ISSN 0021–0382

F—518

IONOSPHERIC DATA IN JAPAN

FOR FEBRUARY 1992

VOL. 44 NO. 2

CONTENTS

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MINISTRY OF POSTS AND TELECOMMUNICATIONS
TOKYO, JAPAN

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

FEB. 1992

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

HD	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	60	60	58	57	56	54	44	108	110	149	148	136	153	134	127	124	118	111	92	71	62	66	63	66
2	60	66	43	38	41	40	58	81	111	112	137	141	140	166	129	132	129	116	107	84	66	67	61	45
3	43	47	48	45	65	50	27	82	122	142	145	166	139	120	120	128	130	130	108	87	72	81	80	64
4	56	58	59	61	N	40	39	60	83	132	138	125	131	127	129	132	130	116	98	90	73	73	73	66
5	55	56	55	54	58	54	66	104	122	144	151	148	148	146	135	133	131	123	106	97	78	65	61	57
6	61	54	52	59	54	53	66	76	129	139	141	144	140	133	131	132	121	116	97	92	66	58	55	52
7	58	48	N	42	66	47	61	65	120	121	139	144	137	127	122	127	119	100	91	87	66	63	60	60
8	61	60	52	51	60	60	84	95	150	152	169	156	142	134	140	139	125	111	92	87	72	73	69	72
9	72			34	58			64	112	142	162	141	142	140	136	116	100	92	93	99	91	92	83	67
10	80	75	N	A	53	57	59	106	110	124	129	152	147	136	135	133	138	124	111	96	84	86	82	68
11	60	51	N	59	53	38		88	129	141	152	146	138	129	128	120	103	104	84	66	60	63	54	58
12	60	52	59	48	48	45	43	104	129	139	138	140	140	130	131	120	124	103	101	91	96	71	65	79
13	54	53	54	56	57		66	109	128	107	141	141	148	134	129	131	126	121	111	92	70	56	60	62
14	58	55	56	55	58	53	84	112	131	148	N	140	145	138	137	132	124	112	100	90	80	72	72	60
15	67	57	53	58	51	53	63	112	128	158	165	148	146	141	141	140	137	124	98	94	74	71	65	72
16	67	60	55	64	48	45	53	106	125	142	148	136	140	130	126	124	120	111	97	80	65	62	66	63
17	43	51	56	52	56	52	51	110	122	141	145	142	141	135	130	125	121	116	102	84	67	63	63	54
18	47		70	56	47	51	66	108	130	148	152	156	148	142	144	142	132	125	100	99	86	73	70	65
19	63	56	57	60	55	51					150	148	148	137	135	130	128	113	96	87	86	72	66	66
20	68	56	59	60	62	58	67	106	120	148	150	151	140	136	128	127	130	113	96	67	66	66	79	65
21	52	42	43	41	26	60	50	87	122	128	126	131	115	112	N	113	124	107	82	N	57	60	62	58
22	A	A	40	48	36	36	54	96	138	130	134	144	149	136	123	133	123	107	94	80	73	72	56	62
23	55	61	53	60	54	57	81	101	118	148	148	141	136	136	133	128	130	122	97	92	87	79	73	73
24	69	64	66	62	63	60	90	108	133	140	137	150	144	130	128	128	130	127	100	91	91	79	83	76
25	72	61	62	66	62	52	85	87	129	139	140	135	137	141	142	135	121	121	101	98	88	87	86	87
26	89	80	73	66	66	67	89	129	150	152	155	159	150	141	137	138	133	129	111	97	85	72	65	63
27	66	66	62	55	42	36	50	86	124	113	118	131	136	134	137	131	131	122	106	92	82	66	61	66
28	76	58	57	A	42	38		64	66	86	92	106	111	120	118	126	126	110	86	73	73	62	70	66
29	52	58	54	56	52	51	80	124	127	138	148	143	148	138	140	141	138	124	112	85	80	66	54	66
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	26	25	27	28	27	25	28	28	28	28	29	29	29	28	29	29	29	29	28	29	29	29	29
MED	60	58	56	56	54	52	63	102	124	140	145	143	141	135	131	131	126	116	98	90	73	71	65	65
U Q	67	61	59	60	59	57	80	108	129	148	150	149	148	139	137	133	130	123	106	93	85	73	73	67
L Q	55	53	52	48	48	45	50	84	119	129	137	138	137	130	128	125	121	110	93	84	66	63	61	60

HOURLY VALUES OF FES AT WAKKANAI

FEB. 1992

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

HD	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	30	G	G	G
2	G	G	G	G	G	G	G	G	G	G	G	G	G	G	66	G	G	G	G	G	G	29	27	28
3	G	G	G	G	G	G	G	G	38	G	G	G	G	G	G	G	G	G	G	G	G	G	32	26
4	G	G	24	32	26	G	25	G	G	G	G	52	40	43	46	40	35	29	36	G	G	G	G	G
5	G	G	G	G	G	G	122	G	G	G	41	G	G	G	G	G	G	G	G	G	G	G	G	29
6	G	G	26	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	30	G	G
7	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	30	G	G	G	G
8	G	G	G	G	G	G	G	G	G	G	G	G	48	53	G	G	G	G	G	G	G	G	G	G
9	30		G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	38	29	G	G	G	G	G
10	G	26	30	38	32	28	122	39	39	52	95	42	G	G	G	G	G	G	28	G	G	G	G	G
11	G	G	G	G	G	G	G	G	G	41	51	48	G	G	G	55	38	38	34	G	29	41	28	30
12	31	30	28	G	G	G	G	G	G	G	G	G	G	41	G	G	G	G	G	G	G	G	G	G
13	G	G	G	G	G	96	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
14	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	39	34	27	28	33	G	G	G
15	G	G	G	G	G	G	G	G	50	G	G	G	G	G	G	G	G	G	G	G	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	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	28	27	28	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
19	G	G	26	24	G	G					G	G	G	G	G	G	G	28	G	G	G	G	G	G
20	G	G	G	34	28	G	G	G	42	G	51	G	G	G	G	G	G	G	G	G	G	G	G	G
21	G	G	G	G	G	G	27	G	G	G	87	G	G	G	G	G	G	G	G	G	23	G	G	G
22	39	30	32	42	28	G	G	G	G	G	G	G	G	G	G	G	G	33	32	G	30	45	G	33
23	36	36	34	37	30	G	G	G	G	G	60	53	G	G	G	G	G	G	G	G	G	G	G	G
24	24	24	28	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
25	G	G	G	G	G	G	G	G	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	38	G	G	G	G	G	48	44	40	31	28	42	28	G	G	G
27	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
28	G	G	G	26	G	G		G	G	G	44	G	G	G	G	G	G	G	G	G	G	G	G	G
29	G	G	G	G	G	G	G	G	G	G	G	G	G	G	51	G	G	G	G	G	G	G	G	G
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	28	29	29	29	29	27	28	28	28	29	29	29	29	29	29	29	29	29	29	29	29	29	29
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	26	25	G	G	G	G	G	G	21	G	G	G	G	G	G	14	14	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

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

HOURLY VALUES OF FOF2 AT AKITA

FEB. 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	62	62	52	64	51	42	47	86	117	128	137	142	146	131	116	117	113	107	99	66	52	53	67	68
2	67	56		40	42	32	44	73	87	140	136	145	132	123	122	122	113	121	90	87	54	69	67	52
3	54			54	44		25	82	118	156	146	153	141	120	116	122	133	130	107	79	85	87	80	68
4	64	59	55	56	60	44	40	77	132	128	140	137	136	129	131	131	121	116	108	90	52	79	66	64
5	67	51	55	54	46	53	54	86	140	140	145	145	138	138	137	127	126	121	107	87	52	52	66	66
6	52	52	54	52	52	51	56	90	121	128	141	137	131	126	130	130	126	108	104	90	51	63	62	53
7	53	36	42	43	47	46		86	109	133	136	140	137	126	121	120	112	104	86	90	84	68	52	50
8	55	54	44	37		52	60	106	138	145	146	144	140	135	132	134	130	120	90	91	91	76	54	68
9	54		25	N	53	N	A	88	127	145	153	146	140	143	138	112	90	91	111	91	88	87	85	63
10	68	84	A	67	68	79	62	88	116	122	121	137	141	138	137	131	120	120	120	105	87	88	88	67
11	70	60	52	63	63	54	43	81	118	146	145	145	143	133	131	128	116	111	90	79	66	52	61	56
12	A	50	49	46	43	43	48	86	122	140	136	130	133	127	130	121	124	117	96	87	90	76	67	64
13	52	63	56	53	56	43	54	90	123	124	136	143	140	121	127	131	126	121	108	90	65	52	57	52
14	54	58	52	54	53	54	60	89	127	140	141	144	137	138	136	131	126	110	90	87	49	78	52	64
15	62	56	53	52	58	56	57	90	121	146	153	144	146	138	138	132	130	122	106	91	86	80	76	67
16	62	52	53	52	44	44	57	99	120	138	131	136	133	127	122	122	120	107	90	79	63	64	56	59
17	56	64	54	54	64	47	56	90	126	135	137	137	137	128	121	120	120	111	106	87	52	63	62	52
18	52	52	67	64	46	46	52	88	127	145	141	146	141	136	136	136	130	112	100	87	80	52	54	64
19	66	52	56	56	53	52	59	97	122	137	138	137	137	130	128	127	117	111	104	90	79	55	66	63
20	60	60	56	52	52	52	64	106	126	131	137	138	136	136	130	120	126	113	88	79	78	56	80	66
21	64	A	52	37	30	40	55	73	106	105	105	91	82	88	106	114	111	107	108	67	71	54	79	80
22	58	63	63	52	51	48	54	88	129	141	141	143	144	141	135	132	130	111	90	91	67	74	63	63
23	60	54	60	61	55	54	62	86	126	137	138	138	138	134	135	133	131	122	111	87	90	83	82	82
24	74	65	64	54	56	58	67	97	137	135	135	133	133	134	126	118	131	124	107	90	84	88	85	79
25	69	63	65	66	53	57	65	107	127	141	137	130	137	135	135	128	121	121	111	88	89	90	90	79
26	88	84	68	66	66	66	82	110	137	142	145	153	142	140	137	133	131	128	120	90	90	85	80	63
27	67	74	54	64	48	26	60	88	127	140	137	136	139	141	135	138	128	118	110	98	84	56	64	83
28	87	60	54	51	52	42	52	67	90	118	136	140	141	138	120	118	121	162	100	87	79	64	73	64
29	52	52	56	63	57	56	62	104	132	133	140	138	145	140	135	136	133	127	110	91	89	78	54	56
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	26	26	28	28	27	27	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29
MED	62	58	54	54	52	51	56	88	126	138	138	140	138	134	131	128	126	117	106	88	79	69	66	64
U Q	67	63	56	63	56	54	62	97	128	141	143	144	141	138	135	132	130	121	109	90	87	81	80	68
L Q	54	52	52	52	46	43	52	86	118	129	136	137	136	127	122	120	118	110	90	87	58	55	59	57

HOURLY VALUES OF FES AT AKITA

FEB. 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	41	46	46	G	44	G	36	G	28	28	27	G	G	G	G
2	G	G	G	G	G	G	G	G	G	G	G	G	G	G	44	42	G	G	G	G	G	G	G	25
3	G	G	G	G	G	G	G	G	35	G	G	G	44	49	41	37	34	29	G	G	G	G	G	G
4	G	G	G	G	G	G	G	G	G	38	G	G	50	47	50	52	48	32	58	28	29	G	G	G
5	G	24	G	G	G	G	G	29	G	G	G	G	G	G	40	38	G	G	G	G	G	G	G	G
6	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	47	G	G	G	G	G	G	G	G
7	G	G	G	G	G	G	G	G	G	G	G	G	G	43	43	37	G	G	24	G	G	G	G	G
8	G	G	G	G	G	G	G	G	G	G	G	G	G	G	41	G	G	G	G	G	G	G	G	G
9	G	G	G	G	G	G	29	29	33	G	51	52	55	50	42	49	39	31	33	28	25	G	26	48
10	25	26	42	54	34	G	G	G	39	48	G	47	43	62	G	38	G	G	G	G	G	G	G	G
11	G	G	G	G	G	G	G	29	37	49	45	G	G	G	G	G	G	G	G	G	50	28	G	G
12	27	G	28	G	G	G	G	G	G	39	G	G	G	G	G	G	G	27	G	G	G	G	G	G
13	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	27	G	G	G	G	G
14	G	G	24	G	G	G	G	G	G	G	G	G	G	G	G	38	41	G	G	G	G	37	G	G
15	G	G	G	G	G	G	G	G	G	41	41	G	G	G	G	40	40	G	G	G	G	G	G	G
16	G	G	G	G	G	G	G	28	G	G	G	G	G	G	G	G	G	G	G	G	G	G	26	25
17	G	28	28	G	G	G	G	G	G	G	G	G	G	G	G	G	34	28	33	28	56	G	G	G
18	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
19	G	G	G	G	G	G	G	G	G	G	50	G	G	G	G	G	35	31	33	27	G	24	G	G
20	G	G	G	G	G	G	G	G	37	43	G	G	G	G	G	G	G	G	G	G	G	G	G	G
21	G	27	G	G	G	G	G	G	G	G	G	50	56	G	G	G	G	G	G	26	G	G	G	G
22	G	G	G	26	25	28	G	G	51	42	61	49	54	G	53	43	36	29	36	G	32	32	53	53
23	27	27	28	G	30	29	G	G	G	G	G	G	52	G	43	50	42	34	28	G	G	G	G	G
24	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	37	G	G	G	G	G	G	G
25	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	41	G	G	G	G	G	G	G	G
26	G	G	G	G	G	G	G	G	G	G	G	G	G	G	43	42	G	G	G	G	G	G	G	25
27	G	G	G	G	G	G	G	48	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
28	G	31	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	34	G	24	G	G	G	G
29	G	G	G	G	G	G	G	G	G	52	G	G	G	G	G	40	G	30	35	G	G	G	G	G
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29
MED	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	37	G	G	G	G	G	G	G	G
U Q	G	G	G	G	G	G	G	G	G	40	G	G	22	G	41	41	35	29	28	12	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

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

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF FOF2 AT KOKUBUNJI

FEB. 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	63	76	73	54	47	47	54	86	123	126	136	141	135	126	111	112	109	108	104	83	75	63	70	66
2	69	63	55	40	46	44	57	85	108	137	140	142	126	134	122	121	113	119	100	82	67	74	74	73
3	58	60	61	60	57		36	88	112	145	142	137	136	124	116	127	135	131	112	92	92	87	86	67
4	63	55	57	59	58	42	34	88	141	128	131	131	135	131	131	129	120	116	104	91	88	80	78	74
5	74	63	58	50	50		57	88	141	146	140	146	136	135	137	124	119	124	116	102	86	64	74	74
6	72	55	52	54	50	50	44	97	120	128	138	130	126	122	127	132	133	128	106	107	90	81	72	69
7	63	58	57	57	41	57	50	88	122	130	127	136	134	127	122	118	111	108	93	96	98	86	55	74
8	67	37	47	57	53	57	62	111	140	144	143	142	141	136	134	136	133	123	106	102	101	80	78	68
9	73			36	46	29	45	103	137	141	142	147	146	142	129	115	91	102	119	102	92	102	92	85
10	54	84	82	72	77	92	72	88	128	122	120	128	141	135	133	125	112	121	119	110	101	87	92	72
11	60	62	57	63	58	56	48	89	135	141	145	151	142	138	137	136	133	124	121	103	84	68	72	62
12	60	57	59	57	46	45	58	97	128	136	136	134	129	136	136	136	133	136	118	102	100	90	85	81
13	70	62	48	58	55	57	56	97	122	138	131	136	133	130	126	127	123	123	114	91	82	69	72	62
14	66	63	56	52	52	54	54	86	125	134	137	135	132	134	135	130	125	116	101	94	91	84	67	66
15	58	52	59	57	58	52	50	98	117	137						138	137	127	112	104	101	86	93	78
16	66	72	60	57	44	46	52	94	127	127	132	131	134	130	128	124	121	116	95	91	81	66	52	60
17	58	48	47	57	56	50	57	94	122	133	136	137	137	133	124	120	122	116	110	100	77	73	70	69
18	63	53	73	71	46	48	47	91	131	141	142	141	140	137	130	129	123	111	100	94	84	83	79	72
19	60	60	53	56	52	50	53	97	131	130	131	138	136	130	129	125	120	113	105	94	76	77	73	69
20	56	60	56	56	55	51	60	105	126	130	133	140	138	138	135	123	127	120	104	85	92	86	93	67
21	73	51	53	38	46	48	69	79	90	95	79	64	A		74	89	87	94	99	87	80	61	77	77
22	61	67	66	45	50	48	54	100	121									124	103	101	100	86	78	67
23	64	67	63	60	52	51	62	104	126	144	137	138	137	136	136	135	126	128	118	104	101	97	90	92
24	82	80	69	67	53	58	68	94	140	141	134	131	133	132	127	122	125	124	106	90	86	97	83	82
25	79	60	73	73	57	56	61	114	125	138	138	130	137	142	137	125	118	127	126	98	101	86	93	88
26	78	82	56	66	57	72	81	101	130	138	137	145	144	137	136	138	133	130	125	113	104	90	94	79
27	81	82	73	72	49	45	68	108	131	144	145	137	141	137	140	137	134	123	111	101	86	92	81	80
28	86	73	71	55	60	63	68	89	118	140	141	142	140	140	135	128	122	122	111	98	92	84	77	78
29	68	68	69	67	60	60	69	111	131	140	137	144	142	141	138	140	136	127	118	105	104	87	81	81
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	28	28	29	29	27	29	29	29	28	27	27	26	26	27	28	28	29	29	29	29	29	29	29
MED	66	62	58	57	52	51	57	94	126	138	137	137	136	135	131	127	123	123	110	98	91	84	78	73
U Q	73	70	69	64	57	57	65	102	131	141	141	142	141	137	136	135	133	127	118	102	100	87	88	79
L Q	60	56	55	54	46	47	50	88	121	130	132	131	134	130	126	122	118	116	103	91	83	73	72	67

HOURLY VALUES OF FES AT KOKUBUNJI

FEB. 1992

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

HD	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	G	G	G	G	G	G	G	36	39	42	G	48	46	44	41	45	G	G	G	G	G	G	G
2	G	G	G	G	G	G	G	G	34	G	G	G	53	58	83	G	46	47	54	43	39	24	G	G
3	G	G	G	G	G		G	G	G	G	G	G	G	G	G	40	34	29	G	G	G	G	G	G
4	G	G	G	G	G	G	G	G	34	G	42	42	44	48	55	48	42	27	28	G	68	50	28	28
5	30	26	G	G	G		G	G	G	G	G	G	G	G	48	41	33	G	G	G	G	G	G	G
6	G	G	G	G	G	G	G	G	35	G	G	G	G	G	53	52	36	G	G	32	30	G	30	G
7	G	G	G	G	G	G	G	G	G	G	G	G	45	53	47	40	34	G	26	G	G	G	G	G
8	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	38	34	G	G	29	35	G	G	G
9	G			G	G	G	G	G	G	G	46	68	64	61	57	80	96	109	32	37	30	28	24	40
10	26	32	32	25	34	G	G	G	G	47	53	49	49	62	G	40	37	G	G	G	G	G	G	G
11	G	G	G	G	G	G	G	34	38	44	49	44	53	G	G	G	G	G	G	G	24	29	36	26
12	25	28	G	G	G	G	G	30	G	G	43	43	G	G	G	44	36	G	34	G	39	32	G	G
13	G	G	G	G	G	G	G	31	G	48	45	49	G	G	G	42	41	G	39	44	G	G	G	G
14	G	G	G	G	G	G	G	G	G	58	G	G	G	G	44	42	G	G	G	G	G	G	G	G
15	30	G	G	G	G	G	G	G	G	G						42	G	G	G	G	G	G	24	G
16	25	G	G	G	G	G	G	G	G	G	G	G	G	G	43	40	G	30	G	G	52	30	G	G
17	G	G	G	27	G	G	G	G	54	G	G	G	G	G	G	40	40	G	G	G	G	G	40	G
18	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	35	G	26	25	G	G	G	G
19	G	G	G	G	G	G	G	G	43	G	G	G	G	G	45	49	38	G	29	27	G	G	G	G
20	G	G	G	G	G	G	G	G	G	G	G	45	G	G	G	41	G	G	G	25	G	G	G	24
21	G	G	G	G	G	G	26	G	37	G	48	50	57		G	G	G	31	G	G	G	G	G	40
22	G	G	28	G	G	G	G	G	38									34	26	29	33	28	24	G
23	54	41	31	25	24	G	25	G	48	G	G	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	G	46	G	G	G	40	G	G	G	G	G	G	G
25	G	G	G	G	G	G	G	48	G	G	46	49	G	G	G	43	38	48	G	G	G	G	G	G
26	G	G	G	G	G	G	G	G	G	G	G	G	G	G	44	43	38	G	G	G	G	G	G	G
27	G	G	G	G	G	G	24	33	G	G	G	G	G	G	G	G	36	G	G	G	G	G	G	23
28	26	G	G	G	G	G	G	40	G	G	50	G	G	78	44	47	44	44	37	24	G	27	G	24
29	G	G	G	G	G	G	G	47	G	G	G	G	G	G	G	G	G	G	23	G	G	G	G	G
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	28	28	29	29	27	29	29	29	28	27	27	27	26	27	28	28	29	29	29	29	29	29	29
MED	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	40	36	G	G	G	G	G	G	G
U 0	13	G	G	G	G	G	G	15	35	G	45	44	46	46	45	43	40	29	27	26	30	25	12	12
L 0	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

FEB. 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	14	15	14	15	15	17	16	20	22	20	26	26	23	18	15	17	16	16	16	16	16	20
2	16	16	16	66		16	16	16	15	17	20	24	32	34	21	17	16	15	15	15	16	16	15	16
3	20	17	16	15	15			16	16	18	39	21	40	27	24	20	18	15	17	17	15	16	16	16
4	16	15	20	17	16	15		23	17	17	22	24	26	39	22	17	16	15	16	16	15	15	15	15
5	15	16	16	17	15		16	17	15	16	18	39	39	30	24	18	18	22	16	15	16	15	20	17
6	16	16	16	16	15	16	15	23	17	16	26	20	43	42	33	21	16	21	16	16	16	16	15	16
7	16	16	16	16	15	15	16	20	20	20	39	27	26	29	24	18	16	21	15	16	16	16	18	17
8	16	15	17	16	16	16	16	23	15	16	20	21	29	26	24	18	18	22	16	16	16	16	16	16
9	15				15			23	16	17	21	22	28	21	20	16	15	15	16	15	15	15	16	15
10	15	15	14	15	15	16	15	23	15	16	20	21	22	20	16	15	17	16	16	16	15	16	16	17
11	16	15	15	16	15	16	16	15	15	15	21	27	28	28	28	20	18	22	15	16	16	16	15	16
12	16	16	16	16	16	16	15	23	16	17	28	24	22	22	17	15	16	16	16	16	16	15	16	15
13	16	16	16	15	15	16	16	16	15	16	18	20	35	26	22	18	17	15	15	15	15	16	16	16
14	15	16	16	16	16	15	15	21	17	16	18	22	39	38	29	18	16	22	16	15	16	16	15	16
15	16	17	33	18	15	16	16	24	15	18						18	16	23	14	15	16	16	15	15
16	15	15	14	14	15	14	15	15	15	18	22	22	20	40	30	22	20	15	15	15	15	14	16	15
17	15	15	14	15	15	15	15	23	17	16	39	40	33	39	28	21	18	22	15	15	14	15	15	16
18	15	14	15	14	14	14	15	26	17	35	18	39	40	30	32	20	16	24	14	16	16	16	16	15
19	15	15	14	15	14	15	15	15	16	16	39	24	26	44	30	20	16	16	15	15	15	14	15	15
20	15	15	15	14	15	15	15	16	14	18	18	20	30	33	20	18	16	24	16	15	15	15	15	15
21	16	14	14		15	16	15	15	15	18	18	21	29		42	29	18	16	15	15	15	16	16	15
22	15	15	15	14	16	15	16	15	15									15	14	14	15	14	15	15
23	14	15	14	15	15	15	16	18	15	18	34	39	30	29	24	18	16	16	14	15	16	15	15	15
24	14	15	15	15	15	15	15	27	15	16	18	24	22	40	20	18	16	15	15	15	15	15	15	15
25	15	15	15	15	14	15	16	17	15	39	38	40	35	33	30	17	15	15	15	15	15	15	15	15
26	15	14	15	15	15	15	15	15	15	17	18	33	32	30	26	17	17	15	15	15	15	16	15	15
27	16	14	14	14			16	21	16	39	32	22	30	33	38	22	16	24	16	15	15	15	16	15
28	15	15	15	16	15	15	17	16	16	20	20	26	24	22	18	16	14	14	14	15	15	15	15	15
29	15	15	15	14	15	15	16	15	16	17	17	39	40	39	20	18	14	18	16	15	15	15	15	15
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	28	28	27	27	25	26	29	29	28	27	27	27	26	27	28	28	29	29	29	29	29	29	29
MED	15	15	15	15	15	15	16	17	15	17	21	24	30	30	24	18	16	16	15	15	15	15	15	15
U 0	16	16	16	16	15	16	16	23	16	18	32	33	35	39	30	20	17	22	16	16	16	16	16	16
L 0	15	15	14	15	15	15	15	15	15	16	18	21	26	26	20	17	16	15	15	15	15	15	15	15

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF FOF2 AT YAMAGAWA

FEB. 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	86	84		57		50	71	53	126	130	135	140	142	133	121	122	127	124	127	108	101	110		77
2		60	52	38	37	52	40	84	118	148	156	141	134	134	124	112	117	122	118	88	82	86	90	86
3	72	57	66	64	58	A	71			154	154	128	134	130	123	138	140	131	126	110	111	107	87	80
4	79	72	66	54	54	51	38	61	136	88	107	141	146	141	137	134	121	122	111	110	108	90	90	86
5	83	61	74	58		38	43	63	125	130	142	158	152	154	156	149	144	146	148	148	144	128	108	121
6	107	86	78	72	58	53		66	111	135	138	134	127	135	138	146	142	146	150	145	144	138		87
7	85	84	66	66	62		38	58	111	137	146	137	145	143	144	141	136	132	134	134	144	138		108
8		86		72	65	73	79	90	137	150	151	151	151	145	146	142	138	143	136	137	143	137	99	86
9	86	58	26	31	45	48	43	76	118	148	156	155	166	158	134	128	115	108	132		106	130	87	108
10			83	74	87		88	72	118	118	114	117	136	129	125	109	110	113	110	110	111		87	86
11	86		60	60	65	60	43	54	120	142	145	153	158	150	153	150	149	144	156	162	145	118	106	90
12	84	67	60	66	59	63	43	66	111	135	140	133	136	141	151	157	161	167	176	178	175	176	157	147
13	115		83	84	86	53	56	76	107	128	135	124	127	134	131	128	134	127	122		102	88		64
14		67	51	53	53	52	52	73	104	117	138	144	135	138	141	135	129	129	126	111	110	106	90	
15	77	72		53	64	52	43	66	100	125	140	141	137	138	144	149	145	141	141	143	156	146	143	116
16	88		72	62			38	72	110	121	126	131	135	140	138	135	128	126	126	111	102		85	82
17	79	60	54	53	58	44	38	66	112	125	130	138	140	144	139	137	134	129	133	127	108	98	87	88
18	87	66	84	80	58	32	34	64	108	141	150	146	152	142	137	132	126	125	118	110	107	90	86	
19		67	61	66	58	40	44		117	135	127	128	135	139	137	130	125	124	126	107	90	87	88	86
20	87		71	63	63	61		80	111	120	122	138	142	146	145	144	138	131	120	111	101	114	90	66
21	66	64	62	53	53	42	53	86	121	157	120		93		79	90	86			83			60	66
22	58	50	60	48	49	53	52		118	145	146	146	149	153	155	145	144	143	140	138	131	106	88	85
23		77	77	68	52		53	86	118	141	146	136	137	145	151	150	145	146	143	146	145	137	121	109
24	106	87	85		80	64	61		117	130	138	126	130	141	138	132	131	127	126	111	102	111	104	80
25	78	66	65		57		51	97	111	136	141	127	142	146	138	127	130	135	138	N	111	90	102	88
26			65	63	55	66		91	117	131	146	153	153	146	146	147	141	140	141	140	130	110	108	86
27		85		64	52	51		81	138	164	155	135	145	140	135	141	132	125	131	114	105		90	78
28	87	84	73		61	66	55	76	125	148	148	165	167	155	144	140	132	131	137	125	110	107	97	93
29	85	81	73	73	73			83	112	130	137	144	149	147	151	146	146	146	142	137	146	144	111	108
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	21	23	25	26	26	22	24	25	28	29	29	28	29	28	29	29	29	28	28	26	28	25	25	27
MED	85	67	66	63	58	52	48	73	117	135	140	139	142	142	138	138	134	131	132	120	110	110	90	86
U Q	87	84	75	68	64	61	55	83	120	146	147	146	150	146	146	146	143	143	141	140	144	137	107	108
L Q	78	61	60	53	53	48	41	65	111	126	132	132	135	138	134	129	126	125	126	110	103	94	87	80

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF FES AT YAMAGAWA

FEB. 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	28	G		G		G	G	24	32	38	41	44	G	45	49	62	G	G	G	G	G	G	G	G
2		G	G	G	G	G	G	G	G	40	44	G	G	53	G	G	61	59	G	44	43	38	48	37
3	30	26	34	54	31	31	G			G	G	G	G	53	48	42	G	G	G	G	G	G	G	G
4	G	G	G	G	G	G	G	G	G	G	42	G	55	58	53	55	44	G	25	G	G	G	G	G
5	35	34	31	G		G	G	G	G	G	G	G	G	G	G	44	G	G	26	24	G	G	G	G
6	G	G	G	G	G	G		G	33	G	51	54	56	48	50	51	47	G	52	40	30	G	G	G
7	G	G	24	G	G		G	G	39	44	G	50	G	G	57	46	42	G	45	30	28	28	G	G
8	G	G		G	G	G	G	G	G	G	G	G	G	G	45	42	39	G	24	G	29	G	25	24
9	G	G	G	G	G	G	G	G	G	G	G	48	56	57	75	55	56	33	G		G	26	40	36
10			30	33	24		G	G	36	G	51	51	53	50	48	45	44	G	49	34	34		G	G
11	G		G	G	G	G	G	G	G	G	G	62	53	G	G	48	46	40	G	G	25	28	24	27
12	G	G	G	G	G	G	G	G	G	G	46	47	G	G	G	42	40	G	G	G	G	32	G	G
13	G		G	G	G	G	G	G	G	43	55	54	45	G	G	G	48	54	35		32	G		G
14		G	G	G	G	G	G	G	48	G	43	50	G	49	50	43	42	36	G	G	G	G	G	
15	29	G		24	G	G	23	G	G	G	G	G	G	G	G	48	42	G	G	G	G	G	G	G
16	G		G	G			G	G	G	G	G	G	G	G	50	53	58	46	34	G	G		G	G
17	G	G	G	G	G	G	G	G	G	G	42	G	G	G	G	G	G	G	G	25	G	G	G	G
18	G	G	G	G	G	G	G	28	G	G	G	G	G	G	G	45	40	G	G	G	G	G	G	
19	G	G	G	G	G	G	G		G	G	G	G	G	G	G	G	41	G	G	G	G	G	G	G
20	G		G	G	G	G		G	G	G	G	G	G	G	G	43	41	35	G	G	G	G	G	G
21	G	G	G	G	G	G	G	G	G	49	64	G	G		G	G	G	G		G			G	G
22	G	G	G	26	G	G	G		G	40	G	G	51	56	51	50	44	G	G	G	G	G	G	G
23		26	31	G	G		G	G	G	G	G	45	G	G	G	44	G	G	34	24	G	G	G	G
24	G	G	G		25	G	G		G	G	G	G	G	G	G	44	G	39	G	G	G	G	G	G
25	G	G	G		G		G	29	G	G	G	G	48	46	G	G	41	G	G	G	G	G	G	24
26		G	G	G	G	G		G	G	G	G	G	G	50	G	45	42	36	G	G	G	G	G	G
27	G	G		G	G	G		G	G	G	G	G	53	45	G	44	40	G	28	G	G		G	G
28	G	G	G		G	G	G	G	G	G	G	G	G	G	G	G	40	G	38	G	G	G	G	G
29	G	G	G	G	G			G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	24	24	25	26	26	23	24	25	28	29	29	29	29	28	29	29	29	29	28	27	28	25	28	27
MED	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	44	41	G	G	G	G	G	G	G
U Q	G	G	G	G	G	G	G	G	G	G	42	47	49	49	49	48	44	35	31	24	13	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

FEB. 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	16	16		15		16	16	16	16	16	20	28	34	30	27	23	16	15	16		15	15		15
2		15	15		66	15		17	16	16	18		33	32	42		17	15		15	15	15	15	15
3	15	15	15	15	15	15				20	38			34	23	21	21	16			15	15	15	15
4	15	15	15	15	14	16		17	16	16	21		24	44	24	22	17		17		15	15	15	15
5	15	15	15	15		15	15	17		15	21	21	40	42	34	34	20	15	15	15	15	15	15	15
6	15	15	15	15	14	15		17	17	18	17	21	35	42	34	24	18	15	16	15	16			15
7	15	15	15	15	15		15	20	17	18		32		45	28	18	18	15	15	15	15	15		15
8		15		15	15	15	15	17	16	16	16	22	40		24	24	17	17	18	15	15	15	15	15
9	15	15			15	15		17	18	16	18	24	35	33	30	29	17	15	16		15	15	15	16
10			15	14	15		15	16	15		16	21	35	34	35	17	15	15	15	15	15		15	15
11	15		15	15	15	15	15	18		16		35	36	35	40	22	18	16			15	15	15	15
12	15	15	15	15	15	15	15	18			22	22			40	21	16	15	20	15	14	15	15	15
13	15		15	15	15	15	15	18	15	15	18	36	18	39	39		18	18	15		15	15		15
14		15	15	15	15	15	15	18	15		17	20		27	22	18	17	16	18		15	15	15	
15	15	15		15	15	15	16	17	17	17		38	35	36	41	23	18	17	21		15	15		15
16	15		15	15			15	18	16		21		40	43	36	35	22	18	15	15	15		15	15
17	15	15	15	15	15	15	15	18	16	16	26	43	35	36	35					15	15	16	15	21
18	15	15	15	15	15	15	15	15		20	23	44	40	41	40	26	21	18			15	15	15	
19		15	15	15	15	15	15				26	42	46	46		21	20	17	20	15	15	15	15	15
20	15		15	15	15	15		17	16	17	18	39			40	38	18	16	17	15	15	15	15	15
21	15	15	15	16	15	15	15	21	18	20	28					42	35			16			16	15
22	15	15	15	16	15	15	15		17	23	39	36	34	36	36	27	23					15	15	15
23		15	15	15	15		15	21	18	17	27	43		35	39	23	18	16	15	15		15	15	15
24		15	15		15	16	15		16		21	40		40	40	18		16		15	15	15	15	15
25	15	15	15		15		15	15	16	39	42		42	44		38	22	16		15	15	16	15	15
26			15	15	16	15		21		21		41	44	36	41	34	20	16	21		15	15	15	15
27		15		15	15			15	17	36	39		34	34	40	26	20	16	15	16	16		15	15
28	15	15	15		15	15	15	21	17	22	23	24					17	15	15		15	15	15	15
29	16	15	15	15	15			22	16	17	22	39		40	40	38	22	16	22	15	15	15	15	15
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	20	23	24	24	26	22	20	25	22	23	25	22	19	24	25	25	27	25	20	17	26	24	24	27
MED	15	15	15	15	15	15	15	17	16	17	21	36	35	36	36	24	18	16	16	15	15	15	15	15
U 0	15	15	15	15	15	15	15	19	17	20	26	40	40	42	40	34	21	16	19	15	15	15	15	15
L 0	15	15	15	15	15	15	15	17	16	16	18	22	34	34	29	21	17	15	15	15	15	15	15	15

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF FOF2 AT OKINAWA

FEB. 1992

LAT. 26.3N LON. 127.8E 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	110	111	87	71	54	32		52	120	144	146	142	134	146	143	131	130	145	145	145	151	176	121	108
2	87	85	54	30	N		33	56	108	146	146	130	129	142	124	110	109	119	111	104	91	90	111	110
3	87	82	81	61	46	N		55	84	146	146	117	136	127	115	146	146	136	122	142	146	123	86	71
4	85	81	55	47	30	32	23	32	134	107	96	133	147	146	146	131	131	131	131	122	146	146	145	110
5	110	86	86	66	32	31	N	31	108	121	143	159	156	151	159	158	167	171	187	188	170	171	160	146
6	161	130	110	108	86	63	27	66	110	131	146	131	131	146	152	146	151	162	159	147	168	197	196	170
7	145	110	141	93	81	63	46	54	110	146	145	146	147	150	162	159	N	160	161	146	186	187	163	171
8	138	121	110	105	86	88	86	108	131	146	146	153	158	150	161	156	161	160	158	152	175	N	145	110
9	108	86	N	25		61	N	78	107	146	146	146	172	160	129	140	111	130	136	142	111	145	131	110
10	110	85	88	79	85	111	120	88	108	120	111	116	117	113	107	90	89	99	96	100	106	111	88	85
11	87	78	A	A	61	37	37		107	141	125	145	146	146	146	136	145	146	160	190	190	160	145	159
12	129	86	86	86	86	62	44	54	108	130	131	146	140	147	150	141	170	168	170	169	146	190	175	160
13	145	145	129	145	102	66	54	66	108	131	140	141	125	145	150	146	145	120	121	130	107	108	107	86
14	86	85	58	54	54	54	44	55	87	111	136	146	141	146	146	146	146	154	146	160	169	170	146	130
15	131	121	87	87	87	86	31	62	104	120	134	121	121	140	146	138	150	171	188	190	197	197	188	163
16	145	122	110	88	80	29	34	59	103	111	131	133	137	146	147	146	144	145	145	146	146	147	145	145
17	110	87	66	55	55	44	37	53	111	126	131	132	150	151	150	146	146	152	146	160	146	145	144	130
18	110	86	110	85	66	30	32	59	108	143	152	135	153	157	146	147	147	142	131	130	130	122	108	108
19	105	86	86	85	66	32		54	110	120	134	131	122	145	146	144	146	144	131	146	168	145	145	131
20	N	110	86	86	80	66	36	66	108	108	131	137	146	162	160	153	161	146	146	146	123	162	107	86
21	84	85	53	52	52	46	23	81	104	162	146	131	124	121	109	111	108	106	109	108	85	85	66	52
22	40	38	55	32	35	29	32	62	110	131	146	146	146	152	160	152	151	146	145	160	146	130	105	87
23	86	83	85	66	49	28	43	78	110	131	144	131	146	143	158	161	163	171	179	187	187	196	170	169
24	164	146	110	110	106	86	66	81	110	121	132	132	138	136	146	131	131	131	131	130	131	110	107	85
25	86	82	75	71	52	29	27	82	108	136	138	124	131	152	131	119	131	135	144	129	120	110	108	87
26	78	64	52	54	50	N	43	76	110	131	146	157	150	145	151	144	150	160	162	162	169	162	146	130
27	109	107	86	63	31	34		60	146	160	147	135	130	143	146	145	128	138	146	140	128	145	131	108
28	86	88	85	77	61	82	48	62	130	133	146	161	164	160	146	132	137		145	146		130	130	129
29	110	110	87	87	87	48	N	66	108	124	145	146	146	146	146	150	158	160	164	184	186	187	109	186
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	29	27	28	27	26	22	28	29	29	29	29	29	29	29	29	28	28	29	29	28	28	29	29
MED	110	86	86	74	61	47	37	62	108	131	144	135	141	146	146	145	146	146	145	146	146	146	131	110
U Q	130	110	110	87	86	66	46	77	110	145	146	146	148	151	151	148	151	160	160	161	169	173	146	152
L Q	86	84	66	54	50	32	32	54	107	120	131	131	130	143	144	131	131	133	131	130	125	122	107	87

HOURLY VALUES OF FES AT OKINAWA

FEB. 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	37	G	G	59	62	50	G	G	34	G	G	G	G	G	G
2	G	G	G	G	G	G	G	G	G	39	G	G	52	54	52	52	44	42	G	G	G	G	G	G
3	33	29	G	24	G	G		G	G	G	G	G	56	53	50	50	43	36	41	G	G	G	G	G
4	G	G	G	G	G	G	G	G	34	38	G	43	54	G	G	G	44	35	G	G	G	G	G	G
5	G	G	G	25	G	G	25	G	G	G	42	50	55	52	53	54	45	37	27	30	G	G	G	G
6	G	G	G	G	G	G	G	G	G	38	G	52	58	G	54	51	50	43	34	37	G	G	G	G
7	G	G	G	26	G	G	G	G	31	43	41	45	52	56	57	60	56	45	36	39	28	32	24	71
8	G	G	28	G	G	G	G	G	G	G	41	G	G	G	G	G	G	35	G	G	G	G	G	G
9	24	G	G	G	G	G	G	G	34	G	G	G	58	51	G	G	41	34	G	G	G	G	G	90
10	33	G	25	G	33	32	34	24	33	42	51	56	62	54	51	45	40	G	G	G	G	G	G	G
11	32	27	34	36	28	G	G		32	41	47	50	58	54	55	50	42	35	32	40	33	32	G	G
12	G	G	G	G	G	G	G	G	G	G	41	G	50	51	G	43	44	38	41	38	32	32	G	25
13	G	G	G	G	G	G	G	G	32	44	54	51	52	54	G	G	43	G	40	49	G	G	G	G
14	28	G	G	G	G	G	G	G	G	G	G	G	G	50	G	44	44	36	G	G	G	24	G	G
15	G	G	25	G	G	G	G	30	G	G	G	G	G	G	G	50	44	G	G	G	24	G	G	G
16	G	G	G	G	G	G	G	G	G	G	42	G	G	G	57	73	53	36	G	28	G	G	G	G
17	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	49	52	41	28	24	24	G	G	G
18	G	G	G	G	G	G	G	G	G	G	44	G	G	51	G	G	43	38	G	G	32	G	G	G
19	G	G	G	G	G	G		G	G	G	G	G	53	G	G	49	46	40	G	G	G	24	G	G
20	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
21	G	G	G	G	G	G	G	G	G	G	50	50	53	58	G	G	G	G	G	G	30	G	G	G
22	G	G	G	G	G	G	G	G	34	40	G	G	51	G	G	48	45	37	G	G	G	G	G	G
23	G	G	G	25	30	28	24	G	G	G	G	G	56	56	53	48	45	G	30	G	24	G	G	G
24	G	G	G	G	G	G	G	24	G	G	G	G	G	55	52	49	46	41	G	G	G	41	54	G
25	25	24	37	G	G	G	G	G	G	G	G	G	G	G	52	47	G	G	G	24	G	G	G	G
26	G	G	G	G	G	G	G	G	G	G	G	G	52	G	G	48	42	37	G	G	G	G	G	G
27	G	G	G	G	G	G	G	G	G	G	G	G	53	G	50	44	42	G	G	G	G	G	G	G
28	24	G	27	26	24	G	G	G	G	G	G	48	G	50	G	49	G		G	26	G	G	G	G
29	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	42	G	G	G	G	G	G	G
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	29	29	29	26	28	29	29	29	29	29	29	29	29	29	28	29	29	29	29	29	29
MED	G	G	G	G	G	G	G	G	G	G	G	G	52	50	G	48	43	36	G	G	G	G	G	G
U Q	12	G	G	G	G	G	G	G	16	38	41	46	55	54	52	50	45	38	29	27	24	G	G	G
L Q	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	40	G	G	G	G	G	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF FMIN AT OKINAWA

FEB. 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	15	16	15	15	15		16	28	23	44	33	33	30	29	24	22	14	21	16	18	15	15	15
2	16	16	15		66	17		16	28	21	23	43	45	45	33	38	23	17	22	15	16	16	16	15
3	16	15	15	15	15	20		17	29	23	45	29	44	44	33	30	30	16	16	16	16	16	16	16
4	15	15	15	16	15	15		17	28	18	22	27	32	48	31	30	23	20	23	20	16	16	16	15
5	16	16	16	16	16	16	18	18	16	18	24	29	44	30	30	33	29	18	20	16	17	16	16	15
6	15	16	16	17	15	15	16	17	28	21	45	45	43	52	46	32	26	21	16	16	23	16	16	15
7	16	17	15	15	15	15	15	20	30	26	23	26	30	32	30	28	22	18	15	15	15	15	16	16
8	16	15	15	15	17	15	16	22	18	22	28	29	46	45	29	29	21	20	18	17	17	16	17	15
9	16	15				15		16	17	20	22	42	44	45	30	33	21	17	22	16	16	16	16	15
10	15	16	15	15	15	15	15	15	18	17	20	27	30	46	51	29	23	16	16	17	16	16	16	16
11	15	16	15	15	15	16	17		16	17	23	28	44	32	33	30	21	18	15	15	15	16	15	17
12	15	15	15	15	15	15	16	18	16	17	23	27	45	33	29	30	21	17	15	15	15	15	15	16
13	15	15	15	15	15	15	15	17	16	16	17	21	44	40	30	30	16	16	18	17	17	16	15	21
14	15	16	15	15	15	15	17	21	28	17	22	26	29	44	29	26	20	17	23	16	18	15	16	17
15	15	16	18	16	15	16	15	15	17	22	48	46	51	47	46	28	30	30	23	18	16	16	15	15
16	16	15	17	16	15	15	16	21	27	27	24	30	45	49	40	42	28	22	23	16	16	15	16	15
17	15	15	16	15	15	15	16	17	18	21	40	46	46	45	43	34	28	18	16	15	15	15	15	15
18	15	15	15	15	15	15	20	18	17	21	28	45	45	45	47	33	29	24	26	18	20	16	15	15
19	15	15	15	15	15	15		18	16	21	47	30	39	53	45	29	29	18	23	15	16	16	15	15
20	16	15	15	15	15	15	16	22	17	17	45	46	46	48	48	46	24	21	23	16	17	17	15	16
21	17	16	15	15	15	15	17	20	29	22	28	45	42	49		48	39	23	18	17	15	17	15	15
22	16	15	15	15	15	15	16	22	17	24	30	45	46	45	47	29	24	21	24	16	16	15	15	15
23	15	15	15	15	15	15	16	23	29	22	29	32	44	42	32	30	22	20	15	15	16	26	15	15
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30																								
31																								
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CNT	29	29	28	27	28	28	22	28	29	29	29	29	29	29	28	29	29	28	29	29	29	29	29	29
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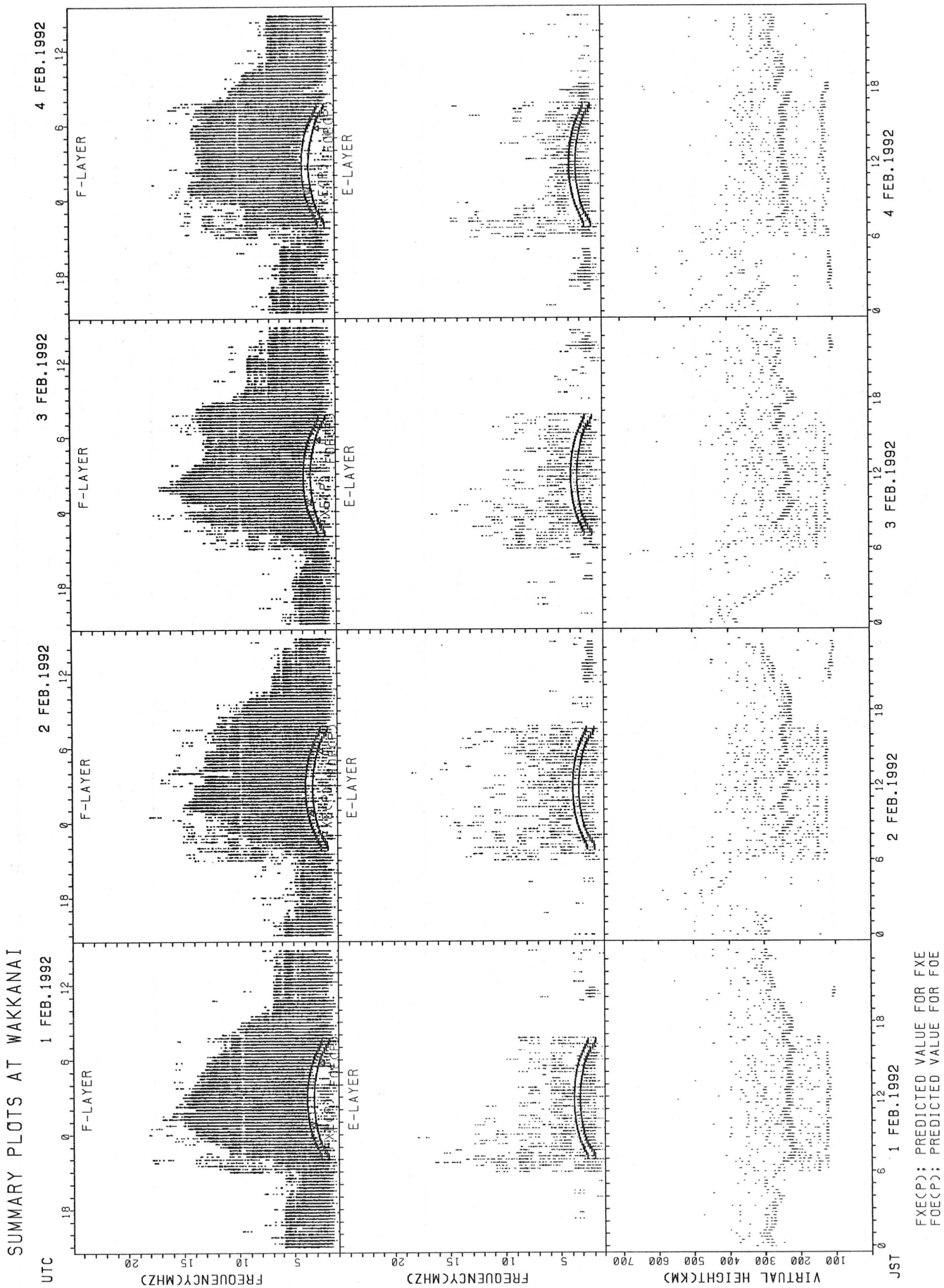
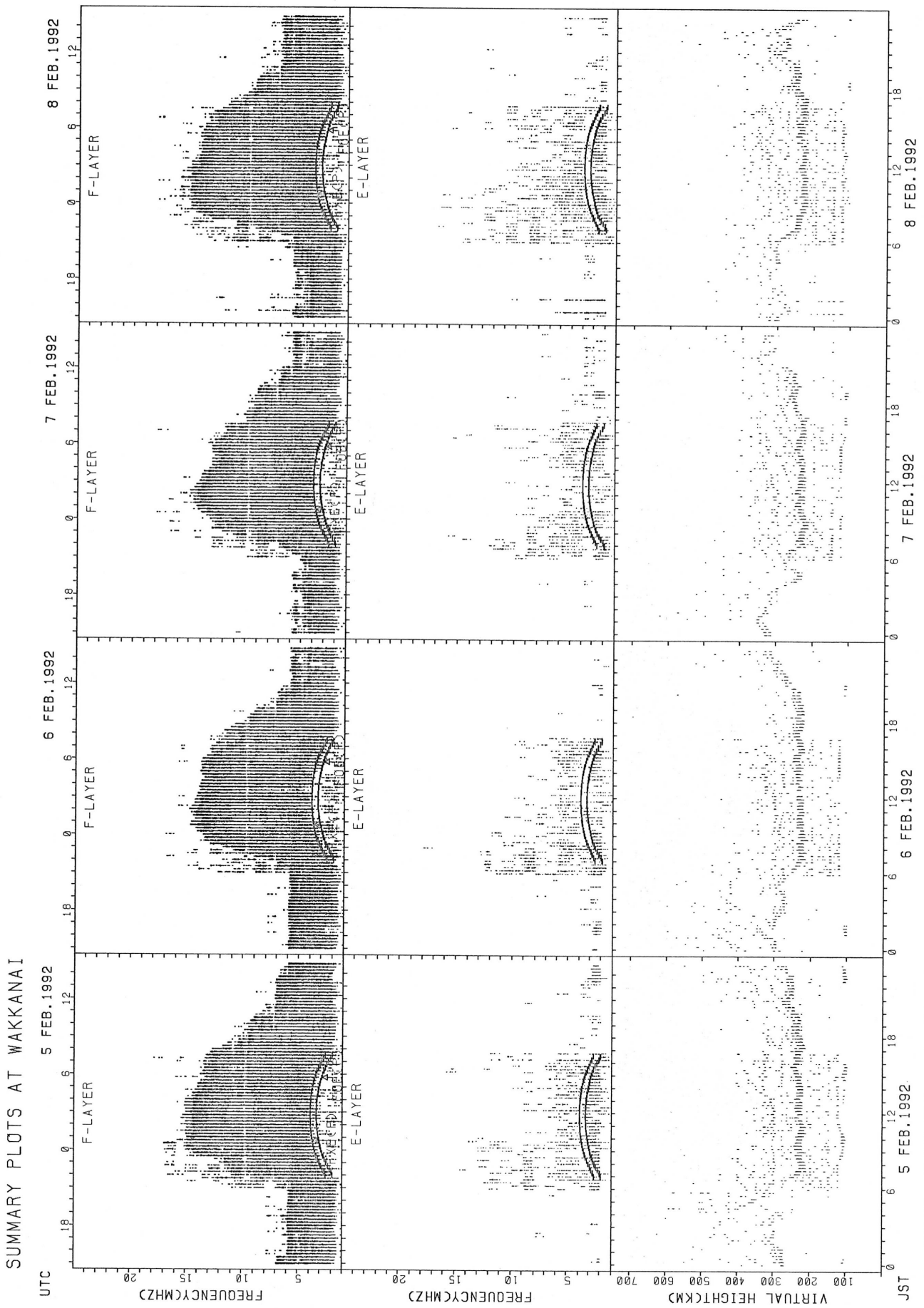
L Q	15	15	15	15	15	15	16	17	17	18	23	28	36	41	30	29	22	17	16	15	16	15	15	15

COMMUNICATIONS RESEARCH LABORATORY, JAPAN


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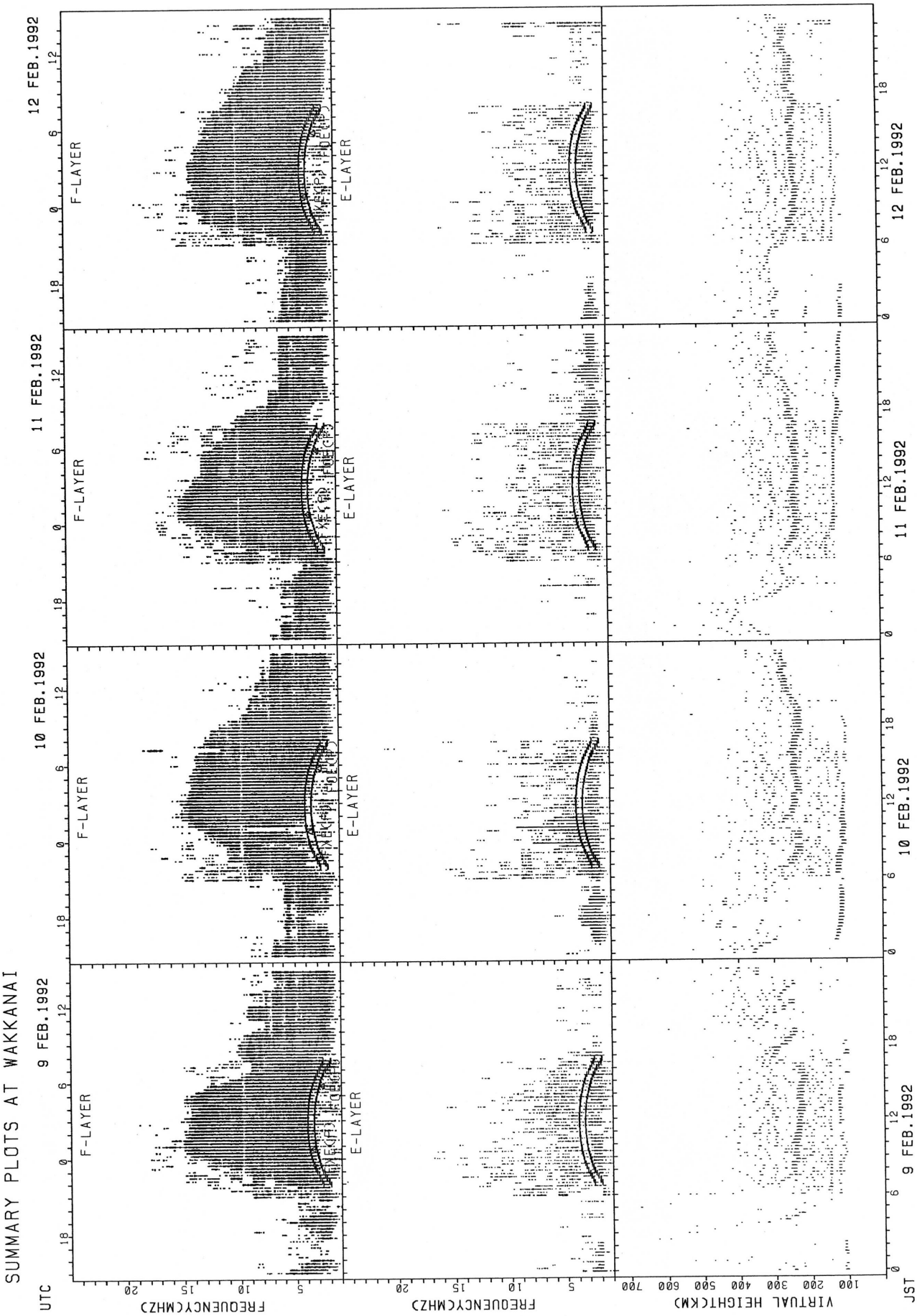
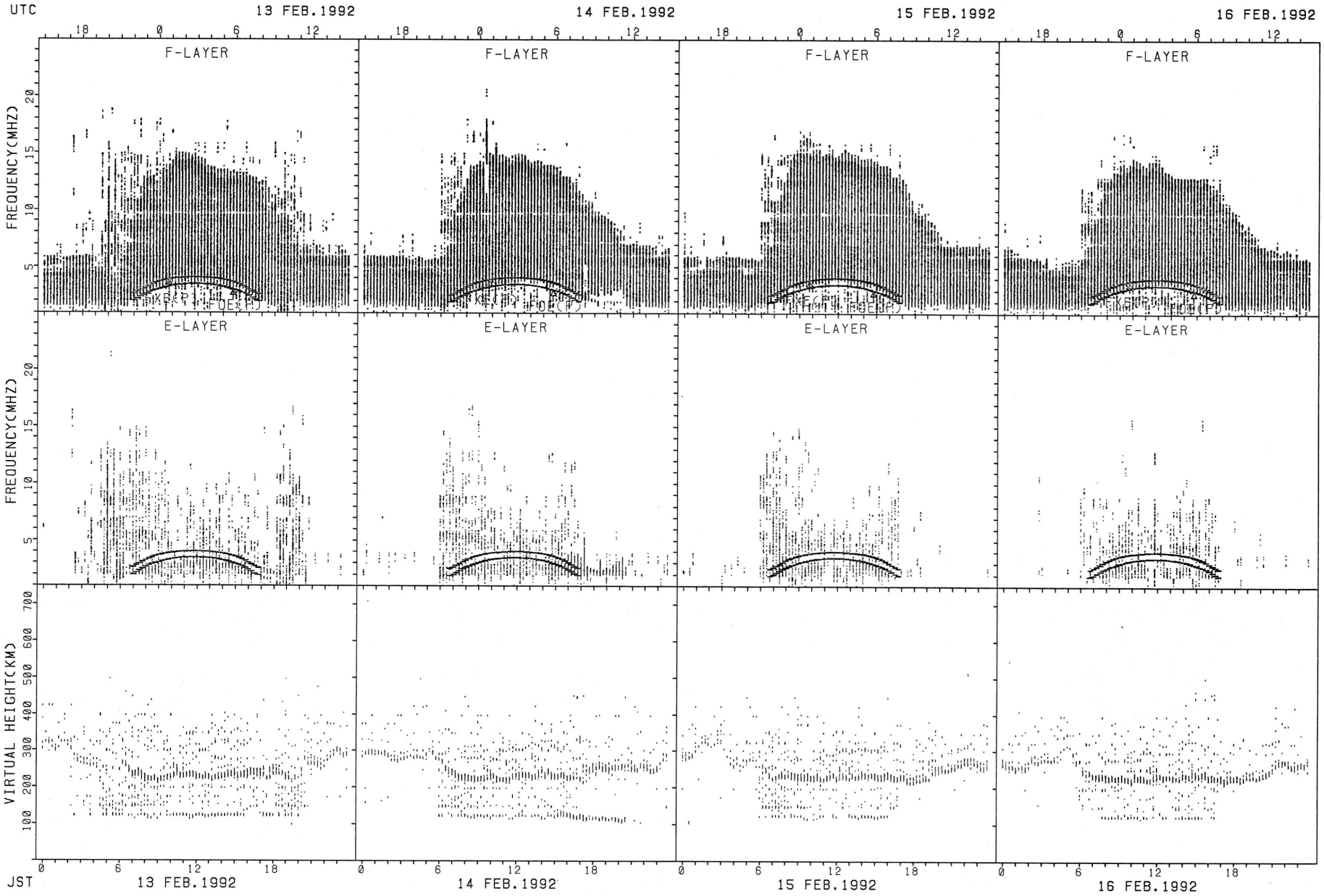
7 FEB.1992
8 FEB.1992
F-LAYER
E-LAYER
FREQUENCY(MHZ)
VIRTUAL HEIGHT(KM)
JST
FXE(P); PREDICTED VALUE FOR FXE
FOE(P); PREDICTED VALUE FOR FOE


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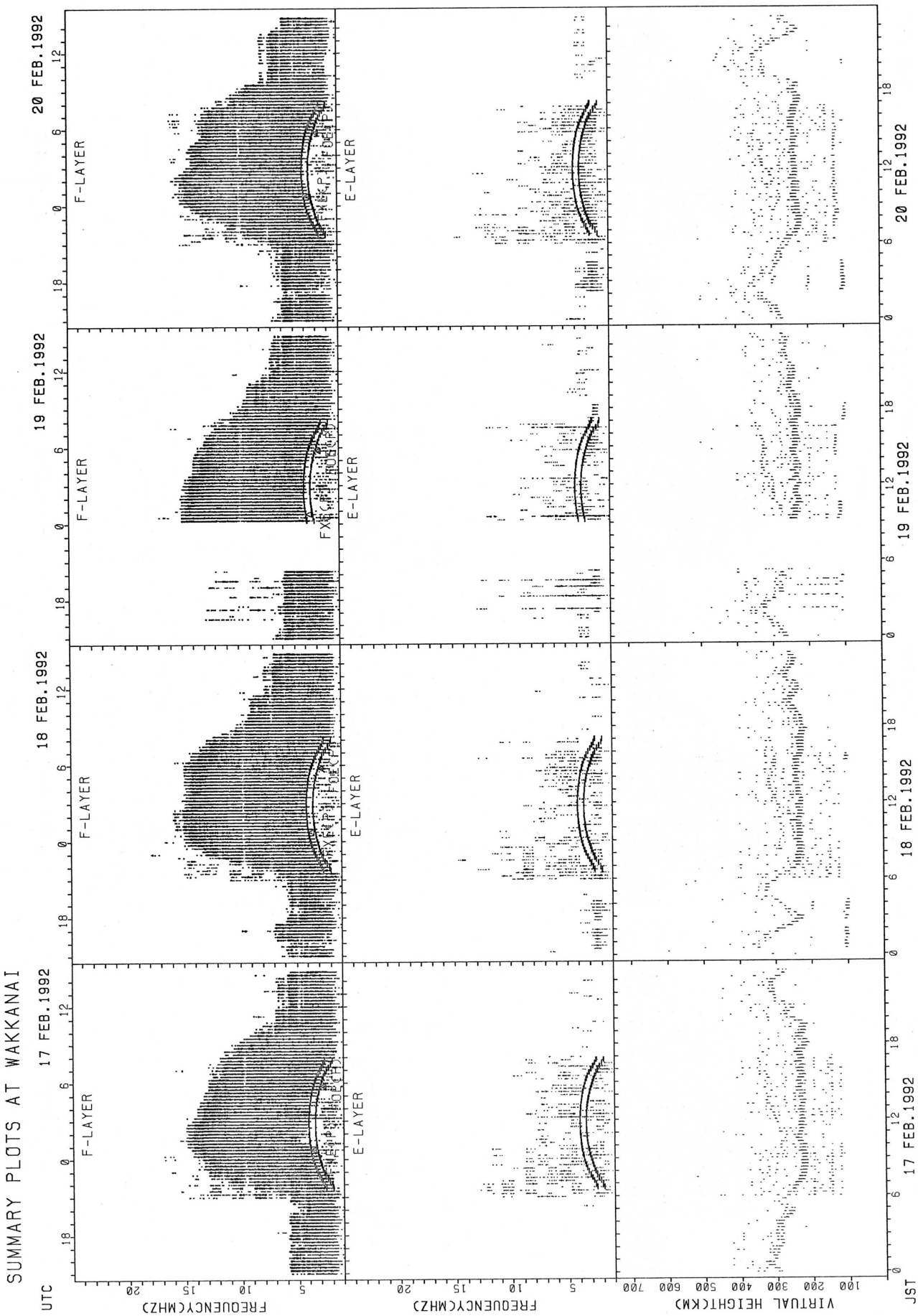
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17 FEB.1992
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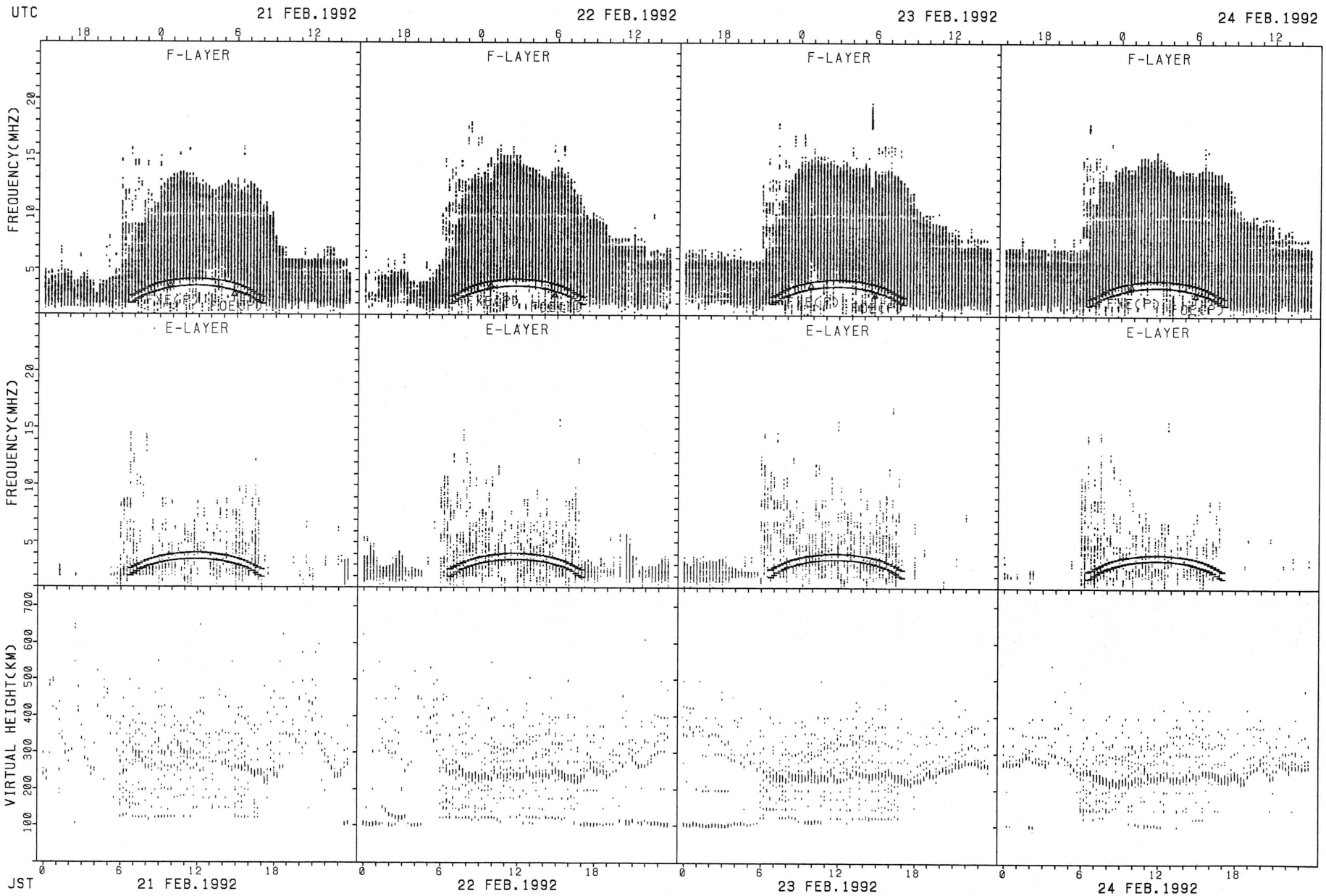
20 FEB.1992
F-LAYER
E-LAYER
FREQUENCY(MHZ)
VIRTUAL HEIGHT(KM)
UTC
JST
FXE(P): PREDICTED VALUE FOR FXE
FOE(P): PREDICTED VALUE FOR FOE

SUMMARY PLOTS AT WAKKANAI



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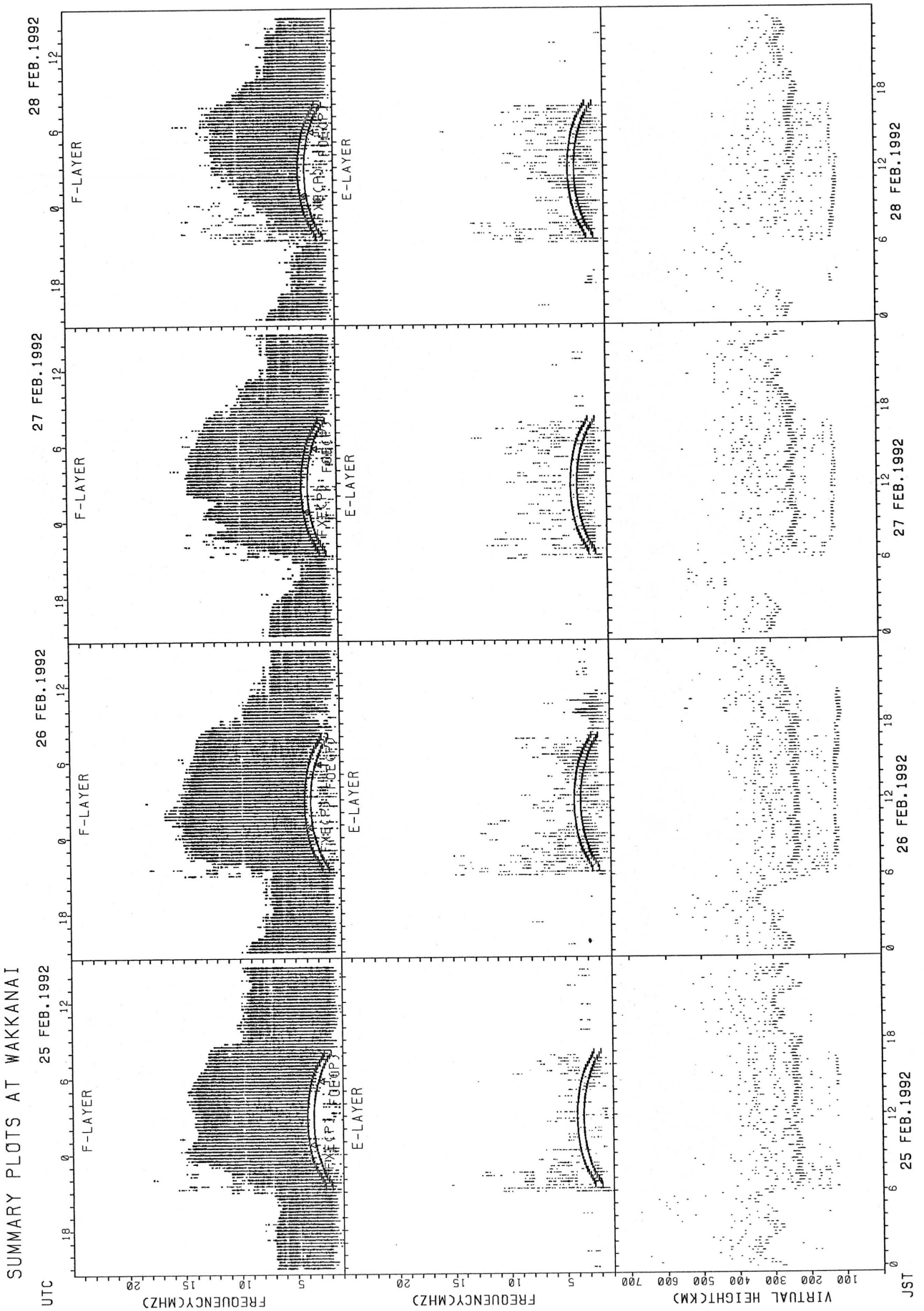
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UTC
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F-LAYER
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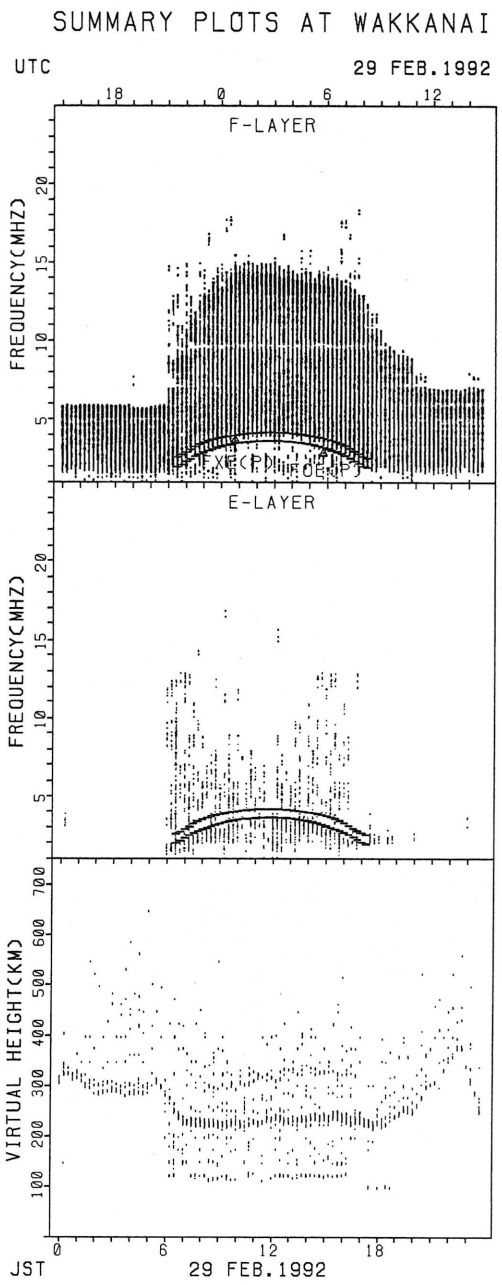

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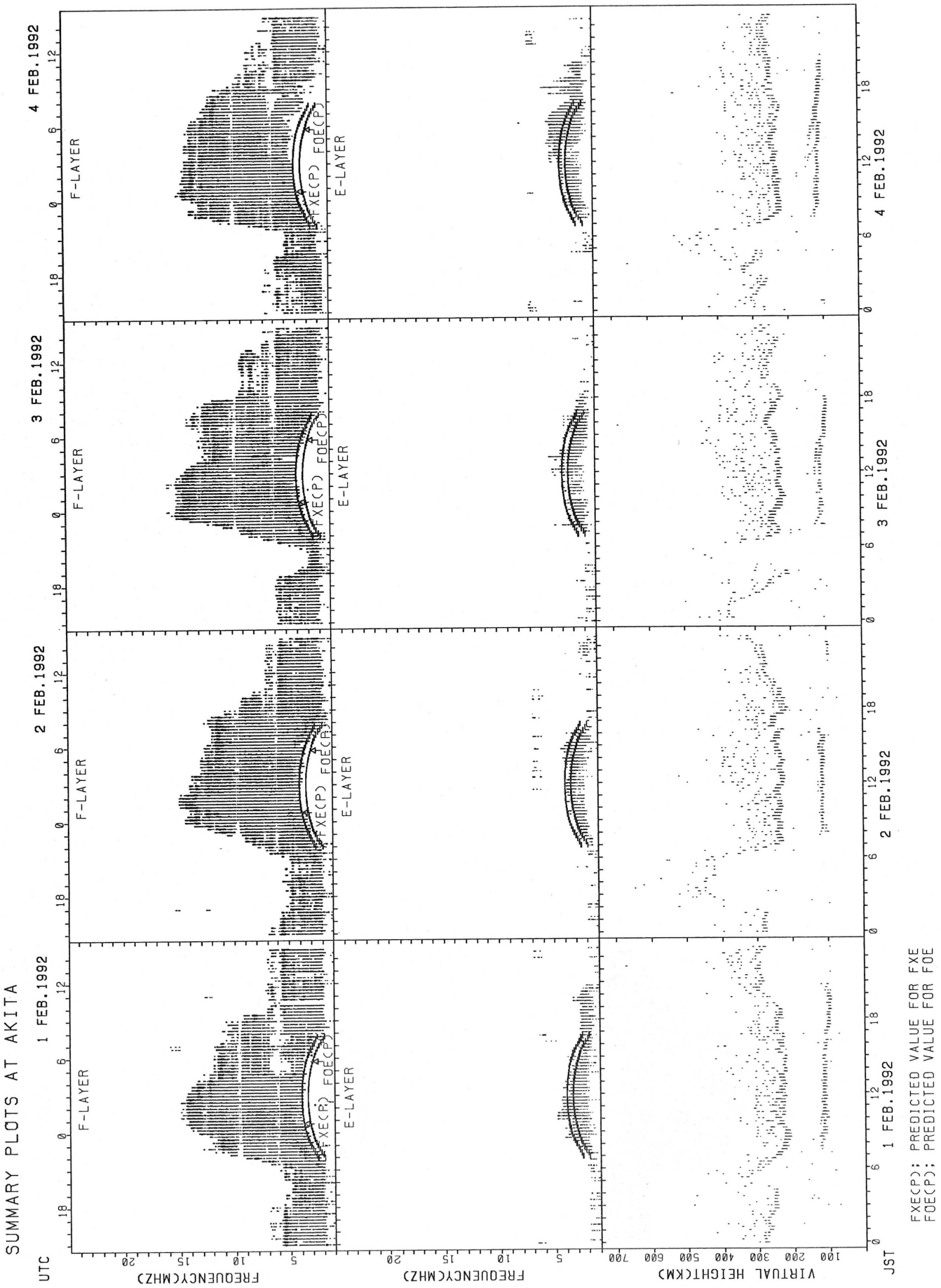
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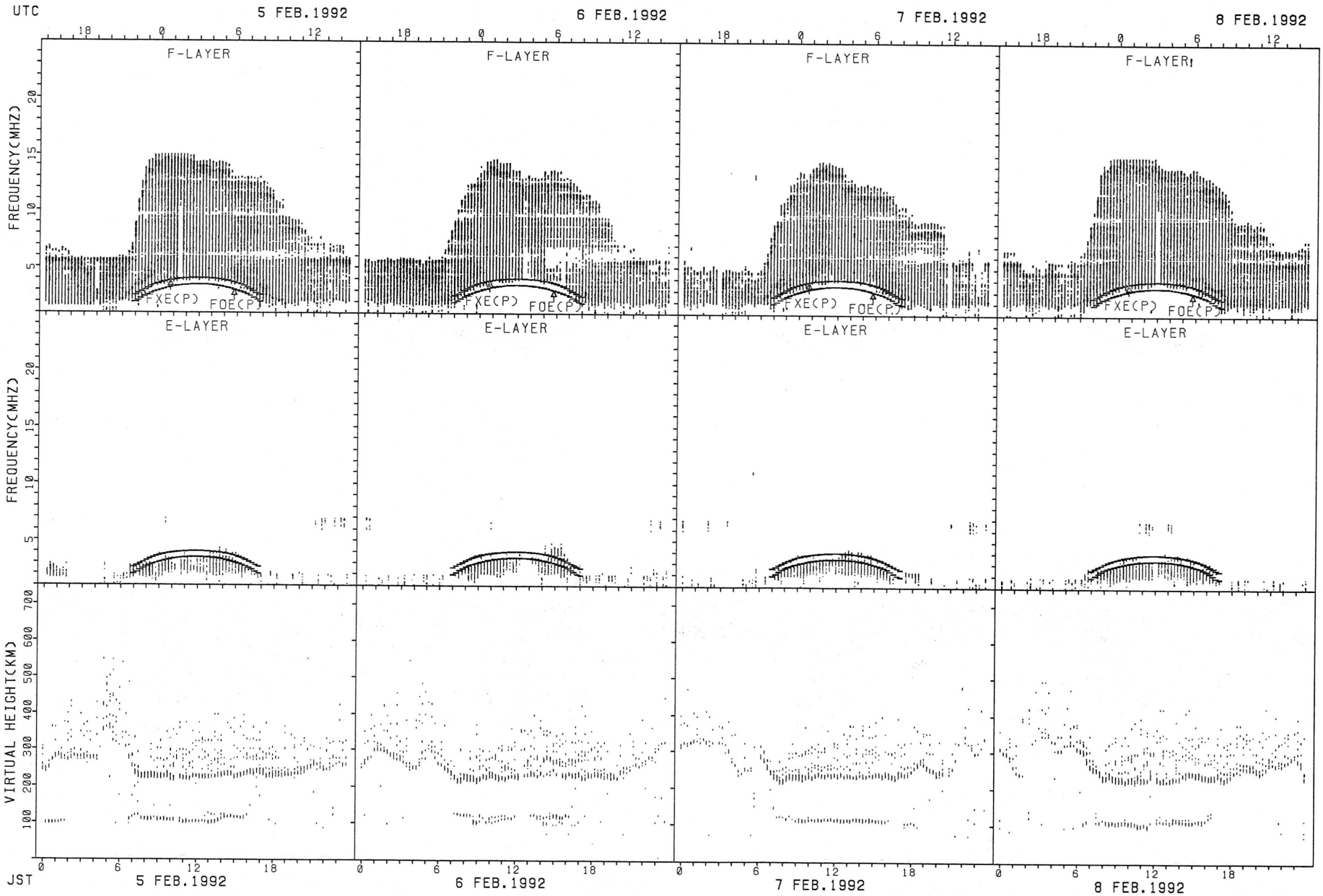
F-LAYER
E-LAYER
FXE(P)
FOE(P)
FREQUENCY(MHZ)
VIRTUAL HEIGHT(KM)
UTC
JST
FXE(P); PREDICTED VALUE FOR FXE
FOE(P); PREDICTED VALUE FOR FOE

SUMMARY PLOTS AT AKITA



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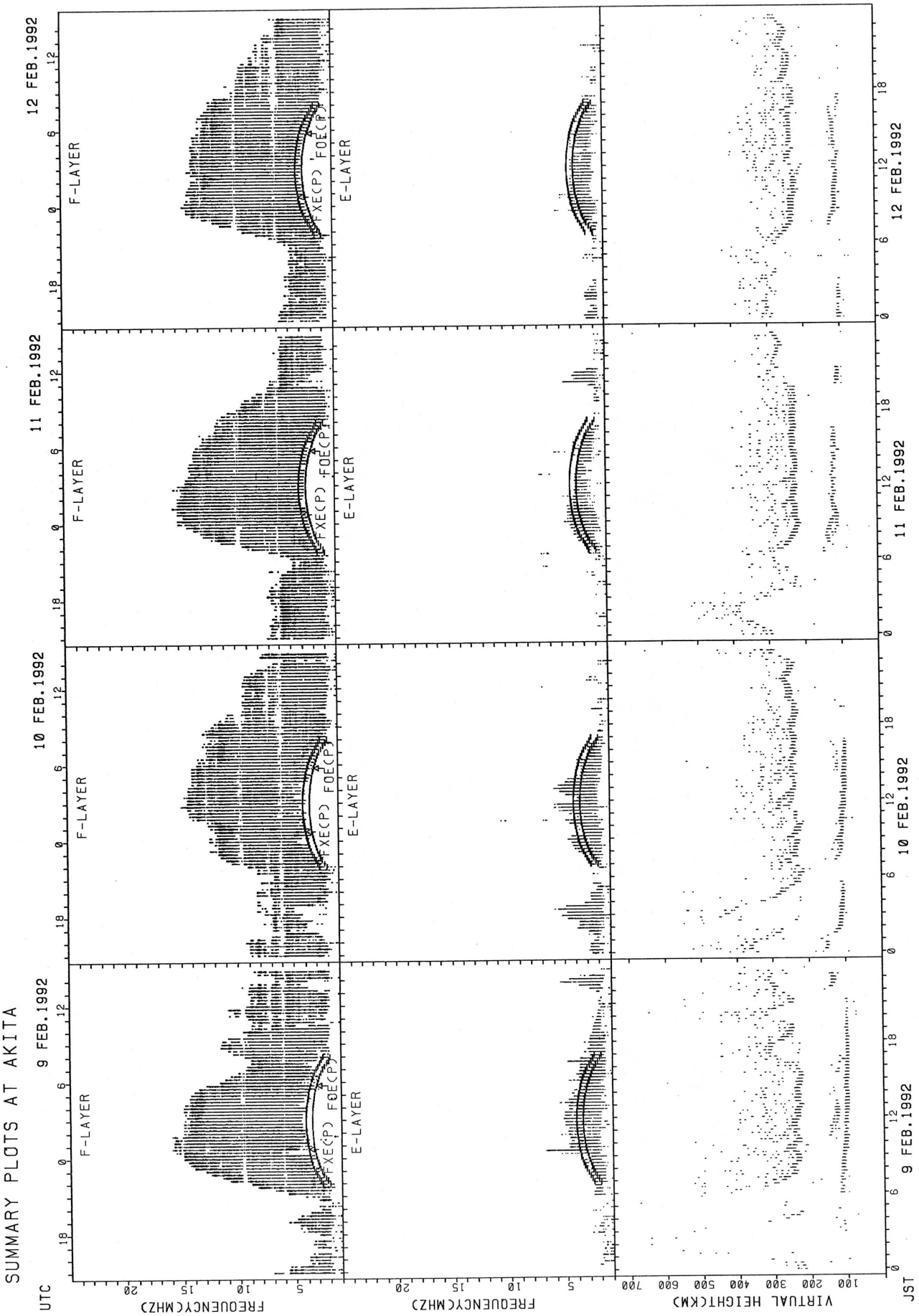
SUMMARY PLOTS AT AKITA
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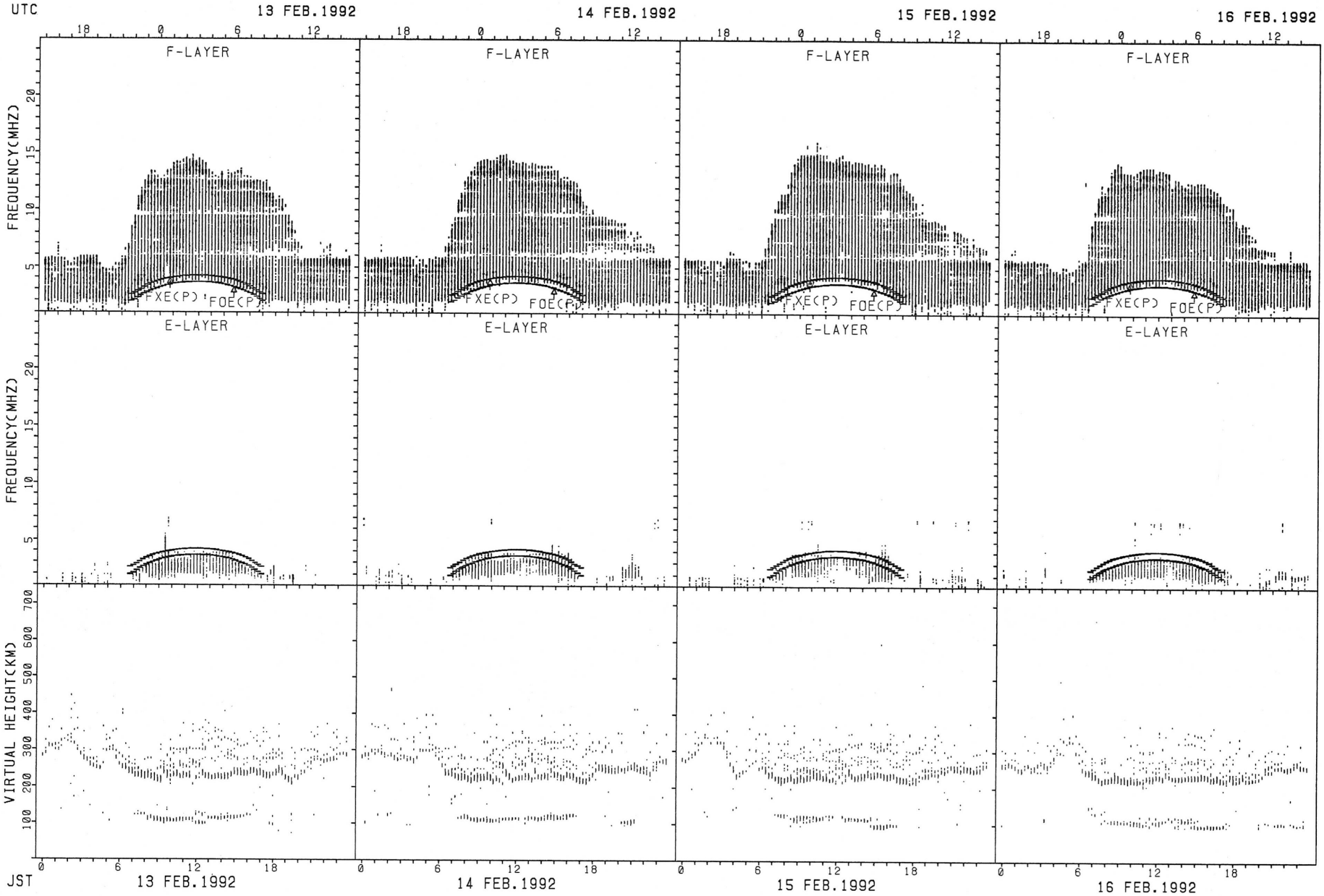
UTC
JST
F-LAYER
E-LAYER
FXE(P)
FOE(P)
FREQUENCY(MHZ)
VIRTUAL HEIGHT(KM)
FXE(P); PREDICTED VALUE FOR FXE
FOE(P); PREDICTED VALUE FOR FOE

SUMMARY PLOTS AT AKITA



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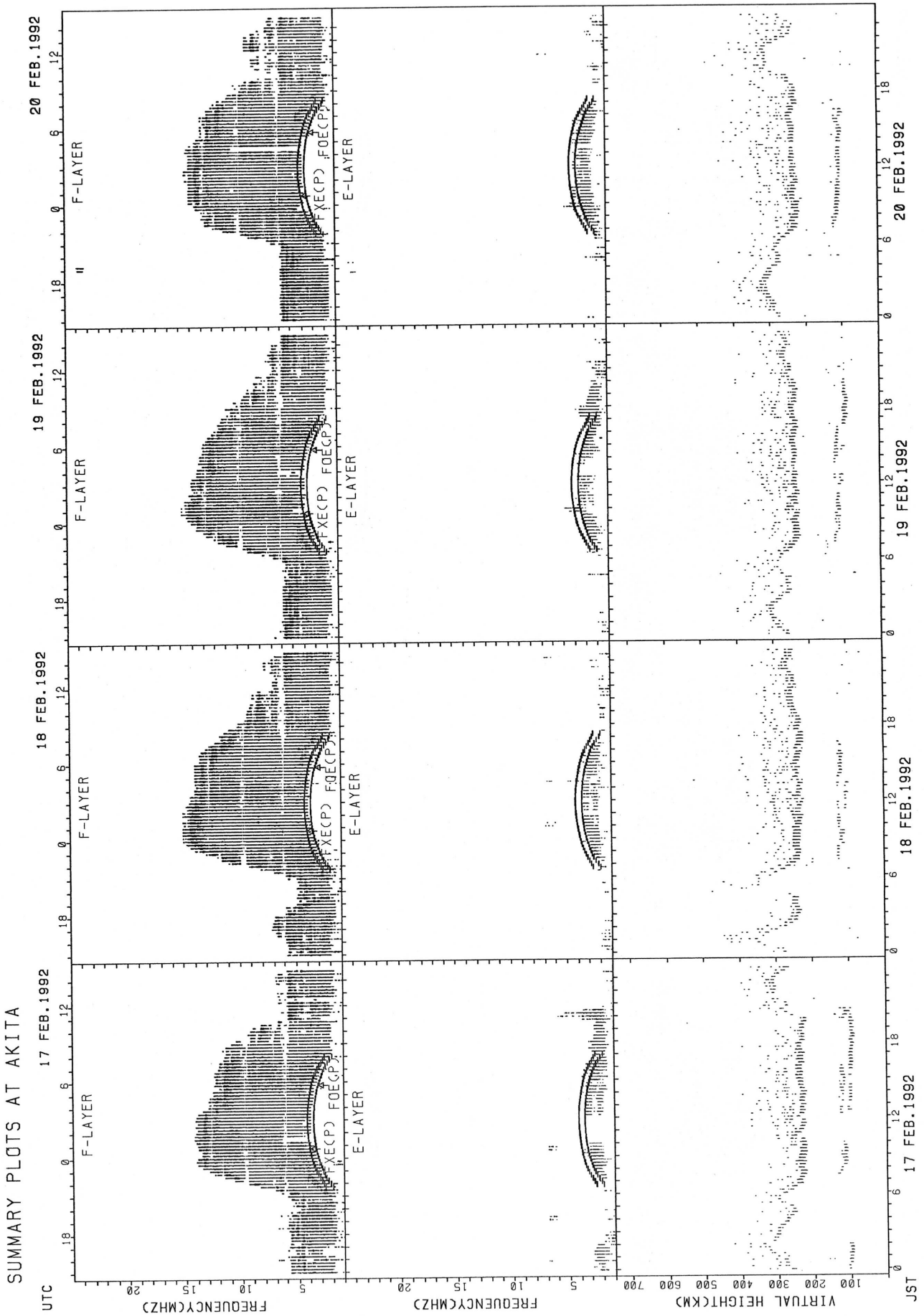
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UTC
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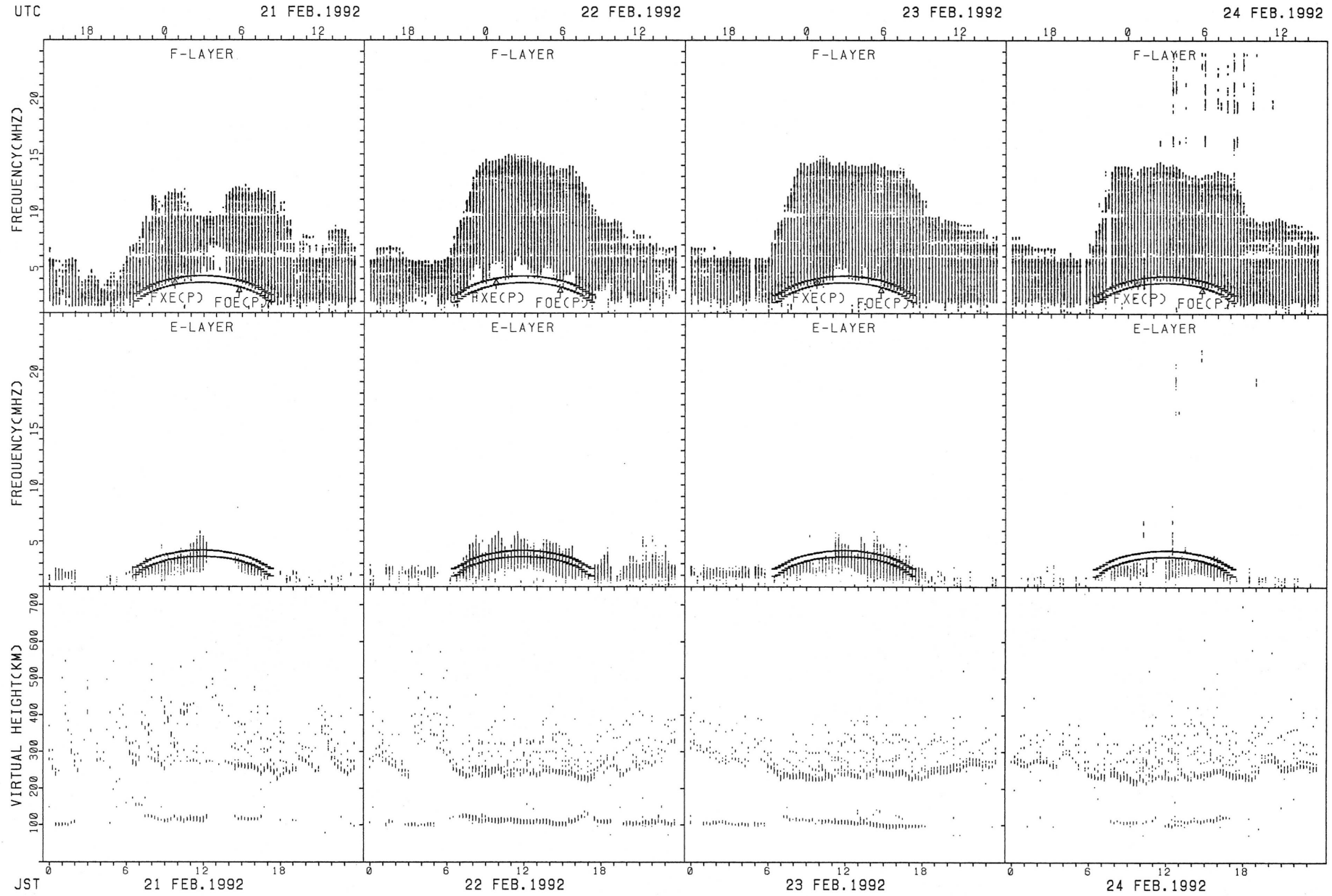
F-LAYER
E-LAYER
FXE(P)
FOE(P)
FREQUENCY(MHZ)
VIRTUAL HEIGHT(KM)
JST
FXE(P): PREDICTED VALUE FOR FXE
FOE(P): PREDICTED VALUE FOR FOE

SUMMARY PLOTS AT AKITA



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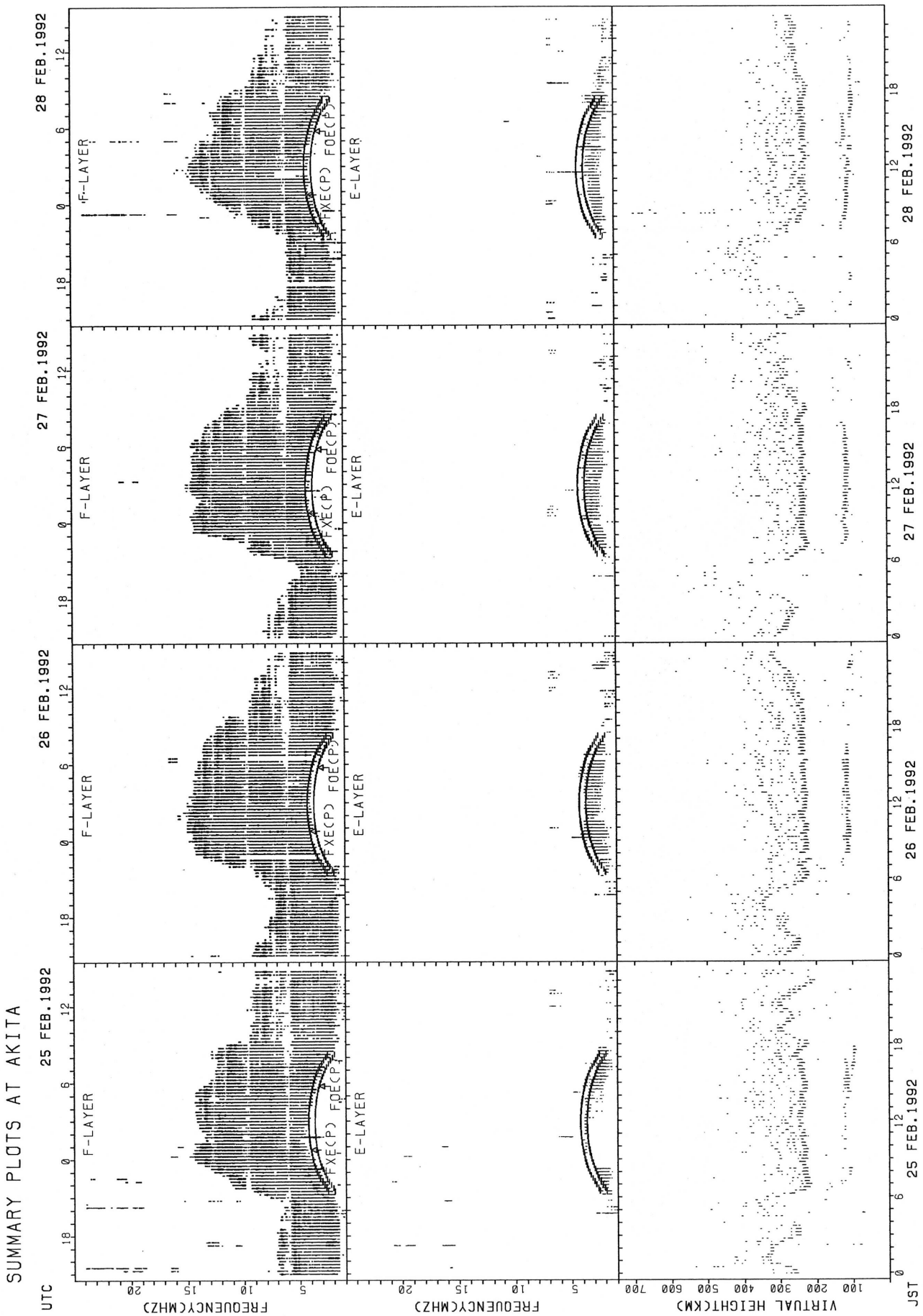
FOE(P): PREDICTED VALUE FOR FOE


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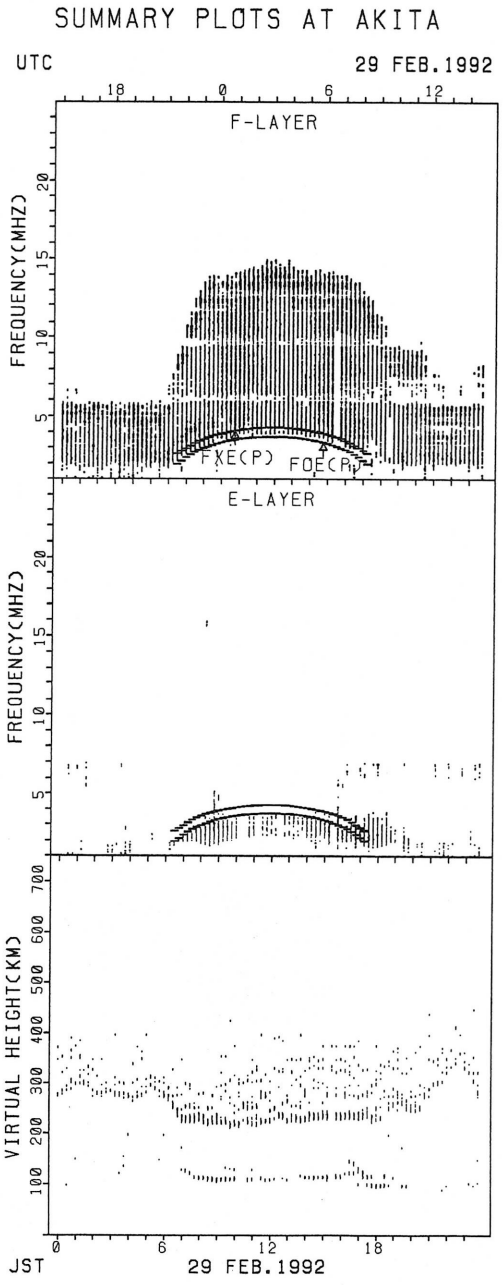
VIRTUAL HEIGHT(KM)
JST
FXE(P): PREDICTED VALUE FOR FXE
FOE(P): PREDICTED VALUE FOR FOE



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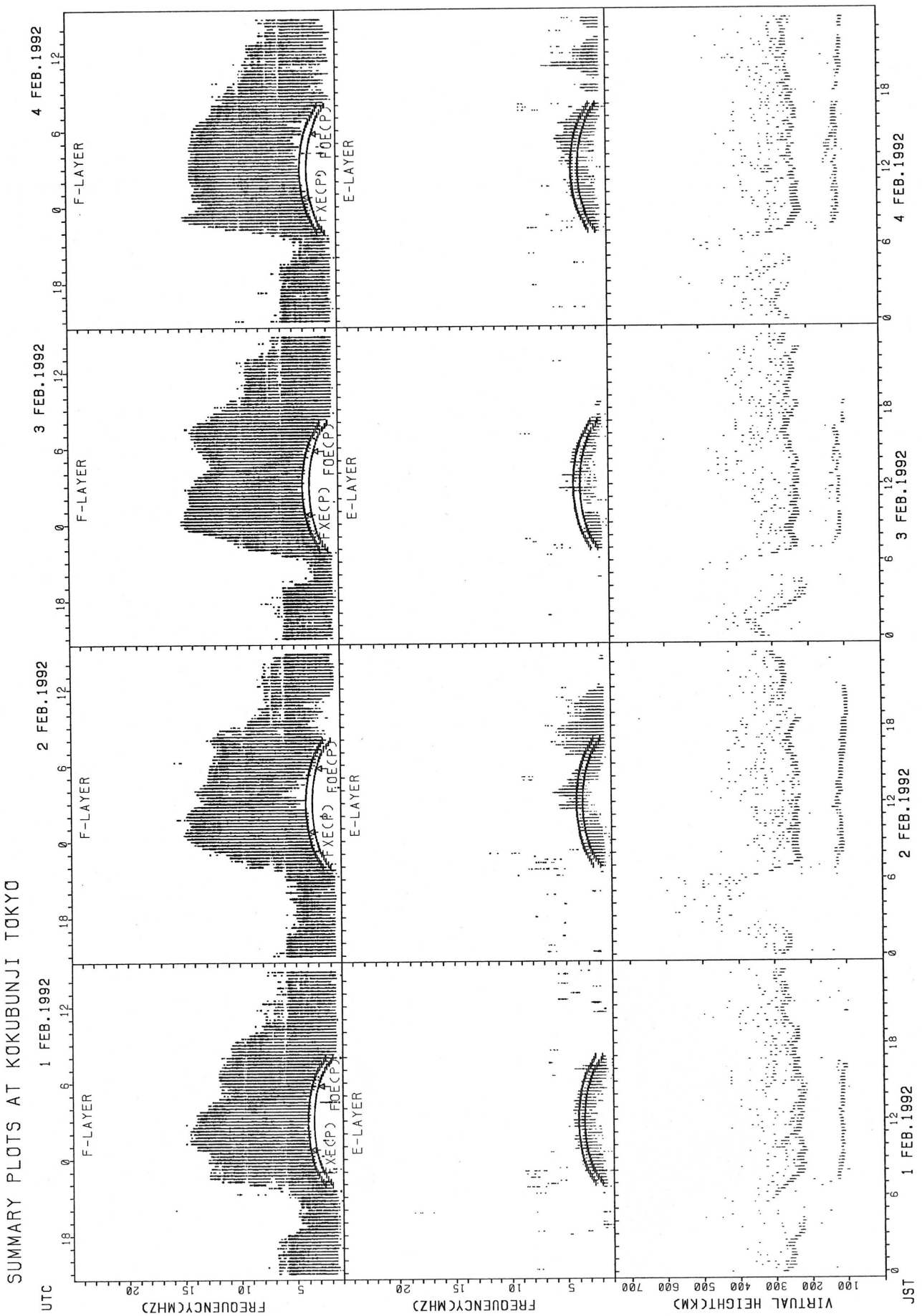
SUMMARY PLOTS AT KOKUBUNJI TOKYO
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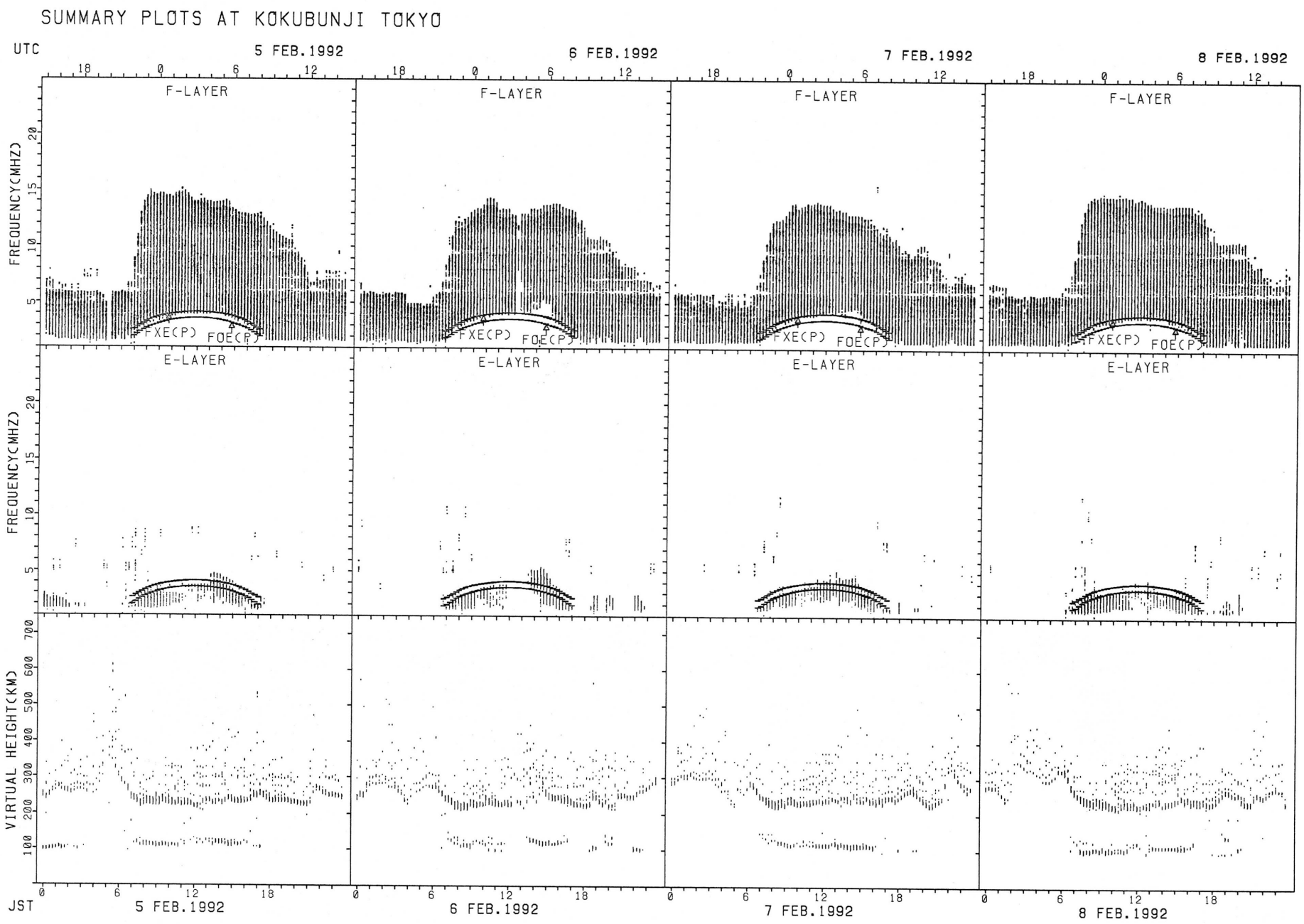
3 FEB.1992
4 FEB.1992
F-LAYER
E-LAYER
FXE(P) FOE(P)
FREQUENCY(MHZ)
VIRTUAL HEIGHT(KM)
UTC
JST
FXE(P): PREDICTED VALUE FOR FXE
FOE(P): PREDICTED VALUE FOR FOE


SUMMARY PLOTS AT KOKUBUNJI TOKYO
UTC
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7 FEB.1992
8 FEB.1992
F-LAYER
FXE(P) FOE(P)
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VIRTUAL HEIGHT(KM)
JST
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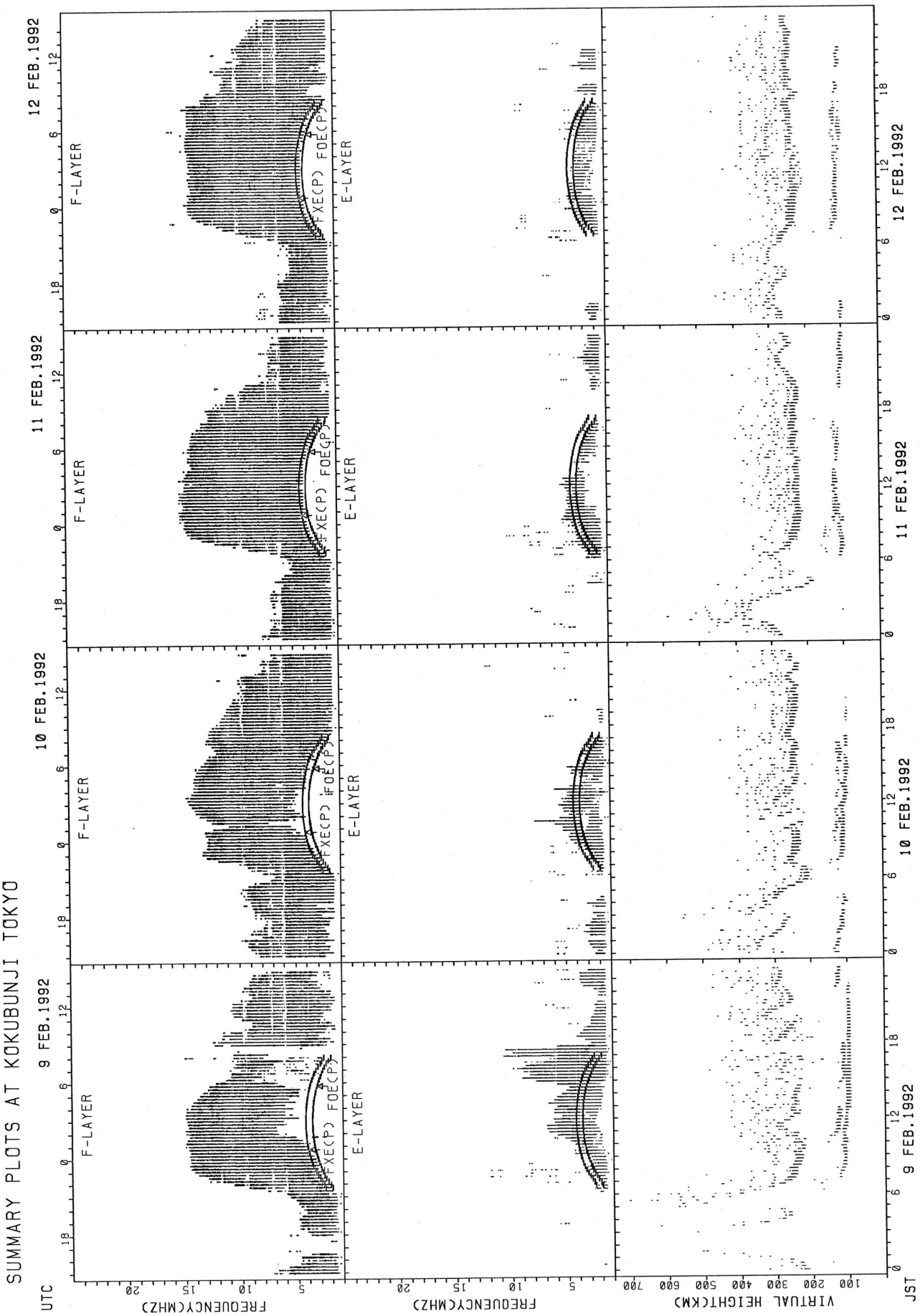
SUMMARY PLOTS AT KOKUBUNJI TOKYO
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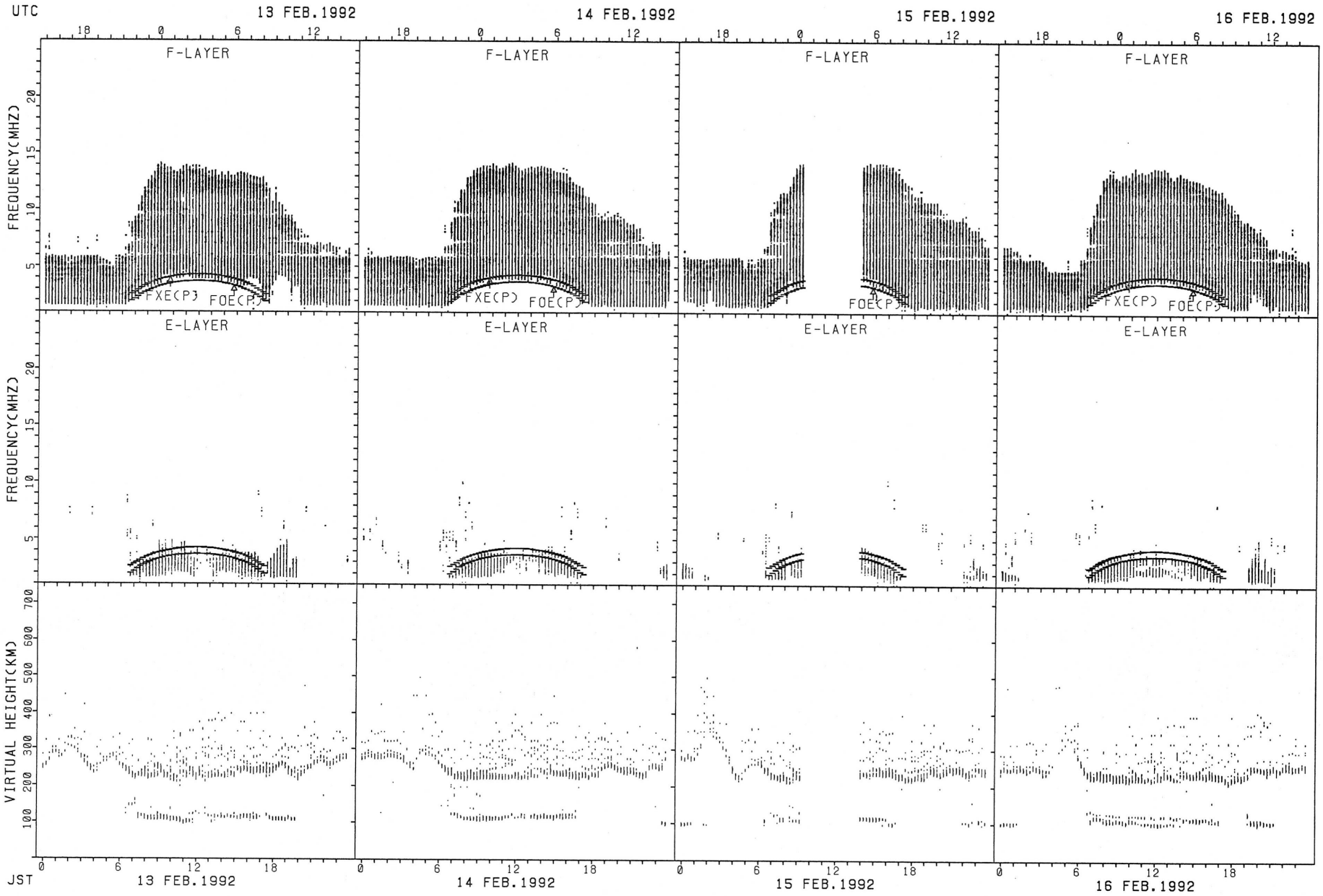
F-LAYER
E-LAYER
FXE(P) FOE(P)
FREQUENCY(MHZ)
VIRTUAL HEIGHT(KM)
UTC
JST
FXE(P): PREDICTED VALUE FOR FXE
FOE(P): PREDICTED VALUE FOR FOE

SUMMARY PLOTS AT KOKUBUNJI TOKYO



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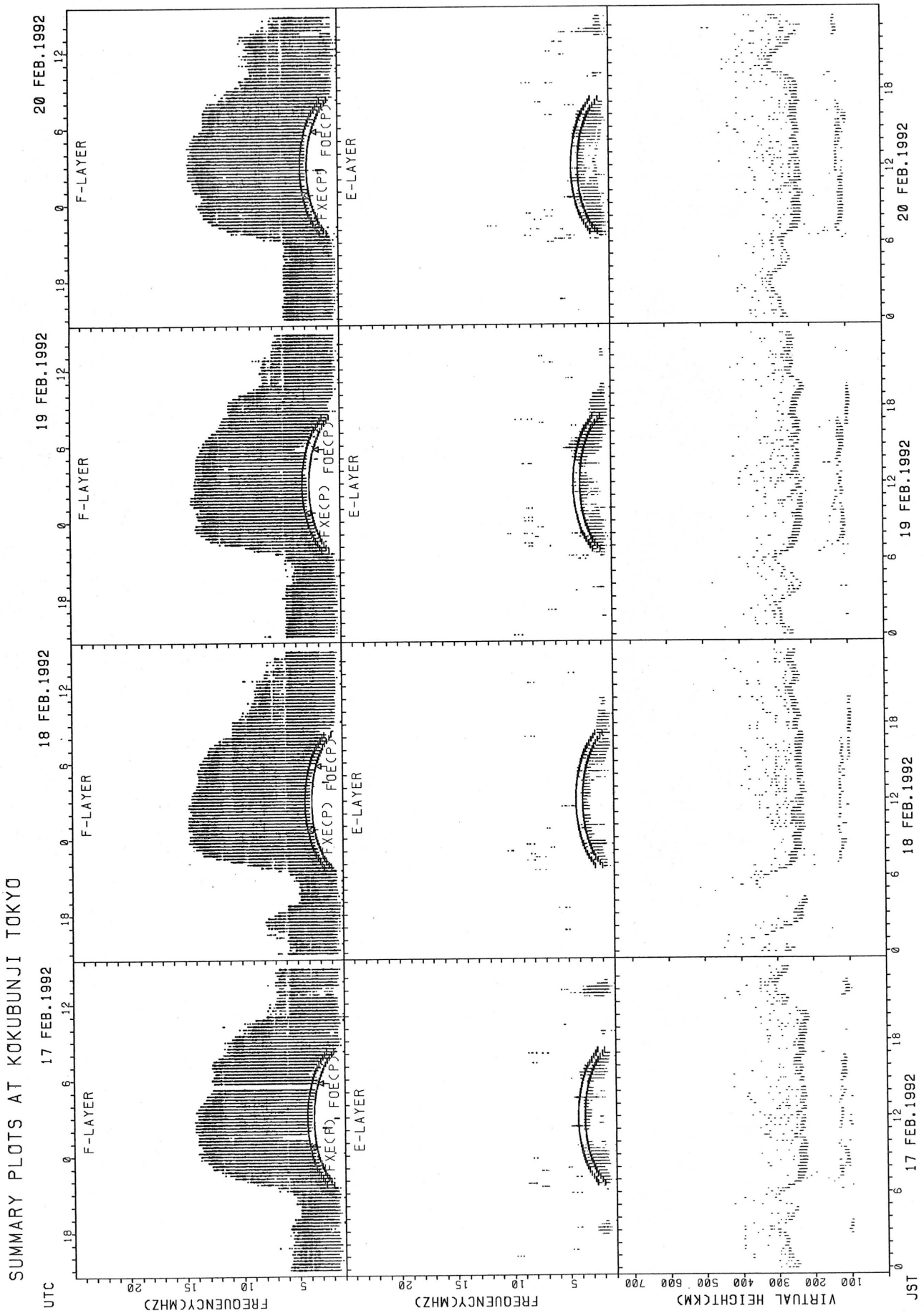
FOE(P); PREDICTED VALUE FOR FOE


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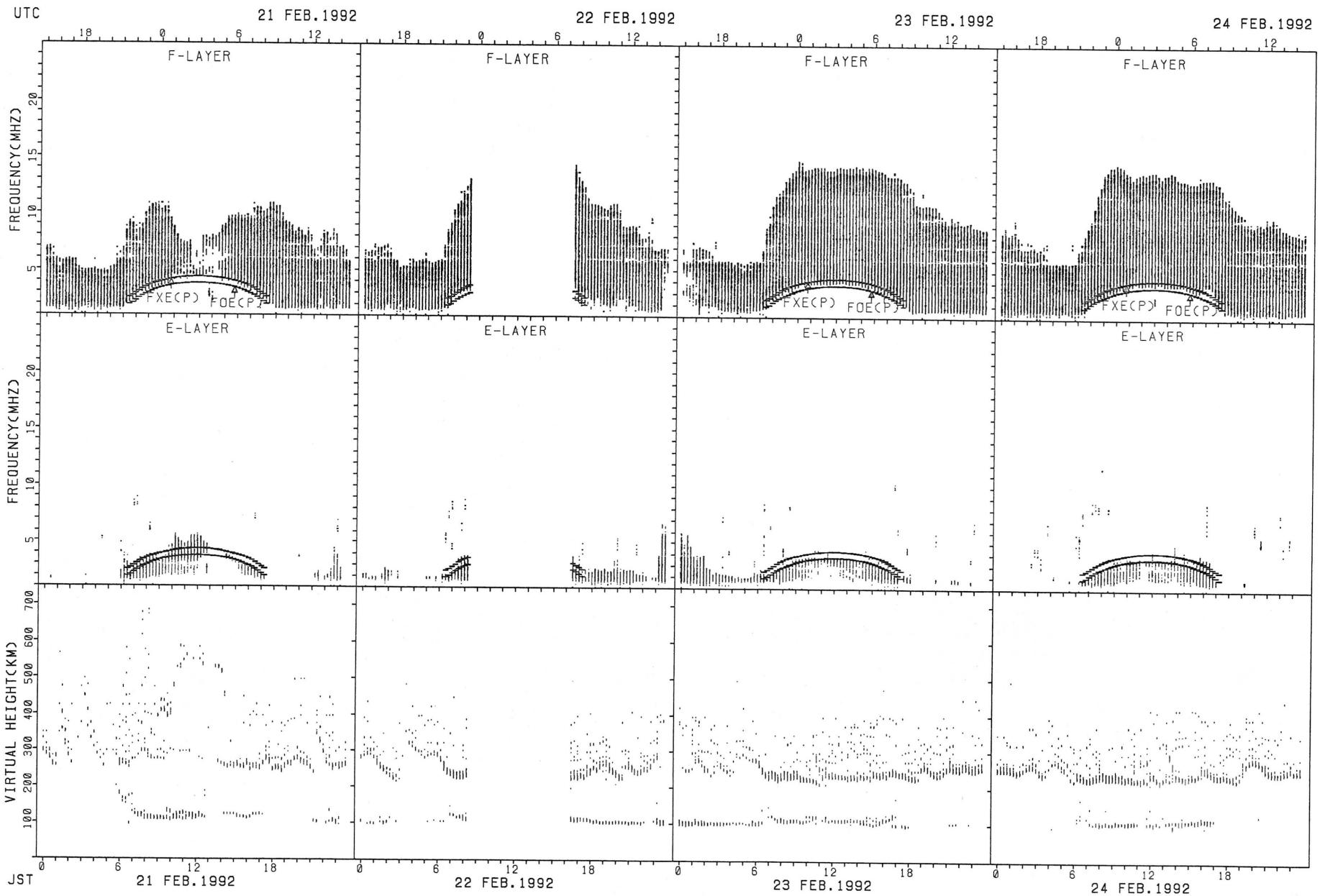
18 FEB.1992
19 FEB.1992
20 FEB.1992
F-LAYER
E-LAYER
FXE(P)
FOE(P)
FREQUENCY(MHZ)
VIRTUAL HEIGHT(KM)
UTC
JST
FXE(P): PREDICTED VALUE FOR FXE
FOE(P): PREDICTED VALUE FOR FOE

SUMMARY PLOTS AT KOKUBUNJI TOKYO



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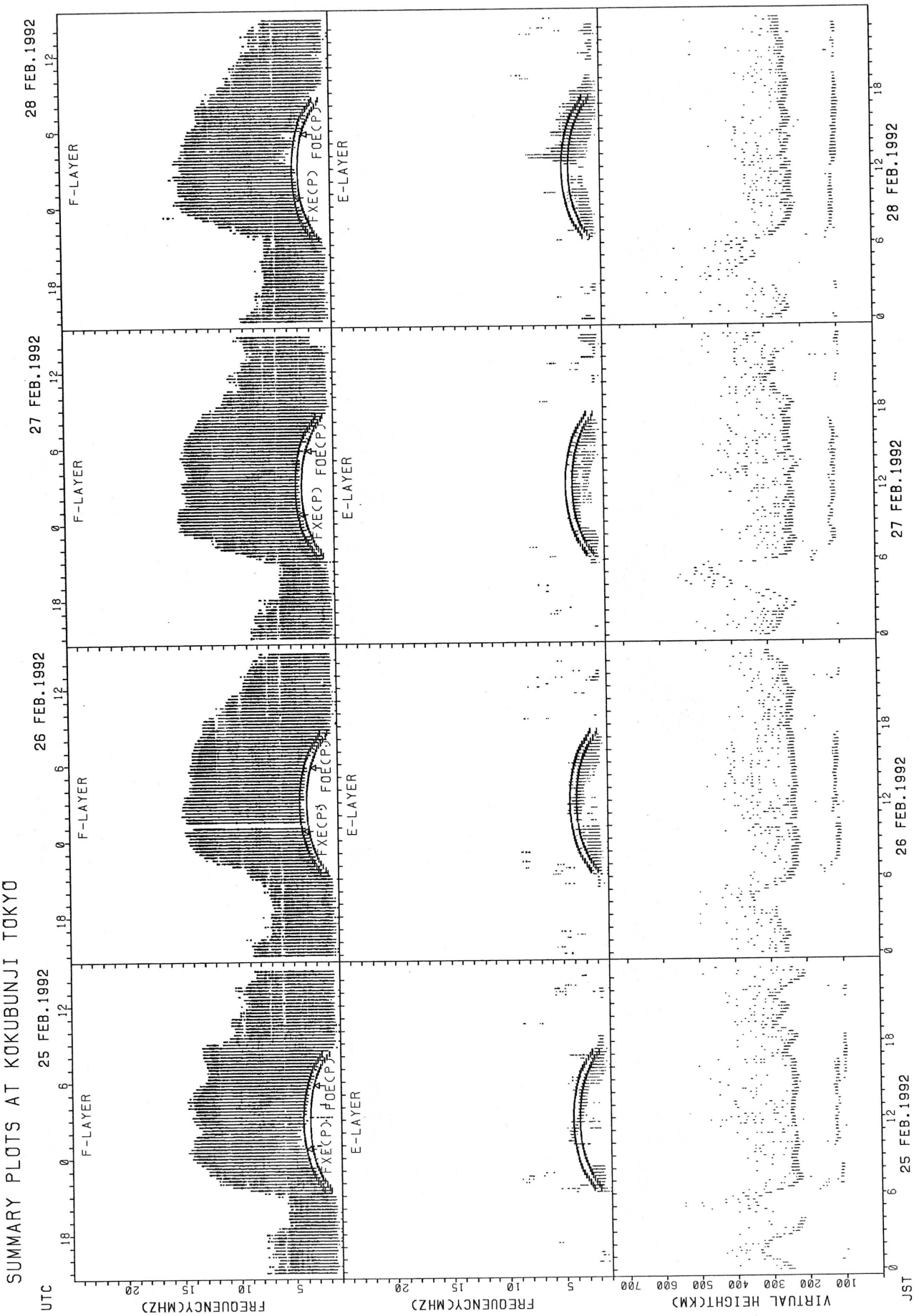
SUMMARY PLOTS AT KOKUBUNJI TOKYO
UTC
JST
25 FEB.1992
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28 FEB.1992
F-LAYER
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FXE(P)
FOE(P)
FREQUENCY(MHZ)
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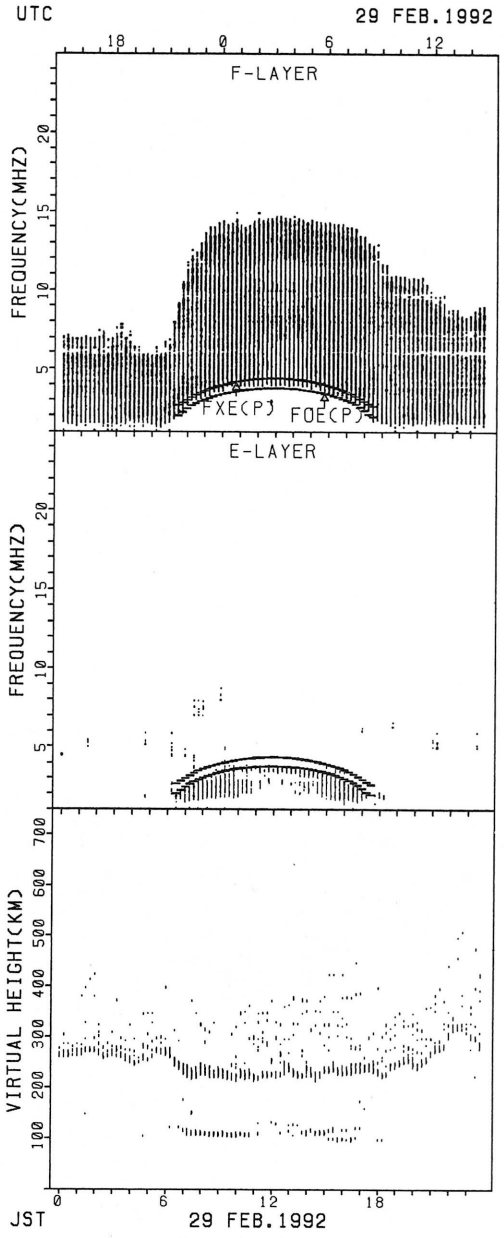
FXE(P); PREDICTED VALUE FOR FXE
FOE(P); PREDICTED VALUE FOR FOE

SUMMARY PLOTS AT KOKUBUNJI TOKYO



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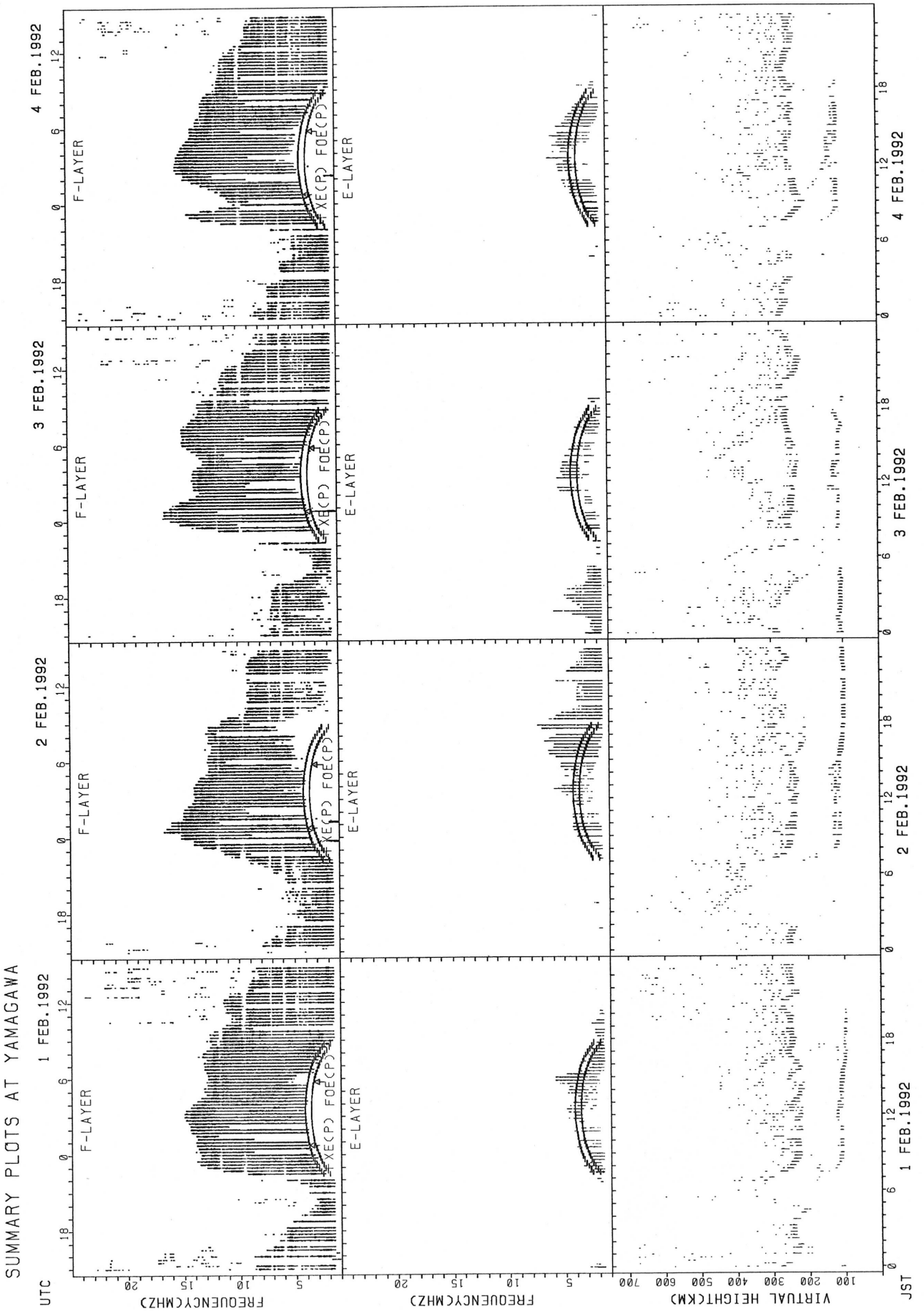
FOE(P); PREDICTED VALUE FOR FOE


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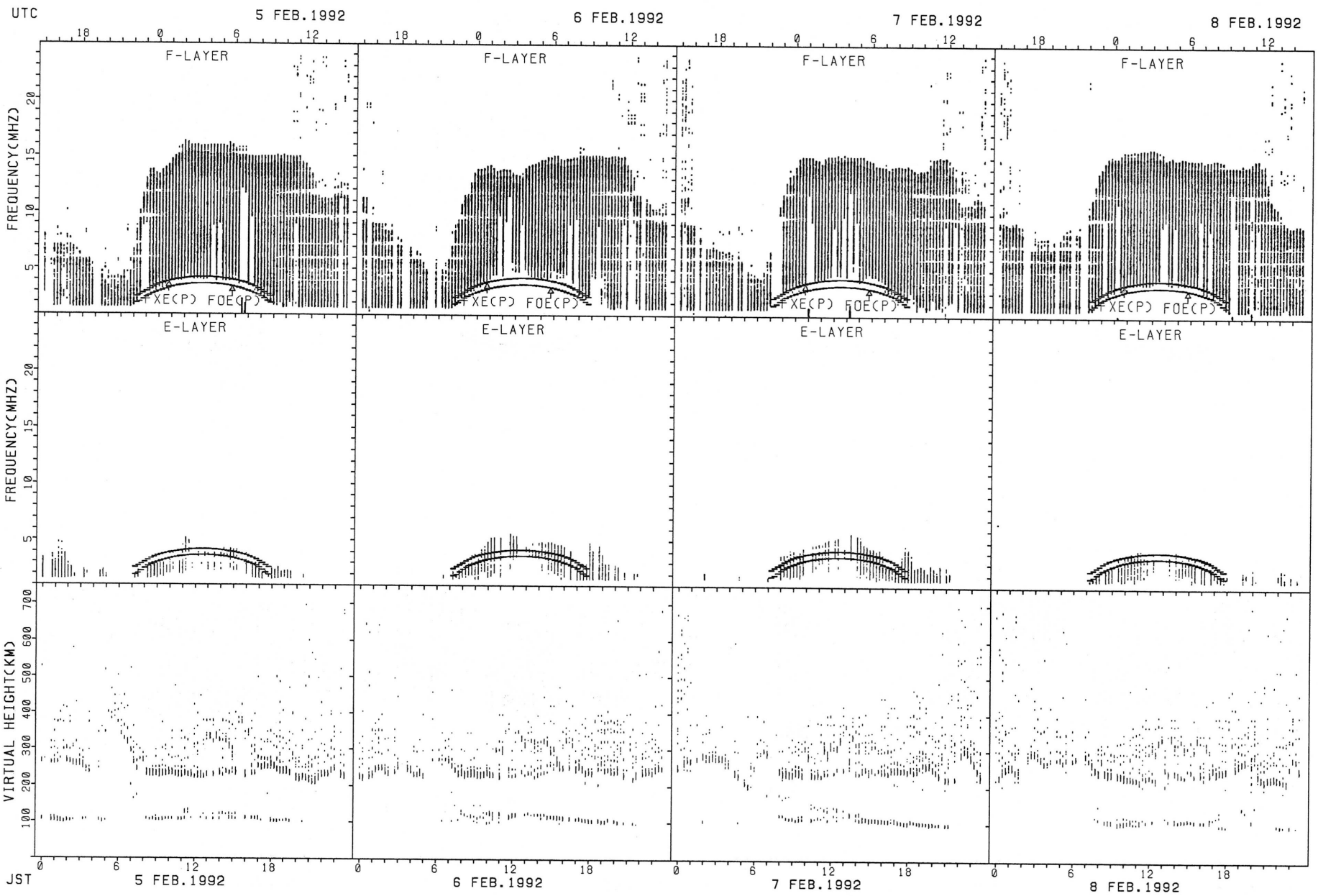
UTC
JST
FXE(P): PREDICTED VALUE FOR FXE
FOE(P): PREDICTED VALUE FOR FOE

SUMMARY PLOTS AT YAMAGAWA



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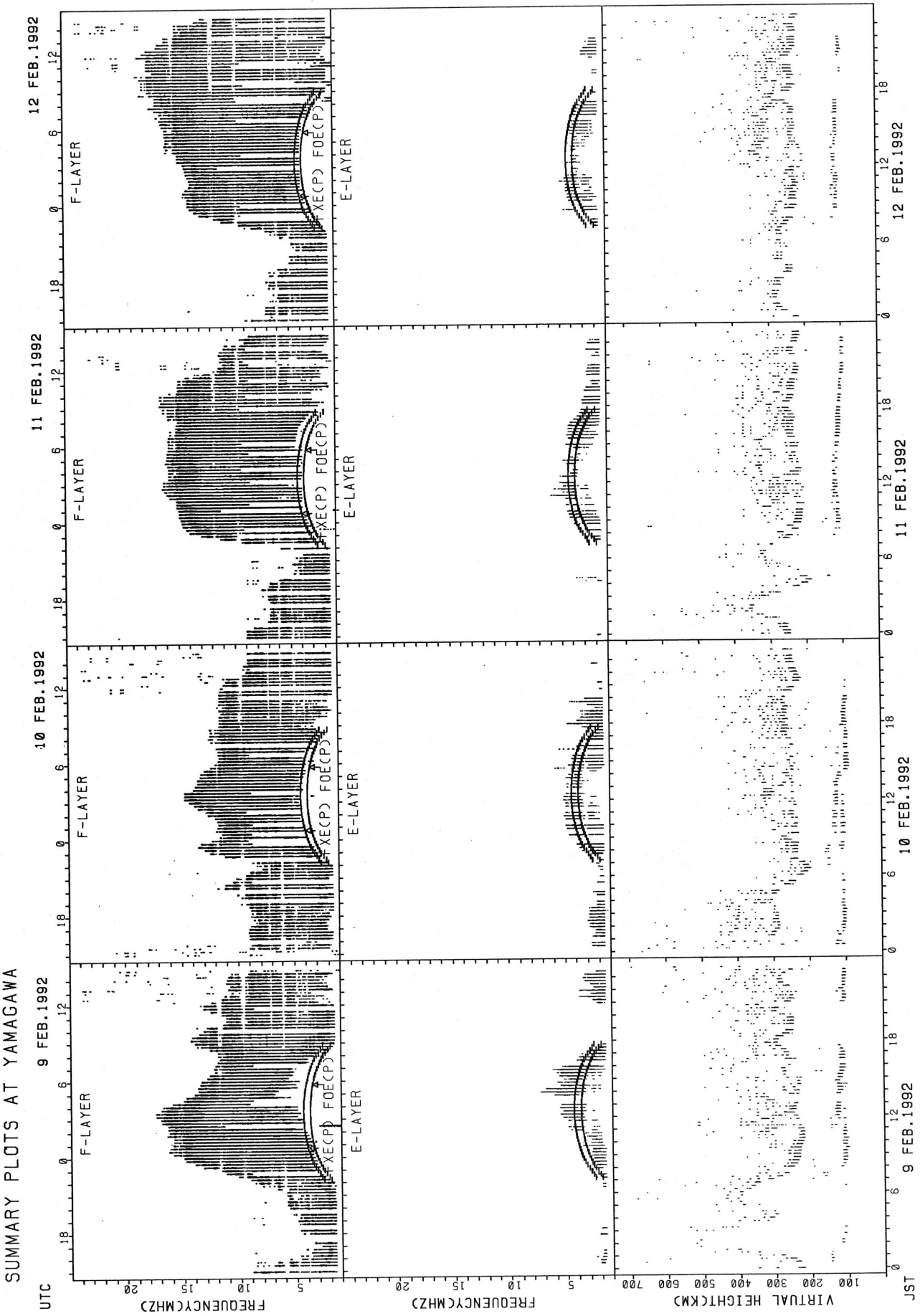
SUMMARY PLOTS AT YAMAGAWA
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E-LAYER
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UTC
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FXE(P): PREDICTED VALUE FOR FXE
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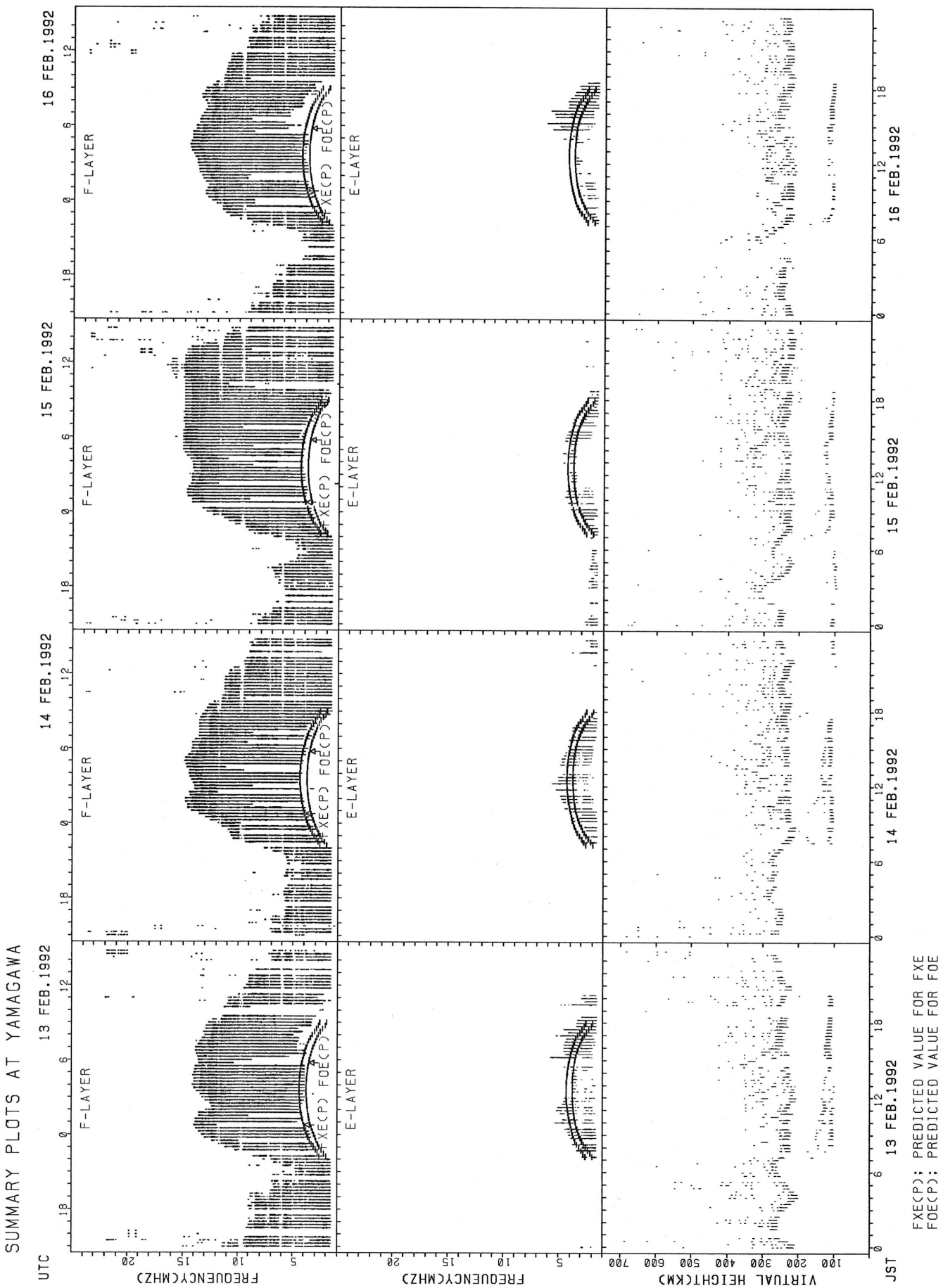
SUMMARY PLOTS AT YAMAGAWA
UTC
13 FEB.1992
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FXE(P): PREDICTED VALUE FOR FXE
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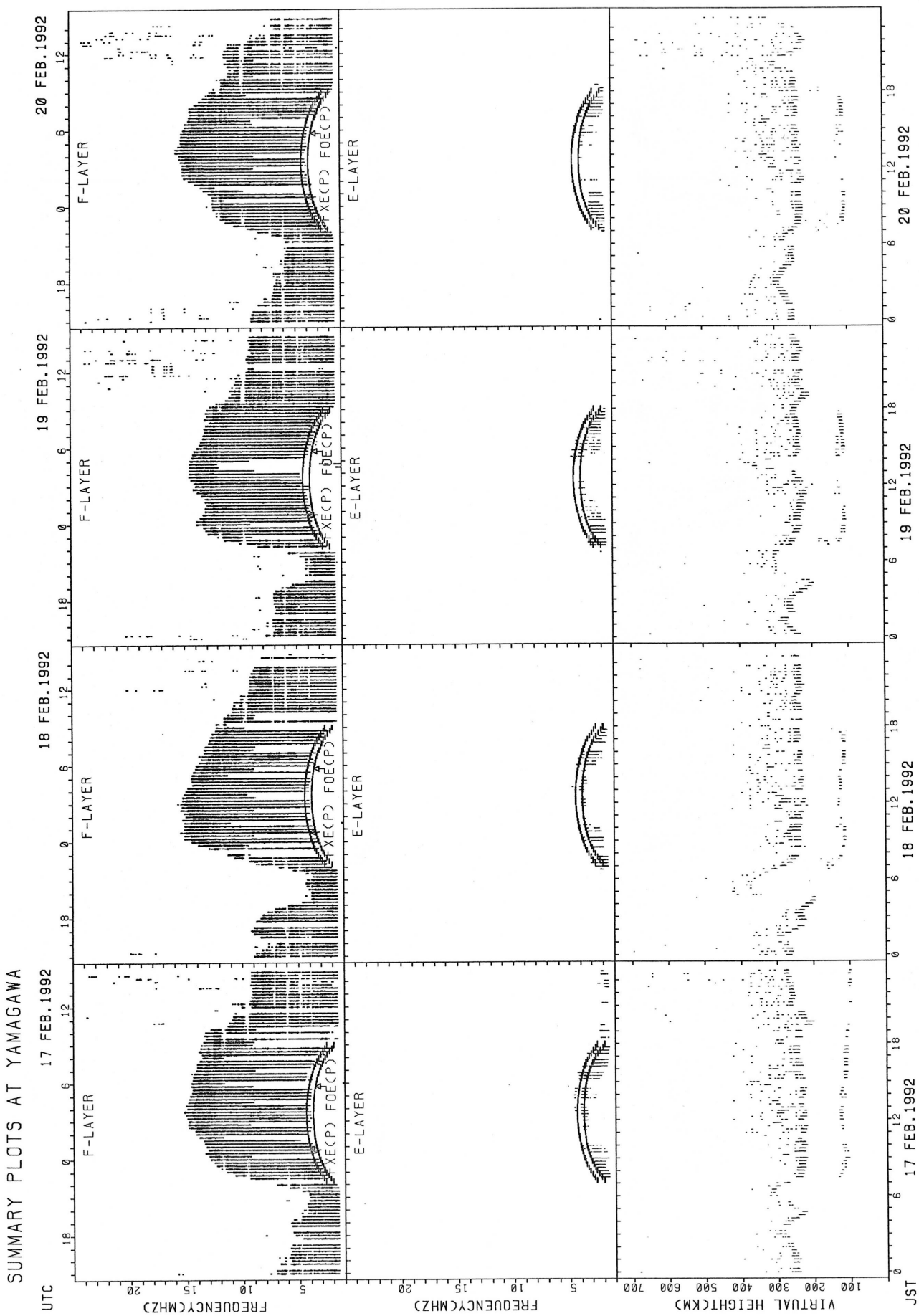
SUMMARY PLOTS AT YAMAGAWA
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18 FEB.1992
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E-LAYER
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FREQUENCY(MHZ)
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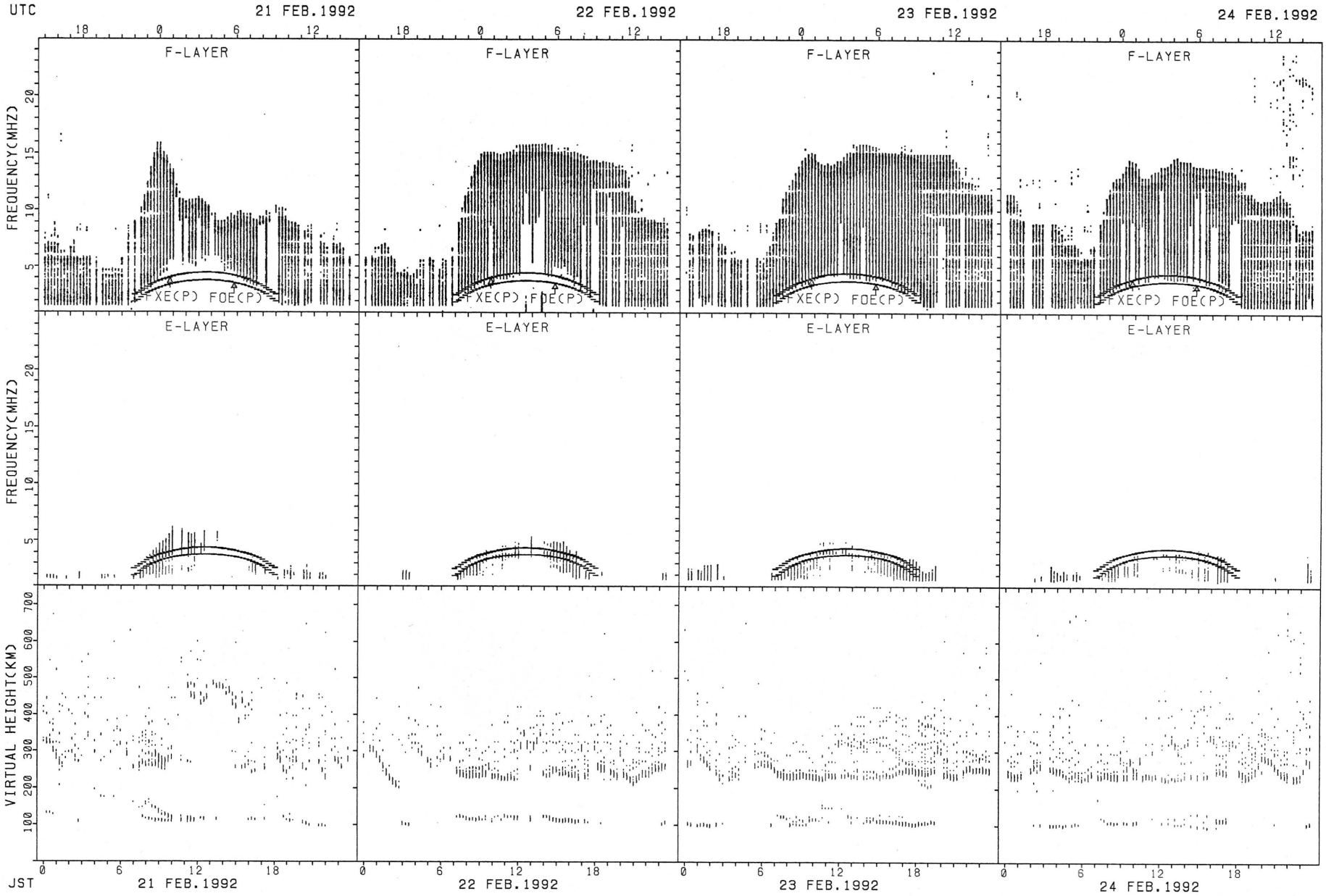
JST
FXE(P): PREDICTED VALUE FOR FXE
FOE(P): PREDICTED VALUE FOR FOE

SUMMARY PLOTS AT YAMAGAWA



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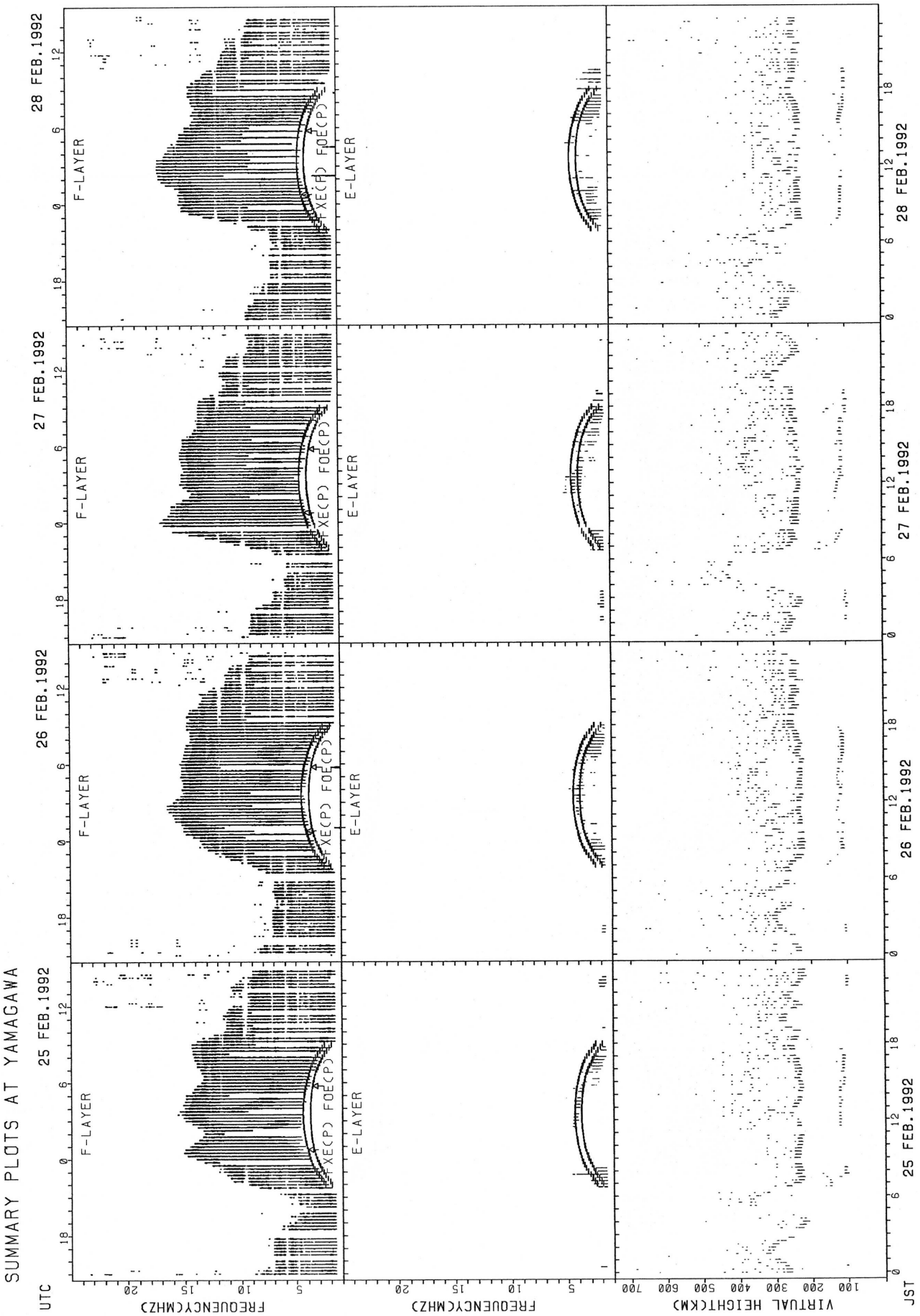
SUMMARY PLOTS AT YAMAGAWA
UTC
JST
25 FEB.1992
26 FEB.1992
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F-LAYER
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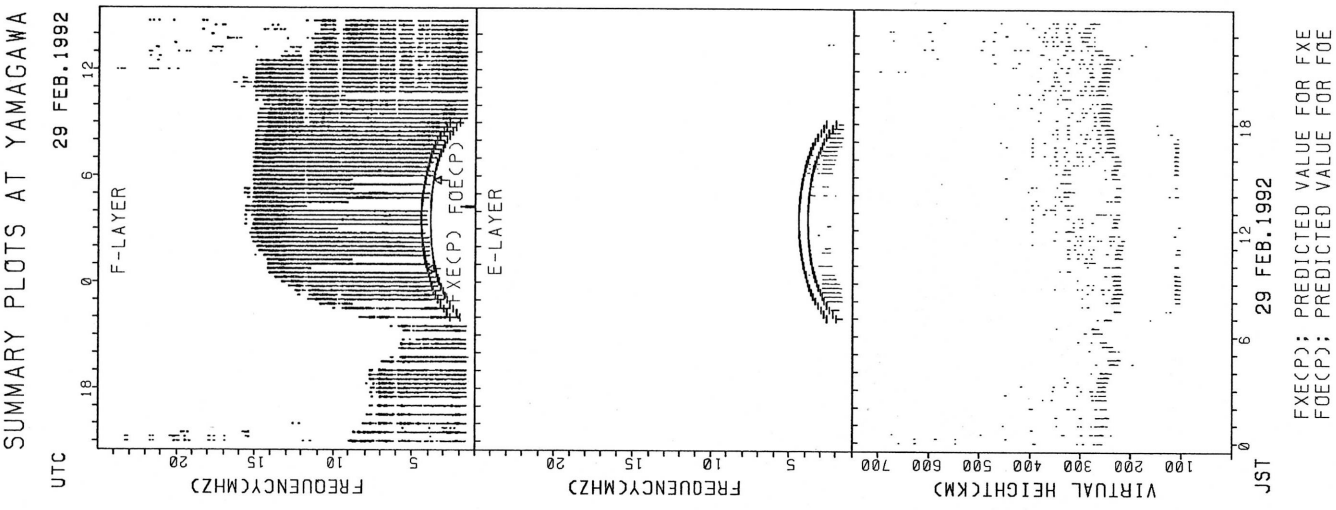
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JST
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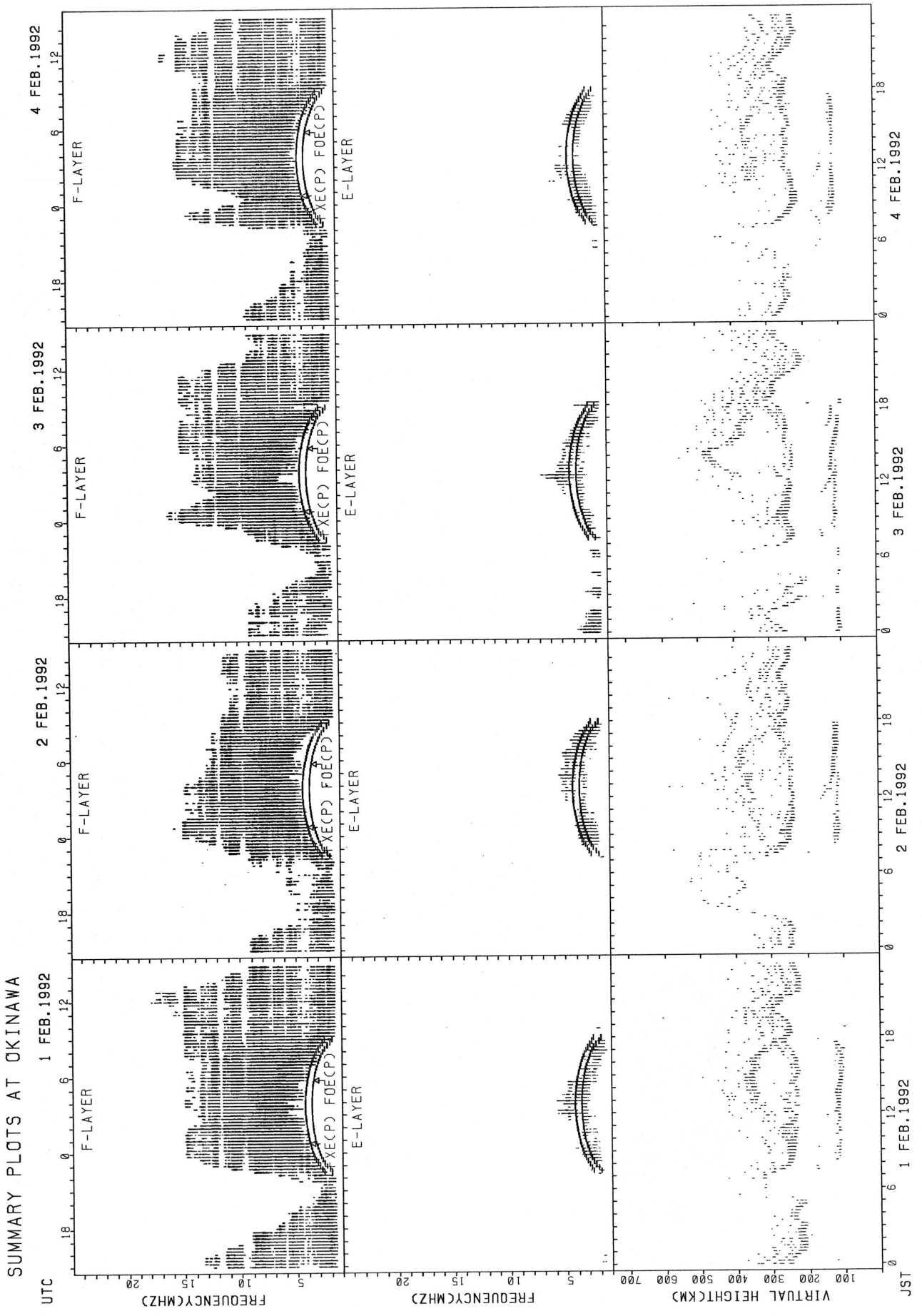
SUMMARY PLOTS AT OKINAWA
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3 FEB.1992
4 FEB.1992
UTC
JST
F-LAYER
E-LAYER
FREQUENCY(MHZ)
VIRTUAL HEIGHT(KM)
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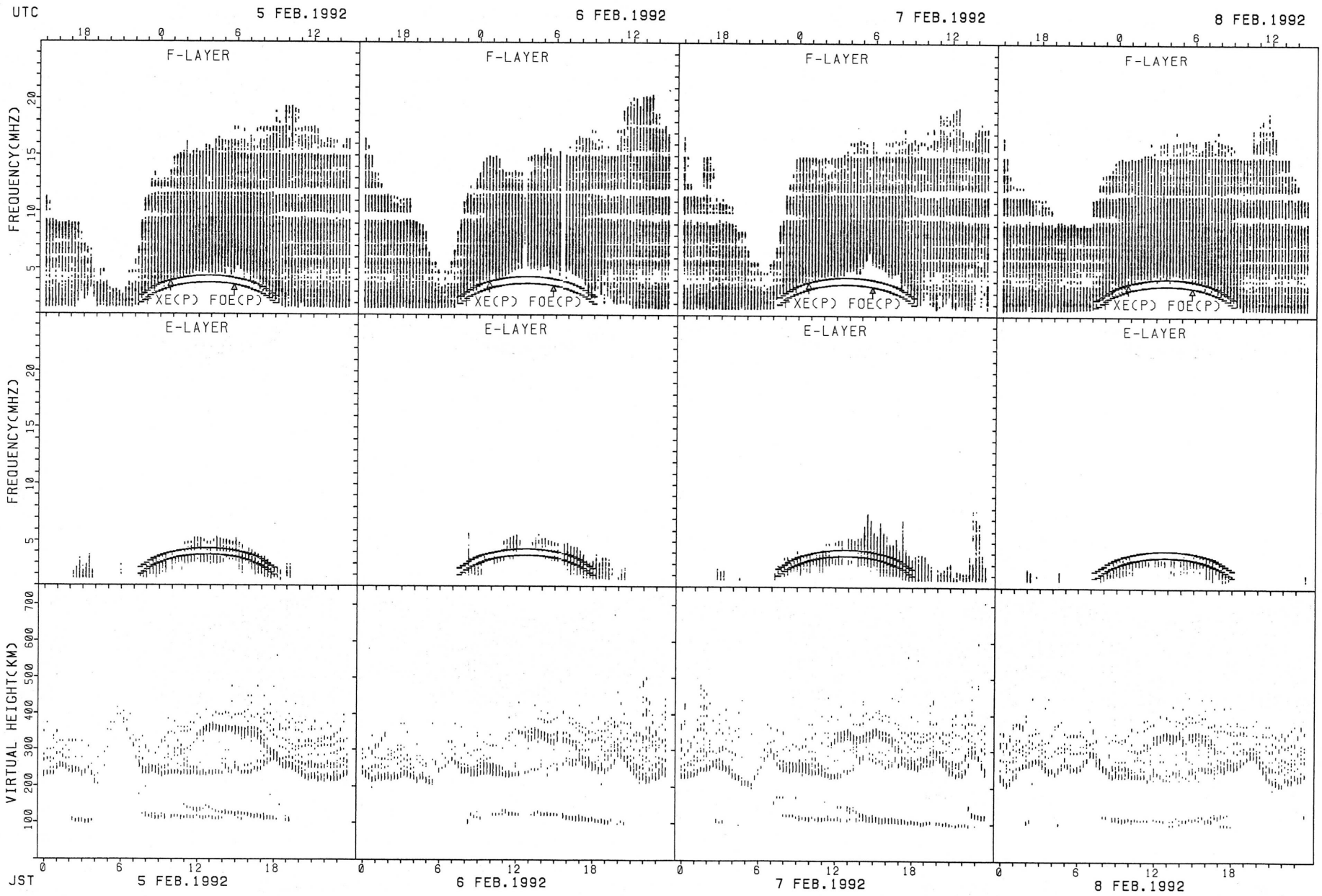
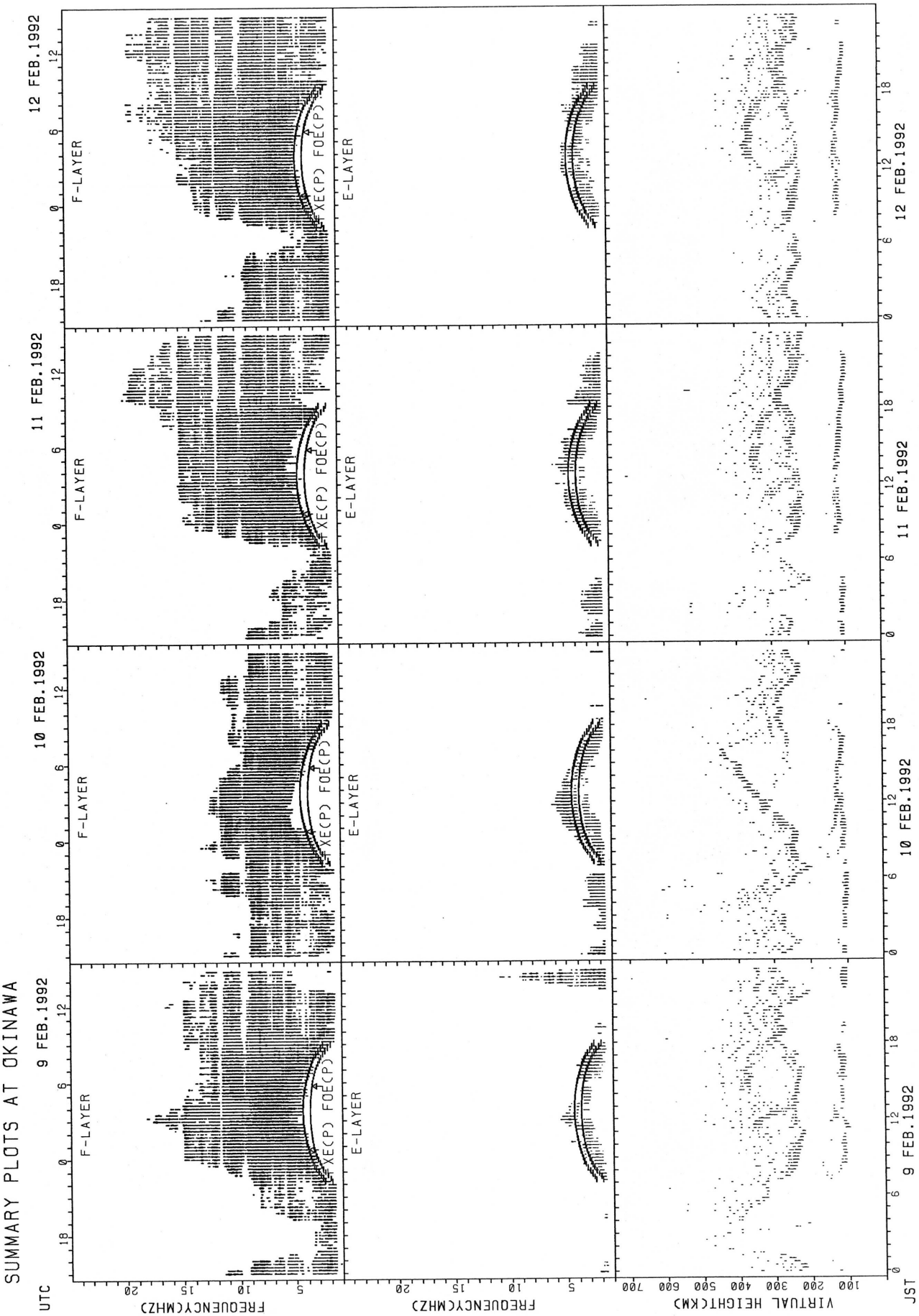
FXE(P): PREDICTED VALUE FOR FXE
FOE(P): PREDICTED VALUE FOR FOE

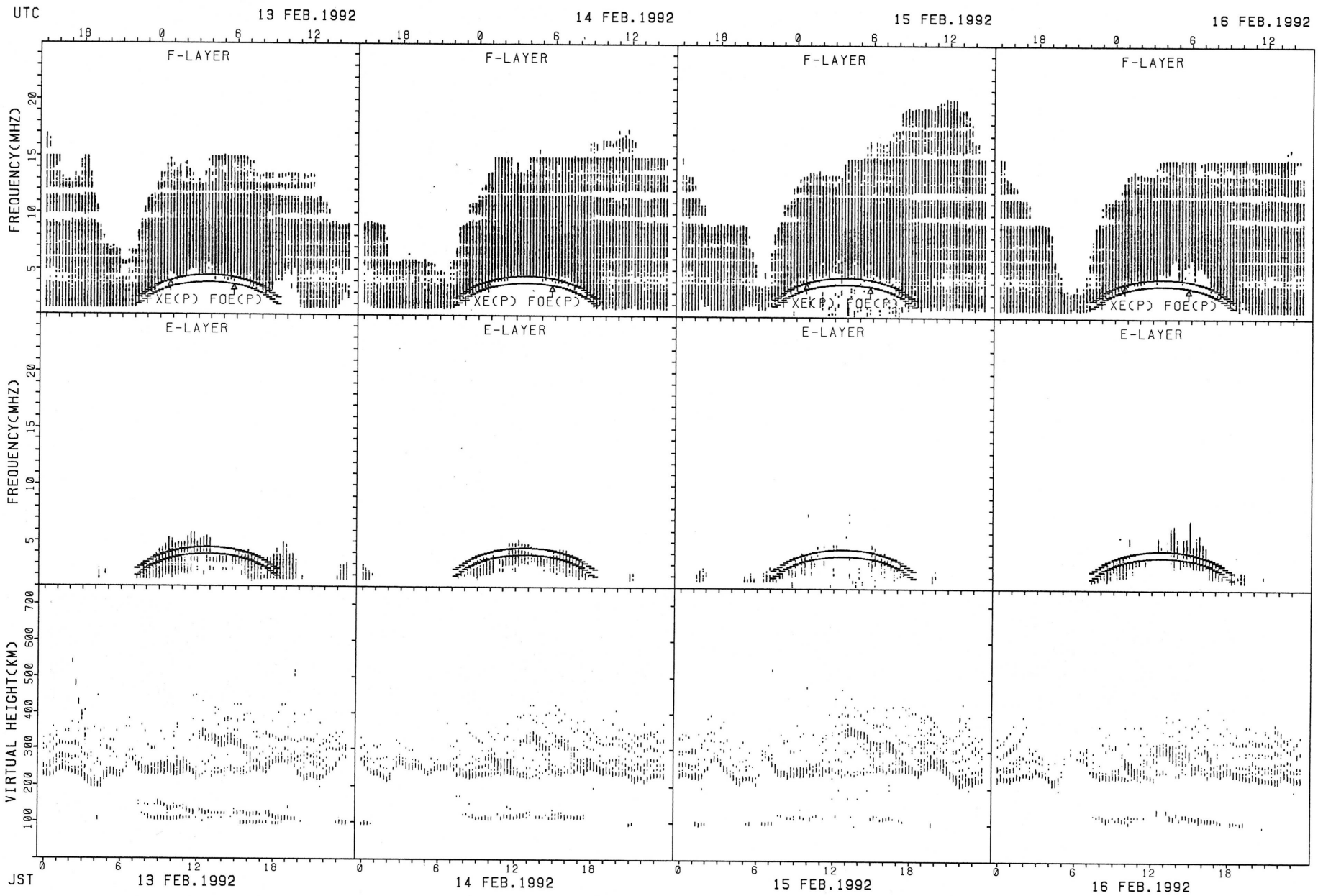
SUMMARY PLOTS AT OKINAWA



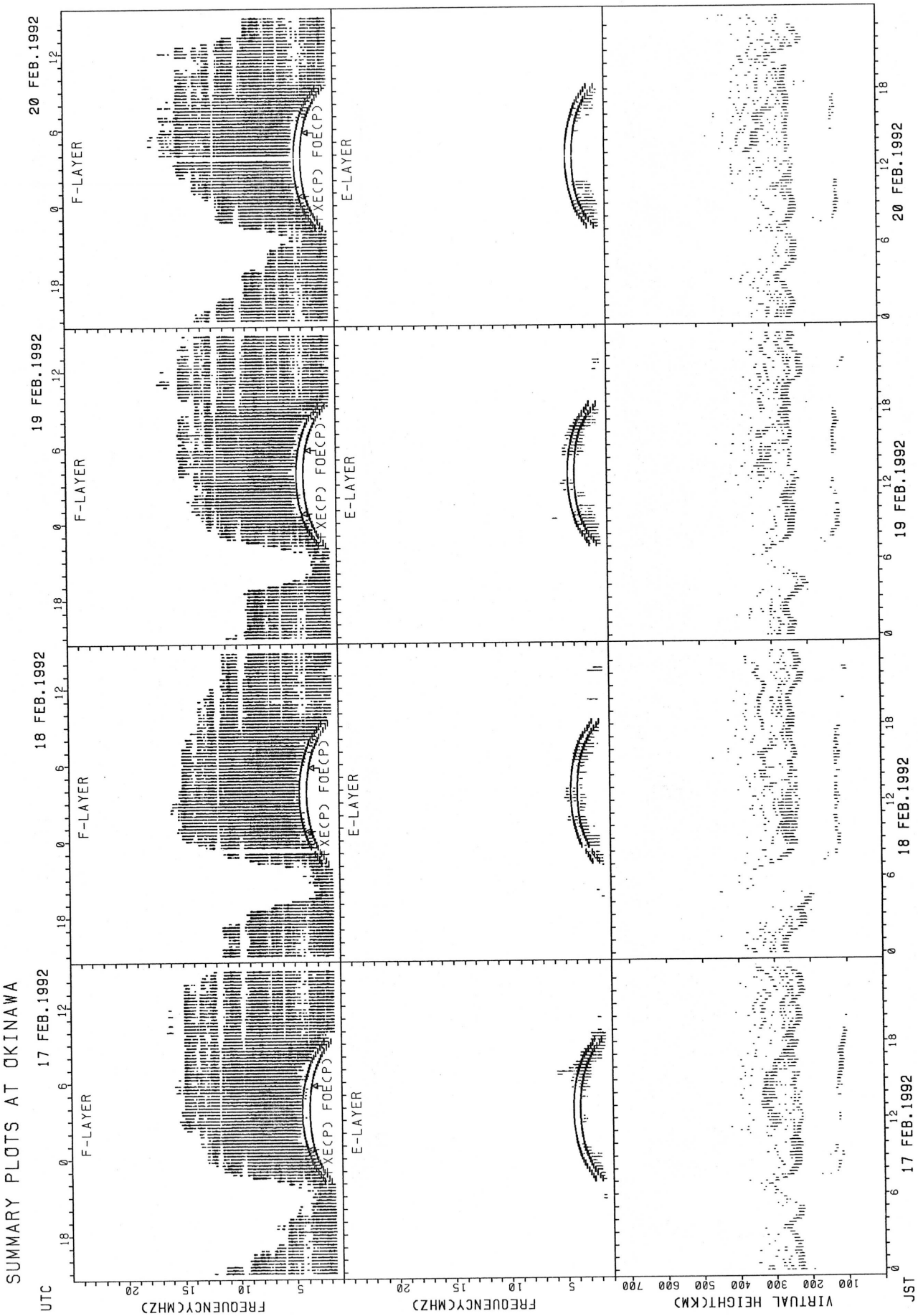
FXE(P); PREDICTED VALUE FOR FXE
FOE(P); PREDICTED VALUE FOR FOE


SUMMARY PLOTS AT OKINAWA
9 FEB.1992
10 FEB.1992
11 FEB.1992
12 FEB.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

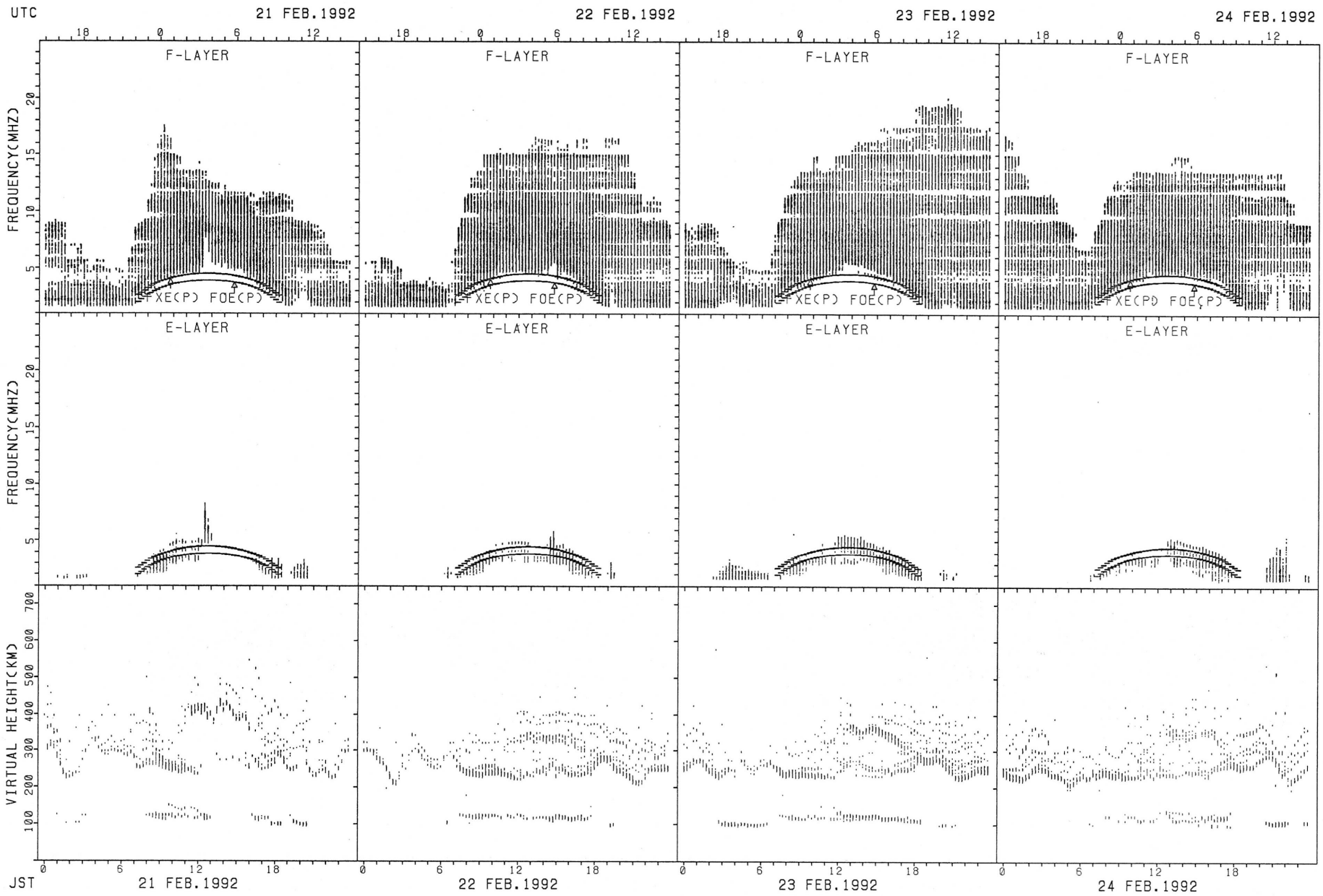
SUMMARY PLOTS AT OKINAWA



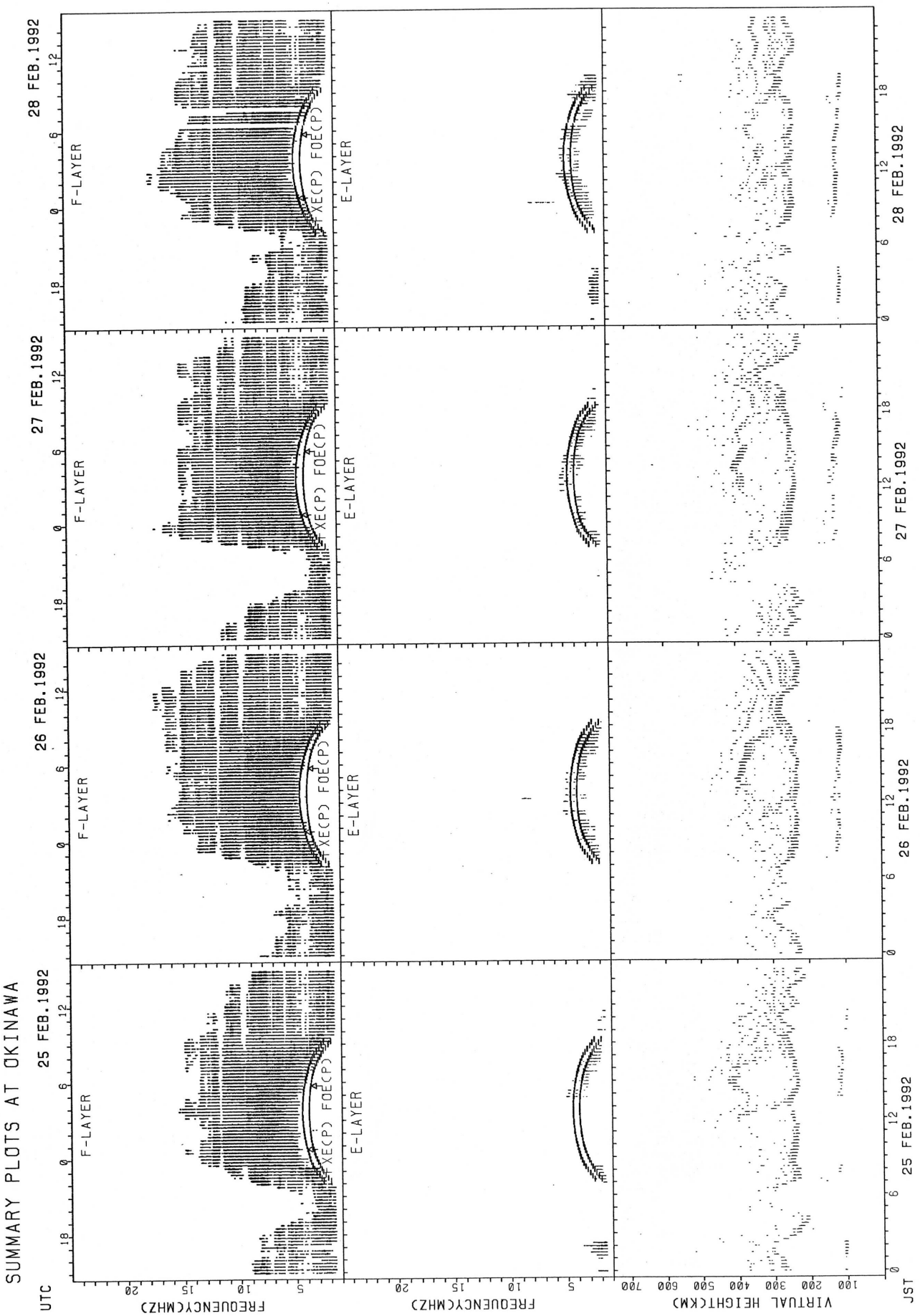
FXE(P); PREDICTED VALUE FOR FXE
FOE(P); PREDICTED VALUE FOR FOE

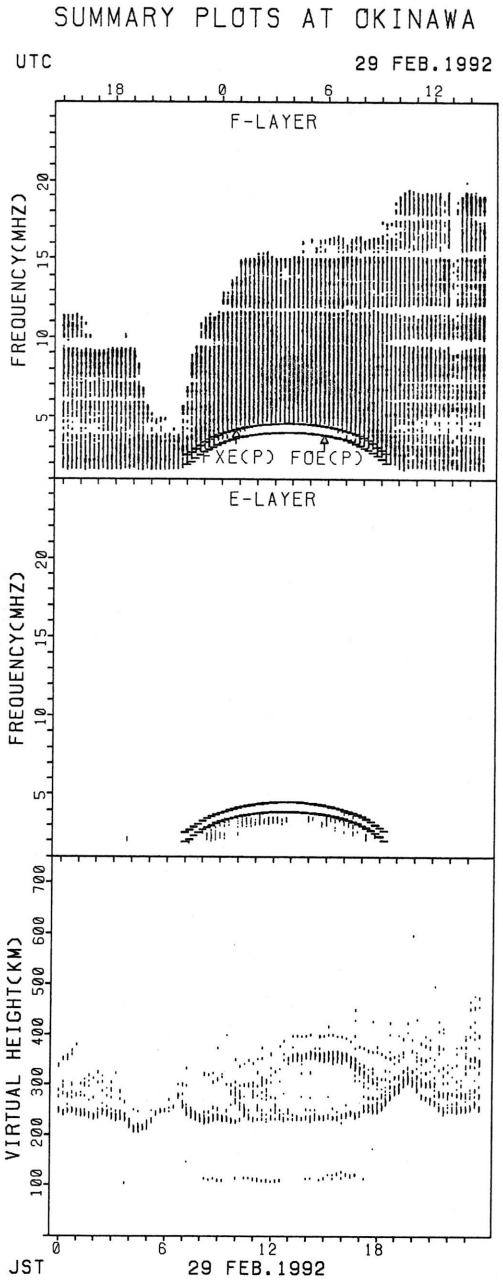

SUMMARY PLOTS AT OKINAWA
17 FEB.1992
18 FEB.1992
19 FEB.1992
20 FEB.1992
F-LAYER
E-LAYER
FXE(P) FOE(P)
FREQUENCY(MHZ)
VIRTUAL HEIGHT(KM)
UTC
JST
FXE(P): PREDICTED VALUE FOR FXE
FOE(P): PREDICTED VALUE FOR FOE

SUMMARY PLOTS AT OKINAWA



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


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



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

MONTHLY MEDIANS OF H'F AND H'ES

FEB.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							18	28	30	30	31	28	25	31	31	31	31	31	28	28	19		11	
MED							237	261	231	230	236	237	234	242	248	246	246	256	275	302	318		332	
U Q							308	283	238	238	278	254	260	258	266	256	258	266	293	328	334		376	
L Q							220	241	226	224	228	229	228	234	242	240	242	244	263	281	298		318	

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			107	106																				
U Q			117	115																				
L Q			103	103																				

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								29	30	31	31	22	18	23	30	30	31	31	29	22				
MED								264	242	238	242	250	253	254	267	266	266	272	294	314				
U Q								299	260	250	252	264	266	268	278	278	292	282	308	356				
L Q								250	234	230	230	236	244	240	256	260	258	260	279	290				

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					12	18	12	13	12					
MED										117					115	115	116	103	105					
U Q										125					121	119	119	130	112					
L Q										113					111	103	100	99	99					

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								31	31	31	28	17	10	18	29	30	30	30	31	28	24	22	13	
MED								274	238	240	242	252	253	267	264	269	266	266	278	299	300	316	318	
U Q								290	254	246	248	284	308	292	309	294	276	280	288	312	338	344	352	
L Q								246	232	232	236	241	238	248	253	258	260	252	272	277	275	296	281	

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		14	13	12	11	16	23	23	11	13	12	11	10		
MED									126		120	127	117	123	120	117	117	109	107	107	107	105		
U Q									137		240	239	173	266	195	119	119	127	114	150	117	121		
L Q									116		115	120	115	107	112	115	113	101	100	98	103	103		

MONTHLY MEDIANS OF H'F AND H'ES

FEB. 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	17	10						13	29	30	29	22			22	29	31	29	27	24	30	26	25	22
MED	318	331						280	244	244	238	244			292	292	270	270	272	295	294	282	294	296
U Q	354	352						316	270	262	264	284			354	339	336	305	300	321	316	300	324	324
L Q	292	294						276	235	234	234	238			254	253	258	261	260	272	282	256	281	286

H'ES

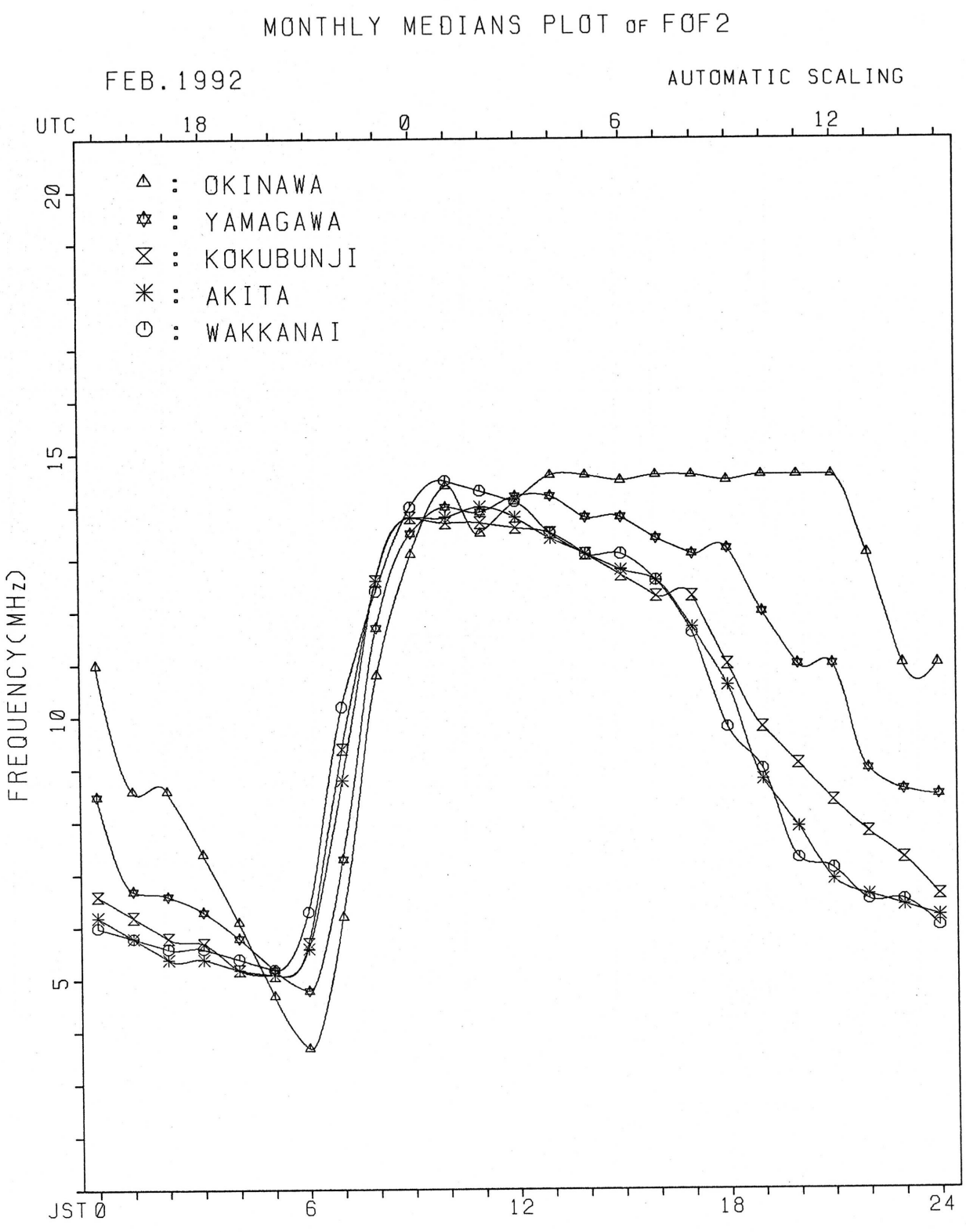
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT											12	12	11	14	13	23	23	11	13					
MED											119	136	125	125	125	117	115	113	105					
U Q											127	149	131	131	130	121	119	117	119					
L Q											117	122	121	119	118	113	113	113	103					

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	28	27	20	15	11				30	31	31	25				31	30	30	31	31	30	30	29	29
MED	289	300	295	296	272				253	244	250	254				350	348	319	294	294	309	272	270	286
U Q	324	324	330	326	320				270	266	270	321				378	374	338	332	314	334	290	291	317
L Q	258	278	288	282	248				242	238	242	246				320	324	290	268	276	278	260	256	259

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	12	11	20	18	15	22	25	21	11	12	10			
MED										125	123	127	129	129	123	119	117	119	113	108	107			
U Q										171	136	153	145	141	129	123	122	119	115	112	109			
L Q										119	117	117	126	121	121	117	115	115	107	105	105			


MONTHLY MEDIANS PLOT OF FOF2
FEB.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

FEB. 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	X	X	X	X	X	X												X	X	X	X	X	X
	69	69	68	61	48	47	54												110	87	81	82	76	73
2	X	X	X	X	X	X													X	X	X	X	X	X
	74	67	56	56	54	56	61												112	90	80	82	80	78
3	X	X	X	X	X	X	X												X	X	X	X	X	X
	69	64	67	64	56	37	38												120	99	98	98	91	76
4	X	X	X	X	X	X	X												X	X	X	X	X	X
	70	67	64	59	63	52	45												113	100	94	89	82	81
5	X	X	X	X	X	S	X												X	X	X	X	X	X
	77	68	64	61	59		59												119	109	97	75	80	78
6	X	X	X	X	X	X	X												X	X	X	X	X	X
	71	61	58	58	51	50	55												123	116	100	88	79	70
7	X	X	X	X	X	X	X												X	X	X	X	X	X
	69	64	59	58	56	54	54												100	101	103	91	71	78
8	X	X	X	X	X	X	X												X	X	X	X	X	X
	73	72	58	60	61	63	69												118	109	108	88	82	77
9	X	X	X	X	X	X													X	X	X	X	X	X
	77	49	41	44	54	44	59	106				156							128	114	102	114	97	96
10	X	X	X	X	X	X	X												X	X	X	X	X	X
	87	99	89	83	91	98	79												126	118	106	99	100	81
11	X	X	X	X	X	X	X												X	X	X	X	X	X
	81	68	68	69	54	56	54												132	117	97	79	74	69
12	X	X	X	X	X	X	X												X	X	X	X	X	X
	64	60	58	60	51	51	56												126	116	114	104	96	84
13	X	X	X	X	X	X	X												X	X	X	X	X	X
	71	67	61	65	61	57	61												117	103	82	75	75	68
14	X	X	X	X	X	X	X												X	X	X	X	X	X
	68	68	64	63	57	60	65												108	101	97	89	74	71
15	X	X	X	X	X	X	X												X	X	X	X	X	X
	68	63	59	63	65	55	61												120	110	105	97	94	84
16	X	X	X	X	X	X	X												X	X	X	X	X	X
	72	68	63	59	48	49	57												104	94	85	76	70	64
17	X	X	X	X	X	X	X												X	X	X	X	X	X
	60	58	58	57	56	52	59												116	102	81	78	71	75
18	X	X	X	X	X	X	X												X	X	X	X	X	X
	69	66	78	75	52	49	54												112	99	89	89	81	78
19	X	X	X	X	X	X	X												X	X	X	X	X	X
	71	66	63	63	58	53	58												115	101	81	83	77	71
20	X	X	X	X	X	X													X	X	X	X	X	X
	66	66	62	62	61	60													110	94	94	96	97	80
21	X	X	X	X	X	X													X	X	X	X	X	X
	75	64	65	52	50	55	71		104										108	96	88	70	85	81
22	X	X	X	X	X	X													X	X	X	X	X	X
	68	74	69	56	59	58													111	108	104	91	84	76
23	X	X	X	X	X	X													X	X	X	X	X	X
	74	74	69	65	59	58													124	110	107	100	95	90
24	X	X	X	X	X	X													X	X	X	X	X	X
	88	84	73	73	64	63													114	102	97	101	91	87
25	X	X	X	X	X	X													X	X	X	X	X	X
	80	69	74	73	62	61													132	105	109	100	104	93
26	X	X	X	X	X	X													X	X	X	X	X	X
	88	87	74	74	70	76													133	123	113	99	96	86
27	X	X	X	X	X	X													X	X	X	X	X	X
	84	86	82	71	63	58													120	109	100	98	91	91
28	X	X	X	X	X	X													X	X	X	X	X	X
	99	80	78	71	71	71													117	104	96	90	83	82
29	X	X	X	X	X	X													X	X	X	X	X	X
	76	74	74	72	67	66													125	112	111	100	91	88
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	29	29	28	20	1	1			1							29	29	29	29	29	29
MED	X	X	X	X	X	X	X												X	X	X	X	X	X
	72	68	64	63	59	56	58	106	104			156							117	104	97	90	83	78
U Q	X	X	X	X	X	X	X												X	X	X	X	X	X
	78	74	74	71	63	60	61												124	111	106	99	94	85
L Q	X	X	X	X	X	X	X												X	X	X	X	X	X
	69	64	59	58	54	52	54												112	100	88	82	76	74

IONOSPHERIC DATA STATION KOKUBUNJI

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	63	63	62	55	42	41	48	91	122	125	141	145	140	129	112	115	113	108	104	81	75	S 76	70	66
2	68	61	50	50	48	50	F 50	87	110	143	146	149	132	135	124	122	118	122	106	84	74	77	74	71
3	63	58	61	58	50	31	32	85	114	R 154	149	144	136	127	122	131	139	132	114	93	92	92	85	70
4	64	61	58	53	57	46	39	82	146	127	133	135	140	136	136	132	121	115	107	95	88	83	76	J S 75
5	71	62	58	55	53	S	53	84	147	150	147	152	142	139	138	128	123	123	J R 113	103	91	69	74	72
6	J R 65	55	52	52	45	44	J S 49	93	118	128	139	129	126	126	131	134	133	127	117	R 110	94	82	72	64
7	63	58	53	52	50	48	48	88	120	129	133	138	135	130	126	122	112	108	94	95	97	85	65	72
8	S 67	66	52	54	55	57	63	107	146	150	149	148	147	140	138	139	135	126	R 112	103	102	82	76	71
9	71	43	36	38	48	H 38	F 48	F 99	139	149	R 150	F 149	152	149	134	118	99	A	122	108	96	R 108	91	90
10	81	93	83	77	85	92	73	87	127	124	118	130	147	140	137	129	119	124	120	J R 112	100	93	94	75
11	S 75	62	62	63	48	50	48	85	135	147	R 152	R 155	148	146	143	143	134	128	126	R 111	91	S 73	68	63
12	58	54	52	54	45	45	50	94	127	140	135	134	134	141	143	140	137	140	120	R 110	108	98	90	78
13	65	61	55	59	55	51	55	90	121	139	130	137	136	131	129	128	126	123	R 111	97	R 76	69	69	62
14	62	62	58	57	51	54	59	S 97	123	133	138	140	135	135	136	130	125	115	R 102	95	91	83	68	65
15	62	57	53	57	60	49	55	97	116	139	C	C	C	C	C	140	137	126	R 114	105	99	91	88	78
16	66	62	57	53	42	43	51	92	126	127	132	130	134	129	128	125	120	115	98	88	79	70	64	58
17	54	52	52	51	50	46	53	93	122	133	136	139	138	133	125	122	123	114	R 110	96	75	72	65	69
18	63	60	72	69	46	43	48	91	131	144	R 148	147	144	138	133	131	126	112	106	93	83	83	75	J R 72
19	65	60	57	57	52	47	53	94	129	129	131	139	137	133	132	127	119	112	109	95	76	77	71	65
20	60	60	56	56	55	54	58	104	124	129	133	140	142	141	138	126	127	118	104	88	88	90	91	74
21	69	58	59	46	44	49	F 62	82	F 95	100	87	72	76	83	92	100	99	100	102	90	82	64	79	75
22	62	68	63	50	53	52	59	97	120	C	C	C	C	C	C	C	C	125	105	102	98	85	78	70
23	68	68	63	59	53	52	61	102	125	145	139	139	139	140	140	139	131	129	118	104	101	94	89	84
24	82	78	67	67	58	57	65	94	131	144	132	134	135	133	128	127	129	125	108	96	91	95	86	81
25	74	63	68	67	56	55	62	109	124	139	139	130	140	143	141	128	124	129	126	99	103	94	98	87
26	82	81	68	68	64	70	80	99	129	138	148	R 155	151	143	139	140	135	131	127	R 117	107	93	90	80
27	78	80	76	65	57	53	66	108	130	150	R 153	138	148	140	145	143	136	128	R 114	104	94	92	85	85
28	93	74	72	65	65	65	67	87	119	143	147	R 152	U R 153	147	139	131	122	122	R 111	98	90	84	77	76
29	J S 70	68	68	66	61	60	68	110	131	139	138	145	148	147	143	140	137	130	119	106	105	94	85	82
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	29	29	28	29	29	29	28	27	27	27	27	27	28	28	28	29	29	29	29	29	29
MED	66	62	58	57	53	50	55	93	125	139	139	139	140	138	136	130	126	124	111	98	91	84	77	72
U Q	72	68	68	65	57	54	62	99	131	144	R 148	148	147	141	139	139	134	128	118	R 106	100	93	88	79
L Q	63	58	53	52	48	46	48	87	120	129	133	134	135	131	128	126	120	115	106	94	82	76	70	68

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

IONOSPHERIC DATA STATION KOKUBUNJI

FEB. 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									
2														L	L	L								
3											L	L	L	L	U L 750	L	L							
4												L	L	L										
5										L		L	L	L	L									
6													L	L										
7												L	L											
8										L	L		L	L	L	L								
9														L	L									
10												L	U L 600		L									
11												L		L	L	L								
12												L	L	L	L	L								
13										L	L	L	L	L	L	L								
14										L		L		L										
15										L														
16													L											
17										L			L			L								
18												L		L	L									
19												L	L	L	L	L								
20													L	L	L									
21								L		L 590	L 530	L 510	L 550	R 570	L 650	U L 700	L							
22																								
23												L	L	L	L	L								
24									L			L		L	L	L	L							
25												L	L	L	L	L	L							
26										L		L	L	L	L	L								
27											L		L	U L 830	L	L								
28										L	L		L		L									
29											L	L	L		L		L							
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT										1	1	1	2	2	2	1								
MED										L 590	530	510	575	700	700	U L 700								
U Q																								
L Q																								

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

IONOSPHERIC DATA STATION KOKUBUNJI

FEB. 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								180	285	335	U A 360	U A 370	A	375	355	A	280	160						
2							J K 140	170	265	325	350	370	390	U A 360	355	330	270	A						
3								B	285	325	B	375	385	380	365	335	270	A						
4								160	265	320	365	375	380	385	365	325	A	200						
5								180	270	330	350	B	395	385	355	A	270	175						
6								190	285	330	365	375	385	390	365	325	270	H 190						
7								205	295	340	375	390	390	390	A	A	270	185						
8								200	270	335	350	370	375	375	355	330	270	175						
9								205	270	320	A	370	375	A	A	A	A	A						
10								A	265	315	340	365	A	A	355	A	A	A						
11						J K 140		A	H 285	320	A	A	A	375	360	330	265	H 200						
12								H 200	285	325	A	370	380	370	355	325	A	A						
13								180	270	A	340	370	375	355	350	U A 330	A	S 210						
14								185	270	320	350	360	370	A	A	A	280	200						
15								205	285	335	C	C	C	C	C	A	275	185						
16								225	300	340	360	380	390	385	360	A	A	A						
17								H 215	285	330	360	390	390	390	360	340	A	A 170						
18								H 220	285	335	360	380	390	375	365	340	280	195						
19								200	295	340	R 370	390	390	B	370	A	A	205						
20							B	220	300	335	355	380	390	385	370	340	290	205						
21							B	210	310	335	360	375	A	B	380	350	280	A 205						
22							B	230	315	C	C	C	C	C	C	C	C	200						
23							B	H 225	305	345	365	A 360	380	380	370	335	295	210						
24							B	H 220	300	340	370	385	U S 380	390	370	340	U A 285	A 185						
25							B	H 250	300	B	B	B	A	395	390	355	305	215						
26							B	215	295	345	375	385	A	385	380	350	300	215						
27							K 160	210	295	360	380	385	390	390	360	335	290	H 215						
28							B	205	300	340	365	375	R 380	A	A	335	A	A						
29							B	220	300	335	370	390	385	380	370	340	290	200						
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						1	2	26	29	26	22	24	21	21	23	19	19	22						
MED						J K 140	K 150	205	285	335	360	375	385	385	365	335	280	200						
U Q								H 220	300	340	370	385	390	390	370	340	290	205						
L Q								190	270	325	350	370	380	375	355	330	270	185						

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

IONOSPHERIC DATA STATION KOKUBUNJI

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E B 15	E B 14	E B 14	E B 14	E B 13	E B 13	E B 14	G	G	G	39	39	42	J A 39	G	J A 33	J A 38	G	E B 14	E B 14	E B 16	E B 16	E B 15	E B 17
2	E B 14	E B 14	E B 16	E B 15	E B 14	E B 15	K 14	G	28	G	38	39	47	J A 52	39	G	J A 42	J A 40	J A 49	34	J A 32	22	E B 15	E B 14
3	E B 14	E B 16	E B 15	E B 14	E B 14	19	E B 16	E B 16	G	G	E B 38	G	G	41	G 31	G	G	J A 22	21	E B 13	E B 15	E B 15	E B 16	E B 15
4	E B 14	18	E B 15	E B 13	E B 15	E B 14	E B 15	G	29	G	40	42	42	46	48	39	35	G	J A 21	21	J A 60	J A 33	27	J A 20
5	J A 23	J A 21	19	E B 16	E B 13	E B C 25	E B 16	G	28	G	38	E B 38	G	G	41	35	G	18	J A 15	E B 14	E B 15	E B 15	E B 17	E B 14
6	E B 15	E B 16	E B 15	E B 16	E B 14	E B 14	E B 14	G	G	G	G	G 26	G	G	47	J A 45	30	G	E B 15	30	J A 24	E B 13	J A 24	E B 14
7	20	E B 15	21	E B 14	E B 15	E B 14	E B 14	G	G	G	G	G	42	47	39	33	G 26	G	J A 20	E B 14	E B 16	E B 15	E B 18	E B 16
8	E B 14	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	G 19	G 25	G 35	G 34	G 27	G	G	G	G	G	G	20	J A 23	J A 28	E B 14	E B 15	E B 15
9	E B 15	E B 16	E B 16	E B 17	E B 15	E B 16	E B 15	25	G	G	39	61	J A 57	J A 55	56	78	J A 89	109	30	J A 30	29	26	23	J A 33
10	24	J A 26	J A 25	J A 19	J A 26	E B 15	E B 14	21	30	40	46	41	47	J A 55	38	35	30	24	20	18	E B 14	E B 15	E B 15	E B 15
11	E B 16	E B 14	E B 14	E B 14	E B 15	J K 14	E B 15	J A 28	33	37	J A 42	44	J A 47	G	G 32	G 30	G 22	G	E B 15	E B 14	23	J A 22	J A 27	J A 18
12	J A 18	J A 20	E B 15	E B 15	E B 13	E B 14	E B 15	G	G	G	38	G	G	G	G 20	J A 44	J A 30	21	J A E B 27	14	J A 32	J A 24	E B 15	E B 14
13	E B 13	E B 15	E B 15	E B 15	E B 14	E B 14	E B 14	G	31	J A 43	36	J A 42	42	39	37	39	34	G	J A 31	J A 39	20	E B 15	E B 17	E B 16
14	E B 14	E B 14	E B 15	E B 15	E B 15	E B 14	E B 14	G	G 27	38	40	37	G	37	39	35	G 27	G 18	E B 14	E B 14	E B 14	E B 14	E B 15	E B 15
15	J A 23	20	19	E B 14	E B 15	E B 15	E B 16	G	G	G	C	C	C	C	C	34	G 26	G 18	E B 13	E B 15	E B 14	E B 14	J A 20	J A 22
16	J A 17	21	18	E B 13	E B 13	E B 14	E B 14	G 21	G	G 26	G	G 26	G 28	G 27	G 21	33	28	24	E B 15	E B 14	J A 41	J A 23	E B 15	E B 14
17	E B 14	E B 13	E B 14	J A 21	E B 15	E B 15	E B 14	G	G	G 26	G 24	G	G 24	G	G	G	32	20	E B 14	J A 15	E B 13	E B 14	J A 36	E B 13
18	E B 14	E B 14	E B 14	E B 14	E B 13	E B 13	E B 14	G	G	34	G	G	G	G	G	G 20	G 18	G 18	J A 19	J A 17	22	E B 15	E B 16	E B 15
19	E B 15	E B 13	E B 13	E B 14	E B 13	E B 14	E B 14	G	G 25	G	G	G	G	E B 43	J A 39	J A 44	J A 32	G 19	28	J A 20	E B 14	E B 13	20	E B 14
20	E B 15	E B 15	E B 13	E B 13	E B 13	E B 14	E B 13	G	G	G	G 32	45	G	G	G 20	G	34	G	E B 14	J A 19	E B 14	E B 14	E B 15	J A 18
21	E B 13	E B 13	E B 13	E B 14	E B 13	E B 14	J A 19	25	G	G	42	43	J A 51	42	G	G	G	23	E B 14	E B 14	E B 14	E B 14	21	J A 34
22	J A 17	20	J A 22	20	E B 15	20	21	G	G	C	C	C	C	C	C	C	C	26	J A 20	J A 22	J A 25	J A 21	22	20
23	J A 47	J A 39	29	24	22	21	J A 18	G	J A 41	36	40	39	G 38	G	G	G 25	G	J A 20	20	E B 14	20	E B 14	E B 15	E B 15
24	E B 14	E B 14	E B 14	E B 14	E B 16	E B 15	E B 14	G	G	G 27	G 32	G	G	G	39	G	35	22	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14
25	E B 15	E B 14	E B 14	E B 14	E B 13	E B 14	E B 14	G	G 26	E B 37	45	48	42	G 38	G	G 23	G 20	30	20	E B 13	E B 14	E B 14	19	E B 14
26	E B 13	E B 13	E B 15	E B 14	E B 14	E B 14	J A 15	G	G	G	G	40	42	G	G 37	G 34	G	G	J A 16	E B 14	E B 15	E B 14	20	E B 15
27	E B 15	19	E B 13	E B 13	E B 13	E B 14	K 16	G	G	G	G	G	G	G	G	G	G	G	E B 14	E B 14	19	E B 14	E B 15	22
28	25	E B 14	E B 13	E B 14	E B 14	E B 14	E B 15	G	G	G 27	G	G	G	J A 72	41	J A 41	J A 37	J A 36	J A 30	J A 18	E B 15	J A 20	E B 13	22
29	E B 14	E B 14	E B 14	E B 13	E B 14	E B 13	E B 14	G	G	G	G	G	G	G	G 24	G	G 20	G 16	21	E B 15	E B 14	E B 14	E B 15	E B 14
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	29	29	29	29	29	29	28	27	27	27	27	27	28	28	29	29	29	29	29	29	29
MED	E B 15	E B 15	E B 15	E B 14	E B 14	E B 14	E B 14	G	G	G	E G 36	E G 37	G	G	G	G	G	G	20	E B 15	E B 16	E B 15	E B 16	E B 15
U O	J A 18	20	17	16	E B 15	E 15	16	G	G	34	40	42	42	J A 43	39	37	34	24	J A 21	J A 20	J A 24	J A 20	20	J A 19
L O	E B 14	E B 14	E B 14	E B 14	E B 13	E B 14	E B 14	G	G	G	G	G	G	G	G 37	G 34	G	G	E B 14	E B 14	E B 14	E B 14	E B 15	E B 14

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

IONOSPHERIC DATA STATION KOKUBUNJI

FEB. 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

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	E B 15	E B 14	E B 14	E B 14	E B 13	E B 13	E B 14	G	G	G	38	39	39	39	G	28	G 20	G	E B 14	E B 14	E B 16	E B 16	E B 15	E B 17
2	E B 14	E B 14	E B 16	E B 15	E B 14	K 15	G 14		28	G	37	38	44	41	37	G	G 22	22	27	30	28	17	E B 15	E B 14
3	E B 14	E B 16	E B 15	E B 14	E B 14	E B 15	E B 16	E B 16	G	G	E B 38	G	G	40	G 29	G	G	21	E B 16	E B 13	E B 15	E B 15	E B 16	E B 15
4	E B 14	E B 14	E B 15	E B 13	E B 15	E B 14	E B 15	G	28	G	G	41	41	45	47	39	34	G	17	E B 15	56	17	20	18
5	22	E B 15	E B 15	E B 16	E B 13	E B C 25	E B 16	G	28	G	37	E B 38	G	G	40	34	G	G 16	E B 15	E B 14	E B 15	E B 15	E B 17	E B 14
6	E B 15	E B 16	E B 15	E B 16	E B 14	E B 14	E B 14	G	G	G	G	G 26	G	G	43	42	29	G	E B 15	20	16	E B 13	19	E B 14
7	E B 15	E B 15	E B 15	E B 14	E B 15	E B 14	E B 14	G	G	G	G	G	40	44	39	33	G 25	G	17	E B 14	E B 16	E B 15	E B 18	E B 16
8	E B 14	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	G	G 23	G 35	G 28	G 26	G	G	G	G	G	G	E B 14	21	27	E B 14	E B 15	E B 15
9	E B 15	E B 16	E B 16	E B 17	E B 15	E B 16	E B 15	22	G	G	39	55	55	49	49	68	42	A A 109	24	22	20	20	17	28
10	17	24	19	E B 15	21	E B 15	E B 14	20	29	38	44	40	43	49	38	34	27	20	E B 14	E B 14	E B 14	E B 15	E B 15	E B 15
11	E B 16	E B 14	E B 14	E B 14	E B 15	K 14	E B 15	26	31	36	36	39	40	G	G 31	G 30	G 21	G	E B 15	E B 14	E B 14	18	24	18
12	E B 15	19	E B 15	E B 15	E B 13	E B 14	E B 15	G	G	G	36	G	G	G	G 20	G 19	28	20	25	E B 14	27	16	E B 15	E B 14
13	E B 13	E B 15	E B 15	E B 15	E B 14	E B 14	E B 14	G	31	34	G 31	G 35	40	38	37	G	33	G	26	36	E B 15	E B 15	E B 17	E B 16
14	E B 14	E B 14	E B 15	E B 15	E B 15	E B 14	E B 14	G	G 23	36	39	37	G	37	36	34	G 25	G 17	E B 14	E B 14	E B 14	E B 14	E B 15	E B 15
15	20	E B 15	U Y 19	E B 14	E B 15	E B 15	E B 16	G	G	G	C	C	C	C	C	34	G 25	G 16	E B 13	E B 15	E B 14	E B 14	E B 14	E B 13
16	E B 14	E B 13	E B 13	E B 13	E B 13	E B 14	E B 14	G	G	G 24	G	G 25	G 28	U G 27	G 21	33	27	20	E B 15	E B 14	23	E B 13	E B 15	E B 14
17	E B 14	E B 13	E B 14	E B 14	E B 15	E B 15	E B 14	G	G	G 25	G 24	G	U G 24	G	G	G	30	20	E B 14	E B 13	E B 13	E B 14	18	E B 13
18	E B 14	E B 14	E B 14	E B 14	E B 13	E B 13	E B 14	G	G	34	G	G	G	G	G	G 20	G 18	G 17	17	E B 15	E B 15	E B 15	E B 16	E B 15
19	E B 15	E B 13	E B 13	E B 14	E B 13	E B 14	E B 14	G	G 23	G	G	G	G	E B 43	G 34	35	30	G 16	20	16	E B 14	E B 13	E B 14	E B 14
20	E B 15	E B 15	E B 13	E B 13	E B 13	E B 14	E B 13	G	G	G	G 32	40	G	G	G 20	G	31	G	E B 14	16	E B 14	E B 14	E B 15	E B 14
21	E B 13	E B 13	E B 13	E B 14	E B 13	E B 14	G	23	G	G	40	40	41	42	G	G	G	22	E B 14	E B 14	E B 14	E B 14	E B 15	19
22	E B 14	E B 14	E B 16	E B 14	E B 15	E B 14	E B 14	G	G	C	C	C	C	C	C	C	C	G 18	17	20	20	20	E B 16	E B 14
23	36	22	18	17	15	E B 14	E B 14	G	G	36	40	39	G 33	G	G	G 24	G	E B 15	E B 13	E B 14	E B 15	E B 14	E B 15	E B 15
24	E B 14	E B 14	E B 14	E B 14	E B 16	E B 15	E B 14	G	G	G 25	G 30	G	G	G	38	G	31	21	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14
25	E B 15	E B 14	E B 14	E B 14	E B 13	E B 14	E B 14	G	G E 25	B 37	45	46	41	G 35	G	G 22	G 20	G 19	E B 15	E B 13	E B 14	E B 14	E B 14	E B 14
26	E B 13	E B 13	E B 15	E B 14	E B 14	E B 14	E B 14	G	G	G	G	40	41	G	G 35	G 26	G	G	E B 13	E B 14	E B 15	E B 14	E B 15	E B 15
27	E B 15	E B 13	E B 13	E B 13	E B 13	E B 14	K 16	G	G	G	G	G	G	G	G	G	G	G	E B 14	E B 14	E B 13	E B 14	E B 15	E B 14
28	17	E B 14	E B 13	E B 14	E B 14	E B 14	E B 15	G	G	G 26	G	G	G	48	39	G 27	31	27	22	E B 14	E B 15	E B 15	E B 13	E B 13
29	E B 14	E B 14	E B 14	E B 13	E B 14	E B 13	E B 14	G	G	G	G	G	G	G	G 23	G	G 19	G 15	E B 14	E B 15	E B 14	E B 14	E B 15	E B 14
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	29	29	29	29	29	29	28	27	27	27	27	27	28	28	29	29	29	29	29	29	29
MED	E B 15	E B 14	E B 15	E B 14	E B 14	E B 14	E B 14	G	G	G	G	G	G	G	G	G	G	G	E B 15	E B 14	E B 15	E B 14	E B 15	E B 14
U Q	15	E B 15	15	E B 15	E B 15	E B 15	E B 15	G	G	34	38	40	41	42	38	34	30	20	17	16	18	16	17	16
L Q	E B 14	E B 14	E B 14	E B 14	E B 13	E B 14	E B 14	G	G	G	G	G	G	G	G 34	G 29	G 25	G 18	E B 14	E B 14	E B 14	E B 14	E B 15	E B 14

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

IONOSPHERIC DATA STATION KOKUBUNJI

FEB. 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

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

FEB. 1992 FMIN (0.1MHZ) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION KOKUBUNJI

FEB. 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

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	285	300	300	330	250	250	275	310	330	315	300	285	285	280	270	275	275	285	290	285	260	S 280	280	265
2	285	270	245	215	220	225	F 240	285	275	285	290	280	265	265	260	260	270	280	300	280	285	280	285	285
3	255	240	270	275	305	230	245	305	280	R 300	295	270	270	255	240	250	260	265	270	280	265	270	285	280
4	275	260	275	245	275	225	230	285	320	305	285	275	280	275	275	275	280	280	290	290	290	290	285	J S 285
5	310	285	280	270	250	S	270	290	325	315	300	295	280	280	270	275	275	280	J R 290	300	305	290	280	290
6	J R 305	270	270	285	285	280	J S 285	335	335	320	305	300	290	275	275	280	290	290	285	R 295	295	285	280	280
7	280	270	265	260	270	280	270	310	330	310	300	295	280	280	275	275	285	285	285	290	305	290	250	270
8	S 280	275	225	250	255	255	265	295	315	310	295	290	280	275	275	275	285	285	R 285	290	300	275	275	265
9	305	230	205	210	280	H 210	F 220	F 285	310	295	R 285	F 280	280	280	270	275	270	A	280	285	245	R 275	245	265
10	235	255	250	230	260	295	320	315	315	315	320	275	285	280	280	275	265	275	290	J R 295	300	300	315	295
11	S 295	255	230	275	365	285	265	300	320	315	R 305	R 295	285	285	280	280	285	280	295	R 300	290	S 280	285	290
12	295	275	265	300	275	265	295	325	325	315	310	290	280	275	275	275	275	285	290	R 300	295	305	300	285
13	300	270	250	285	295	280	295	330	330	325	310	300	295	285	285	285	295	295	R 305	300	R 285	275	295	275
14	275	280	285	285	265	275	290	S 330	330	315	310	295	290	285	285	285	295	295	R 300	290	305	300	305	295
15	285	285	255	260	305	280	290	325	330	310	C	C	C	C	C	280	290	290	R 295	290	305	300	315	305
16	290	295	295	310	270	260	295	335	335	320	305	300	295	290	290	285	290	300	295	300	300	295	290	295
17	295	290	285	280	285	265	280	330	330	315	305	295	290	285	280	285	285	295	R 300	300	300	275	260	280
18	285	245	285	320	320	250	265	305	320	315	R 310	300	290	285	280	285	285	285	290	290	280	290	290	J R 295
19	290	275	270	285	285	275	275	315	325	315	295	300	290	280	285	285	290	290	300	310	285	290	295	280
20	275	270	265	265	280	275	285	315	325	320	295	285	285	280	275	270	280	285	285	280	260	265	280	265
21	260	220	265	220	255	240	F 280	270	F 245	240	235	220	220	225	220	230	230	245	265	270	260	270	270	290
22	270	280	305	250	265	270	280	320	305	C	C	C	C	C	C	C	C	285	275	275	305	290	280	270
23	270	265	280	275	260	265	290	325	315	315	295	295	280	275	275	275	275	280	285	275	285	285	285	285
24	295	290	275	285	260	280	295	320	310	310	305	285	280	270	270	265	275	285	280	275	270	290	285	290
25	290	250	255	290	235	235	265	320	310	300	285	270	255	260	260	255	250	265	280	255	265	250	265	295
26	270	285	255	245	235	250	290	290	300	295	295	R 285	275	265	265	265	270	270	275	R 280	285	275	280	260
27	260	265	275	260	220	215	280	305	285	290	R 290	270	260	255	260	265	265	270	R 280	260	250	265	250	235
28	280	260	255	225	230	245	235	295	285	295	290	R 285	U R 285	280	280	285	285	290	R 295	285	300	290	280	290
29	J S 280	275	275	280	285	280	290	320	315	310	305	285	280	275	270	270	275	280	275	270	280	265	245	235
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	29	29	28	29	29	29	28	27	27	27	27	27	28	28	28	29	29	29	29	29	29
MED	285	270	270	275	270	265	280	315	320	312	300	285	280	280	275	275	278	285	290	290	285	285	280	285
U Q	295	282	280	285	285	280	290	325	330	315	305	295	290	280	280	282	285	290	R 295	298	300	290	290	290
L Q	272	258	255	248	252	242	265	295	308	300	290	280	280	270	270	268	270	280	280	278	268	275	272	268

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

IONOSPHERIC DATA STATION KOKUBUNJI

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

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

HD	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1											L		L		L									
2														L	L	L								
3											L	L	L	L	U L 280	L	L							
4												L	L	L										
5										L		L	L	L	L									
6													L	L										
7												L	L											
8										L	L		L	L	L	L								
9														L	L	A		A						
10												L	U L 350		L									
11												L		L	L	L								
12												L	L	L	L	L								
13										L	L	L	L	L	L	L								
14										L		L		L										
15										L	C	C	C	C	C									
16													L											
17										L			L			L								
18												L		L	L									
19												L	L	L	L	L								
20													L	L	L									
21								L		L 300	320	335	315	R 320	310	U L 295	L							
22										C	C	C	C	C	C	C	C							
23												L	L	L	L	L								
24									L			L		L	L	L	L							
25												L	L	L	L	L	L							
26										L		L	L	L	L	L								
27											L		L	U L 320	L	L								
28										L	L		L		L									
29											L	L	L		L		L							
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT										1	1	1	2	2	2	1								
MED										L 300	320	335	332	320	295	U L 295								
U Q																								
L Q																								

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

IONOSPHERIC DATA STATION KOKUBUNJI

FEB. 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											280		260		L 335									
2														335	L 370	L 350								
3											L 295	L 315	L 325	L 375	395	L 360	315							
4												270	310	310										
5										255		300	325	310	L 320									
6													315	L 320										
7												290	305											
8										245	235		320	L 330	320	310								
9														315	355	A 290		A						
10												335	290		310									
11												280		L 305	310	300								
12												L 290	L 315	305	310	300								
13										250	240	270	290	310	305	300								
14										250		290		305										
15										245	C	C	C	C	C									
16													260											
17										250			270			305								
18												260		300	310									
19												255	290	310	300	315								
20													305	320	L 330									
21								L 330		400	410	545	545	515	520	L 425	L 435							
22										C	C	C	C	C	C	C	C							
23												260	310	320	320	270								
24									255			L 310		330	L	350	290							
25												280	360	U L 360	360	L 370	L 370							
26										275		320	320	330	355	330								
27											280		350	360	350	325								
28										250	300		240		310									
29											250	310	260		340		300							
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								1	1	9	8	17	21	20	20	15	5							
MED								L 330	255	250	280	290	310	320	325	315	315							
U Q										265	298	312	322	332	355	L 350	L 402							
L Q										248	245	270	280	310	310	300	295							

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

IONOSPHERIC DATA STATION KOKUBUNJI

FEB. 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

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	275	255	260	230	225	310	300	260	225	230	230	240	225	225	220	225	235	250	250	240	270	270	280	290
2	275	260	280	425	445	390	385	255	235	240	240	240	H 240	235	235	240	250	255	240	265	280	275	270	275
3	310	350	285	225	210	430	390	235	245	240	230	230	220	225	230	250	265	255	230	260	255	240	255	270
4	255	290	270	260	290	265	425	270	230	220	230	235	240	245	255	235	230	235	240	240	A	255	260	265
5	255	270	265	270	260	E C 370	310	240	230	H 225	230	220	220	H 230	235	240	235	250	240	240	230	220	270	250
6	245	285	290	275	230	265	270	240	220	220	230	230	230	230	250	255	250	230	220	245	220	250	250	270
7	290	305	305	305	270	H 225	270	250	230	225	230	230	230	240	230	240	235	240	240	265	235	230	315	285
8	275	270	275	340	320	295	320	260	240	230	225	230	220	230	230	240	245	235	230	270	255	230	250	280
9	215	320	535	515	285	H 315	405	270	250	235	235	A 260	A 260	240	235	A	A 255	A	300	260	315	265	270	280
10	280	340	270	H 270	310	270	210	240	235	235	245	H 215	230	A 255	235	240	240	255	250	235	235	240	250	250
11	270	315	365	310	200	245	290	255	235	225	220	225	230	225	225	240	230	230	235	225	230	260	280	250
12	265	290	300	270	260	305	270	250	230	230	220	H 205	220	220	240	230	240	245	225	240	245	240	240	245
13	250	285	305	280	235	270	260	225	230	230	215	210	220	230	225	225	245	240	240	250	220	250	270	270
14	275	280	285	280	250	290	265	235	220	225	225	225	230	225	235	240	235	230	235	255	250	240	230	255
15	280	280	360	320	245	250	265	230	225	225	C	C	C	C	C	235	240	230	225	230	240	245	240	240
16	240	250	245	250	265	320	290	230	230	225	220	225	220	235	225	235	235	230	220	230	255	245	255	255
17	255	270	280	300	265	270	290	240	230	H 225	230	235	230	230	230	235	245	230	230	230	220	280	310	300
18	265	335	265	235	220	340	330	260	240	240	H 230	240	230	230	230	240	235	230	245	245	260	255	245	265
19	255	285	290	260	230	270	300	250	240	230	225	220	225	240	235	240	230	240	240	225	235	260	265	255
20	265	280	300	305	270	260	275	240	230	H 225	230	230	230	235	H 240	235	240	230	235	260	310	285	250	230
21	300	260	285	370	310	265	260	270	300	275	270	255	260	255	260	255	260	250	250	255	275	250	300	260
22	280	280	240	225	315	280	285	240	230	C	C	C	C	C	C	C	C	225	235	260	230	260	240	275
23	E A 340	305	250	265	240	295	270	230	230	230	225	210	H 205	230	225	225	235	240	230	255	240	255	250	250
24	255	250	255	260	265	260	225	225	230	H 230	225	220	235	225	H 230	230	250	240	235	235	280	255	245	260
25	255	320	320	235	H 220	350	315	225	240	240	235	240	245	250	235	240	240	265	245	270	275	270	275	215
26	255	260	280	290	345	310	240	225	230	225	H 240	230	235	225	230	235	240	240	250	240	240	250	260	270
27	305	270	250	265	400	455	280	235	235	235	225	230	230	230	H 215	235	240	235	235	260	300	275	260	310
28	280	235	265	340	375	325	345	260	230	215	225	220	230	235	230	235	230	240	235	230	240	240	240	255
29	265	270	270	270	255	255	270	230	230	225	215	H 215	225	235	H 220	230	230	235	230	240	250	265	300	310
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	29	29	29	29	29	29	28	27	27	27	27	27	27	28	28	29	29	28	29	29	29
MED	265	280	280	270	265	285	285	240	230	230	230	230	230	230	230	235	240	240	235	245	248	255	260	265
U Q	280	305	300	308	310	322	318	258	238	235	230	235	235	240	235	240	245	248	242	260	272	265	272	278
L Q	255	265	265	260	232	265	268	230	230	225	225	220	220	225	225	235	235	230	230	235	235	240	248	250

IONOSPHERIC DATA STATION KOKUBUNJI

FEB. 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								155	125	120	120	115	120	120	120	A	A 130	B 170						
2							B	B	A 125	115	115	120	B 125	120	115	115	A 130	A						
3								B	115	115	B	115	115	120	A 125	120	120	A						
4								B 165	120	120	115	120	120	B	115	120	120	115						
5								B 165	115	115	115	B	125	120	120	115	120	A 150						
6								B 150	115	115	120	120	120	E B 135	B 125	120	120	E B 165						
7								145	130	120	120	120	115	120	A	A	A	145						
8								130	A 125	A 120	A 120	115	120	115	115	115	115	E B 175						
9								B 150	115	115	A	120	A 125	A	A	A	A	A						
10								A	110	110	110	110	A	A	120	115	A	A						
11						B		A	120	120	115	120	A	120	A 130	A 130	A 125	E B 170						
12								125	115	115	A	115	110	110	110	115	A	A						
13								130	115	115	E A 140	A	120	120	120	120	120	120						
14								125	A	A 130	A 130	A 130	120	A	A	A	A 130	A 130						
15								130	115	115	C	C	C	C	C	A	A 130	A 135						
16								135	115	A 120	115	120	125	E Y 130	125	A	A	A						
17								135	115	A 120	B 120	B 130	Y 130	B 130	120	120	120	A						
18								130	115	125	115	125	125	120	B 125	120	120	A 145						
19								135	A 130	110	115	120	120	B	A 130	A	A	120						
20							B	130	115	115	A 125	115	120	B 130	115	120	115	130						
21							B	130	115	115	115	115	115	B	B 130	120	115	125						
22							B	125	115	C	C	C	C	C	C	C	C	E A 140						
23							B	125	110	110	115	110	A 125	115	115	115	115	B 125						
24							B	115	110	A 120	A 125	115	110	115	110	110	115	A						
25							B	125	A 130	B	B	B	A	A 130	120	A 120	120	A						
26							B	120	110	110	110	110	A	120	A 135	A 125	120	120						
27							K 165	120	115	130	120	120	115	115	115	115	115	115						
28							B	120	110	A 120	110	110	110	A	A	A 120	A	A						
29							B	115	110	110	110	E B 135	B 130	115	115	115	115	A 120						
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1	25	28	27	23	24	23	20	23	21	21	19						
MED							K 165	130	115	115	115	119	120	120	120	120	120	125						
U Q								B 140	120	A 120	A 120	120	125	125	125	A 120	A 122	E B 150						
L Q								125	115	115	115	115	115	115	115	115	115	120						

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

IONOSPHERIC DATA STATION KOKUBUNJI

FEB. 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

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	B	B	B	B	B	B	B	G	G	G	125	120	125	125	G	115	110	G	B	B	B	B	B	B
2	B	B	B	B	B	B	B	G	165	G	E G 190	160	120	115	120	G	110	110	105	100	100	105	B	B
3	B	B	B	B	B	115	B	B	G	G	B	G	G	150	110	G	G	105	110	B	B	B	B	B
4	B	145	B	B	B	B	B	G	170	G	140	160	160	140	135	130	120	G	120	120	105	125	105	105
5	105	110	110	B	B	C	B	G	E G 165	G	160	B	G	G	120	125	G	110	115	B	B	B	B	B
6	B	B	B	B	B	B	B	G	G	G	G	105	G	G	125	120	130	G	B	110	120	B	105	B
7	130	B	120	B	B	B	B	G	G	G	G	G	155	130	110	110	110	G	110	B	B	B	B	B
8	B	B	B	B	B	B	B	115	105	175	105	105	G	G	G	G	G	G	105	145	115	B	B	B
9	B	B	B	B	B	B	B	E G 195	G	G	110	130	130	105	100	120	115	115	105	100	100	100	105	130
10	130	125	120	110	105	B	B	140	140	125	125	125	125	100	130	120	115	100	105	105	B	B	B	B
11	B	B	B	B	B	B	B	105	150	130	120	130	120	G	120	115	120	G	B	B	110	105	105	110
12	105	100	B	B	B	B	B	G	G	G	115	G	G	G	110	100	120	115	110	B	105	100	B	B
13	B	B	B	B	B	B	B	G	150	120	110	100	130	150	125	125	120	G	115	110	120	B	B	B
14	B	B	B	B	B	B	B	G	120	185	170	E G 190	G	120	120	120	120	120	B	B	B	B	B	B
15	105	115	105	B	B	B	B	G	G	G	C	C	C	C	C	120	115	115	B	B	B	B	110	115
16	105	105	110	B	B	B	B	110	G	110	G	110	105	110	105	120	120	115	B	B	110	110	B	B
17	B	B	B	110	B	B	B	G	G	110	110	G	G 110	G	G	G	120	E G 180	B	120	B	B	110	B
18	B	B	B	B	B	B	B	G	G	E G 210	G	G	G	G	G	110	105	105	100	100	100	B	B	B
19	B	B	B	B	B	B	B	G	110	G	G	G	G	B	120	115	115	105	100	100	B	B	110	B
20	B	B	B	B	B	B	B	G	G	G	110	130	G	G	110	G	140	G	B	150	B	B	B	130
21	B	B	B	B	B	B	175	170	G	G	130	125	120	130	G	G	G	130	B	B	B	B	110	105
22	105	105	105	110	B	110	110	G	G	C	C	C	C	C	C	C	C	110	110	105	105	105	105	110
23	105	105	105	105	105	105	105	G	120	145	120	120	115	G	G	110	G	105	100	B	110	B	B	B
24	B	B	B	B	B	B	B	G	G	110	110	G	G	G	140	G	125	150	B	B	B	B	B	B
25	B	B	B	B	B	B	B	G	110	B	130	120	125	120	G	110	105	100	105	B	B	B	110	B
26	B	B	B	B	B	B	160	G	G	G	G	130	120	G	120	120	G	G	115	B	B	B	110	B
27	B	110	B	B	B	B	K 160	G	G	G	G	G	G	G	G	G	G	G	B	B	105	B	B	110
28	105	B	B	B	B	B	B	G	G	110	G	G	G	100	105	100	95	95	95	100	B	120	B	100
29	B	B	B	B	B	B	B	G	G	G	G	G	G	G	110	G	100	105	100	B	B	B	B	B
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	9	9	7	4	2	3	5	6	11	11	17	16	14	13	19	19	21	19	18	13	13	8	11	9
MED	105	110	110	110	105	110	160	120	130	122	120	124	122	120	120	120	115	110	105	105	105	105	110	110
U Q	118	120	120	110		115	168	170	165	175	135	130	130	135	125	120	120	115	110	120	112	115	110	122
L Q	105	105	105	108		105	108	110	110	110	110	115	120	108	110	110	110	105	100	100	102	102	105	105

IONOSPHERIC DATA STATION KOKUBUNJI

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

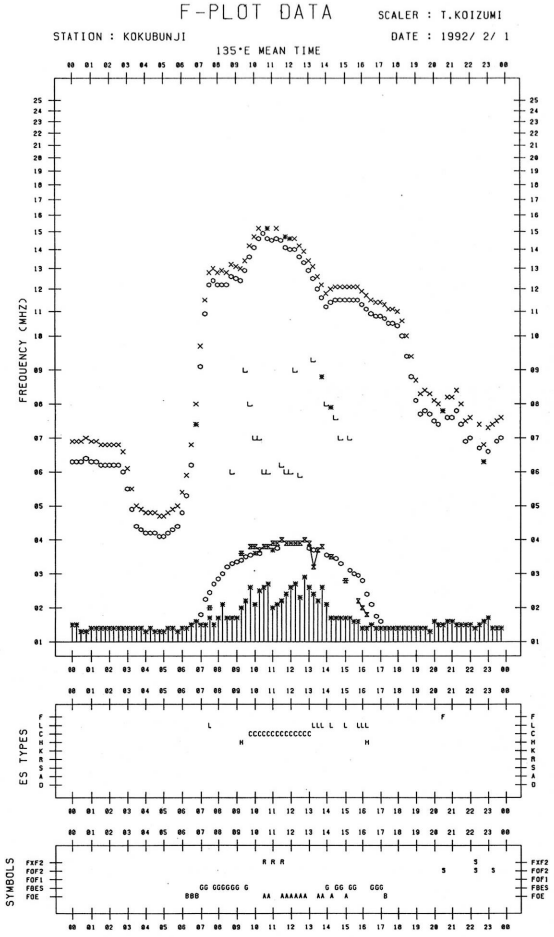
LAT. 35° 42.4'N LON. 139° 29.3'E SWEEP 1.0MHZ TO 25.0MHZ IN 24.0SEC IN MANUAL SCALING

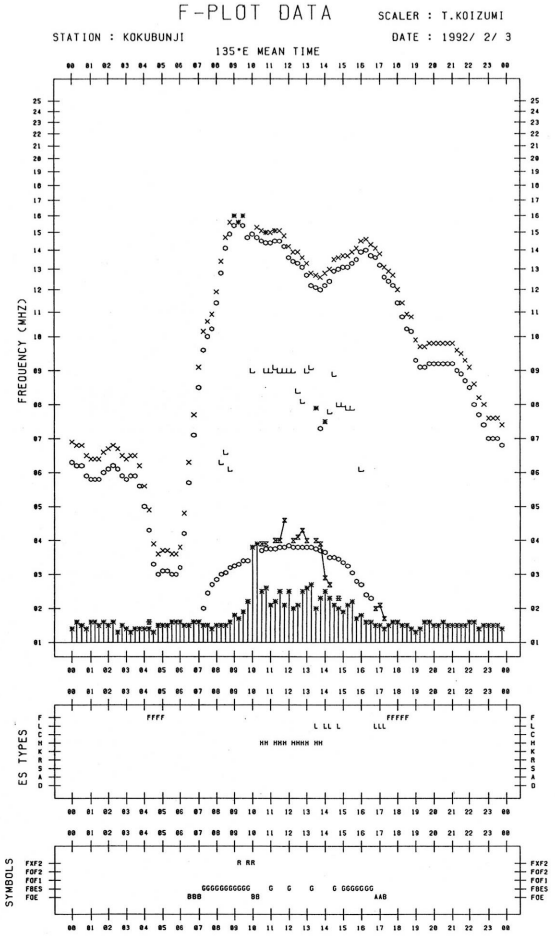
HD	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1											C 1	C 1	C 1	C 1		L 1	L 2							
2							K 1		HL 11		H 1	H 1	C 1	C 2	C 1		L 2	L 2	F 3	F 3	F 3	F 1		
3						F 1								H 1	L 2			L 2	F 1					
4		F 1							H 1		H 1	H 1	H 1	H 1	H 2	H 1	C 2		F 2	F 1	F 5	FF 12	F 3	F 2
5	F 3	F 1	F 1						H 1		H 1				C 1	C 1		L 1	F 1					
6												L 1			C 1	C 2	H 1			F 2	F 1		F 2	
7	F 1		F 1										H 1	H 1	C 1	L 2	L 2		F 1					
8								L 1	L 2	HL 12	L 2	L 1							F 1	FF 21	F 2			
9								H 1			C 2	HL 21	HL 21	LH 31	L 3	CL 33	CL 44	CL 44	F 2	F 5	F 3	F 2	F 2	F 6
10	F 2	F 2	F 4	F 2	F 2			C 1	H 1	H 2	H 2	H 1	CL 12	L 3	HL 11	CL 21	C 2	L 2	F 1	F 1				
11						K 1		L 3	HL 11	HL 21	C 1	C 1	C 1		L 1	L 1	L 1				F 1	F 2	F 3	F 2
12	F 2	F 2									C 1				L 1	L 1	C 2	L 1	F 2		F 3	F 2		
13									H 2	C 1	L 2	L 2	H 1	H 1	C 1	C 1	C 2		F 3	F 3	F 1			
14									L 2	HL 11	HL 11	HL 11		L 1	LH 11	L 1	L 1	L 1						
15	F 1	F 1	F 1													C 1	LL 11	L 1					F 1	F 1
16	F 1	F 2	F 1					L 1		L 1		L 1	L 1	L 1	L 1	C 1	C 1	L 2			F 3	F 2		
17				F 1						L 1	L 1		L 1				C 2	HL 11		F 1			F 2	
18										HL 11						L 1	L 1	L 1	F 1	F 1	F 1			
19									L 1						L 1	C 1	C 1	L 1	F 2	F 2			F 1	
20											L 1	H 1			L 1		HL 11			F 1				F 1
21							H 1	H 1			H 1	C 1	C 2	C 1				C 2					F 1	F 2
22	F 1	F 1	F 1	F 1		F 1	L 1											L 2	F 1	F 3	F 3	F 4	F 3	F 1
23	F 4	F 4	F 3	F 2	F 2	F 1	L 2		L 1	H 1	H 1	C 1	L 1			L 1		L 1	F 1		F 1			
24										L 1	L 1				H 1		C 2	HL 11						
25									L 1		C 1	C 1	C 1	L 1		L 1	L 1	L 2	F 1				F 1	
26							H 1					C 1	C 1		L 1	L 1			F 1				F 1	
27		F 1					K 1														F 1			FF 21
28	F 2									L 1				L 2	L 2	LL 22	L 3	L 4	F 2	R 1		F 1		F 2
29															L 1		L 2	L 1	F 1					
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

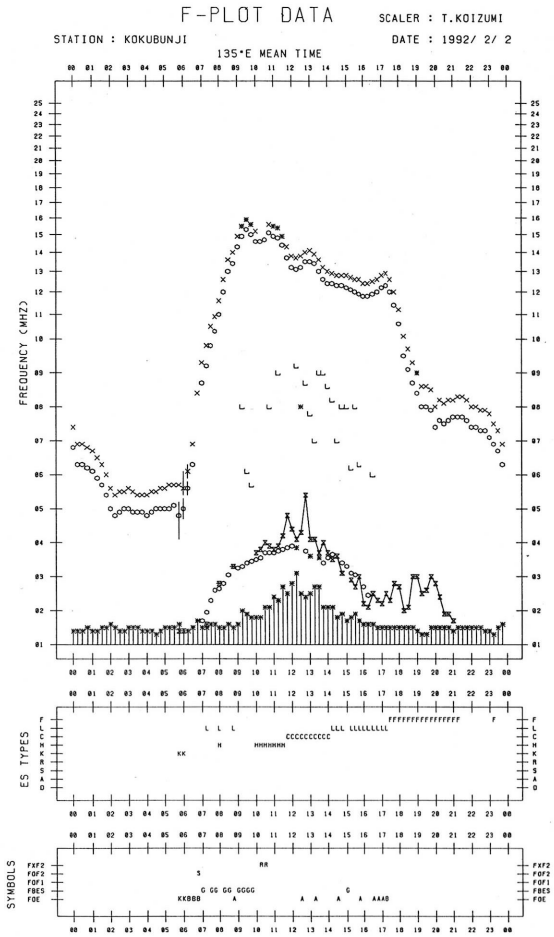
FEB. 1992 TYPES OF ES COMMUNICATIONS RESEARCH LABORATORY, JAPAN

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/ 2/ 1
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FQF2
FQF1
FBES
FQE


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 2/ 3
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FQF2
FQF1
FBES
FQE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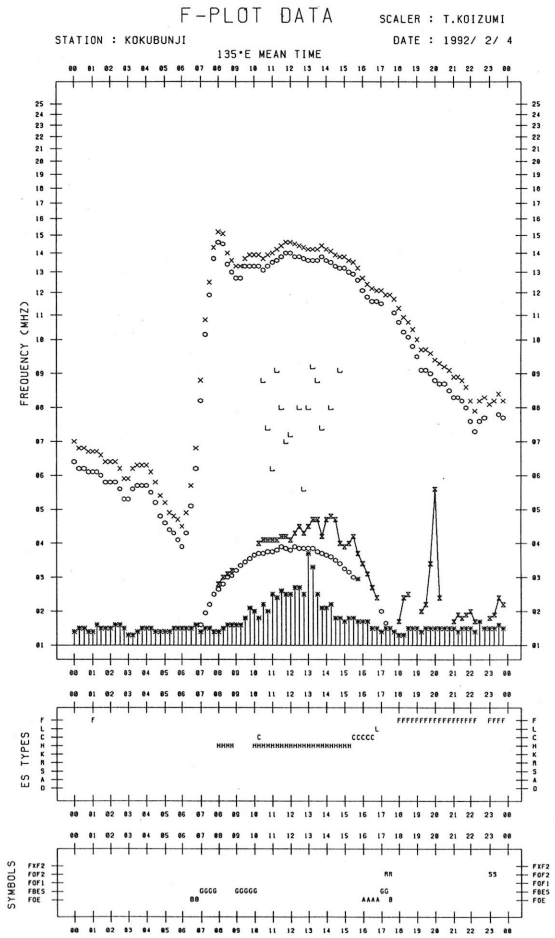
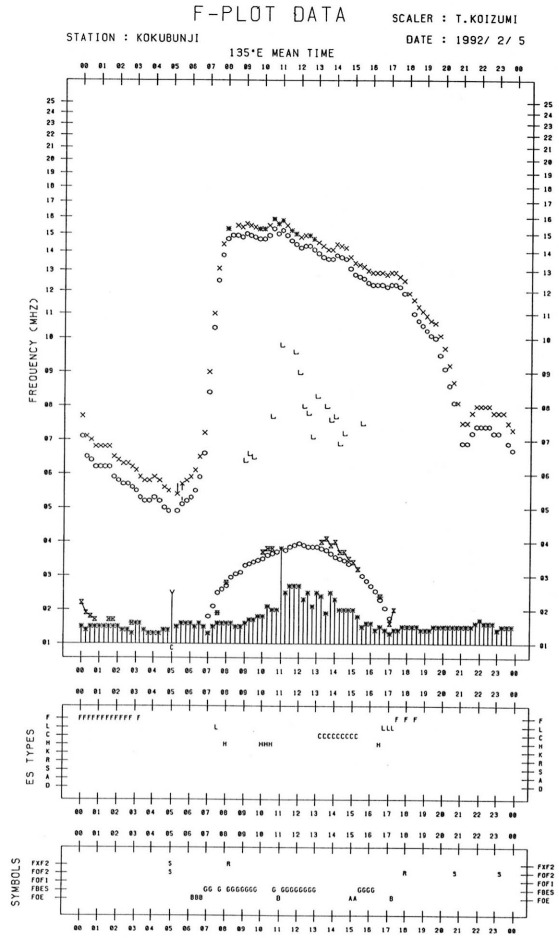
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 2/ 2
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FQF2
FQF1
FBES
FQE


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 2/ 4
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FQF2
FQF1
FBES
FQE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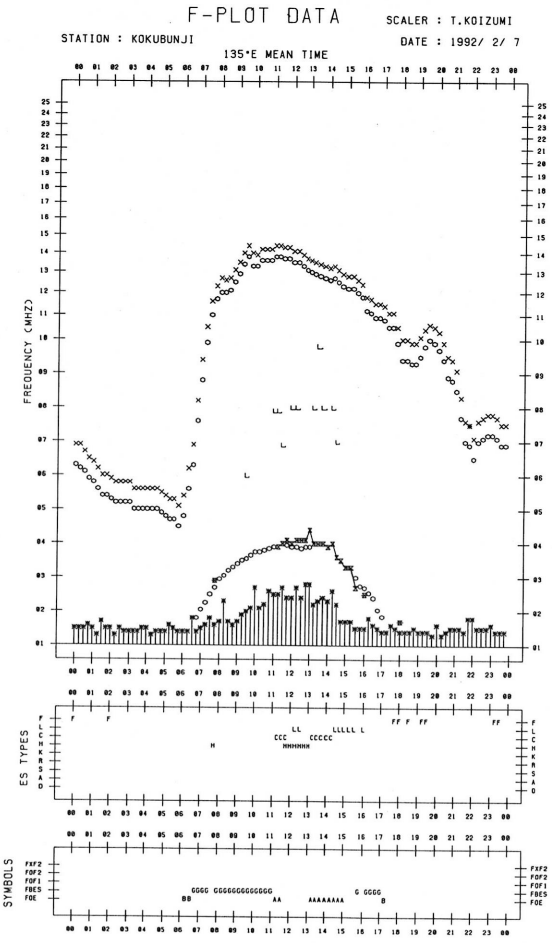
STATION : KOKUBUNJI
DATE : 1992/ 2/ 5
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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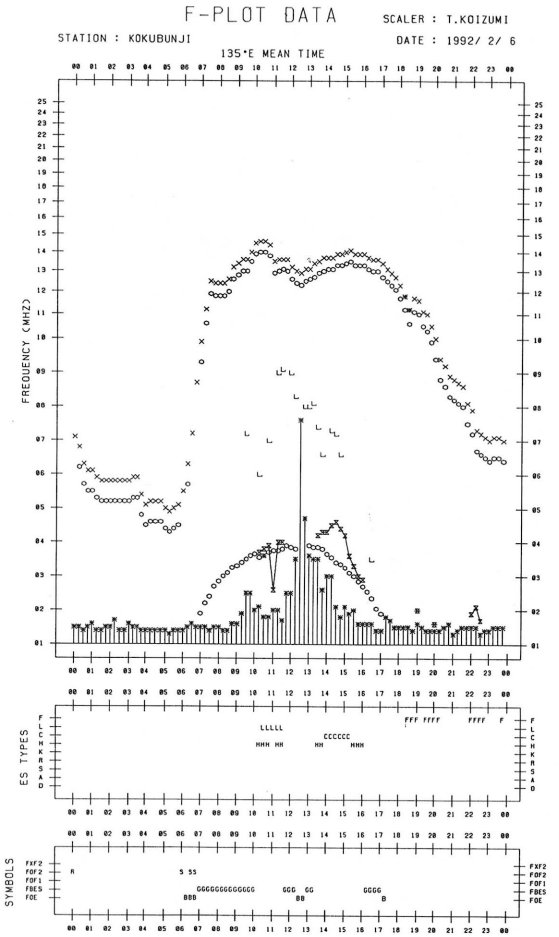
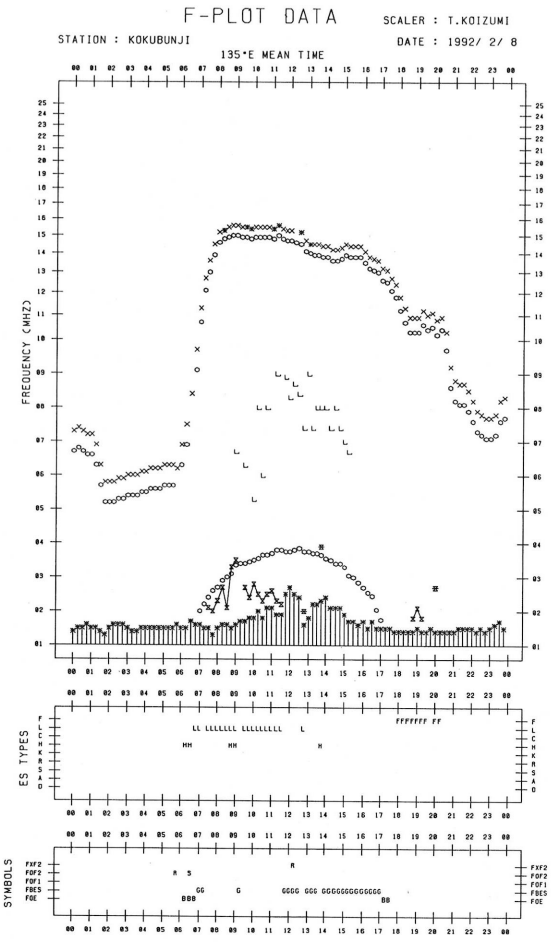
STATION : KOKUBUNJI
DATE : 1992/ 2/ 7
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 2/ 6
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
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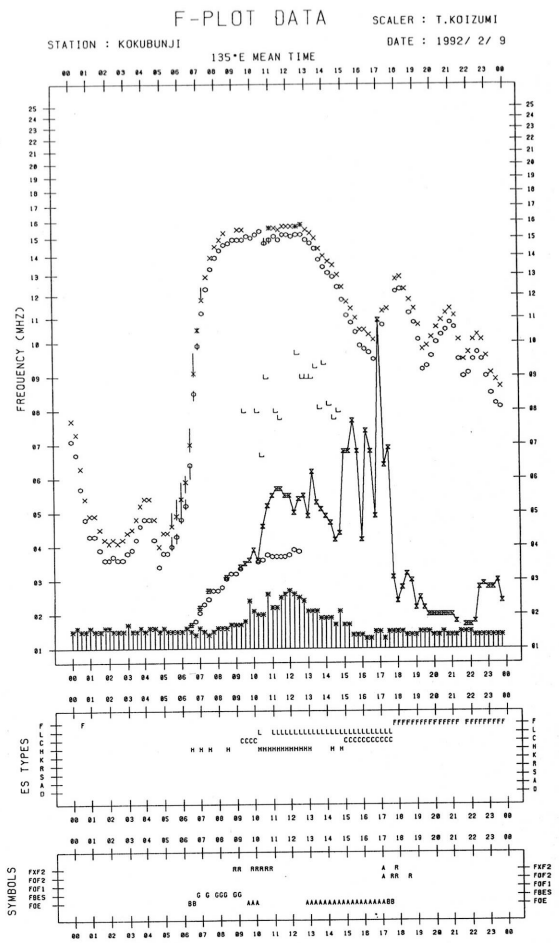
STATION : KOKUBUNJI
DATE : 1992/ 2/ 8
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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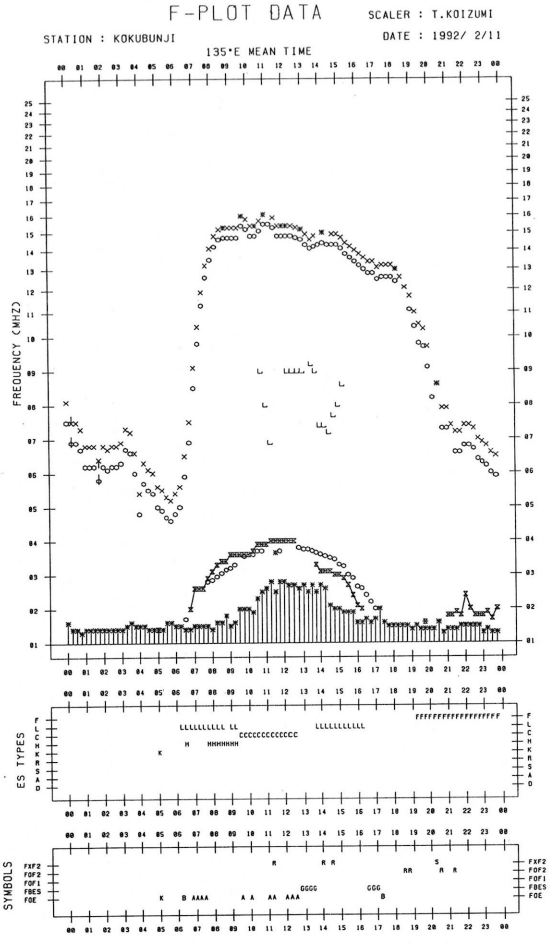
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 2/ 9
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE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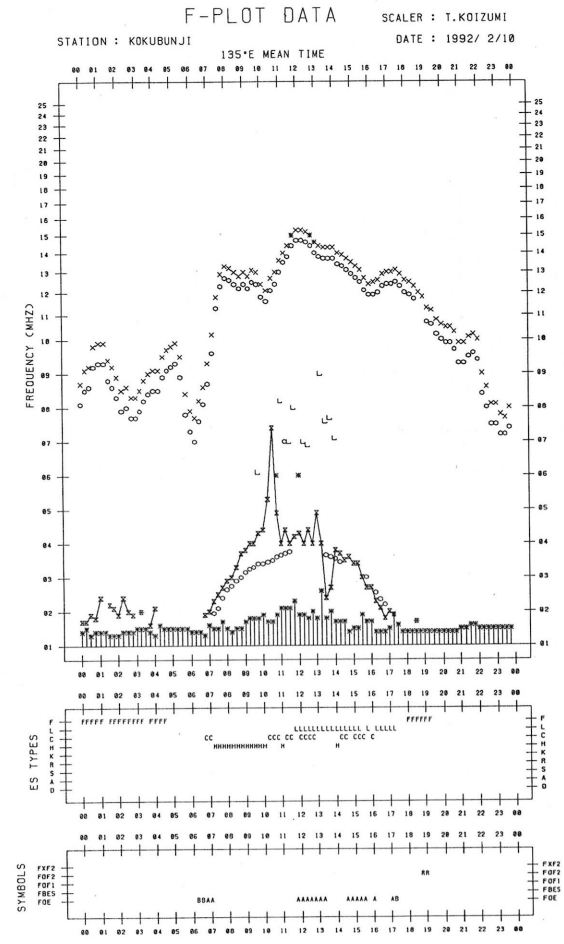
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 2/11
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE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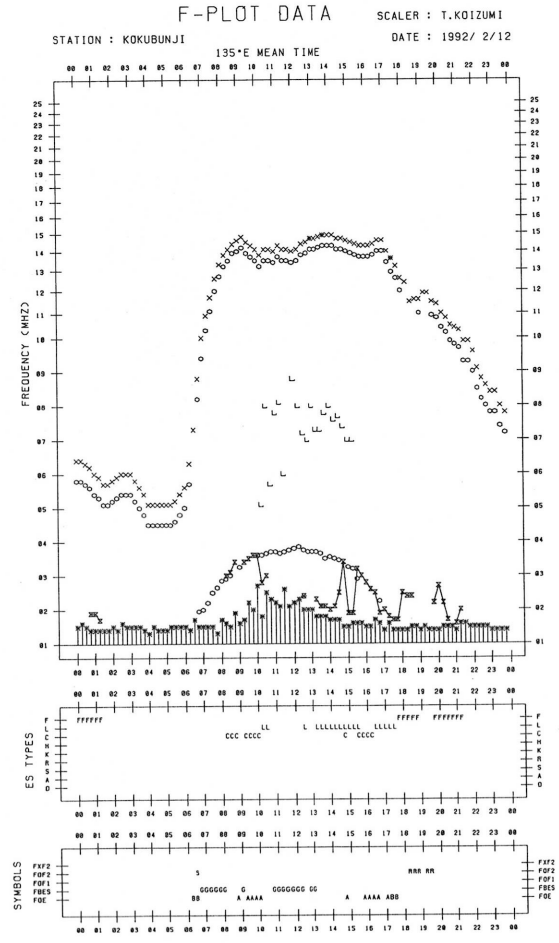
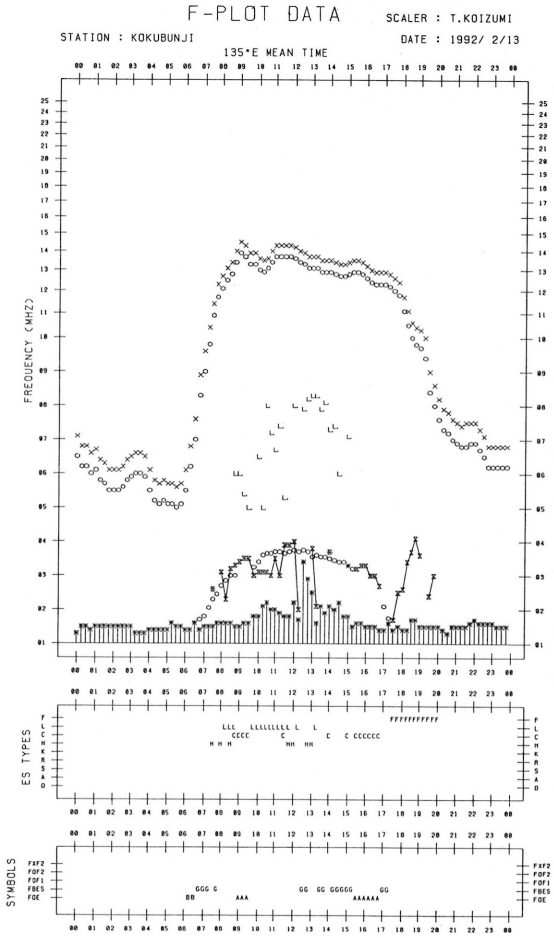
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 2/10
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 2/12
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE


F-PLOT DATA
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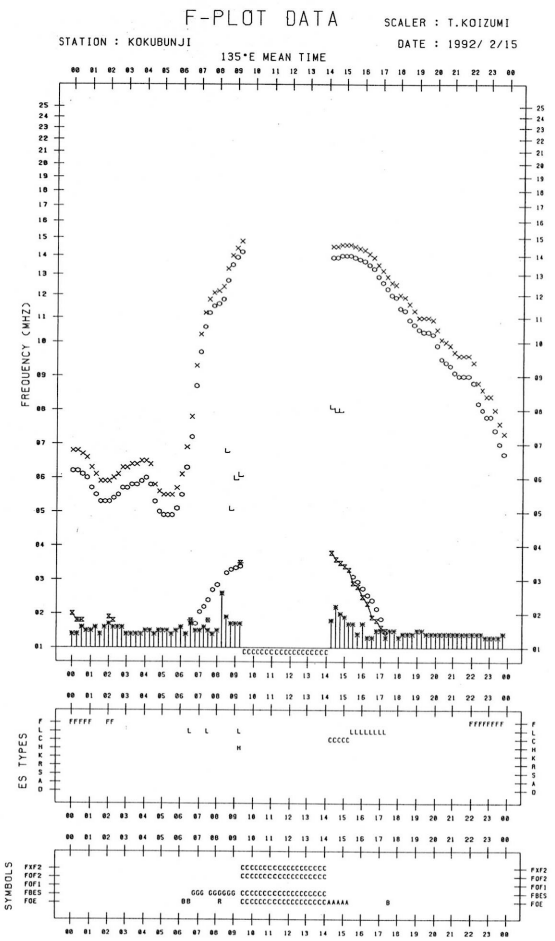
STATION : KOKUBUNJI
DATE : 1992/ 2/13
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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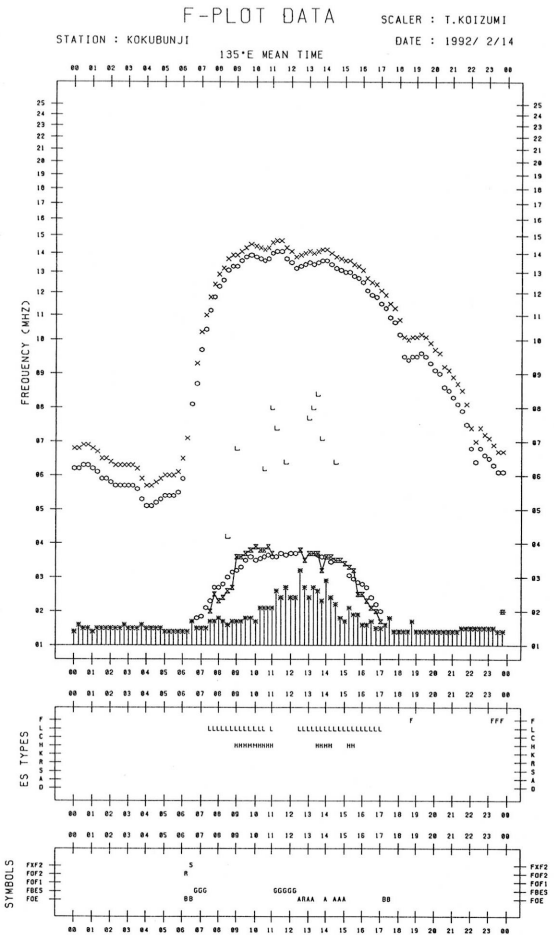
STATION : KOKUBUNJI
DATE : 1992/ 2/15
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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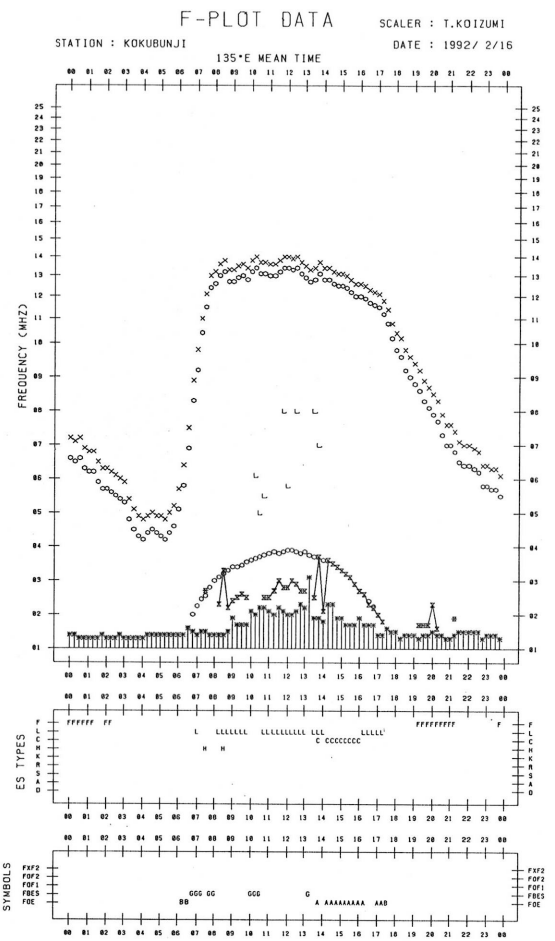
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 2/14
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
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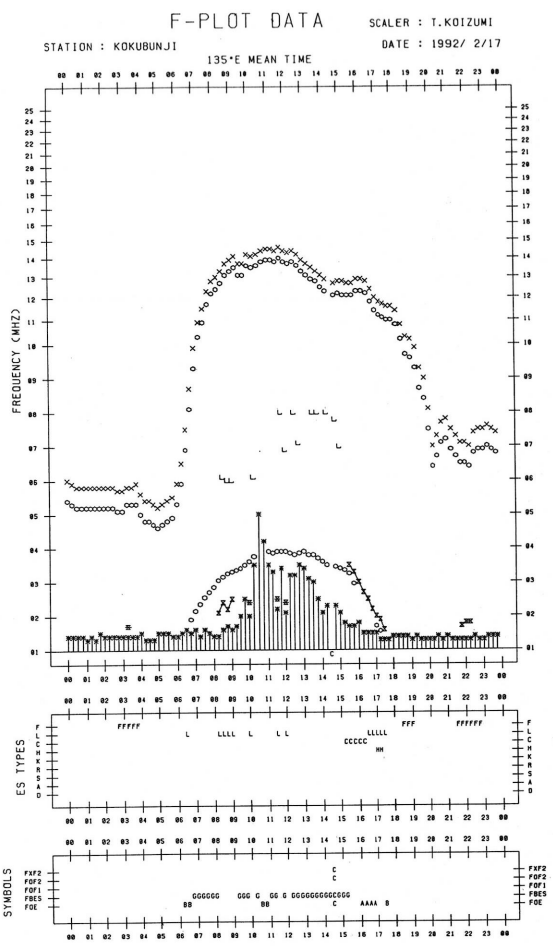
STATION : KOKUBUNJI
DATE : 1992/ 2/16
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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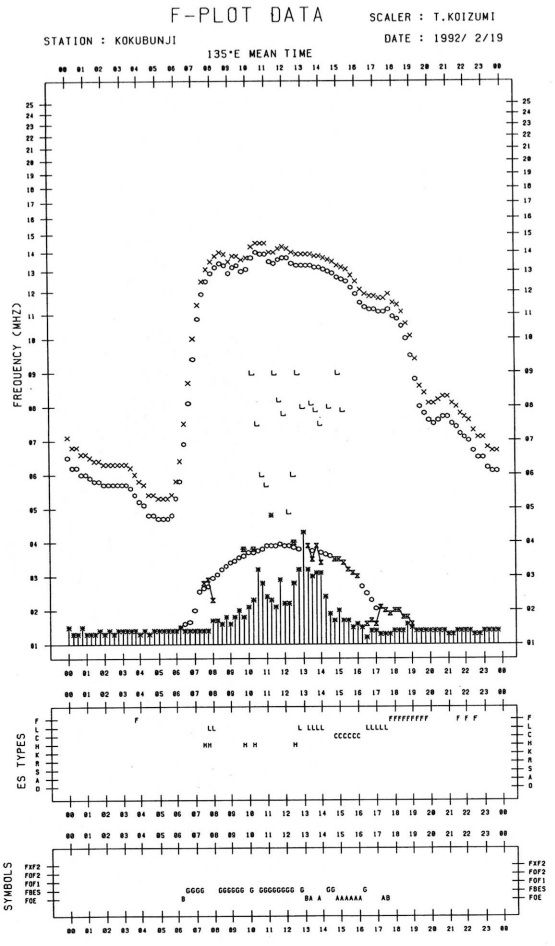
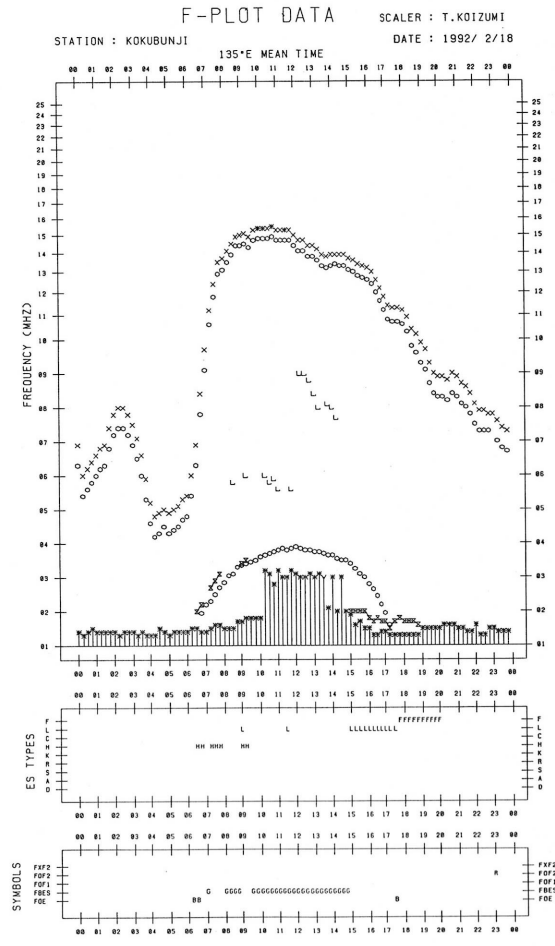
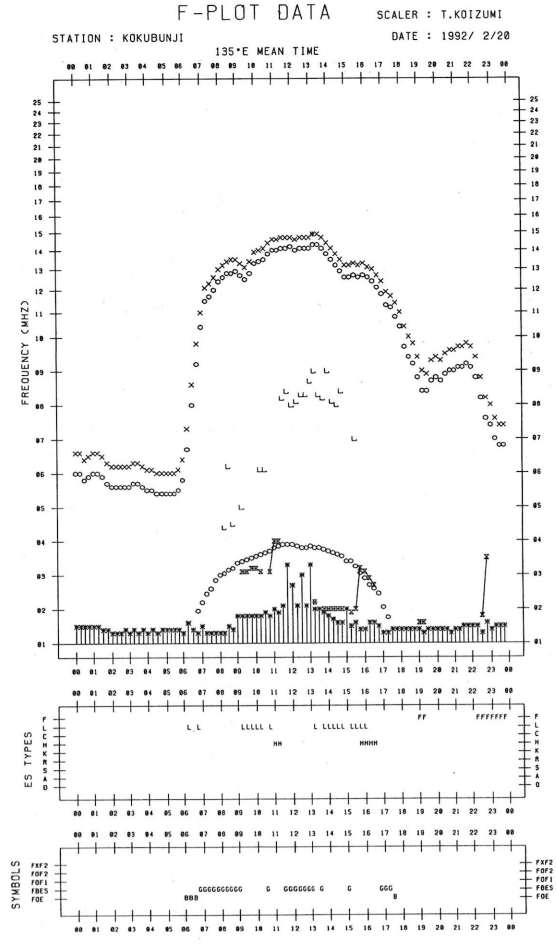
STATION : KOKUBUNJI
DATE : 1992/ 2/17
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 2/19
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 2/18
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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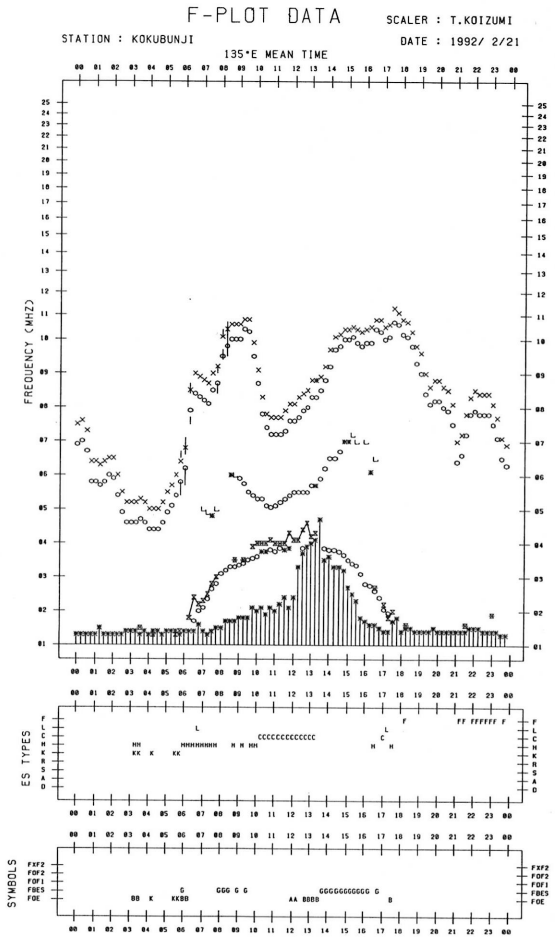
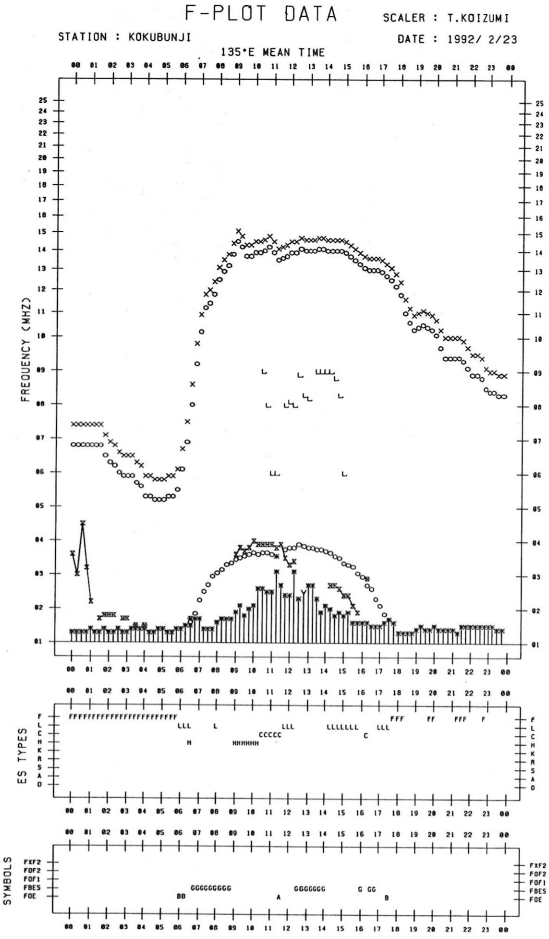
STATION : KOKUBUNJI
DATE : 1992/ 2/20
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 2/21
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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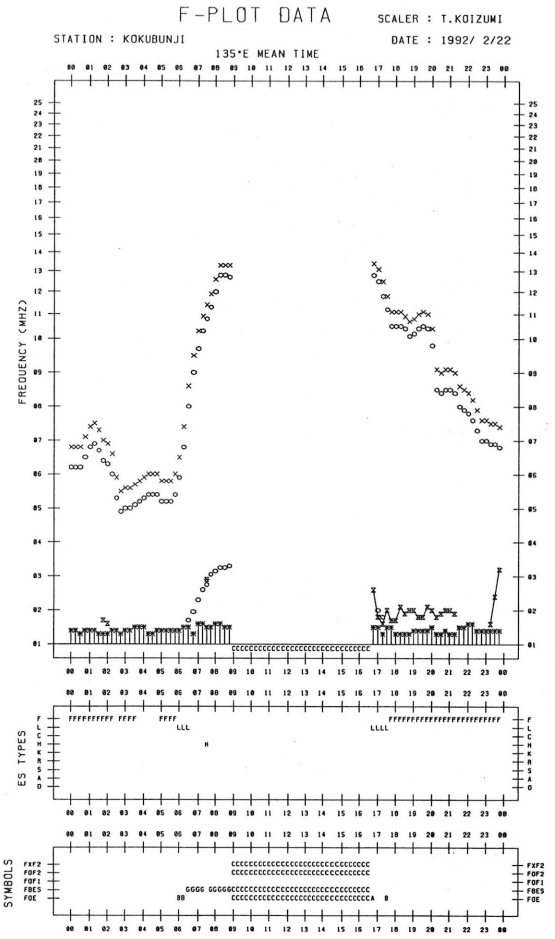
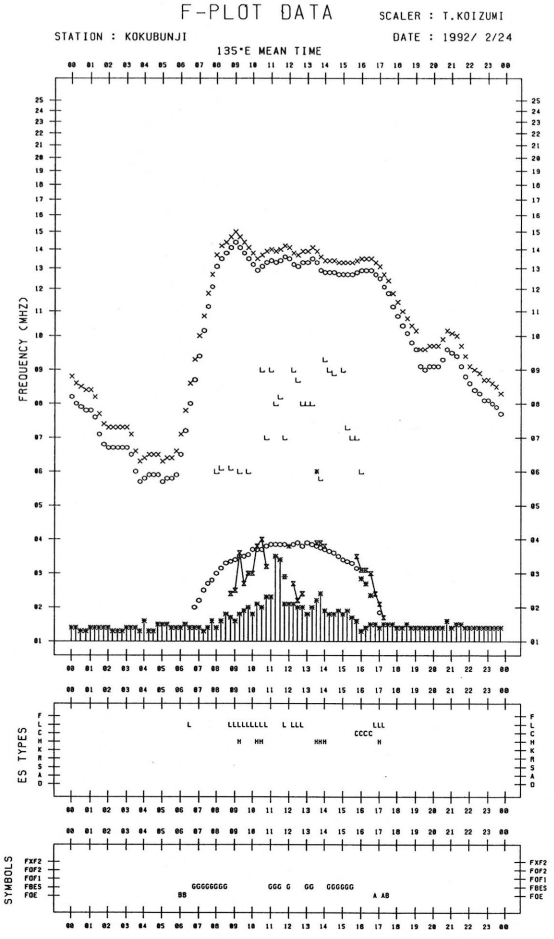
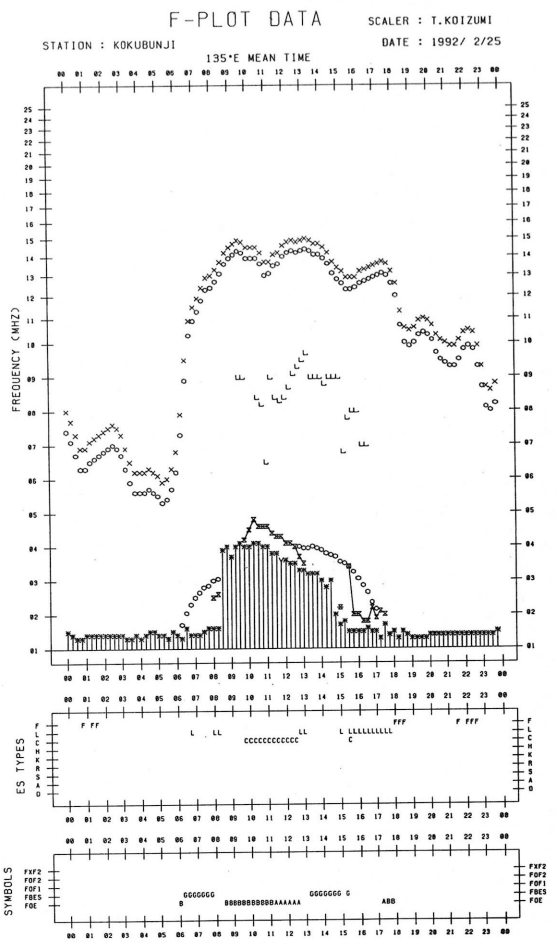
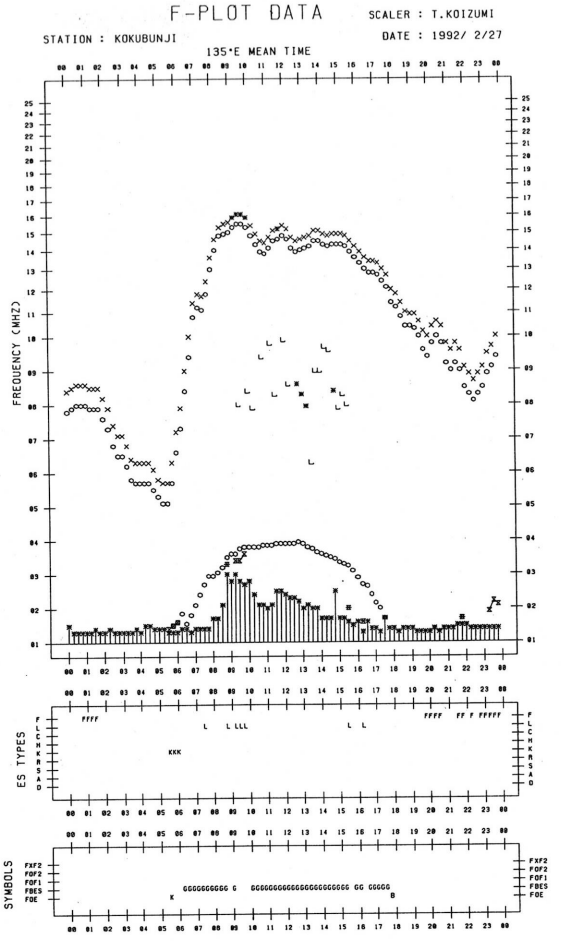
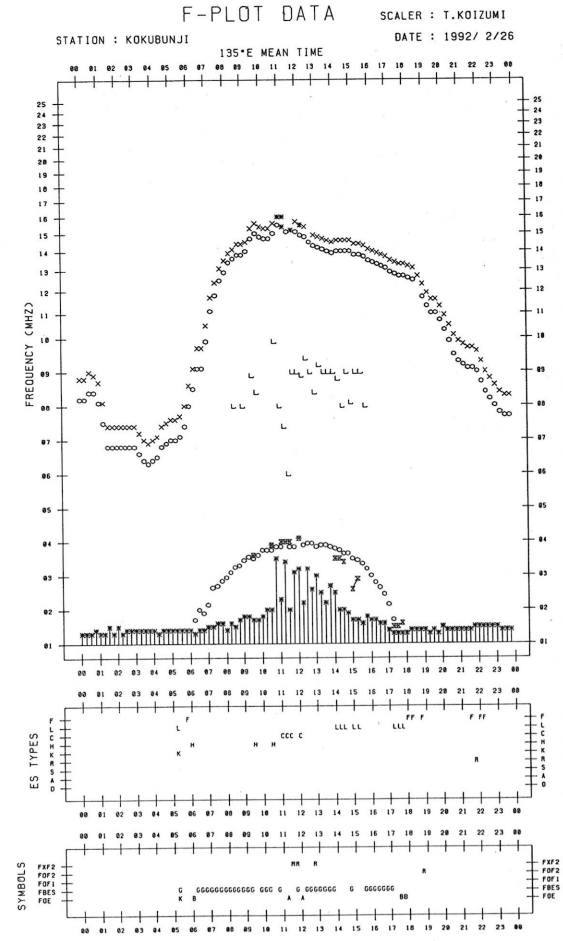
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 2/23
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

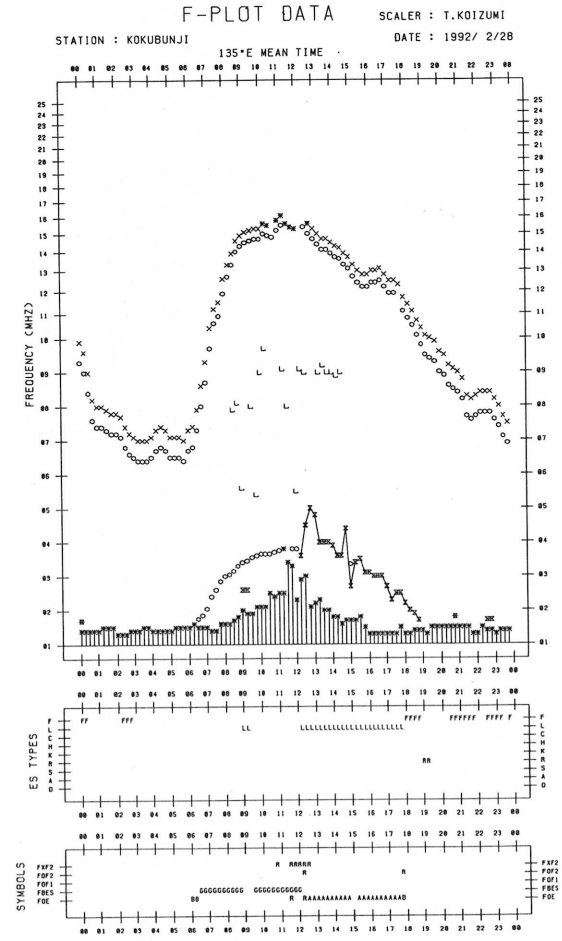

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 2/22
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

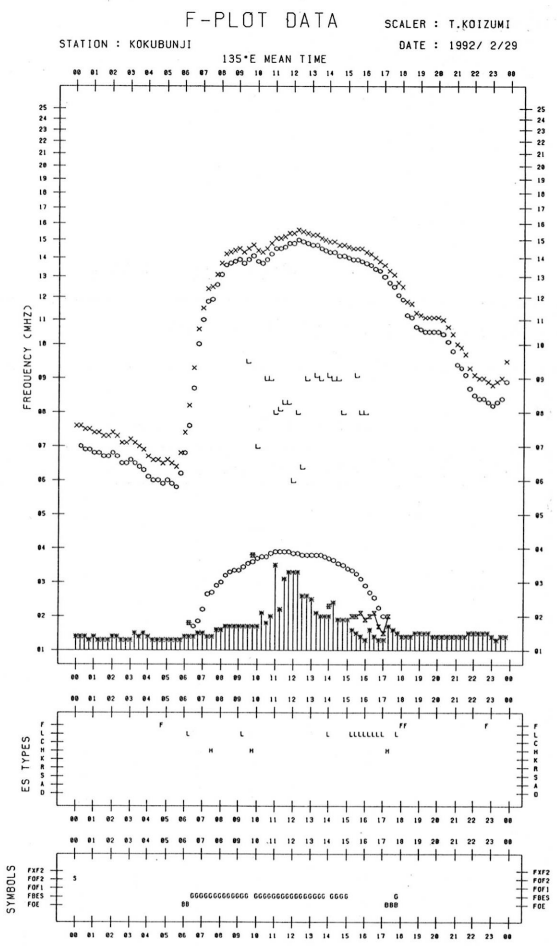

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 2/24
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 2/25
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 2/27
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 2/26
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 2/28
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 2/29
135*E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

B. Solar Radio Emission

B1. Daily Data at Hiraiso

200 MHz

Hiraiso February 1992

Single-frequency total flux observations at 200 MHz										
	Flux density: 10^{-22}Wm^{-2}Hz^{-1}					Variability: 0 to 3				
UT	00-03	03-06	06-09	21-24	Day	00-03	03-06	06-09	21-24	Day
Date										
1	B	B	B	15	B	3	3	3	1	3
2	B	B	B	B	B	1	1	1	1	1
3	B	B	B	B	B	2	2	2	2	2
4	B	B	B	B	B	3	3	3	3	3
5	B	B	B	B	B	3	3	3	3	3
6	B	B	B	B	B	3	2	2	2	3
7	B	B	B	B	B	2	2	2	2	2
8	B	B	B	B	B	2	2	2	1	2
9	B	B	B	B	B	1	1	1	3	1
10	B	B	B	B	B	3	2	3	1	3
11	B	B	B	12	B	1	1	1	0	1
12	12	11	11	12	11	0	0	0	0	0
13	12	12	12	12	12	0	0	0	0	0
14	12	11	12	B	12	0	0	0	1	0
15	B	B	B	B	B	1	1	2	3	1
16	B	B	B	18	B	3	2	2	1	2
17	B	B	B	21	B	3	3	2	0	2
18	18	19	B	16	B	0	0	2	0	0
19	B	B	B	15	B	1	1	1	0	1
20	12	14	13	15	13	0	0	0	0	0
21	15	14	14	14	15	0	0	1	0	0
22	12	13	B	12	B	0	0	2	0	0
23	B	B	B	B	B	0	1	1	1	1
24	B	B	B	B	B	2	1	2	3	2
25	B	B	B	B	B	3	3	3	3	3
26	B	B	B	B	B	3	3	3	3	3
27	B	B	B	B	B	3	3	3	3	3
28	B	B	B	18	B	3	3	3	0	3
29	15	12	12	14	14	0	0	0	0	0

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

B. Solar Radio Emission

B2. Outstanding Occurrences at Hiraiso

Hiraiso February 1992

Single-frequency observations

Normal observing period: 2130 - 0820 U.T. (sunrise to sunset)

FEB. 1992	FREQ. (MHz)	TYPE	START TIME (U.T.)	TIME OF MAXIMUM (U.T.)	DUR. (MIN.)	FLUX DENSITY (10^{-22}Wm^{-2}Hz^{-1}) PEAK	FLUX DENSITY (10^{-22}Wm^{-2}Hz^{-1}) MEAN	POLARIZATION REMARKS
2	200	43 NS	0210	0426	350D	80	35	WR
	100	43 NS	0300	0332	240	150	40	WR
	100	44 NS	2140E	0149	620D	350	50	SL
	200	44 NS	2140E	0535	620D	200	60	SL
	200	46 C	2246.4	2246.6	2.0	120	70	WL
3	100	44 NS	2140E	0501	620D	600	80	SL
	200	44 NS	2140E	0520	620D	700	150	SL
4	100	44 NS	2140E	0101	620D	750	450	SL
	200	44 NS	2140E	0120	620D	600	200	SL
5	200	44 NS	2140E	0107	620D	400	90	SL
	100	44 NS	2140E	0114	620D	700	150	SL
6	200	46 C	0326.6	0326.8	2.0	950	400	WR
	200	44 NS	2140E	2343	620D	60	30	ML
	100	44 NS	2140E	0110	620D	30	10	ML
7	200	44 NS	2140E	0127	620D	80	30	WL
	100	44 NS	2140E	0656	620D	100	20	WL
8	200	44 NS	2140E	0218	620D	80	15	ML
9	100	44 NS	2140E	2253	620D	400	10	WL
	200	44 NS	2140E	0040	620D	150	50	SL
10	200	44 NS	2140E	0025	620D	70	20	ML
11	100	48 C	0422.0	0422.7	8.0	19800	4000	WL
	200	48 C	0422.6	0422.8	4.3	10000	2000	WR
12	200	8 S	0403.3	0403.5	0.6	1500	-	0
14	200	46 C	0100.6	0101.5	4.0	350	80	0
	200	44 NS	2140E	0638	620D	70	20	WR
15	200	44 NS	2130E	0027	640D	200	90	SL
	100	44 NS	2130E	0139	640D	350	10	SL
17	200	43 NS	0022	0257	470D	1500	200	SL
	100	43 NS	0022	0355	470D	1300	500	SL
	200	46 C	0117.5	0118.8	4.6	110	70	0
18	100	43 NS	0325	0724	280D	460	100	SL
	200	43 NS	0542	0703	130D	500	200	ML
19	200	43 NS	0026	0319	470D	100	30	WL
	100	43 NS	0214	0514	350D	200	40	ML
20	200	42 SER	0228.6	0232.2	4.0	350	-	0
	200	42 SER	0742.0	0747.3	9.3	2100	-	0
	200	46 C	2307.0	2343.3	10.0	300	70	WR
22	200	46 C	0200.7	0201.9	3.3	160	50	ML
	200	43 NS	0613	0710	120D	80	20	0
23	200	43 NS	0240	0330	330D	60	10	WR
	200	44 NS	2120E	0610	650D	100	30	SR
	200	46 C	2242.2	2244.6	3.0	2000	250	WL
	100	46 C	2242.4	2242.9	3.0	260	100	WL
24	200	44 NS	2120E	0233	650D	1500	400	SR
	100	44 NS	2120E	0400	650D	750	400	SR
	200	48 C	2351.6	0052.7	113	2300	400	ML
25	100	48 C	0006	0054.7	87	1300	800	SL
	100	44 NS	2120E	2135	650D	900	70	SR
	200	44 NS	2120E	2307	650D	500	100	SR
26	100	44 NS	2120E	0713	650D	650	350	SR
	200	44 NS	2120E	0722	650D	800	200	SR
27	200	46 C	0026.7	0027.1	1.5	3000	1200	WR
	200	46 C	0808.0	0808.6	1.2	7000	3000	SR
	200	44 NS	2120E	2335	650D	600	150	SR
	100	44 NS	2120E	0009	650D	700	10	MR

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)

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

C. RADIO PROPAGATION

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

FEB 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	6	9	14	23	24	35	34	32	33	21	24	28	17	-2	-5	-8	ES -26	ES -26	ES -26	6	8	11	7
2	6	6	8	13	22	25	25	25	25	32	15	22	11	15	-11	ES -26	-11	20	-11	ES -26	12	12	2	10
3	ES -26	-2	7	15	22	24	25	25	28	24	34	27	35	27	-11	ES -26	ES -26	-11	ES -26	ES -26	11	13	7	5
4	-3	3	9	15	22	27	31	29	25	27	27	26	25	10	-17	ES -26	ES -26	ES -26	-17	-11	9	8	5	0
5	-2	2	8	16	19	26	25	33	30	30	27	31	30	15	-8	-11	ES -17	9	-13	-2	-3	8	8	2
6	-5	1	7	-7	14	20	24	25	30	20	30	14	4	-11	ES -22	ES -26	ES -26	0	9	15	10	3	4	0
7	1	5	C	C	C	20	25	30	26	21	32	17	-5	0	-1	-11	-11	15	22	17	5	11	7	2
8	4	8	14	15	20	28	34	25	25	34	35	31	24	9	-22	ES -26	ES -17	ES -17	ES -17	-17	11	11	8	8
9	2	11	12	20	20	24	28	28	25	24	30	30	12	22	25	24	26	16	20	20	13	14	10	2
10	5	2	8	17	16	23	32	30	25	32	29	28	25	12	8	8	ES -26	12	30	18	15	15	5	8
11	1	2	10	15	15	25	25	30	36	25	25	22	16	16	-17	-5	ES -26	-5	ES -26	ES -26	10	9	6	7
12	2	4	5	14	18	24	25	30	28	24	15	31	20	5	-2	-11	ES -26	20	15	2	14	12	8	1
13	2	11	7	14	26	19	30	ES -11	ES -11	32	23	23	10	15	-26	ES -26	-17	27	8	5	20	15	12	8
14	5	3	9	12	23	30	25	32	25	22	27	22	15	-5	-17	ES -26	ES -26	ES -26	14	15	12	1	2	-5
15	5	5	2	10	16	23	25	35	30	30	30	15	18	6	5	-17	ES -26	-8	ES -26	ES -26	10	ES -26	5	6
16	7	2	9	7	21	21	25	22	21	20	26	25	-5	-5	-17	ES -26	ES -26	-11	-20	ES -26	8	13	7	1
17	2	ES -26	8	10	20	20	24	33	26	25	21	27	22	23	ES -26	ES -26	-17	22	-17	ES -17	22	10	5	9
18	5	-4	2	9	19	22	25	25	32	25	25	12	5	-13	-3	ES -26	ES -26	27	11	11	8	13	5	1
19	1	4	10	-17	15	24	25	27	27	23	25	25	15	-4	-11	ES -26	ES -26	5	11	17	10	2	5	2
20	-4	1	6	10	18	30	24	25	29	24	26	21	22	17	-5	-11	ES -26	ES -26	ES -26	ES -26	4	18	14	8
21	4	5	1	5	14	19	22	21	19	26	17	25	30	30	15	22	17	-9	-1	-5	1	2	-3	0
22	-11	-11	2	10	24	25	22	27	32	24	25	21	25	23	4	1	-4	5	9	1	14	9	1	2
23	4	0	3	15	20	24	26	25	35	24	24	20	19	21	15	-7	-3	30	4	10	11	7	1	1
24	-5	-2	3	8	19	22	25	30	30	30	27	24	31	15	0	ES -26	-17	30	15	11	11	6	2	ES -26
25	ES -26	ES -26	-14	14	21	22	28	28	25	25	28	28	29	25	20	8	-8	8	22	14	10	10	-2	-1
26	-6	-17	-3	11	20	20	25	25	30	25	27	28	25	22	25	20	16	25	ES -26	ES -26	14	8	-2	ES -26
27	-9	-8	3	10	16	24	21	33	32	23	19	9	20	17	0	-8	-5	10	-17	-13	8	3	-2	-4
28	-5	-4	3	8	14	21	25	21	31	27	27	30	25	2	4	-1	-5	25	-6	10	10	10	2	-1
29	0	2	5	10	15	20	22	28	28	30	37	25	8	5	0	-4	ES -26	-17	-17	-2	-4	2	-2	0
CNT	29	29	28	28	28	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29
MED	1	2	7	12	20	24	25	28	28	25	27	25	20	15	-2	-11	US -17	8	-6	-2	10	9	5	2
UD	6	8	10	16	23	28	32	33	32	32	34	31	30	25	20	20	16	27	22	17	15	15	11	8
LD	-11	-17	1	5	14	20	22	21	21	21	17	14	4	-5	ES -22	ES -26	ES -26	ES -26	ES -26	ES -26	1	2	-2	-5

C. Radio Propagation

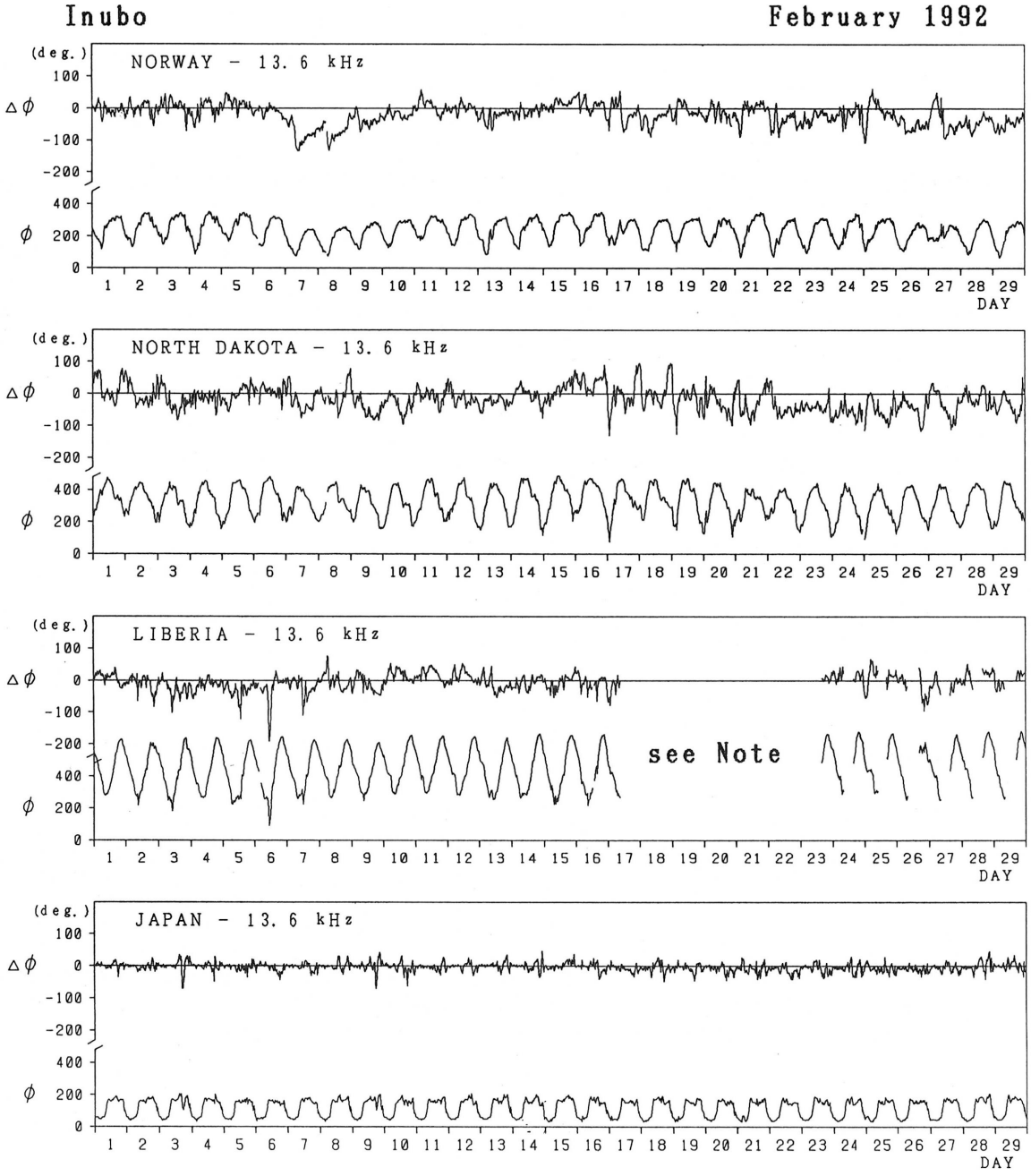
C2. Radio Propagation Quality Figures at Hiraiso

Hiraiso — Time in U.T.

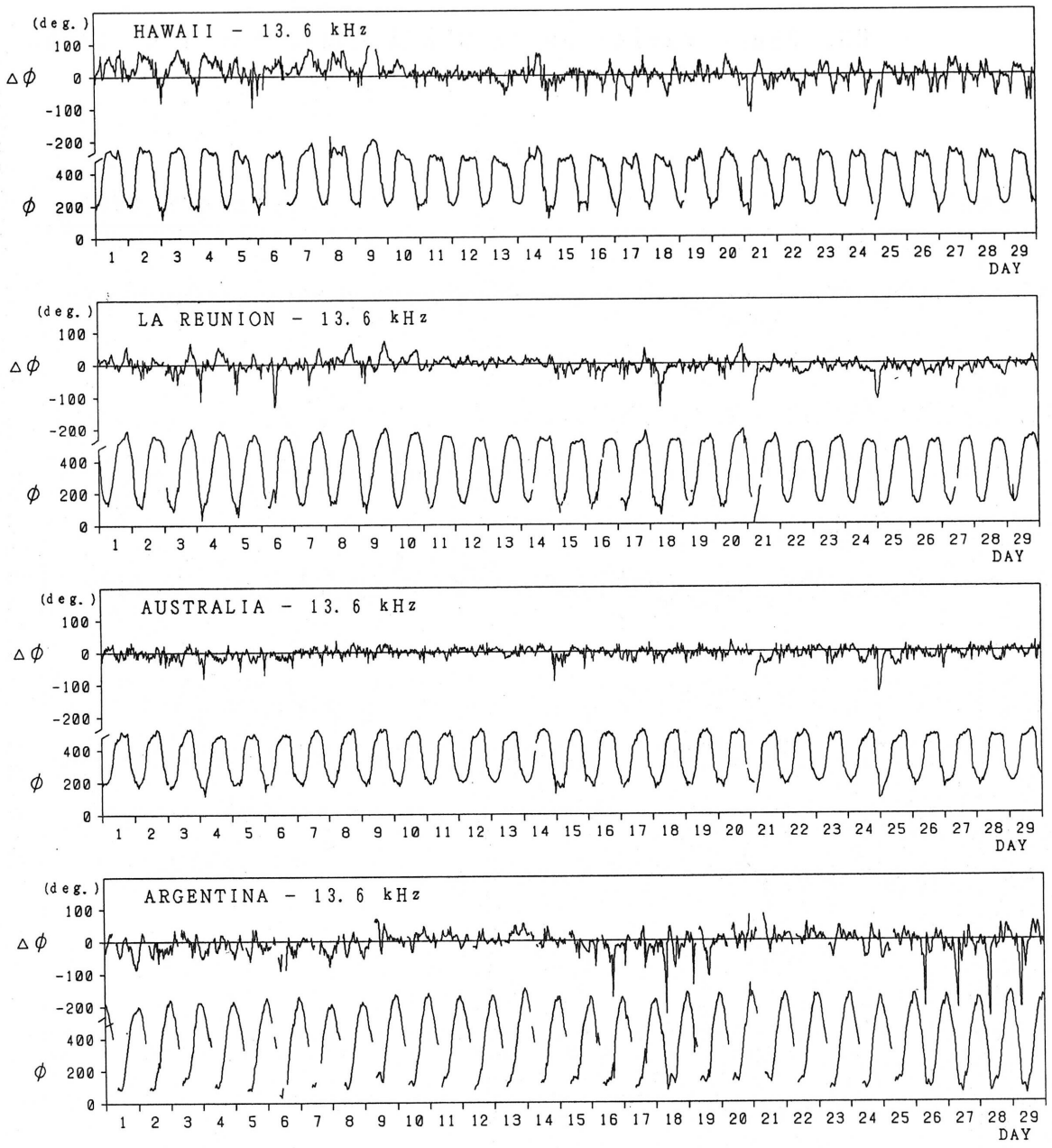
Feb. 1992	Whole Day Figure	W W V 00 06 12 18 / 06 12 18 24	W W V H 00 06 12 18 / 06 12 18 24	Conditions 00 06 12 18 / 06 12 18 24	Principal Geomagnetic Storms Start h m	End h	Range nT
1	4o	5 4 4 5	4 4 3 4	N N N N	0608	C	116
2	4o	5 5 4 4	4 4 4 3	N N N N	1153	----	156
3	4o	4 4 4 4	4 4 4 3	N N N N	----	----	
4	4o	5 4 4 4	4 4 3 4	N N N N	----	----	
5	4o	4 5 4 4	4 4 4 4	N N N N	----	06	SSC
6	4-	4 4 4 4	3 3 3 4	N N N N			
7	4o	4 5 4 4	4 3 4 4	N N N N			
8	4o	4 4 4 5	4 5 3 4	N N N N	1428	----	250
9	4o	4 3 4 5	4 4 5 4	U U U U	----	----	
10	3+	3 2 2 4	4 4 4 5	U U U U	----	21	SSC
11	3+	4 2 3 3	4 4 3 3	U U U U			
12	4o	4 4 3 4	4 4 4 4	N N N N			
13	4-	3 3 4 3	4 3 4 5	N N N N			
14	4o	4 4 4 5	4 4 2 4	N N N N			
15	4o	4 3 5 4	4 4 3 3	N N N N			
16	3+	4 3 3 5	4 3 2 4	N N N N			
17	4o	4 4 4 4	4 4 3 4	N N N N	0805	----	79
18	4o	4 5 4 4	4 4 3 4	N N N N	----	06	SSC
19	4o	4 4 5 4	4 4 3 4	N N N N			
20	4-	4 4 3 3	4 4 3 4	N N N N	0109	----	278
21	3o	2 2 3 4	3 4 4 3	U U U U	----	----	
22	4o	4 4 5 3	4 4 5 4	U U U U	----	12	SSC
23	4o	3 4 5 4	4 4 5 4	U U U U			
24	4o	3 4 5 4	4 4 4 3	N N N N	1628	----	125
25	4o	3 5 5 4	3 4 5 4	N N N N	----	----	
26	4o	3 5 5 3	4 4 5 3	N N N N	----	02	SSC
					1658	----	173
27	4-	4 3 4 3	4 4 4 3	N N N N	----	----	
28	4o	4 4 3 4	4 4 4 4	N N N N	----	03	SSC
29	4o	3 4 4 4	4 4 4 3	N N N N	0920	----	101
3/1					----	12	SSC

C. Radio Propagation

C3. Phase Variation in OMEGA Radio Waves at Inubo



Inubo **February 1992**



Note: As for LIBERIA - 13.6 kHz, no record during February 17 - February 23 and daily 0800 to 1600 UT from February 24 - February 29, due to the maintenance of transmitter.

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

Start (U.T.)	End (U.T.)	Max. (U.T.)	Max. Phase Deviation (negative value, deg.)
Feb.06/1320	Feb.10/0417	Feb.07/0951	167.4
Feb.17/1007	Feb.19/0500	Feb.17/1224	113.4
Feb.25/2319	Feb.27/0200	Feb.26/1100	115.2
Feb.27/1102	Mar.01/0312	Feb.27/1153	145.4

C. Radio Propagation

C4. Sudden Ionospheric Disturbance

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

Hiraiso

Time in U.T.

Feb. 1992	S W F									Correspondence	
	Drop-out Intensities(dB)					Start	Dur.	Type	Imp.	Solar * Flare	Solar Burst
	CO	HA	AUS	MOS	BBC						
3		x	25			0038	30	3	2	x	x
3			10			0135	32	3	1-		x
4	x	x	7	x		0310	6	1	1-	x	x
4	x	x	7	x		0323	22	2	1-	x	x
4			11			0359	21	1	1-	x	
5			10			0525	21	2	1-	x	
5			9			0608	23	2	1-	x	
5			11			0631	20	2	1-	x	
5			11			0651	23	2	1-	x	
6	>40	>47	>15	x		0311	50	2	1	x	x
6		>46				2046	56	3	3+	x	
7			10			0337	28	2	1-	x	x
8			10			0320	10	1	1-	x	
9			13			0300	12	2	1	x	x
9			12			0540	10	2	1	x	
11			17			0421	10	1	1+	x	x
14			19			2306	18	1	1+	x	
15			9			0449	23	2	1-	x	x
15			16			0512	28	2	1+	x	x
15			14			0939	66	2	1	x	
15			19			2130	27	2	1+	x	
16			9			0343	19	1	1-	x	
16		24			>32	1232	28	1	2	x	
17	>30	>35	23	9		0057	25	3	2	x	x
17	x	x	>31	x		0122	23	2	2+	x	
17	x	x	29	x		0145	26	2	2+	x	
17			8			0536	17	2	1-	x	
18			8			0156	22	1	1-	x	
18			10			0341	19	2	1-	x	
18			9			0841	13	2	1-	x	
19	x	48	>21	x		0337	58	2	2-	x	x
19			17			2325	15	2	1+	x	
21		x	>18	x		0240	161	3	1+		x
21			10			2158	14	2	1-	x	
24			13			0155	63	3	1	x	x
24		38	30	x		2316	226	3	2+	x	x
26		x	22			0134	15	2	2-	x	x
26		x	17	x		2316	36	3	1+	x	
27		x	14	x		0020	27	2	1	x	x
27			8			0532	18	1	1-	x	x
27					>31	0948	43	2	2	x	
29	15	24				2032	28	3	3	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

Feb. 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				41	31		0011	0119D	0031
1				8	8		0119E	0133	0122
1			18				0620	0704	0632
1	17				61		2045	2131	2052
1			10	14	19		2344	0028	2351
2				19	19		0119	0203	0131
2	23		25	23	23	22	0216	0252	0228
2			13	14	6	16	0311	0342	0320
2			12	9			0509	0543	0519
2			31	21			0615	0712	0620
2			54	20			0720	0810	0729
2		21	17				0828	0850	0839
2		111	136				0905	1006	0913
2		24	12				1125	1212	1138
2		21					1400	1430	1403
2		30					1513	1544	1523
2					28		1944	2013	1947
2				14	26*		2212	2243D	2235
2			6	51	59	26	2243E	2347D	2251
2			13	32	24		2353E	0044D	0003
3	9	25	70	108	77	78*	0044E	0214D	0058
3	11	9	35	42	31	35	0214E	0258D	0223
3			7	14	11		0258E	0334	0305
3			41*	25*	12*		0335	0421D	0409
3	28		38	19		18	0421E	0510D	0439
3			28*	7			0510E	0549D	0531
3			58*	36			0549E	0657D	0615
3	34	50	103	49			0657E	0812	0703
3		41	35				0856	0946	0912
3		72	62				1002	1130D	1027
3		47					1130E	1242	1139
3		16					1410	1452	1422
3		24					1611	1647	1624
4				18	16		0034	0142	0104
4				12	11		0236	0257	0242
4	27*	16	56	44*	36*		0312	0356D	0331
4	48	53	163	114	96	87	0356E	0535	0405
4			17				0542	0611	0547
4		34	14				0756	0826	0814
4	32*	28*	15*				0915	0957	0932
4				8	9	33	2314	2348	2329
5	14	33		14	15		0045	0135	0102
5				17	18		0108E	0152	0118
5			10	8	9		0258	0333	0305
5	18		68	39	28		0516	0633D	0533
5	19		112	65	13		0633E	0802	0650
5			8				0947	1016	0950
5		75	23				1317	1408	1329
5					108	31	2017	2150	2032
5				6	8		2314	2351	2323
6	18	20	37	70	68	40	0019	0133	0029
6	65	84	302	217	176	99	0311	0536D	0330
6			31	10			0536E	0635	0549
6		192	142				0936	1311	1034
6		48					1345	1435	1356

Inubo

Feb. 1992	S P A								
	Phase Advance (degrees)						Time (U.T.)		
Date	Ω/N	Ω/L	Ω/LR	Ω/AU	Ω/H	Ω/ND	Start	End	Maximum
6					64	37	1855	1926	1859
6				48	124	95	2049	2230	2109
6				11	9		2235	2310	2243
7	11		35	32	23	18	0342	0424D	0348
7			6	8			0424E	0447	0437
7			14	7			0544	0638	0557
7			30*				0712	0833	0744
7		136	63				1146	1323D	1204
7		88	8				1323E	1420	1335
7		35					1507	1550	1516
7			9	16	17		2344	0016	2349
8	8			7	7		0113	0147	0121
8	16	16	46	37	36	18	0320	0410	0326
8			19				0720	0802	0731
8			6				0907	0925	0914
8		24	6				1121	1211	1131
8				12	20		2123	2150	2131
9				4	7		0012	0040	0017
9	25	40	118	94	73	30	0259	0432	0308
9	23	39	112	67	34	30	0533	0707	0546
9			10				0719	0740	0723
9			7				0901	0921D	0904
9		21	12				0927	0957	0937
9		29	18				1050	1123	1103
9		24					1243	1317	1251
9	10		13	21*	22*		2338	0026	2342
10					4		0031	0052	0040
10			8	9	7		0248	0328	0259
10	14	14	41	32	25	14	0340	0406D	0347
10			29	22			0406E	0430D	0416
10			57	37	27	13	0430E	0456D	0437
10	26*		46	31	23		0456E	0558	0507
10			5				0851	0911	0856
10		37	15				1101	1146	1111
10		26*					1524	1608	1532
10				78	83	49	2209	2328	2214
11				4	6		0008	0042	0021
11				9	9		0050	0112	0053
11	9	11	19	25	19		0204	0252	0214
11		15	33	25	19		0337	0421D	0347
11	29	45	112	77	54	27	0421E	0528	0427
11			12				0540	0602D	0545
11			42	15			0602E	0652	0619
11			6				0940	1003	0949
11					22		2120	2148	2127
12				12	15		0014	0110	0020
12			6	6	4		0337	0354	0342
12				28	28		2221	2309	2231
12		24					2239	2320	2248
13		35	56	17			0727	0818	0739
13				14	32	31	2102	2145	2114
14				12	11		0103	0144	0112
14			6	4	4		0223	0239	0227
14		30	9				1118	1213	1128
14		29					1225	1317	1236

(b) Sudden Phase Anomaly (SPA) at Inubo

Inubo

Feb. 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
14		67					1400	1503	1408
14					32		1944	2026	1952
14				79	109	63	2140	2250D	2153
14	44	39	64	186	158	127	2250E	0048D	2313
15				16	14		0048E	0120D	0057
15				14	9		0120E	0148D	0128
15			32	35	20	16	0148E	0225D	0204
15			43	47	28	14	0225E	0313D	0231
15			45	39	26		0313E	0453D	0332
15			82	54	21	21	0453E	0514D	0500
15	30	46	147	104	54	37	0514	0658	0518
15		66	132*	38		14	0711	0817	0731
15		77	135				0833	0932D	0842
15		65	98				0932E	1106	1008
15		33					1252	1345	1312
15		34					1454	1542	1501
15				117	158	149	2127	2321	2140
16			13	14	11		0212	0312	0220
16	57	71	158	111	85	33	0321	0551	0353
16			13*				0642	0751	0650
16		34	67				0846	1002D	0902
16	24	40	43				1002E	1106	1008
16		—	97				1231	1429	1238
16		75					1535	1722	1552
16					19		2041	2113	2046
16				13	19		2244	2321	2251
17		11		21	22	62	0018	0041D	0035
17	31	30	91	99	90	112	0055E	0123D	0116
17	52	52	165	173	153	198	0123E	0344	0132
17		29	74	40			0539	0732	0547
17			22				0819	0846D	0828
17			12				0846E	0923	0855
17		—	14				1000	1038	1006
17		—			19		2046	2118	2056
17		—		18	29		2212	2244D	2216
17		—		15	23		2244E	2327	2250
18		—	36	26	28		0056	0152D	0117
18	13	—	65	59	55		0152E	0250	0205
18	13	—	58	40	32		0339	0451D	0352
18		—	22	8			0451E	0516	0501
18		—	43	17	17		0516E	0611D	0532
18	9	—	28	4			0611E	0637D	0620
18		—	28				0637E	0657D	0650
18		—	37				0657E	0736D	0724
18		—	103	22			0736E	0807D	0747
18		—	133				0807E	0844D	0821
18		—	129				0844E	0944D	0851
18		—	59				0944E	1119	0950
18		—			14		1950	2025	2000
18		—			46	30	2034	2122	2043
18		—		19	27	19	2201	2234	2210
18		—		13	15	16	2343	0016	2352
19		—		25	21		0039	0121D	0056
19	12	—	22	33	26	33	0121E	0219	0132
19		—	19	16	12		0255	0335D	0321

(b) Sudden Phase Anomaly (SPA) at Inubo

Inubo

Feb. 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
19	62	—	212	156	114	62	0335E	0544	0356
19		—	12				0624	0656D	0634
19		—	47	14			0656E	0754	0705
19		—	49				1017	1111	1027
19		—	9				1151	1212	1157
19		—			61	27	2055	2139D	2105
19		—		10	28	17	2139E	2238	2152
19	10	—	24	49	53	33	2324	0049	2331
20		—	13	12	10		0232	0259	0239
20	18	—	56	35	28		0339	0521D	0358
20	18	—	19	10			0521E	0548D	0529
20		—	33	11			0548E	0608D	0600
20		—	26	30	10		0608E	0710D	0617
20	25	—	24	12			0710E	0746D	0718
20		—	43	8			0746E	0852	0754
20		—		28	33	49	2302	2355	2317
21		—		9	5		0036	0057	0045
21		—		8	5		0111	0128	0119
21	66	—	176	126	98	86	0256	0905	0348
21	44	—	10				0945	1016D	0954
21	22	—	81				1015E	1126	1022
21	28	—		78	89	90	2157	2321	2209
22		—		19	14		0108	0158	0118
22		—	5	8	5		0226	0255	0232
22		—	13	9			0330	0410	0346
22		—	11				0741	0813	0755
22		—	11				0850	0925	0857
22		—	14				1042	1133	1050
22	21	—			30	30	2100	2225	2123
23					5		2245	2315	2253
24			35	39	28	20	0158	0312	0217
24				18	21	29	2214	2254	2232
24	103	51	90	171	135	126	2316	0424D	2336
25			44	33			0424E	0546	0439
25		22	15				0718	0803	0729
25			14	20	16		2353	0037	0007
26				5	5	18	0105	0132	0120
26	38	34	77	92	67	52	0134E	0253	0142
26			13	8	6	13	0337	0416	0349
26			11	7			0449	0514	0454
26			9	4			0544	0602	0550
26	29	19	38	82	72	53	2315	0027D	2343
27	21	15	19	39	34	51	0027E	0057	0036
27			5	4			0334	0347	0339
27	35	46	59	35	35	33	0528	0626	0543
27			12				0806	0830	0816
27		99	31				0922	0953D	0937
27	78	133	306				0946E	1237	0955
28	10	14	23	31	22		0214	0311D	0238
28			10	16	13		0311E	0350	0314
28		22	41	26	11		0427	0537	0441
28			17	5			0716	0753	0723
28					23		2108	2140	2117
29			6	4			0533	0548	0540
29					75		2032	2136	2049

IONOSPHERIC DATA IN JAPAN FOR FEBRUARY 1992

F-518 Vol.44 No.2 (Not for Sale)

電離層月報（1992年2月）

第44巻 第2号（非売品）

1992年6月25日 印刷

1992年6月30日 発行

編集兼 郵政省通信総合研究所

発行所 〒184 東京都小金井市貫井北町4丁目2－1

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