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IONOSPHERIC DATA IN JAPAN

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CONTENTS

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INTRODUCTION

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

Station	Geographic		Geomagnetic		Technical Method
	Latitude	Longitude	Latitude	Longitude	
Wakkanai	45°23.5'N	141°41.2'E	35.3°N	206.5°	Vertical Sounding (I)
Akita	39°43.5'N	140°08.0'E	29.5°N	205.9°	" (I)
Kokubunji	35°42.4'N	139°29.3'E	25.5°N	205.8°	" (I)
Yamagawa	31°12.1'N	130°37.1'E	20.4°N	198.3°	" (I)
Okinawa	26°16.9'N	127°48.4'E	15.3°N	196.0°	" (I)
Hiraiso	36°22.0'N	140°37.5'E	26.3°N	206.8°	Radio Receiving (S, P)
Inubo	35°42.2'N	140°51.5'E	25.6°N	207.0°	" (P)

A. IONOSPHERE

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

A1. Automatic Scaling

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

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

a. Characteristics of Ionosphere

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

b. Descriptive Letters

The following descriptive letters are used in the tables.

- A Impossible measurement because of the presence of a lower thin layer, for example *Es* (for *foF2*).
- B Impossible measurement because of absorption in the vicinity of *fmin*.
- C Impossible measurement because of any failure in observation.
- G Impossible automatic scaling because of too small ionization density of the layer (for *fEs*).
- N Impossible automatic scaling because of complex echoes.
- Blank No digital record because of trouble in the automatic data processing system, but existence of film record.

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

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

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

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

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

d. Reliability of Automatic Scaling

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

e. Summary Plot

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

A2. Manual Scaling

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

All symbols and terminology in the tables or figures of ionospheric data are used in accordance with the "URSI Handbook of Ionogram Interpretation and Reduction (Second Edition) 1972" and its revision of chapters 1-4, published in July 1978.

a. Characteristics of Ionosphere

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

b. Symbols

(i) Descriptive Letters

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

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

(ii) Qualifying Letters

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

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

(iii) Description of Types of *Es*

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

The types are:

f An *Es* trace which shows no appreciable increase of height with frequency.
l A flat *Es* trace at or below the normal *E* layer minimum virtual height or below the particle *E* layer minimum virtual height.
c An *Es* trace showing a relatively symmetrical cusp at or below *foE*. (Usually a daytime type.)
h An *Es* trace showing a discontinuity in height with the normal *E* layer trace at or above *foE*. The cusp is not symmetrical, the low frequency end of the *Es* trace lying clearly above the high frequency end of the normal *E* trace. (Usually a daytime type.)
q An *Es* trace which is diffuse and non-blanketing over a wide frequency range.
r An *Es* trace showing an increase in virtual height at the high frequency end similar to group retardation.
a An *Es* trace having a well-defined flat or gradually rising lower edge with stratified and diffuse traces present above it.
s A diffuse *Es* trace which rises steadily with frequency and usually emerges from another type *Es* trace.
d A weak diffuse trace at heights below 95 km associated with high absorption and large *fmin*.
n The designation 'n' is used to denote an *Es* trace which cannot be classified into one of the standard types.
k The designation 'k' is used to show the presence of particle *E*. When *foEs* > *foE* (particle *E*) the *Es* type precedes k.

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

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

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

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

B. SOLAR RADIO EMISSION

Solar radio observations at 100, 200 and 500 MHz are carried out at Hiraiso. The observation equipment consists of two parabolic antennas, one with 10-meter diameter for 100 and 200 MHz measurements and one with 6-meter diameter for 500 MHz measurements, each being equipped with a pair of crossed doublet antennas as a primary radiator, and three appropriate receivers. Each pair of the crossed doublet antennas is used as a polarimeter. Observations are continuously carried out almost from sunrise to sunset.

B1. Daily Data at Hiraiso

The three-hourly mean and daily mean values of the solar radio emission intensities at the base-level are tabulated separately for 200 and 500 MHz measurements. Here, the base-level intensity is defined as the intensity recorded during the time when no radio emission burst is taking place. The intensities are expressed by the flux density in 10^{-22} Wm^{-2} Hz^{-1} unit.

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

0 quiet or no burst,
1 a few bursts,
2 many bursts,
3 very many bursts.

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

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

* Measurement impossible because of interference.

B Measurement impossible because of bursts.

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

B2. Outstanding Occurrences at Hiraiso

The table is a list of outstanding occurrences of solar radio emission bursts observed at Hiraiso during a month. Listed in the table are the date, frequencies, the type of event, the start time and the time of maximum, both in U.T. expressed in hours, minutes and tenths of a minute, the duration in minutes, the peak and mean flux densities in 10^{-22} Wm^{-2} Hz^{-1} unit, and the polarization.

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

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

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

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

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

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

C. RADIO PROPAGATION

C1. H.F. Field Strength at Hiraiso

Field strength observation of 15 MHz standard waves transmitted from WWV and WWVH stations which are located respectively at Fort Collins, Colorado and Kauai, Hawaii, is carried out at Hiraiso. In order to avoid interference among the same frequency waves, the upper sideband of WWV or WWVH with the audio tone 660 Hz is picked up by the use of a narrow band-pass filter with 80 Hz bandwidth. Particulars of the transmitters and the receiver are summarized in the following table.

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

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

C2. Radio Propagation Quality Figures at Hiraiso

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

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

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

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

C	artificial accident,
S	propagational accident,
U	inaccurate.

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

N	normal,
U	unstable,
W	disturbed.

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

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

C3. Phase Variation in OMEGA Radio Waves at Inubo

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

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

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

C4. Sudden Ionospheric Disturbances

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

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

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

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

Types of fade-out are as follows:

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

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

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

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

b. Sudden Phase Anomaly (SPA) at Inubo

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

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

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

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

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

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

HOURLY VALUES OF FOF2 AT WAKKANAI

JUL. 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	52	51	44	50	50	54	62	A	A	A	A	A	62		64		58	A	62	73	70	67	A	54
2	58	55	55	55	55	52	55	56		66	69		58	68	51	A	A	61	72	80	84	80	77	66
3	62	63	55	52	48	58	A	63	52	54	A	A	A	61	67	67	65	60	67	73	78	73	72	73
4	66	66	63	63	62	72	50	86	76	67	A	A	A	83	A	68	66	67	72	82	79	78	81	78
5	76	72	66	63	63	61	62	73	67	61	67	76	77	70	78	82	74	81	A	74	58	80	80	78
6	73	72	66	62	60	62	73	76	78	74	A		76	77	A	71	A	73	70	70	54	73	A	A
7	73	68	A	64	66	77	78		A		A				N	A	A	89	66	72		A	72	65
8	66	66	A	67	66	72	A	80	86	72	A	66			64	A	67	67	70	77	83	86	78	80
9	77	77	71	67	65	80	90	84	86	72	80	81	56	74	73	51	71	78	A	88	A	86	85	73
10	77	75	62	68	72	72	84	81	83	90	78	A	76	84	70	74	67	83	78	76	82	86	53	77
11	82	80	77	73	71	83	91	91	A	91	70	86	82	59	80	84	80	77	78	78	82	79	83	78
12	82	82	76	63	67	75	87	84	A	A	A	A	74	72	76	86	A	A	88	90	86	90	86	83
13	85	86	77	76	71	79	80	A	67	A				A	90	A	A	A	63	67	66	73	73	57
14	61	61	55	63	A	61	61	A		A	A		A	A	A	A	A	A	62	A	67	66	66	66
15	61	A	65	67	52	66	58	64	73	A		A	67	63	A	61	68	67	54	A	54	71	70	65
16	64	62	65	77	62	72	80	80		A	A	A	A	A	A	73	67	A	68	66	86	86	84	70
17	83	73	63	62	64	57	62	69	A	100	A	A	A		64	A	67	A	72	A	72	70	73	73
18	66	68	71	65	66	73	76	84	66	68	A	A	A	63	70	72	80	70	65	73	78	79	81	72
19	66	63	64	60	64	71	68	74	84	76	A	A	73		77	A	76	A	A	81	74	78	84	80
20	77	A	71	62	62	68	87		84	A	A	74	A	74	70	70	69	78	81	76	77	73	83	67
21	61	67	61	54	51	62	A	A	A	A	A					A	A	57	59	63	60	72	64	A
22	63	60	56	53	A	52		87	84	87	74	68		A		69	60	63	64	A	86	81	81	66
23	66	64	52	49	A	A	A	54	58			A	A	A	A	A	A	A	73	A	64	64	60	A
24	55	52	34	52	50	48	A	66	A	A	A	A			57		63	63	A	A	A	63	72	66
25	63	54	52	52	55		A	A	A			A		A	A	A	A	A	A	60	60	55	53	54
26	A	55	51	A	48	51	106	91	A	A	102	A	A	A	A	A	62	A	A	A	A	A	A	A
27	52	A	52	48	54	61	62	65	A	131	A	A	A	A	A	80	A	61	67	76	78	64	64	61
28	A	A	52	49	52	64	65	A	A	A	A	A	75	73	67	A	A	84	67	63	66	66	A	65
29	62	66	58	55	51	63	71	76	62	73	73	78	78	74	72	62	67	70	67	A	83	77	73	72
30	63	55	52	51	54	60	73	70	74	78	77	C	62	63	67	63	58	63	66	70	74	77	76	66
31	60	55	54	54	54	55	64	70	72	75	77	76	A	63	67	63	59	64	67	73	82	42	67	64
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	27	29	30	28	29	24	23	17	17	10		13	16	19	17	20	21	25	23	27	29	27	27
MED	66	66	61	62	61	63	72	76	74	74	76		74	71	70	70	67	67	67	73	77	73	73	67
U Q	76	72	66	65	65	72	82	84	84	88	78		76	74	76	77	70	78	72	78	82	80	81	77
L Q	61	55	52	52	52	57	62	66	66	67	70		62	63	64	63	62	63	64	70	66	66	67	65

HOURLY VALUES OF FES AT WAKKANAI

JUL. 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	24	27	30	35	32	41	64	44	60	57	80	92	G	G	G	G	G	73	58	72	37	59	60	60
2	57	27	G	G	33	40	52	47	G	G	G		G	G	54	64	71	60	57	80	72	60	38	30
3	24	25	23	30	G	52	81	41	65	55	64	106	125	67	G	G	G	37	41	66	48	33	29	G
4	36	27	41	92	40	49	56	58	56	60	111	109	106	64	62	G	G	G	39	63	88	42	40	33
5	46	33	36	33	45	36	60	72	80	51	G	G	G	G	65	92	69	50	126	70	84	38	60	28
6	G	25	G	26	G	G	38	58	67	74	77		64	62	94	73	68	40	36	50	72	90	125	94
7	57	58	114	59	60	45	74	96	91	114	85	149	175	132	96	162	148	124	90	60	146	72	94	90
8	77	57	60	66	62	50	64	61	G	G	60	G	G	G	G	52	53	46	52	41	77	140	61	61
9	34	G	G	30	G	32	G	54	66	G	G	G	G	G	G	G	G	G	123	40	90	62	42	37
10	32	28	32	G	G	32	50	51	G	52	G	115	G	G	G	G	56	49	55	46	32	33	59	59
11	61	49	39	39	48	38	G	93	106	62	65	G	51	G	G	G	40	50	39	33	34	36	32	36
12	36	29	G	G	G	G	G	90	90	63	94	84	84	58	G	60	86	117	96	54	60	42	38	24
13	G	28	G	68	36	54	94	68	67	55	G			65	55	58	72	77	46	35	54	54	59	32
14	26	25	27	29	44	51	44	59	G	58	63		52	69	56	90	81	67	48	71	58	44	G	69
15	111	60	26	G	G	33	51	56	54	66	G	58	G	G	80	G	56	G	94	85	96	60	35	65
16	38	33	30	32	29	40	62	70	181	118	85	96	66	92	63	G	54	88	67	61	49	28	26	25
17	G	G	G	G	G	35	46	51	69	94	66	60	84	G	67	72	65	80	45	66	72	61	42	57
18	26	37	34	31	G	40	57	70	62	56	65	72	66	51	G	55	G	38	51	58	39	34	55	39
19	34	32	25	G	31	34	58	52	62	55	60	58	64	168	G	75	G	68	65	58	34	115	60	70
20	89	91	59	54	44	40	65	82	65	68	73	90	70	54	G	G	52	57	52	40	29	33	54	40
21	G	G	G	G	G	36	61	82	80	56	63	G			G	62	51	65	64	57	58	58	82	93
22	55	44	41	30	41	G	G	G	66	55	G	G	G	56	G	G	G	46	39	73	58	26	G	G
23	G	26	33	28	56	56	44	59	G			117	70	57	59	78	56	76	92	70	85	43	40	35
24	27	59	33	36	37	56	73	52	55	63	66	80			56	G	G	G	43	85	69	116	80	26
25	G	G	G	38	G	G	78	66	68		G	54		78	120	64	92	88	84	50	46	28	32	67
26	60	66	49	42	30	38	54	106	74	61	77	181	153	141	81	64	49	125	126	96	130	86	60	59
27	54	37	36	29	33	36	38	G	66	97	116	68	91	71	60	85	62	48	69	60	58	58	43	42
28	104	92	26	G	24	30	55	68	74	88	69	64	G	54	G	75	68	38	78	60	40	67	91	90
29	79	72	29	25	31	50	G	G	G	G	G	G	G	62	G	G	G	41	51	81	58	29	38	40
30	26	G	G	24	25	36	50	72	G	G	G	C	G	G	G	G	G	G	G	30	79	72	68	58
31	83	58	32	30	33	G	46	52	67	55	G	52	77	G	G	51	50	56	33	36	36	45	81	25
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	29	30	26	27	29	31	31	31	31	31	31	31	31	31	31
MED	36	32	30	30	31	38	54	59	66	57	64	66	64	56	G	55	53	50	55	60	58	54	54	40
U Q	60	58	36	38	41	49	64	72	74	67	77	96	84	68	63	73	68	76	84	71	79	67	61	65
L Q	24	25	G	G	G	32	44	51	54	53	G	G	G	G	G	G	G	38	43	46	40	34	38	30

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF FMIN AT WAKKANAI

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

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF FOF2 AT AKITA

JUL. 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	A	A	45	45	45	52	72	A	A	A	63	71	73	N	A	51	51	63	A	81	47	A	64	A
2	64										A	69	A	78	48	71	54	67	77	A	A	A	78	A
3	56	A	A	52	56	55	71	A	A	A	A	A	A	A	68	71	55	61	54	A	51	76	77	78
4	A	77	77	67	54	74	77	72	71	71		A	85	85	86	74	71	70	36	34	54	66	70	71
5	56	72	74	66	63	60	65	A	70	A	71	77	A	A	A	A	86	85	80	78	74	75	A	76
6	77	A	A	69	67	73	84	80	81	70	78	A	A	95	88	A	86	77	78	80	67	56	70	A
7	55	A	A	57	50	67	A	54	49	A	68	68		71	70	67	56	67	76	80	67	54	70	55
8	74	56	67	70	A	42	A	71	68	A	A	A	72	A	A	A	67	67	89	57	A	A	A	70
9	72	73	51	72	68	78	82	86	87	90	86	80	79	71	75	48	82	86	90	90	86	84	77	81
10	80	79	80	70	60	75	85	88	88	91	87	91	87	86	87	86	77	76	78	83	86	85	80	83
11	80	A	73	52	56	80	87	86	90	87	84	A	91	84	86	86	81	84	82	86	35	80	A	N
12	89	90	81	73	64	72	86	88	91	88	86	76	A	A	80	90	87	85	86	90	88	97	92	88
13	88	90	79	75	86	88	90	78	76	A	A	64	A	49	A	64	A	A	A	A	A	A	76	A
14	A	72	42	58	58	A	A	88	A	A	A	A	A	A	54	A	A	A	104	A	A	A	A	62
15	54	A	51	52	52	51	A	69	A	A	A	A	68	A	71	A	A	76	87	74	67	52	A	A
16	70	A	73	71	71	47	80	86	86	A	126	139	110	83	91	N	A	71	A	A	A	A	78	75
17	75	69	54	53	56	53	64	80	83	76	54	A	A	A	A	A	77	78	82	76	54	A	70	54
18	54	72	68	68	66	69	80	A	79	A	A	83	A	A	A	133	A	A	A	78	79	86	N	65
19	62	54	A	67	66	60	66	73	81	111	A	A	84	83	86	87	76	A	A	52	A	72	76	80
20	73	62	54	55	52	67	86	86	76	N	144	A	140	C	A	80	86	A	A	103	N	28	52	63
21	A	63	54	51	48	54	72		A	A	50	A	A	43	49	54	57	63	A	A	A	52	A	54
22	A	54	55	55	53	55	62	88	87	86	A	90	77	A	55	55	111	66	A	A	A	78	83	52
23	84	84	52	A	42	A	A	69	A	A	A	A	A	A	N	88	A	A	54	A	A	A	A	63
24	51	A	54	54	49	A	51	66	A	A	A	A	A	A	A	A	63	69	56	A	66	50	66	57
25	A	54	54	56	54	49	A	A	A	A	A	A	126	A	A	A	A	A	56	55	56	50	51	51
26	52	A	48	48	44	48	59	A	A	55	A	A		51	A	A	A	63	52	80	30	A	52	51
27	54	51	51	48	51	52	52	72	67	62	A	A	A	A	88	A	A	55	67	80	62	48	A	54
28	A	57	A	51	55	53	75	66	51	67	56	72	79	86	54	72	84	88	80	67	54	56	A	54
29	52	A	51	50	A	60	73	A	64	67	73	81	83	88	74	67	67	66	54	80	52	71	78	67
30	51	53	52	50	50	52	68	78	78	79	79	54	67	68	72	69	63	55	67	73	71	53	73	50
31	52	N	52	52	44	52	51	68	77	78	A	68	A	A	68	73	67	67	54	42	54	54	69	66
	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	19	25	29	28	27	24	22	21	15	15	15	15	15	20	20	22	24	23	22	21	22	21	25
MED	63	69	54	55	54	55	72	78	78	78	78	76	83	83	73	72	74	68	77	79	62	61	73	63
U Q	76	77	73	68	63	72	83	86	86	88	86	83	91	86	86	86	84	77	82	81	72	78	78	75
L Q	54	54	51	51	50	52	64	69	69	67	63	68	73	68	61	65	63	64	54	67	53	52	67	54

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF FES AT AKITA

JUL. 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	50	41	38	31	34	G	G	62	106	69	57	47	50	54	50	G	G	54	60	116	93	49	41	55
2	25										74	62	65	G	52	58	50	49	58	144	111	93	57	40
3	40	40	45	33	31	37	42	85	92	54	94	65	79	57	50	G	G	49	49	54	55	41	61	103
4	131	73	51	61	37	36	G	85	58	51	73	89	70	72	54	50	47	41	50	58	26	31	32	41
5	44	46	53	55	49	39	54	62	150	84	G	69	91	114	148	122	121	44	42	50	96	116	91	83
6	60	114	59	53	29	34	49	59	64	G	59	97	99	74	54	83	62	58	64	48	24	33	38	56
7	84	106	59	48	37	35	47	52	51	72	59	53	G	52	51	53	G	48	54	61	31	24	26	43
8	48	49	41	30	53	51	74	52	54	73	102	110	74	60	72	85	50	44	85	61	60	95	92	52
9	40	50	50	46	31	30	48	84	81	95	64	58	50	G	G	81	46	57	50	54	35	38	33	24
10	29	G	25	G	26	30	61	54	58	58	G	G	G	58	50	60	53	G	34	34	42	52	48	58
11	49	58	43	58	48	30	55	40	G	G	54	112	80	58	52	50	73	61	68	116	32	30	40	28
12	28	35	G	G	G	G	G	51	49	58	54	G	117	91	68	55	74	56	55	45	58	91	84	45
13	49	50	49	29	G	59	43	81	G	86	81	49	51	49	96	63	60	93	85	111	110	85	52	60
14	52	52	41	42	44	72	80	68	61	60	54	64	71	98	65	88	77	103	73	90	127	134	60	40
15	149	50	40	G	G	42	43	58	74	76	70	74	51	74	74	62	101	54	46	37	143	140	91	58
16	54	50	52	50	46	57	40	56	69	132	138	160	134	74	86	95	86	84	145	77	72	58	35	43
17	G	41	41	32	G	40	36	48	68	58	93	74	50	46	50	75	52	44	49	45	42	86	95	44
18	40	57	40	40	44	40	49	88	78	78	92	66	107	150	105	110	111	103	62	50	59	43	115	46
19	55	40	58	50	45	29	44	54	61	70	81	88	76	61	58	G	84	176	116	76	59	58	38	51
20	45	38	43	41	30	33	46	58	46	92	118	169	136	C	178	136	57	108	150	132	104	30	29	44
21	56	29	29	34	27	36	52	90	79	95	72	61	58	49	G	52	50	59	84	58	94	84	57	91
22	69	30	27	40	28	29	41	50	59	81	92	90	82	58	51	51	98	48	93	126	95	G	92	111
23	32	G	30	60	46	55	58	68	62	73	60	97	91	49	62	96	74	77	51	129	117	127	114	43
24	57	53	44	41	31	38	36	54	85	58	60	56	88	134	62	62	54	82	52	60	27	57	54	92
25	91	41	29	30	34	37	57	92	79	61	82	61	143	74	78	67	57	93	40	33	29	26	G	29
26	30	58	29	28	24	34	40	57	119	90	59	74	G	G	55	100	106	53	92	48	37	53	54	51
27	43	29	31	28	27	G	G	G	54	50	74	142	143	74	83	57	78	46	49	40	25	58	84	42
28	56	43	91	58	41	G	G	54	47	G	G	48	G	G	G	G	G	40	31	G	40	46	127	36
29	58	54	44	59	54	44	38	117	G	49	51	59	64	54	51	G	43	49	38	30	43	56	30	57
30	40	30	26	G	28	36	49	56	79	50	G	G	52	G	G	61	G	G	33	58	29	58	31	57
31	85	34	26	40	G	28	G	50	53	57	82	56	95	61	45	G	50	47	38	40	34	G	G	46
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	30	30	30	30	30	30	30	30	31	31	31	30	31	31	31	31	31	31	31	31	31	31
MED	49	44	41	40	31	36	44	58	62	65	70	65	74	58	54	61	57	54	54	58	55	56	54	46
U Q	58	53	50	50	44	40	52	81	79	81	82	90	95	74	74	85	78	82	84	90	95	86	91	58
L Q	40	35	29	30	27	30	36	52	53	54	54	56	51	49	50	50	47	46	46	45	32	33	33	42

HOURLY VALUES OF FMIN AT AKITA

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

HOURLY VALUES OF FOF2 AT KOKUBUNJI

JUL. 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	51	51	46	42	43	51	63	74	91	77	55	A	81	80	77	67	67	68	77	A	70	A	67	68
2	68	58	52	52	52	63	54	72	70	66	55	A	77	A	92	80	83	84	86	87	82	76	77	73
3	71	67	68	68	62	60	58	73	72	72	66	68	A	74	77	76	77	76	74	80	67	76	72	71
4	68	68	72	66	64	80	68	63	52	A	75	81	87	94	94	90	79	80	49	76	66	66	67	68
5	74	76	72	68	56	62	65	52	A	A	A	A	77	85	86	93	91	92	86	81	77	55	71	76
6	82	81	72	67	71	74	84	85	A	75	69	C	90	101	96	94	94	81	86	82	71	73	68	68
7	73	72	72	54	56	66	66	74	75	81	71	A	A	N	85	74	76	74	70	A	72	A	72	66
8	67	63	67	67	61	61	47	71	67	64	68	72	71	A	80	76	A	70	A	80	78	80	85	A
9	74	65	68	68	55	65	72	81	86	85	88	80	78	76	78	85	90	93	94	104	83	77	78	84
10	81	85	83	70	67	72	84	86	90	86	90	90	95	102	110	97	85	80	83	86	83	83	86	80
11	81	70	74	54	64	65	81	94	95	83	85	85	90	98	98	90	87	90	90	86	84	84	83	85
12	90	96	85	80	73	70	82	85	91	86	84	76	76	79	91	103	93	87	85	89	99	87	95	90
13	89	94	90	78	82	84	100	A	102	50	72	74	A	91	A	55	A	A	A	A	86	75	75	77
14	75	73	64	A	54	55	60	A	76	95	A	A	A	A	72	A	A	A	70	A	66	54	A	61
15	62	52	48	55	56	51	58	80	A	A		80	A	A	A	97	85	83	A	55	68	67	66	69
16	72	73	73	70	72	76	81	97	90	86	85	81	87	100	98	87	75	75	68	68	73	80	86	77
17	76	75	73	71	61	65	77	93	83	48	52	58	78	82	84	80	82	85	85	76	71	54	74	73
18	72	73	67	67	62	72	72	74	A	A	85	91	86	A	A		102	83	84	A	86	78	72	72
19	A	A	A	54	66	62	70	78	80	A	71	86	90	91	100	90	94	96	87	71	71	75	68	75
20	72	53	64	63	63	67	78	85	71	77	68	75	82	86	81	110	96	82	54	50	77	77	76	67
21	66	66	66	60	55	55	76	A	77	A	A	A	A	A	72	54	A	A	73	63	72	A	72	66
22	66	65	62	55	60	64	54	86	97	91	94	103	A	A	A	67	76	73	A	77	71	57	77	A
23	76	81	52	A	A	31	A	A	A	A	A	A	A	A	A	A	55	A	54	55	60	61	A	60
24	52	54	A	52	51	A	60	48	64	A	A	A	A	A	66	A	A	54	A	A	A	51	66	64
25	56	52	57	51	48	54	63	66	A		A	A	44	A	67	66	65	63	67	68	53	52	A	51
26	51	48	47	48	45	47	57	66	N	77	73	54	70	56	62	54	A	61	70	82	54	55	52	55
27	52	55	51	51	47	48	58	68	63	53	A	72	A	A	A	69	75	82	81	82	76	63	58	A
28	54	50	51	51	50	51	75	66	60	65	76	50	86	86	84	84	88	98	80	66	60	54	61	45
29	A	52	A	A	52	52	67	62	A	62	91	84	96	104	91	72	71	74	A	77	78	71	60	64
30	52	48	51	47	46	46	61	78	81	93	85	A	80	82	83	73	68	67	70	73	65	52	54	A
31	A	A	51	52	51	48	52	68	80	78	80	72	68	71	76	80	81	68	59	73	64	71	72	66
	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	28	28	30	30	30	27	23	22	23	20	21	19	25	27	25	27	25	25	30	28	28	27
MED	72	66	66	58	56	62	66	74	80	77	75	78	81	86	84	80	82	80	77	77	72	71	72	68
U Q	75	74	72	68	64	67	77	85	90	86	85	84	88	98	93	90	90	85	85	82	78	77	77	76
L Q	59	52	51	52	51	51	58	66	70	65	68	72	76	79	76	69	75	70	69	68	66	55	66	64

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF FES AT KOKUBUNJI

JUL. 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	59	37	30	31	25	29	G	51	79	62	58	61	58	46	49	G	42	60	73	135	116	77	38	57
2	25	25	26	G	G	32	48	44	51	50	51	76	75	93	62	69	53	56	55	46	26	54	55	59
3	49	52	34	38	28	G	G	44	49	51	50	55	59	58	57	48	48	47	56	26	32	G	26	27
4	96	52	59	50	G	43	49	56	74	101	97	51	G	56	48	82	88	59	58	51	58	58	49	30
5	37	43	49	34	40	43	46	60	66	118	103	82	58	68	50	48	55	70	40	30	G	32	30	54
6	50	58	47	40	40	G	44	58	85	54	95	C	G	58	67	93	49	48	53	64	59	31	30	40
7	40	48	38	40	32	G	G	G	58	61	69	97	79	97	72	44	60	46	83	124	56	91	91	49
8	43	28	G	G	G	32	54	59	50	72	52	50	48	81	54	71	100	54	70	57	83	51	67	85
9	25	57	25	34	27	28	G	54	57	58	62	54	50	56	73	58	55	44	34	40	34	40	58	61
10	53	29	G	G	G	G	G	55	83	54	52	59	61	50	62	78	46	43	33	31	33	25	40	58
11	23	G	G	G	G	28	40	74	68	58	50	51	57	G	51	69	45	43	G	G	29	43	55	28
12	50	38	31	G	G	G	34	44	G	46	52	49	46	G	101	62	72	46	44	36	G	54	105	56
13	50	58	48	38	36	39	124	91	94	49	85	56	68	96	73	58	80	98	87	122	60	59	45	43
14	56	62	72	73	39	57	72	91	83	84	51	58	55	62	51	60	74	72	59	90	95	68	59	59
15	61	125	52	28	54	59	39	57	103	109	G	46	83	77	106	91	78	73	84	55	43	33	66	54
16	44	54	29	G	44	31	54	54	64	68	68	57	G	G	88	77	42	54	49	44	82	59	60	56
17	44	27	54	55	50	50	G	G	78	G	G	G	G	55	78	70	71	64	49	31	41	40	40	35
18	45	41	29	28	G	G	41	58	108	81	90	88	83	119	107	116	105	44	74	110	79	41	49	56
19	110	86	59	50	25	G	G	72	59	86	85	55	58	103	69	60	100	87	66	54	55	48	37	93
20	60	56	50	40	28	44	46	55	52	G	50	54	G	54	74	51	66	105	61	59	82	58	92	38
21	30	35	32	33	25	30	103	90	83	137	73	149	87	55	54	51	136	90	104	59	60	80	40	29
22	54	55	72	30	G	28	41	60	64	72	64	135	156	132	128	58	54	50	94	58	58	48	58	87
23	70	70	40	58	42	31	54	105	144	59	86	150	139	148	77	62	69	59	105	52	41	45	85	40
24	69	60	90	30	37	59	54	41	60	58	96	97	69	67	62	71	76	76	65	66	86	58	G	41
25	81	52	58	58	30	G	40	58	59	152	99	107	58	57	53	50	85	92	50	28	34	29	43	29
26	31	28	28	29	G	26	38	57	134	57	50	48	G	49	52	76	85	72	50	72	60	57	34	36
27	40	28	28	G	G	31	35	40	42	64	111	66	124	101	86	59	56	54	49	53	59	40	54	59
28	40	58	59	56	33	G	G	G	42	G	52	49	46	G	G	44	56	57	49	26	34	28	87	56
29	85	60	78	90	45	90	56	38	91	47	61	53	57	61	55	50	G	40	71	37	40	56	59	37
30	35	57	32	32	24	G	34	51	60	86	66	85	65	G	58	G	G	38	G	26	30	58	59	95
31	59	92	35	30	50	G	G	48	50	64	64	60	50	G	G	58	57	40	G	35	50	30	25	G
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31
MED	50	52	38	33	28	29	40	55	64	61	64	58	58	58	62	60	60	56	56	52	55	48	54	54
U Q	60	58	58	50	40	43	54	60	83	84	86	85	75	93	77	71	80	72	73	64	60	58	60	59
L Q	40	35	29	28	G	G	G	44	52	51	51	51	46	49	52	50	49	46	49	31	34	33	38	36

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF FMIN AT KOKUBUNJI

JUL. 1992

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	15	15	15	15	16	16	15	15	17	20	21	33	34	33	30	26	22	16	16	15	15	15	14	15
2	14	15	15	14	15	15	16	15	18	18	30	35	34	29	22	20	18	15	16	16	14	16	15	15
3	16	15	14	16	14	21	18	18	17	23	29	32	30	33	34	20	20	16	16	17	14	15	16	14
4	15	14	15	14	15	14	15	15	16	32	35	33	35	29	34	18	16	16	15	15	15	14	15	15
5	14	15	16	14	14	15	16	17	20	23	21	34	34	38	24	27	21	16	16	16	15	15	15	15
6	15	15	15	15	14	15	18	18	18	38	39	C	60	39	38	22	17	15	14	14	15	15	15	15
7	15	14	15	14	14	16	18	16	18	21	29	38	35	36	34	32	21	17	16	16	14	15	15	15
8	15	16	16	15	16	15	17	17	18	32	24	24	33	33	33	29	16	17	15	17	15	15	15	15
9	15	14	15	15	15	15	15	15	20	20	32	33	35	38	30	29	23	16	15	14	15	15	15	15
10	15	15	14	15	16	21	17	17	20	28	26	32	32	34	27	20	17	16	17	14	15	15	15	15
11	15	15	15	15	14	15	17	18	23	34	34	35	34	35	33	22	16	15	17	22	15	15	15	15
12	15	15	15	16	15	21	16	18	20	24	38	30	34	33	29	20	17	15	16	15	15	15	15	15
13	15	14	14	15	14	15	16	16	20	22	27	35	33	29	28	21	16	17	16	15	16	15	15	15
14	15	15	14	14	14	15	20	20	20	32	28	33	37	34	44	27	21	16	16	14	15	14	15	15
15	15	14	15	15	14	15	16	16	18	21	35	34	33	38	33	23	21	17	18	15	14	15	15	15
16	15	15	15	16	16	15	16	17	18	34	32	34	33	43	33	23	18	15	17	15	15	15	15	15
17	15	15	15	14	14	15	18	16	20	50	29	32	58	40	36	20	21	16	16	14	15	14	15	15
18	15	15	15	16	14	23	17	16	20	27	33	33	34	30	29	21	21	15	15	14	15	15	15	14
19	15	15	14	14	14	20	18	16	18	33	34	35	36	35	34	34	20	16	16	15	15	15	15	15
20	14	14	15	14	15	15	16	16	17	22	32	35	34	39	36	23	27	15	15	14	14	15	15	14
21	16	14	14	15	14	16	16	15	20	30	30	34	33	30	24	22	17	16	14	15	15	15	15	15
22	14	14	15	15	14	16	17	16	20	23	32	35	33	34	21	21	18	15	15	17	15	15	15	15
23	15	14	14	15	15	15	16	15	15	18	22	33	34	32	36	23	17	16	16	16	15	15	15	15
24	15	14	15	15	16	14	14	17	17	20	32	33	23	30	23	32	18	15	16	18	15	15	17	15
25	15	14	15	15	14	18	15	15	16	18	28	33	38	39	21	20	17	17	15	15	15	15	15	15
26	15	15	15	15	14	15	16	16	15	18	29	30	26	22	21	18	17	16	15	15	15	15	15	15
27	14	14	15	15	16	15	18	16	20	23	21	23	23	32	20	20	16	15	15	14	15	15	14	16
28	15	15	14	14	15	17	15	16	18	24	24	24	45	49	38	18	20	15	16	16	14	15	15	14
29	15	15	15	14	15	14	15	16	17	20	36	20	38	22	33	18	17	16	16	15	14	15	15	15
30	15	15	14	14	16	17	16	15	16	20	35	29	24	27	22	18	15	18	16	15	15	16	15	15
31	14	14	14	15	15	17	15	15	16	18	26	28	32	27	24	20	33	15	17	16	15	15	16	16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31
MED	15	15	15	15	15	15	16	16	18	23	30	33	34	33	30	21	18	16	16	15	15	15	15	15
U Q	15	15	15	15	15	17	17	17	20	32	34	34	35	38	34	26	21	16	16	16	15	15	15	15
L Q	15	14	14	14	14	15	15	15	17	20	26	30	33	30	24	20	17	15	15	14	15	15	15	15

HOURLY VALUES OF FOF2 AT YAMAGAWA

JUL. 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		55	54	53			54	66		A	A			A	85		76	74		87	82	A	61	72
2	74	A	77			65	54	72		64		70	81	102	103	96	100	102	101	101	88	76	69	74
3	76	84	80	73	57	52		76	68	75	76	74	71	71	A	77		105	91		88	80		73
4	75	75			62	62		63	A	A		A	96		105	108	A		97		78	66		
5	71	72	66	A	58		60	61	68		72	71	72	90	85	99	101	107	107	90	82	81	76	78
6	81	81	75	68	66			80	81	77	65	77		104	105	96	94	106	105	98	73	71		72
7	71	73	67	66	60		61	73		82	A	76		A	82		94	105	107	90	73	73	77	77
8	76	74	77	64		53	57	70	74		72	71	74	80	86	87	81	80	83		87	79	82	86
9	87	86	79	72		62	72	78	76		A	A	A	78	87	91	100	111	111	86	A	81	80	
10	85	90		74	78	76		84	74	74		80	90	101	104	100	90	91	87	82	82		87	80
11	83	80	82	80			66	85		78	85	85	86	94		96	92	91	90	91	90	86	84	90
12	87	97		86	81	71		84	81	80		78	74	84	104	110	93	82	90	102	97	88	87	90
13	87	87	91		68	73	80	63	81	78	82	88	85		75	78	77	A	80	98	85			78
14	78			63	59	56	67		A	A	A			A		67	72	67	67	79	A	A	66	70
15	67	53		62	55		54	81	78	72	73	75	A		86		88	90		83	81	76	76	75
16	78	80		76	77		80	78	80	74		77	90	105	111		86	80	A	76	81	80	81	86
17	87	87	78		71	65	65	84	85		A			87	92		87	91	83	68	76	76	A	66
18	75	74	79			62	62	68	68	78	76	A	A	104	110	105	105	102	102	102	96	80		
19	78	A			63	62			74	A	80	A	90	98	91	93	105	100	76		81		78	74
20	67	72		72	72	75			71	75	A	69			92	104	107		72	66	78	78	87	A
21	78	71		65	51	53	63	62	71	A	A	78	86	88	A	91	84	74		75	82		75	74
22	83	82	76		73	66	79		86	76	84	97		98	100	96	94	105		86	86	82	76	74
23	67		68	42	41	34	54	76	A	A	A	64		A	66	70	67		60	55	53	A		A
24	66	56		54	48	54	64	62	48	54	53	A	70	A	A	71			71	66	73	67		72
25		66	60			60	66	63	62			77	64	70	A	72	A		86		58	54		62
26	59	60	58	60	54	57				59	60	50		62	68	65	65	66	77			66	63	63
27	63	63		60	53	42	52		67		70	A		118	A	78	77	81	86	90	A	A		74
28		50	52	52	53	52	63	66	75			61	76		95	90	90	96			78	52	60	
29		61	51			66	57		57	65		84	95	98	101	A	A	93	86	85	86			
30		66	55		53		53	71	76		72		95	A	A	95	98	87	84		85		67	72
31		52	52			43	51	66	71	75	A	70	77			97	102	91	91	86	76	72		78
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	27	20	19	22	23	23	24	23	17	14	21	18	19	22	25	26	25	25	23	27	21	19	24
MED	76	73	72	65	60	62	62	72	74	75	72	76	83	94	92	93	91	91	86	86	82	76	76	74
U Q	83	82	78	73	71	66	66	79	80	78	80	79	90	102	104	98	100	103	99	91	86	80	82	78
L Q	69	61	56	60	53	53	54	64	68	68	70	70	74	80	85	77	81	80	78	76	76	69	67	72

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF FES AT YAMAGAWA

JUL. 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		48	34	32			45	48		98	70			114	85		46	G		33	104	125	41	109
2	91	146	43			30	40	41		76		66	51	G	G	72	G	44	40	G	G	G	48	59
3	32	39	37	25	45	38		G	46	52	51	54	54	54	82	61		42	40	G	90	82		45
4	38	38			G	G		47	112	113		107	80		G	74	104	G	44		59	31		
5	33	28	91	70	68		40	67	46		54	55	G	G	G	111	88	56	45	66	32	82	94	28
6	25	28	29	43	48			G	61	G	71	G		52	G	56	73	58	53	117	48	29		33
7	44	40	33	32	32		G	G		66	95	84		91	61		74	G	49	58	33	G	G	G
8	G	G	G	G		G	38	45	48		G	52	G	G	62	86	69	56	54		82	43	41	59
9	43	38	28	31		30	G	60	40		104	154	140	56	G	54	84	67	88	97	104	66	40	
10	32	30		G	32	49		41	42	51		58	49	51	55	70	51	84	49	40	40		30	G
11	G	G	G	G			G	46		61	72	82	62	G		G	G	47	44	56	24	29	27	G
12	G	G	G	G	G	G		G	G	G		G	G	52	G	G	67	49	G	56	59	69	59	38
13	30	G	G		G	G	40	54	52	93	87	87	G		77	52	52	163	60	91	80			26
14	G			G	G	G	29		62	62	61			67		54	G	G	40	61	79	92	83	69
15	69	84		34	44		57	66	51	52	90	92	95		74		G	G		50	32	42	54	40
16	34	40		G	G		G	50	59	95		63	60	G	71		59	78	63	44	40	40	55	81
17	37	38	30		30	G	46	46	G	G	139			54	69		55	G	78	93	88	55	58	44
18	43	30	28			23	36	44	55	64	84	114	135	123	82	G	67	41	56	30	G	33		
19	45	134			33	G			60	83	72	99	72	G	82	88	G	97	64		64		94	46
20	48	66		61	48	40			70	55	128	82		G	58	77	85		56	61	49	82	79	113
21	45	27		45	24	G	40	56	51	92	128	G	77	82	114	G	56	G		31	G		30	92
22	92	77	92		28	G	51		53	62	58	56		53	78	54	G	92	148	143	60	71	33	33
23	62		32	41	42	26	30	40	68	151	150	92		94	94	123	53		40	29	26	36		79
24	41	G		30	56	36	28	G	44	48	68	50	70	69	152	G			40	40	29	G		26
25		38	40			32	G	59	45			104	56	G	74	64	90		38		31	30		G
26	30	29	30	40	34	24				G	G	G		49	G	51	44	43	46			56	32	36
27	40	28		25	25	34	33		60		79	58		113	160	77	48	61	90	G	80	84		48
28		32	43	58	46	58	70	G	41			G	G		G	G	49	42			G	36	44	
29	G	38	57			28	50		G	72		52	49	66	64	110	150	42	G	G	88			
30		52	26		37		28	46	48		70		109	89	93	62	82	123	70		58		29	33
31		91	35			30	40	37	60	64	73	84	74			61	49	64	72	46	56	58	G	39
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	29	21	20	22	23	23	24	26	24	23	27	21	26	28	26	29	27	27	24	30	25	21	26
MED	38	38	32	32	32	26	38	46	51	63	72	63	60	54	70	61	55	47	49	48	52	43	41	40
U Q	45	50	41	42	45	34	45	52	60	87	95	92	78	82	82	77	78	67	64	63	80	76	58	59
L Q	30	28	27	G	24	G	28	19	44	51	61	52	25	G	G	51	45	G	40	30	31	30	30	28

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF FMIN AT YAMAGAWA

JUL. 1992

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

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

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF FOF2 AT OKINAWA

JUL. 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	39	53	55	54	54	44	50	60	63	62	64	65	78	95	105	105	94	88	A	87	80	54	A	A
2	54	34	58	52	72	72	72	73	66	60	65	78	94	112	128	121	123	110	110	105	85	77	62	77
3	78	78	85	A	66	62	54	63	73	78	77	74	78	A	81	88	104	112	110	88	87	66	66	A
4	68	36	62	72	54	44	53	60	64	65	81	A	95	104	112	112	111	112	103	106	85	72	75	28
5	71	34	66	62	60	54	62	60	66	62	67	A	86	95	85	94	100	111	111	87	75	74	A	78
6	82	85	77	67	63	59	61	77	82	68	71	80	88	104	105	95	105	120	110	87	80	74	74	78
7	76	76	79	72	64	61	60	72	80	78	77	C	C	A	85	90	103	111	105	85	77	76	84	80
8	81	84	80	66	55	51	54	72	73	72	74	71	80	87	91	96	95	92	86	87	84	77	77	80
9	80	78	86	66	63	66	66	72	66	77	74	65	A	A	94	92	112	118	110	87	77	77	75	80
10	80	83	78	72	66	73	81	66	77	75	76	83	91	103	96	103	105	104	91	91	84	80	83	80
11	77	86	85	72	63	54	61	80	85	82	81	80	86	87	95	91	94	94	91	90	85	83	86	86
12	87	87	87	83	72	60	63	70	78	78	85	80	75	91	105	105	91	94	104	105	90	84	77	80
13	84	87	90	66	63	60	66	76	67	82	87	90	91	87	95	C	94	91	88	90	74	81	83	81
14	86	85	87	66	64	54	61	70	53	A	49	A	51	72	82	85	85	75	70	66	54	A	A	A
15	A	62	62	54	54	33	A	76	A	69	62	76	87	95	103	107	103	105	105	87	81	78	77	82
16	85	85	85	85	85	82	72	72	77	70	67	A	95	112	110	102	104	96	90	88	84	68	71	75
17	71	76	A	66	65	65	72	85	A	A	A	68	A	93	111	105	103	102	91	85	84	83	42	53
18	71	82	88	90	84	65	67	70	76	82	83	A	92	106	A	121	138	146	144	142	104	88	84	84
19	64	84	87	85	80	67	62	66	72	70	82	85	101	91	102	111	105	88	85	85	87	86	61	62
20	71	74	67	67	77	62	66	72	66	69	69	A	A	95	103	111	94	90	80	77	82	72	A	51
21	A	76	A	58	58	53	53	66	54	A	92	A	85	95	101	95	88	82	87	88	81	66	73	70
22	72	80	66	57	55	62	66	81	72	66	73	85	100	104	104	104	116	99	104	86	85	88	86	87
23	85	57	58	A	A	A	52	62	66	66	64	A	85	93	86	85	77	85	81	58	52	A	58	28
24	60	62	52	52	58	61	A	54	60	60	A	61	A	A		A	A	82	82	85	A	A	A	66
25	66	62	64	62	54	54	61	54	61	65	67	72	77	91	91	94	94	105	110	87	84	84	85	85
26	53	73	66	54	55	55	55	66	55	64	62	62	66	76	70	68	71	81	89	74	66	54	62	28
27	61	A	60	54	45	40	38	43	72	75	62	66	A	90	96	91		88	105	82	76	80	73	64
28	73	A	A	70	62	58	53	66	85	80	66	65	75	94	96	100	95	96	91	84	85			
29		60	58	55	64	78	30	49	55	C	67	86	91	101	104	A	103	A	A	90	85	86	78	66
30	84	75	58	40	38	34	43	64	73	66	72	90	90	103	111	111	112	112	110	105	106	80	66	66
31	61	55	54	51	23	38	30	42	65	72	A	A	88	95	103	125	142	122	108	111	88	86	84	84
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	29	28	29	30	30	29	31	29	27	28	21	25	27	29	28	29	30	29	31	30	27	25	27
MED	72	76	66	66	63	60	61	66	67	70	72	76	87	95	101	101	103	98	103	87	84	78	75	78
U Q	81	84	85	72	66	65	66	72	76	78	79	84	91	103	105	109	108	111	110	90	85	84	83	81
L Q	65	61	59	54	55	53	53	60	63	65	65	65	78	91	91	91	94	88	87	85	77	72	66	64

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF FES AT OKINAWA

JUL. 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	33	33	33	23	G	40	34	38	44	67	80	48	78	84	56	50	48	56	94	72	57	30	40	91
2	32	38	35	32	41	44	39	50	56	50	58	48	G	47	53	90	51	50	43	34	34	28	28	G
3	58	40	33	38	38	32	28	47	44	58	84	57	71	90	G	G	G	G	45	G	25	29	24	31
4	G	24	G	G	G	G	G	37	41	G	66	169	85	70	64	69	59	92	59	91	82	33	G	G
5	28	35	40	36	29	G	27	42	58	56	61	133	68	59	G	G	50	49	50	48	58	58	112	39
6	G	G	G	G	27	G	34	49	45	62	G	G	G	G	71	59	68	61	54	45	33	83	50	65
7	34	39	43	33	26	G	G	35	G	52	58	C	C	80	98	84	50	G	82	72	33	58	58	59
8	G	G	29	25	G	G	G	57	43	66	G	53	G	49	61	69	62	54	39	80	80	58	28	67
9	33	38	26	G	G	G	30	45	84	47	92	94	84	146	91	62	57	52	59	67	84	38	G	25
10	32	40	32	G	G	38	40	45	64	57	58	83	80	63	52	50	67	60	64	46	34	24	G	33
11	G	G	G	G	G	G	G	34	44	G	62	48	52	G	52	66	75	50	75	38	34	33	26	G
12	G	G	G	G	G	G	30	G	44	G	45	G	G	G	G	G	52	67	50	30	33	58	58	33
13	34	24	32	G	26	29	33	36	48	51	65	G	51	G	74	C	52	G	92	72	82	41	26	G
14	G	G	G	G	G	G	G	41	55	51	55	72	57	G	G	G	G	47	36	36	G	59	89	90
15	83	48	86	40	50	39	51	58	95	101	72	88	65	G	50	G	G	G	38	48	50	58	44	25
16	28	37	G	G	G	G	G	G	50	50	58	93	71	106	73	64	71	61	59	58	58	37	42	30
17	66	84	85	40	48	33	31	44	85	94	88	60	93	67	48	G	44	G	50	G	26	30	G	G
18	24	32	29	G	G	G	29	44	66	G	63	95	82	68	118	79	51	42	46	59	83	40	40	30
19	28	66	40	29	68	51	32	48	51	57	74	80	81	68	70	72	91	78	82	41	49	31	40	G
20	40	45	31	49	59	60	59	69	68	83	83	106	150	104	62	63	52	49	54	40	46	41	175	71
21	91	83	110	69	30	G	G	46	108	82	148	161	82	67	56	70	68	66	46	28	G	G	G	28
22	40	48	56	40	70	24	30	59	82	61	168	96	94	59	70	72	66	46	38	29	G	40	G	38
23	40	33	32	40	71	59	33	G	44	80	67	82	92	78	82	82	81	50	50	57	30	60	43	39
24	57	41	G	37	50	40	39	40	43	56	100	58	78	162	165	95	84	71	57	91	85	68	82	48
25	33	30	34	39	35	44	39	35	G	47	51	56	52	58	63	64	67	60	57	85	39	28	23	G
26	G	G	G	G	G	29	31	G	40	G	G	G	G	G	G	47	G	42	44	30	G	G	34	38
27	29	41	36	31	40	32	35	48	58	67	65	84	84	108	163	83		62	56	44	59	30	24	143
28	58	60	84	45	40	65	90	86	67	48	46	47	G	G	G	G	47	61	42	30	31			
29		25	G	38	46	58	35	33	G	C	G	49	G	54	69	101	69	98	150	61	28	58	40	38
30	59	40	32	37	24	G	35	40	42	48	82	61	81	G	78	67	62	66	84	38	59	G	G	G
31	G	27	G	G	28	30	37	48	50	61	85	81	81	83	72	57	92	62	39	41	29	38	30	65
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	31	31	31	31	31	31	30	31	30	30	31	31	30	30	31	31	31	31	30	30	30
MED	32	37	32	31	28	29	32	44	50	56	65	66	74	63	63	64	58	54	54	45	34	38	32	33
U Q	40	41	40	39	46	40	37	48	66	66	83	93	82	83	74	72	68	62	64	67	59	58	44	59
L Q	G	24	G	G	G	G	27	35	43	48	55	48	51	G	50	47	50	46	44	34	29	30	23	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF FMIN AT OKINAWA

JUL. 1992

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	15	15	14	15	15	15	15	14	20	23	27	28	32	29	29	27	26	21	15	15	15	15	15	15
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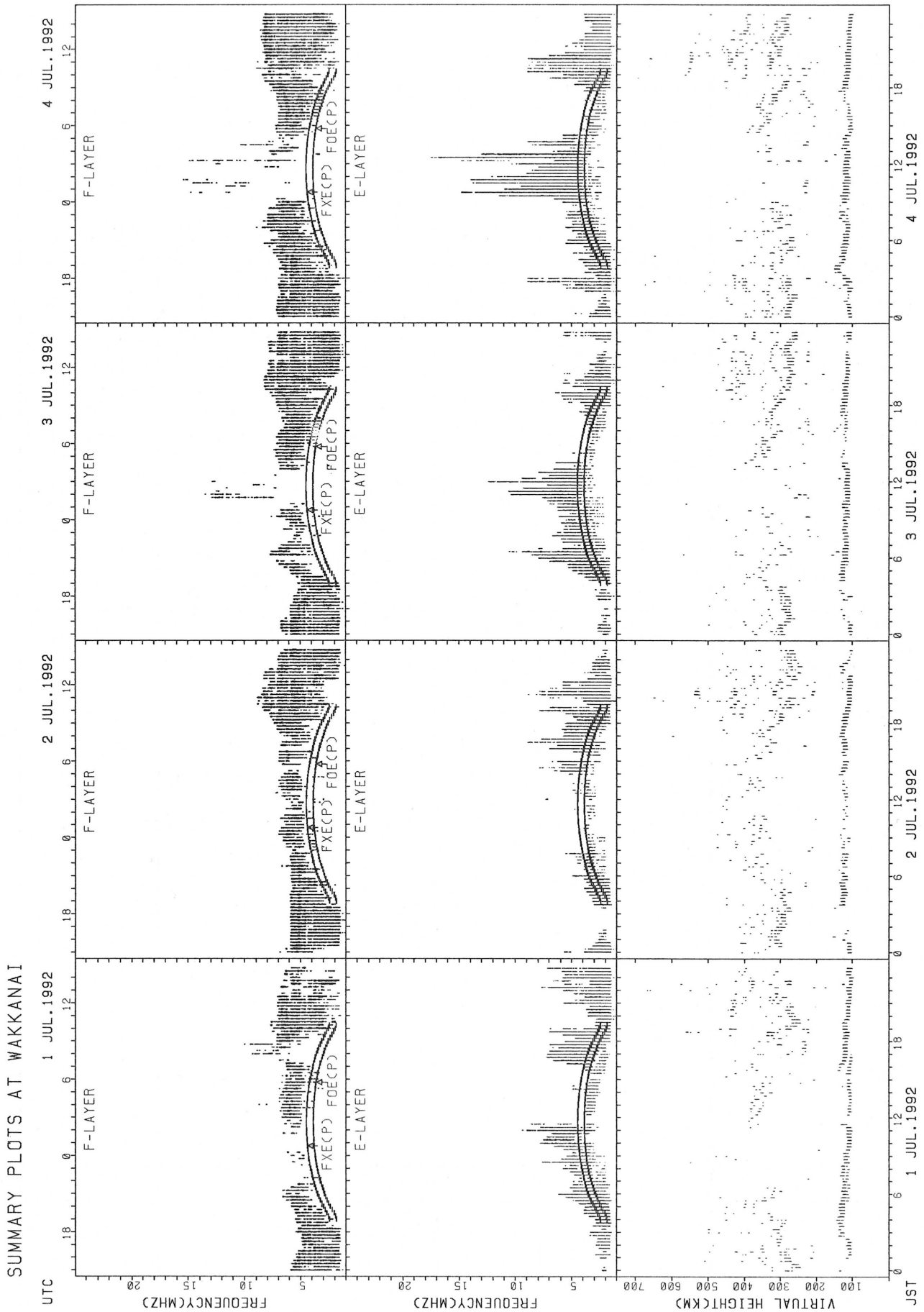
COMMUNICATIONS RESEARCH LABORATORY, JAPAN


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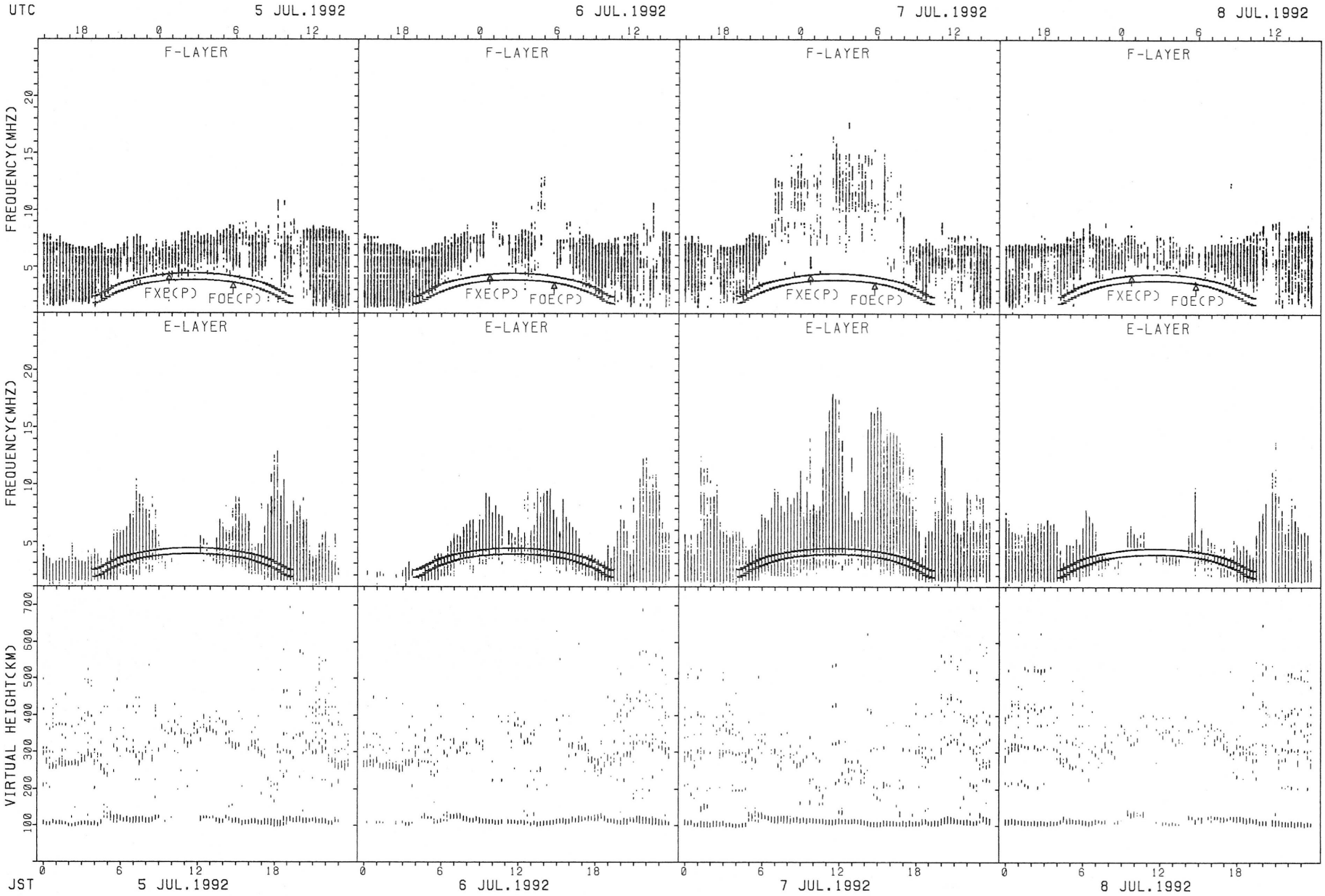
FOE(P)
FREQUENCY(MHZ)
VIRTUAL HEIGHT(KM)
FXE(P): PREDICTED VALUE FOR FXE
FOE(P): PREDICTED VALUE FOR FOE

SUMMARY PLOTS AT WAKKANAI



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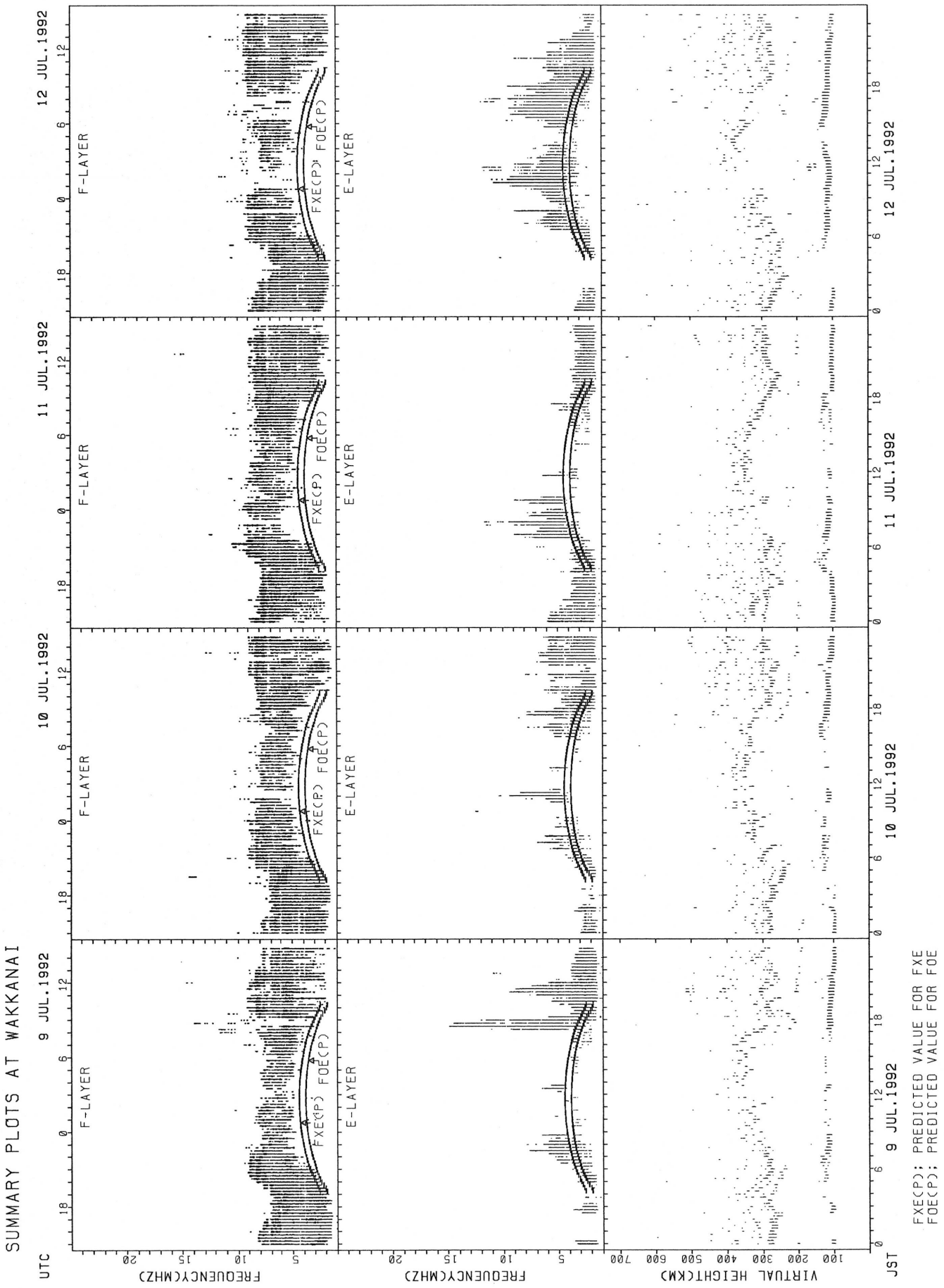
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FXE(P); PREDICTED VALUE FOR FXE
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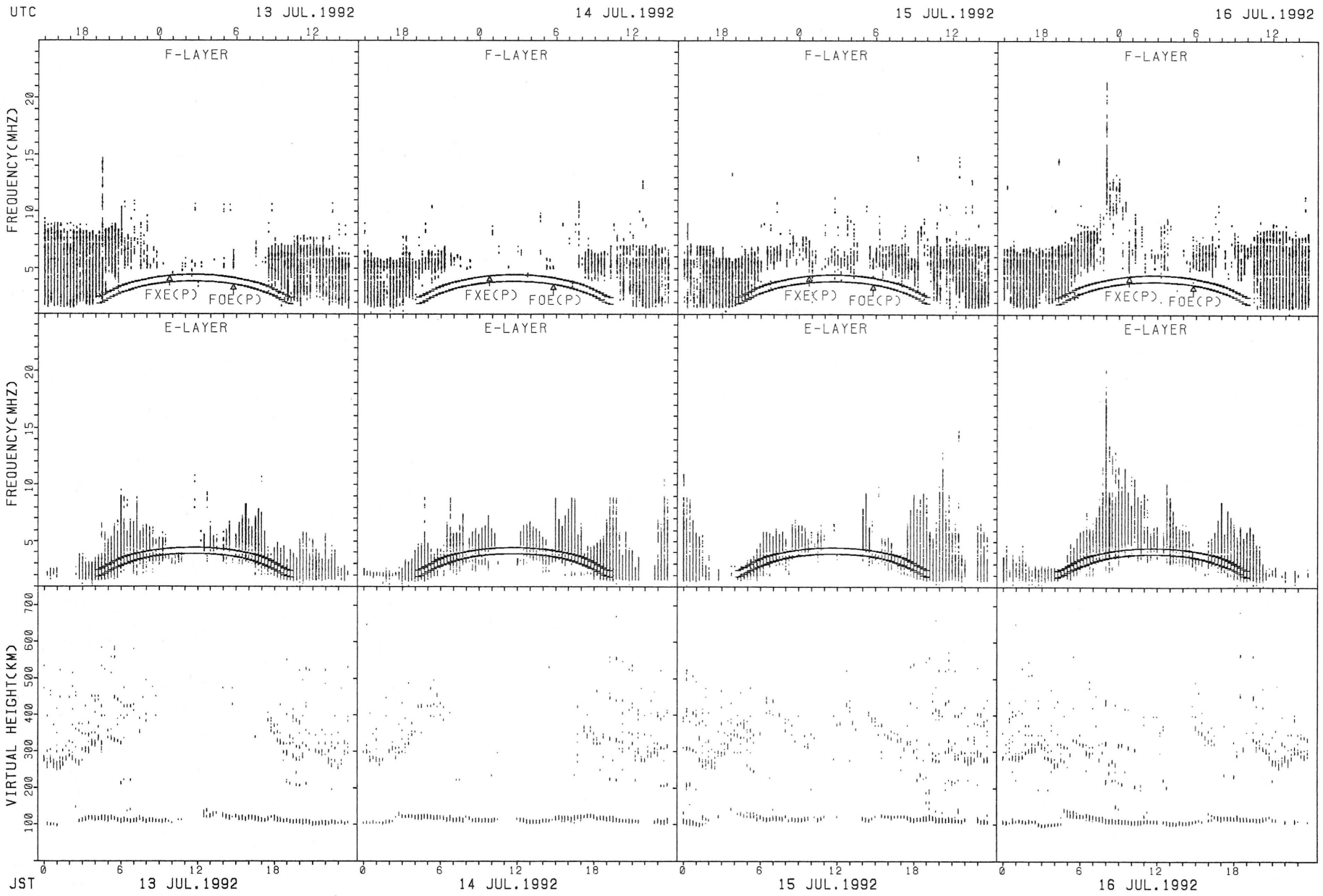
SUMMARY PLOTS AT WAKKANAI



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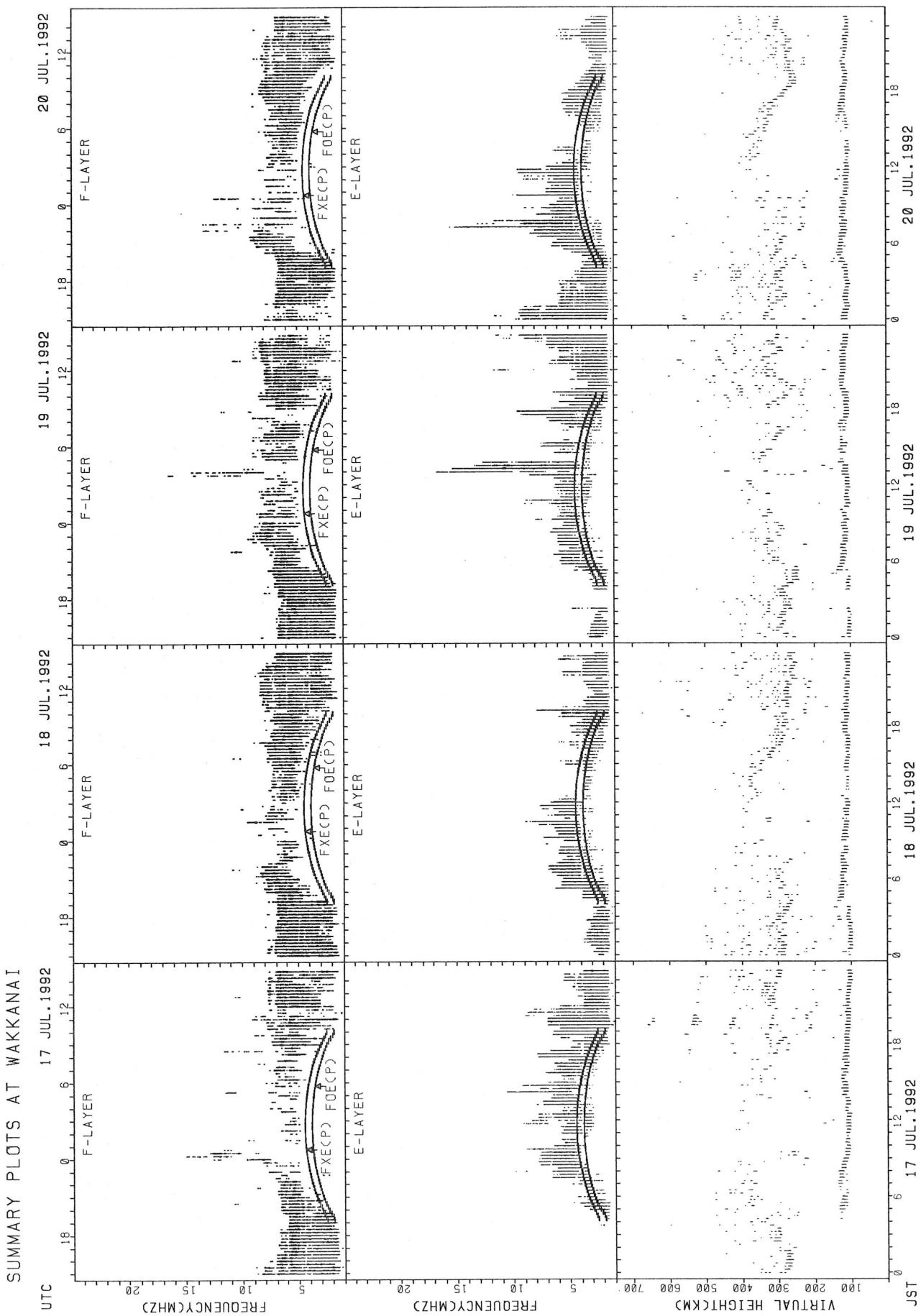
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FREQUENCY(MHZ)
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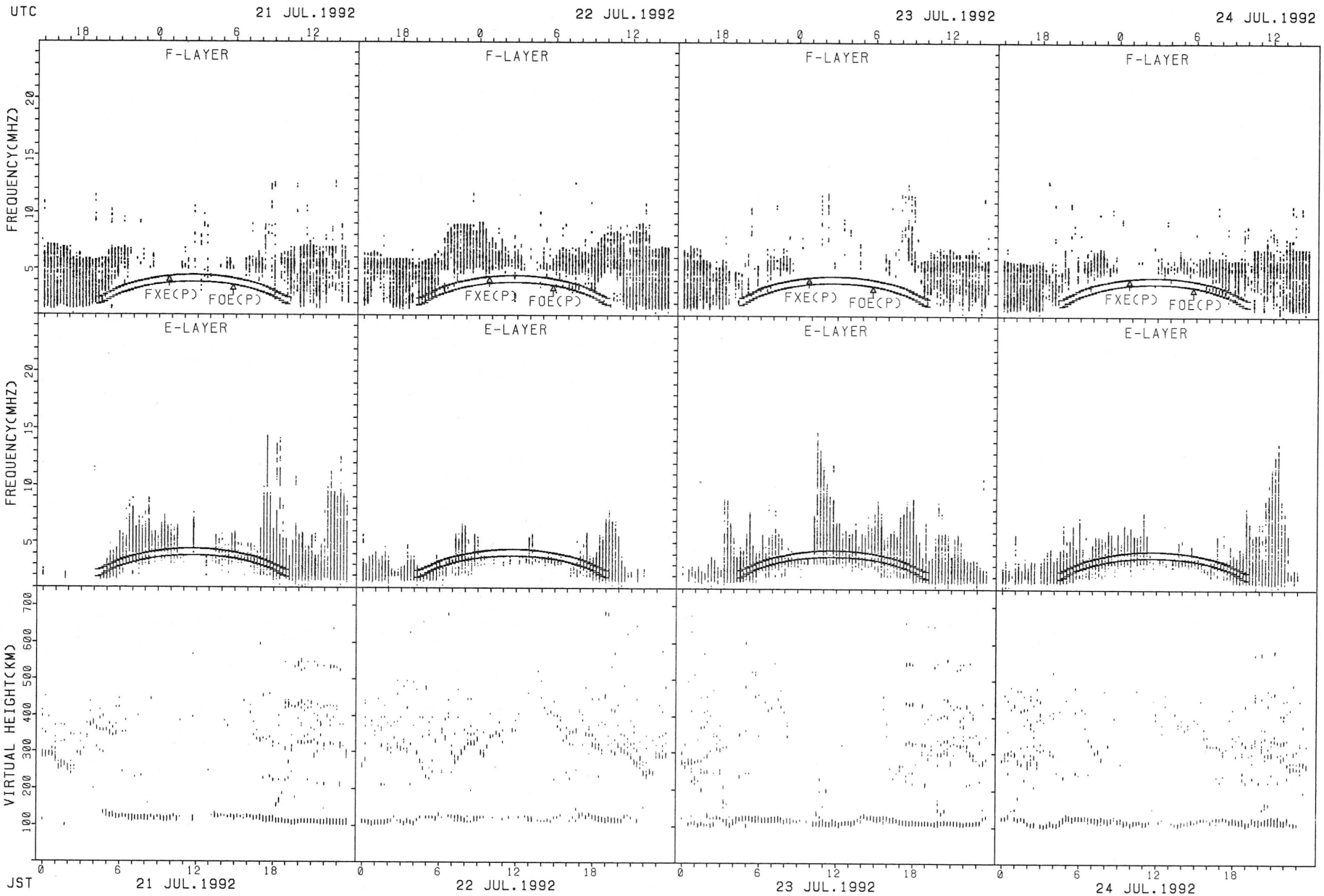
SUMMARY PLOTS AT WAKKANAI



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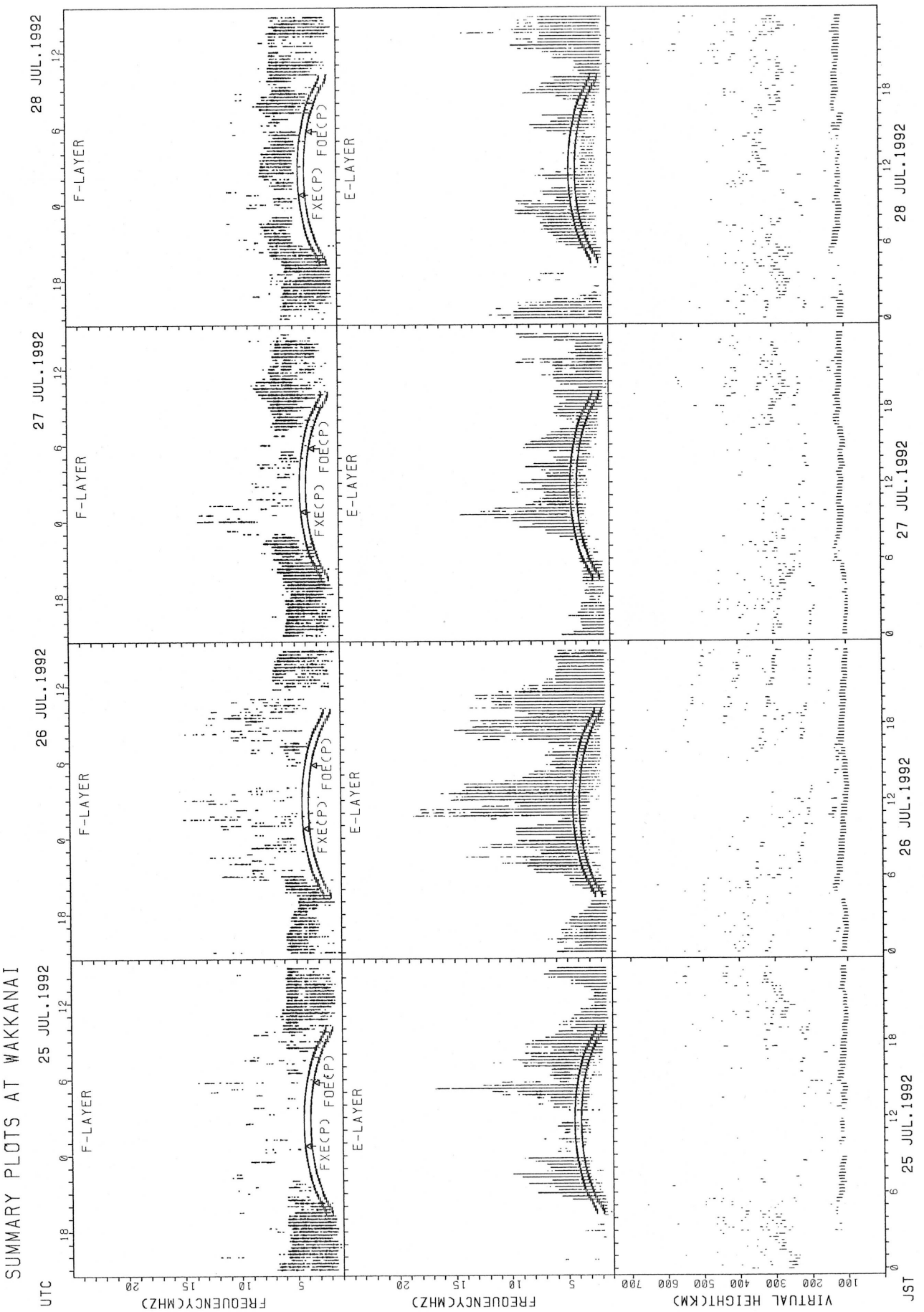
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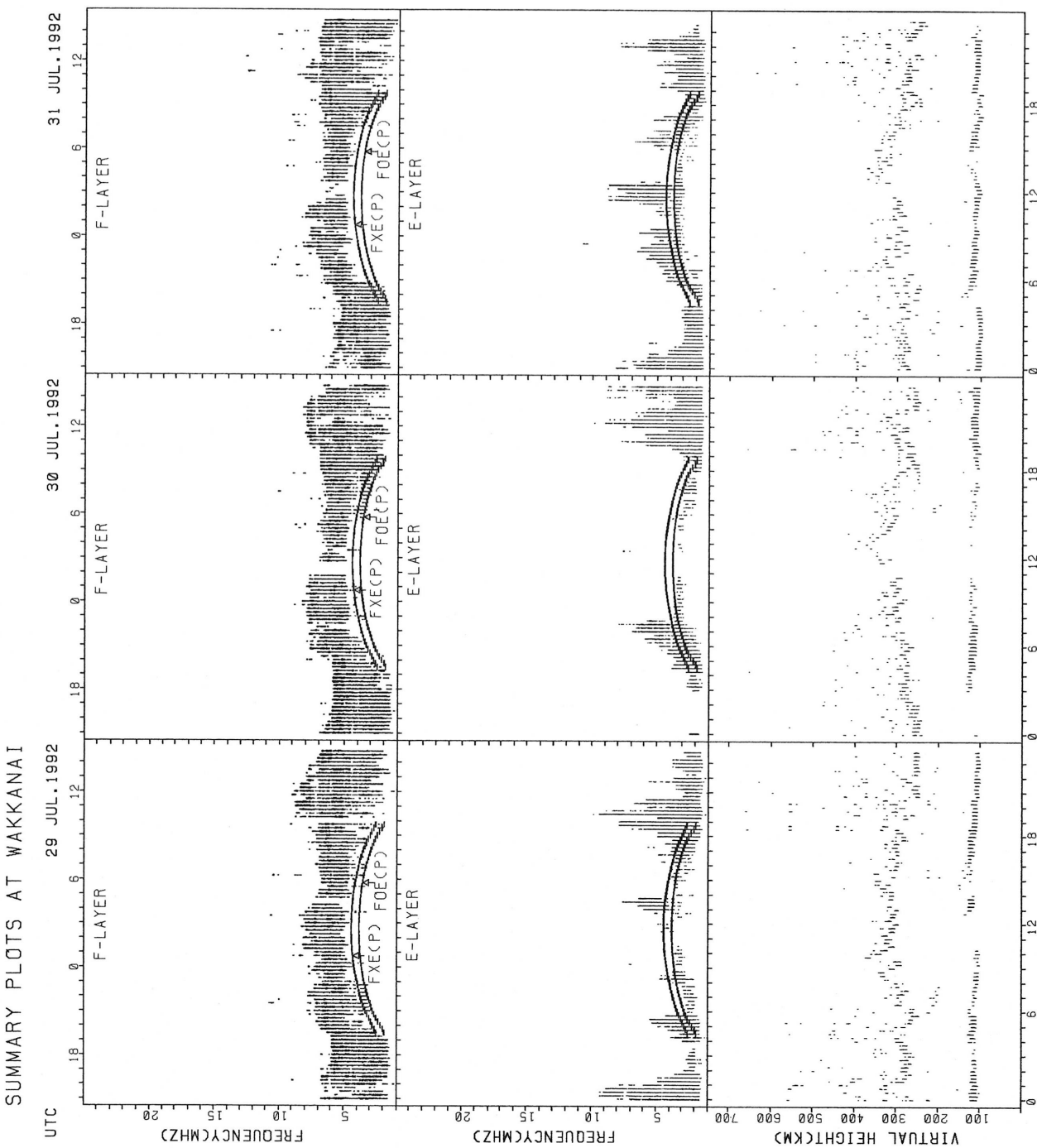
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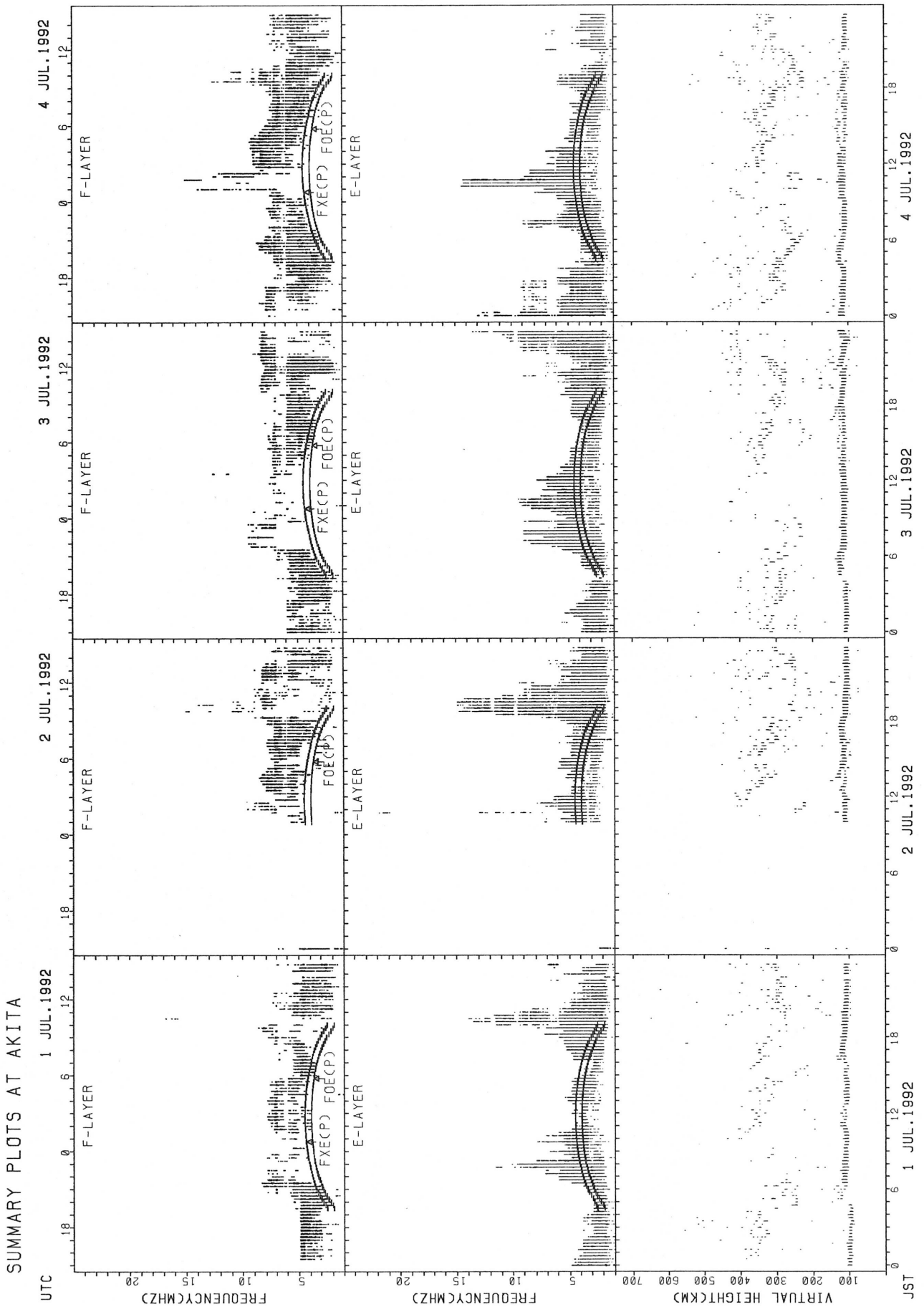
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FOE(P)
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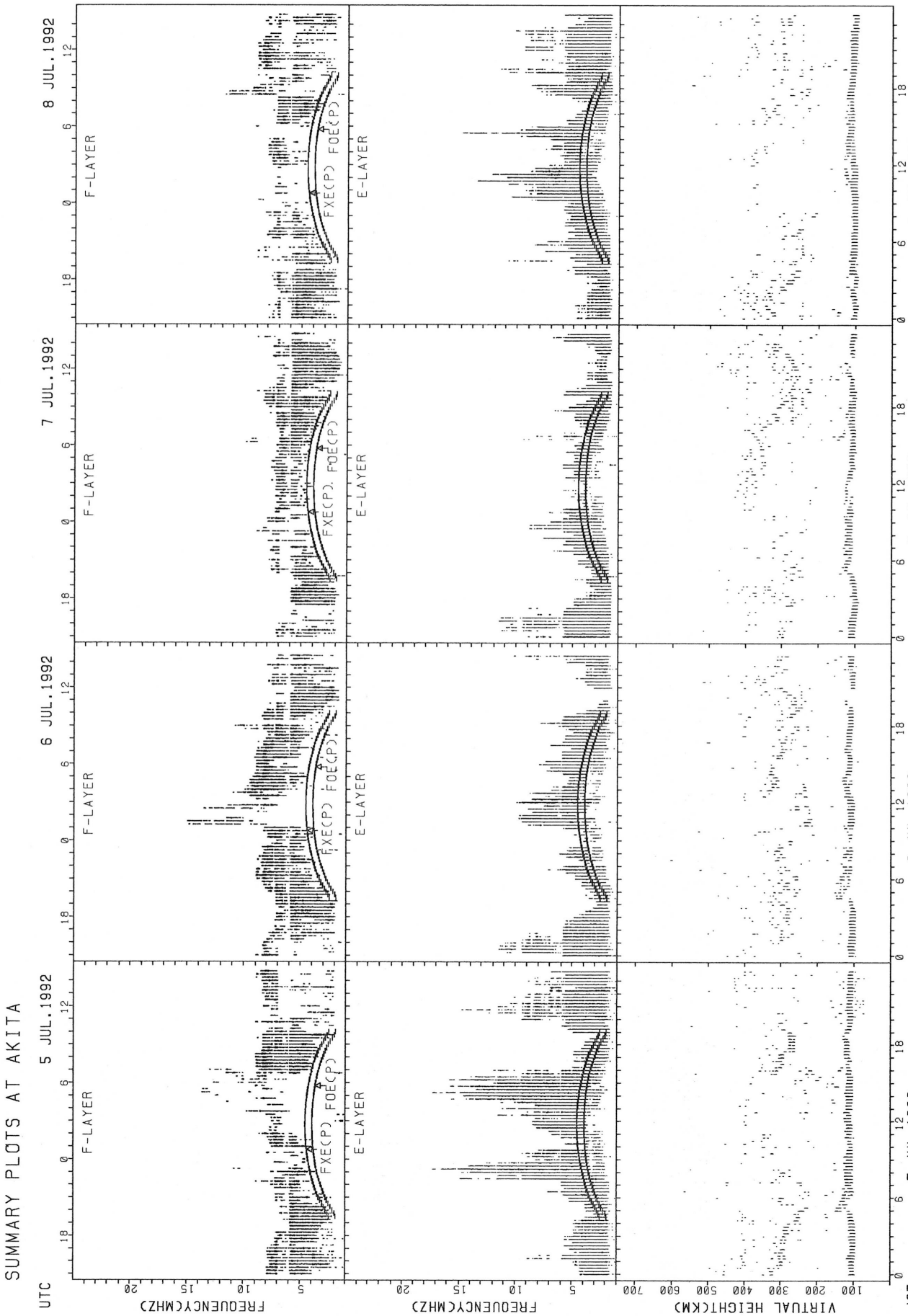
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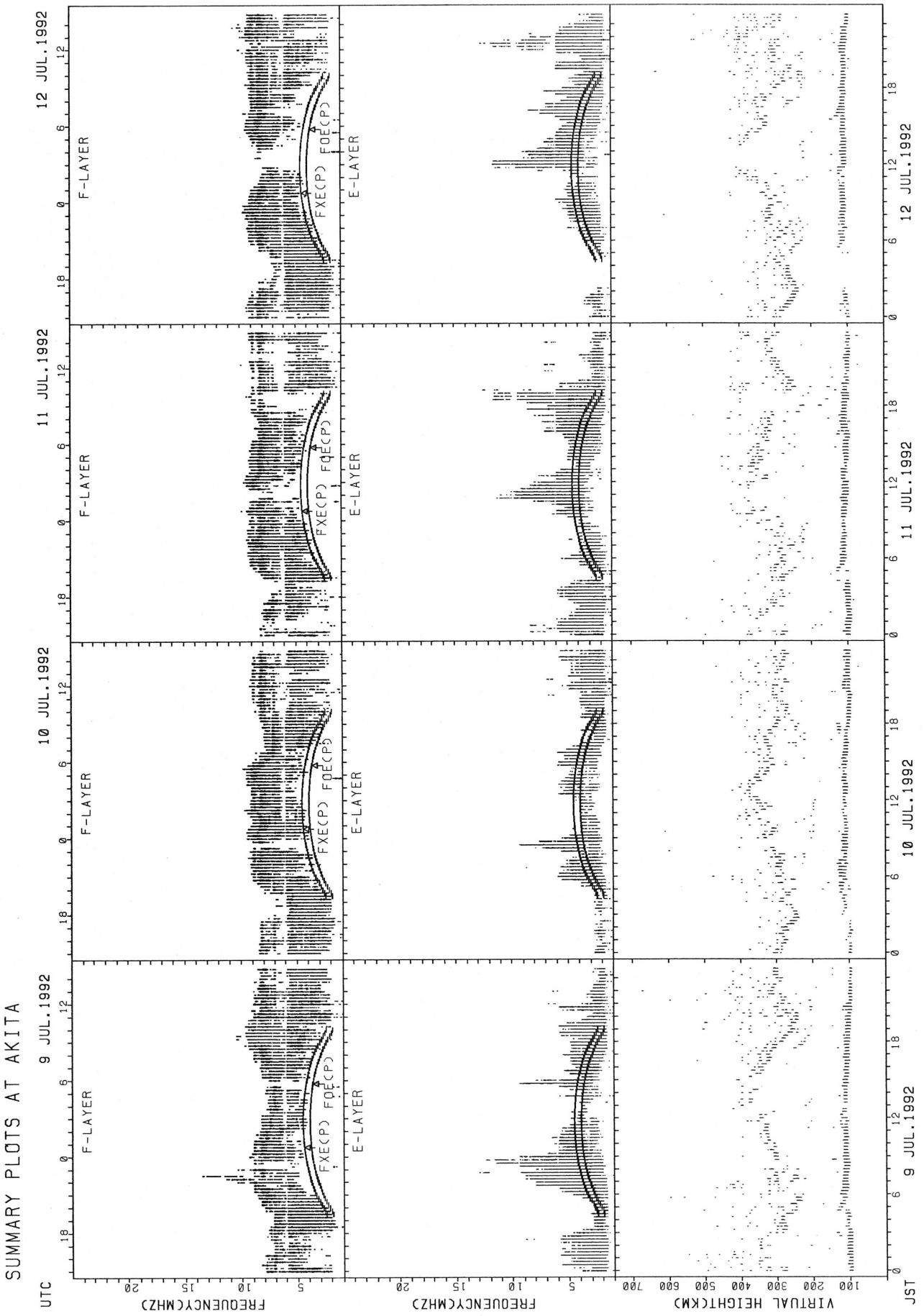
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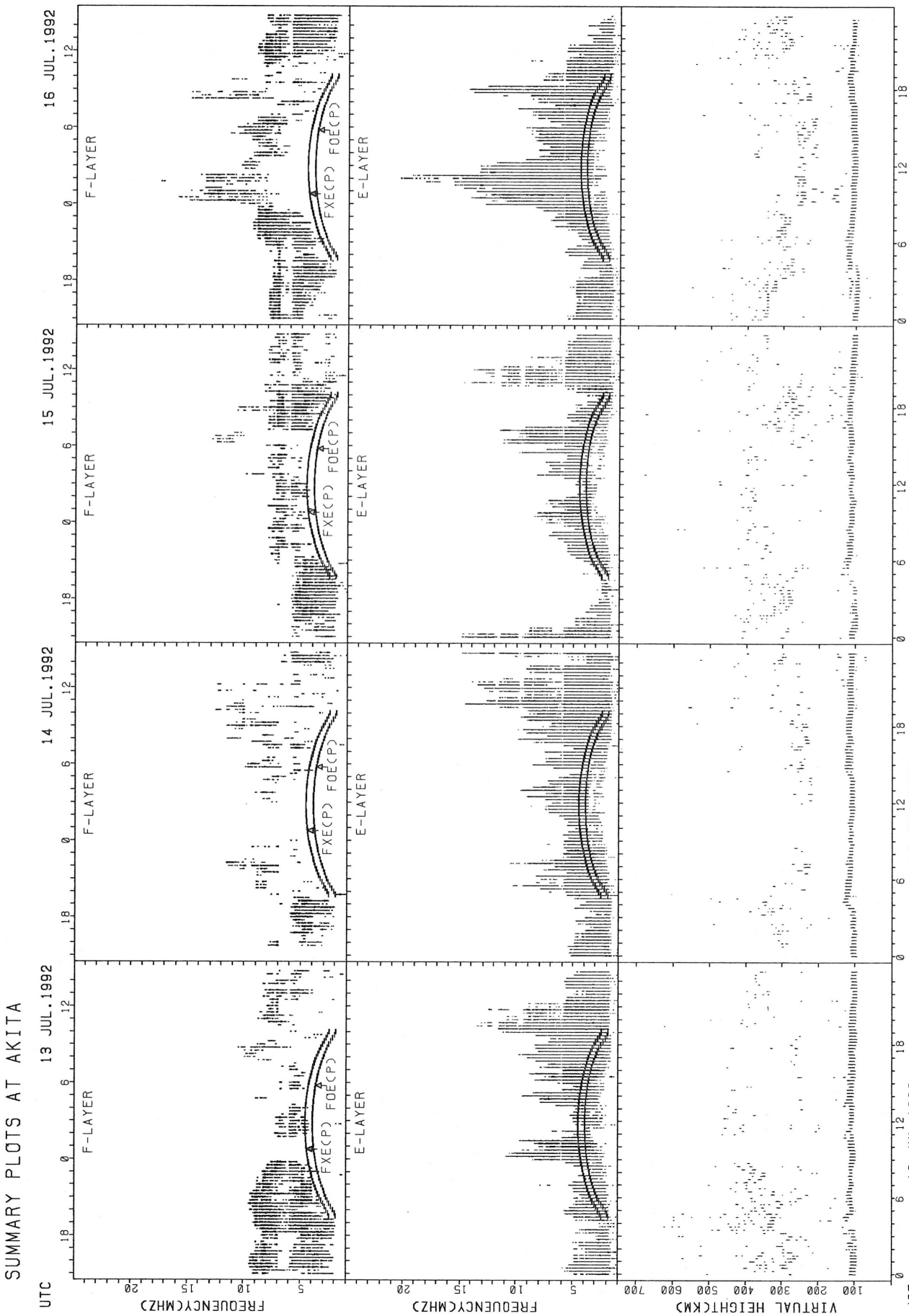
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VIRTUAL HEIGHT(KM)
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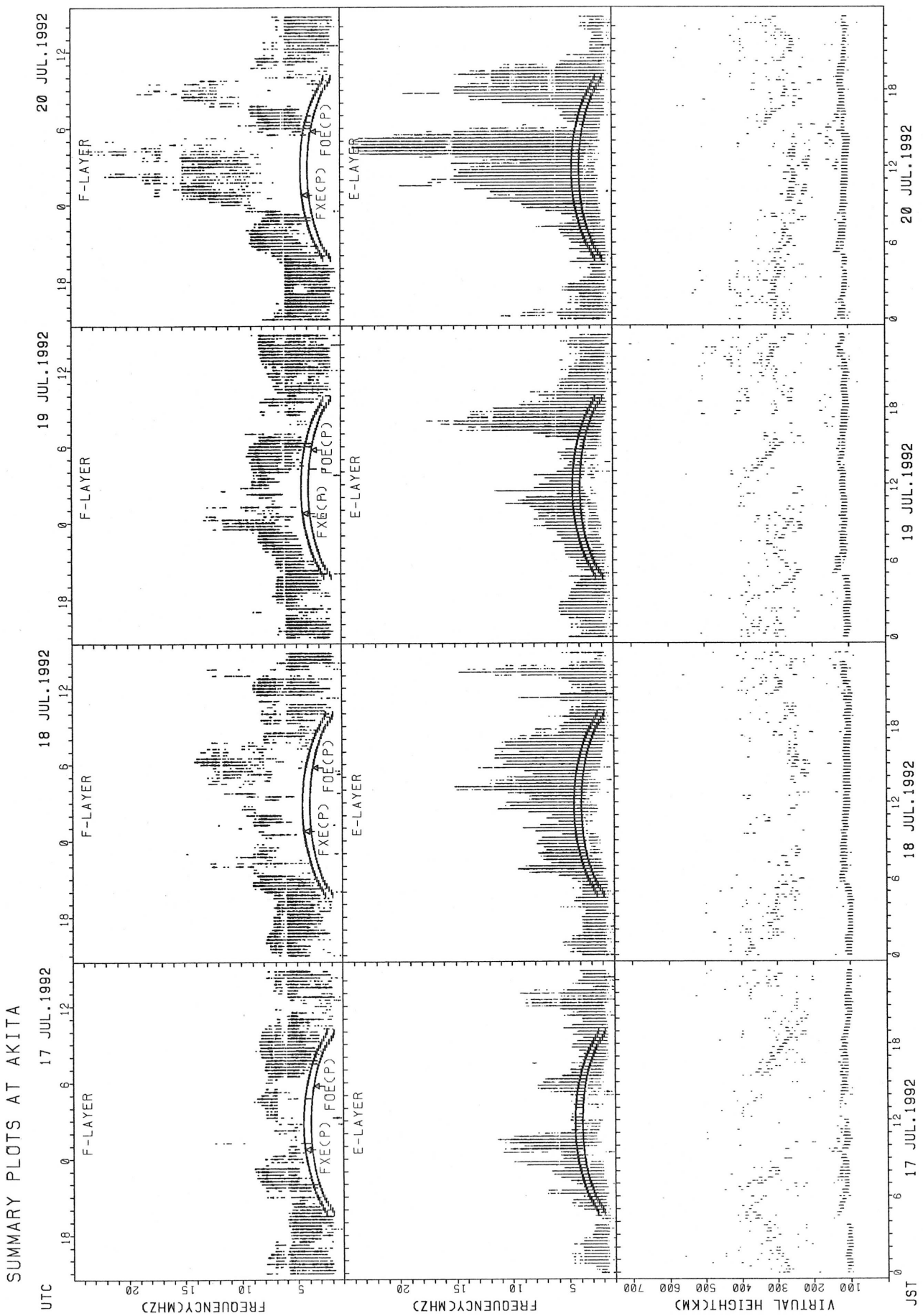
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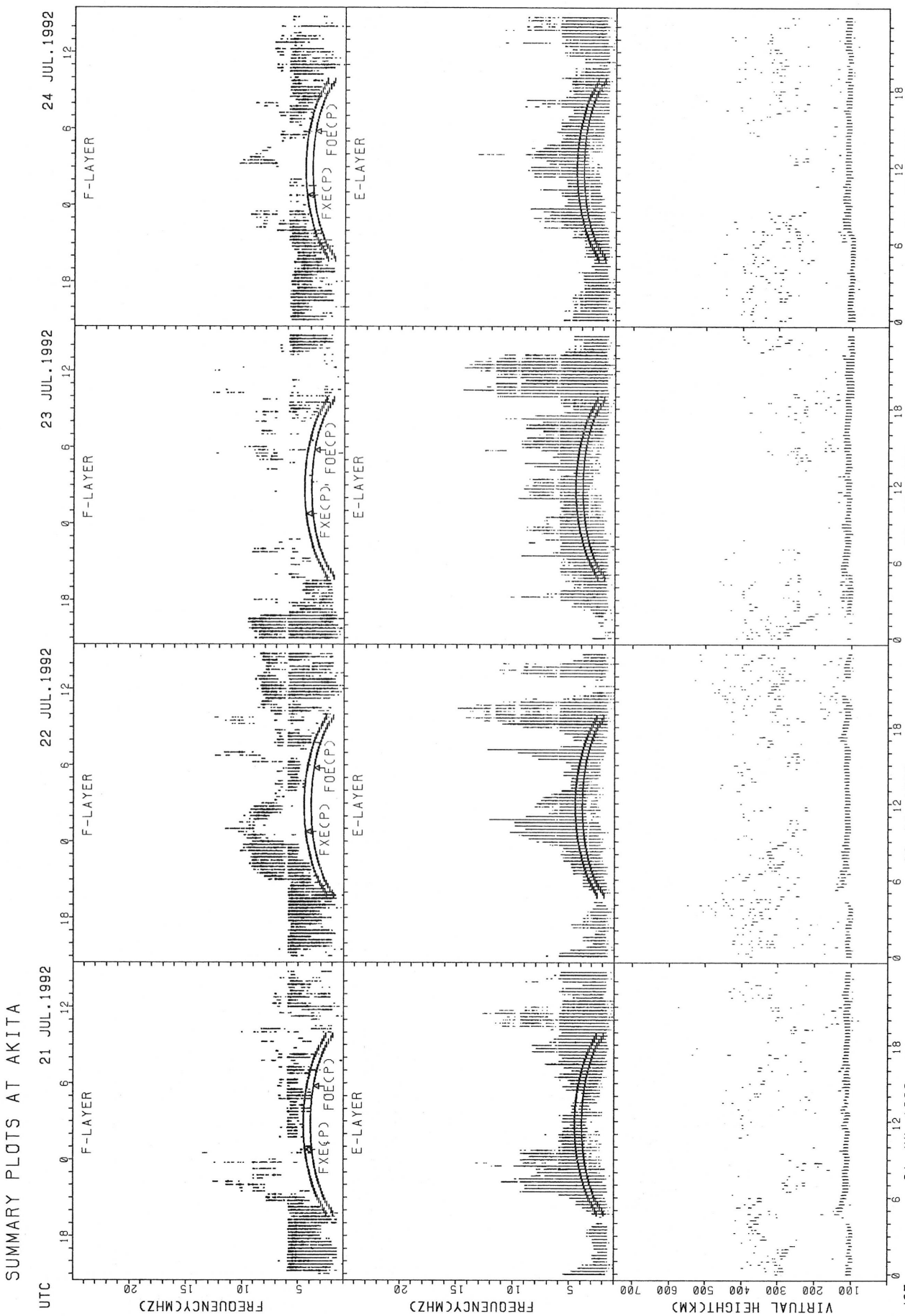
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FOE(P)
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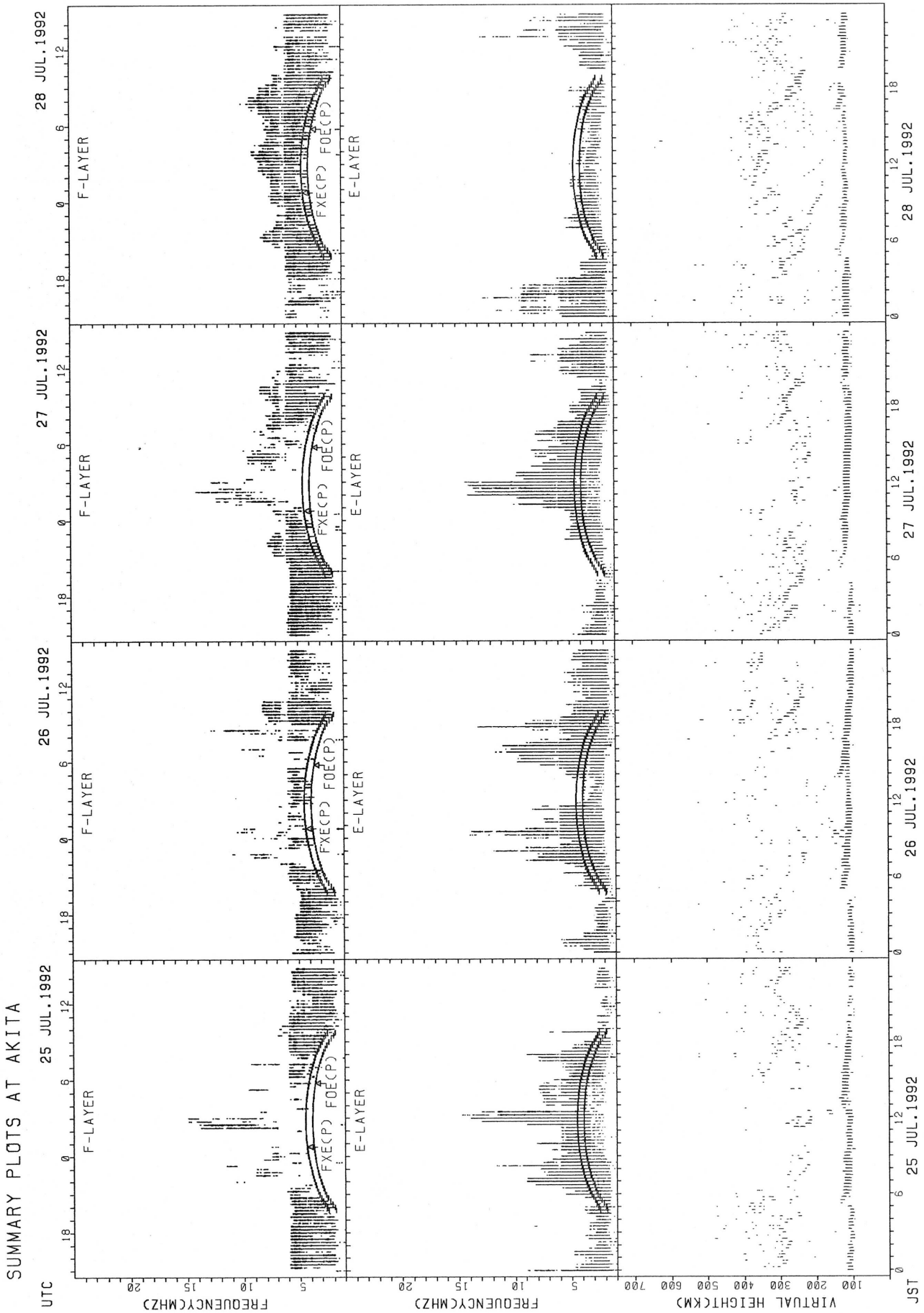
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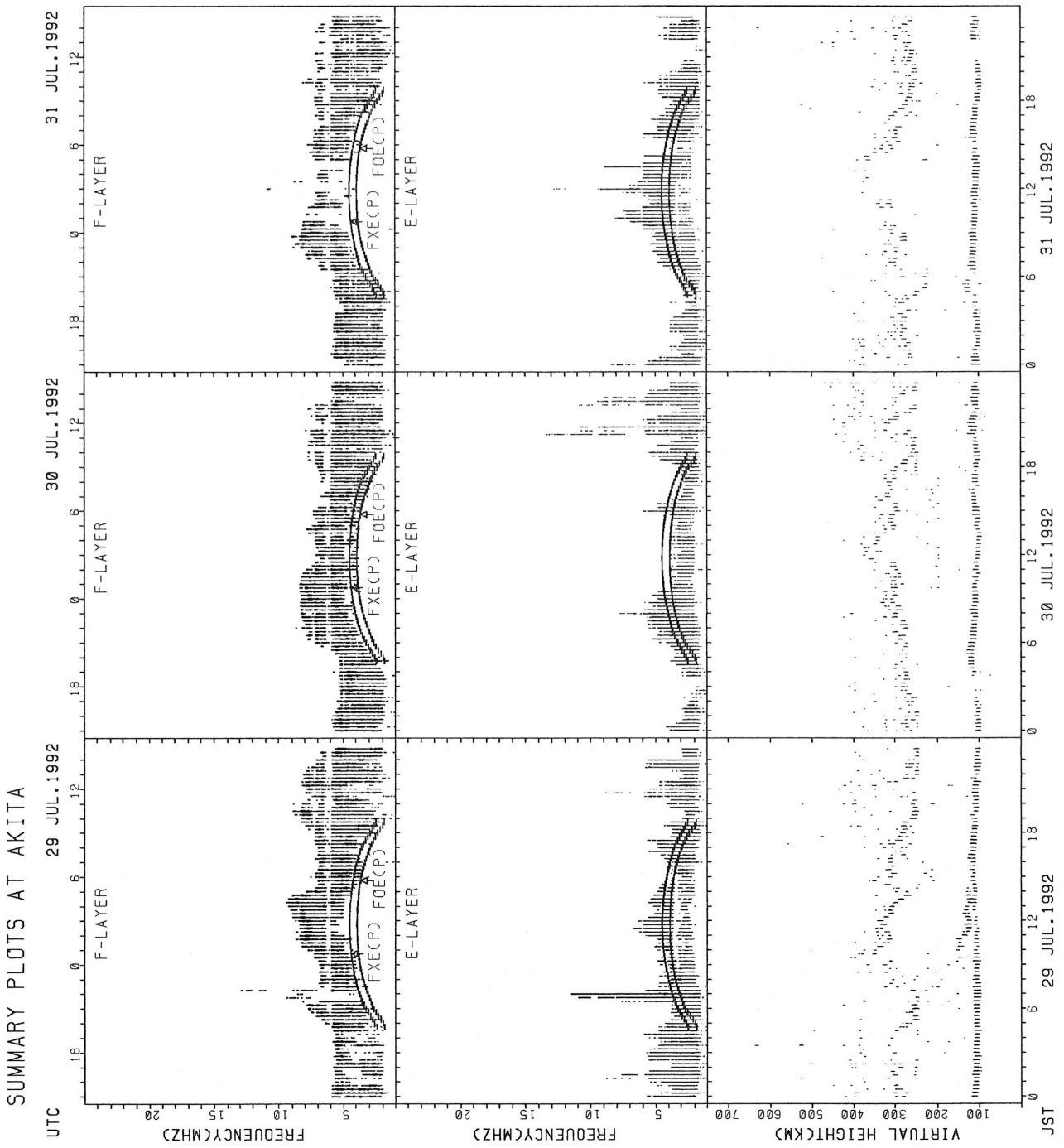
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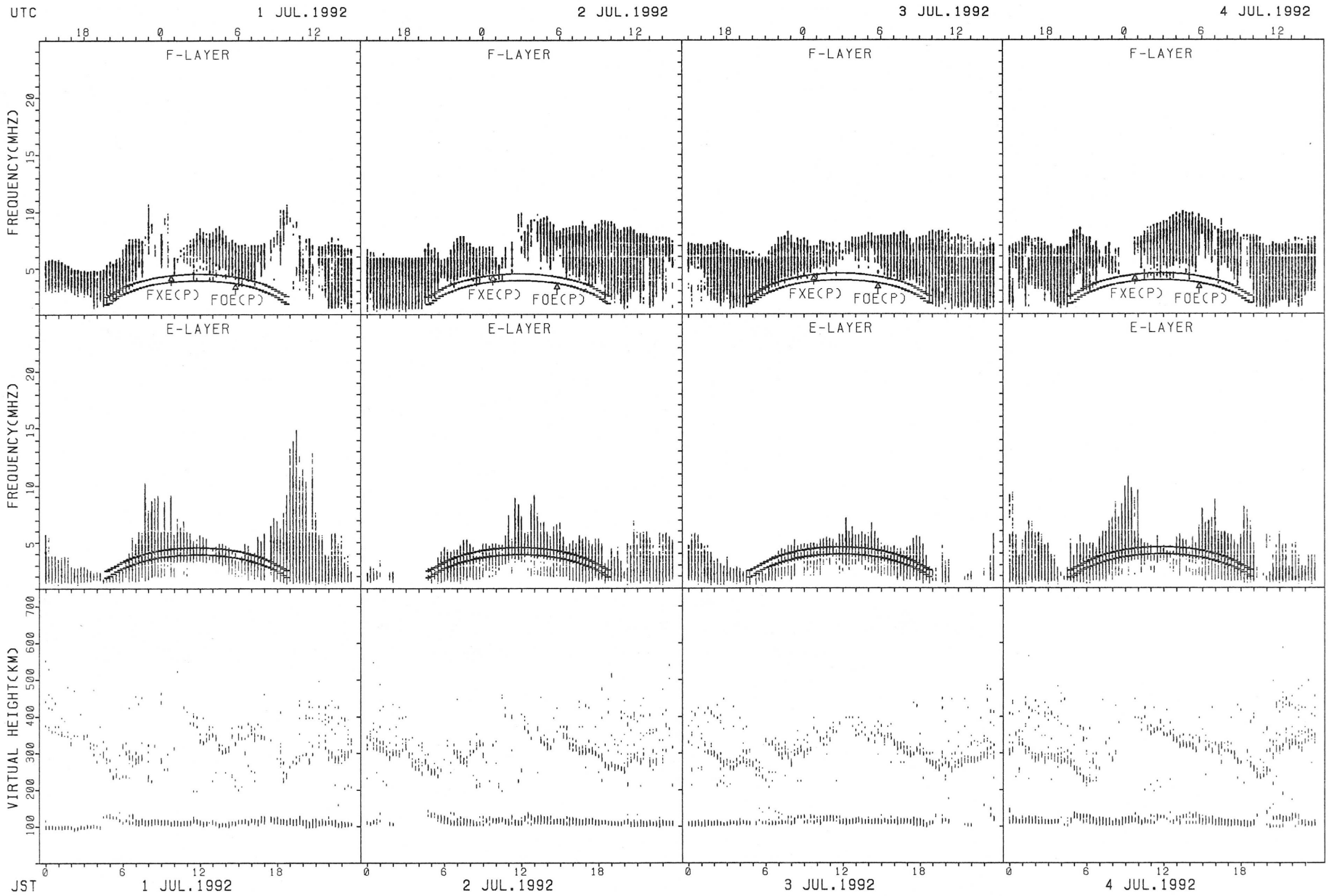
SUMMARY PLOTS AT KOKUBUNJI TOKYO



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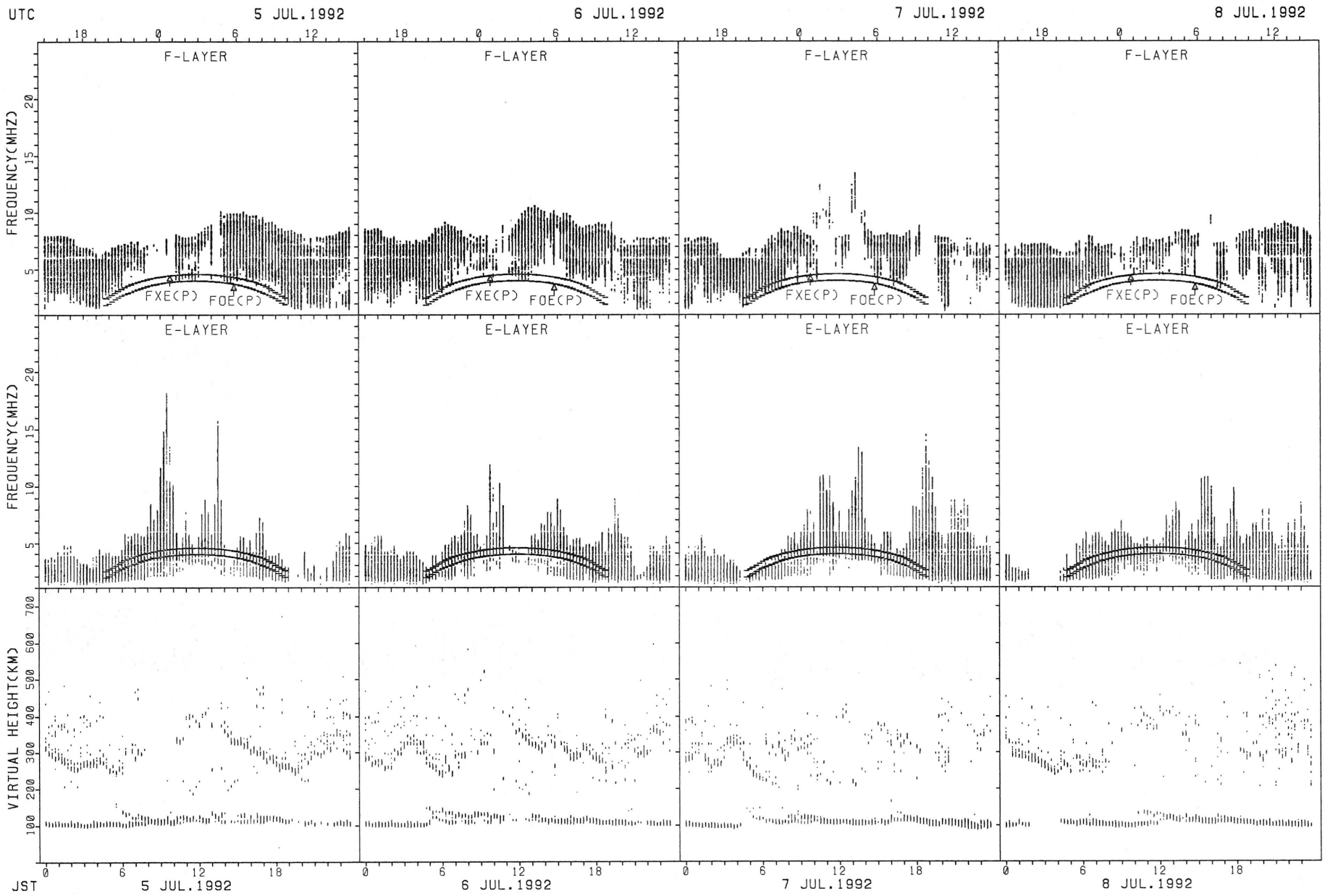
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E-LAYER
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FOE(P)
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VIRTUAL HEIGHT(KM)
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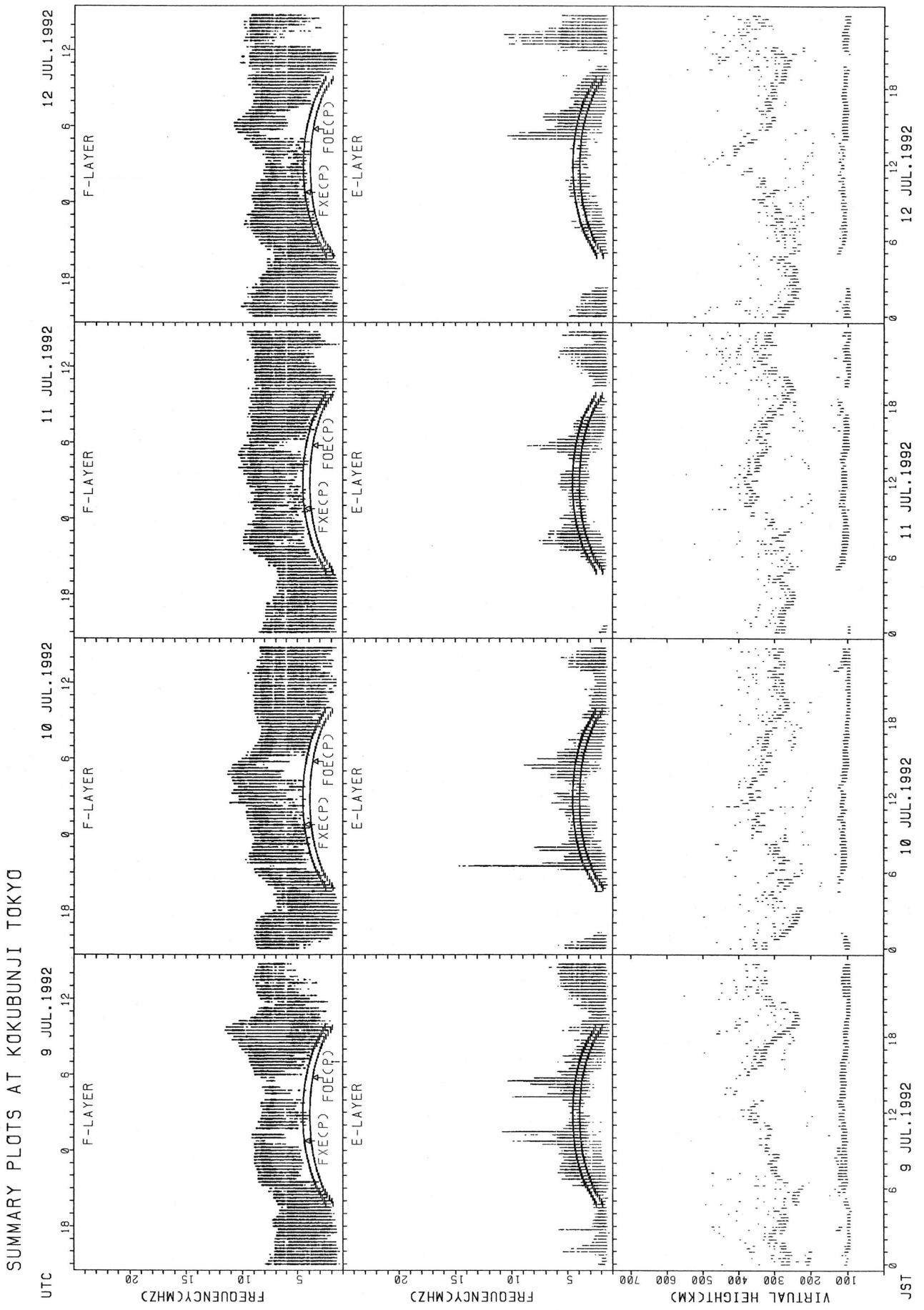
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E-LAYER
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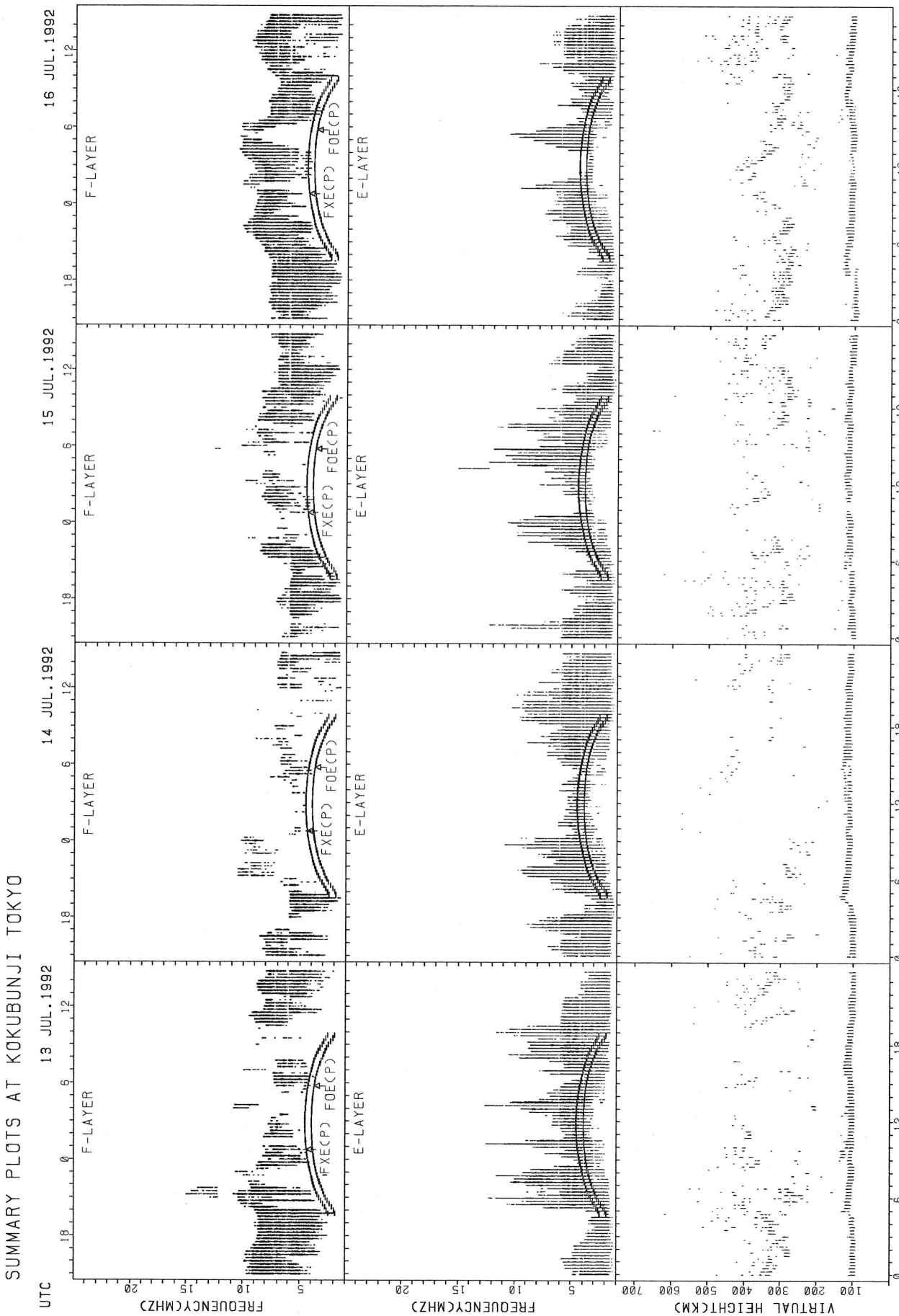
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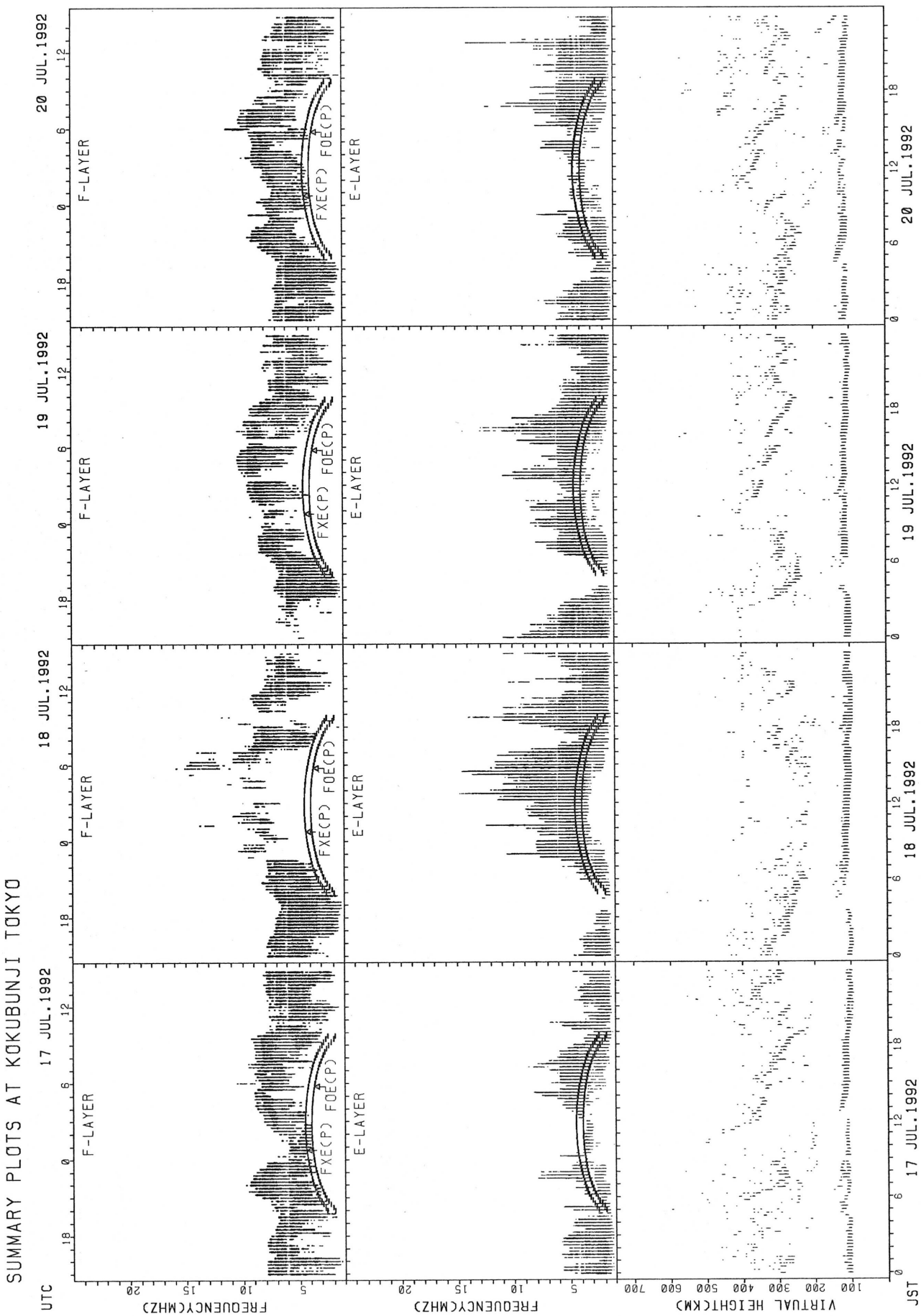
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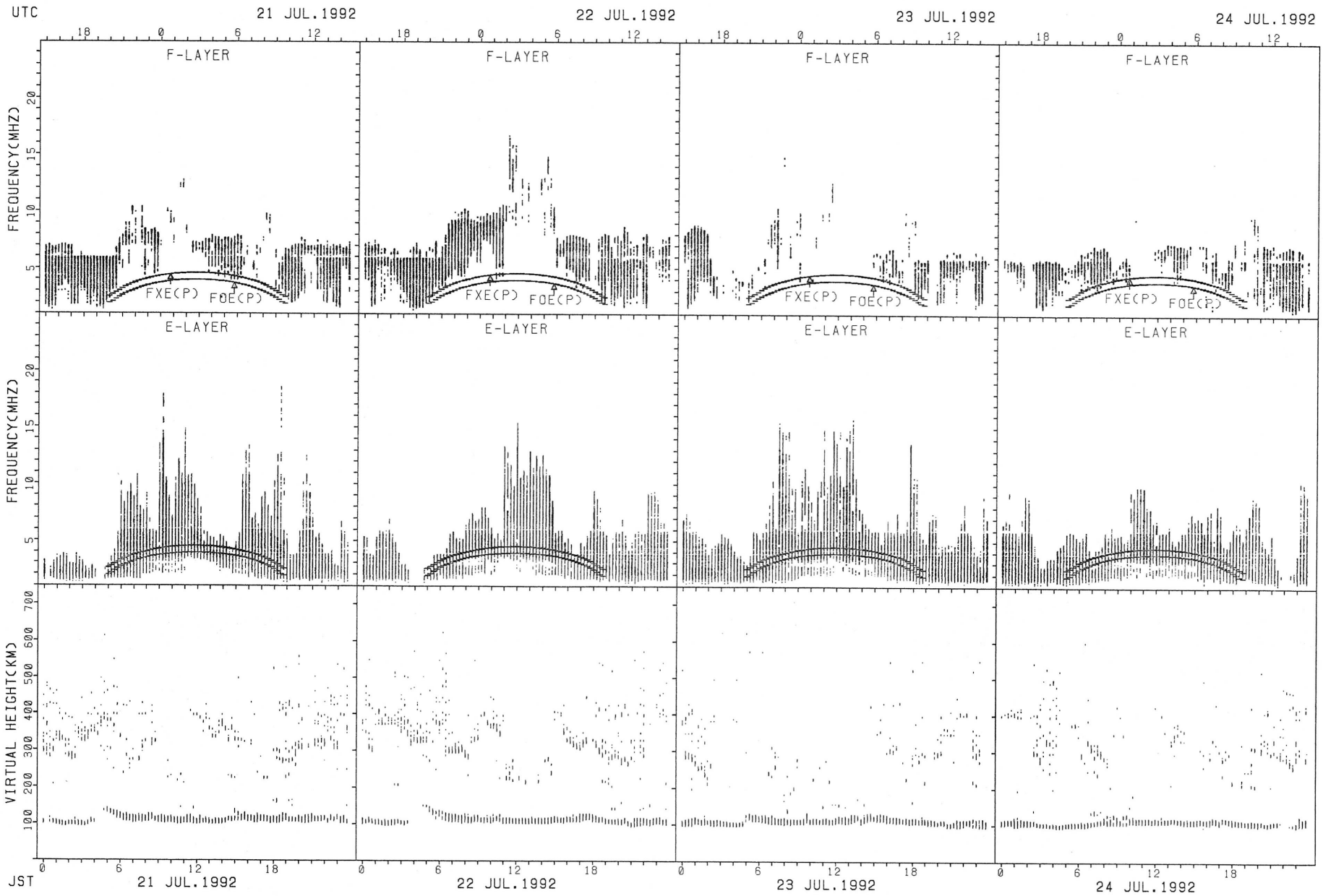
SUMMARY PLOTS AT KOKUBUNJI TOKYO



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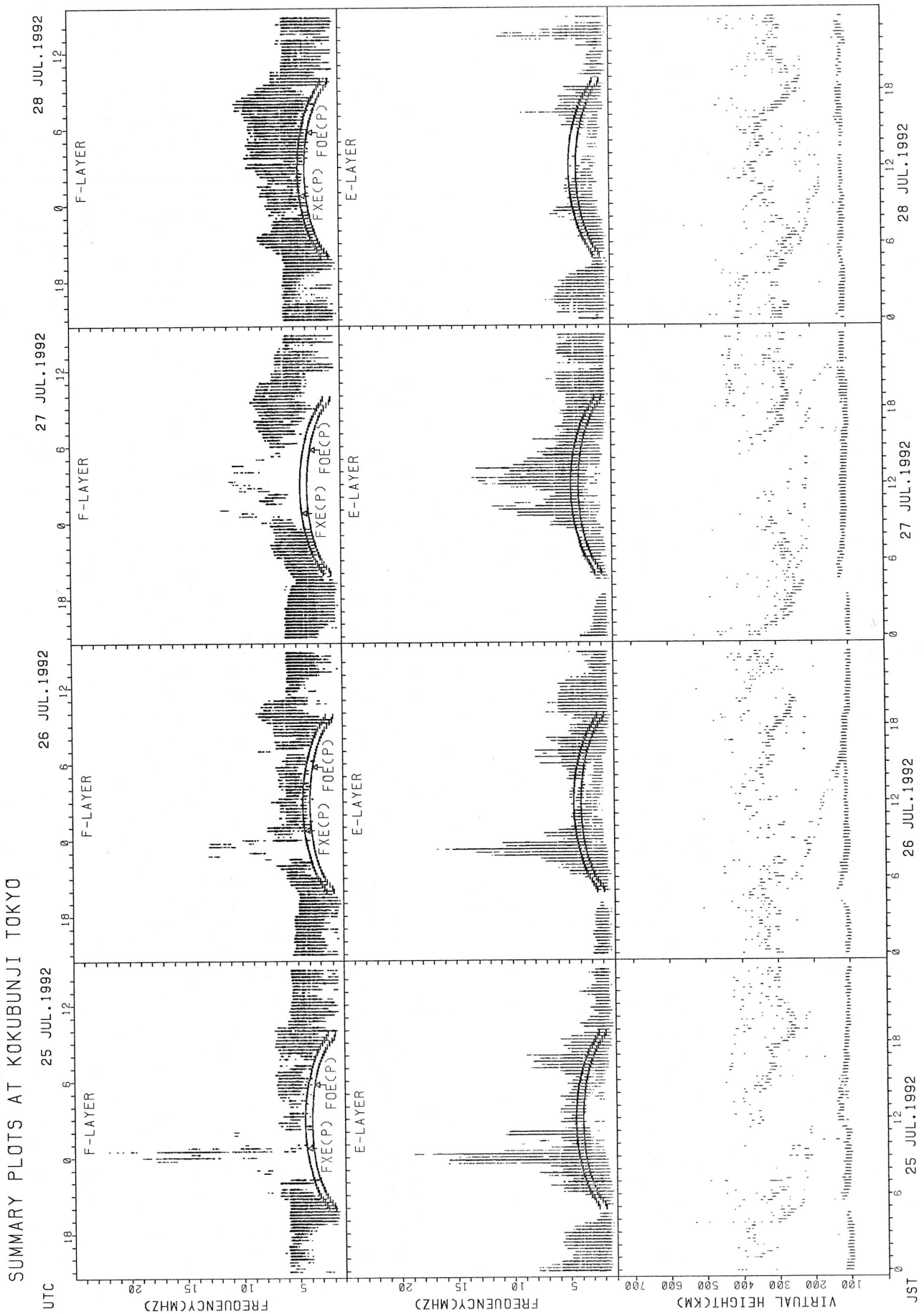
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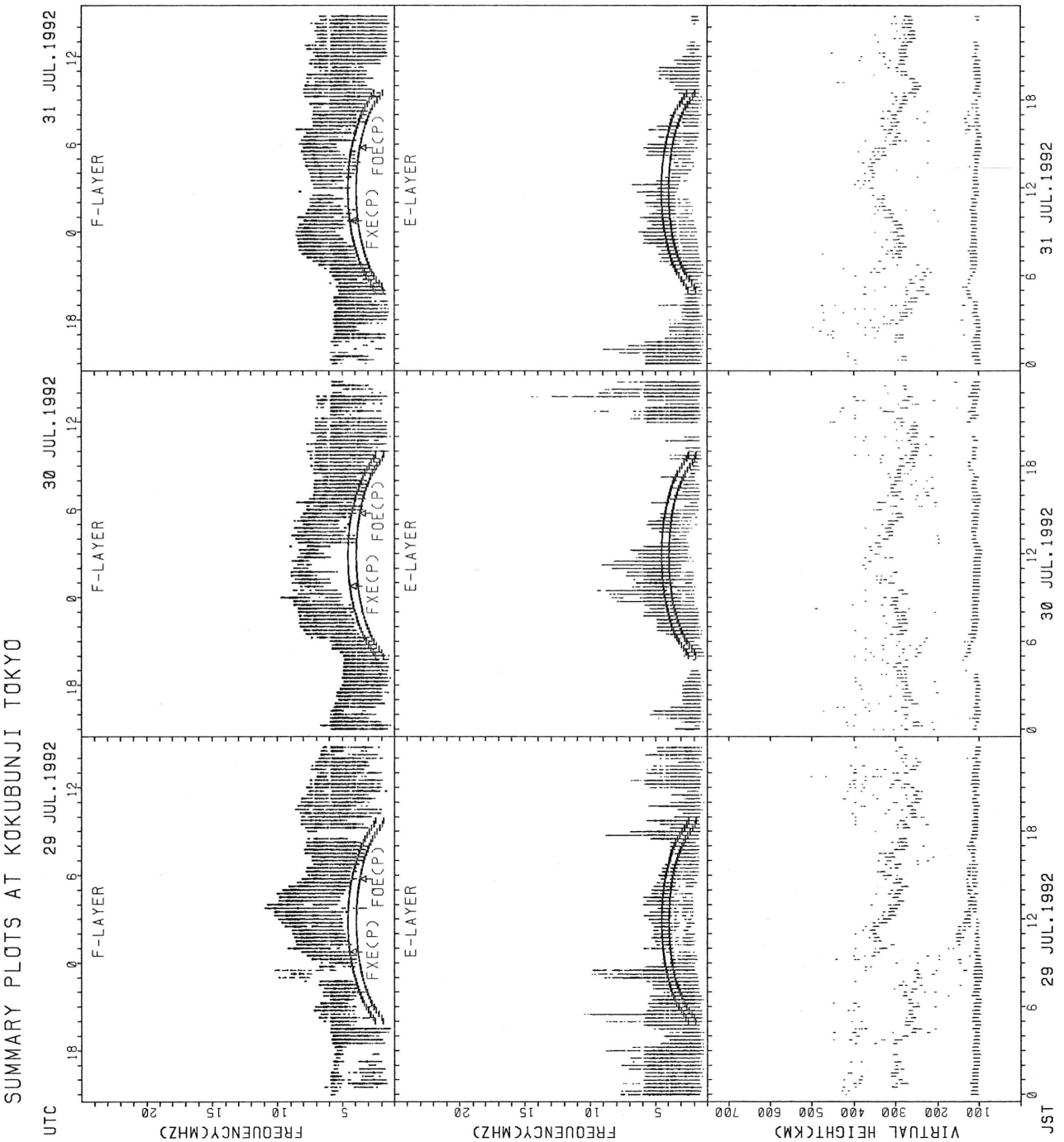
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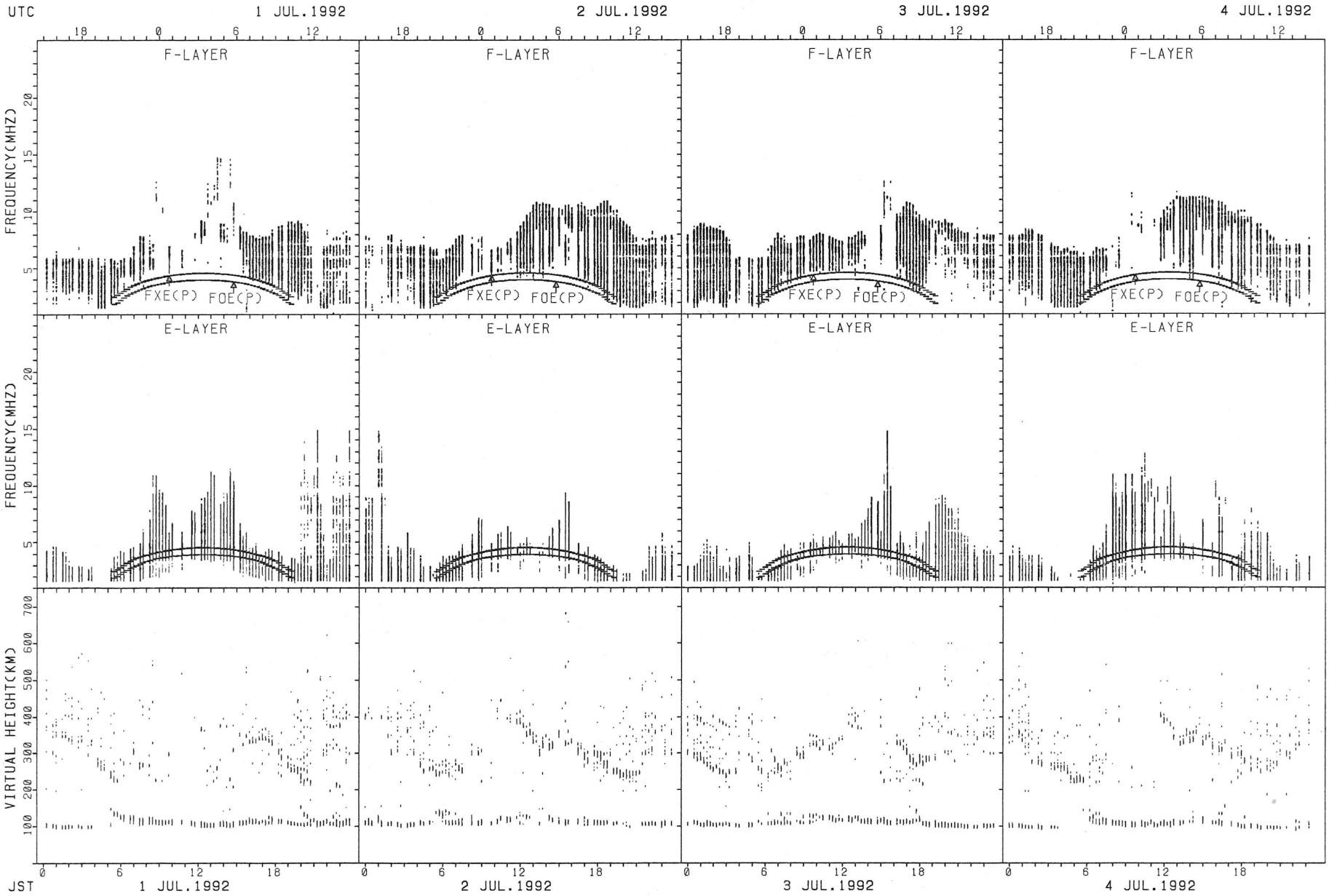
SUMMARY PLOTS AT YAMAGAWA



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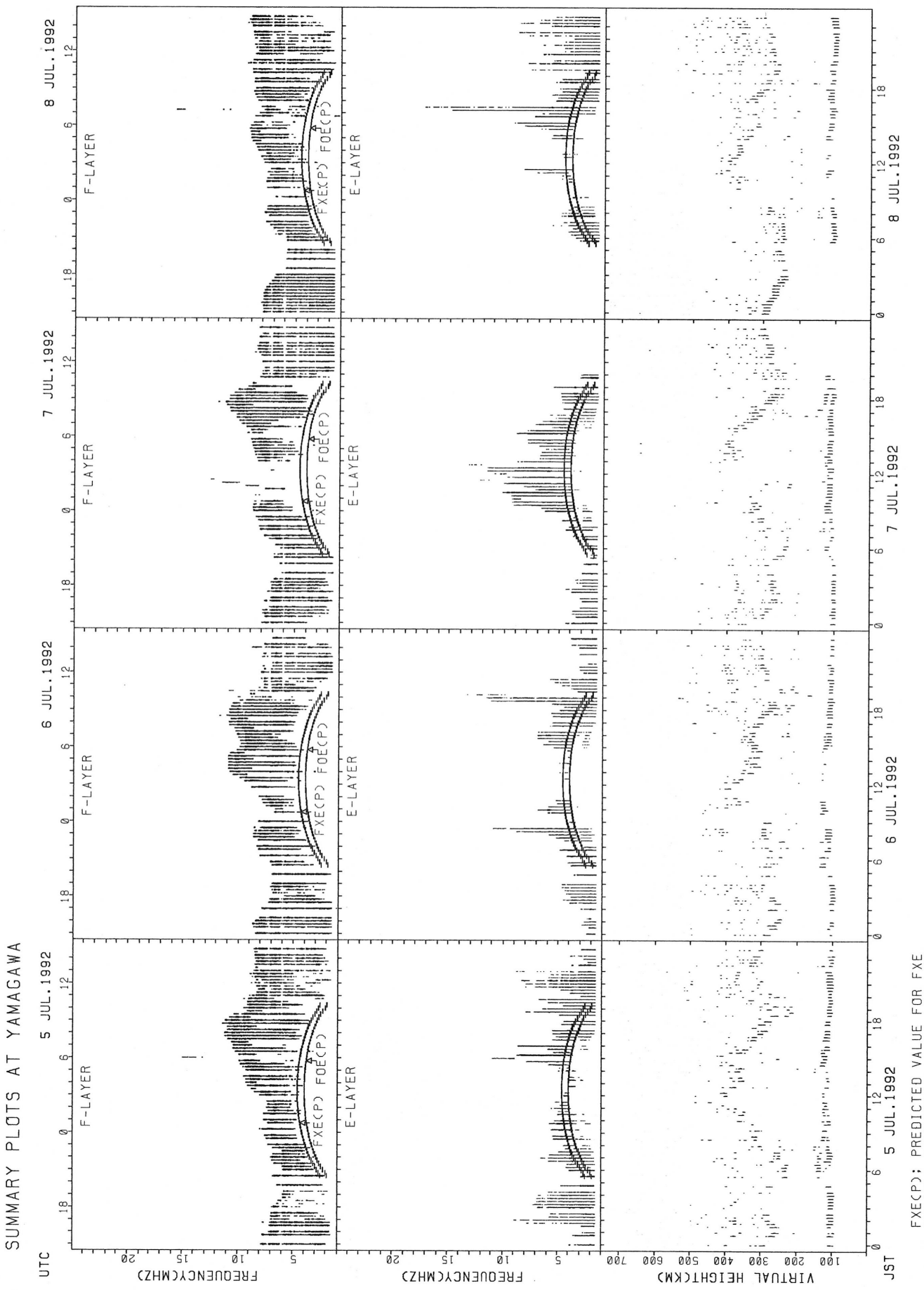
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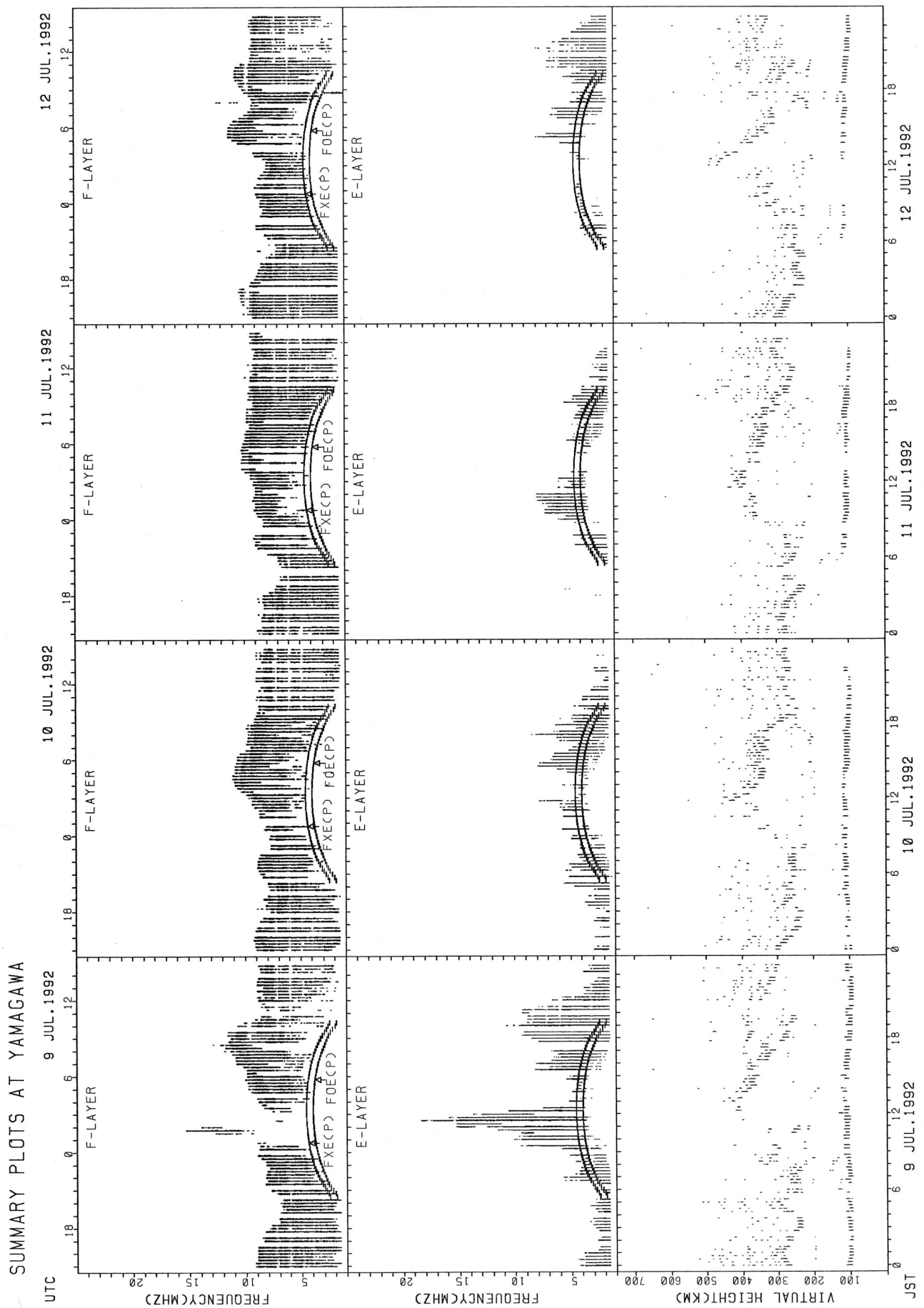
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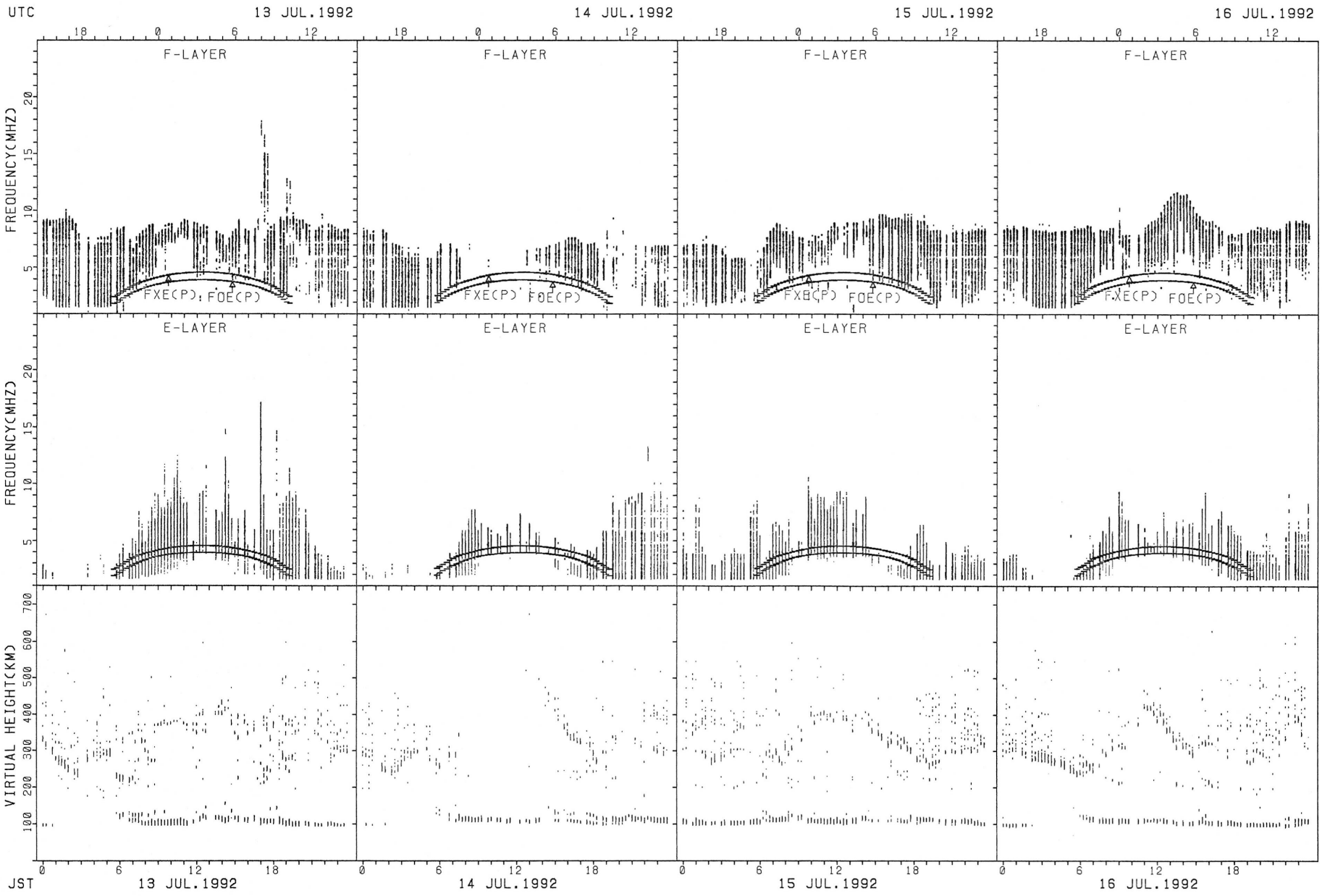
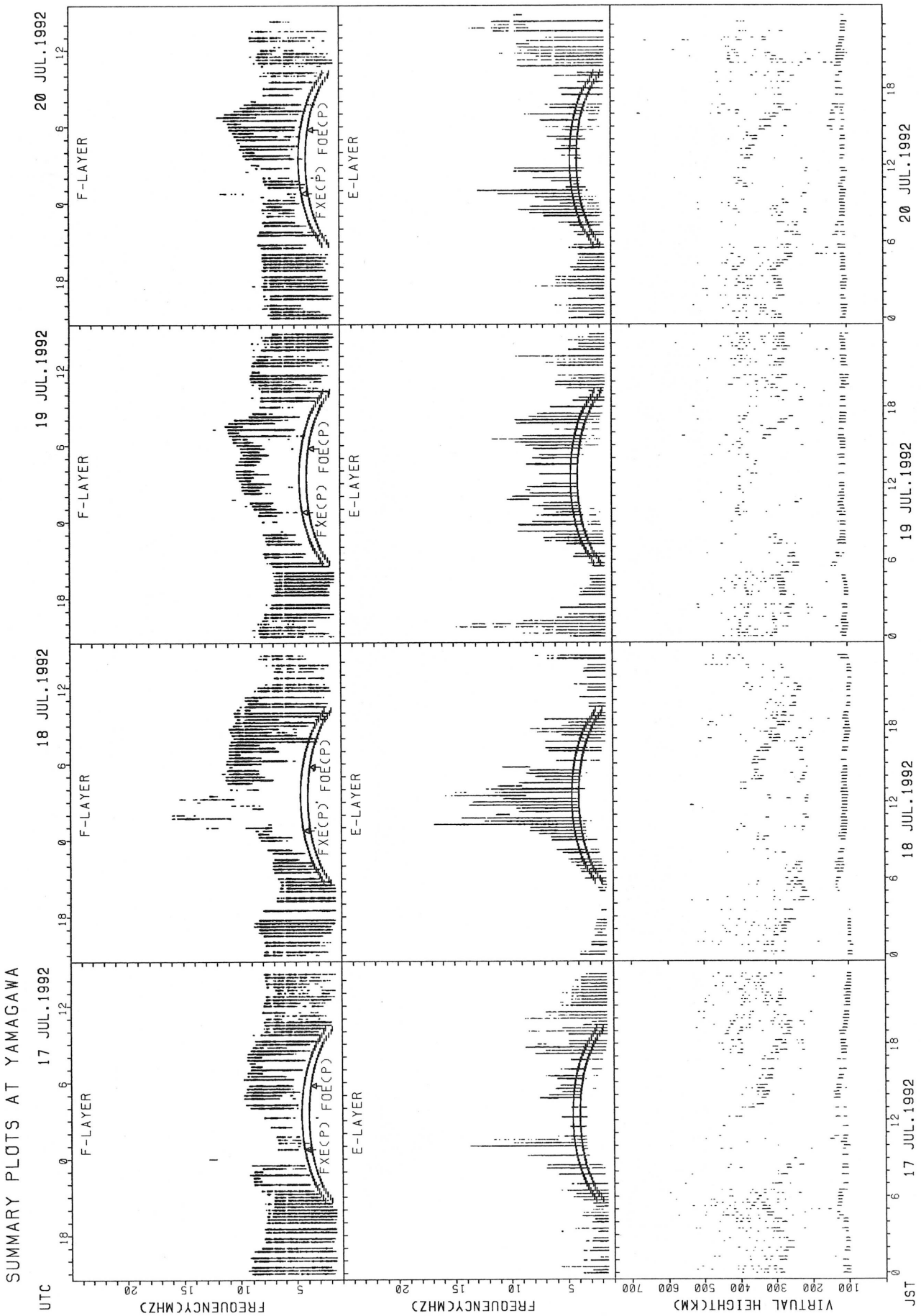
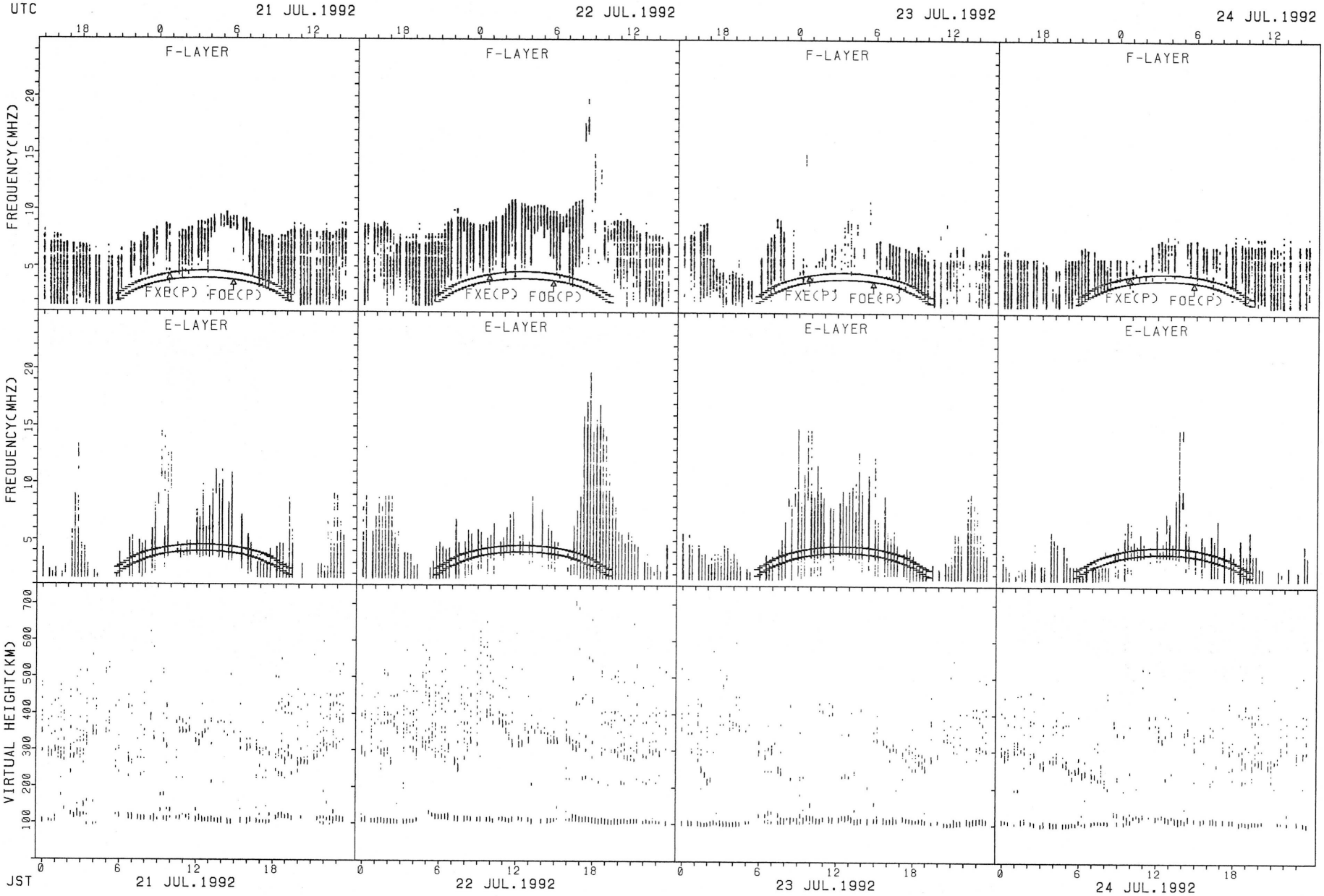
12 JUL.1992
F-LAYER
E-LAYER
FXE(P) FOE(P)
FREQUENCY(MHZ)
VIRTUAL HEIGHT(KM)
JST
FXE(P): PREDICTED VALUE FOR FXE
FOE(P): PREDICTED VALUE FOR FOE

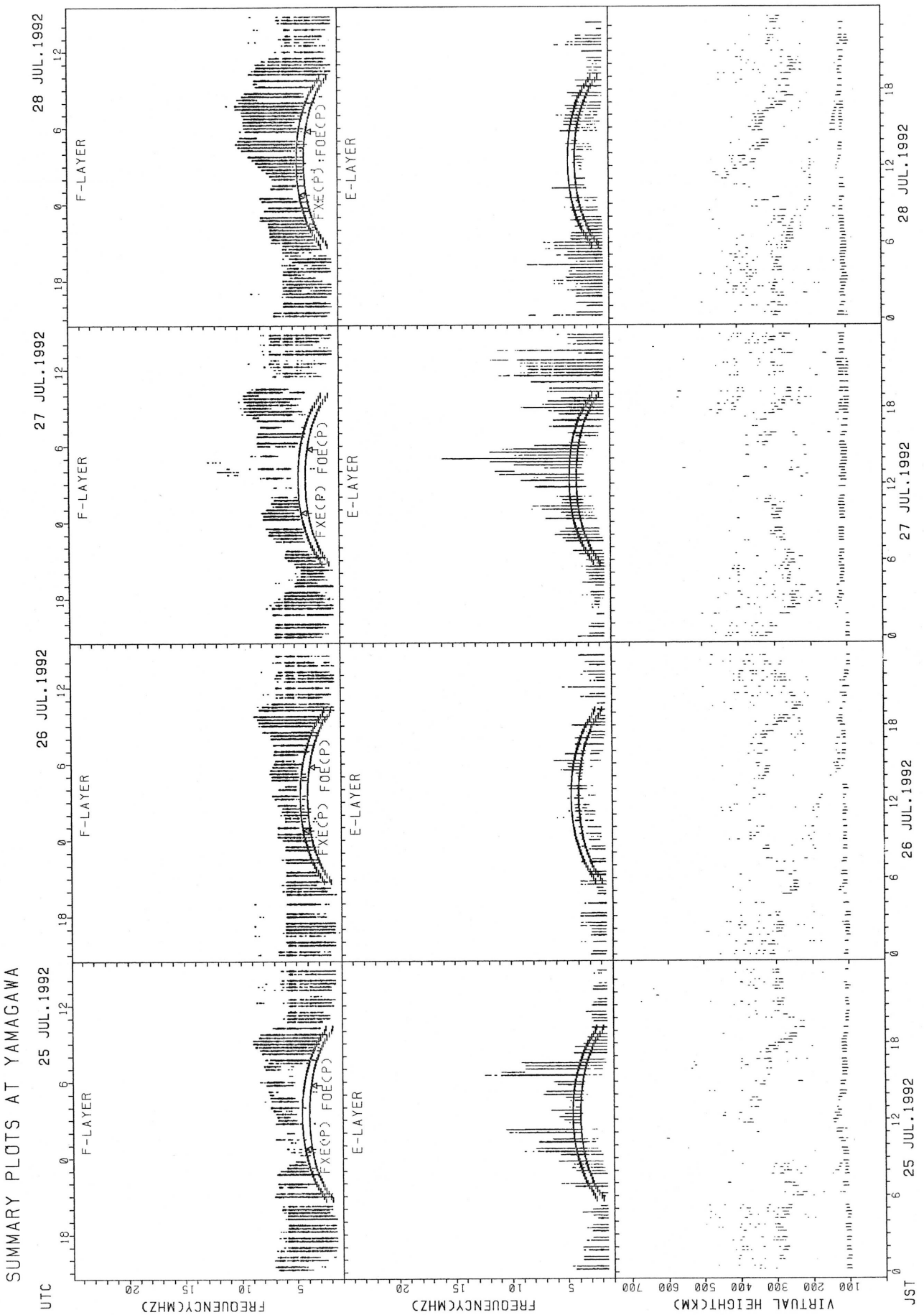

SUMMARY PLOTS AT YAMAGAWA
UTC
13 JUL.1992
14 JUL.1992
15 JUL.1992
16 JUL.1992
F-LAYER
FXE(P); FOE(P)
FREQUENCY(MHZ)
E-LAYER
VIRTUAL HEIGHT(KM)
JST
FXE(P): PREDICTED VALUE FOR FXE
FOE(P): PREDICTED VALUE FOR FOE


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

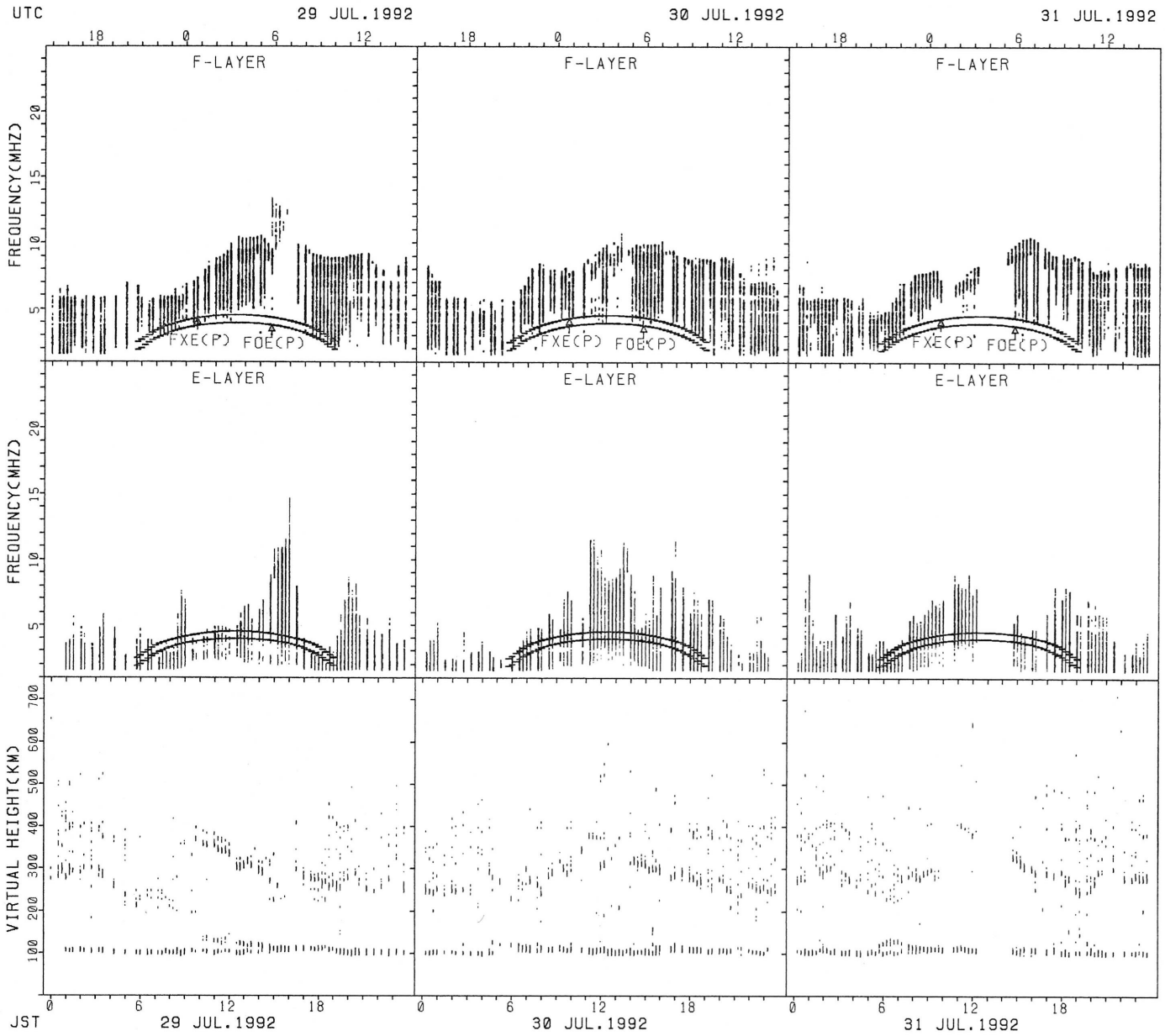
SUMMARY PLOTS AT YAMAGAWA



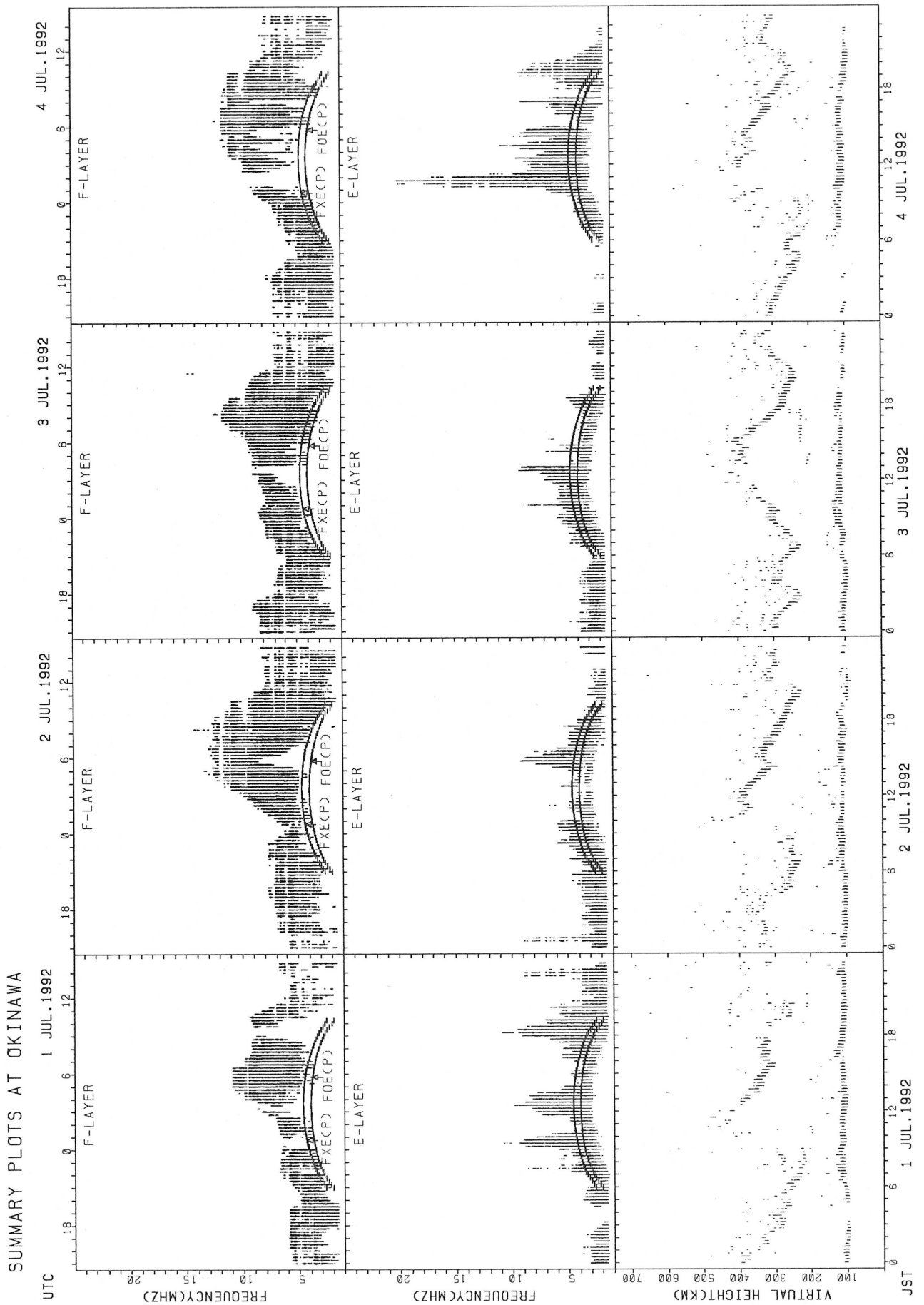
FXE(P); PREDICTED VALUE FOR FXE
FOE(P); PREDICTED VALUE FOR FOE

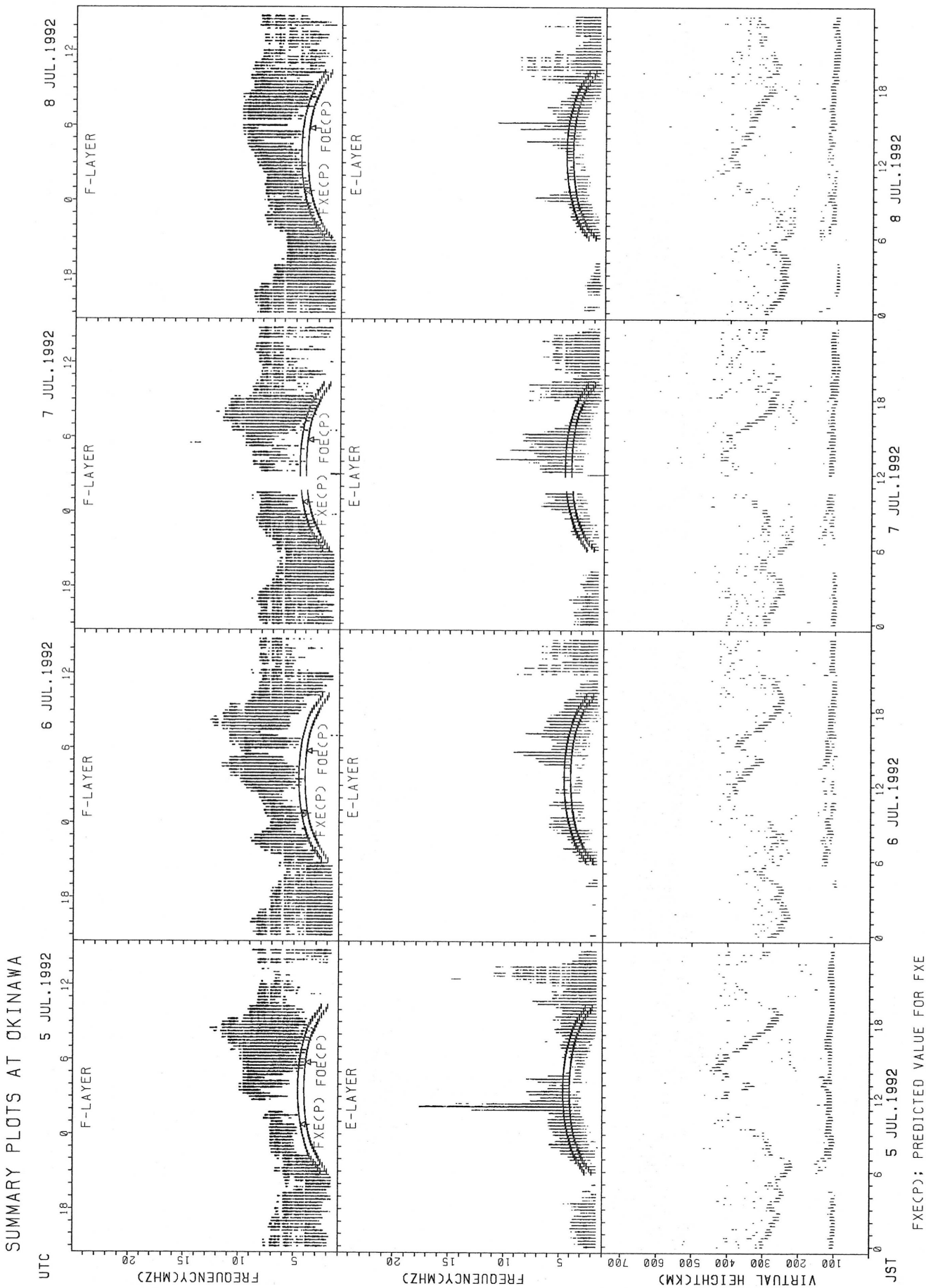

SUMMARY PLOTS AT YAMAGAWA
UTC
25 JUL.1992
26 JUL.1992
27 JUL.1992
28 JUL.1992
F-LAYER
E-LAYER
FXE(P) FOE(P)
FREQUENCY(MHZ)
VIRTUAL HEIGHT(KM)
JST
FXE(P): PREDICTED VALUE FOR FXE
FOE(P): PREDICTED VALUE FOR FOE

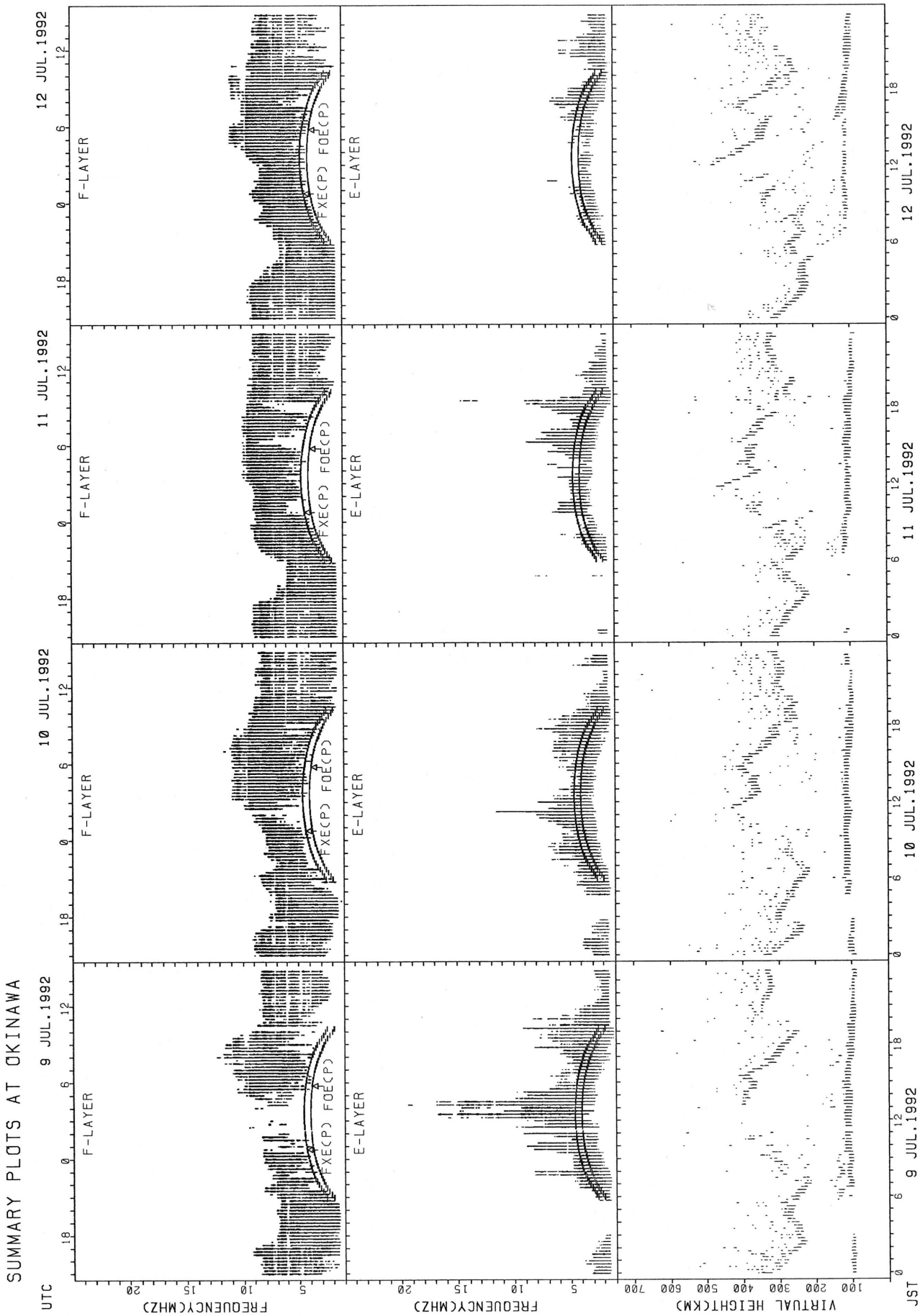
SUMMARY PLOTS AT YAMAGAWA



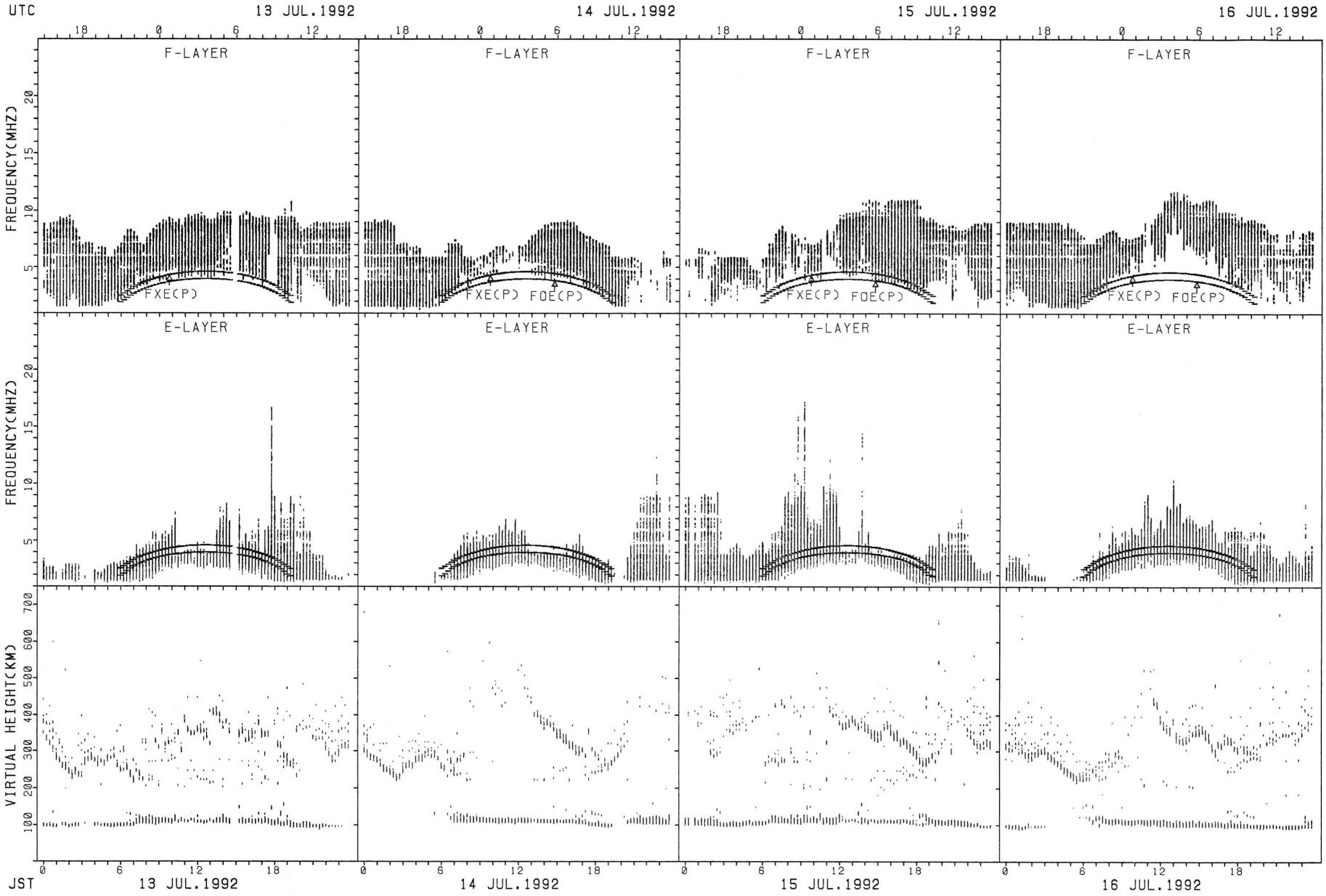
FXE(P); PREDICTED VALUE FOR FXE
FOE(P); PREDICTED VALUE FOR FOE


SUMMARY PLOTS AT OKINAWA
1 JUL.1992
2 JUL.1992
3 JUL.1992
4 JUL.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

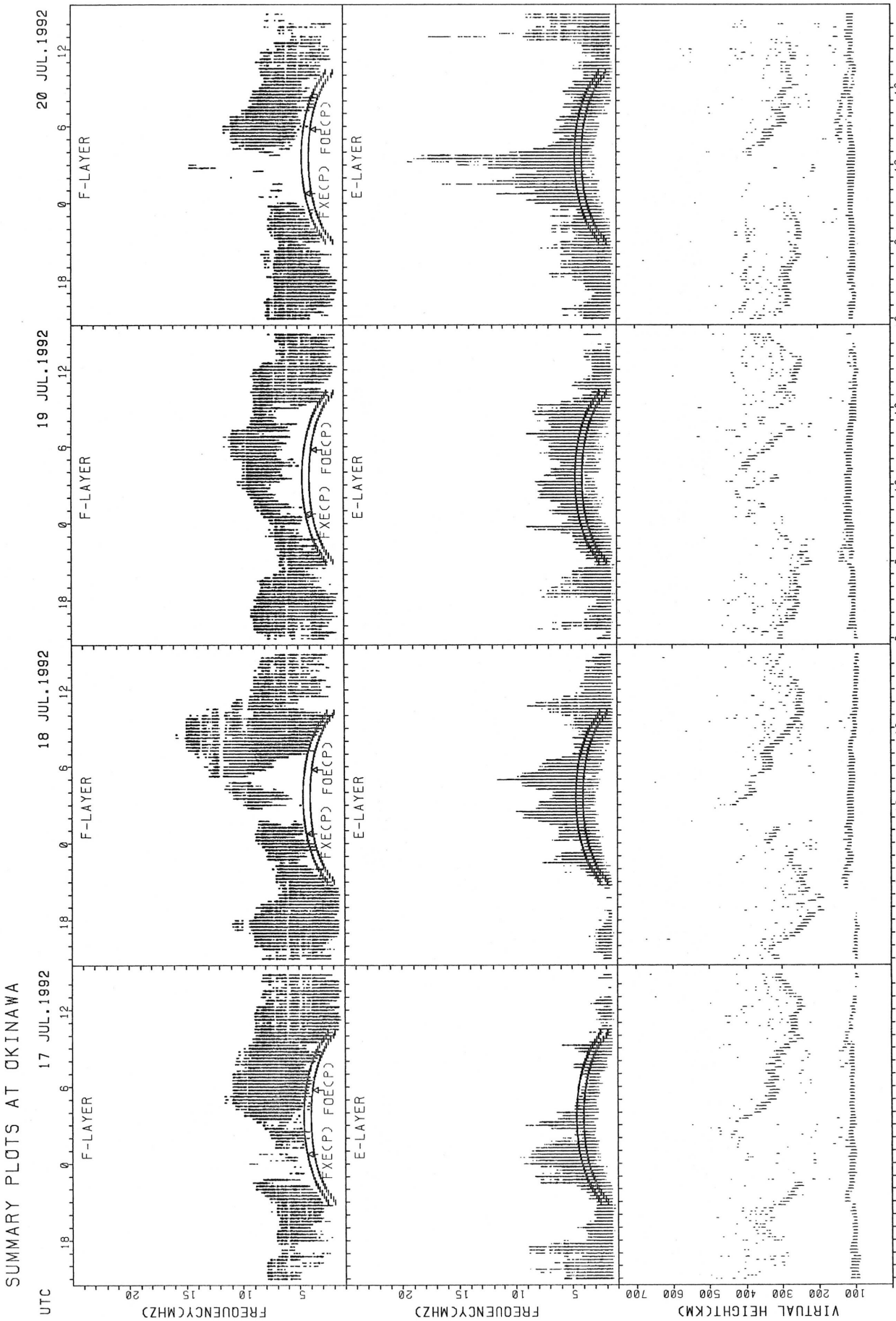

SUMMARY PLOTS AT OKINAWA
UTC
JST
5 JUL.1992
6 JUL.1992
7 JUL.1992
8 JUL.1992
F-LAYER
E-LAYER
FXE(P) FOE(P)
FREQUENCY(MHZ)
VIRTUAL HEIGHT(KM)
FXE(P); PREDICTED VALUE FOR FXE
FOE(P); PREDICTED VALUE FOR FOE


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

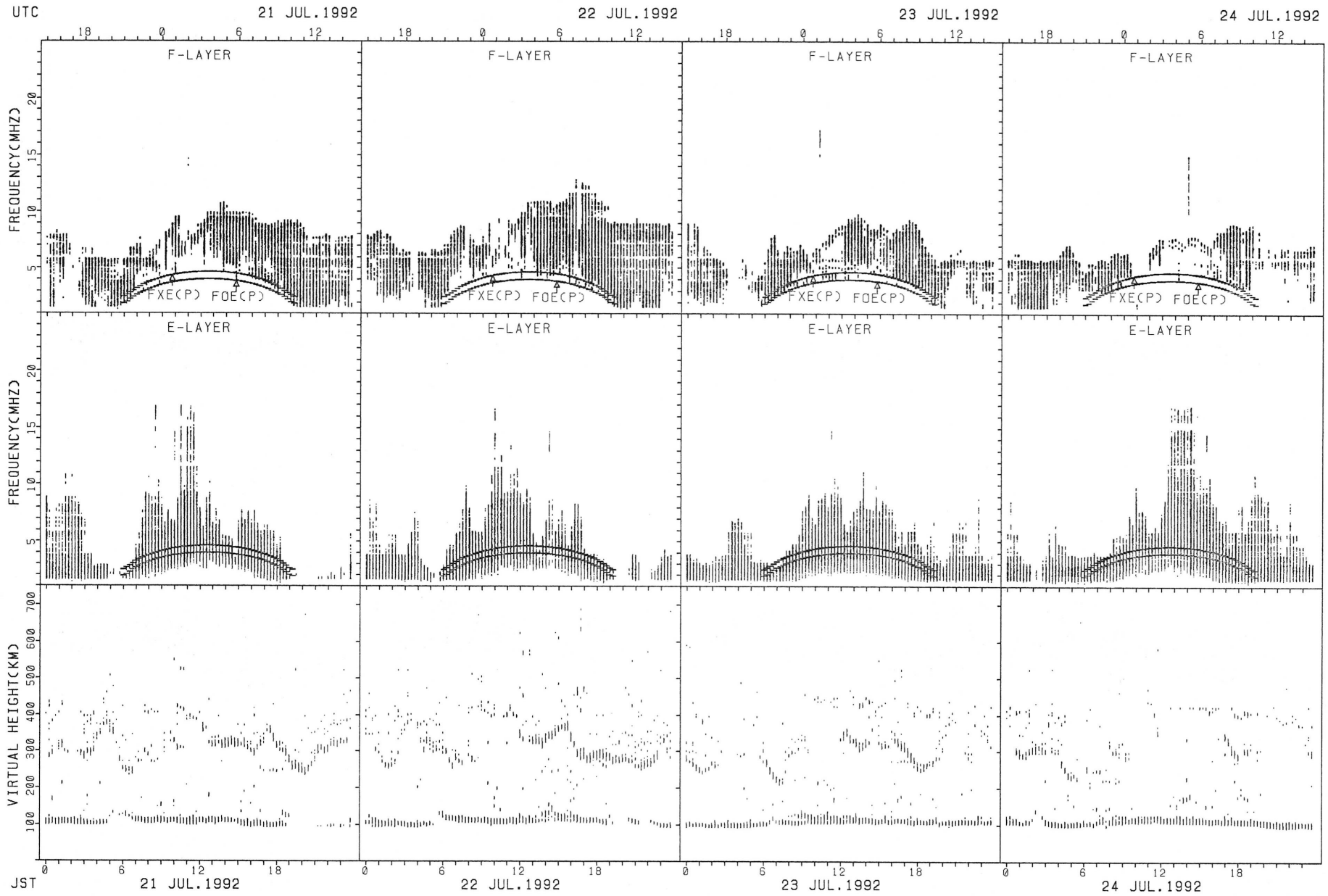
SUMMARY PLOTS AT OKINAWA



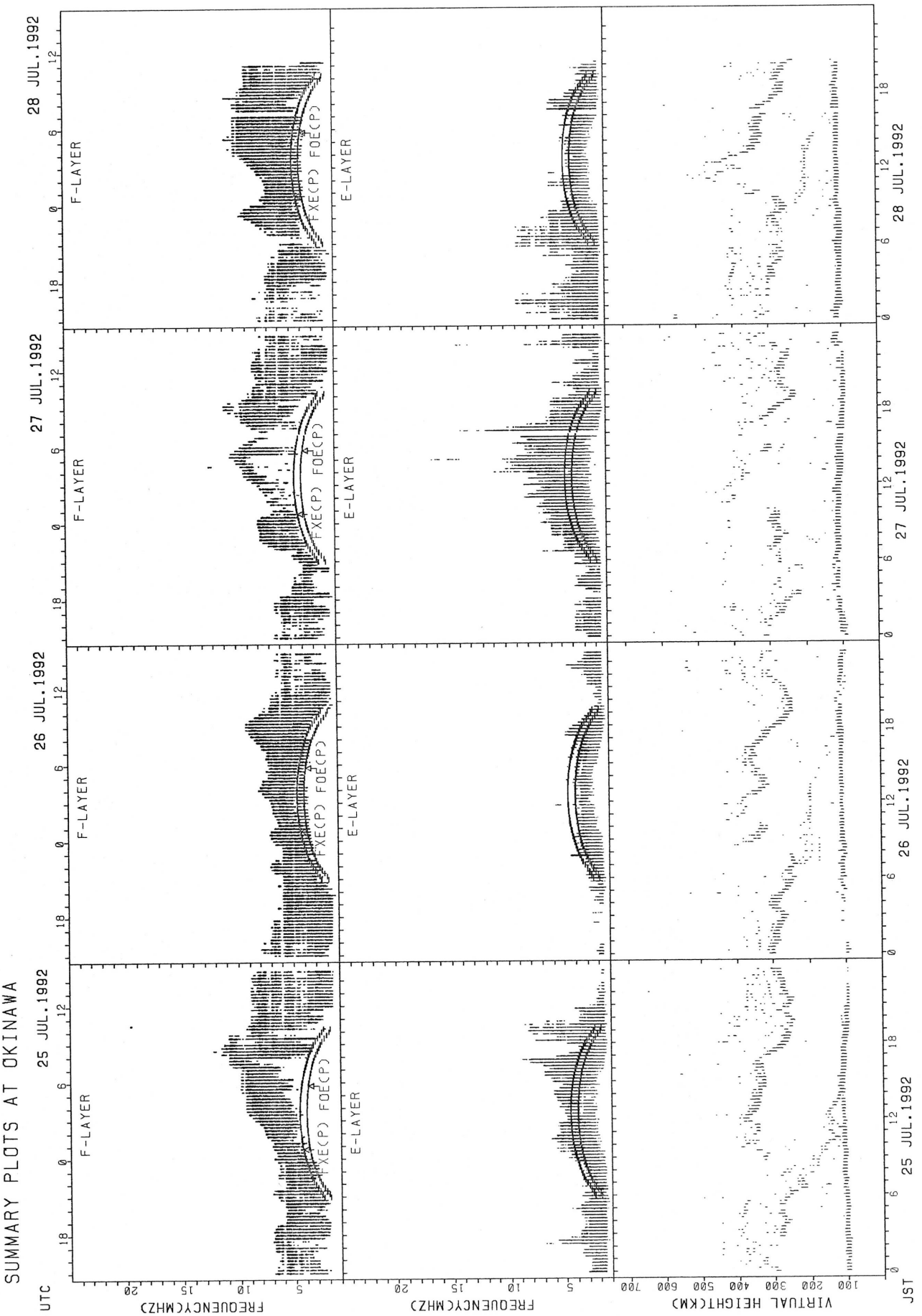
FXE(P): PREDICTED VALUE FOR FXE
FOE(P): PREDICTED VALUE FOR FOE


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

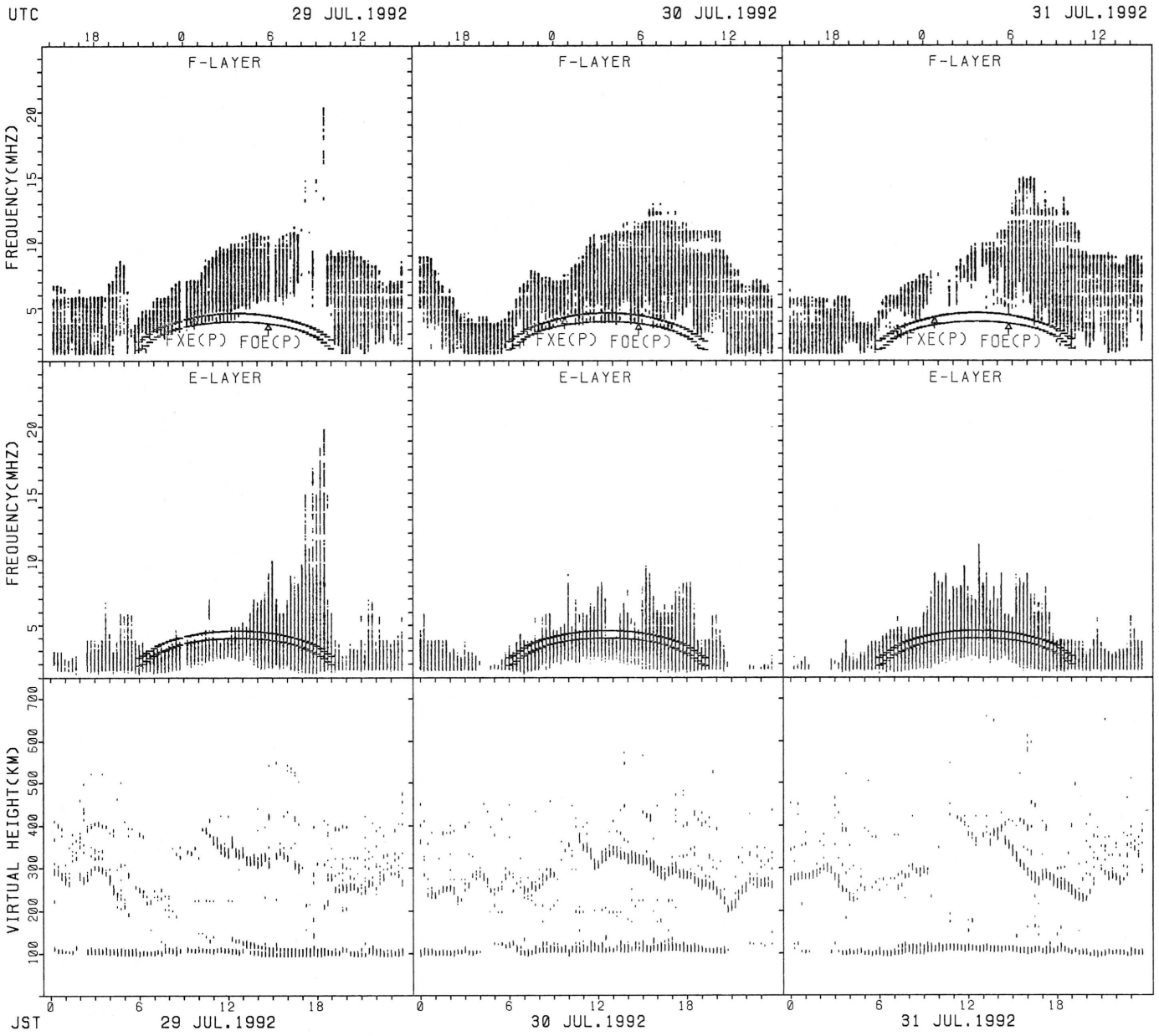
SUMMARY PLOTS AT OKINAWA



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


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

SUMMARY PLOTS AT OKINAWA



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

MONTHLY MEDIANS OF H'F AND H'ES

JUL. 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						10	14	16									11	13	13	12	12	13	12	
MED						344	299	300									340	318	310	296	307	318	335	
U Q						348	328	312									350	349	320	309	335	352	348	
L Q						322	280	284									318	294	274	280	286	312	320	

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	25	26	22	23	21	26	26	28	24	24	19	19	16	18	15	18	21	26	30	31	31	31	29	29
MED	113	111	110	111	111	129	121	119	118	117	113	113	111	115	115	121	119	119	117	115	117	115	113	113
U Q	120	115	115	127	123	131	123	122	121	121	117	121	128	123	125	123	125	125	121	117	119	121	118	117
L Q	107	105	105	107	107	121	119	117	113	115	111	113	109	109	111	113	115	115	115	113	113	111	110	109

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							11	12									14	12	11					
MED							298	281									319	330	276					
U Q							322	302									344	346	320					
L Q							274	258									296	302	238					

H'ES

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	28	29	26	25	26	24	29	27	27	27	28	27	25	27	25	26	29	31	30	31	29	29	31
MED	109	107	105	105	109	123	121	119	115	115	111	113	111	115	117	115	117	115	113	111	113	115	111	109
U Q	111	109	109	107	113	129	124	125	117	117	117	117	115	120	121	118	121	123	117	115	119	120	117	113
L Q	103	103	102	103	106	113	118	115	113	113	111	109	107	112	109	110	113	113	109	109	109	109	106	105

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	12	12					11	25	15								22	18	17	17	13			
MED	367	352					294	300	282								322	308	288	302	326			
U Q	392	394					324	315	288								336	316	326	320	351			
L Q	343	326					260	289	234								310	296	276	275	308			

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	31	30	28	24	21	20	22	28	30	28	29	29	25	25	29	29	29	31	28	30	29	30	30	30
MED	109	108	105	105	107	123	119	117	114	113	115	113	113	117	113	115	115	115	113	111	111	109	109	109
U Q	111	113	108	107	115	130	125	121	119	117	117	119	118	125	122	120	119	119	115	113	115	115	115	113
L Q	103	103	101	103	103	110	115	113	111	110	109	109	109	108	107	108	113	111	109	109	107	103	105	105

MONTHLY MEDIANS OF H'F AND H'ES
JUL. 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	13	14	10					16	15								22	23	19	17	14			11
MED	358	339	327					284	300								316	300	288	288	324			370
U Q	370	358	340					293	308								334	328	296	296	338			378
L Q	333	318	280					264	292								294	286	276	262	288			348

H'ES

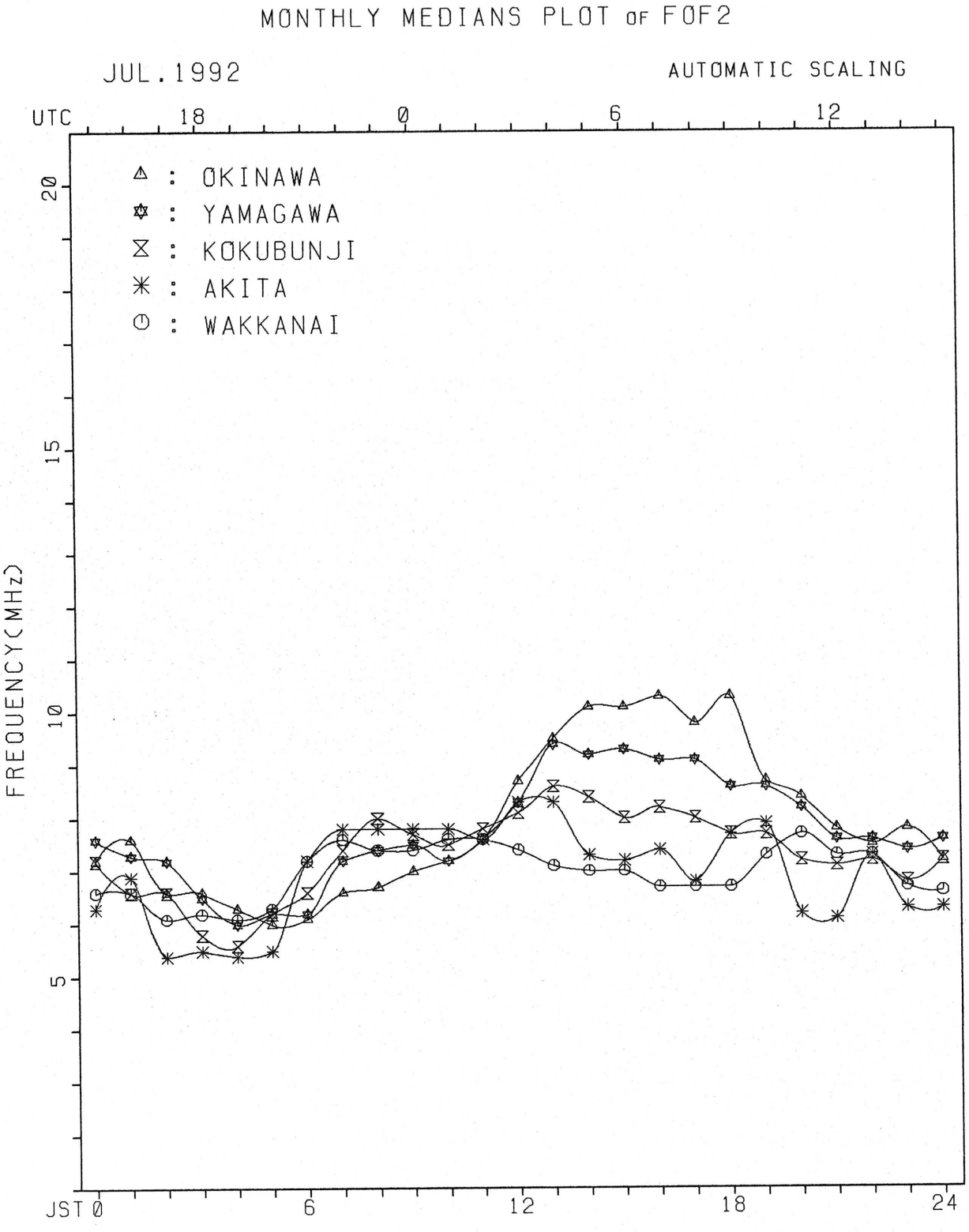
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	21	24	17	14	17	14	18	18	23	20	21	22	16	18	20	20	23	20	25	20	26	22	19	22
MED	107	105	105	104	105	108	119	117	115	113	111	113	117	113	112	115	113	111	111	108	109	105	107	107
U Q	109	109	108	111	111	113	125	125	119	115	117	117	131	115	119	121	117	117	117	114	113	111	113	113
L Q	99	101	102	103	103	105	113	113	113	111	110	109	110	109	109	111	109	107	106	105	107	103	101	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		13	14					13	19	14							28	28	28	27	15			
MED		324	281					288	286	305							326	309	279	290	288			
U Q		336	332					298	300	316							346	326	306	314	312			
L Q		300	274					263	268	284							306	298	269	268	262			

H'ES

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	22	25	21	19	20	18	24	27	28	26	27	26	23	22	25	23	27	26	31	29	27	27	23	22
MED	108	107	103	103	104	105	109	119	116	119	115	114	115	116	113	115	115	113	113	109	109	107	107	108
U Q	115	109	108	109	106	107	124	125	123	125	119	123	117	129	125	125	125	121	125	114	111	113	113	113
L Q	97	101	99	103	103	103	107	111	111	113	111	109	111	111	109	111	111	107	109	105	101	97	101	99


MONTHLY MEDIANS PLOT OF FOF2
JUL. 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

JUL. 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	59	58	X 52	X 49	X 48															A	X 81	X 70	79	75
2	69	X 66	X 64	X 64	X 63							A									X 88	X 84	X 83	X 78
3	X 75	X 73	X 74	X 71	X 67																X 85	X 81	85	X 77
4	77	77	78	72	71																X 75	X 75	X 77	76
5	X 80	87	X 77	X 70	X 66					A											X 82	X 79	X 81	X 85
6	X 87	88	78	76	X 76	80															X 78	X 80	X 77	X 78
7	X 78	X 77	X 77	65	64							A									X 80	X 77	X 77	X 74
8	X 74	X 75	75	X 74	X 68																X 86	90	92	X 86
9	80	73	X 71	73	72	73															X 90	X 87	X 91	X 91
10	X 88	X 91	X 90	X 76	X 73																X 93	X 91	X 92	X 88
11	87	X 83	X 80	X 74	X 70																X 89	X 91	X 91	98
12	X 97	X 102	X 90	87	X 78																X 103	X 100	106	102
13	100	X 100	X 96	X 88	90	91			88					A				A	A		X 92	X 84	X 84	X 86
14	X 82	O X 91	X 75	X 66	X 64			A	A	A				A							A	X 71	X 71	X 71
15	X 69	X 64	65	74	63	61							A		A						X 76	X 75	76	75
16	80	X 80	X 80	X 76	X 77																X 85	87	97	86
17	X 81	X 80	79	X 77	X 71	78	86	99													X 77	X 78	81	X 82
18	X 79	X 79	X 74	X 72	X 68	77			A					A		A					X 92	X 84	80	79
19	67	71	64	66	74		77														X 77	X 80	X 80	81
20	X 78	X 72	X 70	X 70	X 68																X 83	86	81	X 74
21	X 71	72	X 71	X 65	X 63	63	83				A										X 77	76	74	X 72
22	73	73	X 67	65	73		78						A	A							X 82	X 77	83	X 75
23	83	90	62	43	44							A		A	A						X 65	X 66	X 63	X 65
24	X 63	61	59	60	59	54											A				A	X 74	X 73	X 70
25	63	64	64	62	60					A		A									X 60	X 58	X 57	X 57
26	X 57	X 54	X 52	X 53	X 50				A												X 78	X 61	X 60	X 60
27	62	X 60	61	X 56	53						A		A	A	A						X 81	X 70	X 70	X 63
28	X 59	X 59	60	60	59	62															X 67	X 66	X 66	X 65
29	64	62	X 61	58	59																X 85	X 80	75	71
30	67	X 59	X 56	X 52	X 52																X 76	X 75	76	73
31	61	56	58	59	56	55															X 76	X 77	X 79	X 74
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	10	4	1	1												29	31	31	31
MED	X 75	X 73	X 71	X 66	X 66	68	80	99	88												X 81	X 78	X 79	X 75
U Q	X 81	X 83	X 78	X 74	72	78	84														X 87	X 84	84	X 85
L Q	64	62	61	60	59	61	78														X 76	X 74	X 74	X 71

JUL. 1992 FXI (0.1MHZ) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION KOKUBUNJI

JUL. 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	F 52	F 49	46	43	42	51	64	74	76	77	56	68	81	79	76	66	66	69	77	A	75	64	F 71	F 68
2	F 61	60	58	57	58	64	55	72	69	67	V 62	I A 66	76	89	91	80	82	83	86	86	82	78	77	72
3	69	67	68	65	61	60	60	72	75	72	65	68	69	74	77	74	76	75	73	79	79	75	74	71
4	F 69	F 66	F 72	F 64	F 62	78	72	64	R 65	70	75	83	88	94	94	91	83	79	76	77	69	69	71	69
5	74	76	71	64	F 61	62	67	70	66	I A 68	77	74	78	86	93	95	91	91	87	81	75	73	75	79
6	V 81	F 80	F 72	F 68	70	73	84	84	H 80	76	68	78	91	101	97	94	92	81	86	82	72	74	71	72
7	72	71	71	F 57	F 56	64	67	74	77	80	71	I A 70	72	80	85	75	76	73	83	79	74	71	71	J S 68
8	68	Z 70	66	68	62	62	71	70	67	66	70	72	71	77	80	77	R 71	69	73	81	80	F 83	F 85	80
9	F 73	F 64	65	F 66	F 65	66	71	82	85	84	89	81	79	77	79	84	91	96	111	104	84	81	85	85
10	82	85	84	70	67	73	84	91	91	87	91	92	98	103	110	96	84	80	83	85	87	85	86	J R 82
11	F 79	77	74	68	64	68	83	94	Z 95	85	90	89	93	97	99	91	87	88	90	88	83	85	85	89
12	91	96	84	80	72	70	84	91	92	87	84	77	77	80	95	103	93	87	89	92	97	94	F 96	F 95
13	F 91	94	90	82	80	F 84	99	81	F 83	79	76	76	71	A	61	68	I Y 67	I A 68	I A 73	81	86	78	78	81
14	J R 76	85	69	60	59	59	64	I A 60	A	A	57	56	56	I A 58	61	63	62	68	69	62	I A 60	65	65	65
15	63	58	F	J F 67	F 55	F 52	68	80	J R 73	71	70	80	I A 77	J R 80	I A 81	79	84	84	78	79	70	69	F 68	F 68
16	F 74	74	74	70	71	75	82	97	91	86	85	85	89	100	97	86	73	74	70	71	79	F 79	F 80	F 77
17	75	74	F 71	71	65	68	78	F 89	84	H 71	60	66	78	82	84	80	83	84	84	77	71	72	71	76
18	73	73	69	66	62	F 70	75	73	I A 74	76	84	88	87	I A 94	97	I A 94	90	82	84	80	86	78	F 71	F 71
19	F 59	F 62	F 56	F 58	F 64	61	F 66	V 78	79	76	77	87	90	96	100	91	90	94	87	70	71	J R 74	74	F 75
20	72	66	64	64	62	69	78	87	70	76	68	76	83	85	85	91	97	85	70	68	77	F 77	F 75	68
21	65	J R 66	65	60	57	F 55	F 76	79	79	73	I A 68	66	71	72	71	74	67	64	U A 68	63	71	F 68	F 65	66
22	F 65	F 65	61	F 59	F 63	63	F 57	91	97	92	95	105	I A 101	I A 87	77	72	75	72	R 71	77	76	70	F 74	69
23	F 74	F 81	F 57	F 36	F 36	37	54	71	59	R 53	E G 46	A	57	I A 55	I A 54	59	61	56	53	54	59	60	57	59
24	57	F 53	F 52	F 52	F 49	F 48	60	67	63	57	55	58	62	67	67	65	I A 63	61	57	61	I A 68	68	67	64
25	F 56	F 56	F 56	F 54	F 53	54	62	62	53	I A 55	U R 51	I A 59	61	60	63	66	64	62	66	68	54	52	51	51
26	51	48	46	47	44	46	58	65	I A 60	V 68	72	61	68	61	62	64	62	64	71	82	72	55	54	54
27	J F 55	54	F 54	50	F 46	48	59	68	62	64	I A 70	71	I A 67	I A 65	I A 67	67	74	77	80	81	75	64	64	57
28	53	53	J F 53	J F 53	J F 52	F 53	72	65	58	70	75	70	82	87	84	85	88	98	79	65	61	60	60	59
29	F 57	F 55	55	F 53	F 52	58	67	61	62	R 63	80	84	95	99	91	71	69	72	73	79	81	74	66	F 65
30	F 59	53	50	46	46	45	62	77	79	85	81	83	79	82	H 82	72	68	67	70	73	70	69	F 68	F 62
31	F 55	F 48	F 50	F 51	F 50	F 47	52	67	78	82	75	72	68	70	76	79	71	69	71	75	70	71	73	68
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	30	31	31	31	31	31	30	30	31	30	31	30	31	31	31	31	31	30	31	31	31	31
MED	69	66	65	60	61	62	67	74	76	74	72	75	78	81	82	79	76	75	76	79	75	72	71	69
U Q	74	76	71	68	64	69	78	84	83	82	81	83	88	94	94	91	88	84	84	81	81	78	77	77
L Q	F 57	55	55	53	F 52	52	60	67	65	68	65	68	69	72	71	68	67	68	70	70	70	68	66	65

IONOSPHERIC DATA STATION KOKUBUNJI

JUL. 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							U L 440	430			490	U A 510	480	510	480	470	485							
2								430	450	460	U L 520				U A 540	U A 505	450	L 430						
3							L 430	430	450	460	490	500		510	U A 480	480	450	L 440	L					
4						L	L	L	L 480		500	510	500	480	500									
5							L	L				510	510	510	490	480	460	L 430	U L 380					
6						L		L		520	H 520	U Y 530	H 530	510			460	L 490	L					
7						L		L	L		520					520	460	L 450						
8							L	L	U L 550		530	540	550		530			L						
9							L	L	L	L 520	520	530	530	540	U A 540	510	500	460	L 410					
10						L	L	L		L 560	L 520	L	530	530	535		490	L 470	L					
11							L	L	U L 500		550	510	540	550	530		L	L 450	L					
12							L	L	L	H 540	H 520	H 540	540	530	510			U L 460	L					
13						L				530	550	530			520	500	510							
14											480	U A 500	510		500	U A 510	U A 500							
15						L	L	460	480		520	530					490	L 440						
16								L 470		520		550	550	520			U L 490	L 450						
17						L		U L 500	450	500	L 510	510	510	540										
18							L	L										U L 500						
19							L		480		500	510	520	U A 540		U A 500	490	430	L					
20									L	500	560	530	520	520		480								
21						L 340	410		480			U A 530		500	510	480								
22						L	410									470	U A 430	U A 420						
23						310	L			450	460		470				430		L					
24							370	410	430	470	490			490	470			L						
25						L	360	410	500		480		U A 480	U A 480	460	460	440	L 420	U L 330					
26						U L 300	U L 370	410		470	470	470	470	490	460	450	440	U L 420	L					
27							L	U L 440	450	480						470	440							
28						L	U L 400	L 420	L 470	470	450	500	510	490	480	470	460	420						
29							L	U L 420		L	470	490	490		470	L 490	U L 480	410						
30						L	L	L 450	450	470	470		U A 480	470	480	L 500	430	L 410	L					
31							L	U L 480	450		480	490	500	490	470	470	460	430	L					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						3	9	14	15	16	25	21	21	20	20	19	22	20	3					
MED						L 310	410	430	470	490	500	510	510	510	495	480	460	L 435	U L 380					
U Q						L 340	L 420	L 460	L 480	520	520	530	530	530	525	U A 500	490	L 455	L 410					
L Q						U L 300	370	420	450	470	480	500	485	490	475	470	440	420	U L 330					

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

IONOSPHERIC DATA STATION KOKUBUNJI

JUL. 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						A					U A	A	A	A	A		A			B				
							260	295	330	340	345					345		280	205					
2											U A	A							A	B				
						190	245	295	320	345	355		365	365	355	340	315	270						
3																		A	A	B				
						185	260	295	330	355	370	380	380	370	355	345	310							
4								A	A	A	A								A	B				
						195	265					380	385	375	360	345	325	285						
5						A	A				A	A	A							B				
								300	340	345		390		405	375	355	335	285	230					
6						A				B		B							U A	B				
							265	310	355		385		395	390	370	355	335	290	205					
7													A	U A	A	A				B				
						180	265	310	340	370	380	380		380			350	300	235					
8						A	A	A	A	A	A	A					U A	A	A	B				
												410	410	400	385	370	340	305						
9						A					A	A	A	A	A	A	A	A	A	B				
							270	320	345	370									225					
10								A		A	U A									B				
						190	270		350		385	400		385										
11						A	U A	A	A	A	A	A	A	A	A	A				B				
							235										335	285	245					
12							A				A		A	A	A	A	A	A	A	B				
						180	265	330	355	380		400	400											
13							A	A	A	A	A	A	A	A	A	A		A	A	B				
						185				375	395						345							
14						U A				A	U A	U A	A	A	A					B				
						195	270	315	340		385	385				370	335	295	230					
15						A				U A	A	A	A						A	B				
							250	305	340	370				400	390	360	335	285						
16						A	A		U A	A	A	A	A	R	A	A				B				
							260	310	340								350	305	235					
17						A				R	A	A							U A	B				
							265	305	335	370			395	395	380	350	325	290	210					
18						A						U A	A	A	A	A	A	A	A	B				
							250	305	340	355	370	390	385											
19						H				A	A							A	A	B				
						185	255	295	335			375	390	370	370	365	340							
20											A	A	A							B				
						190	250	305	330	355				390	370	360	330	290	220					
21						A			A	A	A	A	A	A	A				A	B				
							260	315	340	370						370	330	280						
22						A						A	A	A	A	A	A	A	U A	B				
							245	300	330	350	360								215					
23						A				A	U A	A	A	A	A			A	A	B				
							230	285		325	345					350	320	270						
24						A	A					A	A	A	A	U A	A	A	A	B				
								285	325	340	355					340								
25										A	A	A	B					A	A	B				
						175	240	280	320					365	355	340	320							
26						A				A	A	A	A	A				U A	A	B				
							235	275					375	360	350	340	320	265						
27						A	A	U A		U A	U A	A	A	A	A	A	A	A	A	B				
								275	335	340	355					345								
28						A			A	A		A						A	A	B				
							225	285			365	370	365	360	350	335	300	255						
29						A	A		A										A	B				
								285		345	355	370	375	360	350	335	305	270						
30						A		U A	A	A	A	A	A		A	A	A	A		B				
							240	275						365					215					
31										A	A	A	A			A				B				
						165	235	285	315	335				370	355		320	265	200					
	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	25	26	22	19	15	12	12	18	15	20	22	19	13					
MED						185	255	298	338	355	365	382	385	372	360	348	330	285	220					
U Q						190	265	310	340	A 370	A 385	395	395	390	375	360	335	290	232					
L Q						180	240	285	330	A 340	355	378	375	365	355	340	320	270	208					

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

IONOSPHERIC DATA STATION KOKUBUNJI

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J A 52	J A 30	J A 24	J A 25	J A 20	22	G	J A 46	80	J A 55	J A 51	J A 56	J A 52	J A 41	J A 42	G 35	37	J A 53	73	J A 127	J A 110	J A 72	J A 33	J A 51
2	24	25	25	21	E B 14	25	J A 41	J A 40	J A 45	43	43	75	74	J A 86	J A 56	J A 63	J A 47	J A 50	J A 52	J A 40	J A 21	50	J A 48	J A 53
3	J A 46	J A 46	J A 30	J A 33	J A 23	G 16	G 22	36	42	43	43	48	J A 53	J A 51	J A 55	43	J A 42	J A 40	J A 49	J A 20	27	E B 13	24	E B 13
4	J A 25	J A 46	J A 59	J A 44	24	J A 36	J A 43	J A 50	J A 67	J A 94	J A 92	48	45	49	42	J A 75	J A 84	J A 53	J A 52	J A 50	J A 52	J A 53	J A 38	J A 24
5	J A 30	J A 39	J A 44	33	J A 41	J A 37	J A 44	J A 54	65	J A 111	J A 96	J A 77	J A 52	J A 54	45	42	J A 48	J A 64	32	J A 24	21	32	J A 23	J A 48
6	J A 42	J A 54	J A 42	J A 34	J A 33	27	39	J A 52	J A 79	48	J A 94	50	47	J A 52	J A 61	J A 87	J A 43	J A 42	47	J A 59	J A 55	30	J A 23	J A 34
7	J A 34	J A 41	J A 35	J A 34	J A 26	23	30	34	J A 51	61	J A 66	97	78	97	71	37	J A 56	J A 39	83	J A 117	J A 51	J A 84	J A 87	J A 42
8	J A 39	J A 24	23	E B 15	E B 14	25	J A 51	J A 54	48	J A 65	J A 46	51	48	J A 80	48	J A 67	J A 95	J A 50	J A 72	56	J A 76	J A 47	J A 63	J A 77
9	24	J A 49	28	J A 30	J A 22	J A 22	G 22	J A 51	J A 51	J A 53	J A 56	J A 49	J A 43	50	J A 69	J A 52	J A 48	44	J A 31	33	33	J A 35	J A 51	J A 58
10	J A 47	J A 23	E B 13	20	E B 14	23	29	J A 48	J A 77	J A 49	46	J A 52	J A 57	43	J A 58	J A 70	42	J A 38	33	30	32	25	J A 34	J A 50
11	22	E B 13	E B 14	E B 13	E B 13	23	J A 34	J A 70	J A 62	58	43	J A 45	J A 52	41	J A 45	J A 62	J A 40	34	G 23	E B 17	J A 24	J A 36	J A 52	J A 23
12	J A 43	J A 30	J A 24	E B 15	E B 13	G	29	39	39	39	45	43	46	43	J A 96	62	J A 66	J A 39	J A 38	35	E B 14	42	J A 99	J A 49
13	J A 46	J A 51	J A 42	J A 32	J A 33	J A 32	J A 120	91	J A 89	44	J A 78	J A 51	J A 61	96	J A 70	J A 52	J A 74	J A 92	86	J A 115	J A 63	J A 52	J A 39	J A 42
14	J A 52	J A 58	J A 65	J A 67	J A 34	J A 52	J A 66	J A 86	84	83	43	J A 51	48	62	40	J A 53	J A 68	J A 70	58	J A 85	J A 89	J A 62	J A 54	J A 54
15	J A 55	J A 119	J A 45	28	J A 48	J A 55	32	J A 51	J A 98	J A 103	42	47	82	J A 73	J A 100	81	J A 55	J A 66	J A 82	47	J A 43	J A 26	J A 69	J A 48
16	J A 37	J A 48	J A 23	22	J A 40	24	J A 48	J A 48	J A 58	J A 62	J A 61	J A 50	40	G 39	86	75	40	J A 48	J A 42	J A 39	83	J A 55	J A 64	J A 47
17	J A 41	J A 21	J A 48	J A 48	J A 44	J A 43	28	34	J A 73	G	42	42	44	J A 51	J A 71	J A 71	J A 64	61	48	J A 24	34	J A 39	36	J A 28
18	J A 42	J A 36	J A 23	J A 24	E B 13	20	35	J A 50	J A 101	J A 74	J A 85	88	J A 77	J A 112	94	115	J A 101	J A 37	J A 69	J A 123	J A 84	J A 36	J A 44	J A 52
19	J A 103	J A 79	J A 53	J A 43	J A 18	G	29	68	J A 53	J A 82	J A 81	J A 48	51	J A 97	J A 62	J A 54	J A 96	J A 81	J A 59	53	J A 51	J A 42	J A 31	J A 86
20	J A 54	J A 38	J A 47	J A 33	J A 21	J A 37	J A 41	J A 48	J A 45	40	42	J A 48	42	48	J A 67	43	J A 59	J A 100	J A 57	J A 54	J A 79	J A 53	J A 86	J A 32
21	J A 22	J A 35	J A 26	J A 27	J A 19	25	J A 98	J A 85	J A 79	J A 128	72	J A 151	J A 82	J A 49	J A 49	J A 44	J A 129	J A 84	J A 98	J A 51	J A 54	J A 75	J A 33	J A 23
22	J A 49	J A 48	J A 66	29	22	22	35	J A 54	J A 60	J A 65	62	J A 128	J A 149	J A 125	J A 121	J A 52	J A 47	J A 44	J A 90	J A 54	J A 53	J A 42	J A 53	J A 85
23	J A 63	J A 68	J A 35	J A 51	J A 41	J A 25	J A 48	J A 99	J A 125	J A 54	J A 77	J A 126	138	J A 130	J A 65	J A 55	J A 70	J A 53	J A 123	52	39	J A 37	J A 79	J A 34
24	J A 69	J A 54	J A 85	J A 28	J A 31	J A 53	J A 49	36	J A 55	J A 51	J A 55	91	J A 63	J A 59	J A 54	J A 64	75	J A 71	63	64	J A 82	J A 52	E B 15	J A 35
25	J A 78	J A 45	J A 52	J A 52	J A 23	G	34	J A 52	J A 52	160	101	106	J A 52	50	J A 48	43	J A 80	J A 88	J A 50	J A 21	33	J A 23	J A 37	J A 23
26	J A 26	J A 21	J A 21	J A 21	J A 16	20	J A 32	J A 52	J A 127	J A 51	J A 43	43	45	42	47	J A 71	J A 78	J A 66	J A 43	66	55	53	32	J A 30
27	J A 35	J A 23	J A 23	21	E B 14	23	28	34	36	60	109	J A 58	J A 120	J A 94	J A 80	J A 55	J A 54	J A 51	J A 44	48	J A 54	33	47	54
28	J A 32	J A 51	J A 53	J A 50	J A 24	J A 20	26	G 29	J A 37	J A 42	G 34	38	41	G	38	41	J A 50	J A 50	J A 45	J A 22	J A 27	J A 21	58	J A 50
29	J A 81	J A 54	J A 72	J A 84	J A 37	J A 87	J A 51	J A 39	91	40	43	47	50	J A 54	49	42	36	J A 35	71	36	J A 35	J A 49	J A 52	J A 34
30	J A 29	J A 49	30	J A 27	J A 19	20	28	J A 45	J A 55	J A 73	J A 55	J A 78	J A 58	39	J A 52	35	36	32	G	19	29	J A 51	J A 52	J A 74
31	J A 54	J A 84	J A 29	J A 24	J A 42	G	26	J A 42	J A 44	J A 57	J A 65	J A 52	J A 47	G 35	40	J A 51	40	34	25	J A 29	J A 45	J A 25	24	E B 15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	J A 42	J A 46	J A 35	J A 29	J A 23	23	34	J A 50	J A 60	J A 57	J A 55	J A 51	52	J A 51	J A 56	J A 54	J A 55	J A 50	J A 52	J A 48	J A 51	J A 42	J A 47	J A 47
U Q	J A 54	J A 54	J A 52	J A 43	J A 34	J A 36	J A 48	J A 54	J A 80	J A 74	J A 78	78	74	J A 86	J A 71	J A 70	J A 75	J A 66	J A 72	J A 59	J A 63	J A 53	J A 58	J A 53
L Q	J A 30	J A 30	J A 24	22	E B 16	G 20	28	39	48	44	43	48	46	43	47	43	42	J A 39	42	J A 29	32	32	33	J A 30

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

IONOSPHERIC DATA STATION KOKUBUNJI

JUL. 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

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	27	25	22	19	E B 14	22	G	41	63	50	44	51	43	39	41	G 33	34	50	65	A A 127	33	55	16	17
2	E B 13	E B 13	E B 14	E B 13	E B 14	24	36	35	40	40	41	A A 75	64	83	54	51	42	34	46	34	E B 13	30	16	21
3	33	38	20	27	16	G 16	G 21	35	40	40	41	43	53	50	48	42	42	32	33	16	18	E B 13	18	E B 13
4	18	30	32	27	E B 14	30	30	34	41	65	43	42	43	46	40	71	61	47	41	18	E B 14	16	24	16
5	22	30	23	23	15	23	32	39	61	A A 111	65	42	44	42	41	40	39	32	29	19	E B 14	19	17	19
6	23	24	16	30	19	26	30	40	65	45	43	U Y 50	41	47	55	80	38	36	35	55	40	23	E B 13	17
7	14	30	21	25	18	22	29	33	42	59	48	A A 97	71	79	54	37	38	36	61	70	19	44	27	17
8	25	17	E B 14	E B 15	E B 14	23	32	38	43	51	43	47	43	67	44	59	62	33	60	48	20	39	26	24
9	15	E B 14	E B 14	16	17	20	G 21	43	45	46	49	43	42	46	54	43	44	34	G 23	22	23	26	30	37
10	31	19	E B 13	E B 13	E B 14	21	29	39	50	40	44	50	45	43	52	62	35	31	29	20	23	E B 14	17	22
11	E B 13	E B 13	E B 14	E B 13	E B 13	21	31	44	40	54	43	43	45	41	41	61	G 29	31	G 22	E B 17	18	23	27	16
12	16	E B 13	19	E B 15	E B 13	G	29	34	37	39	44	42	43	41	44	56	65	34	33	27	E B 14	30	46	34
13	31	31	36	26	19	26	74	69	51	43	45	47	56	A A 96	43	42	43	A A 92	A A 86	66	43	38	21	24
14	18	46	45	33	23	44	51	A A 86	A A 84	A A 83	42	50	46	A A 62	40	51	50	61	56	47	A A 89	46	35	19
15	40	16	31	E B 13	20	21	31	43	43	64	42	43	A A 82	61	A A 100	72	41	36	63	21	15	16	44	33
16	20	20	20	17	26	20	45	40	55	46	55	44	U Y 40	U G 39	80	64	36	36	40	20	41	29	22	18
17	19	E B 13	26	40	35	24	28	33	37	G	40	40	41	45	70	51	63	55	40	21	25	15	28	19
18	24	29	17	16	E B 13	20	31	39	A A 101	70	70	83	67	A A 112	87	A A 115	55	32	64	69	45	24	26	34
19	42	35	42	30	E B 13	G	28	59	43	51	45	42	50	54	61	50	46	34	32	31	20	36	28	21
20	32	16	17	17	15	28	34	46	38	37	40	40	40	46	54	40	49	58	42	17	34	35	21	18
21	17	15	18	20	16	20	35	55	43	51	A A 72	53	55	42	41	40	63	61	U A 35	27	28	35	20	16
22	30	34	27	16	E B 13	20	31	48	51	54	62	80	A A 149	A A 125	65	43	43	42	40	40	25	23	17	42
23	43	16	25	28	25	20	36	66	51	41	39	A A 126	41	A A 130	A A 65	51	37	45	26	29	21	27	36	19
24	35	30	39	15	23	34	31	33	38	40	46	50	51	42	41	53	A A 75	38	55	57	A A 82	27	E B 15	17
25	14	28	35	33	17	G	31	40	48	A A 160	41	A A 106	48	48	42	40	38	29	26	18	21	18	26	E B 14
26	E B 13	16	16	16	E B 13	18	29	36	A A 127	39	40	38	43	41	43	43	37	37	29	31	34	31	24	22
27	27	E B 14	17	17	E B 14	21	27	32	G	45	A A 109	58	A A 120	A A 94	A A 80	40	40	43	35	37	22	E B 13	44	38
28	16	19	28	19	E B 13	17	25	G 25	34	36	G 32	G 33	40	G	38	36	37	28	31	18	26	19	19	18
29	37	16	23	29	21	35	31	G 27	61	39	42	45	47	54	45	39	34	30	63	27	21	22	17	16
30	E B 14	23	19	E B 15	E B 14	17	26	41	35	43	40	52	48	G 34	45	35	32	32	G	15	16	E B 14	26	30
31	41	16	17	17	E B 13	G	25	34	41	55	40	46	42	G 34	38	38	34	27	G 18	26	27	E B 14	E B 14	E B 15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	23	19	20	17	15	21	31	39	43	46	43	47	45	46	45	43	41	36	35	27	23	24	24	19
U Q	32	30	28	27	19	24	32	44	55	55	48	53	55	A A 67	61	59	50	45	56	47	34	35	28	24
L Q	16	E B 16	E B 17	E B 15	E B 13	G 18	28	34	40	40	41	42	42	41	41	40	37	32	29	19	18	E B 16	17	17

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

IONOSPHERIC DATA STATION KOKUBUNJI

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	13	13	13	15	14	13	13	14	17	19	20	21	27	24	31	19	21	15	16	13	13	14	13	14
2	13	13	14	13	14	13	14	14	18	17	20	27	20	21	20	19	16	13	16	13	13	14	13	13
3	15	13	13	14	13	13	15	14	17	21	22	26	23	25	23	20	17	15	13	13	13	13	13	13
4	13	13	15	13	14	13	13	14	15	27	24	24	22	22	22	18	16	15	13	13	14	13	14	14
5	14	13	16	13	13	13	15	17	18	20	21	22	31	28	19	23	18	14	15	15	14	14	14	13
6	13	13	13	15	13	13	18	18	17	38	21	45	28	30	24	20	17	16	12	14	14	13	13	14
7	13	13	14	13	13	13	16	16	18	20	23	31	34	33	34	26	20	17	16	14	13	13	16	15
8	15	13	14	15	14	15	17	16	17	26	24	22	23	24	27	18	16	16	13	13	14	14	13	14
9	13	14	14	13	13	15	13	14	18	18	20	29	33	37	25	26	17	15	13	13	14	14	13	13
10	15	14	13	13	14	14	16	16	17	23	23	30	29	25	21	19	17	16	17	13	14	14	15	13
11	13	13	14	13	13	14	15	18	21	33	27	33	33	31	27	18	17	14	17	17	14	14	13	13
12	15	13	13	15	13	14	16	18	17	24	25	23	26	33	22	20	18	15	15	14	14	14	15	13
13	13	13	13	13	13	13	16	16	19	21	20	21	23	30	21	17	16	15	16	15	13	14	14	13
14	13	14	13	13	13	14	18	18	20	22	24	26	34	33	23	21	18	17	17	14	13	13	13	13
15	14	13	13	13	13	13	16	17	18	19	26	31	33	34	31	21	18	16	13	14	13	13	13	13
16	15	14	13	14	14	13	15	16	18	25	26	31	33	35	25	21	17	14	16	14	13	13	13	14
17	13	13	13	13	13	13	15	16	18	33	26	31	30	29	24	20	18	16	16	13	15	13	13	13
18	14	14	14	13	13	13	15	16	19	21	28	33	34	27	26	20	20	16	13	13	14	14	14	13
19	14	13	13	14	13	13	17	16	19	22	23	21	27	22	23	22	17	17	15	14	13	13	13	13
20	13	14	13	13	13	14	14	16	16	21	23	35	33	34	30	20	18	16	16	14	13	13	15	13
21	13	13	13	13	13	13	15	15	19	22	22	22	34	31	25	20	17	16	14	14	15	13	13	13
22	13	14	14	14	13	13	16	17	16	20	18	34	22	22	20	17	17	16	13	17	14	13	13	13
23	14	13	13	13	14	13	13	14	15	17	19	19	33	19	21	19	16	16	16	16	13	15	15	13
24	13	13	13	13	16	13	14	16	17	18	20	27	22	20	21	19	20	15	14	17	15	15	15	13
25	13	13	13	13	13	15	14	15	16	18	22	25	38	25	20	18	16	15	14	13	14	13	14	14
26	13	13	13	13	13	13	14	16	14	17	21	30	23	20	20	18	17	15	13	13	13	13	13	13
27	13	14	13	14	14	14	17	16	18	18	20	19	22	22	19	18	16	14	13	15	15	13	14	16
28	13	13	13	13	13	13	13	16	18	21	21	24	23	22	20	17	17	14	14	15	13	13	15	13
29	15	14	13	13	13	13	14	15	17	17	19	20	22	21	20	17	16	15	14	16	14	14	15	13
30	14	15	13	15	14	13	13	16	16	18	19	20	22	18	18	17	15	18	15	13	13	14	13	14
31	13	13	13	14	13	13	13	13	16	18	20	20	32	24	23	17	14	14	13	15	14	14	14	15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	13	13	13	13	13	13	15	16	17	21	22	26	28	25	23	19	17	15	14	14	14	13	13	13
U Q	14	14	14	14	14	14	16	16	18	23	24	31	33	31	25	20	18	16	16	15	14	14	15	14
L Q	13	13	13	13	13	13	14	15	16	18	20	21	23	22	20	18	16	15	13	13	13	13	13	13

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

IONOSPHERIC DATA STATION KOKUBUNJI

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F 265	F 270	280	265	285	335	295	320	320	330	340	270	300	285	315	290	290	290	290	A	290	A	F 280	F 285
2	F 275	270	270	280	295	335	295	320	325	325	V 290	A	270	A 300	290	280	290	285	290	300	290	280	275	275
3	280	285	285	290	285	305	290	310	335	330	290	295	275	285	295	290	300	300	290	300	290	285	280	280
4	F 275	F 280	F 290	F 280	F 305	330	H 310	345	R 325	A 285	280	280	280	285	285	285	295	300	305	315	285	270	270	260
5	275	290	300	295	F 290	315	315	330	A 285	A	305	280	275	270	270	280	290	300	310	295	285	270	265	275
6	V 285	F 285	F 280	F 280	280	285	300	310	H 285	285	295	260	270	285	285	290	305	300	295	310	275	270	270	265
7	280	280	295	F 275	F 275	320	270	295	275	310	295	A	A	A	300	270	300	285	305	A	270	285	280	J S 275
8	275	Z 275	295	295	295	285	325	320	300	300	285	285	270	280	285	290	R 285	280	295	285	285	F 275	F 280	265
9	F 290	F 315	270	F 295	F 295	275	305	300	300	295	295	290	275	290	260	270	280	280	295	315	280	265	260	270
10	275	285	300	305	270	285	295	300	295	280	265	250	270	255	280	290	290	285	285	280	270	270	275	J R 275
11	F 285	280	300	285	290	290	265	290	Z 280	275	260	270	265	270	285	285	280	290	285	300	275	270	285	265
12	275	300	305	295	285	275	285	290	280	280	290	290	255	260	270	290	285	280	265	265	275	275	F 275	F 275
13	F 270	280	290	270	265	F 255	300	285	F 245	265	265	275	260	A	240	280	Y	A	A	265	280	255	260	260
14	J R 270	285	295	270	300	265	260	A	A	A	230	235	240	A	265	275	285	A 290	300	285	A	255	265	275
15	280	280	F	J F 285	F 290	F 250	255	305	J R 295	290	250	295	A	J R 280	A	A 285	285	310	280	300	275	265	F 260	F 270
16	F 270	270	275	275	295	280	275	300	295	285	280	265	260	285	295	310	295	310	300	265	255	F 270	F 275	F 265
17	270	280	F 260	275	260	250	255	F 275	310	H 300	285	260	285	280	290	290	305	300	305	300	275	270	265	265
18	275	275	280	290	300	F 300	330	315	A	A 285	285	A 285	260	A	A 280	A	295	285	305	A 280	285	300	F 270	F 265
19	F 255	F 265	F 290	F 290	F 290	300	F 305	V 315	315	295	260	275	280	275	285	290	280	300	315	300	275	J R 285	280	F 305
20	285	280	285	290	290	315	295	330	305	305	270	265	275	285	270	285	310	325	310	280	275	F 280	F 285	275
21	270	J R 275	285	275	250	F 255	F 275	265	280	280	A	280	290	295	290	310	A	A 305	A	275	275	F 265	F 270	265
22	F 275	F 280	260	F 255	F 260	265	F 265	290	305	280	260	280	A	A	A 275	265	280	300	R 290	285	290	270	F 270	260
23	F 285	F 310	F 350	F 260	F 270	225	250	A 310	275	R 290	G	A	270	A	A	290	295	310	300	285	270	270	265	280
24	290	F 265	F 285	F 270	F 280	F 285	300	320	335	270	Y	275	280	290	305	310	A	A 310	A	A 290	A	290	270	275
25	F 285	F 280	F 300	F 285	F 280	300	310	320	245	A	U R 260	A	300	290	300	305	310	300	315	315	290	280	275	275
26	280	270	275	280	275	305	325	325	A	V 290	330	290	320	290	305	315	300	300	300	310	310	280	285	290
27	J F 275	285	F 310	305	F 335	325	325	325	335	320	A	325	A	A	A	300	305	320	305	305	315	295	285	290
28	285	305	J F 295	J F 285	J F 315	F 320	330	335	325	300	320	270	265	285	285	280	285	315	320	300	280	280	280	290
29	F 285	F 285	285	F 270	F 295	335	350	330	A	R 280	290	280	290	310	320	305	305	320	310	295	290	305	305	F 300
30	F 305	285	300	295	300	285	295	310	325	305	300	300	295	300	H 300	300	315	305	305	300	290	300	F 315	F 270
31	F 295	F 285	F 290	F 300	F 300	F 325	290	295	325	315	310	305	285	295	295	310	310	310	305	305	290	280	295	290
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	30	31	31	31	31	30	27	28	28	27	27	24	28	30	28	30	28	29	29	30	31	31
MED	275	280	290	285	290	290	295	310	300	290	285	280	275	285	285	290	295	300	300	300	280	275	275	275
U Q	F 285	F 285	300	295	F 295	320	310	320	325	305	295	290	285	290	298	300	305	310	305	302	290	285	280	280
L Q	275	275	280	275	275	275	275	295	280	280	262	270	265	280	278	280	285	290	290	282	275	270	270	265

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

IONOSPHERIC DATA STATION KOKUBUNJI

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							U L 335	A	A	A	385	A	390	360	365	370	335	A	A	A				
2								360	395	380	U L 360	A	A	A	A	A	A	L 335	A					
3							L 350	350	380	370	390	385	A	A	A	370	A 355	L 340	L					
4						L	L	L	L 370	A	390	380	400	A	365	A	A	A	A					
5							L	L	A	A	A	400	385	360	390	355	350	L 345	L					
6						L		L	A	360	H 395	A	H 390	A 345	A	A	350	L 330	L					
7						L		L	L	A	A 330	A	A	A	A	H 345	355	L 335	A					
8							L	L	U L 340	A	H 370	A 330	H 370	A	330	A	A	L	A					
9							L	L	L	L 365	A	385	370	370	A	350	A 335	330	L 330					
10						L	L	L	A	H 340	L 365	L	410	400	A	A	355	L 320	L					
11							L	L	U L 370	A	380	405	385	370	H 365	A	L	325	L					
12							L	L	L	H 355	A 350	H 385	365	385	355	A	A	U L 340	L					
13						L	A	A	A	335	360	385	A	A	360	350	A 300	A	A	A				
14						A	A	A	A	A	405	A	A 345	A	340	A	A	A	A	A				
15						L	L	A 350	355	A	405	375	A	A	A	A	340	L 355	A					
16							A	L 345	A	A 355	A	355	H 350	360	A	A	U L 350	L 340						
17						L	340	U L 340	405	380	L 390	390	375	355	A	A	A	A	A					
18							L	L	A	A	A	A	A	A	A	A	A	U L 325	A					
19							L	A	A 365	A	395	370	A	A	A	A	A	345	L					
20								A	L	370	345	H 390	385	A 330	A	355	A	A	A					
21						L 315	320	A	A	A	A	A	A	370	350	370	A	A	A					
22						L	315	A	A	A	A	A	A	A	A	A	A	A	A					
23						285	L	A	A	355	410	A	385	A	A	A	H 345	A	L					
24						A	360	H 370	395	A 315	A 330	A	A	355	370	A	A	L	A					
25						L	355	A	A 280	A	365	A	A	A	A 310	370	A 345	L 340	U L 350					
26						U L 310	U L 335	375	A	420	430	420	395	385	370	A 340	A 315	U L 340	L					
27							L	U L 355	370	A 345	A	A	A	A	A	355	A 350	A	A					
28						L	U L 365	L 385	L 370	400	475	H 405	355	H 380	375	345	340	350						
29							L	U L 375	A	L	385	A 350	A	A	A	L 340	U L 335	345	A					
30						L	L	A	380	A 335	410	A	A	400	A 385	L 350	375	L 350	L					
31							L	U L 325	A 360	A	390	A 350	360	365	380	335	350	345	L					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						3	9	11	14	16	24	17	17	16	15	15	18	19	2					
MED						L 310	340	L 355	370	358	388	385	385	368	365	350	348	L 340	L 340					
U Q						L 315	358	L 375	380	375	400	395	390	382	375	370	350	L 345						
L Q						285	328	U L 345	360	A 342	362	A 362	362	358	350	345	A 335	L 330						

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

IONOSPHERIC DATA STATION KOKUBUNJI

JUL. 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

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							320	275	A 305	275	310	420	335	345	310	345	360	345	A	A				
2								295	305	295	375	A	E A 410	A	320	350	315	305	295					
3							335	300	270	295	360	340	375	350	335	355	325	300	305					
4						255	H 230	245	275	E A 430	365	350	350	335	320	A 350	A 325	305	265					
5							270	275	A	A	A 330	360	375	375	360	330	300	280	270					
6						270		290	A	330	310	365	365	325	320	E A 355	285	315	290					
7						270		305	L 375	315	340	A	A	A	335	380	320	330	A 315					
8							270	270	350	360	385	370	420	E A 405	350	A 350	A 375	360	A					
9							300	295	310	325	320	320	355	340	415	375	345	330	285					
10						L 310	310	265	295	360	350	L 410	350	370	330	320	330	325	310					
11							L 370	310	265	305	375	360	360	350	340	A 320	355	310	285					
12							305	L 300	275	340	295	340	430	410	355	320	A 325	320	L 335					
13						365	E A 295	A	400	370	400	385	420	A	560	405	Y	A	A	A				
14						E A 400	A 405	A	A	A	570	585	580	A	460	415	390	A	E A 325	E A 330				
15						425	L 350	305	325	E A 400	470	350	A	A 355	A	A	340	285	A					
16							A 310	290	285	320	350	395	400	340	E A	A 310	310	310						
17						L 350	380	310	290	300	L 370	460	365	360	E A 350	350	A 310	310	275					
18							225	285	A	A	E A 360	A	E A 395	A	A	A	310	310	E A 300					
19							305	A 285	290	325	375	360	340	340	320	295	320	300	270					
20								240	300	325	450	390	370	350	365	330	285	280	270					
21						390	340	A 330	325	345	A	410	370	360	370	330	A	A	A					
22						335	F 370	A 300	290	335	370	A 360	A	A	A	380	330	310	330					
23						590	435	A	E A 410	380	G	A	450	A	A	385	350	A 325	300					
24						370	325	310	280	415	Y	440	395	360	340	325	A	315	A					
25						280	310	300	L 550	A	525	A	355	390	360	330	315	325	280					
26						345	295	300	A	330	290	365	320	390	350	320	355	320	300					
27							280	285	280	305	A	305	A	A	A	350	315	280	280					
28						275	270	250	300	300	305	395	365	300	330	335	330	270						
29							240	270	A	320	325	350	320	295	290	320	320	280	A					
30						L 360	295	290	285	305	310	300	330	320	310	335	300	300	285					
31							365	335	280	300	310	330	360	355	340	305	310	305	275					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						16	27	28	25	27	28	26	27	23	25	29	28	28	22	1				
MED						344	310	292	292	322	360	362	365	350	340	335	322	310	286	E A 330				
U Q						380	350	302	325	360	380	395	400	370	360	355	342	322	305					
L Q						278	280	275	280	305	315	350	350	340	320	320	310	300	275					

IONOSPHERIC DATA STATION KOKUBUNJI

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A 370	345	315	320	280	255	240	A	A	A	A 240	A	A 240	220	235	205	240	A	A	A	290	A	285	290
2	315	310	295	315	260	250	A 260	235	225	230	220	A	A	A	A	A	A	A 245	A	265	250	285	270	285
3	A 320	A 330	300	270	270	270	225	235	A 240	240	200	230	A	A	A	230	A	250	A	270	265	265	280	290
4	300	320	275	A 285	270	A	210	A 235	230	A	210	210	210	A	230	A	A	A	A	240	240	300	325	320
5	310	290	260	270	270	250	235	A 265	A	A	A	205	220	220	220	225	A 255	A 240	A 255	260	260	300	320	320
6	285	265	255	A 320	300	A 265	240	A 260	A	A 250	H 195	H	H 200	A	A	A	230	245	A	E A 275	E A 310	310	300	330
7	285	300	260	280	310	260	225	210	A 255	A	A	A	A	A	A	H 200	240	250	A	A	250	A 320	310	300
8	320	295	280	265	250	245	A 255	240	235	A	H 210	A	H 200	A	A	A	A	230	A	A	265	A 330	305	A 320
9	265	260	290	275	275	240	225	A	A	E A 255	A	210	210	225	A	A 265	A	240	255	235	240	290	335	A 320
10	320	280	245	230	300	265	225	A	A	H 215	240	A	210	H 190	A	A	235	230	A 260	270	290	285	290	290
11	280	280	260	250	280	255	245	E A 275	235	A	220	205	225	205	H 210	A	225	235	250	260	265	300	310	300
12	290	255	240	245	250	255	245	250	215	H 220	E A 260	H 210	220	200	A 260	A	A	235	E A 270	280	270	A 305	A 325	310
13	325	300	280	285	310	290	A	A	A	A 250	A 230	240	A	A	250	A 250	A	A	A	A	A 315	A 300	320	305
14	300	A 325	E A 300	A 335	280	A	A	A	A	A	210	A	A	A	235	A	A	A	A	A	A	E A 410	A 340	305
15	A 325	295	370	270	295	280	255	A	E A 270	A	190	210	A	A	A	A	E A 265	A 250	A	265	255	290	E A 375	335
16	305	300	295	280	280	265	A	A 250	A	E A 265	A	235	H 220	240	A	A	230	A 255	A 280	290	A 350	A 340	300	310
17	290	270	345	A 330	A 350	A 280	245	240	220	H 210	210	210	200	250	A	A	A	A	A	230	280	275	A 350	300
18	310	305	270	275	250	250	240	A 250	A	A	A	A	A	A	A	A	A	A 235	A	A	A 300	260	320	A 340
19	A	E A 335	A	A 310	265	245	240	A	E A 260	A	230	240	A	A	A	A	A	A 250	A	A 250	295	A 310	A 300	260
20	305	270	285	280	280	A 275	250	A	220	210	H 210	H 180	190	A	A	255	A	A	A	270	320	310	270	310
21	300	310	290	320	335	270	A	A	A	A	A	A	A	230	A 250	220	A	A	A	A 260	310	340	315	315
22	A 350	A 330	A 345	330	330	285	260	A	A	A	A	A	A	A	A	A	A	A	A	A 295	290	290	290	A
23	A 350	250	205	A 420	A 380	300	A	A	A	E A 270	200	A	220	A	A	A	H 250	A	A 260	E A 290	290	A 320	360	290
24	A 330	E A 365	A	280	A 310	A	A 255	H 210	230	A	A	A	A	230	235	A	A	A	A	A	A	300	290	285
25	300	335	310	A 365	290	240	E A 265	A	A	A	240	A	A	A	A	A 250	E A 265	225	A 250	245	255	280	340	305
26	290	320	305	305	320	270	250	A 250	A	195	190	185	E A 235	205	E A 275	A	A	A	A	260	250	A 310	A 305	300
27	330	295	270	260	230	250	250	225	210	A	A	A	A	A	A	A 240	E A 260	A	A	255	250	250	E A 315	A 320
28	280	260	A 345	320	275	250	225	215	215	200	175	H 170	240	H 190	225	215	A 245	215	245	230	280	300	300	285
29	A 345	290	300	E A 345	270	A 255	A 240	210	A	A 230	230	A	A	A	A	A 245	225	235	A	255	240	260	270	235
30	250	270	260	270	280	260	235	A	210	A	220	A	A	190	E A 260	H 190	220	225	255	250	250	260	260	A 310
31	A	325	290	285	255	240	230	205	A	A	200	A	245	210	225	A 255	225	230	250	245	270	275	270	270
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	31	29	31	31	28	26	18	15	14	22	14	16	14	13	14	15	19	11	24	29	30	31	30
MED	305	298	288	282	280	258	240	236	225	221	210	210	218	215	232	235	235	235	255	259	268	300	302	305
U Q	A 325	A 325	302	A 320	310	270	A 250	A 250	A 240	E A 250	230	230	230	230	A 255	A 250	E A 255	A 250	A 260	270	292	A 310	325	320
L Q	290	270	260	270	270	250	230	215	215	210	200	205	205	200	225	215	225	230	250	248	250	280	290	290

JUL. 1992 H'F (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION KOKUBUNJI

JUL. 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						A 115	110		110	110	110	115	115	A	A	A 125	A	115	120	B				
2						130	115	110	110	110	110	115	115	110	110	110	110	110	A	B				
3						E A 155	E A 145	A	110	115	115	115	110	115	115	115	110	A	A	B				
4						A 130	110	110	110	A	110	A 120	120	110	110	110	A 120	110	A	B				
5						A	A	A 130	110	110	110	110	120	115	110	115	115	A 130	120	B				
6						A	120	110	110	B	110	B	115	115	115	110	110	115	120	B				
7						140	120	110	110	115	110	115	B 130	125	A	A	115	115	120	B				
8						A	A	A	A	A	A	A	115	115	115	115	110	110	A	B				
9						A	A 125	110	115	110	110	A	A	A	A	A	A	A	A	B				
10						130	115	115	110	A	115	115	115	115	115	A	A	A	A	B				
11						A	115	110	A	A	A	A	A	A	A	A	A 130	110	A 135	B				
12						120	A	115	110	115	115	120	115	A	A	110	A	A	115	B				
13						A 130	110	A	A	A	E A 130	A	A	A	A	A	110	110	A	B				
14						130	120	115	110	110	110	110	A	A	115	115	110	110	120	B				
15						A	115	110	110	110	A	A	120	B 130	120	115	115	110		B				
16						130	120	110	110	120	115	A	A	A	A	A	115	110	120	B				
17						130	120	110	115	120	A	A	A	120	120	110	110	115	120	B				
18						A	120	115	110	115	115	120	120	115	A	A	A	A	A	B				
19						135	120	110	110	115	115	115	115	115	115	110	110	A	A	B				
20						140	110	110	110	110	115	B 120	A	130	125	115	115	115	120	B				
21						A	120	110	110	110	110	110	A	A	A	115	115	115	A	B				
22						A	120	110	110	110	110	A	115	120	110	110	110	110	120	B				
23						A	120	110	110	110	110	110	B 130	110	A	115	115	115	A	B				
24						A	A	E A 135	115	110	110	A	115	115	115	115	115	A	A	B				
25						150	120	110	110	110	A	A	B	120	115	115	115	115	A	B				
26						A	120	110	A	A	A	A	A	110	110	115	115	115	A	B				
27						A	A 115		110	110	110	110	115	115	115	A	A	A	A	B				
28						A	115	A 125	A	A	A	E A 130	110	110	110	110	115	110	A	B				
29						A	A	A 120	A	A 130	A 120	110	115	115	115	115	115	115	A	B				
30						A	120	110	A	110	A	A	A	A 130	110	105	A	A	120	B				
31						125	115	110	110	110	110	110	A	E A 135	A 130	A	A 125	A 125	E A 140	B				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						14	25	28	24	23	24	18	19	23	21	22	24	22	13					
MED						130	120	110	110	110	110	115	115	115	115	115	115	115	120					
U Q						140	120	115	110	115	115	120	120	120	115	115	115	115	120					
L Q						130	115	110	110	110	110	110	115	115	110	110	110	110	120					

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

IONOSPHERIC DATA STATION KOKUBUNJI

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	120	95	95	100	105	130	G	120	115	115	110	110	110	115	105	115	115	120	120	110	110	115	115	110
2	110	115	110	110	B	135	120	130	120	120	120	110	110	120	120	115	125	115	110	110	115	110	110	110
3	110	110	110	110	110	110	115	130	120	120	125	120	115	115	115	120	115	115	115	110	115	B	105	B
4	110	110	120	110	120	130	120	115	105	115	115	130	140	120	135	115	110	110	110	105	130	120	130	115
5	105	105	105	100	110	105	140	125	115	115	110	120	125	135	135	135	130	120	120	110	115	105	105	105
6	105	105	115	105	105	145	140	125	125	130	125	135	125	130	115	115	125	120	110	110	110	110	110	105
7	105	105	100	100	100	155	145	155	125	125	120	110	110	110	105	110	125	125	115	110	110	110	115	110
8	105	110	110	B	B	110	110	110	110	105	100	135	135	120	125	115	110	120	110	110	105	105	105	110
9	110	105	115	125	95	110	110	120	120	120	110	115	115	120	115	115	115	110	105	105	100	100	110	110
10	105	110	B	115	B	180	155	110	115	115	120	110	115	120	110	105	110	105	105	100	95	100	130	110
11	100	B	B	B	B	125	115	110	110	110	115	110	110	120	110	105	110	120	120	B	105	100	110	105
12	110	110	100	B	B	G	E G 185	140	140	125	115	150	120	120	130	110	110	110	115	110	B	110	120	105
13	100	100	100	105	105	125	110	110	100	140	120	110	105	105	105	105	115	115	110	110	105	105	105	100
14	115	105	100	105	110	125	120	115	115	110	115	110	110	110	120	125	120	120	115	110	110	110	110	110
15	105	110	105	115	110	110	125	120	115	110	120	120	115	115	115	110	115	115	115	115	115	115	105	105
16	110	120	100	100	125	125	120	120	110	110	110	110	110	115	105	105	145	125	120	120	115	115	110	110
17	110	110	110	110	110	120	E G 160	150	120	G	110	115	140	125	120	120	115	115	115	110	110	120	105	110
18	110	100	105	120	B	140	125	125	115	115	110	110	110	110	105	105	105	110	120	115	120	95	110	105
19	110	110	105	105	120	G	140	115	120	115	115	120	120	110	115	115	115	110	110	110	110	110	105	120
20	115	110	110	110	115	130	125	120	120	120	120	120	120	135	125	155	125	120	120	115	115	115	125	110
21	105	105	100	100	110	135	120	115	115	115	110	110	110	110	110	130	115	120	110	115	115	110	115	120
22	110	110	105	110	110	145	135	120	120	120	110	110	110	110	110	115	115	130	120	110	120	100	110	110
23	105	110	110	125	105	120	115	120	110	110	110	110	110	110	130	120	120	115	110	110	110	100	105	110
24	110	110	110	105	105	100	105	140	120	125	115	115	115	115	115	110	110	110	110	110	110	110	B	110
25	110	95	105	100	110	G	130	120	115	120	120	110	130	130	130	125	115	110	115	110	110	110	110	110
26	110	105	110	110	115	135	130	120	110	110	110	110	E G 180	150	135	120	115	110	110	105	105	100	100	100
27	100	100	100	100	B	120	120	120	120	110	110	110	110	105	105	135	105	105	120	115	115	130	115	115
28	110	110	110	110	110	115	145	110	110	130	110	110	165	G	E G 185	130	120	120	115	120	110	115	130	115
29	110	110	110	110	110	110	110	110	110	135	165	150	130	125	125	125	135	125	110	110	110	110	110	115
30	115	105	105	105	130	130	125	115	110	110	105	100	100	110	110	120	115	110	G	110	110	120	110	110
31	100	105	105	105	140	G	140	125	115	115	115	110	110	110	E G 200	100	125	125	110	110	105	110	110	B
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	29	28	24	27	30	31	31	30	31	31	31	30	31	31	31	31	30	30	30	30	30	29
MED	110	110	105	108	110	125	122	120	115	115	115	110	115	115	115	115	115	115	115	110	110	110	110	110
U Q	110	110	110	110	115	135	140	125	120	120	120	120	125	120	130	125	125	120	120	110	115	115	115	110
L Q	105	105	100	102	105	110	115	115	110	110	110	110	110	110	110	110	110	110	110	110	110	105	105	105

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

IONOSPHERIC DATA STATION KOKUBUNJI

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

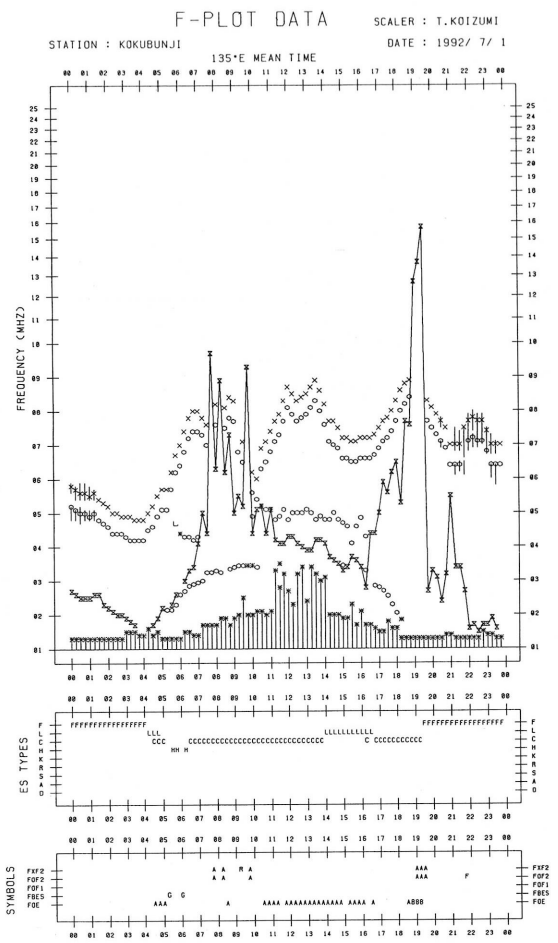
LAT.35°42.4'N LON.139°29.3'E SWEEP 1.0MHZ TO 25.0MHZ IN 24.0SEC IN MANUAL SCALING

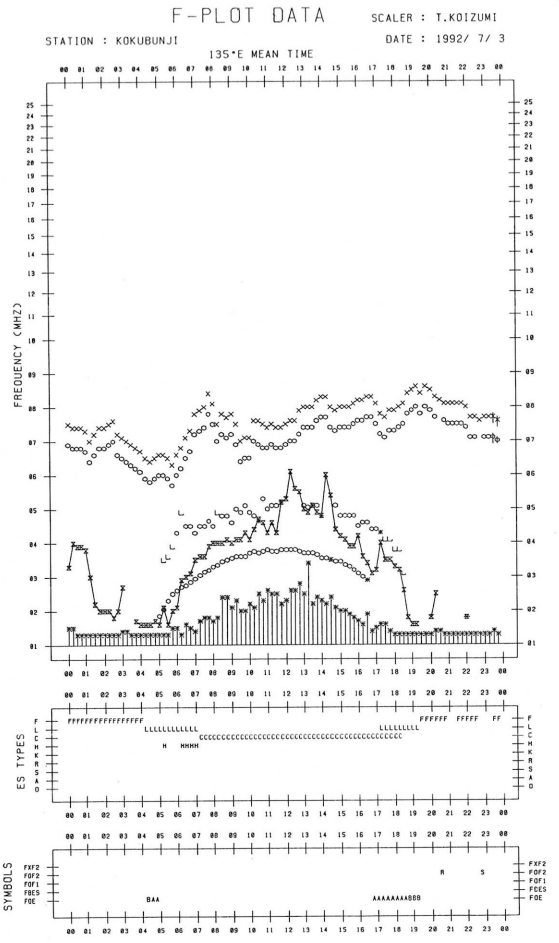
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	FF 13	F 3	F 3	F 2	F 1	C 2		C 3	C 3	C 2	C 2	C 2	C 2	C 1	L 2	L 1	L 2	C 3	C 4	C 4	F 3	FF 43	F 2	F 5
2	F 2	F 2	F 2	FF 11		C 2	C 3	C 2	C 2	C 1	C 2	C 3	C 3	C 3	C 2	C 3	C 2	C 2	C 2	C 3	F 2	F 3	F 3	F 4
3	F 5	F 5	F 5	F 3	F 2	L 1	L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

JUL. 1992 TYPES OF ES COMMUNICATIONS RESEARCH LABORATORY, JAPAN

f-PLOTS OF IONOSPHERIC DATA

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


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 7/ 1
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE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FREQUENCY (MHZ)
ES TYPES
SYMBOLS
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FOF2
FOF1
FBES
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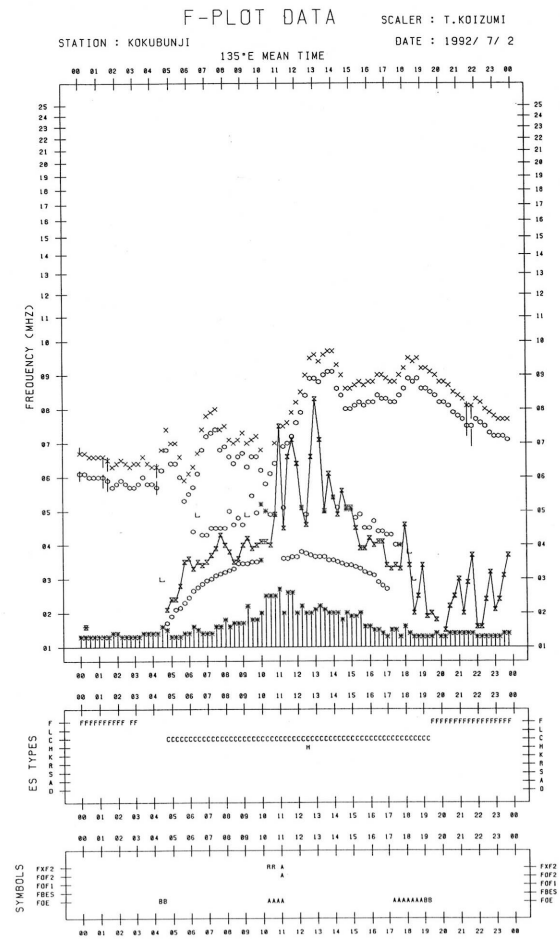
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STATION : KOKUBUNJI
DATE : 1992/ 7/ 2
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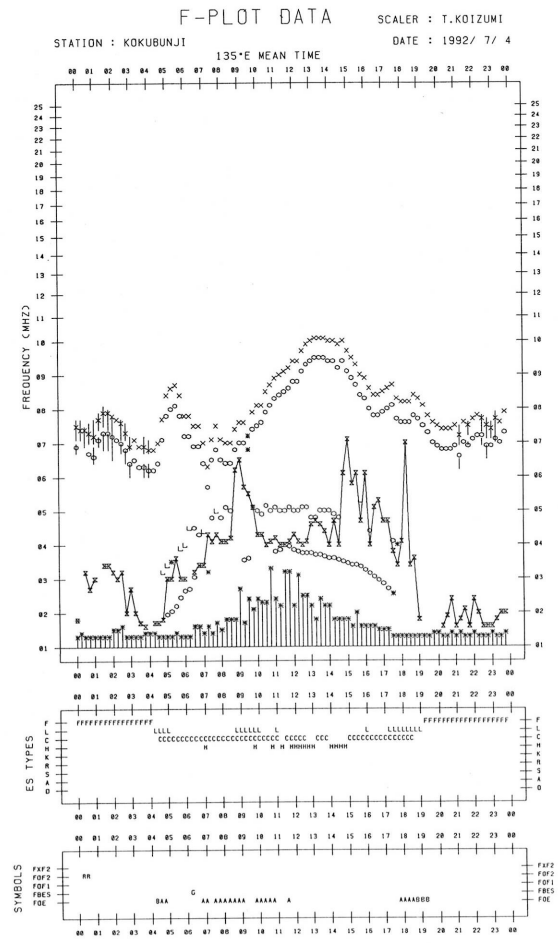
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE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ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
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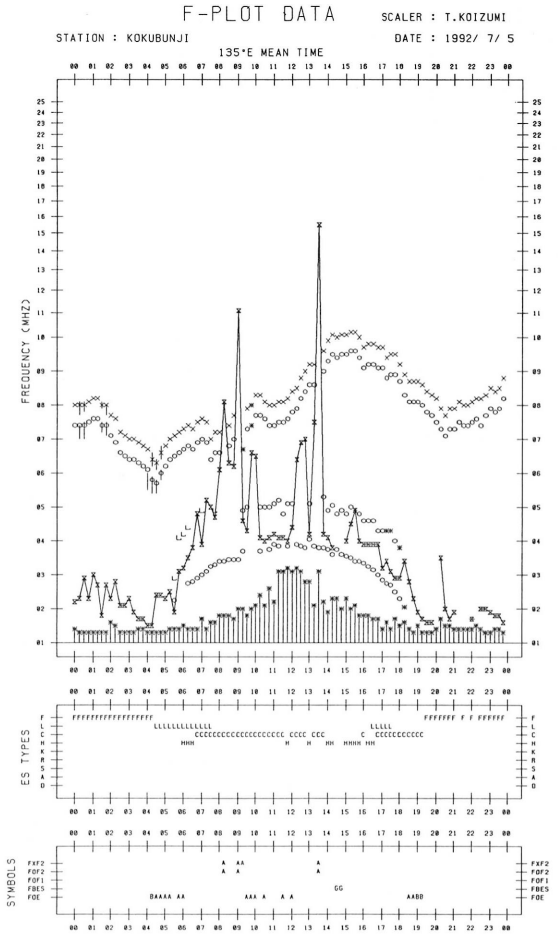
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ES TYPES
SYMBOLS
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FOF2
FOF1
FBES
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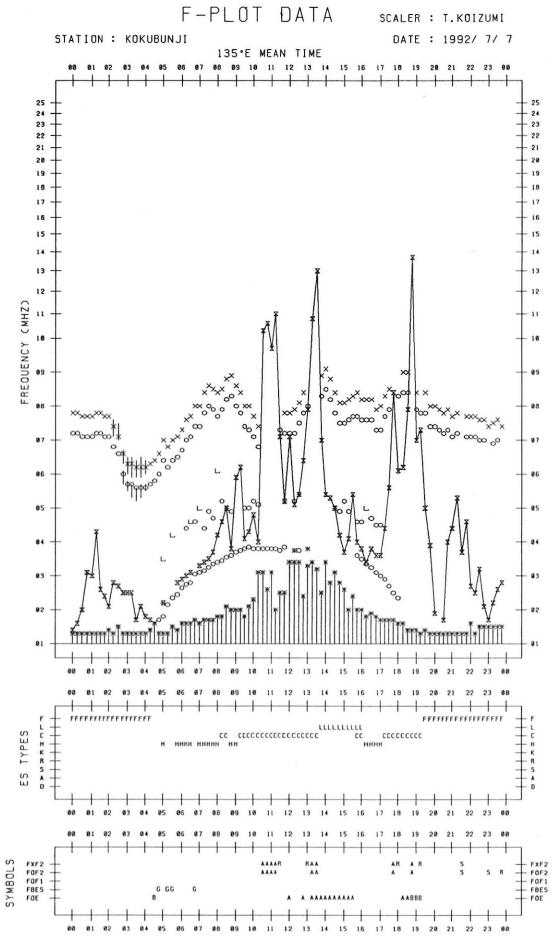
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FOF2
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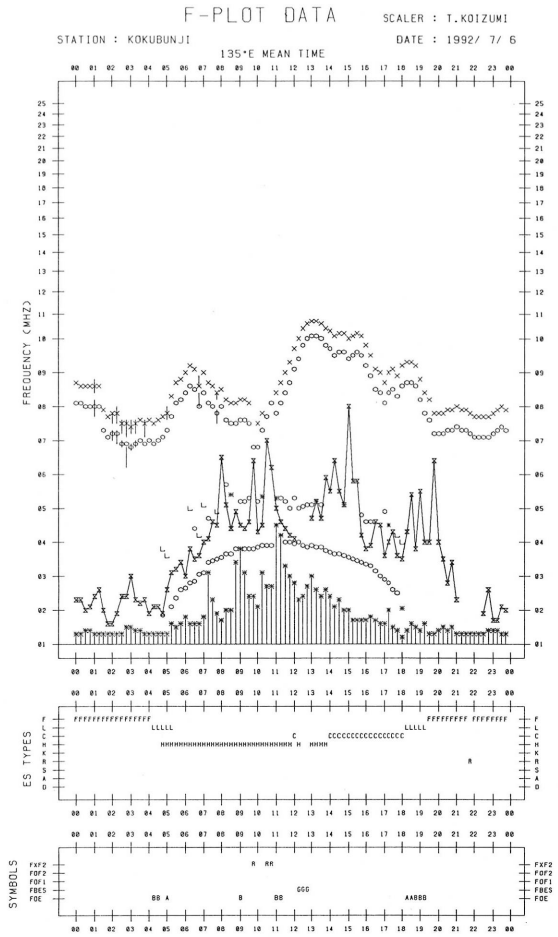
FBES
FOE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DATE : 1992/ 7/ 6
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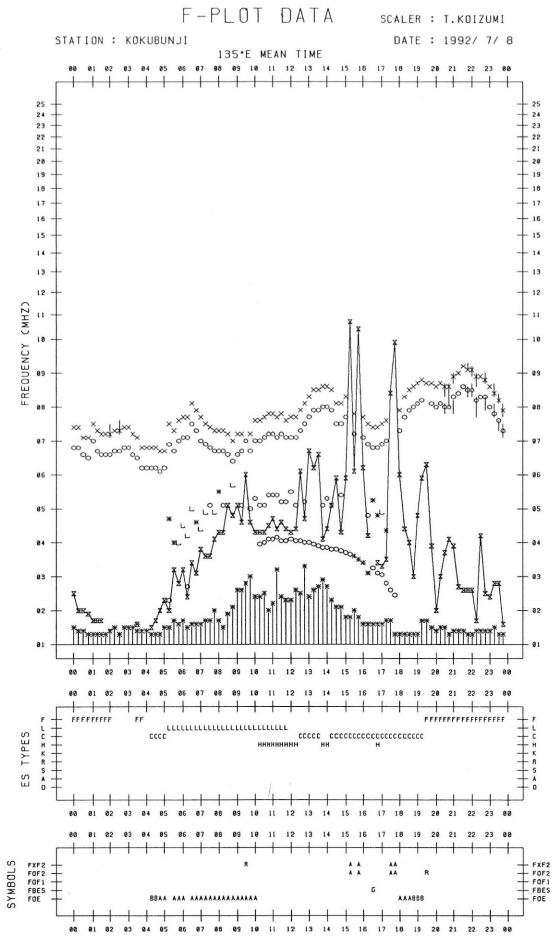
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE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STATION : KOKUBUNJI
DATE : 1992/ 7/ 8
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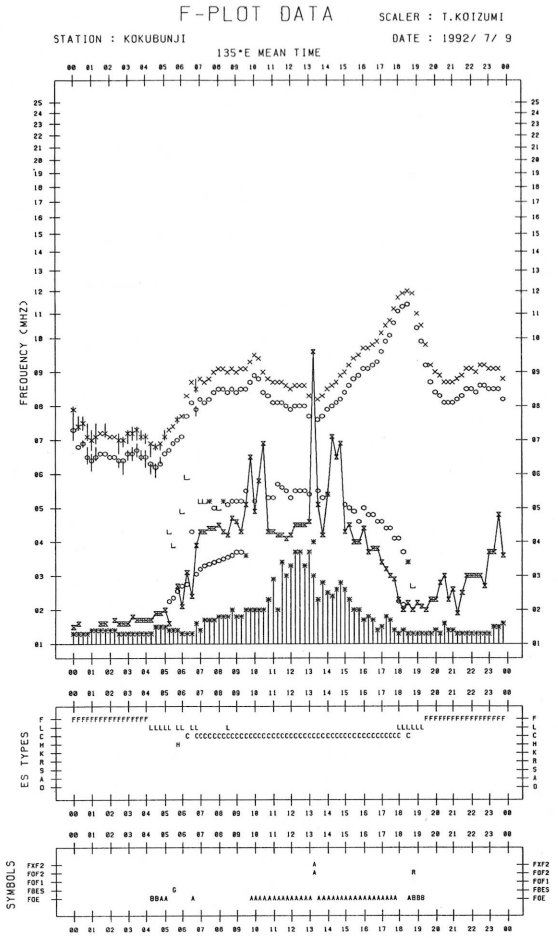
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE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STATION : KOKUBUNJI
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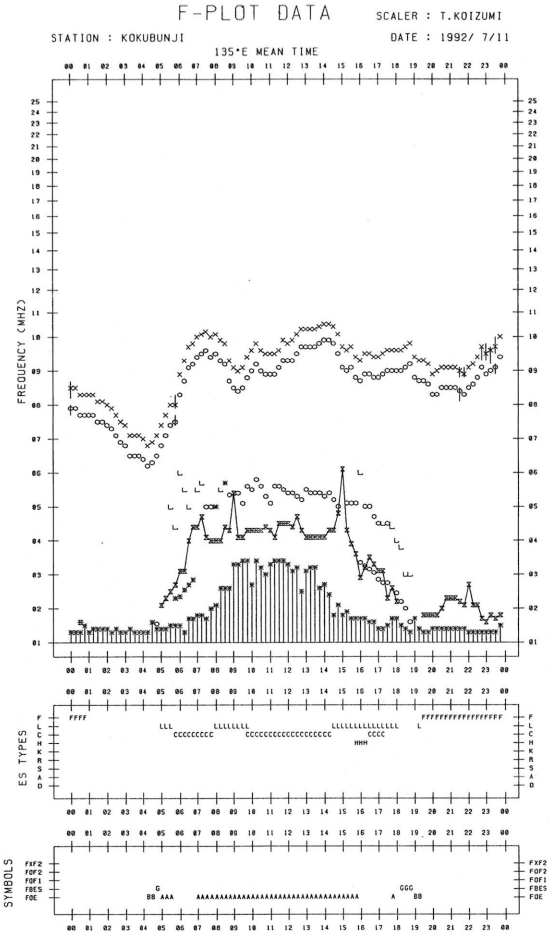
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE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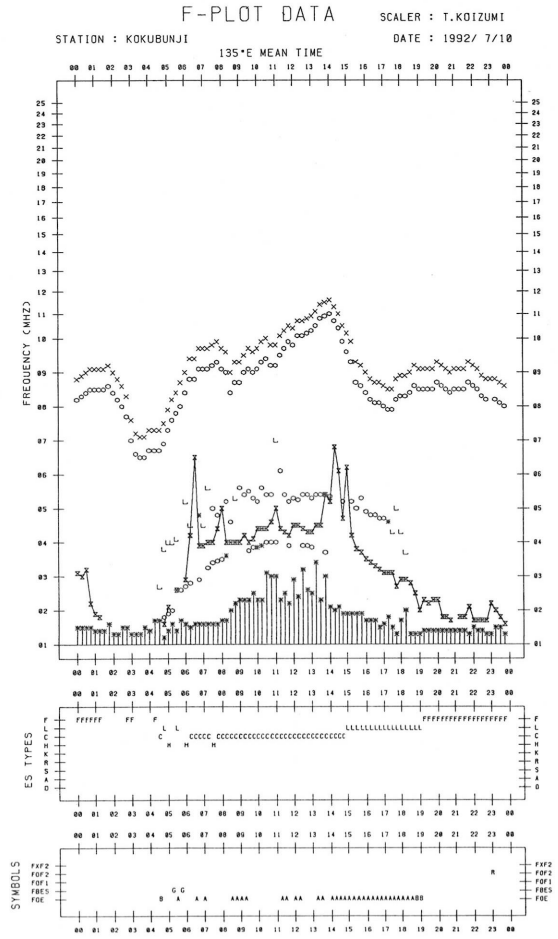
STATION : KOKUBUNJI
DATE : 1992/ 7/11
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE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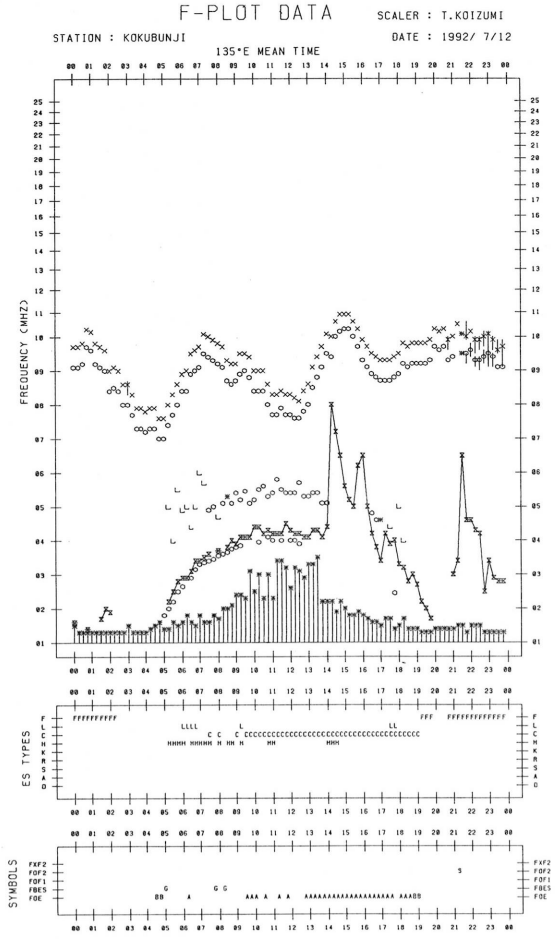
STATION : KOKUBUNJI
DATE : 1992/ 7/10
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE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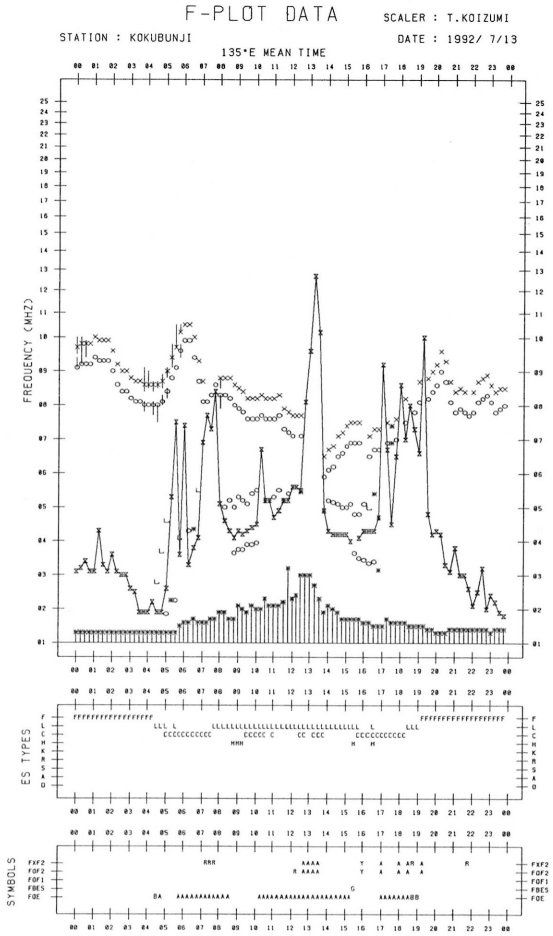
STATION : KOKUBUNJI
DATE : 1992/ 7/12
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE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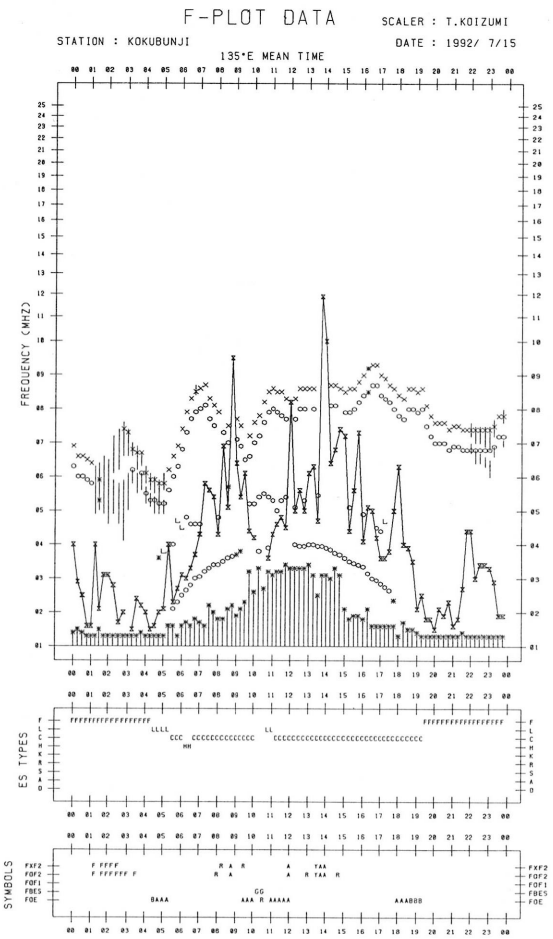
STATION : KOKUBUNJI
DATE : 1992/ 7/13
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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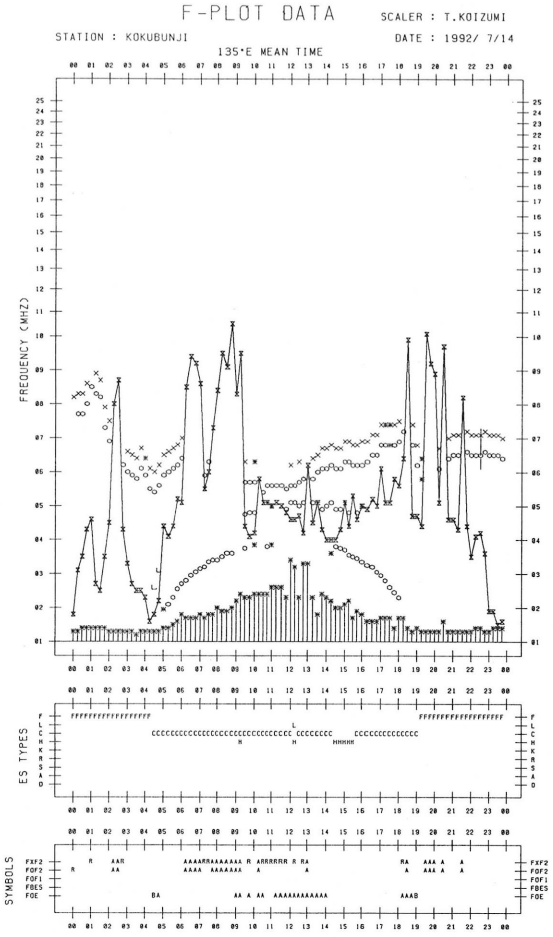
STATION : KOKUBUNJI
DATE : 1992/ 7/15
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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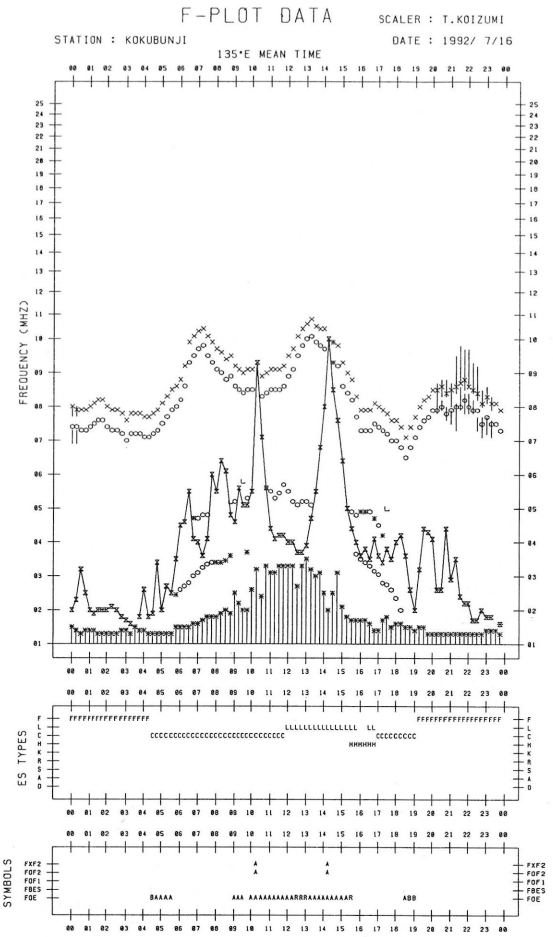
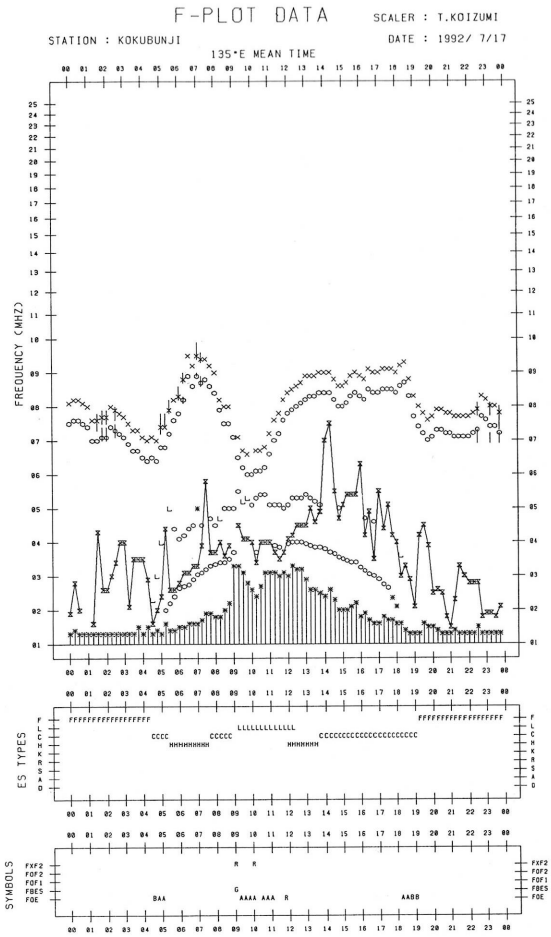
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 7/14
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 7/16
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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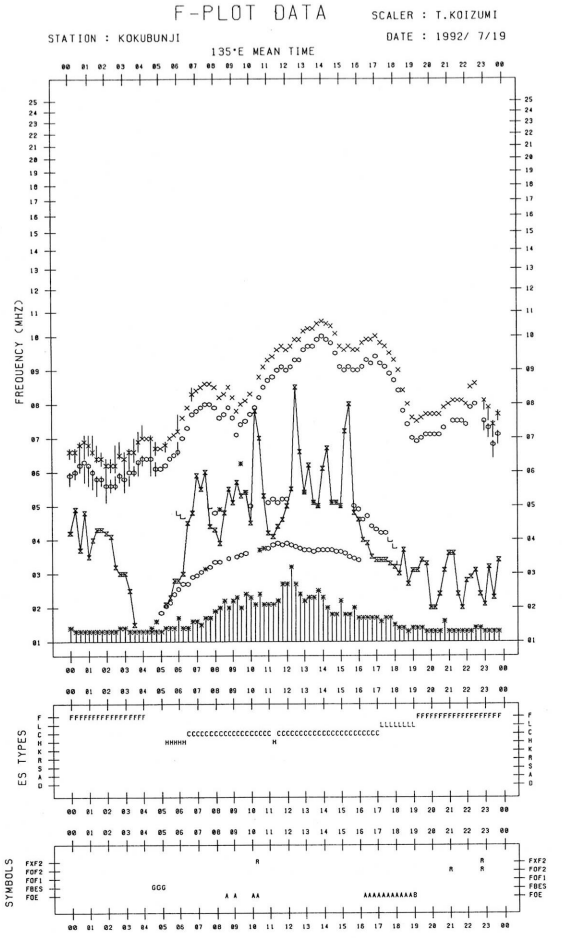
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 7/17
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE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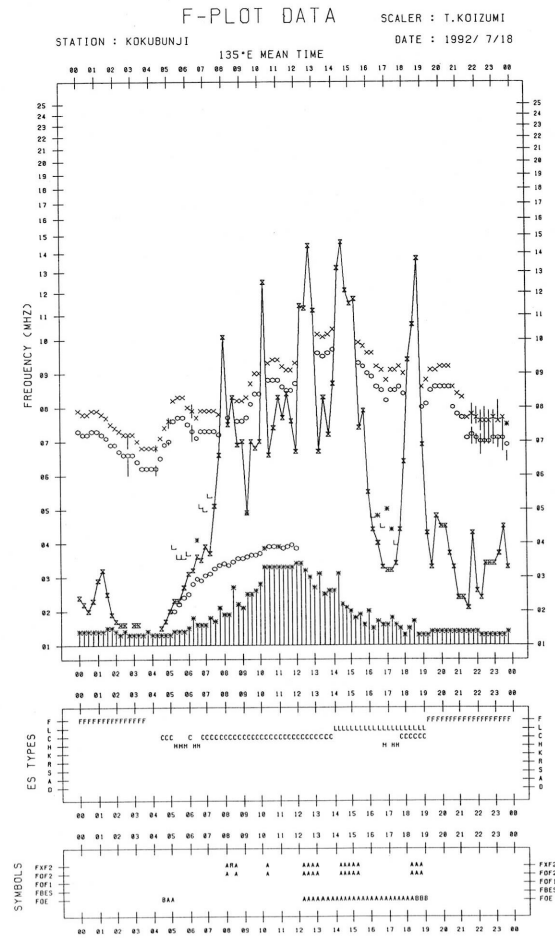
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 7/19
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE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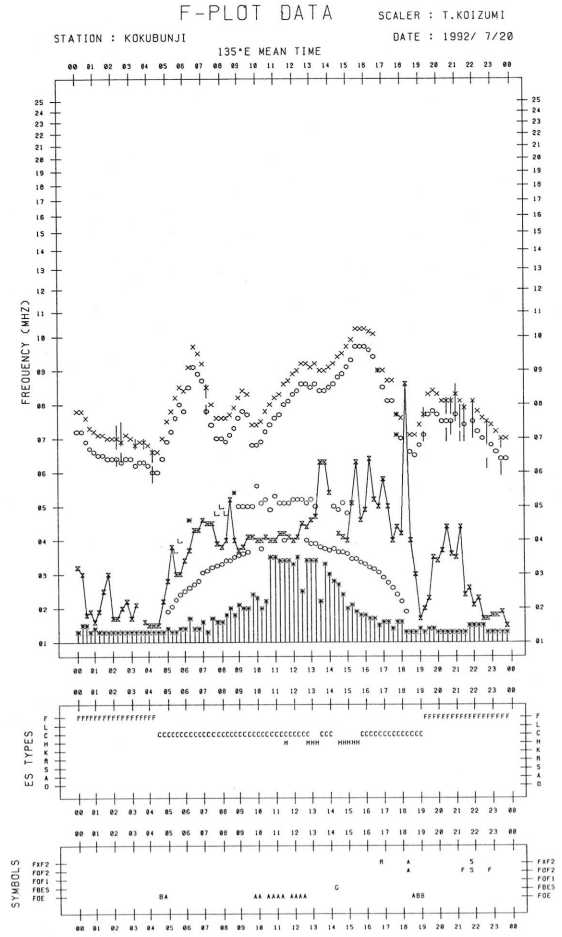
STATION : KOKUBUNJI
DATE : 1992/ 7/18
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE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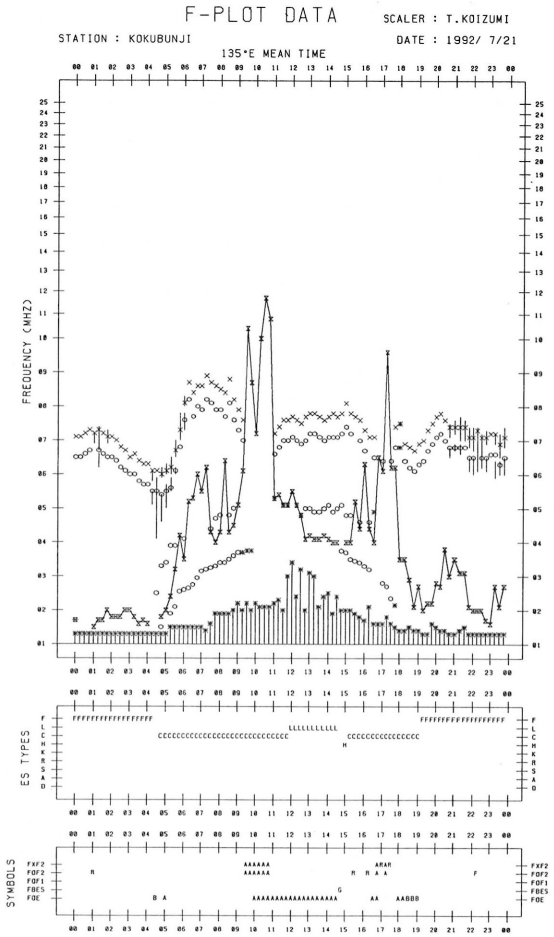
STATION : KOKUBUNJI
DATE : 1992/ 7/20
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE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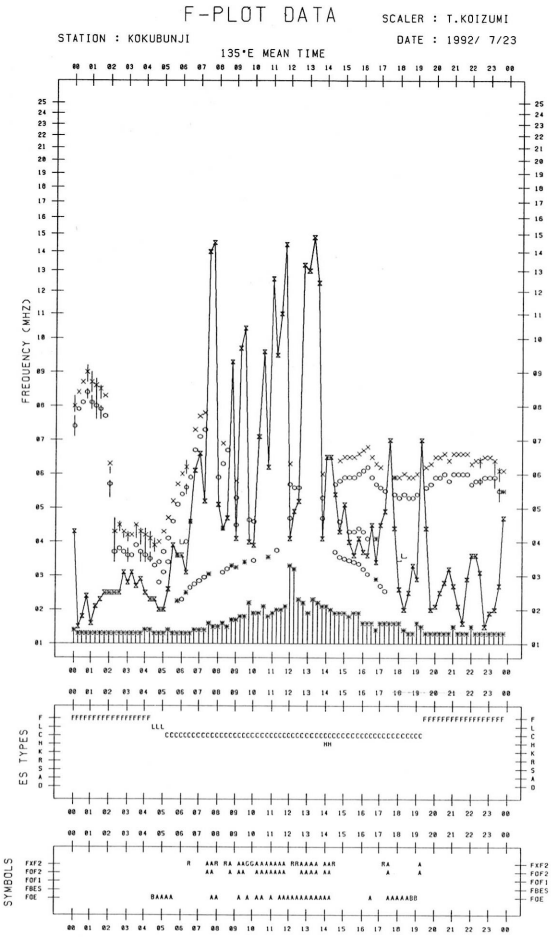
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 7/21
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE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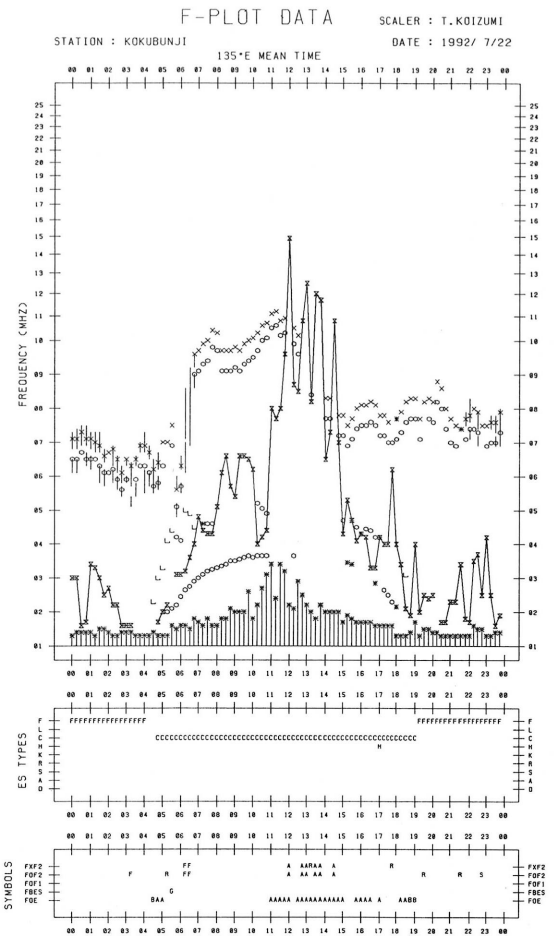
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 7/23
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE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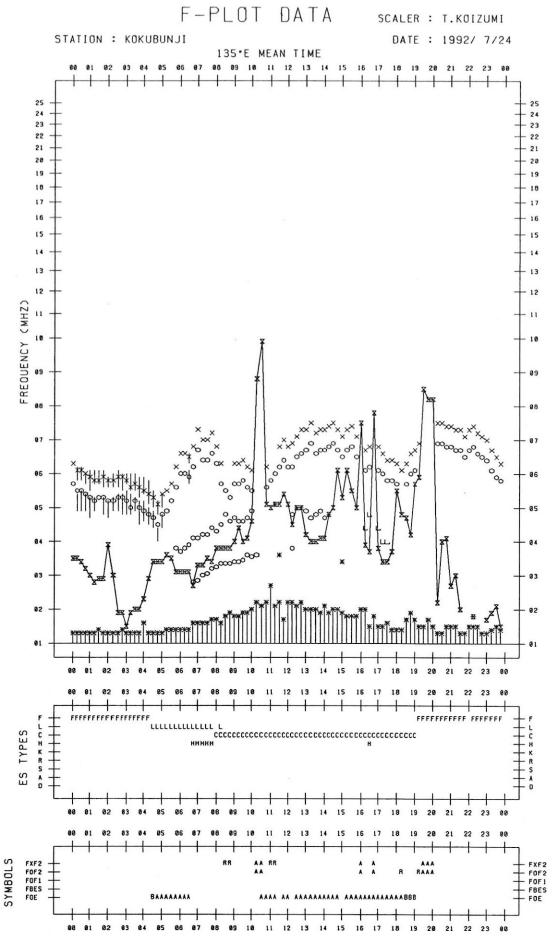
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 7/22
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE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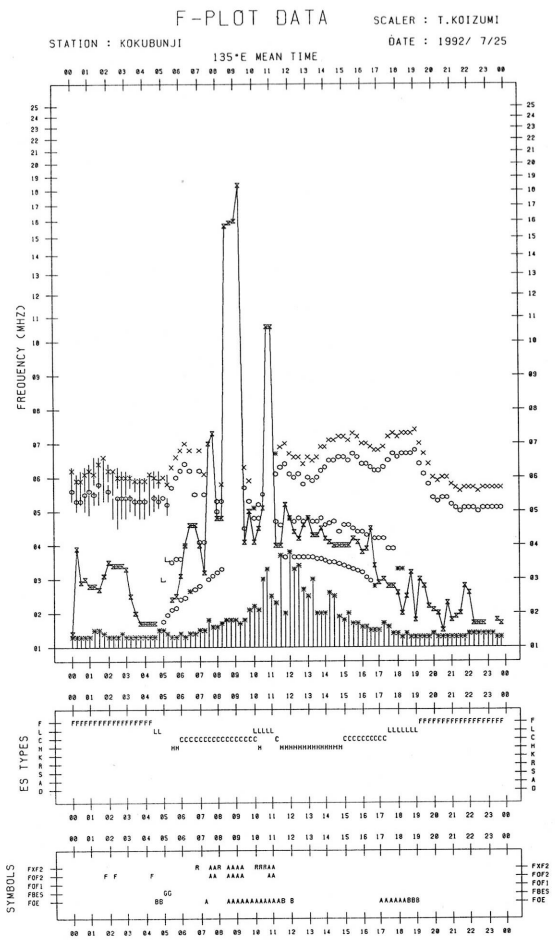
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 7/24
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE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STATION : KOKUBUNJI
DATE : 1992/ 7/25
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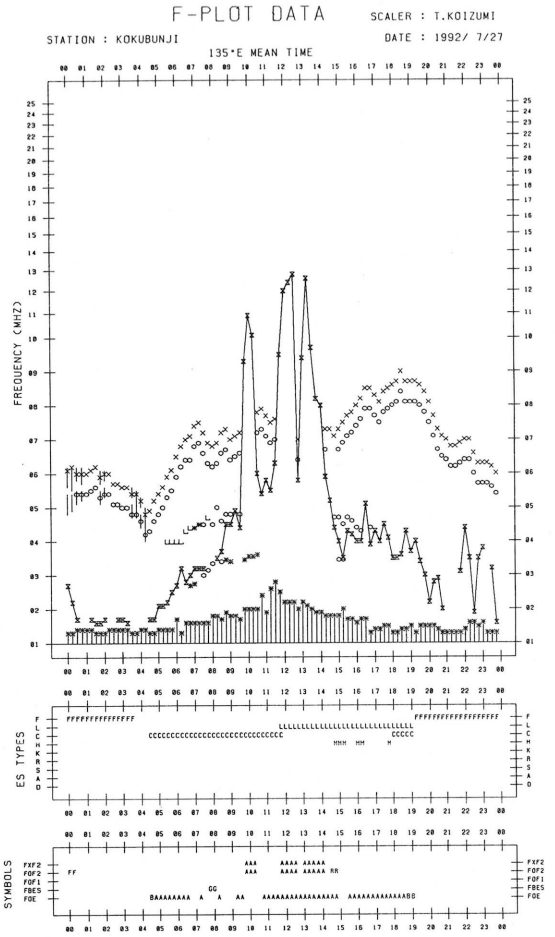
ES TYPES
SYMBOLS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DATE : 1992/ 7/27
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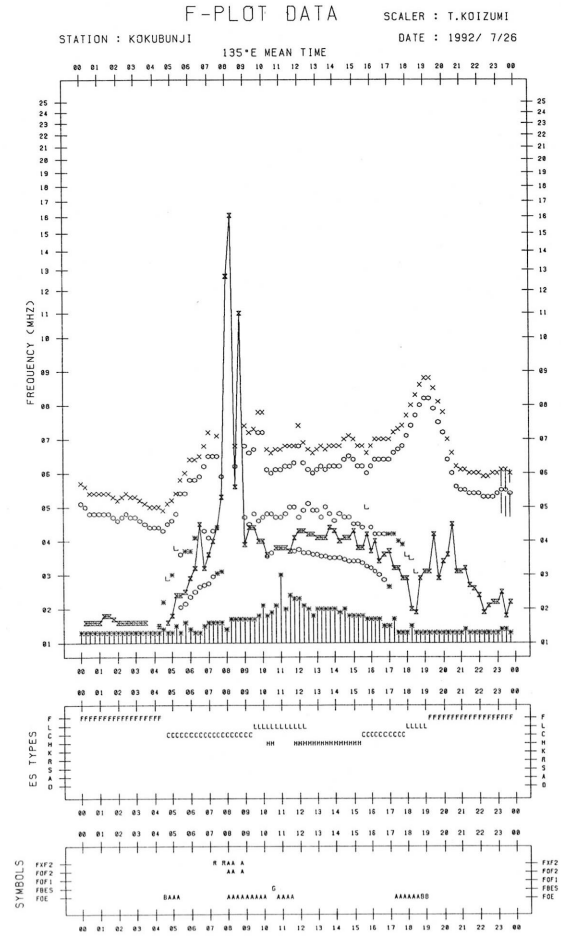
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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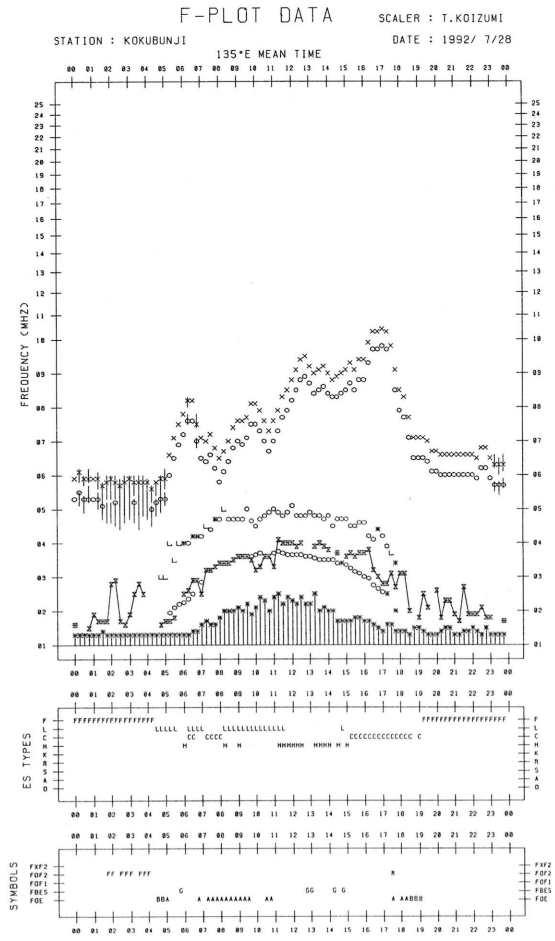
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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DATE : 1992/ 7/28
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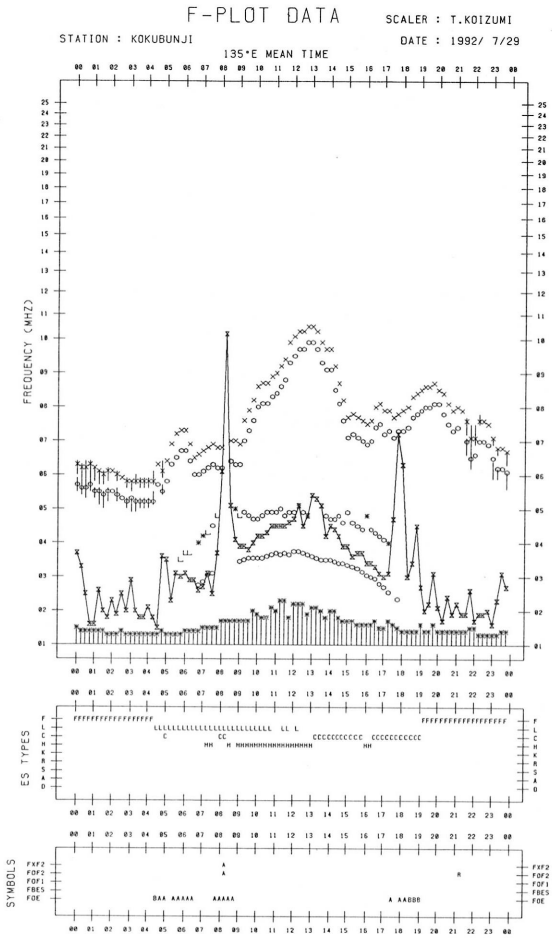
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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DATE : 1992/ 7/29
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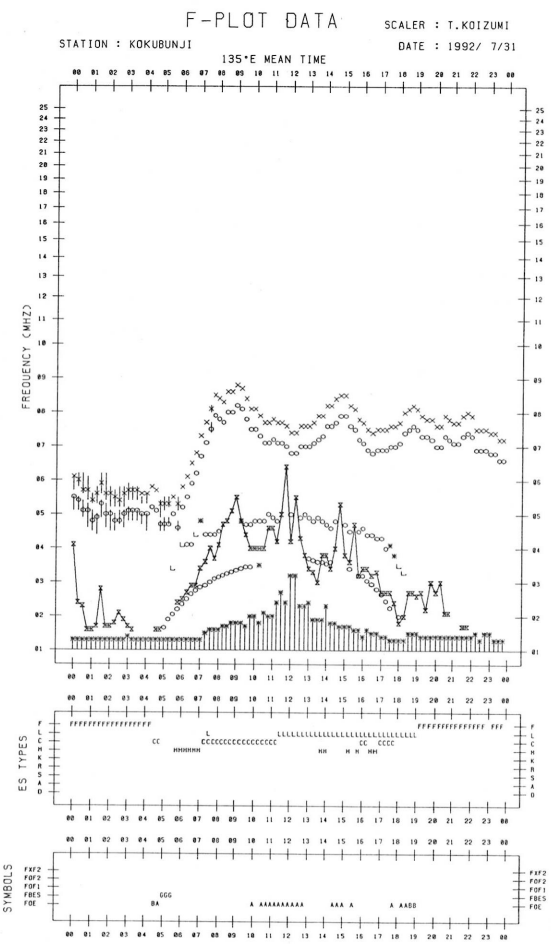
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE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STATION : KOKUBUNJI
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FREQUENCY (MHZ)
ES TYPES
SYMBOLS
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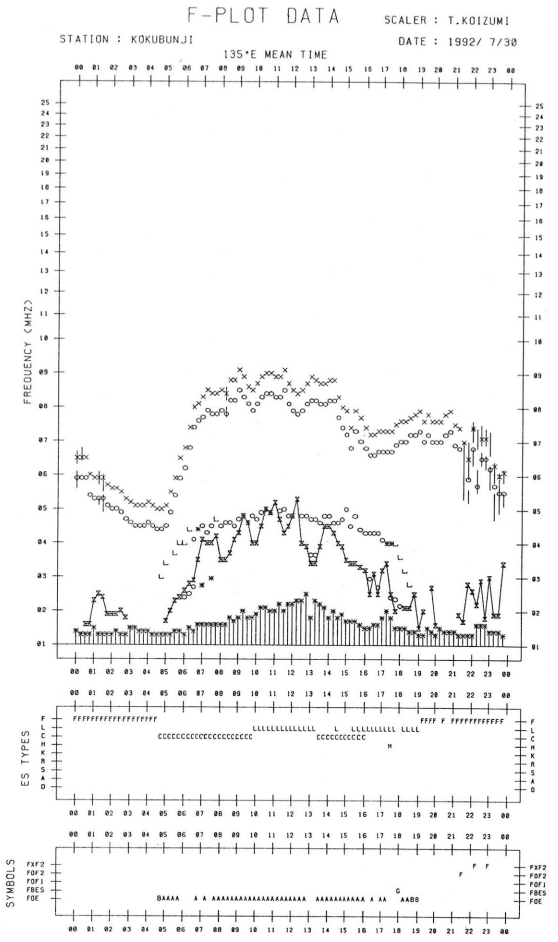
FOF2
FOF1
FBES
FOE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STATION : KOKUBUNJI
DATE : 1992/ 7/30
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

B. Solar Radio Emission

B1. Daily Data at Hiraiso

200 MHz

Hiraiso July 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	*	10	B	1	1	*	0	1
2	10	10	*	B	10	0	0	*	1	0
3	B	B	*	10	B	1	1	*	0	1
4	9	9	9	9	9	0	0	0	0	0
5	9	9	9	9	9	0	0	0	0	0
6	8	8	*	10	8	0	0	*	0	0
7	10	10	*	11	10	0	0	*	0	0
8	10	11	*	12	11	0	0	*	0	0
9	10	11	*	11	11	0	0	*	0	0
10	10	10	*	10	10	0	0	*	0	0
11	*	*	*	*	*	*	*	*	*	*
12	*	*	*	10	*	*	*	*	0	*
13	11	11	*	*	11	0	0	*	*	0
14	*	*	*	10	*	*	*	*	0	*
15	10	10	*	B	10	0	0	*	1	0
16	B	12	*	B	B	1	0	*	1	1
17	B	B	*	B	B	1	1	*	2	1
18	B	B	*	B	B	2	2	*	1	2
19	10	10	*	10	10	0	0	*	0	0
20	10	10	*	10	10	0	0	*	0	0
21	*	*	*	10	*	*	*	*	0	*
22	9	8	*	8	9	0	0	*	0	0
23	8	8	*	9	8	0	0	*	0	0
24	8	8	*	8	9	0	0	*	0	0
25	8	8	*	9	8	0	0	*	0	0
26	9	8	*	8	9	0	0	*	0	0
27	7	7	6	8	7	0	0	0	0	0
28	8	7	8	9	8	0	0	0	0	0
29	8	B	B	B	B	0	0	1	1	0
30	B	B	B	10	B	1	1	1	0	1
31	9	8	8	8	8	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 July 1992

Single-frequency observations

Normal observing period: 1950 - 0950 U.T. (sunrise to sunset)

JUL. 1992	FREQ. (MHz)	TYPE	START TIME (U.T.)	TIME OF MAXIMUM (U.T.)	DUR. (MIN.)	FLUX DENSITY (10^{-22}Wm^{-2}Hz^{-1}) PEAK	FLUX DENSITY (10^{-22}Wm^{-2}Hz^{-1}) MEAN	POLARIZATION REMARKS
1	200	44 NS	0000E	0016	600D	40	18	0
2	200	44 NS	1945E	0511	850D	60	16	WL
8	200	42 SER	0214.0	0214.8	9	55	-	WL
13	200	42 SER	2116.0	2119.3	14	650	-	ML
	100	42 SER	2118.0	2120.8	12	3600	-	ML
	200	42 SER	2218.0	2240.7	30	200	-	WL
15	200	44 NS	1950E	2200	380D	100	30	WL
16	200	44 NS	1950E	0700	835D	200	20	WL
17	200	44 NS	1950E	2207	835D	200	50	WL
	100	46 C	2108.8	2110.0	3.5	1000	350	WL
	100	46 C	2317.3	-	2.0	1000D	-	-
18	200	44 NS	1950E	2211	190D	60	12	ML
19	100	46 C	0306.1	0306.3	3.7	100	50	WL
	200	46 C	0306.3	0309.2	3	210	50	0
29	200	43 NS	0508	0730	280D	70	30	ML
	200	44 NS	1950E	0252	730D	60	15	ML
	200	8 S	2306.7	2307.2	0.8	400	-	WR
	100	8 S	2306.8	2307.0	0.9	380	-	WR
30	200	46 C	0446.0	0447.8	2.0	700	200	WL
	100	46 C	0446.7	0446.8U	2.1	1000D	-	ML
	100	46 C	2232.9	2234.8	5.3	340	200	WL
	200	46 C	2233.6	2234.8	2.5	470	150	0
31	100	46 C	0246.7	0246.8	3.0	340	100	WL
	200	46 C	0507.7	0509.0	1.3	170	70	ML
	100	46 C	0508.0	0508.6	1.5	500	200	WL

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)

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

C. RADIO PROPAGATION

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

JUL 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	2	2	10	10	17	18	21	22	23	20	30	18	15	17	-2	ES -25	1	-1	10	10	15	3	0	-8
2	3	-11	8	15	21	21	25	30	27	27	26	25	30	23	12	13	27	23	-2	9	9	6	13	-2
3	3	9	9	11	18	21	10	23	23	24	25	22	21	22	19	14	12	21	10	15	12	14	6	9
4	12	7	7	9	26	25	22	25	26	25	30	24	20	25	23	28	23	23	12	17	13	7	9	7
5	5	4	8	11	16	21	23	25	27	28	25	22	27	26	22	24	24	25	10	19	15	9	11	-4
6	6	5	7	8	16	21	22	27	28	18	27	29	28	18	16	22	24	16	6	18	21	12	10	5
7	-1	3	1	8	12	20	21	21	28	30	27	28	23	15	14	15	20	29	16	8	-3	5	2	-1
8	-11	-3	9	10	16	23	20	21	25	31	26	20	31	26	17	26	21	15	5	16	12	6	7	6
9	4	2	11	10	14	22	24	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
10	C	2	7	7	18	17	22	25	28	27	26	24	20	21	21	12	26	16	8	7	2	6	2	-8
11	-11	-5	5	8	9	20	22	31	26	28	24	21	27	27	27	7	7	16	-4	14	5	8	13	4
12	4	6	9	9	13	22	25	27	26	24	26	27	23	28	25	20	29	23	19	16	14	2	1	10
13	4	5	2	6	9	23	16	17	28	22	21	20	25	21	6	-10	-16	10	-6	11	-7	-4	-16	ES -25
14	-2	ES -25	-4	3	8	11	22	18	26	20	20	18	21	18	17	16	18	16	13	16	11	10	10	6
15	3	4	1	4	18	21	25	26	26	38	28	15	28	22	18	19	5	22	22	13	10	10	2	10
16	7	7	3	3	10	24	35	23	25	27	29	25	24	23	22	27	27	19	11	18	13	10	4	-2
17	-4	3	3	15	13	17	21	27	30	26	20	17	28	16	19	19	19	29	18	17	12	13	4	-2
18	-2	-5	4	12	17	21	23	25	28	31	26	26	21	27	16	19	20	28	16	16	5	9	10	7
19	11	10	16	16	20	23	27	28	27	31	27	23	27	27	23	21	24	13	7	22	17	15	13	6
20	8	2	4	13	18	22	24	29	29	24	25	24	29	26	20	25	15	14	15	25	7	10	10	5
21	2	8	0	12	18	18	20	24	19	24	22	20	20	15	24	14	-2	-5	22	14	14	13	8	13
22	8	5	1	6	8	13	23	24	24	22	19	20	24	21	23	23	23	12	9	5	17	0	11	-1
23	-9	-8	-2	-3	5	19	18	13	9	5	5	-3	10	9	9	-7	ES -26	-11	5	6	12	8	9	3
24	4	-1	4	15	11	12	17	17	15	17	19	21	11	11	11	15	16	5	0	5	7	7	-2	5
25	-2	0	7	12	14	16	20	20	24	20	20	19	4	0	-13	ES -26	-17	-13	ES -26	8	18	8	9	-1
26	4	2	2	9	16	21	13	17	15	12	21	13	20	14	12	-22	-3	15	16	14	13	12	6	0
27	6	1	3	5	10	16	19	21	25	25	20	16	21	8	10	10	15	17	2	5	19	9	7	10
28	8	8	10	9	13	18	21	18	24	21	14	17	9	4	-12	-18	13	18	18	19	17	15	7	4
29	-1	10	4	15	18	27	6	19	19	18	6	18	24	9	-6	-3	ES -27	ES -27	ES -27	19	12	17	15	5
30	5	5	5	9	9	14	19	13	8	14	19	17	15	11	ES -27	-14	-18	-12	ES -27	11	5	9	5	4
31	4	4	3	13	16	14	17	20	18	19	19	20	14	5	15	9	ES -27	16	9	4	14	9	11	9
CNT	30	31	31	31	31	31	31	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	4	3	4	9	16	21	21	23	26	24	24	20	22	20	16	14	16	16	10	14	12	9	8	4
UD	8	9	10	15	20	24	25	29	28	31	29	27	29	27	24	26	27	28	19	19	18	15	13	10
LD	-9	-8	0	3	8	13	13	17	15	14	14	15	10	5	-12	-22	ES -26	-12	ES -26	5	2	2	0	-8

C. Radio Propagation

C2. Radio Propagation Quality Figures at Hiraiso

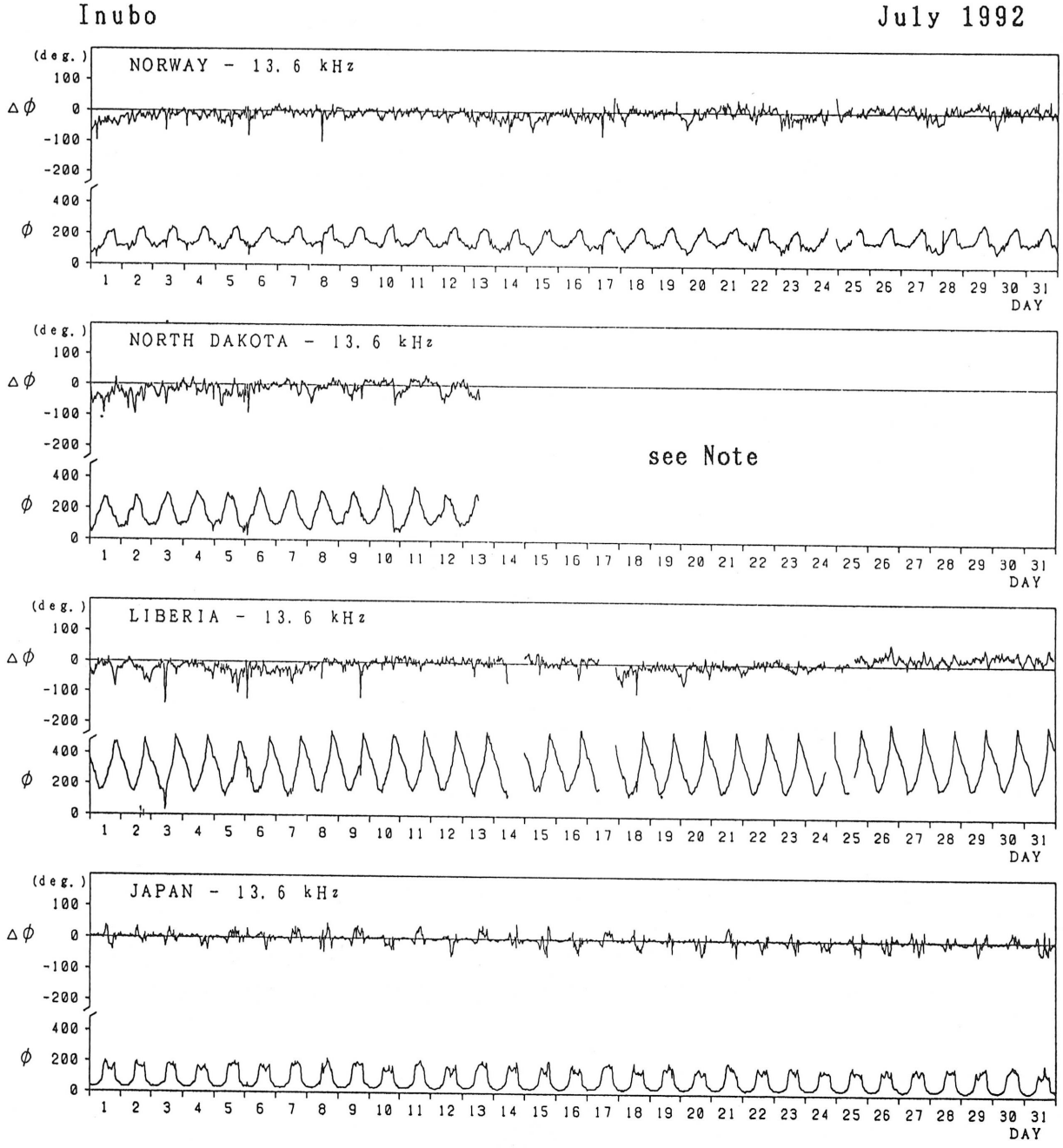
Hiraisdo — Time in U.T.

Jul. 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	3o	(2) (2) (2) (2)	4 4 3 4	U U U U			
2	4-	3 3 3 4	4 4 4 4	U U U U			
3	4o	4 4 4 5	4 4 4 4	N N N N			
4	4+	5 5 5 4	4 4 5 4	N N N N			
5	4o	4 4 4 4	4 4 5 4	N N N N			
6	4o	4 4 4 5	4 4 4 4	N N N N			
7	4o	4 5 5 4	4 4 4 3	N N N N			
8	4o	4 4 5 4	4 4 4 4	N N N N			
9	C	4 C C C	4 C C C	N N N N			
10	4o	4 5 5 3	4 4 4 3	N N N N			
11	4+	4 5 5 4	4 4 4 4	N N N N			
12	4+	4 5 4 4	4 4 5 4	N N N N			
13	3o	(3) 3 2 (2)	4 4 3 2	N N N N			
14	3+	(2) (2) 4 (3)	3 4 4 4	N N N N			
15	4+	4 5 5 4	4 4 4 4	N N N N			
16	4o	3 5 4 5	4 4 4 4	Ñ Ñ Ñ Ñ			
17	4o	4 5 4 3	4 4 4 4	N N N N			
18	4o	4 5 5 3	4 4 4 4	N N N N			
19	4+	4 5 5 4	5 4 5 4	N N N N			
20	4o	4 5 4 3	4 4 4 4	N N N N			
21	4-	4 4 3 3	4 4 4 4	N N N N			
22	3+	4 (2) 2 (2)	4 4 5 3	N N N N	05.7	---	102
23	3o	(2) 3 3 3	3 3 2 4	U U U U	---	12	
24	3o	3 (3) 2 (2)	4 4 3 3	U N N N			
25	3o	(2) (2) 2 4	4 4 2 3	N N N N			
26	4-	3 4 4 4	4 3 4 4	N N N N			
27	4o	4 3 4 4	4 4 4 4	N N N N			
28	4-	4 (3) 2 5	4 4 3 4	N N N N			
29	3+	4 (2) 3 4	4 3 2 4	N N N N			
30	3+	4 2 3 4	4 3 2 4	N N N N			
31	3+	4 (3) 3 4	4 3 3 4	N N N N			

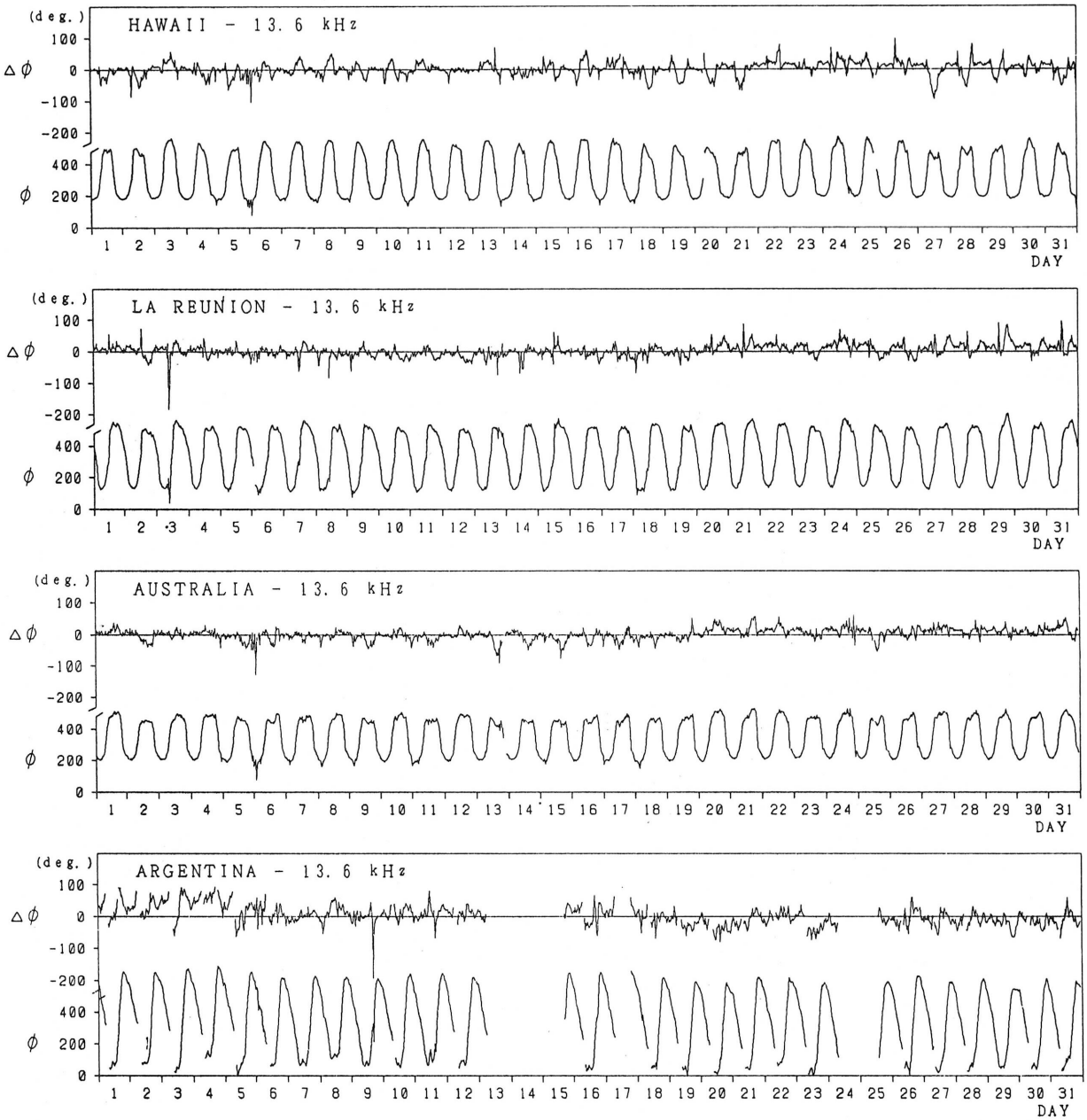
* Optical and X-ray Flares

C. Radio Propagation

C3. Phase Variation in OMEGA Radio Waves at Inubo



Inubo July 1992



Note: As for NORTH DAKOTA-13.6 kHz, no record during July 13 - July 31, due to the maintenance of transmitter.

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

NONE

C. Radio Propagation

C4. Sudden Ionospheric Disturbance

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

Hiraiso

Time in U.T.

Jul. 1992	S W F									Correspondence	
	Drop-out Intensities(dB)					Start	Dur.	Type	Imp.	Solar * Flare	Solar Burst
	CO	HA	AUS	MOS	BBC						
3					10	0910	18	2	1-	x	
3					15	0945	35	1	1	x	x
4			10		5	2248	17	1	1-	x	
5		>37	15		11	2006	22	2	3+	x	
5		>35	17			2336	14	1	3+	x	x
6		>35	>33	x		0145	17	2	3-	x	
7	x			>15	>21	1132	50	1	1+	x	
7			11			0454	21	2	1-	x	
8			10			0209	19	2	1-	x	x
8				x	>24	0918	92	1	2-	x	x
9			16			0300	11	2	1+	x	
9			14			0350	17	2	1	x	
9	C	C			16	1637	18	2	1	x	
11			6			0426	10	2	1-	x	
13			5	9	17	0800	63	2	1	x	
14	x			x	22	1218	20	1	1+	x	
15			14			0200	12	1	1	x	
15			8			0349	8	1	1-	x	
16			13			0107	15	2	1	x	
16	x				15	1655	19	1	1	x	
16			16		8	2352	26	2	1-	x	
17			8			2316	14	2	1-	x	
18			14			0133	27	2	1	x	
18			22			0245	21	2	2-	x	
18			8			0402	18	2	1-	-	
18					9	1050	20	2	1-	x	
18			12		26	1339	33	1	2-	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

Jul. 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			14	9			0424	0456	0438
3	47	144	160			30	0918	1050	0954
4	23	14	14	56	58	39	2246	2330	2254
5				4	4		0134	0158	0144
5				13	7		0208	0258	0236
5			4	7	4		0300	0322	0306
5			14	6			0552	0616	0600
5			19				0706	0748	0722
5		20	22				0834	0916	0844
5			6				0924	0942	0928
5					27	24	1958	2038	2008
5					11		2128	2154	2134
5	45	36	32	90	87	67	2204	2304	2214
5	45	47	54	104	81	67	2336	0056	2344
6	86	103	139*	151*	115*	83	0147	0326	0156
6			16	8	6		0336	0406	0342
6	14	34	58	32	14	10	0448	0542	0454
6			20	13			0620	0700	0632
6			11				0800	0824	0810
6				16	17		2248	2312D	2254
6				12	13		2312E	2352	2318
7	11	24	31	23	16	24	0242	0320	0300
7			23	16	8		0352	0444	0408
7	23	20	58	35		23	0454	0526D	0506
7			22	14	—		0526E	0600	0534
7			14		—		0626	0646	0632
7	16	32	42		—		0804	0852	0816
7	47	147	78		—		1128	1232	1148
7				23	—	18	2354	0034	0010
8	32	34	49	65	50	30	0206	0248D	0216
8	20	20	40	40	23		0248E	0332	0254
8			7	5	4		0356	0420	0400
8			9				0611	0630	0616
8	112	—	270				0944	1110	0950
8					5		2132	2152	2138
9	27	44	89	68	50	40	0258	0350D	0310
9	20	30	70	48	29	29	0350E	0448	0400
9			30	9			0504	0658	0536
9			9				0932	0954	0936
9	16	130				56	1636	1756	1646

Inubo

Jul. 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
10		29	31				0855	0922	0902
10		20	14				0948	1024	1000
10					14		2058	2158D	2130
10			11	22	36	28	2158E	2302D	2208
10	11		12	43	46	17	2302E	2346D	2314
10	11		14	44	36		2346E	0040D	2358
11				11	8		0040E	0112	0046
11				15	7		0234	0334	0254
11	34	18	65	43	24	29	0428	0512	0432
11			25				0828	0850	0838
11			12				1148	1206	1153
11		44					1522	1604	1534
12			14	10	4		0358	0422	0412
12			28	14			0640	0722	0648
12			16				0822	0838	0828
12			14				0930	0944	0933
12					14	22	2112	2154	2122
13			104	25			0802	0901	0808
13			59				0926	1016	0942
14			13			—	0702	0720	0708
14		44	60			—	1016	1116	1024
14			45			—	1218	1258	1225
14				18	22	—	2214	2258	2227
15	14	17	22	35	23	—	0200	0242	0206
15	17	26	45	32	19	—	0346	0428D	0354
15	14	29	71	47	21	—	0428E	0528	0438
15		44	27*			—	1046	1138	1100
15				8	13	—	2138	2210	2148
16	17		18	35	23	—	0110	0154	0116
16				12	6	—	0200	0230	0208
16			9	6	6	—	0304	0328	0308
16		98				—	1656	1806	1704
16	23	22	17	44	32	—	2342	0052	0006
17					30	—	2109	—	2114
17	14		10	27	28	—	2236	2304	2242
17	9		14	35	30	—	2318	2342	2324
17			11	19	17	—	2348	0010	2354
18				4	4	—	0030	0044D	0034
18				6	4	—	0044E	0114	0048
18	22	15	30	48	34	—	0132	0208	0140

Inubo

Jul. 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
18	36	34	95	78	50	—	0244	0326	0252
18	31	37	60	33	11	—	0506	0540	0514
18			13			—	0720	0746	0728
18			35			—	0750	0824	0758
18		29	25			—	1054	1116	1104
18	18	91				—	1340	1432	1352
18					14	—	2034	2102	2042
19			12	13	6	—	0312	0336	0318
19			16	12	7	—	0428	0504	0434
19			13			—	0630	0654	0642
21		15	11	13	13	—	2344	0008	2354
22				6	6	—	0126	0154	0130
22				7	4	—	0200	0224	0204
27	22	34	63	24	11		0604	0646	0618
30				21	22		2232	2302	2238

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