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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)
Kokubunji	35°42.4′N	139°29.3′E	25.5°N	205.8°	Vertical Sounding (I)
Yamagawa	31°12.1′N	130°37.1′E	20.4°N	198.3°	Vertical Sounding (I)
Okinawa	26°16.9′N	127°48.4′E	15.3°N	196.0°	Vertical Sounding (I)
Hiraiso	36°22.0′N	140°37.5′E	26.3°N	206.8°	Solar Radio Emission (S)
Inubo	35°42.2′N	140°51.5′E	25.6°N	207.0°	Radio Receiving (P)

A. IONOSPHERE

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

A1. Automatic Scaling

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

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

a. Characteristics of Ionosphere

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

b. Descriptive Letters

The following descriptive letters are used in the tables.

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

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

C Impossible measurement because of any failure in observation.

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

N Impossible automatic scaling because of complex echoes.

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

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

Median count (CNT) is the number of numerical values from which the median has been computed. In addition to numerical values, the count may include a 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 I-4, published in July 1978.

a. Characteristics of Ionosphere

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

b. Symbols

(i) Descriptive Letters

The following 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 normnal *E* trace. (Usually a daytime type.)

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

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

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

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

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

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

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

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

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

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

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

B. SOLAR RADIO EMISSION

Solar radio observations at 200, 500 and 2800 MHz are carried out at Hiraiso. The observation equipment consists of three parabolic antennas, one with 10-meter diameter for 200 MHz measurements, one with 6-meter diameter for 500 MHz measurements and one with 2-meter diameter for 2800 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 are tabulated for 500 MHz measurements. The intensities are expressed by the flux density in 10^{-22} Wm^{-2} Hz^{-1} unit.

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

* Measurement impossible because of interference.

B Measurement impossible because of bursts.

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

B2. Outstanding Occurrences at Hiraiso

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

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

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

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

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

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

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

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

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

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

The following symbols are used in the $F_{10.7}$ index:

*	Measurement made not at 3h U.T..
B	Measurement affected by bursts.

C. RADIO PROPAGATION

C1. Phase Variation in OMEGA Radio Waves at Inubo

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

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

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

C2. 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	/N	13.6	10	7820
Liberia	06°18′N	010°40′W	/L	13.6	10	14480
Hawaii	21°24′N	157°50′W	/H	13.6	10	6100
North Dakota	46°22′N	098°20′W	/ND	13.6	10	9140
La Reunion	20°58′S	055°17′E	/LR	13.6	10	10970
Argentina	43°03′S	065°11′W	/AR	13.6	10	17640
Australia	38°29′S	146°56′E	/AU	13.6	10	8270
Japan	34°37′N	129°27′E	/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

MAY 2001

LAT. 45°23.5'N LON. 141°41.2'E 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	92	73	73	72	76	95		94	86	96	92	93	84	92	96	92	92	92	92	84	94	83	94	79
2	84	76	94		77	95	92	96	93	102	91	91	92	94	81	95		114	92	97	94	93	70	94
3	78	70	92	71	73	93	94	114	92	91	90	92	91	98	91	92	91	92	90	83	93	92	95	93
4	94	71		68	69	68		69		76	76	72	78	82	82	82	81	83	88	77	77	74		
5		70	68	65	64		95	73	71	80	67	64	78	88	83	83	83	82	A	83	93	82		72
6	70	74	67		67	71	82	94	122	92		84	82	82	81	84	91	98	92	93	94	71		67
7	73	74		92	73		94	93	93	91	96	92	93	70	91	91	96	92		92	77	94	94	77
8	94	74	71	68	71	74		83	88	85	77	86	81	84	82	92	91	91	115	82	81	95	94	92
9	94	94	68	66	62	69	57	73	78	85	80	82	93	91	92	90	90	91	92	77	93	94	73	67
10	70	70	69	60	44	58					A				73	63	72	74	74	74	73	71	67	56
11		51	57			60	58	A			74	80	82	81	77	80	80	79	79		71	94		92
12	68	62	69	58	55	60	57	62	68	74	69	73	73	82	78	77	77	81	82	92	93	80	65	63
13	69	70	57	59	45	42										64	63	57	61	68	63	58	57	57
14	59	58	59	44	48		54					59			68	70	63	68	67	82	81	72		68
15	55	53	69	58	58	68		83	83	83	82	83	82	84	82	81	83	81		89	82	95	84	84
16	68		73	70	61	66	64	68	62	68	65			69	76	80	88	83	82	94	83	94	94	72
17	69		69	69	64	81	94	77	81	81	83	81	82	86	83	83	84	80	83	86		93	95	80
18		79	68	68	73	94	93	80	75	74	A	79	80	81	81	83	81	83	82	82	94	83	95	92
19	93	74	68	68		72	78	80	78	71		82	78	82	84	84	78	74	73		84	84	69	69
20	70	70	68	55	67	73		73	64					A		64	66	68	A		68	67	68	85
21	67	67	61	60	67		94	83	83	80	77	80	72	78	81	83	83	81	83	90	82	94	92	68
22	67	70	63	68	62	66	72	72	67					71	68	73	72	71	76	80	95		80	69
23	70	68	67	68	72	82	94	114	93	90	82		83	86	82	85	83	84	83	84	80	95	79	82
24	80	72	72	70	62	66		67	58					68		62	66	68	67	74		74		95
25	68	55	63	63	61	68	71	67	64	59						62			70	75	68		94	95
26	72	68	68	55	60	67	72	70	57								68	64	64			94	80	74
27	59	62	70	67	66	68		70						61	62	61		61	62	68	70	68	95	68
28	73	69	69	56	65	64			79	78	82		70		82	80	78	81	62	82	95	94	93	95
29	70	71	69	68	77	76											60		62	74	70			71
30	68	70	70	71		70	93	82	82									82	83		93	94	94	92
31	77	71	68	70	68	71	81	88	68	67	76	72	76	82	78	80	76		81		79	83	94	70
	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	29	28	28	27	20	25	24	20	17	18	19	22	24	28	27	28	27	25	28	28	24	30
MED	70	70	68	68	66	69	82	80	78	80	80	82	82	82	82	82	81	81	82	82	82	88	92	76
U Q	79	73	70	69	71	76	94	90	87	90	86	86	84	86	83	84	88	87	88	89	93	94	94	92
L Q	68	67	67	59	61	66	67	70	67	74	75	73	78	78	77	71	72	72	67	76	75	74	71	68

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT Wakkanai

MAY 2001

LAT. 45°23.5'N LON. 141°41.2'E 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	C	G	G	G	G	G		G	G	59		G	G	G	G	61	G	G	28	37	G	40	G	G
2	G	G	G		G	G	G	G	G	43	G	G	G	G	G	G	G	G		G	36	43		G
3	G	G	G	G	G	G	G	54	51	46	46	G	G	G	55	G	G	G	35	27	G	G	G	G
4	G	G		G	G	G	G	G	75	G	G		G	45	66	G	G	G	G	72	36	46	G	
5		G	G	G	G	G	G	40	42	79	64	G	45		G	48	62	68	73		30	G	G	G
6	G	G	G	G	G	G	G	G	51	59		G	G	G	G	51	66	65	73	47	48	40		G
7	G	28	G	G	G	G	G	G	49	G	46	G	G	G	44	48	48	G		50	58	42	G	G
8	G	G	G	G	G	G	41	47	50	72	47	G	G	G	G	G	G	40	40	35	G	G	G	G
9	G	G	G	G	26	33	58	54	72	59	47	G	G	G	G	G	G	47	52	54	37	32	G	G
10	G	G	G	25	G	41	60	64	74	96	103	G	48	62	G	G	G	55	49	62	68	45	32	56
11		62	32	29		G	43	72	77	55	45	66	59	65	60	G	G	G	47		54	60		28
12	33	31	G	G	G	G	40	46	64	G	46	G	G	G	G	G	G	G	G	27	G	G	G	G
13	27	27	G	G	G	G	40	G	G		G	G	G		G	G	50	55	32	40	46	28	26	G
14	G	G	G	G	G	G	G	63	45	G		G	G	G	G	G	47	47	45	61	G	49		G
15	G	26	G	G	G	G	G	51	65	48	51	G	G	G	G	G	G	G		39	54	55	27	36
16	G		G	G	G	G	G	49	57	51	57	G	G	G	G	72	85	39	42	G	44	44	28	G
17	G		G	G	G	G	G	G	42	44	51	G	59	G	G	G	40		36	G	26	G	G	G
18	G	G	G	G	G	G	44	60	60	58	106	75	58	G	58	73	63	52	49	50	39	43	30	
19	G	G	G	G	28	41	G	G	44	45	G	G	G	G	G	G	48	41	38		54	29	61	25
20	G	G	G	G	G	G	43	49	56	47	47	48	59	65		G	G	50		82	50	34	24	
21	G	26	27	G	G	32	G	G	G	50	63	G	G	G	G	50	66	44	38	39	40	G	31	G
22	27	G	G	G	G	G	44	51	52	68	66	60		G	G	G	G	G	49		35	70	45	34
23	50	31	39	G	G	32	48	64	62	62	50		57	51	G	66	60	83	74	60	45	54	36	36
24	41	G	G	G	G	G	44	48	G	56	57	G	G	G	G	45	G	G	37	33		G	25	28
25	24	G	G	G	G	G		50	54	46	G	G	G	G	G	G	58	58	59	64		34	G	26
26	G	G	G	G	G	37	45	53	59	54	45	G	G	G	64	75	66	46	44	75	60	50	60	46
27	68	29	60	33	51	36	62	62	74	61		G		G	G	G		G	45	39	34	26	G	38
28	G	G	G	G	G	G		52	82	74	56	70	62	90	59	G		G	44	40	34	G	G	34
29	G	30	64	30	34	39	45	49		G	G	G	G	46	57	49	45	64	37	29	G		58	38
30	G		G	G	G	G	48	81	G									45	50	93	40	29	G	G
31	G	G	G	G	G	G	42	57	66	59	58	G	G	68	67	58	69	85	86	75	75	G	45	G
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	30	30	30	31	28	31	30	29	26	28	28	28	29	30	28	30	27	27	29	30	27	28
MED	G	G	G	G	G	G	40	49	53	54	47	G	G	G	G	G	42	42	44	40	39	34	24	G
U Q	12	26	G	G	G	32	44	57	65	60	57	G	46	45	56	50	61	55	50	62	52	45	32	34
L Q	G	G	G	G	G	G	G	G	42	44	45	G	G	G	G	G	G	G	37	33	28	G	G	G

HOURLY VALUES OF fmin AT Wakkanai

MAY 2001

LAT. 45°23.5'N LON. 141°41.2'E 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	18	18	17	21	16	17	18	18	18	21	23	22	21	15	17	17	17	15	20	15	16	17
2	17	16	17		18	27	16	17	20	22	49	22	23	21	20	17	21	20	15	17	15	15	16	20
3	18	17	17	15	17	23	16	18	20	20	23	21	23	21	21	18	17	17	16	17	17	15	16	16
4	15	15		16	18	23	18	18	22	22	27	28	30		21	22	20	17	23	15	16	16	18	
5		20	15	18	20	26	16	18	20	20	20	21	23	21	20	17	15	17	20	17	18	16	16	16
6	17	17	16	17	18	23	15	18	18	21		20	22	21	22	21	18	16	15	15	17	15		15
7	17	17	18	18	21	24	17	18	20	20	23	21	26	32	20	20	20	16		15	15	15	17	16
8	17	17	16	15	17	20	18	17	18	21	50	22	22	22	21	20	18	16	16	16	17	20	21	20
9	18	20	20	20	20	18	16	17	21	18		23	23	27	20	20	18	17	15	16	17	16	20	21
10	20	18	17	18	20	18	17	21	20	20	23	37	35	33	26	23	20	16	16	15	15	15	16	16
11		15	15	18		23	16	16	20	20	24	20		20	26	20	21	18	18		15	16		17
12	15	16	16	20	18	23	22	16	20	20	17	21	22	24	22	20	20	17	23	18	17	17	20	20
13	20	17	20	20	20	18	18	20	20		21	21	22	22	21	18	21	22	15	16	15	18	18	17
14	21	18	18	22	20	21	15	17	18	22		21	24	23	21	22	20	15	15	14	16	16		18
15	17	16	17	15	18	24	18	20	20	20	23		52	52	24	21	21	18		15	16	15	18	16
16	15	15	17	15	20	24	16	20	20	20		23	24	23	20	21	18	17	15	17	15	14	17	17
17	16		20	20	18	21	20	17	20	21	22		35	20	20	20	18	18	17	16	16	17	16	15
18	20	17	20	17	18	26	20	20	20	35	36	23		20	21	20	21	16	14	15	16	15	16	15
19	17	18	18	17	18	18	17	20	22	36	21		23		21	21	20	21	15		17	15	15	18
20	18	18	18	17	20	21	24	20	18	24	23	23	21	23		24	20	17	15	15	17	15	18	17
21	20	18	15	18	20	18	15	17	20	21	20	21		21	20	20	18	17	17	15	15	17	15	17
22	17	20	16	18	20	20	18	20	20	22	22			21	20	21	18	18	20	15	16	15	15	15
23	15	15	18	16	20	17	18	20	18	21	24		24	23	21	21	20	17	15	15	15	15	15	15
24	15	20	17	17	18	17	17	18	20	22	23	23	21	21	23	21	22	17	17	15		20	17	16
25	16	15	20	15	20	20	16	20	20	21	22	22	22	22	23	20	18	16	15	16	17	14	18	18
26	20	18	20	20	24	20	16	20	20	22	23	23	21	27	23	20	20	17	21	15	16	15	15	15
27	16	15	18	16	16	21	15	18	20	20	21	23		21	21	22		17	18	15	15	18	16	20
28	15	17	20	16	23	17		18	20	24	22	24		22	22	22	20	20	15	15	15	17	15	17
29	21	17	15	20	18	20	16	17	20	21	23	21	21	24	22	22	20	17	15	18	20		16	16
30	16	15	16	20	22	20	24	18	20									17	16	15	16	18	17	16
31	17	15	21	18	20	16	17	16	21	21	21	35	24	21	22	21	21	18	16	14	16	17	15	20
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	30	30	30	31	30	31	31	29	26	25	24	28	29	30	29	31	29	29	30	30	28	30
MED	17	17	18	18	20	21	17	18	20	21	23	22	23	22	21	20	20	17	16	15	16	16	16	17
U Q	19	18	20	20	20	23	18	20	20	22	23	23	24	23	22	21	20	18	17	16	17	17	18	18
L Q	16	15	16	16	18	18	16	17	20	20	21	21	22	21	20	20	18	17	15	15	15	15	15	16

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF foF2 AT Kokubunji

MAY 2001

LAT. 35°42.4'N LON. 139°29.3'E 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	99	93	93	94	94	82	95	93		85	98	100	111	120	112	116	113	116	117	99		94	96	
2	94	93	92	83	91	98	115	114	116	108	121	128	120	126	125	125	128	126	134	123	117	101	94	
3	115	93	92		75	92	106	117	113	111	114	124	126	126	124	121	118	117	118		97		96	97
4	94	94	94	93	93	93		116	117	112	121	115	111	110	107	110	110	116	117	91	80	93	92	93
5	91	80	91	95	62	72	81	97	103	114	111	110	105	113	106	105	105		98	103		74	91	66
6	92	67	95	67	59	72	93	123	114	91	98	107	113	117	113		123	116	132	117	90	85		94
7	93		95	91	68	94	93	104	107	103	106	116	110	118		129	135	130	116	93		70		83
8	94	95	94	94	95	81	94	115	116	97	100	108	115	113	120	123	124	118	114	113	100	102	101	97
9	84	94	80	84	73		93	94	104	106	103	117	131	132		135	128	123	116	121	93	95		
10	94			56	50	69	93	92	51	A			86	90	95	90	84	82		86			72	
11	95	62		49	51	58	67	69	78	71		90	92	97	105	104	92	93	93	93		94	95	A
12	74	70	59	61	54	64	67	84	98	82	82	83	85	101	105	114	114	113	116	100	87	115	93	
13	94	114	91	69	68	94	95	A		A			76	81	83	81	82		86	93	68	57	63	68
14		57	57	55	53	59	59	59		71		76	87	86	75	82	75	73	81	93	94	56	68	68
15	58	68	59	59	59	67	81		92	85	84	84	95	97	104	102	95	96	93	102	94	94	94	
16	93	94	94	68	59	73	96	96		80	86	90	98	111	104	106	97	102	116	106	82	95	68	92
17	95	95	94	76	72	80	95	86		82	84	86	93	95	93	101				94	93	82	68	82
18		95	93	93	72	82	94	93		A	87	101	107	107	114	110	108	103	106	103	103	94	101	102
19	115	81		68	93	84		97	90	80	86		105	113	119	120	107	96	94	98	A	92	82	73
20	68	68	68	63	61	93	94	66								77	77	82	84	86	59	57	67	69
21	66	68	59	58	59	72	94	83	91	84	81	88	100	A	111	105	108		94	92	93	A	67	82
22		95	94	64	61	72	80	82	81					84	90	99	90	94			80		79	81
23	81	95	72	72	72	82	94	105	A	A	109	A	98	101	106	103	95		96		84	A	94	94
24	94	94	75	82	66	94	92	115	A	67	A	83	A	85	A	83	84	81	84	81	82	95	95	94
25	69		56	61	61	72	94	81				A			82	81	80	78	80		A	81	94	94
26	82		67	68	67	56								A	71	78	80	73	69	73	A		71	68
27		69	70	67	56	66			A	99	N	A	A	159			64	68	68	66			68	
28	69	68		62	61	71			94	91	A	90	92	103	103	103	96	94	93	88		95	81	94
29	82	94	94	56	95	93											64	A	67	69	62		69	68
30		94	63	62	63	68	94	93	86	87	81		96	105	108	108	104	108	106	116	85	84		87
31	81		69		95	78	93	93	87	92	86	89		100	99	104	104	103	A	83	94	95	95	94
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	26	27	29	31	30	25	25	18	22	19	20	23	26	25	28	30	25	27	27	21	23	27	23
MED	92	93	91	68	66	76	94	93	96	89	98	95	100	106	105	104	100	102	96	93	90	94	91	87
U Q	94	94	94	83	75	92	94	109	113	103	109	112	111	117	112	115	113	116	116	103	94	95	95	94
L Q	81	68	67	61	59	69	86	83	87	82	84	87	92	97	94	94	84	82	84	86	81	81	68	69

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT Kokubunji

MAY 2001

LAT. 35°42.4'N LON. 139°29.3'E 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	62	55	40	G	G	G	G	51	G	G	G	G	55	G	G	48	47	51	39		30	27	35
2	32	G	G	G	G	G	G	G	G	G	G	G	69	71	53	G	57	51	35	48	30	34		73
3	G	31	43	30	G	G	60	61	57	55	G	59	56	57	47	G	G	G	37	33	33	39		G
4	G	G	G	G	G	G		G	G	G	G	G	G	G	62	58	57	57	40	44	35	63	58	G
5	41	29	23	G	25	G	46	G	48	G	G	G	G	G	G	G	G	47	40	36	37	53	58	G
6	G	G	G	G	G	G	G	G	51	53	59	G	52	52	53	132	80	103	64	61	75	62	73	73
7	G	G	G	G	G	30	G	49	53	G	47	G	G	55	123	62	53	G	40	47	42	56	73	51
8	29	G	G	G	G	G	G	50	56	G	G	G	82	73	51	57	55	G	38	57	44	G	G	G
9	G	G	G	G	31	29	G	74	61	71	55	55	54	85		G	G	G	35	37	50	61		84
10	56	58		28	G	27	40	52	53	74	54	94	50	70	58	G	40	55	104	111	118	70	58	96
11	45	29	50	23	26	G	40	52	59	47		G	G	55	G	G	G	G	37	43	48	55	72	90
12	24	32	33	37	G	34	39	48	51	52	G	G	G	G	G	46	61	67	72	79	57	63	40	
13	G	33	26	24	46	68	60	73	55	56	57	52	G	58	G	G	49	90	50	71	41	44	G	58
14	52	27	87		43	30	42	43	45	G		52	G	G	G	G	G	G	43	53	47	G	33	30
15	26	G	G	G	G	G	G	G	54	54	48	65	G	68	84	47	51	G	52	40	34	45	37	62
16	34	26	26	G	G	30	G	45	42	60	G	G	59	G	G	G	49	49	42	33	25	62	52	43
17		34	30	31	31	29	39	G	G	62	62	48	56	G	G	62				63	43	63	60	72
18	70	59	53	35	31	G	G	49	62	95	60	G	52	85	60	G	73	73	62	73	82	87		30
19	G	29	26	26	G	G	G	53	G	73	68	59	74	78	100	G		72	75	55	96	42	40	G
20	33	33	G	G	G	G	40	47	67			60	60	58		58	46	67	55	30	34	62	54	47
21	49	G	26	G	25	G	40	54	58	62	57	47	65	123	G	70		97	41	65	70	126		42
22	29	G	G	G	G		G	47	54	G	71	G		86	58	G	G	82		169	115	70	40	51
23	25	26	32	34	34	31	49	67	75	76	54	69	58	61	G	62	66		86		92	86	73	
24	G	43	40	31	G	G	40	47	59	62	59	G	72	61	80	58	47	40	37	57	66	59	53	33
25	G	G	28	G	G	32	G	50	65	G	53	64		60	69	G	40	80	63	91	96	73	58	98
26	66	34	38	36	G	42	55	72	120	130	135			57	47	50	54	51	53	58	104	93	53	63
27	50	75	45	39	28	G	42	71	71	102	105	161	153	187			G	55	45	94	57		G	32
28	34	27	50	32	G	38	55	58	53	68	87	56	48	55	45	G	G	G	G	G	33	57	59	55
29	60	53	35	G	G	35	42	52	49	G				G	54	61	52	131			46	94	62	47
30		65	40	28	25	31	40	51	61	62	62		G	80	67	65	62	55	42	61	40	37	34	
31	40	27	G		G	29	42	G		G	55	97	61	49	51	87	73	94	125	85	29	34	33	G
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	31	30	29	31	30	30	31	30	30	27	28	27	31	28	30	28	29	28	29	30	30	26	28
MED	32	29	27	23	G	14	40	49	54	54	55	48	52	58	51	24	49	55	44	57	46	60	53	47
U Q	47	34	40	31	26	31	42	54	61	68	62	59	61	73	61	61	57	76	62	72	75	70	59	67
L Q	G	G	G	G	G	G	G	G	49	G	G	G	G	49	G	G	G	G	39	39	35	42	34	30

HOURLY VALUES OF fmin AT Kokubunji

MAY 2001

LAT. 35°42.4'N LON. 139°29.3'E 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	13	13	13	13	14	21	14	18	20			52		39	25	24	18	14	13	13		13	15	13
2	14	13	13	14	13	13	14	20	18	26	50	60	44	40	47	44	21	14	14	14	14	14	13	14
3	14	14	13	14	17	21	14	20	21				35	36	17		21	18	14	14	13	14	15	14
4	14	14	13	14	13	21		21	23		50	47	57	61	43	37	30	15	14	14	13	13	13	14
5	15	13	14	13	14	15	15	17	21	22	47	53	60	54	47	44	20	15	13	14	14	13	14	14
6	14	13	13	14	14	20	28	20	26	22	43		63	43	43	36	21	17	15	14	18	14	14	14
7	15	14	14	17	14	14	30	17			39		63	44	40	37	33	15	13	14	14	15	14	13
8	14	15	14	15	15	18	14	14	23			63	39	34	31	22	14	13	13	14	14	13	15	13
9	15	14	13	14	13	14	14	14	18	20		31	34	39		20	23	14	17	14	13	13		13
10	13	13		14	14	18	13	15	18	23	39	44	44	40	40	45	18	14	14	13	13	13	14	14
11	14	13	14	14	14	20	14	18	17	22		62	52	25	21	21	14	15	15	14	13	13	13	14
12	13	14	13	13	14	14	14	17	18	18			63	63		22	20	17	14	14	13	13	14	
13	14	13	13	14	14	14	13	17	31	38	42	43	50		49	22	15	14	14	14	13	14	13	13
14	14	14	13	13	14	14	14	14	15	18		37		61			18	15	13	14	13	14	13	13
15	14	14	14	14	13	21	13	15	21		37	38		40	33	20	18	14	15	14	13	13	13	13
16	13	13	14	14	20	14	14	20	18	22		56	38	33	44	22	21	14	15	13	13	14	14	13
17	13	13	13	13	14	14	18	15	34	36	40	52	43	24		18				14	14	14	13	14
18	13	13	14	13	13	15	18	18		43	40		38	43	40	21	23	14	14	13	13	14	13	14
19	14	14	13	14	14	18	14	17	21	31	40	42	42	40	37	20	13	15	14	14	14	13	13	14
20	13	14	17	21	17	15	15	17	20			42	40	38		40	18	17	14	13	13	14	13	13
21	13	14	13	14	14	14	14	14	17		40		38	42			20	15	15	14	14	13	14	14
22	13	14	13	14	13	13	14	15	22	21	25		33	34	31	22	17	14		14	14	13	13	13
23	13	13	13	13	14	14	18	18	30	33	40	38	40	36	26		20		13		14	13	13	13
24	14	14	13	13	14	14	14	17	18		39		40	39	40	23	15	15	13	14	13	14	13	13
25	14	13	14	20	17	14	14	18	15	22	36	37		36	22		18	14	13	13	13	13	13	13
26	14	13	13	14	14	14	14	15	20		36			40	38	26	21	13	13	13	14	14	13	13
27	13	14	13	13	13	13	18	14	14		25	35	37	40			18	15	17	13	13		23	14
28	14	14	13	13	15	18	15	15	21	22		42		40		18	17	15	14	17	14	14	13	13
29	13	14	14	17	13	15	14	15	15	21				22		20	20	14	13	13	14	13	14	13
30	13	14	13	14	13	14	15	17	18	18	37		72	35	22	30	17	14	15	13	14	14	14	13
31	13	14	14		15	14	13	20	17		24	37	40	43	42	22	18	15	14	13	14	13	14	14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	30	30	31	31	30	31	29	19	20	20	24	30	22	25	30	29	29	30	30	30	30	30
MED	14	14	13	14	14	14	14	17	20	22	40	42	41	40	39	22	18	15	14	14	14	13	13	13
U Q	14	14	14	14	14	18	15	18	21	31	41	52	54	43	43	36	21	15	15	14	14	14	14	14
L Q	13	13	13	13	13	14	14	15	17	21	36	37	38	36	26	20	17	14	13	13	13	13	13	13

HOURLY VALUES

IONOSPHERIC DATA of Yamagawa is not available due to the ionosonde trouble.

HOURLY VALUES OF foF2 AT Okinawa

MAY 2001

LAT. 26°16.9'N LON. 127°48.4'E 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			176	149	94		92		87	90	95	116	117	124	142		140	127	131	126		102	111	122
2	119	121	122		88	95	93	117	117	104	115	112	121	120	123	140	154	166	167	168		162		156
3		173	174	133	94	94	95	121	117	107	114	113	117	118	120		146		146	171	125	120	120	114
4	116	95	94	84	76	77	82	98	102	111		121	117	121	115	128	117	128	133	126	92	95	96	
5	92	94			93	80		94	104	96	109	121	123	130	149	117	123	122	142	140	91	94	94	89
6	96	95	114	81	70	70	94	94	105	84	90	107	115	143	151	146	143	148	152	158				
7	158	94		122	93		85	113	122		94	123	131	148	157	170	158	158	145		116		95	117
8	113	94	92	93											155	165	171	182	186	170	132		163	
9	154	167	123		94	95	94	94	92	91	92	122	134	150	167	173	170	173	174	174	132	93	115	97
10		88	92	95	71	77	94	76	76	87		114		112	132	125	120	124	130	124	96	96	95	94
11	76		80	70	58	60	72	94	93	82	91	103	113	124	144	166	171	179	178	156	112	92		
12	76		70	62	60	60	70	93	92	78	81	88	112		113	158	172	168	167	160		159	161	173
13	164		123		120	94	116	94	96	113	84	114	123	139	131	131	150	172	173		132			137
14	89		94		93	95																		
15											91	114	109	131	150	134	121	123	135	127		83	84	90
16	86	94	93	70	70	67	85	92	76		91	91	114	120	122	121	126	125	126	135	86			94
17	81	87	82	80	72	61	70		94	76	86	94	115	121	122	122	120	122	122		92		93	93
18	82	94	96	95	62	67	93		95		A		116		115	143	149	143	145		155	109		
19	89	116	109	91	94	95	96	82	92	80	82	95	114	122	139	144	150	125	140	142	140	90		80
20	94	90	89	94	84	67	67	80	84	84	A	90	122	116	120	121	121	122	126	128	84	86	84	78
21	81	84	92	74		70	92	86	80	75	84	81	95	102	117	126	122		118	123	A	81	77	93
22	91	92	92	91	87	95		89	86	81	90	91	103	116	120	141	148	156	155	139	132	126		150
23	122		96	94	88	96	93	76	92	73	81	95	116	131	137	134	131	133	144		94	112	99	94
24	98	89	93		96	75	78	95	92		92	115	117	121	127	131	151	123	121	107	93	93	94	80
25	94	93	72	66	61	61		80	92	92		97	113	130		144	152	152		131		123		114
26		93	93	94	78	73	77	95	92	72	73	A	83	88	95	92	98	98	93	83	77	68	68	66
27		94	69	55	89	57	60	87		68	A	90	92	115	95	101	113	118	106	109	82		64	
28		73		68	60	62	62	78		76	78		90	94	106	117	112	119	111	112	114	82	92	93
29	C	95		95	71	68	92	90						72		71	A	77	82	83	74	95		67
30			70	74	70	71		83	83	72	75		116		150	171	171	168	166	128		122	122	140
31	114	130		115	94	83	94	94	96	84			112	117	121	118	121	128	139	110	94	113	129	89
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	22	23	25	24	28	27	24	25	25	23	21	23	27	26	28	28	29	28	29	25	22	23	20	24
MED	94	94	93	91	86	73	92	93	92	84	90	107	115	121	125	132	143	128	140	128	95	95	95	94
U Q	116	95	111	95	93	94	94	94	99	92	93	115	117	130	146	145	153	162	160	157	132	120	117	119
L Q	86	90	85	72	70	67	74	82	86	76	81	91	112	116	118	121	121	122	124	117	91	90	88	89

HOURLY VALUES OF fEs AT Okinawa

MAY 2001

LAT. 26°16.9'N LON. 127°48.4'E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1			G				G		G			G	G	G	G								G	
				77	31					54	49					60	55	64	46	60	67	65		23
2	G	G	G		G	G		G			G	G	G	G	G	G							G	G
										56							61	81	70	32	34	26		
3	G	G	G	G	G	G	G	G		G							G	G				G	G	
									41		48	47	65	76	54	63			36	34	28			58
4		G	G	G	G	G	G		G				G	G	G	G	G	G		G			G	
	42							38		57		47							40		60	25		85
5		G	G	G	G	G	G				G	G	G	G	G	G	G							
	34							39	47	47								43	63	51	94	37	44	25
6		G	G	G	G	G			N		G	G				G	G							
	40						38	44		58			49	50	47			46	44	27	42		37	
7							G					G	G			G	G	G	G					
	71	30	37	33	26			42	51	62	58			87	49					38		91	51	44
8				G												G	G	G						
	32	32	28												100				44	54	61	53	34	47
9		G			G	G	G			G	G	G	G	G	G	G	G	G	G					
	45		35	24				44	40											32	33	42	44	41
10				G			G																	
	36	36	28		32	26		44	56	62	80	79		61	90	77	68	64	48	43	64	67	70	58
11					G	G	G						G		G			G			G			
	86	95	50					42	51	78	71	52		71		58	55		38	36		34	56	70
12	73		44	49	50	36	50	44	50	52	61	67	68		87	87	70	44	38	27	27	30	68	83
13										G		G	G	G	G		G	G			G	G		
	86	47	127	94	40	43	43	76	67		46					46			33				40	71
14	38		43	28	25	39																		
15											63	62	54	G	G	55	G	G	G	36	38	G	32	G
16	G						G		G					G				G						
		28	69	38	37	50		41		92	68	79	56		111	99	62		41	30	59	135	95	57
17	G	G	G							G			G	G	G	G								
				28	30	36	76	124	68		66						66	68	68	88	60	144	95	45
18					G	G											G	G			G			
	46	36	39	27			37	69	59	95	88	97	75	180	79	80			43	31		26	31	57
19			G	G	G	G	G		G				G		G	G								
	26	27						38		44	62	47		52			55	68	72	42	36		50	72
20				G		G	G	G							G									
	47	40	34		25				60	46	176	84	59	60		85	86	117	68	92	87	56	41	42
21	G				G	G	G		G	G	G		G	G										
		31	44	46				34				55			64	72	63	59	72	64	117	67	68	72
22								G				G	G	G	G	G	G	G						
	60		44	54	43	36	44		50	48	85								36		72	40		26
23	G		G	G	G	G	G		G	G	G	G	G	G	G	G	G	G	G		G		G	G
								35														28		
24							G					G	G	G	G	G								
	60	76	62	38	25	24		38	57	105	70						54	56	45	58	59	38	57	42
25			G	G	G	G				G	G	G	G	G	G		G	G	G	G	G	G		G
	35	40					31	40	44							46								
26						G								G		G	G							
		60	39	30	23		34	38	44	86	60	101	53		47			74	45		38	37		49
27							G					G	G	G	G	G	G	G						
		26	68	49	31	26		48	82	77	91								37	36	33	80	29	
28						G	G										G		G					
		60	78	66	38			38	98	63	61	72	68	63	47	45		47		31	34	38		44
29											G					G		G						
	58	54		29	28	35	41	60		62		57	110	66	67		116		45	27	34	37		37
30											G													
			71	44	59	43		86	76	57		60	59	65	47	70	47	45	50	37	58	45	27	29
31									G				G											
	40			68	81	48	33	38		66	67			58	74	62	83	76	68	94	62	45	51	59
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	23	28	28	29	27	26	27	25	28	28	27	28	28	30	30	30	30	30	26	29	28	25	28
MED	40	31	36	28	25	G	G	40	50	56	60	47	G	G	G	23	G	22	44	36	38	38	41	44
U Q	59	47	47	47	34	36	37	44	59	64	69	67	57	62	64	63	62	64	50	54	61	60	56	58
L Q	13	G	G	G	G	G	G	38	G	22	G	G	G	G	G	G	G	G	36	31	30	27	28	27

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

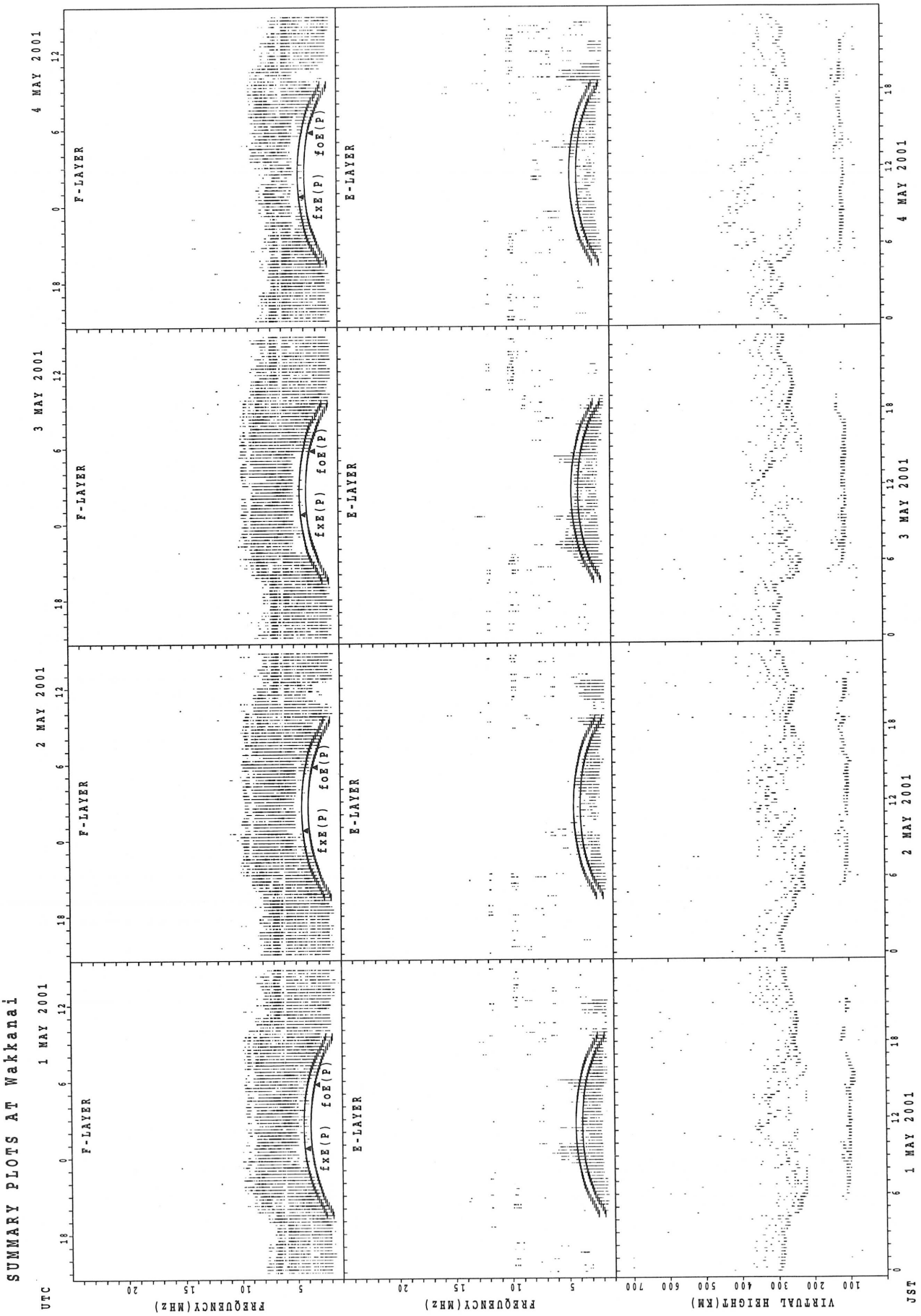
HOURLY VALUES OF fmin AT Okinawa

MAY 2001

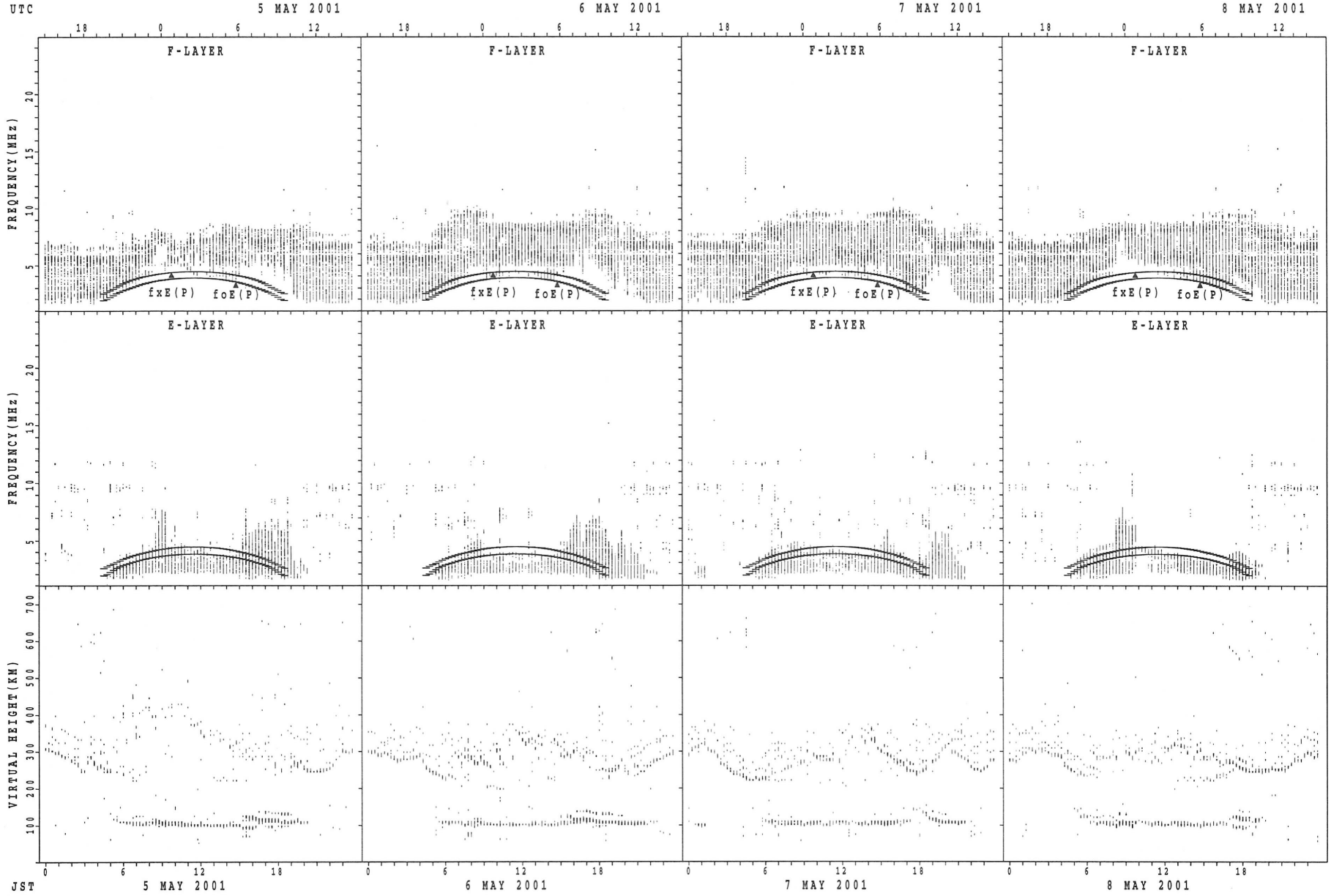
LAT. 26°16.9'N LON. 127°48.4'E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

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

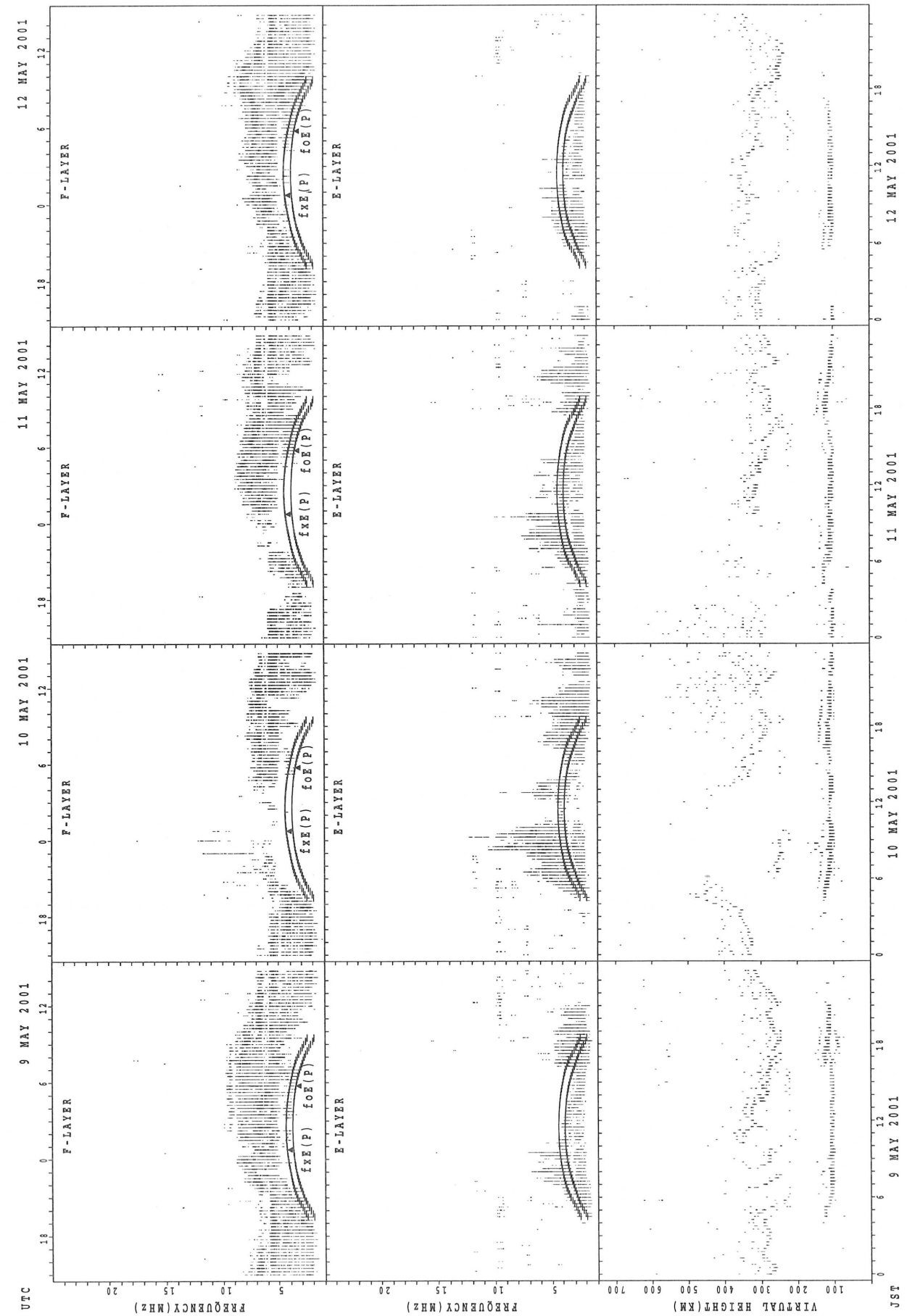
COMMUNICATIONS RESEARCH LABORATORY, JAPAN


SUMMARY PLOTS AT Wakkanai
UTC
JST
1 MAY 2001
2 MAY 2001
3 MAY 2001
4 MAY 2001
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

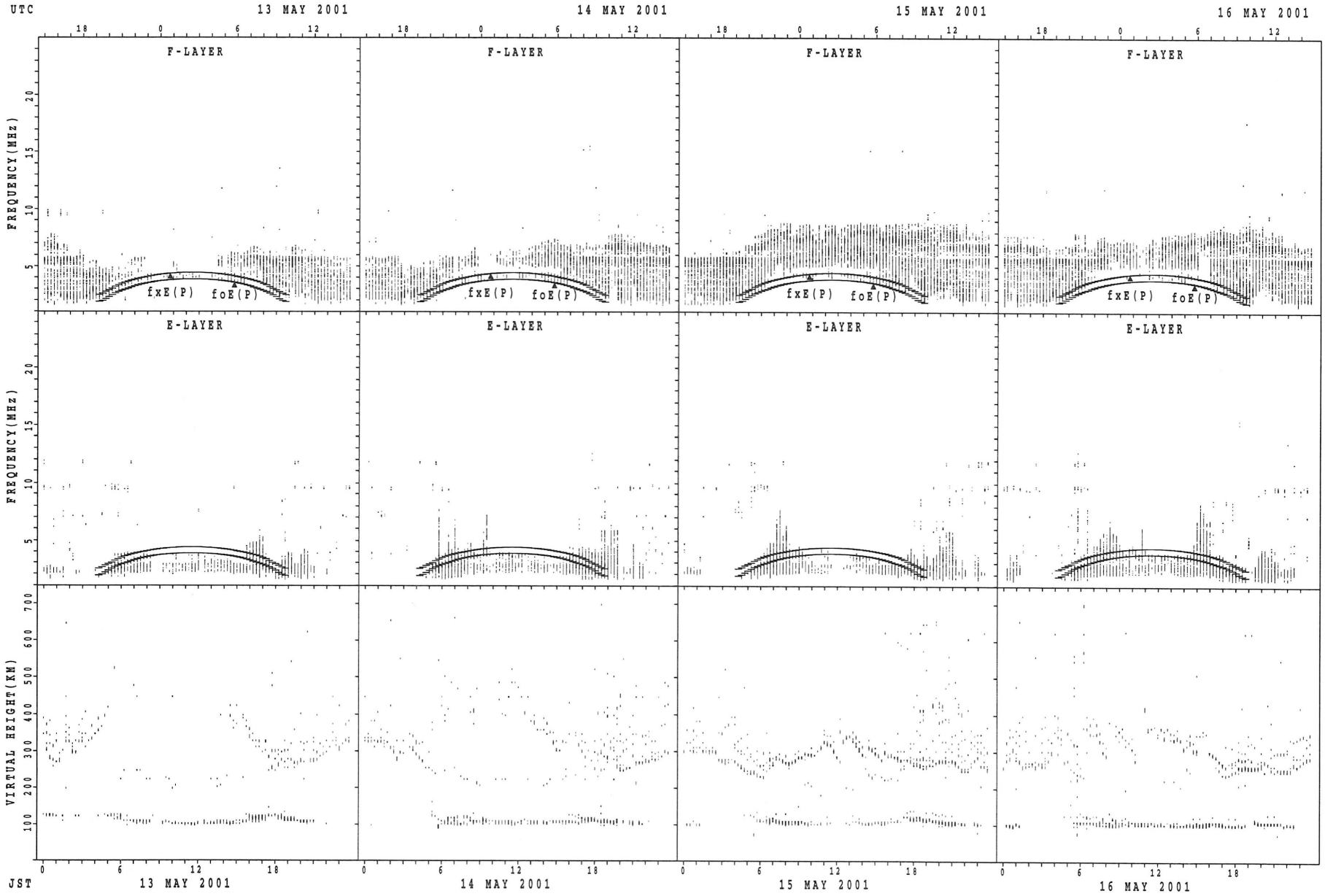
SUMMARY PLOTS AT Wakkanai



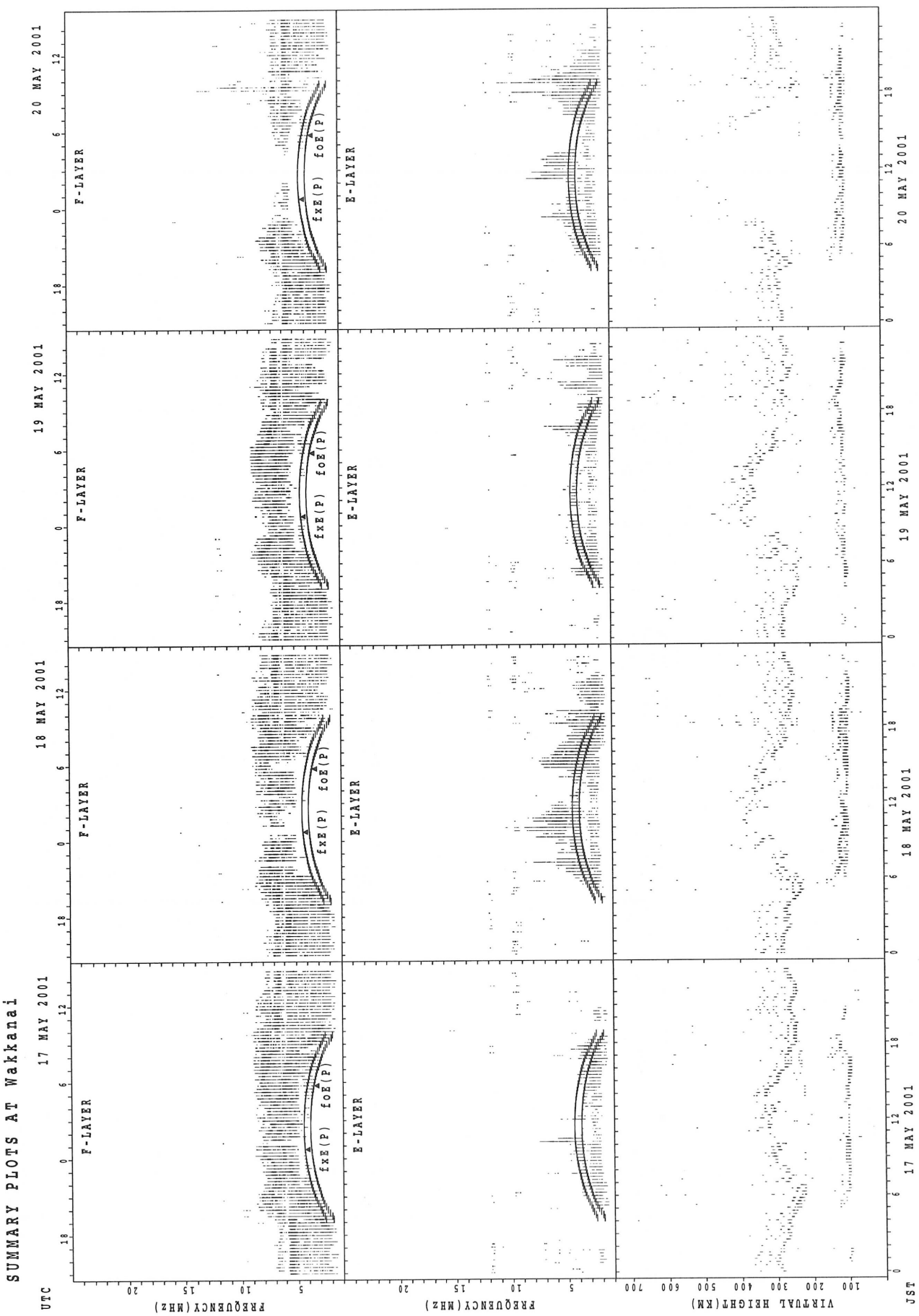
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Wakkanai
UTC
JST
9 MAY 2001
10 MAY 2001
11 MAY 2001
12 MAY 2001
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

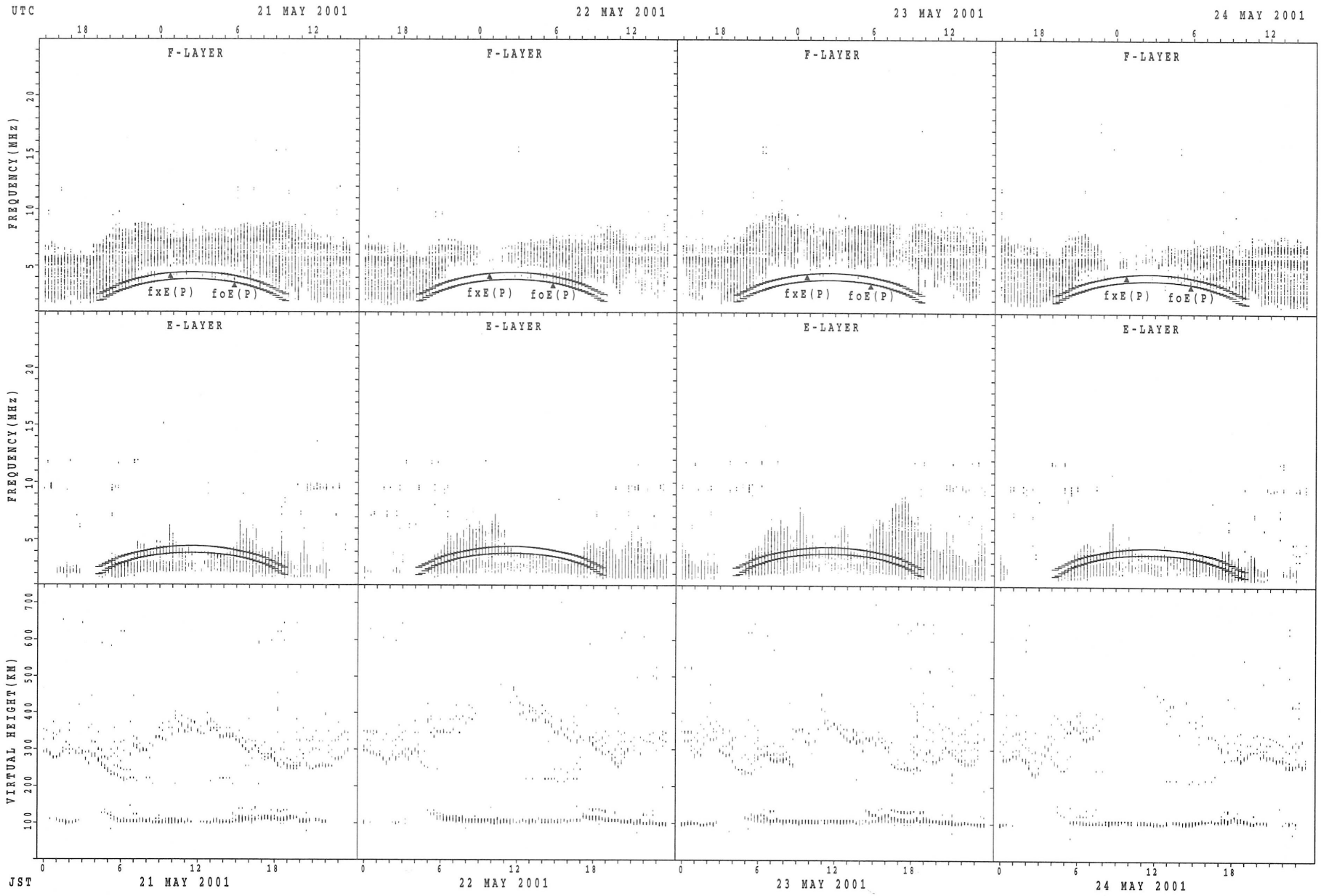
SUMMARY PLOTS AT Wakkanai



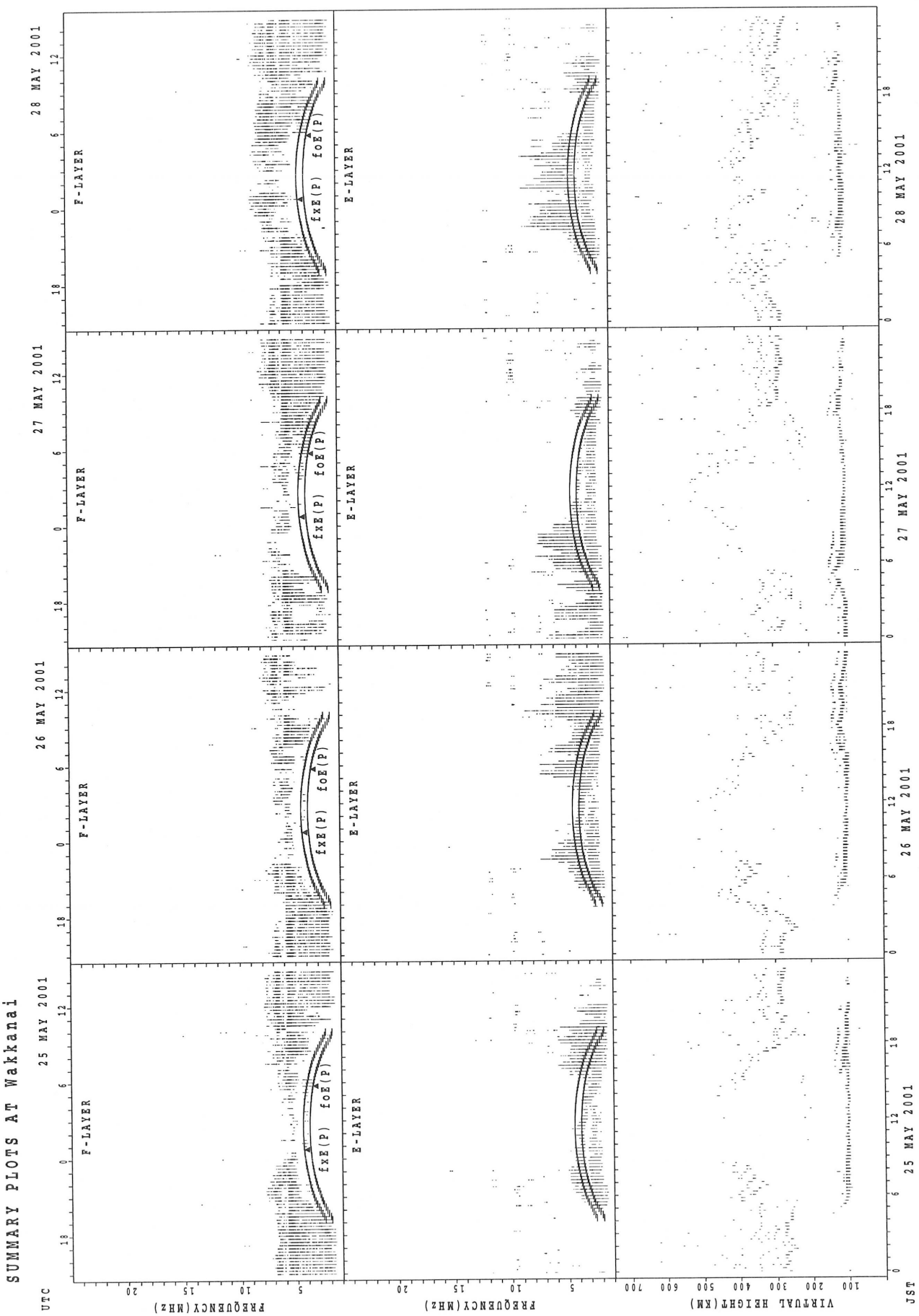
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

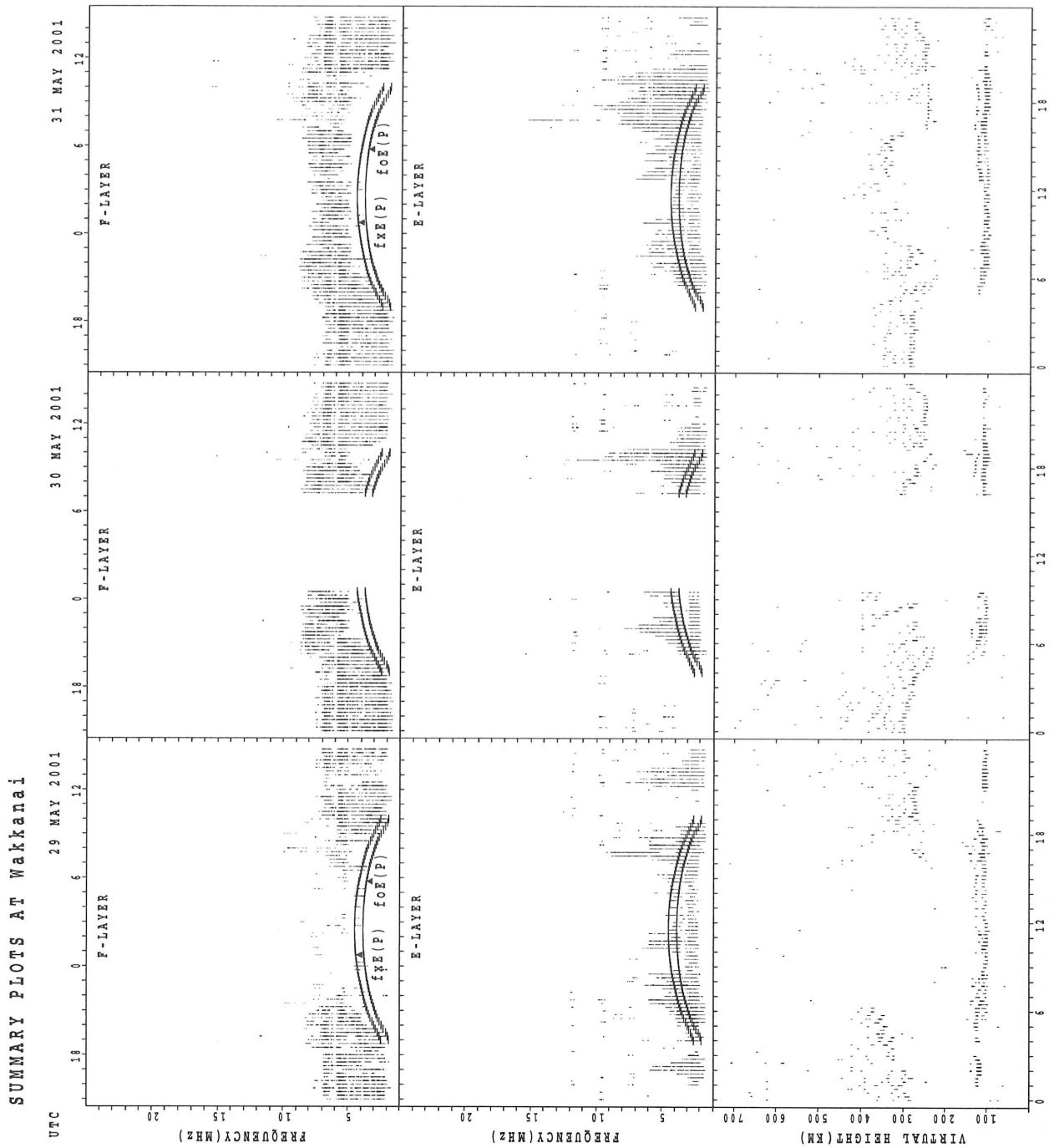

SUMMARY PLOTS AT Wakkanai
UTC
17 MAY 2001
18 MAY 2001
19 MAY 2001
20 MAY 2001
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
JST
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

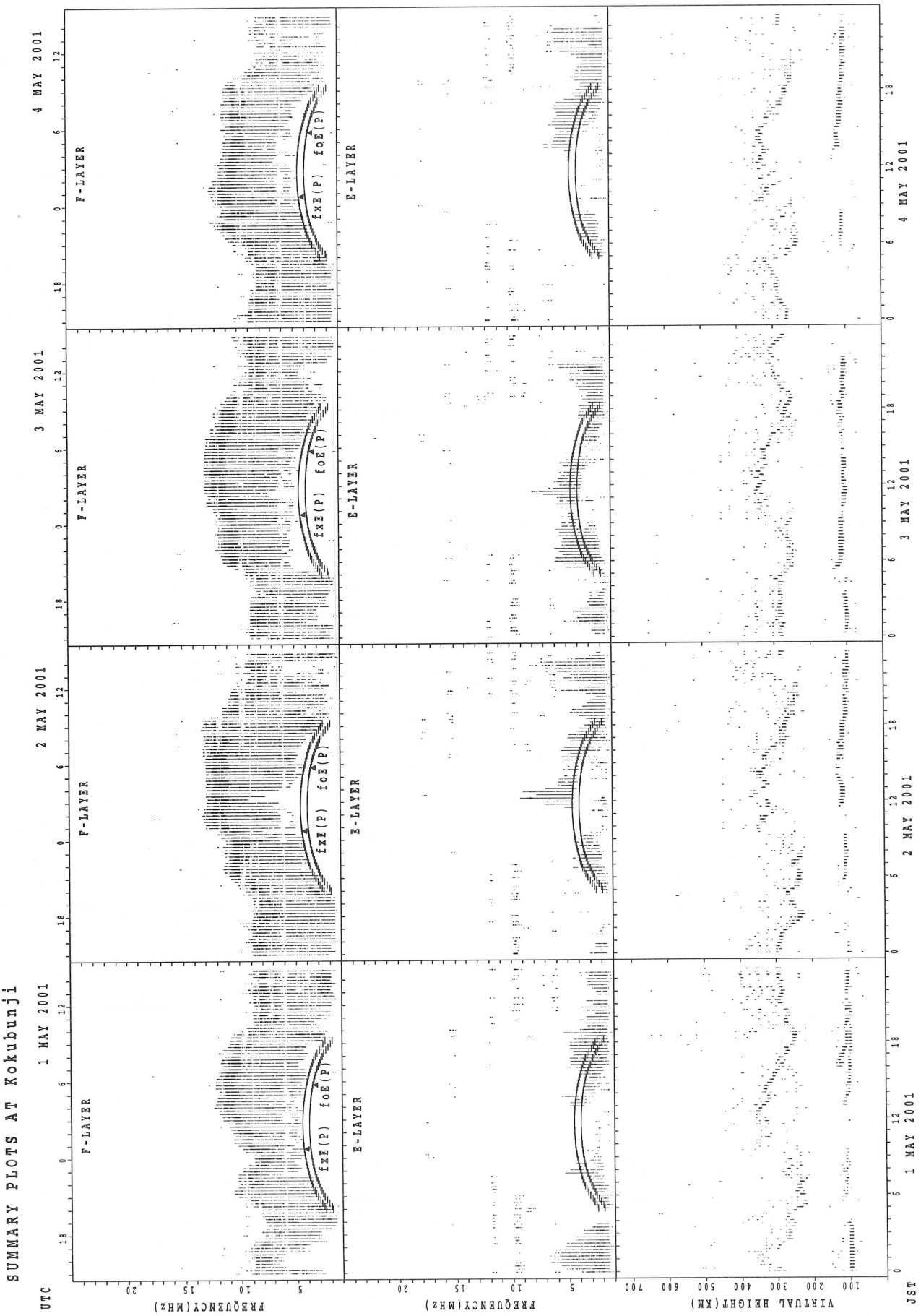
SUMMARY PLOTS AT Wakkanai



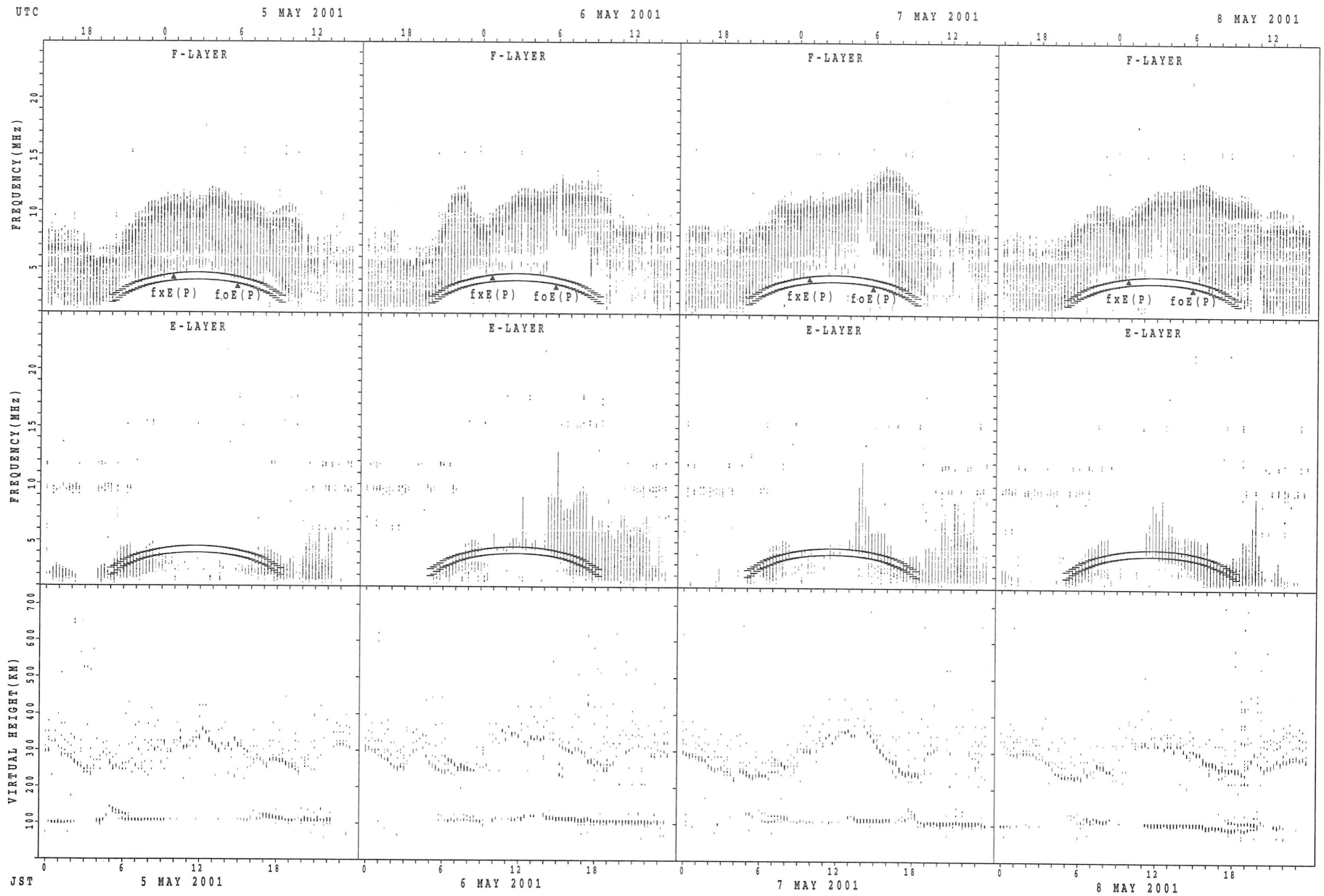
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Wakkanai
UTC
JST
25 MAY 2001
26 MAY 2001
27 MAY 2001
28 MAY 2001
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

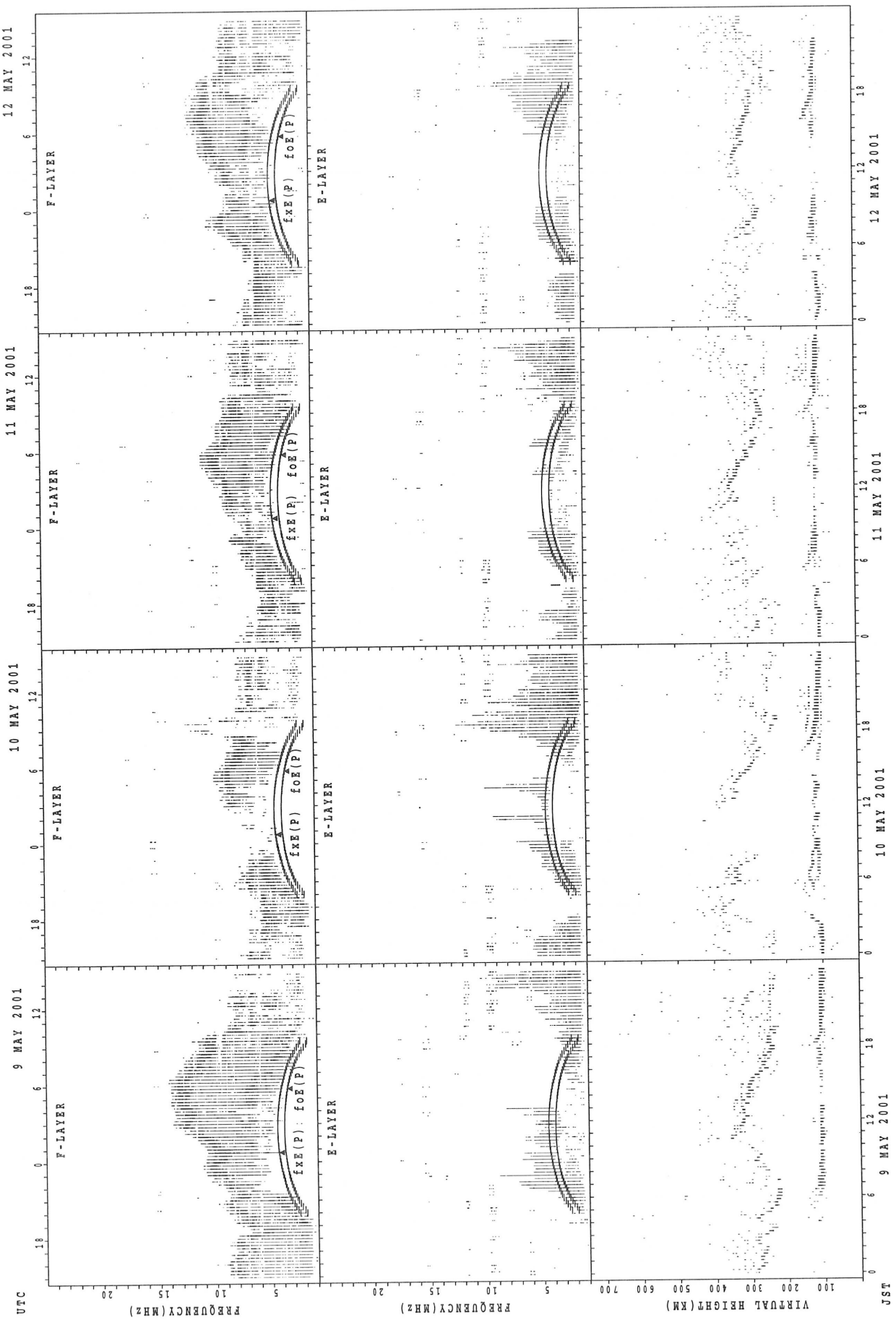

SUMMARY PLOTS AT Wakkanai
UTC
29 MAY 2001
30 MAY 2001
31 MAY 2001
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
JST
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Kokubunji
UTC
JST
1 MAY 2001
2 MAY 2001
3 MAY 2001
4 MAY 2001
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

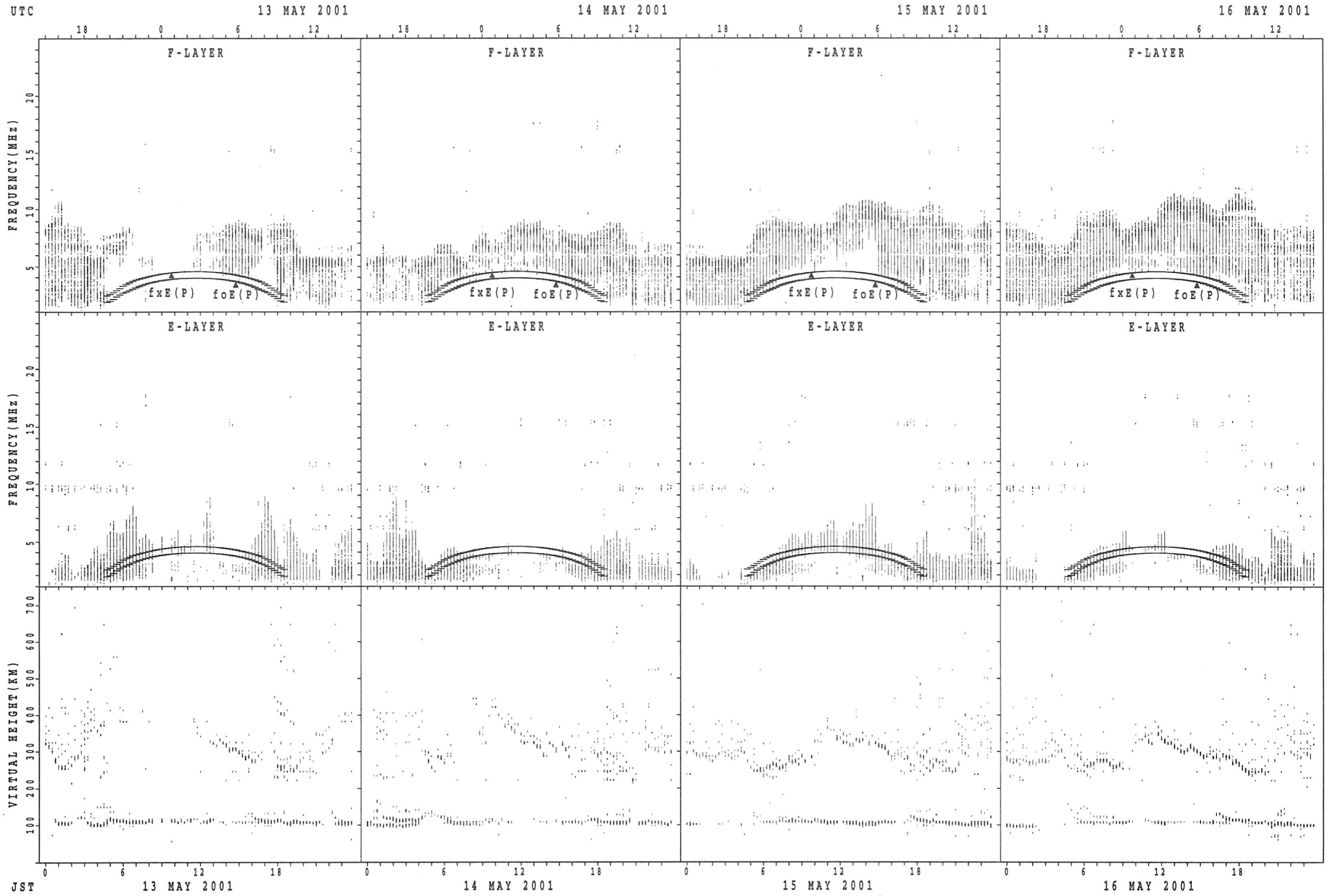
SUMMARY PLOTS AT Kokubunji



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

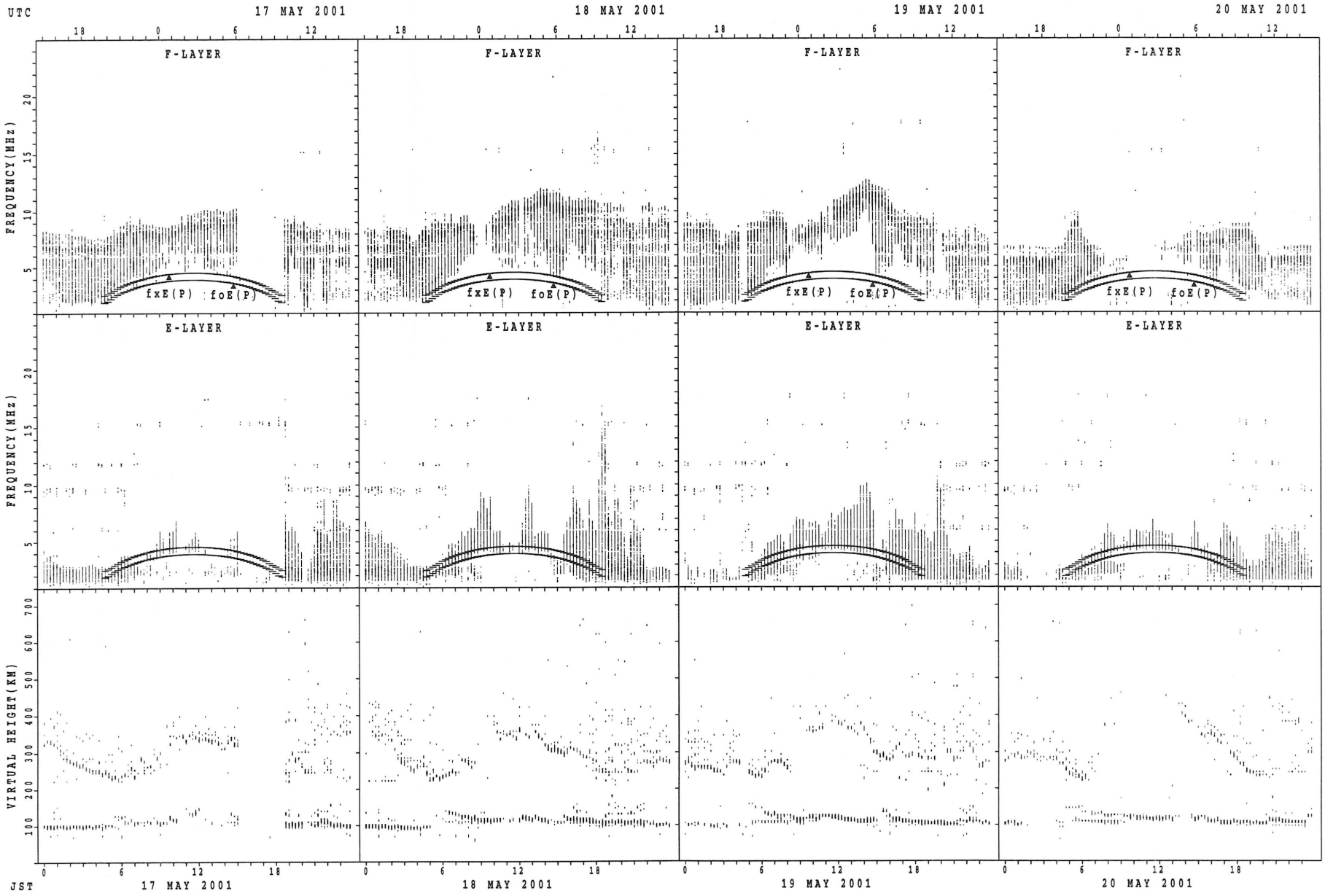

SUMMARY PLOTS AT Kokubunji
UTC
JST
9 MAY 2001
10 MAY 2001
11 MAY 2001
12 MAY 2001
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



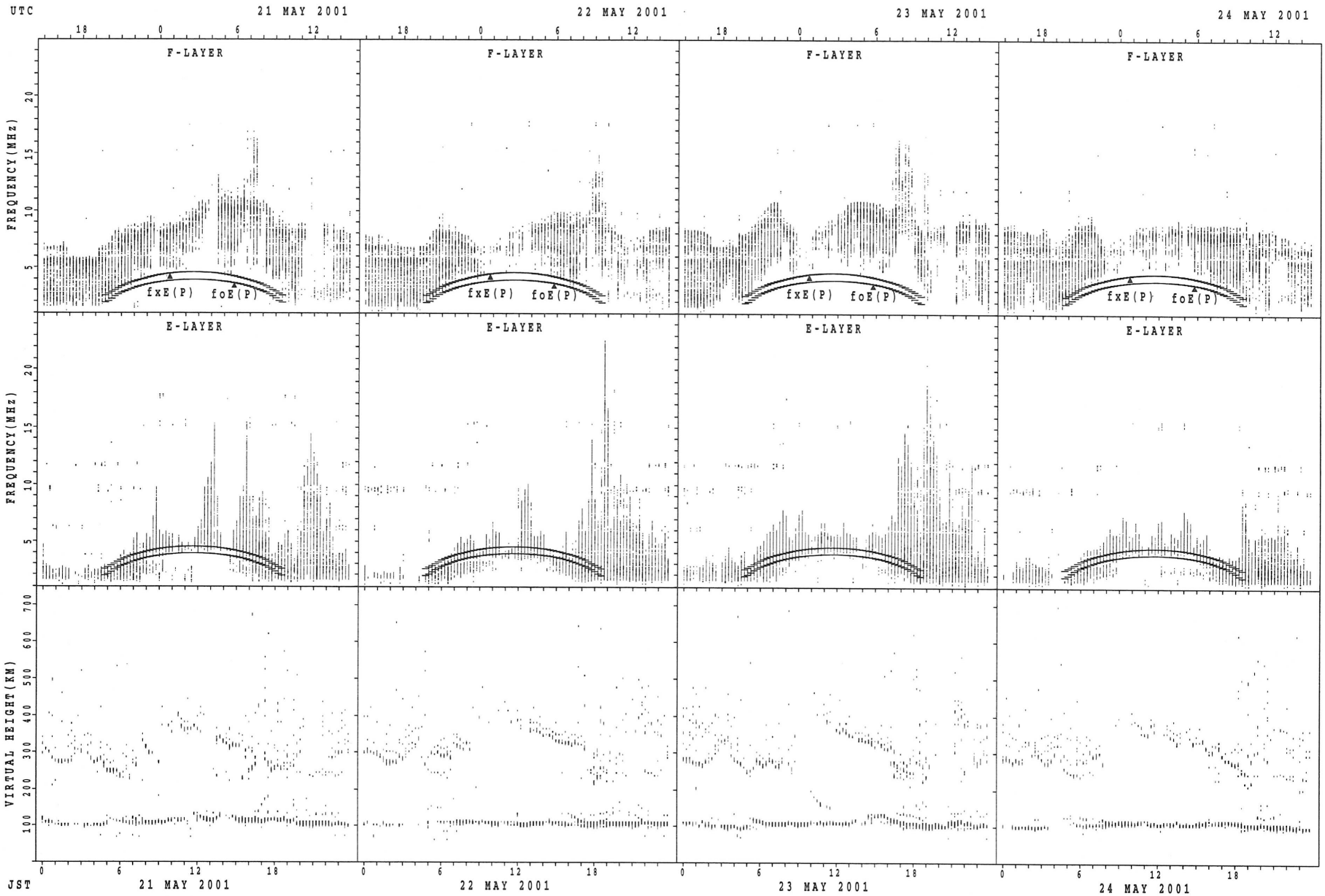
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji

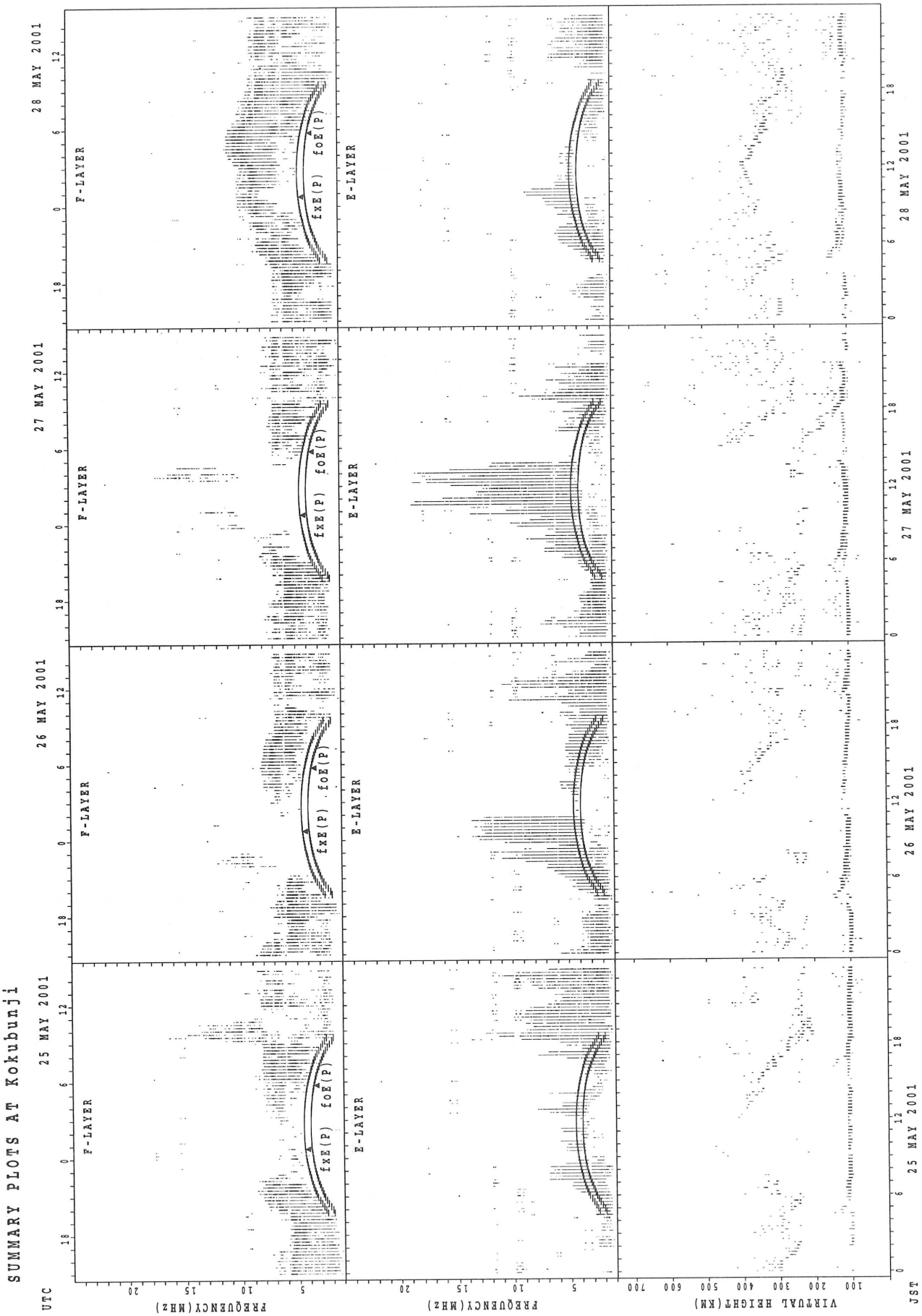


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

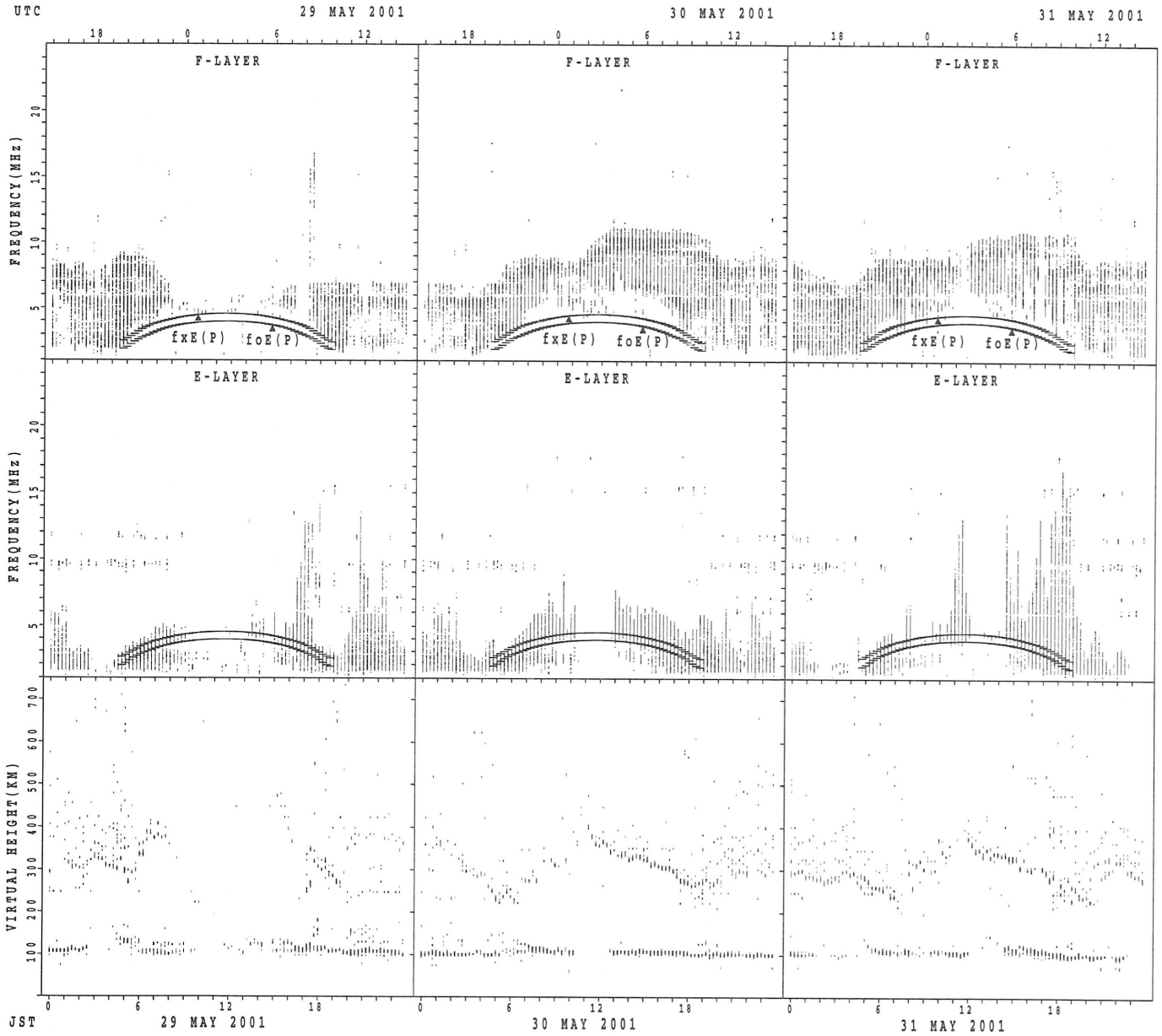
SUMMARY PLOTS AT Kokubunji



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


SUMMARY PLOTS AT Kokubunji
UTC
25 MAY 2001
26 MAY 2001
27 MAY 2001
28 MAY 2001
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
JST
fxE(P) ; PREDICTED VALUE FOR fxE
foE(P) ; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji

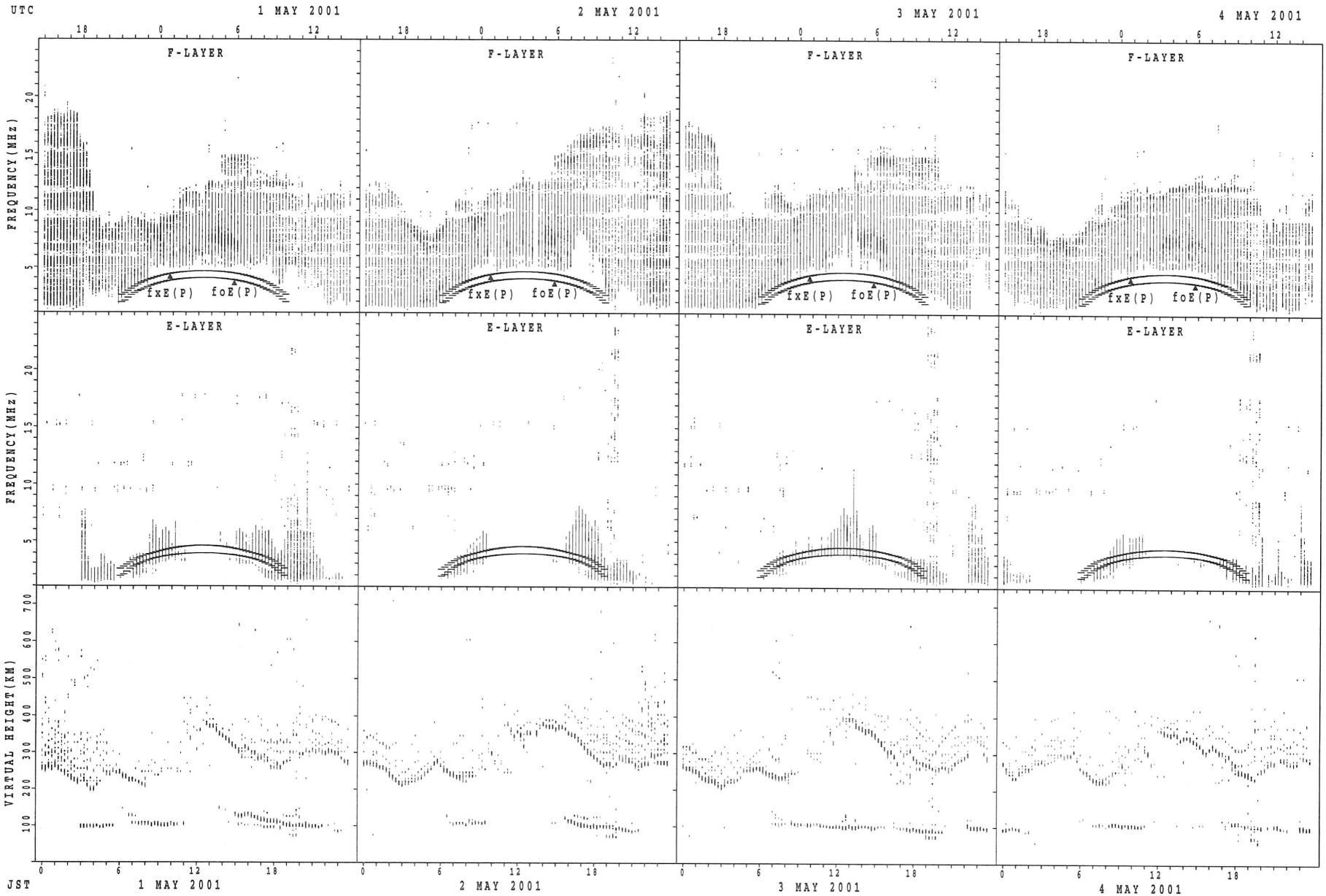


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS

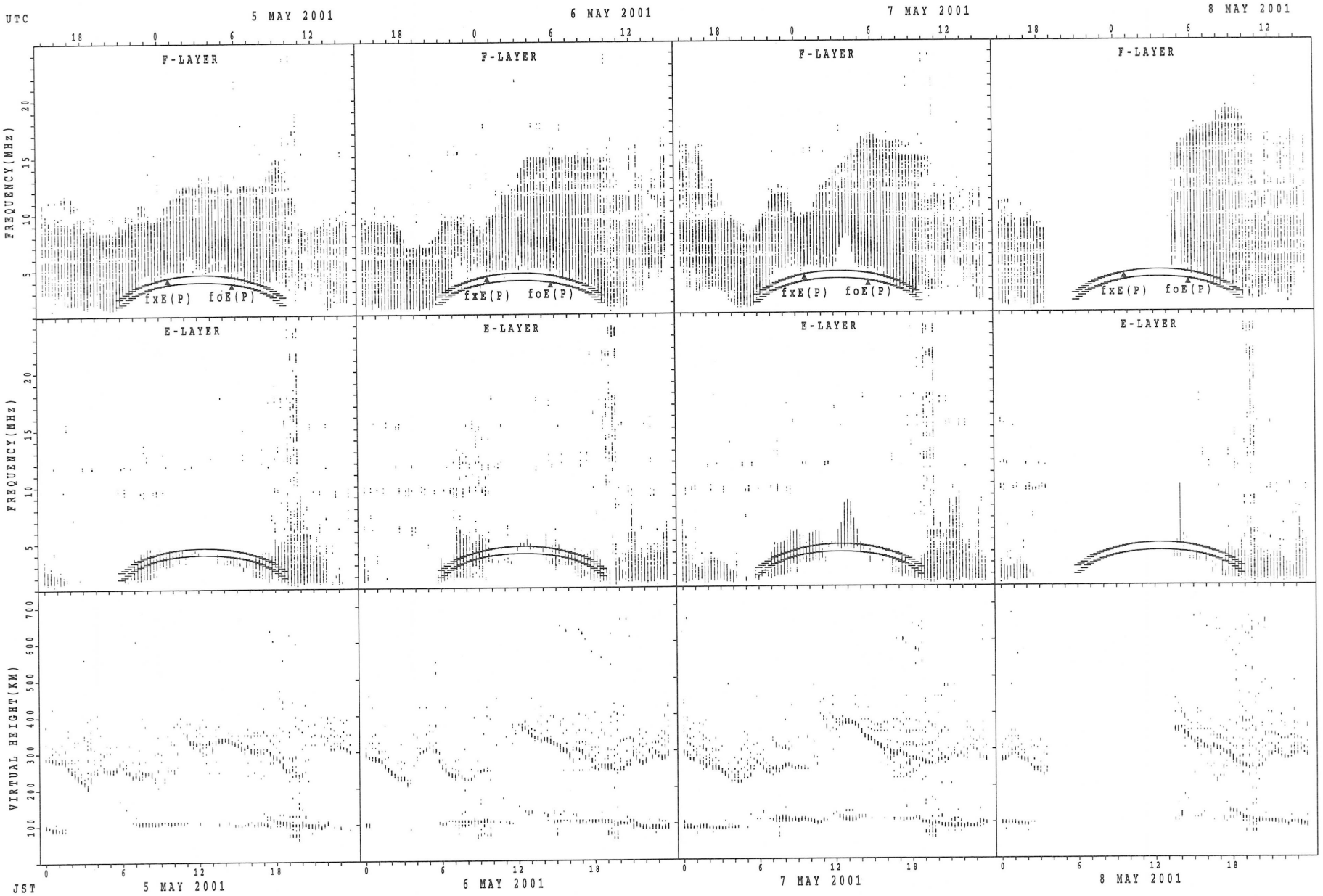
IONOSPHERIC DATA of Yamagawa is not available due to the ionosonde trouble.

SUMMARY PLOTS AT Okinawa

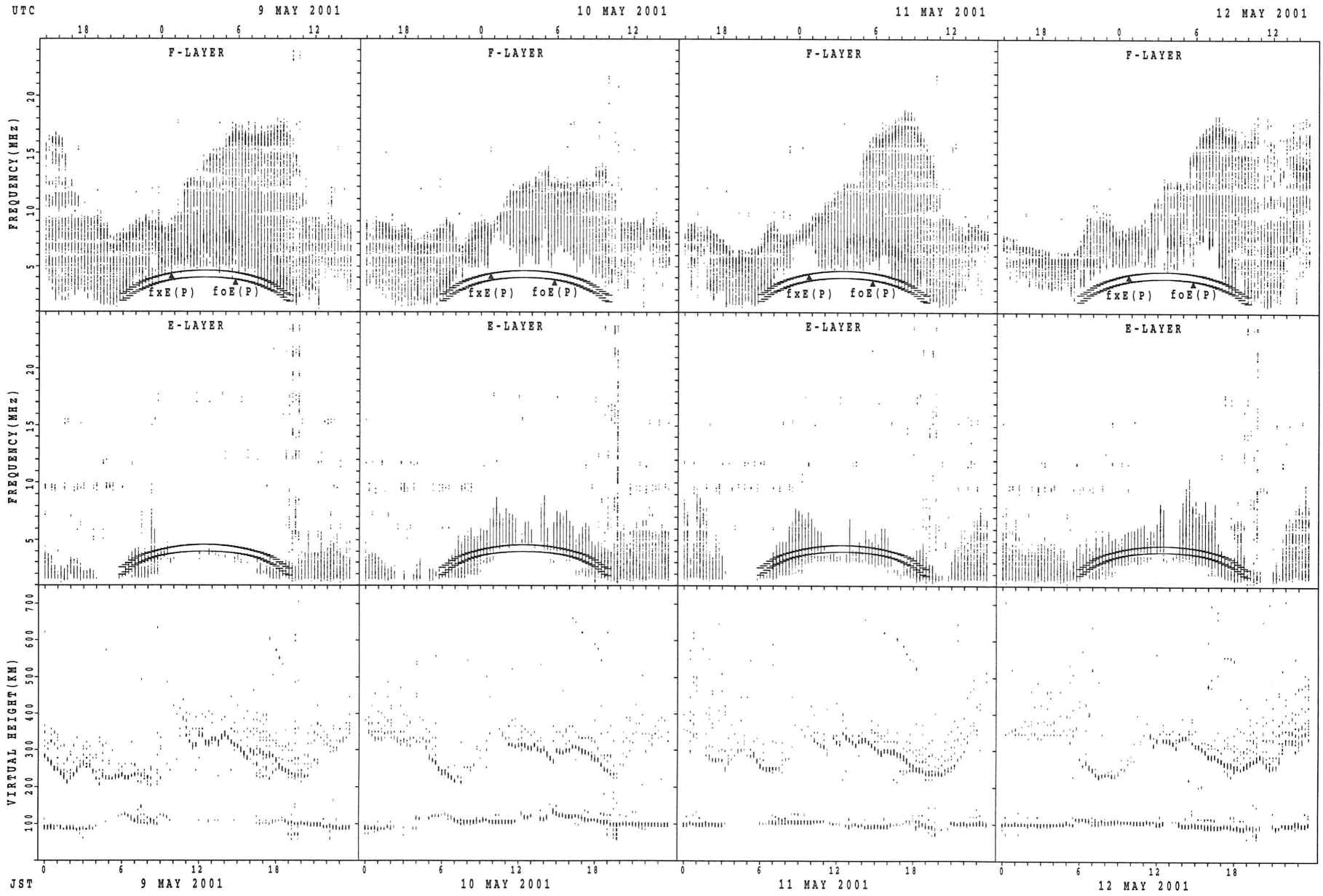


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

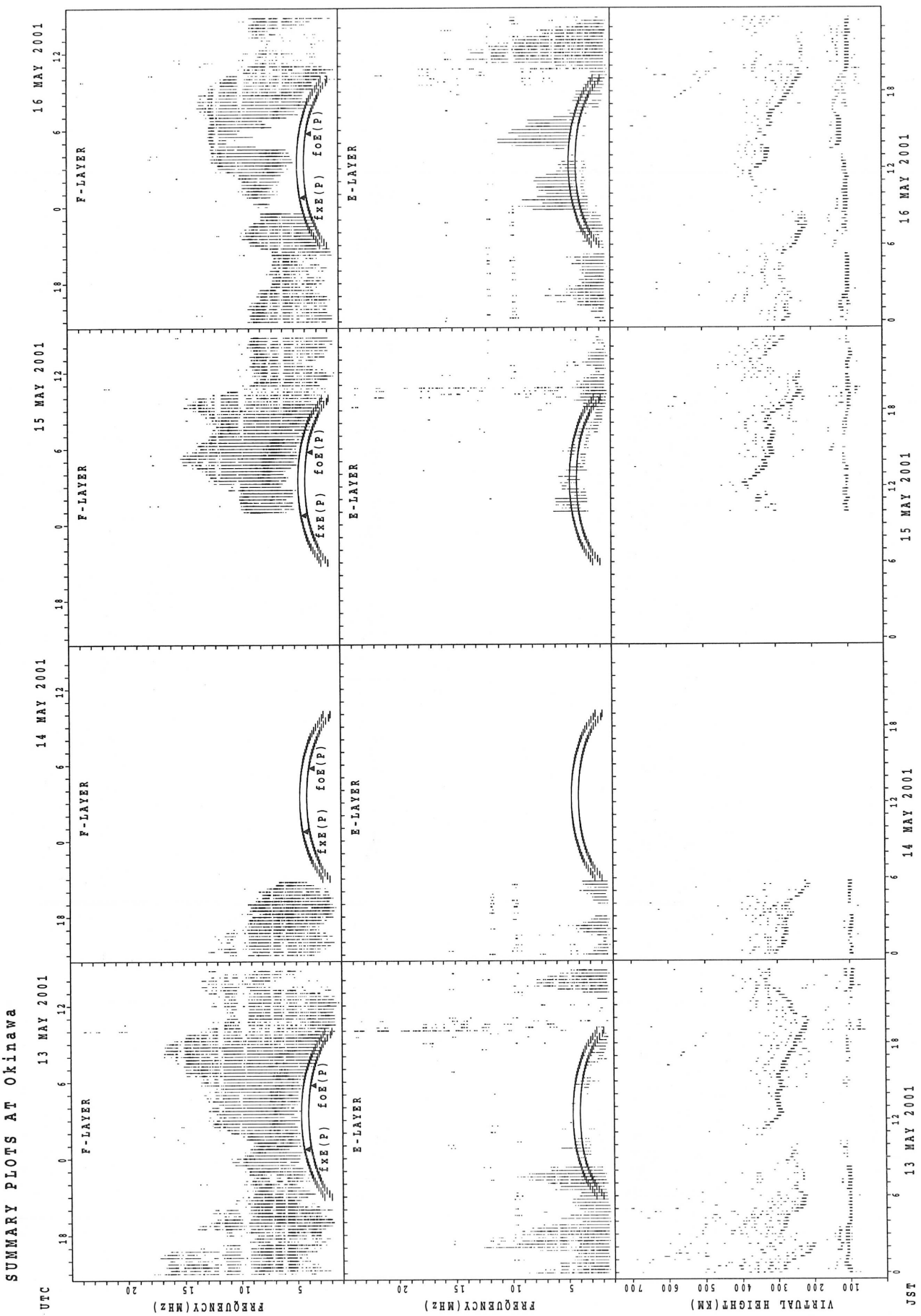
SUMMARY PLOTS AT Okinawa



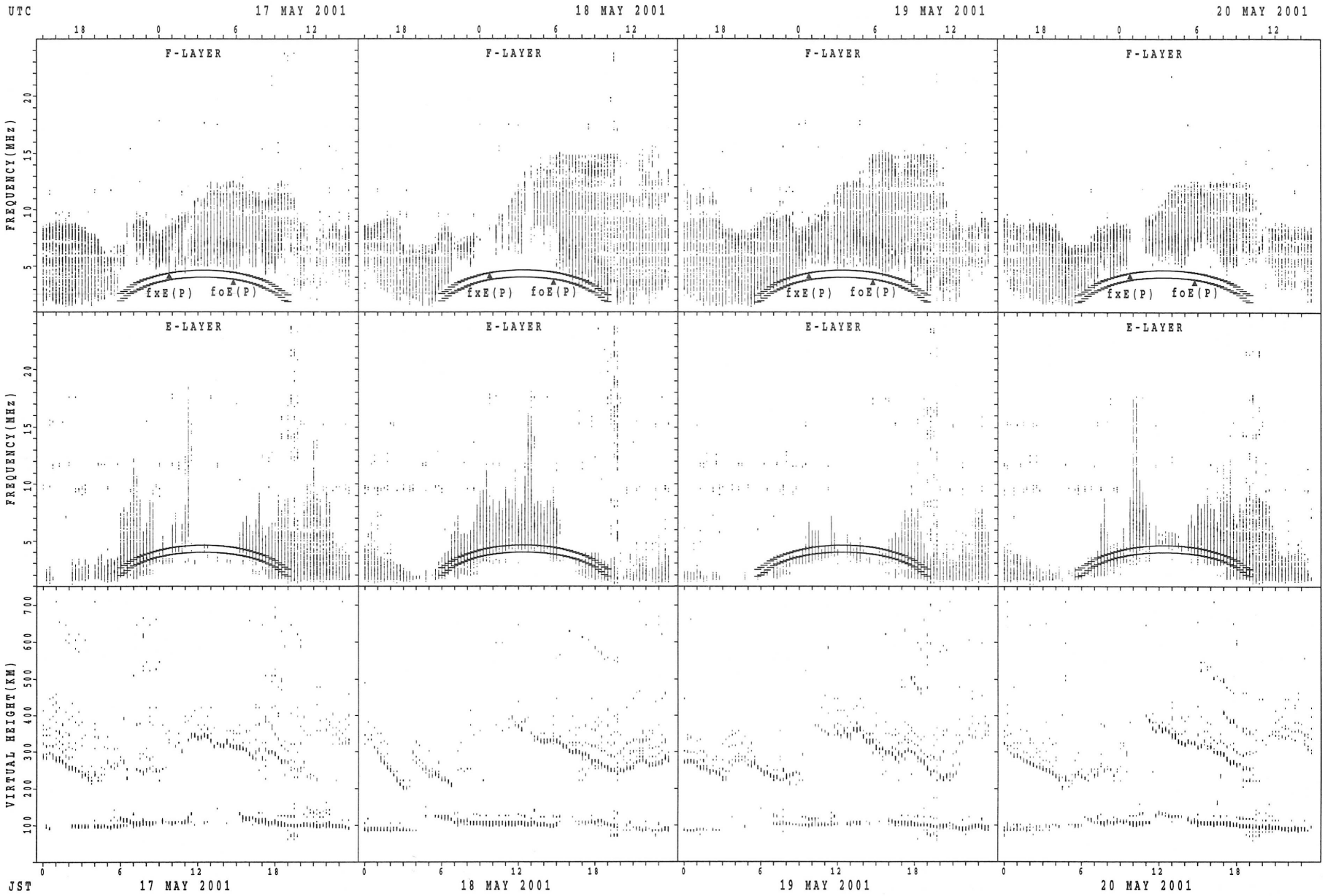
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE



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

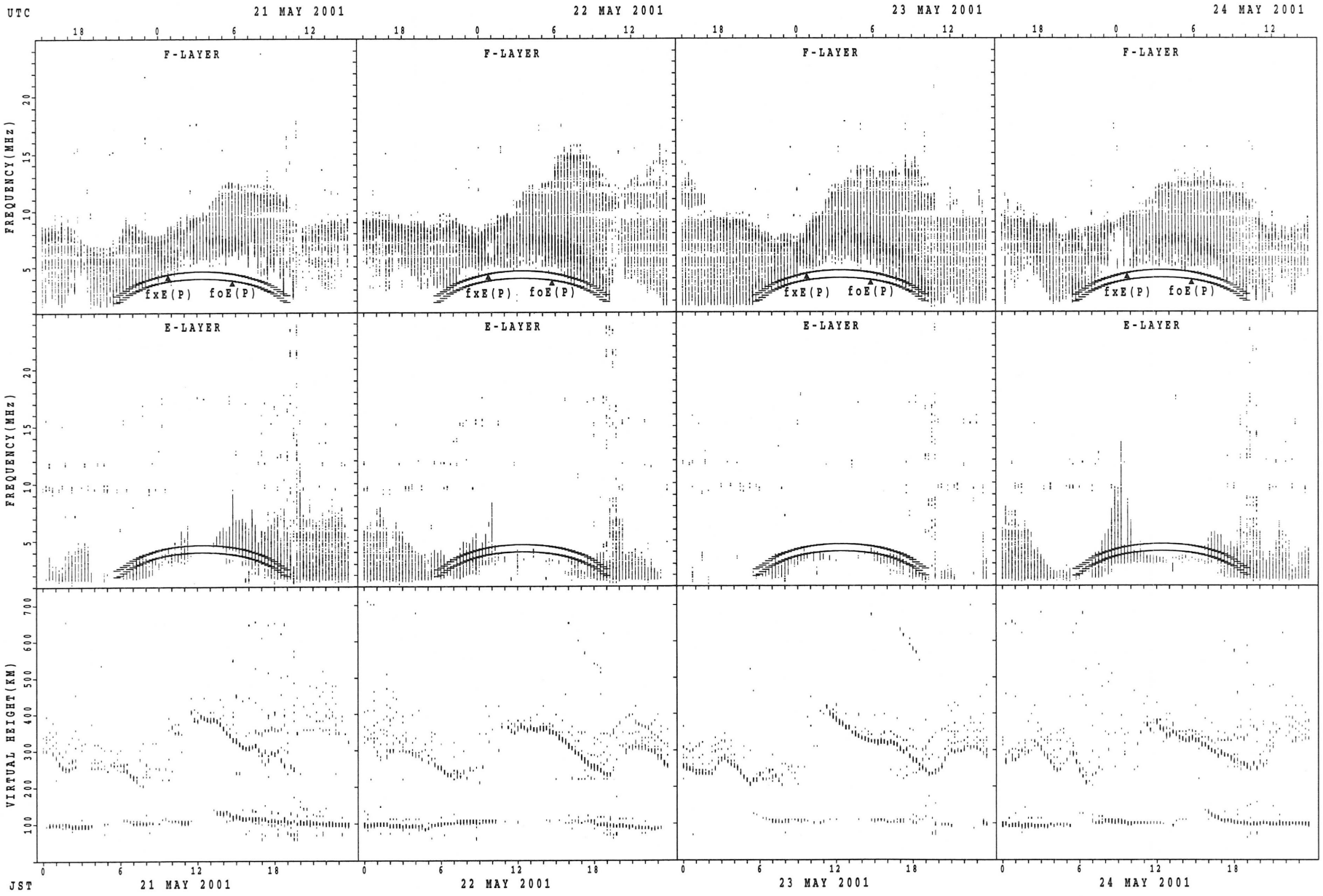

SUMMARY PLOTS AT Okinawa
UTC
JST
13 MAY 2001
14 MAY 2001
15 MAY 2001
16 MAY 2001
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



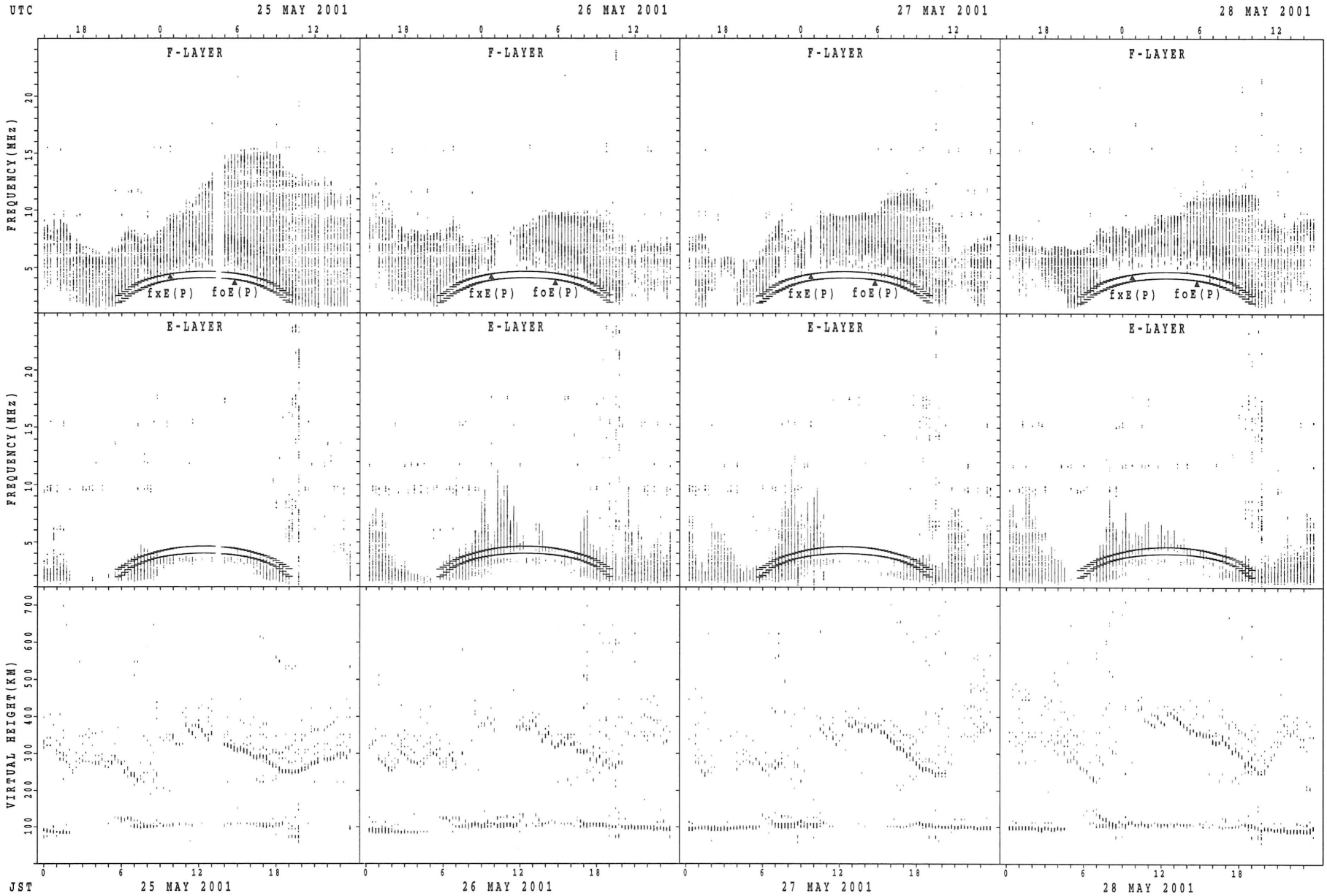
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



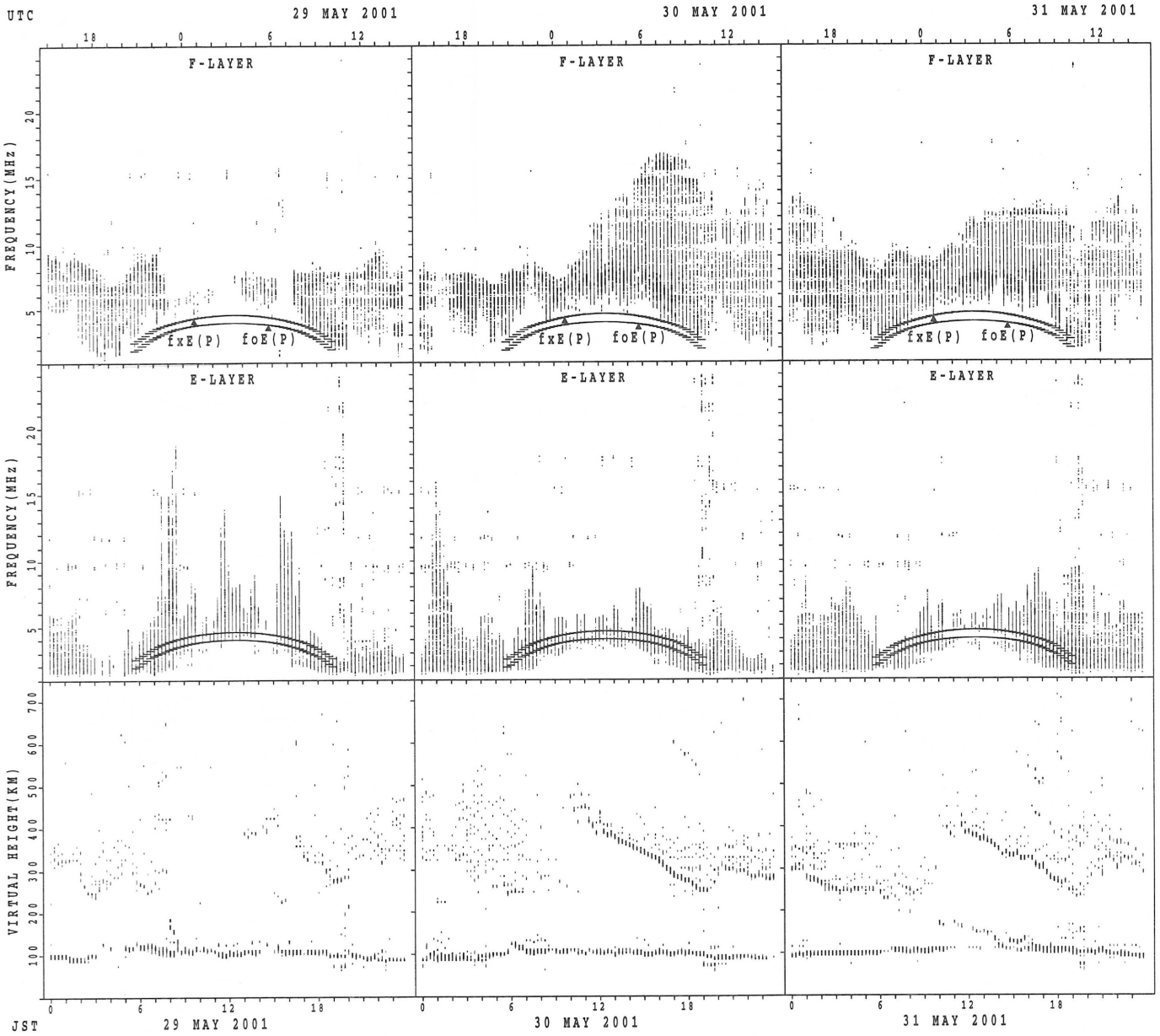
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



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

SUMMARY PLOTS AT Okinawa



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

MONTHLY MEDIANS OF h'F AND h'Es

MAY 2001 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

h'F STATION Wakkanai LAT. 45°23.5'N LON. 141°41.2'E

	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	15	13	11	7	8	13	20	21									20	21	17	21	23	23	15	16
MED	348	366	358	362	333	290	317	306									304	284	284	280	304	314	326	350
U Q	360	386	382	376	351	335	386	334									313	302	295	308	332	360	346	363
L Q	328	356	340	354	314	272	297	276									295	274	279	274	288	302	304	327

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	8	11	5	4	4	8	18	22	25	24	21	6	8	9	9	12	16	19	27	26	24	21	15	14
MED	103	103	103	123	121	126	120	115	111	111	111	109	113	111	107	117	119	117	115	113	112	107	107	105
U Q	107	111	112	137	129	130	125	119	119	113	115	115	117	116	121	124	122	121	119	119	113	113	111	109
L Q	99	103	100	106	112	124	119	113	109	110	107	107	109	107	104	105	113	113	113	111	111	107	105	103

h'F STATION Kokubunji LAT. 35°42.4'N LON. 139°29.3'E

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	19	18	20	10	7	19	26	23	5								29	22	26	27	17	17	16	19
MED	340	338	353	358	356	316	279	278	274								304	295	277	276	308	362	352	346
U Q	368	362	360	392	386	324	330	304	294								317	302	292	288	336	377	361	370
L Q	316	326	310	320	346	280	256	254	269								287	280	266	262	296	322	335	336

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	21	20	16	11	16	18	23	27	19	19	15	18	24	18	15	22	21	28	29	30	28	27	24
MED	105	103	103	103	105	127	120	119	115	113	113	113	116	112	115	117	119	113	114	107	109	109	111	107
U Q	107	105	105	110	115	131	123	123	121	115	115	119	121	118	121	121	125	122	117	111	111	115	113	111
L Q	103	100	99	101	103	116	119	115	111	111	109	107	109	109	109	113	113	111	111	107	107	105	105	105

h'F STATION Okinawa LAT. 26°16.9'N LON. 127°48.4'E

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	23	23	24	21	22	13	22	25	20	17							29	30	30	28	28	21	15	24
MED	318	306	274	288	315	296	272	254	254	274							304	292	274	267	284	312	320	332
U Q	348	334	296	319	360	383	292	270	269	312							318	304	290	280	306	337	336	352
L Q	294	288	260	253	280	260	256	243	246	255							298	286	270	248	267	296	288	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	19	19	18	19	17	12	10	23	20	21	19	16	11	12	14	15	14	15	24	26	25	25	22	24
MED	97	97	96	97	99	103	117	113	111	109	107	107	107	109	114	117	115	111	111	103	103	101	99	98
U Q	103	105	101	101	104	104	121	115	114	113	111	111	119	125	119	129	121	119	113	107	105	105	103	103
L Q	93	91	89	91	96	98	103	111	107	104	105	103	105	106	109	105	109	103	103	97	96	95	91	89

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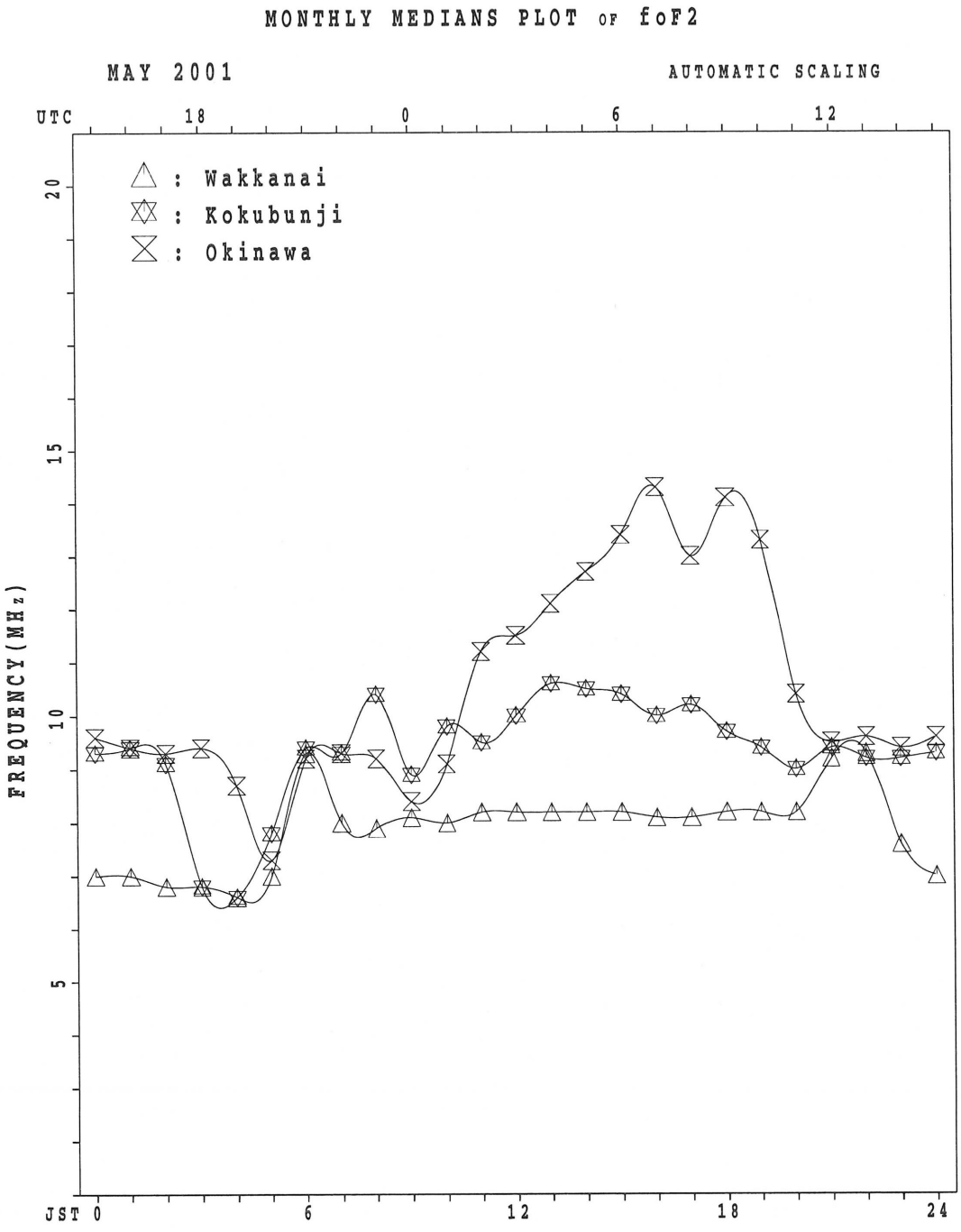
MONTHLY MEDIANS PLOT OF foF2
MAY 2001
AUTOMATIC SCALING
UTC
18
0
6
12
△ : Wakkanai
✡ : Kokubunji
⧖ : Okinawa
FREQUENCY(MHz)
20
15
10
5
JST 0
6
12
18
24

IONOSPHERIC DATA STATION Kokubunji

MAY 2001 fxI (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	X 107	O X 100	X 97	R 82	X 80															X 104	X 93	X 96	X 98	R 86
2	X 98	X 98	X 104	X 92	X 90															X 126	X 113	X 108	O X 101	X 102
3	O X 99	X 100	X 96	X 91	X 86															X 112	X 105	X 103	X 101	X 102
4	X 106	X 97	X 89	X 86	X 86															X 102	O X 88	X 87	X 89	X 92
5	X 87	X 86	X 85	X 77	X 68															X 108	R 86	X 82	X 83	X 83
6	X 85	X 85	X 86	X 74	X 73															X 112	X 100	X 94	X 94	X 94
7	O X 98	X 96	X 95	X 92	X 85															X 99	O X 97	X 92	X 91	X 90
8	X 88	X 88	X 85	X 84	X 82															X 118	X 107	X 109	X 106	X 106
9	X 98	X 104	X 89	X 89	X 82															X 109	O X 90	O X 92	X 91	X 84
10	X 82	O X 78	X 75	X 68	X 70															X 92	X 82	X 78	X 82	X 82
11	X 81	O X 74	X 70	X 57	X 59															X 92	X 84	X 83	X 83	X 85
12	X 79	X 75	X 71	X 65	X 65															X 111	O X 99	X 99	X 98	O X 95
13	X 96	X 110	X 90	X 82	X 74															X 89	X 70	X 69	X 70	X 68
14	O X 65	X 69	X 65	X 61	X 60															X 92	X 88	X 72	O X 74	X 75
15	X 73	X 70	X 66	X 66	X 65															X 108	X 101	X 91	R 88	X 91
16	X 94	X 87	X 81	X 75	X 73															X 110	X 89	X 87	O X 89	X 88
17	X 86	X 84	X 82	X 81	X 78															X 100	X 96	X 88	X 87	O X 85
18	O X 88	R 87	89	X 82	X 78															X 109	X 108	X 98	X 106	X 107
19	X 106	O X 102	X 96	X 82	X 86															X 103	A	X 84	X 86	X 84
20	O X 73	X 75	X 72	X 70	X 71															X 91	X 63	O X 63	X 69	73
21	X 70	X 72	X 65	O X 66	X 66															X 94	X 94	A	X 94	X 86
22	X 80	X 80	X 74	X 71	X 68															X 95	X 82	X 80	X 85	X 86
23	88	X 85	X 79	X 80	X 80															X 96	X 93	O X 92	94	O X 96
24	X 90	X 88	X 83	X 85	X 77															X 87	X 85	X 84	X 81	X 78
25	X 75	X 74	X 70	X 66	X 66															A	A	X 86	X 88	X 87
26	X 90	X 80	X 76	X 72	X 73															X 71	A	X 77	X 77	O X 76
27	X 75	X 76	70	X 69	O X 64															A	O X 78	O X 76	X 78	X 80
28	X 79	O X 77	X 72	X 68	X 68															X 93	R 86	X 90	X 89	X 88
29	X 89	X 85	X 85	X 80	X 85															X 72	X 73	A	X 75	X 73
30	X 73	X 72	X 70	X 67	X 70															X 105	X 94	X 91	R 90	X 96
31	X 90	X 82	X 76	X 74	X 74															X 106	X 90	X 90	X 94	O X 97
	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															29	28	29	31	31
MED	X 88	X 85	X 81	X 75	X 73															X 102	X 90	X 88	X 89	X 86
U Q	X 96	X 96	X 89	X 82	X 82															X 109	X 98	X 93	X 94	X 95
L Q	X 79	X 75	X 71	X 68	X 68															X 92	X 84	X 81	X 82	X 82

MAY 2001 fxI (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 2001 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	R 101	S 94	91	R	74	81	100	96	95	90	99	106	112	120	116	119	114	112	106	98	87	90	92	R
2	92	92	S 98	86	84	91	103	110	110	110	122	128	124	126	126	125	128	126	128	R 120	107	R 102	S 95	96
3	R 93	94	90	85	R 80	95	110	116	114	113	117	123	126	126	124	124	121	116	117	106	99	S 97	R 95	S 95
4	R 100	91	83	80	80	92	98	111	115	112	120	117	110	109	107	109	108	108	109	R 96	82	81	83	86
5	81	80	79	71	62	68	82	96	105	109	110	108	107	116	110	107	104	97	98	102	R	R 75	R 77	R 77
6	R 79	79	R 80	68	67	72	95	R 121	107	94	100	108	116	116	116	122	122	122	122	106	94	S 88	88	89
7	R 92	90	89	R 86	79	83	91	104	107	106	111	112	114	118	R	132	136	130	112	93	R 91	86	R 84	84
8	82	82	79	R 78	U R 76	81	93	100	106	97	102	111	119	117	120	122	123	118	113	112	101	103	S 100	S 100
9	S 92	R 98	83	83	R 76	86	92	93	106	106	104	118	134	R 134	138	137	130	122	113	103	84	86	85	U R 78
10	R 76	S 72	68	62	64	65	R 77	71	58	A	69	R 80	88	91	94	90	84	79	A	85	76	S 72	76	R 76
11	75	68	R 64	51	53	F 57	66	F	R 76	71	79	88	91	97	104	102	92	92	84	86	R 78	77	77	R 79
12	R 73	69	R 65	60	58	63	71	82	97	82	81	84	93	100	104	108	113	110	107	105	R 93	93	S 92	R 89
13	R 90	U R 104	84	R 76	68	72	F 70	A	59	A	58	R 63	74	77	82	87	80	85	84	83	64	63	R 64	62
14	U R 59	R 63	59	R 55	54	58	65	59	R 63	77	70	78	86	86	77	76	74	72	79	86	82	66	68	69
15	67	64	R 60	60	59	68	84	91	86	84	83	86	98	100	104	102	97	94	92	102	94	85	R	R 85
16	88	81	75	R 69	R 66	73	S 94	93	94	80	86	90	101	110	105	106	R 96	100	110	104	83	81	R 83	R 82
17	80	78	76	75	73	76	83	86	86	82	85	R 92	95	97	96	100	C	C	C	94	R 90	82	81	S 79
18	R 82	R	F	R 77	72	80	88	88	93	A	92	102	108	R 107	116	112	108	106	105	103	102	S 92	S 100	S 101
19	R 100	S 96	90	R 76	80	84	92	95	87	83	90	99	106	113	122	119	107	94	95	R 97	A	R 78	80	78
20	U R 67	69	65	64	65	80	82	65	62	62	54	64	68	R 68	73	78	77	81	84	85	57	S 57	R 63	F 64
21	U R 64	66	R 59	60	60	70	79	84	90	85	88	94	103	A	R 110	108	107	104	92	88	88	A	R 88	80
22	R 74	74	68	65	62	71	84	80	75	66	69	R 72	81	87	92	94	92	94	96	89	76	74	79	80
23	F 77	79	73	R 74	R 74	79	94	104	90	R	80	90	99	104	106	103	98	98	92	90	87	R 86	F	90
24	R 84	R 82	77	79	71	77	90	88	70	R 74	80	R 83	R 87	90	88	86	84	86	83	81	R 79	78	75	72
25	69	R 68	R 64	60	60	70	81	77	65	U R 61	R	R 67	72	74	78	77	79	78	78	A	A	80	82	81
26	84	74	R 70	66	67	60	60	71	67	R	A	66	69	73	74	78	76	72	68	65	A	R 71	71	R 70
27	69	R 70	R	65	58	63	72	73	A	A	A	A	A	A	R 66	68	67	69	67	A	S 72	R 70	R 72	S 74
28	S 73	S 71	R 66	R 62	62	F	F	79	91	96	97	94	95	104	106	103	96	93	89	87	R	84	V 82	82
29	83	79	78	R 74	79	F	89	R 74	U R 61	57	E G 48	R	U R 65	R 67	R 58	58	64	A	66	66	67	A	69	R 67
30	R 67	66	64	61	64	70	82	92	88	90	89	93	102	109	108	107	106	108	104	99	88	85	R	R 90
31	R 84	76	70	68	R 68	77	89	R 85	86	90	91	92	98	101	102	104	103	102	A	100	84	84	88	R 91
	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	30	31	29	30	29	30	25	28	29	30	29	30	31	30	29	28	29	26	29	28	30
MED	R 81	78	75	68	67	73	86	88	89	85	88	92	98	104	104	104	100	98	96	96	86	82	82	80
U Q	R 90	90	83	77	76	81	93	98	105	102	101	108	110	116	116	119	113	111	110	103	93	87	88	89
L Q	R 73	69	R 65	62	62	68	79	78	70	76	80	R 82	87	88	88	87	84	86	84	86	78	74	76	76

MAY 2001 foF2 (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 2001 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									L	L	L	L	L	U L 588	L	L	L	A						
2									L	L	L	U L 564	A	A	L	L	L							
3									L	L	L	L	L	L	L	L	L	L						
4								L	L	L	L	L	U L 596	L	L	L	A	A						
5								L	L	L	L	U L 580	L	U L 580	L	L	L							
6							L	L		L	L	U L 588	L	L	L	A	A	A						
7								L	L		U L 576	L	U L 644	A	A	A	L							
8									L	L	L	L	A	L	L	L	L							
9								A	A	A	L	U L 560	L	U L 592	U L 608	L		L						
10						U L 408	L	L	U L 492	A	U L 556	A	L	A	U L 524	U L 480	L		A					
11							L	A	L	L	U L 560	528	U L 540	524	U L 532	U L 512	L							
12							L	L	L	L	L	L	U L 560	U L 564	U L 536	U L 532	A	A						
13						A	A	A	A	A	U L 528	A	U L 528	U L 516	U L 532	L	L	A						
14							L	U L 496	U L 548	U L 580	524	U L 536	536	536	L	L	L	L						
15								L	L	L	U L 604	A	A	A	A	L	L	L						
16						L	L	L	L	A	L	U L 564	A	U L 532	L	L	L	A						
17									L	A	L	U L 548	L	U L 552	L	A	C	C	C					
18									A	A	A	L	L	A	A	U L 524	A	A						
19								L	L	A	A	A	A	A	A	L	A	A						
20								L	A	U L 532	A	A	A	A	516	A	U L 488	A	A					
21								L	A	A	U L 580	U L 568	A	A	U L 564	A	A	A						
22						L	L	U L 492	U L 504	U L 560	U L 580	580	U L 536	A	A	U L 528	L	A	A					
23							L	A	A	A	U L 620	A	A	A	U L 556	A	A	A	A					
24							L	L	A	A	U L 528	U L 576	A	U L 556	A	L	L	L						
25							L	U L 472	A	512	U L 520	U L 536	U L 524	U L 540	U L 536	U L 524	L	L	A	A				
26						L	A	A	A	A	A	U L 552	556	548	508	516	L	L						
27								A	A	A	A	A	A	A	U Y 564	528	U L 460	A	L					
28							A	A	U L 548	L	A	U L 580	U L 556	U L 548	U L 552	U L 524	L	L						
29							U L 428	452	488	516	484	512	524	520	U L 504	A	476	A	L					
30								L	A	A	L	U L 596	U L 560	A	A	A	A	A						
31						L	L	L	U L 516	U L 548	U L 628	L	L	U L 544	U L 560	U L 504	A	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						1	1	4	6	6	13	16	12	15	14	10	3							
MED						U L 408	U L 428	U L 482	U L 510	U L 540	U L 560	U L 564	U L 548	U L 548	U L 536	U L 524	U L 476							
U Q								U L 494	U L 548	U L 560	U L 592	U L 580	U L 560	U L 564	U L 560	U L 528	U L 488							
L Q								462	492	516	526	U L 542	532	532	524	U L 512	U L 460							

MAY 2001 foF1 (0.01MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 2001 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						B	U R 256	U R 320	R	R	R	B	R	A	R	R	U A 328	272	B					
2						B	U R 288	A	R	R	B	B	B	B	R	R	R	280	U R 176					
3						B	264	312	352	R	R	A	A	A	A	R	R	276	B					
4						B	252	U R 324	356	R	B	B	B	B	R	R	U R 328	272	B					
5						B	268	320	352	U R 380	B	R	B	B	B	R	R	276	A					
6						B	260	312	R	R	B	B	B	B	R	U R 348	316	264	B					
7						B	264	320	U R 344	A	A	R	B	B	R	R	R	268	200					
8						B	260	304	340	R	B	B	A	A	A	A	A	A	A					
9						B	248	300	R	U A 352	A	A	A	A	R	R	U R 324	272	U A 204					
10						196	260	304	U R 344	U R 360	R	B	B	B	B	R	R	264	B					
11						B	256	300	A	A	A	R	B	A	U R 372	R	A	280	U R 160					
12						U A 192	U R 252	300	U A 336	R	R	R	R	R	R	U R 336	U R 324	268	176					
13						B	A	296	R	B	A	R	R	R	R	R	R	260	172					
14						172	252	A	A	R	R	R	R	R	A	R	R	264	U A 188					
15						176	U R 260	304	R	A	R	A	A	A	A	A	A	R	U R 180					
16						180	284	320	U R 348	A	A	B	R	A	B	R	A	272	188					
17						U R 200	U A 264	U R 308	R	R	R	B	R	R	R	U R 360	C	C	C					
18						196	288	U R 332	U R 356	R	B	B	B	B	B	R	R	276	192					
19						U R 180	268	324	R	A	R	R	B	B	R	U R 348	A	280	B					
20						B	272	R	360	R	R	B	B	B	B	B	A	A	A					
21						U R 204	260	312	348	R	R	R	B	B	R	360	A	U A 272	188					
22						U R 184	268	304	344	R	A	A	A	A	A	A	U R 320	U R 280	A					
23						B	U R 252	308	A	A	A	A	A	A	R	R	U R 336	A	B					
24						B	268	316	A	R	R	R	R	R	A	A	A	A	204					
25						200	268	312	A	R	A	A	R	A	A	U R 368	U R 344	284	B					
26						204	276	U R 320	A	A	A	B	B	B	R	356	A	A	B					
27						U R 160	272	312	A	A	A	A	A	A	R	R	R	300	220					
28						204	272	U R 320	U R 352	R	R	R	B	B	R	R	U R 312	U R 292	U R 228					
29						U A 196	U R 264	A	R	372	R	B	R	R	R	R 380	340	276	196					
30						204	U R 272	316	R	R	A	B	B	U R 368	U A 356	A	A	A	B					
31						U R 188	256	308	U R 340	R	R	A	A	R	B	U R 364	R	276	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						17	30	27	14	4				1	2	9	10	23	15					
MED						196	264	312	348	U 366				U R 368	U 364	U R 360	U R 326	276	188					
U Q						202	272	U R 320	352	376						U R 366	U R 336	280	204					
L Q						180	256	304	344	U 356						U R 348	U R 320	268	176					

MAY 2001 foE (0.01MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 2001 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	JA 36	JA 60	JA 49	JA 38	EB 13	EB 15	G	G 30	45	G 33	G 28	EB 47	G 33	JA 51	42	G 34	45	40	JA 44	JA 33	JA 29	JA 30	JA 22	JA 30
2	JA 28	EB 16	20	EB 14	EB 15	21	G 25	38	G 28	G 36	EB 45	EB 46	68	JA 64	46	G	49	JA 44	JA 29	JA 42	JA 24	JA 29	JA 44	JA 65
3	EB 15	JA 27	JA 37	JA 24	EB 16	18	JA 54	JA 55	49	48	44	JA 53	JA 53	JA 51	JA 44	G 34	G 29	31	JA 31	JA 26	JA 26	38	JA 20	EB 16
4	EB 15	EB 16	EB 15	EB 15	EB 14	EB 15	29	G 28	41	G 32	EB 45	EB 46	EB 46	45	JA 62	50	JA 51	JA 52	JA 34	JA 38	JA 31	JA 49	JA 59	EB 15
5	JA 16	JA 24	JA 18	EB 14	JA 19	22	39	36	42	40	EB 44	G 33	EB 43	EB 43	EB 42	G 29	G 20	39	33	JA 29	JA 33	JA 48	JA 52	EB 15
6	EB 16	EB 12	EB 16	EB 16	EB 16	19	29	36	44	JA 47	59	44	51	52	48	JA 126	JA 75	JA 98	JA 59	JA 54	JA 73	JA 52	JA 66	JA 50
7	EB 15	EB 16	EB 15	EB 11	EB 16	23	32	42	46	43	JA 46	G 39	EB 44	55	JA 116	JA 60	JA 47	34	33	JA 41	42	JA 52	69	JA 44
8	JA 22	EB 14	EB 15	EB 14	EB 16	20	32	44	49	39	EB 46	46	JA 75	JA 70	JA 52	JA 52	JA 52	JA 30	JA 34	JA 53	JA 38	22	21	20
9	EB 15	EB 16	EB 14	EB 15	JA 27	22	32	72	60	JA 65	JA 49	JA 50	JA 53	JA 79	G	G 27	35	33	28	JA 30	JA 43	JA 56	JA 42	JA 80
10	JA 49	JA 52	JA 32	JA 22	EB 14	25	34	JA 46	45	JA 67	49	JA 88	50	JA 63	50	G 23	GJ A 40	JA 48	JA 100	JA 105	JA 110	JA 63	JA 51	JA 81
11	JA 40	JA 23	JA 44	JA 17	JA 22	20	34	45	JA 53	JA 41	G 39	42	EB 44	JA 48	41	42	38	31	30	JA 26	JA 43	JA 49	JA 65	JA 84
12	23	JA 29	26	JA 34	JA 22	26	32	41	JA 46	JA 45	43	G 33	G 32	G 31	40	39	JA 54	JA 60	JA 67	79	JA 50	JA 53	JA 34	EB 13
13	EB 16	JA 26	JA 21	24	JA 41	JA 61	JA 53	72	47	48	52	50	G 32	JA 54	G 25	G 29	42	JA 84	JA 45	JA 66	JA 35	JA 37	EB 15	BJ A 52
14	JA 46	JA 22	JA 80	JA 54	JA 37	24	35	37	39	39	G	JA 46	G 38	G 39	39	G	G 29	33	JA 37	JA 47	40	EB 14	BJ A 26	JA 25
15	JA 20	21	EB 14	EB 15	JA 17	21	31	36	47	JA 50	47	65	48	66	JA 78	JA 41	JA 45	G 23	50	JA 34	28	JA 34	JA 31	JA 48
16	JA 28	JA 19	JA 21	EB 15	EB 15	22	33	38	42	JA 54	44	46	58	46	EB 42	G 33	44	JA 44	JA 37	32	18	JA 48	JA 44	JA 36
17	JA 30	JA 28	JA 25	JA 25	JA 25	JA 25	33	33	42	JA 56	JA 62	48	JA 50	G 33	44	JA 56	C	C	C	58	JA 36	JA 46	JA 56	JA 64
18	JA 63	JA 53	JA 48	JA 31	JA 24	JA 23	32	44	JA 57	JA 88	60	44	51	JA 78	JA 54	G 31	GJ A 66	JA 66	JA 56	JA 66	JA 76	JA 80	JA 22	JA 22
19	EB 12	JA 24	JA 21	JA 21	19	24	33	44	44	JA 66	68	58	JA 68	JA 72	JA 94	42	JA 63	JA 65	JA 69	JA 48	JA 89	JA 32	JA 35	JA 23
20	JA 29	JA 26	EB 18	EB 14	JA 20	22	33	40	JA 60	47	48	55	54	52	EB 44	JA 52	JA 39	JA 61	JA 49	JA 23	JA 28	JA 53	JA 49	JA 48
21	JA 46	JA 21	JA 20	20	JA 19	JA 24	33	JA 48	51	JA 62	JA 51	46	66	JA 118	G 31	JA 64	JA 160	JA 92	JA 36	JA 54	JA 64	JA 127	74	JA 37
22	JA 23	JA 16	21	20	EB 14	23	31	39	JA 48	43	JA 66	44	JA 49	JA 80	JA 58	JA 39	38	JA 75	JA 82	JA 165	JA 110	66	38	46
23	JA 22	JA 24	JA 26	JA 32	JA 28	29	JA 42	66	JA 69	JA 72	56	JA 62	56	JA 58	47	63	JA 60	JA 114	JA 80	JA 182	JA 89	84	66	38
24	22	JA 29	JA 33	JA 26	EB 14	21	33	39	JA 54	JA 56	JA 53	48	71	JA 54	79	JA 52	41	38	30	JA 50	55	54	48	JA 27
25	21	EB 15	JA 22	EB 14	21	25	33	44	JA 61	G 33	JA 49	JA 62	G 36	JA 59	JA 63	G 31	40	JA 73	JA 58	JA 85	JA 89	JA 67	JA 54	85
26	JA 60	JA 29	JA 31	JA 31	EB 16	35	JA 49	JA 74	JA 126	JA 124	JA 128	EB 44	45	50	46	43	JA 47	JA 44	JA 47	JA 52	97	99	46	53
27	JA 40	JA 68	JA 40	JA 31	JA 24	24	36	JA 64	70	JA 96	JA 99	JA 165	JA 144	JA 182	G 27	G 33	G 25	38	34	JA 88	JA 52	JA 34	EB 18	30
28	JA 29	JA 22	JA 45	JA 26	EB 14	30	JA 50	JA 52	46	JA 61	JA 82	49	48	48	45	39	34	G 27	G 17	JA 17	27	50	53	48
29	JA 53	JA 47	JA 30	EB 16	19	28	JA 36	43	43	44	G	EB 45	46	G 31	48	54	45	JA 124	28	JA 25	JA 40	JA 87	50	41
30	JA 43	JA 61	JA 33	JA 22	23	23	33	JA 45	55	JA 56	JA 56	EB 43	EB 45	79	JA 61	JA 60	JA 56	JA 49	JA 37	JA 55	JA 40	JA 32	28	40
31	JA 34	JA 25	EB 16	22	EB 16	23	36	37	JA 64	42	48	JA 92	JA 56	49	50	JA 81	73	JA 88	JA 110	JA 79	JA 24	28	29	EB 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	30	30	30	31	31	31	31	31
MED	JA 28	JA 24	JA 22	21	19	23	33	43	47	JA 48	49	46	50	JA 54	46	41	45	JA 46	JA 37	JA 50	JA 40	JA 49	JA 44	JA 40
U Q	JA 40	JA 29	JA 33	JA 26	JA 23	25	JA 36	JA 48	JA 57	JA 62	JA 59	JA 55	56	JA 70	JA 58	JA 54	JA 54	73	58	JA 66	JA 73	63	54	JA 52
L Q	EB 16	EB 16	EB 18	EB 15	EB 15	21	32	37	44	41	44	44	G 44	48	42	G 33	38	34	33	JA 32	JA 29	JA 34	28	EB 23

MAY 2001 foEs (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 2001 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	25	47	41	27	E B 13	E B 15	G	G 30	44	U Y 33	U Y 28	E B 47	G 33	47	41	U Y 34	42	39	40	29	28	20	18	19
2	18	E B 16	E B 15	E B 14	E B 15	20	G 25	35	G 28	U Y 36	E B 45	E B 46	63	63	45	G	48	40	27	40	20	22	30	44
3	E B 15	E B 15	29	21	E B 16	U Y 18	52	46	48	46	44	51	46	48	42	G 33	G 28	29	29	22	23	36	18	E B 16
4	E B 15	E B 16	E B 15	E B 15	E B 14	E B 15	28	G 28	41	G 32	E B 45	E B 46	E B 46	45	57	50	48	50	31	35	25	47	24	E B 15
5	E B 16	19	E B 14	E B 14	16	21	38	35	40	40	E B 44	U Y 33	E B 43	E B 43	E B 42	G 29	U Y 20	36	33	25	22	26	22	E B 15
6	E B 16	E B 12	E B 16	E B 16	E B 16	U Y 19	28	34	42	45	54	44	49	51	48	116	64	78	54	48	62	48	42	27
7	E B 15	E B 16	E B 15	E B 11	E B 16	21	30	40	44	42	44	U Y 39	E B 44	U Y 55	88	57	44	30	31	38	38	36	59	16
8	E B 14	E B 14	E B 15	E B 14	E B 16	20	28	42	48	U Y 39	E B 46	U Y 46	70	48	48	48	35	28	32	40	24	E B 15	E B 15	E B 16
9	E B 15	E B 16	E B 14	E B 15	E B 14	20	31	67	56	62	46	48	49	47	G	U Y 27	34	32	26	26	40	44	39	66
10	35	43	18	18	E B 14	G 19	30	42	44	A A 67	48	73	50	57	50	G 23	39	44	A A 100	64	31	48	32	30
11	23	18	26	E B 12	E B 13	19	33	43	48	41	U Y 39	41	E B 44	46	41	40	36	30	29	21	31	22	28	62
12	E B 16	21	23	23	E B 15	22	30	40	43	43	42	U Y 33	G 32	U Y 31	U Y 40	U Y 39	52	59	64	73	36	26	32	E B 13
13	E B 16	21	E B 14	E B 16	21	58	50	A A 72	47	A A 48	48	U Y 50	G 32	43	G 25	G 29	41	78	29	63	31	34	E B 15	22
14	36	20	38	22	25	21	34	34	36	37	G	44	G 38	U Y 39	U Y 39	G	G 29	31	34	45	19	E B 14	E B 14	18
15	E B 13	16	E B 14	E B 15	E B 13	19	27	35	45	47	43	63	U Y 48	63	73	40	40	G 23	45	28	25	20	25	22
16	21	16	18	E B 15	E B 15	20	31	37	40	52	44	45	57	46	E B 42	G 33	44	42	35	31	16	22	25	28
17	22	19	20	20	19	20	30	32	40	50	60	46	48	G 33	43	53	C	C	C	45	24	38	16	51
18	56	47	39	27	19	G 17	30	41	55	A A 88	U Y 60	43	49	66	54	G 28	55	61	51	30	65	47	E B 16	18
19	E B 12	E B 15	16	17	17	22	32	42	44	64	63	U Y 58	66	70	90	41	50	62	67	41	A A 89	24	30	E B 16
20	18	23	E B 18	E B 14	17	21	31	38	52	46	U Y 48	54	54	U Y 52	E B 44	51	U Y 39	58	45	19	23	45	34	29
21	E B 15	E B 14	16	E B 14	15	G 18	32	38	49	48	46	46	65	A A 118	U Y 31	62	74	82	33	45	43	A A 127	57	22
22	E B 14	16	16	E B 14	E B 14	22	28	38	42	42	52	44	46	53	53	38	36	65	62	74	43	40	30	21
23	E B 14	E B 16	15	19	20	26	40	60	67	60	54	56	49	56	46	62	51	90	51	23	40	47	48	23
24	16	20	30	20	E B 14	21	32	38	49	53	48	48	68	48	75	46	40	36	28	42	44	41	44	E B 14
25	E B 14	E B 15	E B 15	E B 14	18	23	31	43	52	U Y 33	45	45	U Y 36	50	49	U Y 31	38	57	47	A A 85	A A 89	40	31	61
26	45	19	27	22	E B 16	33	46	67	63	52	A A E B 128 44		U Y 45	49	45	42	43	42	39	33	A A 97	18	21	18
27	19	36	34	23	16	22	35	62	A A 70	A A 96	A A 99	A A 165	A A 144	A A 182	U Y 27	U Y 33	U Y 25	37	32	A A 88	41	20	E B 18	24
28	25	17	29	22	E B 14	28	43	50	46	52	80	48	48	48	44	U Y 39	33	G 27	G 17	16	22	21	28	17
29	19	33	24	E B 16	E B 14	26	33	40	42	43	G	E B 45	44	U Y 31	47	52	45	A A 124	26	19	29	A A 87	20	28
30	29	E B 16	24	E B 15	19	22	31	41	53	52	47	E B 43	E B 45	78	58	54	54	46	34	48	35	24	22	26
31	20	E B 15	E B 16	16	E B 16	22	34	36	43	40	47	53	55	47	47	42	67	47	A A 110	53	21	19	27	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	30	30	30	31	31	31	31	31
MED	16	16	18	E B 16	E B 16	21	31	40	45	46	46	46	48	48	45	40	42	43	34	40	31	34	27	22
U Q	23	21	27	21	17	22	34	43	52	52	54	51	55	57	53	51	50	61	51	48	43	45	32	28
L Q	E B 15	E B 16	E B 15	E B 14	E B 14	19	30	35	42	40	44	44	44	46	41	G 33	36	32	29	26	23	21	E B 18	E B 16

MAY 2001 fbEs (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 2001 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	14	16	15	15	13	15	16	18	20	21	22	47	18	31	26	22	18	16	15	16	14	14	13	16
2	14	16	15	14	15	16	16	19	17	23	45	46	43	42	28	21	21	15	14	15	12	16	16	13
3	15	15	15	12	16	14	14	20	14	24	22	23	28	31	18	28	19	16	15	14	14	14	14	16
4	15	16	15	15	14	15	15	20	23	24	45	46	46	42	32	28	19	16	15	16	15	15	14	15
5	16	15	14	14	14	16	16	15	20	22	44	22	43	43	42	22	17	18	16	16	15	16	15	15
6	16	12	16	16	16	15	18	18	27	20	42	39	42	42	28	19	24	15	17	16	19	14	15	15
7	15	16	15	11	16	16	19	16	22	21	21	25	44	44	25	25	18	14	15	16	14	15	15	13
8	14	14	15	14	16	16	16	14	21	28	46	42	39	34	22	19	15	14	11	16	14	15	15	16
9	15	16	14	15	14	15	16	15	18	19	20	24	35	35	21	19	15	14	14	14	14	16	15	15
10	15	14	15	14	14	15	16	16	19	21	30	42	43	40	40	20	19	14	14	16	14	12	16	15
11	13	16	14	12	13	14	14	18	15	22	14	26	44	22	20	20	15	15	13	16	14	16	14	15
12	16	15	15	14	15	15	13	16	18	16	24	28	22	25	28	22	19	19	13	15	15	14	16	13
13	16	15	14	16	15	16	14	17	22	37	23	18	26	24	20	20	16	15	13	16	14	12	15	16
14	16	13	13	13	14	12	16	14	17	18	24	22	30	28	16	28	16	16	14	14	12	14	14	14
15	13	13	14	15	13	14	14	18	21	20	29	38	42	35	33	17	16	15	14	16	14	16	12	15
16	16	12	15	15	15	15	14	17	18	21	30	40	29	32	42	20	20	16	14	16	12	16	12	15
17	15	15	13	15	15	15	16	17	26	22	28	42	36	20	23	15	C	C	C	16	14	15	12	16
18	13	14	14	16	16	13	15	18	23	26	41	40	39	42	41	21	22	14	16	16	16	14	16	15
19	12	15	12	13	13	13	16	18	21	22	28	34	43	40	29	22	20	15	14	16	13	16	12	16
20	15	15	18	14	13	16	15	16	20	22	22	42	42	40	44	40	20	14	14	14	13	12	16	16
21	15	14	15	14	12	14	15	19	18	22	28	26	45	43	21	21	17	15	14	16	13	15	16	16
22	14	14	12	14	14	15	14	17	18	21	22	23	23	28	31	21	15	15	14	16	16	15	14	15
23	14	16	14	15	12	13	18	17	22	23	22	33	39	36	26	16	19	15	13	16	14	15	14	15
24	12	15	13	14	14	15	14	15	19	20	26	25	33	18	22	21	17	16	15	15	16	14	13	14
25	14	15	15	14	15	16	14	18	16	14	33	28	29	33	22	19	18	16	15	16	15	15	15	16
26	15	15	14	15	16	16	14	16	19	23	21	44	42	40	28	18	20	15	14	15	16	16	16	16
27	15	16	14	15	12	13	14	15	18	21	20	22	23	38	23	22	18	15	15	16	15	15	18	15
28	15	14	13	13	14	16	16	15	20	22	30	28	43	42	21	18	18	18	15	12	16	16	15	13
29	12	16	16	16	14	16	16	16	17	21	23	45	29	22	28	18	18	15	15	14	16	14	15	15
30	15	16	16	15	13	16	14	15	15	19	38	43	45	28	22	24	16	15	16	15	15	14	16	14
31	16	15	16	12	16	14	14	18	18	18	24	36	39	30	42	18	16	16	15	13	15	16	12	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	30	30	30	31	31	31	31	31
MED	15	15	15	14	14	15	15	17	19	21	26	34	39	35	26	21	18	15	14	16	14	15	15	15
U Q	15	16	15	15	15	16	16	18	21	23	33	42	43	42	32	22	19	16	15	16	15	16	16	16
L Q	14	14	14	14	13	14	14	15	18	20	22	25	29	28	22	19	16	15	14	15	14	14	14	15

MAY 2001 fmin (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 2001 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	R 280	S 278	289	R	278	306	313	318	323	272	271	263	265	276	270	281	286	291	291	290	270	265	274	R
2	273	276	S 294	289	283	293	306	307	290	266	269	281	271	272	266	266	272	275	286	R 295	283	R 274	S 265	274
3	R 282	289	289	275	R 278	282	305	307	288	267	272	268	270	271	271	279	284	283	297	293	275	S 267	R 263	S 273
4	R 287	287	265	265	255	267	275	284	304	263	278	283	278	279	276	277	279	285	294	R 295	276	257	259	276
5	266	265	284	295	273	278	276	277	277	270	274	281	271	287	286	289	295	297	294	302	R	R 266	R 257	R 264
6	R 263	279	R 295	278	264	268	284	R 320	323	278	261	262	275	274	273	283	288	295	309	305	279	S 281	277	275
7	R 273	276	282	R 284	286	305	317	296	299	281	285	272	266	268	R	278	292	300	298	272	R 277	275	R 276	278
8	262	272	263	R 272	R 296	292	313	308	318	289	279	277	285	281	285	288	293	297	295	298	283	274	S 275	S 266
9	S 270	R 281	268	293	R 269	306	338	306	283	299	268	268	282	R 282	282	287	289	305	297	306	279	268	276	R 257
10	R 267	S 248	251	244	250	246	R 280	292	316	A	249	R 272	281	289	296	309	306	294	A	291	273	S 258	261	R 272
11	279	288	R 282	262	267	F 307	287	F	R 284	280	277	297	281	288	292	299	291	302	298	294	R 281	275	268	R 279
12	R 279	267	R 269	273	271	269	293	295	321	326	308	275	282	284	294	295	300	298	300	294	R 285	269	S 278	R 258
13	R 255	U R 294	269	R 272	251	264	F 274	A	291	A	255	R 266	294	314	310	320	323	306	309	317	276	270	R 265	255
14	R 265	R 254	269	R 275	264	303	315	293	R 223	294	268	278	292	300	291	290	294	295	289	292	307	261	257	269
15	272	270	R 279	279	274	291	319	334	312	318	298	280	278	282	288	286	278	290	280	300	300	275	R	R 262
16	288	278	284	R 283	R 278	278	S 316	308	327	319	290	288	277	291	287	300	R 302	293	308	311	291	270	R 268	R 275
17	269	270	287	294	300	319	311	320	318	309	280	R 285	285	286	281	290	C	C	C	295	R 301	270	284	R 258
18	R 267	R	F	R 288	286	304	321	324	312	A	265	265	267	R 270	286	287	292	292	291	290	292	S 274	S 275	S 278
19	R 287	S 289	303	R 282	285	299	292	311	310	271	273	248	261	264	279	287	292	294	281	R 291	A	R 278	268	278
20	R 290	272	275	278	284	303	340	284	297	264	319	250	258	R 269	276	284	284	284	296	311	312	S 264	R 259	F 275
21	R 276	286	R 279	260	292	312	301	306	290	284	267	264	270	A	R 280	288	291	289	302	284	281	A	R 270	272
22	R 272	277	291	270	264	271	303	271	298	295	261	R 264	275	280	282	280	287	287	307	304	284	254	253	257
23	F 285	281	275	R 269	R 277	279	307	310	292	R	236	256	267	273	276	285	283	294	291	285	279	R 259	F	285
24	R 276	R 285	271	283	264	265	291	301	245	R 272	269	R 277	R 286	R 284	285	291	296	297	292	291	R 259	268	276	266
25	266	R 291	R 292	272	272	306	293	292	277	U R 255	R	R 264	268	283	292	289	301	305	315	A	A	258	260	262
26	281	286	R 269	263	276	257	289	R 252	R 281	R	A	261	267	278	275	288	295	299	289	278	A	R 264	266	R 266
27	268	R 271	R	296	278	309	290	281	A	A	A	A	A	A	R 262	264	276	294	283	A	S 287	R 282	R 276	S 266
28	S 270	S 282	R 265	R 261	254	F	F	237	256	267	270	267	261	269	275	282	279	285	282	282	R	266	V 252	269
29	271	254	273	R 258	258	F	267	R 274	R 296	235	G	R	R 265	R 250	R 256	278	285	A	294	286	272	A	268	R 258
30	R 257	263	271	270	269	326	311	290	269	286	247	256	260	276	280	278	284	297	302	295	281	272	R	R 278
31	R 269	279	285	286	R 273	293	310	R 321	289	291	271	267	268	270	278	281	295	287	A	313	278	264	265	R 273
	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	30	31	29	30	29	30	25	28	29	30	29	30	31	30	29	28	29	26	29	28	30
MED	R 272	278	279	275	273	293	304	301	294	280	270	268	271	279	280	287	291	294	294	294	281	268	268	270
U Q	R 280	286	288	284	283	306	313	310	312	294	278	279	281	285	287	290	295	298	301	303	287	274	276	275
L Q	R 267	270	269	269	264	270	289	284	283	267	263	264	267	270	275	280	284	288	290	290	276	264	260	R 262

MAY 2001 M(3000)F2 (0.01) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 2001 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									L	L	L	L	L	U L 344	L	L	L	A						
2									L	L	L	U L 366	A	A	L	L	L							
3									L	L	L	L	L	L	L	L	L	L						
4								L	L	L	L	L	U L 341	L	L	L	A	A						
5								L	L	L	L	U L 349	L	U L 331	L	L	L							
6							L	L		L	L	U L 345	L	L	L	A	A	A						
7								L	L		U L 339	L	U L 304	A	A	A	L							
8									L	L	L	L	A	L	L	L	L							
9								A	A	A	L	U L 347	L	U L 325	U L 310	L		L						
10						U L 286	L	L	U L 355	A	U L 348	A	L	A	R 332	U L 362	L		A					
11							L	A	L	L	U L 344	363	U L 352	356	U L 350	U L 352	L							
12							L	L	L	L	L	L	U L 348	U L 344	U L 337	U L 332	A	A						
13						A	A	A	A	A	U L 322	A	U L 350	U L 356	U L 345	L	L	A						
14							L	U L 328	U L 309	U L 313	362	U L 350	343	353	L	L	L	L						
15								L	L	L	U L 352	A	A	A	A	L	L	L						
16						L	L	L	L	A	L	U L 354	A	U L 355	L	A	L	A						
17									L	A	L	U L 349	L	U L 344	L	A	C	C	C					
18									A	A	A	L	L	A	A	U L 333	A	A						
19								L	L	A	A	A	A	A	A	L	A	A						
20								L	A	U L 328	A	A	A	A	353	A	U L 335	A	A					
21								L	A	A	U L 334	U L 348	A	A	U L 336	A	A	A						
22						L	L	U L 345	U L 361	U L 349	U L 331	334	U L 362	A	A	U L 335	L	A	A					
23							L	A	A	A	U L 301	A	A	A	U L 333	A	A	A	A					
24							L	L	A	A	R 290	U L 330	A	U L 356	A	L	L	L						
25							L	U L 345	A	367	R 360	U L 371	U L 368	U L 320	U L 328	U L 336	L	A	A					
26						L	A	A	A	A	A	R 348	344	344	373	333	L	L						
27								A	A	A	A	A	A	A	R 311	R 306	R 355	A	L					
28							A	A	U L 334	L	A	U L 343	U L 356	U L 338	U L 333	U L 335	L	L						
29							U L 341	328	339	367	R 418	R 389	377	377	R 292	A	A	A	L					
30								L	A	A	L	U L 336	U L 347	A	A	A	A	A						
31						L	L	L	U L 372	U L 361	U L 329	L	L	U L 360	U L 338	U L 379	A	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						1	1	4	6	6	13	16	12	15	14	10	2							
MED						U L 286	U L 341	U L 336	U L 347	U L 355	U L 339	U L 348	U L 349	U L 344	U L 334	U L 335	345							
U Q								U L 345	U L 361	367	356	U L 358	U L 359	U L 356	345	U L 352								
L Q								328	U L 334	U L 328	U L 326	U L 344	344	U L 338	328	333								

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IONOSPHERIC DATA STATION Kokubunji

MAY 2001 h'F2 (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									274	276	352	354	358	340	342	320	310	288						
2									310	282	356	314	324	336	348	320	322							
3									294	284	346	334	340	342	332	318	302	296						
4								300	272	352	322	334	322	328	340	334	288	282						
5								312	310	302	304	312	340	320	312	314	302							
6							310	270		262	318	336	346	342	338	E A 428	304	300						
7								296	266		306	336	346	364	E A 388	336	288							
8									266	318	340	326	326	326	326	314	284							
9								306	262	288	310	338	326	330	314	306		264						
10						400	342	326	312	A	488	E A 438	370	344	324	294	284		A					
11							326	E A 310	346	376	392	324	350	332	310	286	314							
12							312	308	272	274	294	310	314	334	308	314	298	286						
13						E A 396	E A 376	A	374	A	506	E A 462	344	320	320	298	276	E A 362						
14							274	372	602	352	422	380	332	326	350	348	326	300						
15								264	292	294	330	366	338	322	328	318	290	288						
16						334	268	286	268	260	326	330	340	318	308	296	290	292						
17									272	298	392	334	338	332	314	320	C	C	C					
18									276	A	378	354	364	350	324	310	316	290						
19								284	262	A 380	360	382	376	360	352	300	278	E A 298						
20								336	E A 326	462	332	492	458	E A 452	398	364	352	334	280					
21								296	316	276	358	366	366	A	334	322	314	328						
22						328	296	328	328	412	U R 456	440	392	364	346	336	326	322	288					
23							278	282	274	E A 304	496	408	366	354	338	320	312	E A 382	296					
24							302	296	E A 304	402	388	360	E A 356	352	E A 370	324	314	300						
25							310	314	374	450	U R 474	454	420	392	354	360	314	302	278					
26						404	334	E A 518	E A 444	460	A	476	440	402	390	356	330	326						
27								E A 370	A	A	A	A	A	A	R	448	364	330	304					
28							E A 302	E A 326	380	354	E A 386	370	388	362	348	330	312	326						
29							338	372	362	558	G	620	454	502	510	446	402	A	314					
30								292	274	316	302	408	358	344	326	330	312	300						
31						290	268	242	310	312	372	366	374	338	342	332	306	308	A					
	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						6	15	24	29	26	29	30	30	29	30	31	29	23	6					
MED						U 348	306	302	298	314	357	358	350	341	336	320	312	300	292					
U Q						400	334	327	337	380	407	408	374	361	350	336	319	326	304					
L Q						328	278	289	272	284	324	334	338	329	324	314	290	290	280					

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MAY 2001 h'F (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

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	288	318	294	264	262	242	232	236	242	210	210	216	242	246	E A 244	E A 254	E A 256	A	250	250	272	292	284	294
2	300	286	266	228	254	256	238	244	228	218	232	218	A	A	252	248	E A 290	266	276	266	246	240	308	E A 328
3	274	272	280	280	280	270	254	248	E A 246	A	222	E A 272	246	242	214	244	240	238	272	248	272	294	E A 296	296
4	260	268	282	282	304	262	236	234	E A 238	244	204	240	220	232	A	E A 296	A	A	268	250	256	E A 354	E A 318	284
5	296	304	278	244	266	266	246	232	228	214	222	220	212	228	238	230	254	258	278	258	226	E A 284	E A 316	304
6	304	290	258	252	300	266	244	238	248	A	A	208	266	E A 280	280	A	A	A	262	256	E A 320	E A 314	E A 312	302
7	296	284	260	244	222	242	238	242	E A 248	232	216	238	224	A	A	A	A	252	242	272	308	304	E A 338	256
8	308	298	304	284	262	238	238	246	A	218	238	236	A	E A 268	E A 266	E A 266	E A 236	238	264	256	262	266	278	288
9	288	274	258	262	264	248	230	A	A	A	240	E A 256	E A 280	E A 268	230	246	H E A 234	244	254	238	E A 282	E A 328	300	E A 440
10	E A 326	E A 388	E A 338	E A 336	352	282	260	A	E A 270	A	E A 274	A	E A 296	A	A	236	A	E A 274	A	E A 332	286	E A 372	E A 336	E A 330
11	296	272	270	246	302	276	E A 282	A	A	224	214	216	220	E A 264	234	232	234	256	E A 260	260	284	290	E A 332	E A 376
12	282	324	300	E A 316	292	256	250	E A 256	E A 262	E A 234	212	220	222	208	236	E A 242	A	A	290	E A 300	268	264	E A 310	324
13	322	260	266	274	E A 356	A	A	A	A	A	E A 332	A	238	236	226	224	A	A	264	284	E A 276	E A 326	306	E A 350
14	E A 386	352	E A 344	270	334	258	A	226	208	208	226	240	202	222	226	216	240	246	E A 286	E A 288	248	220	316	304
15	284	288	268	294	292	258	238	232	A	A	212	A	A	A	A	242	E A 248	242	E A 294	272	262	250	286	308
16	278	268	266	268	292	258	246	E A 244	E A 236	A	224	220	A	E A 244	E B 250	234	A	A	266	240	240	284	E A E 308	A 304
17	306	302	278	264	250	240	228	236	222	A	E A 330	250	E A 292	228	E A 256	A	C	C	C	278	264	E A 322	256	E A 336
18	E A 394	E A 324	E A 330	272	260	224	238	240	A	A	A	218	E A 270	A	A	226	A	A	276	242	304	294	272	280
19	268	260	256	244	274	248	236	E A 254	A	A	A	A	A	A	A	244	A	A	E A 326	280	A	278	E A 312	262
20	270	E A 300	296	272	282	244	226	244	A	E A 294	A	A	A	A	222	A	E A 258	A	A	246	216	E A 412	E A 370	A 338
21	300	276	268	302	272	256	238	232	A	A	E A 246	214	A	A	238	A	A	A	256	E A 292	E A 298	A	E A 344	300
22	300	294	272	276	314	252	238	240	228	200	E A 304	214	246	A	A	228	234	A	A	E A 318	E A 290	E A 342	Z 354	322
23	280	270	280	Q 308	276	252	A	A	A	A	E A 338	A	A	A	E A 272	A	A	A	A	268	302	E A E 344	A 354	E A 270
24	Q 282	282	E A 318	284	296	254	238	242	A	A	E A E 386	E A 262	A	E A 256	A	E A 286	E A 254	E A 266	256	284	346	E A 330	E A 314	282
25	294	278	252	284	282	264	246	E A 290	A	216	220	216	230	E A 338	E A 320	244	E A 260	A	A	A	A	E A E 366	A 340	E A 392
26	E A 326	262	E A 298	322	284	E A 352	A	A	A	A	A	228	E A 248	E A 278	244	E A 258	E A 284	E A 290	E A 300	E A 296	A	E A E 302	A 316	E A 288
27	328	E A 372	E A 286	260	242	242	262	A	A	A	A	A	A	A	E B 302	234	198	A	E A 262	A	E A 318	E A 300	274	E A 308
28	E A 312	280	E A 326	E A 338	344	E A 274	A	A	E A 268	E A 314	A	244	E A 252	E A 292	E A 240	E A 250	220	230	262	272	E A 292	296	E A 330	286
29	296	E A 338	E A 308	308	310	296	250	E A 312	E A 272	238	222	240	230	216	E A 368	A	A	A	E A 258	286	312	A	E A 304	E A 350
30	E A 336	310	E A 298	294	292	234	238	E A 250	A	A	E A 250	208	236	A	A	A	A	A	270	264	276	E A 296	290	E A 294
31	290	282	276	Q 278	Q 290	252	E A 232	E A 228	224	206	E A E 254	A 304	A	E A E 268	E A 254	238	A	A	A	264	244	E A E 288	A 316	294
	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	30	26	23	16	15	24	24	20	19	22	23	16	13	24	29	28	29	31	31
MED	292	282	273	274	283	254	238	238	232	216	220	221	230	E A 246	235	237	U 226	247	264	262	269	E A E 296	A 312	295
U Q	E A 312	310	E A 300	294	302	266	246	E A 248	E A 255	238	E A E 264	A 242	E A E 259	A E 268	A E 266	A E 250	A E 257	A E 266	A E 277	A E 285	300	E A E 329	A E 332	A 330
L Q	282	272	266	262	264	244	236	234	228	210	218	216	223	228	234	232	234	240	259	253	259	284	296	288

MAY 2001 h'F (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

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MAY 2001 h'E (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

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						B	116	126	118	122	118	B	124	A	124	A	122	116	B					
2						B	132	A	118	A	B	B	B	B	118	118	120	120	122					
3						B	122	122	124	122	118	A	A	A	A	132	124	120	B					
4						B	126	124	124	128	B	B	B	B	118	122	126	122	B					
5						B	122	122	124	124	B	124	B	B	B	122	120	122	118					
6						B	118	122	120	118	B	B	B	B	118	120	120	118	B					
7						B	126	122	122	118	A	A	B	B	120	120	120	122	128					
8						B	118	124	120	116	B	B	A	A	A	A	A	A	122					
9						B	120	120	118	116	A	A	A	A	120	118	124	118	118					
10					126	122	124	122	118	118	B	B	B	B	122	124	122	B						
11						B	122	122	120	120	A	A	B	A	122	124	122	122	118					
12					E A 134	130	122	118	A	118	120	120	120	120	116	116	122	124	118					
13						B	122	120	118	B	A	118	124	118	118	118	122	122	118					
14					130	118	120	120	120	120	118	122	118	120	A	116	122	124	122					
15					E B 134	120	118	120	120	120	126	A	A	A	A	A	A	120	120					
16					128	118	120	122	120	124	B	120	A	B	124	A	126	124						
17					E A 130	122	120	118	120	120	B	122	122	126	124	C	C	C						
18					E A 132	120	126	122	120	B	B	B	B	B	122	128	120	122						
19					116	128	122	122	A	A	124	B	B	120	120	124	118	B						
20						B	124	122	122	120	120	B	B	B	B	B	118	A	A					
21					128	118	118	116	118	118	A	B	B	124	120	122	120	120						
22					122	132	128	120	118	A	A	A	A	A	A	122	122	A						
23						B	118	120	A	A	A	A	A	A	122	126	128	A	B					
24						B	122	124	120	118	124	122	120	120	A	A	122	A	118					
25					124	126	124	A	120	A	A	A	A	A	A	122	122	120	B					
26					130	120	122	A	A	A	B	B	B	120	120	120	A	B						
27					128	124	122	122	A	A	A	A	A	A	118	134	122	126	126					
28					126	126	120	120	120	122	118	B	B	118	124	120	124	122						
29					132	124	120	118	108	120	B	116	A	120	108	116	122	118						
30					E A 134	124	124	122	120	A	B	B	122	120	A	118	A	B						
31					122	120	122	124	118	124	A	A	118	B	120	124	122	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						17	31	30	28	24	14	7	8	7	18	24	27	24	17					
MED						126	122	122	120	120	120	122	120	120	120	121	122	122	120					
U Q						E A 132	126	124	122	120	124	124	123	122	122	124	124	122	122					
L Q						125	120	120	118	118	118	118	119	118	118	119	120	120	118					

IONOSPHERIC DATA STATION Kokubunji

MAY 2001 h'Es (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	100	98	100	100	B	B	G	108	118	110	108	B	108	112	128	104	132	122	112	116	110	102	110	106
2	108	B	108	B	B	152	112	124	108	112	B	B	118	118	130	G	122	118	114	108	108	106	106	104
3	B	100	104	104	B	134	118	114	116	116	118	108	110	108	106	112	114	148	118	112	114	108	110	B
4	B	B	B	B	B	B	152	108	132	110	B	B	B	140	120	122	116	114	114	108	108	108	110	B
5	106	104	106	B	102	146	128	138	128	126	B	112	B	B	B	112	110	124	118	112	110	110	112	B
6	B	B	B	B	B	146	148	130	122	120	112	116	120	124	128	116	116	112	112	110	110	112	110	108
7	B	B	B	B	B	136	138	130	120	120	110	110	B	128	114	114	118	142	138	108	110	108	108	108
8	104	B	B	B	B	144	134	122	116	124	B	116	108	108	108	108	100	102	118	112	108	112	104	100
9	B	B	B	B	120	134	132	116	114	112	108	108	108	108	G	112	150	130	124	110	108	110	110	106
10	106	104	108	130	B	136	130	124	124	116	118	112	122	114	118	108	150	126	118	112	112	110	108	106
11	102	106	100	110	114	140	128	126	114	118	106	114	B	106	134	126	122	156	128	114	110	112	106	108
12	106	98	96	102	116	128	126	120	118	118	112	112	110	110	126	118	134	124	112	112	112	110	108	B
13	B	108	110	126	104	120	116	112	114	112	112	118	110	122	108	110	130	114	114	108	110	110	B	116
14	110	104	120	118	120	130	124	118	120	114	G	114	116	122	108	G	110	134	114	108	110	B	114	110
15	108	110	B	B	108	150	126	128	118	118	118	108	114	108	104	108	108	110	120	112	112	108	104	106
16	100	100	98	B	B	138	138	124	124	114	118	116	110	108	B	112	110	126	122	114	112	106	108	102
17	102	102	100	100	104	104	122	132	118	108	120	148	144	108	140	122	C	C	C	108	112	106	112	104
18	102	98	98	94	98	100	152	134	124	114	116	122	116	120	114	110	120	116	112	110	110	112	110	104
19	B	108	100	106	102	156	142	128	128	122	122	126	120	116	114	130	128	112	110	106	108	104	112	114
20	110	106	B	B	108	146	140	130	124	130	128	120	116	114	B	122	118	108	110	108	108	116	112	112
21	118	108	104	106	104	106	124	124	114	114	116	118	128	116	110	122	116	114	118	116	110	106	108	110
22	106	108	106	104	B	148	148	120	114	114	104	112	108	106	110	108	134	114	110	120	110	108	114	106
23	114	108	106	102	102	102	116	110	108	106	194	110	110	108	150	132	126	108	110	104	104	112	114	104
24	106	104	104	104	B	130	124	120	118	116	116	120	112	112	112	114	120	130	118	110	112	108	106	118
25	108	B	108	B	104	128	124	116	106	104	108	108	112	108	104	110	148	112	110	106	106	108	106	102
26	102	102	100	102	B	124	118	118	108	108	104	B	120	118	120	116	112	108	106	120	102	112	106	104
27	102	100	100	102	106	140	138	120	114	108	104	102	106	110	106	108	110	178	130	112	110	116	B	106
28	106	104	104	106	B	142	124	120	120	112	114	118	120	118	122	128	120	110	112	110	108	112	116	116
29	122	112	112	B	158	132	134	126	126	118	G	B	118	108	126	130	130	114	116	110	108	110	110	108
30	104	104	102	104	110	152	136	126	118	112	108	B	B	110	110	110	110	108	106	104	106	104	104	106
31	108	106	B	106	B	134	114	124	116	122	114	106	112	126	138	120	122	114	106	104	106	104	104	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	24	24	23	19	17	29	30	31	31	31	25	25	26	30	27	29	30	30	30	31	31	30	29	26
MED	106	104	104	104	106	136	128	124	118	114	114	114	113	112	114	114	120	114	114	110	110	109	110	106
U Q	108	108	108	106	115	146	138	128	124	118	118	118	120	118	128	122	130	126	118	112	110	112	112	110
L Q	102	101	100	102	103	128	124	118	114	112	108	109	110	108	108	110	112	112	110	108	108	106	106	104

IONOSPHERIC DATA STATION Kokubunji

MAY 2001 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

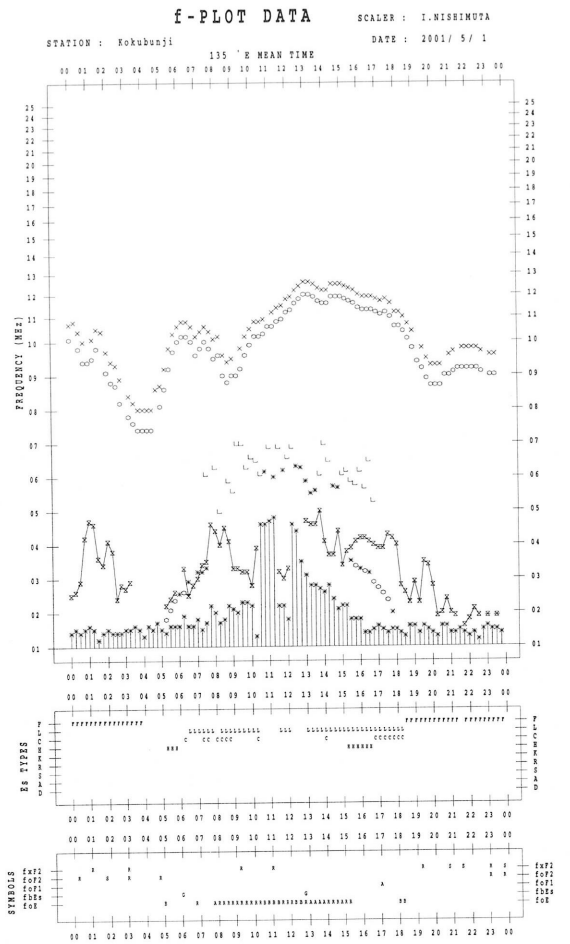
LAT.35°42.4'N LON.139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

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	F3	F2	F2	F3				L1	C1	L1	L1		L1	L1	CL11	L1	HL11	CL21	CL31	FF12	F5	F1	F2	F3
2	F3		F1			H1	L1	CL11	L1	L1			C1	C1	C1		C1	C2	C3	F4	F3	F4	F3	F4
3		F2	F2	F1		H1	CL41	CL31	CL11	CL11	CL11	L2	L1	L1	L1	L1	L1	H1	C2	F5	F4	F3	F2	
4							HL11	L1	HL11	L1				C1	C2	C1	CL21	CL31	C4	F4	F6	F4	F3	
5	F1	F3	F1		F2	H1	H2	HL11	CL11	CL11		L1				L1	L1	C1	C2	F3	F3	F2	F2	
6						H1	H1	HL11	CL11	CL11	C1	C1	C1	C1	C1	C3	C3	C3	C3	F4	F3	F3	F3	F3
7						H2	H1	HL11	CL11	CL11	L1	L1		C1	CL21	CL21	C2	H1	H3	F6	F5	F3	F3	F2
8	F2					H1	H1	CL21	CL21	C1		C1	L2	L1	L2	L2	L2	L2	CL22	FF43	F3	F1	F1	F1
9					F1	H2	H2	CL31	CL21	CL31	L1	L1	LC11	L1		L1	HL11	HC21	C2	F4	F4	F4	F6	F5
10	F6	F3	F3	F3		H1	CL21	CL21	CL11	CL21	CL11	L2	C1	C1	C1	L1	HL11	HL21	C4	F6	F3	F5	F4	F4
11	F4	F2	F3	F1	F1	H1	CL21	CL11	CL21	CL11	L1	CL11		L1	CL11	CL11	CL11	HL11	H3	F3	F3	F3	F3	F4
12	F2	F3	F2	F2	F1	CL11	CL12	CL21	CL11	LC11	LC11	L1	L1	L1	CL11	CL21	HL21	CL41	C4	F6	F4	F5	F3	
13		F4	F3	F2	F2	C5	C3	CL31	CL11	C1	L1	CL11	L1	C1	L1	L1	CL11	CL21	C3	F4	F5	F6		FF23
14	FF35	F3	FF24	FF23	FF32	H1	CL21	CL21	CL11	CL11		CL11	CL11	C1	L1		L1	HL11	C3	F4	FF32		F2	F3
15	F3	F1			F2	H1	CL11	CL11	CL11	CL11	CL11	L2	L1	L2	L2	L1	L2	L1	CL31	F4	F4	F3	F3	F4
16	FF32	F2	F2			HL11	HL11	CL11	CL11	CL21	C1	C1	CL21	L1		L1	L1	CL21	C3	F3	F2	F3	F3	F4
17	F3	F2	F2	F3	F2	L2	CL22	CL11	CL11	CL21	CL11	H1	H1	L1	HL11	CL21				F5	FF21	F4	F2	F4
18	F5	F3	F3	F5	F2	L1	H1	CL11	CL21	C3	C2	C1	C1	C2	C1	L1	CL21	CL31	CL31	FF62	F4	F3	F2	F2
19		F2	F2	F2	F1	H1	HL11	HL11	CL11	CL21	CL11	C2	C2	C2	C2	CL11	CL21	C3	L3	F4	F3	F3	F6	F2
20	F3	F3			F1	H1	HL11	HL21	CL21	CL11	CL11	C1	C1	C1		C2	C1	L3	L3	F4	F3	F6	F6	F6
21	F2	F2	F3	F1	F1	L2	C2	CL11	CL11	CL11	CL11	CL11	C1	C2	L1	CL21	CL21	CL21	C2	F4	F3	F3	F3	F3
22	F2	F2	F1	F1		H1	HL11	CL11	CL11	CL11	L2	L2	L1	L2	L1	L2	CL11	CL21	CL32	FF14	F3	F4	F5	F3
23	F2	F2	F2	F1	F2	L2	CL31	CL21	L2	L2	HL11	LH21	LH11	L1	HL11	CL21	CL32	L3	L3	F3	F2	F3	F4	F3
24	F1	F4	F4	F3		H1	CL11	CL21	CL21	CL21	CL11	C1	CL21	CL11	L2	L2	C2	CL21	C3	F4	F4	F3	F3	FF12
25	F2		F1		F1	C1	CL11	CL21	L2	L1	L1	L1	L1	L2	L1	L1	HL11	CL31	C5	F5	F5	F6	F6	F4
26	F4	F3	F5	F3		C3	CL21	CL31	L2	L2	L2		C1	C1	C1	C1	CL11	L2	L3	FF25	F5	F2	F3	F2
27	F2	F4	F3	F3	F1	H1	HL21	CL31	CL21	L2	L2	L2	L2	L2	L1	L1	L1	HL11	H3	F5	F6	F2		F3
28	F3	F1	F2	F4		H2	C2	CL21	CL21	CL21	CL21	CL11	C1	C1	CL11	CL11	CL11	L2	L2	F2	F2	F3	FF41	F2
29	FF24	F5	F5		F1	H2	CL21	CL11	CL11	C1			CL11	L1	C1	C1	C2	CL31	C2	F3	F4	F5	F5	F4
30	F3	F2	F3	F2	F1	HL12	HL11	CL21	CL21	CL21	L2			CL21	CL21	L2	CL21	L2	L3	F4	F4	F3	F2	F3
31	F3	F2		F1		H1	CL21	CL21	CL21	CL11	CL21	L2	L1	C1	H1	CL21	CL21	CL21	L2	F4	F2	F3	F2	
	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																								

MAY 2001 TYPES OF Es COMMUNICATIONS RESEARCH LABORATORY, JAPAN

f-PLOTS OF IONOSPHERIC DATA

KEY OF f-PLOT	
	SPREAD
	foF2,foF1,foE
	fxF2
	DOUBTFUL foF2,foF1,foE
	fbEs
	ESTIMATED foF1
	fmin
	GREATER THAN
	LESS THAN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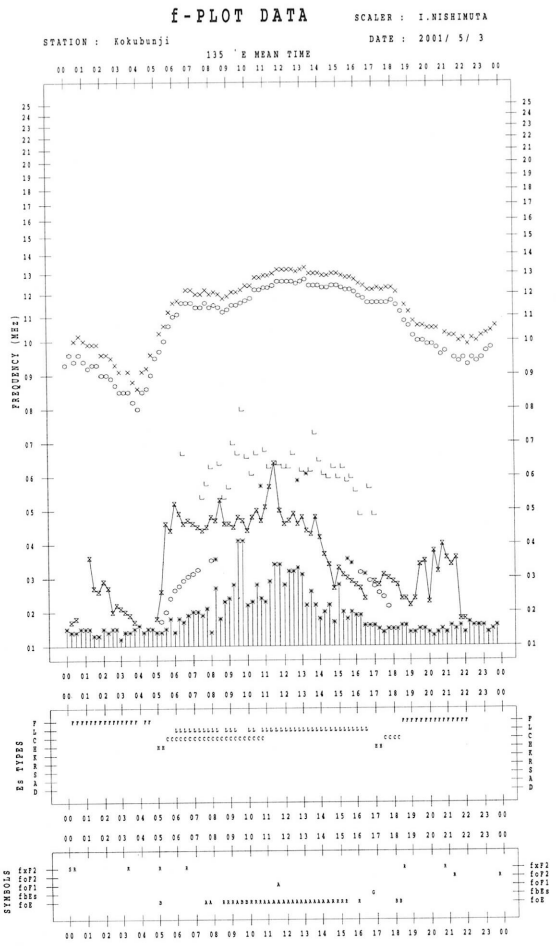
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 5/ 1
135 'E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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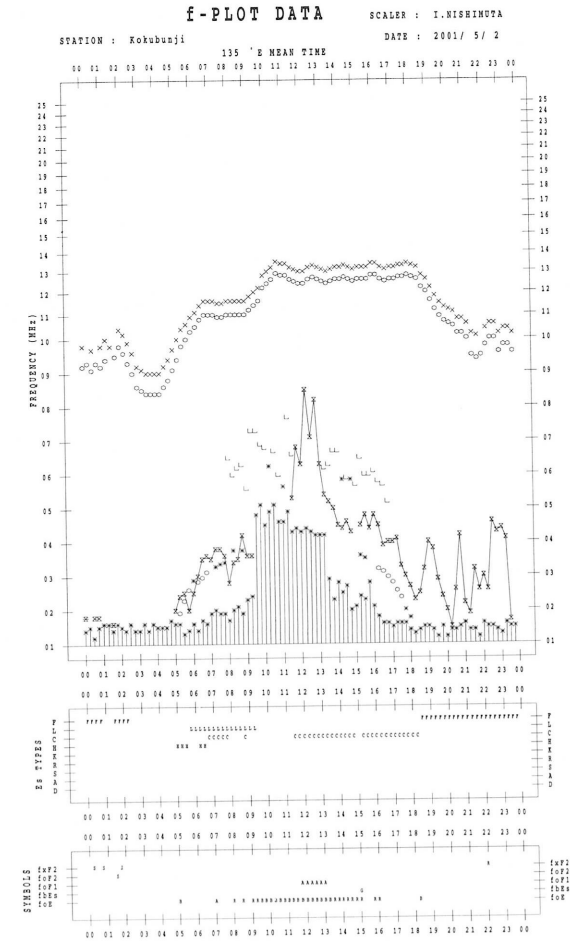
STATION : Kokubunji
DATE : 2001/ 5/ 3
135 'E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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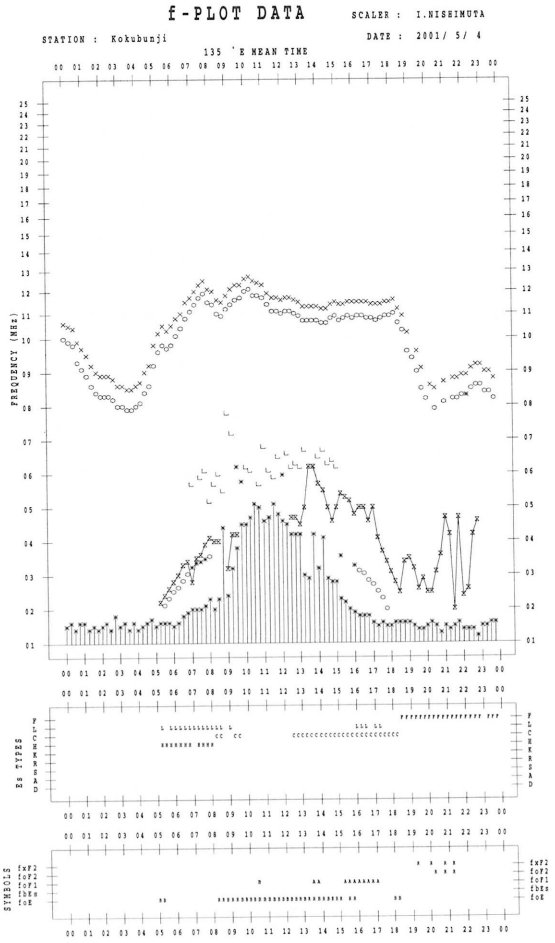
STATION : Kokubunji
DATE : 2001/ 5/ 2
135 'E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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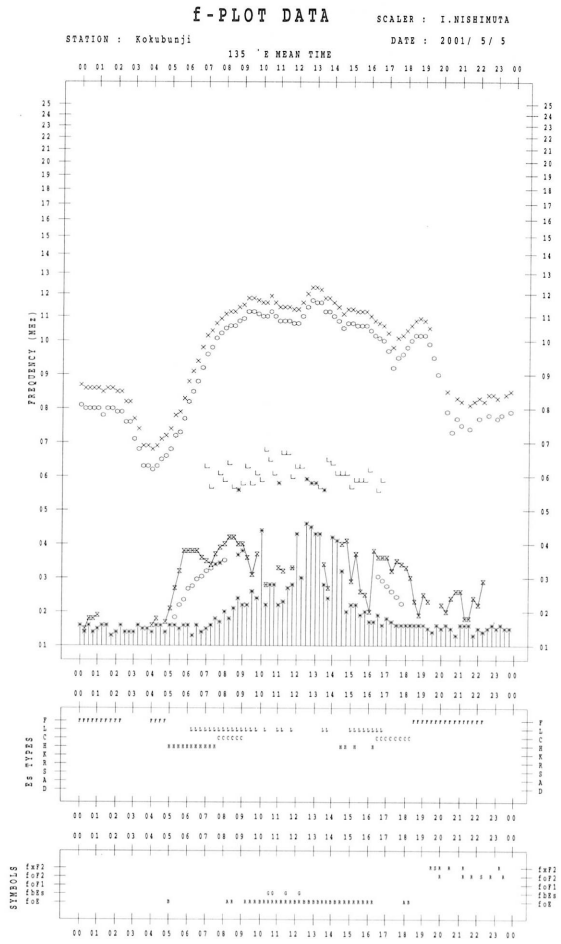
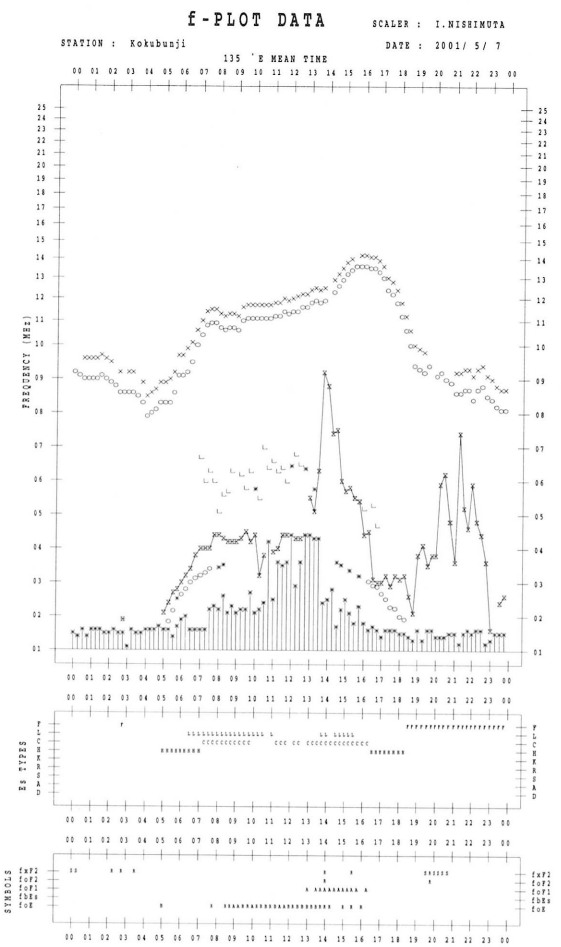
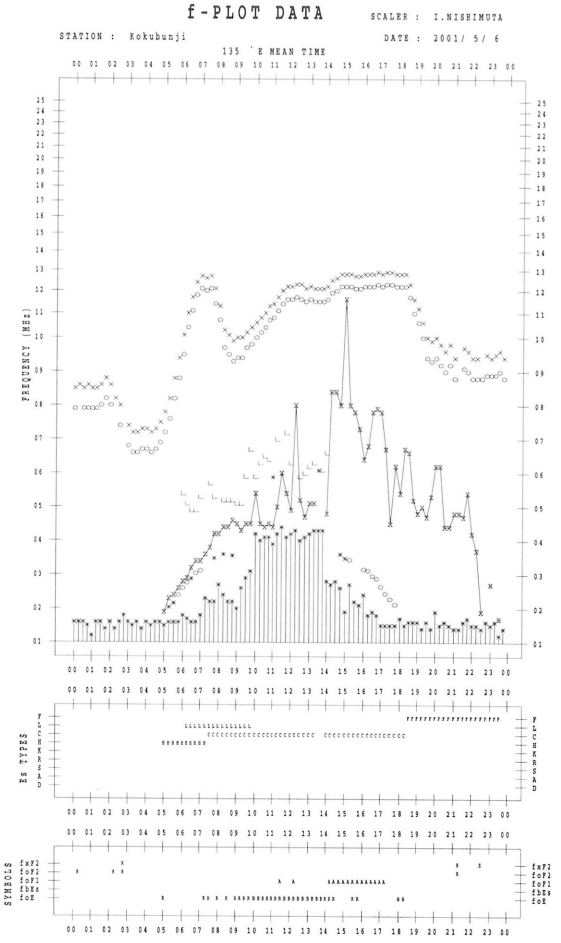
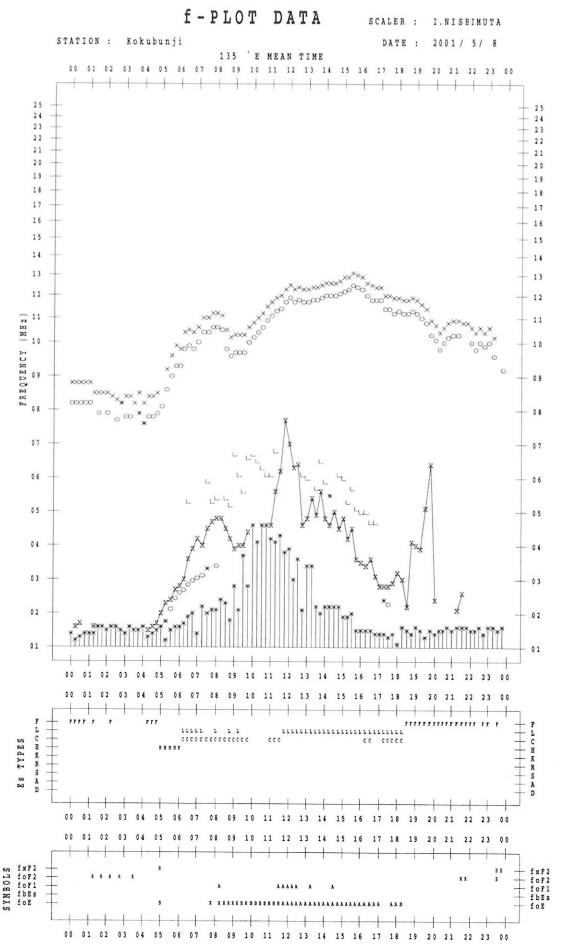
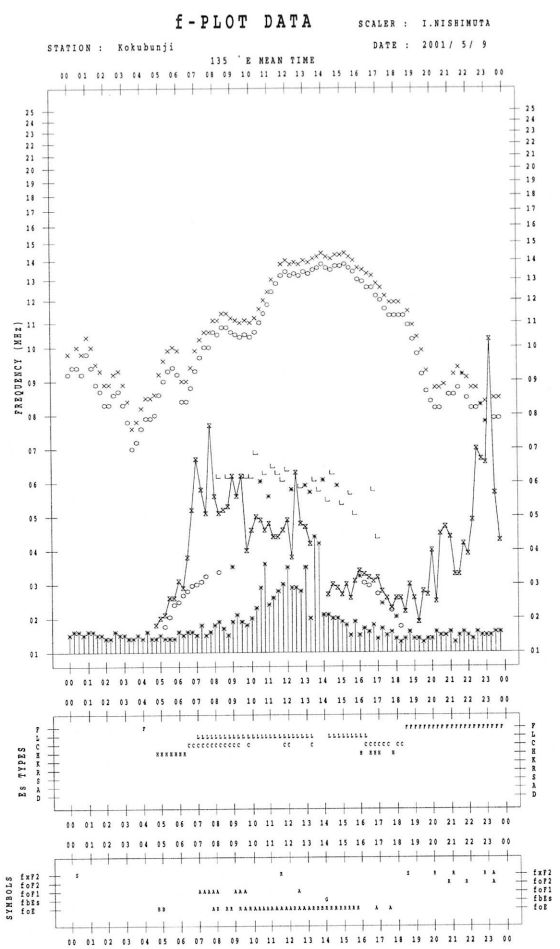
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 5/ 4
135 'E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

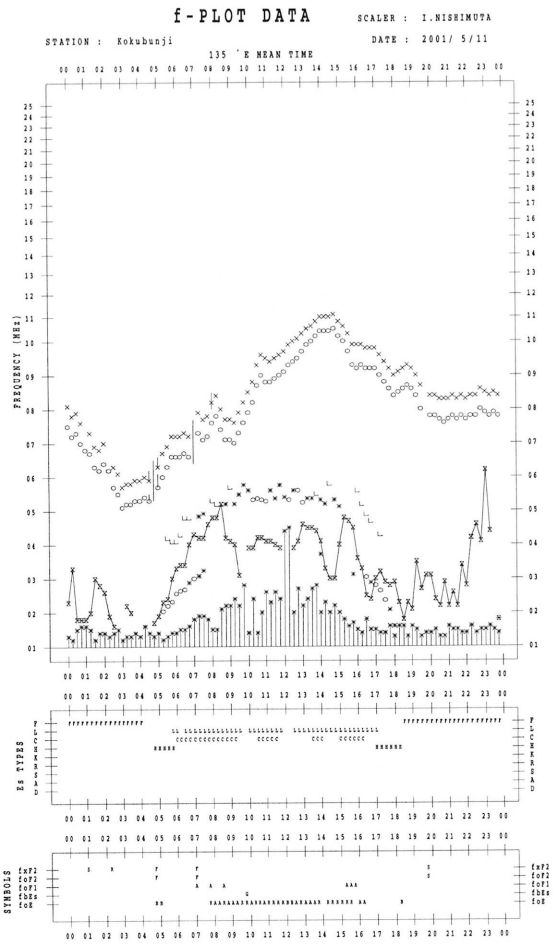

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 5/ 5
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 5/ 7
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 5/ 6
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 5/ 8
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 5/ 9
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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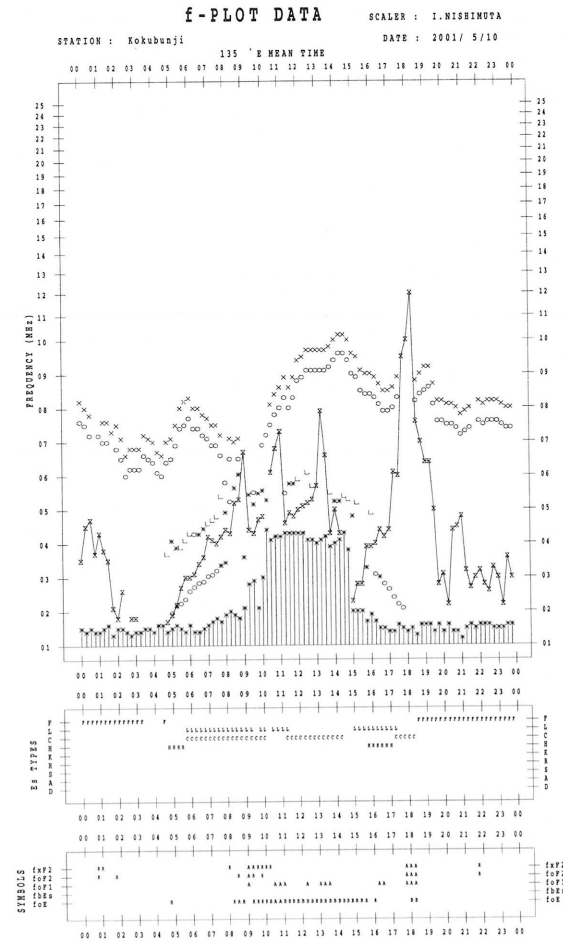
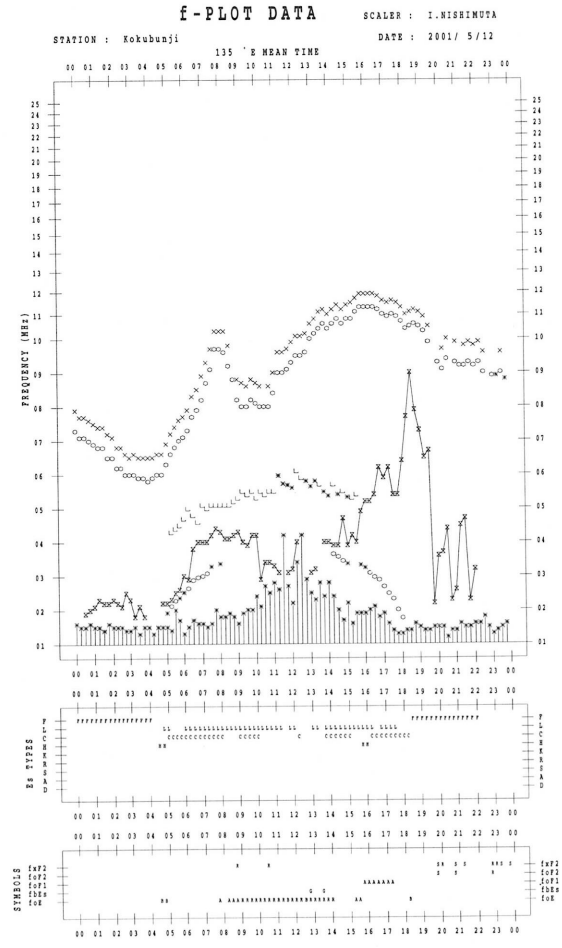
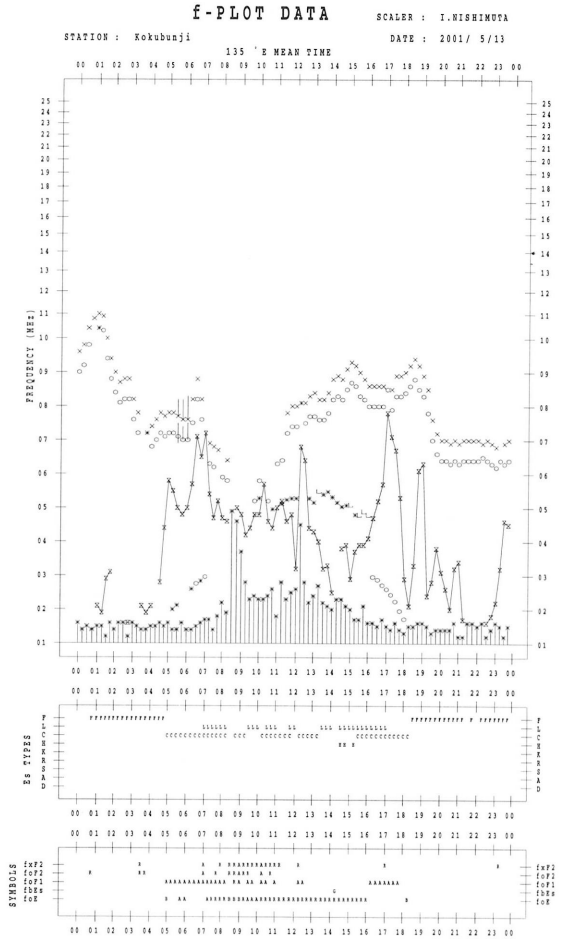
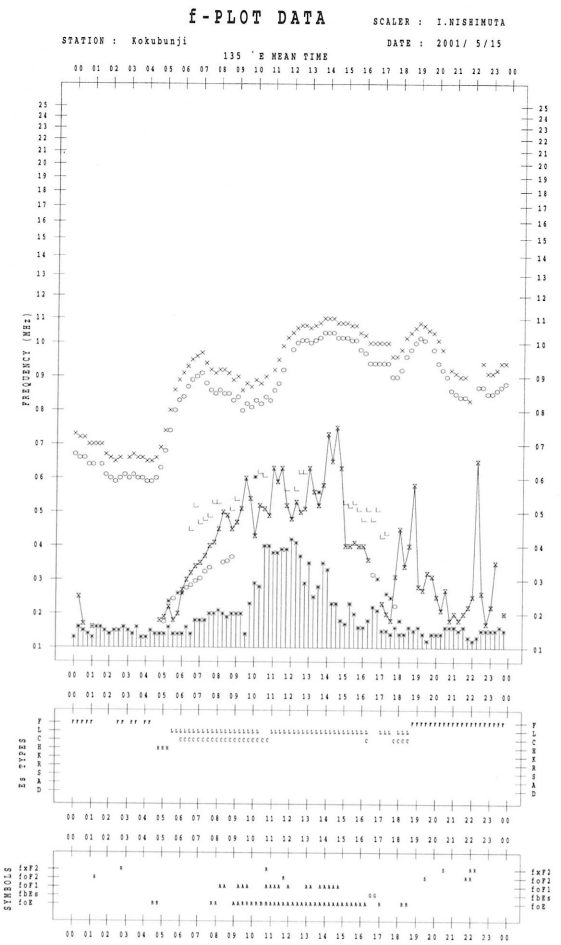
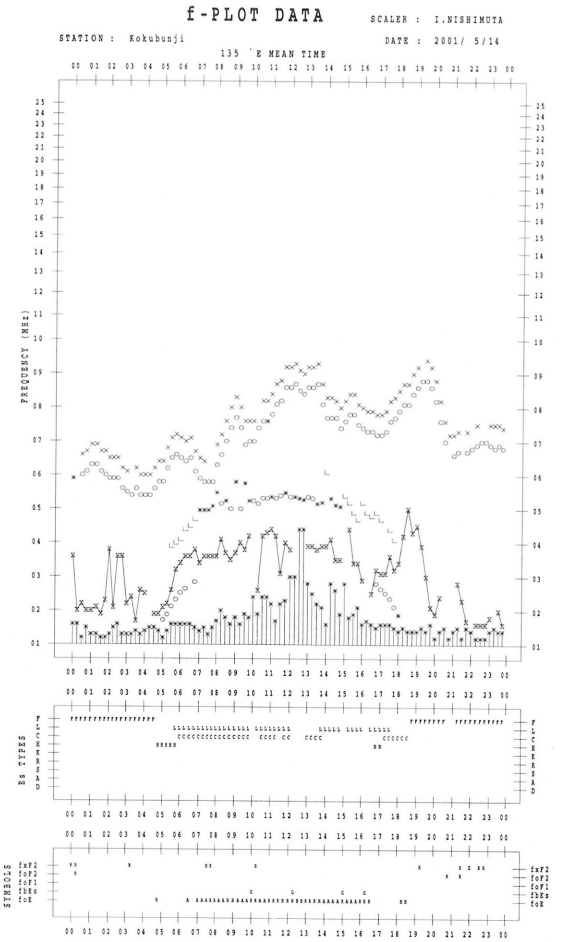
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 5/11
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

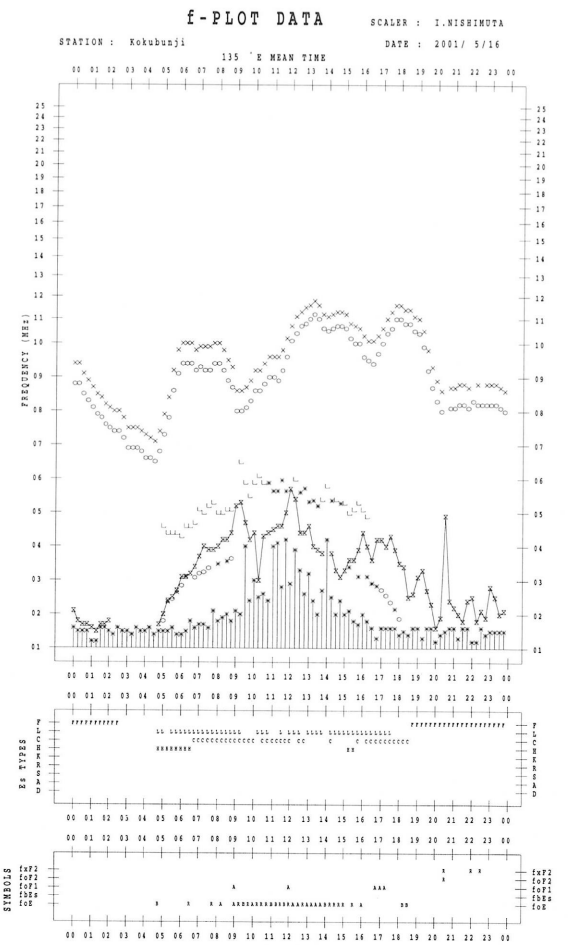

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 5/10
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

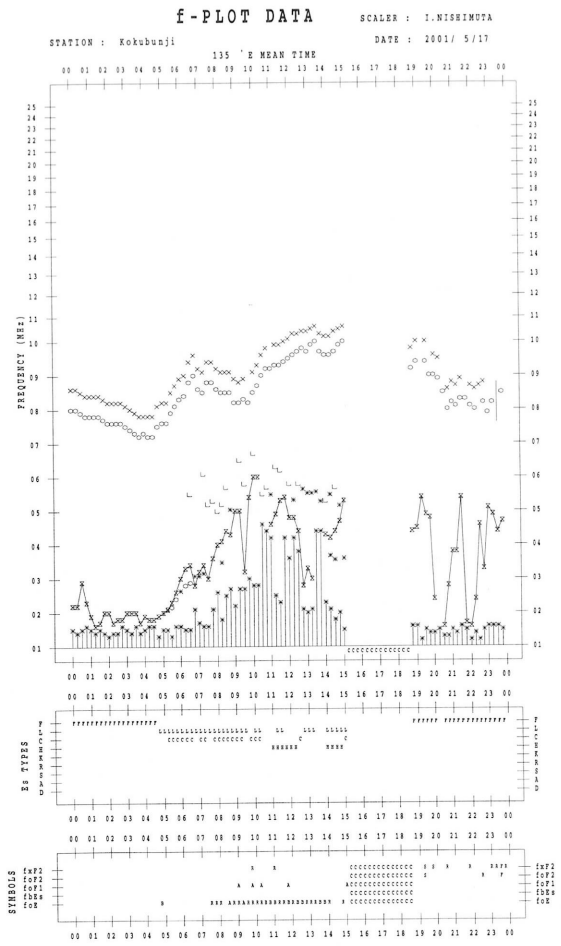

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 5/12
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

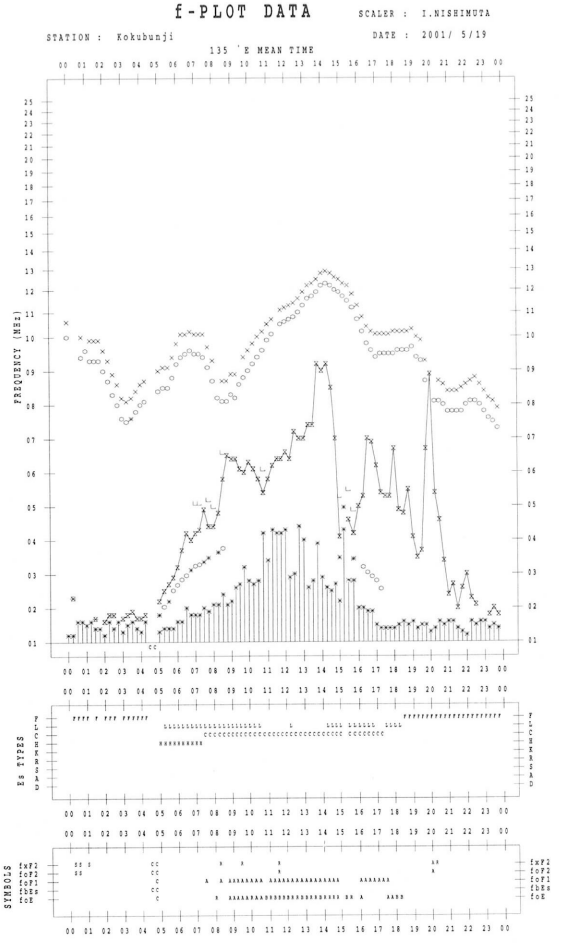

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 5/13
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

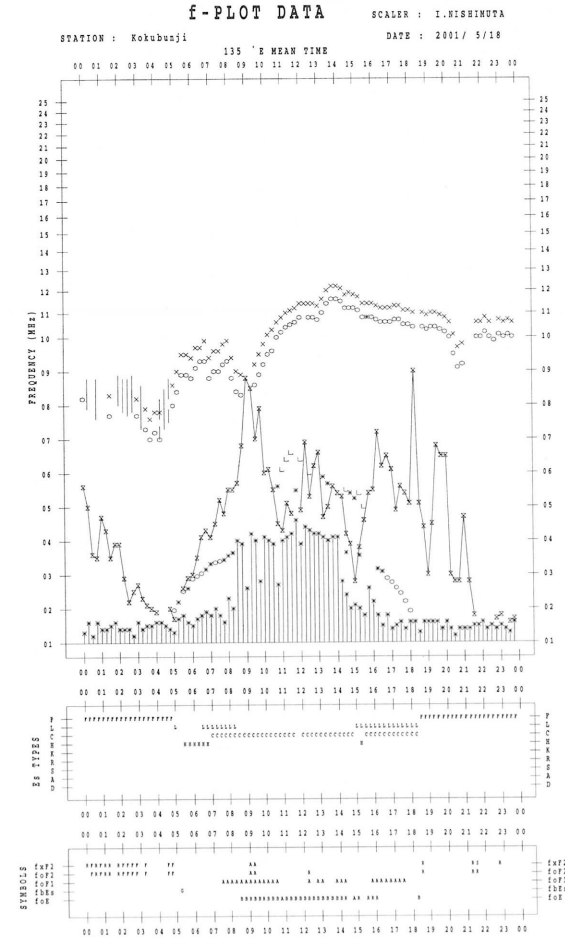

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 5/15
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

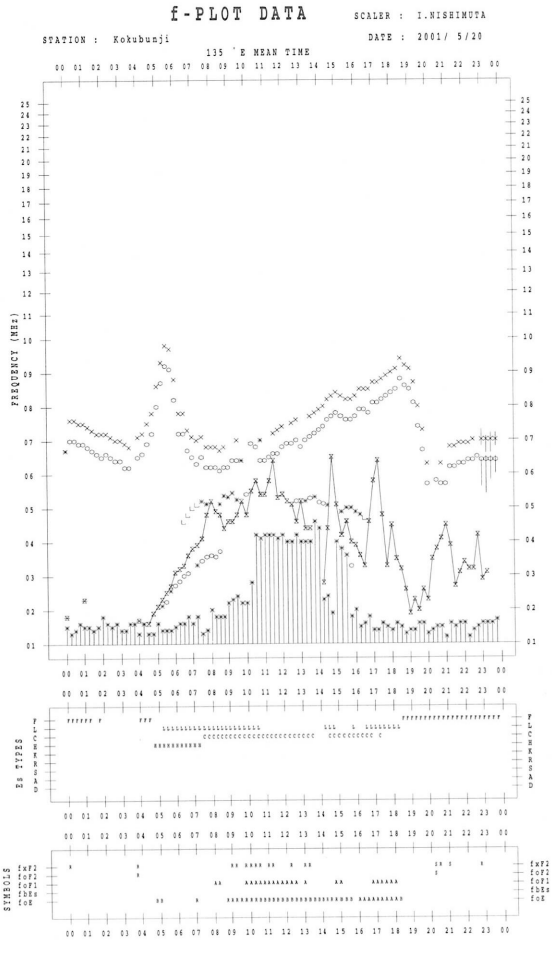

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 5/14
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

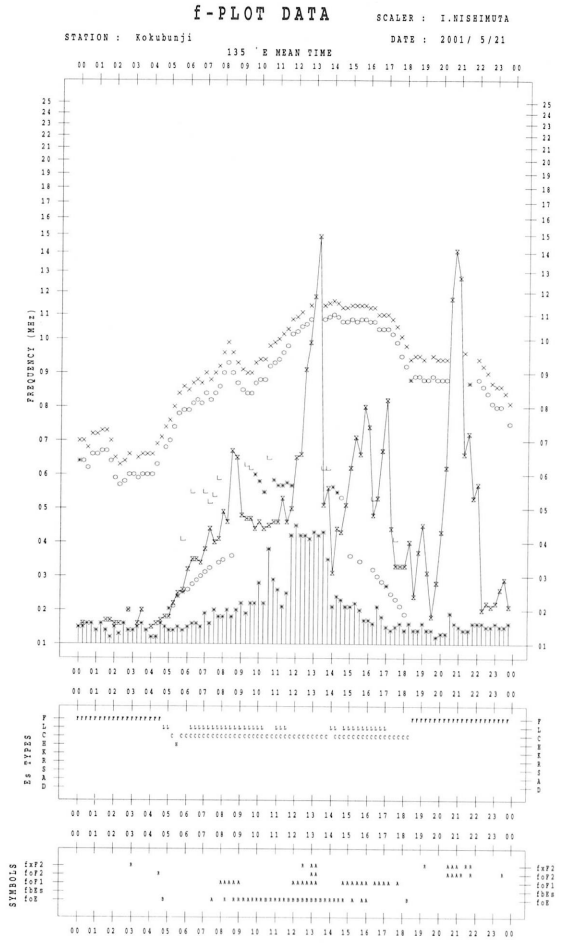

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 5/16
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

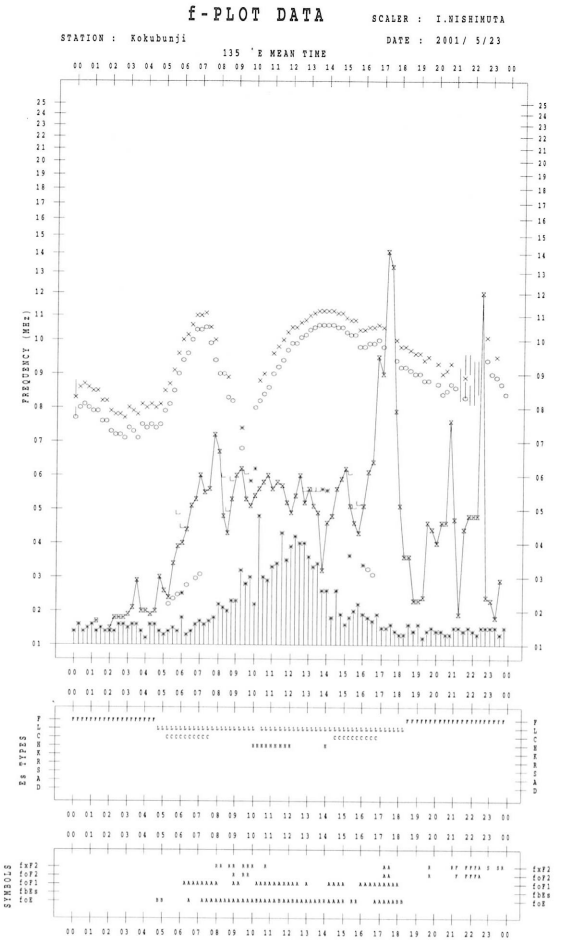

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 5/17
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

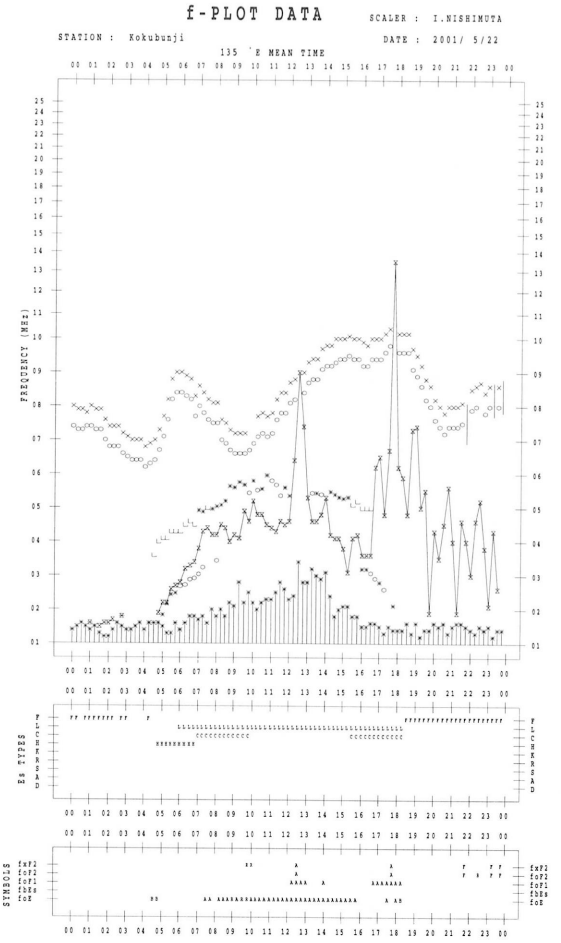

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 5/19
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

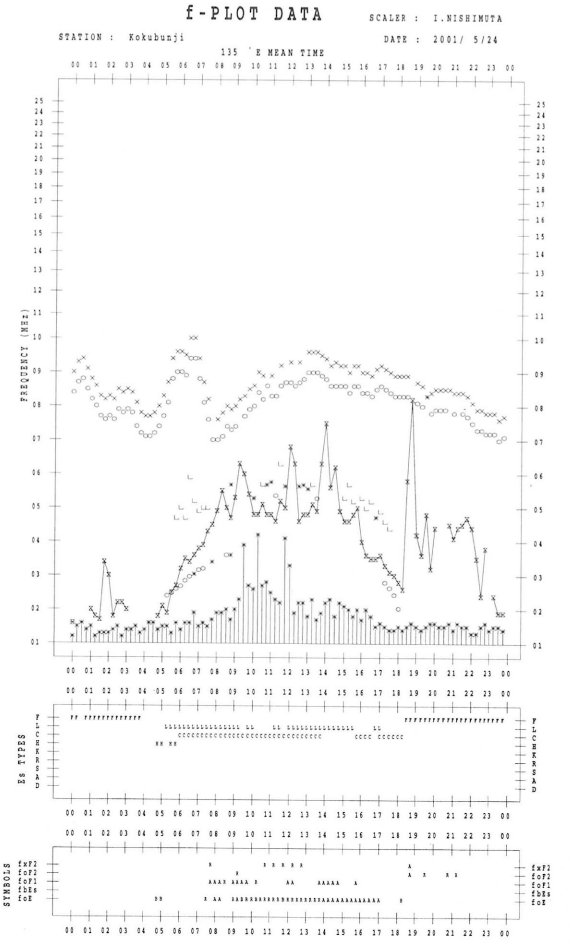

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 5/18
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

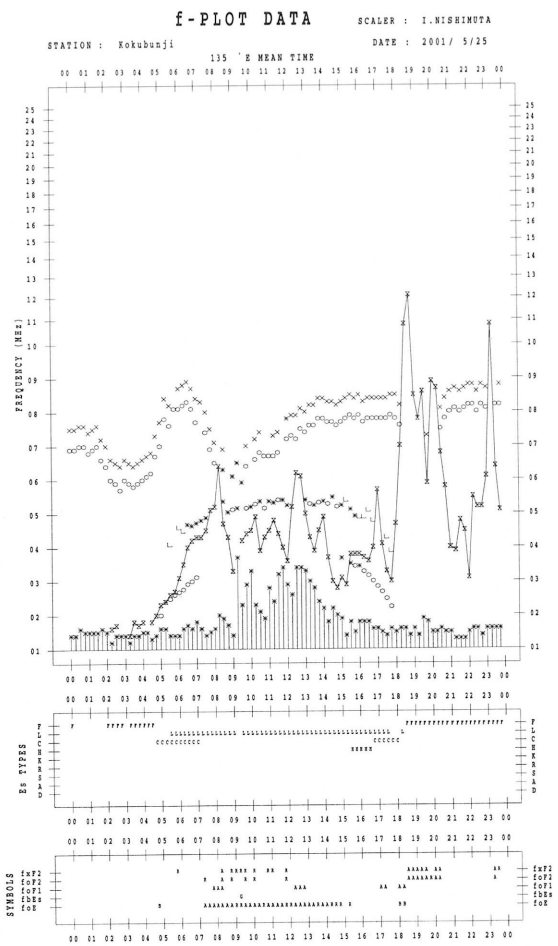

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 5/20
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

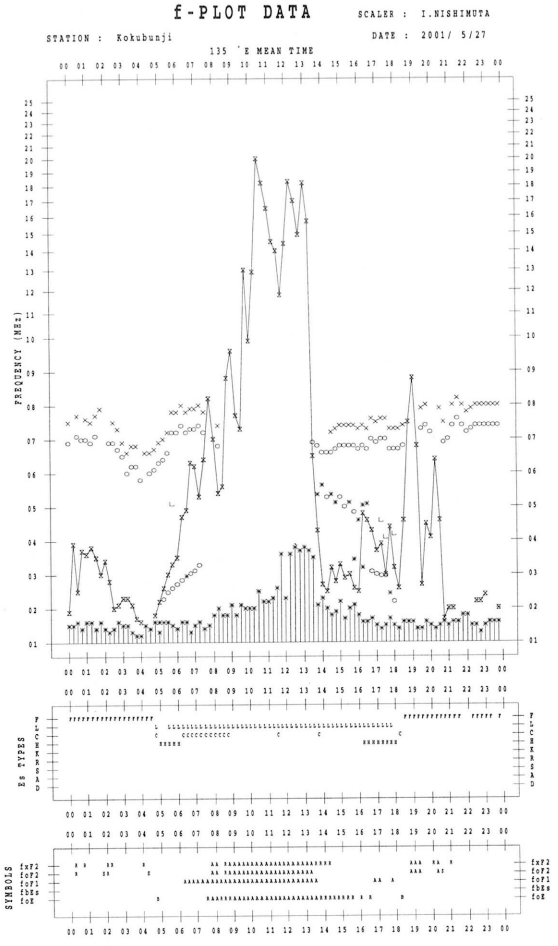

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 5/21
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

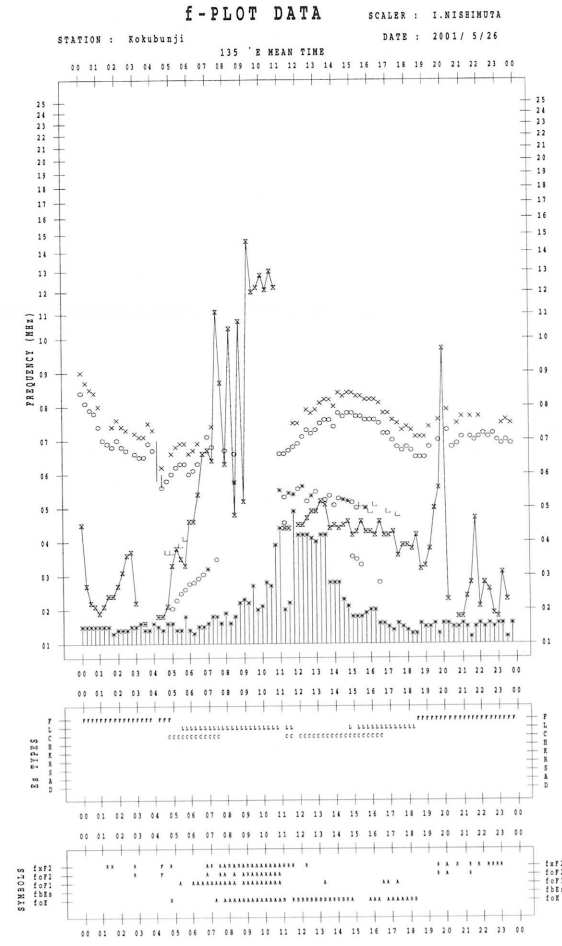

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 5/23
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

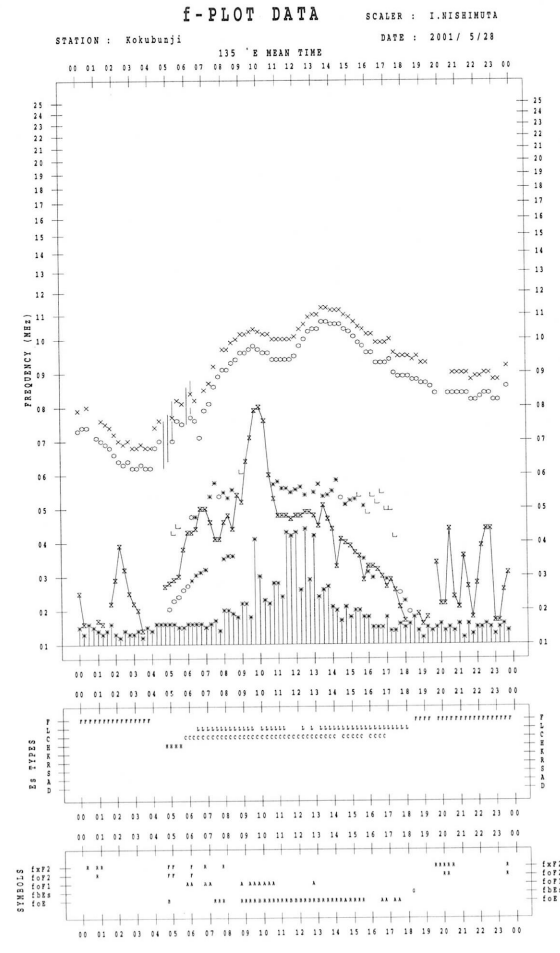

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 5/22
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

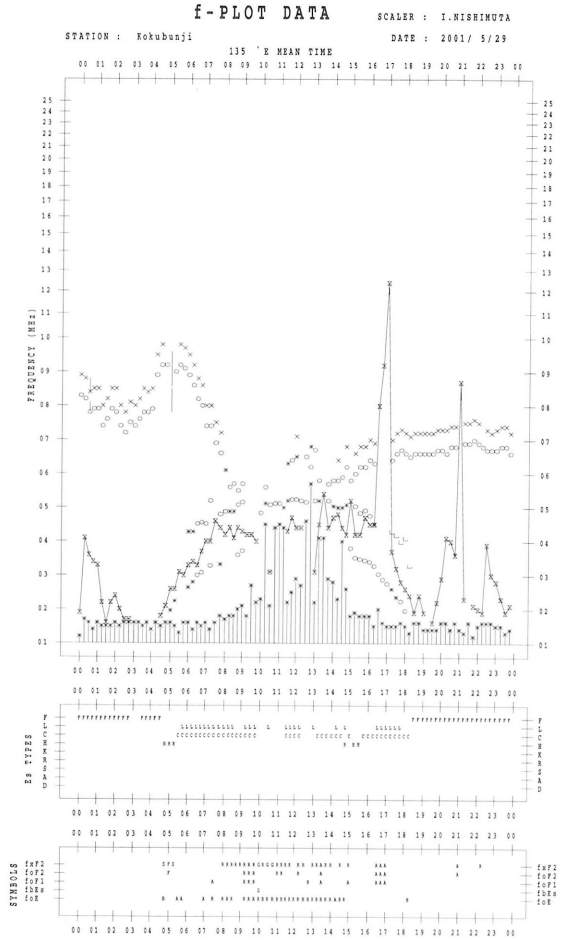

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 5/24
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

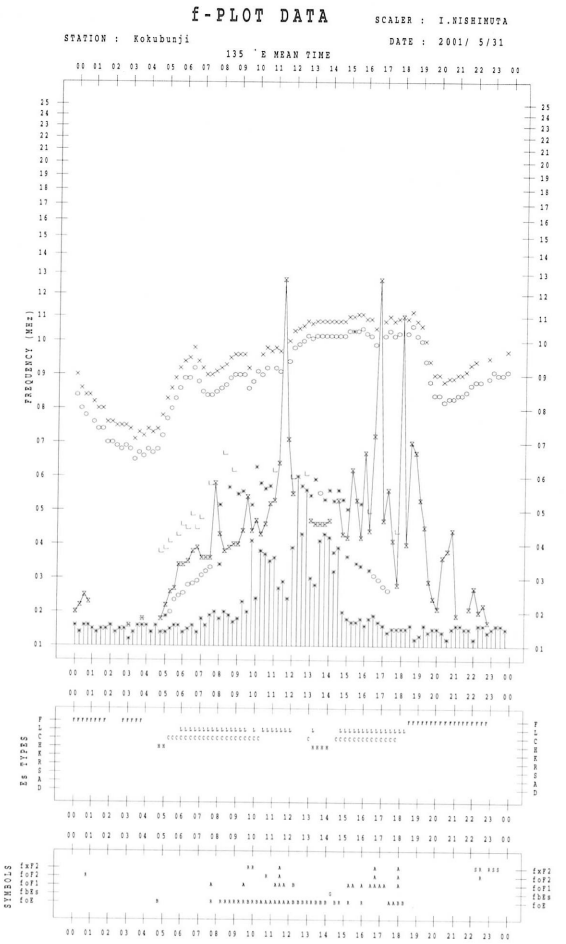

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 5/25
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

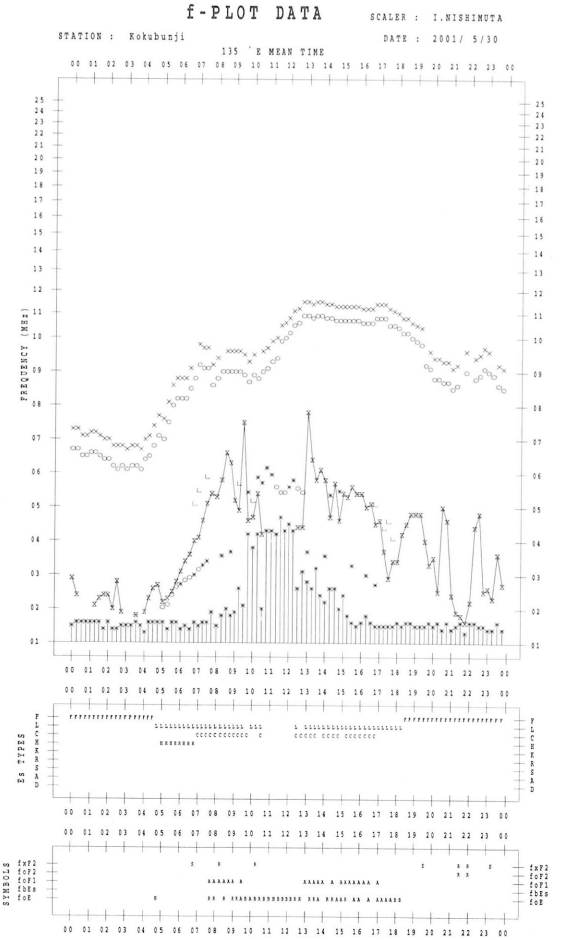

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 5/27
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 5/26
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 5/28
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 5/29
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 5/31
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 5/30
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

B. Solar Radio Emission
B1. Daily Data at Hiraiso
500 MHz

Hiraiso May 2001

Single-frequency total flux observations at 500 MHz					
Flux density: 10^{-22} W m^{-2} Hz^{-1}					
Date \ UT	00-03	03-06	06-09	21-24	Day
1	39	41	41	40	40
2	39	38	38	43	40
3	44	43	44	45	44
4	44	42	42	43	43
5	43	43	41	41	42
6	40	38	39	43	40
7	40	38	38	38	38
8	38	36	34	36	36
9	37	35	35	37	36
10	36	35	34	39	36
11	36	36	36	42	37
12	39	38	37	42	39
13	39	38	36	41	39
14	37	34	37	38	36
15	36	37	37	33	36
16	36	35	31	39	35
17	37	36	35	41	37
18	38	36	35	40	37
19	38	36	37	39	37
20	39	35	38	35	37
21	37	37	39	43	39
22	41	40	37	36	39
23	37	37	32	34	35
24	37	40	40	47	41
25	42	79	67	45	59
26	44	39	40	39	40
27	42	40	39	40	40
28	39	40	43	41	40
29	39	39	40	35	38
30	35	36	38	33	35
31	34	36	36	33	35

B. Solar Radio Emission

B2. Outstanding Occurrences at Hiraiso

Hiraiso May 2001

Single-frequency observations

Normal observing period: 1925 - 0945 U.T. (sunrise to sunset)

MAY. 2001	FREQ. (MHz)	TYPE	START TIME (U.T.)	TIME OF MAXIMUM (U.T.)	DUR. (MIN.)	FLUX DENSITY (10^{-22} W m^{-2} Hz^{-1}) PEAK	FLUX DENSITY (10^{-22} W m^{-2} Hz^{-1}) MEAN	POLARIZATION REMARKS
1	200	8 S	2017.0	2018.0	1.0	300	-	0
2	500	8 S	0031.0	0032.0	2.0	40	-	0
2	2800	3 S	0032.0	0036.0	9.0	80	-	0
2	200	8 S	0120.0	0120.0	1.0	20	-	0
2	2800	4 S/F	0628.0	0631.0	6.0	80	-	0
2	200	8 S	0629.0	0630.0	1.0	30	-	0
2	200	8 S	2004.0	2004.0	1.0	40	-	0
3	200	8 S	0024.0	0025.0	1.0	15	-	0
3	500	8 S	0034.0	0035.0	1.0	30	-	WR
3	200	8 S	0332.0	0332.0	1.0	35	-	0
4	200	8 S	0738.0	0738.0	1.0	30	-	WL
4	200	8 S	2055.0	2055.0	1.0	20	-	0
5	200	8 S	0621.0	0621.0	1.0	20	-	0
5	200	8 S	2318.0	2318.0	1.0	15	-	0
6	200	8 S	0004.0	0004.0	1.0	30	-	0
6	200	8 S	0652.0	0652.0	1.0	10	-	MR
6	200	8 S	0748.0	0749.0	1.0	5	-	0
8	2800	7 C	0040.0	0051.0	15.0	40	-	0
8	2800	29 PBI	-	0055.0		40	-	0
8	200	8 S	0722.0	0722.0	1.0	10	-	0
10	500	7 C	0349.0	0353.0	7.0	40	-	0
10	200	8 S	0429.0	0429.0	1.0	5	-	0
10	500	8 S	0446.0	0447.0	1.0	10	-	0
10	200	8 S	0446.0	0446.0	1.0	160	-	0
10	500	8 S	2103.0	2103.0	1.0	70	-	0
11	200	8 S	0349.0	0349.0	1.0	15	-	0
11	500	4 S/F	0712.0	0716.0	8.0	50	-	WR
11	200	8 S	2031.0	2031.0	1.0	10	-	WR
11	500	8 S	2320.0	2320.0	1.0	55	-	0
12	200	47 GB	0226.0	0227.0	1.0	715	-	0
12	200	8 S	0535.0	0536.0	1.0	15	-	0
12	200	8 S	0743.0	0743.0	1.0	40	-	0
12	2800	7 C	2326.0	2337.0	51.0	185	-	0
12	500	8 S	2327.0	2327.0	3.0	480	-	0
12	200	8 S	2327.0	2327.0	1.0	1840	-	0
12	500	7 C	2332.0	2335.0	70.0	245	-	WR
12	200	27 RF	2332.0	0008.0	98.0	145	-	0
13	2800	7 C	0301.0	0309.0	12.0	105	-	0
13	500	47 GB	0302.0	0302.0	1.0	1075	-	0
13	500	47 GB	0303.0	0308.0	41.0	555	-	0
13	200	47 GB	0303.0	0308.0	2.0	1470	-	0
13	200	7 C	0307.0	0308.0	40.0	175	-	0
13	500	7 C	0358.0	0402.0	17.0	55	-	0
13	200	42 SER	0535.0	0535.0	5.0	25	-	0
13	200	8 S	0825.0	0826.0	1.0	10	-	0
14	200	8 S	0337.0	0338.0	1.0	10	-	0
14	200	8 S	2148.0	2148.0	1.0	15	-	0

B. Solar Radio Emission

B2. Outstanding Occurrences at Hiraiso

Hiraiso May 2001

Single-frequency observations

Normal observing period: 1925 - 0945 U.T. (sunrise to sunset)

MAY. 2001	FREQ. (MHz)	TYPE	START TIME (U.T.)	TIME OF MAXIMUM (U.T.)	DUR. (MIN.)	FLUX DENSITY (10^{-22} W m^{-2} Hz^{-1}) PEAK	FLUX DENSITY (10^{-22} W m^{-2} Hz^{-1}) MEAN	POLARIZATION REMARKS
14	200	8 S	2208.0	2208.0	1.0	25	-	0
14	200	8 S	2218.0	2220.0	2.0	30	-	0
14	200	8 S	2244.0	2245.0	1.0	10	-	WR
14	200	8 S	2248.0	2248.0	1.0	5	-	0
14	200	8 S	2254.0	2254.0	1.0	30	-	WR
15	2800	1 S	0256.0	0258.0	5.0	35	-	0
15	500	8 S	0257.0	0258.0	5.0	95	-	WL
15	200	47 GB	0301.0	0303.0	2.0	505	-	0
15	200	8 S	0450.0	0450.0	1.0	20	-	0
15	500	8 S	0456.0	0456.0	1.0	60	-	0
15	200	8 S	0456.0	0457.0	2.0	45	-	0
15	200	8 S	0516.0	0516.0	1.0	50	-	0
15	200	8 S	0605.0	0606.0	1.0	15	-	0
15	200	8 S	0608.0	0608.0	1.0	45	-	0
15	200	8 S	2121.0	2121.0	1.0	25	-	0
16	500	8 S	0639.0	0639.0	1.0	200	-	0
16	200	8 S	0740.0	0740.0	1.0	15	-	0
17	2800	3 S	2043.0	2045.0	5.0	85	-	0
17	2800	1 S	2137.0	2139.0	2.0	20	-	0
17	200	8 S	2159.0	2159.0	1.0	20	-	0
17	2800	3 S	2317.0	2319.0	9.0	40	-	0
17	200	8 S	2330.0	2333.0	1.0	30	-	0
18	200	8 S	0446.0	0446.0	1.0	40	-	0
18	200	8 S	2016.0	2017.0	2.0	20	-	WL
19	200	47 GB	0742.0	0743.0	2.0	1180	-	0
20	2800	3 S	0601.0	0603.0	9.0	110	-	0
20	500	4 S/F	0601.0	0604.0	12.0	45	-	0
20	200	47 GB	0601.0	0603.0	2.0	520	-	0
20	200	47 GB	0604.0	0606.0	2.0	1220	-	0
20	200	8 S	0920.0	0920.0	1.0	160	-	0
21	2800	4 S/F	0313.0	0320.0	16.0	120	-	0
21	500	7 C	0313.0	0315.0	8.0	70	-	ML
21	200	7 C	0313.0	0315.0	13.0	290	-	ML
22	200	47 GB	0258.0	0258.0	1.0	1080	-	0
22	200	8 S	2036.0	2036.0	1.0	15	-	0
22	200	8 S	2221.0	2222.0	1.0	60	-	0
22	500	4 S/F	2240.0	2243.0	8.0	45	-	WL
22	200	4 S/4	2240.0	2244.0	10.0	70	-	0
23	200	8 S	0930.0	0931.0	1.0	60	-	WL
25	500	8 S	0665.0	0655.0	1.0	40	-	0
25	200	8 S	0655.0	0656.0	1.0	190	-	MR
25	200	8 S	0813.0	0813.0	1.0	265	-	MR
26	200	8 S	0513.0	0514.0	1.0	20	-	WL
29	200	8 S	0831.0	0831.0	1.0	5	-	0
29	200	7 C	2147.0	2149.0	3.0	340	-	0
29	500	8 S	2149.0	2149.0	1.0	10	-	0
30	200	7 C	0005.0	0006.0	3.0	55	-	0

B. Solar Radio Emission

B2. Outstanding Occurrences at Hiraiso

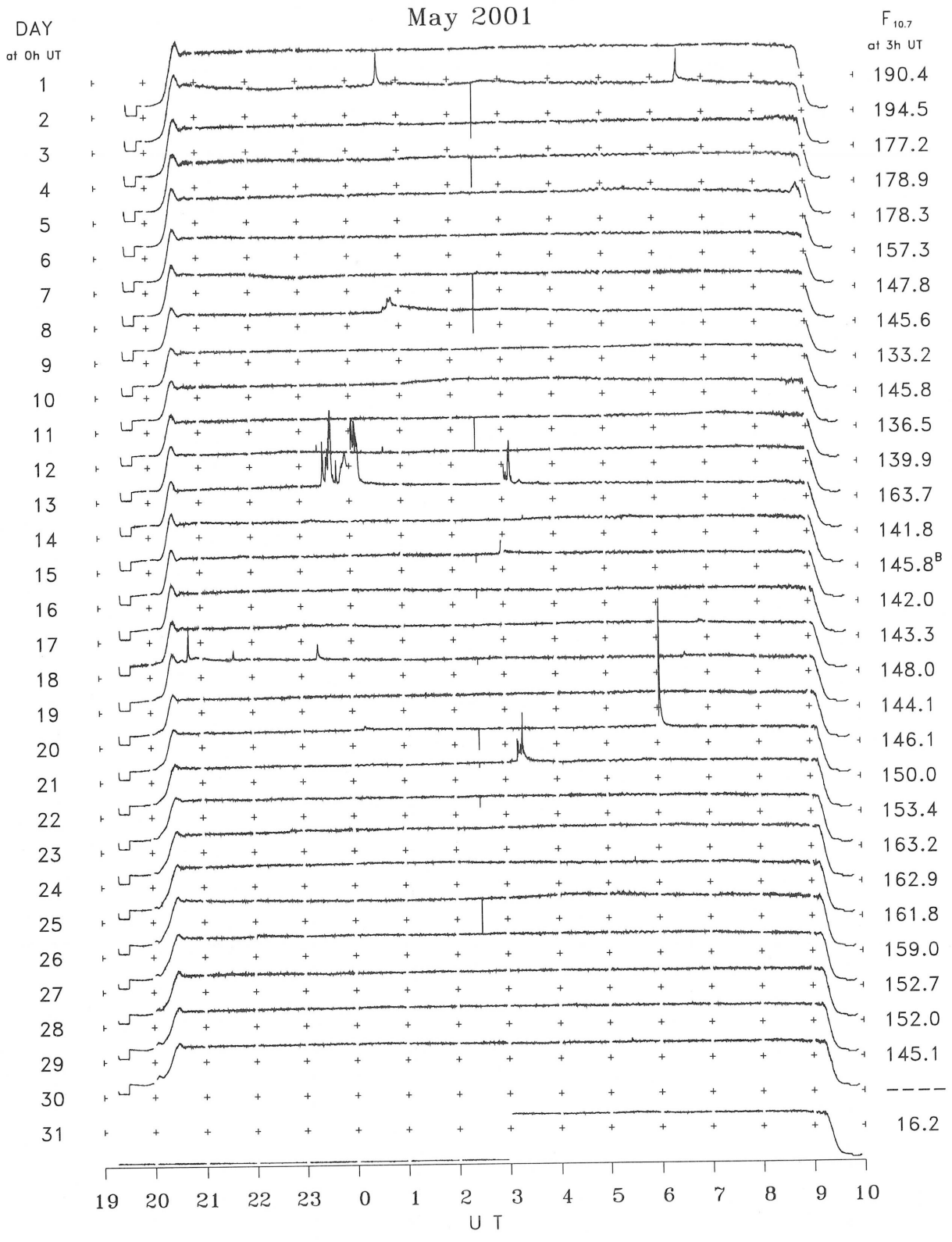
Hiraiso May 2001

Single-frequency observations

Normal observing period: 1925 - 0945 U.T. (sunrise to sunset)

MAY. 2001	FREQ. (MHz)	TYPE	START TIME (U.T.)	TIME OF MAXIMUM (U.T.)	DUR. (MIN.)	FLUX DENSITY (10^{-22} W m^{-2} Hz^{-1}) PEAK	FLUX DENSITY (10^{-22} W m^{-2} Hz^{-1}) MEAN	POLARIZATION REMARKS
31	200	8 S	0142.0	0142.0	1.0	10	-	0
31	200	42 SER	0533.0	0533.0	4.0	15	-	0

B. Solar Radio Emission
B3. Summary Plots of $F_{10.7}$ at Hiraiso



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

IONOSPHERIC DATA IN JAPAN FOR MAY 2001
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