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IONOSPHERIC DATA IN JAPAN

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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, Independent Administrative Institution in 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°40.5'N	128°09.2'E	16.5°N	161.7°	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

Ionospheric 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. 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*).

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

b. Symbols

(i) Descriptive Letters

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

A Measurement influenced by, or impossible because of, the presence of a lower thin layer, for example *Es*.

B Measurement influenced by, or impossible because of, absorption in the vicinity of *fmin*.

C Measurement influenced by, or impossible because of, any non-ionospheric reason.

D Measurement influenced by, or impossible because of, the upper limit of the normal frequency range in use.

E Measurement influenced by, or impossible because of, the lower limit of the normal frequency range in use.

F Measurement influenced by, or impossible because of, the presence of spread echoes.

G Measurement influenced by, 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.

X 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 part *E* layer minimum virtual height.

c An *Es* trace showing a relatively symmetrical cusp at or below *foE*. (Usually a daytime type.)

h An *Es* trace showing a discontinuity in height with the normal *E* layer trace at or above *foE*. The cusp is not symmetrical, the low frequency end of the *Es* trace lying clearly above the high frequency end of the normal *E* trace. (Usually a daytime type.)

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

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

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

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

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

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

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

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

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

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

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

B. SOLAR RADIO EMISSION

Solar radio observations at 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 Measurement, 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

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 F10.7 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

SEP. 2001

LAT. 45°23.5'N LON. 141°41.2'E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

HD	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	69	61	60	69	#54	#72	73	#96	88	80	81	78	81	84	88	84	78	81	78	82	#95		72	
2	61	61	63	56	60	60	#77	#93		115	#87		88	82	90	83	80	88	83	93	94		69	72
3	68	64	63	61	60	69	#94		92	90	83		82	83	80	80	83	81	84	84	75	#99	#76	73
4	69	70	69	63	62	66	#94	#77	#97	#82	81	80	77	84	83	81	91	93	93	87	80		99	
5	61		55	54	54	59	69	#82			80	83	#68	#82	87	83	83	87	#71		82		72	
6	67	#48	#61	55	52	62		78	83	83	#68	#81	82	82	82	83	83	87	93	83	#94			72
7	68	#56	#69	63	60	70		96	#82		80	84	84	82	84	84	78	83	83	84	94	#82	76	80
8	#69	70	61	68	61	69	#82	80		81	82		82	84	81	90	91	90		84	94	99	92	94
9	#68	69	65	62	64	67	#95	#115	#93	91	90	84	83	84	84	81	86	81		92	82			
10	69	79	#68	69	#58	62	#81		115	#95	C	C	C	C	C	C	C	C	C	C		83	80	#68
11	69	60	69	72	#60	69	#95	94		103	#92	92		92	98	96	93	90	83	#95	94	#82		95
12	#64	#79	#54	61	63	68	#92	#114		107	114	#88	88	92	91	91	92	92				74		89
13	#69		62	#44		44		*58	66	69						64	66	#80		66	68		60	
14	60	60		55	54	#67	#94	93	#114	#91	91		91	85	80	80	82	80	85	#71	70	67		69
15	70	72	#61	63	64	63	#94		94	#114	#98	90	92	96	95	92	91	90	93	92	94		89	
16	69	77	75	#61	59	62	67	71	77	80	76		68		83	76	83	93	84	90	82			
17	60	69	69	60	61	55	#74	#94	93	91	#80	C	82	81	#96	#82	91	92	82	81		68	58	
18	45	#70	72	70	64	70		94	91	92	92	92	92	90	91	90	92	92	91	83				
19	75	69	69	72	#57	58	#80	#94	98	91	92	92	91	92	92	94	98	90		84				
20	69	69	63	63	60	56	#95	#119	#95		92	92	85	92	92	92	96	105	#81	90		55	#69	
21	69		68	62	59	68	#87	92	#114	#92		92	92	96	103		93	84	93	84	91	93	#71	
22	69	70	64	62	63	69	#96	96	#115		92	92	92	94	92	102	95	94	91	100	#81	75		57
23	63	69	66	60	66	69	#94		116	114	#95		92	94	93	92	93		90	81	#94	#57	57	
24	58	56	60	59	#45	#60	#76	#94	96	96	102	92	98	92	92	93	94	91	81	81	#94	92	99	99
25	#75	69	73	63	62	67	#94		113			92	#103		92	96	96	103	#92	94	#82			
26	69	70	68	71	66	68	#96	93			92	92		92	95	94	92	92	102	92	92		67	#80
27	74	#55	#66	64		92	94	#115	119		95	94	90	93	92		89	#112	#98	#81	76	80	71	
28	69	69	63	56	#69		99	#115	#95		94	96	94	95	92	95	91		93	90	81			51
29	53	#69	64	58	59	60	#93	95	#124		114	116			100	91	#102		98	#82	84			
30	73	69	67		60	69	#82		114	#93	92	94	96	89	88	90	92	#115		82	83	83	91	
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	27	29	29	28	29	26	24	24	21	26	21	25	25	28	27	29	26	23	27	25	15	18	12
MED	69	69	65	62	60	67	94	94	96	91	92	92	88	90	92	90	91	90	90	84	83	80	72	76
U Q	69	70	69	66	63	69	94	96	114	99	94	92	92	92	92	93	93	93	93	92	94	92	89	91
L Q	63	61	61	58	58	60	80	87	91	82	81	84	82	83	84	82	83	84	83	82	81	68	68	70

HOURLY VALUES OF fEs AT Wakkanai

SEP. 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	25	G#	#24	G#	G	G	*#33	*42	G	*#42	G	*#44	G	G	G	G	G	#38	32	*42	*59			G
2	G	#26	*35	*35	G	*#34	31	*#49	*47	*45	G		G	G	G	G	*#39	35	G#	G	#34	*#49		*32
3	G	G	#30	*34	*32	G	*#35	*45	*49	*49	*51		G	G	G	G	G	G	G	G	G	G	G	
4	29		G	*#35	31	27	G#	G	G	G	G	G	G	G	G	G	G	G	G	G	#26			G
5	G	*#61	G	G	G	G	*#41	*40	*40	G	G	G	G	G	G	G	*#45	42	32		42	G#		G
6	G	G	G	G	G	G	*#33	*46	*45	G	G	*#48	G	G	G	*#40	*51	61	#50	#29	G#	G	G	G
7	G	#30	G#	G	G	G	G	G	*#40		G	G	G		G	G	G	G	G	G	G		G	G
8	G	G	G	G	G	G	G	*#46	G	G	G		G	G	G	G	G	G		G	G	G	G	G
9	G	G	G	G	G	G	G	G	G	G	*#68	G	G	G	G	*#75	*49	33		*41	*88	*61		
10		G	G	G	#25	*35	*44	G	G	G	C	C	C	C	C	C	C	C	C	C	40	*41		
11	G	G	G	G	*#37	28	*38	*45	*41	*42	G	G	G	G	G	G	G		41	#11	G	G	G	
12	G	G	G	G	G	#26	G#	G	G	G	*#45	G	G	G	G	G	G	#39				*44		G
13	*#32	*66	*45	*44	*60	*33		*39	*43	*46	G		G	*#54	G	G	G	#29		G	G	G	*#43	G
14	G	G		G	#24	*33	*32	G	G	G	G		G	*#45	G	G	*#36	61	#32	28	G#			G
15	G	G	G	G	G	G	*#33	G	G	G	G	G	G	G	G	G	G	G	G	G	G		G	G
16	G	G	G	*#32	*42	G	G	G	G	G	G	G	G		G	G	G	G	#28	G#	G			
17	G	G	G	G	G	G	G	G	*#46	*44	*44	C	G	G	G	*#40	G	#29	26	G#		G	G	G
18	G	G	G	G	G	#29		G	G	G	*#42	G	G	G	G	G		G	#27	G#		G	G	
19	*34	29	24	G#	G	G	G	G	G	*#46	G	G	*#48	*65	G	*#41	*48	34			*85		G	
20	27	G#	G	G	G	#27	*#41		*48		G	*#49	G	G	G	G	*#40	33	39	*#67	30			
21	26			G	#31	28	G#	*#35	*77	G		G	G	*#44	G		*37	32	40	*33	*46	G		G
22	G	G	G	G	G	G	G	G	G		G	G	G	G	G	*#39	G	G	#25	G#	G	G		30
23	G#	#25	*#43	G	G	G	G	G	*#49	*42	*51		*51	G	G	G	G		56	*#44	39		*40	
24	*32	G	G	G	*#32	G		*40	*41	*52	*56	*59	*48	G	*#48	*40	G	#31	31	G#	G	G	G	G
25	#25	G#	G	G	#26	G#	G		G			G	G	G	G	G	G	#39	G#	G	G	G		G
26	*#45		G	#27	G#	G	G			G	G	G	G	G	G		G	G	G	G	G	G		G
27	G	G	G	G		G	G	G	G		G	*#42		G	G	G	G	G	G		27	G#	G	G
28	G	G	G	G	G			G	G		*42	G	G	G	G	G	G		G	#31			G	
29	G	G	G	G	G	G	*#33	*41			*46	*50	G	*#41	G	G	G		37		*52		G	G
30		G	*#32	*50	G	G		G	G	*#60	*55	*70	*45	G	*#45	*48	*44	43		*51	*70	G	G	G
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	27	28	30	29	29	25	27	28	23	27	22	28	27	29	27	28	25	23	24	26	19	16	20
MED	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	31	27	G	14	G	G	G
U Q	25	G	12	G	28	27	33	41	44	45	45	44	G	G	G	39	38	38	37	32	42	G	G	G
L Q	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G

HOURLY VALUES OF fmin AT Wakkanai

SEP. 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	16	17	18	17	18	16	16	22	20	23	30	22	21	22	20	18	15	15	15	15		18	21
2	20	17	16	18	20	16	17	18	18	21	20		21	21	23	21	18	16	20	15	16	18	15	18
3	17	20	17	15	18	26	#15	18	21	20	21		24	23	21	18	15	16	20	14	16	20	18	15
4	18	16	17	18	15	18	15	18	18	21	22	22	28	22	21	18	18	16	20	16	18		18	17
5	21	17	20	20	17	18	15	#33	23	24	24	24		21	24	22	18	18	15		18	17	18	21
6	20	20	18	18	17	21	17	16		22	24	27		21	16	21	22	18	15	16	18	18	22	16
7	18	16	20	17	20	21	16	21	21		24		26	21	22	21	20	18	20	15	17	18	16	16
8	18	18	18	16	17	20	18	20	24	22			49	47	*54	20	18	26		15	17	18	18	17
9	17	16	17	18	20	20	16	18	21	20	23	24	#54	#23	22	21	18	16		14	16	16	21	15
10	18	18	18	18	16	15	18	20	22	22	C	C	C	C	C	C	C	C	C	C	14	15	15	
11	21	20	20	17	20	20	15	16	17	20	*#53	23	26		21	20	21	16	15	15	18	17	15	16
12	18	16	17	16	18	18	17	18	21	21	23	24	24		23	18	18	16				15		17
13	17	16	16	15	16	15		18	18	20	22	21	22	22	22	20	16	16		15	17	20	17	18
14	16	16		18	17	20	16	18	20	21	22		21	22	21	23	16	15	14	20	22	18		18
15	18	18	16	20	17	18	15		18	18	23	23	21	27	20	18	18	16	16	15	17	22	16	18
16	17	17	15	15	18	20	27	#16	17	20	21	20			46	#16	16	16	17	15	17			
17	16	17	17	17	20	18	26	18	18	21	21	C	26	21	20	18	16	15	16	14		20	17	18
18	17	18	17	18	18	17		16	20	21	21		21	22	18	20	18	20	16	15		18	17	15
19	15	15	17	18	20	17	23	17	21	18	#30	22	20	21	21	18	20	20		17	20		20	21
20	18	15	18	20	17	20	15	20	21		23	24	26	24	20	17	17	16	14	16	17	17	16	
21	18		17	16	16	16	26	17	18	22		32	23	22	21		18	15	14	16	20	17	18	18
22	18	17	20	16	18	17	24	18	20		21	23	28	26	23	20	20	23	15	15	17	17		17
23	17	20	16	20	17	17	23	17	22	21	22		22	22	20	17	18		15	15	14	15	17	15
24	16	16	15	21	16	16	17	20	20	22	23	21	20	21	20	18	16	15	15	15	17	17	15	20
25	16	18	18	16	18	16	20	16	20			48	#22	22	*#53	20	16	17	15	15	17	15	17	
26	20	20	20	20	20	17	26	#15	18	22	20	21		24	18	20	17	15	15	16	20	20	17	17
27	20	17	18	20		17	16	17	18		22	23	22	22	20	17	18	21	15	16	17	20	17	16
28	18	20	18	18	20		17	18	20		20	26	24	22	21	21	17		14	15	16		18	22
29	18	18	17	16	18	17	15	18	20		22	22	26	24	22	18	18		15	14	16		18	26
30	17	20	16	15	22	17	23	18	20	21	24	24			22	21	18	16		15	18	18	22	
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	29	29	30	29	29	28	29	29	23	26	21	24	25	29	28	29	26	23	27	27	24	26	25
MED	18	17	17	18	18	18	17	18	20	21	22	23	24	22	21	20	18	16	15	15	17	18	17	17
U Q	18	19	18	18	20	20	23	18	21	22	23	25	26	23	22	21	18	18	16	16	18	19	18	19
L Q	17	16	16	16	17	17	15	16	18	20	21	22	21	21	20	18	16	16	15	15	16	17	16	16

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF foF2 AT Kokubunji

SEP. 2001

LAT. 35°42.4'N LON. 139°29.3'E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

HD	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	57	#68	59	56	53	55		93	94	#83	84	#95	103	97	103	107	108	114	#82	#97	#81	71	*#59	95
2	95	#70		69	59	67	#80	#92		98	92	93	#107	111	110	106	101	100	#87	93	94	94	#81	#69
3	67	69	62	59	55	54	#93	#116	116	#86	84	90	#103		103	95	96	100	#114	#94	92	93		93
4	#71	#94	94	92	#59	63		116	116	114	114	#100	103	108	106	103	102	#116	106	#93	94	#69	70	69
5	70	#59	69	#54	51	#63	#81	#96	#107	#96		93	100	95	102	101	94	94	96	#83	#94	94	91	94
6	#67	68	63	59	59	#74	#93	#116	115	#92	85		91	94	92	93	91	92	97	92	87	95	95	94
7	94	#68	69	64	67	70	#101	#116	#97	87	92	#103	#90	97	95	95	96	101	98		92	93	92	#73
8		95	#70	67	63	67	#102		93	96	100	105	103	99	98	101	103	101	110	#83	#94	93	94	94
9	95	#68	69	69	61	#75	#116	#97	#115	105	#120	113	107	103	98	101	103	113		84	94	#74	67	
10	94	#72		71	#59	58	#94	97	102	101	107	115	113	113	#101	103	#117	#101	#114	#93	84	83	#94	94
11	#67	74	#94	#68	#56	59	#82	#95	#114	108	113	109	108	107	112	104	97	#111		114	#93	84	#96	
12	96	95	94	#69	61	67	#102	106	114	115	109	#121	122	113	108	106	101	99	#114	#93	91		94	94
13	#68	68	64	59	55		*59	A	94	*#81			*77			*73	83	93	91		*59	*61	*61	*61
14	69		49	49	48	57	#92	101			102	104	103	104	102	100	#113	#98	97	94	#72		95	#81
15		70	67	69	59	68		115	#99	#116	107	111	108	111	112	107	101	103	#116	#96		95	94	#76
16	68	71	68	58	58	58	#97	#115	#96	94	94	100	#88		103	96		122		94	#81	#92	#74	
17	69	67	68	63	58	62	#94	93	#114	#100		107	111	106	107	104	104	104						
18											102	#116	118	113	107	107	112	121	#108	#95		91		
19	92	#68	67		56	51	#95	#115	114	115	#104		121	118	109	114	116	117		94	93		95	#69
20	74	70	68	67	#56	#70	#95	#106	#117	113	112	114	118	127	133	132	130	133	136	#97	94	95		91
21	95	#69	75	#59	67		95	#114	116	114	#97	#114	118	116	120	122	126	124	131	#114	#81	#93	94	93
22	95	#69	70	76	#61		96	#116	114	114	114	110	120	117	120	#133	133	137	#123	116	#94	#82	#70	72
23	75		57	63	59	#74	#115	116		120		118	120		126	124	118	114	111	116			*59	*57
24	68	70	61			66		102	#116	121	117	110	#123	119	109	109	#121	113	110	#94	#81	#94	94	95
25		95	95	95	#64	69	#95	#117	120	#132	122	124		124	123	120	111	118	125	#104	#93	95	#76	
26	95		95	94	#66	72		114	124	116	*#149	110	106	106	#122	122		116	111	106	#93	96	#85	93
27	#73		73	70	70		99	#116	124	133	#118	#132	128	125	132	126	133		110	115	#93	85	92	92
28	95	95	#70	63	70	#81	#99	#122	124	125	127	129			131				123	#91	96	94	95	95
29	#61	68	69	69	63		94	#122	126		138	136	#124	130		126	#114	117	117	#93	92	94		94
30		82	#68	62	63		103	#126	120	124	123	#138		129	132	132	124	133	#105	104	112	#91	94	94
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	25	27	27	28	23	24	27	26	27	26	27	27	25	28	29	27	28	25	27	26	25	25	24
MED	73	70	69	67	59	67	95	115	114	113	108	110	108	111	108	106	108	113	110	94	93	93	92	93
U Q	95	78	73	69	63	70	100	116	117	116	118	118	120	118	121	122	118	117	116	104	94	94	94	94
L Q	68	68	64	59	56	58	93	97	102	96	97	103	103	103	102	101	101	100	97	93	84	83	72	72

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT Kokubunji

SEP. 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	29	G#	G	G	G	G	#32	*# 47	*47	*51	*48	*56	*70	*53	*52	G	G	*G	33		31	28	36	*32
2	26	*34	28	G#	G	G	G	*# 39	*40	G	G	G	G	G	G	G	G		*G	23	24	24	29	G#
3	#27	G#	G	G	G	G	G	G	G	G	G	G	G	G	G	*# 43	*46	39	40	#29	32	G#	G	G
4	G	G	G	G	G	G	#32	G#	*# 44	G	G	G	*# 60	G	G	G	G	*G		G	G	G	#27	G#
5	G	G	G	G	G	G	#32	G#	*# 42	G	*# 82	G	G	G	G	G	G	#43	40	43	#55	#25	33	24
6	G#	G	G	G	G	G	#31	G#	G	G	G		G	*# 55	*55	G	*# 52	58	#33	33		56	#29	28
7	G#	G	G	G	G	G	G	G	G	*# 43	G	*# 47	*47	G	G	G	G	*G	*G	G	#44	37	36	*33
8	23	G#	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	*G	24	26	G#	#53	G#	*# 62
9	30	G#	G	G	G	G		G	G	G	G	G	G	G	G	G	G	#36		G	G	#40	#29	G#
10	G	G	G	G	G	*# 37	30	*40	G	G	G	G	G	G	G	G	*# 43	41		25	34		G	G
11	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	#34	27		40	#29	23	*# 42
12	29	27	G#	G	G	G	#31	G#	G	G	G	G	*# 59	*46	G	G	G	*G	*G	G	G		G	
13	G	*# 53	*40	G	G		40	*# 83	*50	G			G			G	G	#35	*G#		G	G	G	G
14	G	G	G	G	G	G	G	G	G		G	G	G	G	G	G	G	#43	#32	G#	#34	30	36	#24
15	G#	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	#35	*G#	33		27	G#	G
16	G	G	G	G	G	G	#36	*39	G	G	G	G	G		G	G	G	#32		G	#34	26	33	
17	30	G#	G	G	G	G	G	G	G	G		*55	*68	G	G	*# 54	*39	*87						
18											G	G	G	G	G	G	G	*G	33	42		34		
19	24	G#	G	G	G	G	#34	G#	*# 39	G	G		G	G	G	*# 45	G	#33	25	#44	54	*# 72	30	
20		*34	*33	30	31	26	G#	*# 44	G	*# 42	*45	*57	*52	G	G	G	*# 53	37	40	#54	61	#34		25
21	G#	G	G	G	G	G	#31	G#	G	*# 42	*50	G	G	*# 51	*53	*53	*	61	51		31	G#	G	G
22	G	G	G	G	G	G	#41	G#	*# 41	*61	G	G	G	G	G	G	G	#34	*# 70	50	40	41	40	G#
23	G		G	G	G	#27	G#	G	G	G		G	G	G	G	G	G	#32	*G#	G			G	*# 49
24	*33	27	G#			G	G	*# 54	*71	*56	G	G	G	G	G	G	G	*G	37	35	26	G#	G	G
25	G	G	G	G	G	G	#30	G#	G	G	G	G	G	G	G	G	G	#35	*G#	G	#24	24	29	G#
26	G		G	G	G	G		G	G	G	G	G	G	G	G	G		29	*G#	27	G#	G	G	G
27	G	G	G	G	G	*# 32	33	G#	G	*# 44	*43	G	G	G	*# 44	*52	*48	41	44	37	29	33	G#	G
28	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	#59	57	#39	31	35	G#	G
29	G	G	#30	*# 55	G	G	#30	G#	G	G	G	*# 53	*47	G	G	G	G	#48	*# 86	*# 68	39	41		28
30		G	G	G	G	*# 40	G	G	*# 48	*44	G	G		G	G	G	*# 82	55	54	#33	G#	G	*# 62	*61
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	27	29	28	28	28	27	29	29	28	27	27	29	28	29	30	29	29	25	25	25	26	26	25
MED	G	G	G	G	G	G	30	G	G	G	G	G	G	G	G	G	G	35	33	29	31	28	25	G
U Q	26	G	G	G	G	G	32	20	40	42	G	G	24	G	G	G	41	43	42	40	39	37	33	30
L Q	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	15	G	G	G	G	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT Kokubunji

SEP. 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	14	14	17	13	14	14	15	25	22	#34	34	34	28	25	20	17	13	14	14	13	14	14	14
2	14	14	15	15	14	14	15	14	13	20		21		52	#23		17	14	17	14	14	14	13	14
3	14	15	23	13	14	14	23	15	18		47		53	53	53	#28	#15	14	14	14	14	14	14	14
4	15	14	13	14	13	14	14	13	15	22	20	22	22	21	18	15	14	13	13	14	13	14	14	14
5	13	14	13	13	13	15	14	#44	#18	17	25	#54				21	17	14	14	13	14	17	14	13
6	14	14	14	14	14	14	14	15			47		62	#43	41	#22	20	15	14	14	14	13	14	13
7	15	14	14	14	14	14	15	17	20	22			34	26		23	17	14	13	14	13	13	14	14
8	14	13	13	14	13	15	17	17	21	25		56	62	62		20	17	14	18	14	14	14	14	13
9	13	13	13	14	13	15	14	17	20	24		62	64	62	#45	50	#15	13		13	13	14	13	14
10	14	13	13	14	13	14	13	17	17		50		64	64	#45	42	#18	14	14	13	13	13	14	14
11	14	14	14	14	13	14	18	15	17				64	72	#28	23		17	17	13	13	13	13	13
12	13	14	14	14	14	13	14	14	22		45			39	30	20	15	15	17	14	14		13	13
13	14	15	14	14	14	14	15	17	17	20			61			48	#14	15	17		15	13	13	14
14	13	14	14	14	14	18	14	13	14		47	48	53	#33		13	14	14	14	13	13	14	13	14
15	14	14	14	14	13	14	18	#39	#20		45		62	63	#23	18	14	13	14	13		13	14	14
16	14	14	14	14	13	15	14	15	15	18		46	52		62	#15	14	14		14	13	14	13	
17	14	14	14	14	13	14	24	17	21	25		35	30	30	26	18	14	14						
18											31		26		17	14	15	14	14	13		14		
19	13	14	13	14	14	14	15	13	18	23			26	#44	42	#24	20	14	14	20	14	13	13	14
20	14	14	13	13	13	15	15	14	20	20		40	36	43	#29	26	18	14	13	13	13	13		14
21	13	14	14	13	14	14	18	13	13	17		20	#45	36	34	#17	17	13	13	13	14	13	14	15
22	14	14	14	14	14	14	15	17	23	26		33	#52	#22	24	17	20	15	14	14	13	13	14	14
23	15		13	14	13	14	15	15	17			62		25	22	21	15	14	14	14			14	13
24	13	13	14			15	15	15	15	#26		47	46	#25		20	13	13	14	14	14	13	14	14
25	13	14	13	14	13	15	17	18	20		24	#49	45	#21			17	18	14	14	13	13	14	13
26	14		13	13	13	13		14	17	22		45		49	#61	#20		17	13	13	13	14	13	14
27	15	13	14	13	13	14	13	15	15	#30	26		48		64	#18	15	14	13	13	13	14	13	14
28	14	13	13	14	13	14	17	18	23		49	44	46	48	47	#18	18	14	13	14	13	13	15	14
29	13	13	13	14	14	14	14	14	21		43	38	39	46	44	#18	17	14	14	13	13	13		13
30		13	13	13	14	13	15	#28	33	#20		48		47	43	40	#17	15	14	14	15	13	13	13
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	27	29	28	28	29	28	29	28	18	14	19	24	25	23	28	28	30	27	28	26	27	26	27
MED	14	14	14	14	13	14	15	15	18	22	44	45	47	43	34	20	17	14	14	14	13	13	14	14
U Q	14	14	14	14	14	15	17	17	21	25	47	49	61	52	45	23	17	15	14	14	14	14	14	14
L Q	13	13	13	13	13	14	14	14	16	20	26	34	35	27	24	18	14	14	13	13	13	13	13	13

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES

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

HOURLY VALUES OF foF2 AT Okinawa

SEP. 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	111	#72	70	69	70		70		117	#82	92		121		*179	160	152	#167	164	#147	#121	117		
2		115	116	#92	#70	#57	60	#84	94	93	91	86	#122		146	#159	152	151	#168	168		83	*#177	140
3		*136			94	#78	#92	*#122	94	86	#115	123	*#154	*165	157	152	147	151	152	#166	#149		92	
4		95	94	95	94	#77		91	#117	#88	91	#116	120			130		124	#140	#123	*#93	92	92	
5	94	#116	#94	C	C	C	C	C	C	C		C	121	121		139	132	130	134		132	122	114	
6	94	95	95	#80	70		63	#93	99	92	94	#116	122	122	116	*#104	*112	118	126	131	*#93	81		91
7		92	95	93	#72	#60	56	#82	91	92	#113	#98	#118	#153		173	*#186	*192	*188	168	#132	129	*#155	*156
8		*150		*134	*121			83	#97	#122		112	121	125	116	*115	155	#130		*102			*69	*67
9	95	95	94				81	#94	#115	116	121	118	C	C	C	C	C	C	C	C	C	C	C	C
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C							
11												C												
12				C								C												
13																								
14																								
15														*169										
16														134										
17																								
18																								
19																								
20																								
21															C									
22																			C					
23	C					C				C														
24		C							C							C								
25												C								C				
26												C	C	C	C	C	C	C	C	C	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	C								C	C	C			
28						C																C		
29			*149																		C			
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	4	9	8	6	7	4	6	7	8	8	7	7	8	7	5	8	7	8	7	7	6	6	6	4
MED	94	95	94	92	72	68	66	91	98	92	94	116	121	134	146	146	152	140	152	147	126	104	103	116
U Q	103	126	105	95	94	77	81	94	116	104	115	118	122	165	168	159	155	159	168	168	132	122	155	148
L Q	94	93	94	80	70	58	60	83	94	87	91	98	120	122	116	122	132	127	134	123	93	83	92	79

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT Okinawa

SEP. 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	*# 41	*36	*42	28		50	G#	G		G	G		G	G	*G	34	*# 72	39	G#	G	G
2	# 30		G	G	# 27	31	G#	# 34	40	G#	G	G	G		G	G	G	# 44	40	# 28	# 47	# 33	G#	# 24
3	G#	G			G	G	G	*G	43	*42	G	G	G	*# 60	*69		*87			58	48	# 29	29	
4		G	G	G	G	G		40	46	*50	*58	G	G			G	G	# 68	60		66	*72	*60	
5	25	G#	G	C	C	C	C	C	C	C		C	G	G	G	G	G	#* 68	76		30	G#	# 39	
6	33	G#	G	G	G		G	# 47	46		*83	*81	G	G	G	*# 57	G	# 70	# 41	48	# 60	# 49	# 35	# 50
7	# 32	G#	G	G	G		*99	35	#* 63	*60	*49	*72	*76	*65	*87	G	G	*G	33	*G#	*G	28	29	38
8		G		*34	G		G	*G	*G	G	G	G	G	G	G	G	G	*G	*G	*G	*G		G	G
9	G	G	G	G		G	G	*G	*G	G	G	G	C	C	C	C	C	C	C	C	C	C	C	C
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C							
11												C					*42							
12				C								C												
13																								
14																								
15																								
16														G										
17																								
18																								
19																								
20																								
21															C									
22																			C					
23	C					C				C														
24		C							C							C								
25												C								C				
26												C	C	C	C	C	C	C	C	C	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	C								C	C	C			
28						C																C		
29																					C			
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	7	8	7	7	7	5	7	7	8	7	8	7	8	7	6	7	9	7	7	6	8	7	8	5
MED	25	G	G	G	G	G	G	34	44	G	G	G	G	G	G	G	G	44	40	38	43	29	29	24
U Q	32	G	G	34	27	36	28	40	48	50	53	72	G	60	69	G	21	68	60	58	54	49	37	44
L Q	G	G	G	G	G	G	G	G	20	G	G	G	G	G	G	G	G	G	33	G	15	G	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

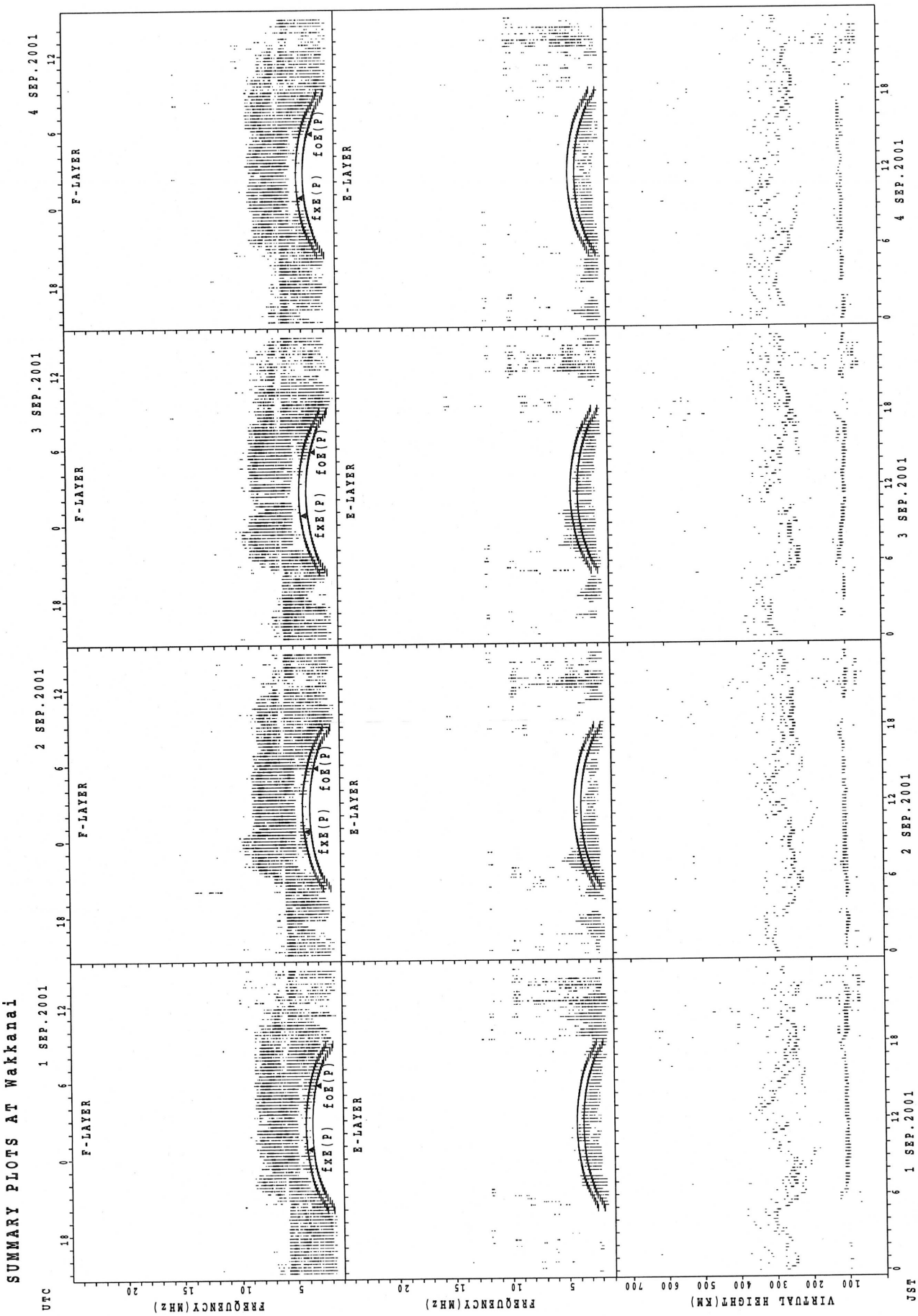
HOURLY VALUES OF fmin AT Okinawa

SEP. 2001

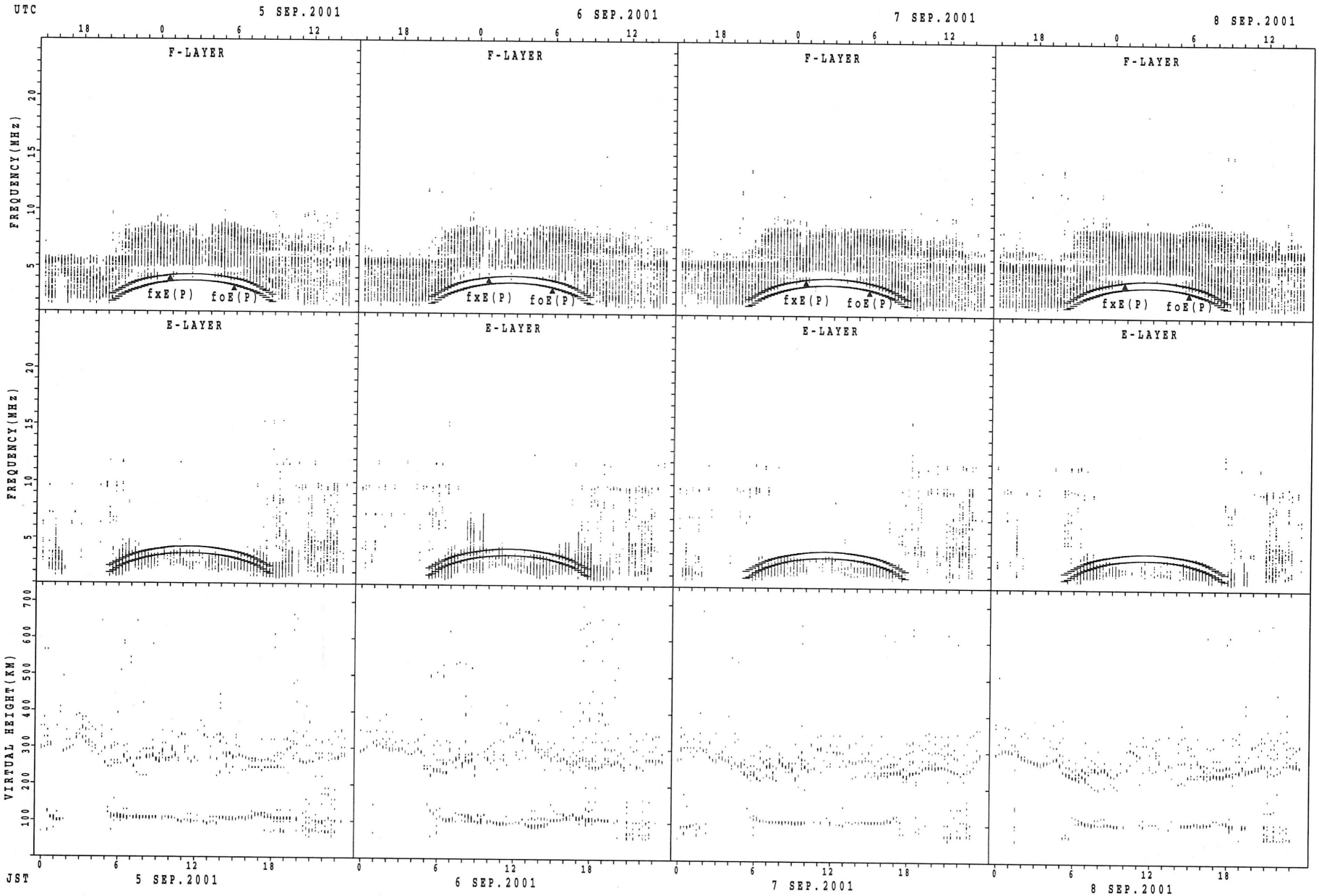
LAT. 26°16.9'N LON. 127°48.4'E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

HD	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	15	14	15	14	14	14	14	17	21			52	56	60	52	#29		15	14	14	14	15	18	16
2	14	14	15	15	14	14	15	16	16		28	27		55	56	56	54	#16	15	15	15	14		15
3	15	14			15	14	17	22	17	#32	#51	60	59	#48	44	42	39	#28	#17	14	14	14	15	14
4	14	17	15	15	14	15	17	16	16	#28	32		56	#40	36		52	#17	15	15	15	14	15	
5	15	15	15	C	C	C	C	C	C	C		C	63	59	59	#22	18	17	15	14	14	15	14	15
6	15	15	15	15	15		16	14	#30	36	45	45	50	#64	55	#44	54	#27	#15	14	14	15	15	14
7	14	15	14	15	14	14	14	15	17	#32	40	46	46	44	46	51	#30	#15	17	15	14	15	15	15
8		16		16						54				66		60	55			26				
9								35	43	52	58	59	C	C	C	C	C	C	C	C	C	C	C	C
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C							
11												C					34							
12				C								C												
13																								
14																								
15																								
16														73										
17														32										
18																27								
19							14																	
20																								
21							14								C									
22																			C					
23	C					C				C														
24		C							C							C								
25							14					C								C				
26							14					C	C	C	C	C	C	C	C	C	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	C								C	C	C			
28					14	C	14															C		
29			14																		C			
30							14												18					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	7	8	7	6	7	5	12	7	7	6	6	6	6	10	7	8	8	7	8	8	7	7	6	6
MED	15	15	15	15	14	14	14	16	17	34	42	49	56	57	52	43	46	17	15	14	14	15	15	15
U Q	15	15	15	15	15	14	15	22	30	52	51	59	59	64	56	53	54	27	17	15	15	15	15	15
L Q	14	14	14	15	14	14	14	15	16	32	32	45	50	44	44	28	32	15	15	14	14	14	15	14

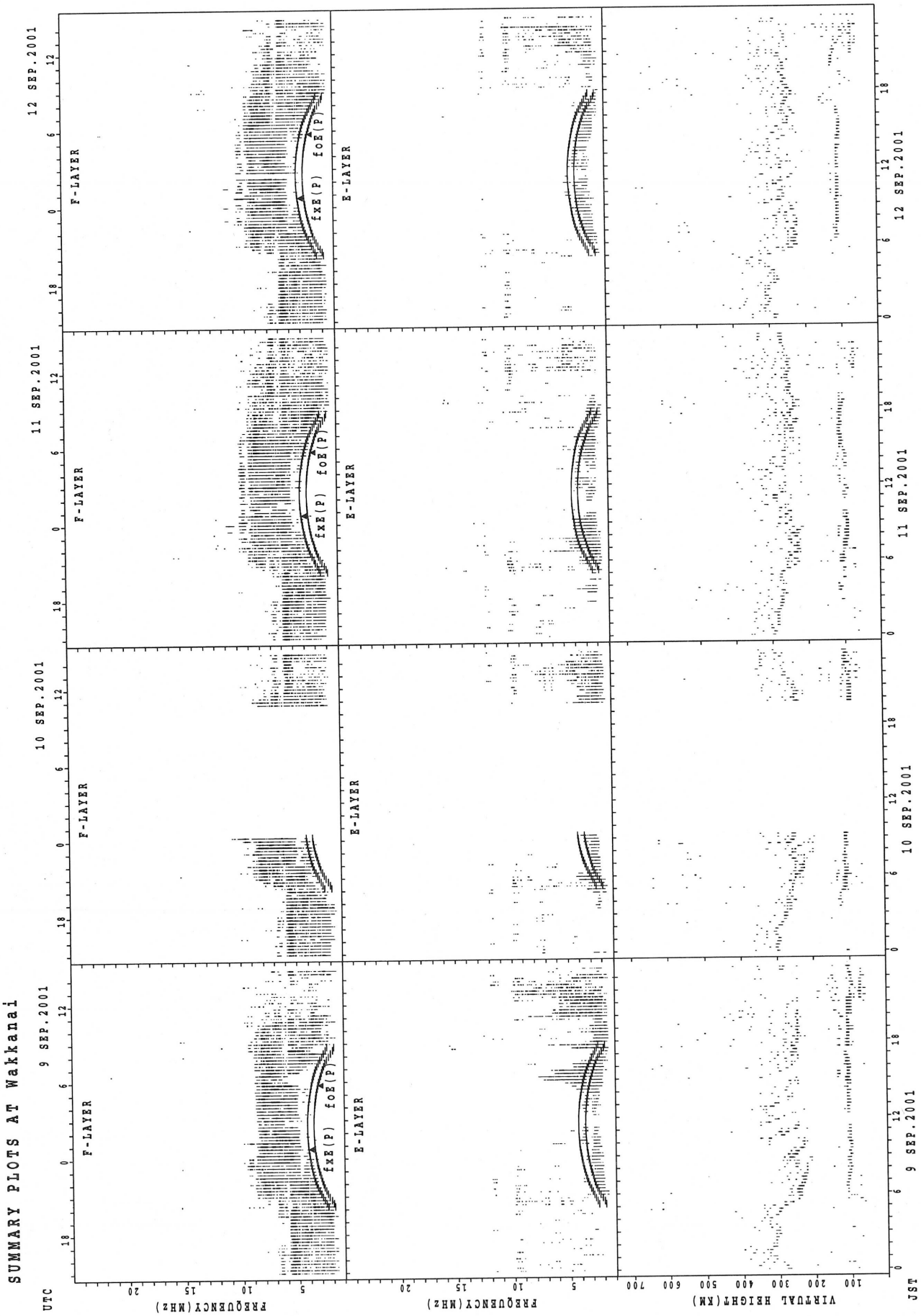
COMMUNICATIONS RESEARCH LABORATORY, JAPAN


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

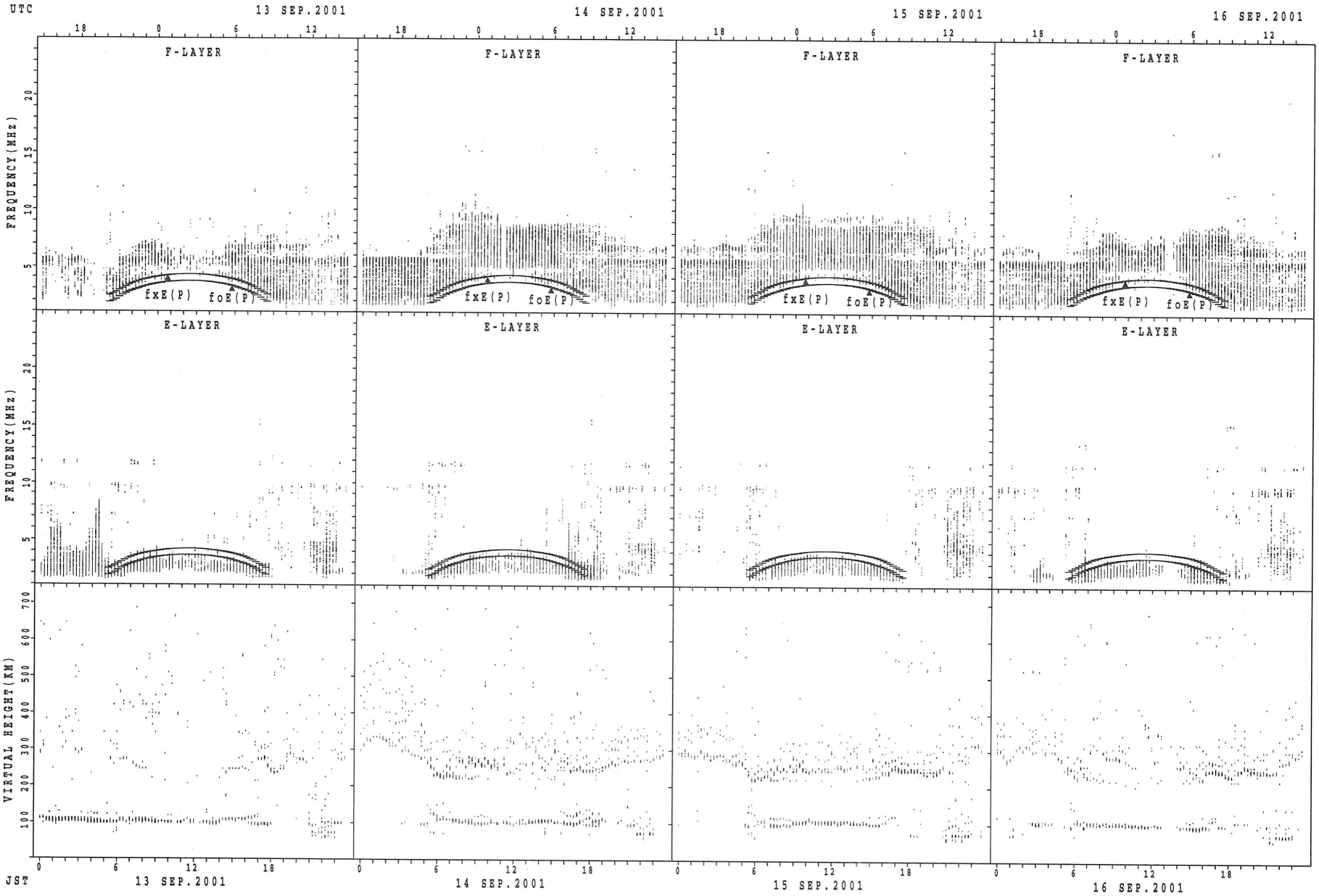
SUMMARY PLOTS AT Wakkanai



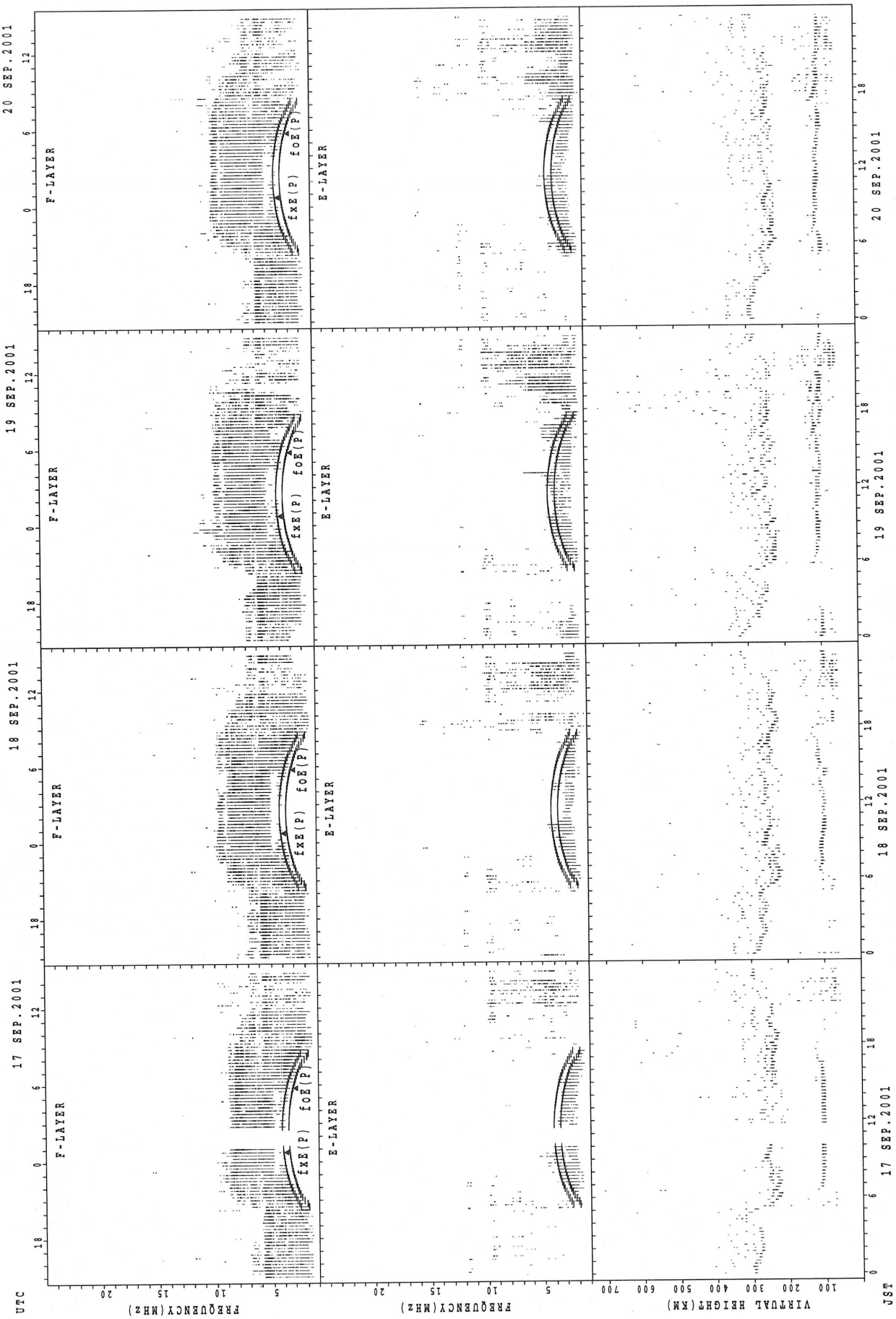
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Wakkanai
UTC
JST
9 SEP.2001
10 SEP.2001
11 SEP.2001
12 SEP.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

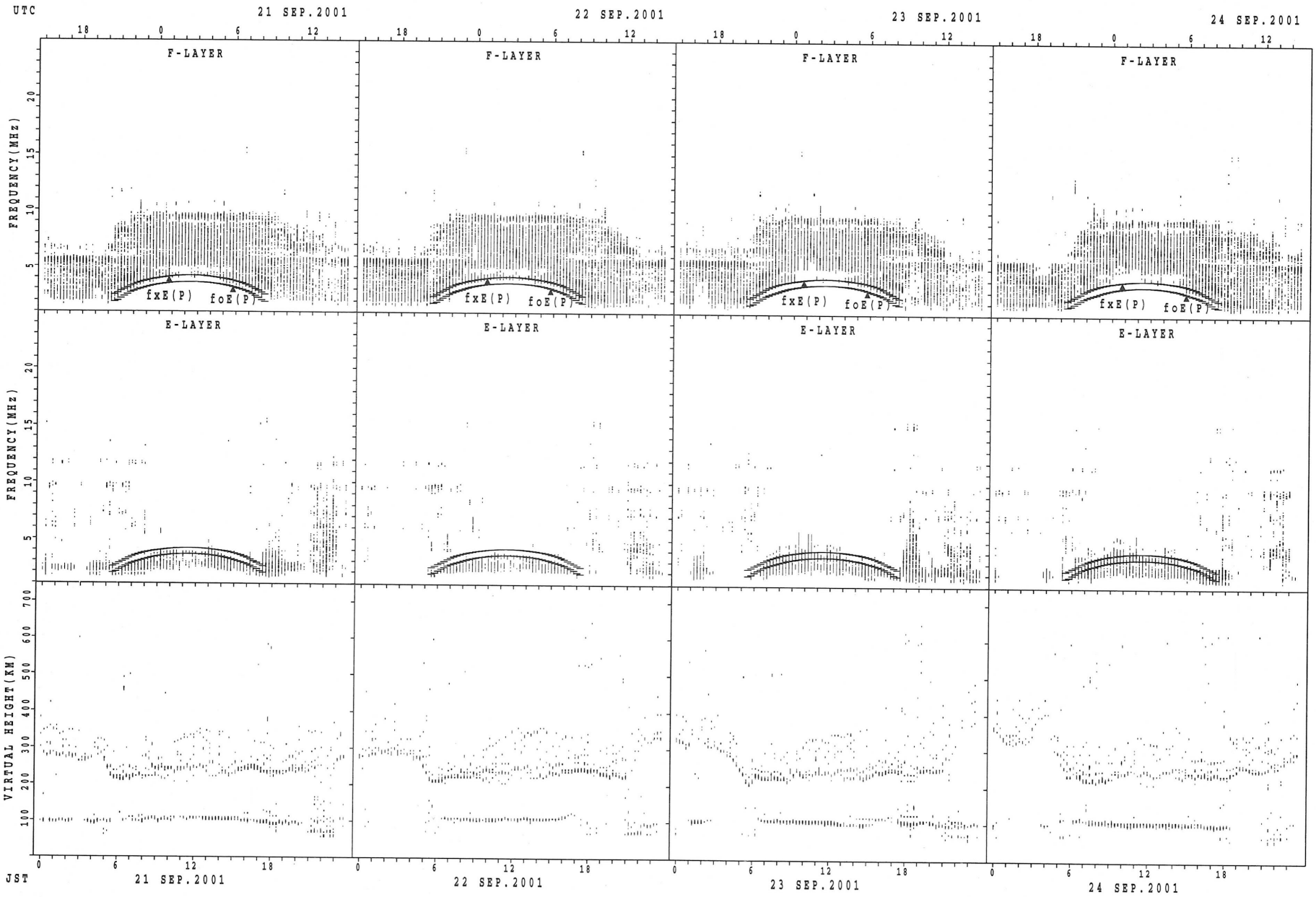
SUMMARY PLOTS AT Wakkanai



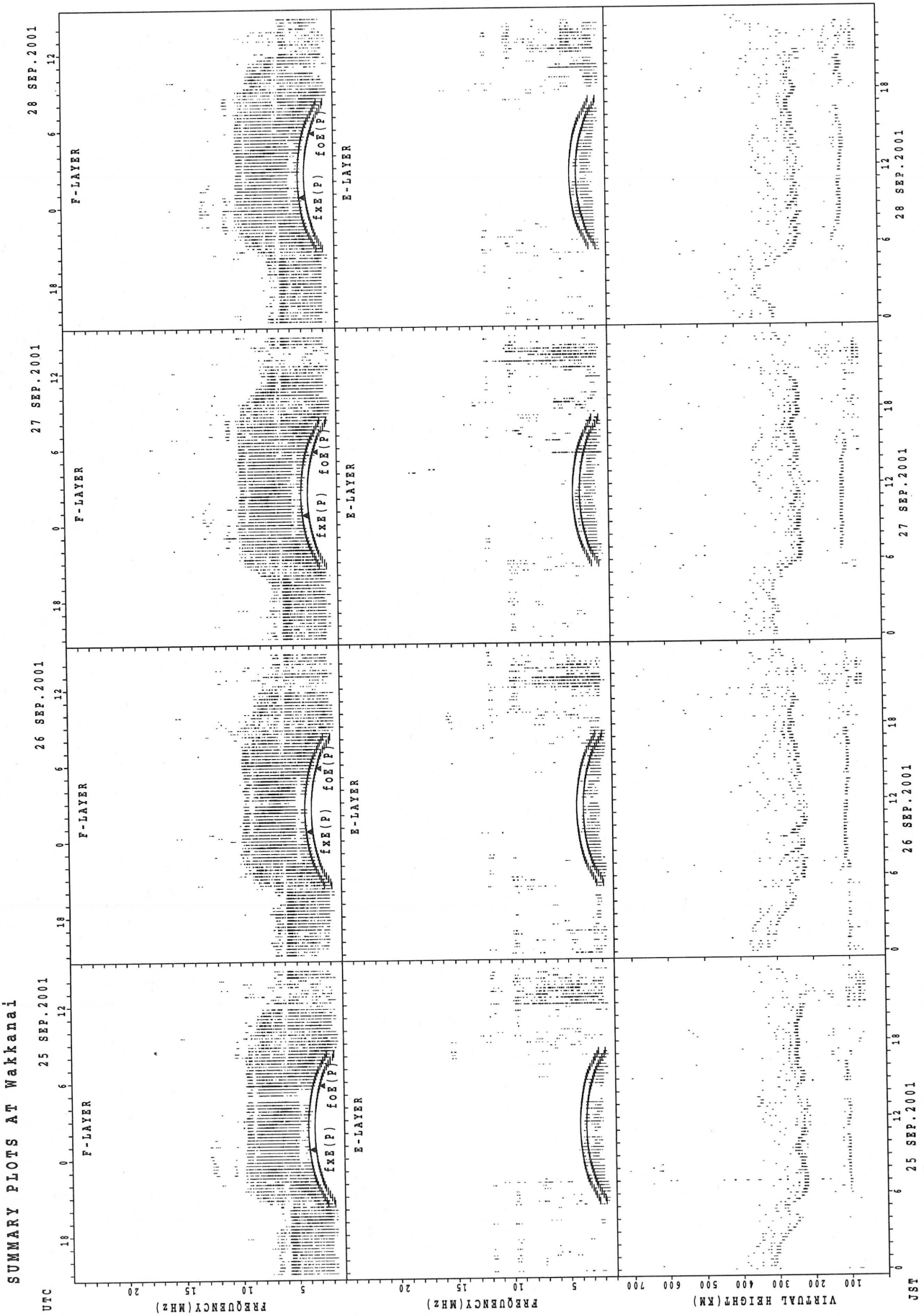
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


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

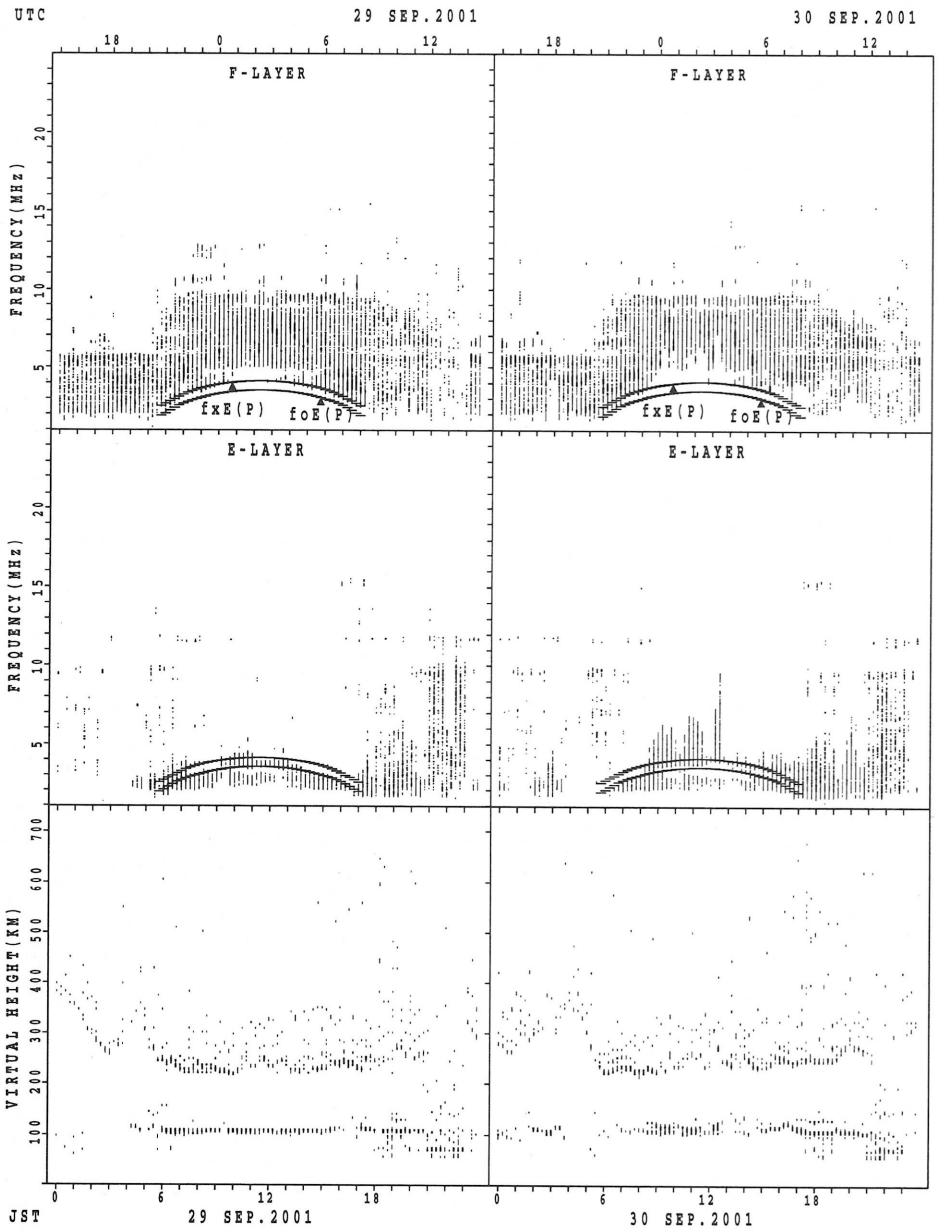
SUMMARY PLOTS AT Wakkanai



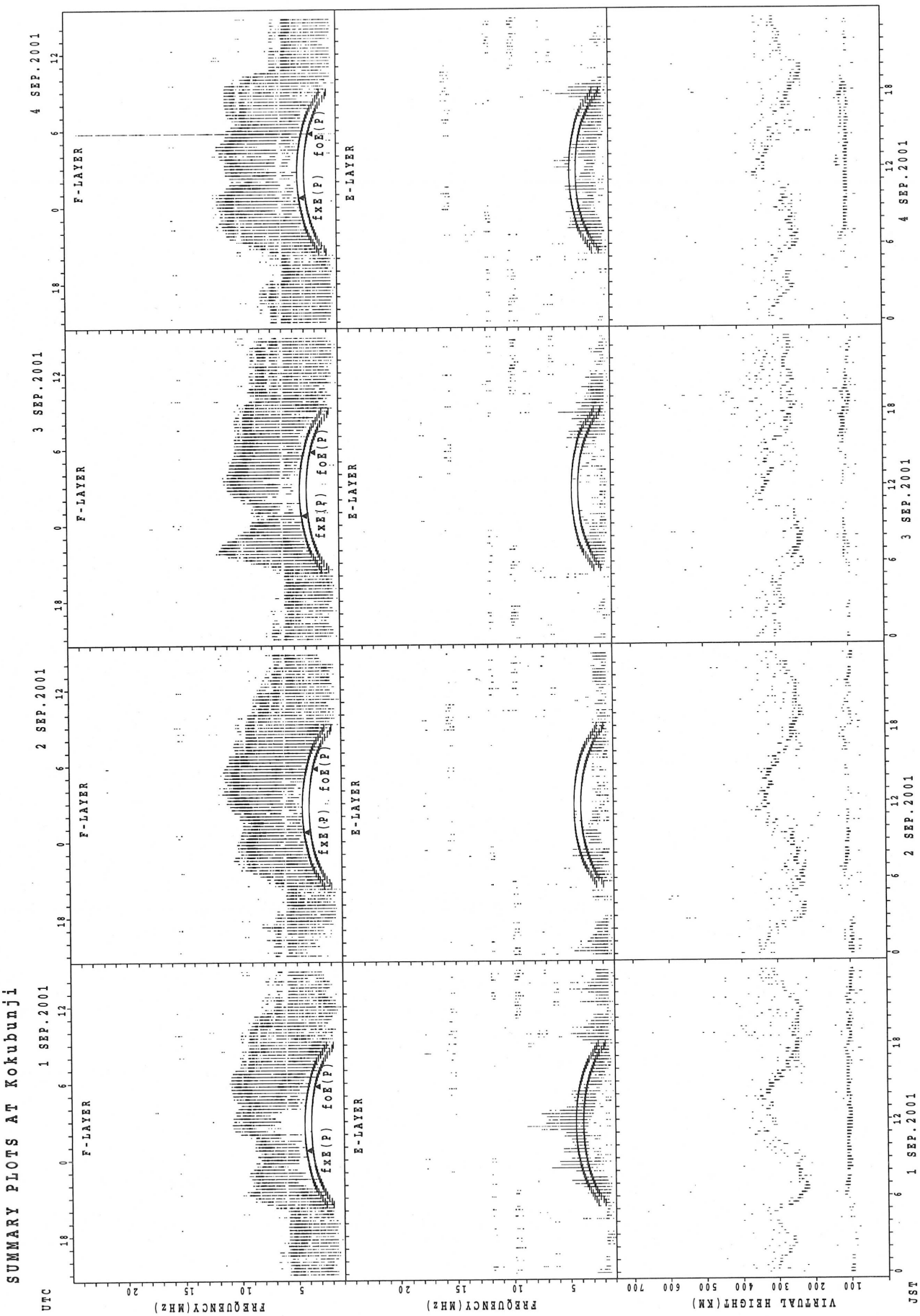
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Wakkanai
UTC
JST
25 SEP.2001
26 SEP.2001
27 SEP.2001
28 SEP.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

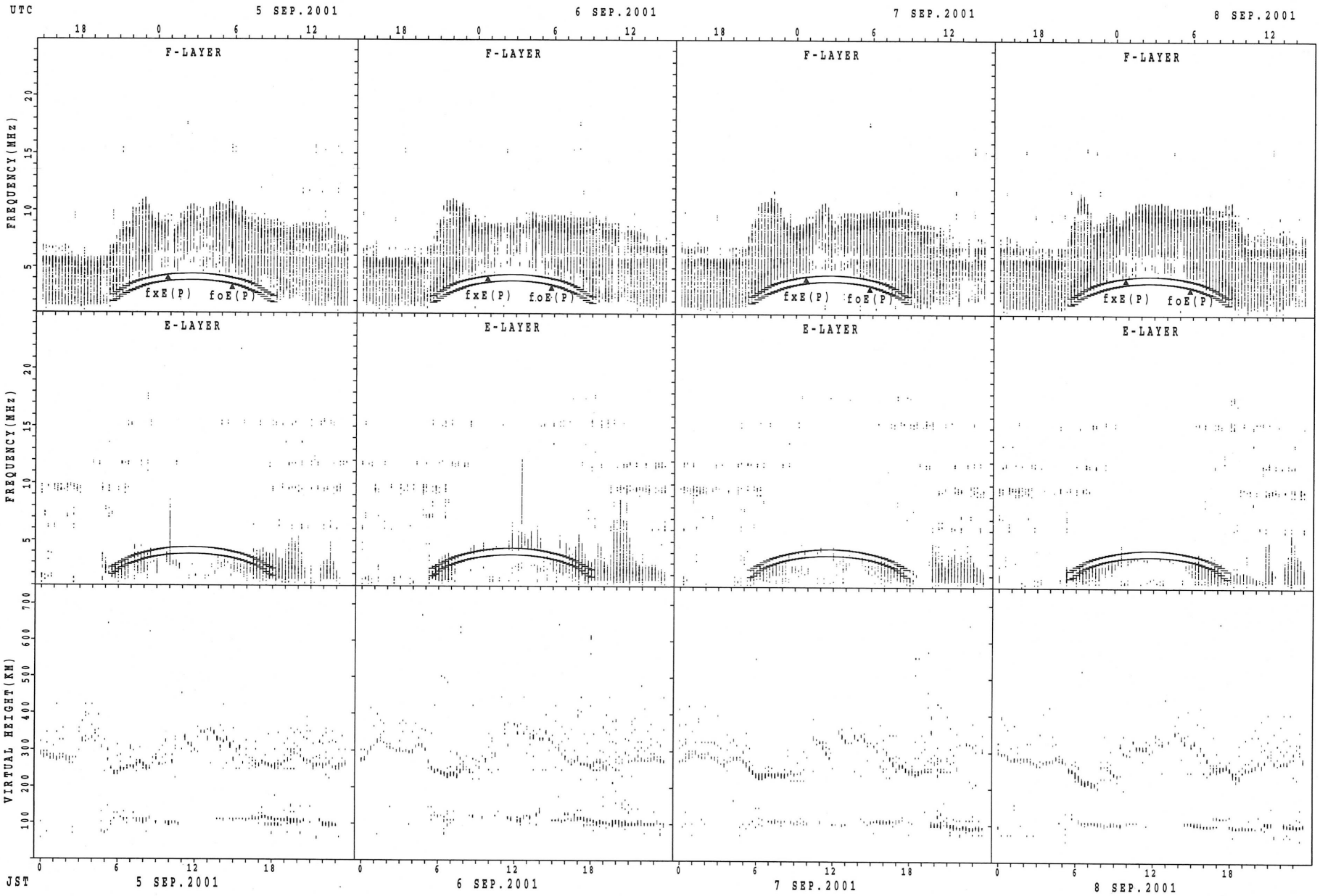
SUMMARY PLOTS AT Wakkanai



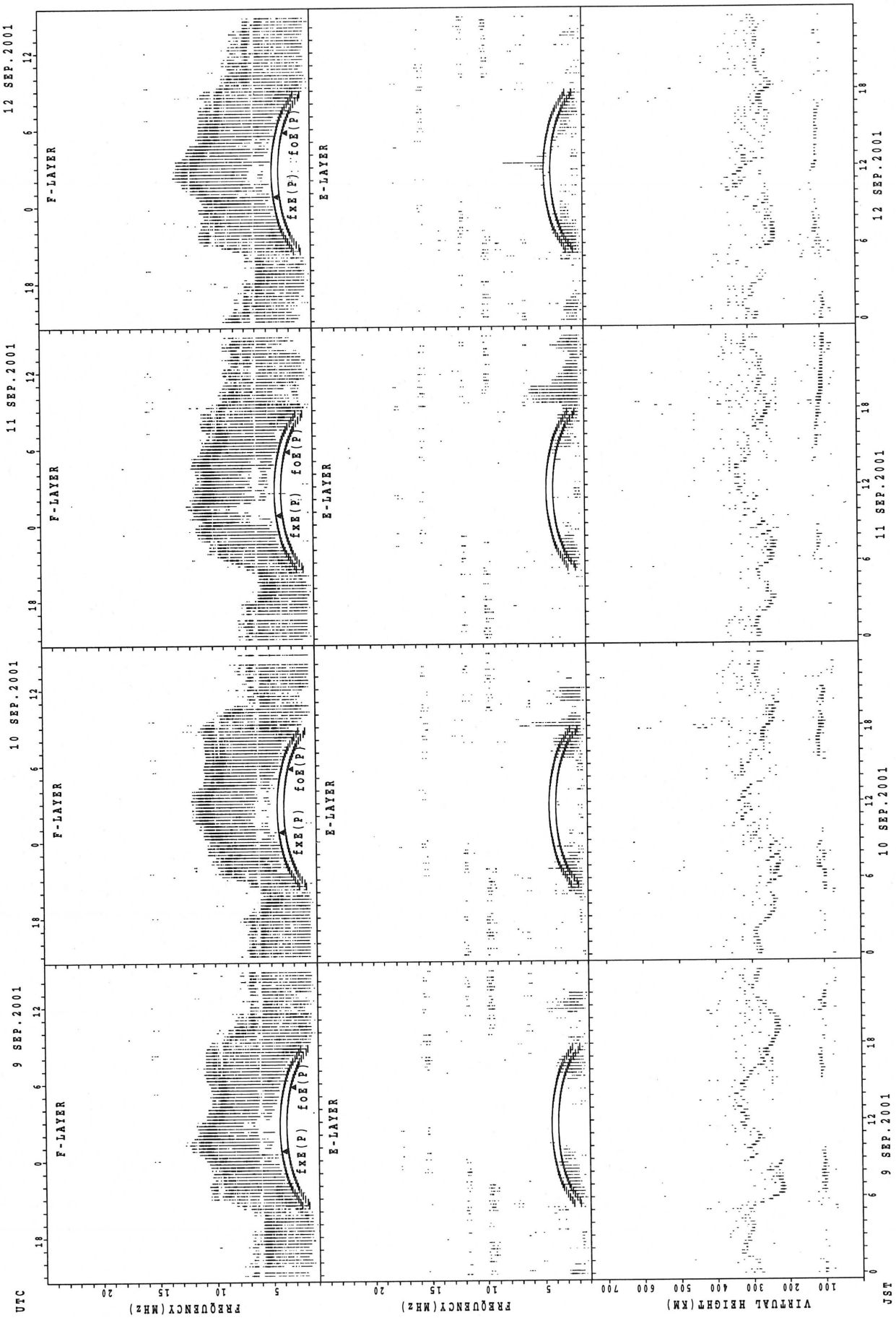
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Kokubunji
UTC
JST
1 SEP.2001
2 SEP.2001
3 SEP.2001
4 SEP.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

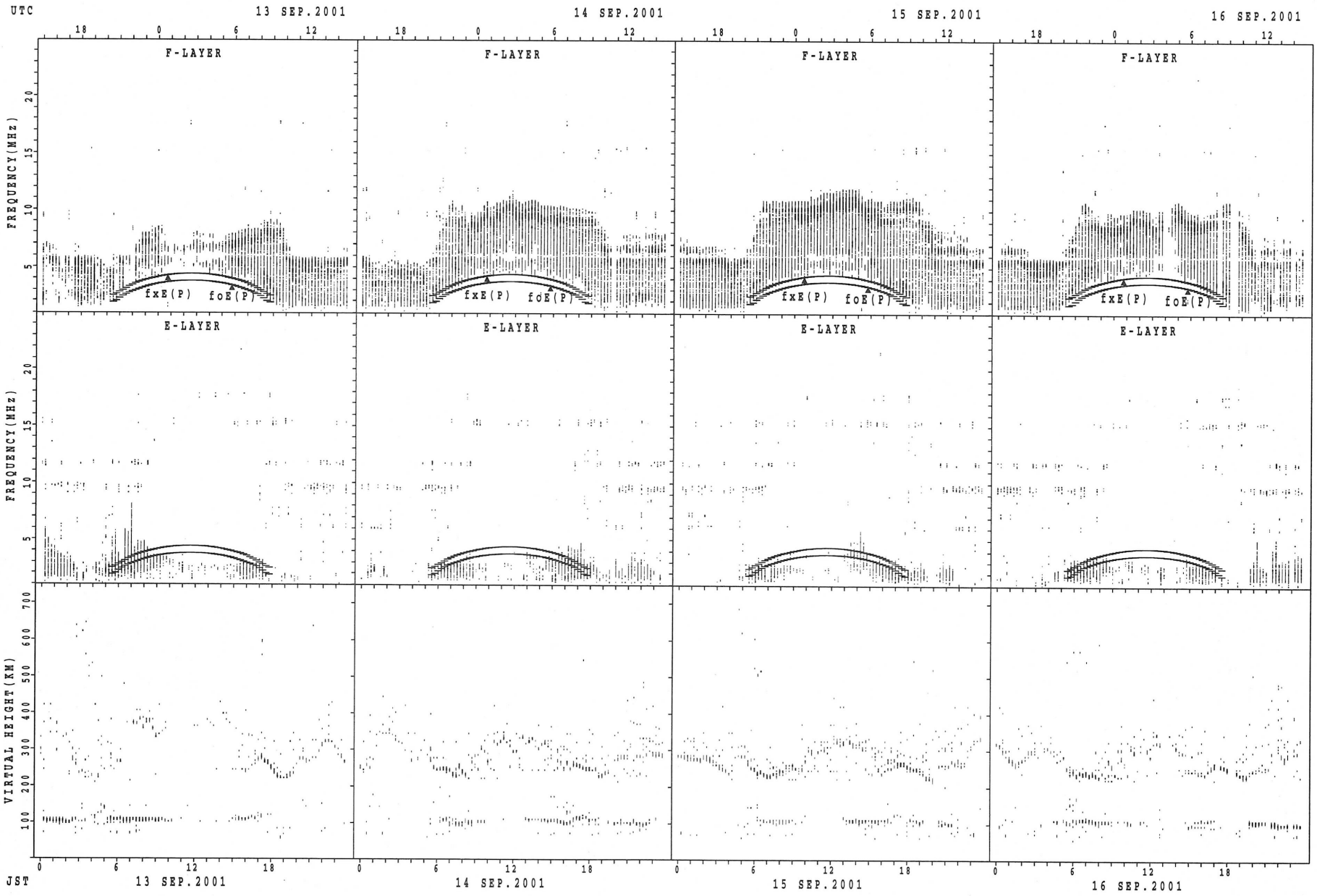
SUMMARY PLOTS AT Kokubunji



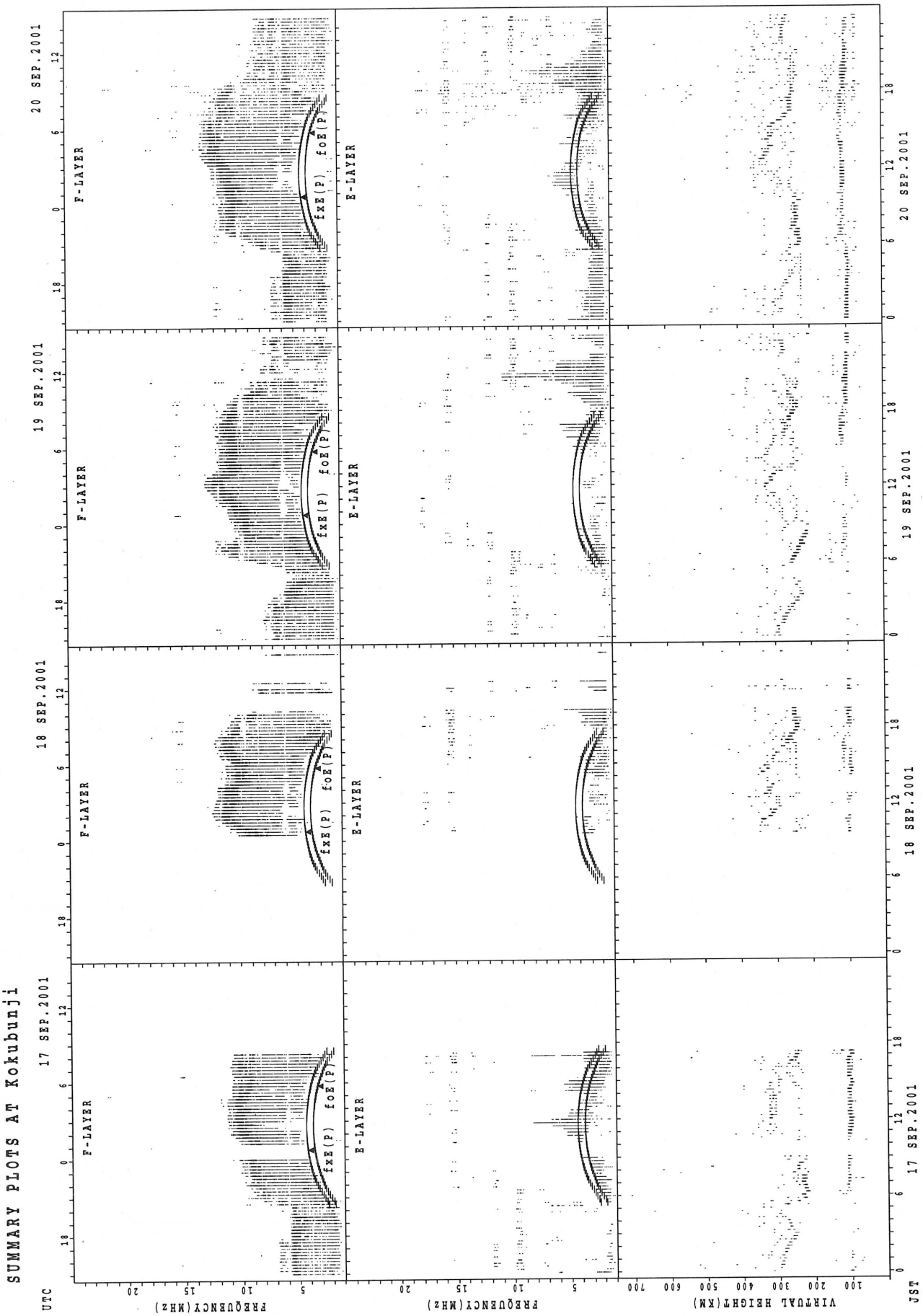
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Kokubunji
UTC
9 SEP.2001
10 SEP.2001
11 SEP.2001
12 SEP.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

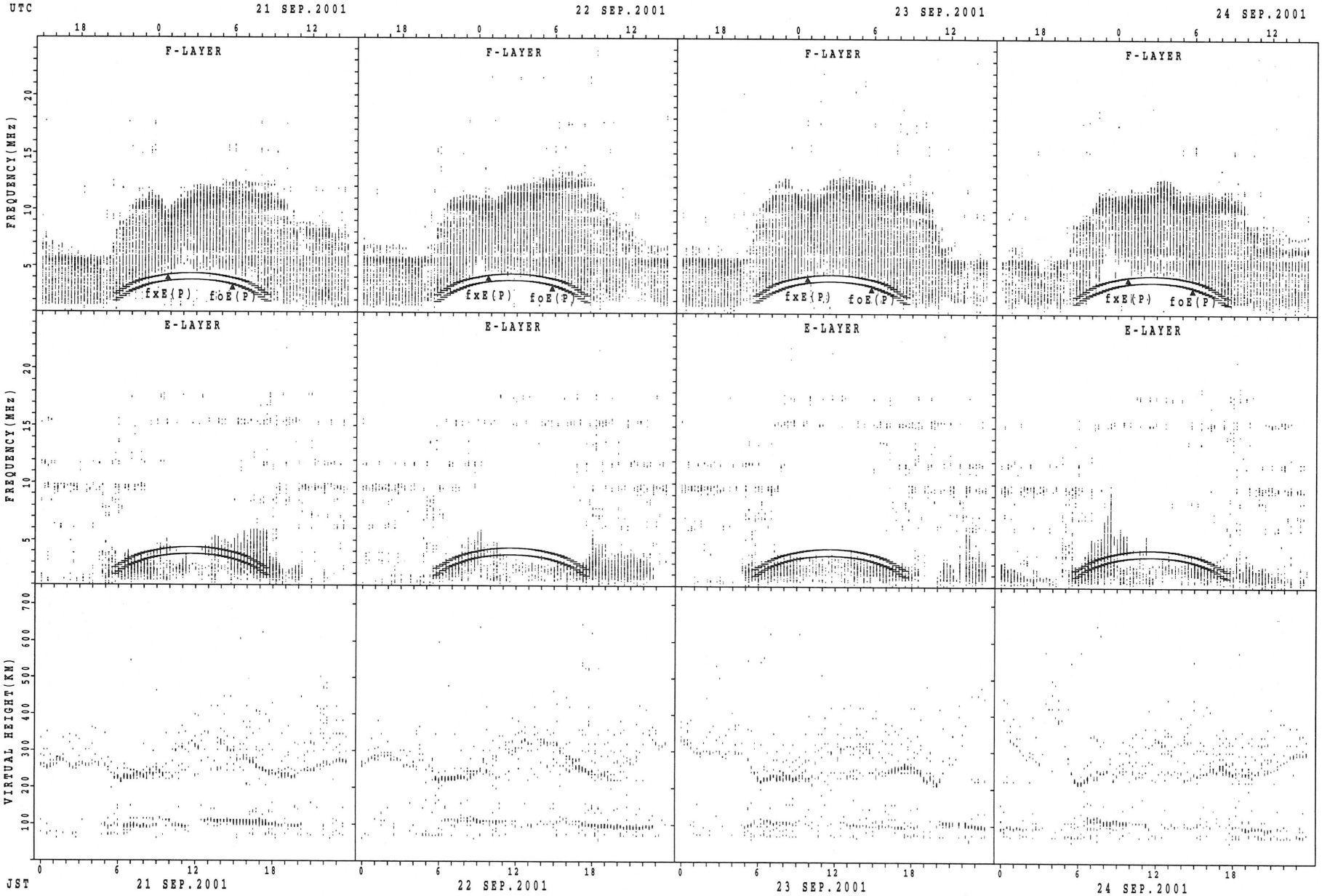
SUMMARY PLOTS AT Kokubunji



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

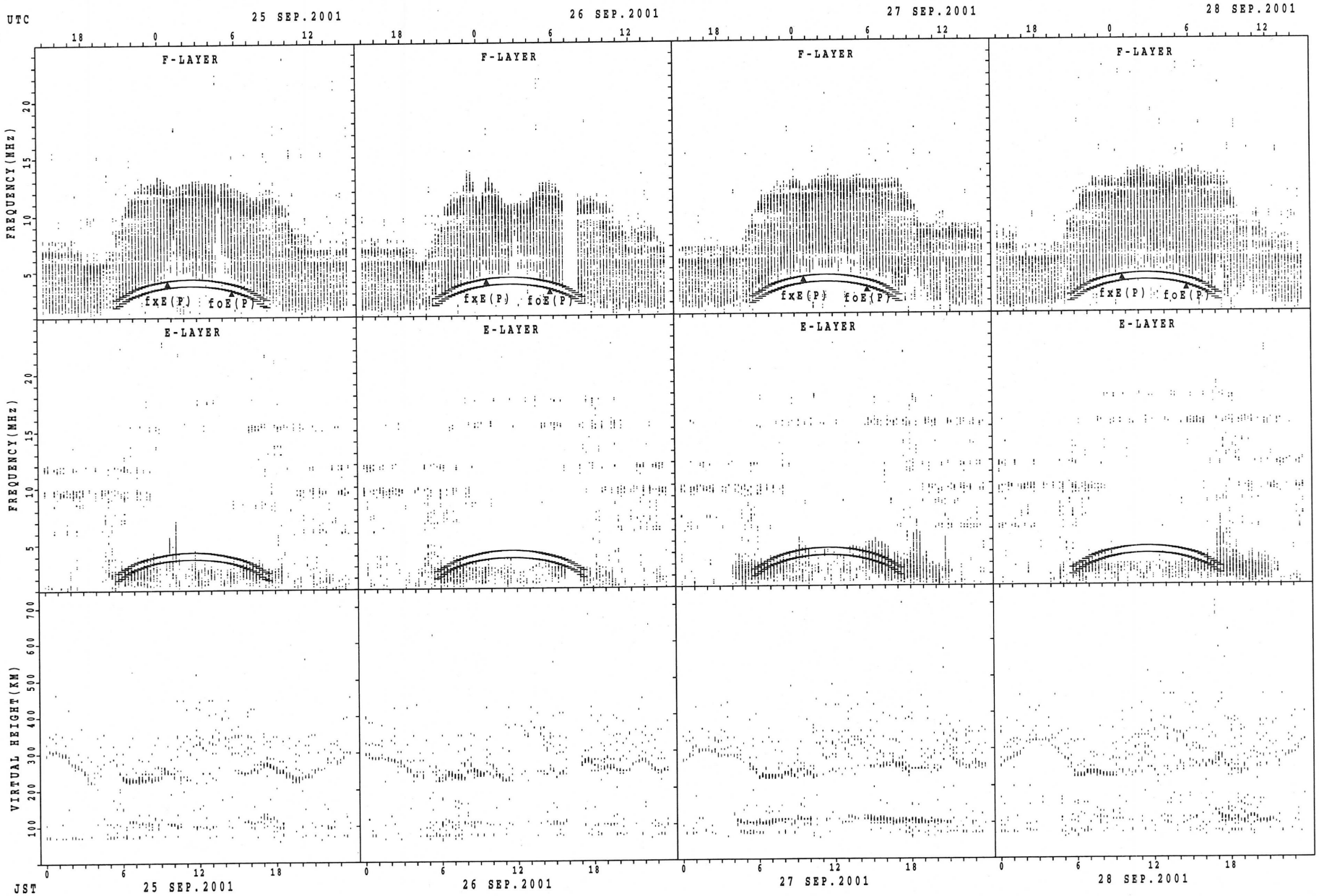

SUMMARY PLOTS AT Kokubunji
UTC
JST
17 SEP.2001
18 SEP.2001
19 SEP.2001
20 SEP.2001
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji

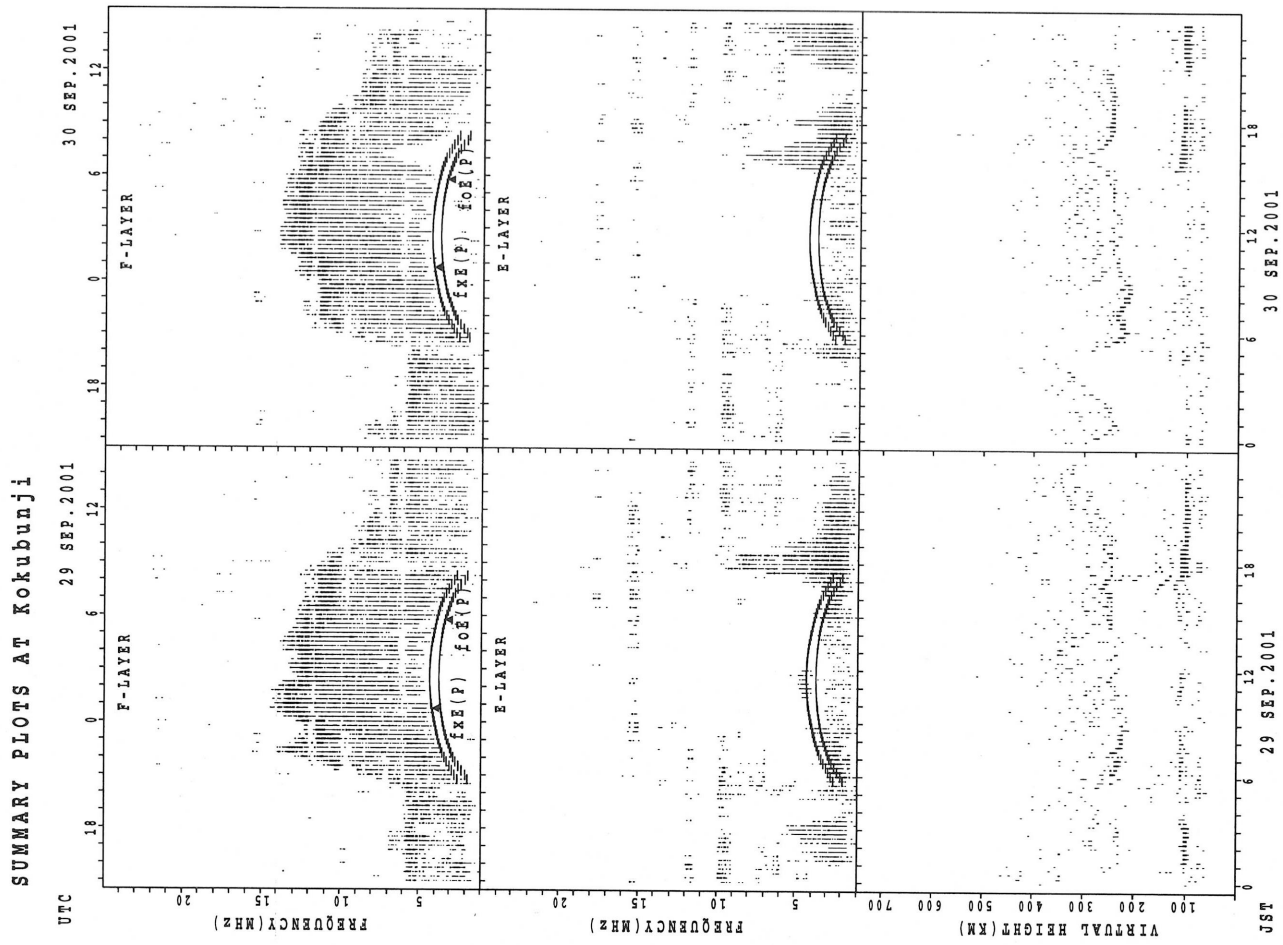


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



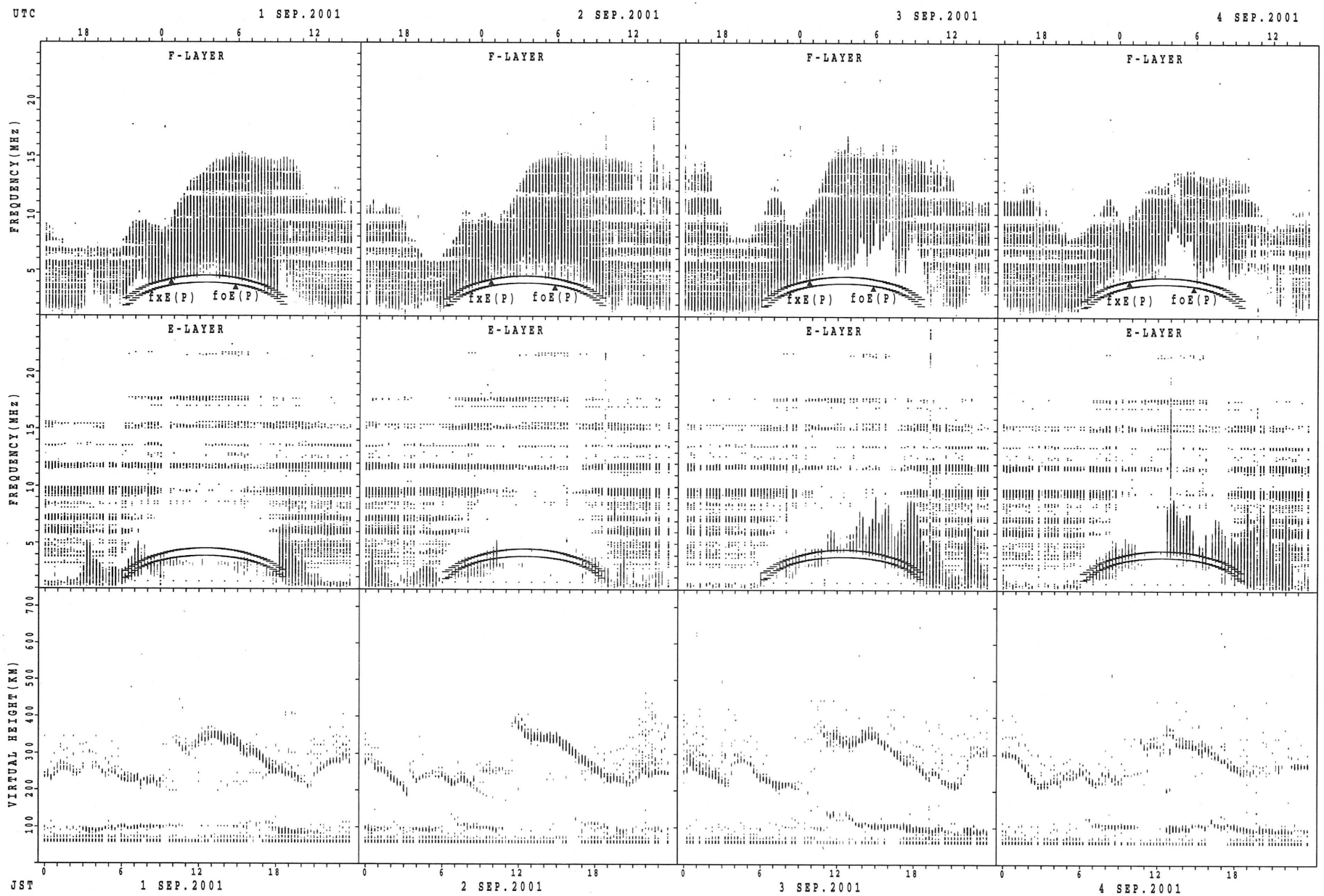
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Kokubunji
UTC
29 SEP.2001
30 SEP.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

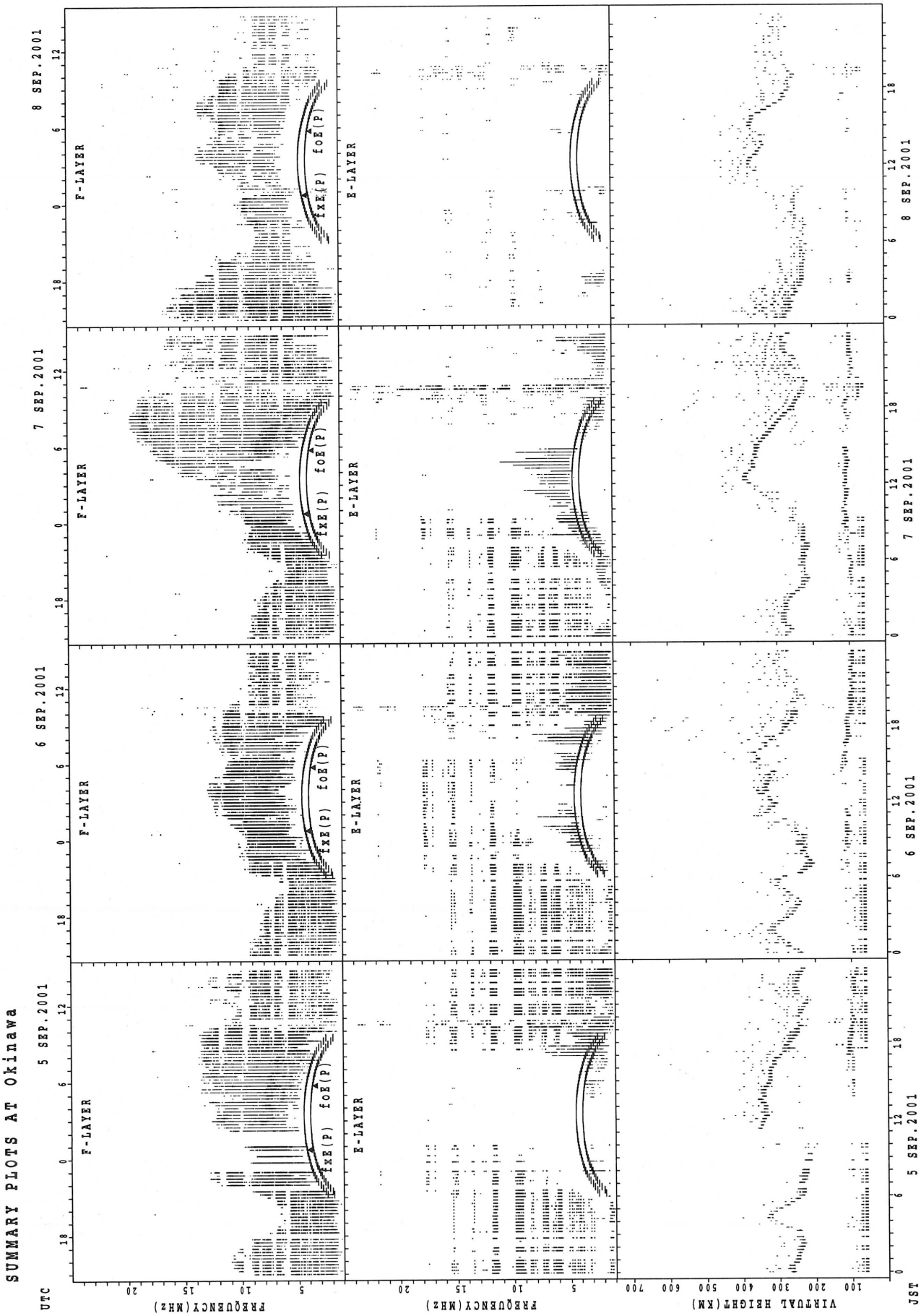
SUMMARY PLOTS

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

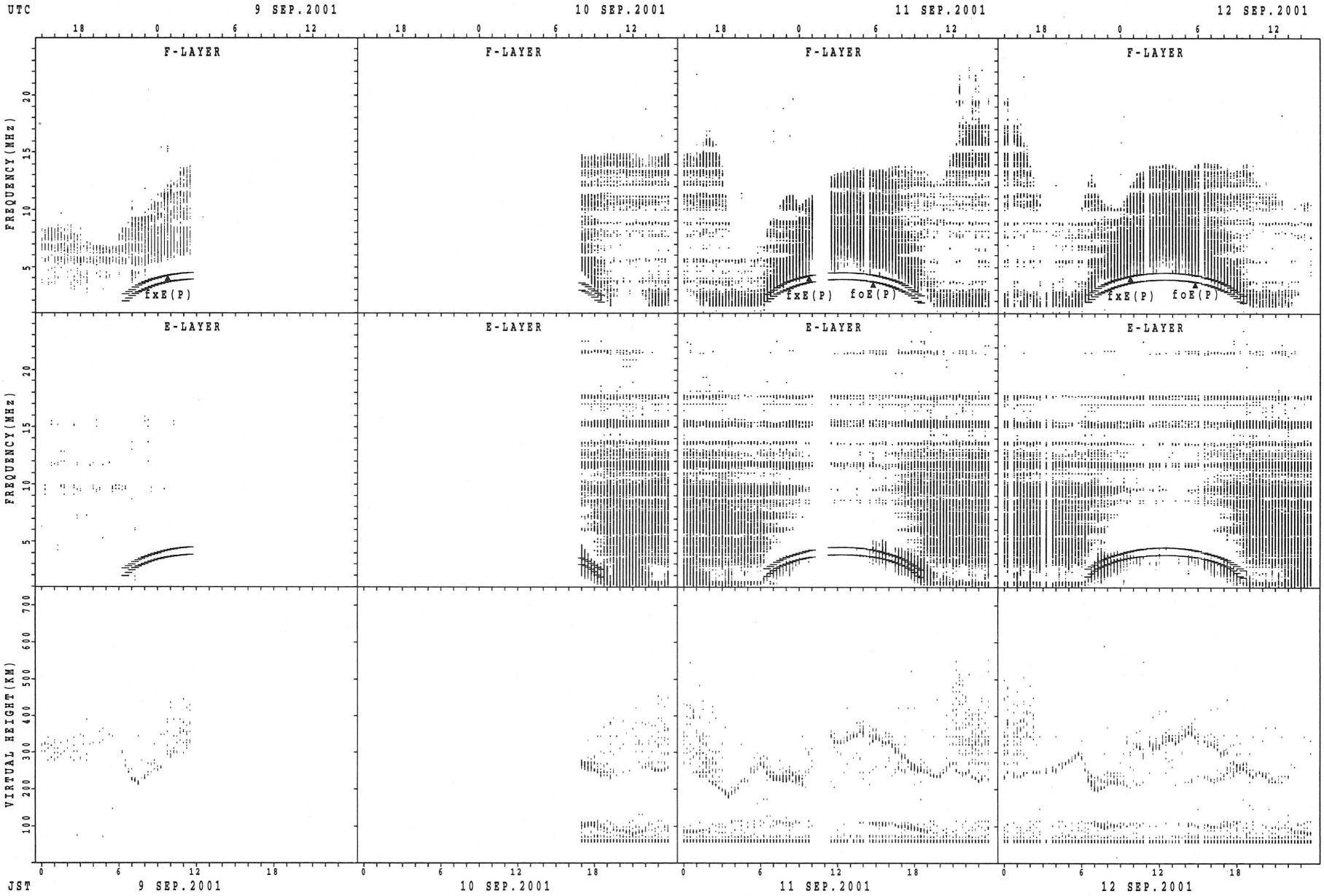
SUMMARY PLOTS AT Okinawa



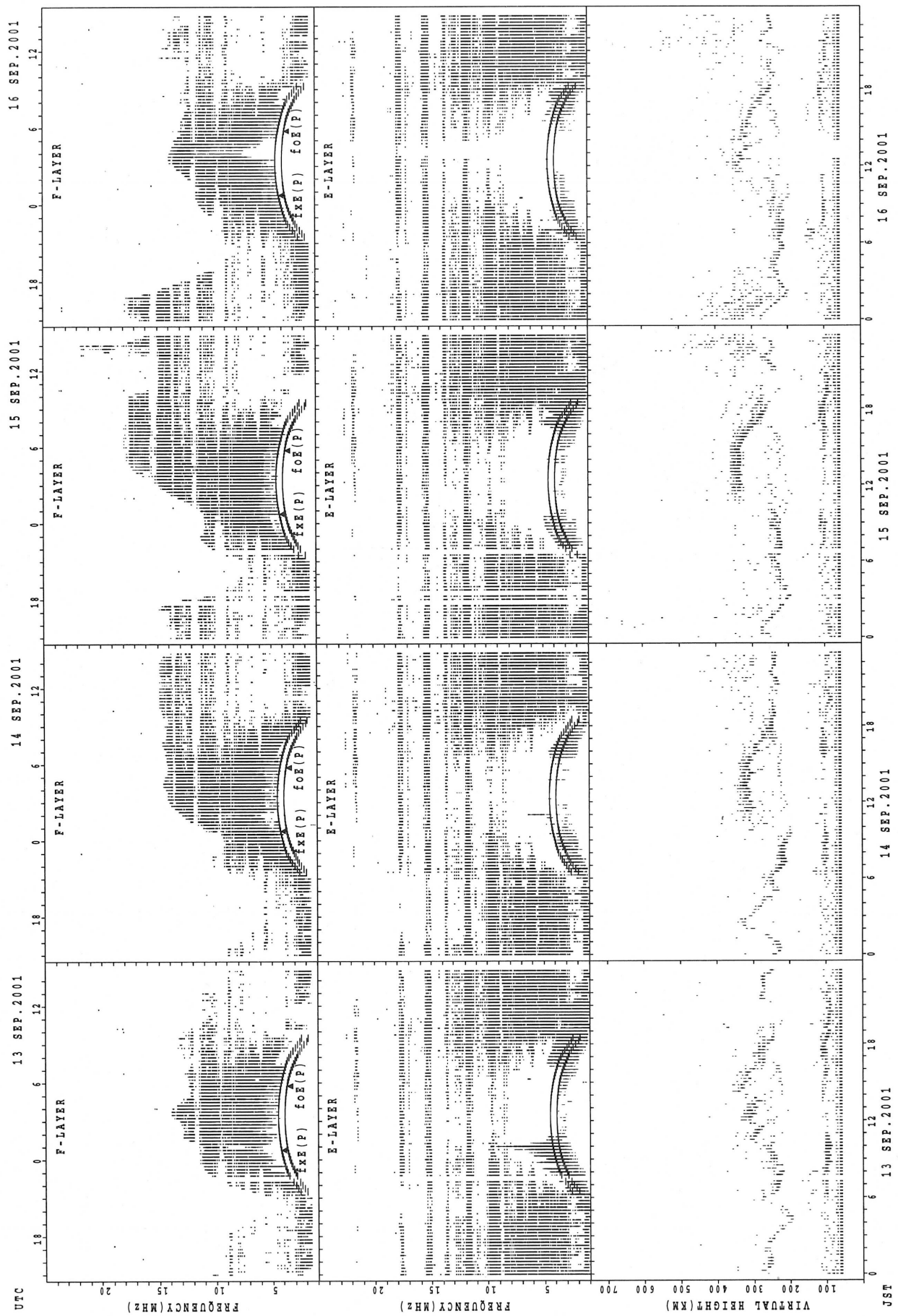
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Okinawa
UTC
JST
5 SEP.2001
6 SEP.2001
7 SEP.2001
8 SEP.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

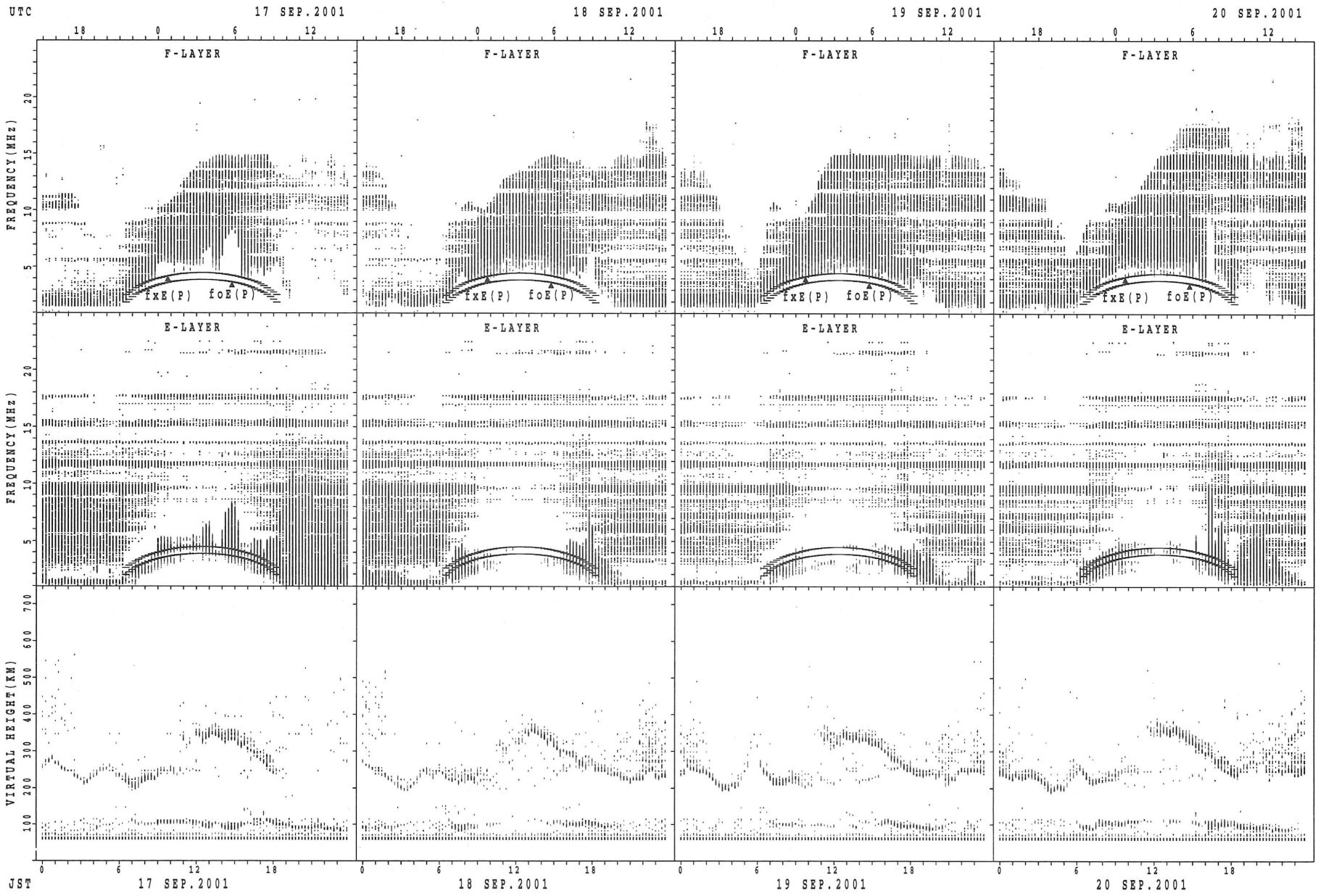
SUMMARY PLOTS AT Okinawa



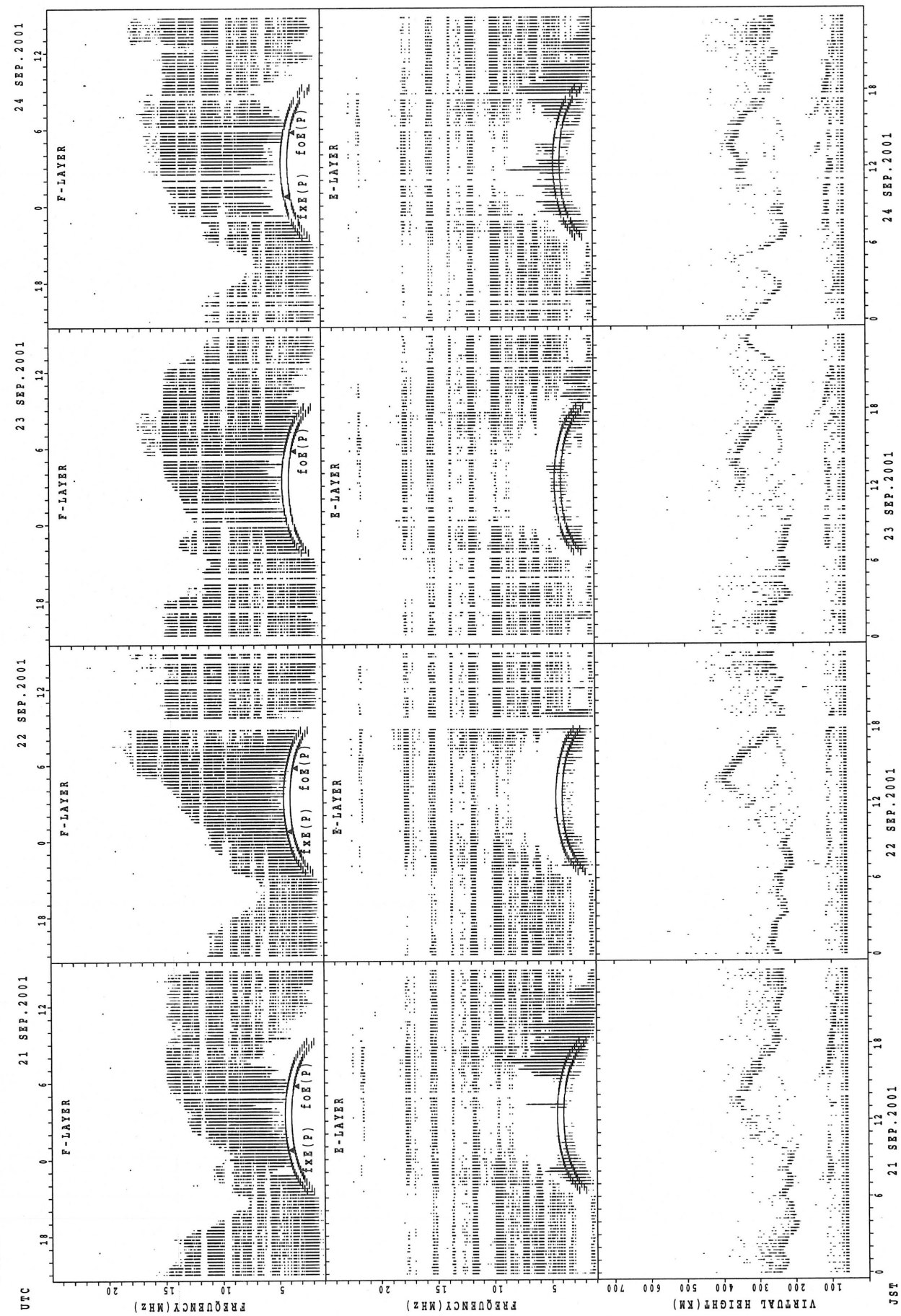
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Okinawa
UTC
JST
13 SEP.2001
14 SEP.2001
15 SEP.2001
16 SEP.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

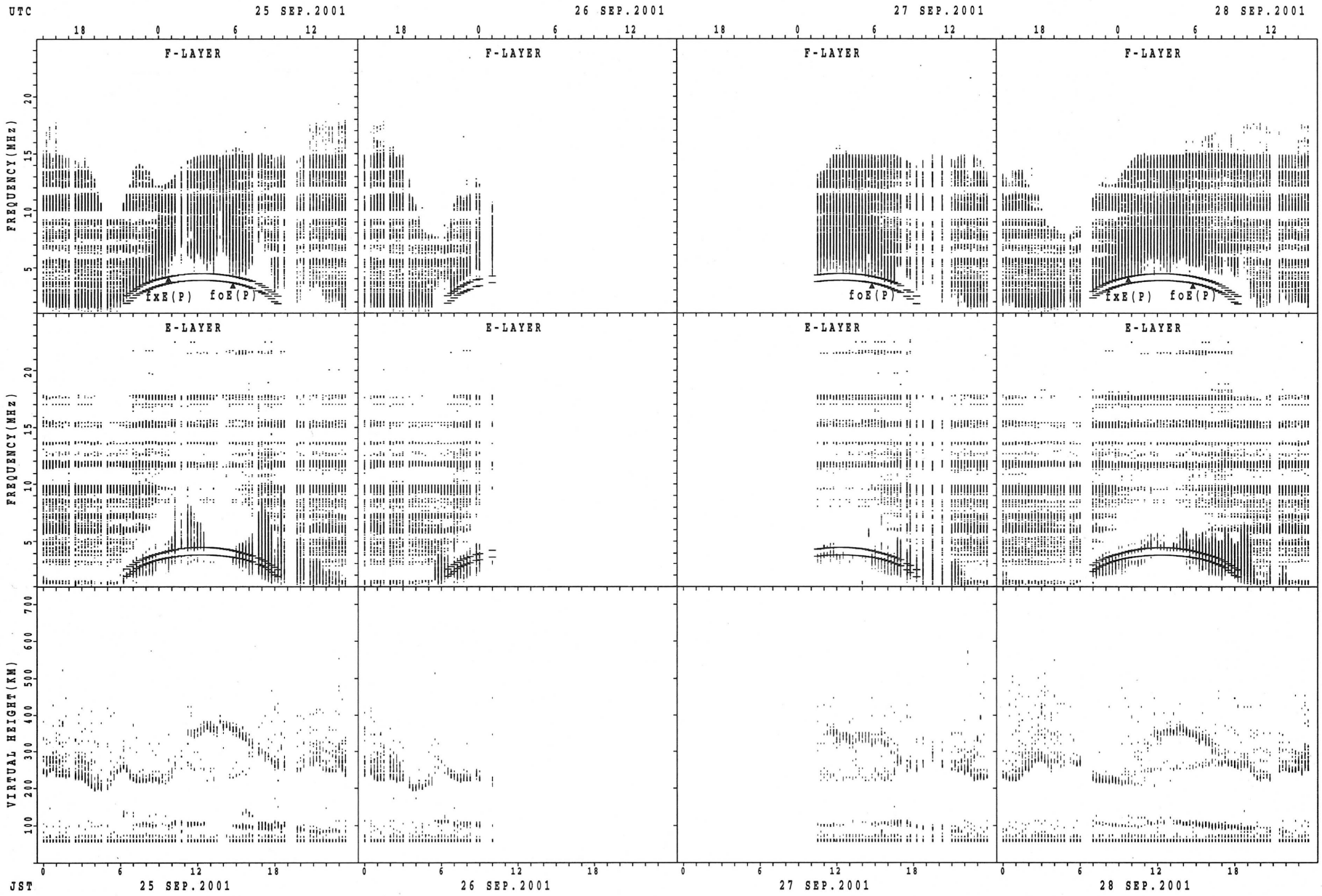
SUMMARY PLOTS AT Okinawa



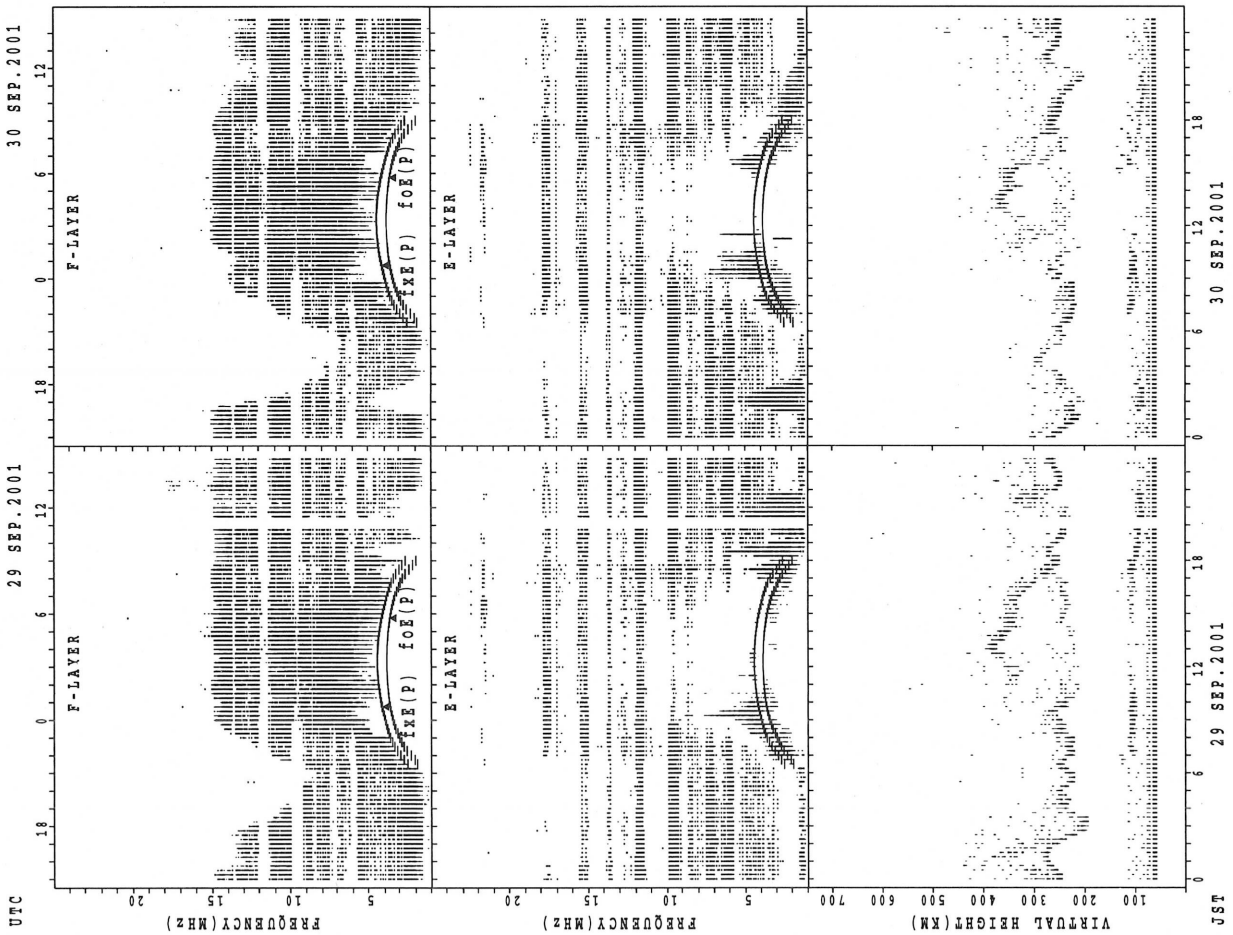
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Okinawa
UTC
JST
21 SEP.2001
22 SEP.2001
23 SEP.2001
24 SEP.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
UTC
29 SEP.2001
30 SEP.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

MONTHLY MEDIANS OF h'F AND h'Es

SEP.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	7	5	3	1	1	7	25	29	29	1					7	27	27	26	23	25	22	13	15	9
MED	366	380	374	362	390	354	262	248	250	226					264	284	276	271	270	292	302	354	310	380
U Q	384	410	382	181	195	376	273	260	271	113					286	314	288	280	276	302	314	390	322	426
L Q	354	272	360	181	195	330	250	236	240	113					256	274	268	264	256	279	280	300	266	328

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	9	6	7	7	10	10	11	11	12	10	10	7	4	5	2	7	9	15	14	10	13	4	2	2
MED	103	107	105	103	105	106	113	113	111	106	109	109	110	113	125	113	117	119	110	107	107	95	98	90
U Q	109	107	113	107	111	111	119	115	113	113	113	113	122	125	139	125	120	125	115	109	110	101	105	95
L Q	98	97	99	101	103	101	105	107	106	103	107	105	106	108	111	107	105	103	105	103	98	91	91	85

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	16	10	11	4	3	8	27	28	28	1						30	29	30	27	28	22	24	21	21
MED	346	364	340	318	386	358	250	239	246	220						305	294	279	264	281	311	335	372	354
U Q	377	382	360	390	420	378	266	247	253	110						320	304	288	274	294	328	381	382	411
L Q	314	340	330	309	348	346	238	233	236	110						298	281	266	256	264	288	306	327	323

h'Es

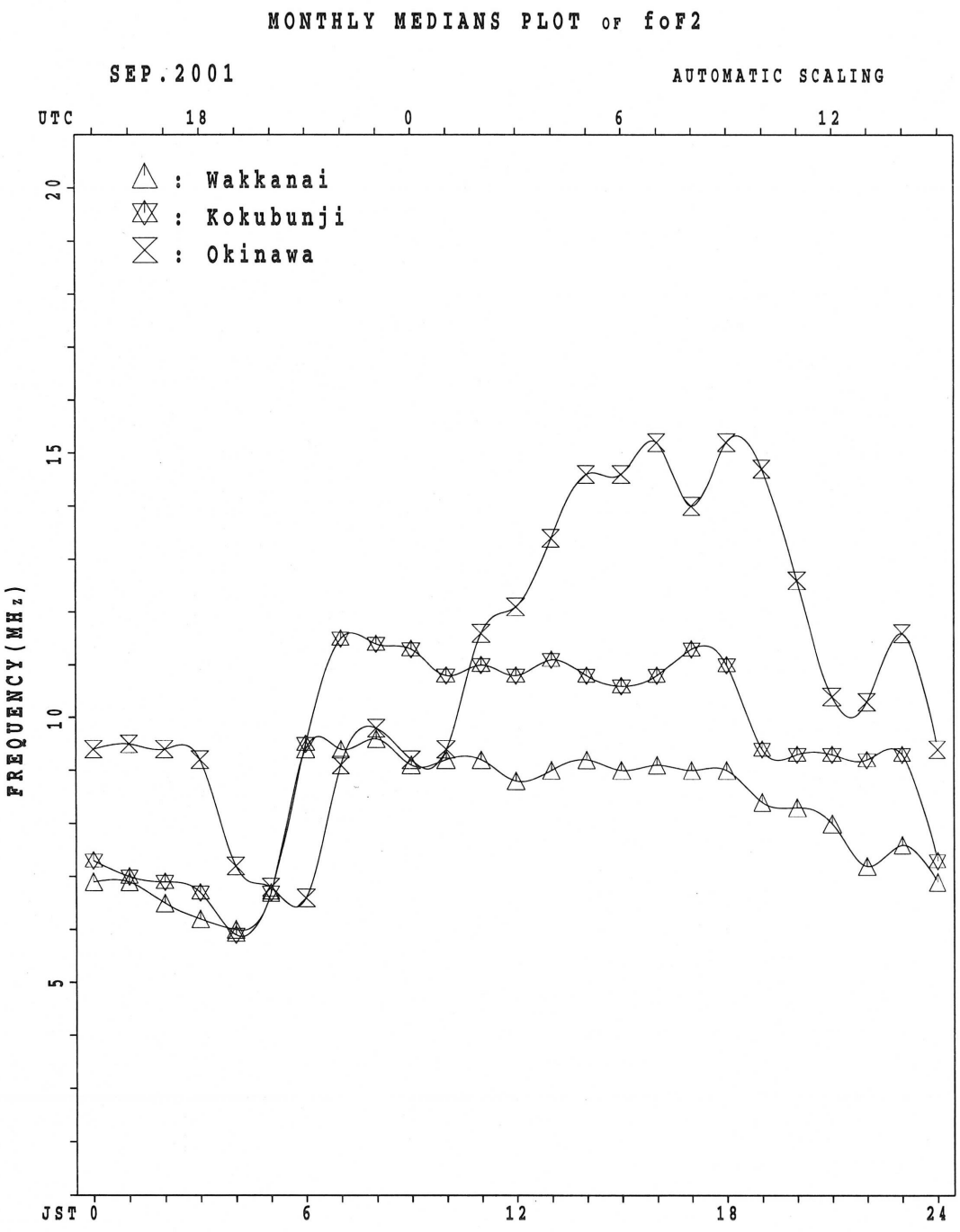
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	9	5	4	2	1	5	14	7	9	8	5	5	7	4	4	5	8	22	17	17	18	19	14	11
MED	97	95	101	100	87	91	123	113	111	112	109	107	107	115	114	111	117	117	107	105	103	105	99	103
U Q	104	103	105	103	43	104	145	115	118	115	112	112	115	118	127	119	120	121	111	106	105	105	105	109
L Q	95	93	97	97	43	91	103	113	106	108	100	106	105	110	111	105	107	111	98	98	99	103	97	97

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	8	8	7	5	7	3	6	8	8	7							9	8	9	8	7	6	8	7
MED	286	309	312	248	268	366	275	230	230	250							320	287	264	243	254	287	306	310
U Q	311	321	406	313	338	376	302	236	245	268							335	293	270	256	264	288	319	322
L Q	272	283	266	230	254	288	260	225	225	230							309	282	255	232	240	266	276	262

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	4			2	2	2	2	4	6	3	3	2	1	2	2	1	2	4	6	4	6	5	5	3
MED	97			96	96	98	111	119	107	111	107	108	111	120	108	125	108	111	110	98	96	95	95	95
U Q	100			97	97	99	121	122	111	115	117	109	55	129	111	62	113	116	119	118	99	102	98	99
L Q	92			95	95	97	101	118	99	109	107	107	55	111	105	62	103	107	107	91	91	91	87	95


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

IONOSPHERIC DATA STATION Kokubunji

SEP.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 68	X 70	X 68	X 64	X 62															X 103	O X 93	X 86	X 83	X 80
2	X 80	O X 79	X 80	X 76	X 65															X 97	X 91	X 85	X 82	X 77
3	X 76	X 76	X 74	X 69	X 67															O X 99	X 100	O X 94	X 97	X 90
4	X 81	X 82	X 84	X 76	X 68															X 103	X 76	X 76	X 76	X 72
5	X 74	X 72	X 70	X 63	X 64															X 88	X 89	X 96	X 92	X 83
6	X 76	X 71	X 71	X 68	X 67															X 98	X 92	X 88	X 84	X 82
7	X 80	O X 76	X 74	X 74	X 72															X 93	X 89	X 82	X 76	X 80
8	X 80	X 79	X 76	X 72	X 71															X 90	X 85	X 85	X 88	X 82
9	X 83	X 75	X 74	X 74	X 69															X 95	X 86	X 78	X 80	X 81
10	X 80	X 77	X 75	X 77	X 66															X 102	X 84	X 81	X 84	X 84
11	X 81	X 80	X 82	X 70	X 64															O X 98	O X 96	X 93	X 93	X 95
12	X 93	X 81	X 81	X 74	X 69															X 90	X 90	X 84	X 85	X 78
13	X 75	X 73	X 71	X 64	X 62															X 76	X 65	X 66	X 64	X 66
14	X 69	X 56	X 57	X 58	X 58															X 85	X 78	X 82	R 71	X 82
15	X 80	X 76	X 75	X 72	X 64															X 105	X 88	X 82	X 82	X 74
16	X 76	X 80	X 71	X 67	X 66															X 99	X 80	X 80	X 80	C
17	X 75	X 75	X 74	X 68	X 65															C	C	C	C	C
18	C	C	C	C	C															X 103	C	X 93	C	C
19	X 80	X 79	X 80	X 74	X 64															X 106	X 95	X 82	X 80	X 79
20	X 80	X 76	X 75	X 73	X 66															O X 100	X 91	X 84	X 87	X 87
21	X 82	X 74	X 72	X 66	X 64															X 106	X 91	X 94	X 94	X 86
22	X 78	X 75	X 74	X 70	X 66															X 106	X 93	X 85	X 75	X 75
23	X 71	X 75	X 70	X 68	X 66															X 112	X 86	X 72	X 69	X 69
24	X 68	X 71	X 65	X 60	X 59															X 103	X 92	X 88	X 83	X 83
25	X 80	X 81	X 82	X 76	X 68															X 110	X 91	X 84	X 82	X 81
26	X 80	X 81	X 81	X 81	X 71															X 110	X 100	O X 90	X 95	X 89
27	X 80	X 78	X 78	X 75	X 76															X 99	X 95	X 97	X 98	X 95
28	X 86	X 85	X 74	X 71	X 71															X 94	X 95	X 86	X 80	X 78
29	X 70	X 69	X 75	X 72	X 61															X 100	X 93	X 85	X 84	X 79
30	X 87	X 82	X 74	X 69	X 67															X 106	X 95	X 89	X 85	X 82
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	29	29															29	28	29	28	27
MED	X 80	X 76	X 74	X 71	X 66															X 100	X 91	X 85	X 83	X 81
U Q	X 80	X 80	X 79	X 74	X 68															X 106	X 94	X 90	X 88	X 84
L Q	X 75	X 74	X 71	X 68	X 64															X 94	X 86	X 82	X 80	X 78

IONOSPHERIC DATA STATION Kokubunji

SEP.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

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	R 62	64	62	58	56	58	92	89	92	82	84	98	102	100	103	107	102	96	93	97	R 87	80	R 77	74
2	74	S 73	74	70	58	58	74	93	96	97	93	97	106	111	109	107	100	98	98	91	85	79	R 76	S 71
3	70	70	68	R 62	61	R 61	84	117	96	87	84	94	106	106	101	98	96	98	97	U R 93	R 94	88	91	84
4	75	76	R 78	70	R 62	65	88	103	111	113	109	U R 98	105	111	109	103	101	106	105	S 97	70	70	70	R 66
5	68	66	64	57	57	59	80	98	106	93	90	96	100	100	102	100	R 94	R 90	90	82	84	R 89	R 86	R 77
6	70	64	R 65	R 62	U R 61	R 66	92	107	99	90	R 92	88	91	94	92	92	91	92	94	92	86	82	78	76
7	74	70	68	68	66	70	99	109	94	85	92	102	93	96	94	97	98	99	96	87	83	R 76	70	74
8	74	73	69	66	65	69	108	97	89	94	99	105	104	103	102	100	103	100	104	84	79	79	82	R 75
9	R 76	69	68	68	63	69	101	102	100	105	118	114	110	102	101	103	106	105	102	89	80	72	R 74	75
10	74	71	69	71	60	57	79	95	H 102	101	110	114	116	113	104	103	103	104	109	R 96	R 78	R 75	R 78	78
11	R 75	R 74	76	R 64	58	59	81	98	108	108	113	111	111	110	112	104	100	104	103	R 92	R 90	87	87	88
12	87	75	74	68	R 63	67	101	105	101	101	112	124	125	116	109	106	103	101	99	84	84	78	U R 79	72
13	69	67	R 65	U R 58	56	47	59	A	75	81	69	70	75	R 74	73	75	80	83	86	70	59	60	58	60
14	R 63	50	51	52	51	50	76	103	94	94	102	104	106	104	101	99	98	98	96	78	72	76	R	76
15	74	70	69	66	58	R 62	90	102	104	106	107	110	112	115	114	106	102	105	110	R 98	R 82	76	R 76	68
16	70	73	R 65	61	60	64	86	102	90	92	94	99	95	R	105	96	93	98	106	93	S 74	74	74	C
17	69	69	68	R 62	R 59	61	87	95	98	99	C	106	110	109	107	104	106	103	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	105	120	117	116	107	110	115	118	108	97	C	86	C	C
19	74	S 73	R 74	R 68	58	51	82	116	98	101	105	116	125	119	112	112	115	116	109	100	89	76	74	73
20	S 74	69	69	67	60	56	82	106	112	111	112	116	118	126	127	127	123	120	R 117	R 94	85	78	81	81
21	76	68	66	60	58	58	85	98	110	110	101	111	117	117	120	122	120	119	R 118	100	85	88	88	79
22	74	69	68	64	R 60	65	90	107	110	108	108	113	118	120	124	127	130	129	124	100	86	79	68	69
23	R 65	68	64	62	60	66	100	116	126	116	112	117	124	126	125	122	118	112	113	106	80	66	S 63	R 63
24	R 62	65	59	54	52	63	93	101	116	114	117	114	122	123	112	113	115	115	111	96	86	82	77	77
25	74	75	76	70	R 62	63	92	115	122	132	122	124	128	125	123	120	115	115	R 118	104	85	78	76	75
26	74	75	75	74	65	R 63	84	110	124	115	129	110	106	108	122	121	C	108	111	104	94	84	88	83
27	74	72	72	69	70	74	98	115	121	126	118	128	128	126	128	126	124	127	115	93	89	91	92	89
28	80	79	68	65	65	72	97	S 117	124	125	127	133	129	128	131	132	129	129	122	R 88	89	80	74	72
29	64	63	69	R 66	55	57	88	126	126	127	139	135	130	130	130	124	119	118	111	93	87	R 79	78	73
30	R 81	76	68	63	61	67	101	118	119	120	122	136	136	133	132	130	122	124	116	100	89	83	79	76
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	29	29	29	29	28	29	29	29	30	30	29	30	30	29	30	29	29	28	29	27	27
MED	74	70	68	65	60	63	88	104	104	105	108	111	112	113	109	106	103	105	108	93	85	79	77	75
U Q	74	74	73	68	62	66	98	115	118	114	118	117	124	124	123	122	118	118	114	99	88	84	82	78
L Q	69	68	65	62	58	58	82	98	96	94	94	99	105	104	102	100	99	98	98	88	80	76	74	72

SEP.2001 foF2 (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP.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 532	L 600	U L 568	L	L 556	L	L	L						
2									L	L	L	U L 600	L 596	L 560	L 572	L	L							
3									L	L	L	U L 620	L 600	L	L	L	L	L						
4									L	L	L	L	L	U L 580	L	L	L							
5								B	L	L	A	L	L	L	U L 576	L 452	L							
6									L	L	L	L 608	L 608	U L 596	U L 556	L	L							
7										L	L	L	L	L	L	L	L							
8									L	L	L	L 572	U L 580	L	B	L	L							
9									L	L	L 536	L	L	L	L	L	L							
10										L	L	L	L	L	L	L	L							
11									L	L	B	L	L	L	L	L	L							
12										L	L	U L 564	A	L	L	L	L							
13								A	U L 468	520	U L 648	U L 576	L 560	U L 572	L 588	L 520	L							
14									L	L	L	L	L	L	L	L	L							
15										L	L	L	L	L	L	L	L							
16									L	L	L	L	L	B	L									
17									L	L	C	L	L	L	L	L	L		C					
18						C	C	C	C	C	L	L	L	L	L	L								
19										L	L	L	L	L	L	L	L							
20										L	L	L	L	L	L	L								
21										L	L	L	L	L	L	L	L							
22										A	L	L	L	L	L	L								
23												L	L	L	L	L	L							
24									A		L	L	L	L	L	L	L							
25										L		L	L	L	L	L	L							
26											L	L	L	L	L	L	C							
27										L	L	L	L	L	L									
28										L		L	L	L	L	L								
29										L	L	L	L	U L 728	L	L								
30										L		L	L	L	L	L	A							
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									1	1	3	7	6	5	5	2								
MED									U L 468	520	L 536	U L 600	L 588	U L 580	L 572	L 486								
U Q											U L 648	L 608	L 600	U L 662	L 582									
L Q											L 532	L 572	L 568	L 566	L 556									

SEP.2001 foF1 (0.01MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP.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	228	288	A	A	A	A	A	A	A	UR 356	UR 316	UR 272	B					
2						B	UR 224	A	A	R	UR 356	R	R	R	R	R	UR 324	UR 284	UR 168					
3						B	UR 232	UR 304	UR 352	R	R	B	B	R	R	364	324	236	B					
4						B	220	A	A	R	R	R	R	A	UR 384	R	328	256	B					
5						B	UA 228	B	352	R	A	B	B	B	R	R	336	268	B					
6						B	UA 260	UA 308	UA 368	B	B	B	R	B	R	R	UR 340	A	B					
7						B	UR 224	UR 320	R	R	R	B	A	R	B	R	R	252	B					
8						B	UR 224	R	R	A	R	R	B	B	B	R	UR 316	252	B					
9						B	UR 236	300	R	R	R	B	B	B	B	R	320	236	B					
10						B	204	A	316	R	B	B	B	B	B	B	320	248	B					
11						B	244	R	R	R	B	B	B	B	R	R	UR 328	A	UA 184					
12						B	232	312	R	UR 396	R	B	R	A	A	UR 360	UR 320	UA 224	B					
13						B	A	A	A	A	R	R	B	B	R	R	UR 312	240	B					
14						B	236	292	UR 336	R	R	B	R	A	R	UR 360	312	232	B					
15						B	220	B	348	A	R	B	R	A	A	A	UR 308	244	B					
16						B	UR 196	308	A	R	R	R	B	B	B	UR 356	312	236	B					
17						B	216	R	R	A	C	A	A	R	A	A	A	232	C					
18						C	C	C	C	C	A	R	R	R	R	364	UR 316	224	B					
19						B	212	UR 304	UR 340	R	R	R	R	B	R	360	308	UA 224	B					
20						B	192	292	UR 328	R	R	R	A	R	R	UR 364	312	A	B					
21						B	204	A	356	A	A	R	B	R	A	A	A	A	B					
22						B	188	304	R	A	A	R	R	R	UR 368	R	UR 308	A	B					
23						B	216	R	R	UR 388	R	R	R	R	R	R	UR 292	A	B					
24						B	244	A	352	UA 392	A	A	R	R	R	R	UR 292	208	B					
25						B	UA 188	308	360	R	A	B	R	R	B	R	316	UR 228	B					
26						B	UR 212	296	R	R	R	R	B	B	B	R	C	UR 240	B					
27						B	A	UR 304	R	A	A	R	B	A	A	A	A	A	B					
28						B	200	296	344	A	UR 432	R	B	B	R	UR 332	296	UA 208	B					
29						B	176	UR 296	A	A	A	UR 364	R	B	R	UR 344	300	UA 224	B					
30						B	UR 220	292	R	R	R	R	B	B	B	UR 372	UA 296	188	B					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							27	17	12	3	2	1			2	11	25	23	2					
MED							220	304	350	UR 392	UR 394	UR 364			UR 376	UR 360	U 316	236	U 176					
U Q							232	308	354	UR 396						UR 364	UR 322	252						
L Q							204	294	UR 338	UR 388						U 356	U 308	224						

SEP.2001 foE (0.01MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP. 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	J A 24	21	E B 14	18	E B 15	20	J A 26	J A 41	J A 43	J A 45	J A 44	J A 50	J A 65	J A 52	J A 46	G 34	G 27	G 23	J A 28	J A 26	J A 25	J A 23	J A 27	J A 27
2	J A 23	J A 29	J A 22	18	E B 15	E B 16	J A 25	J A 33	39	G 31	40	G 32	G 31	G 31	G 26	G	G	G	20	J A 21	23	J A 17	J A 23	21
3	J A 21	E B 16	23	19	E B 15	E B 14	G	33	G 30	34	40	E B 54	E B 46	G 37	G 28	43	39	32	J A 33	J A 23	J A 27	J A 19	20	J A 17
4	23	E B 14	E B 14	E B 15	19	E B 14	26	36	J A 42	G 33	G 31	G 38	J A 56	46	G 36	G 24	38	30	J A 41	J A 21	E B 13	E B J A 16	22	19
5	E B 14	E B 15	E B 16	E B 14	E B 16	J A 23	28	E B 42	44	G 32	J A 79	E B 45	E B 49	E B 49	G 33	G 30	38	37	J A 34	J A 37	J A 52	24	J A 27	J A 19
6	E B 16	E B 16	E B 15	E B 16	E B 16	E B 16	31	37	45	45	46	E B 53	G 32	53	51	44	45	J A 52	26	J A 28	J A 100	J A 50	J A 23	J A 24
7	E B 15	E B 15	E B 16	E B 16	E B 15	E B 16	26	G 25	G 30	J A 43	46	47	50	G 36	E B 44	G 30	G 32	33	21	E B 16	J A 43	J A 32	J A 32	J A 27
8	22	E B 15	E B 15	E B 16	E B 13	E B 15	25	G 25	G 30	37	G 37	G 38	E B 45	E B 46	E B 62	G 33	G 30	30	J A 18	J A 20	21	J A 48	E B 16	J A 49
9	J A 23	J A 18	19	19	E B 14	E B 16	G	34	G 33	G 34	G 33	E B 48	E B 51	E B 48	E B 42	G 33	36	29	18	E B 14	E B 14	J A 33	J A 22	E B 16
10	E B 16	E B 15	E B 12	18	20	22	25	35	37	G E 50	E B 49	E B 47	E B 47	E B 43	E B 41	37	34	J A 49	J A 20	J A 29	J A 29	E B 15	E B 16
11	E B 16	E B 15	E B 15	E B 14	E B 15	E B 16	G	G 26	G 30	G E 26	B 64	E B 52	E B 47	E B 48	G	G	G	J A 28	26	J A 52	J A 34	J A 26	22	39
12	J A 25	J A 22	J A 20	E B 15	E B 16	E B 13	27	34	G 31	G	G E 47	B	59	46	38	G 30	G 27	G 21	22	E B 14	E B 16	E B 15	E B 16	E B 16
13	E B 14	J A 49	J A 38	E B 16	J A 22	J A 28	J A 34	J A 76	J A 43	37	G 33	G 32	E B 47	E B 44	G	G	G 25	30	E B 16	21	E B 13	E B 16	E B 14	E B 15
14	E B 13	E B 15	20	E B 15	E B 15	E B 15	G	G 19	37	G 30	G E 34	B 46	G 29	40	G	G 33	36	J A 38	J A 26	21	J A 29	J A 26	J A 30	23
15	E B 16	E B 14	E B 15	E B 15	E B 16	E B 16	27	E B 36	38	42	G E 32	B 49	G	41	J A 44	40	G 28	29	J A 20	J A 27	E B 15	E B J A 24	E B 15	E B 15
16	E B 15	E B 16	E B 15	E B 13	E B 15	E B 16	30	34	36	G 31	G 35	G	E B 48	E B 74	E B 46	G 23	G	28	E B 15	E B 16	J A 28	J A 20	28	C
17	J A 25	20	18	21	E B 15	E B 16	26	G 26	G 30	41	C	J A 49	J A 64	G 31	43	J A 51	J A 36	J A 80	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	46	G 37	G 34	G 32	G 28	G 26	G 19	28	J A 27	J A 36	C	C J A 29	C	C
19	22	E B 14	E B 15	19	18	18	26	32	39	31	G 30	44	G E 35	B 45	40	45	35	27	19	J A 39	J A 30	J A 68	J A 24	24
20	J A 42	J A 29	J A 26	J A 24	J A 24	J A 21	24	J A 38	38	44	45	J A 52	J A 49	G 36	G 38	G	J A 46	J A 32	J A 33	J A 50	J A 48	J A 26	E B 14	25
21	E B 16	E B 14	E B 14	E B 16	E B 15	J A 22	26	34	G 33	42	46	G 35	E B 46	46	51	J A 46	51	J A 53	J A 31	E B 15	J A 22	E B 14	J A 20	E B 14
22	E B 14	E B 15	E B 16	E B 16	E B 15	E B 16	25	35	41	J A 59	44	G 39	G 34	G 29	G 31	G 30	G J 21	A 28	J A 53	J A 46	J A 34	J A 39	J A 32	E B 16
23	E B 16	E B 15	E B 15	E B 16	E B 16	J A 19	27	30	G 31	G 28	G 37	G	G 36	G 35	G 31	G 23	G 21	31	J A 22	E B 15	E B 15	J A 26	E B 14	J A 33
24	J A 28	J A 21	20	20	E B 20	E B 15	33	J A 48	J A 66	J A 50	45	43	G 37	G 32	G 30	G 26	G 22	26	22	J A 29	J A 21	J A 24	E B 22	15
25	E B 14	E B 13	E B 14	E B 16	E B 12	E B 16	26	G	42	39	J A E 50	B 49	G 36	G 30	E B 50	G 26	36	30	J A 28	E B 14	J A 19	23	J A 24	E B 14
26	E B 16	E B 16	E B 15	E B 14	E B 14	E B 16	J A 50	36	G 29	G 31	G 33	G 32	E B 65	E B 47	E B 42	G 31	C	G J 19	A 17	J A 21	E B 16	E B 15	E B 16	20
27	22	E B 14	19	E B 16	J A 27	J A 27	J A 31	G 28	G 35	43	43	G	E B 47	44	44	J A 46	47	J A 36	J A 38	J A 31	J A 23	J A 28	E B 15	E B 16
28	E B 16	E B 16	E B 15	E B 15	E B 15	E B 16	25	33	40	43	G 34	G 32	E B 47	E B 45	G	G 26	G J 54	A 28	J A 36	J A 32	J A 30	J A 16	E B	20
29	E B 16	E B 15	J A 23	J A 48	20	E B 16	24	37	37	44	44	J A 48	J A 48	E B 44	G 33	G 29	G J 42	A 89	J A 61	J A 30	J A 36	J A 23	J A 22	
30	J A 22	E B 14	21	E B 15	E B 14	E B J 32	A 25	32	43	J A 45	G 36	G 36	E B 49	E B 47	E B 44	G	J A 82	J A 49	J A 48	J A 27	E B 15	20	J A 53	J A 56
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	29	29	29	29	29	29	29	29	30	30	30	30	30	29	30	29	29	28	29	28	27
MED	E B 16	E B 15	E B 16	E B 16	E B 15	E B 16	26	34	37	37	E G 40	U 40	E G 47	U 38	U 36	33	G	30	J A 26	J A 23	J A 24	J A 26	J A 22	20
U Q	J A 23	J A 19	J A 20	18	18	J A 20	28	36	42	J A 44	46	E B 49	49	E B 47	44	40	38	J A 37	J A 34	J A 36	J A 31	J A 31	J A 26	J A 25
L Q	E B 16	E B 14	E B 15	E B 15	E B 15	E B 16	25	G	G 31	G 32	G 34	G 38	G 36	G 36	G 33	G 29	G 28	28	20	E B 18	E B 16	E B 20	E B 16	E B 16

SEP. 2001 foEs (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP.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	14	17	E B 14	16	E B E B 15	16	23	34	41	41	43	44	47	46	44	G 33	G 27	G 23	24	22	21	E B 15	19	20
2	17	26	17	E B 14	E B E B 15	16	24	31	35	G U Y 31	40	G U Y 32	G U Y 31	U Y U Y 31	U Y 26	G	G	G	19	E B 15	E B E B 16	E B E B 11	18	16
3	E B 18	16	21	E B 14	E B E B 15	E B 14	G U Y 32		G U Y 30	U Y 34	U Y 40	E B 54	E B 46	U Y 37	U Y 28	41	37	30	25	19	22	16	E B 15	E B 15
4	E B 17	E B 14	E B 14	E B 15	E B 16	14	25	32	36	G 33	G U Y 31	38	55	44	G 32	G 24	37	28	32	E B 16	E B E B 13	E B 16	20	16
5	E B E B 14	E B 15	E B 16	E B 14	E B E B 16	E B 15	27	E B 42	41	U Y 32	66	E B 45	E B 49	E B 49	G 33	G 30	37	34	30	27	27	19	E B 15	E B 13
6	E B E B 16	E B 16	E B 15	E B 16	E B E B 16	E B 16	26	35	43	U Y 45	U Y 46	E B 53	U Y 32	49	50	43	41	45	22	21	E B 16	24	16	E B 16
7	E B E B 15	E B 15	E B 16	E B 16	E B E B 15	E B 16	25	G 25	G 30	42	46	46	47	U Y E B 36	44	G 30	G 32	27	18	E B 16	22	18	18	23
8	16	E B 15	E B 15	E B 16	E B E B 13	E B 15	24	G 25	G U Y 30	U Y 37	U Y 37	U Y E B 38	45	E B 46	E B E B 62	U Y 33	G 30	28	18	E B 16	16	23	E B 16	24
9	18	16	17	E B 15	E B E B 14	E B 16	G	32	U Y 33	G U Y 34	33	E B 48	E B 51	E B 48	E B E B 42	G 32	36	28	16	E B 14	E B 14	20	16	E B 16
10	E B E B 16	E B 15	E B 12	E B 15	E B 15	17	24	34	37	G E B 50	E B 49	E B 47	E B 47	E B E B 43	E B E B 41		37	32	34	E B 14	21	20	E B 15	E B 16
11	E B E B 16	E B 15	E B 15	E B E B 14	E B E B 15	E B 16	G	G 25	G U Y 30	E 26	E B 64	E B 52	E B 47	E B 48	G	G	G	26	G 18	18	26	E B 16	E B E B 16	35
12	23	20	16	E B 15	E B E B 16	13	24	32	G 31	G	G	E B 47	54	U Y 46	U Y 38	G 30	G 26	G 20	16	E B 14	E B E B 16	E B 15	E B E B 16	E B 16
13	E B 14	36	30	E B 16	16	22	31	A A 76	41	U Y 37	G 33	U Y 32	E B 47	E B 44	G	G	G 25	28	E B 16	E B 14	E B E B 13	E B 16	E B E B 14	E B 15
14	E B 13	E B 15	E B 16	E B 15	E B E B 15	15	G	G 19	U Y 37	G 30	U Y 34	E B 46	G 29	40	G	G 32	35	34	24	16	22	18	20	E B 16
15	E B 16	E B 14	E B 15	E B 15	E B E B 16	16	25	E B 36	U Y 38	42	U Y 32	E B 49	G	41	41	37	G 28	26	18	18	E B 15	16	E B 15	E B 15
16	E B E B 15	E B 16	E B 15	E B 13	E B E B 15	16	28	34	U Y 36	G 30	G 35	G	E B 48	E B 74	E B 46	G 22	G	27	E B 15	E B 16	20	E B 15	19	C
17	E B 14	E B 15	16	16	E B 15	E B 16	24	G 26	G 30	40	C	48	56	G 31	43	39	34	G 18	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	44	U Y 37	G 32	G 32	G 28	G 24	G 19	26	21	33	C	26	C	C
19	E B 16	E B 14	E B 15	E B 16	E B E B 14	16	24	31	37	U Y 31	U Y 30	U Y 44	U Y 35	E B 45	U Y 40	43	34	25	16	37	22	41	19	16
20	40	21	22	22	17	17	22	36	35	42	44	48	44	G 36	G 38	G	34	26	26	39	18	18	E B 14	18
21	E B E B 16	E B 14	E B 14	E B 16	E B E B 15	E B 15	23	32	G 26	39	43	G E B 35	46	44	46	42	50	26	18	E B 15	18	E B 14	E B E B 15	E B 14
22	E B E B 14	E B 15	E B 16	E B 16	E B E B 15	E B 16	24	32	39	52	42	U Y 39	G 31	G 29	G 31	G 30	G 20	24	20	28	32	29	24	E B 16
23	E B E B 16	E B 15	E B 15	E B 16	E B E B 16	E B 16	24	21	G U Y 29	28	G 37	G	G 36	G 35	G 31	G 22	G 21	25	18	E B 15	E B 15	22	E B 14	22
24	24	18	16	E B 15	E B E B 20	E B 15	G 24	43	60	48	45	U Y 43	G 37	G 32	G 30	G 26	G 22	24	E B 15	21	18	18	16	E B 15
25	E B E B 14	E B 13	E B 14	E B 16	E B E B 12	E B 16	24	G	40	U Y 39	42	E B 49	G 36	G E B 29	E B 50	G 26	34	25	18	E B 14	16	E B 15	16	E B 14
26	E B E B 16	E B 16	E B 15	E B 14	E B E B 14	E B 16	24	35	G 29	G 31	G 32	G E B 32	E B 65	E B E B 47	E B 42	G 31	C	G E B 18	16	16	E B 16	E B E B 15	E B 16	16
27	E B E B 16	E B 14	15	E B 16	E B E B 15	E B 16	27	G 26	G 33	42	42	G E B 47	U Y 44	44	43	42	33	32	28	17	21	E B 15	E B E B 16	
28	E B E B 16	E B 16	E B 15	E B 15	E B E B 15	E B 16	23	32	U Y 40	42	G 34	G E B 32	E B 47	E B 45	G	G 26	G	32	22	34	21	27	E B 16	16
29	E B E B 16	E B 15	20	46	E B E B 16	E B 16	24	33	35	41	42	46	45	E B 44	G 33	G 29	G	40	69	41	19	22	18	18
30	18	E B 14	E B 16	E B 15	E B 14	19	G 21	30	40	40	G 36	G E B 36	E B 49	E B 47	E B 44	G	65	41	42	23	E B 15	E B 12	34	35
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	29	29	29	29	29	29	29	29	30	30	30	30	30	29	30	29	29	28	29	28	27
MED	E B 16	E B 15	E B 15	E B 15	E B 15	E B 16	24	32	36	37	38	U 40	U 40	U 38	U 36	32	G	26	19	18	18	18	16	E B 16
U Q	17	16	16	16	E B 16	16	25	34	40	42	44	E B E 48	E B 48	E B 47	44	37	37	32	26	28	22	22	18	18
L Q	E B 14	E B 14	E B 15	E B 15	E B 15	E B 15	G	G	G 30	32	34	G	G 36	G 36	G 33	G 29	G 28	G 25	17	E B 15	E B 16	E B 15	E B 15	E B 15

SEP.2001 fbEs (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP. 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	10	15	14	12	15	16	15	14	24	21	27	25	32	20	28	15	15	14	12	15	15	15	15	15
2	15	16	14	14	15	16	16	14	20	21	22	20	20	20	22	25	16	16	13	15	16	11	15	12
3	15	16	15	14	15	14	13	14	20	18	27	54	46	28	22	27	20	16	16	16	16	14	15	15
4	16	14	14	15	14	14	15	14	17	21	20	18	23	20	17	15	16	11	16	16	13	16	16	14
5	14	15	16	14	16	15	13	42	20	14	24	45	49	49	21	20	19	15	16	15	16	15	15	13
6	16	16	15	16	16	16	15	15	30	42	42	53	23	43	21	21	21	15	16	16	16	16	15	16
7	15	15	16	16	15	16	15	15	16	18	21	40	31	25	44	25	15	16	14	16	15	14	16	15
8	14	15	15	16	13	15	15	17	20	27	21	35	45	46	62	20	20	16	14	16	13	16	16	16
9	15	14	15	15	14	16	16	18	19	21	30	48	51	48	42	23	18	14	14	14	14	15	14	16
10	16	15	12	15	15	16	15	18	19	24	50	49	47	47	43	41	21	14	16	14	16	15	15	16
11	16	15	15	14	15	16	16	17	17	22	64	52	47	48	28	22	22	16	13	15	15	16	16	15
12	16	15	12	15	16	13	15	15	13	23	25	47	31	37	28	19	17	15	13	14	16	15	16	16
13	14	16	17	16	13	11	14	18	19	14	26	28	47	44	25	21	14	17	16	14	13	16	14	15
14	13	15	16	15	15	15	14	14	14	17	24	46	23	23	20	22	17	13	16	14	14	14	16	16
15	16	14	15	15	16	16	14	36	20	18	21	49	28	27	19	18	15	16	16	16	15	11	15	15
16	15	16	15	13	15	16	12	14	14	20	22	29	48	74	46	17	19	14	15	16	15	15	16	C
17	14	15	13	15	15	16	11	19	18	22	C	28	26	23	27	20	15	14	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	24	34	22	23	18	14	15	16	15	15	C	16	C	C
19	16	14	15	16	14	16	15	16	19	21	28	22	26	45	25	22	18	16	14	20	14	16	16	15
20	16	16	16	14	14	11	13	14	20	16	24	25	23	23	22	19	17	16	16	15	15	16	14	14
21	16	14	14	16	15	15	14	12	13	14	15	18	46	23	23	18	16	17	15	15	12	14	15	14
22	14	15	16	16	15	16	12	19	17	24	28	30	28	23	26	21	17	15	16	15	15	14	15	16
23	16	15	15	16	16	16	12	18	14	22	22	29	28	25	24	19	15	14	16	15	15	15	14	13
24	14	16	14	15	20	15	18	14	17	18	30	20	30	16	26	21	15	14	15	16	12	12	14	15
25	14	13	14	16	12	16	16	18	19	29	19	49	24	22	50	19	14	14	15	14	14	15	14	14
26	16	16	15	14	14	16	12	16	16	19	27	22	65	47	42	20	C	15	16	12	16	15	16	11
27	16	14	13	16	15	16	16	17	17	28	26	33	47	23	26	18	16	16	16	16	16	16	15	16
28	16	16	15	15	15	16	15	19	17	22	20	28	47	45	24	20	18	15	12	15	16	14	16	10
29	16	15	13	16	16	16	12	16	17	16	24	26	26	44	26	20	17	13	14	14	14	15	15	14
30	14	14	16	15	14	16	13	19	18	19	23	30	49	47	44	28	19	15	15	16	15	12	15	16
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	29	29	29	29	29	29	29	29	30	30	30	30	30	29	30	29	29	28	29	28	27
MED	15	15	15	15	15	16	15	16	18	21	24	30	31	28	26	20	17	15	15	15	15	15	15	15
U Q	16	16	16	16	16	16	15	18	20	22	28	47	47	46	42	22	19	16	16	16	16	16	16	16
L Q	14	14	14	14	14	15	13	14	16	18	22	25	26	23	22	19	15	14	14	14	14	14	15	14

SEP. 2001 fmin (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP.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

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	R 275	282	290	277	266	288	336	334	335	301	300	283	283	280	283	290	298	311	302	308	R 303	275	R 272	274
2	273	S 263	286	300	290	304	320	329	329	320	292	272	277	285	282	286	298	301	311	310	295	291	R 284	S 279
3	278	275	274	R 282	275	R 274	307	339	346	319	296	280	288	288	284	282	289	300	303	U R 292	R 285	279	288	291
4	266	271	R 284	287	R 268	277	309	314	323	300	298	R 288	281	287	289	291	292	298	309	S 313	288	275	277	R 268
5	271	277	286	259	256	281	314	327	339	321	315	280	292	274	286	294	R 298	R 297	304	288	273	R 289	R 289	R 293
6	287	259	R 261	R 274	R 277	R 272	320	333	338	309	R 297	275	278	284	284	287	290	297	297	296	293	280	278	279
7	276	273	267	286	281	292	339	339	344	316	296	293	281	288	283	286	284	294	301	296	289	R 285	279	268
8	270	275	277	285	277	283	342	361	326	313	294	289	272	270	275	276	291	294	306	287	271	274	282	R 279
9	R 280	264	256	260	260	265	R 338	319	319	296	293	285	285	283	279	279	292	297	309	298	283	272	R 264	271
10	278	276	279	309	305	288	313	323	H 300	299	283	284	278	285	279	290	293	296	312	R 309	R 287	R 273	R 274	280
11	R 288	R 283	302	R 311	284	285	317	328	311	311	285	281	279	272	284	285	278	299	294	R 295	R 281	277	275	277
12	286	267	274	274	R 260	252	320	325	309	308	273	277	285	280	278	275	285	291	301	275	270	257	R 275	277
13	269	265	R 274	U R 304	322	290	315	A	281	294	R 267	274	291	R 283	267	284	285	292	304	319	263	268	252	R 271
14	R 293	261	251	260	272	280	311	345	333	293	295	281	289	281	286	291	301	306	308	294	270	269	R	279
15	272	279	276	295	275	R 277	325	321	321	314	287	280	273	275	277	280	283	291	297	R 314	268	275	R 279	251
16	261	286	R 281	265	262	276	320	338	331	321	286	296	291	R	292	293	293	300	308	312	S 279	275	273	C
17	273	273	276	R 279	R 274	275	333	332	324	318	C	280	278	276	277	287	291	305	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	266	283	283	278	271	276	288	302	301	307	C	283	C	C
19	272	S 285	R 293	R 305	296	258	318	346	310	303	286	279	280	282	274	279	287	298	303	302	290	279	275	280
20	S 280	287	275	292	301	300	333	328	320	314	294	280	275	277	278	284	291	301	R 316	R 310	282	279	288	287
21	295	280	287	290	292	296	341	339	318	324	283	286	280	276	273	279	290	291	R 310	316	284	284	285	281
22	284	278	279	290	R 284	282	326	335	322	309	297	279	281	274	270	269	282	291	R 311	306	287	278	260	265
23	R 256	266	273	270	266	276	337	326	326	306	291	280	278	276	276	278	282	288	300	310	312	274	251	R 235
24	R 248	255	274	248	235	266	340	318	315	306	295	275	272	275	269	272	281	290	298	306	278	272	268	270
25	271	268	286	292	R 279	276	328	321	316	302	287	276	272	270	268	272	277	286	R 304	299	286	277	272	272
26	274	273	277	295	300	R 287	328	317	297	316	294	286	264	256	268	272	C	279	287	280	281	262	278	292
27	263	266	267	270	265	286	316	322	313	300	276	276	271	268	275	275	282	295	306	286	278	281	284	294
28	277	281	258	254	260	276	315	S 320	308	296	279	278	269	267	265	276	282	288	309	R 306	279	274	269	271
29	251	250	275	R 290	266	267	306	308	303	286	292	284	268	266	271	272	282	285	297	292	281	R 267	268	257
30	R 275	292	277	263	253	259	331	324	320	288	282	279	275	273	271	280	277	291	298	297	287	280	265	265
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	29	29	29	29	28	29	29	29	30	30	29	30	30	29	30	29	29	28	29	27	27
MED	274	273	276	285	275	277	320	328	320	308	292	280	278	276	277	280	288	296	304	302	282	275	275	277
U Q	280	280	285	294	287	288	334	336	330	316	296	284	283	283	283	287	292	300	309	310	288	280	282	280
L Q	270	266	274	268	264	273	315	321	310	300	283	278	273	272	271	276	282	291	299	293	278	272	268	268

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

IONOSPHERIC DATA STATION Kokubunji

SEP.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 384	L 334	U L 350	L	L 337	L	L	L						
2									L	L	L	U L 350	L 340	L 340	L 327	L	L							
3									L	L	L	U L 333	L 336	L	L	L	L	L						
4									L	L	L	L	L	U L 337	L	L	L							
5								B	L	L	A	L	L	L	U L 327	L 382	L							
6									L	L	L	L 346	L 346	U L 332	U L 349	L	L							
7										L	L	L	L	L	L	L	L							
8									L	L	L	L 356	U L 350	L	B	L	L							
9									L	L	L 395	L	L	L	L	L	L							
10										L	L	L	L	L	L	L	L							
11									L	L	B	L	L	L	L	L	L							
12										L	L	U L 366	A	L	L	L	L							
13								A	U L 361	344	U L 294	U L 336	L 340	U L 347	L 324	L 341	L							
14									L	L	L	L	L	L	L	L	L							
15										L	L	L	L	L	L	L	L							
16									L	L	L	L	L	B	L									
17									L	L	C	L	L	L	L	L	L		C					
18						C	C	C	C	C	L	L	L	L	L	L								
19										L	L	L	L	L	L	L	L							
20										L	L	L	L	L	L	L								
21										L	L	L	L	L	L	L	L							
22										A	L	L	L	L	L	L								
23												L	L	L	L	L	L							
24									A		L	L	L	L	L	L	L							
25										L		L	L	L	L	L	L							
26											L	L	L	L	L	L	C							
27										L	L	L	L	L	L									
28										L		L	L	L	L	L								
29										L	L	L	L	U L 340	L	L								
30										L		L	L	L	L	L	A							
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									1	1	3	7	6	5	5	2								
MED									U L 361	344	L 384	U L 346	L 343	U L 340	L 327	L 362								
U Q											L 395	L 356	U L 350	U L 344	L 343									
L Q											U L 294	L 334	L 340	U L 334	L 326									

SEP.2001 M(3000)F1 (0.01) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP. 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									254	260	290	340	318	324	330	308	286	272						
2									250	268	304	330	338	326	326	298	286							
3									234	256	338	346	328	316	330	342	304	276						
4									254	292	290	330	320	320	298	316	316							
5								258	260	278	284	310	304	334	316	280	308							
6									266	280	286	378	378	344	340	330	286							
7										260	312	330	300	332	346	338	332							
8									268	248	300	318	310	354	350	324	308							
9									270	310	302	308	324	342	348	330	304							
10										300	314	322	336	312	340	312	298							
11									264	260	276	282	330	354	314	326	332							
12										260	354	304	306	314	308	330	314							
13								A	364	338	402	426	368	388	434	356	348							
14									248	286	286	328	304	338	308	324	310							
15										268	292	322	336	328	328	330	312							
16									274	278	340	290	292	324	312									
17									280	286	C	332	326	330	306	304	308		C					
18						C	C	C	C	C	338	320	316	326	354	322								
19										288	304	326	326	294	350	324	296							
20										264	300	330	340	328	326	314								
21										264	264	316	332	314	334	314	288							
22										244	268	322	316	334	338	330								
23												324	314	330	332	322	308							
24									242		308	322	346	326	350	336	316							
25										280		336	334	330	344	330	318							
26											280	330	382	386	352	328	C							
27										286	346	328	326	344	334									
28										296		330	336	342	342	322								
29										308	298	318	354	360	328	324								
30										316		322	312	334	336	320	298							
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								1	14	26	25	30	30	30	30	28	22	2						
MED								258	262	279	300	325	326	330	334	324	308	274						
U Q									270	292	326	330	336	342	346	330	316							
L Q									250	260	286	318	314	324	326	315	298							

SEP. 2001 h'F2 (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

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SEP.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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E A 246	E A 290	264	260	302	296	242	218	228	208	202	218	234	232	240	248	232	240	252	252	246	246	E A 266	E A 298
2	E A 300	E A 314	282	234	220	252	230	226	224	212	206	194	210	204	224	216	238	248	258	232	240	244	E A 264	E A 272
3	E A 292	286	298	274	280	276	222	238	212	210	244	E B 264	224	242	240	E A 248	232	E A 240	254	254	262	262	268	258
4	E A 274	296	262	258	254	304	238	236	232	224	224	228	E A 246	214	E A 244	E A 246	E A 246	256	248	228	222	276	E A 284	292
5	286	274	276	292	E B 326	306	234	B	E A 242	228	A	208	E B 262	E B 252	236	224	238	E A 256	250	266	E A 292	268	254	250
6	268	E B 310	310	290	298	308	246	236	E A 244	224	240	E B 268	216	E A 256	E A 266	E A 260	A	E A 278	262	254	246	E A 268	E A 276	280
7	268	284	282	276	276	276	234	238	238	E A 224	222	E A 240	E A 248	236	234	244	244	250	244	244	E A 268	242	290	E A 298
8	292	282	278	264	272	280	238	220	214	E A 216	198	U R 252	202	240	B	240	248	250	254	244	254	E A 296	E A 268	E A 290
9	E A 280	E A 292	E A 318	306	304	312	240	222	224	224	194	E B 258	256	250	230	238	252	260	246	230	232	264	E A 304	288
10	276	278	282	250	238	244	224	228	226	210	E B 254	228	224	E B 246	232	232	E A 242	E A 254	252	240	228	E A 280	286	274
11	268	278	258	230	246	270	242	234	220	208	B	E B 248	232	248	E B 242	234	242	252	242	246	272	262	264	E A 308
12	278	E A 306	284	260	E B 294	E B 336	236	224	238	234	236	206	A	240	228	246	232	258	240	256	272	244	266	264
13	280	E A 332	E A 320	234	230	E A 246	E A 270	A	E A 250	232	236	230	E B 262	232	236	234	240	274	256	220	232	264	300	304
14	252	268	350	318	270	E B 274	246	246	E A 234	212	218	228	220	244	234	250	246	E A 262	250	232	E A 270	280	E A 280	286
15	282	276	280	262	236	286	250	230	236	220	228	234	242	220	234	234	240	262	262	240	214	256	262	304
16	318	278	272	284	302	276	244	240	230	220	204	200	226	B	E B 250	230	240	258	254	238	240	252	E A 284	C
17	286	286	278	256	270	300	234	234	224	226	C	E A 246	E A 282	234	E A 240	232	248	252	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	224	216	U R 254	232	242	234	244	262	242	246	C	E A 272	C	C
19	288	276	258	238	240	E A 316	254	236	214	208	226	236	230	232	228	252	246	260	240	258	234	268	270	278
20	E A 310	282	E A 282	260	228	252	230	232	228	220	222	238	224	240	240	254	248	252	244	236	238	238	270	270
21	260	258	264	262	258	260	230	226	230	214	208	224	232	E A 236	250	E A 252	A	252	240	228	234	248	256	268
22	260	274	286	266	250	258	222	228	234	A	E A 230	218	222	226	234	240	254	260	242	236	E A 254	E A 266	E A 308	316
23	326	304	290	290	284	282	232	232	228	228	216	202	222	236	232	240	240	260	260	230	214	E A 268	314	E A 394
24	E A 392	E A 330	276	268	E B 420	326	220	236	A	234	224	234	224	224	242	236	250	264	248	248	256	258	270	288
25	294	302	274	248	234	274	238	230	232	234	234	222	212	234	242	244	248	264	252	240	230	250	260	270
26	292	284	282	262	234	256	228	234	244	222	226	224	E B 338	234	236	234	C	266	264	258	246	256	272	242
27	262	288	300	280	284	266	226	230	228	206	H 218	228	236	242	238	244	E A 258	256	240	242	244	E A 280	258	260
28	254	278	308	314	306	270	224	234	230	220	220	224	236	242	248	244	250	264	238	242	246	256	274	284
29	318	346	282	E A 314	260	292	234	232	224	224	224	224	238	238	230	242	250	258	E A 294	264	258	E A 280	E A 288	E A 326
30	292	240	252	292	326	E A 318	234	226	218	212	230	242	234	240	246	244	A	E A 266	252	242	246	256	E A 306	E A 320
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	29	29	29	29	27	28	28	27	30	29	29	29	30	26	30	29	29	28	29	28	27
MED	279	281	281	263	264	275	234	232	228	220	223	226	228	235	236	239	244	257	250	242	242	256	268	278
U Q	293	E 303	294	290	300	305	242	236	235	225	230	E 240	E 247	242	242	246	248	262	255	253	257	E A 270	287	E A 304
L Q	268	277	273	257	239	263	229	226	224	212	216	218	223	232	233	234	240	252	242	234	233	251	265	270

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SEP.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

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	122	118	A	A	A	A	A	A	A	128	122	122	B					
2						B	122	122	A	124	128	118	118	A	118	118	120	118	116					
3						B	122	126	128	124	A	B	B	A	A	120	126	116	B					
4						B	120	118	A	118	118	A	120	A	120	120	118	122	B					
5						B	124	B	120	R	A	B	B	B	126	124	124	130	B					
6						B	128	122	122	B	B	B	120	B	124	126	124	120	B					
7						B	128	128	128	122	118	B	A	A	B	122	124	126	B					
8						B	120	118	122	A	126	R	B	B	B	128	120	120	B					
9						B	130	122	A	124	124	B	B	B	B	120	126	118	B					
10						B	122	A	114	116	B	B	B	B	B	B	118	118	B					
11						B	126	124	128	118	B	B	B	B	122	118	116	118	118					
12						B	116	120	126	120	118	B	116	A	A	120	120	130	B					
13						B	A	A	A	A	116	118	B	B	122	118	124	120	B					
14						B	120	120	118	120	120	B	118	A	120	122	122	122	B					
15						B	128	B	120	124	126	B	118	120	A	A	124	124	B					
16						B	130	130	A	122	120	118	B	B	B	116	118	126	B					
17						B	128	124	126	122	C	A	A	128	A	A	A	E 134	C					
18						C	C	C	C	C	A	124	A	116	118	118	120	118	B					
19						B	128	128	128	120	120	122	A	B	118	122	120	120	B					
20						B	118	124	120	120	116	118	A	122	128	124	120	A	B					
21						B	126	A	120	116	116	116	B	118	118	A	A	A	B					
22						B	122	120	120	A	A	128	128	118	124	124	124	A	B					
23						B	120	126	120	118	124	120	124	120	120	118	120	A	B					
24						B	132	118	116	120	122	A	120	120	120	118	122	122	B					
25						B	130	120	116	116	A	B	118	120	B	122	120	124	B					
26						B	124	116	120	118	122	118	B	B	B	124	C	120	B					
27						B	A	124	132	120	A	118	B	A	A	A	A	A	B					
28						B	126	120	120	122	120	120	B	B	116	124	124	122	B					
29						B	128	130	A	A	118	120	118	B	124	126	122	122	B					
30						B	128	116	124	120	122	122	B	B	B	122	122	122	B					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							27	24	22	22	19	14	11	9	16	25	26	25	2					
MED							126	122	120	120	120	119	118	120	120	122	122	122	117					
U Q							128	125	126	122	124	122	120	121	124	124	124	124						
L Q							122	119	120	118	118	118	118	118	118	118	120	119						

IONOSPHERIC DATA STATION Kokubunji

SEP. 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	96	98	B	94	B	104	124	116	110	106	110	106	106	106	128	108	108	110	108	106	106	114	102	100
2	96	96	100	96	B	B	102	124	108	106	132	108	108	110	106	G	G	G	120	96	110	106	100	100
3	98	B	100	96	B	B	G	128	108	112	114	B	B	110	104	130	122	112	110	94	106	106	96	96
4	96	B	B	B	128	B	158	130	104	100	102	104	120	102	100	98	124	128	112	112	B	B	98	106
5	B	B	B	B	B	150	130	B	120	104	100	B	B	B	112	108	132	128	116	110	108	108	100	98
6	B	B	B	B	B	B	136	130	124	122	126	B	108	122	136	152	128	118	114	108	108	106	110	106
7	B	B	B	B	B	B	162	110	108	120	120	108	104	106	B	106	112	130	118	B	104	106	96	96
8	96	B	B	B	B	B	124	106	108	108	110	114	B	B	B	108	104	128	104	98	98	110	B	116
9	106	110	108	108	B	B	G	136	106	110	108	B	B	B	B	108	132	116	118	B	B	106	104	B
10	B	B	B	108	110	102	120	112	124	G	B	B	B	B	B	B	128	116	108	110	106	106	B	B
11	B	B	B	B	B	B	G	108	108	104	B	B	B	B	G	G	G	118	112	104	102	100	100	98
12	96	94	96	B	B	B	128	128	106	G	G	B	116	110	110	108	106	114	112	B	B	B	B	B
13	B	106	106	B	106	144	108	106	106	108	104	106	B	B	G	G	110	124	B	94	B	B	B	B
14	B	B	138	B	B	B	G	102	142	110	110	B	110	112	G	108	146	122	114	112	104	108	106	108
15	B	B	B	B	B	B	156	B	140	128	108	B	G	118	110	110	108	132	116	110	B	106	B	B
16	B	B	B	B	B	B	148	162	108	106	106	G	B	B	B	98	G	128	B	B	110	110	106	C
17	104	104	104	104	B	B	132	108	110	122	C	106	104	104	106	100	104	100	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	104	106	104	106	100	98	96	136	110	106	C	104	C	C
19	102	B	B	102	104	102	142	172	142	108	108	146	104	B	120	130	130	116	114	106	104	102	104	104
20	102	100	100	98	98	102	126	118	122	120	114	110	108	108	112	G	122	110	110	108	106	104	B	104
21	B	B	B	B	B	104	142	98	100	122	114	98	B	114	114	108	110	106	104	B	100	B	100	B
22	B	B	B	B	B	B	166	142	126	110	108	112	108	104	108	104	106	106	106	100	98	98	98	B
23	B	B	B	B	B	112	132	114	108	108	108	G	110	108	102	102	102	100	104	B	B	110	B	102
24	96	98	96	96	B	B	176	126	114	116	116	112	108	106	110	104	104	140	104	96	96	98	94	B
25	B	B	B	B	B	B	152	G	134	124	106	B	106	104	B	104	140	128	122	B	102	104	98	B
26	B	B	B	B	B	B	108	138	110	108	106	102	B	B	B	106	C	106	118	104	B	B	B	104
27	104	B	102	B	120	106	104	106	108	116	110	G	B	112	114	110	108	104	108	104	104	104	B	B
28	B	B	B	B	B	B	156	142	130	126	108	108	B	B	G	108	G	122	106	100	110	104	B	100
29	B	B	104	102	104	B	114	148	108	122	124	114	112	B	110	112	G	150	106	108	106	100	104	106
30	102	B	108	B	B	104	130	138	128	124	110	108	B	B	B	G	116	118	114	110	B	108	106	106
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	13	8	12	10	7	10	25	26	29	27	26	17	16	18	18	24	24	29	27	22	20	24	18	17
MED	98	99	103	100	106	104	132	125	110	110	109	108	108	108	110	108	111	118	112	106	105	106	100	104
U Q	103	105	107	104	120	112	154	138	125	122	114	112	110	112	114	109	128	128	116	110	107	108	104	106
L Q	96	97	100	96	104	102	122	108	108	108	106	106	105	106	106	104	106	110	106	100	102	104	98	99

IONOSPHERIC DATA STATION Kokubunji

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

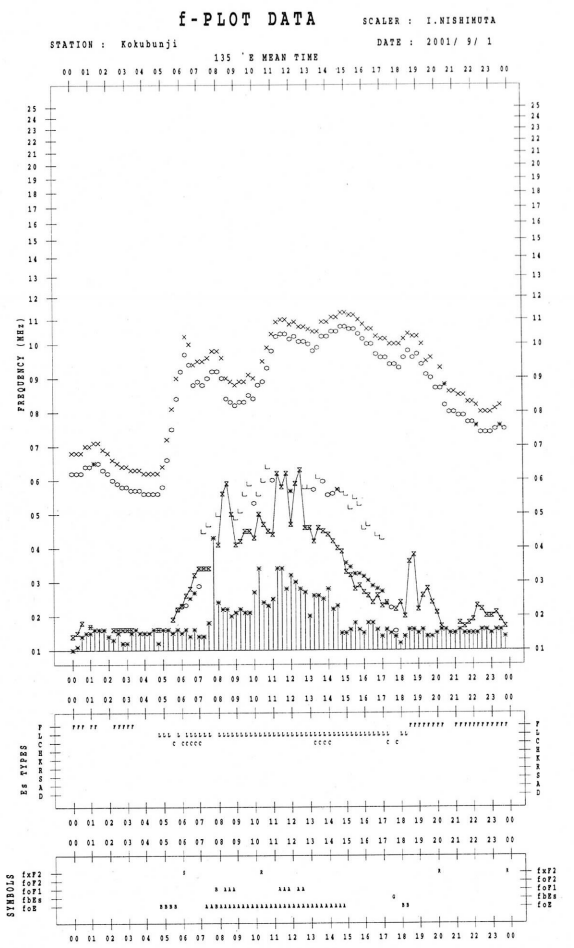
LAT.35°42.4'N LON.139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

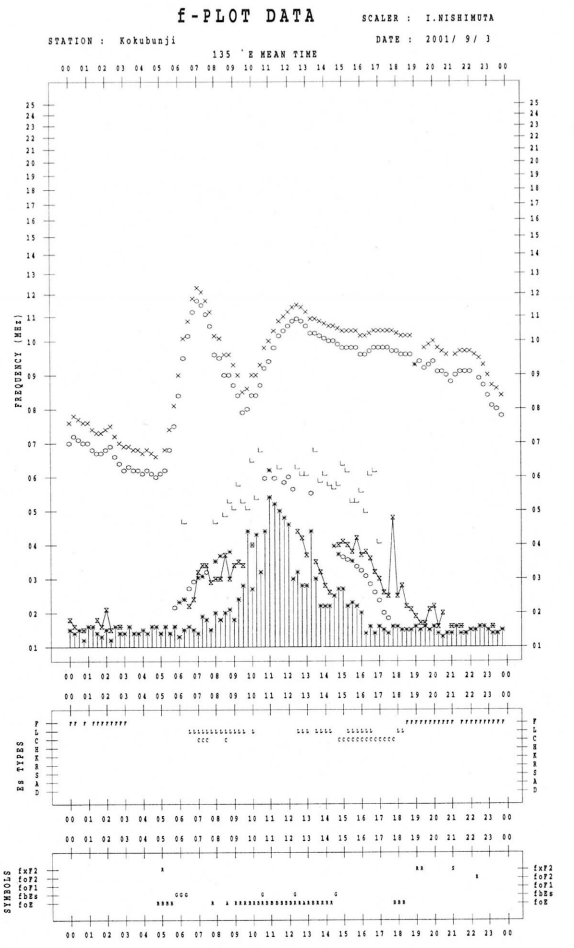
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F2	F1		F1		L2	C1	CL21	L1	L1	L1	L1	L2	L1	CL11	L1	L1	L1	L3	F5	F5	F2	F3	F2
2	F1	F3	F2	F1			L1	C2	L2	L1	CL11	L1	L1	L1	L1				CL11	F1	F1	F1	F2	F2
3	F1		F1	F2				CL11	L1	L1	L1			L1	L1	C1	CL11	C3	L3	F2	F2	F1	F2	F3
4	F2				F1		H1	CL11	L1	L1	L1	L1	CL11	L1	L1	L2	CL11	CL11	CL31	F1			F1	F2
5						H1	C2		CL11	L1	L2				L1	L1	CL11	CL21	CL31	F3	F3	F1	F2	F2
6							H1	CL11	C1	C1	C1		L1	C1	CL21	H1	CL11	C3	C3	F4	F3	F3	F1	F1
7							HL11	L1	L1	CL11	CL11	L1	L1	L1		L1	L1	CL11	CL21		F4	F2	F2	F4
8	F1						C1	L1	L1	L1	L1	L1				L1	L1	CL11	L1	F2	F2	F4		FF13
9	F2	F2	F1	F1				CL11	L1	L1	L1					L1	CL11	C2	C2			F3	F2	
10				F1	F1	L2	CL11	L1	CL11								C1	C3	L3	F1	F2	F2		
11								L1	L1	L1								C1	C2	F3	F4	F2	F1	F2
12	F1	F2	F1				C1	C1	L1				C1	L1	L1	L1	L1	L1	C1					
13		F3	F4		F1	HL22	L3	L3	L2	L1	L1	L1					L1	C1		F1				
14			F1					L1	HL11	L1	L1		L1	L1		L1	HL11	CL21	C4	F1	F3	F2	F3	F1
15							H2		HL11	CL11	L1			C1	L1	L1	L1	C2	C2	F2		F2		
16							HL22	HL12	L2	L1	L1					L1		CL11			F3	F1	F3	
17	F2	F2	F1	F2			C1	L1	L1	CL11		L1	L2	L1	L1	L2	L1	LC32						
18											L1	L1	L1	L1	L1	L2	L1	H2	C3	F3		F4		
19	F2			F1	F1	L1	H2	HL11	HL11	L1	L1	HL11	L1		CL11	C1	C1	C2	C2	F3	F4	F3	F5	F2
20	F4	F3	F4	F4	F3	L2	CL21	CL11	CL11	CL11	CL11	C1	L1	L1	L1		C1	L2	L4	F4	F4	F3		F2
21						L1	H1	L2	L2	CL11	CL21	L1		C1	C1	L2	L2	L2	L2		F1		F1	
22							H1	H1	C1	L2	L1	L1	L1	L1	L1	L1	L1	L2	L3	F3	F3	F2	F3	
23						C1	C2	L1	L1	L2	L1		L1	L1	L1	L1	L1	L2	L2			F2		F4
24	F3	F3	F2	F1			H1	C2	C3	CL11	C1	L1	L1	L1	L1	L1	L1	H1	L1	F4	F2	F2	F2	
25							HL11		HL11	C1	L2		L1	L1		L1	C1	C1	C2		F2	F1	F1	
26							LC11	H1	L1	L1	L1	L1				L1		L1	C1	F2				F2
27	F1		F2		F1	L2	L2	L2	L2	C1	L2			L1	L1	L1	L2	L3	L3	F3	F3	F3		
28							H2	H1	H2	CL11	L1	L1				L1		C3	L4	F2	F2	F2		F1
29			F3	F4	F1		C1	HL11	L2	CL11	CL11	CL11	CL11		L1	L1		HC22	L5	F3	F2	F3	F2	F2
30	F2		F1			L3	H1	H1	CL11	CL11	L1	L1					C3	C3	C4	F2		F2	F3	F3
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

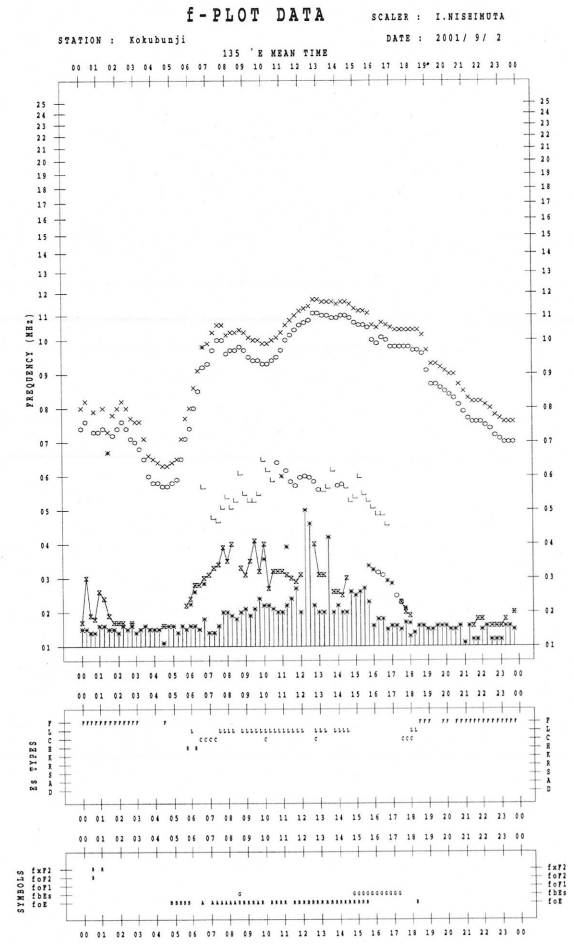
SEP. 2001 TYPES OF Es COMMUNICATIONS RESEARCH LABORATORY, JAPAN

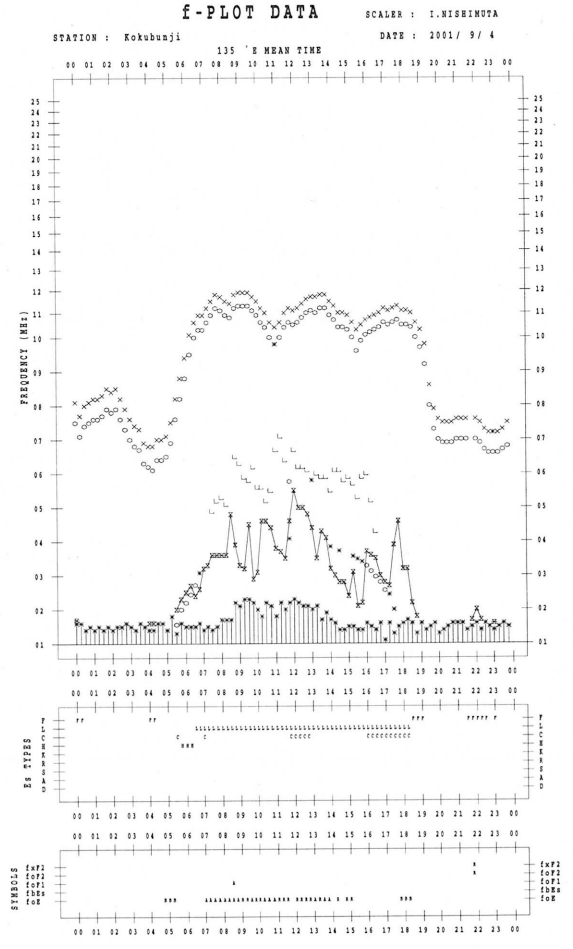
f-PLOTS OF IONOSPHERIC DATA

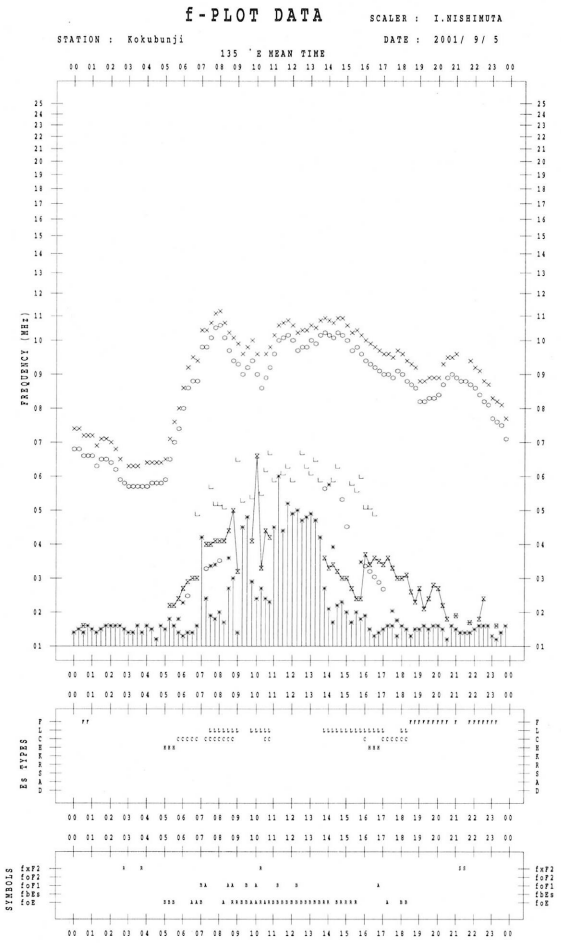
KEY OF f-PLOT	
	SPREAD
	foF2,foF1,foE
	fxF2
	DOUBTFUL foF2,foF1,foE
	fbEs
	ESTIMATED foF1
	fmin
	GREATER THAN
	LESS THAN

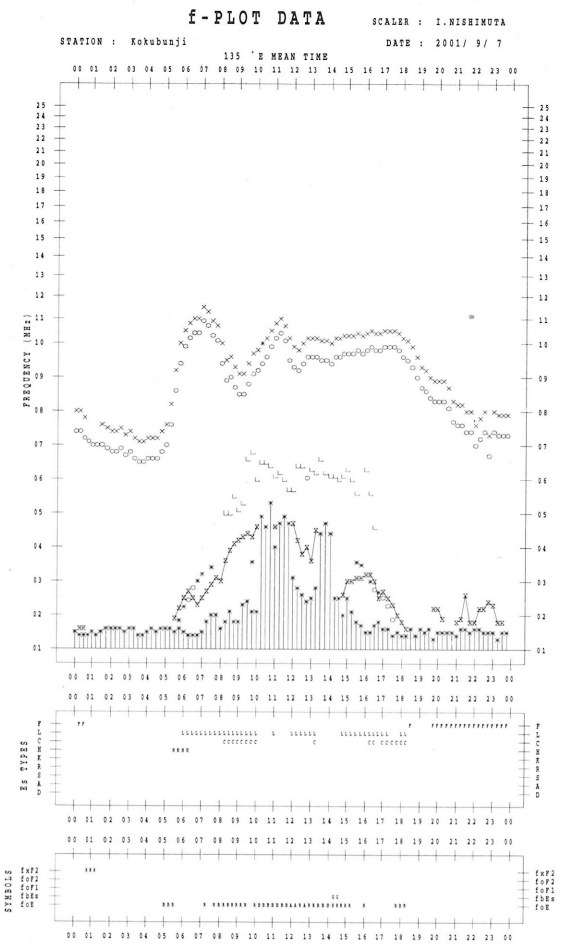

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 9/ 1
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

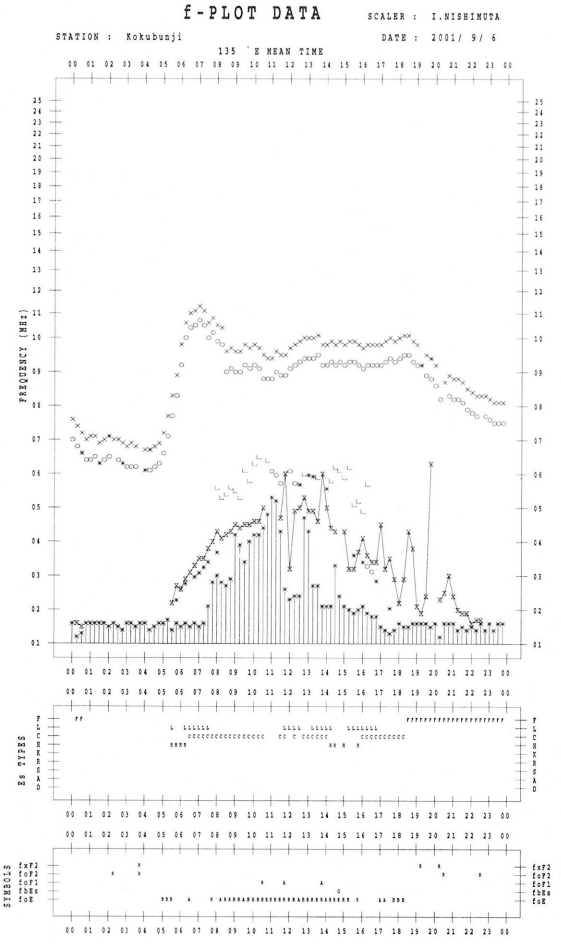

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 9/ 3
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

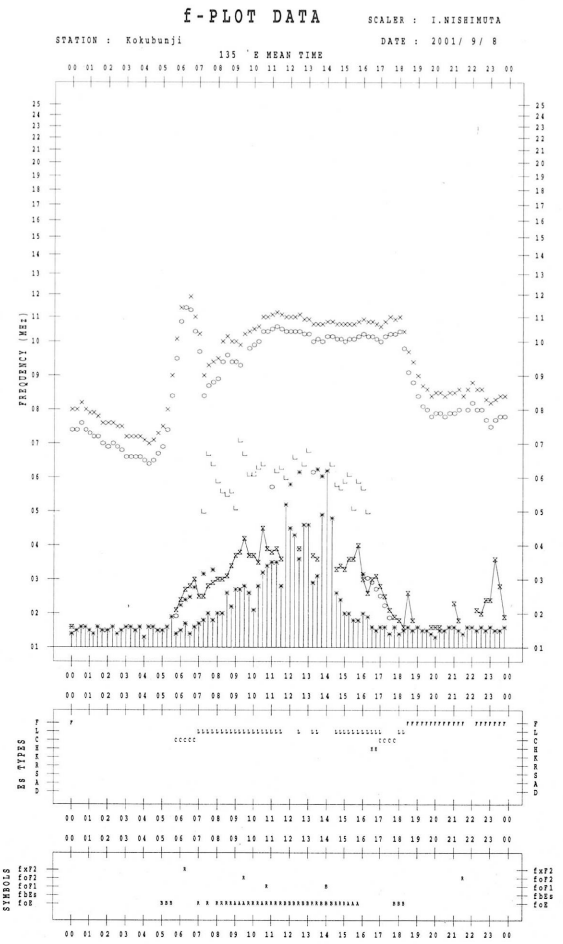

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 9/ 2
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

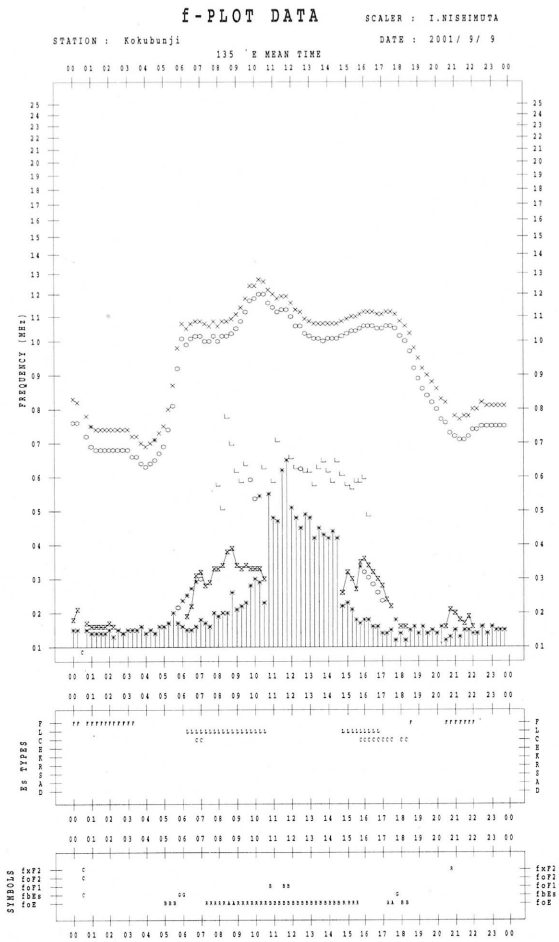

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 9/ 4
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

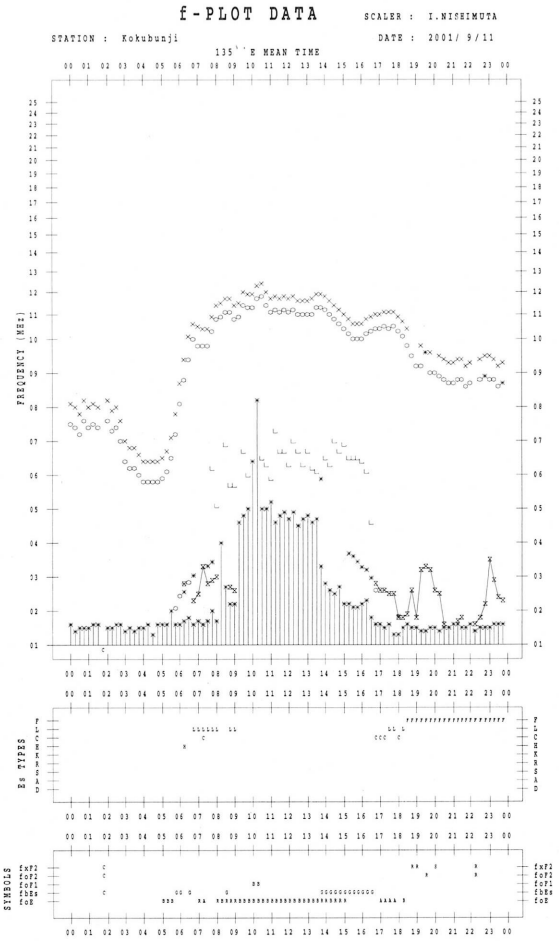

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 9/ 5
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 9/ 7
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 9/ 6
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 9/ 8
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 9/ 9
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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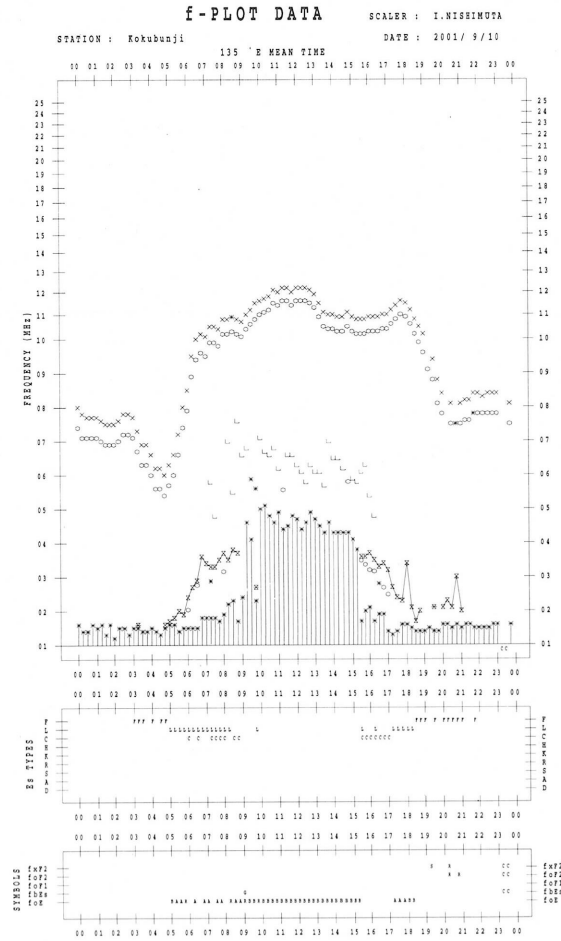
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 9/11
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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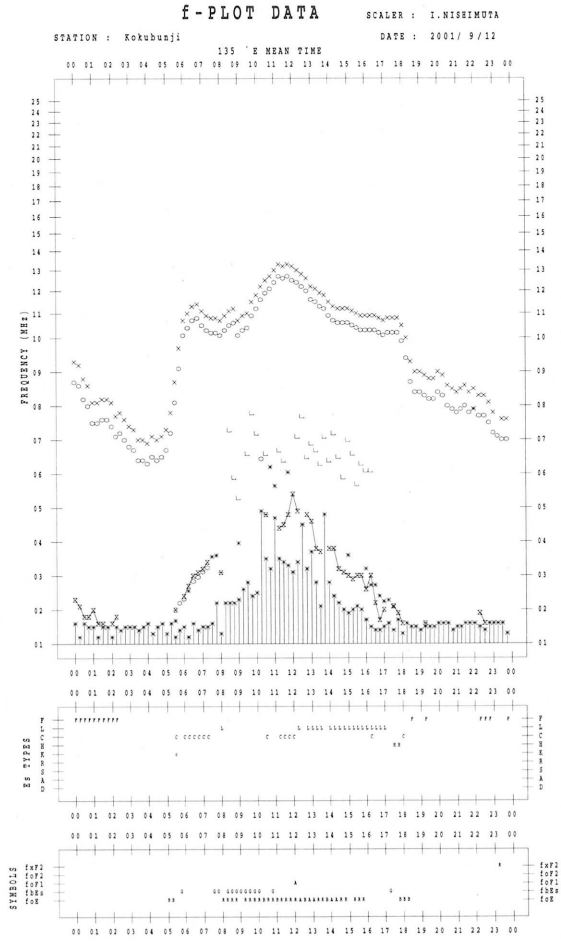
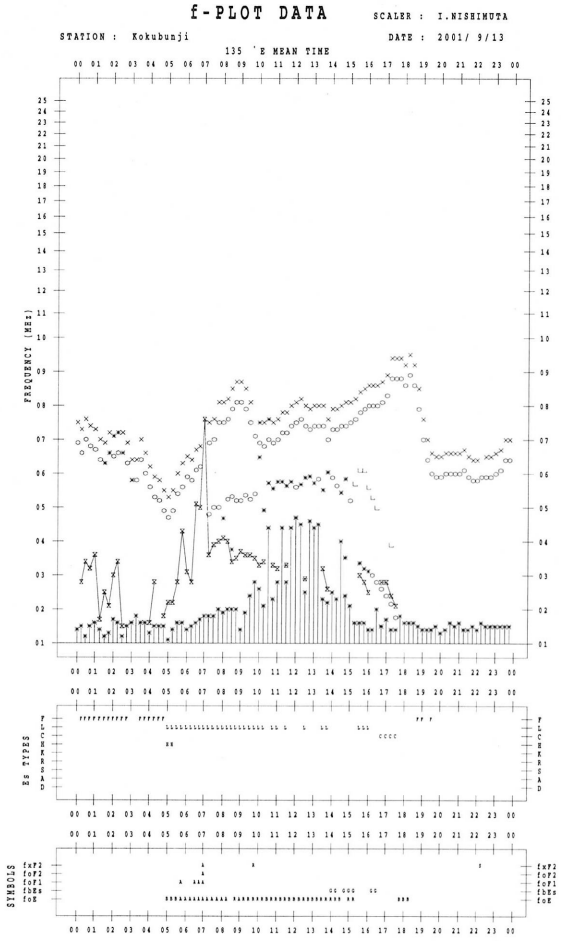
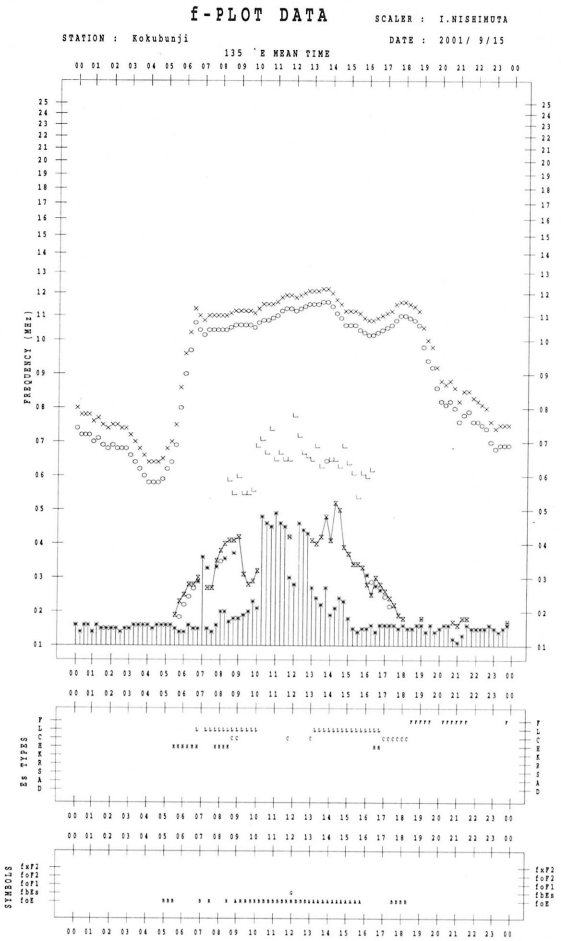
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 9/10
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 9/12
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 9/13
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/ 9/15
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
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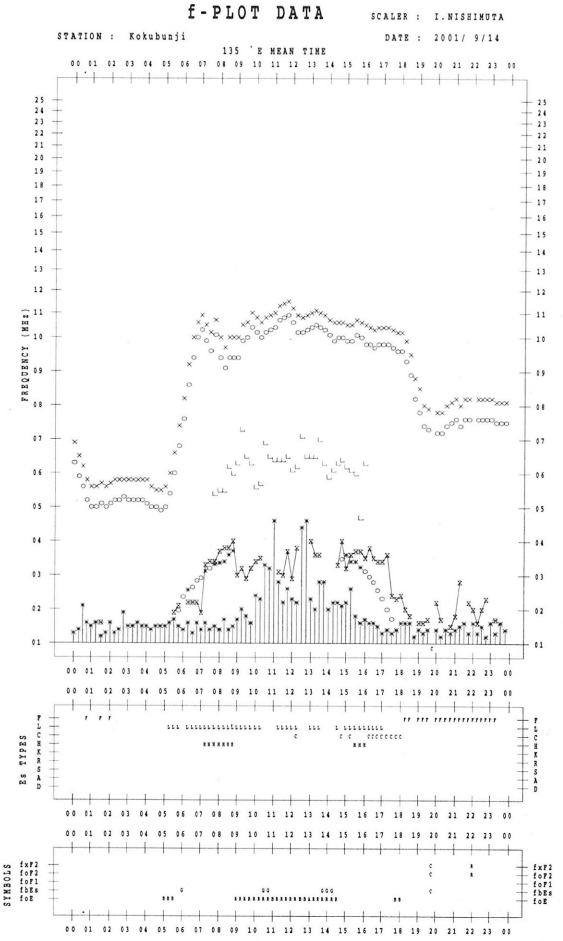
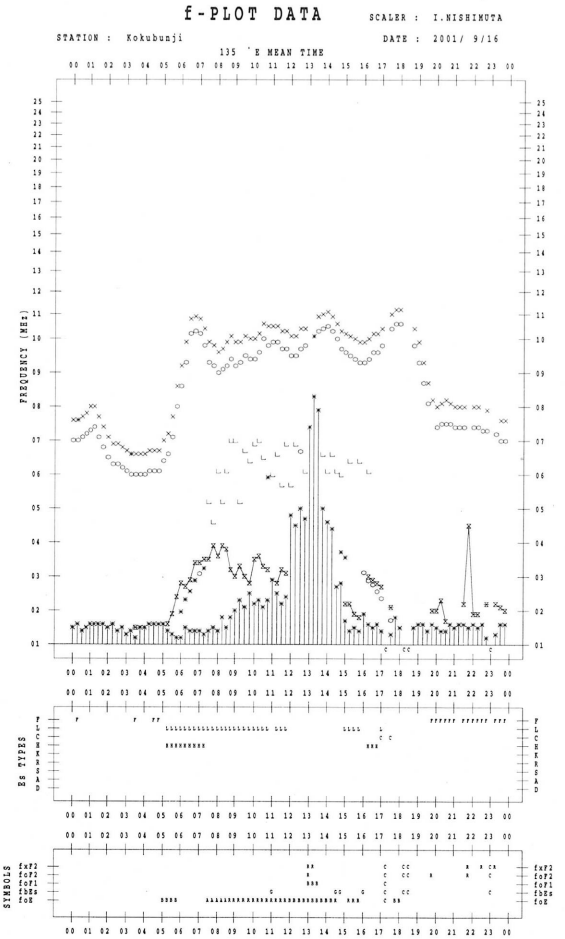

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 9/14
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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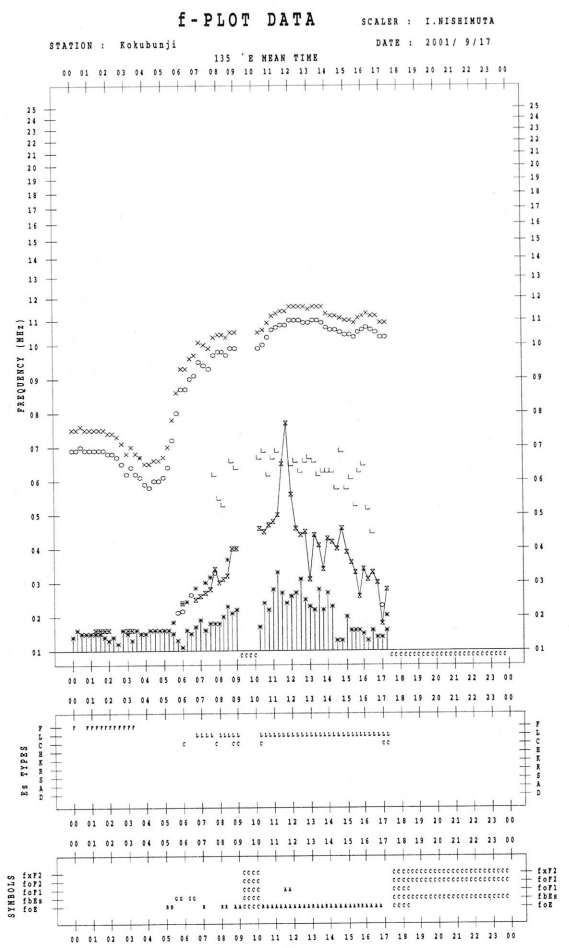
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 9/16
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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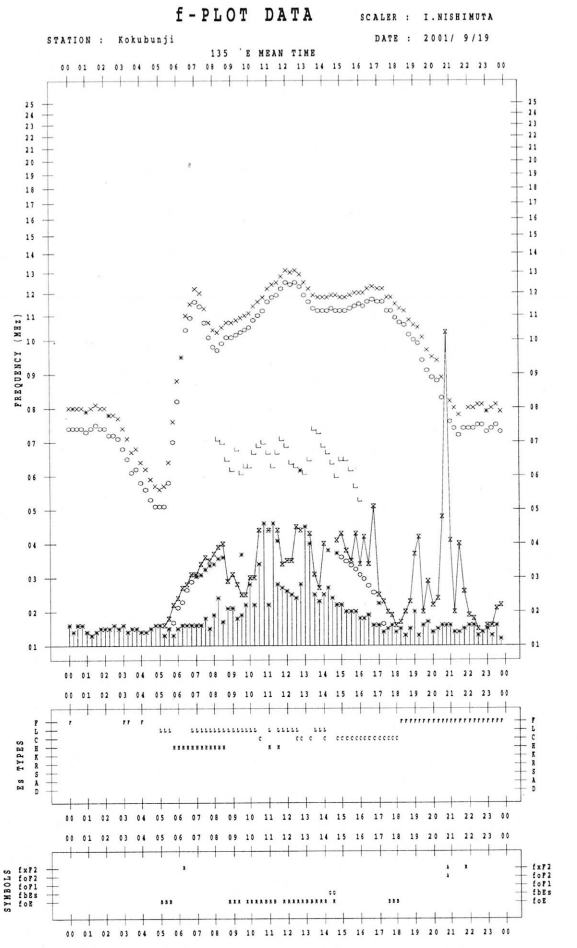
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 9/17
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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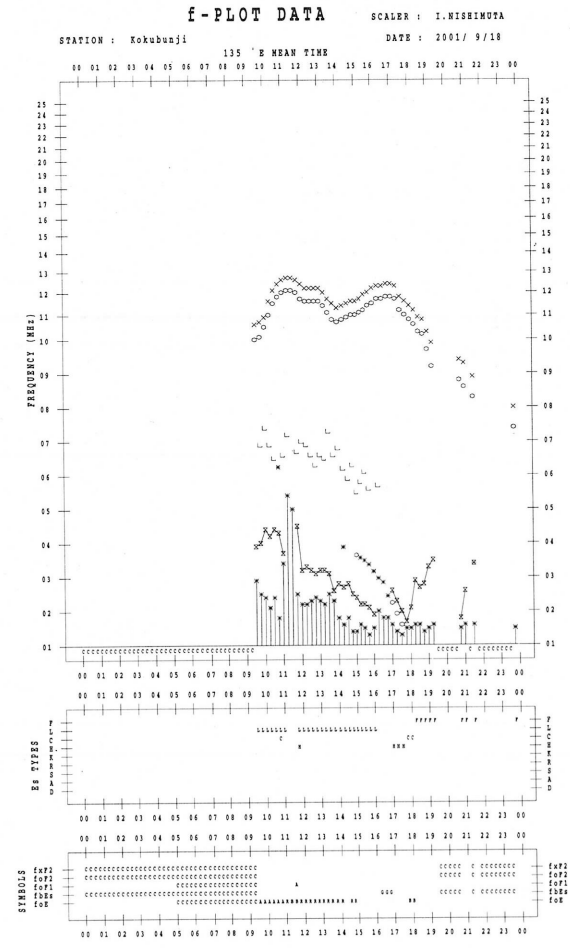
STATION : Kokubunji
DATE : 2001/ 9/19
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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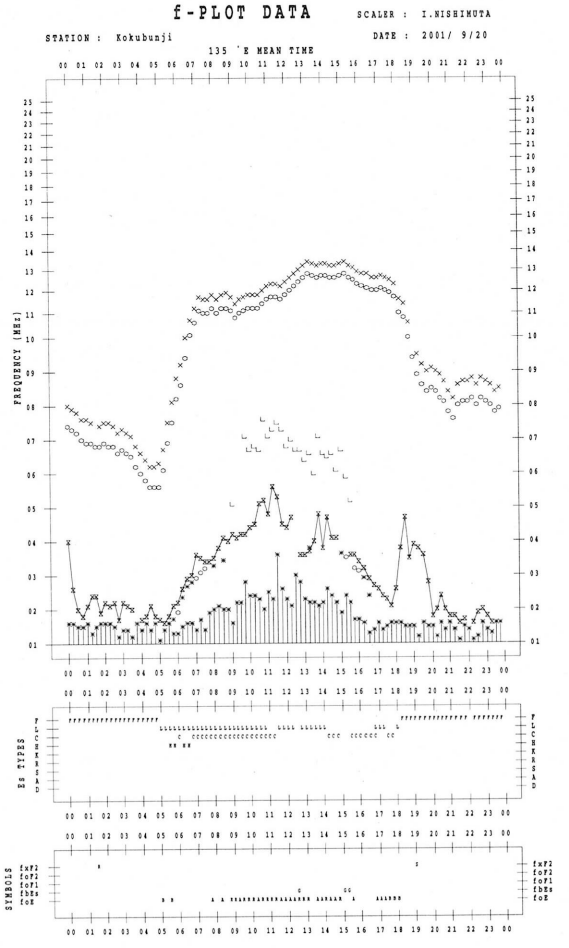
STATION : Kokubunji
DATE : 2001/ 9/18
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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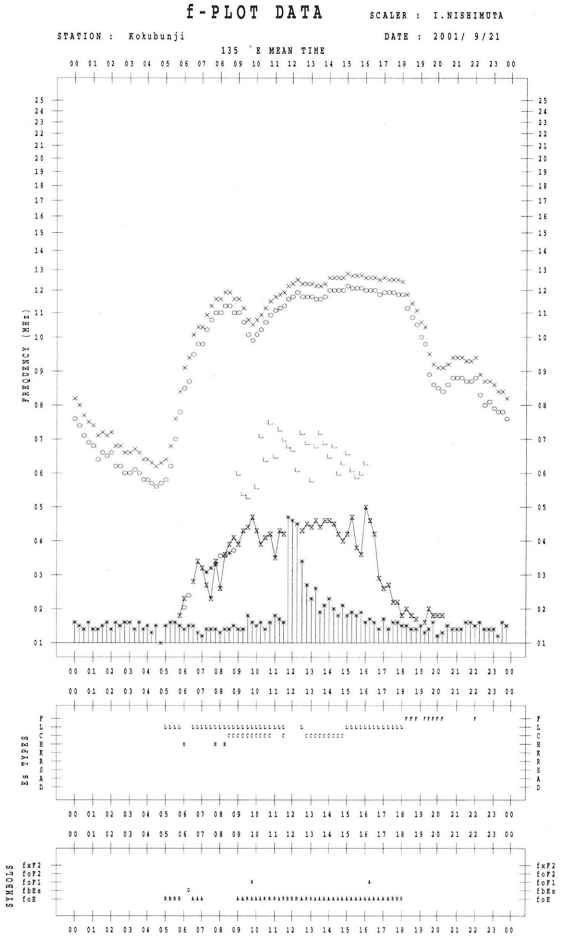
STATION : Kokubunji
DATE : 2001/ 9/20
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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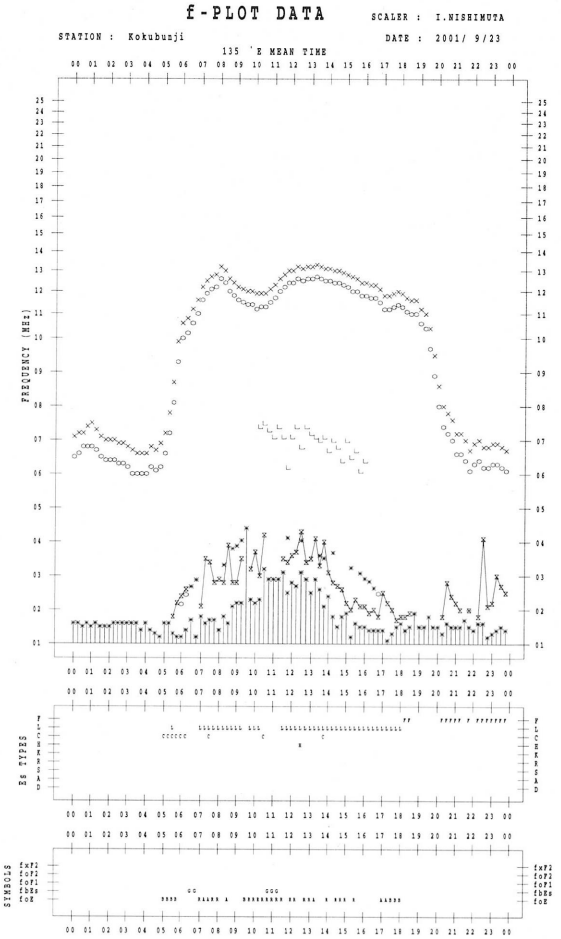
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 9/21
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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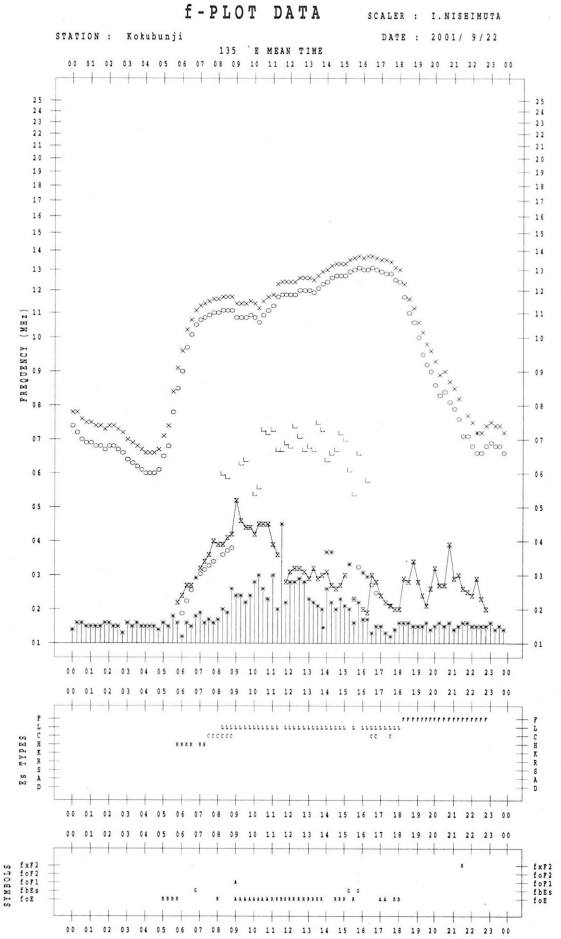
STATION : Kokubunji
DATE : 2001/ 9/23
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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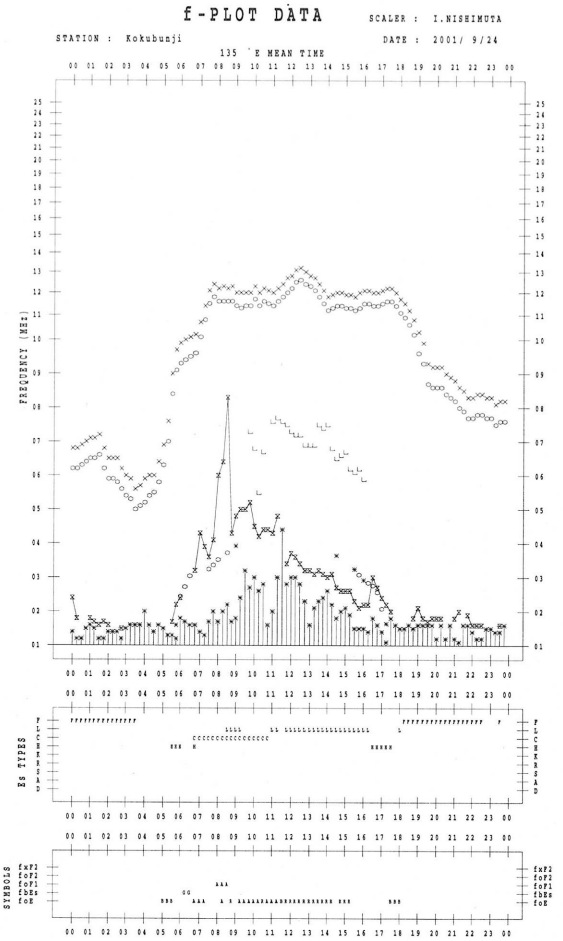
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 9/22
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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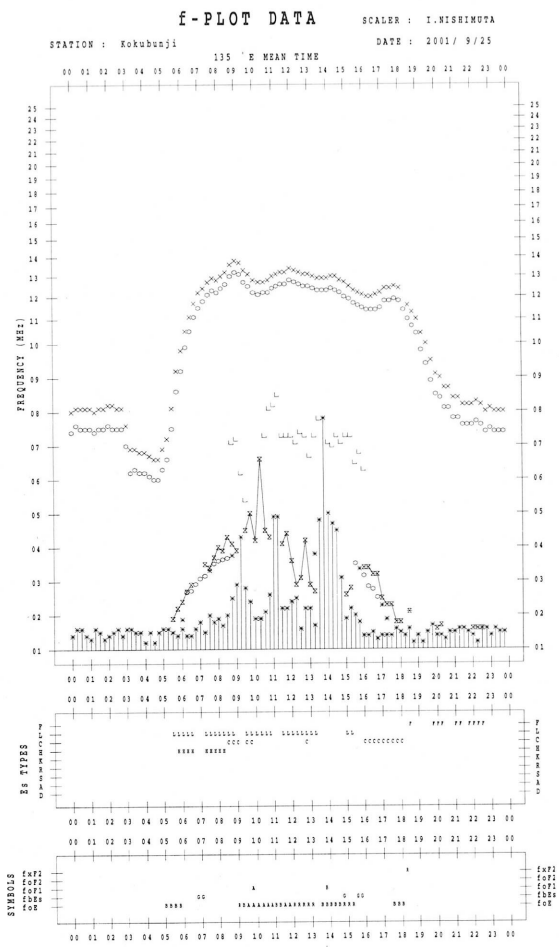
STATION : Kokubunji
DATE : 2001/ 9/24
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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STATION : Kokubunji
DATE : 2001/ 9/25
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
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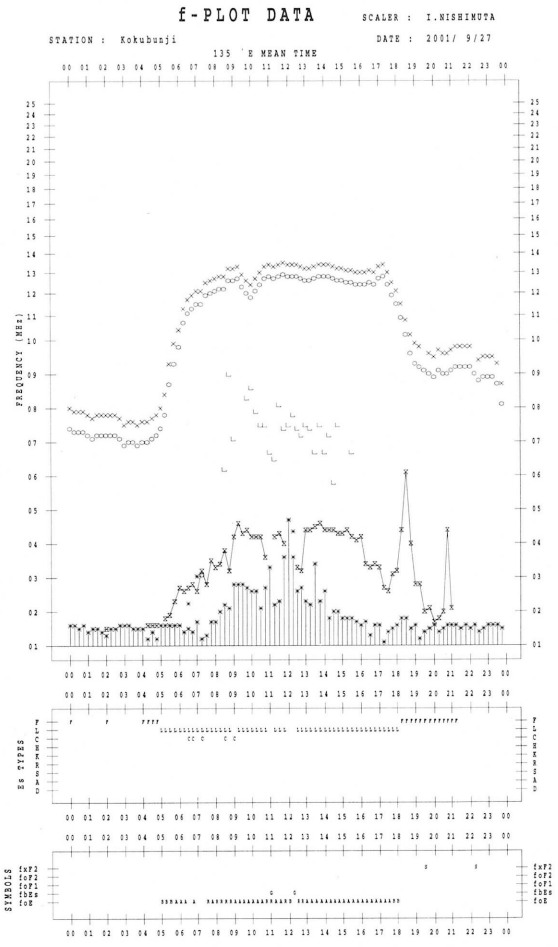
foF2
foF1
fbEs
foE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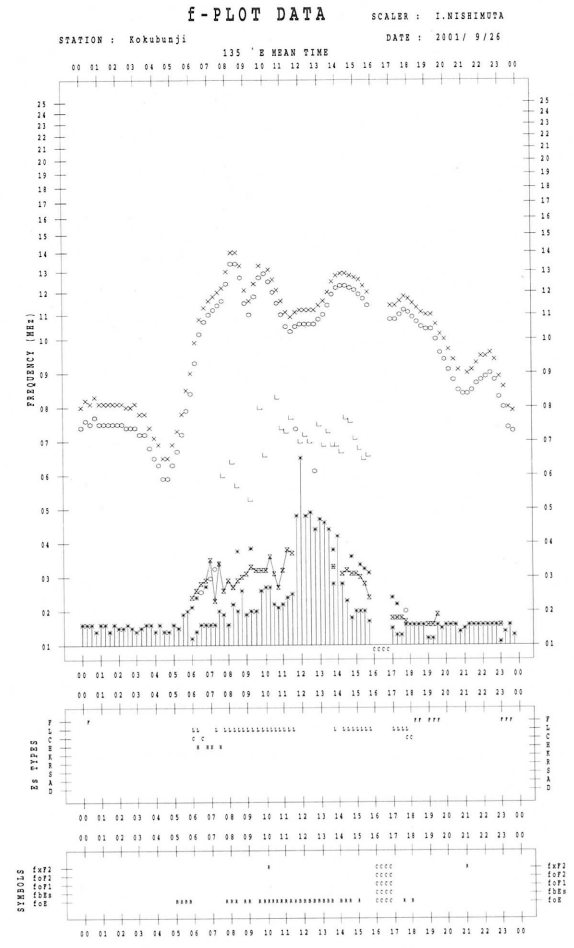
STATION : Kokubunji
DATE : 2001/ 9/27
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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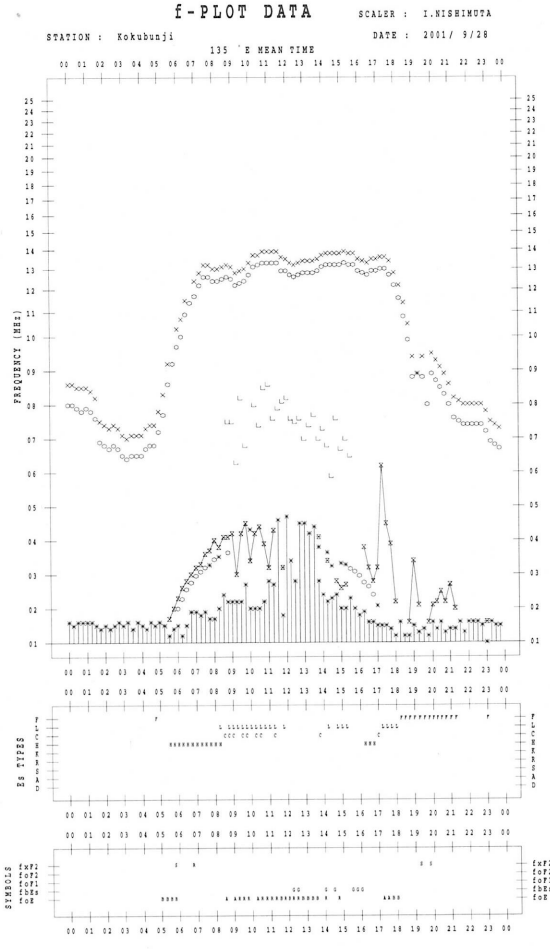
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 9/26
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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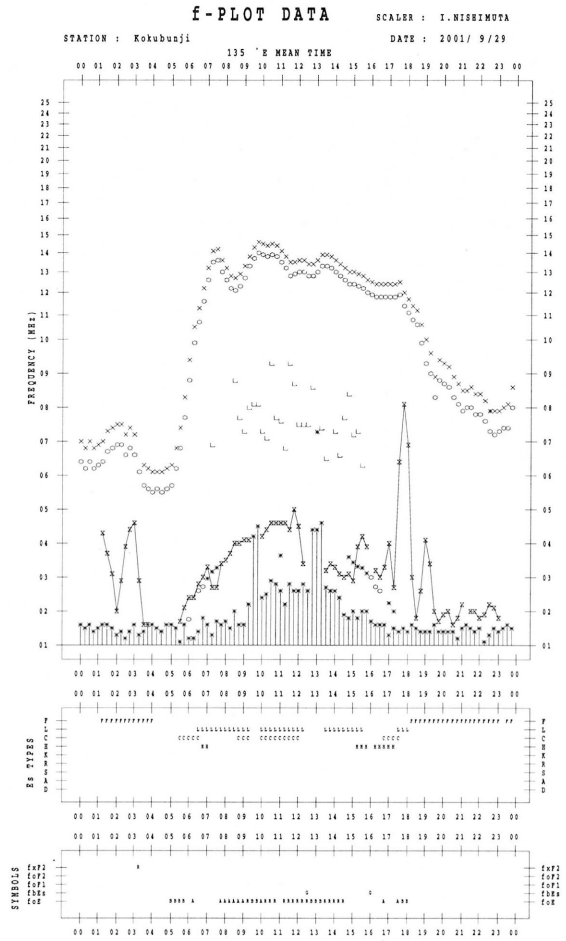
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 9/28
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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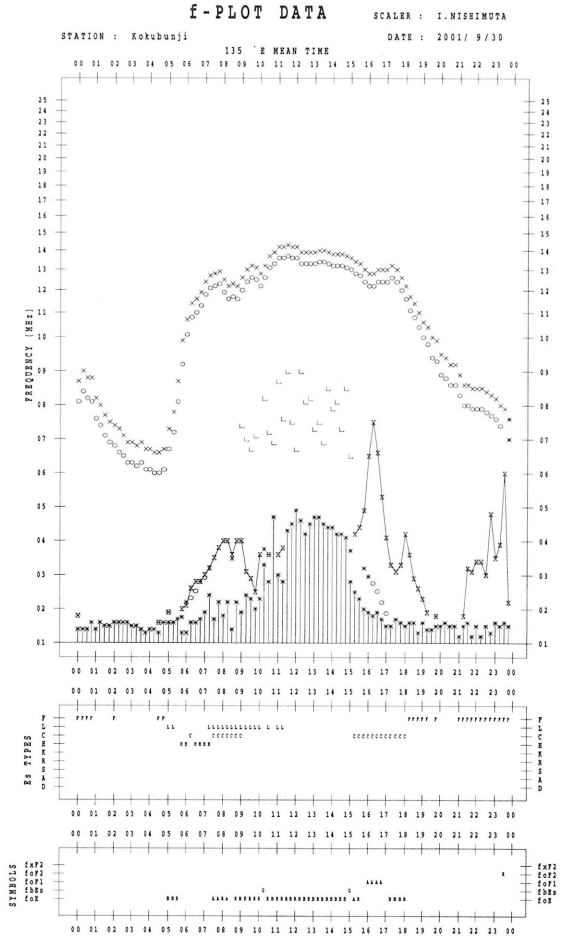
STATION : Kokubunji
DATE : 2001/ 9/29
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2001/ 9/30
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

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

Hiraiso September 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	51	39	41	42	43
2	39	39	39	39	39
3	38	38	38	40	38
4	43	39	41	44	42
5	41	40	40	39	40
6	40	40	40	43	41
7	41	40	39	-	40
8	41	40	39	40	40
9	40	40	38	36	38
10	37	36	37	38	37
11	40	36	33	43	39
12	39	37	37	38	38
13	37	38	39	38	38
14	37	37	38	47	40
15	46	37	37	38	40
16	38	36	37	41	38
17	39	36	37	41	38
18	39	37	37	40	38
19	39	38	40	40	39
20	41	41	41	42	41
21	44	42	45	46	44
22	45	44	43	51	46
23	46	43	41	49	45
24	43	43	42	47	44
25	43	43	44	44	43
26	42	42	42	49	44
27	51	48	49	43	47
28	46	45	43	53	47
29	51	46	45	45	47
30	43	44	44	44	43
31					

Note: No data is available during the following periods.
7th 2030 - 8th 0100

B. Solar Radio Emission

B2. Outstanding Occurrences at Hiraiso

Hiraiso September 2001

Single-frequency observations

Normal observing period: 2020 - 0845 U.T. (sunrise to sunset)

SEP. 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	500	8 S	2133.0	2133.0	1.0	10	-	0
1	2800	8 S	2310.0	2310.0	1.0	40	-	WL
1	2800	4 S/F	2314.0	2315.0	2.0	85	-	ML
2	2800	3 S	0310.0	0313.0	5.0	55	-	0
2	2800	1 S	0405.0	0406.0	2.0	30	-	0
2	500	1 S	0405.0	0406.0	2.0	10	-	0
2	500	1 S	0416.0	0418.0	4.0	15	-	0
3	2800	3 S	0151.0	0152.0	3.0	55	-	0
4	2800	3 S	2154.0	2156.0	6.0	285	-	0
4	500	3 S	2155.0	2156.0	5.0	65	-	0
5	2800	8 S	0233.0	0234.0	1.0	25	-	0
5	500	8 S	0630.0	0630.0	1.0	20	-	0
5	2800	3 S	2223.0	2228.0	11.0	40	-	0
6	500	7 C	0339.0	0345.0	6.0	110	-	WR
6	2800	3• S	0343.0	0344.0	6.0	300	-	0
6	2800	8 S	0727.0	0728.0	2.0	70	-	WR
6	500	8 S	0728.0	0728.0	1.0	50	-	0
6	500	8 S	2053.0	2053.0	1.0	25	-	0
6	2800	8 S	2055.0	2055.0	1.0	40	-	0
6	500	8 S	2055.0	2055.0	1.0	225	-	0
6	2800	1 S	2153.0	2154.0	2.0	20	-	0
6	500	8 S	2153.0	2154.0	1.0	90	-	0
7	2800	7 S	0102.0	0113.0	16.0	45	-	0
8	500	7 C	0703.0	0707.0	5.0	120	-	WR
8	2800	8 S	0707.0	0707.0	1.0	130	-	SL
8	500	8 S	2115.0	2115.0	1.0	20	-	0
8	500	8 S	2224.0	2224.0	1.0	60	-	WR
8	500	47 GB	2347.0	2350.0	9.0	505	-	MR
8	2800	3 S	2348.0	2350.0	4.0	45	-	0
9	2800	3 S	0231.0	0239.0	11.0	65	-	
9	2800	7 C	0649.0	0650.0	7.0	20	-	
9	500	7 C	0649.0	0650.0	4.0	110	-	
9	500	4 S/F	0800.0	0802.0	8.0	450	-	
9	2800	3 S	0801.0	0802.0	5.0	80	-	
9	2800	8 S	2043.0	2045.0	3.0	100	-	WR
9	500	8 S	2206.0	2206.0	1.0	10	-	0
9	500	8 S	2231.0	2231.0	1.0	20	-	WR
10	2800	7 C	0513.0	0514.0	4.0	115	-	0
10	2800	3 S	0541.0	0542.0	3.0	55	-	0
10	500	8 S	0546.0	0546.0	1.0	15	-	0
10	500	8 S	2245.0	2245.0	1.0	45	-	0
11	2800	1 S	0052.0	0053.0	3.0	35	-	0
11	2800	3 S	0104.0	0104.0	6.0	85	-	0
11	500	8 S	2234.0	2234.0	1.0	40	-	0
12	500	7 C	2136.0	2140.0	9.0	185	-	0
14	2800	4 S/F	0552.0	0555.0	7.0	80	-	0
14	2800	47 GB	2143.0	2146.0	13.0	1530	-	WR

B. Solar Radio Emission

B2. Outstanding Occurrences at Hiraiso

Hiraiso — September 2001

Single-frequency observations

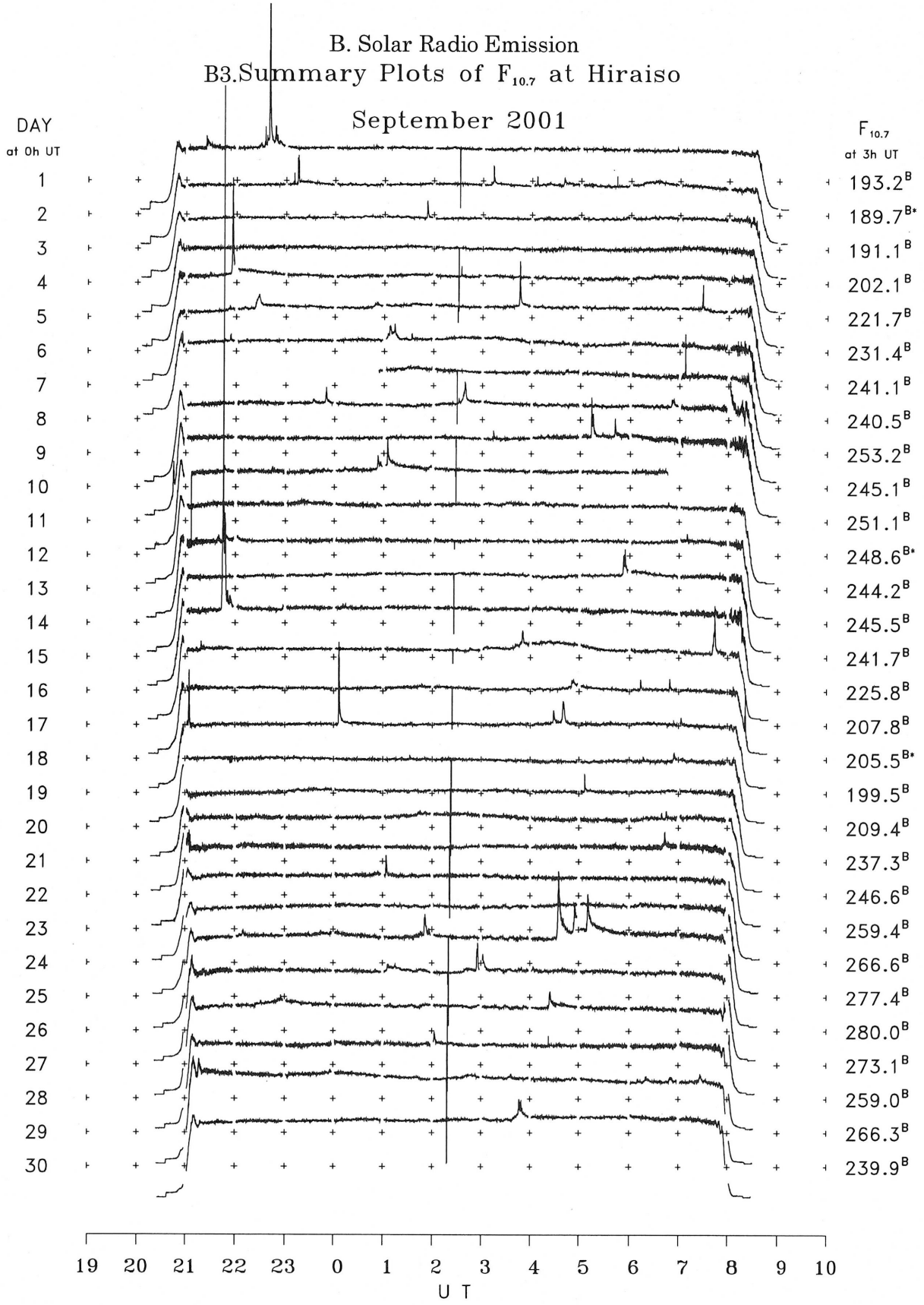
Normal observing period: 2020 - 0845 U.T. (sunrise to sunset)

SEP. 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	500	4 S/F	2143.0	2147.0	12.0	35	-	0
16	500	8 S	0309.0	0310.0	1.0	20	-	0
16	500	4 S/F	0311.0	0313.0	4.0	10	-	0
16	2800	3 S	0348.0	0350.0	4.0	35	-	0
16	2800	3 S	0740.0	0744.0	8.0	145	-	0
16	500	4 S/F	0741.0	0745.0	9.0	80	-	WL
17	2800	1 S	0451.0	0451.0	9.0	20	-	0
17	2800	1 S	0613.0	0613.0	2.0	35	-	0
17	2800	1 S	0648.0	0649.0	3.0	35	-	0
17	2800	8 S	0820.0	0822.0	2.0	125	-	0
17	500	7 C	0820.0	0825.0	5.0	95	-	0
17	2800	8 S	2104.0	2105.0	2.0	160	-	0
17	500	4 S/F	2104.0	2105.0	8.0	20	-	0
18	2800	8 S	0006.0	0006.0	4.0	240	-	WR
18	500	8 S	0015.0	0015.0	1.0	15	-	0
18	500	8 S	0134.0	0134.0	1.0	10	-	0
18	500	8 S	0356.0	0356.0	1.0	50	-	0
18	2800	42 SER	0428.0	0440.0	15.0	65	-	0
18	500	4 S/F	0428.0	0429.0	3.0	15	-	0
18	500	4 S/F	0438.0	0444.0	4.0	85	-	0
19	500	8 S	0811.0	0811.0	1.0	80	-	0
20	500	8 S	0333.0	0334.0	2.0	35	-	WR
20	2800	8 S	0506.0	0507.0	1.0	50	-	0
20	500	8 S	0556.0	0556.0	1.0	10	-	0
20	500	8 S	0721.0	0722.0	2.0	25	-	WR
20	500	7 C	2344.0	2347.0	7.0	25	-	0
21	500	8 S	0726.0	0726.0	1.0	15	-	0
23	2800	8 S	0104.0	0104.0	1.0	60	-	WL
23	500	8 S	0104.0	0104.0	1.0	165	-	0
23	500	8 S	0410.0	0411.0	1.0	140	-	0
23	500	8 S	2213.0	2213.0	1.0	10	-	0
24	500	7 C	2204.0	2209.0	9.0	120	-	ML
24	500	7 C	2316.0	2318.0	5.0	265	-	WL
25	2800	3 S	0149.0	0151.0	8.0	65	-	0
25	500	7 C	0149.0	0153.0	9.0	305	-	SL
25	500	8 S	0237.0	0237.0	1.0	385	-	0
25	2800	42 SER	0433.0	0435.0	43.0	200	-	0
25	500	4 S/F	0433.0	0434.0	25.0	120	-	ML
26	2800	7 C	0254.0	0256.0	12.0	85	-	0
26	500	7 C	0254.0	0256.0	8.0	145	-	WL
26	500	8 S	0349.0	0349.0	1.0	30	-	ML
27	2800	3 S	0422.0	0425.0	7.0	55	-	0
28	2800	3 S	0201.0	0203.0	4.0	45	-	0
30	2800	7 C	0340.0	0346.0	12.0	65	-	0

B. Solar Radio Emission

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

September 2001



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

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