

IONOSPHERIC DATA IN JAPAN

FOR DECEMBER 2011

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«Real Time Ionograms on the Webhttp://wdc.nict.go.jp/index_eng.html»



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INTRODUCTION

This Series contains data on ionosphere (I) and solar radio emission (S) obtained at the following stations under the

National Institute of Information and Communications Technology, Japan.

Stations	Geographic(WGS84)		Geomagnetic (IGRF-10(2005))		Technical Method
	Latitude	Longitude	Latitude	Longitude	
*Wakkanai/Sarobetsu	45°10'N	141°45'E	36.4°N	208.9°	Vertical Sounding (I)
Kokubunji	35°43'N	139°29'E	26.8°N	208.2°	Vertical Sounding (I)
Yamagawa	31°12'N	130°37'E	21.7°N	200.5°	Vertical Sounding (I)
Okinawa	26°41'N	128°09'E	17.0°N	198.6°	Vertical Sounding (I)
Hiraiso	36°22'N	140°37'E	27.6°N	209.1°	Solar Radio Emission (S)

*We moved the observation facilities at Wakkanai to Sarobetsu on February 2009. The new observatory is located at approximately 26km south from the old observatory. The observation at Sarobetsu commenced on March 6, 2009.

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 a 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 by experienced specialists to supplement automatically-scaled parameters.

A1. Automatic Scaling

Digital ionograms are automatically scaled by the pattern recognition method. The following five characteristics of the ionospheric are listed below. 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 (f_oF2 , fEs , $fmin$) and monthly medians of two factors ($h'Es$, $h'F$), daily Summary Plots and monthly medians plot of f_oF2 .

a. Characteristics of Ionosphere

f_oF2	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 f_oF2).
- C Impossible measurement because of any failure in observation.
- G Impossible automatic scaling because of very small ionization density of the layer (for fEs).
- N Impossible automatic scaling because of complex echoes.
- Blank No digital record because of problems occurring in the automatic data processing system, but existence of film record.

c. Definitions of 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 f_oF2 , 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 f_xE and f_oE 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

f_xI	Top frequency of spread F trace
f_oF2 f_oF1 f_oE f_oEs	Ordinary wave critical frequency for the F2 , F1 , E , and Es (including particle type E) layers, respectively
$fbEs$	Blanketing frequency of the Es layer, e.g. the lowest ordinary wave frequency visible through Es
$fmin$	Lowest frequency that shows vertical ionospheric reflections
$M(3000)F2$ $M(3000)F1$	Maximum usable frequency factor for a path of 3000 km for transmission by the 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 replace 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 atmospheric effects.
T Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.
V Forked trace which may influence the measurement.
W Measurement influenced or impossible because the echo lies outside the height range recorded.
X Measurement refers to the extraordinary component.
Y Lacuna phenomena, severe layer tilt.
Z Third magneto-electronic component present.

(ii) Qualifying Letters

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

- A** Less than. Used only when *fbEs* is deduced from *foEs* because total blanketing of higher layer is present.
D Greater than.
E Less than.
I Missing value has been replaced by an interpolated value.
J Ordinary component characteristic deduced from the extraordinary component.

- M** Mode interpretation uncertain.
O Extraordinary component characteristic deduced from the ordinary component. (Used for x-characteristics only.)
T Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.
U Uncertain or doubtful numerical value.
Z Measurement deduced from the third magneto-electronic component.

(iii) Description of Types of *Es*

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

The types are:

- f** An *Es* trace which shows no appreciable increase of height with frequency.
l A flat *Es* trace at or below the normal *E* layer minimum virtual height or below the 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 as-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. 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 $10^{-22} \text{ Wm}^{-2} \text{ Hz}^{-1}$ 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
SGD Code	Letter Symbol	Morphological Classification
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.

B2. 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.

HOURLY VALUES OF foF2 AT Wakkanai

DEC. 2011

LAT. 45° 10.0' N LON. 141° 45.0' E SWEEP 1.0MHz TO 30.0MHz 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	34	37	34	32	36	31	32	67	70	C	C	C	C	60	65	66	66	47	46	43	32	A	A	A	
2	34	32	59	32	34	34	34	61	67	67	87			70	69	54	68	54	47	37	32	A		32	34
3	38	32	34	46	44	38	42	65	72	62	71	90	70	56	69	91	65	63	44	32	34	A		38	34
4	36	42	38	34	29	34	37	66	66	55	69	59	79	82	80	69	63	58	51	43	A	22	34	32	
5	37	A	34	41	43	41	34	58	43	68	96	109	97		74	88	66	54	46	A	A	A	A	30	
6	29		36	40	37	34	32	53	74	N	N		102	99	69	84	66	63	50	42	32	35	A	30	32
7	29	34	42	40	37	36	32	63	67	69	69		70		76	81	62	32	34	35	34	28	29	31	
8	32	34	30	34	34	31	34	54	66	68	87	N		74	68	66	72	67	19	36	37	A		34	34
9	34	32	35	42	46	52	53	61	66	67	89	91	93	87	69	68	65	58	36	42	44	34	36	34	
10	39	52	52	52	52	46	32	53	68		81	94		100	81	71	64	52	34	42	43	37	34	34	
11	36	42	47	38	47	36		48	73	87	96	N		59	96	70	86	64	60	46	43	34	34	31	38
12	34	34	42	34	42	47	32	53	73	90	59	87	107	90	87	71	66	50	42	34	34	30	36	32	
13	34	42	A	A	43	43	36	54	65	84	90	69	94	91	70	72	61	A	A	A	A	A	A	32	32
14	36	32	32	34	32	37	35	54	65	44	96	63	80	78	71	80	63		A	A	A	A	A		34
15	30	38	32	34	34	32	29	53	63	67	N		90	92	N	65	66	57	43	34	34	32	32	38	29
16	A	44	34	47	36	42	30	52	64	66	78	89	70	84	66	71	55	34	34	28	32		34	34	
17	32	34	35	37	32	34	35	49	62	67	83	59	84	81	67	68	60	42	44	N	30		N	29	
18		30	31	32	32	34	30	19	66	88	91	59	70	70	48	74	64	50		29	29	A	29	31	
19	31	32	31	31	32	32	34	47	65	81	82	90	88	70	71	80	48	40	29	30	32	29	32	59	
20	32	34	34	37	36	34	32	54	66	82	91	89	75	65	91	60	54	43	34	34	32	31	34	31	
21	36	34	36	34	32	37	N	50	66	59	60	97	92	66	84	67	67	47	37	34	36	30	34	34	
22	29	37	42	59	30	32	29	52	67	N	87	86	68	70	69	70	64	44	38	34	24	A	32	34	
23	A	30	37	37	32	42	34	53		68	90	65	59	67	45	68	61	34	37	37	29		29	35	
24	37	A	A	34	34	38	34	48	65	67	59	91	67	70	70	67	61	47	34	32	26	28	32	A	
25	34	N		34	34	34	32	47	60	67	85	67	73	81	68	70	61	47	37	32				30	
26	32		34	34	32	38	31	46	66	67	70	74	71	70	80	65	65	A	A	29	32		29	34	
27	29	32	34	37	37	34	29	42	64	65	78	68	68	71	75	68	59		A	A	37	A	A	31	32
28	30	32	37	34	32	44	23	A	60	76	64	N		67	68	72	67	66	42	42	34	A	A	34	31
29	38	34	34	42	34	40	42	53	65	79	89	87	70	87	68	66	62	54	46	34	A	31	29	30	
30	32	32	34	28	35	34	34	42	60	79	66	86	86	66	67	65	64	N		32	31	34	37	32	30
31	32	32	38	32	32	32	32	43	65	67	103	N		59		71	67	60	47	32	29	31	32	32	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	28	29	30	31	31	29	30	30	27	28	24	28	27	31	31	31	28	28	28	24	15	26	29	
MED	34	34	35	34	34	36	32	53	66	67	84	87	74	70	70	68	63	47	37	34	32	31	32	32	
U Q	36	37	40	40	37	41	34	54	67	79	90	90	90	84	76	72	65	54	44	37	34	34	34	34	
L Q	31	32	34	34	32	34	31	48	64	67	69	67	69	68	67	66	61	42	34	32	31	29	31	31	

HOURLY VALUES OF fEs AT Wakkanai

DEC. 2011

LAT. 45° 10.0' N LON. 141° 45.0' E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	24	28	G	G	G	G	G	G	31	C	C	C	C	G	37	28	G	G	G	29	G	36	33	29
2	31	G	G	G	G	G	G	37	39	54	38			35	33	G	G	30	G	G	G	35	G	G
3	G	G	G	24	G	G	G	G	52	34				36	48	35	G	G	G	G	G	40	G	G
4	24	G	G	G	G	G	G	48	53	35	36	38	38	G	34	G	G	G	G	G	40	32	G	G
5	G	26	G	G	G	G	G	G	37	G	72	50	51		37	33	34	41	G	38	44	27	32	34
6	G	38	35	25	G	G	G	36	50	35	36	G	44	36	39	48	28	30	24	G	35	40	28	24
7	G	G	G	G	G	G	G	26	G	36	36		G		G	G	G	G	G	G	G	G	G	G
8	27	26	G	G	G	G	G	G	30	36	37	37	G	G	G	37	G	G	G	G	G	34	G	G
9	G	G	G	G	G	G	G	G	49	39				39	34	G	G	G	G	G	G	G	G	G
10	G	28	G	G	G	G	G	24	33		38	38		G	34	G	G	G	G	G	G	G	G	G
11	26	G	G	G	G	G		32	32	38	40	37	G	G	40	G	G		G	G	G	G	G	G
12	G	32	34	G	G	G	G	G	G	37	36	38	38	35	34	G	G	G	G	G	G	G	G	G
13	G	G	39	40	35	25	G	40	G	35	37	38	37	37	34	G	11	G	G	G	G	G	G	G
14	G	G	G	G	G	G	G	43	49	36	47	38	44	40	35	G	G	40	38	31	32	28	27	G
15	G	G	G	G	G	G	G	G	30	34	44	40	38	G	37	32	G	G	G	G	G	G	27	24
16	40	34	34	23	G	G	G	30	59	54	62	58	51	62	62	36	38	26	G	G	G		G	G
17	G	G	G	G	G	G	G	G	G	33	37		G	N	G	G	G	G	G	G	G		G	G
18		G	G	G	G	G	G	26	33	40	38	39		G	G	G	G	G		G	G	24	24	G
19	G	G	G	G	G	G	G	G	G	33				G	G	G	20	G	G	G	G	G	G	G
20	G	G	G	G	G	G	G	G	32	37	48	39	38	38	33	G	G	G	G	29	G	24	G	G
21	33	28	G	27	G	G	G	G	G	34				G	G	32	G	G	G	G	G	G	G	G
22	G	G	G	G	G	G	G	33	32	40	37	38	38	36	G	G	G	G	G		36	55	26	G
23	35	G	G	G	G	G	G	G		34	37	56	38	G	G	G	G	G	G	32	G		24	G
24	G	G	27	G	G	G	G	G	32	35	35	G	G	G	34	G	G	26	G	G	G	G	G	38
25	26	40	37	24	G	G	G	G	32	34		38		G	G	G	G	28	G	G				G
26	G	G	G	G	28	32	26	G	G	48	36		N	G	52	G	G	G	G	G	G		28	G
27	G	26	G	G	G	G	G	G	54	34	36		G			65	22	35	42	34	59	25	27	G
28	G	23	33	G	58	58	33	59	34	G	G	G	50	G	G	G	G	G	G	29	40	34	26	32
29	G	30	G	G	G	G	30	35	G	G	G	G	G	G	G	G	G	G	G	27	35	24	G	G
30	G	G	G	G	G	G	G	G	G	44	G	G	G	G	G	G	33	33	34	G	G	G	G	33
31	33	G	G	G	G	G	26	33	G	G	G	G	G		G	G	G	G	G	G	32	34		G
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	31	31	31	30	31	30	29	30	27	27	28	31	31	31	31	30	31	30	26	30	31
MED	G	G	G	G	G	G	G	G	32	35	36	37	G	G	33	G	G	G	G	G	G	24	G	G
U Q	26	28	G	G	G	G	G	33	39	38	38	38	38	36	37	32	G	26	G	27	32	34	27	G
L Q	G	G	G	G	G	G	G	G	G	34	G	G	G	G	G	G	G	G	G	G	G	G	G	G

HOURLY VALUES OF fmin AT Wakkanai

DEC. 2011

LAT. 45° 10.0' N LON. 141° 45.0' E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	14	14	14	15	14	15	15	16	14	C	C	C	C	14	14	15	17	14	14	15	15	14	14	14
2	14	15	16	14	15	15	15	14	14	14	14			15	14	14	18	15	15	15	15	14	16	14
3	14	15	15	15	14	14	14	16	15	14	14	14	14	14	14	14	15	15	15	14	15	14	15	15
4	15	15	14	18	15	14	14	14	14	14	14	14	14	15	14	22	17	14	14	15	14	14	15	15
5	15	16	15	14	14	14	15	18	14	14	15	15	14		14	16	14	14	14	14	14	15	14	14
6	15	14	14	14	15	15	15	14	14	14	14	14	14	14	14	14	14	14	15	14	14	15	14	14
7	15	16	15	17	15	15	14	17	14	14	14		14		14	14	15	16	16	14	14	15	15	15
8	14	14	14	15	15	15	15	17	14	14	14	14	14	14	14	15	15	15	15	14	14	14	15	15
9	15	16	17	15	14	14	14	17	14	14	14	14	14	14	14	14	16	14	14	15	14	15	14	14
10	15	14	15	14	14	15	15	17	14		14	15		14	14	14	14	14	14	15	15	15	17	14
11	15	16	15	16	14	15		17	15	14	14	15	15	15	14	21	17	16	14	14	14	15	16	15
12	14	14	14	14	14	14	15	16	14	14	15	14	14	15	15	21	16	15	15	15	14	15	14	14
13	14	15	14	14	14	15	15	16	18	14	14	14	15	15	14	14	16	15	15	14	14	14	16	15
14	14	15	14	16	14	15	15	16	14	14	14	14	15	14	14	14	16	14	15	14	14	15	14	15
15	14	16	15	15	14	14	15	15	14	14	14	14	14	14	14	14	17	14	15	15	15	16	14	16
16	14	14	14	15	15	14	15	14	14	14	14	14	14	14	14	14	14	14	14	15	14		14	14
17	14	15	14	15	15	15	15	15	14	14	14	15	14	14	15	14	15	15	15	17	14		16	15
18		15	15	15	15	15	15	15	14	14	14	14	14	14	14	14	17	14		17	17	15	16	14
19	16	14	15	14	18	14	15	15	14	14	15	15	15	15	18	14	15	15	14	15	15	17	15	15
20	15	15	14	14	14	14	15	14	14	14	14	14	14	15	14	14	17	14	15	15	15	16	15	15
21	14	15	14	15	15	15	15	14	14	14	15	14	15	17	14	14	15	14	14	14	16	15	15	15
22	17	14	14	15	14	14	15	15	14	14	14	14	14	14	15	14	16	15	14	15	14	15	16	15
23	14	15	15	14	14	14	15	15		14	14	14	15	14	14	14	17	15	14	14	15		15	14
24	14	14	14	14	14	14	14	15	14	14	14	15	14	14	14	17	16	14	14	14	14	17	14	14
25	14	14	14	14	15	14	14	14	14	14	14	14	14	14	21	14	14	14	14	14				15
26	14	14	15	15	14	14	14	14	14	14	14	14	14	14	14	14	15	15	14	15	15		15	15
27	14	15	14	14	18	15	15	14	15	14	14	15	14	15	15	14	14	14	14	15	14	15	14	14
28	14	15	15	14	14	14	14	14	14	15	16	15	17	17	14	15	16	14	14	14	14	14	15	14
29	15	14	14	15	15	14	14	14	17	15	15	15	17	17	18	22	17	15	14	15	14	14	17	16
30	15	15	14	14	14	14	14	14	14	16	30	18	18	20	15	15	14	14	14	14	15	15	14	14
31	14	15	15	14	14	14	15	14	17	15	18	18	29		27	27	18	14	15	14	14	14	14	14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	31	31	31	30	31	30	29	30	28	28	28	31	31	31	31	30	31	30	26	30	31
MED	14	15	14	15	14	14	15	15	14	14	14	14	14	14	14	14	16	14	14	15	14	15	15	15
U Q	15	15	15	15	15	15	15	16	14	14	15	15	15	15	15	15	17	15	15	15	15	15	16	15
L Q	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	15	14	14	14	14	14	14	14

HOURLY VALUES OF foF2 AT Kokubunji

DEC. 2011

LAT. 35° 43.0' N LON. 139° 29.0' E SWEEP 1.0MHz TO 30.0MHz 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				58			43	73	102	108	130	128	111	113	98	100	78	53	46	42	44	N	N		
2	N						N	65	81	87	102	N	104	100	105	89	87	51	54	44					
3		A			37		32	67	89	103	92	107	98	100	106	96	86	64	52	38		A			
4			34	N	36		32	81	86	104	106	111	103	108	101	93	87	75	55	47	A	A		27	
5	A	A				N		72	91	99	106	97	81	105	100	91	81	67	38	44	N			30	
6			34			N		28	67	82	85	106	105	98	102	96	78	91	55	44	27			35	
7	A		28	30	N			30	64	94	88	97	97	96	91	94	87	77	53	45	30	36	34	N	
8					30			67	81	88	96	85	105	93	95	90	72	66		N		38			
9	N		27	27		38	N		34	67	85	107	95	105	97	104	88	91	76	54	48	44	32	32	N
10		28			28	N		28	64	86	99	96	105	94	101	97	81	69	58	43			28		N
11	N		N		N		N		67	78	102	110	88	110	101	102	85	97	63	45	37	24		N	
12			32	30	N		N		54	86	96	94	106	102	111	108	86	59	53	44	46	32			
13	N	N		32	34	N			66	81	78	87	98	105	95	97	77	74	67	54	N				
14	28	30			N		N	28	52	78	85	101	101	102	90	90	83	71	53	44	28	27	32	31	N
15	N	A		28		N	N	N	59	77	83	91	91	97	90	81	82	62	54	44	22				N
16				N				26	54	78	86	83	83	85	112	98	74	73	54		N				N
17	N			N		28		28	58	66	80	82	77	81	114	97	73	70	61	32	58		N		
18		26							54	76	76	86	91	125	84	91	74	74	49	46	A	N	A	A	28
19	A	A							64	76	78	81	82	83	82	83	74	73	53	35	37	28			
20		N		58		28	28	63	81	76	100	85	92	94	78	80	72			34	34				
21	27	34		N	A	N		38	63	73	91	88	102	102	95	77	85	71	47		28			N	N
22	41	38							53	83	80	98	96	96	90	85	81	74	46	N	N		34		
23						N	N		61	73	78	75	95	98	96	84	80	76	46	46			A		27
24					45				53	72	78	85	101	100	78	75	73	68	53	52	42				
25	N		N		N				53	67	73	88	92	86	74	83	85	73	46	42					
26		28	N		28	28	34	54	72	73	80	87	84	80	82	85	61	63	49				N		
27		30	28		N	N		28	47	66	73	74	85	84	85	83	87	68	53	35	38	N	N		A
28	A					N			31	54	64	72	74	81	76	78	73	74	66	53	54				A
29						N			31	53	77	80	78	86	85	76	93	84	71	58		45	37		N
30	42	A	A	N			28		46	67	76	88	100	80	77	80	81	66	52			30			
31						N			51	61	88	101	98	115	102	97	86	75	54		45				
	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	4	8	4	15	31	31	31	31	30	31	31	31	31	31	30	24	20	11	4	1	5	
MED	34	28	31	46	33	28	30	61	78	85	92	96	97	95	93	84	73	54	45	40	32	32	31	28	
U Q	41	32	33	58	37	29	34	67	85	96	101	102	103	102	98	87	77	61	50	44	37	33	15	32	
L Q	27	27	28	32	28	28	28	53	72	78	83	86	85	84	83	78	69	53	42	32	28	30	15	27	

HOURLY VALUES OF fEs AT Kokubunji

DEC. 2011

LAT. 35° 43.0' N LON. 139° 29.0' E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1				G			G	G	G	G	G	G	39	G	G	G	G	G	G	36	27	G	G	G
2	G				G		G	G	G	G	50	50	G	G	39	34	33	35	29	G				
3		27			G		G	G	G	G	G	G	G	48	42	G	G	G	G	G			34	
4			G	G	G		G	G	G	G	G	49	48	G	G	G	G	G	G	G	27	35		G
5	26	24				G		G	G	G	G	G	61	G	G	G	G	G	G	G	G			G
6			G			G	G	G	G	G	G	G	G	G	G	G	G	G	G	G				G
7	29	G	G	G	G		G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G		G
8					G			G	G	G	G	G	G	G	G	G	G	G		G	G	G		
9	G	G	G	G	G	G	G	G	G	G	G	40	G	G	G	G	G	G	G	G	G	G		G
10		G		G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G			G		G
11	G		G		G		G	G	G	G	G	G	G	G	G	G	G		11	G	G	G		G
12			G	G	G		G	28	G	G	G	50	G	G	G	G	G	G	G	G	G			
13	G	G	G	G	G			G	G	G	G	G	G	G	G	G	G	G	G	G		G		
14	G	G		G	G		G	G	G	G	G	50	G	G	G	G	G	G	G	G	G	G	G	G
15	G	28	G		G	G	G	28	G	G	G	G	G	G	G	G	G	G	G	G				G
16				G			G	G	G	G	G	46	G	71	G	G	G	G	G	G			G	
17	G			G	G		G	G	G	G	G	51	G	G	G	G	G	G	G	G		G		
18		G						G	G	G	G	G	G	G	G	G	30	34	29	26	G	30	33	G
19	29	27						G	G	G	G	G	G	G	G	G	28	G	G	G	G			
20		G		G		G	G	G	G	G	45	G	G	G	G	G	G		G	G				
21	G	24		G	29	G	G	G	G	G	50	G	G	G	G	G	G	G	G	G			G	G
22	G	G						G	G	G	G	G	G	G	G	G	G	G	G	G	G			
23						G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	28		G
24					G			G	G	G	G	G	G	G	G	G	G	G	G	G				
25	G		G	G	G		G	G	G	G	G	G	G	G	G	G	32	25	G					
26		G	G		G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G			G	
27		G	28		G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	24	G	G		30
28	30					G	G	G	37	G	81	48	G	G	G	G	G	G	G					29
29						G	G	G	G	G	68	G	G	G	G	G	G	G		G	G		G	
30	28	36	34	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G			G			
31						G		G	48	48	G	G	G	G	G	G	G	G	G	G			G	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	15	16	12	14	19	14	23	31	31	31	31	31	31	31	31	31	31	30	27	26	16	13	9	13
MED	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
U Q	28	25	G	G	G	G	G	G	G	G	G	40	G	G	G	G	G	G	G	G	G	29	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 Kokubunji

DEC. 2011

LAT. 35° 43.0' N LON. 139° 29.0' E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

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

HOURLY VALUES OF foF2 AT Yamagawa

DEC. 2011

LAT. 31° 12.0' N LON. 130° 37.0' E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

$\begin{matrix} H \\ D \end{matrix}$	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	38	34	32	45	34	32	36	53	90	49	59	112	79	115	101	59	84	77	52	53	47	43	40	34	
2	36	59	36	32	34	29	32	50	86	88	88	88	57	88	79	94	60	77	74	54	53	45	43	34	
3	28	32	31	32	37	19	29	48	78	94	79	95	92	91	96	97	87	79	72	44	53	54	53	34	
4	N	34	34	34	45	28	28	53	78	95	89	N	98	85	102	90	90	91	74	54	53	53	42	34	
5	B	B	34	30	34	A	B	50	84	N	80	90	112	96	N	38	91	77	67	52	54	53	44	36	
6	34	36	34	31	42	34	26	50	77	88	81	87	94	96	94	97	88	84	54	54	46	52	53	42	
7	41	34	34	37	37	30	30	50	85	89	96	90	78	95	109	116	87	73	70	54	54	54	54	53	
8	47	42	44	40	40	34	29	51	73	69	59	74	92	75	N	86	77	N	55	43	55	54	27	37	
9	36	40	37	34	36	32	29	52	74	77	94	81	77	95	98	84	82	92	66	54	53	54	52	32	
10	29	30	32	31	34	28		44	78	91	89	77	N	79	88	80	81	78	60	53	52	54	30	B	
11	N	32	34	36	40	29	29	45	76	49	59	94	84	94	90	77	77	71	51	50	55		37		
12	B	B	38	34	29	B	B	44	80	34	69	78	69	94	78	106	78	72	53	54	52	53	36	28	
13	28	29	29	29	29	28	28	47	78	76	89	84	88	90	81	84	88	76	54	54	48	51	40	29	
14	32	34	32	32	34	32	34	48	76	77	89	101	78	92	90	80	86	77	52	54	35	40	32	29	
15	29	28	28	32	32	32	31	45	72	77	78	94	79	95	78	77	78	74	55	50	48	44	29	N	
16	26	B	29	30	34	30	30	43	75	86	77	76	77	96	89	77	78	76	53	42	43	37	28	37	
17	B	N	32	32	34	29	B	44	66	81	68	72	59	68	79	88	82	75	64	48	48	44	37	28	
18	28	31	28	34	34	34	31	42	66	77	73	76	59	84	83	74	75	76	55	58	44	36	40	29	
19	N	29	28	31	34	34	34	45	75	84	77	58	88	N	89	84	81	79	50	46	43	42	34	28	
20	28	34	36	36	36	32	28	45	76	80	59	74	86	88	77	90	76	74	A	A	50	41	44	40	28
21	A	A	34	34	40	26	29	52	77	76	86	79	94	78	A	A	77	66	55	47	43	59	42	38	
22	37	40	38	B	32	B	28	42	70	77	84	74	N	85	85	86	87	74	57	54	51	34	23	B	
23	B	N	28	34	42	30	B	37	67	74	80	87	69	92	60	85	81	72	50	52	29	34	B	B	
24	N	28	29	29	47	B	B	34	70	76	75	77	78	N	77	77	76	72	64	51	N	37	28	29	
25	B	32	30	34	34	30	B	42	66	65	76	78	79	81	89	90	78	67	54	52	43	37	34	B	
26	29	N	28		34	32	B	42	67	72	76	77	60	N	82	72	82	34	55	53	31	36	43	29	
27	28	26	29	28	34	28	B	37	54	73	77	78	77	69	76	88	76	75	64	44	54	59	N	23	
28	26	29	29	30	29	32	28	34	52	N	64	71	86	59	80	80	77	70	46	73	54	A	34	A	
29	A	A	30	B	B	29	29	40	67	78	79	76	76	77	76	75	78	N	55	52	67	50	44	34	
30	43	41	36	32	32	32	59	37	52	74	69	94	78	77	79	79	84	64	51	45	44	51	32	34	
31	32	30	37	32	30	34	34	44	55	78	78	70	79	52	84	89	80	49	55	53	52	46	34	32	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	20	23	31	28	30	27	22	31	31	29	31	30	29	28	28	30	31	29	30	31	30	29	29	24	
MED	30	32	32	32	34	30	29	45	75	77	78	78	79	88	84	84	81	75	55	52	50	46	37	33	
U Q	36	36	36	34	37	32	32	50	78	85	86	90	88	94	90	90	86	77	64	54	53	53	43	35	
L Q	28	29	29	31	34	29	28	42	67	73	69	76	76	77	78	77	77	71	53	48	43	38	32	29	

HOURLY VALUES OF fEs AT Yamagawa

DEC. 2011

LAT. 31° 12.0' N LON. 130° 37.0' E SWEEP 1.0MHz TO 30.0MHz 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	24	G	G	G	G	G	33	38	39	40	46	G	G	36	G	G	G	G	33	G	G	G
2	G	G	G	26	G	G	G	G	N	G	38	G	70	49	53	41	34	G	G	G	29	28	G	G
3	26	G	G	G	G	24	G	G	G	G	G	45	G	G	40	38	G	G	22	G	G	G	G	G
4	26	G	G	G	G	G	G	G	32	G	40	G	G	46	G	40	G	G	G	48	G	G	G	G
5	B	B	G	G	29	34	B	G	G	G	G	57	76	48	42	44	34	40	33	G	G	G	G	G
6	G	G	G	26	G	G	G	G	G	G	40	40	G	G	40	G	G	G	11	G	G	G	G	G
7	G	G	G	G	G	G	G	G	34	36	46	44	43	40	G	36	G	G	11	G	28	G	G	G
8	G	G	G	G	G	G	G	G	31	36	39	G	G	G	39	G	33	G	11	G	G	31	G	G
9	G	G	G	G	G	G	G	G	32	36	G	50	63	41	G	G	34	G	11	G	G	G	G	G
10	G	G	G	G	G	G	G	G	G	35	G	G	41	G	39	G	G	G	36	35	G	G	G	B
11	G	G	G	G	G	G	G	G	G	G	G	50	45	G	G	G	G	G	G	35	G	G	28	G
12	B	B	G	G	G	B	B	G	35	40	38	G	45	43	38	37	G	G	G	G	G	G	G	G
13	G	G	G	G	G	G	G	G	31	G	G	G	G	G	G	38	34	G	G	G	G	G	G	G
14	G	G	G	G	G	G	G	G	48	G	G	52	49	48	40	36	G	G	G	G	G	G	G	G
15	G	G	G	G	24	G	G	G	50	36	38	51	58	50	40	G	33	G	11	G	G	G	G	G
16	G	B	G	G	G	G	G	G	G	41	44	41	40	40	G	46	40	G	40	26	G	G	G	G
17	B	G	G	G	G	G	B	G	G	35	40	46	43	44	40	G	33	34	48	G	G	G	G	G
18	G	G	G	G	G	G	G	G	30	G	G	40	G	G	G	G	G	30	26	G	G	G	G	G
19	G	G	G	G	G	G	G	G	G	G	40	46	47	40	40	38	49	27	G	30	G	G	G	G
20	G	G	G	G	G	G	G	G	G	G	G	47	42	G	43	46	40	G	64	32	27	26	G	G
21	33	34	25	34	G	G	G	G	G	36	45	G	46	81	81	64	62	43	44	28	G	G	G	G
22	G	G	G	B	G	B	G	G	G	37	G	48	47	G	46	G	34	G	G	G	G	G	G	B
23	B	G	G	G	G	G	B	G	G	35	38	43	62	52	G	G	34	G	11	G	G	G	B	B
24	G	G	G	G	G	B	B	G	G	G	G	48	49	46	40	40	G	G	G	G	G	G	G	G
25	B	G	G	G	G	G	B	G	G	G	44	G	52	48	40	G	33	G	G	G	G	G	G	B
26	G	G	G	G	G	G	B	29	50	G	G	44	G	53	46	40	35	G	23	32	22	G	G	G
27	G	G	G	23	G	G	B	G	29	34	43	44	44	41	G	40	45	37	G	G	25	G	G	G
28	G	G	G	23	G	G	G	G	41	G	G	48	41	G	44	40	34	28	34	36	24	45	28	29
29	40	30	G	B	B	G	G	G	G	G	49	42	G	G	G	G	G	G	40	G	G	G	G	G
30	G	G	G	G	26	G	G	G	G	34	G	41	G	G	G	G	35	G	G	26	35	29	G	G
31	32	G	32	G	G	G	G	G	33	36	57	45	G	G	G	41	42	32	G	G	G	G	G	G
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	28	31	29	30	28	23	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	30	27
MED	G	G	G	G	G	G	G	G	G	G	38	44	43	40	39	36	33	G	11	G	G	G	G	G
U Q	G	G	G	G	G	G	G	G	33	36	40	48	49	48	40	40	35	27	33	28	22	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 Yamagawa

DEC. 2011

LAT. 31° 12.0' N LON. 130° 37.0' E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

$\begin{matrix} H \\ D \end{matrix}$	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	15	14	16	17	18	15	18	14	14	18	18	18	21	18	16	15	21	15	15	14	15	15	14		
2	14	17	14	14	16	16	18	18	14	14	15	18	16	22	17	16	15	20	14	15	14	14	15	15		
3	14	15	17	14	15	14	15	17	14	15	15	18	20	17	18	15	14	14	14	15	15	15	15	15		
4	16	15	15	15	15	15	15	17	15	15	16	21	17	17	16	15	15	14	15	14	17	17	18	16		
5	B	B		16	14	14	15	B		20	27	16	15	17	18	20	18	15	14	14	15	15	15	15		
6	20	16	15	15	14	15	18	17	14	17	18	18	21	18	17	20	16	14	15	15	15	17	15	15		
7	15	15	15	15	15	15	16	17	14	14	18	21	16	17	16	16	14	20	15	15	15	18	15	15		
8	16	15	14	14	14	15	15	16	15	15	20	20	21	20	18	17	14	21	20	14	15	16	15	22		
9	20	15	15	15	15	16	15	17	15	14	21	18	20	15	16	14	14	21	15	15	14	15	15	16		
10	18	15	16	15	15	16	66	15	14	15	16	17	18	18	18	15	15	23	15	15	17	15	17	B		
11	20	16	15	20	15	16	18	16	14	15	15	16	16	16	14	20	16	21	15	15	15	22	15	66		
12	B	B		15	17	15	B	B		17	14	14	17	16	17	20	18	14	15	17	15	15	15	20		
13	22	16	18	20	15	15	17	16	15	16	16	17	18	24	18	18	18	21	15	15	16	15	15	15		
14	15	15	15	15	17	15	15	15	15	16	17	18	20	18	20	17	14	21	14	15	15	15	16	15		
15	17	15	15	15	15	15	15	15	15	17	15	18	21	23	16	16	15	21	15	16	15	15	15	17		
16	18	B		15	15	17	17	15	17	14	17	15	16	16	17	14	14	14	20	15	14	17	15	21	15	
17	B		16	15	16	15	15	B		15	14	15	14	15	20	18	20	15	17	14	15	15	17	15	16	15
18	16	16	15	16	14	15	16	15	14	17	17	18	18	20	18	15	17	15	16	16	15	15	15	15		
19	16	16	20	15	14	15	15	15	24	16	15	17	18	18	17	17	15	14	15	14	15	17	15	15		
20	17	18	15	15	15	16	16	15	24	14	14	17	18	21	18	16	15	20	14	15	15	15	15	16		
21	14	14	15	14	15	15	17	15	14	16	17	18	20	18	18	14	15	15	14	16	15	15	16	18		
22	15	14	15	B	17	B	17	16	15	15	14	20	21	21	21	18	14	21	15	16	16	15	18	B		
23	B		18	16	15	15	15	B		15	14	15	17	17	20	18	17	16	15	21	14	23	15	15	B	B
24	18	16	16	15	16	B	B		14	23	16	20	20	22	27	21	18	17	21	15	15	15	15	18	17	B
25	B		17	16	15	15	16	B		14	23	15	18	20	20	18	18	16	17	21	15	15	15	15	15	B
26	17	17	15	71	17	16	B		15	14	16	16	18	20	18	17	15	14	14	15	15	16	15	15	15	
27	18	16	16	14	20	15	B		15	14	16	18	22	18	18	20	15	14	14	17	16	14	16	15	66	
28	17	16	14	14	14	14	15	15	14	17	17	23	21	23	20	18	14	14	15	14	17	14	15	15		
29	15	15	15	B	B		18	15	15	15	14	17	17	16	16	15	18	14	20	15	16	16	15	15	15	
30	17	17	15	14	15	14	17	15	24	14	17	21	18	18	18	15	14	21	14	15	16	14	15	16		
31	14	17	15	15	18	16	15	22	14	15	15	20	17	17	16	14	14	14	15	17	15	15	15	18		
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	26	28	31	29	30	28	23	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	27		
MED	17	16	15	15	15	15	15	15	14	15	17	18	18	18	18	16	15	20	15	15	15	15	15	15		
U Q	18	16	16	15	16	16	17	17	15	16	18	20	20	21	18	17	15	21	15	16	16	15	16	17		
L Q	15	15	15	14	15	15	15	15	14	14	15	17	17	17	16	15	14	14	15	15	15	15	15	15		

HOURLY VALUES OF foF2 AT Okinawa

DEC. 2011

LAT. 26° 41.0' N LON. 128° 09.0' E SWEEP 1.0MHz TO 30.0MHz 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			53	52	47			54	100	132	143	132	N	120	132	140	133	116	78	54	64	54	54	47	
2			37	34				51	88	104	105	106	93	130	133		143	119	108	88	54	81	64	50	
3	38		30		40	35		48	81	107	120	108	118	117	121	122	124	130	107	77	78	72	69	61	
4	N			42	41			51	88	90	117	110	112	125	126	119	117	131	130	88	67	63	67	60	
5		43		56	51			55	101	111	126	111	106	112	131	130	116	110	88	82	81	88	76	53	
6	34	47	A	A	52	30		50	94	96	107	97	108	118	124	127	118	108	N	64	62	54	73	66	
7	48			38	43			50	85	117	130	127	128	129	139	N	144	133	131	89	N	88	87	80	
8	66	67	57	44	40	32		48	88	101	108	97	110	119	109	130	131	109	N	A		80	66	54	
9					37	29		54	80	100	110	118	117	127	131	145	130	131	131	86	87	86	83	54	
10		34	38	34				47	83	105	124	105	117	130	131	132	128	131	107	54	64	80	53	34	
11				29	32			47	82	117	145	114	88	131	146	143		144	131	108	83	67	67	51	
12	32	44	61	28				44	78	111	108	100	107	108	118	134	146	130	91	88	86	80	72	52	
13				29				44	88	106	110	96	108	116	108	111	107	110	88	74	81	54	49	32	
14		43			32		N	47	72	100	105	110	106	112	108	121	107	103	74	84	67	45	51	51	
15					30			51	67	80	105	105	103	102	106	128	88	98	70	51	72	66	44		
16			30	29		30		46	81	95	90	101	110	135	130	139	139	142	89	80	73	52	52	53	
17		30		31	32	30		42	67	87	107	98	87	108	132	134	131	131	126	72	60	59	54	35	
18	28				34	30		39	68	90	100	77	97	105	N	118	108	111	88	78	71	60	53	N	
19				26		34		42	76	92	80	92	87	102	123	130	118	118	88	52	54	51	48	37	
20			32	79				43	82	90	100	93	95	102	105	104	98	90	87	76	67	67	48		
21				29		A		48	87	90	106	105	121	130	127	127	132	89	74	51	53	66	61		
22	41	43	44		N			40	78	92	87	100	120	117	118	106	107	118	76	54	66	53	42		
23					44	29		36	78	90	88	94	102	118	110	102	103	88		64	54	54	48	30	
24	30		32	41	45			34	73	90	93	90	107	112	107	107	106	103	82	66	71	63	42	34	
25	40		42	42	44	32		36	77	87	83	87	110	131	130	124	108	109	86	52	63	54	52	38	
26		32	34	34		N		40	77	88	82	105	115	127	N	129	124	116	107	76	81	54	54	48	
27	30		32	34	44	N		38	67	81	85	90	103	123	118	108	N	108	107	A		53	66	89	
28		28			38	47	N	38	66	75	81	87	82	115	120	106	90	87	87	88	77	80	A		
29		A						34	45	78	85	86	82	85	116	112	118	108	125	121	70	43	82	72	53
30			34	34	40			41	67	76	85	87	107	101	69	117	108	94	67	50	54	72	53		
31		32	A						80	87	113	96	117	118	137	147	147	125	130	88	106	87	52		
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	10	11	14	20	19	11	1	30	31	31	31	31	30	31	29	29	29	31	28	29	29	31	30	22	
MED	36	43	36	34	40	30	34	46	80	92	105	100	107	118	123	127	118	116	88	76	67	66	54	51	
U Q	41	44	44	42	44	34	17	50	87	105	113	108	115	127	131	133	131	130	114	87	79	80	69	54	
L Q	30	32	32	29	34	30	17	40	73	87	87	92	97	112	109	114	107	103	84	54	57	54	51	37	

HOURLY VALUES OF fEs AT Okinawa

DEC. 2011

LAT. 26° 41.0' N LON. 128° 09.0' E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1			G	G	G			G	G	G	G	G	G	G	G	G	G	G	11	G	G	G	G	G		
2			G	G				G	G	G	G	G	G	G	G		34	G	G	23	G	G	G	G		
3	G	G	G		G	G		G	G		G	G	G	G	G	G	34	G	G	G	G	G	G	G		
4	25			G	G			G	G		G	G										G		G		
5		G		G	G			G	G	G	G		74	53	53		G		35		28	G	G	G	G	
6	G	G		40	27	G	G		G	G	G		G	G	G	G	G		28	25	G	G	G	G	G	
7	G		G	G	G			G	G	G	G	G	G	G	G	G	G	G	G				G	G	G	
8	G	G	G	G	G	G		G	G	G	G	G		45	G	G	G		39		36	78	48	G	G	
9	G				G	G		G	G	G	G		42	G	52	70	50	56	36	28	38	G	G	G	G	
10		G	G	G				G	G	G	G		51	G	50	G	G	G	32	25	G	G	G	G	G	
11		G		G	G			G	G	G	G		71		44	G	G			11	11	26	G	G	G	
12	G	G	G	G				G		47	41	G	G		48	G	51	40	35	G	G	G	G	G	G	
13				G				G	G		36	G		52	G	G	46	39	41	G	26	G	G	G	G	
14		G			G		G	G	G	G	G		50	G	G	50	44	G	G		24	G	G	G	G	
15					G			G	G	G	G	G	G		45	40	G		34	G	19	G	G	G	G	
16			G	G	G	G		G	G		G		G	G		G	G	G				G	G	G	G	
17		G		G	G	G		G	G	G	G		39	46		50	G	G	G		28	43	G	G	G	G
18	G				G	G		G		30	36	G	G	G	47	50	47	G	G	G	G	G	G	G	G	
19	G			G		G	G	G	G	G	G	G	G	G	48	G	G	G	G			25	G	G	G	G
20			G	G				G	G	G	G	G		53	G	G	G	G		11	G	G	G	G	G	
21				G	G		36		28	G	G		40	50	72	G	G	G	36	52	34	G	G	G	G	
22	G	G	G		G			G	G	G	G	G		50	47		G	G	36	44	41	28	G	G	G	
23	G				G	G		G	G	G	G	G	G	G		47	G	G	G		G	G	G	G	G	
24	G		G	G	G			G	G	G	G		48	54	57	52	50	G	G		11	G	G	G	G	
25	G		G	G	G	G		G	G	G	G	G	G		43	G	G	35		26	G	G	G	26	G	
26		G	G	G		G		G	G	G	G		51	54	51	50	G			41	47	26	G	G	G	G
27	G		G	G	G	G		G	G	G		46	50		48	68	70	54	36	36	27	24	G	G		
28		G			G	G		29	G	G		36	G		49	52	41	G	G	G	29	26	G	G	72	
29		34					G	G	G		35	41	42	G	56	51	G	G	G	G	26	G	G	G	G	
30		G	G	G	G			G	G	G	G	G	G	G		66	G	G	G	G	G	G	G	G	G	
31		G							G	G	G	G	G	G	G	G	G	G	G	G		25	G	G	G	G
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	14	15	17	21	22	14	4	30	31	31	31	31	31	31	31	30	30	31	29	31	31	31	31	26		
MED	G	G	G	G	G	G	G	G	G	G	G	G	G	G	40	G	G	G	24	11	G	G	G	G		
U Q	G	G	G	G	G	G	15	G	G	G	G	50	49	48	51	39	35	36	28	28	G	G	G	G		
L Q	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G		

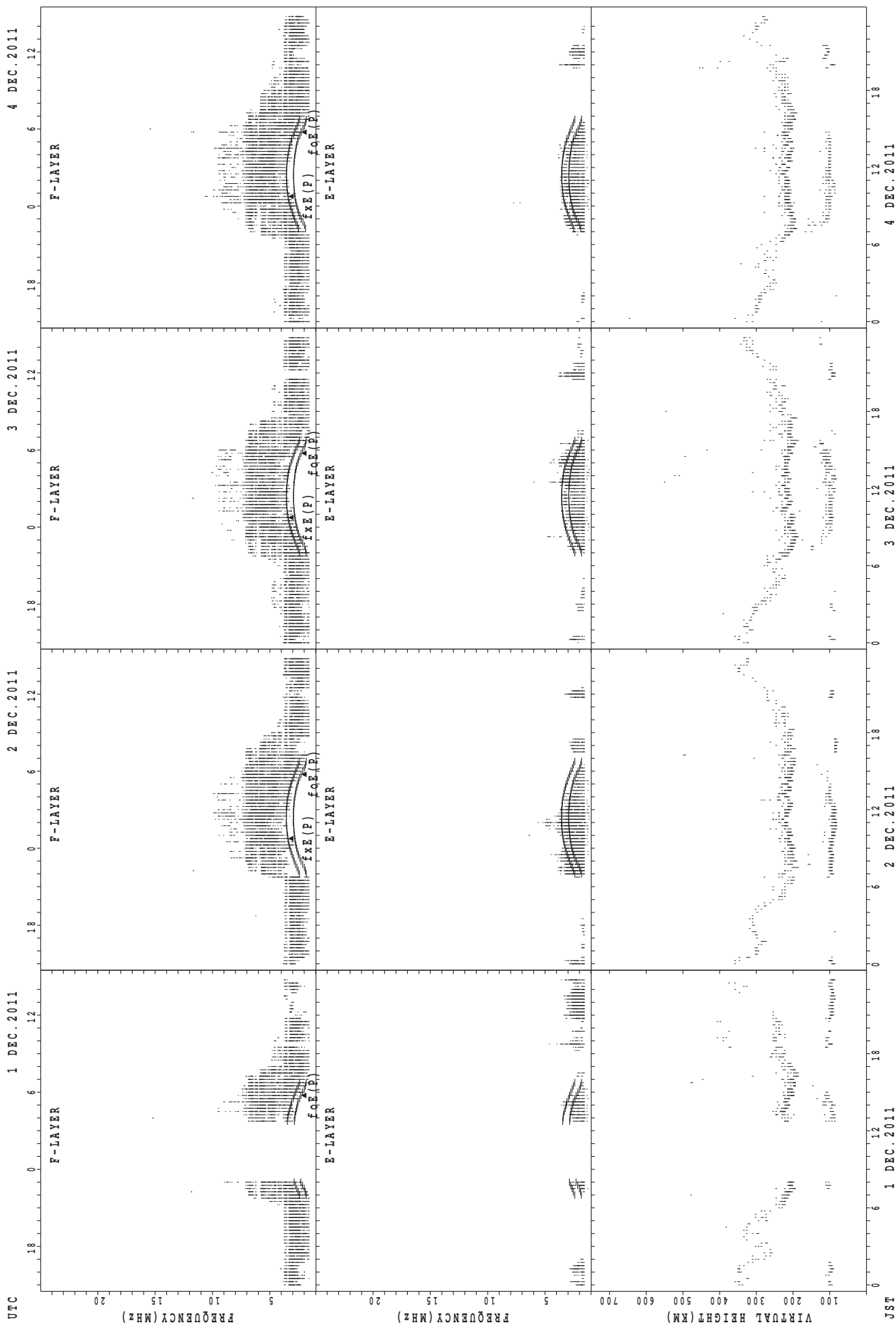
HOURLY VALUES OF fmin AT Okinawa

DEC. 2011

LAT. 26° 41.0' N LON. 128° 09.0' E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

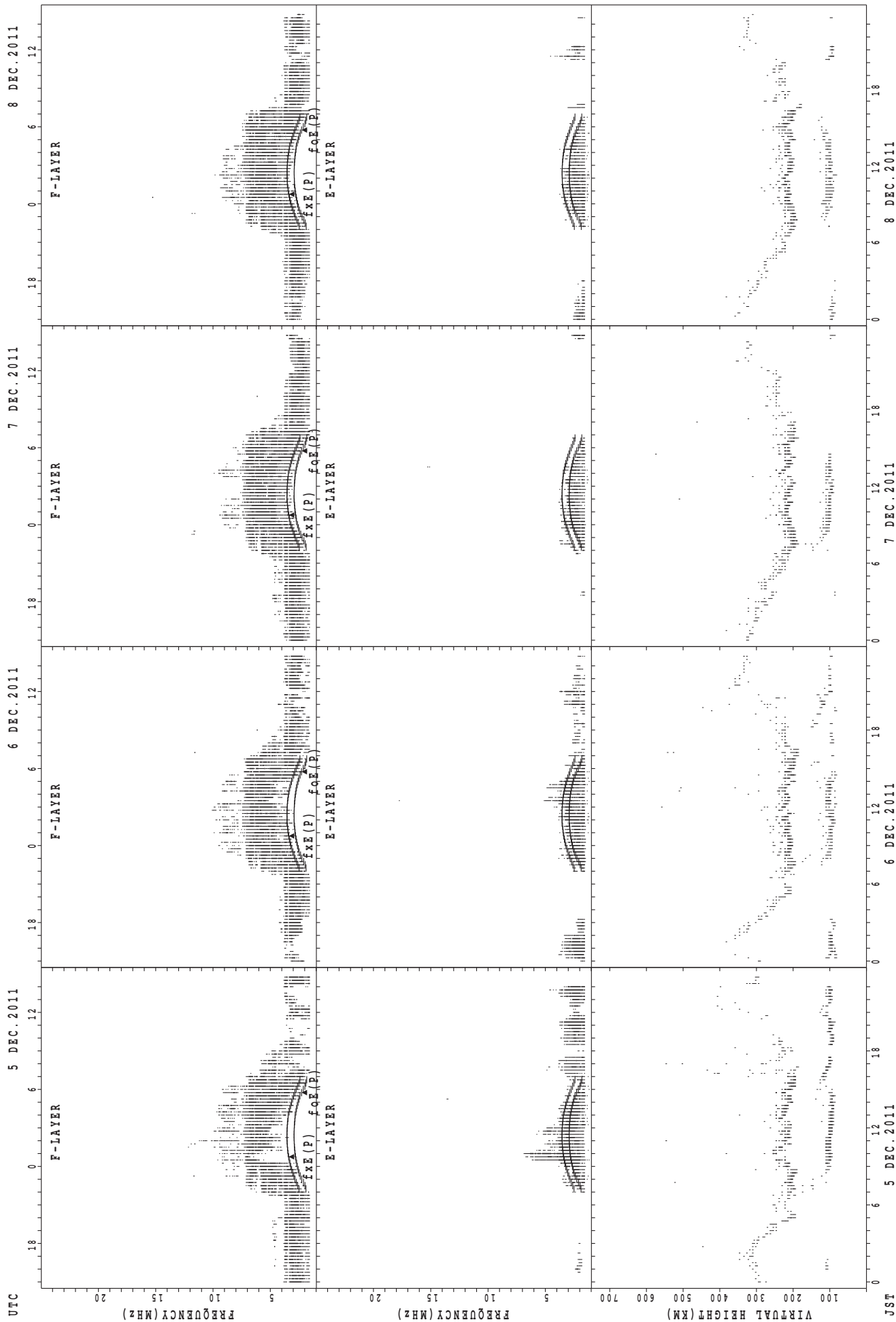
$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1			20	18	22			21	29	21	39	42	43	40	40	39	29	26	16	20	16	17	18	18
2			15	15				20	15	21	40	40	39	40	40		20	28	17	20	29	17	17	20
3	18	21	17		17	17		18	15	21	42	42	43	40	24	23	18	18	16	17	20	15	17	17
4	15			21	18			17	27	20	42	43	39	39	38	27	21	17	15	15	15	20	20	38
5		18		18	20			18	17	20	39	38	43	36	30	18	30	17	27	15	18	20	18	16
6	18	18	17	15	17	18		20	28	39	38	44	44	40	40	39	35	32	22	17	42	22	18	22
7	21		20	22	20			20	28	20	40	42	45	43	41	40	14	24	15	15	16	18	20	18
8	18	18	18	16	18	15		39	29	36	42	49	43	42	42	42	38	28		17	21	15	23	22
9	21				20	18		20	27	39	21	23	42	32	24	17	15	17	16	20	17	15	16	15
10		21	15	16				17	28	18	40	38	44	27	42	20	16	17	16	36	27	20	18	17
11		20		20	16			17	15	18	40	33	44	29	41	18		23	17	18	15	20	23	18
12	16	16	18	21				20	28	18	21	41	40	44	29	21	18	27	22	23	42	17	21	21
13				18				18	27	18	40	38	44	42	32	23	20	24	18	40	15	18	15	16
14		20			20		21	21	28	39	38	42	46	42	34	26	17	30	15	16	18	17	18	18
15					17			17	26	21	42	42	42	42	40	40	21	22	21	17	42	16	17	
16			18	16	20	18		18	18	21	40	30	52	42	21	40	40	17	15	15	20	16	18	18
17		18		18	20	16		16	16	32	39	26	39	36	43	38	18	15	15	17	17	32	18	18
18	18				18	22		17	22	20	40	42	44	40	44	40	21	27	20	15	17	20	40	17
19	20			17		18	17	18	27	20	43	40	44	42	29	41	38	38	17	17	18	17	18	20
20			18	17				18	27	33	40	42	40	42	40	39	30	34	14	15	18	27	17	20
21				20	21	14		14	29	21	27	30	34	44	44	40	38	21	14	32	30	15	32	21
22	18	17	20		17			18	28	18	40	39	38	40	28	40	15	16	18	18	21	21	17	
23	21				21	18		18	27	20	21	40	45	44	23	39	20	23		21	20	20	21	20
24	17		18	17	15			18	28	36	40	42	38	35	38	36	36	27	16	16	17	16	18	20
25	21		20	20	15	16		18	29	20	39	40	47	42	21	21	21	29	16	15	17	16	15	15
26		20	20	20		20		17	27	21	40	39	38	38	23	20	17	15	17	16	20	20	20	17
27	17		18	17	16	16		16	26	35	21	32	46	46	30	22	15	14	15	15	15	20	22	
28		16			18	16	17	17	21	20	22	40	40	49	34	21	18	27	15	14	14	29	33	
29		17					18	15	26	20	28	30	44	21	18	18	30	18	20	17	53	18	18	20
30		20	21	15	18			16	24	18	40	29	44	42	30	20	16	17	20	20	21	18	16	
31		18	16						27	34	40	44	42	42	44	20	21	27	18	15	15	21	16	21
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	14	15	17	21	22	14	4	30	31	31	31	31	31	31	31	30	30	31	29	31	31	31	31	26
MED	18	18	18	18	18	18	18	18	27	21	40	40	43	42	34	26	20	23	16	17	18	18	18	18
U Q	21	20	20	20	20	18	19	20	28	33	40	42	44	42	41	40	30	27	19	20	21	20	21	20
L Q	17	17	17	16	17	16	17	17	22	20	38	33	40	38	28	20	17	17	15	15	16	16	17	17

SUMMARY PLOTS AT Wakkanai



f_xE(P); PREDICTED VALUE FOR f_xE
 f_oE(P); PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Wakkanai



f_{x E}(P); PREDICTED VALUE FOR f_{x E}
f_{o E}(P); PREDICTED VALUE FOR f_{o E}

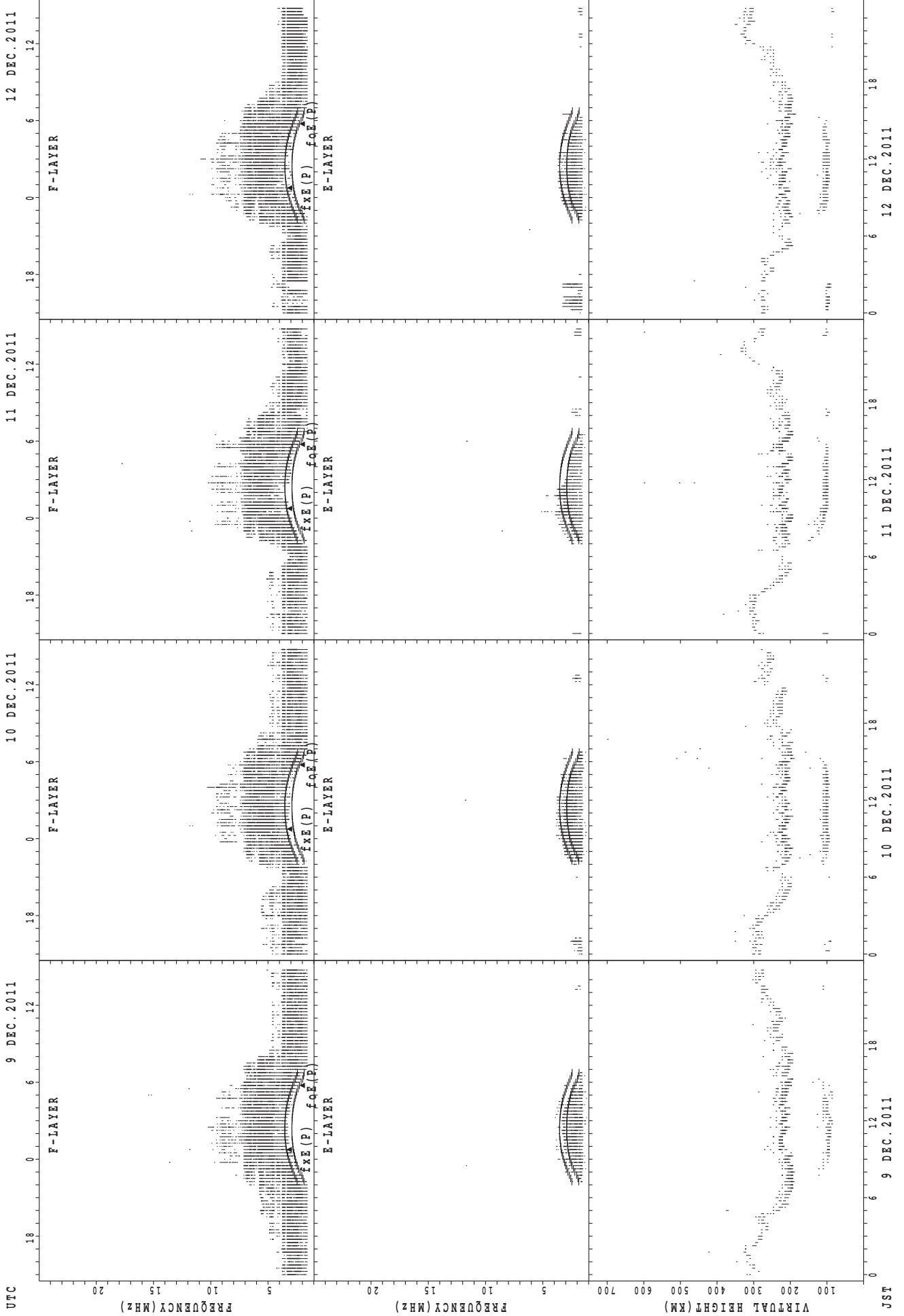
JST 5 DEC. 2011

6 DEC. 2011

7 DEC. 2011

8 DEC. 2011

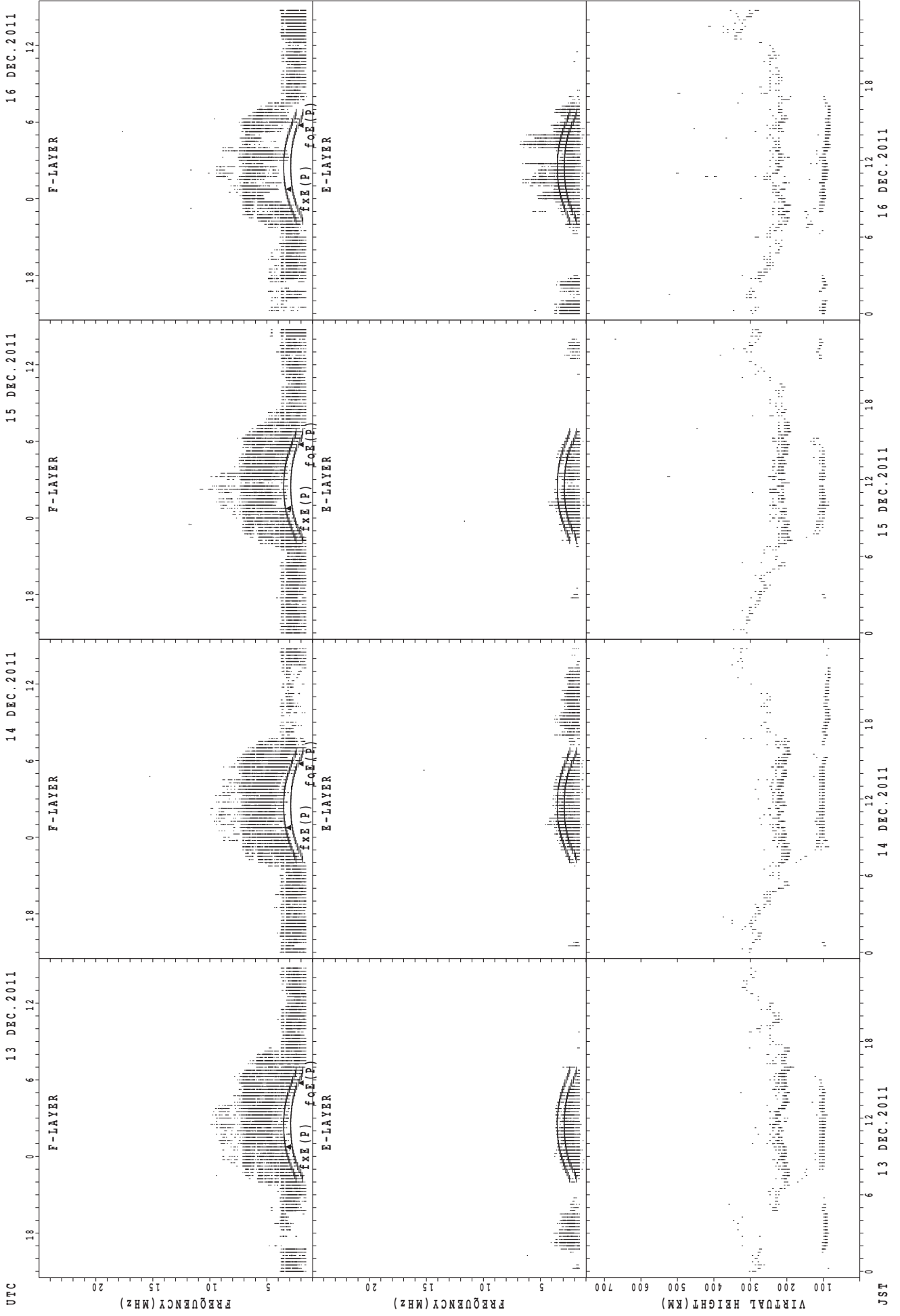
SUMMARY PLOTS AT Wakkanai



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

UTC 9 DEC. 2011 10 DEC. 2011 11 DEC. 2011 12 DEC. 2011 JST

SUMMARY PLOTS AT Wakkanai

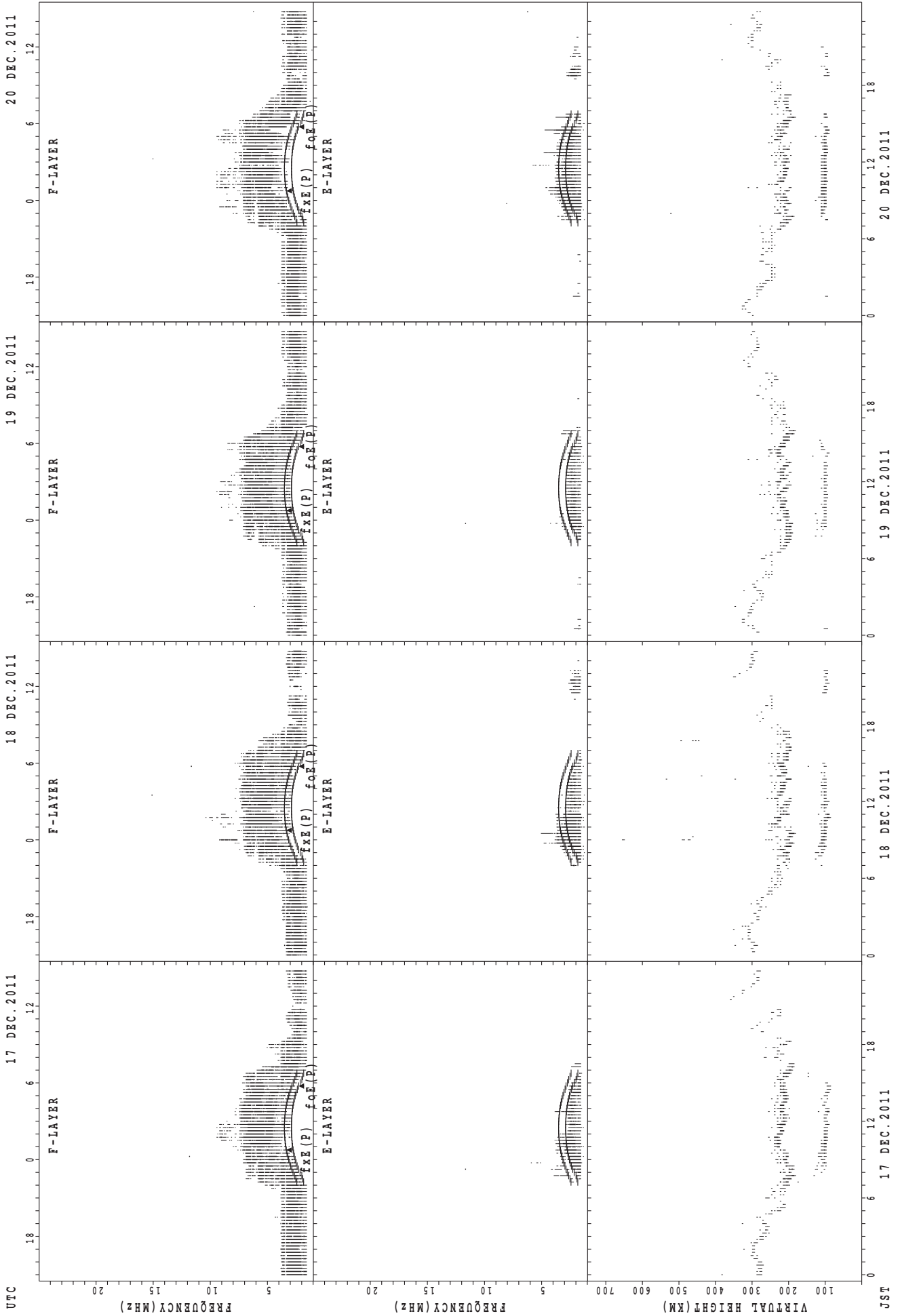


f_{XE}(P) ; PREDICTED VALUE FOR f_{XE}
f_{oE}(P) ; PREDICTED VALUE FOR f_{oE}

UTC 13 DEC. 2011 14 DEC. 2011 15 DEC. 2011 16 DEC. 2011

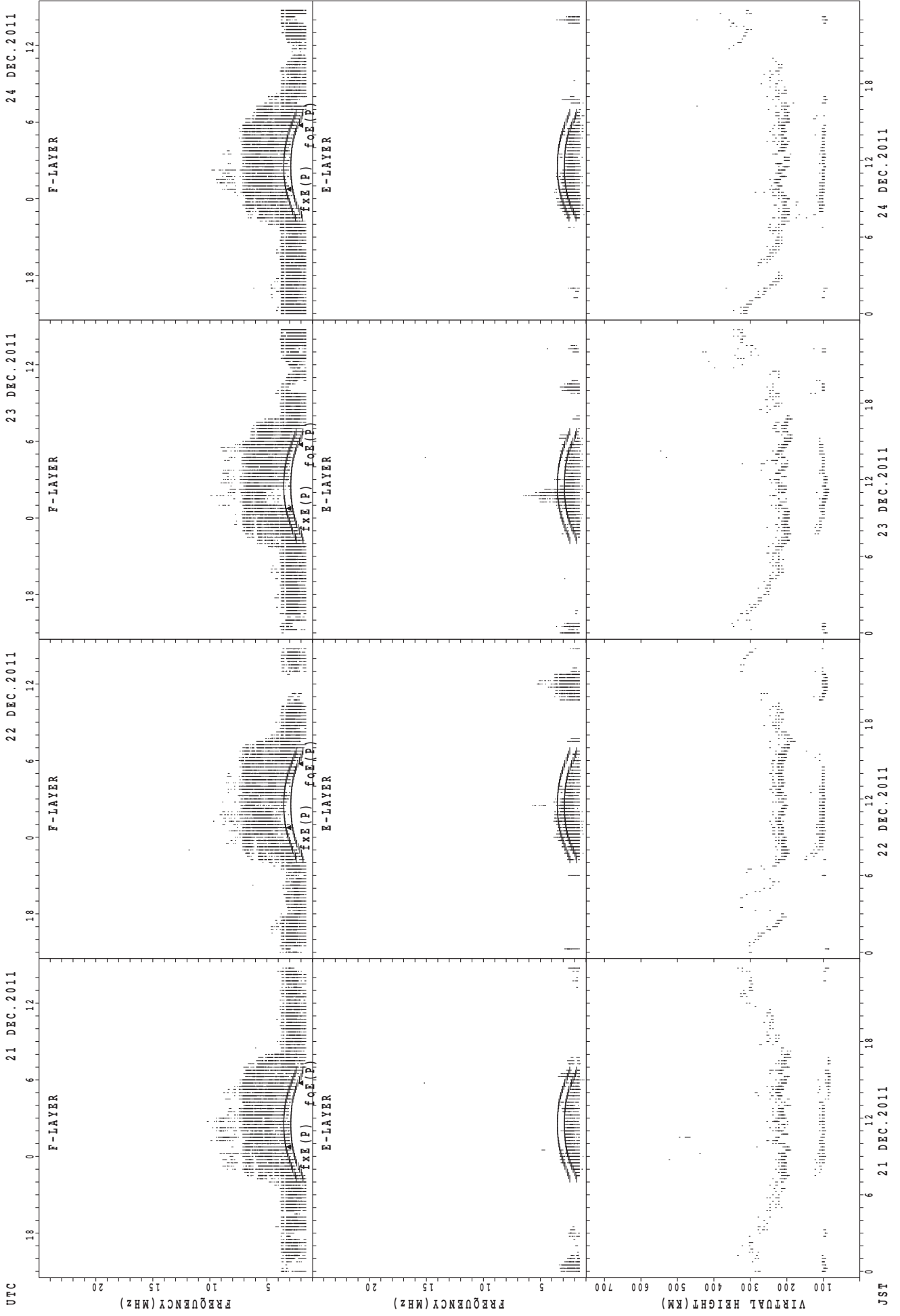
JST

SUMMARY PLOTS AT Wakkanai



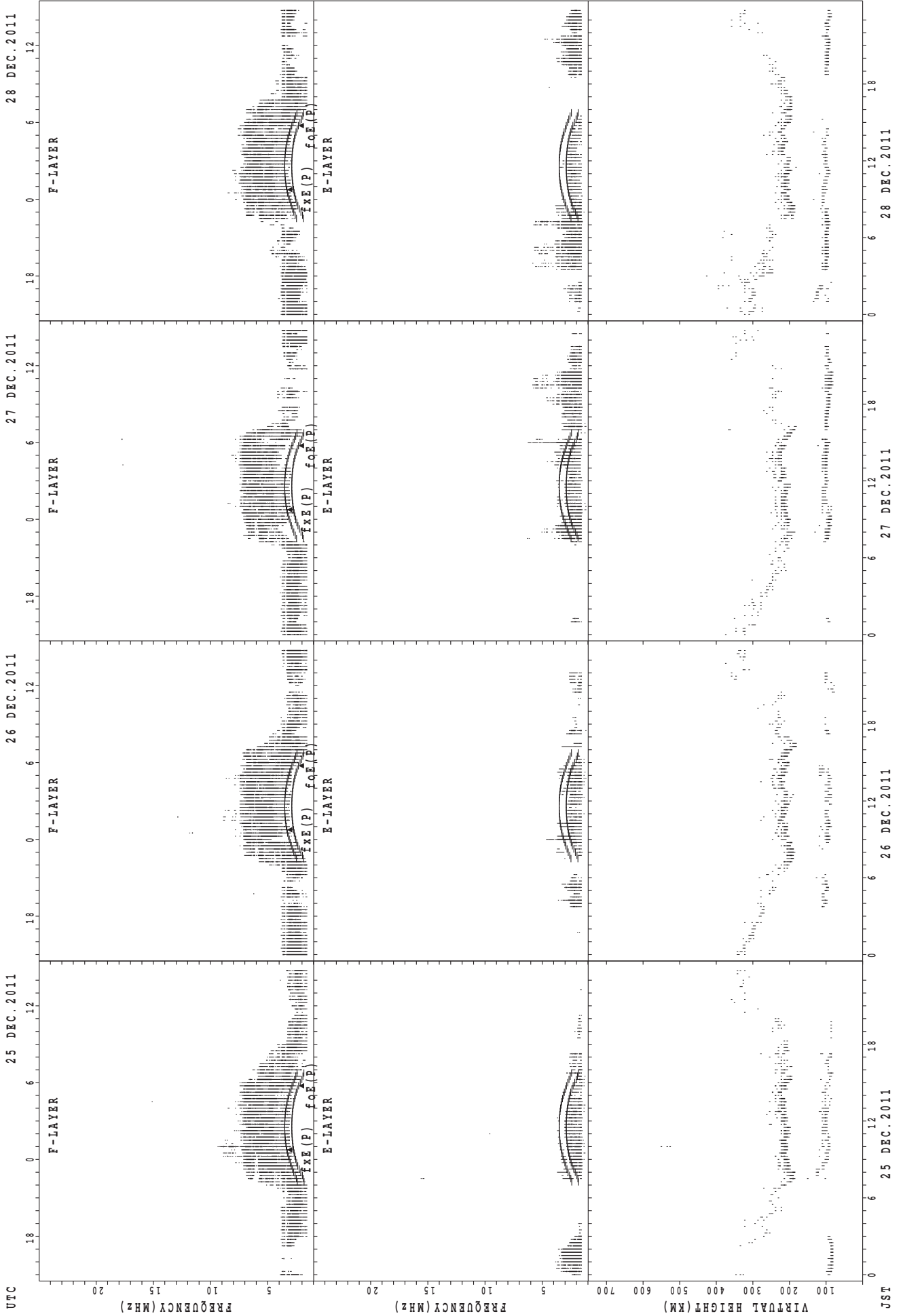
JST 17 DEC. 2011 18 DEC. 2011 19 DEC. 2011 20 DEC. 2011
 $f_{x E}(P)$; PREDICTED VALUE FOR $f_{x E}$
 $f_{o E}(P)$; PREDICTED VALUE FOR $f_{o E}$

SUMMARY PLOTS AT Wakkanai



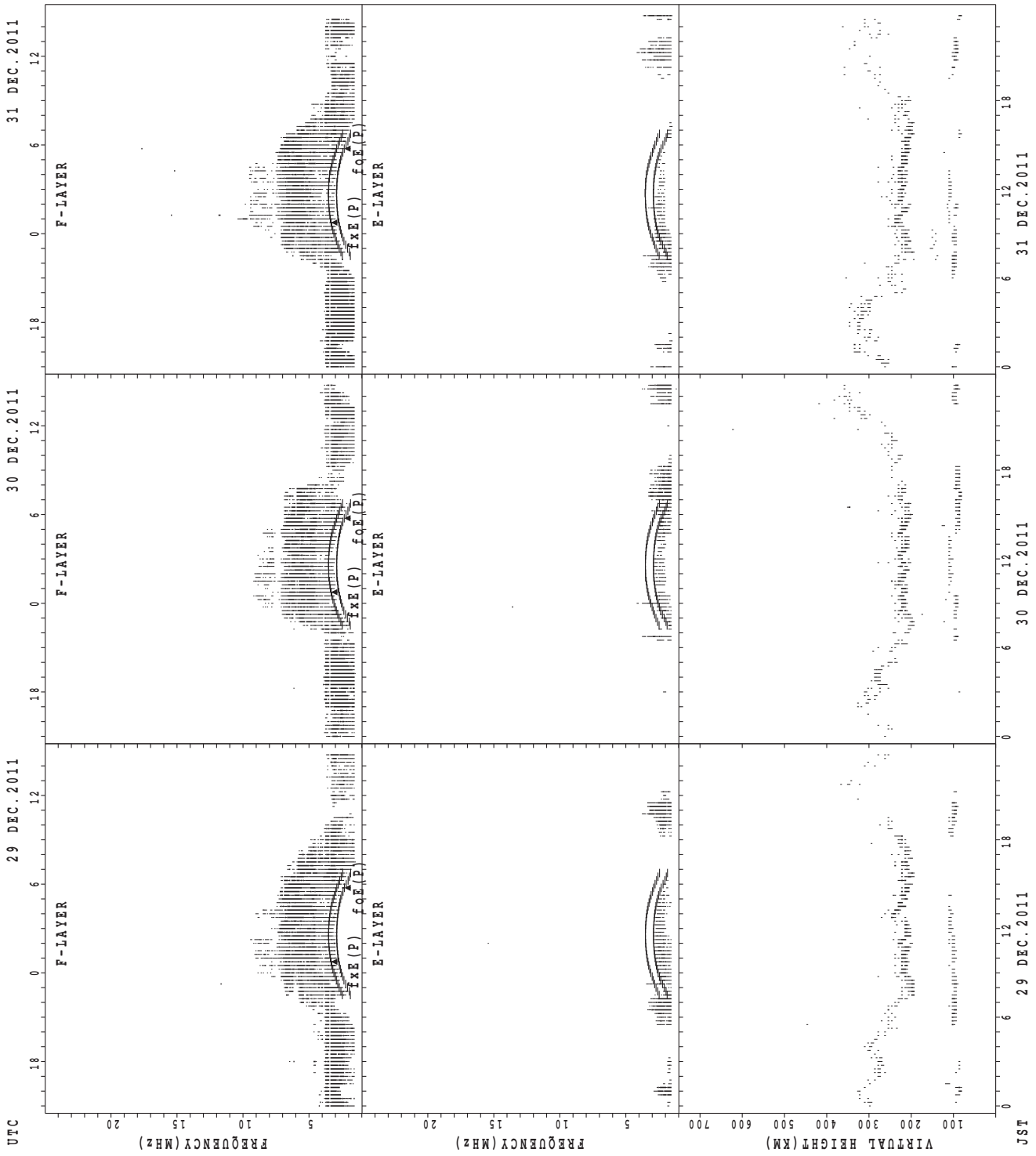
f_xE (P); PREDICTED VALUE FOR f_xE
f_oE (P); PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Wakkanai



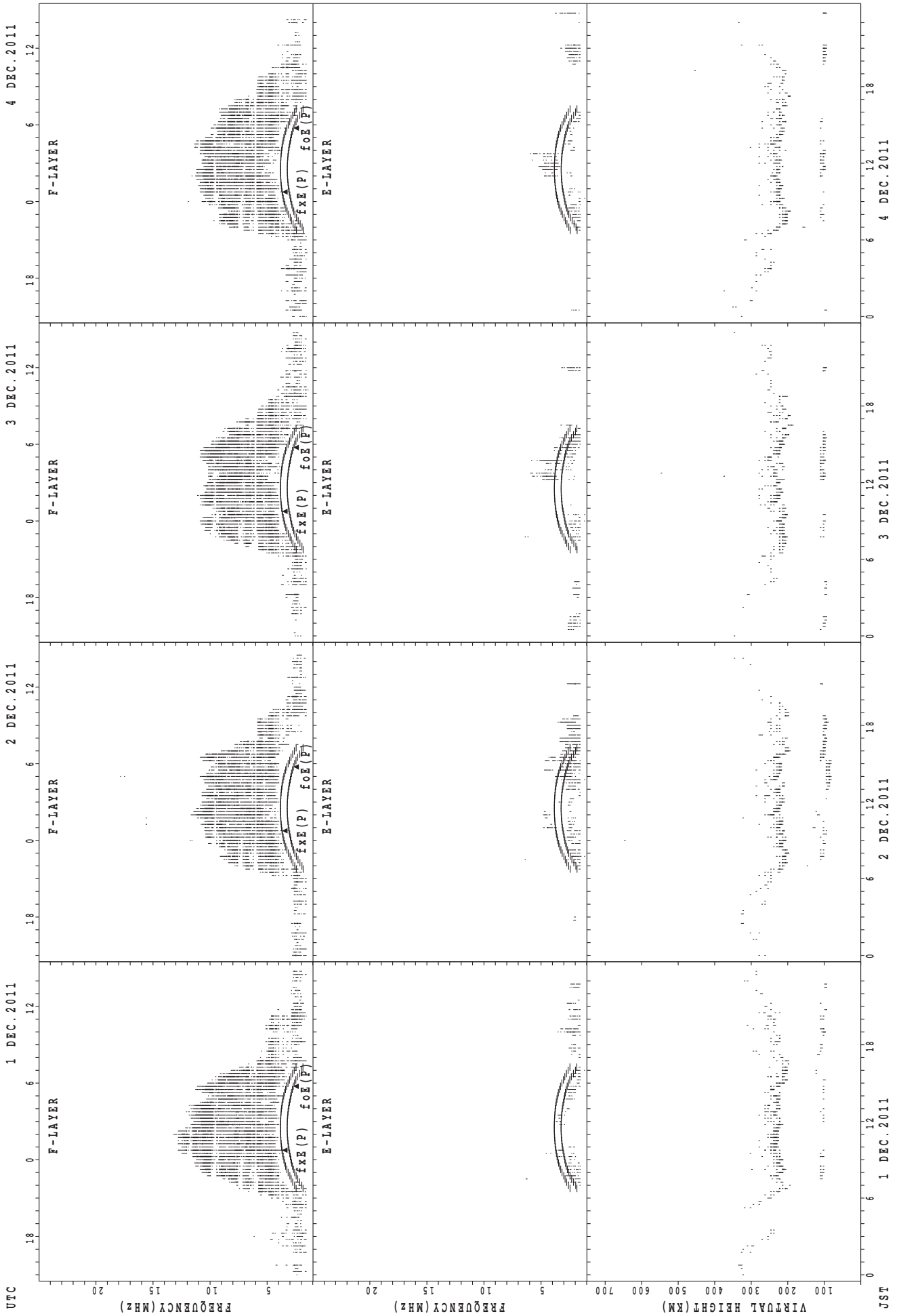
foF2(P); PREDICTED VALUE FOR foF2
 h'pF2(P); PREDICTED VALUE FOR h'pF2

SUMMARY PLOTS AT Wakkanai



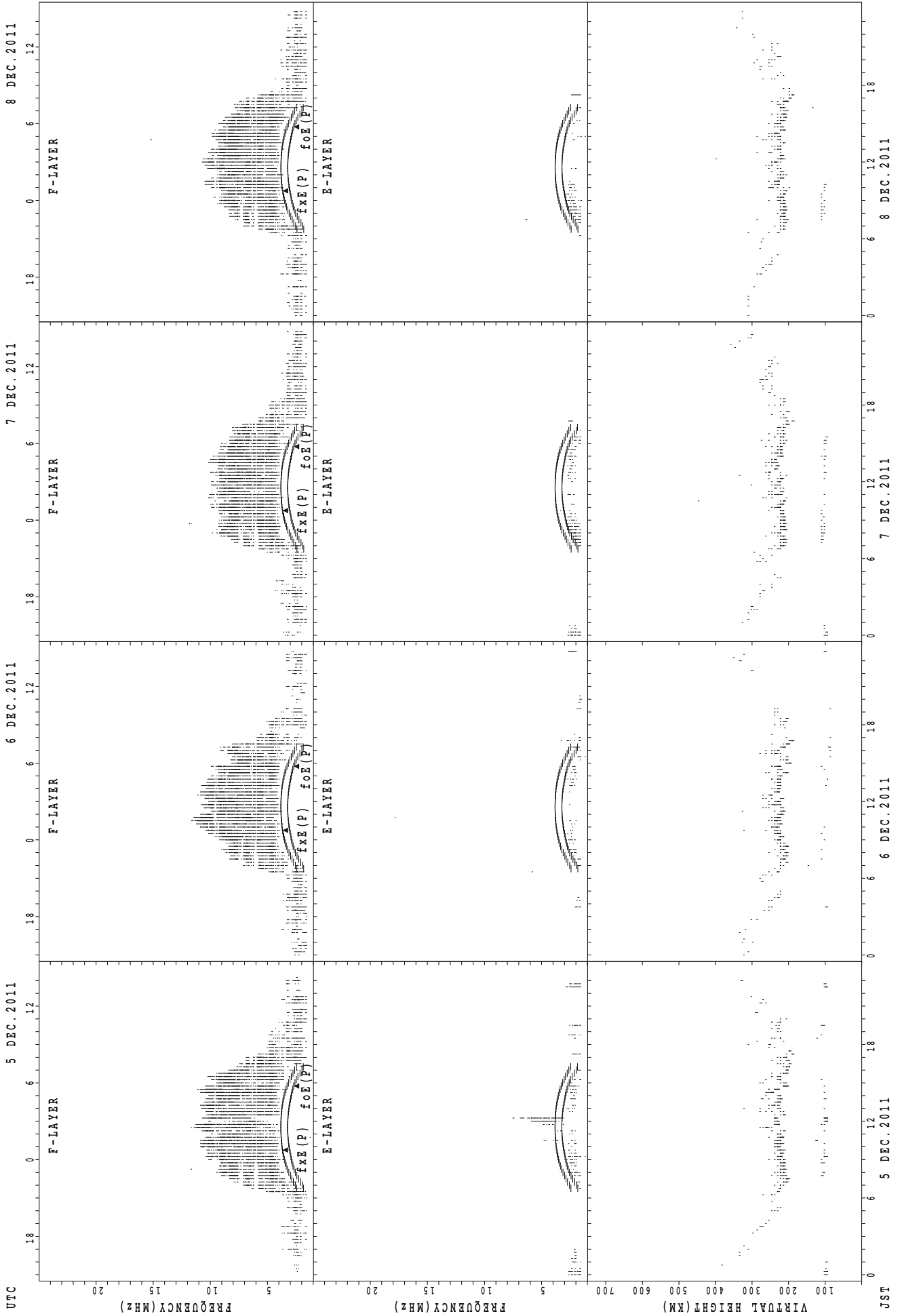
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Kokubunji



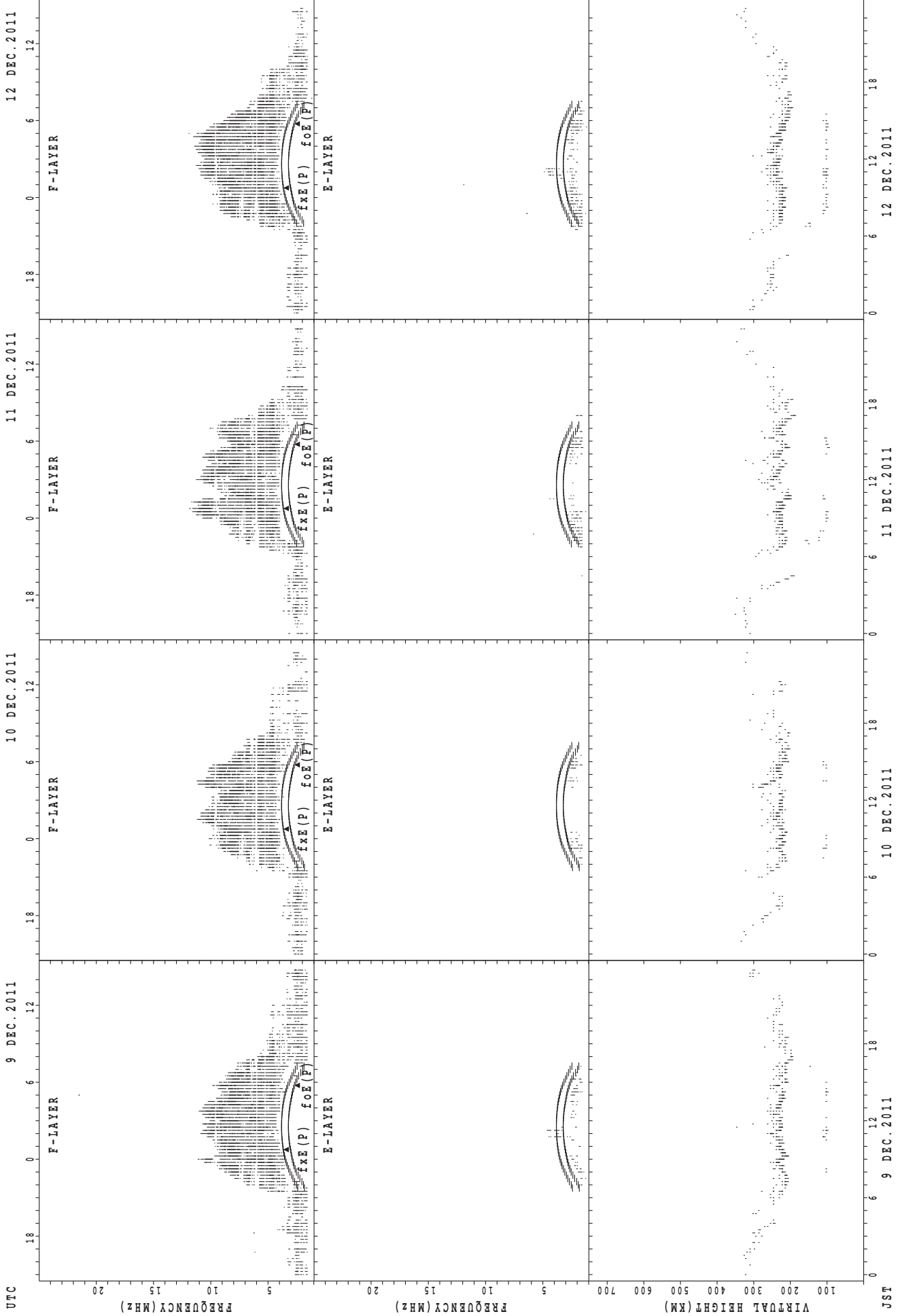
f_{x E}(P); PREDICTED VALUE FOR f_{x E}
 f_{o E}(P); PREDICTED VALUE FOR f_{o E}

SUMMARY PLOTS AT Kokubunji



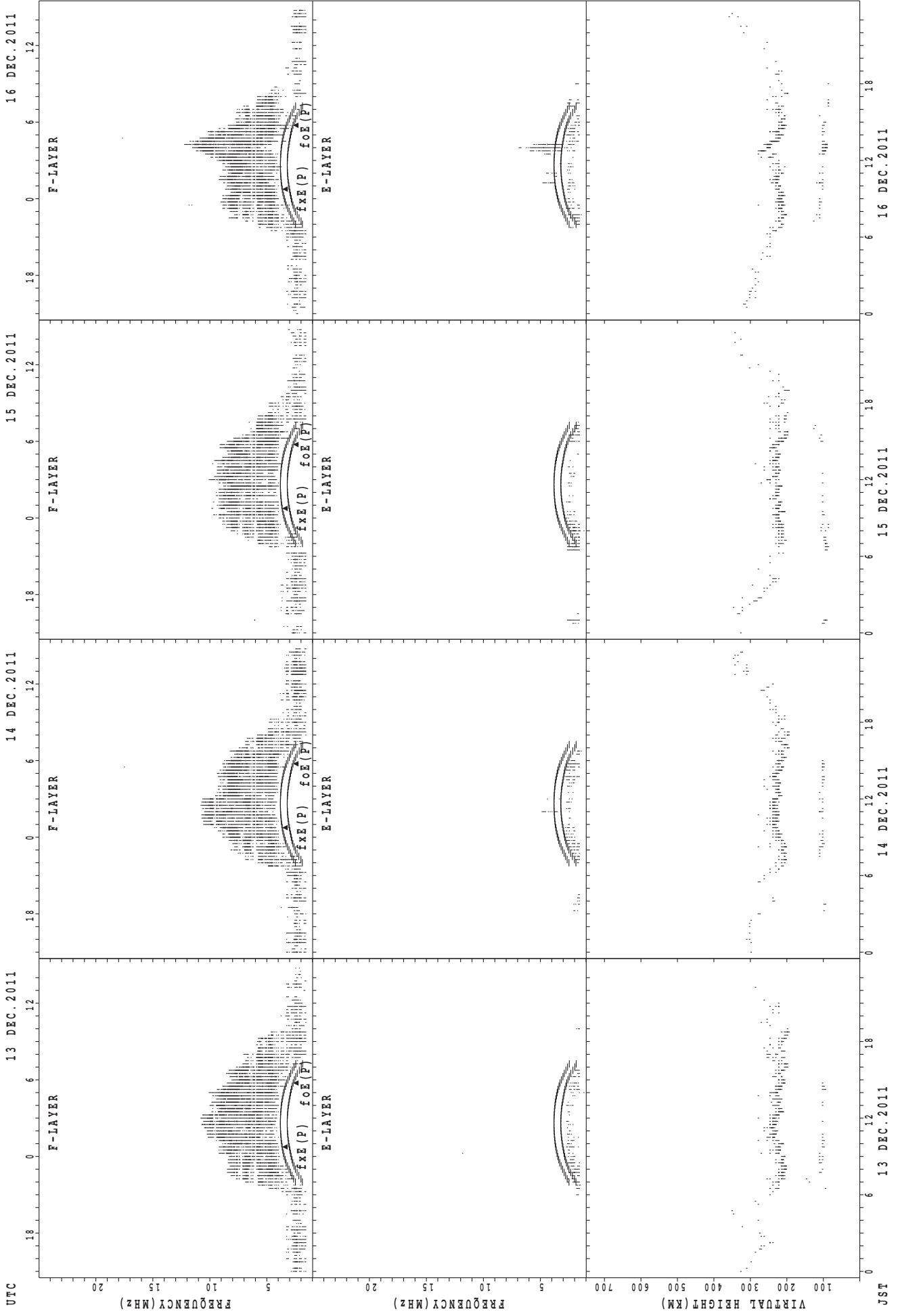
f_{x E}(P); PREDICTED VALUE FOR f_{x E}
f_{o E}(P); PREDICTED VALUE FOR f_{o E}

SUMMARY PLOTS AT Kokubunji



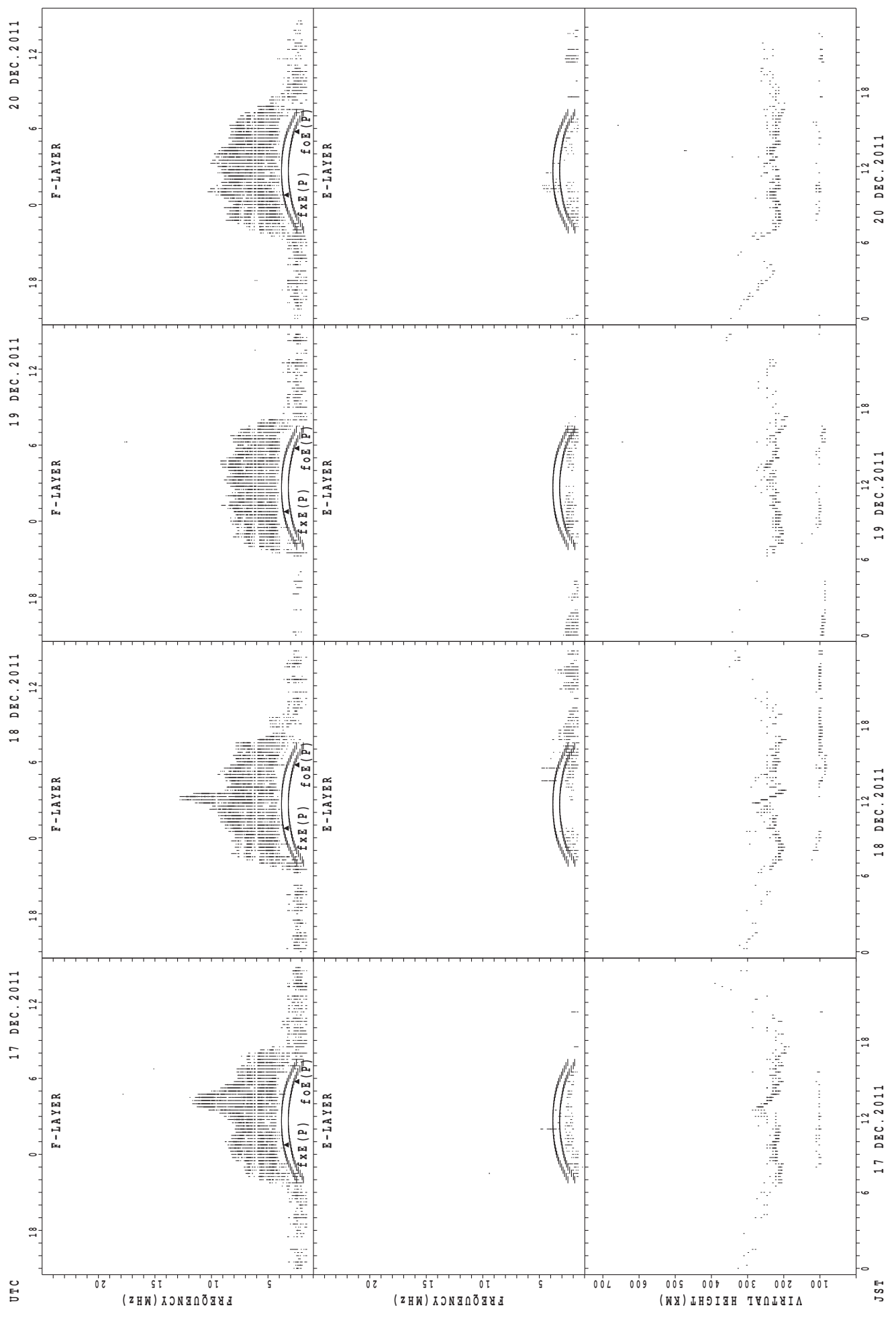
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Kokubunji



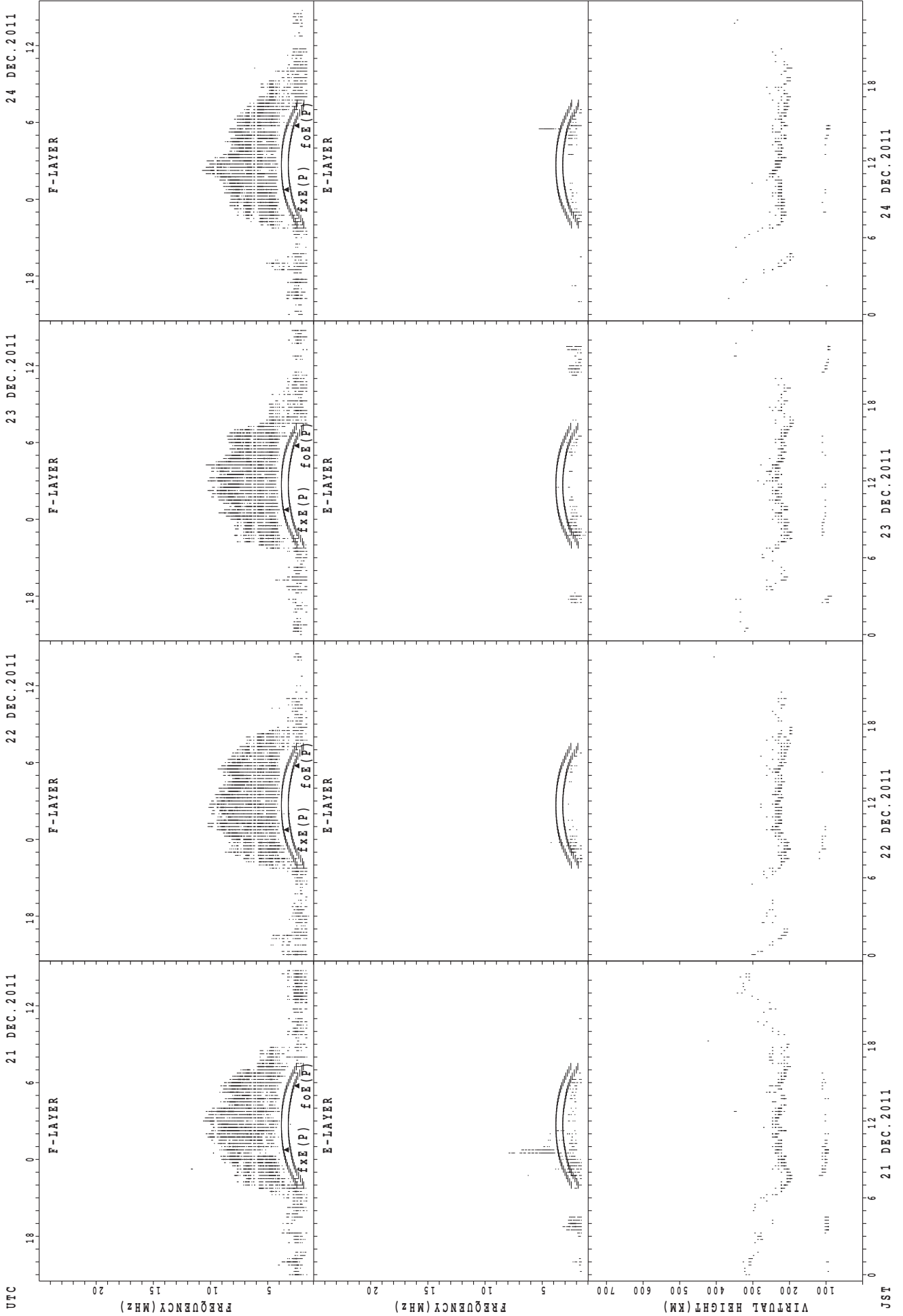
f_{xE}(P); PREDICTED VALUE FOR f_{xE}
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



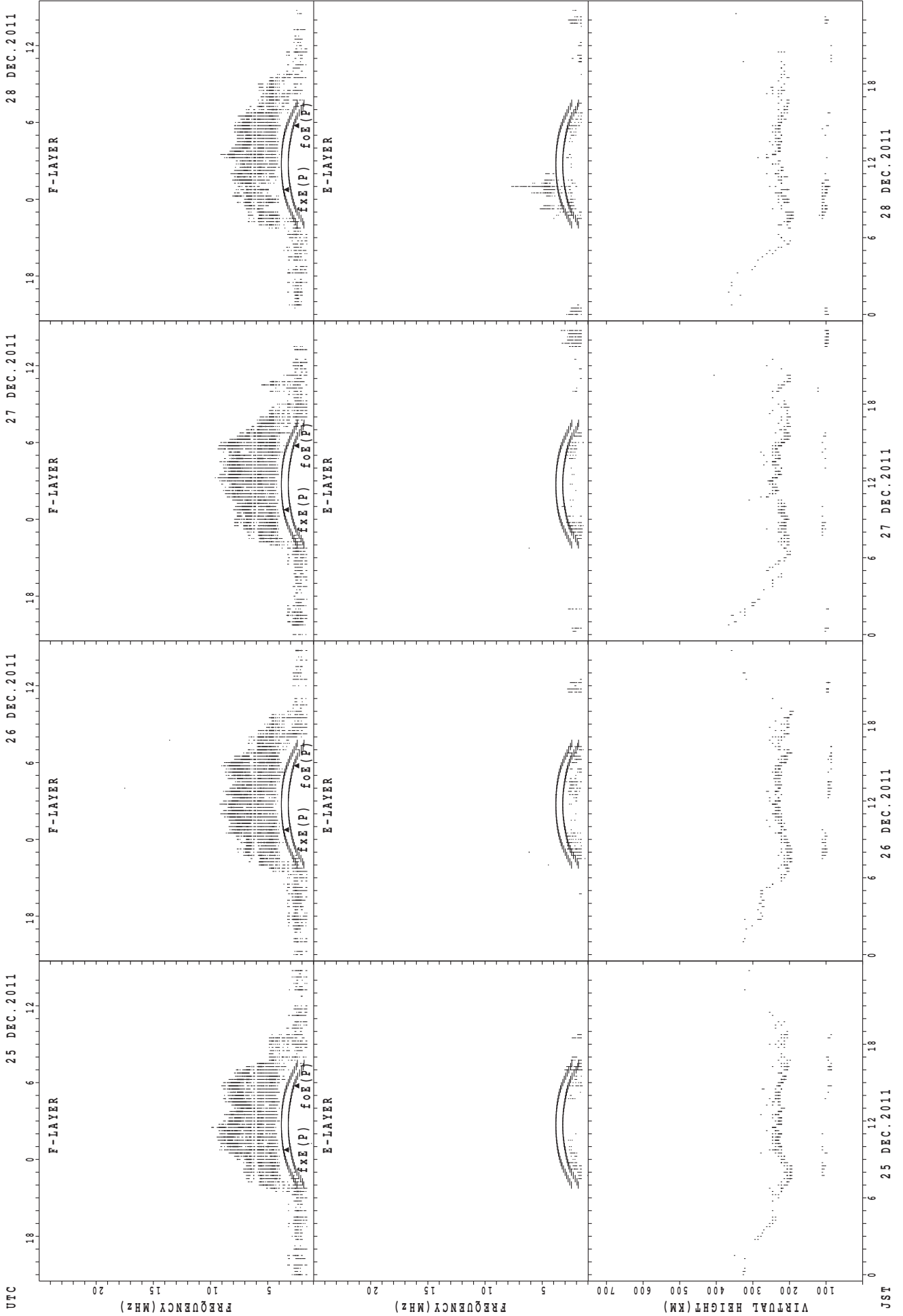
fxe(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



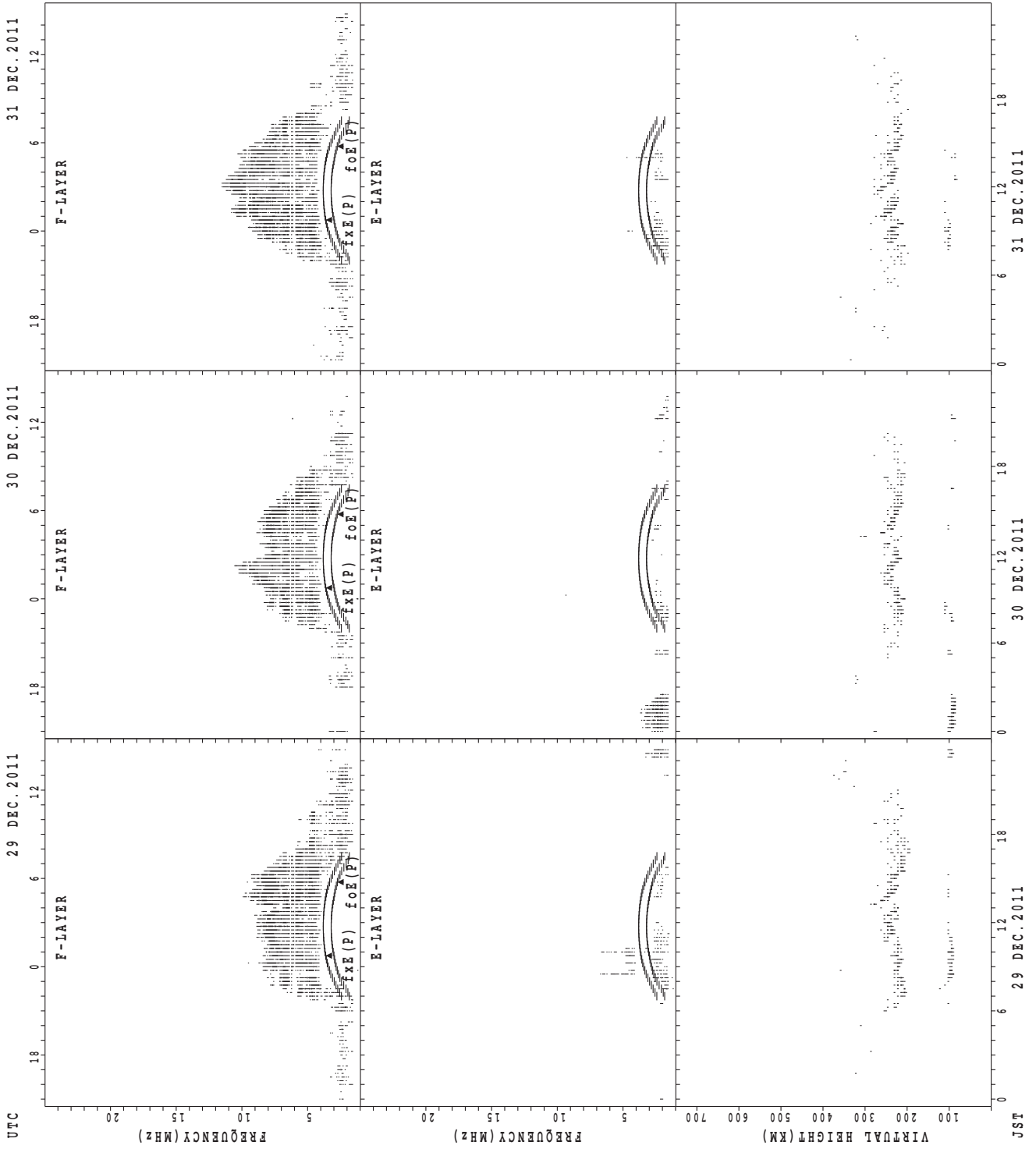
f_xE(P); PREDICTED VALUE FOR f_xE
f_oE(P); PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Kokubunji



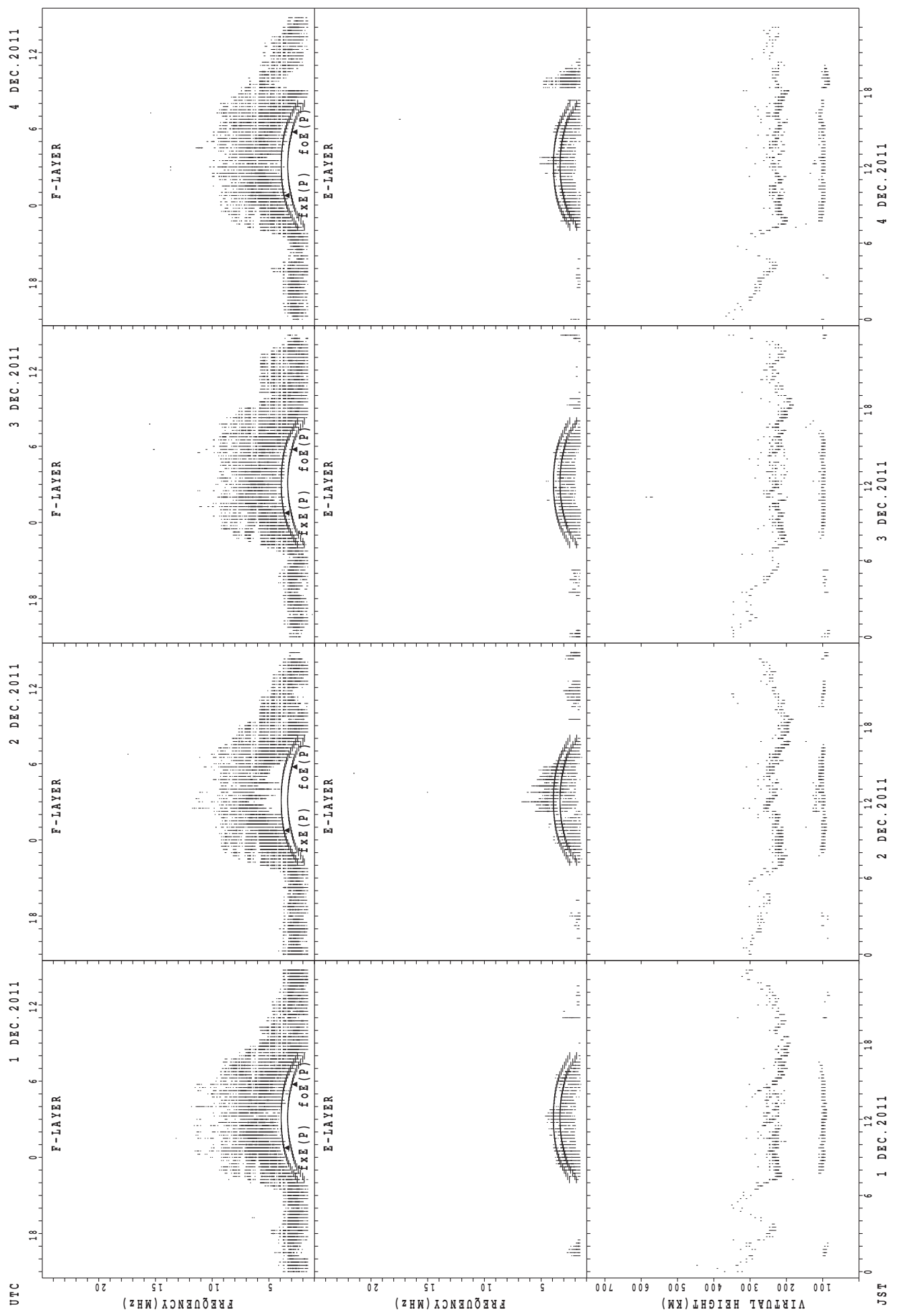
fxe(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



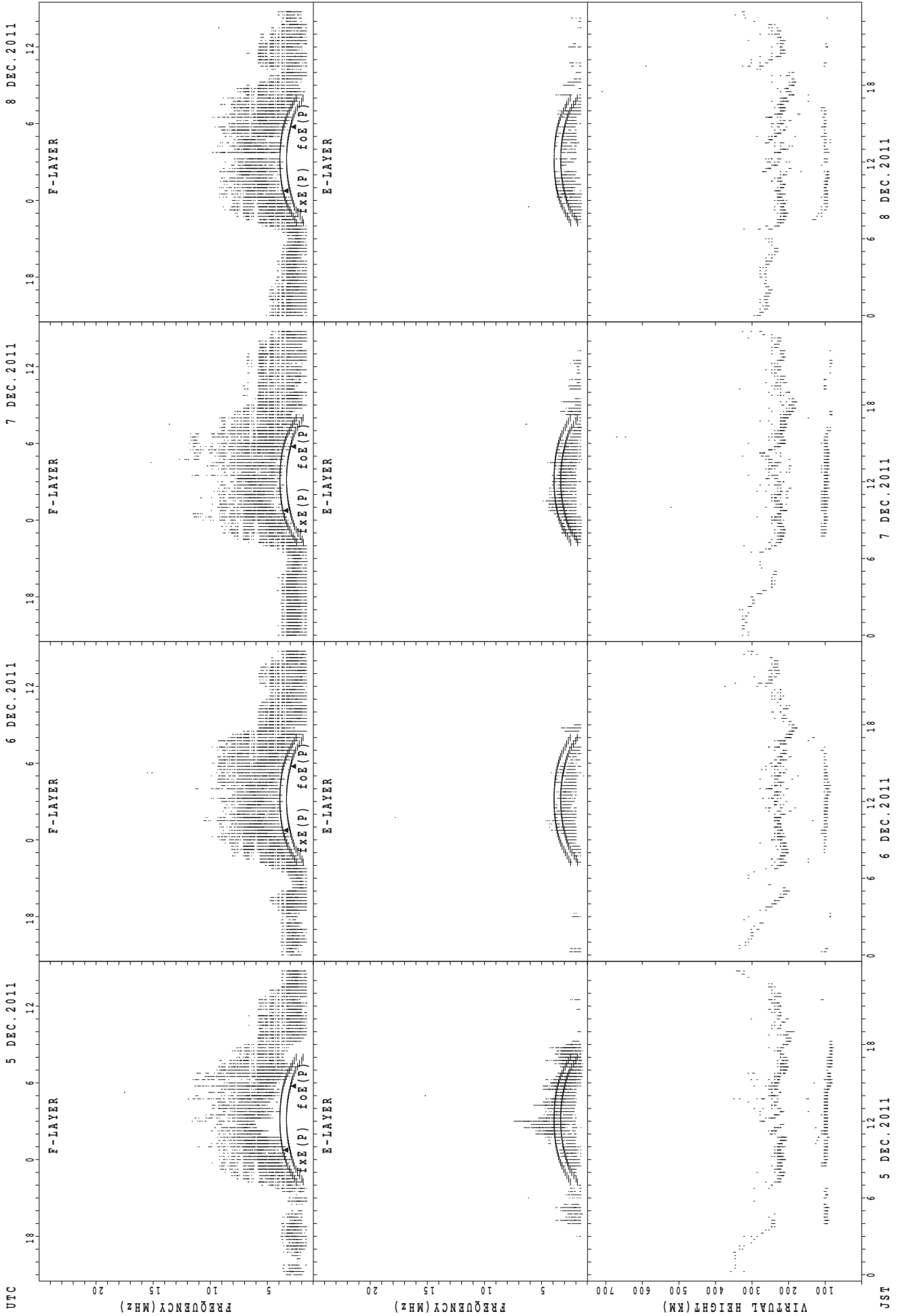
foE(P); PREDICTED VALUE FOR foE
FxE(P); PREDICTED VALUE FOR FxE

SUMMARY PLOTS AT Yamagawa



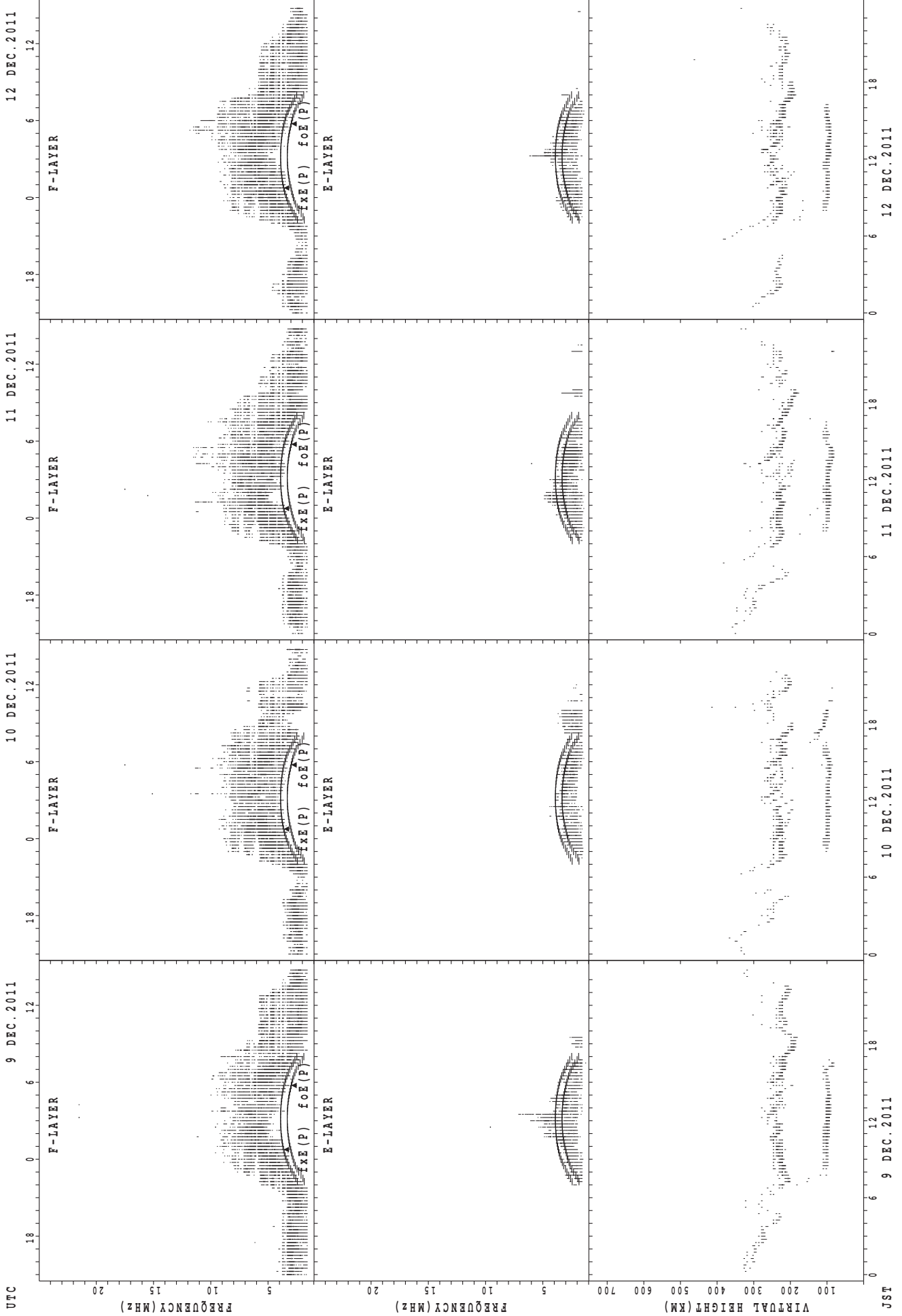
foF(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foe

SUMMARY PLOTS AT Yamagawa



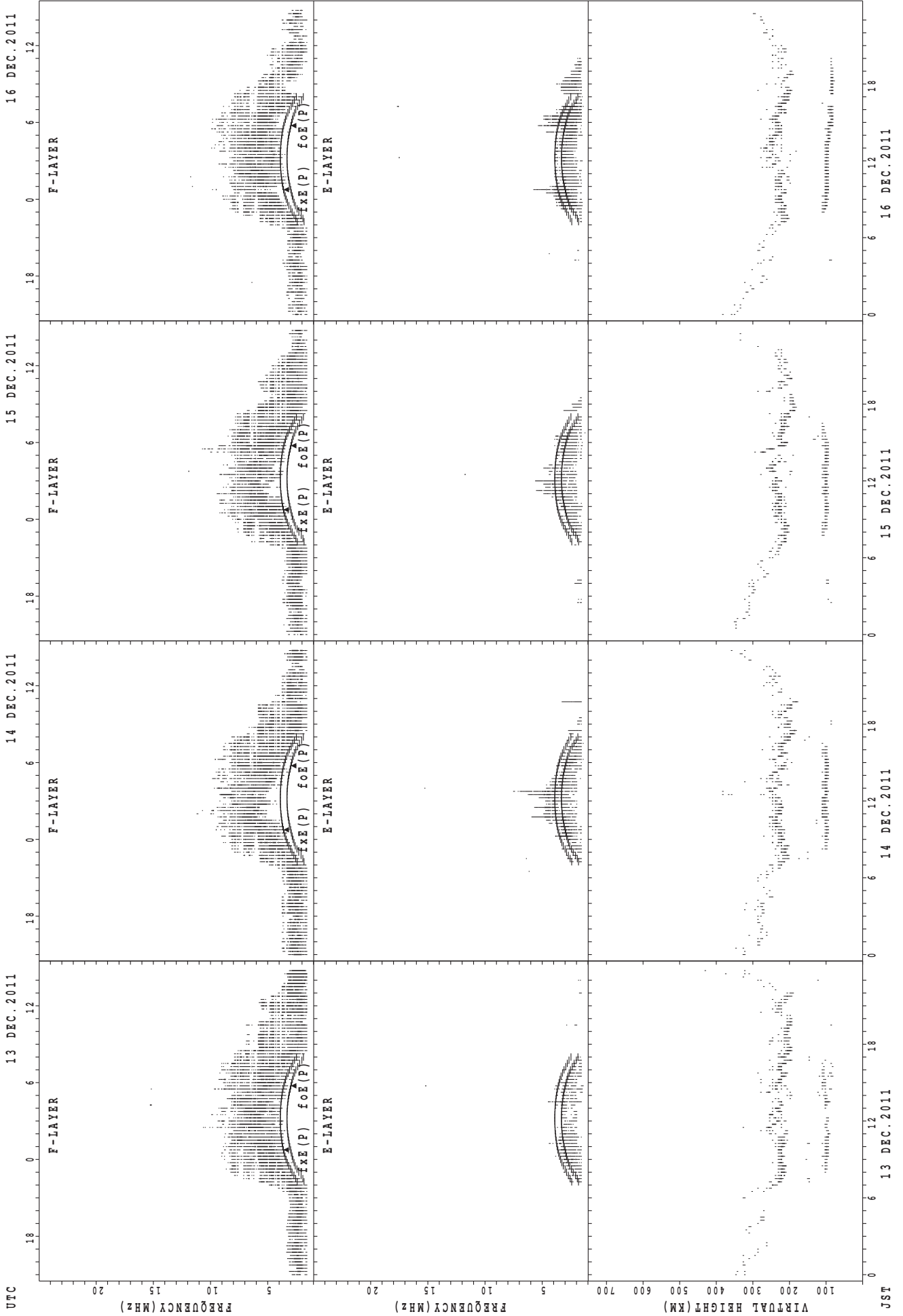
f_{xe}(P); PREDICTED VALUE FOR f_{xe}
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa

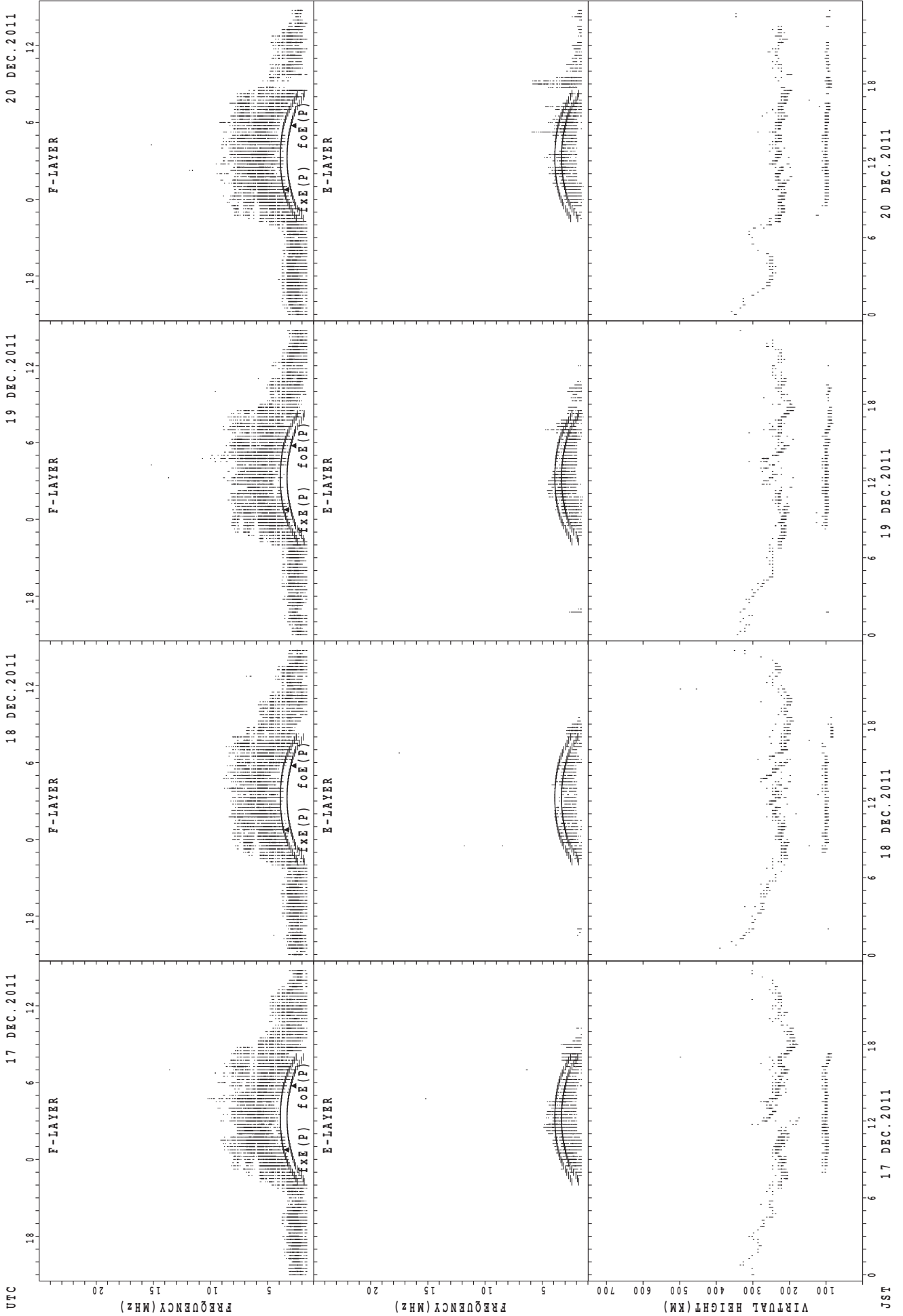


f_xE(P); PREDICTED VALUE FOR f_xE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa

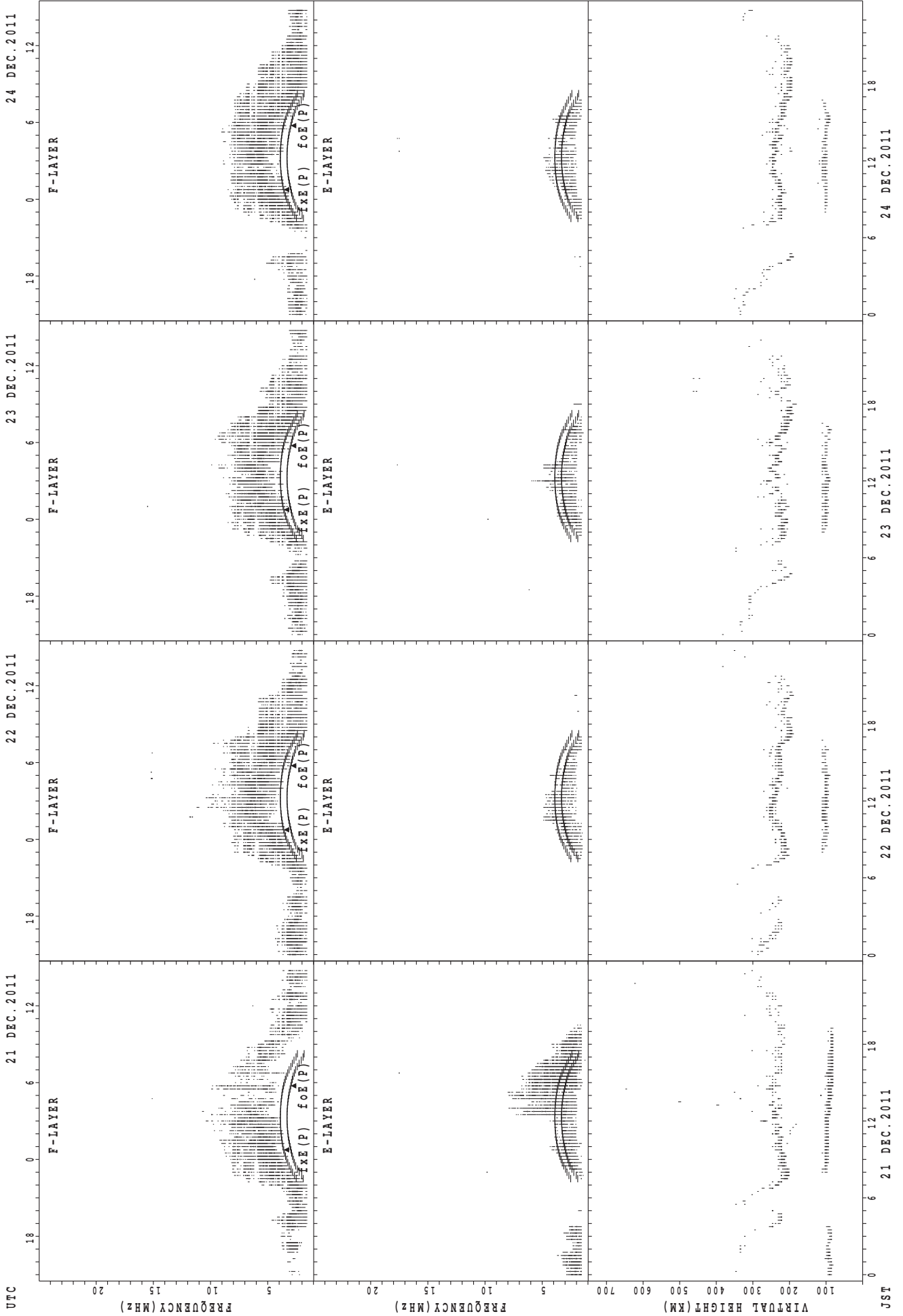


SUMMARY PLOTS AT Yamagawa



JST 17 DEC. 2011 18 DEC. 2011 19 DEC. 2011 20 DEC. 2011
fxE(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foE

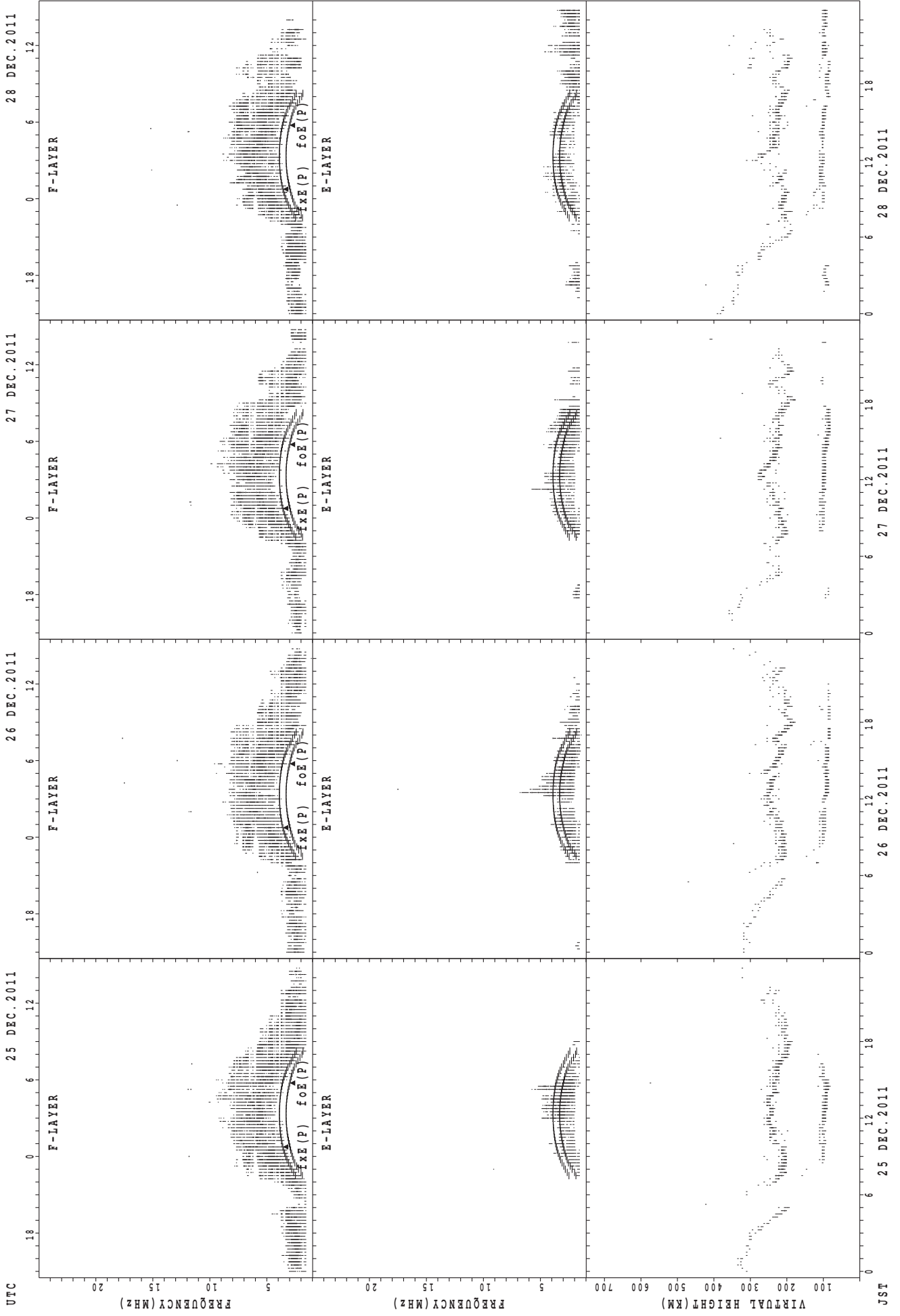
SUMMARY PLOTS AT Yamagawa



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

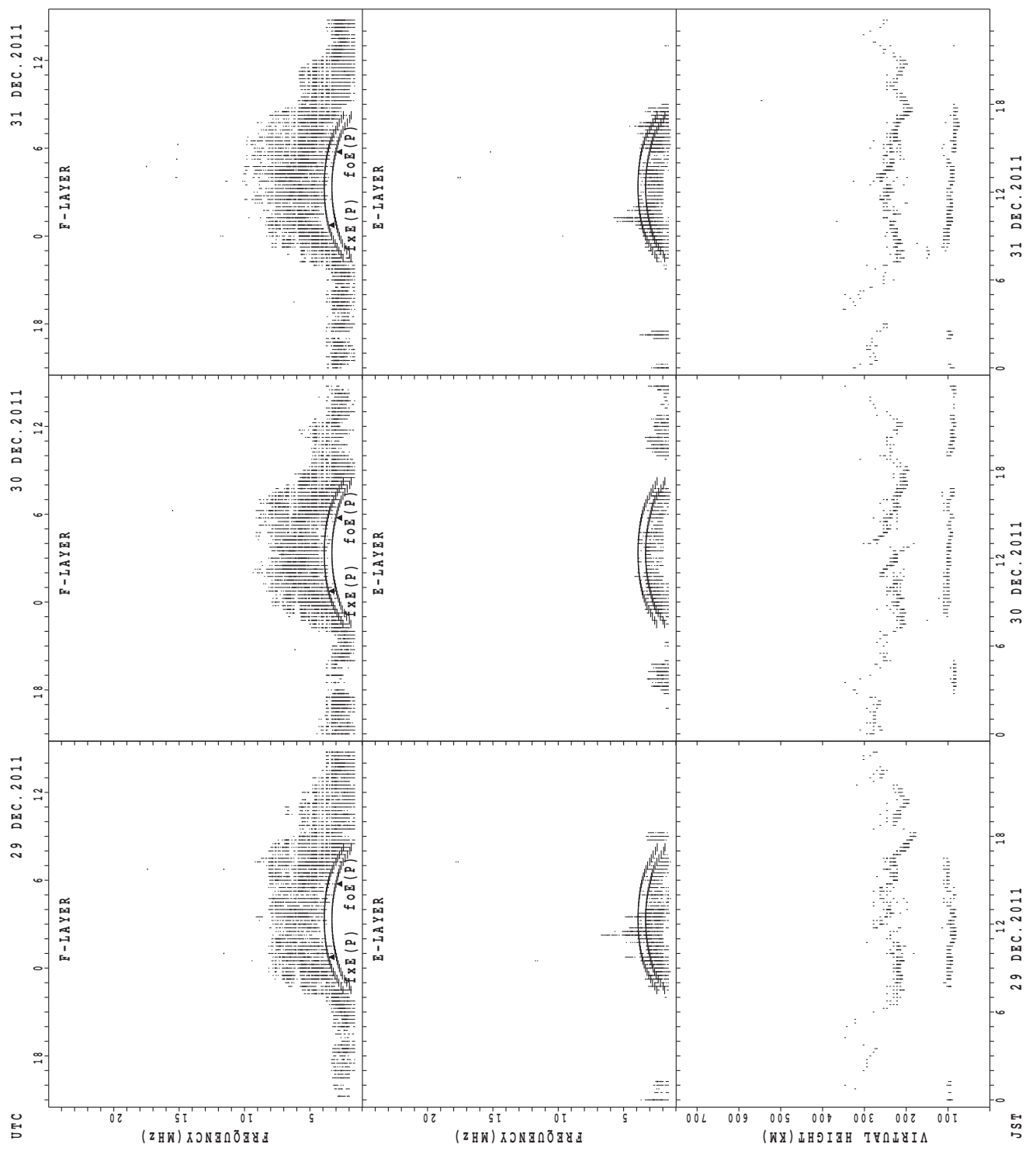
JST

SUMMARY PLOTS AT Yamagawa



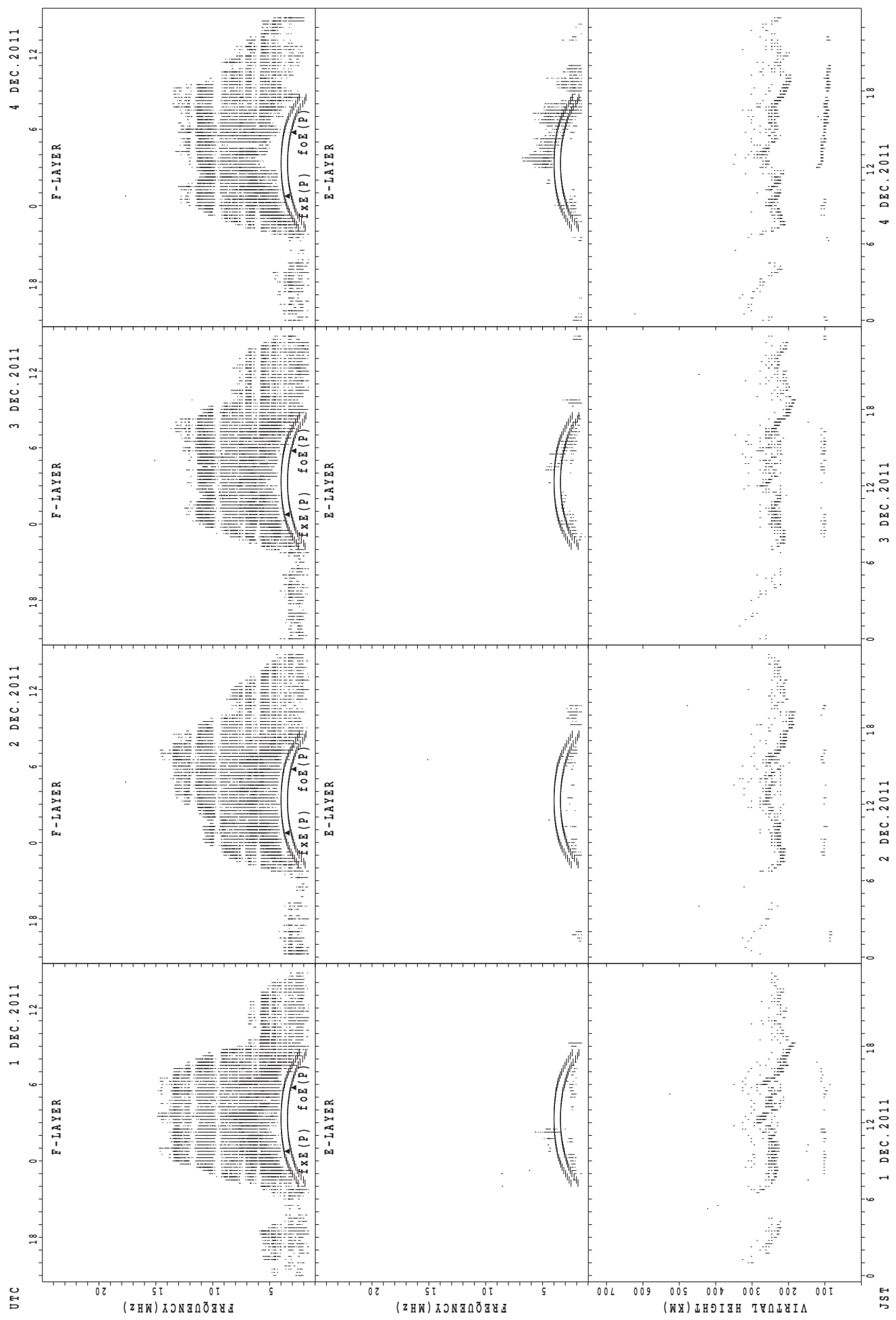
f_xE(P) ; PREDICTED VALUE FOR f_xE
f_oE(P) ; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Yamagawa



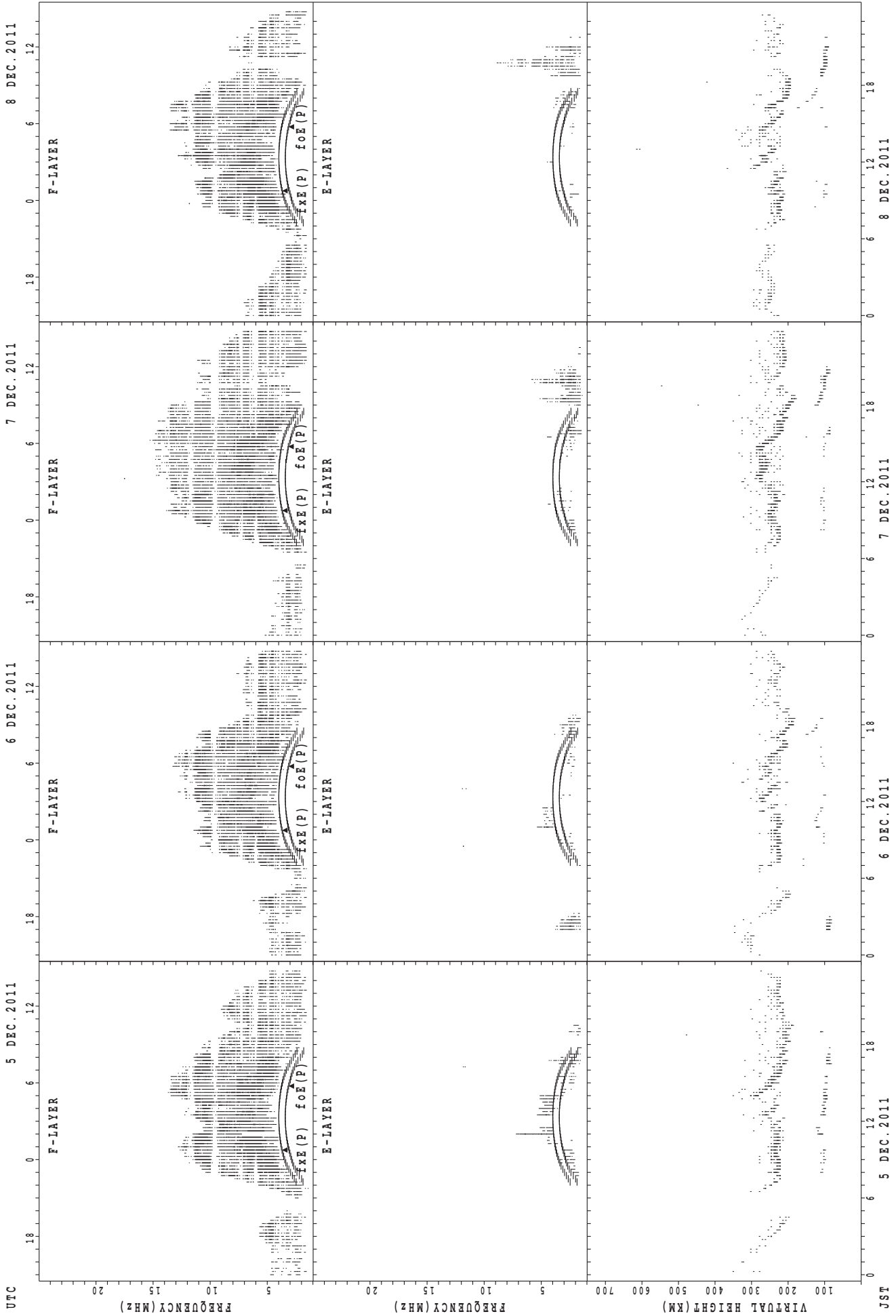
fxe(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



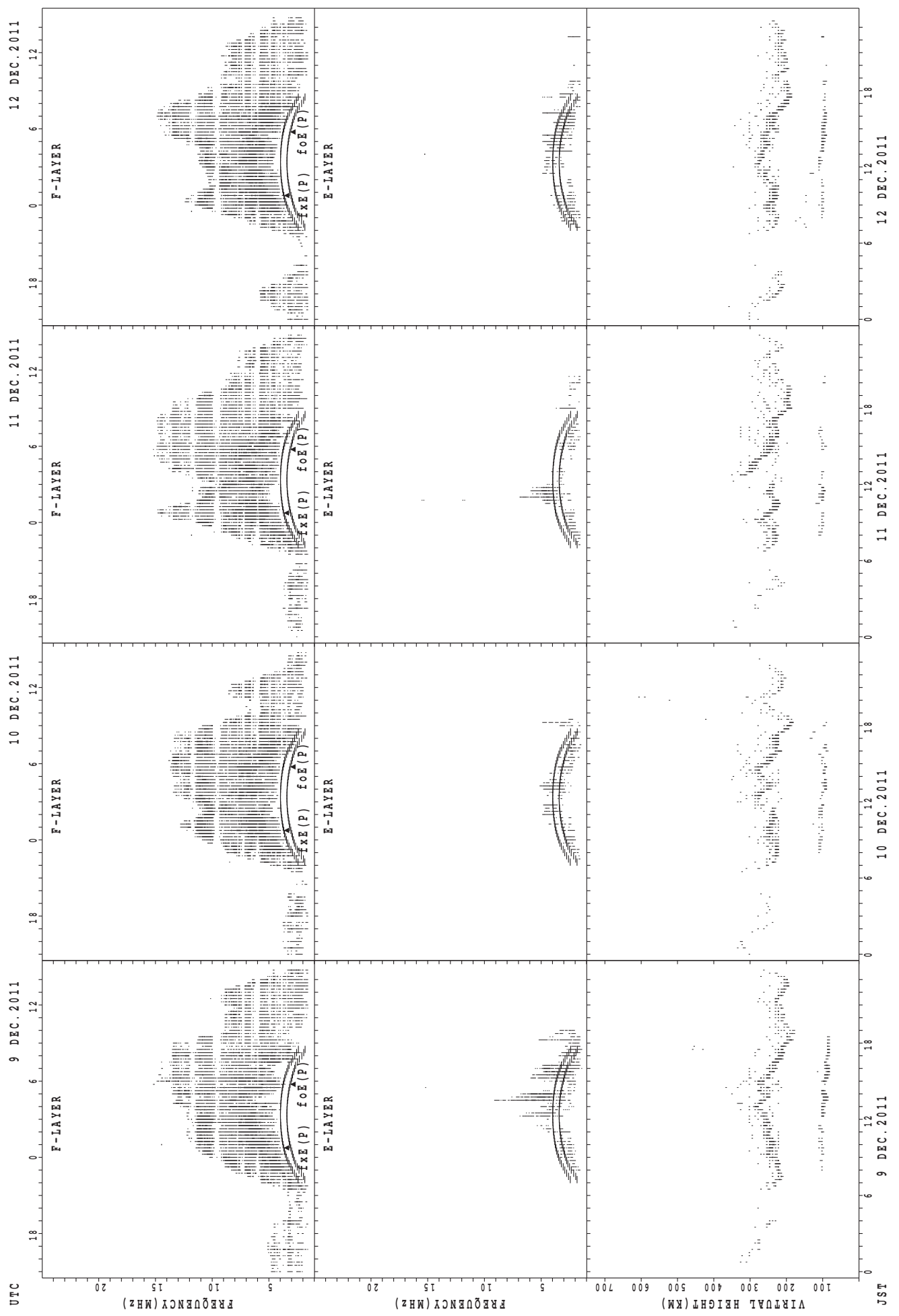
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



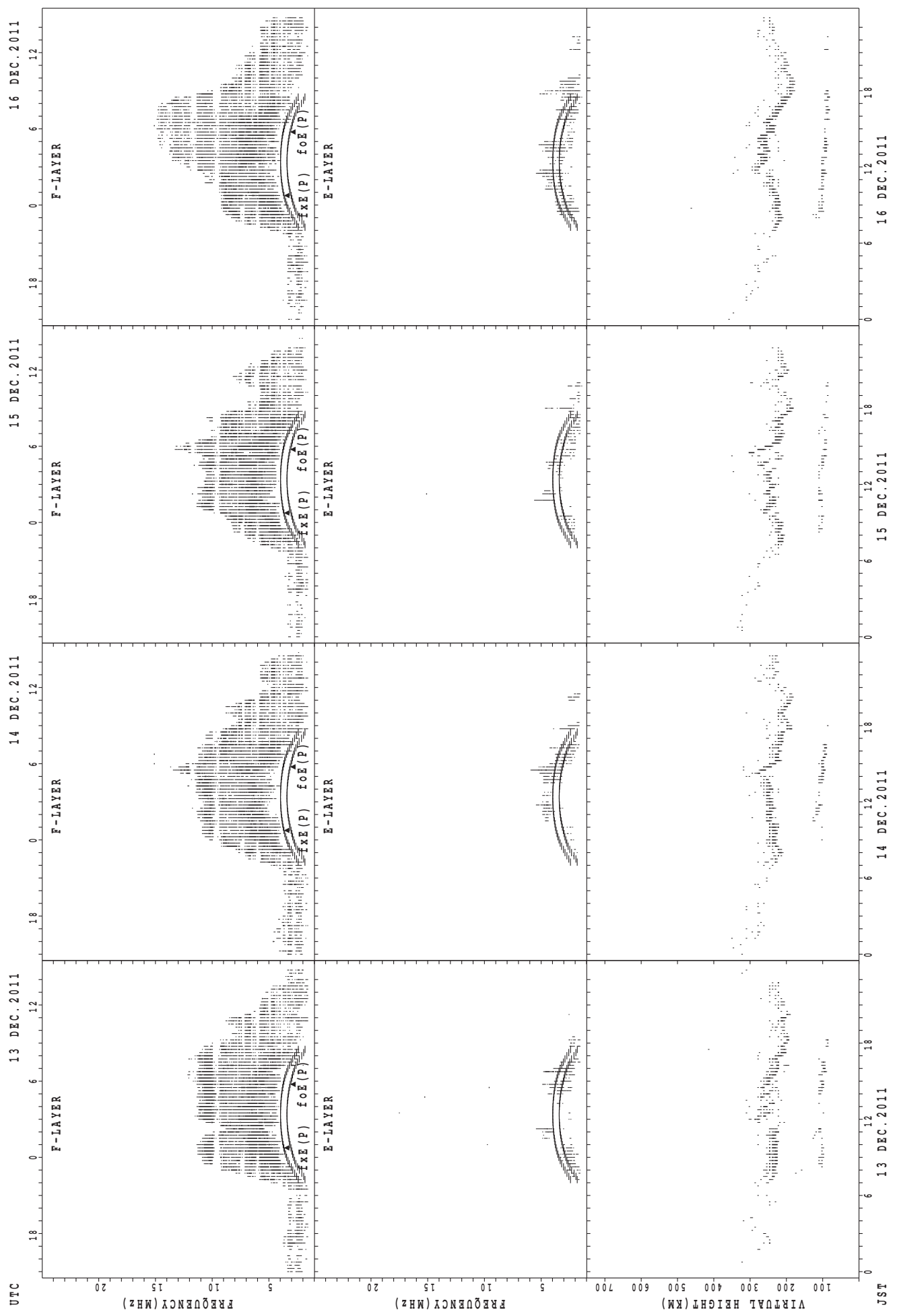
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



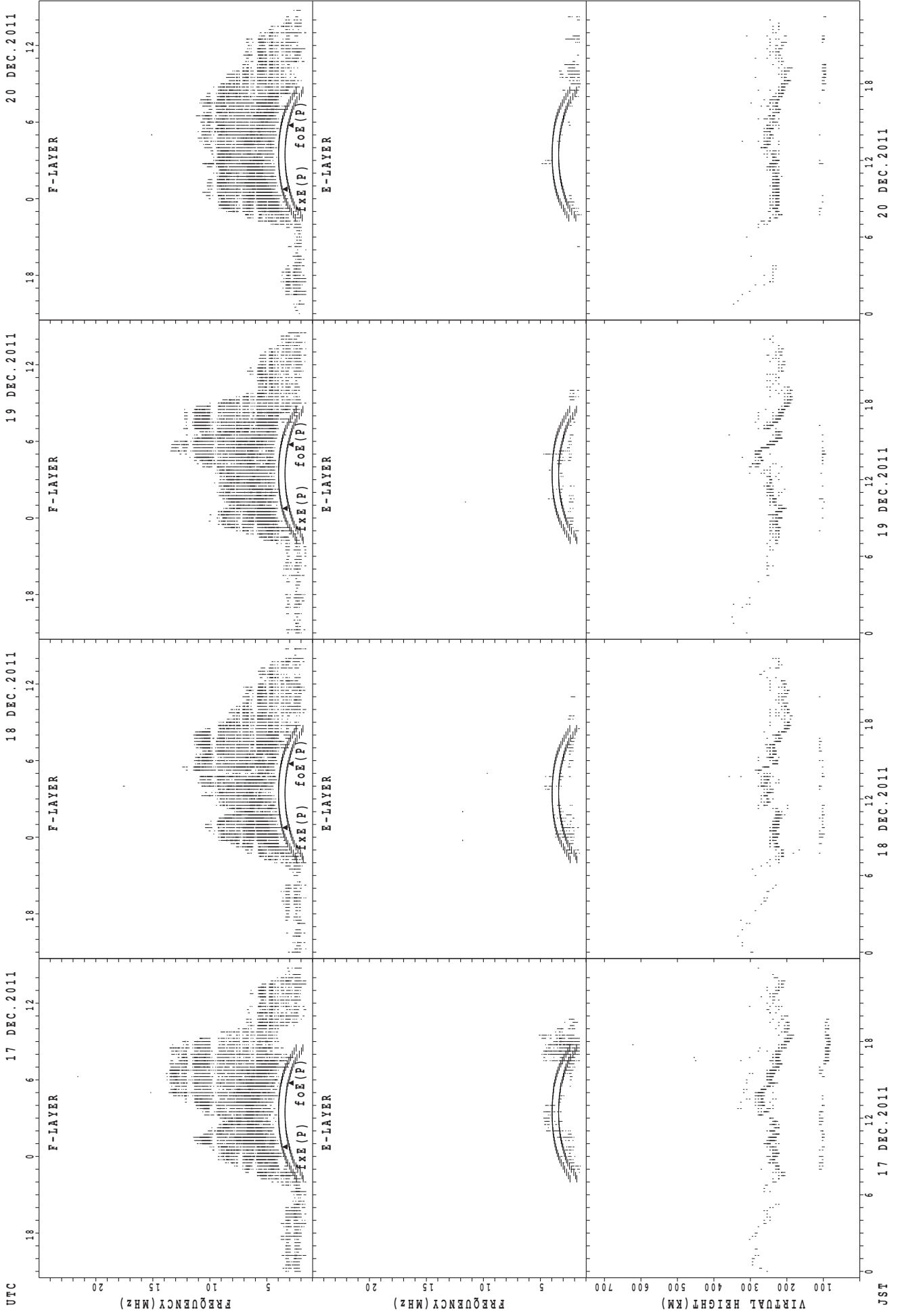
fxe(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



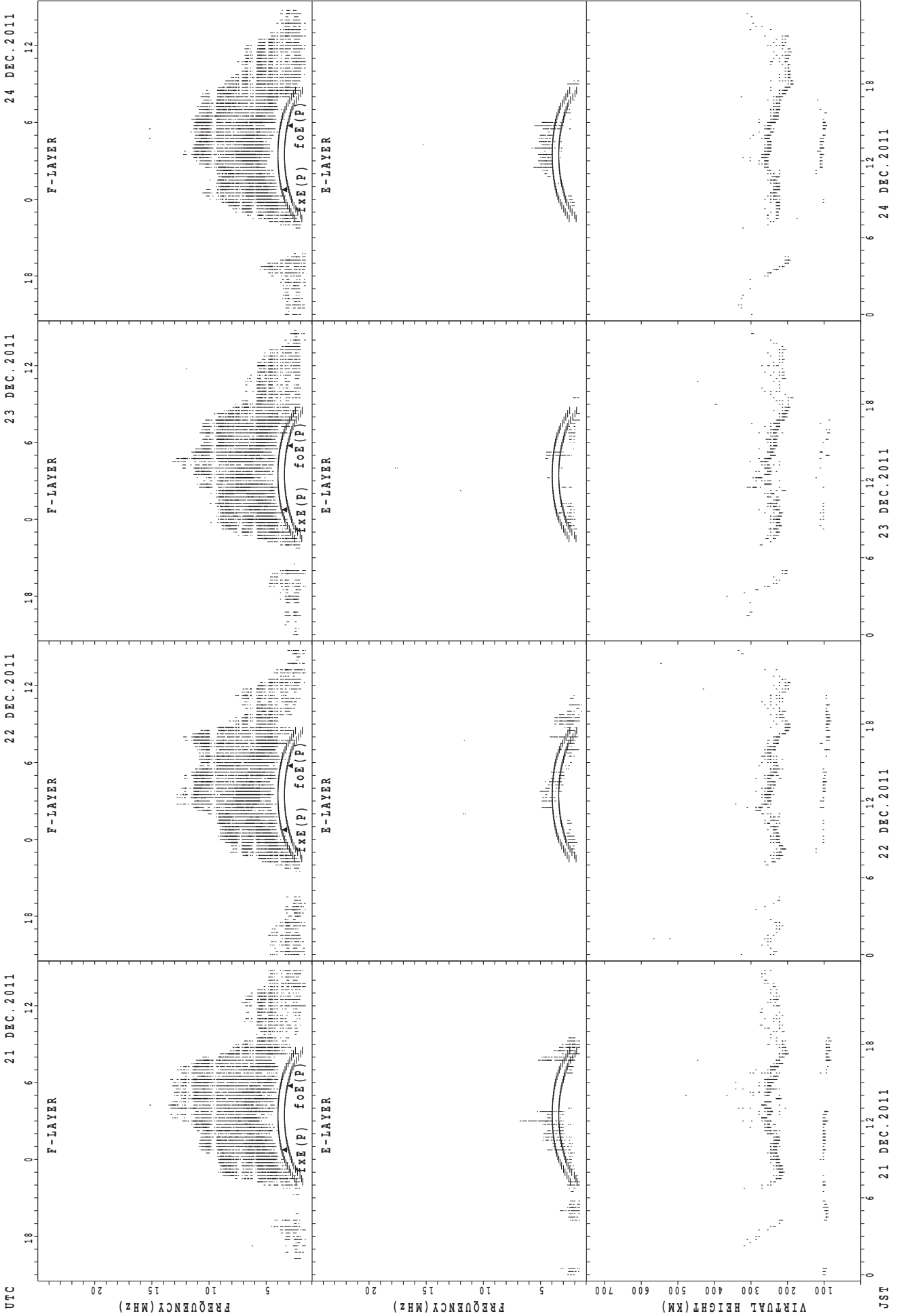
foE(P); PREDICTED VALUE FOR fXE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



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

24 DEC. 2011

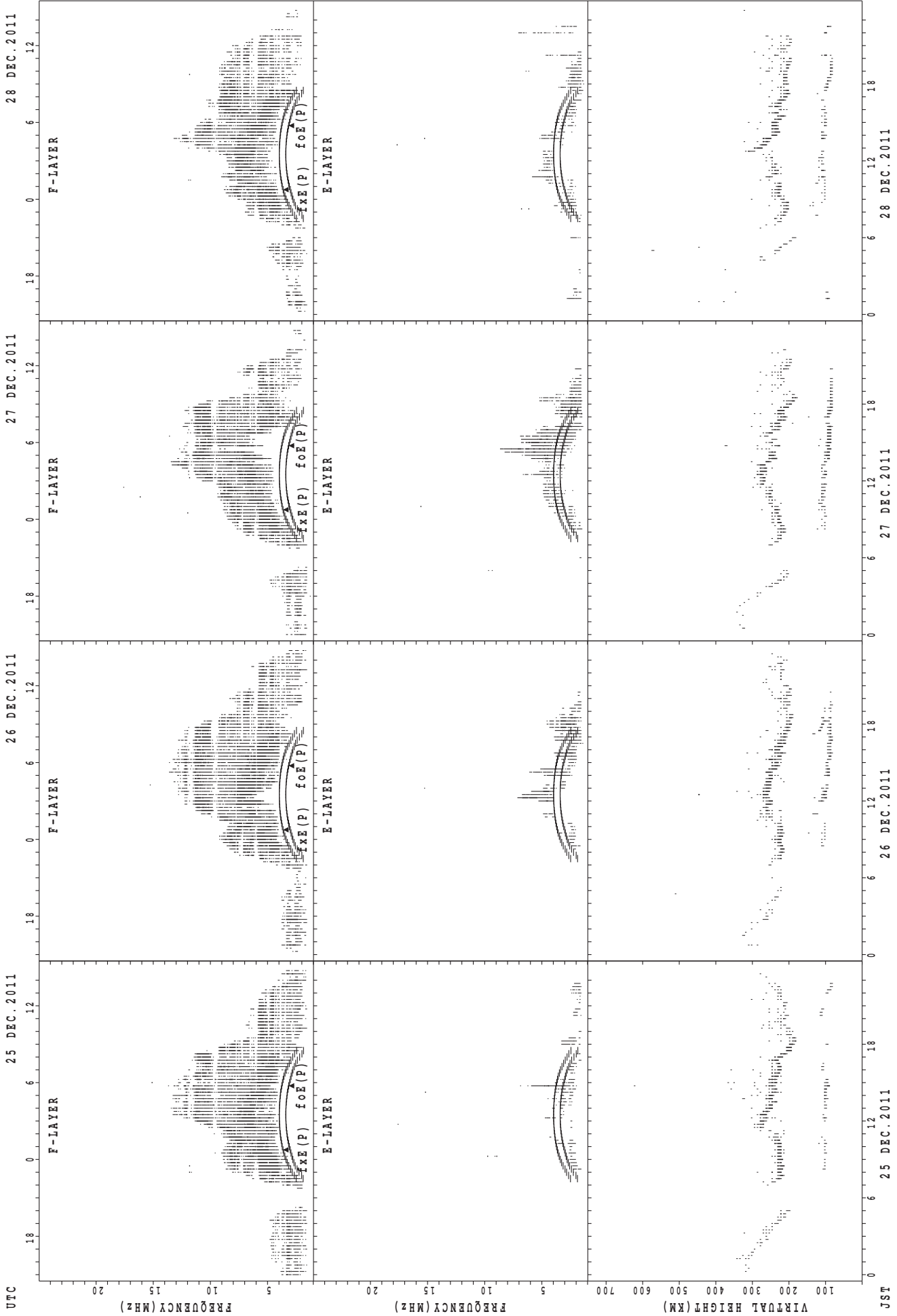
23 DEC. 2011

22 DEC. 2011

21 DEC. 2011

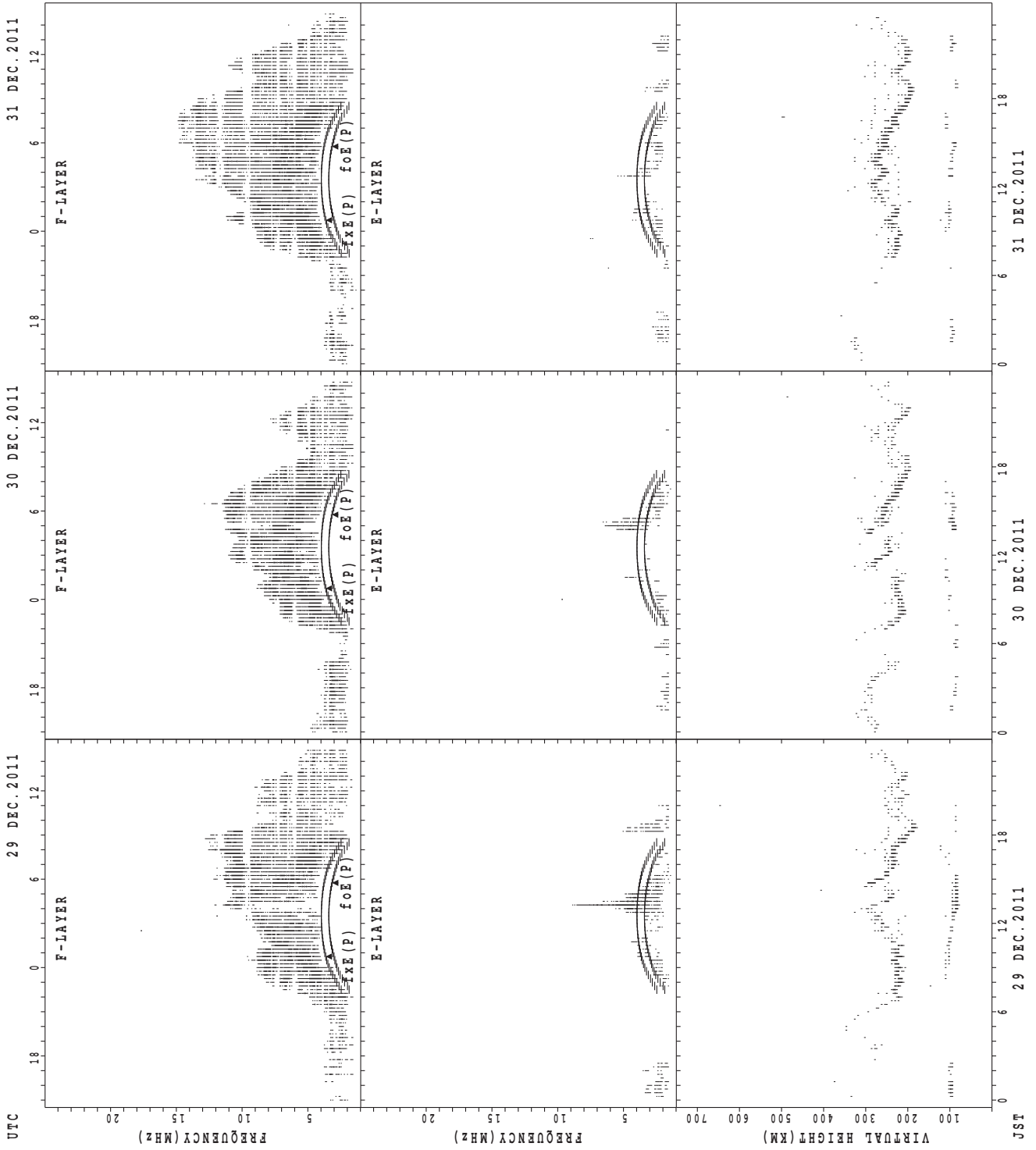
JST

SUMMARY PLOTS AT Okinawa



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

SUMMARY PLOTS AT Okinawa



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

MONTHLY MEDIANS OF h'F AND h'Es
 DEC. 2011 135E MEAN TIME (UTC+9H) AUTOMATIC SCALING

h'F STATION Wakkanai LAT. 45°10.0'N LON. 141°45.0'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								2	26	29	30	28	27	28	31	28	11							
MED								246	222	220	225	222	222	223	224	223	236							
U Q								254	230	227	232	230	230	231	232	231	252							
L Q								238	212	214	222	216	216	217	220	221	228							

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	10	12	7	6	3	3	5	13	20	25	21	15	13	12	17	9	6	10	4	8	8	15	12	7
MED	100	96	97	95	105	101	103	115	119	107	103	105	107	104	107	113	97	97	94	100	98	99	100	101
U Q	103	99	99	97	113	107	109	169	152	113	107	107	113	106	113	144	105	101	96	104	105	103	103	105
L Q	95	91	95	91	95	99	102	103	108	103	103	103	100	102	101	94	89	91	92	96	95	95	95	95

h'F STATION Kokubunji LAT. 35°43.0'N LON. 139°29.0'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								12	29	31	30	31	31	31	31	31	23	5						
MED								240	222	222	230	238	238	238	236	230	232	246						
U Q								246	230	232	238	246	250	244	242	238	240	259						
L Q								237	216	218	224	230	230	230	230	222	224	231						

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	5	6	2		1			2	2	1	5	8	3	2	2	1	4	3	2	3	2	4	1	2
MED	99	96	94		99			126	140	111	111	110	105	104	99	89	97	99	101	103	105	101	103	101
U Q	100	99	97		49			155	169	55	122	113	107	111	109	44	103	101	103	127	105	103	51	101
L Q	98	95	91		49			97	111	55	98	106	99	97	89	44	90	97	99	103	105	98	51	101

h'F STATION Yamagawa LAT. 31°12.0'N LON. 130°37.0'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								20	31	31	31	31	31	31	30	30	31	27	9	1		2		
MED								231	226	232	238	246	246	240	235	238	226	224	230			262		
U Q								239	232	238	244	260	254	246	240	248	232	229	115			284		
L Q								224	222	230	226	238	238	236	230	222	222	220	115			240		

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	5	2	3	5	3	2		1	14	15	17	23	21	17	18	18	19	8	10	10	8	5	2	1
MED	91	93	95	89	97	95		119	128	103	103	105	101	99	101	97	97	89	91	92	101	97	95	95
U Q	100	97	99	93	99	97		59	157	107	108	107	105	105	105	101	107	90	123	99	104	99	103	47
L Q	91	89	93	89	87	93		59	107	101	100	103	99	97	95	91	91	87	89	89	93	93	87	47

MONTHLY MEDIANS OF h'F AND h'Es
 DEC. 2011 135E MEAN TIME (UTC+9H) AUTOMATIC SCALING

h'F STATION Okinawa LAT. 26°41.0'N LON. 128°09.0'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									27	31	31	31	28	31	31	30	30	31	26	16	14	15	8	1
MED									238	230	234	242	256	254	254	246	232	222	213	232	245	254	257	260
U Q									248	242	238	248	267	266	264	254	238	230	220	240	254	268	268	130
L Q									230	228	228	232	246	246	246	238	226	214	206	219	232	238	240	130

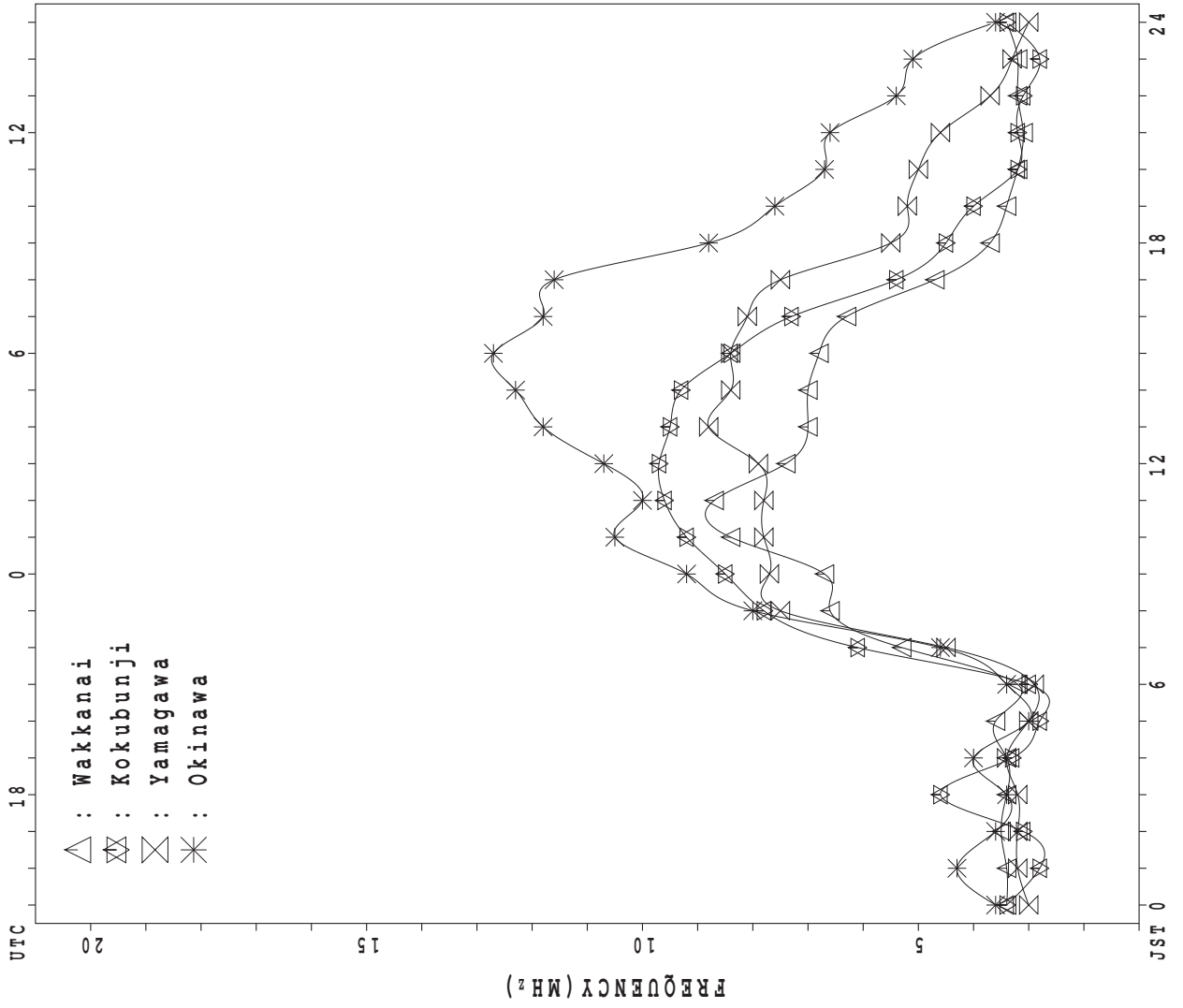
h'Es

	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	1	1	2	1		1	1	1	3	7	4	13	10	14	16	8	11	11	15	15	6	1	3	
MED	99	99	92	89		97	187	103	167	107	108	109	112	105	99	103	97	95	93	97	99	97	97	
U Q	49	49	93	44		48	93	51	169	107	114	117	115	111	105	105	105	135	95	113	103	48	105	
L Q	49	49	91	44		48	93	51	143	105	106	105	109	103	95	98	93	91	89	91	89	48	93	

MONTHLY MEDIANS PLOT OF fOF2

DEC. 2011

AUTOMATIC SCALING



IONOSPHERIC DATA STATION Kokubunji

DEC.2011 f_{XI} (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0'N LON.139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	X 44	X 46	X 43	X 51	X 41	X 43	X 48											X 61	X 54	X 54	X 50	X 41	X 42	X 39
2	X 42	X 42	X 44	X 40	X 40	X 39												X 65	X 64	X 51	X 41	X 38	X 36	X 35
3	X 37	X 40	X 39	X 40	X 44	X 40	X 38											X 72	X 59	X 47	X 44	X 41	X 44	X 38
4	X 38	X 42	X 42	X 45	X 46	X 40	X 41											X 82	X 66	X 55	X 42	X 42	X 40	X 38
5	X 40	X 41	X 42	X 42	X 45	X 43	X 40											X 74	X 56	X 51	X 40	X 41	X 41	X 41
6	X 42	X 40	X 42	X 44	X 44	X 36	X 38											X 64	X 56	X 46	X 42	X 43	X 42	X 41
7	X 42	X 43	X 43	X 44	X 47	X 38	X 40											X 61	X 53	X 43	X 44	X 47	X 37	X 40
8	X 40	X 40	X 41	X 42	X 44	X 36	X 37											X 72	X 44	X 43	X 45	X 42	X 37	X 39
9	X 42	X 42	X 44	X 44	X 46	X 42	X 42											X 65	X 56	X 52	X 48	X 50	X 38	X 43
10	X 40	X 40	X 44	X 46	X 41	X 33	X 36											X 67	X 57	X 57	X 52	X 46	X 36	X 37
11	X 39	X 42	X 43	X 43	X 43	X 33	X 36											X 72	X 57	X 45	X 42	X 41	X 38	X 36
12	X 42	X 42	X 44	X 40	X 41	X 32	X 35											X 59	X 60	X 53	X 42	X 40	X 36	X 36
13	X 38	X 39	X 40	X 39	X 39	X 38												X 72	X 66	X 35	X 44	X 42	X 36	X 34
14	X 38	X 37	X 40	X 38	X 40	X 36	X 38											X 62	X 52	X 45	X 39	X 40	X 40	X 40
15	X 42	X 43	X 42	X 44	X 42	X 37	X 38											X 61	X 51	X 42	X 39	X 36	X 34	X 38
16	X 38	X 40	X 41	X 40	X 42	X 40	X 40											X 61	X 44	X 43	X 37	X 37	X 35	X 36
17	X 38	X 38	X 39	X 39	X 41	X 37	X 39											X 70	X 45	X 44	X 35	X 36	X 34	X 37
18	X 39	X 39	X 39	X 38	X 41	X 36	X 34											X 58	X 53	X 42	X 37	X 36	X 39	X 38
19	X 39	X 39	X 38	X 40	X 40	X 40	X 39											X 59	X 43	X 43	X 40	X 42	X 35	X 35
20	X 40	X 42	X 44	X 46	X 44	X 38	X 43											X 57	X 47	X 43	X 43	X 49	X 36	X 40
21	X 42	X 44	X 44	X 45	X 48	X 41	X 46											X 62	X 51	X 40	X 40	X 42	X 38	X 43
22	X 47	X 50	X 38	X 36	X 33	X 31	X 36											X 71	X 47	X 48	X 44	X 33	X 32	X 36
23	X 43	X 41	X 41	X 43	X 48	X 38	X 36											X 54	X 54	X 49	X 38	X 30	X 32	X 37
24	X 38	X 37	X 39	X 42	X 56	X 28	X 32											X 60	X 60	X 48	X 38	X 28	X 33	X 36
25	X 37	X 37	X 39	X 39	X 42	X 38	X 41											X 56	X 54	X 43	X 35	X 31	X 33	X 34
26	X 36	X 37	X 37	X 40	X 39	X 40	X 46											X 69	X 57	X 40	X 31	X 34	X 33	X 33
27	X 36	X 36	X 38	X 37	X 39	X 37	X 38											X 60	X 48	X 51	X 49	X 32	X 29	X 32
28	X 33	X 35	X 37	X 36	X 37	X 42	X 36											X 60	X 60	X 47	X 39	X 32	X 34	X 36
29	X 37	X 39	X 39	X 40	X 38	X 40	X 39											X 65	X 56	X 60	X 46	X 36	X 38	X 44
30	X 47	X 44	X 39	X 38	X 37	X 38	X 31											X 65	X 52	X 44	X 41	X 41	X 41	X 40
31	X 44	X 48	X 48	X 45	X 43	X 41	X 30											X 62	X 51	X 52	X 37	X 37	X 36	X 38
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	29											31	31	31	31	31	31	31
MED	X	X	X	X	X	X	X											X	X	X	X	X	X	X
U Q	42	42	43	44	44	40	40											70	57	51	44	42	39	40
L Q	X	X	X	X	X	X	X											X	X	X	X	X	X	X
	38	39	39	39	40	36	36											60	51	43	38	36	34	36

DEC.2011 f_{XI} (0.1MHz)

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DEC.2011 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0'N LON.139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	38	40	37	45	35	37	42	72	104	109	131	130	112	114	98	98	79	55	48	48	44	35	35	33
2	36	36	37	34	33	33	35	74	82	92	102	114	103	99	104	95	87	59	58	45	35	32	30	29
3	31	34	33	34	38	33	32	68	95	104	93	107	98	100	106	96	88	66	53	40	38	35	38	32
4	32	36	36	39	39	34	35	81	91	102	106	110	103	108	100	93	87	76	60	49	36	36	34	32
5	34	35	36	36	39	37	34	71	92	98	104	97	110	104	100	91	82	68	49	45	34	35	35	35
6	36	34	36	38	37	30	32	67	82	90	106	105	98	101	95	81	90	58	50	40	36	36	35	35
7	36	37	37	37	41	32	34	70	94	88	97	97	95	90	96	86	79	54	47	37	38	41	31	34
8	34	34	34	36	38	30	31	69	81	91	96	92	103	95	95	89	73	66	38	36	39	36	31	33
9	36	36	38	37	40	36	36	66	85	106	94	105	98	102	88	90	77	59	50	46	42	44	32	37
10	34	34	38	40	35	27	30	64	86	96	96	104	95	102	98	86	71	61	51	50	45	40	30	31
11	33	36	37	37	37	27	30	66	79	103	110	90	112	100	100	84	98	66	51	38	36	34	32	30
12	36	36	38	34	35	26	29	62	91	93	94	106	102	110	108	86	66	53	54	47	36	33	30	30
13	32	33	34	33	33	32	33	66	81	80	86	98	104	96	97	77	74	66	60	28	38	36	30	28
14	32	31	34	32	34	30	32	59	77	85	101	101	102	90	90	84	72	56	46	39	33	34	33	34
15	36	36	36	37	36	30	32	60	78	89	92	92	97	90	81	82	61	55	45	36	33	29	28	31
16	32	34	35	34	36	34	34	61	79	86	84	86	91	113	99	73	72	55	38	37	31	31	29	30
17	31	32	33	33	35	31	33	57	70	79	83	77	87	114	98	72	71	64	39	38	29	30	28	31
18	33	33	33	32	35	30	28	58	76	75	91	92	128	83	92	76	75	51	47	36	31	30	33	32
19	33	32	32	34	34	34	33	64	76	80	84	82	83	83	84	76	78	53	37	37	34	36	29	29
20	34	36	38	40	38	32	37	63	81	82	100	86	92	92	78	82	73	50	41	37	37	43	30	34
21	36	38	38	39	41	35	40	70	72	85	91	101	104	94	80	84	71	56	46	34	34	36	32	37
22	41	44	32	29	26	25	30	56	82	80	98	94	96	89	85	84	75	65	40	42	38	26	26	30
23	37	35	35	37	42	32	30	61	71	79	80	94	98	97	84	80	76	48	48	43	32	24	26	31
24	34	31	33	36	50	22	26	54	72	79	85	102	99	79	75	72	66	54	53	42	32	22	27	30
25	31	31	32	33	36	32	35	58	68	72	88	90	86	76	84	86	74	49	48	37	28	25	27	28
26	30	30	31	34	33	34	40	60	72	72	81	87	86	80	82	83	64	62	51	34	25	28	27	27
27	30	30	32	31	33	30	32	49	64	75	75	84	90	85	84	88	69	54	42	45	42	26	22	25
28	27	29	30	30	31	36	30	55	63	71	74	80	77	79	74	74	66	54	54	41	33	26	28	30
29	30	33	33	33	32	33	34	56	75	80	78	85	86	75	94	90	72	58	50	54	40	30	32	37
30	41	38	33	32	31	32	25	47	70	78	90	99	80	78	87	80	66	58	46	38	35	35	34	34
31	38	42	42	38	36	35	24	51	65	90	100	98	113	103	98	86	76	56	45	46	31	30	30	32
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	34	34	35	34	36	32	32	62	79	85	93	97	98	95	94	84	74	56	48	40	35	34	30	31
U Q	36	36	37	37	38	34	35	68	85	93	100	104	103	102	98	89	79	64	51	45	38	36	33	34
L Q	32	32	33	33	33	30	30	57	72	79	84	87	90	83	84	80	71	54	45	37	32	29	28	30

DEC.2011 foF2 (0.1MHz)

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DEC.2011 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0'N LON.139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1												L												
2												L												
3														L	L									
4														L										
5																								
6																								
7																								
8											L		L											
9												L	L											
10												L	L	L										
11													L											
12														L										
13													L	L										
14																								
15													L											
16										L					A									
17													L	L										
18												L	A											
19																								
20												L	L	L										
21													L											
22											L													
23																								
24												L												
25															A									
26												L	L											
27													L		L									
28												L		L										
29												L												
30											L	L	L		L									
31											L	L	U L											
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT													1											
MED													U L											
U Q													512											
L Q																								

DEC.2011 foF1 (0.01MHz)

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IONOSPHERIC DATA STATION Kokubunji

DEC.2011 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0'N LON.139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								B	R	R	A	R	A	R	R	R	R							
2							B	B	R	R	A	A	A	R	A	A	A							
3								B	A	A	A	A	A	A	A	A	B							
4								B	A	A	R	A	A	A	R	R	R							
5									A	A	A	A	A	R	R	R	R							
6								180	B	R	A	R	A	A	R	R	R	A						
7								B	R	R	A	R	R	R	R	R	R							
8									R	R	R	R	R	R	R	R	R							
9								188	B		R	R	A	A	R	R	R	R						
10									264		R	R	R	R	R	R	R							
11								B	R	R	A	R	R	R	R	R	R							
12								B	A	A	A	A	R	R	A	R	B							
13							B	B		R	R	R	R	R	R	R	R							
14								B	R	R	R	A	A	R	R	R	B							
15								A	R	R	R	R	A	A	R	R	B							
16								B	R	R	R	A	A	A	R	R	R							
17								B		R	A	A	A	R	R	R	B							
18								B	R	A	A	R	R	A	R	R	A							
19								B	R	U	R	R	R	A	R	R	B							
20								B	R	A	A	A	A	A	A	R	R							
21								B	A	A	A	A	R	A	R	A	R							
22								B	U	R	A	A	A	R	R	R	R							
23								B	A	A	A	A	R	A	A	R	R							
24								B	R	R	A	R	R	A	A	A	R							
25								B	U	R	R	A	R	R	A	R	A							
26								B	R	A	A	R	R	R	R	R	R							
27								B	U	R	R	A	A	R	A	R	R							
28								B	A	A	A	A	R	R	R	R	A							
29								B	A	A	A	R	R	R	R	R	B							
30								B	R	R	R	R	R	A	R	R	R							
31								B		A	A	A	A	R	A	A	A							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								2	8	1														
MED								184	256	288														
U Q								U	R															
L Q								266																
								248																

DEC.2011 foE (0.01MHz)

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IONOSPHERIC DATA STATION Kokubunji

DEC.2011 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0'N LON.139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
2	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
3	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
4	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
5	J	A	J	A	J	A	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
6	J	A	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
7	J	A	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
8	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
9	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
10	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
11	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
12	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
13	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
14	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
15	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
16	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
17	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
18	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
19	J	A	J	A	J	A	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
20	J	A	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
21	J	A	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
22	J	A	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
23	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
24	J	A	J	A	J	A	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
25	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
26	J	A	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
27	J	A	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
28	J	A	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
29	J	A	J	A	J	A	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
30	J	A	J	A	J	A	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
31	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
UQ	J	A	J	A	J	A	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
LQ	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B

DEC.2011 foEs (0.1MHz)

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DEC.2011 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0'N LON.139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1	E	BE	BE	BE	BE	BE	BE	B	G	G		G		G	G	G	GE	B			E	BE	BE	BE	BE	B
2	E	BE	BE	BE	BE	BE	BE	B	G	G		G		G	G	G	GE	B			E	BE	BE	BE	BE	B
3	E	BE	BE	BE	BE	BE	BE	B													E	BE	BE	BE	BE	B
4	E	BE	BE	BE	BE	BE	BE	B													E	BE	BE	BE	BE	B
5	E	BE	BE	BE	BE	BE	BE	B													E	BE	BE	BE	BE	B
6	E	BE	BE	BE	BE	BE	BE	B													E	BE	BE	BE	BE	B
7	E	BE	BE	BE	BE	BE	BE	B													E	BE	BE	BE	BE	B
8	E	BE	BE	BE	BE	BE	BE	B													E	BE	BE	BE	BE	B
9	E	BE	BE	BE	BE	BE	BE	B													E	BE	BE	BE	BE	B
10	E	BE	BE	BE	BE	BE	BE	B													E	BE	BE	BE	BE	B
11	E	BE	BE	BE	BE	BE	BE	B													E	BE	BE	BE	BE	B
12	E	BE	BE	BE	BE	BE	BE	B													E	BE	BE	BE	BE	B
13	E	BE	BE	BE	BE	BE	BE	B													E	BE	BE	BE	BE	B
14	E	BE	BE	BE	BE	BE	BE	B													E	BE	BE	BE	BE	B
15	E	BE	BE	BE	BE	BE	BE	B													E	BE	BE	BE	BE	B
16	E	BE	BE	BE	BE	BE	BE	B													E	BE	BE	BE	BE	B
17	E	BE	BE	BE	BE	BE	BE	B													E	BE	BE	BE	BE	B
18	E	BE	BE	BE	BE	BE	BE	B													E	BE	BE	BE	BE	B
19	E	BE	BE	BE	BE	BE	BE	B													E	BE	BE	BE	BE	B
20	E	BE	BE	BE	BE	BE	BE	B													E	BE	BE	BE	BE	B
21	E	BE	BE	BE	BE	BE	BE	B													E	BE	BE	BE	BE	B
22	E	BE	BE	BE	BE	BE	BE	B													E	BE	BE	BE	BE	B
23	E	BE	BE	BE	BE	BE	BE	B													E	BE	BE	BE	BE	B
24	E	BE	BE	BE	BE	BE	BE	B													E	BE	BE	BE	BE	B
25	E	BE	BE	BE	BE	BE	BE	B													E	BE	BE	BE	BE	B
26	E	BE	BE	BE	BE	BE	BE	B													E	BE	BE	BE	BE	B
27	E	BE	BE	BE	BE	BE	BE	B													E	BE	BE	BE	BE	B
28	E	BE	BE	BE	BE	BE	BE	B													E	BE	BE	BE	BE	B
29	E	BE	BE	BE	BE	BE	BE	B													E	BE	BE	BE	BE	B
30	E	BE	BE	BE	BE	BE	BE	B													E	BE	BE	BE	BE	B
31	E	BE	BE	BE	BE	BE	BE	B													E	BE	BE	BE	BE	B
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	
MED	E	BE	BE	BE	BE	BE	BE	B	G	G				G	G		G	GE	BE	BE	BE	BE	BE	BE	BE	B
UQ	16	15	15	15	15	15	15	20	29	32	36	38	36	35	32		22	17	15	15	15	16	15	15	15	
LQ	E	BE	BE	BE	BE	BE	BE	B	G	G				G	G		G	GE	BE	BE	BE	BE	BE	BE	BE	B

DEC.2011 fbEs (0.1MHz)

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IONOSPHERIC DATA STATION Kokubunji

DEC.2011 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0'N LON.139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

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

DEC.2011 fmin (0.1MHz)

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DEC.2011 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0'N LON.139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	285	283	293	314	287	295	317	335	349	329	334	326	313	329	325	352	355	336	334	326	312	312	298	294
2	302	290	286	284	324	320	305	361	370	363	344	346	342	334	346	330	378	341	333	336	316	318	305	290
3	283	271	281	295	321	325	319	351	349	368	340	342	333	321	333	335	345	351	339	328	312	317	330	279
4	288	278	306	298	332	306	307	366	373	360	343	340	338	321	333	349	336	344	328	346	338	310	315	278
5	278	282	289	305	314	333	305	357	369	359	349	334	342	330	310	331	361	354	326	318	341	307	283	286
6	283	291	293	298	316	352	325	363	359	350	342	332	332	326	346	370	344	338	341	323	314	316	293	283
7	280	291	308	306	332	302	307	360	365	367	354	350	336	340	318	352	336	340	345	330	318	322	319	288
8	303	291	309	298	325	325	312	350	366	351	341	351	343	341	331	344	323	364	319	315	331	331	300	288
9	291	309	295	308	328	297	324	359	341	371	350	339	334	343	328	335	341	335	328	328	324	338	301	286
10	292	288	286	316	343	342	309	341	345	366	333	337	325	314	323	337	343	325	311	323	343	343	308	299
11	290	290	288	305	355	300	314	359	355	336	345	317	331	327	343	312	342	330	362	338	324	299	290	289
12	289	306	327	333	343	301	291	342	358	355	333	330	326	334	348	362	362	346	344	349	308	314	304	294
13	289	293	314	308	311	300	335	360	376	344	344	337	338	339	351	332	351	343	353	369	338	333	309	290
14	294	303	314	305	338	308	328	352	364	352	349	339	355	337	346	364	357	360	356	345	320	331	282	274
15	296	303	299	326	352	321	337	360	355	352	349	353	344	328	342	370	361	342	350	369	340	327	302	286
16	294	307	305	308	309	310	334	352	364	366	358	339	323	329	332	352	358	353	342	360	336	315	298	283
17	294	294	295	298	315	308	332	351	366	373	382	341	324	341	341	349	354	366	329	332	345	328	265	278
18	306	304	298	299	326	310	331	363	377	377	354	339	351	323	357	358	345	359	353	350	324	297	289	289
19	280	289	290	323	310	308	331	359	382	376	353	357	333	326	351	335	366	368	338	352	333	342	338	287
20	288	294	311	336	333	305	303	356	363	368	362	359	328	354	342	339	356	328	346	340	315	312	309	304
21	282	288	309	304	342	306	324	377	378	370	353	359	332	356	338	350	368	332	352	329	309	309	274	289
22	293	344	334	339	351	301	322	348	370	346	359	346	350	348	336	349	340	354	344	321	373	321	298	276
23	280	277	279	309	345	363	327	354	369	360	329	338	335	345	363	347	373	327	352	354	345	300	292	288
24	315	292	304	314	370	349	306	339	369	364	350	342	372	349	337	350	354	341	364	369	346	335	274	284
25	301	286	290	321	323	307	330	367	377	358	363	346	352	332	342	358	362	331	346	350	330	307	291	305
26	295	306	313	314	309	327	363	382	380	365	356	360	354	352	343	379	358	353	362	385	314	321	289	298
27	278	281	304	318	336	332	369	362	378	387	357	350	352	335	337	363	366	344	343	349	373	337	275	284
28	280	289	298	296	306	327	357	375	374	372	362	350	324	350	335	361	372	327	366	346	355	315	294	282
29	298	291	306	304	284	301	334	352	368	363	370	352	350	333	347	341	350	340	332	348	327	317	267	297
30	307	326	308	288	311	316	370	345	364	367	339	351	350	340	341	353	355	334	349	349	330	328	331	303
31	320	312	326	276	285	319	377	345	370	350	334	328	335	331	329	351	347	367	324	352	317	326	297	314
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	291	291	304	306	325	310	325	357	368	363	349	342	336	334	341	350	355	342	344	346	330	318	298	288
U Q	298	304	309	316	342	327	334	362	374	368	357	351	350	343	346	358	362	354	352	352	341	331	308	294
L Q	283	288	290	298	311	302	309	350	359	352	341	337	331	328	332	337	344	334	332	328	316	312	289	283

DEC.2011 M(3000)F2 (0.01)

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DEC. 2011 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 35°43.0'N LON. 139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1												L												
2												L												
3														L	L									
4														L										
5																								
6																								
7																								
8											L		L											
9												L	L											
10												L	L	L										
11													L											
12														L										
13													L	L										
14																								
15													L											
16										L					A									
17													L	L										
18												L	A											
19																								
20												L	L	L										
21													L											
22											L													
23																								
24												L												
25															A									
26												L	L											
27													L		L									
28												L		L										
29												L												
30											L	L	L		L									
31											L	L	U L											
													344											
CNT													1											
MED													U L											
U Q													344											
L Q																								

DEC. 2011 M(3000)F1 (0.01)

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DEC.2011 h'F2 (KM)

135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0'N LON.139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1												252												
2												254												
3														268	258									
4														266										
5																								
6																								
7																								
8											250		248											
9												256	244											
10												250	234	288										
11													256											
12														240										
13													244	246										
14																								
15													252											
16										226				256										
17													270	256										
18												270	256											
19																								
20												226	246	244										
21													250											
22											248													
23																								
24												254												
25														224										
26												254	236											
27													252		244									
28												252		244										
29												250												
30												254	254	226		254								
31												262		256										
	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	4	11	14	10	3								
MED											226	252	254	249	251	254								
U Q											258	254	256	266	258									
L Q											249	250	244	244	244									

DEC.2011 h'F2 (KM)

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DEC.2011 h'E (KM)

135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0'N LON.139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1								B			A		A												
									126	124		118		120	118	114	120								
2							B	B					A		A	A	A								
									122	122	118	118		114											
3								B				A		A	A	A	B								
									122	120	118		122												
4								B		A		A	A		A		122	122	122						
									124		122					122	122	122							
5										A	A	A	A			118	120	116	124						
								122	126																
6								B		A		A	A				A								
									122		122				114	116	120								
7								B			A														
									124	122		114	118	118	120	120	122								
8									126	118	118	120	120	120	124	116	114	120							
								B				A	A												
9									116	116	118			114	118	120	126								
								B								B									
10									116	126	122	116	114	116			116	118							
								B																	
11									122	114	116	112	120	116	116	120	128								
								B			A	A			A		B								
12									120	122			120	120		120									
							B	B																	
13									112	118	118	118	118	120	120	120	134								
								B				A					B								
14									118	120	112		112	112	114	120									
								A					A	A			B								
15									118	114	124	118			120	118									
								B				A	A	A											
16									124	124	118				114	112	114								
								B			A	A	A				B								
17									114	118				114	112	118									
								B			A			A			A								
18									120	122		124	122		116	112									
								B						A			B								
19									120	122	122	122	120		120	110									
								B			A	A	A	A	A										
20									118	124						120	118								
								B		A	A	A			A		A								
21									114				114		114		120								
								B		A	A	A													
22									120				116	114	118	120	120								
								B		A	A	A		A	A										
23									116				120			116	118								
								B			A			A	A										
24									114	118		118	118			118	120								
								B			A			A			A								
25									118	118		118	118		118	116									
								B		A	A														
26									114			114	112	112	112	114	110								
								B			A	A		A											
27									118	122			122		124	124	122								
								B	A	A	A	A		112	120	118	114								
28										A	A														
								B	A	A	A														
29												118	118	118	120	120									
								B						A											
30									116	116	114	114	118		120	120	112								
								B		A	A	A	A		A	A	A								
31									116					114											
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT								2	29	21	14	15	20	18	23	27	18								
MED								124	118	120	118	118	118	116	118	118	120								
U Q									122	122	122	118	120	120	120	120	122								
L Q									116	118	118	114	115	114	116	114	118								

DEC.2011 h'E (KM)

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IONOSPHERIC DATA STATION Kokubunji

DEC.2011 h'Es (KM)

135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0'N LON.139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D	H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	B	B	B	B	B	B	B	B	124	106	108	106	106	108	106	102	102	G	B	106	104	110	104	102	96
2	B	B	B	94	B	B	B	98	142	108	104	124	122	108	98	90	96	102	104	102	100	B	116	100	B
3	B	102	100	100	98	B	B	B	156	128	114	120	110	122	104	108	106	106	B	B	B	B	B	B	B
4	B	102	B	B	98	B	B	B	150	120	108	104	108	108	104	106	106	G	B	B	B	106	102	94	100
5	100	98	96	B	B	B	B	B	162	118	102	108	108	102	104	104	G	G	B	B	116	B	B	B	B
6	104	B	98	B	96	B	B	B	146	106	106	106	106	104	98	G	G	96	94	92	B	84	B	B	B
7	100	98	B	98	B	B	B	B	148	110	108	108	106	110	104	108	106	G	102	B	B	B	B	B	B
8	B	B	B	B	B	B	B	B	G	G	102	104	104	102	G	G	G	G	B	B	B	B	B	110	B
9	B	B	B	B	B	B	B	B	158	156	G	108	104	104	104	104	104	G	B	B	B	B	B	B	B
10	B	96	B	B	B	B	B	B	152	160	106	G	G	104	106	B	G	G	B	B	B	B	B	B	B
11	B	B	B	B	B	B	B	B	146	G	98	118	G	108	104	104	102	G	B	B	B	B	B	B	B
12	B	B	B	B	B	B	B	B	146	120	112	102	104	104	G	110	104	136	90	B	B	B	B	B	B
13	B	B	B	B	B	B	B	92	142	G	102	106	108	108	106	104	106	G	B	B	B	B	B	B	B
14	B	B	B	B	100	B	B	B	G	G	G	108	110	G	104	102	B	90	B	B	B	B	B	B	B
15	B	98	B	B	94	94	96	96	G	G	G	G	106	104	104	106	128	B	B	B	B	B	B	B	B
16	B	B	B	B	B	B	B	B	136	G	106	106	104	104	100	102	100	G	92	90	88	88	B	B	B
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18	B	B	B	B	B	B	B	B	108	124	104	G	104	102	94	88	100	98	102	104	B	B	104	102	B
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20	100	B	B	B	96	B	B	B	G	124	104	100	106	106	102	108	G	102	B	B	B	106	98	94	96
21	96	96	96	100	100	104	B	144	114	104	106	100	98	102	98	108	G	B	B	98	96	B	B	B	B
22	104	B	B	B	B	B	B	136	G	108	106	104	G	G	G	110	G	B	B	B	B	B	B	B	B
23	B	B	100	94	B	B	B	B	116	108	104	108	G	106	106	G	G	B	B	B	B	B	106	102	B
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25	B	B	B	B	B	B	B	B	G	104	106	G	G	108	106	98	94	96	96	94	B	B	B	B	B
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27	100	102	102	102	102	B	B	B	G	108	108	108	G	104	108	110	G	B	B	122	94	B	106	100	B
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	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	13	14	10	9	9	5	5	17	19	27	27	24	24	25	25	24	11	13	10	11	11	11	11	11	8
MED	100	99	99	98	98	102	98	146	110	106	106	105	104	104	104	105	100	98	98	98	98	96	102	100	99
U Q	103	102	100	100	99	103	102	151	120	108	108	108	108	108	105	106	106	106	102	102	104	106	104	104	100
L Q	99	96	96	94	95	96	94	136	106	104	104	103	104	102	99	99	92	92	94	94	94	92	98	94	96

DEC.2011 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

DEC.2011 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0'N LON.139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC 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								C2	L2	L2	L2	L2	L2	L2	L2				F1	F2	F2	F1	F1	F2	
2				F1			L1	H2	L1	L2	CL22	CL22	L2	L2	L3	L2	L2	F3	F3	F1		F2	F1		
3		F1	F1	F2	F2			H1	CL21	CL22	CL22	L2	CL22	L2	L2	L2	L2					F2			
4		F1			F1			H2	CL11	L2	L2	L2	L3	L1	L2	L2					F2	F3	F2	F1	
5	F1	F2	F1					H1	CL11	L2	L1	L2	L3	L2	L2					F2					
6	F1		F1		F2			H2	L1	L2	L2	L2	L2		L2		L2	F2	F2		F2				
7	F2	F1		F1				H1	L2	L2	L2	L2	L2	L2	L1	L1		F1							
8										L2	L2	L2	L2										L2		
9								H1	H1		L2	L2	L2	L2	L2	L2									
10		F1						H2	H1	L2			L1	L1											
11								H2		L1	CL22		L2	L2	L2	L2									
12								H2	C2	CL12	L2	L2	L1		L2	L3	H2	F2							
13							L2	H2		L2	L2	L2	L2	L2	L2	L2									
14					F2							L2	CL21		L2	L2		F1							
15		F3			F2	F2	F1	L2					L2	L2	L2	L1	C2								
16								H2		L2	L1	L2	L2	L3	L2	L2		F2	F2	F1	F1				
17									H1	L2	L1	L2	L2	L2								F1			
18									L2	CL12	L2	L2	L2	L2	L2	L2	L2	F3	F4	F3	F3	F3	F2	F1	
19	F2	F2	F2	F2	F2				L2	L2	L2	L2	L2	L2	L2	L2	L3	F1	F1			F1			
20	F2				F2					CL22	L2	L2	L2	L2	L2	L1		F3			F2	F2	F1	F2	
21	F2	F2	F1	F2	F2	F1		H2	C2	L2	L3	L3	L2	L2	L2	L2				F1	F1				
22	F1							H2		L2	L1	L2				L1									
23			F1	F2					C1	L2	L2	L2		L1	L2							F2	F2		
24	F2	F1	F1	F1						L2	L2			L1	L2	C1									
25										L2	L2			L2	L1	L2	L3	F3	F2	F2					
26	F1	F1			F1	F2				L2	L2	L2	L2	L2	L2	L3	L2	F2		F1	F1	F2			
27	F1	F1	F1	F1		F1				L2	L2	L1		L2	L2	L2				F2	F1	F1	F1	F3	
28	F3	F1						L2	L2	L2	L2	L2			L2	L2	L2	F2	F1	F1	F2	F3		F3	
29	F1	F1	F1			F1		L2	L2	L2	L2	L2	L2	L2	L2	L2			F1				F1	F1	
30	F2	F2	F3	F1		F1	F1	L2	L2					L2	L1			F1	F1	F2	F2	F2	F2	F1	
31								L2	L2	L2	L2	L2	L2	L2	L2	L2	L2								
	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																									

f-PLOTS OF IONOSPHERIC DATA

KEY OF f-PLOT	
	SPREAD
◊	f _o F ₂ , f _o F ₁ , f _o E
×	f _x F ₂
*	DOUBTFUL f _o F ₂ , f _o F ₁ , f _o E
⊗	f _b E _s
└	ESTIMATED f _o F ₁
†, ‡	f _{min}
^	GREATER THAN
∨	LESS THAN

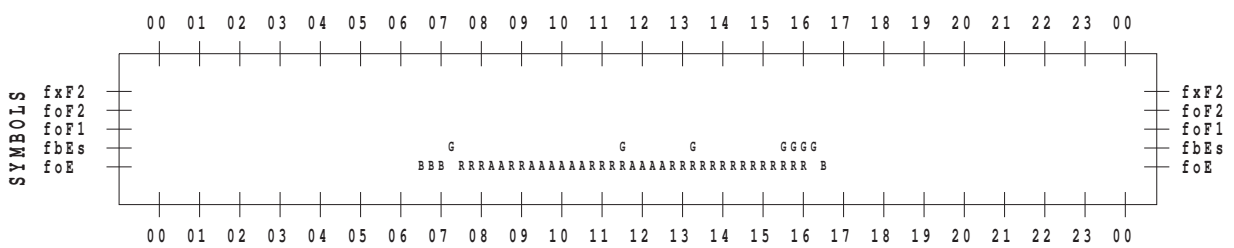
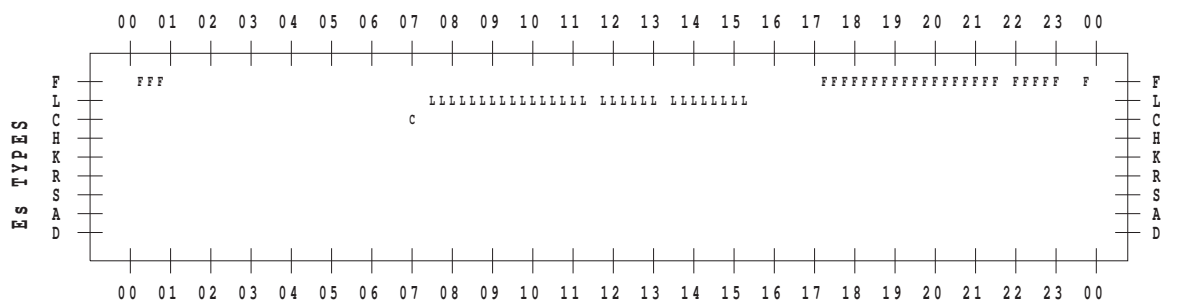
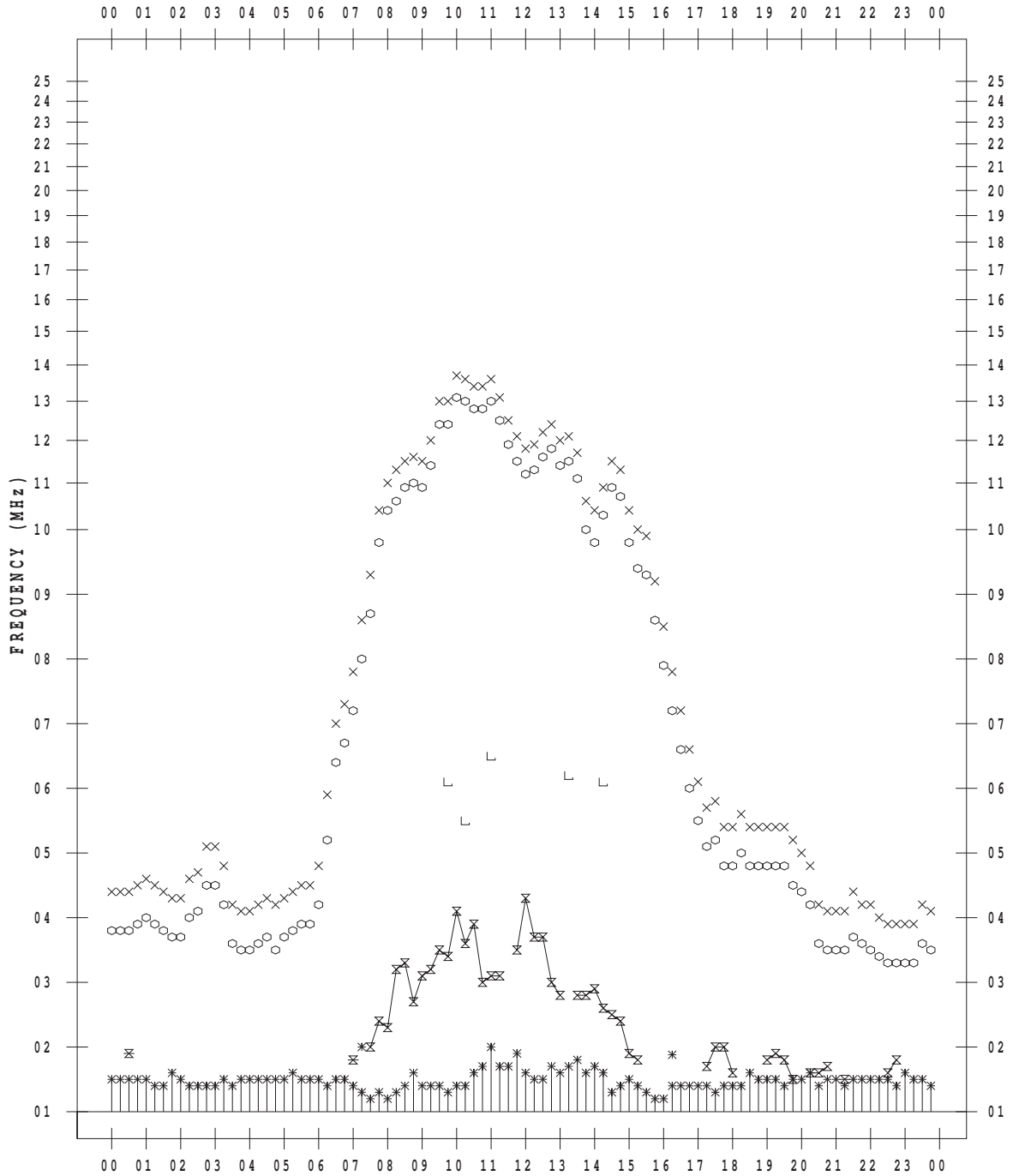
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/12/ 1

135 ° E MEAN TIME



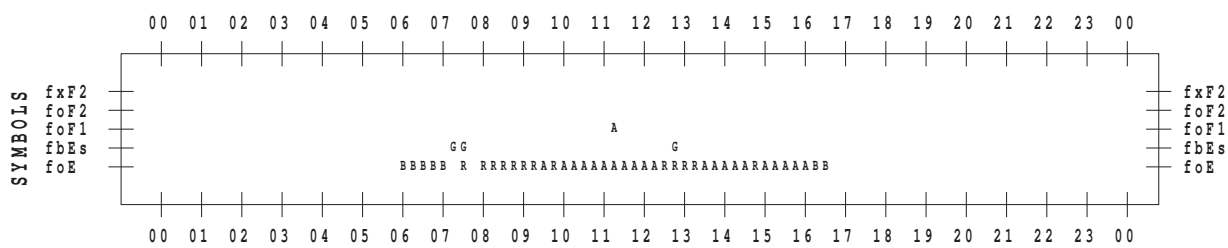
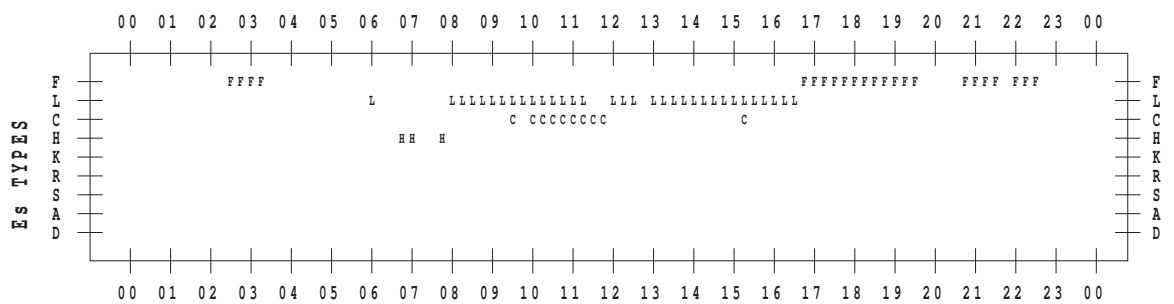
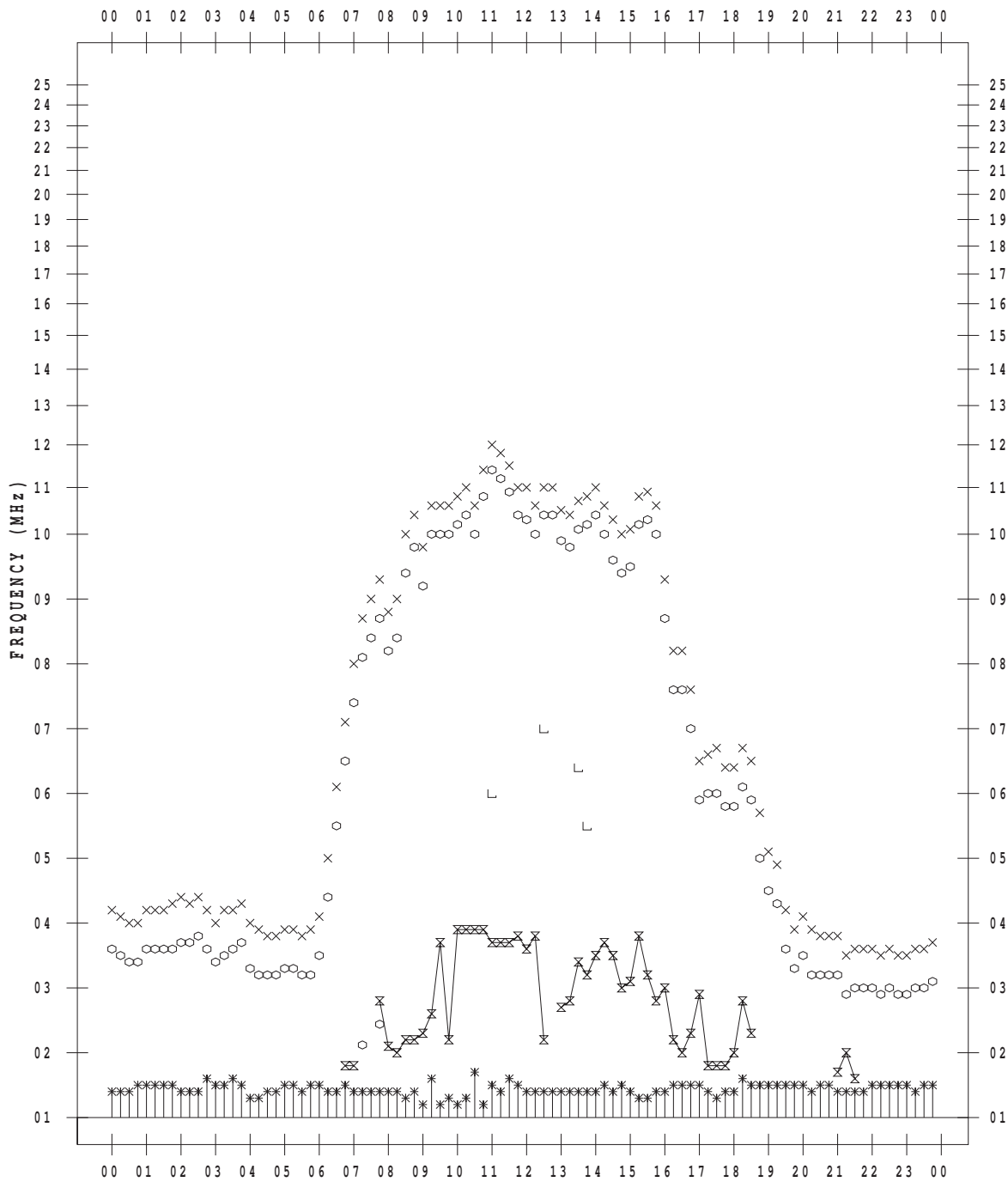
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/12/ 2

135 ° E MEAN TIME



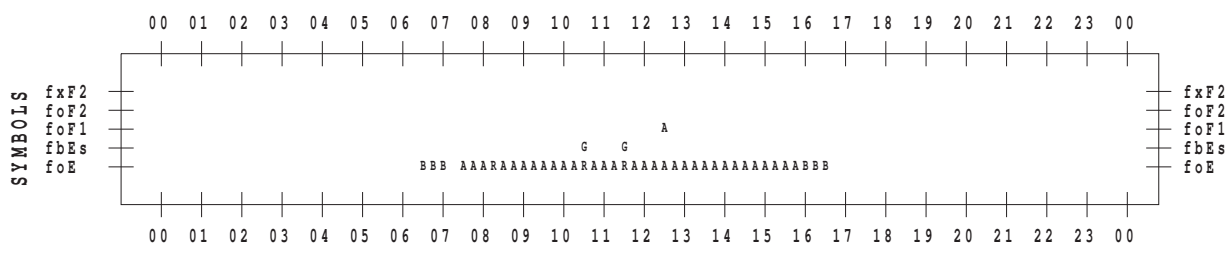
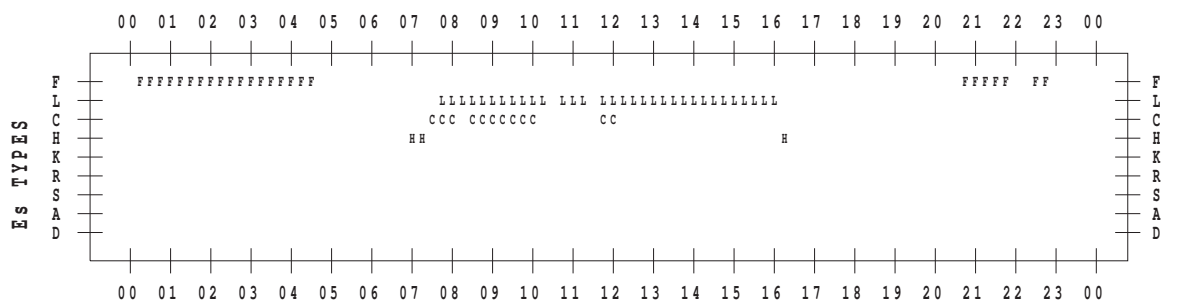
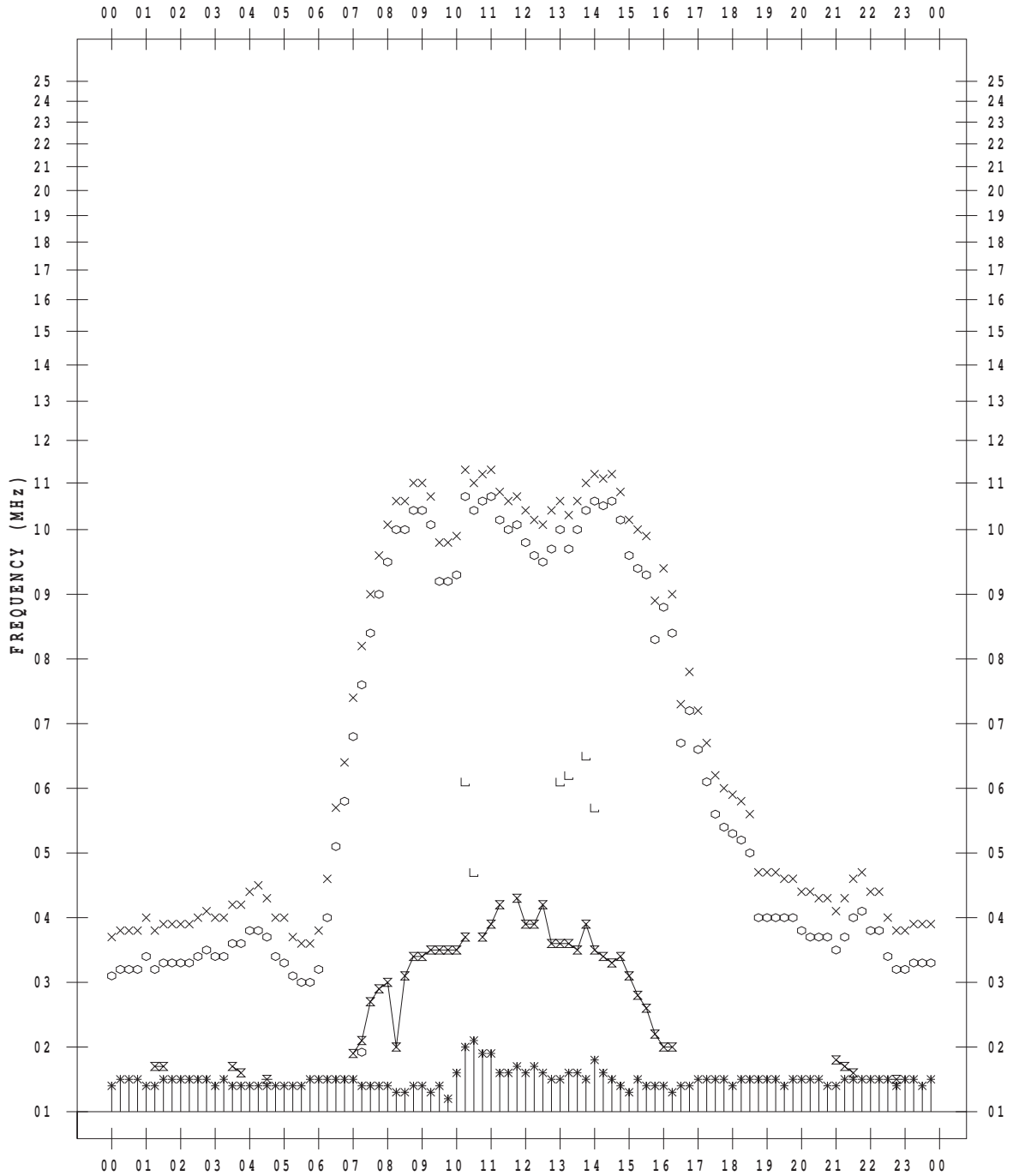
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/12/ 3

135 ° E MEAN TIME



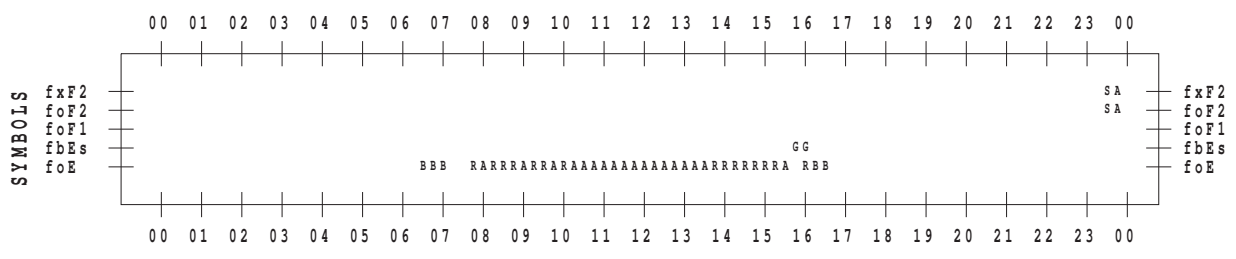
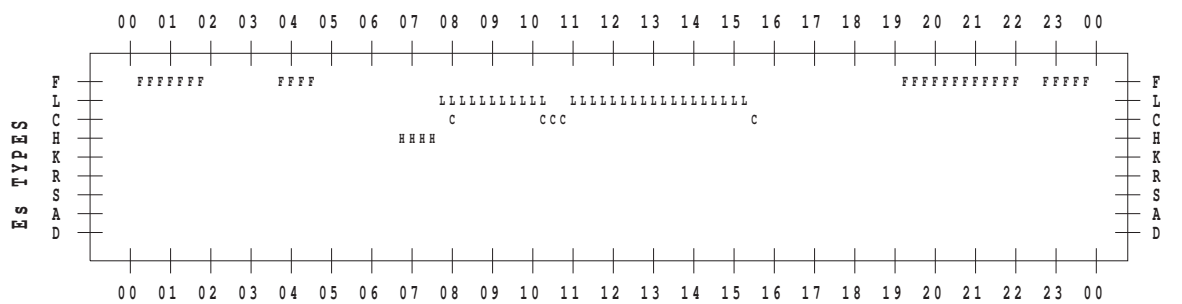
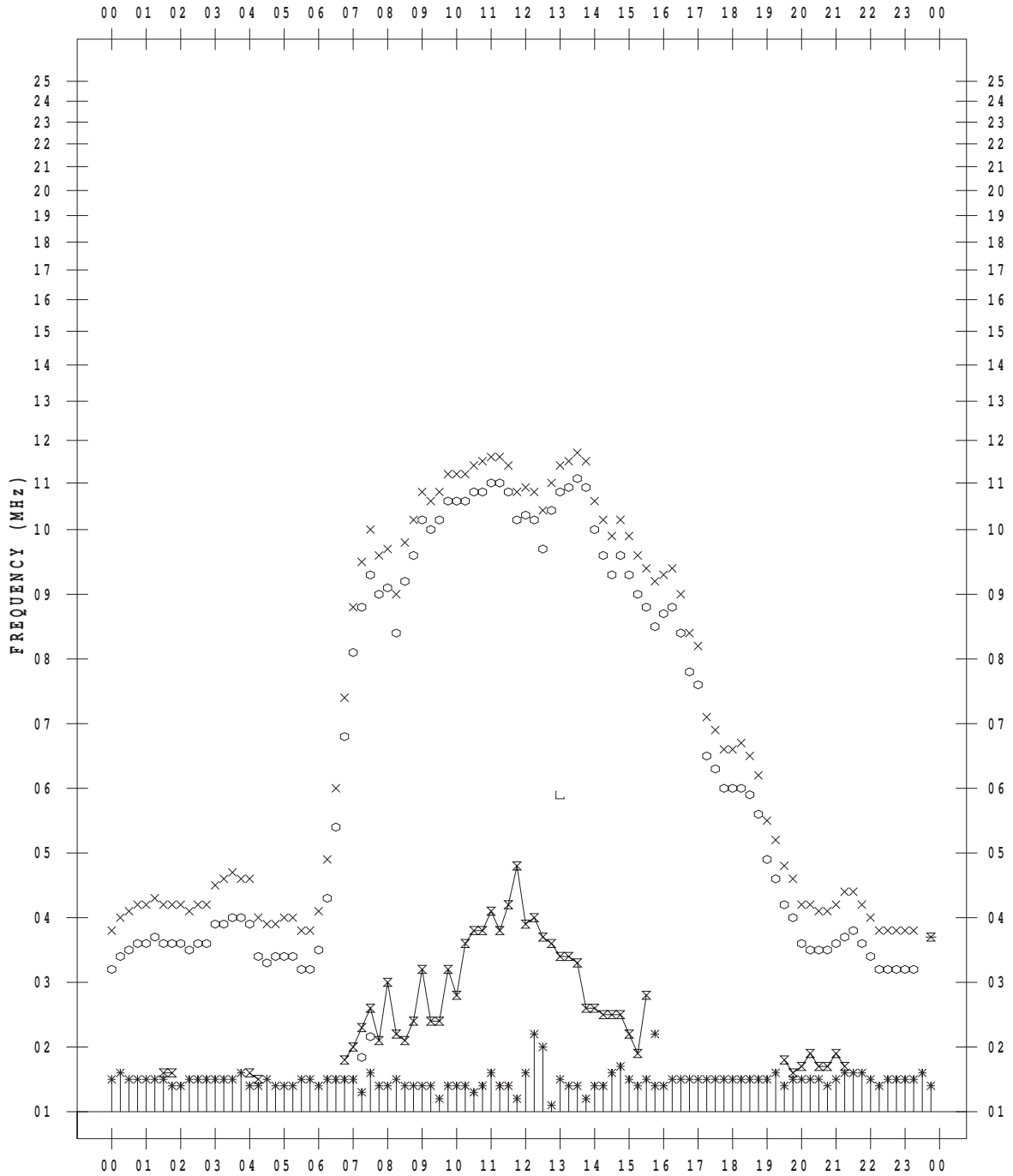
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/12/ 4

135 ° E MEAN TIME



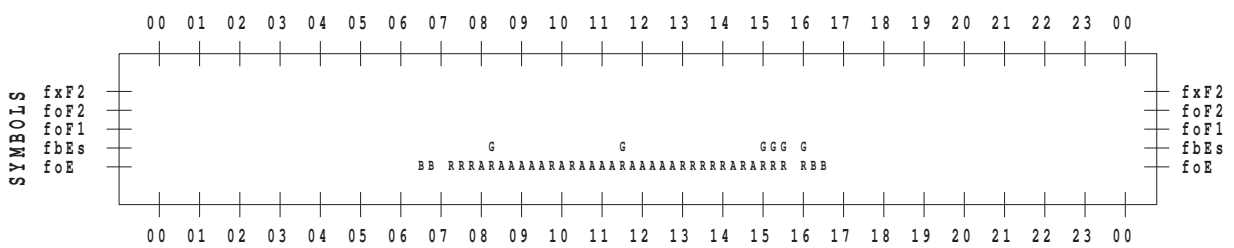
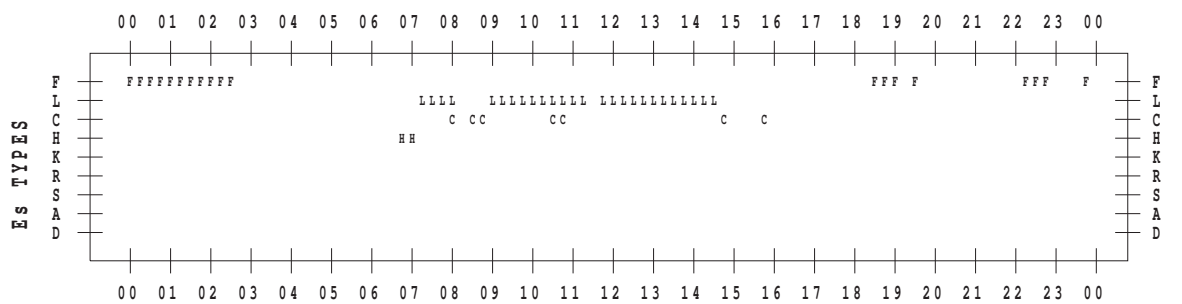
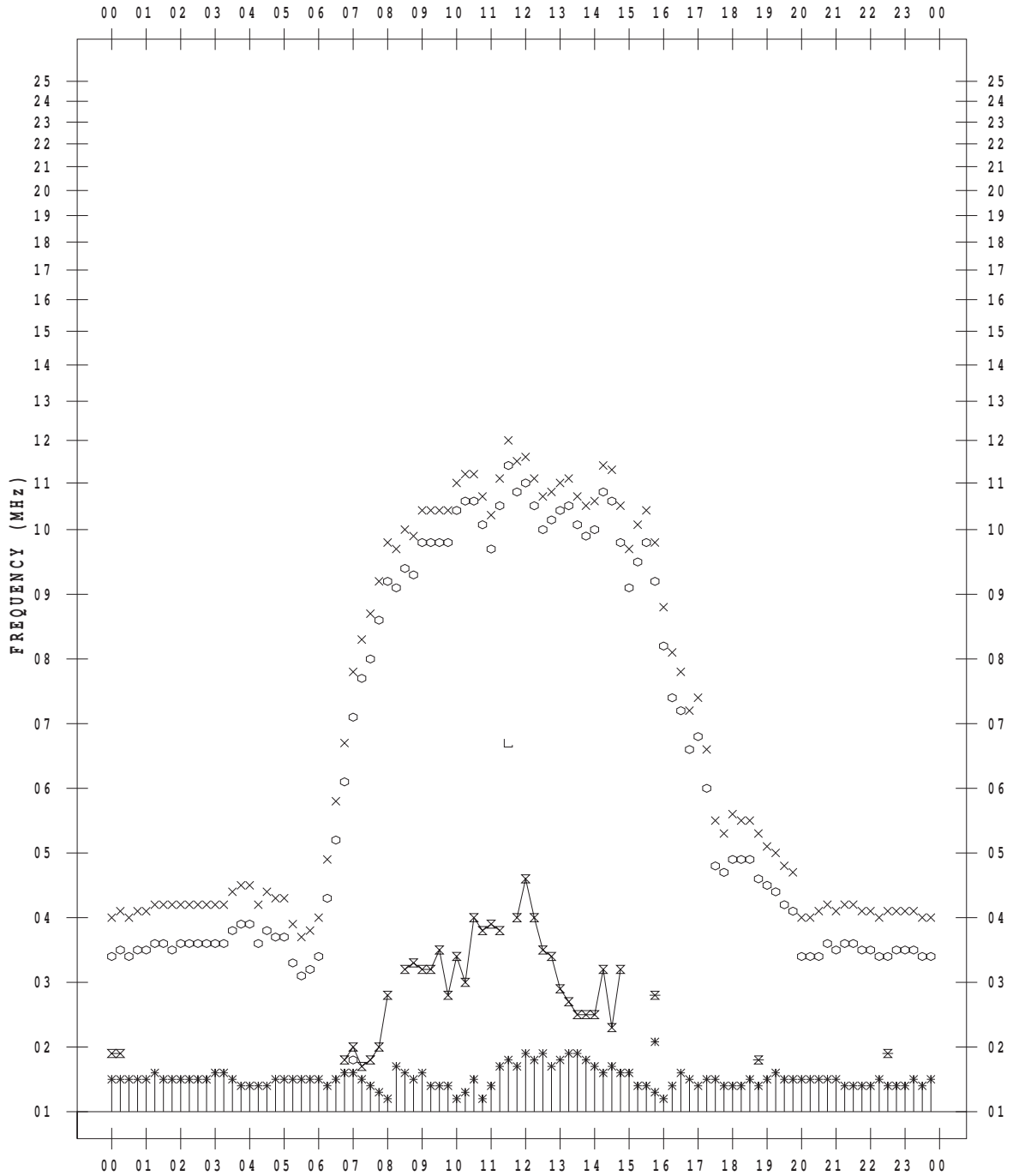
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/12/ 5

135 ° E MEAN TIME



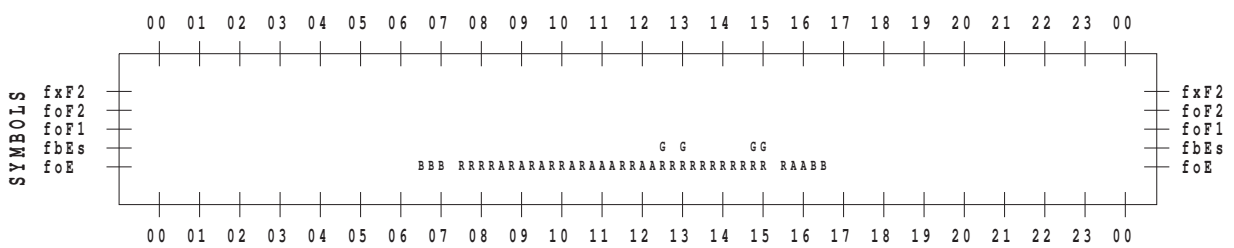
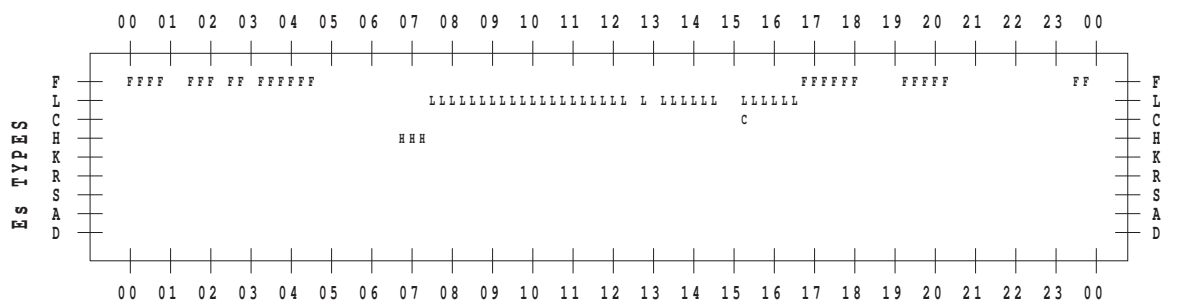
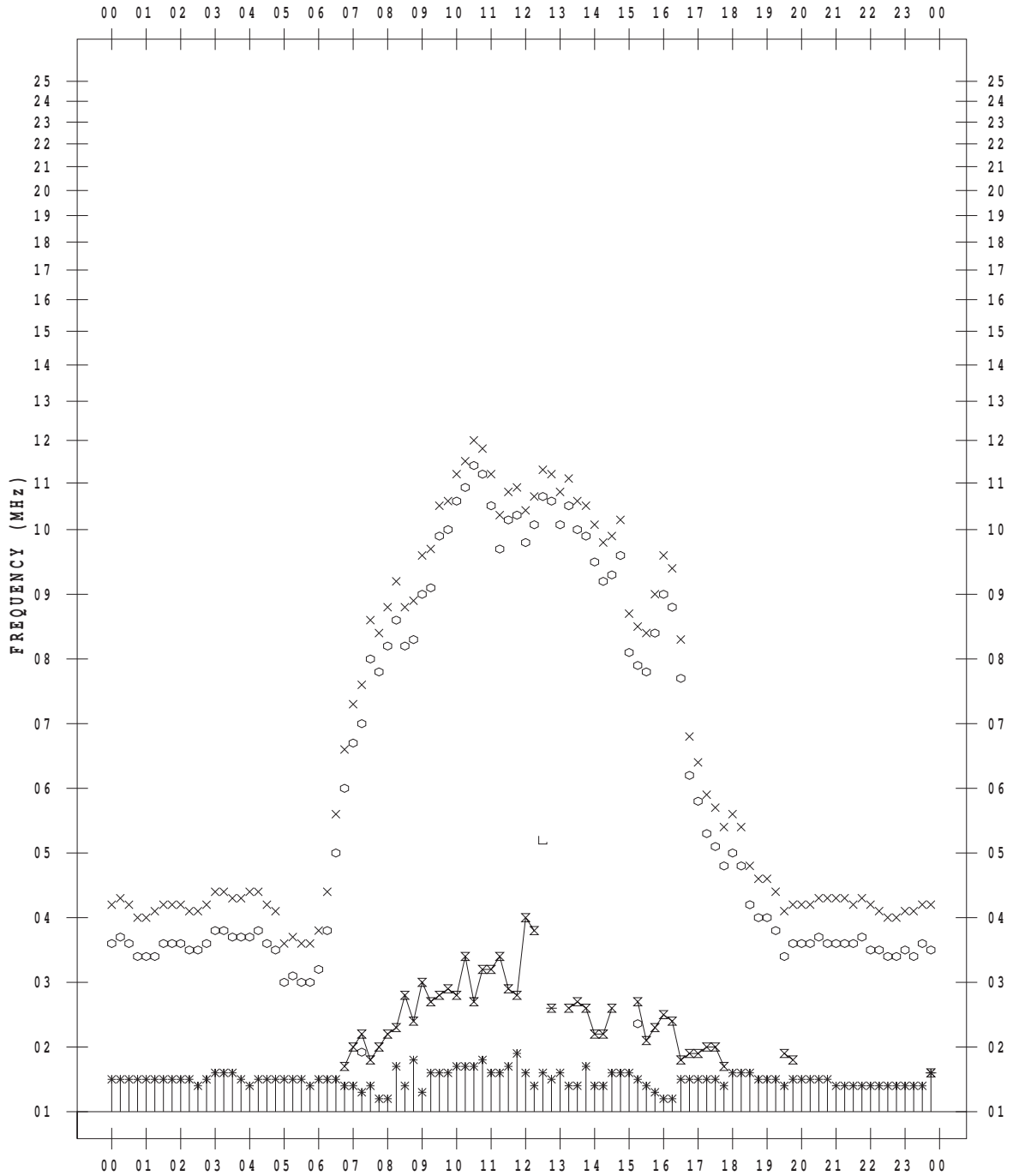
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/12/ 6

135 ° E MEAN TIME



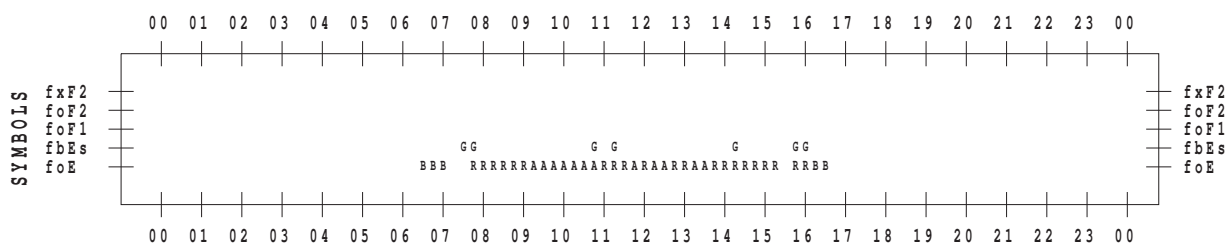
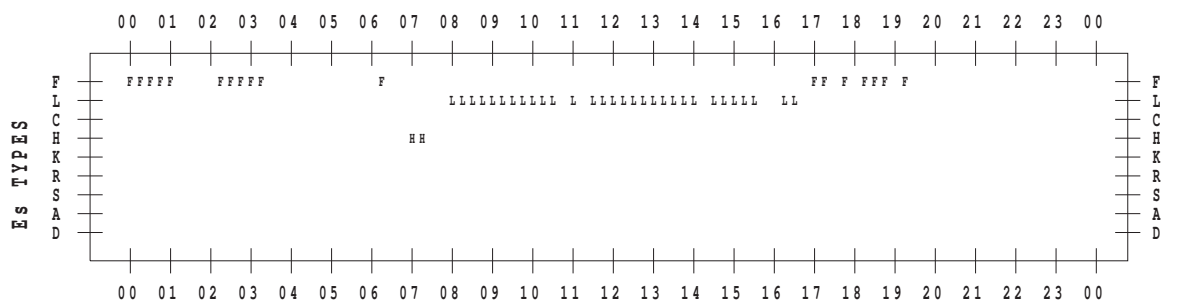
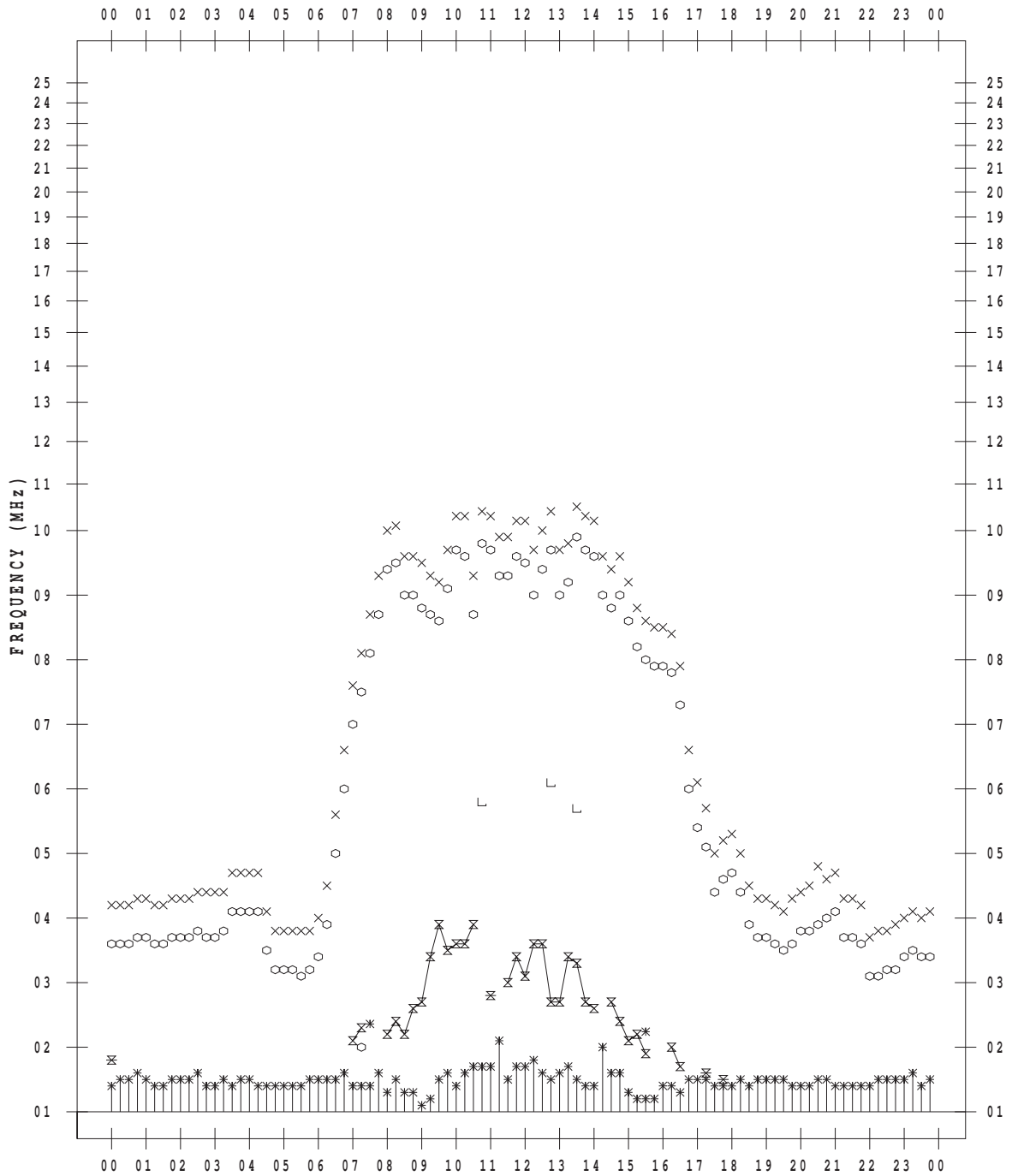
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/12/ 7

135 ° E MEAN TIME



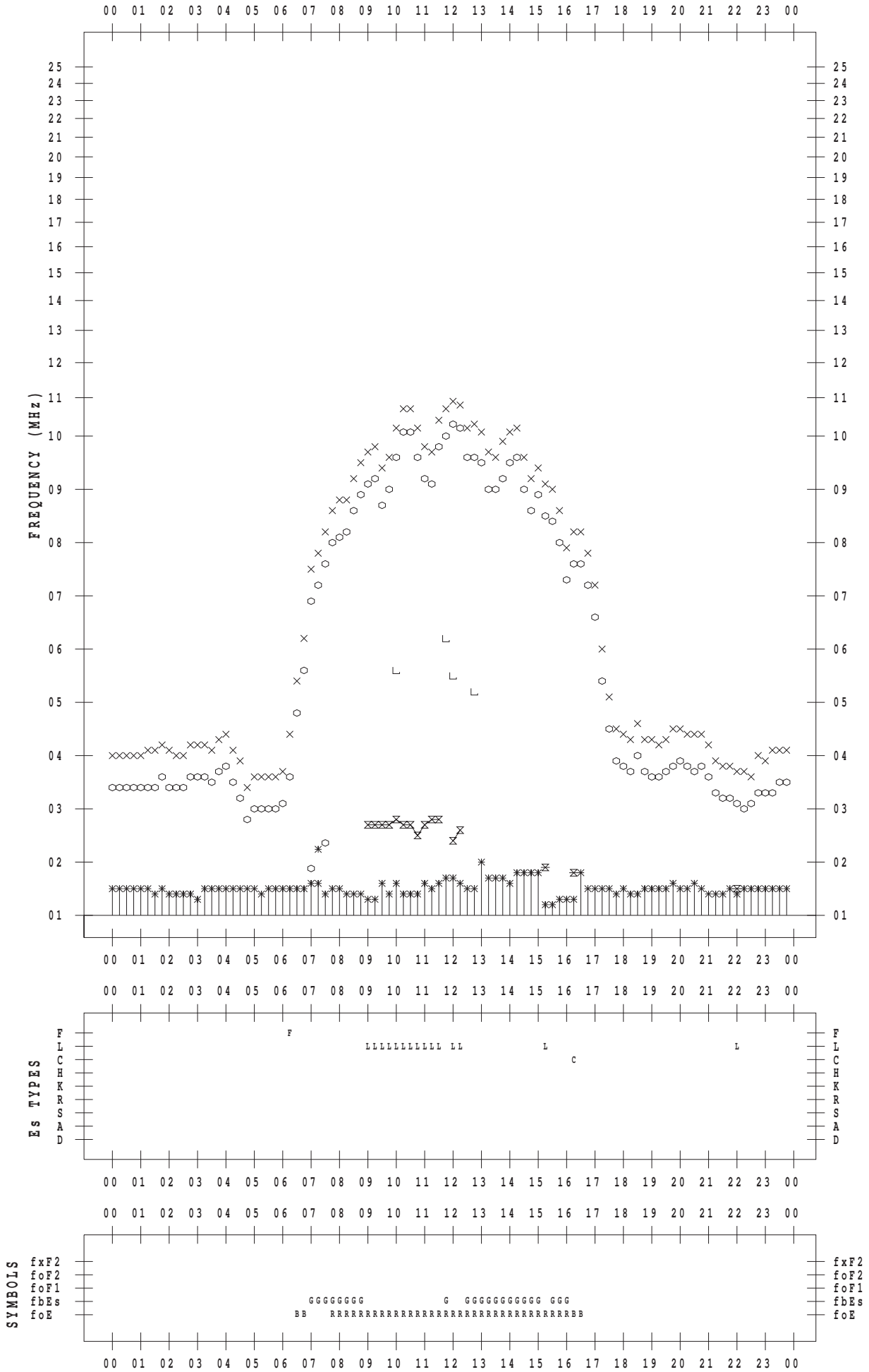
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/12/ 8

135 ° E MEAN TIME



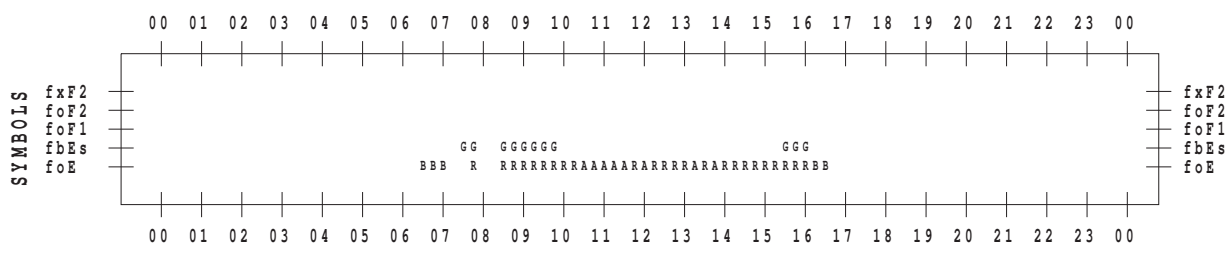
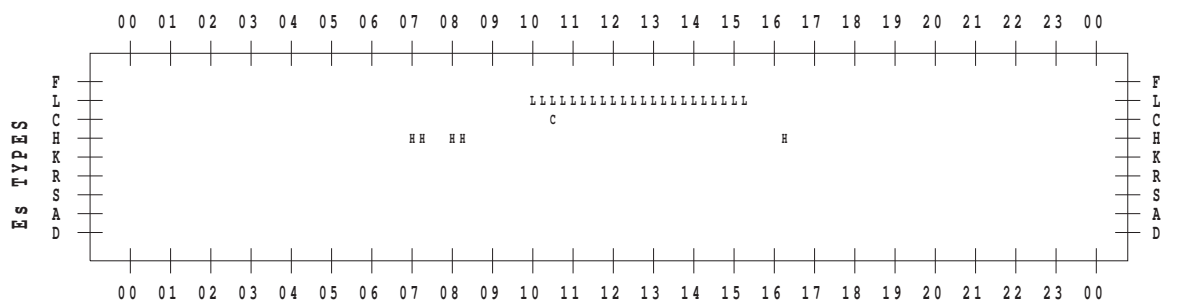
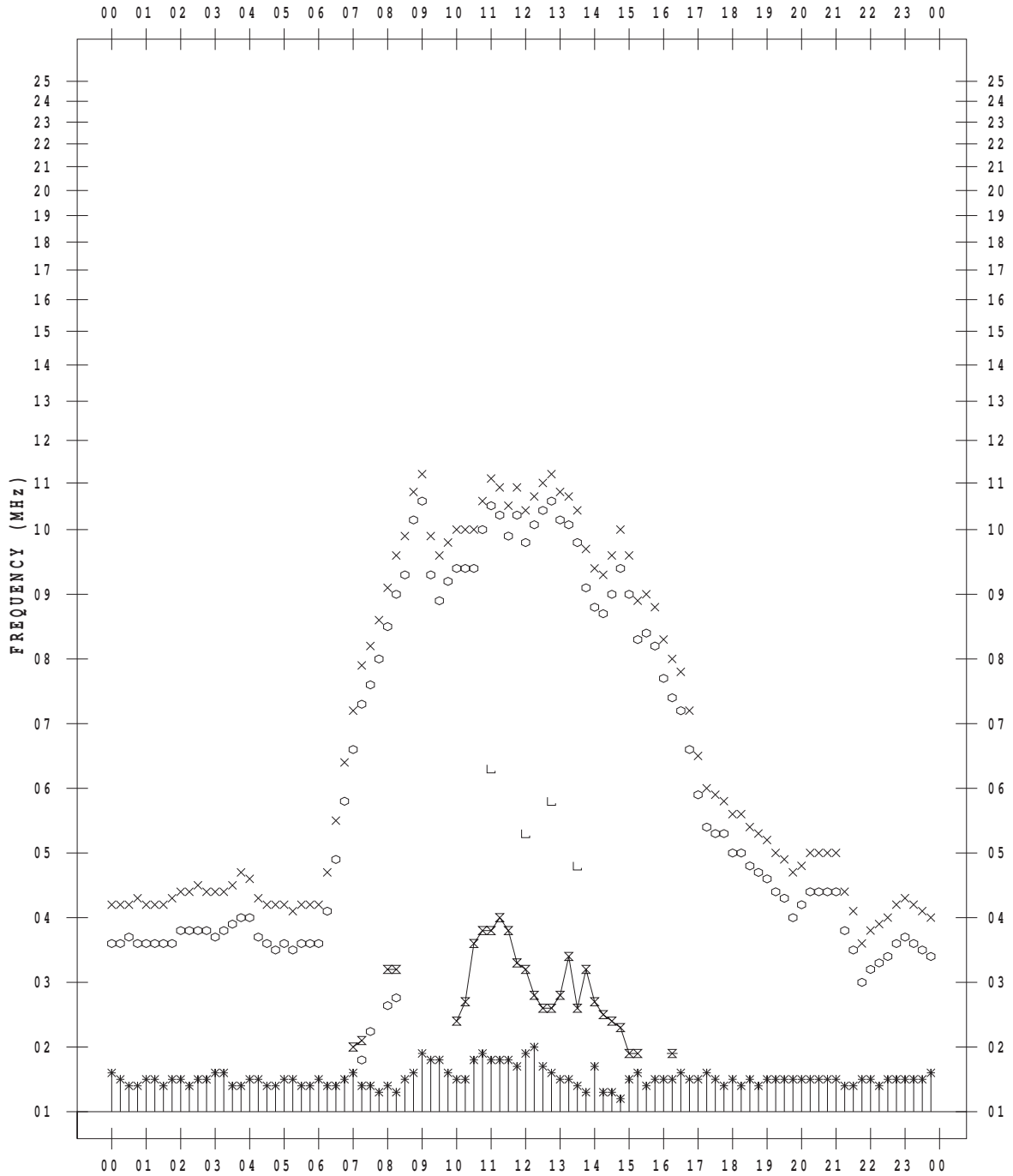
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/12/ 9

135 ° E MEAN TIME



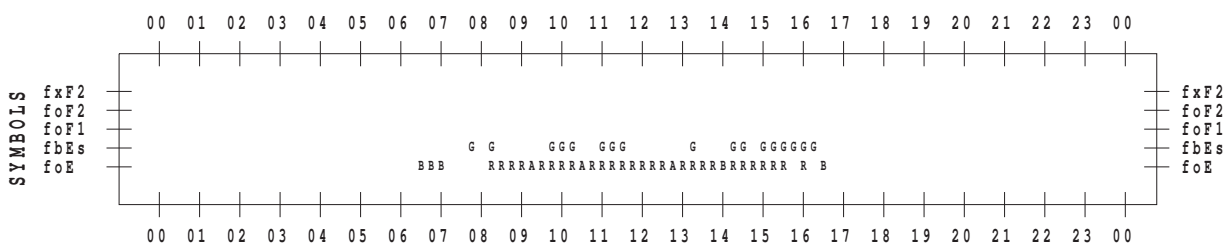
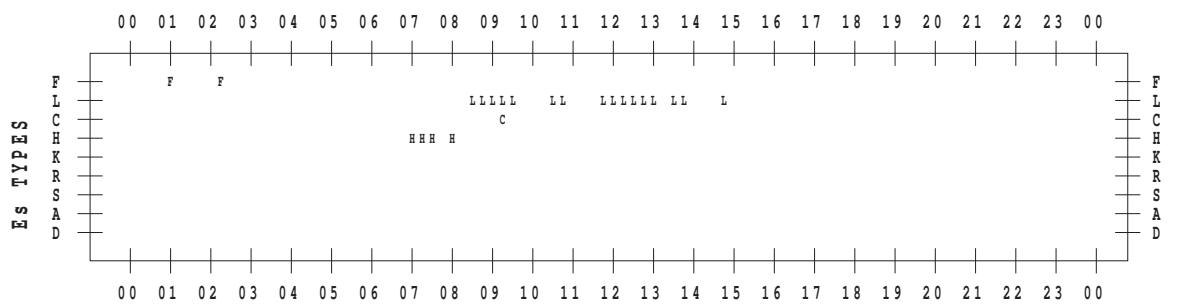
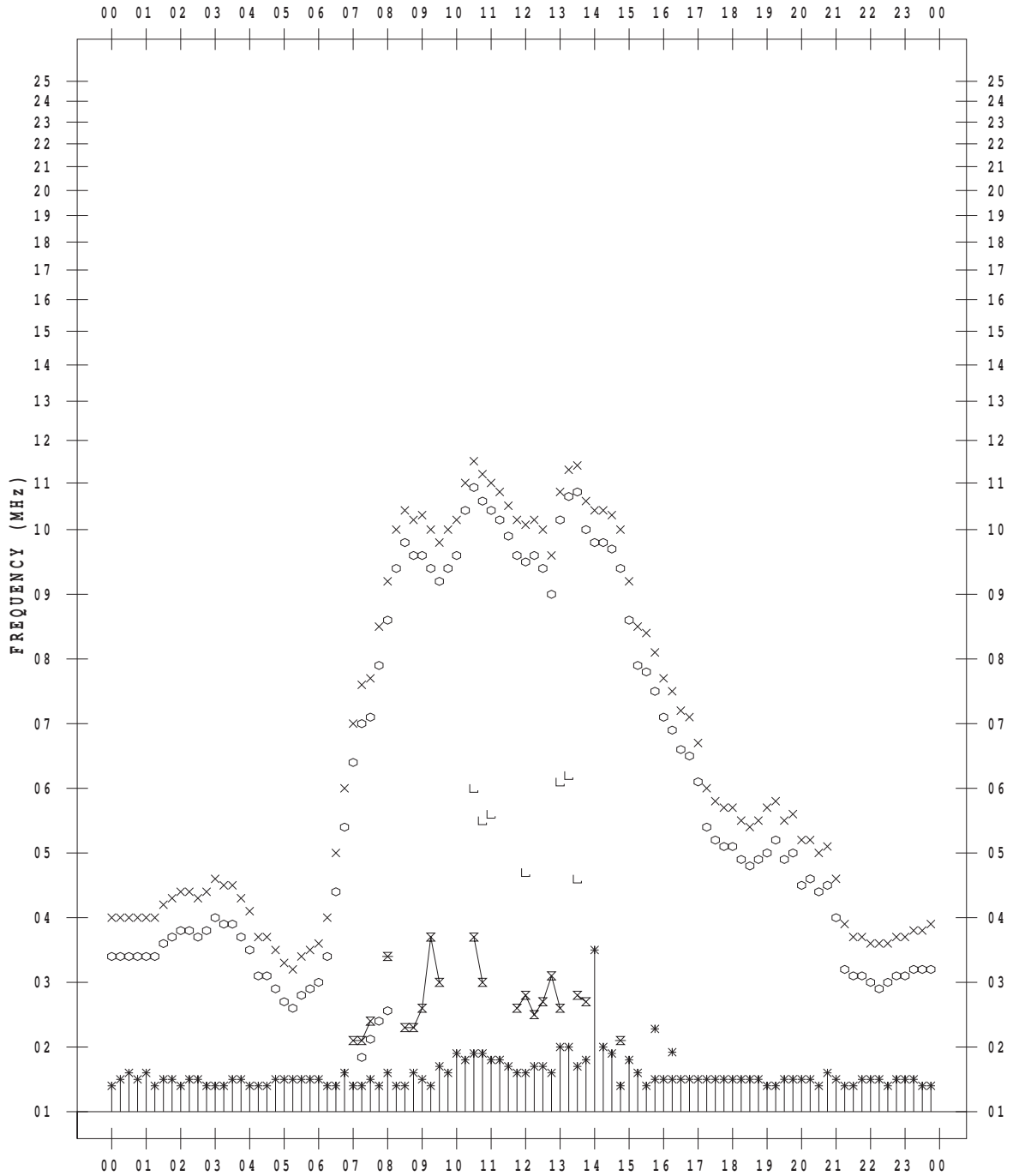
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/12/10

135 ° E MEAN TIME



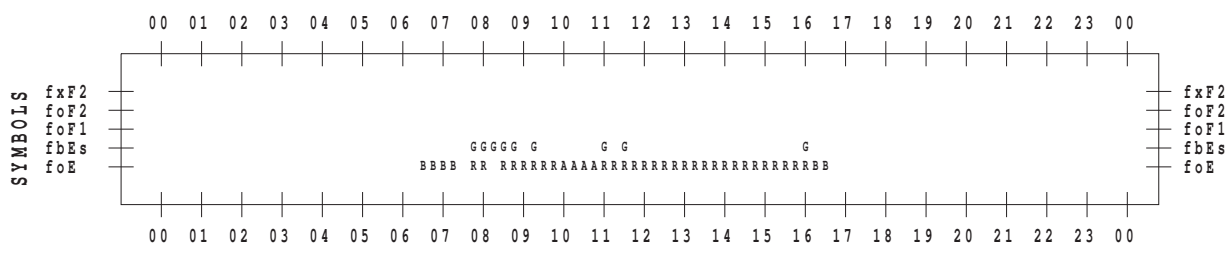
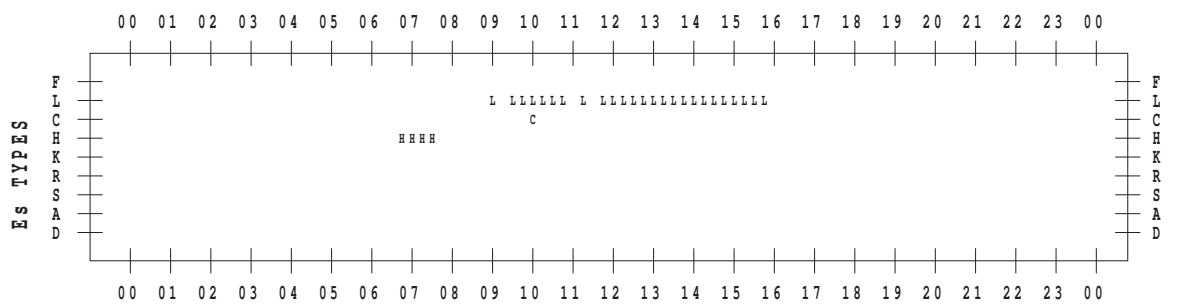
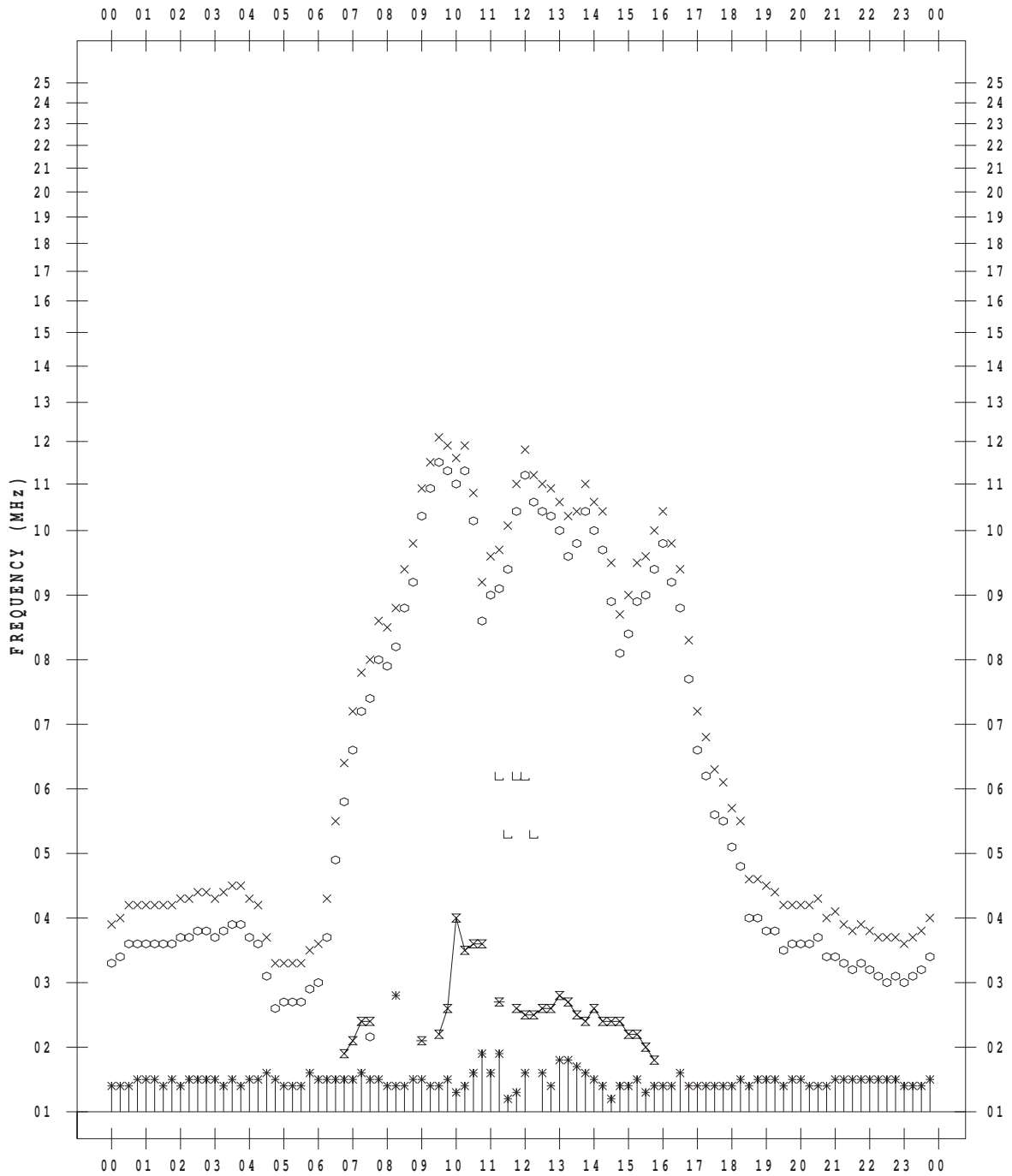
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/12/11

135 ° E MEAN TIME



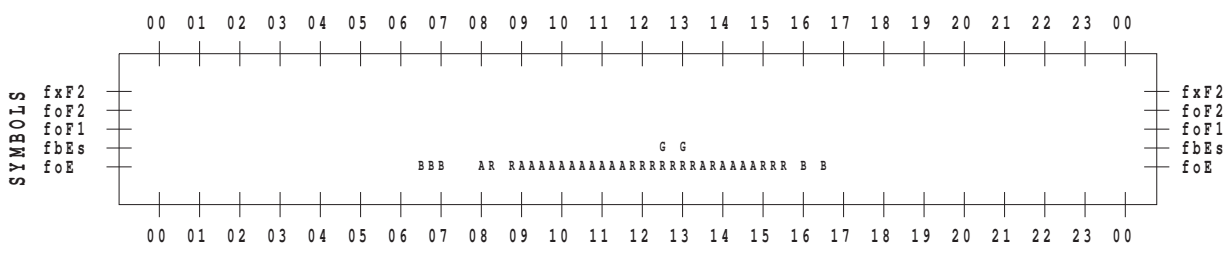
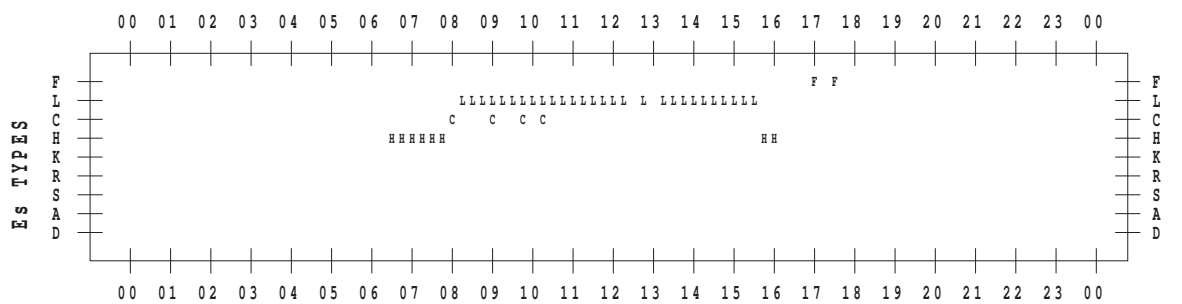
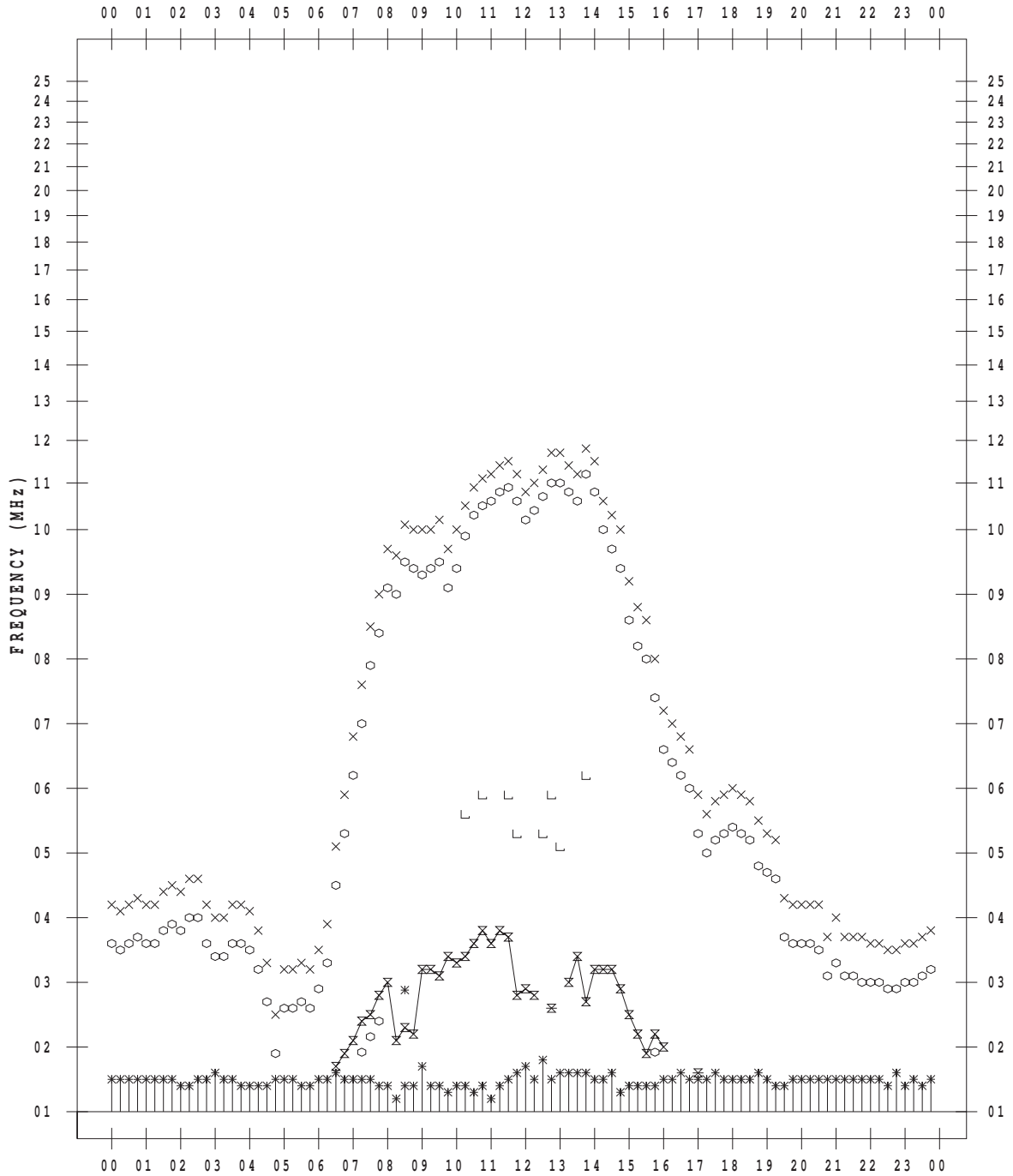
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/12/12

135 ° E MEAN TIME



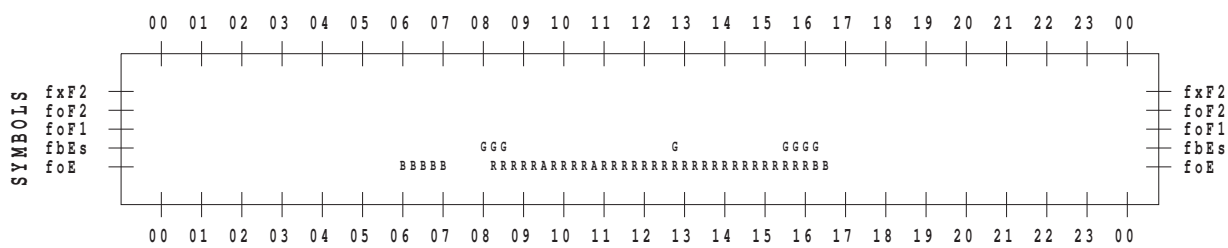
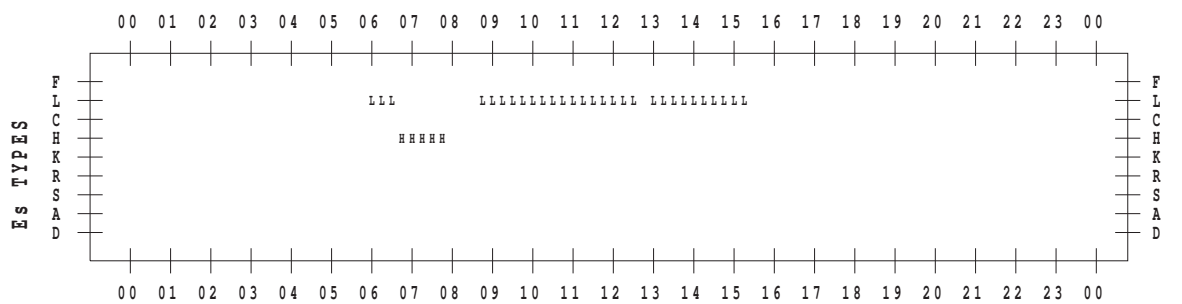
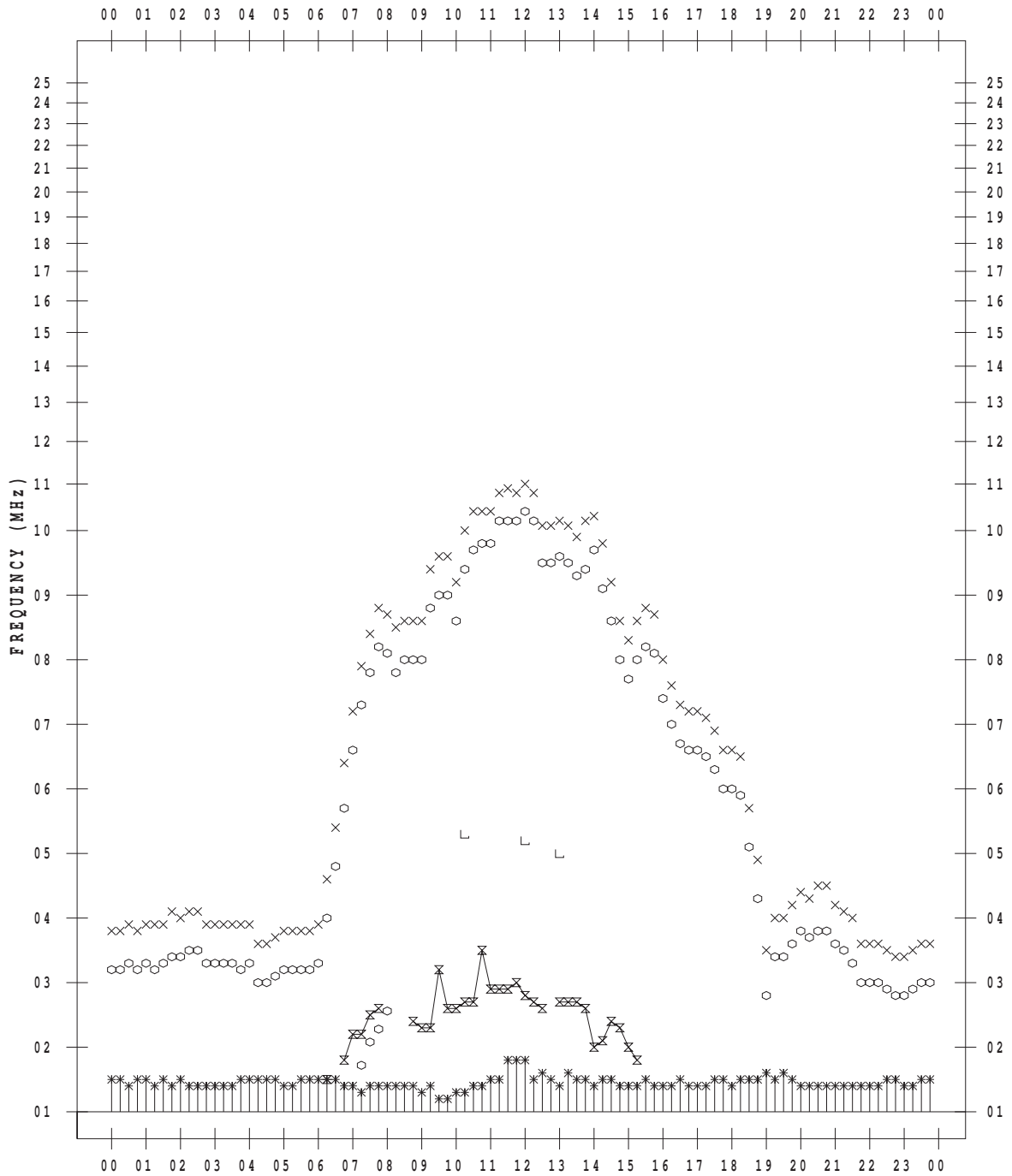
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/12/13

135 ° E MEAN TIME



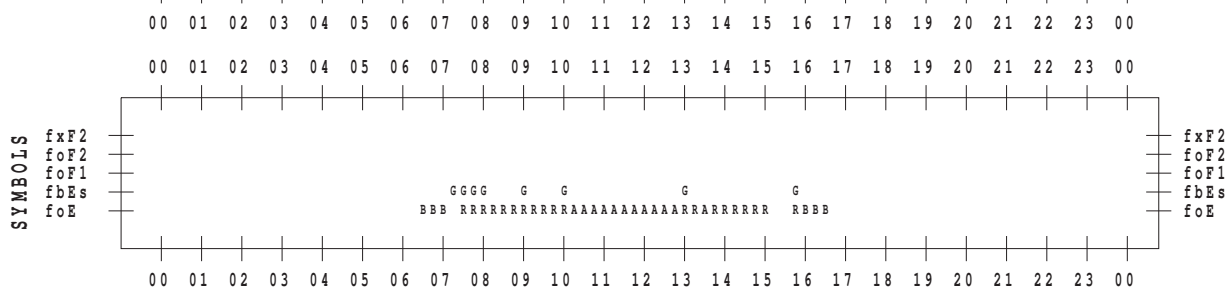
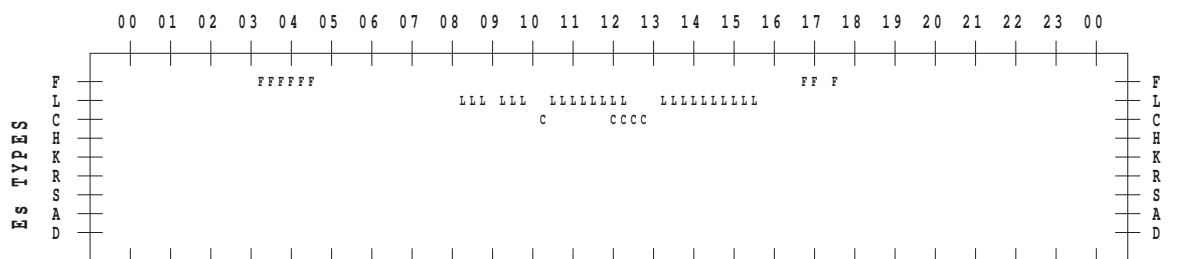
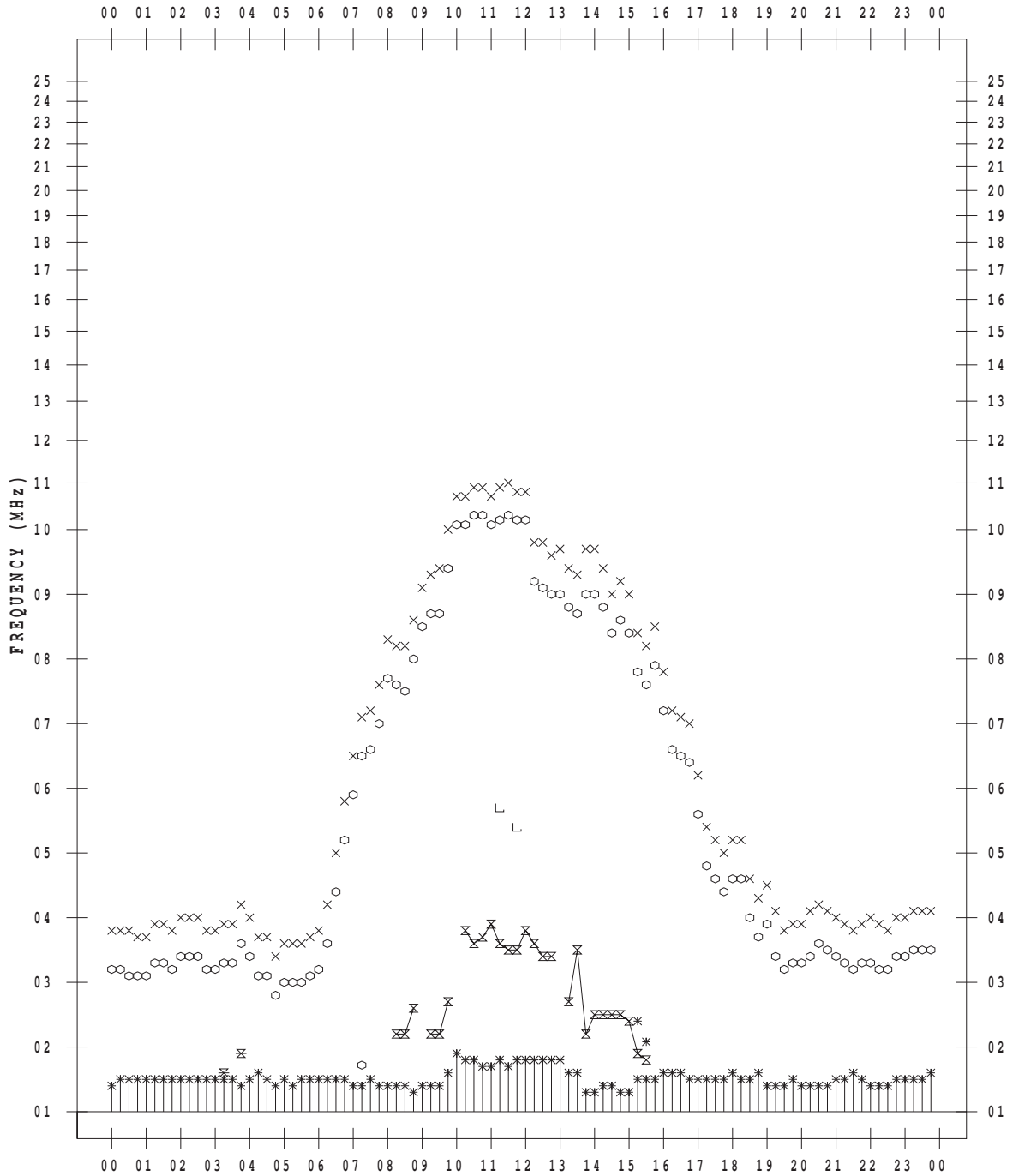
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/12/14

135 ° E MEAN TIME



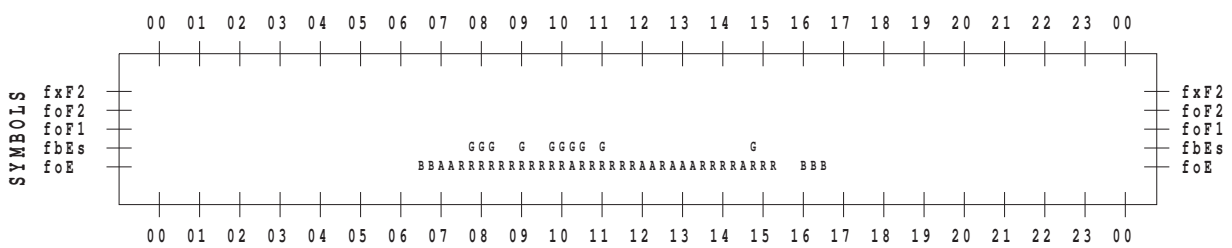
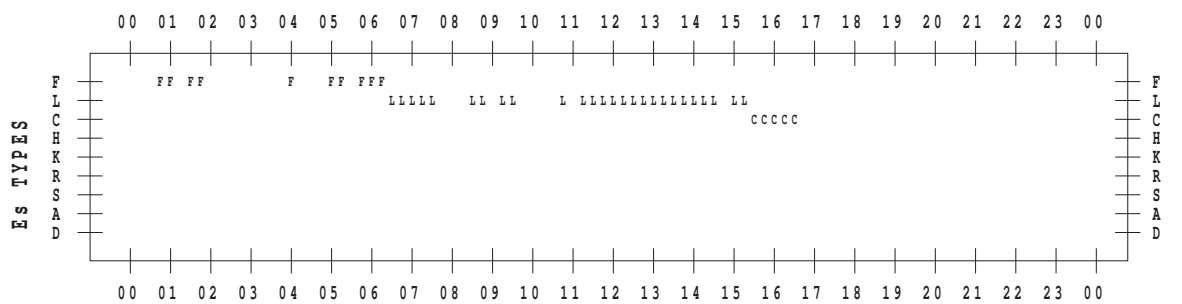
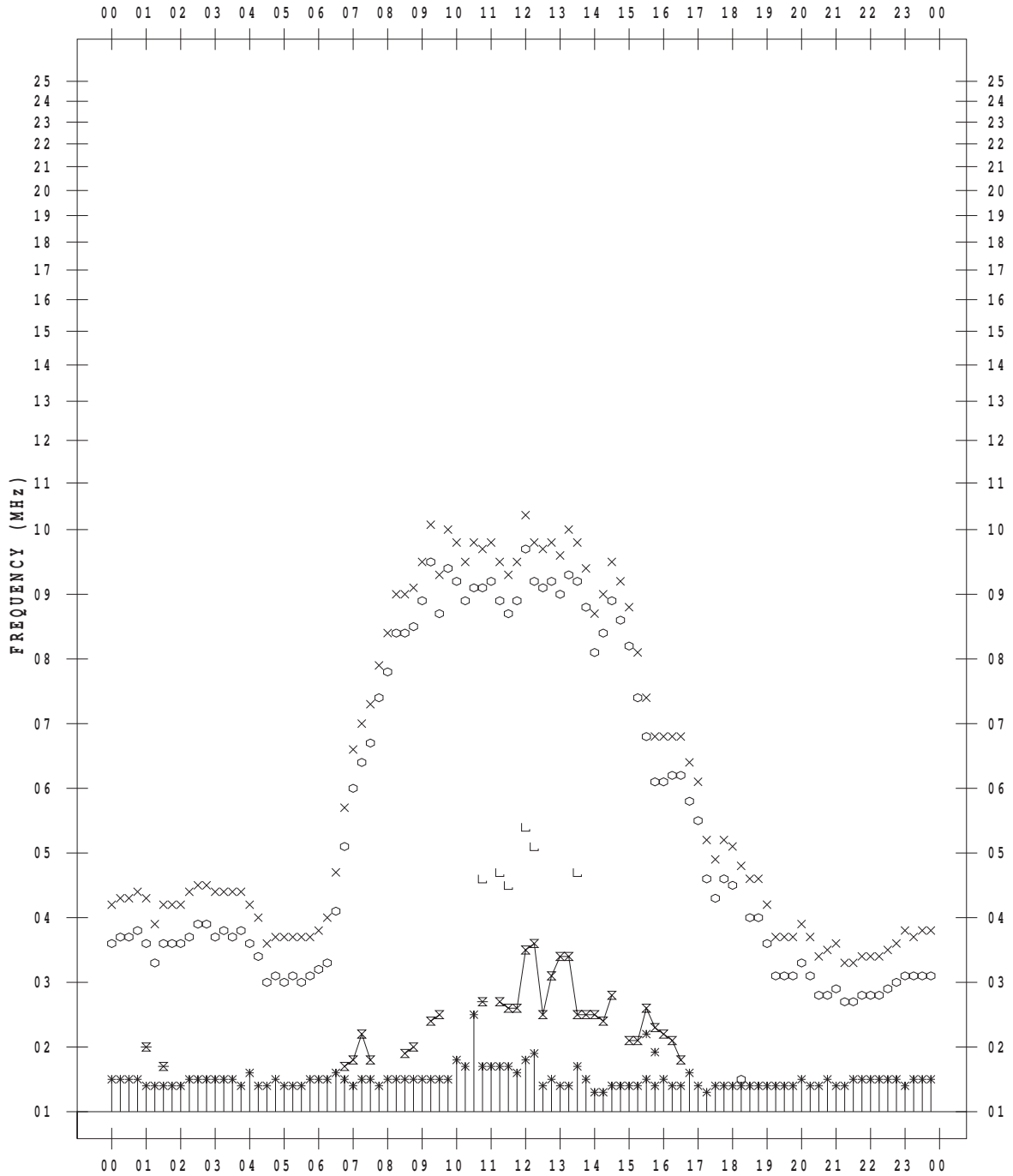
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/12/15

135 ° E MEAN TIME



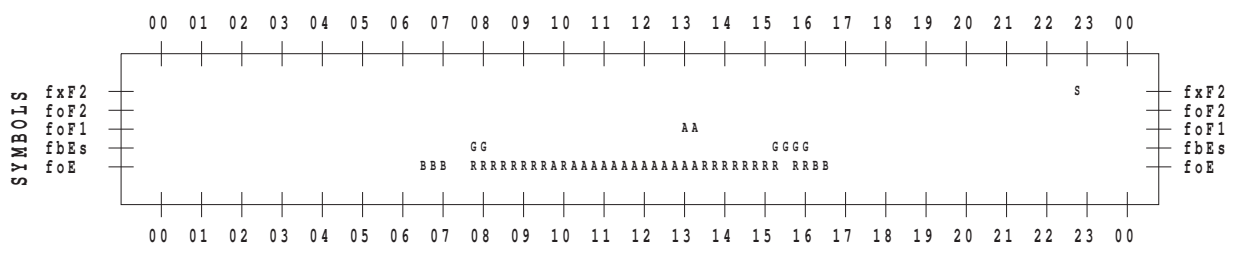
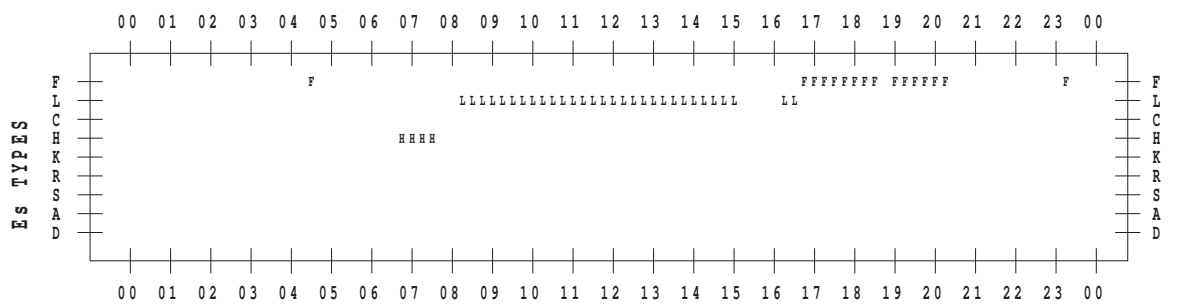
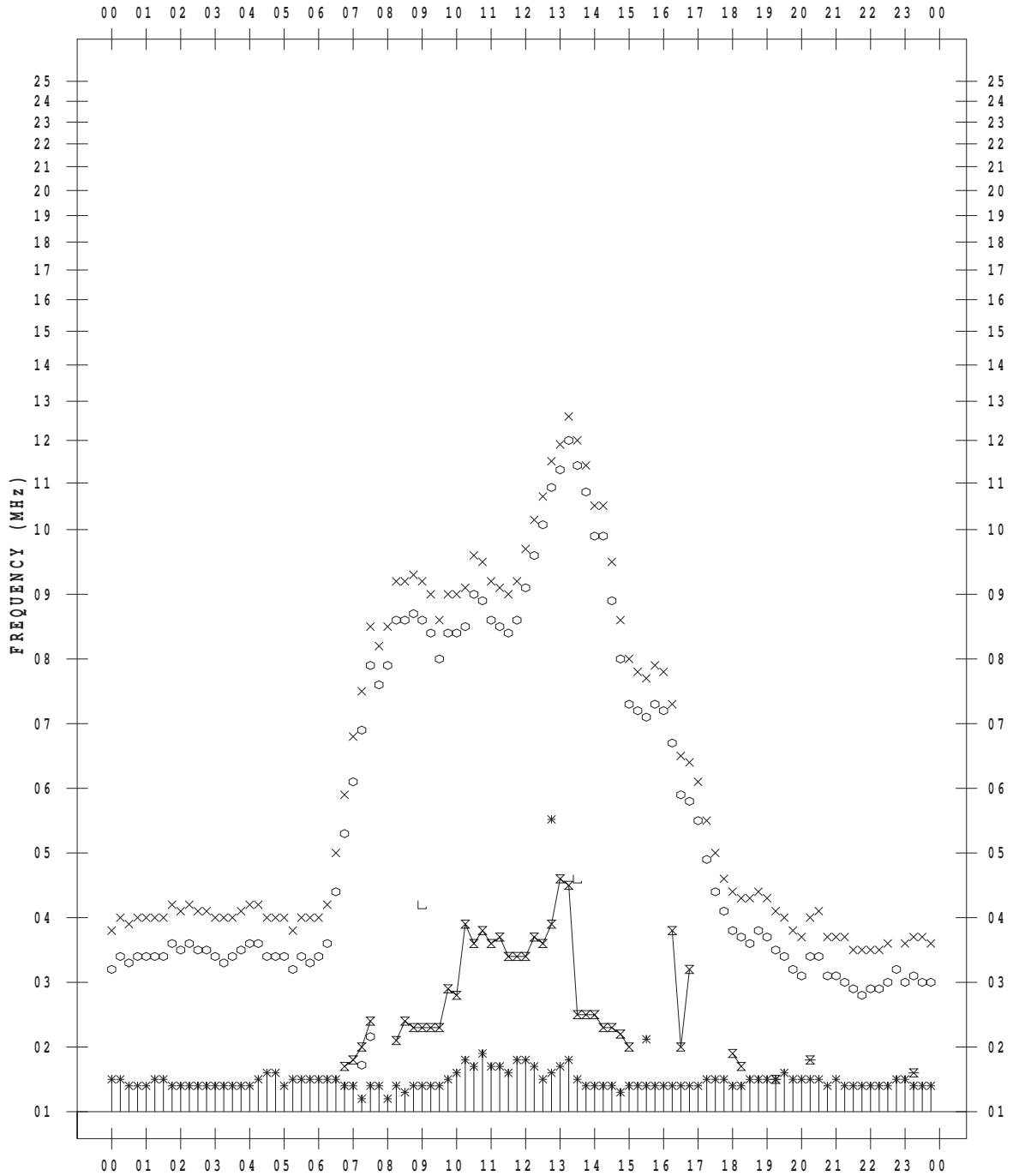
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/12/16

135 ° E MEAN TIME



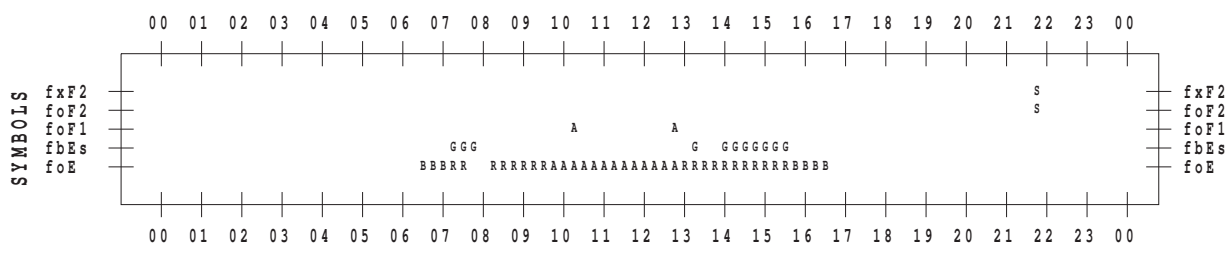
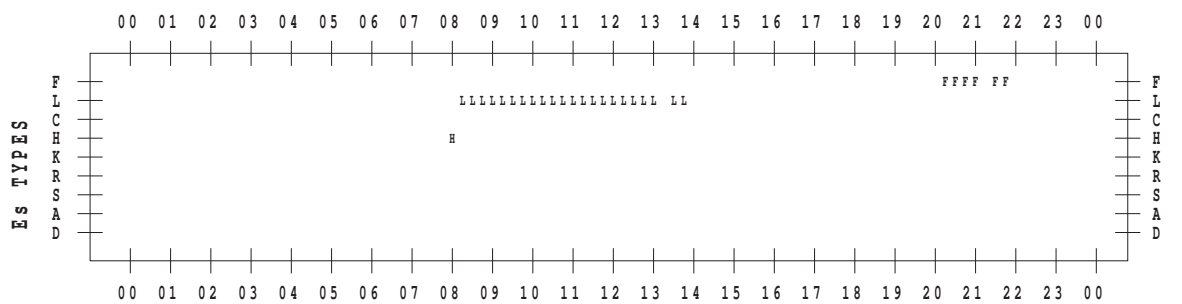
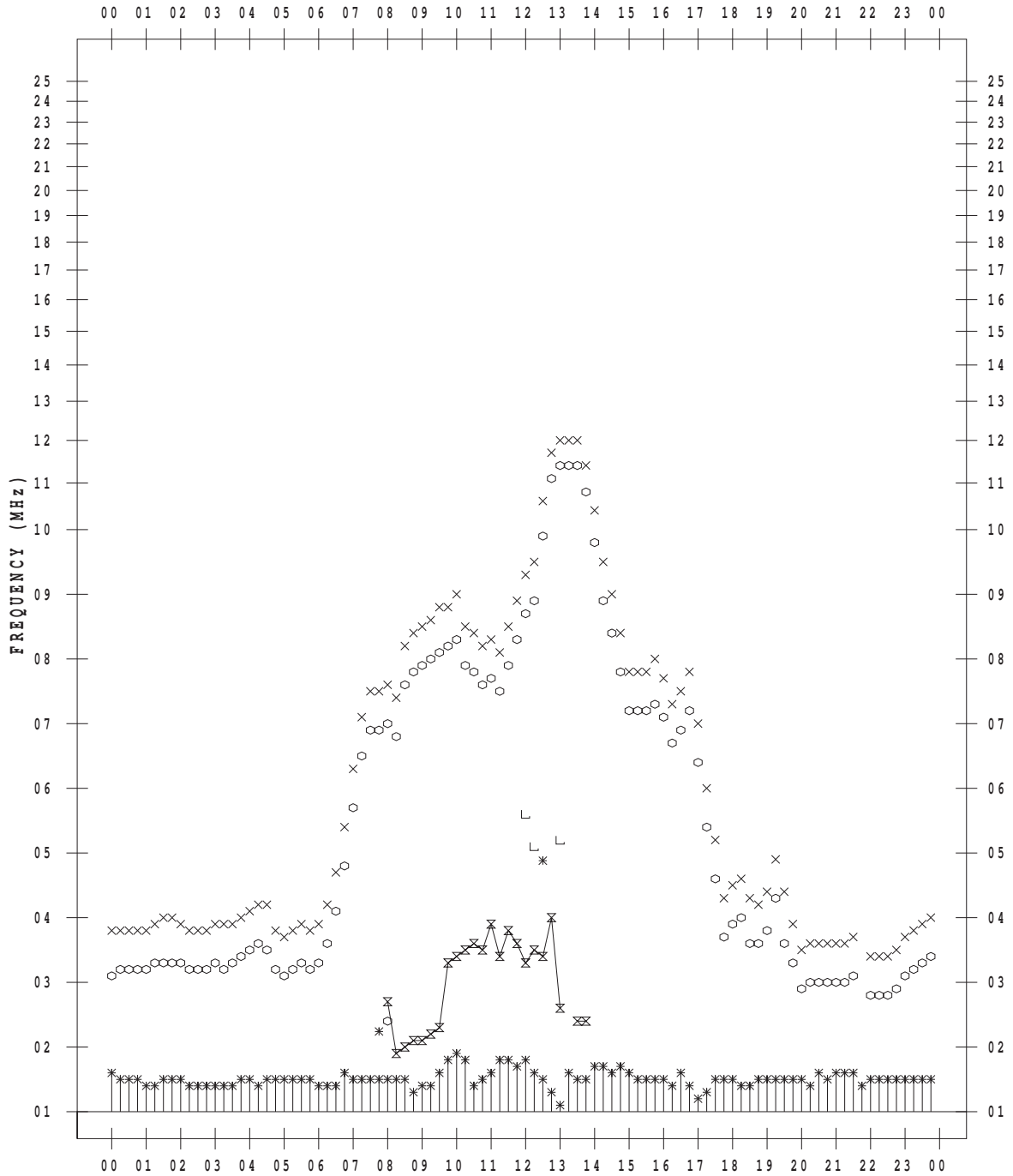
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/12/17

135 ° E MEAN TIME



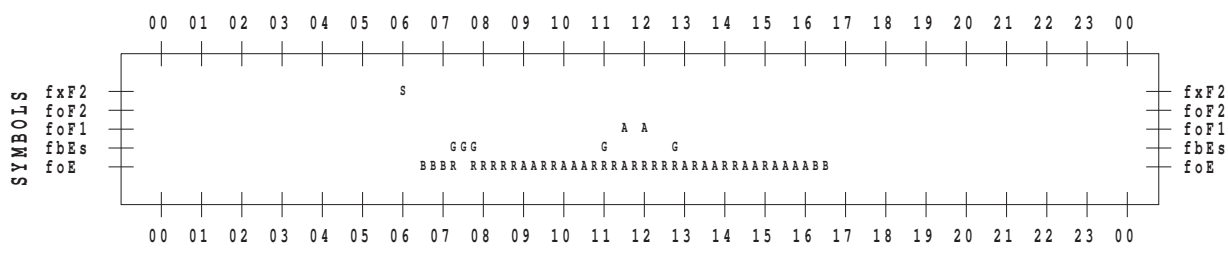
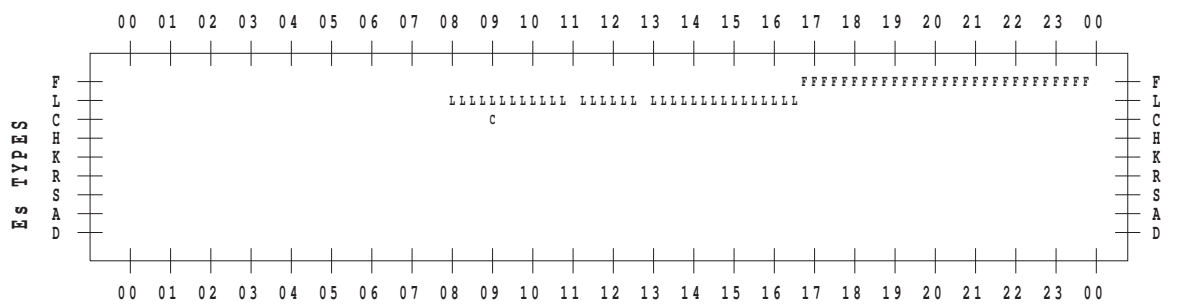
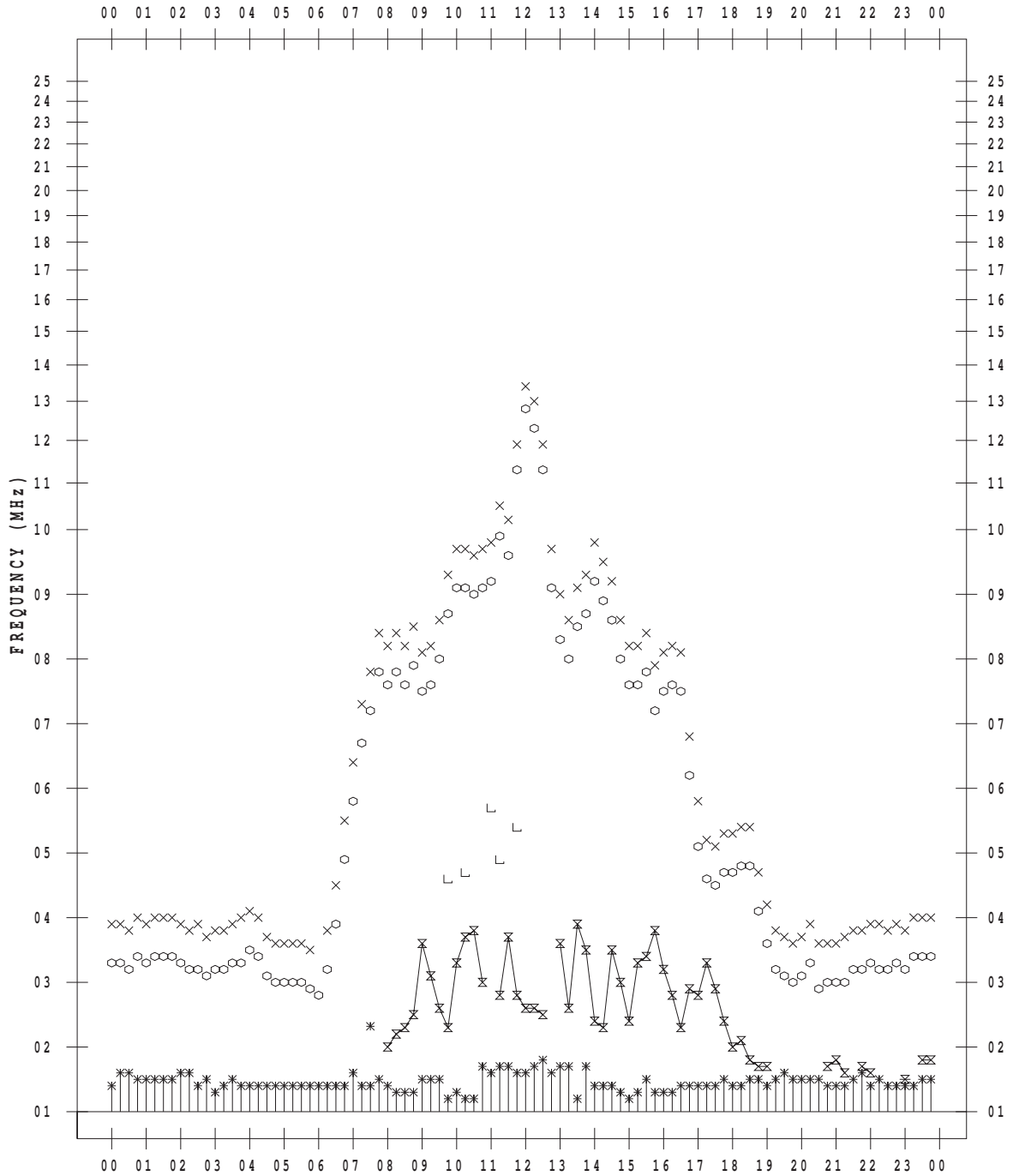
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/12/18

135 ° E MEAN TIME



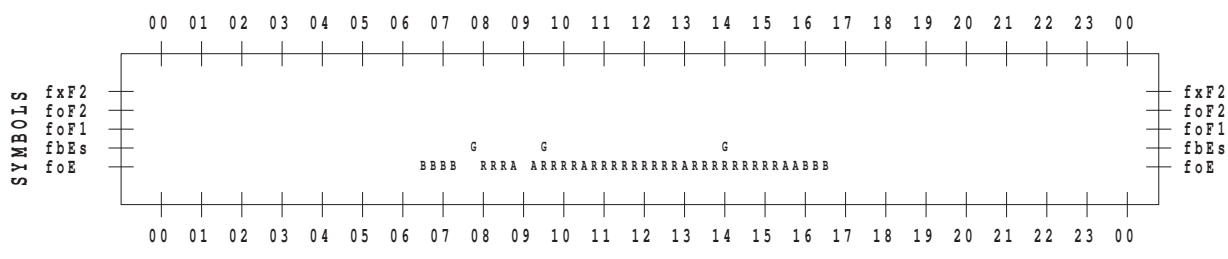
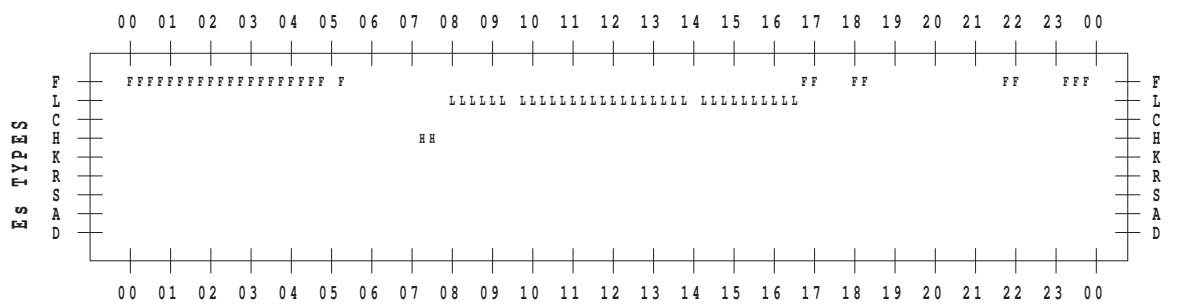
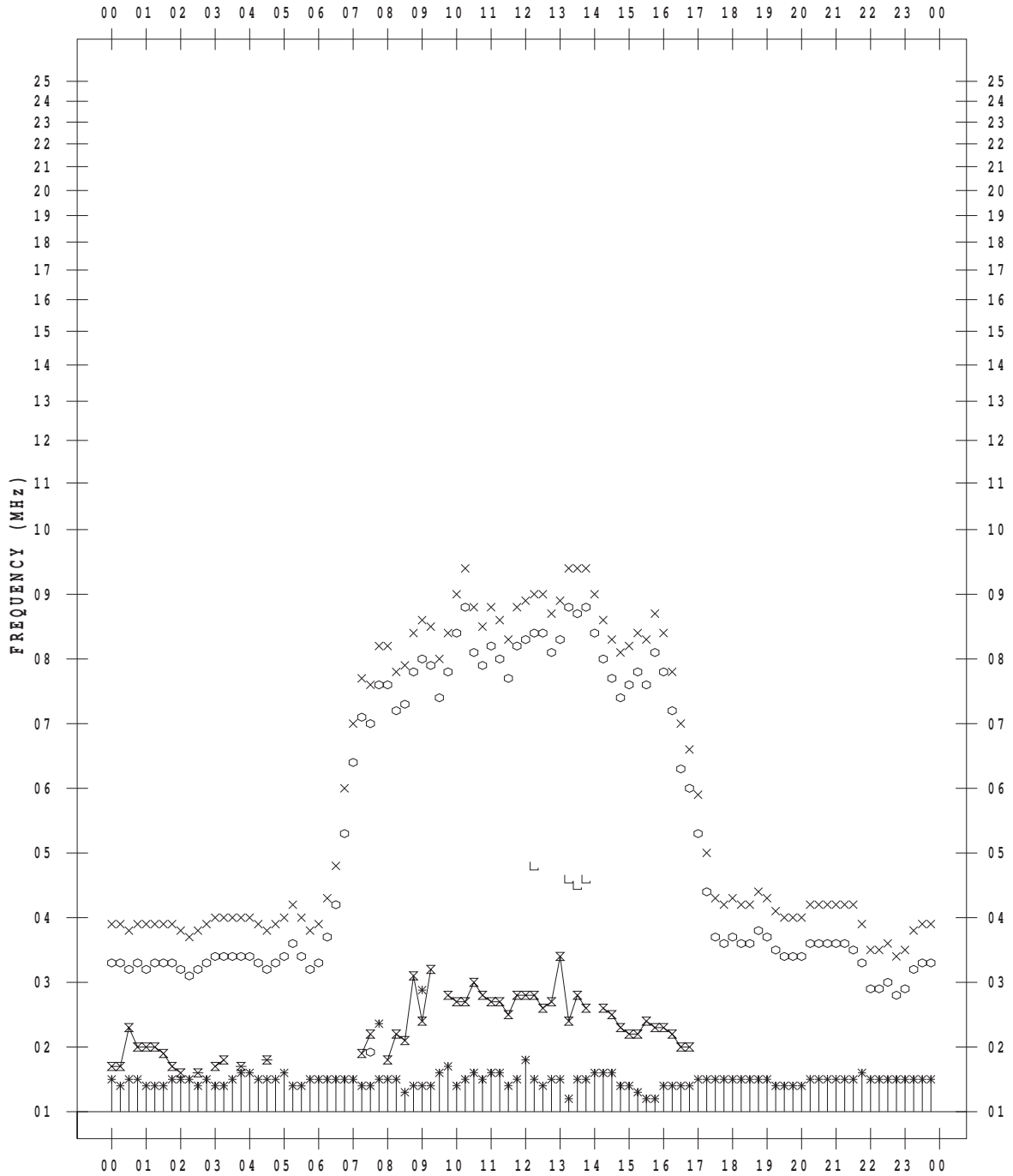
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/12/19

135 ° E MEAN TIME



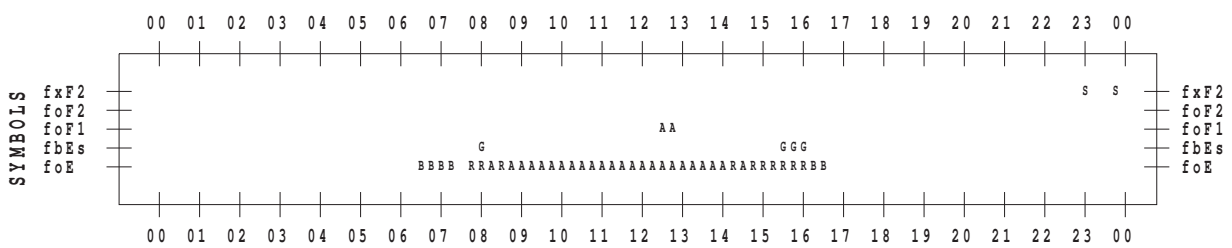
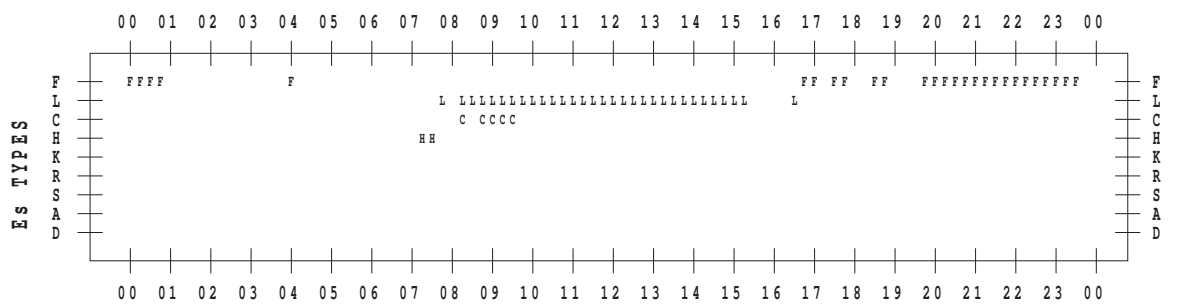
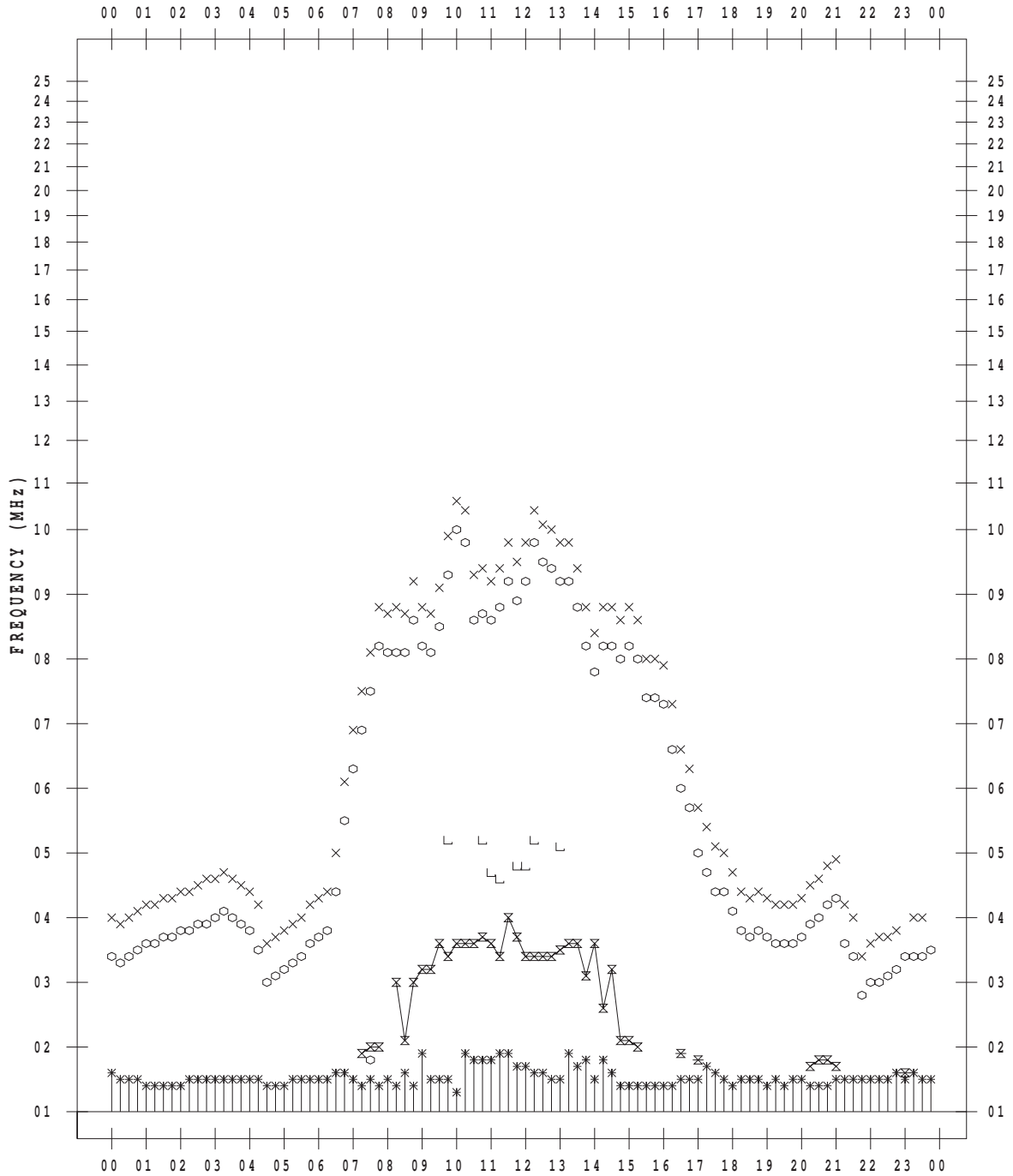
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/12/20

135 ° E MEAN TIME



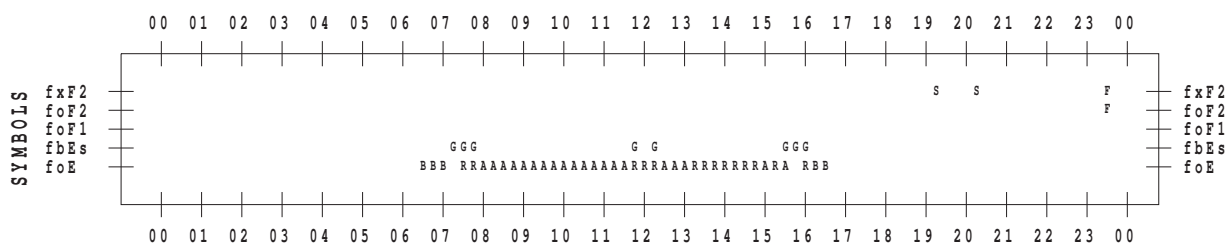
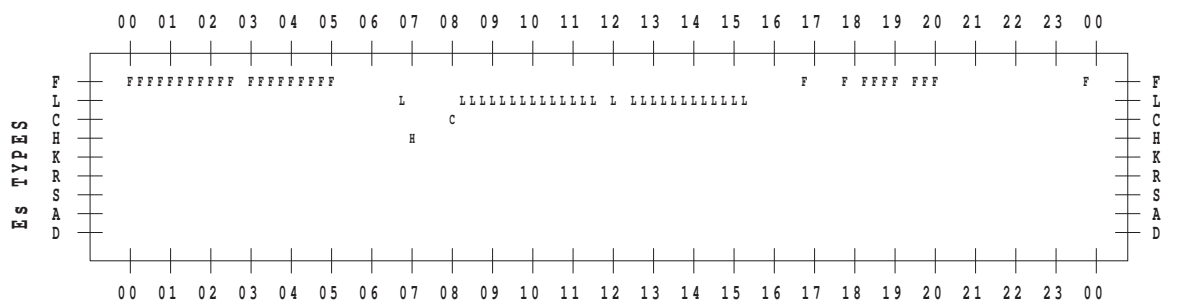
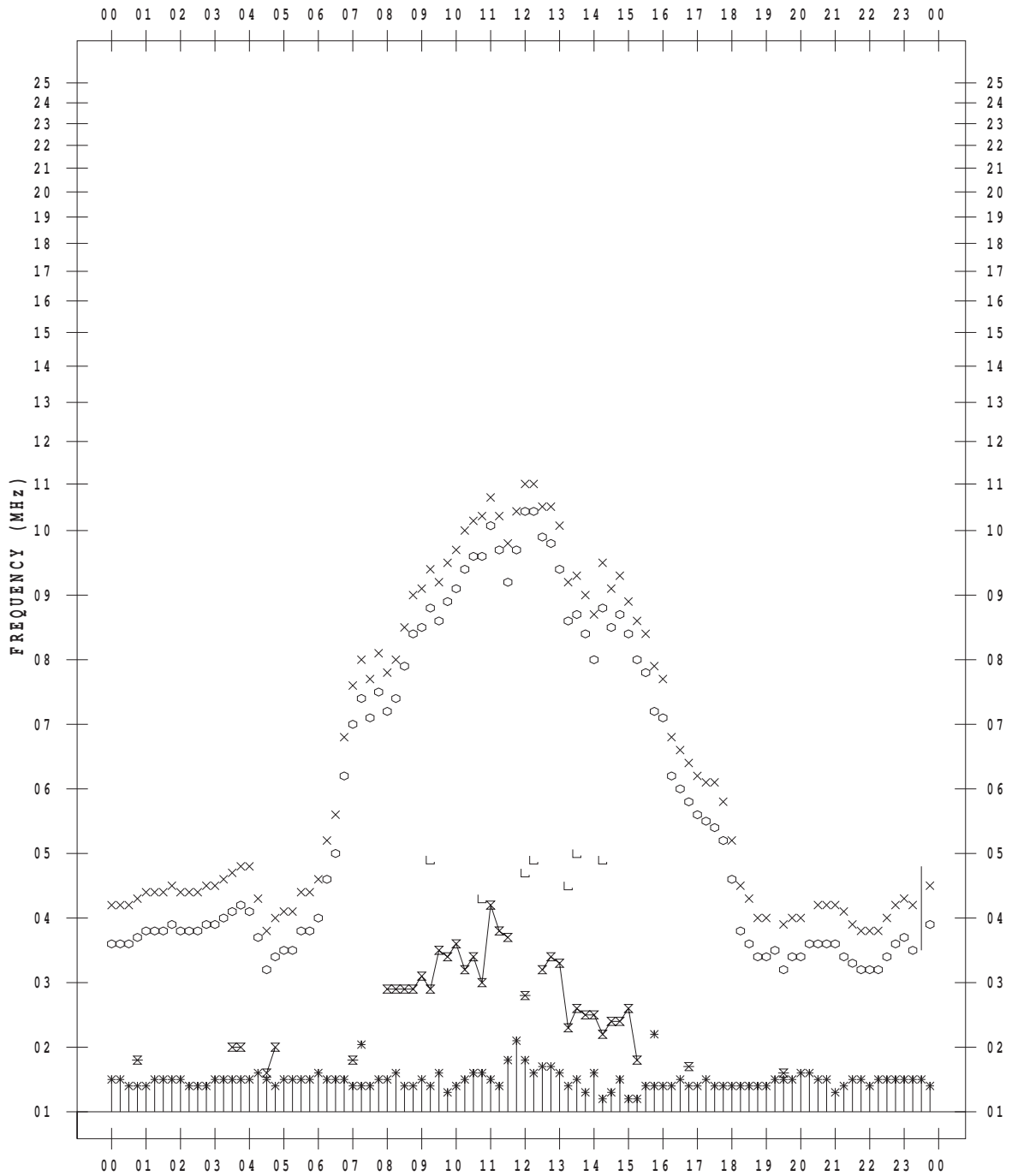
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/12/21

135 ° E MEAN TIME



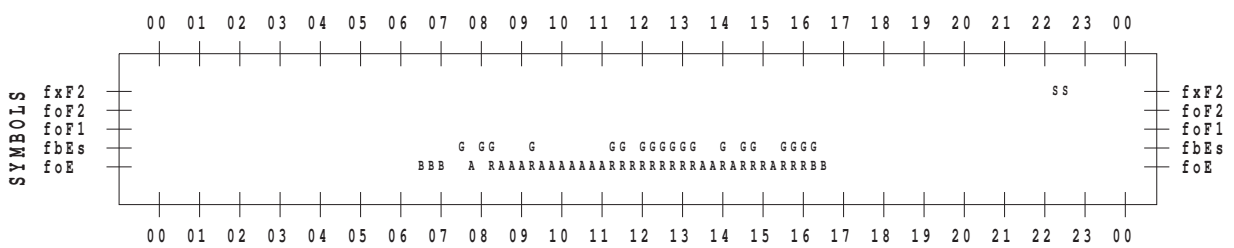
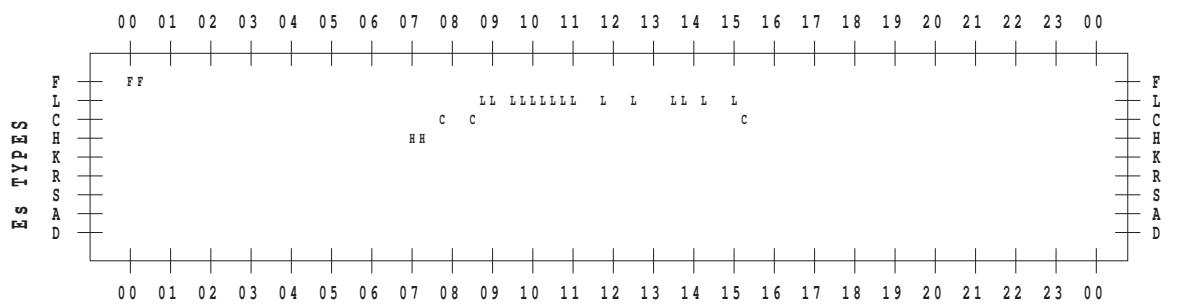
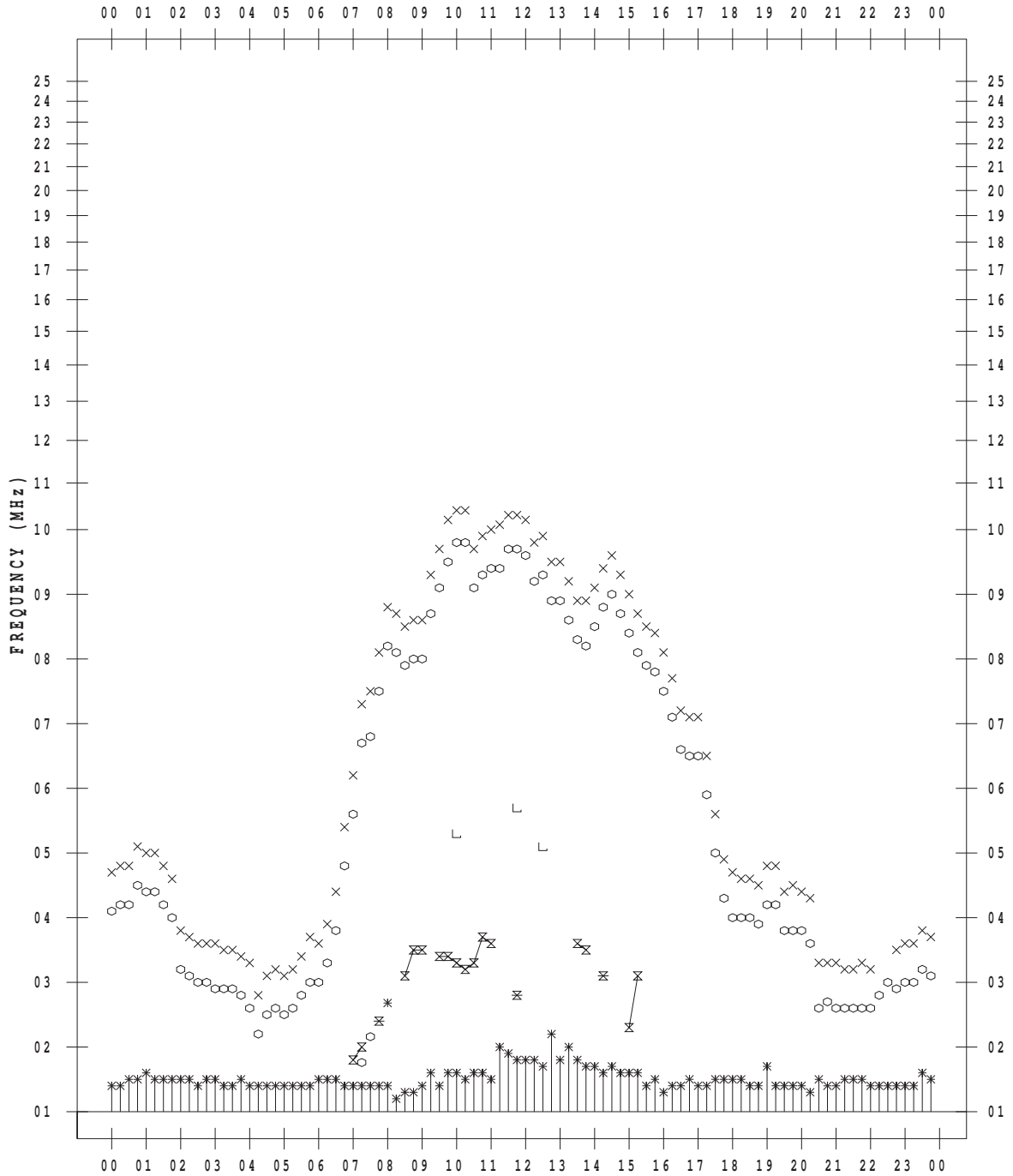
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/12/22

135 ° E MEAN TIME



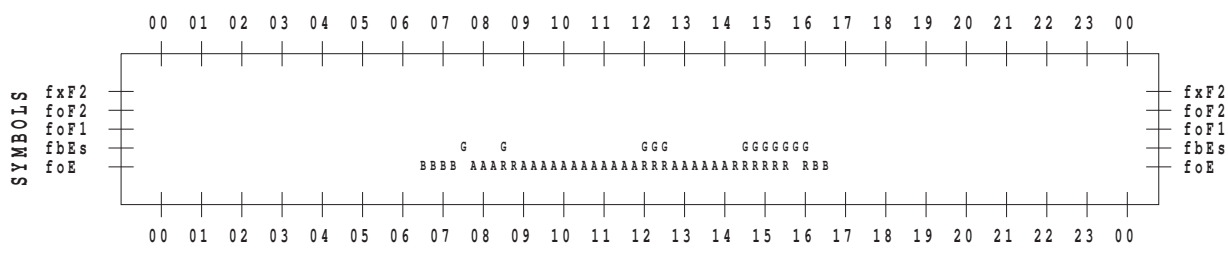
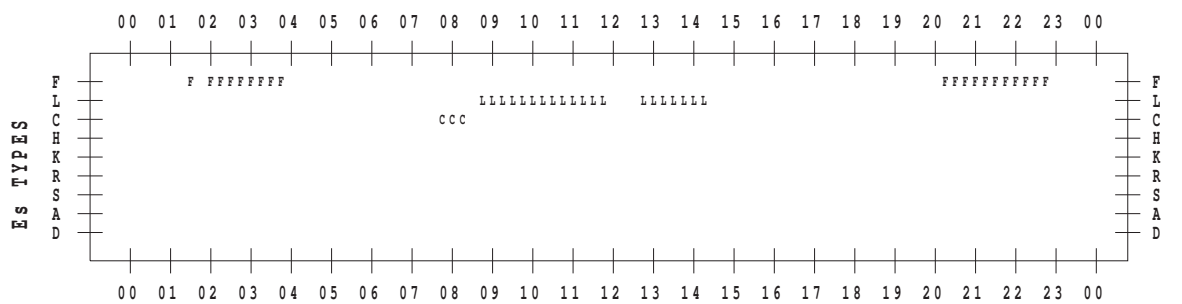
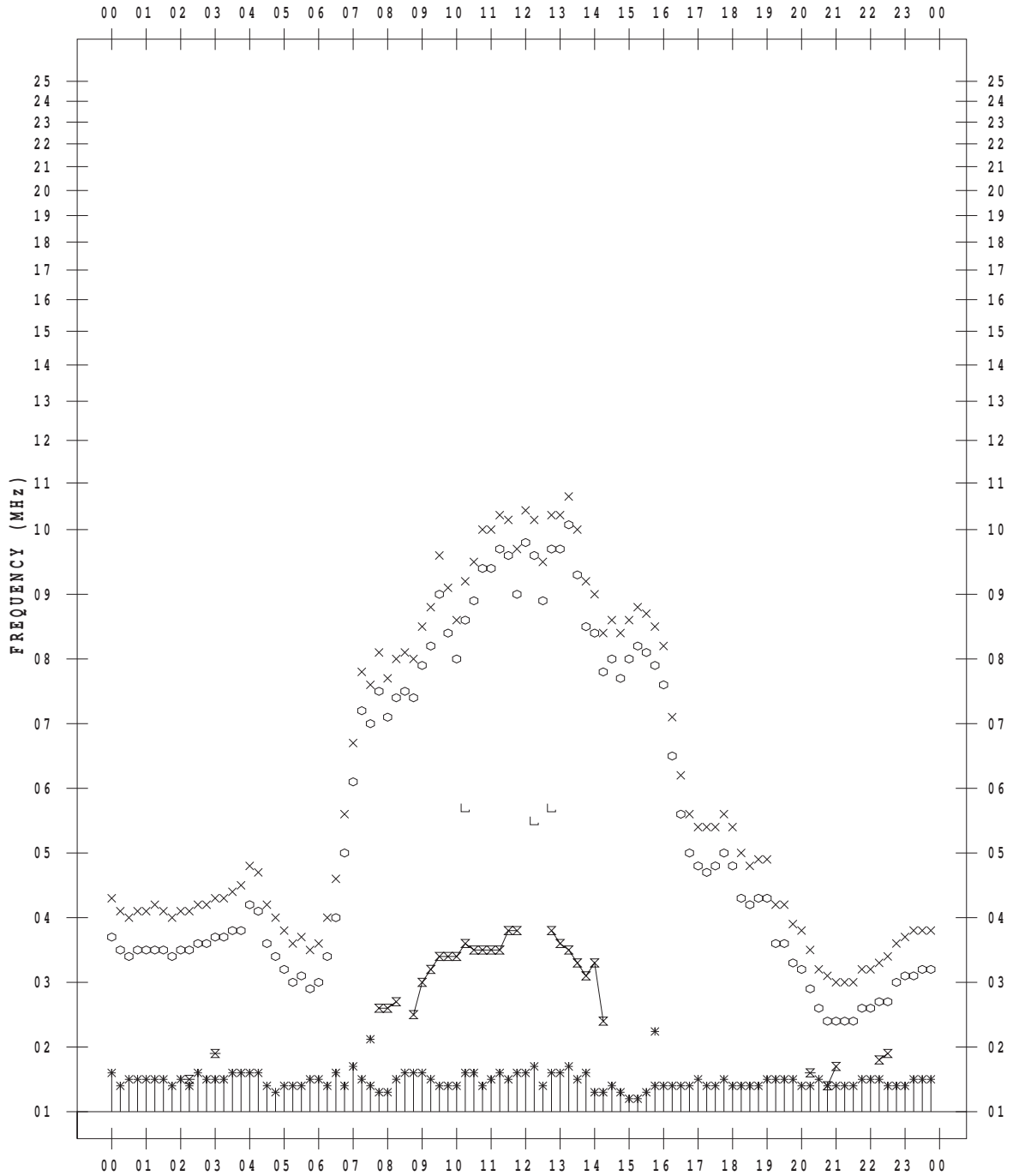
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/12/23

135 ° E MEAN TIME



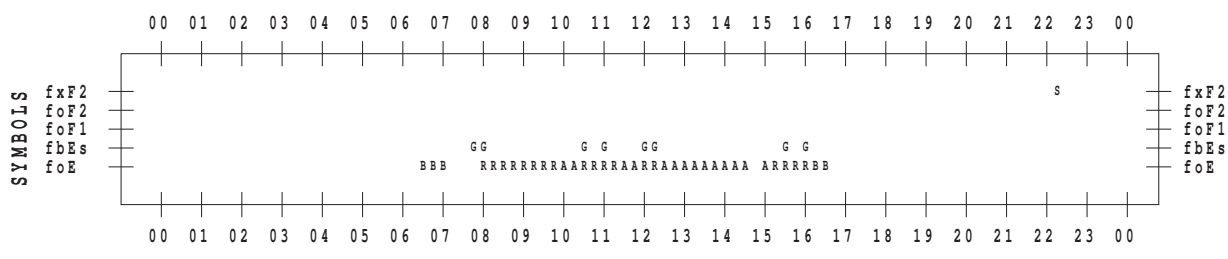
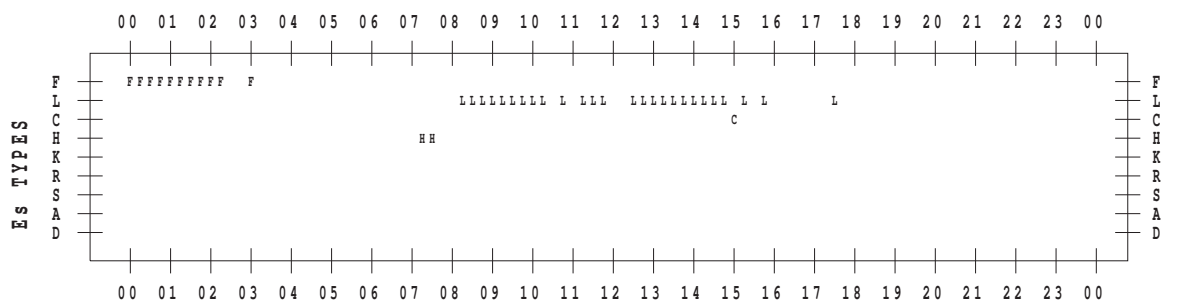
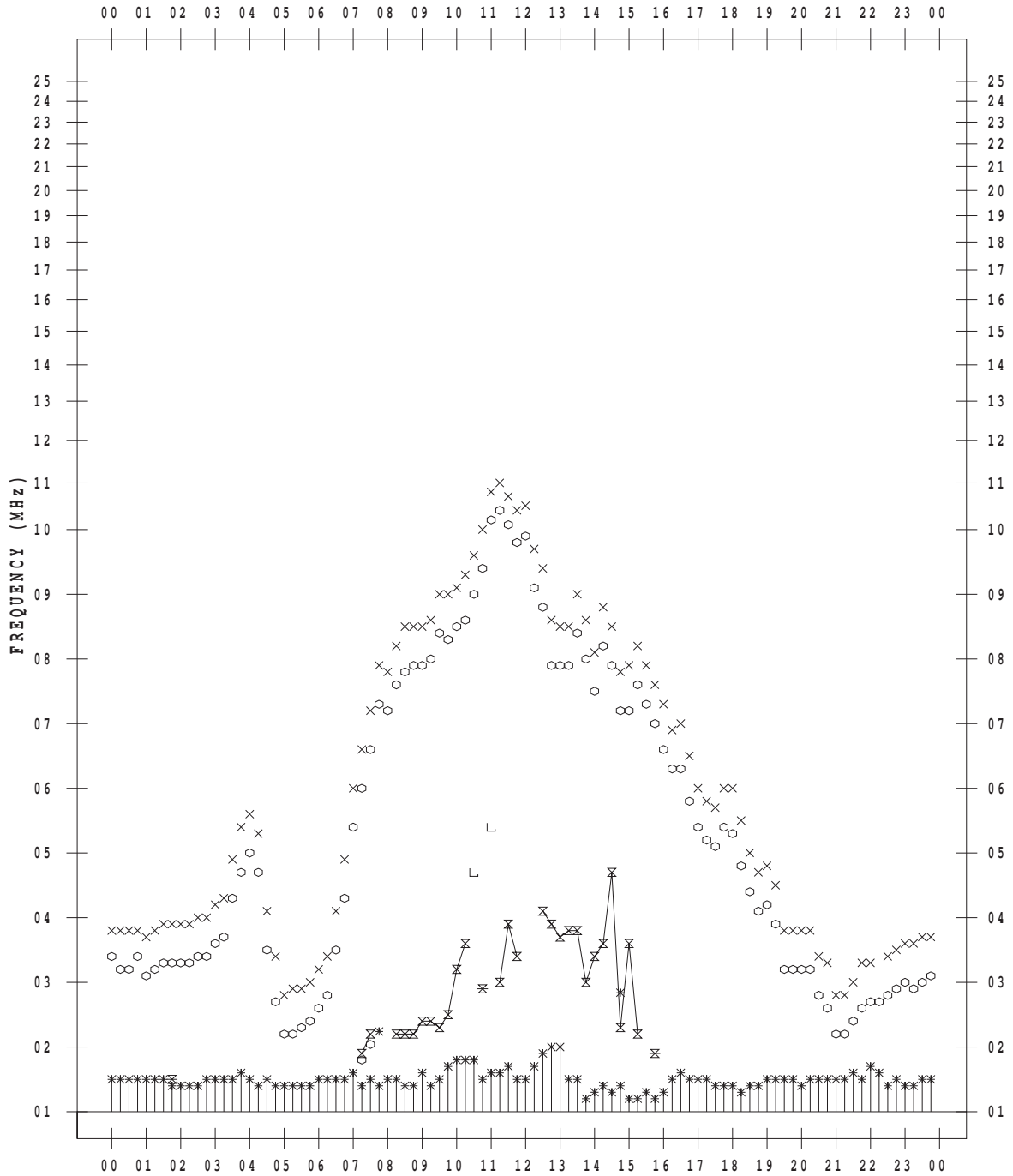
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/12/24

135 ° E MEAN TIME



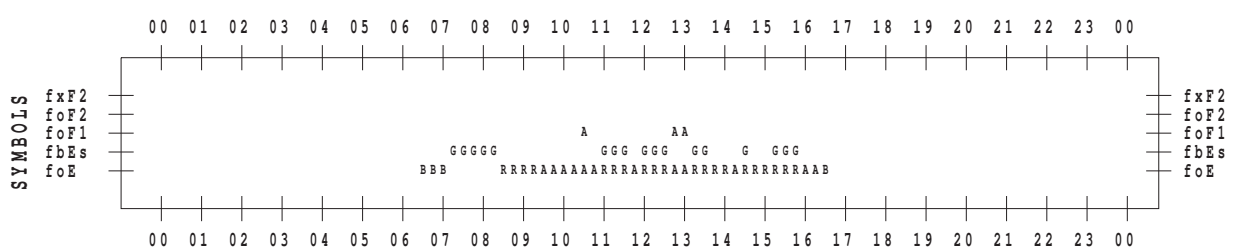
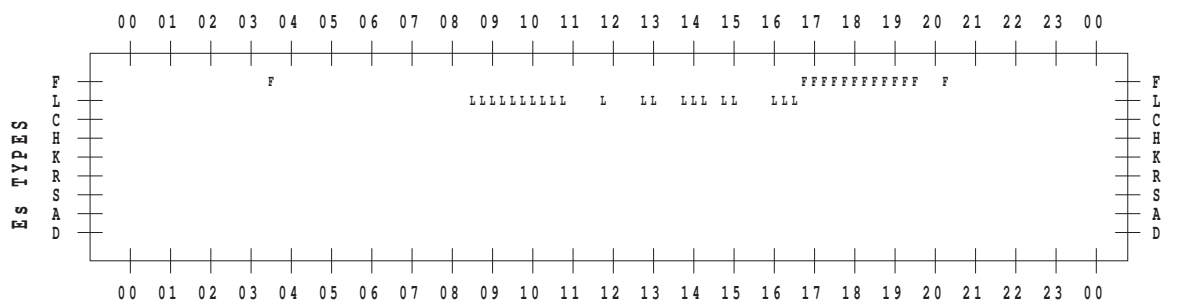
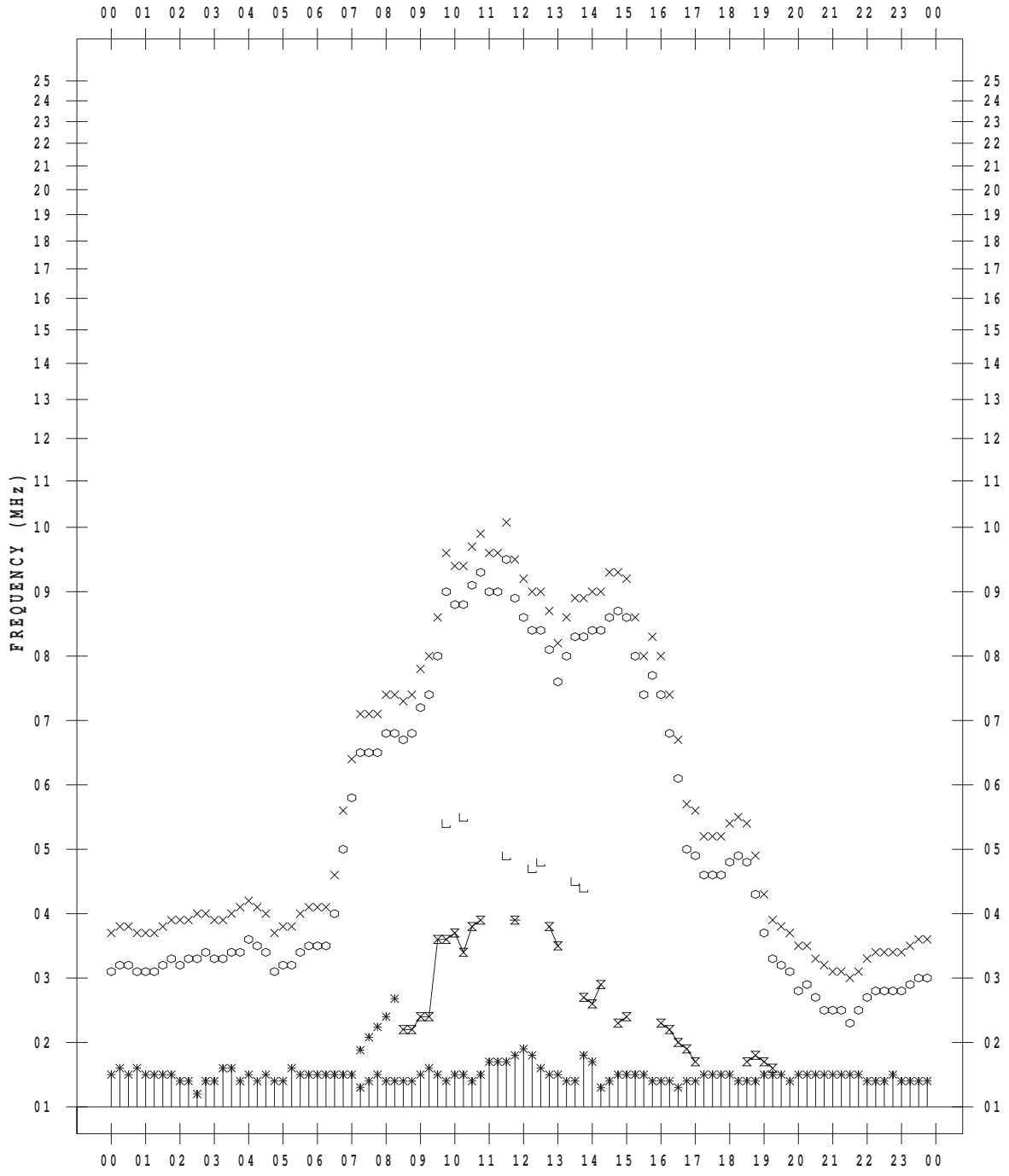
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/12/25

135 ° E MEAN TIME



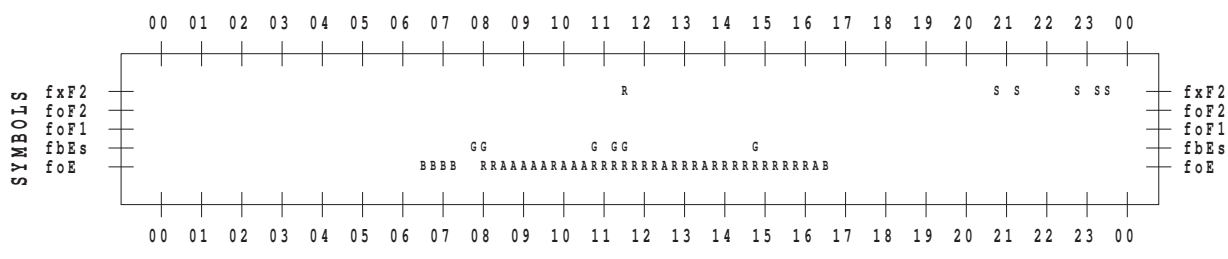
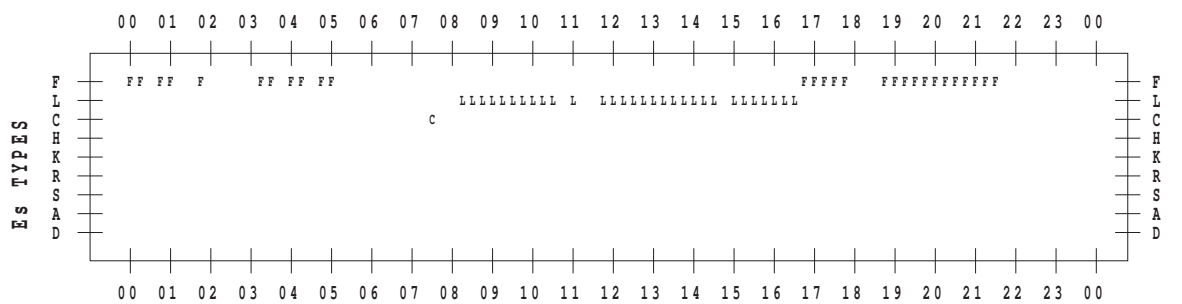
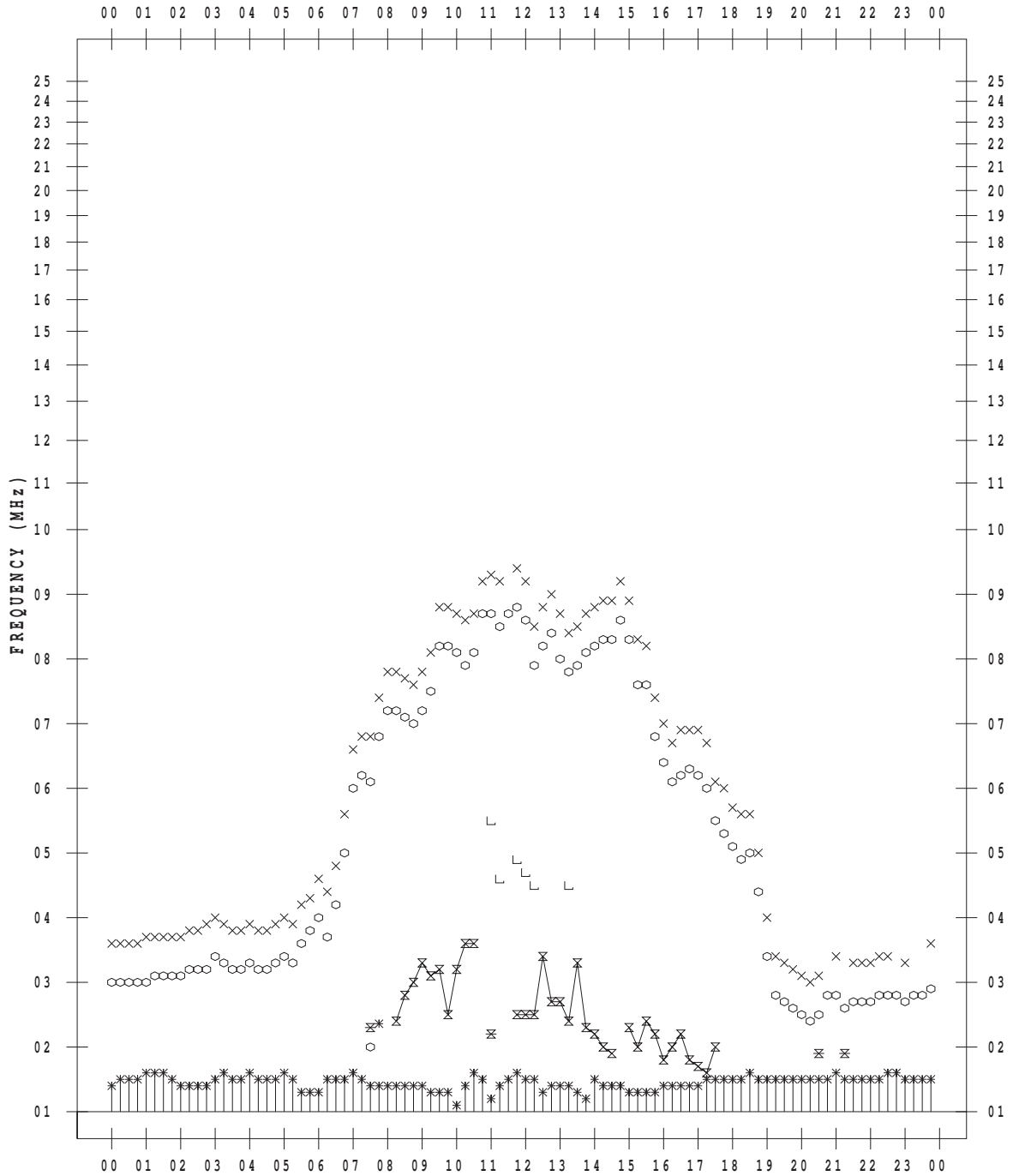
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/12/26

135 ° E MEAN TIME



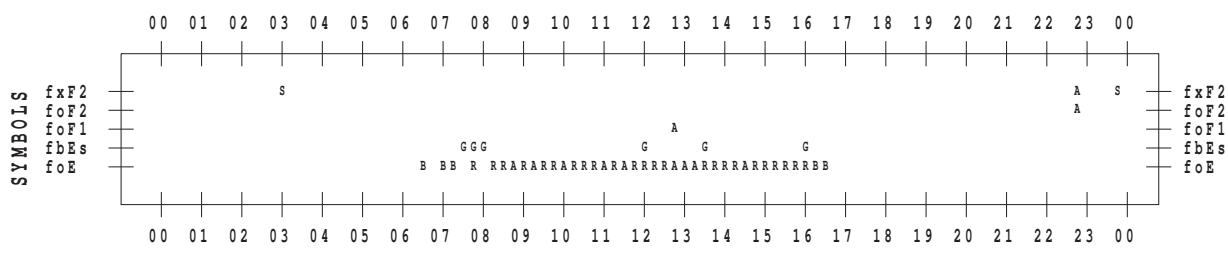
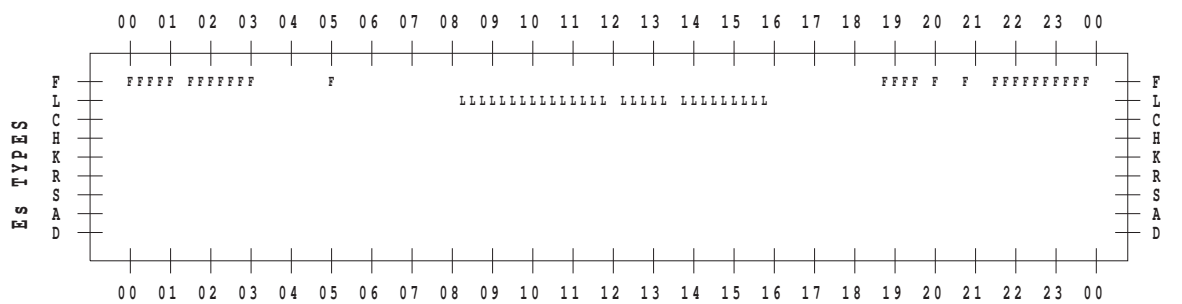
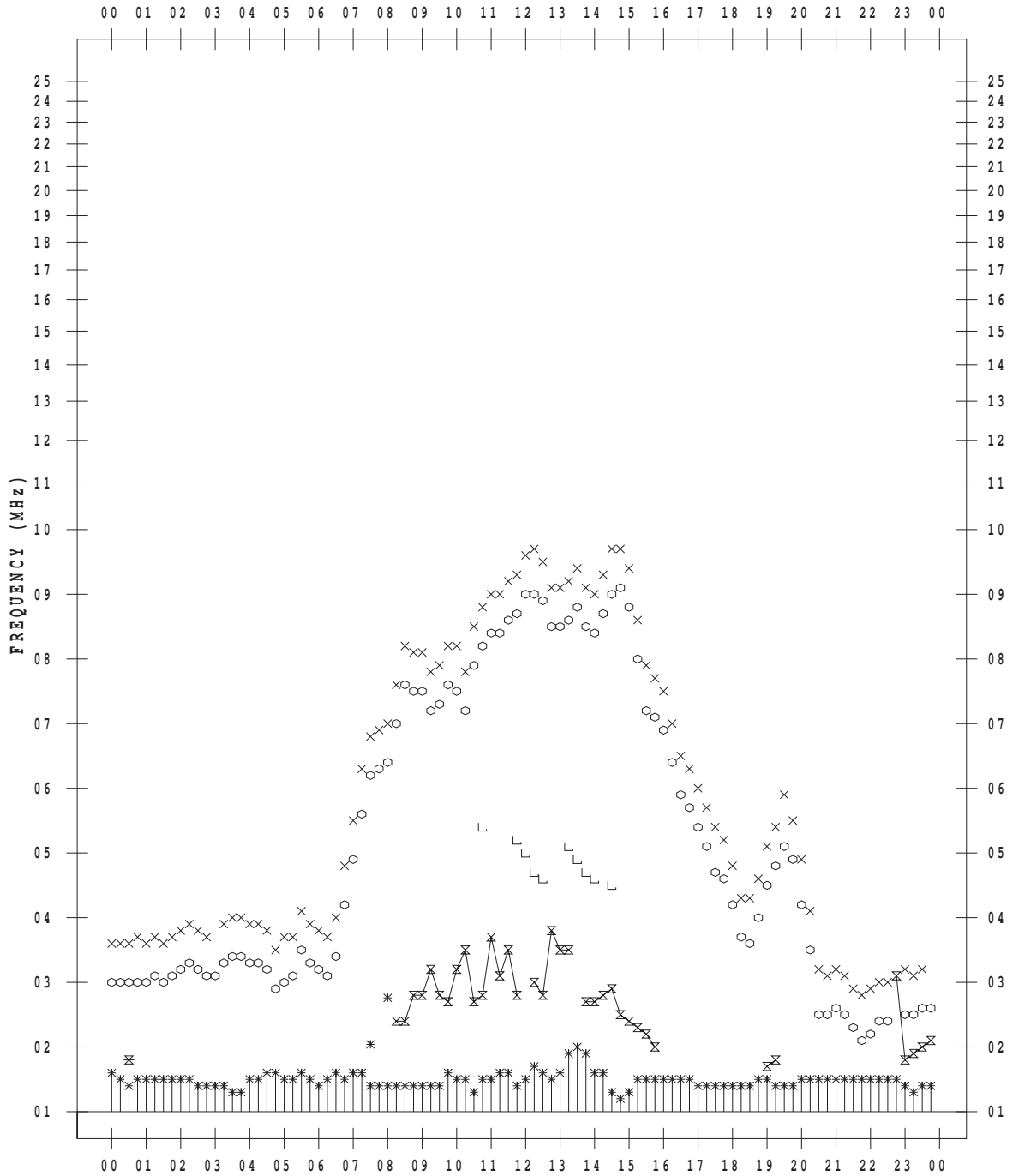
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/12/27

135 ° E MEAN TIME



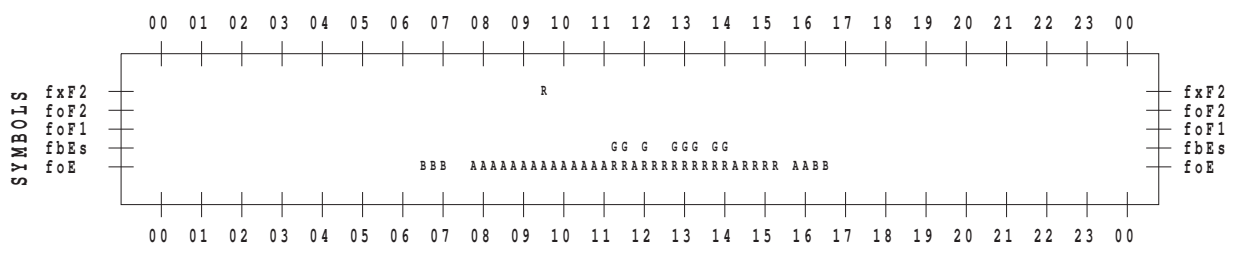
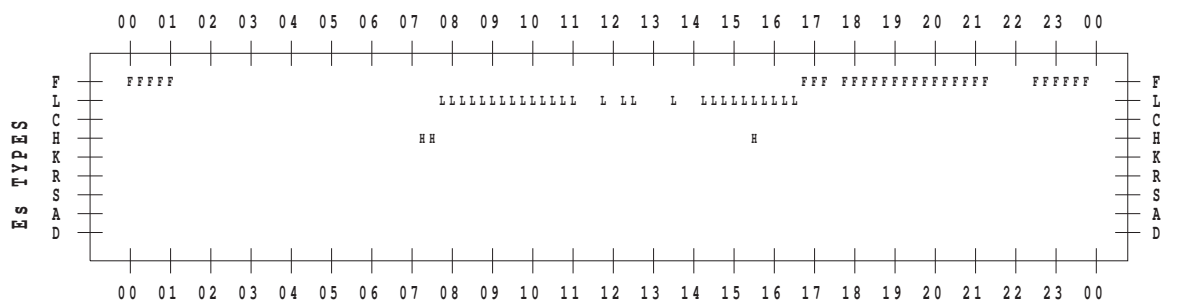
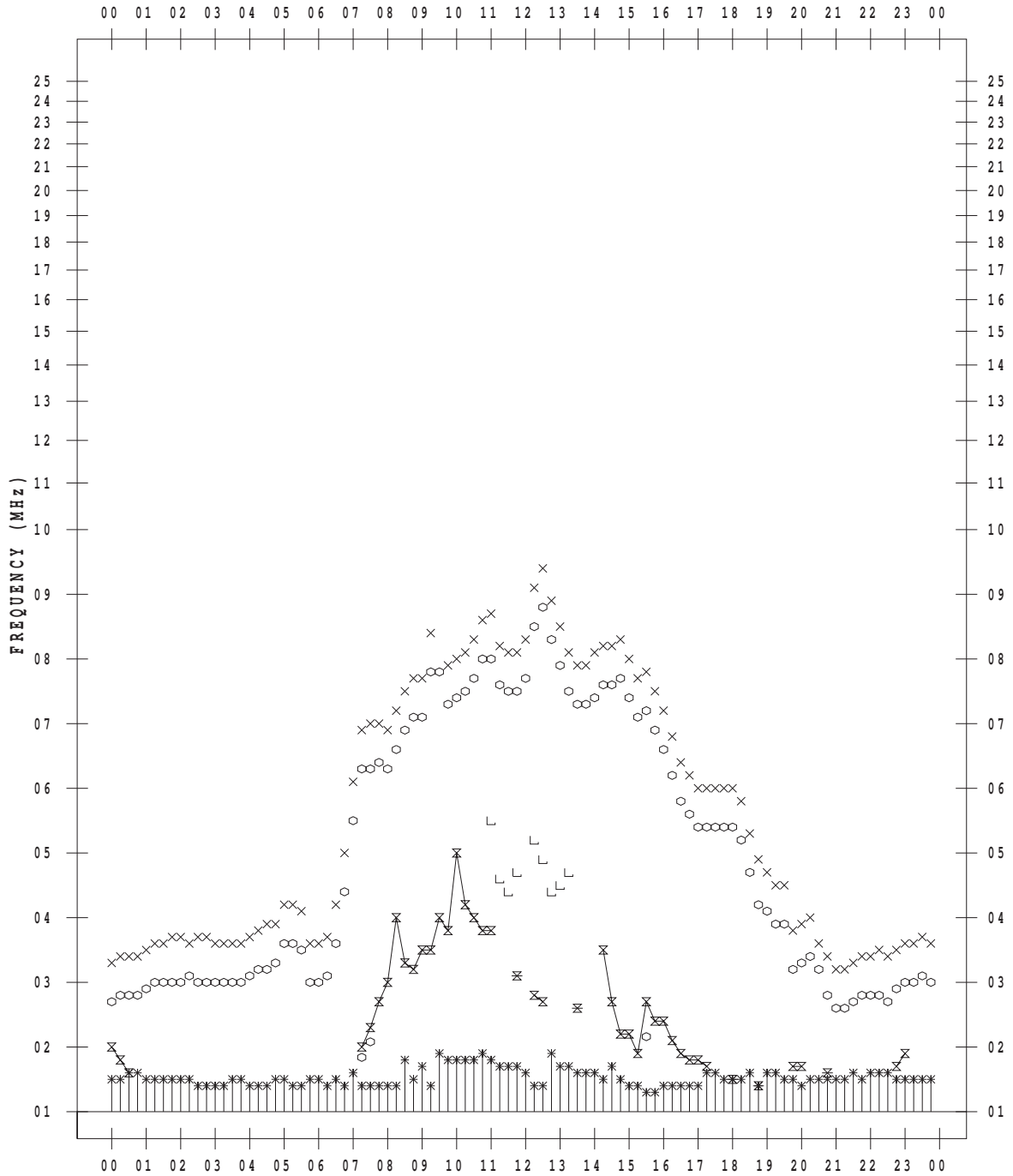
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/12/28

135 ° E MEAN TIME



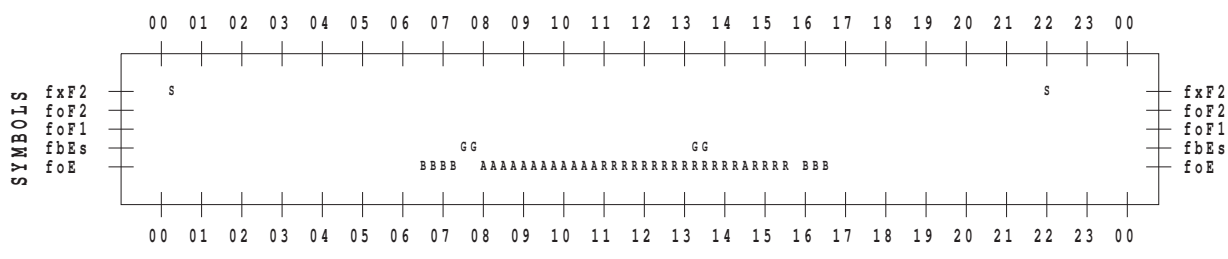
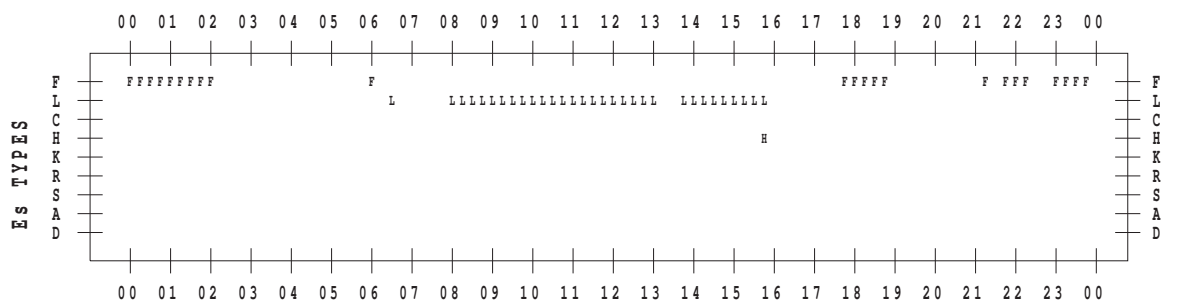
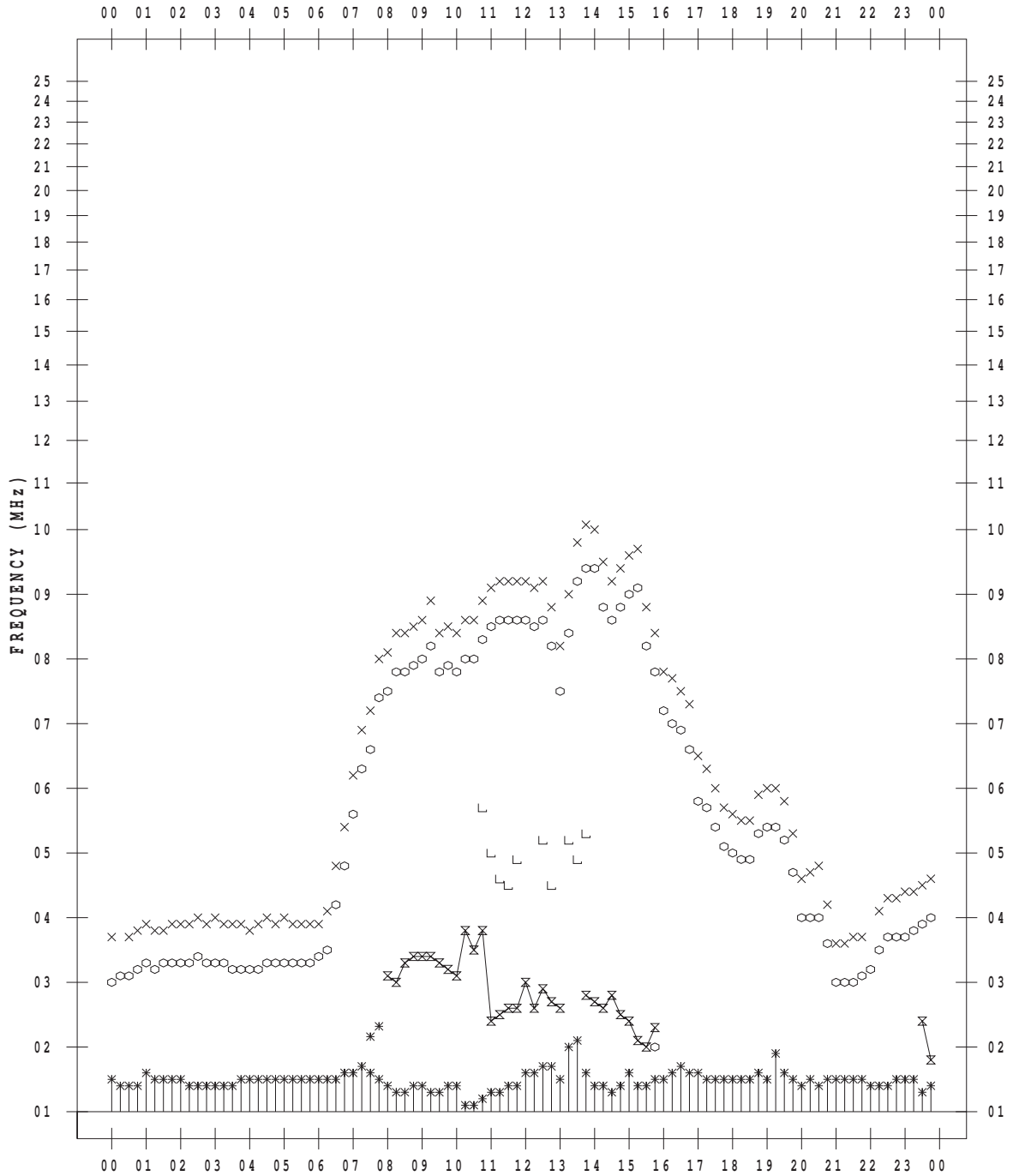
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/12/29

135 ° E MEAN TIME



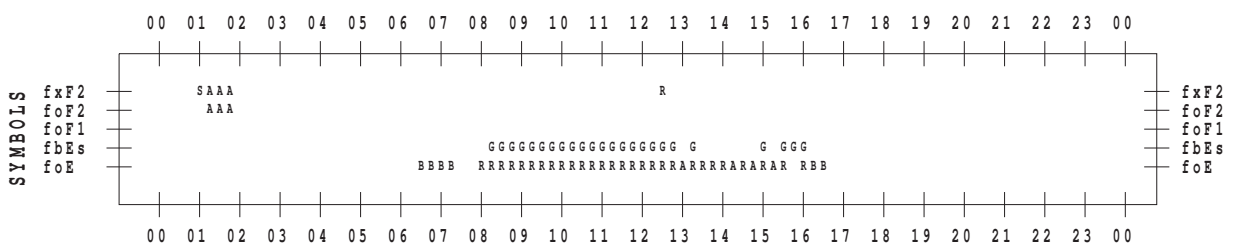
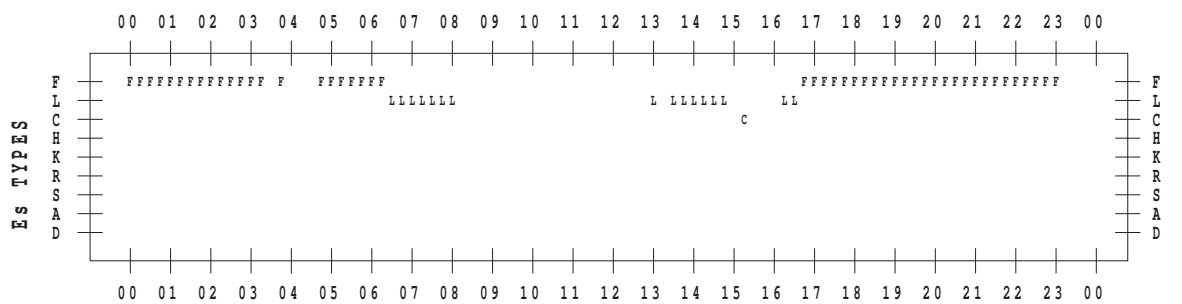
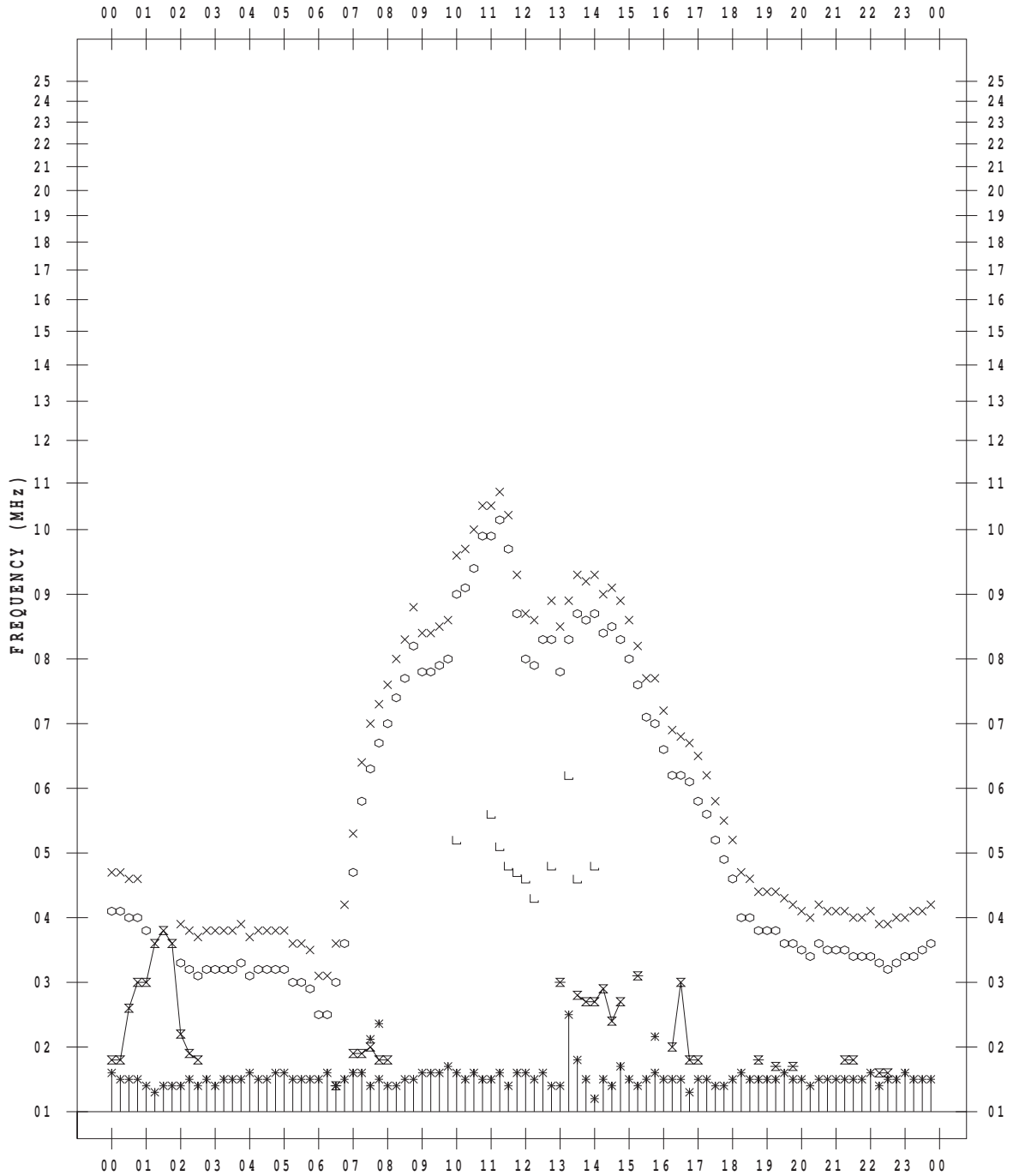
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/12/30

135 ° E MEAN TIME



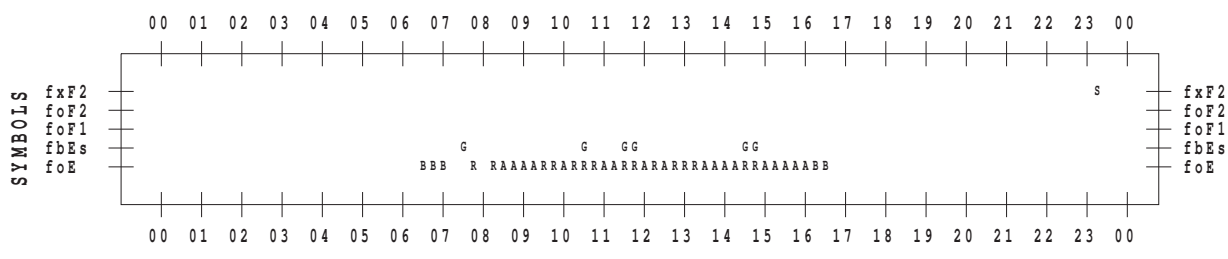
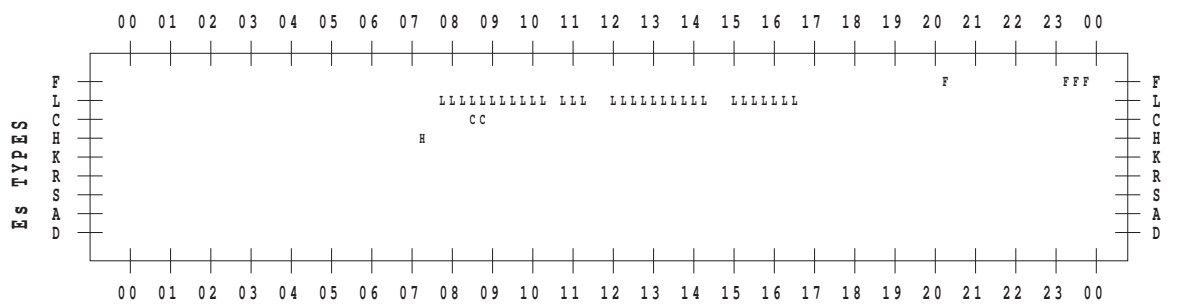
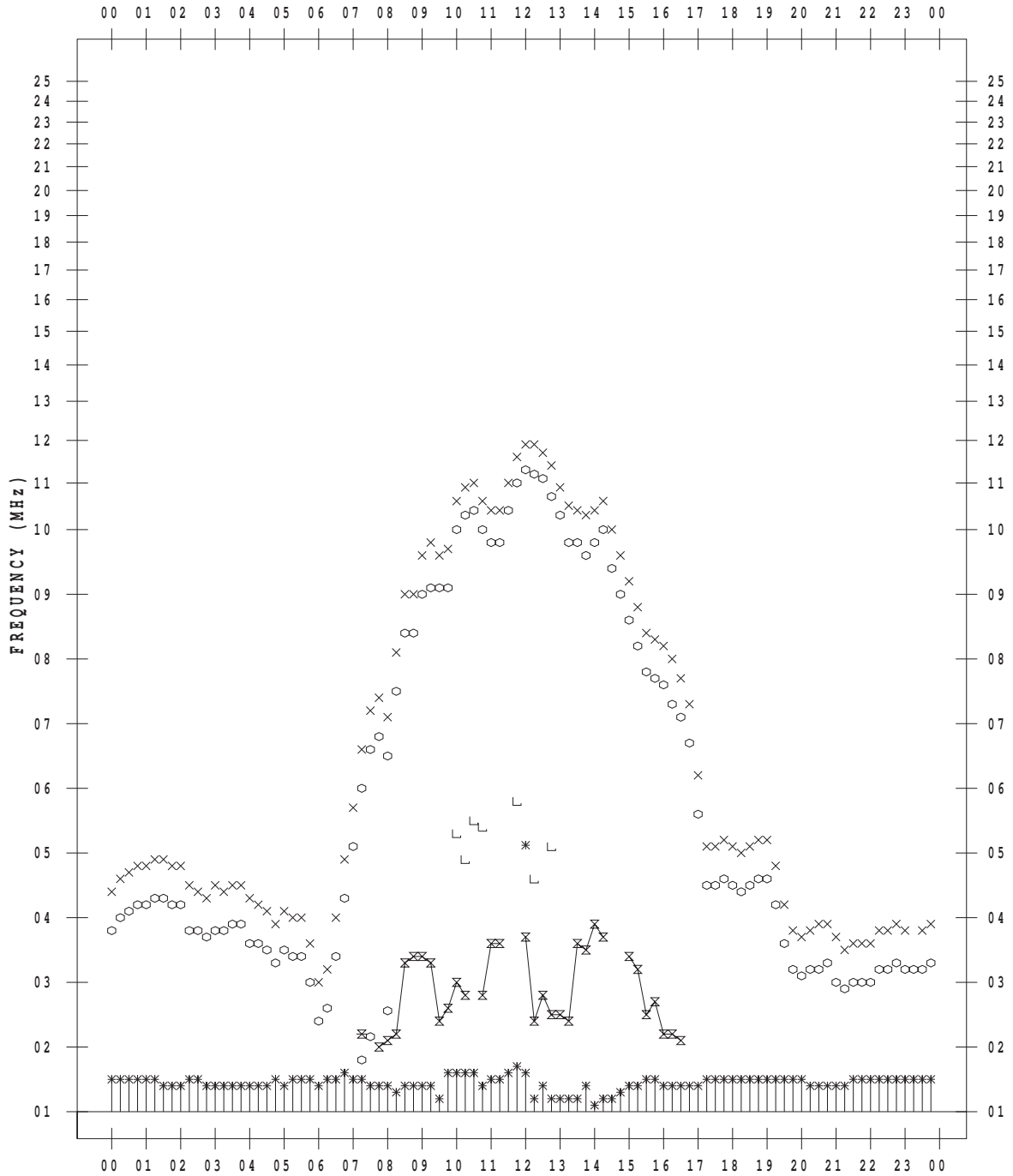
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/12/31

135 ° E MEAN TIME



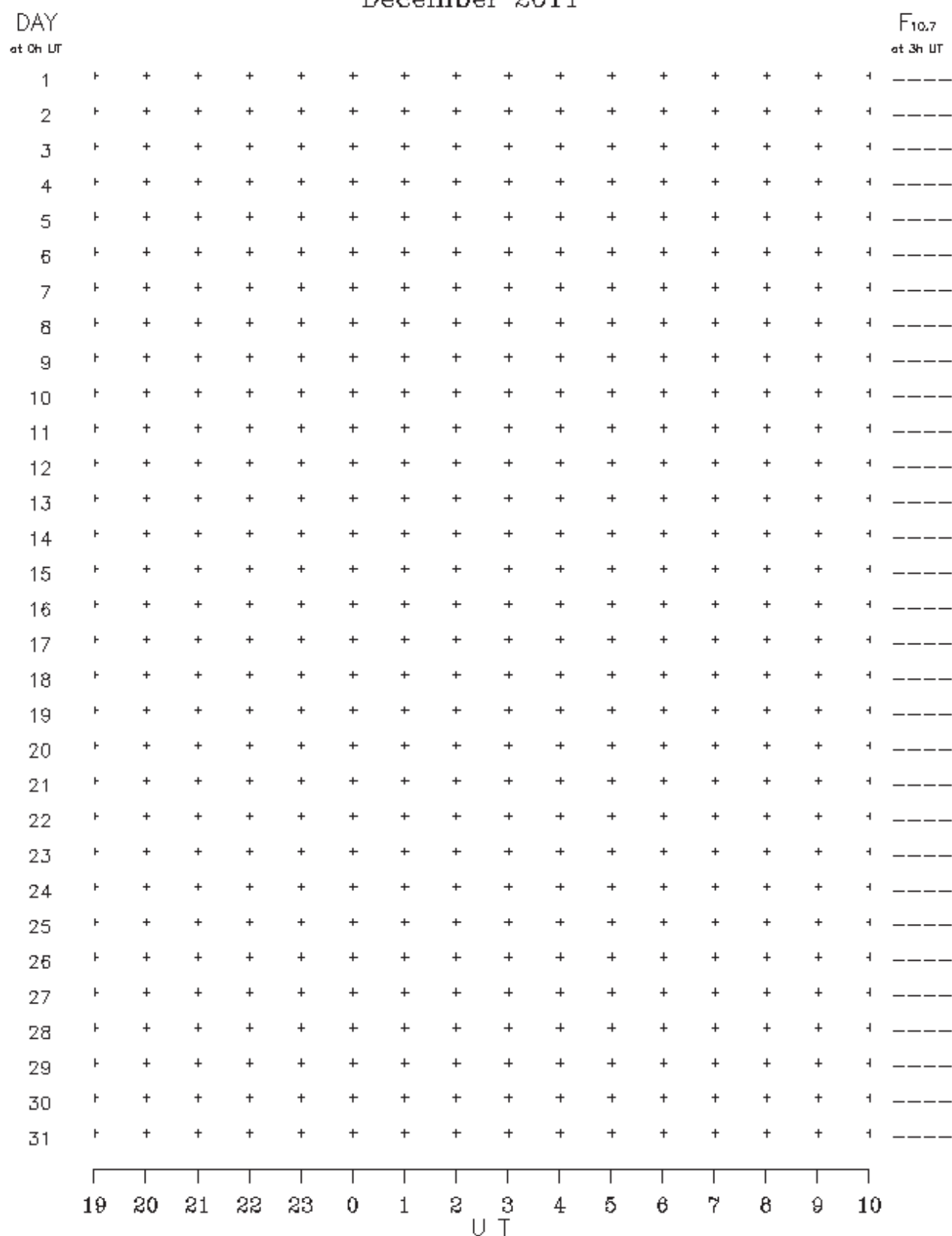
B. Solar Radio Emission
 B1.Outstanding Occurrences at Hiraiso

Hiraiso

December 2011

Single-frequency observations								
Normal observing period: 2135 – 0730 U.T. (sunrise to sunset)								
DEC.	FREQ.	TYPE	START TIME (U.T.)	TIME OF MAXIMUM (U.T.)	DUR. (MIN.)	FLUX DENSITY ($10^{-22} \text{ W m}^{-2} \text{ Hz}^{-1}$)		POLARIZATION REMARKS
						PEAK	MEAN	
2011	(MHz)							

B.Solar Radio Emission
 B2. Summary Plots of $F_{10.7}$ at Hiraïso
 December 2011



Note: A vertical grid space corresponds to a 100 sfu.

Elevation angle range $\geq 6^\circ$

A link to the daily plot data directory : <http://sunbase.nict.go.jp/solar/denpa/hirasDB/2011/12/>