F-746

IONOSPHERIC DATA IN JAPAN

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≪Real Time Ionograms on the Web ・・・・・・・・・・・・・http://wdc.nict.go.jp/index_eng.html≫

NATIONAL INSTITUTE OF INFORMATION
AND COMMUNICATIONS TECHNOLOGY
TOKYO, JAPAN

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 (*foF2, fEs*, *fmin*) and monthly medians of two factors (*h'Es* ,*h'F*), daily Summary Plots and monthly medians plot of *foF2*.

a. Characteristics of Ionosphere

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

b. Descriptive Letters

The following descriptive letters are used in the tables.

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

C Impossible measurement because of any failure in observation.

G Impossible automatic scaling because of 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 auto matic 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 *foF2 , fEs* and *fmin* were scaled within a difference of 1 MHz from about 90, 90 and 99%, respectively of the test ionograms.

e. Summary Plot

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

A2. Manual Scaling

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

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

a. Characteristics of Ionosphere

fxI	Top frequency of spread ***F*** trace
foF2 ***foF1*** ***foE*** ***foEs***	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 replaced a numerical value on the monthly tabulation sheets, if necessary.

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

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

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

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

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

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

G Measurement influenced by, or impossible because the ionization density of the layer is too small to enable it to be made accurately.

H Measurement influenced by, or impossible because of, the presence of a stratification.

K Presence of particle *E* layer.

L Measurement influenced or impossible because the trace has no sufficiently definite cusp between layers.

M Interpretation of measurement questionable because the ordinary and extraordinary components are not distinguishable.

N Conditions are such that the measurement cannot be interpreted.

O Measurement refers to the ordinary component.

P Man-made perturbations of the observed parameter; or spur type spread *F* present.

Q Range spread present.

R Measurement influenced by, or impossible because of, attenuation in the vicinity of a critical frequency.

S Measurement influenced by, or impossible because of, interference or atmospherics.

T Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.

V Forked trace which may influence the measurement.

W Measurement influenced or impossible because the echo lies outside the height range recorded.

X Measurement refers to the extraordinary component.

Y Lacuna phenomena, severe layer tilt.

Z Third magneto-electronic component present.

(ii) Qualifying Letters

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

A Less than. Used only when *fbEs* is deduced from *foEs* because total blanketing of higher layer is present.

D Greater than.

E Less than.

I Missing value has been replaced by an interpolated value.

J Ordinary component characteristic deduced from the extraordinary component.

M Mode interpretation uncertain.

O Extraordinary component characteristic deduced from the ordinary component. (Used for x-characteristics only.)

T Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.

U Uncertain or doubtful numerical value.

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-sociated 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} Wm^{-2} Hz^{-1} unit, and the polarization.

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

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

FEB. 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	29	32	32	32	32	32	29	43	47	55	64	60	60	53	62	57	51	29	43	34	32	34	34	34
2	34	34	36	34	37	32	34	31	60	56	61	62	67	66	57	54	56	38	32	34	34	34		32
3	34	34	34	34	31	41	34	45	59	65	64	61	64	62	60	62	53	45	35	34	34	34	34	34
4	34	34	34	28	29	26		44	59	60	59	61	58	66	59	56	47	51	34	28		29	28	29
5	29	31	31	30	28	31	30	37	59	53	58	66	64		66	67	65	62	55	34	31	31	34	54
6	64	64	62	58	57	44	42	46	62	62	67	64	68	67	63	70	61	43	34	34	34	37	34	43
7	32	35	34	34	32	29	34	47	60	67	67	66	67	66	64	64	60	44	34	32	34	34	38	37
8	37	37	30	34	31	36	29	47	63	59	55	65	70	62	65	70	62	41	26	32	32	37	32	32
9	37	38	38	31	37	34	34	47	59	60	63	61	68	68	61	60	56	47	37	41	34	34	34	36
10	34	32	32	43	42	36	34	50	58	60	64	69		70	62		57	50	30	34	34	32	41	42
11	29	32	42	43	44	43	37	52	66	62	65	69		69	56	70	63	51		34	36	34	37	32
12	37	31	34	34	37	29	32	49	52	61	67	60	69	75	62	61	65	53	29	42	32	44	35	42
13	33	45	47	51	48	44	34	46		62	65	64	64	67	60	62	65	50	42	43	43	37	42	37
14	42	32	34	34	38	38	39	54	61	68	58	65	65	64	64	60	58	57	35	34	35	32	32	34
15	34	34	34	34	36	34	40	48	63	59	66		70	67	65	68	68	67	46	42	42	32	38	34
16	43	36	37	40	38	32	34		66	63	59	64	69	70	60	65	63	56	34	31	37	36	40	42
17	44	44	32	40	38	34	34	54	64	64	67	66	77	67	69	66	65	48	34	32	31	38	34	34
18	32	34	34	34	34	26	30	54	67	68	66	63	68	68	65	64	66	62	47	43	34	28	30	28
19	31	32	34	35	34	32	27	52	63	67	67	91	63	70	69	64	65	52	41	42	32	34	32	34
20	34	34	34	38	32		28	55	67	71	68	59	69	67	66	67	64		42	37	37	32	32	34
21	30	36	37	36	36		29	54	67	64	63	68	59	64	65	68	66	55	34	32		32	34	34
22	34	34	23		28		32	58	68	66	67	70	68	67	64	67	68	58	43	32	34	38	37	37
23	34	32	41	38	32	34	32	52	61	64		67	61	56	66	68	64	57	38	37	35	A	A	37
24	29	34	36	34	34	32	34	54	70	68	69	58	65	68	58	65	65	55	42	34	32	34	32	32
25	32	34	34	34	34	29	34	58	61	58	60	61	64	62	63	63	65	58	48	37	34	31	34	34
26	34	34	32	32	32	32	37	52	57	58	56	61	67	68	61	58	60	61	44	42	36	29	34	38
27	31	34	34	36		31	30	50	64	64	60	67	70	68	67	67	67	65	53	44	34	34	34	36
28	34	35	34	34		37	42	58	62	66	64	67	67	66	68	64	65	61	36	45	32	30	26	31
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	27	26	25	27	27	27	28	27	27	26	27	28	27	28	27	27	28	26	27	26	28
MED	34	34	34	34	34	32	34	50	62	62	64	64	67	67	64	64	64	53	37	34	34	34	34	34
U Q	35	35	36	38	38	36	34	54	66	66	67	67	69	68	65	67	65	58	43	42	35	36	37	37
L Q	31	32	33	34	32	31	30	46	59	59	60	61	64	64	60	61	59	47	34	33	32	32	32	33

HOURLY VALUES OF fEs AT Wakkanai

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

HOURLY VALUES OF fmin AT Wakkanai

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

HOURLY VALUES OF foF2 AT Kokubunji

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

HOURLY VALUES OF fEs AT Kokubunji

FEB. 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	G	G	G	37	G	G	G	35	G	32	22	G	22	34	31	G
2	24	G	G	G	G		G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
3	G	G	24	G	23	G	G	G	45	G	G	G	G	G	G	G	G	28	G	G	G		G	G
4	G		G	G	G			28	36	42	G	G	G	43	G	G	G	31	G	G	G	29	26	G
5	G	G	G	G		G		26	31	G	43	48	47	53	G	40	50	30	34	38	34	34	G	G
6	G	G	G	G	G	G	G		G	G	G	G	G	47	50	34	34	41	26	G	G	G	G	G
7	G	G	G	G	31	G	G	28	G	G	50	G	44	G	G	G	G	G	23	G	G	G	G	G
8	G	G	32	23	G		G	G	G	G	G	G	G	45	G	35	47	35	43	G	G		G	G
9	G	G	G	G	G	G	G		G	G	G	G	44	G	G	G	G	G	G	G	29	G	25	G
10	G	G	G	G	G	G	20	26	43	G	G	43	46	48	G	G	G	G	G	G	G	G	G	G
11	G	46	24	G	G	G	G	G	G	G	G	G	52	G	G	G	G	G	G		G	G	G	G
12	G	G	G	G	G		G	36	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	23
13	G	G	G	26	G	24	G	29	G	G	G	G	G	G	38	G	31	G	G	G	G	26	G	G
14	G	G	G	G	G	G	G	G	G	G	G	G	42	G	G	G	G	G	G	G	G	G	G	G
15	G	G	G	G	G	G	G	G	G	G	G		G	G	G	G	G	G	26	23	G	G	25	G
16	G	G	23	G	23	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	24	G	G
17	G	G	G	G	G	G	G	28	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
18	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	11	29	G	G	G	28
19	24	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	27	G	G	G	G	G	G
20	G	G	G	G			G	29	G	C	C	C	C	C	C	C	C	C	65	G	G	G	G	
21	G	G	G	G	G		G		G	G	G	G	G	48	G	G	G	G	27	G	23		G	G
22	G	G	G	G			G	G	G	G	G	G	G	G	G	G	G	G	11	G	G	G	G	G
23	G	G	G	G	G	G	G	G	G	G	G	G	G	G	37	G	G	37	G	G	G	G	G	G
24	G	G	G	G	G	G	G	G	G		G	40	G	48	60	50	35	33	G	G	24	G	28	G
25	G	G	G	G	G		G		G	G	G	G	G	G	G	G	G	G	G	G	G	G	29	25
26	G	G	G	G	G	G	11	G	G	G	G	G	G	G	G	G	G	G	11	G	G	G	25	G
27	G	G	G	G	G	G	G	G	G	G	G	51	G	G	G	G	G	26	11	30	28	G	G	G
28	G	G	G	G	G	G	G	N	G	G	G	G	G	G	G	G	G	G	11	G	G	G	G	G
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	27	28	28	25	20	25	23	28	26	27	26	27	27	27	27	27	27	28	27	28	25	28	26
MED	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
U Q	G	G	G	G	G	G	G	28	G	G	G	G	G	43	G	G	G	30	22	G	G	G	13	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

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

HOURLY VALUES OF foF2 AT Yamagawa

FEB. 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	28	28	29	29		26		31	52	55	50	64	58	58	60	57	72	65	44	45	45	34	59	28
2	28	30		26	30	29	28	32		53	67	72	73	64	A	55	60	60	47	38	38	40	34	
3		32	32	30	28			29	58		57	51	67	69	64	63	52	51	41	34	37	41	31	29
4	26	25	26	26	30			29		66	62	84	70	71	74	67	58	58		47	45	28		
5	28	28		34			26	32	66	56	56	68	87	101		62	60	70	50	43	38	28	A	32
6	32	34		32	36			37	53	55	69	60	54	88	85	87	64	58	47	34	30	31	29	
7		34	A	28	A			38	52	68	68	84	84	58	88	62	60	57		A	30		28	
8		26		32	34	28		34	67	62	63	56	92	82	85	72	64	60	51	34	28	28	30	30
9	30	26	32	32	36	20	28		44	67	66	68	A	71	78	83	77	46	52	40	34	31	29	31
10	31	34	32	34	34	32	28		56	64	67	67	80	68	78	78	66	55	50		37	32	34	34
11	34	30	34	40	44	25		40	59		65	76	81	80	69	88	81	73	51	28	30	34	37	
12	36	36	38	36	41			37	60	61	65	71	74	62	80	71	66	62	52	42	43	37	34	28
13	26	34	34	32	34			37	52	65	64	73	69	78	77	76	59	63	67	47	37	38	40	34
14	34	34	34	34	34	49		42	40	C	C	C	C	C	C	C	C	62	54	54	43	40	32	34
15	38		29	27	31	28	26	43	52	C	C	C	C	C	C	C	90	83	60	44	42	37	37	36
16	37	40	32	36	38	37	32	41	60	78	87	69	92	66	77	75	66	64	52	49	37	38	40	40
17	37	33	26	34	40	30	32	40	60	77	91	111	69	89	90	96	88	80	71	51	46	44	43	44
18	32	42	42	43	42	30	28	42	64	67	81	114	69	114	96	83	72	64	66	42	37	38	37	32
19	36	34	42	43	40	29		40	52	78	81	87	88	79		70	66	58	51	41	36	34	34	34
20	34	36	42	40				40	53	74	93		76	85	85	75	70	66	54	44	36	38	34	34
21	29	34	34	37	36				59	67	77	90	81	76		85	71	64	62	39	37	34	28	32
22	26	32	34	36	34			42	53	67	75	79	82		90	81	68	72	71	44	34	32	29	30
23	32	30	30	32	40			42	54	62	62	65	77	85	88	81	70	71	62	51	46	42	30	34
24	34	28	34	37	36	28		44	46	65	62	68	77	78	63	85	68	65	59	42	38	34	34	32
25	32	32	32	34	36	32			54	56	71	67	67	55	67	68	67	67	64	47	40	A	32	29
26	25	28	31	34	34	34	25	42	55	54	64	65	57	70	86	86	86	68	68	50	47	36	37	36
27	31	36	37	37	40	28	25	46	55	60	68	72	82	88	94	86	78	88	77		A	34	30	30
28	26	32	34	32	31	30	28	50	56		69	73	78	87	91	77	74	83	68	37	41	42	36	36
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	27	23	28	24	17	11	24	26	23	26	25	25	25	22	26	27	28	26	25	27	26	26	23
MED	32	32	34	34	36	29	28	40	54	65	67	71	77	78	82	76	68	64	54	43	37	35	34	32
U Q	34	34	34	36	40	32	28	42	59	67	75	81	82	86	88	85	74	70	66	47	43	38	37	34
L Q	28	28	31	32	34	28	26	35	52	56	63	66	69	67	74	68	64	59	51	38	36	32	30	30

HOURLY VALUES OF fEs AT Yamagawa

FEB. 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	G	G		G	G	G	G	G	38	47	42	46	39	41	45	34	34	26	32	G	24	G
2	G	G	29	G	G	G	G	G	28	G	41	54	G	45	72	44	62	40	35	29	G	G	G	
3		G	G	G	G	G	G	G	G		43	38	39	40	G	G	G	36	26	G	G	24	G	G
4	G	G	G	G	G			G		36	36	39	G	G	G	G	G	34	38	28	32	G	25	
5	G	G		G	G	G	G	G		40	46	46	51	49		40	37	30	27	28	G	G	39	25
6	40	G	G	G	G	G		25	34	47	46	45	43	44	49	42	36	33	G	G	G	G	G	
7	G	G	27	33	34	29	G	G	28	G	G	42	46	44	56	40	36	37	32	30	23	24	G	37
8		G	G	G	31	G		G	32	34	55	46	48	55	51	48	34	29	25	26	G	G	G	G
9	G	G	G	G	G	G	G	G	32	G	38	50	89	G	G	G	33	30	23	G	G	23	G	G
10	24	G	G	G	G	G	G		G	G	44	G	48	50	39	G	G	G	11	29	G	G	G	G
11	G	G	G	G	G	24	G	G	G		G	40	G	40	39	G		G	11	G	G	G	G	G
12	24	G	24	G	G		23	G	32	36	G	G	G	40	G	48	36	G	G	G	G	G	G	G
13	G	G	G	G	G	G	G	G		34	G	G	G	42	G	44	G	36	G	11	G	G	G	G
14	G	G	G	G	G	G	G	G	30	C	C	C	C	C	C	C	C	32	G	G	G	G	G	G
15	G	G	G	G	G	G	G	G	34	C	C	C	C	C	C	C	36	G	G	G	G	G	G	G
16	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	36	G	G	G	G	G	G	G
17	G	G	G	G	G	G	G	G	32	35	G	40	G	G	48	41	34	G	G	G	G	G	G	23
18	G	G	G	G	G	G	G	24	G	36	G	39	G	42	G	G	54	41	29	24	G	G	G	G
19	G	G	G	G	G	G		G	G	G	39	42	G	44	61	38	G	30	25	G	G	G	G	G
20	G	G	G	G				G	G	44	G		G	41	G	G			G	G	G	G	G	G
21	G	G	G	G	G	G		G	G	40	G	46	47	48	G	46	35	30	G	26	24	G	G	G
22	G	G	G	G	G		G	G		G	G	G	G	43	G	G	35	G	G	G	G	G	G	G
23	G	G	G	G	G	G	G	G		N		G	G	46	G	G	34	G	G	G	G	G	G	G
24	G	G	G	G	G	G	G	G	G	G	37	G	G	48	40	51	41	40	37	11	G	G	G	G
25	28	25	G	G	G	G		G	G	36	44	45	50	41	45	G	44	54	44	34	25	42	25	G
26	G	G	G	G	G	G	G		46	51	G	G	48	G	G	G	38	34	G	G	24	24	G	G
27	G	G	G	G	G	G	G	G	G	G	G	G	50	42	G	G	41	34	28	32	46	28	G	G
28	G	G	G	G	G	G	G	G	G		38	N	G	G	45	G	52	61	35	47	G	G	G	G
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	28	27	28	26	24	21	26	23	22	25	24	26	26	25	26	25	27	28	28	28	28	28	25
MED	G	G	G	G	G	G	G	G	G	34	36	40	G	42	G	G	36	32	17	6	G	G	G	G
U Q	G	G	G	G	G	G	G	G	32	36	42	45	48	46	46	42	41	36	30	28	12	G	G	G
L Q	G	G	G	G	G	G	G	G	G	G	G	G	G	40	G	G	33	G	G	G	G	G	G	G

HOURLY VALUES OF fmin AT Yamagawa

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

HOURLY VALUES OF foF2 AT Okinawa

FEB. 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	34								56	56	59	58	63	68	66	70	75	92	71	44	52	39		
2					29			29	58	69	71	83	101	83	72	70	A	64	63	44	34		42	
3	32		34						62	67	55	70	71	94	85	68	58	52	52			41		32
4	31								53	67	78	102	102	130	127	102	84	70	61	A	49	44		
5	36	31	34	34				30	63	70	52	65	98	127	108	77	63	86	80	31		30		
6	26	A		29	34			28	64	58	60	76	87	100	139	141	108	80	72	63	30	41	37	32
7	42	44	38	41	A				60	75	77	84	98	124	140	146	128	104	88	49	A	A		
8	A		34	32	32				54	67	72	76	98	130	140	128	101	A	81	A		A	A	28
9			34	30	34	28		30	60	65	71	78	75	78	110	131	115	80	57	44	42			29
10	32	34	32	32	34	31		29	55	64	68	82	70	86	77	101	100	67	60	34	41	34		
11	34			42	30			30	58	67	82	81	82	100	136	148	130	104	92	47			44	40
12		34	41					32	59	66	78	80	75	82	90	91	92	87	88	67	54	64	43	
13			36	43	34			34	57	59	72	76	80	74	87	85	78	84	81	79	54	53	53	46
14		36	49			34		32	60	65	78	86	95	101	82	88	70	75	69	67	71	53	53	44
15	44	42	32	36				34	61	86	84		71	76	87	101	97	92	86	66	53	53		
16	32	31		34	34	A		34	70	85	101	104	117	92	83	86	78	70	62	52	58	44	53	51
17	41	47						34	61	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	85	88	51	47		44	32
19	44			50	32			34	57	C	C	C	C	C	C	C	C	68	54		32		38	
20	29	34	37	31				32	63	76	90	106	110		104	84	77	81	67	47	43			30
21	32	34	32	38	40			37	61	68	77	110	121	104	120	121	103	106	106	84	53	49		
22	36				29	A		37		70	82	84	92	101	122	105	92	84	77	63	42		32	28
23		34	28	31	30			38	54	58	70	72	90	100	108	116	118	113	106	86	74	67	45	
24		53	51	53	45	32		46	60	65	62	70	81	97	109	104	97	82	78	66	53	42	44	36
25			32	34	44	30		40	58	55	72	78	76	71	80	71	77	80	78	67	67			
26				41	43	29		42	54	61	60	69	72	67	91	110	117	98	88	79	80	54	43	
27	47	42	44	34	44			42	61	58	65	82	88	89	105	117	113	118	113	88	84	53	42	
28		32	38		34		26	43	58	61	68	86	88	105	118	125	114	121	130	88	84	76	66	53
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	16	14	17	18	17	6	1	22	26	25	25	24	25	24	25	25	24	26	27	23	22	17	15	13
MED	34	34	34	34	34	30	26	34	60	66	72	80	88	96	105	102	97	84	78	63	53	49	44	32
U Q	41	42	39	41	41	32	13	38	61	69	78	85	98	102	121	123	113	98	88	79	67	53	53	45
L Q	32	34	32	32	31	29	13	30	57	60	63	74	75	80	84	84	77	75	63	47	42	41	42	29

HOURLY VALUES OF fEs AT Okinawa

FEB. 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	N	G	G	G	G	G	G	G	G	G	G	
2					G	G		G	30	G	G	40	40	54	57	45	73	34	G	G	G	G	G	
3	G	G	G		G				G	G	G	G	G	G	G	G	35	G	G			26		G
4	G	G			G			G	G	G	36	40	G	G	G	G	G	44	40	56	31	30	G	
5	G	G	G	G	G			G	G	G	G	48	50	50	52	G	38	37	26	G		G		
6	G	49	G	G	G			G	30	G	G	46	47	G	47	47	36	40	G	G	27	25	G	G
7	G	G	G	G	34			G	32	G	G	39	G	43	52	42	38	33	G	G	33	36		
8	32	28	G	G	G	G		G	G	G	G	G	49	59	95	92	44	90	60	60	30	50	39	G
9			G	G	G	G		G	G	G	G	50	49	G	G	G	G	36	G	G	G	26	G	G
10	G	G	G	G	G	G		G	G	34	39	49	50	49	G	G	G	G	30	G	G	G		
11	G	G		G	23			G	G	G	G	G	G	G	46	G	G	G	G	G			G	G
12		G	29	28				G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	26	
13	G	G	G	G	G			G	G	G	38	G	42	G	G	G	G	G	G	G	G	G	G	G
14		G	G	G		G	G	G	G	G	G	G	G	G	G	G	G	40	G	24	G	G	G	G
15	G	G	G	G		G		G	G	G	G		G	G	G	G	G	G	29	G	G	G	G	G
16	G	G		G	G	29		G	G	G	G	G	G	G	65	G	G	G	G	G	G	G	G	G
17	G	G			G			G	G	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	34	43	26	G	28	G	G
19	G		G	G	G			G	G	C	C	C	C	C	C	C	C	32	G	G	G	25	G	
20	G	G	G	G				G	G	G	G	G	G		G	G	38	G	G	26	G			G
21	G	G	G	G	G			G		G	G	G	G	G	G	G	63	G	29	G	G	G		29
22	G				G	24		G		G	G	G	G	42	G	G	G	32	G	G	G	G	G	G
23	G	G	G	G	G			G	G	G	G	G	G	G	40	43	38	G	G	G	G	G	G	
24	G	G	G	G	G	G		G	G	G	G	G	G	G	49	53	43	G	G	G	G	G	G	G
25	G	G	G	G	G	G		33	32	36	50	39	G	50	42	39	42	38	30	G	G	G		
26			G	G	G	G	G	G	G	G	G	G	49	G	G	G	G	G	G	27	28	G	G	27
27	G	G	G	G	G			G	G	G	G	G	41	G	G	46	G	34	G		G	G	G	G
28		G	G		G	G	G	G	G	G	38	G	G	G	50	G	G	34	G		29	32	G	G
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	21	21	20	20	23	12	3	26	25	25	25	24	24	24	25	25	25	27	27	24	24	25	20	17
MED	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	32	G	G	G	G	G	G
U Q	G	G	G	G	G	G	G	G	G	G	G	39	44	42	49	42	38	36	29	12	14	26	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

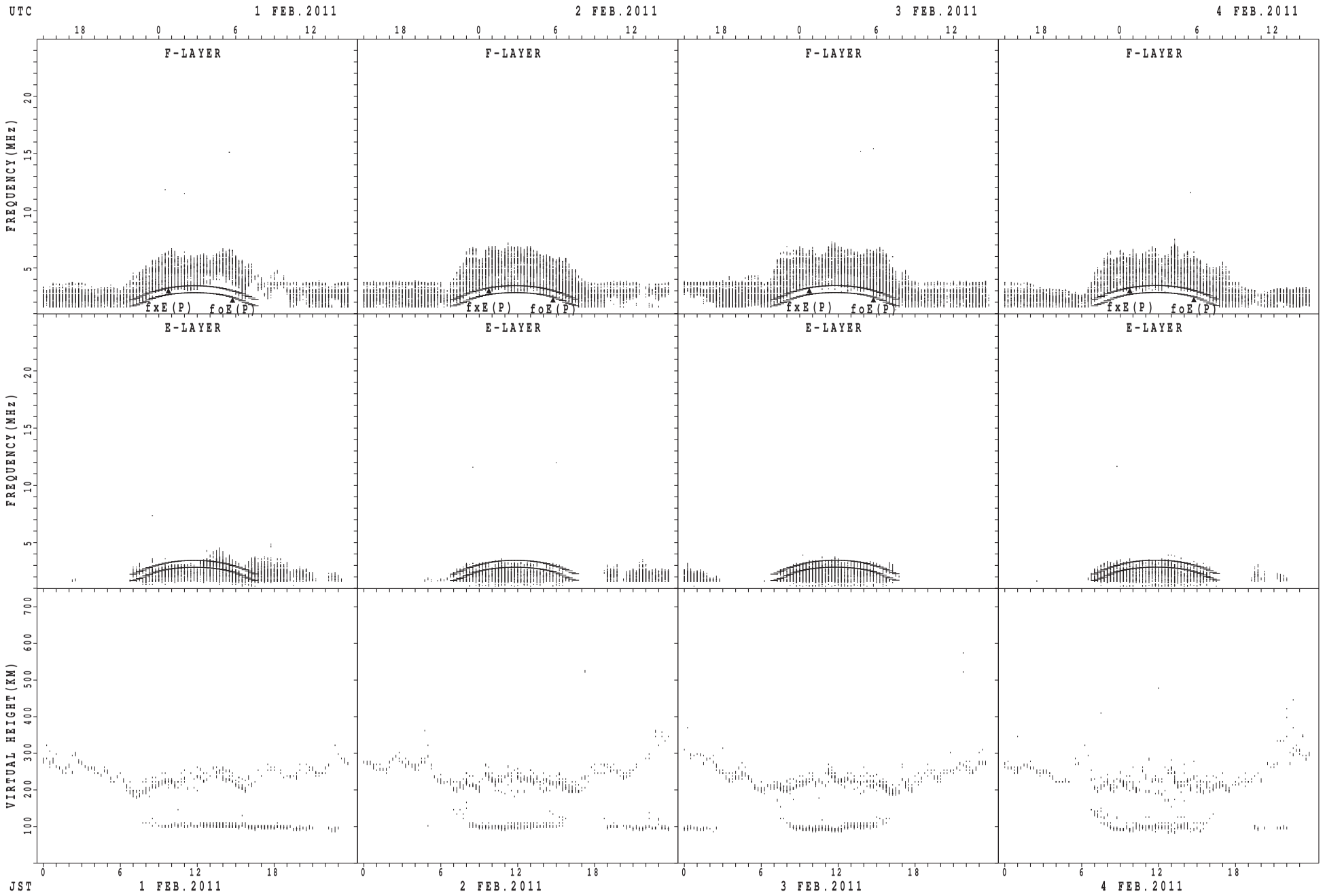
HOURLY VALUES OF fmin AT Okinawa

FEB. 2011

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

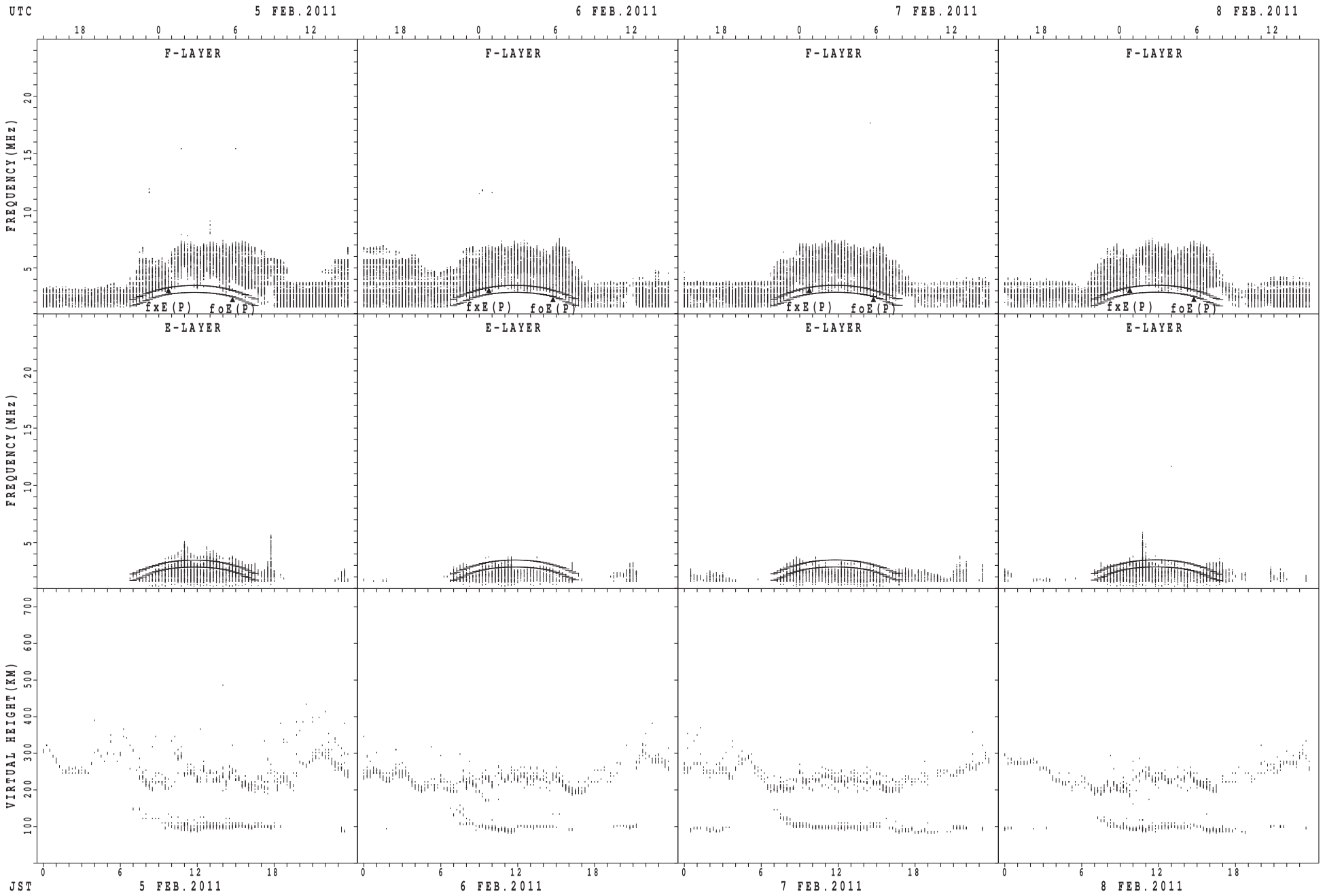
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	22				17			17	21	28	41	34	45	50	44	27	22	23	22	21	15	17	21	
2					15	15		15	17	15	39	34	33	32	22	26	16	15	21	18	27	22	20	
3	16	15	15		15				23	15	40	43	44	49	50	36	15	14	21			16		21
4	16	20			15			21	23	14	18	30	43	48	28	27	14	14	14	14	15	15	24	
5	17	20	23	16	14			15	14	14	35	32	33	33	30	39	21	15	17	14		15		
6	17	14	15	15	16			15	15	15	14	22	30	44	30	21	15	15	22	15	16	15	17	30
7	15	15	17	16	14			15	14	15	17	23	29	29	24	24	21	15	21	15	14	14		
8	15	14	17	15	14	18		15	23	15	18	44	36	35	30	24	21	14	15	15	15	20	15	21
9			15	15	15	15		15	18	30	20	34	35	48	26	14	14	14	21	22	21	15	20	15
10	15	15	17	17	14	17		15	26	33	36	35	44	38	46	43	22	14	15	15	15	15		
11	17	21		18	14			15	15	17	22	24	44	49	53	42	21	16	21	17			15	23
12		24	15	21				15	14	14	41	35	44	46	52	41	35	17	26	15	15	17	14	
13	23	21	15	26	15			15	24	18	22	44	34	48	44	43	18	24	20	16	15	22	17	16
14		23	15	20		14	20	15	22	18	22	41	44	45	54	43	38	15	22	15	16	15	18	18
15	16	15	21	15		20		15	14	32	38		52	53	45	44	36	27	14	15	15	15	26	21
16	17	17		16	22	17		17	28	15	43	42	44	44	34	45	32	29	22	17	21	21	28	18
17	17	18			16			16	16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	15	17	17	15	15	22	15
19	20		20	15	15			16	14	C	C	C	C	C	C	C	C	18	23	22	15	17	17	
20	17	18	16	15				16	14	17	23	44	53		22	42	15	14	22	15	22			16
21	21	15	17	15	15			18	26	32	43	43	44	45	45	27	20	14	14	15	16	15		15
22	17				14	15		18		33	33	45	44	33	43	42	16	24	20	23	22	21	16	17
23	17	20	18	15	15			16	26	29	33	44	44	44	33	29	24	15	14	16	17	18	20	
24	24	35	15	16	15	15		17	24	30	36	23	44	51	34	32	24	23	21	15	15	16	16	15
25	24	18	15	17	15	15		15	24	18	33	44	43	35	33	32	23	15	15	15	15	21		
26			22	21	14	15	20	18	28	16	38	43	35	38	43	43	39	20	21	15	15	15	17	15
27	15	15	20	14	15			18	27	30	43	53	51	52	44	30	24	17	20	14	18	22	23	26
28		15	20		15	17	16	18	24	34	41	50	44	45	38	42	21	16	23	15	32	15	15	17
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	21	21	20	20	23	12	3	26	26	25	25	24	25	24	25	25	25	27	27	26	24	25	20	17
MED	17	18	17	16	15	15	20	16	22	18	35	42	44	45	38	36	21	15	21	15	15	16	18	17
U Q	20	20	20	17	15	17	20	17	24	30	40	44	44	48	45	42	24	20	22	17	19	20	21	21
L Q	16	15	15	15	14	15	16	15	15	15	22	33	35	36	30	27	16	14	15	15	15	15	16	15

SUMMARY PLOTS AT Wakkanai



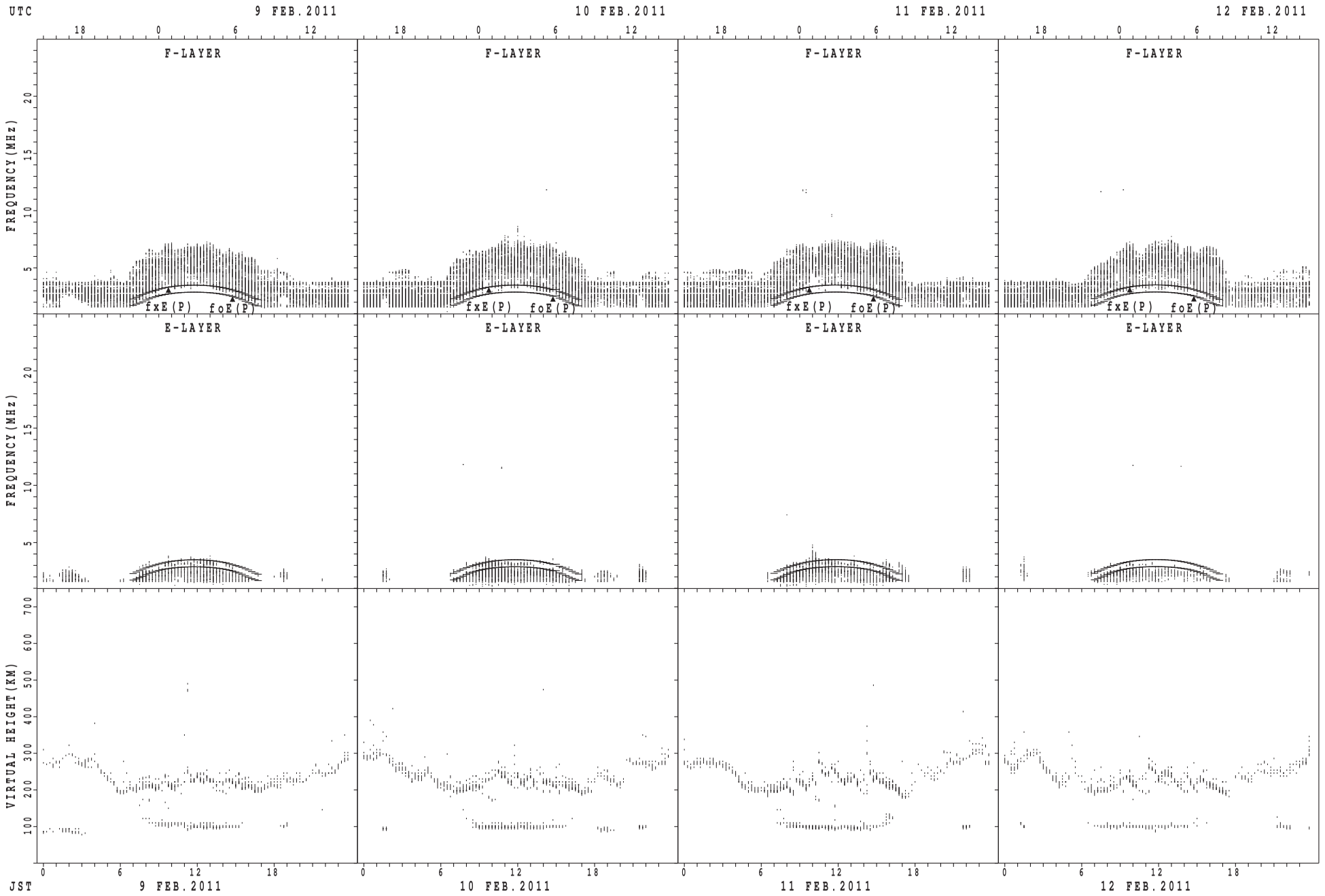
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



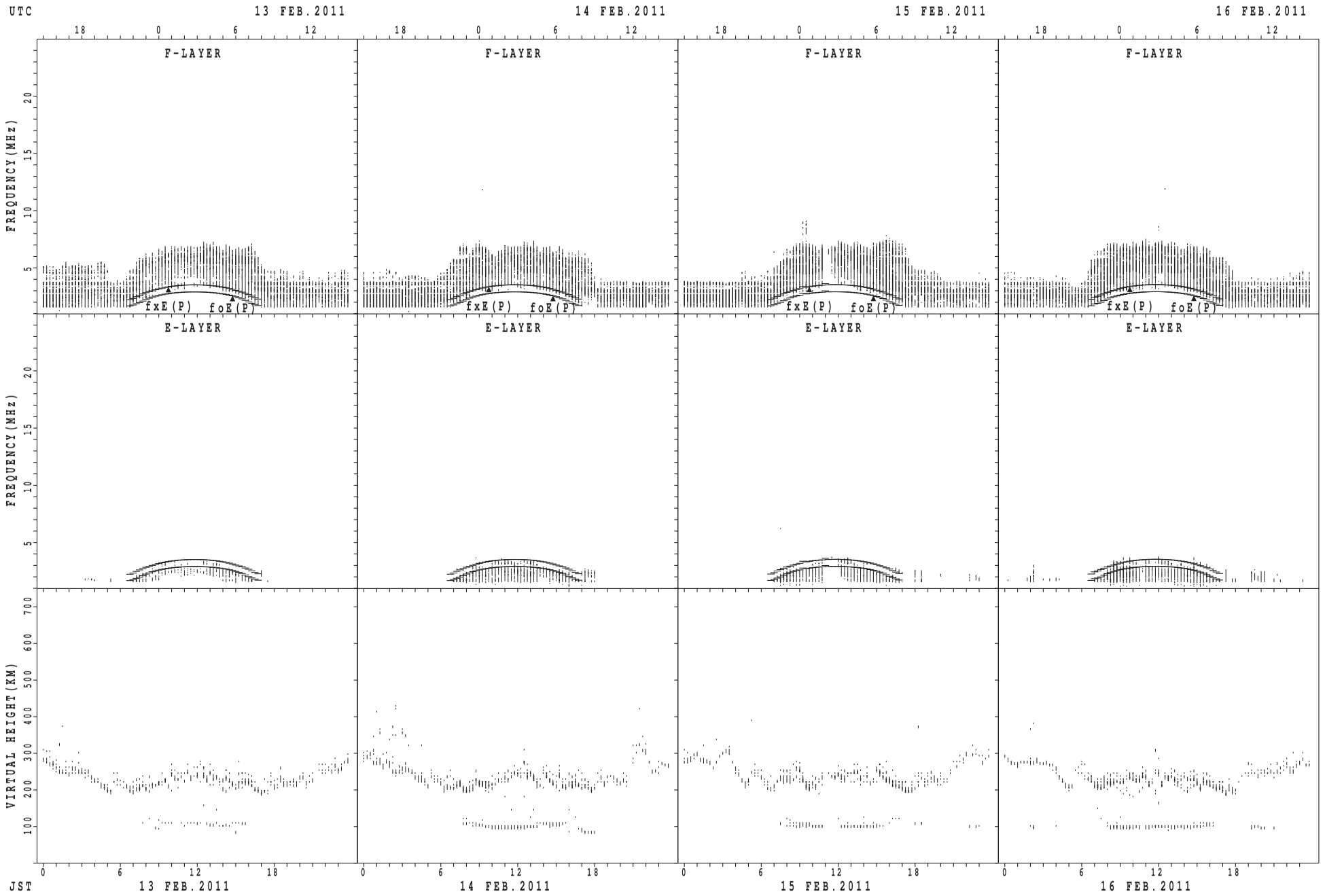
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



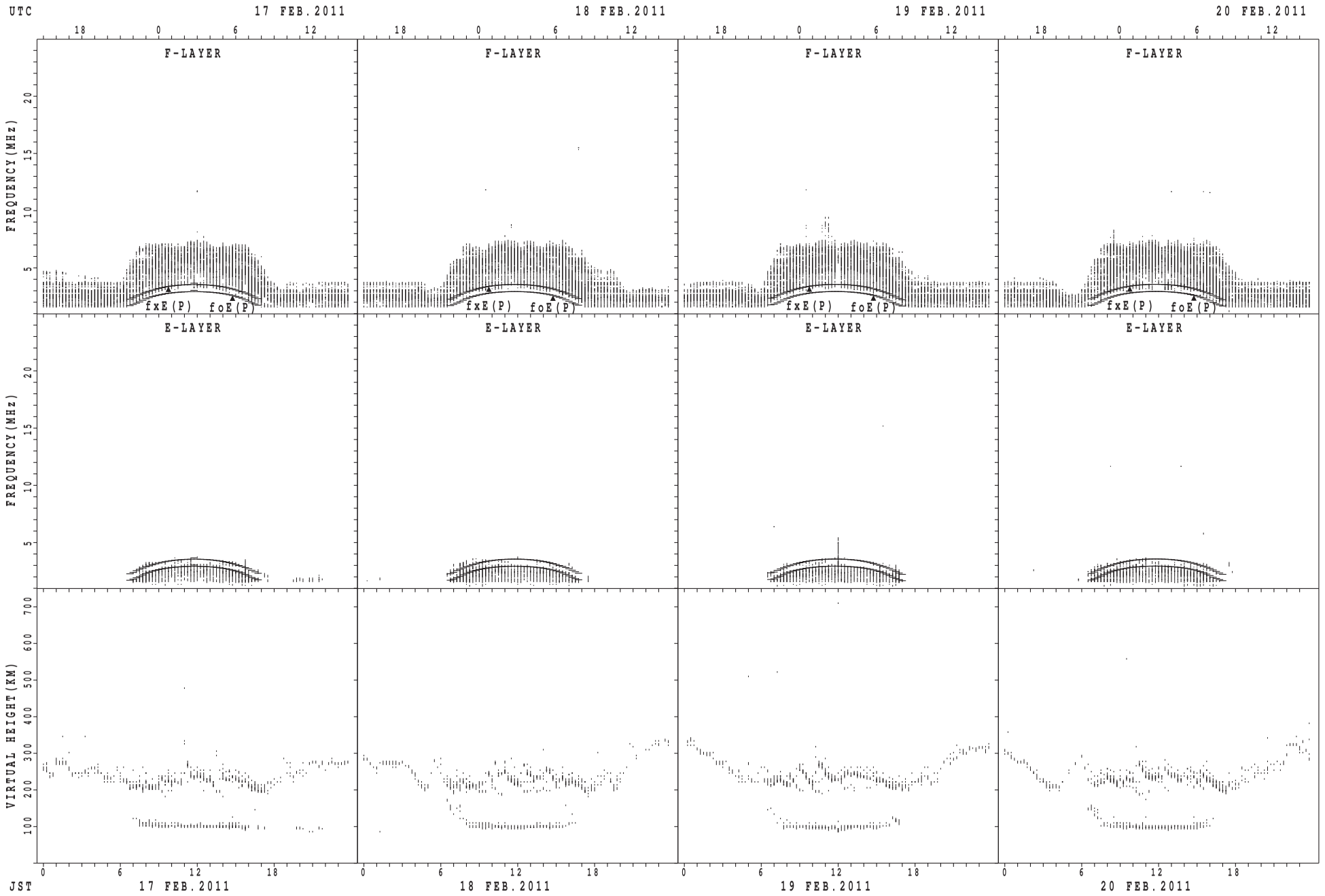
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



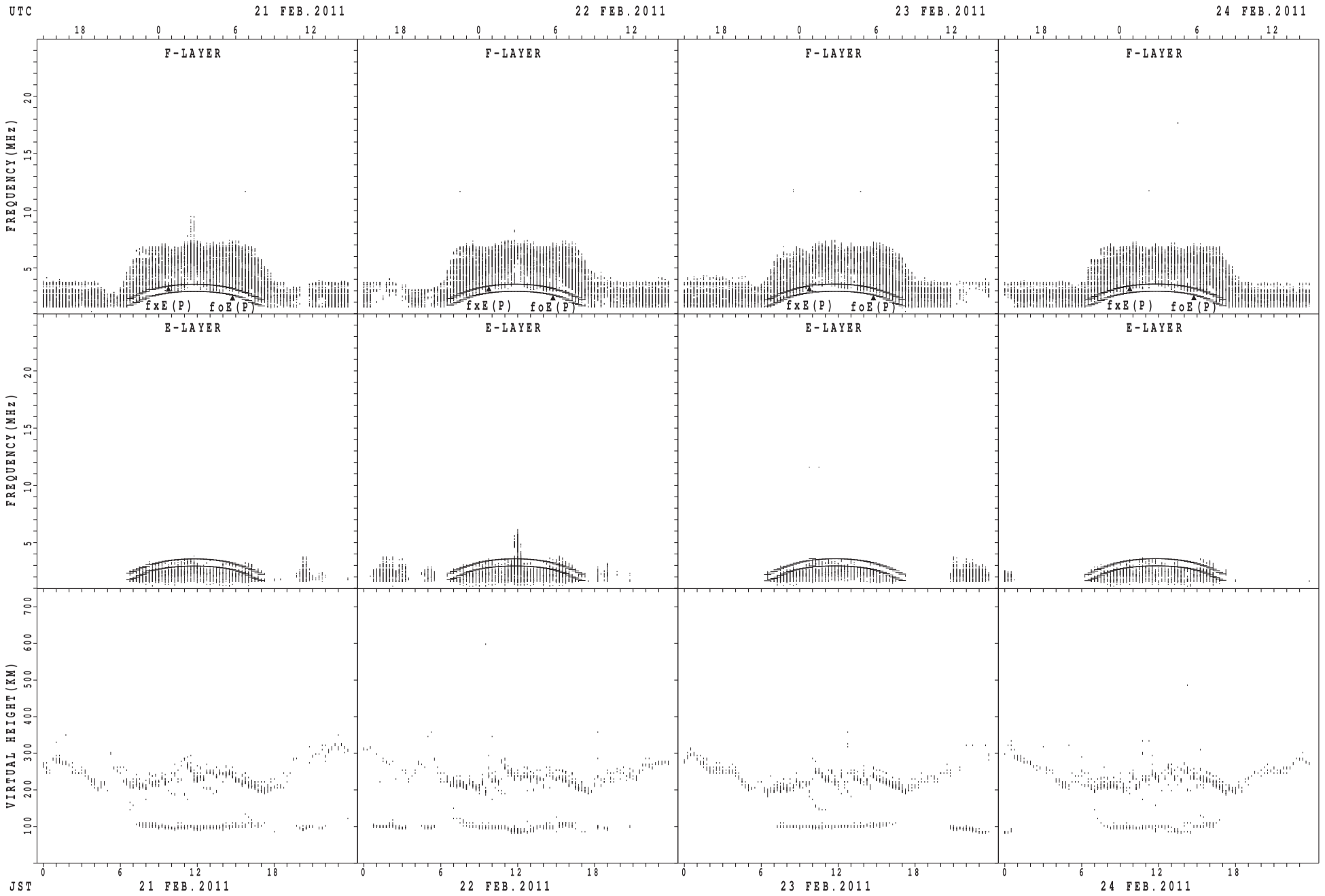
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



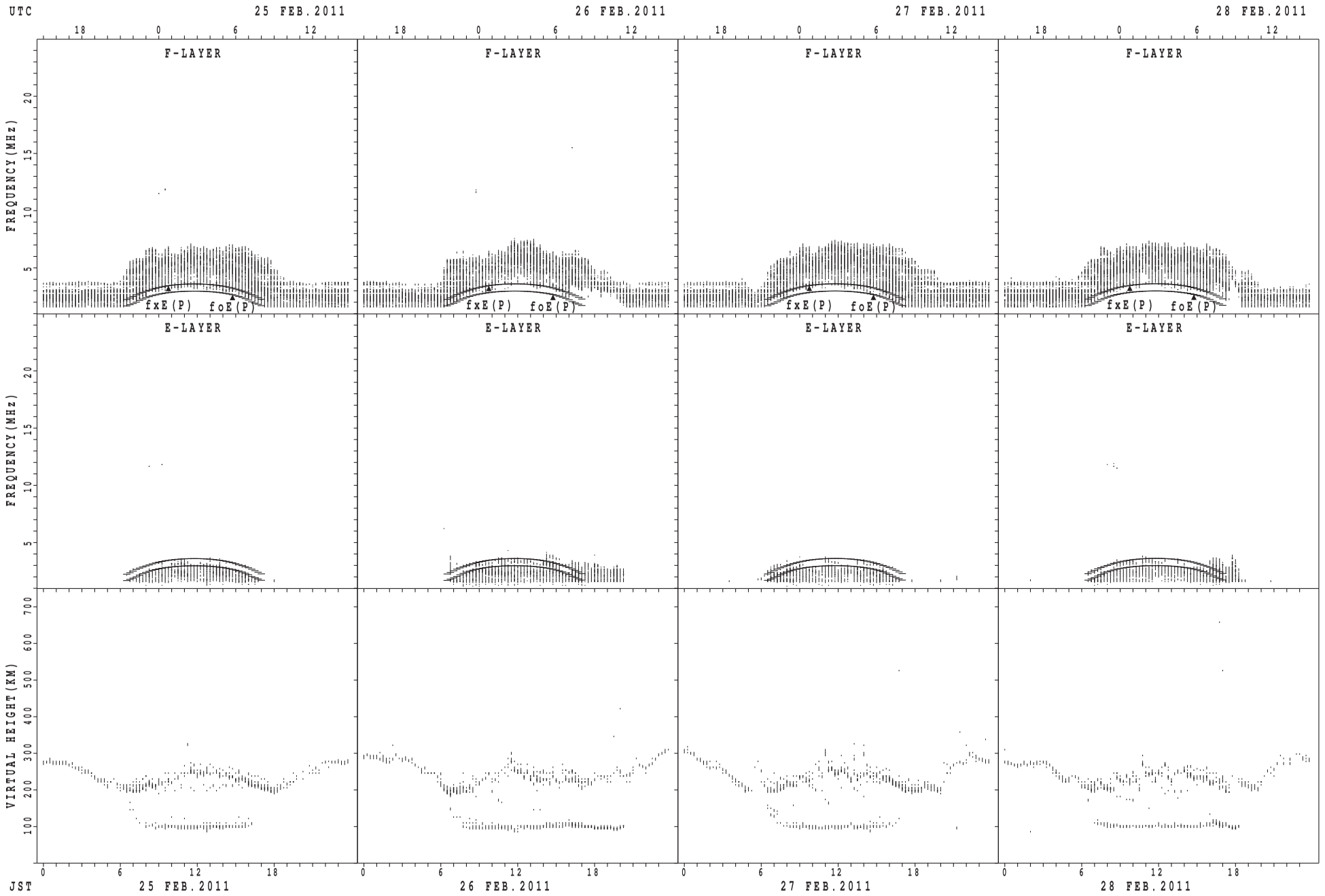
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



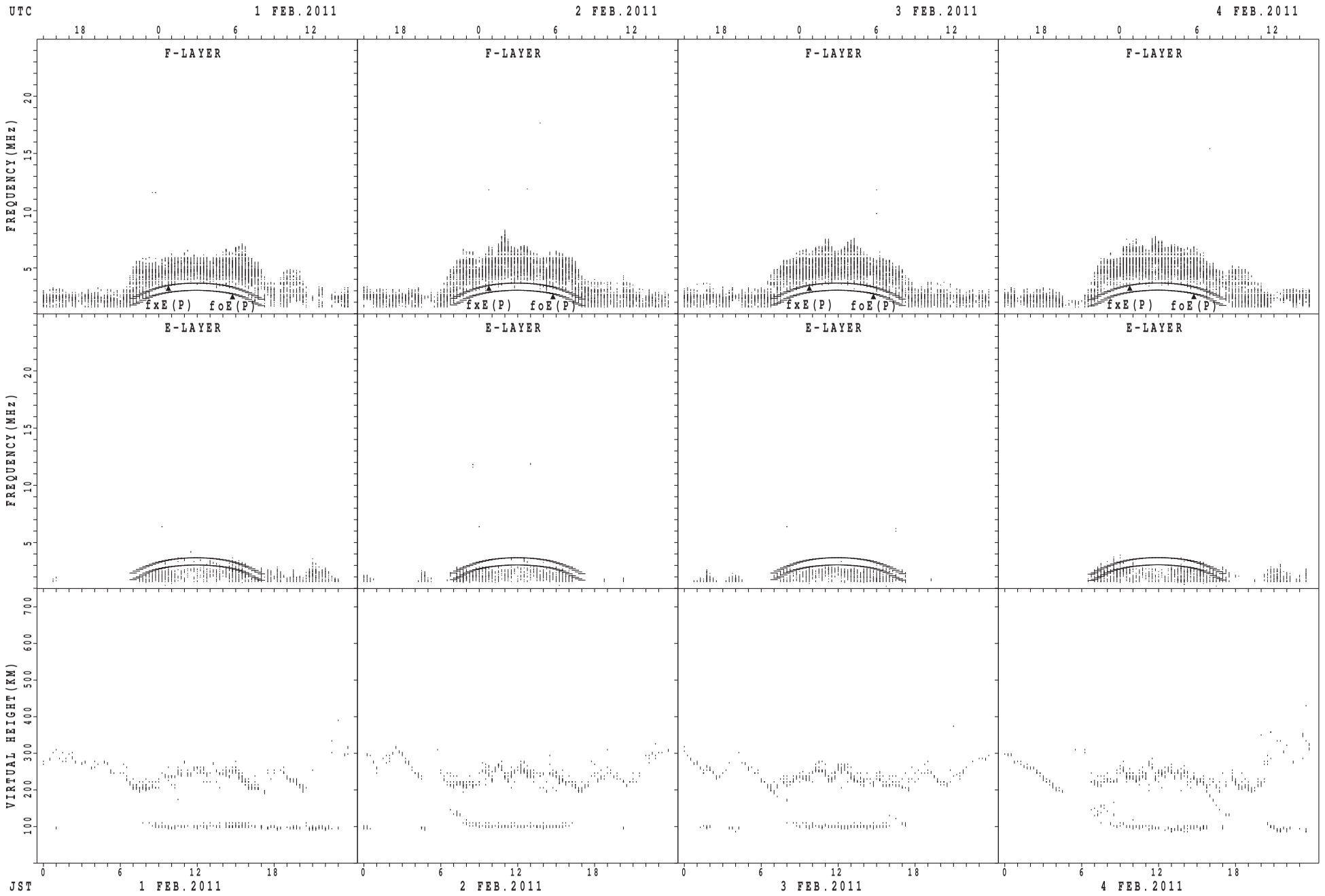
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



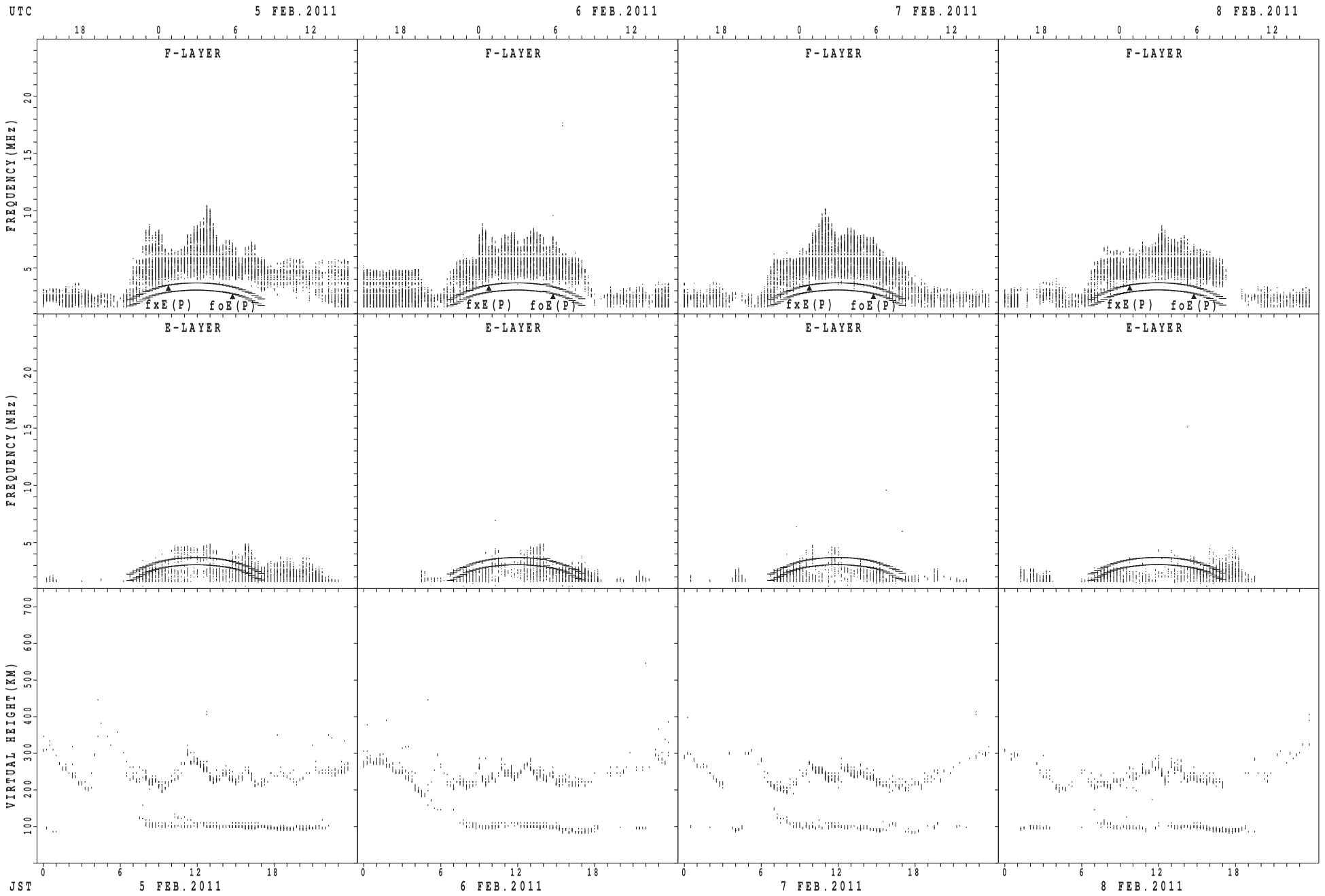
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



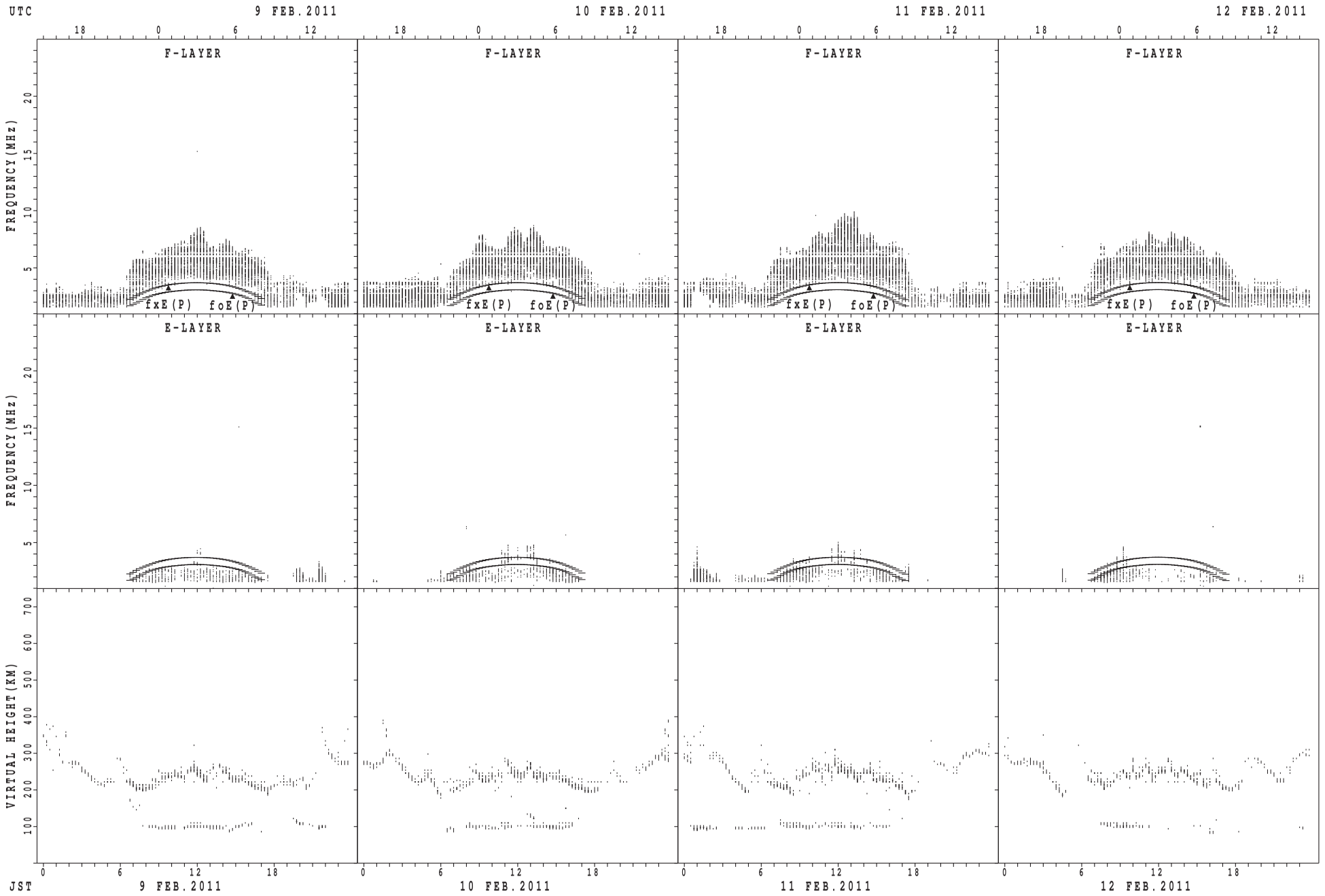
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



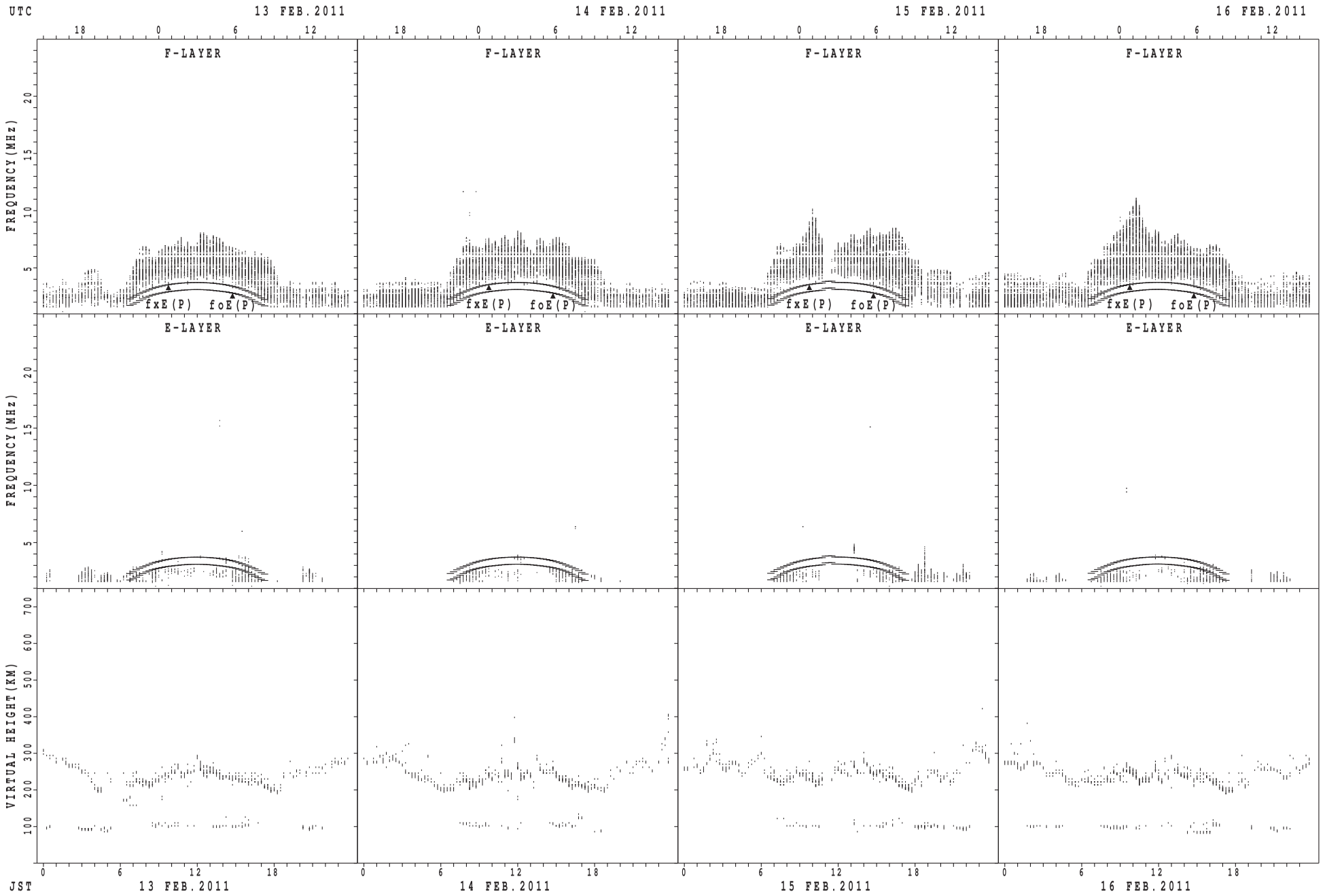
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



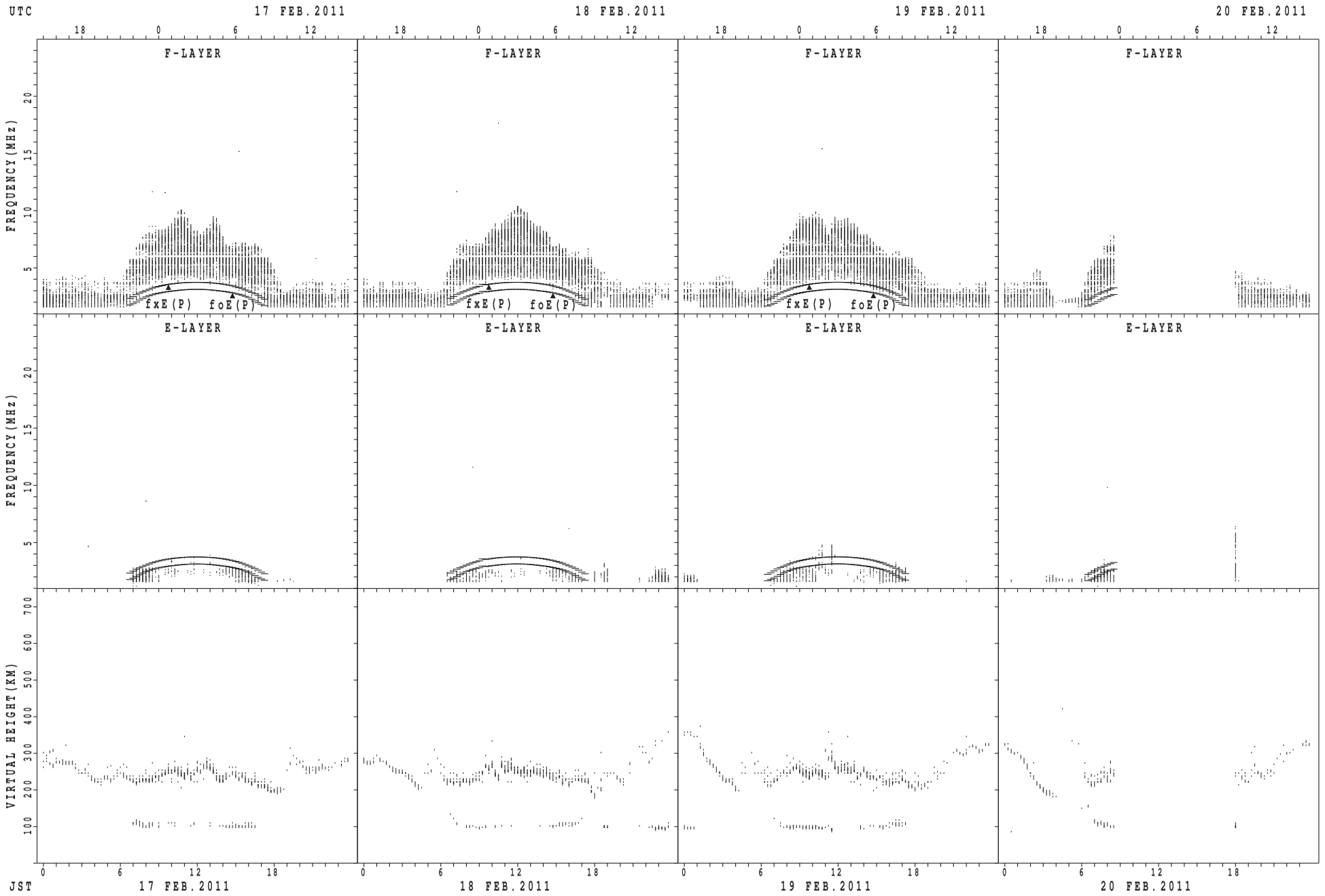
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



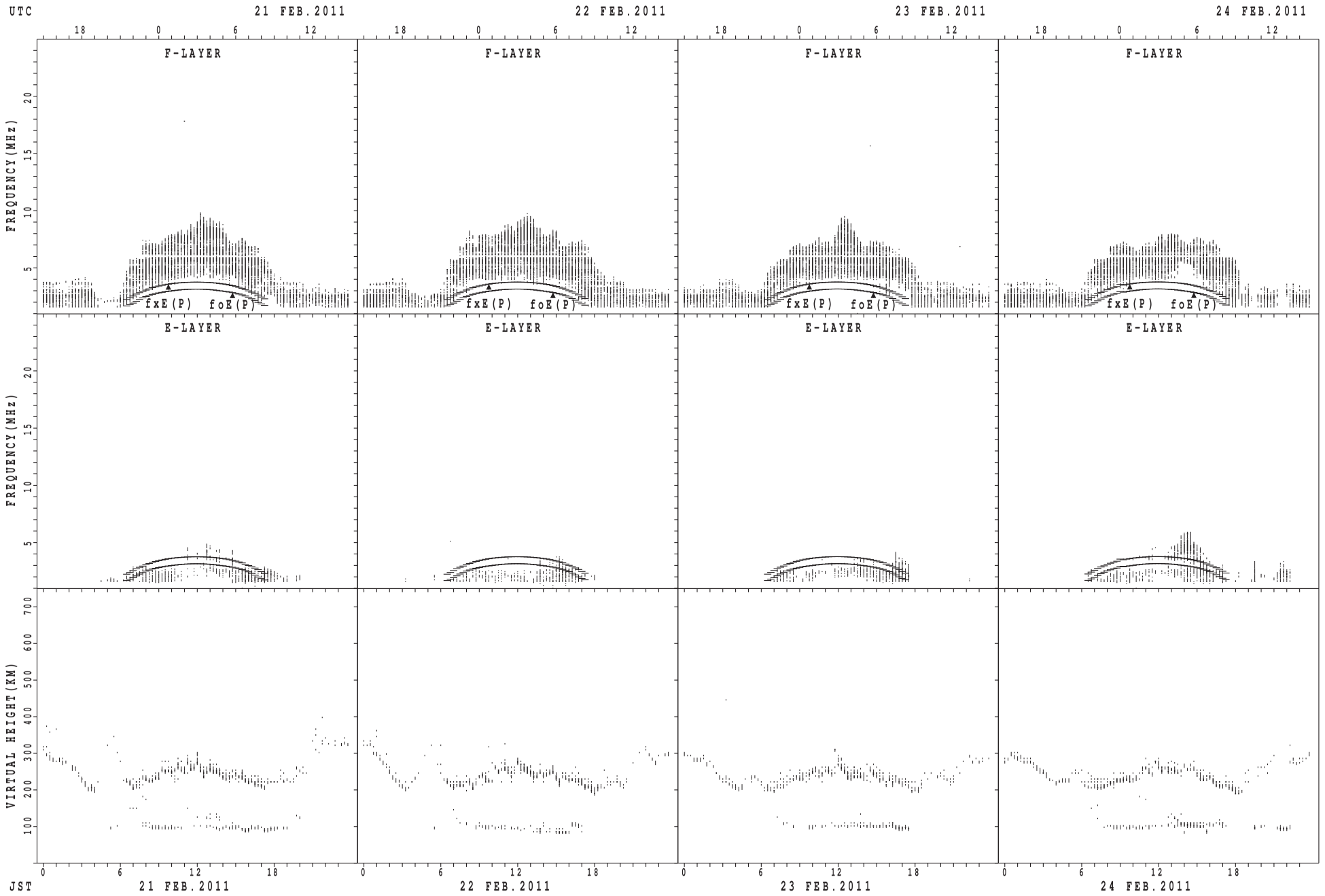
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



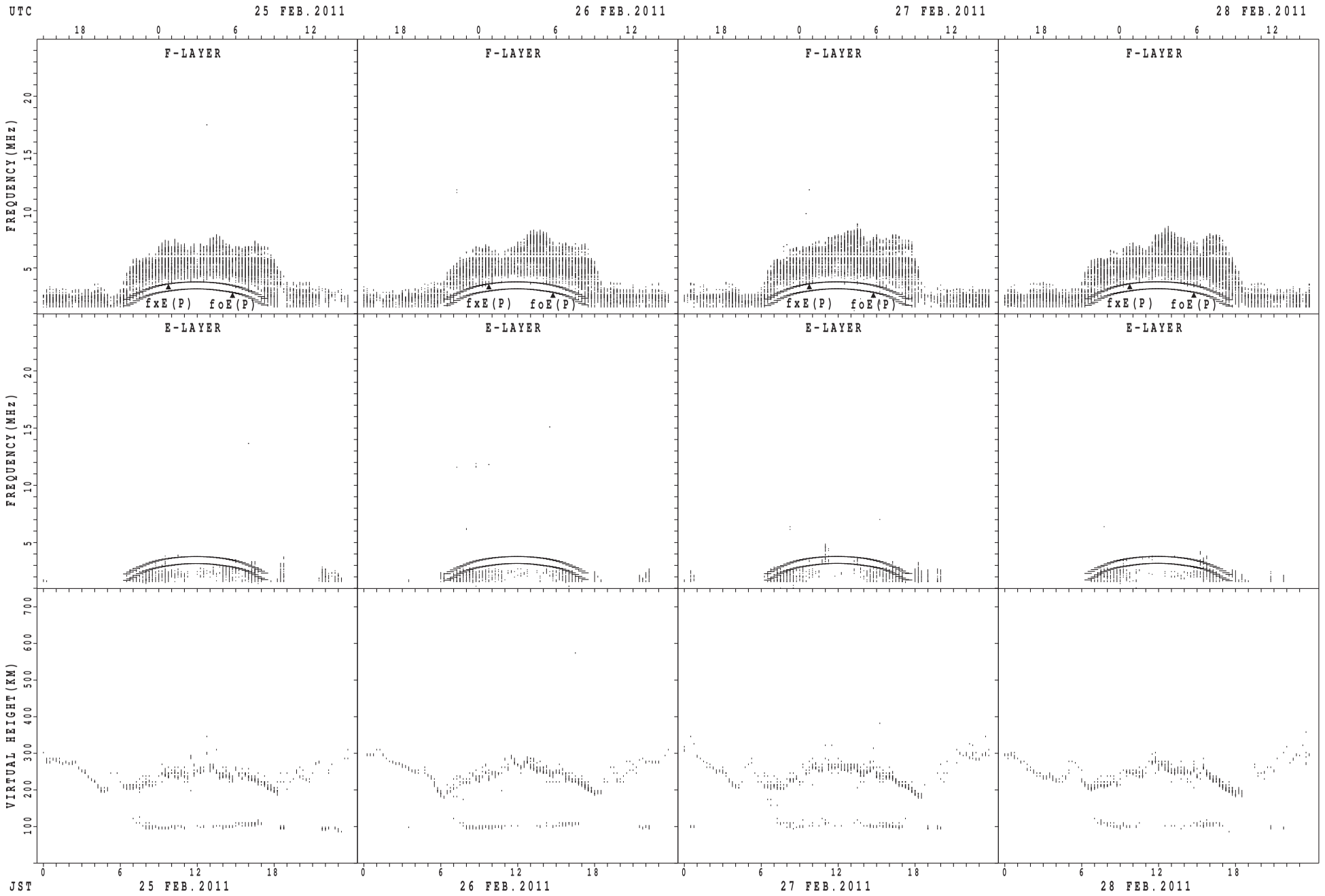
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



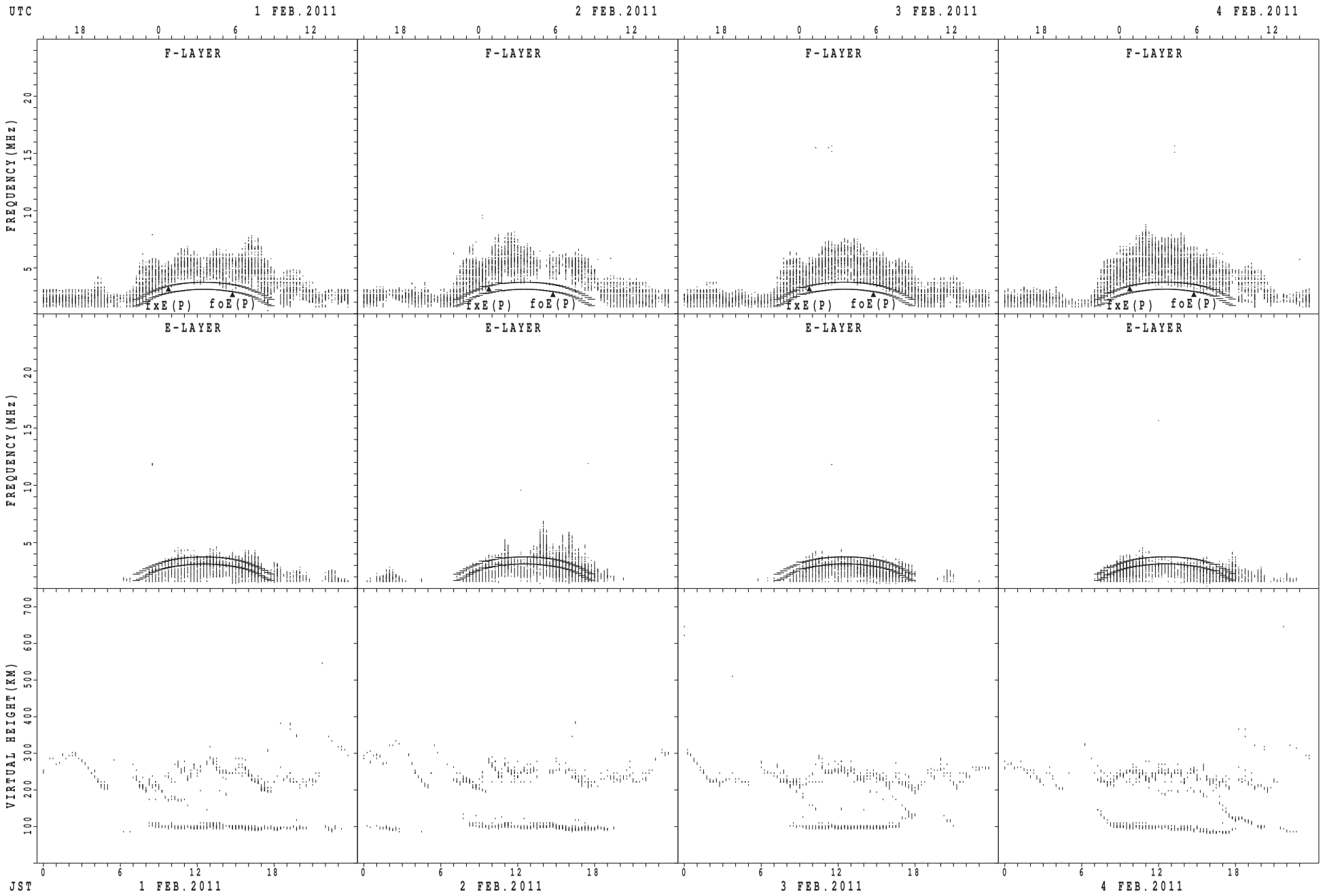
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



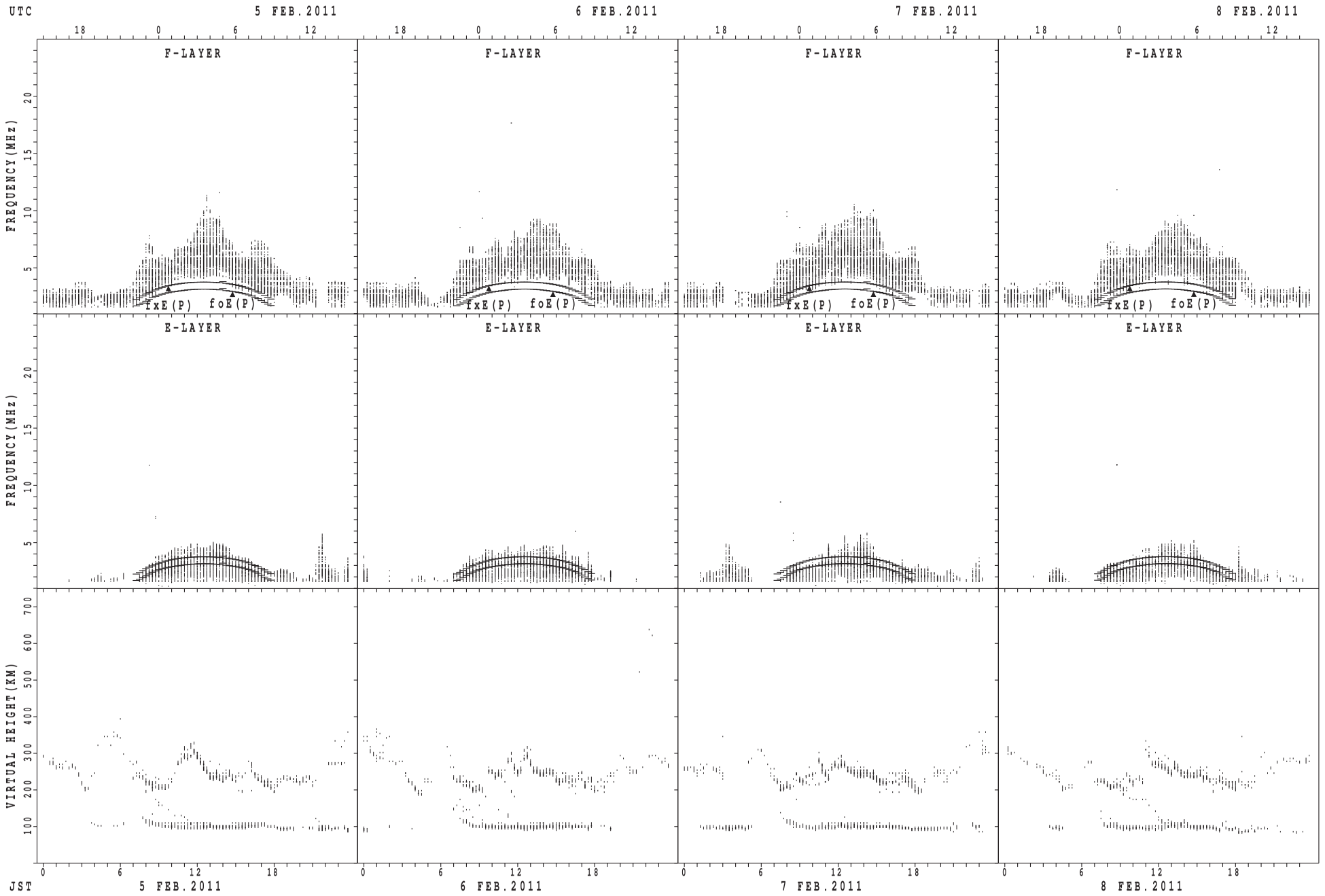
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



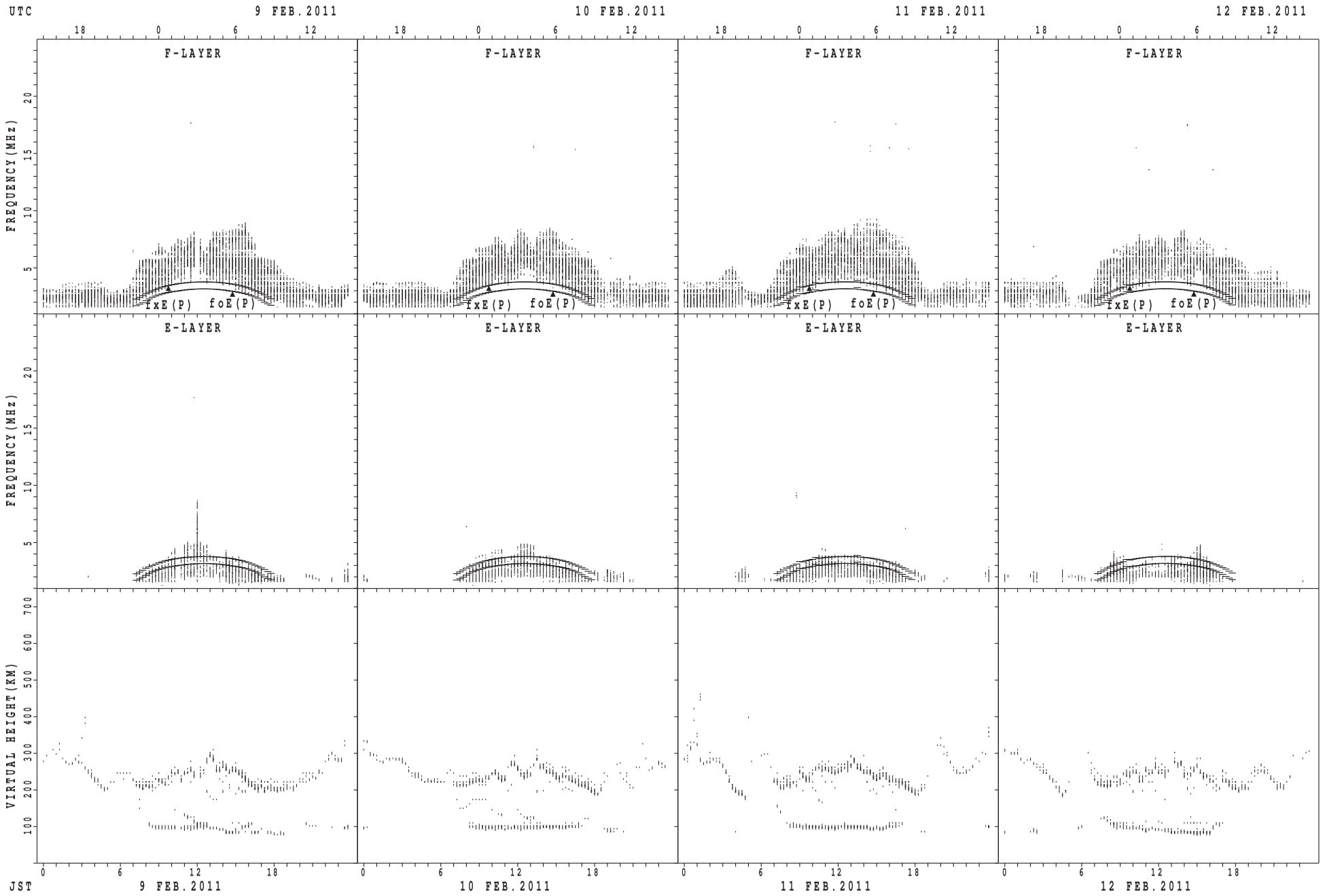
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



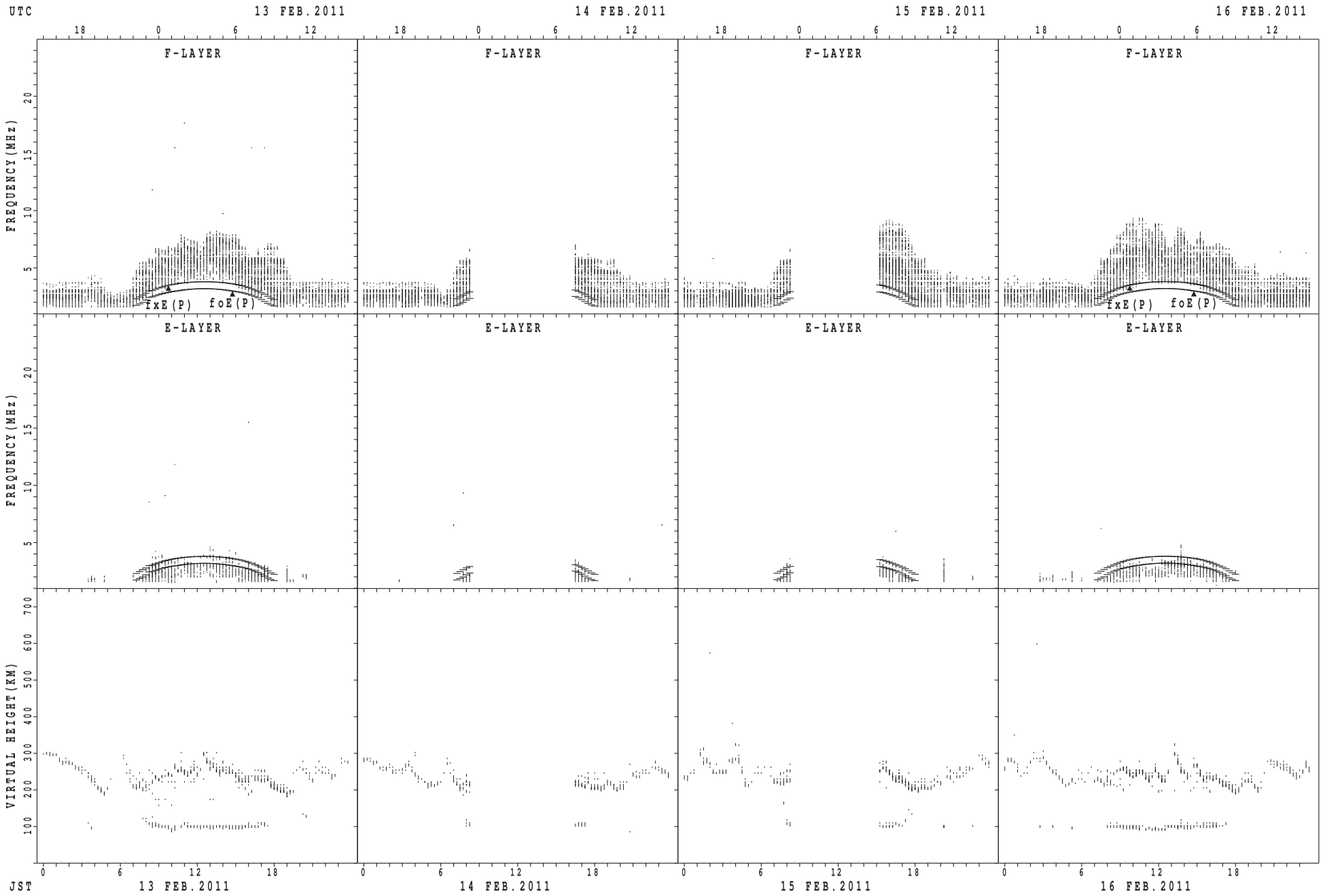
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



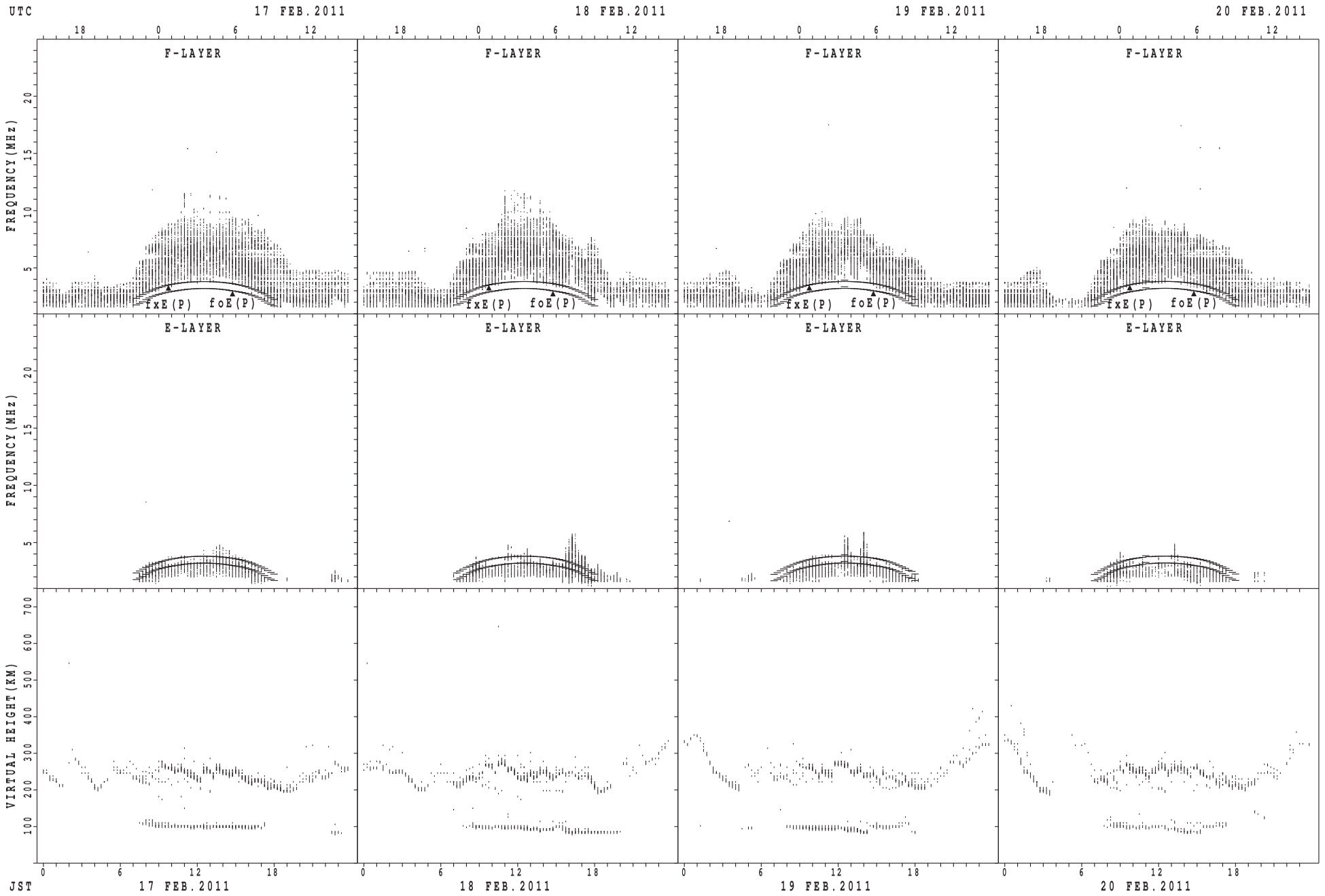
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



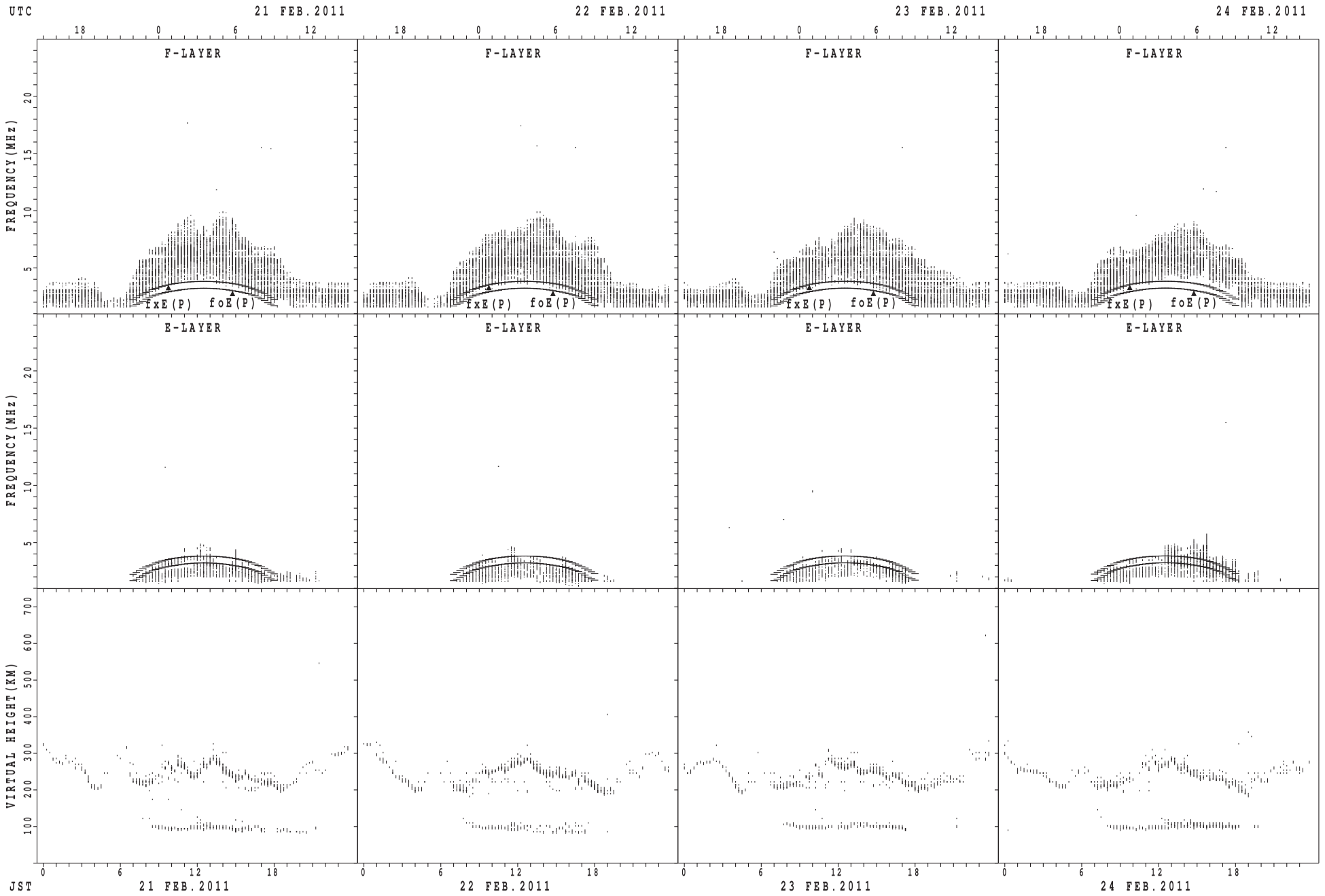
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



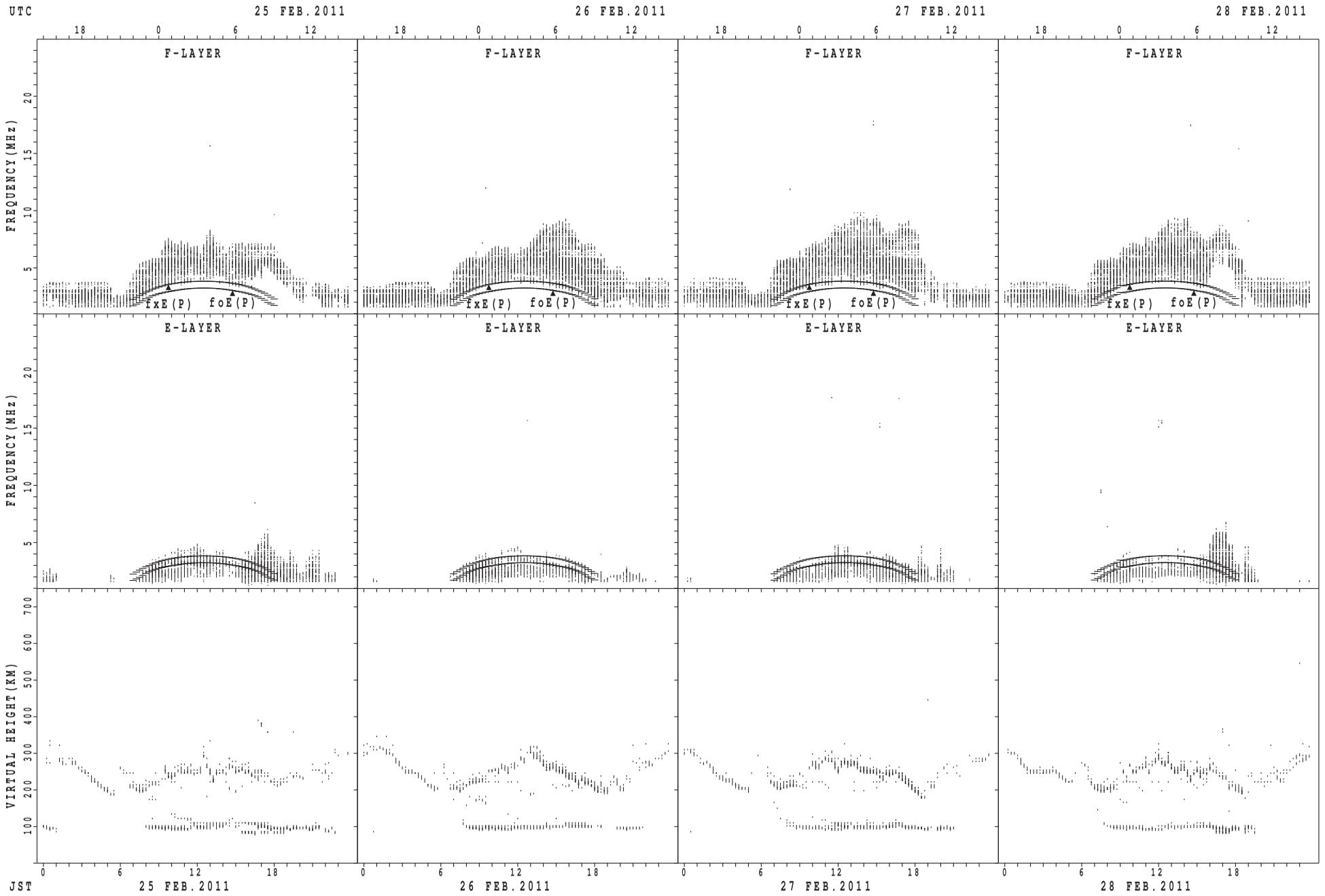
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



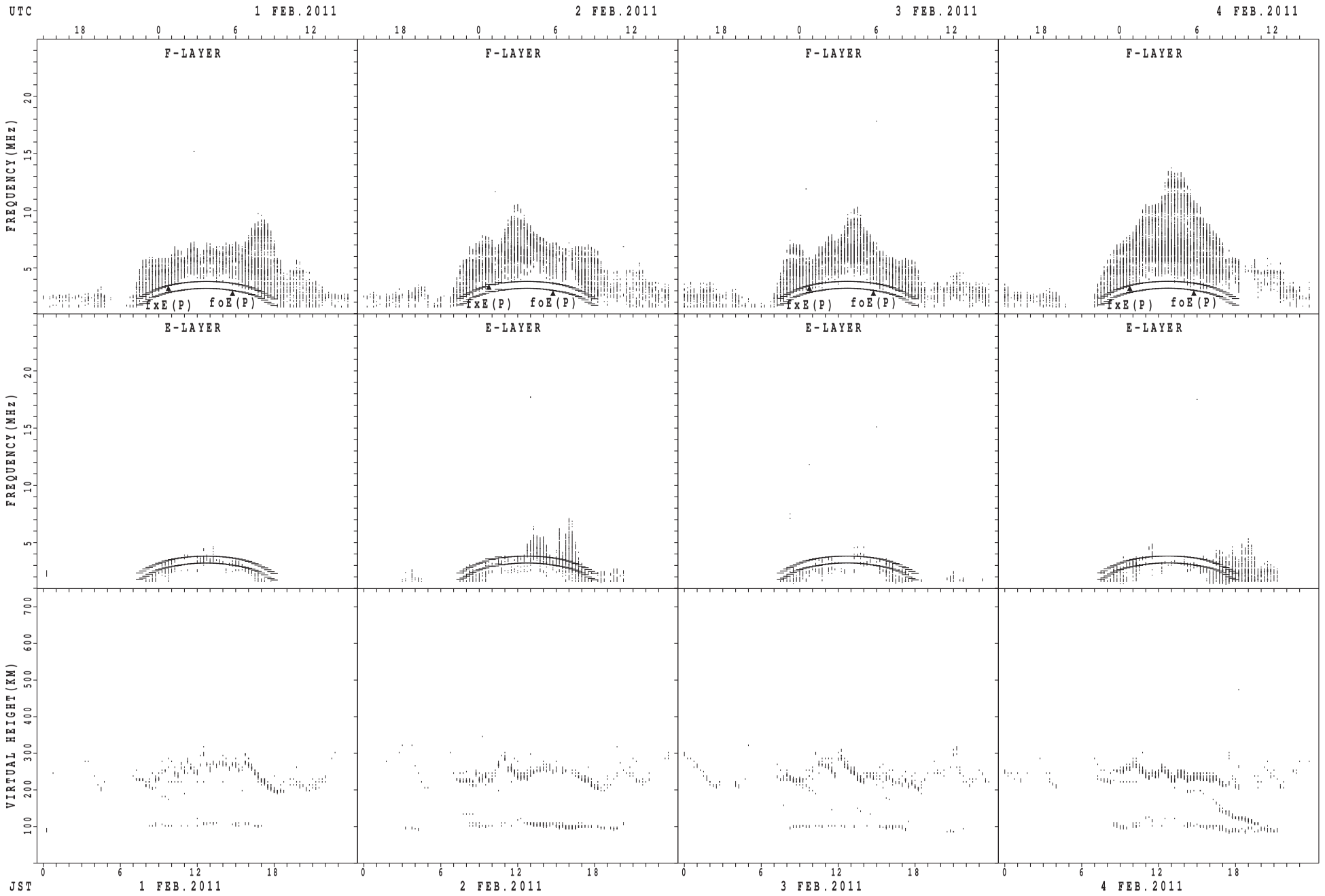
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



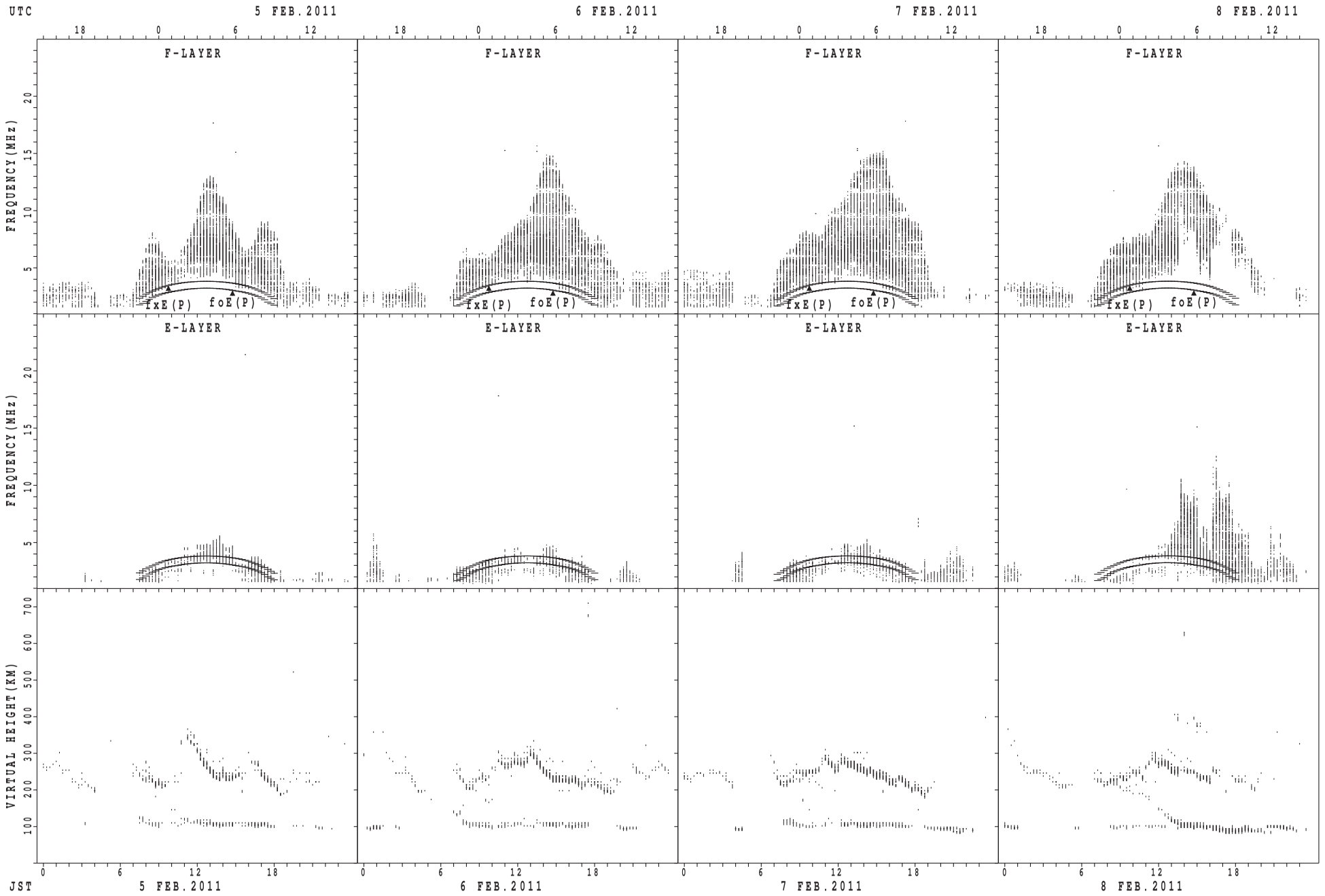
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



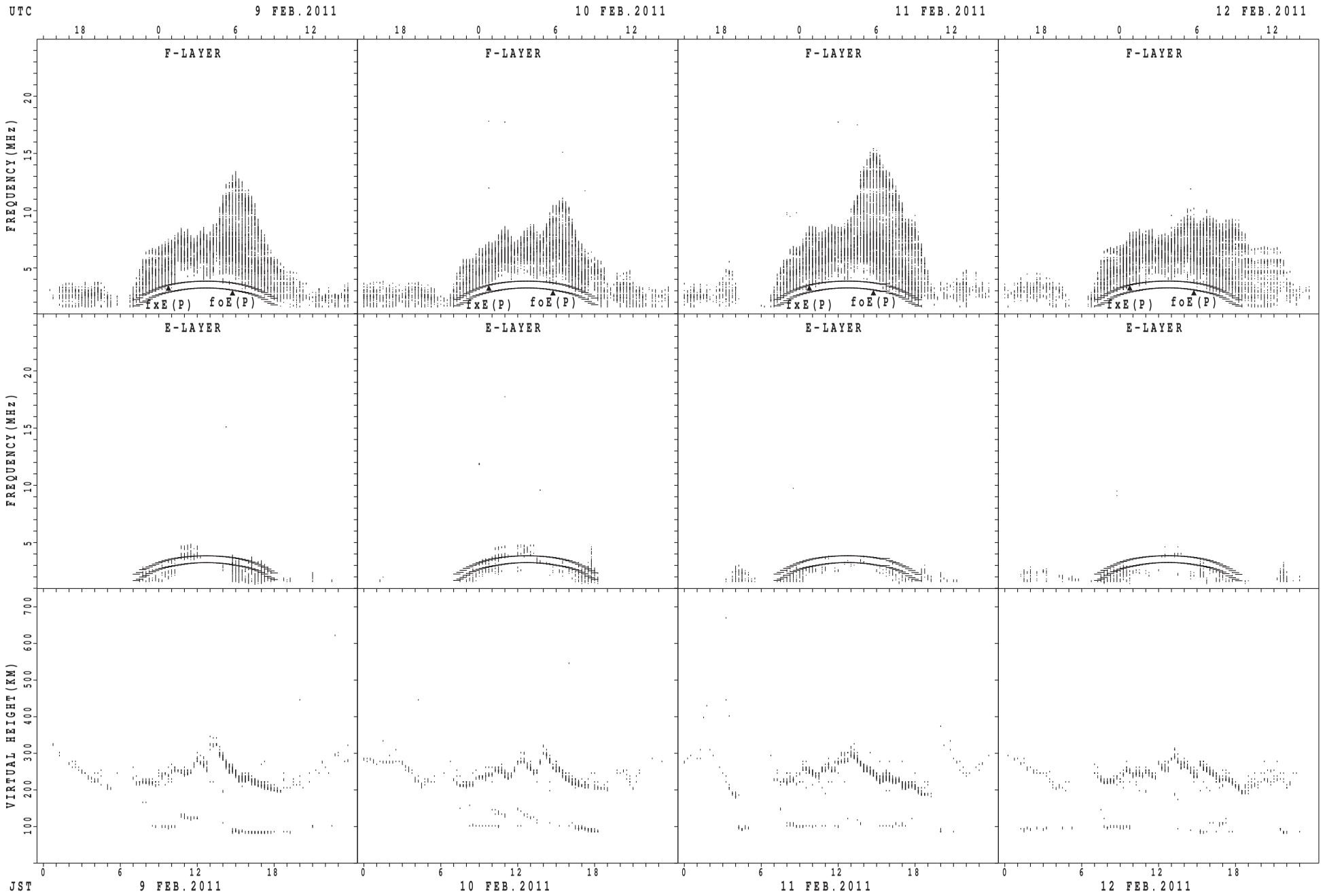
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



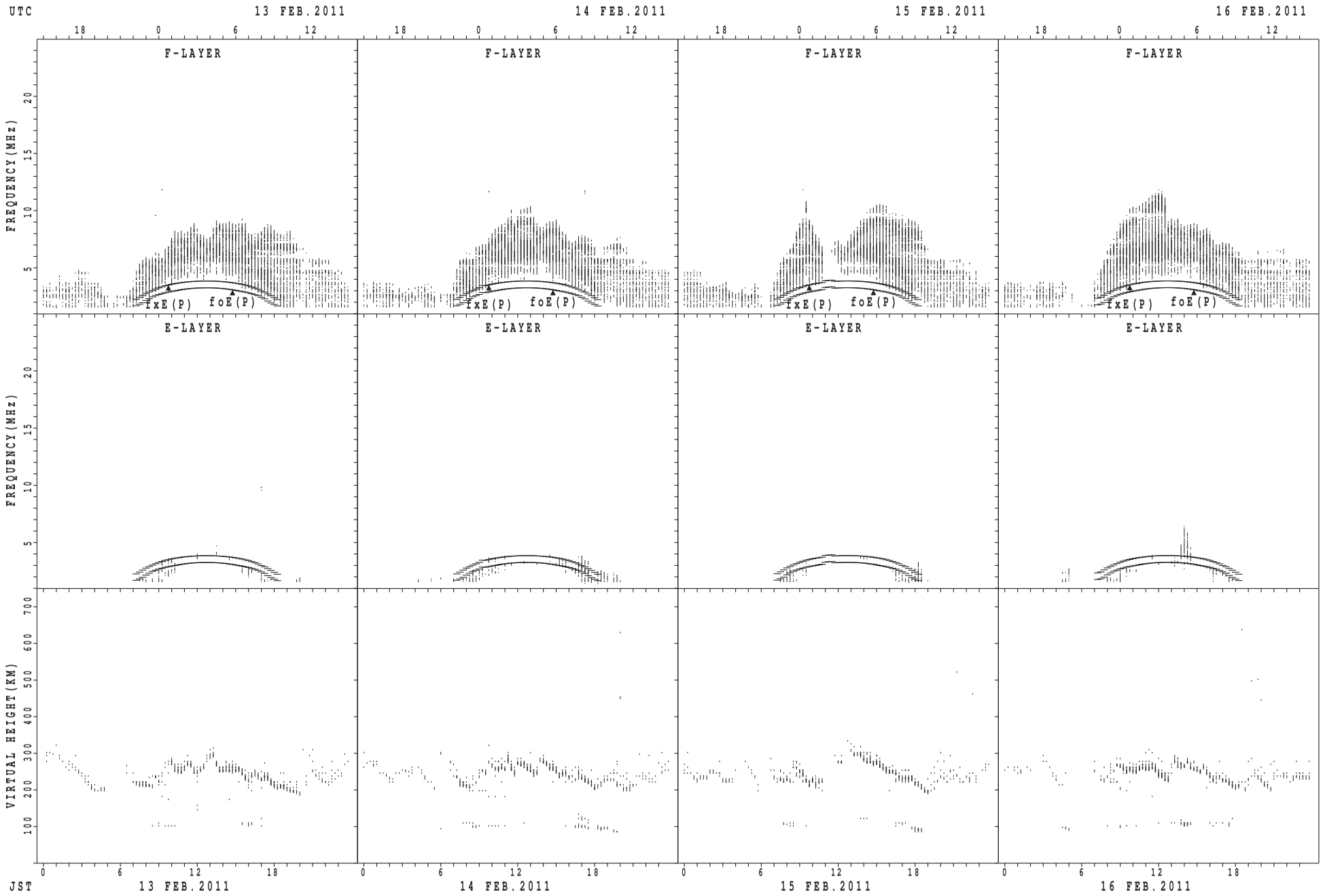
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



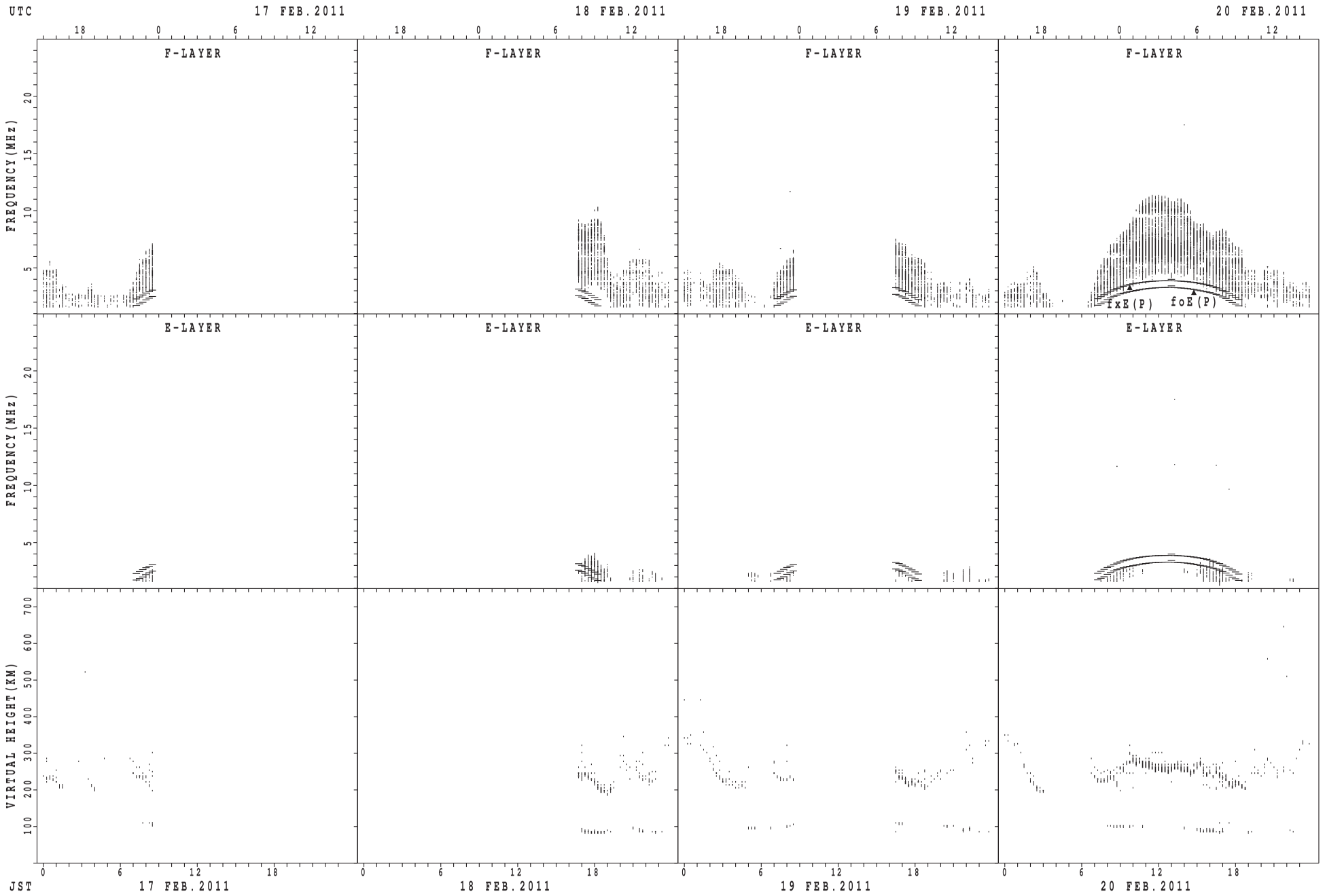
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



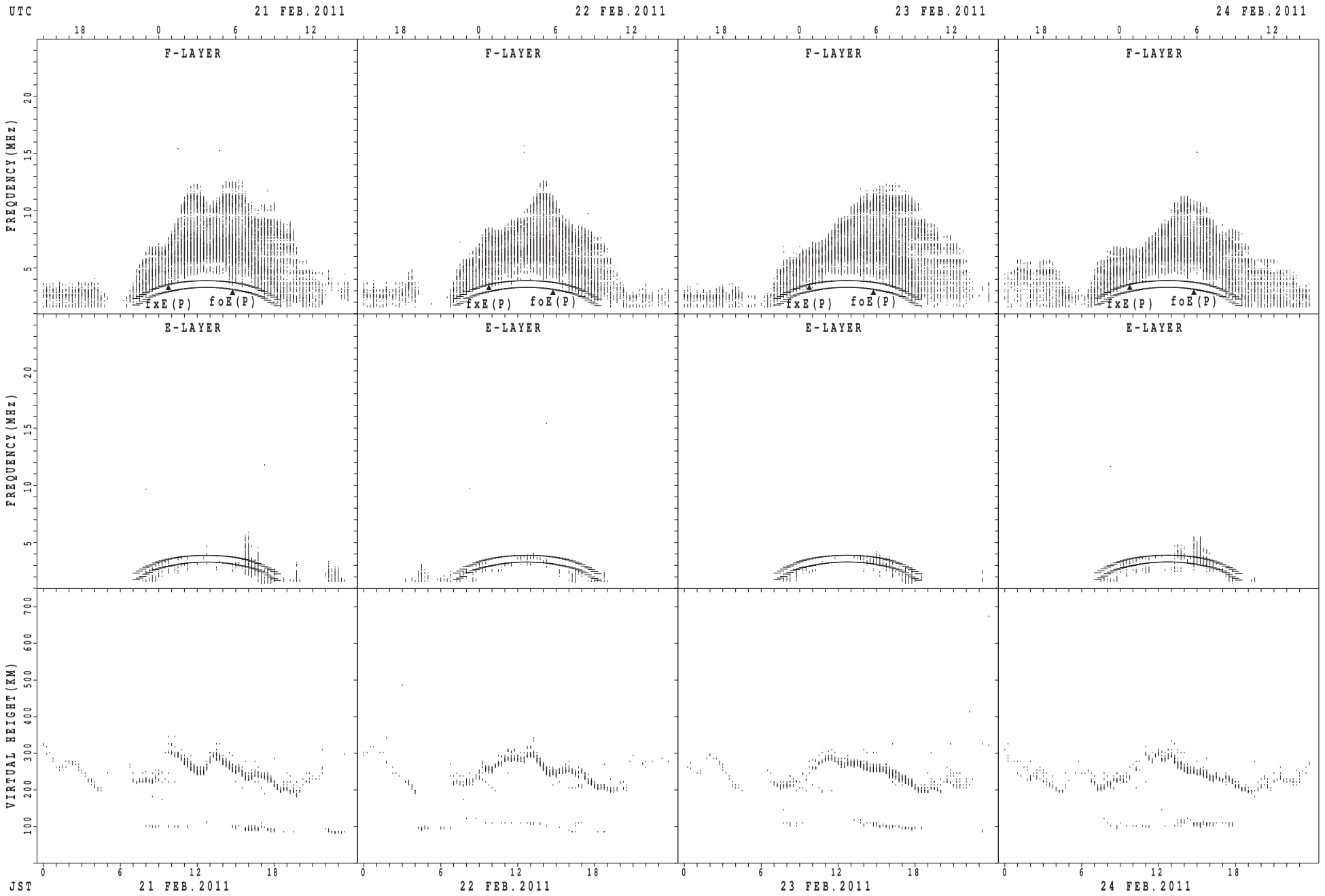
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



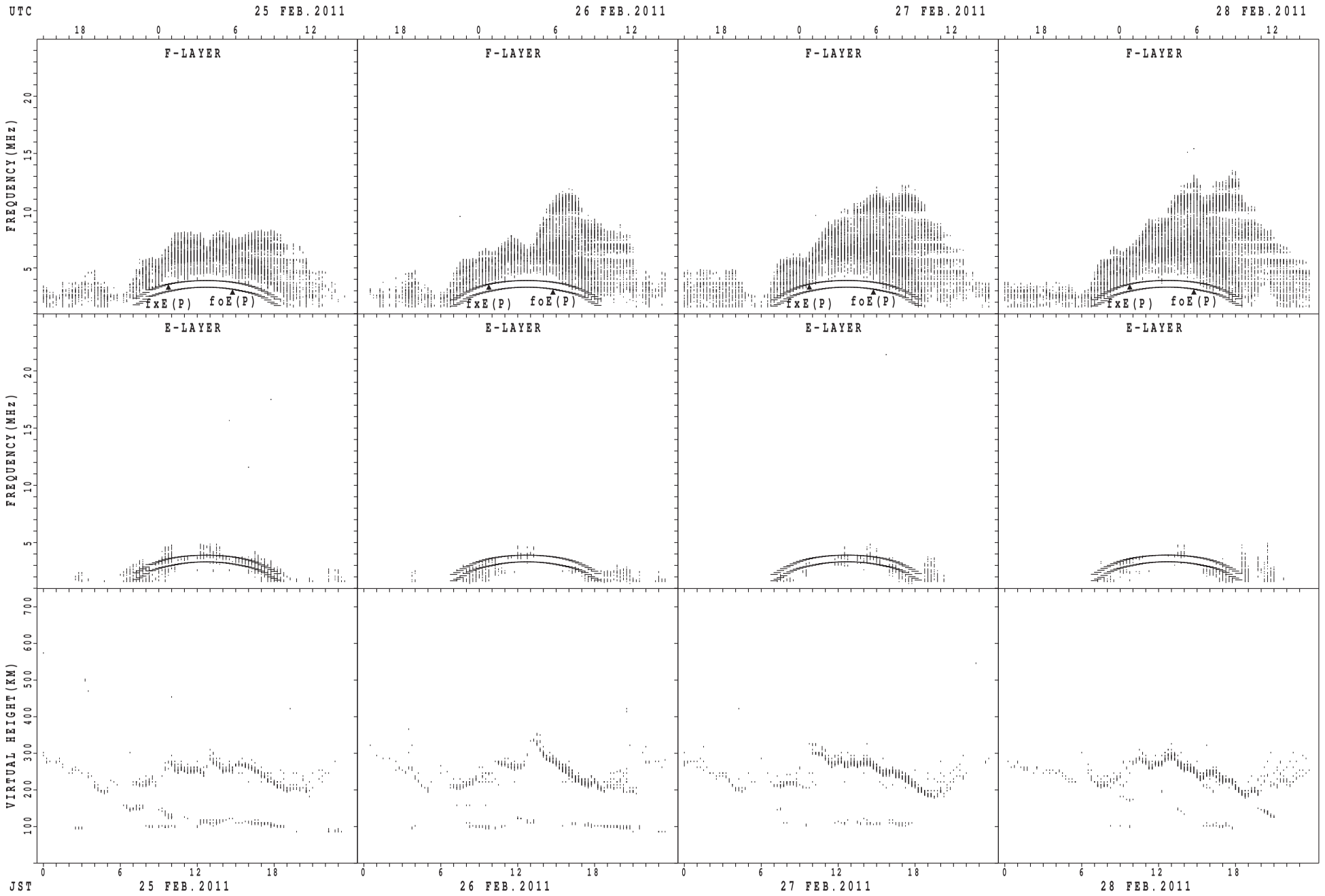
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



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

SUMMARY PLOTS AT Okinawa



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

MONTHLY MEDIANS OF h′F AND h′Es

FEB.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		1						2	18	20	16	3	2	8	17	18	18	2						
MED		308						236	230	236	239	244	236	241	248	248	235	237						
U Q		154						256	238	251	252	248	238	250	259	254	236	242						
L Q		154						216	222	230	226	240	234	237	244	240	230	232						

h′Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	4	3	4	2		1		12	14	19	10	10	7	6	10	13	13	7	7	7	7	6	6	3
MED	92	97	97	96		99		142	119	105	137	110	103	106	103	103	109	99	103	97	97	98	98	97
U Q	95	105	104	99		49		152	143	125	177	161	169	107	103	110	120	105	119	99	105	103	99	113
L Q	88	95	90	93		49		135	107	101	99	99	91	103	101	103	102	91	99	91	95	97	97	87

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								1	8	14	5				5	19	15	7						
MED								248	238	249	236				234	248	246	230						
U Q								124	243	256	254				256	256	250	240						
L Q								124	229	238	234				230	232	236	224						

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	2	1	4	2	3	1	1	8	4	1	2	5	6	7	4	5	5	10	8	4	6	5	7	3
MED	99	101	99	96	91	91	97	139	154	125	124	119	113	105	110	103	97	102	96	100	101	95	95	97
U Q	99	50	100	97	103	45	48	163	175	62	143	177	139	129	126	104	102	105	103	105	111	99	103	103
L Q	99	50	99	95	91	45	48	112	122	62	105	109	105	105	106	102	91	95	90	96	97	95	95	91

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									7	15	8					10	19	12	7					
MED									232	254	258					239	246	234	224					
U Q									238	272	261					254	262	238	232					
L Q									226	236	243					230	234	227	214					

h′Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	4	1	3	1	2	2	1	2	10	12	13	15	12	20	12	12	20	19	14	12	7	6	4	3
MED	95	91	95	97	97	138	103	148	128	116	153	125	108	105	103	101	103	105	97	94	99	97	94	89
U Q	100	45	97	48	97	177	51	151	155	163	173	155	117	111	110	103	103	107	101	97	99	105	99	97
L Q	91	45	91	48	97	99	51	145	113	105	110	107	105	100	100	97	98	97	95	90	95	95	92	89

MONTHLY MEDIANS OF h′F AND h′Es

FEB.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									3	20	13					3	22	25	19	9	4	1		
MED									252	254	248					268	238	246	230	230	230	246		
U Q									254	263	269					272	246	248	232	238	238	123		
L Q									230	244	243					246	228	225	222	218	229	123		

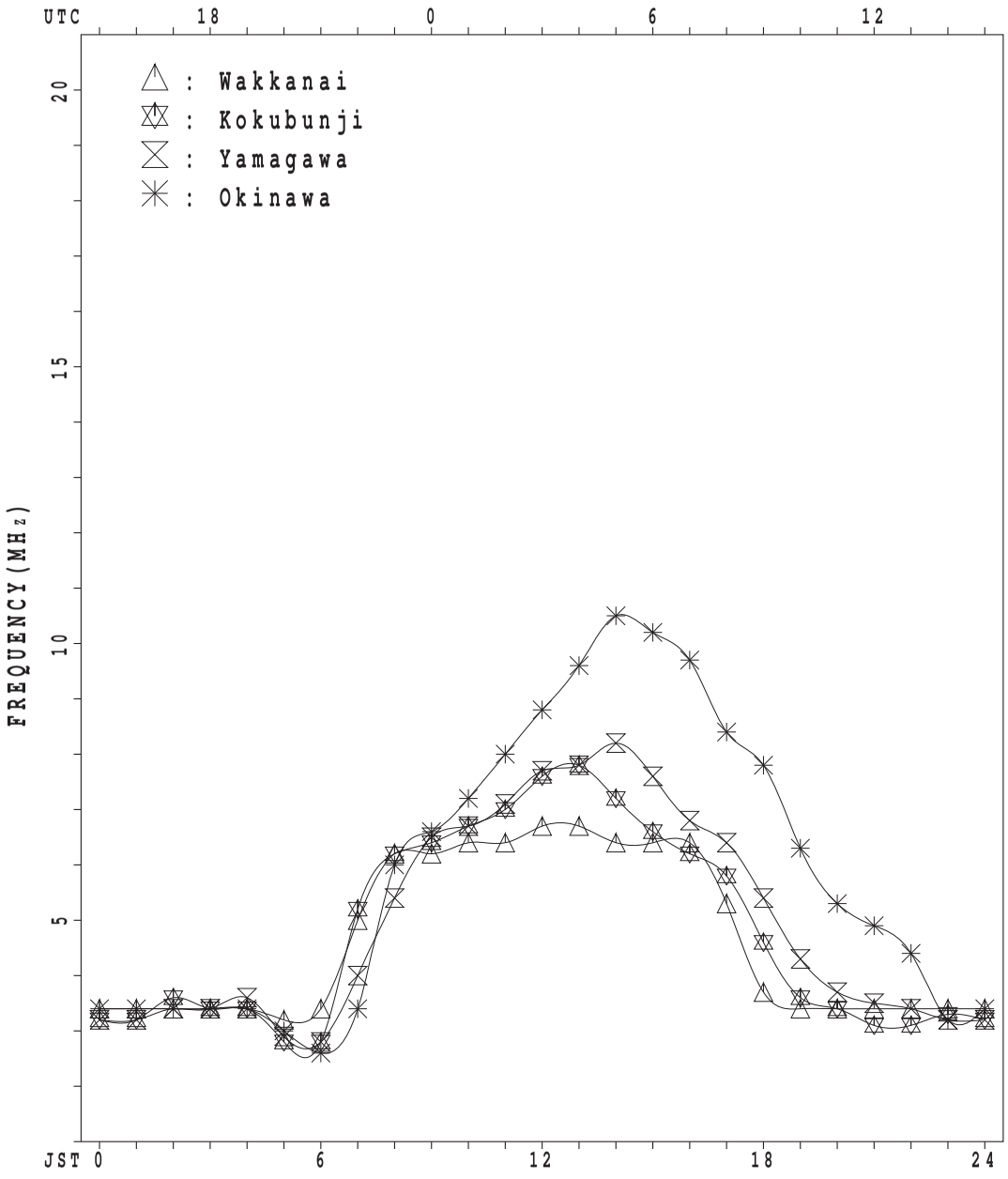
h′Es

	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	2	1	1	2	2		1	4	2	5	8	9	7	11	8	11	14	8	6	6	9	2	2
MED	105	99	95	95	98	97		151	125	167	149	128	121	113	111	106	103	106	93	97	96	97	91	88
U Q	52	101	47	47	101	97		75	148	183	171	131	150	119	121	110	111	111	105	105	99	106	95	89
L Q	52	97	47	47	95	97		75	112	151	127	113	114	111	103	105	97	101	89	93	91	91	87	87

MONTHLY MEDIANS PLOT OF foF2

FEB.2011

AUTOMATIC SCALING



IONOSPHERIC DATA STATION Kokubunji

FEB. 2011 fxI (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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	X 35	X 35	X 36	X 36	X 36	X 35	X 33												X 43	X 52	X 51	X 35	X 35	X 35
2	X 36	X 38	X 37	X 37	X 38	X 32	X 36												X 43	X 42	X 43	X 40	X 36	X 35
3	X 36	X 39	X 38	X 36	X 34	X 36	X 36	X 50											X 37	X 40	X 42	X 40	X 35	X 36
4	X 36	X 37	X 36	X 37	X 34	X 24	X 25												X 56	X 49	X 39	36	X 34	X 33
5	X 34	X 36	X 36	X 38	X 27	X 32	X 28												X 54	X 64	X 58	X 51	X 59	X 63
6	64	X 49	52	52	54	X 34	X 34												X 36	X 36	X 38	X 37	X 40	X 38
7	X 40	X 39	X 40	X 35	X 32	X 32	X 33												X 46	X 38	X 37	X 36	X 36	X 36
8	X 36	X 36	X 37	X 40	X 42	X 32	X 29												A	X 32	X 38	X 35	X 37	X 38
9	X 36	X 37	X 38	X 40	X 39	X 34	X 33												X 46	X 46	X 42	X 36	X 36	X 39
10	X 40	X 41	X 42	X 42	X 43	X 40	X 33												X 44	X 38	X 42	X 38	X 42	X 42
11	44	48	45	X 42	X 45	X 34	X 34												X 39	X 34	X 40	X 41	X 41	X 40
12	X 40	X 40	X 41	X 41	X 46	X 28	X 31											X 60	X 48	X 39	X 44	X 45	X 40	X 39
13	X 40	X 43	X 44	X 45	X 51	X 34	X 32												X 55	X 41	X 43	X 40	X 38	X 41
14	X 40	X 40	X 41	X 42	X 42	X 42	X 39												X 61	X 40	X 40	X 40	X 40	X 40
15	X 40	X 40	X 40	X 40	X 37	X 35	X 34												X 60	X 50	X 52	X 47	X 44	X 44
16	49	50	X 45	X 45	X 42	X 45	X 39												X 47	X 41	X 44	X 46	X 46	X 46
17	X 45	X 44	X 44	X 45	X 46	X 42	X 42												X 52	X 37	X 40	X 42	X 41	X 42
18	X 42	X 43	X 43	X 42	X 42	X 34	X 35												X 56	X 42	X 43	X 37	X 40	X 41
19	X 40	X 41	X 44	X 47	X 39	X 34	X 37												X 55	X 41	X 40	X 38	X 39	X 40
20	X 40	X 42	X 47	X 47	X 23	X 26	X 32			C	C	C	C	C	C	C	C	C	X 50	X 44	X 44	X 40	X 39	X 39
21	X 39	X 40	X 42	X 44	X 36	X 26	X 32												X 47	X 44	X 40	X 37	X 39	X 38
22	X 38	X 39	X 43	X 42	X 30	X 28	X 33												X 58	X 45	X 47	X 36	X 37	X 38
23	X 38	X 38	X 40	X 43	X 40	X 35	X 34												X 53	X 42	X 44	X 41	X 38	X 40
24	X 41	X 39	X 40	X 41	X 39	X 34	X 36												X 59	X 40	X 38	X 36	X 37	X 37
25	X 38	X 37	X 37	X 37	X 39	X 30	X 34												X 63	X 43	X 42	X 37	X 38	X 37
26	X 37	X 36	X 38	X 38	X 38	X 40	X 40												X 60	X 40	X 40	X 39	X 38	X 39
27	X 39	X 38	X 39	X 40	X 38	X 31	X 37												X 64	X 38	X 38	X 35	X 36	X 37
28	41	X 39	X 40	X 40	X 37	X 35	X 40												X 55	X 40	X 40	X 36	X 36	X 36
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	28	28	28	1										1	27	28	28	28	28	28
MED	X 40	X 39	X 40	X 41	X 39	X 34	X 34	X 50										X 60	X 53	X 41	X 42	X 38	X 38	X 39
U Q	40	X 42	X 44	X 44	X 42	X 35	X 36												X 58	X 44	X 44	X 40	X 40	X 40
L Q	X 36	X 38	X 38	X 38	X 36	X 32	X 32												X 46	X 38	X 40	X 36	X 36	X 37

FEB. 2011 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

FEB. 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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	29	29	30	30	30	29	26	47	50	48	60	60	57	54	59	63	58	45	36	46	45	29	29	29
2	30	32	31	31	32	26	30	49	60	53	63	79	64	62	55	62	56	38	36	36	37	34	30	29
3	30	33	32	30	28	30	30	44	54	60	61	71	61	70	60	53	52	46	31	34	36	34	29	30
4	30	30	30	30	28	18	19	42	58	56	71	62	68	67	63	61	50	43	50	43	33	F	28	27
5	28	30	30	31	21	25	22	47	80	79	62	64	84	96	66	64	67	58	48	58	52	44	53	57
6	F	43	F	F	F	28	28	46	58	76	73	75	69	79	72	68	59	52	30	30	32	31	33	32
7	34	33	34	29	26	26	26	56	53	60	77	98	72	81	75	67	53	52	40	32	31	29	30	30
8	30	30	31	34	36	26	23	51	66	59	63	64	78	72	74	61	60	54	A	26	32	29	31	32
9	30	31	32	34	33	28	27	56	57	60	63	68	80	64	69	62	62	52	40	40	36	30	30	33
10	34	34	35	35	37	34	27	44	54	73	66	64	79	81	70	63	63	52	38	32	36	32	36	36
11	F	F	F	36	39	28	28	55	64	61	73	73	90	92	74	68	67	62	32	28	34	34	35	34
12	34	34	35	35	40	22	25	50	57	62	69	70	70	77	72	60	54	54	42	33	38	39	34	32
13	34	37	38	39	45	28	26	50	65	61	66	67	70	71	67	64	58	60	49	35	37	34	32	35
14	34	34	35	36	36	35	33	48	74	64	67	74	78	61	70	72	66	58	55	34	34	34	33	34
15	34	34	34	34	30	29	29	61	60	71	97	R	68	77	74	72	79	74	54	44	46	41	38	38
16	F	F	39	39	36	39	33	54	69	79	100	82	78	72	70	63	66	61	41	35	38	40	40	40
17	38	37	38	38	40	36	36	60	75	78	86	93	79	84	72	67	66	62	46	30	34	36	35	35
18	36	36	37	36	36	28	29	56	69	68	80	88	99	86	78	65	60	59	50	36	37	31	34	35
19	34	35	38	41	33	28	31	54	70	91	92	V 83	87	85	75	65	60	60	48	35	34	32	33	34
20	34	36	41	41	17	20	26	52	68	C	C	C	C	C	C	C	C	C	44	38	38	34	33	33
21	33	34	36	38	29	20	26	54	70	67	75	76	88	90	84	68	66	61	41	38	34	31	33	31
22	32	33	37	36	24	22	27	58	73	76	72	84	87	91	75	78	68	72	52	39	41	30	31	32
23	32	32	34	37	34	29	28	49	58	68	67	69	84	86	65	69	66	60	47	36	37	34	31	34
24	35	33	34	35	33	28	29	53	59	67	64	68	73	77	68	72	70	58	53	34	32	30	31	31
25	32	31	31	31	32	23	28	53	60	66	66	68	64	72	71	65	66	64	57	37	36	31	32	31
26	31	30	32	32	32	33	34	48	57	64	61	61	70	79	78	66	65	66	54	34	34	33	32	33
27	33	34	33	34	32	25	31	54	59	59	67	68	75	80	72	75	72	70	58	32	32	29	30	31
28	F	33	34	34	31	29	34	53	60	59	68	63	76	78	71	68	75	71	49	34	34	30	30	30
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	24	26	26	27	27	28	28	28	28	27	27	26	27	27	27	27	27	27	27	28	28	27	28	28
MED	33	33	34	35	32	28	28	52	60	64	67	70	76	78	71	65	65	59	47	35	36	32	32	32
U Q	34	34	37	37	36	29	30	54	69	73	75	79	84	85	74	68	67	62	52	38	38	34	34	34
L Q	30	31	32	31	29	25	26	48	58	60	63	64	69	71	67	63	58	52	40	32	34	30	30	31

FEB. 2011 foF2 (0.1MHz)

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IONOSPHERIC DATA STATION Kokubunji

FEB. 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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1											L	L	L		L	L								
2											L	U L 416	L	L	L	U L 392								
3										L	L	432	L	416	L	L								
4											L	L	L	L	U L 412	L								
5													L	A	L	A								
6										U L 424	L	420	L	L	U L 424	L								
7											A	A	A	L	L									
8											L	U L 444	L	L	U L 412	L								
9											L	L	A	L	L	L								
10										L	L	L	460	A	L	L								
11										L	L	L	A	U L 456	U L 448	A	L							
12											L	L	L	L	L									
13										L	L	L	L	L	A	L								
14									L	L	L	L	440	L	L	L								
15										L	L			L	L	L								
16										L	L	L	L	U L 504	A	L								
17										L	L	U L 468	468	L	A	L								
18										L	L	L	464	U L 460	L									
19											L	L	U L 432	L	L	L								
20										C	C	C	C	C	C	C	C	C						
21										L	L	U L 448	476	U L 452	U L 448	L								
22									L	L		U L 456	U L 476	L	L	416								
23										L	L	L	468	L	A	L	L							
24										L	L	U L 452	A	A	A	A	L							
25										L	A	L	U L 440	420	L	L								
26										L	L	U L 456	U L 464	U L 448	L	L	L							
27											L	U L 472	L	U L 456	436	U L 404								
28									L		L	A	U L 456	464	L	A	A							
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT										1		10	11	9	6	3								
MED										U L 424		U L 450	464	U L 456	U L 430	U L 404								
U Q												U L 456	468	U L 462	U L 448	416								
L Q												432	U L 440	434	U L 412	U L 392								

FEB. 2011 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

FEB. 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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								B	U R 248	A	308	328	A	A	A	A	A	B						
2								B	A	A	A	A	A	R	R	A	R	B						
3									228	R	R	R	R	304	292	A	232	B						
4								B	240	A	A	A	A	A	A	R	U R 224	B						
5								B	232	300	A	A	A	A	A	A	A	B						
6								B	236	R	A	A	A	A	A	A	A	B						
7								B	A	A	A	A	A	A	R	R	A	B						
8								B	U R 268	R	A	A	R	A	A	A	A	B						
9								B	R	R	304	324	A	A	R	R	R	B						
10								B	248	304	R	A	U A 348	A	R	R	R	B						
11								B	A	A	A	R	A	A	288	284	224	B						
12								176	A	A	U R 336	R	R	R	R	R	R							
13								176	U R 256	R	324	R	356	R	A	A	A	B						
14								B	R	R	R	R	A	R	R	R	R	B						
15								168	252	R	R	B	B	A	R	R	A	B						
16								B	R	R	R	R	R	R	A	R	A	B						
17								184	U R 280	A	A	A	A	A	A	R	R	B						
18								184	R	R	R	R	R	R	R	R	R	B						
19								B	R	R	A	R	R	R	R	R	A	B						
20								U R 208	R	C	C	C	C	C	C	C	C	C						
21								B	252	U A 284	R	340	A	A	A	A	R	B						
22								172	R	R	R	R	R	R	A	A	A	B						
23								188	264	R	R	R	348	R	A	R	U R 252	B						
24								180	248	R	R	R	356	A	A	A	A	B						
25								192	R	R	A	A	A	A	R	R	R	B						
26								U R 200	252	R	R	R	R	R	R	A	R	B						
27								196	A	R	R	A	R	R	R	R	A	B						
28								U R 192	268	R	332	A	R	R	R	A	A	B						
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								13	15	3	5	3	4	1	2	1	4							
MED								184	252	300	324	328	352	304	290	284	228							
U Q								U R 194	264	304	334	340	356				242							
L Q								176	240	U A 284	306	324	348				224							

FEB. 2011 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

FEB. 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

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

FEB. 2011 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

FEB. 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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E B 15	E B 15	E B 15	E B 15	E B 15	E B 14	E B 14	E B 16	G	30	34	38	36	35	31	28	24	24	17	E B 15	E B 15	E B 16	17	E B 16
2	E B 15	E B 16	E B 15	E B 16	E B 15	E B 14	E B 15	19	26	30	33	30	30	G 25	G 26	30	G	E B 13	E B 14	E B 15	E B 15	E B 15	E B 14	E B 15
3	E B 15	E B 16	E B 15	E B 15	E B 15	E B 14	E B 14	E B 15	28	G 21	G 25	G 28	27	34	35	28	G 19	18	16	E B 15	E B 15	E B 15	E B 15	E B 15
4	E B 15	E B 15	E B 15	E B 15	E B 15	E B 16	E B 15	19	29	34	34	34	32	33	30	G 24	G 18	20	E B 15	E B 15	E B 15	15	E B 15	E B 16
5	16	E B 15	E B 15	E B 16	E B 16	E B 14	E B 15	19	25	32	33	38	38	44	33	32	39	22	21	20	24	26	E B 15	18
6	E B 15	E B 15	E B 16	E B 14	E B 16	E B 15	16	18	25	G 22	33	32	34	35	35	29	27	23	E B 16	E B 16	E B 15	E B 15	16	E B 15
7	E B 15	E B 16	E B 15	E B 15	16	E B 16	E B 15	20	27	31	42	34	38	32	G 24	G 24	22	E B 16	E B 15	E B 15	E B 15	E B 14	E B 15	E B 16	E B 14
8	E B 15	E B 15	20	E B 16	E B 15	E B 14	15	19	G	G 22	32	36	G 22	36	36	30	34	29	A A 43	E B 16	E B 16	E B 15	E B 15	E B 15
9	E B 15	E B 15	E B 15	E B 16	E B 15	E B 15	E B 15	20	G 18	G 21	36	35	36	35	G 21	G 22	G 21	18	E B 15	E B 15	20	16	E B 16	E B 15
10	E B 15	E B 16	E B 15	E B 15	E B 15	E B 15	E B 15	17	30	32	G 22	33	39	39	G 25	G 24	G 22	E B 14	E B 15	E B 16	E B 16	E B 14	E B 15	E B 15
11	E B 16	18	14	E B 15	E B 15	E B 16	E B 15	E B 16	26	31	36	G 28	42	36	36	32	26	19	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15
12	E B 15	E B 14	E B 15	E B 14	E B 15	E B 14	E B 14	20	27	33	G 29	G 26	G 26	G 26	G 24	G 21	G 21	E B 16	E B 15	E B 15	E B 15	E B 15	E B 15	E B 16
13	E B 16	E B 16	16	17	E B 14	16	E B 14	22	G	G 25	36	G 25	38	G 27	36	33	30	E B 13	E B 16	E B 14	E B 14	E B 15	E B 15	E B 15
14	E B 15	E B 14	16	E B 15	E B 15	E B 16	E B 15	19	G 22	G 25	G 26	G 22	34	G 23	G	G 26	G 24	19	E B 15	E B 15	E B 15	E B 16	E B 15	E B 16
15	E B 15	E B 15	E B 14	E B 15	E B 15	E B 15	E B 15	20	27	G 21	G E B 26	E B 29	E B 42	40	G 25	G 23	26	19	21	E B 15	E B 15	E B 16	16	E B 15
16	E B 16	E B 16	E B 14	E B 15	E B 15	E B 14	E B 15	E B 16	G 22	G 25	G 22	G	G 25	G 24	34	G 20	27	19	E B 14	E B 14	E B 15	E B 15	E B 15	E B 15
17	E B 15	E B 15	E B 14	E B 15	E B 15	E B 15	E B 15	G 16	G	35	35	36	34	34	32	G 24	G 23	E B 16	E B 14	E B 14	E B 15	E B 14	E B 15	E B 15
18	E B 14	E B 14	E B 15	E B 14	E B 14	E B 16	E B 15	21	G 22	G 21	G 24	G 25	G 24	G	G	G 22	G 22	20	E B 15	20	E B 16	E B 15	E B 14	E B 15
19	E B 15	E B 16	E B 15	E B 15	E B 16	E B 15	E B 15	20	G 24	G 27	33	G 26	G	G	G 21	G 25	26	20	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15
20	E B 16	E B 15	E B 15	E B 15	E B 15	E B 14	E B 16	G 19	G 19	C	C	C	C	C	C	C	C	C	20	E B 15	E B 15	E B 15	E B 15	E B 15
21	E B 15	E B 16	E B 15	E B 15	E B 16	E B 15	E B 16	21	30	34	G 25	38	41	38	34	33	18	18	16	E B 15	E B 15	E B 16	E B 16	E B 15
22	E B 15	E B 15	E B 15	E B 14	E B 14	E B 16	E B 15	20	G	G 22	G 24	G 25	G 22	G 18	34	32	27	19	E B 15	E B 15	E B 15	E B 14	E B 15	E B 15
23	E B 15	E B 15	E B 15	E B 15	E B 14	E B 15	E B 15	G	28	G 20	G 24	G 25	39	G 28	36	G 21	G 22	30	E B 15	E B 15	E B 15	E B 14	E B 15	E B 15
24	E B 15	E B 15	E B 15	E B 15	E B 14	E B 15	E B 14	22	27	G 21	G 25	G 22	38	39	50	40	28	25	E B 15	E B 15	E B 15	E B 15	17	E B 15
25	E B 16	E B 15	E B 15	E B 16	E B 15	E B 15	E B 15	22	G 18	G 21	36	38	36	37	G 27	G 26	G 24	20	E B 15	E B 15	E B 14	15	17	16
26	E B 15	E B 14	E B 14	E B 15	E B 16	E B 15	E B 15	G	32	G 23	G 26	G 25	G 26	G 26	G 23	29	G 25	19	E B 15	E B 15	E B 15	E B 15	E B 15	E B 16
27	E B 16	E B 15	E B 15	E B 15	E B 15	E B 15	E B 16	23	28	G 24	G 23	38	G	G	G 23	G 26	G 27	19	E B 14	23	E B 16	E B 15	E B 15	E B 15
28	E B 14	E B 15	E B 15	E B 16	E B 15	E B 15	E B 15	G	G 19	G 21	36	41	G 24	G 24	G 25	34	29	20	E B 16	E B 15	E B 15	E B 15	E B 15	E B 15
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	28	28	28	28	28	27	27	27	27	27	27	27	27	27	28	28	28	28	28	28
MED	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	19	25	G 25	32	30	34	33	30	G 26	25	19	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15
U Q	E B 16	E B 16	E B 15	E B 16	E B 15	E B 16	E B 15	20	28	31	35	36	38	36	35	32	27	20	16	E B 15	E B 15	E B 15	16	E B 16
L Q	E B 15	E B 15	E B 15	E B 15	E B 15	E B 14	E B 15	18	G 23	G 21	G 25	G 25	G 26	G 26	G 25	G 24	G 22	E B 18	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15

FEB. 2011 fbEs (0.1MHz)

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IONOSPHERIC DATA STATION Kokubunji

FEB. 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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	15	15	15	15	15	14	14	16	14	15	12	14	14	16	18	15	13	14	16	15	15	16	15	16
2	15	16	15	16	15	14	15	14	14	14	14	13	12	13	14	12	11	13	14	15	15	15	14	15
3	15	16	15	15	15	14	14	15	15	14	14	16	16	14	14	15	12	13	16	15	15	15	15	15
4	15	15	15	15	15	16	15	16	13	14	14	15	14	12	14	15	15	14	15	15	15	15	15	16
5	16	15	15	16	16	14	15	15	15	13	14	15	13	15	15	14	15	14	15	14	15	14	15	15
6	15	15	16	14	16	15	14	15	14	12	13	16	14	14	14	14	14	15	16	16	15	15	16	15
7	15	16	15	15	15	16	15	15	14	14	14	14	13	15	15	12	15	16	15	15	14	15	16	14
8	15	15	14	16	15	14	15	15	16	15	14	14	15	17	14	14	14	14	15	16	16	15	15	15
9	15	15	15	16	15	15	15	14	15	14	12	14	14	14	14	14	14	14	15	15	14	16	16	15
10	15	16	15	15	15	15	15	15	15	14	15	14	13	12	16	16	13	14	15	16	16	14	15	15
11	16	15	14	15	15	16	15	16	14	15	14	14	14	13	13	14	14	14	15	15	15	15	15	15
12	15	14	15	14	15	14	14	15	14	14	15	14	14	14	14	14	14	16	15	15	15	15	15	16
13	16	16	15	14	14	15	14	14	14	14	17	18	16	16	18	14	14	13	16	14	14	15	15	15
14	15	14	16	15	15	16	15	16	13	12	17	14	14	14	19	13	13	14	15	15	15	16	15	16
15	15	15	14	15	15	15	15	14	14	13	15	28	42	21	18	16	14	13	16	15	14	16	15	15
16	16	16	14	15	16	14	15	16	15	16	13	18	14	17	15	14	13	14	14	14	15	15	15	15
17	15	15	14	15	15	15	15	15	13	13	17	19	14	16	15	14	14	16	14	14	15	14	15	15
18	14	14	15	14	14	16	15	14	15	14	15	15	16	23	20	14	13	14	15	15	16	15	14	15
19	15	16	15	15	16	15	15	15	14	13	14	18	18	22	13	16	14	13	15	15	15	15	15	15
20	16	15	15	15	15	14	16	15	14	C	C	C	C	C	C	C	C	C	15	15	15	15	15	15
21	15	16	15	15	16	15	15	15	14	13	14	16	14	16	16	13	13	13	14	15	15	16	16	15
22	15	15	15	14	14	16	15	14	14	14	12	12	14	14	13	12	15	12	15	15	15	14	15	15
23	15	15	15	15	14	15	15	15	14	14	15	14	14	20	18	14	14	13	15	15	15	14	15	15
24	15	15	15	15	14	15	14	15	14	13	13	12	13	18	15	13	14	15	15	15	15	15	15	15
25	16	15	15	16	15	15	15	14	14	14	19	16	18	16	15	14	14	13	15	15	14	15	14	14
26	15	14	14	15	16	15	15	16	14	14	13	14	18	17	14	14	15	14	15	15	15	15	15	16
27	16	15	15	15	15	15	16	15	14	12	16	14	18	20	13	14	13	13	14	15	16	15	15	15
28	14	15	15	16	15	15	15	16	13	13	15	18	18	14	16	18	15	15	16	15	15	15	15	15
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	28	28	28	28	28	27	27	27	27	27	27	27	27	27	28	28	28	28	28	28
MED	15	15	15	15	15	15	15	15	14	14	14	14	14	16	15	14	14	14	15	15	15	15	15	15
U Q	16	16	15	15	15	15	15	16	14	14	15	16	16	17	16	15	14	14	15	15	15	15	15	15
L Q	15	15	15	15	15	14	15	14	14	13	13	14	14	14	14	14	13	13	15	15	15	15	15	15

IONOSPHERIC DATA STATION Kokubunji

FEB. 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

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	318	314	317	321	315	323	331	379	400	379	362	342	359	341	335	355	379	397	328	343	376	355	327	303
2	310	323	320	305	330	307	333	373	388	372	392	371	337	365	348	364	380	381	345	323	353	347	305	301
3	296	316	338	319	316	329	365	360	375	363	346	368	358	381	389	365	371	368	335	327	357	343	314	314
4	304	328	328	362	388	317	345	355	370	336	373	375	365	362	356	384	370	345	362	364	357	F	302	321
5	291	317	327	365	310	286	295	335	357	379	366	314	337	365	355	374	347	369	338	343	349	290	308	310
6	F	296	F	F	F	381	328	390	383	354	375	362	354	356	371	383	389	377	325	334	333	327	319	298
7	299	319	340	364	322	300	333	392	404	344	348	364	348	360	366	380	358	355	354	350	344	332	308	315
8	299	284	298	358	379	378	344	377	386	383	378	355	345	346	387	367	361	378	A	321	334	299	316	288
9	267	313	317	313	353	352	319	382	396	368	365	357	365	337	335	360	363	369	353	349	365	345	295	292
10	309	301	281	325	347	326	404	381	368	373	373	332	355	346	368	355	376	365	376	322	347	303	332	303
11	F	F	F	333	358	375	326	364	391	355	355	326	347	325	354	369	357	388	376	288	319	330	301	297
12	284	312	311	325	372	329	309	354	374	356	367	346	351	358	347	365	349	378	350	309	314	331	319	314
13	303	311	319	330	391	327	320	350	378	366	350	350	325	354	370	361	368	369	364	322	325	321	318	297
14	308	318	297	314	339	338	368	352	372	363	370	369	366	368	353	356	392	355	353	344	334	315	323	307
15	327	333	288	322	311	330	303	362	350	343	370	R	351	306	324	334	338	354	340	319	343	333	319	289
16	F	F	308	316	327	346	330	366	354	346	350	368	368	327	366	366	361	377	336	336	312	319	331	314
17	291	325	318	317	342	332	332	371	366	344	339	345	351	342	366	356	356	366	370	297	326	329	331	312
18	313	307	307	334	357	329	334	371	377	338	341	339	347	352	365	350	362	348	322	361	334	298	309	281
19	280	289	315	338	375	297	339	357	337	339	338	V 342	347	350	349	343	359	358	346	352	312	304	299	291
20	285	304	337	385	392	306	323	362	348	C	C	C	C	C	C	C	C	C	353	334	330	313	295	285
21	287	295	314	350	369	319	327	396	366	349	349	351	327	339	364	352	371	372	355	336	334	306	291	288
22	284	290	329	378	351	293	335	382	357	358	322	343	332	345	350	365	359	359	345	334	347	307	299	298
23	305	306	315	334	367	338	368	382	358	375	356	348	340	358	342	361	366	375	360	332	323	327	318	307
24	305	296	316	345	346	337	356	385	369	374	368	349	347	331	338	364	358	359	375	332	318	315	322	315
25	308	310	318	334	357	376	350	385	381	343	353	370	331	358	342	347	358	368	368	335	333	327	327	319
26	312	310	314	315	326	337	398	391	377	369	360	335	340	341	350	336	359	368	366	317	334	325	322	316
27	300	296	318	328	364	316	342	373	347	361	348	315	330	344	367	363	355	366	391	328	334	304	293	307
28	F	302	326	343	339	305	354	382	376	340	370	324	350	350	356	363	368	377	377	303	331	322	317	307
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	24	26	26	27	27	28	28	28	28	27	27	26	27	27	27	27	27	27	27	28	28	27	28	28
MED	302	310	317	333	351	329	334	373	373	358	360	348	347	350	355	363	361	368	353	333	334	322	316	305
U Q	308	317	326	350	369	338	352	382	382	372	370	364	355	358	366	366	371	377	368	343	347	331	322	314
L Q	289	296	311	319	327	312	326	361	358	344	348	339	337	341	347	355	358	359	340	322	326	306	302	294

IONOSPHERIC DATA STATION Kokubunji

FEB. 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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1											L	L	L		L	L								
2											L	U L 382	L	L	L	U L 375								
3										L	L	378	L	400	L	L								
4											L	L	L	L	U L 390	L								
5													L	A	L	A								
6										U L 370	L	410	L	L	U L 379	L								
7											A	A	A	L	L									
8											L	U L 399	L	L	U L 398	L								
9											L	L	A	L	L	L								
10										L	L	L	391	A	L	L								
11										L	L	L	A	U L 384	U L 401	A	L							
12											L	L	L	L	L									
13										L	L	L	L	L	A	L								
14									L	L	L	L	446	L	L	L								
15										L	L			L	L	L								
16										L	L	L	L	U L 363	A	L								
17										L	L	U L 404	395	L	A	L								
18										L	L	L	384	U L 395	L									
19											L	L	U L 424	L	L	L								
20										C	C	C	C	C	C	C	C	C						
21										L	L	U L 389	381	U L 385	U L 371	L								
22									L	L		U L 390	U L 368	L	L	375								
23										L	L	L	359	L	A	L	L							
24										L	L	U L 414	A	A	A	A	L							
25										L	A	L	U L 408	437	L	L								
26										L	L	U L 387	U L 387	U L 380	L	L	L							
27											L	U L 377	L	U L 381	385	U L 363								
28									L		L	A	U L 384	388	L	A	A							
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT										1		10	11	9	6	3								
MED										U L 370		U L 390	387	U L 385	U L 388	U L 375								
U Q												U L 404	U L 408	398	U L 398	U L 375								
L Q												U L 382	381	U L 380	U L 379	U L 363								

FEB. 2011 M(3000)F1 (0.01)

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IONOSPHERIC DATA STATION Kokubunji

FEB. 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

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											242	276	260		250	256								
2											230	238	256	244	252	244								
3										246	250	244	254	238	224	238								
4											236	238	246	254	242	226								
5													278	232	244	218								
6										266	234	244	246	260	232	226								
7											262	236	230	246	238									
8											240	250	264	260	236	240								
9											248	240	246	268	252	240								
10										240	238	264	242	260	238	242								
11										242	262	268	256	252	246	228	246							
12											250	266	248	256	252									
13										236	252	246	292	250	234	240								
14									230	240	232	244	262	244	254	246								
15										244	236			282	284	250								
16										248	246	226	236	290	240	242								
17										254	250	236	252	264	228	242								
18										252	262	256	250	242	240									
19											246	240	252	248	256	246								
20										C	C	C	C	C	C	C	C	C						
21										246	252	250	274	254	238	246								
22									238	242		260	270	250	242	236								
23										236	252	258	270	234	240	250	238							
24										234	234	268	266	256	E A 256	244	240							
25										252	246	242	262	260	240	266								
26										236	248	280	268	264	254	256	242							
27											268	282	264	258	244	240								
28									216		248	260	254	248	250	246	240							
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									3	16	25	25	26	26	27	24	5							
MED									230	243	248	250	256	254	242	242	240							
U Q									238	250	252	265	266	260	252	246	244							
L Q									216	238	237	240	248	246	238	239	239							

FEB. 2011 h′F2 (KM)

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IONOSPHERIC DATA STATION Kokubunji

FEB. 2011 h′F (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	E B 256	E B 276	E B 274	E B 262	E B 256	E B 258	E B 236	206	200	198	208	204	198	214	200	190	206	196	E A 236	E B 234	206	214	E A 262	E B 268
2	E B 272	E B 246	E B 272	E B 292	E B 238	E B 272	E B 236	214	212	208	206	196	184	206	190	188	214	192	E B 230	E B 236	228	216	E B 266	E B 282
3	E B 296	E B 266	E B 246	E B 242	E B 260	E B 246	216	192	214	210	198	200	196	204	196	184	H 182	210	214	E B 240	212	214	E B 240	E B 268
4	E B 286	E B 266	E B 258	224	204	E B 258	E B 272	212	222	216	206	198	192	188	178	188	190	200	212	E B 200	208	E A 284	E B 276	E B 270
5	E A 286	E B 282	E B 254	208	212	E B 322	E B 308	230	228	214	224	E A 236	226	A	196	A	E A 240	208	216	218	214	E A 230	E B 232	E A 238
6	E B 254	E B 266	E B 262	E B 244	204	192	230	204	208	204	196	176	192	214	204	198	214	208	E B 210	E B 240	E B 232	E B 256	E A 242	E B 286
7	E B 284	E B 256	E B 240	202	E A 260	E B 286	E B 248	206	196	180	A	A	A	192	192	212	194	210	E B 210	208	220	E B 238	E B 264	E B 276
8	E B 296	E B 284	E A 296	228	204	198	224	210	212	208	182	202	218	204	194	204	214	204	A	E B 234	E B 230	E B 252	E B 264	E B 288
9	E B 328	E B 254	E B 252	E B 250	222	E B 210	E B 244	214	198	206	206	206	A	198	198	206	218	200	204	212	212	208	E B 290	E B 268
10	E B 268	E B 258	E B 294	E B 254	214	228	186	198	214	220	196	188	202	A	214	200	218	206	E B 194	E B 216	E B 220	E B 252	E B 248	E B 284
11	E B 276	E A 306	E A 278	E B 270	214	192	210	208	206	190	222	208	A	186	190	A	202	204	E B 190	E B 288	E B 254	E B 238	E B 284	E B 290
12	E B 284	E B 266	E B 266	E B 252	210	194	E B 256	216	210	216	204	210	202	200	202	208	218	204	200	E B 240	E B 264	224	226	E B 266
13	E B 292	E B 274	E A 260	E A 248	208	220	E B 254	208	220	208	212	200	202	194	A	194	218	218	198	212	E B 228	E B 244	E B 240	E B 268
14	E B 268	E B 264	E B 270	E B 260	E B 234	E B 224	204	198	192	190	194	206	180	202	206	212	214	210	202	200	E B 228	E B 238	E B 258	E B 270
15	E B 252	E B 252	E B 284	E B 254	E B 260	E B 246	E B 266	226	218	210	208	212	E B 250	216	204	206	232	212	208	212	220	E B 214	E A 254	E B 300
16	E B 270	E B 264	E B 262	E B 246	E B 234	214	E B 206	210	218	202	208	208	196	200	A	204	224	206	E B 198	206	E B 246	E B 250	E B 230	E B 240
17	E B 262	E B 266	E B 260	E B 238	222	226	E B 230	226	216	204	206	184	188	200	A	196	214	204	196	218	E B 256	E B 248	E B 254	E B 252
18	E B 270	E B 276	E B 260	E B 244	214	E B 240	E B 238	216	224	198	192	190	212	200	200	204	216	226	188	214	E B 224	E B 292	E B 278	E B 300
19	E B 326	E B 320	E B 272	E B 224	202	E B 232	E B 232	224	230	E A 242	188	210	190	220	200	202	216	228	198	206	E B 224	E B 272	E B 286	E B 300
20	E B 320	E B 288	E B 236	E B 204	186	E B 308	E B 262	216	222	C	C	C	C	C	C	C	C	C	210	E B 210	E B 232	E B 238	E B 264	E B 302
21	E B 308	E B 272	E B 256	228	E B 200	E B 290	E A 248	208	228	194	218	208	210	210	204	202	218	212	202	218	E B 228	E B 284	E B 306	E B 312
22	E B 320	E B 292	E B 240	206	216	E B 292	E B 240	204	196	204	206	214	190	194	200	206	228	220	194	E B 212	E B 210	E B 244	E B 282	E B 272
23	E B 288	E B 280	E B 266	224	208	224	206	H 176	208	200	212	204	232	208	A	214	202	208	198	E B 218	E B 230	216	E B 264	E B 264
24	E B 272	E B 278	E B 272	E B 246	214	214	218	208	212	198	210	172	A	A	A	A	208	206	194	E B 204	E B 232	E B 264	E A 272	E B 266
25	E B 276	E B 274	E B 266	E B 248	220	196	E B 220	204	202	208	A	218	198	204	200	186	220	220	200	206	226	E B 226	E A 252	E A 266
26	E B 282	E B 290	E B 280	E B 262	E B 244	E B 238	184	184	216	200	202	190	198	196	214	206	216	216	194	E B 214	212	E B 246	E B 258	E B 258
27	E B 290	E B 274	E B 252	E B 244	212	E B 252	210	208	214	218	210	202	214	208	204	212	234	210	194	E A 258	E B 230	E B 252	E B 282	E B 270
28	E B 290	E B 272	E B 250	E B 232	218	E B 236	220	H 190	182	200	206	A	206	212	208	A	A	212	188	224	E B 232	E B 230	E B 272	E B 280
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	28	28	28	28	28	27	25	25	23	24	22	23	26	27	27	28	28	28	28	28
MED	E B 284	E B 273	E B 262	E B 244	210	E B 234	E B 231	208	213	204	206	203	198	203	200	204	216	208	199	E 215	E B 228	E B 241	E B 264	E B 270
U Q	E B 294	E B 281	E B 272	E B 253	E B 234	E B 258	E B 248	215	219	210	210	209	212	209	204	206	218	212	210	E B 234	E B 232	E B 252	E B 277	E B 287
L Q	E B 270	E B 265	E B 253	226	208	214	213	204	204	198	197	193	192	197	196	194	208	204	194	209	217	225	E B 250	E B 266

FEB. 2011 h′F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

FEB. 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

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	116	120	116	116	122	114	A	A	A	B						
2								B	122	114	116	A	A	128	128	122	112	B						
3									124	122	122	122	122	122	122	A	120	B						
4								B	118	118	114	A	A	A	A	118	122	B						
5								B	108	124	124	120	116	A	A	A	A	B						
6								B	120	118	A	A	A	A	A	A	A	B						
7								B	114	114	A	A	A	A	116	116	A	B						
8								B	118	122	114	114	118	A	A	A	A	B						
9								B	114	124	122	118	A	A	118	118	126	B						
10								B	114	116	114	A	120	126	122	122	120	B						
11								B	A	A	118	120	A	120	116	114	110	B						
12								128	124	A	124	118	120	118	116	124	124							
13								126	118	118	118	118	120	124	114	120	120	B						
14								B	120	124	118	126	A	116	206	116	122	B						
15								126	122	118	118	B	B	124	124	122	118	B						
16								B	122	122	116	120	118	120	122	118	112	B						
17								116	130	A	A	A	A	A	A	124	126	B						
18								118	118	118	118	122	124	124	126	118	122	B						
19								B	120	122	A	120	118	122	112	118	124	B						
20								130	126	C	C	C	C	C	C	C	C	C						
21								B	122	122	122	116	118	120	122	118	118	B						
22								118	114	122	122	122	118	112	A	114	A	B						
23								116	118	120	120	118	118	122	126	126	126	B						
24								126	122	114	114	114	114	120	114	A	A	B						
25								118	120	118	114	112	116	116	120	122	124	B						
26								124	118	118	118	120	120	120	118	A	124	B						
27								120	126	118	118	A	126	126	126	120	A	B						
28								118	114	116	116	120	124	126	118	116	A	B						
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								13	27	24	23	19	18	20	20	20	18							
MED								120	120	118	118	120	119	121	121	118	122							
U Q								126	122	122	122	120	122	124	125	122	124							
L Q								118	116	118	116	116	118	119	116	117	118							

FEB. 2011 h′E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

FEB. 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	100	100	100	B	B	B	B	G	120	150	158	130	122	104	102	106	106	100	100	98	102	98	98
2	98	100	B	B	B	98	B	138	128	122	116	104	102	108	104	114	G	B	B	98	98	B	B	B
3	114	104	104	B	94	B	B	B	164	104	102	102	104	152	136	104	102	108	126	B	114	B	B	B
4	B	B	B	B	B	B	B	136	140	124	112	104	100	94	102	104	104	100	126	B	116	98	96	100
5	94	94	B	110	110	B	B	152	150	150	128	118	116	104	106	106	100	104	104	96	98	98	98	96
6	B	B	B	B	B	B	142	144	160	108	104	106	104	104	104	104	92	88	94	B	100	B	96	B
7	B	B	102	B	96	B	B	138	116	118	106	106	102	102	102	94	108	B	88	100	B	B	100	B
8	B	B	98	96	B	B	100	144	G	106	118	112	104	104	104	102	98	92	92	94	98	B	B	B
9	B	B	B	B	B	B	B	156	104	98	148	136	104	102	100	100	104	118	B	B	118	104	104	B
10	B	100	B	B	B	100	98	94	168	148	100	106	136	126	104	102	102	B	B	B	B	B	B	B
11	B	98	98	B	98	100	94	B	106	106	120	104	106	126	130	156	148	122	B	86	B	B	B	B
12	B	B	B	B	B	B	B	156	120	108	106	106	104	100	100	106	92	B	90	88	90	B	B	104
13	B	102	102	94	100	94	B	154	G	108	148	106	154	104	126	122	122	B	B	B	B	100	B	B
14	B	B	B	B	102	B	B	128	106	106	106	102	104	102	G	102	106	118	96	B	94	B	B	B
15	B	B	B	B	B	B	B	156	166	104	104	154	B	124	102	102	126	112	106	106	104	102	96	B
16	B	B	100	104	106	B	B	B	102	98	100	G	100	108	116	92	116	106	B	B	B	98	98	B
17	B	B	B	B	B	B	B	108	G	106	108	110	104	110	104	102	104	B	B	B	130	B	96	B
18	B	B	B	B	B	B	B	140	104	100	104	104	104	G	G	104	106	106	B	102	B	B	B	100
19	102	102	B	B	B	B	B	136	102	100	98	96	G	G	96	104	122	104	B	B	B	B	126	B
20	B	B	B	B	B	B	150	114	106	C	C	C	C	C	C	C	C	C	102	B	B	B	B	B
21	B	B	B	B	B	96	100	150	170	124	98	146	122	124	128	112	96	100	94	94	130	B	B	B
22	B	B	B	B	B	B	B	138	G	102	102	100	100	96	106	114	102	104	B	B	B	B	B	B
23	B	B	B	B	B	B	B	G	154	106	100	100	144	104	128	106	104	100	B	B	B	B	B	B
24	B	B	B	B	B	B	B	160	162	98	100	100	134	122	110	104	100	106	B	86	100	100	98	B
25	98	B	B	B	B	B	B	158	102	102	118	122	120	118	106	104	104	108	B	106	106	B	94	94
26	B	B	B	B	B	B	B	G	164	100	98	102	102	102	102	108	108	106	B	B	B	B	100	B
27	90	102	B	B	B	B	B	158	120	106	108	108	G	G	108	104	108	102	B	98	98	B	B	B
28	B	96	B	B	B	B	B	G	104	100	148	148	106	104	100	122	108	104	B	88	B	94	B	B
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	6	10	7	5	7	5	6	21	23	27	27	26	24	24	25	27	26	21	12	14	16	9	13	6
MED	98	100	100	100	100	98	100	144	120	106	106	106	104	104	104	104	104	106	98	97	100	100	98	99
U Q	102	102	102	107	106	100	142	156	162	118	118	118	121	122	113	108	108	108	105	100	115	102	100	100
L Q	94	98	98	95	96	95	98	136	104	100	100	102	103	102	102	102	102	101	93	88	98	98	96	96

IONOSPHERIC DATA STATION Kokubunji

FEB. 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		F2	F2	F1						CL11	HL12	HL12	C2	CL12	L2	L2	L3	L3	F2	F2	F1	F2	F2	F1
2	F1	F1				F2		H2	C2	C2	CL22	L2	L2	L2	L2	CL22				F1	F1			
3	F1	F1	F2		F2				CL22	L2	L2	L2	L2	HL22	HL12	L2	L2	L3	F1		F1			
4								H4	H2	CL21	CL21	L2	L2	L2	L2	L2	L2	L3	F2		F1	F2	F2	F2
5	F2	F2		F1	F1			H2	H2	HL22	CL22	CL22	CL22	L2	L2	L2	L3	L3	F3	F4	F3	F4	F3	F3
6							F3	H3	H2	L2	L2	L2	L2	L2	L2	L2	L3	L3	F2		F2		F2	
7			F2		F3			H3	C2	CL22	L3	L2	L2	L2	L2	L2	L2		F2	F2			F2	
8			F2	F2			F2	HL21		L2	CL22	CL11	L2	L2	L2	L2	L3	L3	F4	F1	F1			
9								H2	L2	L2	HL12	HL12	L2	L2	L2	L2	L1	CL11			F5	F1	F2	
10		F1				F1	F1	L2	HL22	HL22	L1	L2	HL12	CL12	L2	L2	L2							
11		F2	F2		F1	F1	F2		L2	L2	CL12	L2	L2	CL22	HL12	HL12	H2	C2		F1				
12								H3	CL22	L2	L2	L2	L2	L2	L2	L1	L2		F1	F1	F1			F2
13		F2	F1	F3	F2	F3		H3		L2	HL12	L2	HL12	L2	CL22	CL12	CL22					F3		
14					F1			C2	L2	L2	L2	L2	L2	L2		L2	L2	C3	F1		F2			
15								H2	HL21	L2	L2	H1		CL22	L2	L2	CL22	C2	F3	F3	F2	F1	F3	
16			F2	F1	F2				L2	L2	L2		L2	L2	CL11	L1	CL12	L2				F4	F2	
17								L1		L2	L2	L2	L2	L2	L2	L2	L2				F1		F1	
18								H2	L2	L2	L2	L2	L2			L2	L1	L1		F3				F2
19	F2	F1						H2	L2	L2	L2	L2			L2	L2	CL12	L2					F2	
20							F1	C1	L2										F2					
21						F2	F1	H2	H2	C2	L2	HL12	CL22	CL12	CL12	CL12	L2	L2	F2	F2	F2			
22								H2		L2	L2	L2	L2	L1	L2	CL22	L2	L2						
23									H2	L2	L2	L2	HL12	L1	CL11	L1	L2	L3						
24								H3	HL22	L2	L1	L2	HL11	CL12	CL31	L3	L2	L3		F1	F2	F2	F3	
25	F2							H2	L2	L2	CL11	CL11	CL11	C1	L2	L2	L2	L2		F2	F1		F3	F2
26									HL12	L2	L2	L2	L2	L2	L2	L1	L2	L2					F2	
27	F2	F1						H2	CL12	L2	L1	L2			L2	L2	L2	L2		F3	F2			
28		F1							L2	L2	HL12	HL11	L2	L2	L1	C2	L2	L2		F2		F1		
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

FEB. 2011 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

f-PLOTS OF IONOSPHERIC DATA

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

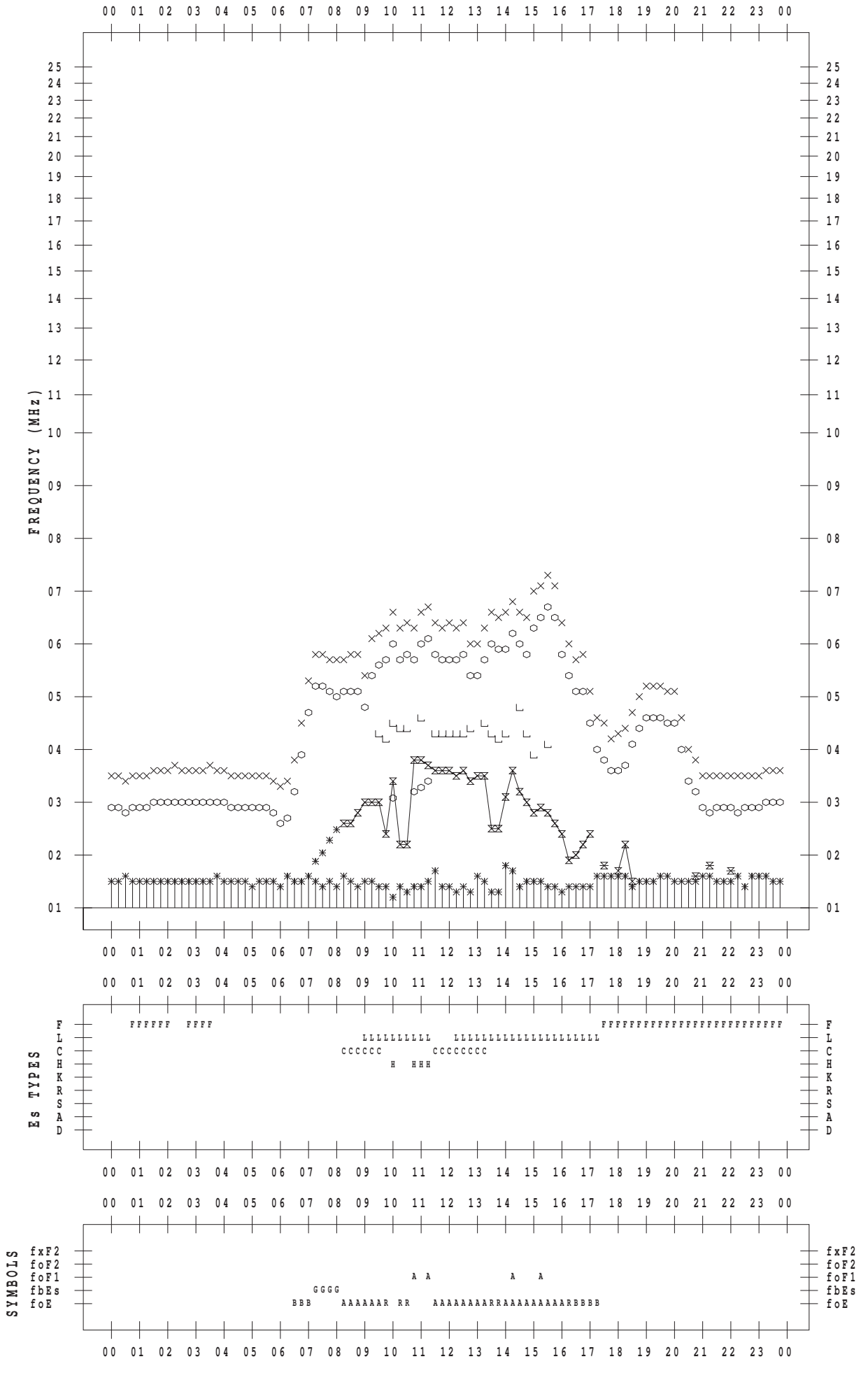
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 2/ 1

135 °E MEAN TIME



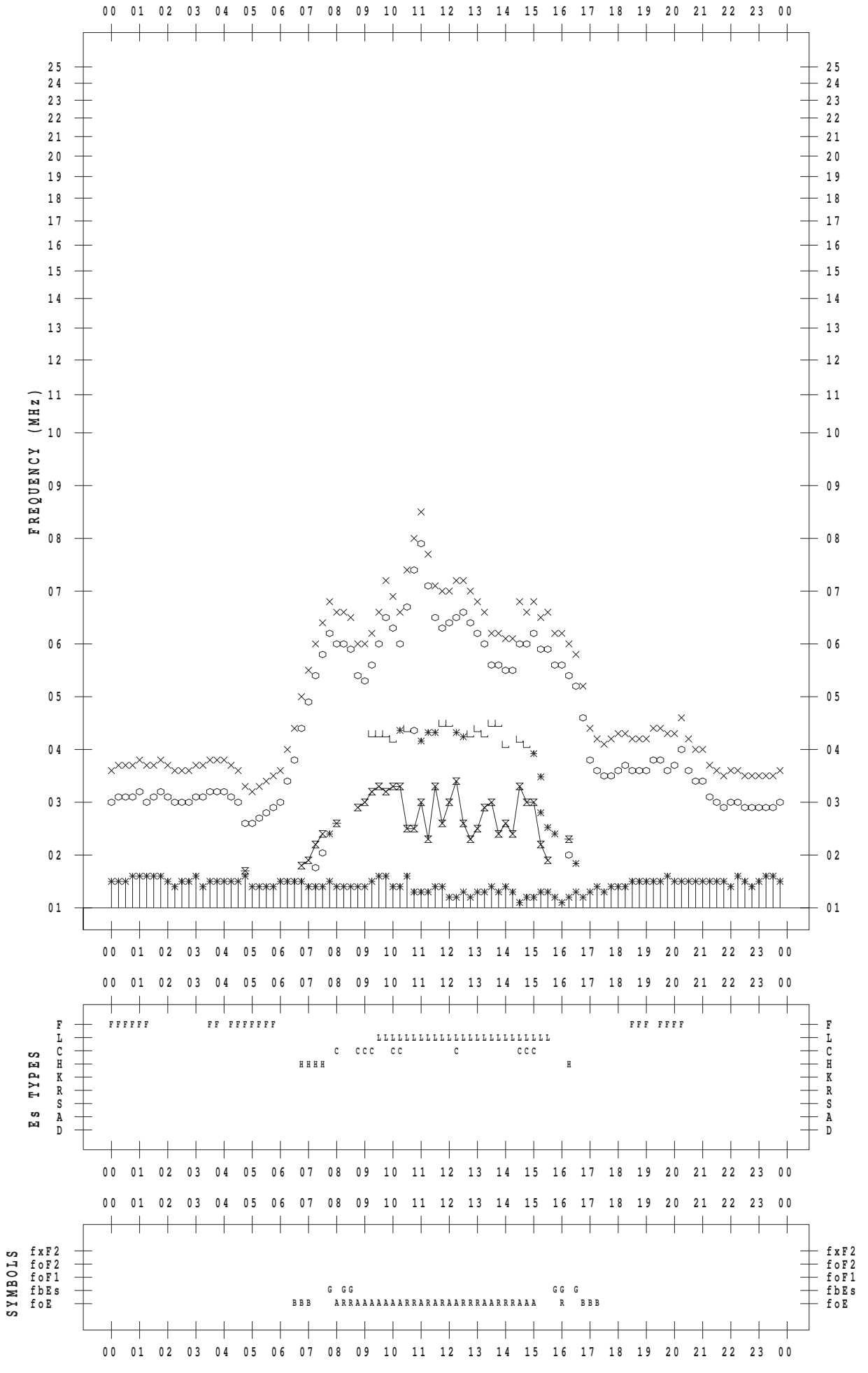
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 2/ 2

135 °E MEAN TIME



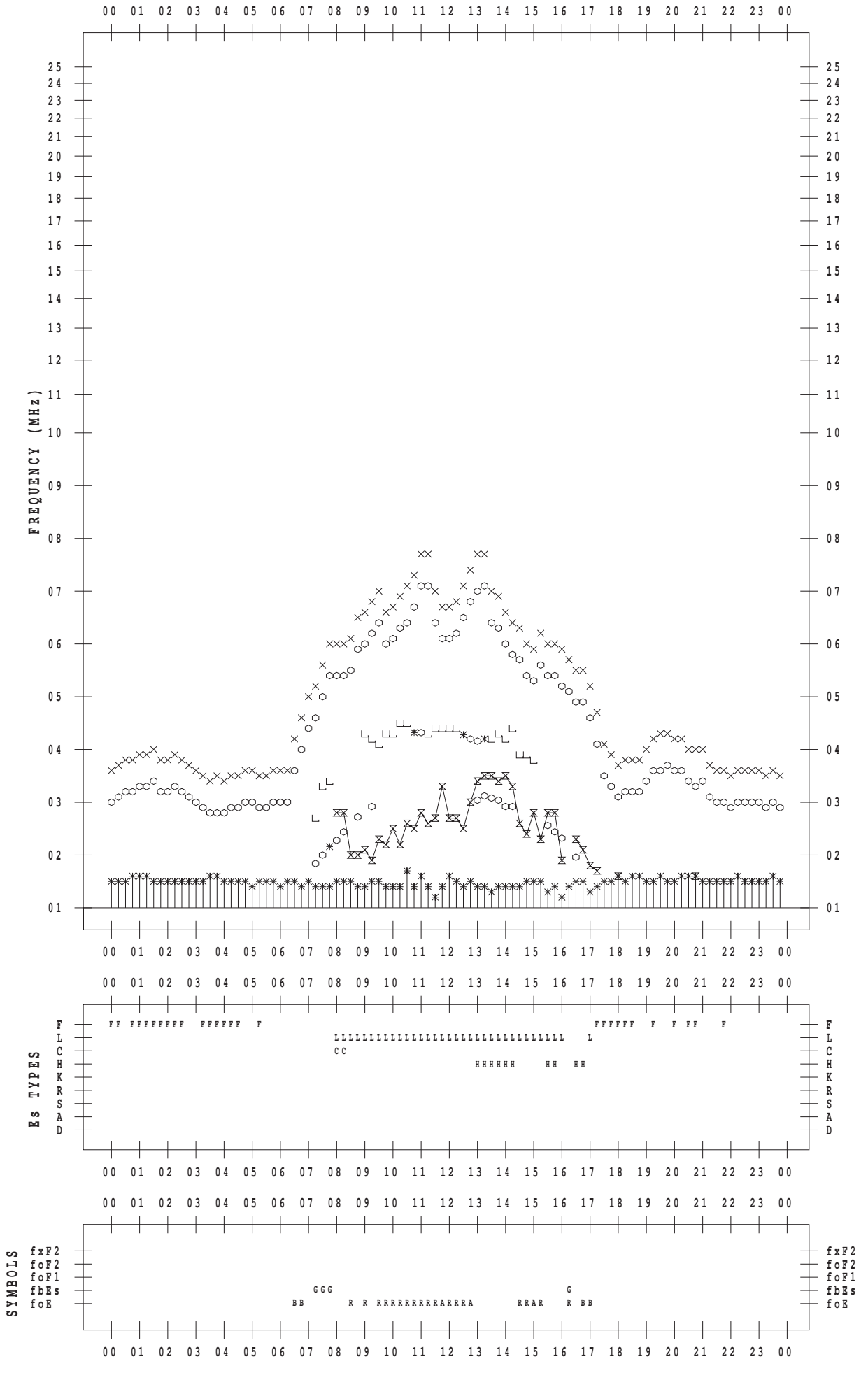
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 2/ 3

135 °E MEAN TIME



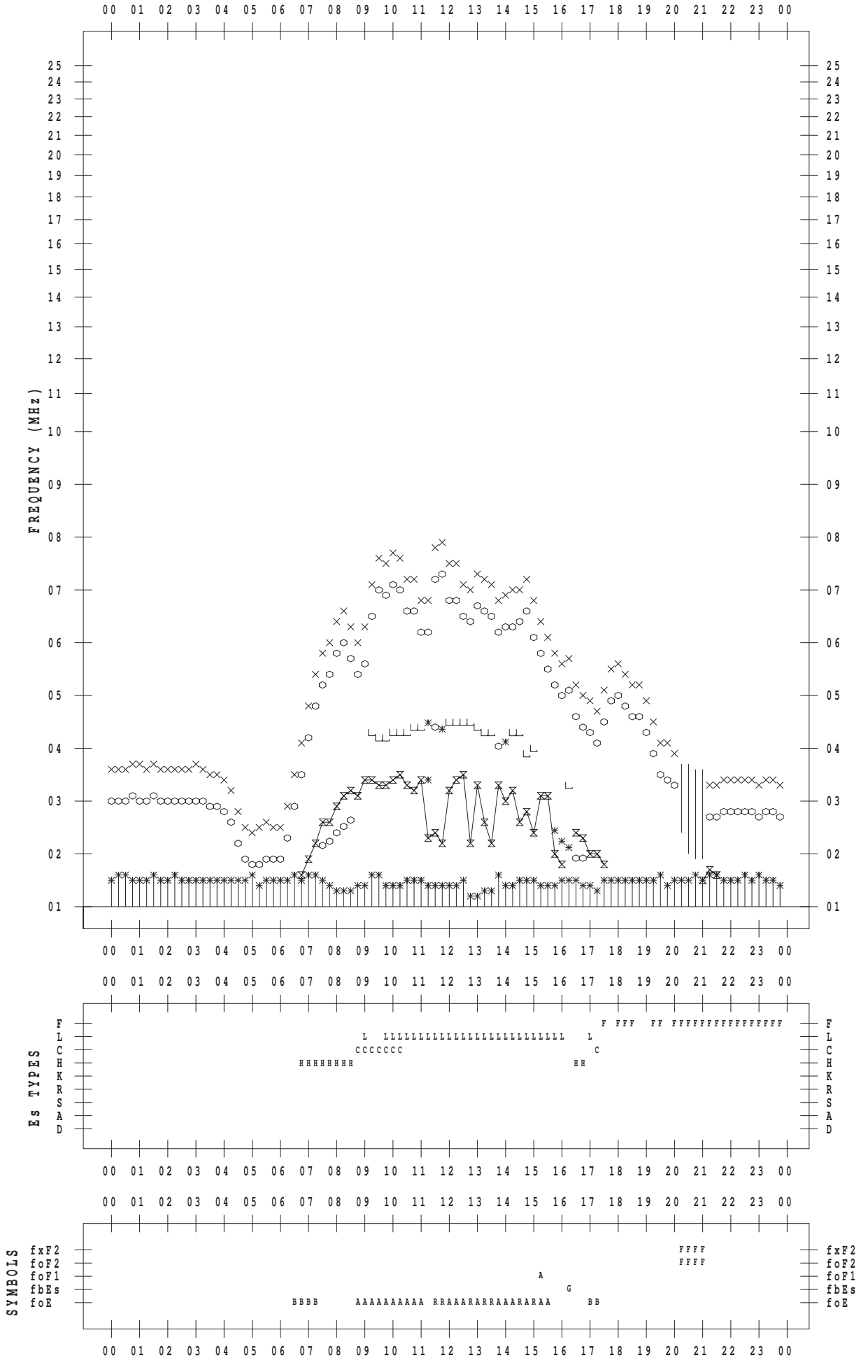
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 2/ 4

135 °E MEAN TIME



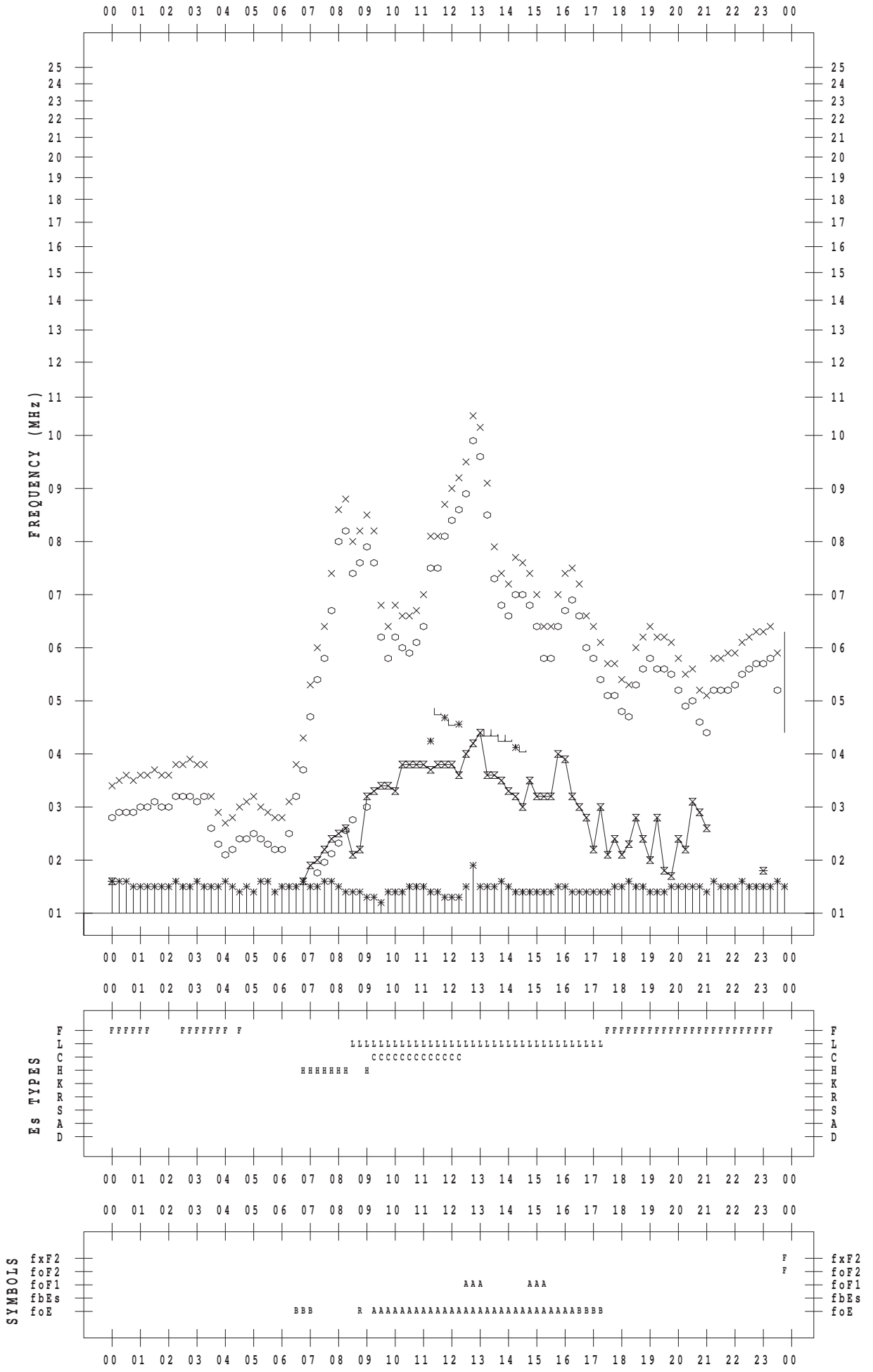
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 2/ 5

135 °E MEAN TIME

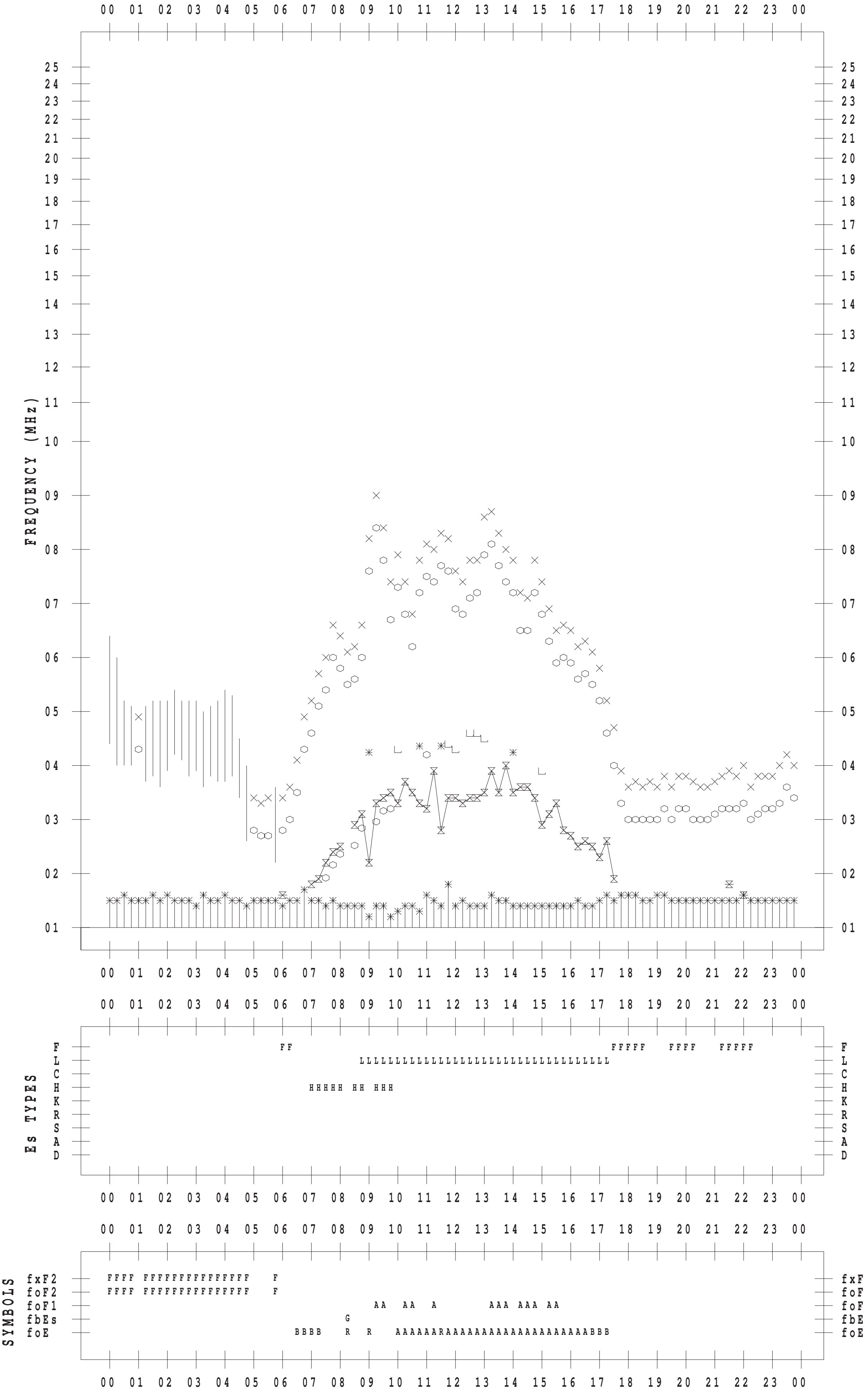


f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji DATE : 2011/ 2/ 6

135 °E MEAN TIME



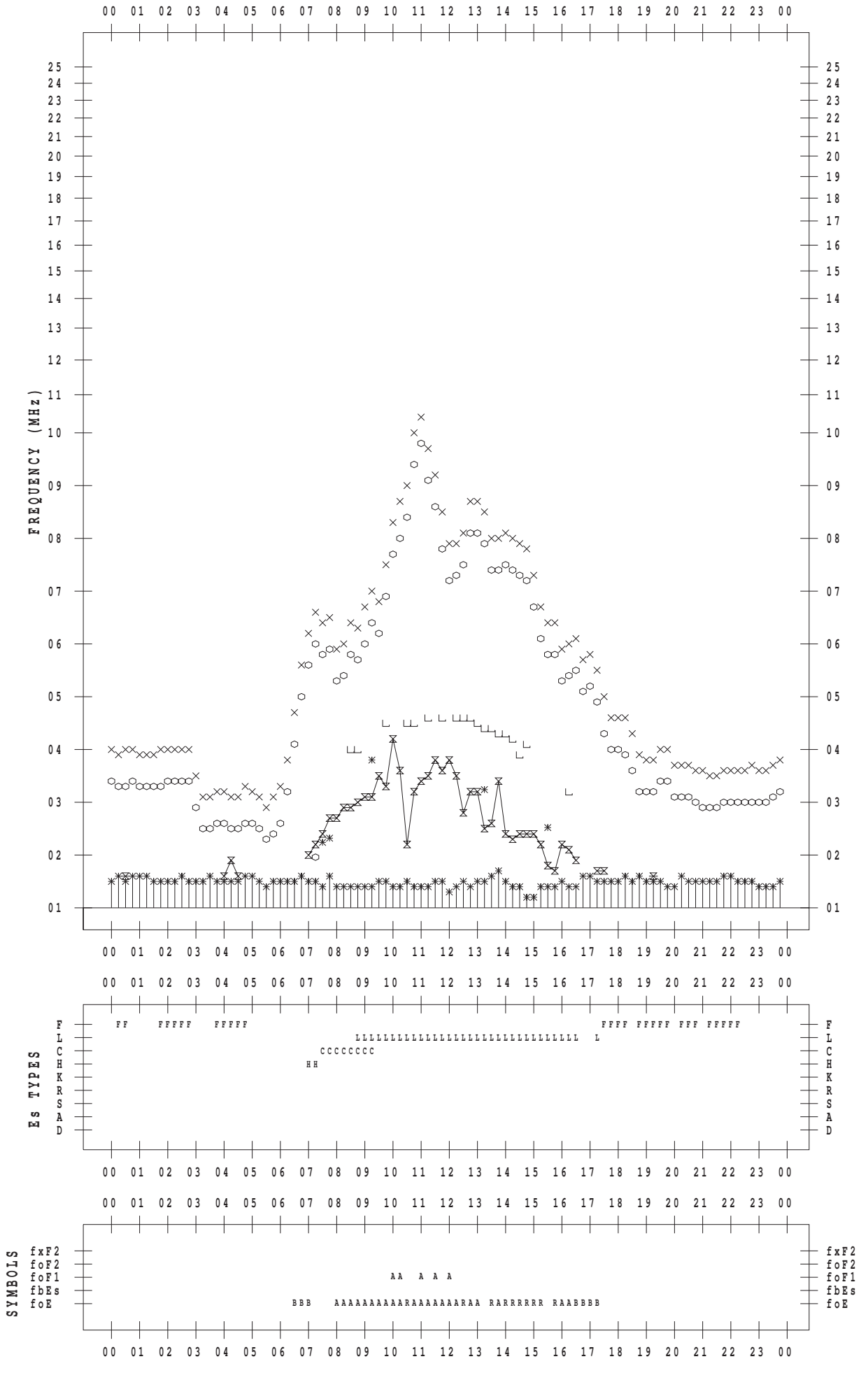
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 2/ 7

135 °E MEAN TIME



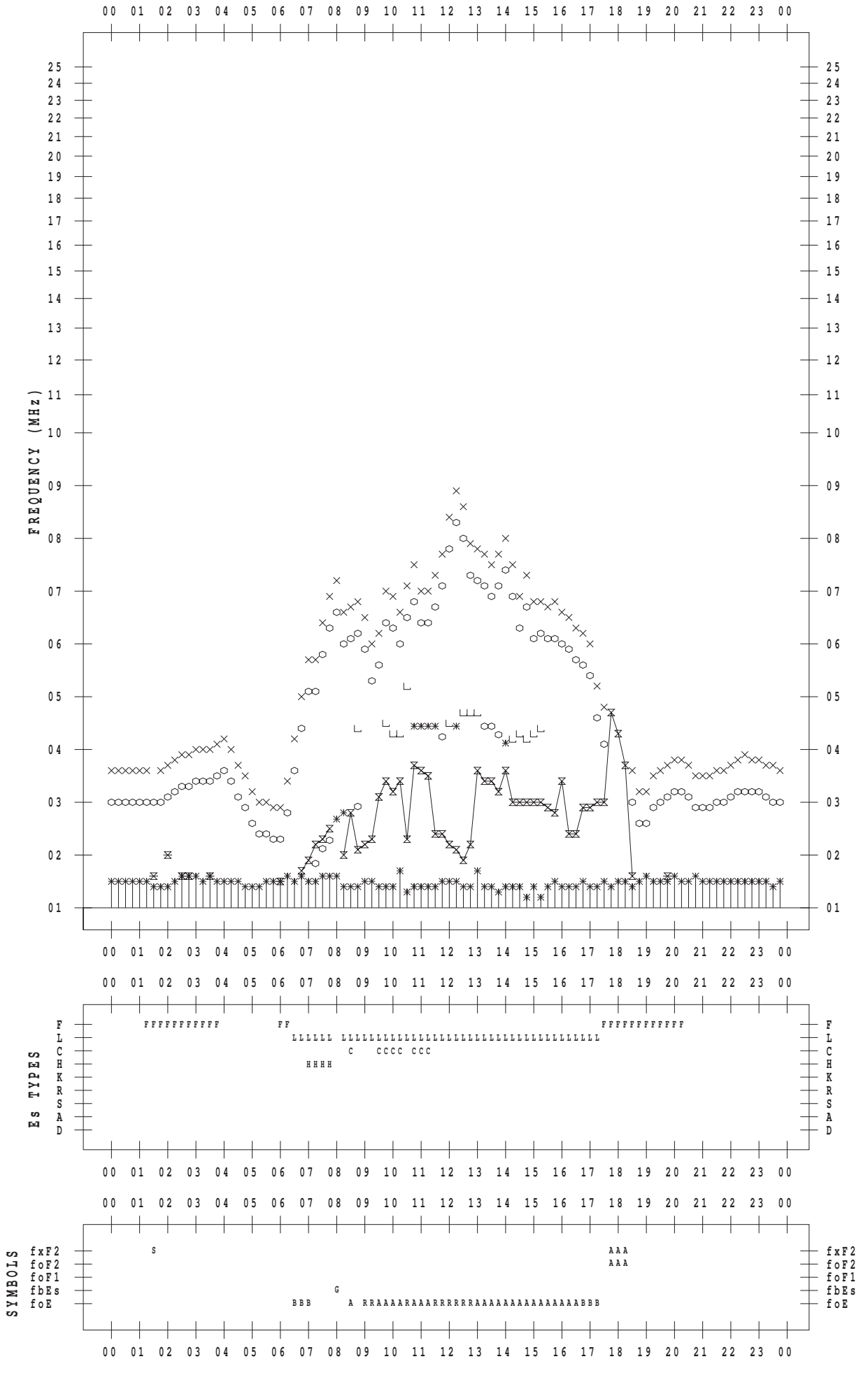
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 2/ 8

135 °E MEAN TIME



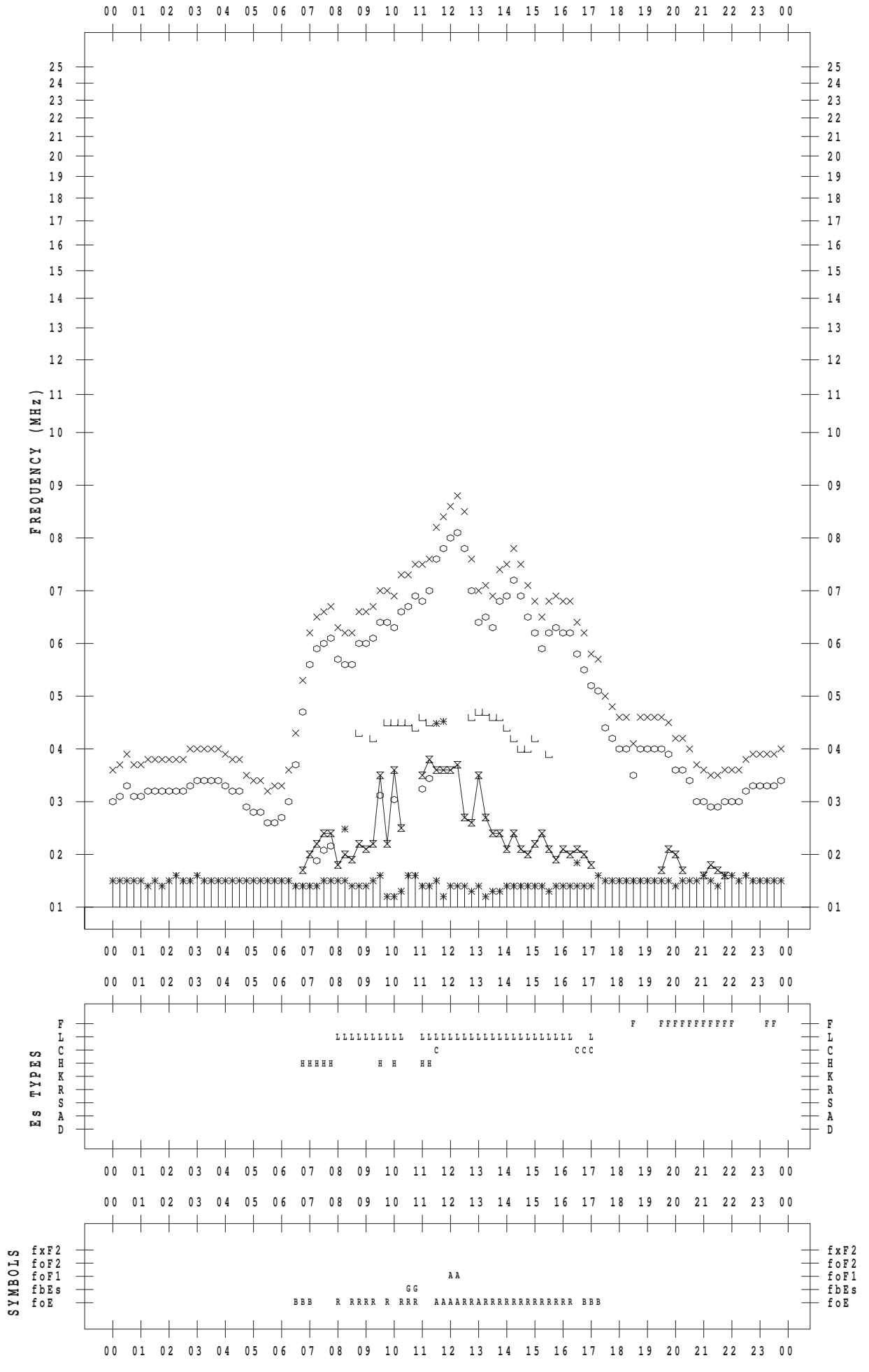
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 2/ 9

135 °E MEAN TIME



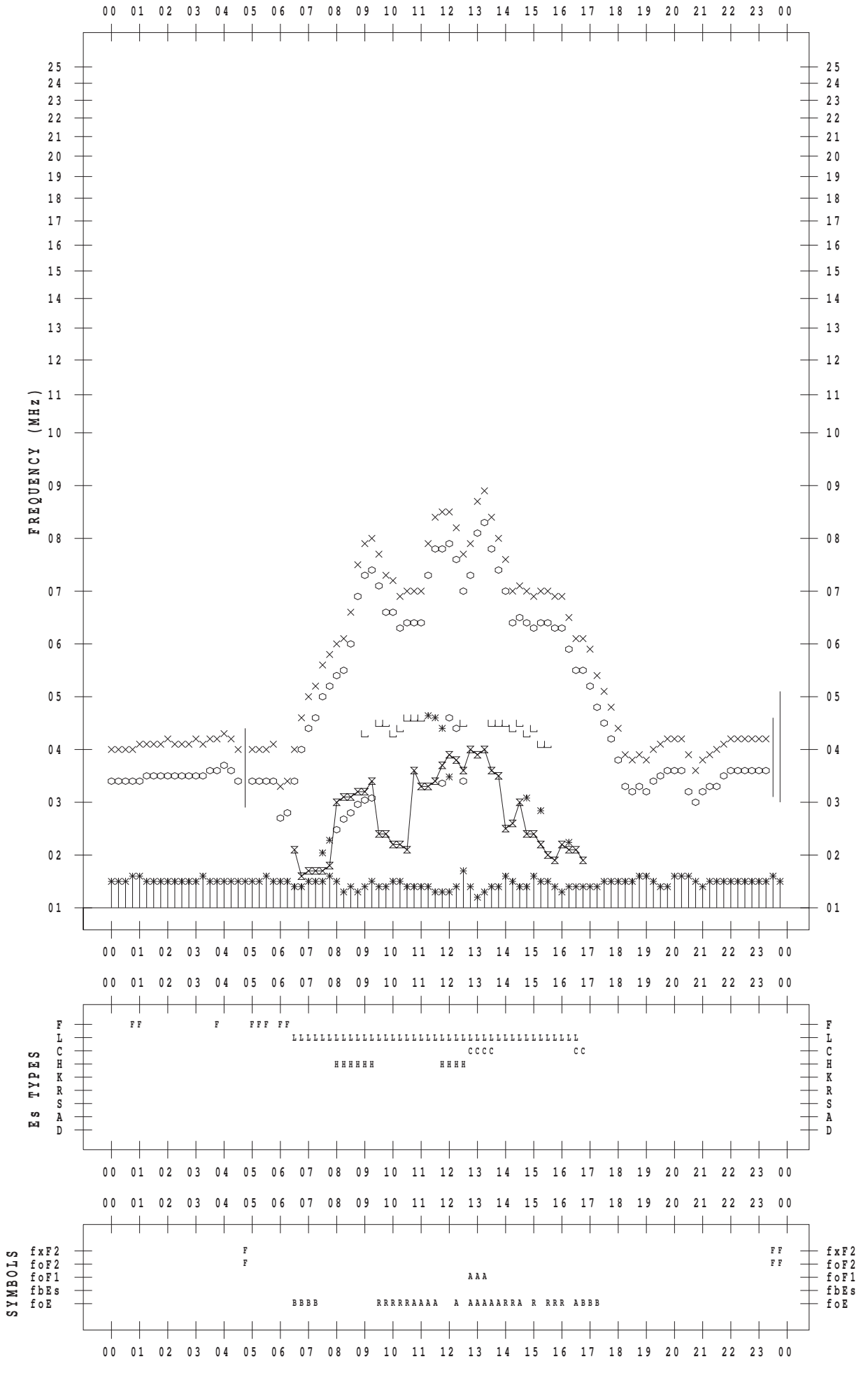
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 2/10

135 °E MEAN TIME



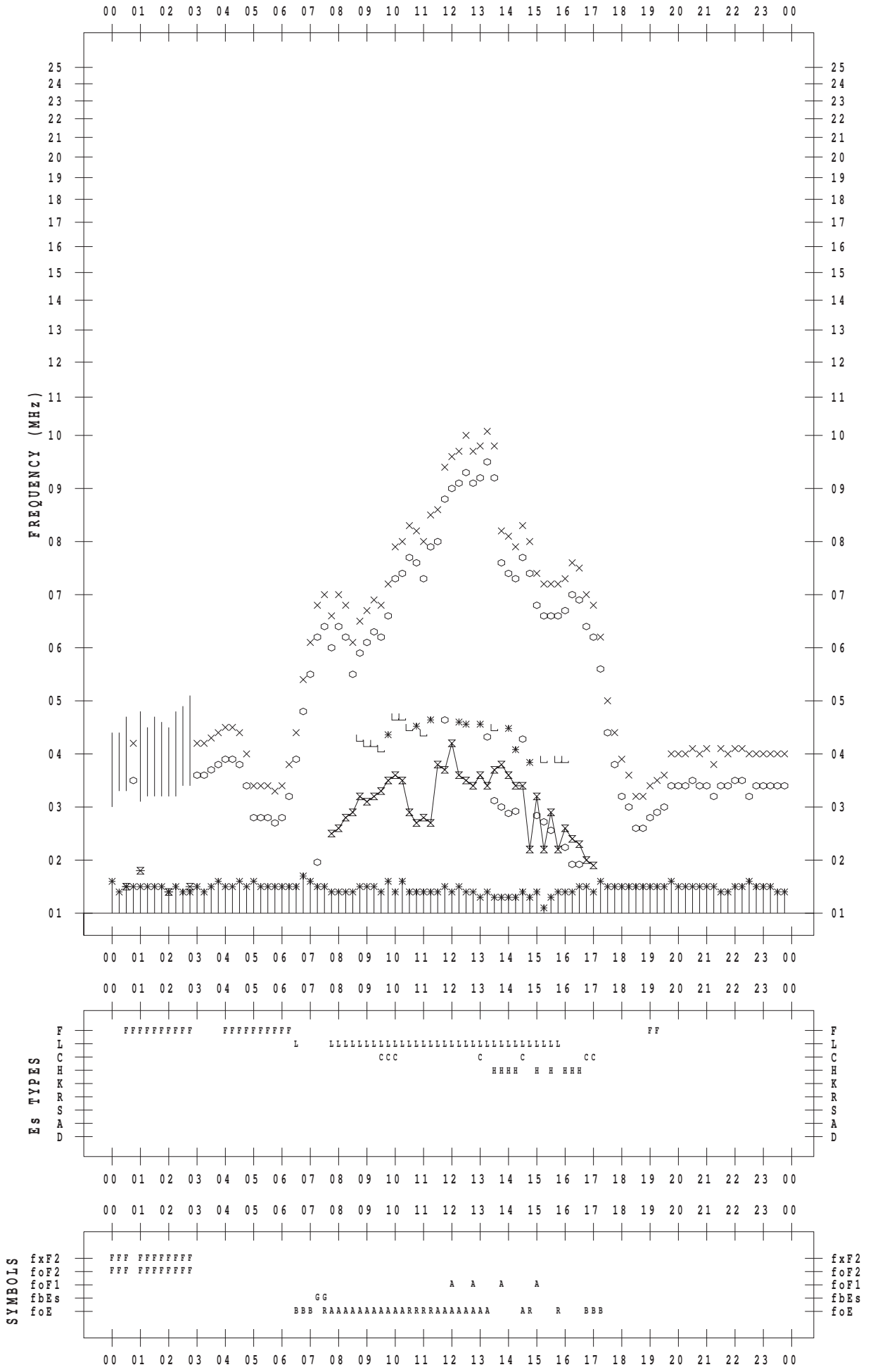
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 2/11

135 °E MEAN TIME



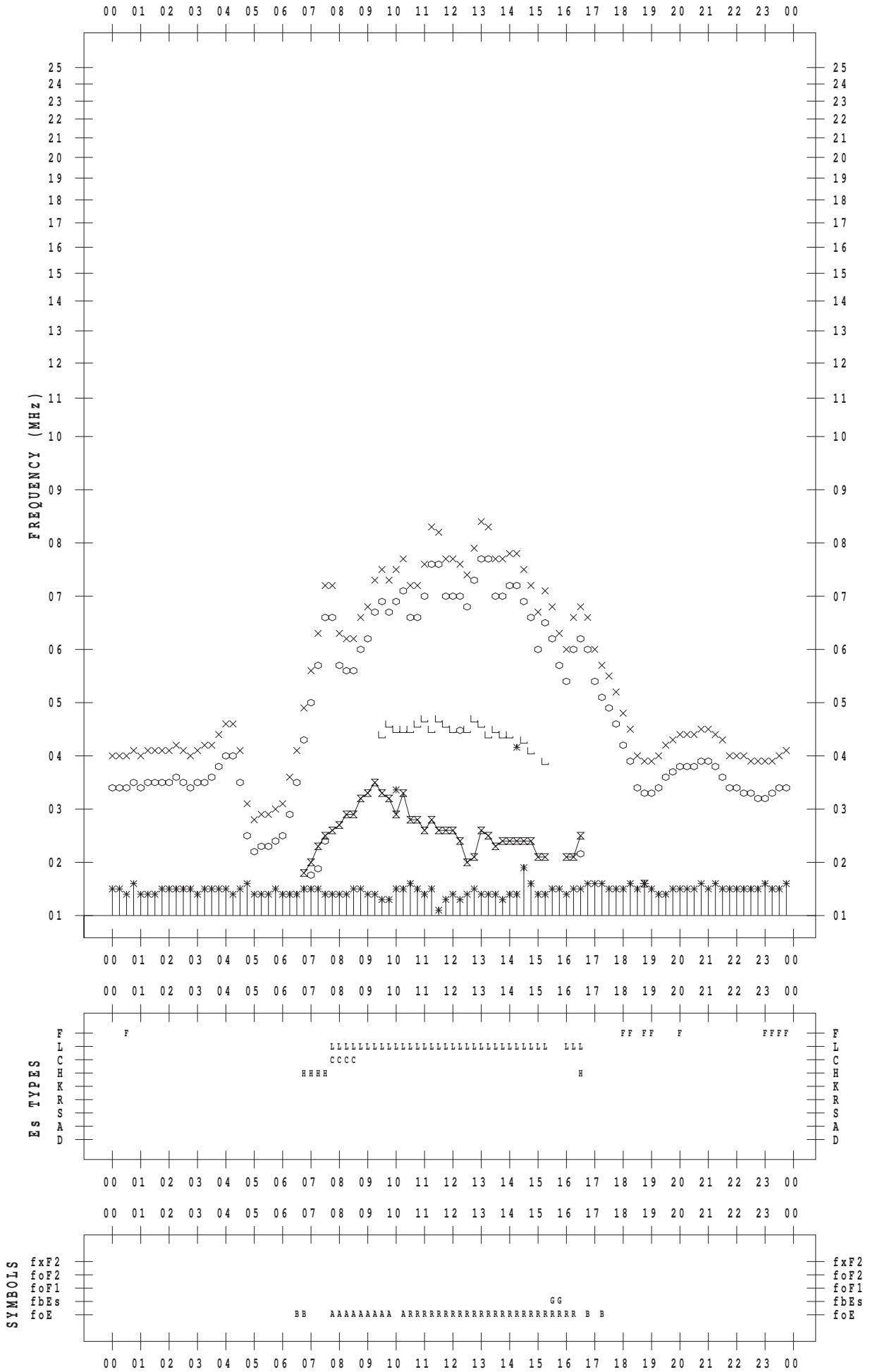
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 2/12

135 °E MEAN TIME



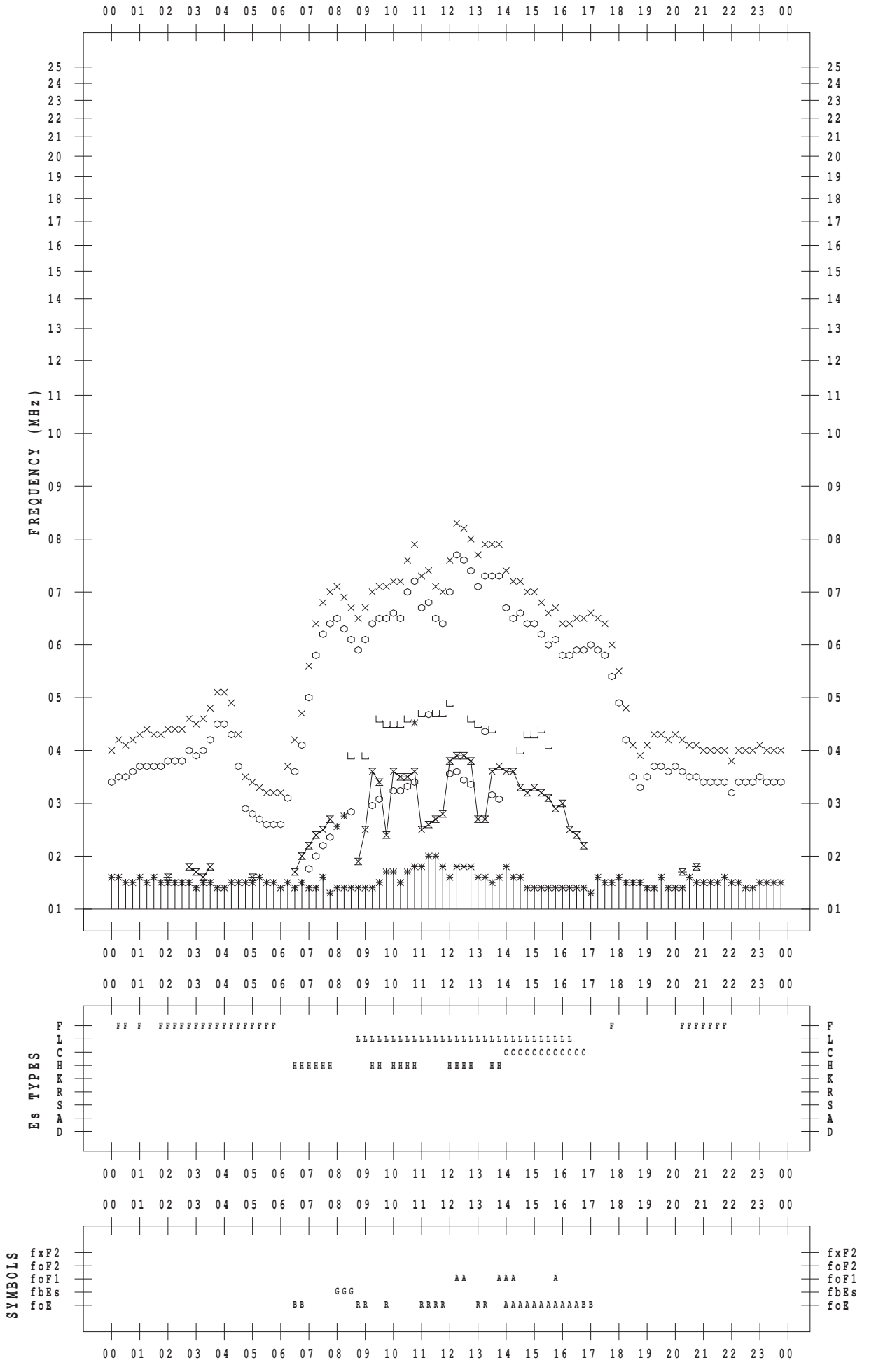
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 2/13

135 °E MEAN TIME



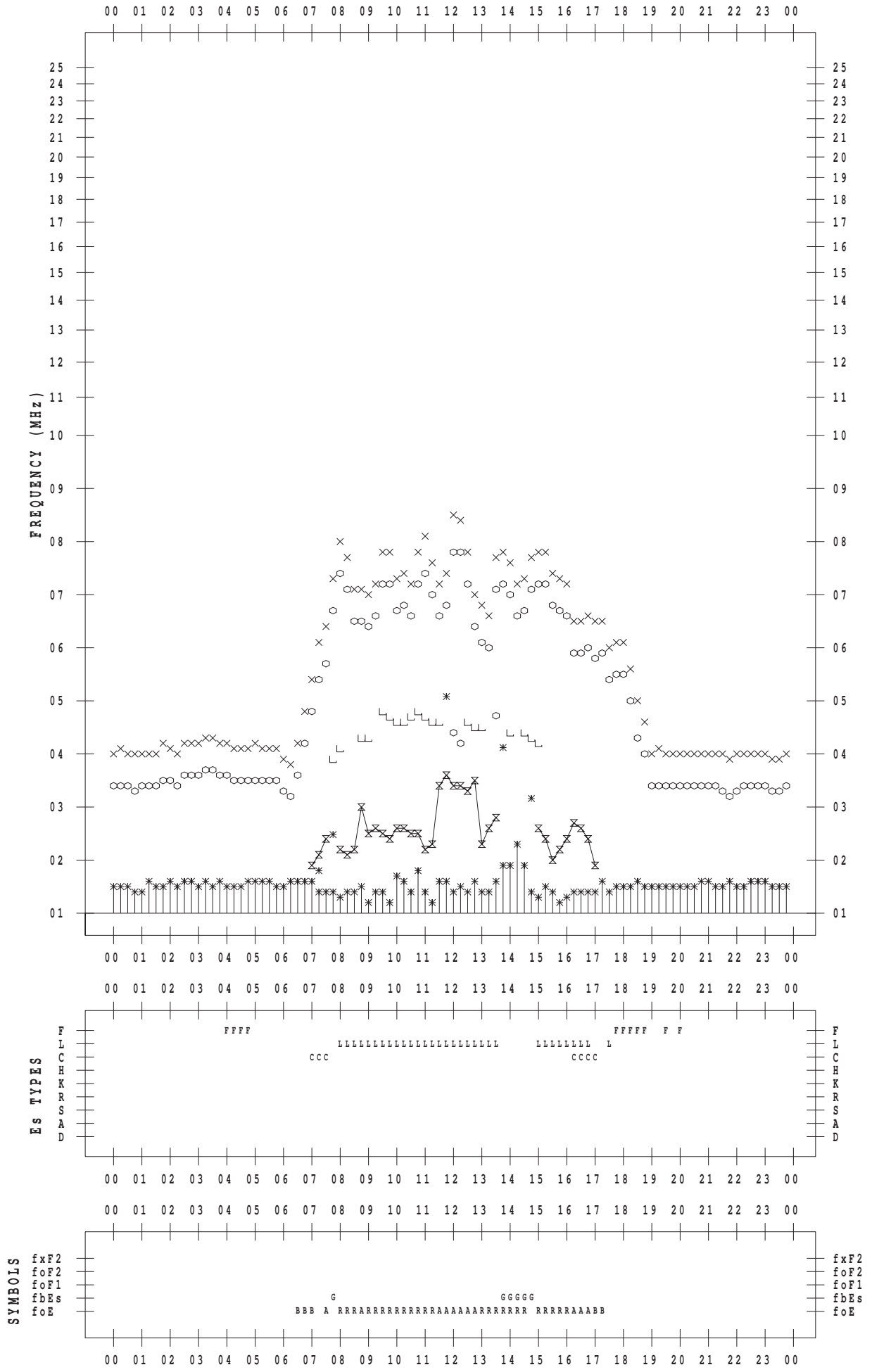
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 2/14

135 °E MEAN TIME



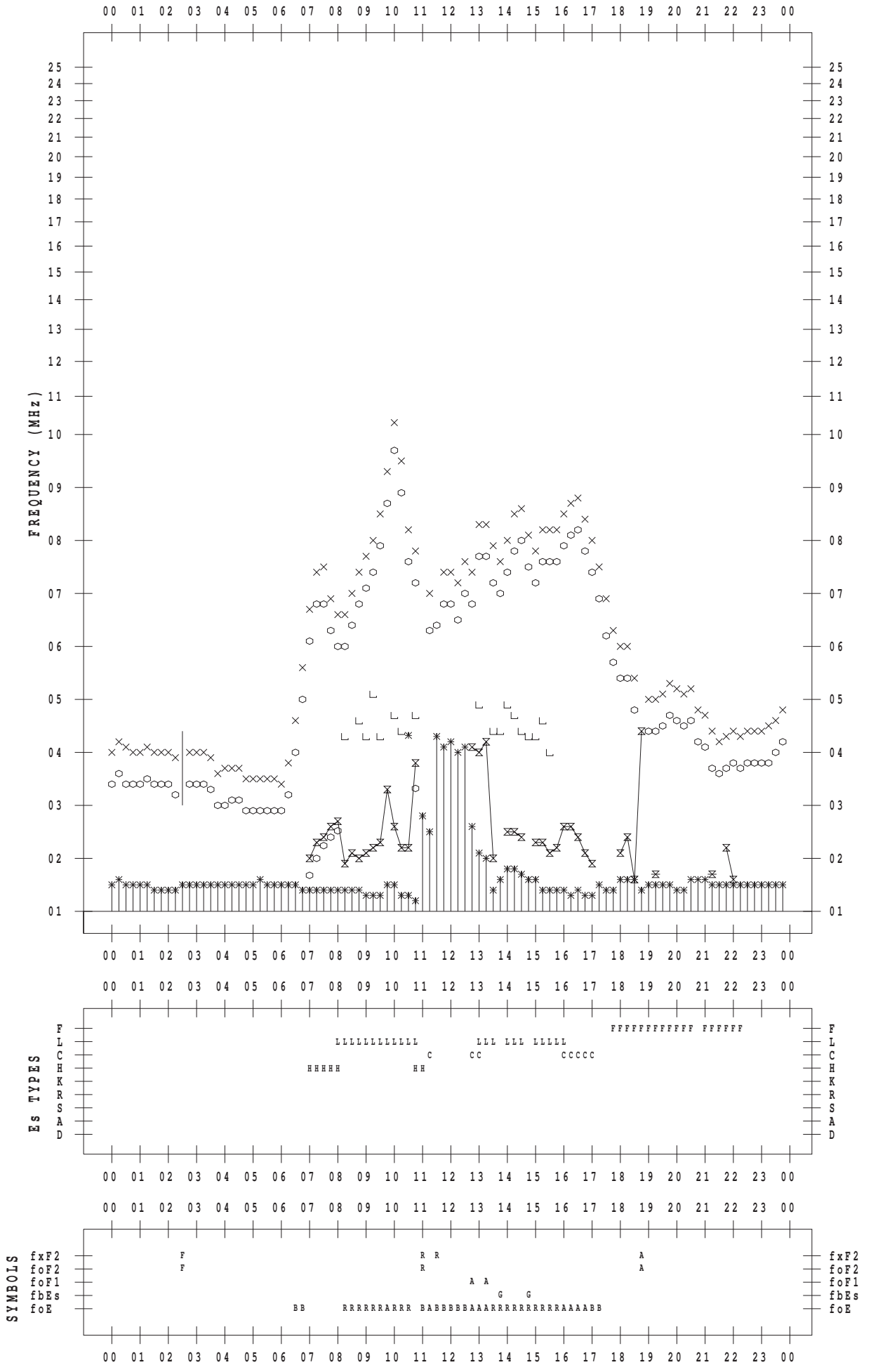
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 2/15

135 °E MEAN TIME



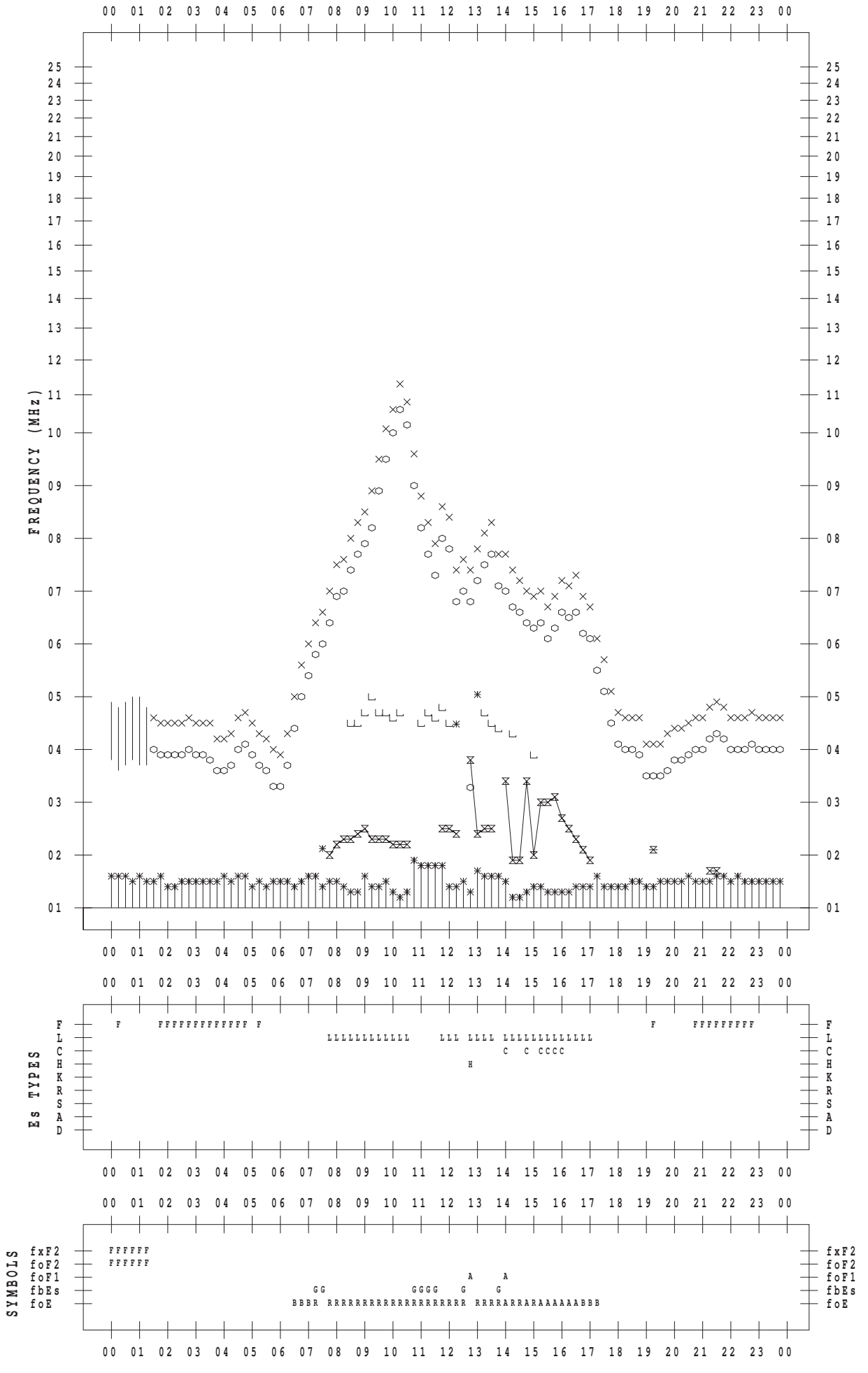
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 2/16

135 °E MEAN TIME



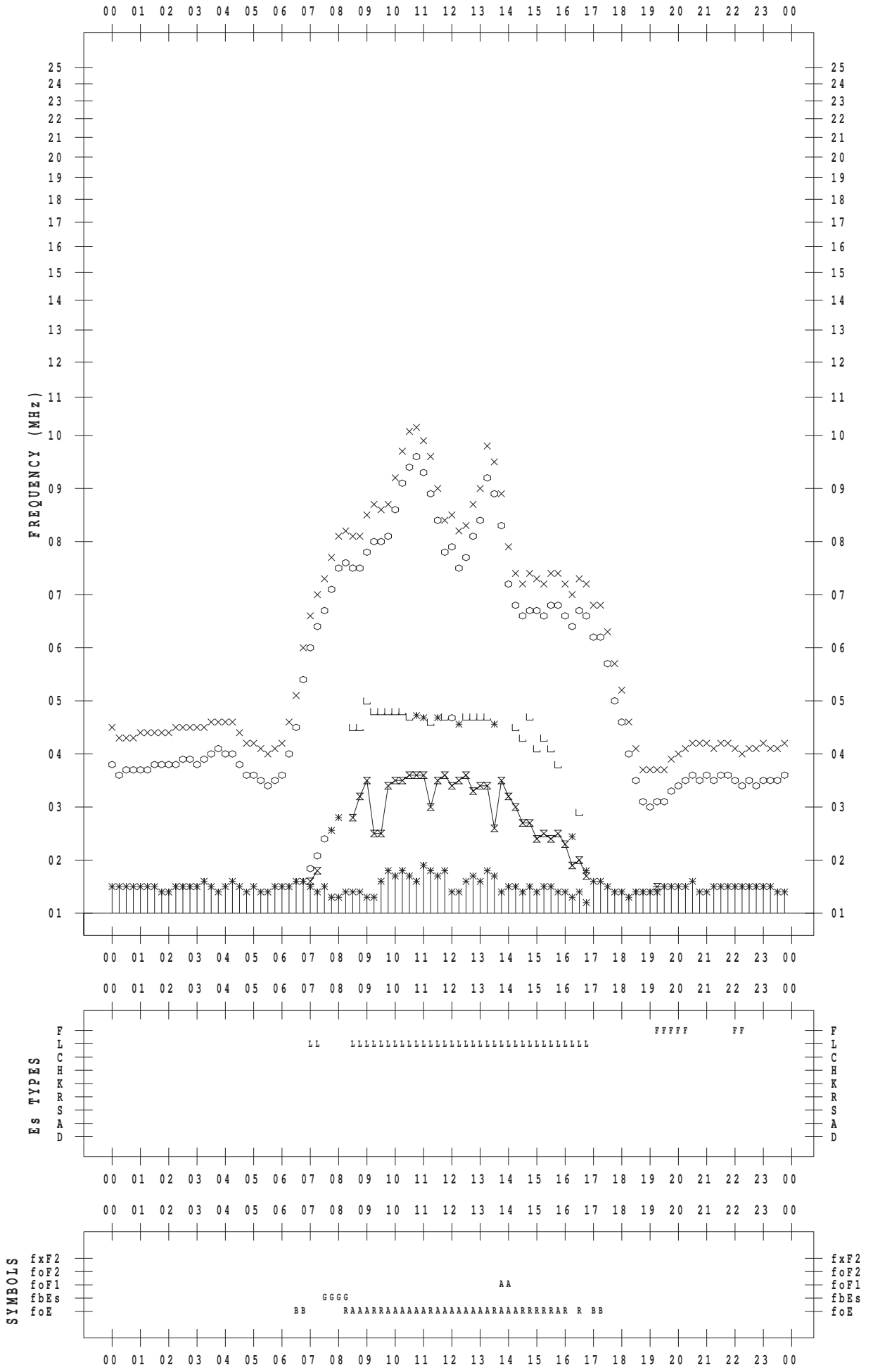
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 2/17

135 °E MEAN TIME



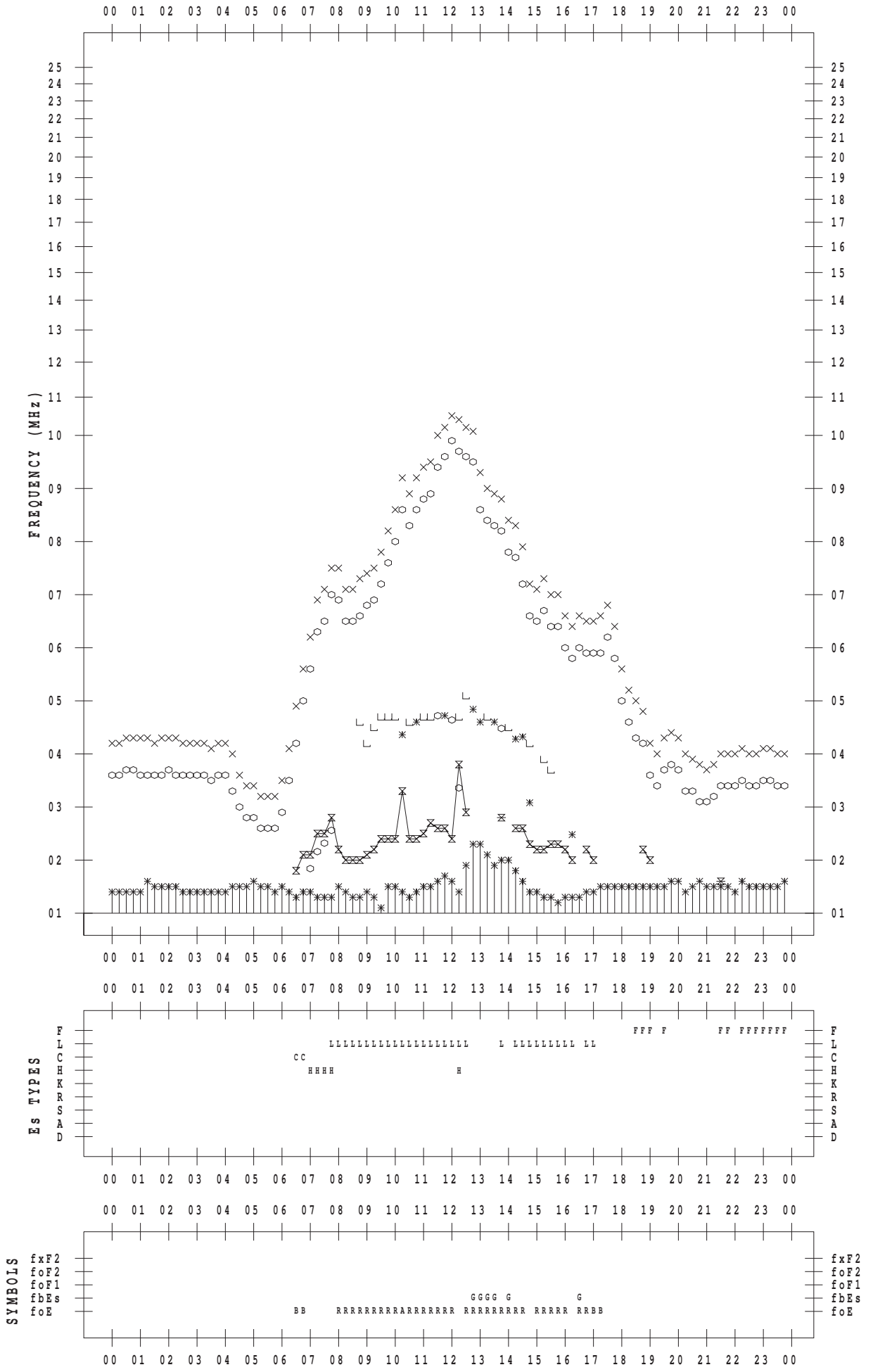
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 2/18

135 °E MEAN TIME



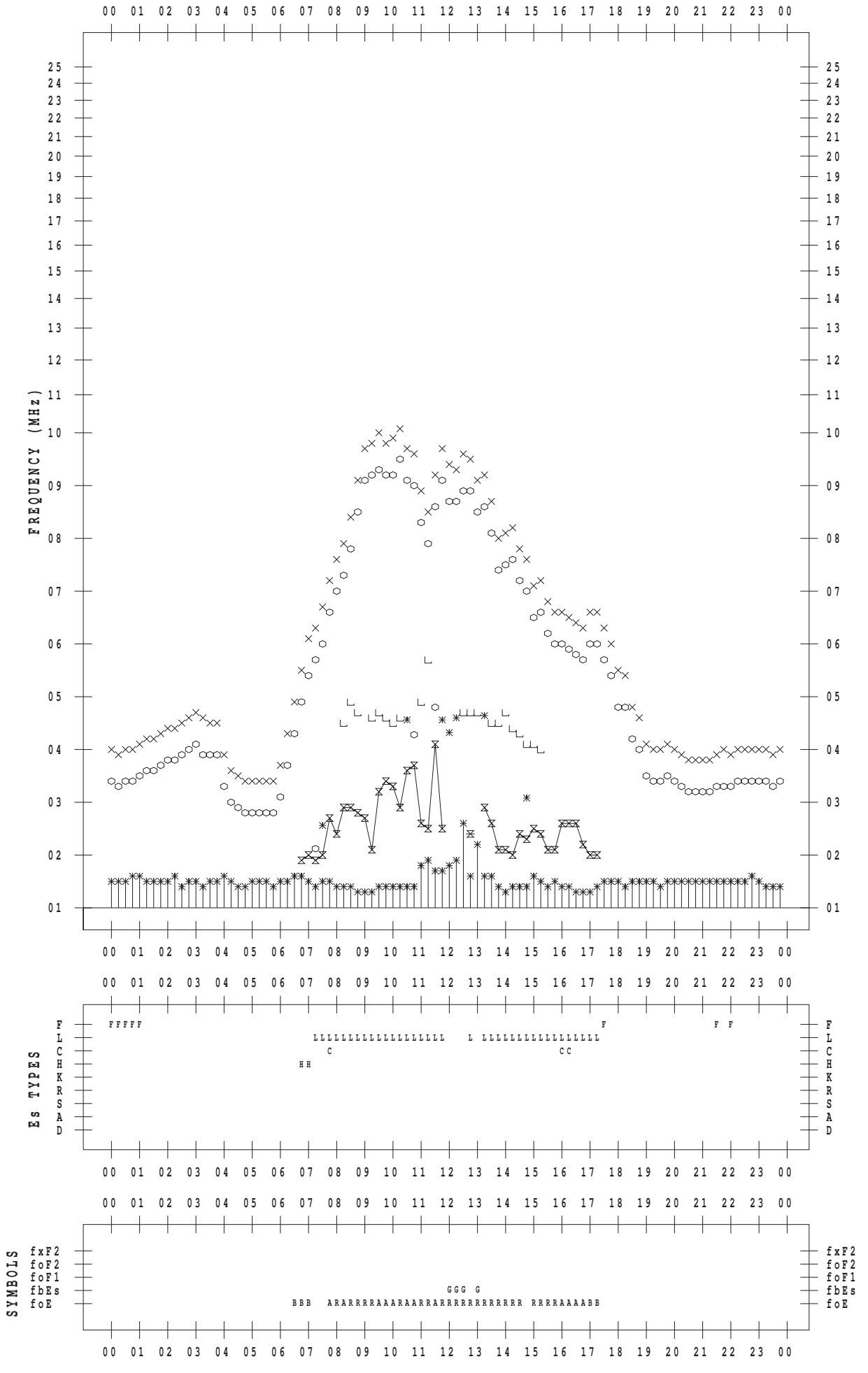
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 2/19

135 °E MEAN TIME



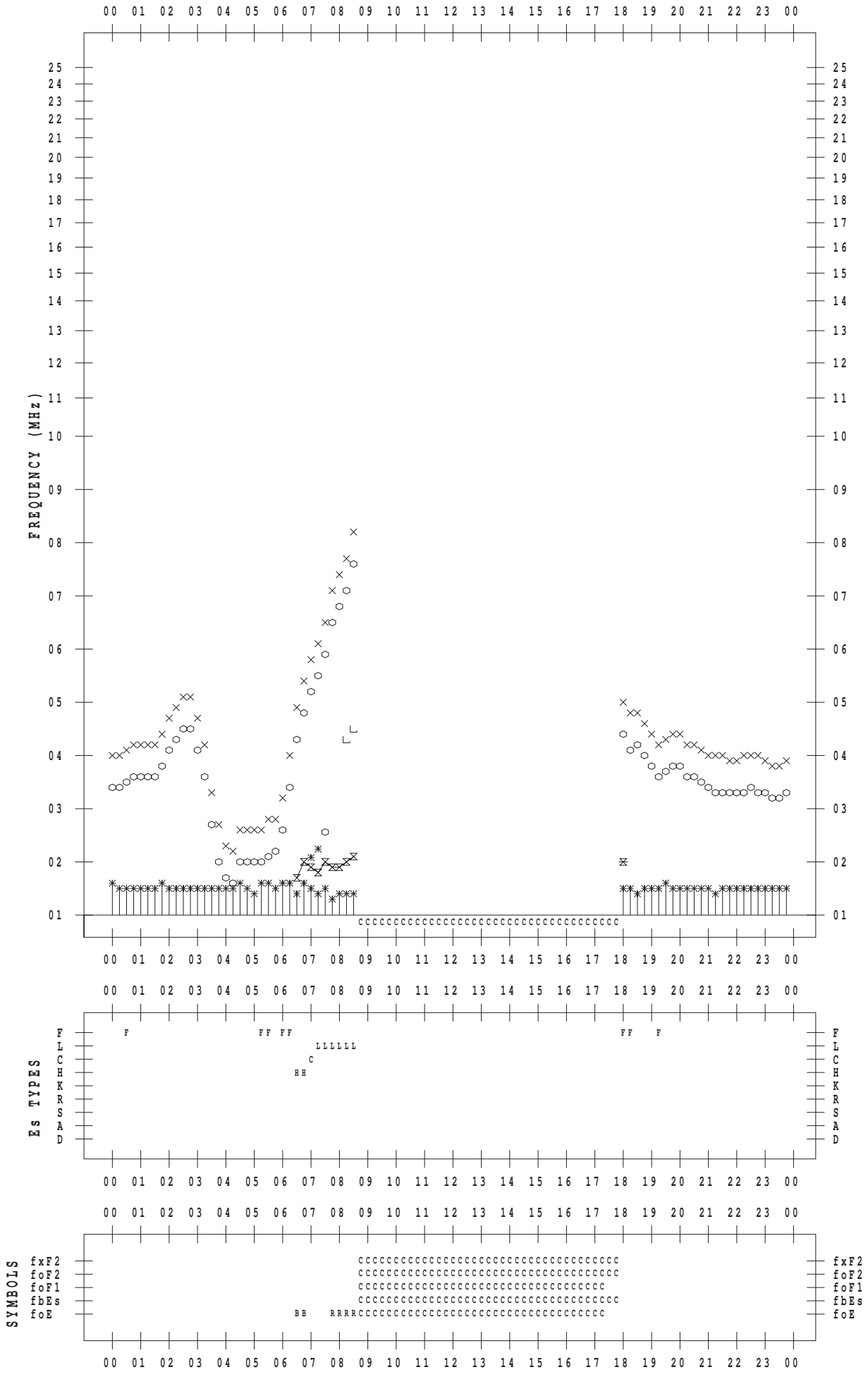
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 2/20

135 °E MEAN TIME



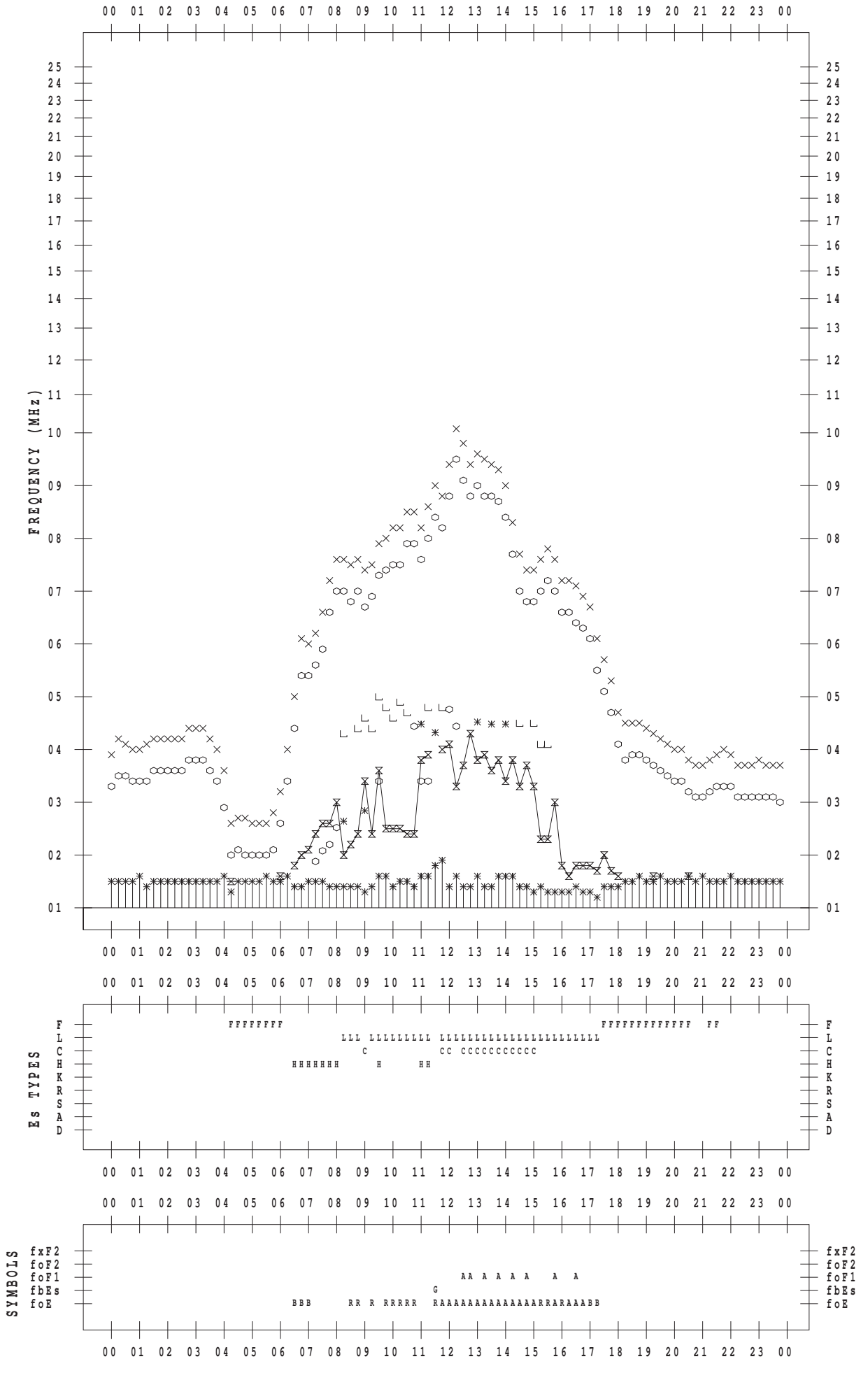
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 2/21

135 °E MEAN TIME



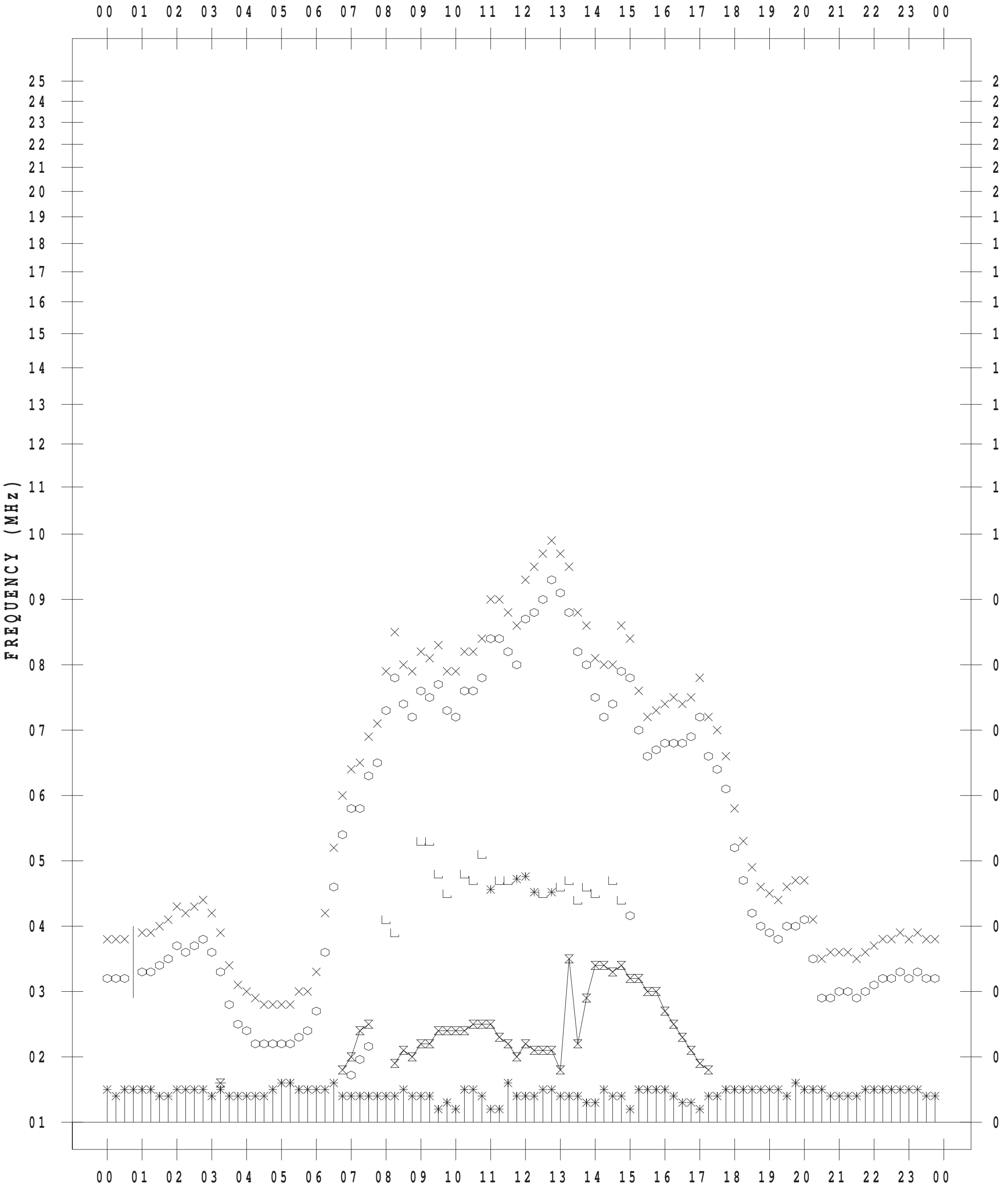
f-PLOT DATA

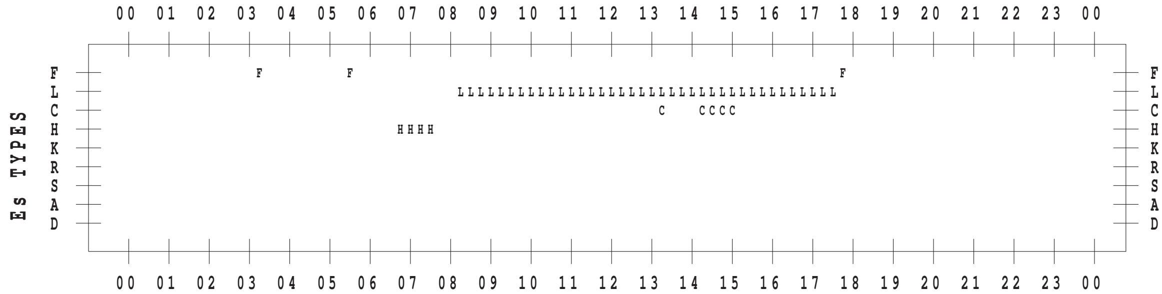
SCALER : I.NISHIMUTA

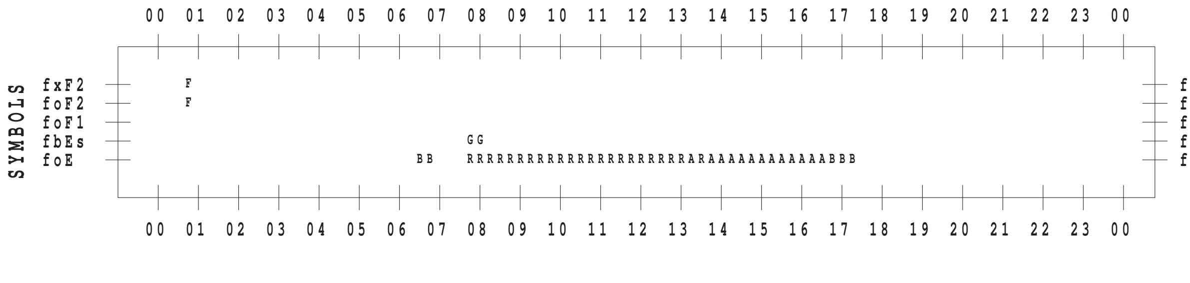
STATION : Kokubunji

DATE : 2011/ 2/22

135 °E MEAN TIME







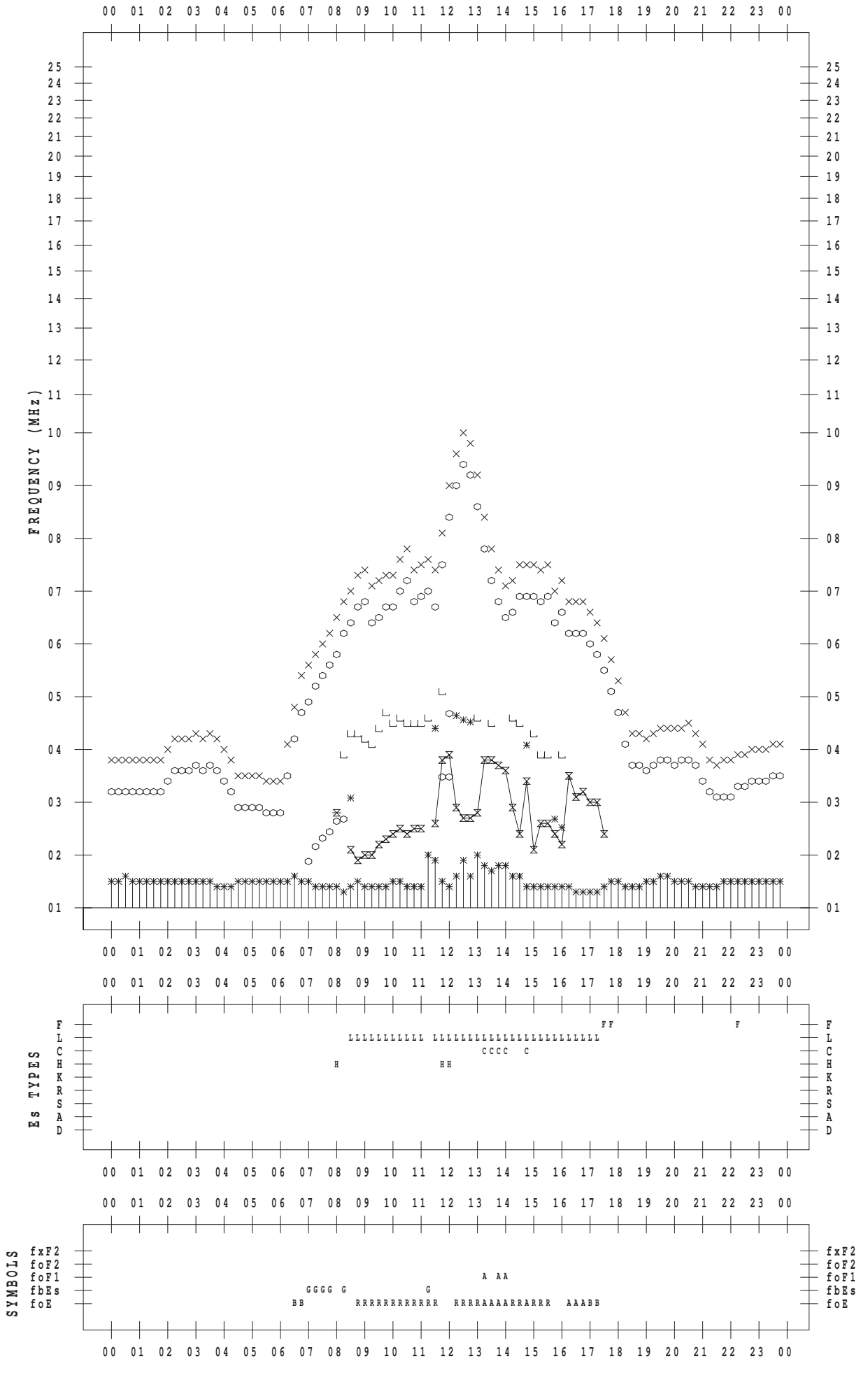
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 2/23

135 °E MEAN TIME



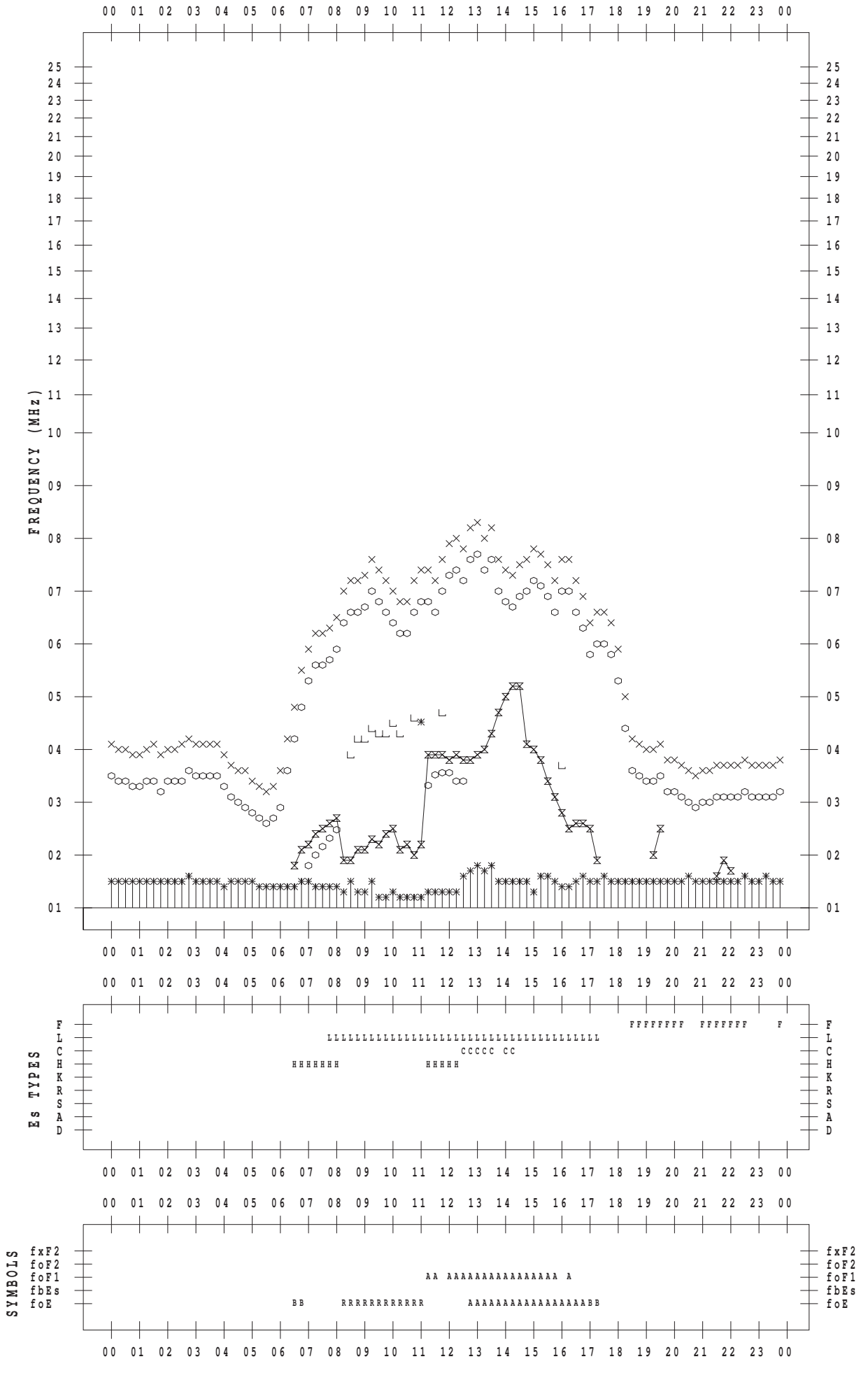
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 2/24

135 °E MEAN TIME



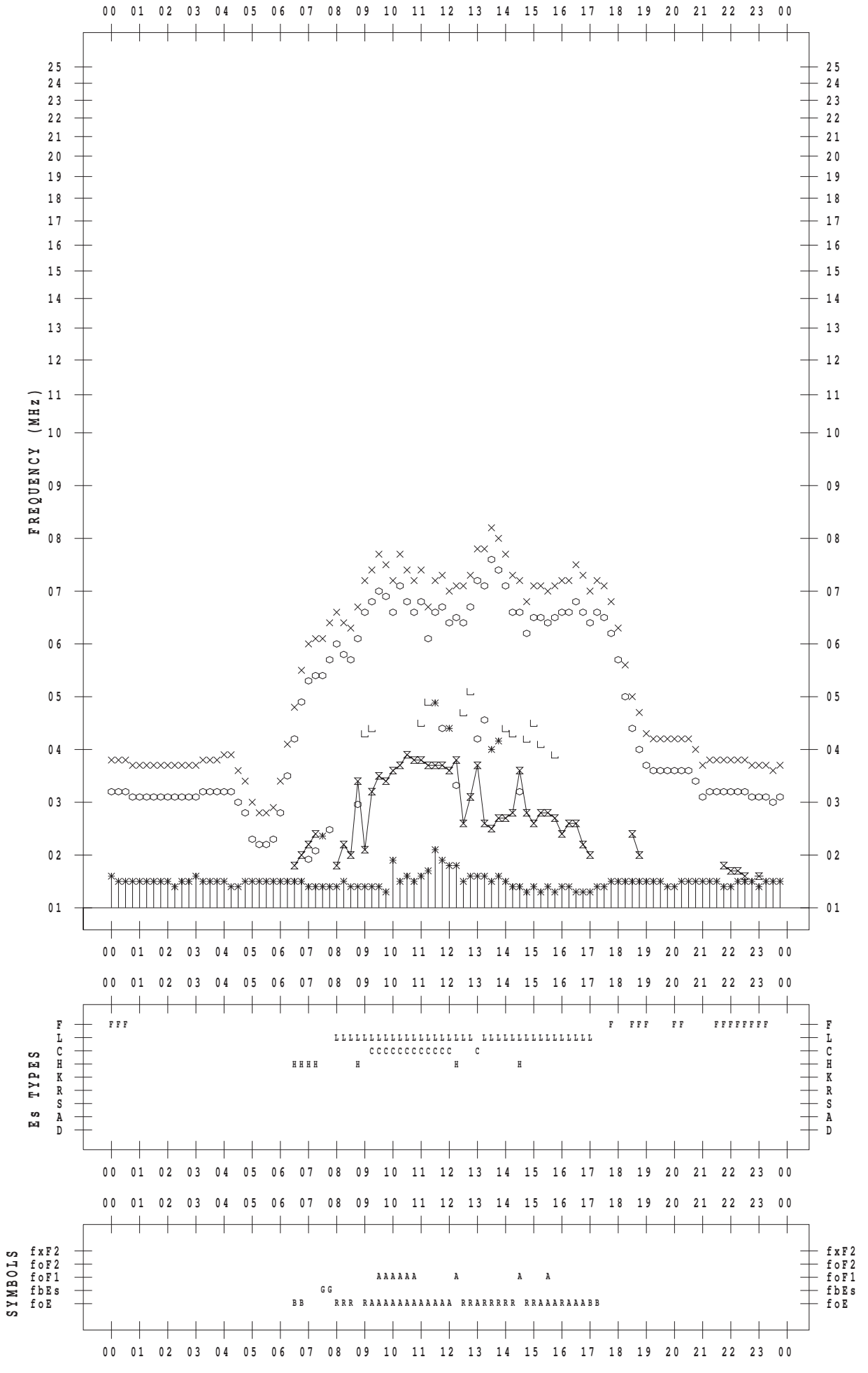
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 2/25

135 °E MEAN TIME



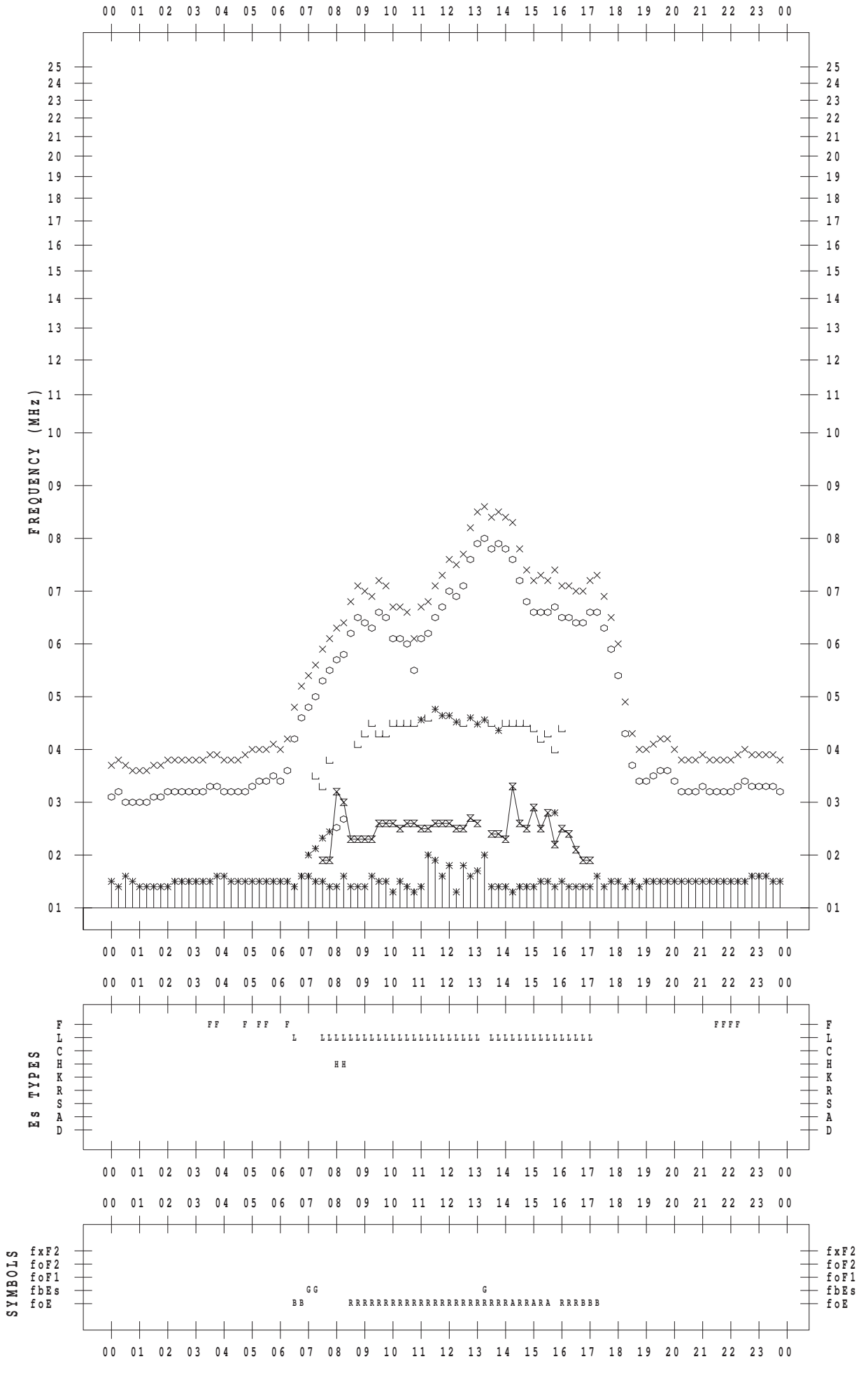
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 2/26

135 °E MEAN TIME



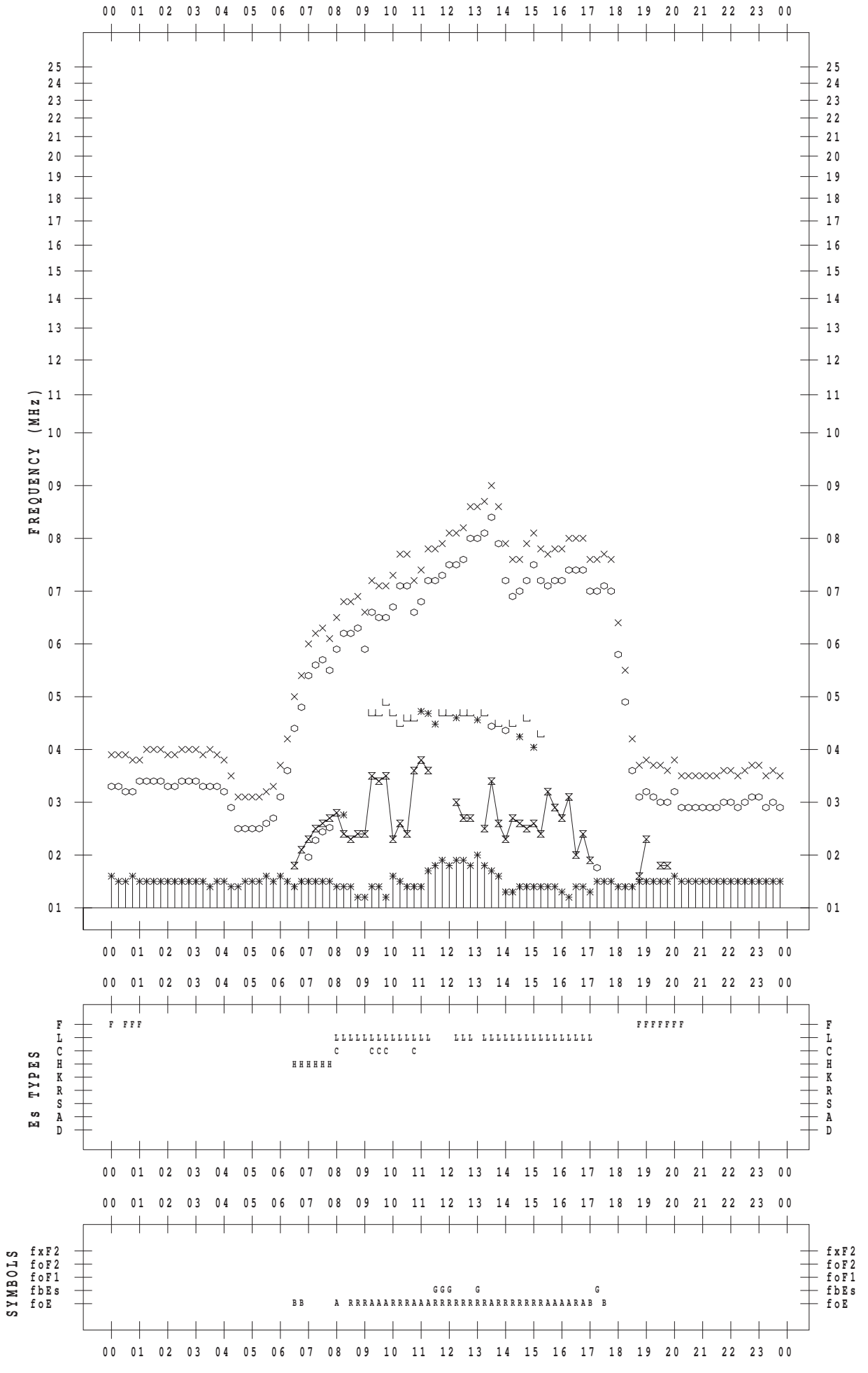
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 2/27

135 °E MEAN TIME



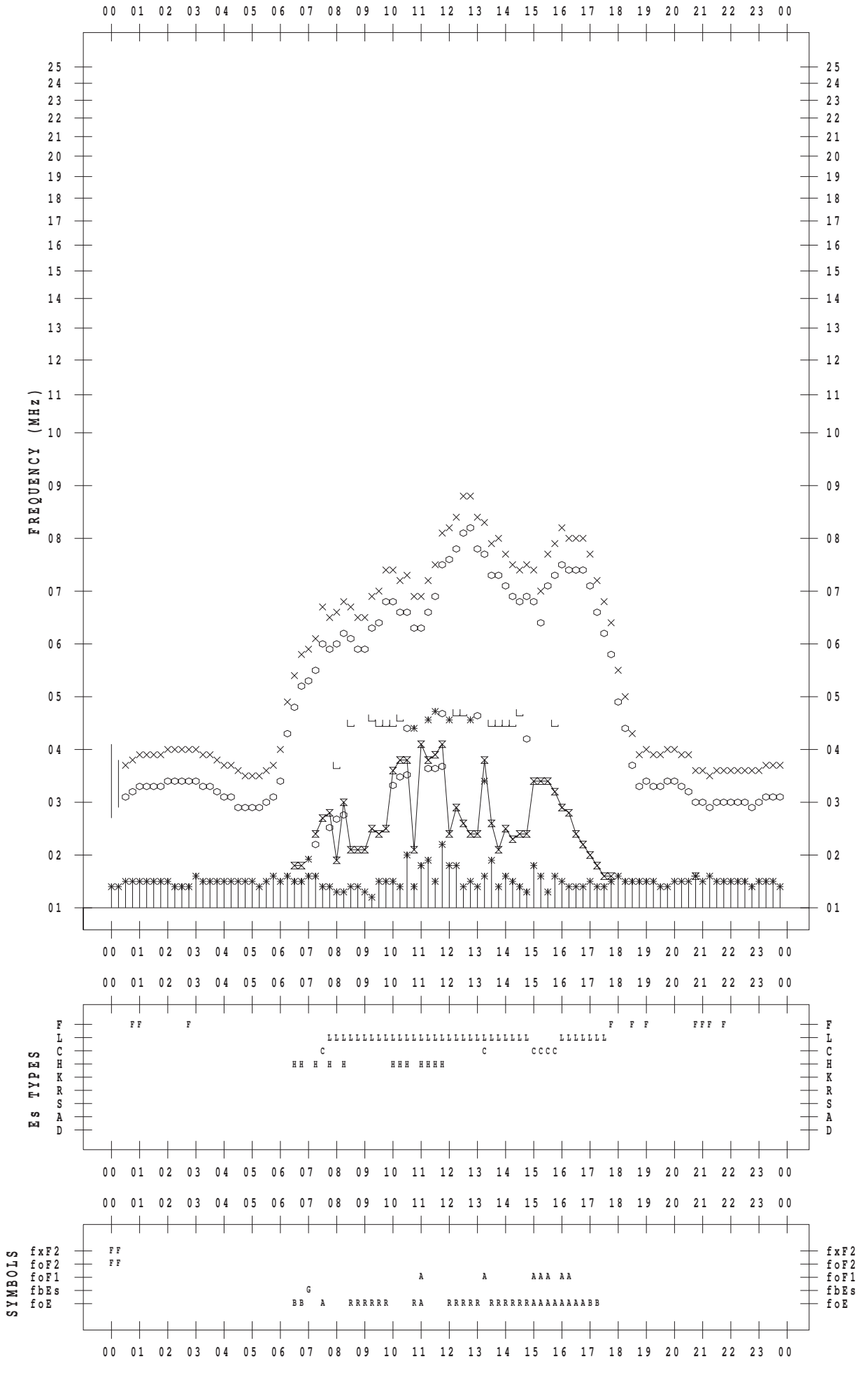
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 2/28

135 °E MEAN TIME



B. Solar Radio Emission

B1.Outstanding Occurrences at Hiraiso

Hiraiso February 2011

Single-frequency observations

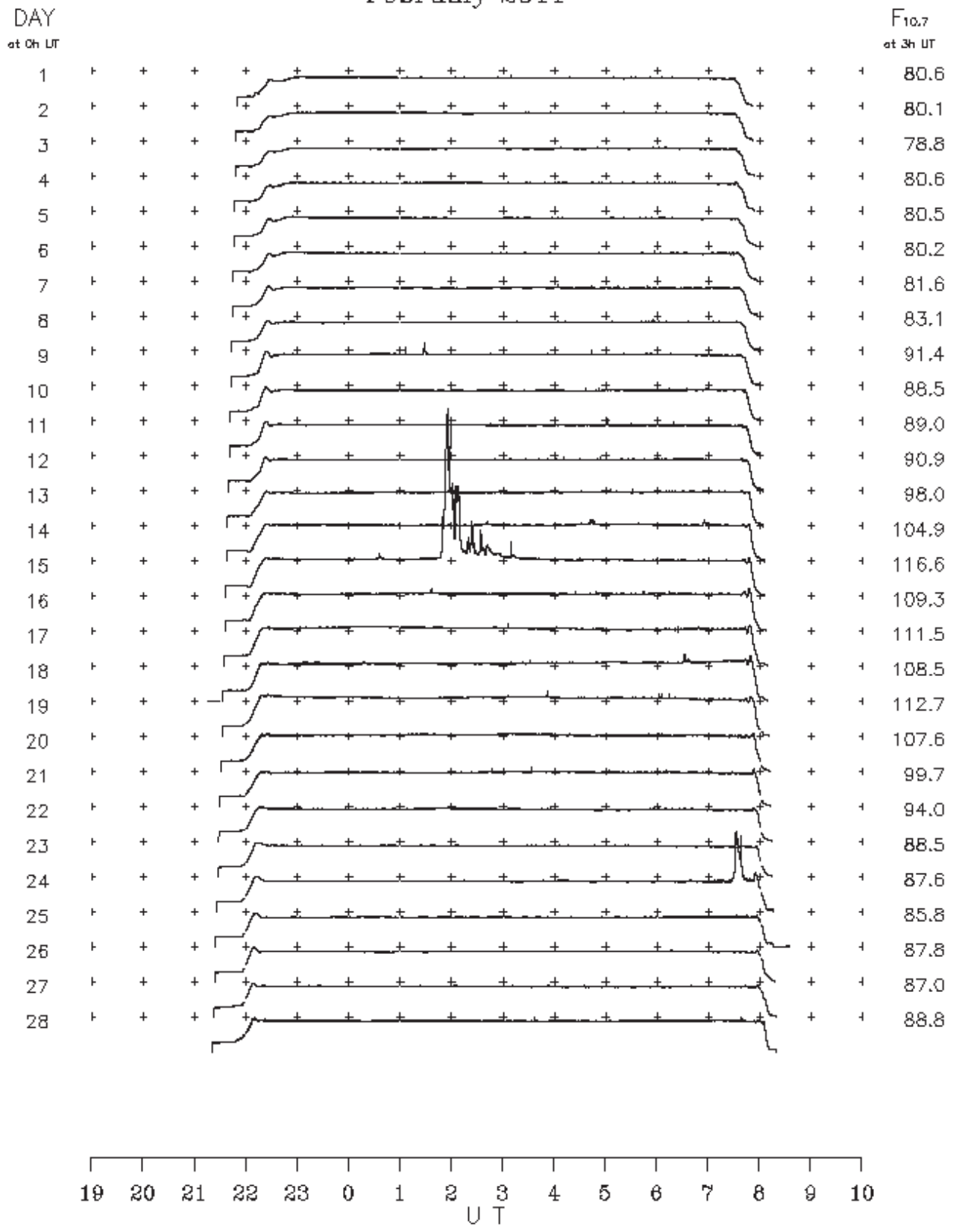
Normal observing period: 2120 - 0820 U.T. (sunrise to sunset)

FEB.	FREQ.	TYPE	START TIME	TIME OF MAXIMUM	DUR.	FLUX DENSITY (10^{-22} W m^{-2} Hz^{-1})		POLARIZATION
2011	(MHz)		(U.T.)	(U.T.)	(MIN.)	PEAK	MEAN	REMARKS
9	2800	7 C	0126.0	0129.0	6.0	35	-	
10	2800	1 S	0656.0	0657.0	4.0	5	-	
14	2800	1 S	0236.0	0241.0	9.0	5	-	
14	2800	7 C	0440.0	0442.0	7.0	15	-	
14	2800	4 S/F	0652.0	0654.0	6.0	15	-	
15	2800	7 C	0032.0	0037.0	7.0	15	-	
15	2800	49 GB	0148.0	0159.0	89.0	445	-	
16	2800	8 S	0135.0	0137.0	3.0	10	-	
16	2800	1 S	0542.0	0543.0	3.0	10	-	
18	2800	7 C	0629.0	0631.0	9.0	25	-	
21	2800	1 S	0501.0	0504.0	6.0	5	-	
24	2800	4 S/F	0726.0	0731.0	17.0	140	-	
27	2800	1 S	0352.0	0354.0	3.0	5	-	
28	2800	1 S	0737.0	0737.0	2.0	10	-	

B.Solar Radio Emission

B2. Summary Plots of $F_{10.7}$ at Hiraiso

Februaly 2011



Note: A vertical grid space corresponds to a 100 sfu.
Elevation angle range ≧ 6°.
A link to the daily plot data directory : http://sunbase.nict.go.jp/solar/denpa/hirasDB/2011/02/