F-749

IONOSPHERIC DATA IN JAPAN

FOR MAY 2011

VOL. 63 NO. 5

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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

MAY 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	64	34	53	52	46	52	63	63	67	66	63	65	67	66	67	67	69	68	68	66	66	54	52	51
2	51	51	53	48	47	60	55	52	A	A	A	A		A	59	62	61	61	63	64	62	64	61	54
3	54	54	51	54	51	54	58	58	60		65	67	61	67	67	65	66	65	68	67	66	64	54	62
4	60	54	53	57	58	67	70	67	65	61	67	68	70	75	69	70	71	65	64	66	73	66	66	64
5	58	52	53	54	55	62	66	67	67	68	68	61	66	67	69	70	68	64	65	66	66	67	54	53
6	52	58	52	52	58	62	66	66	68	68	82	N	68	62	74	68	67	68	65	66	65	54	50	62
7	61	53	54	55	57	59	58	61	64	70	59	64	66	60	65	65	66	A	66	A	66	65	64	63
8	51	54	60	53	51	57	52	62	61		A	65	67	65	65	66	A	A	67	72	64	54	52	58
9	51	53	55	53	54	60	62	63	67	52	70	67	67	66	66	66	65	65	70	67	66	64	67	54
10	52	53	53	53	58	63	60	59	70	68	68	69		66	68	67	65	65	71	67	67	66	64	58
11	52	53	53	44	52	52	61	62	64	58	A	62	65	64	64	63	65	66	A	65	67	66	54	53
12	53	50	53	53	53	66	67	66	68	68	66	66	A	71	70	67	70	70	70	67	65	66	64	64
13	54	54	53	51	58	65	67	64	67	68	60	65	A	A	66	56	68	67	64	69	65	66	66	66
14	59	53	49	52	54	51	67	72	50	69	64	63	68	62	67	68	68	67	70	67	66	54	52	52
15	51	54	38	53	54	60	62	67	68		54	64	62	59	67	67	67	68	67	65	A	A	63	52
16	54	A	52	51	47	50	A	52	A	A	A	A				A	A	61	63	66	64	54	58	53
17	52	53	48	42	34	37	A	A	A	A	A	A	A	A	49	60	62	A	65	64	A	64	64	64
18	A	A	54	34	48	61	A	66	A	A	A	A	A	A	A	60	A	62	61	64	A	A	54	54
19	51	54	53	47	48	53	64	A	A	A	A	A	A	63	61	62	60	A		65	59	66	66	61
20	54	51	50	51	52	62	63	48	65	62		63	A	A	62	65	66	A	A	A	66	65	64	
21	63	54	52	54	54	62	65	A	A	66		61	66	62	58	61	61	62	A	A	63	66	62	54
22	54	51	34	47	48	55	65	67	68	A	A	A		62	64	63	63	66	63	64	65	66	63	64
23	61	58	53	52	53	51	61	64	58	61		A	60	61	61		60	58	56	64	65	65	62	61
24	61	61	60		56	70	64	63	65	65	64	65	62		62	65	A	A	65	65	63	67	65	66
25	51	54	53	52	52	61	68	65	A		64	61	A	A	57	A	A	A	A	A	65	65	A	A
26	54	50	47	46	44	53	A	A	A	A	A	A	A	A	A	A	A	A		A	A	A	A	54
27	52	52	50	48	44	51	A	A	A	A	A	A	A	A	62	66	62	65	64	65	71	66	65	63
28	54	54	53	61	58	61	64		57	A	A	62	A	A		65	58	52	66	66	66	53	67	61
29	34	53	54	49	44	A		A	A	A	A						62	66	65	67	67	66	61	54
30	54	52	43	37	A	A	A	A	A	A	A	A	A	A		57	A	56	57	62	62	64	54	52
31	62	58	54	48	47	60	63	64	65	A	64	A	65	65	61	66	66	61	66	66	64	53	65	64
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	29	31	30	30	29	25	23	20	16	15	17	15	18	25	26	24	23	25	26	27	28	29	29
MED	54	53	53	52	52	60	63	64	65	66	64	65	66	64	65	65	66	65	65	66	65	65	63	58
U Q	59	54	53	53	55	62	66	66	67	68	68	66	67	66	67	67	67	67	67	67	66	66	65	63
L Q	52	52	50	48	47	52	60	61	62	61	61	62	62	62	61	62	62	61	63	65	64	59	54	53

HOURLY VALUES OF fEs AT Wakkanai

MAY 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	27	33	34	38	40	58	59	G	G	41	52	34	37	38	35	36	34	29	26
2	28	27	G	G	G	38	38	39	38	54	64	42	G	62	G	G	37	G	G	29	23	32	39	41
3	33	46	29	26	G	G	G	34	36	G	G	G	G	G	G	G	40	37	40	41	G	29	29	28
4	G	G	27	24	G	34	40	G	G	41	40	53	65	G	G	G	G	G	G	G	G	G	G	G
5	G	G	G	G	G	G	G	35	G	G	G	G	G	G	G	G	38	46	34	26	G	G	G	G
6	G	G	G	G	G	31	G	54	G	G	G	G	G	G	39	G	G	39	34	28	G	G	G	G
7	G	G	G	G	G	G	32	G	G	38	40	G	40	G	G	58	57	99	41	70	26	G	G	G
8	G	G	G	G	G	G	40	50	G	G	42	45	G	G	G	61	147	72	35	32	28	27	24	G
9	G	G	G	G	G	32	35	42	G	40	G	G	G	G	G	G	G	48	36	G	33	28	29	G
10	G	G	G	G	G	G	33	G	G	G	G	G	G	G	G	G	G	G	34	37	38	24	G	G
11	G	G	G	G	G	29	G	G	G	G	40	G	G	G	G	52	58	76	76	28	G	G	G	G
12	G	G	G	G	G	30	G	G	48	50	57	67	72	68	G	G	G	32	G	G	28	30	G	G
13	23	G	G	G	G	G	40	48	52	54	40	51	73	76	56	58	48	45	40	47	45	28	38	G
14	G	G	G	G	G	40	44	60	G	39	44	G	G	58	52	48	G	G	40	26	G	G	24	45
15	28	26	G	23	G	30	34	G	38		G	G	52	52	39	G	55	54	42	40	53	74	51	49
16	G	29	28	G	G	G	38	49	48	40	54	54	G	G	G	38	59	42	45	45	40	32	29	G
17	G	G	G	G	25	32	40	71	62	56	40	45	50	60	40	50	52	62	55	40	71	70	49	34
18	46	44	39	28	34	53	73	48	78	71	82	68	51	76	54	50	63	61	44	34	69	70	40	39
19	39	38	28	29	31	37	47	63	72	74	76	72	65	G	G	G	58	76		57	41	49	40	G
20	G	32	G	29	28	34	44	50	40	40	G	G	80	75	60	G	67	111	80	94	38	58	39	
21	G	G	G	27	G	35	39	65	60	63	G	G	G	G	G	38	G	50	82	114	60	60	40	40
22	39	42	33	27	24	43	45	49	62	68	65	73	G	52	G	48	44	37	28	34	29	29	30	G
23	G	G	G	G	G	36	41	44	38	51		57	49	G	G		G	G	35	33	28	27	24	G
24	G	26	G		G	33	39	53	52	49	56	G	40	G	G	G	70	76	60	40	39	28	51	G
25	34	G	G	G	G	44	50	68	66	54	59	70	52	75	41	65	54	73	71	68	81	65	84	71
26	32	G	G	29	38	38	65	92	70	72	79	62	76	90	68	128	150	95		129	71	116	70	46
27	38	34	32	39	34	51	59	75	96	97	180	86	101	73	66	G	G	38	38	57	68	54	51	27
28	36	34	27	G	G	34	40		41	51	54	G	48	41	G	G	G	G	G	G	G	G	G	G
29	G	34	32	32	35	41	48	38	60	49	41		G	G	G		G	34	47	G	28	29	G	30
30	40	48	36	25	40	41	59	53	52	39	62	41	42	41	G	G	62	54	47	50	39	G	G	G
31	40	30	29	G	28	38	38	40	50	65	55	43	41	63	G	G	43	48	60	38	40	26	G	38
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	30	31	31	31	30	31	30	30	30	31	31	31	29	31	31	29	31	31	31	31	30
MED	G	G	G	G	G	34	40	48	41	49	43	42	40	G	G	G	43	46	40	37	36	29	29	G
U Q	34	34	28	27	28	38	45	54	60	56	59	59	52	63	41	51	58	72	51	50	45	54	40	38
L Q	G	G	G	G	G	27	33	34	G	39	G	G	G	G	G	G	G	34	34	28	23	G	G	G

HOURLY VALUES OF fmin AT Wakkanai

MAY 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	15	15	15	15	14	15	14	14	14	14	16	27	22	17	23	15	14	14	14	14	14	15	14	15
2	14	15	15	14	15	14	14	17	20	18	20	21	22	15	17	16	14	14	14	14	14	14	14	14
3	14	15	14	14	15	15	14	14	16	20	18	20	22	20	20	17	14	14	14	14	14	14	15	15
4	15	15	14	15	15	15	14	16	15	15	18	18	17	15	20	16	14	14	15	14	16	14	14	15
5	14	14	14	14	14	14	14	14	14	16	15	17	17	15	18	16	14	14	14	15	14	15	15	15
6	14	15	14	14	14	14	18	14	14	15	17	17	18	16	14	15	14	14	14	14	18	14	15	15
7	14	14	15	14	15	14	14	14	16	16	17	17	17	14	14	14	14	15	14	14	14	14	14	15
8	14	15	14	14	14	14	14	14	15	17	17	18	16	21	20	14	14	14	14	14	14	15	15	14
9	15	14	14	14	14	14	14	14	15	15	23	51	18	18	16	15	14	14	14	15	14	14	14	15
10	15	15	14	14	14	14	14	14	17	18	16	15	28	20	20	15	14	14	14	14	14	14	14	14
11	15	14	15	14	14	14	14	14	15	17	16	18	20	18	15	14	14	14	14	14	15	14	14	14
12	14	14	14	15	14	14	14	14	14	17	17	18	21	30	15	15	14	14	14	15	15	14	14	15
13	14	15	14	15	14	14	14	14	14	16	17	22	21	17	18	16	14	14	14	14	14	14	14	14
14	14	15	14	15	15	14	14	14	14	15	16	20	15	17	16	16	14	14	14	15	15	14	15	15
15	14	15	15	14	15	14	14	14	14		17	23	17	16	15	14	14	14	14	14	14	14	15	14
16	15	14	14	15	14	14	14	14	14	17	28	20	24	20	18	17	14	14	14	14	14	15	15	14
17	14	14	15	14	14	14	14	14	14	18	15	16	15	28	15	14	14	14	15	14	14	14	14	14
18	14	14	14	14	14	14	14	14	14	17	15	15	16	16	16	14	14	15	14	14	14	14	14	14
19	14	14	14	14	14	14	14	14	15	21	16	20	26	23	16	15	14	14		14	15	15	14	15
20	15	14	14	14	14	14	14	14	14	17	18	17	20	18	20	14	15	14	14	14	14	14	14	
21	14	14	14	14	14	14	14	14	14	16	16	18	24	54	17	16	15	14	14	14	14	14	14	14
22	14	14	14	14	14	14	14	14	14	14	24	20	16	16	16	15	15	14	14	14	14	14	14	14
23	15	14	14	16	14	14	14	14	17	15		15	17	24	15		14	14	14	14	15	15	15	15
24	14	14	15		14	14	14	14	16	15	15	15	15	18	15	16	14	14	14	14	14	14	14	14
25	14	15	14	14	14	14	14	14	14	14	15	15	34	18	18	14	14	14	14	14	14	14	14	14
26	14	14	14	15	14	14	14	14	14	14	17	18	22	27	16	18	16	14		14	15	14	14	14
27	14	14	14	14	14	15	14	15	14	18	18	20	17	17	15	17	15	14	14	14	14	14	14	14
28	14	15	15	14	15	14	14		21	33	16	20	21	32	17	15	14	15	14	15	14	15	14	15
29	15	14	14	14	14	14	14	20	16	21	18		18	16	15		17	14	14	14	15	14	15	16
30	15	14	14	14	14	14	14	16	18	22	17	18	30	18	21	21	14	15	14	14	14	14	14	14
31	14	14	14	14	14	14	14	15	15	15	20	21	16	17	20	15	15	14	14	14	15	14	14	14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	30	31	31	31	30	31	30	30	30	31	31	31	29	31	31	29	31	31	31	31	30
MED	14	14	14	14	14	14	14	14	14	16	17	18	18	18	16	15	14	14	14	14	14	14	14	14
U Q	15	15	15	15	14	14	14	14	16	18	18	20	22	21	20	16	14	14	14	14	15	14	15	15
L Q	14	14	14	14	14	14	14	14	14	15	16	17	17	16	15	14	14	14	14	14	14	14	14	14

HOURLY VALUES OF foF2 AT Kokubunji

MAY 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	54	66	52	53	53	53	78	96	82	74	83	77	81	88	81	91	90	85	95	89	51	54	54	54
2	52	54	54	52	44	66	61	55	A	A	64	67	67	63	A	72	73	74	A	A	A	54	54	52
3	54	52	52	53	44	47	65	62	68	66	72	75	82	85	87	76	77	84	84	76	76	73	A	54
4	54	64	54	57	57	64	86	77	64	68	72	78	88	97	101	105	88	82	80	86	78	75	54	63
5	62	54	53	52	52	52	77	81	80	76	73	80	87	90	91	87	87	97	107	100	80	54	A	63
6	54	54	53	57	52	53	67	68	81	83	100	93	96	100	91	81	81	84	90	90	88	71	54	54
7	54	52	52	54	54	53	64	68	77	94	83	75	88	76	80	87	91	88	86	83	75	67	67	65
8	61	53	54	52	52	53	71	72	63	68	76	82	77	84	87	91	91	98	98	A	63	52	54	63
9	53	54	52	54	53	58	66	76	83	84	81	74	77	80	83	95	96	87	90	85	53	54	54	52
10	54	54	54	52	52	59	77	84	78	81	69	72	76	74	77	74	80	77	80	78	88	75	64	53
11	54	54	53	51	47	54	75	66	61	A	67	72	76	74	77	75	74	80	81	80	78	64	A	54
12	59	54	52	A	A	60	67	64	75	68	67	72	A	90	91	98	88	89	81	78	80	77	73	67
13	67	64	66	54	A	59	74	64	72	74	77	74	75	76	90	87	90	88	87	90	87	A	A	52
14	52	54	54	51	44	54	77	87	76	67	A	A	71	77	83	93	95	95	96	86	64	54	54	54
15	53	53	52	46	45	53	67	73	81	76	78	A	69	73	86	97	104	91	80	81	77	54	54	72
16	53	A	A	54	56	65	A	A	A	A	A	A	A	A	71	69	71	73	81	A	A	A	A	A
17	A	54	51	44	46		54	59	A	A		A	A	A	A	71	71	A	A	A	A	A	A	54
18	A	54	54	52	46	43	64	64	67	A	A	A		A	71	A	A	A	76	A	54	61	54	A
19	52	52	49	45	45	54	57	A	67	75	A		A	A	72	71	76	A	71	74	71	52	A	53
20	59	52	52	49	49	53	64	74	A	A	A	A	A	A	75	75	82	84	72	A	A	52	52	54
21	54	A	52	54	51	59	64	55	A	A	A	66	A	A	64	73	71	55	67	75	A	A	52	54
22	54	45	A	45	44	52	66	75	81	67	A	A	A	67	74	73	74	86	87	77	66	54	N	54
23	54	54	52	52	52	51	64	77	A	66	66	67	73	76	72	68	A	A	61	70	76	72	53	52
24	53		47	52	52	52	59	73	73	71	80	81	81	81	74	84	75	76	68	76	A	64	A	A
25	54	A	A	A	45	48	74	90	A	A	A	A	A	A	68	72	61	64	76	77	A	A	A	A
26	A		A	A	44	54	64	A	64	A	A	A	A	A	A	72	69	68	73	74	78	69	A	54
27	54	54	A	44	51	53	58	67	A	67	A	A	69	74	76	84	81	75	74	A	A	74	53	71
28	54	54	62	51	52	A	65	67	A	A	A	A	75	76	94	81	66	55	59	76	80	73	74	54
29	67	53	77	N	A	53	76	86	A	A	A	A	A	A	67	66	A	81	93	101	86	A	A	51
30	A	A	A	A	44	45	A	69	A	A	A	A	A	A	A	62	68	67	A	72	71	54	65	63
31	54	54	52	46	A	A	68		A	A	A	A	A	A	A	76	88	82	80	77	72	66	A	54
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	25	25	26	27	28	29	27	19	18	16	16	18	20	26	30	28	27	28	24	23	25	18	27
MED	54	54	52	52	51	53	66	72	75	72	74	74	76	76	78	76	80	82	80	78	76	64	54	54
U Q	54	54	54	54	52	58	74	77	81	76	80	79	82	86	87	87	89	88	88	86	80	72	64	63
L Q	53	53	52	49	45	52	64	64	67	67	68	72	73	74	72	72	72	74	73	76	66	54	54	53

HOURLY VALUES OF fEs AT Kokubunji

MAY 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	31	36	34	23	G	G	G	G	G	G	G	G	G	G	G	68	G	32	29	43	51	25	G	G
2	G	G	G	G	G	G	31	45	52	79	59	56	42	49	96	53	52	40	119	79	82	50	59	26
3	31	41	38	29	27	G	G	G	G	G	G	49	49	73	101	52	76	53	45	56	53	50	34	G
4	G	33	G	G	G	30	G	G	52	55	G	G	86	51	52	71	50	43	39	53	85	72	77	28
5	24	G	G	G	G	G	G	34	G	63	50	G	50	52	G	G	G	42	38	40	69	47	57	G
6	G	29	G	G	G	G	30	G	52	G	G	G	G	G	G	G	56	66	69	45	G	23	G	G
7	G	G	G	G	G	G	G	G	G	51	71	53	G	G	G	G	50	49	53	72	60	44	27	G
8	G	G	33	G	29	G	34	G	G	66	G	61	49	42	40	G	46	47	95	102	57	27	29	27
9	G	G	G	G	G	G	40	42	63	56	49	65	49	52	G	G	G	G	G	29	34	33	29	G
10	G	G	G	G	G	G	G	G	G	G	G	46	48	54	60	57	40	G	32	79	51	39	45	37
11	G	G	G	G	G	G	G	G	39	46	G	G	G	G	G	G	56	48	57	43	G	31	40	50
12	57	G	46	59	50	50	G	46	G	59	G	43	77	75	59	51	60	84	53	63	34	39	27	60
13	G	22	49	60	79	51	40	37	40	49	G	63	47	60	50	62	62	38	61	37	45	69	79	43
14	G	30	34	26	G	G	G	G	52	49	49	61	65	G	G	62	74	72	60	82	29	28	28	28
15	G	29	G	G	G	G	G	41	51	49	72	78	G	G	G	G	G	39	29	29	26	G	50	50
16	55	82	58	37	43	35	61	91	83	73	86	75	84	103	58	G	55	53	44	95	116	87	70	106
17	59	33	G	G	G		G	53	67	51		51	58	61	93	G	G	72	107	144	149	73	60	46
18	69	54	59	43	24	24	50	G	50	51	60	53		102	60	145	122	133	59	73	40	40	28	53
19	44	43	37	40	32	27	51	60	59	49	56		62	60	60	52	54	67	63	31	40	49	70	51
20	58	37	40	34	25	G	47	58	82	96	103	50	84	110	104	G	G	55	104	94	43	40	41	41
21	58	68	28	63	34	29	50	62	114	115	184	65	101	94	61	G	52	50	104	64	84	114	26	48
22	44	29	47	31	26	35	53	54	54	60	60	52	57	58	65	65	55	49	40	72	46	31	44	33
23	30	40	30	26	26	30	40	G	71	55	G	41	65	45	G	59	77	62	51	43	53	52	23	G
24	G		G	G	G	26	57	60	55	53	53	G	G	48	G	G	G	47	43	112	86	43	72	81
25	50	59	116	59	26	31	38	72	96	146	113	114	123	194	53	G	48	51	60	35	136	102	84	60
26	71		83	60	40	41	60	69	60	68	122	91	95	68	65	40	45	39	33	39	45	56	60	60
27	56	51	48	59	38	G	39	67	92	75	67	63	57	51	45	47	38	70	69	81	29	40	41	78
28	50	33	43	53	40	52	50	59	72	82	74	72	60	45	G	G	46	46	G	G	G	G	25	26
29	G	32	G	50	64	53	51	59	83	62	84	148	131	70	51	60	65	43	56	63	73	58	80	40
30	83	58	50	39	44	G	58	58	79	65	53	63	52	124	73	51	47	53	58	45	59	34	27	53
31	G	26	23	G	31	29	G		57	67	77	102	85	53	70	46	G	G	27	G	24	55	58	59
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	29	31	31	31	30	31	30	31	31	30	30	30	31	31	31	31	31	31	31	31	31	31	31
MED	30	32	33	26	26	12	38	44	54	56	54	54	57	53	52	46	50	49	53	56	51	43	41	41
U Q	56	42	47	50	38	31	50	59	72	68	74	65	84	73	65	59	56	62	63	79	73	56	60	53
L Q	G	G	G	G	G	G	G	G	39	49	G	43	47	45	G	G	G	40	38	39	34	31	27	26

HOURLY VALUES OF fmin AT Kokubunji

MAY 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	14	13	13	14	13	13	15	21	39	47	45	52	55	54	46	34	17	14	13	13	13	14	14	18
2	13	14	14	14	17	18	14	20	35	34	35	40	35	37	39	34	20	13	14	14	13	13	13	17
3	13	13	13	14	14	18	14	34	40	46	50	35	37	34	31	28	21	13	13	13	13	13	13	13
4	13	13	14	13	14	14	14	15	34	39	43	53	36	34	33	35	20	14	15	14	13	13	14	13
5	13	14	13	13	14	22	14	15	17	33	34	55	40	34	46	43	39	13	14	13	13	14	14	21
6	14	13	13	14	14	18	15	36	31	44	45	52	54	57	55	40	17	14	13	13	14	14	14	14
7	14	15	14	34	13	18	18	17	22	33	37	34	56	49	48	44	15	22	13	17	14	14	14	17
8	14	18	13	29	13	13	17	17	43	30	53	33	35	33	33	50	30	31	13	14	14	14	14	14
9	13	14	15	14	20	31	13	13	31	36	33	18	34	34	13	50	18	18	13	13	13	14	13	42
10	18	14	14	15	14	18	14	31	21	50	48	39	37	39	30	34	24	14	13	13	13	13	14	13
11	14	14	17	13	14	17	13	14	17	34	53	58	54	51	50	43	33	21	13	13	13	13	14	14
12	13	17	13	14	13	13	13	21	43	35	44	51	38	36	35	34	31	15	13	14	14	13	15	14
13	14	13	13	15	13	13	13	20	15	34	50	36	37	36	35	34	36	37	13	14	18	15	13	13
14	14	14	14	14	14	18	13	14	33	36	36	36	38	52	52	34	15	14	13	15	14	13	14	13
15	13	13	17	14	15	18	13	15	33	43	36	36	52	52	52	50	36	21	14	13	13	14	13	13
16	13	13	13	14	13	13	13	14	35	34	39	35	36	34	34	48	17	14	14	22	13	14	13	13
17	14	13	34	13	14		13	17	34	36		37	39	38	35	47	17	15	13	17	14	14	13	14
18	13	13	13	13	15	13	15	17	18	35	38	38		39	37	20	21	14	14	15	14	15	13	14
19	14	13	14	13	13	13	18	22	18	33	33		34	40	38	33	22	13	13	14	14	13	14	13
20	14	13	13	13	14	20	14	17	33	31	34	35	33	37	39	57	42	15	14	15	17	13	13	13
21	13	14	13	13	13	13	13	14	17	34	39	36	33	31	18	48	18	15	13	21	14	13	15	13
22	13	14	13	13	17	13	13	17	31	18	34	36	39	34	30	30	20	14	13	13	13	13	13	13
23	13	13	13	15	13	13	14	15	15	35	49	51	33	33	47	33	33	13	15	13	17	13	17	15
24	17		23	14	15	13	15	20	20	34	34	52	53	33	43	48	21	14	13	13	13	14	13	13
25	14	13	13	13	13	13	14	13	34	33	36	39	34	38	36	48	36	14	13	13	13	14	13	13
26	13		13	14	13	13	13	17	17	35	35	37	36	35	36	47	20	13	13	14	13	15	13	14
27	13	13	14	14	13	15	13	15	33	35	34	36	39	36	31	28	18	14	13	17	13	13	13	14
28	13	13	13	13	13	13	14	17	22	33	34	36	36	36	53	42	36	17	39	14	14	17	15	14
29	31	13	17	13	14	14	14	34	34	34	42	43	34	34	35	35	21	14	15	14	14	13	14	14
30	14	13	14	13	13	22	14	20	22	34	39	36	39	36	35	40	44	18	15	14	13	14	13	14
31	14	15	15	24	13	13	18		15	39	37	42	38	38	34	52	18	14	14	17	14	14	13	13
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	29	31	31	31	30	31	30	31	31	30	30	30	31	31	31	31	31	31	31	31	31	31	31
MED	14	13	13	14	14	14	14	17	31	34	38	37	37	36	36	40	21	14	13	14	13	14	13	14
U Q	14	14	14	14	14	18	15	20	34	36	45	51	39	39	46	48	33	17	14	15	14	14	14	14
L Q	13	13	13	13	13	13	13	15	18	33	34	36	35	34	33	34	18	14	13	13	13	13	13	13

HOURLY VALUES OF foF2 AT Yamagawa

MAY 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	47	52	67	54	57	54	72	87	81	78	78	77		91	A	95	94	91	91	88	71	A	54	54
2	54	52	54	52	53	48	69	66	57	72	90	69	72	82	79	95	94	90	86	88	78	A	63	A
3	54	54	54	50	53	51	65	70	70	70	80	78	71	86	96		86	90	94	88	67	66	A	A
4	67	67	66	66	66	66	86	73	68	70	74	76	90	107	97		N	97	112	N	41	84		64
5	65	67	67	54	58	60	73	84	79	68	76	86	89	92	52	93	96	110	91	87	74	54	73	76
6	54	67	52	52	53	46	60	70	78	88	87	90	61	76	86	86	90	90		89	84	54	66	54
7	54	54	54	52	51	50	58	72	87	84	67	77	70	58	86	91	97	92	88	88	52	A	54	54
8	53	52	54	52	52	52	53	70	A	78	A	78	86	87	95	59	107	97	90	67	55	A	A	54
9	43	54	54	54	55	51	50	64	83	79		67	80	86	90	69	96	94	88	86	A	51	67	67
10	54	54	54	54	47	52	69	73	75	72	73	77	76	79	94	90	86	76	90	86	84	64	37	66
11	64	66	67	67	61	54	65	92	66	65	72	84	87	91	77	N	87	83	83	87	78	53	A	54
12	54	54	52	54	57	53	60	66	77	68	71	77	78	101	97	98	90	88	90	A	84	A	77	67
13	67	66	49	54	52	54	58	60	71	80	75	73	84	88		94	101	104	90	79	79	66	52	44
14	54	52	53	53	52	54	67	87	66	A	A	72	78	82	92	95	96	88	88	90	48	A	66	64
15	54	54	54	54	54	58	62	78	80	84	78	77	N	86	83	56	97	94	90	86	77	44	54	53
16	54	52	52	46	51	51	64	76	74	A	A	A	A	88	A	A	A	91	91	A	53	63	A	A
17	A	A	A	A	47	48	54	56	58	A	64	66	A	74	68	72	88	88	78	73	68	A	53	53
18	54	52	52	52	53	51	60	74	65	58	A	61		73	77	82	86	85	78	67	A	A	A	64
19	62	A	52	54	52	51	56	61	78		57	A	A	77	77	82	81	A	A	A	A	A	54	54
20	52	54	52	53	52	52	40	62	70	67	A	A	A	71	77	86	97	114	90	72	54	53	52	51
21	52	50	47	46	46	48	54	63	54	68	74	A	62	64	72	83	78	81	84	87	77	74	54	54
22	54	54	54	51	50	49	56	74	42	70	A	A	A	A	58	86	92	90	88	A	A	A	67	54
23	A	A	A	52	A	54	61	A	A	A	81	87	88	58	77	85	72	74	78	77	76	N	52	A
24	66	54	54	54	50	47	51	A	A	67	A	A	A	A	A	A	83	81	76	74	A	52	A	A
25	A	A	A	52	47	47	66	70	A	56	A	A	72	67	68	71	72	87	92	88	54	A	54	A
26	A	A	A	A	A	A	45	53	67	A	A	72	74	82	69	87	76	77	A	79	86	A	A	54
27	54	54	51	47	50	48	52	A	A	A	A	A	A	A	64	77	87	78	78	78	A	74	A	54
28	42	66	67	52	52	50	50	67	67	A	A	A	70	A	90	A	77	67	A	A	A	49	73	55
29	54	54	71	50	A	A	54	74		65	71	72	79	58	84	72	72	A	A	62	88	47	48	A
30	A	52	44	44	44	44	54	70	66	A	A	A	A	68	71	72	72	72	67		71	70	A	67
31	54	54	54	43	45	44	50	61	A	62	A	A	67	A	78	47	85	88	87	73	53	67	64	53
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	26	27	29	28	29	31	28	24	22	17	20	20	26	27	25	29	29	26	24	24	18	21	24
MED	54	54	54	52	52	51	58	70	70	70	74	77	77	82	78	85	87	88	88	86	72	58	54	54
U Q	54	54	54	54	53	54	65	74	78	78	79	78	85	88	90	92	96	93	90	88	78	67	66	64
L Q	54	52	52	50	50	48	53	63	66	67	71	72	70	71	71	72	79	81	83	73	54	52	52	54

HOURLY VALUES OF fEs AT Yamagawa

MAY 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	23	G	G	G	28	32	30	49	50	52	61	50		66	78	G	G	43	49	45	58	39	34	G
2	25	G	34	44	43	51	30	50	50	61	57	66	42	52	55	G	G	50	54	50	71	73	48	59
3	36	31	32	28	G	31	G	G	45	53	51	51	G	65	64		G	G	G	40	40	54	60	58
4	29	G	G	31	G	32	28	33	53	52	67	51	62	73	46		G	G	G	29	52	44		43
5	48	28	54	53	57	33	G	33	72	52	52	58	56	75	63	53	54	60	52	46	50	31	40	39
6	25	G	G	26	G	G	30	32	37	G	44	49	G	55	43	54	48	76		38	40	24	28	G
7	G	G	G	G	G	G	30	G	36	46	50	50	G	44	G	G	52	53	76	67	79	68	39	59
8	69	39	41	36	30	G	51	53	92	55	79	G	50	53	80	48	42	46	60	39	59	71	60	49
9	44	41	32	31	33	32	G	34	38	42		50	72	72	70	62	66	40	38	32	74	29	24	31
10	G	G	G	G	G	G	G	36	41	42	G	49	62	G	50	G	G	46	33	31	39	33	40	50
11	34	38	28	G	G	23	G	35	40	70	64	46	G	G	G	G	44	G	34	36	G	26	45	27
12	25	G	24	25	G	G	29	40	43	G	G	52	52	76	43	G	50	72	81	116	78	53	36	40
13	29	29	25	30	34	34	G	33	44	G	G	42	59	72		49	81	54	84	60	57	48	41	53
14	56	54	43	40	60	46	44	46	65	74	70	43	43	42	40	G	49	78	76	60	60	82	60	44
15	44	23	29	G	G	G	43	33	48	38	G	G	43	G	49	52	47	G	40	30	27	30	37	36
16	49	58	59	33	28	52	31	48	64	70	96	132	158	101	124	157	146	65	51	73	59	48	59	59
17	58	70	59	59	34	30	40	46	52	76	52	67	72	60	57	G	80	40	56	27	24	56	59	50
18	57	44	58	57	G	G	36	40	46	48	53	52		41	42	56	75	51	71	78	72	46	65	57
19	57	70	46	52	49	37	G	42	45		46	66	83	72	66	63	62	82	123	94	86	86	46	37
20	47	53	46	30	G	G	29	40	65	52	77	87	68	G	44	56	41	45	40	G	G	29	40	58
21	37	40	46	51	38	28	31	44	52	54	N	60	G	52	G	G	G	G	49	58	45	44	50	60
22	49	34	39	28	G	26	34	54	55	69	84	80	66	95	62	52	G	72	76	114	79	70	48	53
23	73	59	52	58	63	52	55	92	79	106	67	63	66	65	84	51	G	G	39	35	29	G	36	59
24	G	33	24	G	G	G	29	51	85	61	117	94	99	89	140	102	60	54	53	60	73	146	116	58
25	82	73	59	56	51	G	39	59	93	69	66	74	60	48	43	49	G	50	62	51	56	73	56	57
26	51	53	72	59	59	51	43	51	68	78	88	G	G	44	46	48	46	G	76	39	46	68	59	57
27	34	34	50	36	43	32	37	84	91	88	134	75	95	83	68	65	68	67	57	67	90	34	44	29
28	G	G	34	30	G	28	51	70	62	88	90	84	68	92	66	112	62	56	74	73	79	28	G	G
29	44	29	39	34	40	55	39	61		48	64	62	61	52	43	G	55	74	91	60	72	33	34	84
30	68	92	46	38	36	28	45	64	61	91	152	97	96	52	G	41	78	47	67		72	60	73	57
31	40	29	34	56	32	G	31	41	54	49	70	58	54	68	42	49	61	61	64	59	G	36	39	24
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	30	30	29	31	29	31	30	29	31	31	30	30	31	31	30	31
MED	44	34	39	33	30	28	31	44	52	54	64	58	60	60	50	49	49	50	56	50	58	46	44	50
U Q	56	53	50	52	43	34	40	53	65	70	81	74	70	73	66	56	62	65	76	67	73	68	59	58
L Q	25	G	25	26	G	G	28	34	45	48	50	49	42	44	43	G	G	40	40	36	40	31	37	36

HOURLY VALUES OF fmin AT Yamagawa

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

HOURLY VALUES OF foF2 AT Okinawa

MAY 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	A	83	85	72	57	53	64	100	67	77	82	A	102	118	127	126	132	128	134	108	76	54	81	78
2	A		66	64		53	64	66	65	92	101	91	107	125	134	148	146	147	144	128	109	103	84	78
3	A		77	53	58	53	62	84	70	69	86	90	118	125	131	130	131	138	140	128	79	67	77	A
4	76	80	80	85	85	80	67	74	67	76	85	104	122	136	140	147	150	148	157	147	140	85	83	85
5	59		84	62	63	67	78	97	80	67	86	104	110	110	123	131	130	143	128	108	81	66	59	78
6	84	77	66	67	31	44	55	N	86	111	88	94	115	122	126	127	122	121	130	114	A	A	67	65
7	53	54		54	47	44	52	71	90	72	78	90	106	122	129	127	123	114	120	89	67	66	A	A
8	67	52	42	53	53	53	67	A	74	88	85	87	102	108	127	141	147	142	107	82	73	75	66	79
9	67	67	63	63	52	A	53	72	A	77	68	85	105	117	124	130	134	127	107	85	82	A	77	
10	67	76	71	34	52	44	63	82	70	74	71	88	110	119	N	116	105	90	106	103	85	77	77	76
11	A	54	82	74	67	66	70	74	67	67	80	85	100	102	111	111	104	90	102	108	80	67	67	53
12	66	67	75	64	51	44	53	72	76	75	76	88	102	116	123	122	120	122	A	104	85		84	85
13	79	77	79	54	60	53	42	59	72	81	72	78	90	101	107	110	114	117	126	131	87	67	A	66
14	67	66	66	66	54	53	67	75	67	71	75	84	100	107	124	129	108	102	88	88	74	67	A	A
15	54	54	53	64	50	51	61	70	78	78	82	86	102	106	102	118	130	128	130	108	86	73		66
16	66	66	62	53	52	48	60	64	72	66	A	A	96	101	106	108	111	108	101	86	54	54	66	A
17	62	A	A	A	A	A	53	60	A	A	70	76	87	98	88	96	107	104	88	78	A	A	58	A
18	62	A	A	54	54	45	53	64	71	56	A		76	82	90	102	98	90	85	A	71	66	64	54
19	52	67	58	52	44	43	52	73	66	A	A	A	A	83	A	106	107	104	87	87	74	A	53	52
20	A	A	42	A	53	46	52	62	65	70	64	66	83	88	90	104	118	120	105	86	A	A		52
21	54	52	52	58	53	50	61	55	65	A	71	A		76	82	92	88	93	A	A	83	54	A	62
22	54	52	42	52	45	43	48	71	80	A	A	A	A	A	A	105	110	126	114	87	67	76	78	69
23	67		67	64	58	52	52	62		67	A	A	87	87	90	90	102	107	95	105	86	37		N
24	49		52	A	52		53	54	A	65	A	A	A	85	92	90	94	102	98	88	80	66	54	50
25	46	36	53	46	43	42	61	72	67	71	82	77	81	87	83	87	102	116	122	97	63	50		46
26	45	46	45	43	34	30	42	68	71	78	77	77	88	88	98	96	91	88	88	95	84	A	A	A
27	53	66	53	45	45	44	50	55	A	A	75	A	84	98	97	108	110	100	105	102	86	67	67	67
28	77	67		47	34	37	54	67	61	A	A	A	A	101	100	100	94	92	84	80	84	86	82	84
29	83	87	53	69	46	A	54	67	72	A	68	84	87	91	108	106	88	99	121	124	85	72	A	54
30	41	A	53	A	A	34	54	62	69	A	A		77	88	85	82	A	78	A	76	73	67	A	77
31	76	77	74	46	46	44	58	56	70	A	71	67	67		85	101	102	110	114	88	81			67
	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	22	27	27	28	27	31	29	26	22	23	20	26	29	28	31	30	31	28	29	28	23	19	23
MED	64	66	63	54	52	46	54	68	70	73	77	86	100	101	106	108	110	110	107	97	81	67	67	67
U Q	67	77	75	64	55	53	63	73	74	78	85	90	106	117	125	127	130	127	127	108	85	75	81	78
L Q	53	54	53	52	45	44	52	62	67	67	71	77	87	88	90	100	102	99	96	86	73	66	64	54

HOURLY VALUES OF fEs AT Okinawa

MAY 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	29	G	G	G	G	G	G	36	53	50	62	90	46	G	G	G	G	47	38	41	56	42	70	33
2	36	G	G	G		30	G	39	60	70	96	102	82	62	G	G	G	50	50	74	69	43	36	72
3	39		G	43	29	G	G	G	47	51	48	49	G	G	G	G	G	36	31	31	44	33	69	91
4	71	69	G	49	G	26	G	39	G	49	G	58	52	58	62	59	40	G	G	59	G	G	G	G
5	G		36	48	28	49	49	35	G	56	48	68	70	46	G	G	G	153	80	61	54	34	26	28
6	48	34	G	G	G	24	G	39	44	47	55	52	60	G	G	G	G	67	80	112	128	72	29	27
7	G	G		G	G	G	G	G	G	G	43	G	G	G	G	46	40	64	64	33	38	50	73	70
8	30	30	G	28	48	46	G	62	58	53	54	69	49	G	G	58	48	46	34	43	G	36	86	40
9	33	39	51	G	34	29	G	G	108	72	G	48	82	55	69	90	70	80	73	51	50	82	59	
10	29	G	70	26	G	G	G	G	36	G	G	G	44	G	68	73	69	68	80	61	37	30	32	32
11	29	33	G	G	G	G	G	G	G	52	52	G	G	G	G	G	G	G	38	G	G	G	G	31
12	49	G	55	G	29	G	G	38	G	46	G	G	G	G	61	59	76	84	179	50	35	G	G	34
13	G	G	24	G	G	G	G	50	35	39	G	60	50	59	57	76	41	G	G	30	50	59	54	49
14	38	G	34	28	G	G	30	44	54	51	64	61	G	G	G	G	G	G	36	31	40	72	54	66
15	58	27	27	G	G	G	27	35	42	40	G	G	G	G	G	G	G	38	56	28	G	28	G	G
16	30	39	35	48	32	G	29	49	36	G	54	74	83	51	49	60	56	54	59	48	36	34	41	85
17	53	93	81	104	58	50	49	43	72	71	62	45	G	G	G	52	40	52	74	52	48	30	G	45
18	40	48	54	39	36	57	30	33	52	40	63		G	G	64	65	61	72	93	78	59	34	50	34
19	87	48	24	28	G	G	G	40	61	63	75	60	56	54	158	62	49	56	71	42	46	59	39	38
20	53	53	37	60	71	50	33	36	42	G	G	50	G	G	G	G	57	60	40	48	60	38	G	28
21	G	40	G	G	G	G	28	36	42	92	89	67		G	G	G	47	45	94	111	59	39	49	27
22	43	34	35	28	G	30	30	50	50	84	102	85	140	132	170	G	G	G	G	G	24	36	G	G
23	G		G	G	G	G	G	G		81	175	134	152	64	G	G	G	G	G	G	G	28	G	40
24	40		33	48	G		G	53	90	136	111	133	104	82	G	G	53	41	39	29	G	G	G	G
25	G	30	36	G	34	G	31	38	41	40	59	52	G	G	G	G	G	46	38	33	30	G		G
26	G	48	34	32	29	G	35	43	39	59	G	G	62	58	G	G	53	56	48	50	48	50	85	54
27	36	47	35	40	36	37	32	46	91	76	70	107	64	72	72	88	59	G	36	34	32	G	G	G
28	G	G		G	G	G	G	35	56	104	82	81	115	50	G	G	41	36	G	60	70	50	58	G
29	G	G	29	35	36	36	34	31	48	73	64	62	58	46	G	G	59	59	82	82	82	60	49	G
30	G	59	58	86	36	G	G	50	56	147	78		G	G	60	70	82	60	92	48	35	49	58	59
31	57	51	46	29	G	G	32	46	60	68	56	G	50		G	51	49	39	56	35	30	G		G
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	27	29	31	30	30	31	31	30	31	31	29	30	30	31	31	31	31	31	31	31	31	29	30
MED	33	34	34	28	G	G	G	38	48	53	56	60	50	G	G	G	41	47	50	48	40	36	39	32
U Q	48	48	41	43	34	30	31	46	58	73	75	77	70	58	61	60	57	60	80	60	56	50	58	49
L Q	G	G	G	G	G	G	G	33	36	40	G	23	G	G	G	G	G	36	36	31	30	28	G	G

HOURLY VALUES OF fmin AT Okinawa

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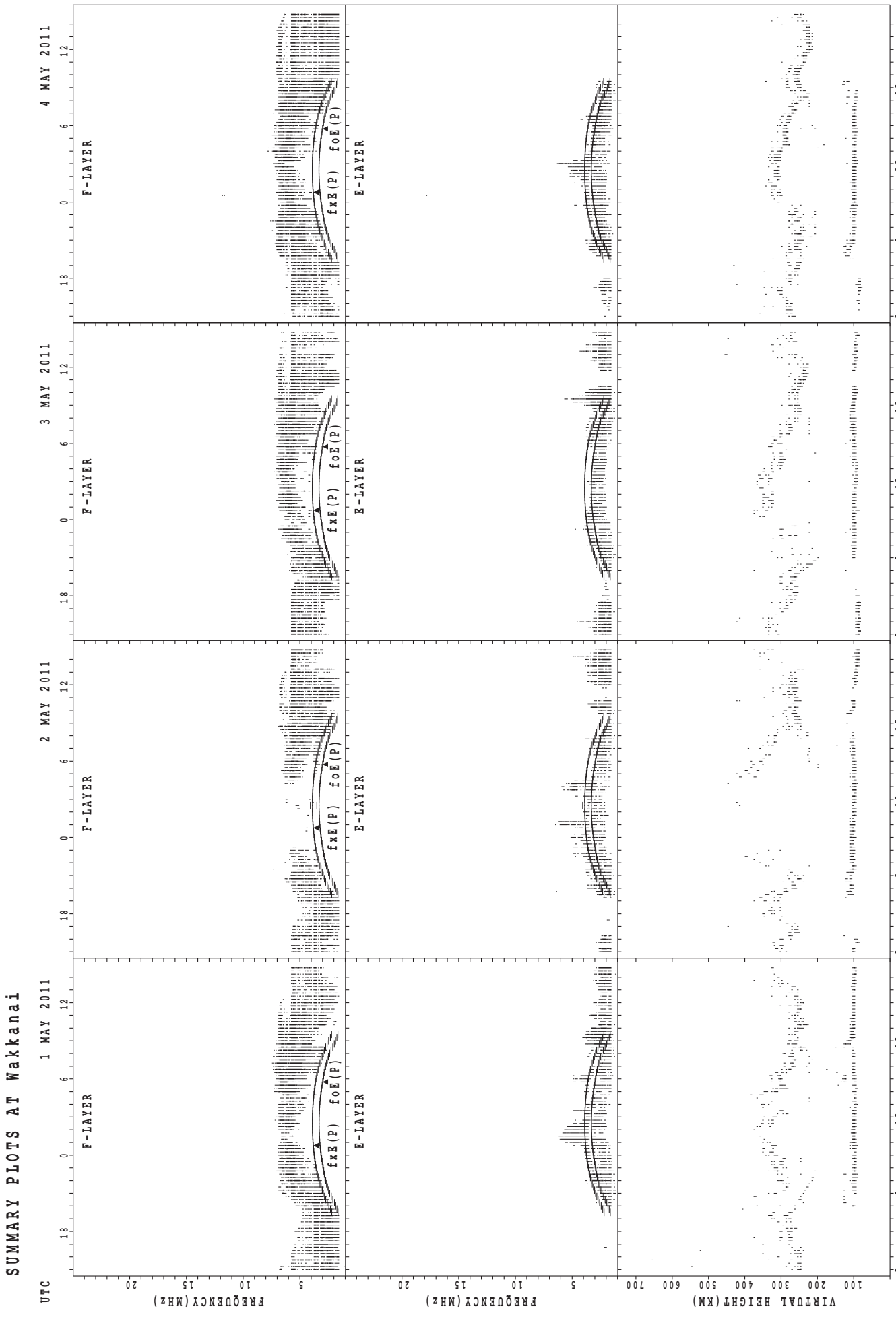
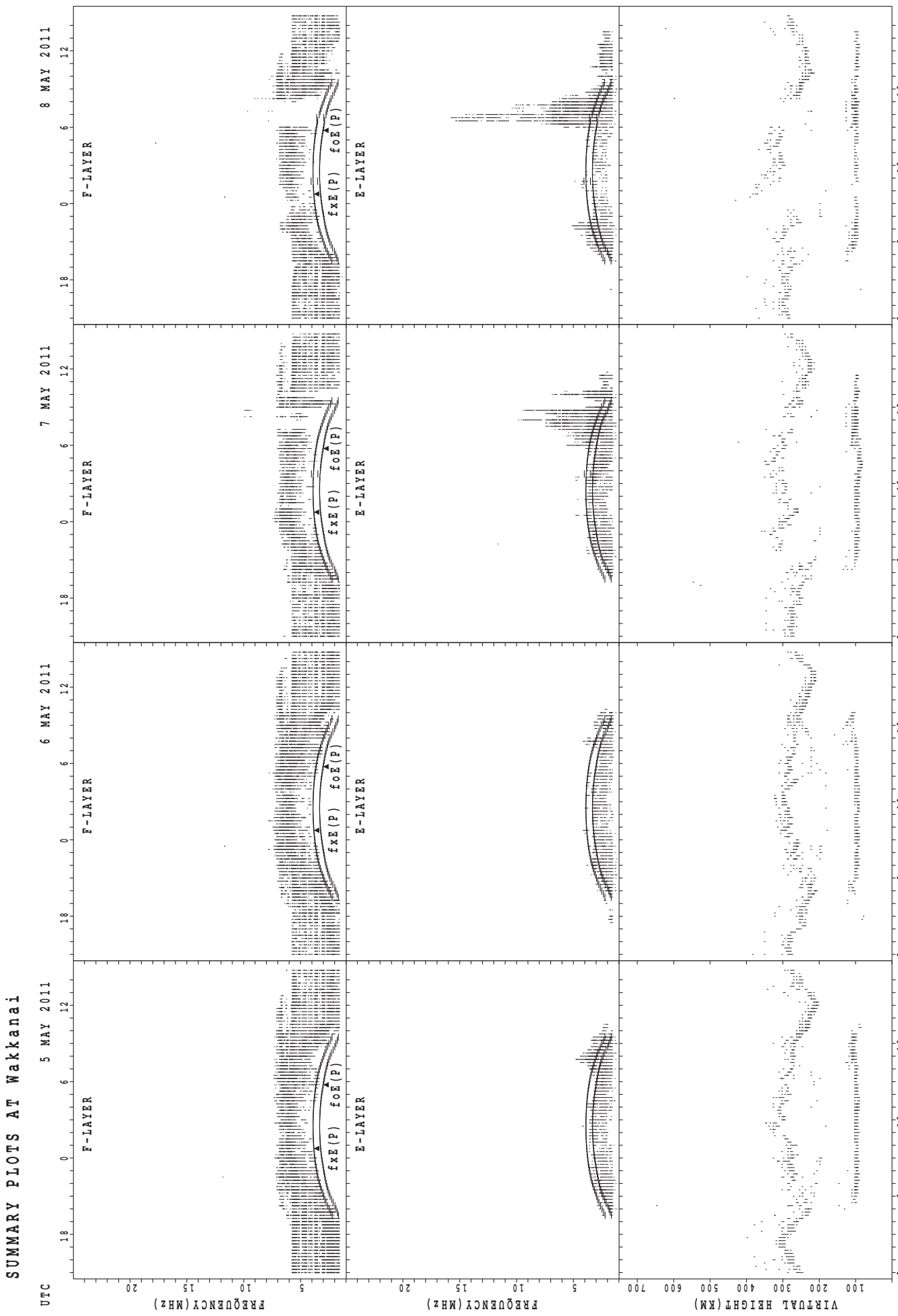
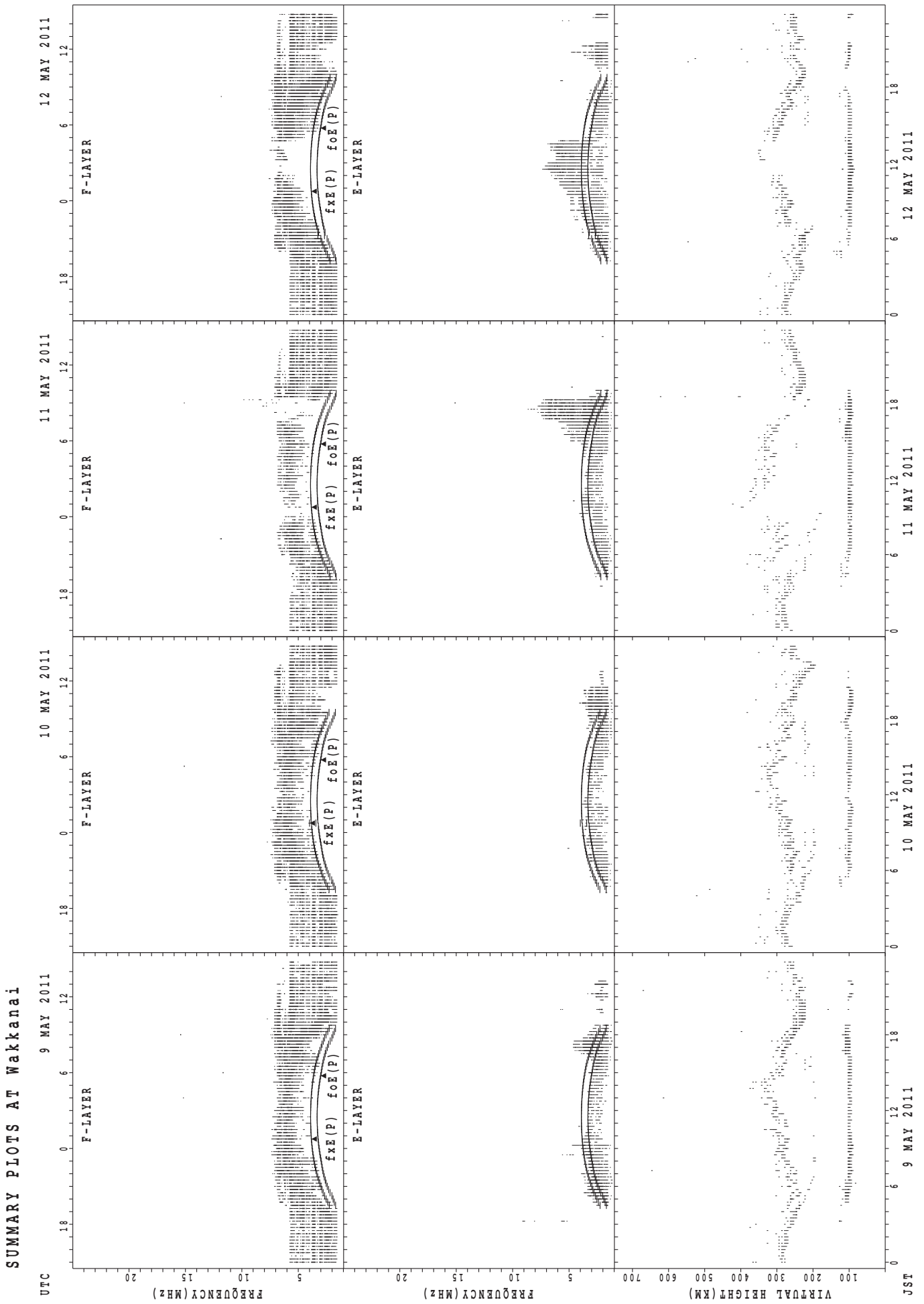
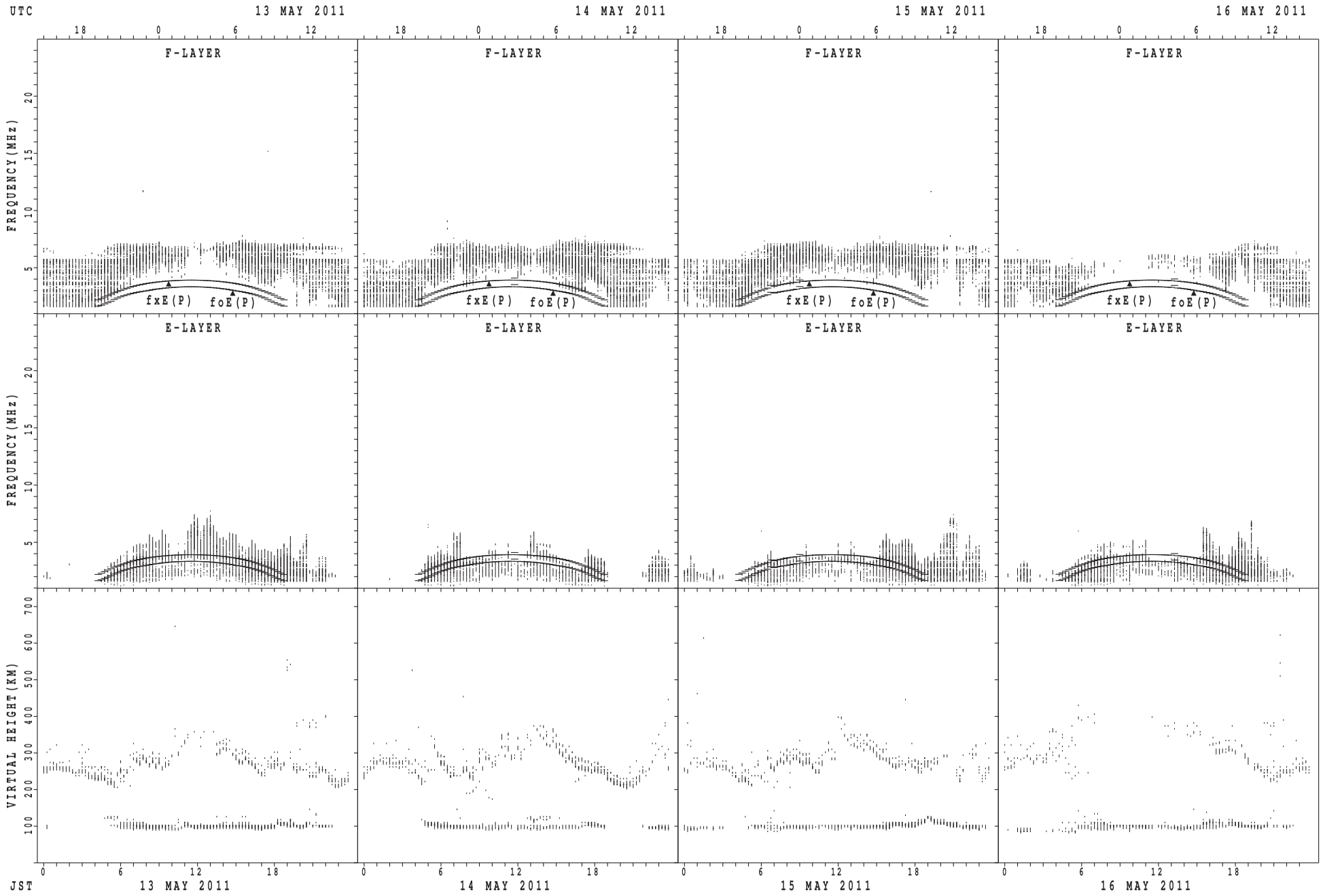
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	27	29	31	30	30	31	31	30	31	31	29	30	30	31	31	31	31	31	31	31	31	29	30
MED	16	16	16	17	18	16	16	17	22	29	35	38	39	48	53	45	35	28	18	15	16	16	16	16
U Q	20	21	20	21	22	18	22	22	28	32	40	47	55	56	56	53	44	29	22	18	20	17	23	20
L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


SUMMARY PLOTS AT Wakkanai
UTC
JST
1 MAY 2011
2 MAY 2011
3 MAY 2011
4 MAY 2011
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

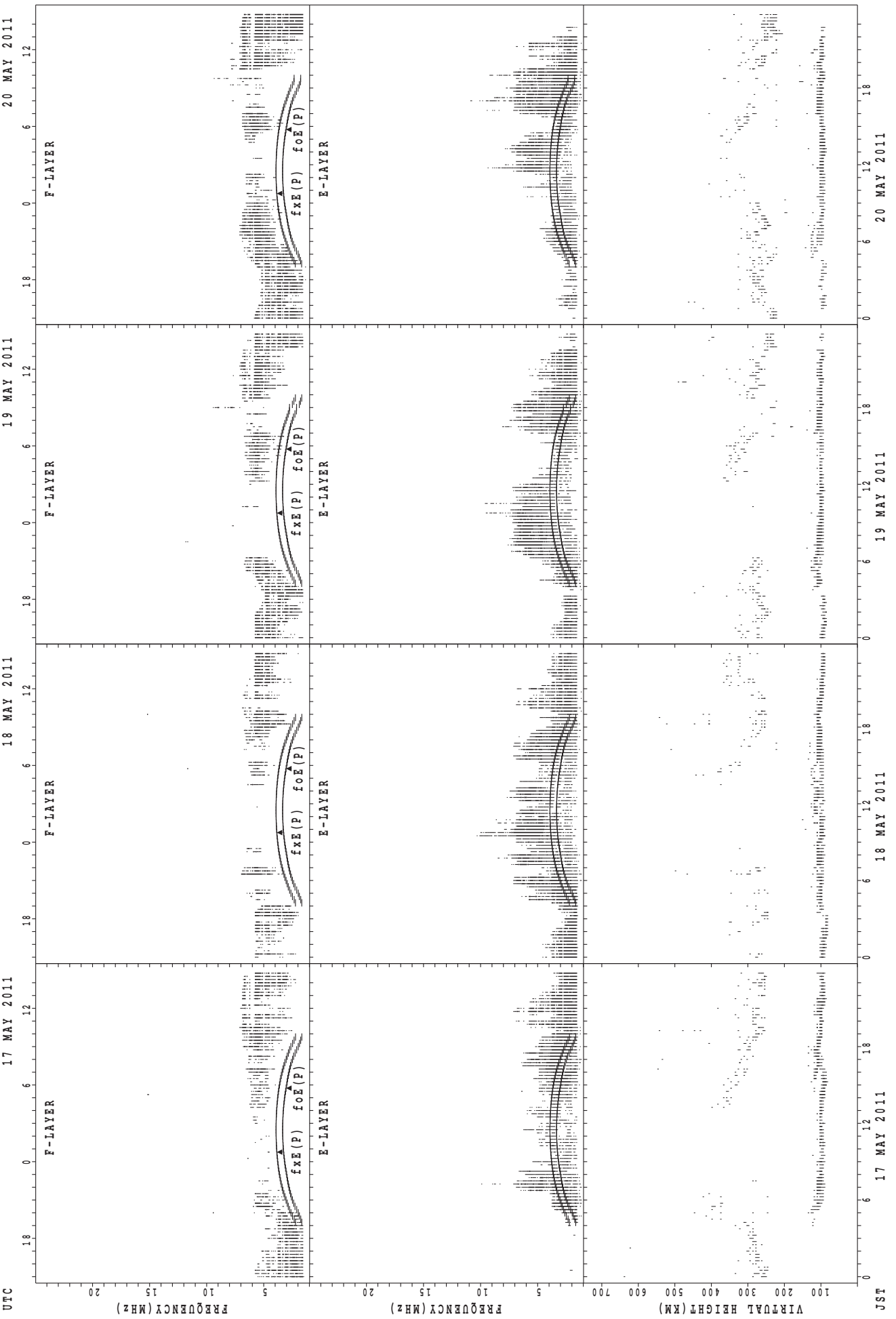

SUMMARY PLOTS AT Wakkanai
UTC
JST
5 MAY 2011
6 MAY 2011
7 MAY 2011
8 MAY 2011
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

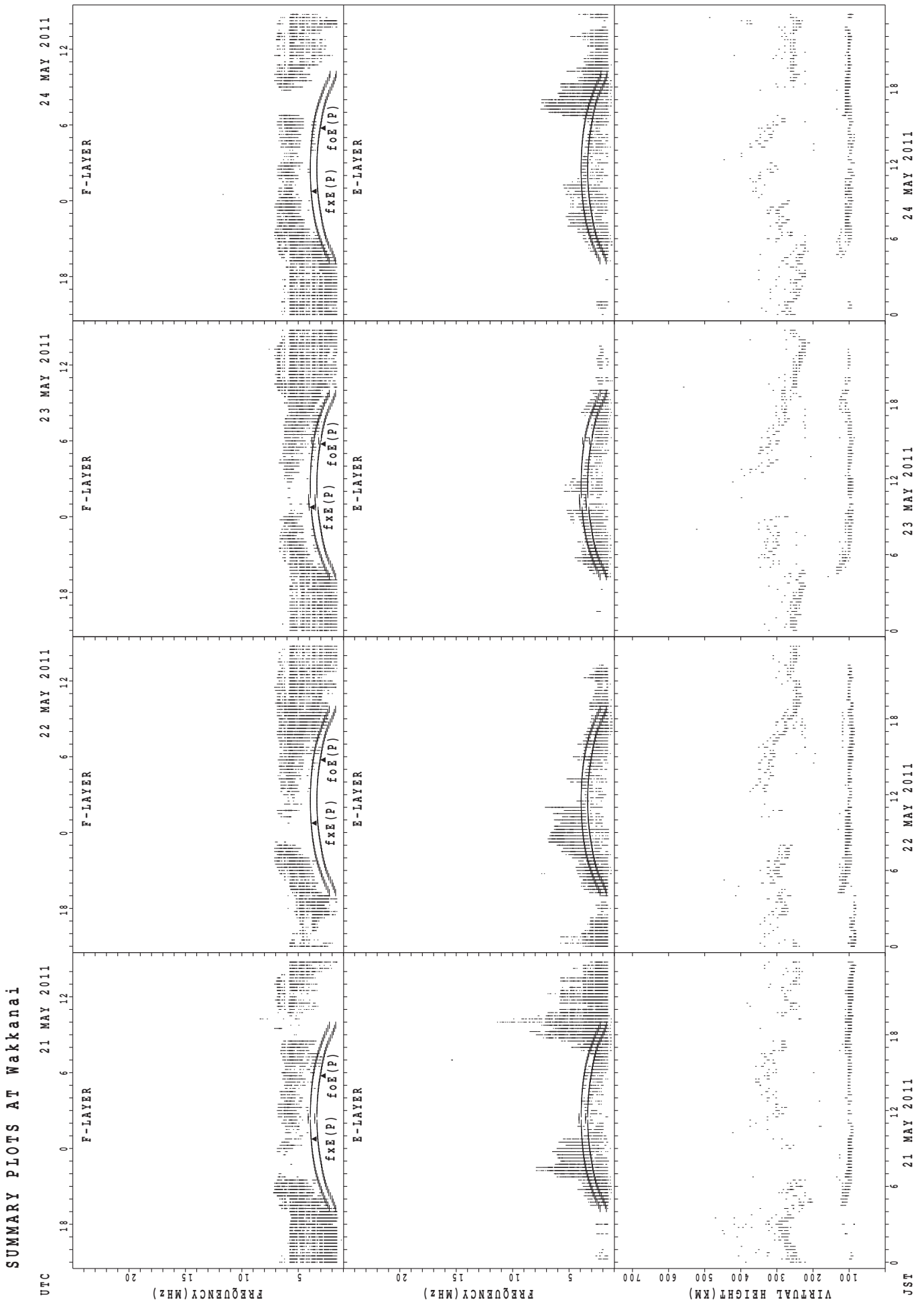

SUMMARY PLOTS AT Wakkanai
UTC
JST
9 MAY 2011
10 MAY 2011
11 MAY 2011
12 MAY 2011
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

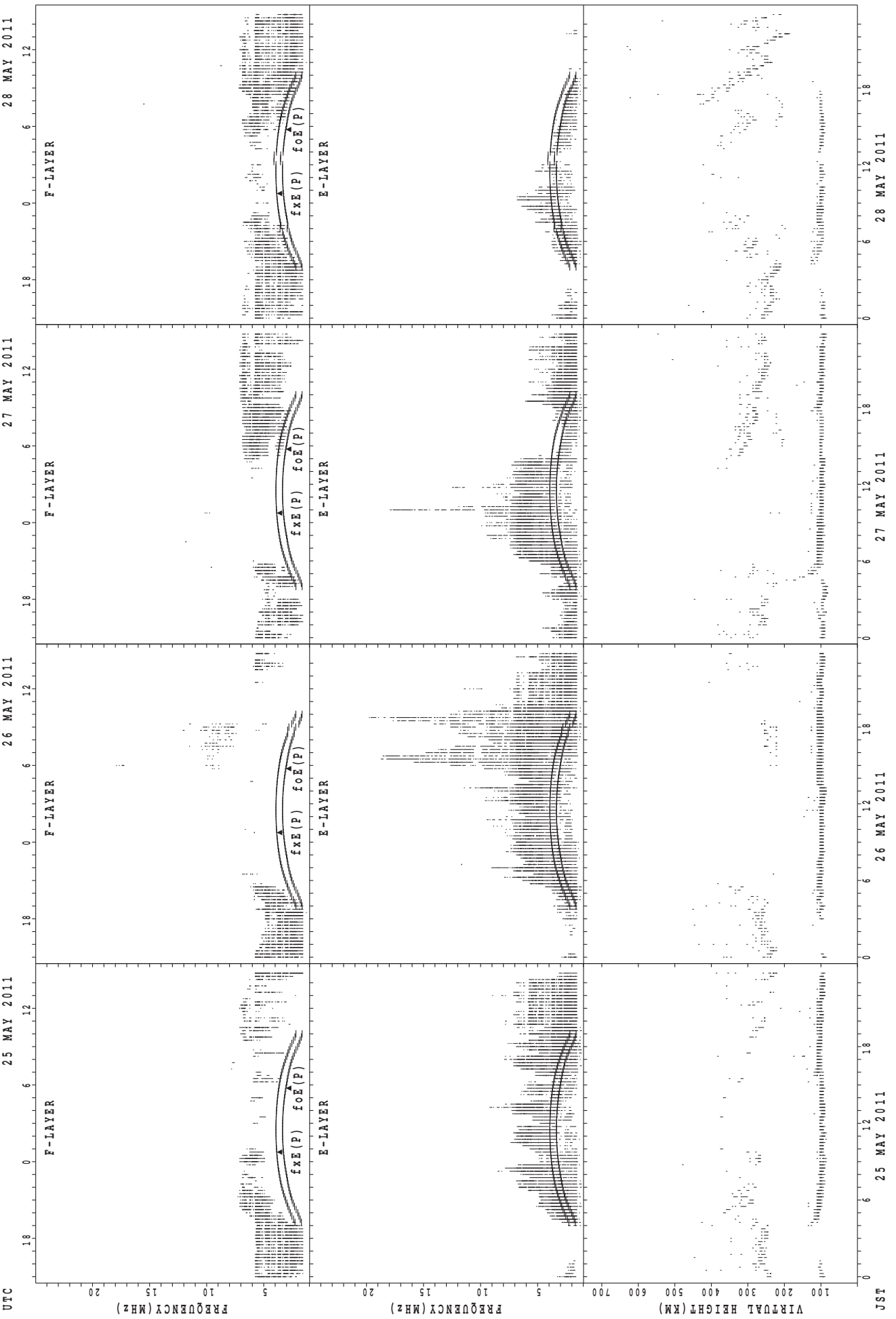
SUMMARY PLOTS AT Wakkanai

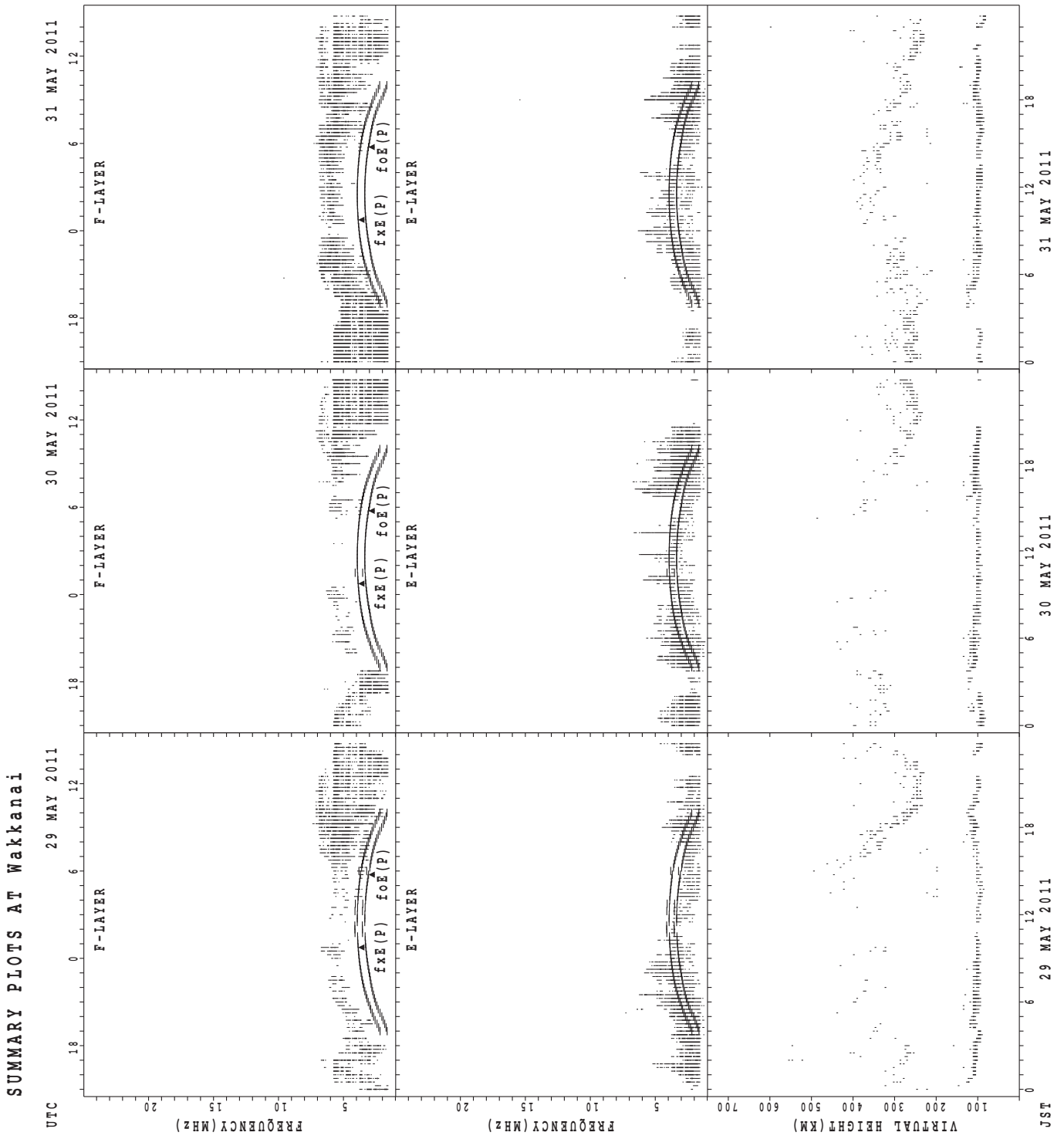


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

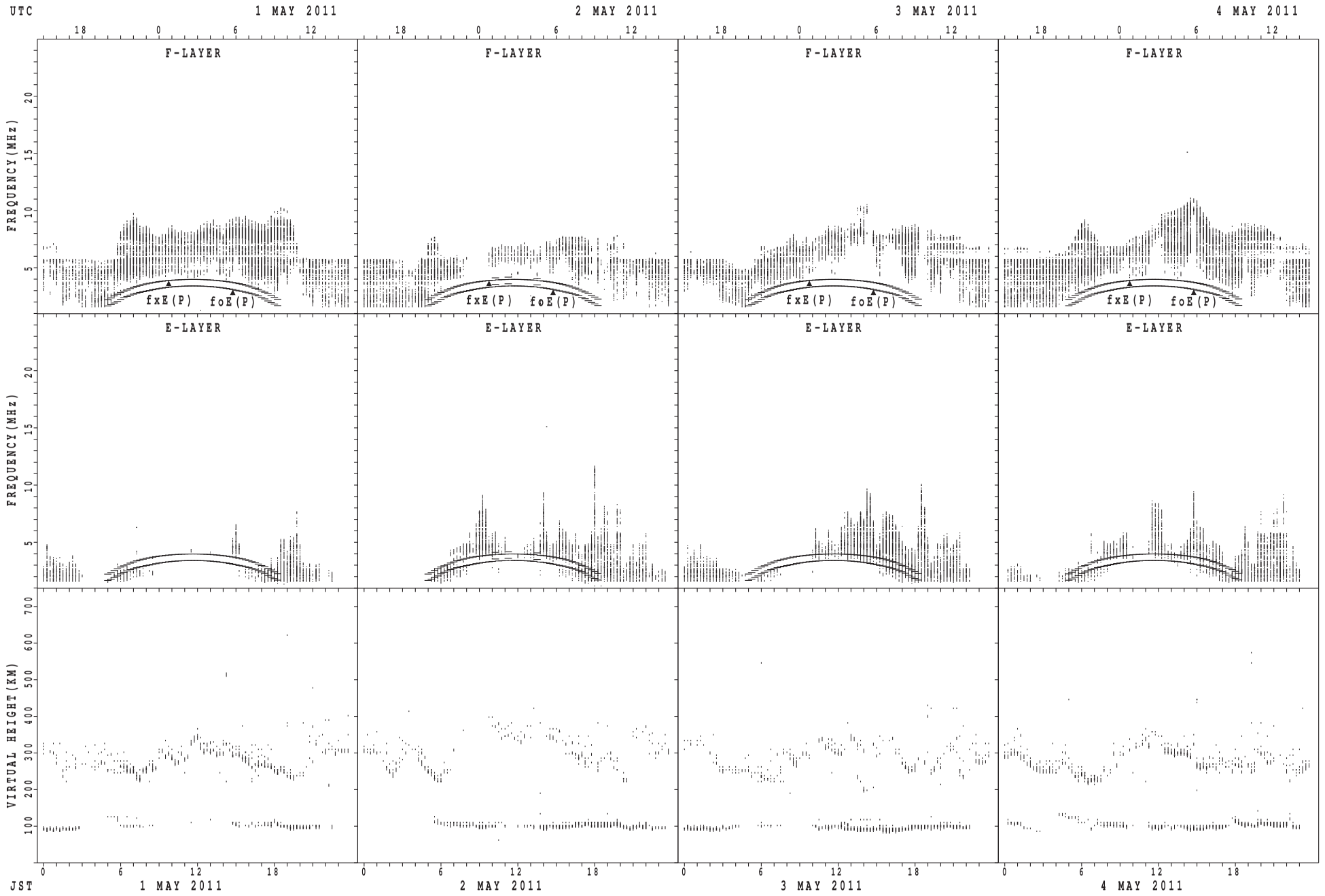

SUMMARY PLOTS AT Wakkanai
UTC
JST
17 MAY 2011
18 MAY 2011
19 MAY 2011
20 MAY 2011
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Wakkanai
UTC
JST
21 MAY 2011
22 MAY 2011
23 MAY 2011
24 MAY 2011
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

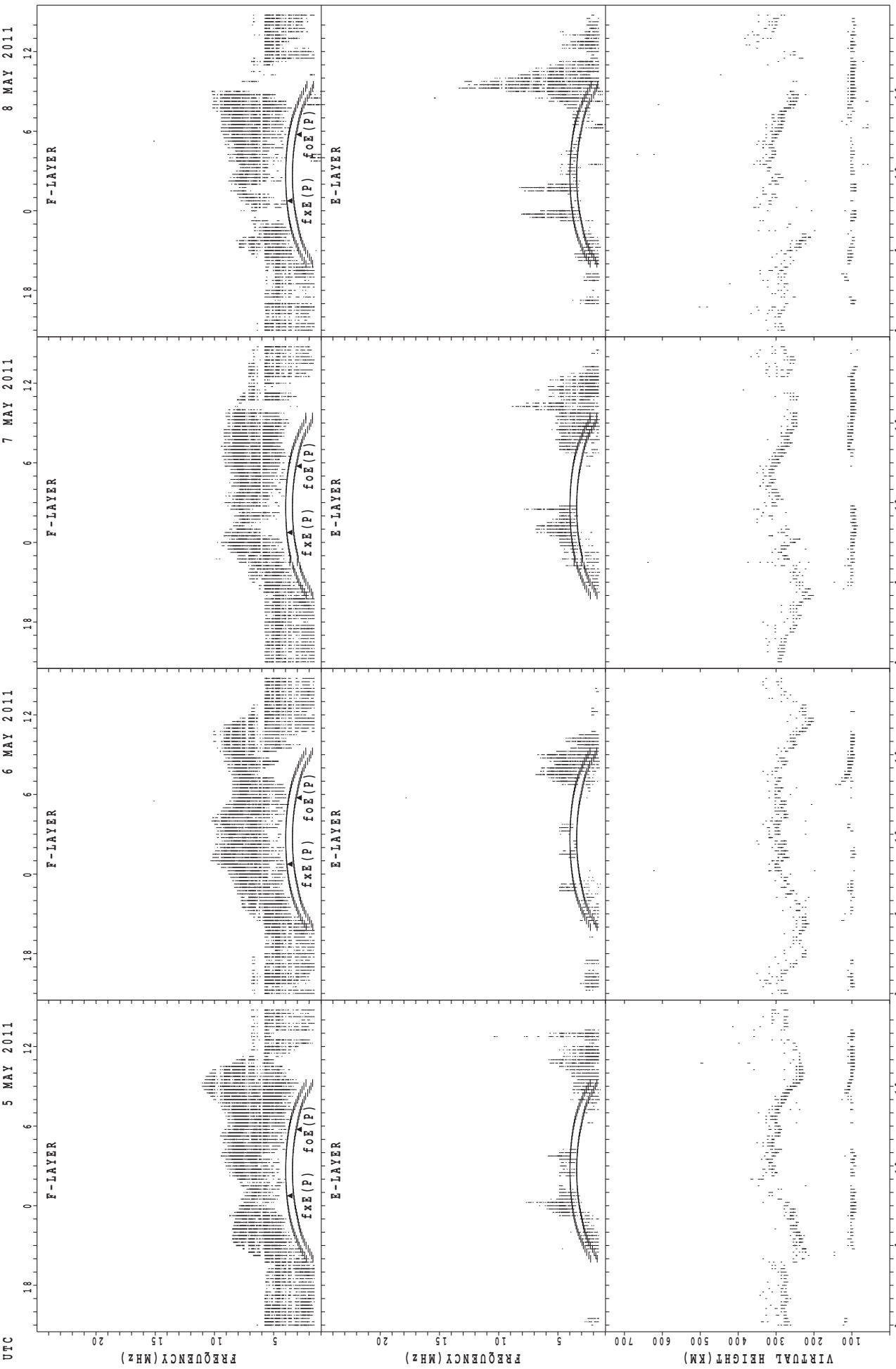

SUMMARY PLOTS AT Wakkanai
UTC
JST
25 MAY 2011
26 MAY 2011
27 MAY 2011
28 MAY 2011
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Wakkanai
UTC
JST
29 MAY 2011
30 MAY 2011
31 MAY 2011
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

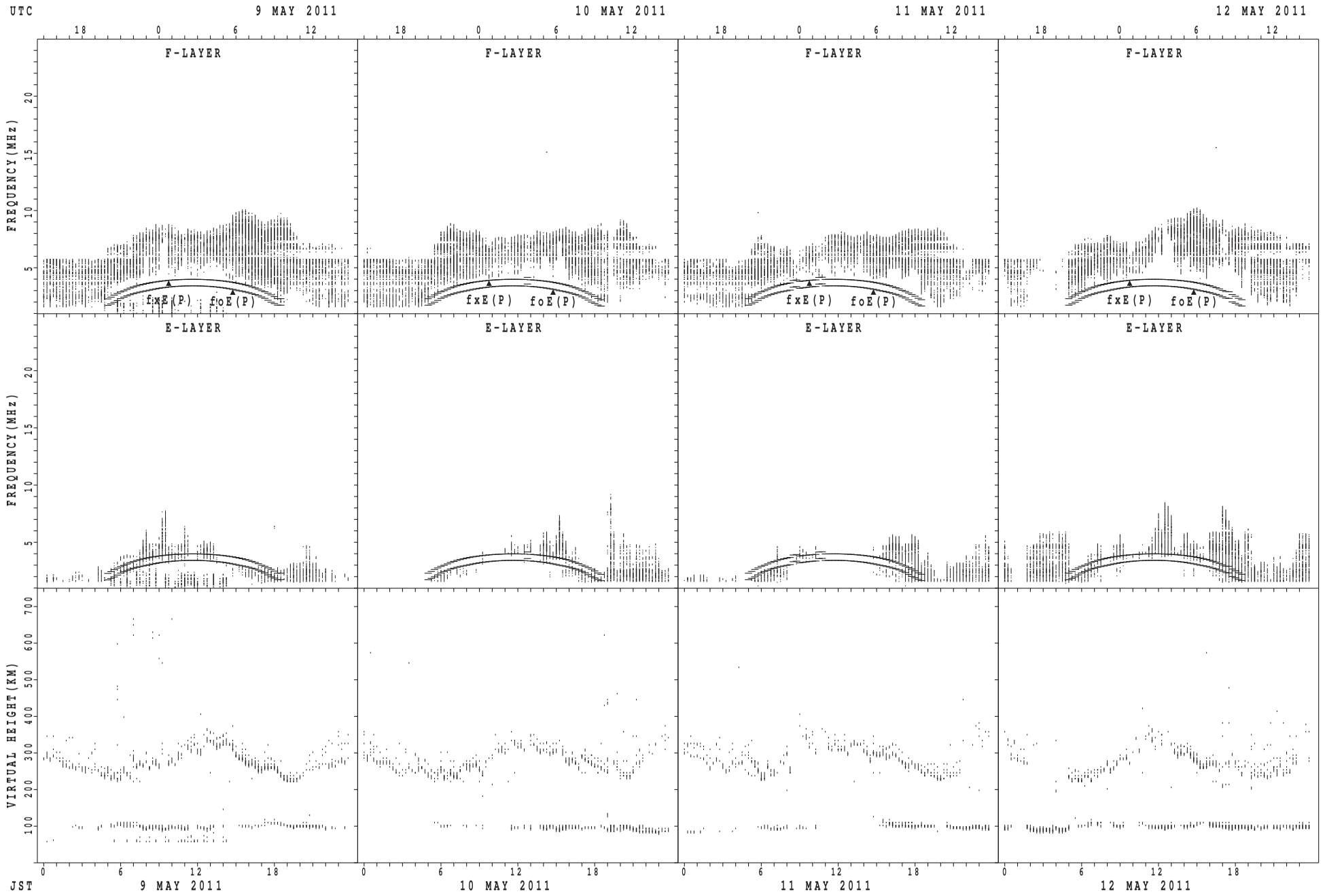
SUMMARY PLOTS AT Kokubunji



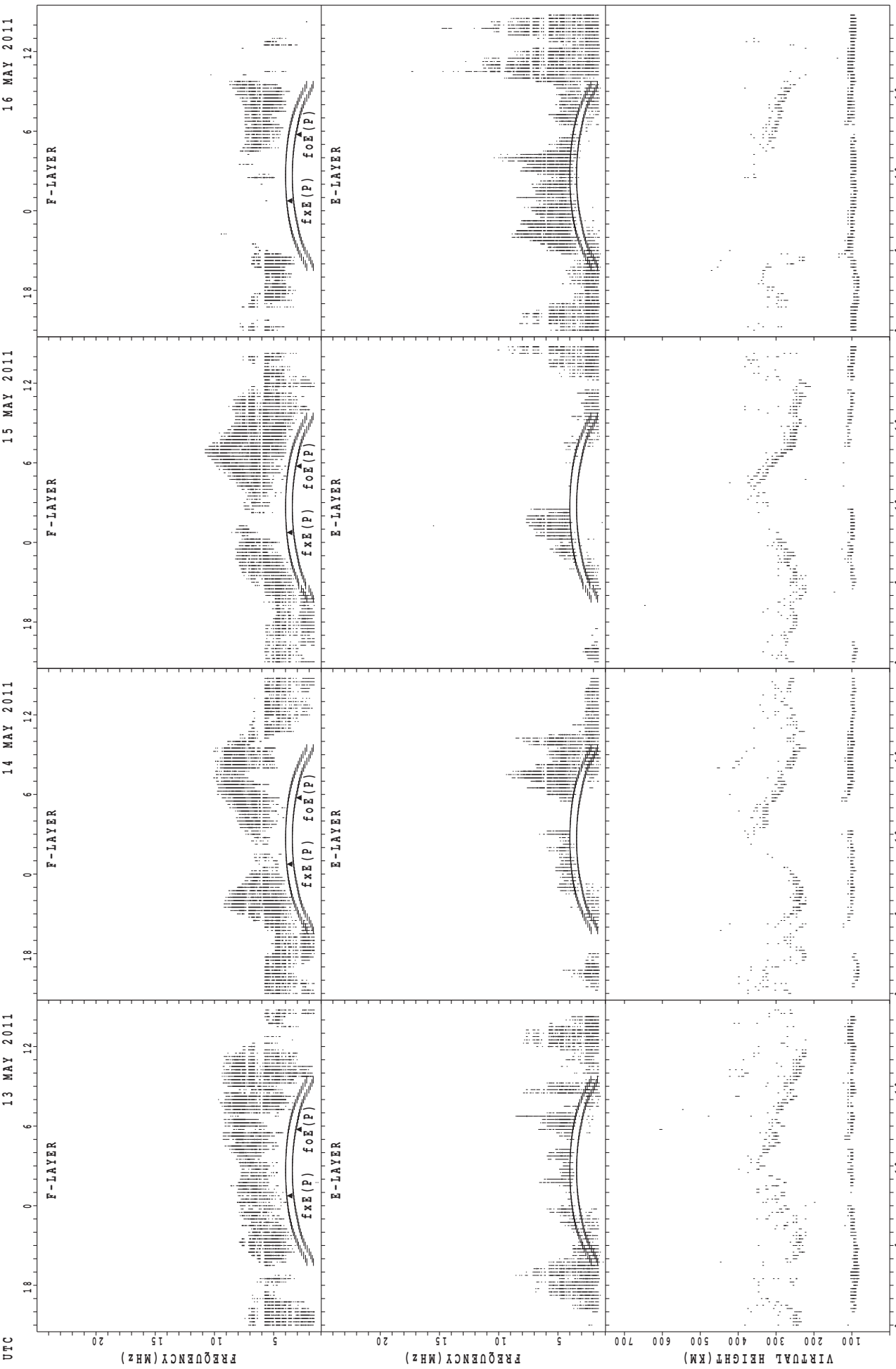
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

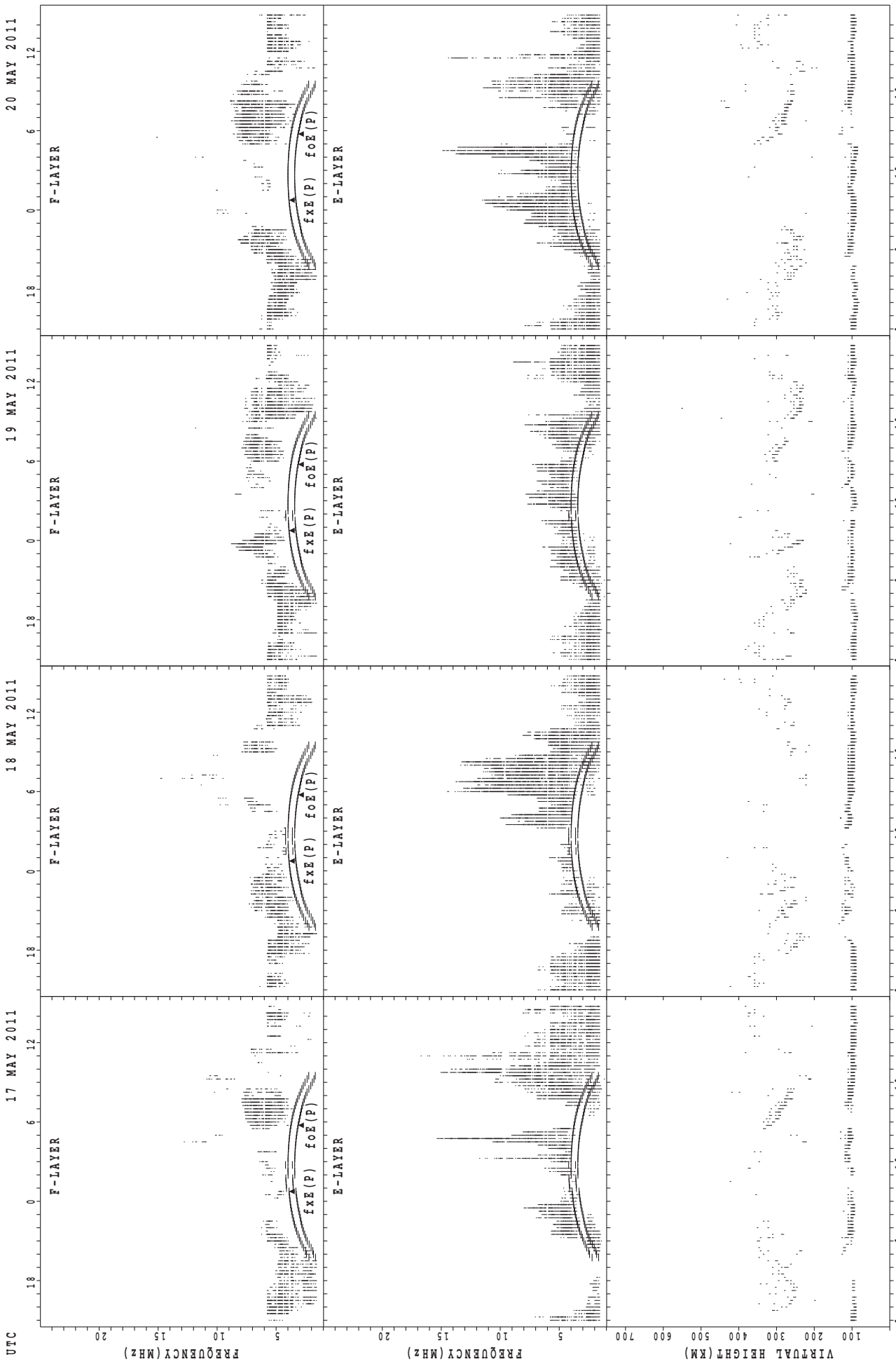

SUMMARY PLOTS AT Kokubunji
UTC
JST
5 MAY 2011
6 MAY 2011
7 MAY 2011
8 MAY 2011
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

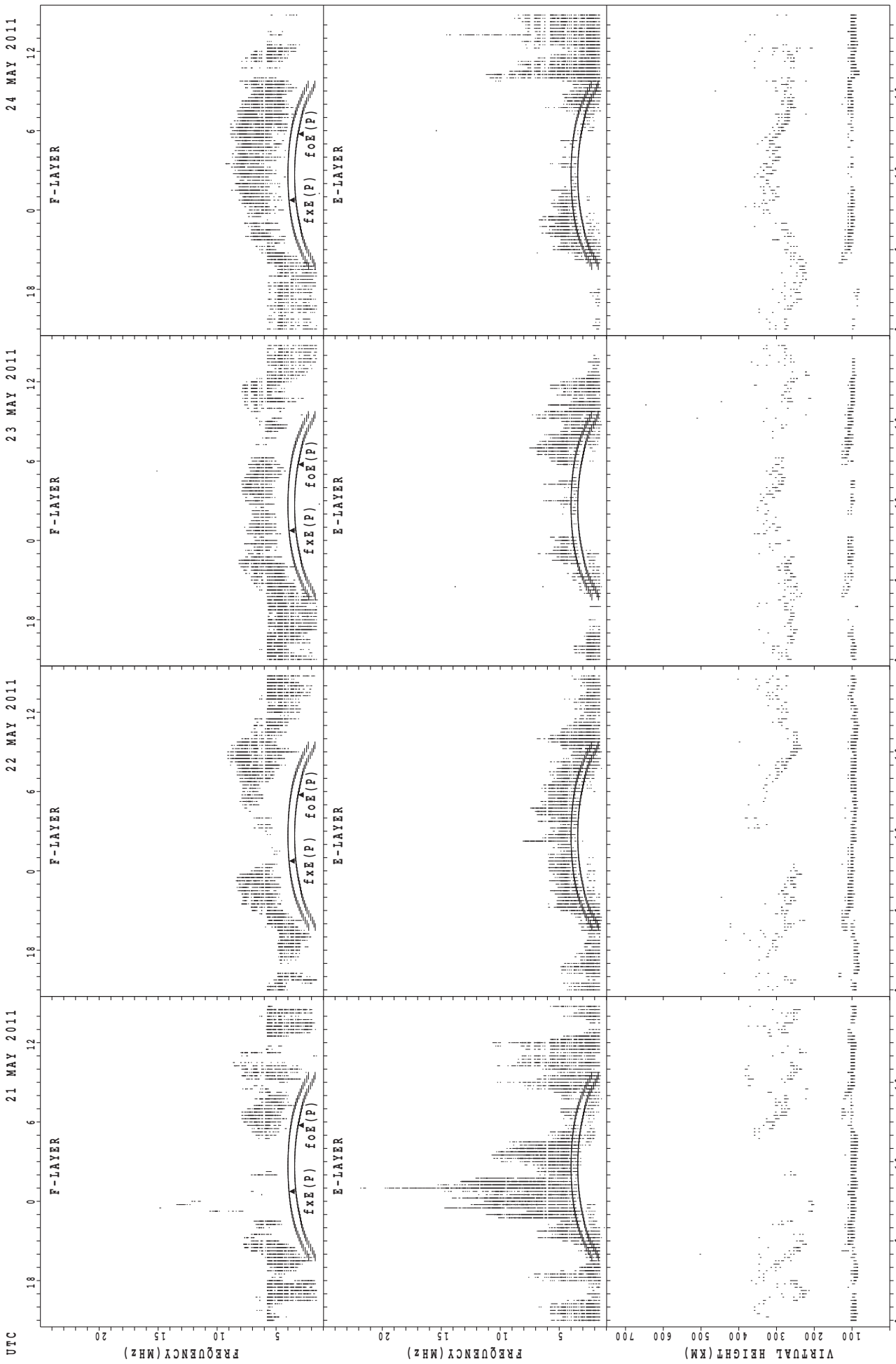
SUMMARY PLOTS AT Kokubunji

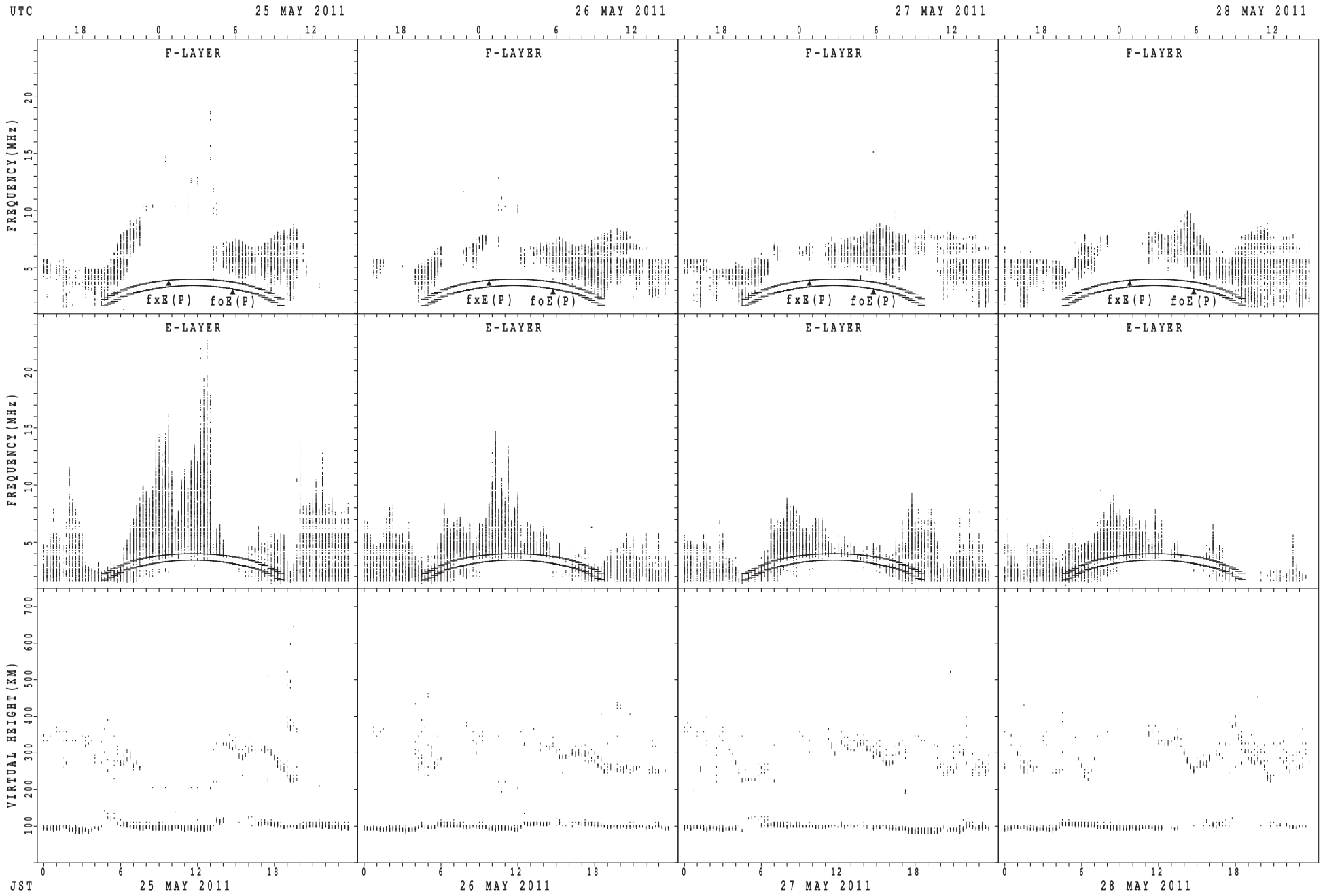


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

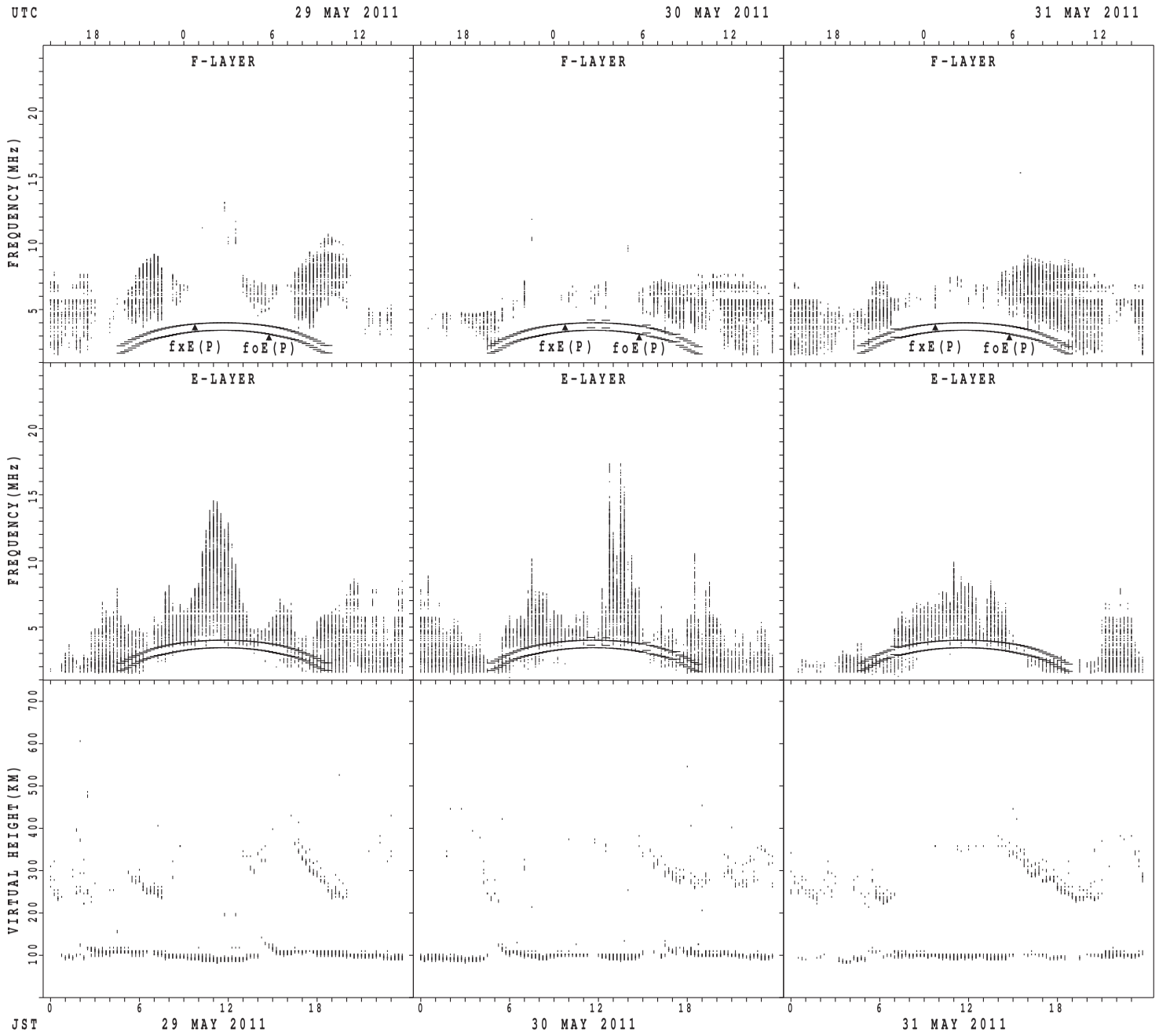

SUMMARY PLOTS AT Kokubunji
UTC
JST
13 MAY 2011
14 MAY 2011
15 MAY 2011
16 MAY 2011
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Kokubunji
UTC
JST
17 MAY 2011
18 MAY 2011
19 MAY 2011
20 MAY 2011
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Kokubunji
UTC
JST
21 MAY 2011
22 MAY 2011
23 MAY 2011
24 MAY 2011
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

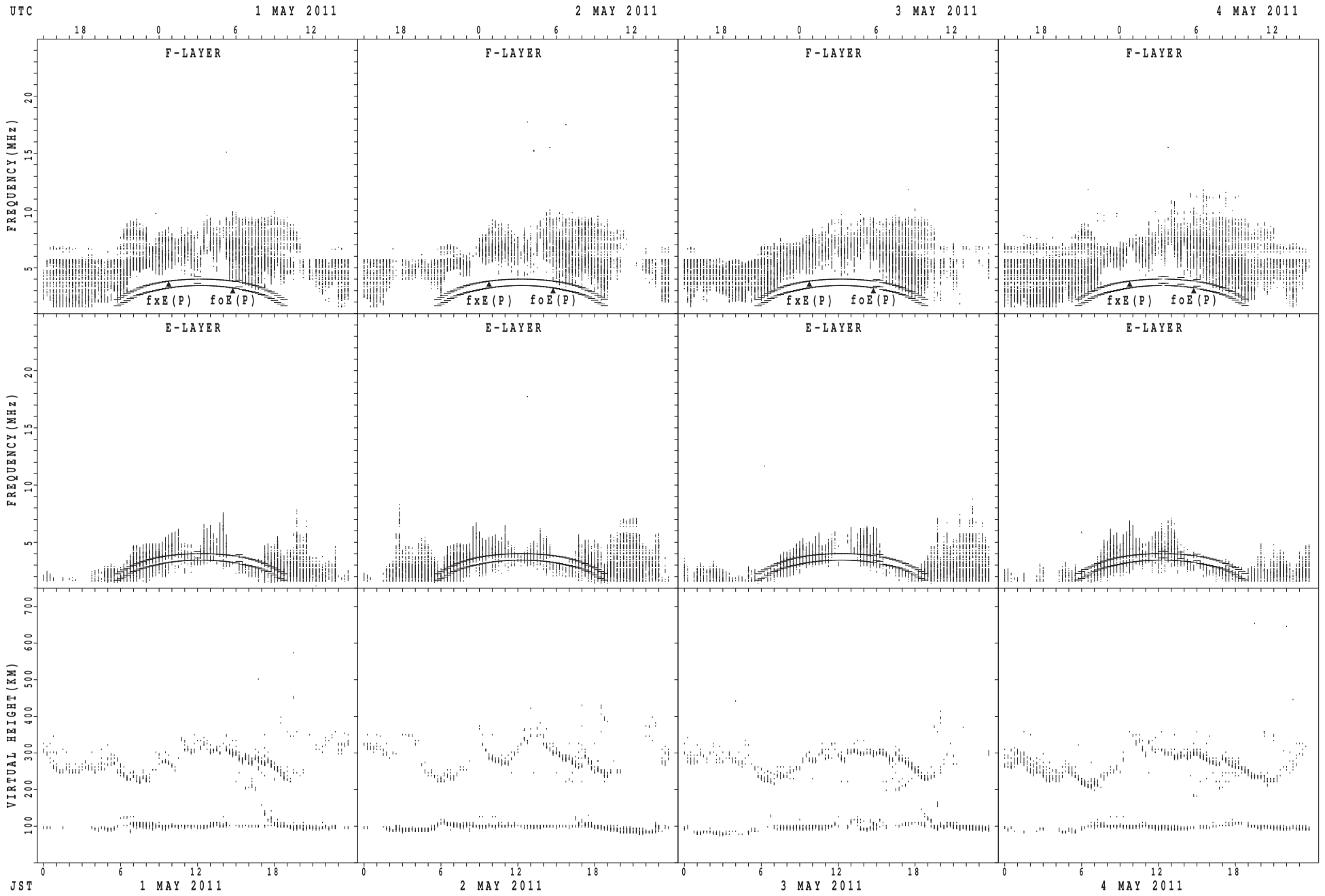

SUMMARY PLOTS AT Kokubunji
UTC
25 MAY 2011
26 MAY 2011
27 MAY 2011
28 MAY 2011
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
JST
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji

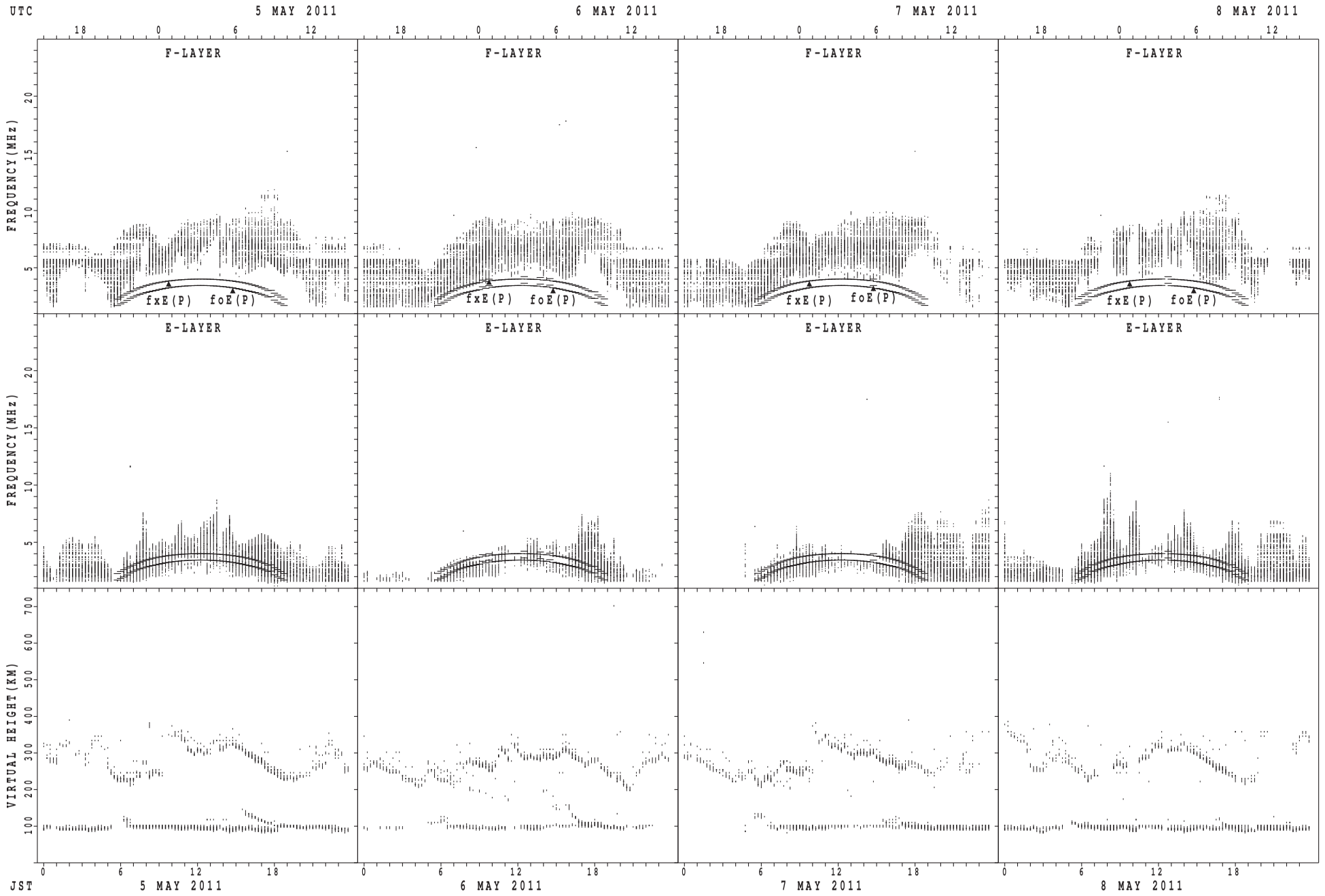


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

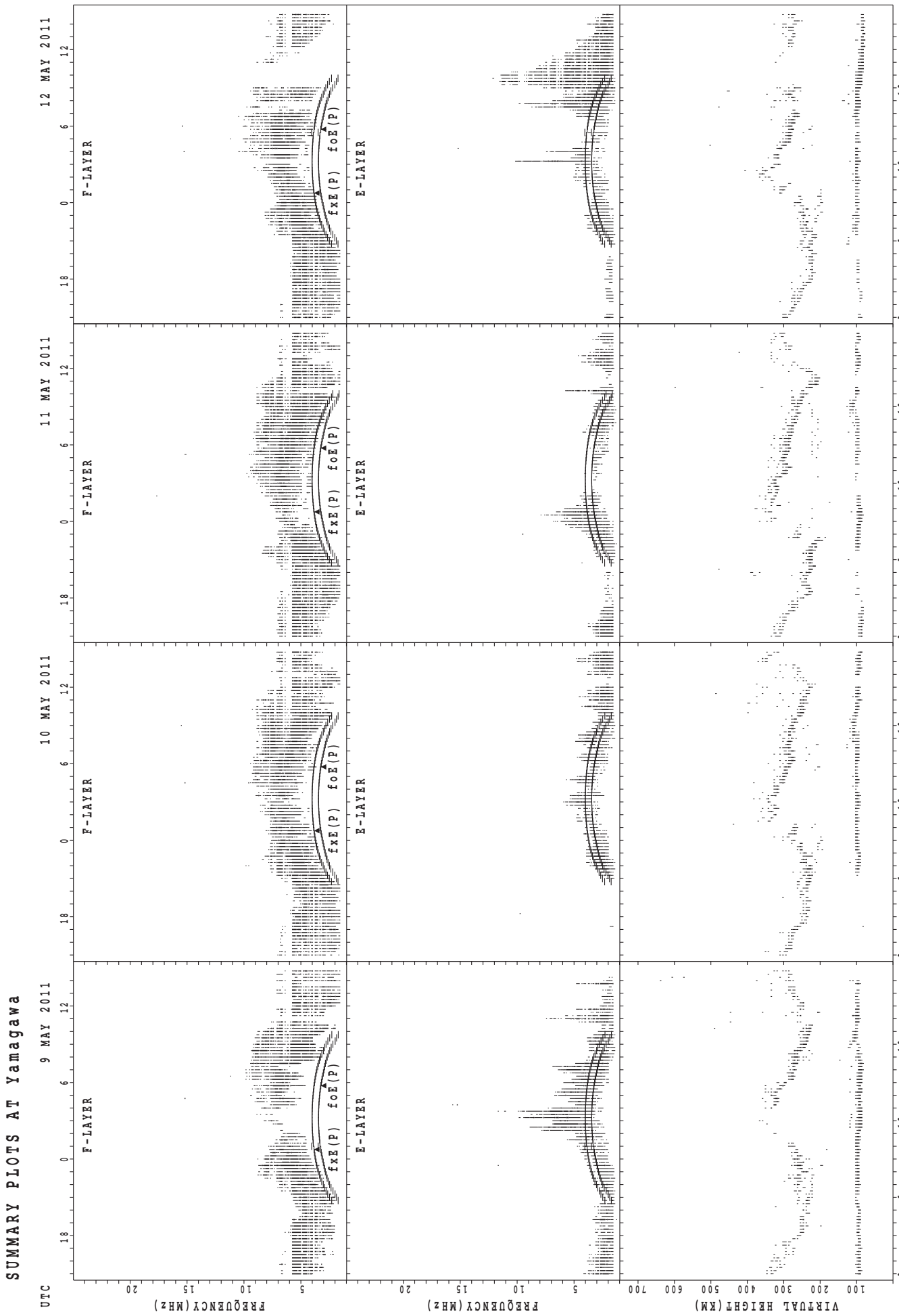
SUMMARY PLOTS AT Yamagawa



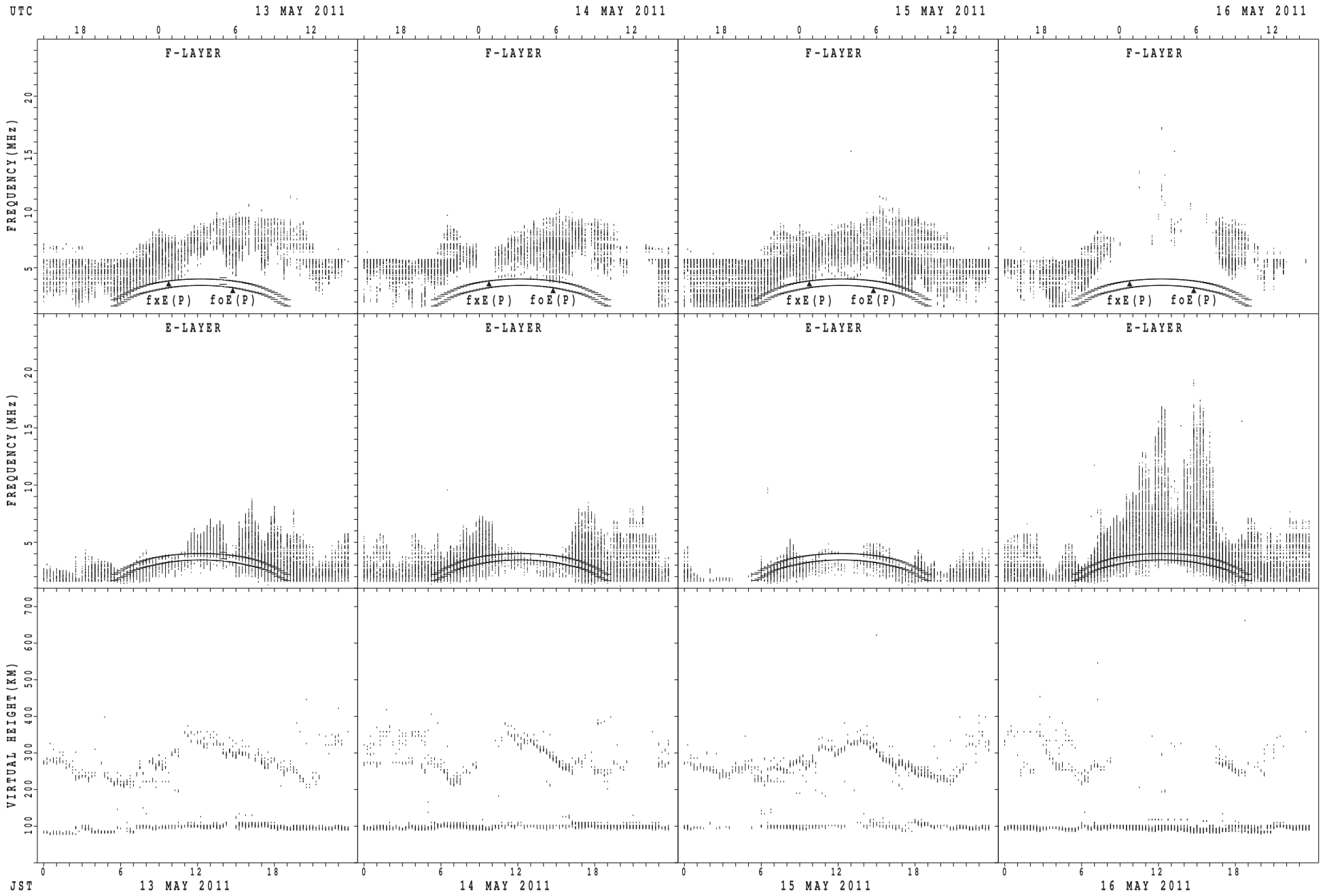
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE



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

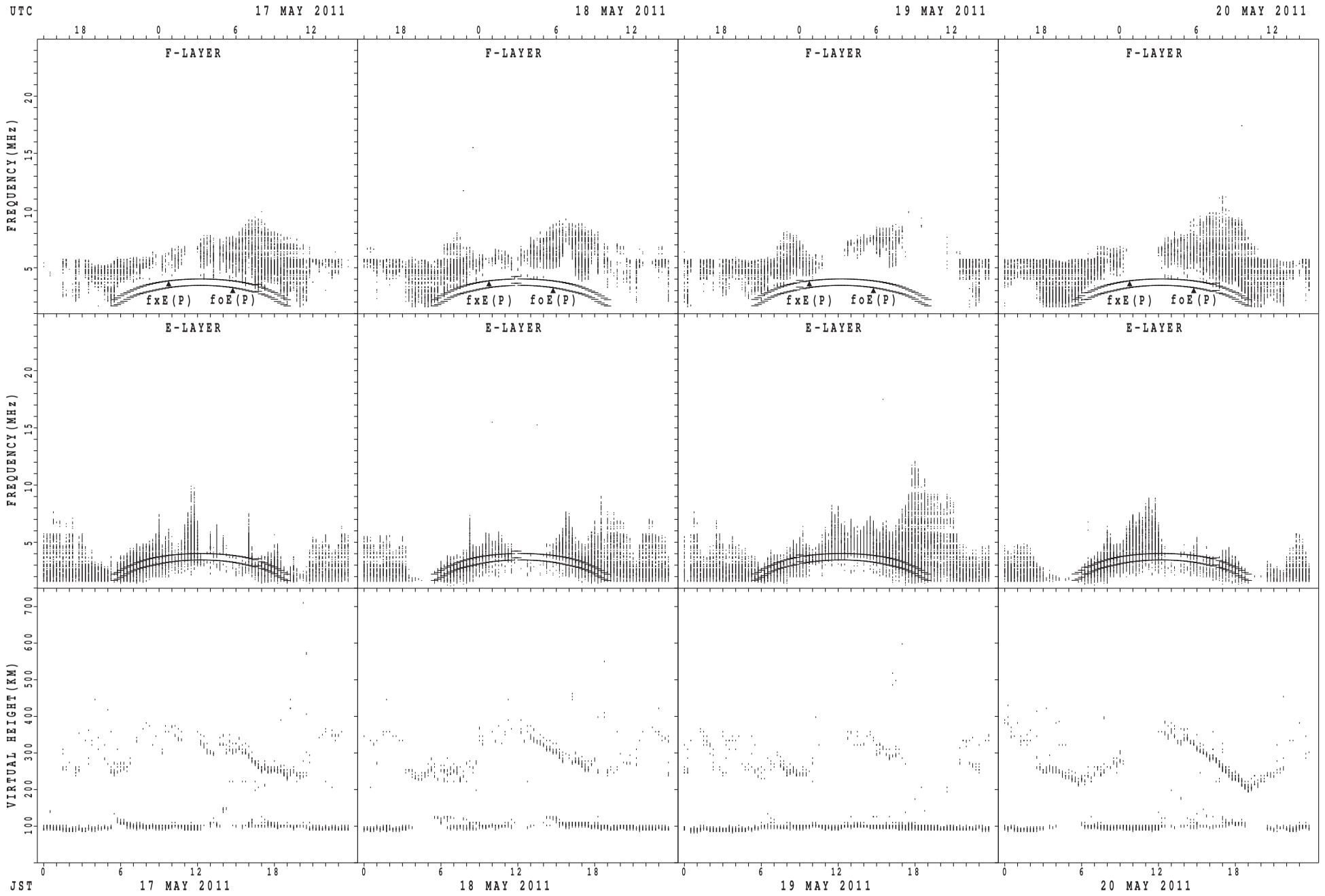

SUMMARY PLOTS AT Yamagawa
UTC
JST
9 MAY 2011
10 MAY 2011
11 MAY 2011
12 MAY 2011
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa

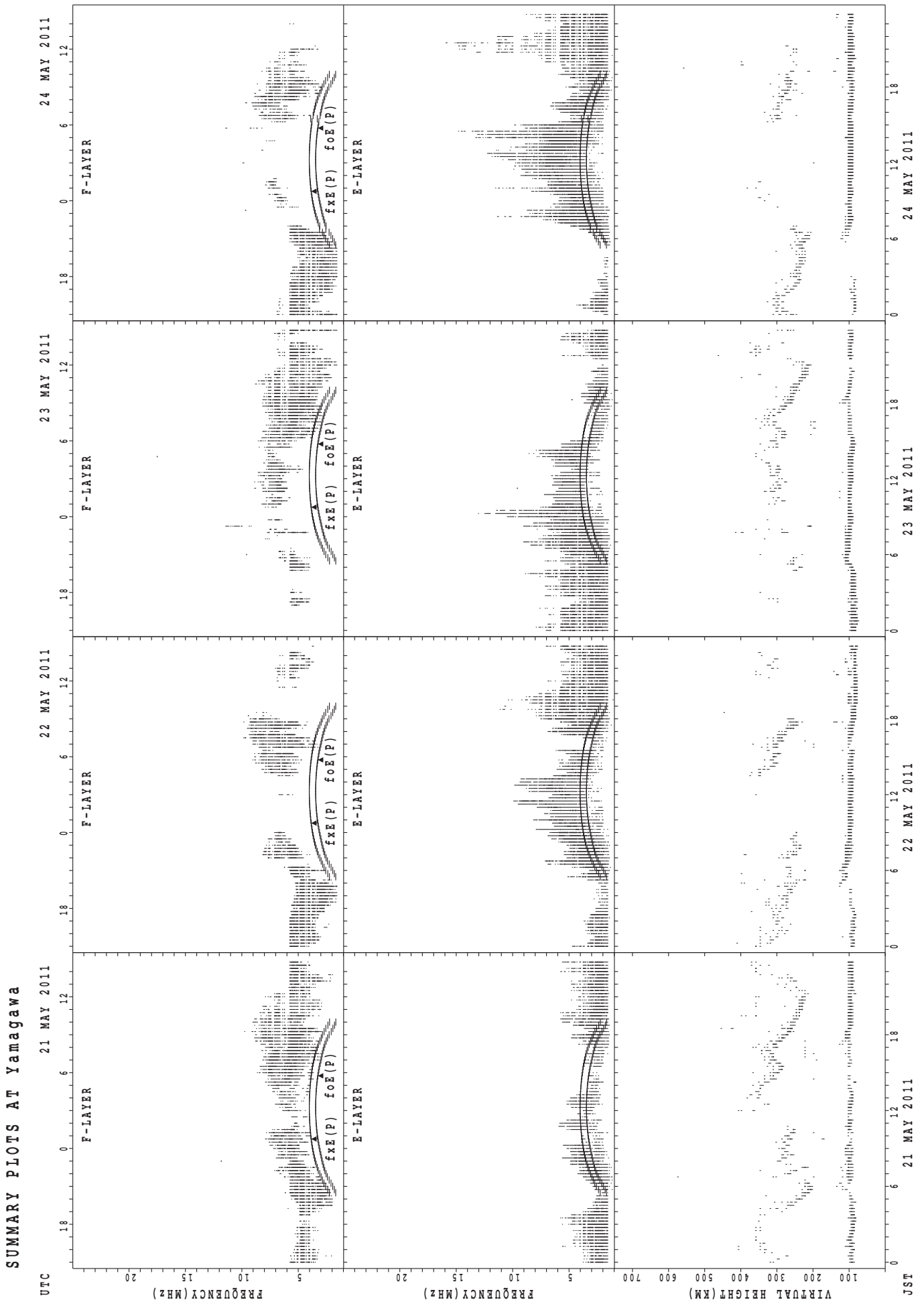


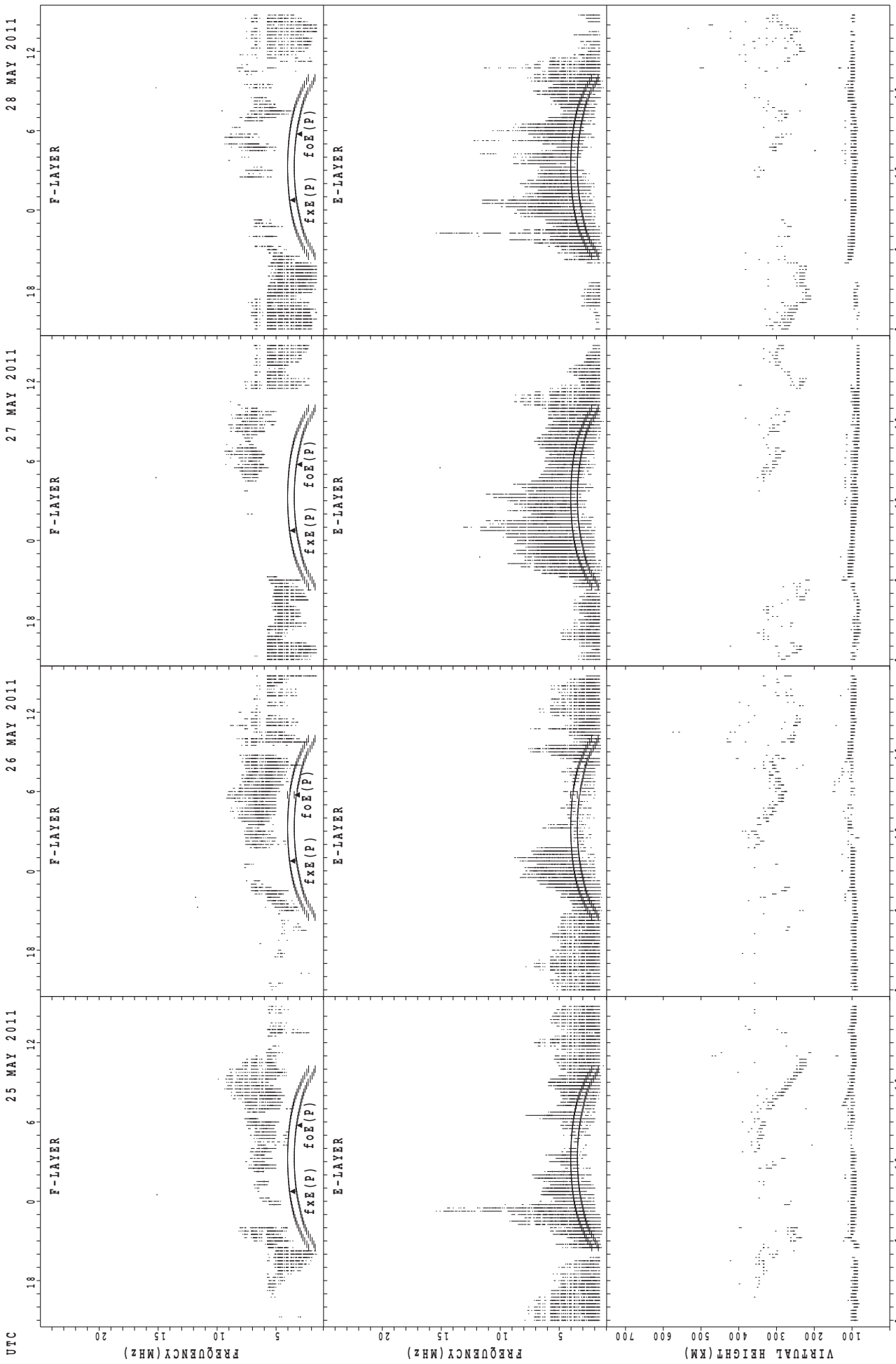
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa

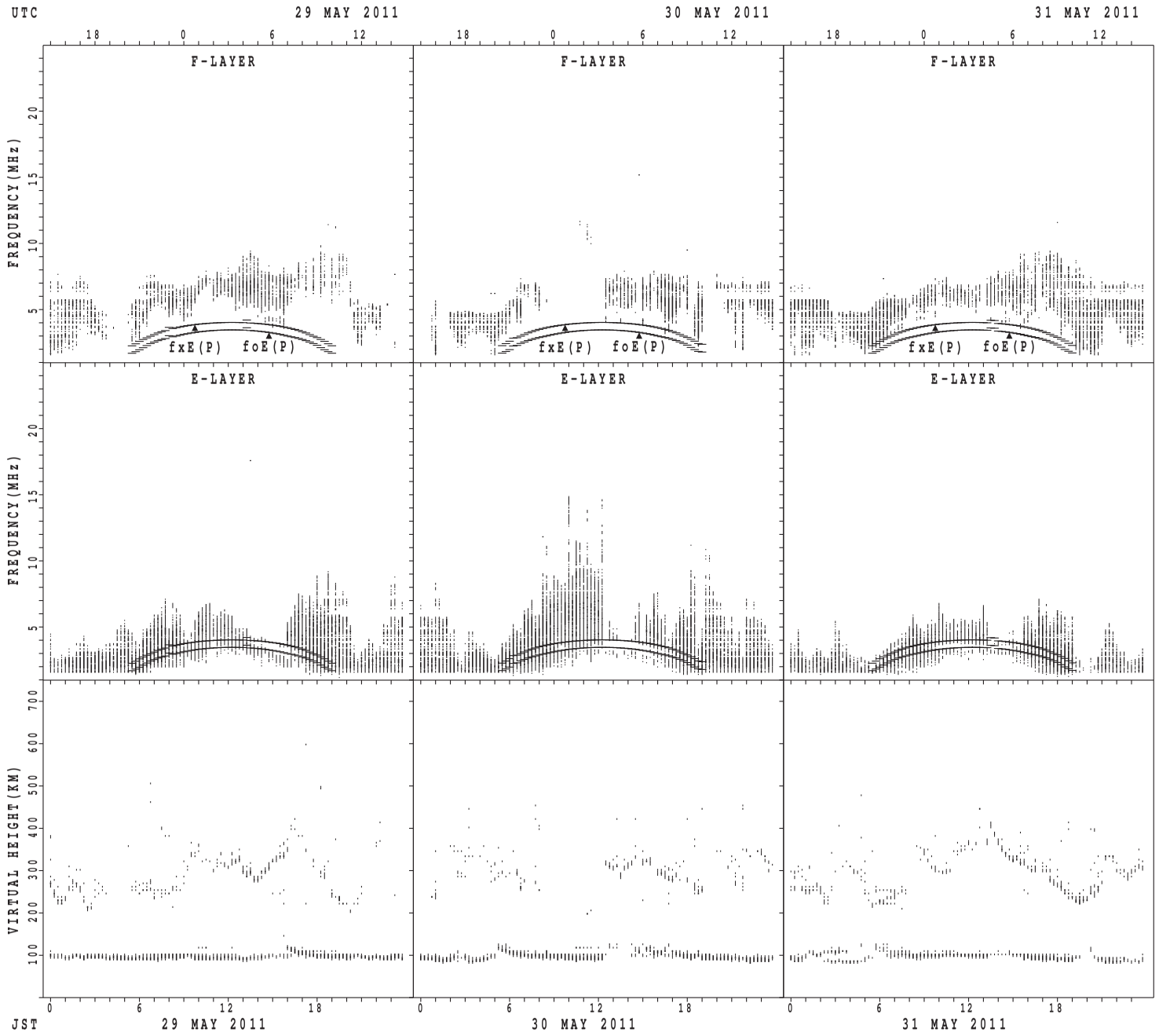


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Yamagawa
UTC
JST
21 MAY 2011
22 MAY 2011
23 MAY 2011
24 MAY 2011
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

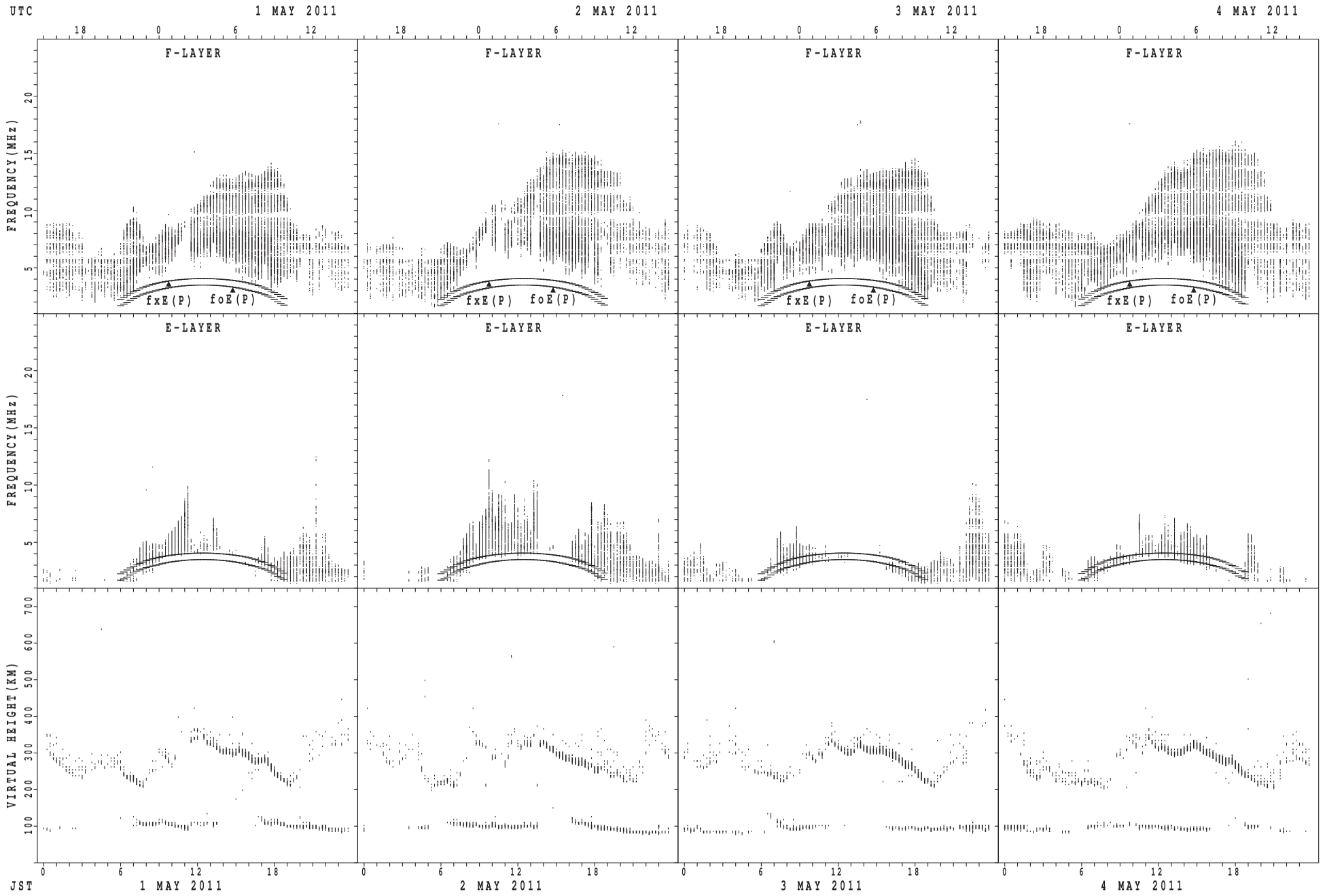

SUMMARY PLOTS AT Yamagawa
UTC
JST
25 MAY 2011
26 MAY 2011
27 MAY 2011
28 MAY 2011
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



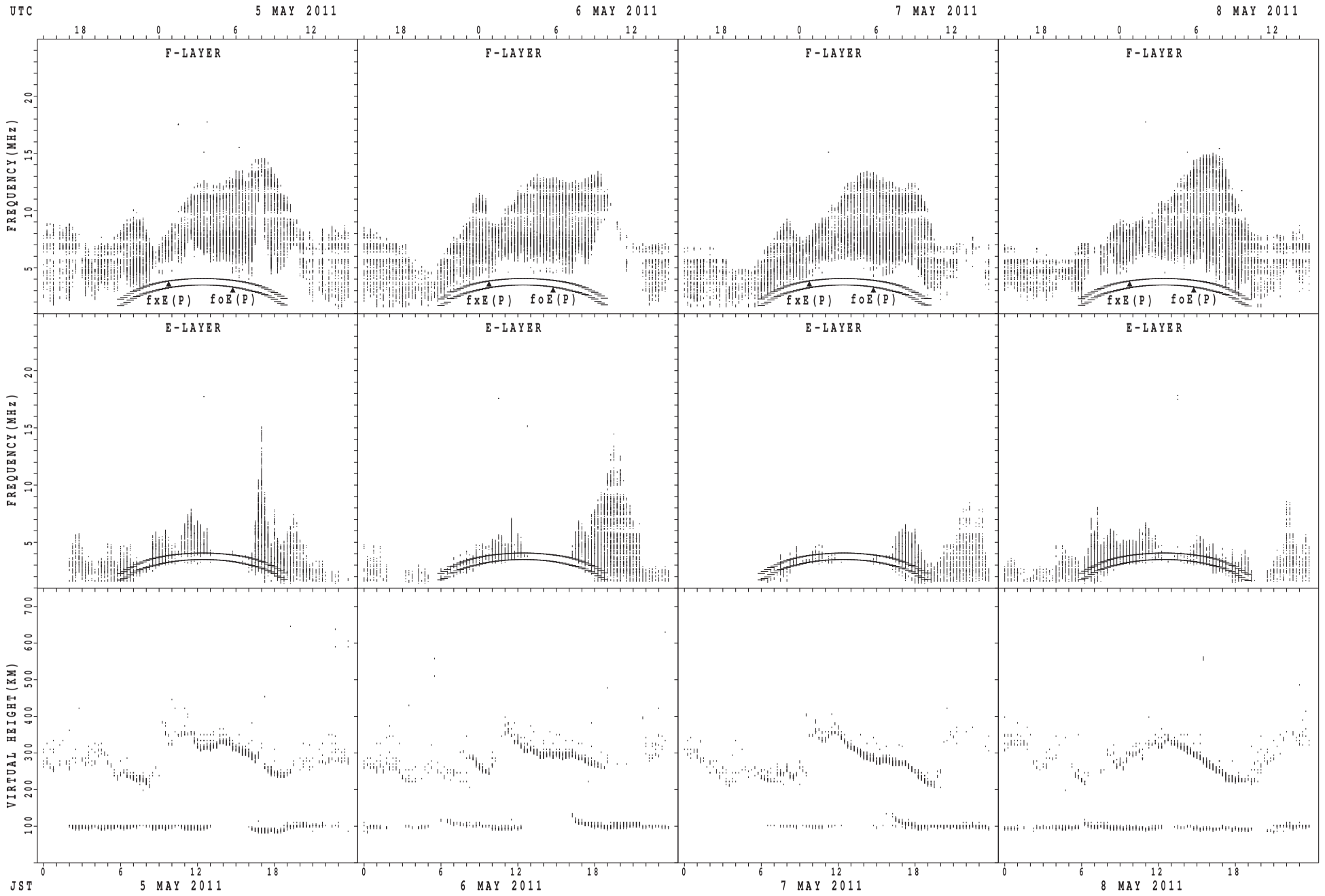
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



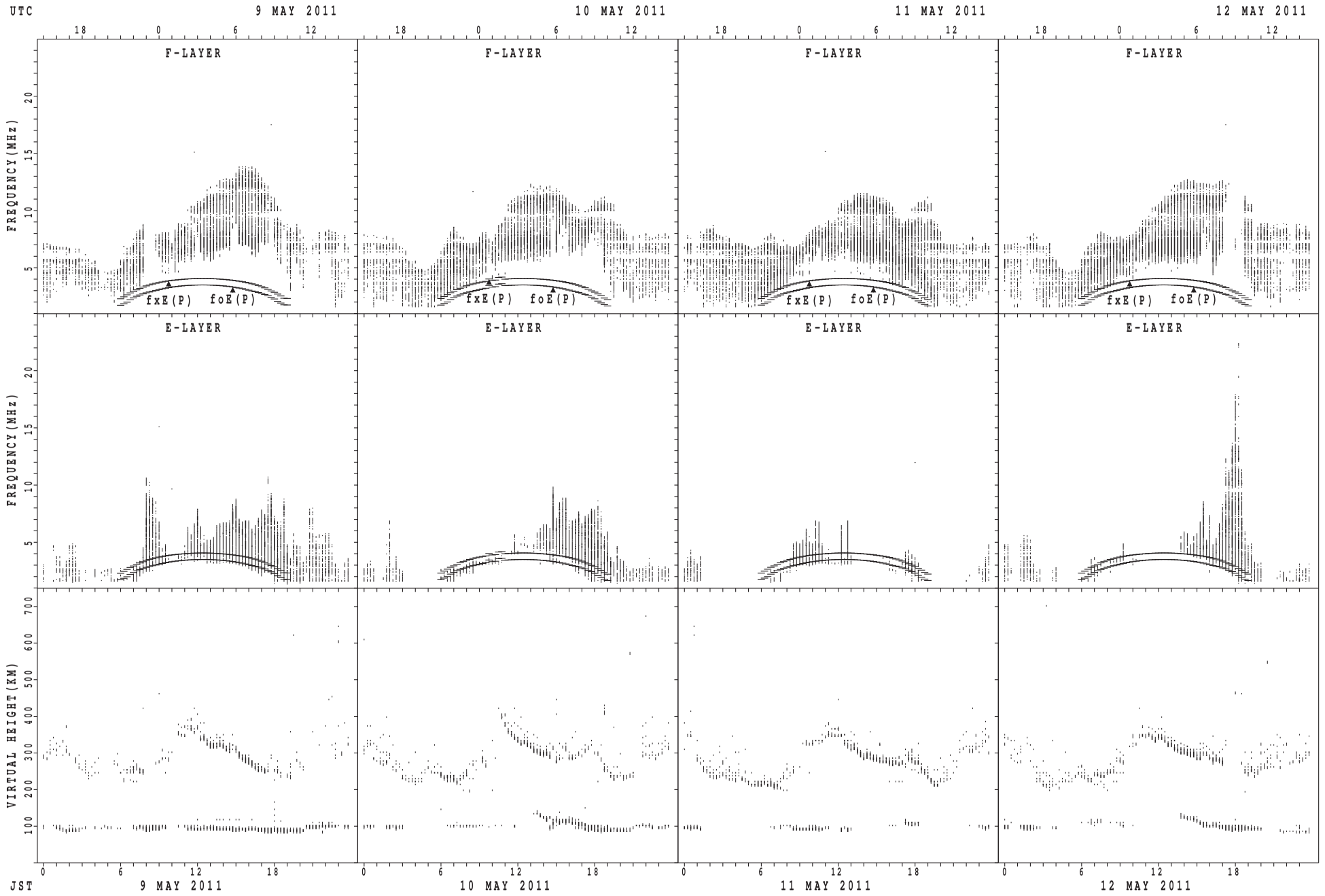
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



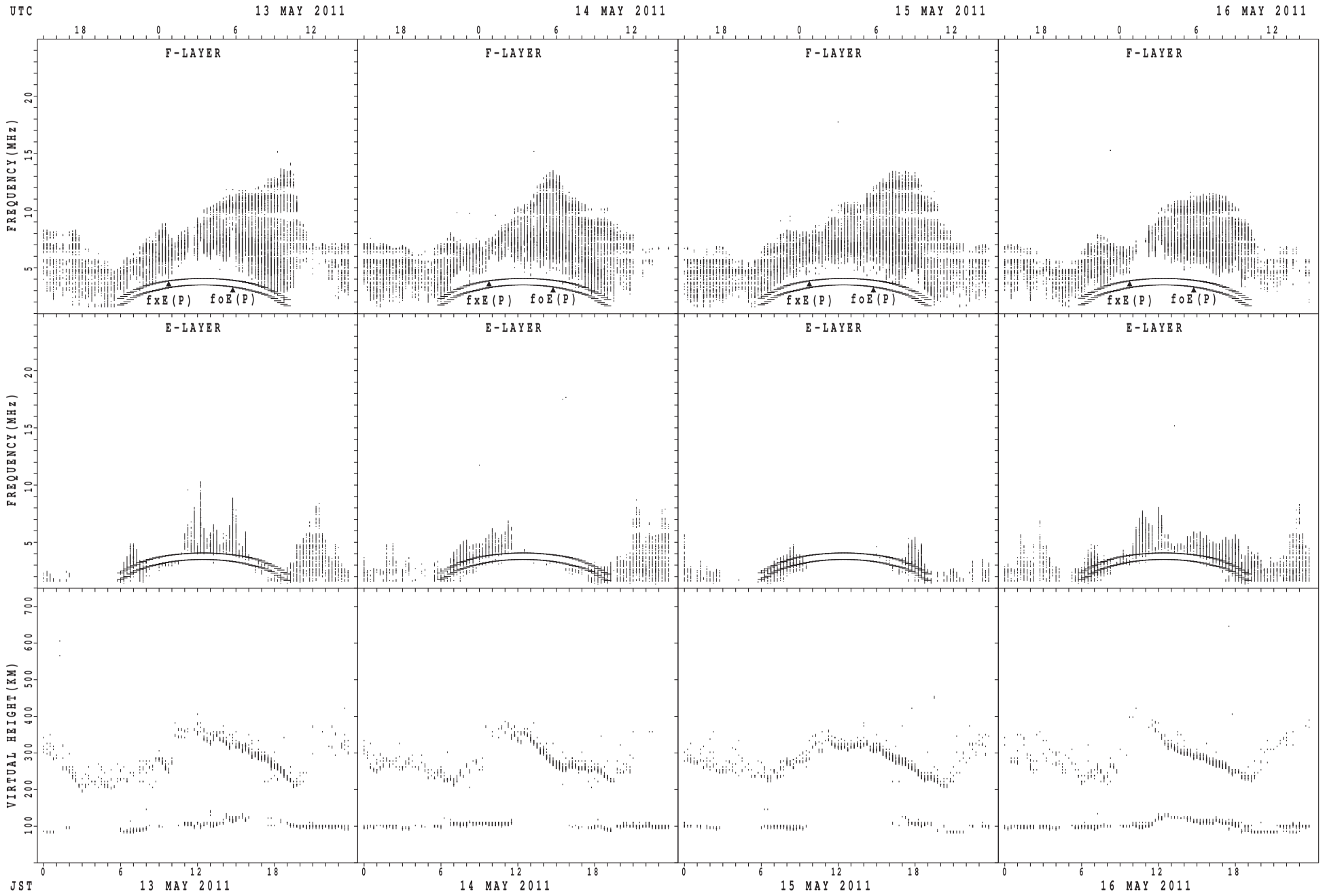
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



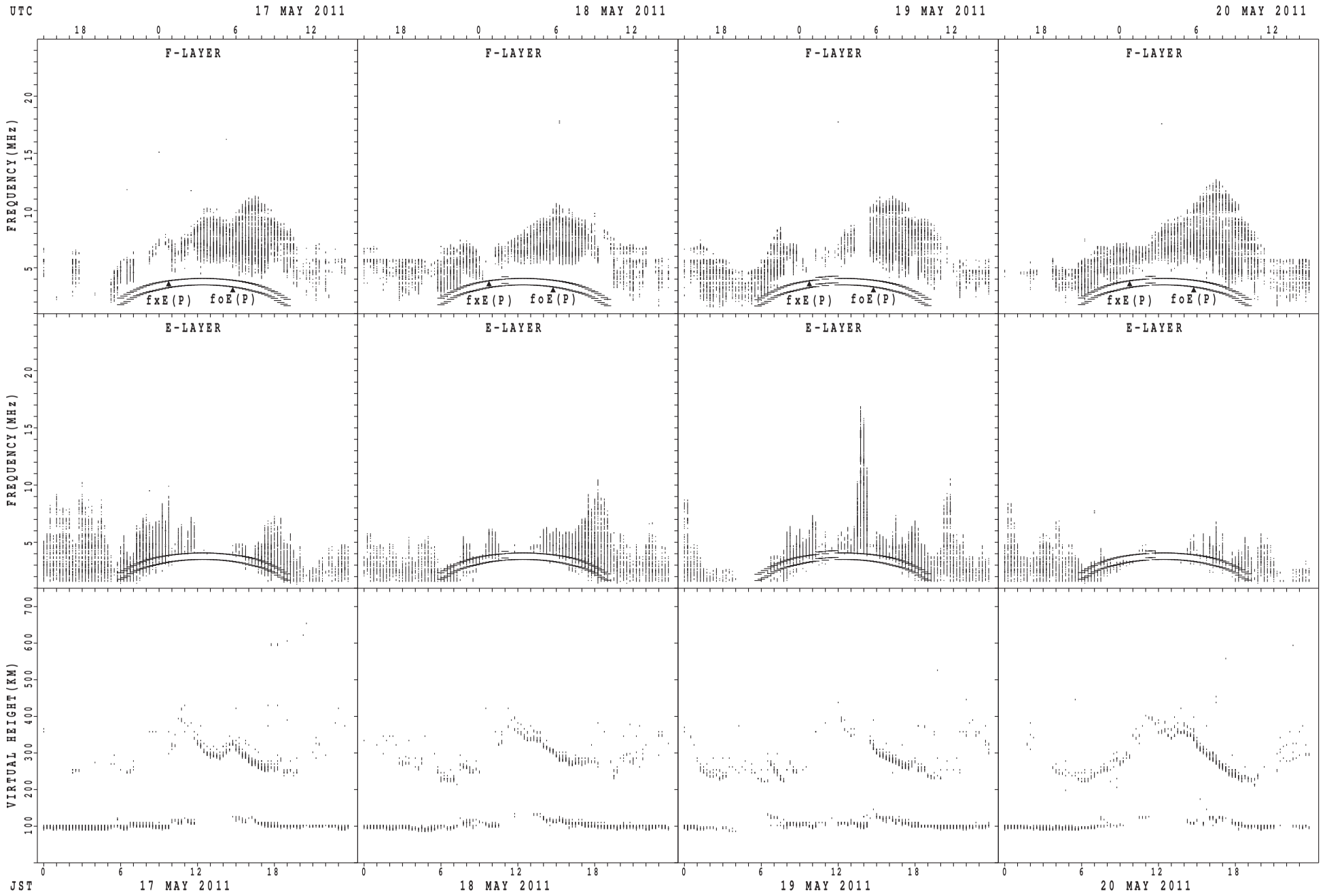
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa

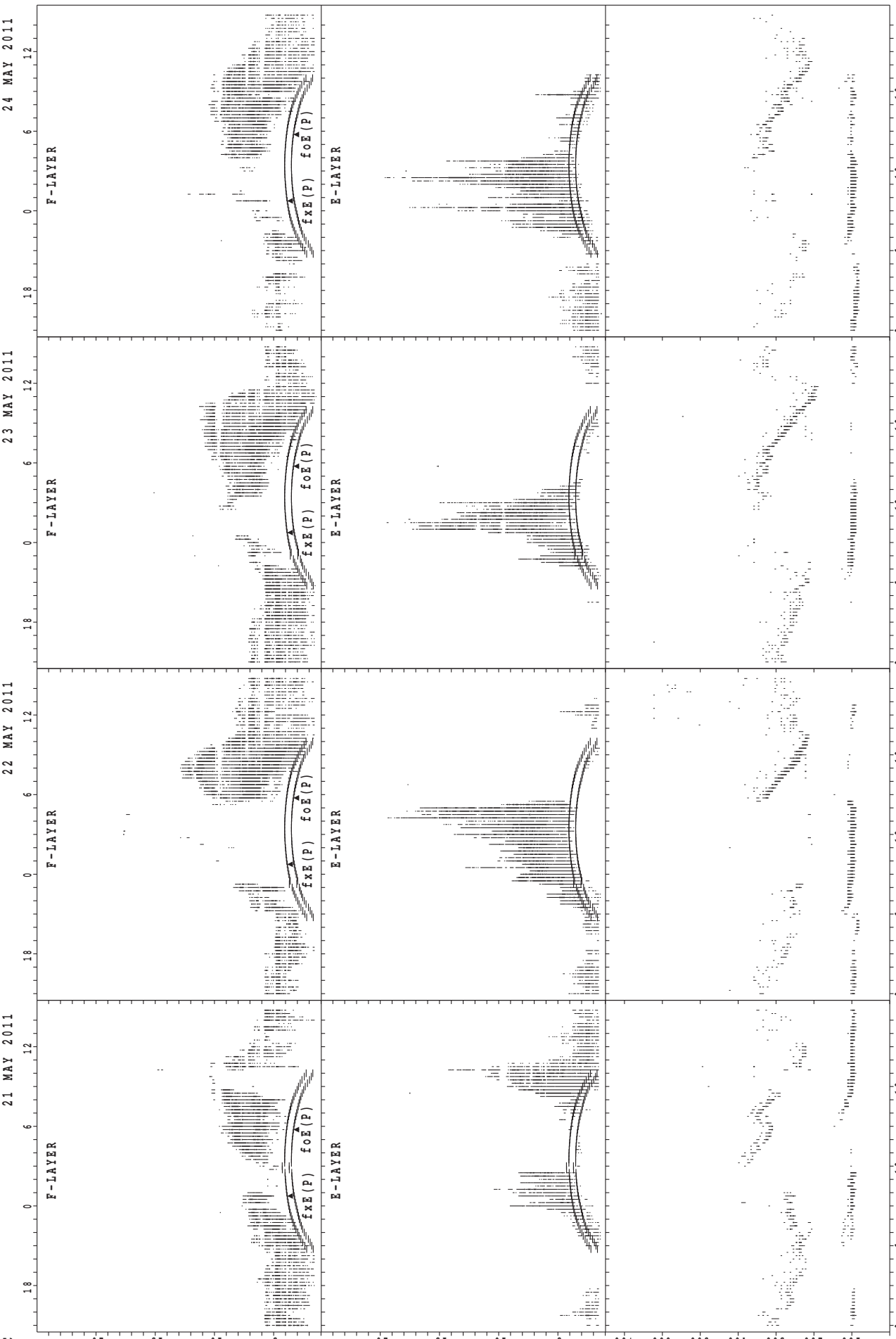


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

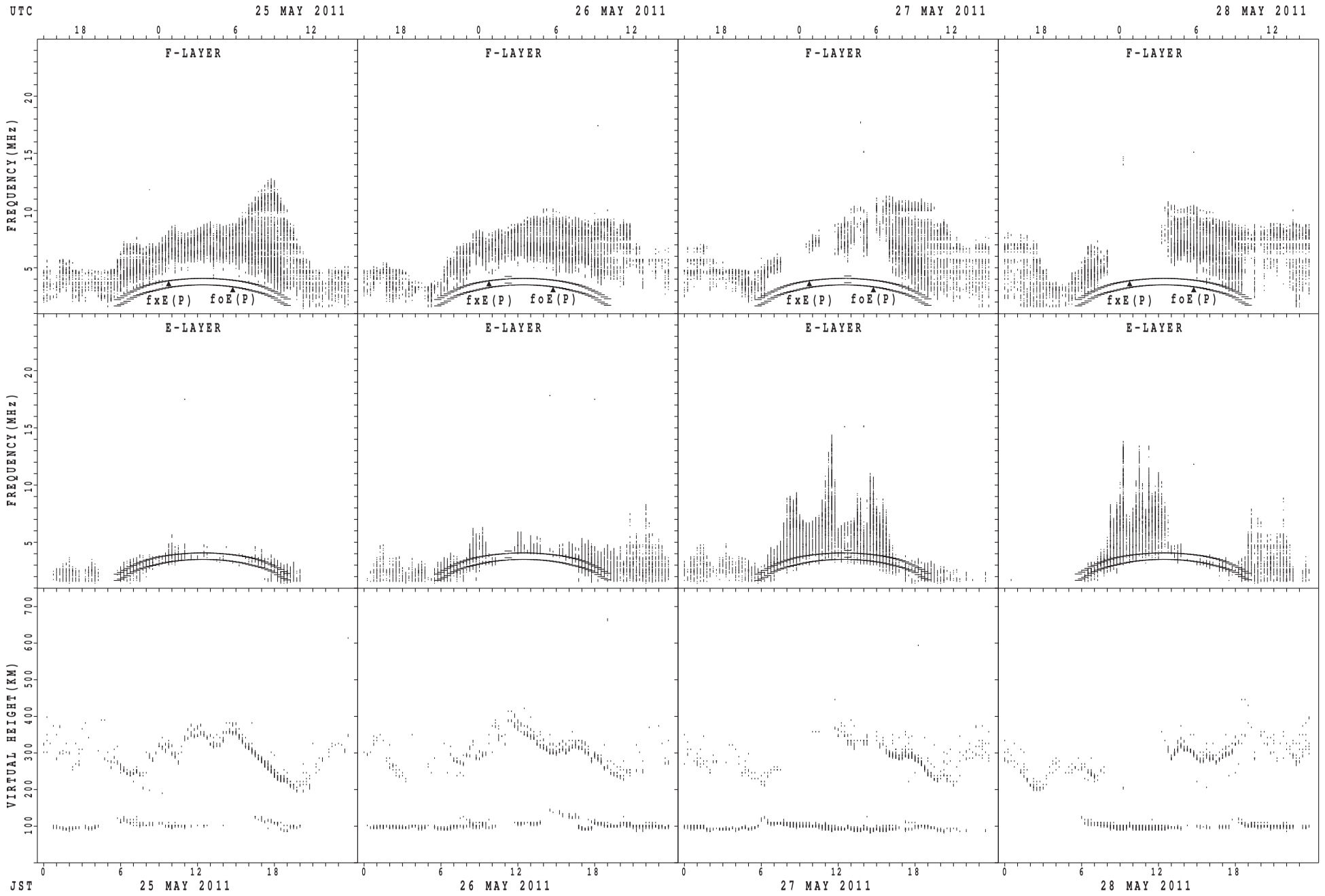
SUMMARY PLOTS AT Okinawa



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

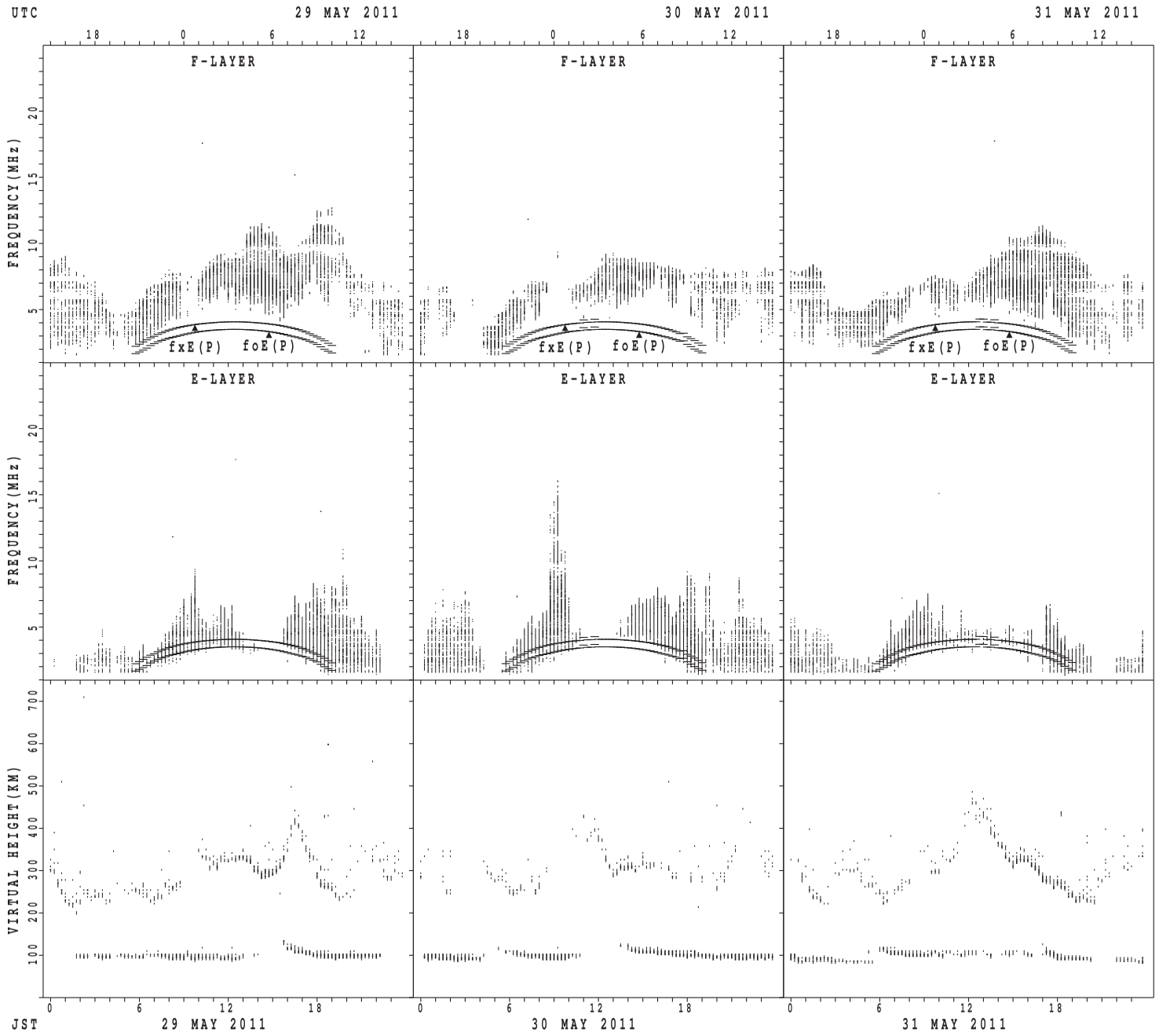

SUMMARY PLOTS AT Okinawa
UTC
JST
21 MAY 2011
22 MAY 2011
23 MAY 2011
24 MAY 2011
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



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

SUMMARY PLOTS AT Okinawa



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

MONTHLY MEDIANS OF h′F AND h′Es

MAY 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					1	11	10									8	13	13	17	15	10	4	
MED	368					278	272	289									296	294	286	278	276	271	266	
U Q	184					139	324	312									305	298	299	296	284	280	279	
L Q	184					139	254	256									279	273	271	259	264	264	245	

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	13	14	11	12	10	24	26	24	22	24	22	16	17	15	11	13	20	25	25	26	24	23	20	13
MED	95	95	91	96	99	113	111	107	105	103	103	103	101	99	103	107	110	107	105	103	104	103	98	97
U Q	97	99	95	100	111	125	113	111	107	106	105	103	104	105	121	116	112	112	108	107	107	105	102	99
L Q	92	91	89	94	93	109	107	103	103	101	99	99	97	97	99	102	104	103	103	103	101	99	97	94

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	2	1	2			1	15	17									24	19	24	21	15	5	2	2
MED	306	298	281			274	262	246									281	278	266	272	272	302	373	359
U Q	312	149	290			137	280	273									296	288	286	277	290	342	400	362
L Q	300	149	272			137	246	234									270	262	236	243	248	289	346	356

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	17	21	19	18	18	15	19	19	24	27	20	24	24	25	20	17	23	28	29	29	28	29	29	24
MED	97	97	95	95	97	107	109	105	101	101	100	100	98	99	101	103	107	106	103	103	102	103	99	98
U Q	99	99	97	97	99	125	111	107	105	105	103	103	102	103	110	107	113	112	105	103	105	104	107	101
L Q	95	95	93	93	93	97	105	103	98	97	97	97	96	95	97	98	103	104	99	99	97	98	97	97

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	2	1	5	1	1	1	6	19	16									28	26	21	16	3	2	2
MED	312	336	286	280	304	290	255	254	250									273	266	254	255	232	314	320
U Q	316	168	359	140	152	145	270	274	271									295	282	265	268	262	330	328
L Q	308	168	260	140	152	145	238	238	240									263	244	238	243	232	298	312

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	27	23	26	25	18	20	24	29	30	27	25	28	23	26	26	19	22	24	28	29	28	30	29	28
MED	97	95	94	95	95	95	110	105	103	101	97	97	95	99	100	99	107	107	103	99	98	98	97	97
U Q	97	97	97	97	95	99	117	107	103	103	103	103	101	105	107	113	113	112	107	103	103	101	100	100
L Q	95	93	91	91	91	95	103	98	97	97	95	95	95	95	95	95	101	98	100	97	97	95	95	96

MONTHLY MEDIANS OF h'F AND h'Es

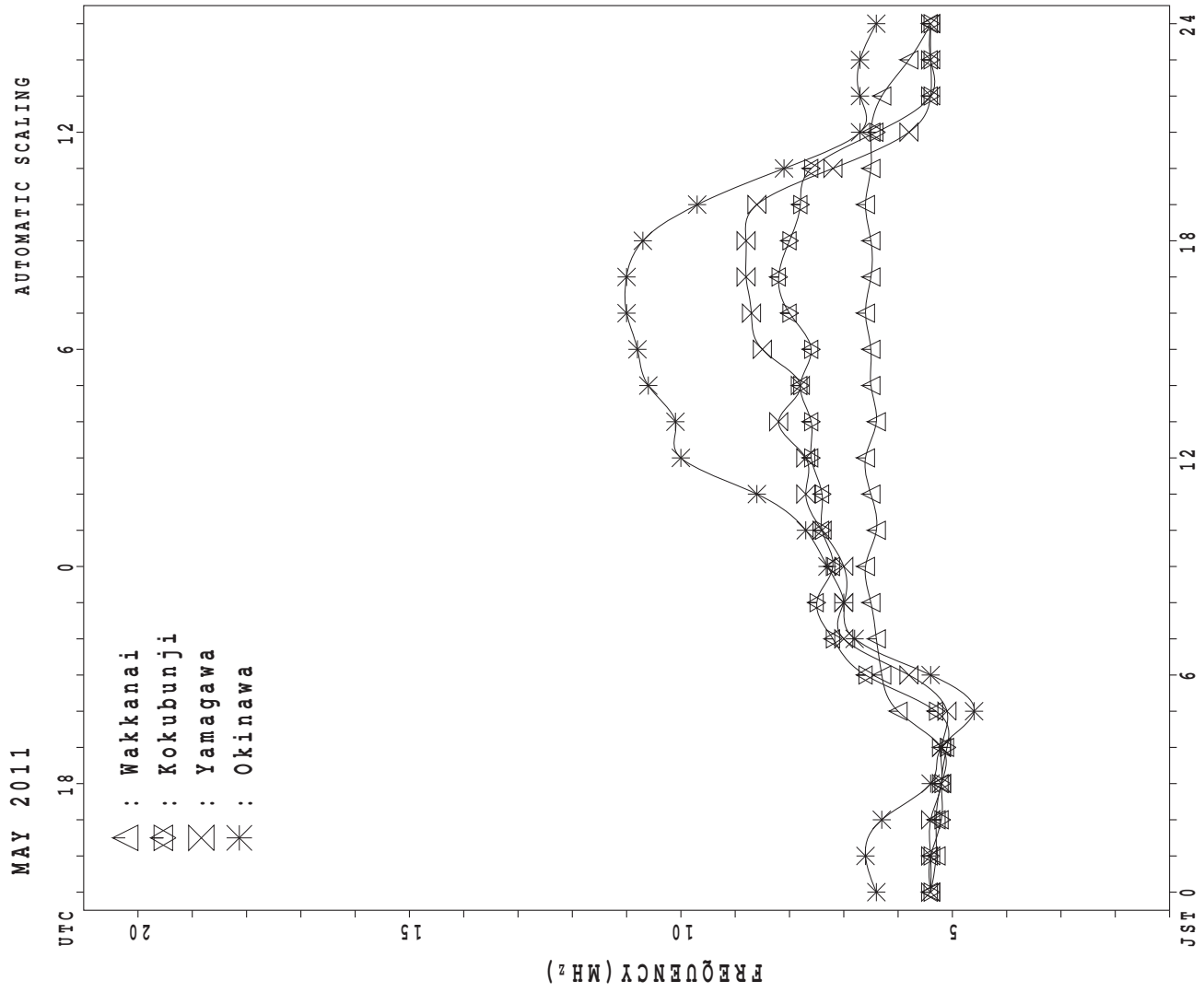
MAY 2011 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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	6	6	5	3	2	1	4	17	20									30	28	28	20	6	5	6
MED	330	327	272	274	287	252	256	242	270									271	254	246	257	292	338	337
U Q	332	346	298	328	304	126	284	267	283									286	276	256	291	336	364	354
L Q	312	312	260	260	270	126	242	229	250									262	242	238	239	232	318	328

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	21	18	20	18	14	12	14	25	25	27	23	22	19	14	11	14	20	24	26	28	25	24	19	21
MED	97	99	97	97	97	98	101	107	107	103	101	101	101	102	113	112	111	110	103	101	99	101	103	99
U Q	101	99	99	99	103	99	115	111	109	107	103	107	109	105	125	115	123	112	105	103	103	104	105	105
L Q	97	97	95	95	95	95	97	99	101	97	99	97	95	99	95	95	96	98	99	97	95	96	99	97


MONTHLY MEDIANS PLOT OF foF2
MAY 2011
AUTOMATIC SCALING
: Wakkanai
: Kokubunji
: Yamagawa
: Okinawa
UTC
18
0
6
12
JST 0
6
12
18
24
5
10
15
20
FREQUENCY (MHz)

IONOSPHERIC DATA STATION Kokubunji

MAY 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 72	X 73	X 64	X 62	X 60															X 104	X 71	X 67	X 68	X 67
2	X 66	X 66	X 68	X 59	X 56	X 72														X 77	X 80	X 65	X 66	X 65
3	X 65	X 64	X 64	X 60	X 54															X 91	X 82	X 80	X 72	X 69
4	X 69	X 69	X 70	X 66	X 65															X 92	92	81	X 75	74
5	X 69	X 65	X 63	X 61	X 58															X 106	X 86	X 72	X 73	X 73
6	X 73	X 71	X 71	X 67	X 61															X 104	X 102	X 77	X 70	X 68
7	X 66	X 66	X 64	X 63	X 61															X 90	X 80	X 76	X 75	X 70
8	X 68	X 67	X 66	X 64	X 58															X 78	X 70	X 66	70	72
9	X 69	X 67	X 65	X 62	X 60															X 98	X 75	X 74	X 73	X 70
10	X 70	X 70	X 66	X 61	X 60															X 91	X 97	X 81	X 76	X 70
11	X 70	X 66	X 64	X 63	X 61															X 87	X 86	X 76	X 67	X 66
12	X 67	X 66	X 64	X 59	X 58															X 90	X 88	X 82	X 78	X 76
13	81	76	73	73	X 59															X 99	X 100	X 77	X 66	60
14	X 63	66	X 60	X 56	X 55															X 91	X 77	X 71	X 70	X 67
15	X 64	X 61	X 60	X 60	X 56															X 88	X 85	X 70	X 68	80
16	80	80	X 79	66	65															A	A	A	67	A
17	X 64	X 61	X 61	X 56	X 53															A	X 74	X 68	X 67	X 65
18	69	66	X 62	66	X 53															X 77	X 71	X 69	X 67	X 61
19	70	X 58	X 56	X 51	X 51															X 80	X 78	X 71	X 66	67
20	71	68	68	X 56	X 55															A	X 65	66	68	68
21	70	74	70	X 59	62															X 86	X 87	X 70	71	72
22	X 59	56	53	52	50															X 84	X 72	X 70	69	69
23	66	X 66	X 60	X 58	X 58															X 76	X 82	X 77	X 64	X 64
24	X 64	X 62	X 63	X 61	X 59															X 85	X 83	72	X 58	A
25	64	66	59	X 53	52															X 93	A	A	A	66
26	A	70	A	65	64	64														X 86	X 86	X 76	X 70	X 68
27	64	64	X 55	57	X 56															X 88	X 87	X 83	X 78	X 75
28	X 72	72	70	60	X 57															X 85	X 92	X 80	X 82	X 72
29	X 79	X 70	X 84	X 65	A															X 108	X 92	X 60	56	60
30	A	X 56	56	51	X 47															X 79	78	79	76	75
31	X 71	X 67	X 58	X 54	X 53															X 91	X 82	75	74	76
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	31	30	31	30	2														28	29	29	30	29
MED	X 69	X 66	X 64	X 60	X 58	68														X 89	X 82	X 74	X 70	X 69
U Q	X 71	70	X 68	64	X 60															X 92	X 88	X 78	X 74	72
L Q	X 64	X 64	X 60	X 56	X 54															X 84	X 76	X 70	X 67	X 66

IONOSPHERIC DATA STATION Kokubunji

MAY 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	66	67	58	56	54	55	78	94	82	74	84	78	81	87	83	90	90	84	94	98	65	61	62	61
2	60	60	62	53	50	66	62	58	54	A	63	67	68	62	70	72	72	73	A	71	74	58	60	59
3	59	58	58	54	48	48	65	62	71	70	71	81	84	86	88	76	77	83	85	85	76	74	66	63
4	63	63	64	60	59	63	83	76	61	66	72	78	90	96	99	105	87	79	80	86	F	F	68	F
5	63	58	56	55	52	55	75	79	80	76	73	81	88	91	90	86	87	96	106	100	80	66	67	67
6	67	64	65	61	55	60	67	72	80	84	98	95	95	99	90	82	81	86	89	97	96	71	64	62
7	60	60	58	57	54	56	65	67	78	92	85	81	87	83	82	87	89	88	85	84	73	70	68	64
8	62	60	60	57	52	54	70	72	63	69	75	84	79	86	86	92	90	98	98	72	64	60	F	F
9	63	61	59	56	54	62	64	75	82	83	83	79	81	80	83	94	94	86	91	91	69	68	67	64
10	64	64	60	55	54	60	77	84	78	80	70	72	75	74	77	80	79	77	82	85	91	75	70	64
11	64	60	59	57	54	57	74	66	66	62	66	73	77	74	76	75	73	78	80	81	80	70	61	60
12	61	60	58	53	52	61	68	68	75	69	67	73	82	89	90	98	88	84	81	85	82	76	71	70
13	F	F	F	F	53	60	72	68	70	75	78	74	76	83	89	88	89	90	87	93	94	71	60	F
14	57	F	54	50	49	54	77	88	77	66	63	64	71	77	83	93	95	94	96	85	71	65	64	61
15	58	55	54	54	50	53	66	74	80	75	79	72	71	73	87	96	104	92	80	82	79	64	62	F
16	F	F	72	F	F	63	59	A	A	A	A	65	A	A	70	70	71	72	79	A	A	A	F	A
17	58	55	55	50	47	44	54	58	A	A	52	59	62	62	A	71	72	74	A	A	68	62	60	59
18	F	F	56	F	47	48	63	62	67	61	54	60	59	A	70	A	A	A	76	71	65	63	60	54
19	F	52	50	44	45	54	61	49	70	74	59	63	A	67	72	70	75	71	71	74	72	65	60	F
20	F	F	F	50	49	52	68	74	A	A	A	61	A	A	76	82	83	83	82	A	59	F	F	F
21	F	F	F	53	F	59	68	62	62	A	A	68	A	A	64	73	71	62	67	80	81	64	F	F
22	53	F	F	F	F	51	64	73	82	67	56	56	64	67	75	78	79	84	87	78	66	64	F	F
23	F	59	54	52	52	57	68	78	70	67	70	67	72	78	71	66	A	A	60	70	76	70	58	58
24	58	56	57	55	53	55	62	72	74	70	81	82	84	84	82	86	81	76	68	79	76	F	52	A
25	F	F	F	47	F	45	72	89	A	A	A	A	A	69	68	71	66	65	77	87	A	A	A	F
26	A	F	A	F	F	F	63	A	62	71	A	A	A	66	68	71	69	66	74	80	80	70	64	62
27	F	F	49	F	50	51	60	66	A	66	67	66	70	74	76	84	83	75	76	82	81	77	72	69
28	66	F	F	F	51	50	69	65	73	A	A	A	82	78	93	81	66	57	64	79	86	74	76	66
29	73	64	78	59	A	54	74	87	A	68	A	A	A	72	66	66	66	83	92	102	86	54	F	F
30	A	50	F	F	41	44	54	68	A	A	64	A	65	A	64	63	67	67	66	73	F	F	F	F
31	65	60	52	47	47	52	70	58	59	62	64	A	68	68	74	79	88	84	80	85	76	F	F	F
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	20	20	23	23	25	30	31	29	24	23	24	25	24	26	30	30	29	29	29	28	27	24	22	17
MED	62	60	58	54	52	54	68	72	72	70	70	72	76	78	76	80	81	83	80	83	76	67	64	62
U Q	64	62	60	57	54	60	72	77	79	75	78	80	83	86	87	88	88	86	88	86	81	71	68	65
L Q	58	57	54	50	48	51	63	64	64	66	64	64	69	69	70	71	72	72	75	78	69	64	60	60

IONOSPHERIC DATA STATION Kokubunji

MAY 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	508	L	UL532	UL504	UL488	A	452	L						
2								UL452	UL492	A	504	A	504	492	A	472	A	L	A					
3									L	L	UL488	UL512	UL496	A	A	L	A	A						
4							L	L		A	L	UL564	A	516	A	A	UL452	L	A					
5							L	L	L	A	L	532	A	504	500	L	L	L						
6								L	L	L	496	504	512	500	L	UL492	A	A	A					
7								L	UL464	A	A	UL516	504	L	512	468	A	A	A					
8							L	A	L	A	500	492	504	488	496	480	A	A	A					
9								UL464	A	A	488	A	488	512	492	468	L	L	L					
10							L	L	476	472	512	512	UL508	UL496	A	A	A	L	A					
11							A	420	UL424	488	UL488	UL508	496	UL488	488	L	A	A	A					
12								L	L	A	UL484	508	A	A	A	464	A	A	A					
13								L	L	L	488	A	492	A	A	A	A	L	A					
14							L	L	A	UL484	UL544	UL576	A	480	480	A	A	A						
15							L	L	452	476	A	A	496	UL476	468	A	A	L	A					
16							A	A	A	A	A	A	A	A	476	460	A	A	A					
17						L	UL372	A	A	A	UL464	UL464	A	A	A	452	436	A	A					
18						L	A	UL436	A	L	A	A	UL488	A	A	A	A	A	A					
19									A	464	A	UL508	A	A	A	A	A	A	A					
20							A	L	A	A	A	492	A	A	468	A	432	UL404	A					
21								A	A	A	A	A	A	A	A	456	A	A	A					
22							A	A	A	A	A	UL484	A	A	A	A	A	A						
23							L	416	A	A	464	480	A	UL476	460	A	A	A	A					
24								A	A	UL480	A	480	UL480	468	472	440	UL424	L	A					
25							L	A	A	A	A	A	A	A	A	460	A	A	A					
26							A	A	A	A	A	A	A	A	A	A	A	UL404	L					
27							L	A	A	A	A	A	A	A	468	A	432	A	A					
28						A	A	A	A	A	A	A	A	A	468	452	UL428	A	UL360					
29						A	A	A	A	A	A	A	A	A	A	A	A	428	A					
30							A	A	A	A	A	A	UL492	A	A	460	444	L	A					
31							L	A	A	A	A	A	A	A	A	472	452	408						
	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	5	5	6	13	16	14	13	14	14	9	4	1					
MED							UL372	UL436	UL464	478	488	508	496	492	478	462	436	406	UL360					
U Q								UL458	484	484	506	UL514	504	504	492	472	452	418						
L Q								418	438	472	486	488	492	478	468	456	UL430	UL404						

MAY 2011 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 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 A 236	A	A	A	R	R	R	A	A	A	R	A	A					
2							A	A	A	A	A	A	A	A	A	A	A	A	B					
3						B	U R 236	R	R	R	A	A	A	A	A	A	A	A	A					
4						B	248	A	A	A	A	R	A	A	A	A	A	A	A					
5						B	252	A	A	A	A	R	A	A	R	R	R	U A 252	A					
6						B	A	A	A	A	A	A	A	A	R	R	A	A	A					
7						B	A	A	R	A	A	A	A	R	R	R	A	A	B					
8						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
9						B	A	A	A	A	A	A	A	A	A	R	R	A	A					
10						B	R	A	A	R	A	R	A	A	A	A	A	R	A					
11						B	252	R	R	A	A	R	R	A	R	A	A	A	B					
12						B	A	A	A	A	R	A	A	A	A	A	A	A	B					
13						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
14						B	A	R	A	A	A	A	A	R	R	A	A	A	B					
15						B	A	A	A	A	A	A	R	R	A	A	A	A	A					
16						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
17						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
18						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
19						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
20						180	A	A	A	A	A	A	A	A	A	A	R	A	A					
21						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
22						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
23						B	U A 244	A	A	A	A	A	A	A	R	A	A	A	A					
24						A	A	A	A	A	A	A	A	A	A	A	R	A	B					
25						196	A	A	A	A	A	A	A	A	A	R	A	A	A					
26						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
27						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
28						B	A	A	A	A	A	A	A	A	A	R	A	A	U R 204					
29						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
30						U A 180	A	A	A	A	A	A	A	A	A	A	A	A	A					
31						B	A	A	A	A	A	A	A	A	A	A	A	R	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						3	6											1	1					
MED						180	246											U A 252	U R 204					
U Q						196	252																	
L Q						180	U 236																	

MAY 2011 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 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	JA 25	JA 34	JA 31	JA 20	EB 15	20	29	40	42	42	G	G	G	JA 45	42	JA 62	G 24	33	26	JA 38	JA 53	JA 24	JA 20	EB 14
2	EB 15	EB 15	EB 14	20	EB 16	EB 16	32	JA 39	JA 46	JA 73	JA 60	JA 53	43	JA 48	JA 93	JA 46	JA 49	JA 38	JA 113	JA 86	JA 100	JA 48	JA 72	JA 21
3	JA 25	JA 37	JA 35	JA 25	JA 22	EB 15	G	G 26	G 31	G	44	JA 45	JA 44	JA 68	JA 66	JA 48	JA 70	JA 48	JA 40	JA 52	JA 53	JA 44	JA 34	EB 15
4	EB 15	JA 28	JA 20	JA 19	EB 15	JA 28	32	36	JA 46	JA 50	JA 44	G	JA 81	JA 48	JA 47	JA 64	JA 44	JA 38	JA 35	JA 48	JA 102	JA 81	JA 110	JA 31
5	JA 24	EB 14	EB 15	EB 15	EB 14	20	29	37	41	JA 61	JA 49	G	50	JA 47	G	G	G 26	35	JA 32	JA 36	JA 68	JA 48	JA 60	EB 15
6	EB 15	JA 29	JA 23	JA 18	JA 18	19	30	37	JA 46	42	39	39	43	41	G 30	G	JA 51	JA 60	JA 64	JA 39	21	JA 18	19	20
7	EB 15	EB 15	EB 15	EB 15	EB 14	EB 16	30	35	G 27	JA 51	JA 65	JA 50	44	G	G	G 27	JA 44	JA 42	JA 48	JA 66	JA 66	JA 62	JA 44	EB 15
8	EB 15	20	JA 34	JA 18	JA 24	22	29	38	40	JA 62	40	JA 56	JA 44	44	JA 41	40	40	JA 45	JA 93	JA 104	JA 58	JA 22	JA 24	22
9	JA 17	21	JA 19	JA 20	EB 17	24	JA 36	JA 38	JA 57	JA 50	JA 47	JA 60	JA 47	JA 47	39	G 27	G 27	32	25	JA 24	JA 31	JA 31	JA 24	21
10	22	EB 15	EB 15	EB 15	EB 14	19	G 23	40	37	G	42	G	JA 42	JA 52	JA 56	JA 53	JA 40	G 28	34	JA 24	JA 56	JA 37	JA 42	JA 38
11	JA 24	JA 21	21	20	JA 20	19	29	G 26	G 29	JA 45	41	G	G	39	G	39	JA 50	JA 43	JA 52	JA 37	20	JA 26	JA 35	JA 44
12	JA 52	EB 15	JA 48	JA 57	JA 48	JA 46	27	36	38	JA 52	G 39	46	JA 72	74	JA 53	JA 48	JA 56	JA 80	JA 47	JA 59	JA 29	JA 44	JA 22	JA 54
13	JA 52	22	JA 52	JA 64	JA 76	JA 46	JA 34	36	42	JA 46	43	JA 58	45	JA 55	44	JA 57	JA 58	JA 34	JA 57	JA 34	JA 44	JA 64	JA 81	JA 47
14	JA 22	JA 26	JA 36	JA 22	EB 14	19	31	G 27	JA 48	JA 45	JA 46	JA 59	JA 63	G	G	JA 58	JA 69	JA 68	JA 58	JA 96	JA 23	JA 25	JA 26	JA 22
15	21	JA 24	JA 18	EB 15	EB 16	20	34	JA 37	JA 44	JA 43	JA 67	JA 74	G	G	40	42	38	JA 35	JA 34	JA 26	JA 20	EB 15	JA 46	JA 46
16	JA 61	JA 100	JA 63	JA 38	JA 38	JA 32	JA 57	JA 94	JA 79	JA 67	JA 81	JA 73	JA 84	JA 99	JA 55	38	JA 50	JA 47	JA 40	JA 94	JA 134	JA 91	JA 80	JA 110
17	JA 74	JA 29	JA 25	JA 17	EB 15	19	33	JA 49	JA 61	JA 47	JA 44	JA 52	JA 58	JA 56	JA 88	36	42	JA 66	JA 108	JA 148	JA 221	70	64	44
18	JA 69	JA 54	JA 71	JA 42	JA 22	25	JA 44	37	JA 45	JA 48	JA 56	JA 52	JA 46	JA 95	JA 57	JA 142	JA 116	JA 132	JA 53	JA 68	JA 40	JA 38	JA 28	JA 64
19	JA 39	JA 42	JA 34	JA 38	JA 30	20	JA 46	JA 56	JA 52	JA 44	JA 51	JA 40	JA 57	JA 60	JA 55	JA 53	JA 51	JA 64	JA 72	JA 24	JA 37	JA 52	JA 65	JA 60
20	JA 62	JA 44	JA 39	JA 29	JA 22	21	JA 42	JA 56	JA 76	JA 91	JA 108	JA 51	JA 82	JA 104	JA 98	JA 44	G	JA 50	JA 99	JA 91	JA 39	JA 35	JA 37	JA 46
21	JA 58	JA 71	JA 21	JA 75	JA 30	JA 24	JA 45	JA 59	JA 108	JA 109	JA 228	JA 75	JA 104	JA 91	JA 59	42	JA 46	JA 46	JA 98	JA 61	JA 85	JA 128	JA 22	JA 42
22	JA 45	JA 24	JA 47	JA 29	JA 22	JA 31	JA 47	JA 52	JA 51	JA 54	JA 57	JA 50	JA 52	JA 53	JA 59	JA 60	JA 50	JA 43	JA 40	JA 67	JA 42	JA 26	JA 45	JA 28
23	JA 29	JA 34	JA 27	JA 21	JA 21	JA 24	JA 37	JA 36	JA 69	JA 51	JA 44	JA 43	JA 61	JA 44	G	JA 52	JA 71	JA 58	JA 46	JA 40	JA 48	JA 52	JA 20	21
24	20	21	JA 18	JA 21	20	26	JA 51	JA 55	JA 49	JA 47	JA 50	JA 42	43	JA 43	42	JA 38	G 29	JA 44	JA 37	JA 122	JA 90	JA 40	JA 72	JA 81
25	JA 53	JA 62	JA 116	JA 68	JA 23	JA 25	34	JA 67	JA 100	JA 147	JA 116	JA 111	JA 118	JA 207	JA 50	G	40	JA 45	JA 54	JA 30	JA 144	JA 100	JA 83	JA 68
26	JA 74	JA 47	JA 81	JA 64	JA 37	JA 35	JA 54	JA 63	JA 63	JA 63	JA 99	JA 91	JA 92	JA 62	JA 60	42	38	33	JA 31	JA 36	JA 45	JA 56	JA 58	JA 65
27	JA 53	JA 54	JA 46	JA 60	JA 33	JA 24	JA 33	JA 62	JA 85	JA 69	JA 61	JA 58	JA 52	JA 45	JA 39	JA 42	JA 34	JA 64	JA 62	JA 76	JA 39	JA 35	JA 44	JA 104
28	JA 26	JA 29	JA 43	JA 48	JA 38	JA 46	JA 43	JA 53	JA 68	JA 76	JA 68	JA 66	JA 56	JA 47	JA 42	G 33	JA 40	JA 40	G	EB 15	JA 21	JA 22	JA 21	JA 20
29	20	JA 27	JA 22	JA 46	JA 67	JA 49	JA 46	JA 58	JA 77	JA 59	JA 79	JA 142	JA 126	JA 64	JA 46	52	JA 61	JA 38	JA 51	62	JA 71	JA 74	JA 75	JA 38
30	JA 80	JA 75	JA 46	JA 34	JA 42	JA 23	JA 54	JA 54	JA 73	JA 58	JA 50	JA 58	JA 48	JA 119	JA 67	JA 49	JA 45	JA 48	JA 52	JA 41	JA 53	JA 36	JA 24	JA 62
31	EB 14	JA 24	JA 23	JA 25	JA 26	JA 24	32	JA 44	JA 53	JA 60	JA 72	JA 95	JA 79	JA 49	JA 66	JA 44	36	G 25	34	JA 19	JA 19	JA 56	JA 102	JA 74
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	JA 25	JA 28	JA 31	JA 25	JA 22	24	34	JA 40	JA 49	JA 51	JA 50	JA 52	JA 52	JA 49	JA 47	JA 44	JA 44	JA 44	JA 48	JA 48	JA 48	JA 44	JA 42	JA 42
U Q	JA 53	JA 44	JA 46	JA 46	JA 33	JA 28	JA 45	JA 56	JA 69	JA 63	JA 68	JA 66	JA 79	JA 68	JA 59	JA 53	JA 51	JA 58	JA 62	JA 76	JA 71	JA 56	JA 72	JA 62
L Q	EB 20	EB 21	20	19	EB 16	19	30	36	42	45	44	G 42	44	44	G 39	G 38	G 38	35	34	J A 34	JA 31	JA 26	JA 24	21

MAY 2011 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 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	17	27	22	E B 15	E B 15	18	27	34	38	38	G	G	G	42	42	59	G 22	31	23	35	33	16	17	E B 14
2	E B 15	E B 15	E B 14	E B 15	E B 16	E B 16	29	36	38	A A 73	42	50	40	42	56	41	41	33	A A 113	31	20	30	26	18
3	E B 14	26	24	16	E B 15	E B 15	G	G 24	G 29	G	40	39	41	64	62	42	62	44	39	49	27	38	19	E B 15
4	E B 15	E B 15	E B 15	E B 15	E B 15	22	31	31	42	46	40	G	59	41	44	48	36	34	28	45	20	44	E B 15	17
5	E B 15	E B 14	E B 15	E B 15	E B 14	19	27	34	36	48	41	G	48	42	G	G	G 25	32	29	31	37	17	39	E B 15
6	E B 15	E B 15	E B 15	E B 15	E B 15	18	28	33	40	38	38	39	42	40	G 29	G	48	57	59	34	E B 15	E B 15	E B 14	E B 16
7	E B 15	E B 15	E B 15	E B 15	E B 14	E B 16	27	32	G 27	43	54	44	41	G	G	G 26	42	40	36	57	20	24	17	E B 15
8	E B 15	E B 15	E B 15	E B 15	E B 15	18	27	33	36	56	37	42	41	39	37	35	38	38	66	45	42	E B 14	17	E B 16
9	E B 14	E B 15	E B 16	17	E B 17	20	26	33	52	45	40	53	40	41	37	G 26	G 25	30	21	20	18	E B 15	20	E B 15
10	E B 16	E B 15	E B 15	E B 15	E B 14	17	G 22	34	34	G	41	G	40	39	53	49	36	G 27	30	17	18	20	32	31
11	E B 16	E B 15	E B 15	E B 15	E B 15	18	27	G 23	G 27	40	39	G	G	36	G	37	48	39	46	34	15	21	30	37
12	37	E B 15	38	41	38	24	26	32	35	49	G 38	40	69	71	50	39	52	51	45	54	22	20	18	37
13	E B 14	E B 16	19	36	35	35	29	34	39	42	41	52	42	50	41	53	44	27	45	22	35	50	39	17
14	E B 15	E B 14	27	E B 15	E B 14	18	27	G 24	43	39	40	45	55	G	G	53	66	42	41	55	18	18	20	17
15	E B 15	20	E B 15	E B 15	E B 16	17	31	31	40	41	63	70	G	G	39	40	36	30	22	19	16	E B 15	29	33
16	34	42	25	30	31	28	52	A A 94	A A 79	A A 67	A A 81	55	A A 84	A A 99	40	36	47	38	35	A A 94	A A 134	A A 91	29	A A 110
17	30	19	20	E B 15	E B 15	18	27	42	A A 61	A A 47	32	40	49	53	A A 88	34	35	60	A A 108	A A 148	45	39	48	36
18	38	38	38	20	17	23	38	35	43	35	42	46	41	A A 95	54	A A 142	A A 116	A A 132	51	63	24	33	18	19
19	19	20	E B 16	24	E B 15	19	45	40	46	40	48	G 35	A A 57	56	53	44	44	57	54	18	32	23	52	21
20	34	29	31	23	E B 15	20	37	33	A A 76	A A 91	A A 108	42	A A 82	A A 104	41	43	G	30	47	A A 91	31	20	20	32
21	26	41	18	18	20	22	30	51	53	A A 109	A A 228	47	A A 104	A A 91	46	38	41	38	34	23	70	42	E B 15	23
22	33	E B 14	29	22	16	29	43	45	47	46	50	42	40	49	52	47	42	38	23	44	36	24	24	17
23	E B 15	23	E B 15	E B 15	15	20	32	34	55	45	42	40	53	39	G	48	A A 71	A A 58	44	36	43	34	E B 15	E B 16
24	E B 15	E B 14	E B 16	E B 15	E B 15	21	46	41	44	40	45	40	39	40	40	35	G 27	28	34	44	55	28	36	A A 81
25	35	20	E B 15	E B 15	E B 15	20	30	61	A A 100	A A 147	A A 116	A A 111	A A 118	61	43	G	40	41	34	24	A A 144	A A 100	A A 83	41
26	A A 74	34	A A 81	36	28	22	50	A A 63	52	57	A A 99	A A 91	A A 92	58	56	38	38	30	24	31	35	40	48	E B 15
27	29	37	38	34	18	22	33	60	A A 85	56	58	52	48	42	38	40	32	36	61	55	20	29	38	E B 15
28	E B 15	19	26	33	20	42	39	46	59	A A 76	A A 68	A A 66	52	46	39	G 32	37	35	G	E B 15	16	17	E B 15	E B 15
29	E B 14	22	17	39	A A 67	44	42	40	A A 77	56	A A 79	A A 142	A A 126	59	41	47	58	36	43	57	56	40	34	28
30	A A 80	30	20	28	27	20	48	44	A A 73	A A 58	47	A A 58	42	A A 119	57	39	36	34	48	33	32	19	18	32
31	E B 14	16	E B 16	16	19	20	28	39	44	56	58	A A 95	53	47	51	37	32	G 24	30	E B 15	E B 15	22	20	28
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	E B 15	19	17	16	E B 15	20	30	34	44	46	42	44	48	46	41	39	40	36	39	35	31	24	20	18
U Q	33	27	26	28	20	22	39	44	A A 59	A A 57	A A 63	A A 55	A A 59	A A 61	53	47	48	42	48	55	42	39	36	32
L Q	E B 15	E B 15	E B 15	E B 15	E B 15	18	27	33	38	40	40	G 39	40	40	G 37	G 35	G 35	30	29	23	18	18	E B 17	E B 15

MAY 2011 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

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

IONOSPHERIC DATA STATION Kokubunji

MAY 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	281	296	290	283	282	303	317	345	341	311	323	317	300	315	297	310	323	313	319	334	322	272	276	274
2	276	273	309	275	275	318	353	318	302	A	290	307	312	312	285	297	298	314	A	300	326	282	272	277
3	282	292	292	303	303	317	353	336	317	316	310	309	310	299	316	309	316	317	318	318	303	284	276	284
4	285	280	293	303	295	319	342	374	359	323	300	296	296	300	303	323	313	305	301	309	F	F	298	F
5	288	295	293	287	289	316	349	349	331	336	311	301	303	310	303	302	300	308	323	332	333	288	287	290
6	295	271	300	325	306	339	321	333	323	295	317	313	314	307	311	306	309	306	305	318	337	317	285	287
7	282	286	297	311	313	329	336	331	314	324	327	300	310	295	301	313	315	319	321	329	316	287	293	287
8	283	288	302	303	290	308	345	384	331	331	313	317	304	300	302	312	315	324	338	318	293	285	F	F
9	287	290	297	306	306	340	331	332	328	324	324	297	316	298	296	309	315	310	318	332	320	286	298	287
10	289	291	304	299	294	330	345	358	343	351	325	317	309	298	315	311	324	308	303	298	313	298	291	272
11	281	297	296	306	295	305	363	354	341	299	317	298	317	311	318	323	318	320	314	306	318	305	293	282
12	279	291	303	314	317	352	360	351	342	324	313	295	299	305	302	322	317	323	309	318	307	297	295	290
13	F	F	F	F	287	324	336	326	316	308	300	316	301	300	299	304	300	312	306	321	327	333	310	F
14	304	F	289	319	310	296	330	348	350	336	311	282	304	302	294	303	311	325	335	329	310	292	291	298
15	306	302	299	308	306	325	340	327	344	331	319	310	306	282	290	300	326	321	314	308	328	312	287	F
16	F	F	302	F	F	330	301	A	A	A	A	298	A	A	305	318	320	316	308	A	A	A	F	A
17	288	296	296	290	299	302	304	316	A	A	290	300	317	309	A	316	324	331	A	A	292	285	284	283
18	F	F	292	F	336	308	327	323	330	326	287	307	305	A	307	A	A	A	337	326	302	286	291	288
19	F	293	308	296	303	347	365	360	322	368	322	299	A	309	314	312	315	316	315	313	319	305	318	F
20	F	F	F	289	310	316	355	354	A	A	A	290	A	A	289	304	309	326	342	A	303	F	F	F
21	F	F	F	309	F	327	357	313	329	A	A	366	A	A	306	313	333	305	316	322	352	289	F	F
22	300	F	F	F	F	346	333	327	346	369	334	307	295	301	295	305	300	305	331	331	300	297	F	F
23	F	303	311	303	302	326	327	308	313	347	327	306	309	321	326	333	A	A	303	308	316	316	294	304
24	293	285	314	302	312	335	345	358	325	289	299	280	293	311	301	320	318	325	309	320	325	F	324	A
25	F	F	F	283	F	306	322	340	A	A	A	A	A	318	310	313	316	310	308	326	A	A	A	F
26	A	F	A	F	F	F	324	A	297	322	A	A	A	308	320	318	321	307	298	310	321	323	306	322
27	F	F	294	F	316	317	339	340	A	314	321	301	307	318	300	307	324	309	301	306	309	300	316	309
28	292	F	F	F	331	294	329	320	317	A	A	A	291	291	311	338	323	314	267	279	293	282	295	291
29	298	276	331	336	A	305	332	337	A	321	A	A	A	316	312	291	271	277	296	334	352	288	F	F
30	A	314	F	F	301	357	295	328	A	A	293	A	299	A	294	301	307	321	294	306	F	F	F	F
31	287	312	306	303	316	311	365	375	309	296	304	A	300	286	280	280	301	305	308	321	308	F	F	F
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	20	20	23	23	25	30	31	29	24	23	24	25	24	26	30	30	29	29	29	28	27	24	22	17
MED	288	292	299	303	303	318	336	337	328	324	313	301	304	306	302	310	315	314	309	318	316	290	293	287
U Q	294	296	306	309	312	330	353	354	342	336	322	312	310	311	311	318	322	321	320	328	326	305	298	294
L Q	282	286	293	290	294	308	327	326	316	311	300	298	300	299	296	304	308	308	303	308	303	286	287	282

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MAY 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	375	L	U L 372	U L 381	U L 348	A	381	L						
2								U L 348	U L 363	A	381	A	368	398	A	344	A	L	A					
3									L	L	U L 420	U L 396	U L 402	A	A	L	A	A						
4							L	L		A	L	U L 340	A	372	A	A	U L 375	L	A					
5							L	L	L	A	L	376	A	387	364	L	L	L						
6								L	L	L	408	389	380	386	L	U L 383	A	A	A					
7								L	U L 382	A	A	U L 384	387	L	366	374	A	A	A					
8							L	A	L	A	392	388	391	395	368	351	A	A	A					
9								U L 364	A	A	425	A	414	377	371	366	L	L	L					
10							L	L	390	408	388	415	U L 373	U L 379	A	A	A	L	A					
11							A	391	U L 351	412	U L 362	U L 389	379	U L 384	371	L	A	A	A					
12								L	L	A	U L 397	384	A	A	A	386	A	A	A					
13								L	L	L	396	A	402	A	A	A	A	L	A					
14							L	L	A	U L 382	U L 360	U L 318	A	399	366	A	A	A						
15							L	L	385	412	A	A	393	U L 411	397	A	A	L	A					
16							A	A	A	A	A	A	A	A	377	367	A	A	A					
17						L	U L 382	A	A	A	U L 325	U L 423	A	A	A	360	355	A	A					
18						L	A	U L 372	A	L	A	A	U L 336	A	A	A	A	A	A					
19									A	377	A	U L 389	A	A	A	A	A	A	A					
20							A	L	A	A	A	393	A	A	365	A	373	U L 357	A					
21								A	A	A	A	A	A	A	A	369	A	A	A					
22							A	A	A	A	A	U L 384	A	A	A	A	A	A						
23							L	394	A	A	387	389	A	U L 390	371	A	A	A	A					
24								A	A	U L 376	A	395	U L 400	378	365	378	U L 363	L	A					
25							L	A	A	A	A	A	A	A	A	354	A	A	A					
26							A	A	A	A	A	A	A	A	A	A	A	U L 367	L					
27							L	A	A	A	A	A	A	A	375	A	368	A	A					
28						A	A	A	A	A	A	A	A	A	388	385	U L 381	A	U L 309					
29						A	A	A	A	A	A	A	A	A	A	A	A	339	A					
30							A	A	A	A	A	A	U L 396	A	A	381	362	L	A					
31							L	A	A	A	A	A	A	A	A	362	350	373						
	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	5	5	6	13	16	14	13	14	14	9	4	1					
MED							U L 382	U L 372	U L 382	395	388	389	389	386	370	368	368	362	U L 309					
U Q								392	388	412	402	394	400	396	375	381	U L 378	370						
L Q								U L 356	U L 357	377	U L 368	U L 384	U L 373	378	365	360	358	348						

MAY 2011 M(3000)F1 (0.01)

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IONOSPHERIC DATA STATION Kokubunji

MAY 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							272	250	252	298	284	288	338	306	296	294	268	272						
2								312	316	A	376	340	336	340	E A 380	332	298	296	A					
3									304	288	292	314	300	E A 328	288	292	E A 314	270						
4							252	230		284	346	338	318	306	298	266	266	280	254					
5							256	244	254	266	312	338	304	300	312	296	300	284						
6								262	282	274	284	288	294	288	290	300	290	282	288					
7								256	278	254	272	312	304	306	316	290	284	266	248					
8							264	212	278	E A 290	302	294	314	306	310	294	282	254	E A 248					
9								288	278	268	274	E A 304	304	332	322	294	274	264	268					
10							262	236	260	254	292	304	326	330	300	302	274	286	268					
11							236	242	294	362	322	336	306	320	304	294	290	278	256					
12								252	270	280	304	334	E A 336	E A 322	298	278	270	256	E A 262					
13								252	310	274	278	292	330	328	298	278	298	266	262					
14							264	244	236	256	356	392	344	324	326	294	280	258						
15							264	260	256	288	E A 296	E A 358	326	354	328	306	266	258	238					
16							E A 358	A	A	A	A	E A 358	A	A	320	300	286	290	264					
17						330	348	316	A	A	408	376	330	E A 358	A	310	288	E A 286	A					
18						308	278	280	298	308	392	336	360	A	324	A	A	A	258					
19									294	236	304	334	A	E A 334	E A 302	300	292	E A 300	E A 286					
20							248	234	A	A	A	392	A	A	340	296	282	264	242					
21								E A 302	E A 284	A	A	254	A	A	340	312	270	272	276					
22							262	250	250	236	E A 294	370	E A 344	354	326	300	300	274						
23							268	270	E A 304	268	292	330	322	304	290	288	A	A	E A 322					
24								252	280	316	294	318	304	296	308	282	274	260	278					
25							274	260	A	A	A	A	A	E A 302	318	318	302	302	282					
26							E A 282	A	E A 350	E A 308	A	A	A	E A 342	E A 308	306	288	300	276					
27							268	E A 296	A	E A 316	E A 306	E A 362	322	314	328	296	268	286	E A 322					
28						E A 338	264	E A 286	E A 300	A	A	A	326	330	300	260	284	288	372					
29						E A 328	276	250	A	E A 322	A	A	A	E A 316	340	368	E A 432	332	288					
30							E A 372	306	A	A	366	A	362	A	E A 366	330	318	286	E A 306					
31							248	242	332	E A 380	E A 358	A	344	354	354	342	296	274						
	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	21	27	23	23	24	25	24	26	30	30	29	29	23					
MED						324	264	251	280	276	299	326	324	316	312	296	285	276	265					
U Q						334	277	286	304	308	351	358	337	334	328	306	298	287	288					
L Q						318	259	244	260	266	292	304	305	306	300	292	274	265	256					

MAY 2011 h′F2 (KM)

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MAY 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 A 280	E A 262	E A 250	E B 256	E B 248	246	230	210	206	198	198	204	198	208	214	A	220	210	E A 244	234	218	E A 274	E A 298	E B 292
2	E B 302	E B 296	E B 240	E B 280	E B 292	244	226	E A 246	214	A	206	A	204	210	A	E A 268	A	E A 260	A	E A 280	234	E A 290	E A 314	E A 286
3	E B 294	E A 286	E A 278	E A 236	E B 242	244	H 196	216	204	200	180	198	208	A	A	E A 230	A	A	E A 246	E A 262	E A 258	E A 302	218	E B 274
4	E B 282	E B 286	E B 260	E B 244	E B 236	E A 254	214	208	212	A	210	202	A	206	A	A	208	E A 240	A	E A 258	E A 250	E A 272	224	234
5	E B 258	E B 268	E B 260	E B 268	E B 268	228	214	214	202	A	190	200	A	206	204	210	216	232	E A 248	224	222	218	E A 322	E B 260
6	E B 266	E B 284	E B 260	216	226	220	220	208	210	192	192	194	214	204	218	192	A	A	A	E A 250	216	206	216	E B 278
7	E B 282	E B 278	E B 266	E B 246	E B 238	204	220	206	200	A	A	198	186	222	190	204	A	A	A	E A 250	232	E A 262	E A 258	E B 248
8	E B 274	E B 278	E B 272	E B 250	E B 276	248	214	A	194	A	190	198	200	192	216	210	A	A	A	E A 244	E A 294	E B 244	E A 306	E B 296
9	E B 278	E B 278	E B 258	E A 250	E B 240	234	218	206	A	A	202	A	198	208	196	202	222	216	228	224	216	E B 244	E A 258	E B 260
10	E B 274	E B 274	E B 266	226	E B 240	234	226	204	196	204	204	176	218	216	A	A	A	216	A	E A 244	232	220	E A 258	E A 302
11	E B 286	E B 284	E B 256	E B 260	E A 266	238	A	206	196	188	216	196	228	220	212	220	A	A	A	242	222	E A 236	E A 272	E A 326
12	E A 338	E B 278	E B 300	E A 298	E A 286	230	220	206	198	A	196	212	A	A	A	218	A	A	A	E A 264	E A 236	E A 246	E A 238	E A 306
13	230	230	E A 282	E A 256	E A 304	E A 244	222	210	210	208	192	A	206	A	A	A	A	212	A	236	228	E A 254	E A 258	E A 264
14	E B 252	E B 282	E A 282	216	E B 254	230	224	200	A	202	200	E A 238	A	200	210	A	A	A	236	E A 244	220	E A 248	E A 274	E A 260
15	E B 260	E A 274	E B 264	E B 248	E B 248	230	212	206	212	208	A	A	196	204	194	A	A	226	A	236	216	212	E A 304	E A 284
16	E A 312	E A 304	226	E A 296	E A 308	E A 258	A	A	A	A	A	A	A	A	224	210	A	A	A	A	A	A	E A 314	A
17	E A 314	E A 276	E A 260	E B 256	E B 274	234	208	A	A	A	212	190	A	A	A	208	208	A	A	A	E A 306	E A 280	E A 362	E A 320
18	E A 310	E A 326	E A 324	E A 240	218	E A 242	A	210	A	E A 244	A	A	E A 284	A	A	A	A	A	A	E A 306	E A 252	E A 282	E A 262	E A 278
19	E A 274	E A 300	E B 254	E A 308	E B 256	218	216	E A 240	A	208	A	200	A	A	A	A	A	A	A	234	E A 242	226	E A 324	E A 274
20	E A 292	E A 278	E A 280	E A 284	E B 252	218	A	208	A	A	A	200	A	A	E A 244	A	212	210	A	A	212	E A 296	E A 308	E A 314
21	E A 280	E A 324	218	E A 252	E A 276	232	224	A	A	A	A	A	A	A	A	228	A	A	A	230	E A 254	E A 304	E B 268	240
22	E A 288	E B 250	E A 284	E A 300	E A 280	E A 246	A	A	A	A	A	226	A	A	A	A	A	A	236	228	E A 268	E A 266	E A 286	E A 272
23	E B 262	E A 278	E B 232	E B 258	E A 256	232	232	200	A	A	222	204	A	204	204	A	A	A	A	E A 262	E A 264	E A 254	E B 212	E B 256
24	E B 268	E B 268	E B 240	234	220	224	E A 260	A	A	212	A	212	196	234	216	204	208	206	A	E A 256	E A 278	E A 244	E A 286	A
25	E A 296	E A 286	E B 268	E B 292	E B 280	E A 254	222	A	A	A	A	A	A	A	A	210	A	A	A	232	A	A	A	E A 326
26	A	E A 320	A	E A 294	E A 294	222	A	A	A	A	A	A	A	A	A	A	A	216	228	E A 238	E A 250	E A 250	E A 316	234
27	E A 306	E A 306	E A 272	E A 306	E A 236	222	218	A	A	A	A	A	A	A	210	A	210	A	A	E A 302	228	E A 242	E A 264	E B 230
28	E B 258	E A 284	E A 246	E A 280	228	A	A	A	A	A	A	A	A	A	222	214	222	A	248	E B 274	E A 274	226	E B 254	E B 258
29	E B 254	E A 262	218	232	A	A	A	A	A	A	A	A	A	A	A	A	A	242	A	E A 238	224	E A 310	E A 380	E A 314
30	A	E A 278	E A 314	E A 366	E A 326	E A 248	A	A	A	A	A	A	200	A	A	210	240	E A 242	A	E A 252	E A 284	E A 262	E A 264	E A 326
31	E B 246	E A 248	216	E A 256	210	216	210	A	A	A	A	A	A	A	A	226	212	200	E A 254	236	224	E A 242	E A 242	E A 348
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	31	30	31	30	29	22	18	13	11	15	17	14	14	15	17	11	14	9	28	29	29	30	29
MED	E B 280	E A 278	E 260	E 256	E 255	229	220	207	204	203	200	200	201	207	211	210	212	214	236	E A 244	U 223	E A 250	E A 270	E A 278
U Q	E A 295	E A 286	E A 278	E A 292	E A 280	E A 245	224	210	211	208	210	208	214	216	218	223	222	E A 240	E A 248	E A 260	E A 261	E A 277	E A 308	E A 310
L Q	E B 261	E 274	246	244	238	223	214	206	197	198	192	197	198	204	204	206	208	210	232	235	222	239	E 258	E 259

MAY 2011 h'F (KM)

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IONOSPHERIC DATA STATION Kokubunji

MAY 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	120	A	120	126	128	A	A	A	118	120	A					
2							116	A	A	A	A	A	A	A	A	A	A	A	B					
3						B	110	122	120	122	A	A	A	A	A	A	A	A	A					
4						B	118	114	A	A	A	120	A	A	A	A	A	A	A					
5						B	116	A	A	A	A	116	A	A	116	116	116	118	A					
6						B	114	114	A	A	A	A	A	A	110	120	114	A	A					
7						B	108	116	114	A	A	A	A	114	116	112	114	A	B					
8						B	A	A	A	A	A	A	A	A	A	A	118	A	A					
9						B	A	A	A	A	A	A	A	A	A	116	118	118	A					
10						B	120	118	118	118	A	124	A	A	A	A	A	124	A					
11						B	118	118	118	A	A	120	122	A	116	114	A	A	B					
12						B	122	A	126	A	124	A	A	A	A	A	A	A	B					
13						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
14						B	A	118	A	A	A	A	A	116	120	A	A	A	B					
15						B	A	A	A	A	A	A	120	122	124	124	122	A	A					
16						B	122	A	A	A	A	A	A	A	A	A	114	A	B					
17						B	120	A	A	A	A	A	A	A	A	A	120	A	B					
18						B	120	120	120	A	122	124	120	A	A	A	A	A	B					
19						B	A	A	A	A	A	114	A	A	A	A	A	A	A					
20						112	A	A	A	A	A	A	A	A	A	124	124	116	A					
21						B	A	A	A	A	A	A	A	A	A	A	120	120	B					
22						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
23						B	118	118	A	A	118	A	A	A	122	A	A	A	A					
24						118	A	A	A	A	A	A	A	A	A	A	114	A	B					
25						114	110	A	A	A	A	A	A	A	A	124	120	A	A					
26						B	A	A	A	A	A	A	A	A	A	118	A	A	B					
27						B	120	A	A	A	A	A	A	A	A	A	A	A	B					
28						B	A	A	A	A	A	A	A	A	A	124	118	A	118					
29						A	A	A	A	A	A	A	A	A	A	118	A	A	A					
30						120	A	A	A	A	A	A	A	A	A	A	A	112	A					
31						B	114	116	A	A	A	A	A	A	A	A	A	116	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						4	17	11	7	2	4	7	4	3	7	11	14	8	1					
MED						116	118	118	120	120	121	120	121	116	116	118	118	118	118					
U Q						119	120	120	120		123	124	125	122	122	124	120	120						
L Q						113	114	116	118		119	116	120	114	116	116	114	116						

IONOSPHERIC DATA STATION Kokubunji

MAY 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	98	94	94	94	B	126	118	122	122	104	G	G	G	108	110	106	104	116	108	100	100	100	100	B
2	B	B	B	98	B	B	108	108	102	98	102	102	104	104	100	100	102	102	104	104	104	100	102	100
3	98	98	96	92	98	B	G	102	98	G	102	96	98	98	96	96	94	94	100	96	96	100	98	B
4	B	112	94	92	B	122	128	116	104	104	100	G	98	100	104	98	100	100	108	104	110	108	108	98
5	116	B	B	B	B	146	134	108	106	100	98	G	96	98	G	G	102	118	106	104	104	96	102	B
6	B	102	112	98	108	124	120	120	104	102	100	100	104	104	100	G	122	106	104	104	100	100	98	98
7	B	B	B	B	B	B	128	120	102	102	98	100	100	G	G	98	116	108	100	100	100	98	94	B
8	B	90	98	102	116	112	104	104	102	96	104	94	100	102	102	104	116	108	104	104	98	98	102	96
9	96	98	98	96	B	134	106	106	100	100	100	100	98	98	98	102	104	116	108	108	106	106	102	98
10	98	B	B	B	B	112	104	124	114	G	102	G	98	102	104	98	100	100	100	98	96	96	96	92
11	94	88	90	92	92	138	144	98	98	104	102	G	G	106	G	124	106	104	104	104	90	98	98	98
12	96	B	96	90	92	98	124	110	128	104	104	106	98	100	104	104	108	104	100	100	96	100	100	98
13	106	98	98	98	94	94	94	116	106	104	104	104	104	104	104	106	102	106	102	106	102	102	102	106
14	96	92	92	92	B	120	106	104	104	102	102	100	106	G	G	118	104	104	104	102	104	102	100	100
15	98	96	96	B	B	150	96	102	104	104	104	104	G	G	122	118	112	106	106	106	100	B	106	104
16	100	100	94	92	86	96	112	104	104	102	100	98	98	98	100	98	114	106	102	102	102	102	102	96
17	100	98	94	92	B	132	114	102	102	102	106	106	106	110	108	108	124	104	104	98	98	98	98	96
18	98	98	98	98	112	130	116	122	120	108	120	122	128	106	108	102	102	104	104	102	104	102	102	100
19	96	96	96	94	96	122	104	102	104	106	106	106	100	102	106	104	108	104	100	102	102	100	104	102
20	100	96	92	92	94	122	106	104	100	100	96	108	98	98	102	124	G	114	104	102	102	102	100	100
21	100	98	96	98	94	118	104	104	98	98	98	96	98	98	98	106	122	120	104	100	100	100	104	104
22	98	128	90	90	94	120	108	104	104	104	104	104	100	98	94	96	100	100	100	94	94	94	102	104
23	98	98	102	108	90	120	114	120	104	104	114	104	104	104	G	102	108	108	104	102	100	100	98	98
24	98	96	94	88	94	128	108	104	102	102	102	102	104	102	106	106	104	104	108	100	92	100	98	98
25	98	98	98	92	92	134	116	102	104	96	94	96	96	96	110	G	122	108	104	100	100	104	106	106
26	100	96	96	94	94	100	104	104	104	104	98	96	94	104	104	120	104	102	104	102	102	102	102	102
27	100	96	96	92	94	128	122	104	104	100	104	104	104	102	104	98	98	96	92	90	92	88	98	98
28	98	100	94	94	94	110	104	104	98	96	96	96	98	98	102	102	116	108	G	B	110	106	106	104
29	104	98	116	114	108	108	106	108	102	98	98	92	92	92	102	118	106	106	106	104	104	104	104	100
30	98	98	96	94	94	122	108	104	98	100	102	102	104	98	98	102	106	114	106	104	104	104	102	100
31	B	94	90	94	92	94	114	116	104	102	102	98	98	100	100	98	104	102	94	96	102	102	104	104
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	26	27	27	21	28	30	31	31	29	30	26	28	28	26	28	30	31	30	30	31	30	31	27
MED	98	98	96	94	94	122	108	104	104	102	102	101	99	101	103	103	105	106	104	102	100	100	102	100
U Q	100	98	98	98	97	129	118	116	104	104	104	104	104	104	106	107	114	108	106	104	104	102	104	104
L Q	98	96	94	92	92	111	104	104	102	100	98	96	98	98	100	98	102	102	100	100	98	98	98	98

IONOSPHERIC DATA STATION Kokubunji

MAY 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	F3	F4	F5	F3		C2	C2	CL11	CL21	L2				L2	L2	L2	L2	CL12	L2	F5	F3	F2	F2	
2				F1			C2	L2	L2	L3	L2	L2	L2	L2	L3	L2	L2	L2	L3	F3	F2	F4	F4	F3
3	F2	F3	F3	F2	F1			L1	L2		L2	L2	L2	L3	L3	L2	L3	L3	L3	F2	F4	F4	F3	
4		F1	F2	F1		C2	C2	C2	L2	L2	L2		L2	L2	L2	L2	L2	L2	L2	F6	F3	F4	F3	F2
5	F2					H2	H2	L2	L2	L2	L2		L2	L2			L1	CL22	L2	F3	F3	F2	F3	
6		F2	F2	F1	F1	C1	C2	CL21	L2	L2	L2	L2	L2	L2	L2		CL32	L4	L5	F5	F2	F2	F1	F1
7							C2	CL12	L2	L2	L2	L2	L2			L2	CL22	L2	L3	F5	F3	F3	F3	
8		F1	F2	F1	F3	C2	L2	L2	L2	L3	L2	L2	L2	L2	L2	L2	CL21	L2	L3	F4	F5	F2	F2	F2
9	F2	F2	F1	F2		H2	L2	L3	L2	L2	L3	L2	L2	L2	L2	L2	L1	CL21	L2	F3	F2	F3	F3	F2
10	F1					C1	L2	CL12	CL11		L2		L2	L2	L2	L2	L2	L2	L2	F3	F4	F2	F4	F3
11	F2	F2	F2	F2	F2	H2	HL21	L2	L2	L2	L2			L2		CL22	L2	L3	L3	F3	F1	F5	F5	F3
12	F4		F7	F4	F5	L3	CL22	L2	CL12	L2	L2	L2	L2	L2	L3	L2	L2	L3	L3	F5	F4	F4	F2	F4
13	F2	F2	F3	F3	F4	L3	L3	CL13	L2	L2	L2	L2	L2	L2	L2	L2	L3	L2	L2	F3	F2	F4	F4	F4
14	F2	F2	F2	F2		C2	L2	L2	L2	L2	L2	L2	L2			C2	L3	L3	L3	F4	F3	F4	F3	F3
15	F2	F6	F2			H1	L2	L3	L2	L2	L2	L2			C1	C1	C1	L2	L2	F3	F2		F6	F4
16	F4	F5	F3	F3	F3	L2	CL22	L4	L3	L3	L3	L2	L2	L2	L2	L2	CL32	L2	L3	F5	F4	F6	F5	F5
17	F4	F3	F3	F2		C2	CL32	L3	L3	L3	L2	L2	L2	L2	L2	L2	CL11	L2	L3	F4	F4	F5	F4	F4
18	F4	F4	F3	F4	F2	H3	CL21	CL21	CL21	L2	CL22	CL22	CL22	L2	L2	L3	L3	L3	L3	F5	F4	F4	F3	F3
19	F3	F4	F3	F4	F3	CL22	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L3	L4	F3	F3	F4	F5	F2
20	F4	F4	F3	F4	F2	C2	L3	L2	L2	L3	L3	L2	L2	L2	L2	CL12		C2	L5	F5	F4	F4	F5	F6
21	F3	F5	F3	F3	F3	CL22	L2	L2	L3	L2	L2	L3	L2	L3	L2	L2	CL22	CL22	L3	F3	F3	F3	F2	F4
22	F4	F3	F4	F4	F3	CL22	L3	L2	L3	L2	L2	L2	L2	L2	L2	L2	L3	L3	L2	F2	F4	F3	F4	F4
23	F2	F3	F2	F2	F2	C2	CL12	CL22	L2	L2	C2	L2	L2	L2		L2	L2	L3	L3	F4	F4	F5	F2	F3
24	F2	F2	F2	F2	F1	C2	L3	L2	L2	L2	L2	L2	L2	L2	L2	L2	L1	L3	L2	F4	F3	F3	F4	F6
25	F4	F4	F3	F3	F3	H2	C2	L3	L3	L3	L3	L3	L3	L2	L2		CL22	L2	L3	F3	F4	F5	F5	F4
26	F4	F4	F6	F3	F4	L2	L3	L3	L2	L2	L3	L2	L3	L2	L2	CL11	L2	L2	L3	F3	F5	F5	F5	F2
27	F3	F5	F6	F5	F3	H2	CL21	L3	L3	L2	L2	L2	L2	L2	L2	L2	L2	L2	L4	F4	F5	F3	F3	F2
28	F3	F3	F3	F4	F2	L3	L2	L3	L2	L2	L2	L2	L2	L2	L2	L1	CL11	L1			F2	F2	F2	F3
29	F2	F4	F5	F4	F5	L3	L2	L2	L3	L2	L2	L2	L3	L3	L2	CL21	L3	L2	L3	F3	F3	F3	F5	F3
30	F4	F4	F3	F4	F4	C2	L2	L2	L3	L2	L2	L2	L2	L2	L3	L2	L2	C2	L2	F4	F4	F5	F3	F3
31		F3	F2	F2	F3	L2	CL11	CL21	L2	L2	L2	L2	L2	L2	L3	L2	L2	L1	L2	F1	F3	F5	F3	F4
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

MAY 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

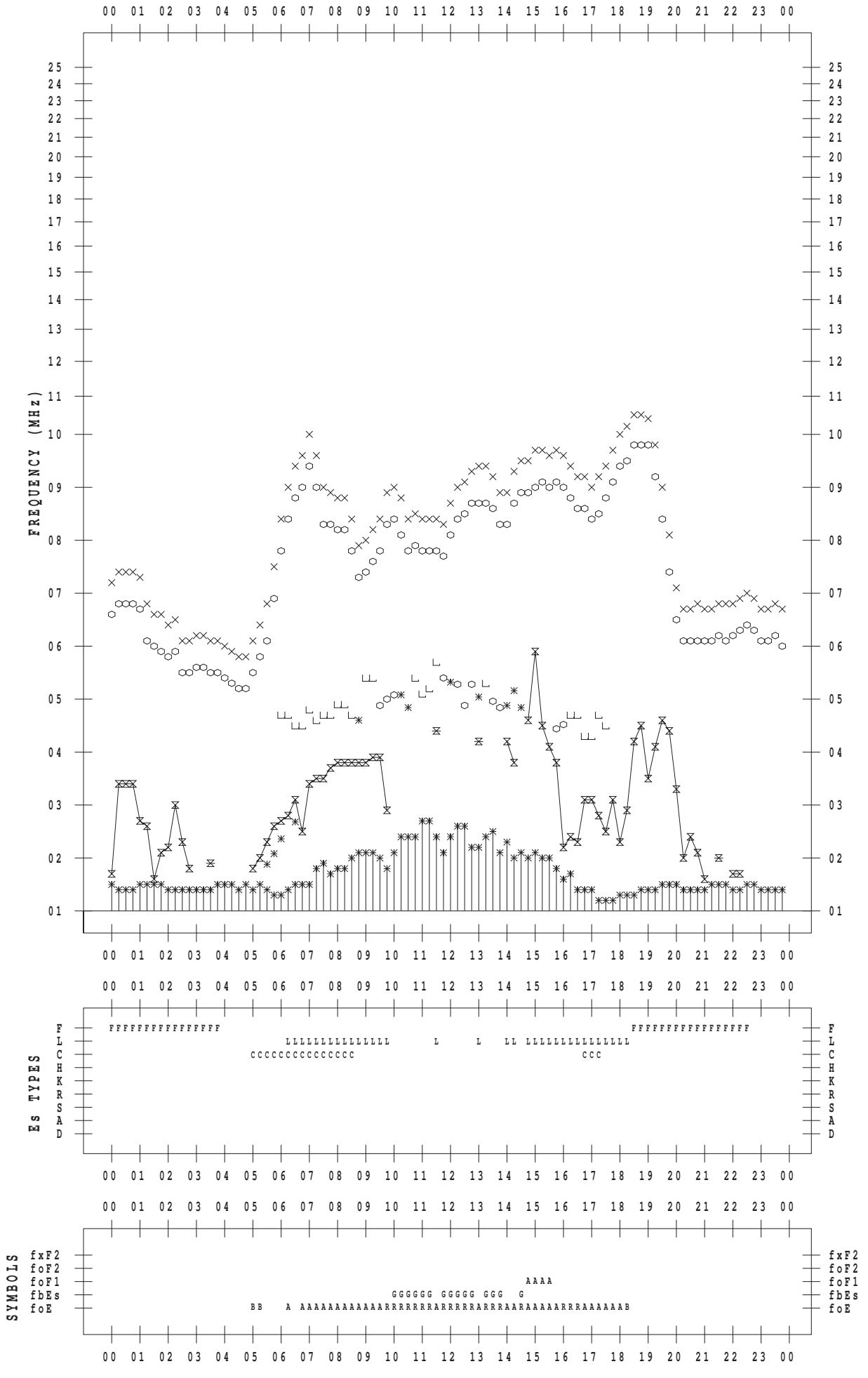
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 5/ 1

135 °E MEAN TIME



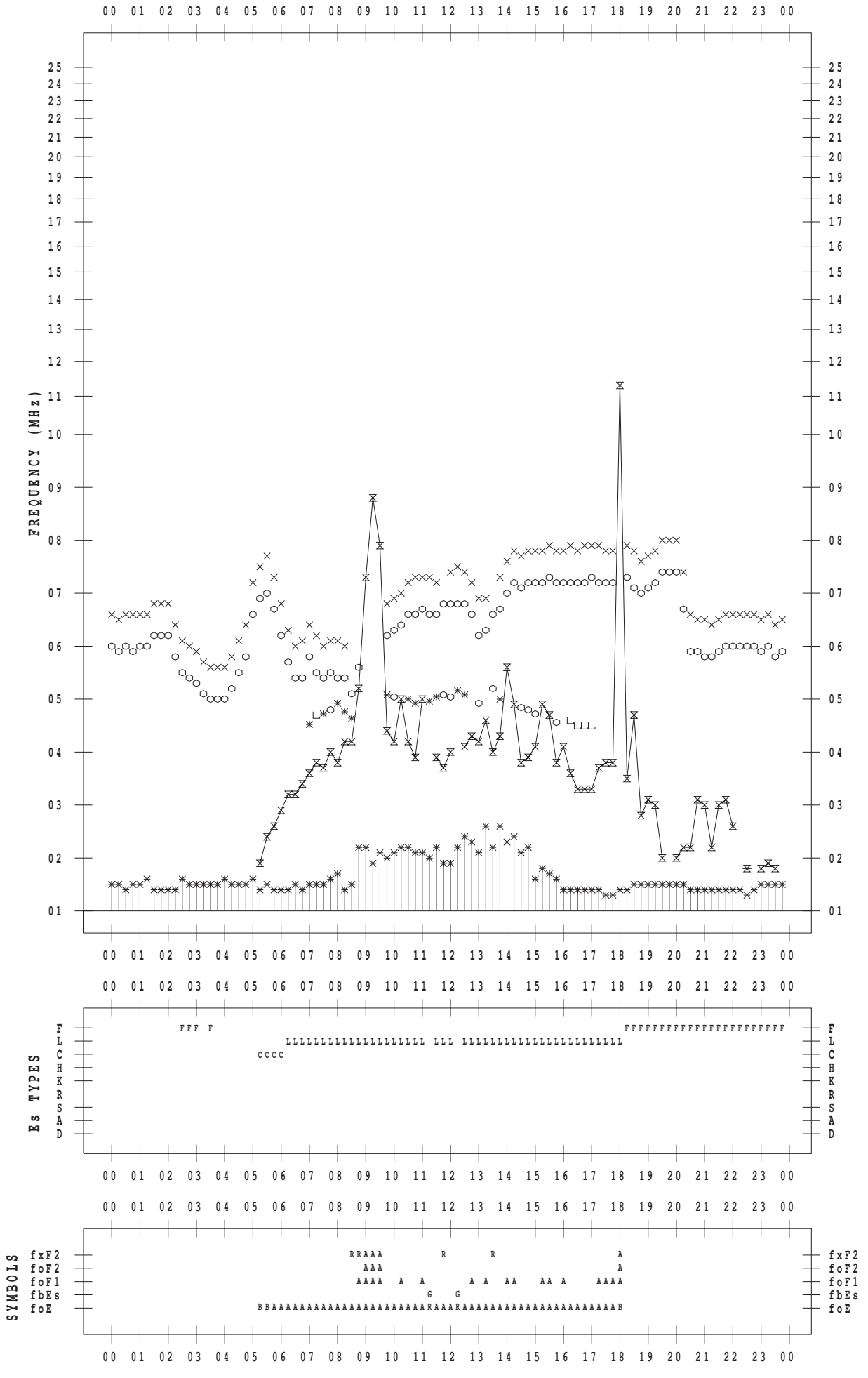
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 5/ 2

135 °E MEAN TIME



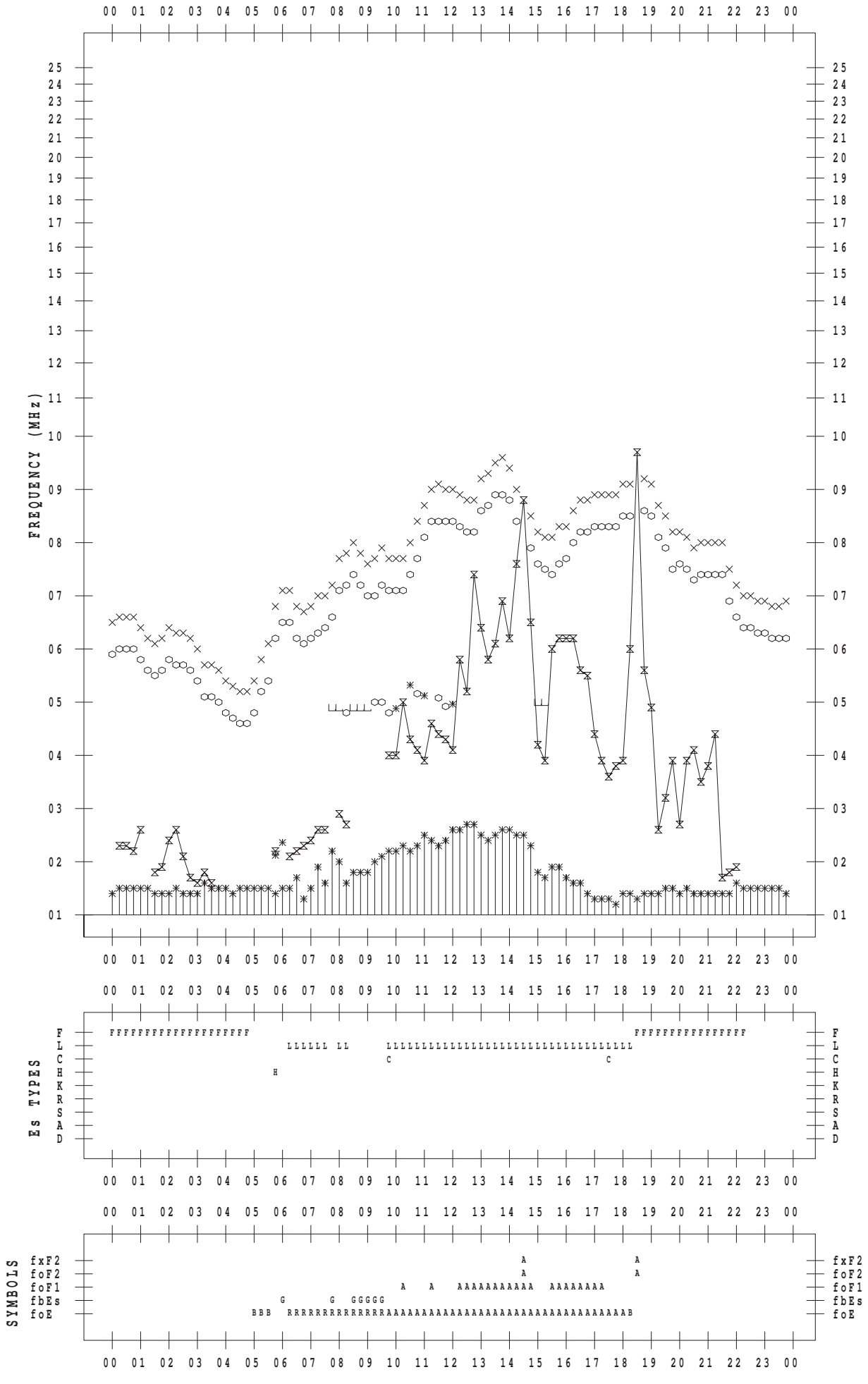
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 5/ 3

135 °E MEAN TIME



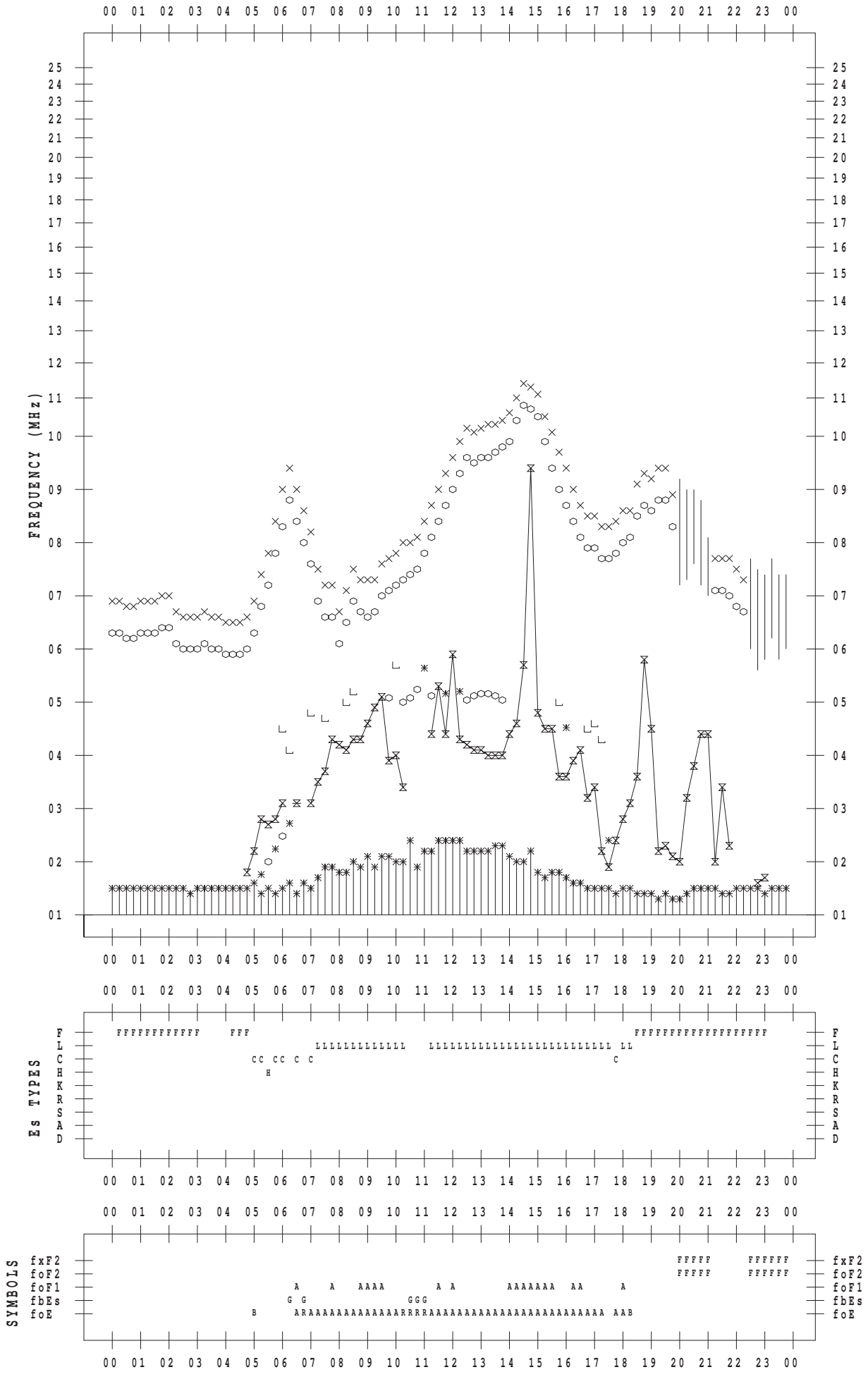
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 5/ 4

135 °E MEAN TIME



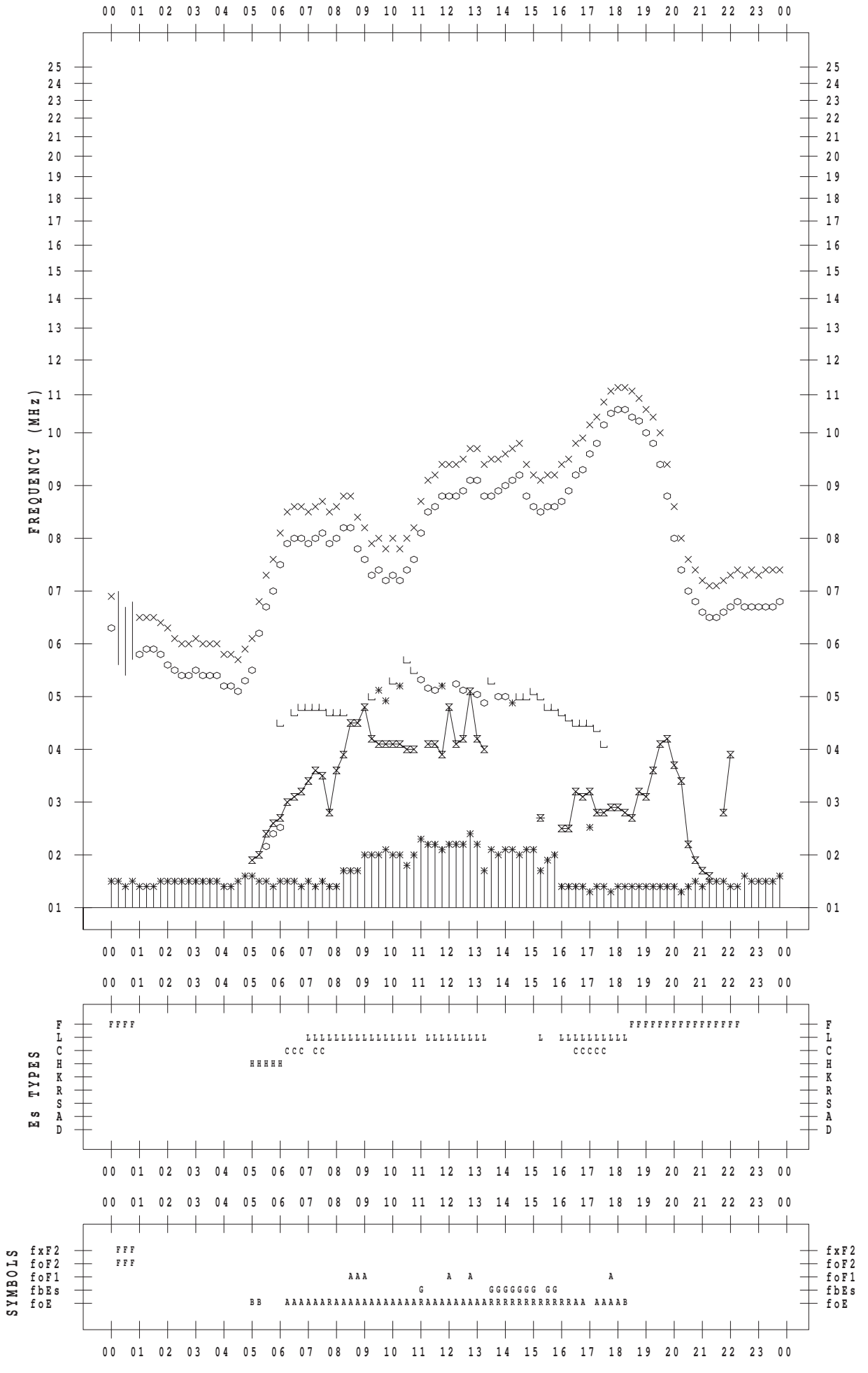
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 5/ 5

135 °E MEAN TIME



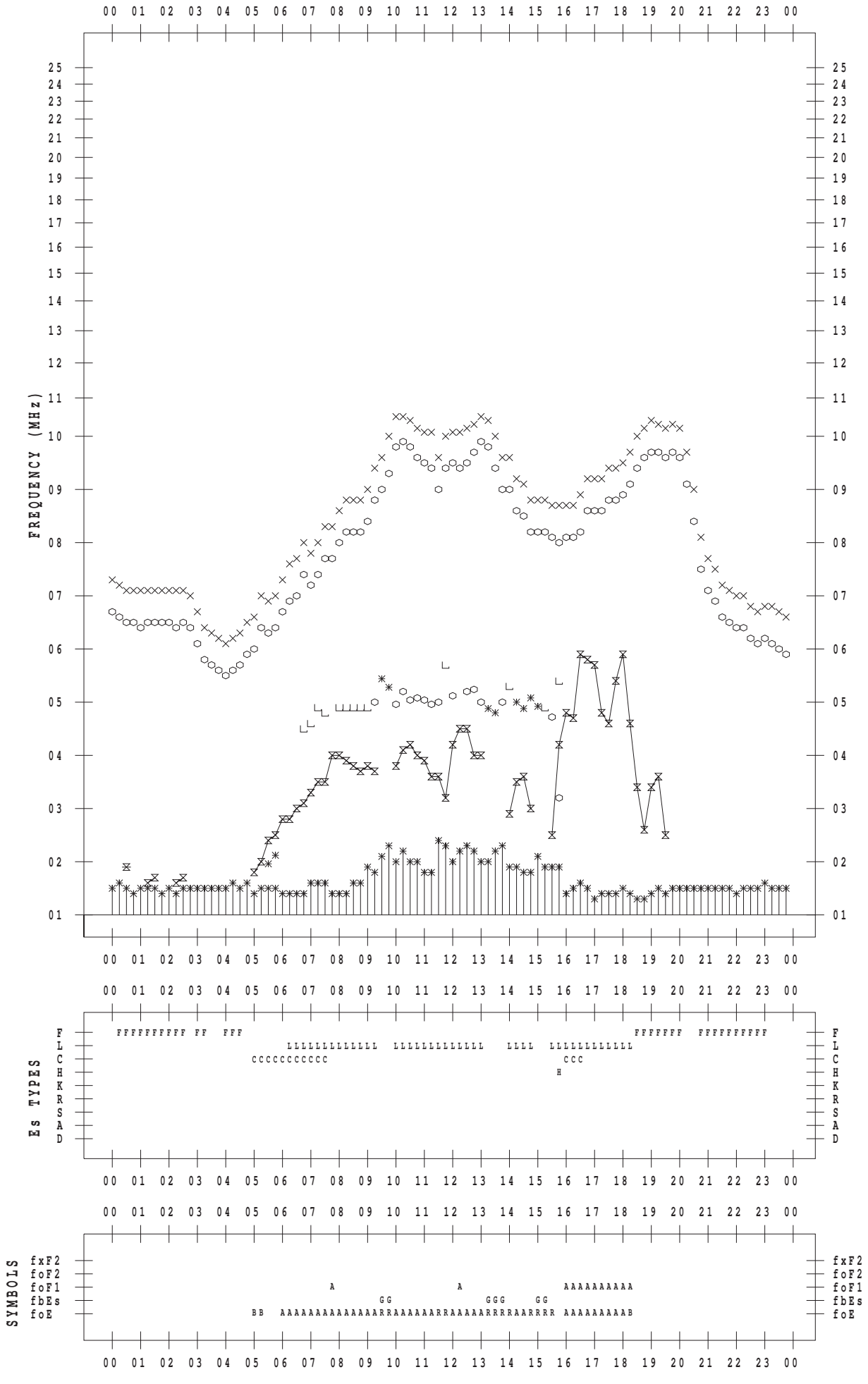
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 5/ 6

135 °E MEAN TIME



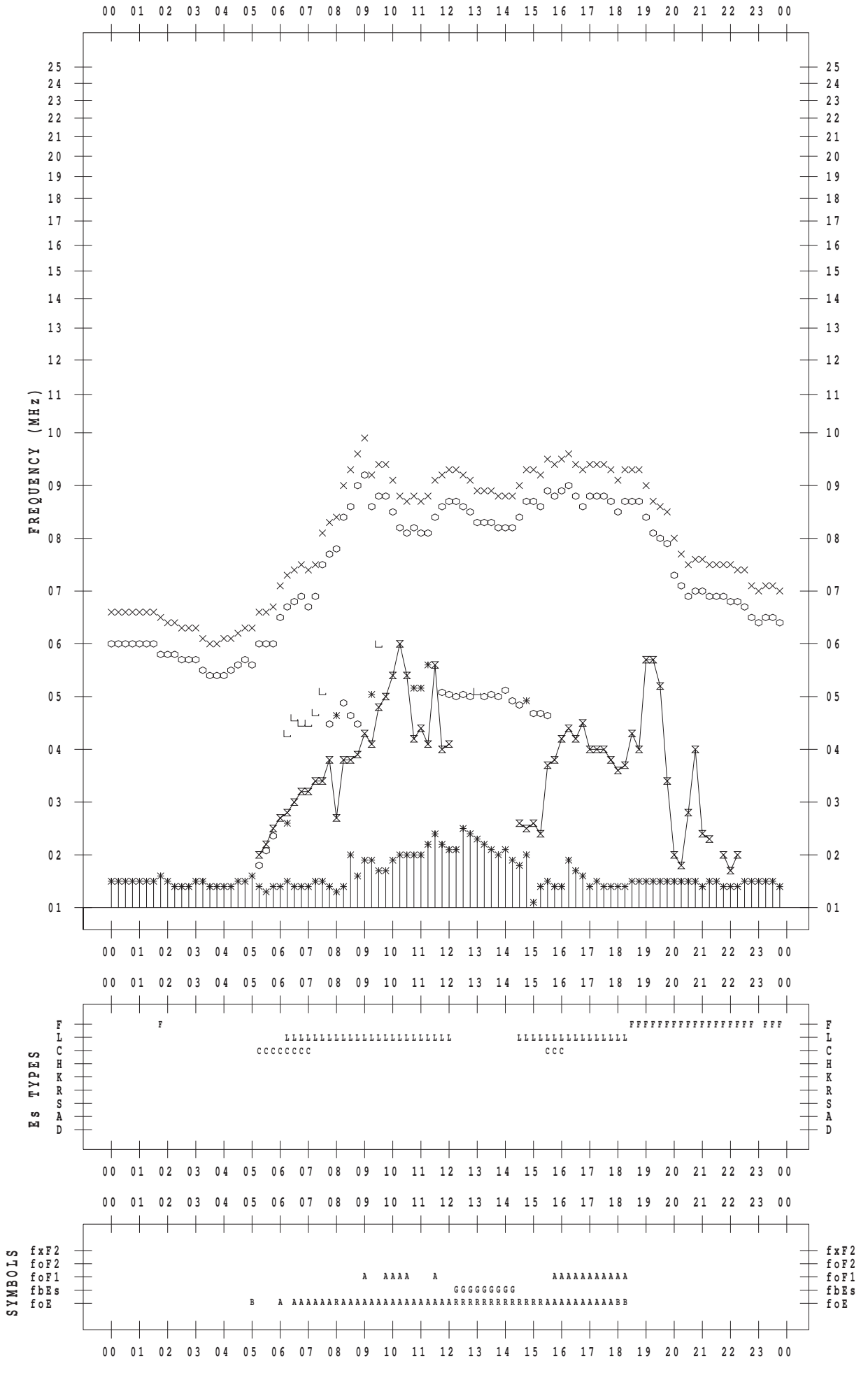
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 5/ 7

135 °E MEAN TIME



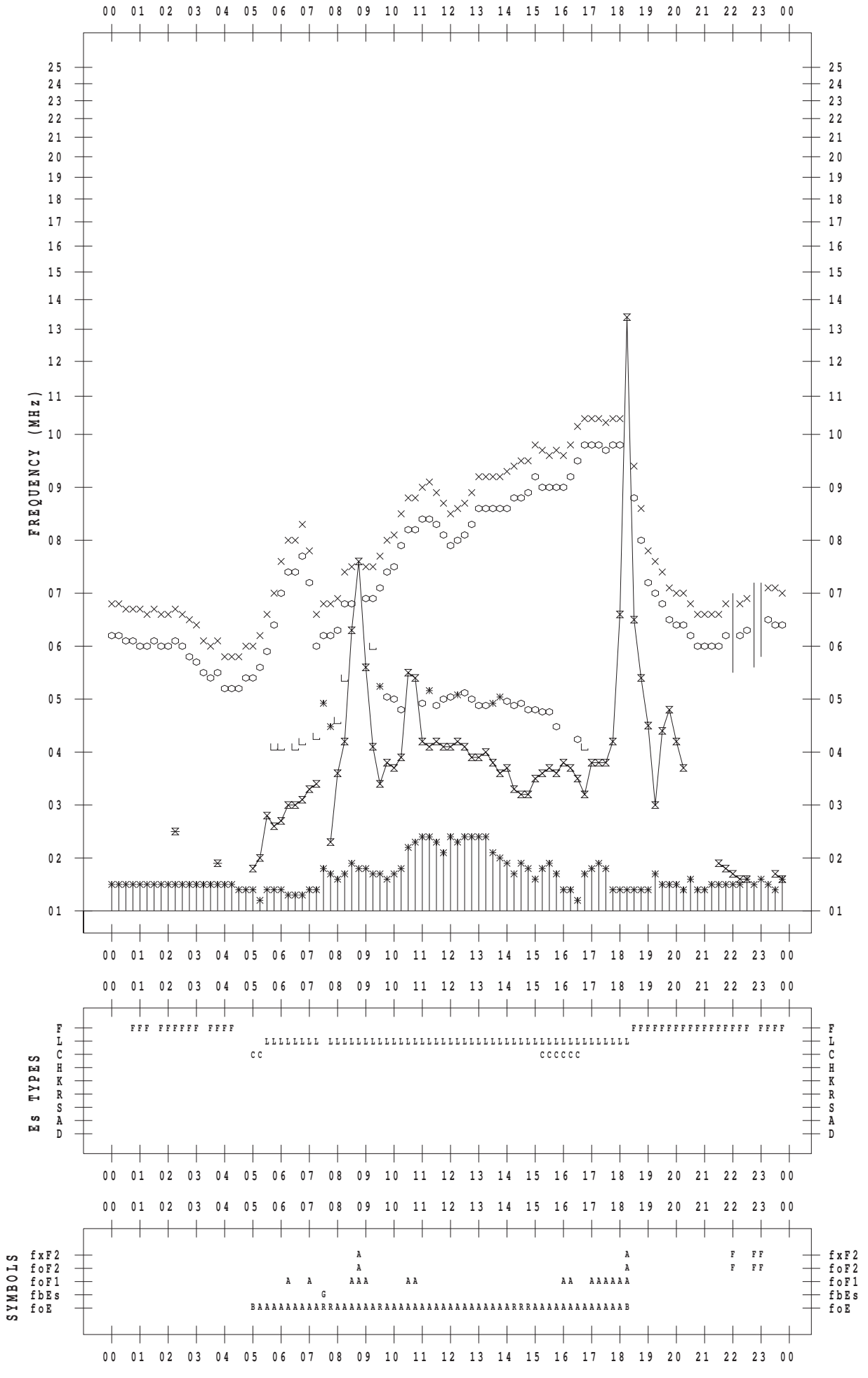
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 5/ 8

135 °E MEAN TIME

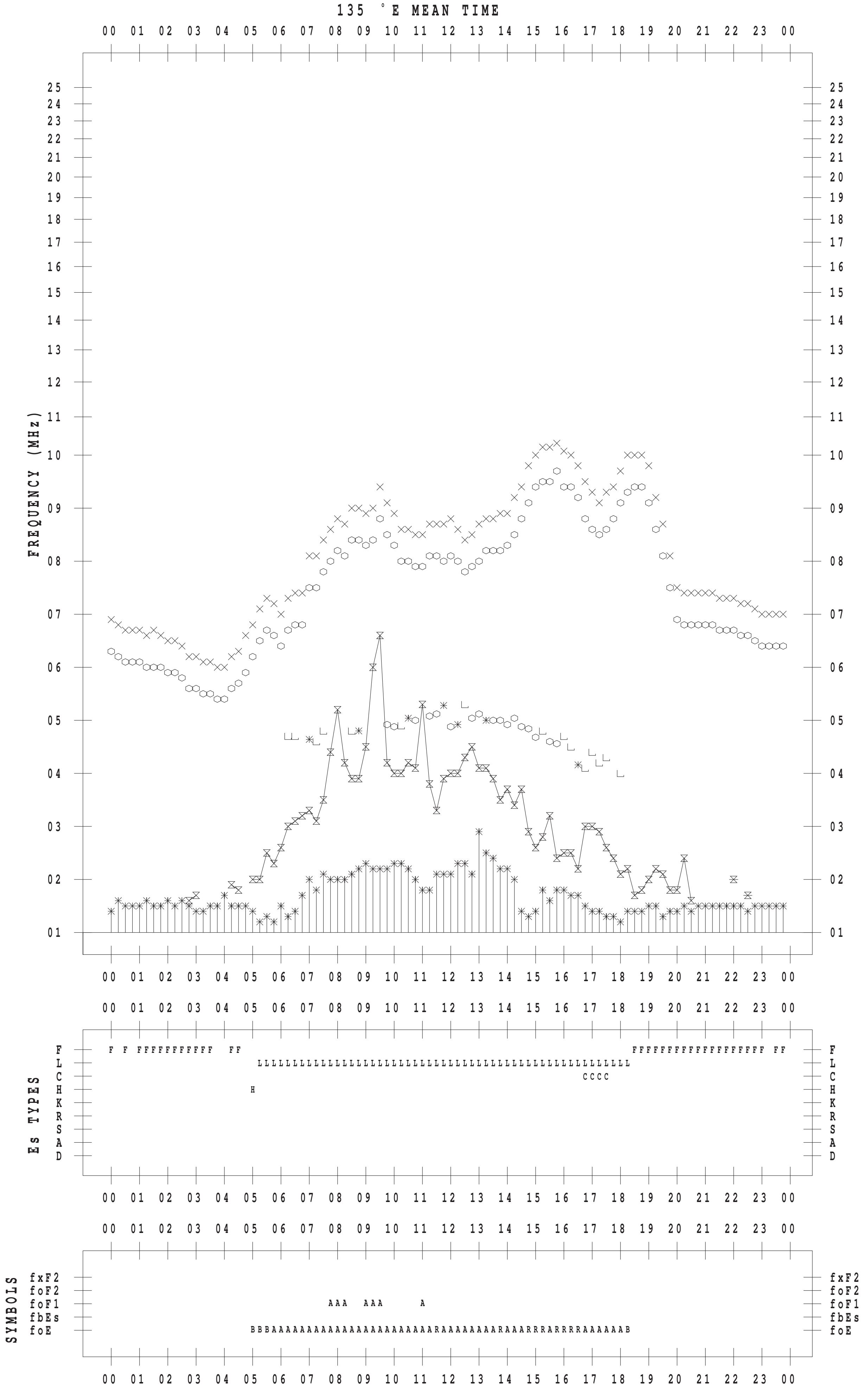


f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 5/ 9



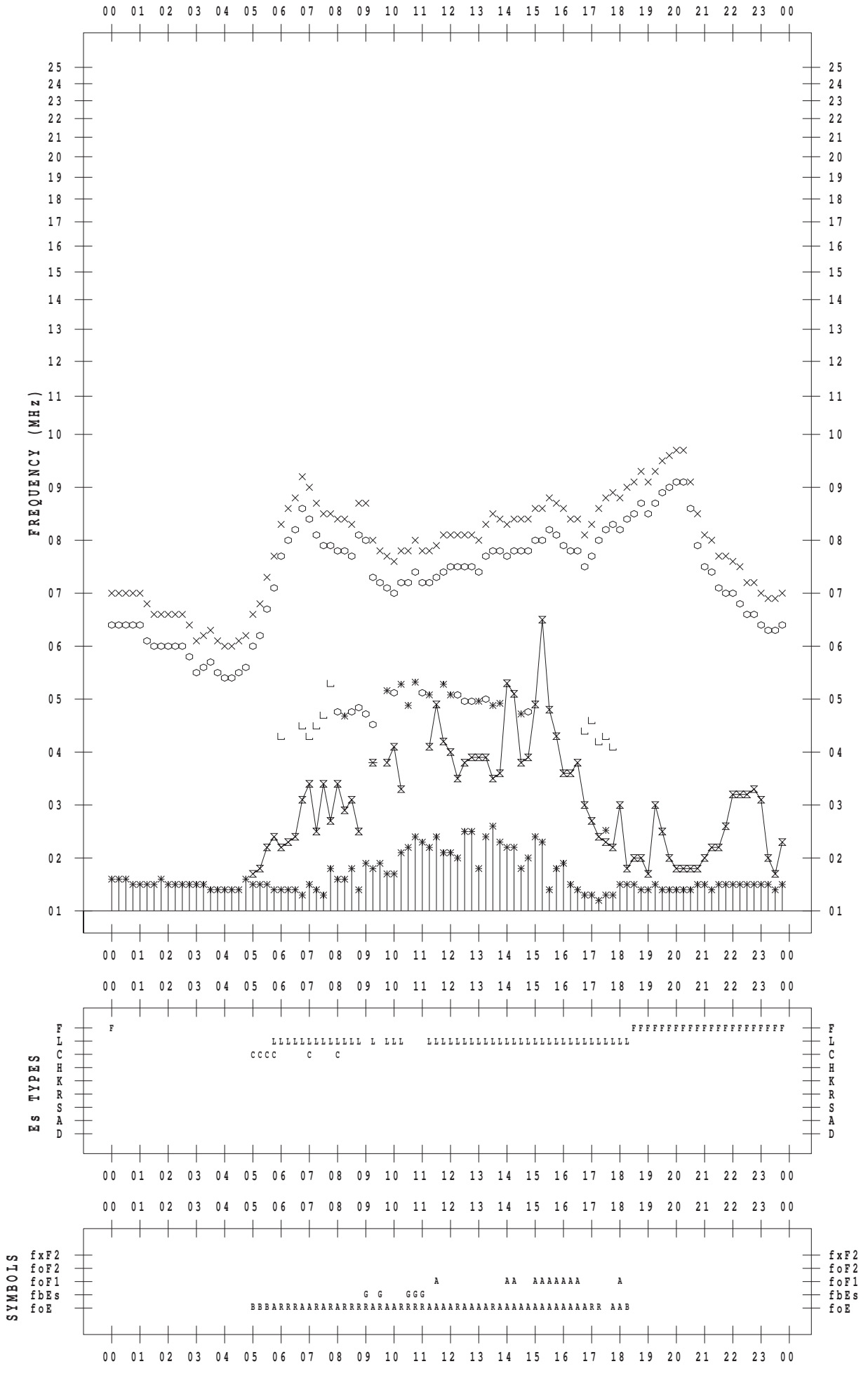
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 5/10

135 °E MEAN TIME



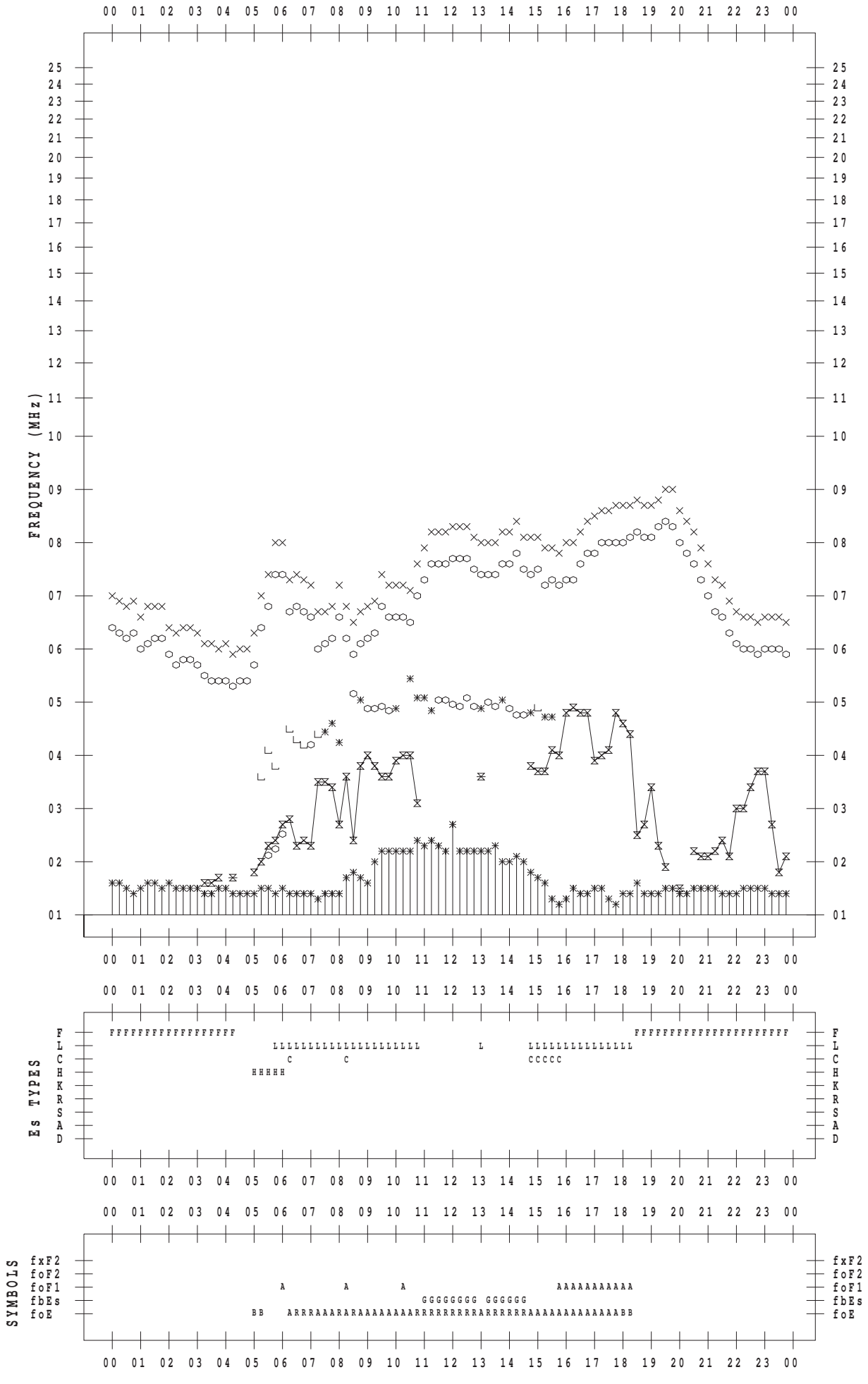
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 5/11

135 °E MEAN TIME



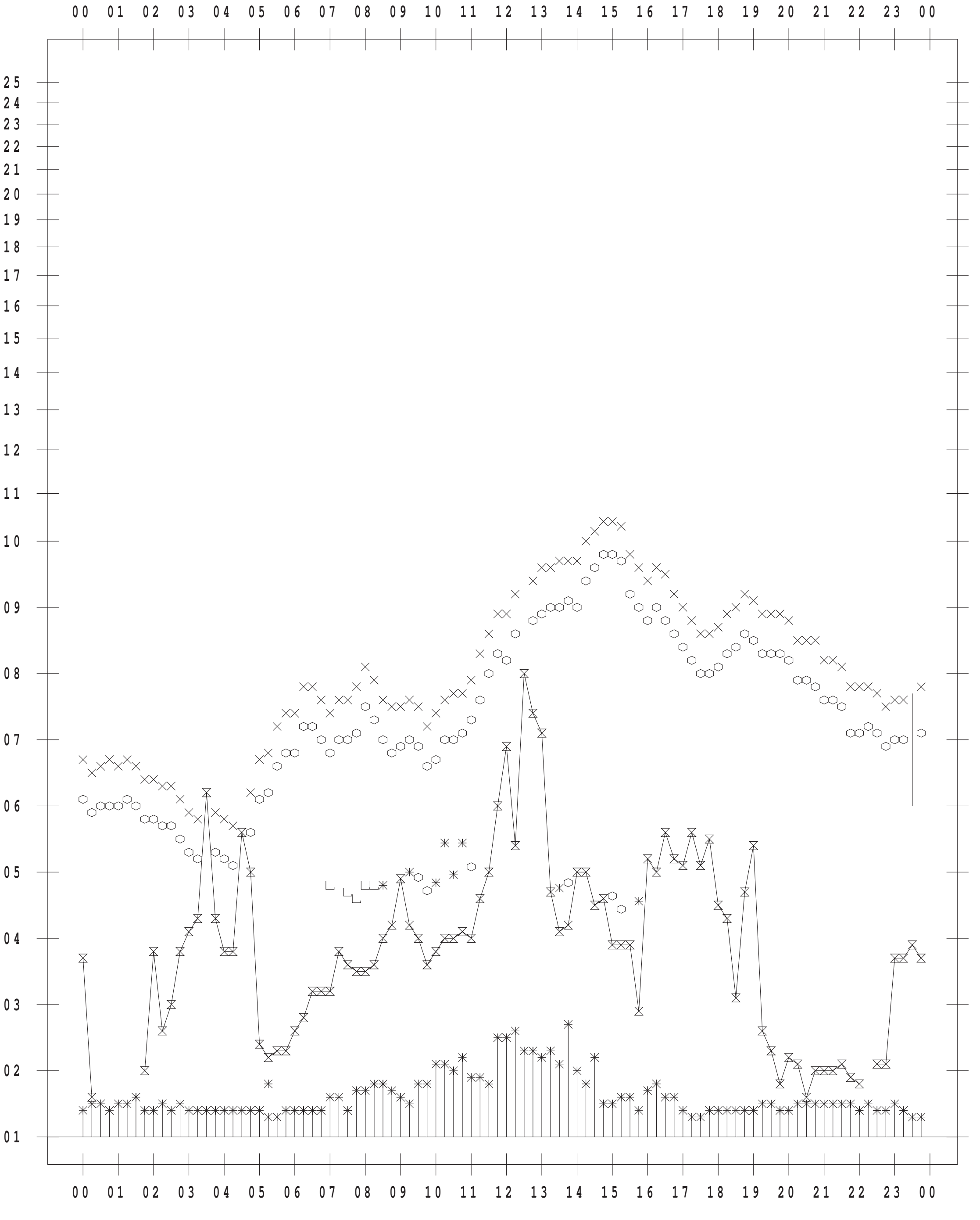
f-PLOT DATA

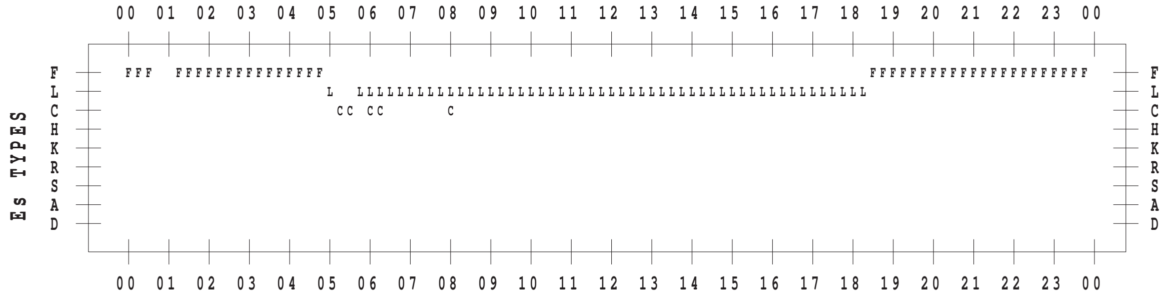
SCALER : I.NISHIMUTA

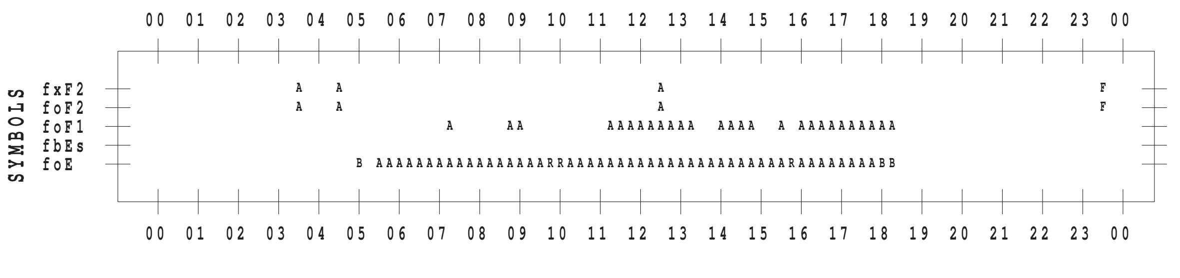
STATION : Kokubunji

DATE : 2011/ 5/12

135 °E MEAN TIME







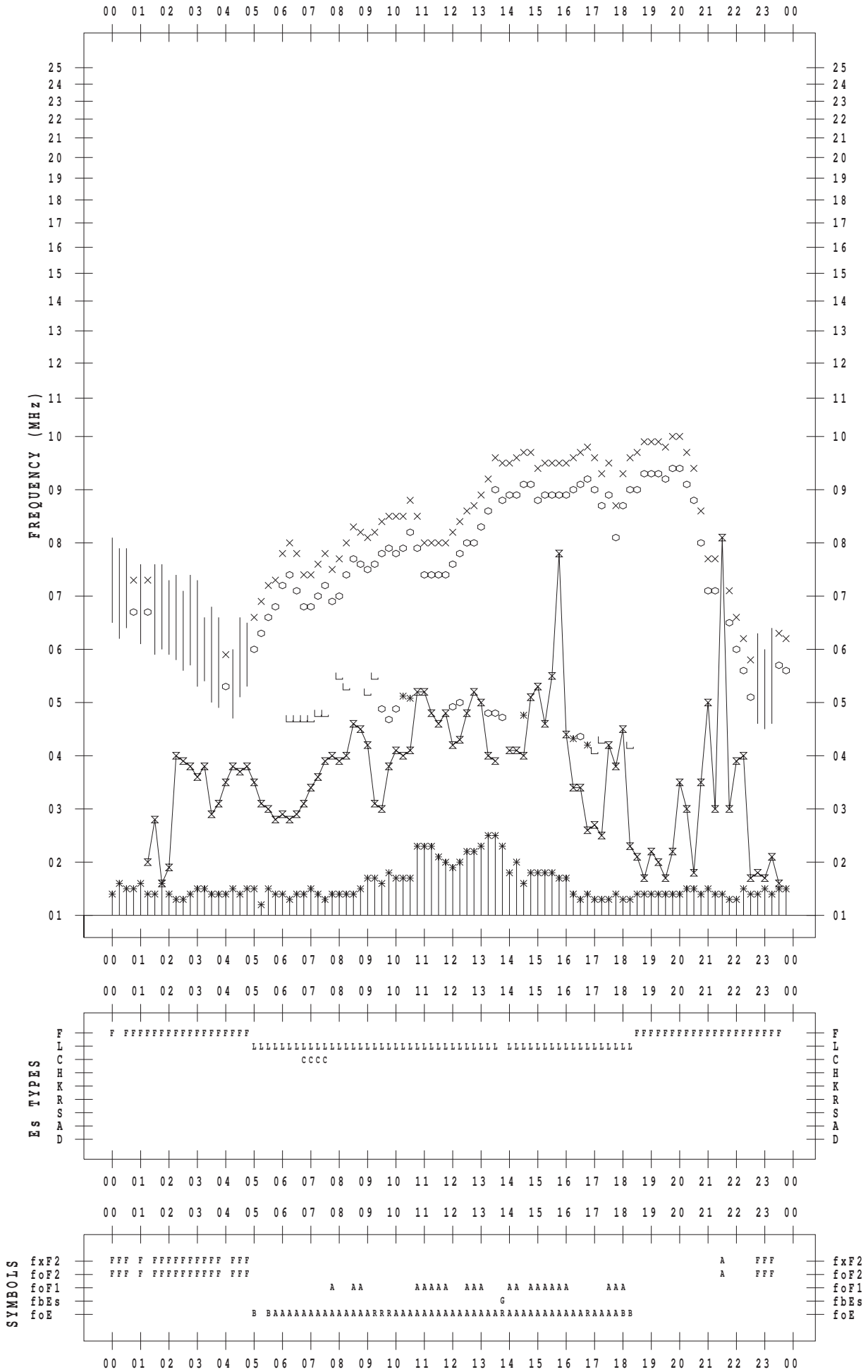
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 5/13

135 °E MEAN TIME



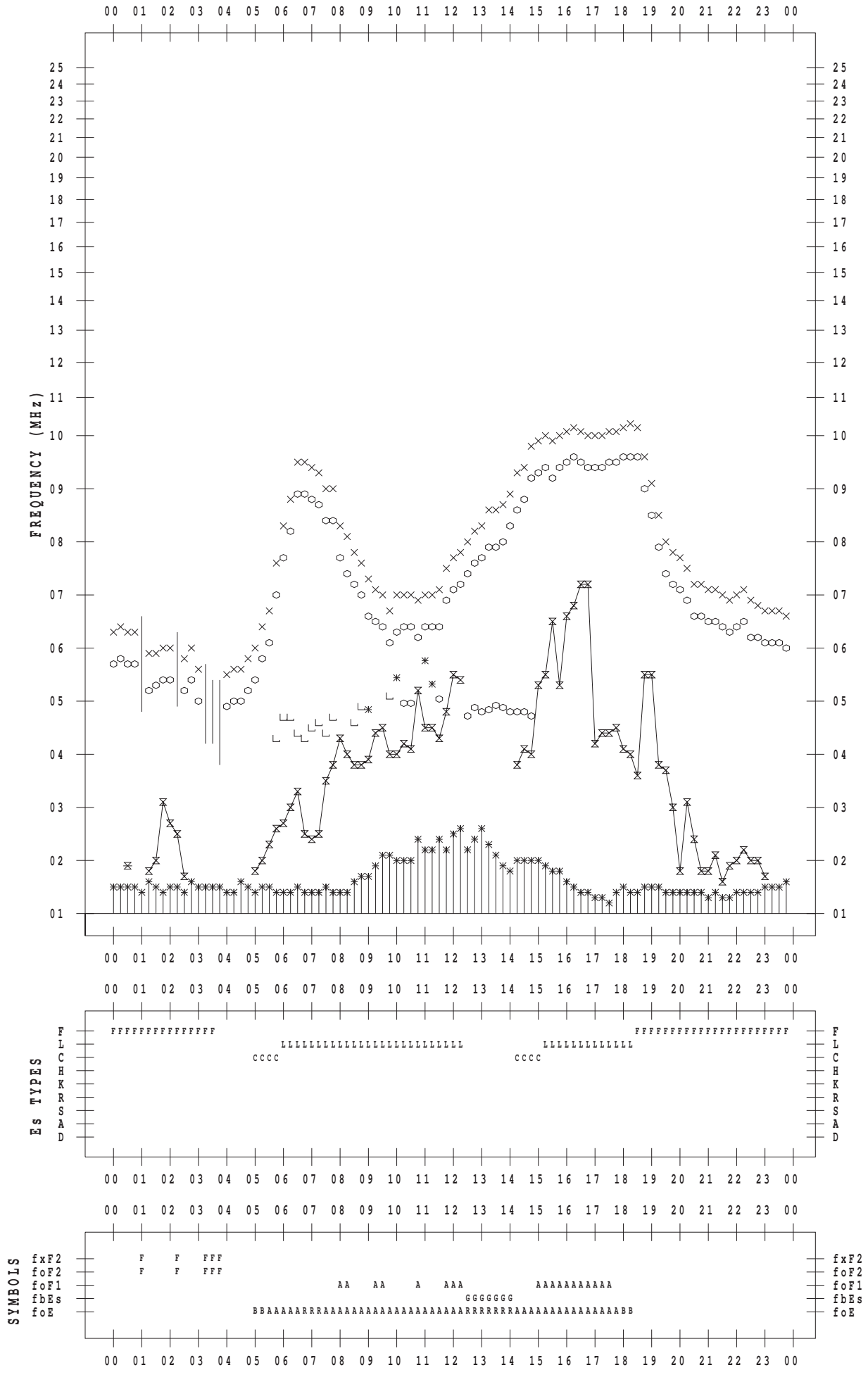
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 5/14

135 °E MEAN TIME



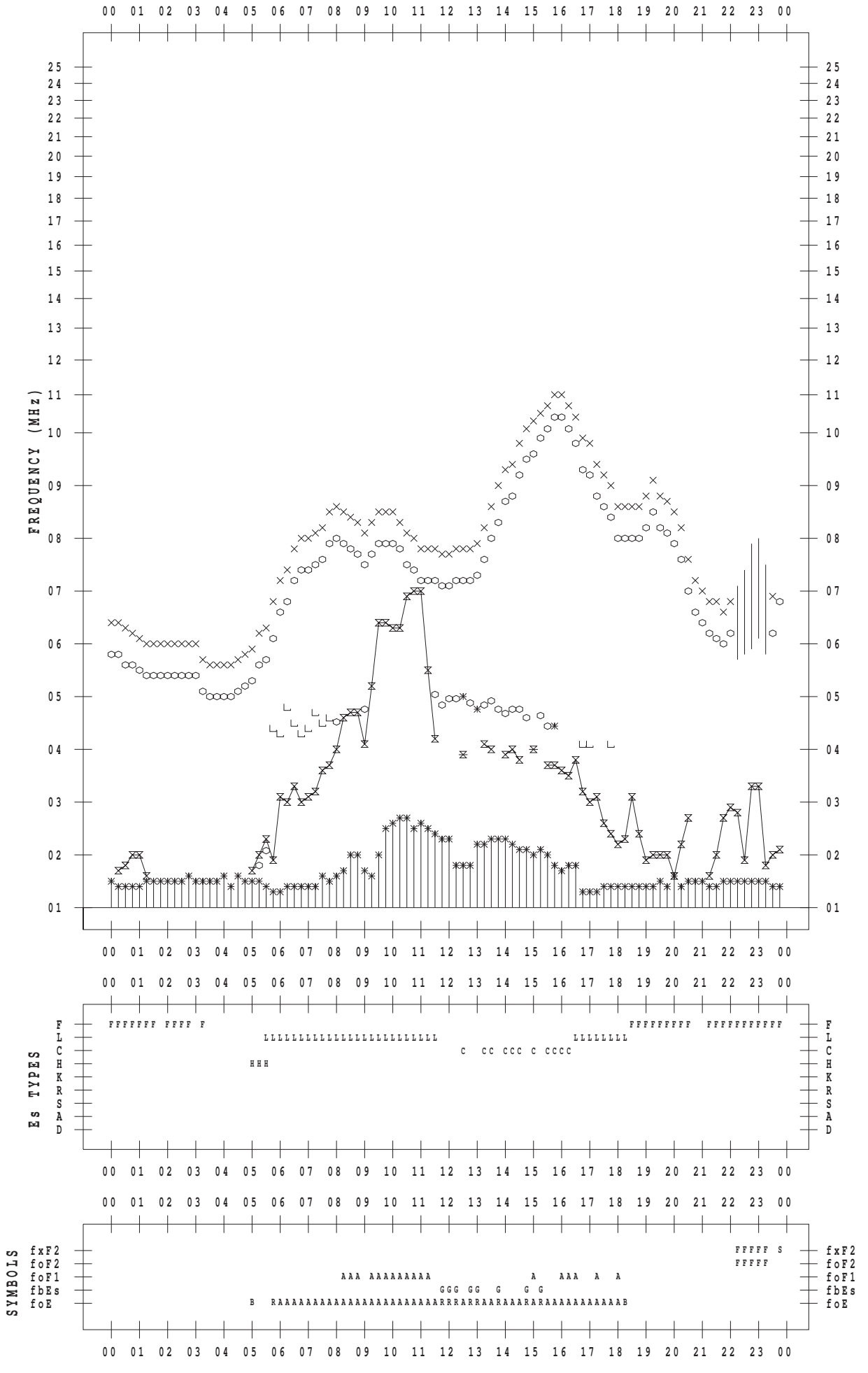
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 5/15

135 °E MEAN TIME

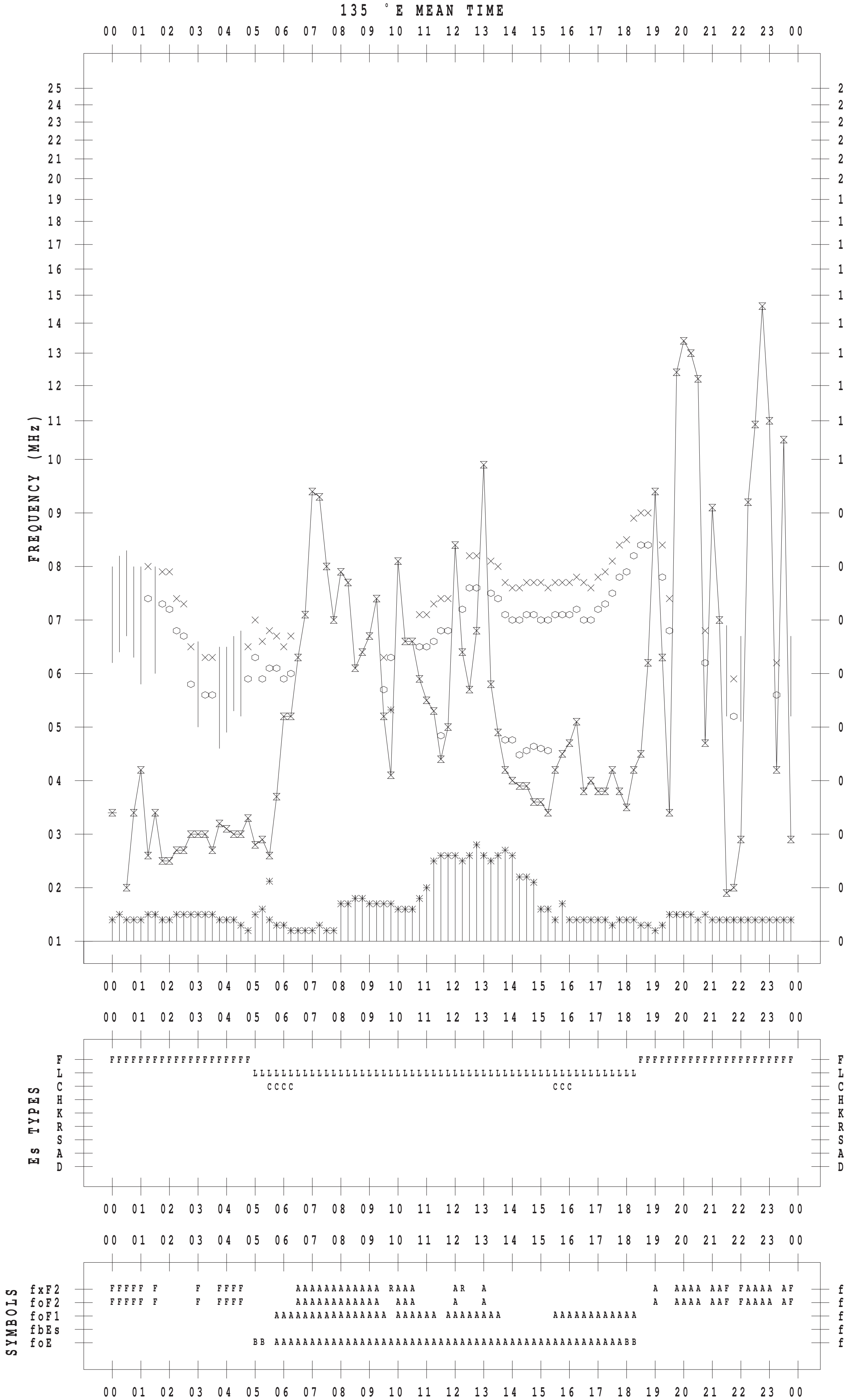


f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 5/16

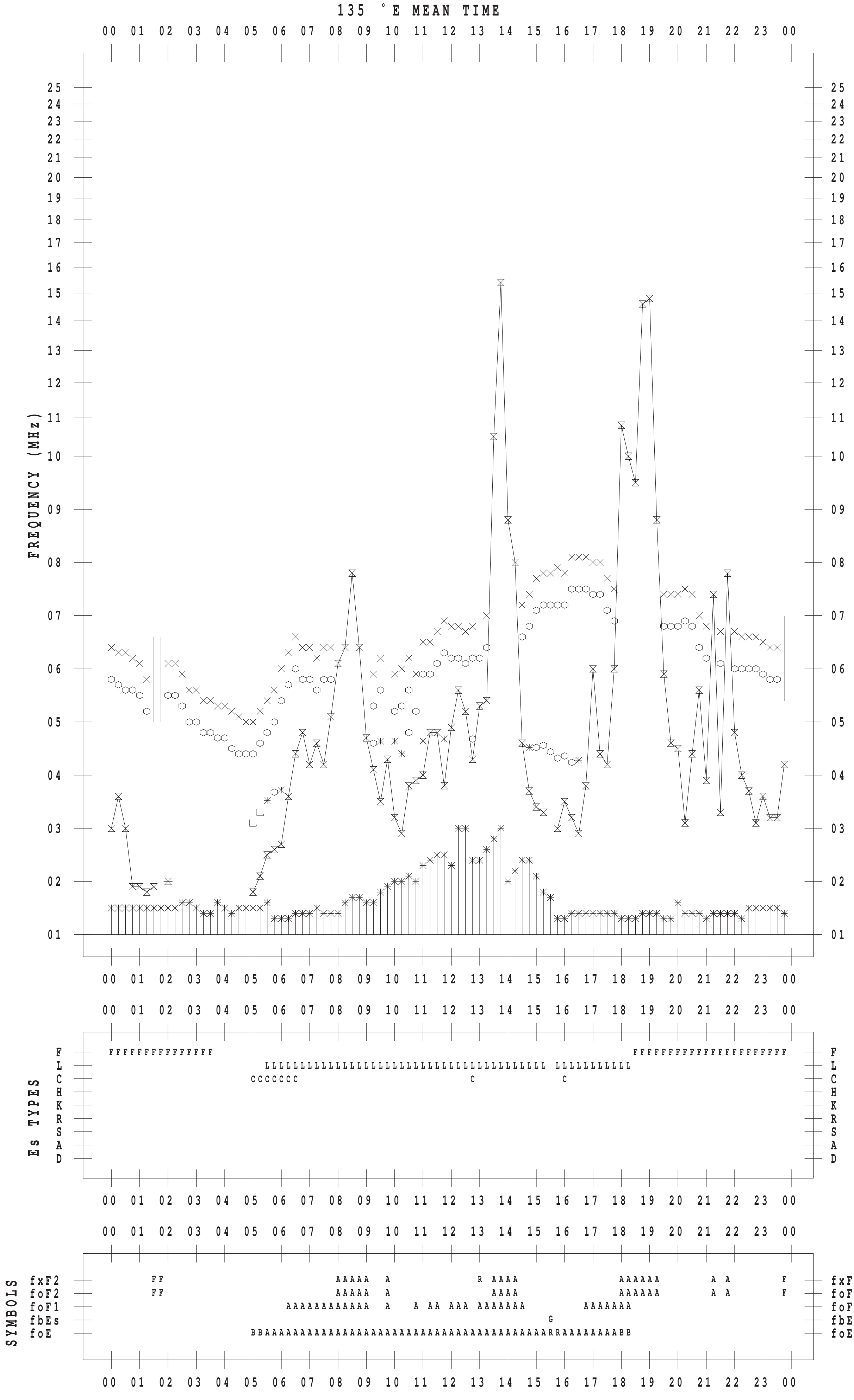


f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 5/17



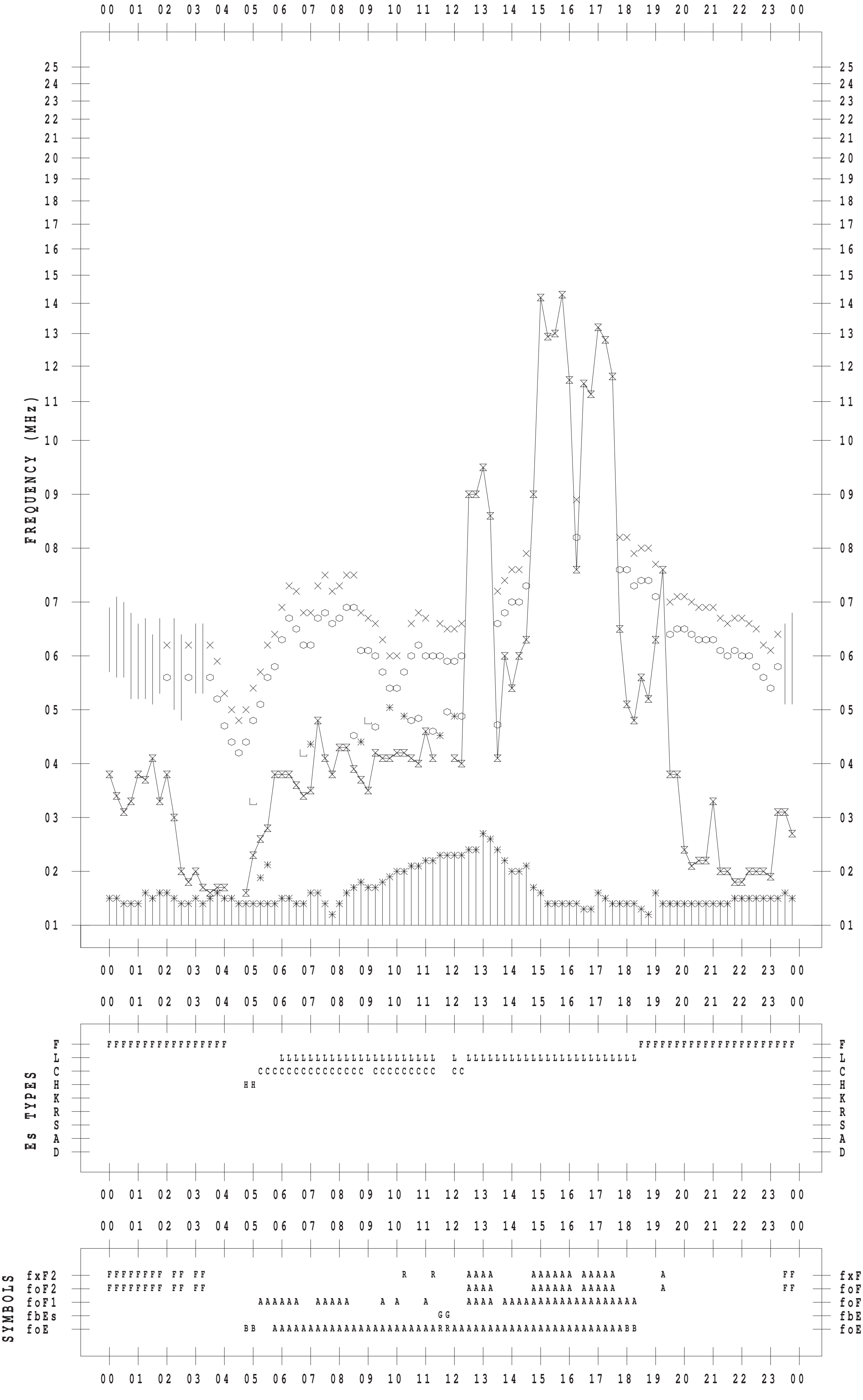
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 5/18

135 °E MEAN TIME



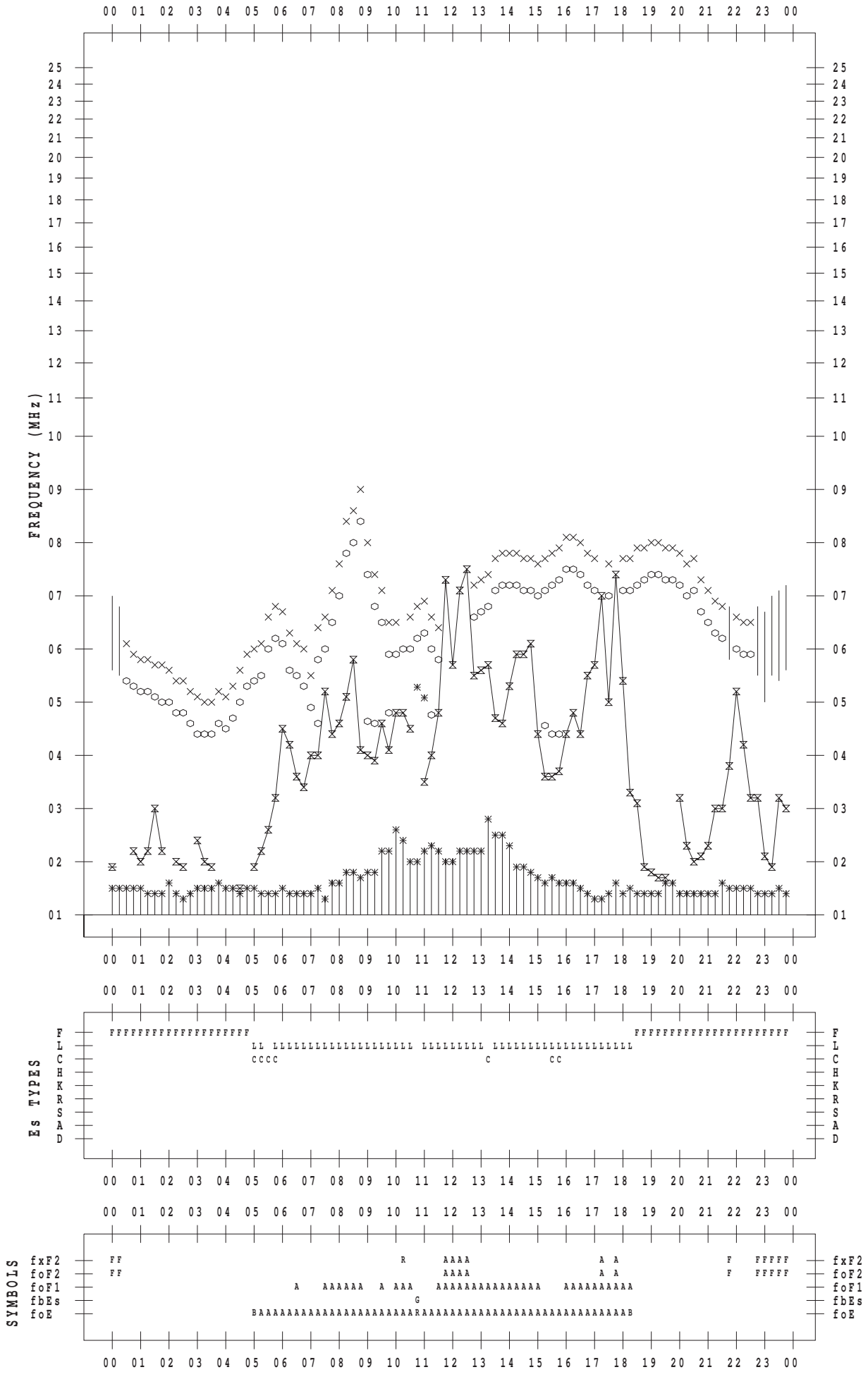
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 5/19

135 °E MEAN TIME



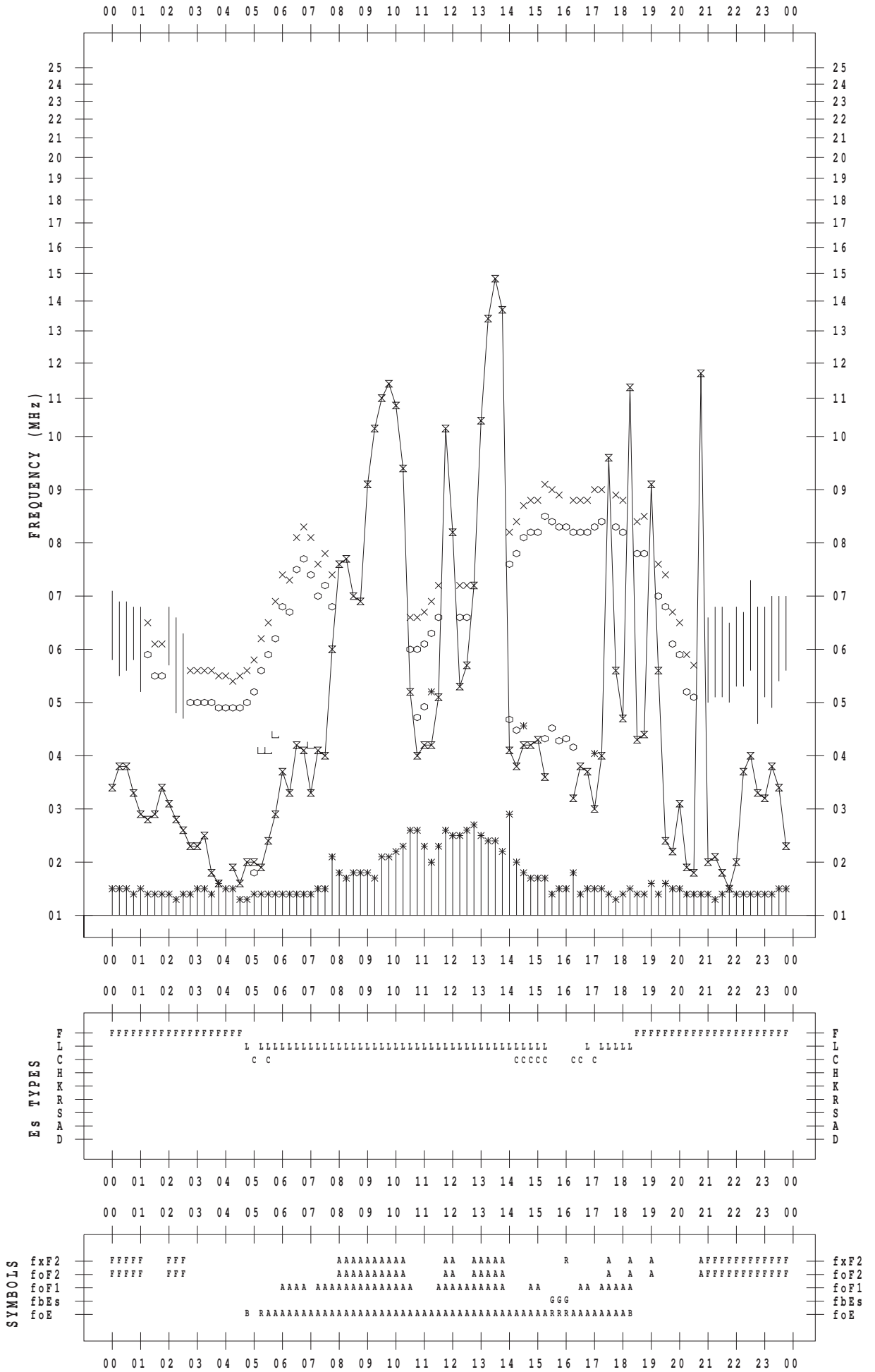
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 5/20

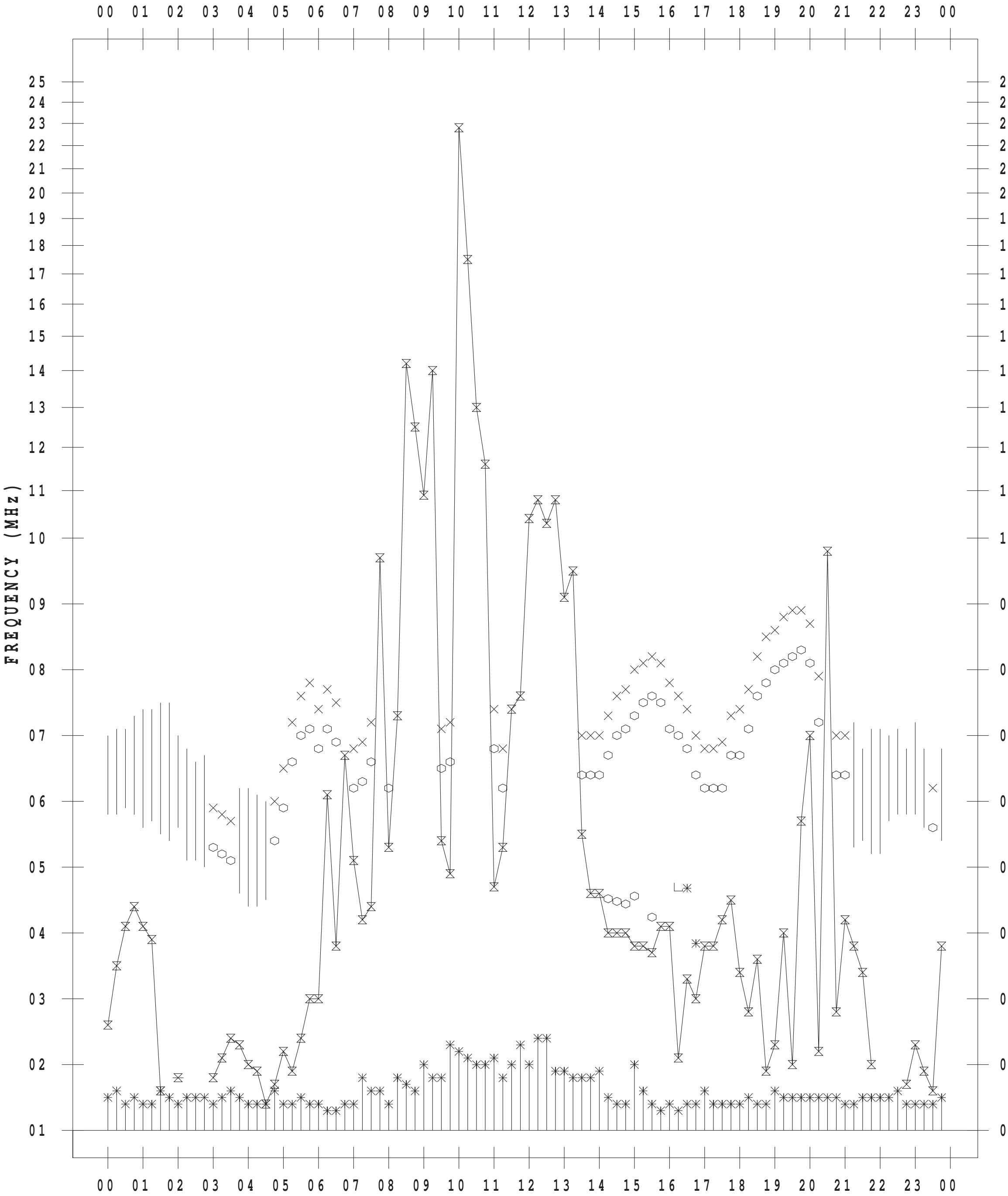
135 °E MEAN TIME

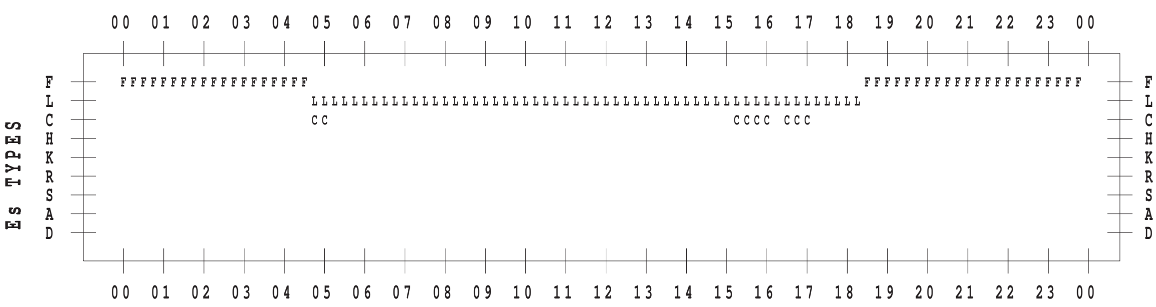


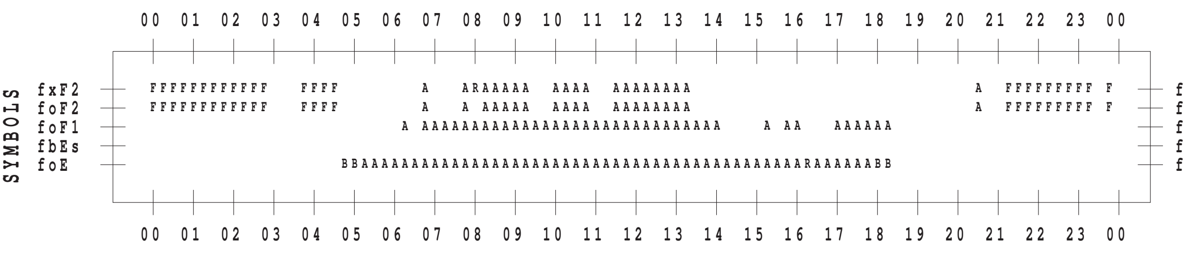
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji DATE : 2011/ 5/21







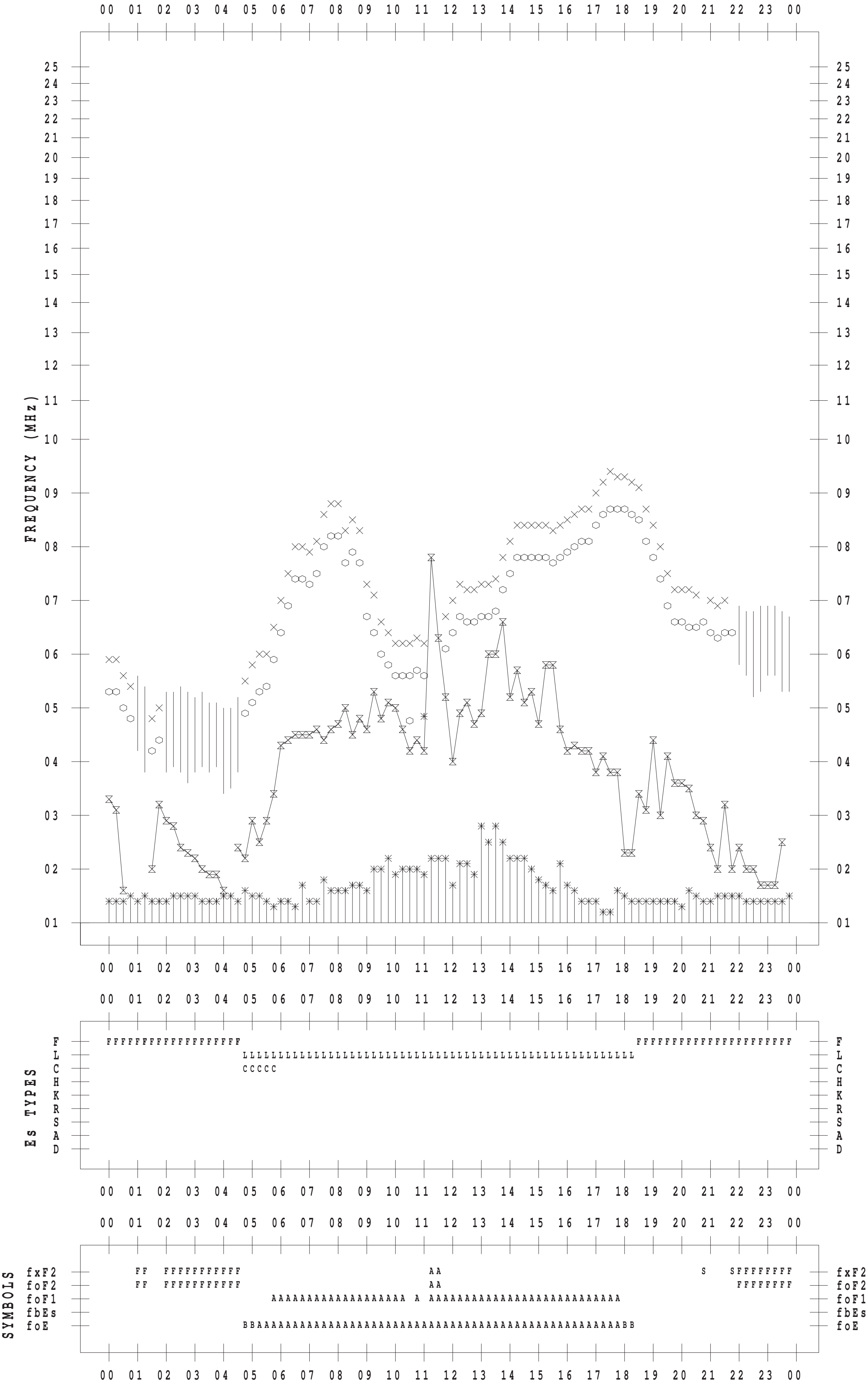
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 5/22

135 °E MEAN TIME



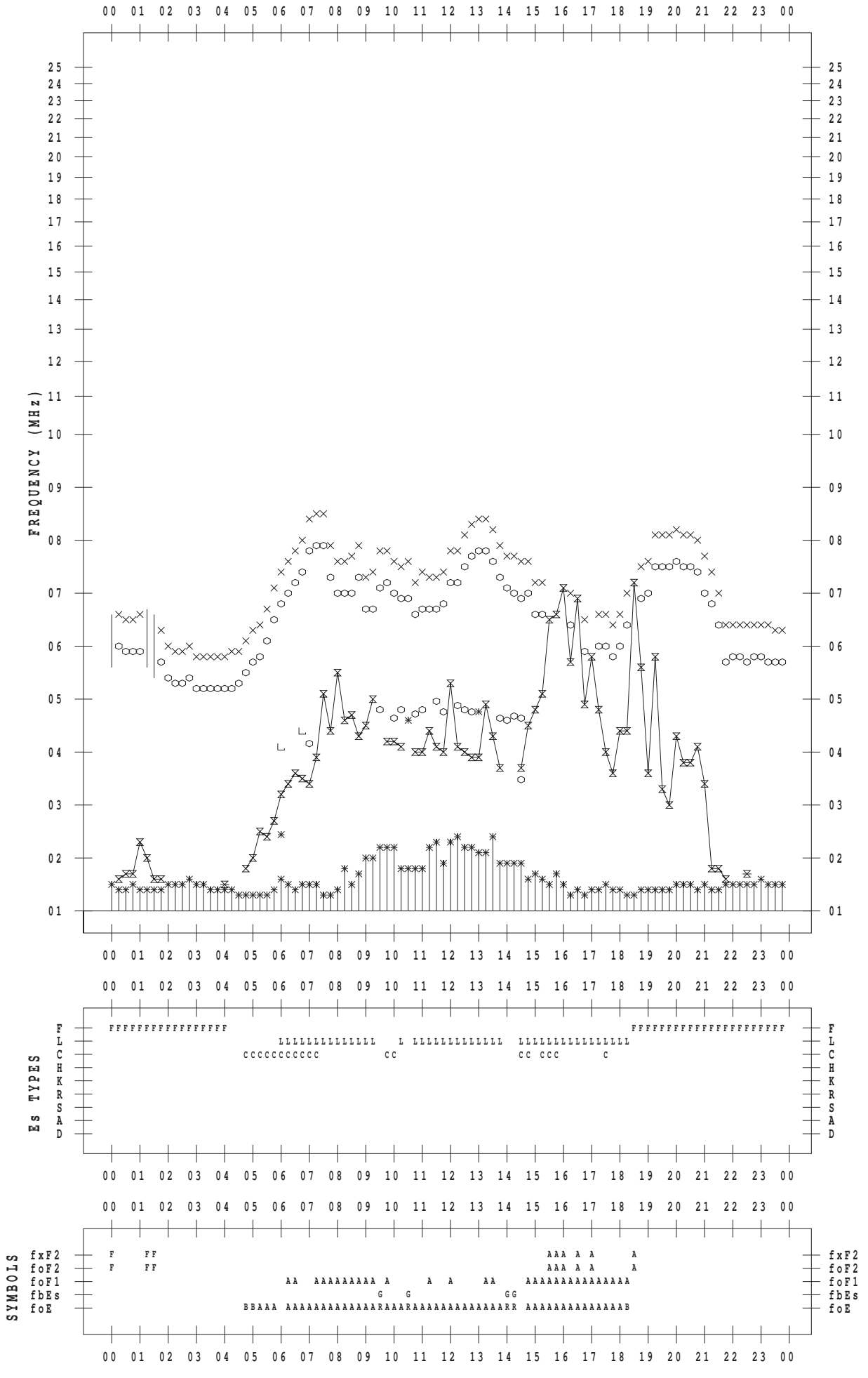
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 5/23

135 °E MEAN TIME



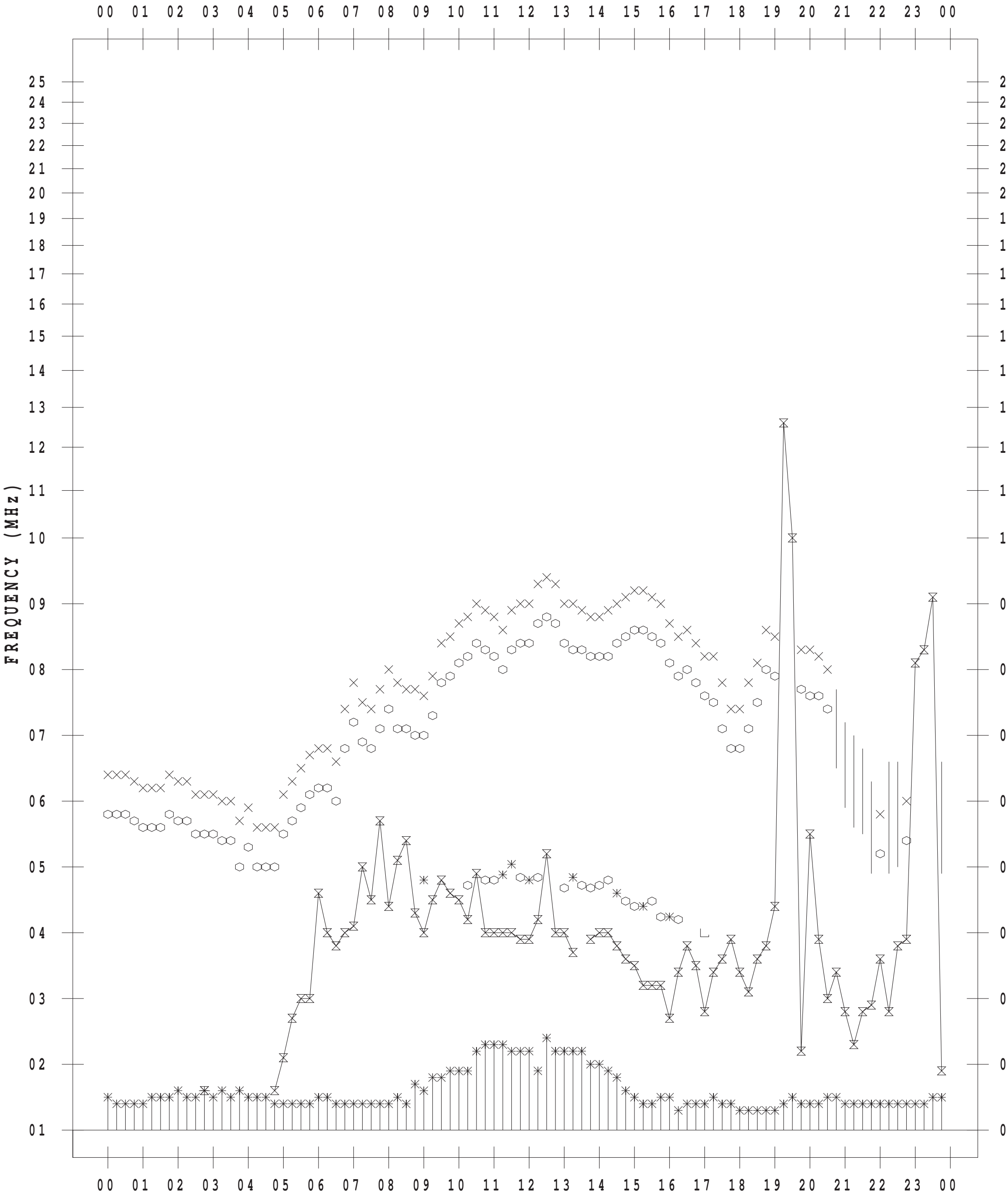
f-PLOT DATA

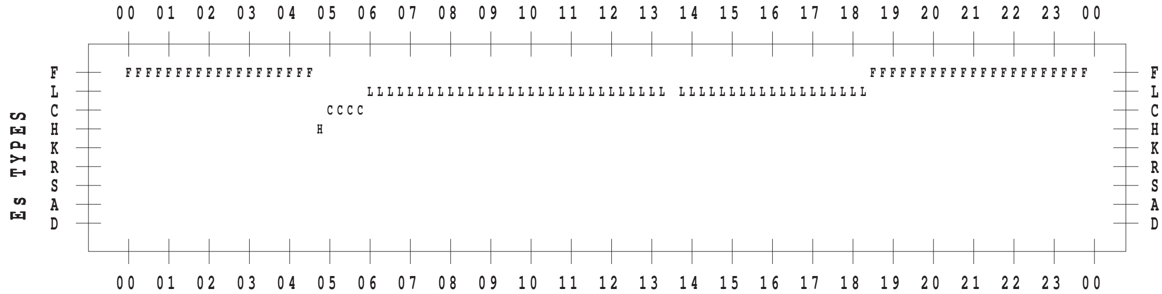
SCALER : I.NISHIMUTA

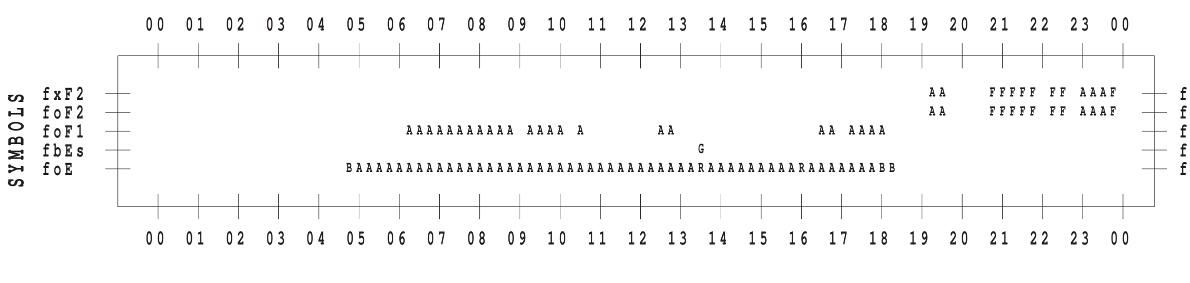
STATION : Kokubunji

DATE : 2011/ 5/24

135 °E MEAN TIME







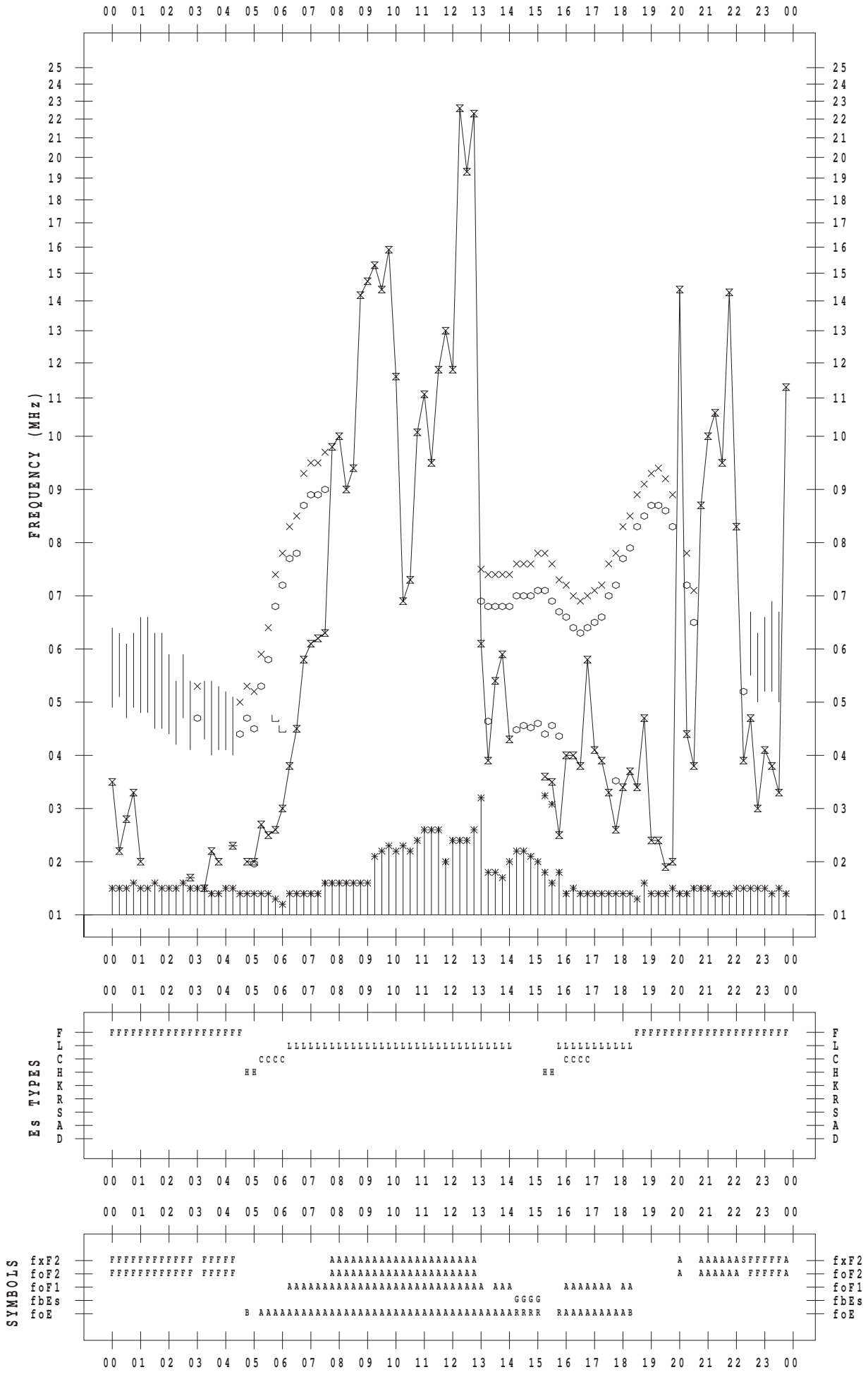
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 5/25

135 °E MEAN TIME



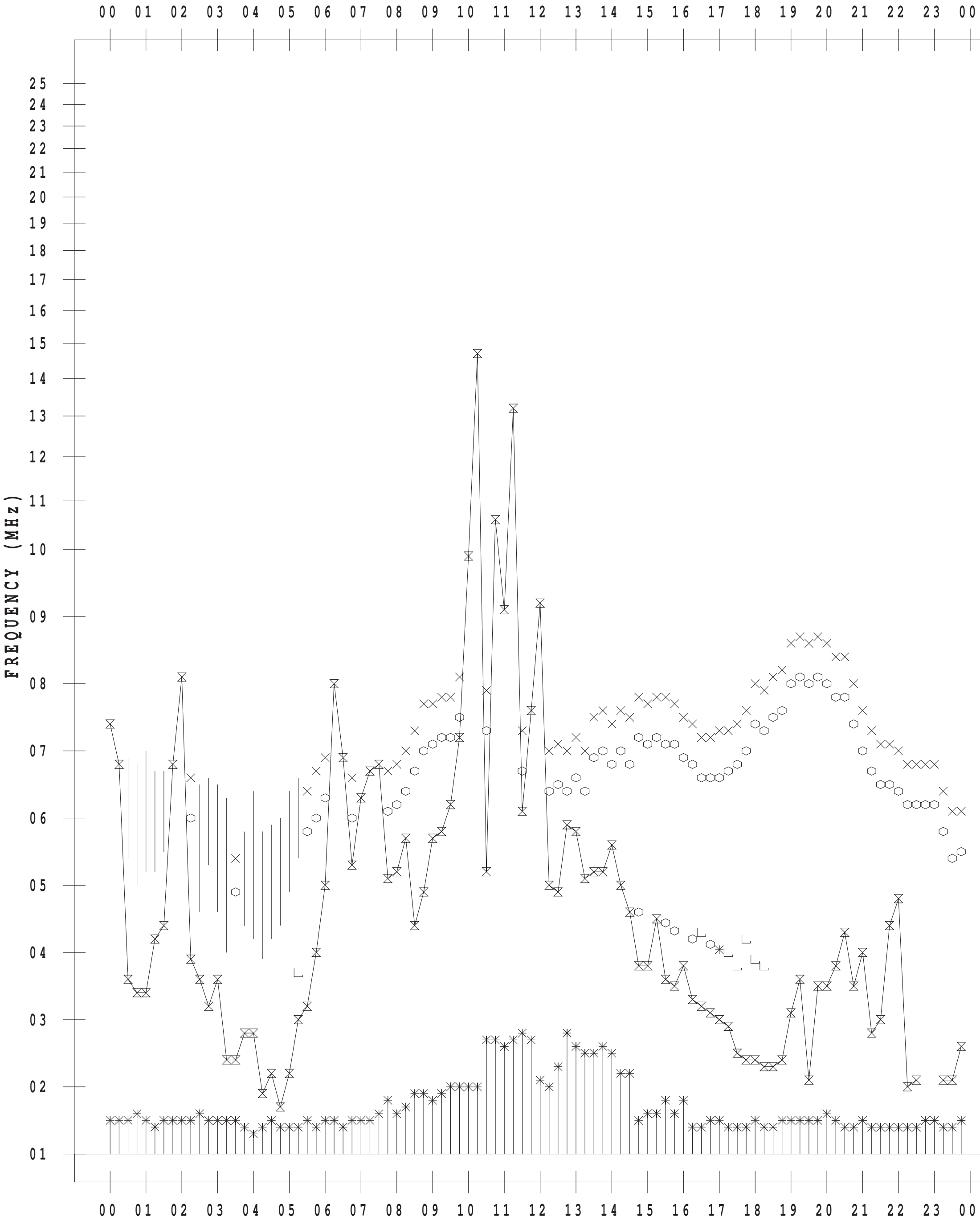
f-PLOT DATA

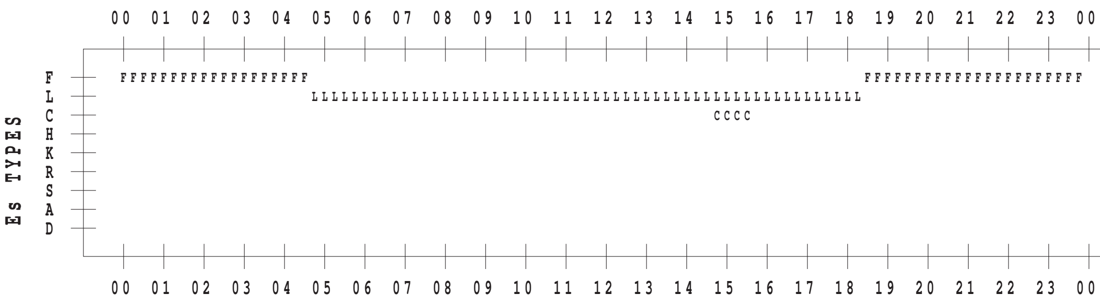
SCALER : I.NISHIMUTA

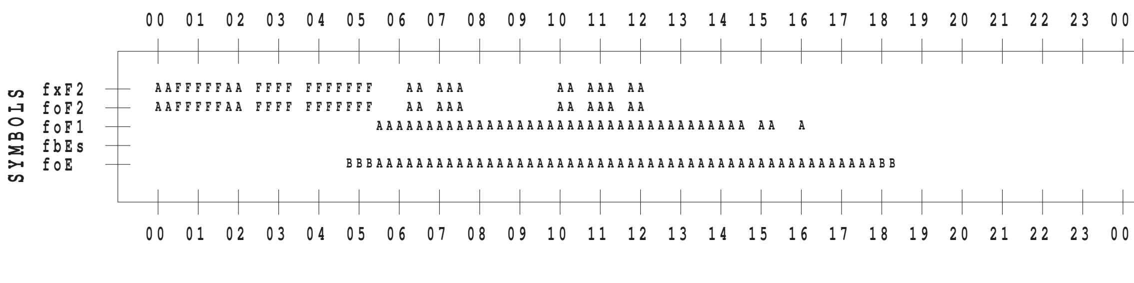
STATION : Kokubunji

DATE : 2011/ 5/26

135 °E MEAN TIME







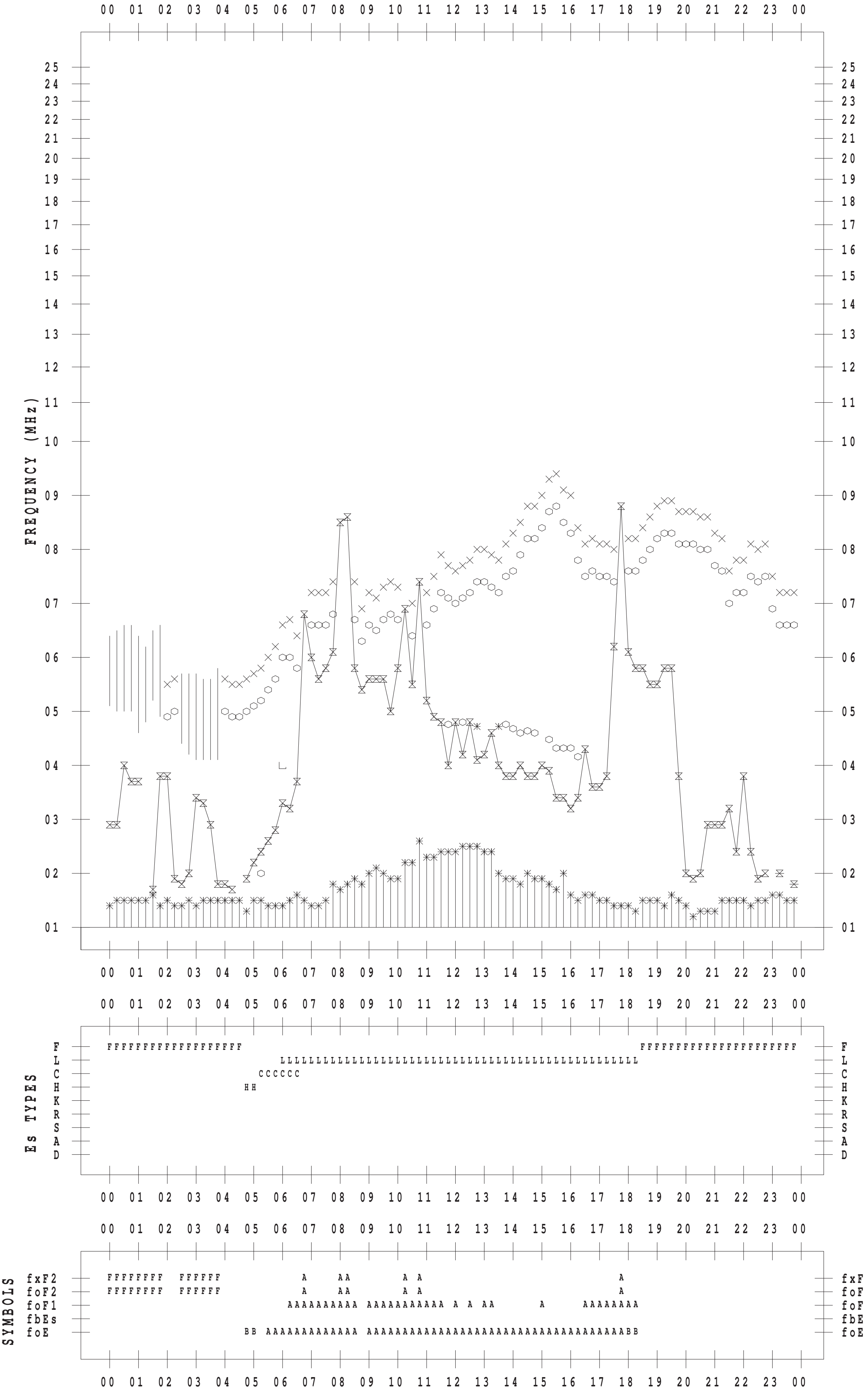
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 5/27

135 °E MEAN TIME



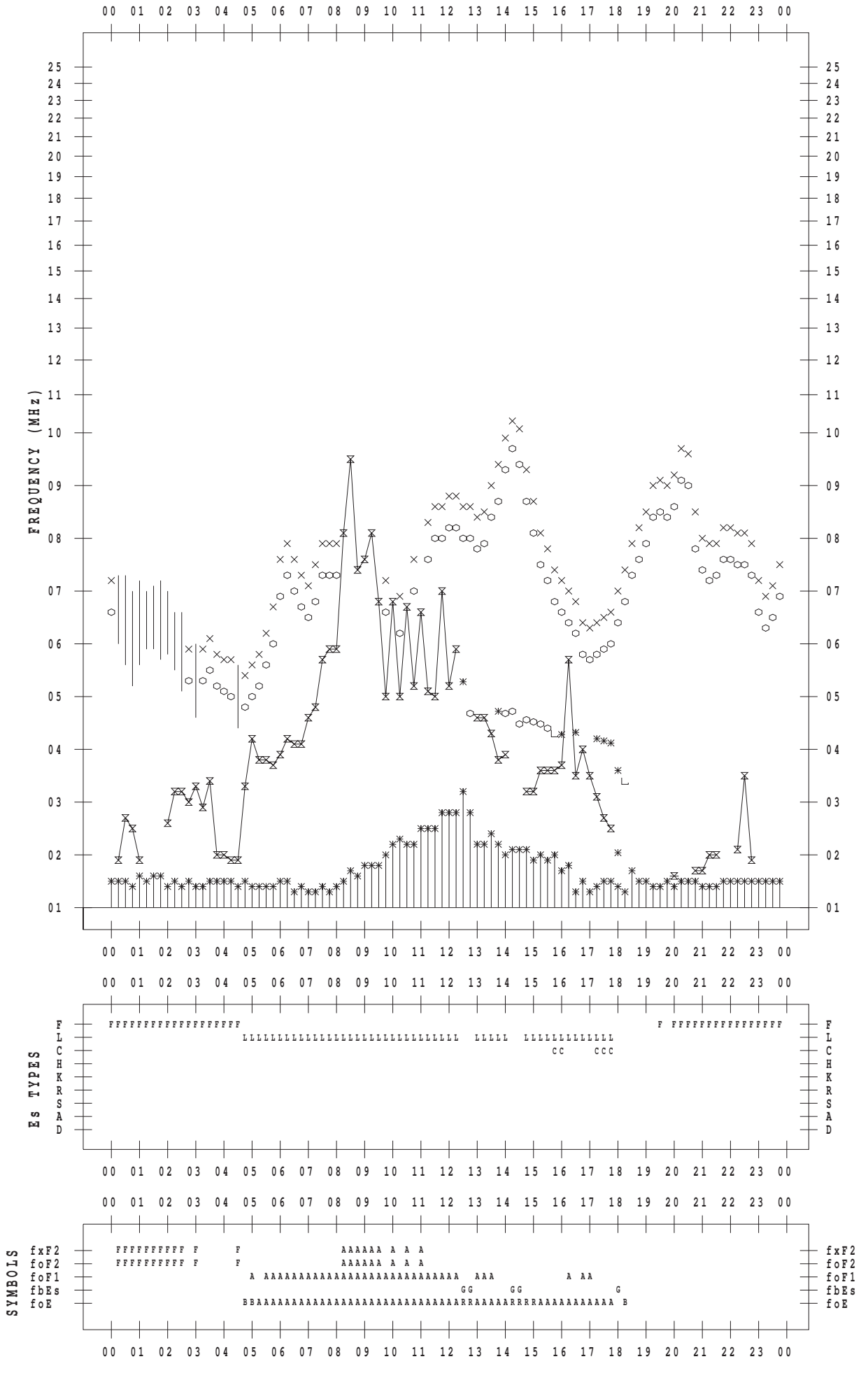
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 5/28

135 °E MEAN TIME



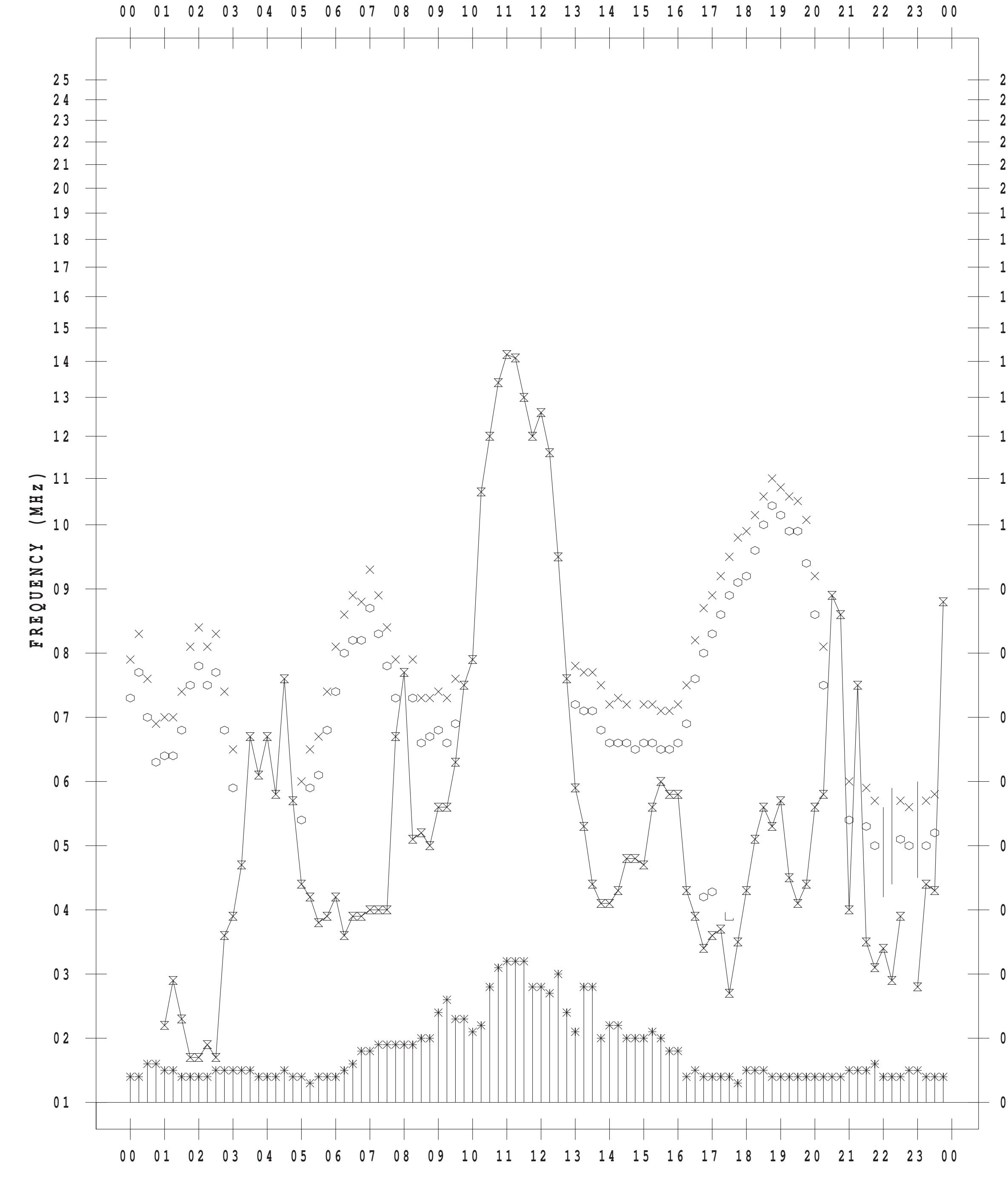
f-PLOT DATA

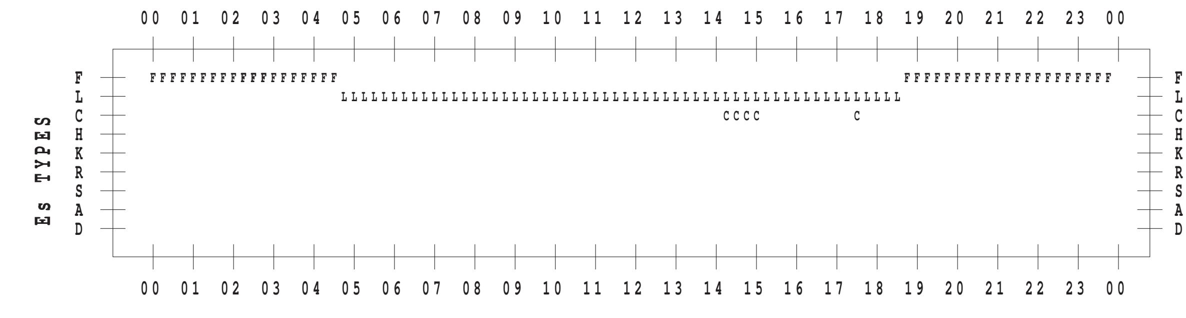
SCALER : I.NISHIMUTA

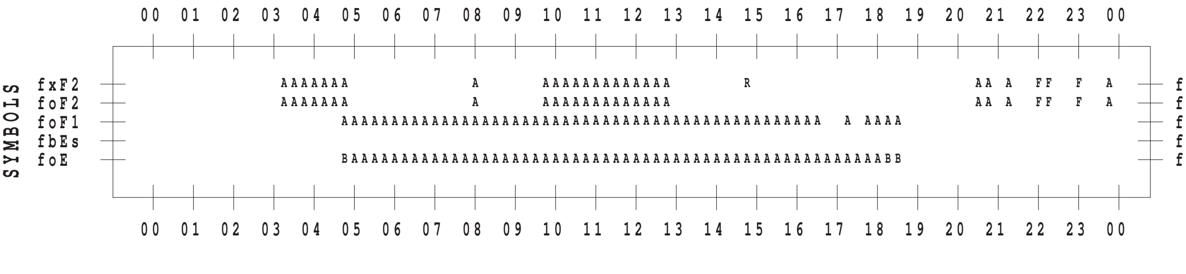
STATION : Kokubunji

DATE : 2011/ 5/29

135 °E MEAN TIME







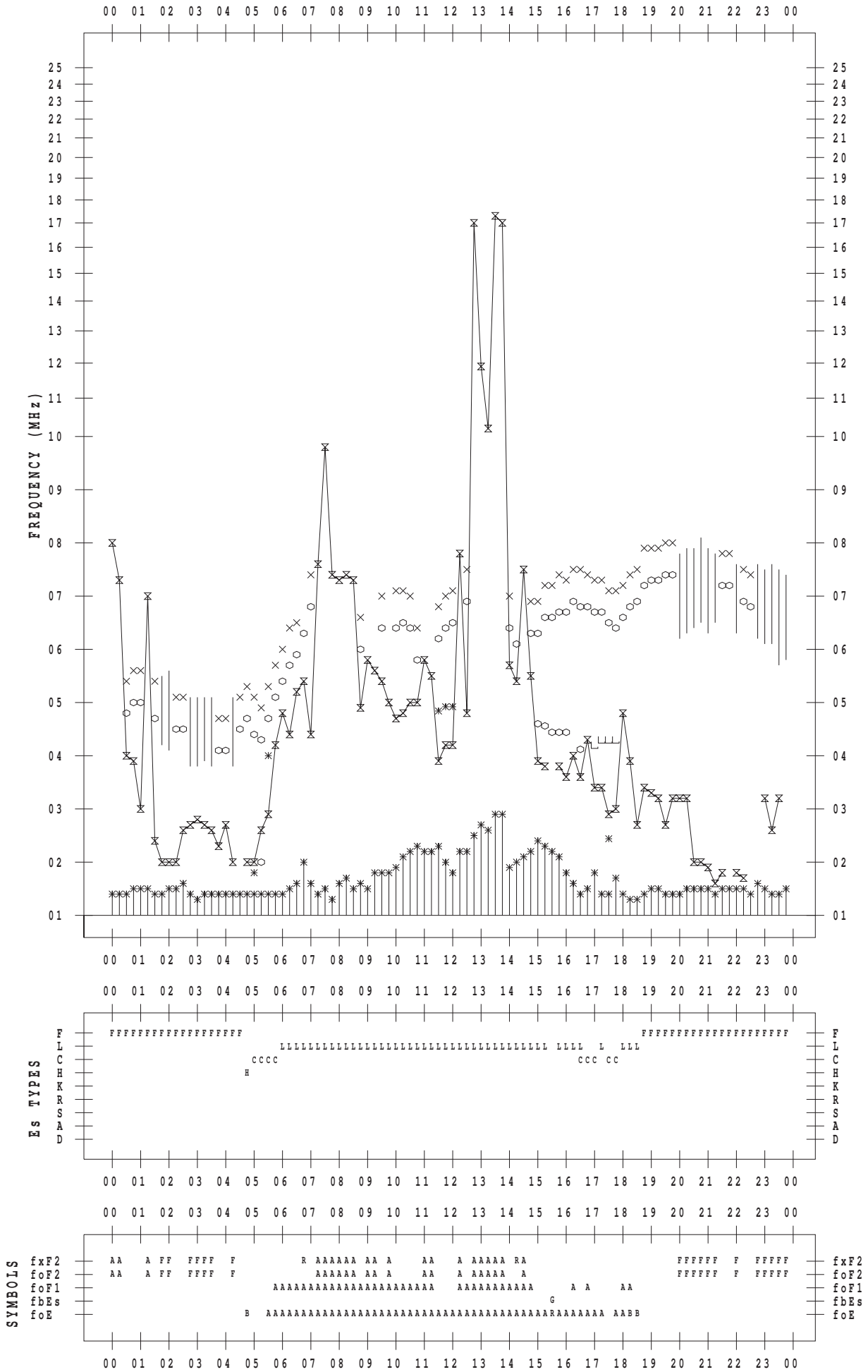
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2011/ 5/30

135 °E MEAN TIME



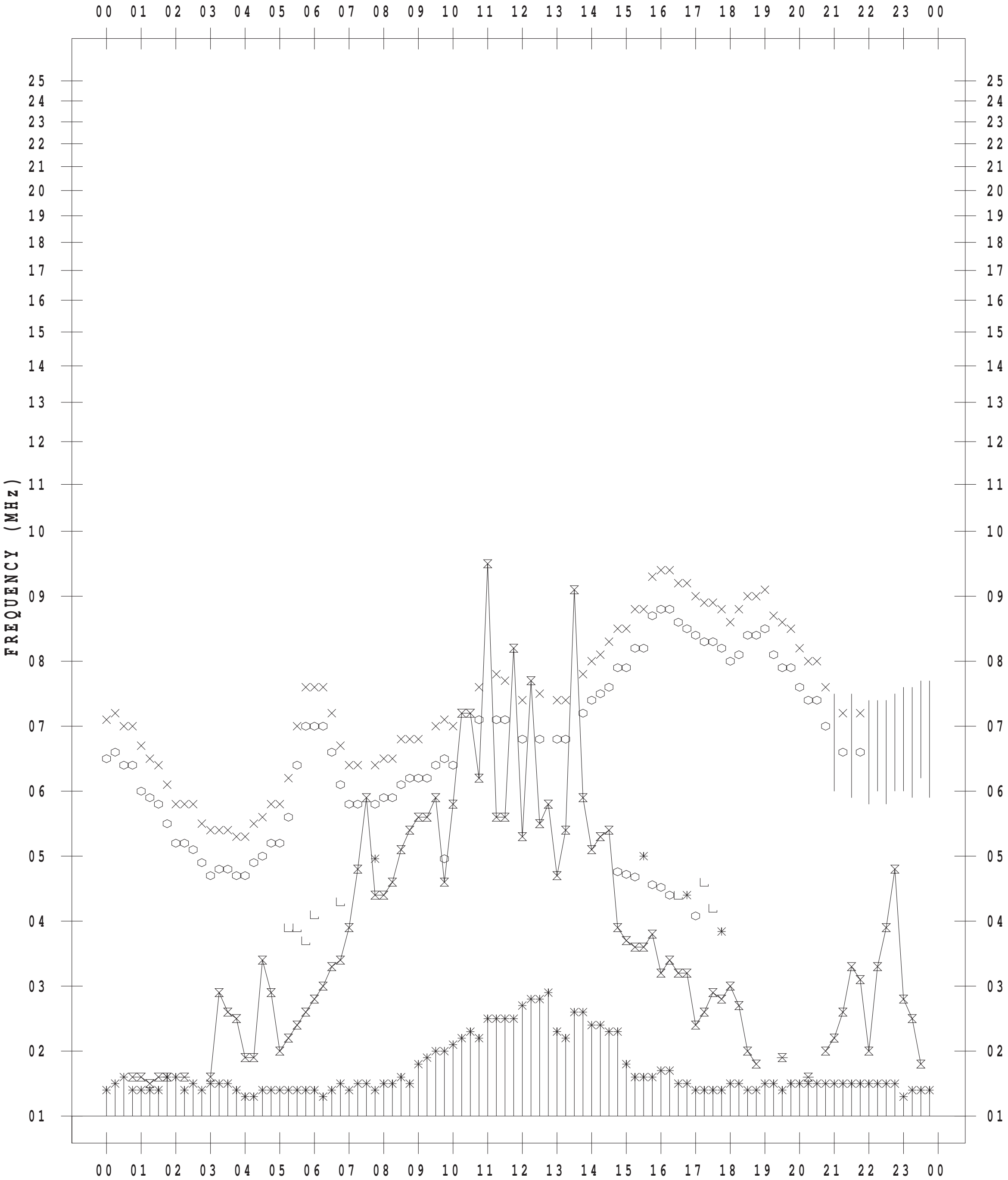
f-PLOT DATA

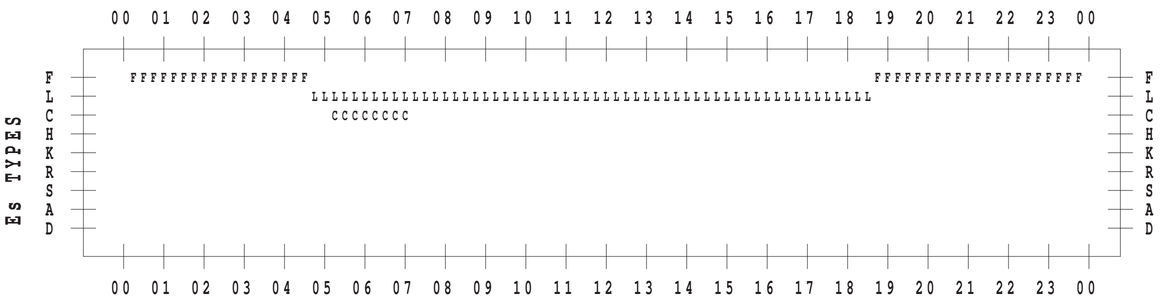
SCALER : I.NISHIMUTA

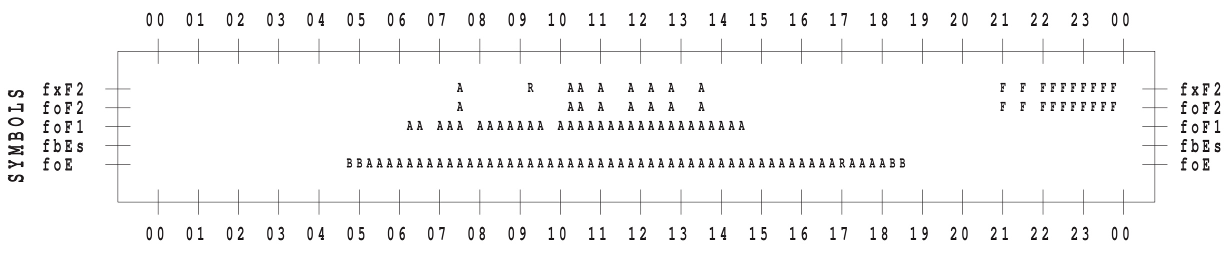
STATION : Kokubunji

DATE : 2011/ 5/31

135 °E MEAN TIME







B. Solar Radio Emission

B1.Outstanding Occurrences at Hiraiso

Hiraiso May 2011

Single-frequency observations

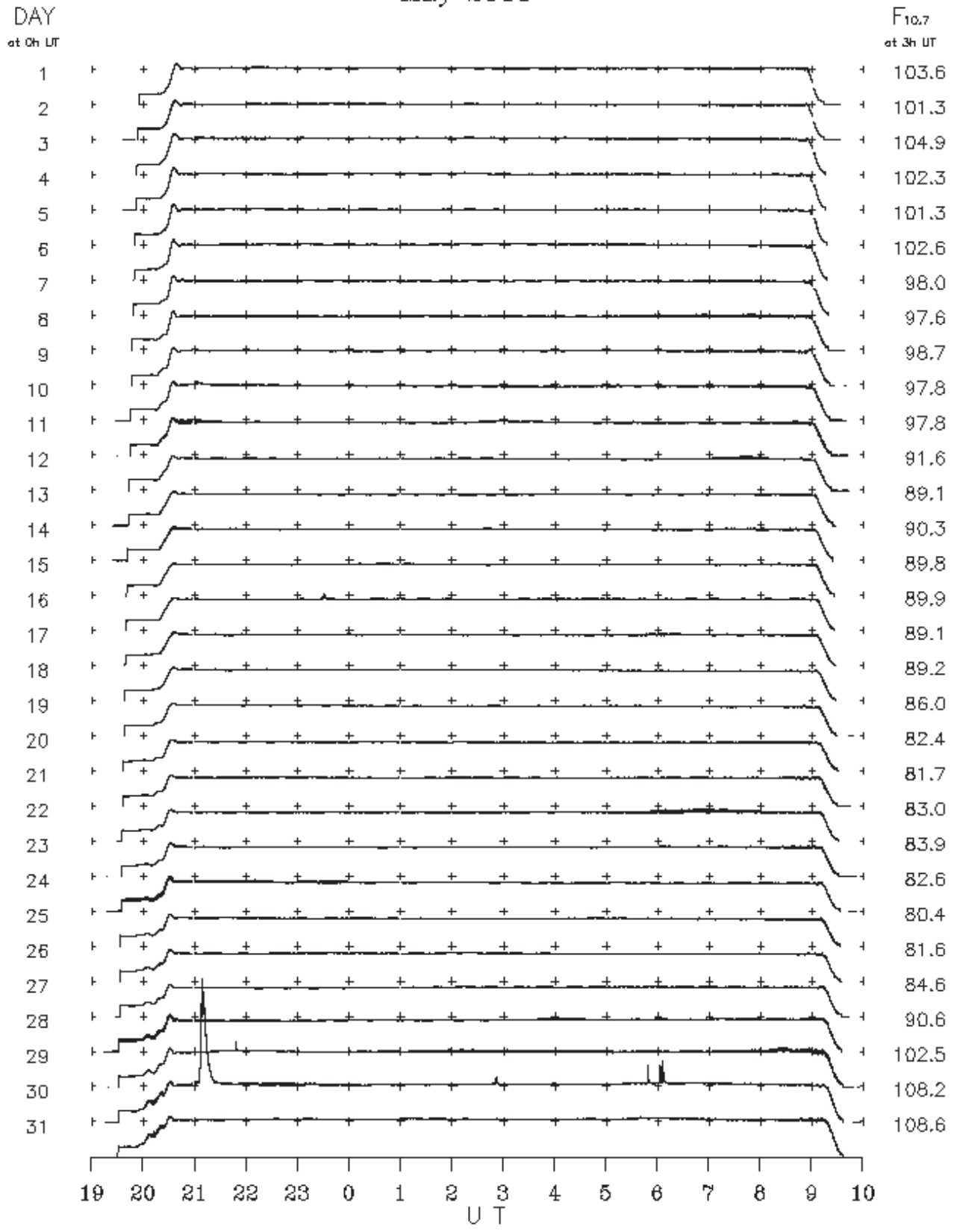
Normal observing period: 1925 - 0940 U.T. (sunrise to sunset)

MAY	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	1 S	2059.0	2101.0	13.0	5	-	
15	2800	1 S	2328.0	2332.0	6.0	10	-	
28	2800	8 S	2149.0	2150.0	3.0	25	-	
29	2800	8 S	2107.0	2111.0	20.0	295	-	
30	2800	1 S	0251.0	0252.0	4.0	15	-	
30	2800	8 S	0547.0	0548.0	4.0	45	-	
30	2800	7 C	0601.0	0605.0	7.0	50	-	

B.Solar Radio Emission

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

May 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/2011/05/