

ION.ANT.— 30

IONOSPHERIC DATA AT SYOWA STATION (ANTARCTICA)

January 1978—June 1978

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RADIO RESEARCH LABORATORIES

MINISTRY OF POSTS AND TELECOMMUNICATIONS

TOKYO, JAPAN

INTRODUCTION

Vertical soundings of ionosphere at Syowa Station, Antarctica, have been carried out by the Radio Research Laboratories through the sponsorship of the National Institute of Polar Research of Japan.

LOCATION OF SYOWA STATION

Geographic		Geomagnetic	
Latitude	Longitude	Latitude	Longitude
69° 00.4' S	39° 35.4' E	69.8° S	78.2° E

SPECIFICATIONS OF THE IONOSONDE USED AT SYOWA STATION

Items	Specifications
Frequency Range	500 kHz–15 MHz
Transmitting Power	10 kW (peak value)
Duration of Sweep	30 sec
Transmitted Pulse Width	100 μ sec
Recurrence Frequency of Transmitted Pulse	50 Hz (by power source frequency)
Frequency Scale	every 1 MHz
Height Range	900 km
Height Scale	every 50 km
Total Receiver Gain	120 dB
Recording Method	35 mm film and video fax for ionograms
Power Supply	100 volt AC, 2.5 kVA
Transmitting Antenna and Receiving Antenna	30 m height vertical delta terminated by 600 Ω respectively

SYMBOLS AND TERMINOLOGY

All symbols and terminology in the tables or figures of ionospheric data are used in accordance with the "URSI Handbook of Ionogram Interpretation and Reduction (Second Edition 1972)".

a. Characteristics of Ionosphere

f_{xI}	Top frequency of spread F trace
f_oF2	Ordinary wave critical frequency for the $F2$, $F1$, E and Es including particle E layers respectively
f_oF1	
f_oE	
f_oEs	
$fbEs$	Blanketing frequency of the Es layer, e.g. the lowest ordinary wave frequency visible through Es
f_{min}	Lowest frequency which shows vertical ionospheric reflections
$M(3000)F2$	Maximum usable frequency factor for a path of 3000 km for transmission by $F2$ layer.
$h'F2$	Minimum virtual height on the ordinary wave for the $F2$, whole F and Es layers respectively.
$h'F$	
$h'Es$	
Types of Es	See below b. (iii)

b. Symbols

(i) Descriptive Letters.

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

A	Measurement influenced by, or impossible because of, the presence of a lower thin layer, for example, <i>Es</i> .
B	Measurement influenced by, or impossible because of, absorption in the vicinity of <i>f_{min}</i> .
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.
E	Measurement influenced by, or impossible because of, the lower limit of the normal frequency range.
F	Measurement influenced by, or impossible because of, the presence of spread echoes.
G	Measurement influenced or impossible because the ionization density of the layer is too small to enable it to be made accurately.
H	Measurement influenced by, or impossible because of, the presence of stratification.
K	Presence of particle <i>E</i> layer.
L	Measurement influenced by 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 perturbation of parameters—Presence of polar spur traces.
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.

A	Less than. Used only when <i>f_bEs</i> is deduced from <i>f_oEs</i> 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.
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 is present on the ionogram, the type for the trace used to determine f_oEs must be written first. the number of multiple traces is indicated after the type letter.

The types are:

f	An <i>Es</i> trace which shows no appreciable increase of height with frequency.
l	A flat <i>Es</i> trace at or below normal <i>E</i> layer minimum virtual height or below the particle <i>E</i> layer minimum virtual height.
c	An <i>Es</i> trace showing a relatively symmetrical cusp at or below f_oE .
h	An <i>Es</i> trace showing a discontinuity in height with the normal <i>E</i> layer trace at or above f_oE . The cusp is not symmetrical, the lower frequency end of the <i>Es</i> trace laying clearly above the high frequency end of the normal <i>E</i> trace.
q	An <i>Es</i> trace which is diffuse and non-blaketing over a wide frequency range.
r	An <i>Es</i> trace showing an increase in virtual height at the high frequency end similar to group retardation.
a	An <i>Es</i> trace having a well-defined fiat or gradually rising lower edge with stratified and diffuse traced present above it.
s	A diffuse <i>Es</i> trace which rises steadily with frequency and usually emerges from another type <i>Es</i> trace.
d	A weak diffuse trace at heights below 95 km associated with high absorption and large f_{min} .
n	The designation 'n' is used to denote an <i>Es</i> trace which cannot be classified into one of the standard types.
k	The designation k is used to show the presence of particle <i>E</i> . When $f_oEs > f_oE$ (particle <i>E</i>) the <i>Es</i> type precedes k.

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

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

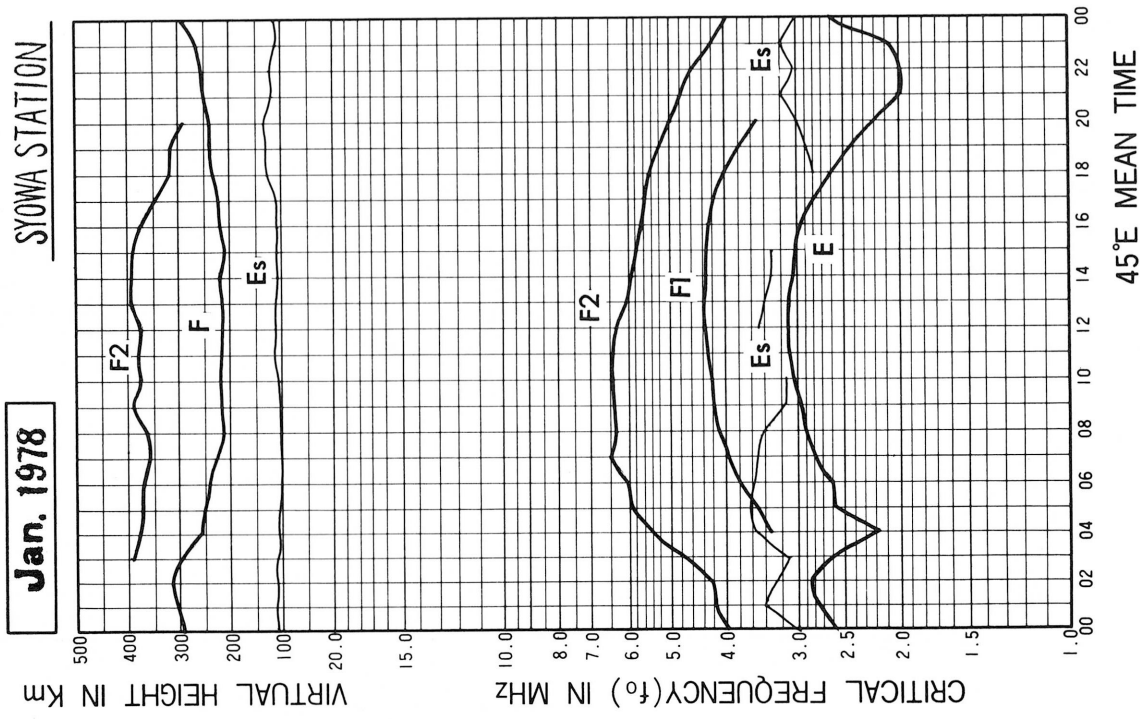
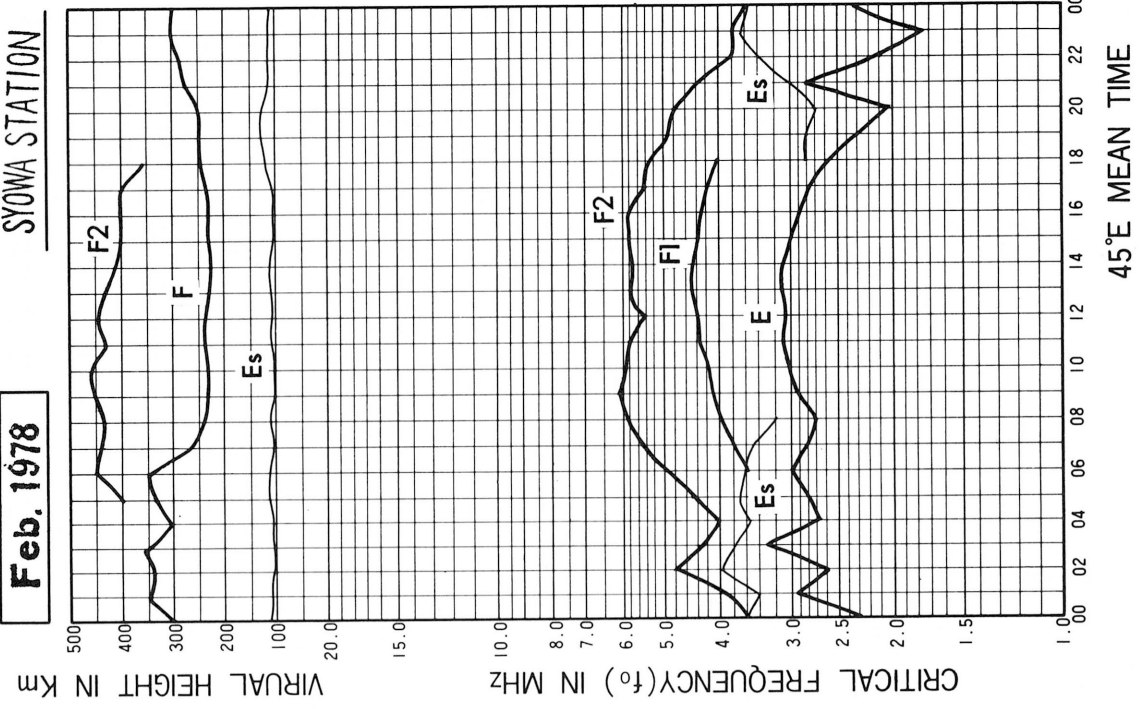
Median (MED) of a set of numbers is the middle value when the numbers are arranged in order of magnitude, or the average of the two middle values if there is an even number of values.

Upper quartile (UQ) is the median value 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.

d. *f*-plot.

f-plots of ionospheric data are illustrated only the periods of the Regular World Days of every month.

IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS



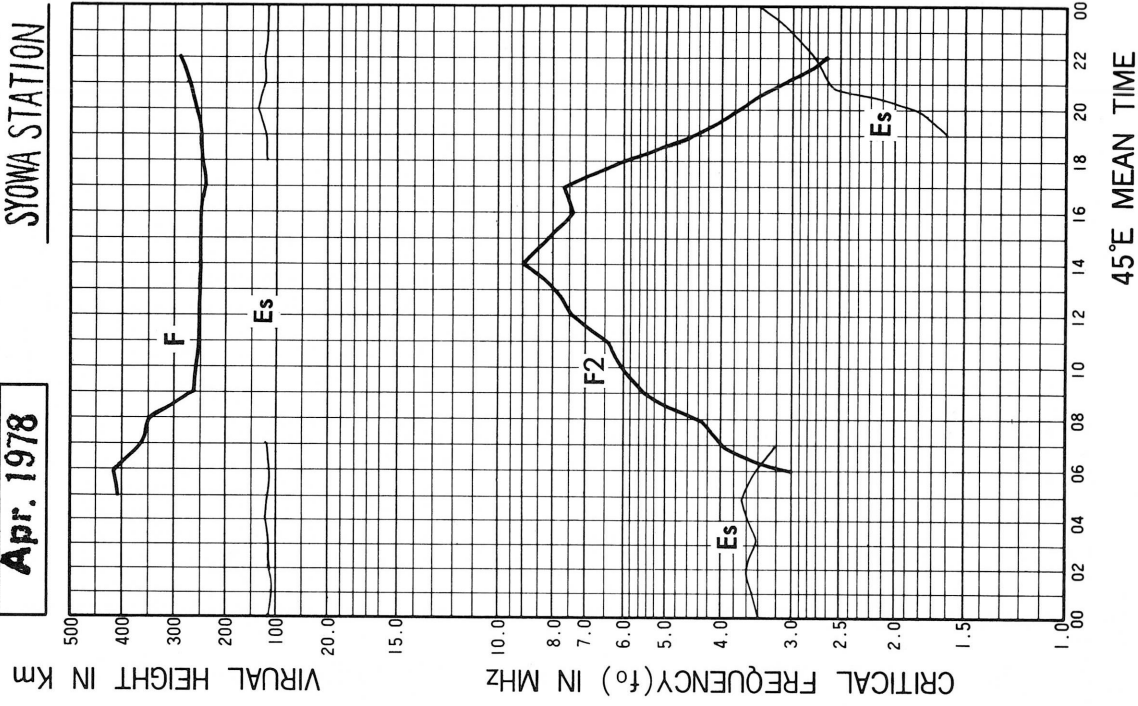
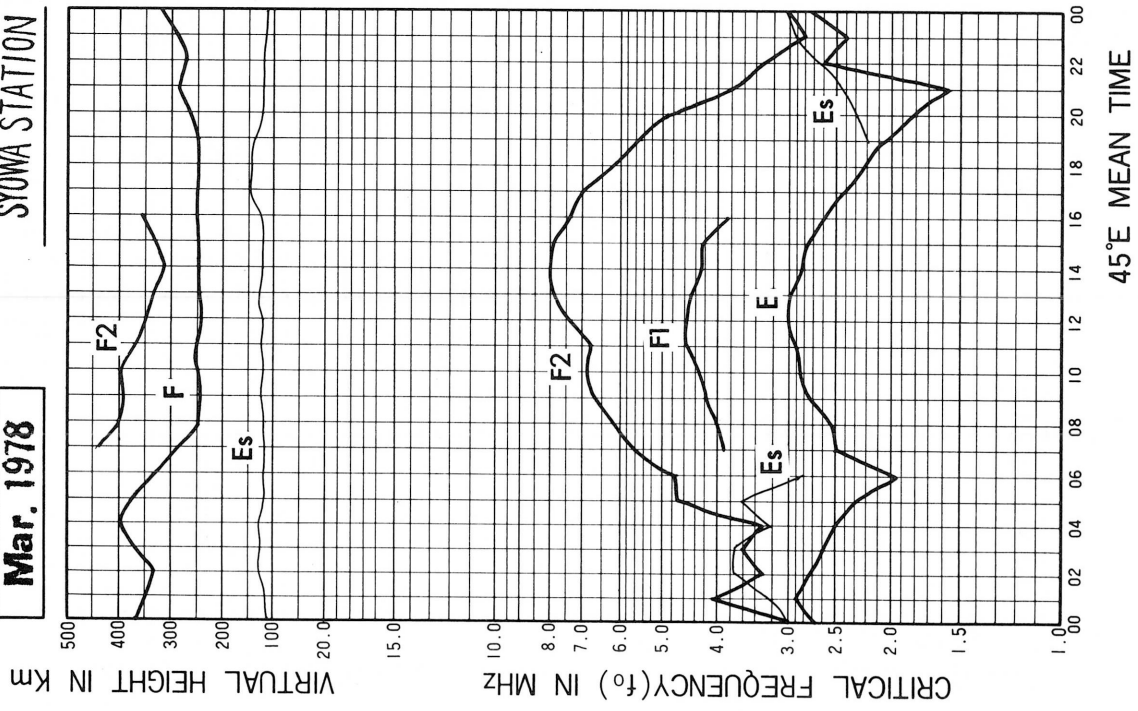
IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS

Mar. 1978

SYOWA STATION

Apr. 1978

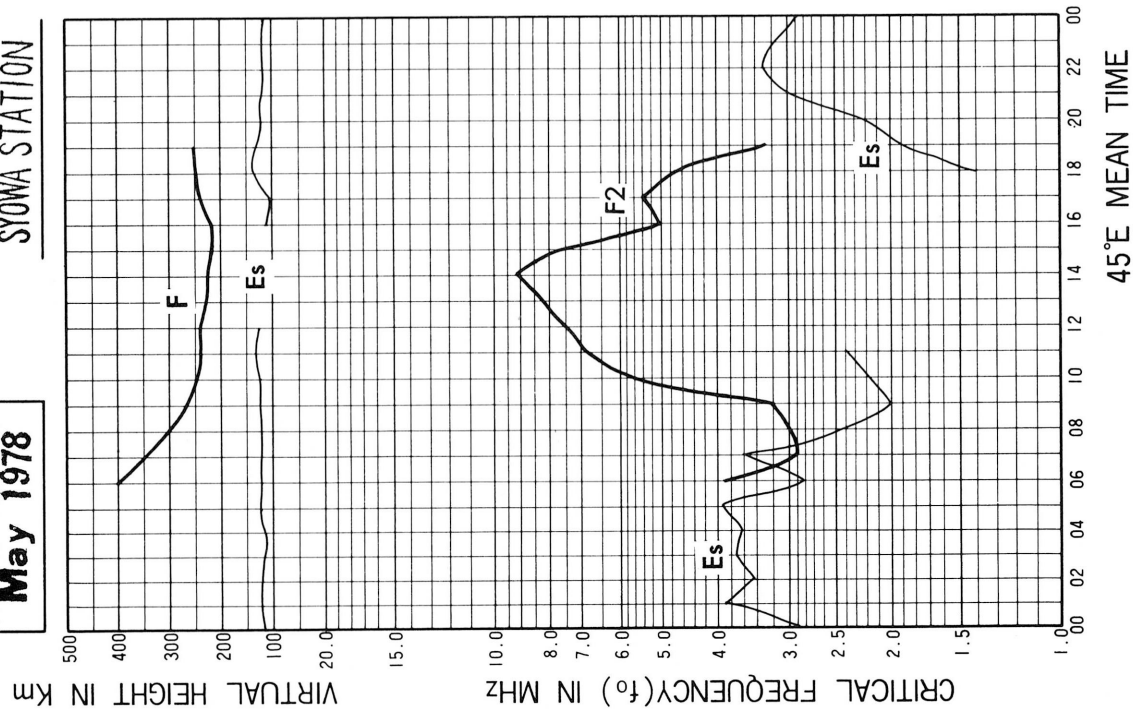
SYOWA STATION



IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS

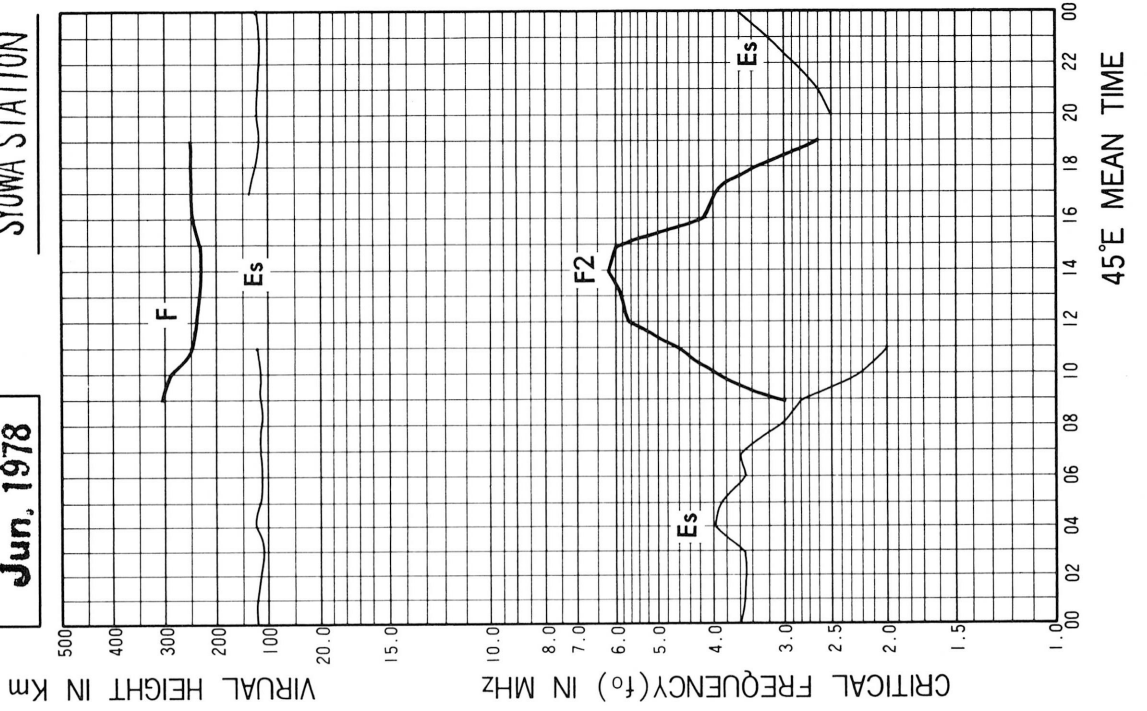
May 1978

SYOWA STATION



Jun. 1978

SYOWA STATION



IONOSPHERIC DATA

JAN. 1978

FXI (0.1 MHz)

45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S, Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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	67	55	63	68	76	85	83	78	85	81	81	75	69	68	66	A	65	69	70	65	61	54	U 53	
2	S	A	55	55	70	68	A	A	Y	A	66	65	64	58	58	59	66	66	65	62	O R	59	57	58	
3	47	52	55	59	65	70	71	83	87	85	81	78	73	69	66	62	62	62	65	65	59	54	53	55	
4	A	A	O R 55	O R 51	A	Y	R	B	B	B	B	B	B	B	R	B	Y	72	85	U A 56	A	Y	B	R	
5	49	Y	55	Y	Y	Y	Y	Y	Y	Y	Y	U A 64	B	B	B	B	O R 56	O R 55	B	X 53	O R 50	X 46	O R 46	46	
6	O R 46	R	37	O R 46	50	R	B	B	Y	Y	Y	Y	B	49	49	W	57	63	68	60	56	45	Y	Y	
7	41	A	A	A	R	R	58	65	70	71	68	61	60	60	60	58	60	61	61	55	B	O R 51	X 51	X 50	
8	52	48	R	B	60	Y	A	60	65	70	71	72	72	67	65	71	72	66	60	O R 58	X 49	X 53	X 51	X 46	
9	67	53	47	56	58	Y	Y	Y	51	60	62	O R 64	B	B	81	O R 75	O R 71	75	68	63	O R 49	A	58	70	
10	48	B	A	A	R	B	B	B	R	R	U A 70	R	B	O R 56	O R 54	O R 57	58	57	55	U A 54	52	50	51	48	
11	A	A	O R 45	B	B	B	67	74	70	B	O R 71	69	60	60	60	64	69	70	62	60	56	56	50	X 51	
12	O S 51	48	48	57	58	57	59	76	83	72	70	72	X 70	X 70	X 67	X 60	61	62	63	62	X 59	X 59	X 53	X 48	
13	O R 42	O R 51	52	R	60	68	70	67	67	66	66	75	80	90	87	85	83	81	76	57	59	O R 53	50	48	
14	40	55	B	B	68	X 60	68	74	74	72	70	O R 70	X 75	77	X 75	X 68	67	69	67	62	61	X 60	X 61	X 53	
15	52	56	47	54	60	70	80	85	85	83	74	70	X 67	64	X 68	74	X 68	X 68	65	X 62	X 64	X 63	X 62	X 57	
16	X 57	X 64	X 68	X 66	68	74	X 82	X 86	87	X 85	X 79	X 71	69	X 69	X 69	X 67	X 65	X 67	70	57	Y	Y	Y	44	44
17	R	38	48	A	U S 80	Y	50	50	R	57	54	53	52	56	61	62	62	65	65	64	58	X 54	X 50	X 41	
18	40	48	47	60	57	53	Y	A	R	O R 54	R	R	49	58	O R 56	65	66	80	66	60	60	60	X 65	U S 65	
19	52	U A 67	57	52	R	A	A	U A 68	U S 70	71	72	66	65	63	62	58	56	X 56	X 58	58	54	50	50	50	
20	46	O S 45	O R 45	53	58	66	71	80	76	75	72	70	68	67	65	59	61	62	61	60	60	58	60	66	
21	60	60	60	67	70	70	80	84	83	74	71	71	X 75	X 72	X 68	X 64	59	X 58	X 60	X 60	57	58	X 58	58	
22	X 54	68	X 51	57	U S 65	68	83	94	95	93	X 90	X 88	85	81	77	64	63	63	65	62	59	57	57	X 59	
23	U S 62	S 65	S 63	69	70	78	85	89	85	85	86	85	82	A	A	A	A	A	X 60	60	60	X 59	X 63	S	
24	58	59	58	67	67	60	66	75	79	82	82	77	X 74	80	84	75	68	68	69	60	54	X 46	47	47	
25	47	47	52	58	53	U A 94	60	70	70	75	76	72	70	69	72	75	73	76	62	55	66	70	44	A	
26	U S 64	A	67	65	A	Y	R	U A 65	69	U A 92	R	Y	O R 54	59	64	64	X 60	X 56	58	60	X 52	X 53	47	46	
27	45	57	48	52	O R 48	51	65	O R 52	62	67	65	63	60	55	X 57	X 58	X 60	X 60	X 60	X 56	X 57	X 56	X 58	X 48	
28	41	42	46	48	X 58	67	X 75	83	82	80	X 80	X 76	X 75	X 72	X 64	X 69	X 66	X 66	X 64	X 58	X 53	40	55	A	
29	A	U A 67	O R 46	45	52	A	69	55	59	B	B	R	R	R	B	60	60	U A 66	R	R	53	A	R	A	
30	A	D C 60	O C 47	D C 45	A	O R 46	50	56	R	68	B	B	B	B	B	O R 61	62	51	51	56	50	48	X 53	45	
31	S 46	53	O R 49	B	Y	B	Y	Y	O R 60	62	B	O R 57	B	B	61	O R 65	72	O R 56	C 55	C	51	A	37	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	25	23	27	22	22	18	20	23	23	24	23	24	23	24	26	27	28	30	29	28	28	26	28	24	
MED	48	55	51	56	60	68	70	74	74	73	71	70	X 70	67	65	64	62	65	X 63	60	57	54	53	50	
UQ	54	63	55	63	68	70	80	83	83	84	80	76	X 75	71	X 68	68	68	69	X 66	X 62	60	59	58	58	
LQ	46	48	47	52	58	60	62	65	68	68	69	64	62	58	60	X 60	60	60	X 60	56	52	50	50	46	

JAN. 1978

FXI (0.1 MHz)

IONOSPHERIC DATA

JAN. 1978 FOF2 (0.1 MHz)

45° E Mean Time (G. M. T. + 3 h)

Station SYDWA STATION Lat. 69 00.4 S, Long. 39 35.4 E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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	F 40	U F 45	F 47	F 55	S J 61	F 69	F 75	F 77	72	F 79	F 75	F 73	U F 67	F 61	F 61	F 60	A	59	63	63	59	55	47	U F 41
2	S	A	F	F 47	F	F	A	A	Y	A	F	U F 52	58	51	F 52	53	60	60	59	56	59	52	50	F 51
3	F 40	U F 42	48	F 51	F 57	F	F	F	80	F 79	F 75	F 72	67	63	60	56	55	56	59	F 57	F 53	47	44	F 48
4	A	A	47	U F 44	A	Y	R	B	B	B	B	B	B	B	R	B	Y	Y	Y	R	A	Y	B	R
5	F 35	Y	U F 38	Y	Y	Y	Y	Y	Y	Y	Y	Y	B	B	B	B	50	49	B	47	U F 43	40	40	F 38
6	F 40	R	F	40	F 44	R	B	B	Y	Y	Y	Y	B	E G 43	E G 42	w	F 50	F 56	F 60	54	F 45	F 39	A	Y
7	F	A	A	A	R	R	50	F 56	63	64	60	55	54	54	54	52	54	55	55	49	B	45	45	44
8	F 45	F 40	A	B	F	Y	A	F 53	F 58	F 63	64	66	66	60	59	F 65	U F 64	F 58	54	42	43	46	45	40
9	F 46	F	41	F	F	Y	Y	Y	F 43	F 52	F 55	58	B	B	F 75	F 69	65	68	61	57	43	A	49	F
10	F	B	A	A	R	B	B	B	R	R	Y	R	B	50	48	F 51	F 51	F 50	F 48	Y	U F 43	43	45	42
11	A	A	R	B	B	B	F 60	F 68	F 61	B	F 63	U F 61	53	54	54	58	63	64	52	F 52	F 48	F 46	44	45
12	F 44	U F 40	U F 40	F 48	F 50	F 50	U F 61	U F 68	U F 63	F 62	66	64	64	61	54	55	56	56	55	52	52	47	41	41
13	R	U F 42	U F 46	R	F 59	F	F	U F 47	F 50	F 53	U F 62	F 71	F 79	U F 77	F 72	U F 74	U F 70	F 68	47	F	F 46	F 41	F 37	
14	F	F	B	B	F 54	R	U F 56	U F 60	U F 61	U F 61	F 62	64	69	70	69	62	61	62	60	55	F 54	F 54	55	47
15	F 44	F 36	U F 40	U H 47	F	F	U F 67	F 79	F 78	F 74	F 68	64	61	58	62	68	62	61	59	56	58	57	56	50
16	50	58	J S 62	59	F 61	F 68	76	80	81	F 79	72	66	63	63	61	59	60	F 63	F 50	Y	Y	Y	F	F
17	R	F	F	A	F	Y	44	Y	A	F	F	U F 47	F 50	F 53	F 55	55	U F 55	U F 56	J S 58	F 50	48	43	35	35
18	32	F	F	F	F 40	F	Y	A	A	48	R	R	F	F 51	F 49	F 57	F 60	F	F	F	U F 50	F 51	U F 52	U F 55
19	U F 43	F	U F 40	U F 45	R	A	A	Y	Y	J F 64	F 64	60	58	57	55	51	F 50	F 50	52	U F 48	J F 47	F 39	42	U F 42
20	U F 40	37	F	F	F	F	U F 60	U F 65	60	U F 64	U F 62	U F 61	60	U F 59	F 58	52	54	F 56	54	52	U F 53	U F 48	U F 51	F
21	F	J F 53	F 53	F 60	J F 60	J F 64	F 71	F 78	F 77	F 67	F 64	65	69	67	62	58	F 52	F 51	54	54	F 50	F 50	51	F 51
22	48	45	J S 44	F	J F 54	F	F	F	F	85	84	82	79	74	70	U F 57	F 57	F 56	F 59	56	51	F 50	F 50	J S 53
23	U F 55	U F 56	U F 56	U F 58	U R 60	U F 68	F 78	U F 81	F 79	U F 77	F 79	F 77	F 74	A	A	A	A	A	53	52	F 53	F 53	57	S
24	F	F	U F 38	42	F	F	U F 54	J F 61	J F 66	U F 68	66	70	69	F 73	F 67	68	U F 60	F 61	F 60	F 50	F 48	40	40	F 40
25	F	U F 38	44	U F 46	U F 46	F	U F 53	U F 56	59	U F 61	F 67	J F 64	63	62	F 66	F 69	F 67	U F 61	F 50	U F 46	A	F	F	A
26	A	A	F	F	A	Y	R	F	Y	Y	R	Y	F 47	F 52	F 58	58	54	50	F 51	F 51	46	47	40	U F 33
27	F 38	F	F 42	U F 46	42	45	F 47	U F 46	U F 53	F 53	F 57	F 55	F 53	49	51	52	54	53	53	50	50	50	52	42
28	J F 35	F 32	F 40	U F 42	52	61	69	F 77	F 76	F 73	F 74	70	69	66	58	64	60	59	58	52	47	F	F	A
29	A	F	U F 36	F	F	A	F	F	R	B	B	R	R	R	B	F	F 52	R	R	R	F	A	R	A
30	A	F	F	F	A	U F 39	F	R	R	Y	B	B	B	B	B	U F 52	F 56	F 45	U F 44	U F 46	F 42	42	46	U F 38
31	F 34	F	F 41	B	Y	B	Y	Y	54	F 53	B	51	B	B	F	F 59	F 66	50	F 48	C	F 41	A	F	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	18	13	20	15	11	10	15	15	19	21	20	23	21	24	25	27	28	27	27	25	25	24	24	21
MED	F 40	U F 42	F 42	F 47	F 54	F 60	F 60	F 65	F 63	F 64	F 64	64	64	60	59	58	F 56	F 56	55	52	F 50	48	46	F 42
UQ	F 45	U F 45	F 47	F 53	F 60	F 68	F 70	F 78	F 76	F 74	F 73	68	69	65	62	63	F 62	F 61	59	56	F 53	52	51	F 48
LQ	F 36	U F 38	U F 40	U F 44	F 45	U F 50	F 52	U F 58	F 58	F 61	F 62	F 59	58	52	54	52	F 54	F 52	52	F 49	F 45	44	44	F 40

JAN. 1978 FOF2 (0.1 MHz)

IONOSPHERIC DATA

JAN. 1978

FOF1 (0.01 MHz)

45° E Mean Time (G. M. T. + 3 h)

Station **SYOWA STATION** Lat. 69° 00.4' S, Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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	F 370	F 360	F 400	400	420	450	430	F 450	480	470	F 470	F 460	A	L	410	400	L	L	L	
2				A	F	A	A	A	Y	A	460	430	U H 470	450	450	450	H 430	450	420	L	L	U L 360	L	
3				U L 360	F 370	F 400	F 410	410	430	440	450	460	470	470	470	470	450	450	430	F 400				
4					A	Y	370	B	B	B	B	B	B	B	390	B	Y	400	400	360	A			
5				A	Y	Y	Y	Y	A	400	Y	Y	B	B	B	B	410	400	B	L	F 350			
6				A	F 340	U F 360	B	B	Y	A	Y	Y	B	430	420	420	410	410	400	380	F 350	L		
7				A	A	A	390	400	400	420	430	440	450	450	450	440	440	440	420	390	B	L		
8				B	U F 330	Y	A	F 400	410	440	450	450	450	460	460	440	U F 450	F 440	400	400	L			
9				A	U F 350	A	A	A	420	400	430	B	B	B	B	B	B	B	U L 400	L				
10				A	B	B	B	A	400	400	400		B	B	U Y 420	420	430	420	400	Y				
11				B	B	F 380	400	410	B	B	430	450	450	H 430	430	I R 420	420	400	L	L				
12			L	320	L	A	400	400	410	420	430	430	440	440	440	460	430	U L 430	U L 400	L	L			
13			R	330	330	U F 400	400	410	420	420	430	450	450	450	F 430	430	420	400	U 340	L	L	L		
14			B	B	B	F 390	F 390	400	410	420	B	B	440	430	440	420	420	400	L	L	L			
15			L	U F 360	F 360	F 370	390	410	420	440	430	440	440	430	420	430	430	400	L	L				
16				L	360	F 350	370	400	400	420	420	430	430	440	440	430	420	410	F	Y	Y	A		
17				F	Y	U F 360	F 400	A	410	410	420	410	430	410	F 400	F 420	F 400	L	L	L	L			
18				A	A	Y	A	A	A	410	410	R	Y	410	400	400	400	390	370	370	320			
19				L	A	A	U Y 400	A	420	410	410	420	410	420	420	410	F 400	F 400	L	L	L			
20				A	330	370	390	390	400	400	410	A	420	420	430	410	F 400	F 400	L	L	L			
21			L	320	340	370	390	F 400	420	410	430	420	440	430	440	L	L	L	L	L	L			
22				U F 330	F	390	390	U F 420	410	430	430	440	440	430	430	L	420	400	L	U L 360	L			
23				U L 290	U L 310	F 350	F 380	390	F 420	420	420	430	A	A	A	A	A	A	A	L	L	L		
24				L	L	F	390	F 390	400	430	440	440	450	450	440	F 430	U L 420	400	L	F 380	F 350			
25				U H 390	A	410	F 410	F 410	F 420	430	430	430	420	430	430	430	400	390	F 380	F 380				
26				A	A	U F 350	F	F	Y	F	Y	420	410	420	U R 430	U H 430	420	400	L	L	L			
27				A	A	A	A	A	400	U Y 420	420	420	420	450	430	430	430	L	L	L				
28				L	330	350	F 380	400	410	430	440	450	450	450	480	U H 450	U L 430	L	L	L				
29				A	A	U F 340	F 350	F 390	F	B	B	430	420	420	B	430	400	U F 390	F 370	F				
30				A	A	F 360	F 400	F 400	Y	B	B	B	B	B	B	R 420	410	410	400	F 390	F 390			
31				Y	B	A	A	A	A	B	B	B	B	B	440	420	430	I B 420	410					
	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	12	11	19	21	20	22	23	23	20	24	26	27	25	25	24	11	6			
MED				U L 320	335	F 350	F 380	F 400	410	420	420	430	440	440	430	430	430	420	400	380	350			
UQ				F 340	F 360	F 360	F 390	400	415	420	430	435	450	450	450	440	430	420	400	395	F 350			
LQ				305	330	345	F 370	F 390	400	400	415	425	420	425	420	420	410	400	400	375	340			

JAN. 1978

FOF1 (0.01 MHz)

IONOSPHERIC DATA

JAN. 1978

F0E (0.01 MHz)

45° E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION Lat. 69 00.4' S. Long. 39 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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	340	320	270	300	290	275	280	290	310	320	320	330	325	310	300	270	300	280	265	220	200	210	280	280							
2	320	280	370	350	A	A	A	A	A	A	345	340	340	325	325	310	305	295	275	260	230	200	180	140							
3	230	200	315	250	240	270	270	280	300	320	320	325	315	315	300	A	310	300	275	230	320	360	200	360							
4	B	B	A	K	A	B	B	B	B	B	B	B	B	B	300	B	Y	280	260	230	A	B	B	K							
5	U	K	A	U	A	B	A	A	B	A	Y	Y	B	B	B	B	R	B	B		240	205		150							
6	250	350	315	310	300	280	B	B	Y	A	U	U	B	320	320	305	300	295	265	230	215	270	B	A							
7	U	K	A	A	B	A	400	305	270	280	290	300	305	A	310	310	310	310	290	280	290	B	B	180	180						
8	290	330	B	B	U	F	370	A	350	305	305	310	320	315	305	290	310	305	280	R	B	220	B	200	320						
9	290	250	290	330	A	B	A	A	A	310	340	B	B	B	B	B	B	B	B	B	B	250	B	U	U						
10	U	K	B	B	A	A	B	B	B	B	A	A		B	B	B	U	R		H	A	A	K	K	K						
11	U	K	B	B	B	B	275	270	A	B	B	310	300	300	300	A	Y	290	250	260	F	220	210	U	H	150					
12	150	275	150	210	275	A	300	290	290	290	295	U	A	310	A	A	300	300	280	A	R	U	H	170	190	A					
13	B	A	320	260	225	A	A	A	A	300	305	A	Y	330	320	A	U	R	290	270	B	B	B	A	315						
14	275	U	K	B	B	B	B	330	250	285	295	300	B	B	310	300	280	260	275	240	240	H	H	185	170	150					
15	F	U	K	K	190	210	240	265	280	290	300	305	300	305	300	280	A	A	260	250	H	220	175	A	U	A					
16	A	A	140	170	A	220	A	280	A	295	U	A	310	310	300	290	270	A	250	A	Y	A	A	U	K	U	310				
17	350	U	K	100	B	A	A	280	330	A	320	295	300	300	300	295	U	C	260	250	255	U	F	220	R	195	170	215			
18	U	K	U	A	A	A	A	A	A	A	A	A	Y	A	310	300	295	270	260	B	250	195	A	A	A						
19	A	A	210	U	A	B	A	A	350	A	300	300	300	310	305	305	300	A	290	275	A	210	200	H	F	A	U	150			
20	A	345	300	280	A	250	240	250	A	A	A	A	A	310	A	300	290	300	295	270	250	210	220	200	A	A					
21	A	A	A	185	H	190	A	225	A	280	275	285	300	305	U	A	320	A	305	290	280	265	220	220	200	170	H	A			
22	A	120	A	A	U	A	250	250	275	290	300	305	300	295	300	295	H	H	290	260	270	A	A	A	A	A	A				
23	A	A	A	140	A	205	240	A	A	290	A	310	300	300	A	A	A	A	A	A	230	200	170	A	120						
24	A	U	R	A	150	F	180	H	250	H	260	A	300	305	310	300	300	U	A	U	290	285	250	230	A	U	K	A	A		
25	A	A	K	K	A	A	A	280	285	290	A	A	310	310	A	A	A	290	275	250	F	A	K	A	A	A					
26	A	A	U	120	A	A	A	U	K	330	300	Y	A	320	Y	A	315	310	I	B	U	R	290	260	250	H	220	H	200	225	A
27	U	K	300	U	K	250	330	A	A	A	A	320	A	340	320	300	300	290	U	A	280	260	A	A	210	155	170	F	140		
28	U	A	A	A	A	200	215	230	260	290	A	300	305	315	310	320	320	280	335	270	225	200	210	350	K	B					
29	B	A	A	140	A	B	230	280	F	290	B	B	350	305	B	B	310	325	Y	280	390	U	K	290	A	400	K	A			
30	U	K	U	K	K	A	360	350	A	290	Y	B	B	B	B	B	Y	B	300	270	250	215	170	220	K	K	K				
31	U	K	A	U	K	B	B	B	B	A	A	A	B	B	B	B	310	B	Y	B	A	A	320	A	A	A	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23							
CNT	19	15	18	19	12	12	16	18	14	18	18	22	18	22	22	21	22	25	22	23	23	22	18	19							
MED	260	275	285	260	218	260	260	280	290	298	302	310	310	308	302	300	292	280	265	240	220	200	200	215	K						
UQ	302	325	320	320	288	325	290	290	290	310	320	325	315	315	310	310	305	290	275	255	235	210	310	312	K	K					
LQ	230	240	210	185	195	218	240	260	280	290	300	305	300	300	300	295	280	275	260	230	218	175	180	150							

JAN. 1978

F0E (0.01 MHz)

IONOSPHERIC DATA

JAN. 1978

FOES (0.1 MHz)

45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S, Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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	K 34	41	U K 32	29	K 30	K 29	G	G	G	G	G	G	40	40	38	J A 52	J A 52	G	38	35	J A 65	25	G	J A 35	
2	J A 41	53	J A 34	65	K 35	45	J A 62	51	29	50	G	39	G	36	G	G	37	31	G	29	32	J A 31	G	20	
3	31	27	K 31	K 25	27	G	G	G	G	G	G	35	38	37	J A 39	46	33	G	G	G	32	K 36	25	K 36	
4	40	52	39	K 35	88	35	33	B	B	B	B	B	B	B	G	B	G	G	35	33	J A 65	106	B	K 32	
5	29	32	J A 36	36	30	30	34	120	40	35	G	G	B	B	B	B	G	E B 36	B	G	G	E B 30	G	38	
6	30	K 35	K 31	K 31	33	63	B	B	88	44	G	G	B	35	G	34	G	G	J A 34	29	26	J A 36	40	34	
7	29	40	47	46	37	K 40	34	31	33	J A 35	40	39	41	G	G	G	G	G	G	G	B	E B 24	G	20	
8	K 29	K 33	46	B	J A 82	K 37	49	K 35	G	G	G	G	38	35	G	G	G	G	G	G	27	E B 35	G	K 32	
9	K 29	29	J A 62	K 33	32	36	40	42	40	G	G	E B 46	B	B	E B 56	E B 47	E B 52	E B 44	E B 32	E B 27	G	60	55	70	
10	36	B	45	J A 50	38	B	B	B	44	35	40	G	B	E B 44	E B 35	G	G	G	G	30	37	K 36	46	K 34	
11	80	68	E B 37	B	B	B	32	G	30	B	E B 47	G	34	35	32	30	G	G	30	32	G	22	G	G	
12	G	33	24	G	J A 32	38	G	G	G	G	31	38	G	32	32	32	G	G	J A 34	G	G	27	G	J A 24	
13	30	39	K 32	K 26	G	28	38	39	J A 36	G	34	33	G	G	G	33	G	G	G	E B 29	30	27	J A 78	K 31	
14	J A 73	70	B	B	E B 47	71	J A 38	34	G	J A 30	G	E B 46	E B 50	G	35	34	30	G	G	25	G	G	20	15	
15	26	J A 34	30	24	G	G	J A 54	39	G	G	G	G	G	37	G	31	34	J A 31	G	25	G	G	J A 32	J A 26	
16	J A 22	17	18	22	J A 56	J A 25	J A 62	J A 30	J A 41	32	39	41	38	40	J A 45	J A 39	J A 31	G	28	44	87	45	J A 46	J A 36	
17	K 35	J A 30	24	72	J A 79	J A 34	41	37	48	G	G	G	34	34	32	J A 35	G	35	G	28	27	J A 24	G	J A 26	
18	J A 35	J A 46	23	J A 37	J A 41	68	27	51	49	56	54	41	G	31	G	G	G	G	29	E B 28	28	40	27	28	
19	J A 59	J A 25	26	43	E B 36	58	58	J A 57	52	G	G	G	35	G	33	38	G	G	30	23	29	23	25	J A 20	
20	J A 29	K 34	35	K 28	38	34	30	J A 36	48	J A 39	J A 40	41	J A 53	37	J A 42	34	G	J A 46	J A 39	27	25	J A 36	31	67	
21	J A 62	J A 41	34	J A 26	52	J A 53	J A 39	37	34	J A 62	J A 81	41	35	33	39	G	G	J A 38	30	25	G	J A 23	J A 29	32	
22	J A 29	22	J A 29	34	J A 31	J A 30	G	32	30	32	40	39	36	35	J A 57	35	J A 61	31	27	80	J A 64	47	42	58	
23	20	J A 24	35	J A 31	J A 32	J A 32	G	J A 40	J A 31	40	J A 41	41	90	J A 91	J A 47	J A 94	J A 82	J A 71	J A 46	40	35	G	J A 22	J A 22	
24	J A 25	J A 20	J A 30	20	45	J A 53	24	27	J A 41	36	G	37	45	J A 34	J A 41	36	32	31	30	G	35	34	26	J A 24	
25	J A 27	J A 26	K 28	K 27	J A 26	J A 37	J A 44	J A 34	J G 28	G	44	40	33	G	J A 36	J A 34	31	32	G	31	42	K 42	J A 52	J A 49	
26	J A 39	J A 88	J A 24	70	J A 64	J A 38	J A 38	J A 35	35	G	40	G	35	G	G	E B 36	G	G	G	J A 40	G	25	J A 25	23	
27	35	38	J A 29	36	35	44	J A 54	42	45	G	40	38	37	36	35	34	J A 34	33	J A 42	30	33	J A 39	J A 34	G	
28	18	20	27	26	G	30	J A 26	G	G	46	J A 31	G	G	32	G	G	34	36	J A 28	G	28	28	35	38	
29	46	105	J A 100	22	J A 57	49	J A 34	G	31	B	B	G	G	E B 37	B	G	G	G	G	K 39	J A 80	J A 44	40	J A 44	
30	51	J A 38	K 34	D C 55	45	K 36	K 35	30	32	G	B	B	B	B	B	G	E B 34	J A 54	J A 61	J A 56	J A 64	J A 76	J A 59	K 31	
31	30	J A 29	J A 39	B	27	B	42	50	J A 46	43	B	E B 46	B	B	34	E B 35	G	E B 47	37	36	32	K 37	101	J A 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	30	30	27	30	28	29	28	30	28	27	29	24	26	28	29	31	31	30	31	30	31	30	31	
MED	30	34	32	31	35	36	35	35	34	31	31	E G 37	35	34	33	33	G	G	28	29	30	32	30	32	
UQ	40	41	37	40	47	47	J A 42	41	44	40	40	40	38	36	38	36	33	U 34	34	34	34	37	40	42	37
LQ	29	27	28	26	30	30	27	28	28	G	G	G	G	31	G	G	G	G	G	E G 24	G	24	20	24	

JAN. 1978

FOES (0.1 MHz)

IONOSPHERIC DATA

JAN. 1978

FBES (0.1 MHz)

45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69 00.4 S, Long. 39 35.4 E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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	K34	U32	U32	K27	K30	K29	G	G	G	G	G	G	G	G	33	33	A117	G	32	U31	32	G	G	K28	
2	K32	A53	U28	K37	K35	U45	A62	A51	E29	A50	G	39	G	35	G	G	G	G	G	G	G	G	G	20	
3	25	K20	K31	K25	G	G	G	G	G	G	G	35	36	36	37	33	G	G	G	G	K32	K36	22	K36	
4	A40	A52	U39	K35	A88	E35	30	B	B	B	B	B	B	B	G	B	G	G	30	G	A65	Y	B	K32	
5	U23	E32	U33	E36	E30	E30	E34	E37	E40	U35	G	G	B	B	B	B	G	E36	B	G	G	E30	U24		
6	29	K35	K31	K31	U30	K28	B	B	G	E44	G	G	B	35	G	34	G	G	29	G	U27	A40	E34		
7	U24	A40	A47	A46	E37	K40	K30	30	30	33	U40	37	34	G	G	G	G	G	G	G	B24	E24	G	G	
8	K29	K33	A46	B	G	K37	A49	K35	G	G	G	G	34	33	G	G	G	G	G	G	E35	G	G	K32	
9	K29	U25	K29	K33	32	E36	E40	E42	40	G	G	E46	B	B	E56	E47	E52	E44	E32	E27	G	A60	43	U23	
10	U23	B	A45	A50	38	B	B	B	E44	U35	36	G	B	E44	E35	G	G	G	G	U30	U37	K36	K37	K34	
11	A80	A68	E37	B	B	B	30	G	Y30	B	E47	G	32	32	32	30	G	G	G	29	G	G	G	G	
12	G	U27	20	G	K27	U38	G	G	G	G	31	G	G	31	32	G	G	G	27	G	U25	G	G	21	
13	U30	34	K32	K26	G	27	36	39	35	G	30	33	G	G	G	32	G	G	G	G	E25	26	21	K31	
14	K27	U33	B	B	E47	E48	K33	32	G	G	G	E46	E50	G	35	34	30	G	G	G	G	G	G	12	
15	22	U23	K23	G	G	G	21	G	G	G	G	G	G	35	G	31	30	29	G	G	G	G	G	19	12
16	17	17	G	G	22	19	26	27	36	29	31	37	35	38	40	38	29	G	U28	G	E38	U35	U35	U31	
17	K35	U26	U15	A72	U27	E34	G	G	A48	G	G	G	34	34	G	C32	G	32	G	G	G	G	G	K21	
18	U29	U27	U23	U29	34	35	E27	A51	A49	46	33	39	G	U31	G	G	G	G	29	E28	G	22	20	20	
19	20	22	24	G	E36	A58	A58	G	E52	G	G	G	G	G	G	32	G	G	27	G	27	23	18	14	
20	24	K34	32	K28	38	G	28	32	35	31	32	32	45	34	33	32	G	34	G	25	G	G	19	22	
21	24	22	19	18	G	32	24	32	33	40	36	37	32	G	32	G	G	25	G	G	G	G	18	16	21
22	13	G	18	19	U29	26	G	G	G	32	40	32	32	32	40	34	40	29	25	28	U25	20	17	19	
23	13	18	18	13	20	16	G	30	29	30	U34	36	48	A91	A147	A94	A82	A71	39	22	19	G	17	17	
24	14	G	18	G	G	27	17	G	28	G	G	G	33	33	G	G	G	30	27	G	34	U30	20	18	
25	10	20	K28	K27	22	32	43	24	G26	G	37	33	32	G	32	30	30	G	G	G	A42	K42	42	A49	
26	A39	A47	G	43	A64	E38	31	U33	U33	G	37	G	34	G	G	E36	G	G	G	G	G	22	K22	17	
27	24	25	U25	K33	34	42	40	40	U45	G	38	G	36	33	33	33	30	31	36	G	29	U22	U19	G	
28	G	17	25	24	G	G	G	G	G	32	28	G	G	32	G	G	34	U33	25	G	24	G	K35	A38	
29	A46	U20	33	21	43	A49	G	G	G	B	B	G	G	E37	B	G	G	G	G	K39	U29	A44	K40	A44	
30	A51	U30	K34	K34	A45	K36	K35	30	32	G	B	B	B	B	B	G	E34	36	U34	34	G	23	K22	K31	
31	U26	19	39	B	E27	B	E42	E50	44	43	B	E46	B	B	32	E35	G	E47	35	U36	K32	A37	29	A59	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	31	30	30	27	30	28	29	28	30	28	27	29	24	26	28	29	31	31	30	31	30	30	30	31	
MED	25	26	28	27	U27	U30	U27	U27	28	G	29	G	32	32	E32	31	G	G	E25	G	E19	22	20	22	
UQ	31	K34	35	K34	36	37	34	U34	U38	33	36	U35	34	34	34	34	30	30	29	28	30	35	30	K32	
LQ	21	20	20	18	E20	U24	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	18	

JAN. 1978

FBES (0.1 MHz)

IONOSPHERIC DATA

JAN. 1978

F-MIN (0.1 MHz)

45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	10	8	9	9	7	6	9	8	9	19	10	10	11	10	10	10	10	10	10	9	10	8	9	10
2	9	12	9	11	7	10	22	10	12	10	10	10	10	10	11	11	10	12	10	11	13	15	11	12
3	12	11	13	12	13	12	11	12	12	11	11	12	10	11	12	10	11	10	11	11	24	19	15	13
4	21	20	20	20	20	27	29	B	B	B	B	B	B	B	23	B	12	10	10	10	10	23	B	10
5	10	8	10	15	22	27	10	22	28	13	11	28	B	B	B	B	22	36	B	26	20	8	30	8
6	10	32	10	22	9	8	B	B	13	23	28	15	B	11	10	13	14	15	11	11	9	9	24	10
7	6	12	16	30	16	20	12	12	10	10	27	15	10	13	14	21	21	16	19	10	B	24	13	7
8	12	14	28	B	10	25	23	14	12	10	11	18	18	11	10	10	10	16	24	24	15	35	16	14
9	15	15	13	23	13	33	19	12	10	10	18	46	B	B	56	47	52	44	32	27	24	24	11	10
10	11	B	26	15	11	B	B	B	33	18	30	25	B	44	35	29	16	11	10	12	12	12	10	12
11	30	22	37	B	B	B	13	10	20	B	47	22	12	10	10	13	24	25	10	25	18	12	11	8
12	10	10	12	10	11	21	11	12	10	11	9	10	12	12	11	10	12	11	10	9	10	7	7	6
13	23	16	13	22	10	10	13	22	10	11	12	22	29	15	13	21	24	24	18	29	25	22	13	8
14	19	23	B	B	47	48	8	7	10	10	10	46	50	20	24	21	21	14	11	11	10	10	9	7
15	6	10	11	10	8	8	8	8	10	9	10	10	10	10	10	12	22	14	12	11	10	10	10	7
16	8	8	8	7	10	8	8	10	10	12	14	8	21	16	12	11	10	9	20	11	10	10	8	8
17	5	6	6	21	7	13	9	12	11	10	10	10	13	14	11	10	10	10	8	7	7	8	8	6
18	11	7	7	10	8	8	21	12	15	14	14	15	24	22	23	20	21	18	26	28	20	16	15	15
19	14	6	9	16	36	13	24	14	10	8	10	10	12	10	21	16	16	18	22	12	13	9	9	9
20	8	8	13	10	15	10	10	10	10	10	12	13	16	10	10	11	14	10	10	10	13	11	13	10
21	8	5	7	8	7	10	10	10	9	11	11	11	13	13	13	11	10	9	8	9	8	6	5	5
22	5	6	5	10	8	8	9	8	9	10	10	10	11	11	10	10	10	10	11	13	10	8	6	7
23	6	8	6	6	7	6	10	9	8	8	10	10	11	10	10	10	8	10	8	8	7	7	6	8
24	5	7	6	9	10	10	8	8	9	10	9	10	8	10	10	10	10	9	8	8	11	19	11	10
25	8	9	8	10	10	13	12	9	9	10	15	10	10	8	10	10	10	10	12	12	14	9	11	7
26	10	10	6	10	12	8	6	9	8	11	11	24	14	20	30	36	27	20	16	10	15	11	10	6
27	10	12	10	11	19	15	13	18	11	15	23	17	12	13	13	12	12	13	12	10	10	9	9	6
28	8	10	10	10	10	10	10	10	10	9	10	13	13	14	11	12	12	13	10	10	9	13	15	23
29	26	9	11	8	10	23	9	8	10	B	B	22	20	37	B	11	10	12	11	11	10	10	6	10
30	10	8	14	10	20	13	11	8	13	15	B	B	B	B	B	24	34	13	14	11	12	10	9	8
31	10	11	11	B	23	B	29	24	15	20	B	46	B	B	18	35	22	47	23	24	9	9	10	10
	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	10	10	10	11	10	13	11	10	10	11	11	15	13	13	12	12	12	13	11	11	11	10	10	8
UQ	12	13	13	22	18	24	20	14	12	15	25	23	40	21	23	21	22	17	18	12	15	16	13	10
LQ	8	8	8	10	8	9	9	9	10	10	10	10	11	10	10	10	10	10	10	10	10	9	9	7

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F-MIN (0.1 MHz)

IONOSPHERIC DATA

JAN. 1978

M(3000)F2 (0.01)

45° E Mean Time (G. M. T. + 3 h)

Station SYDWA STATION Lat. 69° 00.4' S, Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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	F 325	F 270	F 255	F 265	S 255	J 260	F 245	F 290	F 255	F 260	U F 265	U F 270	F 275	F 280	F 280	A	F 270	F 300	F 315	F 315	F 310	F 320	U F 305		
2	S	A	F 255	F 255	F	F	A	A	Y	A	F	F	310	245	230	F 235	280	275	300	300	F 320	F 325	F 310	F 315	
3	F 285	U F 285	F 285	F 265	F 255	F	F	F	F 260	F 255	F 265	F 275	F 270	F 285	F 285	F 285	F 290	F 280	F 270	F 280	F 300	F 295	F 310	F 290	
4	A	A	235	U F 240	A	Y	R	B	B	B	B	B	B	B	R	B	Y	Y	Y	R	A	Y	B	R	
5	F 285	Y	F	Y	Y	Y	Y	Y	Y	Y	Y	Y	B	B	B	B	260	265	B	255	F	310	300	F 290	
6	F 300	R	F	250	F 250	R	B	B	Y	Y	Y	Y	B	G	G	W	F 245	F 275	F 280	F 285	F 280	F 255	A	Y	
7	F	A	A	A	R	R	250	F 245	F 270	F 265	F 265	F 275	240	255	270	275	275	290	305	280	B	325	335	300	
8	F 320	F 275	A	B	F	Y	A	F 240	F 255	F 255	F 265	F 260	275	265	255	255	F	F 295	F 280	235	295	325	335	295	
9	F 300	F	270	F	F	Y	Y	Y	R	280	F 255	F 255	B	B	F 270	F 270	270	F 285	F 310	F 290	F 300	A	F 285	F	
10	F	B	A	A	R	B	B	B	R	R	Y	R	B	250	Y	F 270	F 260	F 275	F 270	Y	Y	U F 265	F 310	F 315	
11	A	A	R	B	B	B	F 260	F 265	F 275	B	F 270	F	F 265	F 280	F 260	F 255	F 265	F 280	F 290	F 335	F 355	F 320	F 320	F 310	
12	F 305	U F 305	F 265	F 265	F 280	U F 300	U F 275	F 285	F 285	F 270	F 275	F 280	F 280	F 310	F 280	F 285	F 315	F 315	F 330	F 325	F 335	F 340	F 295		
13	F 270	U F 285	F	R	F	F	F	F	F	F 260	F 255	F	F 270	F 280	F	F 290	F	F	F 295	F 305	F	F 340	F 340	F 295	
14	F	F	B	B	F 260	F	F	F	F	F	F 270	F 275	F 270	F 280	F 290	F 275	F 280	F 305	F 315	F 310	F 325	F 315	F 335	F 315	
15	F 290	F 290	F 315	F 315	F	F	F	F 280	F 270	F 285	F 285	F 280	F 285	F 275	F 280	F 295	F 300	F 310	F 310	F 305	F 315	F 330	F 340	F 330	
16	F 305	F 305	F 300	F 295	F 275	F 280	F 275	F 265	F 280	F 280	F 280	F 280	F 285	F 285	F 295	F 290	F 270	F 285	F 260	Y	Y	Y	F	F	
17	R	F	F	A	F	Y	F 275	Y	A	F	F	F	F	F 255	F 285	F 300	F 285	F	F	F 310	F 325	F 315	F 325	F 310	
18	F 270	F	F	F	F 270	F	Y	A	A	240	R	R	F	F 250	F 245	F 265	F 255	F	F	F	F 310	F 315	F	F 320	
19	F	F	U F 300	U F 350	R	A	A	Y	Y	F 255	F 275	F 270	F 275	F 265	F 275	F 275	F 275	F 275	F 270	F	F 295	F 315	F 310	F	
20	U F 260	F 245	F	F	F	F	F	U F 275	F 275	F	F	F	F 265	F	F 330	F 280	F 295	F 320	F 320	F 300	F	F	F	F	
21	F	F	F 290	F 285	F 265	F 270	F 275	F 270	F 295	F 285	F 280	F 275	F 300	F 300	F 320	F 320	F 325	F 325	F 315	F 350	F 340	F 320	F 330	F 335	
22	F 315	F 300	F 295	F	F 275	F	F	F	F	F 270	F 270	F 280	F 285	F 285	F 315	U F 300	F 295	F 285	F 305	F 320	F 345	F 320	F 310	F 315	
23	F	F	F	F	R	U F 285	F 250	F	F 265	F	F 280	F 300	F 295	A	A	A	A	A	A	F 320	F 325	F 320	F 315	F 315	
24	F	F	U F 305	U F 300	F	F	F	F 275	F 285	F 270	F	F 285	F 290	F 295	F 295	F 310	F	F 295	F	F 290	F 265	F 300	F 325	F 350	
25	F	F	F 305	U F 290	U F 285	F	F	U F 265	F 280	F	F 265	F 280	F 285	F 275	F 265	F 285	F 295	F	F 280	U F 285	A	F	F	A	
26	A	A	F	F	F	A	Y	R	F	Y	Y	R	Y	F 235	F 250	F 260	F 285	F 280	F 280	F 295	F 350	F 325	F 320	F 300	
27	F 305	F	F 285	U F 260	F 255	F 240	F 240	F	F 230	F 255	F 255	F 275	F 280	F 280	F 260	F 280	F 280	F 315	F 320	F 320	F 340	F 320	F 335	F 300	
28	F 315	F	F 275	U F 280	F 270	F 275	F 275	F 275	F 265	F 260	F 270	F 265	F 275	F 300	F 275	F 295	F 290	F 320	F 340	F 305	F 320	F	F	A	
29	A	F	U F 240	F	F	A	F	F	R	B	B	R	R	R	R	B	F 275	F 250	R	R	R	F	A	R	A
30	A	F	F	F	A	F	F	R	R	Y	B	B	B	B	B	F	F 270	F 245	F	F	F 310	F 285	F 285	F	
31	F 305	F	F 290	B	Y	B	Y	Y	220	F 230	B	235	B	B	F	F 235	F 255	F 240	F 245	C	F 295	A	F	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	16	8	14	14	10	8	10	12	15	17	18	18	21	23	23	27	25	24	24	23	22	23	22	18	
MED	F 302	F 288	F 288	F 272	F 268	F 272	F 268	F 268	F 270	F 260	F 270	F 275	F 275	F 275	F 275	F 280	F 280	F 285	F 300	F 305	F 318	F 315	F 320	F 310	
UQ	F 310	F 302	F 300	U F 295	F 275	F 280	F 275	F 275	F 280	F 280	F 275	F 280	F 285	F 282	F 292	F 290	F 290	F 308	F 315	F 320	F 325	F 322	F 335	F 315	
LQ	F 285	F 280	F 270	F 255	F 255	F 258	F 250	F 255	F 262	F 255	F 265	F 265	F 270	F 255	F 260	F 270	F 265	F 275	F 280	F 288	F 300	F 310	F 310	F 295	

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M(3000)F2 (0.01)

IONOSPHERIC DATA

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H'F2 (KM)

45° E Mean Time (G. M. T. + 3 h)

Station SYDWA STATION Lat. 69° 00.4' S, Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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	375	390	355	400	350	395	380	365	380	390	390	390	A	L	315	295	L	L			
2				460	F	A	A	A	Y	A	450	490	325	530	550	550	390	375	315	L	280	L			
3				380	390	375 ^H	400	360	370	370	355	350	380	360	370	395	370	400	390	350					
4					A	Y	R	B	B	B	B	B	B	B	R	B	Y	Y	Y	R	A				
5				Y	Y	Y	Y	Y	Y	Y	Y	Y	B	B	B	B	490	Y	B	L	U F	400			
6				400	475 ^F	R	B	B	Y	Y	Y	Y	B	G	G	w	500	400	350	350	375	L			
7				A	A	A	450	445	375	390	395	435	500	480	430	430	420	350	330	380	B	L			
8				B	F	Y	A	510	445	400	395	400	350	415	450	400	350	340	395	L	L				
9				425	U H	375	Y	Y	Y	R	420	450	455	B	B	360	350	375	330	300	320				
10					A	B	B	B	A	R	Y	R	B	490	Y	450	405	400	400	Y					
11					B	B	400	375	380	B	390	350	455	405	450	425	400	350	375	290	L				
12				L	370	390	400	350	365	330	355	390	370	370	350	330	390	375	325	310	260	255			
13				R	350	375	400	375 ^{U H}	490 ^{U F}	450	470	425	370	345	370	330	320	325	300		295				
14				B	B	B	450	350	370	395	385	385	370	340	330	355	350	300	290	L	250	L			
15				305	Y	370	330	320	340	325	330	350	350	400	375	330	320	300	290	L	L				
16					345	330	320	330	310	320	340	350	355	350	340	350	395	350	Y	Y	Y				
17					F	Y	400	Y	A	U H	455	U H	520	510	U F	500	500	400	350	390	350	L	285	L	L
18					445	300	Y	A	A	A	R	R	Y	455	495	405	U H	360	350	270	310 ^H	320			
19					L	A	A	Y	A	405	350	375	375	440	395	390	420	400	400	L	L				
20					380	370	350	345	390	350	350	380	390	350	300	405	340	300	300	L	250	L			
21				L	325	350	340	320	300	345	350	340	310	315	305	300	L	L	L	250	L				
22					375	375	350	290	360	310	335	325	325	325	295	300	L	350	295	275	245				
23				295	300	330	310	300	340	350	325	300	305	A	A	A	A	A	270	L	L	L			
24					290	L	385	375	355	380	350	340	345	305	325	300	285	300	295	345	420				
25					U F	460	455	460	375	365	365 ^F	375	360	390	380	345	335	275	370	U F	380				
26					A	Y	A	F	Y	Y	R	Y	570	490	425	375	U H	325	380	355	L	L			
27					475	A	520	A	Y	445	445	400	405	430	475	415	400	300	300	L					
28					380	350	350	350	330	330	390	330	375	355	300	405	315	305	285	L	L				
29					A	A	350	F	R	B	B	R	R	R	B	420	450	R	R						
30					A	600	U F	575	R	R	Y	B	B	B	B	B	550	375	545	470	350				
31					Y	B	Y	A	530	500	B	530	B	B	660	475	400	B	500						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT				8	15	14	20	17	18	21	22	23	22	24	25	28	26	24	24	14	10				
MED				380	375	372	370	360	362	390	372	375	370	395	390	390	375	350	315	315	288				
UQ				412	390	390	425	375	380	405	395	412	390	468	450	422	400	378	382	350	375				
LQ				338	348	350	350	330	360	350	350	350	350	368	360	368	360	300	298	285	250				

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H'F2 (KM)

IONOSPHERIC DATA

JAN. 1978

H'F (KM)

45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S, Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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	U ^H 285	A 360	A 390	A 300	A 340	A 290	A 255	A 230	A 195	A 220	A 200	A 190	A 225	A 210	A 220	A 205	A 200	A 240	A 240	A 240	A 250	A 240	A 315	
2	A 330	A 300	A 300	A 300	F 300	A 300	A 300	A 300	Y 300	A 300	A 220	A 220	A 225	A 225	A 200	A 200	A 225	A 225	A 225	A 250	A 245	A 240	A 250	A 265
3	A 350	A 340	A 355	A 300	A 275	A 240	A 225	A 225	A 225	A 220	A 210	A 200	A 220	A 200	A 245	A 200	A 200	A 225	A 230	A 250	A 300	A 345	A 260	A 310
4	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 250	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300
5	A 315	A 425	A 425	A 425	A 425	A 425	A 425	A 425	A 425	A 425	A 425	A 425	A 425	A 425	A 425	A 425	A 425	A 425	A 425	A 425	A 425	A 425	A 425	A 425
6	A 305	R 305	R 305	A 305	A 390	A 250	A 250	A 250	A 250	A 250	A 250	A 250	A 250	A 250	A 250	A 250	A 250	A 250	A 250	A 250	A 250	A 305	A 305	A 305
7	A 450	A 450	A 450	A 450	A 450	A 450	A 450	A 450	A 450	A 450	A 450	A 450	A 450	A 450	A 450	A 450	A 450	A 450	A 450	A 450	A 450	A 450	A 450	A 450
8	A 270	A 390	A 390	A 390	A 310	A 250	A 250	A 250	A 225	A 210	A 240	A 250	A 215	A 200	A 230	A 205	A 220	A 205	A 275	A 230	A 250	A 270	A 245	A 355
9	A 300	A 300	A 390	A 390	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300
10	A 250	A 250	A 250	A 250	A 250	A 250	A 250	A 250	A 250	A 250	A 250	A 250	A 250	A 250	A 250	A 250	A 250	A 250	A 250	A 250	A 250	A 250	A 250	A 250
11	A 250	A 300	A 310	A 300	A 320	A 275	A 225	A 200	A 200	A 200	A 195	A 195	A 200	A 200	A 200	A 250	A 200	A 205	A 225	A 225	A 225	A 230	A 240	A 300
12	A 250	A 300	A 310	A 300	A 320	A 275	A 225	A 200	A 200	A 200	A 195	A 195	A 200	A 200	A 200	A 250	A 200	A 205	A 225	A 225	A 225	A 230	A 240	A 300
13	A 350	A 390	A 390	A 390	A 295	A 250	A 250	A 250	A 300	A 210	A 200	A 240	A 250	A 205	A 210	A 220	A 225	A 215	A 225	A 205	A 240	A 240	A 235	A 355
14	A 320	A 320	A 320	A 320	A 320	A 320	A 320	A 320	A 320	A 320	A 320	A 320	A 320	A 320	A 320	A 320	A 320	A 320	A 320	A 320	A 320	A 320	A 320	A 320
15	A 290	A 325	A 355	A 300	A 250	A 230	A 210	A 195	A 200	A 220	A 240	A 225	A 200	A 210	A 200	A 205	A 220	A 205	A 200	A 210	A 220	A 245	A 245	A 245
16	A 250	A 255	A 255	A 250	A 250	A 245	A 230	A 245	A 250	A 230	A 205	A 230	A 200	A 200	A 250	A 230	A 190	A 190	A 190	A 190	A 190	A 190	A 300	A 400
17	A 595	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300
18	A 425	A 350	A 350	A 350	A 350	A 350	A 350	A 350	A 350	A 350	A 350	A 350	A 350	A 350	A 350	A 350	A 350	A 350	A 350	A 350	A 350	A 350	A 350	A 350
19	A 275	A 300	A 315	A 215	A 250	A 250	A 250	A 250	A 250	A 190	A 225	A 195	A 240	A 240	A 225	A 225	A 200	A 210	A 230	A 210	A 225	A 250	A 255	A 260
20	A 350	A 500	A 355	A 355	A 255	A 205	A 245	A 240	A 230	A 230	A 205	A 200	A 240	A 210	A 200	A 200	A 205	A 260	A 235	A 220	A 230	A 230	A 255	A 250
21	A 250	A 260	A 275	A 280	A 255	A 225	A 225	A 200	A 200	A 200	A 240	A 240	A 195	A 225	A 205	A 200	A 200	A 205	A 215	A 225	A 215	A 240	A 250	A 240
22	A 235	A 270	A 275	A 270	A 200	A 200	A 200	A 200	A 215	A 200	A 200	A 200	A 195	A 205	A 210	A 210	A 200	A 200	A 210	A 250	A 210	A 245	A 245	A 250
23	A 245	A 250	A 250	A 260	A 245	A 240	A 225	A 210	A 200	A 205	A 200	A 205	A 200	A 200	A 200	A 200	A 200	A 200	A 200	A 200	A 200	A 240	A 225	A 250
24	A 240	A 245	A 275	A 295	A 250	A 250	A 240	A 230	A 200	A 200	A 200	A 210	A 200	A 200	A 220	A 205	A 205	A 210	A 210	A 240	A 325	A 250	A 230	A 230
25	A 250	A 300	A 300	A 295	A 250	A 250	A 250	A 200	A 210	A 215	A 200	A 200	A 205	A 205	A 210	A 220	A 240	A 235	A 205	A 245	A 340	A 340	A 340	A 340
26	A 300	A 325	A 350	A 380	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300
27	A 230	A 300	A 330	A 330	A 250	A 250	A 225	A 215	A 200	A 210	A 210	A 200	A 200	A 215	A 230	A 205	A 200	A 250	A 230	A 225	A 250	A 345	A 350	A 350
28	A 290	A 320	A 350	A 350	A 250	A 250	A 225	A 215	A 200	A 210	A 210	A 200	A 200	A 215	A 230	A 205	A 200	A 250	A 230	A 225	A 250	A 345	A 350	A 350
29	A 300	A 325	A 350	A 380	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300
30	A 290	A 325	A 350	A 380	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300
31	A 290	A 325	A 350	A 380	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300	A 300
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	23	21	20	15	13	11	18	19	19	19	20	22	20	24	25	27	26	26	26	27	24	26	26	25
MED	285	300	312	295	255	250	240	225	210	215	210	210	205	210	220	210	220	220	228	240	240	250	250	265
UQ	310	350	372	300	310	250	265	242	225	228	240	240	225	230	230	230	235	240	240	249	250	290	275	310
LQ	250	270	275	265	250	240	225	212	200	205	200	200	200	200	205	202	205	205	210	222	225	240	245	250

The Radio Research Laboratories, Japan

JAN. 1978

H'F (KM)

IONOSPHERIC DATA

JAN. 1978

H^oES (KM)

45° E Mean Time (G. M. T. + 3h)

Station **SYOWA** STATION Lat. 69° 00.4' S, Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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	K 100	K 100	K 100	K 115	K 100	K 100	G	G	G	G	G	G	125	120	105	105	100	G	125	115	105	115	G	K 105	
2	K 100	K 105	K 100	K 100	K 100	100	100	100	100	100	180		G	125	G	G	130	150	G	130	125	110	G	145	
3	K 125	K 140	K 125	K 145	145	G	G	G	G	G	G	G	125	110	110	105	100	110	G	G	G	K 130	K 125	150	K 115
4	100	100	100	K 110	130	135	150	B	B	B	B	B	B	B	G	B	G	G	140	145	100	100	B	K 130	
5	K 100	95	K 100	100	100	105	100	125	100	100	G	G	B	B	B	B	G	B	B	G	G	G	B	140	
6	K 100	K 140	K 100	K 130	K 100	K 150	B	B	130	100	G	G	B	145	G	150	G	G	130	140	135	K 165	K 105	100	
7	K 100	110	100	100	100	K 105	K 105	105	105	105	100	100	100	G	G	G	G	G	G	G	B	B	G	140	
8	K 110	K 115	K 105	B	100	K 105	100	100	G	G	G	G	125	120	G	G	G	G	G	G	140	B	G	K 120	
9	K 110	K 130	K 120	K 140	100	100	100	100	100	G	G	B	B	B	B	B	B	B	B	B	G	105	100	K 160	
10	K 150	B	105	100	100	B	B	B	120	100	120	G	B	B	B	G	G	G	G	105	K 105	K 110	K 135	K 120	
11	K 150	105	B	B	B	B	140	G	110	B	B	G	115	115	110	110	G	G	150	130	G	145	G	G	
12	G	K 110	130	G	K 100	110	G	G	G	G	105	100	G	100	100	100	G	G	100	G	110	G	100		
13	140	110	K 105	K 130	G	100	100	100	100	G	95	95	G	G	G	105	G	G	G	B	150	140	130	K 100	
14	K 125	K 155	B	B	B	150	K 100	140	G	100	G	B	B	G	110	105	105	G	G	100	G	G	130	100	
15	150	K 130	K 120	140	G	G	105	100	G	G	G	G	G	125	G	105	100	100	G	100	G	G	105	100	
16	100	125	115	105	100	100	100	100	100	140	100	120	125	110	105	100	105	G	115	150	150	150	K 100	K 100	
17	K 100	K 100	125	105	100	100	180	100	100	G	G	G	150	145	125	100	G	140	G	110	120	120	G	K 100	
18	K 105	100	150	100	100	150	95	100	100	100	155	100	G	115	G	G	G	G	125	B	150	135	140	135	
19	150	100	140	195	B	100	100	100	100	G	G	G	110	G	125	110	G	G	125	130	175	150	120	105	
20	100	K 100	K 140	K 125	120	145	100	120	100	100	100	120	105	120	105	140	G	120	130	110	150	100	140	110	
21	100	100	100	100	105	100	100	105	105	105	105	110	110	100	100	G	G	100	100	125	G	100	100	95	
22	100	100	100	125	100	130	G	110	115	130	120	120	105	105	105	110	110	110	100	100	100	100	115	100	
23	105	100	100	95	100	100	G	100	100	115	100	115	100	100	100	100	100	100	100	95	100	G	100	130	
24	100	140	100	135	150	170	100	100	100	120	G	115	110	105	100	100	105	105	140	G	110	K 125	125	120	
25	120	120	K 100	K 105	115	100	100	100	100	G	100	100	110	G	100	100	100	100	G	150	120	K 100	100	100	
26	110	150	140	100	135	100	100	K 100	145	G	100	G	100	G	G	B	G	G	G	160	G	125	K 120	140	
27	135	115	K 130	K 130	130	100	100	105	100	G	105	125	125	110	125	110	105	105	100	140	125	125	115	G	
28	145	120	105	105	G	125	105	G	G	95	100	G	G	110	G	G	105	100	100	G	150	130	120	100	
29	125	105	130	115	100	100	140	G	140	B	B	G	G	B	B	G	G	G	G	100	K 150	K 100	K 100	100	
30	K 130	K 105	K 125	K 100	100	K 105	K 100	100	140	G	B	B	B	B	B	G	B	130	130	130	130	115	K 120	K 100	
31	K 110	110	K 100	B	100	B	110	95	100	100	B	B	B	B	110	B	G	B	120	120	K 100	100	150	120	
CNT	30	30	29	26	25	26	24	22	23	15	14	14	16	18	16	17	12	12	17	21	22	25	22	29	
MED	K 110	110	105	108	100	102	100	100	100	100	100	115	110	112	105	105	105	105	125	125	128	115	120	105	
UQ	K 130	K 125	K 125	K 130	115	130	105	105	112	110	105	120	125	120	110	110	108	125	130	140	150	130	130	130	
LQ	K 100	100	100	100	100	100	100	100	100	100	100	100	105	105	100	100	100	100	100	105	105	100	100	100	

JAN. 1978

H^oES (KM)

IONOSPHERIC DATA

JAN. 1978

TYPES OF ES

45° E Mean Time (G. M. T. + 3h)

Station **SYOWA STATION** Lat. 69° 00.4' S, Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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	K3	RK41	K2	CK21	K2	K2							H1	C1	C1	C1	CA41	A1	H2	C2	C4	C1		RK21	
2	RK51	R2	RKA21	RK12	KA51	R2	R1	R1	CS11	R1				H1			H1	H1		H1	C1	C1		H1	
3	RK11	RK11	K2	KC11	R1							C1	C1	C1	C1	C1	C1				K1	K1	R1	K2	
4	RA11	R1	R1	K1	RA11	R1	R1												H1	H1	AR11	A1		KL11	
5	LK11	L1	RKA21	R1	R1	CA11	C1	AR11	L1	RS11														H1	
6	LHK12	K1	K2	K1	RK11	RKA11			A1	R1				H1		H1			H1	H1	H1	HK11	R1	RA11	
7	RK11	RL11	R1	L1	R1	K1	CK21	C2	C2	C2	C1	C1	C1											H1	
8	K2	K2	C1		RA11	K1	L1	K1					H1	C1							H1			K1	
9	K1	CK11	RK11	K1	RCA11	L1	L1	R1	R1													R1	RK11	ARK11	
10	HCK11		R1	R1	R1				R1	R1	C1									R1	R1	K2	HK12	K3	
11	HKA21	C1					R1		C1				C1	C1	C1	C1			H1	H1		H1			
12		RK21	H1		LK11	R1					C1	C1		C1	L1	L1				L2		CL31		R1	
13	R1	R1	K1	K1		R1	R1	R1	R2		L1	L1				C1					H1	H1	C1	K2	
14	CK11	ARK11				A1	RK21	R1			L1				C1	C1	C1				L1		H1	L1	
15	RA11	RKA11	RK11	RC11			C1	L1						H1		C1	C1	C1			L2		C2	C3	
16	C2	H1	C2	C2	L2	C2	C2	C1	C3	H1	LH11	H1	H1	C1	C3	C2	C2		R1	AA11	AR11	A1	RK21	RK12	
17	K3	RK31	RA11	AR11	AL11	RA11	AA11	RA11	R1				H1	H1	H1	LC11			BR21		C1	CH11	C1	RK11	
18	RK21	ARK11	HA31	RA11	RA21	AR11	L1	R1	R1	R1	AR11	R1		C1						C1	H1	H1	C1	C1	
19	HC11	BA31	HC11	AHC11		R2	R1	AH11	R2				C1		H1	C1				R1	H1	HA11	HA11	CH11	
20	RA31	K4	CKA22	KA21	R2	R1	CC11	C1	C3	L2	R1	C1	C1	C1	C2	H1			C2	H1	C2	H1	LH11	C1	CL31
21	R3	C3	L4	L1	C2	L4	C2	C2	C2	C3	C2	C2	C1	C1	L1				L2	L1	H1		L3	L3	L4
22	L2	L1	LA11	RAC11	R1	RC22		C2	C1	H1	C2	C1	C1	C2	C2	C2	C2	C2	C2	C1	L3	AL3	RA21	AC12	R2
23	C3	C4	C3	L2	L1	L1		L2	C2	CC11	L2	C2	C2	CA41	C4	C4	C3	L4	L4	L2	C3		L4	HH11	
24	LH21	H1	LR11	HA11	AR11	HR11	L1	L1	L2	C1		C1	C1	C2	R2	C1	C1	CH11	H1		R1	RK11	R1	C2	
25	R1	C2	K2	K2	RC11	RA21	RA21	C2	L3		RS11	R1	CL2		C1	C2	C2	L1		H1	R2	KA31	R3	R3	
26	RA31	AR33	RA11	RA21	HRL12	RLS11	R2	RK21	HA11		R1		R1							HH11		C2	RK12	RC11	
27	CK11	CK21	CK11	RCCK13	R1	R1	R2	R1	R1		R1	C1	C1	C1	C1	C1	C1	C3	C3	HC12	C3	C3	C3		
28	HC11	R1	RA11	R2		C1	C1			L2	L1			C1			C2	CK21	R2		R2	R1	K1	C1	
29	R1	AC11	AR12	C2	R2	RS11	H1		H1												K2	ARK11	RA21	K3	R3
30	CK22	RK21	K2	CK21	R1	K2	K2	R1	H1										H2	H2	H2	C1	C2	CK21	K4
31	RK31	CA11	RKA21		L1		R1	L1	R2	R1					R1					R1	R1	K2	RA11	ARC11	R2
	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																									
UQ																									
LQ																									

The Radio Research Laboratories, Japan

JAN. 1978

TYPES OF ES

IONOSPHERIC DATA

FEB. 1978

FXI (0.1 MHz)

45° E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION Lat. 69 00.4 S, Long. 39 35.4 E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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	S 50	X 47	U C 52	B	B	O R 50	O R 49	Y	B	Y	B	B	O R 53	X 56	O R 55	56	X 59	X 57	60	57	52	X 46	41	O R 46
2	X 38	B	A	A	Y	A	74	68	Y	Y	61	67	X 60	62	X 66	B	B	B	62	X 60	C	C	C	C
3	45	A	A	B	B	B	61	69	68	72	76	74	67	67	65	64	X 69	X 68	O R 63	R	53	45	48	45
4	A	A	A	A	A	54	B	Y	B	Y	59	59	57	58	X 61	X 62	X 59	X 60	61	60	59	63	C	47
5	41	X 42	46	58	56	60	Y	B	Y	R	Y	Y	O R 55	O R 55	62	71	69	64	50	56	47	A	A	
6	R	O R 46	R	R	R	R	O R 57	63	67	70	O R 65	68	C	C	C	61	62	60	62	X 51	41	U R 50	O R 42	A
7	A	52	57	U S 60	U S 60	65	69	70	X 72	70	X 67	X 64	X 66	X 64	60	X 63	61	60	60	60	58	56	46	X 39
8	O S 41	U S 47	40	50	50	R	R	R	67	O R 56	62	O R 60	51	66	62	64	66	X 59	R	X 50	O R 46	45	R	O R 44
9	R	U S 52	S	R 45	56	65	70	70	69	67	69	O R 74	O R 76	82	92	O R 92	X 87	73	50	52	70	S 60	Y	A
10	40	U S 57	S	U S 50	44	53	O R 56	65	70	72	82	84	79	74	68	65	65	65	69	64	60	X 54	41	S
11	X 47	X 47	O S 52	X 47	S	S	68	S 83	84	85	89	87	83	X 81	C	X 80	X 73	X 70	X 67	X 64	X 65	S 62	S 56	S 54
12	X 57	S	X 68	S	U S 70	72	90	98	100	100	100	O R 102	X 88	X 88	X 83	X 82	X 73	71	X 69	X 63	65	S 52	31	A
13	A	A	A	O S 52	54	U S 54	A	O R 60	O R 54	65	66	64	X 61	R	B	B	B	B	B	B	B	B	B	B
14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	O R 43	O R 48	O R 45	O R 47	48
16	55	36	O R 38	O R 36	O R 46	O R 46	R	R	O R 44	O R 48	O R 50	O R 49	O R 50	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	55	O R 56	O R 53	O R 56	56	O R 54	X 56	O R 53	O R 53	53	X 55	X 54	X 48	42	36
18	R	R	33	A	B	40	C	C	C	C	C	C	C	X 64	63	62	60	61	B	X 60	X 58	44	31	31
19	A	O R 27	A	O R 43	A	B	B	B	B	R	57	57	57	O R 54	Y 57	59	O R 59	X 59	X 59	X 51	47	65	A	A
20	A	A	40	Y	Y	58	R	62	Y	A	B	R	B	O R 58	66	68	O R 68	B	O R 58	O R 56	51	R	R	A
21	A	37	A	U A 56	42	66	65	Y	U A 70	58	O R 54	O R 54	60	X 64	X 62	X 66	68	65	63	U S 65	O R 42	A	Y	A
22	A	A	A	54	43	R	Y	A	Y	Y	A	Y	56	O R 54	53	X 55	59	X 60	56	O R 59	A	42	A	A
23	S 60	U S 63	A	A	R	O R 49	70	60	66	66	68	65	X 67	X 68	X 66	X 68	X 68	X 65	X 62	O S 63	X 63	X 61	X 54	S 48
24	S	S	S	U S 55	46	U S 60	60	S 70	80	81	80	80	80	83	X 84	X 85	X 81	81	S	O S 71	70	70	S	S
25	S	S 60	X 55	C	S	S 59	S	70	80	87	87	88	93	93	107	100	90	93	81	X 75	71	68	S 70	57
26	A	70	S	S	66	Y	60	U A 89	60	Y	Y	59	56	54	X 63	69	69	51	U S 63	O R 44	A	R	A	U A 53
27	B	R	A	69	B	B	B	R	B	B	B	B	53	B	B	O R 57	70	O R 64	O R 47	60	S 52	U A 53	A	A
28	B	B	B	R	55	51	46	B	B	B	B	B	B	O R 53	B	X 64	64	O R 56	54	50	R	59	A	A
29																								
30																								
31																								
CNT	10	14	10	13	13	16	14	14	15	15	18	19	21	22	20	23	23	22	21	24	21	21	12	12
MED	46	47	49	52	54	58	63	70	69	70	66	65	60	64	63	64	68	62	62	58	56	53	44	46
UQ	55	S 57	55	56	56	65	70	70	76	76	80	77	76	74	67	68	70	69	63	63	63	61	51	50
LQ	41	42	40	47	46	50	57	63	66	62	59	59	56	R 56	58	62	60	59	58	50	51	46	41	42

FEB. 1978

FXI (0.1 MHz)

IONOSPHERIC DATA

FEB. 1978

FOF2 (0.1 MHz)

45° E Mean Time (G. M. T. + 3 h)

Station **SYOWA STATION** Lat. 69° 00.4' S, Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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	F 35	F	F	B	B	F 42	U F 40	Y	B	Y	B	B	47	50	49	F 50	53	51	F 52	F 50	F 45	40	F 35	F 38	
2	32	B	A	A	Y	A	U F 45	F	Y	Y	F 55	F 58	53	56	60	B	B	B	F 56	53	C	C	C	C	
3	F 36	A	A	B	B	B	F 50	F	U F 57	F	F 57	F	F 56	U F 58	55	F 57	63	62	F 57	R	F 39	F 39	U F 39	F 34	
4	A	A	A	A	A	Y	B	Y	B	Y	F 51	U F 49	U F 49	51	55	56	52	54	F 53	F 54	F 52	F 57	C	U F 37	
5	F	J S 36	F	F	F	U F 50	Y	B	Y	R	Y	Y	Y	U F 49	U F 48	F 55	F 63	F 61	U F 57	F 42	F 47	F 40	A	A	
6	A	U F 39	A	A	A	R	51	F 55	F 59	U F 60	59	F 61	C	C	C	F 54	F 55	F 53	F 45	44	F 35	R	36	A	
7	A	U F 39	F	U F 45	F	F 56	J S 63	F 64	67	64	60	58	60	58	54	58	54	52	F 54	U F 54	52	49	F	U S 32	
8	F	F	F	F 42	F 38	A	A	A	Y	U R 50	U F 49	F 53	F 54	F 59	F 56	F 58	F 60	53	R	43	F 39	F	A	F	
9	R	F	S	F	J F 48	F	F 47	F 53	F 59	F 58	F 62	F 68	70	74	U F 82	86	80	F	F 44	U F 43	F	F	Y	A	
10	F 31	F	S	F	F 43	F 47	F 49	F 55	F 60	F 65	F 67	F 67	F 72	F 68	F 61	F 58	J F 57	F 56	F 60	F 57	F 54	48	F 35	S	
11	J S 41	J R 41	46	42	S	S	U R 59	F	F	F 79	F 82	F 80	F 77	75	I G 72	73	68	64	60	58	59	56	U S 50	47	
12	S 50	S	J S 62	S	J F 64	F	F	U F 87	F	F 92	91	96	82	82	78	67	67	65	60	57	F 58	F	F	A	
13	A	A	A	U F 43	F	F	A	54	U R 47	F	U F 55	F 54	55	R	B	B	B	B	B	B	B	B	B	B	
14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R 37	42	39	F 40	F 40
16	F	F	U F 28	F 30	U F 39	40	R	R	E G 38	F 40	44	43	44	C	C	C	C	C	C	C	C	C	C	C	
17	C	C	C	C	C	C	C	C	C	F	F 48	F 46	F 48	F 50	48	50	47	47	F 47	49	48	41	U F 33	F	
18	R	R	F	A	B	F	C	C	C	C	C	C	C	F 58	F 57	F	F 54	F 55	B	54	51	F 37	U F 28	U F 20	
19	A	21	A	F 35	A	B	B	B	B	R	F	F	F 48	F 48	51	53	53	53	53	45	F 40	A	A	A	
20	A	A	F	Y	Y	F	R	F	Y	A	B	R	B	F 50	F 60	F 61	62	B	R 52	F 42	F 44	R	R	A	
21	A	F	A	F	F	F	Y	Y	F 50	F 47	48	54	57	56	60	61	59	F 55	F 49	F 33	A	Y	A		
22	A	A	A	U F 37	F 32	A	Y	A	Y	Y	A	Y	F 48	U F 48	47	49	52	53	F 49	F 31	A	U F 35	A	A	
23	F	F	A	A	A	F 40	U F 58	U F 54	F 60	F 60	F 60	F 59	61	62	60	62	62	59	56	F 54	57	J R 55	47	U S 42	
24	S	S	S	F	F	U F 47	F	F	U F 70	U F 71	F 73	F 72	F 73	F 77	78	79	75	F	S	U S 65	F 64	F 63	S	S	
25	S	J S 50	J S 49	C	S	F 43	S	J F 64	F	U F 73	F 80	F 80	U F 87	F 84	F 87	F 81	F 81	F 86	F 74	69	F 65	U F 58	U F 55	U F 40	
26	A	F	F	S	F	Y	U F 54	F 40	F	Y	Y	F 50	E G 48	E G 48	J Y 57	U F 61	F 53	U F 43	F 36	38	A	A	A	F	
27	B	R	A	F	B	B	B	R	B	B	B	B	F	B	B	51	53	58	41	F	F 30	F	A	A	
28	B	B	B	A	U F 40	F	F	B	B	B	B	B	B	47	B	59	F 58	50	F 47	F 42	R	F	A	A	
29																									
30																									
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	6	6	4	7	7	8	10	9	9	12	17	17	20	22	21	22	23	20	21	23	20	14	10	9	
MED	36	39	48	42	F 40	F 45	F 50	F 55	F 59	F 62	F 59	F 58	F 54	F 58	57	58	F 58	54	F 53	49	F 48	44	F 38	U F 38	
UQ	S 41	J 41	J S 56	F 42	F 46	F 48	U 58	F 64	F 60	F 72	F 67	F 68	71	F 68	61	62	63	60	F 57	54	56	56	U F 47	F 40	
LQ	F 32	36	37	F 36	F 38	F 41	F 47	F 54	F 57	F 54	F 51	F 50	F 48	F 50	54	F 54	F 53	52	F 47	43	F 40	F 39	F 35	U F 34	

The Radio Research Laboratories, Japan

FEB. 1978

FOF2 (0.1 MHz)

IONOSPHERIC DATA

FEB. 1978

FOF1 (0.01 MHz)

45° E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION Lat. 69 00.4 S, Long. 39 35.4 E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1					B	A	370	F	B	Y	B	B	440	440	460	450	430	420	430	L	350			
2						A	F	A	A	A	Y	440	450	450	460	B	B	B	L					
3						B	370	B	420	420	Y	460	450	460	470	440	440	430	420	F	390			
4						A	B	A	B	Y	410	450	440	440	440	460	L	440		L				
5						A	A	B	A	F	Y	450	400	450	440	440	430	430	F	F	420			
6						A	Y	380	390	400	B	440	C	C	C	U	U	U	F	F	400			
7					L	340	390	390	400	420	430	440	440	460	450	450	F	F	F	L	L	L		
8						A	A	A	Y	440	440	440	450	450	460	450	450	410	390	F				
9						F	F	380	410	430	430	B	B	440	440	B	B	410	400	F	F	380		
10						320	A	390	400	410	430	450	430	450	450	F	U	L	L	L				
11						F	F	370	390	410	410	440	450	450	470	460	I	C	L	L	L			
12					L	360	F	F	400	420	450	370	H	B	460	460	R	450	U	U	U	L		
13							A	A	A	420	420	420	430		R	B	B	B	B	B	B			
14						B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B			
15						B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B			
16							A	R	380	390	390	400	Y	C	C	C	C	C	C					
17							C	C	C	400	400	400	410	410	420	420	L							
18							C	C	C	C	C	C	C	430	430	C	U	L	F	B				
19						B	B	B	B	390	400	U	R	410	420	430	420	420	400	400	L	U	L	330
20							R	F	Y	A	B	410	B	B	420	410	B	B	B					
21							U	F	Y	U	F	400	410	410	420	440	440	430	U	L	L			
22						A	A	A	A	Y	A	Y	430	450	430	430	420	L	370					
23						A	330	F	390	410	410	430	430	U	H	460	440	L	L					
24							F	F	340	380	410	420	U	H	470	460	B	L	L					
25						L	F	F	360	380	410	F	430	430	R	U	L	450	L	L	L			
26							A	Y	U	F	Y	Y	420	480	480	450	420	F	F	F				
27							B	A	B	B	B	B	430	B	B	L	430	390	L					
28							B	B	B	B	B	B	B	400	B	B	400	F	B					
29																								
30																								
31																								
Hour Day	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	11	9	13	17	16	19	20	19	20	18	15	11	7	3	1			
MED						340	360	380	400	410	415	440	440	450	450	440	430	420	400	F	F	380	350	
UQ						350	370	390	410	420	430	450	450	455	460	450	435	430	420	F	F	385		
LQ						330	F	F	340	380	390	400	400	415	430	435	435	430	410	405	F	F	355	

The Radio Research Laboratories, Japan

FEB. 1978

FOF1 (0.01 MHz)

IONOSPHERIC DATA

FEB. 1978

FOE (0.01 MHz)

45° E Mean Time (G. M. T. + 3 h)

Station SYDWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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	K 250	U K 210	A	B	B	K 350	300	Y	B	A	B	B	Y	320	320	315	B	B	260	250	240	290	K 260	U K 250	
2	K 215	B	A	B	B	A	300	A	A	A	A	A	320	315	320	320	B	B	B	B	U B 220	U H 180	140	170	
3	K 300	A	B	B	B	B	A	B	325	325	A	350	B	B	310	315	R	300	B	225	K 250	K 345	K 350	F 200	
4	A	A	B	B	B	A	B	A	B	Y	A	A	320	315	R	B	B	A	H 300	270	230	205	F 180	I C 180	
5	U F 130	190	A	A	U K 260	A	A	B	A	Y	U A 320	A	Y	315	320	310	R 305	280	290	290	K 270	U K 330	A	A	
6	A	A	A	A	B	A	A	A	295	A 305	B	320	Y	C	C	C	350	310	275	280	220	K 265	U K 390	A	A
7	A	320	U K 280	A	Y	A	330	290	280	300	300	305	300	A	A	A	305	300	295	270	F 240	F 200	H 150	U F 330	U K 270
8	U K 270	U K 300	A	U K 290	A	A	A	A	A	A	360	360	320	320	320	300	300	290	280	230	U F 230	A	U K 350	A	U K 260
9	A	A	U K 260	A	A	A	U K 300	K 315	270	290	305	B	B	R 320	U R 325	B	B	U K 360	370	U K 330	U K 400	U K 350	U K 400	A	
10	A	A	A	A	A	A	A	K 350	290	295	315	305	295	280	280	300	F 280	A	A	200	180	U A 180	A	150	
11	150	A	A	A	K 350	U K 280	220	240	H 270	280	300	310	300	310	I C 315	U R 300	290	R 270	240	230	200	H 155	125	A 110	
12	A	A	U A 150	A	A	200	F 220	280	275	295	305	B	B	A	A	305	U A 295	280	240	220	H 180	A	U K 210	B	
13	A	A	A	A	K 330	U F 195	B	A	A	H 310	315	320	330	B	B	B	B	B	B	B	B	B	B	B	B
14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
16	A	A	A	190	K 250	U K 280	A	A	280	270	R 295	R 290	B	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	U C 325	U Y 300	U Y 300	U R 305	B	B	A	B	B	240	200	190	A	120	F 110	
18	K 250	K 280	U K 230	A	B	A	C	C	C	C	C	C	C	B	U Y 310	A	A	250	B	B	B	B	U F 170	B	U F 150
19	A	A	B	A	B	B	B	B	B	Y	A	U R 320	300	300	H 300	300	H	B	B	B	B	U F 200	A	A	A
20	A	A	A	A	B	250	A	A	Y	A	B	330	B	B	B	B	B	B	B	B	B	U F 190	K 320	K 360	A
21	A	A	A	B	U K 270	A	A	Y	A	K 360	B	B	310	300	300	325	H 275	A	U F 230	310	K 260	A	U K 290	A	
22	A	A	A	A	A	A	A	A	B	A	A	Y	300	300	300	290	300	250	210	280	K 340	K 280	A	A	
23	170	A	A	K 370	K 390	K 360	K 310	245	260	U A 265	270	310	300	300	U A 305	300	U A 275	250	240	200	130	U A 140	A	A	
24	A	330	A	U K 350	A	U K 300	K 310	240	250	A 270	290	U A 305	A	A	A	B	Y	240	A	U A 190	170	A	A	A	
25	A	A	A	C	195	A	U F 220	A	260	270	U R 300	300	R	310	300	U A 250	A	R	255	200	A	B	A	B	
26	A	U K 390	U K 370	U K 330	A	A	A	A	250	B	315	300	310	300	B	300	260	240	260	A	A	A	A	A	
27	B	K 290	B	U K 260	B	B	B	A	B	B	B	B	305	H	B	B	B	260	B	B	U K 260	U F 160	A	A	A
28	A	B	B	K 350	K 260	B	B	B	B	B	B	B	B	B	B	B	280	B	245	230	U A 320	K 400	K	A	B
29																									
30																									
31																									
00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	8	8	5	7	8	8	9	7	12	14	14	17	14	13	14	15	13	14	16	19	20	16	11	10	
MED	K 232	K 295	U K 260	U K 330	K 265	K 280	300	280	272	295	302	310	305	310	310	300	290	278	258	230	202	K 285	K 210	175	
UQ	K 260	K 325	U K 280	K 350	K 340	K 325	K 310	302	285	310	315	320	315	320	320	312	300	295	275	255	K 262	K 348	K 320	U K 250	
LQ	K 160	K 245	U K 230	U K 275	K 255	K 225	220	242	260	270	300	305	300	300	300	300	275	250	240	210	185	175	135	150	

The Radio Research Laboratories, Japan

FEB. 1978

FOE (0.01 MHz)

IONOSPHERIC DATA

FEB. 1978

FOES (0.1 MHz)

45° E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	J A 57	30	J A 37	B	B	37	41	G	B	39	B	B	G	G	G	G	E B 36	E B 30	31	35	G	K 29	K 26	30	
2	K 21	B	83	51	39	J A 48	29	40	40	J A 40	40	40	33	G	G	B	B	B	33	38	24	32	27	D 40	
3	32	49	50	B	B	B	40	E B 48	G	G	39	G	E B 37	56	J A 74	G	G	G	E B 32	G	30	34	35	J A 31	
4	45	J A 45	45	67	46	40	B	44	B	G	J A 39	G	G	G	E B 37	E B 34	30	J A 62	43	G	24	20	C	27	
5	20	J A 26	J A 51	41	28	J A 51	46	B	52	G	35	40	G	G	G	G	G	G	G	K 29	K 27	J A 39	J A 61	40	
6	37	36	J A 40	39	45	40	36	39	35	G	E B 47	G	C	C	C	35	G	30	G	G	K 26	40	78	J A 62	
7	J A 41	K 32	J A 29	J A 35	30	34	K 33	31	30	31	38	37	J A 39	J A 49	J A 37	31	G	G	29	27	24	J A 22	J A 21	35	
8	32	J A 53	J A 41	J A 32	J A 31	40	44	46	39	41	40	G	G	G	G	G	G	G	G	28	45	35	J A 39	J A 53	
9	40	J A 34	D 48	D 82	J S 64	33	31	37	G	32	G	E B 47	E 51	29	G	E 65	E 54	39	37	K 39	J A 39	65	U 35	U 40	J A 44
10	J A 52	J A 61	J A 27	78	J A 51	J A 39	39	41	32	G	35	35	44	J A 49	52	70	J A 43	J A 42	J A 40	33	22	19	J A 31	20	
11	20	24	25	J A 35	K 35	34	J A 39	G	30	30	G	G	32	G	C	G	G	G	G	G	G	19	G	12	
12	J A 31	J A 26	J A 27	21	20	22	29	G	G	G	G	E B 60	E B 44	33	32	G	29	31	24	27	G	15	24	23	J A 39
13	J A 51	53	46	38	33	K 29	55	51	42	G	G	G	G	E B 37	B	B	B	B	B	B	B	B	B	B	B
14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	32	38	30	58	J A 82
16	J A 76	30	20	J A 31	35	U 28	36	32	G	G	31	33	38	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	G	G	G	G	E B 34	31	35	E B 35	E B 33	26	23	G	20	G	13	
18	K 25	K 28	J A 61	48	B	J A 39	C	C	C	C	C	C	C	E B 39	G	35	28	G	B	E B 37	32	20	E B 15	25	
19	28	J A 25	37	37	J A 42	58	B	B	B	G	42	G	33	G	31	G	E B 38	E B 35	E B 26	E B 23	25	33	J A 33	41	
20	45	34	J A 64	30	25	27	40	28	72	46	B	G	B	E B 45	E B 33	E B 32	E B 49	B	E B 46	33	21	K 32	K 36	38	
21	J A 36	J A 74	50	40	35	36	J A 31	G	40	36	E B 34	E B 35	G	36	G	G	G	30	J A 29	31	30	J A 40	J A 120	60	
22	50	J A 37	70	J A 37	J A 34	38	38	45	37	35	47	G	31	36	G	G	30	G	G	K 28	40	28	42	J A 37	
23	J A 61	J A 72	37	37	39	K 36	K 31	G	G	61	31	G	G	33	J A 34	G	32	G	27	29	J A 29	J A 51	13	12	
24	J A 29	33	J A 35	J A 39	J A 41	J A 34	K 31	G	27	G	32	J A 33	J A 46	J A 51	J A 40	E B 49	G	J A 26	46	J A 36	J A 27	20	21	20	
25	J A 36	J A 42	29	C	J A 33	40	31	33	J A 34	33	G	G	G	G	33	36	31	G	G	23	25	22	J A 21	E B 20	
26	45	95	J A 47	J A 37	J A 39	38	40	55	G	E B 36	G	35	G	G	E B 33	G	32	30	34	J A 34	J A 40	30	J A 87	J A 89	
27	B	29	40	29	B	B	B	39	B	B	B	B	G	B	B	E B 39	G	E B 36	E B 27	40	J A 38	J A 104	J A 64	30	
28	36	B	B	40	K 26	35	E B 36	B	B	B	B	B	B	E B 37	B	E B 48	G	E B 40	30	28	32	146	44	45	
29																									
30																									
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	24	23	24	22	21	23	21	21	19	23	21	22	22	23	20	23	23	22	23	25	25	25	24	25	
MED	36	34	40	38	35	37	36	U 35	32	E G 30	32	G	E G 31	E G 33	E G 32	E G 31	E G 30	E G 28	28	28	27	30	34	37	
UQ	48	J A 51	50	41	41	40	40	42	40	36	39	34	U 36	U 36	35	U 34	32	U 32	33	34	32	35	51	J A 44	
LQ	30	30	32	J A 35	31	34	31	G	G	G	G	G	G	G	G	G	G	G	E G 26	23	24	22	21	25	

FEB. 1978

FOES (0.1 MHz)

IONOSPHERIC DATA

FEB. 1978

FBES (0.1 MHz)

45° E Mean Time (G. M. T. + 3 h)

Stations SYDWA STATION Lat. 69 00.4 S. Long. 39 35.4 E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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	K25	U21	U20	B	B	K35	35	G	B	E39	B	B	G	G	G	G	E34	E30	29	G	G	K29	K26	U25	
2	K21	B	A83	A51	E39	A48	27	U40	E40	E40	U40	37	G	G	G	B	B	B	32	30	24	21	20	G	
3	K30	A49	A50	B	B	B	35	E48	G	G	U39	G	E37	40	35	G	G	G	E32	K25	G	K34	K35	G	
4	A45	A45	A45	A67	A46	E40	B	E44	B	G	35	G	G	E37	E34	30	G	G	G	G	G	G	C	G	
5	18	22	33	U33	U26	K39	E46	B	E52	G	E35	U40	G	G	G	G	G	G	G	K29	K27	U33	A61	A40	
6	A37	36	A40	A39	A45	E40	U36	36	G	G	E47	G	C	C	C	29	G	G	G	G	K26	U39	K33	A62	
7	A41	32	U28	22	22	31	K33	G	G	31	33	U37	35	38	33	G	G	G	G	G	G	G	20	U27	
8	U27	U30	28	U29	25	A40	A44	A46	E39	41	32	G	G	G	G	G	G	G	G	G	U36	U35	A39	U26	
9	37	U33	U26	29	U20	28	U30	28	G	32	G	E47	E51	29	G	E65	E54	34	K37	U33	U40	U35	U40	A44	
10	20	U22	U22	U23	37	31	U39	38	G	G	G	35	41	39	35	G	G	G	30	27	G	G	25	18	
11	G	20	21	27	K35	U28	G	G	G	30	G	G	32	G	C	G	G	G	G	G	G	13	G	G	
12	11	12	14	15	15	G	G	G	G	G	G	E60	E44	33	32	29	29	24	26	G	15	20	U21	A39	
13	A51	A53	A46	38	K33	G	A55	50	42	G	G	G	G	E37	B	B	B	B	B	B	B	B	B	B	
14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	32	32	27	22	19
16	16	29	16	17	27	U28	E36	E32	G	G	31	33	35	C	C	C	C	C	C	C	C	C	C	C	
17	C	C	C	C	C	C	C	C	C	G	G	G	G	E34	31	34	E35	E33	G	23	G	18	G	13	
18	K25	K28	U23	A48	B	23	C	C	C	C	C	C	C	E39	G	31	28	G	B	E37	27	15	E15	G	
19	A28	20	A37	33	A42	E45	B	B	B	G	33	G	33	G	31	G	E38	E35	E26	E23	G	A33	A33	A41	
20	A45	A34	28	E30	E25	Y27	34	U28	G	A46	B	G	B	E45	E33	E32	E49	B	E46	26	G	K32	K36	A38	
21	A36	F	A50	35	U27	26	33	G	39	K36	E34	E35	G	31	G	G	G	27	G	K31	K26	A40	U29	A60	
22	A50	A37	A70	22	18	A38	E38	A45	E37	E35	A47	G	G	G	G	G	25	G	G	G	K28	A40	K28	A42	A37
23	F	F	A37	37	K39	K36	K31	G	G	26	30	G	G	G	G	G	G	G	G	G	22	19	14	10	10
24	21	33	E35	U35	38	U30	K31	G	G	G	G	31	42	33	31	E49	G	G	25	19	G	18	13	14	
25	18	15	17	C	18	19	26	28	G	G	G	G	G	G	32	33	30	G	G	22	21	22	12	E20	
26	A45	U39	U37	U33	U29	E38	39	U29	G	E36	G	33	G	G	E33	G	G	G	U34	A40	A30	A87	U22		
27	B	K29	A40	U26	B	B	B	U39	B	B	B	B	G	B	B	E39	G	E36	E27	U26	19	U19	A40	A30	
28	A34	B	B	A40	K26	35	E36	B	B	B	B	B	B	E37	B	E48	G	E40	29	G	K32	K40	A44	A45	
29																									
30																									
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	23	21	24	22	21	23	21	21	19	23	21	22	22	23	20	23	23	22	23	25	25	25	24	25	
MED	28	30	U32	33	27	30	U33	28	G	G	E31	G	G	E29	E31	G	G	G	G	G	22	19	27	28	25
UQ	A39	36	A42	38	38	36	36	39	E38	U32	34	34	34	U34	32		E30	E30	27	28	27	K33	A40	A39	
LQ	20	22	22	24	25	28	31	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	18	18	12

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FEB. 1978

FBES (0.1 MHz)

IONOSPHERIC DATA

FEB. 1978

F-MIN (0.1 MHz)

45° E Mean Time (G. M. T. + 3 h)

Station		YDWA STATION		Lat. 69° 00.4' S.				Long. 39° 35.4' E				Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation															
Hour	Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1		10	10	9	B	B	15	10	10	B	23	B	B	26	15	11	13	34	30	13	14	10	12	8	8		
2		8	B	13	25	30	14	20	14	20	16	23	15	12	10	15	B	B	B	29	26	22	10	8	7		
3		13	17	23	B	B	B	12	48	27	22	15	15	37	34	20	13	25	15	32	19	13	12	10	10		
4		13	16	23	42	26	10	B	11	B	23	17	10	20	23	37	34	13	15	9	15	10	9	C	8		
5		7	10	11	14	8	10	15	B	25	20	20	23	25	20	23	30	25	17	13	10	8	12	13	13		
6		12	14	16	17	23	13	23	23	15	10	47	22	C	C	C	10	11	10	14	12	16	10	10	8		
7		8	10	8	5	12	19	10	10	10	9	10	10	10	11	15	11	10	9	7	10	10	9	6	9		
8		10	7	7	10	9	21	10	26	10	12	11	31	27	20	22	16	10	10	12	11	10	12	10	6		
9		6	7	14	13	7	13	16	14	12	11	10	47	51	19	31	65	54	10	12	10	11	10	7	7		
10		6	8	6	9	14	11	18	10	10	10	10	10	12	10	10	10	10	10	9	7	7	8	5	6		
11		5	6	8	13	11	10	9	9	10	10	10	10	10	11	C	15	15	11	10	9	8	6	7	9		
12		5	7	8	8	8	12	12	23	11	13	20	60	44	25	20	19	14	10	10	10	10	10	9	14		
13		5	10	10	14	15	10	25	19	20	18	15	15	19	37	B	B	B	B	B	B	B	B	B	B		
14		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		
15		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	26	24	25	20	15		
16		13	12	10	12	21	22	24	23	22	15	19	20	29	C	C	C	C	C	C	C	C	C	C	C		
17		C	C	C	C	C	C	C	C	C	U	C	27	23	25	23	34	30	20	35	33	20	16	18	13	8	9
18		10	10	10	15	B	20	C	C	C	C	C	C	C	39	23	23	20	18	B	37	19	10	15	10		
19		9	9	19	10	24	45	B	B	B	23	14	24	17	15	13	17	38	35	26	23	12	12	10	12		
20		8	10	11	18	22	12	21	15	21	14	B	25	B	45	33	32	49	B	46	25	11	10	13	10		
21		10	9	8	20	10	12	11	16	14	18	34	35	24	12	13	15	13	17	7	13	12	11	8	10		
22		6	8	8	7	8	7	18	15	26	24	13	26	13	14	13	15	11	15	15	15	12	8	11	11		
23		7	9	12	9	10	17	11	11	10	10	14	15	11	13	10	10	13	11	12	10	10	8	6	7		
24		6	8	9	10	10	10	9	8	10	10	10	11	10	10	14	49	24	10	10	10	13	11	10	12		
25		5	7	6	C	10	13	10	13	10	6	22	21	25	20	13	10	20	21	20	16	14	20	7	20		
26		7	6	7	7	10	15	11	12	11	36	25	B	15	19	33	21	13	20	10	11	8	10	7	7		
27		B	22	27	7	B	B	B	23	B	B	B	B	16	B	B	39	16	36	27	10	8	10	10	10		
28		8	B	B	26	15	25	36	B	B	B	B	B	B	37	B	48	16	40	20	17	19	15	9	30		
29																											
30																											
31																											
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT		27	27	27	26	27	27	26	26	26	27	27	27	26	26	25	27	27	27	27	27	27	27	26	27		
MED		8	10	10	14	15	14	17	16	20	18	20	24	24	20	22	20	20	17	14	14	12	10	10	10		
UQ		11	15	18	25	28	22	25	26	B	24	40	54	37	37	33	44	36	36	28	21	17	12	11	12		
LQ		6	8	8	9	10	12	11	11	10	10	14	15	13	13	13	14	13	10	10	10	10	10	7	8		

FEB. 1978

F-MIN (0.1 MHz)

IONOSPHERIC DATA

FEB. 1978

M(3000)F2 (0.01)

45° E Mean Time (G. M. T. + 3 h)

Station SYDWA STATION Lat. 69 00.4 S. Long. 39 35.4 E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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	F 275	F	F	B	B	F 240	F	Y	B	Y	B	B	215	280	225	F 240	265	265	290	F 315	280	F 305	295	F 310		
2	355	B	A	A	Y	A	U F 280	F	Y	Y	F	F	240	260	240	255	235	B	B	B	F 300	295	C	C	C	
3	C	A	A	B	B	B	C	F	C	F	C	F	C	C	C	C	C	C	C	C	R	275	F 280	F 295		
4	A	A	A	A	A	Y	B	Y	B	Y	235	F	F	F	F	260	265	275	270	270	F 295	290	F 300	C	U F 295	
5	F	J S 280	F	F	F	F	Y	B	Y	R	Y	Y	Y	F	F	255	F 265	265	270	F 310	300	F 300	A	A		
6	A	U F 245	A	A	A	R	245	230	F 250	F 245	245	255	C	C	C	F 260	255	F 265	245	F 310	295	R	245	A		
7	A	F	F	U F 285	F	F	J S 260	250	245	255	250	255	265	265	260	275	275	285	F	U F 315	320	320	F	U S 295		
8	F	F	F	F 280	F	A	A	A	Y	U R 215	F	F	250	F 270	275	F 275	285	F 260	R	290	A	F	A	F		
9	R	F	S	F	F	F	235	255	250	F 240	235	260	255	245	F	245	245	R	F	F	U F 270	F	F	Y	A	
10	F	F	S	F	F	F	235	230	235	235	250	F 260	265	255	290	F 290	290	F 290	F	295	300	315	330	310	255	S
11	J S 300	J R 295	305	270	S	S	R	F	F	F 260	F 270	265	275	275	I C 275	290	310	295	320	310	315	320	U S 320	305		
12	S	S	J S 290	S	J F 280	F	F	U F 265	F	F	F 280	265	285	270	280	310	300	300	F 310	330	315	330	F	F	A	
13	A	A	A	U F 250	F	F	A	260	U R 255	F	F	255	250	R	B	B	B	B	B	B	B	B	B	B	B	
14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R 295	280	270	255	C	
16	F	F	F	F 240	F	250	R	R	G	F	225	225	240	C	C	C	C	C	C	C	C	C	C	C		
17	C	C	C	C	C	C	C	C	C	F	F	F 250	225	240	250	250	280	325	330	330	320	335	320	F	F	
18	R	R	F	A	B	F	C	C	C	C	C	C	C	C	C	270	F	F	280	F 280	B	315	335	295	F	U 280
19	A	240	A	A	A	B	B	B	B	R	F	F	250	245	255	265	270	290	320	290	275	A	A	A		
20	A	A	F	Y	Y	F	R	F	Y	A	B	R	B	335	F 260	265	280	B	F 310	305	295	R	R	A		
21	A	F	A	F	F	F	F	Y	Y	F 245	230	230	260	F 280	280	290	U F 310	320	310	F 300	280	A	Y	A		
22	A	A	A	U F 285	295	A	Y	A	Y	Y	A	Y	F	F	F 245	255	270	285	265	280	A	U F 315	A	A		
23	F	F	A	A	A	F 245	F	U F 260	265	245	260	255	250	275	275	290	305	320	330	325	315	J R 325	330	U S 305		
24	S	S	S	F	F	U F 270	F	F	U S 255	U F 275	265	270	265	270	275	275	285	F	S	U S 315	320	315	S	S		
25	S	J S 290	J S 270	C	S	240	S	J F 240	F	U F 260	250	F	U F 270	275	280	F	295	275	325	335	330	F	F	F		
26	A	F	F	S	F	Y	F	F	F	Y	Y	F	G	G	Y	F	220	F	F	300	A	A	A	A	F	
27	B	R	A	F	B	B	B	R	B	B	B	B	F	B	B	255	230	245	265	F	300	F	A	A		
28	B	B	B	A	U F 245	F	F	B	B	B	B	B	B	Y	B	240	240	245	290	F 300	R	F	A	A		
29																										
30																										
31																										
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	5	5	3	6	5	7	5	8	8	11	14	14	18	17	17	19	21	18	18	22	19	13	6	7		
MED	300	J 280	J S 290	275	280	F 245	245	252	250	F 255	250	255	250	F 270	270	275	275	282	300	F 310	300	F 310	275	U F 295		
UQ	S	J S 290	298	U F 285	290	F 260	260	260	255	F 260	265	260	265	280	275	285	295	295	320	315	325	320	320	305		
LQ	F 275	245	J S 280	250	F 245	F 240	F 235	F 238	248	F 245	F 235	F 235	240	F 255	F 255	255	F 265	F 265	F 270	F 295	F 285	F 300	F 255	U F 295		

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M(3000)F2 (0.01)

IONOSPHERIC DATA

FEB. 1978

H'F2 (KM)

45° E Mean Time (G. M. T. + 3 h)

Stations YOWA STATION		Lat. 69 00.4 S.		Long. 39 35.4 E		Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation																		
Hour Day	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	535	545	Y	B	Y	B	B	670	450	600	550	455	445	350	L	350			
2					A	415	475	Y	Y	465	425	530	475	425	B	B	B	310						
3					B	405	B	455	485	450	420	450	380	480	500	400	400	355	R					
4					A	B	A	B	Y	530	690	590	485	440	400	L	420		L		L			
5					400	A	B	A	R	Y	Y	Y	U F	630	675	460	400	390	365					
6					A	455	500	450	450	475	425	C	C	C	U F	390	U F	400	410	305				
7					L	390	395	430	400	400	440	445	400	430	450	400	H	F	380	L	L	260		
8					A	A	A	Y	R	U F	650	530	500	400	405	400	350	450	R					
9					U F	350	520	470	445	450	475	410	410	430	420	405	B	410	550	540	435			
10					500	540	495	430	400	390	400	345	345	340	330	350	L	L	L					
11					380	365	365	360	355	350	345	330	350	I C	340	315	290	L	L					
12					325	350	320	325	330	330	350	310	340	320	295	250	300	280	250					
13						A	A	A	500	460	460	480	R	B	B	B	B	B	B					
14					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B					
15					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B					
16						A	R	G	600	580	640	Y	C	C	C	C	C	C						
17						C	C	C	C	495	595	525	480	500	380	L								
18						C	C	C	C	C	C	C	C	350	350	C	350	360	B					
19					B	B	B	B	R	500	410	U F	430	600	460	430	400	350	L	310				
20						R	F	Y	A	B	R	B	525	415	390	370	B	530						
21						U F	450	Y	Y	460	570	E Y	450	375	400	340	295	L						
22					A	A	A	Y	Y	A	Y	500	F	530	475	430	L	395						
23					530	450	430	390	460	430	445	445	350	360	325	280	L	L						
24						480	395	350	355	350	360	375	340	325	300	L	L							
25					450	415	425	430	380	350	335	330	L	280	L	L								
26						460	Y	F	Y	Y	450	G	G	365	370	550	F							
27						B	Y	B	B	B	B	550	B	B	475	520	L							
28							B	B	B	B	B	B	Y	B	500	440	500							
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					1	9	14	10	11	13	18	19	20	19	21	21	19	12	9	2	2			
MED					325	400	450	430	430	450	462	425	450	430	415	400	400	405	355	372	305			
UQ					500	480	475	448	460	500	475	528	482	460	460	420	448	395						
LQ					380	405	395	375	380	390	405	388	350	350	340	350	370	330						

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H'F2 (KM)

IONOSPHERIC DATA

FEB. 1978

H F (KM)

45° E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION Lat. 69 00.4 S, Long. 39 35.4 E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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	Y 410	Q 350	Y	B	B	A	A	Y	B	A	B	B	240	210	220	H 215	295	U 230	240	245	270	340	340	305	
2	250	B	A	A	A	A	285	A	A	A	A	H 225	U 230	230	210	B	B	B	245	245	260	255	260	250	
3	385	A	A	B	B	B	A	B	260	250	A	225	250	245	210	210	225	225	250	260	325	395	A	A 300	
4	A	A	A	B	A	A	B	A	B	Y	230	240	275	210	230	H 210	215	235	240	245	250	250	C	Q 285	
5	U 295	H 325	A	A	Q 300	A	A	B	A	A	200	Y	A	200	230	225	235	230	250	250	H 260	U 300	H 350	A	A
6	A	A	A	A	A	A	A	A	H 245	225	B	235	C	C	C	250	210	205	290	250	300	A	A	A	
7	A	U 375	Q 345	320	U 250	A	360	265	230	U 205	240	225	210	240	240	240	225	220	220	230	245	250	345	355	
8	A	U 600	A	350	290	A	A	A	A	A	230	235	255	235	225	230	225	220	240	F 220	A	U 420	A	Q 425	
9	A	U 390	Q 330	A	Q 300	A	360	270	230	230	230	B	B	255	245	R	B	B	A	U 450	F 400	A	Q 320	Y	A
10	Q 415	A	F	A	A	A	A	A	275	240	230	250	A	245	225	200	215	230	250	240	U 440	H 250	E 400	350	
11	230	285	280	350	Q 345	Q 340	210	250	230	225	225	215	205	U 205	H 210	I 230	225	210	230	H 245	250	245	230	245	
12	265	280	275	295	300	255	245	235	210	U 200	240	B	B	210	210	220	205	205	235	H 235	240	275	U 400	A	
13	A	A	A	A	400	250	A	A	A	U 245	H 200	200	240	240	B	B	B	B	B	B	B	B	B	B	B
14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	E 350	A 345	310	305
16	300	A	350	Q 470	395	Q 475	A	R	240	250	260	250	250	C	C	C	C	C	C	C	C	C	C	C	
17	C	C	C	C	C	C	C	C	C	C	215	240	250	225	210	250	250	B 275	245	250	250	250	270	300	
18	R	R	U 450	A	B 300	C	C	C	C	C	C	C	C	E 250	H 230	225	225	230	B 320	250	300	375	Q 380		
19	A	A	A	A	475	A	B	B	B	B	270	240	250	230	240	245	245	B 270	B 250	250	300	A	A	A	
20	A	A	A	A	Y	350	A	270	Y	A	B	270	B	B	235	250	B	B	B	265	230	R	R	A	
21	A	F	A	A	375	Q 375	A	Y	A	350	250	B 245	240	240	245	275	240	220	240	300	U 430	Q 430	A	Y	A
22	A	A	A	360	300	A	A	A	A	A	A	Y	270	240	240	240	290	255	280	400	A	U 340	F	A	A
23	A	A	A	A	A	A	400	250	250	245	230	225	205	U 200	H 225	225	250	215	230	235	250	240	235	250	
24	A 350	S	A	U 430	A	390	Q 390	230	240	225	250	240	270	A 225	U 200	B	230	205	250	230	245	240	245	230	
25	250	270	290	C	350	340	340	310	F 300	210	240	240	U 230	H 220	240	225	U 210	H 240	250	230	225	240	230	Q 270	
26	A	370	Q 415	Q 360	U 290	A	A	Y	240	B	230	240	255	245	250	H 210	270	250	325	A	A	A	A	F	
27	B	R	A	Q 335	B	B	B	A	B	B	B	B	230	B	B	B	250	B	B	U 300	305	A	A	A	
28	B	B	B	A	380	A	B	B	B	B	B	B	B	B	B	B	260	B	290	300	R	375	A	A	
29																									
30																									
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	10	9	8	10	13	9	8	8	12	15	16	18	19	21	21	19	20	19	21	23	20	19	12	14	
MED	298	350	338	355	300	340	350	258	240	230	230	240	240	232	225	230	228	228	250	250	250	275	278	300	
UQ	385	U 375	Q 382	Q 430	Q 375	Q 375	375	270	255	248	240	245	252	240	240	242	250	242	250	282	300	342	351	350	
LQ	250	285	285	335	300	Q 300	265	242	230	218	230	225	230	220	210	218	220	218	240	238	245	250	240	250	

The Radio Research Laboratories, Japan

FEB. 1978

H F (KM)

IONOSPHERIC DATA

FEB. 1978

H^oES (KM)

45° E Mean Time (G. M. T. + 3h)

Stations YOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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	K 140	K 125	K 160	B	B	K 100	145	G	B	100	B	B	G	G	G	G	B	B	130	125	G	K 105	K 100	K 130	
2	K 105	B	100	100	100	100	115	100	100	95	100	110	110	G	G	B	B	B	145	130	145	140	130	135	
3	K 120	K 105	95	B	B	B	100	B	G	G	100	G	B	115	115	G	G	G	B	G	K 150	K 115	K 105	110	
4	100	100	100	120	120	145	B	95	B	G	100	G	G	G	B	B	100	150	125	G	125	100	C	150	
5	130	130	130	110	K 100	100	100	B	100	G	100	100	G	G	G	G	G	G	G	K 100	K 100	K 130	100	95	
6	95	110	100	100	100	100	110	110	130	G	B	G	C	C	C	100	G	100	G	G	K 125	K 100	140	100	
7	100	K 100	K 100	95	130	125	K 100	125	100	E 130	115	110	105	100	100	100	G	G	100	100	130	100	130	K 110	
8	K 125	K 100	K 105	K 105	125	100	100	100	100	100	100	G	G	G	G	G	G	G	G	150	100	K 110	100	K 100	
9	100	130	K 115	100	120	120	K 110	K 105	G	125	G	B	B	100	G	B	B	K 170	K 105	K 100	K 150	K 100	K 170	100	
10	100	100	125	100	100	130	105	K 100	150	G	130	110	105	100	100	170	100	100	100	130	120	150	100	160	
11	155	110	110	130	K 100	K 100	100	G	110	120	G	G	120	G	C	G	G	G	G	G	G	115	G	120	
12	175	150	100	105	100	145	110	G	G	G	G	B	B	115	110	105	100	100	110	G	110	150	K 150	125	
13	100	100	100	105	K 105	130	100	100	100	G	G	G	G	B	B	B	B	B	B	B	B	B	B	B	
14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	115	135	130	125	100
16	120	110	125	120	K 100	K 125	110	120	G	G	130	120	105	C	C	C	C	C	C	C	C	C	C	C	
17	C	C	C	C	C	C	C	C	C	G	G	G	G	B	120	100	B	B	160	140	G	120	G	150	
18	K 115	K 115	K 120	100	B	120	C	C	C	C	C	C	C	B	G	105	110	G	B	B	B	B	B	110	
19	100	105	110	100	100	100	B	B	B	G	100	G	125	G	120	G	B	B	B	B	180	120	115	100	
20	100	100	100	95	95	130	115	100	150	100	B	G	B	B	B	B	B	B	B	130	135	K 110	K 125	100	
21	120	110	100	110	K 110	105	120	G	100	K 105	B	B	G	110	G	G	G	105	100	K 110	K 170	110	K 135	105	
22	95	100	100	100	100	110	110	100	110	115	95	G	125	130	G	G	100	G	G	K 125	K 150	K 100	100	115	
23	150	145	95	K 95	K 100	K 120	K 110	G	G	100	115	G	G	140	110	G	110	G	175	130	120	100	100	100	
24	140	K 110	125	K 100	100	K 100	K 100	G	120	G	100	100	100	100	100	B	G	105	100	105	100	115	100	100	
25	100	100	100	C	125	100	100	100	135	95	G	G	G	G	110	100	105	G	G	145	125	120	100	B	
26	120	K 130	K 100	K 100	105	105	110	155	G	B	G	175	G	G	B	G	170	160	170	105	100	105	100	100	
27	B	K 140	100	K 100	B	B	B	100	B	B	B	B	G	B	B	B	G	B	B	K 150	150	120	135	95	
28	110	B	B	K 180	K 125	140	B	B	B	B	B	B	B	B	B	B	G	B	150	150	K 150	K 150	130	110	
29																									
30																									
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	24	23	24	22	21	23	20	14	13	11	12	7	8	9	9	7	8	8	13	18	22	25	21	24	
MED	112	110	100	100	100	110	110	100	110	100	100	110	108	110	110	100	102	105	125	128	128	115	115	108	
UQ	128	128	118	110	120	128	110	110	130	114	115	115	122	115	115	105	110	155	150	140	150	120	130	122	
LQ	100	100	100	100	100	100	100	100	100	100	100	105	105	100	100	100	100	100	100	105	110	105	100	100	

FEB. 1978

H^oES (KM)

IONOSPHERIC DATA

FEB. 1978

TYPES OF ES

45° E Mean Time (G. M. T. + 3 h)

Station Δ YDWA STATION Lat. 69° 00' 4" S, Long. 39° 35' 4" E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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	AK 11	CK 21	AR 11			RK 11	R 1			L 1									C 1	C 1		K 1	K 2	CK 13		
2	K 2		R 2	R 1	L 1	R 1	L 1	R 1	LA 11	L 1	R 1	C 1	C 1						H 1	H 1	H 1	H 1	H 2	C 1		
3	RK 11	R 1	R 1				R 1				R 1			C 1	C 1						RK 11	K 1	KS 31	R 2		
4	R 2	R 2	R 1	R 1	RR 11	RR 11		L 1			R 1						C 2	A 1	C 1		C 1	R 1		R 1		
5	C 2	H 3	R 2	R 1	RK 21	RA 11	R 1		R 1		CA 11	R 1									K 2	K 1	RK 21	R 2	R 1	
6	R 1	R 2	R 1	R 1	R 1	R 1	R 1	R 1	C 1							L 1		R 1			K 1	RK 21	AL 11	RA 21		
7	R 1	K 2	RK 11	L 3	R 1	R 1	K 3	C 1	L 1	H 1	C 2	C 2	C 2	L 2	L 1	L 1			R 1	R 1	C 1	L 1	R 1	RCK 11		
8	RK 41	RK 41	RA 21	RLK 31	RCA 31	R 1	RL 11	R 1	R 1	R 1	R 1										RA 11	KA 11	R 2	RKA 11		
9	R 1	RA 21	CK 21	LA 11	CA 11	CL 11	RK 11	RK 21		C 1				L 1					KC 11	K 1	RK 12	ARK 11	KA 11	RK 11	RL 11	
10	R 1	RA 21	RL 31	RA 21	RA 21	RL 11	R 1	RK 11	H 1		H 1	C 2	C 2	C 3	C 3	AR 13	L 3	L 2	C 3	CR 11	CC 11	RL 11	R 4	R 1		
11	H 1	R 2	R 1	R 1	L 2	LKA 12	L 1		C 1	C 1			C 1									CL 11		C 1		
12	AR 11	AR 11	R 1	R 2	R 1	H 1	R 1							C 1	C 1	L 1	C 1	C 2	C 1		L 1	R 1	RKA 11	R 1		
13	R 2	R 2	R 1	R 1	RK 11	RA 11	R 1	R 1	R 1																	
14																										
15																					C 1	H 1	H 1	C 1	R 1	
16	C 1	R 2	RA 11	CA 11	LK 11	K 1	R 1	R 1			H 1	C 1	C 1													
17															C 1	C 2				H 1	H 1		C 1		H 1	
18	K 2	K 2	CAK 11	R 2		CR 11											C 1					C 1	RA 11	R 1		
19	R 3	RA 31	R 1	R 2	R 1	R 1					R 1		C 1		C 1						A 1	RA 21	R 3	R 1		
20	R 2	R 2	RA 21	L 1	L 1	H 1	CH 11	C 1	AA 11	RS 11										H 1	H 1	KA 21	K 2	RA 11		
21	RA 11	CA 11	R 2	R 1	RK 21	R 1	R 1	S 1	R 2	K 1				S 2				C 2	L 1	K 1	R 1	RA 11	AK 11	RA 11		
22	R 2	RA 11	R 2	L 3	L 3	RL 12	R 1	R 1	C 1	C 1	R 1		C 1	H 1			R 1			K 1	RK 11	K 1	R 1	R 4		
23	ARL 13	AC 13	L 1	K 1	K 2	K 1	K 1				L 1	C 1		H 1	C 1				C 2	H 1	H 2	C 3	L 1	C 1	L 1	
24	RL 12	K 6	RC 31	RK 12	R 2	RK 11	K 2		C 1		L 1	C 2	C 3	C 2	L 1				C 1	C 3	C 2	C 1	C 1	C 1	C 1	
25	C 2	L 2	C 1		R 2	R 1	RA 11	R 1	R 1	L 2							C 2				H 1	LC 11	C 1	C 2		
26	RL 31	ACK 12	RKA 41	RKA 31	RA 11	HC 11	RL 11	AR 11				H 1					HA 11	H 1	H 1	RS 11	RS 31	R 2	AR 11	RA 11		
27		K 1	LA 11	RLK 11				R 1													AK 11	AR 11	AC 11	AR 12	L 1	
28	RA 11			HK 11	K 1	R 1														R 1	R 1	K 1	AK 11	RA 21	RA 11	
29																										
30																										
31																										
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT																										
MED																										
UQ																										
LQ																										

The Radio Research Laboratories, Japan

FEB. 1978

TYPES OF ES

IONOSPHERIC DATA

MAR. 1978

FXI (0.1 MHz)

45° E Mean Time (G. M. T. + 3 h)

Stations Y DWA STATION Lat. 69° 00' .4 S, Long. 39° 35' .4 E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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	50	56	69	A	B	B	B	B	Y	62	O R 63	64	B	B	X 64	X 61	X 59	R	R	A	A	A	B
2	R	A	A	B	B	Y	43	48	B	B	B	B	B	B	O R 64	O R 64	57	O R 54	53	X 52	47	44	A	A
3	A	A	Y	45	B	50	A	60	A	B	B	59	60	O R 65	64	67	O R 66	O R 65	X 60	O R 55	40	A	A	A
4	B	A	B	A	55	60	76	80	81	81	X 82	80	X 80	X 76	X 71	X 70	X 70	X 71	X 68	X 65	X 61	X 55	X 52	X 51
5	50	50	50	50	53	69	67	X 78	X 87	X 95	X 100	X 100	X 103	X 100	X 99	X 97	100	99	X 98	77	U A 90	A	A	A
6	40	O R 43	R	R	51	48	59	64	70	77	81	81	83	84	81	85	X 95	92	X 78	70	X 81	69	65	61
7	56	47	X 40	52	57	64	70	71	67	75	X 78	X 86	X 94	X 98	X 100	X 109	C	C	C	C	C	C	65	49
8	54	O R 52	R	50	55	60	69	78	72	77	80	X 86	X 88	X 89	X 91	100	93	92	87	73	70	48	U A 59	A
9	70	S	70	70	55	45	A	w	47	O R 58	Y	54	58	61	O R 66	77	67	66	63	60	57	48	46	A
10	A	52	80	90	69	80	U S 70	77	75	78	78	81	O R 79	88	110	115	B	53	X 65	67	56	49	50	45
11	37	R	R	R	41	59	B	B	76	75	77	O R 73	X 79	X 82	X 86	X 89	X 103	X 94	X 91	80	71	59	36	35
12	40	R	O R 42	O R 43	56	56	67	70	74	77	80	80	X 86	C	C	C	C	C	C	X 72	X 70	X 62	X 52	49
13	43	43	44	40	A	R 62	68	75	B	B	75	O R 66	X 75	X 82	X 87	108	110	119	112	X 85	80	B	O R 42	A
14	A	B	B	A	A	A	50	B	A	O R 54	O R 57	B	X 73	X 86	X 98	X 102	X 110	X 112	104	85	B	61	A	A
15	A	A	47	53	70	B	O R 53	B	B	B	B	O R 58	B	B	B	O R 62	O R 66	X 68	70	66	36	R	A	A
16	30	A	A	B	A	A	33	B	B	B	B	B	B	B	R	B	B	X 61	X 61	O R 36	A	A	A	A
17	X 45	A	A	Y	B	Y	Y	R	B	B	B	B	B	O R 53	O R 57	O R 59	O R 64	O S 59	51	O R 37	O R 34	A	A	32
18	A	A	B	A	B	B	B	B	B	O R 53	B	B	O R 64	B	B	B	69	X 75	R	O R 48	R	A	A	A
19	A	A	A	B	B	B	B	B	B	B	B	B	O R 66	75	X 82	X 85	B	B	S 76	O R 53	B	28	A	A
20	A	A	A	A	A	A	R	50	58	62	X 67	X 73	X 85	X 92	X 96	X 100	X 106	X 88	R	X 61	67	53	O R 46	A
21	O R 31	A	A	A	A	Y	B	B	R	B	B	75	75	X 80	X 86	X 82	82	78	O R 68	66	56	X 53	47	36
22	O R 32	A	A	A	A	O R 38	Y	O R 47	B	B	B	B	B	X 90	X 90	90	X 93	83	74	B	O R 55	A	A	A
23	46	69	A	43	38	A	A	R	A	B	B	O R 65	O R 64	X 64	X 64	52	X 78	82	Y	62	58	46	32	39
24	41	O R 36	O R 39	40	O R 41	53	O R 48	O R 54	X 64	74	85	99	X 96	95	91	86	82	76	69	61	53	45	34	A
25	A	52	A	A	52	60	S 72	70	X 75	X 85	C	C	C	X 93	X 93	X 88	X 89	80	X 75	X 58	X 52	46	X 37	30
26	R	50	S 72	U S 76	72	A	Y	R 58	R	69	73	O R 74	82	X 79	X 73	X 77	X 84	70	68	R	A	R	A	30
27	A	48	A	A	B	A	B	B	B	B	B	B	B	B	C	O R 59	O R 52	B	O R 37	R	48	B	A	A
28	A	B	B	A	B	Y	B	B	B	R	O R 52	O R 54	B	B	B	O R 57	B	O R 61	X 48	B	O R 36	R	R	A
29	R	R	X 46	A	42	A	48	B	O R 48	O R 55	O R 58	67	B	74	88	X 97	105	87	X 85	X 61	Y	O R 20	22	U A 32
30	A	A	R 37	A	B	A	B	B	B	B	B	B	B	B	87	B	117	90	74	C	C	C	C	A
31	A	A	A	40	39	C	C	C	C	X 74	X 105	X 105	X 100	X 104	X 113	X 106	112	X 94	83	48	45	A	35	A
CNT	14	12	12	14	16	14	15	15	13	17	17	21	21	22	23	27	25	27	26	24	22	16	16	12
MED	42	50	46	50	54	60	67	70	72	75	78	74	X 79	X 83	X 87	85	84	78	72	62	56	48	46	38
UQ	50	52	63	69	56	62	70	76	75	77	81	81	X 86	X 92	X 94	98	X 103	91	83	71	70	57	52	49
LQ	37	45	41	43	42	50	49	56	64	62	67	O R 65	66	75	77	66	67	66	63	54	47	46	36	32

MAR. 1978

FXI (0.1 MHz)

IONOSPHERIC DATA

MAR. 1978

FOF2 (0.1 MHz)

45° E Mean Time (G. M. T. + 3 h)

Stations YOWA STATION Lat. 69 00 4 S Long. 39 35 4 E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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	U	F	F	A	B	B	B	B	Y	F	57	58	B	B	58	55	53	R	R	A	A	A	B	
2	R	A	A	B	B	Y	F	F	B	B	B	B	B	B	U	R	50	48	F	46	39	F	A	A	
3	A	A	Y	U	F	F	A	F	A	B	B	F	54	U	F	58	60	60	58	53	45	U	A	A	
4	B	A	B	A	F	53	U	F	68	F	U	F	73	76	73	74	70	66	64	63	65	61	59	55	
5	F	F	U	U	F	F	F	72	80	89	93	94	97	93	91	F	F	91	F	91	91	F	A	A	
6	U	F	37	R	R	F	F	F	53	62	F	68	75	75	77	F	78	75	79	88	87	71	63	75	
7	F	U	F	33	40	U	F	F	63	F	F	72	80	88	91	93	100	C	C	C	C	C	C	F	
8	F	R	R	U	F	F	J	F	F	U	F	F	60	U	F	67	73	80	82	81	85	85	84	82	
9	F	F	F	F	F	U	F	A	W	F	F	50	Y	F	48	50	54	60	70	60	59	55	52	50	
10	A	F	F	F	F	F	F	F	F	U	F	U	F	F	74	73	80	U	F	102	U	F	B	F	
11	F	R	R	R	U	F	F	B	B	F	61	F	67	U	F	69	67	72	76	80	83	98	88	85	
12	U	F	R	U	F	F	F	F	F	58	U	F	70	U	F	68	F	79	C	C	C	C	C	66	
13	F	U	F	F	F	A	U	F	F	U	F	60	69	76	80	81	F	F	U	F	100	102	79	F	
14	A	B	B	A	A	A	F	B	A	F	51	B	66	80	92	96	104	106	F	F	B	F	A	A	
15	A	A	F	F	U	F	B	U	F	B	B	B	F	B	B	B	56	60	61	F	62	53	F	A	
16	F	A	A	B	A	A	F	B	B	B	B	B	B	B	R	B	B	55	55	F	A	A	A	A	
17	F	A	A	Y	B	Y	Y	R	B	B	B	B	B	B	47	R	51	53	55	53	45	U	F	31	
18	A	A	B	A	B	B	B	B	B	F	B	B	F	B	B	B	62	69	R	F	40	R	A	A	
19	A	A	A	B	B	B	B	B	B	B	B	B	U	F	58	F	67	75	79	B	B	70	F	21	
20	A	A	A	A	A	A	A	F	50	F	61	67	79	86	90	93	90	F	82	75	55	J	U	F	
21	F	A	A	A	A	Y	B	B	R	B	B	U	F	63	65	73	76	76	73	70	62	59	49	47	
22	F	A	A	A	A	32	Y	41	B	B	B	B	B	B	84	84	F	80	R	F	F	68	B	49	
23	F	U	F	A	F	U	F	A	A	R	A	B	B	59	F	58	58	65	71	F	73	Y	F	F	
24	F	F	U	F	F	F	F	F	58	U	F	U	F	77	89	89	86	U	F	81	U	F	72	U	F
25	A	F	A	A	U	F	U	F	48	58	68	79	C	C	C	87	87	81	82	72	69	51	46	F	
26	R	J	R	F	F	F	A	Y	U	F	A	U	F	U	F	64	75	72	67	70	77	61	58	R	
27	A	F	A	A	B	A	B	B	B	B	B	B	B	B	C	53	46	B	31	A	F	B	A	A	
28	A	B	B	A	B	Y	B	B	B	R	46	48	B	B	B	51	B	55	42	B	U	F	R	R	
29	R	R	J	R	A	F	A	U	F	B	F	F	47	52	F	B	F	F	90	95	U	F	78	55	
30	A	A	30	A	B	A	B	B	B	B	B	B	B	B	F	B	F	F	F	C	C	C	C	A	
31	A	A	A	F	F	C	C	C	C	58	89	99	93	98	107	97	106	88	F	U	F	28	F	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	8	8	7	8	9	9	8	10	10	15	16	20	21	21	21	27	23	26	23	21	17	13	10	10	
MED	30	41	33	36	U	F	47	47	56	62	F	67	68	67	73	78	80	79	73	70	62	55	49	38	
UQ	36	44	39	38	U	F	53	58	60	F	68	70	76	78	79	86	90	87	89	F	82	73	63	55	
LQ	F	U	F	30	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	

MAR. 1978

FOF2 (0.1 MHz)

IONOSPHERIC DATA

MAR. 1978

FOF1 (0.01 MHz)

45° E Mean Time (G. M. T. + 3 h)

Stations		YOWA STATION		Lat. 69° 00' 4" S	Long. 39° 35' 4" E	Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation																			
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1							B	B	B	A	400	B	410	B	B	L	U L	U L	U L	320	290				
2							F	330	B	B	B	B	B	B	B	B	U L	450							
3							A	F	A	B	B	420	440	450	450	430	L								
4								390	400	420	440	450	470	460	L	L	L								
5							L	410	L	L	L	L	480	L	L	L	L	L	L						
6								380	400	430	430	460	460	U F	460	L	L	L							
7								410	L	L	450	480	480	L		L									
8								L	L	L	U L	470	U L	480	L	L	L								
9								Y	A	420	A	F	450	420	430	440	B	L							
10							L	L	U L	440	450	480	L	470	B	B	L	450	B						
11									L	L	L	B	450	L	L	L									
12							L	L	L	420	L	L	L	C	C	C									
13								L	B	B	L	L	B	B	L		L								
14								B	A	Y	400	B	B	L	L										
15								B	B	B	B	R	400	B	B	B	L	L							
16								B	B	B	B	B	B	B	400	B	B	L							
17								R	B	B	B	B	B	B	B	390	B	S							
18								B	B	Y	B	B	B	B	B	B	370	L							
19								B	B	B	B	B	440		L	B	B								
20								Y	360	390	400	L	L	L	B										
21										B	B	L	L	L	L	L									
22									B	B	B	B	B	L											
23									A	B	B	400	L	U L	410	L									
24									L	L	L		L	L	L										
25									L	L	C	C	C		L										
26									A	B	B	U L	420	L	B		L								
27									B	B	B	B	B	C	L	360									
28									R	370	B	B	B	B											
29									370	L	L	B	B	L											
30									B	B	B	B	B	B											
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT							1	5	4	8	9	10	10	5	4	3	4	1	1	1					
MED							F	390	400	420	430	455	445	450	425	430	385	U L	400	320	290				
UQ								410	420	440	450	470	470	460	445	440	U L	425							
LQ								380	380	405	400	420	420	430	405	410	365								

MAR. 1978

FOF1 (0.01 MHz)

IONOSPHERIC DATA

MAR. 1978

FOE (0.01 MHz)

45° E Mean Time (G. M. T. + 3 h)

Stations YOWA STATION Lat. 69 00 .4 S Long. 39 35 .4 E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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	B	A	175	B	B	B	B	B	B	300	B	B	B	B	Y	B	250	A	230	A	A	A	B																
2	K	K	A	B	B	B	K	U	B	B	B	B	B	B	B	B	B	B	H	B	B	140	370	K	K															
3	A	A	B	U	B	A	A	U	A	B	B	B	310	B	B	B	B	B	B	B	190	350	K	260	A															
4	B	A	B	B	B	K	K	330	250	250	280	290	280	270	305	300	290	H	H	255	220	B	A	A	A															
5	C	A	C	B	120	A	U	R	195	215	255	275	B	B	Y	310	A	A	U	270	250	225	210	B	A	K	K													
6	250	K	U	K	290	K	290	250	K	250	180	210	250	280	R	285	295	300	H	300	300	300	300	300	250	210	210	B	B	B	B									
7		A	K	K	315	320	230	U	A	250	U	A	B	B	300	310	300	300	A	R	C	C	C	C	C	C	C	C	C	C	160	A								
8	220	290	290	280	230	K	260	A	B	B	270	295	300	Y	300	U	R	295	280	250	250	220	170	A	170	F	B													
9	U	K	250	170	B	B	B	A	285	A	A	A	325	310	R	R	B	B	Y	230	B	U	A	200	A	B	B	310	K											
10		340	290	300	K	U	K	295	210	180	210	250	275	280	300	B	B	B	295	B	240	B	220	150	170	155	150													
11	U	150	210	K	210	230	K	A	U	A	B	B	255	270	290	B	300	300	290	Y	H	260	U	A	U	A	220	A	A	130	F	120	120							
12	K	210	300	K	U	K	240	K	260	260	U	200	U	A	150	210	H	U	A	250	U	A	260	260	U	A	290	C	C	C	C	C	C	C	A	A	A	A	105	
13		A	A	U	A	130	A	A	200	250	B	B	A	B	B	B	B	B	270	260	H	210	B	B	B	B	B	B	B	B	B	B	B	285	K	A				
14		B	B	B	B	250	A	K	280	B	B	A	320	B	B	B	295	275	285	B	B	B	B	B	B	B	B	B	B	B	B	B	B	320	K	K	220			
15	K	350	340	K	U	K	290	A	A	B	A	B	B	B	B	B	B	B	B	B	210	B	160	B	A	K	340													
16			A	B	A	A	U	R	180	B	B	B	B	B	B	B	B	B	B	220	A	A	A	A	A	A	A	A	A	A	A	A	A	A	380	K				
17	K	270		A	A	B	B	B	A	B	B	B	B	B	B	B	B	B	B	S	A	B	150	A	K	U	K	220												
18			B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	320	K	320	K	
19			B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	H	140	210	K	K	260									
20	K	300		A	A	B	A	A	A	K	300	220	235	250	260	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	180	A	B	K	300
21	K	190	300	B	A	B	B	B	B	A	B	B	265	280	B	270	250	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	180	A	A		
22				K	A	A	K	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A		
23	U	K	320	280	B	330	K	B	B	A	A	A	A	B	B	B	B	275	260	240	215	200	H	B	A	A	A	A	B											
24				A	A	A	160	B	B	B	B	250	B	B	270	280	260	250	U	A	220	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	125	F		
25				B	A	K	210	160	160	H	190	240	C	C	C	C	A	260	250	230	175	U	R	170	A	A	A	A												
26		K	U	K	A	A	A	B	A	A	A	B	B	B	B	B	285	250	U	F	220	K	270	K	280	A	B													
27				A	B	B	B	B	B	B	B	B	B	B	B	C	B	B	B	B	B	B	A	A	B													375	K	
28				B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	Y	220	B	220	130		220										220	K		
29	K	300	280	K	U	K	270	B	A	B	F	190	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B			
30	K	270	K	U	K	220	A	B	B	B	B	B	B	B	B	B	B	B	B	B	245	210	A	C	C	C												K	190	
31	K	270		K	U	K	220	C	C	C	C	B	235	240	A	270	270	U	R	250	B	B	B	130	F	U	A	320	K	170	K	210	K	K	K	210	K			
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	-20	21	22	23																
CNT	14	13	12	11	8	10	12	12	9	10	10	10	10	12	12	14	11	15	11	10	8	8	13	16																
MED	270	290	K	275	260	250	K	230	192	250	250	270	288	288	300	300	282	278	260	245	220	210	180	155	260	K	240													
UQ	K	300	K	290	290	K	278	K	270	255	278	250	275	295	300	310	302	298	290	275	250	222	230	205	245	320	K	315												
LQ	K	220	K	280	U	K	220	190	225	200	180	210	250	250	260	260	280	278	265	250	240	220	210	170	150	135	160	200												

The Radio Research Laboratories, Japan

MAR. 1978

FOE (0.01 MHz)

IONOSPHERIC DATA

MAR. 1978

FD05 (0.1 MHz)

45° E Mean Time (G. M. T. + 3 h)

Stations YDWA STATION Lat. 69 00.4 S. Long. 39 35.4 E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J A 55	71	J A 49	G	49	B	B	B	B	44	G	E B 49	E B 33	B	B	G	E B 30	G	30	G	J A 44	J A 41	J A 86	B
2	K 28	K 38	J A 37	104	B	36	K 28	G	B	B	B	B	B	B	E B 52	E B 29	E B 39	G	E B 24	E B 21	G	K 37	J K 43	
3	J A 46	39	33	J A 34	B	34	45	34	49	B	B	E B 32	G	E B 34	E B 32	E B 35	E B 37	E B 39	E B 31	E B 28	G	K 35	K 26	149
4	B	J A 84	B	47	41	K 32	K 33	G	G	G	G	30	30	G	G	G	G	G	E B 20	22	J A 20	13	J A 35	
5	E C 16	J A 16	E C 18	E B 14	G	17	G	G	G	G	E B 37	E B 40	G	G	J A 39	30	31	G	30	G	38	J A 33	K 32	K 31
6	K 25	34	K 29	K 29	31	K 25	G	G	G	G	31	32	G	36	J A 46	G	G	G	G	G	E B 20	E B 14	E B 17	J A 26
7	25	30	K 28	45	40	39	30	J A 51	42	E B 40	E B 32	G	G	35	31	G	C	C	C	C	C	C	G	J A 21
8	K 22	K 29	J A 64	31	27	K 26	23	E B 31	E B 27	G	G	32	36	36	35	35	28	24	27	G	38	J A 26	30	J A 59
9	J A 41	K 24	G	E B 16	23	E B 18	55	G	40	45	46	G	G	G	E B 42	E B 45	G	G	26	21	22	E B 21	27	K 31
10	40	J A 43	35	J A 39	30	J A 45	G	G	G	G	32	G	E B 60	E B 51	E B 45	G	B	29	30	G	G	20	G	G
11	22	K 21	K 21	K 23	21	24	B	B	36	G	G	E B 47	33	G	G	G	G	J A 32	28	J A 36	J A 30	19	20	20
12	K 21	K 30	47	J A 49	30	J A 33	17	G	31	30	30	30	31	C	C	C	C	C	C	20	20	21	15	G
13	E B 8	J A 20	J A 20	J A 29	40	30	G	G	B	B	35	E B 36	E B 49	E B 55	E B 33	E B 30	G	29	26	36	33	B	K 28	J A 44
14	40	B	B	37	42	58	K 28	B	47	39	G	B	E B 49	E B 34	G	G	G	E B 70	E B 51	E B 39	B	E B 27	K 32	28
15	K 35	K 34	37	J A 24	J A 30	B	36	B	B	B	B	E B 32	B	B	B	E B 34	E B 39	28	25	22	E B 19	26	34	J A 41
16	J A 64	J A 43	J A 57	B	40	40	27	B	B	B	B	B	B	B	E B 33	B	B	27	23	27	36	40	43	K 38
17	J A 54	J A 50	107	29	B	37	37	32	B	B	B	B	B	E B 41	E B 45	E B 29	E B 39	E S 42	28	25	G	29	32	J A 64
18	J A 52	J A 64	B	30	71	B	B	B	B	35	B	B	E B 44	B	B	B	E B 27	E B 31	27	K 37	K 32	36	38	K 32
19	34	J A 74	46	B	B	B	B	B	B	B	B	B	E B 35	G	G	E B 40	B	B	E B 22	J A 34	B	G	K 21	K 26
20	K 30	J A 34	39	41	45	47	40	K 30	42	G	G	G	E B 40	E B 37	E B 42	E B 30	E B 26	E B 27	E B 55	E B 25	J A 29	J A 40	22	K 30
21	22	K 30	40	44	46	36	B	B	39	B	B	G	G	E B 37	G	G	E B 27	E B 26	E B 50	E B 33	G	18	18	17
22	J A 24	30	K 36	39	J A 34	36	35	37	B	B	B	B	B	G	E B 31	E B 30	E B 45	E B 23	E B 27	B	E B 27	32	J A 46	J A 61
23	48	39	42	K 33	26	46	41	J A 33	47	B	B	E B 34	E B 38	G	G	G	G	27	29	25	27	26	J A 41	27
24	J A 26	30	28	J A 32	38	25	E B 31	E B 25	E B 23	G	E B 29	E B 36	G	G	G	27	29	20	E B 23	25	E B 16	E B 18	21	35
25	36	32	55	J A 41	35	27	G	G	G	G	C	C	C	J A 38	G	G	G	G	G	19	18	16	16	15
26	20	K 29	J A 27	J A 76	20	57	40	57	48	J A 50	E B 45	E B 45	E B 30	E B 30	E B 44	G	G	27	27	K J A 34	60	40	J A 46	J A 22
27	37	28	40	J A 51	B	40	B	B	B	B	B	B	B	B	C	E B 28	E B 23	B	E B 19	J A 29	J A 77	B	48	42
28	J A 34	B	B	40	B	37	B	B	B	32	E B 34	E B 43	B	B	B	E B 32	B	E B 37	G	B	25	19	18	26
29	K 30	K 28	29	37	J A 31	46	G	B	E B 28	25	E B 35	E B 35	B	E B 58	E B 27	E B 49	E B 24	E B 30	E B 25	E B 18	24	E B 10	16	24
30	K 27	K 27	28	J A 61	B	53	B	B	B	B	B	B	B	B	E B 56	B	E B 50	31	28	C	C	C	C	26
31	K 27	37	38	24	23	C	C	C	C	E B 26	27	29	29	G	G	25	E B 23	E B 22	E B 20	23	22	K 32	J A 24	K 21
CNT	30	29	27	29	24	26	22	18	18	19	18	21	21	22	24	27	25	27	29	27	27	27	30	30
MED	30	32	37	37	32	36	28	E G 25	34	E G 25	E G 30	E B 32	E G 31	G 34	E G 32	E G 28	E B 26	E G 27	E G 27	U 22	23	U 24	26	29
UQ	40	39	44	44	40	45	37	33	42	36	E B 35	E B 36	E B 38	E B 37	E B 42	E B 33	E B 30	U 29	28	U 28	32	32	37	41
LQ	24	K 29	28	29	26	27	G	G	G	G	G	E G 29	G	G	G	G	G	E G 21	E G 22	E G 20	E G 20	18	18	22

MAR. 1978

FD05 (0.1 MHz)

IONOSPHERIC DATA

MAR. 1978

FBES (0.1 MHz)

45 E Mean Time (G. M. T. + 3 h)

Stations YOWA STATION Lat. 69 00.4 S. Long. 39 35.4 E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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 ₅₅	A ₂₁	A ₃₄	G	A ₄₉	B	B	B	B	E ₄₄	G	E ₄₉	E ₃₃	B	B	G	E ₃₀	G	30	G	A ₄₄	A ₄₁	A ₈₆	B
2	K ₂₈	K ₃₈	A ₃₇	E ₄₀	B	E ₃₆	K ₂₈	G	B	B	B	B	B	B	E ₅₂	E ₂₉	E ₃₉	G	E ₂₄	E ₂₁	G	K ₃₇	J ₄₃	
3	A ₄₆	A ₃₉	E ₃₃	20	B	34	A ₄₅	U ₃₀	A ₄₉	B	B	E ₃₂	G	E ₃₄	E ₃₂	E ₃₅	E ₃₇	E ₃₉	E ₃₁	E ₂₈	G	K ₃₅	K ₂₆	A ₂₅
4	B	A ₈₉	B	A ₄₇	40	K ₃₂	K ₃₃	G	G	G	G	G	30	G	G	G	G	G	G	E ₂₀	22	14	11	12
5	E ₁₆	12	E ₁₈	E ₁₄	G	17	G	G	G	G	E ₃₇	E ₄₀	G	G	33	30	G	G	G	G	A ₃₈	A ₃₃	K ₃₂	K ₃₁
6	K ₂₅	U ₃₀	K ₂₉	K ₂₉	K ₂₅	K ₂₅	G	G	G	G	31	32	G	32	31	G	G	G	G	G	E ₂₀	E ₁₄	E ₁₇	19
7	22	20	K ₂₈	K ₂₉	K ₃₁	38	G	G	G	E ₄₀	E ₃₂	G	G	35	31	G	C	C	C	C	C	C	G	15
8	K ₂₂	K ₂₉	K ₂₉	K ₂₈	K ₂₃	K ₂₆	20	E ₃₁	E ₂₇	G	G	32	U ₃₅	35	34	G	28	24	25	G	17	G	F	A ₅₉
9	U ₃₇	K ₂₄	G	E ₁₆	U ₂₃	E ₁₈	A ₅₅	G	40	42	E ₄₆	G	G	G	E ₄₂	E ₄₅	G	G	24	G	20	E ₂₁	20	K ₃₁
10	A ₄₀	K ₃₄	30	K ₃₀	U ₂₉	22	G	G	G	G	G	G	E ₆₀	E ₅₁	E ₄₅	G	B	27	28	G	G	G	G	G
11	U ₁₅	K ₂₁	K ₂₁	K ₂₃	20	G	B	B	G	G	G	E ₄₇	33	G	G	G	G	24	21	33	24	G	13	G
12	K ₂₁	K ₃₀	U ₂₄	28	K ₂₆	U ₂₀	G	G	24	G	30	30	U ₃₁	C	C	C	C	C	C	18	15	20	13	G
13	E ₈	10	11	G	A ₄₀	20	G	G	B	B	U ₃₅	E ₃₆	E ₄₉	E ₅₅	E ₃₃	E ₃₀	G	G	24	32	30	B	K ₂₈	A ₄₄
14	A ₄₀	B	B	A ₃₇	A ₄₂	A ₅₈	K ₂₈	B	A ₄₇	U ₃₉	G	B	E ₄₉	E ₃₄	G	G	G	E ₇₀	E ₅₁	E ₃₉	B	E ₂₇	K ₃₂	A ₂₈
15	K ₃₅	K ₃₄	U ₂₉	F ₂₂	28	B	35	B	B	B	B	E ₃₂	B	B	B	E ₃₄	E ₃₉	G	24	G	E ₁₉	A ₂₆	K ₃₄	A ₄₁
16	U ₂₀	F ₄₃	A ₅₇	B	A ₄₀	A ₄₀	U ₂₄	B	B	B	B	B	B	B	E ₃₃	B	B	24	20	23	A ₃₆	A ₄₀	A ₄₃	K ₃₈
17	24	A ₅₀	A ₄₂	E ₂₉	B	E ₃₇	E ₃₇	E ₃₂	B	B	B	B	B	E ₄₁	E ₄₅	E ₂₉	E ₃₉	E ₄₂	27	U ₂₅	G	A ₂₉	K ₃₂	U ₂₂
18	A ₅₂	A ₆₄	B	A ₃₀	E ₄₁	B	B	B	B	U ₃₅	B	B	E ₄₄	B	B	B	E ₂₇	E ₃₁	U ₂₇	K ₃₇	K ₃₂	A ₃₆	A ₃₈	K ₃₂
19	A ₃₄	A ₇₄	A ₄₆	B	B	B	B	B	B	B	B	B	E ₃₅	G	G	E ₄₀	B	B	E ₂₂	U ₃₄	B	G	K ₂₁	K ₂₆
20	K ₃₀	A ₃₄	A ₃₉	A ₄₁	A ₄₅	A ₄₇	A ₄₀	K ₃₀	G	G	G	G	E ₄₀	E ₃₇	E ₄₂	E ₃₀	E ₂₆	E ₂₇	E ₅₅	E ₂₅	20	19	20	K ₃₀
21	21	K ₃₀	A ₄₀	A ₄₄	A ₄₆	E ₃₆	B	B	E ₃₉	B	B	G	G	E ₃₇	G	G	E ₂₇	E ₂₆	E ₅₀	E ₃₃	G	19	16	15
22	17	A ₃₀	K ₃₆	A ₃₉	A ₃₄	29	E ₃₅	37	B	B	B	B	B	G	E ₃₁	E ₃₀	E ₄₅	E ₂₃	E ₂₇	B	E ₂₇	A ₃₂	A ₄₆	A ₆₁
23	U ₃₂	K ₂₈	A ₄₂	K ₃₃	18	A ₄₁	A ₄₁	E ₃₃	A ₄₇	B	B	E ₃₄	E ₃₈	G	G	G	G	22	E ₂₀	23	25	17	20	21
24	22	25	28	21	22	13	E ₃₁	E ₂₅	E ₂₃	G	E ₂₉	E ₃₆	G	G	G	27	22	20	E ₂₃	24	E ₁₆	E ₁₈	G	A ₃₅
25	A ₃₆	30	A ₅₅	A ₄₁	33	19	G	G	G	G	C	C	C	38	G	G	G	G	G	19	12	14	11	13
26	14	K ₂₉	U ₂₂	F	15	A ₅₇	E ₄₀	38	A ₄₈	42	E ₄₅	E ₄₅	E ₃₀	E ₃₀	E ₄₄	G	G	G	K ₂₇	34	A ₆₀	31	A ₄₆	19
27	A ₃₇	28	A ₄₀	A ₅₁	B	A ₄₀	B	B	B	B	B	B	B	B	C	E ₂₈	E ₂₃	B	E ₁₉	A ₂₉	37	B	A ₄₈	A ₄₂
28	A ₃₄	B	B	A ₄₀	B	E ₃₇	B	B	B	E ₃₂	E ₃₄	E ₄₃	B	B	B	E ₃₂	B	E ₃₇	G	B	22	18	E ₁₈	A ₂₆
29	K ₃₀	K ₂₈	U ₂₇	A ₃₇	19	A ₄₆	G	B	E ₂₈	23	E ₃₅	E ₃₅	B	E ₅₈	E ₂₇	E ₄₉	E ₂₄	E ₃₀	E ₂₅	E ₁₈	E ₂₄	E ₁₀	14	14
30	K ₂₇	K ₂₇	U ₂₂	A ₆₁	B	A ₅₃	B	B	B	B	B	B	B	B	E ₅₆	B	E ₅₀	G	24	C	C	C	C	A ₂₆
31	K ₂₇	A ₃₇	A ₃₈	K ₂₀	U ₂₂	C	C	C	C	E ₂₆	27	29	29	G	G	24	E ₂₃	E ₂₂	E ₂₀	G	22	K ₃₂	K ₁₇	K ₂₁
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	29	27	28	24	26	22	18	18	19	18	21	21	22	24	27	25	27	29	27	27	27	29	30
MED	28	30	30	30	28	U ₃₀	E ₂₈	G	E ₂₄	G	E ₃₀	E ₃₂	E ₃₁	E ₃₃	E ₃₁	E ₂₇	E ₂₃	E ₂₃	E ₂₄	E ₂₃	21	18	20	26
UQ	A ₃₆	A ₃₇	A ₄₀	A ₄₀	A ₄₀	A ₄₀	U ₃₅	E ₃₁	40	U ₃₀	E ₃₅	E ₃₆	E ₃₈	E ₃₇	E ₃₈	E ₃₁	E ₂₉	E ₂₈	26	U ₂₇	28	32	K ₃₄	A ₃₅
LQ	21	27	K ₂₆	21	22	20	G	G	G	G	G	G	G	G	G	G	G	G	E ₂₀	G	E ₁₆	E ₁₄	14	15

The Radio Research Laboratories, Japan

MAR. 1978

FBES (0.1 MHz)

IONOSPHERIC DATA

MAR. 1978

F-MIN (0.1 MHz)

45° E Mean Time (G. M. T. + 3 h)

Stations YDWA STATION Lat. 69 00.4 S Long. 39 35.4 E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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	6	20	13	10	43	B	B	B	B	35	20	49	33	B	B	24	30	15	18	15	13	11	12	B		
2	9	14	13	40	B	16	16	25	B	B	B	B	B	B	B	52	29	39	21	24	21	11	10	11		
3	5	12	23	13	B	19	21	19	19	B	B	32	20	34	32	35	37	39	31	28	12	22	10	14		
4	B	13	B	20	21	24	20	27	19	17	14	18	20	22	23	20	20	20	20	20	12	11	10	9		
5	E C	16	10	E C	18	14	8	11	11	18	18	20	37	40	23	20	19	19	19	20	16	17	20	9	9	10
6	E C	17	16	15	15	15	10	13	14	12	25	20	23	16	15	15	25	22	17	16	15	20	14	17	13	
7	E C	16	9	11	18	15	17	19	18	15	40	32	22	20	20	20	24	C	C	C	C	C	C	13	10	
8	E C	15	10	11	11	11	12	16	31	27	19	20	16	15	27	15	20	17	16	18	14	10	11	11	19	
9	E C	19	11	12	16	20	18	E S	17	20	17	17	18	20	28	22	42	45	26	15	20	15	15	21	15	15
10	16	17	15	14	14	12	12	14	10	17	15	15	60	51	45	18	B	17	23	15	12	10	10	10		
11	9	9	8	7	8	9	B	B	19	13	24	47	23	27	25	16	13	11	11	10	8	9	10	8		
12	8	12	9	13	11	10	10	10	7	9	12	12	10	C	C	C	C	C	C	9	9	8	6	9		
13	8	8	9	9	10	10	15	10	B	B	25	36	49	55	33	30	20	19	17	24	25	B	10	10		
14	15	B	B	24	20	21	12	B	38	20	24	B	49	34	20	18	15	70	51	39	B	27	8	9		
15	E S	8	11	9	8	10	B	19	B	B	B	32	B	B	B	34	39	13	18	10	19	14	10	13		
16	9	8	10	B	10	16	13	B	B	B	B	B	B	B	33	B	B	10	15	13	10	E S	10	E S	10	
17	7	8	13	11	B	27	25	20	B	B	B	B	B	41	45	29	39	E S	42	13	23	10	9	8	9	
18	12	9	B	21	41	B	B	B	B	21	B	B	44	B	B	B	27	31	25	12	9	15	14	14		
19	17	17	25	B	B	B	B	B	B	B	B	B	35	18	16	40	B	B	22	10	B	9	8	9		
20	10	10	12	13	25	15	14	15	15	16	15	17	40	37	42	30	26	27	55	25	15	11	16	9		
21	5	13	22	15	22	22	B	B	20	B	B	20	20	37	24	21	27	26	50	33	14	14	10	11		
22	13	12	14	13	12	10	22	13	B	B	B	B	B	10	31	30	45	23	27	B	27	10	10	10		
23	12	15	29	10	15	22	20	19	15	B	B	34	38	17	18	10	14	13	20	16	10	10	11	12		
24	10	15	13	9	13	12	31	25	23	18	29	36	20	18	20	18	15	16	23	16	16	18	9	10		
25	8	8	13	17	13	12	11	10	12	12	C	C	C	10	10	10	11	12	10	9	10	8	8	E		
26	13	10	10	10	10	12	22	15	17	20	45	45	30	30	44	20	20	11	10	10	12	26	13	8		
27	23	12	20	10	B	24	B	B	B	B	B	B	B	B	C	28	23	B	19	10	10	B	8	19		
28	8	B	B	23	B	17	B	B	B	25	34	43	B	B	B	32	B	37	13	B	15	10	9	10		
29	9	9	25	22	8	22	16	B	28	21	35	35	B	58	27	49	24	30	25	18	10	10	10	9		
30	10	18	10	10	B	23	B	B	B	B	B	B	B	B	56	B	50	18	18	C	C	C	C	10		
31	10	20	10	12	13	C	C	C	C	26	20	21	20	23	22	19	23	22	20	9	8	9	10	12		
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	31	31	31	31	31	30	30	30	30	31	30	30	30	30	30	29	30	29	29	29	29	29	29	30	31	
MED	10	12	13	13	15	17	20	25	25	25	34	36	36	34	31	26	26	20	20	15	12	11	10	10		
UQ ^U	14	16	22	19	42	23	B	B	B	B	B	B	B	B	45	35	39	30	23	24	19	15	11	12		
LQ	8	10	10	10	11	12	14	15	17	18	20	21	20	20	20	19	20	15	16	10	10	10	9	9		

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F-MIN (0.1 MHz)

IONOSPHERIC DATA

MAR. 1978

M(3000)F2 (0.01)

45° E Mean Time (G. M. T. + 3 h)

Stations YOVA STATION Lat. 69° 00.4' S, Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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	U F 235	F	F	A	B	B	B	B	Y	235	240	240	B	B	265	300	255	R	R	A	A	A	B		
2	R	A	A	B	B	Y	F	F	B	B	B	B	B	B	U R 260	255	270	275	290	285	270	F	A	A		
3	A	A	Y	F	B	F	A	F	A	B	B	240	240	F	240	260	265	275	285	285	F	A	A	A		
4	B	A	B	A	F	U F 235	U F 245	F	U F 245	U F 255	250	260	270	270	270	285	300	310	330	320	315	295	300	300		
5	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	A	A	A		
6	U F 270	305	R	R	245	235	F	245	260	245	265	265	260	270	265	265	285	285	310	290	F	320	315	F	F	
7	F	F	240	300	U F 255	F	F	U F 230	F	F	250	250	270	255	270	230	C	C	C	C	C	C	C	F	F	
8	F	240	R	U F 240	F	U F 260	F	F	U F 255	U F 255	255	275	260	270	275	275	300	305	310	310	F	U F 290	U F 250	F	A	
9	F	F	F	F	F	U F 275	A	W	F	230	Y	210	220	220	235	270	280	300	310	290	310	280	260	F	A	
10	A	F	F	F	F	F	F	F	250	F	F	F	245	225	240	F	U F 245	B	270	285	310	F	U F 280	U F 245	F	F
11	F	R	R	R	U F 260	F	B	B	245	245	F	265	275	275	250	275	290	295	305	295	295	F	F	F	U F 305	
12	U F 285	R	U F 275	260	F	F	F	F	F	F	F	F	260	265	C	C	C	C	C	C	310	305	305	315	305	
13	F	F	F	F	A	F	F	245	F	B	B	F	285	230	270	275	280	F	F	275	305	F	B	U F 260	A	
14	A	B	B	A	A	A	240	B	A	F	240	B	275	290	300	300	285	285	F	F	B	F	A	A	A	
15	A	A	F	F	F	B	F	B	B	B	B	F	B	B	B	290	285	300	290	300	280	F	A	A	A	
16	F	A	A	B	A	A	F	B	B	B	B	B	B	B	R	B	B	285	280	F	A	A	A	A	A	
17	F	A	A	Y	B	Y	Y	R	B	B	B	B	B	B	255	265	275	275	295	265	R	F	A	A	F	
18	A	A	B	A	B	B	B	B	B	235	B	B	260	B	B	B	245	255	R	F	R	A	A	A	A	
19	A	A	A	B	B	B	B	B	B	B	B	B	U F 260	280	305	280	B	B	320	295	B	275	A	A	A	
20	A	A	A	A	A	A	A	F	245	255	250	260	265	280	290	300	305	310	315	330	300	F	F	F	A	
21	F	A	A	A	A	Y	B	B	R	B	B	F	275	280	290	305	300	305	310	320	305	300	310	285	F	
22	F	A	A	A	A	230	Y	A	B	B	B	B	B	265	300	300	310	300	300	B	300	A	A	A	A	
23	F	F	A	F	U F 265	A	A	R	A	B	B	265	275	275	270	260	295	290	Y	F	F	F	280	F	F	
24	F	F	F	F	250	F	270	285	260	U F 280	U F 250	280	280	280	U F 305	F	F	F	U F 320	U F 320	310	305	300	265	A	
25	A	F	A	A	F	F	U F 250	260	265	270	C	C	C	285	300	310	315	330	340	335	330	320	320	305	F	
26	R	R	F	F	F	A	Y	F	A	U F 235	F	F	265	280	270	285	295	270	330	R	A	R	A	F	F	
27	A	F	A	A	B	A	B	B	B	B	B	B	B	B	C	285	230	B	290	A	F	B	A	A	A	
28	A	B	B	A	B	Y	B	B	B	R	240	245	B	B	B	285	B	290	280	B	F	R	R	A	A	
29	R	R	U R 300	A	270	A	U F 310	B	F	255	300	F	B	F	F	265	275	F	305	300	Y	280	280	265	F	
30	A	A	320	A	B	A	B	B	B	B	B	B	B	B	F	B	F	F	F	C	C	C	C	A	A	
31	A	A	A	F	250	260	C	C	C	C	320	310	305	295	290	300	265	F	305	F	F	F	A	F	A	A
CNT	8	4	5	6	7	6	7	8	9	14	12	18	21	20	20	26	21	24	23	18	14	12	10	8		
MED	278	258	285	255	260	240	245	252	255	252	252	262	265	272	272	275	285	292	305	300	302	288	288	292	F	
UQ	288	290	300	270	262	260	U F 260	260	260	260	262	265	275	280	300	285	300	305	315	310	310	302	310	305	F	
LQ	272	238	275	250	258	235	245	238	250	245	245	245	260	262	265	265	275	272	282	295	285	272	265	270	F	

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M(3000)F2 (0.01)

IONOSPHERIC DATA

MAR. 1978

H^oF₂ (KM)

45° E Mean Time (G. M. T. + 3 h)

Station **SYQWA** STATION Lat. 69° 00' .4 S, Long. 39° 35' .4 E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							B	B	B	Y	495	E B 490	460	B	B	L	330	400	R	R				
2							F	F	B	B	B	B	B	B	B	B	450							
3							A	F	A	B	B	505	485	505	450	400	L							
4							400	400	385	390	370	350	350		L	L								
5							L	355	L	L	L	335	325	L	L	L	L	295						
6							430	400	330	370	360	350	340		L	L	L							
7							450	400	L	380	370	325	340			290								
8							L	L	390	370	360	335	315	315	L									
9							U R 880	U F 800	550	Y	670	600	550	490	R	330	L							
10							400	L	405	370	420	410	B	450	U F 400	345	B							
11									L	L	340	E B 375	380	325	L	L								
12							L	L	L	350	400	350	325		C	C	C							
13							L	B	B	400	L	350	B	B	305		300							
14							B	A	Y	540	B	350	L	275										
15							B	B	B	B	475	B	B	B	L	L								
16							B	B	B	B	B	B	B	B	R	B	B	L						
17							R	B	B	B	B	B	B	470	B	390	355	E S 330						
18							B	B	540	B	B	420	B	B	B	395	360							
19							B	B	B	B	B	390		265	295		B							
20							450	420	420	380	L	300	270	250										
21									B	B	320	L	330	L	270									
22									B	B	B	B	B	L										
23									A	B	B	375	L	360	365	345								
24									L	L	L		290	L	L									
25									L	L	C	C	C		260									
26									A 420	400	400	345	290	370		295								
27									B	B	B	B	B	B	C	C	530							
28									R	500	B	B	B	B										
29									400	L	L	B	B	275										
30									B	B	B	B	B	B										
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1	6	6	10	13	15	17	14	12	8	7	4						
MED							400	440	402	395	400	372	350	340	310	338	355	345						
UQ							450	420	420	420	424	390	450	382	368	422	380							
LQ							400	400	370	380	358	325	325	270	292	315	304							

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H^oF₂ (KM)

IONOSPHERIC DATA

MAR. 1978

H'F (KM)

45° E Mean Time (G. M. T. + 3 h)

Station SYDWA STATION Lat. 69° 00' 4" S. Long. 39° 35' 4" E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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	450	400	295	B	B	B	B	B	B	230	B	230	B	B	245	230	250	A	380	A	A	A	B		
2	R	A	A	B	B	A	340	R	B	B	B	B	B	B	B	B	U _H	B	280	285	300	305	A	A		
3	A	A	A	300	B	E	A	A	U _H	A	B	B	B	245	B	245	E	B	B	E	B	300	300	A	A	
4	B	A	B	A	A	425	360	290	250	235	225	250	U _H	230	230	245	235	250	250	250	235	235	230	240	250	
5	250	280	300	330	340	325	240	250	250	245	255	250	245	240	250	230	245	245	265	250		A	A	A	A	
6	400	330	R	370	495	460	300	255	250	250	230	250	245	240	245	250	250	250	245	250	245	235	250	280		
7	280	350	470	345	470	410	345	U _H	250	B	250	250	235	240	250	240	C	C	C	C	C	C	250	300		
8	369	490	R	450	425	369	325	B	250	250	245	250	250	250	230	240	245	240	240	240	245	305	F	A		
9	400	320	230	365	400	330	A	Y	A	A	A	240	250	290	B	B	250	250	275	275	270	300	350	A		
10	A	550	U _Q	410	380	U _Q	405	390	300	290	245	250	235	195	B	B	B	250	B	275	310	250	285	325	300	305
11	430	R	R	R	400	350	B	B	255	250	250	B	250	250	250	250	U _H	230	245	245	250	250	310	400	330	
12	375	R	400	445	410	350	300	260	200	240	230	230	255	C	C	C	C	C	C	C	225	230	240	235	240	
13	280	285	295	345	A	380	330	300	B	B	A	275	B	B	250	250	260	265	260	255	260	B	400	A		
14	A	B	B	A	A	A	455	B	B	A	245	R	B	B	250	250	240	210	B	245	240	B	260	A	A	
15	A	A	480	400	275	B	E	A	B	B	B	B	B	B	B	B	B	B	260	280	280	300	A	A	A	
16	U _Q	400	A	A	B	A	A	A	B	B	B	B	B	B	250	B	B	250	295	A	A	A	A	A		
17	255	A	A	A	B	A	A	R	B	B	B	B	B	B	B	250	B	S	350	B	350	A	A	U _Q	410	
18	A	A	B	A	B	B	B	B	B	A	B	B	B	B	B	B	260	B	Y	375	R	A	A	A		
19	A	A	A	B	B	B	B	B	B	B	B	B	250	240	250	B	B	B	235	330	Y	B	310	A	A	
20	A	A	A	A	A	A	A	Y	270	250	250	U _H	230	B	250	B	250	240	230	250	250	250	250	275	A	
21	495	A	A	A	A	A	B	B	A	B	B	240	250	B	245	245	250	250	B	250	250	250	250	280		
22	340	A	A	A	A	A	A	A	B	B	B	B	B	250	250	270	250	250	250	B	B	A	A	A		
23	F	370	B	F	U _Q	320	A	A	A	A	B	B	B	B	250	240	240	255	275	Y	260	290	325	350	340	
24	340	A	A	395	375	350	E	B	290	250	260	255	250	230	230	230	230	240	240	235	240	240	270	340	A	
25	A	A	A	A	E	A	460	390	340	280	250	250	C	C	C	200	240	240	230	225	230	225	210	230	250	220
26	A	320	U _Q	320	F	U _Q	325	A	A	A	A	A	B	B	250	260	B	295	280	300	250	370	A	A	A	A
27	A	460	A	A	B	A	B	B	B	B	B	B	B	B	B	C	265	280	B	305	A	A	B	A	A	
28	A	B	B	A	B	A	B	B	B	A	B	B	B	B	B	B	270	B	300	385	B	350	A	R	A	
29	R	R	330	A	325	A	280	B	B	265	E	B	275	260	B	B	250	275	250	280	250	240	A	370	A	A
30	A	A	325	A	B	A	B	B	B	B	B	B	B	B	B	B	270	250	225	C	C	C	C	C	A	
31	A	A	A	425	415	C	C	C	C	250	250	240	235	230	250	250	245	215	250	320	Q	A	A	260	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	13	11	11	13	15	13	14	10	11	12	14	15	15	16	18	24	22	22	25	24	19	16	14	10		
MED	369	350	330	370	400	374	324	285	250	250	246	250	245	245	250	250	250	250	250	250	260	285	268	290		
UQ	400	455	405	400	416	400	345	290	250	250	250	250	250	250	250	260	255	265	280	292	295	310	350	330		
LQ	280	320	310	345	332	350	300	255	250	248	230	240	235	235	245	240	240	245	245	240	245	245	250	250		

The Radio Research Laboratories, Japan

MAR. 1978

H'F (KM)

IONOSPHERIC DATA

MAR. 1978

H⁺ES (KM)

45° E Mean Time (G. M. T. + 3 h)

Stations YOWA STATION Lat. 69 00.4 S, Long. 39 35.4 E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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	115	115	105	G	120	B	B	B	B	125	G	B	B	B	B	G	B	G	120	G	115	115	100	B	
2	100 ^K	110 ^K	110	140	B	110	105 ^K	G	B	B	B	B	B	B	B	B	B	B	G	B	B	G	110 ^K	115 ^K	
3	130	100	100	120	B	125	100	110 ^K	100	B	B	B	G	B	B	B	B	B	B	B	G	120 ^K	125 ^K	150	
4	B	100	B	110	110	130 ^K	125 ^K	G	G	G	G	110	120	G	G	G	G	G	G	B	100	100	100	125	
5	C	100	C	B	G	100	G	G	G	G	B	B	G	G	110	110	125	G	170	G	125	120	120 ^K	120 ^K	
6	125 ^K	130 ^K	125 ^K	130 ^K	130 ^K	125 ^K	G	G	G	G	125	125	G	130	120	G	G	G	G	G	B	B	B	130	
7	125	100	125 ^K	160 ^K	125 ^K	125 ^K	140	120	150	B	B	G	G	125	120	G	C	C	C	C	C	C	C	145	
8	140 ^K	125 ^K	140 ^K	125 ^K	125 ^K	125 ^K	135	B	B	G	G	140	120	125	125	120	120	110	155	G	130	120	100	135	
9	130 ^K	95 ^K	G	B	130	B	100	G	100	100	100	G	G	G	B	B	G	G	160	150	140	B	125	120 ^K	
10	110	120 ^K	130 ^K	150 ^K	130 ^K	100	G	G	G	G	150	G	B	B	B	G	B	165	150	G	G	150	G	G	
11	110 ^K	110 ^K	110 ^K	100 ^K	100	100	B	B	130	G	G	B	125	G	G	G	G	100	100	100	100	140	115	150	
12	110 ^K	120 ^K	130 ^K	125 ^K	130 ^K	120 ^K	130	G	100	120	110	110	110	C	C	C	C	C	C	100	100	100	100	G	
13	B	100	100	175	100	100	G	G	B	B	110	B	B	B	B	B	G	150	130	145	130	B	120 ^K	100	
14	110	B	B	140	140 ^K	100	100 ^K	B	160	105	G	B	B	B	G	G	G	B	B	B	B	B	110 ^K	145 ^K	
15	110 ^K	110 ^K	100 ^K	135	120	B	110	B	B	B	B	B	B	B	B	B	B	150	150	145	B	130	115 ^K	125	
16	120	100	100	B	100	105	135	B	B	B	B	B	B	B	B	B	B	160	145	150	120	110	110	115 ^K	
17	110 ^K	100	150	95	B	130	130	125	B	B	B	B	B	B	B	B	B	S	115	B	G	125	115 ^K	115 ^K	
18	110	110	B	130	170	B	B	B	B	120	B	B	B	B	B	B	B	B	B	130	120 ^K	110 ^K	105	105	125 ^K
19	145	125	100	B	B	B	B	B	B	B	B	B	B	G	G	B	B	B	B	110	B	G	120 ^K	120 ^K	
20	115 ^K	140	120	110	125	105	100	110 ^K	125	G	G	G	B	B	B	B	B	B	B	B	B	130	125	120	125 ^K
21	100 ^K	130 ^K	125	120	105	130	B	B	120	B	B	G	G	B	G	G	B	B	B	B	G	100	100	100	
22	130	130	125 ^K	110	125	100 ^K	140	115	B	B	B	B	B	G	B	B	B	B	B	B	B	125	140	105	
23	120 ^K	150 ^K	110	125 ^K	150	100	105	110	105	B	B	B	B	G	G	G	G	170	160	150	100	125	120	110	
24	105	105	125	100	130	115	B	B	B	G	B	B	G	G	G	180	100	130	B	100	B	B	150	125	
25	105	100	100	100	120	110 ^K	G	G	G	G	C	C	C	110	G	G	G	G	G	100	100	100	100	100	
26	150	125 ^K	150 ^K	130	120	110	115	110	100	110	B	B	B	B	B	G	G	150	105 ^K	150 ^K	125	135	110	120	
27	120	110	130	100	B	120	B	B	B	B	B	B	B	B	C	B	B	B	B	125	100	B	150	130 ^K	
28	100	B	B	100	B	105	B	B	B	125	B	B	B	B	B	B	B	B	B	G	B	150 ^K	150	125	120 ^K
29	110 ^K	110 ^K	150 ^K	110	100	125	G	B	B	135	B	B	B	B	B	B	B	B	B	B	B	120	B	130	120
30	120 ^K	150 ^K	175 ^K	120	B	100	B	B	B	B	B	B	B	B	B	B	B	150	145	C	C	C	C	125 ^K	
31	120 ^K	130	110	125 ^K	120 ^K	C	C	C	C	B	130	125	120	G	G	120	B	B	B	160	145	115 ^K	150 ^K	120 ^K	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	28	29	25	26	23	25	15	7	10	8	6	5	5	4	4	4	3	10	14	14	18	20	27	28	
MED	115	110	125	122	125	110	115	110	112	120	118	125	120	125	120	120	120	150	145	135	120	120	115	120	
UQ	125	125 ^K	130 ^K	130 ^K	130	125	132	118	130	125	130	125	120	128	122	150	122	160	155	150	130	128	125	128	
LQ	110 ^K	100	105	110	115	100	102	110	100	108	110	110	120	118	115	115	110	130	120	100	100	108	108	115	

The Radio Research Laboratories, Japan

MAR. 1978

H⁺ES (KM)

IONOSPHERIC DATA

MAR. 1978

TYPES OF ES

45° E Mean Time (G. M. T. + 3 h)

Stations YDWA STATION Lat. 69° 00' 4" S Long. 39° 35' 4" E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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	R3	R2	R1		R1					R1									R1		R1	R2	RA11		
2	R1	K1	R1	R1		R1	K1																K5	K3	
3	RA21	R1	L1	R1		R1	R1	RK11	R1													K1	K1	AR11	
4		R2		R1	R1	K1	K1				C1	C1									C1	L1	L1	C1	
5		L1				L1								C2	C1	C1			H1		R1	R3	K4	K4	
6	K3	K2	K2	K1	RK11	K2					C1	C1		H1	C1									H1	
7	R2	R3	K3	AK11	R3	RK11	R1	R1	HR11					C2	C1									R1	
8	K2	K3	AK12	RK13	RK21	K2	R1					H1	C2	C1	C2	C1	C1	C1	H1		C1	R1	RA11	ARC11	
9	RK12	K2			H1		R1		R1	R1	R1								H1	C1	R1		R1	K1	
10	R2	RK21	CK22	HK13	RCK13	L2					H1							H1	H1			H1			
11	RK11	K1	K3	K3	R3	R1			R1				C1					C1	C2	C3	C3	R1	C1	H1	
12	K2	K2	RK21	RK11	CK11	CK21	HC11		L2	C2	C2	C2	C2								L1	L1	L1	L1	
13		C1	L1	HR11	R1	R1					R1							C1	C1	H1	H1		K3	R2	
14	R2			R1	RAK11	R1	K2		R1	R1													K3	HK23	
15	K6	K3	RK11	R1	C1		R1											H1	H1	RA11		C1	K5	R1	
16	AR12	RA21	R1		R2	R1	H1											H1	R1	RA11	RA11	RA11	R1	K4	
17	RK21	R2	AR11	L1		R1	H1	R1											R1	R1		R1	K5	AK11	
18	RA31	R1		R1	H1					C1									H1	K2	KS21	R1	R1	K2	
19	R1	RR11	R1																	R2			KK11	K1	
20	K3	R4	R2	R2	R1	R1	R1	KR11	C1												C1	CL11	C1	K6	
21	RK12	KL11	R1	R2	C1	R1			R1													L1	L1	FS21	
22	R1	R2	K3	R3	RL12	RK21	R1	R1														R2	AR11	RA11	
23	RKA12	RK11	R1	KL22	H1	R1	R1	R1	C2									H1	R1	R1	R3	RL11	C2	R1	
24	FR21	R1	R2	R2	RC11	R1								H1	LH11	RL11				L1		R1	R2		
25	R1	R3	R1	R1	R2	RK11								C2							L2	L1	L2	F1	
26	R1	K2	RK31	AC11	C1	R1	C1	R1	C1	R1								RC11	K3	HK23	R1	H1	R2	R2	
27	R1	R1	RFA11	R1		R1														R1		AR11	RC13	CK12	
28	R1			R1		C1				R1												HK11	R1	R1	KR21
29	K4	K1	RK11	CR11	LR31	R1				R1												R2		R1	R1
30	K3	K1	RKA11	RA21		C1												H1	C1					CK21	
31	K4	R1	R2	RK11	RK11						C1	C1	C1								R1	RA11	K3	HK11	K1
	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																									
UQ																									
LQ																									

MAR. 1978

TYPES OF ES

IONOSPHERIC DATA

APR. 1978

FXI (0.1 MHz)

145° E Mean Time (G. M. T. + 3 h)

Stations YOWA STATION Lat. 69 00.4 S. Long. 39 35.4 E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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	A	A	A	A	A	B	B	B	B	B	B	B	O R 66	O R 69	X 72	O R 72	X 82	79	X 61	43	26	R	A	
2	39	A	B	B	A	A	B	B	O R 47	X 61	X 65	X 69	X 70	X 78	X 82	X 81	X 81	B	O R 63	B	O R 43	O R 36	R	A	
3	B	B	B	B	B	B	O R 45	52	B	B	B	B	B	B	R 75	80	77	B	92	90	R	50	40	A	
4	B	A	A	50	B	B	B	B	B	B	B	B	B	B	B	X 60	X 60	56	X 53	48	60	55	C	36	
5	A	A	41	B	B	80	A	A	B	B	B	O R 56	O R 61	67	O R 66	X 64	O R 59	O R 56	X 50	X 43	37	O R 32	21	A	
6	A	A	A	B	29	A	A	R	B	B	O R 68	75	X 86	X 90	X 97	X 89	O R 91	89	X 78	69	O R 53	O R 41	B	R	
7	29	R	R	A	A	O R 34	40	42	X 56	X 68	X 80	X 96	X 111	X 103	X 108	X 96	X 88	73	X 70	X 53	49	50	35	O R 21	
8	R	A	A	O R 33	40	U S 60	42	72	55	B	77	X 84	X 97	X 107	X 111	X 113	101	90	87	X 73	65	48	O R 31	A	
9	40	O R 34	R	O R 31	U S 46	45	58	60	B	O R 67	88	X 108	X 110	X 119	X 116	X 116	X 115	X 109	X 101	82	U S 68	50	41	34	
10	28	27	R	22	30	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
12	C	C	C	C	C	C	C	C	C	C	C	C	C	B	U R 74	B	B	X 79	B	O R 55	O R 42	B	A	A	A
13	A	B	B	B	B	B	B	B	O R 49	O R 57	X 65	X 70	X 61	X 85	X 98	X 91	102	X 94	80	C	R	A	A	A	
14	A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	A	
15	A	A	A	A	B	A	R	Y	B	Y	A	B	B	B	B	B	82	R	51	B	R	A	A	R	
16	A	A	A	B	B	B	B	R	B	B	O R 61	X 72	X 81	X 80	X 91	B	B	B	B	R	B	O R 31	B	A	
17	45	B	A	A	A	A	O R 37	40	50	B	O R 71	O R 71	X 84	100	X 100	X 107	100	87	76	75	47	38	O R 35	26	
18	O R 26	O R 21	R	R	U S 70	70	B	B	U S 70	B	80	80	75	78	74	73	80	82	69	52	42	35	A	A	
19	A	A	A	U A 70	O R 36	36	42	48	49	A	B	B	B	R	B	R	79	X 82	B	A	R	A	A	A	
20	A	A	A	A	A	B	B	A	B	B	B	O R 63	O R 67	B	C	O R 66	O R 71	70	61	50	B	A	A	A	
21	B	A	A	70	R	B	B	55	R	O R 55	B	O R 71	81	X 82	80	X 88	83	76	O R 71	B	O R 31	O R 21	B	R	
22	35	R	R	R	R	R	X 47	R	B	X 61	X 72	X 88	X 102	X 109	X 113	X 115	100	79	U S 73	U S 70	54	36	25	O R 26	
23	A	O R 42	R	A	R	B	B	A	X 54	B	O R 65	80	O R 76	B	103	104	92	X 90	55	A	A	R	A	60	
24	A	60	B	B	A	A	A	B	B	B	B	B	B	B	B	B	B	B	R	R	R	O R 33	A	A	
25	A	B	B	B	B	B	B	B	B	B	B	O R 58	B	B	B	B	B	B	73	48	R	A	A	A	
26	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	O R 71	B	O R 33	A	R	A	
27	B	B	B	B	B	B	B	B	A	B	O R 57	X 66	X 86	93	X 92	B	B	102	80	R	O R 28	A	A	A	
28	A	A	A	A	A	B	A	A	A	B	B	B	B	B	B	B	X 80	R	O R 61	B	B	R	A	A	
29	A	A	B	B	B	A	A	A	A	S	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
30	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
31																									
CNT	7	5	1	6	6	6	7	7	8	6	12	16	15	15	16	16	20	16	22	14	14	15	7	6	
MED	35	O R 34	41	42	38	52	42	52	52	61	70	72	X 81	X 85	X 94	X 88	82	82	71	57	45	36	35	30	
UQ	40	O R 42		70	U S 46	70	46	58	56	X 67	78	82	X 92	X 104	X 106	X 106	96	90	78	75	54	49	38	36	
LQ	28	O R 27		O R 31	30	36	41	45	49	O R 57	O R 65	O R 68	72	78	78	X 72	78	77	61	48	O R 37	O R 32	28	O R 26	

APR. 1978

FXI (0.1 MHz)

IONOSPHERIC DATA

APR. 1978

FOF2 (0.1 MHz)

45° E Mean Time (G. M. T. + 3 h)

Stations **SYOWA STATION** Lat. 69° 00.4' S, Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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	A	A	A	A	A	B	B	B	B	B	B	B	60	63	65	66	76	70	55	F ₃₃	F ₁₇	R	A	
2	F ₃₁	A	B	B	A	A	B	B	41	55	58	R ₆₃	64	72	76	75	75	B	57	B	37	30	A	A	
3	B	B	B	B	B	B	39	44	B	B	B	B	B	B	F	F ₆₅	U ₆₈	B	F	F	R	F	F ₃₀	A	
4	B	A	A	F	B	B	B	B	B	B	B	B	B	B	B	53	53	50	47	38	F	F ₃₂	C	A	
5	A	A	F	B	B	F	A	A	B	B	B	50	55	F ₆₀	60	58	53	50	44	37	F ₃₀	F ₂₄	F	A	
6	A	A	A	B	F	A	A	A	B	B	62	F ₆₇	79	J ₈₄	R ₉₀	83	85	U ₈₀	F ₇₂	F ₆₀	47	35	B	R	
7	R	R	R	A	A	U ₂₇	F ₂₇	F ₃₅	50	61	74	90	105	102	102	90	82	F ₇₁	64	47	F ₄₀	U ₄₀	U ₂₄	15	
8	A	A	A	F ₂₅	F	F	U ₂₉	U ₃₇	F ₄₈	B	F ₆₇	76	90	101	104	107	U ₉₄	J ₈₃	F ₇₈	F ₆₈	57	31	F ₂₀	A	
9	F	F ₂₆	A	U ₂₅	F	F	F	U ₄₆	B	61	80	100	102	110	108	107	U ₁₀₇	F	F ₉₂	F ₇₄	56	F ₄₂	F ₃₀	F ₂₄	
10	F	U ₁₇	A	F	F ₂₄	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
12	C	C	C	C	C	C	C	C	C	C	C	C	C	U ₆₇	R	B	B	73	B	49	36	B	A	A	A
13	A	B	B	B	B	B	B	B	43	51	59	63	75	78	91	85	F ₉₃	88	F	C	R	A	A	A	
14	A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	A	
15	A	A	A	A	B	A	A	Y	B	Y	A	B	B	B	B	B	F	R	F ₄₅	B	R	A	A	R	
16	A	A	A	B	B	B	B	A	B	B	55	66	J ₇₅	R ₇₄	85	B	B	B	B	R	B	F ₂₄	B	A	
17	F	B	A	A	A	A	F ₃₀	F ₃₂	F ₄₂	B	65	65	77	92	J ₉₄	100	F	U ₇₇	F	F	F ₃₇	F ₃₀	F ₂₆	F ₂₀	
18	F ₁₇	15	R	R	F	F	B	B	F	B	F	U ₆₇	F ₆₇	F ₆₈	F ₆₇	F ₆₆	F ₇₃	F ₇₅	F ₅₈	F ₄₀	F ₃₀	F ₂₃	A	A	
19	A	A	A	F	U ₂₈	F ₃₀	F	F	F ₄₂	A	B	B	B	R	B	R	F ₇₀	F ₇₆	B	A	R	A	A	A	
20	A	A	A	A	A	B	B	A	B	B	B	57	61	B	C	60	F ₆₂	F ₆₀	F ₅₅	F	B	A	A	A	
21	B	A	A	U ₃₃	R	B	B	F ₄₈	R	U ₄₉	B	65	72	76	73	82	F ₇₅	70	U ₆₅	B	25	15	B	A	
22	F ₂₅	R	R	R	R	R	40	R	B	55	66	81	96	103	107	103	88	F ₆₃	U ₆₀	F	F ₃₈	F	F	F ₁₇	
23	A	F	R	A	R	B	B	A	48	B	59	69	U ₇₀	B	F ₉₃	U ₉₈	U ₈₆	85	F ₄₈	A	A	R	A	A	
24	A	A	B	B	A	A	A	B	B	B	B	B	B	B	B	B	B	B	R	R	R	F ₂₅	A	A	
25	A	B	B	B	B	B	B	B	B	B	B	52	B	B	B	B	B	B	F ₆₆	F ₃₂	R	A	A	A	
26	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	65	B	F ₂₆	A	R	A	
27	B	B	B	B	B	B	B	B	A	B	F ₄₉	60	J ₈₀	R ₈₅	F ₈₆	B	B	B	94	J ₇₄	R	22	A	A	A
28	A	A	A	A	A	B	A	A	A	B	B	B	B	B	B	B	J ₇₄	R	55	B	B	R	A	A	
29	A	A	B	B	B	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
30	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
31																									
00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	3	3		3	2	2	5	6	7	6	11	16	15	15	15	16	18	15	19	10	13	13	5	4	
MED	F ₂₅	F ₁₇		U ₂₅	F ₂₆	F ₂₈	F ₃₀	F ₄₀	43	55	62	66	75	78	90	82	74	F ₇₆	60	F ₄₄	F ₃₇	F ₃₀	F ₂₆	F ₁₈	
UQ	F ₂₈	F ₂₂		F ₂₉			F ₃₉	F ₄₆	48	61	66	72	85	96	98	99	F ₈₆	82	68	F ₆₀	F ₄₀	F ₃₂	F ₃₀	F ₂₂	
LQ	F ₂₁	16		F ₂₄			F ₂₉	F ₃₅	42	51	58	62	68	70	74	65	68	F ₆₆	52	F ₃₇	F ₃₀	F ₂₄	F ₂₄	16	

APR. 1978

FOF2 (0.1 MHz)

IONOSPHERIC DATA

APR. 1978

FOF1 (0.01 MHz)

45° E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1												B	B	B	B									
2													L	L	L	L								
3													B	B	B	L								
4													B	B	B									
5													L	L	L									
6													400											
7													L											
8																								
9																								
10																								
11																								
12																								
13																								
14																								
15																								
16																								
17																								
18																								
19																								
20																								
21																								
22																								
23																								
24																								
25																								
26																								
27																								
28																								
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT													1											
MED													400											
UQ																								
LQ																								

APR. 1978

FOF1 (0.01 MHz)

IONOSPHERIC DATA

APR. 1978

FOE (0.01 MHz)

45° E Mean Time (G. M. T. + 3 h)

Station **SYDWA** STATION Lat. 69° 00.4' S, Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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	K 350	K 350			B	A	B	B	B	B	B	B	B	B	B	B	B	B	150	A	K 190	K 120	K 150	K 300	
2					B	B	B	B	B	225	235	260	270 ^R	260	250	240		B	B	B	B	B	K 170		
3					B	B	A	250	B	B	B	B	B	B	B	B	B	B	B	B	B	K 300	U 220	K 150	
4					B	B	B	B	B	B	B	B	B	B	B	230	200	170	140	B	U 210	K 200			
5					B	150	B	A	B	B	B	B	B	B	B	235		B	B	B	B	B		K 120	
6					170	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		K 170	
7	K 90	K 250	K 280		A	A	160	150	170 ^H	220 ^R	240	A	260	260	250	A	A	A	A	A	A				
8					A	A	A	150 ^H	B	B	250	250	B	B	B	B	A	U 150	A	100	100		110	K 190	
9			K 260	K 190	A	140	A	A	B	B	B	B	B	B	270	250	A	190	A	B	Y		K 115		
10					A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C			
11					C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C			
12					C	C	C	C	C	C	C	C	B	B	B	B	B	B	B	B	B				
13					B	B	B	B	B	B	255			B	B	B		B	B	A	C	K 300	K 320	K 360	
14					C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C				
15					B	B	A	B	B	B	B	B	B	B	B	B	B	B	190	B		K 160	K 280	K 270	K 210
16					B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B			K 280	
17	K 300				A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B				
18			K 260	K 300	K 270	U 220	B	B	B	B	250	A	B	B	B	B	B	B	B	B	B		K 100	K 300	K 300
19		K 300	K 250	K 175	U 220	K 250	A	140	A	B	B	B	B	B	B	B	B	B	B	B	B	K 260			
20		K 300	K 350		B	B	B	B	B	B	B	B	B	B	C	B	B	B	B	B	150		K 300	K 280	K 300
21	B	K 400		U 220	K 350		B	A	B	B	B	B	B	B	B	B	B	B	B	B				K 100	
22	K 145	K 230	K 290	K 250	K 340	K 355	K 260	A	B	205	220 ^H	220	U 220	A	240	230	A	A	A	A		K 130	K 120		
23		U 290	K 350		K 330		B	A	A	B	B	B	B	B	B	B	B	B	220 ^K		K 200	K 260	K 350	K 400	
24					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	K 320	K 270	K 175	K 310	K 300
25	K 300				B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		K 220	K 330	K 270	K 300
26	K 260	K 325	U 180		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B			K 230		
27					B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A		K 360	K 330	K 330	K
28					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		K 220	K 270	K 320	K
29	K 320	K 350			B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B					
30					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B					
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	7	9	8	5	6	5	2	4	1	3	5	4	3	3	4	5	1	3	4	3	10	13	16	14	
MED	K 300	K 300	K 270	K 220	K 300	K 220	210	150	170 ^H	220	240	252	260	260	250	235	200	170	170	150	K 215	K 220	K 270	K 300	
UQ	K 310	K 350	K 320	K 250	K 340	K 250		200		222	250	258	265	260	260	240		180	205	235	K 270	K 300	K 305	K 300	
LQ	K 202	K 290	K 255	K 190	K 220	150		145		212	235	235	240	250	240	230		160	145	125	K 190	K 175	K 150	K 190	

APR. 1978

FOE (0.01 MHz)

IONOSPHERIC DATA

APR. 1978

FOES (0.1 MHz)

45° E Mean Time (G. M. T. + 3 h)

Stations SYOWA STATION Lat. 69 00.4 S. Long. 39 35.4 E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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	K 35	K 35	42	J A 39	31	37	B	B	B	B	B	B	B	E B 45	E B 45	E B 42	E B 38	E B 35	25	25	K 19	G	K 15	K 30	
2	33	49	B	B	40	35	B	B	E B 35	G	G	G	G	G	G	G	E B 35	B	E B 36	B	E B 25	30	23	26	
3	B	B	B	B	B	B	J A 36	29	B	B	B	B	B	B	E B 28	E B 25	E B 57	B	E B 25	E B 18	K 30	26	K 15	45	
4	55	J A 84	45	29	B	B	B	B	B	B	B	B	B	B	B	G	29	G	J A 22	17	J A 26	J A 59	C	35	
5	30	47	63	B	B	J A 27	32	35	B	B	B	E B 27	E B 33	E B 28	E B 33	G	E B 36	E B 25	E B 15	E B 15	E B 12	E B 13	J A 24	J A 30	
6	J A 34	36	35	B	25	45	34	33	B	B	E B 49	E B 28	E B 27	E B 45	E B 27	E B 38	E B 78	E B 40	E B 54	E B 25	E B 28	E B 20	B	K 17	
7	K 9	K 25	K 28	40	36	24	G	G	G	G	G	30	J A 48	26	25	31	26	J A 29	J A 22	15	14	E B 12	E B 10	19	
8	18	J A 35	31	25	22	15	13	G	E B 21	B	G	G	E B 28	E B 35	E B 32	E B 24	23	16	15	13	G	J A 26	12	28	
9	30	25	30	27	40	32	J A 39	33	B	E B 34	E B 26	E B 30	E B 27	E B 55	G	G	21	G	16	E B 18	G	13	E B 11	13	
10	25	J A 16	J A 20	25	20	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
12	C	C	C	C	C	C	C	C	C	C	C	C	C	B	E B 37	B	B	E B 26	B	E B 31	E B 15	B	35	30	32
13	36	B	50	B	B	B	B	B	E B 36	E B 25	E B 28	G	E B 36	E B 35	E B 25	G	E B 22	E B 21	27	C	K 30	40	K 36	45	
14	65	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	J A 50	
15	40	45	J A 39	38	B	J A 41	36	30	B	41	B	B	B	B	B	B	E B 56	E B 49	G	B	K 16	K 28	K 27	K 21	
16	33	39	37	B	B	B	B	35	B	B	28	E B 28	E B 31	E B 26	E B 51	B	B	B	B	E B 32	B	E B 17	B	K 28	
17	J A 52	B	29	40	40	38	34	29	E B 20	B	E B 39	E B 28	E B 49	E B 41	E B 55	E B 45	E B 63	E B 30	E B 14	E B 20	E B 15	E B 13	E B 14	E B 14	
18	22	25	K 26	K 30	J A 72	J A 64	B	B	39	B	28	28	E B 27	E B 35	E B 36	E B 30	E B 25	E B 23	E B 12	E B 13	15	13	K 30	J A 122	
19	41	K 30	K 25	J A 26	J A 29	K 25	20	G	23	49	B	B	B	E B 45	B	E B 33	E B 21	E B 42	B	J A 37	K 26	37	108	48	
20	J A 47	K 30	K 35	J A 74	37	B	B	45	B	B	B	E B 34	E B 45	B	C	E B 35	E B 31	E B 20	E B 15	23	B	K 30	K 28	K 30	
21	51	J A 61	J A 39	55	K 35	B	B	32	E B 35	E B 44	B	E B 21	E B 27	E B 38	E B 29	E B 24	E B 22	E B 20	E B 40	B	E B 19	E B 11	B	17	
22	J A 27	K 23	K 29	K 25	K 34	K 35	30	32	B	G	G	G	23	G	30	32	22	20	13	18	18	22	21	15	
23	45	35	35	37	K 33	B	B	48	37	B	E B 45	E B 44	E B 43	B	E B 45	E B 70	E B 43	E B 25	28	J A 37	30	26	K 35	40	
24	55	42	B	B	40	41	37	B	B	B	B	B	B	B	B	B	B	B	B	29	32	K 27	20	K 31	30
25	K 30	B	45	B	B	B	B	B	B	B	B	E B 38	B	B	B	B	B	B	E B 18	E B 15	K 22	K 33	K 27	K 30	
26	33	K 32	40	35	52	46	B	B	B	B	B	B	B	B	B	B	B	B	B	E B 35	B	20	33	K 23	53
27	41	51	48	B	B	B	B	B	40	B	E B 23	E B 26	E B 27	E B 26	E B 29	B	B	18	22	30	E B 17	K 36	K 33	K 33	
28	35	78	38	33	32	B	47	40	35	B	B	B	B	B	B	B	E B 45	E B 35	E B 36	B	B	K 22	K 27	K 32	
29	K 32	K 35	B	B	B	50	48	37	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
30	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
31																									
00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	26	22	22	16	17	15	13	16	11	8	12	16	15	16	16	17	20	18	23	19	21	25	21	26	
MED	34	35	36	34	35	37	34	32	E G 35	E G 30	E B 28	E B 28	E B 35	E B 30	E B 30	E B 30	E B 30	E B 24	E B 22	U 16	18	26	K 27	30	
UQ	45	47	42	40	40	43	37	36	36	42	E B 34	E B 30	E B 40	E B 43	E B 40	E B 35	E B 44	E B 35	E B 30	U 26	K 26	33	K 30	40	
LQ	30	K 30	K 29	26	31	30	30	29	E B 22	G	G		E B 27	E B 26	E B 26	G	22	E G 20	14	E B 15	E G 15	E G 13	15	21	

APR. 1978

FOES (0.1 MHz)

IONOSPHERIC DATA

APR. 1978 FBES (0.1 MHz)

45° E Mean Time (G. M. T. + 3 h)

Stations YDWA STATION Lat. 69 00.4 S. Long. 39 35.4 E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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	K 35	K 35	A 42	A 39	A 31	A 37	B	B	B	B	B	B	B	E 45	E 45	E 42	E 38	E 35	G	15	K 19	G	K 15	K 30
2	28	A 49	B	B	A 40	A 35	B	B	E 35	G	G	G	G	G	G	E 35	B	E 36	B	E 25	25	A 23	A 26	
3	B	B	B	B	B	B	29	U 29	B	B	B	B	B	B	E 28	E 25	E 57	B	E 25	E 18	30	U 22	K 15	K 45
4	E 44	A 84	A 45	21	B	B	B	B	B	B	B	B	B	B	B	G	23	G	18	11	U 21	U 20	C	A 35
5	A 30	A 47	30	B	B	G	A 32	A 35	B	B	B	E 27	E 33	E 28	E 33	G	E 36	E 25	E 15	E 15	E 12	E 13	K 12	K 30
6	A 34	A 36	A 35	B	22	A 45	A 34	A 33	B	B	E 49	E 28	E 27	E 45	E 27	E 38	E 78	E 40	E 54	E 25	E 28	E 20	B	K 17
7	K 9	K 25	K 28	A 40	A 36	20	G	G	G	G	G	26	25	25	20	29	22	21	15	12	12	E 12	E 10	13
8	A 18	A 33	A 31	20	16	12	12	G	E 21	B	G	G	E 28	E 33	E 32	E 24	22	15	15	G	G	17	11	A 28
9	21	20	A 30	K 19	16	G	30	25	B	E 34	E 26	E 30	E 27	E 55	G	G	21	G	15	E 18	G	13	E 11	13
10	E 19	12	A 20	15	15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
12	C	C	C	C	C	C	C	C	C	C	C	C	C	E 37	B	B	E 26	B	E 31	E 15	B	A 35	A 30	A 32
13	A 36	B	E 35	B	B	B	B	B	E 36	E 25	E 28	G	E 36	E 35	E 25	G	E 22	E 21	24	C	30	A 40	36	A 45
14	A 65	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	A 50
15	A 40	A 45	A 39	A 38	B	A 41	A 36	E 30	B	E 41	B	B	B	B	B	B	E 56	E 49	G	B	K 16	K 28	K 27	K 21
16	A 33	A 39	A 37	B	B	B	B	A 35	B	B	Y 28	E 28	E 31	E 26	E 51	B	B	B	B	E 32	B	E 17	B	K 28
17	12	B	A 29	A 40	A 40	A 38	28	27	E 20	B	E 39	E 28	E 49	E 41	E 55	E 45	E 63	E 30	E 14	E 20	E 15	E 13	E 14	E 14
18	E 10	E 10	K 26	K 30	27	U 22	B	B	38	B	27	26	E 27	E 35	E 36	E 30	E 25	E 23	E 12	E 13	12	K 10	K 30	K 30
19	A 41	K 30	K 25	20	25	25	18	G	U 23	A 49	B	B	B	E 45	B	E 33	E 21	E 42	B	A 37	26	A 37	A 108	A 48
20	A 47	K 30	K 35	A 74	A 37	B	B	A 45	B	B	B	E 34	E 45	B	C	E 35	E 31	E 20	E 15	G	B	K 30	K 28	K 30
21	E 44	A 61	A 39	U 22	K 35	B	B	28	E 35	E 44	B	E 21	E 27	E 38	E 29	E 24	E 22	E 20	E 40	B	E 19	E 11	B	A 17
22	15	23	K 29	K 25	K 34	K 35	27	E 32	B	G	G	G	22	G	21	28	17	15	13	12	12	K 13	K 12	13
23	A 45	U 29	K 35	A 37	K 33	B	B	A 48	35	B	E 45	E 44	E 43	B	E 45	E 70	E 43	E 25	K 22	A 37	A 30	K 26	K 35	K 40
24	A 55	A 42	B	B	A 40	A 41	A 37	B	B	B	B	B	B	B	B	B	B	B	E 29	K 32	27	20	31	K 30
25	K 30	B	E 23	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E 18	E 15	22	K 33	K 27	K 30
26	A 33	K 32	A 25	A 35	A 52	A 46	B	B	B	B	B	B	B	B	B	B	B	B	E 35	B	15	A 33	K 23	A 53
27	E 24	E 30	E 23	B	B	B	B	B	A 40	B	E 23	E 26	E 27	E 26	E 29	B	B	18	18	E 30	E 17	K 36	K 33	K 33
28	A 35	A 78	A 38	A 33	A 32	B	A 47	A 40	A 35	B	B	B	B	B	B	B	E 45	E 35	E 36	B	B	K 22	K 27	K 32
29	K 32	K 35	B	B	B	A 50	A 48	A 37	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
30	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
31																								
CNT	26	22	22	16	17	15	13	16	11	8	12	16	15	16	16	17	20	18	23	19	21	25	21	26
MED	32	34	A 30	32	33	A 35	30	30	E 35			E 26	E 27	E 35	E 29	E 28	E 28	E 22	E 18	E 15	U 16	20	K 27	30
UQ	A 38	A 45	A 37	A 38	A 37	A 41	A 36	A 36	36	E 42	E 34	E 29	E 34	E 43	E 40	E 35	E 44	E 35	E 30	E 28	U 24	K 30	K 30	A 35
LQ	20	U 27	26	20	25	21	27	26	E 22	G	G	E 21	E 27	E 26		G	U 20	E 18	E 15	E 12	E 12	E 13	K 14	21

APR. 1978 FBES (0.1 MHz)

IONOSPHERIC DATA

APR. 1978

F-MIN (0.1 MHz)

45° E Mean Time (G. M. T. + 3 h)

Station SYDWA STATION Lat. 69 00.4 S, Long. 39 35.4 E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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 C 18	13	25	10	21	13	B	B	B	B	B	B	B	45	45	42	38	35	10	10	9	10	11	10	
2	16	20	B	B	25	22	B	B	35	19	20	23	25	20	21	20	35	B	36	B	25	10	10	8	
3	B	B	B	B	B	B	15	15	B	B	B	B	B	B	28	25	57	B	25	18	10	11	7	11	
4	44	12	12	12	B	B	B	B	B	B	B	B	B	B	B	21	15	11	9	9	10	10	C	15	
5	10	25	12	B	B	10	22	16	B	B	B	27	33	28	33	23	36	25	15	15	12	13	9	10	
6	E C 20	9	8	B	12	17	15	23	B	B	49	28	27	45	27	38	78	40	54	25	28	20	B	10	
7	8	9	9	E C 15	12	12	10	10	15	15	17	13	17	12	17	17	12	10	10	B	10	12	10	8	
8	E C 7	10	10	13	12	10	8	B	21	B	20	20	28	33	32	24	17	11	7	9	9	10	10	10	
9	E C 18	10	10	10	10	10	10	12	B	34	26	30	27	55	22	18	15	12	10	18	10	9	11	10	
10	E C 19	10	10	10	10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
12	C	C	C	C	C	C	C	C	C	C	C	C	C	B	37	B	B	26	B	31	15	B	20	22	23
13	23	B	35	B	B	B	B	B	36	25	28	20	36	35	25	21	22	21	12	C	11	15	10	17	
14	E C 18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	16	
15	24	10	15	15	B	15	19	13	B	23	B	B	B	B	B	B	56	49	11	B	10	10	9	10	
16	20	23	20	B	B	B	B	24	B	B	22	28	31	26	21	B	B	B	B	32	B	17	B	8	
17	E C 19	B	23	23	25	13	13	10	20	B	39	28	49	41	55	45	63	30	14	20	15	13	14	14	
18	10	10	10	10	11	10	B	B	23	B	23	23	27	35	36	30	25	23	12	13	10	7	10	15	
19	10	10	10	10	10	9	8	8	13	26	B	B	B	45	B	33	21	42	B	8	15	11	12	15	
20	14	9	18	10	10	B	B	20	B	B	B	34	45	B	C	35	31	20	15	10	B	10	9	10	
21	44	17	10	12	23	B	B	13	35	44	B	21	27	38	29	24	22	20	40	B	19	11	B	9	
22	10	11	11	15	21	13	12	17	B	18	16	15	15	16	15	18	10	10	8	10	10	10	10	10	
23	10	10	17	20	22	B	B	13	15	B	45	44	43	B	45	70	43	25	14	10	10	16	10	15	
24	17	25	B	B	23	17	17	B	B	B	B	B	B	B	B	B	B	B	12	11	12	16	13	10	
25	10	B	23	B	B	B	B	B	B	B	B	B	38	B	B	B	B	B	B	18	15	10	10	11	10
26	10	13	13	22	23	32	B	B	B	B	B	B	B	B	B	B	B	B	35	B	10	15	13	19	
27	24	30	23	B	B	B	B	B	25	B	23	26	27	26	29	B	B	13	10	12	17	10	10	10	
28	14	18	25	16	14	B	28	24	20	B	B	B	B	B	B	B	45	35	36	B	B	12	13	18	
29	15	20	B	B	B	33	23	20	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
30	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	28	27	27	27	27	26	26	26	26	26	26	26	27	27	26	27	27	27	27	26	27	27	26	28	
MED	U 14	13	17	20	23	27	D B 28	22	B	B	B	32	45	45	45	38	38	35	15	15	12	11	11	10	
UQ	22	25	25	B	B	B	B	B	B	B	B	B	B	B	B	B	D B 78	B	36	B	26	16	14	16	
LQ	10	10	10	12	12	13	15	13	23	34	23	23	27	34	28	24	22	20	10	10	10	10	10	10	

APR. 1978

F-MIN (0.1 MHz)

IONOSPHERIC DATA

APR. 1978

M(3000)F2 (0.01)

45° E Mean Time (G. M. T. + 3 h)

Stations YOWA STATION Lat. 69 00.4 S, Long. 39 35.6 E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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	A	A	A	A	A	B	B	B	B	B	B	B	285	310	315	320	315	300	310	305	F	F	R	A				
2	F	A	B	B	A	A	B	B	235	275	295	300	R	290	290	300	295	295	B	315	B	295	265	A	A				
3	B	B	B	B	B	B	225	245	B	B	B	B	B	B	B	F	F	F	B	F	F	R	F	F	A				
4	B	A	A	F	B	B	B	B	B	B	B	B	B	B	B	285	320	300	320	315	F	F	F	C	A				
5	A	A	F	B	B	F	A	A	B	B	B	280	265	280	285	280	300	300	275	285	295	F	F	F	A				
6	A	A	A	B	F	A	A	A	B	B	305	295	F	280	J R	280	290	285	280	U F	305	295	F	320	335	B	R		
7	R	R	R	A	A	F	F	F	255	270	260	280	275	280	285	305	305	320	330	F	315	310	310	320	F	U F	F	275	
8	A	A	A	F	F	F	F	F	305	B	310	290	290	295	310	310	F	J F	315	310	310	310	315	325	300	F	A		
9	F	265	A	U F	F	F	F	U F	B	295	290	300	285	290	295	300	F	F	F	305	295	305	300	300	250	F			
10	F	U F	A	F	240	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
12	C	C	C	C	C	C	C	C	C	C	C	C	C	B	U R	B	B	310	B	305	280	B	A	A	A	A			
13	A	B	B	B	B	B	B	B	250	295	290	290	280	290	295	285	290	F	300	F	C	R	A	A	A	A			
14	A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	A		
15	A	A	A	A	B	A	A	Y	B	Y	A	B	B	B	B	B	F	R	F	265	B	R	A	A	R	R			
16	A	A	A	B	B	B	B	A	B	B	305	280	J R	305	280	295	B	B	B	B	R	B	F	B	A	A			
17	F	B	A	A	A	A	235	235	285	B	310	310	300	315	310	295	F	U F	F	F	F	320	F	F	320	335	310	F	F
18	270	300	R	R	F	F	B	B	F	B	F	U F	270	270	295	280	275	290	F	305	330	300	285	295	A	A	A		
19	A	A	A	F	F	F	F	F	255	A	B	B	B	R	B	R	265	F	275	B	A	R	A	A	A	A	A		
20	A	A	A	A	A	B	B	A	B	B	B	265	260	B	C	300	305	300	290	F	F	F	F	B	A	A	A		
21	B	A	A	U F	R	B	B	F	R	U R	B	280	290	F	305	315	325	305	315	U R	310	B	315	320	B	A	A		
22	330	F	R	R	R	R	260	R	B	305	300	310	310	315	320	310	330	315	F	F	F	F	330	F	F	F	F		
23	A	F	R	A	R	B	B	A	265	B	315	290	U R	300	B	300	U F	F	315	290	A	A	R	A	A	A			
24	A	A	B	B	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	R	R	R	R	315	A	A	A		
25	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	F	F	F	R	A	A	A	A		
26	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	320	B	F	A	R	A	A	A		
27	B	B	B	B	B	B	B	B	A	B	285	285	J R	290	285	300	B	B	310	J F	310	R	300	A	A	A	A		
28	A	A	A	A	A	B	A	A	A	B	B	B	B	B	B	B	B	J R	310	R	345	B	B	R	A	A	A		
29	A	A	B	B	B	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
30	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
31																													
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23					
CNT	3	3		3	1	1	4	5	7	6	11	16	15	15	15	16	14	15	18	10	13	12	5	4					
MED	310	280		U F	240	220	245	245	260	290	300	290	290	290	300	298	305	310	F	310	305	305	298	300	285	285			
UQ	320	290		F	245		258	260	275	295	308	300	295	300	310	310	320	315	320	310	F	F	F	F	F	F			
LQ	290	275		F	232		230	240	252	280	290	280	280	285	295	285	290	F	300	300	F	F	295	285	300	262			

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APR. 1978

M(3000)F2 (0.01)

IONOSPHERIC DATA

APR. 1978

H'F2 (KM)

45° E Mean Time (G. M. T. + 3 h)

Station **SYOWA STATION** Lat. 69° 00.4' S, Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1											B	B	B	325										
2											300	L	L	280										
3											B	B	B	L										
4											B	B	B											
5											L	395	340											
6																								
7													L											
8																								
9																								
10																								
11																								
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29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT												1	1	2	1									
MED											300	395	332	280										
UQ																								
LQ																								

APR. 1978

H'F2 (KM)

IONOSPHERIC DATA

APR. 1978

H'F (KM)

45° E Mean Time (G. M. T. + 3 h)

Station SYDWA STATION Lat. 69 00.4 S, Long. 39 35.4 E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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	A	A	A	A	A	B	B	B	B	B	B	B	B	E B 280	300	250	250	295	245	280	320	R	A	
2	A	A	B	B	A	A	B	B	B	260	255	250	250	250	250	245	250	B	B	B	280	E A 430	A	A	
3	B	B	B	B	B	B	A	Y	B	B	B	B	B	B	B	255	260	B	B	260	270	R	U Q 325	360	A
4	B	A	A	390	B	B	B	B	B	B	B	B	B	B	B	280	270	270	250	235	U Q 325	Q 380	C	A	
5	A	A	A	B	255	A	A	B	B	B	B	270	270	260	275	250	285	280	270	250	265	E B 300	A	A	
6	A	A	A	B	A	A	A	A	B	B	E B 290	250	250	275	250	250	B	270	E B 300	250	250	270	B	R	
7	R	R	R	A	A	Q 440	390	320	275	255	240	240	230	230	240	230	225	230	225	220	240	240	230	A	
8	A	A	A	A	Q 400	Q 400	370	325	275	B	240	250	245	240	240	230	220	230	220	220	215	280	310	A	
9	315	E A 360	A	510	Q 430	Q 415	Q 430	405	B	260	250	250	240	270	240	230	235	225	210	225	210	250	265	330	
10	C	A	A	A	E A 430	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
12	C	C	C	C	C	C	C	C	C	C	C	C	B	B 300	B	B	250	B	E B 275	B 275	B	B	B	B	
13	A	B	B	B	B	B	B	B	B	270	255	255	250	250	250	250	250	235	295	C	R	A	A	A	
14	A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	A	
15	B	A	A	A	B	A	A	A	B	A	A	B	B	B	B	B	B	B	B	310	B	R	A	A	R
16	B	B	A	B	B	B	B	A	B	B	280	250	265	250	250	B	B	B	B	B	B	E B 275	B	A	
17	A	B	B	B	B	A	A	A	300	B	270	250	270	250	270	245	B	230	230	235	240	245	275	290	
18	325	E B 295	R	R	250	U 250	B	B	430	B	275	290	290	270	290	275	260	250	240	250	270	325	A	A	
19	A	A	A	A	A	Q 550	455	370	400	A	B	B	B	B	300	B	300	300	B	A	R	A	A	A	
20	A	A	A	A	A	B	B	A	B	B	B	E B 300	310	B	C	275	270	250	250	330	B	A	A	A	
21	B	A	A	Q 400	R	B	B	350	350	B	B	270	255	250	250	240	240	235	E B 250	B	B	B	B	A	
22	260	R	R	R	R	R	400	A	B	250	240	240	240	240	235	245	205	220	230	210	240	Q 250	Q 280	Q 305	
23	A	350	R	A	R	B	B	A	350	A	B	300	290	E B 290	B	250	250	225	300	A	A	R	A	A	
24	A	A	B	B	A	A	A	B	B	B	B	B	B	B	B	B	B	B	R	R	R	320	A	A	
25	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	225	250	R	A	A	A	
26	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	250	B	300	A	R	A	
27	B	B	B	B	B	B	B	B	A	B	280	270	250	275	250	B	B	240	250	R	E B 330	A	A	A	
28	A	A	A	A	A	B	A	A	A	B	B	B	B	B	B	B	250	250	250	B	B	R	A	A	
29	A	A	B	B	B	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
30	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
31																									
CNT	3	3		3	4	6	6	6	7	5	12	16	15	15	16	16	16	17	22	15	13	14	6	3	
MED	315	E E 350		400	U 370	Q 408	415	360	350	260	258	251	250	250	250	250	250	240	250	250	258	U 275	278	305	
UQ	320	352		455	Q 430	Q 440	455	405	375	260	279	275	269	272	257	275	265	250	268	250	280	Q 322	Q 310	Q 318	
LQ	288	322		395	Q 325	Q 255	390	325	288	255	245	250	248	250	245	242	238	230	230	230	240	250	265	298	

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H'F (KM)

IONOSPHERIC DATA

APR. 1978

H⁺ES (KM)

45° E Mean Time (G. M. T. + 3 h)

Stations **SYOWA STATION** Lat. 69° 00.4' S, Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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	120 ^K	125 ^K	125	105	140	120	B	B	B	B	B	B	B	B	B	B	B	B	150	140	140 ^K	G	140 ^K	115 ^K	
2	120	110	B	B	130	120	B	B	B	G	G	G	G	G	G	G	B	B	B	B	B	120	125 ^K	115	
3	B	B	B	B	B	B	120	170	B	B	B	B	B	B	B	B	B	B	B	B	110 ^K	150 ^K	150 ^K	110	
4	115	105	105	110	B	B	B	B	B	B	B	B	B	B	B	G	150	G	145	140	140 ^K	120 ^K	C	110	
5	115	120	120	B	B	100	125	120	B	B	B	B	B	B	B	G	B	B	B	B	B	B	150 ^K	120	
6	110	110	110	B	170	105	105	130	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	140 ^K	
7	C	115 ^K	120 ^K	120	105	125	G	G	G	G	G	105	105	110	100	100	100	100	100	100	100	100	B	110	
8	150	125	120	140	140	130	100	G	B	B	G	G	B	B	B	B	100	100	100	140	G	110	125 ^K	180 ^K	
9	150	110	150 ^K	140 ^K	100	130	120	120	B	B	B	B	B	B	G	G	100	G	100	B	G	100	B	130 ^K	
10	C	160	150	140	140	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
12	C	C	C	C	C	C	C	C	C	C	C	C	C	B	B	B	B	B	B	B	B	B	125	120	125
13	125	B	130	B	B	B	B	B	B	B	B	G	B	B	B	G	B	B	125	C	125 ^K	170 ^K	115 ^K	110	
14	120	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	100	
15	120	110	115	120	B	115	125	120	B	100	B	B	B	B	B	B	B	B	G	B	140 ^K	100 ^K	120 ^K	120 ^K	
16	130	110	120	B	B	B	B	110	B	B	130	B	B	B	B	B	B	B	B	B	B	B	B	120 ^K	
17	120 ^K	B	145	120	100	110	120	105	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
18	160	110	115 ^K	120 ^K	125 ^K	140 ^K	B	B	125	B	150	140	B	B	B	B	B	B	B	B	B	130	150 ^K	130 ^K	120 ^K
19	110	110 ^K	110 ^K	150 ^K	160 ^K	110 ^K	110	G	115	125	B	B	B	B	B	B	B	B	B	B	115	145 ^K	115	110	105
20	105	110 ^K	140 ^K	100	100	B	B	120	B	B	B	B	B	B	C	B	B	B	B	B	130	B	120 ^K	115 ^K	120 ^K
21	145 ^K	125 ^K	100	110 ^K	125 ^K	B	B	105	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	155 ^K	
22	140 ^K	120 ^K	120 ^K	130 ^K	125 ^K	100 ^K	110 ^K	100	B	G	G	G	105	G	100	115	100	100	100	120	125	125 ^K	140 ^K	125	
23	110	120 ^K	125 ^K	125	130	B	B	100	105	B	B	B	B	B	B	B	B	B	125	110	145 ^K	130 ^K	120 ^K	120 ^K	
24	100	120	B	B	125	120	120	B	B	B	B	B	B	B	B	B	B	B	110	120 ^K	125 ^K	175 ^K	115 ^K	110 ^K	
25	120 ^K	B	125	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	140 ^K	120 ^K	120 ^K	120 ^K	
26	140 ^K	120 ^K	160 ^K	110	100	120	B	B	B	B	B	B	B	B	B	B	B	B	B	B	145	120	160 ^K	135	
27	120	105	105	B	B	B	B	B	105	B	B	B	B	B	B	B	B	B	150	130	105	B	100 ^K	120 ^K	125 ^K
28	105	110	130	130	125	B	115	150	120	B	B	B	B	B	B	B	B	B	B	B	B	B	125	130	145
29	120 ^K	125 ^K	B	B	B	100	120	120	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
30	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
31																									
CNT	24	22	22	16	17	15	12	13	5	2	2	2	2	1	2	2	5	4	10	10	13	18	18	25	
MED	120	112	120	120	125	120	120	120	115	112	140	122	105	110	100	108	100	100	118	120	140 ^K	120 ^K	122 ^K	120 ^K	
UQ	135	120 ^K	130	135	140	122	120	120	120								100	125	130	140	140 ^K	130 ^K	140 ^K	125 ^K	
LQ	112	110	115	110	105	108	110	105	105								100	100	100	110	125 ^K	115 ^K	120 ^K	110	

The Radio Research Laboratories, Japan

APR. 1978

H⁺ES (KM)

IONOSPHERIC DATA

APR. 1978

TYPES OF ES

45° E Mean Time (G. M. T. + 3 h)

Station SYDWA STATION Lat. 69° 00.4' S, Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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	K6	K2	R1	R1	R1	C1												H1	R1	K1		K1	K3		
2	R2	R1			H1	R1																R2	RK11	R2	
3							R1	H1													K2	RK11	KA11	RA21	
4	F1	R1	R1	R1													H1		H2	H1	RK21	RKA11		R1	
5	R1	R1	R1			L1	C1	R1															HK11	R2	
6	R1	R2	R2		H1	R1	R1	R1																K1	
7	K1	K2	K3	R2	R1	R1						C1	CA11	L1	L1	L1	L1	L1	L2	L1	L1			R2	
8	R1	R1	R2	R1	R1	H1	L1										L1	L1	R1	H1		R1	RK11	HK11	
9	H1	R1	HK22	RK11	R1	H1	R2	R2									L1		L1			F1		HK11	
10	R1	RC11	RR11	R1	R1																				
11																									
12																						R1	R1	R1	
13	R1		F1																R1		K2	RK11	K3	R1	
14	RA21																							R1	
15	R1	R2	R2	R1		R1	R1	RA11		R1												K1	K2	K3	K2
16	R1	R1	R1					C1			R1													K2	
17	RK11		R1	R1	R1	R2	R1	R2																	
18	R1	R1	K2	K2	RK12	AK13			R1		H1	H1									R1	RK11	KA31	AK11	
19	R2	K3	K3	HK11	RK11	K3	R2		C1	R1										RA21	K1	R3	AR11	R1	
20	R1	K2	KA11	R1	R1			R1													R1		K2	K3	K2
21	HK11	CK11	R2	CKA11	K1			R1																HK11	
22	HK11	K1	K1	K1	K1	K1	RK12	R1					L1		L1	R1	L1	L1	L1	R1	R1	CK11	HK11	R1	
23	RA21	RK21	K1	R1	K1			R2		R1									RK11	R2	HK11	K1	K4	K2	
24	RA11	R1			R1	R1	R1												R1	K2	K2	HK11	K2	K2	
25	K2		R1																			K1	K2	K1	K2
26	HK21	K2	ARK11	R1	R1	R1															R1	R1	K1	R1	
27	R1	R1	R1						R1										H1	R1	R1		K3	K2	K2
28	R1	F1	R1	R1	R1		C1	RH11	R1													K1	K1	K1	
29	K1	K1				R1	R1	R1																	
30																									
31																									
CNT																									
MED																									
UQ																									
LQ																									

APR. 1978

TYPES OF ES

IONOSPHERIC DATA

MAY, 1978

FXI (0.1 MHz)

45° E Mean Time (G. M. T. + 3 h)

Station SYDWA STATION Lat. 69° 00' 4" S, Long. 39° 35' 4" E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
2	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3	B	B	B	B	B	A	B	B	C	B	B	B	B	B	B	B	B	B	68	51	39	A	A	B
4	B	A	A	A	40	R	B	A	B	B	B	B	B	B	B	B	O R 55	B	Y	R	A	A	A	R
5	A	A	B	R	C	C	A	R	42	51	65	72	85	87	101	100	52	62	40	C	B	B	C	C
6	52	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	57	B	B	A	A	B	B	B	B	B	B	R	B	R	85	80	67	41	R	A	A	A
12	B	B	B	A	R	B	B	A	B	C	C	C	C	C	C	C	C	C	C	B	B	A	B	B
13	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	C	X 93	60	61	60	59	46	29	X 22	A
16	R	57	40	46	39	50	O R 57	70	70	72	78	X 87	X 99	95	X 98	B	80	R	80	62	35	A	35	40
17	A	A	60	A	A	31	47	60	54	B	B	76	93	110	102	87	86	74	55	56	O R 33	O R 21	A	R
18	U A 56	A	B	A	A	A	C	C	C	O C 48	70	80	85	95	104	X 90	78	71	70	35	A	A	A	A
19	R	44	60	X 51	45	47	60	69	77	66	65	80	83	85	99	C	77	69	47	30	24	O R 23	O R 26	O R 26
20	O R 25	36	R	68	A	A	49	52	49	52	70	80	X 90	X 95	110	87	58	53	52	40	35	22	A	A
21	A	A	45	54	50	52	53	A	A	67	70	89	90	95	97	81	X 72	65	60	45	38	47	26	A
22	A	B	35	B	A	49	A	R	B	A	O R 44	X 53	67	74	X 62	O R 64	O R 60	R	R	A	35	A	A	A
23	A	38	B	A	A	A	R	B	A	B	R	R	Y	B	B	O R 51	B	B	B	B	B	A	A	A
24	A	A	A	B	B	A	A	A	A	B	A	Y	B	B	B	B	B	B	R	R	A	A	A	A
25	A	B	A	B	A	A	B	B	B	B	B	B	B	R 99	B	B	B	B	B	B	B	A	R	R
26	38	B	A	A	A	B	B	A	A	B	B	B	81	X 85	R	B	B	B	B	B	A	A	A	A
27	26	A	A	A	A	B	O R 39	37	O R 36	O R 41	B	B	92	92	X 93	83	B	40	36	32	B	B	B	R
28	A	S 36	B	B	A	A	34	45	46	42	X 54	C	C	90	C	C	C	C	C	40	A	A	65	A
29	U S 40	41	R	A	B	A	40	42	U S 50	48	56	73	84	80	X 86	X 70	52	52	X 54	R	A	B	B	64
30	U A 83	A	A	A	B	B	B	B	A	B	A	Y	B	B	B	U R 78	70	O R 47	O R 45	R	B	O R 23	A	A
31	70	50	60	A	A	A	51	45	A	B	46	69	72	85	76	R	67	O R 52	B	B	B	B	B	B
CNT	8	7	7	4	4	5	9	8	8	9	10	10	12	14	11	11	14	12	13	11	8	6	5	3
MED	46	41	57	52	42	49	49	48	50	51	65	78	85	91	X 98	83	68	62	55	41	35	23	26	40
UQ	63	47	60	61	48	50	53	64	62	66	70	80	91	95	102	88	78	70	67	54	38	29	35	52
LQ	32	37	42	48	40	47	40	44	44	48	54	72	82	85	X 90	74	58	52	47	38	34	O R 22	26	33

MAY, 1978

FXI (0.1 MHz)

IONOSPHERIC DATA

MAY, 1978

FOF2 (0.1 MHz)

45° E Mean Time (G. M. T. + 3 h)

Stations YDWA STATION Lat. 69 00.4 S. Long. 39 35.4 E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
2	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3	B	B	B	B	B	A	B	B	C	B	B	B	B	B	B	B	B	B	F	F	F	B	A	B
4	B	A	A	A	F ₃₄	R	B	A	B	B	B	B	B	B	B	B	49	B	Y	R	A	A	A	R
5	A	A	B	R	C	C	A	R	31	41	58	66	78	81	95	J ₉₄	46	56	U ₃₁	C	B	B	C	C
6	F	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	F	B	B	A	A	B	B	B	B	B	B	R	B	R	F	F	F	55	35	R	A	A
12	B	B	B	A	R	B	B	A	B	C	C	C	C	C	C	C	C	C	C	C	B	B	A	B
13	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	C	87	U ₅₀	54	51	47	U ₃₅	22	15	A
16	R	F	F	F	U ₃₂	F	F ₄₉	F	F	F	68	80	Z	F	91	B	U ₆₇	R	F	U ₅₂	F	A	F	F
17	A	A	A	A	A	F	U ₃₉	F	F	B	B	U ₆₉	U ₇₂	F	F	F	F	U ₆₈	U ₅₈	47	U ₄₇	U ₂₂	15	A
18	R	A	B	A	A	A	C	C	C	42	U ₅₇	U ₆₇	U ₇₇	F	85	98	H	U ₆₉	J ₆₄	F	27	A	A	A
19	R	F	F	45	U ₃₅	U ₃₇	F ₄₀	F	F	F	57	U ₇₂	U ₇₅	U ₇₅	92	C	F	F	40	25	F	17	F	
20	U ₁₅	U ₁₅	R	F	A	A	F	F	F	F	F	74	83	89	J ₁₀₁	J ₈₀	50	J ₄₆	F	U ₂₉	F	U ₁₅	A	A
21	A	A	F	F	U ₃₆	U ₃₄	F	A	A	F	60	J ₈₀	F	J ₈₉	F	J ₇₅	65	U ₅₉	F	U ₃₄	F	U ₂₅	F	A
22	A	B	F	B	A	F	A	R	B	A	38	47	57	F	65	56	58	54	R	R	A	F	A	A
23	A	F	B	A	A	A	A	B	A	B	R	R	Y	B	B	45	B	B	B	B	B	A	A	A
24	A	A	A	B	B	A	A	A	A	B	A	Y	B	B	B	B	B	B	R	R	A	A	A	A
25	A	B	A	B	A	A	A	B	B	B	B	B	B	J ₉₃	B	B	B	B	B	B	B	A	A	R
26	F	B	A	A	A	B	B	A	A	B	B	B	F	77	R	B	B	B	B	B	B	A	A	A
27	F	A	A	A	A	B	U ₃₁	U ₃₀	U ₃₀	F	B	B	F	F	F	F	B	F	F	U ₂₄	B	B	B	R
28	A	F	B	B	A	A	F	25	23	24	U ₃₀	48	C	C	J ₈₄	C	C	C	C	C	F	A	A	F
29	F	F	R	A	B	A	F	F	U ₂₉	U ₂₉	32	F	63	72	73	79	63	F	U ₄₅	48	R	A	B	B
30	F	A	A	A	B	B	B	B	A	B	A	Y	B	B	B	U ₆₁	F	41	35	F	R	B	17	A
31	F	F	F	A	A	A	F	F	A	B	F	U ₃₆	63	J ₆₅	U ₇₈	68	R	F	50	46	B	B	B	B
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	1	2	1	1	4	2	6	3	6	5	8	10	10	12	10	10	11	9	7	10	3	6	3	1
MED	U ₁₅	24	35	45	U ₃₄	U ₃₆	39	29	30	32	57	68	75	82	92	76	50	54	47	33	U ₂₂	17	16	20
UQ					U ₃₆		40	30	38	41	59	74	78	88	95	83	66	58	50	47	U ₂₈	22	16	
LQ					33		F ₃₁	26	U ₂₉	F ₃₁	43	63	72	75	79	61	50	46	38	27	21	15	16	

The Radio Research Laboratories, Japan

MAY, 1978

FOF2 (0.1 MHz)

IONOSPHERIC DATA

MAY, 1978

FOF1 (0.01 MHz)

45° E Mean Time (G. M. T. + 3 h)

Station **SYDWA STATION** Lat. **69 00.4 S**, Long. **39 35.4 E** Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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																								
2																								
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31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

MAY, 1978

FOF1 (0.01 MHz)

IONOSPHERIC DATA

MAY, 1978

FOES (0.1 MHz)

45° E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
2	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3	B	B	B	B	B	51	B	B	C	B	B	B	B	B	B	B	B	B	E B 15	27	K 15	55	J A 50	B
4	B	J A 80	120	35	32	K 27	B	37	B	B	B	B	B	B	B	B	E B 24	B	20	K 31	J A 37	J A 55	J A 60	K 25
5	62	J A 79	B	E B 25	C	C	33	K 24	K 20	J A 22	E B 22	E B 25	E B 25	E B 25	E B 24	21	G E 16	22	C	B	B	C	C	
6	E B 25	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	55	B	B	33	J A 45	B	B	B	B	B	B	E B 50	B	E B 50	E B 20	E B 15	18	26	K 27	J A 88	35	35
12	B	100	B	75	K 33	B	B	42	B	C	C	C	C	C	C	C	C	C	C	B	B	31	B	B
13	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	C	G	15	G	17	E B 10	E B 10	E B 9	10	21
16	K 24	K 28	K 26	K 25	29	K 29	47	J A 42	J A 24	13	25	J A 23	G E 21	G	B	B	E B 23	E B 37	E B 16	E B 11	E B 9	J A 23	K 20	K 26
17	J A 26	K 30	J A 36	41	J A 39	J A 41	K 23	J A 25	J A 22	B	B	E B 37	26	E B 20	E B 18	E B 15	15	15	E B 13	17	E B 14	22	25	K 25
18	K 30	J A 79	B	39	J A 39	40	C	C	C	J A 35	J A 28	22	E B 23	G E 25	E B 27	21	17	13	20	J A 31	31	26	K 30	
19	K 30	K 30	K 29	K 29	27	22	20	J A 29	14	17	J A 20	E B 19	E B 21	E B 36	E B 29	C	E B 18	E B 15	17	15	19	20	E B 10	J A 26
20	25	J A 22	K 27	K 27	40	38	27	17	13	15	18	G	J A 32	20	17	J A 19	J A 19	16	11	12	11	13	K 36	J A 39
21	38	36	K 33	29	K 30	25	19	J A 41	47	J A 32	22	22	20	22	19	30	16	E B 20	E B 20	30	16	E B 14	J A 26	67
22	J A 69	42	37	47	J A 30	K 23	30	20	B	42	27	25	26	E B 23	E B 25	E B 38	E B 24	E B 33	E B 25	70	84	J A 94	57	47
23	31	81	B	J A 39	38	41	28	123	38	B	32	36	40	B	B	E B 35	B	B	B	B	B	J A 27	J A 44	J A 40
24	23	U C 50	J A 36	B	B	J A 42	J A 31	36	37	B	40	30	B	B	B	B	B	B	31	K 25	29	32	J A 39	K 33
25	K 37	B	J A 30	B	36	48	B	B	B	B	B	B	B	E B 44	B	B	B	B	B	B	B	25	17	K 34
26	K 28	47	50	K 34	36	B	55	50	J A 44	B	B	B	E B 26	E B 24	E B 71	B	B	B	B	B	22	J A 31	K 33	K 35
27	26	K 30	K 30	K 32	38	B	27	J A 39	E B 23	25	B	B	E B 36	E B 26	E B 22	E B 25	B	E B 25	E B 19	E B 13	B	B	B	K 22
28	K 31	30	80	B	44	30	25	18	15	13	19	C	C	G	C	C	C	C	C	18	K 35	K 35	K 35	40
29	35	36	K 32	40	B	J A 40	23	22	12	G	G	G	20	23	J A 31	J A 22	J A 24	21	E B 25	33	J A 36	B	B	K 22
30	U K 27	70	J A 44	J A 43	B	B	B	B	J A 46	B	50	28	B	B	B	E B 27	E B 24	E B 27	E B 20	E B 18	B	23	J A 24	K 24
31	K 28	K 27	J A 27	J A 59	J A 44	J A 40	J A 37	75	42	B	E B 20	E B 26	E B 27	E B 45	E B 29	E B 43	E B 17	E B 28	B	B	B	B	B	B
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	18	18	16	16	15	16	15	16	14	10	13	13	13	15	12	13	14	14	16	16	15	18	17	18
MED	29	39	34	37	36	39	28	36	24	20	22	24	E G 26	E B 23	E B 24	E B 27	E B 18	J 14	19	22	29	33	K 32	
UQ	35	79	47	42	39	41	35	42	42	J A 32	28	26	26	E B 31	E B 29	E B 35	E B 24	E B 27	E B 21	28	33	35	39	39
LQ	26	K 30	K 30	K 29	31	28	24	23	14	13	19	E G 22	E B 21	E G 20	E G 21	16	E G 15	16	13	14	22	24	K 25	

MAY, 1978

FOES (0.1 MHz)

IONOSPHERIC DATA

MAY, 1978

FBES (0.1 MHz)

45° E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION Lat. 69 00.4 S. Long. 39 35.4 E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
2	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
3	B	B	B	B	B	A ₅₁	B	B	C	B	B	B	B	B	B	B	B	B	E ₁₅	K ₁₈	K ₁₅	E ₂₁	A ₅₀	B	
4	B	A ₈₀	A ₁₂₀	A ₃₅	26	K ₂₇	B	A ₃₇	B	B	B	B	B	B	B	B	E ₂₄	B	E ₂₀	K ₃₁	A ₃₇	A ₅₅	A ₆₀	K ₂₅	
5	A ₆₂	A ₇₉	B	E ₂₅	C	C	A ₃₃	K ₂₄	K ₂₀	21	E ₂₂	E ₂₅	E ₂₅	E ₂₅	E ₂₄	21	G	E ₁₆	15	C	B	B	C	C	
6	E ₂₅	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
11	C	C	U ₂₆	B	B	A ₃₃	A ₄₅	B	B	B	B	B	B	E ₅₀	B	E ₅₀	E ₂₀	E ₁₅	15	20	K ₂₇	A ₈₈	A ₃₅	A ₃₅	
12	B	E ₃₀	B	A ₇₅	K ₃₃	B	B	A ₄₂	B	C	C	C	C	C	C	C	C	C	C	C	B	B	A ₃₁	B	B
13	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	C	G	12	G	11	E ₁₀	E ₁₀	E ₉	U ₁₀	A ₂₁	
16	K ₂₄	K ₂₈	K ₂₆	K ₂₅	K ₂₂	K ₂₉	U ₃₈	U ₂₇	U ₁₉	G	15	20	G	E ₂₁	G	B	E ₂₃	E ₃₇	E ₁₆	E ₁₁	E ₉	A ₂₃	K ₂₀	K ₂₆	
17	A ₂₆	K ₃₀	A ₃₆	A ₄₁	A ₃₉	28	K ₂₃	K ₁₅	G	B	B	E ₃₇	26	E ₂₀	E ₁₈	E ₁₅	12	11	E ₁₃	14	E ₁₄	E ₁₂	A ₂₅	K ₂₅	
18	K ₃₀	A ₇₉	B	A ₃₉	A ₃₉	A ₄₀	C	C	C	25	28	22	E ₂₃	G	E ₂₅	E ₂₇	E ₁₃	E ₁₀	13	12	A ₃₁	A ₃₁	A ₂₆	K ₃₀	
19	K ₃₀	K ₃₀	K ₂₉	K ₂₉	20	18	U ₁₅	K ₁₂	11	13	G	E ₁₉	E ₂₁	E ₃₆	E ₂₉	C	E ₁₈	E ₁₅	15	13	E ₁₅	15	E ₁₀	13	
20	11	13	K ₂₇	K ₂₇	A ₄₀	A ₃₈	25	12	G	9	G	G	U ₂₇	17	13	10	10	12	10	10	11	11	K ₃₆	A ₃₉	
21	A ₃₈	A ₃₆	K ₃₃	U ₂₇	K ₃₀	19	U ₁₃	A ₄₁	A ₄₇	18	18	19	G	19	G	28	15	E ₂₀	E ₂₀	U ₁₈	15	E ₁₄	14	K ₉₇	
22	A ₆₉	E ₃₃	22	E ₃₂	A ₃₀	K ₂₃	A ₃₀	E ₂₀	B	A ₄₂	U ₂₇	22	26	E ₂₃	E ₂₅	E ₃₈	E ₂₄	E ₃₃	E ₂₅	A ₇₀	28	A ₉₄	A ₅₇	A ₄₇	
23	A ₃₁	24	B	A ₃₉	A ₃₈	A ₄₁	A ₂₈	E ₃₅	A ₃₈	B	E ₃₂	E ₃₆	E ₄₀	B	B	E ₃₅	B	B	B	B	B	A ₂₇	A ₄₄	A ₄₀	
24	A ₂₃	A ₅₀	A ₃₆	B	B	A ₄₂	A ₃₁	A ₃₆	A ₃₇	B	A ₄₀	E ₃₀	B	B	B	B	B	B	U ₃₁	K ₂₅	A ₂₉	A ₃₂	A ₃₉	K ₃₃	
25	K ₃₇	B	A ₃₀	B	A ₃₆	A ₄₈	B	B	B	B	B	B	B	E ₄₄	B	B	B	B	B	B	B	B	A ₂₅	A ₁₇	K ₃₄
26	K ₂₈	E ₃₆	A ₅₀	K ₃₄	A ₃₆	B	E ₃₃	A ₅₀	A ₄₄	B	B	B	E ₂₆	E ₂₄	E ₇₁	B	B	B	B	B	A ₂₂	A ₃₁	A ₃₃	K ₃₅	
27	18	K ₃₀	K ₃₀	K ₃₂	A ₃₈	B	23	20	E ₂₃	20	B	B	E ₃₆	E ₂₆	E ₂₂	E ₂₅	B	E ₂₅	E ₁₉	E ₁₃	B	B	B	K ₂₂	
28	K ₃₁	28	E ₃₂	B	A ₄₄	A ₃₀	19	15	13	12	G	C	C	G	C	C	C	C	C	U ₁₃	35	K ₃₅	K ₃₅	A ₄₀	
29	30	K ₂₈	K ₃₂	A ₄₀	B	A ₄₀	18	14	G	G	G	G	G	21	19	10	12	13	E ₂₅	E ₃₃	A ₃₆	B	B	K ₂₂	
30	U ₂₇	A ₇₀	A ₄₄	A ₄₃	B	B	B	B	A ₄₆	B	A ₅₀	E ₂₈	B	B	B	E ₂₇	E ₂₄	E ₂₇	E ₂₀	E ₁₈	B	15	A ₂₄	K ₂₄	
31	K ₂₈	K ₂₇	U ₂₁	A ₅₉	A ₄₄	A ₄₀	U ₃₂	U ₂₅	A ₄₂	B	E ₂₀	E ₂₆	E ₂₇	E ₄₅	E ₂₉	E ₄₃	E ₁₇	E ₂₈	B	B	B	B	B	B	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	18	18	16	16	15	16	15	16	14	10	13	13	13	15	12	13	14	14	16	16	15	18	17	18	
MED	29	30	30	34	A ₃₆	A ₃₆	26	23	21	16	E ₂₀	E ₂₂	E ₂₆	E ₂₃	E ₂₃	E ₂₇	E ₁₆	E ₁₆	E ₁₆	14	22	A ₂₆	A ₃₃	K ₃₂	
UQ	31	A ₅₀	A ₃₆	A ₄₀	A ₃₉	A ₄₀	A ₃₂	A ₃₈	A ₄₂	21	28	E ₂₈	E ₂₇	E ₃₁	E ₂₇	E ₃₅	E ₂₃	E ₂₇	E ₂₀	20	A ₃₀	A ₃₂	A ₃₉	A ₃₉	
LQ	25	K ₂₈	K ₂₆	K ₂₈	30	28	21	14	11	9	G	19	E ₂₁	E ₂₀	E ₁₆	E ₁₅	12	E ₁₂	13	12	12	U ₁₃	A ₂₀	K ₂₄	

MAY, 1978

FBES (0.1 MHz)

IONOSPHERIC DATA

MAY, 1978

F=MIN (0.1 MHz)

45° E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION Lat. 69 00.4 S. Long. 39 35.4 E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
2	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
3	B	B	B	B	B	23	B	B	C	B	B	B	B	B	B	B	B	B	15	10	10	21	13	B	
4	B	18	25	21	12	13	B	15	B	B	B	B	B	B	B	B	24	B	15	12	10	16	20	12	
5	10	10	B	25	C	C	18	11	10	13	22	25	25	25	24	16	14	16	10	C	B	B	C	C	
6	25	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
11	C	C	10	B	B	20	16	B	B	B	B	B	B	50	B	50	20	15	13	11	9	12	11	18	
12	B	30	B	26	15	B	B	35	B	C	C	C	C	C	C	C	C	C	C	B	B	21	B	B	
13	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	C	10	8	9	9	10	10	9	9	9	
16	9	9	9	9	9	10	13	10	10	9	10	10	10	21	10	B	E C	23	37	16	11	9	9	12	9
17	8	9	9	10	10	9	9	10	10	B	B	37	23	20	18	15	10	9	13	12	14	12	12	10	
18	10	12	B	15	15	13	C	C	C	18	15	11	23	19	25	27	13	10	10	10	8	9	9	9	
19	12	10	10	10	10	9	8	10	10	12	12	19	21	36	29	C	18	15	11	10	15	11	10	10	
20	10	9	9	7	12	10	9	9	9	8	9	10	10	13	11	9	8	9	9	9	9	8	9	8	
21	12	12	9	9	10	9	8	10	19	10	12	13	15	15	9	13	13	20	20	11	12	14	8	8	
22	10	33	9	32	13	12	18	10	B	20	22	20	22	23	25	38	24	33	25	12	10	10	12	10	
23	9	10	B	19	18	10	15	85	20	B	13	21	28	B	B	35	B	B	B	B	B	9	10	13	
24	9	12	10	B	B	12	10	11	15	B	22	25	B	B	B	8	B	B	18	11	B	9	9	9	
25	11	B	11	B	23	27	B	B	B	B	B	B	B	44	B	B	B	B	B	B	B	12	10	10	
26	15	36	11	9	10	B	33	19	14	B	B	B	26	24	71	B	B	B	B	B	11	9	9	10	
27	10	10	10	11	15	B	11	11	23	17	B	B	36	24	22	25	B	25	19	13	B	B	B	13	
28	9	10	32	B	12	12	11	10	10	10	10	C	C	10	C	C	C	C	C	10	10	9	11	12	
29	10	10	15	15	B	12	11	10	10	10	10	11	13	14	11	9	8	10	25	26	15	B	B	9	
30	10	9	E C	11	9	B	B	B	B	17	B	13	25	B	B	B	27	24	27	20	18	B	13	10	9
31	9	10	11	13	12	10	10	10	15	B	20	26	27	45	29	43	17	28	B	B	B	B	B	B	B
CNT	26	25	26	26	25	25	25	25	24	25	25	24	24	25	23	23	24	24	24	25	26	26	25	25	
MED	10	12	13	23	15	13	18	15	20	B	22	32	32	44	71	43	24	30	20	12	14	12	12	10	
UQ	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
LQ	10	10	10	10	12	10	11	10	10	13	13	20	22	21	23	20	14	15	13	11	10	9	10	9	

MAY, 1978

F=MIN (0.1 MHz)

IONOSPHERIC DATA

MAY. 1978

M(3000)F2 (0.01)

45° E Mean Time (G. M. T. + 3 h)

Station SYDWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
2	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
3	B	B	B	B	B	A	B	B	C	B	B	B	B	B	B	B	B	B	F	F	F	B	A	B	
4	B	A	A	A	F ₂₂₀	R	B	A	B	B	B	B	B	B	B	B	F ₂₃₅	B	Y	R	A	A	A	R	
5	A	A	B	R	C	C	A	R	F ₂₆₀	F ₂₉₅	F ₃₂₅	F ₃₃₅	F ₃₂₅	F ₃₁₀	F ₃₂₅	F ₃₂₀	F ₃₂₅	F ₃₄₀	F ₃₂₅	C	B	B	C	C	
6	F	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
11	C	C	F	B	B	A	A	B	B	B	B	B	B	R	B	R	F	F	F ₃₁₀	F ₂₈₅	R	A	A	A	
12	B	B	B	A	R	B	B	A	B	C	C	C	C	C	C	C	C	C	C	C	B	B	A	B	
13	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	C	F ₃₃₀	F	F ₂₉₀	F ₃₁₅	F ₃₂₀	F ₃₃₀	F ₃₂₀	F ₃₂₅	A	
16	R	F	F	F	U ₂₅₅	R	F	F	F	F	F ₂₉₅	F ₃₁₅	F ₃₂₅	F ₃₁₀	F ₃₁₅	B	F	R	F	F ₃₄₅	F	A	F	F	
17	A	A	A	A	A	F	F	F	F	F	B	B	U ₃₀₅	U ₃₀₅	F	F	F ₃₁₀	F ₃₀₅	F ₃₁₀	F ₃₂₀	F ₃₂₀	F ₃₃₅	A	R	
18	R	A	B	A	A	A	C	C	C	F	F ₂₇₅	U ₃₀₀	U ₃₁₅	F ₃₁₀	F ₃₀₅	F ₃₂₅	F ₃₂₅	U ₂₉₅	F ₃₃₀	F	F ₃₃₅	A	A	A	
19	R	F	F	F	F	F	F	F	F	F	F	F ₃₀₅	F ₃₃₅	F ₃₂₀	U ₃₀₀	F ₃₃₅	C	F	F	F ₃₂₅	F ₂₈₀	F	F ₃₅₅	F ₃₁₅	F ₂₇₅
20	U ₂₆₅	U ₂₆₅	R	F	A	A	F	F	F	F	F	F ₃₁₀	F ₃₀₀	F ₃₁₅	F ₃₁₅	F	F ₃₂₀	F ₃₀₀	F	F ₃₁₀	F ₃₅₀	U ₃₀₅	A	A	
21	A	A	F	F	U ₂₅₀	U ₂₅₅	F	A	A	F	F	F ₂₈₅	F ₃₁₅	F	F	F	F ₃₀₅	F ₂₉₅	F ₂₉₀	F	F	F	F ₃₁₀	F ₃₀₀	A
22	A	B	F	B	A	F	A	R	B	A	C	C	F	C	C	C	C	R	R	A	F	A	A	A	
23	A	F	B	A	A	A	A	B	A	B	R	R	Y	B	B	C	B	B	B	B	B	A	A	A	
24	A	A	A	B	B	A	A	A	A	B	A	Y	B	B	B	B	B	B	R	R	A	A	A	A	
25	A	B	A	B	A	A	B	B	B	B	B	B	B	R	B	B	B	B	B	B	B	A	A	R	
26	F	B	A	A	A	B	B	A	A	B	B	B	C	C	R	B	B	B	B	B	A	A	A	A	
27	F	A	A	A	A	B	F	F	R	C	B	B	F	F	C	F	B	F	F	F ₃₁₅	B	B	B	R	
28	A	F	B	B	A	A	F	F	F	F	C	C	C	F	C	C	C	C	C	F	A	A	F	A	
29	F	F ₃₂₀	R	A	B	A	F	F	U ₂₅₀	F ₂₈₀	F	F	F ₃₀₀	F ₃₃₅	F ₃₁₅	F ₃₃₀	F ₃₁₅	F ₃₁₀	U ₂₉₀	F ₃₃₅	R	A	B	B	F
30	F	A	A	A	B	B	B	B	A	B	A	Y	B	B	B	U ₃₀₀	F	F	F ₂₉₅	F ₃₂₀	R	B	290	A	A
31	F	F	F ₃₃₅	A	A	A	F	F	A	B	F	F	F ₃₁₀	F ₃₂₀	F ₂₉₅	R	F	F ₃₄₀	F ₃₀₅	B	B	B	B	B	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	1	2	1	1	3	1	4	2	5	3	6	8	8	8	8	7	8	9	7	8	3	6	3	1	
MED	U ₂₆₅	F ₂₉₂	F ₃₃₅	F ₃₁₀	U ₂₅₀	U ₂₅₅	F ₂₅₀	F ₂₆₀	F ₂₆₅	F ₂₈₀	F ₂₉₈	F ₃₁₅	F ₃₁₅	F ₃₁₂	F ₃₂₅	F ₃₁₅	F ₃₁₀	F ₃₀₀	F ₃₂₀	F ₃₁₈	U ₃₃₀	F ₃₁₅	F ₃₁₅	F ₂₇₅	
UQ					U ₂₅₂	F ₂₆₂			F ₂₇₅	F ₂₈₈	F ₃₀₅	F ₃₂₅	F ₃₂₅	F ₃₁₈	F ₃₂₈	F ₃₂₂	F ₃₀₅	F ₃₂₅	F ₃₃₂	F	F ₃₄₀	F ₃₃₅	F ₃₂₀		
LQ					F ₂₃₅	F ₂₄₂			F ₂₆₀	F ₂₇₈	F ₂₈₅	F ₃₀₈	F ₃₀₈	F ₃₀₈	F ₃₁₅	F ₃₀₅	F ₂₉₅	F ₂₉₀	F ₃₁₈	F ₂₉₈	F ₃₂₅	F ₃₀₅	F ₃₀₈		

MAY. 1978

M(3000)F2 (0.01)

IONOSPHERIC DATA

MAY. 1978

H'F2 (KM)

45° E Mean Time (G. M. T. + 3 h)

Station **SYOWA STATION** Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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																								
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31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

MAY. 1978

H'F2 (KM)

IONOSPHERIC DATA

MAY, 1978

H'F (KM)

45° E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
2	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
3	B	B	B	B	B	B	B	B	C	B	B	B	B	B	B	B	B	B	B	300	F	B	A	B	
4	B	A	B	B	550	R	B	A	B	B	B	B	B	B	B	B	430	B	Y	R	A	A	A	R	
5	A	A	B	B	C	C	A	R	350	270	250	240	245	225	230	210	215	245	240	C	B	B	C	C	
6	B	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
11	C	C	F	B	B	A	A	B	B	B	B	B	B	B	B	B	290	250	250	300	R	A	A	A	
12	B	B	B	A	R	B	B	B	B	C	C	C	C	C	C	C	C	C	C	B	B	B	B	B	
13	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	C	215	190	240	200	230	230	245	280	A	
16	R	300	350	F	425	400	460	350	300	245	245	240	235	220	220	B	210	B	245	220	260	A	Y	350	
17	A	A	A	A	A	A	400	330	290	B	B	250	245	225	225	200	200	U ^H	200	250	230	240	250	A	R
18	R	A	B	A	A	A	C	C	C	350	275	245	240	230	225	230	205	205	210	250	A	A	A	A	
19	R	300	330	295	370	360	330	320	295	250	230	210	225	240	230	C	220	210	250	265	B	A	300	U ^H	
20	A	A	R	300	A	A	400	310	275	270	225	240	225	220	225	210	190	220	220	235	235	U ^H	320	A	A
21	A	A	F	F	440	375	350	A	A	350	260	235	205	220	230	210	250	240	250	265	250	255	300	A	
22	A	B	305	B	A	475	A	R	B	A	C	290	250	250	230	260	240	280	300	A	A	A	A	A	
23	A	C	B	A	A	A	A	B	A	B	R	R	A	B	B	B	B	B	B	B	B	A	A	A	A
24	A	A	A	B	B	A	A	A	A	B	A	A	B	B	B	B	B	B	Y	R	A	A	A	A	
25	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	230	B	B	B	B	B	A	A	300
26	350	B	A	A	A	B	B	A	A	B	B	B	230	225	B	B	B	B	B	B	B	A	A	A	A
27	A	A	A	A	A	B	A	C	B	A	B	B	250	215	225	225	B	B	230	250	B	B	B	R	
28	A	A	B	B	A	A	A	355	305	300	240	C	C	230	C	C	C	C	C	C	A	A	F	A	
29	A	295	R	A	B	A	430	375	330	250	250	240	220	210	205	200	210	270	250	B	A	B	B	U ^H	
30	F	A	A	A	B	B	B	B	A	B	A	Y	B	B	B	280	250	B	270	B	B	B	A	A	
31	F	295	230	A	A	A	450	U ^Q	470	A	B	285	250	260	260	250	250	215	230	B	B	B	B	B	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	1	4	4	2	4	4	7	7	7	9	9	10	12	14	11	11	14	11	13	11	5	4	3	4	
MED	350	298	318	298	432	388	400	350	300	270	250	240	238	225	225	215	215	240	248	250	240	252	300	325	
UQ		300	340		495	438	440	365	318	325	260	250	248	230	230	240	250	248	250	265	250	288	300	375	
LQ		295	268		398	368	375	325	292	250	240	240	225	220	225	210	205	215	230	232	235	248	290	290	

The Radio Research Laboratories, Japan

MAY, 1978

H'F (KM)

IONOSPHERIC DATA

MAY. 1978

H^oES (KM)

45^o E Mean Time (G. M. T. + 3 h)

Station SYDWA STATION Lat. 69 00.4 S, Long. 39 35.4 E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
2	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3	B	B	B	B	B	115	B	B	C	B	B	B	B	B	B	B	B	B	B	K 190	K 175	125	110	B
4	B	100	105	105	K 170	K 125	B	120	B	B	B	B	B	B	B	B	B	B	150	K 125	125	120	120	K 125
5	110	100	B	B	C	C	125	K 115	K 110	110	B	B	B	B	B	120	G	B	140	C	B	B	C	C
6	B	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	K 110	B	B	125	125	B	B	B	B	B	B	B	B	B	B	B	140	K 145	K 115	115	120	115
12	B	150	B	140	K 120	B	B	125	B	C	C	C	C	C	C	C	C	C	C	B	B	130	B	B
13	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	C	G	100	G	115	B	B	B	K 110	150
16	K 115	K 120	K 120	K 115	K 115	K 125	K 105	K 195	K 110	125	150	100	G	B	G	B	C	B	B	B	B	145	K 170	K 145
17	K 135	K 125	K 120	K 115	K 110	K 115	K 120	K 120	100	B	B	B	125	B	B	B	110	100	B	135	B	140	K 175	K 120
18	K 125	105	B	105	120	120	C	C	C	120	125	135	B	G	B	B	145	100	100	K 150	120	120	120	K 120
19	K 125	K 120	K 125	K 110	K 110	120	K 160	K 150	130	115	110	B	B	B	B	C	B	B	100	100	120	125	B	125
20	150	110	K 120	K 105	105	110	100	140	160	100	120	G	105	105	105	100	100	100	150	100	100	150	K 110	110
21	110	110	K 110	K 115	K 120	120	K 115	100	115	115	130	165	175	155	170	125	110	B	B	K 140	145	B	K 175	110
22	100	130	130	120	110	125	125	100	B	125	C	130	130	B	B	B	B	B	B	C	C	C	C	C
23	100	K 105	B	110	U 120	C	100	110	C	C	B	100	100	C	B	B	B	B	B	B	B	120	110	120
24	C	C	C	B	B	120	100	C	120	B	115	125	B	B	B	B	B	B	K 160	K 115	110	115	110	K 115
25	K 110	B	C	B	115	120	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	125	K 130	K 120
26	K 130	125	100	C	100	B	110	110	120	B	B	B	B	B	B	B	B	B	B	B	B	145	120	K 115
27	K 150	K 120	K 120	K 120	110	B	C	105	B	145	B	B	B	B	B	B	B	B	B	B	B	B	B	K 170
28	K 120	125	120	B	100	110	120	140	140	130	150	C	C	G	C	C	C	C	C	C	K 150	K 120	K 115	K 120
29	110	K 135	K 125	105	B	105	K 120	K 145	170	G	G	G	125	120	110	110	105	K 135	B	125	110	B	B	K 110
30	K 135	140	110	100	B	B	B	B	110	B	100	150	B	B	B	B	B	B	B	B	B	150	K 150	K 120
31	K 115	K 120	K 140	125	100	110	K 110	K 120	110	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	16	17	14	14	15	16	14	14	12	9	9	7	5	3	3	4	6	4	8	11	11	15	15	17
MED	K 118	120	K 120	112	110	120	118	120	118	120	120	130	125	120	110	115	108	100	140	K 135	120	125	K 120	K 120
UQ	K 132	125	K 125	120	120	122	125	140	135	125	130	142	130	138	140	122	110	118	150	K 148	135	135	140	K 125
LQ	110	110	110	105	108	110	110	105	110	115	110	112	125	112	108	105	100	100	108	120	112	120	110	K 115

MAY. 1978

H^oES (KM)

IONOSPHERIC DATA

MAY, 1978

TYPES OF ES

45° E Mean Time (G. M. T. + 3 h)

Station SYDWA STATION Lat. 69 00.4 S. Long. 39 35.4 E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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																									
2																									
3						R ₁													RK ₁₁	K ₁	R ₁	R ₁			
4		R ₁	FA ₁₁	R ₁	HK ₁₁	K ₁		C ₁										R ₁	K ₁	R ₂	R ₁	R ₁	K ₂		
5	RA ₁₁	R ₂					R ₁	K ₁	K ₁	R ₁						C ₁			R ₁						
6																									
7																									
8																									
9																									
10																									
11				RK ₁₁		R ₁	R ₁												F ₁	R ₁	K ₂	R ₁	R ₂	R ₁	
12		AR ₁₁		R ₁	K ₁			C ₁														R ₁			
13																									
14																									
15																	R ₁		R ₁				CK ₁₁	R ₁	
16	K ₃	K ₄	K ₂	K ₃	RKA ₁₂	K ₁	RK ₁₁	R ₂	RK ₁₁	C ₁	HC ₁₁	L ₁										R ₁	K ₁	K ₃	
17	HK ₃₂	K ₄	R ₄	RA ₃₁	R ₃	RK ₃₁	K ₂	CK ₁₁	C ₁				C ₁				R ₁	R ₁		F ₁		F ₁	HK ₁₁	K ₁	
18	K ₃	R ₂		R ₁	R ₂	R ₁				R ₁	R ₁	H ₁					R ₁	F ₁	F ₁	RK ₁₁	RA ₁₁	R ₃	R ₂	K ₆	
19	K ₂	K ₆	K ₂	K ₃	R ₃	R ₂	RK ₁₁	HK ₁₁	H ₁	C ₁	C ₁								F ₁	F ₁	F ₁	F ₁		F ₁	
20	FF ₁₁	RA ₁₁	K ₂	K ₃	R ₁	R ₃	R ₃	R ₁	R ₁	L ₁	C ₁		C ₂	C ₁	C ₁	C ₁	C ₁	R ₁	R ₁	FR ₁₁	F ₁	FA ₁₁	KS ₂₁	R ₂	
21	R ₂	R ₂	K ₃	RK ₂₁	K ₄	R ₂	RK ₁₁	R ₁	R ₁	R ₁	R ₁	R ₁	HC ₁₁	R ₁	HC ₁₁	R ₁	C ₁			RK ₁₁	L ₁		RK ₁₁	AR ₁₄	
22	R ₂	R ₁	RF ₁₁	R ₁	R ₂	K ₁	R ₁	R ₁		R ₁	R ₁	H ₁	R ₁							RA ₁₁	R ₁	RR ₁₁	RA ₁₁	RA ₁₁	
23	R ₂	RK ₁₁		R ₁	R ₁	R ₂	R ₁	R ₁	R ₁		R ₁	R ₁	R ₁									R ₂	R ₂	R ₂	
24	RA ₁₁	R ₁	R ₂		R ₂	R ₁	R ₂	R ₁	R ₁		R ₁	C ₁							HK ₁₁	K ₃	R ₂	R ₅	R ₄	K ₅	
25	K ₂		R ₁		R ₁	R ₁																F ₁	HK ₁₁	K ₃	
26	K ₁	R ₁	R ₁	K ₂	R ₂		R ₁	R ₁	R ₁													R ₁	R ₃	K ₄	K ₅
27	RK ₁₁	K ₄	K ₃	K ₃	R ₁		R ₁	R ₁		R ₁															K ₁
28	K ₂	R ₂	F ₁		F ₂	R ₁	R ₂	R ₁	R ₁	C ₁	C ₁									RK ₁₁	K ₃	K ₆	K ₁	R ₂	
29	R ₃	HK ₂₃	K ₂	R ₁		R ₂	RK ₁₁	RK ₁₁	H ₁				C ₁	C ₁	C ₃	R ₁	C ₁	RK ₁₁		F ₁	F ₁			K ₂	
30	KLA ₅₁	AR ₁₃	R ₂	R ₃					R ₁		R ₁	R ₁											HK ₁₁	FF ₁₁	K ₃
31	K ₃	K ₃	RK ₂₁	RA ₁₁	R ₁	R ₃	RK ₂₁	R ₁	R ₁																
	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																									
UQ																									
LQ																									

The Radio Research Laboratories, Japan

MAY, 1978

TYPES OF ES

IONOSPHERIC DATA

JUN. 1978

FXI (0.1 MHz)

45° E Mean Time (G. M. T. + 3 h)

Stations		Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation																							
Hour Day	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	A	R	70	R	O R 44	R	R	B	O R 53	X 53	R	84	B	108	85	O R 55	55	O R 41	B	B	B	B	B	
2	B	B	B	B	B	B	B	R	C	C	C	C	C	C	C	C	C	C	A	B	R	U S 50	R	A	
3	45	50	50	Y	B	A	R	R	A	B	R	O R 44	B	O R 46	O R 48	B	O R 43	B	B	B	R	A	78	40	
4	O R 45	A	A	A	C	B	A	B	B	B	O R 42	O R 54	O R 60	X 80	87	B	69	B	B	O R 33	B	A	A	70	
5	A	A	A	U A 103	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	A	B	A	
6	X 54	A	A	A	C	A	60	A	O R 39	35	38	X 47	60	X 63	85	76	R	R	B	B	B	B	A	A	
7	A	A	B	B	B	B	A	A	B	B	B	B	O R 64	O R 64	B	B	B	B	B	B	B	A	A	A	
8	A	B	B	B	B	46	B	A	B	B	B	O R 42	R	X 69	O R 60	R	41	O R 41	O R 34	X 28	A	A	A	A	
9	A	A	A	O R 28	30	34	35	B	B	B	42	55	63	64	68	51	38	34	30	O R 21	R	B	B	A	
10	B	A	A	A	R	O R 36	O R 43	B	B	B	B	O R 52	O R 54	X 54	72	B	B	R	B	B	69	57	R	R	
11	R	46	R	A	39	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
12	A	A	A	A	A	A	A	A	A	35	45	X 65	R	O R 56	O R 54	B	B	B	O R 36	B	A	A	A	A	
13	A	A	A	A	A	A	A	O R 33	35	36	46	R	C	B	B	B	C	C	C	C	C	C	C	C	
14	C	C	A	A	O R 28	O R 41	O R 32	A	43	38	X 47	X 54	X 58	R	X 56	41	35	26	O R 28	O R 22	O R 21	O R 17	O R 22	B	
15	R	A	C	A	A	A	A	45	B	B	A	B	B	B	B	O R 70	B	52	35	O R 26	B	B	B	C	
16	A	O R 29	R	A	A	40	53	52	A	B	R	65	X 65	67	X 79	67	B	O R 37	A	A	A	A	O R 19	R	
17	43	A	A	A	A	A	A	A	A	B	O R 43	R	O R 63	71	64	B	B	B	B	B	B	B	R	B	
18	A	B	C	A	A	A	A	43	40	42	B	B	B	X 78	74	B	B	B	O R 55	B	B	B	R	A	
19	A	A	A	C	C	C	C	A	A	B	B	B	B	80	B	C	B	B	O R 33	X 31	C	A	A	A	
20	A	B	B	A	A	C	A	A	B	B	B	46	B	B	B	X 67	B	B	B	B	B	B	A	A	
21	A	A	B	A	B	B	B	B	B	B	B	B	B	R	C	80	87	O R 75	42	A	B	A	68	B	
22	C	A	B	B	B	B	B	B	B	B	B	B	B	B	X 76	B	B	C	B	B	B	A	B	A	
23	A	A	B	A	B	B	A	B	A	B	O R 48	X 58	B	B	B	B	B	B	B	B	C	A	C	A	
24	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	
25	A	A	C	C	C	B	B	B	B	B	B	B	B	B	B	B	R	X 78	O R 55	O R 37	B	B	C	C	
26	C	B	B	B	B	C	C	C	C	C	C	C	B	B	R	110	105	O R 35	A	A	A	B	B	A	
27	A	B	B	A	A	A	A	B	B	A	B	B	X 70	B	90	O R 66	C	B	B	B	B	R	B	A	
28	A	A	A	A	A	A	B	A	B	B	O R 53	60	X 74	B	B	B	B	B	60	45	R	B	A	A	
29	A	C	A	C	A	O R 41	46	48	56	39	65	B	R	B	82	X 59	X 54	60	49	X 35	B	B	B	R	
30	C	B	B	C	46	A	A	A	C	A	C	C	C	C	C	C	90	87	R	40	C	R	C	C	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	4	3	1	3	4	7	6	5	5	7	11	12	11	12	15	11	11	11	12	10	2	3	4	2	
MED	45	46	50	70	34	O R 41	44	45	40	38	46	54	63	66	74	67	55	52	O R 38	32	45	50	45	55	
UQ	50	48		86	42	O R 42	53	48	43	40	50	59	68	74	84	78	79	68	52	37		54	73		
LQ	44	38		49	29	38	O R 35	43	39	36	42	46	60	60	62	62	42	36	O R 34	O R 26		34	O R 20		

JUN. 1978

FXI (0.1 MHz)

IONOSPHERIC DATA

JUN. 1978

F0F2 (0.1 MHz)

45° E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION Lat. 69° 00.4' S, Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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	A	R	F	R	R ₃₈	R	A	B	F ₄₅	F ₄₇	R	F ₇₅	B	F	F ₇₈	F ₄₉	F ₄₄	F ₃₃	B	B	B	B	B	
2	B	B	B	B	B	B	B	R	C	C	C	C	C	C	C	C	C	C	A	B	R	F	R	A	
3	F	F	F	Y	B	A	A	A	A	B	A	F ₃₇	B	40	42	B	U ₃₄	F	B	B	B	R	A	R	F
4	F	A	A	A	C	B	A	B	B	B	36	45	54	73	76	B	U ₅₈	B	B	27	B	A	A	R	
5	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	A	B	A	
6	48	A	A	A	C	A	F	A	U ₃₃	R ₂₉	F ₃₀	40	F ₅₃	57	F ₇₅	F	R	R	B	B	B	B	A	A	
7	A	A	B	B	B	B	A	A	B	B	B	B	58	J ₅₈	R	B	B	B	B	B	B	A	A	A	
8	A	B	B	B	B	U ₃₈	B	A	B	B	B	36	R	62	54	R	F ₃₅	35	28	21	A	A	A	A	
9	A	A	A	F ₂₀	F ₂₈	U ₂₇	B	B	B	B	F ₄₅	55	58	55	45	F ₃₀	F ₂₅	F	15	A	B	B	A		
10	B	A	A	A	R	U ₂₉	U ₃₅	B	B	B	B	R ₄₆	48	48	62	B	B	R	B	B	F	R	R	R	
11	R	F	R	A	U ₃₄	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
12	A	A	A	A	A	A	A	A	A	F	39	58	R	50	48	B	B	B	30	B	A	A	A	A	
13	A	A	A	A	A	A	A	27	F ₂₈	F ₃₀	F ₄₀	R	C	B	B	B	C	C	C	C	C	C	C	C	
14	C	C	A	A	22	F ₂₃	F ₂₅	A	F	F ₂₈	40	48	52	R	50	35	F ₂₉	F	F ₂₀	F ₁₆	F ₁₅	F ₁₅	U ₁₅	B	
15	R	A	C	A	A	A	A	U ₃₅	B	B	A	B	B	B	B	U ₆₃	B	F	F	20	B	B	B	C	
16	A	23	R	A	A	F	F	F	A	B	R	F ₄₈	58	F ₅₉	J ₇₃	F	B	31	A	A	A	A	13	R	
17	A	A	A	A	A	A	A	A	A	B	U ₃₅	R	U ₅₇	F	58	B	B	B	B	B	B	R	B	B	
18	A	B	C	A	A	A	A	F	F ₃₃	F ₃₅	B	B	B	J ₇₂	F	B	B	B	49	B	B	B	R	A	
19	A	A	A	C	C	C	C	A	A	B	B	B	B	F	B	C	B	B	27	25	C	A	A	A	
20	B	B	B	A	A	C	A	A	B	B	B	F ₄₀	B	B	B	61	B	B	B	B	B	B	A	A	
21	A	A	B	A	B	B	B	B	B	B	B	B	B	R	C	J ₇₅	F	U ₆₉	F ₃₃	A	B	A	A	B	
22	C	A	B	B	B	B	B	B	B	B	B	B	B	B	J ₇₀	B	B	C	B	B	B	A	B	A	
23	A	A	B	A	B	B	A	B	A	B	42	52	B	B	B	B	B	B	B	B	C	A	C	A	
24	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	
25	A	A	C	C	C	B	B	B	B	B	B	B	B	B	B	B	65	J ₇₂	49	31	B	B	C	C	
26	C	B	B	B	B	C	C	C	C	C	C	C	B	B	R	F	F	U ₂₈	A	A	A	B	B	A	
27	A	B	B	A	A	A	A	B	B	A	B	B	J ₆₄	B	J ₈₂	60	C	B	B	B	B	R	B	A	
28	A	A	A	A	A	A	B	A	B	B	47	F ₅₄	68	B	B	B	B	B	F	U ₃₅	R	B	A	A	
29	A	C	A	C	A	35	F	F ₄₀	U ₃₉	F	F	B	R	B	U ₇₅	52	47	F ₅₃	F ₄₂	29	B	B	B	R	
30	C	B	B	C	F	A	A	A	C	A	C	C	C	C	C	C	F	F	R	U ₃₁	C	R	C	C	
31																									
Hour	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		1	2	6	3	3	4	5	9	12	11	10	13	8	8	8	9	10	1		2		
MED	48	23		F ₂₀	28	F ₃₂	U ₂₇	F ₃₅	F ₃₃	F ₃₀	40	46	57	58	62	F ₆₀	F ₄₁	40	33	26	F ₁₅		14		
UQ					38	U ₃₁	F ₃₈	U ₃₆	F ₃₅	42	50	61	62	75	F ₆₈	54	61	42	31						
LQ					F ₂₈	F ₂₆	31	F ₃₀	F ₂₉	36	40	54	50	54	48	F ₃₂	30	28	20						

The Radio Research Laboratories, Japan

JUN. 1978

F0F2 (0.1 MHz)

IONOSPHERIC DATA

JUN. 1978

FOF1 (0.01 MHz)

45° E Mean Time (G. M. T. + 3 h)

Station SYDWA STATION Lat. 69° 00.4' S, Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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																								
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
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27																								
28																								
29																								
30																								
31																								
CNT																								
MED																								
UQ																								
LQ																								

JUN. 1978

FOF1 (0.01 MHz)

IONOSPHERIC DATA

JUN. 1978

FOE (0.01 MHz)

45° E Mean Time (G. M. T. + 3 h)

Stations **SYOWA STATION** Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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		K 260	U K 250	K 300	K 270	K 280				B	B	B	B	B	B	B								
2										C	C	C	C	C	C	C								
3										B	A	B	B	B	B	B					K 200	K 200	K 340	K 250
4		K 190								B	B	K 270	B	B	B	B								
5										B	B	B	B	B	B	B					K 200	K 205		K 300
6	K 310	U K 180				K 250	K 360	K 280	K 150	F 160	160	160	H 150	140		B							K 170	K 250
7										B	B	B	B	B	B	B						K 210	K 390	K 400
8						U K 250				B	B	B	B	200	B	B					K 300		K 280	K 350
9	K 320	K 270	K 290	K 165	K 150	U K 170	K 130			B	A	125	U B 150	B	140	B								
10										B	B	B	B	B	B	130	B				K 380	K 330	K 370	K 340
11	K 380	K 390	U K 270		U K 230					B	B	B	B	B	B	B								
12	K 230	K 280	K 270	K 210	K 200					A	150	A	Y	150	A	B					K 310	K 320	K 310	K 270
13	K 330	K 310	K 310				U K 190	K 160	K 130	A	140		C	B	B	B								
14					K 150	K 150				U H 130	135	A 130	U A 160	150	A	A							U K 120	
15	K 150									B	B	B	B	B	B	B								
16			K 250							B	B	B	C	A	A	A							K 110	U K 150
17	U K 230									B	A	A	B	180	B	B							K 200	
18								K 150	U K 190	B	B	B	B	B	B	B							K 230	K 230
19	K 260	K 310								B	B	B	B	B	B	C							K 220	
20										B	B	190	B	B	B	C							K 160	K 320
21	K 320									B	B	B	B	B	C	B							K 350	
22										B	B	B	B	B	B	B							K 260	
23										B	A	A	B	B	B	B								
24										B	B	B	B	B	B	B							K 315	K 310
25	K 320	K 310								B	B	B	B	B	B	B								
26										C	C	C	B	B	B	A		K 200			K 330			K 360
27										B	B	B	B	B	B	B						K 300		K 320
28										B	B	A	250	B	B	B					U K 180		K 280	K 260
29	K 310									B	B	B	B	B	B	B								K 230
30										B	C	C	C	C	C	C	K 170			K 270	U K 210		K 310	
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	12	8	6	3	5	3	3	2	3	4	3	6	4	5	3		1	1	1	1	7	8	15	15
MED	K 310	K 295	K 270	K 210	K 200	U K 250	K 150	K 275	K 160	140	150	150	160	150	140		K 170	K 200	K 270	U K 210	K 300	K 280	K 280	K 300
UQ	K 320	K 310	K 290	K 255	K 230	K 265	K 200		K 220	170	155	190	205	180	140						K 320	K 315	K 328	K 330
LQ	K 230	K 265	K 250	K 188	K 150	U K 210	K 140		K 155	130	142	130	U 155	150	135						K 200	K 208	K 185	K 250

JUN. 1978

FOE (0.01 MHz)

IONOSPHERIC DATA

JUN. 1978

FOES (0.1 MHz)

45° E Mean Time (G. M. T. + 3 h)

Station SYDWA STATION Lat. 69 00.4' S. Long. 39 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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	J A 41	32	K 30	K 27	K 28	35	39	B	36	E B 25	E B 30	E B 30	B	E B 60	E B 38	E B 25	E B 22	E B 20	B	B	B	B	B
2	B	B	B	B	B	B	B	35	C	C	C	C	C	C	C	C	C	C	38	B	27	18	29	37
3	J A 34	J A 29	71	29	B	46	32	35	J A 41	B	37	E B 25	B	E B 20	E B 23	B	E B 19	B	B	B	K 20	25	34	K 25
4	30	30	31	34	C	B	52	B	B	B	35	K 27	E B 36	E B 28	E B 23	B	E B 14	B	B	E B 16	B	25	33	E B 36
5	48	47	J A 70	47	J A 83	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	K 20	24	B	K 30
6	49	J A 40	52	46	C	J A 35	J A 29	K 36	K 28	G	G	20	19	G	15	E B 45	E B 29	E B 25	B	B	B	B	25	K 25
7	43	53	B	B	B	B	46	50	B	B	B	B	E B 32	E B 36	B	B	B	B	B	B	B	K 21	K 39	K 40
8	J A 47	45	40	B	B	J A 29	B	59	B	B	B	E B 26	E B 25	G	E B 18	E B 21	E B 15	E B 25	E B 20	E C 16	30	30	K 28	K 35
9	K 32	K 27	K 29	26	21	18	K 13	B	B	B	30	15	G	E B 20	G	E B 14	E B 15	15	14	E B 10	15	B	B	22
10	B	22	27	J A 32	33	E B 20	E B 19	B	B	B	B	E B 27	E B 23	E B 20	G	B	B	E B 23	B	B	K 38	K 33	K 37	K 34
11	K 38	K 39	J A 54	J A 71	42	38	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
12	K 23	K 28	K 27	K 21	K 20	22	35	J A 34	35	22	15	16	G	G	19	B	B	B	22	B	K 31	K 32	K 31	K 27
13	K 33	K 31	K 31	33	44	40	34	21	K 16	G	13	G	C	B	B	B	C	C	C	C	C	C	C	C
14	C	C	J A 32	J A 29	39	J A 46	15	30	28	21	15	15	J A 20	G	25	25	E B 12	17	E B 11	J A 16	E B 10	E B 8	20	B
15	20	27	C	42	42	55	J A 52	J A 34	B	B	40	B	B	B	B	E B 23	B	E B 23	E C 20	E B 16	B	B	32	35
16	J A 44	116	K 25	J A 39	J A 45	J A 27	25	34	30	B	E B 25	E B 24	29	J A 20	J A 31	J A 28	B	J A 49	J A 31	26	25	25	15	K 15
17	J A 32	35	J A 35	35	39	42	39	J A 45	52	B	30	32	E B 33	G	E B 23	B	B	B	B	B	B	B	K 20	B
18	J A 36	B	J A 34	J A 92	54	J A 42	J A 31	25	15	K 28	B	B	B	E B 24	E B 18	B	B	B	E B 28	B	B	B	K 23	J A 29
19	K 26	K 31	J A 64	C	C	C	C	J A 37	45	B	B	B	B	E B 25	B	C	B	B	E B 17	E B 11	C	32	27	J A 33
20	42	55	B	39	72	C	45	47	B	B	B	G	B	B	B	E C 20	B	B	B	B	B	J A 21	K 32	
21	J A 41	39	55	J A 39	B	B	B	B	B	B	B	B	B	E B 37	C	E B 17	E B 25	E B 57	16	35	B	25	K 35	40
22	40	29	B	B	B	B	B	B	B	B	B	B	B	B	E B 20	B	B	C	B	B	B	K 26	B	35
23	24	35	B	45	B	B	36	B	40	B	19	J A 20	B	B	B	B	B	B	B	B	C	J A 32	C	36
24	J A 40	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	K 31	K 31
25	K 32	K 31	C	C	C	B	B	B	B	B	B	B	B	B	B	B	E B 27	24	E B 28	E B 20	B	B	C	C
26	C	78	35	52	B	C	C	C	C	C	C	C	B	B	E B 23	20	E B 28	26	28	J A 47	J A 66	107	48	K 36
27	J A 42	46	47	35	29	J A 48	J A 50	B	B	48	B	B	E B 35	B	E B 25	E B 33	C	B	B	B	B	K 30	B	K 32
28	40	35	35	J A 34	85	43	B	41	B	B	E B 40	25	G	B	B	B	B	B	E B 20	E B 14	U 18	B	K 28	K 26
29	K 31	C	39	C	J A 40	35	30	J A 29	E C 28	35	J A 34	B	E B 50	B	E B 23	E B 22	23	E B 22	J A 24	35	B	B	B	K 23
30	C	B	B	C	35	111	J A 64	J A 40	C	47	C	C	C	C	C	C	C	K 17	E B 23	K 27	31	C	K 31	C
31																								
CNT	25	24	21	21	17	18	19	18	11	9	14	15	14	14	16	12	12	13	16	13	11	17	19	23
MED	36	35	35	35	40	39	35	36	30	28	U 22	U 20	E B 27	E B 20	E B 23	E B 22	E B 21	E B 23	U 18	E 16	K 25	26	K 29	K 32
UQ	42	46	52	45	45	46	46	41	40	36	34	E B 26	E B 33	E B 25	E B 24	E B 30	E B 26	E B 25	28	31	30	K 32	K 34	36
LQ	31	30	31	32	33	28	30	34	28	21	14	16	E 19	G		E B 20	E B 15	E B 22	E B 18	E B 16	19	25	24	K 26

JUN. 1978

FOES (0.1 MHz)

IONOSPHERIC DATA

JUN. 1978 FBES (0.1 MHz)

45 E Mean Time (G. M. T. + 3 h)

Stations YDWA STATION Lat. 69 00.4 S. Long. 39 35.4 E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Table with columns for Hour/Day (00-23) and rows for stations 1-31, plus summary rows CNT, MED, UQ, LQ. Each cell contains alphanumeric data representing ionospheric measurements.

The Radio Research Laboratories, Japan

JUN. 1978 FBES (0.1 MHz)

IONOSPHERIC DATA

JUN. 1978

F-MIN (0.1 MHz)

45° E Mean Time (G. M. T. + 3 h)

Station SYDWA STATION Lat. 69 00.4 S, Long. 39 35.4 E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	20	21	18	17	16	20	20	22	B	20	25	30	30	B	60	38	25	22	20	B	B	B	B	B	
2	B	B	B	B	B	B	B	23	C	C	C	C	C	C	C	C	C	C	24	B	17	12	12	23	
3	10	E C 15	10	12	B	10	12	12	12	B	17	25	B	20	23	B	19	B	B	B	10	11	10	10	
4	15	10	10	12	C	B	15	B	B	B	20	16	36	28	23	B	14	B	B	16	B	11	8	36	
5	20	13	8	23	10	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	13	17	B	13	
6	10	9	20	25	C	11	10	12	12	10	10	10	10	10	10	45	29	25	B	B	B	B	E C 12	9	
7	12	21	B	B	B	B	25	17	B	B	B	B	32	36	B	B	B	B	B	B	B	10	10	17	
8	10	26	24	B	B	13	B	25	B	B	B	26	25	14	18	21	15	25	20	E C 16	E C 10	13	10	11	
9	10	11	11	10	10	10	9	B	B	B	11	11	15	20	13	14	15	10	10	10	11	B	B	14	
10	B	13	13	18	20	20	19	B	B	B	B	27	23	20	11	B	B	23	B	B	10	11	12	12	
11	12	E C 13	13	15	E C 15	22	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
12	9	10	E C 19	10	10	10	15	13	10	10	10	10	10	10	10	B	B	B	15	B	10	9	E C 11	12	
13	12	10	10	13	23	25	13	15	11	10	10	12	C	B	B	B	C	C	C	C	C	C	C	C	
14	C	C	12	10	10	10	10	20	10	10	10	10	10	13	10	10	12	11	11	10	10	8	8	B	
15	10	E C 10	C	10	E C 19	23	10	10	B	B	20	B	B	B	B	23	B	23	E C 20	16	B	B	18	E C 18	
16	11	10	9	E C 10	10	10	E C 14	10	10	B	25	24	E C 18	10	11	10	B	12	E C 13	11	E C 15	8	8	9	
17	10	E C 15	10	10	E C 15	17	11	17	18	B	13	18	33	14	23	B	B	B	B	B	B	B	10	B	
18	10	B	E C 26	15	E C 20	E C 19	12	10	12	10	B	B	B	24	18	B	B	B	28	B	B	B	19	10	
19	E C 12	12	9	C	C	C	C	E C 18	17	B	B	B	B	25	B	C	B	B	17	11	C	8	10	8	
20	22	25	B	18	13	C	15	E C 27	B	B	B	15	B	B	B	E C 20	B	B	B	B	B	B	12	10	
21	9	13	24	12	B	B	B	B	B	B	B	B	B	37	C	17	25	57	10	15	B	E C 11	14	29	
22	E C 33	20	B	B	B	B	B	B	B	B	B	B	B	B	20	B	B	C	B	B	B	B	B	E C 15	
23	13	20	B	20	B	B	24	B	15	B	15	13	B	B	B	B	B	B	B	B	C	11	C	19	
24	10	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	16	23	
25	24	23	C	C	C	B	B	B	B	B	B	B	B	B	B	B	27	22	28	20	B	B	C	C	
26	C	25	24	25	B	C	C	C	C	C	C	C	C	B	B	23	13	28	15	13	12	14	27	21	25
27	15	23	28	17	12	15	8	B	B	17	B	B	35	B	25	33	C	B	B	B	B	10	B	10	
28	17	16	12	12	20	16	B	23	B	B	40	14	12	B	B	B	B	B	20	14	14	B	9	10	
29	10	C	10	C	E C 16	11	E C 12	10	E C 28	16	18	B	50	B	23	22	20	22	10	12	B	B	B	9	
30	C	B	B	C	15	14	10	11	C	23	C	C	C	C	C	C	13	23	15	11	C	E C 20	C	C	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	27	28	28	26	26	27	28	29	27	28	27	27	27	28	27	27	27	27	29	29	26	29	26	27	
MED	12	16	U 16	16	20	20	15	22	B	B	40	27	50	D 37	23	B	B	B	28	B	B	U 15	12	13	
UQ	17	24	D 28	25	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	24	
LQ	10	11	10	12	12	12	11	12	13	18	16	14	24	20	18	22	22	22	19	13	12	11	10	10	

JUN. 1978

F-MIN (0.1 MHz)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

JUN. 1978

M(3000)F2 (0.01)

45° E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION Lat. 69 00.4 S, Long. 39 35.4 E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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	A	R	F	R	R	R	A	B	F	R	F	B	F	F	C	C	C	B	B	B	B	B	B				
2	B	B	B	B	B	B	B	R	C	C	C	C	C	C	C	C	C	C	A	B	R	F	R	A				
3	F	F	F	Y	B	A	A	A	A	B	A	F	B	285	310	B	F	B	B	B	R	A	R	F				
4	F	A	A	A	C	B	A	B	B	B	F	F	280	310	295	315	315	B	F	B	B	335	B	A	A	R		
5	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	A	B	A		
6	325	A	A	A	C	A	R	A	U R	F	F	305	F	295	320	F	R	R	B	B	B	B	B	A	A			
7	A	A	B	B	B	B	A	A	B	B	B	B	330	320	U R	B	B	B	B	B	B	B	B	A	A	A		
8	A	B	B	B	B	F	B	A	B	B	B	310	R	355	315	R	F	305	340	335	A	A	A	A	A			
9	A	A	A	F	F	F	U F	B	B	B	F	F	F	330	340	335	F	F	F	F	A	B	B	A	A			
10	B	A	A	A	R	F	U F	B	B	B	B	R	315	335	315	325	B	B	R	B	B	F	R	R	R			
11	R	F	R	A	U F	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B			
12	A	A	A	A	A	A	A	A	A	F	310	345	R	315	290	B	B	B	335	B	A	A	A	A	A			
13	A	A	A	A	A	A	A	275	F	285	295	F	R	C	B	B	B	C	C	C	C	C	C	C	C			
14	C	C	A	A	265	260	265	F	F	A	F	280	350	335	325	R	350	315	305	F	F	340	315	300	F	F	F	B
15	R	A	C	A	A	A	A	U F	B	B	A	B	B	B	B	U F	B	F	F	F	350	B	B	B	C			
16	A	A	R	A	A	F	F	F	A	B	R	335	F	300	355	350	F	B	325	A	A	A	A	310	R			
17	A	A	A	A	A	A	A	A	A	B	F	R	345	U R	F	345	B	B	B	B	B	B	B	R	B			
18	A	B	C	A	A	A	A	F	250	F	F	B	B	B	J R	F	B	B	B	355	B	B	B	R	A			
19	A	A	A	C	C	C	C	A	A	B	B	B	B	B	F	B	C	B	B	295	290	C	A	A	A			
20	B	B	B	A	A	C	A	A	B	B	B	B	F	B	B	B	330	B	B	B	B	B	B	A	A			
21	A	A	B	A	B	B	B	B	B	B	B	B	B	R	C	J	F	R	F	325	A	B	A	A	B			
22	C	A	B	B	B	B	B	B	B	B	B	B	B	J R	B	J	F	C	B	B	B	B	A	B	A			
23	A	A	B	A	B	B	A	B	A	B	320	310	B	B	B	B	B	B	B	B	C	A	C	A	A			
24	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A			
25	A	A	C	C	C	B	B	B	B	B	B	B	B	B	B	B	290	J R	335	320	C	B	B	C	C			
26	C	B	B	B	B	C	C	C	C	C	C	C	B	B	R	F	F	F	A	A	A	B	B	A	A			
27	A	B	B	A	A	A	A	B	B	A	B	B	J R	B	J	F	300	C	B	B	B	B	R	B	A			
28	A	A	A	A	A	A	B	A	B	B	320	310	F	290	B	B	B	B	B	F	U F	R	B	A	A			
29	A	C	A	C	A	F	F	U F	F	F	B	R	B	U F	F	325	290	315	310	310	B	B	B	R				
30	C	B	B	C	F	A	A	A	C	A	C	C	C	C	C	C	F	F	R	F	C	R	C	C				
31																												
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23				
CNT	1			1	2	4	3	3	4	5	8	12	11	10	13	7	5	5	8	8	1		1					
MED	325			295	275	262	265	255	265	280	312	310	320	318	320	325	300	315	330	325	300		310					
UQ					275	268	265	280	285	320	335	332	330	340	332	305	325	340	340									
LQ					255	255	255	252	265	290	308	298	315	310	308	290	305	315	312									

The Radio Research Laboratories, Japan

JUN. 1978

M(3000)F2 (0.01)

IONOSPHERIC DATA

JUN. 1978

H'F2 (KM)

45° E Mean Time (G. M. T. + 3 h)

Station SYDWA STATION Lat. 69° 00.4' S, Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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																								
2																								
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30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

JUN. 1978

H'F2 (KM)

IONOSPHERIC DATA

JUN. 1978

H'F (KM)

45° E Mean Time (G. M. T. + 3 h)

Stations YOWA STATION Lat. 69° 00.4' S, Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	B	A	Y	F	R	R	A	A	B	A	370	300	315	260	B	250	250	250	250	E B	250	B	B	B	B
2	B	B	B	B	B	B	B	355	C	C	C	C	C	C	C	C	C	C	A	B	F	300	A	B	
3	A	Q	Q	A	B	A	A	A	A	B	A	350	B	300	250	B	290	B	B	B	R	A	250	275	
4	325	A	A	A	C	B	A	B	B	B	A	250	E B	270	250	250	225	B	B	250	B	A	A	B	
5	B	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	A	B	A	
6	290	A	A	A	C	A	A	A	R	Q	310	240	250	245	240	E B	E B	240	B	B	B	B	A	A	
7	A	B	B	B	B	B	B	A	B	B	B	B	240	275	B	B	B	B	B	B	B	A	A	A	
8	A	B	B	B	B	200	B	A	B	B	B	E B	280	250	240	230	235	220	300	260	C	A	A	A	
9	A	A	A	A	A	370	340	345	B	B	B	300	240	230	230	205	215	240	250	250	245	A	B	B	A
10	B	A	A	A	A	380	350	B	B	B	B	250	245	250	250	B	B	230	B	B	290	R	R	R	
11	R	R	240	A	330	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
12	A	A	A	A	A	A	A	A	A	E A	300	255	245	215	250	210	B	B	B	270	B	A	A	A	A
13	A	A	A	A	A	A	A	A	325	300	240	190	C	B	B	B	C	C	C	C	C	C	C	C	
14	C	C	A	A	A	A	375	A	Y	300	235	230	U H	230	210	200	205	220	A	240	220	B	B	350	B
15	R	A	C	A	A	A	A	375	B	B	A	B	B	B	B	220	B	225	230	C	B	B	B	B	C
16	A	A	R	A	A	A	C	360	A	B	290	250	240	220	230	210	B	A	A	A	A	A	A	A	R
17	A	A	A	A	A	A	A	A	A	B	325	A	245	240	225	B	B	B	B	B	B	B	B	R	B
18	A	B	C	A	A	A	A	375	350	305	B	B	B	240	205	B	B	B	230	B	B	B	R	A	
19	A	A	A	C	C	C	C	A	A	B	B	B	B	240	B	C	B	B	290	295	C	A	A	A	
20	B	B	B	A	A	C	A	B	B	B	B	B	290	B	B	B	220	B	B	B	B	B	A	A	
21	A	A	B	A	B	B	B	B	B	B	B	B	B	275	C	250	250	B	260	A	B	A	A	B	
22	C	B	B	B	B	B	B	B	B	B	B	B	B	B	245	B	B	C	B	B	B	B	A	B	A
23	A	B	B	B	B	B	A	B	A	B	250	250	B	B	B	B	B	B	B	B	C	A	C	B	
24	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	
25	A	A	C	C	C	B	B	B	B	B	B	B	B	B	B	B	250	250	225	E B	250	B	B	C	C
26	C	B	B	B	B	C	C	C	C	C	C	C	B	B	275	250	280	340	A	A	A	B	B	A	
27	A	B	B	A	A	A	A	B	B	A	B	B	270	B	225	250	C	B	B	B	B	R	B	A	
28	A	A	A	A	A	A	B	A	B	B	B	250	U H	250	B	B	B	B	B	250	250	R	B	A	A
29	A	C	A	C	A	A	390	345	E C	350	A	320	B	300	B	225	245	260	250	225	245	B	B	B	R
30	C	B	B	C	A	A	A	A	C	A	C	C	C	C	C	C	250	240	300	350	C	R	C	C	
31																									
CNT	2	1	2		2	3	4	5	3	6	10	14	14	14	16	12	12	10	13	8	1	1	2	1	
MED	308	290	270		350	340	362	360	350	302	295	250	246	242	230	234	250	250	250	250	290	300	300	275	
UQ					360	382	375	350	340	310	280	255	250	250	250	260	250	260	272						
LQ					270	348	355	332	300	250	240	240	240	218	218	232	240	230	238						

JUN. 1978

H'F (KM)

IONOSPHERIC DATA

JUN. 1978

H[°]E S (KM)

45° E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION Lat. 69 00.4 S, Long. 39 35.4 E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour Day	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	140	K 125	K 125	K 130	K 125	K 130	125	125	B	115	B	B	B	B	B	B	B	B	B	B	B	B	B	B
2	B	B	B	B	B	B	B	145	C	C	C	C	C	C	C	C	C	C	150	B	150	140	135	120
3	120	125	125	120	B	100	105	115	110	B	100	B	B	B	B	B	B	B	B	B	K 170	K 150	K 110	K 110
4	K 150	100	105	110	C	B	100	B	B	B	110	110	B	B	B	B	B	B	B	B	B	125	115	B
5	110	110	110	100	100	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	K 120	K 150	B	K 115
6	K 120	K 175	105	115	C	105	K 120	K 105	110	G	G	120	120	G	125	B	B	B	B	B	B	B	K 150	K 110
7	110	110	B	B	B	B	100	100	B	B	B	B	B	B	B	B	B	B	B	B	B	K 120	K 110	K 115
8	110	120	125	B	B	K 120	B	105	B	B	B	B	B	G	B	B	B	B	B	C	K 110	115	K 110	K 120
9	K 120	K 115	K 115	K 110	K 130	K 120	K 110	B	B	B	100	135	G	B	G	B	B	150	100	B	115	B	B	100
10	B	120	120	115	130	B	B	B	B	B	B	B	B	B	G	B	B	B	B	B	K 115	K 110	K 110	K 110
11	K 120	K 115	K 110	100	K 120	120	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
12	K 110	K 110	K 110	K 110	K 115	115	100	110	110	125	110	120	G	G	100	B	B	B	130	B	K 110	K 110	K 110	K 110
13	K 115	K 115	K 115	115	125	100	115	K 130	K 130	G	150	G	C	B	B	B	C	C	C	C	C	C	C	C
14	C	C	120	125	K 125	100	K 100	105	100	145	150	130	105	G	105	100	B	110	B	125	B	B	K 175	B
15	K 190	110	C	115	105	100	100	110	B	B	105	B	B	B	B	B	B	B	C	B	B	B	140	135
16	125	115	K 110	110	100	110	110	100	100	B	B	B	115	105	105	100	B	105	110	105	110	110	K 185	K 150
17	K 140	120	110	110	100	100	105	105	100	B	100	110	B	G	B	B	B	B	B	B	B	B	K 125	B
18	120	B	140	105	105	110	120	125	B	K 110	B	B	B	B	B	B	B	B	B	B	B	B	K 150	K 115
19	K 120	K 110	110	C	C	C	C	115	105	B	B	B	B	B	B	C	B	B	B	B	C	110	K 155	105
20	125	120	B	100	130	C	110	110	B	B	B	G	B	B	B	C	B	B	B	B	B	B	K 100	K 110
21	K 115	120	110	100	B	B	B	B	B	B	B	B	B	B	C	B	B	B	150	120	B	110	K 115	125
22	125	120	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	C	B	B	B	K 120	B	125
23	130	120	B	110	B	B	120	B	105	B	160	130	B	B	B	B	B	B	B	B	C	110	C	105
24	110	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	K 120	K 125
25	K 130	K 140	C	C	C	B	B	B	B	B	B	B	B	B	B	B	B	140	B	B	B	B	C	C
26	C	120	125	110	B	C	C	C	C	C	C	C	B	B	B	140	B	K 150	115	120	K 150	120	115	K 120
27	100	115	125	115	120	120	140	B	B	100	B	B	B	B	B	B	C	B	B	B	B	K 120	B	K 125
28	115	120	120	125	100	115	B	110	B	B	B	120	G	B	B	B	B	B	B	B	K 160	B	K 110	K 110
29	K 125	C	110	C	115	115	120	120	C	100	115	B	B	B	B	B	110	B	125	130	B	B	B	K 110
30	C	B	B	C	120	120	150	110	C	110	C	C	C	C	C	C	K 150	B	K 125	K 110	C	K 140	C	C
31																								
Hour Day	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	24	21	21	17	17	18	18	9	7	10	8	3	1	4	3	2	5	8	6	10	16	19	22
MED	120	120	115	110	120	115	110	110	105	110	110	120	115	105	105	100	130	140	125	120	K 118	K 120	K 115	K 115
UQ	K 125	K 120	125	115	125	120	120	120	110	120	150	130	118		115	120		150	140	125	K 150	K 132	K 145	K 125
LQ	115	112	110	110	105	100	100	135	100	105	100	115	110		102	100		110	112	110	K 110	110	K 110	K 110

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H[°]E S (KM)

IONOSPHERIC DATA

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TYPES OF ES

45° E Mean Time (G. M. T. + 3 h)

Stations YOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

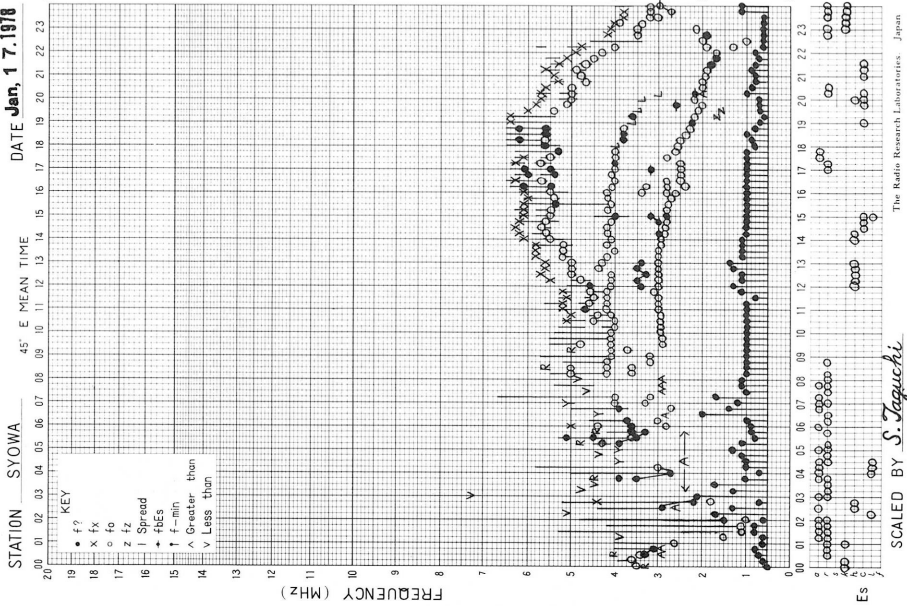
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	F1	CK11	CK11	K1	K1	K1	R1	R1		R1															
2								R1											R1		A1	F1	FF11	R1	
3	R1	R1	R2	RF11		R1	R3	RA21	R1		R1										K1	RK11	K3	K1	
4	RK11	R1	R2	R2			R1				R1	K1										R1	R4		
5	R1	R2	R1	F1	RR11																	K1	HK11	K2	
6	RK12	ACK11	R1	R1		R1	CK12	K2	K2		C1		C1		C1								HK11	K2	
7	R2	R1					F1	R1															K1	K1	
8	R2	R1	R1			CK11		F1														K3	R1	K2	
9	K3	K2	K2	RK11	RK11	RK11	K1				R1	H1						R1	R1		F1			F1	
10		R1	R1	F2	R1																	K2	K2	K2	
11	K3	K1	CK11	R1	RK21	R1																			
12	K1	K2	K2	K1	K1	R1	R1	R1	R2	R1	L1	C1			L1					R1		K3	K3	K1	
13	K2	K3	K2	R3	R1	F1	R1	C1	K1		H1														
14			R1	R2	CK11	F1	LK11	R1	R2	HC11	H1	C1	C1		C1	C1		F1		F1			AK11		
15	AK11	RA11		R2	R2	R1	R2	R2			R1												F1	F1	
16	F1	F2	K2	F2	F2	F1	F1	R2	R1				C1	R1	C1	R1		F1	F1	R1	R1	R1	HK11	K1	
17	RK22	R2	R1	R3	R2	R1	R2	R1	R1		R1	R1												K1	
18	R2		R1	R1	R2	R2	R2	R2	K1	RK11													K1	KR21	
19	K2	K2	R2					R1	R1													R3	HK11	R4	
20	R1	R1		R1	FF11		R1	F1															LK11	K2	
21	RK13	R1	R1	R1																F1	R1		R1	R1	
22	R1	F1																					K2	R1	
23	F1	R1		R1			R1		R1		R1	C1										R1		R1	
24	R1																						K1	K1	
25	K1	KL11																	R1						
26		R1	R1	R1												R1		HK11	F1	R1		HK11	R1	RA11	K1
27	R1	R1	R1	R1	F1	R1	R1			R1													K2		K2
28	R1	R1	R2	R2	R1	R1		R1				R1										K1		K2	K2
29	K5		R2		R1	R3	R2	F2		LH11	RR11						C1		F1	F1				K1	
30					R1	RA11	AR14	R2		R1							K1		K1		RK11		K5		
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT																									
MED																									
UQ																									
LQ																									

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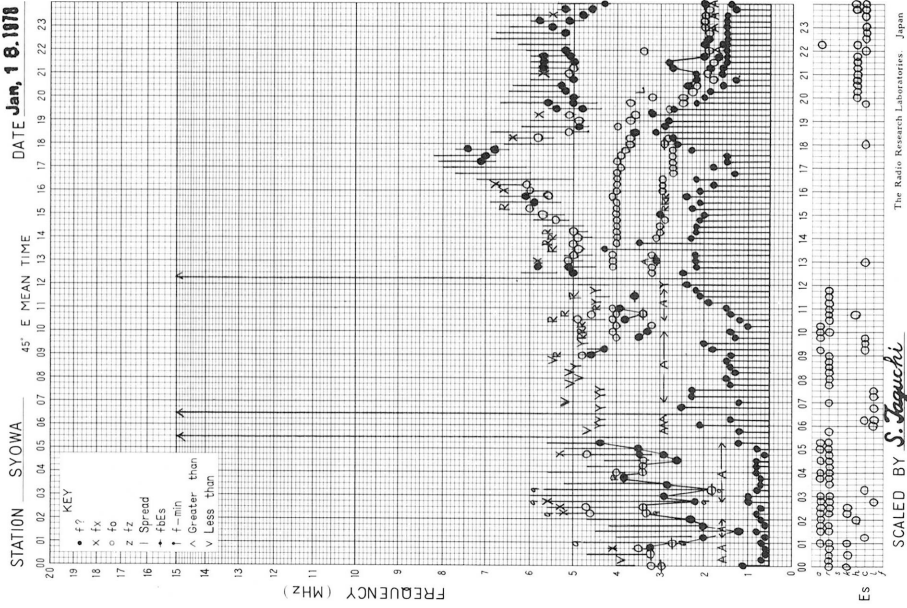
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TYPES OF ES

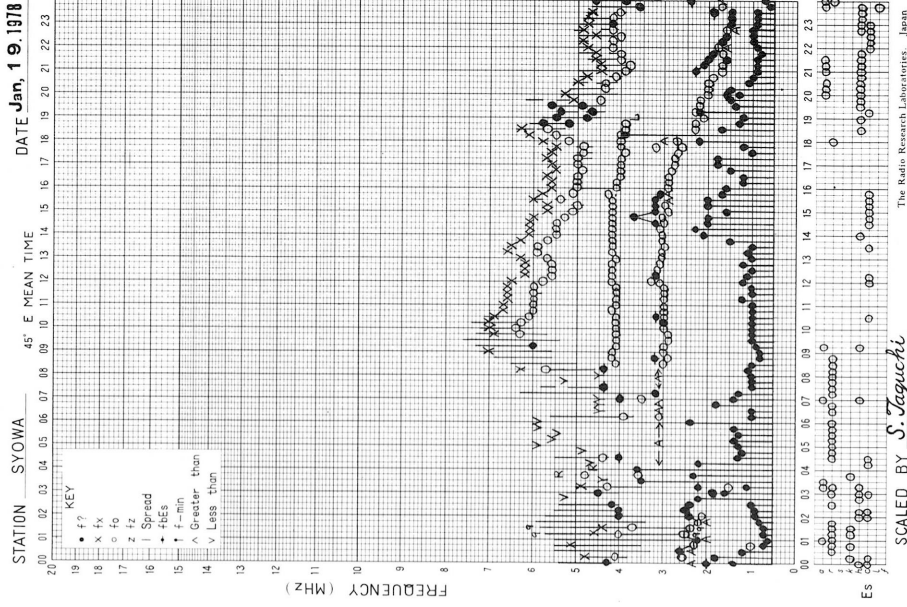
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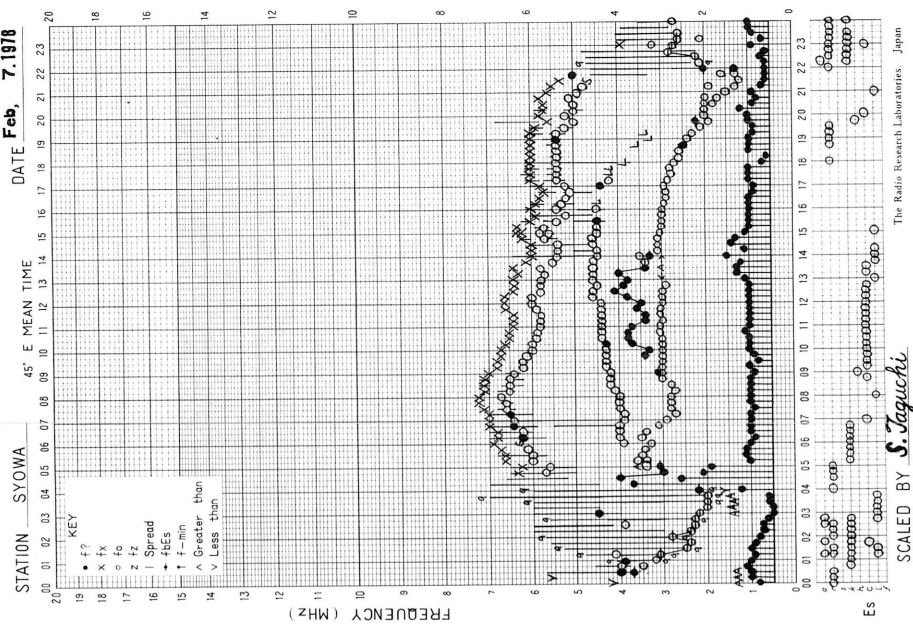
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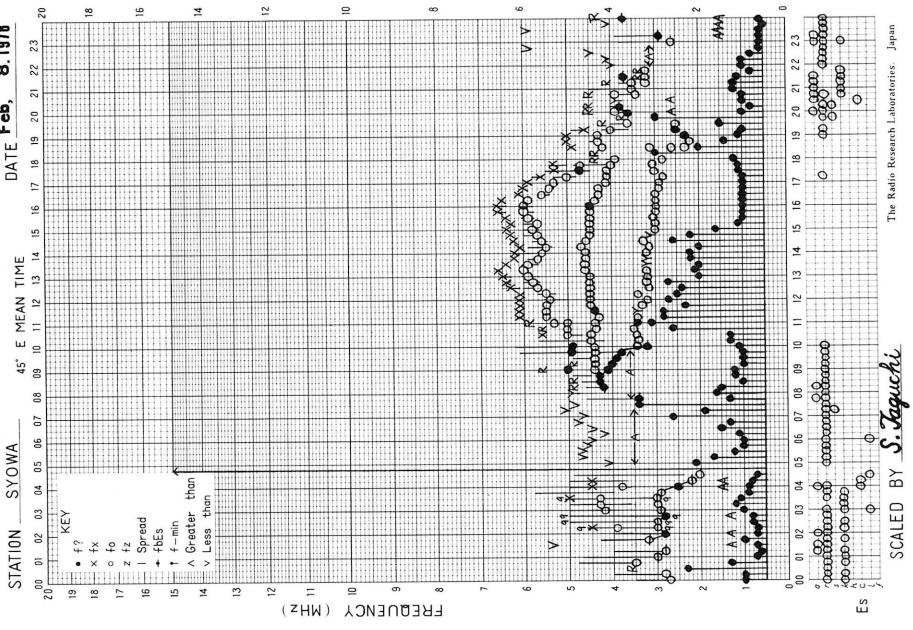
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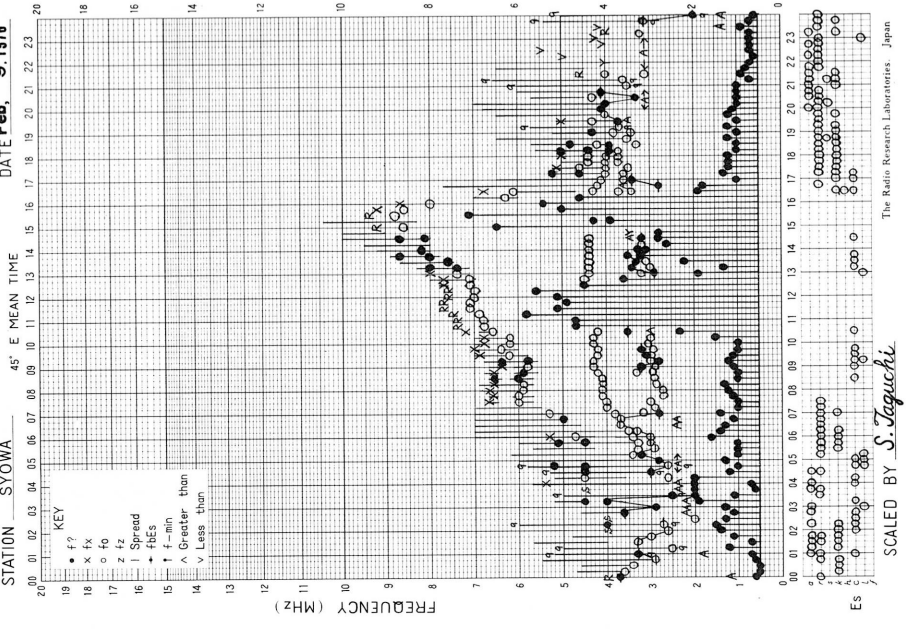
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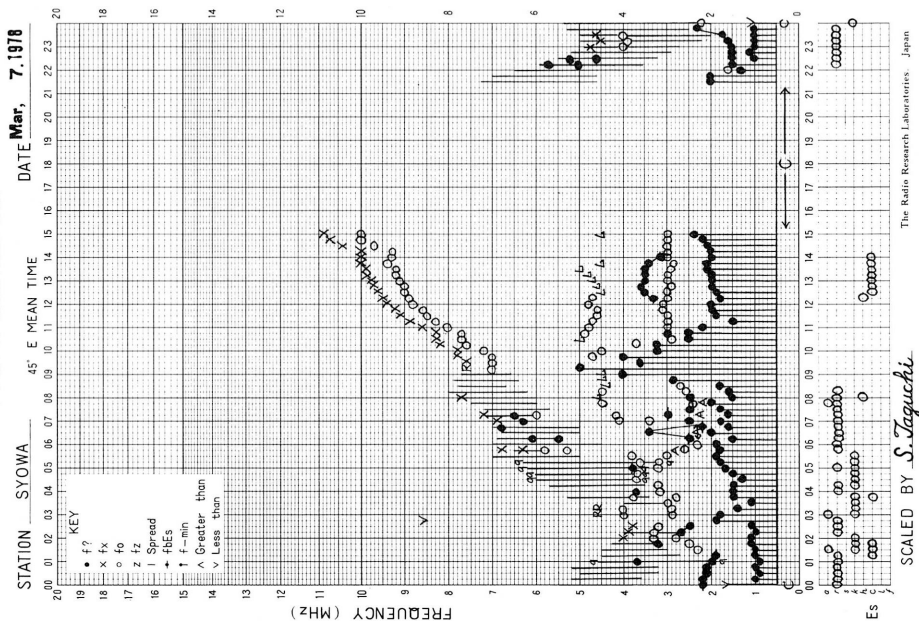
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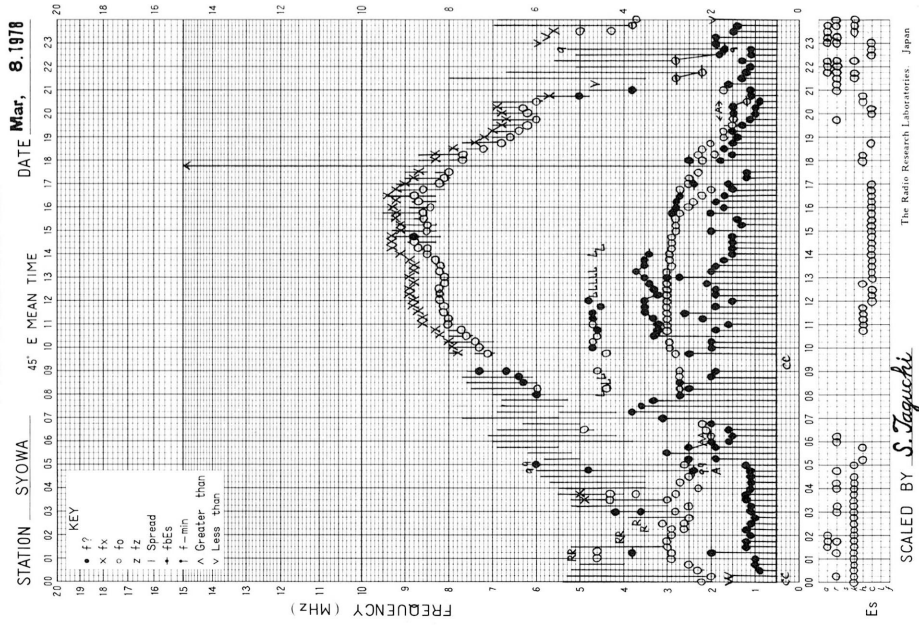
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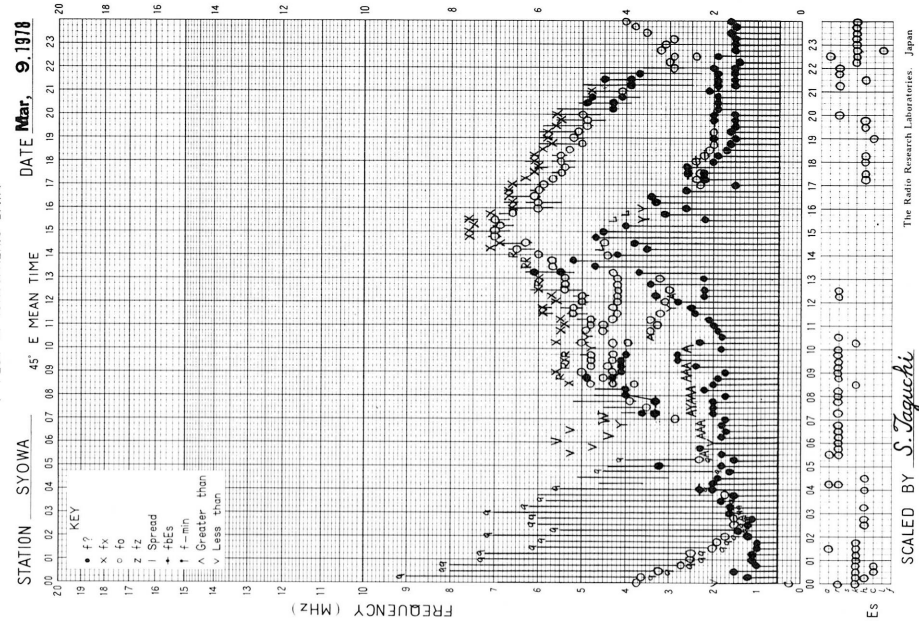
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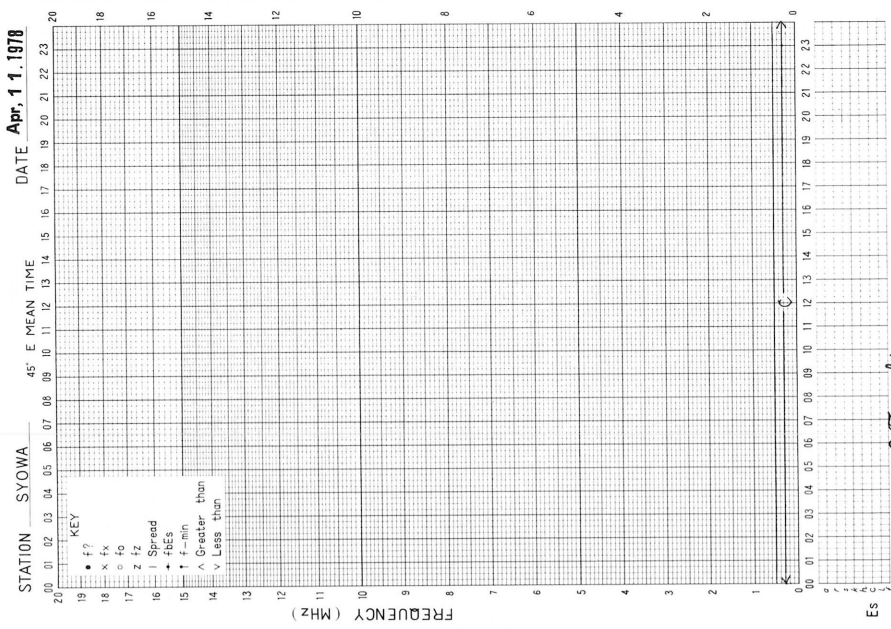
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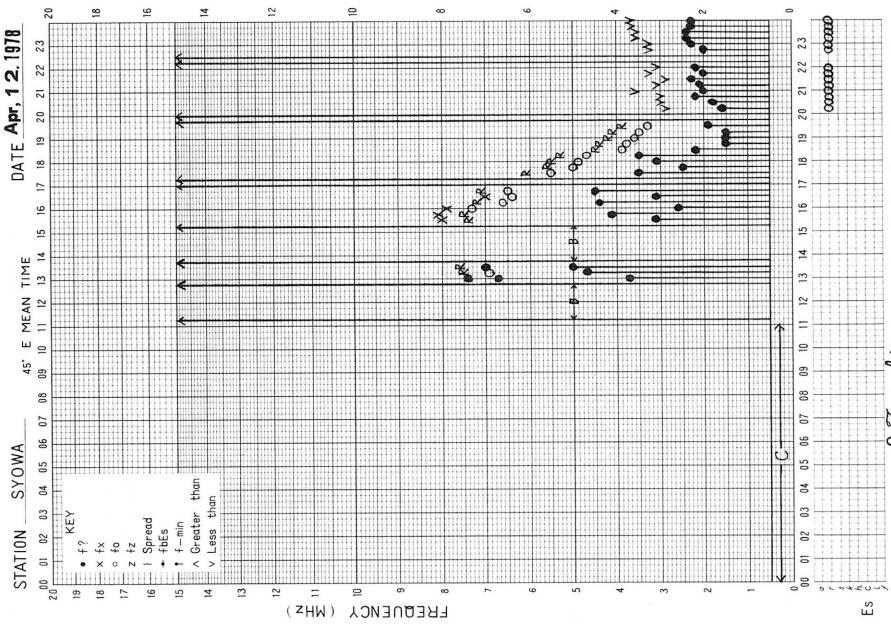
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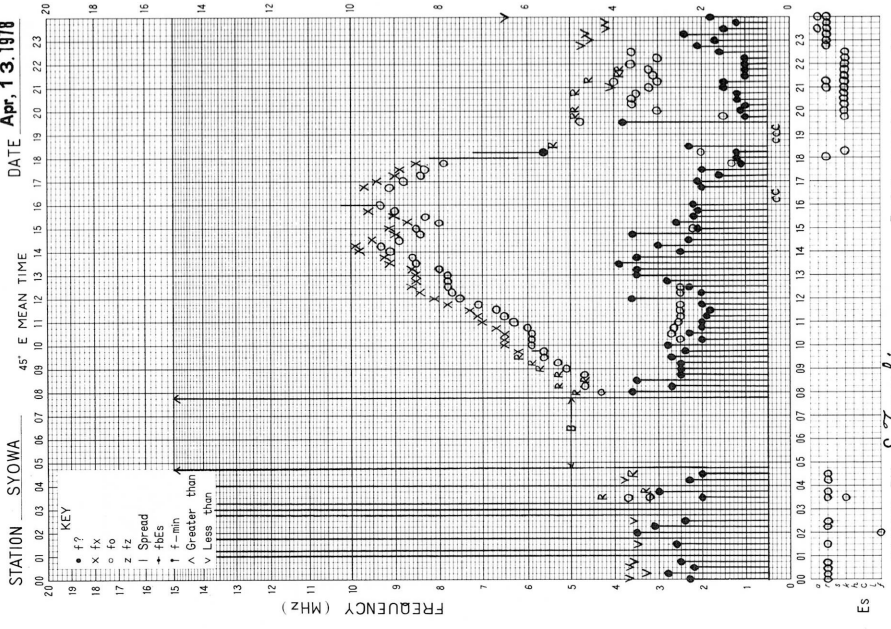
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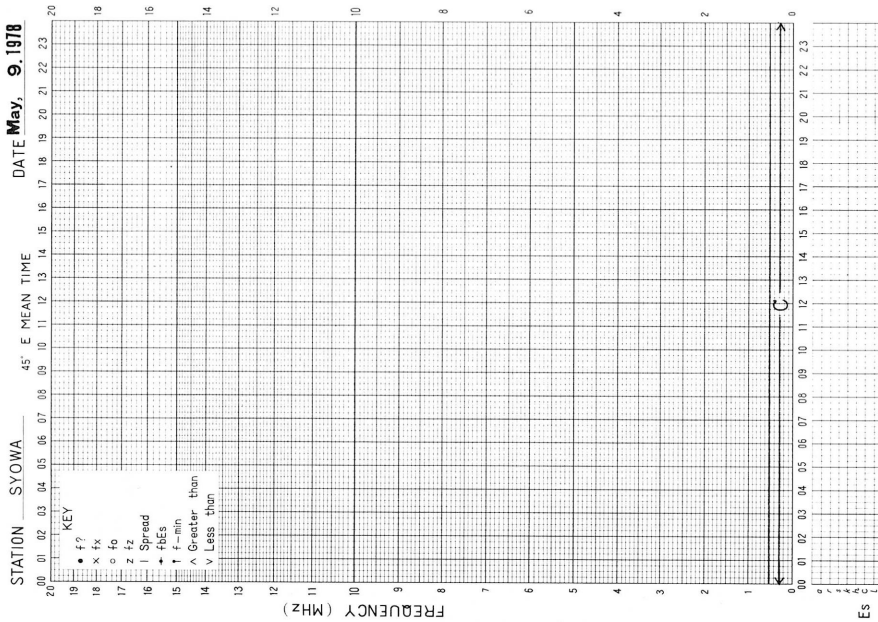
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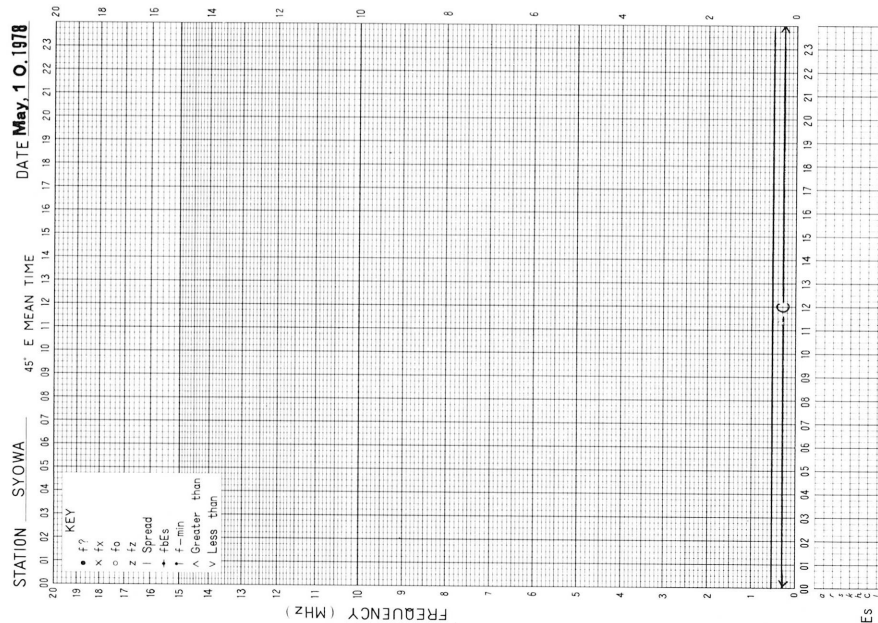
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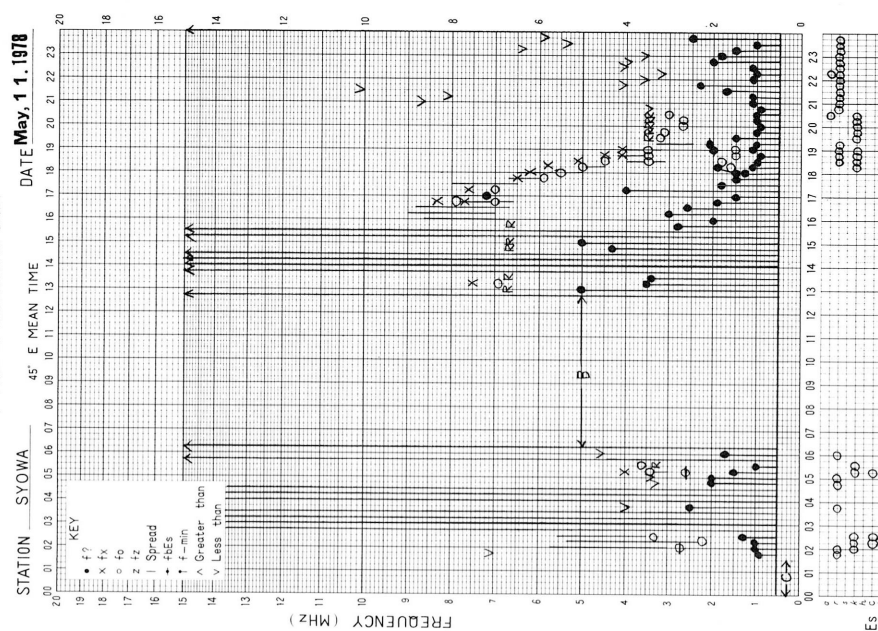
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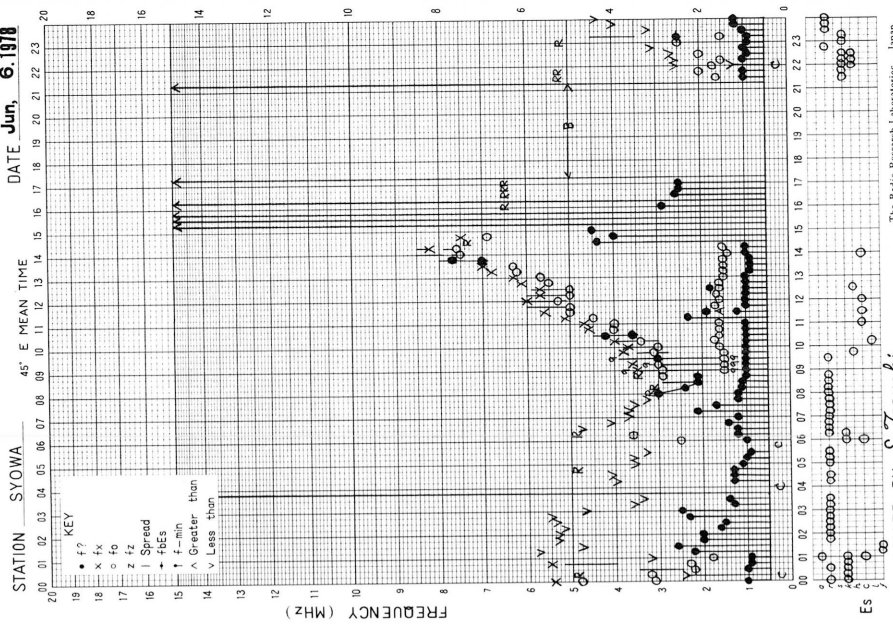
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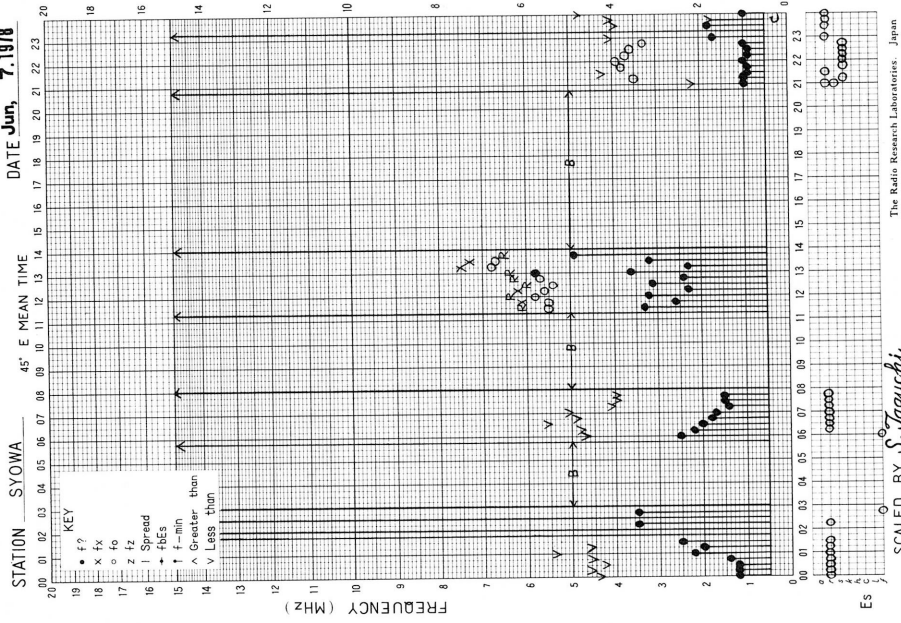
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f-PLOT OF IONOSPHERIC DATA



f-PLOT OF IONOSPHERIC DATA



f-PLOT OF IONOSPHERIC DATA

