

ION.ANT.—49

IONOSPHERIC DATA AT SYOWA STATION

(ANTARCTICA)

July 1987—December 1987

CONTENTS

	Page
Introduction	1
Ionograms	
July	4
August	20
September	36
October	51
November	67
December	82
Tables	98

COMMUNICATIONS RESEARCH LABORATORY

MINISTRY OF POSTS AND TELECOMMUNICATIONS

TOKYO, JAPAN

INTRODUCTION

Vertical soundings of ionosphere at Syowa Station, Antarctica, have been carried out by the Communications Research Laboratory 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°	78.2°

SPECIFICATIONS OF THE IONOSONDE USED AT SYOWA STATION

Items	Specifications
Frequency Range	400 kHz-15 MHz
Transmitting Power	10 kW (peak value)
Duration of Sweep	20 sec
Transmitted Pulse Width	80 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	1000 volt AC, 2.0 kVA
Transmitting Antenna and Receiving Antenna	30 m height vertical delta terminated by 600 Ω respectively

DESCRIPTION

- a. 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)"
- b. Ionograms data are printed in the quarter hourly of every days.
- c. Characteristics of Ionosphere
 - fxI Top frequency of spread F traces or oblique traces.
 - foF2 Ordinary wave critical frequency for the F2 layer.
 - fEs(ftEs) Top frequency of Es layer as reflected overhead.
 - fmin Lowest frequency showing vertical ionospheric reflection.
 - h'F Minimum virtual height of the ordinary wave F trace as a whole.

Symbols

(1) 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, Es.
- B Measurement influenced by, or impossible because of, absorption in the vicinity of f_{min} .
- 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 E 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 atmospheric.
- 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.

D	Greater than.
E	Less than.
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.

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.

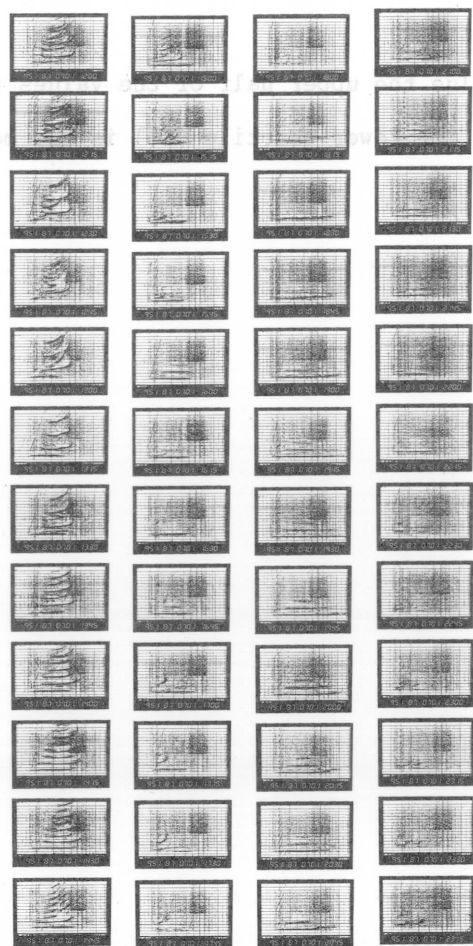
Median (MED) of a set of numbers is the middle value when the numbers are arranged in order of magnitude, or the average of the two middle values if there is an even number of values.

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.

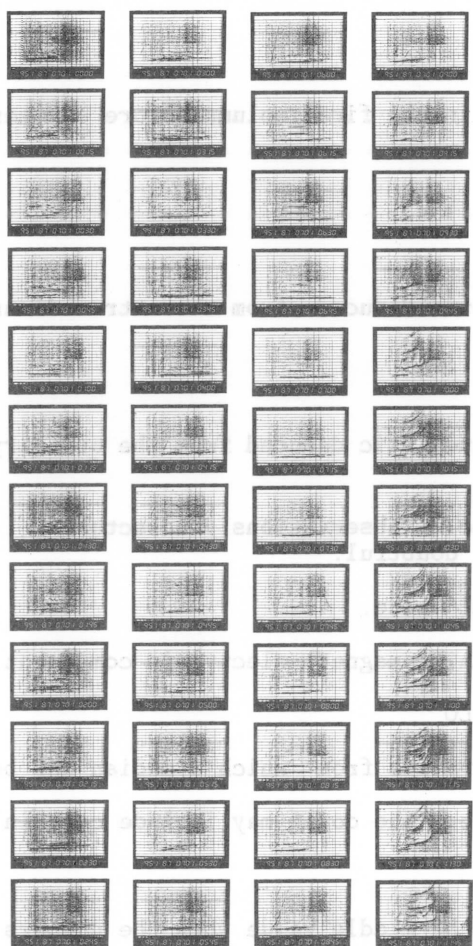
SYOWA STATION

IONOGRAM

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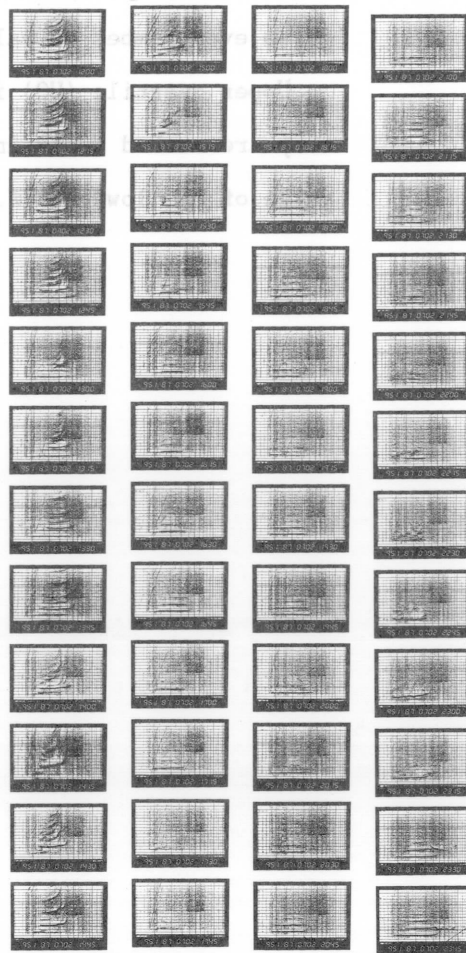
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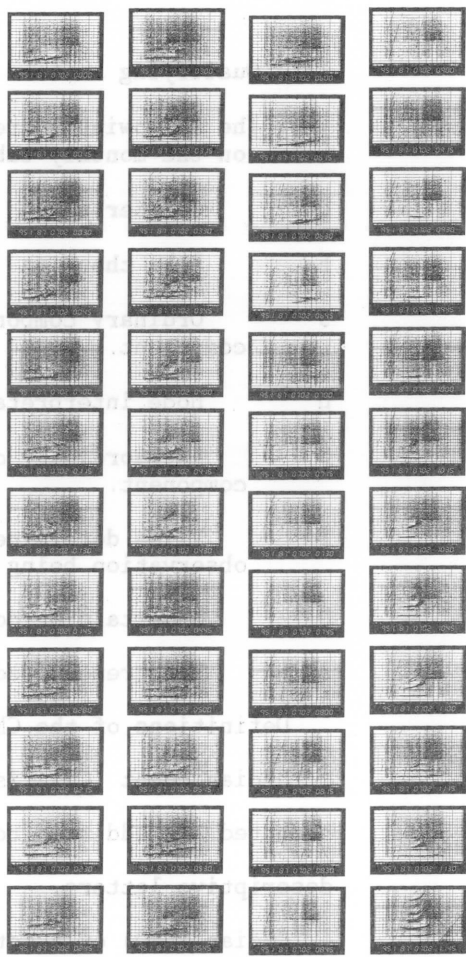
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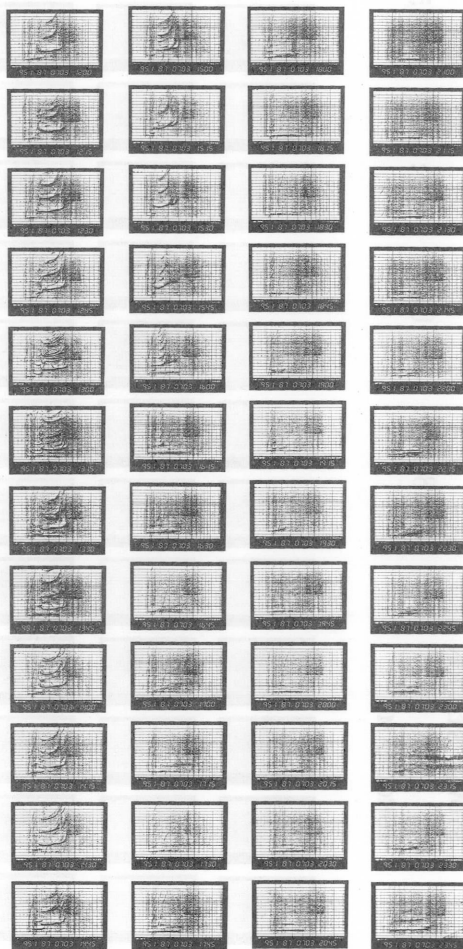
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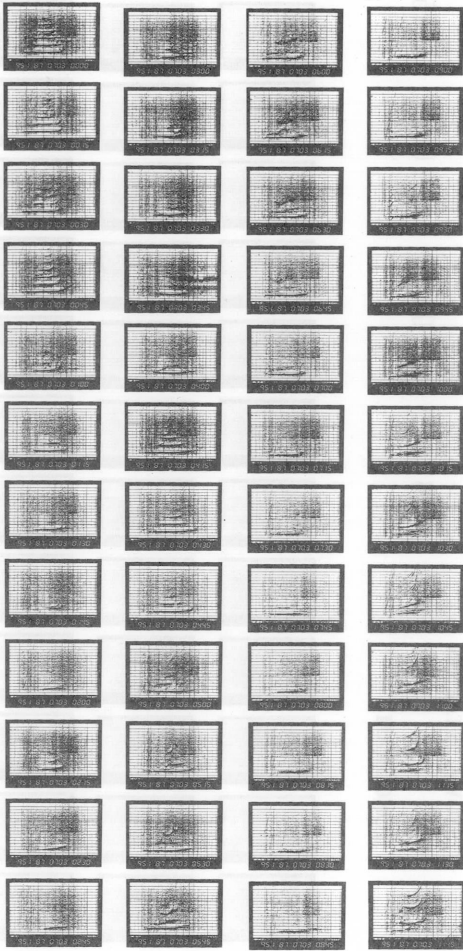
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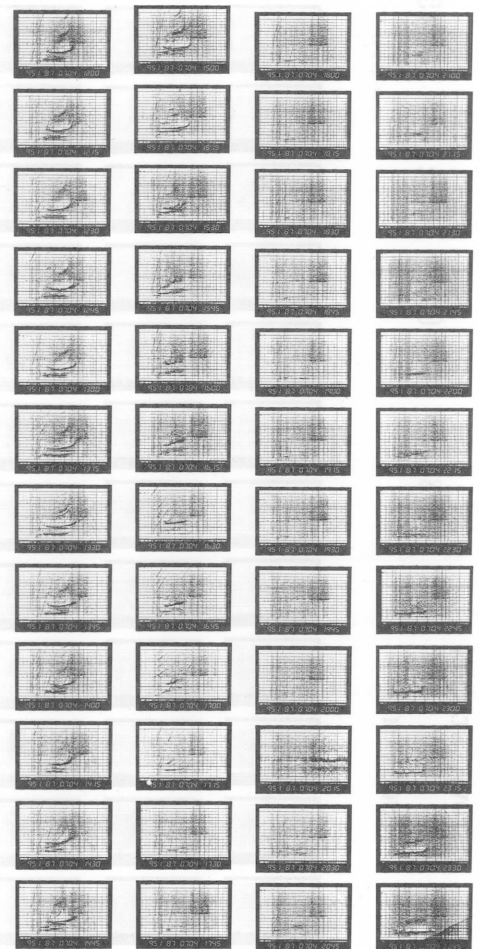
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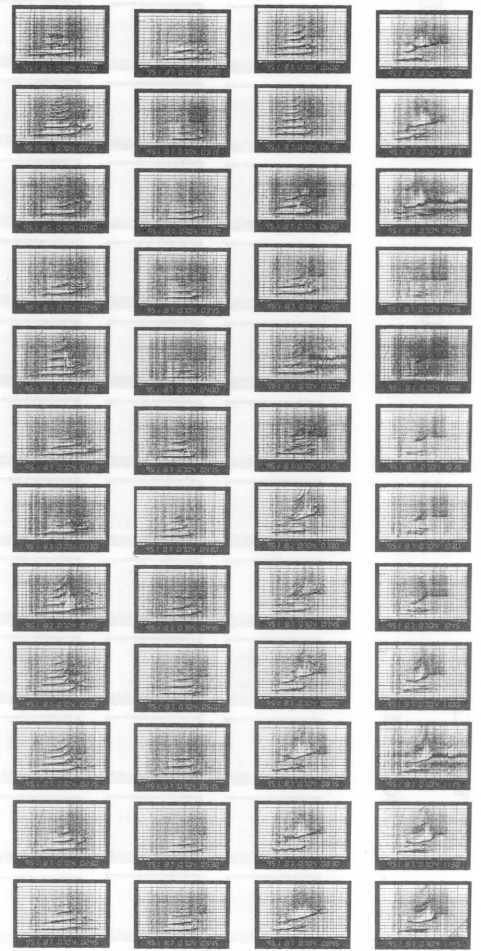
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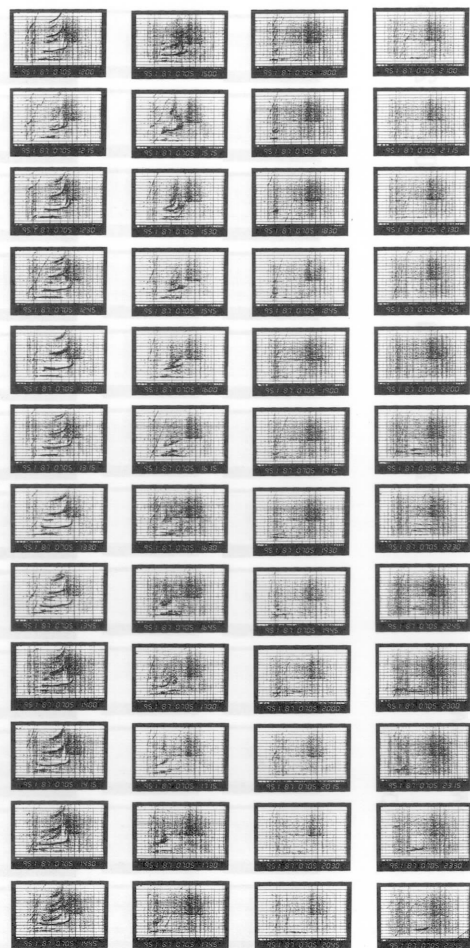


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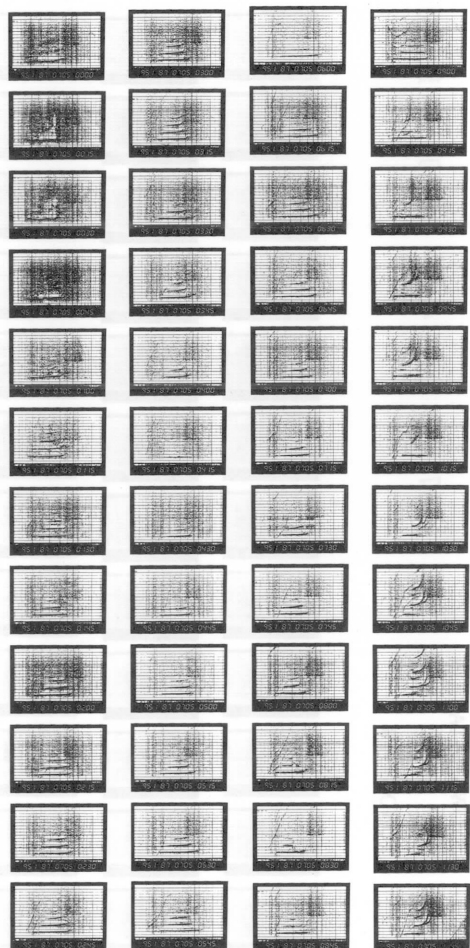


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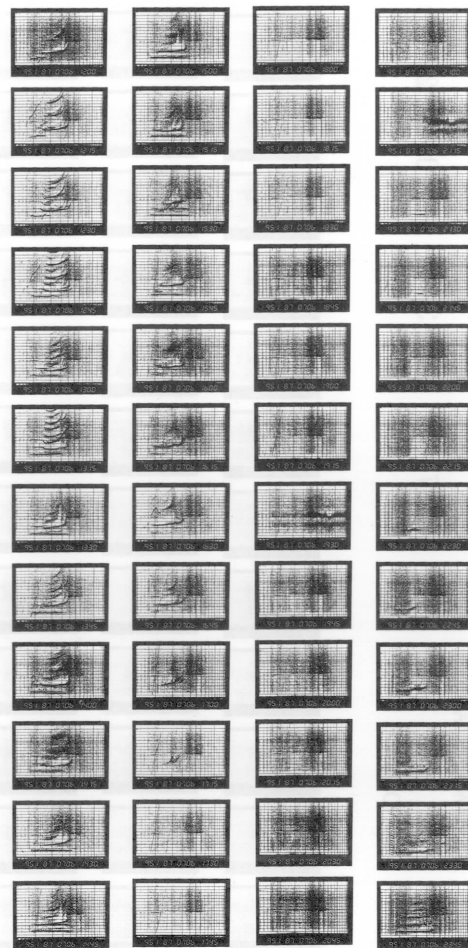


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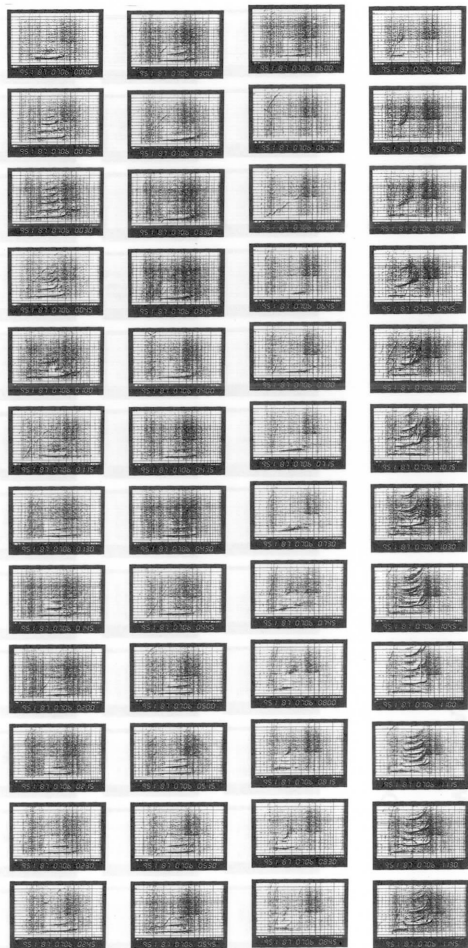


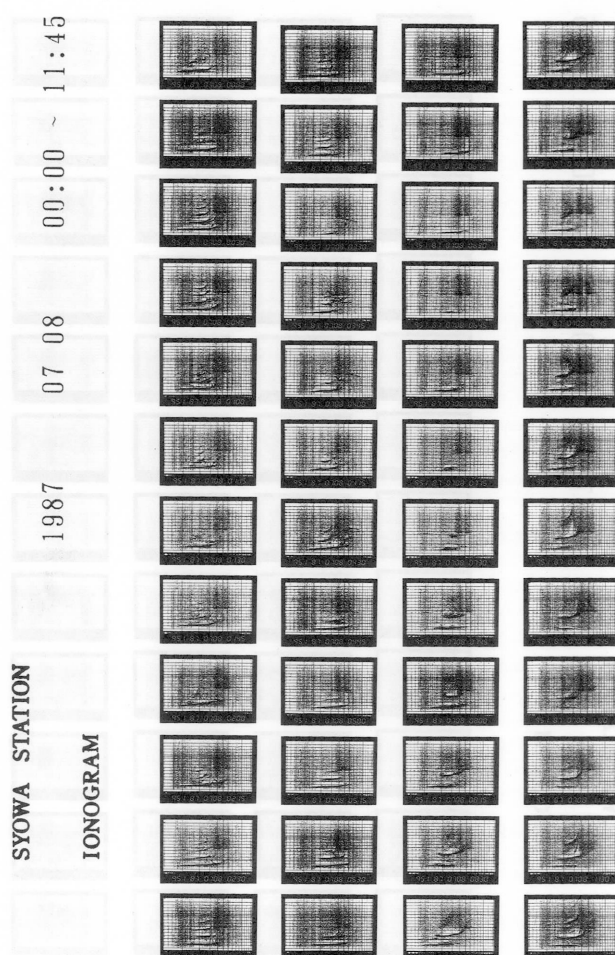
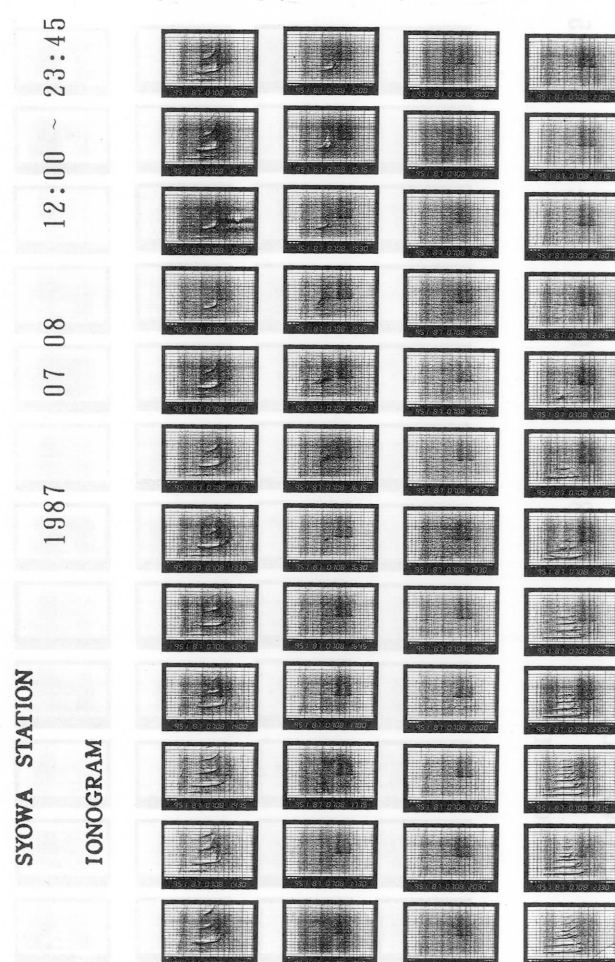
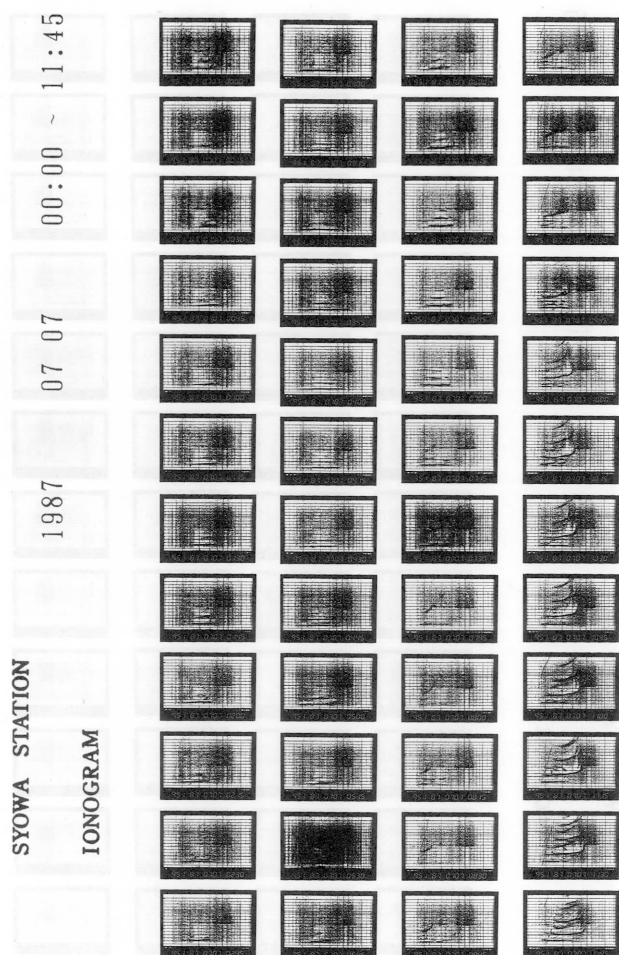
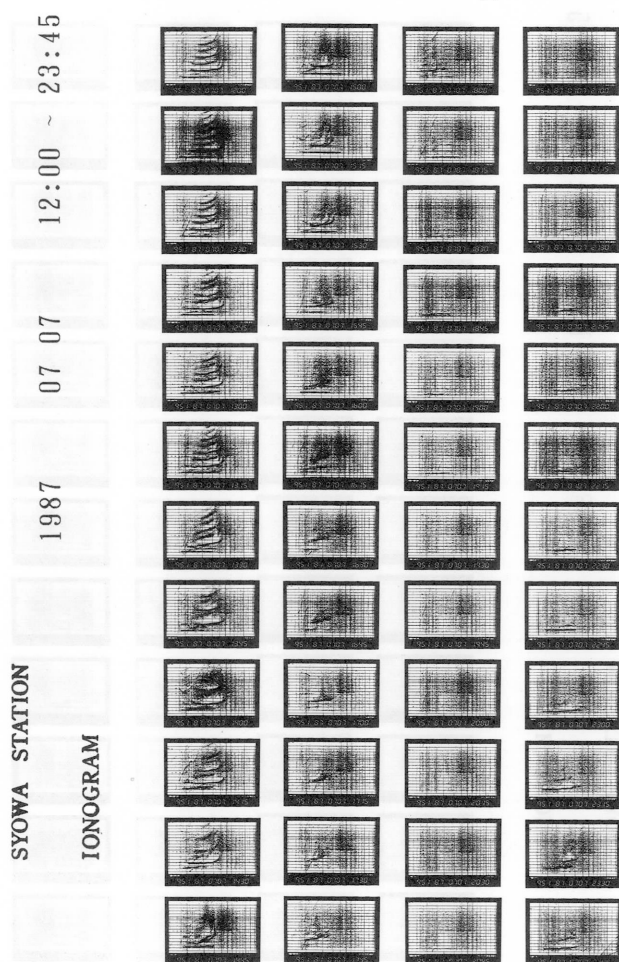
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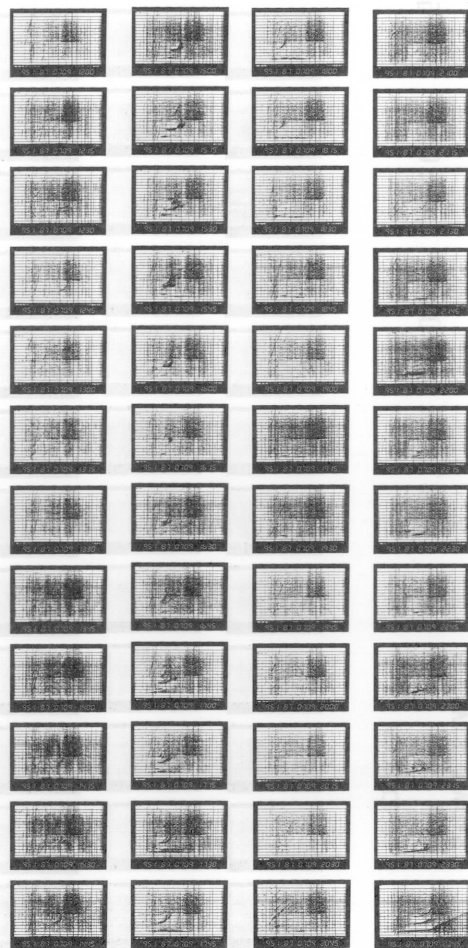
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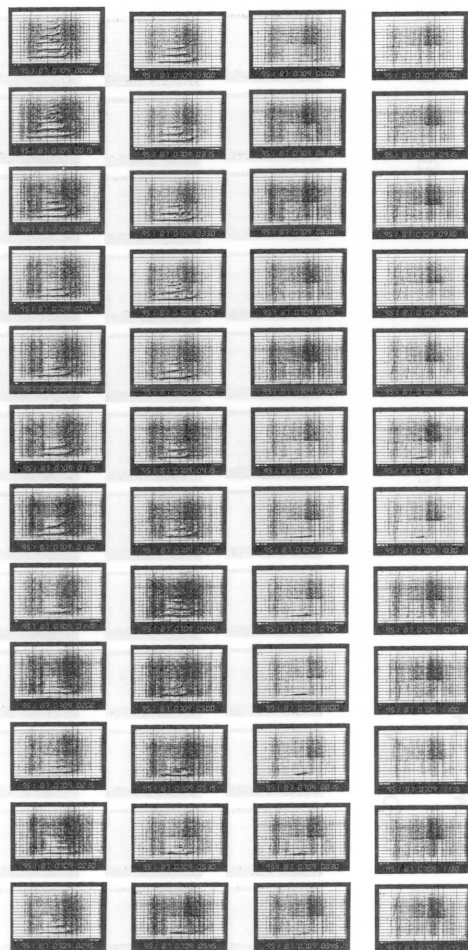
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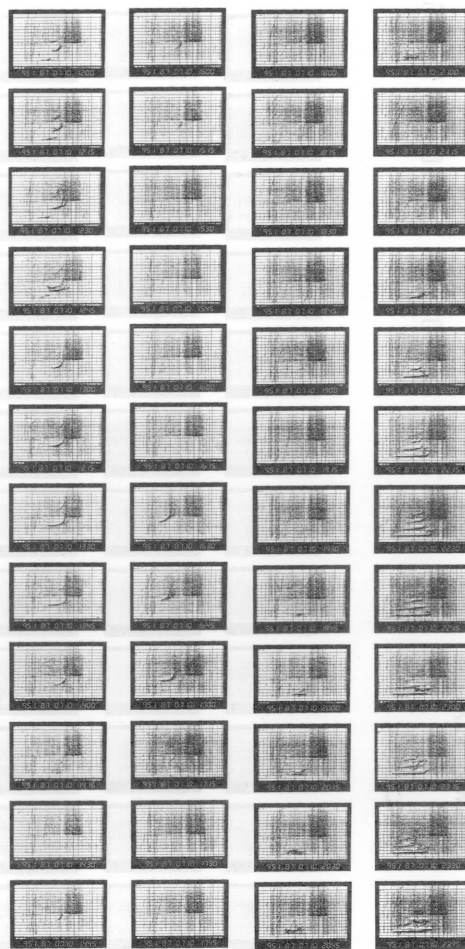
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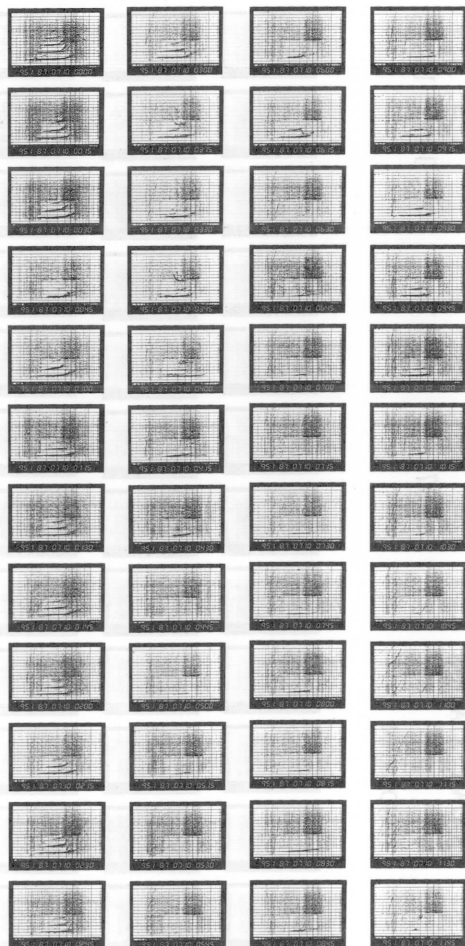
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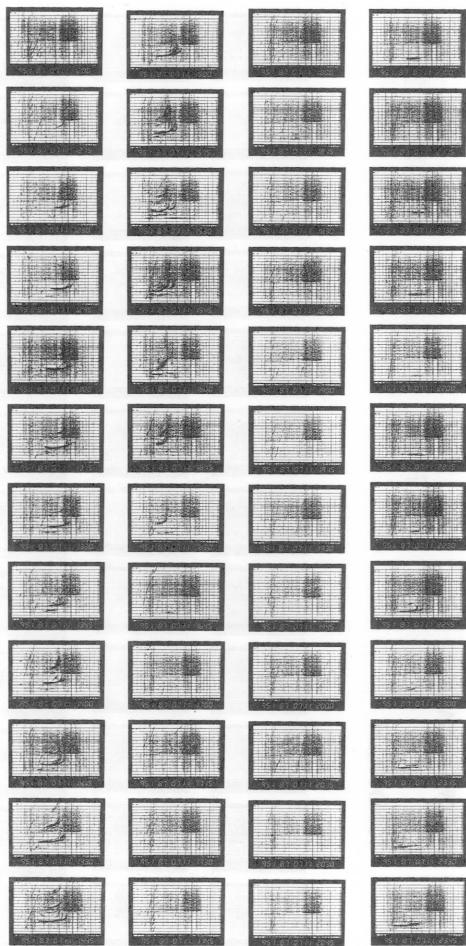
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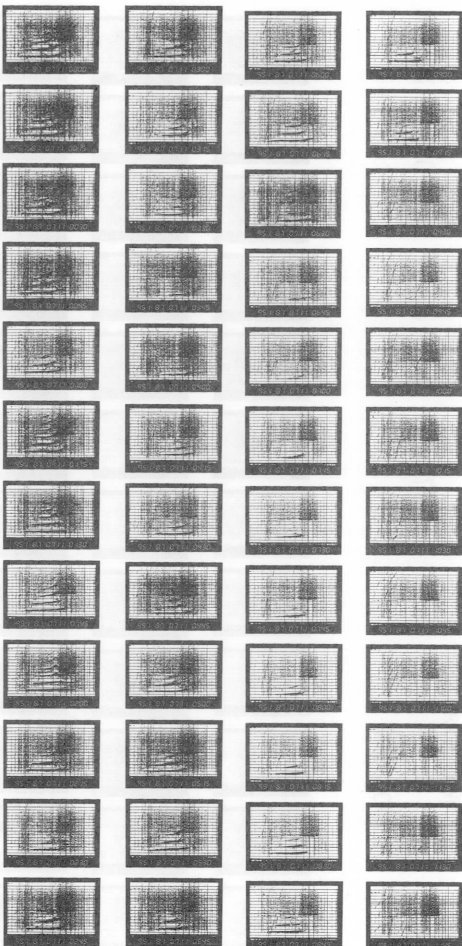
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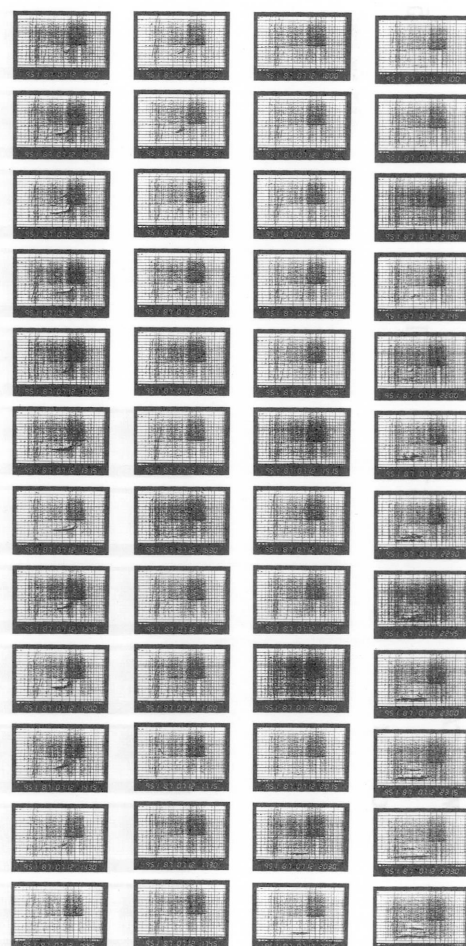
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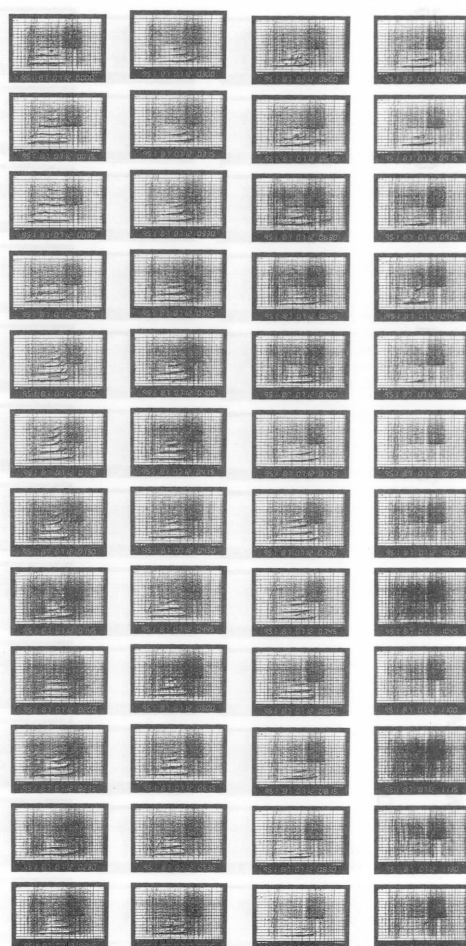
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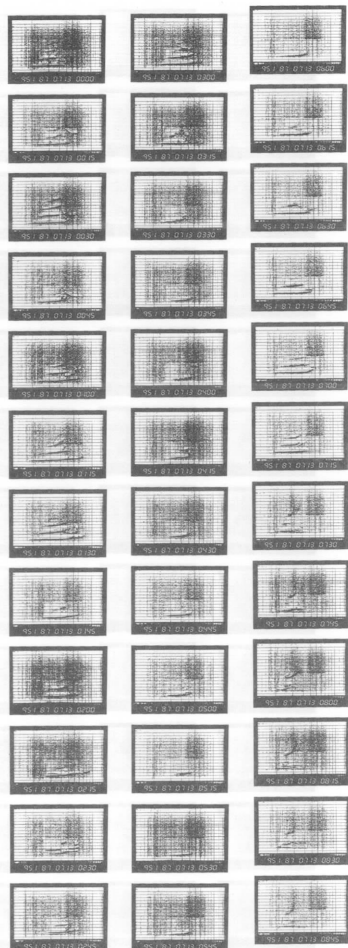
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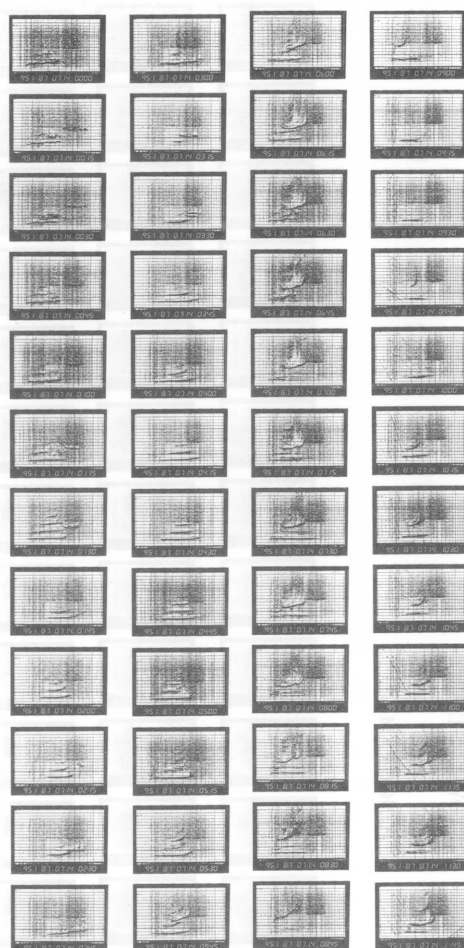
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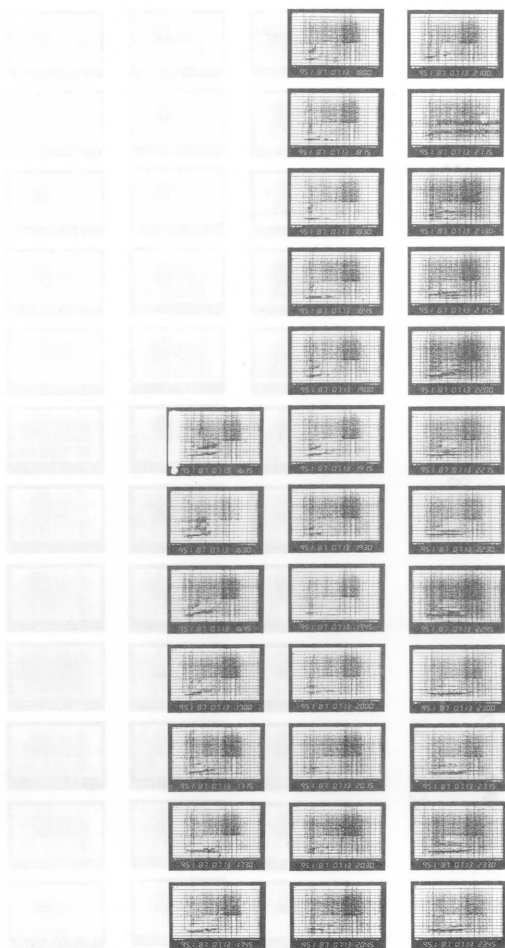
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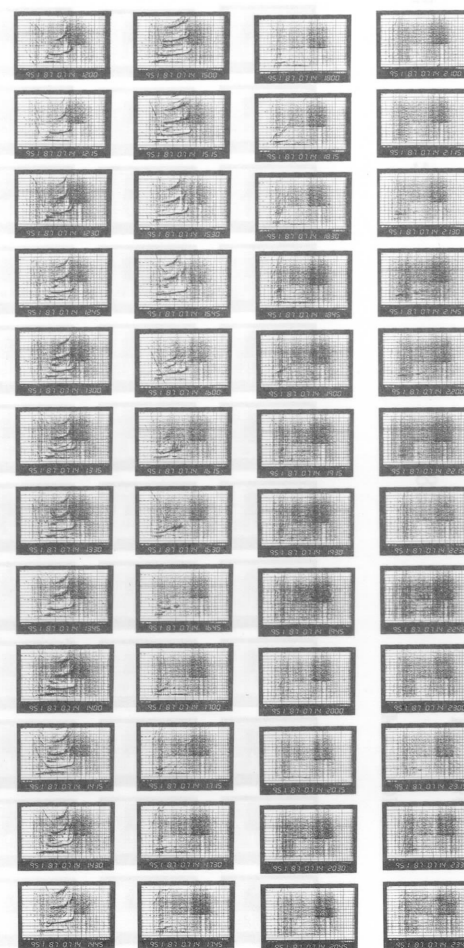
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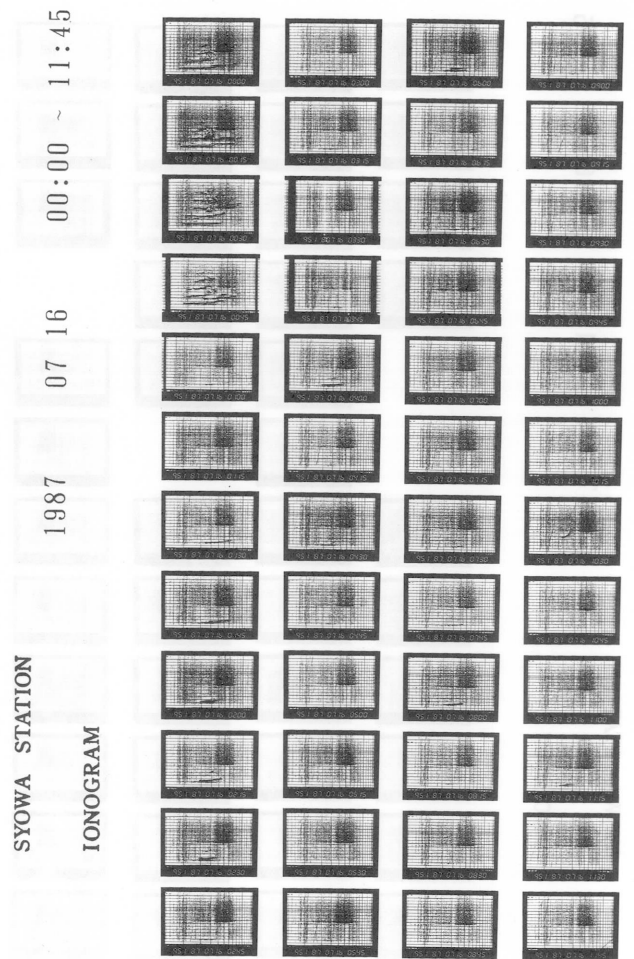
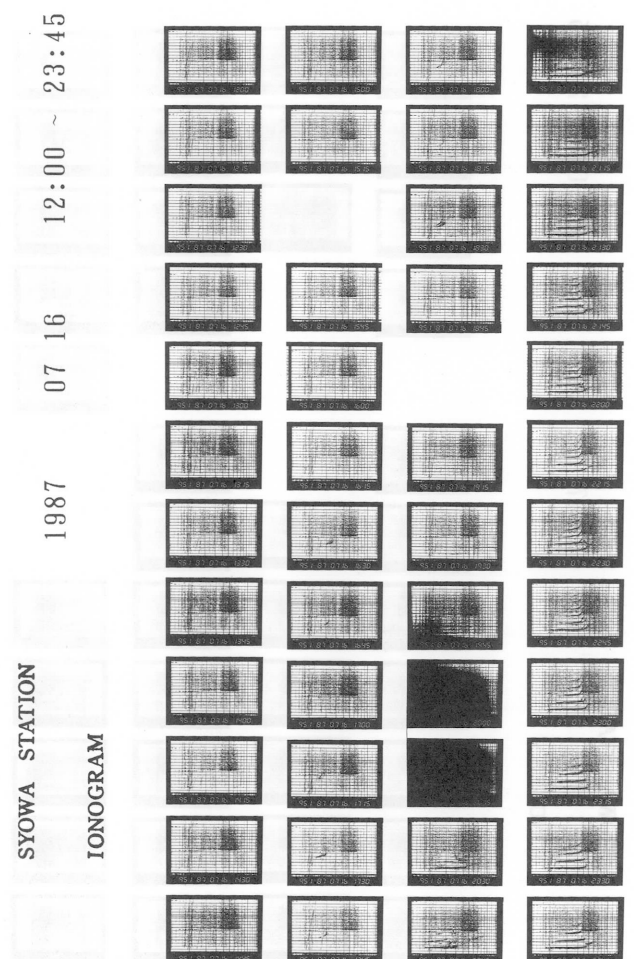
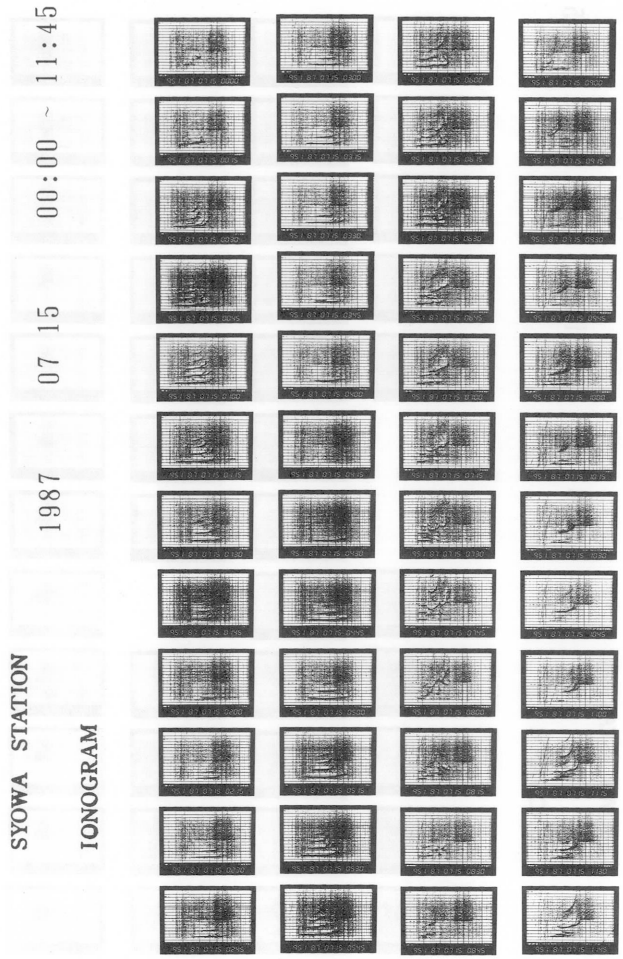
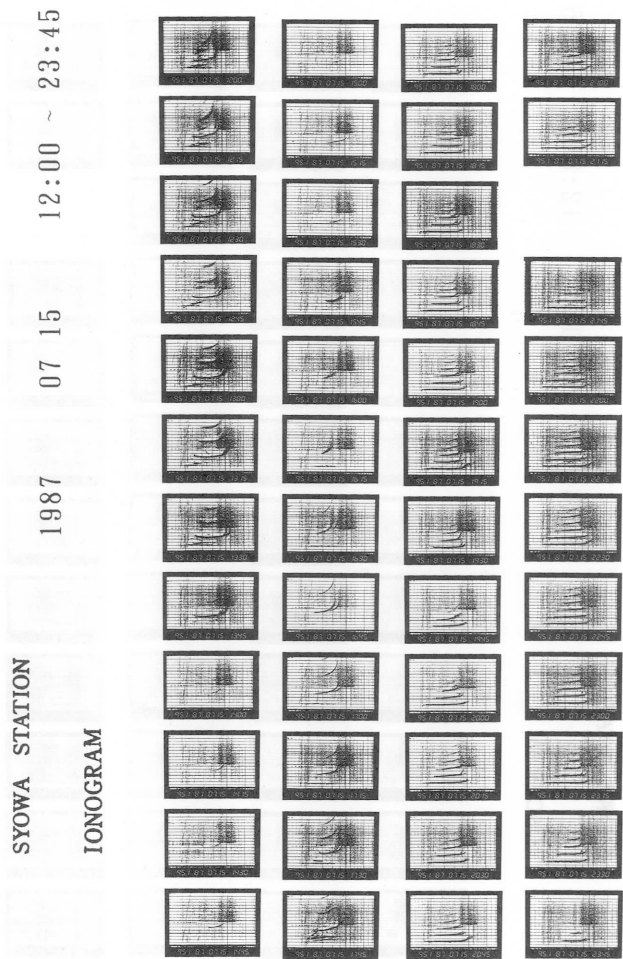
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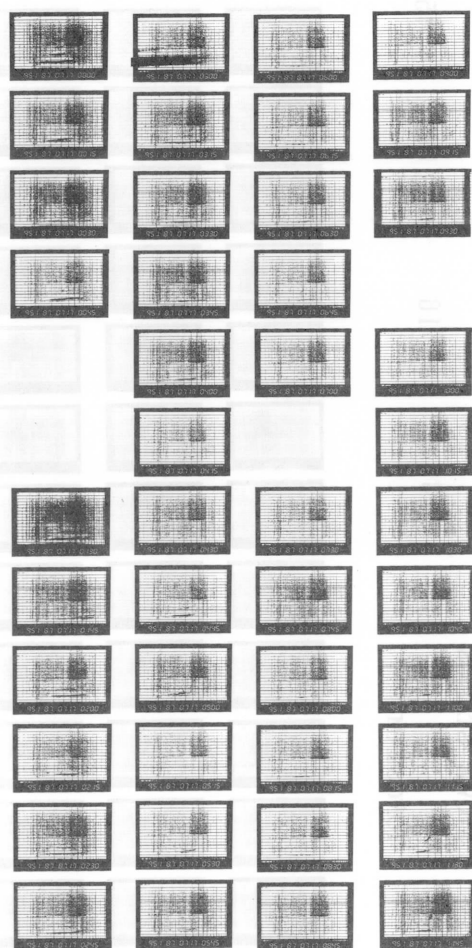
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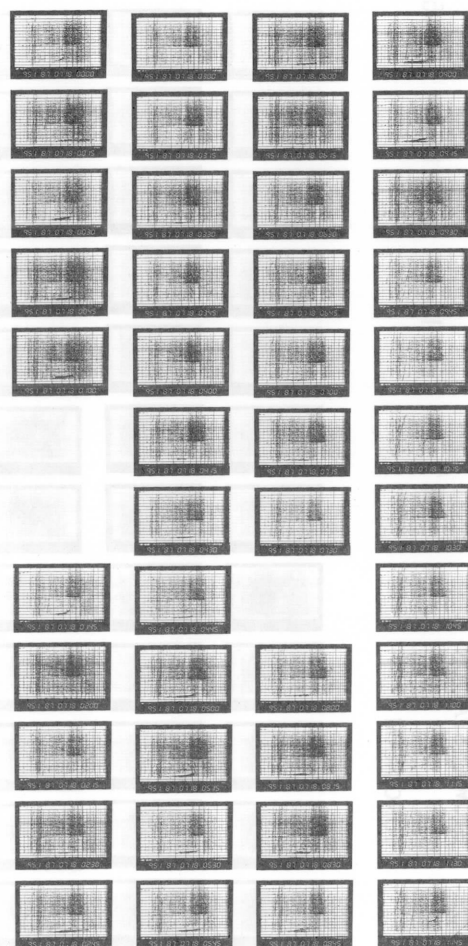
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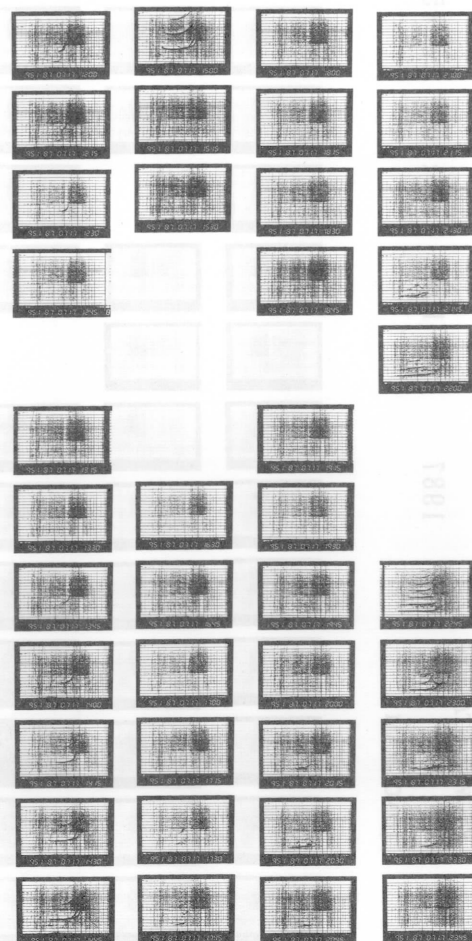
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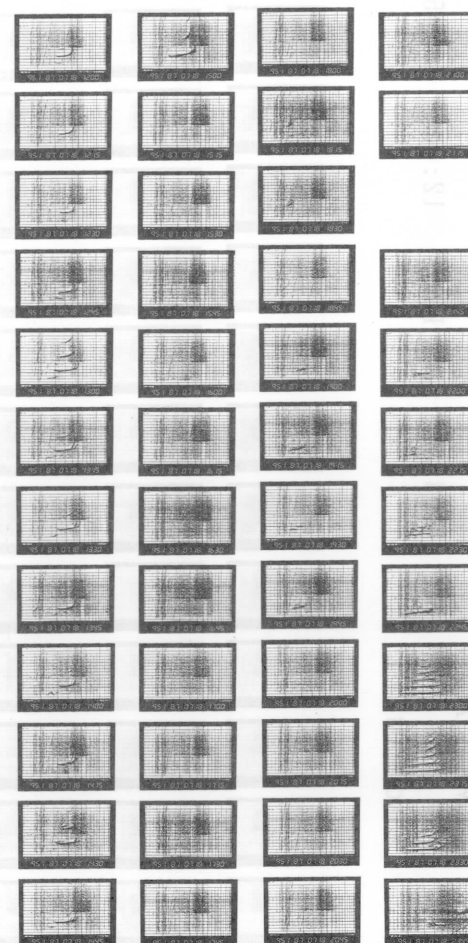
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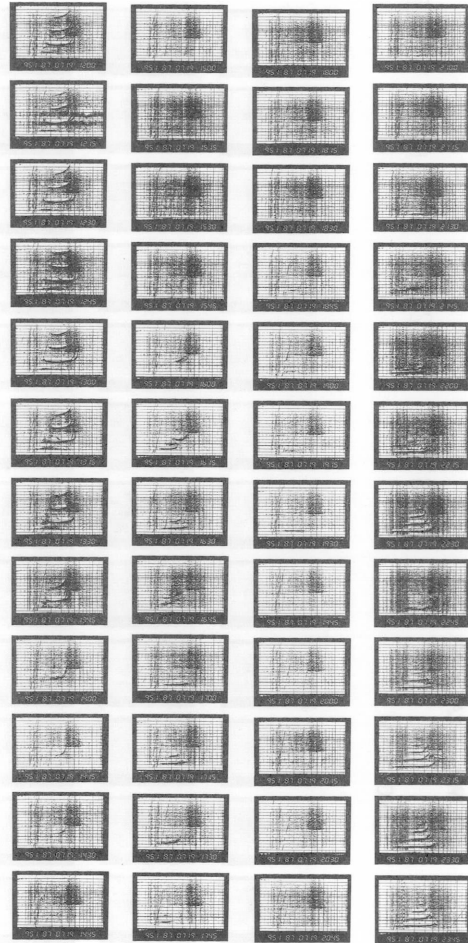
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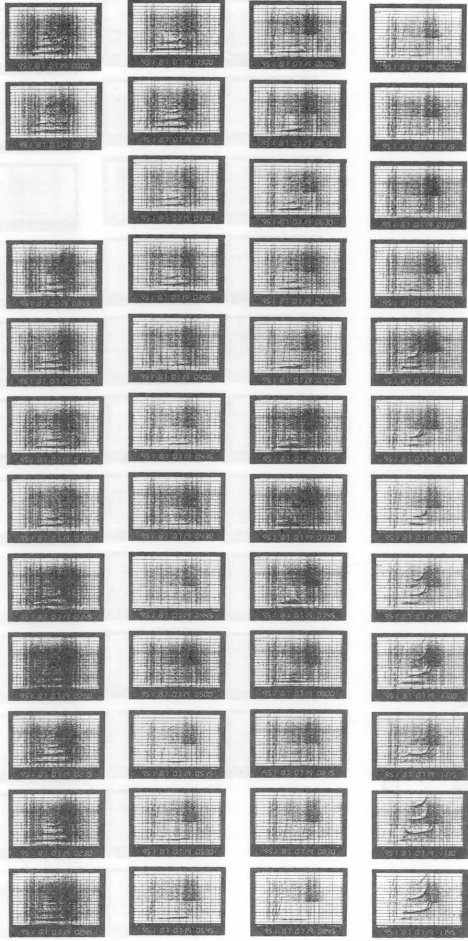
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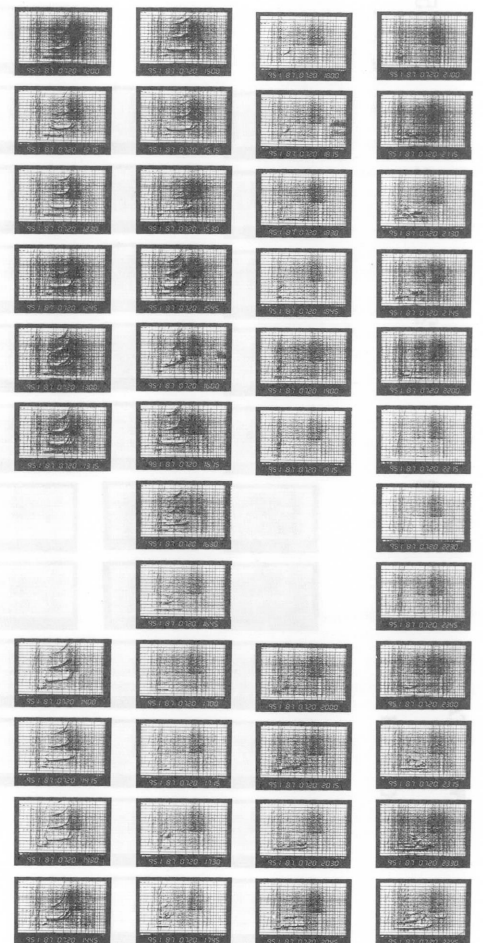
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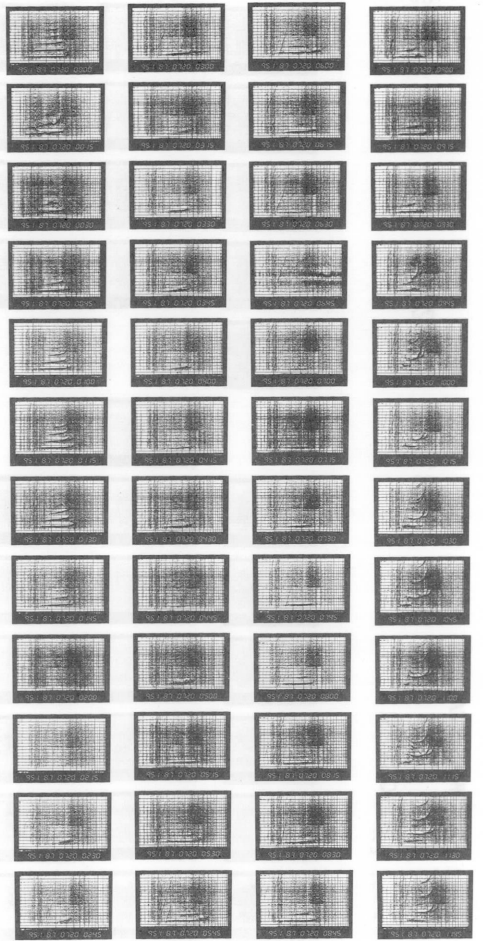
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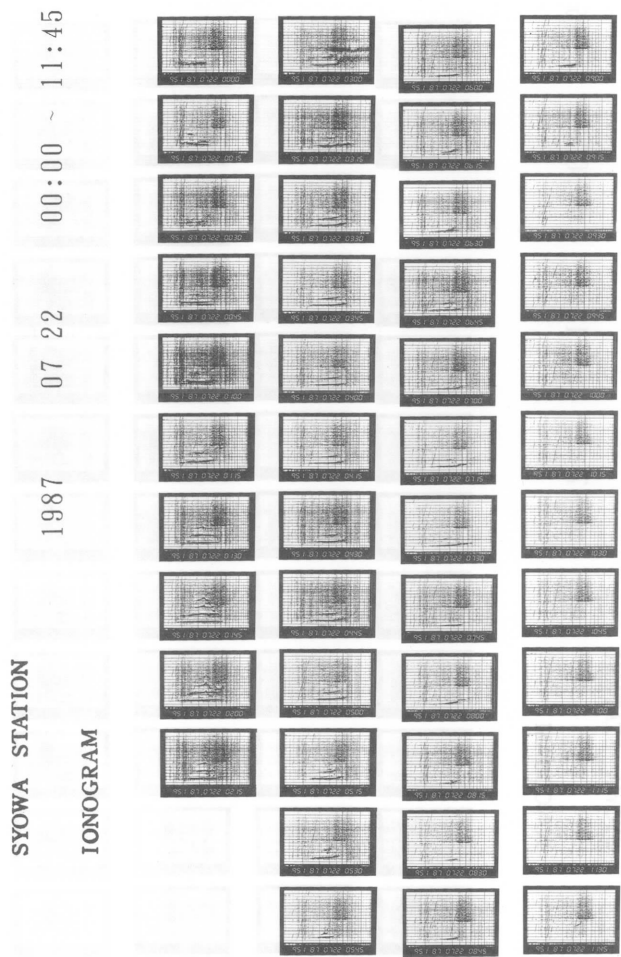
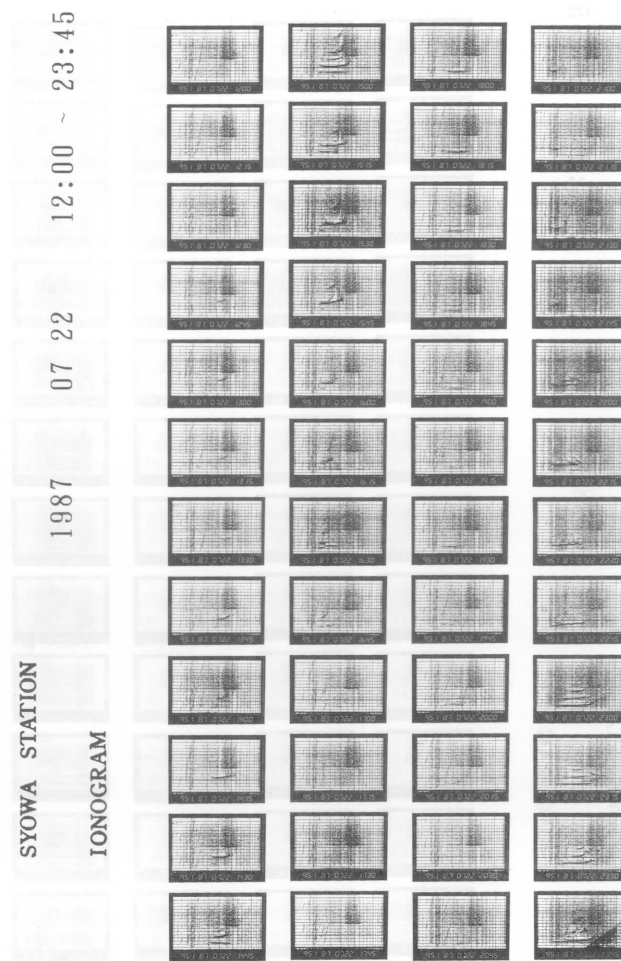
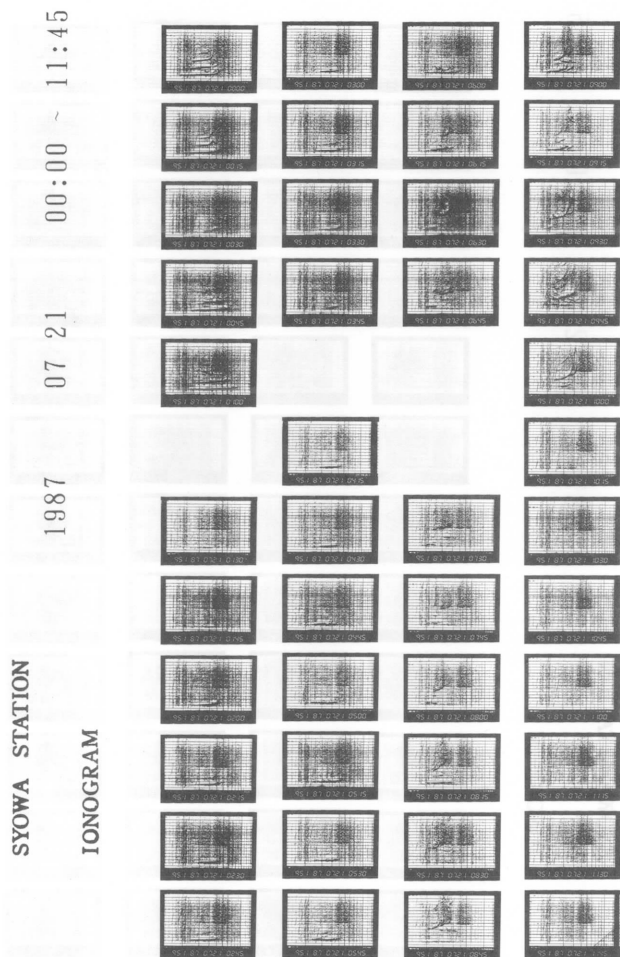
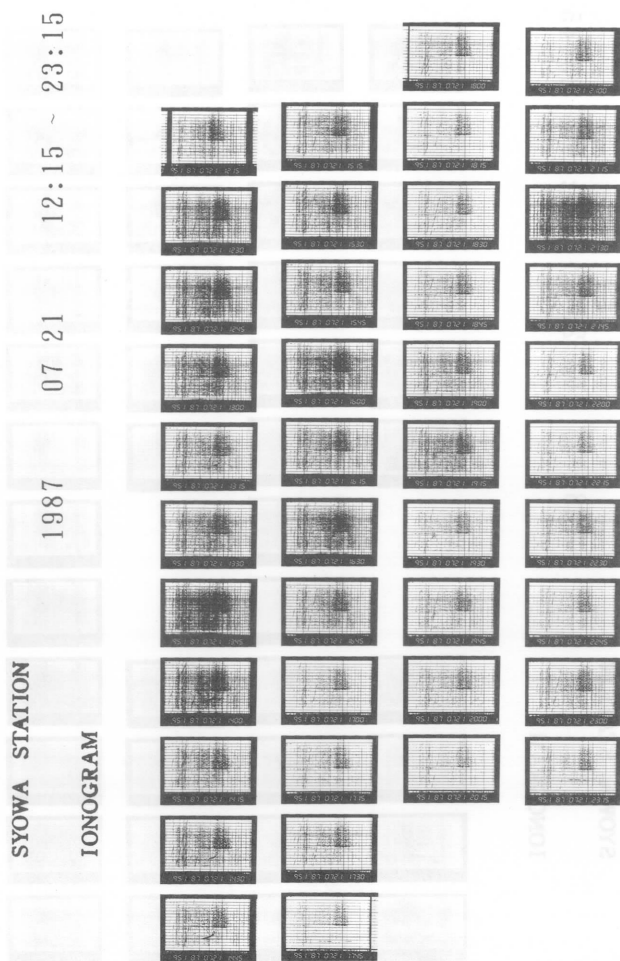
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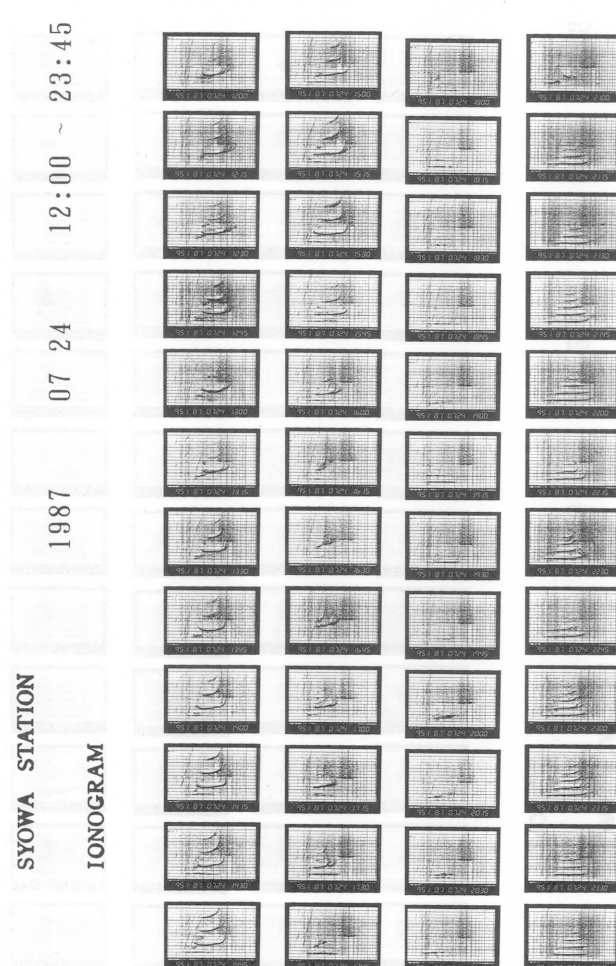
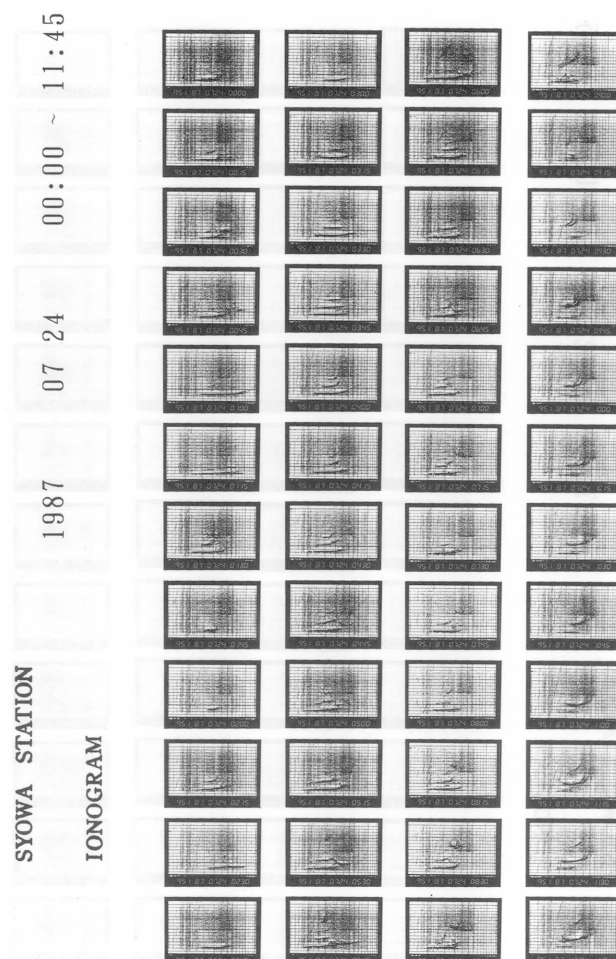
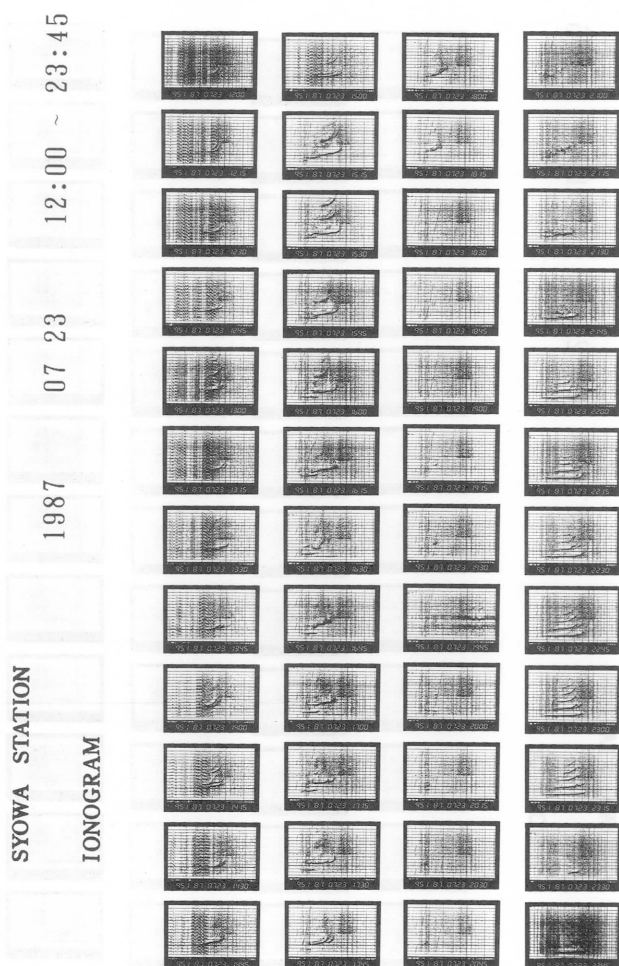
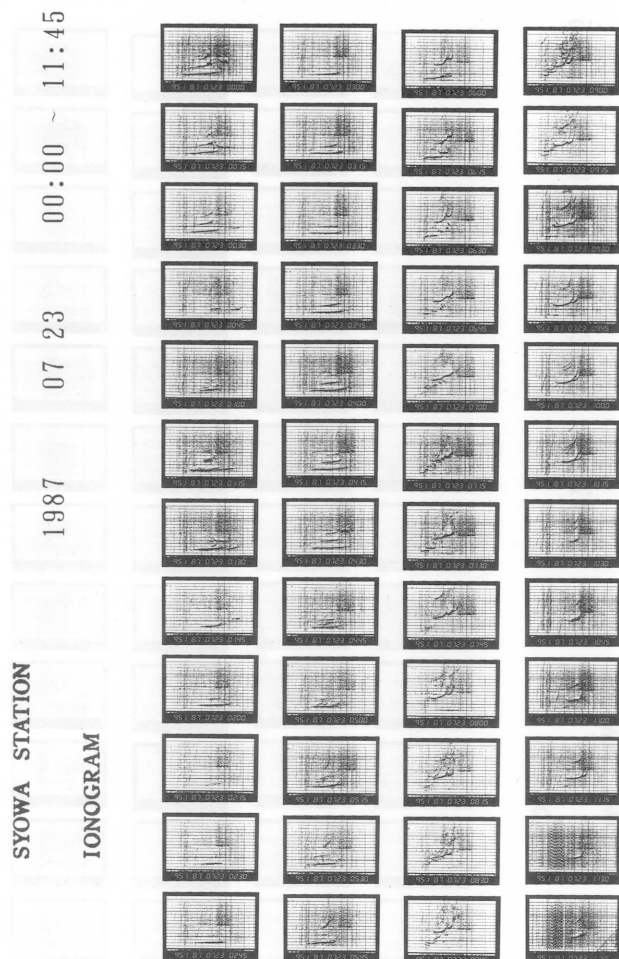


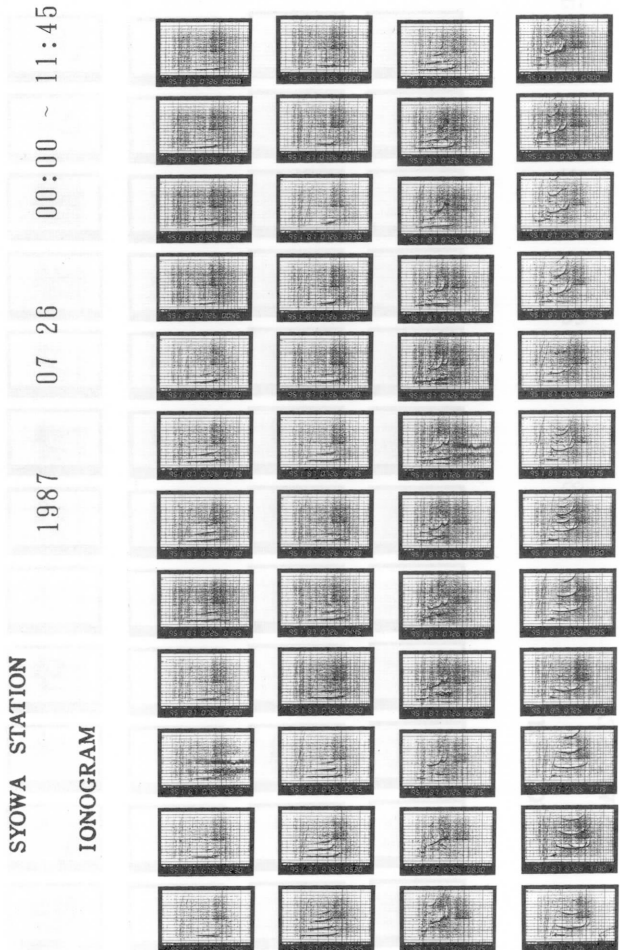
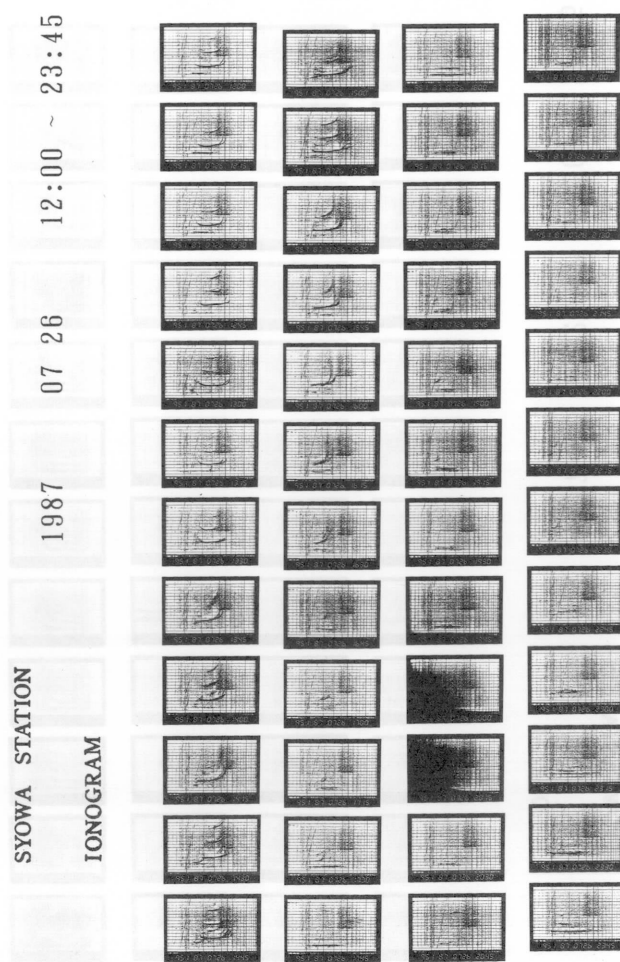
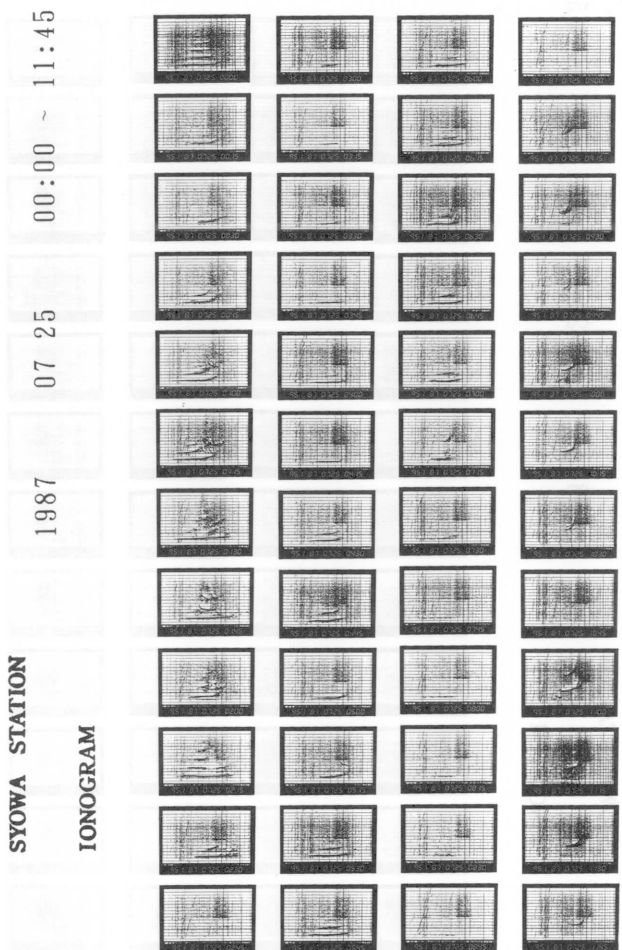
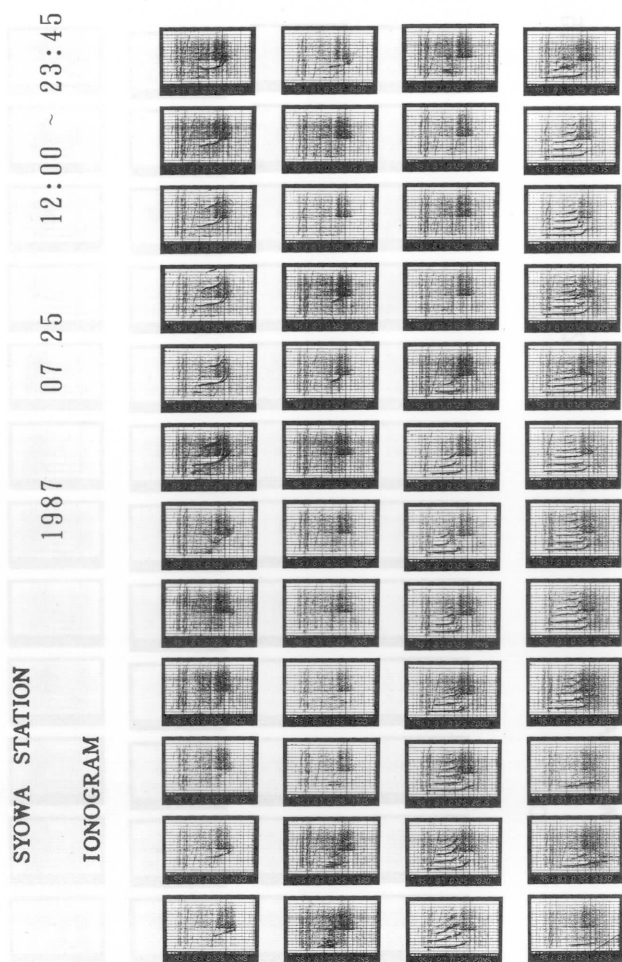
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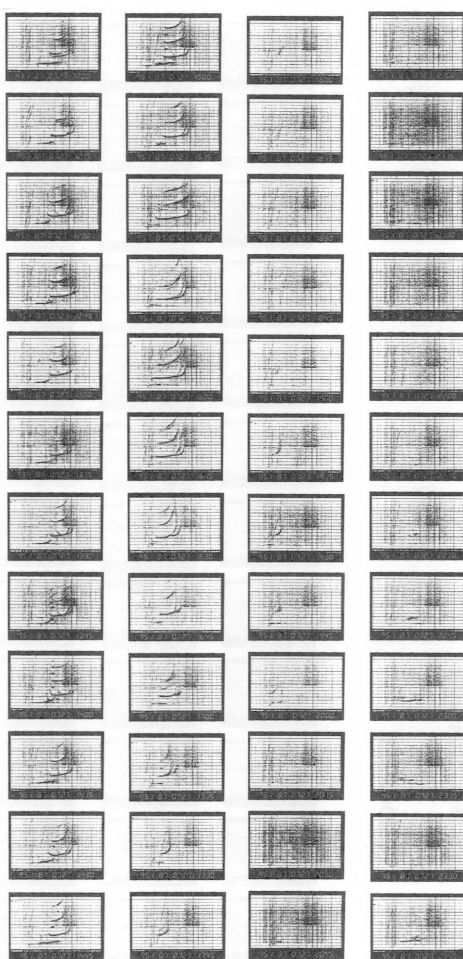
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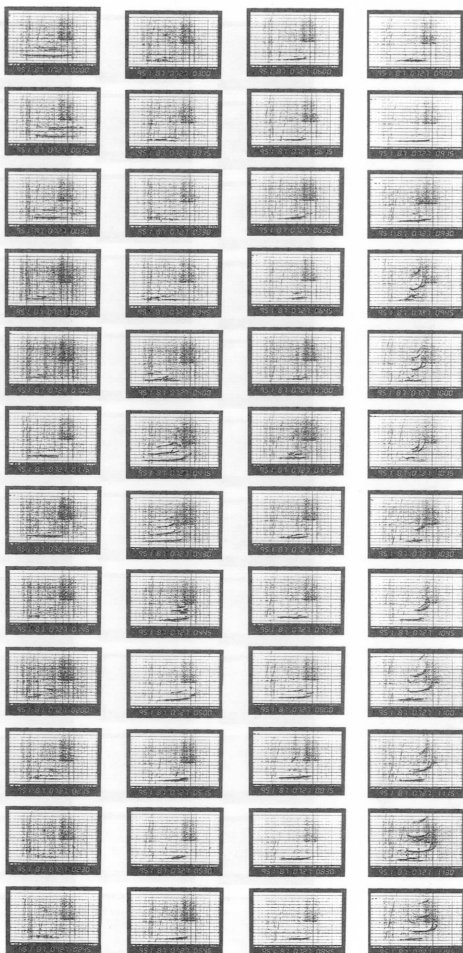
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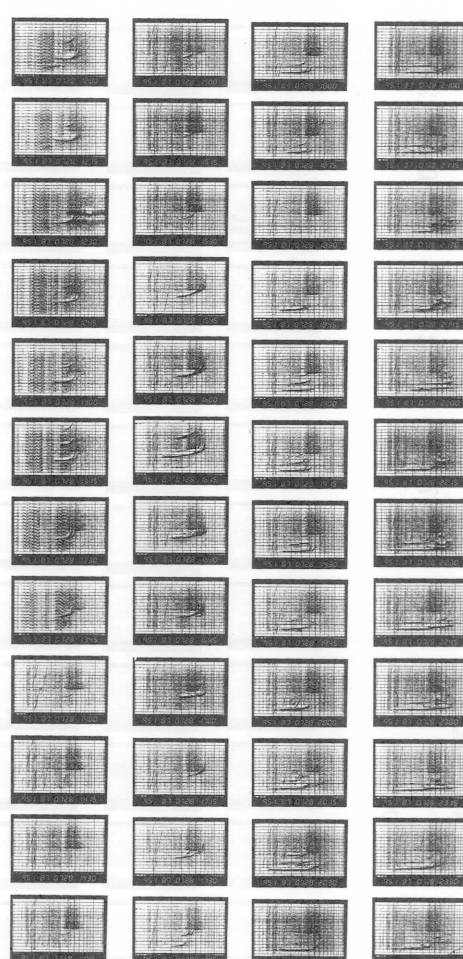
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07 28

12:00 ~ 23:45

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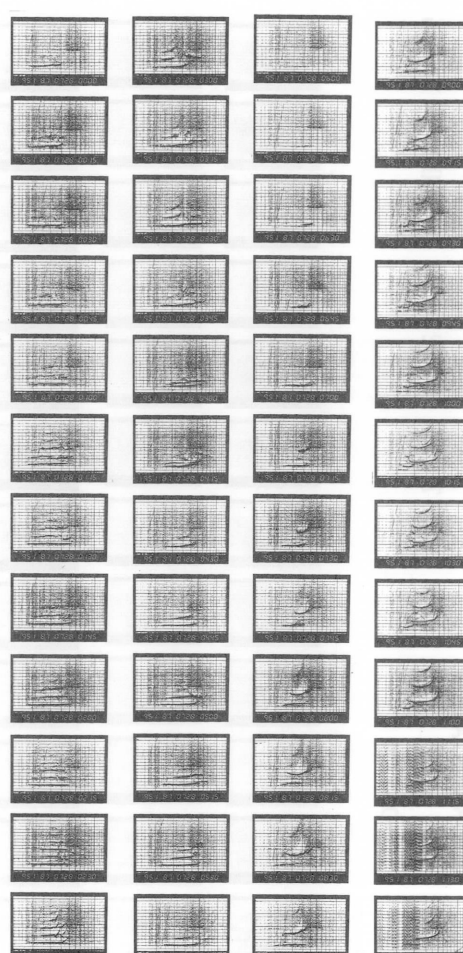
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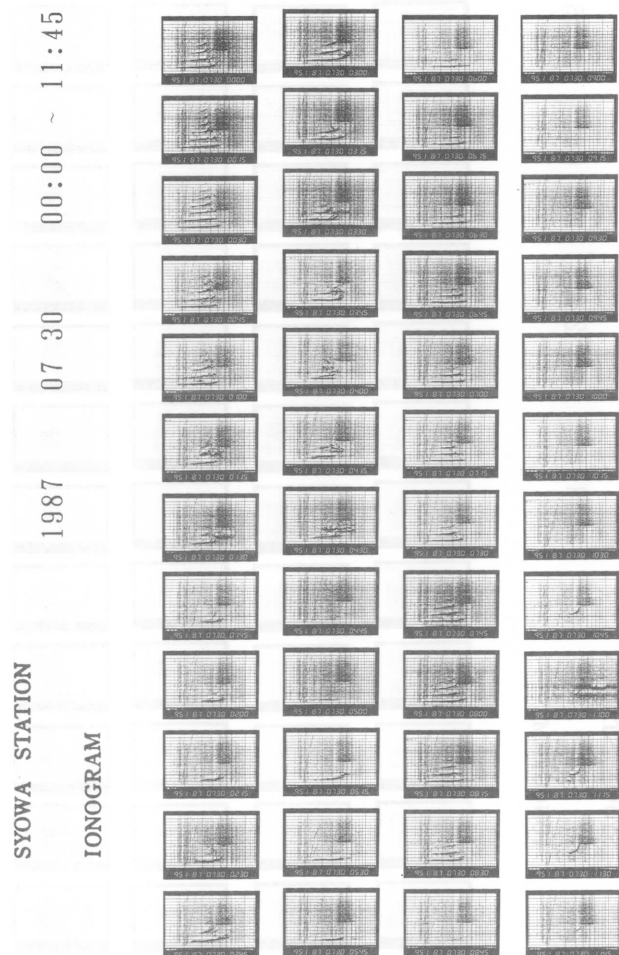
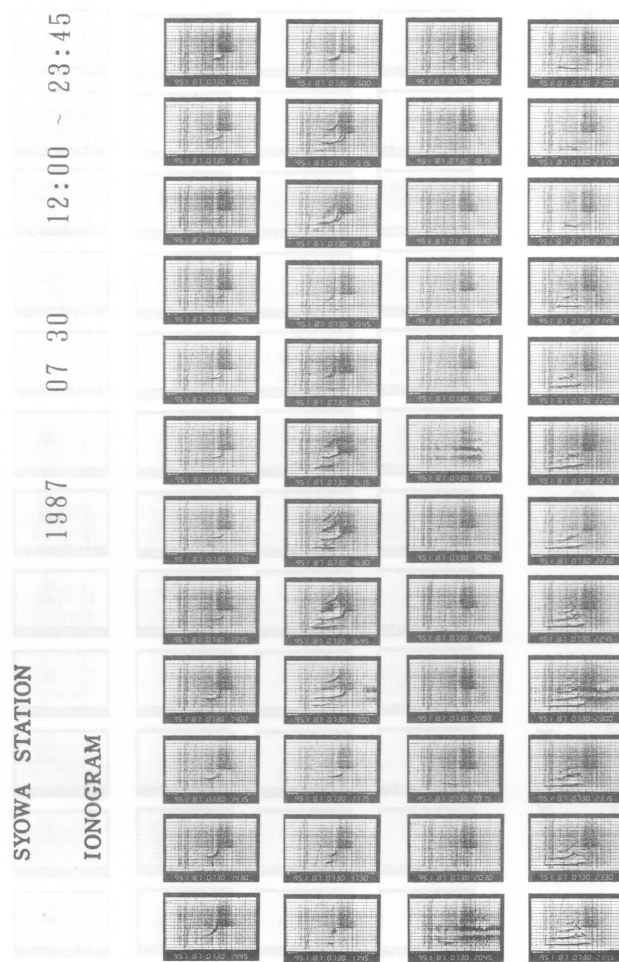
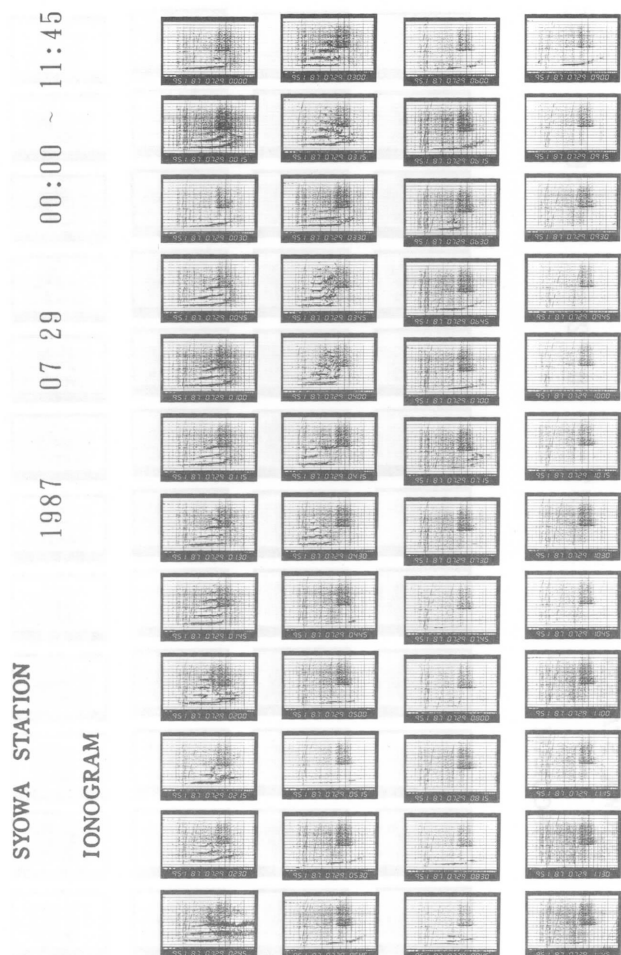
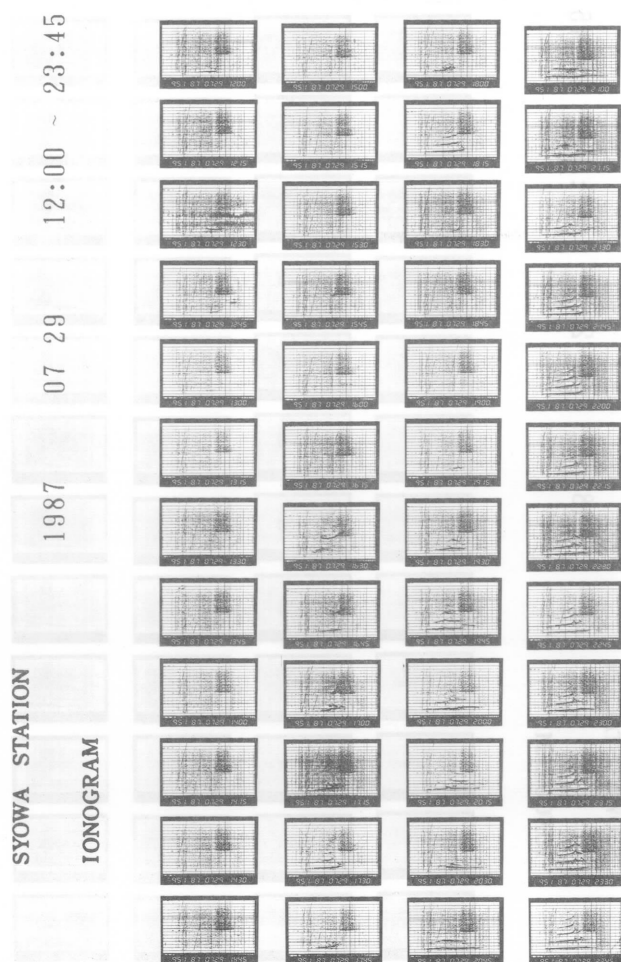
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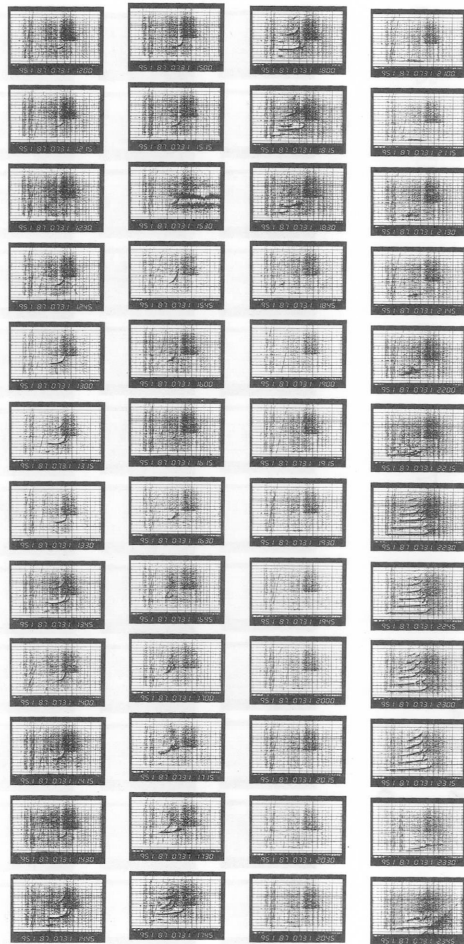
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07 31

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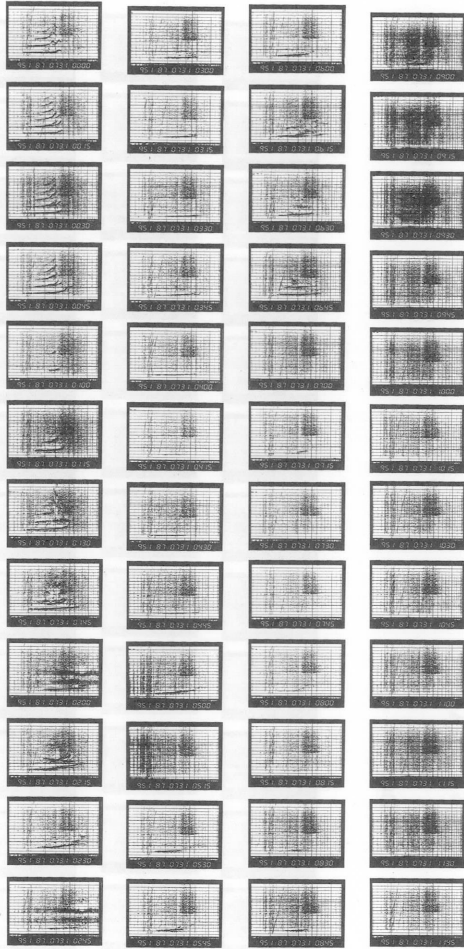
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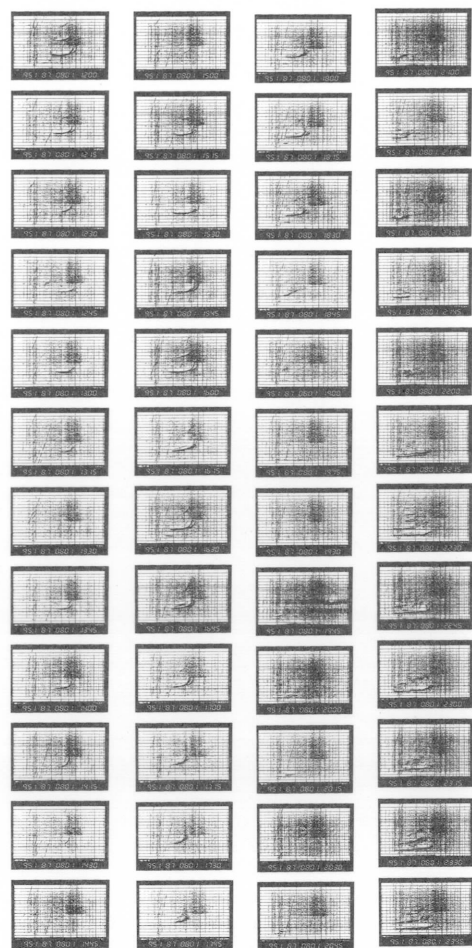
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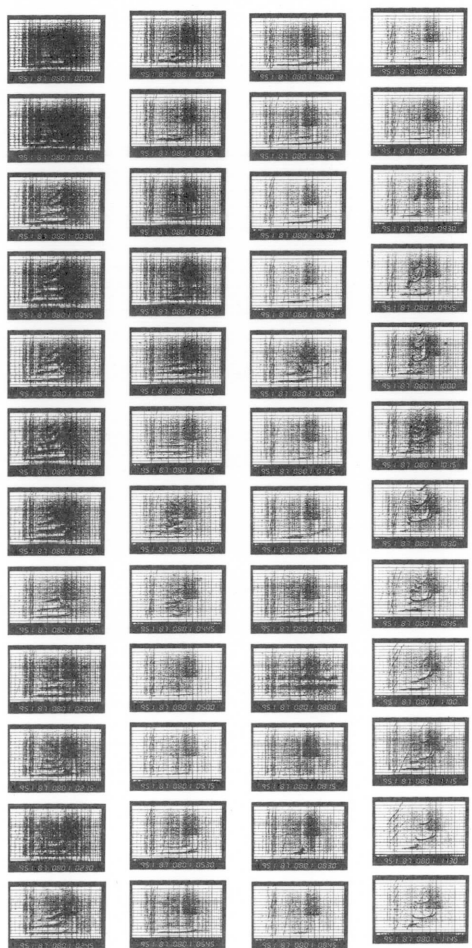
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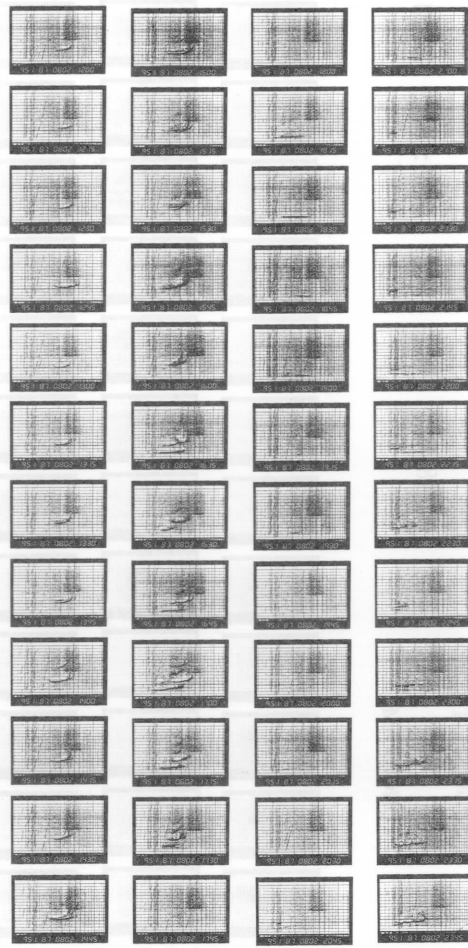
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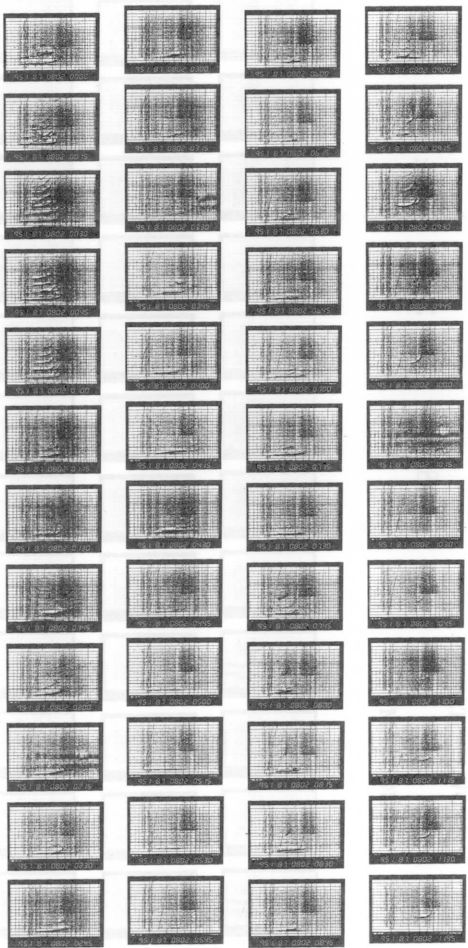
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SYOWA STATION
1987 08 02 12:00 ~ 23:45
IONOGRAM



SYOWA STATION
1987 08 02 00:00 ~ 11:45
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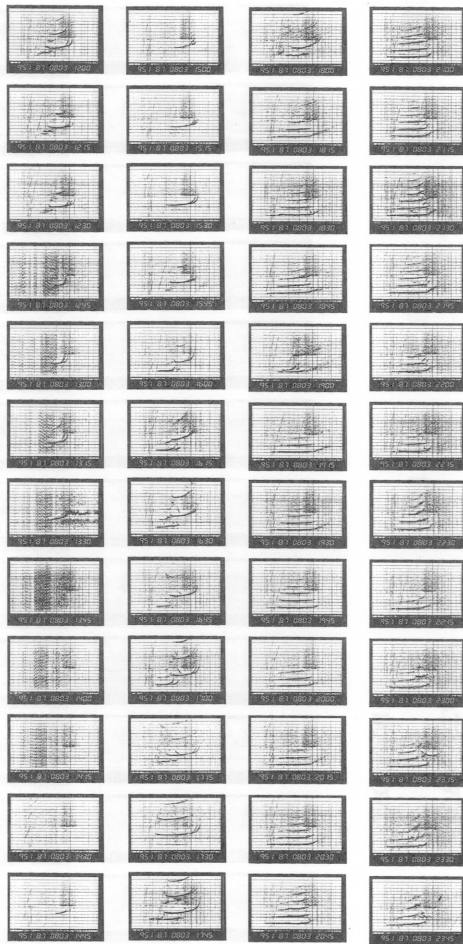
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IONOGRAM

12:00 ~ 23:45

08 03

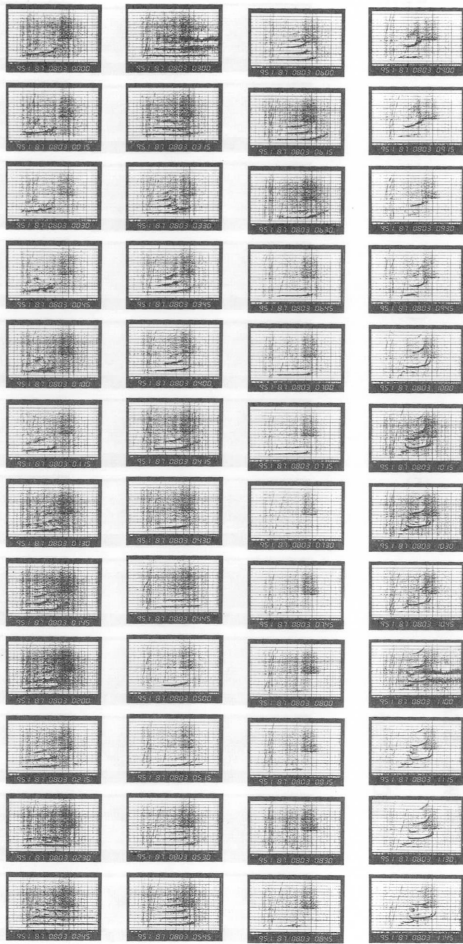
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00:00 ~ 11:45



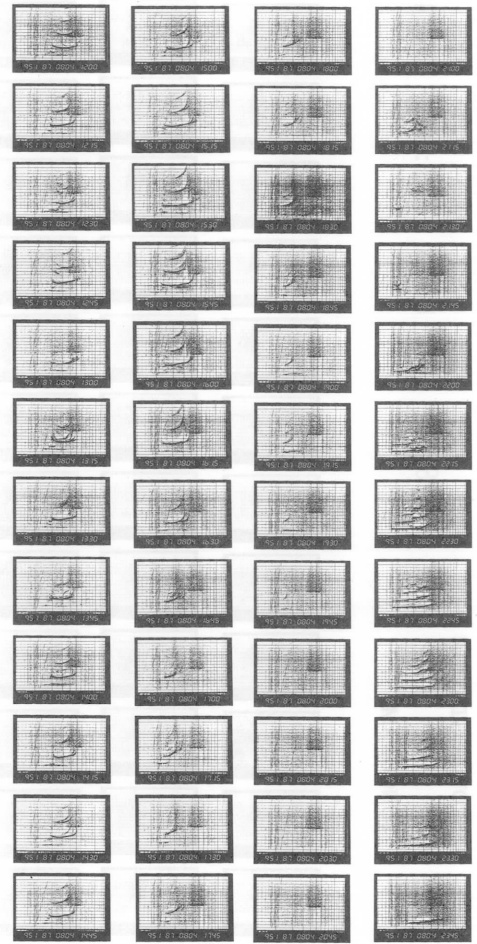
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IONOGRAM

12:00 ~ 23:45

08 04

1987



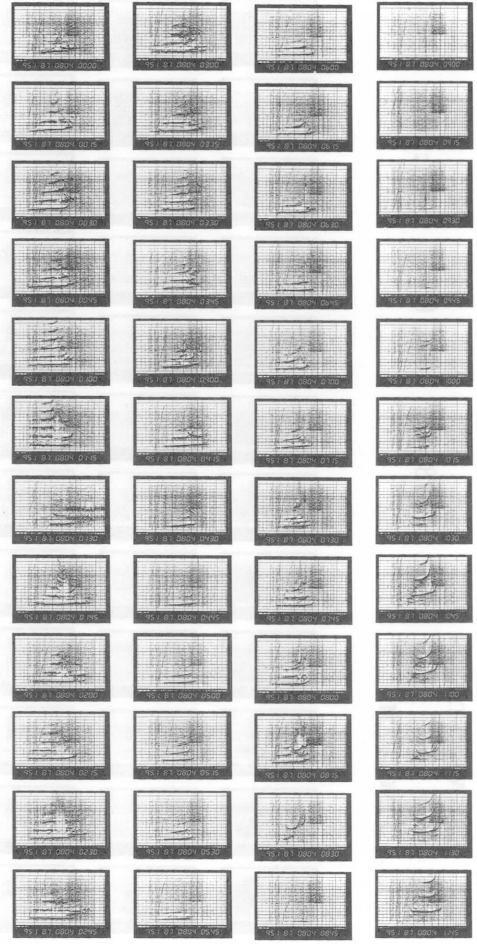
SYOWA STATION

IONOGRAM

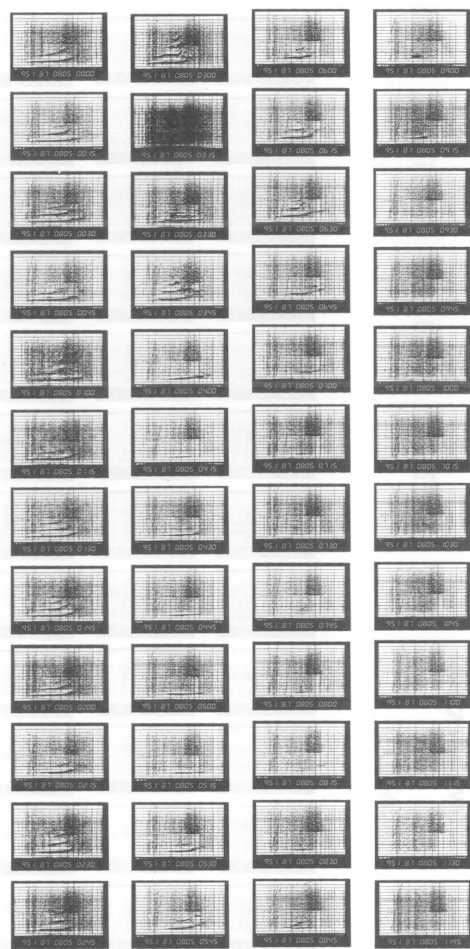
00:00 ~ 11:45

08 04

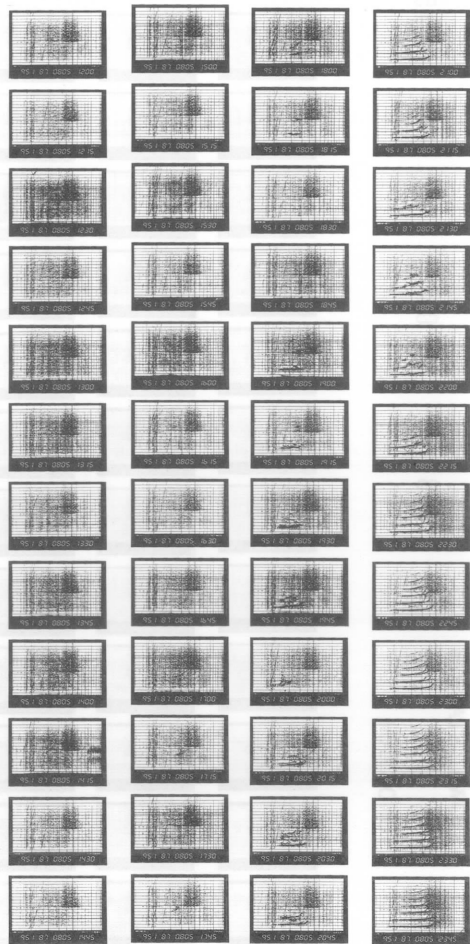
1987



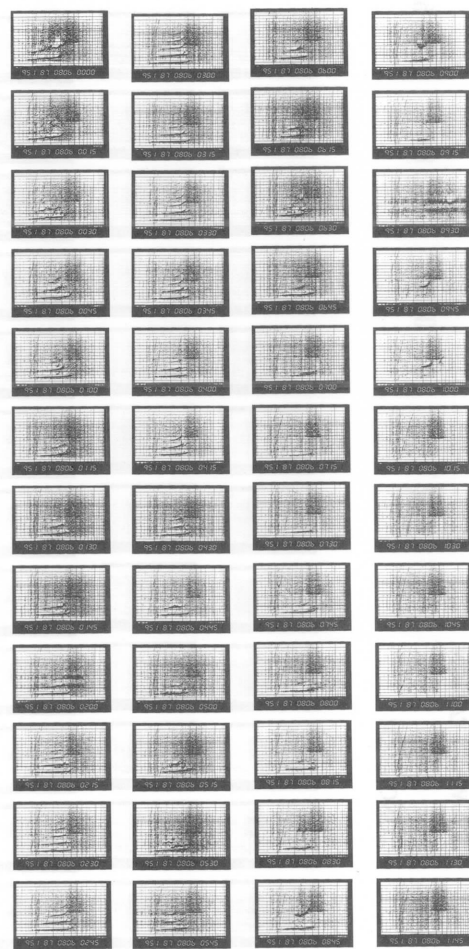
SYOWA STATION
1987
08 05
00:00 ~ 11:45
IONOGRAM



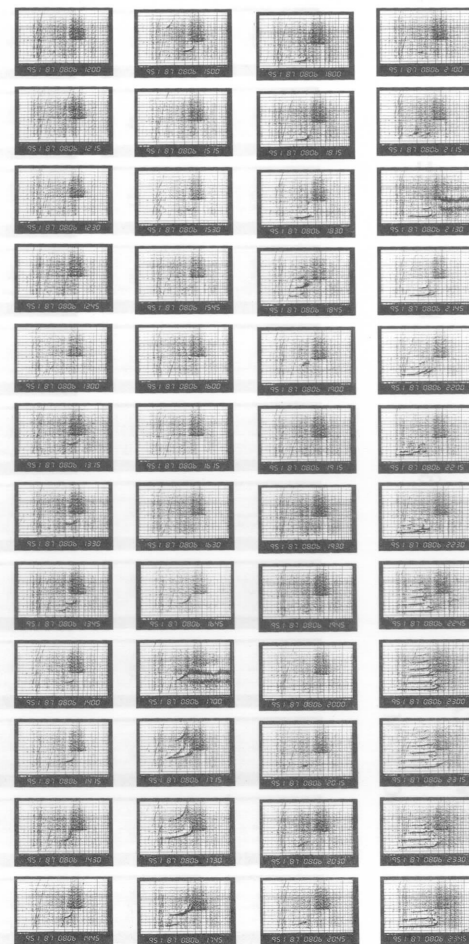
SYOWA STATION
1987
08 05
12:00 ~ 23:45
IONOGRAM



SYOWA STATION
1987
08 06
00:00 ~ 11:45
IONOGRAM



SYOWA STATION
1987
08 06
12:00 ~ 23:45
IONOGRAM

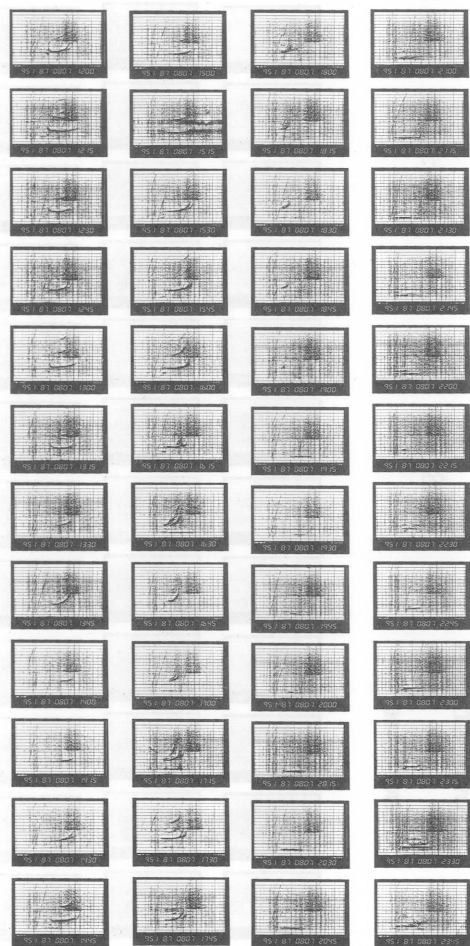


SYOWA STATION
IONOGRAM

1987

08 07

12:00 ~ 23:45

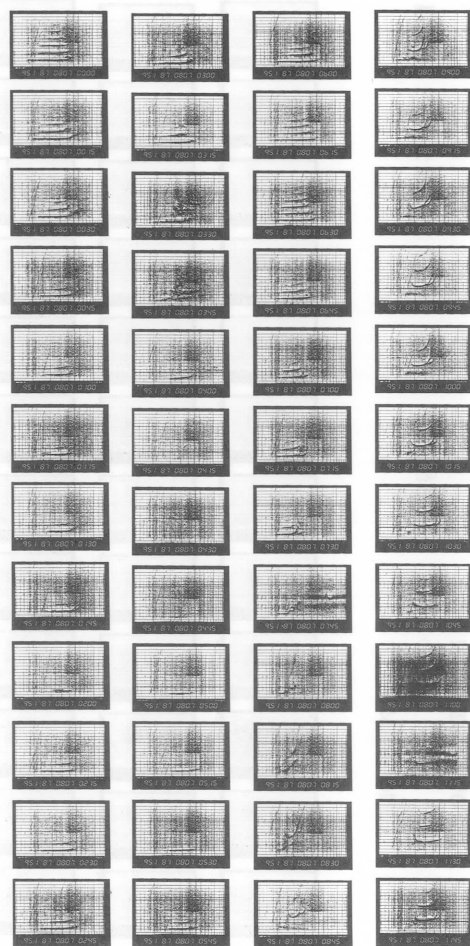


SYOWA STATION
IONOGRAM

1987

08 07

00:00 ~ 11:45

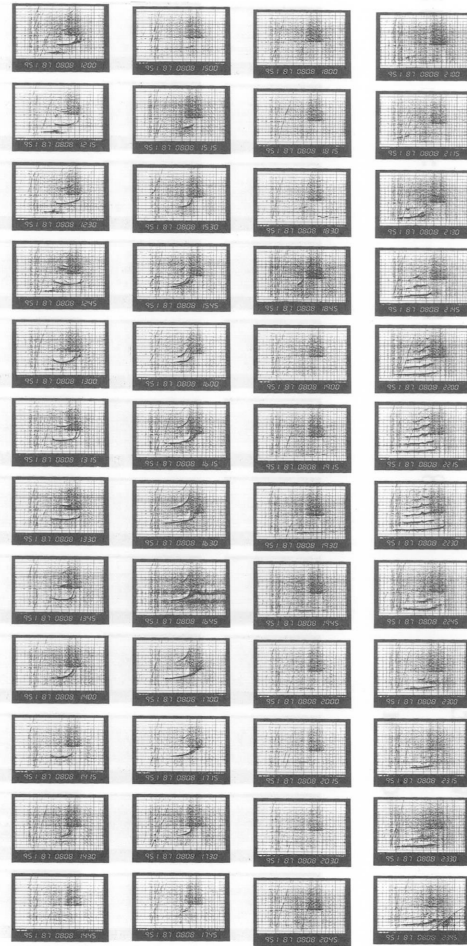


SYOWA STATION
IONOGRAM

1987

08 08

12:00 ~ 23:45

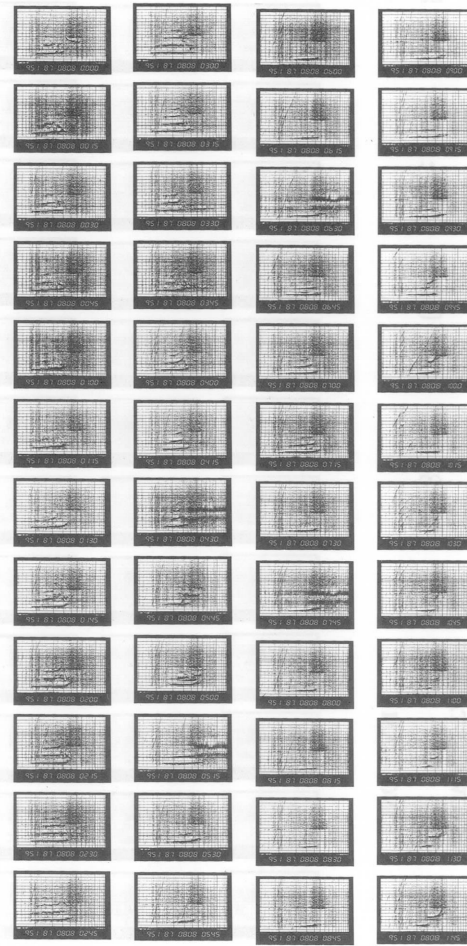


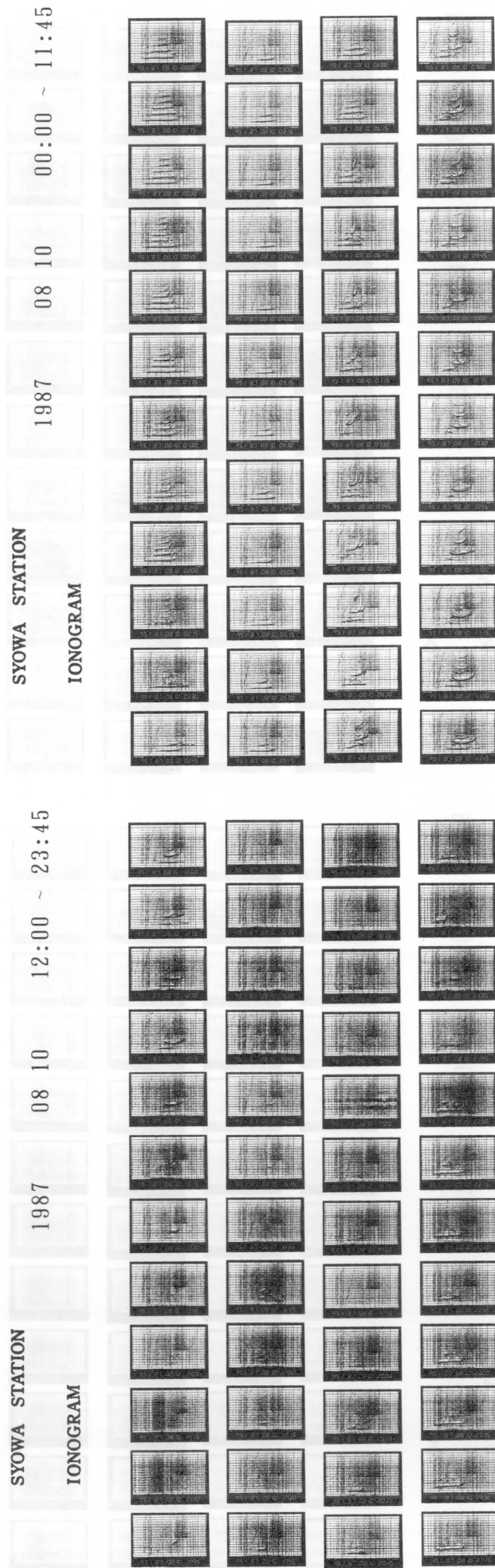
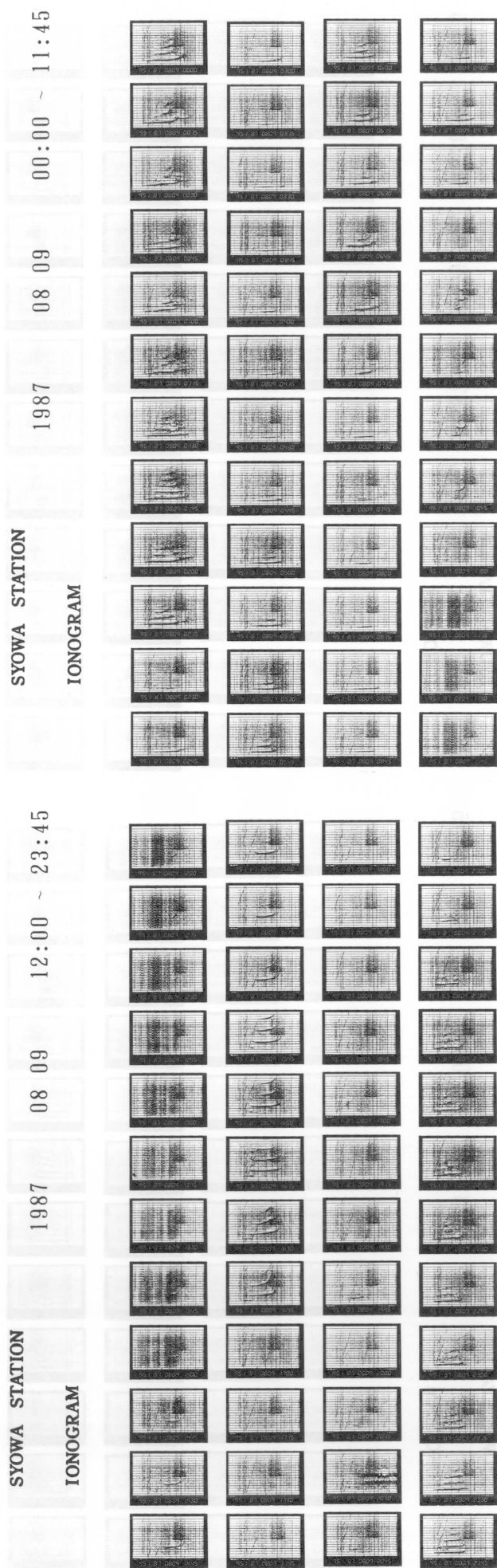
SYOWA STATION
IONOGRAM

1987

08 08

00:00 ~ 11:45





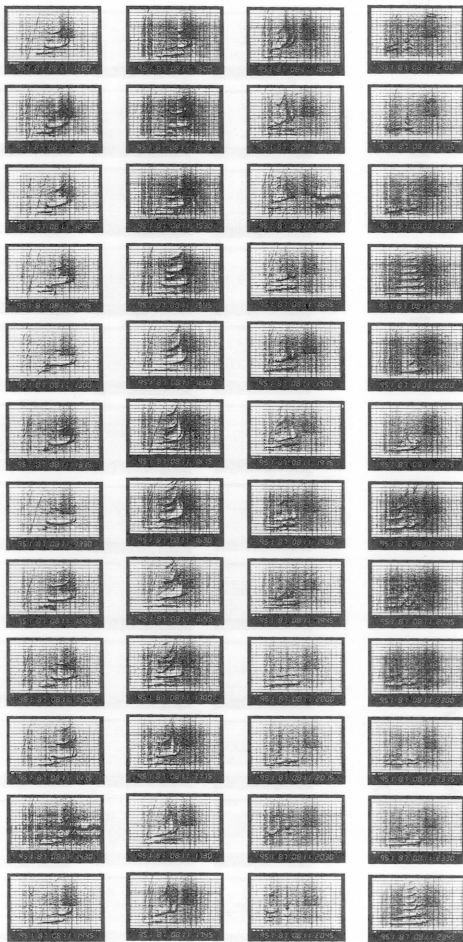
SYOWA STATION

IONOGRAM

1987

08 11

12:00 ~ 23:45



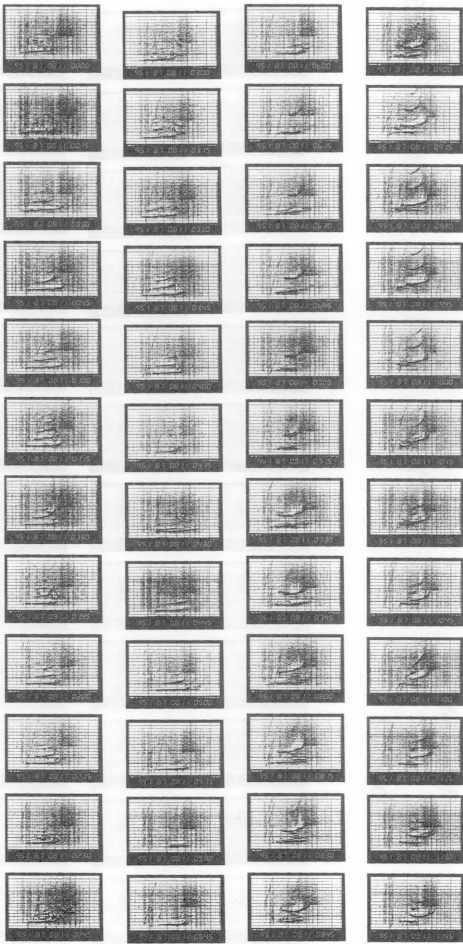
SYOWA STATION

IONOGRAM

1987

08 11

00:00 ~ 11:45



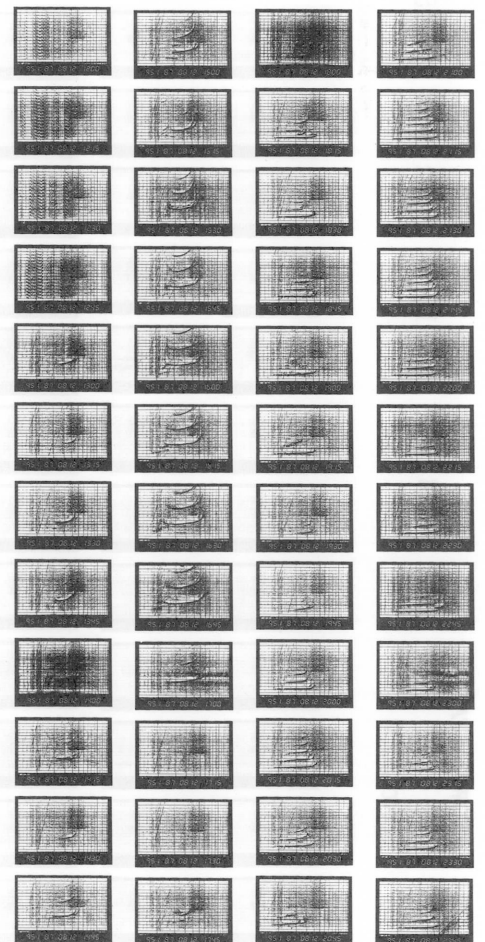
SYOWA STATION

IONOGRAM

1987

08 12

12:00 ~ 23:45



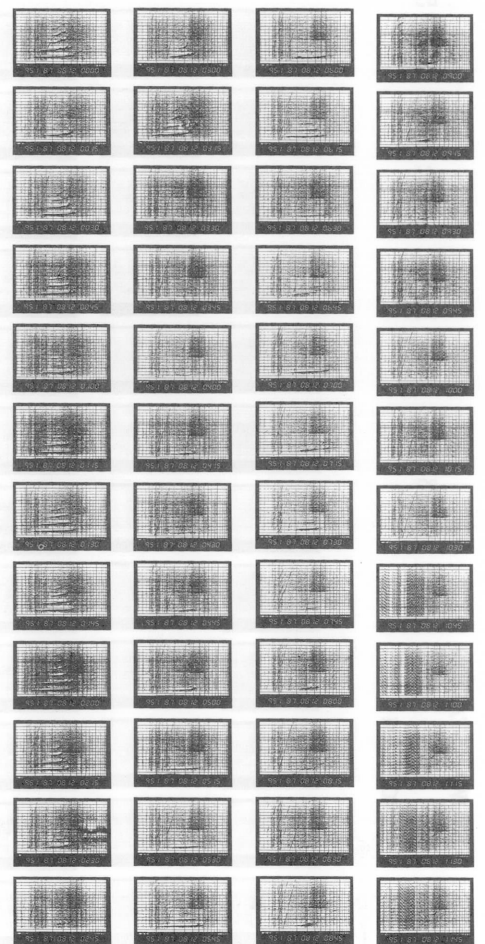
SYOWA STATION

IONOGRAM

1987

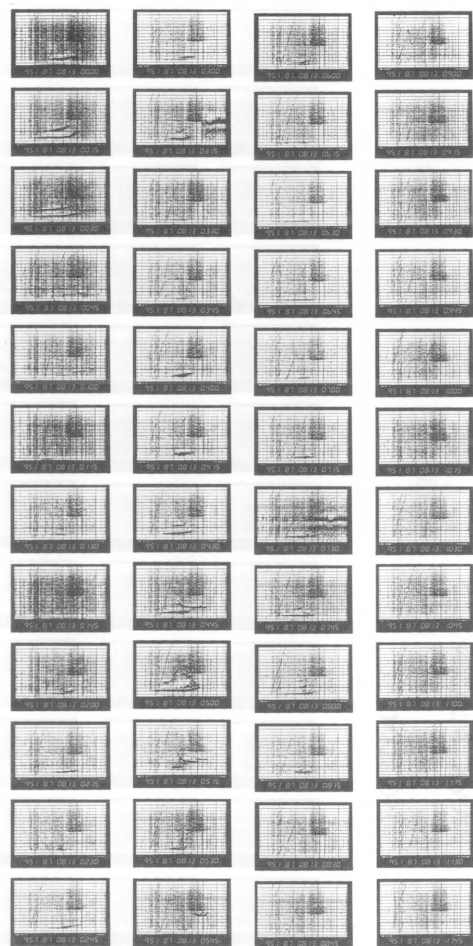
08 12

00:00 ~ 11:45



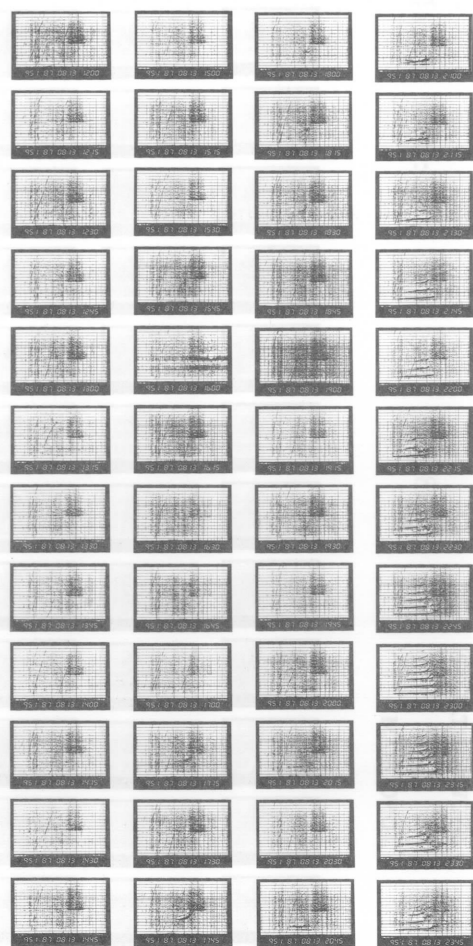
SYOWA STATION
IONOGRAM

1987 08 13 00:00 ~ 11:45



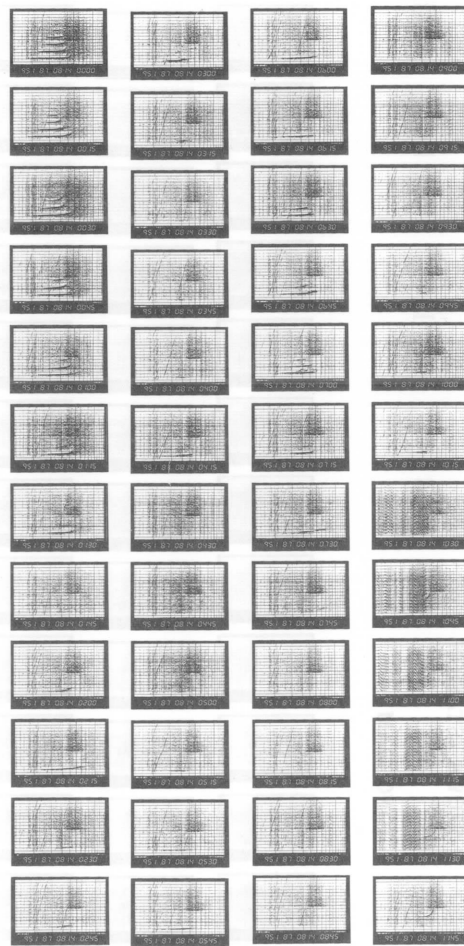
SYOWA STATION
IONOGRAM

1987 08 13 12:00 ~ 23:45



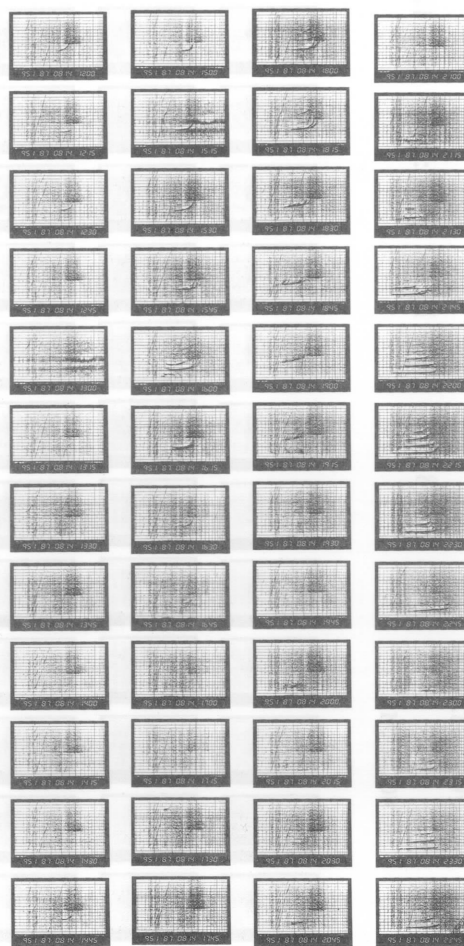
SYOWA STATION
IONOGRAM

1987 08 14 00:00 ~ 11:45



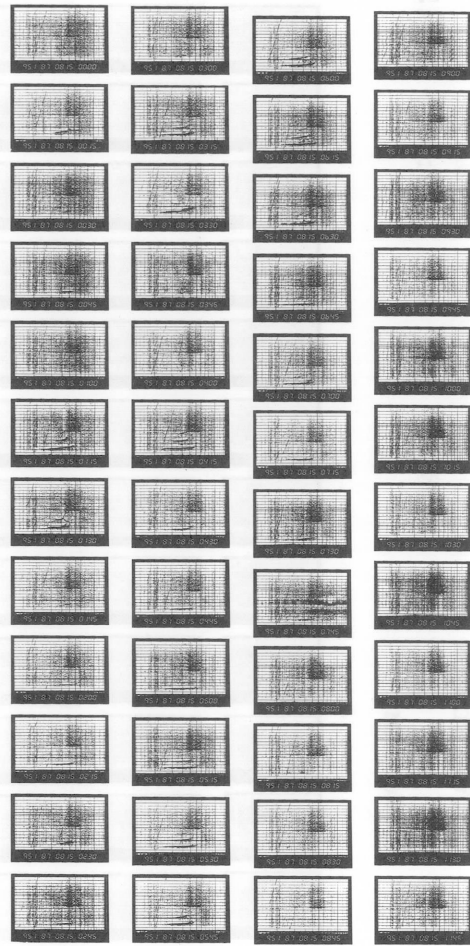
SYOWA STATION
IONOGRAM

1987 08 14 12:00 ~ 23:45



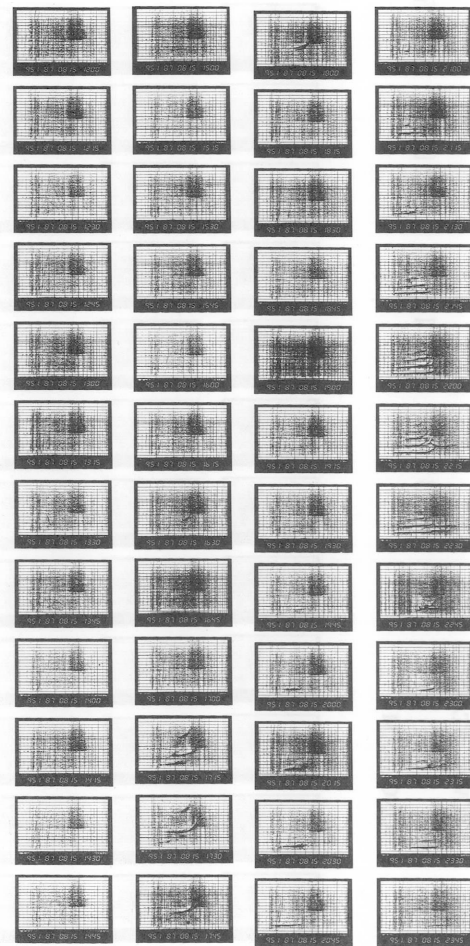
SYOWA STATION
IONOGRAM

1987 08 15 00:00 ~ 11:45



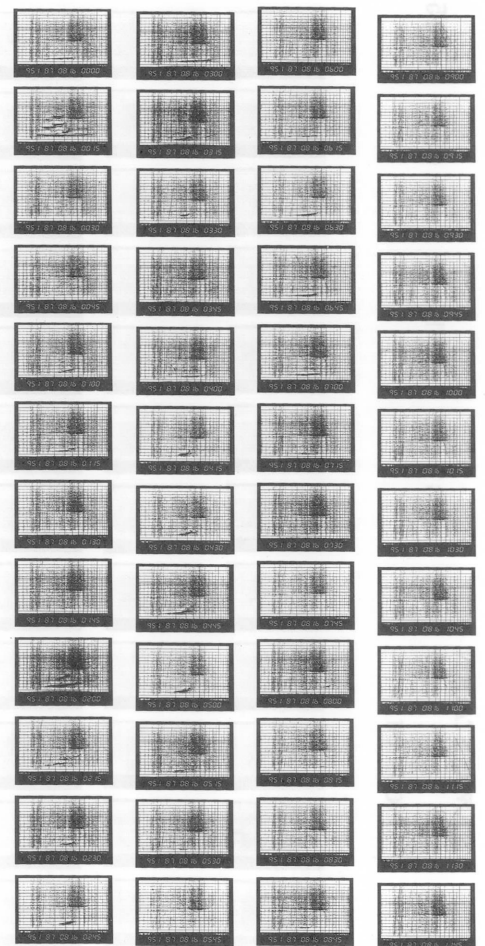
SYOWA STATION
IONOGRAM

1987 08 15 12:00 ~ 23:45



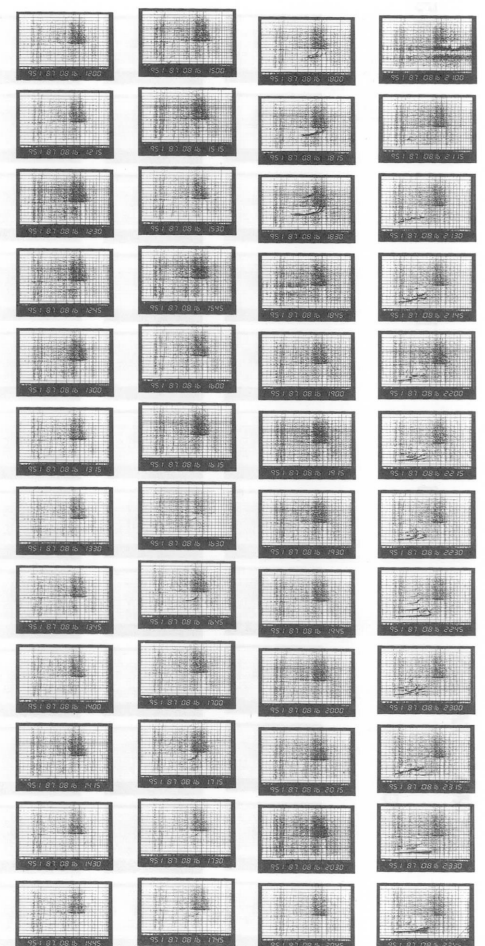
SYOWA STATION
IONOGRAM

1987 08 16 00:00 ~ 11:45



SYOWA STATION
IONOGRAM

1987 08 16 12:00 ~ 23:45

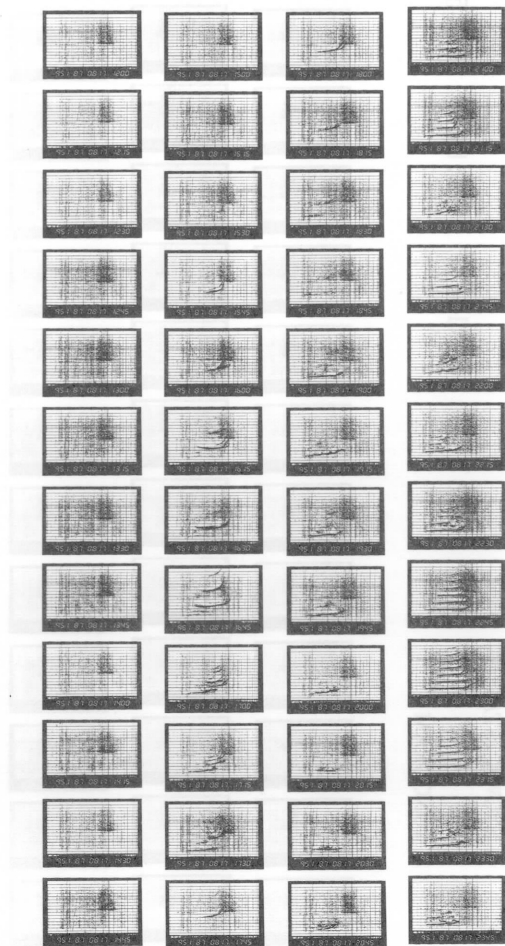


SYOWA STATION
IONOGRAM

1987

08 17

12:00 ~ 23:45

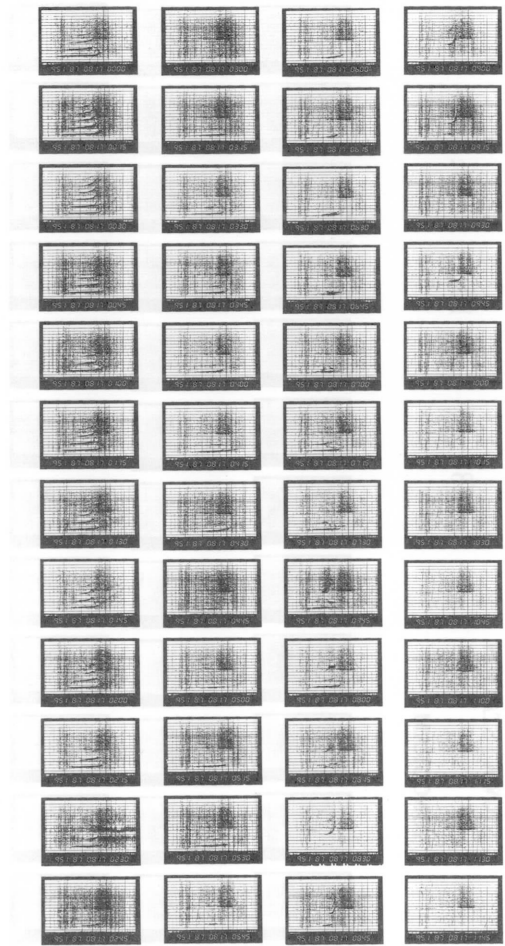


SYOWA STATION
IONOGRAM

1987

08 17

00:00 ~ 11:45

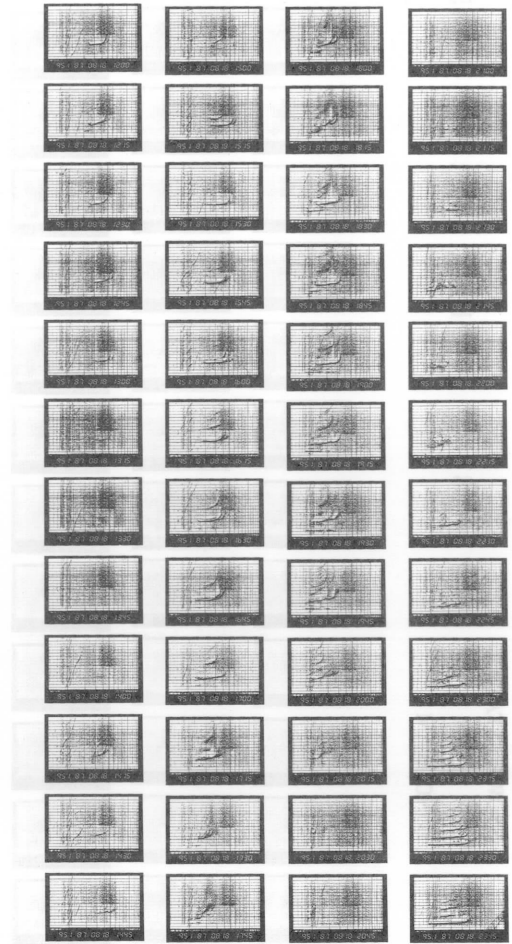


SYOWA STATION
IONOGRAM

1987

08 18

12:00 ~ 23:45

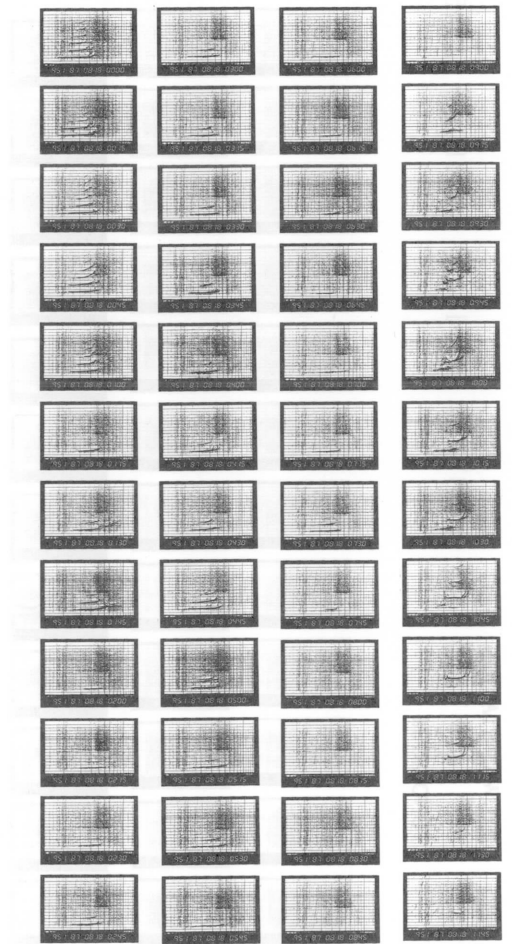


SYOWA STATION
IONOGRAM

1987

08 18

00:00 ~ 11:45



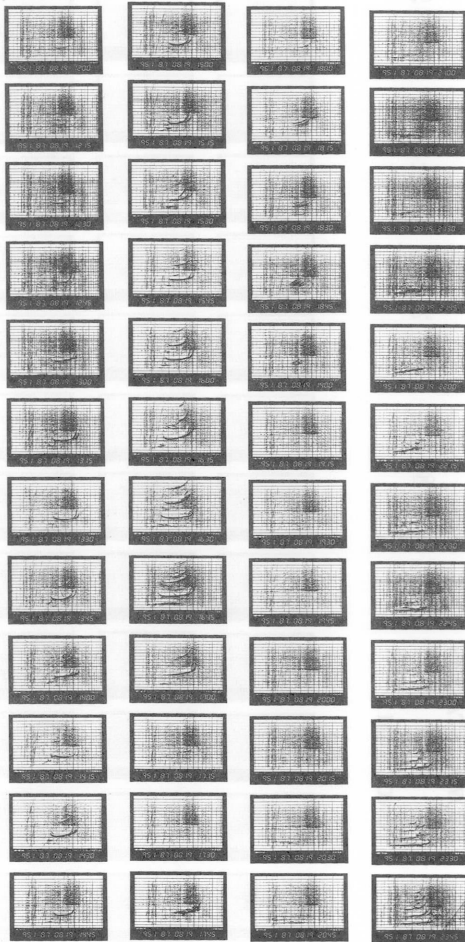
SYOWA STATION

IONOGRAM

12:00 ~ 23:45

08 19

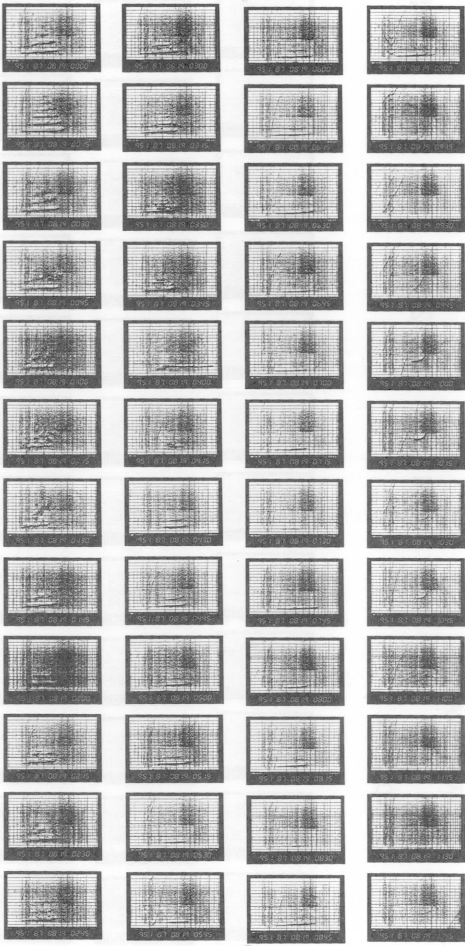
1987



00:00 ~ 11:45

08 19

1987



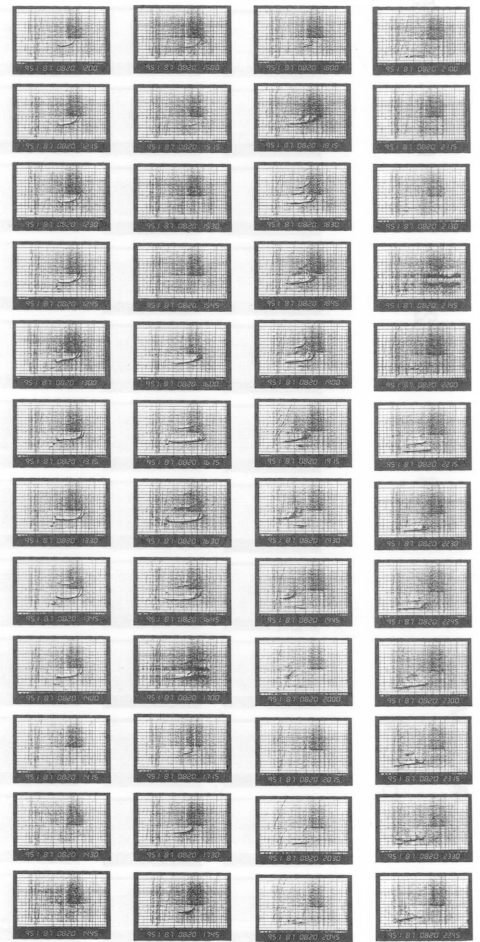
SYOWA STATION

IONOGRAM

12:00 ~ 23:45

08 20

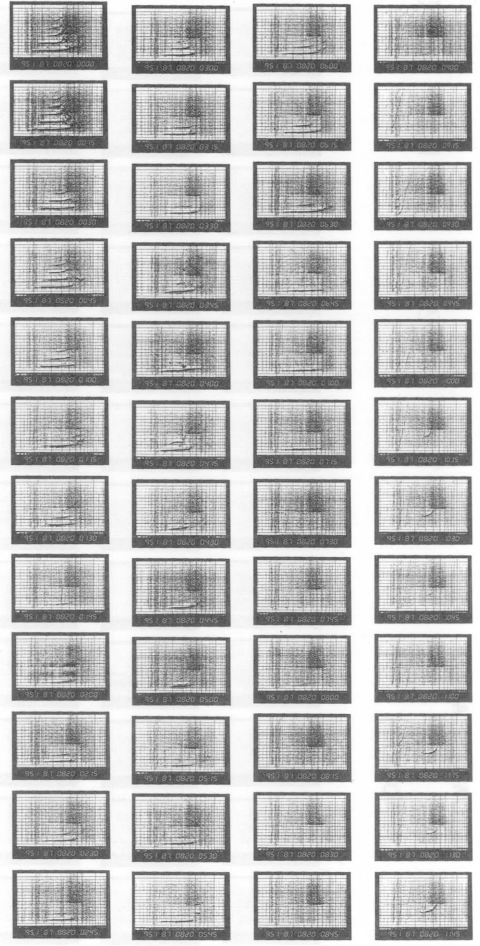
1987



00:00 ~ 11:45

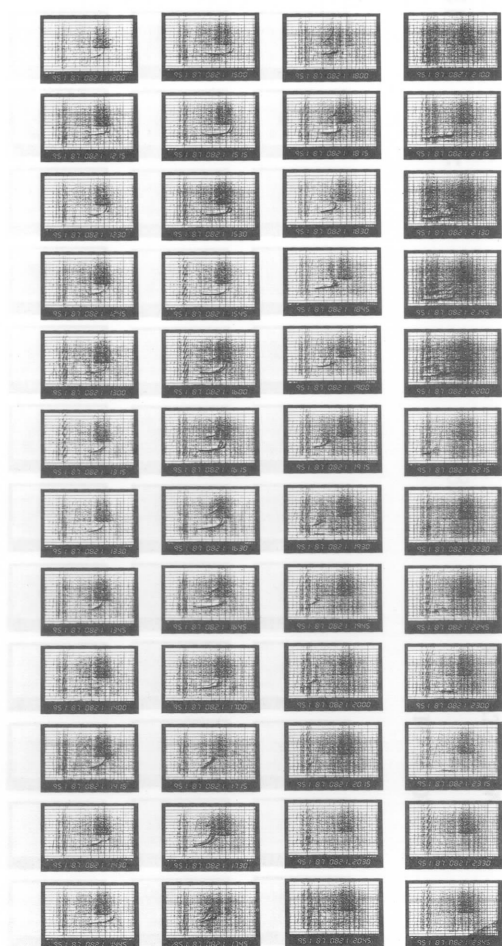
08 20

1987



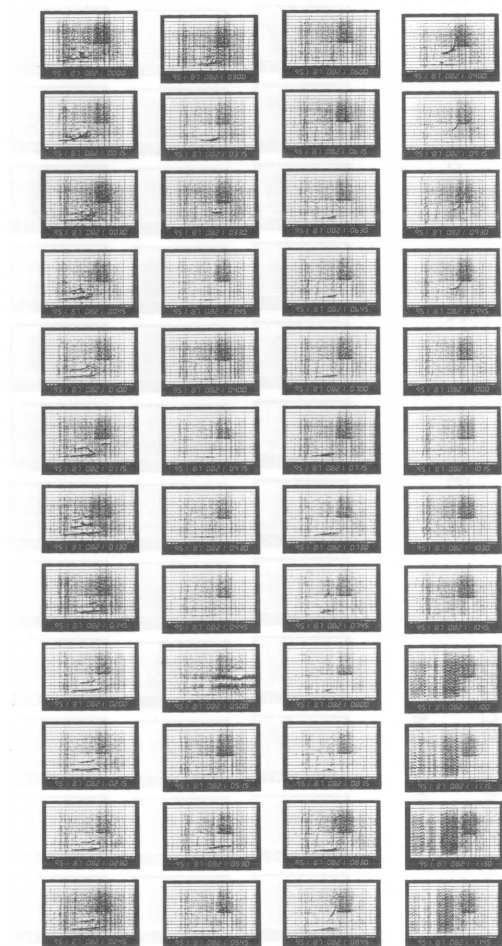
SYOWA STATION
IONOGRAM

1987 08 21 12:00 ~ 23:45



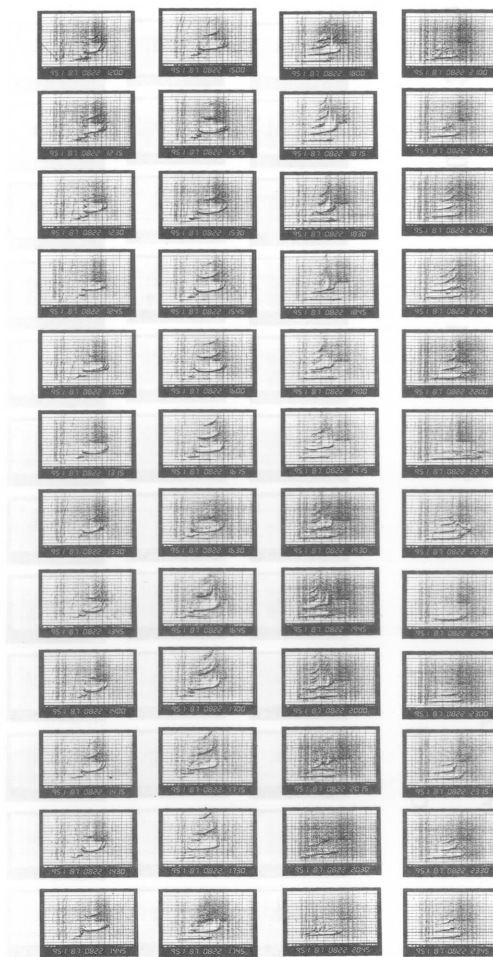
SYOWA STATION
IONOGRAM

1987 08 21 00:00 ~ 11:45



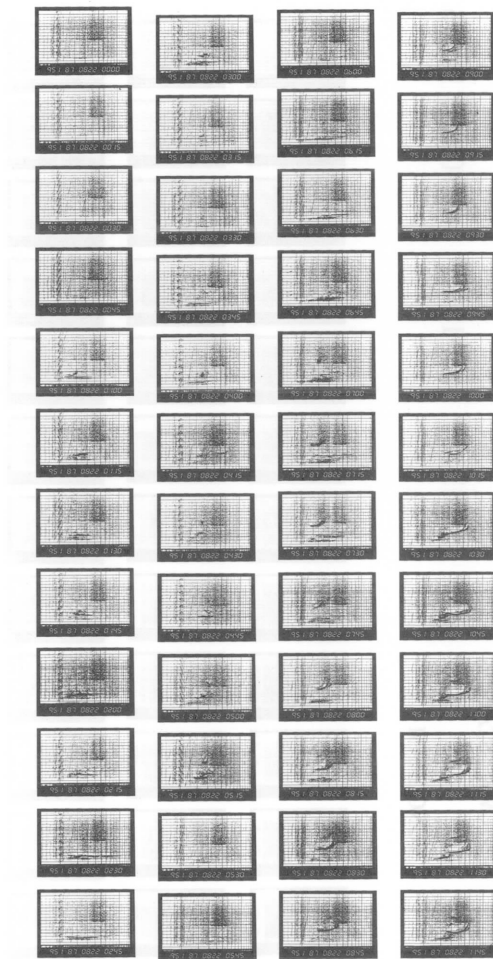
SYOWA STATION
IONOGRAM

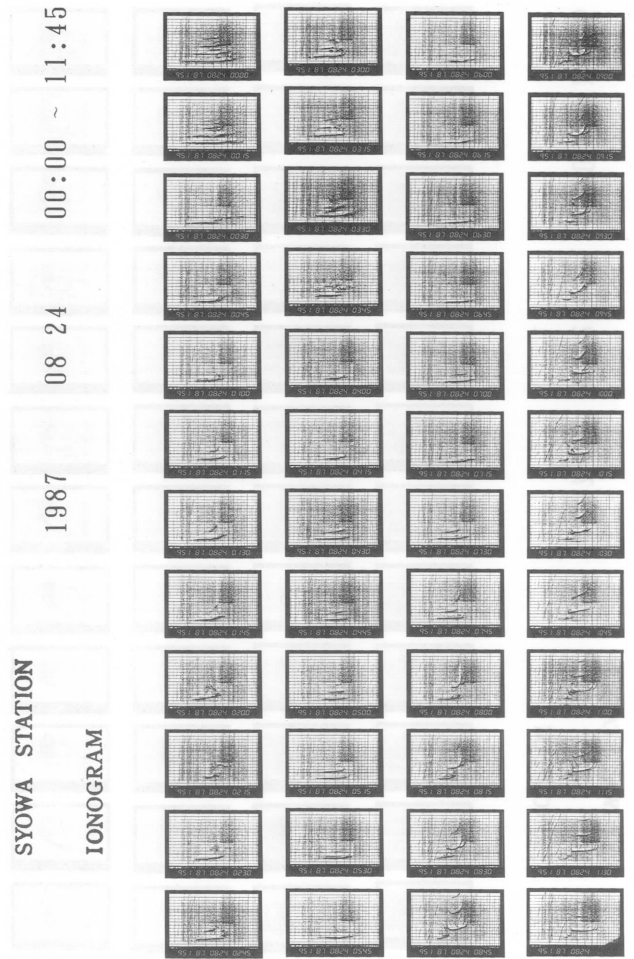
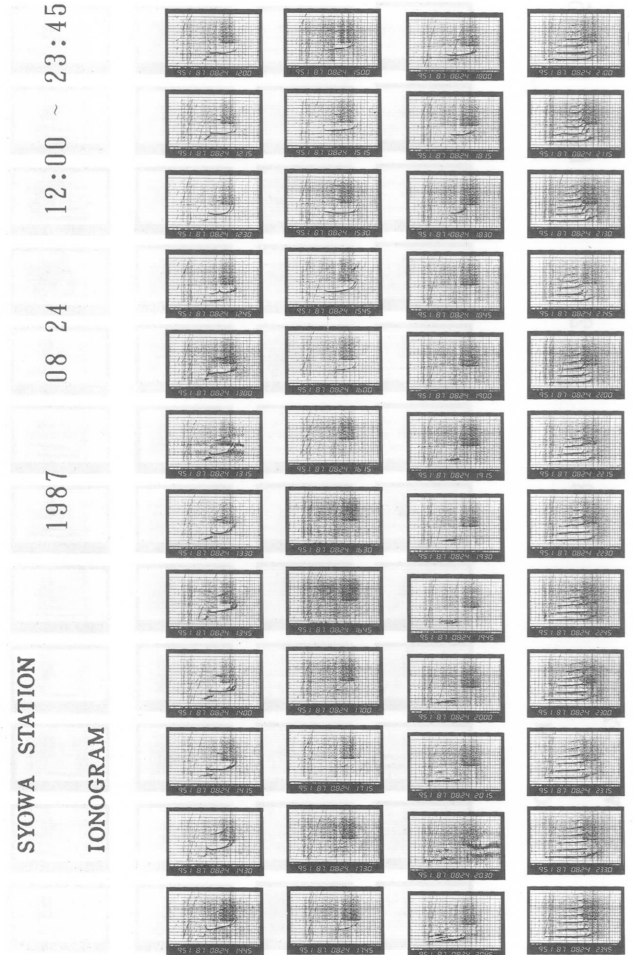
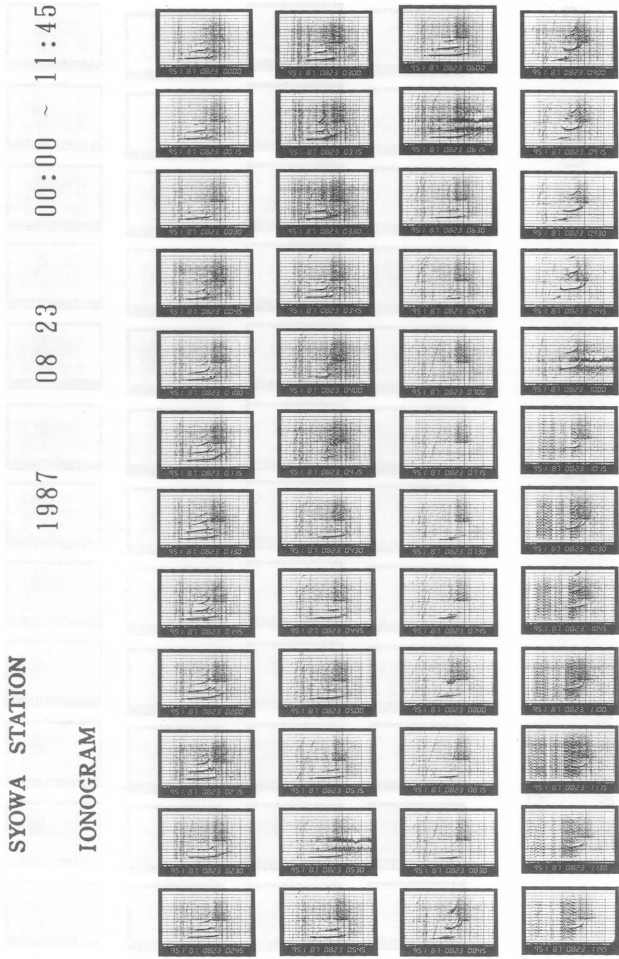
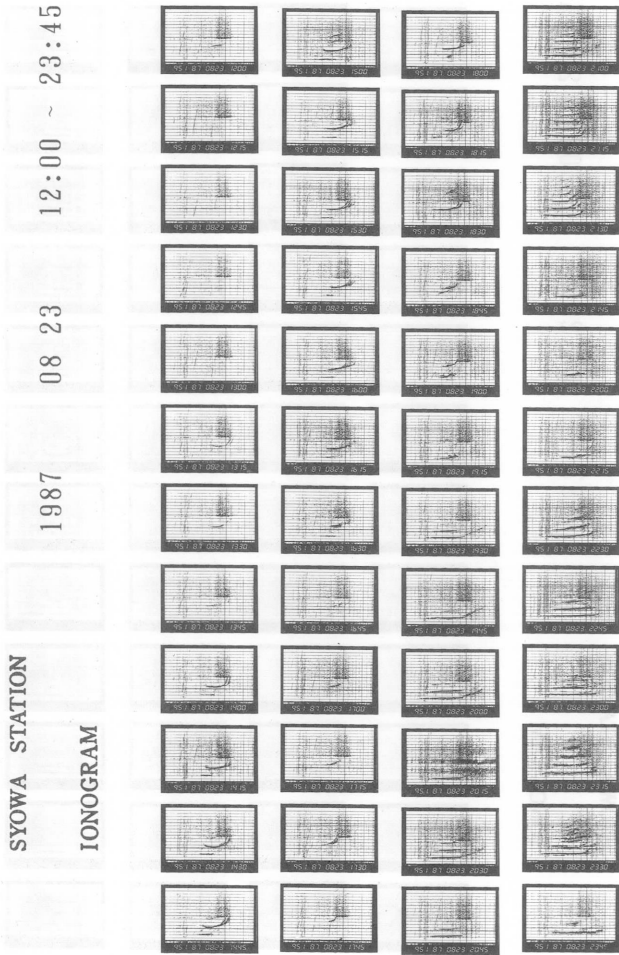
1987 08 22 12:00 ~ 23:45

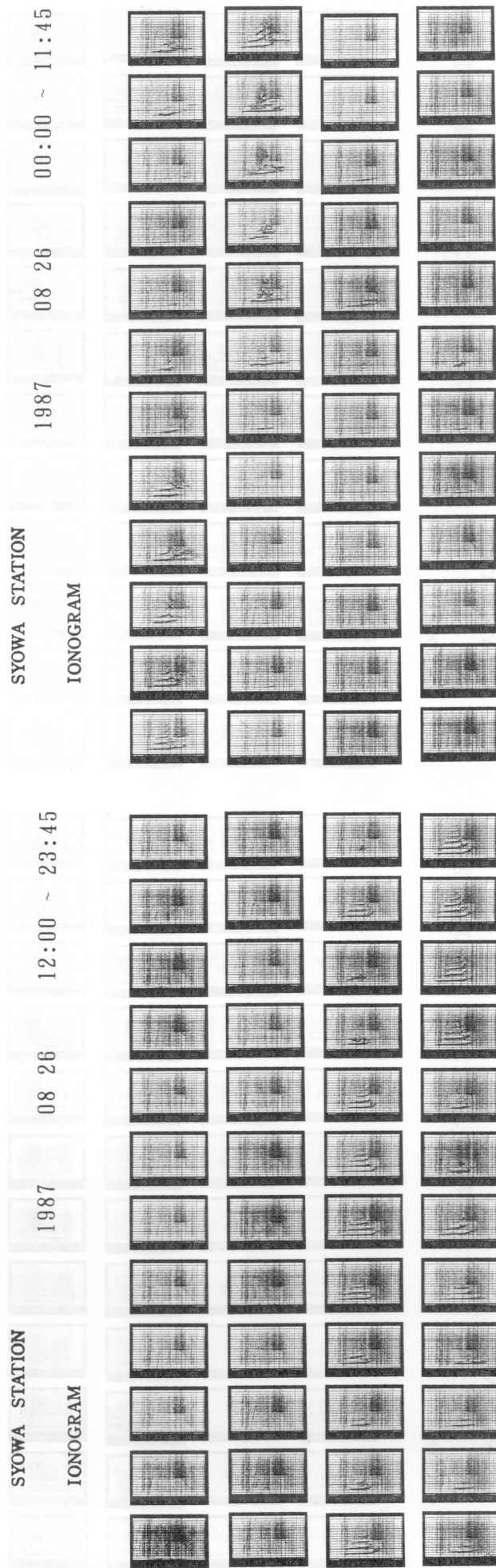
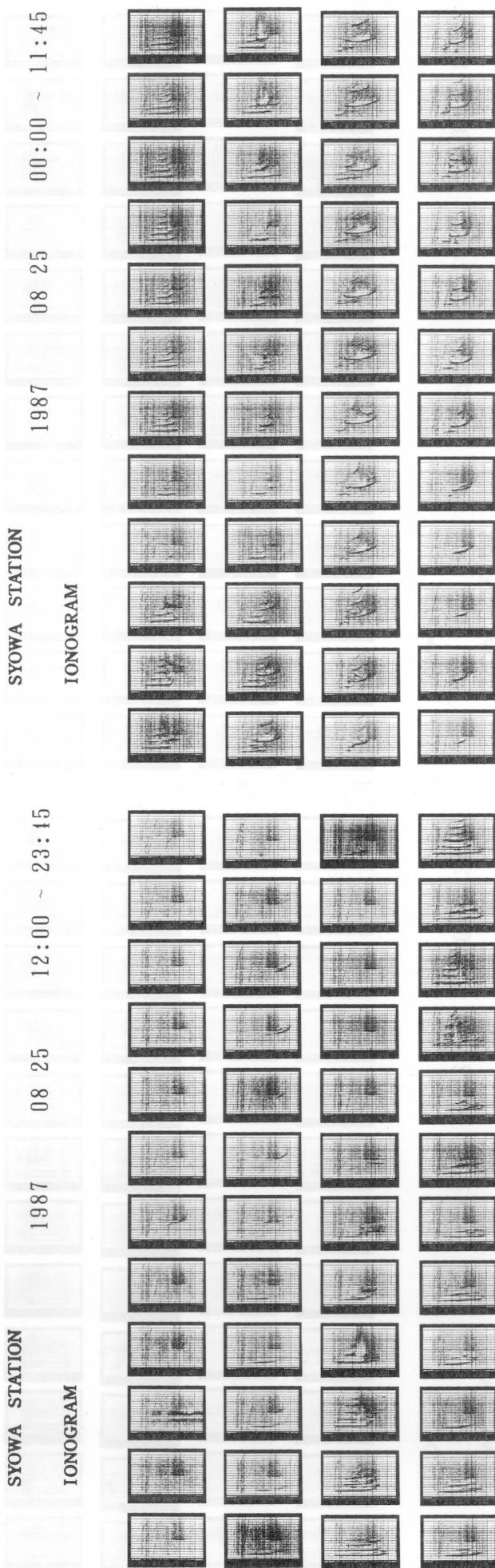


SYOWA STATION
IONOGRAM

1987 08 22 00:00 ~ 11:45







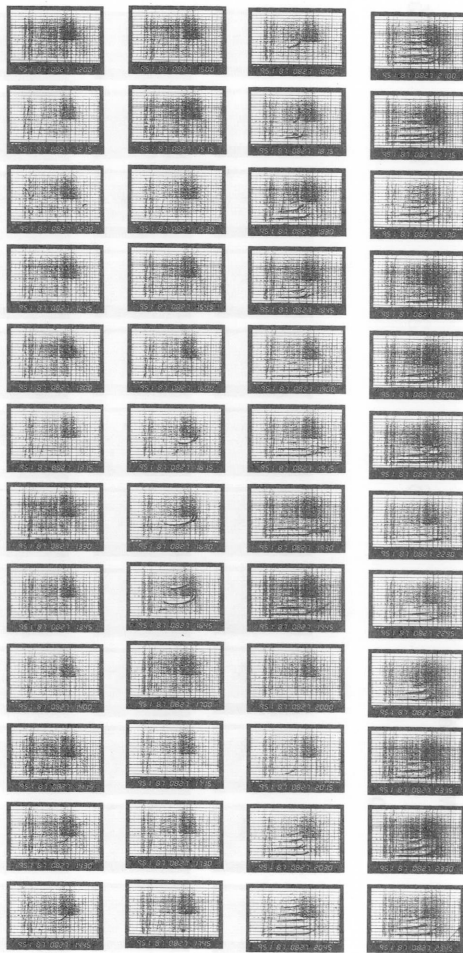
SYOWA STATION

IONOGRAM

1987

08 27

12:00 ~ 23:45



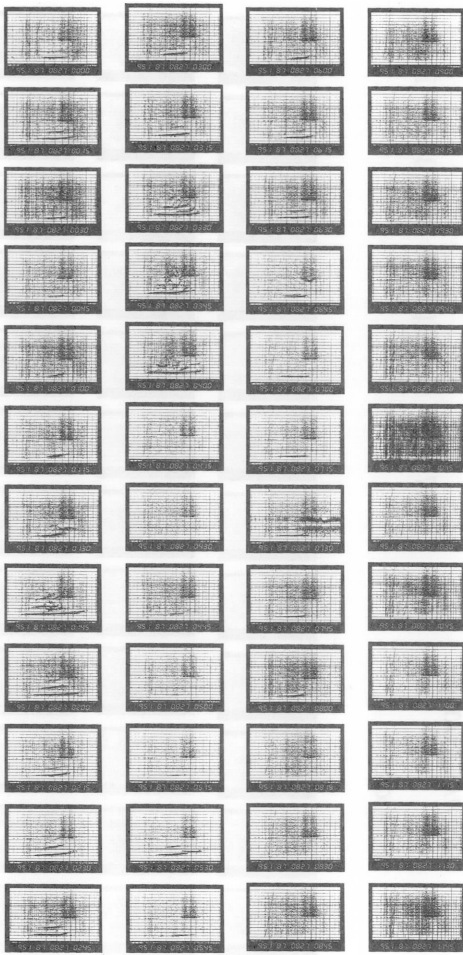
SYOWA STATION

IONOGRAM

1987

08 27

00:00 ~ 11:45



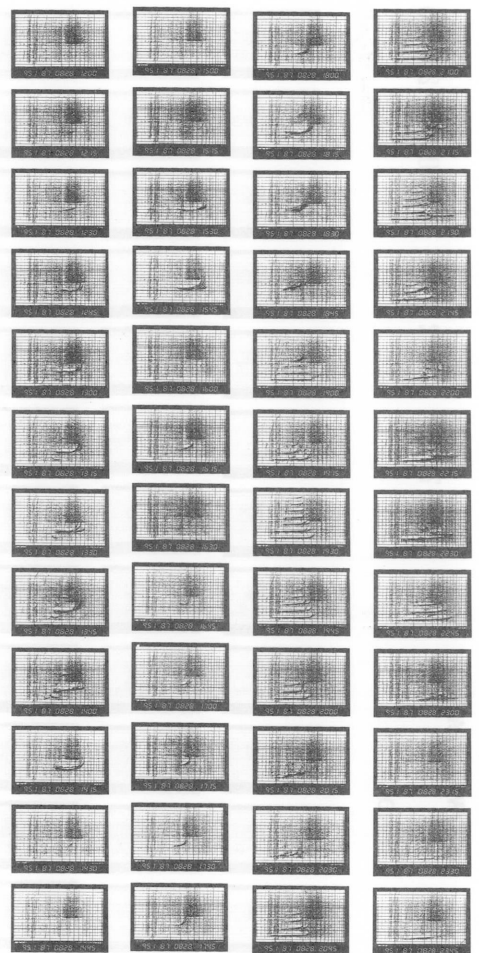
SYOWA STATION

IONOGRAM

1987

08 28

12:00 ~ 23:45



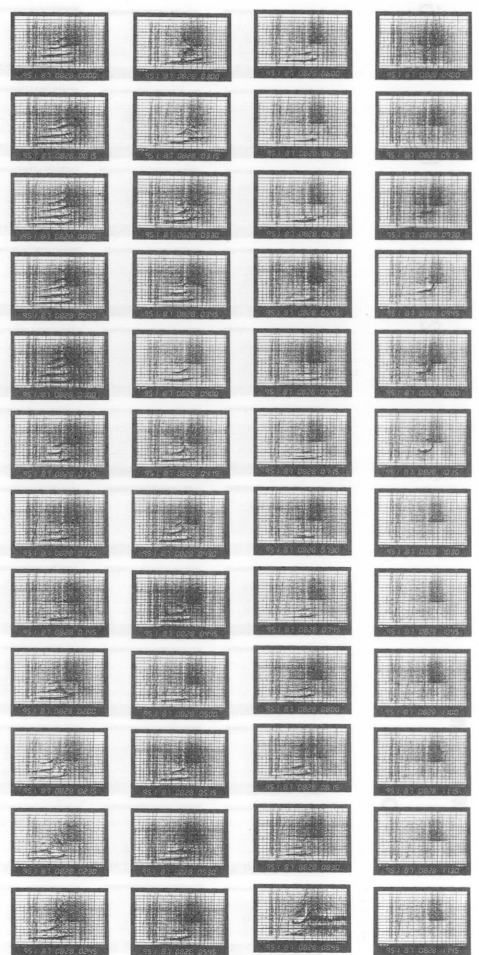
SYOWA STATION

IONOGRAM

1987

08 28

00:00 ~ 11:45



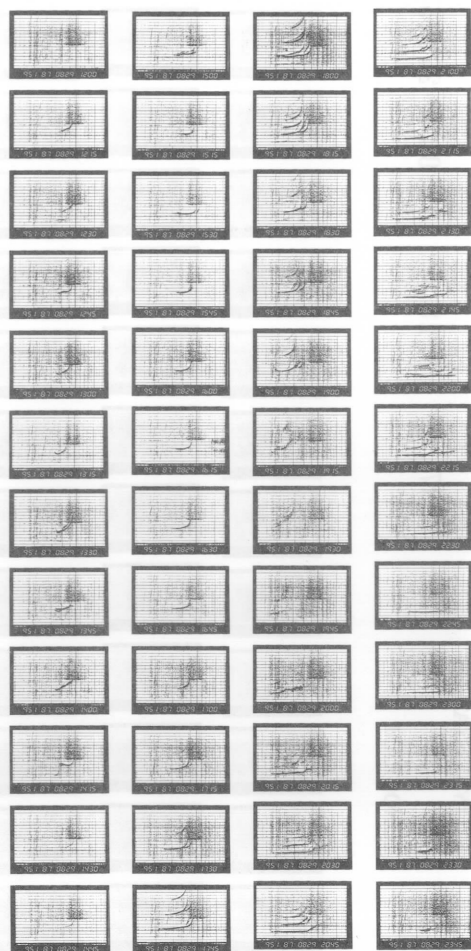
SYOWA STATION

IONOGRAM

12:00 ~ 23:45

08 29

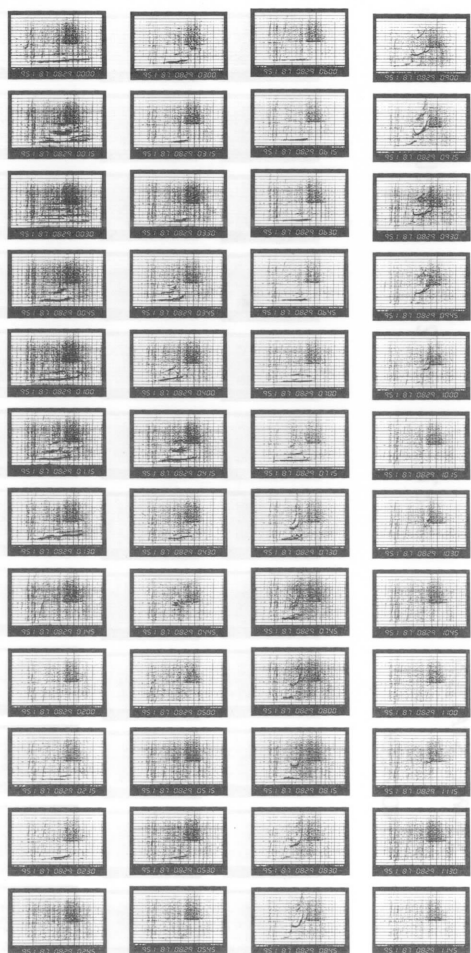
1987



08 29

1987

00:00 ~ 11:45



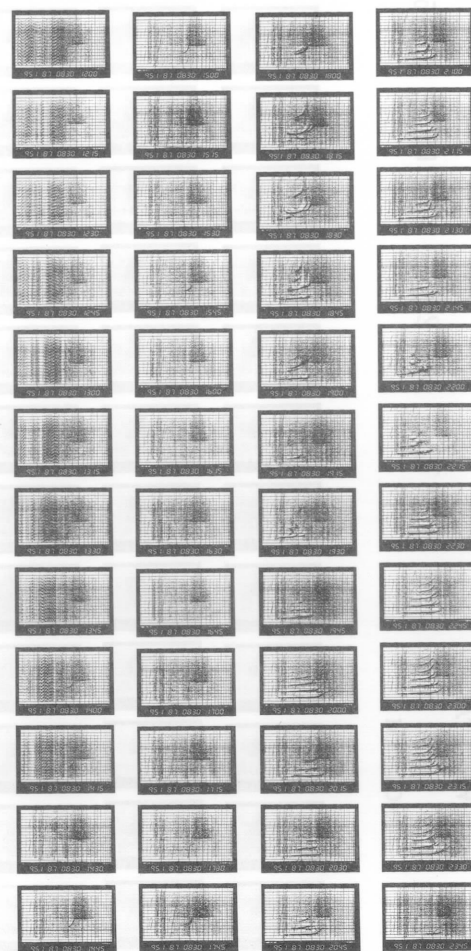
SYOWA STATION

IONOGRAM

12:00 ~ 23:45

08 30

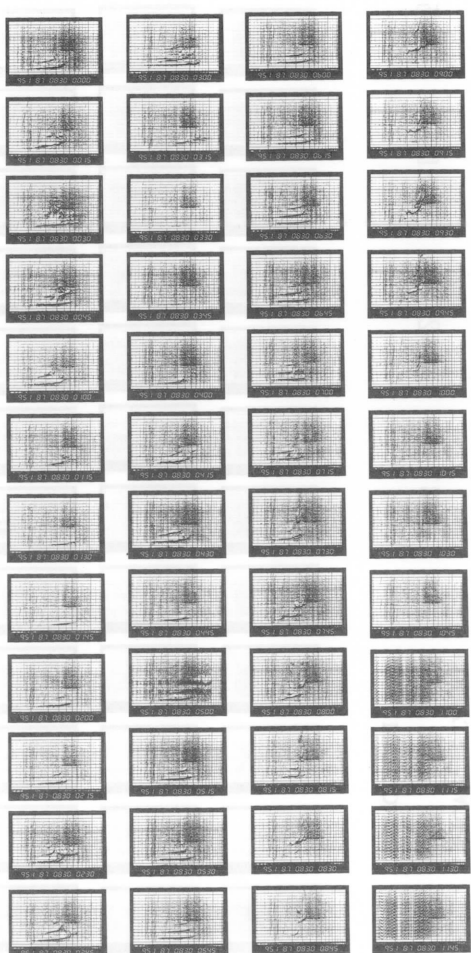
1987



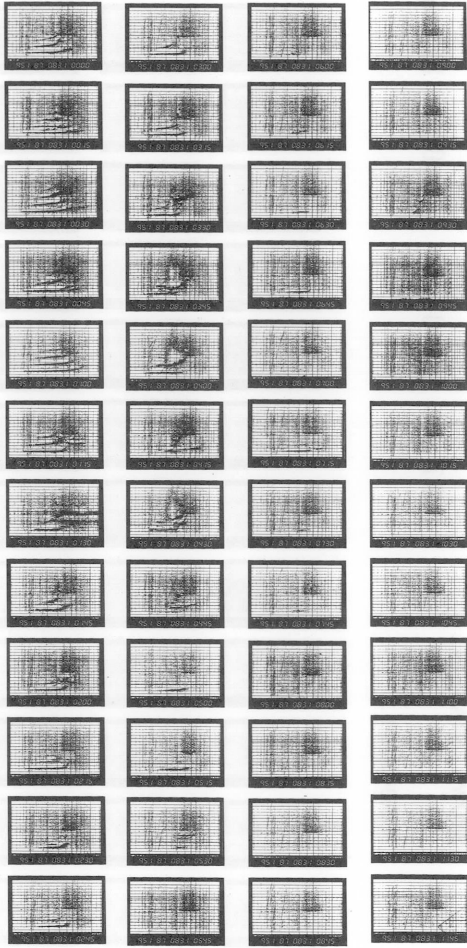
08 30

1987

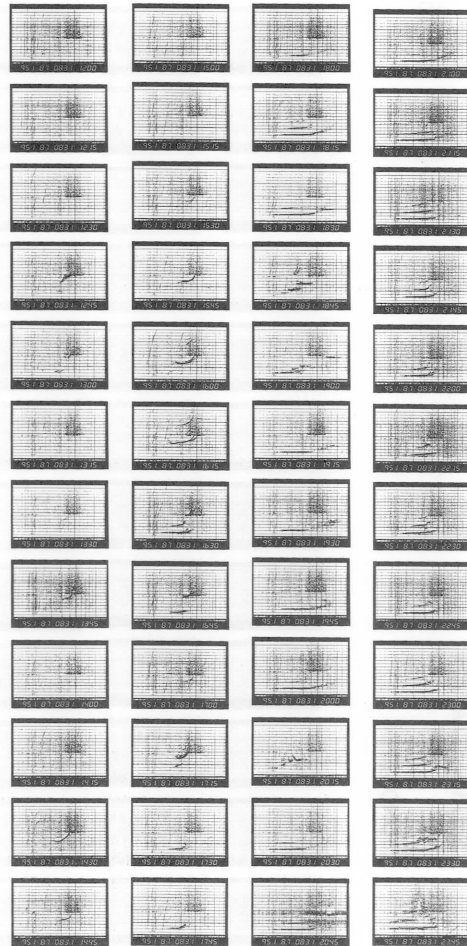
00:00 ~ 11:45



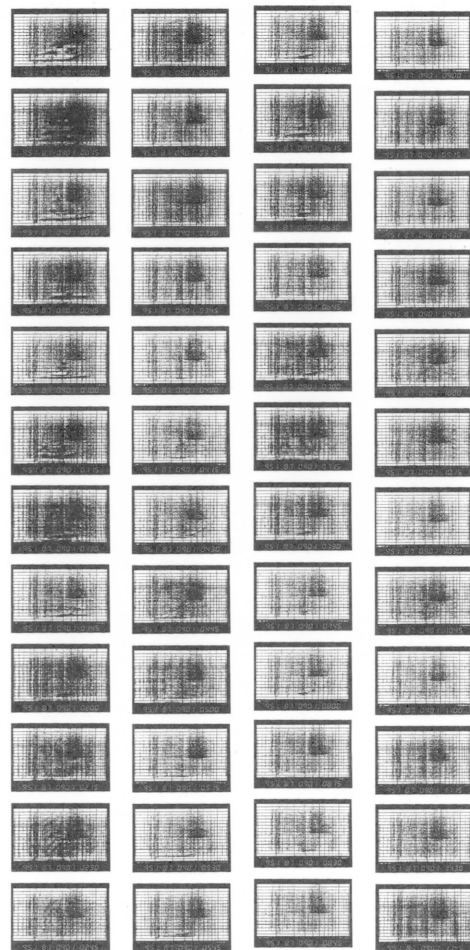
SYOWA STATION
IONOGRAM
1987
08 31
00:00 ~ 11:45



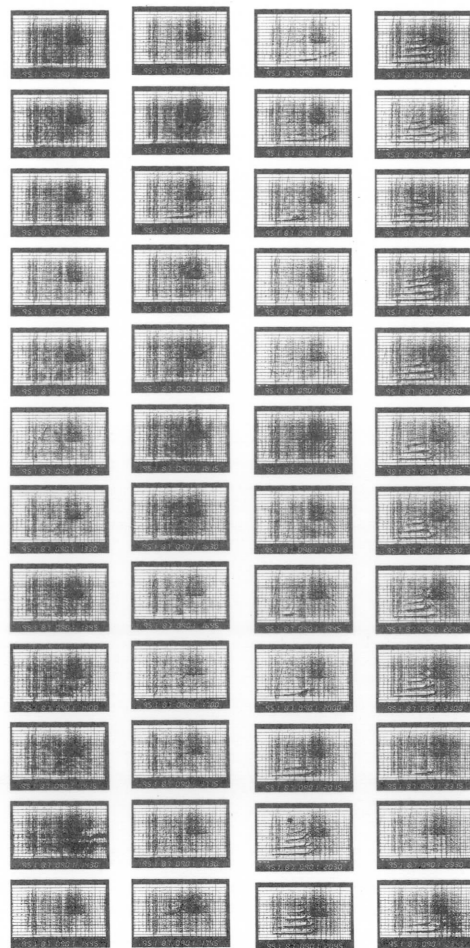
SYOWA STATION
IONOGRAM
1987
08 31
12:00 ~ 23:45



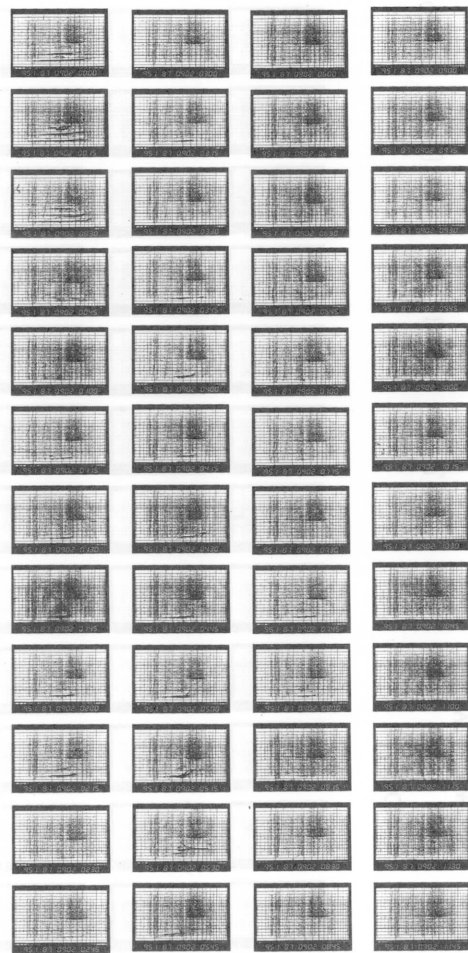
SYOWA STATION
1987 09 01 00:00 ~ 11:45
IONOGRAM



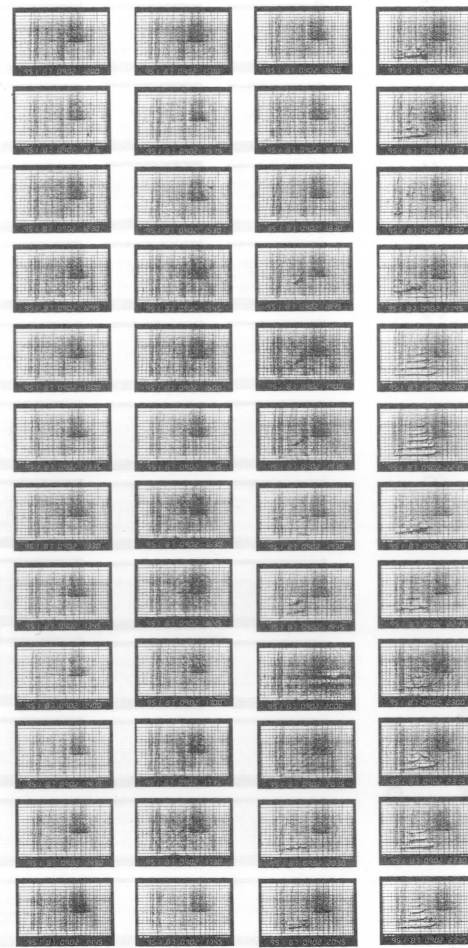
SYOWA STATION
1987 09 01 12:00 ~ 23:45
IONOGRAM



SYOWA STATION
1987 09 02 00:00 ~ 11:45
IONOGRAM

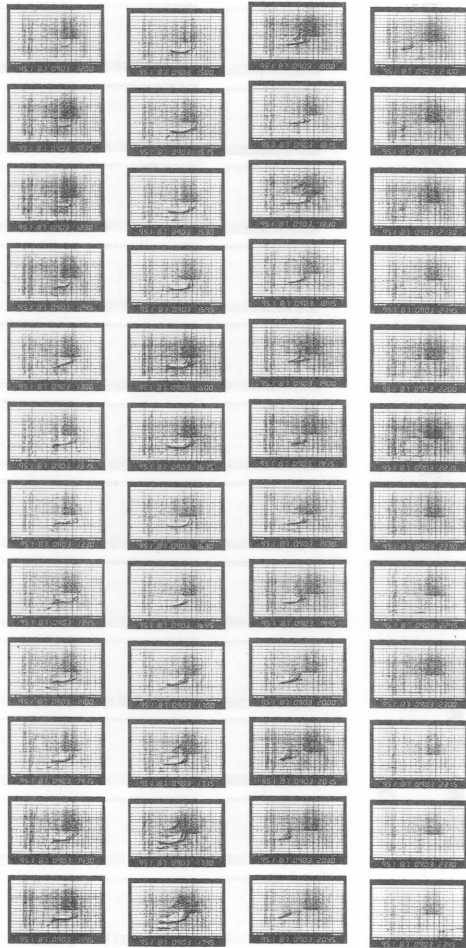


SYOWA STATION
1987 09 02 12:00 ~ 23:45
IONOGRAM



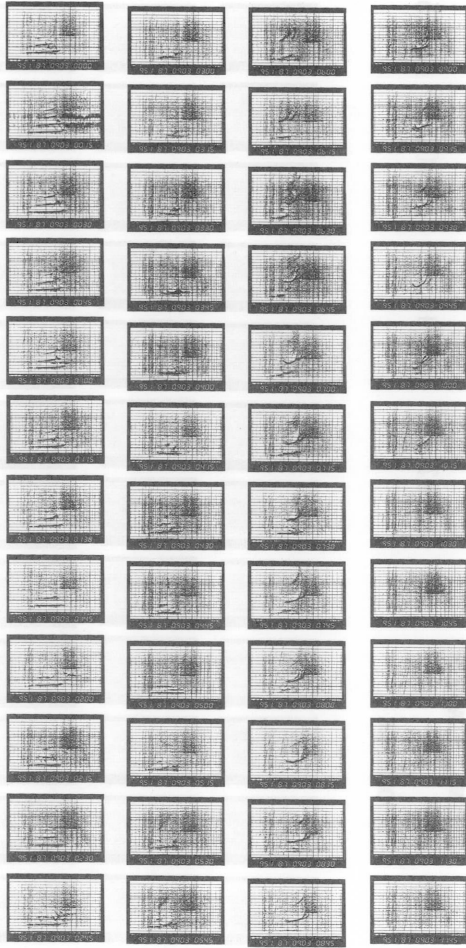
SYOWA STATION
IONOGRAM

1987 09 03 12:00 ~ 23:45



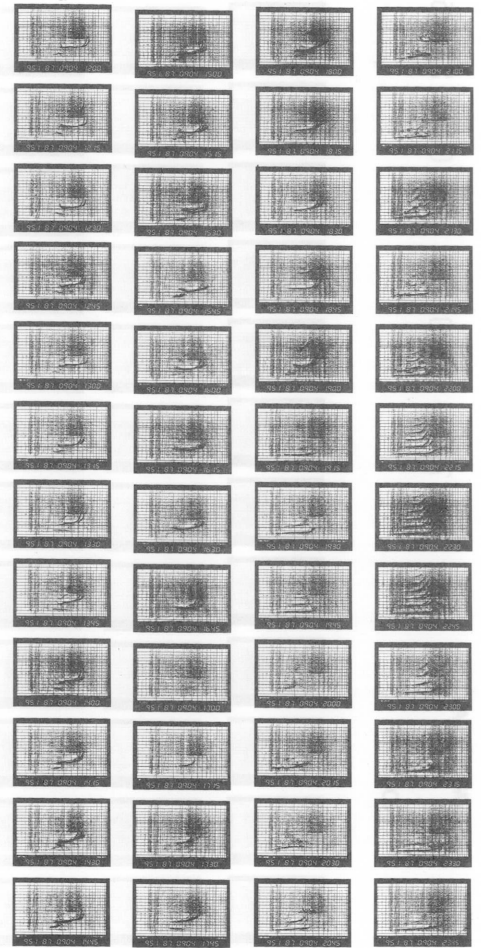
SYOWA STATION
IONOGRAM

1987 09 03 00:00 ~ 11:45



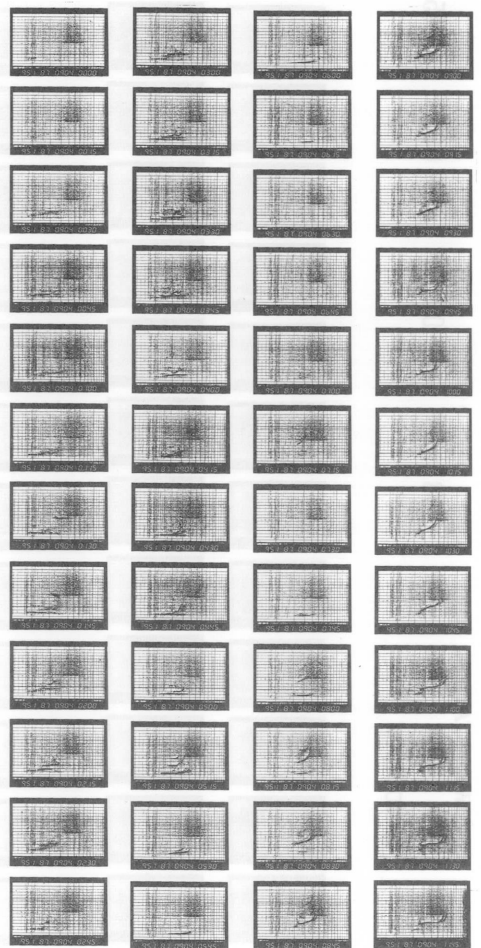
SYOWA STATION
IONOGRAM

1987 09 04 12:00 ~ 23:45



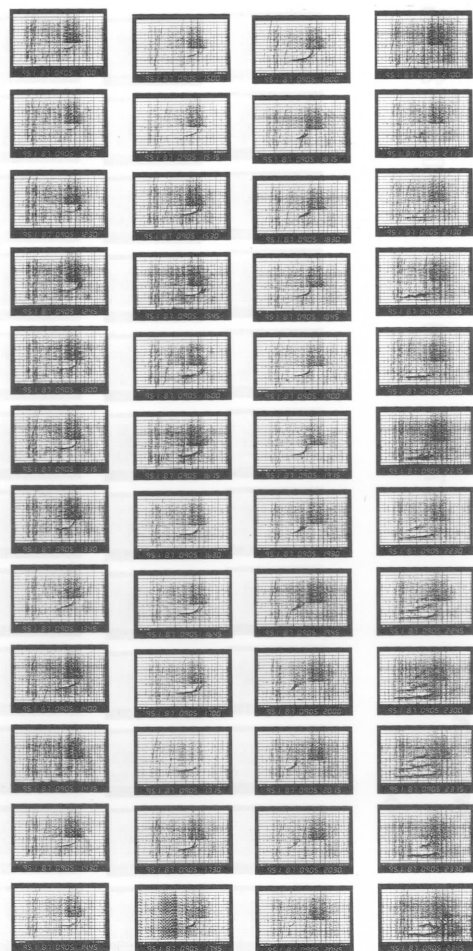
SYOWA STATION
IONOGRAM

1987 09 04 00:00 ~ 11:45



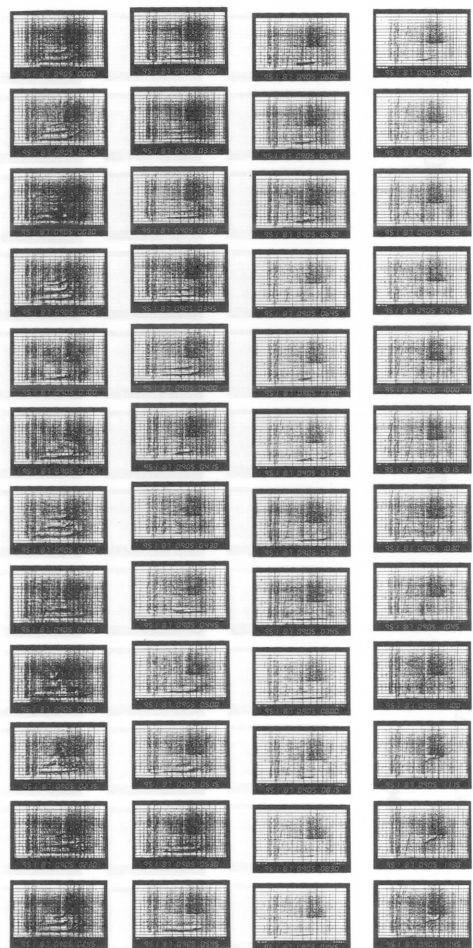
SYOWA STATION
IONOGRAM

1987 09 05 12:00 ~ 23:45



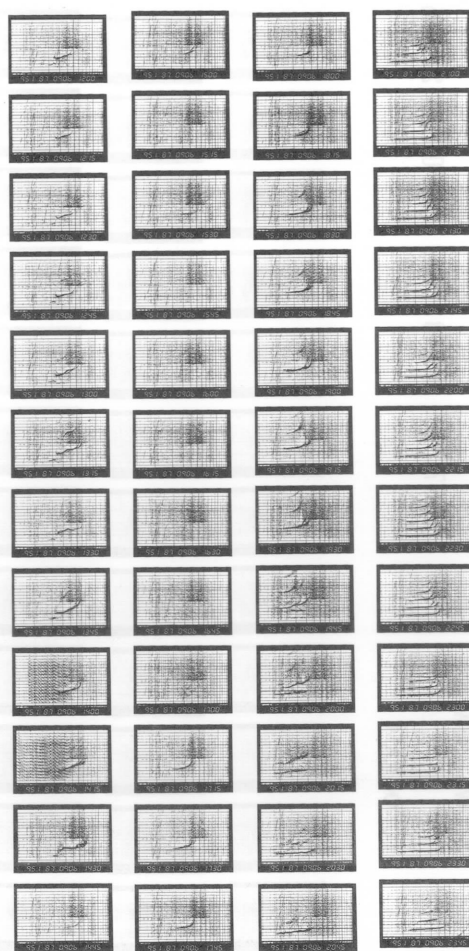
SYOWA STATION
IONOGRAM

1987 09 05 00:00 ~ 11:45



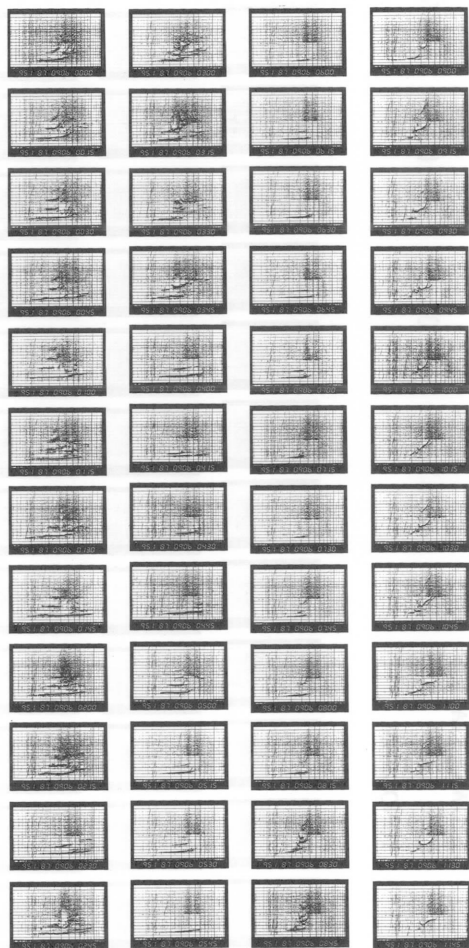
SYOWA STATION
IONOGRAM

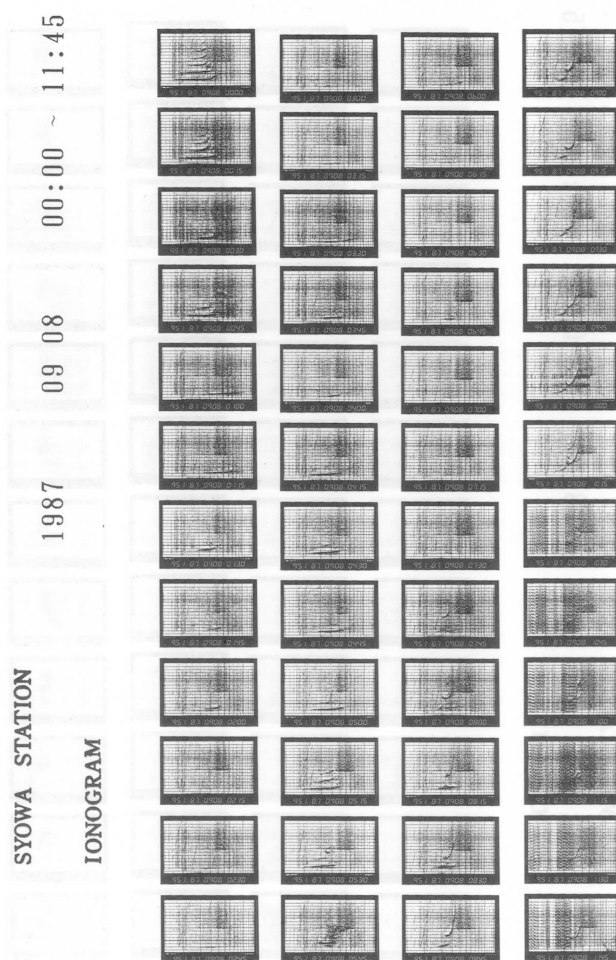
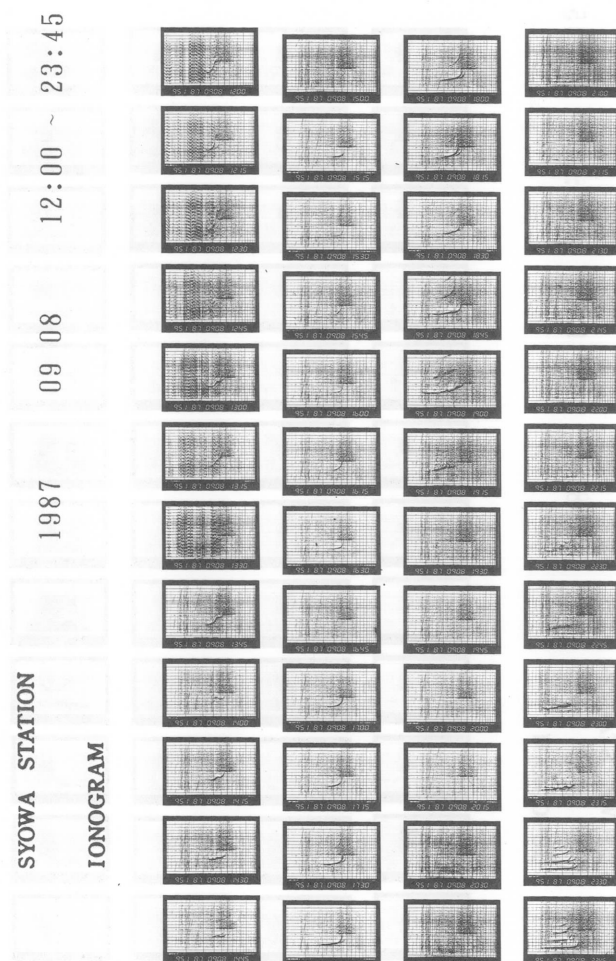
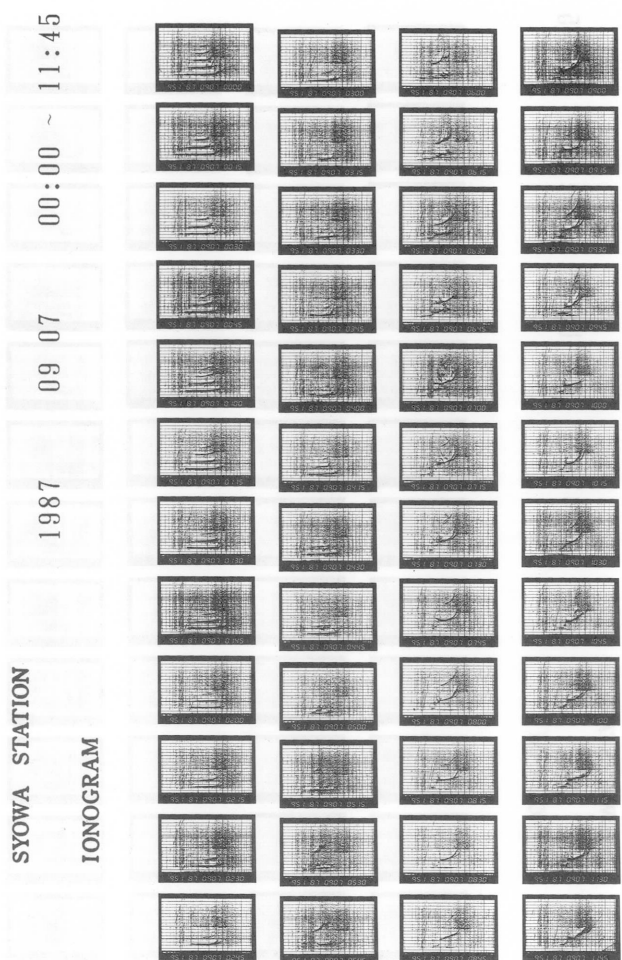
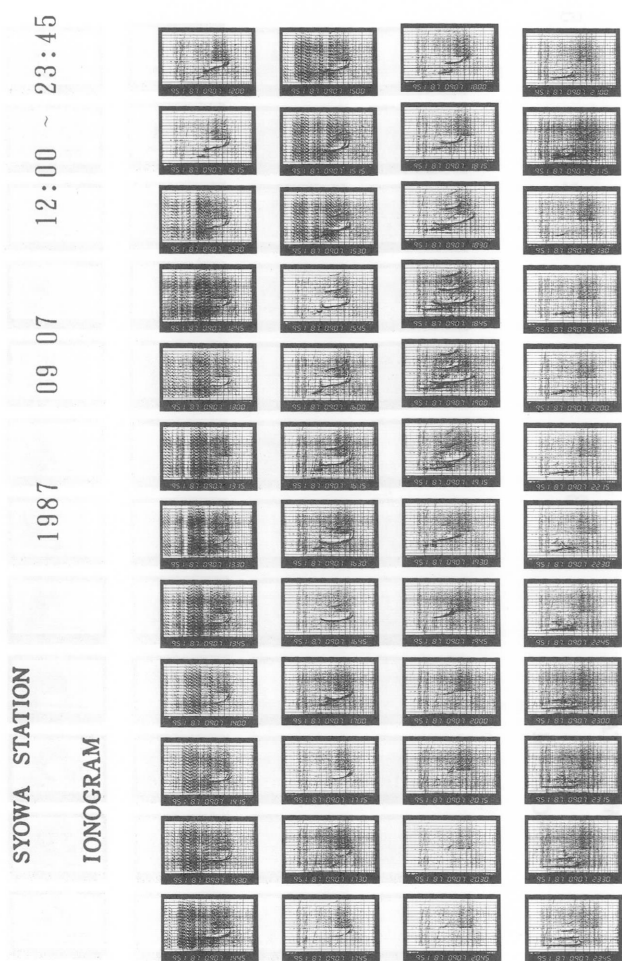
1987 09 06 12:00 ~ 23:45

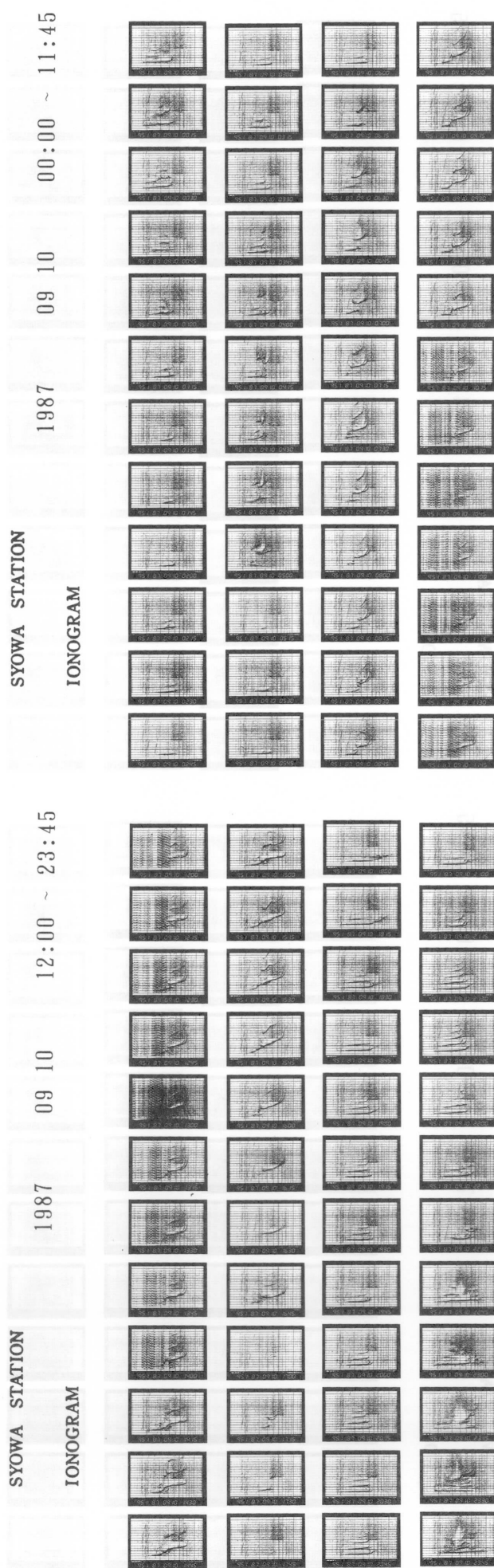
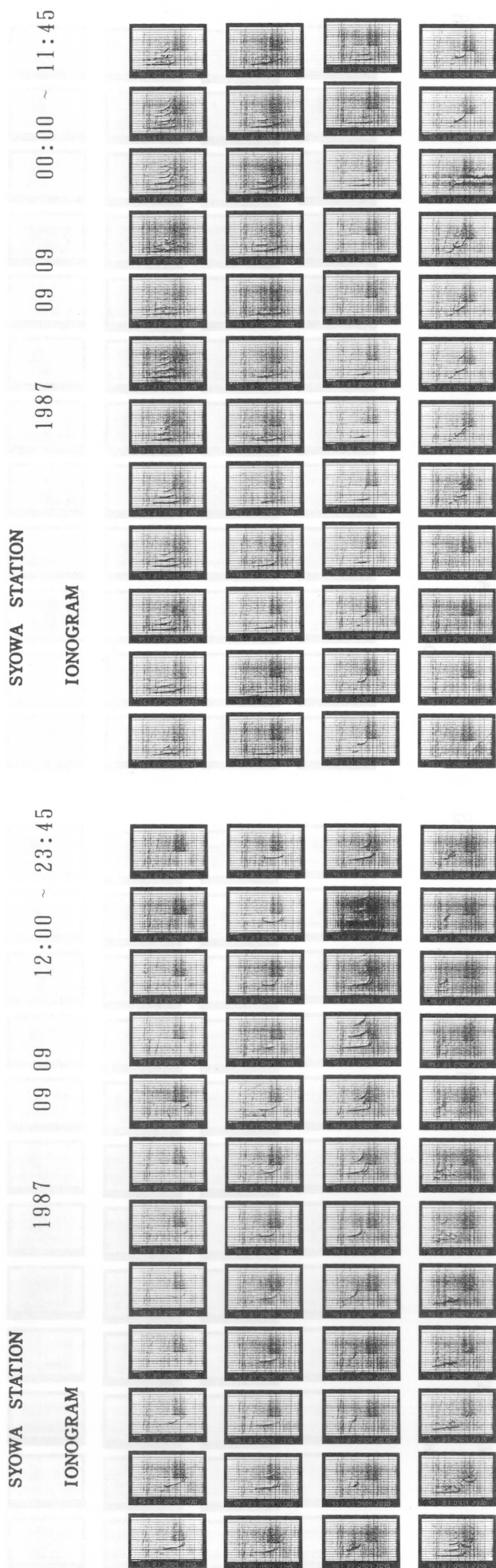


SYOWA STATION
IONOGRAM

1987 09 06 00:00 ~ 11:45







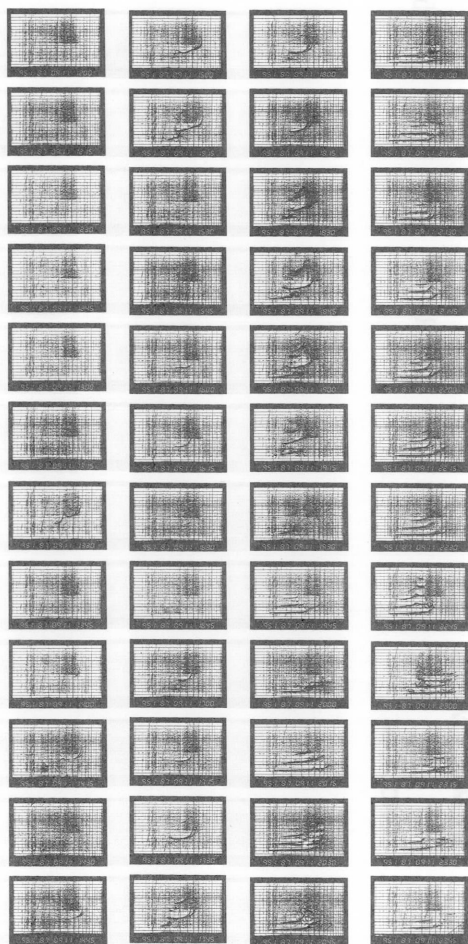
SYOWA STATION

12:00 ~ 23:45

09 11

1987

IONOGRAM



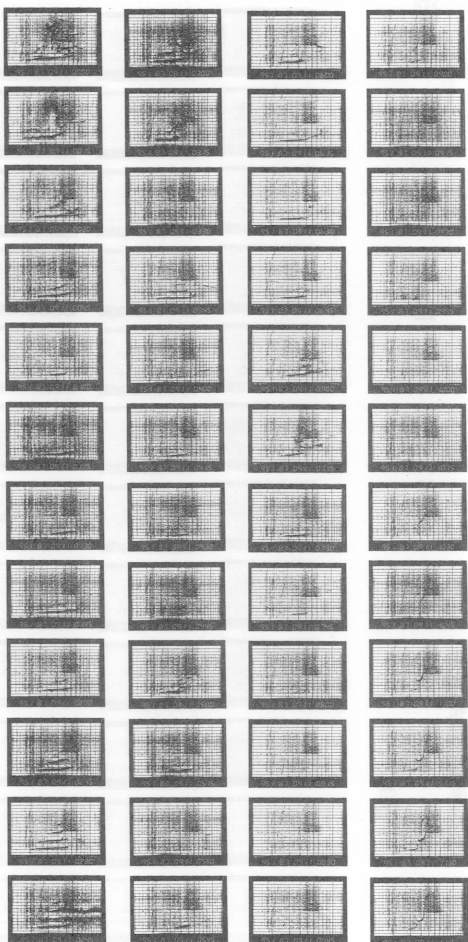
SYOWA STATION

09 11

00:00 ~

11:45

IONOGRAM



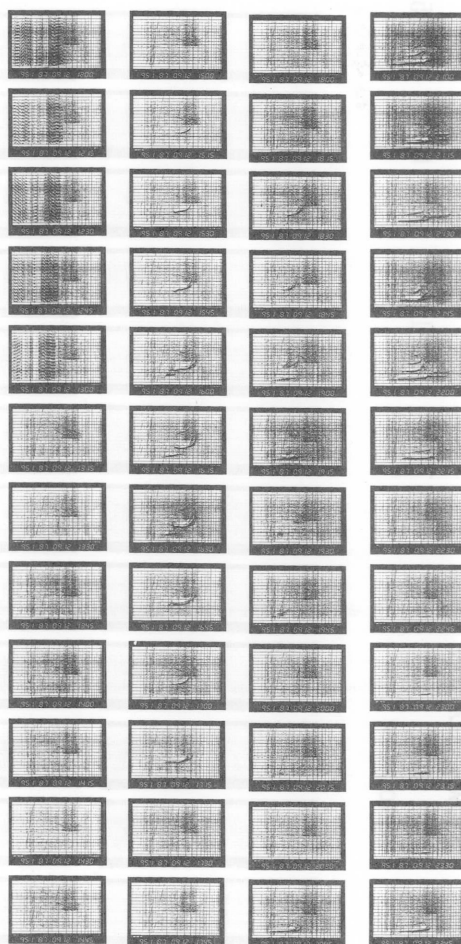
SYOWA STATION

12:00 ~ 23:45

09 12

1987

IONOGRAM



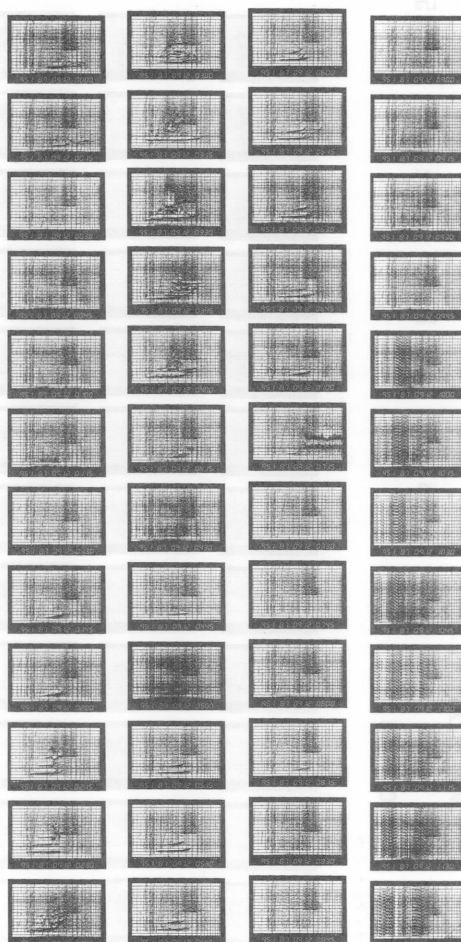
SYOWA STATION

09 12

00:00 ~

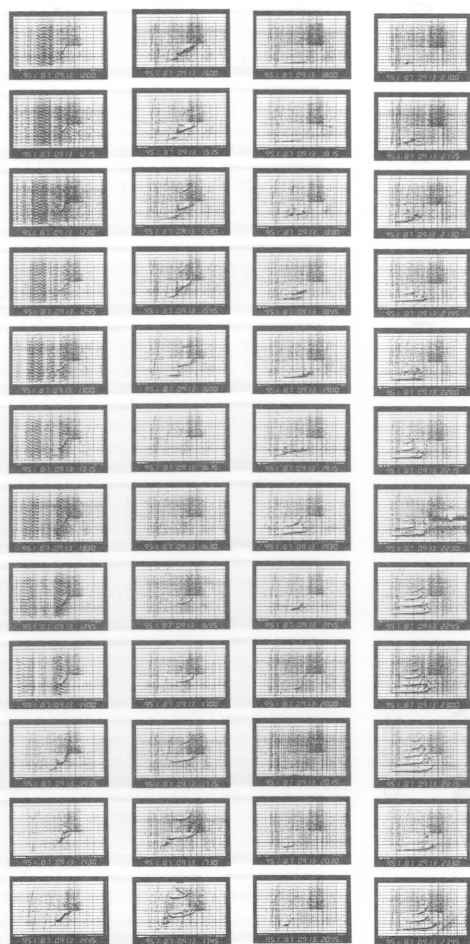
11:45

IONOGRAM



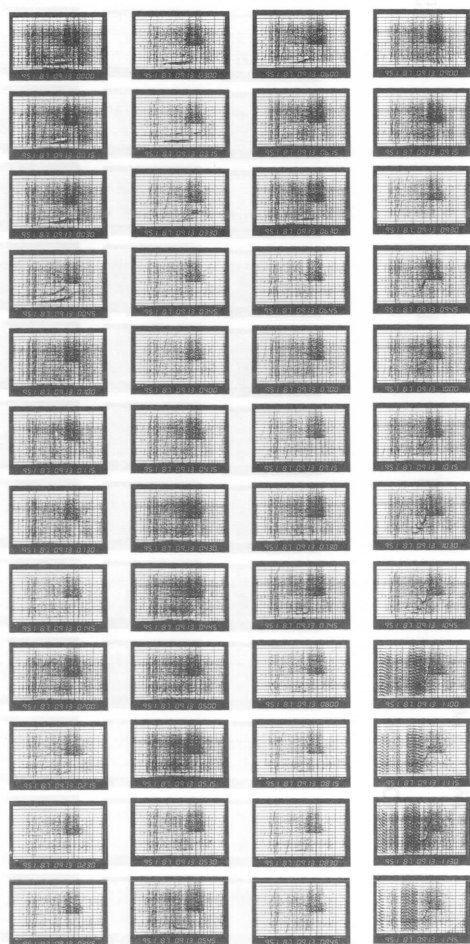
SYOWA STATION
IONOGRAM

1987 09 13 12:00 ~ 23:45



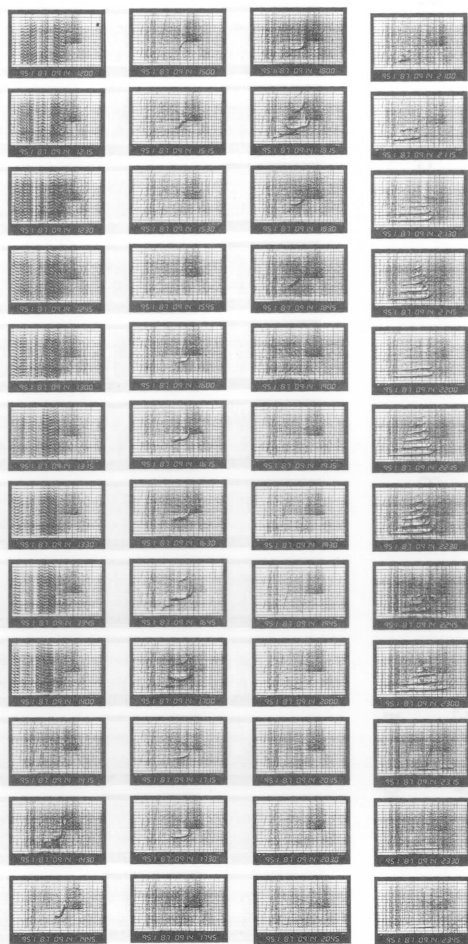
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IONOGRAM

1987 09 13 00:00 ~ 11:45



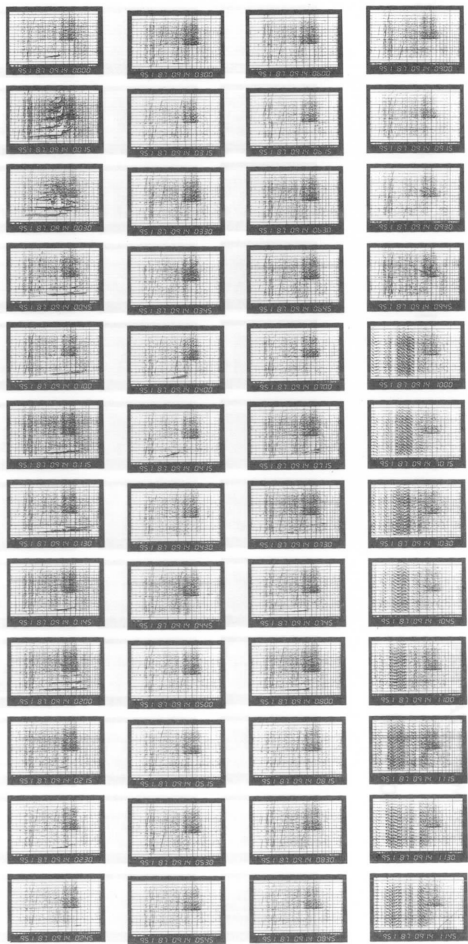
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IONOGRAM

1987 09 14 12:00 ~ 23:45



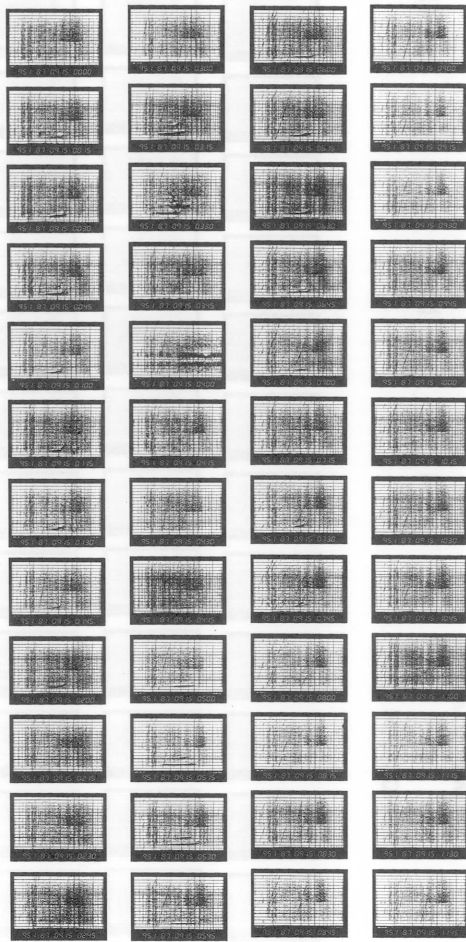
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IONOGRAM

1987 09 14 00:00 ~ 11:45



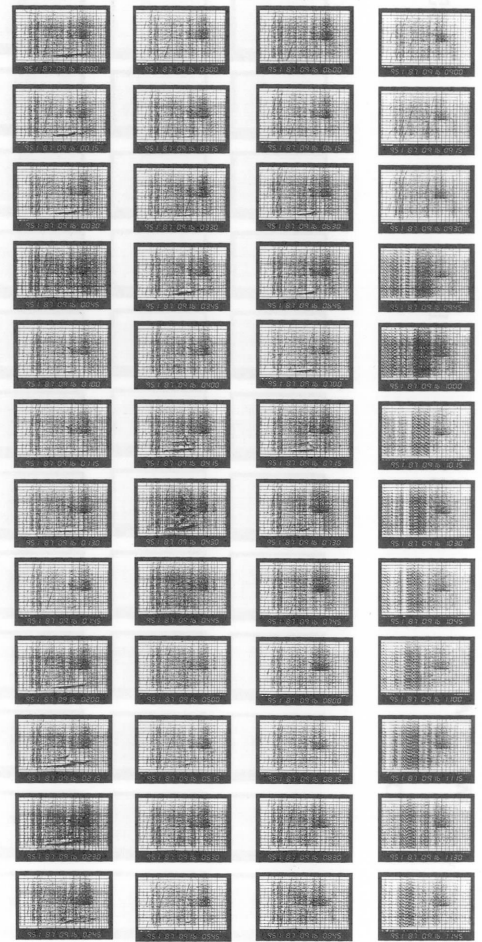
SYOWA STATION
IONOGRAM

1987 09 15 00:00 ~ 11:45



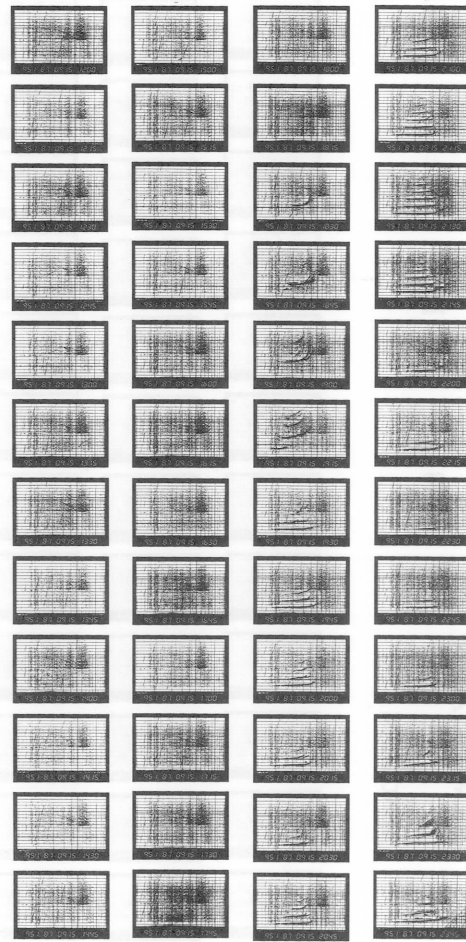
SYOWA STATION
IONOGRAM

1987 09 16 00:00 ~ 11:45



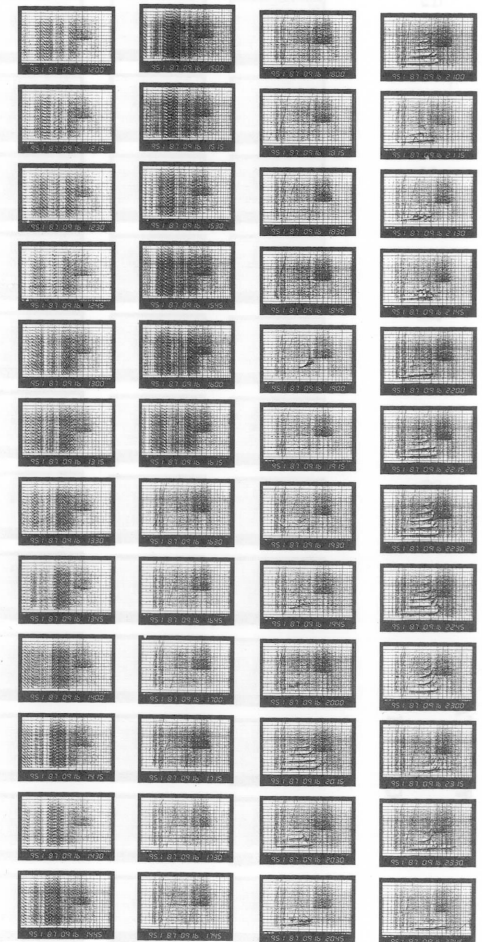
SYOWA STATION
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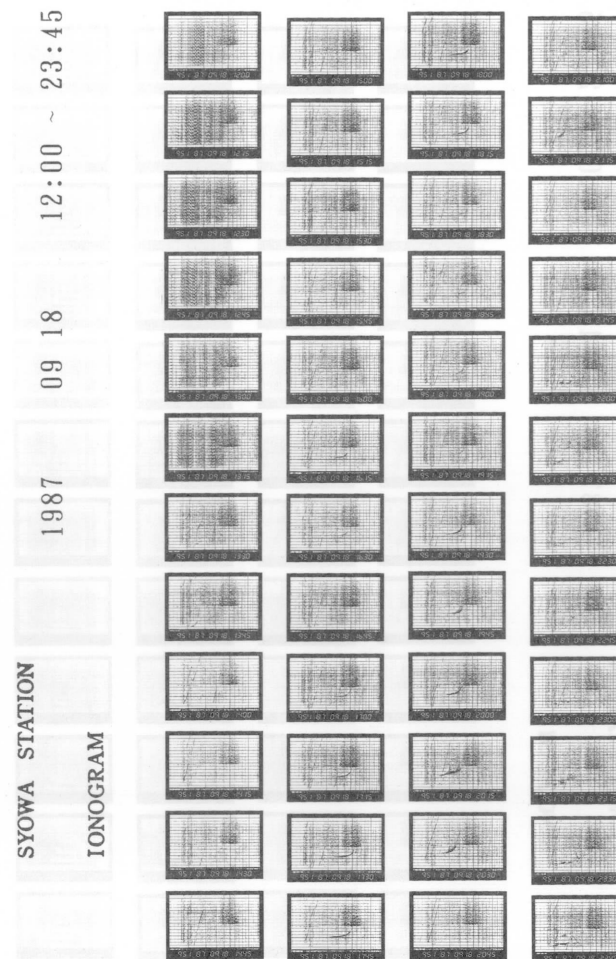
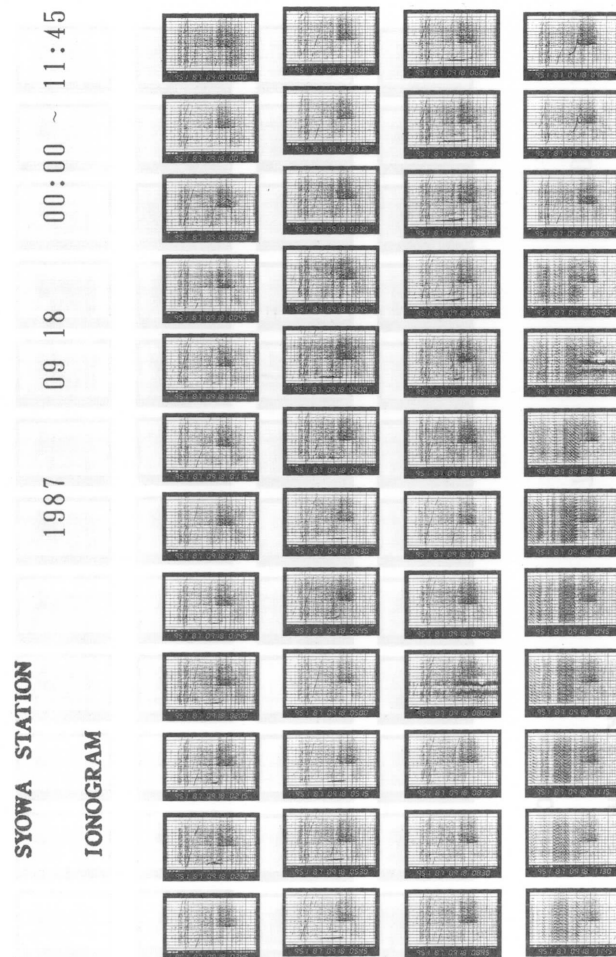
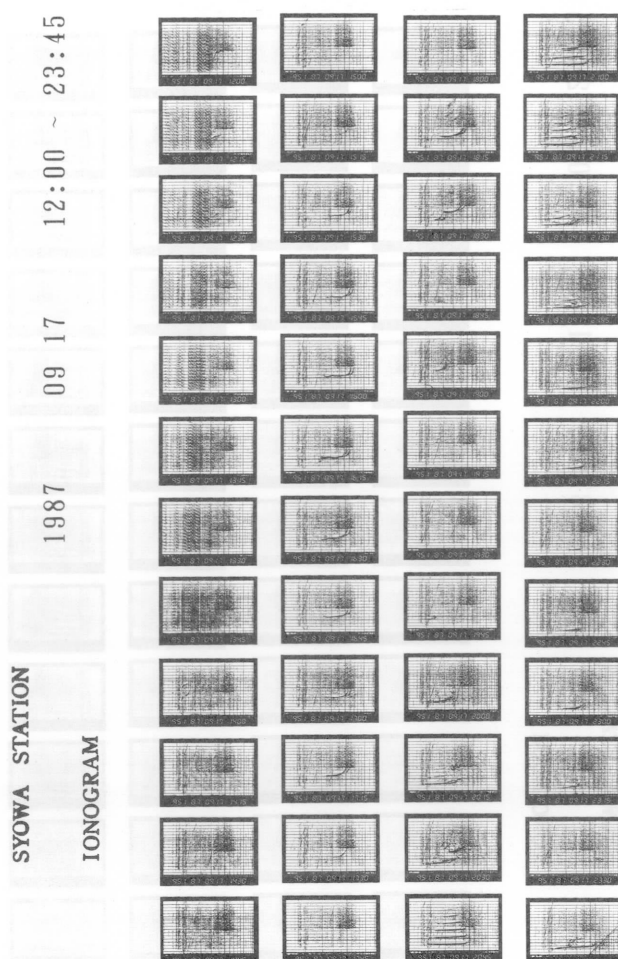
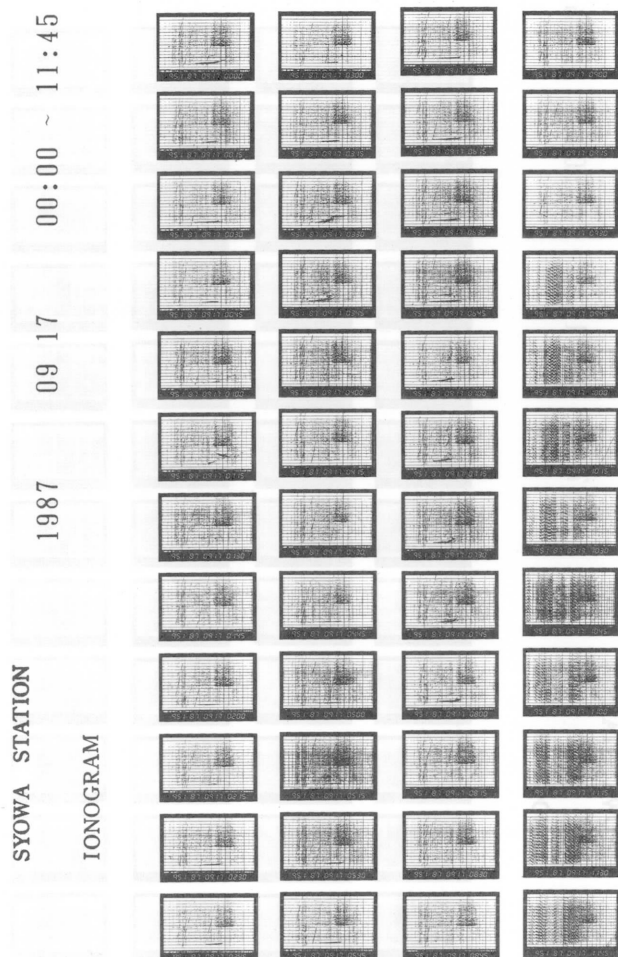
1987 09 15 12:00 ~ 23:45



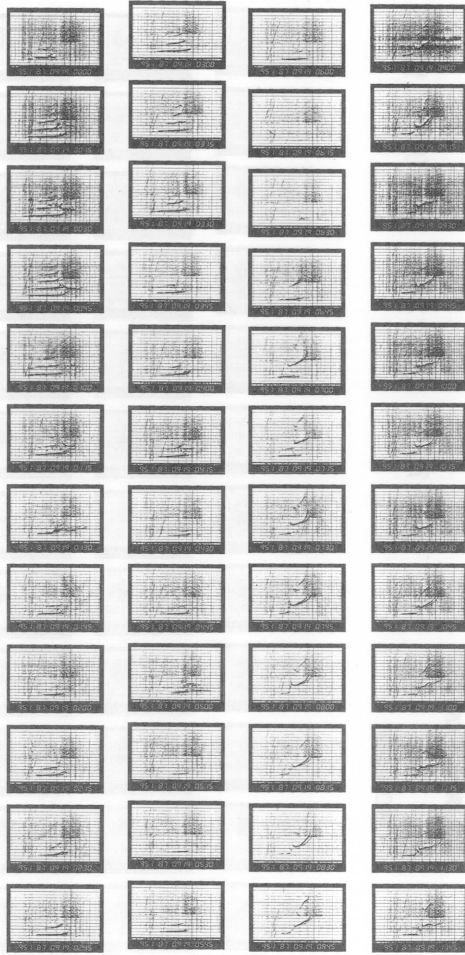
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1987 09 16 12:00 ~ 23:45

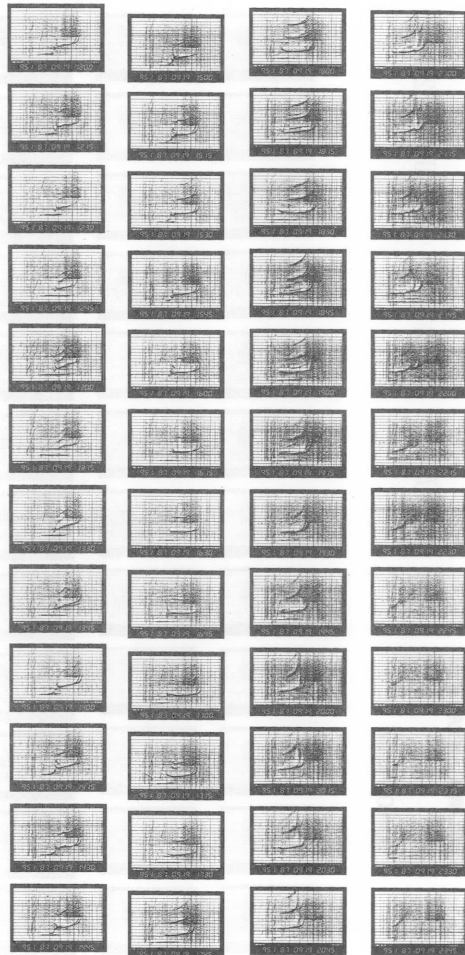




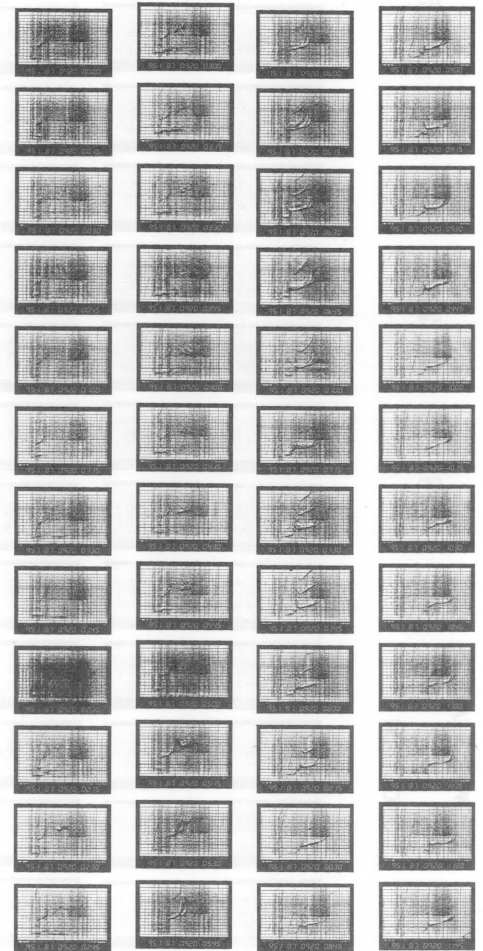
SYOWA STATION
1987 09 19 00:00 ~ 11:45
IONOGRAM



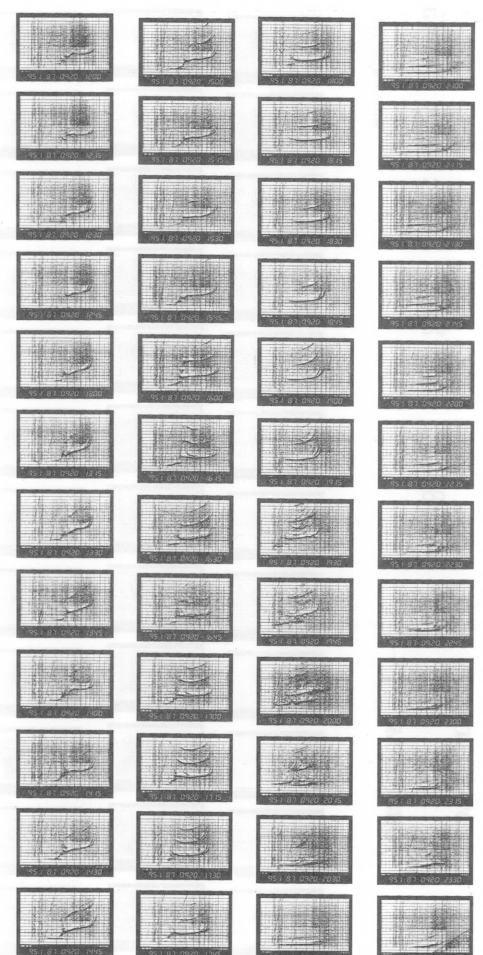
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SYOWA STATION
1987 09 20 00:00 ~ 11:45
IONOGRAM

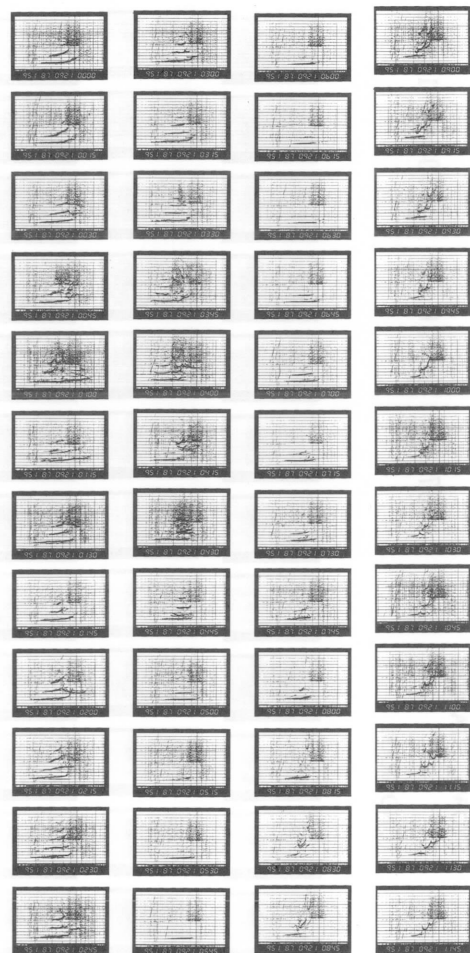


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IONOGRAM



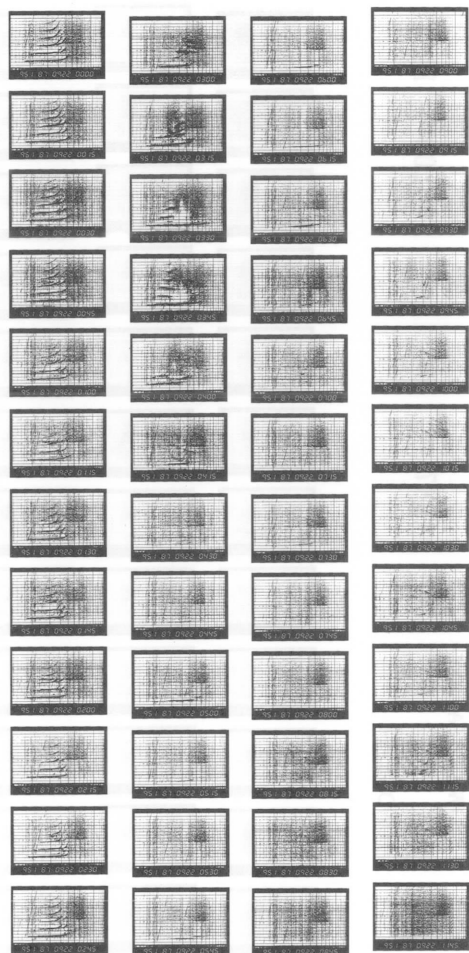
SYOWA STATION
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1987 09 21 00:00 ~ 11:45



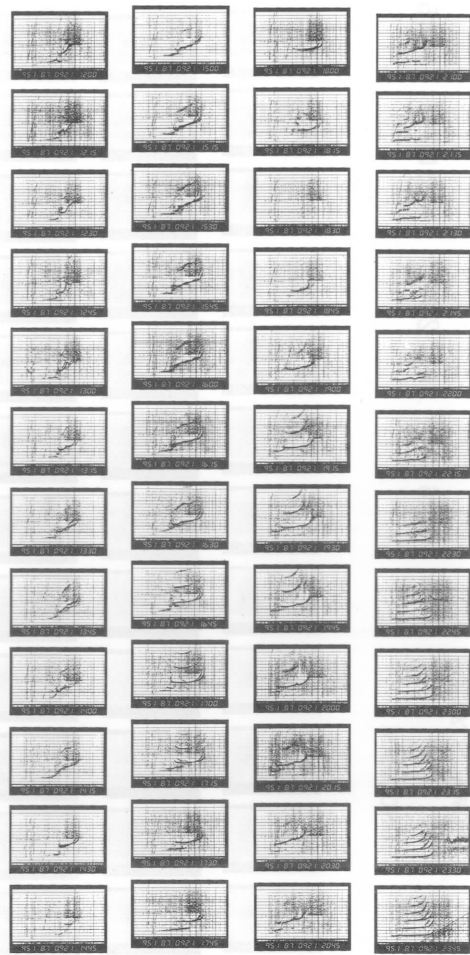
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IONOGRAM

1987 09 22 00:00 ~ 11:45



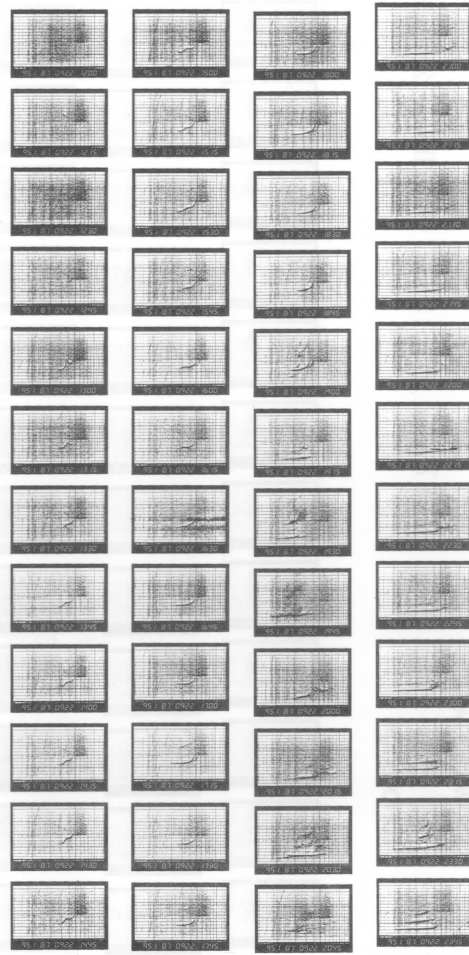
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1987 09 21 12:00 ~ 23:45



SYOWA STATION
IONOGRAM

1987 09 22 12:00 ~ 23:45



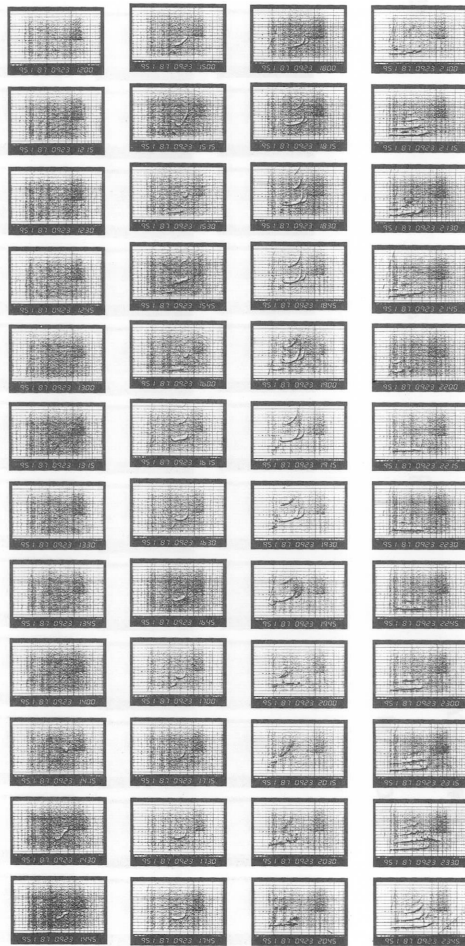
SYOWA STATION

IONOGRAM

12:00 ~ 23:45

09 23

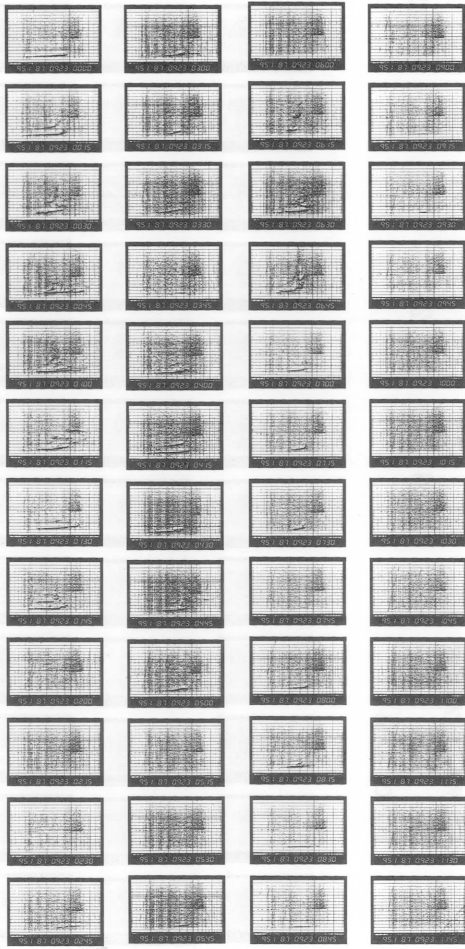
1987



00:00 ~ 11:45

09 23

1987



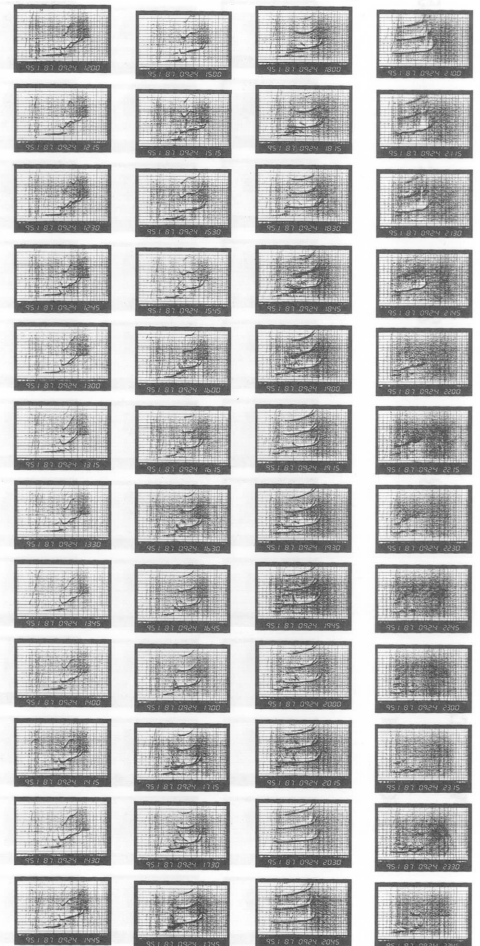
SYOWA STATION

IONOGRAM

12:00 ~ 23:45

09 24

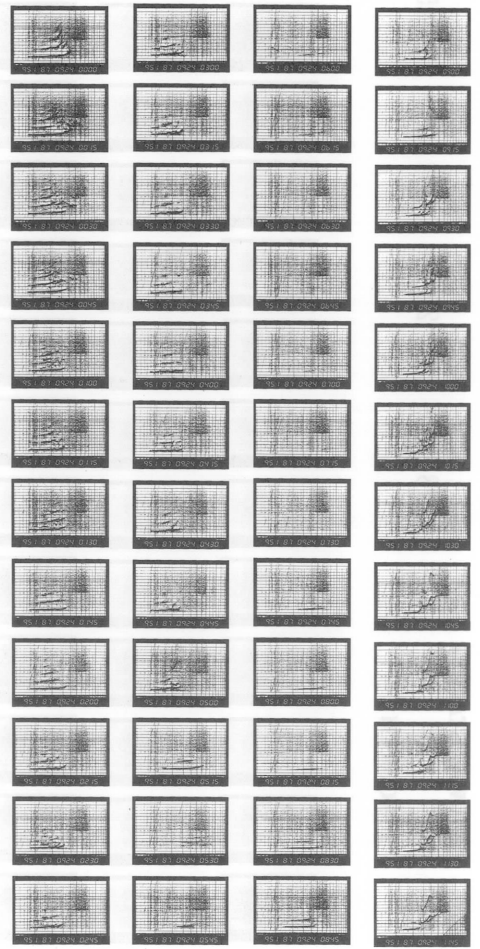
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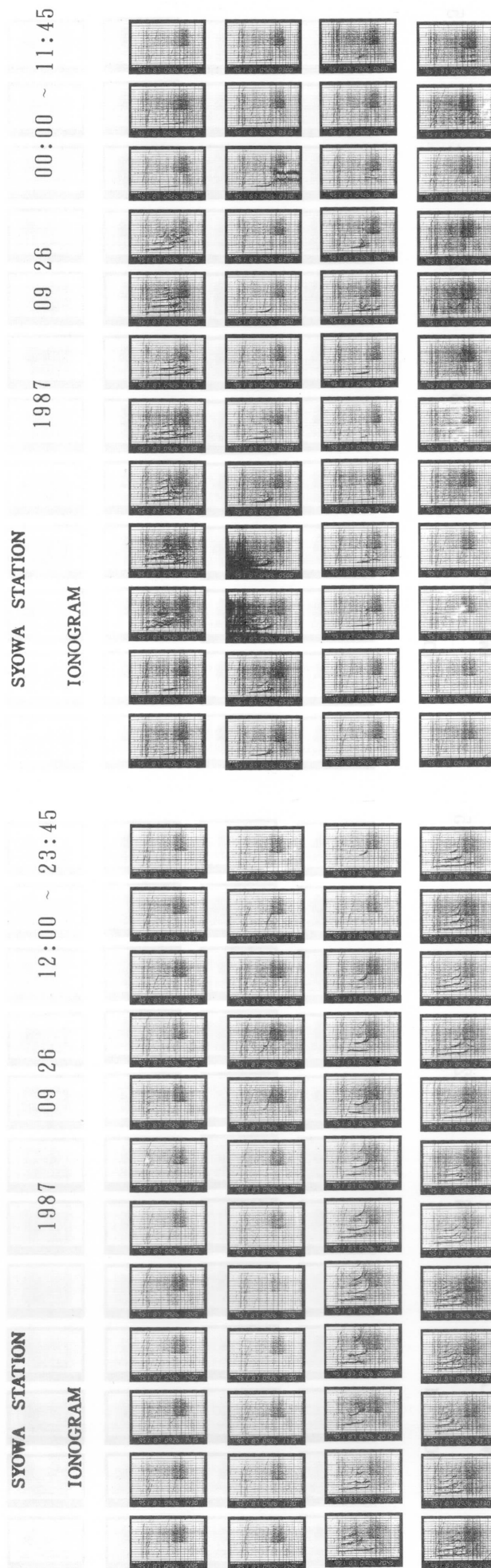
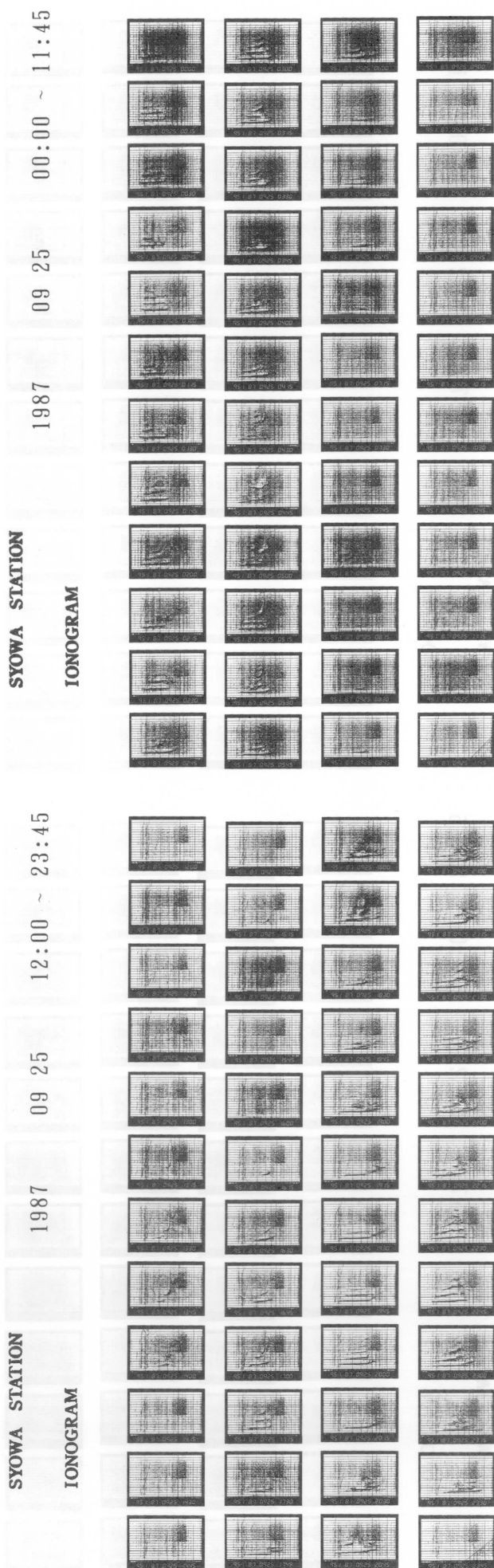


00:00 ~ 11:45

09 24

1987





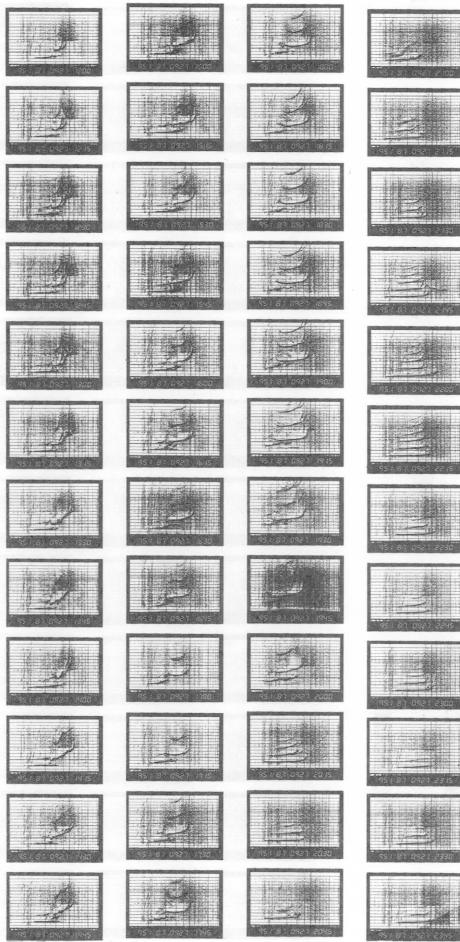
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IONOGRAM

1987

09 27

12:00 ~ 23:45



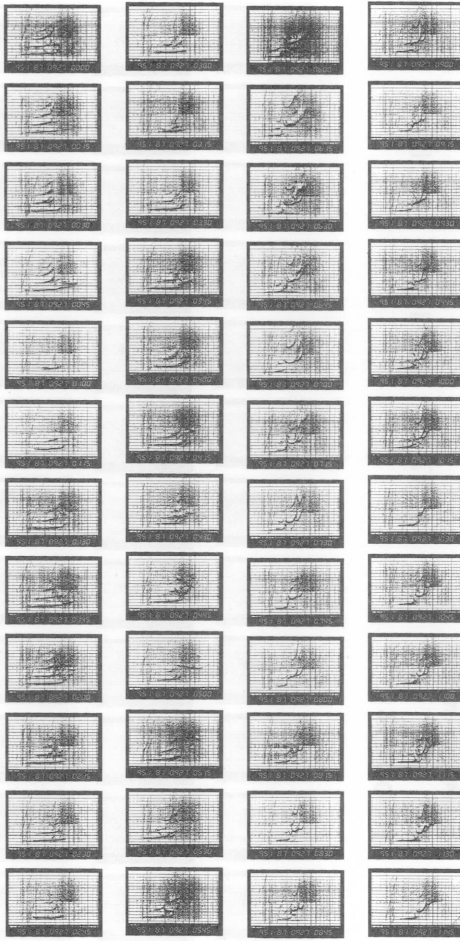
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IONOGRAM

1987

09 27

00:00 ~ 11:45



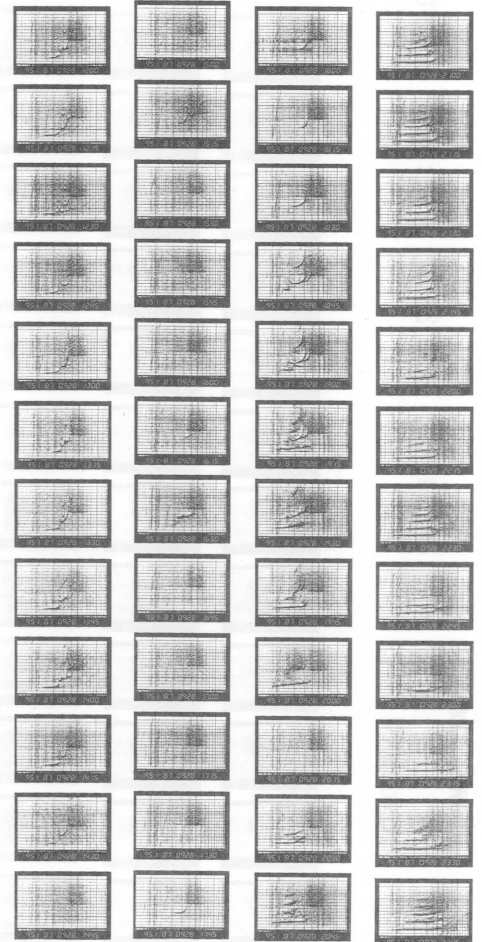
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IONOGRAM

1987

09 28

12:00 ~ 23:45



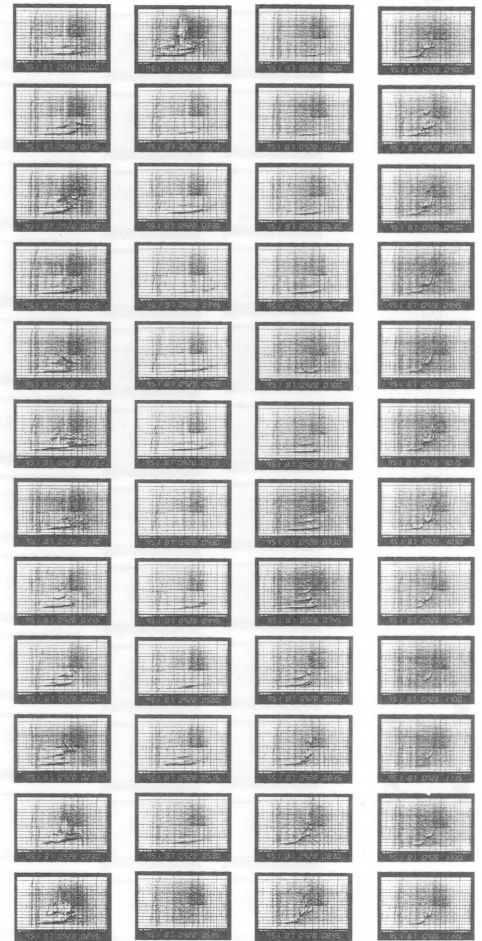
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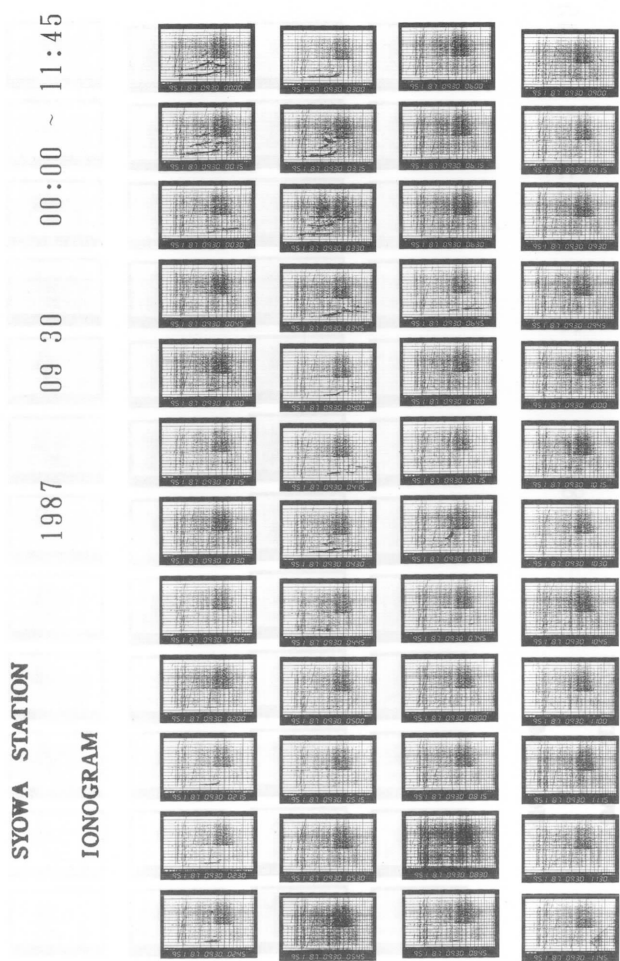
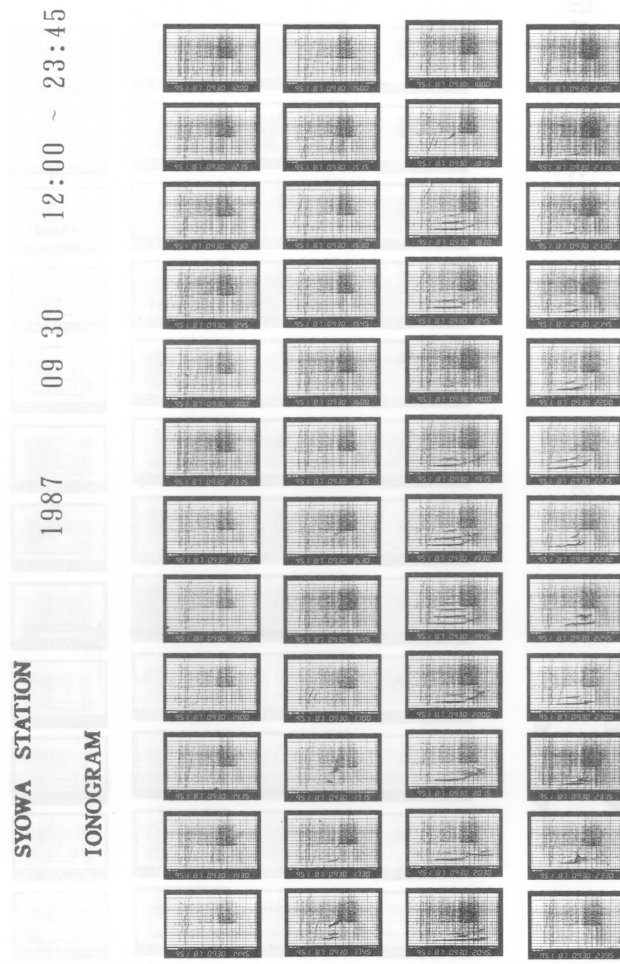
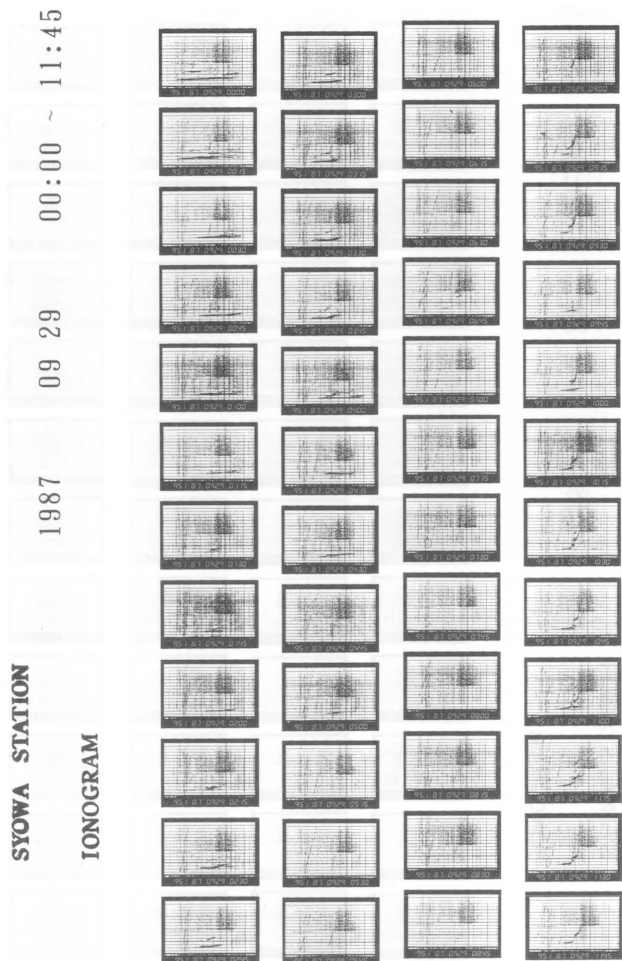
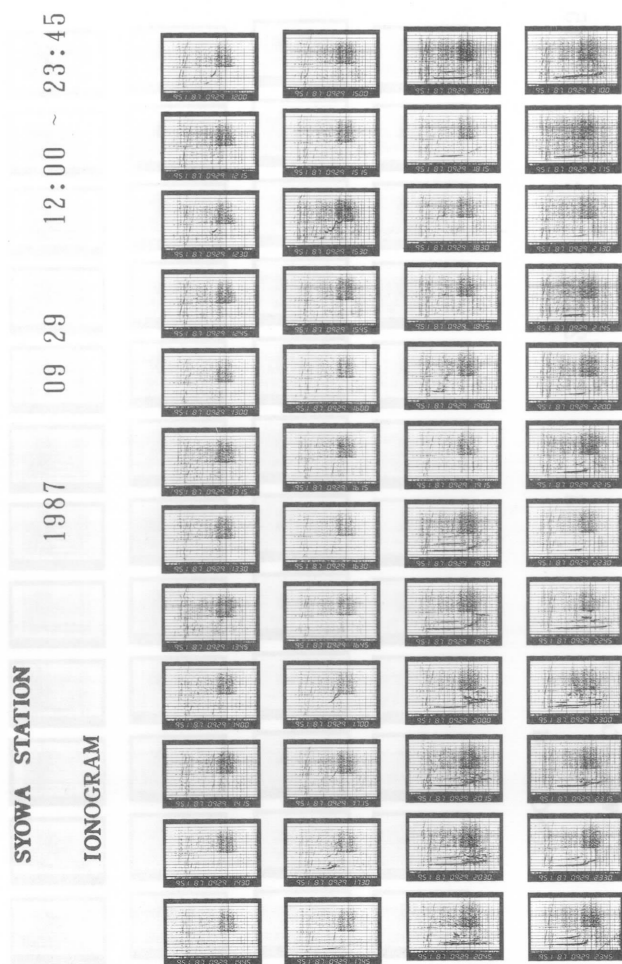
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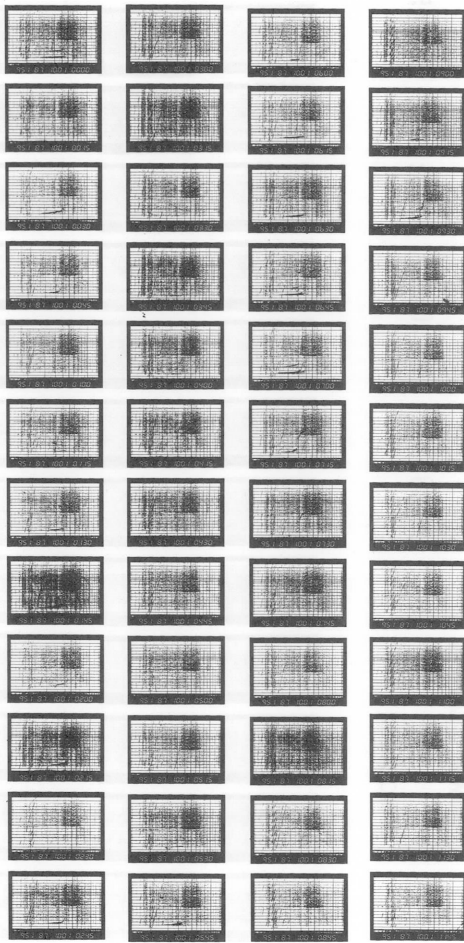
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00:00 ~ 11:45

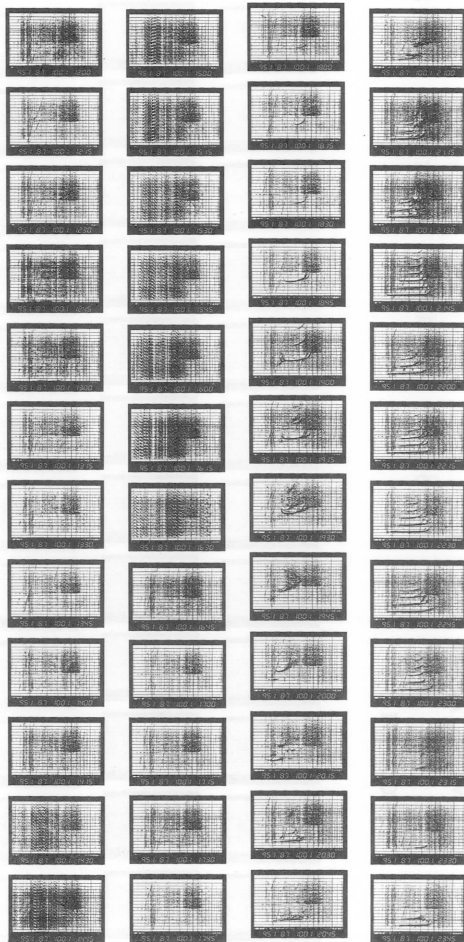




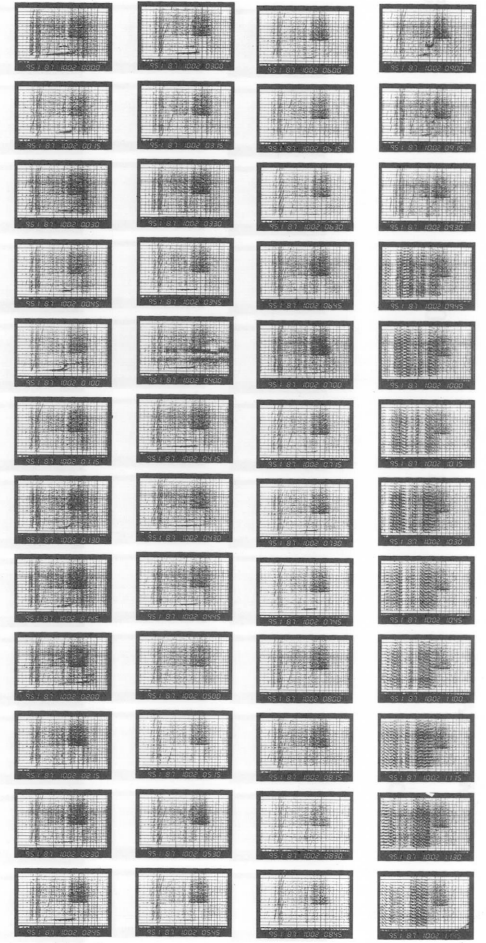
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IONOGRAM
1987 10 01 00:00 ~ 11:45



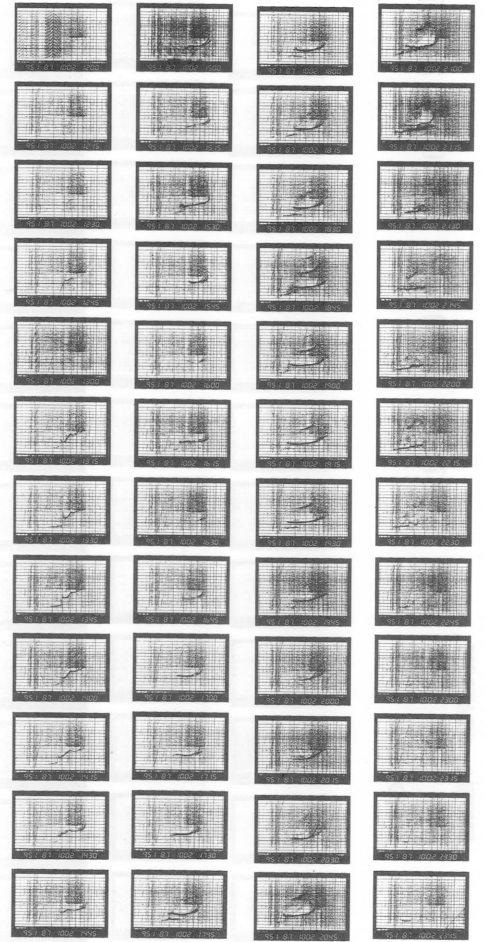
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1987 10 01 12:00 ~ 23:45



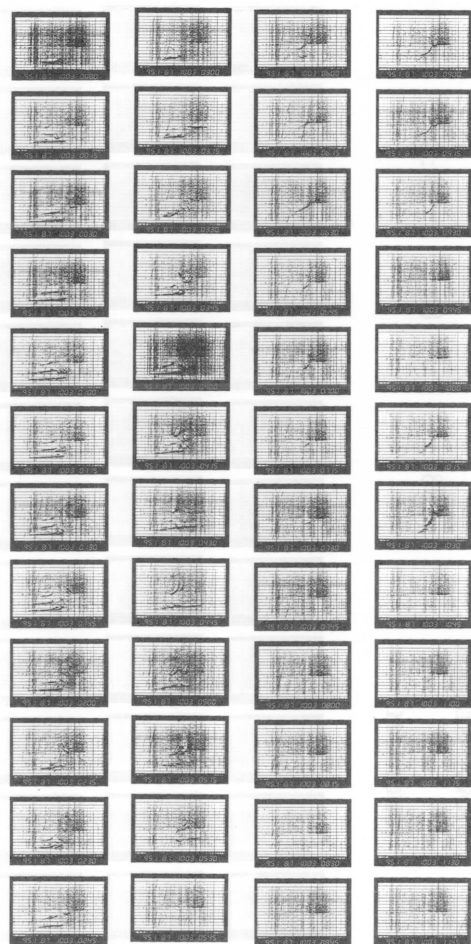
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1987 10 02 00:00 ~ 11:45



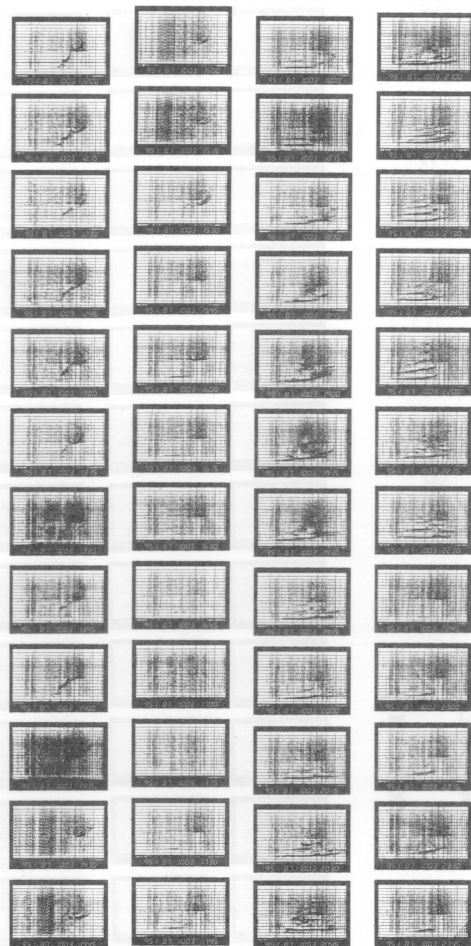
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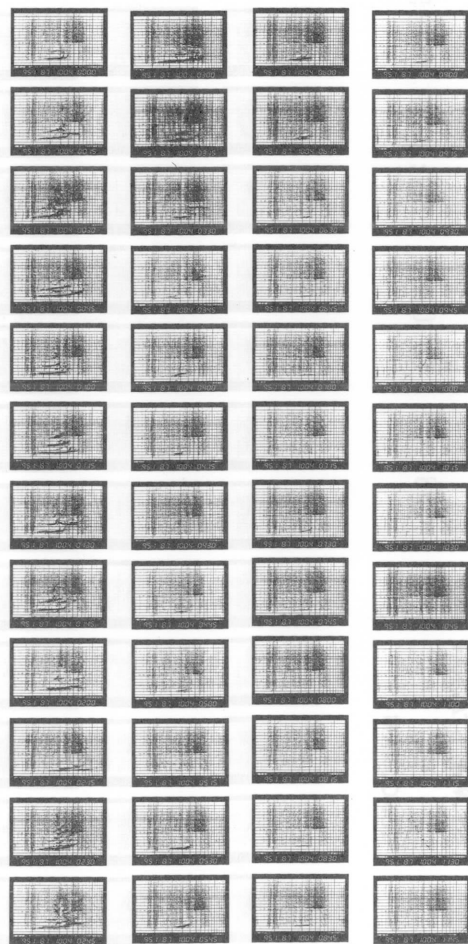
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1987 10 03 00:00 ~ 11:45



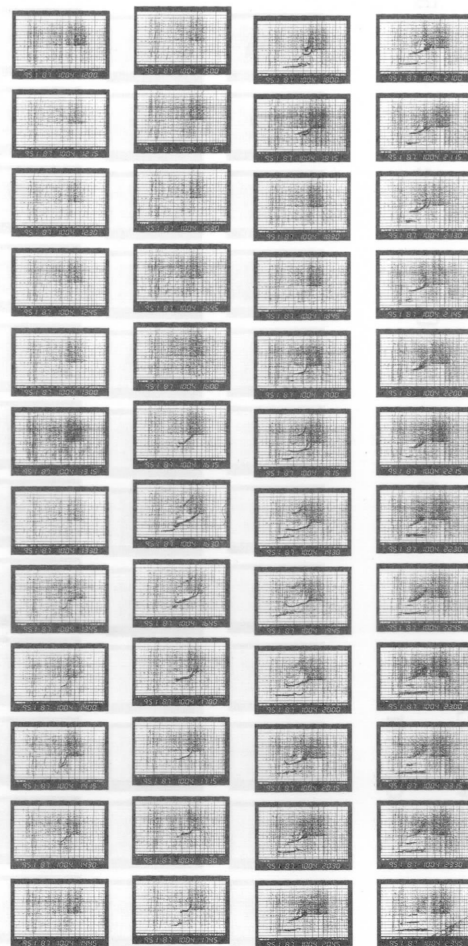
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IONOGRAM
1987 10 03 12:00 ~ 23:45



SYOWA STATION
IONOGRAM
1987 10 04 00:00 ~ 11:45



SYOWA STATION
IONOGRAM
1987 10 04 12:00 ~ 23:45

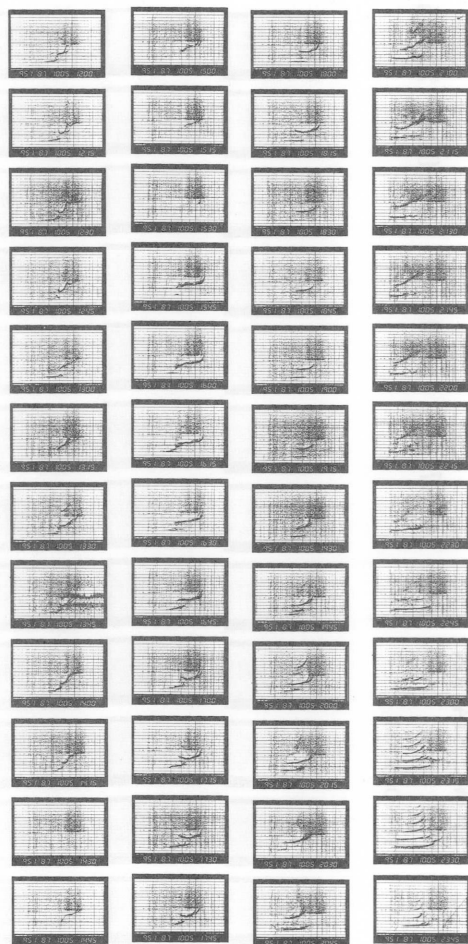


SYOWA STATION
IONOGRAM

1987

10 05

12:00 ~ 23:45

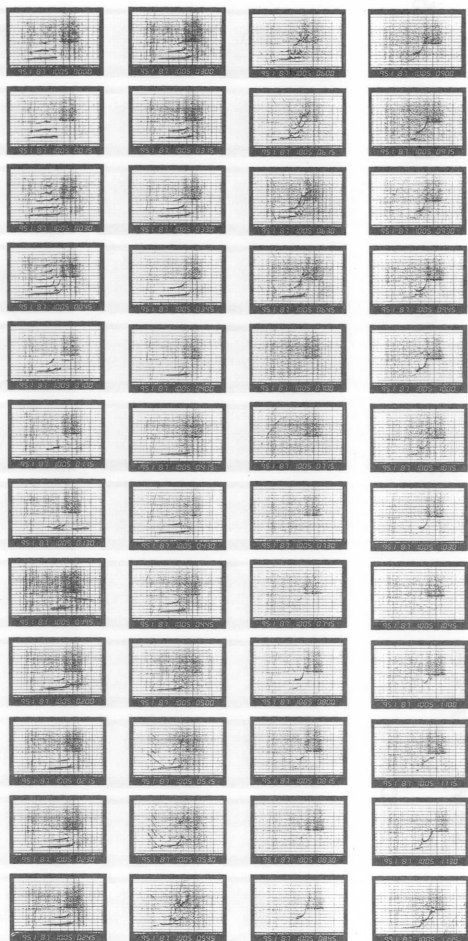


SYOWA STATION
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1987

10 05

00:00 ~ 11:45

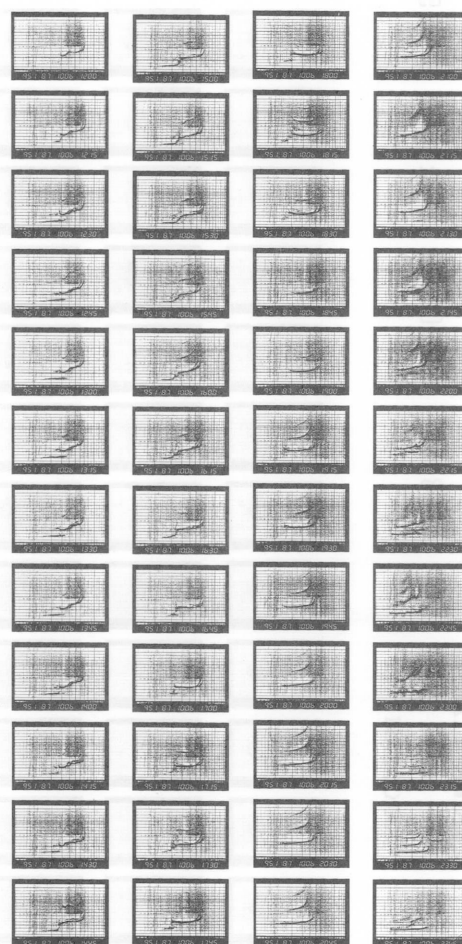


SYOWA STATION
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1987

10 06

12:00 ~ 23:45

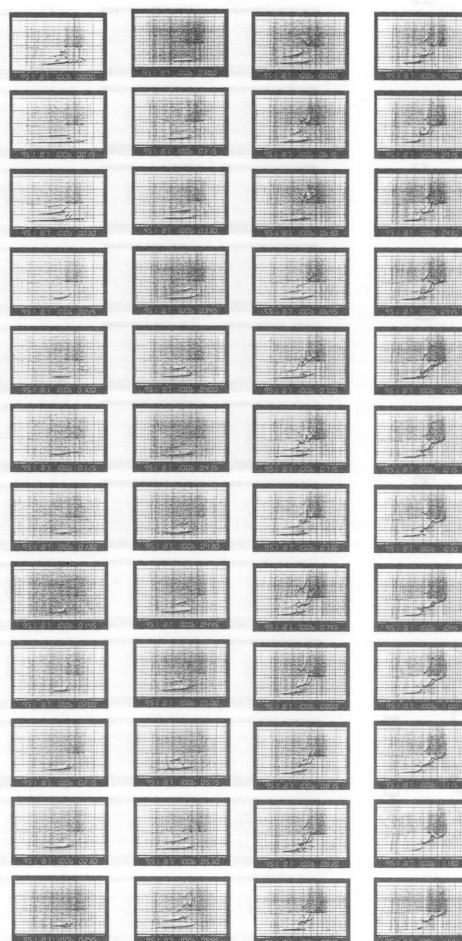


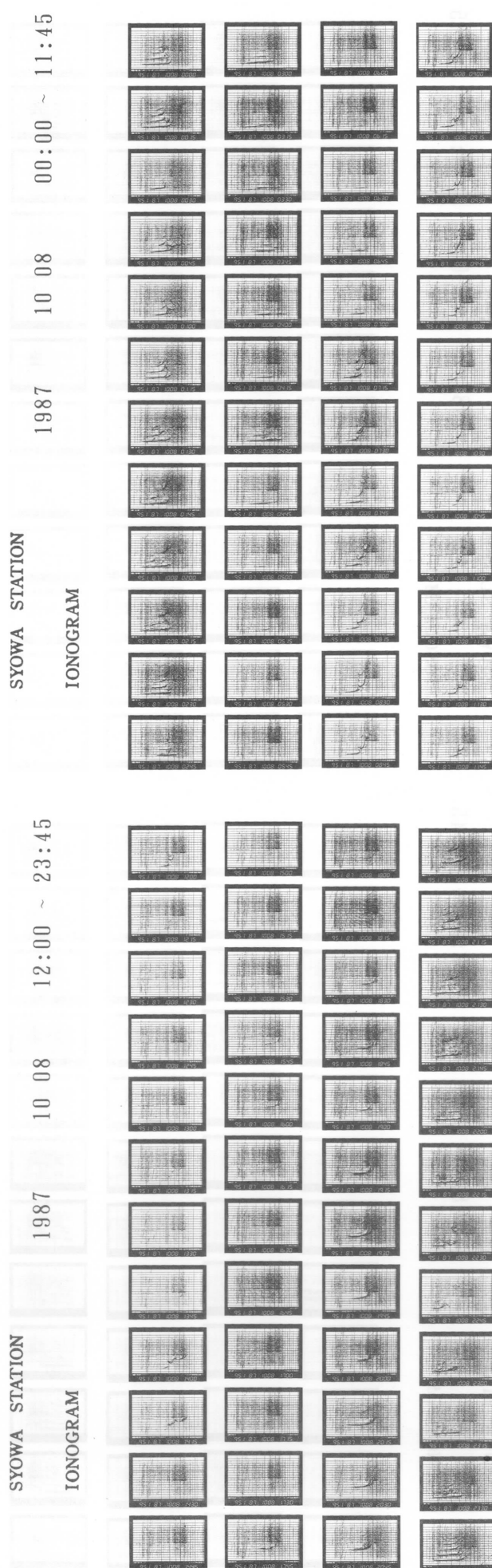
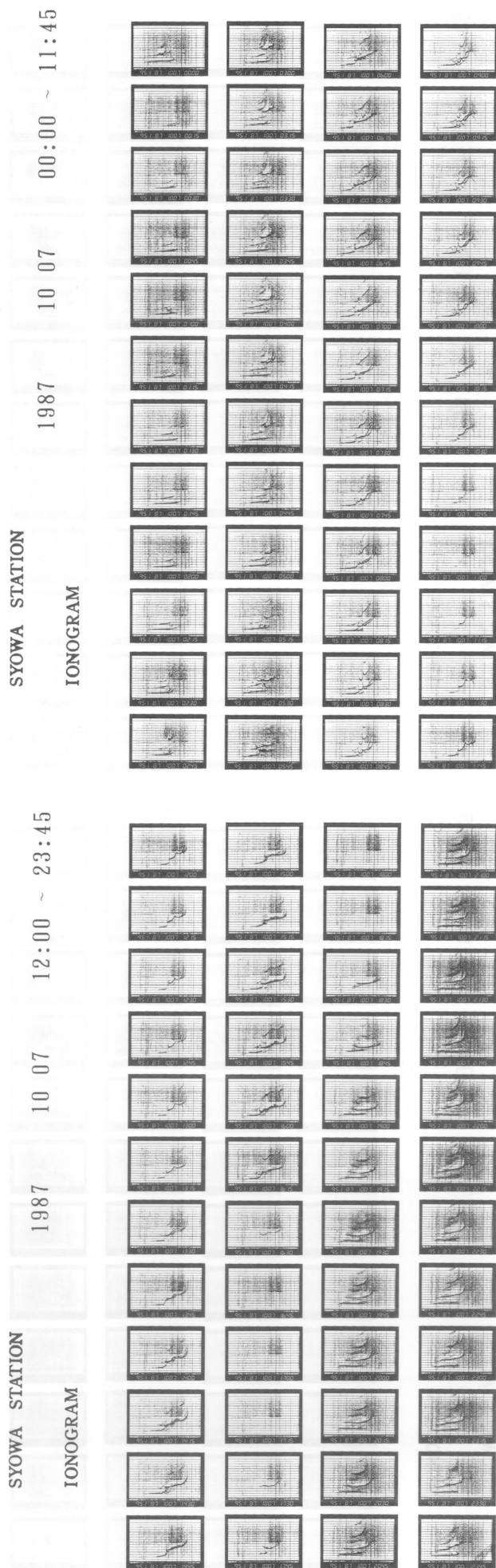
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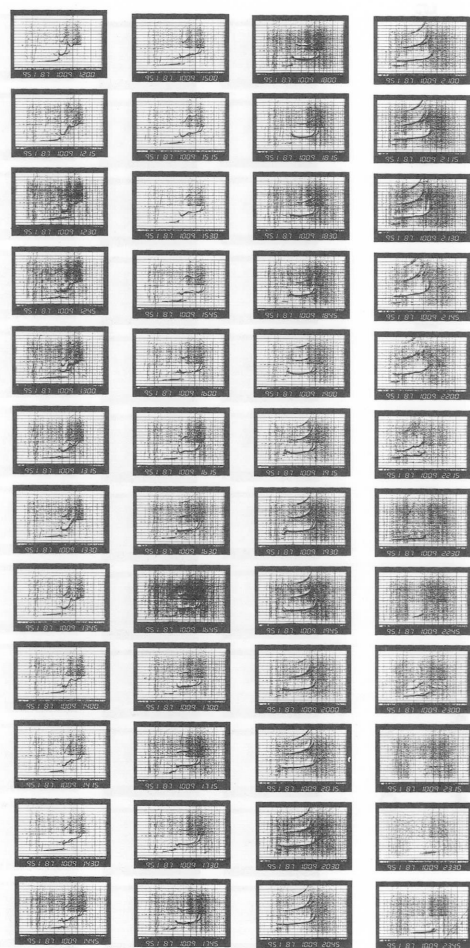
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00:00 ~ 11:45

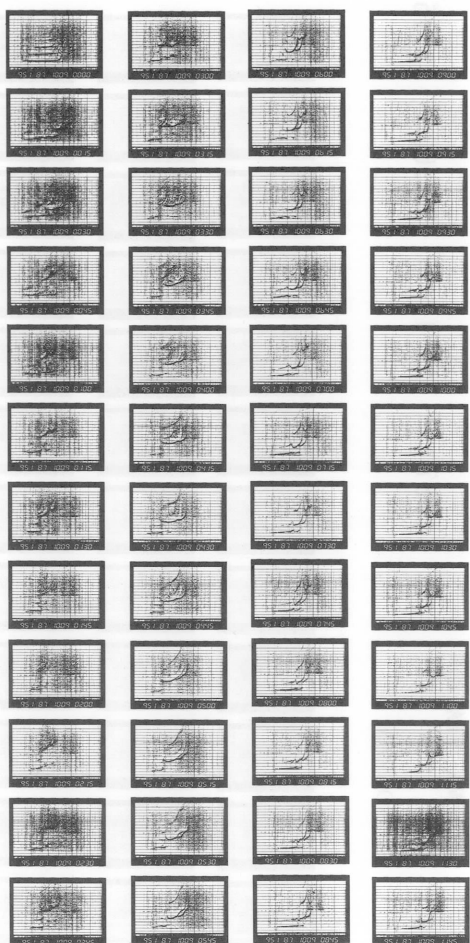




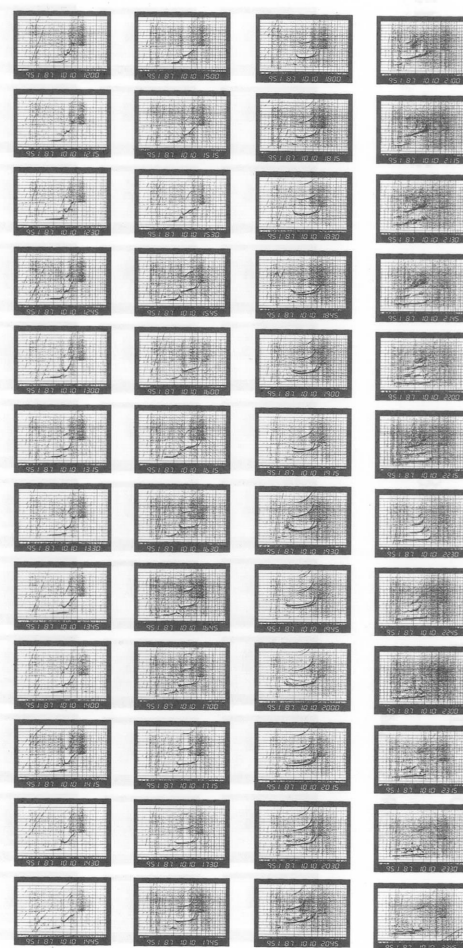
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1987 10 09 12:00 ~ 23:45
IONOGRAM



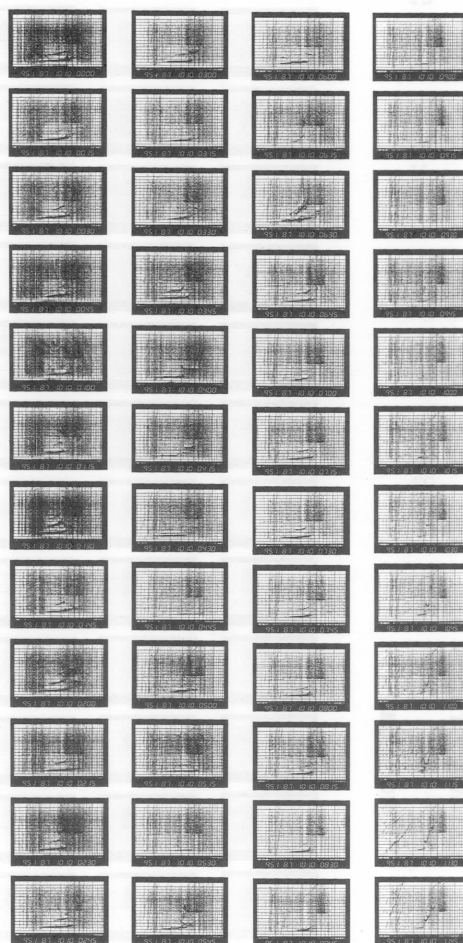
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1987 10 09 00:00 ~ 11:45
IONOGRAM

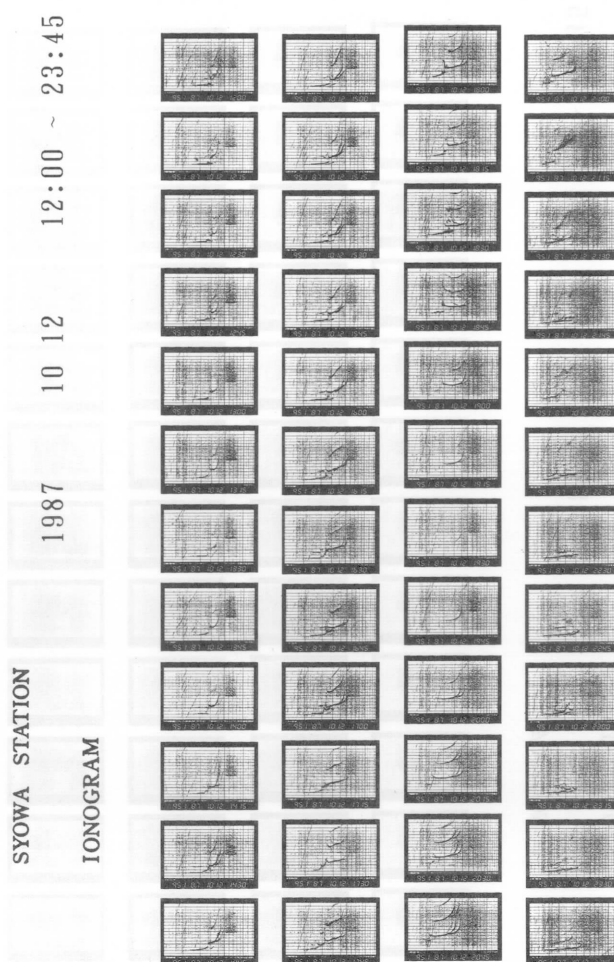
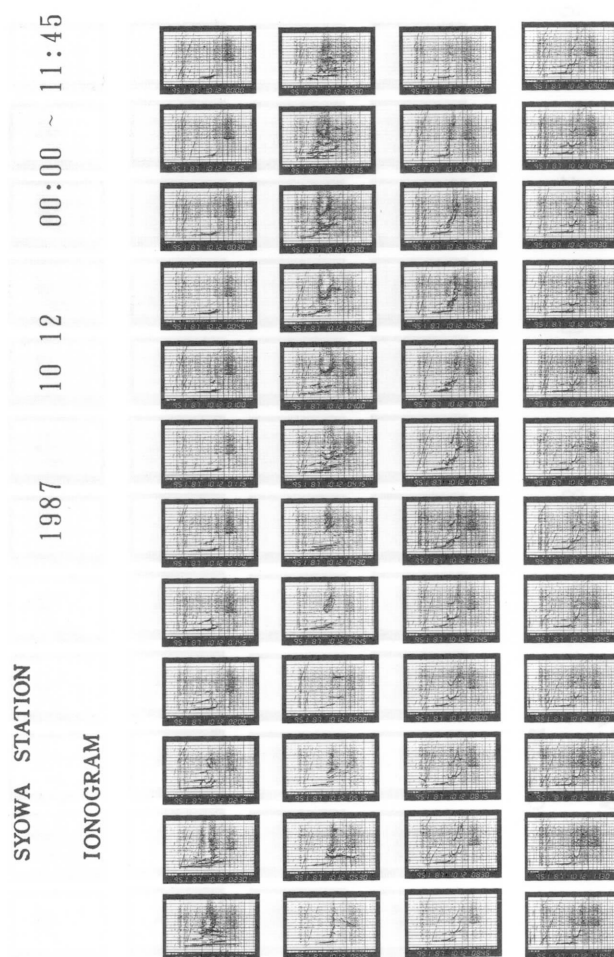
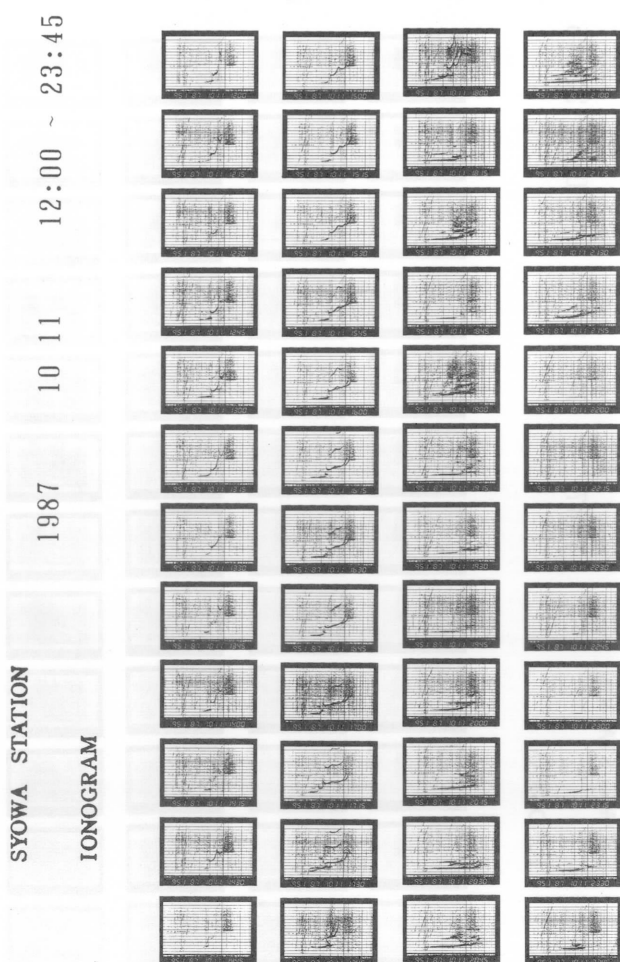
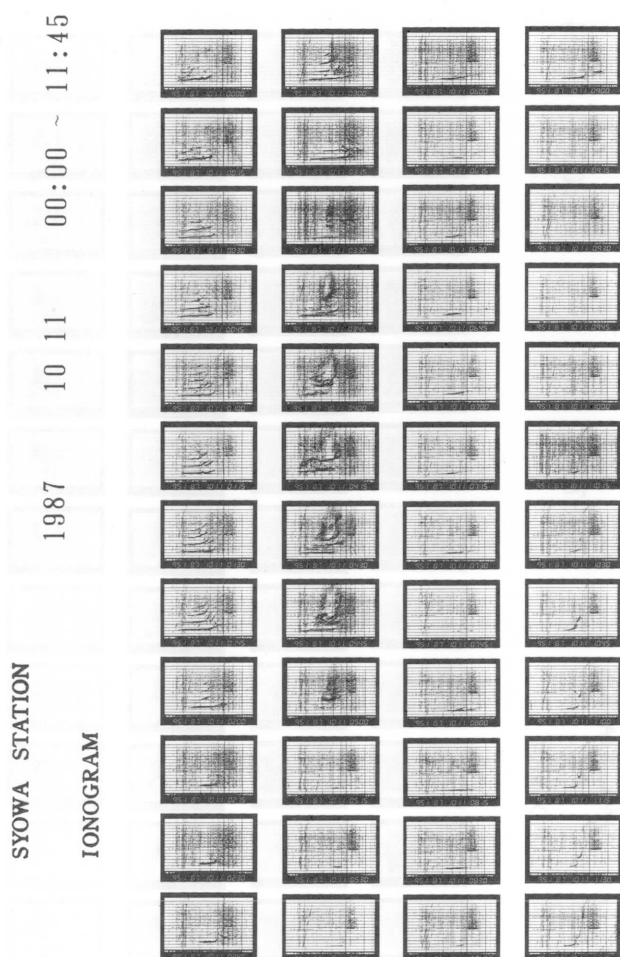


SYOWA STATION
1987 10 10 12:00 ~ 23:45
IONOGRAM



SYOWA STATION
1987 10 10 00:00 ~ 11:45
IONOGRAM





SYOWA STATION

IONOGRAM

1987

10 13

12:00 ~ 23:45

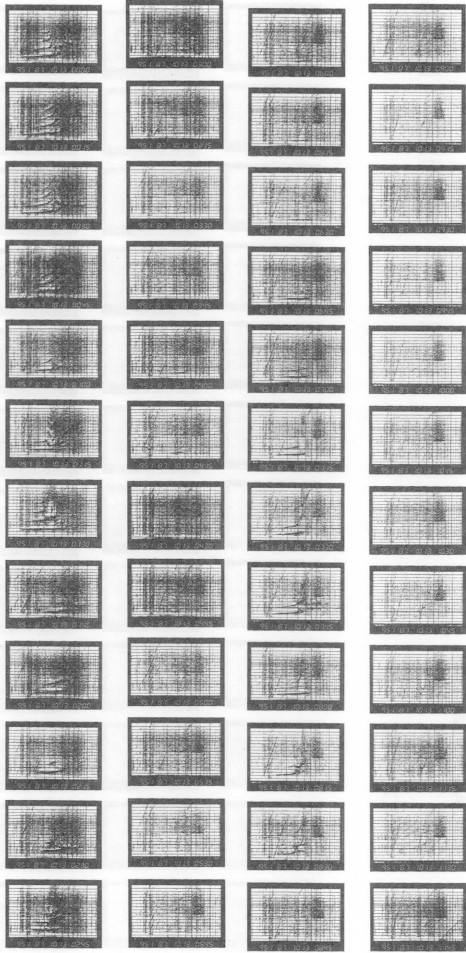
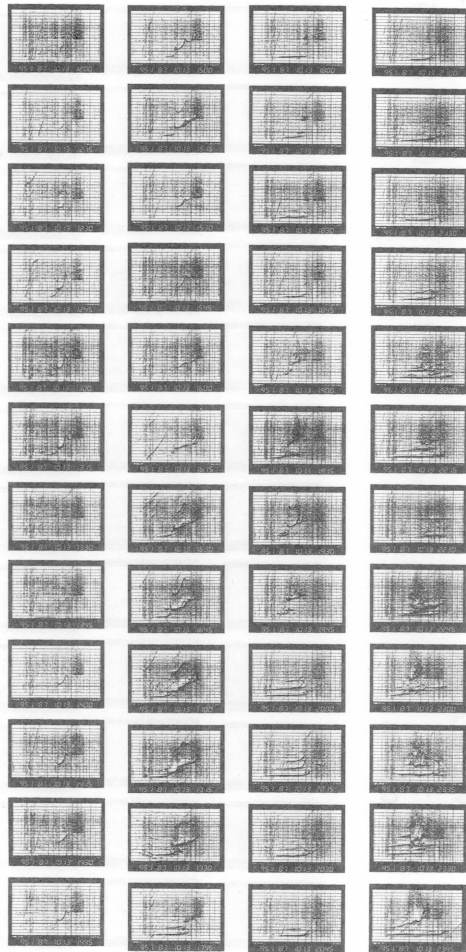
SYOWA STATION

IONOGRAM

1987

10 13

00:00 ~ 11:45



SYOWA STATION

IONOGRAM

1987

10 14

12:00 ~ 23:45

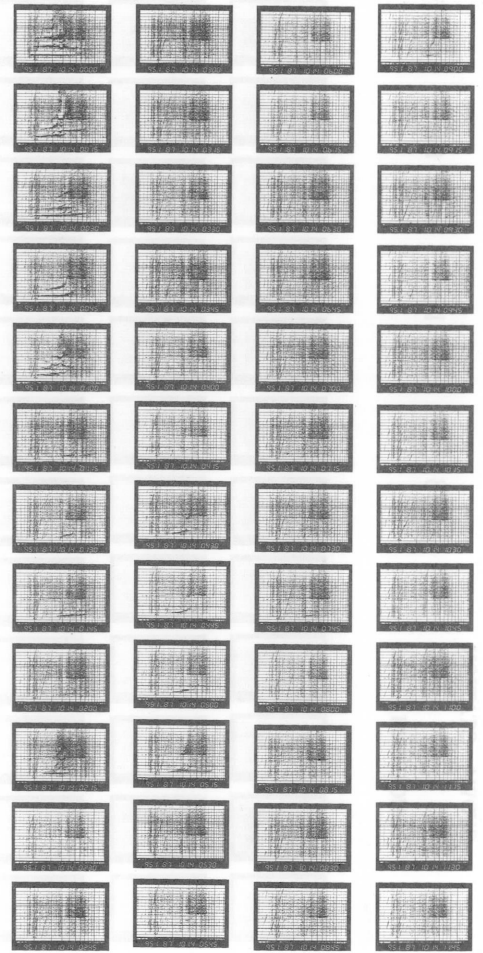
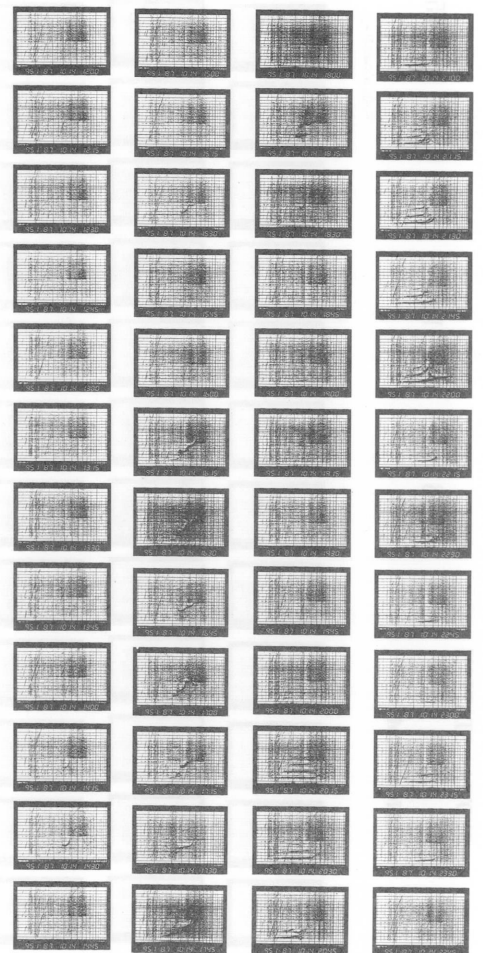
SYOWA STATION

IONOGRAM

1987

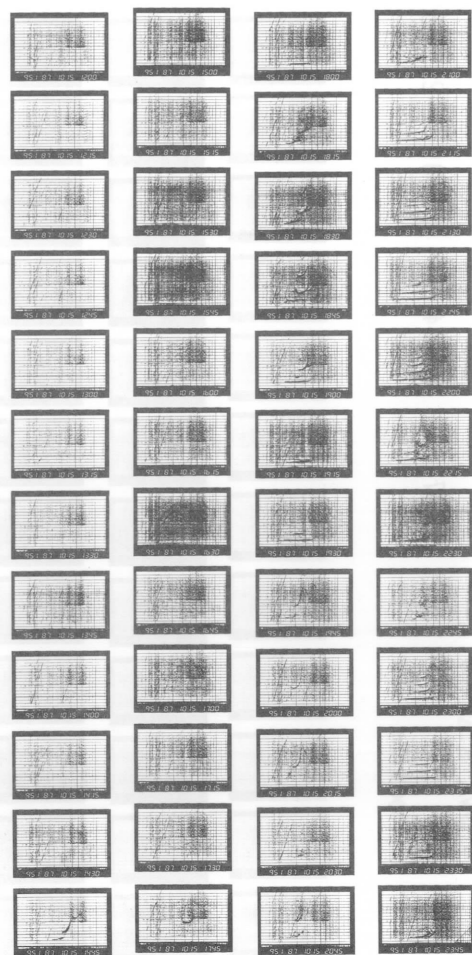
10 14

00:00 ~ 11:45

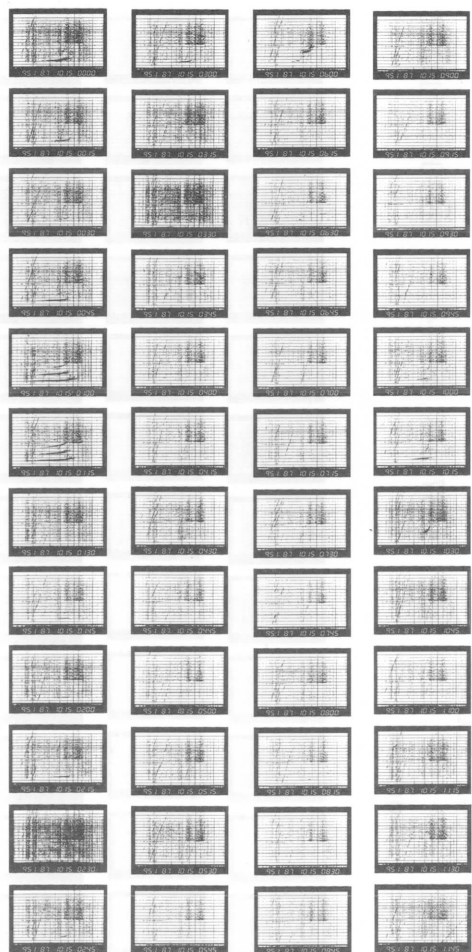


SYOWA STATION
IONOGRAM

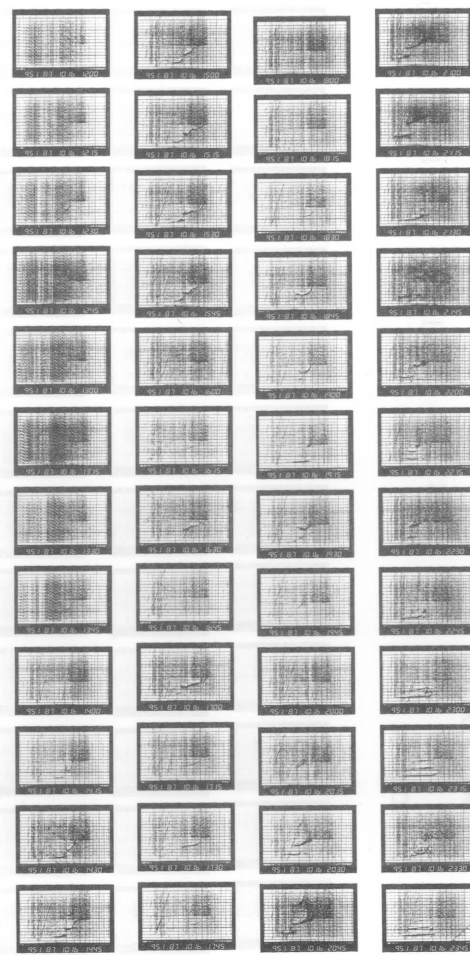
1987 10 15 12:00 ~ 23:45



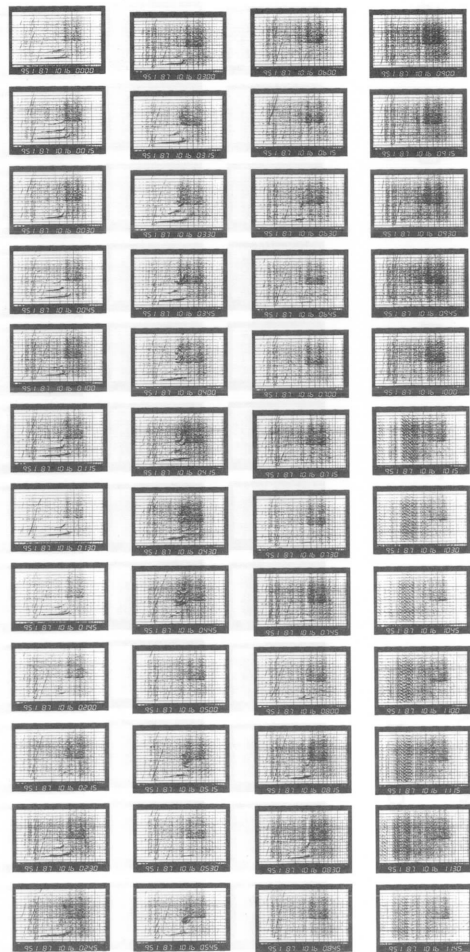
1987 10 15 00:00 ~ 11:45

SYOWA STATION
IONOGRAM

1987 10 16 12:00 ~ 23:45

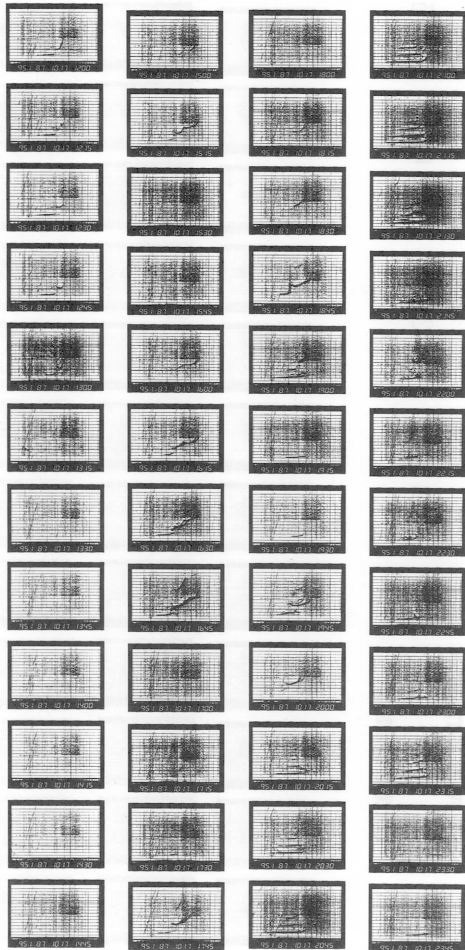


1987 10 16 00:00 ~ 11:45



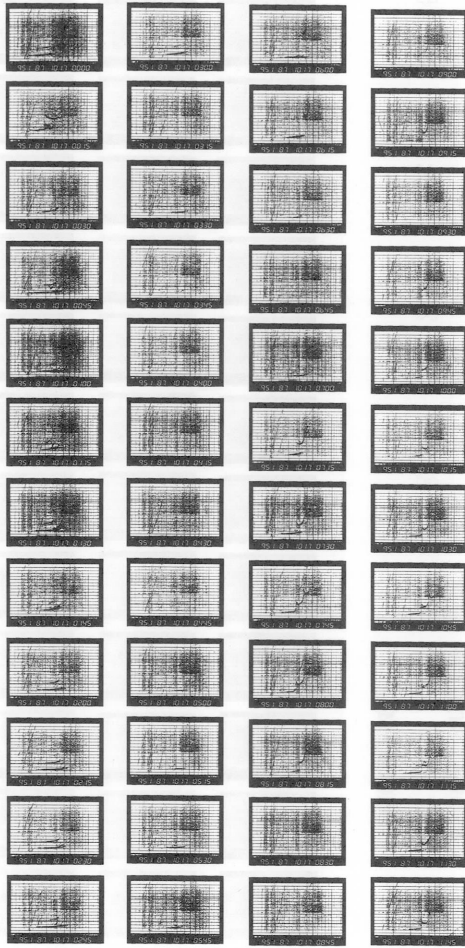
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IONOGRAM

1987 10 17 12:00 ~ 23:45



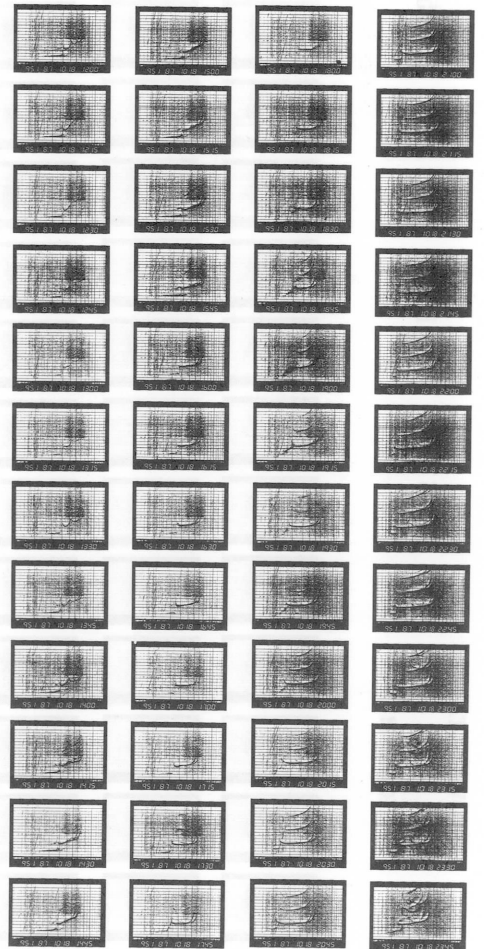
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1987 10 17 00:00 ~ 11:45



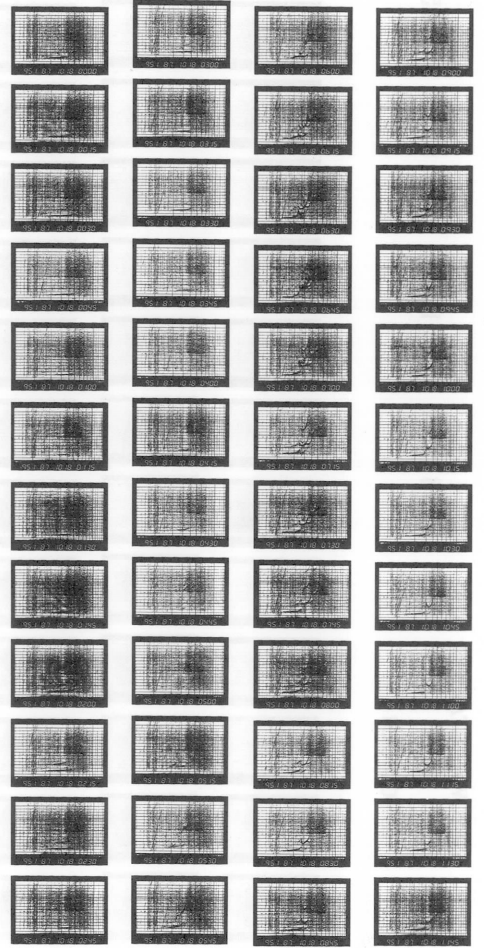
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1987 10 18 12:00 ~ 23:45



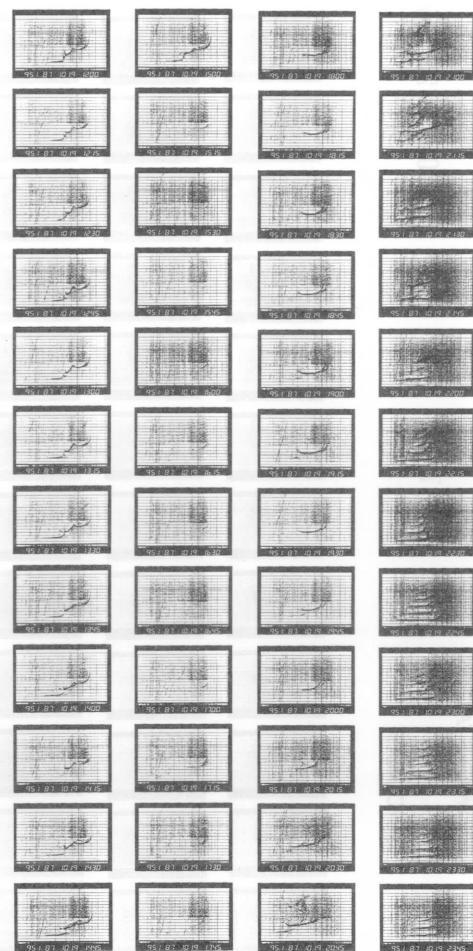
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1987 10 18 00:00 ~ 11:45

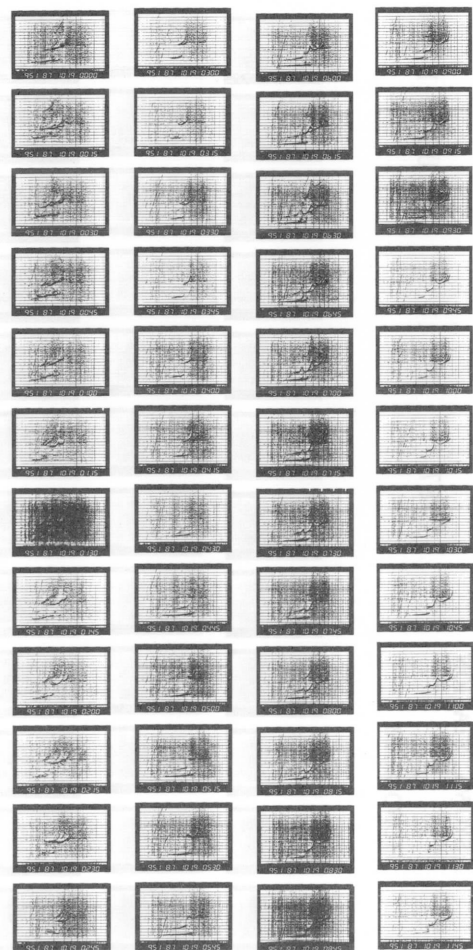


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1987 10 19 12:00 ~ 23:45

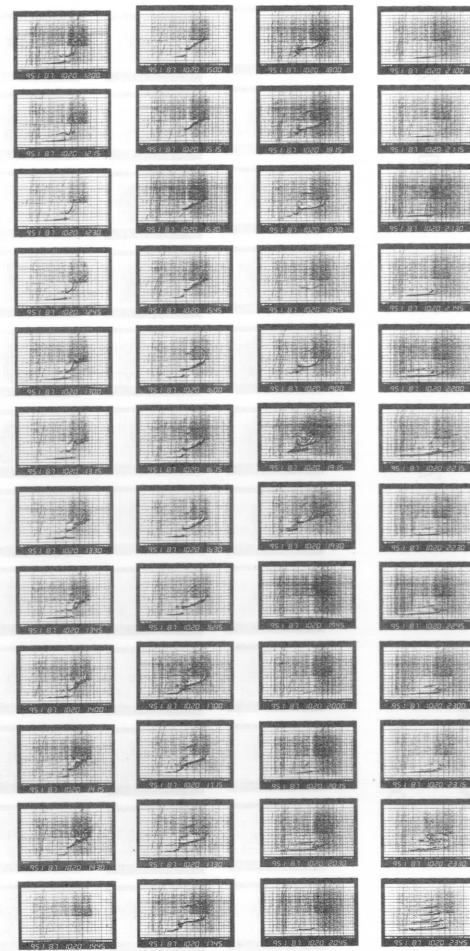


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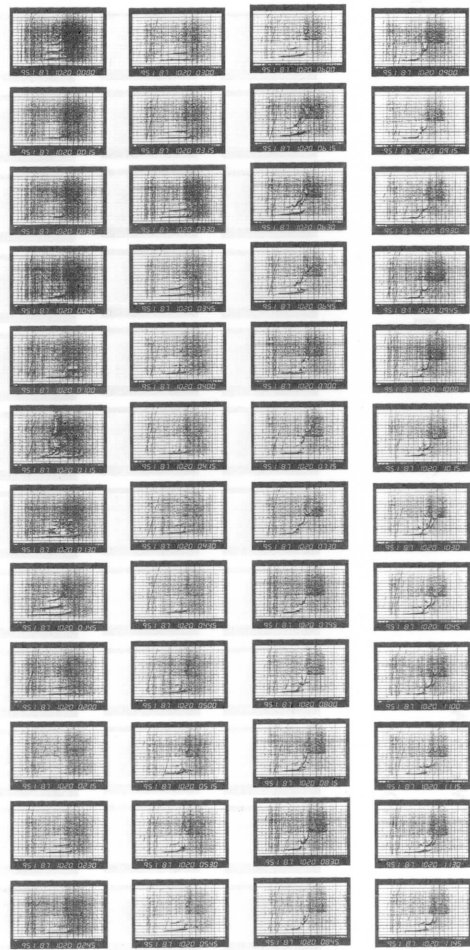
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IONOGRAM

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SYOWA STATION
IONOGRAM

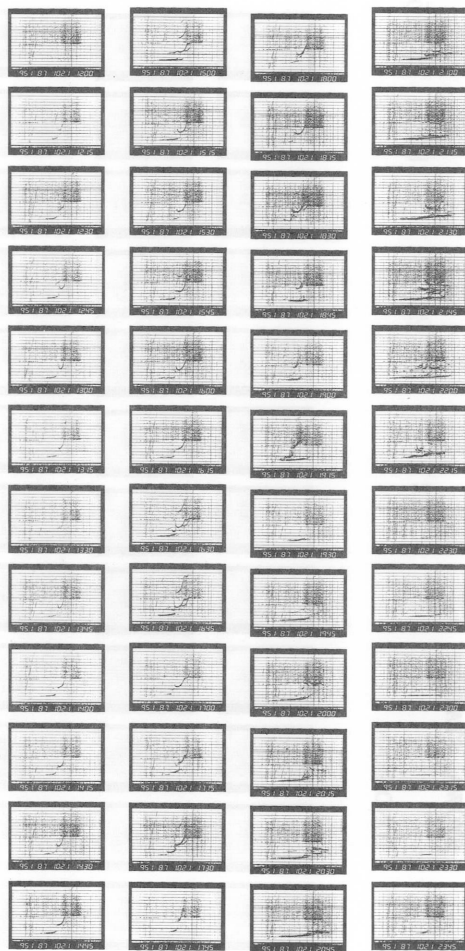
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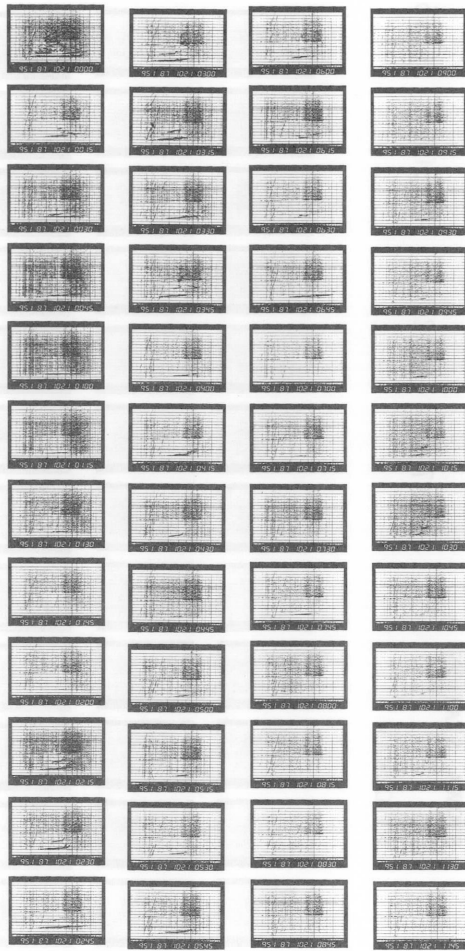
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IONOGRAM

1987 10 21 12:00 ~ 23:45



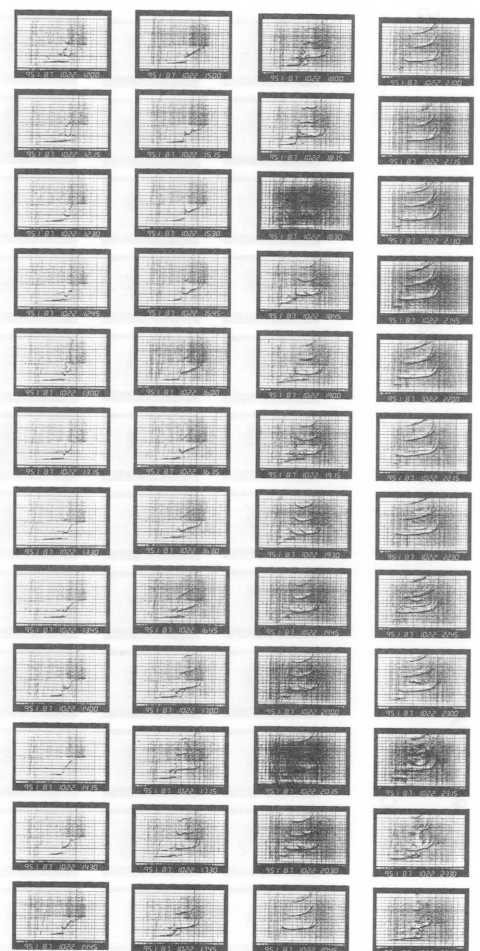
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SYOWA STATION

IONOGRAM

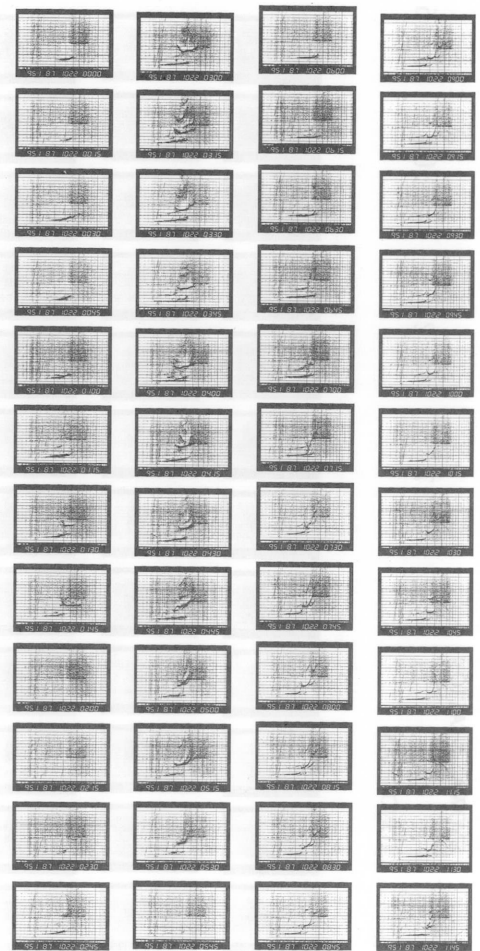
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SYOWA STATION

IONOGRAM

1987 10 22 00:00 ~ 11:45

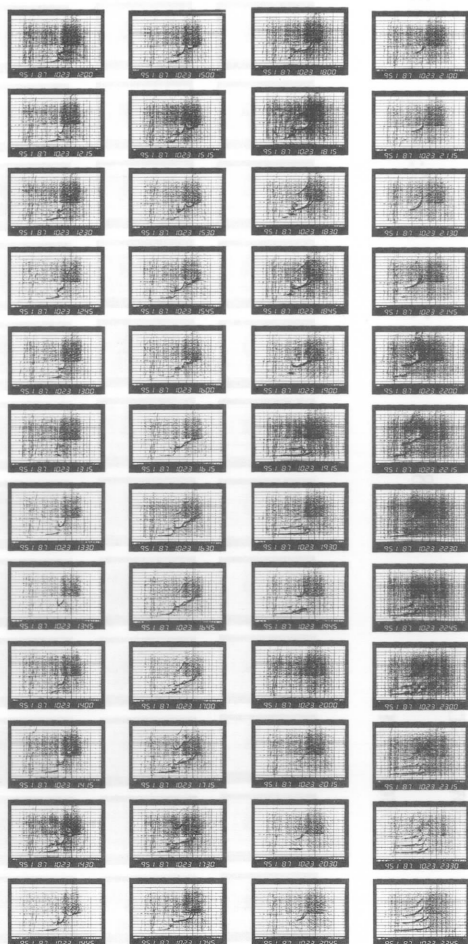


SYOWA STATION
IONOGRAM

1987

10 23

12:00 ~ 23:45

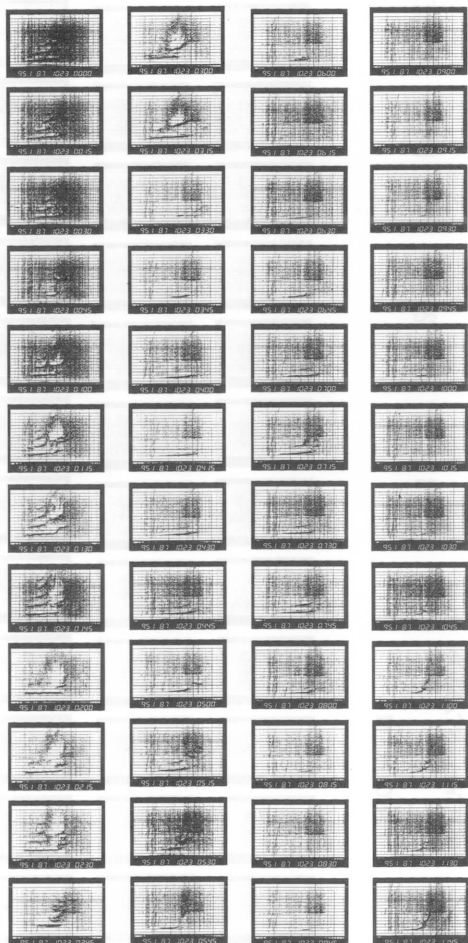


SYOWA STATION
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1987

10 23

00:00 ~ 11:45

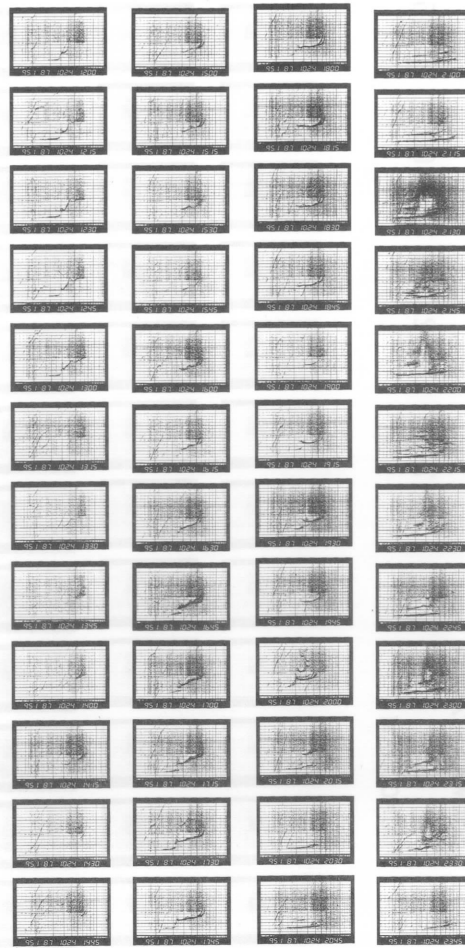


SYOWA STATION
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1987

10 24

12:00 ~ 23:45

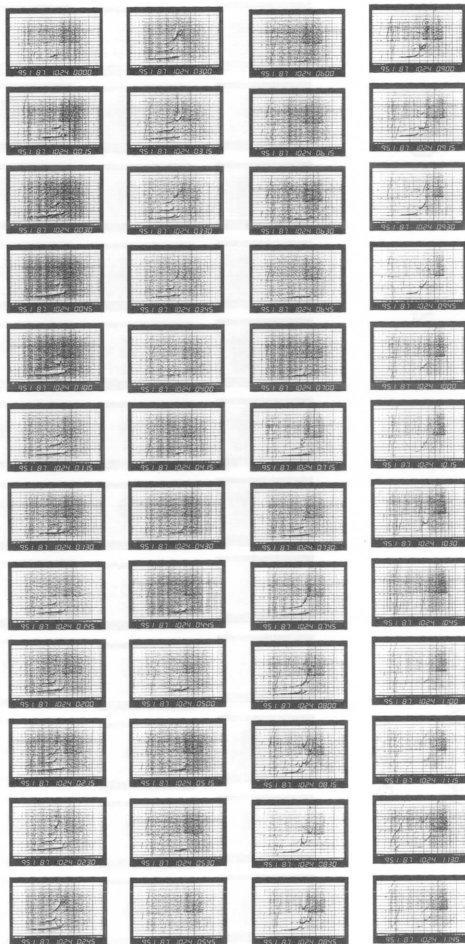


SYOWA STATION
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1987

10 24

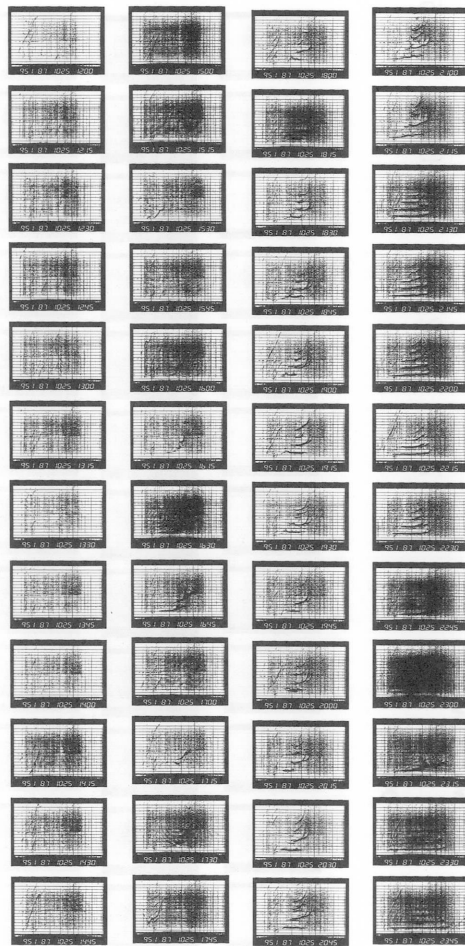
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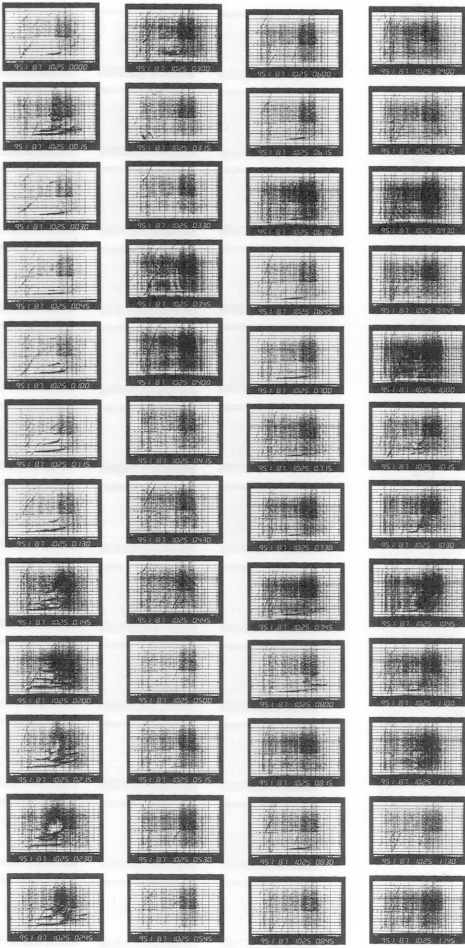
SYOWA STATION

IONOGRAM

1987 10 25 12:00 ~ 23:45



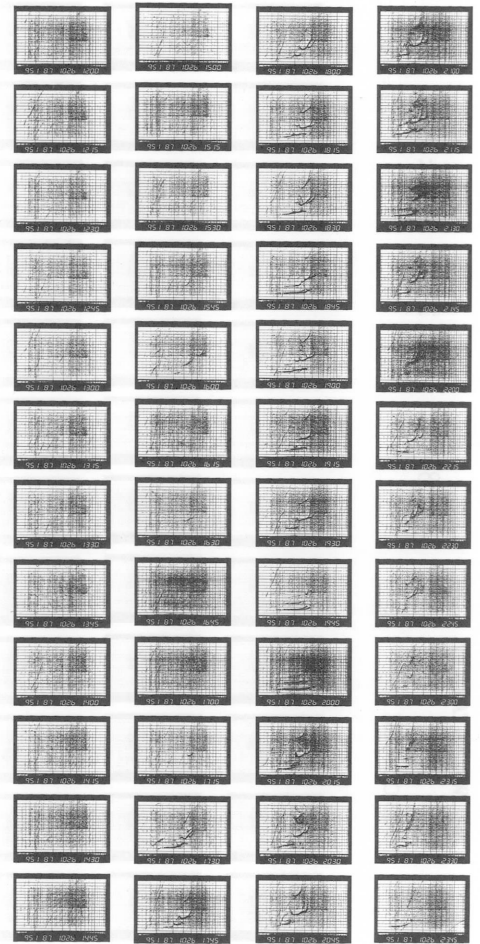
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SYOWA STATION

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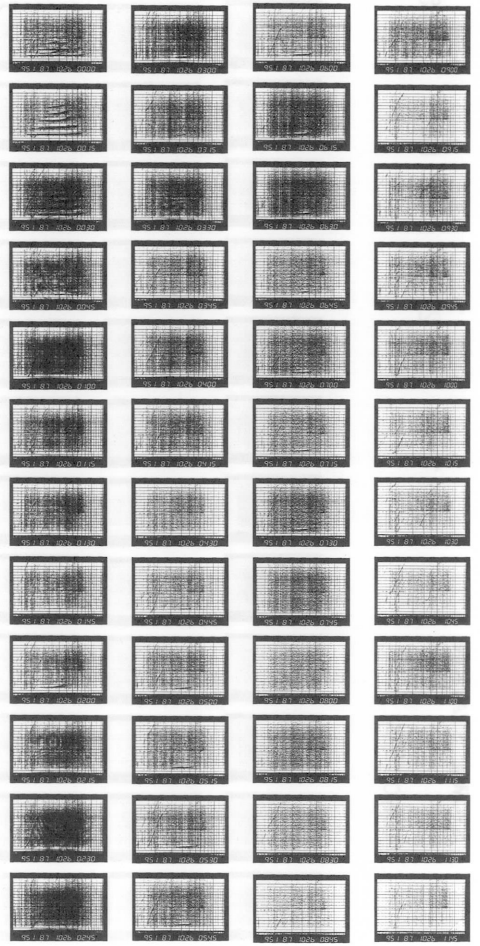
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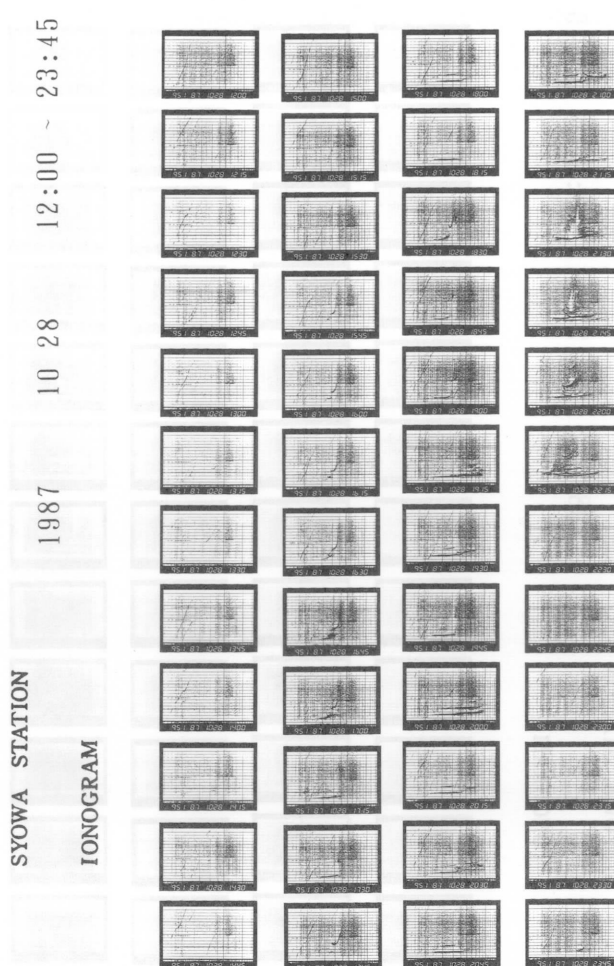
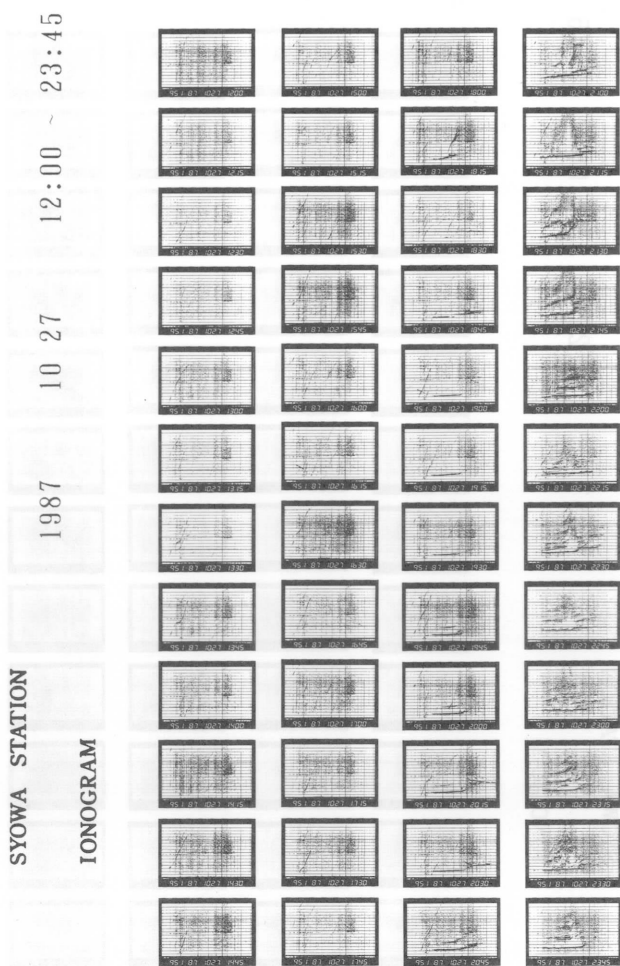
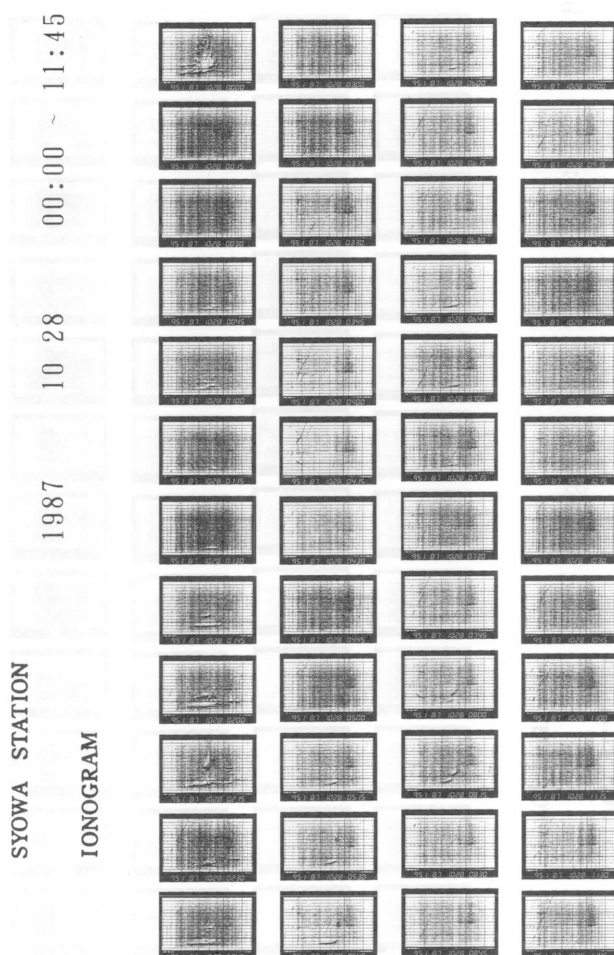
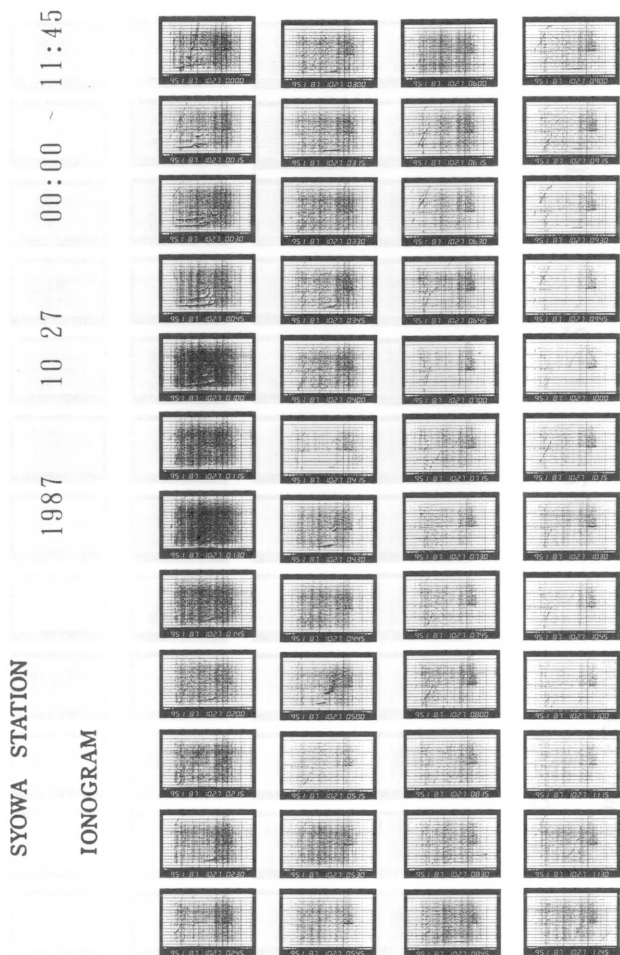


SYOWA STATION

IONOGRAM

1987 10 26 00:00 ~ 11:45

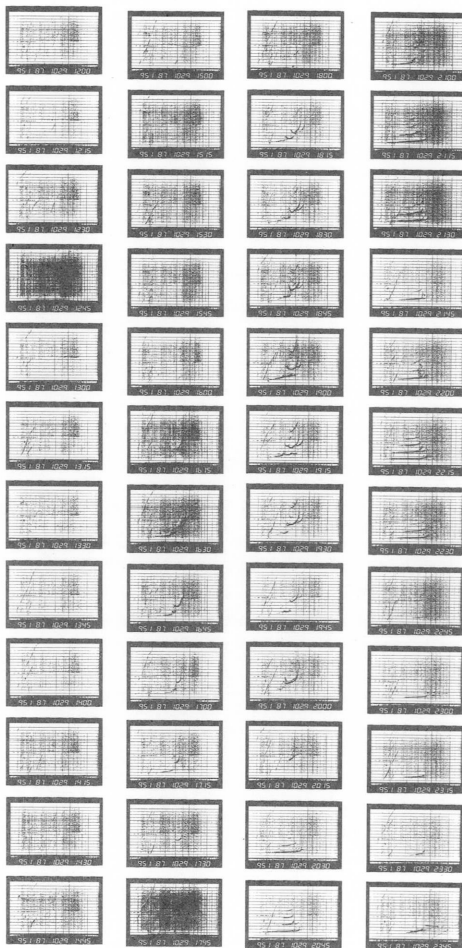




SYOWA STATION

1987 10 29 12:00 ~ 23:45

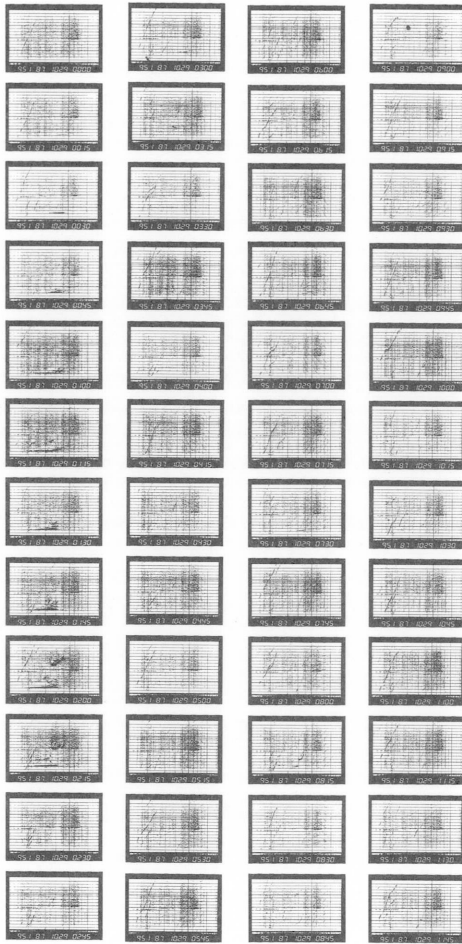
IONOGRAM



SYOWA STATION

1987 10 29 00:00 ~ 11:45

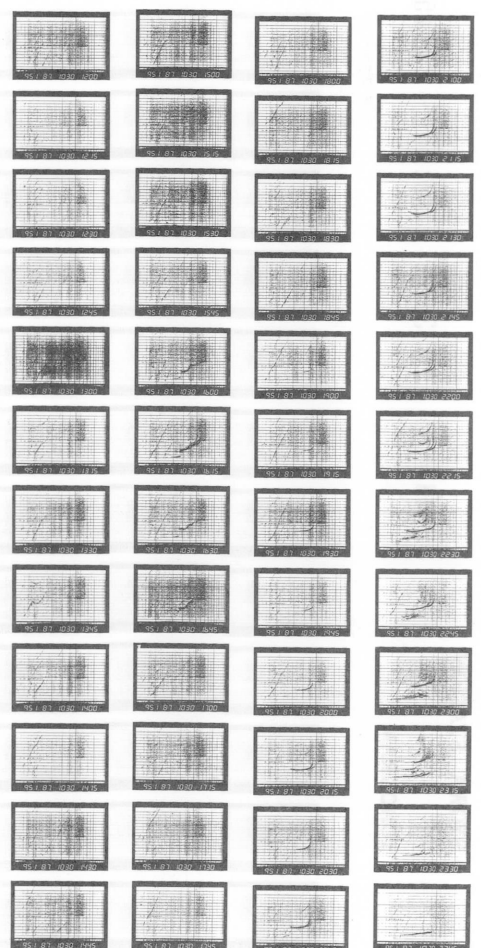
IONOGRAM



SYOWA STATION:

1987 10 30 12:00 ~ 23:45

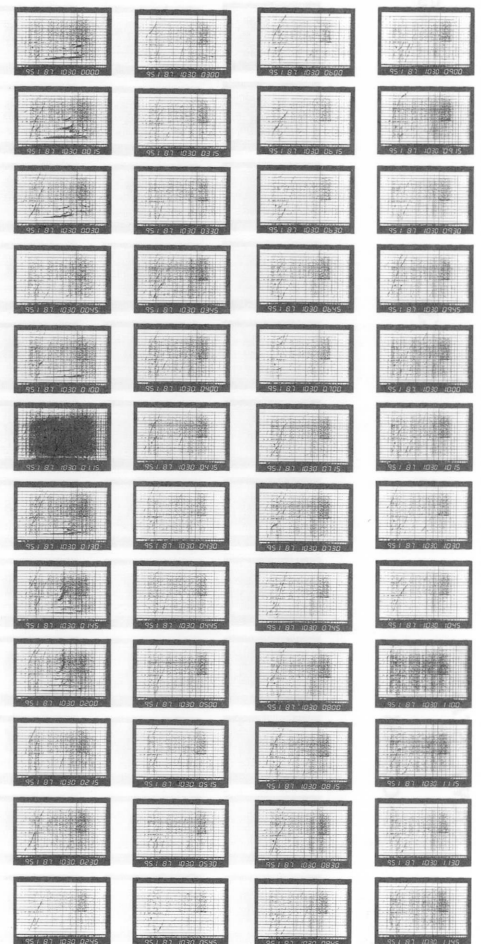
IONOGRAM



SYOWA STATION

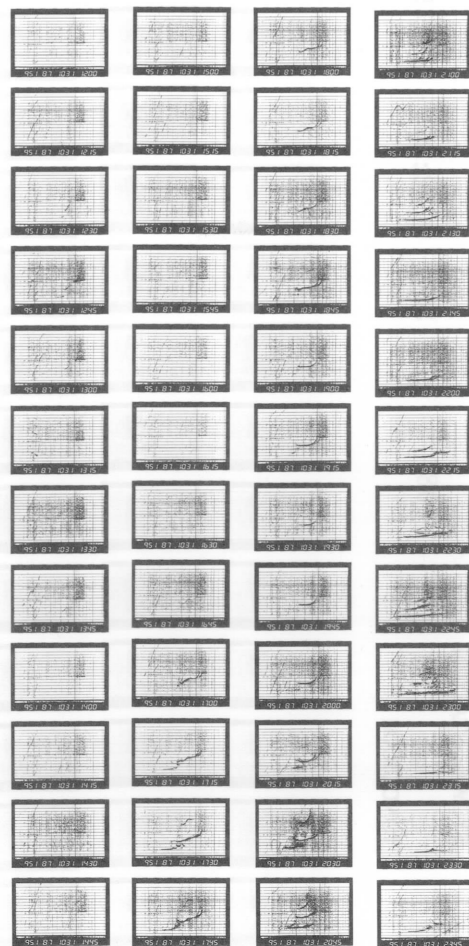
1987 10 30 00:00 ~ 11:45

IONOGRAM

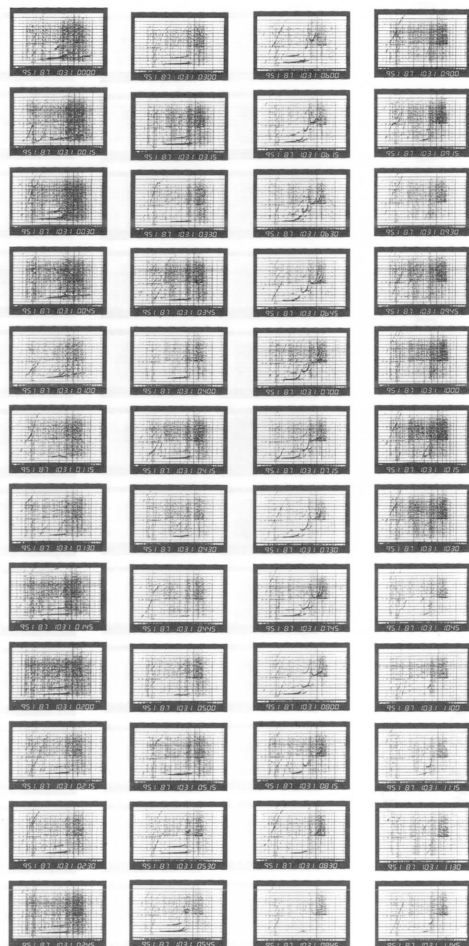


SYOWA STATION
IONOGRAM

1987 10 31 12:00 ~ 23:45



1987 10 31 00:00 ~ 11:45



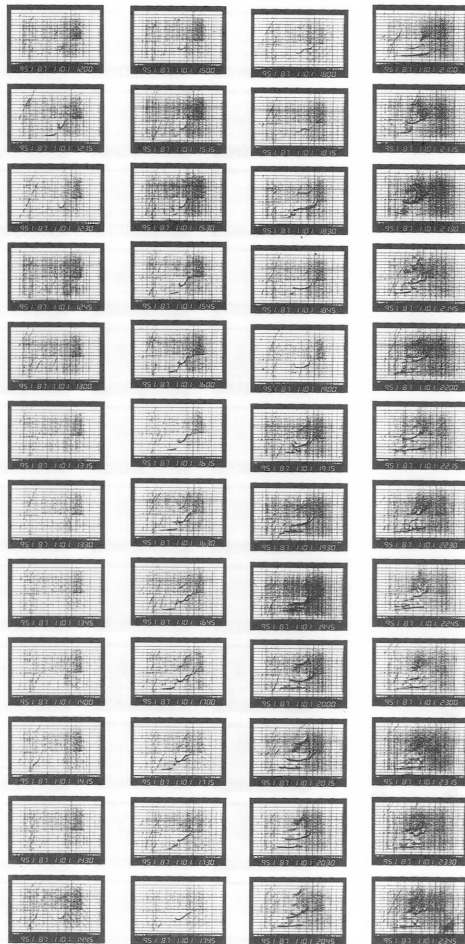
SYOWA STATION

IONOGRAM

1987

11 01

12:00 ~ 23:45



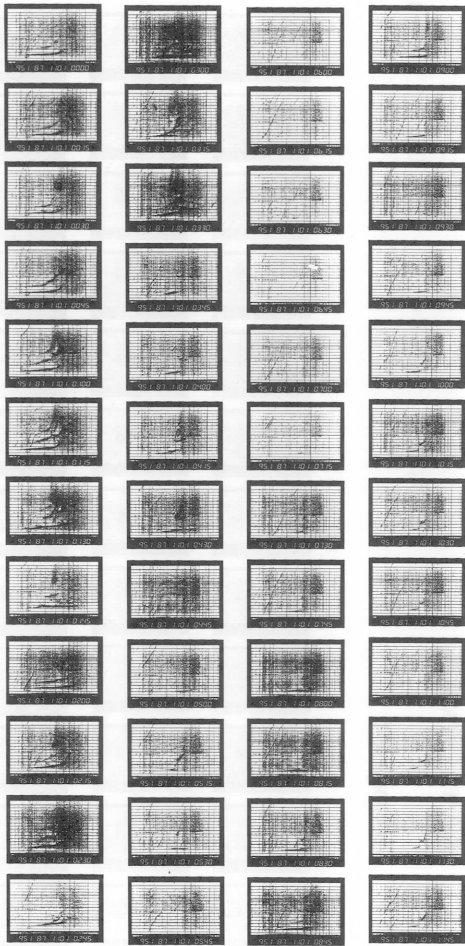
SYOWA STATION

IONOGRAM

1987

11 01

00:00 ~ 11:45



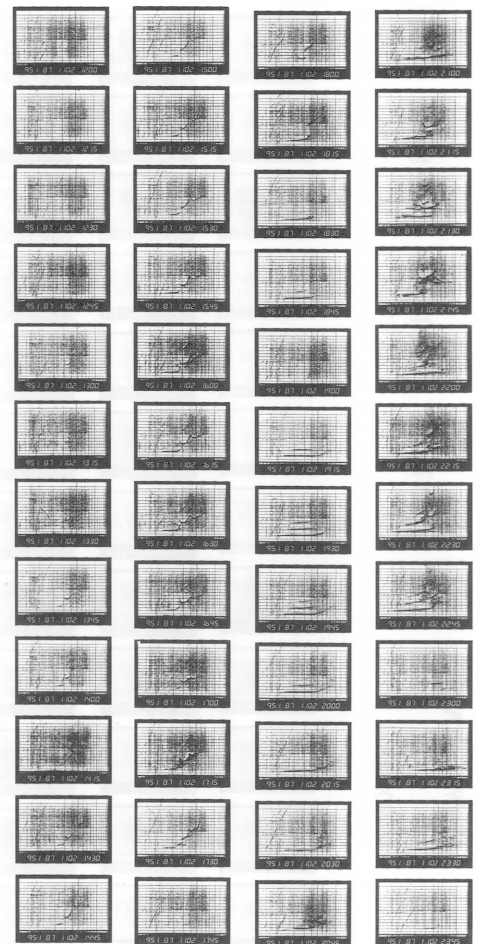
SYOWA STATION

IONOGRAM

1987

11 02

12:00 ~ 23:45



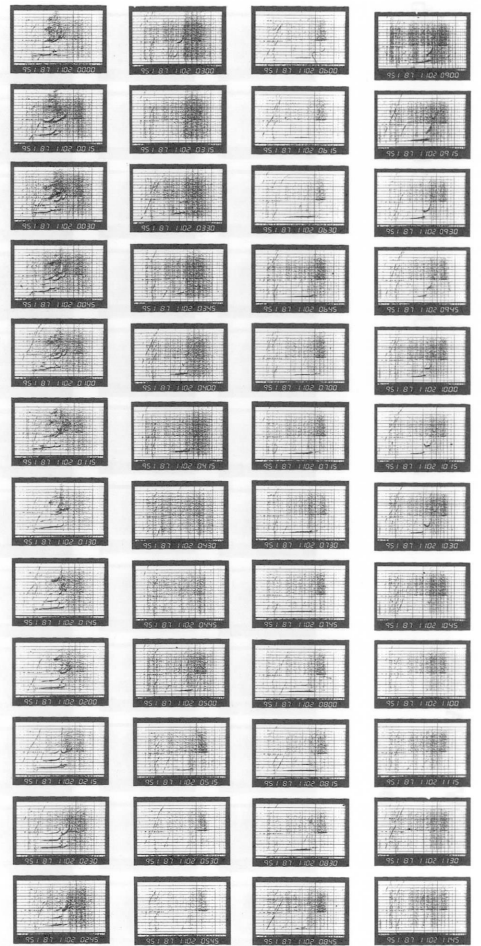
SYOWA STATION

IONOGRAM

1987

11 02

00:00 ~ 11:45



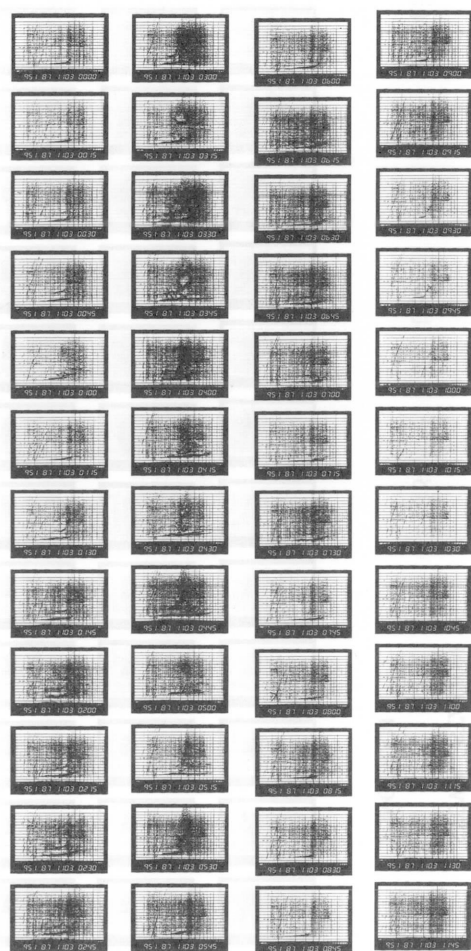
SYOWA STATION

IONOGRAM

1987

11 03

00:00 ~ 11:45



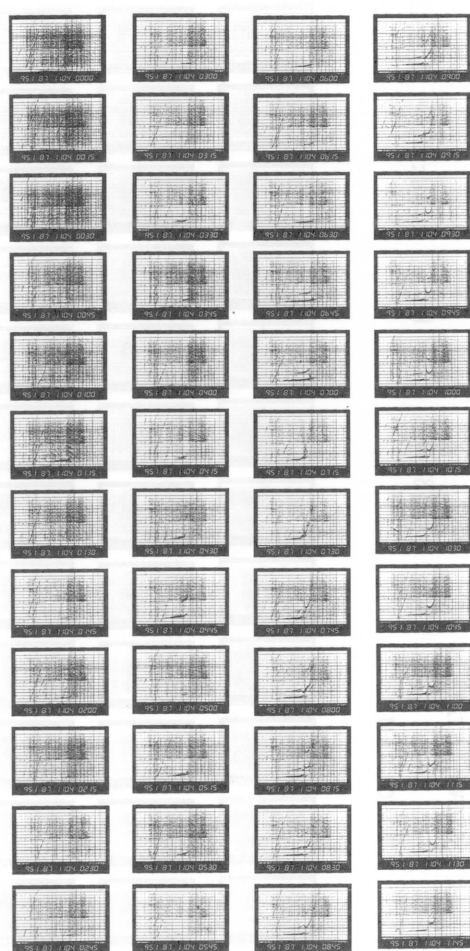
SYOWA STATION

IONOGRAM

1987

11 04

00:00 ~ 11:45



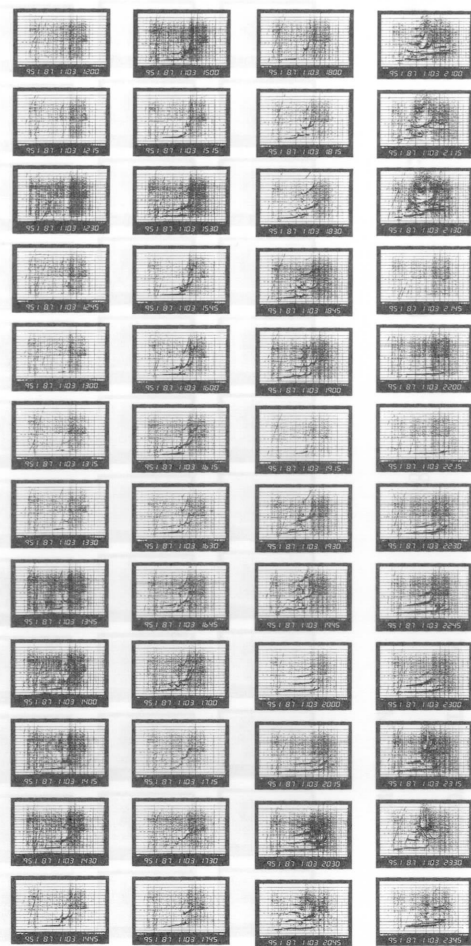
SYOWA STATION

IONOGRAM

1987

11 03

12:00 ~ 23:45



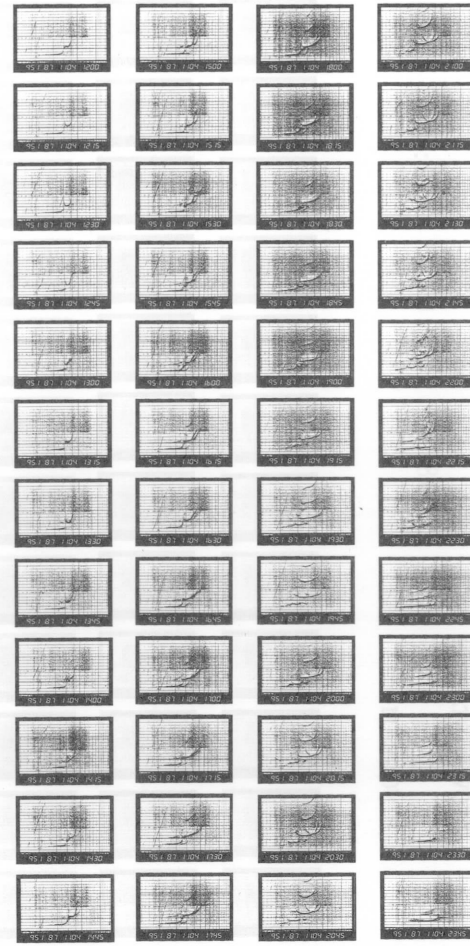
SYOWA STATION

IONOGRAM

1987

11 04

12:00 ~ 23:45



SYOWA STATION

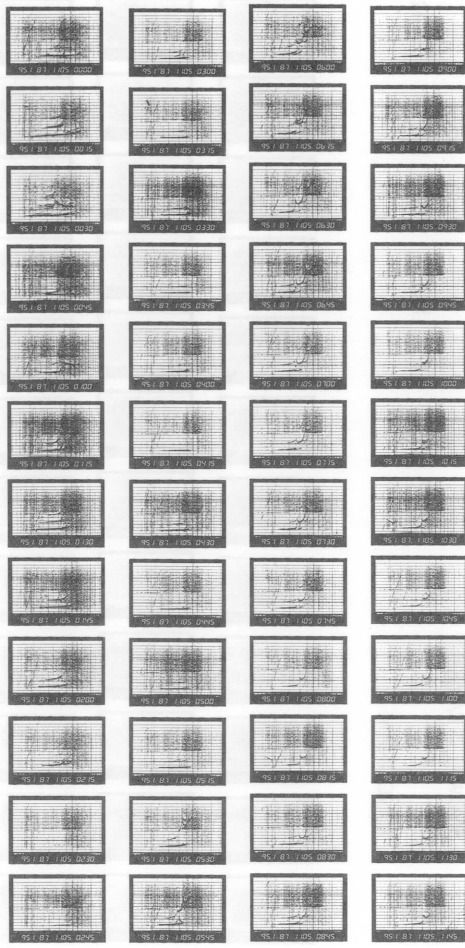
IONOGRAM

1987

11 03

00:00 ~

11:45



SYOWA STATION

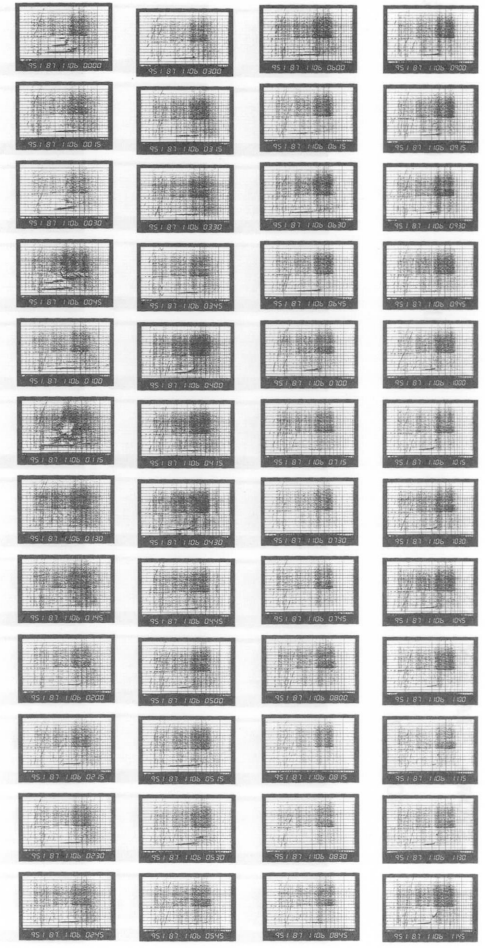
IONOGRAM

1987

11 06

00:00 ~

11:45



SYOWA STATION

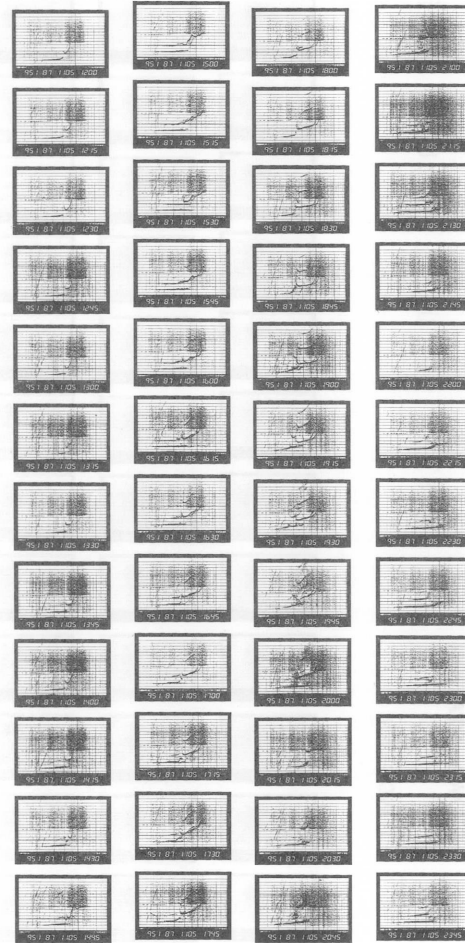
IONOGRAM

1987

11 05

12:00 ~

23:45



SYOWA STATION

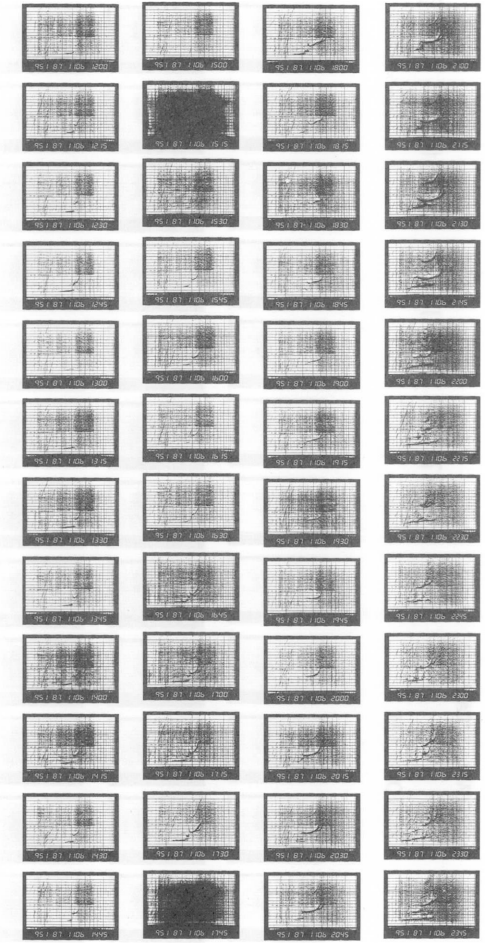
IONOGRAM

1987

11 06

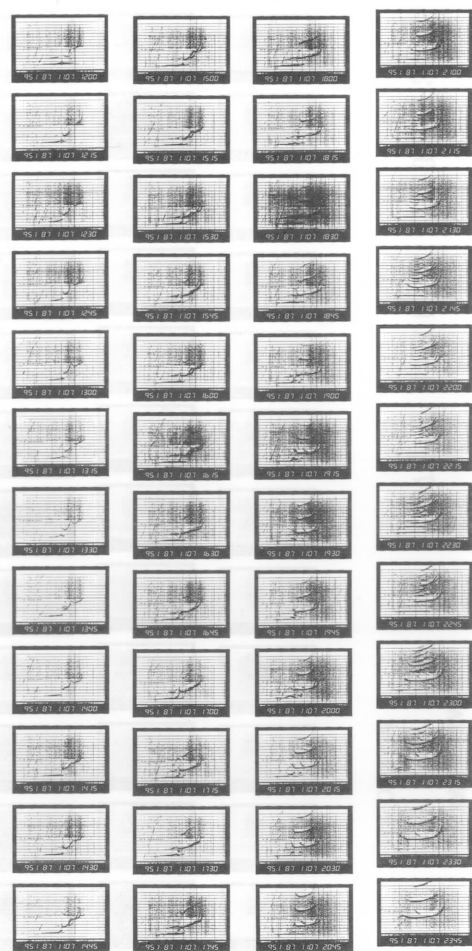
12:00 ~

23:45



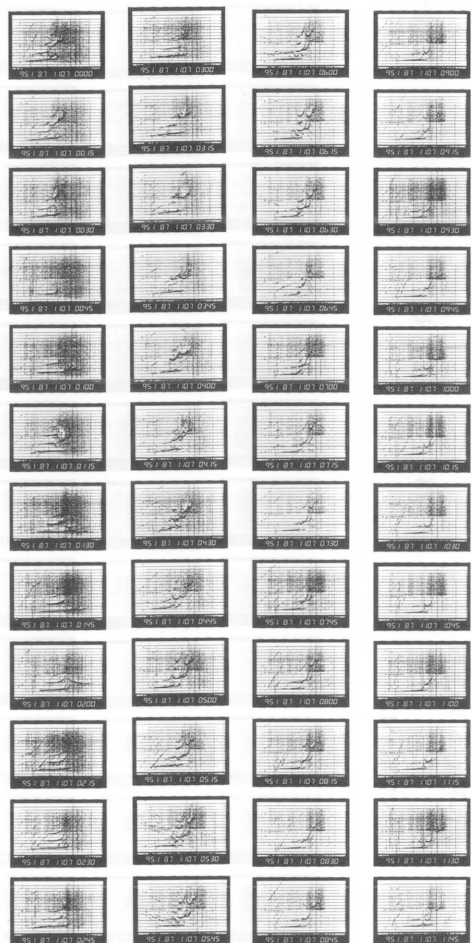
SYOWA STATION
IONOGRAM

1987 11 07 12:00 ~ 23:45



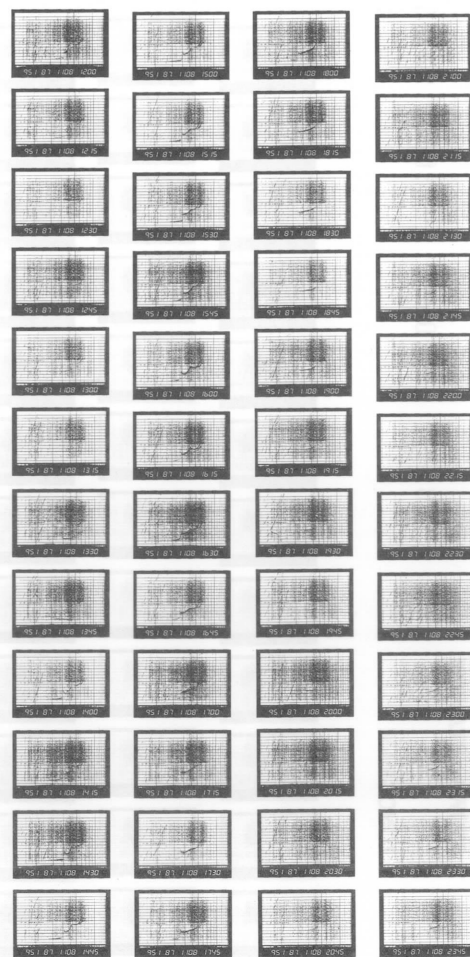
SYOWA STATION
IONOGRAM

1987 11 07 UU:UU ~ 11:45



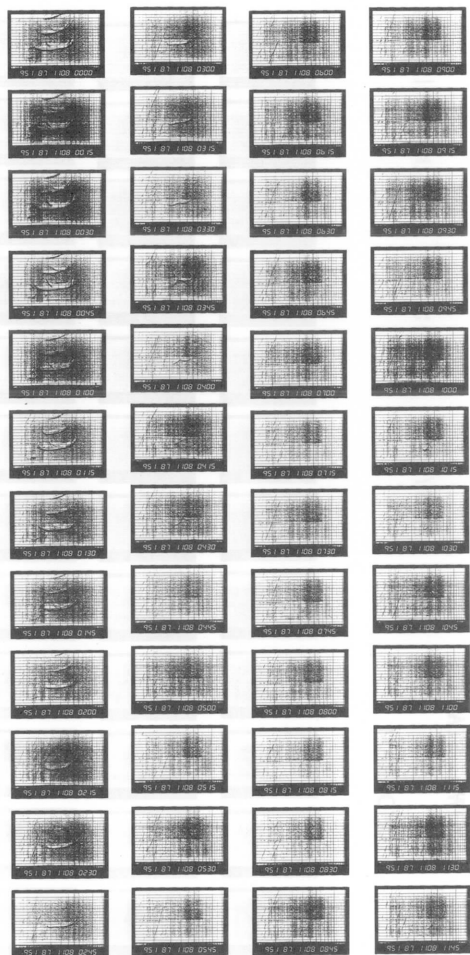
SYOWA STATION
IONOGRAM

1987 11 08 12:00 ~ 23:45



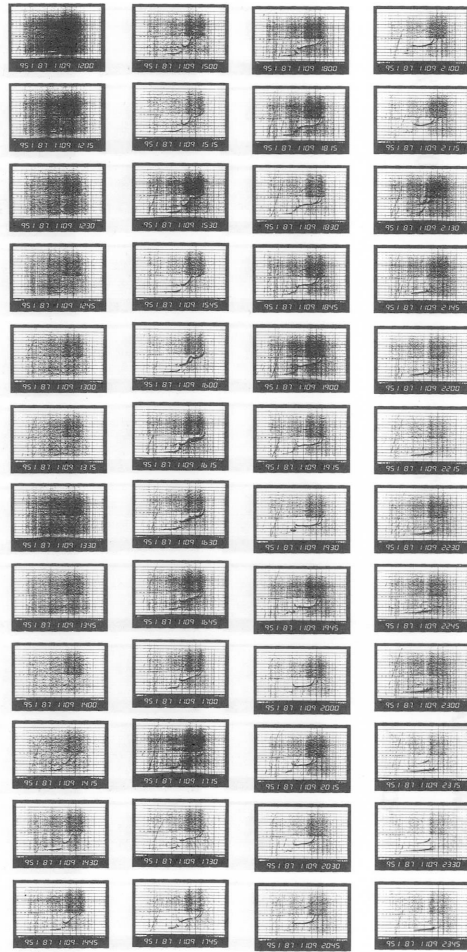
SYOWA STATION
IONOGRAM

1987 11 08 UU:UU ~ 11:45



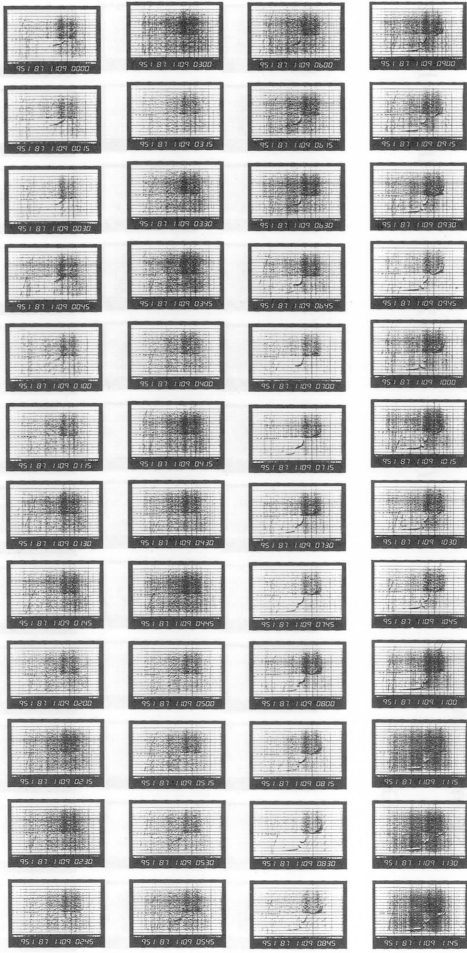
SYOWA STATION
1987 11 09 12:00 ~ 23:45

IONOGRAM



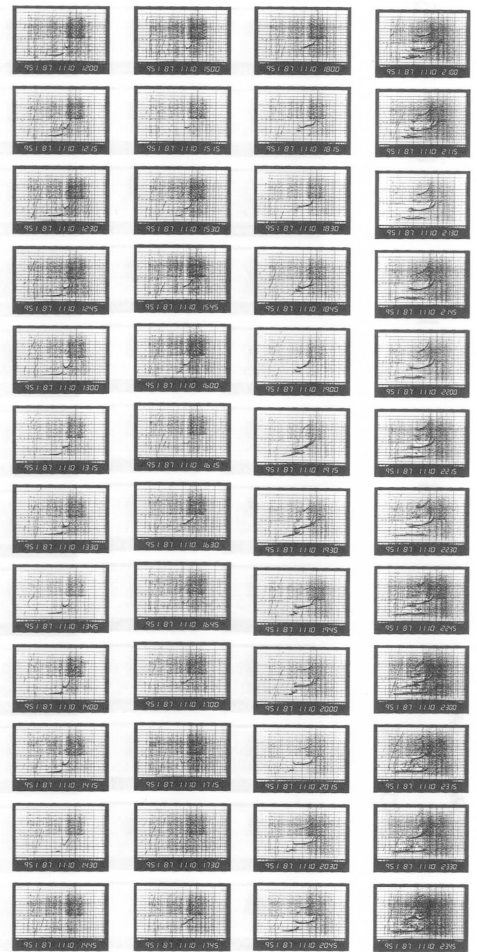
SYOWA STATION
1987 11 09 00:00 ~ 11:45

IONOGRAM



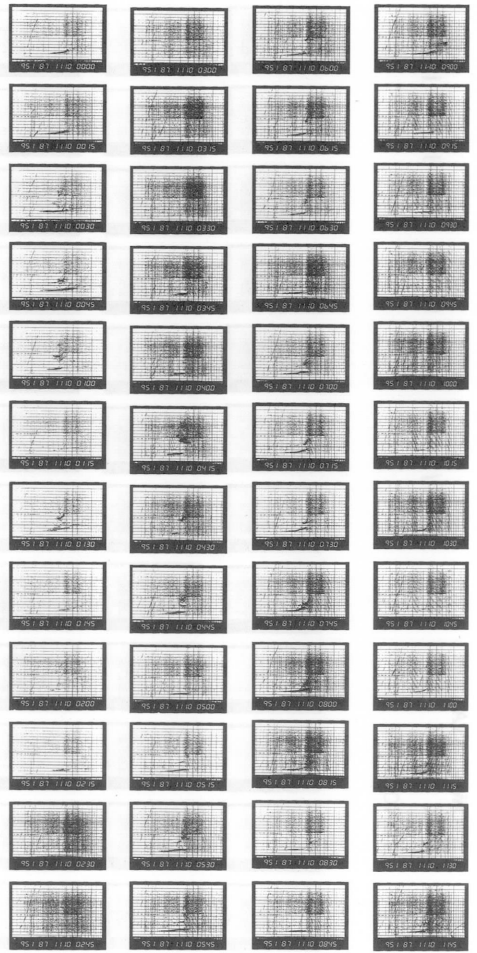
SYOWA STATION
1987 11 10 12:00 ~ 23:45

IONOGRAM



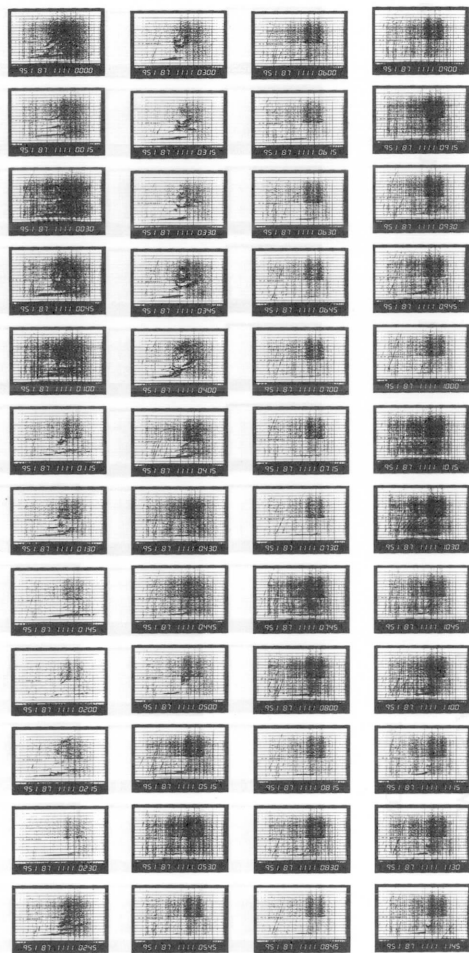
SYOWA STATION
1987 11 10 00:00 ~ 11:45

IONOGRAM

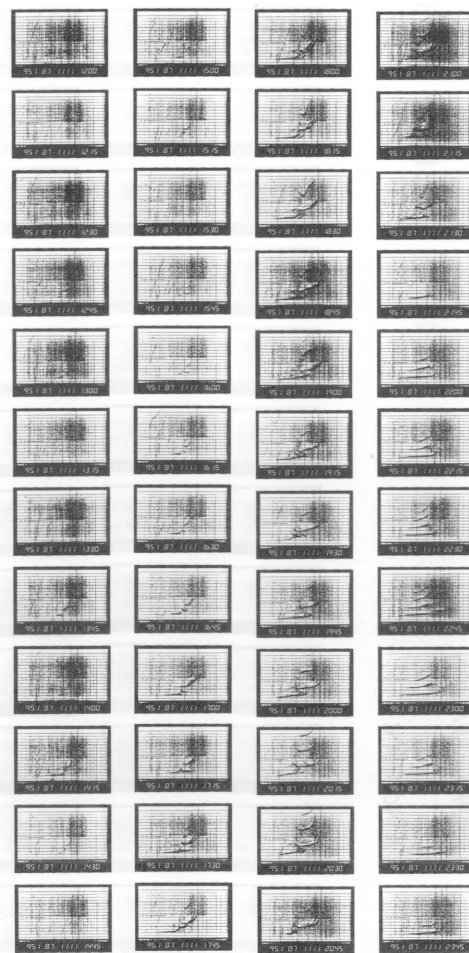


SYOWA STATION
1987
11 11
00:00 ~ 11:45

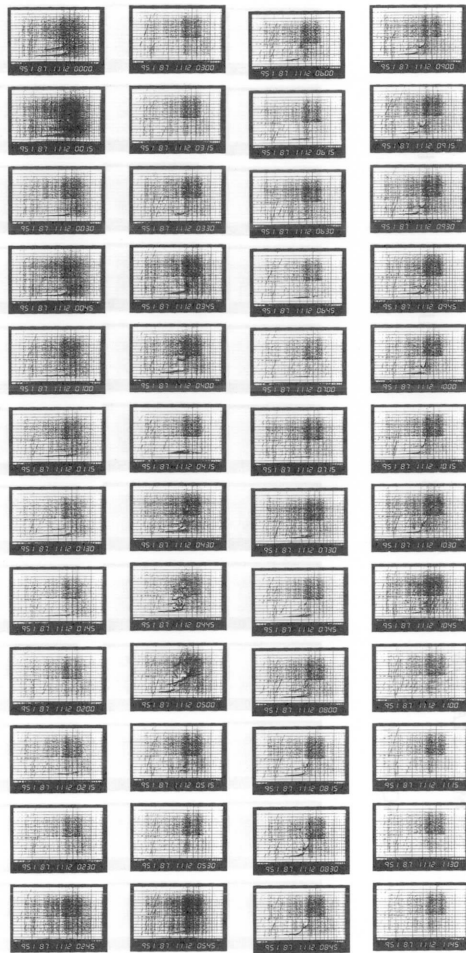
IONOGRAM

SYOWA STATION
1987
11 11
12:00 ~ 23:45

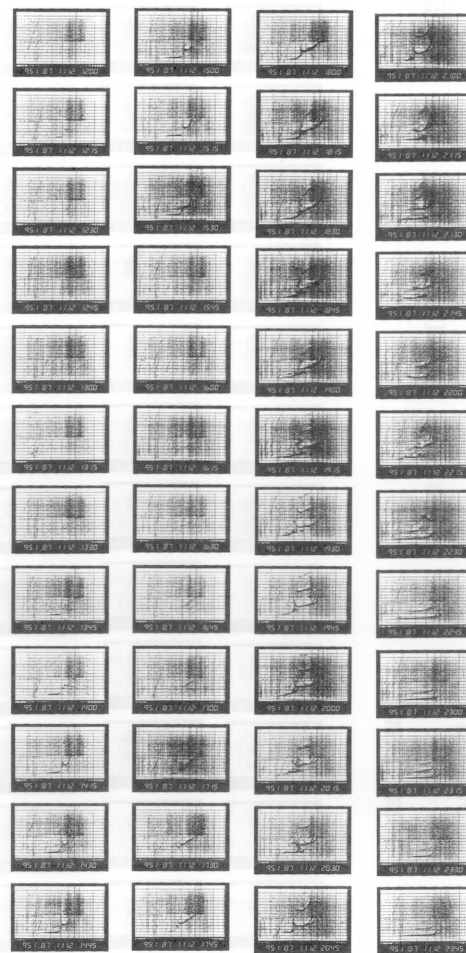
IONOGRAM

SYOWA STATION
1987
11 12
00:00 ~ 11:45

IONOGRAM

SYOWA STATION
1987
11 12
12:00 ~ 23:45

IONOGRAM

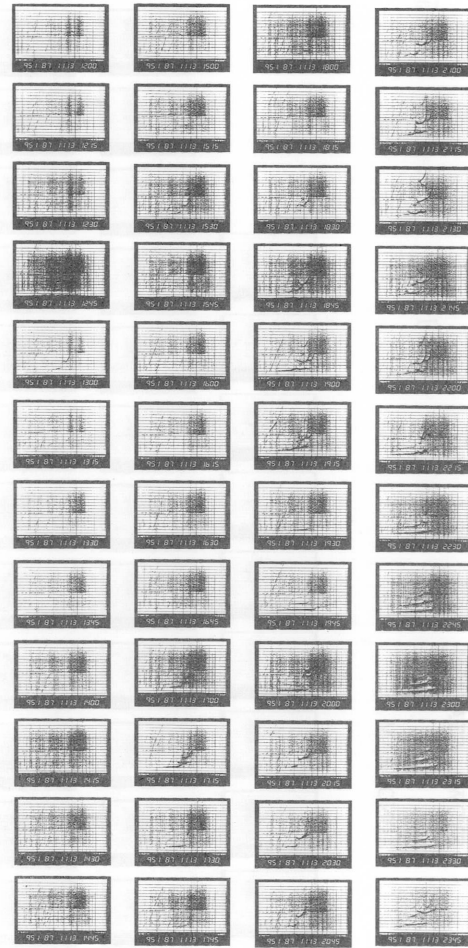


SYOWA STATION

IONOGRAM

1987 11 13 12:00 ~ 23:45

1987 11 13 00:00 ~ 11:45

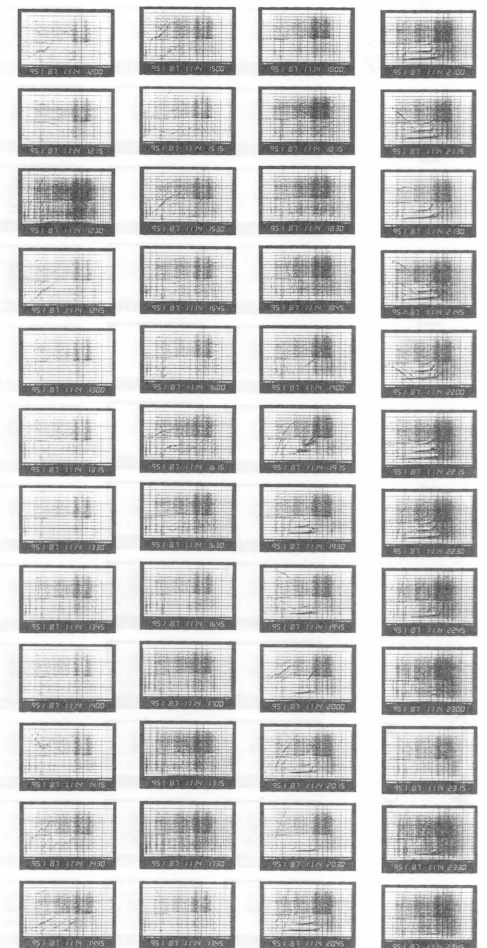


SYOWA STATION

IONOGRAM

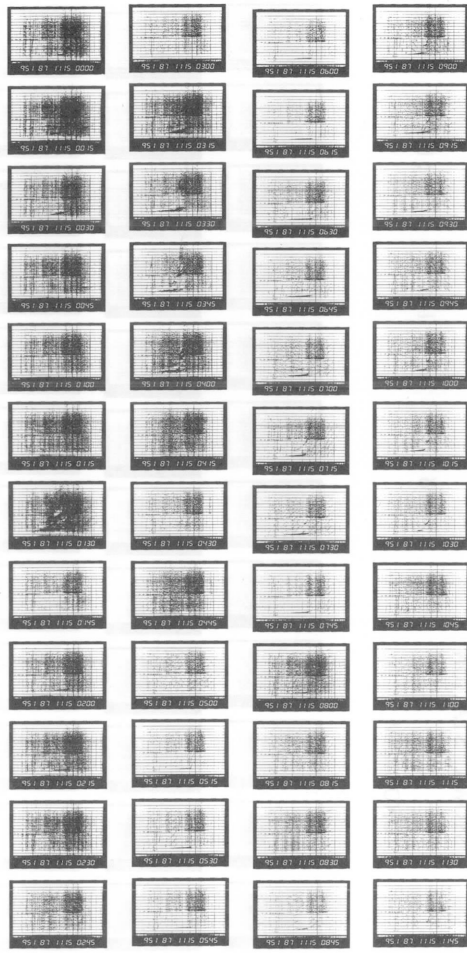
1987 11 14 12:00 ~ 23:45

1987 11 14 00:00 ~ 11:45



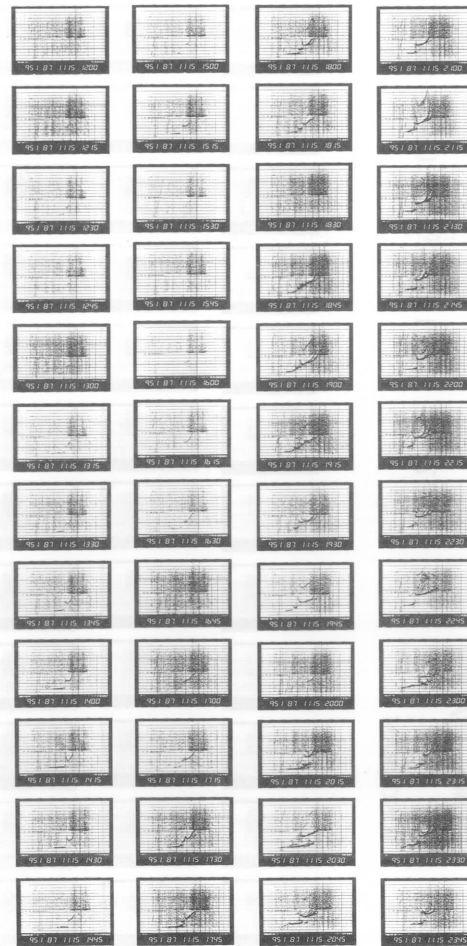
SYOWA STATION
1987 11 15 00:00 ~ 11:45

IONOGRAM



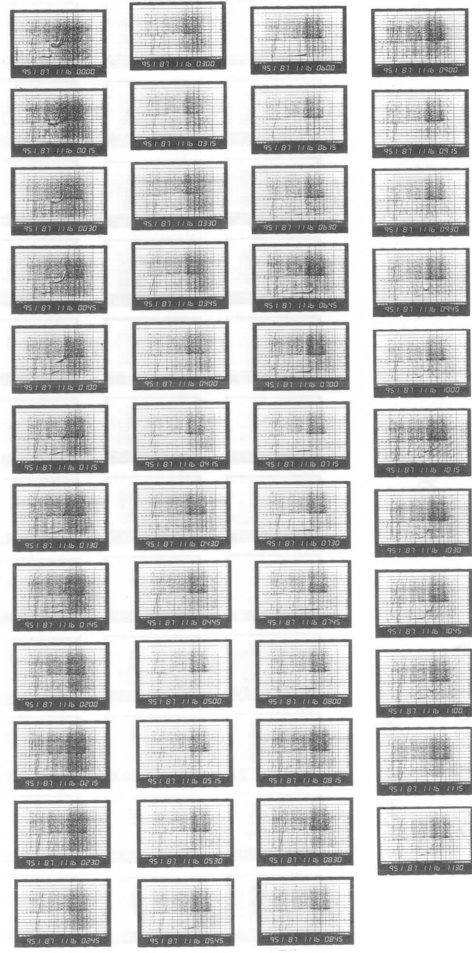
SYOWA STATION
1987 11 15 12:00 ~ 23:45

IONOGRAM



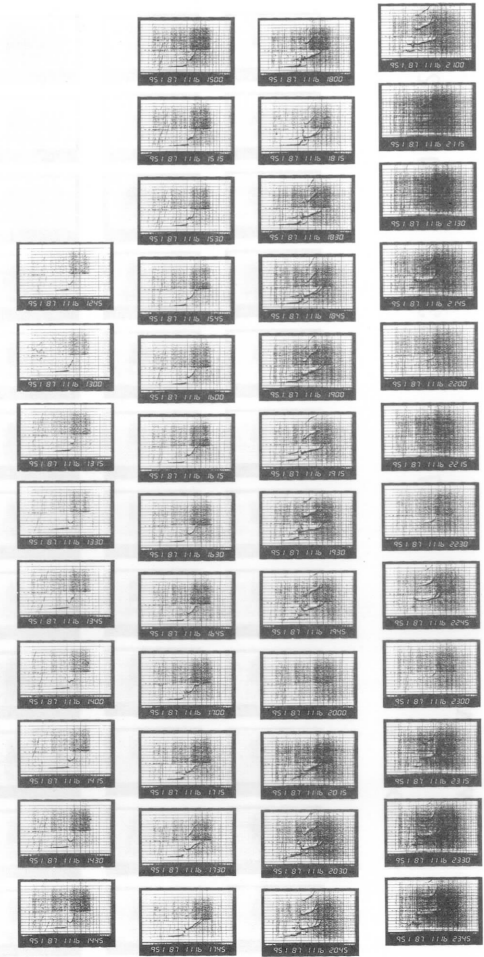
SYOWA STATION
1987 11 16 00:00 ~ 11:30

IONOGRAM

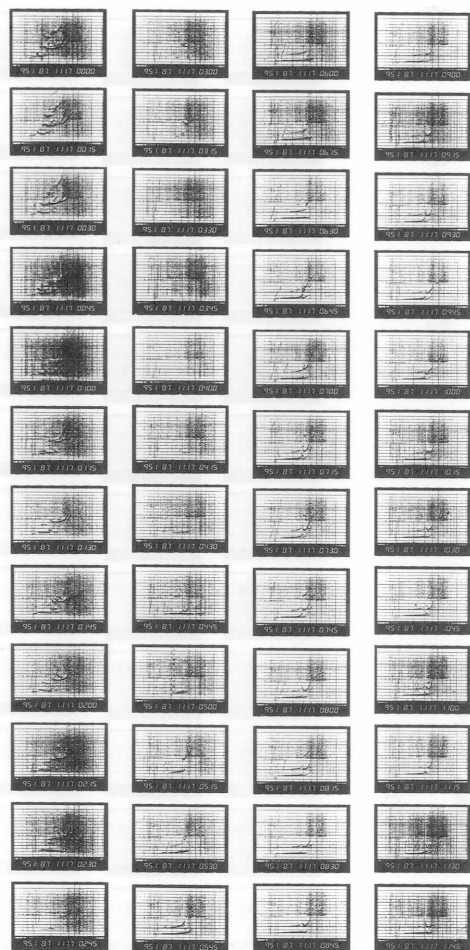


SYOWA STATION
1987 11 16 12:45 ~ 23:45

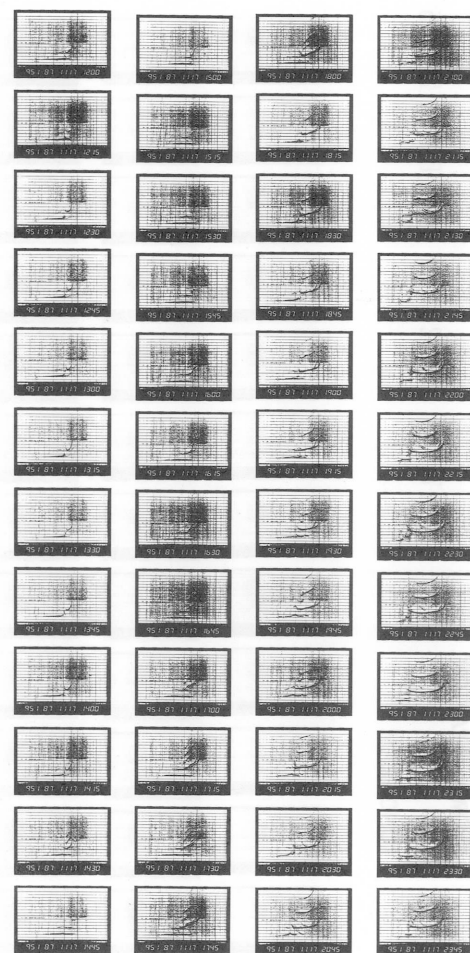
IONOGRAM



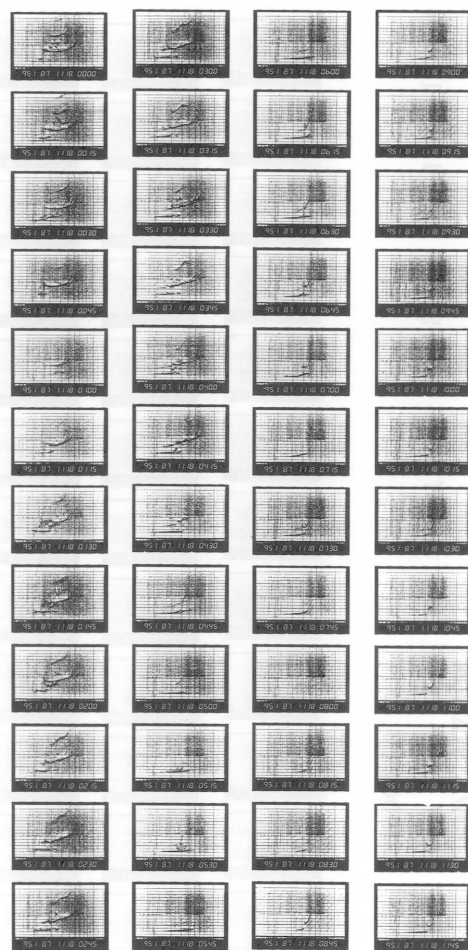
SYOWA STATION
IONOGRAM
1987 11 17 00:00 ~ 11:45



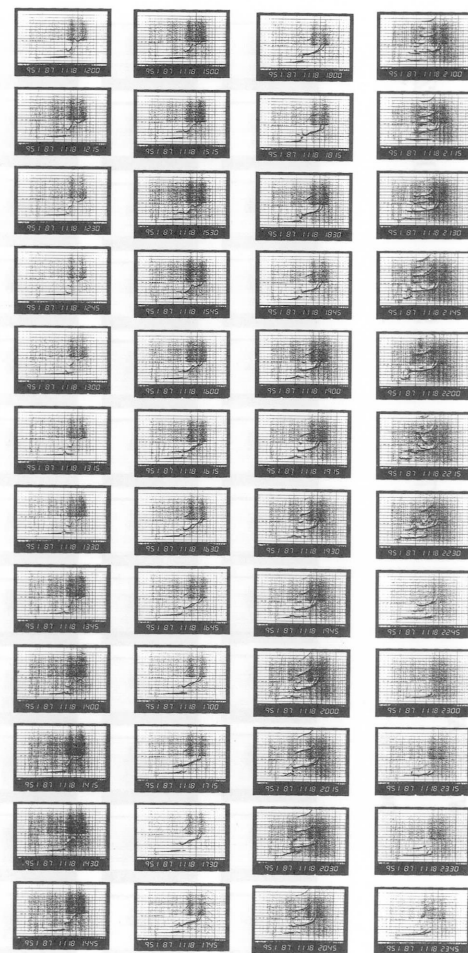
SYOWA STATION
IONOGRAM
1987 11 17 12:00 ~ 23:45



SYOWA STATION
IONOGRAM
1987 11 18 00:00 ~ 11:45



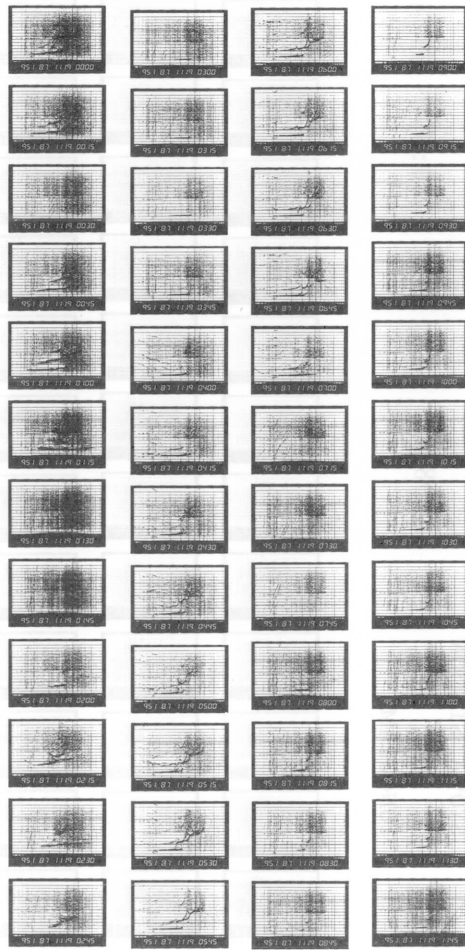
SYOWA STATION
IONOGRAM
1987 11 18 12:00 ~ 23:45



SYOWA STATION

IONOGRAM

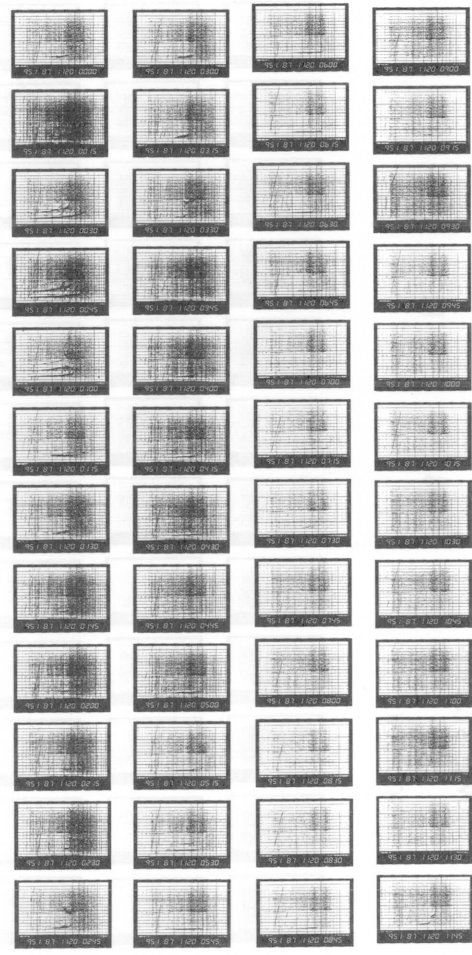
1987 11 19 00:00 ~ 11:45



SYOWA STATION

IONOGRAM

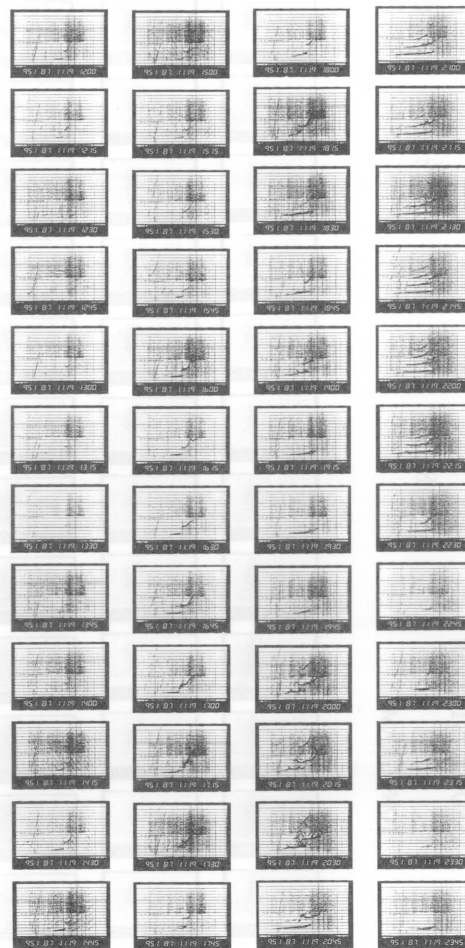
1987 11 20 00:00 ~ 11:45



SYOWA STATION

IONOGRAM

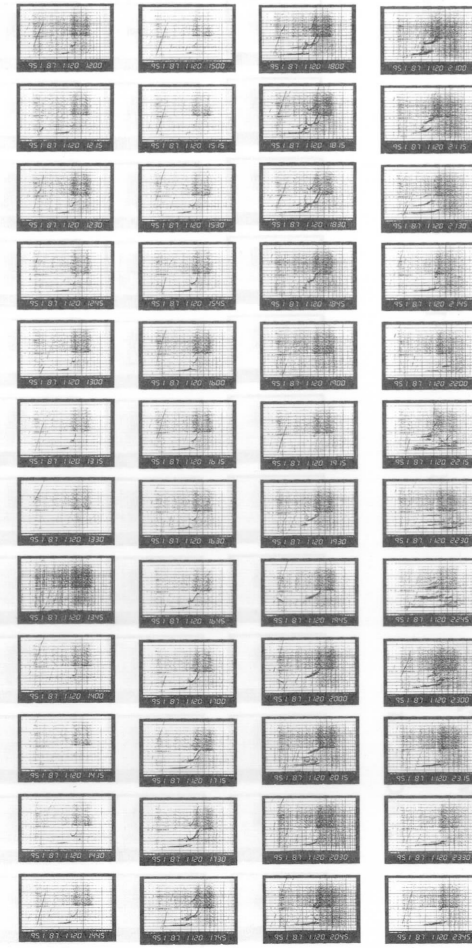
1987 11 19 12:00 ~ 23:45



SYOWA STATION

IONOGRAM

1987 11 20 12:00 ~ 23:45



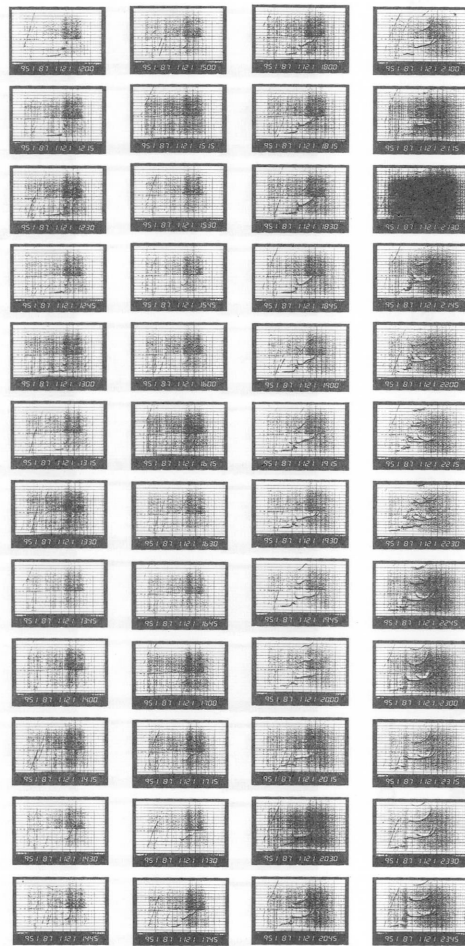
SYOWA STATION

IONOGRAM

12:00 ~ 23:45

11 21

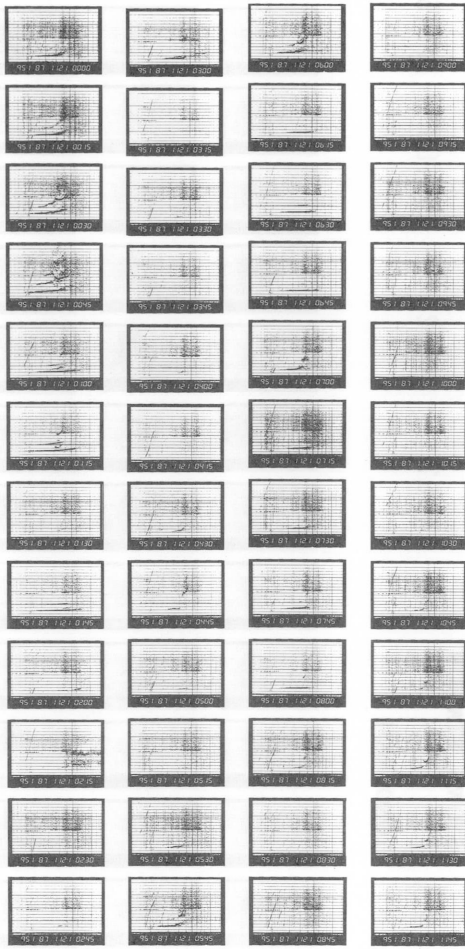
1987



00:00 ~ 11:45

11 21

1987



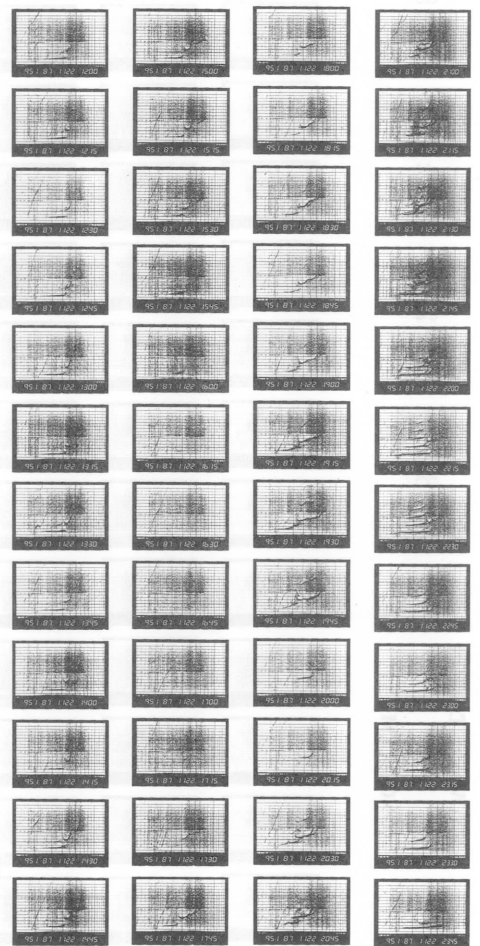
SYOWA STATION

IONOGRAM

12:00 ~ 23:45

11 22

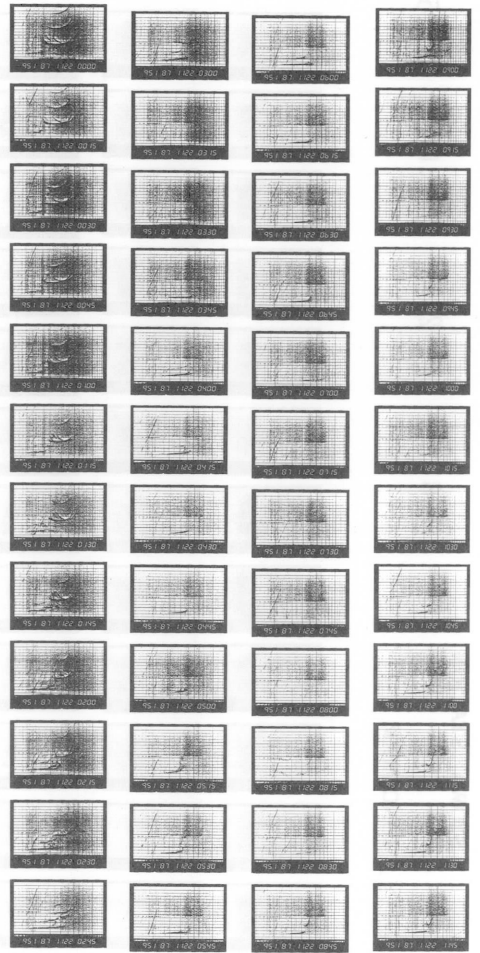
1987



00:00 ~ 11:45

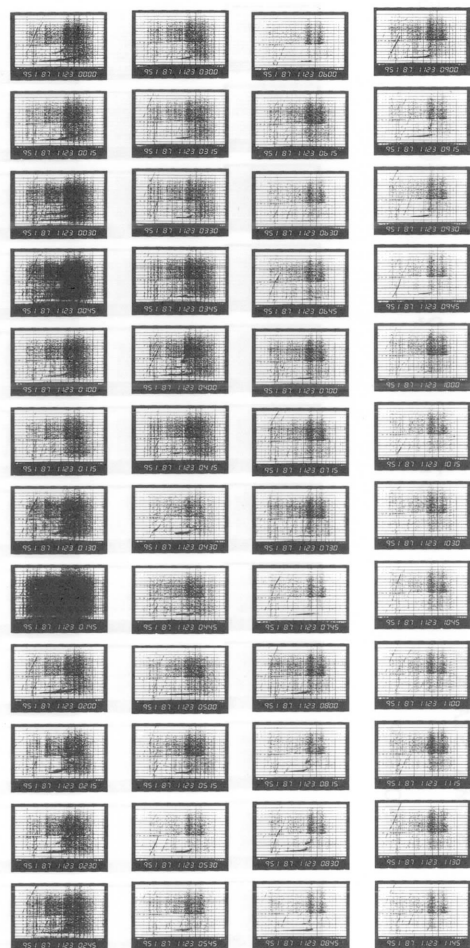
11 22

1987



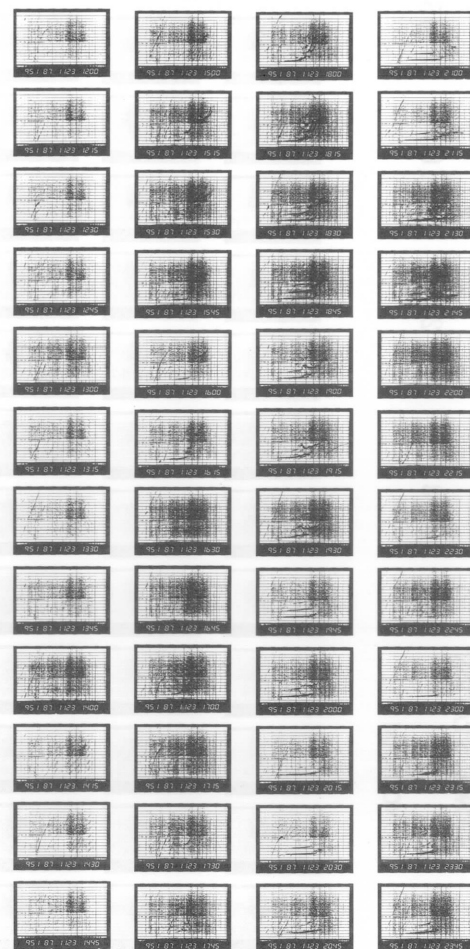
SYOWA STATION
1987 11 23 00:00 ~ 11:45

IONOGRAM



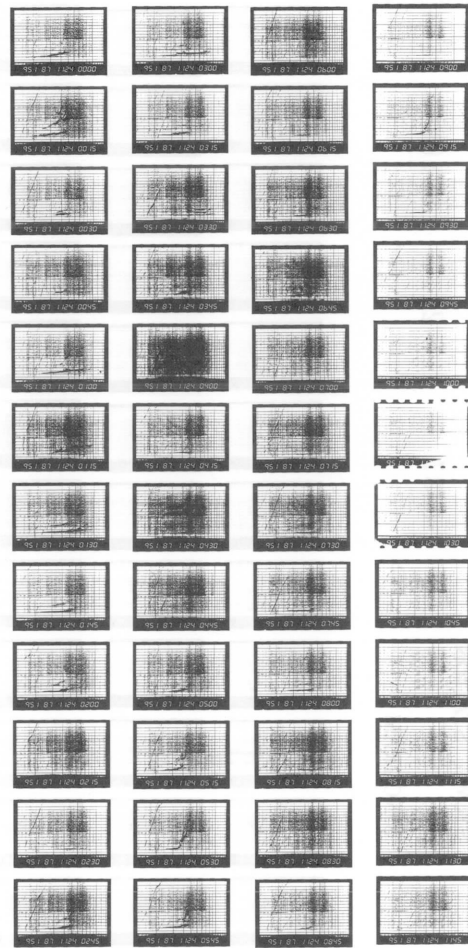
SYOWA STATION
1987 11 23 12:00 ~ 23:45

IONOGRAM



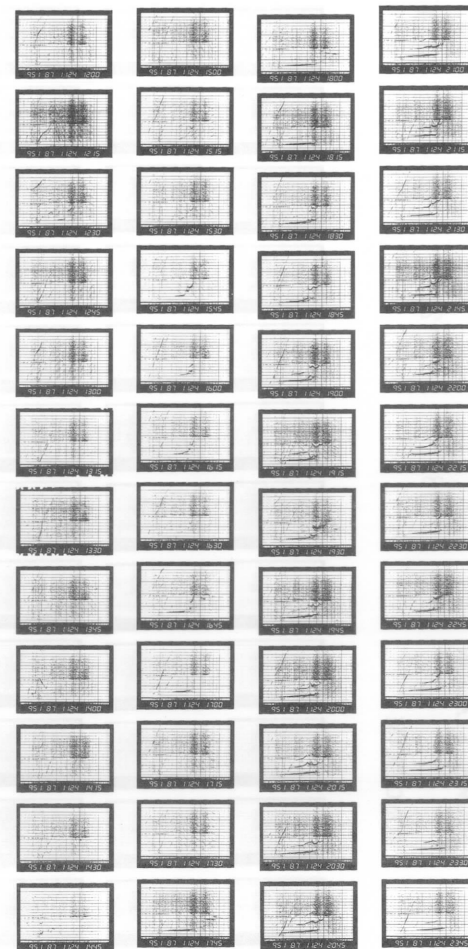
SYOWA STATION
1987 11 24 00:00 ~ 11:45

IONOGRAM



SYOWA STATION
1987 11 24 12:00 ~ 23:45

IONOGRAM



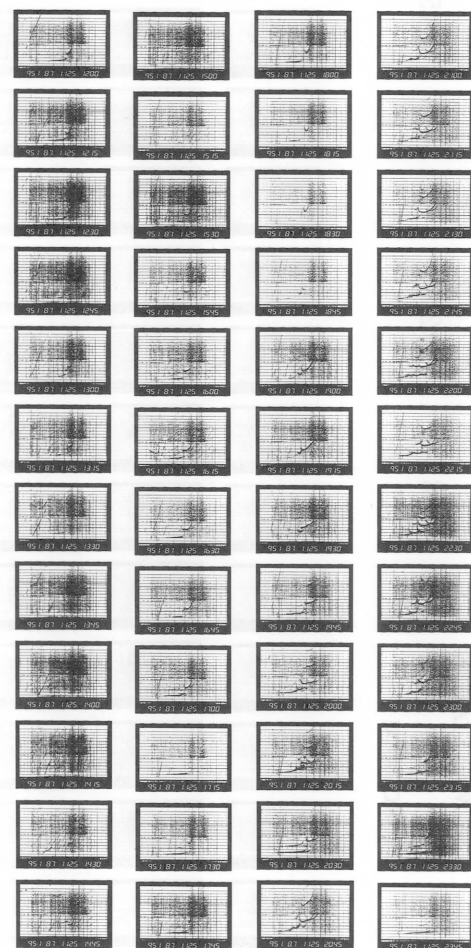
SYOWA STATION

IONOGRAM

12:00 ~ 23:45

11 25

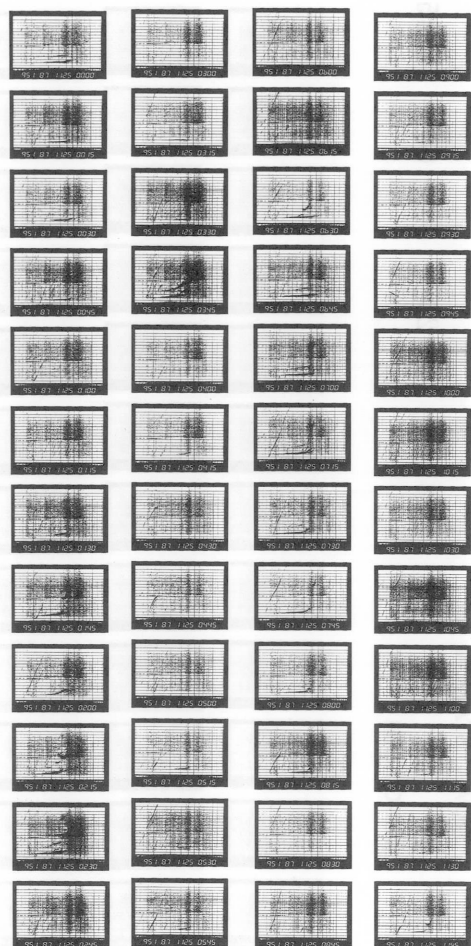
1987



00:00 ~ 11:45

11 25

1987



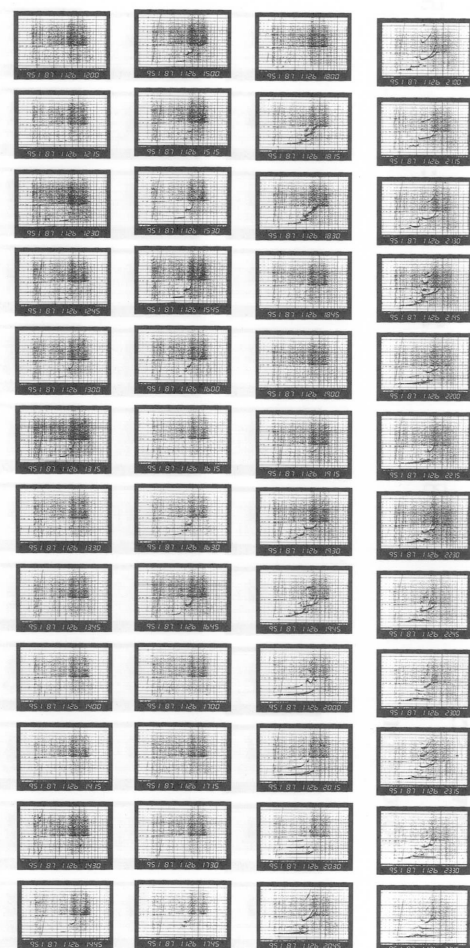
SYOWA STATION

IONOGRAM

12:00 ~ 23:45

11 26

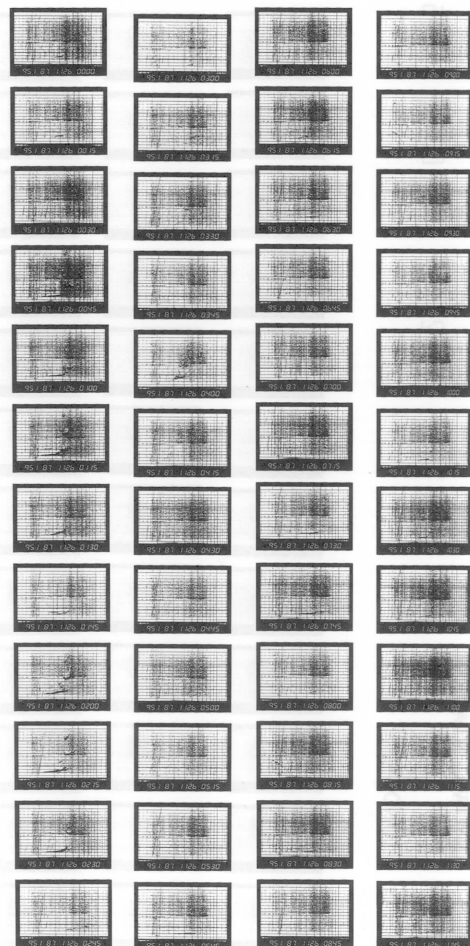
1987



00:00 ~ 11:45

11 26

1987



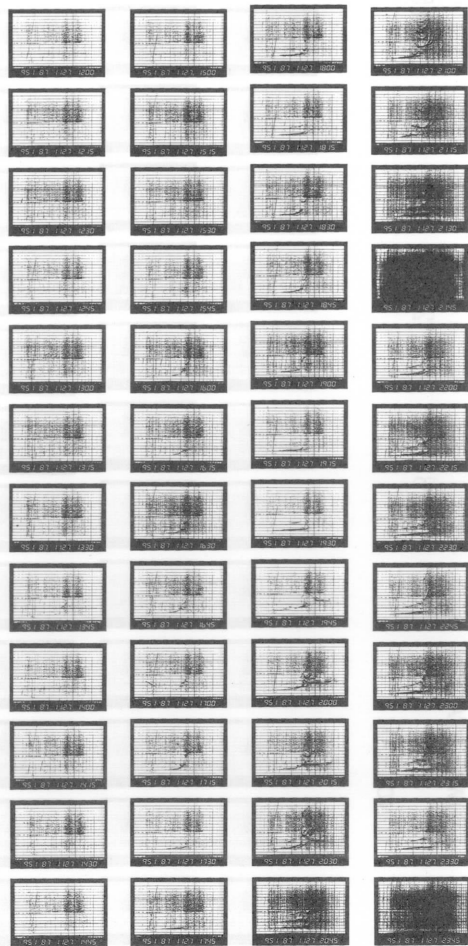
SYOWA STATION

IONOGRAM

1987

11 27

12:00 ~ 23:45



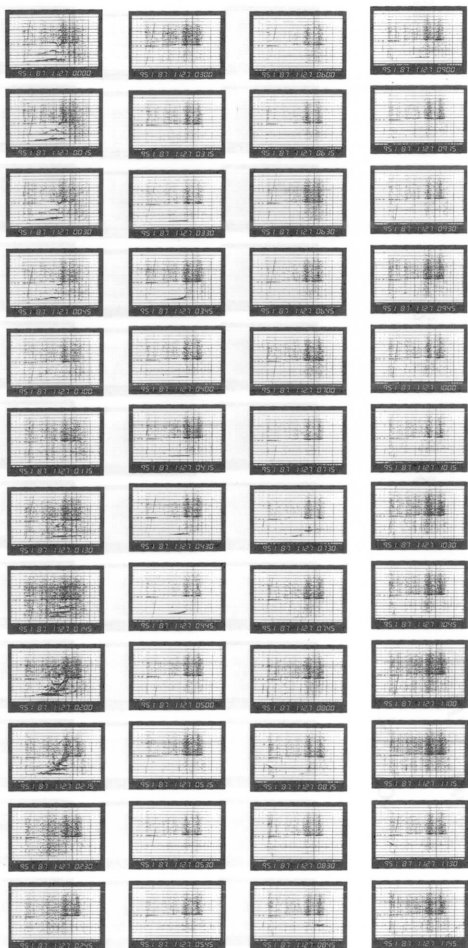
SYOWA STATION

IONOGRAM

1987

11 27

00:00 ~ 11:45



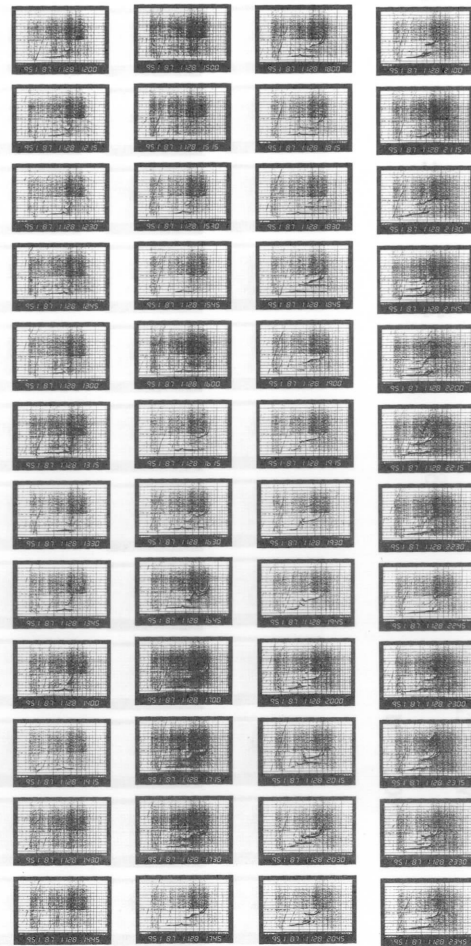
SYOWA STATION

IONOGRAM

1987

11 28

12:00 ~ 23:45



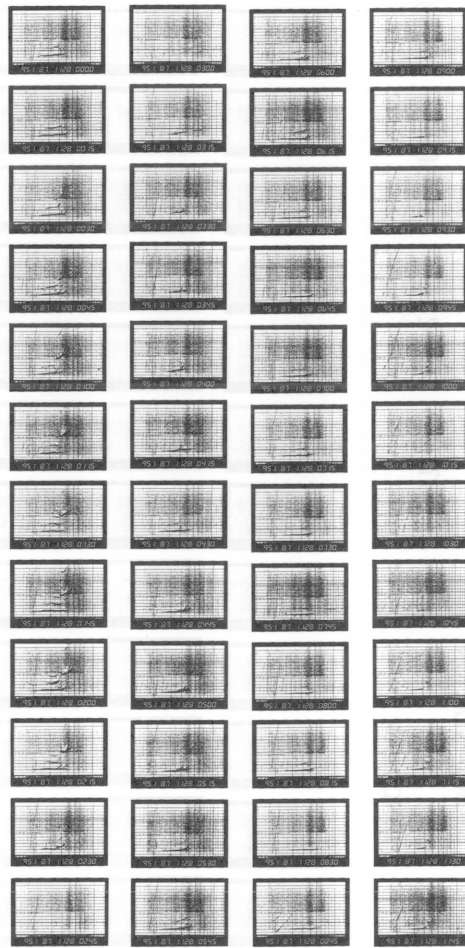
SYOWA STATION

IONOGRAM

1987

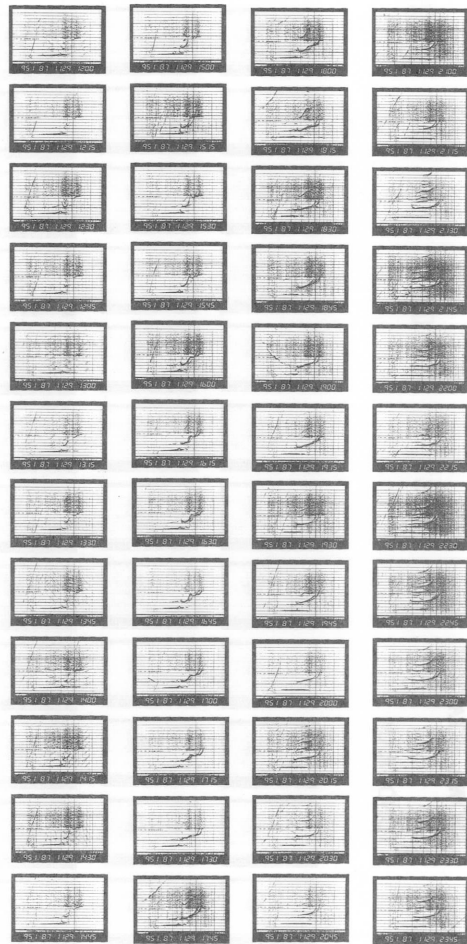
11 28

00:00 ~ 11:45



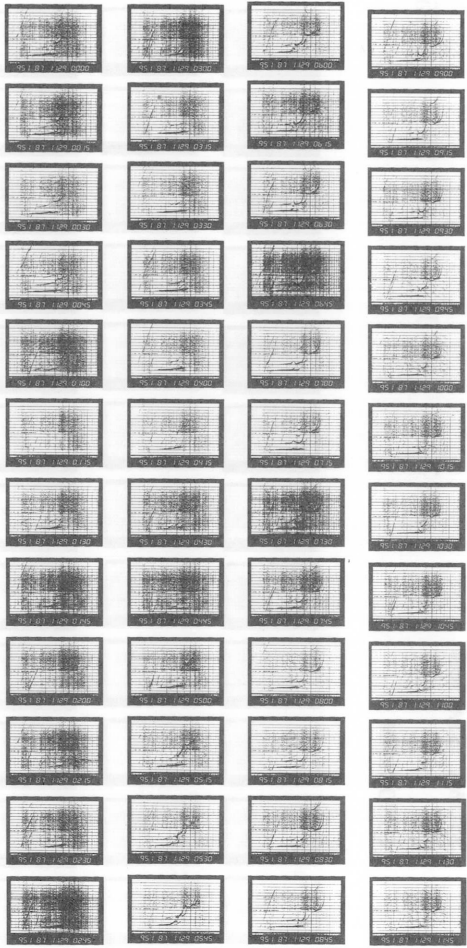
SYOWA STATION
IONOGRAM

1987 11 29 12:00 ~ 23:45



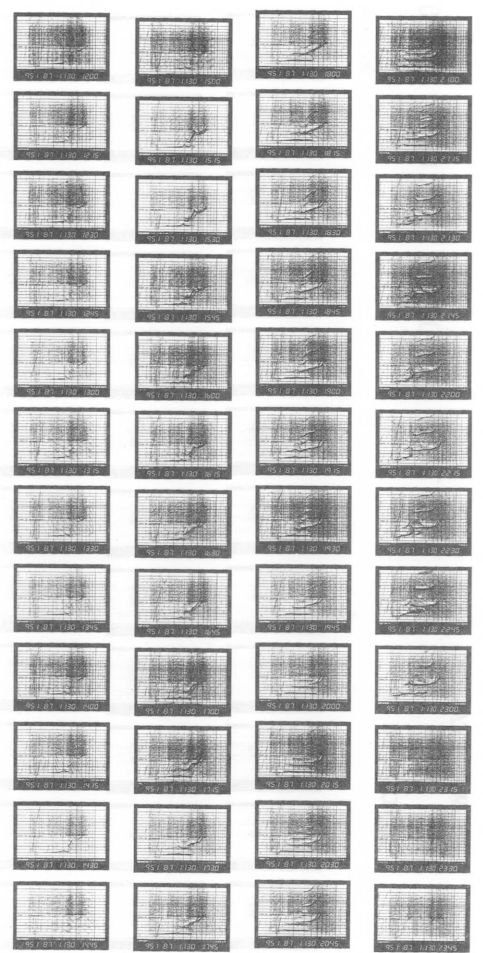
SYOWA STATION
IONOGRAM

1987 11 29 00:00 ~ 11:45



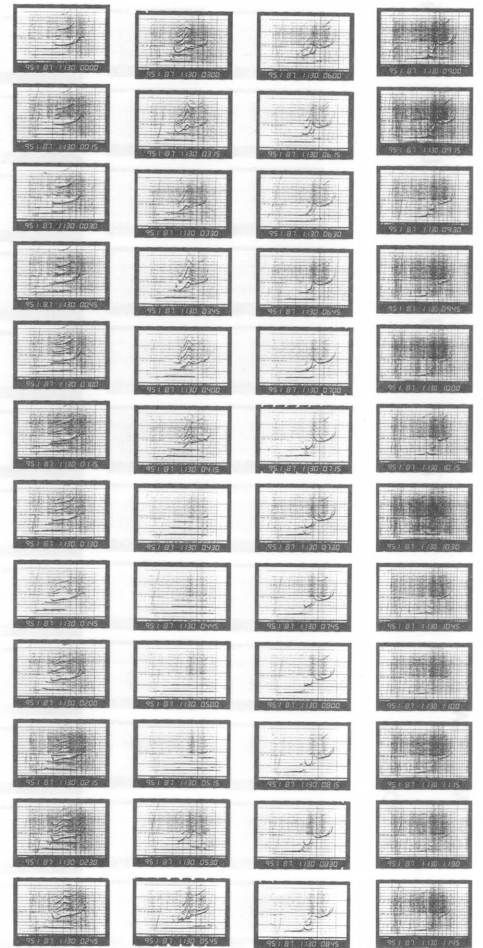
SYOWA STATION
IONOGRAM

1987 11 30 12:00 ~ 23:45



SYOWA STATION
IONOGRAM

1987 11 30 00:00 ~ 11:45

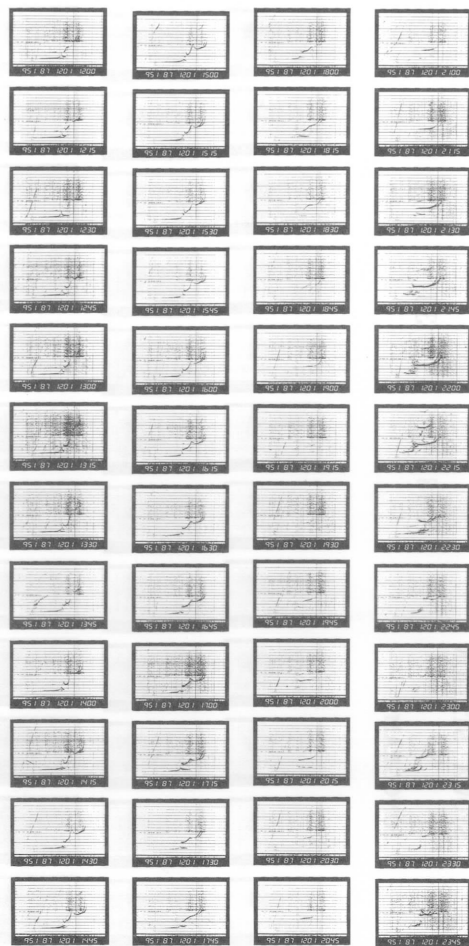


SYOWA STATION
IONOGRAM

1987

12 01

12:00 ~ 23:45

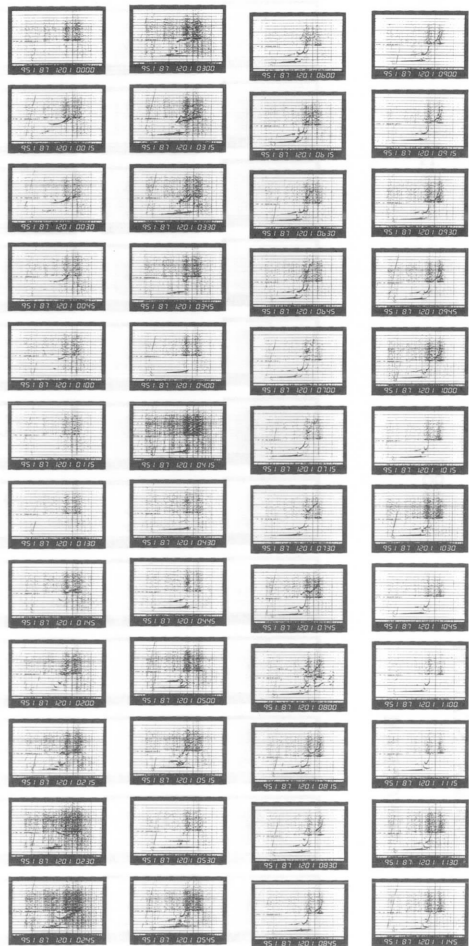


SYOWA STATION
IONOGRAM

1987

12 01

00:00 ~ 11:45

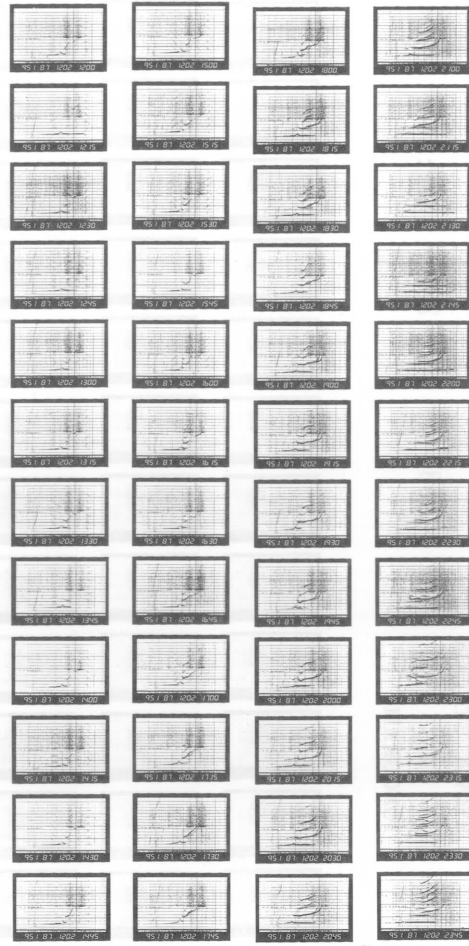


SYOWA STATION
IONOGRAM

1987

12 02

12:00 ~ 23:45

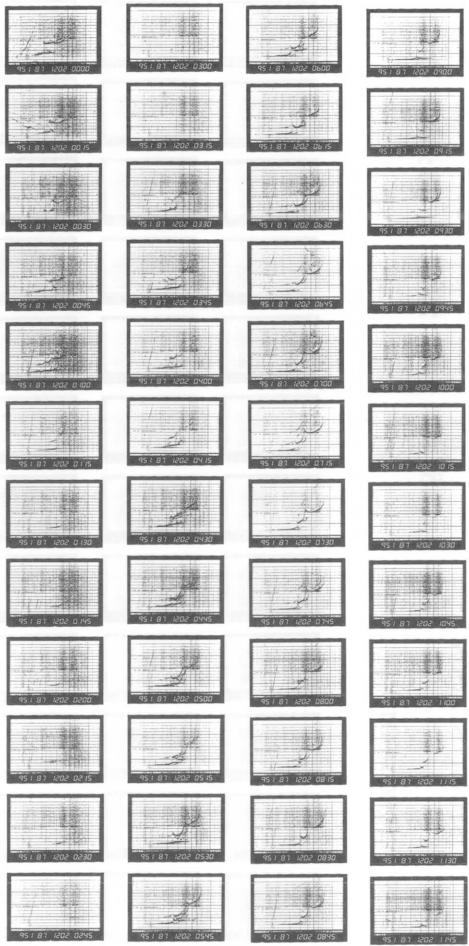


SYOWA STATION
IONOGRAM

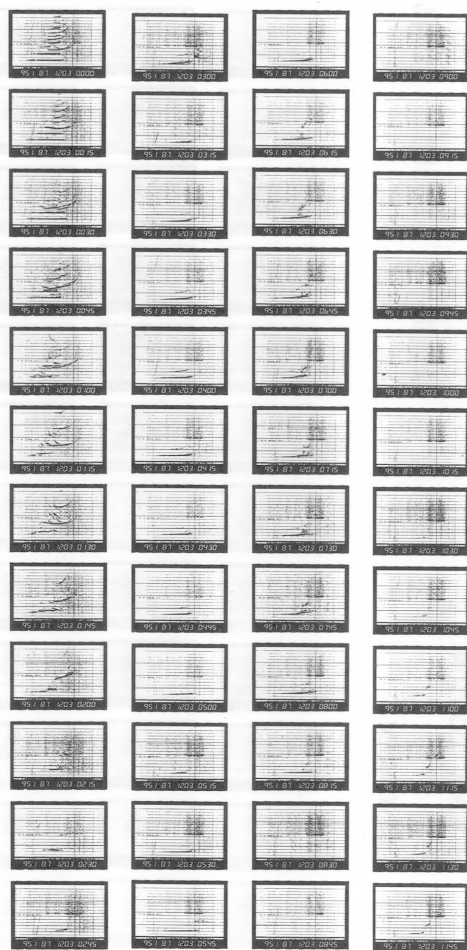
1987

12 02

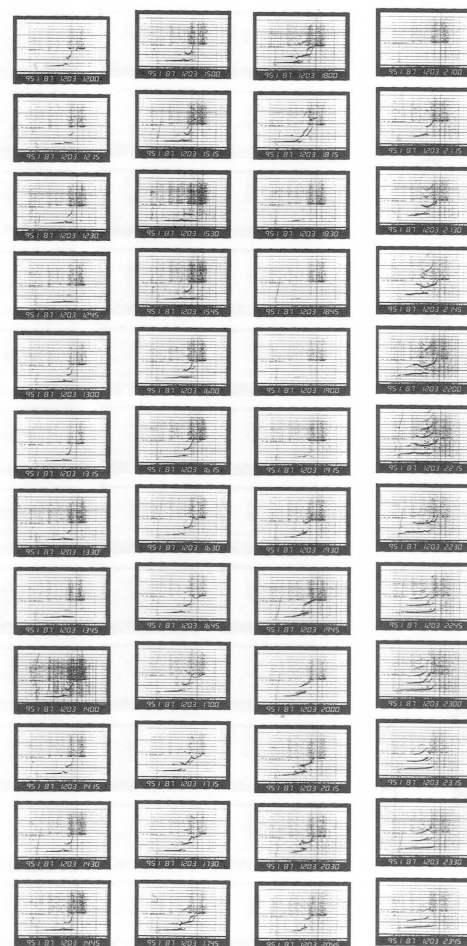
00:00 ~ 11:45



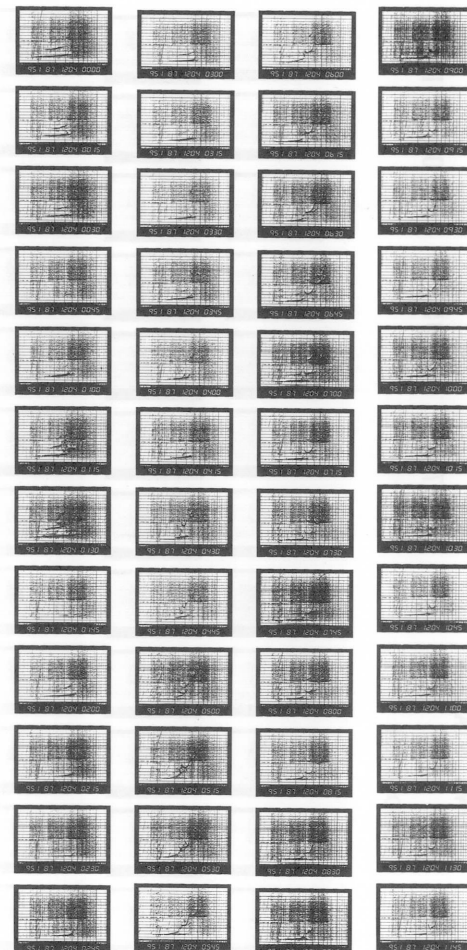
SYOWA STATION
IONOGRAM
1987
12 03
00:00 ~ 11:45



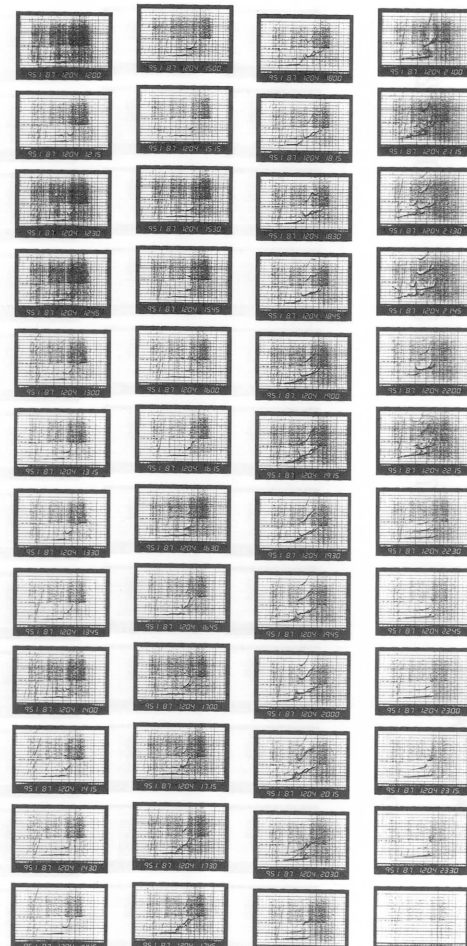
SYOWA STATION
IONOGRAM
1987
12 03
12:00 ~ 23:45



SYOWA STATION
IONOGRAM
1987
12 04
00:00 ~ 11:45



SYOWA STATION
IONOGRAM
1987
12 04
12:00 ~ 23:45



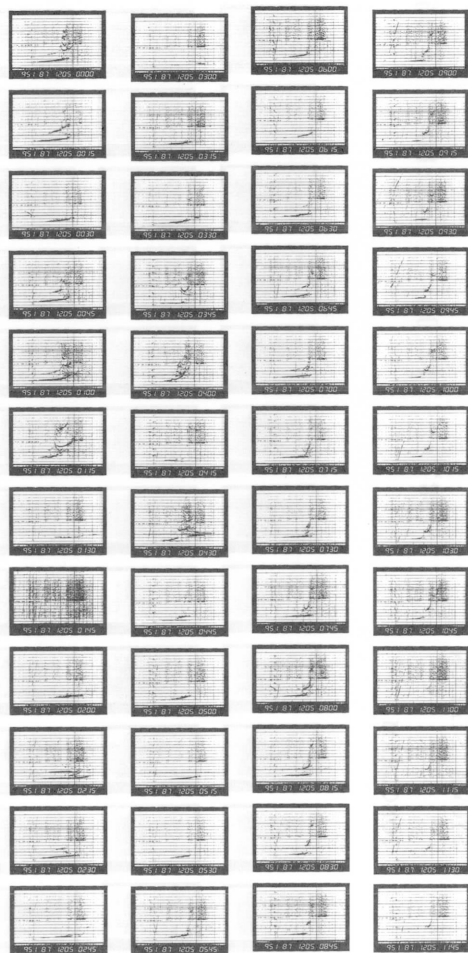
SYOWA STATION

IONOGRAM

1987

12 05

00:00 ~ 11:45



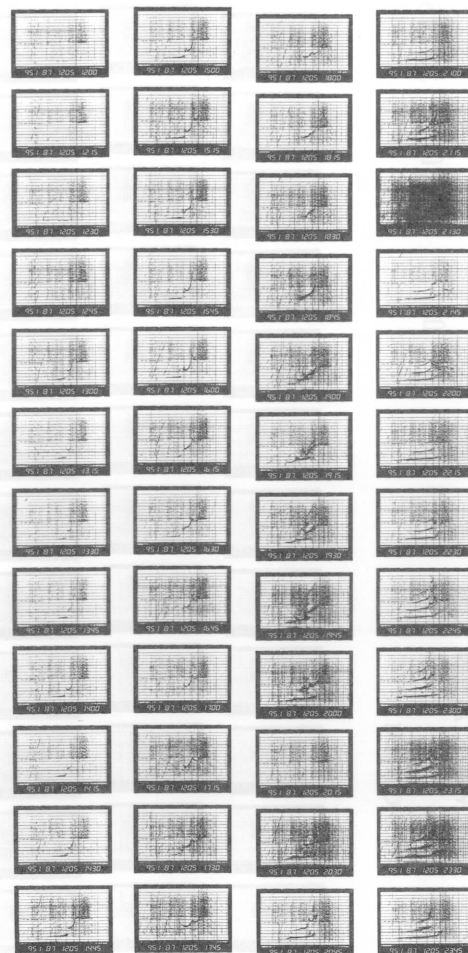
SYOWA STATION

IONOGRAM

1987

12 05

12:00 ~ 23:45



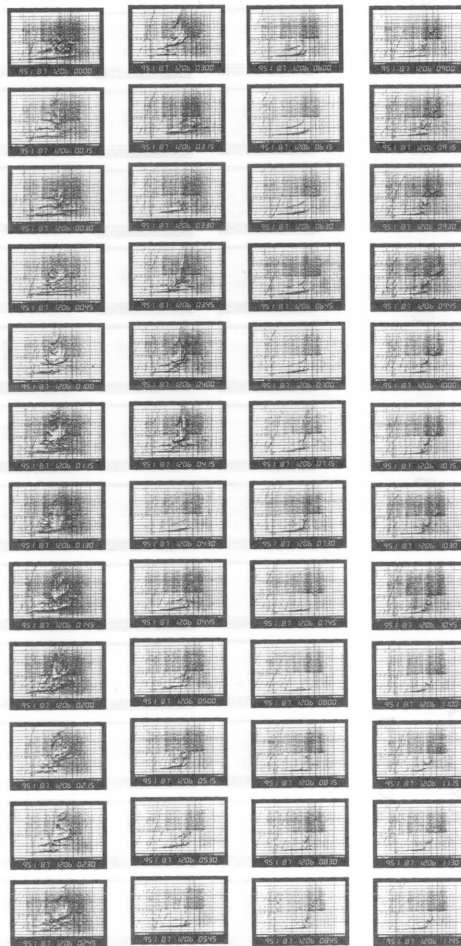
SYOWA STATION

IONOGRAM

1987

12 06

00:00 ~ 11:45



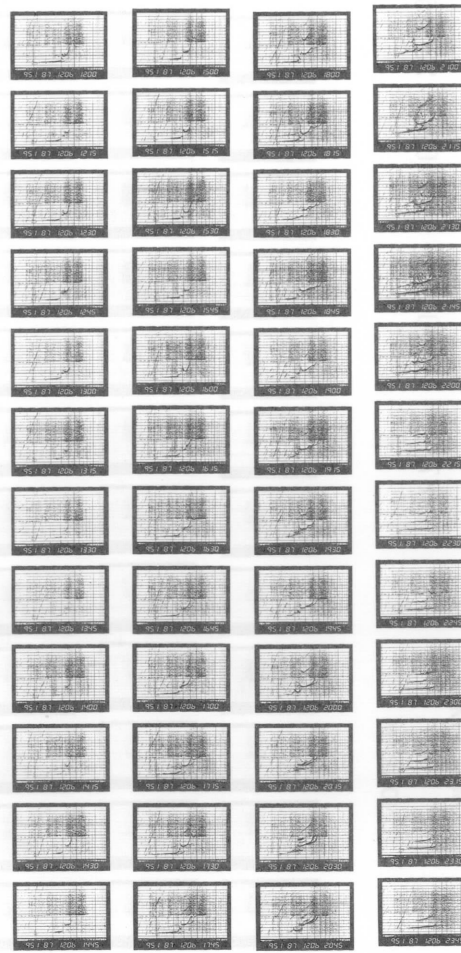
SYOWA STATION

IONOGRAM

1987

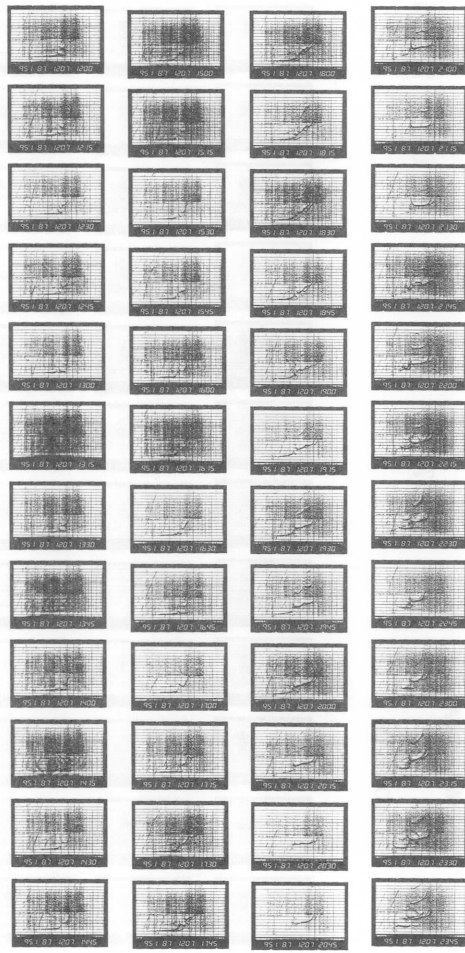
12 06

12:00 ~ 23:45



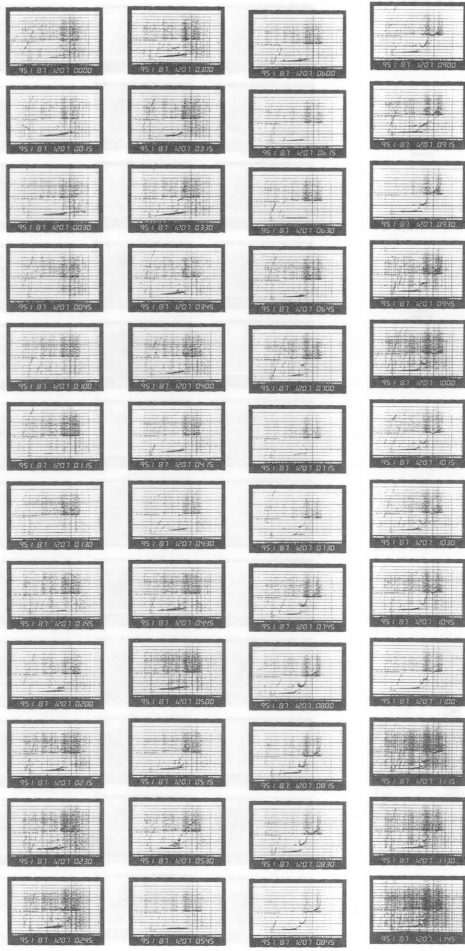
SYOWA STATION
IONOGRAM

1987 12 07 12:00 ~ 23:45



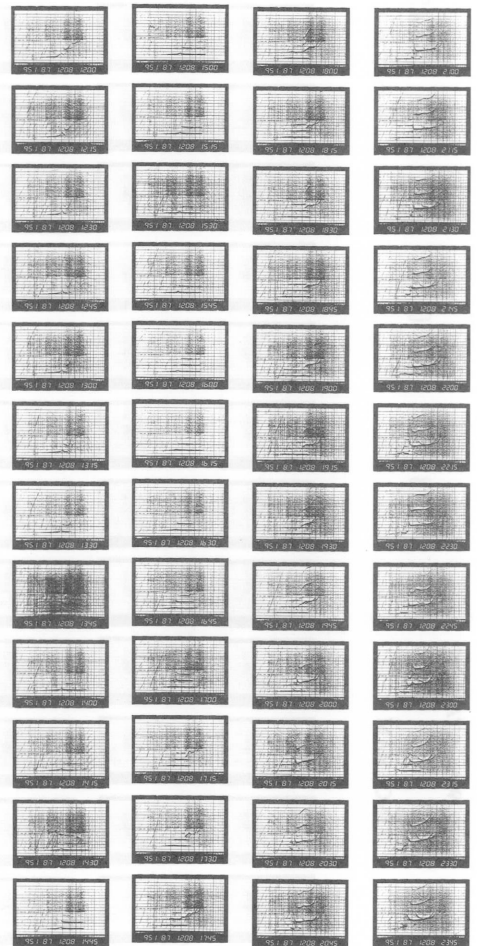
SYOWA STATION
IONOGRAM

1987 12 07 00:00 ~ 11:45



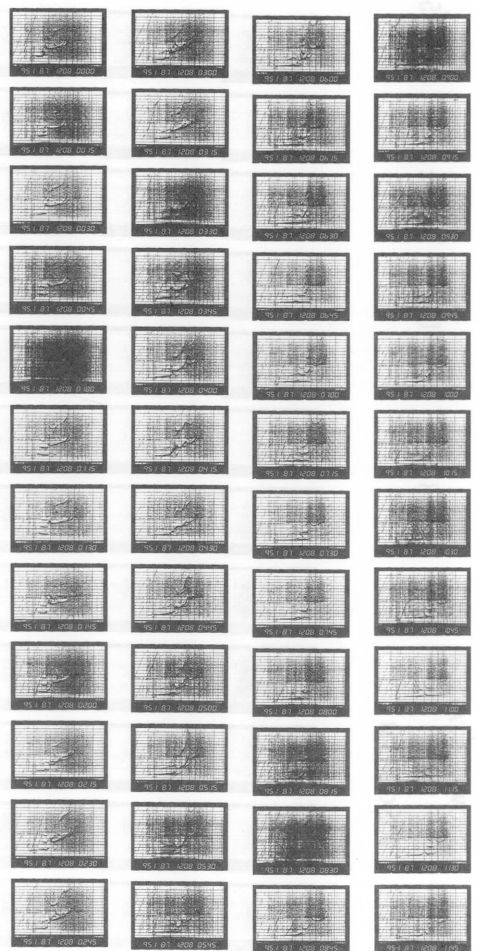
SYOWA STATION
IONOGRAM

1987 12 08 12:00 ~ 23:45



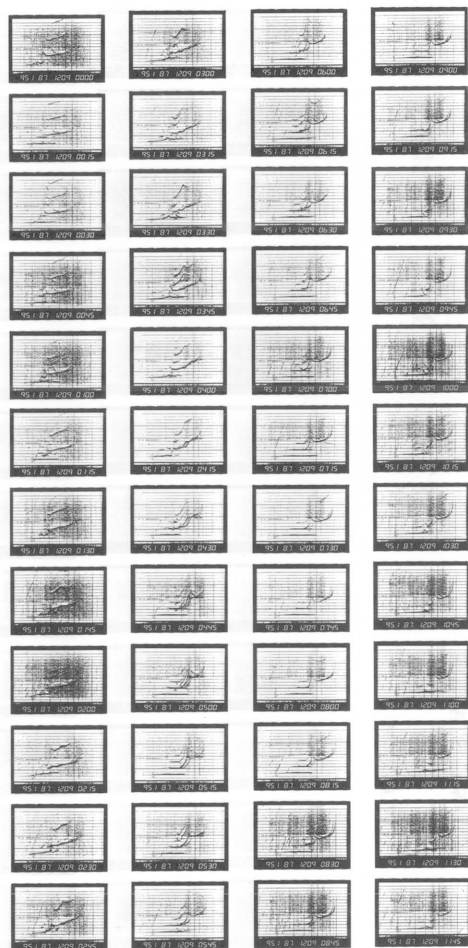
SYOWA STATION
IONOGRAM

1987 12 08 00:00 ~ 11:45



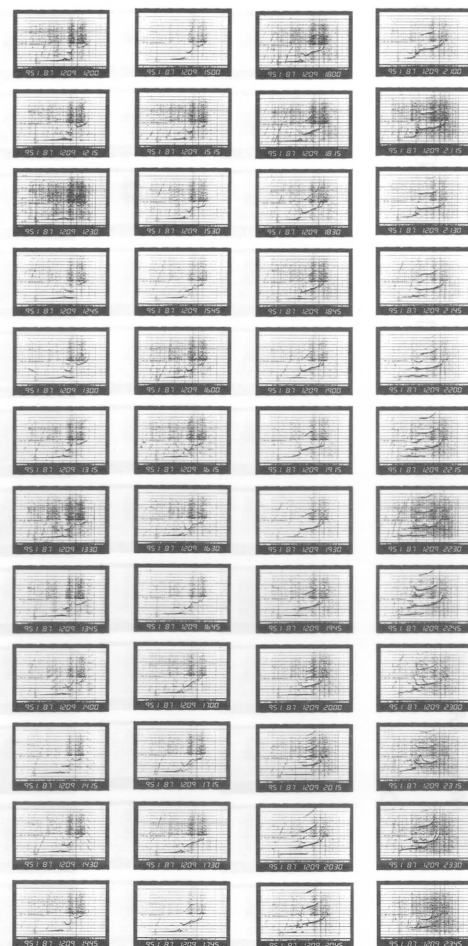
SYOWA STATION
1987 12 09 00:00 ~ 11:45

IONOGRAM



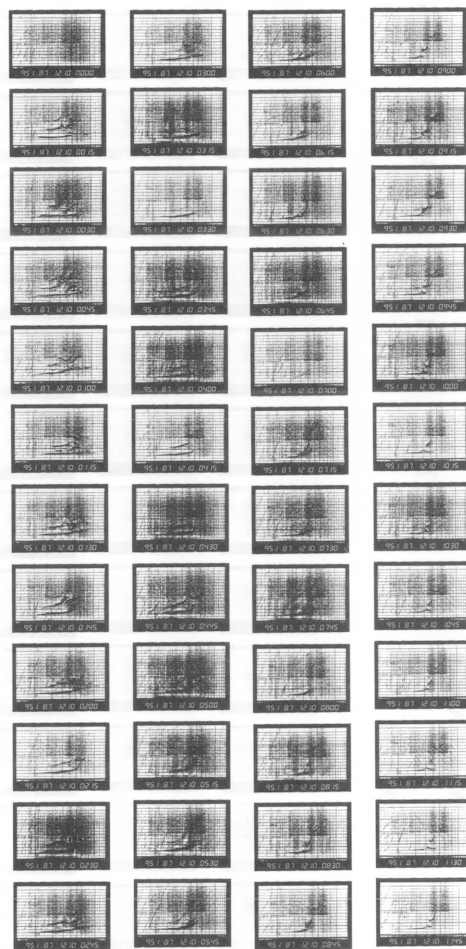
SYOWA STATION
1987 12 09 12:00 ~ 23:45

IONOGRAM



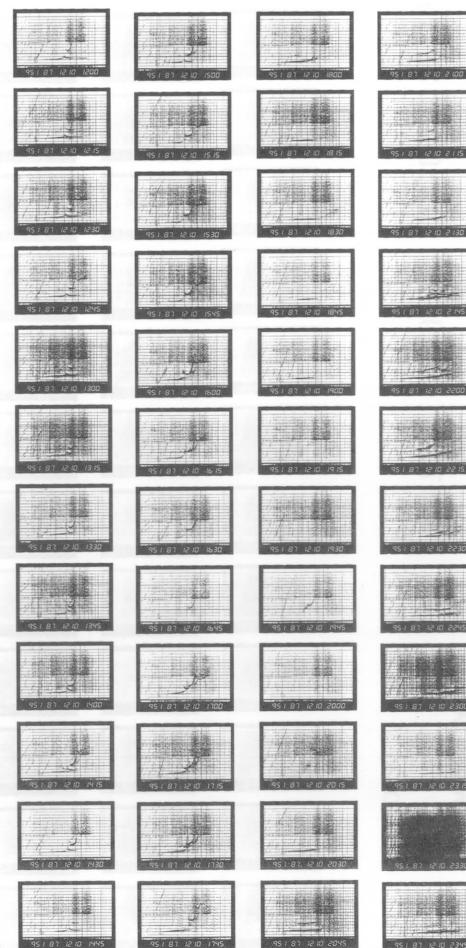
SYOWA STATION
1987 12 10 00:00 ~ 11:45

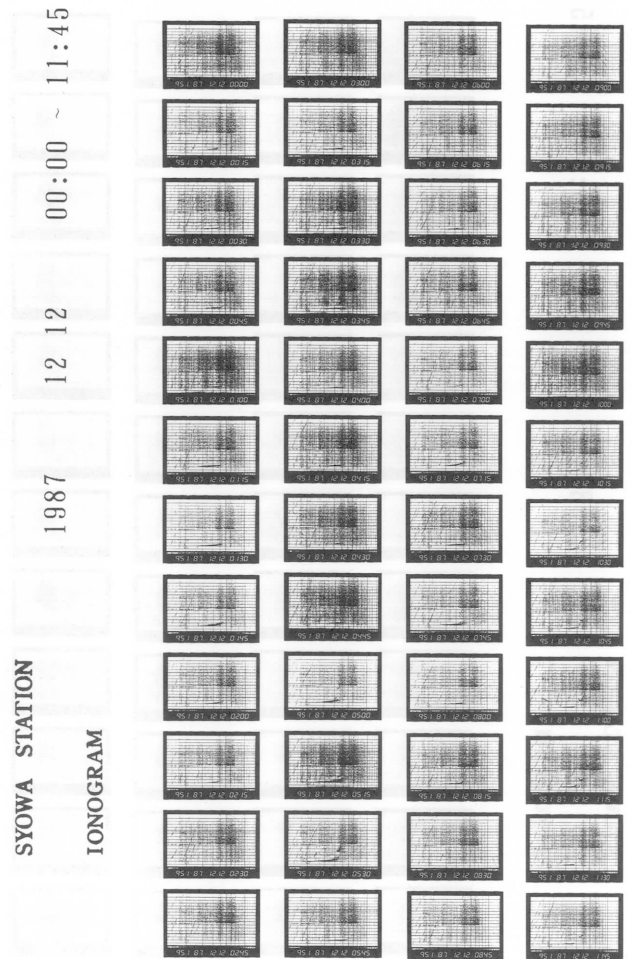
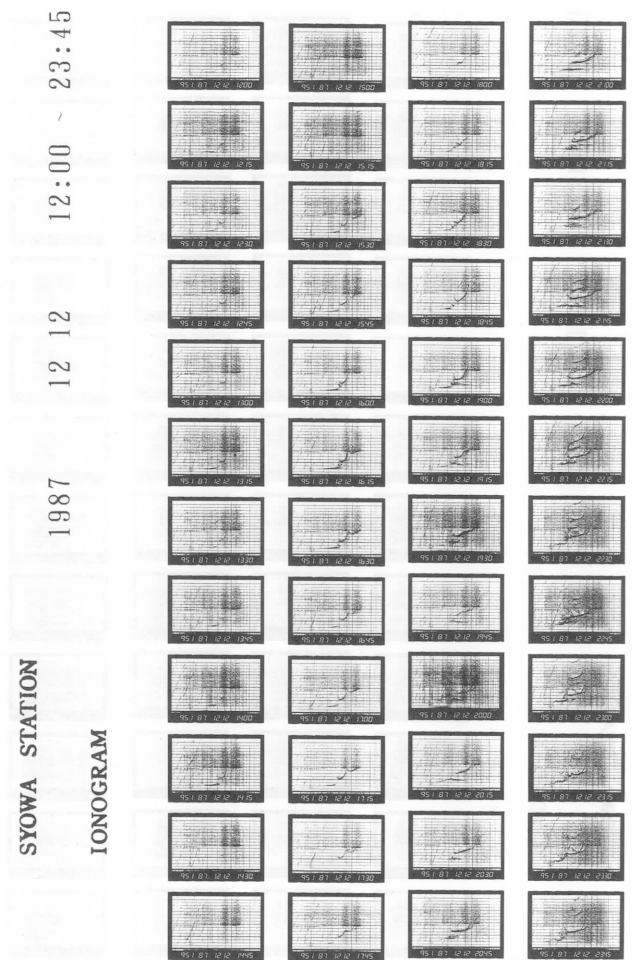
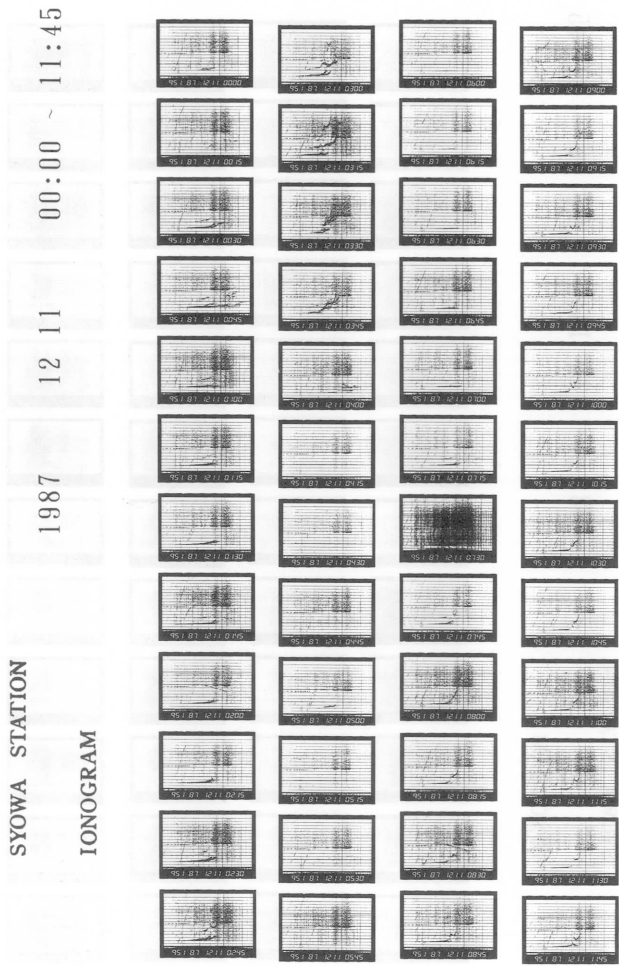
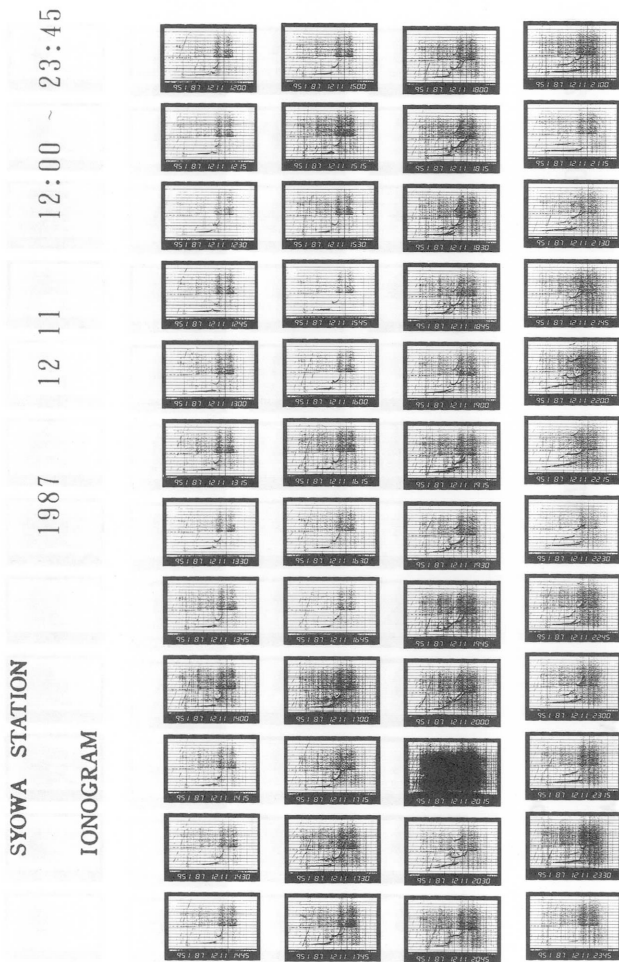
IONOGRAM



SYOWA STATION
1987 12 10 12:00 ~ 23:45

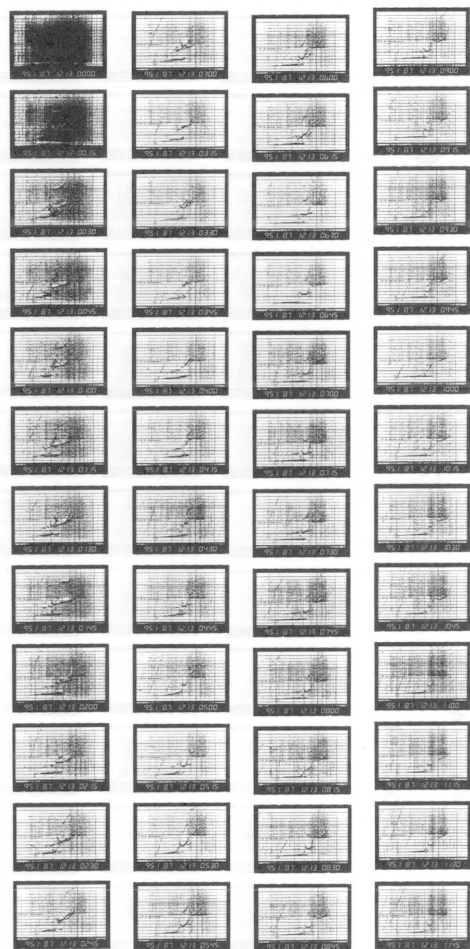
IONOGRAM



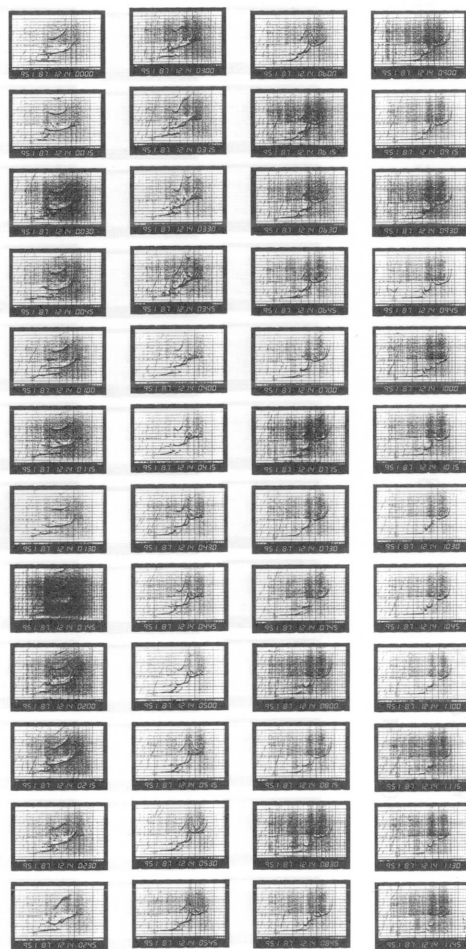


SYOWA STATION
1987 12 13 00:00 ~ 11:45

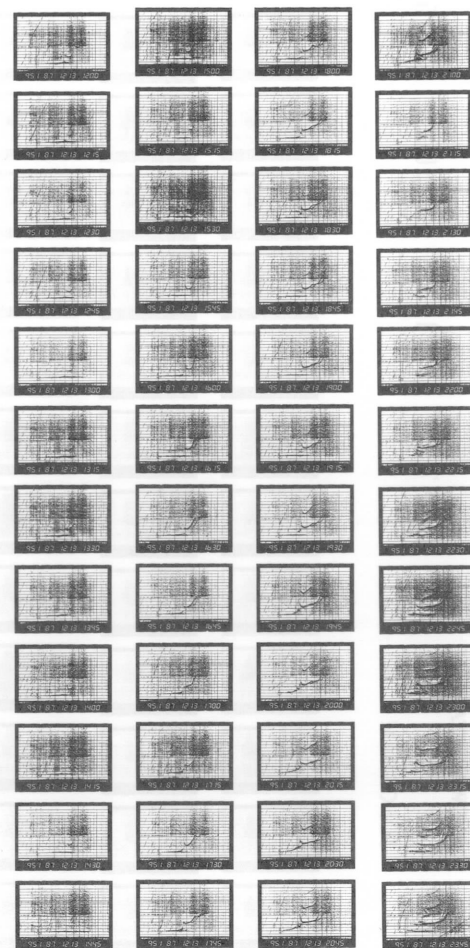
IONOGRAM

SYOWA STATION
1987 12 14 00:00 ~ 11:45

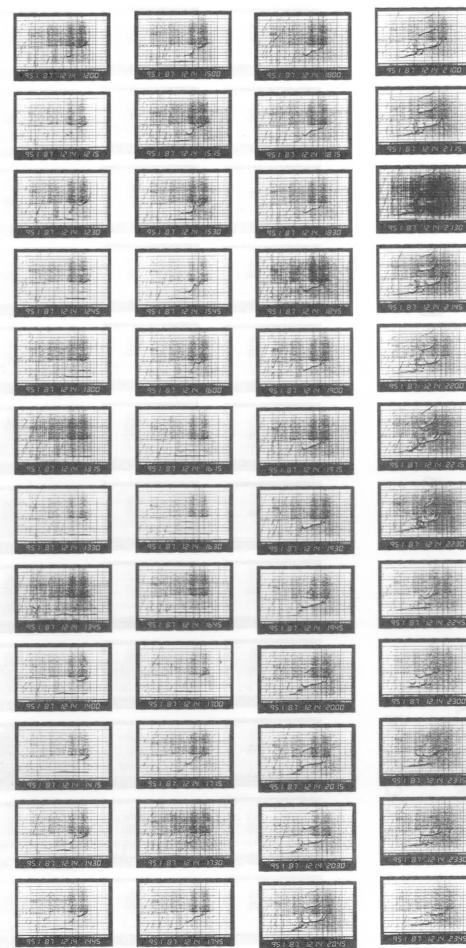
IONOGRAM

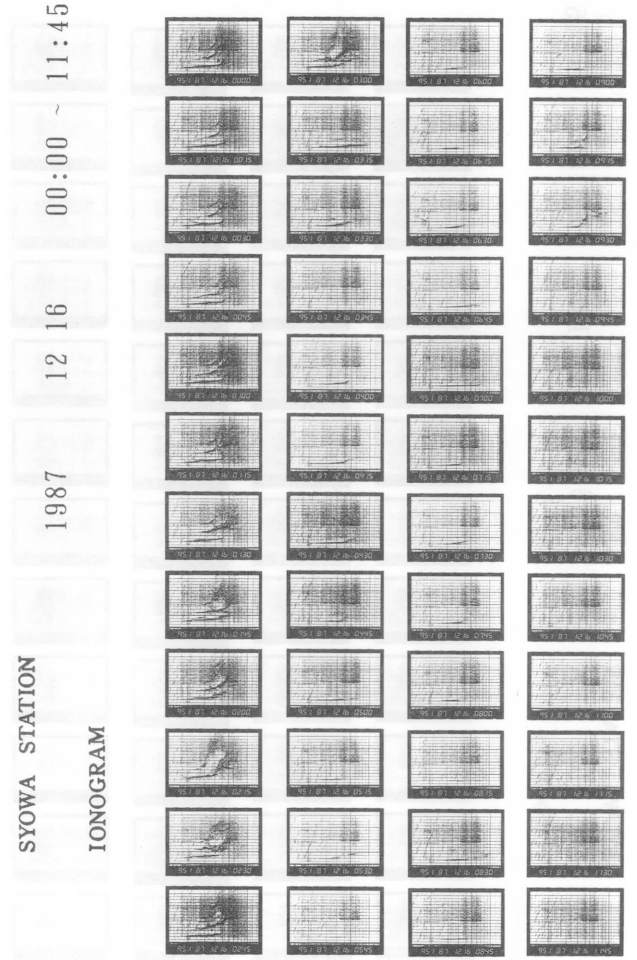
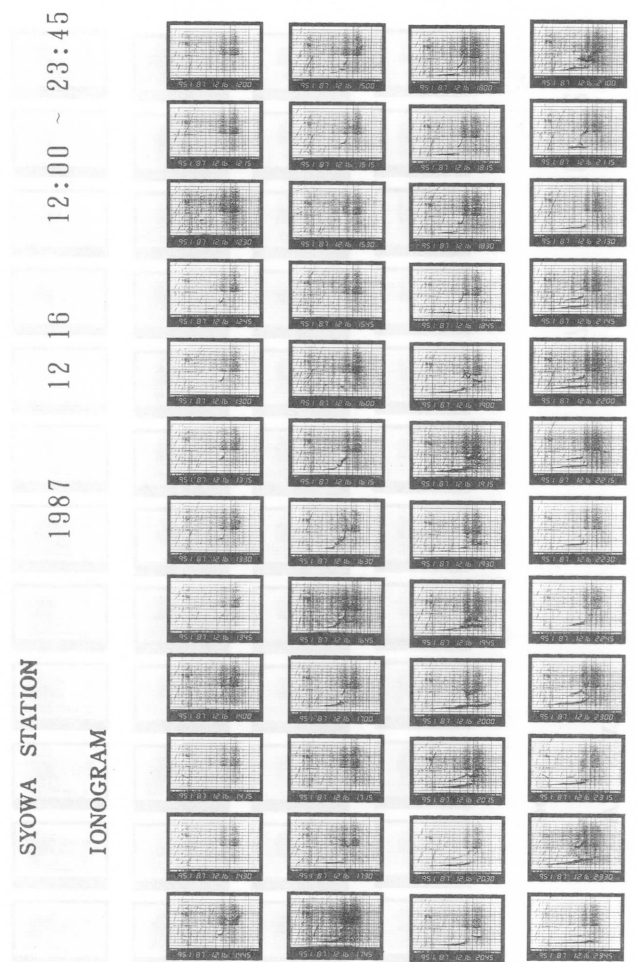
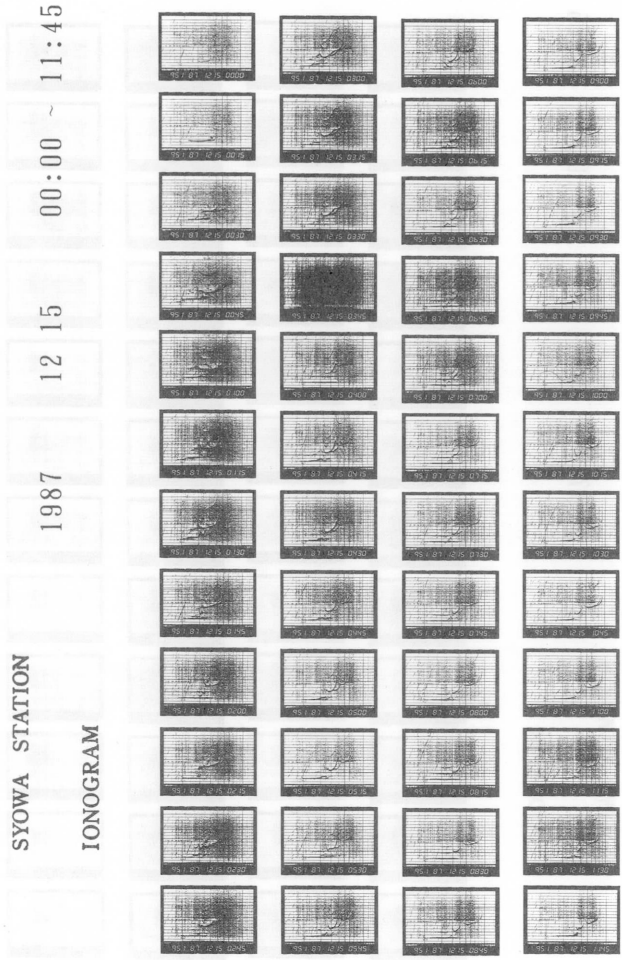
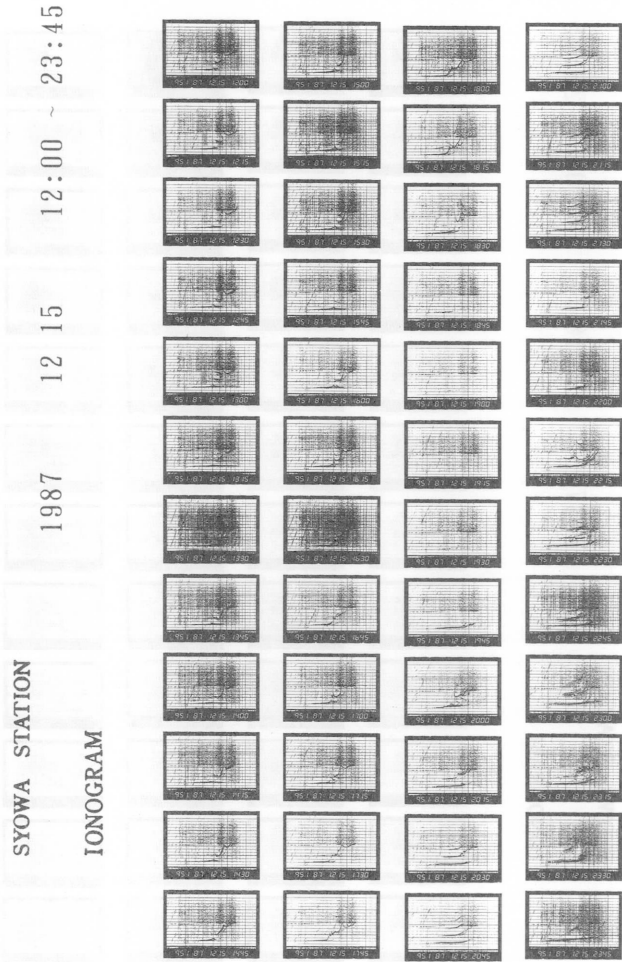
SYOWA STATION
1987 12 13 12:00 ~ 23:45

IONOGRAM

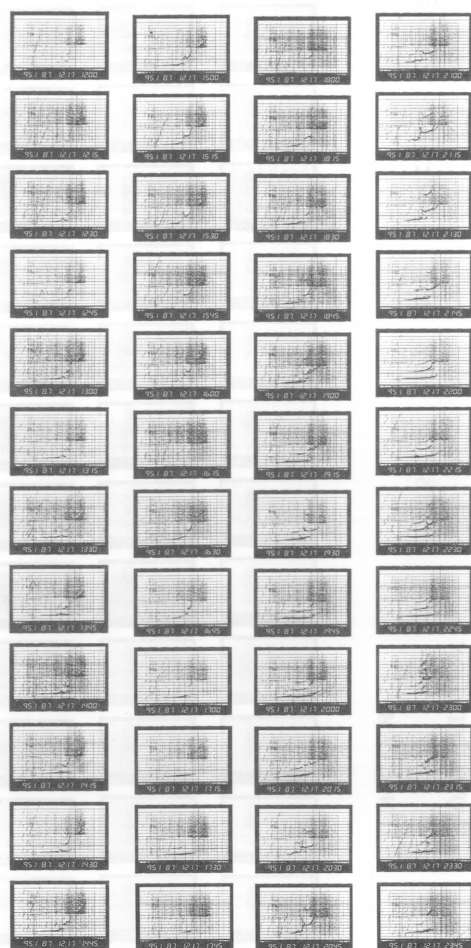
SYOWA STATION
1987 12 14 12:00 ~ 23:45

IONOGRAM

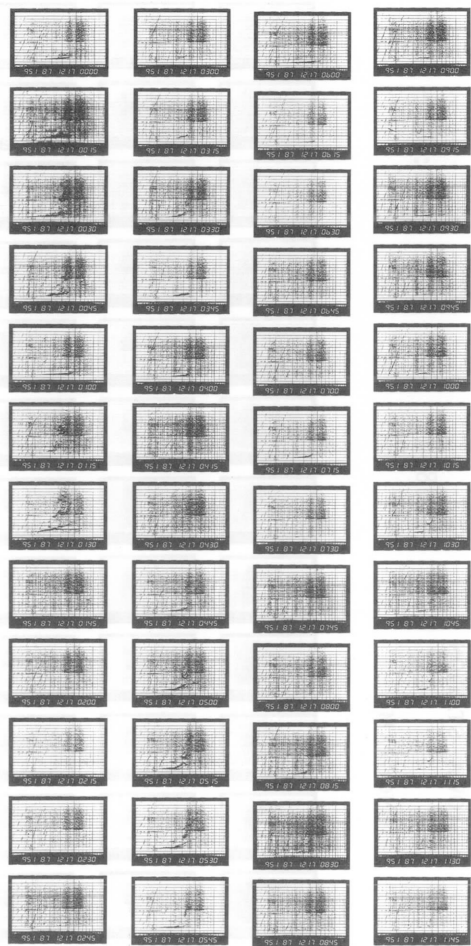




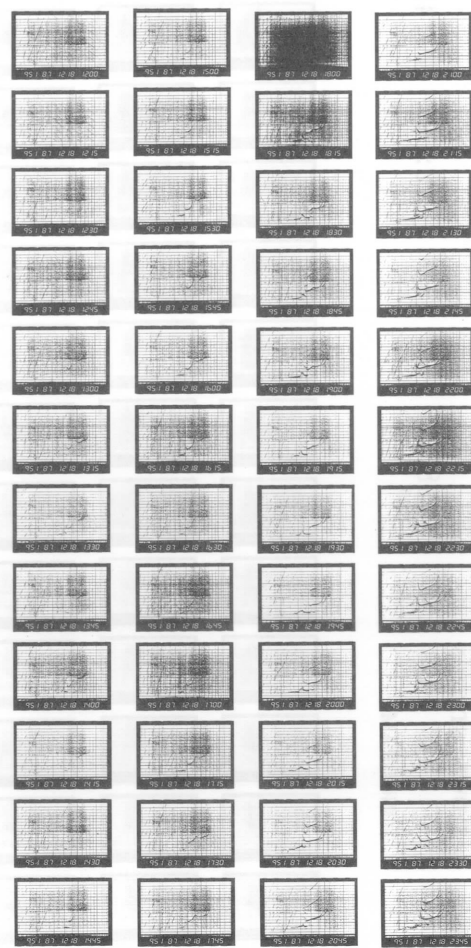
SYOWA STATION
1987
12 17
12:00 ~ 23:45
IONOGRAM



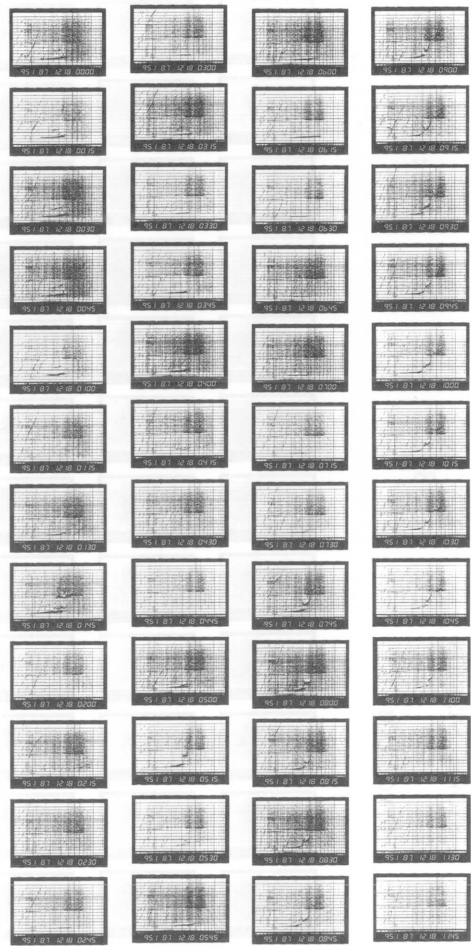
SYOWA STATION
1987
12 17
00:00 ~ 11:45
IONOGRAM



SYOWA STATION
1987
12 18
12:00 ~ 23:45
IONOGRAM



SYOWA STATION
1987
12 18
00:00 ~ 11:45
IONOGRAM



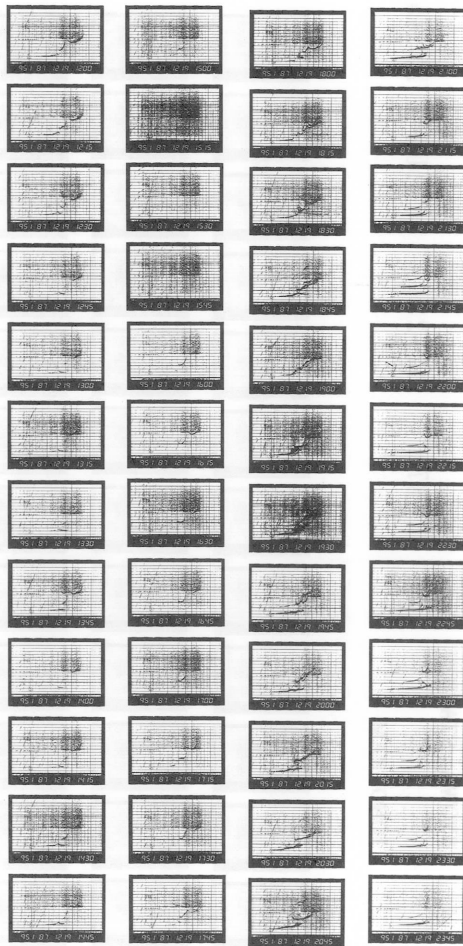
SYOWA STATION

IONOGRAM

1987

12 19

12:00 ~ 23:45



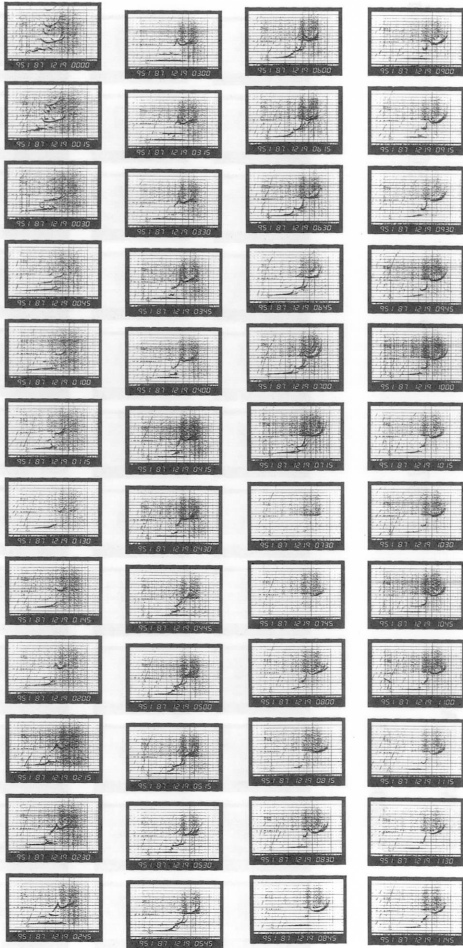
SYOWA STATION

IONOGRAM

1987

12 19

00:00 ~ 11:45



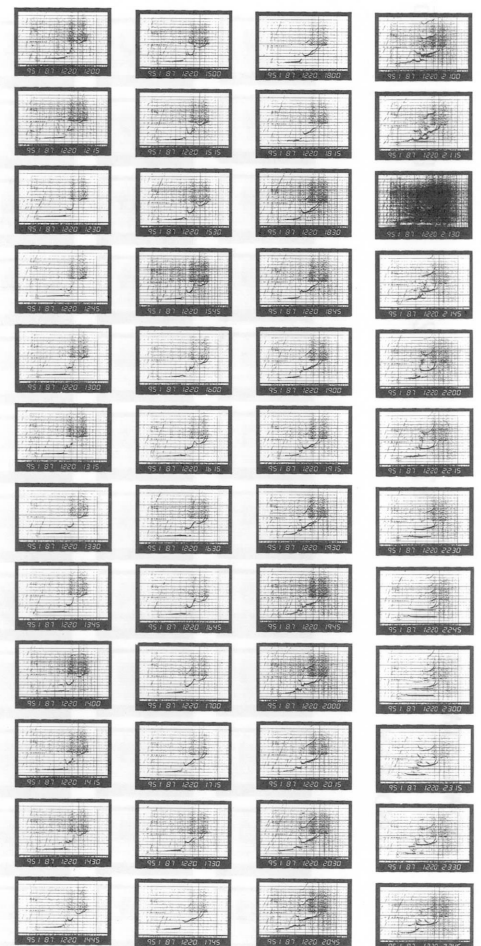
SYOWA STATION

IONOGRAM

1987

12 20

12:00 ~ 23:45



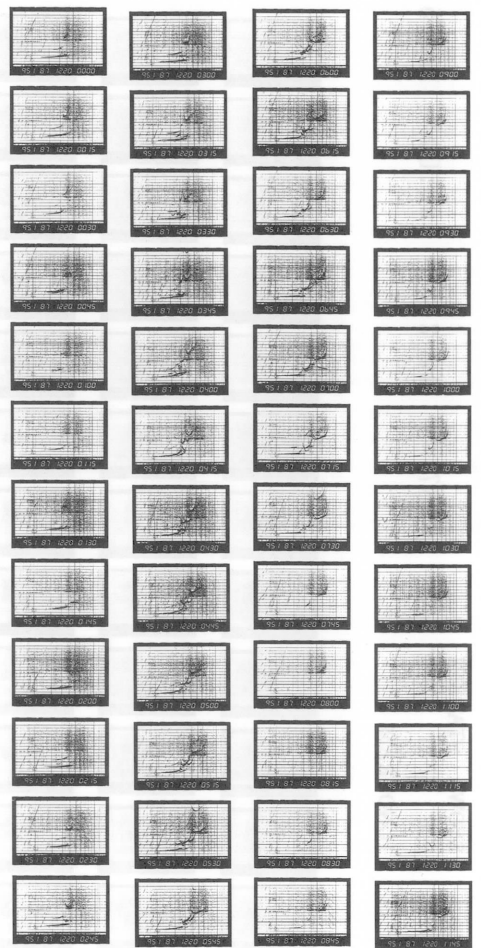
SYOWA STATION

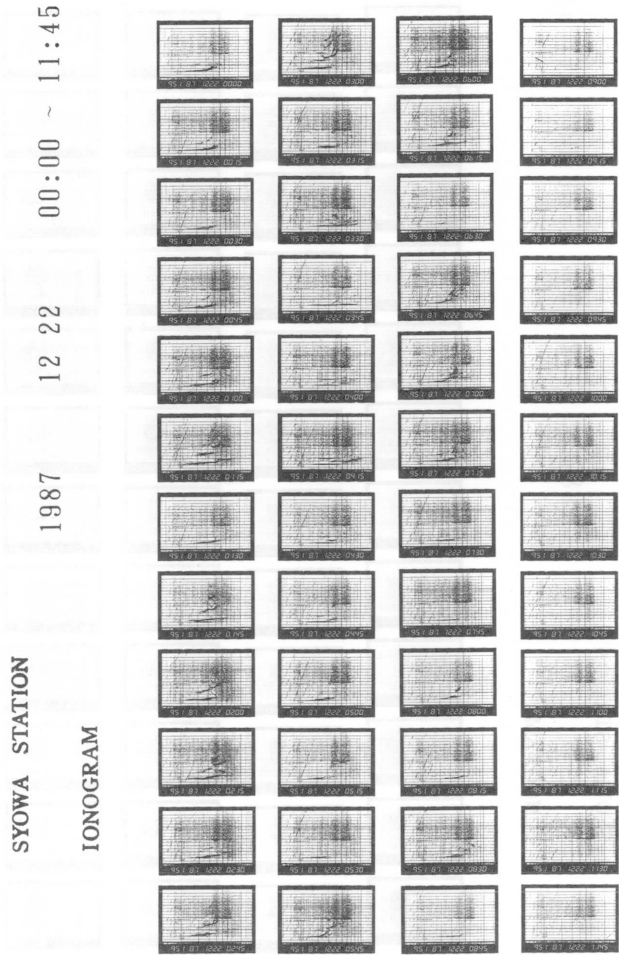
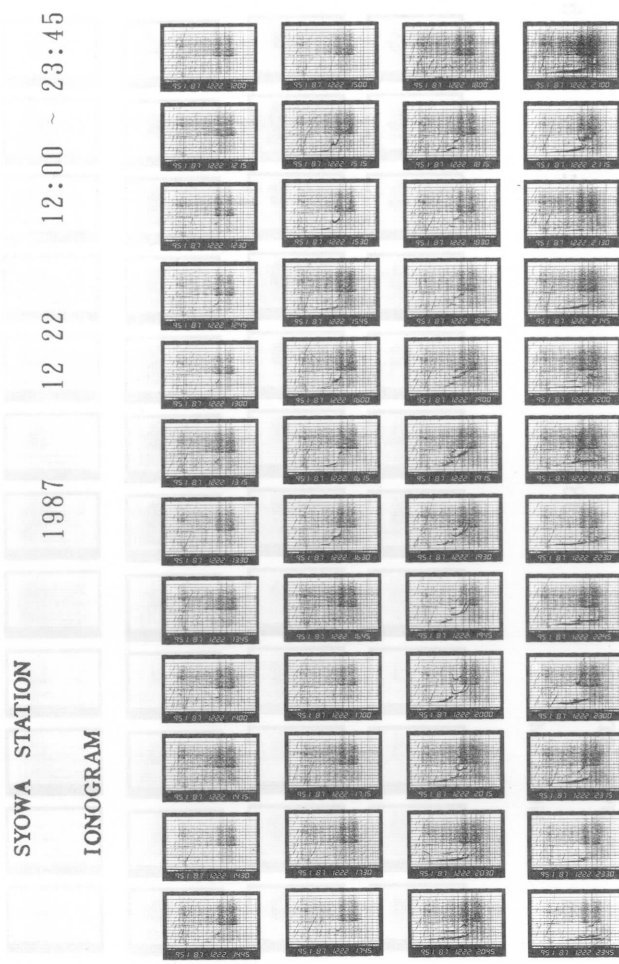
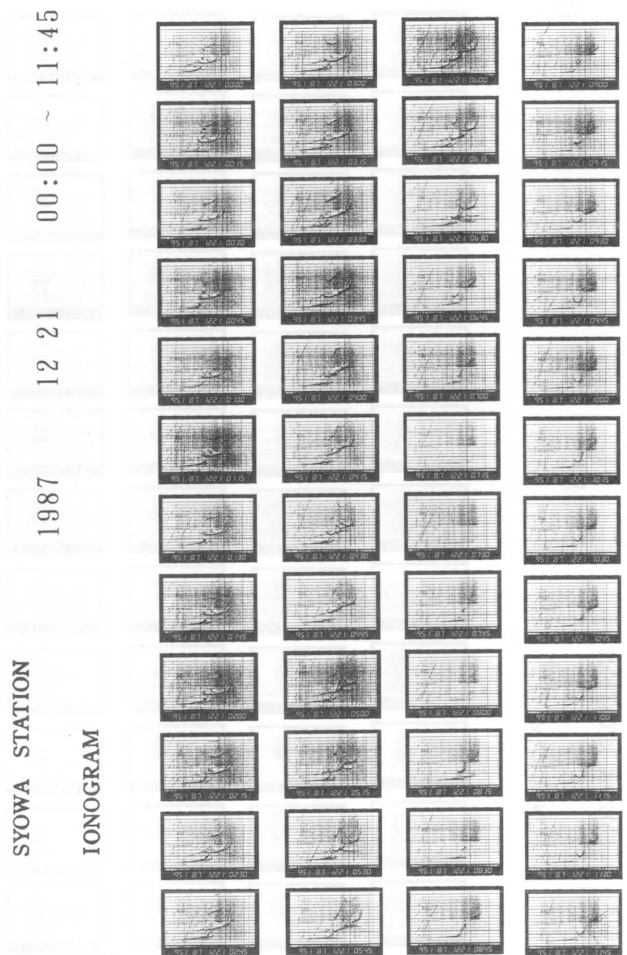
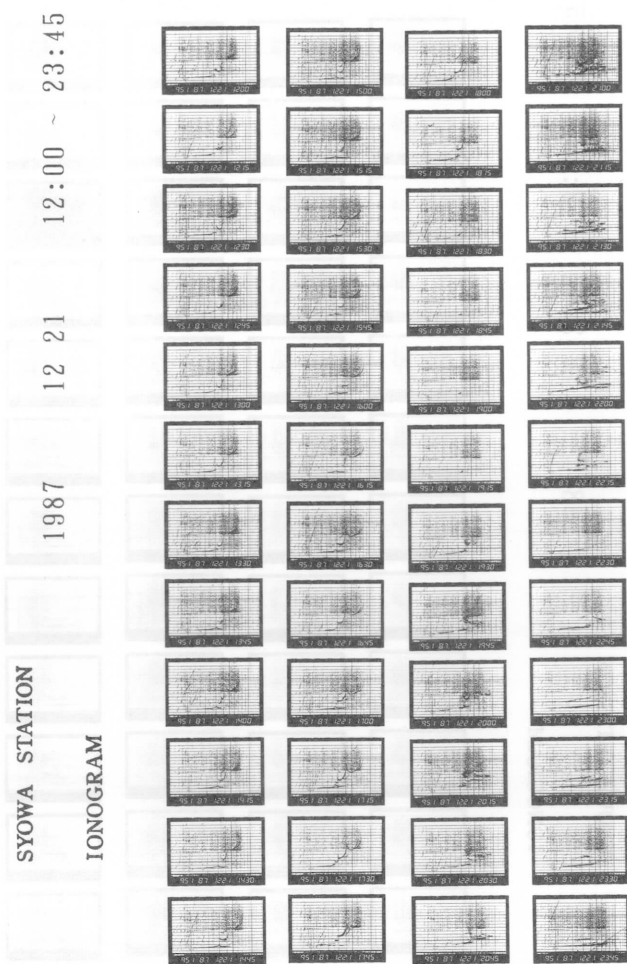
IONOGRAM

1987

12 20

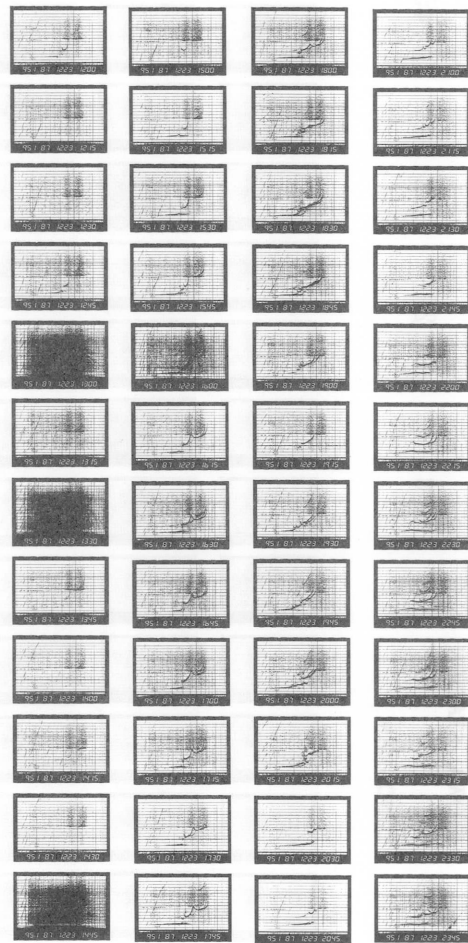
00:00 ~ 11:45





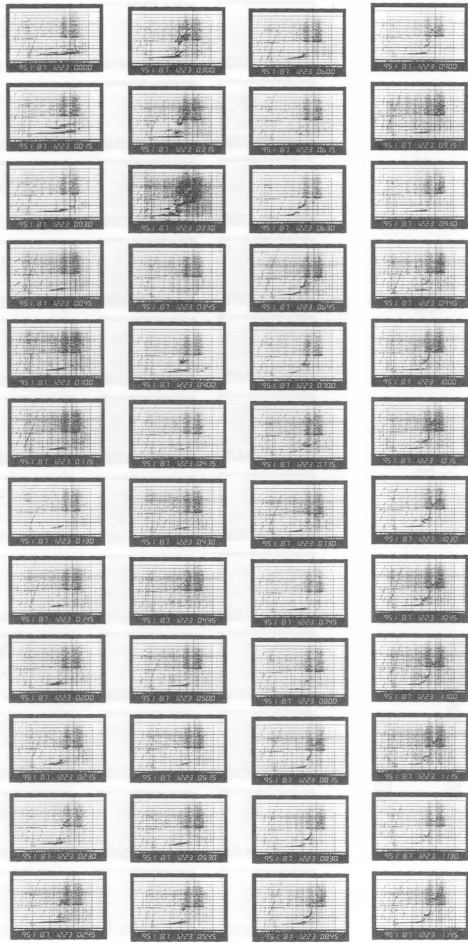
SYOWA STATION
IONOGRAM

1987 12 23 12:00 ~ 23:45



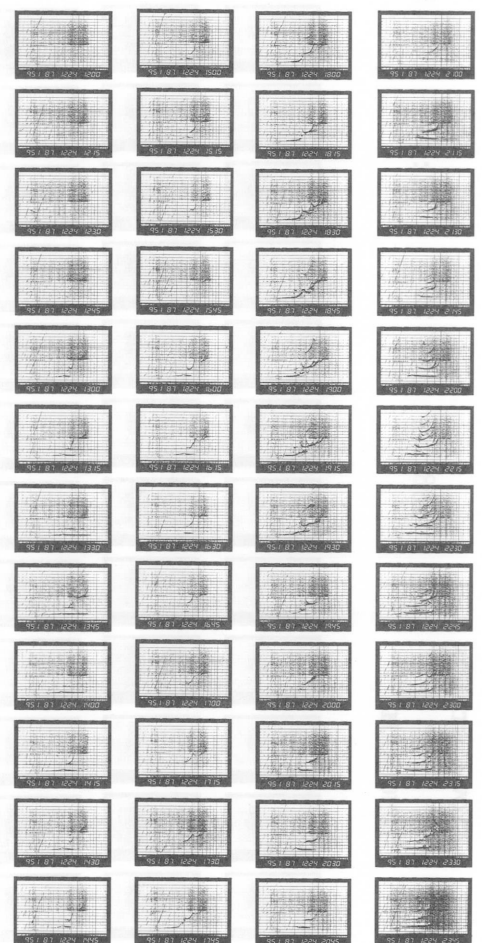
SYOWA STATION
IONOGRAM

1987 12 23 00:00 ~ 11:45



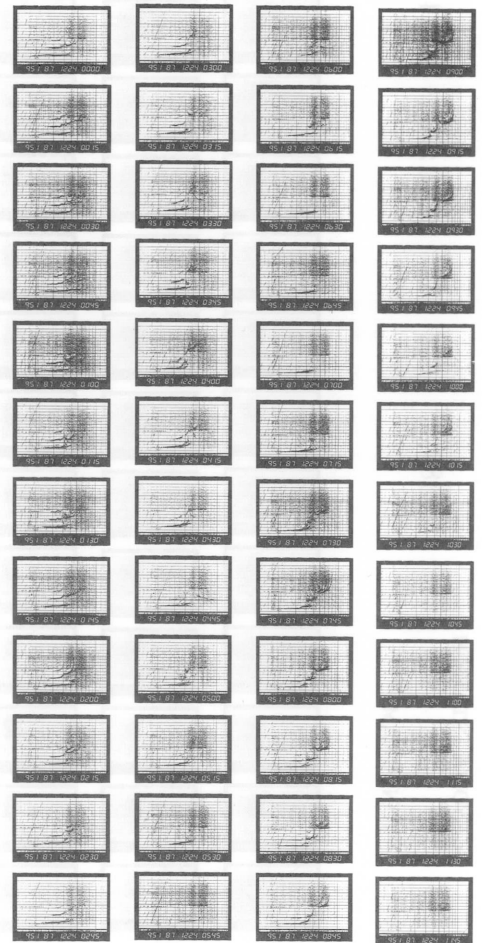
SYOWA STATION
IONOGRAM

1987 12 24 12:00 ~ 23:45



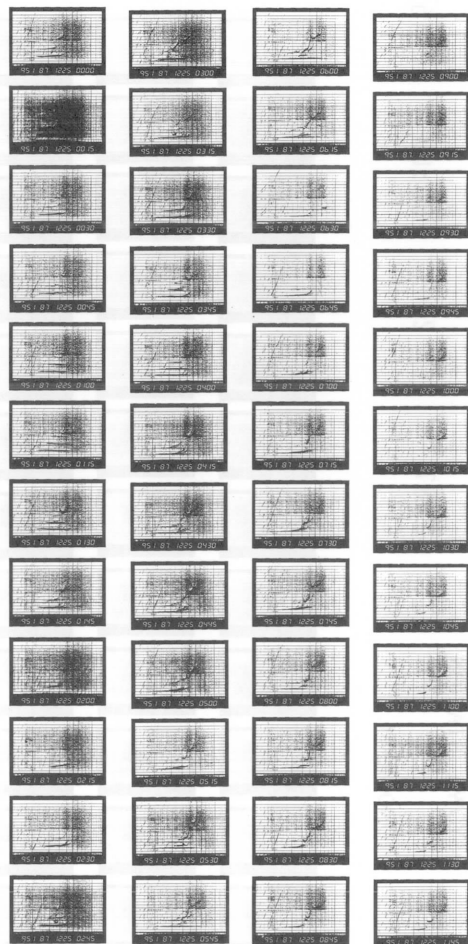
SYOWA STATION
IONOGRAM

1987 12 24 00:00 ~ 11:45



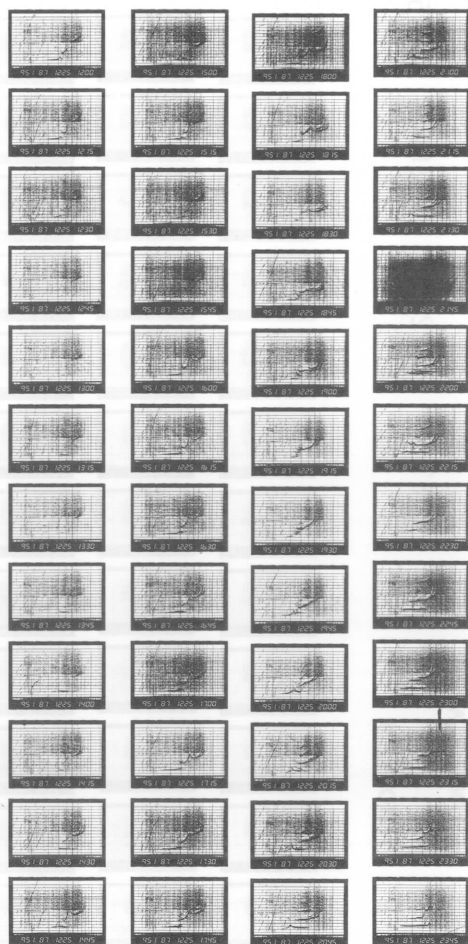
SYOWA STATION
IONOGRAM

1987 12 25 00:00 ~ 11:45



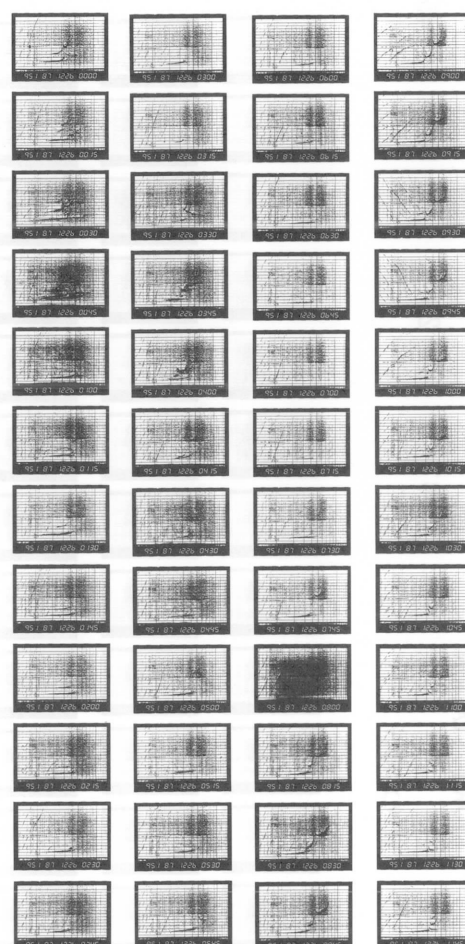
SYOWA STATION
IONOGRAM

1987 12 25 12:00 ~ 23:45



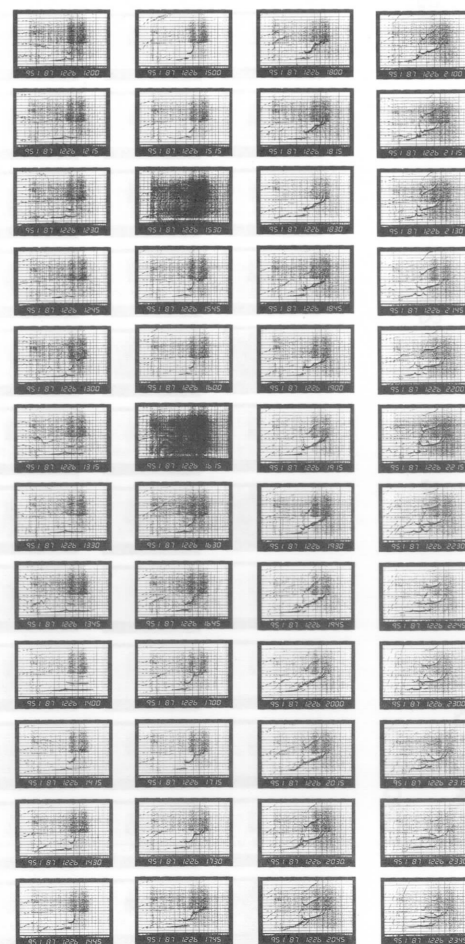
SYOWA STATION
IONOGRAM

1987 12 26 00:00 ~ 11:45



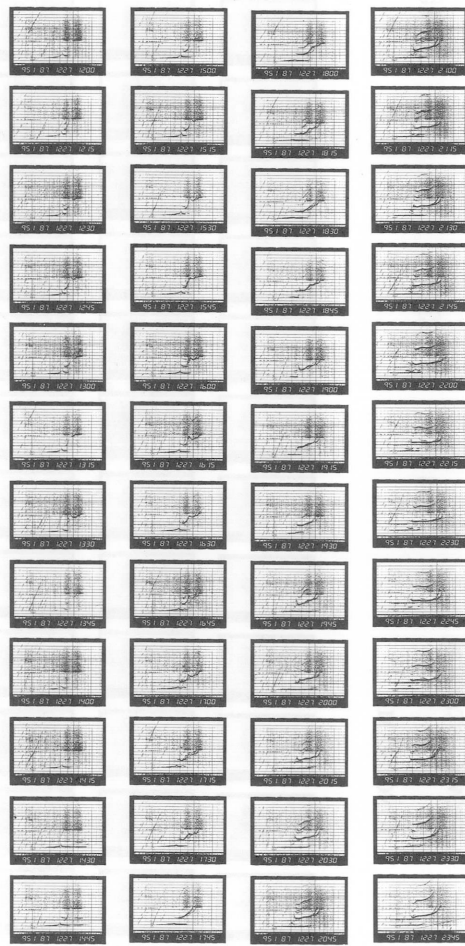
SYOWA STATION
IONOGRAM

1987 12 26 12:00 ~ 23:45



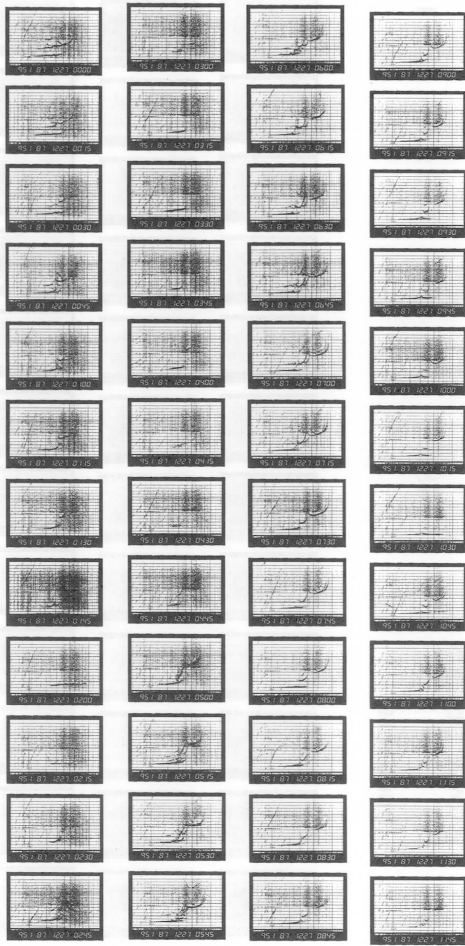
SYOWA STATION
IONOGRAM

1987 12 27 12:00 ~ 23:45



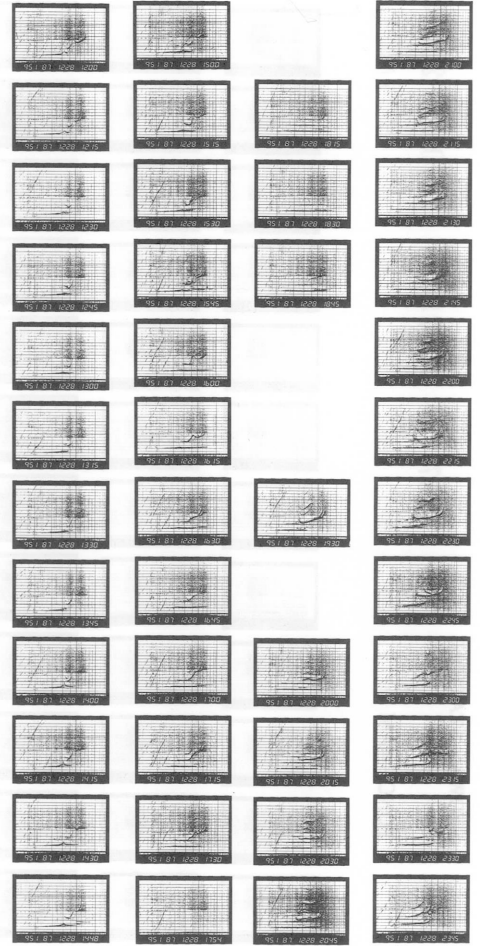
SYOWA STATION
IONOGRAM

1987 12 27 00:00 ~ 11:45



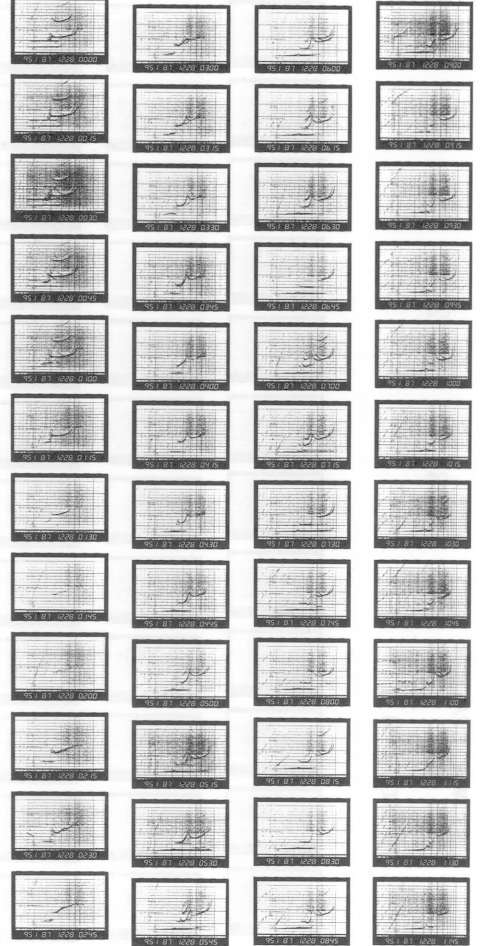
SYOWA STATION
IONOGRAM

1987 12 28 12:00 ~ 23:45



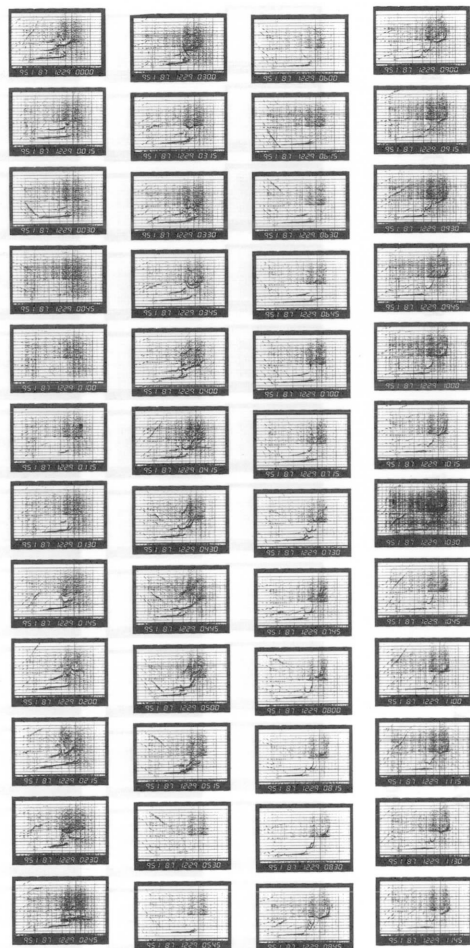
SYOWA STATION
IONOGRAM

1987 12 28 00:00 ~ 11:45

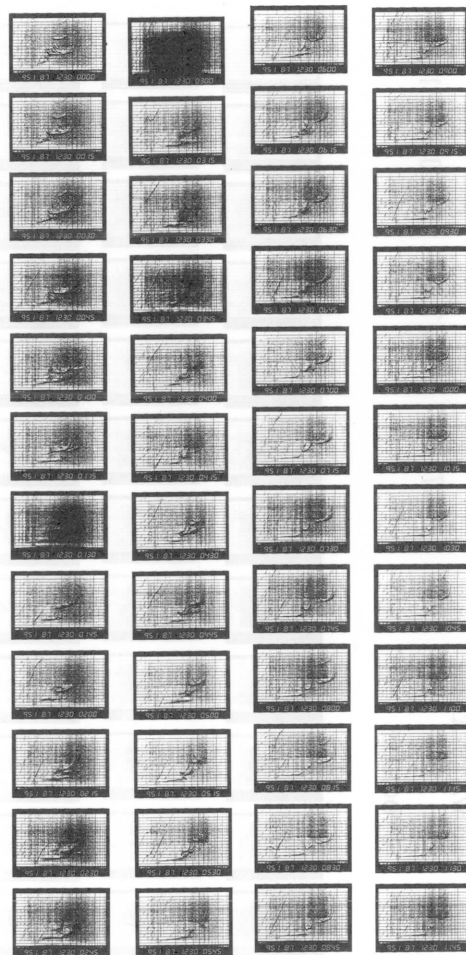


SYOWA STATION
1987 12 29 00:00 ~ 11:45

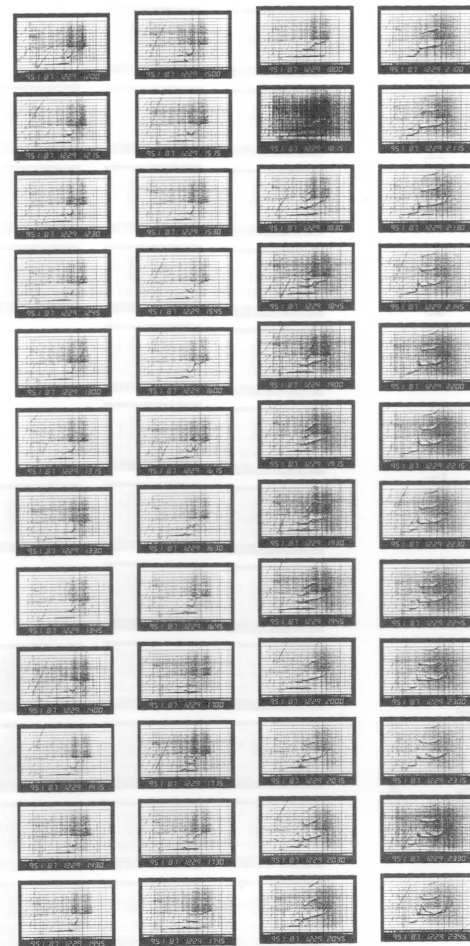
IONOGRAM

SYOWA STATION
1987 12 30 00:00 ~ 11:45

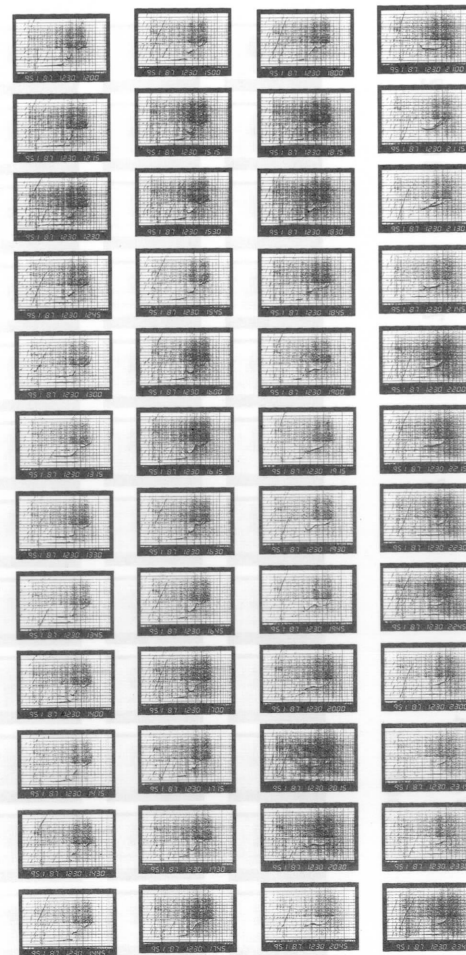
IONOGRAM

SYOWA STATION
1987 12 29 12:00 ~ 23:45

IONOGRAM

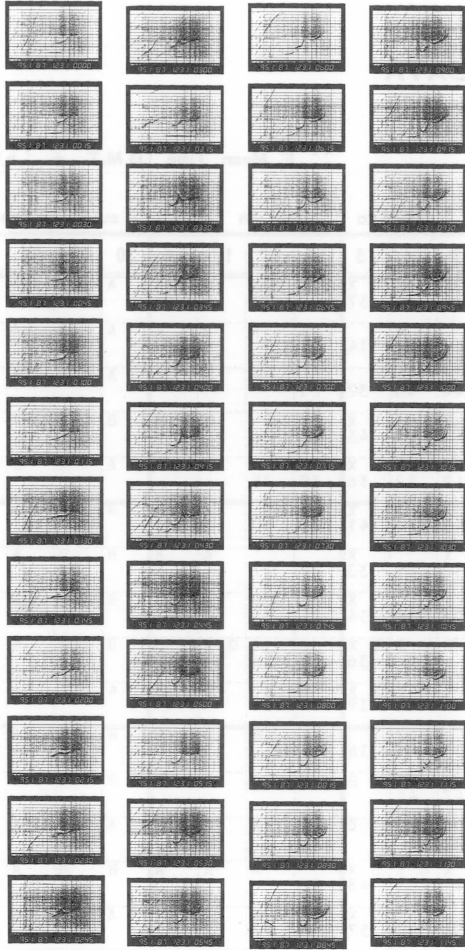
SYOWA STATION
1987 12 30 12:00 ~ 23:45

IONOGRAM



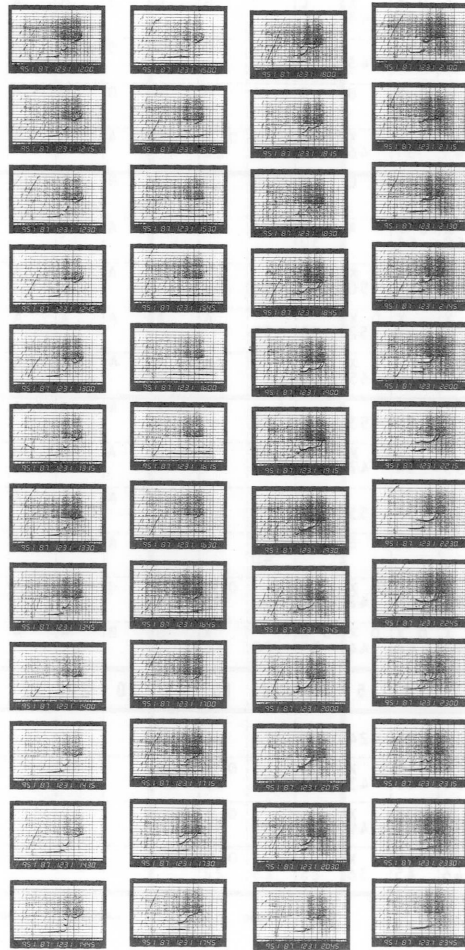
SYOWA STATION
1987 12 31 00:00 ~ 11:45

IONOGRAM



SYOWA STATION
1987 12 31 12:00 ~ 23:45

IONOGRAM



IONOSPHERIC DATA

JUL. 1987

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 4 MHz to 15 MHz in 20 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	A	A	A	A	36	39	X 48	O X 47	X 51	O X 37	A	O X 31	A	A	A	A	A	B
2	A	A	A	A	O X 28	O X 35	A	B	B	B	A	X 39	X 44	X 43	A	34	A	A	A	A	A	A	A	A
3	A	A	A	A	A	O X 45	33	A	A	A	28	40	O X 44	X 44	40	32	25	A	A	A	A	A	A	A
4	A	A	A	A	A	A	A	O X 36	53	45	33	36	45	O X 52	45	O X 43	28	23	A	A	B	B	A	A
5	A	A	A	A	A	A	A	A	A	A	29	X 40	X 41	49	O X 52	X 36	30	25	A	B	A	A	B	A
6	A	A	A	A	A	A	A	A	O X 23	31	O X 44	O X 46	O X 46	O X 46	O X 41	33	30	B	B	B	B	B	B	A
7	A	A	A	A	A	A	A	A	O X 31	19	O X 36	44	48	O X 52	51	X 33	27	27	A	A	B	B	A	A
8	A	A	A	A	A	A	A	A	46	46	33	35	43	43	51	34	27	B	B	B	B	B	A	A
9	A	A	A	A	A	A	A	B	A	3	B	B	B	B	B	O X 36	24	26	O X 21	B	B	B	A	A
10	A	A	A	A	A	B	A	A	A	A	A	B	O X 39	O X 41	O X 44	O X 39	B	29	B	B	A	A	A	A
11	A	A	A	A	A	A	A	A	A	A	B	B	B	51	40	36	25	B	B	B	B	A	A	A
12	A	A	A	A	A	A	A	A	A	A	A	B	O X 46	O X 47	45	B	B	B	B	B	B	B	B	A
13	A	A	A	A	A	A	A	A	28	C	C	C	C	C	C	C	C	A	A	A	A	A	A	A
14	A	A	A	A	A	A	O X 44	O X 45	O X 37	O X 23	A	40	43	O X 49	O X 49	O X 48	36	A	A	A	B	B	A	B
15	B	A	A	A	A	A	O X 34	O X 36	S	A	31	40	43	56	O X 51	O X 57	34	X 42	A	A	A	A	A	A
16	A	B	A	B	A	B	A	B	A	B	B	B	B	B	B	B	B	B	O X 25	C	A	A	A	A
17	A	C	A	A	A	A	B	A	A	B	B	A	O X 39	C	O X 44	X 48	C	B	B	B	B	B	A	A
18	A	A	B	B	B	A	A	A	A	A	B	B	X 49	X 51	O X 46	43	B	B	B	A	B	B	A	A
19	A	A	A	A	A	B	A	A	A	B	X 33	X 43	X 51	X 55	O X 43	B	B	A	B	A	B	B	A	A
20	A	A	B	A	A	A	A	A	A	A	X 36	X 43	X 46	X 45	O X 51	X 46	31	A	O X 22	B	A	B	A	A
21	A	A	A	A	C	A	A	C	25	28	X 33	B	B	B	O X 49	C	B	B	B	B	B	B	B	B
22	A	A	A	A	A	A	A	A	A	A	B	B	B	O X 50	O X 51	A	O X 30	B	A	A	A	B	A	A
23	A	A	A	A	A	A	X 31	O X 37	X 30	X 30	40	O X 47	O X 51	O X 54	O X 49	O X 50	O X 41	33	25	B	A	B	A	A
24	A	A	A	A	A	A	A	O X 33	30	X 42	X 51	X 50	X 54	X 43	O X 52	38	33	A	A	A	A	A	A	A
25	A	A	A	A	A	A	A	A	B	O X 40	X 46	X 54	X 56	B	X 65	O X 51	B	A	A	A	A	A	A	A
26	A	A	A	A	A	A	O X 31	X 31	29	30	O X 36	X 49	X 55	X 58	50	53	33	O X 34	A	O X 24	A	A	A	A
27	A	A	A	A	A	A	A	A	A	A	40	50	X 54	X 55	X 54	X 47	X 40	X 33	B	B	A	B	B	A
28	A	A	A	A	A	B	A	40	40	49	50	X 53	X 55	X 53	55	61	73	A	A	A	A	A	A	A
29	A	A	A	A	A	A	A	A	B	A	B	B	A	B	B	B	B	40	A	B	A	A	A	A
30	A	A	A	A	A	A	A	A	B	B	O X 43	O X 49	O X 51	O X 48	O X 42	O X 37	50	O X 36	B	B	A	A	A	A
31	A	A	A	A	A	A	B	B	A	B	B	O X 47	O X 46	O X 46	O X 44	O X 33	28	X 36	B	B	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					1	2	5	5	10	10	17	19	24	25	25	24	20	16	6	1				
MED					O X 28	O X 40	O X 33	O X 36	32	30	36	X 43	X 46	X 51	O X 49	X 43	33	32	O X 25	O X 24				
UQ						O X 34	O X 37	40	40	40	X 46	X 50	X 54	O X 51	X 49	38	37	O X 36						
LQ						X 31	O X 36	29	23	33	40	X 44	O X 46	O X 45	X 36	28	28	O X 22						

JUL. 1987

FXI (0.1 MHz)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUL. 1987

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 4 MHz to 15 MHz in 20 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	A	A	A	A	F 30	F 33	42	41	45	31	A	25	A	A	A	A	A	B
2	A	A	A	A	22	29	A	B	B	B	A	33	38	37	A	F 28	A	A	A	A	A	A	A	A
3	A	A	A	A	A	39	27	A	A	A	F 22	F 34	38	38	34	F 26	F 19	A	A	A	A	A	A	A
4	A	A	A	A	A	A	A	30	F 43	F 39	F 24	F 30	F 40	46	F 39	F 37	F 17	A	A	B	B	A	A	A
5	A	A	A	A	A	A	A	A	A	A	F 23	34	35	F 43	46	30	F 19	A	B	A	A	B	A	A
6	A	A	A	A	A	A	A	A	A	17	25	38	40	40	40	35	F 27	F 24	B	B	B	B	B	A
7	A	A	A	A	A	A	A	A	25	F 13	30	F 38	F 42	46	F 45	27	F 20	F 19	A	A	B	B	A	A
8	A	A	A	A	A	A	A	A	40	F 40	F 27	F 29	F 37	F 37	F 45	28	F 19	B	B	B	B	B	A	A
9	A	A	A	A	A	A	A	B	A	B	B	B	B	B	B	30	F 18	F 20	15	B	B	B	A	A
10	A	A	A	A	A	B	A	A	A	A	A	B	U S 33	35	38	33	B	F 23	B	B	A	A	A	A
11	A	A	A	A	A	A	A	A	A	A	B	B	B	F 45	34	F 29	F 19	B	B	B	B	B	A	A
12	A	A	A	A	A	A	A	A	A	A	A	B	40	41	F 39	B	B	B	B	B	B	B	B	A
13	A	A	A	A	A	A	A	A	F 22	C	C	C	C	C	C	C	C	A	A	A	A	A	A	A
14	A	A	A	A	A	A	38	39	31	17	A	F 34	F 35	43	43	42	F 30	A	A	A	B	B	A	B
15	B	A	A	A	A	A	28	30	S	A	F 25	F 34	F 37	F 50	45	51	F 28	36	A	A	A	A	A	A
16	A	B	A	B	A	B	A	B	A	B	B	B	B	B	B	B	B	B	19	C	A	A	A	A
17	A	C	A	A	A	A	B	A	A	B	B	A	33	C	38	42	C	B	B	B	B	B	A	A
18	A	A	B	B	B	A	A	A	A	A	B	B	43	45	40	F 37	B	B	B	A	B	B	A	A
19	A	A	A	A	A	B	A	A	A	B	27	37	45	49	37	B	B	A	B	A	B	B	A	A
20	A	A	B	A	A	A	A	A	A	A	30	37	40	39	45	40	F 25	A	16	B	A	B	A	A
21	A	A	A	A	C	A	A	C	F 22	F 27	B	B	B	U R 43	C	C	B	B	B	B	B	B	B	B
22	A	A	A	A	A	A	A	A	A	A	B	B	B	44	45	A	24	B	A	A	A	B	A	A
23	A	A	A	A	A	A	25	31	24	24	34	41	U R 45	49	43	44	35	F 27	F 19	B	A	B	A	A
24	A	A	A	A	A	A	A	A	27	F 20	36	45	44	48	42	U S 46	F 30	F 27	A	A	A	A	A	A
25	A	A	A	A	A	A	A	A	A	B	34	40	48	50	B	59	F 45	B	A	A	A	A	A	A
26	A	A	A	A	A	A	25	25	F 23	F 24	U R 30	43	49	52	44	F 47	F 27	U R 23	A	U R 18	A	A	A	A
27	A	A	A	A	A	A	A	A	A	A	F 34	F 44	48	49	48	41	34	27	B	B	A	B	B	A
28	A	A	A	A	A	A	B	A	F 34	F 34	F 43	F 44	47	49	47	U S 49	55	F 67	A	A	A	A	A	A
29	A	A	A	A	A	A	A	A	B	A	B	B	A	B	B	B	B	F 34	A	B	A	A	A	A
30	A	A	A	A	A	A	A	A	A	B	B	37	43	45	42	36	31	F 44	30	B	B	A	A	A
31	A	A	A	A	A	A	B	B	A	B	B	B	41	40	40	38	27	F 22	30	B	B	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					1	2	5	5	9	10	17	19	24	25	25	24	18	16	6	1				
MED					22	34	27	30	F 27	F 23	F 30	37	40	45	43	37	F 27	F 26	19	U R 18				
UQ							28	31	F 34	F 34	F 34	40	44	49	45	43	31	31	30					
LQ							25	30	24	F 17	F 25	F 34	38	40	39	30	F 20	F 21	16					

JUL. 1987

F₀F₂ (0.1 MHz)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUL. 1987

FES (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 4				MHz to 15				MHz in 20				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	31	32	35	44	110	71	70	110	38	32	16	16	26	26	39	45	42	45	29	108	115	43	32	B			
2	35	31	31	35	31	34	56	B	B	B	33	37	33	55	30	26	32	35	22	28	44	40	26	35			
3	43	39	40	48	57	59	41	40	38	42	36	31	17	32	25	12	29	33	30	25	35	30	24	30			
4	46	70	48	90	59	56	41	45	31	35	18	38	35	34	32	29	31	17	27	41	B	B	27	26			
5	38	32	45	45	43	45	67	43	36	37	30	26	27	27	32	26	42	28	19	B	28	28	B	30			
6	40	60	41	60	50	51	40	40	21	16	27	30	17	37	34	35	15	E ₁₃	B	B	B	B	B	28			
7	40	36	32	37	45	35	29	28	20	35	20	22	31	40	32	45	28	16	31	21	B	B	41	37			
8	32	36	50	38	45	55	52	37	47	26	32	31	35	27	25	E ₁₉	18	B	B	B	B	B	20	38			
9	45	45	47	50	46	41	58	B	36	B	B	B	B	B	B	22	16	17	37	B	B	B	29	30			
10	47	46	45	46	82	B	36	36	44	53	42	B	22	E ₂₁	E ₂₄	E ₂₅	B	18	B	B	30	24	36	39			
11	43	42	70	45	50	33	47	37	41	36	B	B	B	E ₂₁	25	E ₁₃	25	B	B	B	B	30	31	24			
12	38	40	45	46	42	38	40	52	48	46	28	B	E ₃₀	E ₂₉	E ₂₀	B	B	B	B	B	B	B	B	32			
13	37	60	60	67	46	40	41	45	32	C	C	C	C	C	C	C	C	16	14	32	26	13	22	41			
14	37	31	45	65	44	45	32	30	31	30	42	43	33	36	25	30	12	32	36	13	B	B	23	B			
15	B	38	106	58	56	59	30	23	31	32	32	22	35	25	E ₃₂	E ₃₂	33	30	45	47	48	48	46	45			
16	36	B	36	B	44	B	41	B	43	B	B	B	B	B	B	B	B	B	E ₁₄	C	35	38	43	44			
17	67	C	70	60	45	29	B	44	28	B	B	33	25	C	E ₂₃	12	C	B	B	B	B	B	33	40			
18	35	45	B	B	B	42	51	31	35	36	B	B	27	22	E ₂₁	E ₁₅	B	B	B	27	B	B	27	40			
19	42	44	41	38	41	B	39	36	32	B	29	32	21	35	E ₂₂	B	B	40	B	21	B	B	31	41			
20	45	45	B	90	45	45	70	36	41	37	33	21	26	17	16	15	12	16	E ₁₁	B	13	B	37	20			
21	42	89	41	39	C	36	41	C	16	35	24	B	B	B	E ₂₅	C	B	B	B	B	B	B	B	B			
22	30	52	60	42	60	56	42	46	40	37	B	B	B	E ₃₀	E ₃₀	53	E ₁₄	B	41	35	26	B	29	42			
23	42	41	60	41	52	35	30	E ₁₂	37	15	E ₁₄	E ₂₁	E ₂₆	E ₁₉	E ₂₃	E ₁₅	17	22	E ₁₀	B	16	B	38	42			
24	40	92	36	45	47	37	53	38	39	32	34	31	28	25	20	26	30	16	33	20	31	16	49	44			
25	47	46	45	45	62	56	60	47	34	B	E ₂₁	21	25	20	B	E ₃₀	E ₂₉	B	38	38	42	41	42	41			
26	47	47	57	69	52	59	41	30	42	23	21	18	23	32	35	18	16	23	62	32	23	29	19	37			
27	60	21	15	21	26	50	42	40	46	41	34	35	35	23	25	29	31	19	B	B	16	B	30				
28	30	70	41	36	57	47	B	42	32	40	26	20	25	26	E ₃₁	E ₃₀	E ₂₀	E ₂₉	42	49	40	60	90	83			
29	47	59	60	44	37	69	41	60	B	57	B	B	35	B	B	B	B	44	32	B	88	105	40	60			
30	36	38	43	59	33	34	60	47	47	B	B	E ₃₀	E ₂₈	E ₁₅	E ₂₂	E ₂₃	33	51	E ₂₃	B	3	35	38	40			
31	37	36	106	63	60	62	44	B	B	37	B	B	E ₃₀	E ₂₂	E ₃₀	E ₂₇	E ₂₀	E ₁₇	16	B	B	34	28	38			
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
CNT	30	29	29	29	29	28	29	26	28	23	21	20	25	25	26	25	22	22	21	15	17	16	26	28			
MED	40	44	45	45	46	45	41	40	36	36	29	30	26	26	22	20	24	22	30	32	31	34	32	38			
UQ	45	52	60	60	57	56	53	45	42	38	33	32	33	32	32	30	31	33	37	40	42	42	40	42			
LQ	36	36	41	41	44	38	40	36	32	32	21	20	25	22	E ₂₃	15	16	17	18	23	26	28	27	30			

JUL. 1987

FES (0.1 MHz)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUL. 1987

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 4 MHz to 15 MHz in 20 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	9	8	8	8	13	14	11	13	10	8	9	9	9	7	3	8	8	8	9	8	8	9	8	B	
2	7	8	7	8	8	7	9		B	B	15	10	9	8	9	8	9	8	10	8	8	8	8	8	
3	9	13	16	18	9	8	8	8	13	11	9	10	8	8	8	8	8	7	8	9	8	10	10	9	
4	8	8	8	13	14	9	8	8	8	8	11	13	12	11	13	10	8	11	13	13	B	B	E S	8	
5	8	9	13	13	18	13	13	13	10	10	10	10	10	10	11	9	9	8	8	B	8	19	B	9	
6	10	8	16	15	14	14	15	16	11	9	9	9	9	9	8	8	8	13	B	B	B	B	B	9	
7	15	16	10	10	8	8	12	8	8	8	8	8	8	8	8	8	8	10	8	9			13	8	
8	8	9	9	10	13	13	15	15	12	10	11	20	10	15	12	19	10	B	B	B	B	B	12	8	
9	8	12	16	13	12	14	28	B	15	B	B	B	B	B	B	14	13	9	11	B	B	B	13	17	
10	8	9	12	13	14		18	21	15	14	14		15	21	24	25		13	B	B	19	13	13	8	
11	8	8	10	10	18	10	13	13	13	10	B	B	B	21	15	13	9	B	B	B	B	18	21	17	
12	9	8	10	10	10	9	9	14	10	13	14		30	29	20		B	B	B	B	B	B	B	8	
13	9	13	15	14	23	15	13	9	9	C	C	C	C	C	C	C	C	8	8	8	8	8	8	8	
14	8	8	13	14	10	8	8	8	8	9	14	14	10	13	8	8	8	3	8	8	B	B	8	B	
15	B	8	23	15	17	13	8	8	8	8	9	14	9	9	32	32	16	9	9	8	8	9	8	8	
16	8	B	19	B	18	B	18	B	20	B	B	B	B	B	B	B	B	B	14	C	8	8	8	9	
17	9	C	18	19	14	16		14	22	B	B	23	21	C	23	9	C	B	B	B	B	B	7	13	
18	25	23	B	B	B	15	25	13	14	15	B	B	20	15	21	15	B	B	B	18	B	B	15	8	
19	10	13	12	10	30		8	13	15	B	14	12	13	11	22	B	B	14	B	13	B	B	8	9	
20	8	10	B	18	21	18	13	15	13	9	14	13	11	13	10	10	9	9	11	B	8	B	8	13	
21	8	13	14	19	C	13	10	C	9	8	17	B	B	B	25	C	B	B	B	B	B	B	B	B	
22	9	9	8	16	15	17	18	14	13	18	B	B	B	30	30	14	14	B	18	15	15	B	8	9	
23	10	17	18	14	13	12	9	12	14	8	14	21	26	19	23	15	8	8	10	B	10	B	8	9	
24	16	16	24	20	14	8	8	10	10	10	18	15	15	15	10	8	8	10	15	10	13	8	8	8	
25	9	8	13	30	14	17	16	13	10		21	14	15	15	B	30	29	B	20	15	10	8	8	9	
26	18	14	18	20	13	14	9	8	8	8	10	13	14	8	14	12	10	18	11	15	13	15	10	9	
27	8	10	10	9	8	15	10	10	10	14	14	14	15	13	10	8	8	10	B	B	10	B	B	14	
28	8	8	8	9	15	10		15	11	9	1	12	14	17	31	30	20	29	14	14	10	15	19	8	
29	8	8	8	8	8	25	15	25	B	13	B	B	18	B	B	B	B	14	10	B	8	9	8	8	
30	8	8	19	10	13	10	13	11	9		B	B	30	28	15	22	23	14	13	23	B	B	12	8	8
31	8	24	18	13	11	13	13		B	B	19	B	B	30	22	30	27	20	17	13	B	B	13	13	8
	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	31	31	30	31	31	30	31	30	30	30	30	29	30	29	29	31	31	30	31	31	31	31	
MED	8	9	13	13	14	13	13	13	11	10	14	14	15	15	20	14	10	13	14	D B	15	19	9	9	
UQ	10	13	18	18	17	16	16	15	14	19		B	28	21	30	27	29	B	B	B	B	B	16	11	
LQ	8	8	10	10	11	10	9	10	10	9	10	12	10	10	10	8	8	9	10	10	8	10	8	8	

JUL. 1987

F-MIN (0.1 MHz)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUL. 1987

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 4 MHz to 15 MHz in 20 sec in automatic operation

Station	East										West													
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	A	A	A	A	240	180	200	210	210	180	A	225	A	A	A	A	A	B
2	A	A	A	A	E A 310	A	A	B	B	3	A	220	200	E A 240	A	195	A	A	A	A	A	A	A	A
3	A	A	A	A	A	E A 350	330	A	A	A	E A 260	230	225	210	210	195	230	A	A	A	A	A	A	A
4	A	A	A	A	A	A	A	E A 350	E A 320	230	E A 300	260	225	210	210	210	270	230	A	A	B	B	A	A
5	A	A	A	A	A	A	A	A	A	A	E A 275	225	230	210	200	195	220	220	A	B	A	A	B	A
6	A	A	A	A	A	A	A	A	A	E A 320	E A 270	225	200	200	210	200	225	210	B	B	B	B	B	A
7	A	A	A	A	A	A	A	A	E A 290	E A 270	240	220	205	200	200	220	200	230	A	A	B	B	A	A
8	A	A	A	A	A	A	A	A	E A 275	E A 260	E A 310	250	210	225	210	210	E A 300	B	B	B	B	B	A	A
9	A	A	A	A	A	A	A	B	A	B	B	B	B	B	B	225	250	E A 250	E A 255	B	B	B	A	A
10	A	A	A	A	A	B	A	A	A	A	A	B	250	245	220	E B 260	B	E B 280	B	B	A	A	A	A
11	A	A	A	A	A	A	A	A	A	A	B	B	B	220	220	190	200	B	B	B	B	B	A	A
12	A	A	A	A	A	A	A	A	A	A	A	B	E B 250	210	210	B	B	B	B	B	B	B	B	A
13	A	A	A	A	A	A	A	A	E A 300	C	C	C	C	C	C	C	C	A	A	A	A	A	A	A
14	A	A	A	A	A	A	E A 300	E A 280	245	E A 320	A	245	225	210	205	210	175	A	A	A	B	B	A	B
15	B	A	A	A	A	A	E A 380	E A 300	E A 290	A	255	250	210	230	E B 255	230	E A 260	E A 260	A	A	A	A	A	A
16	A	B	A	B	A	B	A	B	A	B	B	B	B	B	B	B	B	B	E B 250	C	A	A	A	A
17	A	C	A	A	A	A	B	A	A	B	B	A	E A 275	C	260	245	C	B	B	B	B	B	A	A
18	A	A	B	B	B	A	A	A	A	A	B	B	230	220	210	205	B	B	A	B	A	B	A	A
19	A	A	A	A	A	B	A	A	A	B	E A 275	220	220	205	220	B	B	A	B	A	B	B	A	A
20	A	A	B	A	A	A	A	A	A	A	A	250	230	225	220	210	210	200	A	225	B	A	B	A
21	A	A	A	A	C	A	A	C	E A 310	E A 295	240	B	B	B	225	C	B	B	B	B	B	B	B	B
22	A	A	A	A	A	A	A	A	A	A	B	B	B	E B 250	240	A	200	B	A	A	A	B	A	A
23	A	A	A	A	A	A	E A 340	E B 325	E B 280	225	255	220	210	225	225	200	210	E A 245	200		B	A	B	A
24	A	A	A	A	A	A	A	A	A	340	255	210	220	210	200	190	190	230	A	A	A	A	A	A
25	A	A	A	A	A	A	A	A	A	B	E B 280	240	245	245	B	E B 255	E B 270	B	A	A	A	A	A	A
26	A	A	A	A	A	A	A	E A 315	E A 310	E A 275	230	215	210	200	200	195	225	E A 260	A	E A 250	A	A	A	A
27	A	A	A	A	A	A	A	A	A	A	E A 275	240	E A 260	210	210	220	200	225	B	B	A	B	B	A
28	A	A	A	A	A	A	B	A	E A 275	E A 260	230	225	E A 250	220	E B 260	E B 300	E B 260	E B 270	A	A	A	A	A	A
29	A	A	A	A	A	A	A	A	B	A	B	B	A	B	B	B	B	E A 370	A	B	A	A	A	A
30	A	A	A	A	A	A	A	A	A	B	B	B	230	260	230	220	E B 260	E A 300	245	E A 250	B	B	A	A
31	A	A	A	A	A	A	A	B	B	A	B	B	255	255	250	240	E B 270	E B 290	230	B	B	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					1	1	4	5	10	10	17	19	24	25	25	24	20	16	6	1				
MED					E A 310	E A 350	E A 335	E A 315	E A 290	E A 272	U 242	225	220	215	210	205	U 212	U 228	U 220	E A 250				
UQ						E A 360	E A 325	E A 310	E A 320	E A 275	240	239	228	222	225	E E 265	E E 265	E A 250						
LQ						315	E A 300	E A 275	E A 260	240	220	210	210	210	195	200	226	225						

JUL. 1987

H⁺F (KM)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

AUG. 1987

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 4				MHz to 15				MHz in 20				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	A	A	A	A	X 41	X 46	X 51	0 X 54	0 X 51	0 X 46	X 50	X 41	36	B	A	A	A	A			
2	A	A	A	A	A	A	A	A	25	0 X 32	0 X 42	0 X 51	0 X 55	0 X 54	X 51	46	40	0 X 51	B	A	B	A	A	A			
3	A	A	A	A	A	A	A	A	B	34	X 46	0 X 48	X 55	X 46	B	X 62	X 56	X 66	X 64	A	A	A	A	A			
4	A	A	A	A	A	A	A	A	A	B	A	X 46	X 54	X 52	X 50	X 46	44	26	27	24	B	B	A	A			
5	A	A	A	A	A	A	A	B	B	A	B	B	B	B	B	B	B	0 X 40	A	A	A	A	A	A			
6	A	A	A	A	A	A	A	A	A	35	0 X 49	B	B	B	0 X 49	0 X 50	B	0 X 39	A	B	B	B	A	A			
7	A	A	A	A	A	A	A	A	A	X 35	X 42	X 51	X 51	X 56	0 X 56	0 X 53	44	0 X 33	24	B	A	A	A	A			
8	A	A	A	A	A	A	A	A	A	A	0 X 46	0 X 54	X 60	X 55	X 53	0 X 55	0 X 46	51	B	B	A	B	A	A			
9	A	A	A	A	A	A	A	A	A	A	0 X 46	B	0 X 51	B	0 X 52	X 56	X 60	B	B	B	B	A	A	A			
10	A	A	A	A	A	A	A	30	31	0 X 44	X 48	X 58	0 X 50	X 52	B	B	0 X 52	0 X 36	A	B	A	A	A	A			
11	A	A	A	A	A	A	A	0 X 42	39	0 X 49	45	50	X 51	62	65	0 X 57	0 X 49	0 X 46	28	28	A	A	A	A			
12	A	A	A	A	B	A	A	A	A	B	B	B	B	0 X 51	0 X 59	X 51	0 X 58	0 X 66	0 X 56	A	A	A	A	A			
13	A	A	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	0 X 46	B	B	A	A	A			
14	A	A	A	A	B	B	A	A	B	B	A	B	0 X 49	B	B	0 X 51	0 X 56	B	X 51	0 X 37	A	B	A	A			
15	B	B	A	B	B	A	A	A	B	B	B	B	B	B	B	B	B	B	0 X 45	B	A	B	A	A			
16	A	A	A	A	A	A	B	A	B	3	B	B	B	B	3	B	B	0 X 52	B	B	B	A	A	A			
17	A	A	A	B	A	A	A	A	A	0 X 33	B	B	B	B	B	B	X 46	X 49	41	A	A	A	A	A			
18	A	A	A	A	A	A	A	A	B	B	X 45	X 55	X 53	60	0 X 55	0 X 64	X 53	0 X 50	X 31	0 X 40	29	B	A	A			
19	A	A	A	A	A	A	A	A	A	A	0 X 46	0 X 52	0 X 58	65	X 59	X 50	X 52	X 55	0 X 59	B	B	A	A	A			
20	A	A	A	A	A	A	A	A	B	B	B	B	0 X 54	61	62	0 X 62	X 60	0 X 56	B	X 42	0 X 24	A	B	A			
21	A	A	A	A	A	A	B	A	A	0 X 39	B	B	0 X 58	60	60	X 67	0 X 56	0 X 46	X 39	33	19	B	A	A			
22	B	A	A	A	A	A	B	A	34	0 X 46	X 56	60	56	X 65	X 56	59	X 59	0 X 49	0 X 51	0 X 38	33	A	A	A			
23	A	A	A	A	A	A	A	B	35	45	X 49	X 55	0 X 59	B	61	60	70	B	46	0 X 42	A	A	A	A			
24	A	A	A	A	A	A	A	A	X 40	X 46	X 54	X 58	X 66	X 63	X 62	X 67	X 70	B	X 65	B	A	A	A	A			
25	A	A	B	A	A	A	60	59	57	X 46	X 47	X 54	B	B	B	B	0 X 86	A	A	B	A	A	A	A			
26	A	B	A	A	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A	A			
27	A	A	A	A	A	B	A	A	A	B	B	B	B	B	B	B	B	B	0 X 38	A	B	A	A	A			
28	A	A	A	A	A	A	A	A	A	0 X 41	40	B	B	X 62	X 70	B	B	0 X 46	40	A	A	A	A	A			
29	A	A	B	A	A	B	A	A	X 35	X 39	0 X 41	B	B	0 X 46	0 X 51	51	0 X 47	0 X 44	X 40	X 28	A	A	A	A			
30	A	A	A	A	A	A	A	A	0 X 42	X 42	0 X 38	B	B	0 X 37	0 X 46	0 X 42	X 44	B	0 X 38	31	A	A	A	A			
31	A	A	A	A	42	A	A	B	B	B	B	B	B	B	B	B	X 52	0 X 52	A	A	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					1		1	3	9	15	18	14	17	13	19	20	23	20	21	10	4						
MED					42		60	42	35	X 41	X 46	X 53	X 54	X 56	X 56	X 54	X 52	0 X 43	X 41	X 35	26						
UQ								50	40	X 46	X 48	X 55	X 58	62	60	61	X 58	0 X 52	0 X 51	0 X 40	31						
LQ								36	34	X 36	X 42	X 50	X 51	0 X 52	0 X 51	X 50	X 46	0 X 40	38	28	22						

AUG. 1987

FXI (0.1 MHz)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

AUG. 1937

F0F2 (0.1 MHz)

45° E Mean Time (G.M.T. + 3 h)

StationSYOWA STATION		Lat. 69° 00.4' S				Long. 39° 35.4' E				Sweep 4		MHz to 15		MHz in 20		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	A	A	A	A	35	40	45	48	45	40	44	35	F 30	B	A	A	A	A
2	A	A	A	A	A	A	A	A	F 19	26	36	45	49	U R 48	45	F 40	F 30	45	B	A	B	A	A	A
3	A	A	A	A	A	A	A	A	B	F 28	40	42	49	40	B	56	50	60	58	A	A	A	A	A
4	A	A	A	A	A	A	A	A	A	B	A	40	48	46	44	40	F 38	F 21	F 20	F 18	B	B	A	A
5	A	A	A	A	A	A	A	B	B	A	B	B	B	B	B	B	B	34	A	A	A	A	A	A
6	A	A	A	A	A	A	A	A	A	F 29	43	B	B	B	43	44	B	33	A	B	B	B	A	A
7	A	A	A	A	A	A	A	A	A	29	36	45	45	50	50	U S 47	F 38	27	F 18	B	A	A	A	A
8	A	A	A	A	A	A	A	A	A	A	40	U R 48	54	49	47	U R 49	40	F 42	B	B	A	B	A	A
9	A	A	A	A	A	A	A	A	A	A	40	B	45	B	R 46	50	54	B	B	B	B	A	A	A
10	A	A	A	A	A	A	A	F 24	25	38	42	52	44	46	B	B	46	30	A	B	A	A	A	A
11	A	A	A	A	A	A	A	36	F 33	43	F 39	F 43	45	56	59	51	43	U R 40	F 22	F 22	A	A	A	A
12	A	A	A	A	B	A	A	A	A	B	B	B	B	45	53	45	52	60	U R 50	A	A	A	A	A
13	A	A	A	A	A	A	A	A	A	B	B	B	B	B	9	B	B	B	U R 40	B	B	A	A	A
14	A	A	A	A	B	B	A	A	9	9	A	B	43	B	9	45	U R 50	B	45	31	A	B	A	A
15	B	B	A	B	B	A	A	A	B	B	B	B	B	B	B	B	B	B	R 39	B	A	B	A	A
16	A	A	A	A	A	A	B	A	B	B	B	B	B	9	9	B	9	B	R 46	B	9	B	A	A
17	A	A	A	B	A	A	A	A	A	32	B	B	B	9	9	B	40	43	F 35	A	A	A	A	A
18	A	A	A	A	A	A	A	A	B	B	39	49	47	54	U R 49	U R 58	47	44	25	34	20	B	A	A
19	A	A	A	A	A	A	A	A	A	A	40	R 46	R 52	59	53	44	46	49	53	B	9	A	A	A
20	A	A	A	A	A	A	A	A	B	B	B	B	48	55	56	56	54	U S 50	B	36	18	A	B	A
21	A	A	A	A	A	A	B	A	A	33	B	B	52	54	54	61	U S 50	40	33	27	F 13	B	A	A
22	B	A	A	A	A	A	B	A	F 38	40	50	F 50	F 50	59	50	F 53	53	43	45	32	F 27	A	A	A
23	A	A	A	A	A	A	A	B	F 28	F 37	43	49	53	B	55	54	60	B	F 40	36	A	A	A	A
24	A	A	A	A	A	A	A	A	34	40	48	52	60	57	56	61	64	B	59	B	A	A	A	A
25	A	A	B	A	A	A	F 54	F 53	F 50	40	41	48	B	B	B	B	D S 30	A	A	B	A	A	A	A
26	A	B	A	A	A	B	B	A	B	9	B	B	B	B	B	B	B	B	B	A	A	A	A	A
27	A	A	A	A	A	B	A	A	A	B	B	B	B	B	9	B	B	B	32	A	B	A	A	A
28	A	A	A	A	A	A	A	A	A	35	34	B	B	56	64	B	B	40	F 34	A	A	A	A	A
29	A	A	B	A	A	B	A	A	29	33	35	B	B	40	45	45	41	38	34	22	A	A	A	A
30	A	A	A	A	A	A	A	A	36	36	32	B	B	31	40	36	38	B	32	F 25	A	A	A	A
31	A	A	A	A	F 34	A	A	B	B	B	B	B	B	B	3	B	46	46	A	A	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					1		1	3	9	15	18	14	17	18	19	20	23	20	21	10	4			
MED					F 34		F 54	F 36	F 33	35	40	47	48	50	50	48	46	41	35	29	F 19			
UQ								44	F 36	39	42	49	52	56	54	55	52	46	45	34	F 24			
LQ								30	F 28	30	36	43	45	46	45	44	40	34	32	F 22	16			

AUG. 1937

F0F2 (0.1 MHz)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

AUG. 1987

FES (0.1 MHz)

45° E Mean Time (G.M.T. + 3 h)

StationSYOWA STATION				Lat. 69° 00.4' S , Long. 39° 35.4' E				Sweep 4				MHz to 15				MHz in 20				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	48	39	66	38	80	52	60	69	33	40	33	36	17	E 25	E 24	E 31	E 17	16	E 15	B	26	25	26	36			
2	35	37	41	43	33	38	37	41	34	36	E 23	E 32	E 28	E 25	17	E 19	E 18	32	B	40	B	29	25	27			
3	28	28	32	105	47	45	57	47	B	33	E 18	25	25	E 26	B	E 29	33	31	42	42	52	45	45	43			
4	60	41	70	70	52	45	41	36	35	B	35	E 19	35	35	45	16	36	11	15	28	B	B	36	45			
5	47	70	51	42	70	70	42	B	B	34	B	B	B	B	B	B	B	E 24	27	31	21	40	35	45			
6	30	45	39	42	37	37	38	52	52	38	E 28	B	B	B	E 30	E 30	B	E 19	30	B	B	B	34	40			
7	42	45	42	47	45	40	51	34	27	27	35	18	E 20	E 20	E 29	E 23	17	26	16	B	22	23	25	28			
8	30	31	36	58	36	46	43	44	43	50	41	34	35	21	E 25	E 38	E 19	E 15	B	B	42	B	45	43			
9	58	41	90	58	51	59	45	60	42	44	32	B	E 32	B	E 30	E 18	20	B	B	B	B	28	31	41			
10	40	90	39	45	45	37	45	31	16	28	11	22	60	36	B	B	E 31	26	27	B	34	26	31	32			
11	28	40	35	32	36	103	45	31	38	34	28	32	26	23	29	38	38	35	31	29	31	20	35	26			
12	46	43	41	42	B	42	60	70	48	B	B	B	B	E 24	E 21	22	16	E 16	36	43	41	35	42	39			
13	47	92	42	42	41	54	32	36	39	B	B	B	B	B	B	B	B	3	E 30	B	B	33	39	41			
14	45	51	45	41	B	B	55	49	B	B	35	B	E 28	B	B	E 25	24	B	E 20	E 13	27	B	42	40			
15	B	B	47	B	B	52	45	41	B	B	B	B	B	B	B	B	B	B	E 21	B	25	B	39	40			
16	41	41	46	72	46	35	B	47	B	B	B	B	B	B	B	B	B	B	E 30	B	B	B	26	26			
17	42	45	41	B	43	44	42	31	36	E 23	B	B	B	B	B	B	E 20	30	E 14	37	30	37	31	45			
18	36	45	46	47	41	45	43	50	B	B	30	21	E 24	E 30	E 30	E 30	E 19	26	16	26	11	B	18	37			
19	35	30	32	30	120	52	55	43	45	57	E 23	E 34	E 30	E 25	24	E 21	21	21	E 30	B	17	32	40				
20	66	47	42	45	60	39	52	50	B	B	B	B	E 25	22	25	E 30	E 19	E 14	B	E 13	26	31	B	31			
21	27	33	40	36	36	32	B	34	27	41	B	B	E 30	E 24	E 20	E 14	20	E 18	E 19	E 15	E 9	B	35	32			
22	B	36	46	48	42	26	B	36	30	41	E 24	33	33	27	26	30	33	30	31	38	42	37	71	45			
23	39	39	46	42	32	52	60	B	42	27	17	23	E 30	B	34	34	32	B	29	32	45	40	45	71			
24	71	41	37	43	47	46	68	50	35	23	22	23	21	22	26	E 22	E 30	B	32	B	28	45	46	45			
25	41	43	B	61	37	31	12	21	15	18	23	E 23	B	B	B	B	E 40	51	38	B	46	92	80	52			
26	71	B	90	42	71	B	B	54	B	B	B	B	B	B	B	B	B	B	B	46	36	44	43	90			
27	48	40	72	45	74	B	60	45	37	B	B	B	B	B	B	B	B	B	E 20	46	B	46	47	46			
28	47	45	45	93	42	35	45	52	42	E 28	27	B	B	26	27	B	B	E 29	E 23	40	35	37	40	105			
29	92	60	B	37	32	B	36	44	22	18	E 30	B	B	26	E 24	E 21	E 22	E 26	33	E 9	15	40	91	47			
30	39	38	46	71	38	48	48	39	29	E 20	E 35	B	B	E 28	E 30	E 30	E 34	B	E 19	31	45	40	27	41			
31	60	70	42	40	37	42	32	B	B	B	B	B	B	B	B	B	E 23	E 35	36	28	45	47	42	47			
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
CNT	29	29	29	29	28	27	27	28	22	20	20	14	17	18	19	20	23	21	26	19	23	23	30	31			
MED	42	41	42	43	42	45	45	44	36	34	25	23	E 28	23	E 26	E 27	E 22	21	22	31	31	37	38	41			
UQ	48	45	46	58	52	52	55	52	42	40	33	32	E 32	26	30	E 30	28	30	31	40	42	42	45	45			
LQ	36	39	40	42	37	38	42	36	29	22	17	20	E 25	E 25	29	E 21	E 19	E 18	E 19	27	26	28	31	36			

AUG. 1987

FES (0.1 MHz)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

AUG. 1987

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 4 MHz to 15 MHz in 20 sec in automatic operation

Station	Lat.								Long.								Sweep				W12 to				W12 to				Sec				Station			
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	9	7	11	10	9	19	11	10	14	20	10	13	14	25	24	31	17	13	15	B	8	8	13	8												
2	7	8	14	13	14	9	19	9	9	15	23	32	28	25	14	19	18	8	B	23	B	18	8	9												
3	8	8	8	8	13	18	9	10	B	14	18	14	13	26	B	29	14	13	18	13	9	8	9	8												
4	13	8	8	8	13	13	8	9	8	B	22	19	10	14	14	13	9	8	11	13	B	B	8	9												
5	8	8	8	8	15	18	14	B	B	14	B	B	B	B	B	B	B	24	19	12	9	8	8	8												
6	8	9	9	8	9	10	11	19	13	13	28	B	B	B	30	30	B	19	18	B	3	B	9	8												
7	8	15	22	10	19	18	11	11	10	9	14	15	20	20	29	23	14	13	13	B	15	11	10	13												
8	9	8	8	8	10	18	18	10	14	15	15	24	15	15	25	38	19	15	B	B	15	B	8	14												
9	9	8	8	18	33	16	11	15	23	19	24	B	32	B	30	18	13	B	B	B	3	13	8	8												
10	8	8	8	20	19	11	10	9	9	9	15	15	19	19	B	B	31	19	16	B	14	10	9	9												
11	8	8	8	8	13	9	14	13	8	10	14	15	15	18	15	13	8	8	8	8	8	8	15	8												
12	10	13	8	17	B	14	19	19	25	B	B	B	B	24	21	15	10	16	14	8	8	8	8	13												
13	18	43	30	14	20	9	21	14	10	B	B	B	B	B	B	B	B	B	30	B	11	9	8													
14	8	13	19	15	B	B	14	13	B	B	21	B	28	B	B	25	13	B	20	13	10	B	8	26												
15	B	B	25	B	B	15	12	13	B	B	B	B	B	B	B	B	B	B	21	21	B	13	B	20												
16	14	27	13	20	25	19	B	19	B	B	B	B	B	B	B	B	B	B	30	B	B	B	9	8												
17	8	13	13	B	14	15	14	13	11	23	B	B	B	B	B	B	20	9	14	8	9	8	8	8												
18	8	13	22	14	14	11	15	9	B	B	15	21	24	30	30	30	19	9	8	8	8	B	9	8												
19	8	8	9	8	15	14	14	13	15	13	23	34	30	25	19	21	14	14	30	B	B	9	10	10												
20	10	12	15	14	12	19	13	14	B	B	B	B	25	19	20	30	19	14	B	13	14	15	B	8												
21	8	8	13	17	9	9	B	14	19	9	B	B	30	24	20	14	14	18	19	15	9	B	8	14												
22	B	10	13	13	13	13	B	8	14	24	24	15	13	15	15	10	10	8	8	8	8	10	12	13												
23	9	9	10	14	14	14	10	B	15	13	13	23	30	B	20	14	19	B	23	18	B	8	19	8												
24	8	15	12	11	19	18	20	14	14	14	15	14	18	15	17	22	30	B	21	B	10	8	8	8												
25	9	13	B	8	13	13	8	8	10	13	15	22	B	B	B	B	40	14	9	B	9	8	15	9												
26	14	B	13	8	14	B	B	13	B	B	B	B	B	B	B	B	B	B	B	13	8	8	16	20												
27	18	24	9	17	9	B	14	15	14	B	B	B	B	B	B	B	B	B	20	8	B	9	9	10												
28	9	10	10	15	14	14	14	14	11	28	19	B	B	22	15	B	B	29	23	8	9	9	12	24												
29	9	15	B	14	11	B	9	13	15	9	30	B	B	21	24	21	22	26	8	9	8	8	8	15												
30	10	8	9	8	13	15	15	10	14	20	35	B	B	28	30	30	34	B	19	8	8	9	8	8												
31	9	8	8	8	7	14	11	B	B	B	B	B	B	B	B	B	23	35	18	9	9	12	13	8												
	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	9	10	11	13	14	15	14	13	14	20	24	B	30	26	30	30	19	19	19	13	9	10	9	9												
UQ	10	14	14	16	19	18	18	14	B	B	B	B	B	B	B	B	40	B	26	B	15	18	12	13												
LQ	8	8	8	8	12	13	11	10	11	13	15	20	20	20	20	20	14	13	14	8	8	8	8	8												

AUG. 1987

F-MIN (0.1 MHz)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

AUG. 1987

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 4 MHz to 15 MHz in 20 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	A	A	A	A	E A 300	E A 260	215	230	220	E B 270	225	225	240	B	A	A	A	A	
2	A	A	A	A	A	A	A	A	E A 370	E A 240	E A 250	E A 260	220	200	210	200	E B 230	E A 240	B	A	B	A	A	A	
3	A	A	A	A	A	A	A	A	B	E A 275	230	220	210	220	B	250	250	265	255	A	A	A	A	A	
4	A	A	A	A	A	A	A	A	A	B	A	A	230	205	200	210	205	200	E A 250	E A 250	E A 255	B	B	A	A
5	A	A	A	A	A	A	A	B	B	A	B	B	B	B	B	B	B	E B 260	A	A	A	A	A	A	
6	A	A	A	A	A	A	A	A	A	E A 305	E A 260	B	B	B	220	230	B	E B 250	A	B	B	B	A	A	
7	A	A	A	A	A	A	A	A	A	240	230	220	210	230	230	210	200	E A 255	210	B	A	A	A	A	
8	A	A	A	A	A	A	A	A	A	A	E A 280	250	230	205	205	E B 245	E B 250	230	B	B	A	B	A	A	
9	A	A	A	A	A	A	A	A	A	A	E A 270	B	245	B	240	210	225	B	B	B	B	A	A	A	
10	A	A	A	A	A	A	A	A	265	250	225	210	215	220	B	B	225	220	A	B	A	A	A	A	
11	A	A	A	A	A	A	A	E A 310	E A 280	250	220	220	220	210	225	230	195	225	220	250	A	A	A	A	
12	A	A	A	A	B	A	A	A	A	B	B	B	B	200	225	220	250	250	E A 295	A	A	A	A	A	
13	A	A	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	E B 250	B	B	A	A	A	
14	A	A	A	A	B	B	A	A	B	B	A	B	E B 275	B	B	250	210	B	245	E B 280	A	B	A	A	
15	B	B	A	B	B	A	A	A	B	B	B	B	B	B	B	B	B	B	E B 270	B	A	B	A	A	
16	A	A	A	A	A	A	B	A	B	B	B	B	B	B	B	B	B	B	E B 275	B	B	B	A	A	
17	A	A	A	B	A	A	A	A	A	E B 280	B	B	B	B	B	B	220	210	260	A	A	A	A	A	
18	A	A	A	A	A	A	A	A	B	B	230	210	225	225	220	220	200	200	E A 260	225	240	B	A	A	
19	A	A	A	A	A	A	A	A	A	A	E B 260	E B 260	220	230	225	210	220	E A 250	230	B	B	A	A	A	
20	A	A	A	A	A	A	A	A	B	B	B	B	250	230	220	225	230	205	B	210	E A 250	A	B	A	
21	A	A	A	A	A	A	B	A	A	E A 260	B	B	225	225	225	225	200	200	250	230	250	B	A	A	
22	B	A	A	A	A	A	B	A	E A 300	E A 275	E A 250	200	220	225	210	220	200	205	200	250	245	A	A	A	
23	A	A	A	A	A	A	A	B	310	255	220	210	E B 260	B	225	225	210	B	E A 280	E A 300	A	A	A	A	
24	A	A	A	A	A	A	A	A	E A 300	240	225	215	220	215	240	260	220	B	230	B	A	A	A	A	
25	A	A	B	A	A	A	300	260	240	180	210	E B 250	B	B	B	B	E B 310	A	A	B	A	A	A	A	
26	A	B	A	A	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A	A	
27	A	A	A	A	A	B	A	A	A	B	B	B	B	B	B	B	B	B	E B 275	A	B	A	A	A	
28	A	A	A	A	A	A	A	A	A	E B 300	220	B	B	230	205	B	B	240	240	A	A	A	A	A	
29	A	A	B	A	A	B	A	A	E A 300	E B 260	E B 300	B	B	225	220	225	230	E B 250	210	245	A	A	A	A	
30	A	A	A	A	A	A	A	A	E B 290	E B 275	E B 250	B	B	E B 280	E B 270	E B 260	E B 280	B	E B 255	E A 300	A	A	A	A	
31	A	A	A	A	210	A	A	B	B	B	B	B	B	B	B	B	250	E B 270	A	A	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					1		1	2	9	15	18	14	17	18	19	20	23	20	21	10	4				
MED					210		300	272	E A 300	E B 260	U 225	215	220	224	220	222	218	U 221	U 230	U 234	245				
UQ									E A 300	E B 275	E A 260	E B 250	228	230	225	238	232	E B 250	E B 260	E A 280	250				
LQ									E B 280	242	225	210	215	210	215	215	205	212	225	230	242				

AUG. 1987

H'F (KM)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

SEP. 1987

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 4 MHz to 15 MHz in 20 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	B	B	A	A	A	A	B	B	B	B	B	B	B	B	B	A	B	A	A	A	A							
2	A	B	A	B	A	A	B	B	A	B	B	B	B	B	B	B	B	B	B	20	B	A	A	A							
3	A	A	A	A	A	A	25	35	38	0	46	0	47	B	0	57	59	61	57	52	43	43	43	30	22	B	A				
4	B	A	A	A	A	A	A	B	0	44	0	49	50	60	72	68	65	65	63	B	0	51	49	A	A	A	A				
5	A	A	A	A	A	A	A	A	A	A	B	B	0	56	59	59	60	64	55	0	50	0	43	27	B	A	A				
6	A	A	A	A	A	A	A	A	0	42	0	44	43	53	55	56	0	62	0	61	B	B	0	46	38	0	38	A	A	A	
7	A	A	A	A	A	A	30	39	42	46	50	0	55	0	62	69	66	63	55	66	0	56	69	S	A	A	A	A			
8	A	A	A	B	A	A	B	B	36	0	38	0	43	45	0	46	0	48	0	54	B	0	48	0	48	45	42	B	B	B	A
9	A	A	A	A	A	A	A	B	A	0	45	50	B	B	79	B	0	66	58	60	54	41	25	25	19	A	A	A	A	A	
10	A	A	A	A	30	43	A	41	45	54	58	64	70	66	69	71	67	70	A	A	A	A	A	A	A	A	A	A	A	A	
11	A	A	A	A	B	A	A	A	B	0	38	B	0	47	B	B	0	71	73	0	53	0	52	47	46	A	A	A	A	A	
12	A	B	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	0	56	0	51	B	26	B	A	A	A	A	A	A	
13	A	B	B	A	A	B	A	B	A	B	B	0	42	0	48	0	47	0	46	0	51	0	50	0	51	A	A	A	B	A	A
14	A	A	A	A	A	A	B	B	A	3	B	B	3	B	B	0	46	0	50	0	50	0	41	B	A	A	A	A	A	A	
15	B	A	A	B	B	A	A	A	B	B	B	0	41	B	B	B	B	B	B	B	B	B	42	A	A	A	A	A	A	A	
16	A	A	A	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	35	A	A	A	A	A	A	A	A	
17	A	B	A	A	B	A	A	A	A	B	B	B	0	52	B	B	B	68	62	B	28	A	A	A	A	A	A	A	A	A	
18	B	B	A	B	A	B	A	A	B	0	47	B	B	B	B	B	B	0	53	0	55	B	0	38	B	A	B	A	B	B	
19	A	A	A	A	A	A	A	44	48	0	52	58	63	67	66	69	65	70	70	56	A	36	34	30	18	A	A	A	A	A	
20	13	16	A	22	F	33	34	43	54	65	66	79	82	76	80	86	95	80	70	52	42	A	A	A	A	A	A	A	A	A	
21	A	A	A	A	A	A	A	A	A	43	0	46	0	51	0	52	58	53	60	63	69	60	44	0	41	30	A	A	A	A	A
22	A	A	A	A	A	A	A	B	B	B	B	B	B	0	55	0	56	56	59	0	54	0	51	42	A	A	A	A	A	A	
23	A	A	B	A	A	A	B	A	A	B	B	B	B	B	0	41	0	47	0	48	0	44	41	35	22	A	A	A	A	A	A
24	A	A	A	A	A	0	50	A	A	A	A	H	54	59	54	60	64	58	58	57	56	55	40	30	A	A	A	A	A	A	
25	A	A	A	A	A	39	A	A	A	B	B	B	B	B	B	0	50	B	B	37	A	A	A	A	A	A	A	A	A	A	A
26	B	A	A	A	A	A	B	A	A	A	0	41	B	B	B	B	B	0	38	B	40	40	35	A	A	A	A	A	A	A	
27	A	A	A	A	A	A	44	37	0	42	43	0	50	0	52	0	50	55	55	61	59	50	50	46	39	A	A	A	A	A	
28	A	A	A	A	A	A	A	A	A	41	0	48	0	47	0	47	0	45	0	50	B	B	0	40	36	28	A	A	A	A	A
29	A	A	A	A	A	A	B	B	B	0	39	0	41	0	41	0	42	B	B	B	0	43	A	A	A	A	A	A	A	A	A
30	A	B	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	B	A	A	A	A	A	A	
31																															
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23							
CNT	1	1		1	1	4	4	6	9	15	15	15	16	16	18	17	20	20	19	21	13	5	3	1							
MED	18	16		22	30	36	32	40	42	0	46	50	52	0	56	58	60	61	58	53	50	42	36	30	30	18					
UQ						41	39	43	45	0	48	50	58	64	67	66	65	64	61	56	46	39	34	30							
LQ						32	28	37	42	0	42	0	44	0	46	0	49	54	0	54	57	0	51	0	49	36	28	25	24		

SEP. 1987

FXI (0.1 MHz)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

SEP. 1987

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 4 MHz to 15 MHz in 20 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	B	B	A	A	A	A	B	B	B	B	B	B	B	B	B	A	B	A	A	A	A
2	A	B	A	B	A	A	B	B	A	B	B	B	B	B	B	B	B	B	B	F 14	B	A	A	A
3	A	A	A	A	A	A	F 18	29	32	40	41	B	51	53	55	51	46	37	37	37	24	16	B	A
4	B	A	A	A	A	A	A	B	38	43	44	54	66	62	F 59	F 59	F 56	B	45	43	A	A	A	A
5	A	A	A	A	A	A	A	A	A	A	B	B	R 50	53	53	54	58	49	44	37	21	B	A	A
6	A	A	A	A	A	A	A	A	36	38	38	47	49	50	56	55	B	B	40	32	32	A	A	A
7	A	A	A	A	A	A	24	33	36	40	44	U R 49	56	63	60	57	59	60	50	F 63	S	A	A	A
8	A	A	A	B	A	A	B	B	F 30	32	37	39	H 40	42	48	B	42	42	39	F 34	B	B	B	A
9	A	A	A	A	A	A	A	B	A	40	44	B	B	73	B	60	52	54	48	35	F 19	F 19	F 13	A
10	A	A	A	A	F 23	37	A	F 35	39	43	52	58	64	60	63	65	61	B	A	A	A	A	A	A
11	A	A	A	A	B	A	A	A	S	32	B	41	B	B	65	67	47	46	41	40	A	A	A	A
12	A	B	A	A	A	A	A	A	B	B	B	B	B	B	B	B	50	45	B	F 19	B	A	A	A
13	A	B	B	A	A	B	A	B	A	B	B	36	H 42	41	40	45	44	45	A	A	A	B	A	A
14	A	A	A	A	A	A	B	B	A	B	B	B	B	B	B	40	44	44	35	B	A	A	A	A
15	B	A	A	B	B	A	A	A	B	B	B	35	B	B	B	B	B	B	B	36	A	A	A	A
16	A	A	A	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	F 29	A	A	A	A
17	A	B	A	A	B	A	A	A	A	B	B	B	H 46	B	B	B	62	56	B	F 22	A	A	A	A
18	B	B	A	B	A	B	A	A	B	41	B	B	B	B	B	B	B	52	49	B	32	B	A	B
19	A	A	A	A	A	A	A	F 38	42	U S 46	52	57	61	60	63	59	64	64	50	A	30	28	F 22	F 12
20	F 12	F	A	F 15	F	F	F 28	37	48	59	60	73	76	70	74	80	89	74	F 64	F 46	F 35	A	A	A
21	A	A	A	A	A	A	A	A	A	37	40	45	46	52	52	54	57	63	54	36	35	23	A	A
22	A	A	A	A	A	A	A	B	B	B	B	B	B	49	50	50	53	48	45	36	A	A	A	A
23	A	A	B	A	A	A	B	A	A	B	B	B	B	B	35	41	42	38	35	29	16	A	A	A
24	A	A	A	A	A	24	A	A	A	A	H 44	48	53	48	54	58	52	52	51	50	F 46	34	F 24	A
25	A	A	A	A	A	F 33	A	A	A	B	B	B	B	B	44	B	B	31	A	A	A	A	A	A
26	B	A	A	A	A	A	B	A	A	A	35	B	B	B	B	B	32	B	34	F 34	F 29	A	A	A
27	A	A	A	A	A	A	F 38	31	36	37	44	46	U R 44	49	49	55	53	44	44	F 40	F 33	A	A	A
28	A	A	A	A	A	A	A	A	A	35	42	41	41	39	44	B	B	B	34	30	F	A	A	A
29	A	A	A	A	A	A	B	B	B	33	E G 35	35	36	B	B	B	B	37	A	A	A	A	A	A
30	A	B	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	B	A	A
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	1			1	1	3	4	6	9	15	15	15	16	16	13	17	20	20	19	21	12	5	3	1
MED	F 12			F 15	F 23	33	F 26	34	36	40	44	46	50	52	54	55	52	47	44	F 36	F 31	F 23	F 22	F 12
UQ						35	F 33	F 37	39	42	44	52	58	61	60	59	58	55	50	40	34	28	23	
LQ						28	21	31	36	36	39	40	43	48	48	51	45	43	38	F 30	F 22	F 19	F 18	

SEP. 1987

F0F2 (0.1 MHz)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

SEP. 1987

FES (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 4				MHz to 15				MHz in 20				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	58	78	41	B	B	41	38	44	42	B	B	B	B	B	9	B	B	B	42	B	34	42	40	40							
2	70	B	45	B	45	35	B	B	44	B	B	B	B	B	9	B	B	B	B	E 19	B	30	37	30							
3	34	41	35	30	34	38	22	23	22	20	26	B	E 40	E 26	23	21	E 21	E 19	E 18	E 19	E 13	E 13	B	27							
4	B	35	25	29	40	36	46	B	40	E 9	E 21	26	25	25	28	26	E 21	B	28	20	20	31	31	41							
5	56	45	90	60	55	47	52	39	75	37	B	B	E 40	E 30	E 15	E 35	E 30	E 21	E 19	E 21	E 15	B	33	34							
6	42	73	71	45	70	42	56	44	35	28	25	27	27	23	E 25	E 30	B	9	E 21	E 13	29	40	45	44							
7	45	47	55	45	33	33	29	14	41	33	22	24	24	E 32	E 26	E 29	31	26	32	27	E 17	32	29	32							
8	39	92	42	B	33	46	B	B	34	23	23	E 24	E 25	E 26	E 30	B	E 30	E 24	E 18	E 8	B	B	B	29							
9	37	41	45	35	59	42	47	B	43	E 25	22	B	B	E 51	B	E 25	E 29	E 22	E 15	E 13	E 18	E 12	12	28							
10	35	35	40	41	35	22	39	26	21	32	22	E 30	E 28	27	22	29	23	B	52	53	46	43	41	90							
11	56	42	50	42	B	35	37	71	B	E 28	B	26	B	9	E 54	E 24	E 24	30	26	31	35	58	50	103							
12	70	B	35	69	47	42	40	44	B	B	6	B	B	B	B	B	25	E 24	B	26	B	45	80	45							
13	43	B	B	41	33	B	36	B	33	B	B	E 30	E 29	E 29	E 26	25	27	E 25	34	37	26	B	28	35							
14	35	35	78	90	65	42	B	B	45	B	B	B	B	B	B	E 30	E 29	25	E 21	B	27	20	42	75							
15	B	36	35	B	B	48	46	40	B	B	B	E 31	B	B	B	B	B	B	B	E 10	42	46	43	43							
16	71	41	65	B	B	B	B	36	B	B	B	B	B	B	B	B	B	B	B	E 20	19	40	31	40							
17	45	B	42	41	B	41	42	35	38	B	B	B	E 30	B	9	B	E 23	E 24	B	E 15	30	47	46	40							
18	B	B	42	B	42	B	51	40	B	E 25	B	B	B	B	B	B	B	E 30	E 24	B	E 18	B	22	B							
19	24	35	39	45	45	102	40	31	21	22	24	25	26	42	30	26	25	26	26	31	E 12	14	26	E 9							
20	33	34	27	18	22	12	10	16	20	25	26	E 30	30	24	25	25	22	21	18	E 13	22	60	58	46							
21	55	92	39	41	33	55	45	49	37	31	26	32	31	27	26	26	24	23	E 24	E 12	13	23	29	39							
22	41	37	35	45	34	45	59	B	B	B	B	B	B	E 29	E 29	E 25	E 28	E 24	E 22	21	36	42	47	43							
23	45	82	B	42	45	43	B	43	41	B	B	B	B	B	E 29	E 24	33	26	E 18	14	13	29	20	30							
24	41	34	34	30	30	27	59	43	65	44	35	30	32	32	33	30	26	20	30	22	20	E 8	12	21							
25	25	32	32	42	45	30	60	40	37	B	B	B	B	B	B	B	B	33	78	60	52	60	69	58							
26	B	60	71	41	40	35	B	72	42	73	E 30	B	B	B	B	B	E 24	B	E 24	41	31	59	47	32							
27	35	37	41	42	37	35	26	19	20	29	30	28	36	33	38	35	34	22	27	16	30	32	59	47							
28	66	42	40	42	70	48	44	45	37	25	23	23	26	25	30	B	B	B	E 19	19	35	43	42	38							
29	76	81	71	44	92	38	B	B	B	E 28	40	36	27	B	B	B	B	E 24	48	20	47	80	41	71							
30	52	B	40	42	45	B	B	B	B	B	B	B	B	B	B	B	B	B	B	28	46	B	38	58							
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	24	28	24	25	26	22	21	22	18	15	15	16	16	18	17	20	20	24	27	27	25	28	29							
MED	44	41	41	42	42	41	43	40	38	23	24	26	27	26	25	24	24	22	24	20	27	40	40	40							
UQ	56	66	52	45	47	45	51	44	42	32	27	29	31	E 32	30	28	30	26	31	28	35	46	46	46							
LQ	35	35	35	41	34	35	37	31	33	22	22	26	26	26	24	25	24	E 22	E 19	E 14	18	29	29	32							

SEP. 1987

FES (0.1 MHz)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

SEP. 1987

F-MIN (0.1 MHz)

45° E Mean Time (G.M.T. + 3 h)

StationSYOWA STATION		Lat. 69° 00.4' S , Long. 39° 35.4' E											Sweep 4 MHz to 15 MHz in 20sec 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	8	10	14	B	B	14	14	30	24	B	B	B	B	B	B	B	B	B	15	B	9	8	8	8			
2	9	B	19	B	21	14	B	B	20	B	B	B	B	B	B	B	B	B	B	19	B	8	8	9			
3	9	9	10	13	15	10	10	8	13	15	21	B	40	26	19	19	21	19	18	19	13	13	B	15			
4	B	9	8	8	9	12	15	B	19	9	21	20	19	19	20	19	21	B	19	13	10	8	8	9			
5	13	16	8	18	15	15	21	25	15	14	B	B	40	30	15	35	30	21	19	21	15	B	11	8			
6	13	8	8	9	13	14	21	15	15	10	19	15	20	18	25	30	B	B	21	13	8	8	10	8			
7	9	10	14	14	14	12	8	8	14	14	17	17	19	32	26	29	14	19	14	8	17	12	11	8			
8	8	28	22	B	30	13	B	B	17	18	14	24	25	26	30	B	30	24	18	8	B	B	B	9			
9	8	8	13	14	13	17	13	B	20	25	15	B	B	51	B	25	29	22	15	13	18	12	8	8			
10	8	10	19	17	10	12	13	14	15	10	13	30	28	14	15	9	13	B	15	10	13	10	8	8			
11	8	21	15	10	B	14	14	18	B	23	B	20	B	B	54	24	24	23	15	9	11	8	10	13			
12	19	B	13	15	8	13	14	22	B	B	B	B	B	B	B	B	15	24	B	10	B	8	8	26			
13	15	B	B	15	21	B	17	B	11	B	B	30	29	29	26	17	16	25	13	11	21	B	8	8			
14	8	19	23	15	24	19	B	B	15	B	B	B	B	B	B	30	29	12	21	B	19	10	9	10			
15	B	19	19	B	B	19	11	25	B	B	B	31	B	B	B	B	B	B	B	10	9	10	15	13			
16	16	29	19	B	B	8	B	19	B	B	B	B	B	B	B	B	B	B	B	20	B	9	8	14			
17	19	B	20	27	B	20	19	14	18	B	B	B	30	B	B	B	23	24	B	15	10	9	14	19			
18	B	B	24	B	18	B	24	30	B	25	B	B	B	B	B	B	B	30	24	B	18	B	13	B			
19	9	8	18	12	14	23	15	9	14	15	15	13	15	14	13	14	13	11	10	9	12	8	8	9			
20	8	9	8	7	8	8	8	13	14	14	19	30	20	19	15	14	13	13	12	13	8	9	10	14			
21	13	9	8	8	8	14	16	14	13	14	18	14	15	15	20	14	13	13	25	12	8	8	8	8			
22	8	8	8	13	8	18	20	B	B	B	B	B	B	29	29	25	28	24	22	18	18	13	13	8			
23	9	14	B	21	14	17	B	21	19	B	B	B	B	B	29	24	19	20	18	10	9	8	8	8			
24	8	8	8	8	8	8	24	30	20	14	13	13	13	13	13	12	13	13	9	9	8	8	8	7			
25	7	7	8	8	9	8	9	29	23	B	B	B	B	B	19	B	B	15	13	10	10	8	8	8			
26	B	8	8	15	17	14	B	19	24	33	30	B	B	B	B	B	24	B	24	14	8	8	12	8			
27	8	13	9	12	10	13	8	8	14	11	11	12	13	10	10	10	10	10	8	8	7	8	8	11			
28	15	9	10	8	18	23	14	21	10	10	11	21	18	14	10	B	B	B	19	10	8	8	12	15			
29	8	19	24	14	19	23	B	B	B	28	19	16	22	B	B	B	B	24	14	12	13	13	18	9			
30	8	B	24	9	24	B	B	B	B	B	B	B	B	B	B	B	B	B	B	19	14	B	13	9			
31																											
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30			
MED	9	12	14	14	15	14	16	24	19	26	D	B	D	B	31	40	42	29	30	26	24	18	12	12	9	10	9
UQ	15	28	20	21	24	20	B	B	B	B	B	B	B	B	B	B	B	B	24	19	13	13	13	13			
LQ	8	9	8	9	10	13	13	14	14	14	17	20	20	19	19	19	15	19	14	10	9	8	8	8			

SEP. 1987

F-MIN (0.1 MHz)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

SEP. 1987

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 4		MHz to 15		MHz in 20		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	B	B	A	A	A	A	B	B	B	B	B	B	B	B	B	B	A	B	A	A	A	A
2	A	B	A	B	A	A	B	B	A	B	B	B	B	B	B	B	B	B	B	E B 255	3	A	A	A	A
3	A	A	A	A	A	A	E A 400	E A 310	E A 265	200	E A 270	B	260	210	200	210	210	210	E B 250	E B 250	200	E B 245	B	A	A
4	B	A	A	A	A	A	A	B	E A 325	190	H 190	H 200	240	210	205	210	225	B	225	245	A	A	A	A	A
5	A	A	A	A	A	A	A	A	A	A	B	B	E B 290	E B 240	200	E B 260	210	220	210	E B 230	E B 250	B	A	A	
6	A	A	A	A	A	A	A	A	E B 280	E A 270	225	E A 250	225	200	200	E B 250	B	B	225	225	E A 250	A	A	A	A
7	A	A	A	A	A	A	E A 350	290	E A 240	E A 240	220	225	195	E B 245	220	E B 240	235	245	E B 275	225	E B 325	A	A	A	A
8	A	A	A	B	A	A	B	B	E A 275	250	230	225	205	230	250	B	E B 245	E B 240	210	230	B	B	B	A	A
9	A	A	A	A	A	A	A	A	A	E B 250	H 200	B	B	E B 270	B	250	220	220	205	205	E B 270	E B 250	E B 270	A	A
10	A	A	A	A	A	E A 340	A	E A 300	E A 250	225	200	E B 240	230	210	210	210	245	B	A	A	A	A	A	A	A
11	A	A	A	A	B	A	A	A	B	E B 320	B	260	B	B	E B 350	245	260	270	240	255	A	A	A	A	A
12	A	B	A	A	A	A	A	A	B	B	B	B	B	B	B	B	230	250	B	E A 300	B	A	A	A	A
13	A	B	B	A	A	B	A	B	A	B	B	E B 265	E B 240	E B 240	230	210	E A 260	255	A	A	A	B	A	A	A
14	A	A	A	A	A	A	B	B	A	B	B	B	B	B	B	E B 300	E B 280	240	245	B	A	A	A	A	A
15	B	A	A	B	B	A	A	A	B	B	B	E B 275	B	B	B	B	B	B	B	260	A	A	A	A	A
16	A	A	A	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	230	A	A	A	A	A
17	A	B	A	A	B	A	A	A	A	B	B	B	240	B	B	B	210	240	B	E B 280	A	A	A	A	A
18	B	B	A	B	A	B	A	A	B	240	B	B	B	B	B	B	B	230	225	B	230	B	A	B	B
19	A	A	A	A	A	A	A	E A 250	245	210	210	205	230	205	220	210	215	210	205	A	220	225	240	E B 300	A
20	E A 300	E A 310	A	E A 330	E A 370	E A 360	E A 275	200	210	230	225	220	215	200	180	H 205	220	220	210	230	E A 305	A	A	A	A
21	A	A	A	A	A	A	A	A	A	225	230	250	240	225	200	195	210	230	225	215	225	E A 260	A	A	A
22	A	A	A	A	A	A	A	B	B	B	B	B	B	240	240	240	E B 255	250	240	250	A	A	A	A	A
23	A	A	B	A	A	A	B	A	A	B	B	B	B	B	B	245	225	E B 310	255	230	250	E A 300	A	A	A
24	A	A	A	A	A	A	A	A	A	A	E A 255	H 210	205	225	225	230	245	205	H 230	220	230	205	225	A	A
25	A	A	A	A	A	E A 350	A	A	A	B	B	B	B	B	275	B	B	A	A	A	A	A	A	A	A
26	B	A	A	A	A	A	A	A	A	A	E B 250	B	B	B	B	B	E B 250	B	E B 270	E B 280	260	A	A	A	A
27	A	A	A	A	A	A	E A 300	245	230	H 205	H 210	H 225	210	200	240	225	220	210	220	230	280	A	A	A	A
28	A	A	A	A	A	A	A	A	A	225	205	H 200	190	205	200	B	B	B	230	240	315	A	A	A	A
29	A	A	A	A	A	A	B	B	B	E B 260	E B 250	220	225	A	B	B	B	B	E B 250	A	A	A	A	A	A
30	A	B	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	B	A	A	A
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	1	1		1	1	3	4	6	9	15	15	15	16	16	18	17	20	19	19	21	14	5	3	1	
MED	E A 300	E A 310		E A 330	E A 370	E A 350	E A 325	U 242	E A 250	U 218	215	218	224	212	214	218	222	235	225	232	U 232	E A 245	232	E B 300	
UQ					E A 355	E A 375	E A 300	E A 275	E E 250	232	U 238	238	232	235	235	E E 252	250	235	248	E A 300	E B 250	248			
LQ					E A 345	E A 288	U 222	U 225	218	208	H 215	208	205	205	200	210	218	218	215	230	225	215	232		

SEP. 1987

H⁺F (KM)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

OCT. 1937

FXI (0.1 MHz)

45° E Mean Time (G.M.T. + 3 h)

StationSYOWA STATION				Lat. 69 00.4 S , Long. 39 35.4 E								Sweep 4 MHz to 15 MHz in 20 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	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	0 X 51	X 46	26	A	A	A							
2	A	A	A	A	A	B	A	A	B	0 X 44	B	B	B	B	65	75	0 X 68	X 65	61	63	53	44	A	A							
3	A	A	A	A	A	0 X 34	0 X 38	0 X 46	B	0 X 55	B	B	0 X 63	0 X 55	0 X 61	B	X 76	B	A	A	A	A	A	A							
4	A	A	A	A	A	A	A	A	B	A	0 X 41	B	B	B	0 X 49	B	B	0 X 51	47	40	X 35	35	30	27							
5	A	0 X 34	A	A	A	A	X 42	B	0 X 46	0 X 49	0 X 51	S	S	0 X 56	0 X 62	62	X 68	X 65	60	X 55	X 44	33	34	A							
6	A	A	A	A	A	A	X 44	X 54	0 X 55	0 X 56	64	68	72	69	68	68	61	66	62	X 58	50	41	34	28							
7	24	A	A	44	X 45	46	X 52	X 51	X 52	0 X 57	0 X 65	0 X 61	66	32	80	81	80	B	B	65	X 50	45	39	44							
8	A	A	31	A	A	A	B	A	47	0 X 48	0 X 42	0 X 49	0 X 50	B	X 69	B	66	B	B	0 X 51	0 X 49	44	A	A							
9	A	30	23	32	39	X 41	X 42	46	0 X 49	0 X 51	57	60	61	60	63	66	70	61	60	X 52	46	44	39	A							
10	A	A	A	A	A	A	A	A	A	A	B	0 X 48	0 X 51	0 X 50	0 X 51	0 X 55	0 X 57	X 56	X 52	X 55	X 51	32	A	A							
11	A	A	A	A	0 X 41	A	A	A	A	A	B	0 X 46	0 X 50	0 X 55	0 X 56	0 X 61	62	59	X 41	A	A	A	B	A							
12	A	A	A	A	A	A	A	0 X 48	0 X 47	0 X 44	0 X 48	0 X 48	0 X 50	0 X 46	0 X 48	0 X 50	53	51	X 49	X 50	X 43	32	A	A							
13	A	A	A	A	A	B	A	A	0 X 42	B	B	0 X 50	B	0 X 55	S	X 61	X 68	62	A	X 34	A	A	A	A							
14	A	A	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	0 X 49	B	A	B	A	41	A							
15	A	A	A	A	B	B	45	B	B	B	0 X 44	B	B	B	B	B	B	B	A	39	0 X 30	A	A	A							
16	A	A	A	A	33	B	B	B	A	B	B	B	B	0 X 48	B	58	B	X 61	B	0 X 44	B	28	25	A							
17	A	A	A	A	B	A	A	A	51	0 X 45	0 X 45	0 X 46	0 X 49	0 X 47	B	0 X 69	X 73	B	B	43	37	A	33	A							
18	A	A	A	A	B	B	0 X 47	0 X 51	0 X 55	0 X 56	0 X 54	0 X 59	60	62	67	62	X 62	X 62	X 56	X 54	X 58	X 51	X 47	X 45							
19	0 X 43	0 X 37	X 34	0 X 46	0 X 46	0 X 51	60	66	X 71	X 75	X 75	78	78	77	78	X 80	X 76	B	62	X 61	55	42	31	A							
20	A	A	A	A	A	0 X 45	0 X 48	0 X 50	0 X 54	0 X 56	0 X 57	59	56	60	61	59	X 60	58	60	X 53	B	A	A	A							
21	A	A	B	0 X 42	A	A	A	B	B	B	A	B	B	0 X 45	R	0 X 55	0 X 51	0 X 50	0 X 43	0 X 34	A	A	A	A							
22	A	A	B	0 X 55	43	40	A	0 X 50	0 X 50	0 X 52	0 X 55	0 X 55	S	X 57	X 58	X 59	X 58	X 60	X 60	X 53	X 50	47	X 48								
23	A	46	A	0 X 51	A	A	A	A	A	B	A	0 X 46	0 X 46	55	0 X 59	63	0 X 58	56	52	X 48	B	37	32	29							
24	B	A	A	0 X 38	A	A	A	A	0 X 48	0 X 49	0 X 45	0 X 45	0 X 59	65	67	67	X 63	63	66	X 46	A	A	A	A							
25	A	A	A	A	B	B	B	A	A	B	A	A	B	B	B	B	X 67	B	0 X 51	X 45	X 43	X 41	A	A							
26	A	A	A	A	B	A	A	A	B	B	B	B	B	B	B	B	0 X 72	B	45	X 44	X 38	X 33	30	0 X 26							
27	0 X 25	A	A	A	B	37	B	B	B	A	B	B	B	B	B	B	B	B	B	A	A	A	A	A							
28	A	A	A	B	B	B	B	A	0 X 45	B	B	B	B	B	B	B	0 X 42	0 X 41	A	0 X 38	A	A	0 X 40	B							
29	B	A	36	A	B	B	B	B	B	B	B	B	B	B	B	B	B	0 X 42	B	38	X 38	A	A	A							
30	A	A	0 X 36	B	B	B	B	B	B	B	B	B	B	B	B	B	0 X 60	B	B	0 X 50	0 X 51	X 45	44	42							
31	A	A	A	A	A	A	0 X 54	66	X 63	B	B	0 X 51	B	0 X 48	B	B	B	62	X 61	0 X 57	0 X 52	X 41	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	3	4	5	7	6	7	10	10	15	14	14	16	14	19	17	18	23	20	19	27	21	18	15	8							
MED	0 X 25	36	34	0 X 44	42	X 41	46	X 50	0 X 50	0 X 52	0 X 52	0 X 50	0 X 58	0 X 55	62	62	X 63	X 60	X 56	X 50	46	41	34	36							
UQ	0 X 34	42	36	0 X 48	X 45	X 46	0 X 52	X 54	X 54	0 X 56	0 X 57	60	63	60	67	68	69	62	60	55	X 51	44	40	44							
LQ	24	32	31	40	39	38	X 42	0 X 48	0 X 47	0 X 43	0 X 45	0 X 47	0 X 50	0 X 48	53	59	X 59	X 51	X 50	X 44	X 38	33	32	28							

OCT. 1937

FXI (0.1 MHz)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

OCT. 1987

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

OCT. 1987

F0F2 (0.1 MHz)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

OCT. 1987

FES (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 4 MHz to 15 MHz in 20 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	46	B	38	B	B	B	32	37	B	B	B	B	B	B	B	B	B	B	E 29	E 16	12	26	36	45	
2	44	35	71	44	41	B	42	60	B	32	B	B	B	B	26	E 28	E 34	E 24	25	16	E 24	19	28	18	
3	28	36	32	27	31	41	32	E 30	B	E 25	B	B	42	32	30	B	41	B	40	70	70	70	45	44	
4	40	39	73	71	36	36	43	51	B	36	E 31	B	B	B	E 30	B	B	E 22	38	21	28	26	E 17	45	
5	31	34	44	47	45	34	31	B	27	25	26	E 33	30	33	31	E 29	27	35	36	35	27	29	24	35	
6	66	43	40	56	41	26	42	46	32	30	33	32	E 29	36	33	28	27	25	20	E 19	E 13	E 11	26	35	
7	35	38	39	35	34	35	26	27	28	32	32	27	30	28	29	33	30	B	B	41	38	32	42	32	
8	35	32	35	47	105	32	B	38	31	27	28	29	31	B	20	B	E 30	B	B	E 23	E 24	15	32	26	
9	37	27	15	22	16	14	19	29	31	31	33	31	30	40	34	33	32	23	22	E 16	12	13	11	36	
10	45	45	42	45	35	41	40	38	42	39	B	31	34	34	35	26	27	25	21	23	E 13	12	37	30	
11	31	35	55	60	26	28	42	45	70	45	B	34	33	30	31	26	26	22	30	70	45	72	B	41	
12	37	44	36	46	29	32	37	29	30	31	31	32	32	27	27	33	32	28	21	E 18	E 16	13	16	25	
13	37	35	45	45	40	B	41	43	47	B	B	31	B	27	66	26	E 29	27	39	E 20	41	38	91	27	
14	68	32	B	B	B	37	B	B	3	B	B	B	B	B	3	B	B	B	26	B	32	B	32	41	41
15	45	59	42	42	B	B	26	B	B	B	34	B	B	B	B	B	B	B	36	35	E 17	31	36	41	
16	45	40	34	37	37	B	B	B	43	B	B	B	B	E 34	B	27	B	23	B	26	B	16	16	32	
17	30	40	42	43	B	41	42	36	26	E 31	32	29	35	28	B	E 33	E 29	B	B	41	18	39	31	40	
18	38	45	43	42	B	B	34	31	32	33	34	29	33	28	30	29	27	23	E 24	19	16	11	27	29	
19	27	25	30	29	20	36	36	33	34	34	31	34	30	32	29	18	E 55	B	E 24	E 21	E 23	25	31	37	
20	40	75	126	51	37	37	37	35	31	26	33	33	36	36	36	30	30	29	23	21	B	39	41	44	
21	71	67	B	40	60	44	42	B	B	B	37	B	B	28	27	33	25	22	26	33	41	45	36	59	
22	41	39	B	31	37	32	41	40	31	32	33	34	36	36	29	29	25	30	28	18	17	12	12	14	
23	35	35	36	31	60	41	45	60	44	B	36	35	35	32	32	30	25	32	22	24	B	E 21	17	29	
24	B	42	35	32	30	39	40	42	36	34	E 30	E 32	29	28	E 31	E 30	E 28	28	21	E 30	19	47	67	50	
25	40	45	39	36	B	B	B	45	42	B	37	29	B	B	B	B	26	B	30	25	31	29	39	40	
26	75	59	38	42	B	42	42	40	B	B	B	B	B	B	B	B	26	B	25	32	37	15	16	16	
27	24	37	37	38	B	27	B	B	B	44	B	B	B	B	B	B	B	B	B	42	45	43	60	51	
28	66	46	57	B	B	B	B	41	31	B	B	B	B	B	B	B	30	23	45	32	45	42	51	B	
29	B	39	32	41	B	B	B	B	B	B	B	B	B	B	B	B	B	20	B	30	17	27	36	42	
30	59	65	55	B	B	B	B	B	B	B	B	B	B	B	B	B	26	B	B	E 30	E 24	E 18	E 15	31	
31	36	36	45	46	40	42	36	26	33	B	B	E 33	B	E 33	B	B	B	27	E 25	E 24	E 23	41	51	71	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	29	30	28	27	20	21	23	23	20	18	17	18	16	19	19	18	23	20	23	31	27	31	30	30	
MED	40	39	40	42	37	36	40	38	32	32	33	32	32	31	30	28	27	25	25	24	24	27	34	36	
UQ	45	45	45	46	41	41	42	44	42	34	34	33	35	34	32	33	30	28	33	32	38	39	42	44	
LQ	35	35	36	36	30	32	33	32	31	28	31	29	30	28	29	26	26	22	22	18	14	15	17	29	

OCT. 1987

FES (0.1 MHz)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

OCT. 1987

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 4 MHz to 15 MHz in 20 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	18	B	17	B	B	B	24	13	B	B	B	B	B	B	B	B	B	B	29	16	9	10	8	9
2	13	13	25	19	15	B	25	25	B	20	B	B	B	B	20	28	34	24	15	10	24	8	8	14
3	13	8	8	11	8	10	24	30	B	25	B	B	25	24	22	B	15	B	11	8	10	8	7	13
4	16	9	15	9	23	25	19	25	B	24	31	B	B	B	30	B	B	22	13	18	8	10	17	7
5	8	13	14	14	15	9	9	B	20	20	20	33	16	18	19	29	18	19	20	19	14	9	8	8
6	15	21	21	24	15	12	12	9	12	13	12	10	29	14	14	12	13	18	14	19	13	11	10	8
7	8	13	13	10	9	9	9	10	9	10	10	20	18	18	14	15	13	B	B	9	9	9	9	8
8	8	14	7	9	19	20	B	13	14	13	20	19	20	B	10	B	30	B	B	23	24	9	9	7
9	8	8	9	9	9	9	10	8	9	10	9	11	12	13	14	11	14	14	14	16	9	8	8	10
10	13	19	13	15	9	15	13	20	13	23	B	23	15	14	14	18	14	13	15	13	13	8	8	8
11	8	8	12	10	8	17	19	20	20	18	B	21	13	18	22	19	13	10	9	13	12	8	B	29
12	20	9	8	15	9	18	19	14	10	10	11	11	13	14	13	9	9	9	11	18	16	8	8	8
13	7	13	12	30	23	B	25	15	13	B	B	24	B	20	24	19	29	10	9	20	8	19	10	9
14	8	9	B	B	B	19	B	B	B	B	B	B	B	B	B	B	B	17	B	21	B	10	11	31
15	15	10	24	21	B	B	19	B	B	B	24	B	B	B	B	9	B	B	17	13	17	11	8	12
16	15	15	25	15	12	B	B	8	25	B	B	B	B	34	9	18	B	19	B	20	B	9	9	8
17	10	14	14	19	B	25	15	24	15	31	22	18	15	19	B	33	29	B	B	11	13	8	14	12
18	20	23	18	19	B	B	15	13	12	13	15	14	14	24	14	12	19	19	24	11	9	8	8	8
19	8	8	8	17	18	13	9	10	13	13	21	18	18	16	14	15	55	B	24	21	23	8	8	8
20	10	16	18	15	14	16	13	14	9	14	15	15	10	12	13	19	13	13	14	14	B	18	9	8
21	9	17	B	10	14	25	23	B	B	B	22	B	B	18	15	12	13	17	20	17	8	14	8	13
22	22	14	B	10	8	11	18	10	14	10	11	11	10	10	13	15	13	10	9	9	9	9	8	8
23	8	10	8	8	15	19	20	15	18	B	24	20	19	21	19	19	20	13	16	17	B	21	9	9
24	B	9	9	10	16	23	23	18	11	14	30	32	21	18	31	30	28	18	17	30	14	10	9	10
25	25	12	11	19	B	B	B	14	13	B	29	19	B	B	B	B	20	B	18	14	16	9	8	9
26	8	21	14	26	B	24	21	23	B	B	B	B	B	B	B	B	20	B	14	10	9	8	11	9
27	8	13	23	23	B	18	B	B	B	19	B	B	B	B	B	B	B	B	B	14	13	9	8	8
28	9	16	10	B	B	B	B	29	24	9	B	B	B	B	B	B	25	16	17	10	13	13	10	B
29	B	14	9	32	B	B	B	B	B	B	B	B	B	B	B	B	B	19	B	10	14	9	13	19
30	14	10	11	B	B	B	B	B	B	B	B	B	B	B	B	B	20	B	B	30	24	18	15	8
31	13	18	14	15	18	24	10	12	11	B	B	33	B	33	B	B	B	24	25	24	23	10	14	9
	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	13	13	14	15	18	23	20	20	18	24	30	32	29	24	22	29	20	19	17	16	13	9	9	9
UQ	16	16	20	24	B	B	B	B	B	B	B	B	B	B	B	B	55	B	B	20	23	10	10	12
LQ	8	10	10	10	13	16	14	13	12	14	20	18	16	18	14	16	14	15	14	11	9	8	8	8

OCT. 1987

F-MIN (0.1 MHz)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

OCT. 1987

H⁺F (KM)

45° E Mean Time (G.M.T. + 3h)

StationSYOWA STATION		Lat. 69° 00.4' S, Long. 39° 35.4' E											Sweep 4 MHz to 15 MHz in 20sec 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	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	220	E 250	E 280	A	A	A	
2	A	A	A	A	A	B	A	A	B	245	B	B	B	B	220	220	E 260	230	220	220	240	240	A	A	
3	A	A	A	A	A	E 330	E 290	E 260	B	205	B	B	210	190	240	B	E 370	B	A	A	A	A	A	A	
4	A	A	A	A	A	A	A	A	B	A	E 280	B	B	B	E 245	B	B	E 250	230	245	E 280	E 290	E 275	E 325	
5	A	E 245	A	A	A	A	E 350	B	E 250	H 200	230	E 255	210	E 240	210	225	H 180	E 250	250	225	240	E 305	E 300	A	
6	A	A	A	A	A	A	A	E 260	200	H 200	195	200	220	200	210	225	A	210	225	220	210	210	205	E 245	E 305
7	E 250	A	A	A	A	A	E 280	210	200	230	225	E 300	210	205	210	230	240	B	B	220	240	230	E 275	E 250	
8	A	A	A	A	A	A	A	3	240	230	250	215	240	B	220	B	220	B	B	220	250	240	A	A	
9	A	E 370	A	E 360	E 300	E 275	E 250	225	H 205	210	210	210	200	200	200	225	225	215	220	210	200	210	245	A	
10	A	A	A	A	A	A	A	A	A	A	B	240	220	205	H 200	220	225	220	230	225	245	245	A	A	
11	A	A	A	A	E 310	A	A	A	A	A	B	E 300	220	200	E 250	230	230	230	E 300	A	A	A	B	A	
12	A	A	A	A	A	A	A	E 250	210	H 215	H 200	240	H 200	215	210	200	220	220	245	240	245	E 260	A	A	
13	A	A	A	A	A	B	A	A	E 300	B	B	240	B	220	225	230	E 245	E 245	A	E 305	A	A	A	A	
14	A	A	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	240	B	A	B	A	A	A	
15	A	A	A	A	B	B	E 260	B	B	B	E 270	B	B	B	B	B	B	B	A	E 300	E 305	A	A	A	
16	A	A	A	A	A	B	B	B	A	B	B	B	B	E 250	B	225	A	B	225	B	E 260	B	E 300	E 290	A
17	A	A	A	A	B	A	A	A	220	E 250	230	210	H 195	210	B	E 230	210	B	B	E 355	E 260	A	A	A	
18	A	A	A	A	B	B	E 350	250	230	215	225	215	215	225	210	210	220	225	225	210	225	220	220	220	
19	E 320	E 350	E 325	E 340	E 290	A	A	240	210	H 200	220	H 200	H 205	200	200	205	E 300	B	230	225	225	260	A	A	
20	A	A	A	A	A	A	A	E 300	210	190	220	160	H 200	H 200	210	220	H 210	220	225	250	B	A	A	A	
21	A	A	B	A	A	A	A	B	B	B	A	B	B	250	240	230	240	230	E 295	E 330	A	A	A	A	
22	A	A	B	A	E 305	E 280	A	A	225	220	215	205	195	230	230	195	H 200	H 200	220	220	225	225	230	240	
23	A	E 280	A	230	A	A	A	A	A	B	A	E 250	225	230	230	210	230	230	220	E 275	B	E 265	E 300	E 380	
24	B	A	A	A	A	A	A	A	A	230	H 200	H 210	H 205	H 210	A 240	E 240	210	225	230	255	255	A	A	A	
25	A	A	A	A	B	B	B	A	A	3	A	A	B	B	B	B	E 250	B	260	250	260	E 290	A	A	
26	A	A	A	A	B	A	A	A	B	B	B	B	B	B	B	B	E 240	B	245	E 295	A	E 295	E 325	E 280	
27	A	A	A	A	B	E 270	3	B	B	A	B	B	B	B	B	B	B	B	B	A	A	A	A	A	
28	A	A	A	B	B	B	B	A	225	B	B	B	B	B	B	B	E 250	E 260	A	E 380	A	A	A	B	
29	B	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	E 280	B	E 265	255	A	A	A	
30	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	220	B	B	E 275	255	255	275	E 300	
31	A	A	A	A	A	A	230	225	220	3	B	215	B	230	B	B	B	220	225	250	250	A	A	A	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	2	4	1	3	4	4	7	9	14	14	14	17	16	19	19	18	23	20	19	27	20	17	11	8	
MED	E 285	E 315	E 325	E 340	E 302	E 278	E 280	U 230	215	214	220	212	210	208	215	222	218	224	228	U 230	244	U 232	E 275	E 290	
UQ		E 360		E 350	E 308	E 305	E 320	E 260	228	230	228	U 228	220	226	226	228	E 242	236	238	E 275	254	E 290	E 295	E 315	
LQ		E 262		U 258	E 295	E 272	E 255	225	210	200	210	210	200	200	210	210	215	220	220	221	232	230	U 232	U 232	

OCT. 1987

H⁺F (KM)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

NOV. 1987

FXI (0.1 MHz)

45° E Mean Time (G.M.T. + 3 h)

SYOWA STATION				Lat. 69° 00.4' S, Long. 39° 35.4' E		Sweep 4		MHz to 15		MHz in 20		sec in		automatic operation											
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	
Day																									
1	A	41	A	A	0 47	A	B	B	A	A	0 51	B	B	B	B	0 46	0 56	55	0 56	0 50	51	37	0 41	A	
2	35	38	44	0 43	A	A	A	A	A	0 51	0 56	B	B	B	0 61	61	62	65	62	0 51	B	A	A	A	B
3	A	A	A	A	A	A	A	A	A	0 52	B	B	B	A	0 47	0 49	52	51	0 40	44	A	37	A	A	
4	B	B	A	A	B	B	A	0 47	0 51	0 46	0 47	0 47	0 46	0 51	53	53	52	54	50	52	51	45	38	A	
5	A	A	A	A	A	A	X	0 50	0 54	0 55	59	60	0 57	S	X	65	65	60	58	57	54	48	A	A	A
6	A	A	A	A	A	A	A	A	B	A	A	A	0 45	B	0 46	B	0 46	0 49	52	0 49	0 45	43	36	34	
7	40	A	A	0 48	X	46	47	0 50	0 51	55	0 60	63	X	64	67	66	63	64	60	63	60	53	54	52	56
8	60	60	59	0 58	0 58	B	B	B	B	B	S	0 69	74	73	69	66	64	S	0 56	0 56	0 54	B	55	0 55	
9	0 56	B	B	B	B	B	0 52	62	70	74	76	75	72	71	66	65	71	66	67	61	53	53	A	A	
10	A	A	A	B	A	A	S	A	A	A	B	A	0 46	0 47	0 55	0 57	0 56	0 51	0 54	0 47	52	51	46	44	
11	32	A	B	A	A	A	A	A	A	B	A	A	B	A	B	S	0 56	0 54	50	52	49	45	A	A	
12	A	A	B	B	0 48	46	A	A	0 51	0 51	0 52	B	B	B	60	60	B	0 56	0 55	0 61	50	43	41	A	
13	A	A	A	A	41	B	B	B	B	A	B	B	0 45	B	B	B	B	43	B	42	A	38	37	A	
14	44	A	A	A	B	A	A	B	B	A	0 45	0 46	B	B	B	B	B	B	B	0 46	0 42	A	A	A	
15	A	B	A	B	0 46	B	A	A	A	0 46	0 46	B	B	0 46	0 46	0 46	0 45	0 50	0 51	47	0 46	0 40	35	39	
16	X	40	B	B	B	B	A	A	A	B	0 46	0 46	0 47	0 43	0 49	55	56	54	54	B	42	0 44	0 41		
17	X	0 46	X	B	B	A	0 49	0 51	58	61	62	X	0 47	60	0 62	S	S	55	55	52	52	51	55	56	
18	X	45	46	51	58	62	A	0 47	B	X	60	61	66	65	66	61	63	61	59	53	53	53	48	A	
19	X	A	A	A	A	54	0 61	56	A	0 47	0 47	A	0 48	0 48	0 47	0 49	0 56	0 55	0 51	0 49	46	51	49	0 42	
20	A	A	B	A	A	A	A	A	B	B	B	B	S	0 46	0 48	0 47	S	0 49	X	B	0 50	41	A	A	
21	A	A	A	A	B	B	45	A	A	B	B	0 49	0 49	0 48	B	0 48	0 50	0 56	55	56	56	51	53	50	
22	X	X	X	0 50	A	A	A	A	0 49	A	S	S	0 57	60	X	69	A	B	0 56	58	X	55	46	0 51	
23	A	A	A	A	39	A	A	A	A	0 48	B	B	B	B	B	B	70	S	S	55	53	A	B	A	
24	A	A	A	A	B	A	B	B	A	A	B	B	B	B	B	B	S	A	A	53	52	51	46	45	
25	A	B	A	B	B	B	B	0 51	0 51	B	B	B	0 47	61	B	B	58	53	0 45	47	50	46	45	41	
26	B	0 45	44	B	0 46	B	B	B	B	B	B	B	B	0 49	B	70	66	B	B	B	45	45	46	43	
27	X	B	X	B	A	B	B	B	B	A	B	B	B	B	B	B	A	B	0 44	0 46	A	49	0 44	0 41	
28	A	43	47	B	A	A	A	A	A	A	0 49	0 61	S	66	68	B	78	72	65	61	56	50	41	49	
29	45	0 51	B	A	0 51	0 56	66	71	80	80	75	73	70	69	66	62	63	65	61	60	58	56	60	59	
30	58	59	0 63	69	75	A	88	91	92	91	86	84	76	72	69	66	63	61	60	60	56	58	55		
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	14	11	9	6	11	5	8	10	9	15	16	13	14	20	19	20	22	23	25	27	25	25	22	17	
MED	X	44	45	46	0 50	0 47	54	51	0 52	55	0 52	0 54	0 61	0 48	0 60	60	X	59	55	55	53	52	49	46	45
UQ	X	53	51	51	58	0 54	0 56	64	62	70	60	62	69	70	66	66	65	64	60	57	57	53	51	52	55
LQ	X	40	42	46	0 48	46	47	50	0 51	0 51	0 48	0 47	0 49	0 46	0 48	0 48	0 49	0 55	0 52	0 51	48	49	43	41	41

NOV. 1987

FXI (0.1 MHz)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

NOV. 1987

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 4		MHz to 15		MHz in 20		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	F 35	A	A	41	A	B	B	A	A	45	B	B	B	B	40	50	49	50	44	45	F 31	35	A
2	F 29	32	F 38	37	A	A	A	A	A	45	50	B	B	55	55	56	59	56	45	B	A	A	A	B
3	A	A	A	A	A	A	A	A	A	46	B	B	B	A	E G 41	43	46	45	34	38		31	A	A
4	B	B	A	A	B	B	A	41	45	E G 40	41	E G 41	40	45	47	47	46	48	44	46	F 45	39	32	A
5	A	A	A	A	A	A	44	48	49	J S 53	54	51	S	J S 59	S	59	54	52	51	48	42	A	A	A
6	A	A	A	A	A	A	A	A	B	A	A	A	E G 39	B	E G 40	B	40	43	46	43	39	37	30	28
7	F 34	A	A	42	40	F 41	44	45	49	54	57	58	58	61	60	56	58	54	57	54	47	48	46	50
8	F 54	F 54	53	52	U R 52	B	B	B	B	B	S	63	68	67	63	60	58	S	50	U S 50	U S 48	B	49	49
9	50	B	B	B	B	B	46	56	60	63	70	69	66	65	60	59	65	60	61	55	47	47	A	A
10	A	A	A	B	A	A	S	A	A	A	B	A	E G 40	E G 41	49	51	50	45	48	41	46	45	40	38
11	26	A	B	A	A	A	A	A	A	3	A	A	B	A	B	S	50	48	44	46	F 43	39	A	A
12	A	A	B	B	42	F 40	A	A	45	45	46	B	B	B	54	54	B	U R 50	49	55	45	37	35	A
13	A	A	A	A	F 35	B	B	B	B	A	B	B	E G 39	B	B	B	B	F 37	B	36	A	32	31	A
14	38	A	A	A	B	A	A	B	B	A	E G 39	E G 40	B	B	B	B	B	B	B	40	36	A	A	A
15	A	B	A	B	U R 40	B	A	A	A	E G 40	E G 40	B	B	E G 40	E G 40	40	39	44	45	41	40	34	29	30
16	34	F 34	B	B	B	B	A	A	A	B	40	E G 40	C	41	42	43	49	50	48	48	B	36	38	35
17	36	40	40	B	B	A	43	45	52	55	56	53	41	54	56	S	S	49	49	46	46	45	48	50
18	47	F 36	F 40	F 45	F 52	56	A	41	B	52	54	55	60	59	60	55	57	55	53	F 47	47	47	42	A
19	30	A	A	A	A	48	55	50	A	41	41	A	42	42	41	43	50	49	45	43	40	45	43	36
20	A	A	B	A	A	A	A	A	B	B	B	B	S	E G 40	42	41	S	43	43	B	U R 45	F 35	A	A
21	A	A	A	A	B	B	F 39	A	A	B	B	43	43	42	B	42	44	50	49	50	50	45	47	44
22	45	45	45	44	A	A	A	A	B	43	A	S	S	51	54	63	A	B	50	52	46	49	40	45
23	A	A	A	A	F 33	A	A	A	A	42	B	B	B	B	B	B	64	S	S	49	47	A	B	A
24	A	A	A	A	B	A	B	B	A	A	B	B	B	B	B	B	S	A	A	47	46	45	F 40	F 39
25	A	B	A	B	B	B	B	45	45	B	B	B	41	55	B	B	52	47	E G 39	41	44	40	39	35
26	B	39	F 38	B	40	R	B	B	B	3	B	B	B	E G 43	B	64	F 60	B	B	B	39	39	40	37
27	37	B	40	B	A	B	B	B	B	A	B	B	B	B	B	B	A	B	38	40	A	43	38	35
28	A	37	41	B	A	A	A	A	A	A	43	55	S	J S 60	62	B	72	66	59	55	50	44	35	43
29	39	45	B	A	45	50	60	65	74	74	69	67	64	63	60	56	57	F 57	F 55	54	52	50	54	53
30	F 50	53	57	63	69	A	82	85	86	85	80	78	70	66	63	60	57	55	54	54	54	50	52	49
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	14	11	9	6	11	5	8	10	9	15	16	13	14	20	19	20	22	23	25	27	25	25	22	17
MED	38	39	40	44	41	48	45	46	49	46	48	55	42	54	54	54	53	49	49	47	46	43	40	39
UQ	47	45	45	52	48	50	58	56	60	54	56	63	64	60	60	59	58	54	51	51	47	45	46	49
LQ	34	36	F 40	42	40	F 41	44	45	45	42	41	43	40	42	42	43	49	46	45	42	43	37	35	35

NOV. 1987

F0F2 (0.1 MHz)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

NOV. 1987

FES (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 4				MHz to 15				MHz in 20				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	43	36	60	90	37	51	B	B	42	41	34	B	B	B	B	E 31	27	24	E 25	26	36	38	27	35							
2	40	30	35	28	39	43	42	60	51	36	32	B	B	E 33	30	27	26	26	32	B	59	59	90	B							
3	42	37	42	39	41	72	45	59	54	41	B	B	B	33	30	32	33	30	20	36	51	51	60	55							
4	B	B	41	41	B	B	40	33	37	34	34	29	32	29	34	34	33	32	32	30	29	18	26	40							
5	70	40	42	42	51	43	32	32	28	33	33	33	31	32	36	37	34	34	25	30	36	34	37	66							
6	39	60	45	45	37	34	41	41	B	43	34	36	31	B	30	B	27	26	26	E 24	E 22	20	30	27							
7	30	41	42	40	31	30	30	31	32	33	35	36	47	34	30	36	32	30	32	26	27	29	31	22							
8	E 11	12	E 16	E 18	E 23	B	B	B	B	B	E 31	37	33	E 54	29	29	27	E 27	E 25	E 27	E 30	B	E 30	E 30							
9	E 25	B	B	B	B	B	E 25	E 26	27	32	36	32	34	34	E 32	30	28	26	27	21	E 20	17	36	40							
10	43	34	21	B	44	41	38	37	40	49	B	34	31	35	31	E 30	28	E 30	E 29	28	24	24	31	36							
11	37	21	B	32	31	28	35	60	41	B	40	35	B	31	B	28	35	33	32	34	30	31	40	56							
12	47	58	B	B	35	29	31	48	37	28	34	B	B	B	32	28	B	E 30	27	27	22	20	39	43							
13	46	42	35	38	37	B	B	B	B	37	B	B	27	B	B	B	B	B	33	35	37	22	29	45							
14	34	39	37	106	B	43	43	B	B	36	31	32	B	B	B	B	B	B	B	E 26	35	43	40	37							
15	37	B	40	B	35	B	41	37	36	35	34	B	B	B	30	30	27	E 32	E 28	27	25	E 27	21	20	28						
16	21	27	B	B	B	B	39	40	46	B	30	30	C	32	32	30	29	25	29	23	B	23	E 25	E 26							
17	18	30	28	B	B	36	42	37	34	34	37	39	37	36	33	40	41	41	40	30	31	19	17	25							
18	28	E 16	19	28	28	58	42	35	B	35	32	32	38	41	42	33	35	34	28	28	31	30	16	37							
19	35	42	37	43	37	32	31	53	38	33	35	33	32	E 35	E 34	32	31	26	25	36	30	41	40	35							
20	36	45	B	42	42	55	60	57	B	B	B	B	31	31	29	32	33	27	30	B	E 23	30	80	37							
21	40	70	70	42	B	B	38	45	52	B	B	33	32	35	B	E 33	E 31	E 33	24	25	24	21	19	15							
22	18	15	32	36	42	39	45	63	B	43	38	31	35	38	32	31	30	B	26	27	E 23	24	37	41							
23	58	37	37	41	42	46	44	41	38	38	B	B	B	B	B	B	33	34	30	36	40	51	B	42							
24	41	38	33	88	B	35	B	B	41	40	B	B	B	B	B	B	37	37	41	35	42	42	38	43							
25	46	B	45	B	B	B	B	44	33	B	B	B	33	31	B	B	28	31	27	26	31	22	30	25							
26	B	32	35	B	34	B	B	B	B	B	B	B	B	B	31	B	30	27	B	B	B	40	28	36	37						
27	42	B	36	B	42	B	B	B	B	42	B	B	B	B	B	B	35	B	38	28	37	30	37	36							
28	37	31	36	B	35	37	42	45	47	41	29	31	32	32	42	B	66	35	43	28	33	35	32	32							
29	33	32	B	40	41	41	31	32	36	34	36	35	45	59	64	35	37	37	32	26	39	48	47	34							
30	35	42	41	50	45	108	43	40	36	72	32	32	34	36	37	38	39	40	40	35	46	41	19	31							
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	25	24	20	22	20	23	23	21	23	20	18	18	22	20	22	27	26	27	27	29	29	29	29							
MED	37	37	37	41	37	41	41	41	38	36	34	33	32	33	32	31	32	30	29	28	31	30	32	36							
UQ	42	42	42	44	42	48	42	50	42	41	36	35	35	36	35	34	35	34	32	32	37	41	39	41							
LQ	32	30	34	37	35	34	34	36	36	34	32	32	31	31	30	29	28	26	26	26	26	22	26	30							

NOV. 1987

FES (0.1 MHz)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

NOV. 1987

F-MIN (0.1 MHz)

45° E Mean Time (G.M.T. + 3 h)

StationSYOWA STATION				Lat. 69° 00.4' S , Long. 39° 35.4' E								Sweep 4				MHz to 15				MHz in 20				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	12	11	19	29	B	B	18	14	19	B	B	B	B	31	19	14	25	20	14	10	9	11							
2	10	9	10	24	21	23	23	22	18	19	19	B	B	33	24	22	13	21	25	B	12	9	9	B							
3	18	15	17	10	10	19	13	14	23	18	B	B	B	25	18	12	10	10	9	8	8	8	10	8							
4	B	B	29	28	B	B	19	9	8	12	13	13	14	14	13	13	11	8	8	8	9	9	8	10							
5	13	15	10	11	15	15	11	11	15	10	13	13	12	14	13	10	8	8	13	10	9	8	20	10							
6	13	19	25	17	18	20	14	22	B	18	21	25	22	B	17	B	21	13	14	24	22	13	9	8							
7	8	13	13	9	9	8	9	10	10	10	13	11	13	18	15	10	10	8	10	9	9	8	8	8							
8	11	8	16	18	23	B	B	B	B	B	31	29	25	54	18	18	19	27	25	27	30	B	30	30							
9	25	B	B	B	B	B	25	26	19	15	17	13	18	26	32	15	11	16	14	14	20	13	17	14							
10	21	19	21	B	25	20	14	14	12	15	B	20	17	14	17	30	22	30	29	22	14	12	9	9							
11	9	13	B	11	9	15	19	24	19	B	23	20	B	23	B	20	23	14	10	9	9	13	9	9							
12	13	15	B	B	15	13	16	25	13	14	13	B	B	B	14	14	B	30	16	12	10	13	14	9							
13	10	11	12	15	13	B	B	B	B	21	B	B	20	B	B	B	B	17	B	10	19	13	10	9							
14	14	29	20	22	B	17	22	B	B	24	20	18	B	B	B	B	B	B	B	B	15	10	10	30							
15	29	B	24	B	14	B	22	18	20	18	23	B	B	24	18	24	32	28	14	11	27	13	12	10							
16	15	17	B	B	B	B	18	21	20	B	19	18	C	17	17	14	16	13	10	9	B	11	25	26							
17	9	9	9	B	B	20	10	10	10	10	12	13	10	10	13	15	14	11	9	9	9	9	10	8							
18	9	16	10	9	9	12	12	14	B	14	17	15	9	14	14	13	12	11	13	9	9	9	11	14							
19	9	8	19	25	13	10	9	9	21	23	15	21	22	35	34	24	19	14	19	13	9	9	9	18							
20	20	8	B	24	24	21	20	24	B	B	B	B	23	19	24	26	18	14	9	B	23	13	23	13							
21	12	13	30	18	B	B	13	14	14	B	B	25	19	20	B	33	31	33	16	11	12	13	10	7							
22	8	8	7	13	15	24	13	30	B	18	24	11	13	14	14	15	20	B	20	14	23	16	7	9							
23	10	16	13	23	11	16	26	17	17	14	B	B	B	B	B	B	20	20	11	9	10	14	B	13							
24	9	14	11	12	B	14	B	B	16	23	B	B	B	B	B	B	20	17	12	9	9	8	15	11							
25	15	B	15	B	B	B	B	12	11	B	B	B	17	21	B	B	17	13	14	15	10	10	10	12							
26	B	18	13	B	19	B	B	B	B	B	B	B	B	21	B	23	24	B	B	B	8	9	8	9							
27	8	B	8	B	24	B	B	B	B	22	B	B	B	B	B	B	21	B	13	13	11	9	8	8							
28	12	10	9	B	18	13	11	14	17	9	19	15	14	18	14	B	20	14	15	19	12	13	8	9							
29	9	12	B	19	12	14	10	8	10	9	10	13	13	14	12	10	12	11	10	18	13	13	8	8							
30	8	8	9	8	8	9	9	10	9	14	19	19	15	15	17	20	10	10	10	9	8	8	8	8							
31																															
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23							
CNT	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30	30							
MED	12	14	16	22	18	20	18	20	18	18	20	23	22	22	18	22	19	14	14	12	12	10	10	10							
UQ	15	19	29	B	B	B	26	30	B	24	B	B	B	9	8	3	22	23	20	20	19	13	14	13							
LQ	9	9	10	12	13	14	12	12	13	14	17	15	14	15	14	14	12	11	10	9	9	9	8	8							

NOV. 1987

F-MIN (0.1 MHz)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

NOV. 1987

H^o 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 4 MHz to 15 MHz in 20 sec in automatic operation

Station	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	
Day																										
1		A	A	A	A	A	A	B	B	A	A	H 200	B	B	B	B	B 225	230	225	230	245	255	E A 355	E A 320	A	
2		A	E A 300	A	350	A	A	A	A	A	E A 240	230	B	B	240	225	210	240	235	E A 265	B	A	A	A	B	
3		A	A	A	A	A	A	A	A	A	235	B	B	B	A	230	215	220	250	260	E A 290	A	A	A	A	
4		B	B	A	A	B	B	A	180	200	210	210	215	200	200	H 200	H 200	225	215	225	A 240	240	240	255	E A 275	A
5		A	A	A	A	A	A	E A 275	225	215	H 200	H 200	210	205	200	210	200	215	225	220	240	E A 260	A	A	A	
6		A	A	A	A	A	A	A	A	B	A	A	A	E A 250	B	230	B	220	230	240	240	245	270	E A 290	E A 330	
7		E A 340	A	A	A	E A 300	250	230	230	H 200	210	220	200	E A 270	205	H 200	195	200	210	220	H 220	225	240	245	250	
8		255	250	275	E B 290	E B 265	B	B	B	B	B	210	210	210	A 340	240	210	215	220	220	240	240	B	E B 260	E B 260	
9		255	B	B	B	B	B	230	220	230	225	240	200	210	E A 225	210	215	H 200	225	220	235	230	250	A	A	
10		A	A	A	B	A	A	E A 340	A	A	A	B	A	230	210	200	230	225	225	240	230	250	230	270	E A 300	
11		E A 350	A	B	A	A	A	A	A	A	B	A	A	B	A	B	240	240	230	E A 260	240	245	250	A	A	
12		A	A	B	B	E A 310	E A 245	A	A	E A 260	H 200	200	B	B	B	200	220	B	E B 240	220	240	240	250	300	A	
13		A	A	A	A	240	B	B	B	B	A	B	B	220	B	B	B	B	E A 250	B	245	A	E A 290	E A 275	A	
14		E A 280	A	A	A	B	A	A	B	B	A	200	H 200	B	B	B	B	B	B	B	E B 245	E A 345	A	A	A	
15		A	B	A	B	E A 325	B	A	A	A	E A 240	E A 250	B	B	210	230	E A 250	220	210	240	220	E B 250	E A 270	E A 300	E A 280	
16		E A 300	E A 300	B	B	B	B	A	A	A	B	200	215	C	190	205	200	205	215	H 210	210	B	230	E B 275	E B 300	
17		255	E A 300	E A 290	B	B	A	A	E A 250	210	215	180	200	H 205	210	200	240	210	E A 250	215	215	230	225	245	240	
18		250	E B 290	E A 275	250	250	260	A	250	B	225	225	200	200	E A 250	220	210	210	210	215	225	225	250	250	A	
19		E A 350	A	A	A	A	E A 260	220	E A 255	A	220	220	A	225	240	220	225	210	230	E A 300	E A 280	250	A	A	E A 360	
20		A	A	B	A	A	A	A	A	B	B	B	B	225	230	230	225	225	210	245	B	E B 250	E A 295	A	A	
21		A	A	A	A	B	B	E A 250	A	A	B	B	210	210	205	B	210	215	E B 250	230	225	230	230	260	250	
22		250	260	280	E A 370	A	A	A	A	B	210	A	215	225	215	225	225	A	B	225	230	240	255	A	A	
23		A	A	A	A	E A 300	A	A	A	A	E A 250	B	B	B	B	B	B	A	230	230	E A 275	E A 280	A	B	A	
24		A	A	A	A	B	A	B	B	A	A	B	B	B	B	B	B	E A 250	A	A	E A 320	E A 290	E A 260	E A 300	245	
25		A	B	A	B	B	B	B	A	A	B	B	B	200	H 200	B	B	225	230	E A 260	225	250	245	E A 275	E A 290	
26		B	A	E A 340	B	E A 330	B	B	B	B	B	B	B	B	230	B	200	190	B	B	B	A	265	E A 280	E A 310	
27		A	B	E A 260	B	A	B	B	B	B	A	B	B	B	B	B	B	A	B	A	E A 270	A	E A 275	A	A	
28		A	E A 350	A	B	A	A	A	A	A	A	220	220	200	190	190	A	B	E A 320	220	E A 250	225	245	E A 305	E A 350	290
29		E A 300	E A 300	B	A	A	E B 375	210	205	200	190	215	205	200	E A 250	200	205	205	205	205	210	230	250	250	240	
30		250	265	250	255	245	A	220	225	A 200	190	E A 250	190	H 200	200	205	E A 250	195	H 210	230	225	250	250	250	275	
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	9	7	5	9	5	8	9	8	15	17	14	18	20	20	22	24	25	25	27	24	23	19	15	
MED		259	E A 300	E A 275	U 270	E A 300	E E 260	222	222	202	212	212	208	208	206	210	212	216	222	225	232	240	245	E E 275	E E 280	
UQ		E A 320	E A 300	280	E E 350	E A 310	E A 260	E A 262	U 238	217	224	222	215	222	U 224	223	225	225	230	238	242	243	E A 270	E A 295	E A 300	
LQ		252	258	259	252	245	E A 250	220	220	200	205	200	200	200	200	200	205	208	215	220	225	235	248	252	246	

NOV. 1987

H⁺ F (KM)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

DEC. 1987

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 4 MHz to 15 MHz in 20 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	0 X 46	A	X 53	A	0 X 49	X 53	0 X 51	61	65	64	65	65	0 X 66	69	X 74	X 72	X 71	62	0 X 66	0 X 60	X 59	X 55	B	
2		0 X 51	46	A	B	0 X 61	61	71	78	77	71	71	70	0 X 65	62	62	63	61	0 X 56	X 60	X 61	X 57	X 53	X 60	X 59	
3		X 55	58	51	A	A	A	A	0 X 49	0 X 46	B	B	0 X 60	S	0 X 59	S	61	61	X 53	A	0 X 46	B	50	A		
4		0 X 42	A	A	A	0 X 48	0 X 51	X 59	62	64	61	64	0 X 62	S	0 X 65	60	S	55	55	X 58	X 54	X 52	42	42	0 X 48	
5		X 47	46	A	A	A	A	A	0 X 47	46	46	46	B	B	0 X 47	0 X 46	0 X 47	0 X 55	0 X 58	X 58	0 X 51	X 48	A	A	0 X 48	
6		0 X 45	45	45	0 X 46	42	0 X 41	A	A	A	60	65	S	0 X 48	0 X 50	0 X 51	0 X 53	0 X 56	59	60	50	48	46	43	37	
7		A	B	A	A	A	A	A	S	X 65	X 66	X 70	X 70	65	0 X 58	0 X 55	0 X 59	0 X 56	0 X 57	0 X 59	X 60	X 59	X 54	X 47	X 38	
8		X 44	46	X 49	X 51	X 59	60	65	70	79	79	78	74	74	67	64	A	A	A	A	60	61	X 58	X 56	54	
9		X 50	X 53	X 56	60	66	X 71	0 X 84	X 92	X 96	X 93	90	87	82	79	84	67	66	62	60	61	X 56	X 59	X 56	55	
10		B	A	A	A	0 X 58	60	A	B	A	S	60	0 X 58	X 64	0 X 63	0 X 61	0 X 64	60	62	A	A	B	A	A	A	
11		A	A	A	46	A	A	A	A	X 52	0 X 54	0 X 55	S	0 X 48	0 X 49	0 X 48	0 X 51	S	0 X 56	0 X 56	X 48	0 X 47	X 46	45	45	
12		B	A	A	B	A	0 X 42	B	B	A	B	B	0 X 48	0 X 49	0 X 49	0 X 50	B	S	X 66	0 X 61	0 X 51	0 X 58	52	50	43	
13		X 45	0 X 46	0 X 49	X 51	0 X 51	0 X 52	X 59	66	X 72	X 77	X 79	X 76	0 X 66	S	S	61	61	X 59	61	X 57	X 56	50	0 X 49	55	
14		X 53	55	52	54	0 X 58	70	80	80	X 84	X 90	85	80	75	75	75	68	62	61	62	61	62	X 56	X 50	43	
15		A	51	X 50	X 55	X 60	X 67	X 76	X 82	X 90	X 92	X 90	X 90	X 76	X 73	66	60	X 64	X 62	X 66	A	55	X 53	A	0 X 55	
16		0 X 44	0 X 54	50	A	A	A	A	A	A	A	B	B	B	0 X 47	0 X 62	S	B	X 57	0 X 60	0 X 52	A	A	A	0 X 47	
17		A	A	B	A	A	0 X 43	A	B	B	A	A	60	62	68	71	72	69	S	S	X 55	A	X 49	0 X 47	44	
18		A	A	B	A	A	A	A	A	0 X 57	0 X 61	61	65	B	63	70	65	66	0 X 66	X 66	X 65	X 60	X 59	X 55	51	51
19		X 46	0 X 52	0 X 52	X 61	64	61	70	76	86	83	86	80	X 80	0 X 75	0 X 79	71	X 73	65	70	X 57	55	X 50	0 X 46	49	
20		0 X 46	A	A	0 X 50	51	X 61	61	71	X 71	X 75	X 76	X 75	X 74	X 70	X 70	69	X 70	X 67	X 59	X 58	55	X 56	X 49	X 50	
21		X 51	X 55	X 62	X 65	X 62	0 X 66	78	0 X 57	A	S	71	71	0 X 68	70	0 X 72	71	X 80	X 78	0 X 59	B	0 X 49	A	S	A	
22		A	A	0 X 49	43	A	A	42	A	S	A	B	B	B	0 X 47	B	B	X 60	B	B	0 X 60	X 48	0 X 48	A	42	
23		A	A	A	0 X 47	A	A	A	S	S	S	66	62	61	B	0 X 70	S	75	71	X 71	X 56	X 50	X 46	X 51	X 46	
24		X 52	0 X 52	0 X 51	0 X 48	52	43	B	A	71	72	70	B	B	68	71	72	X 70	68	X 59	X 57	0 X 51	0 X 52	X 48	X 45	
25		0 X 43	43	0 X 47	50	A	X 55	X 61	X 63	X 60	X 65	B	70	X 72	0 X 76	0 X 75	71	X 73	X 76	X 79	66	X 60	X 59	X 56	X 50	
26		0 X 46	A	A	A	0 X 47	A	A	A	0 X 62	66	66	63	65	65	A	62	0 X 62	X 61	60	60	X 58	X 53	X 56	X 56	
27		X 58	A	A	B	A	0 X 74	0 X 85	39	X 88	X 80	X 78	X 75	0 X 70	0 X 66	A	X 64	X 64	63	59	59	60	X 62	X 65	X 58	
28		X 55	X 55	B	0 X 63	0 X 66	X 80	X 93	X 94	X 95	X 95	X 89	78	X 78	X 65	X 65	X 67	X 70	X 62	C	C	X 70	67	65	0 X 60	
29		59	A	0 X 61	0 X 63	X 66	50	A	X 56	67	X 73	X 70	70	68	0 X 66	S	50	62	X 60	X 63	X 63	X 59	X 60	X 56	X 57	
30		X 55	X 55	X 56	58	S	61	71	86	X 95	X 86	X 81	X 78	X 76	X 78	X 73	67	X 65	X 63	X 67	X 65	X 65	0 X 61	0 X 57	X 60	
31		0 X 54	0 X 55	60	0 X 56	0 X 65	66	X 75	70	73	X 80	82	X 76	73	74	X 70	X 74	A	66	X 65	X 67	X 54	0 X 50	53	51	
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT		21	18	16	19	17	22	17	19	23	23	25	25	25	28	26	24	26	23	26	26	28	26	25	27	
MED		X 50	X 52	X 51	X 53	X 59	X 60	X 71	X 70	X 71	X 73	X 71	X 70	X 68	X 66	X 68	X 66	X 64	X 62	X 60	X 60	X 56	X 53	X 51	X 50	
UQ		X 54	X 55	X 56	X 59	X 64	X 66	X 78	X 81	X 85	X 83	X 81	X 76	X 74	X 72	X 71	X 71	X 70	X 66	X 65	X 61	X 60	X 59	X 56	X 55	
LQ		0 X 45	46	X 49	X 49	0 X 51	0 X 50	61	62	X 62	X 65	65	63	X 64	0 X 60	0 X 60	0 X 60	X 61	X 59	X 59	X 55	X 50	X 50	X 48	X 45	

DEC. 1937

FXI (0.1 MHz)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

DEC. 1987

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	4	MHz to 15				MHz in 20				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	40	A	47	A	43	47	45	55	59	58	59	56	60	63	68	66	65	56	60	U S	54	53	49	B			
2	45	F	A	B	55	F	F	F	71	65	65	64	59	56	56	57	55	50	54	55	51	47	54	53				
3	49	F	F	A	A	A	A	43	E G	40	B	B	54	S	53	S	55	55	47	A	40	B	F	A				
4	36	A	A	A	42	45	53	56	58	55	58	56	S	59	54	S	49	49	52	48	46	36	36	42				
5	41	F	A	A	A	A	A	41	F	40	F	40	B	B	41	40	41	49	52	52	45	42	A	A	42			
6	U R	F	F	40	F	E G	A	A	A	54	59	S	42	U S	44	45	47	50	53	54	49	42	40	37	31			
7	A	B	A	A	A	A	A	S	59	60	64	64	59	52	49	53	50	51	53	54	53	48	41	32				
8	38	40	43	45	53	54	59	64	73	73	72	68	68	61	58		A	A	A	A	54	55	52	50	48			
9	44	47	50	F	F	60	65	78	86	90	87	F	80	81	76	73	73	61	60	56	54	55	50	53	49			
10	B	A	A	A	52	F	A	B	A	S	F	50	52	58	57	55	58	F	F	A	A	B	A	A	A			
11	A	A	A	F	40	A	A	A	46	U S	48	U S	49	S	42	43	42	U S	S	50	50	42	41	40	39	39		
12	B	A	A	B	A	R	B	B	A	B	B	42	43	43	44	R	B	S	60	U S	55	45	52	46	44	37		
13	39	40	43	45	U R	45	46	53	60	66	71	73	70	U S	S	S	55	55	U S	53	55	51	50	43	43	49		
14	47	F	F	48	52	J S	64	74	74	78	84	79	74	69	69	69	F	60	56	F	55	55	56	50	44	37		
15	A	F	45	44	49	54	61	70	76	84	86	84	84	70	67	F	F	54	58	56	60	A	F	47	A	49		
16	38	48	44	A	A	A	A	A	A	A	B	B	B	41	56	S	B	51	44	46	A	A	A	A	41			
17	A	A	B	A	A	37	A	B	B	A	A	54	56	62	65	66	63	S	S	U S	A	43	41	38				
18	A	A	B	A	A	A	A	A	51	55	55	59	B	57	64	59	60	60	59	54	53	49	45	45				
19	40	46	46	55	58	55	60	70	75	F	80	F	80	74	74	69	73	65	67	59	64	51	49	44	40	43		
20	40	A	A	44	F	45	55	55	65	65	69	70	69	68	64	64	63	64	61	53	52	49	50	43	44			
21	45	49	56	59	56	60	72	61	A	S	F	65	64	62	64	66	65	74	72	53	B	43	A	S	A			
22	A	A	43	F	A	A	F	A	S	A	B	B	B	41	B	B	54	B	B	54	42	42	A	F				
23	A	A	A	U S	A	A	A	S	S	S	F	60	56	55	B	64	S	F	69	65	65	50	44	40	45	40		
24	46	46	45	42	F	46	37	B	A	65	66	64	F	B	B	62	65	66	64	62	53	51	45	46	42	39		
25	37	F	37	41	F	A	49	55	57	54	59	B	F	64	66	70	70	F	65	67	70	73	F	60	54	53	50	44
26	40	A	A	A	41	A	A	A	56	F	60	60	57	59	59	A	56	56	55	54	54	52	47	50	50			
27	J S	A	A	B	A	68	79	F	83	82	74	72	69	64	60	A	58	58	57	F	53	F	54	56	59	52		
28	49	49	B	57	60	74	86	88	89	89	83	F	70	67	59	59	61	64	56	C	C	64	61	F	59	U S		
29	F	B	55	57	60	44	A	51	61	67	J S	64	64	62	60	S	J S	54	56	54	57	57	53	54	50	51		
30	49	49	50	F	S	F	65	80	89	80	75	72	70	72	67	61	59	57	60	59	59	55	51	54				
31	48	49	54	50	59	F	60	69	64	F	67	74	74	70	65	68	64	68	A	60	59	61	48	44	47	45		
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23				
CNT	21	18	16	19	17	22	17	19	23	23	25	25	25	28	26	24	26	28	26	26	28	26	25	27				
MED	44	46	45	47	53	54	65	64	65	67	65	64	62	60	62	60	58	56	54	54	50	47	45	44				
UQ	48	49	50	51	58	60	72	75	76	77	74	70	68	66	65	65	64	60	59	55	54	53	50	49				
LQ	39	F	40	43	43	45	44	55	56	59	59	57	56	54	54	54	55	53	53	49	44	43	42	39				

DEC. 1987

F0F2 (0.1 MHz)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

DEC. 1987

FES (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 4 MHz to 15 MHz in 20 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	27	29	42	42	45	31	33	34	34	36	36	38	33	34	33	27	32	31	E B	E B	31	21	B	
2	31	34	35	B	37	40	35	92	34	52	36	34	38	40	37	35	31	32	32	41	42	56	105	31	
3	36	29	27	42	49	57	45	37	52	B	B	32	35	47	37	41	45	29	30	34	32	B	32	37	
4	40	40	45	45	33	35	32	32	35	35	35	34	35	39	40	36	38	34	26	30	27	33	23	40	
5	42	45	71	31	32	42	40	42	35	35	28	B	B	32	31	30	27	E B	E B	28	28	43	45	50	
6	59	31	35	28	28	38	44	42	45	41	36	34	35	31	E B	28	28	25	27	24	24	29	30	38	
7	37	B	36	45	35	42	39	34	26	30	30	30	40	38	72	29	38	26	32	26	22	19	20	22	
8	18	30	18	19	27	30	30	39	38	25	34	59	55	33	37	75	73	61	54	37	42	34	26	27	
9	35	17	30	27	31	41	36	47	43	45	35	71	38	46	40	30	34	30	29	31	39	20	31	21	
10	B	70	69	75	48	44	45	B	46	34	36	39	76	52	39	40	34	32	45	40	B	45	71	102	
11	42	58	37	34	75	37	37	46	32	32	29	29	35	35	32	30	32	32	28	30	23	39	30	37	
12	B	37	40	B	40	35	B	B	40	B	B	28	26	28	29	B	31	29	E B	51	33	36	31	27	
13	20	27	31	33	37	30	31	36	33	36	41	35	41	64	33	40	37	26	33	33	22	30	30	27	
14	31	31	20	30	30	27	38	33	34	34	36	33	E B	84	74	42	46	65	25	E B	21	28	26	31	
15	31	30	31	30	38	30	32	48	35	35	33	36	37	88	56	41	42	35	27	35	52	46	42	80	
16	39	41	34	34	45	63	38	73	35	39	B	B	B	E B	E B	37	B	33	33	38	94	41	45	40	
17	40	46	B	33	38	35	51	B	B	37	35	32	37	33	35	31	26	34	E B	33	43	31	45	31	
18	45	35	B	44	41	38	50	37	33	35	30	29	B	E B	34	E B	29	26	31	31	30	25	27	33	
19	21	32	31	45	35	37	31	33	35	43	34	41	32	40	42	E B	E B	E B	15	32	36	35	41	45	
20	44	31	43	40	35	28	33	31	E B	38	32	32	28	34	36	35	27	30	27	26	23	25	31	29	39
21	28	23	29	30	32	32	35	40	52	32	32	33	31	31	42	40	43	41	27	B	39	70	103	60	
22	46	45	42	33	55	37	40	33	44	44	B	B	B	31	B	B	38	B	E	28	26	47	45	46	
23	87	42	34	33	70	45	37	28	40	36	35	33	28	B	E B	32	33	31	37	26	34	41	39	47	
24	40	37	46	40	32	38	B	39	34	32	36	B	B	37	63	39	36	E B	26	32	29	80	43	37	
25	36	40	30	39	44	37	75	40	35	E B	34	B	32	36	E B	60	45	30	33	62	26	30	37	44	35
26	37	47	47	36	41	41	46	42	38	30	35	35	42	41	89	34	38	31	34	26	27	23	29	28	
27	36	37	90	B	37	36	35	34	40	40	41	34	41	41	40	52	45	38	37	25	57	39	29	47	
28	30	28	B	23	36	37	45	67	46	40	57	32	36	46	44	41	90	67	C	C	57	45	40	37	
29	40	B	42	38	36	33	40	47	33	53	36	37	38	37	37	35	38	62	57	37	34	22	20	18	
30	20	40	36	66	29	37	44	26	28	35	40	34	31	41	34	32	29	29	26	23	24	19	26	44	
31	37	E B	E B	43	E B	23	24	25	26	26	25	17	30	31	33	33	42	106	52	37	23	36	32	30	32
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	28	29	28	28	31	31	29	28	30	29	26	27	26	30	30	29	30	30	29	29	30	30	31	30	
MED	37	35	35	35	37	37	38	38	35	35	35	34	36	38	33	35	35	32	30	30	32	34	31	37	
UQ	41	41	42	42	42	41	44	44	40	40	36	36	38	44	44	41	42	38	34	34	42	45	43	45	
LQ	31	30	30	30	32	34	33	33	34	32	32	32	34	33	34	30	30	28	26	26	25	29	28	31	

DEC. 1987

FES (0.1 MHz)

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IONOSPHERIC DATA

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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 4 MHz to 15 MHz in 20 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	24	23	14	19	9	10	9	9	3	11	11	13	10	10	13	13	17	19	32	25	24	13	B		
2	12	9	24	B	9	9	8	8	11	12	18	16	15	15	13	13	15	13	13	10	11	10	10	9		
3	8	8	9	13	11	15	11	11	10	B	B	17	14	14	14	10	13	10	9	20	13	B	8	8		
4	8	13	13	14	16	10	9	8	8	10	9	12	14	13	9	13	11	9	8	8	8	8	14	10		
5	10	8	19	20	11	11	18	9	11	13	18	B	B	17	19	12	15	30	28	14	8	8	10	9		
6	8	8	8	8	9	8	8	8	13	11	13	15	10	15	34	15	14	10	10	17	13	9	9	10		
7	22	B	14	13	18	14	14	20	13	11	10	12	11	11	10	13	13	9	9	10	10	14	14	13		
8	10	12	11	9	7	9	10	9	10	9	12	11	11	14	14	10	13	10	8	10	10	10	10	8		
9	8	8	7	9	7	9	10	8	11	11	11	9	12	10	11	14	12	10	10	12	11	12	8	9		
10	B	10	8	12	10	10	10	B	14	17	13	19	13	13	14	15	12	12	8	15	B	13	8	20		
11	24	9	11	8	25	19	18	18	12	12	13	13	12	12	10	14	14	11	11	8	12	8	8	8		
12	B	29	20	B	18	12	B	B	18	B	B	16	19	8	20	B	14	19	30	12	24	14	12	11		
13	11	8	8	8	11	9	9	8	8	9	11	12	13	11	12	13	10	13	9	10	9	9	19	11		
14	8	8	9	8	8	8	9	12	11	13	12	13	34	19	18	15	14	18	20	26	14	11	8	12		
15	20	11	8	9	9	9	8	8	9	10	9	11	14	9	9	9	9	11	8	14	12	11	14	8		
16	7	7	9	9	14	9	10	10	13	12	B	B	B	34	47	22	B	11	10	8	9	11	8	8		
17	13	15	B	24	20	10	17	B	B	23	25	20	25	14	13	9	19	14	30	9	8	13	8	9		
18	14	15	B	25	20	17	20	18	12	15	12	19	B	35	23	24	20	24	15	14	13	14	8	8		
19	8	10	10	9	10	12	8	9	24	14	15	14	13	21	30	33	30	30	19	15	9	8	8	8		
20	14	21	17	16	10	8	9	8	38	15	17	13	12	9	13	13	13	10	13	13	12	9	13	11		
21	10	10	8	8	8	8	9	20	21	14	11	10	10	14	13	17	21	15	10	B	13	10	9	8		
22	8	8	10	8	16	8	11	10	17	27	B	B	B	23	B	B	18	B	B	17	9	9	10	11		
23	13	18	19	8	17	19	17	19	18	15	12	15	17	B	49	22	10	16	11	19	8	13	12	10		
24	8	10	9	9	10	11	B	9	10	11	17	B	B	21	15	23	18	30	11	8	22	24	13	8		
25	7	13	15	10	11	8	8	13	8	34	B	23	20	50	14	23	17	15	15	20	14	14	15	12		
26	13	17	15	18	17	17	24	24	10	12	11	11	17	11	11	19	14	19	19	14	9	10	8	11		
27	8	15	24	B	21	14	11	8	9	10	10	13	17	17	19	10	11	12	13	18	11	9	8	7		
28	5	8	B	14	17	12	10	10	10	10	11	12	14	14	13	10	14	13	C	C	10	8	8	10		
29	8	B	8	15	8	8	10	10	8	10	8	13	9	14	10	13	10	10	10	10	9	10	10	9		
30	13	12	13	13	18	14	13	13	10	8	10	11	14	14	15	11	15	15	18	17	15	15	15	18		
31	19	20	23	25	23	17	18	18	19	19	14	14	15	14	14	13	15	16	14	19	32	18	19	14		
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	31	31	31	31		
MED	10	11	13	13	11	10	10	10	11	12	12	13	14	14	14	13	14	13	12	14	11	11	10	10		
UQ	14	16	20	17	18	14	17	18	16	16	18	18	20	18	19	20	16	18	19	18	14	14	13	11		
LQ	8	8	9	9	10	9	9	8	10	10	11	12	12	12	12	12	12	10	10	10	9	9	8	8		

DEC. 1987

F-MIN (0.1 MHz)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

DEC. 1987

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 4		MHz to 15		MHz in 20		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	E A 310	A	E A 325	A	A	240	210	200	200	180	H 200	210	210	200	220	200	205	210	E B 250	230	250	255	B		
2		E A 310	260	A	B	E A 260	H 210	225	205	180	E A 260	E A 230	210	210	E A 250	225	225	200	210	215	E A 245	210	230	A	250	250	H
3		270	260	E A 300	A	A	A	A	H 230	E A 250	B	B	215	H 220	210	210	210	220	210	170	H	A	E A 260	B	250	A	
4		A	A	A	A	A	E A 300	E A 240	220	200	200	190	H 210	195	195	H 190	200	200	195	H 230	220	225	E A 310	230	A		
5		A	A	A	A	A	A	A	H 200	200	205	200	B	B	E A 240	210	210	215	230	225	E A 240	E A 300	A	A	A	A	
6		A	250	E A 310	245	255	A	A	A	A	220	240	205	H 190	215	225	200	200	200	225	225	230	250	270	A		
7		A	B	A	A	A	A	A	E A 270	200	190	200	180	H 220	A	210	195	200	200	190	H 210	210	220	240	250		
8		250	255	260	210	205	200	210	250	205	200	180	E A 330	E A 330	220	225	A	A	A	A	200	E A 250	230	225	230		
9		H 210	250	235	230	225	A 220	H 195	210	210	210	200	A	220	E A 250	215	200	210	195	200	205	225	230	230	250		
10		B	A	A	A	A	A	A	B	A	215	210	210	A	230	220	205	200	180	E A 220	A	A	B	A	A	A	
11		A	A	A	E A 290	A	A	A	A	H 210	200	E A 250	210	205	215	205	205	210	220	B	230	230	230	E A 250	E A 265	A	
12		B	A	A	B	A	E A 320	B	B	A	B	B	200	210	210	215	B	210	210	H 225	230	250	250	250	250		
13		260	275	280	270	E A 310	250	200	210	205	205	180	205	200	205	200	205	200	200	220	225	220	225	250	250		
14		225	245	240	225	H 240	220	210	205	200	210	200	200	200	E A 350	E A 280	225	A	225	A	215	215	220	225	230	E A 275	
15		A	E A 270	E A 290	240	245	225	215	200	200	200	220	200	205	E A 250	200	205	215	210	H 180	A	A	A	A	E A 325		
16		A	A	E A 375	A	A	A	A	A	A	A	B	B	B	220	B	E A 250	B	E A 280	E A 230	E A 340	A	A	A	E A 270		
17		A	A	B	A	A	A	A	B	B	A	A	E A 245	220	H 200	210	210	250	E A 275	245	240	A	250	A	E A 300		
18		A	A	B	A	A	A	A	A	H 210	205	180	H 210	B	220	200	200	205	215	220	225	E A 230	225	245	250		
19		260	A	A	E A 350	260	230	200	190	210	240	200	190	190	A	E A 360	210	210	210	250	250	260	260	A	A		
20		A	A	A	A	E A 300	240	180	205	E B 260	230	210	230	180	200	200	200	190	200	210	225	220	225	250	250		
21		240	260	250	250	230	E A 240	205	225	A	240	200	195	180	180	190	H 200	A	225	225	B	E A 280	A	230	A		
22		A	A	E A 295	E A 275	A	A	E A 260	A	A	220	A	B	B	B	A	B	B	225	B	B	250	230	E A 330	A	A	
23		A	A	A	E A 350	A	A	A	225	220	230	200	200	205	B	E A 390	225	210	205	220	215	E A 245	E A 315	E A 270	240		
24		E A 270	E A 300	E A 300	230	E A 340	A	B	A	H 200	H 205	200	B	B	230	E A 350	200	210	220	230	240	225	240	240	A		
25		E A 400	A	E A 375	E A 295	A	E A 280	200	E A 250	205	E B 250	B	220	210	E B 380	E A 350	E A 230	215	215	220	225	230	250	245	E A 300		
26		250	A	A	A	H 200	A	A	A	220	190	225	225	210	210	A	200	210	205	205	220	H 210	225	225	250		
27		E A 280	A	A	B	A	E A 250	240	200	200	210	E A 250	200	E A 230	225	A	200	E A 300	H 205	210	210	H 200	225	230	225		
28		250	250	B	250	225	230	225	210	E A 270	195	E A 250	H 190	200	200	200	210	200	225	C	C	E A 260	230	250	A		
29		E A 325	B	A	A	245	215	A	A	190	190	180	180	205	200	210	200	190	A	E A 250	215	230	225	245	245		
30		250	280	250	225	E A 290	240	200	200	200	190	H 200	H 200	200	200	200	215	200	205	200	220	H 205	220	245	250		
31		260	260	260	260	230	225	205	200	205	200	180	H 210	200	190	210	E A 270	A	E A 300	220	225	225	A	E A 280	250		
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT		16	14	14	17	16	17	17	20	25	26	25	26	26	29	27	28	27	27	27	26	27	24	24	19		
MED		252	256	U 260	U 238	235	225	203	203	202	204	200	202	205	210	205	202	210	208	220	222	225	228	244	250		
UQ		E A 275	268	E A 300	E A 290	E A 275	E A 250	220	220	210	215	210	210	215	222	213	214	214	216	226	232	239	248	250	255		
LQ		250	250	250	230	228	220	200	200	200	200	190	H 200	200	200	200	200	200	205	210	215	220	225	230	250		

DEC. 1987

H⁺F (KM)

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IONOSPHERIC DATA AT SYOWA STATION (ANTARCTICA)
ION.ANT.— 49 July 1987—December 1987 (Not for Sale)

昭和基地電離層資料（南極）

（1987年7月—1987年12月）

1991年2月5日 印刷（非売品）

1991年2月10日 発行

編集兼発行所

郵政省通信総合研究所

〒184 東京都小金井市貫井北町4丁目2-1

☎ 0423 (21) 1211 (代)

Queries about "Ionospheric Data at Syowa Station" should be forwarded to: The Communications Research Laboratory,
Ministry of Posts and Telecommunications, 2-1 Nukui-Kitamachi 4-chome, Koganei-shi, Tokyo 184 JAPAN.