ISSN 0389–8237

ION.ANT.—37

IONOSPHERIC DATA AT SYOWA STATION

(ANTARCTICA)

July 1981—December 1981

CONTENTS

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

RADIO RESEARCH LABORATORY

MINISTRY OF POSTS AND TELECOMMUNICATIONS

TOKYO, JAPAN

INTRODUCTION

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

LOCATION OF SYOWA STATION

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

SPECIFICATIONS OF THE IONOSONDE USED AT SYOWA STATION

Items	Specificatons
Frequency Range	400 kHz-15 MHz
Transmitting power	10 kW (peak value)
Duration of Sweep	20 sec
Transmitted Pulse Width	80 μsec
Recurrence Frequency of Transmitted Pulse	50 Hz (by power source frequency)
Frequency Scale	every 1 MHz
Height Range	900 km
Height Scale	every 50 km
Total Receiver Gain	120 dB
Recording Method	35 mm film and video fax for ionograms
Power Supply	100 volt AC, 2.0 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 fnequency 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

(i) Descriptive Letters.

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

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

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

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

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

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 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 infuenced by, or impossible because of, attenuation in the vicinity of a critical frequency.

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

T Volue 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 tabuation sheets.

D Greater than.

E Less than.

J Ordinary component characteristic deduced from the extraordinary component.

M Mode interpretation uncertain.

O Extraordinary component characterisitic 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

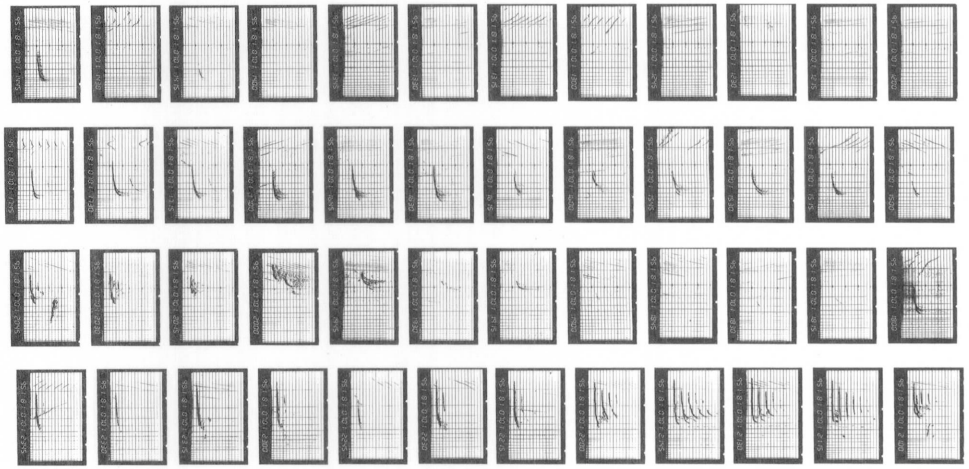
Median count (CNT) is the number of values from which a median has been computed. In addition to numerical values, the count may include certain descriptive letters.

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 accrding to magnitude; the lower quartile (LQ) is the median value of the lower half.

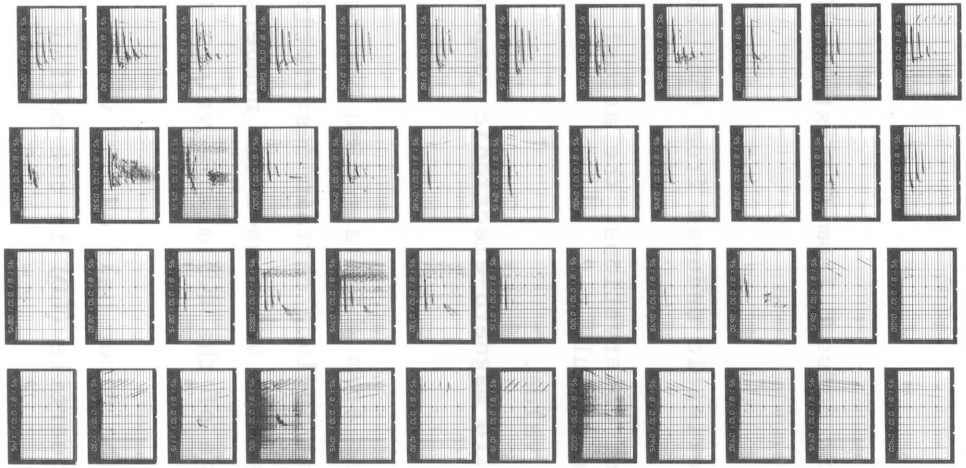
SYOWA STATION

IONOGRAM 1981 07 01 12;00-23;45



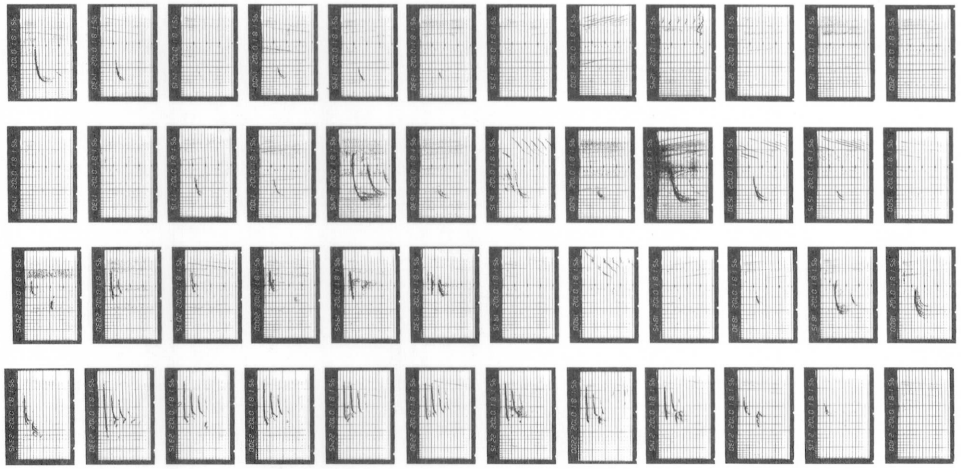
SYOWA STATION

IONOGRAM 1981 07 01 00;00-11;45



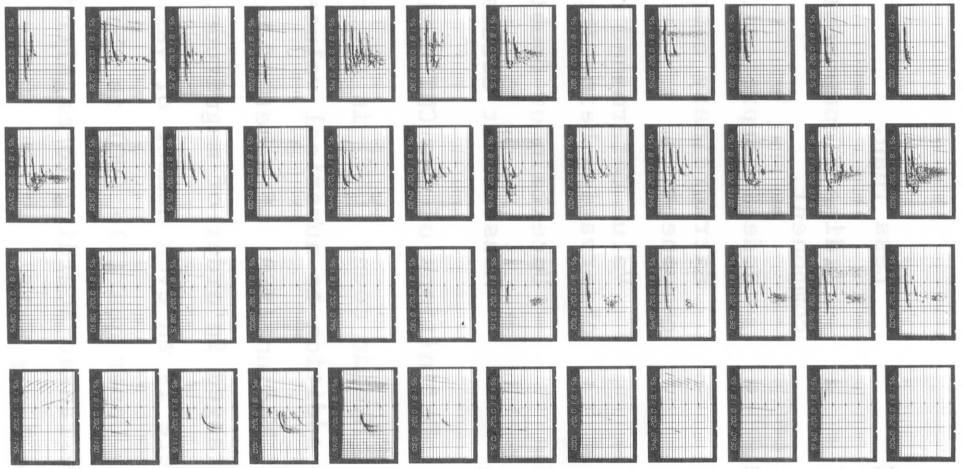
SYOWA STATION

IONOGRAM 1981 07 02 12;00-23;45



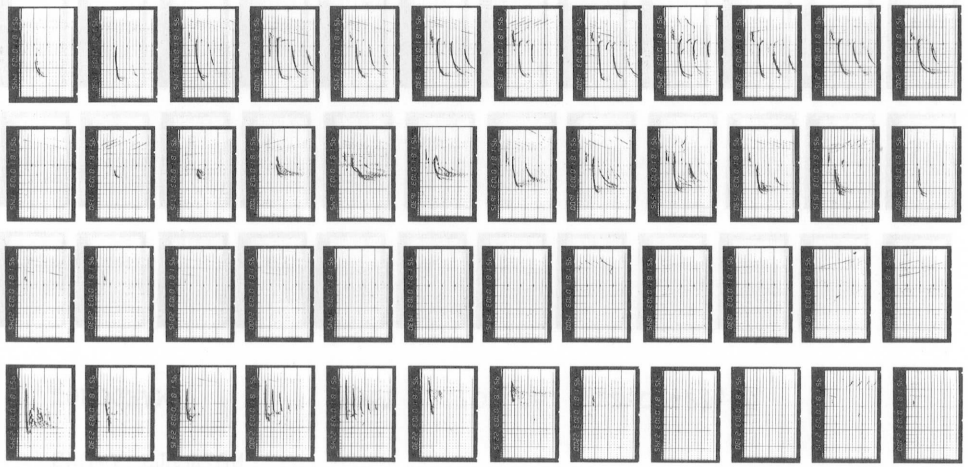
SYOWA STATION

IONOGRAM 1981 07 02 00;00-11;45



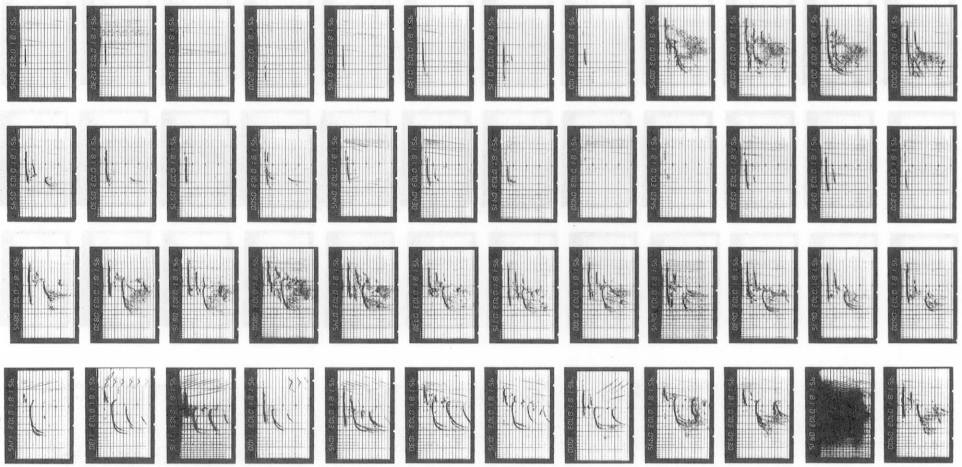
SYOWA STATION

IONOGRAM 1981 07 03 12;00-23;45



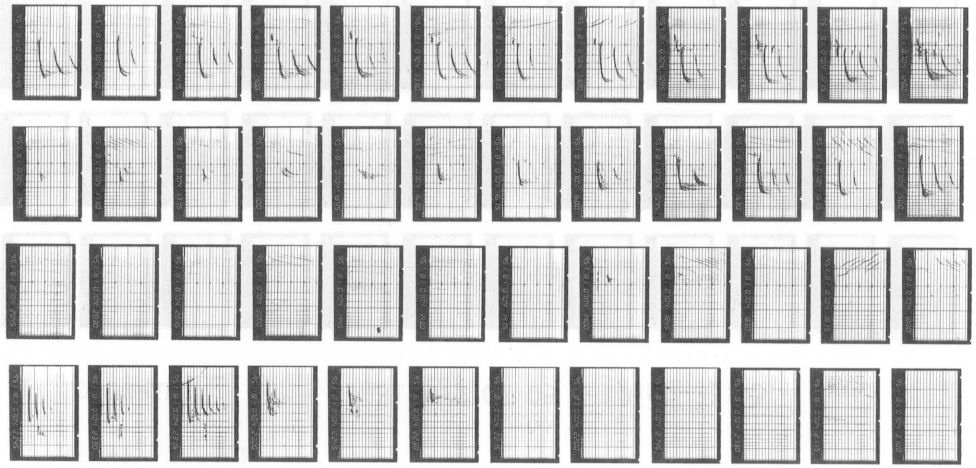
SYOWA STATION

IONOGRAM 1981 07 03 00;00-11;45



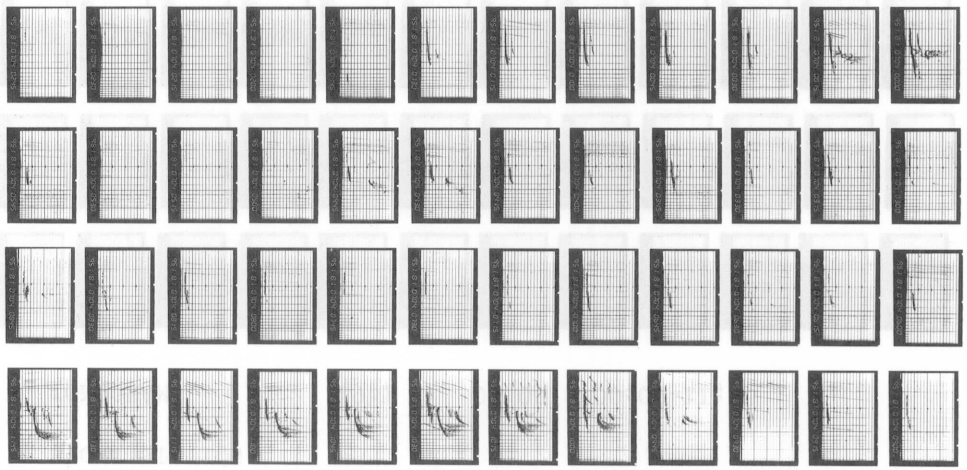
SYOWA STATION

IONOGRAM 1981 07 04 12;00-23;45



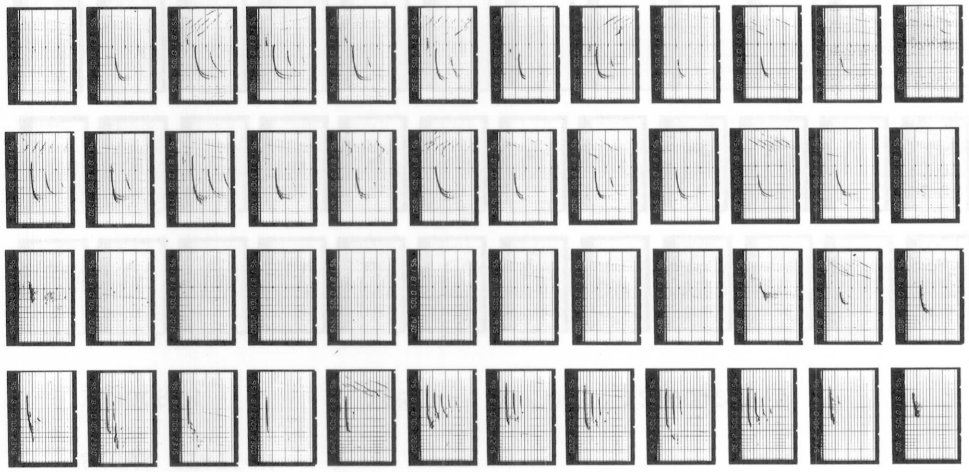
SYOWA STATION

IONOGRAM 1981 07 04 00;00-11;45



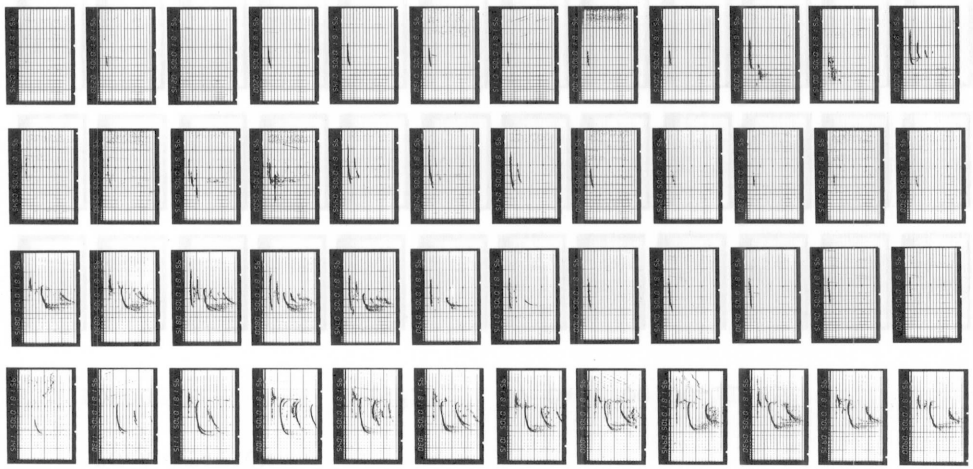
SYOWA STATION

IONOGRAM 1981 07 05 12;00-23;45



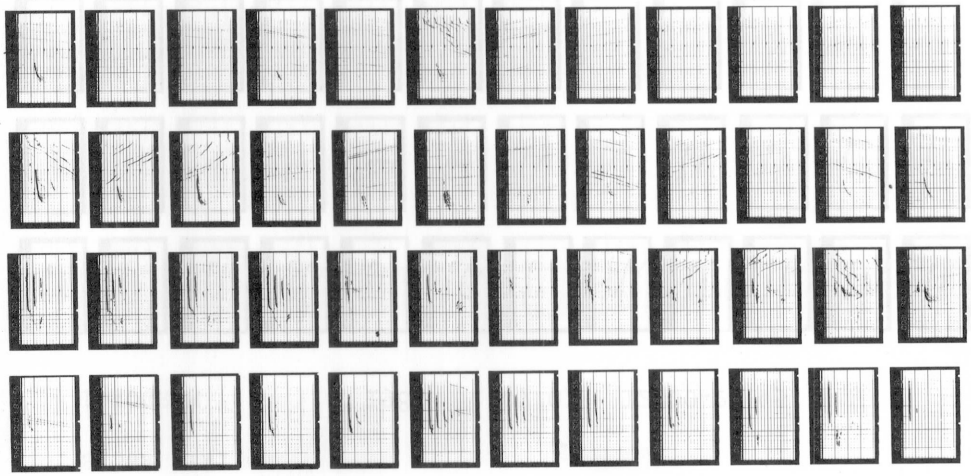
SYOWA STATION

IONOGRAM 1981 07 05 00;00-11;45



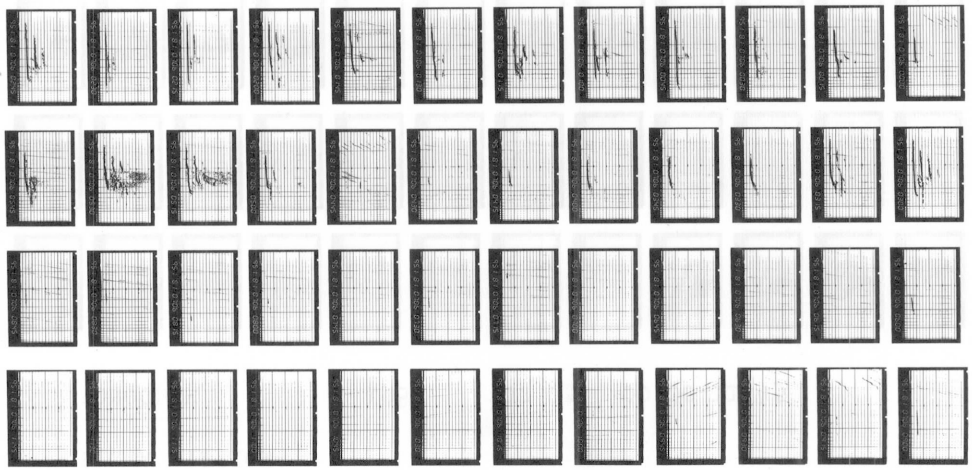
SYOWA STATION

IONOGRAM 1981 07 06 12;00-23;45



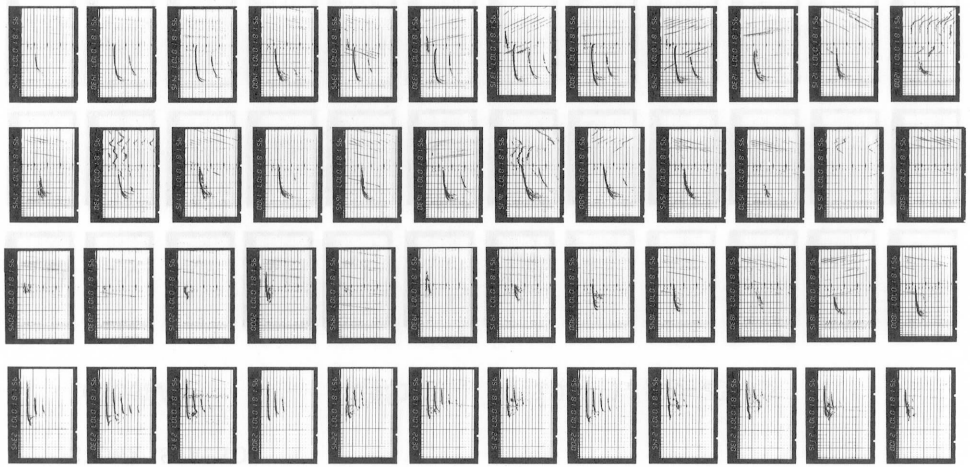
SYOWA STATION

IONOGRAM 1981 07 06 00;00-11;45



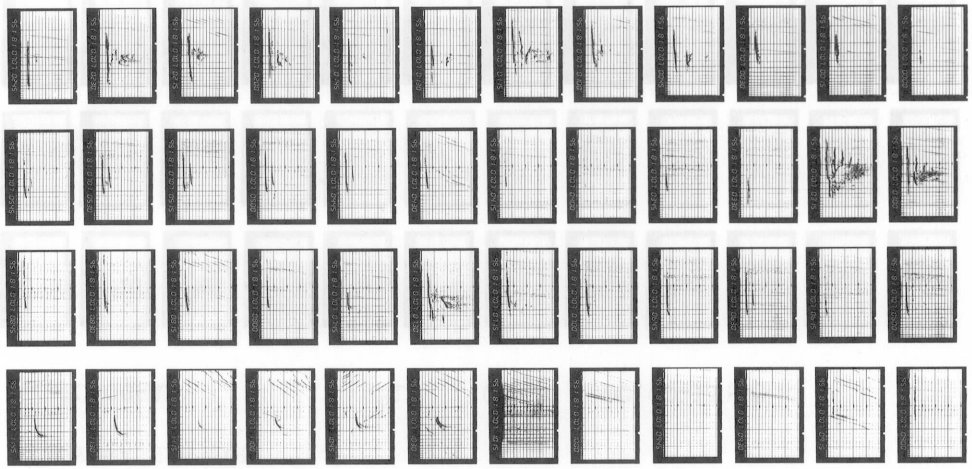
SYOWA STATION

IONOGRAM 1981 07 07 12;00-23;45



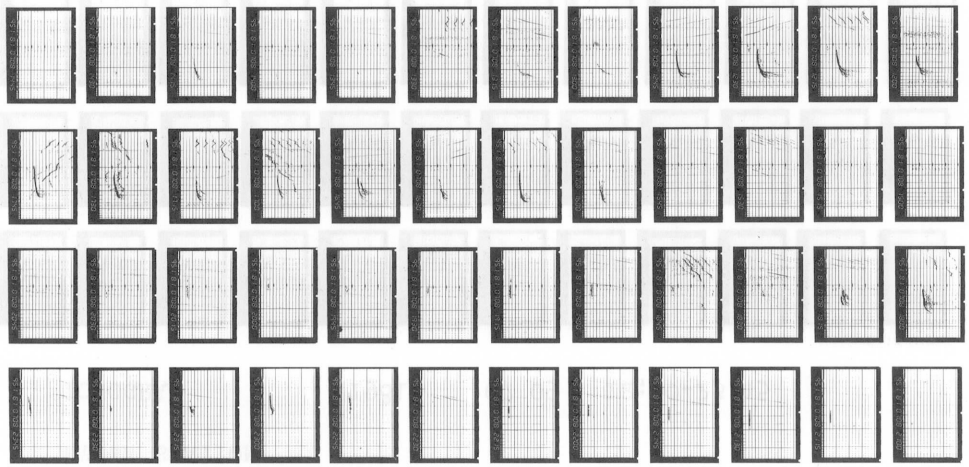
SYOWA STATION

IONOGRAM 1981 07 07 00;00-11;45



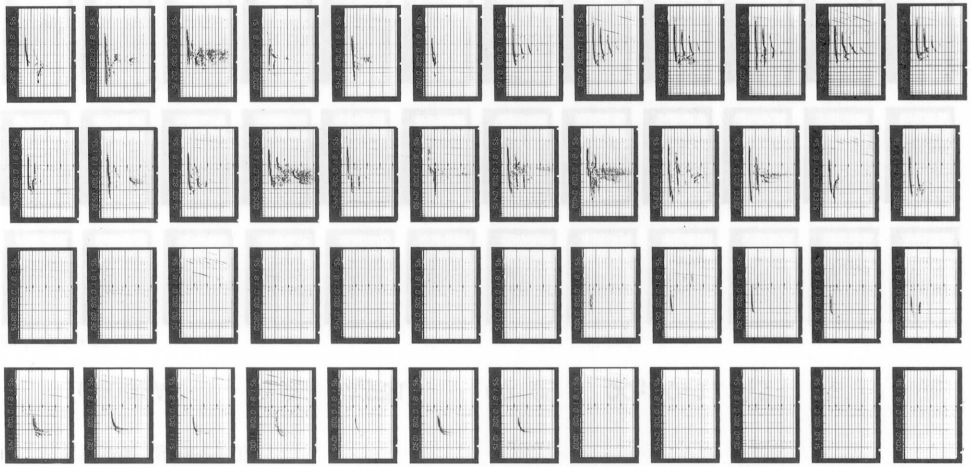
SYOWA STATION

IONOGRAM 1981 07 08 12;00-23;45



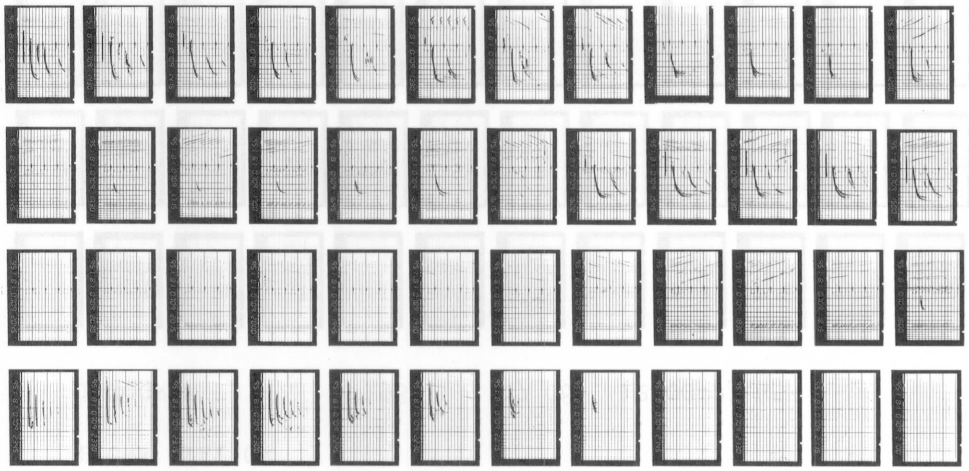
SYOWA STATION

IONOGRAM 1981 07 08 00;00-11;45



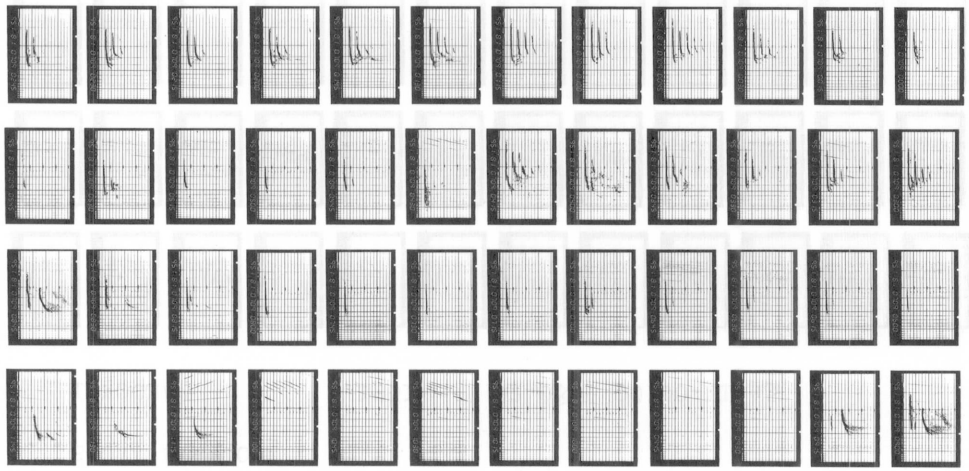
SYOWA STATION

IONOGRAM 1981 07 09 12;00-23;45



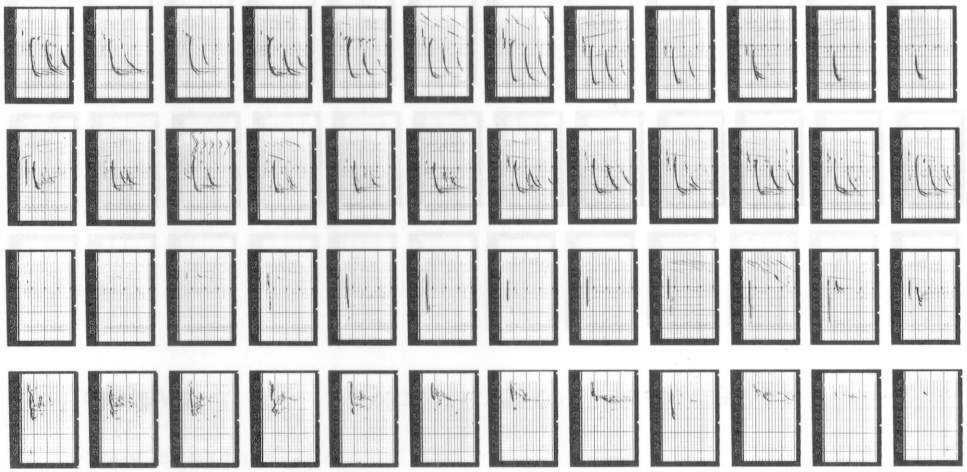
SYOWA STATION

IONOGRAM 1981 07 09 00;00-11;45



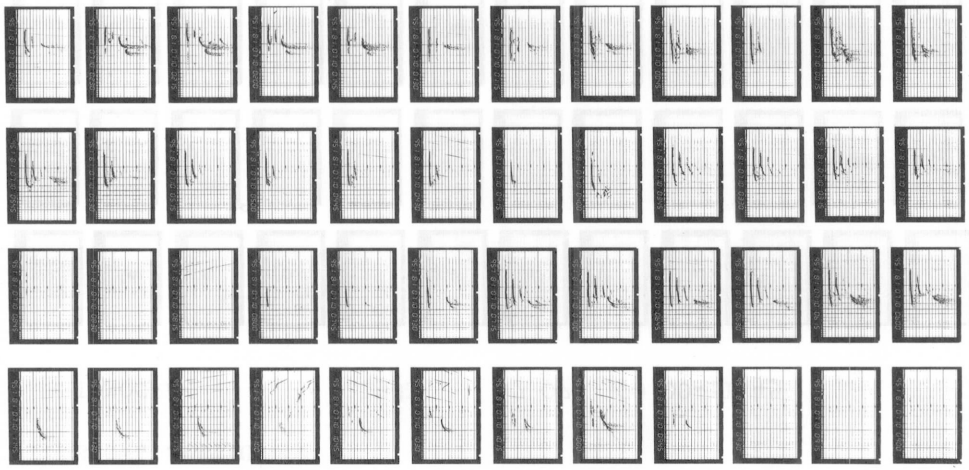
SYOWA STATION

IONOGRAM 1981 07 10 12;00-23;45



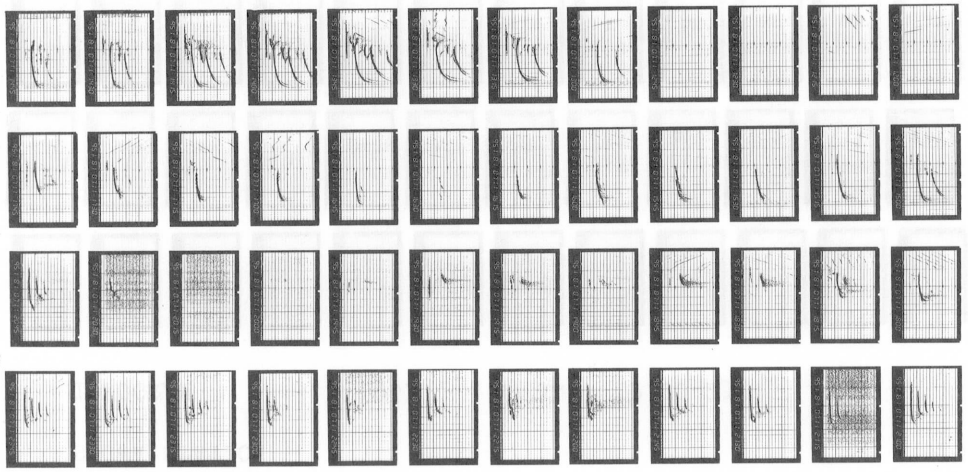
SYOWA STATION

IONOGRAM 1981 07 10 00;00-11;45



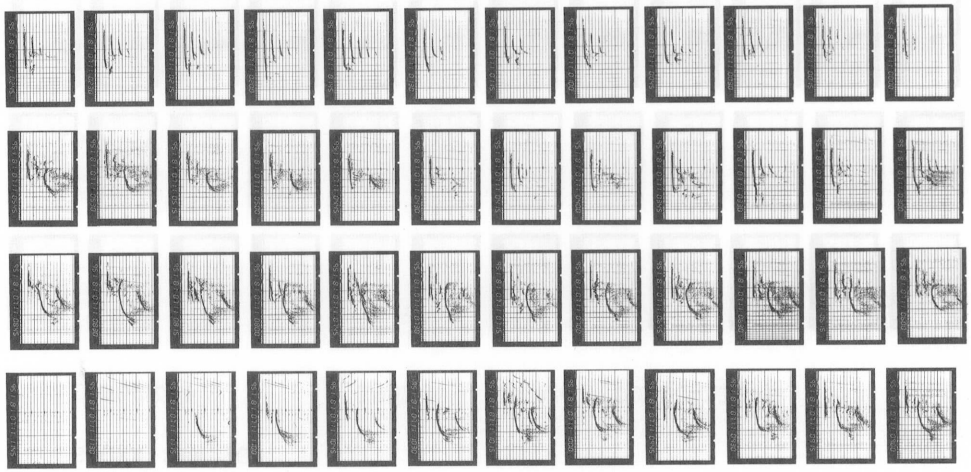
SYOWA STATION

IONOGRAM 1981 07 11 12;00-23;45



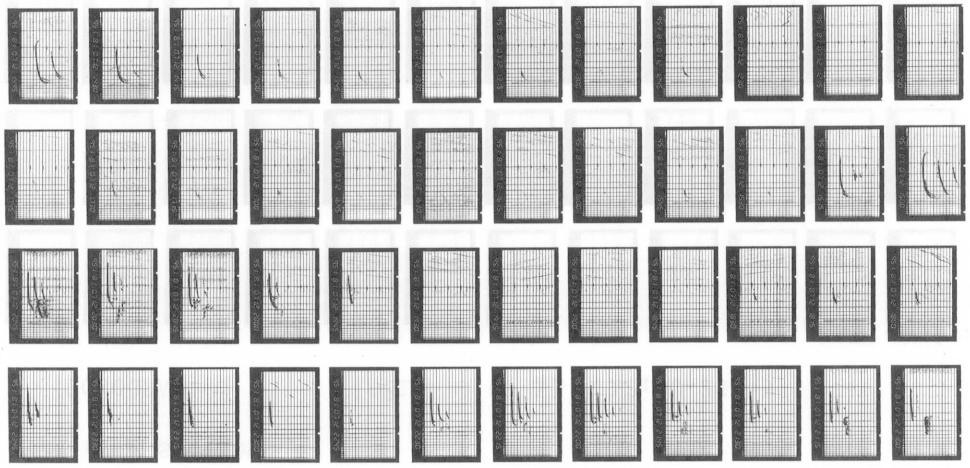
SYOWA STATION

IONOGRAM 1981 07 11 00;00-11;45



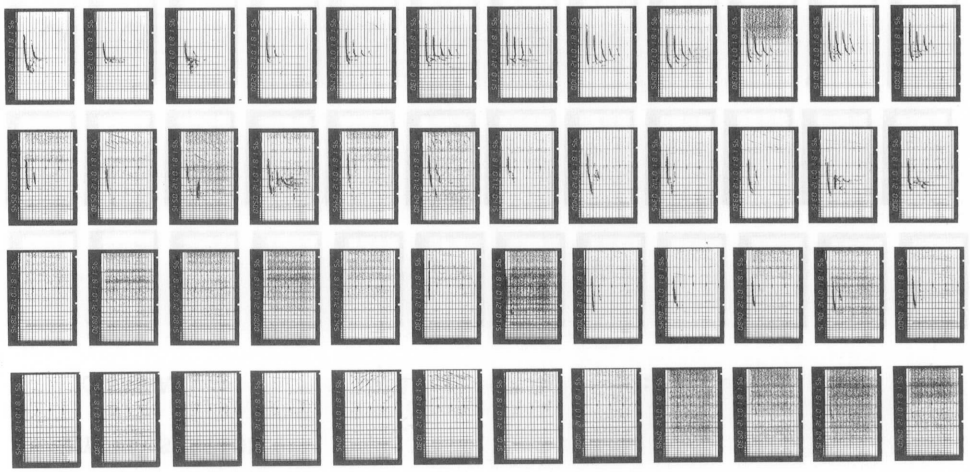
SYOWA STATION

IONOGRAM 1981 07 12 12;00-23;45



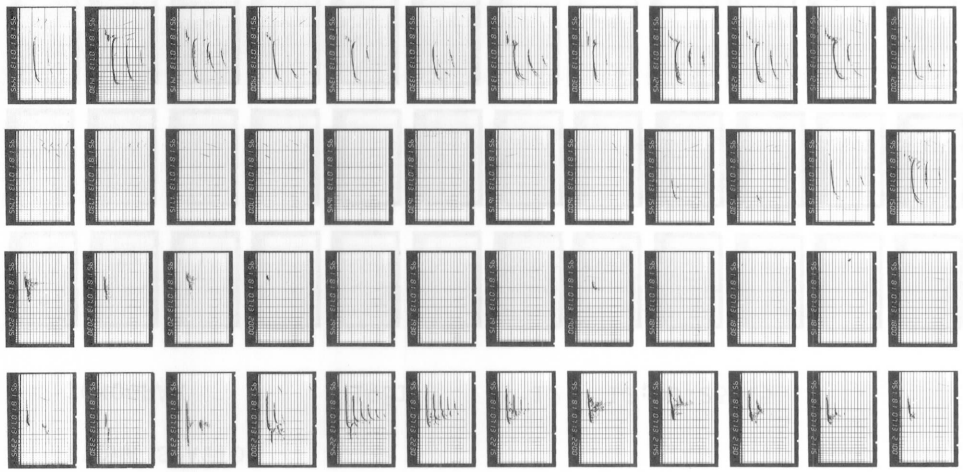
SYOWA STATION

IONOGRAM 1981 07 12 00;00-11;45



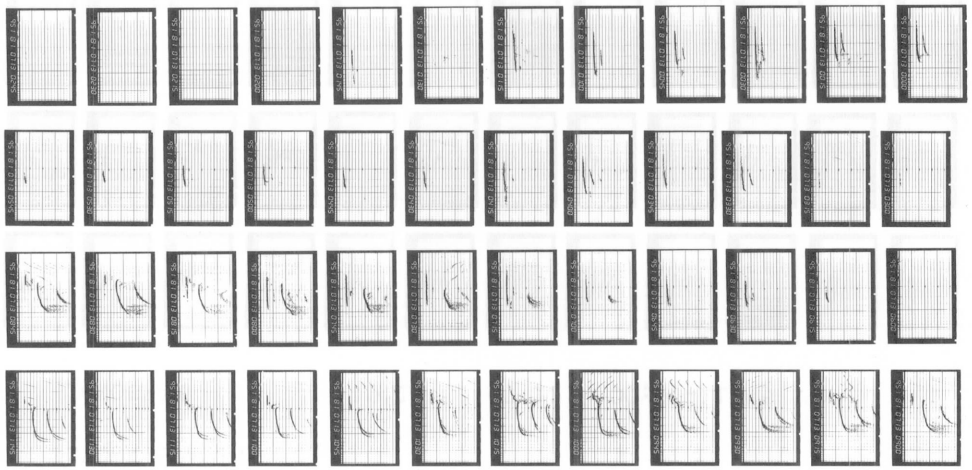
SYOWA STATION

IONOGRAM 1981 07 13 12;00-23;45



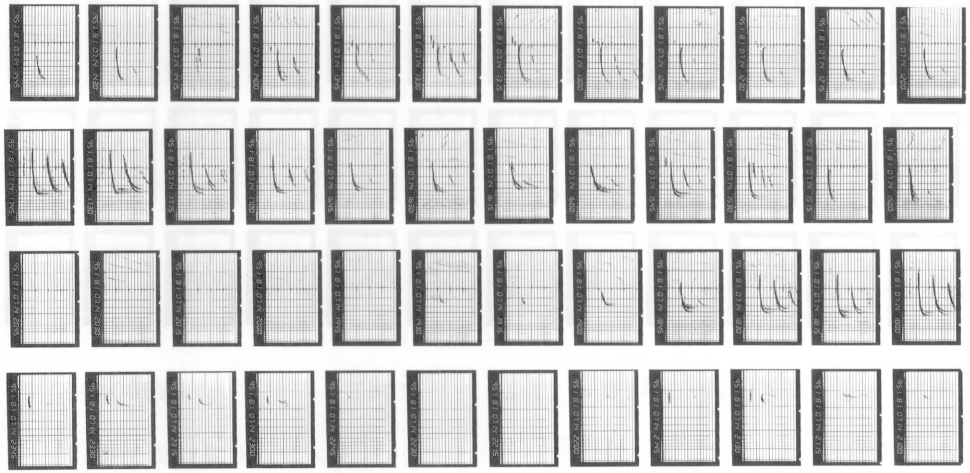
SYOWA STATION

IONOGRAM 1981 07 13 00;00-11;45



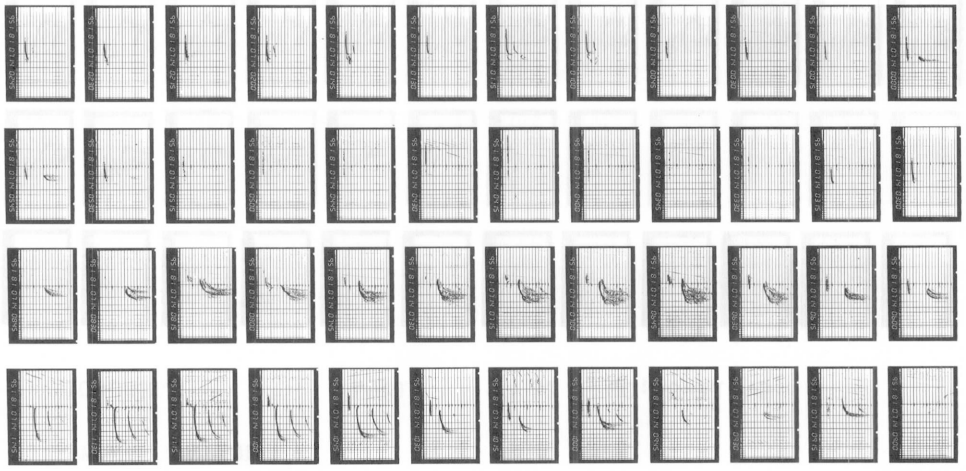
SYOWA STATION

IONOGRAM 1981 07 14 12;00-23;45



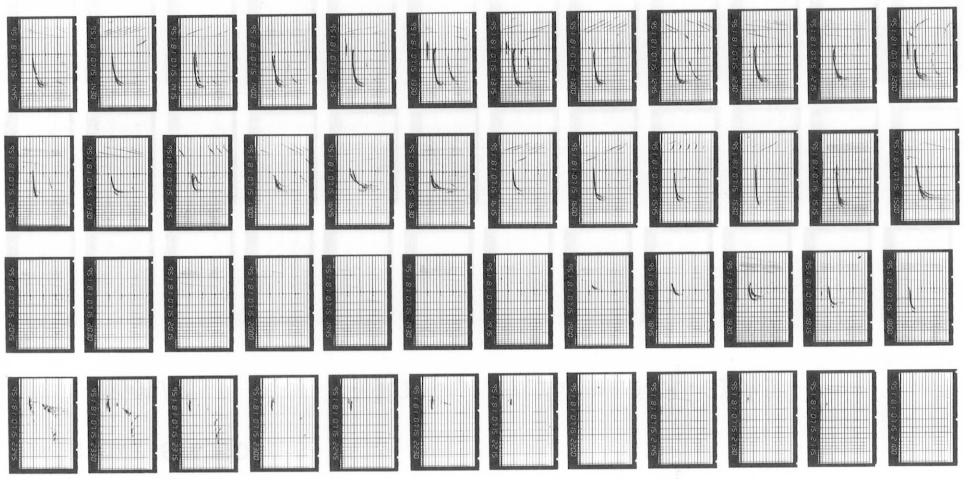
SYOWA STATION

IONOGRAM 1981 07 14 00;00-11;45



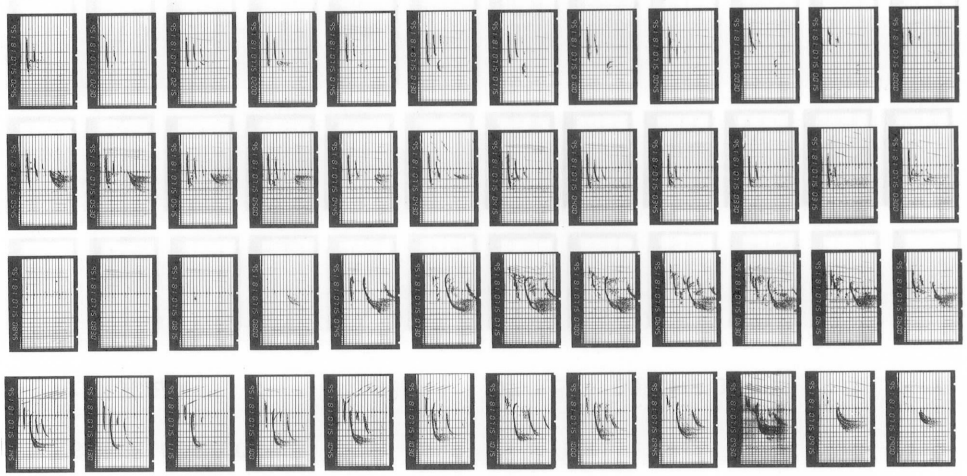
SYOWA STATION

IONOGRAM 1981 07 15 12;00-23;45



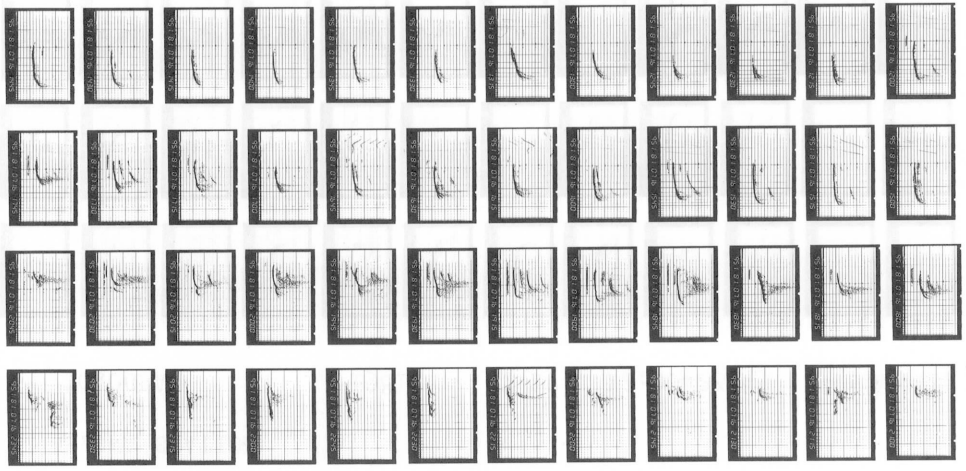
SYOWA STATION

IONOGRAM 1981 07 15 00;00-11;45



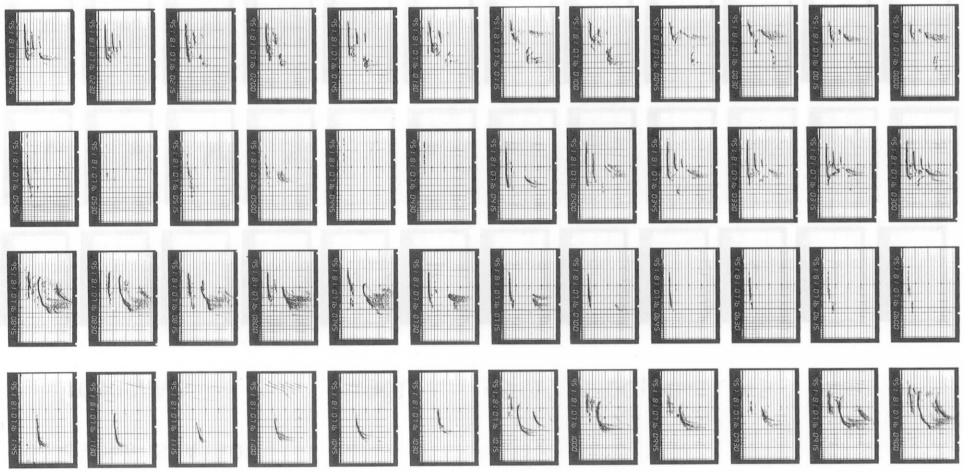
SYOWA STATION

IONOGRAM 1981 07 16 12;00-23;45



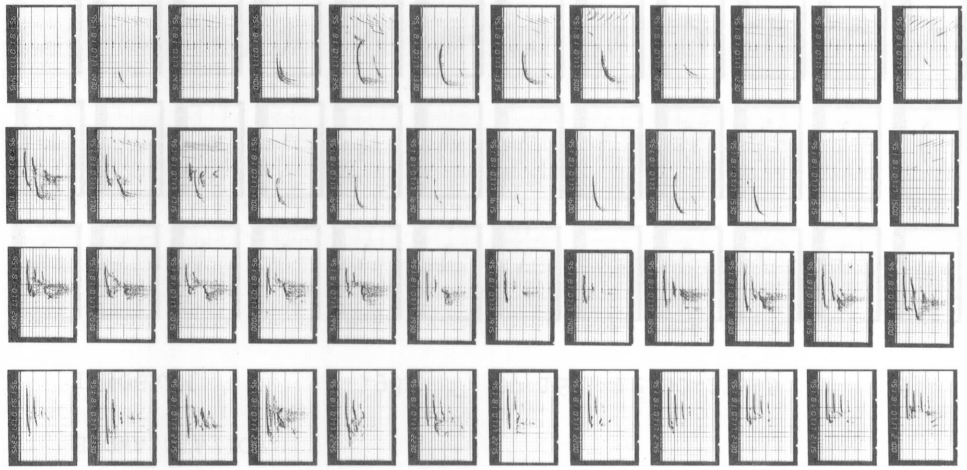
SYOWA STATION

IONOGRAM 1981 07 16 00;00-11;45



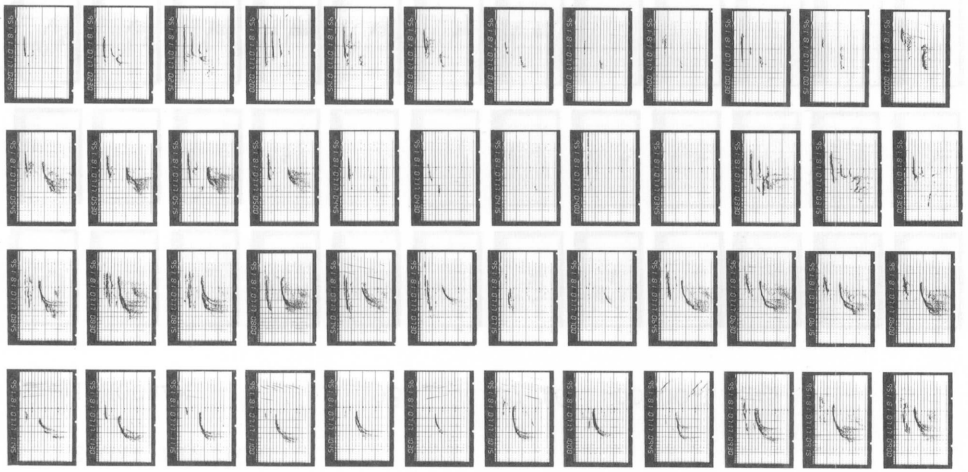
SYOWA STATION

IONOGRAM 1981 07 17 12;00-23;45



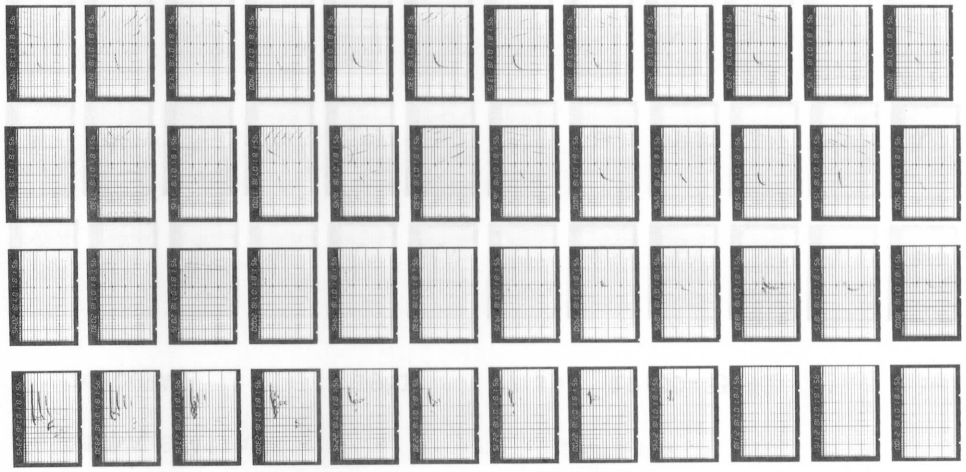
SYOWA STATION

IONOGRAM 1981 07 17 00;00-11;45



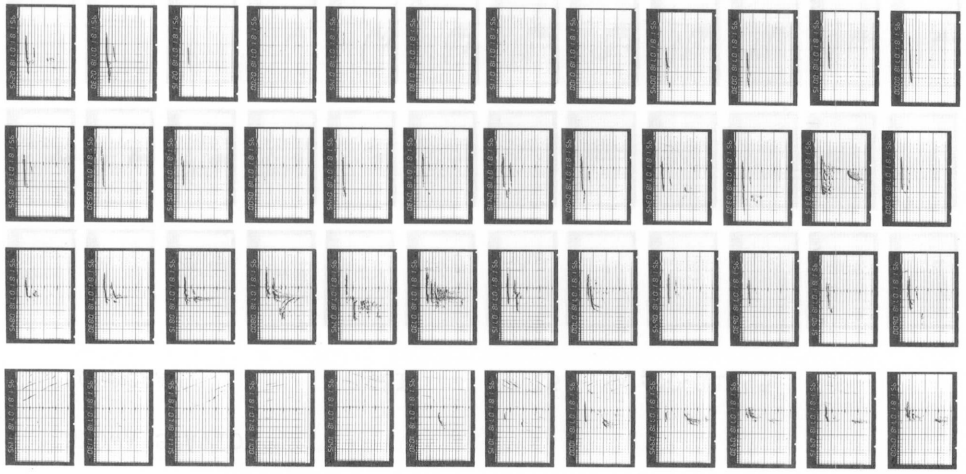
SYOWA STATION

IONOGRAM 1981 07 18 12;00-23;45



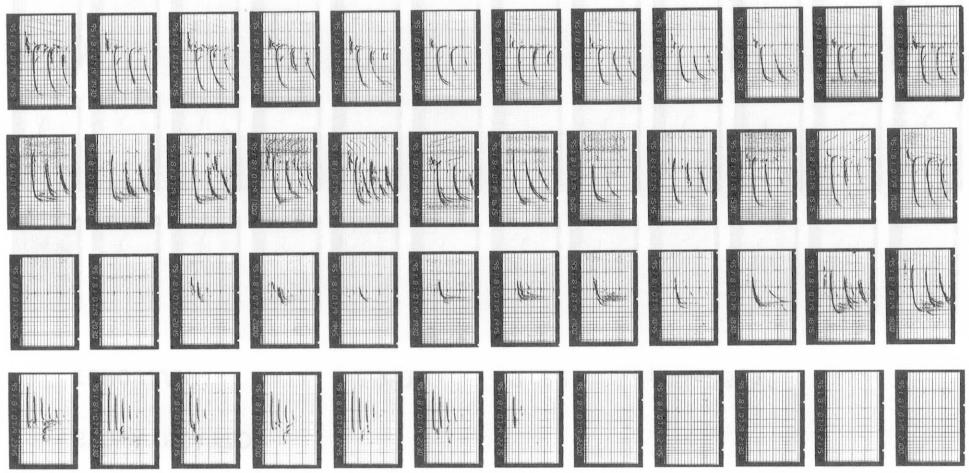
SYOWA STATION

IONOGRAM 1981 07 18 00;00-11;45



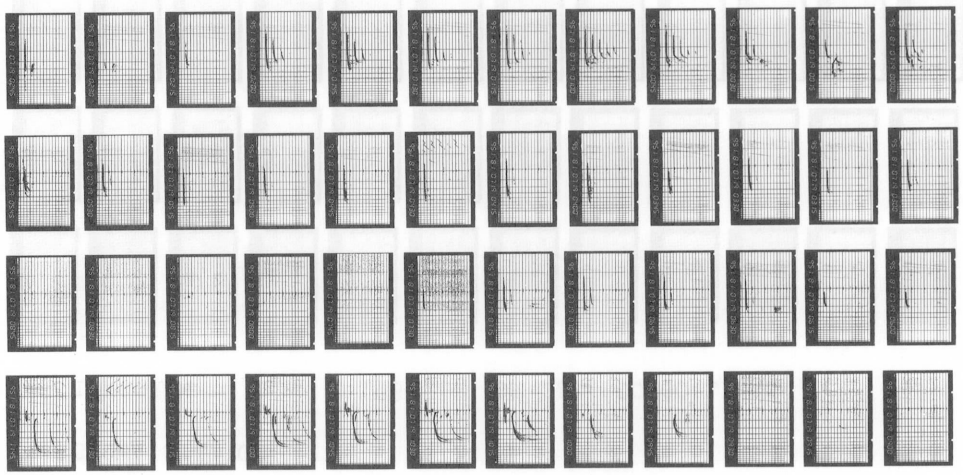
SYOWA STATION

IONOGRAM 1981 07 19 12;00-23;45



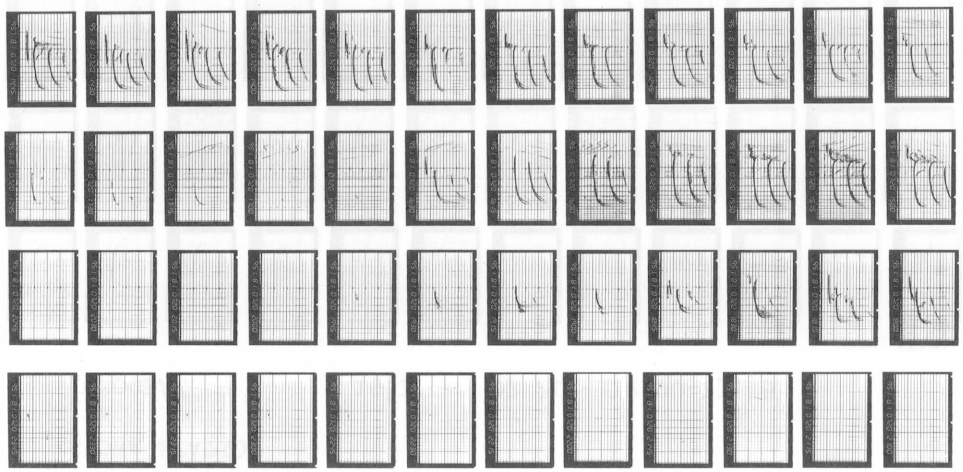
SYOWA STATION

IONOGRAM 1981 07 19 00;00-11;45



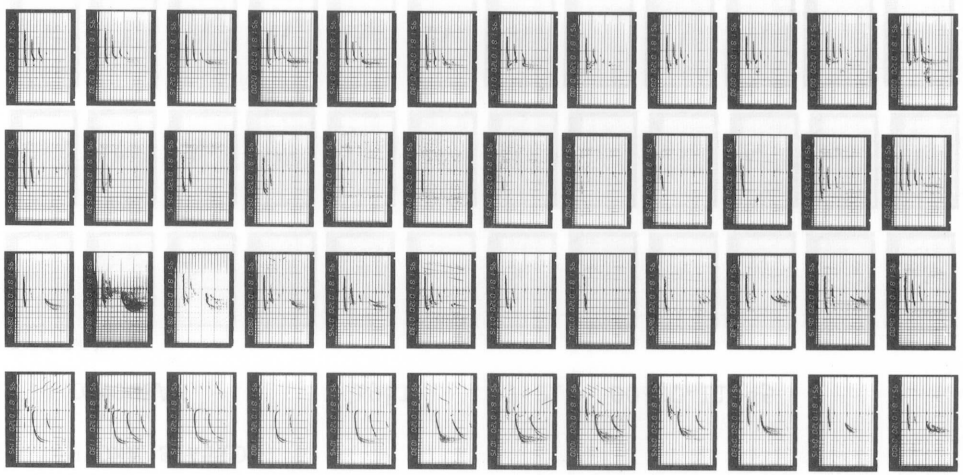
SYOWA STATION

IONOGRAM 1981 07 20 12;00-23;45



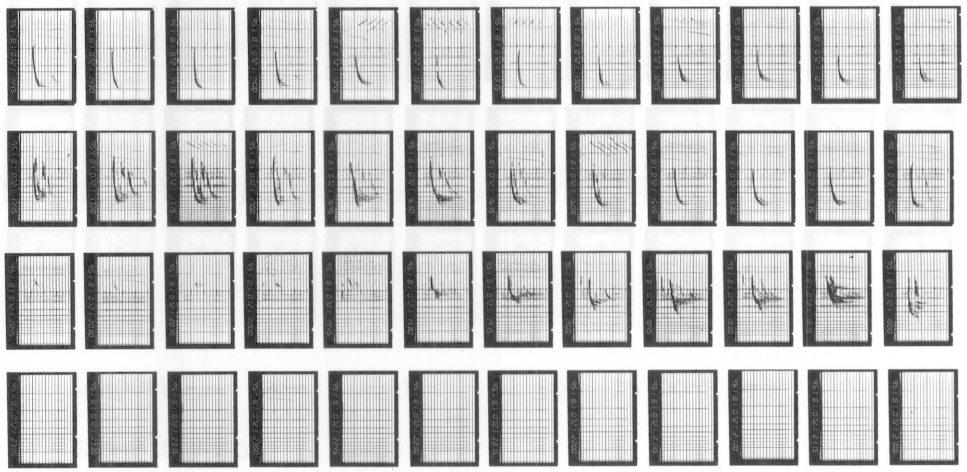
SYOWA STATION

IONOGRAM 1981 07 20 00;00-11;45



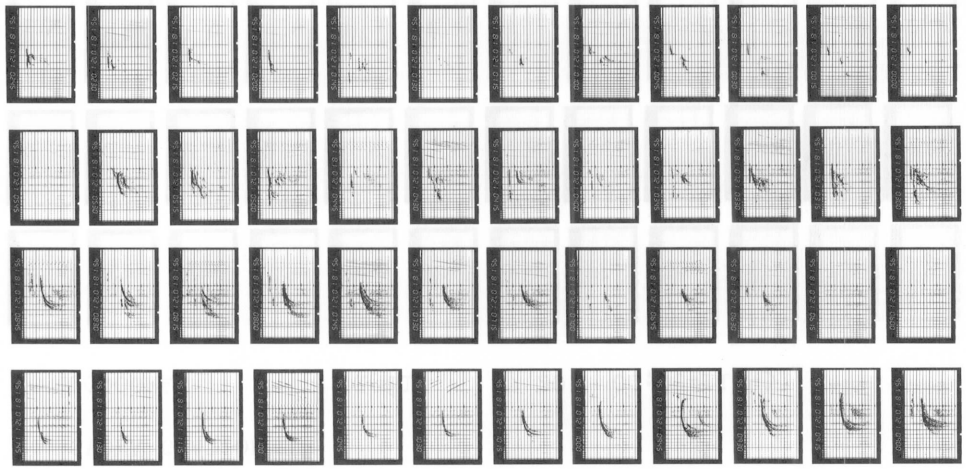
SYOWA STATION

IONOGRAM 1981 07 21 12;00-23;45



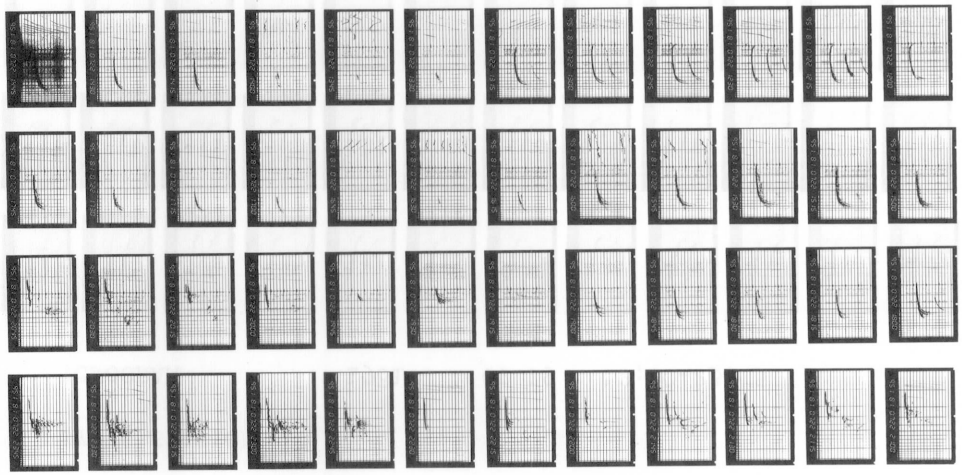
SYOWA STATION

IONOGRAM 1981 07 21 00;00-11;45



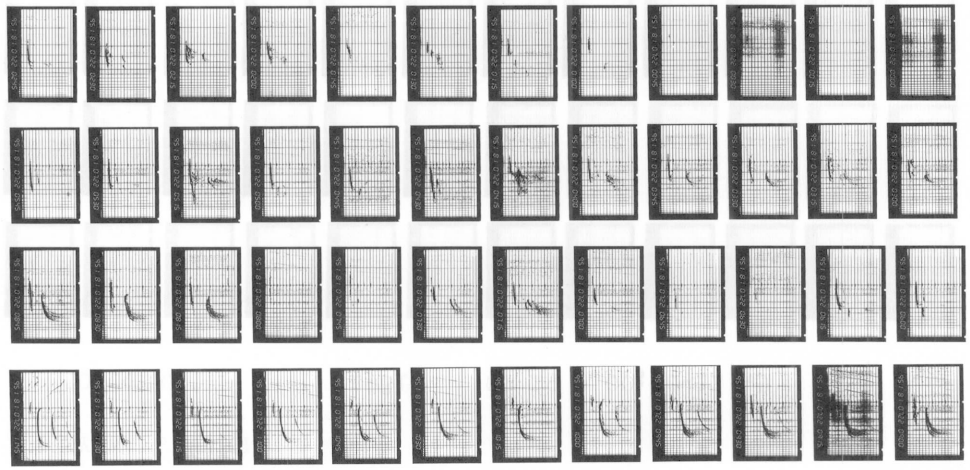
SYOWA STATION

IONOGRAM 1981 07 22 12;00-23;45



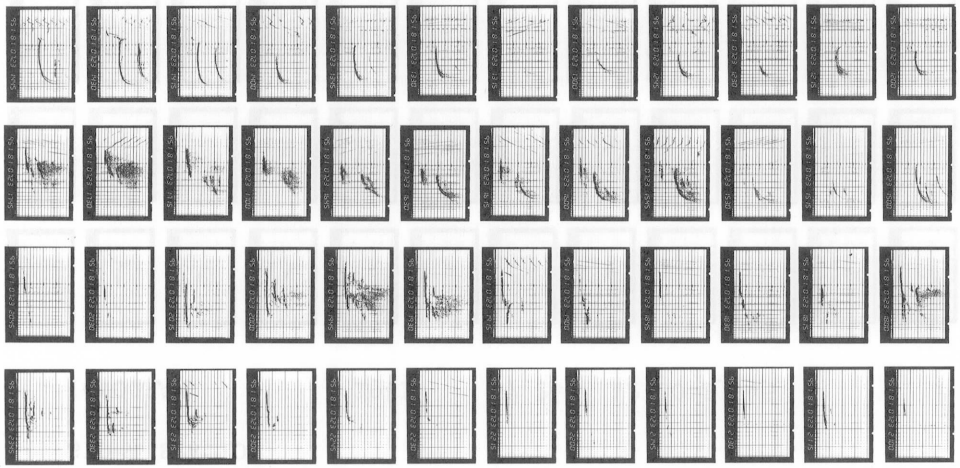
SYOWA STATION

IONOGRAM 1981 07 22 00;00-11;45



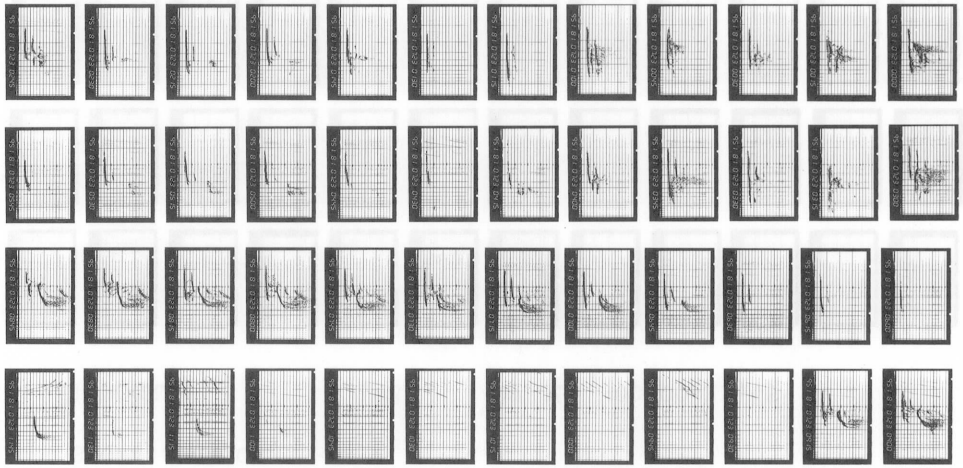
SYOWA STATION

IONOGRAM 1981 07 23 12;00-23;45



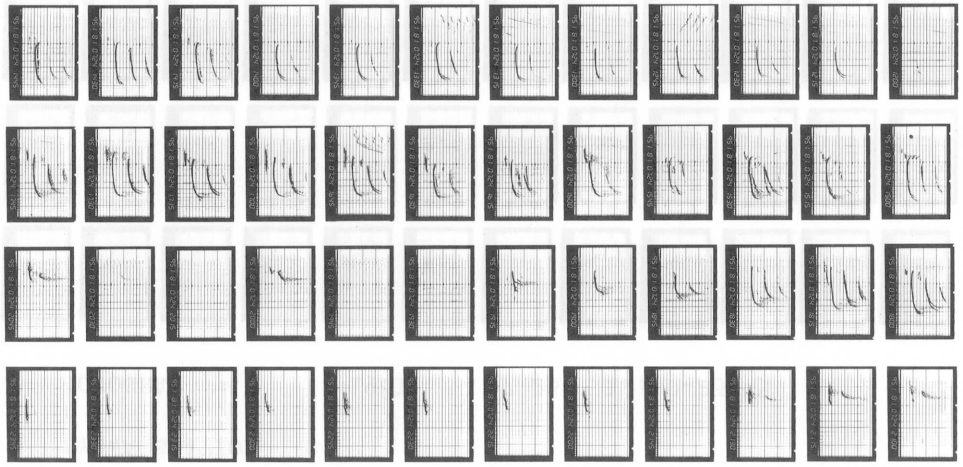
SYOWA STATION

IONOGRAM 1981 07 23 00;00-11;45



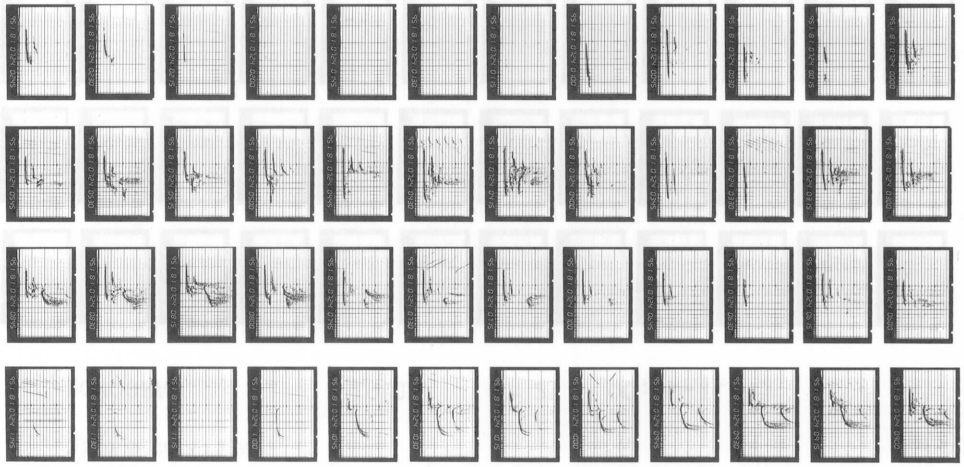
SYOWA STATION

IONOGRAM 1981 07 24 12;00-23;45



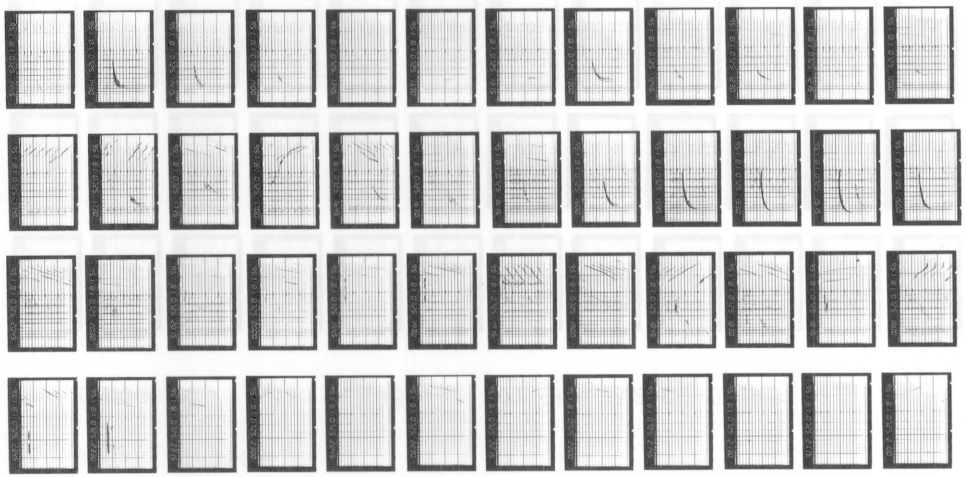
SYOWA STATION

IONOGRAM 1981 07 24 00;00-11;45



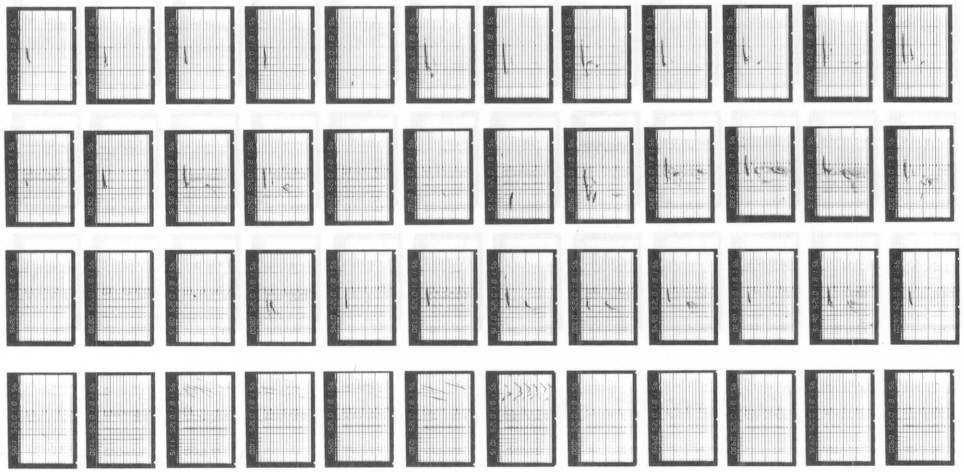
SYOWA STATION

IONOGRAM 1981 07 25 12;00-23;45



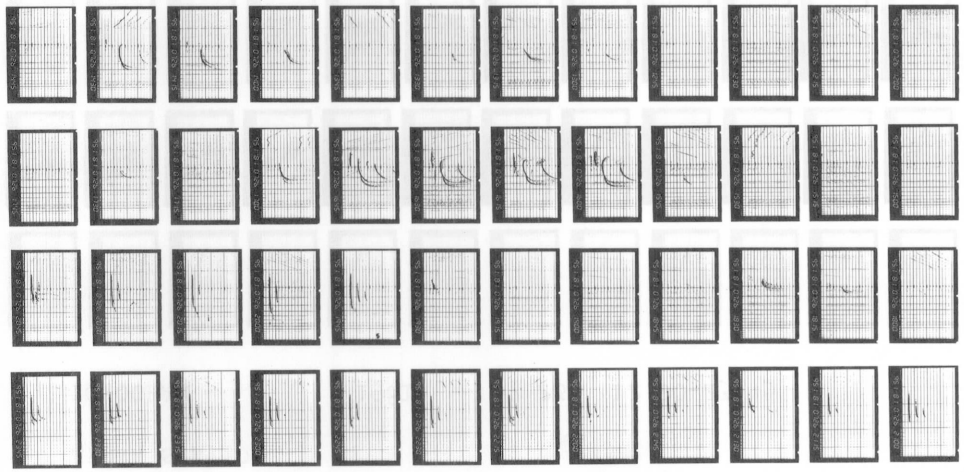
SYOWA STATION

IONOGRAM 1981 07 25 00;00-11;45



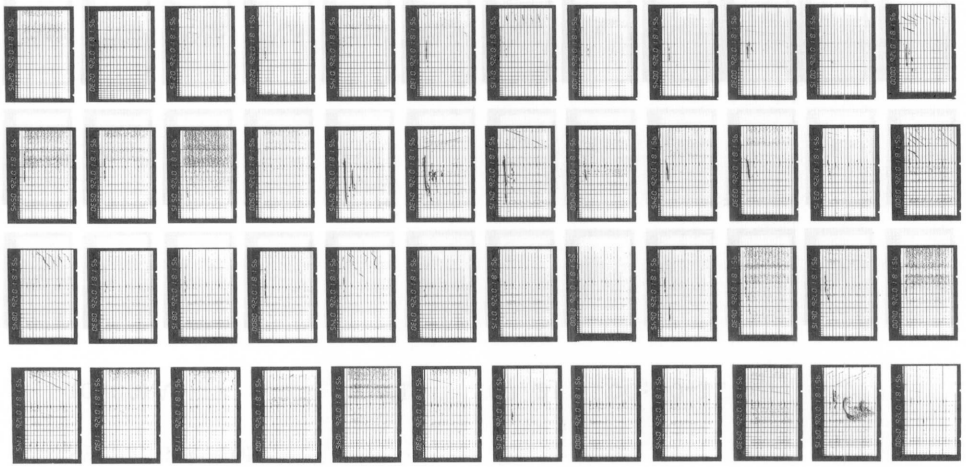
SYOWA STATION

IONOGRAM 1981 07 26 12;00-23;45



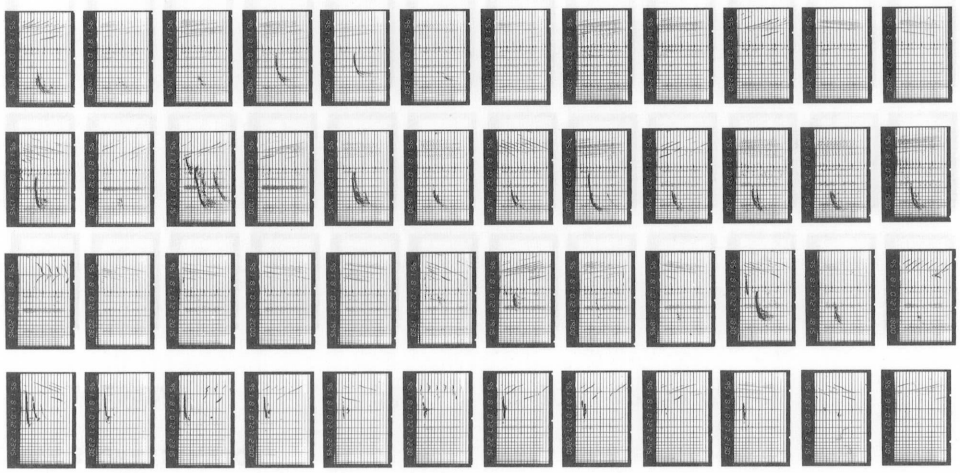
SYOWA STATION

IONOGRAM 1981 07 26 00;00-11;45



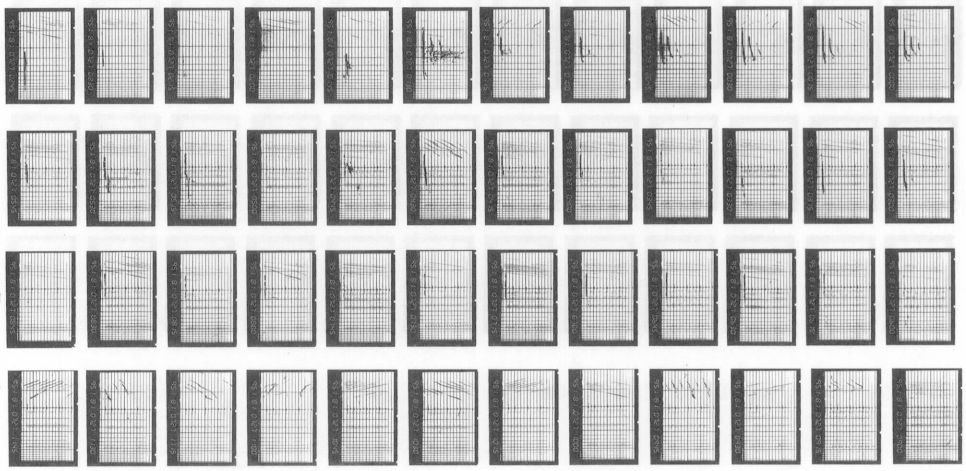
SYOWA STATION

IONOGRAM 1981 07 27 12;00-23;45



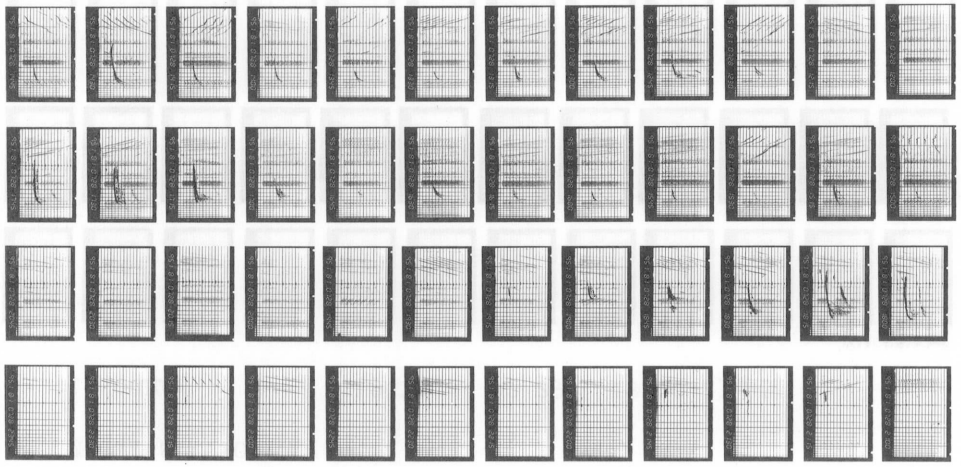
SYOWA STATION

IONOGRAM 1981 07 27 00;00-11;45



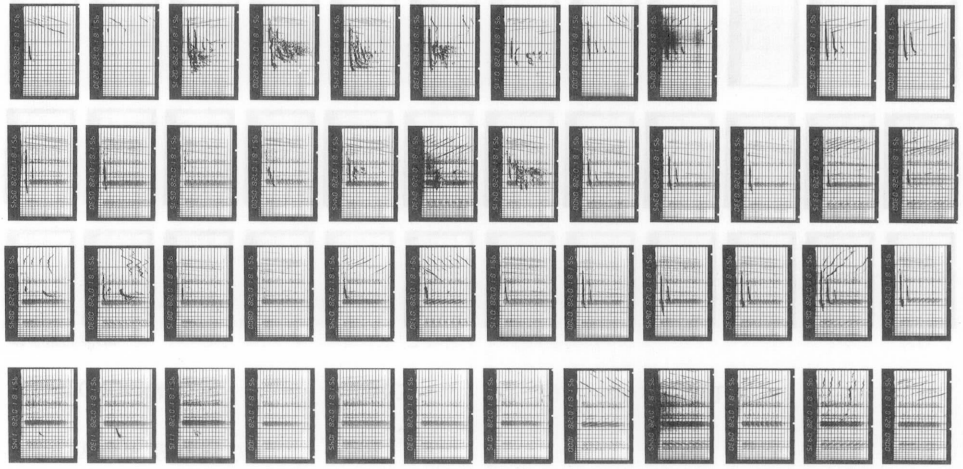
SYOWA STATION

IONOGRAM 1981 07 28 12;00-23;45



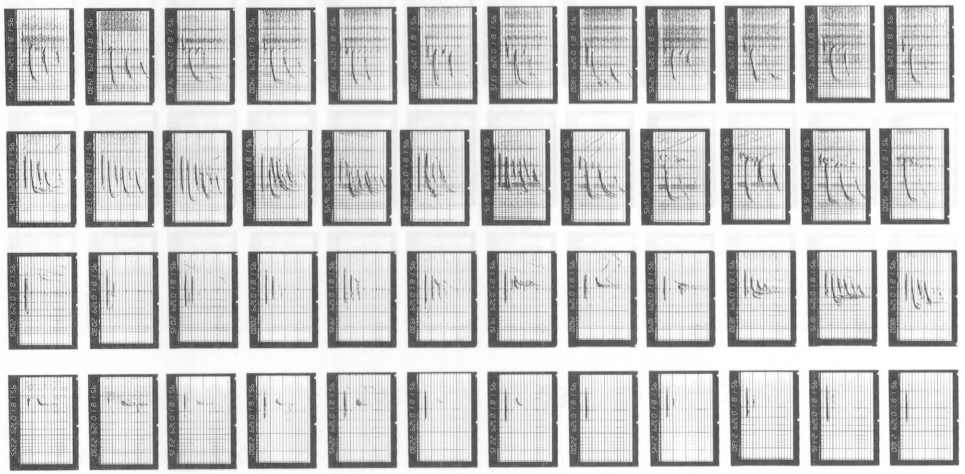
SYOWA STATION

IONOGRAM 1981 07 28 00;00-11;45



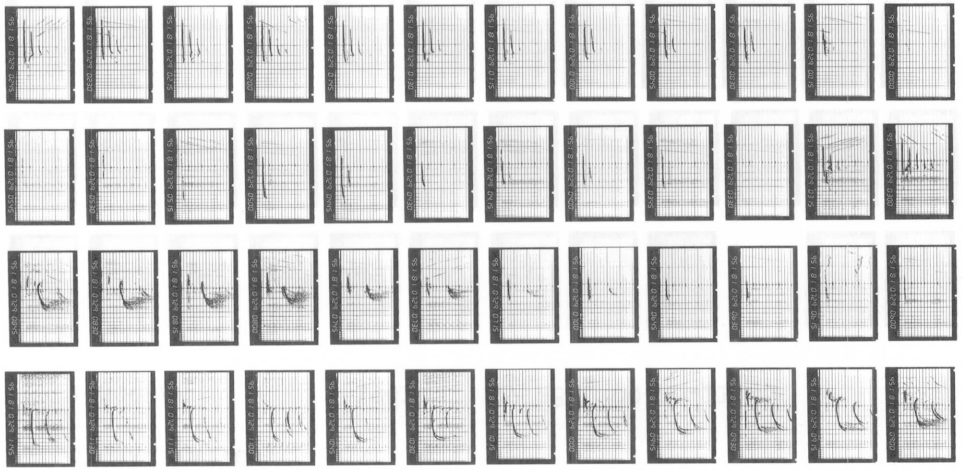
SYOWA STATION

IONOGRAM 1981 07 29 12;00-23;45



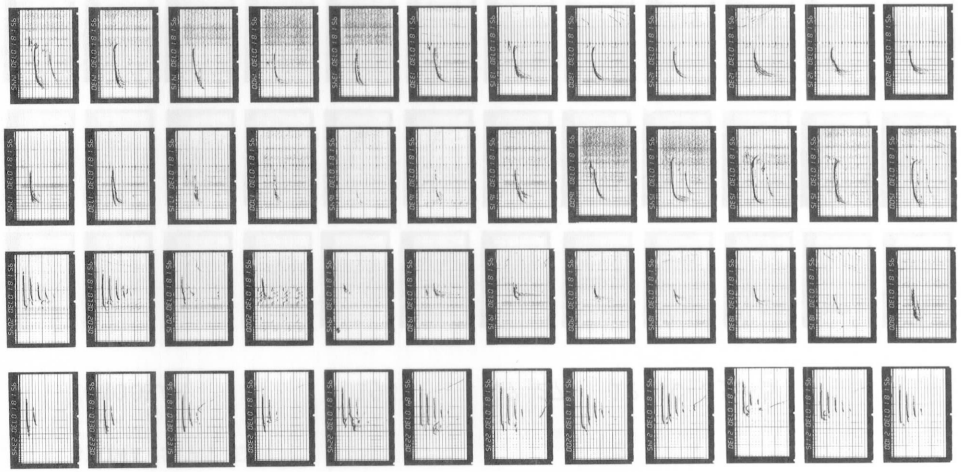
SYOWA STATION

IONOGRAM 1981 07 29 00;00-11;45



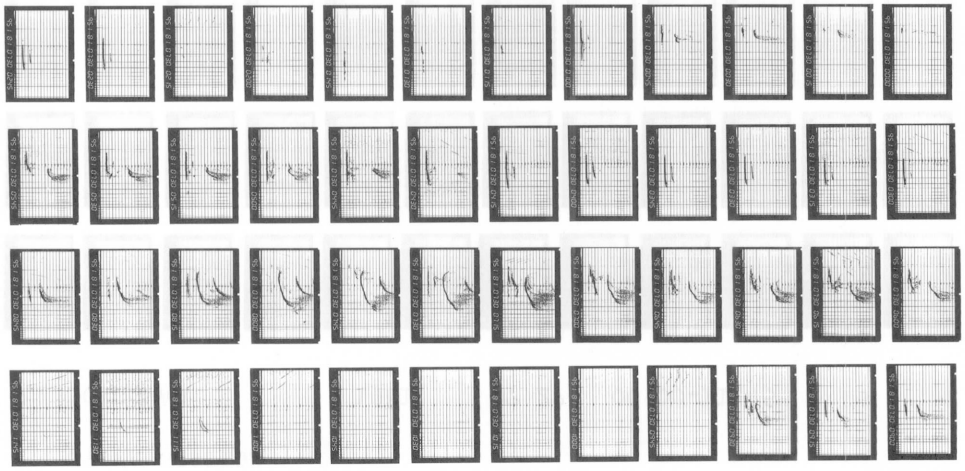
SYOWA STATION

IONOGRAM 1981 07 30 12;00-23;45



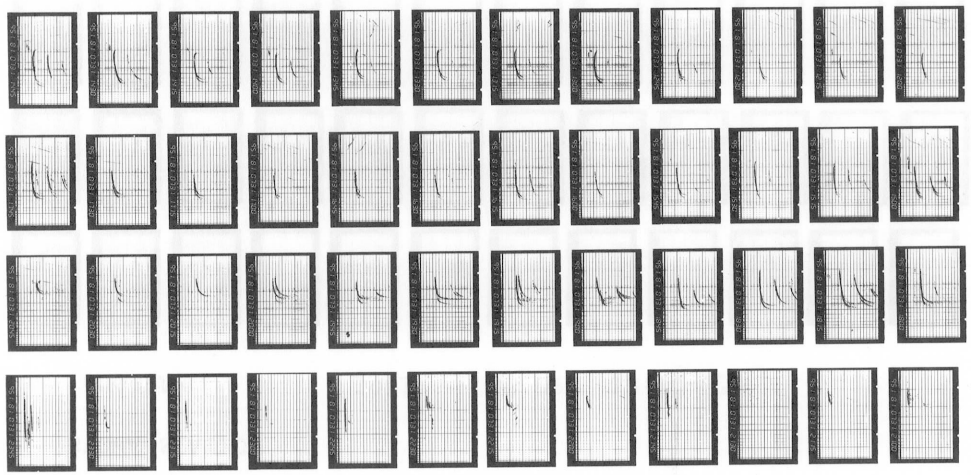
SYOWA STATION

IONOGRAM 1981 07 30 00;00-11;45



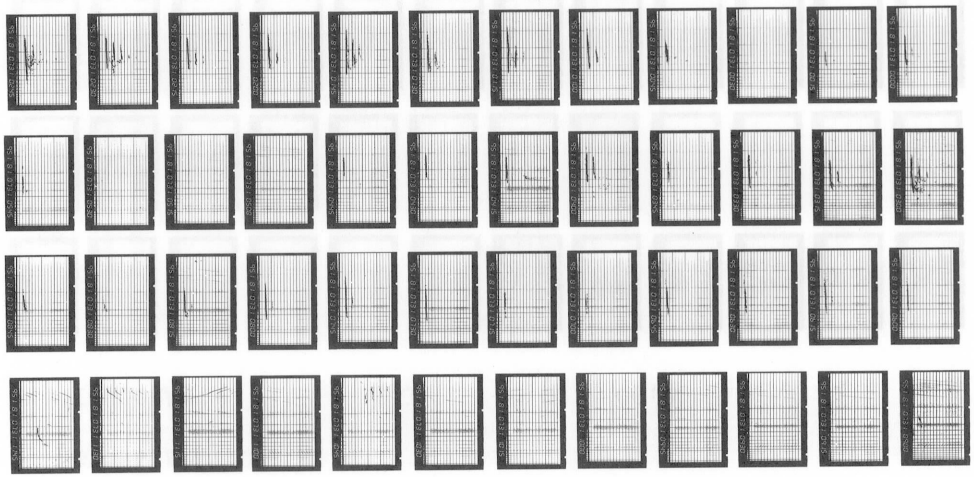
SYOWA STATION

IONOGRAM 1981 07 31 12;00-23;45



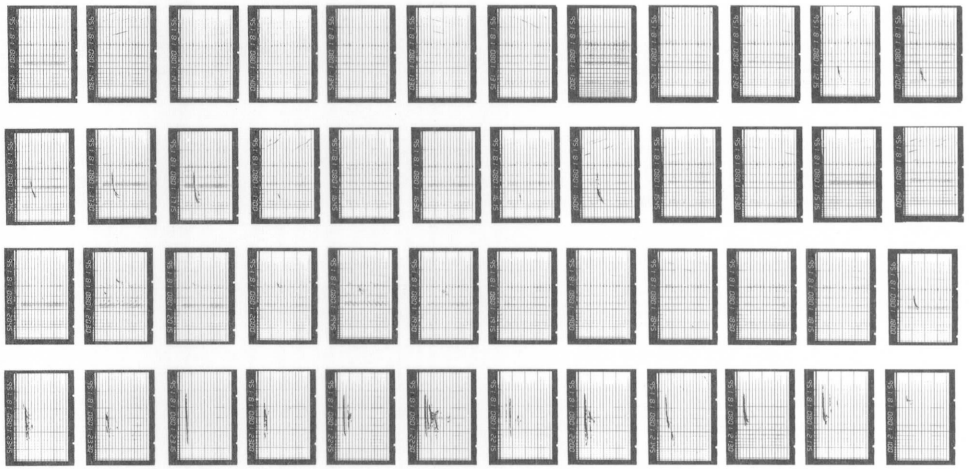
SYOWA STATION

IONOGRAM 1981 07 31 00;00-11;45



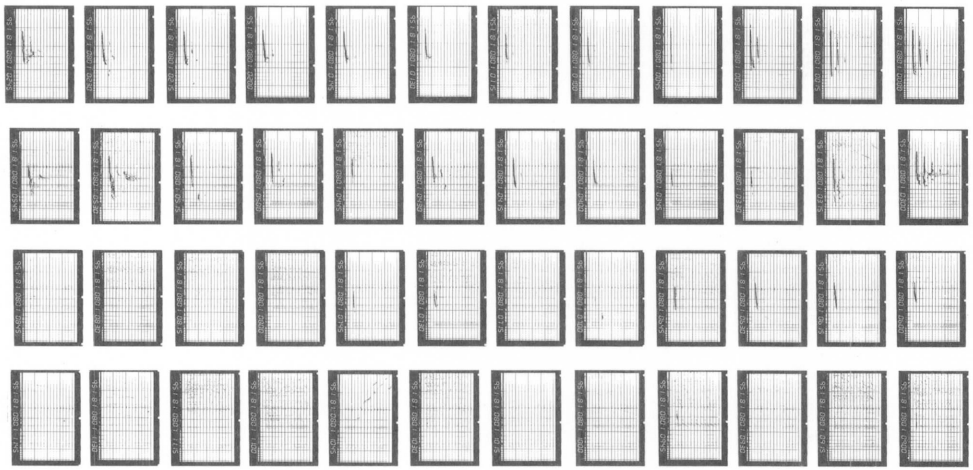
SYOWA STATION

IONOGRAM 1981 08 01 12;00-23;45



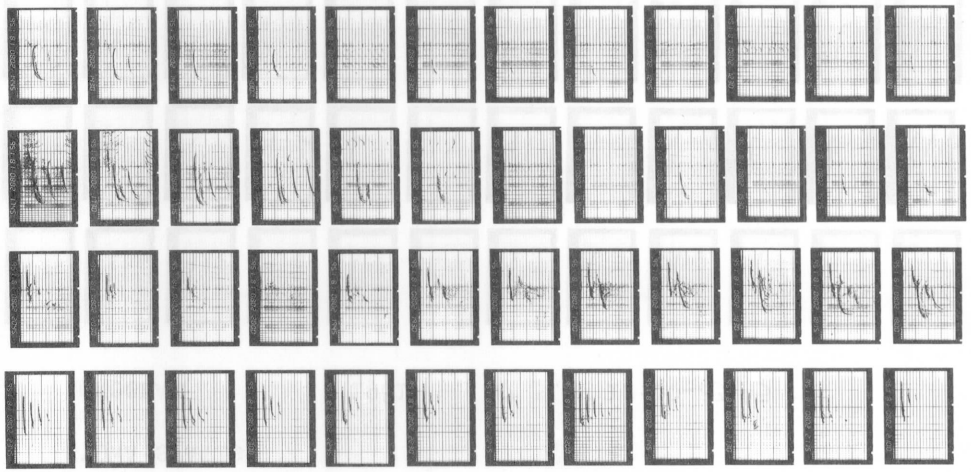
SYOWA STATION

IONOGRAM 1981 08 01 00;00-11;45



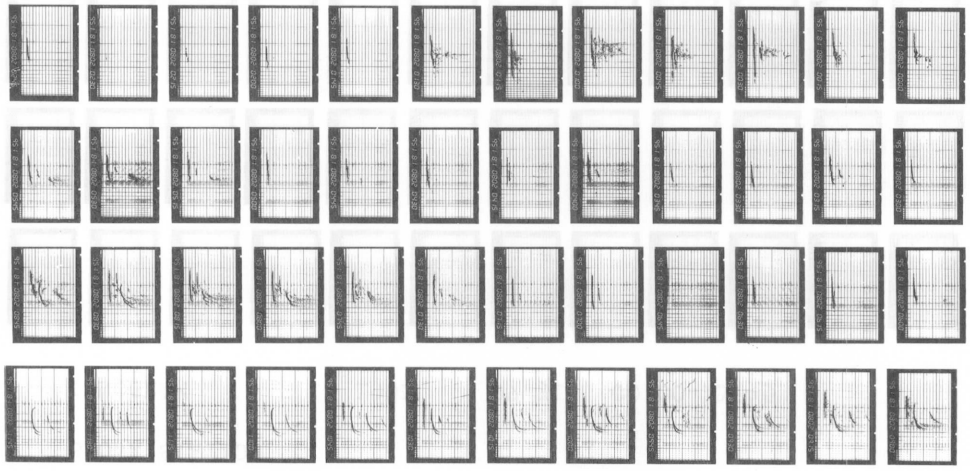
SYOWA STATION

IONOGRAM 1981 08 02 12;00-23;45



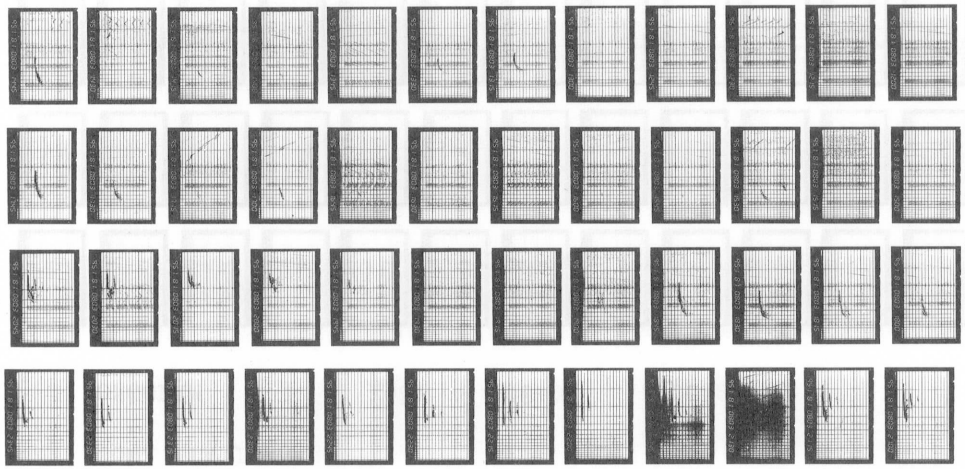
SYOWA STATION

IONOGRAM 1981 08 02 00;00-11;45



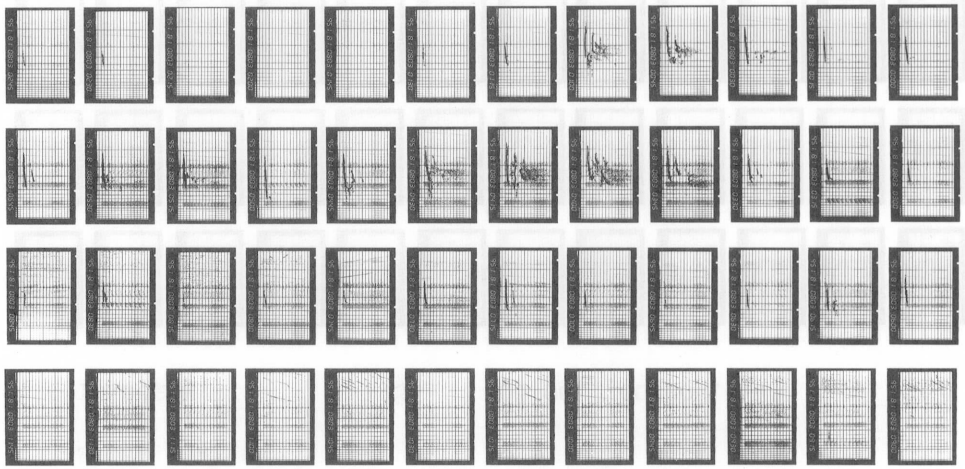
SYOWA STATION

IONOGRAM 1981 08 03 12;00-23;45



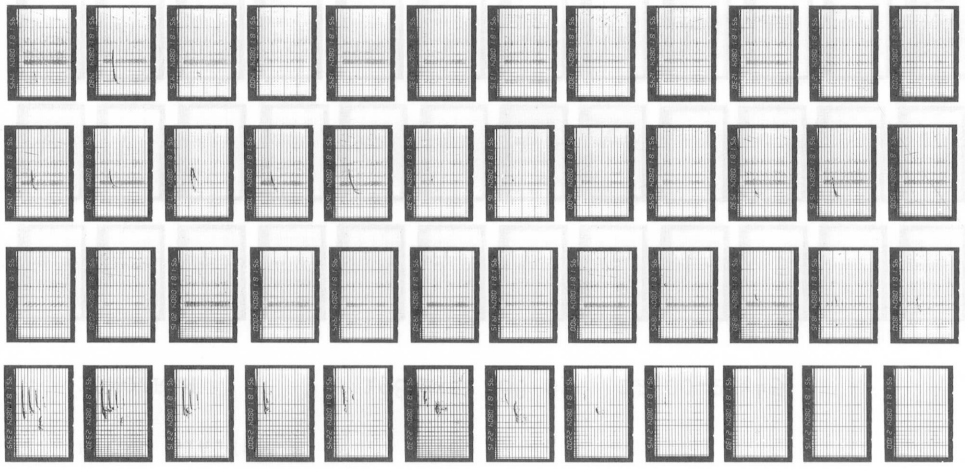
SYOWA STATION

IONOGRAM 1981 08 03 00;00-11;45



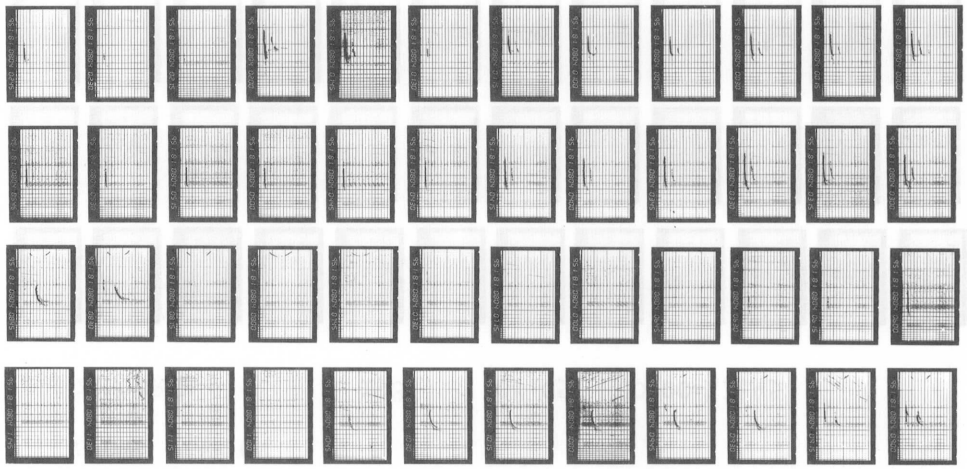
SYOWA STATION

IONOGRAM 1981 08 04 12;00-23;45



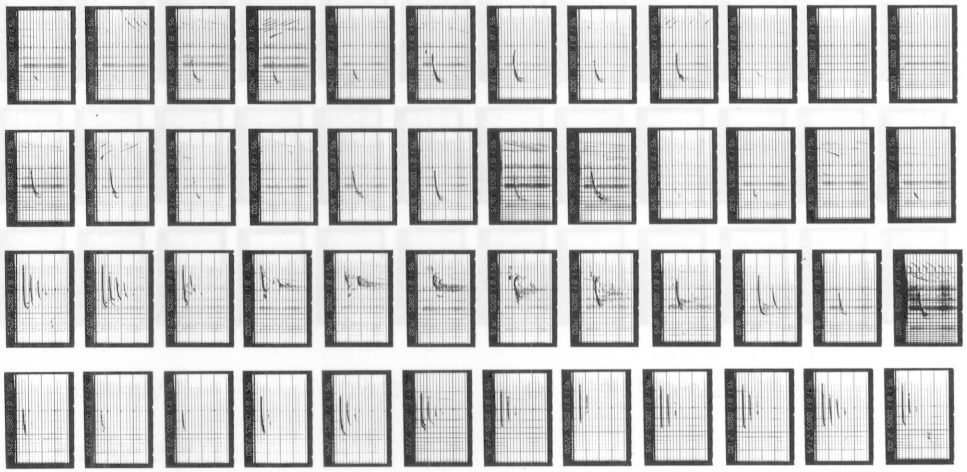
SYOWA STATION

IONOGRAM 1981 08 04 00;00-11;45



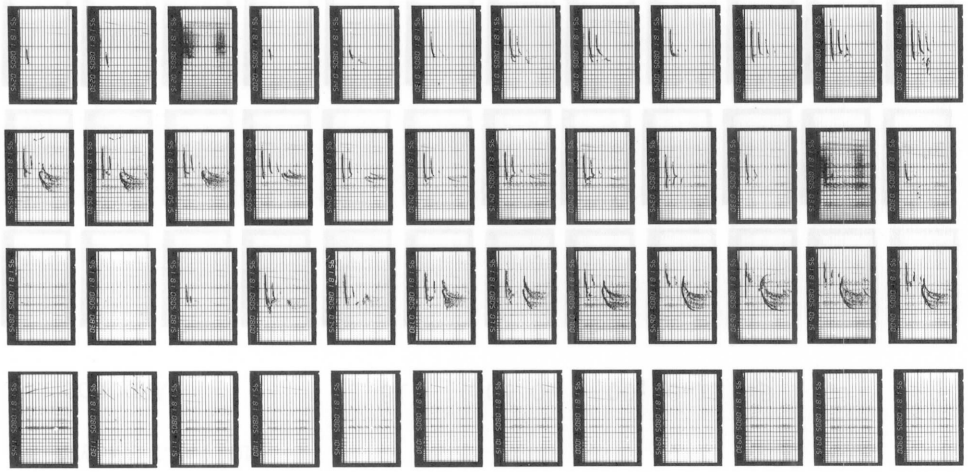
SYOWA STATION

IONOGRAM 1981 08 05 12;00-23;45



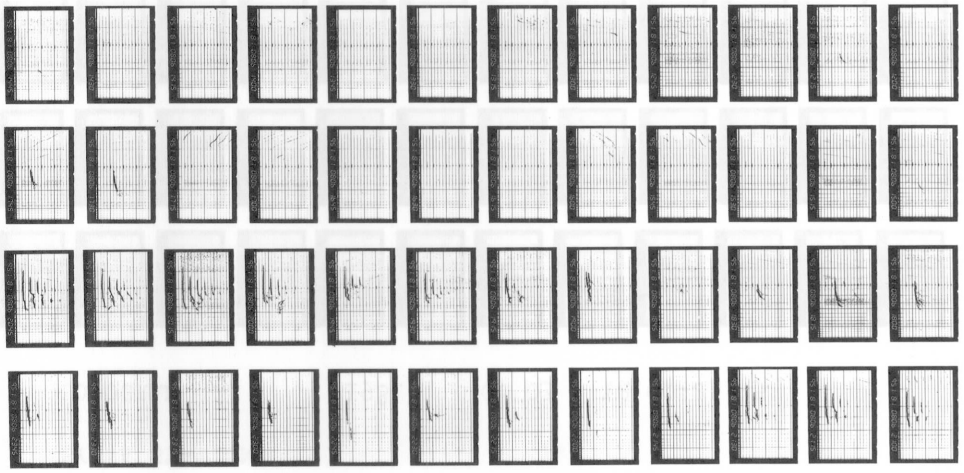
SYOWA STATION

IONOGRAM 1981 08 05 00;00-11;45



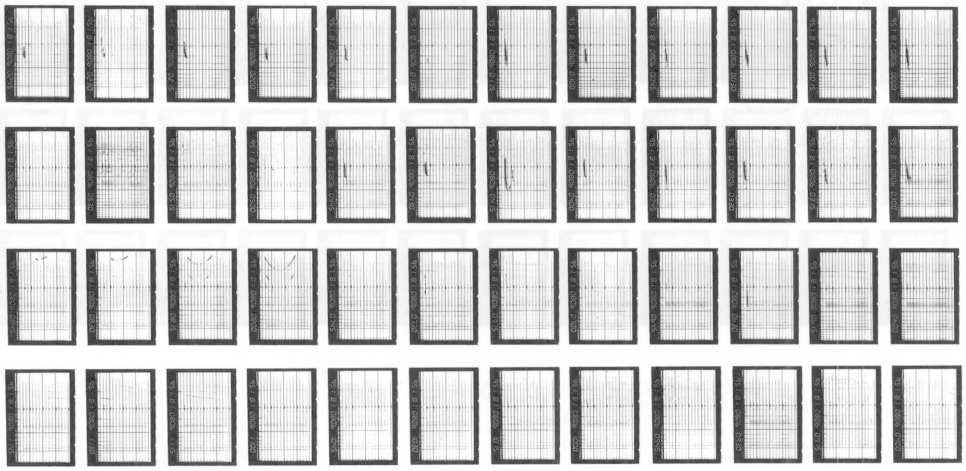
SYOWA STATION

IONOGRAM 1981 08 06 12;00-23;45



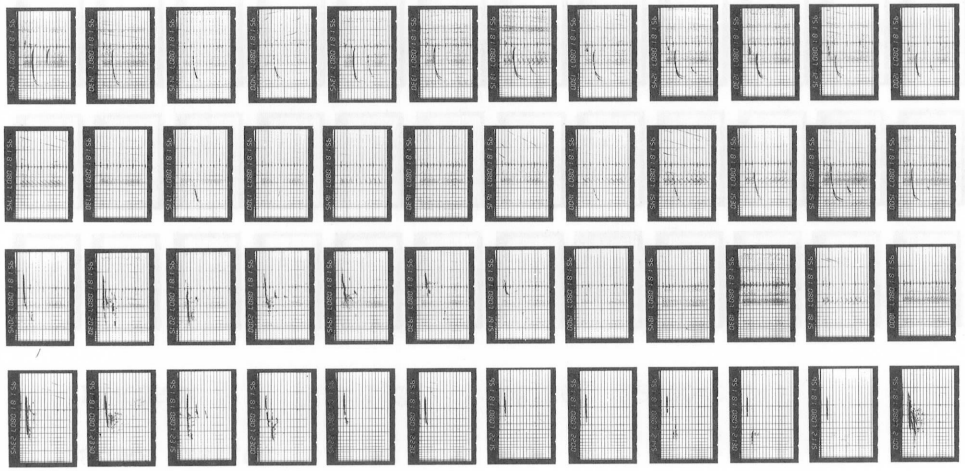
SYOWA STATION

IONOGRAM 1981 08 06 00;00-11;45



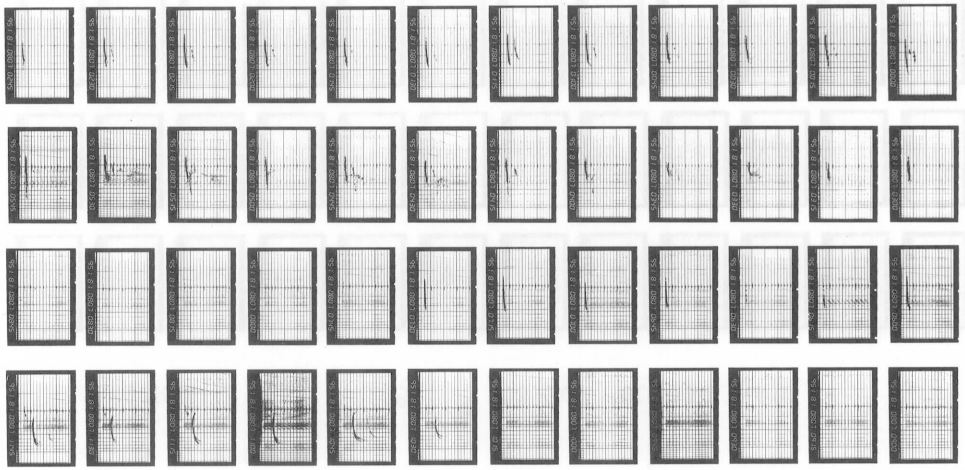
SYOWA STATION

IONOGRAM 1981 08 07 12;00-23;45



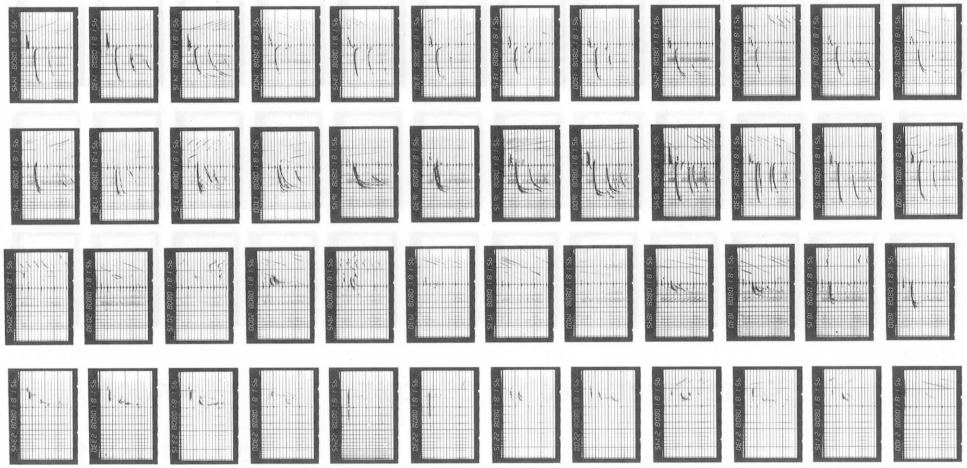
SYOWA STATION

IONOGRAM 1981 08 07 00;00-11;45



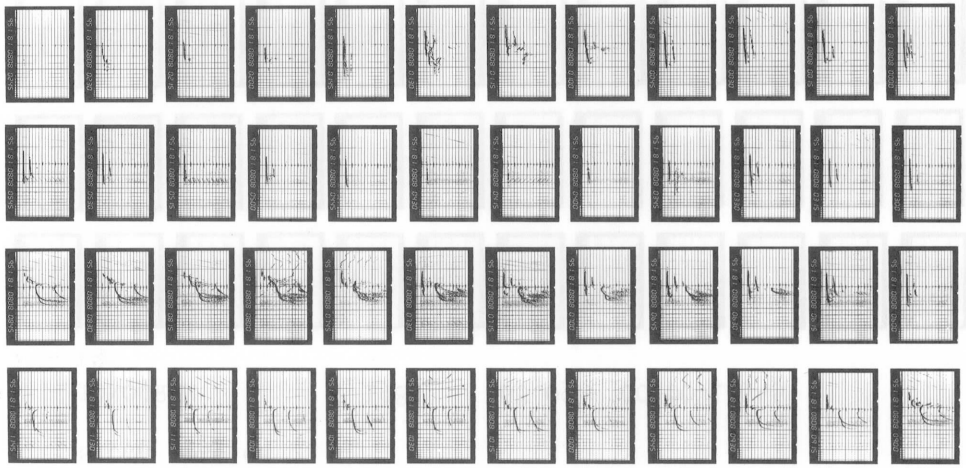
SYOWA STATION

IONOGRAM 1981 08 08 12;00-23;45



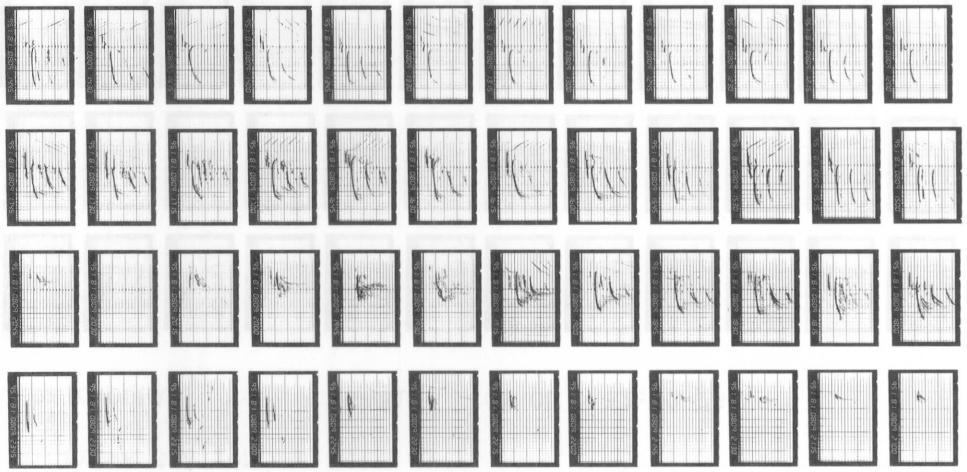
SYOWA STATION

IONOGRAM 1981 08 08 00;00-11;45



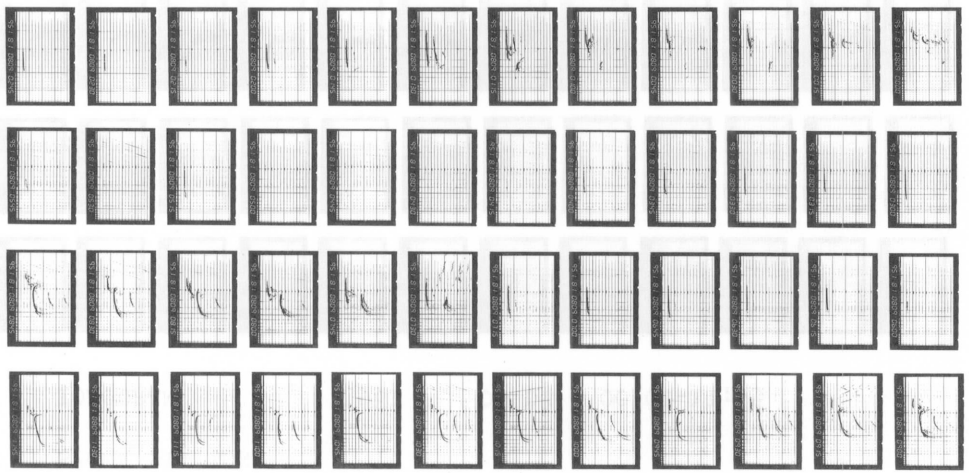
SYOWA STATION

IONOGRAM 1981 08 09 12;00-23;45



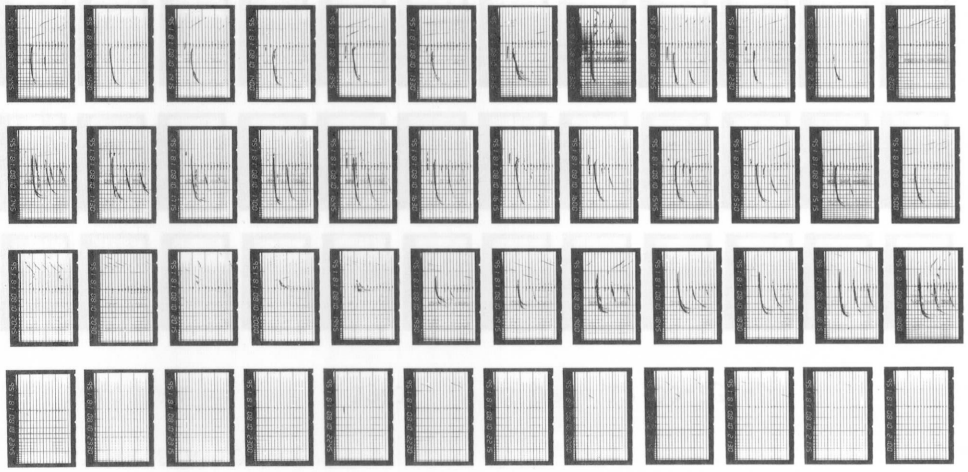
SYOWA STATION

IONOGRAM 1981 08 09 00;00-11;45



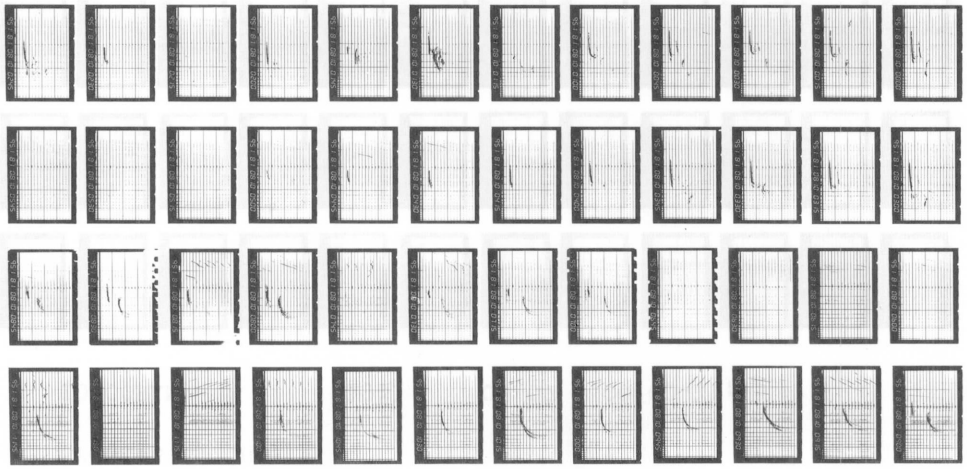
SYOWA STATION

IONOGRAM 1981 08 10 12;00-23;45



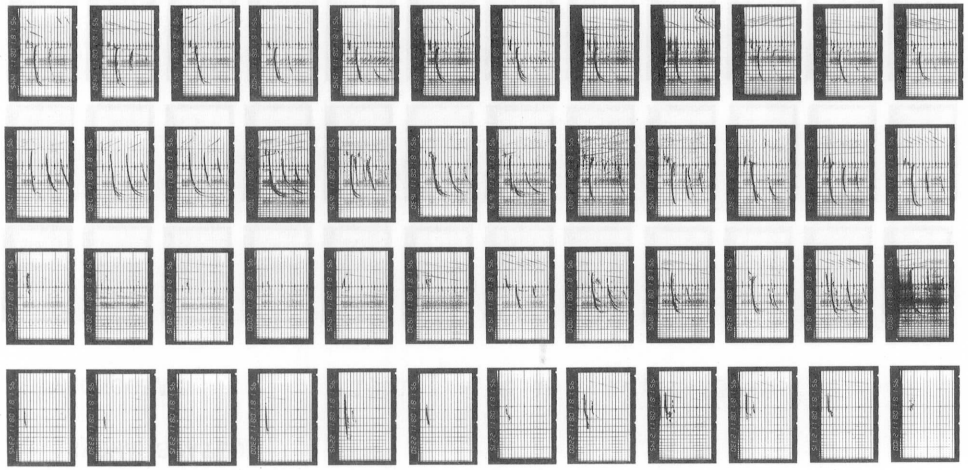
SYOWA STATION

IONOGRAM 1981 08 10 00;00-11;45



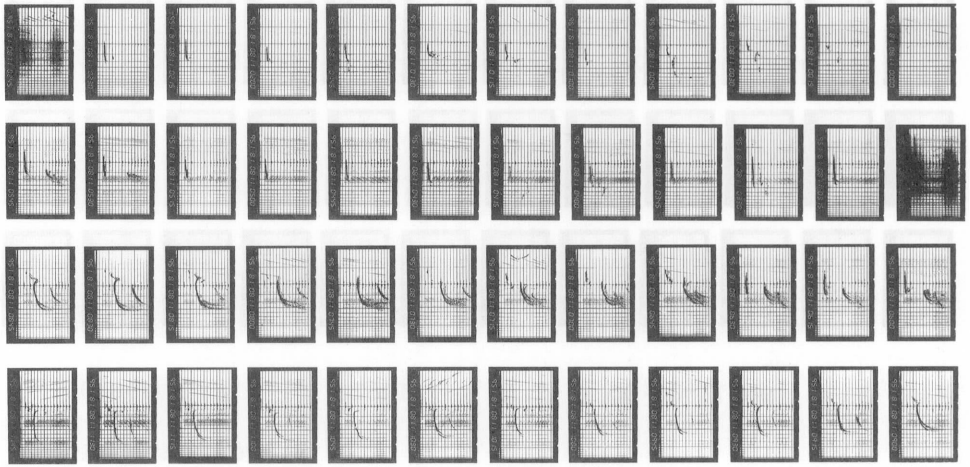
SYOWA STATION

IONOGRAM 1981 08 11 12;00-23;45



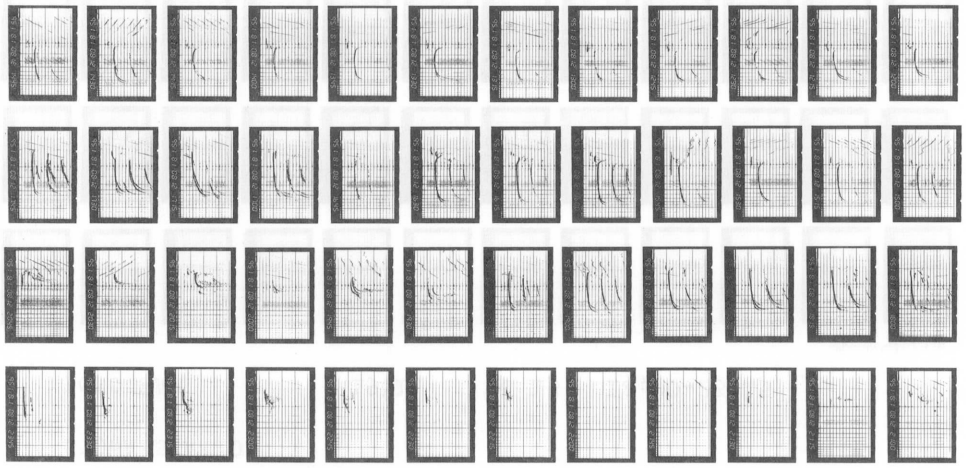
SYOWA STATION

IONOGRAM 1981 08 11 00;00-11;45



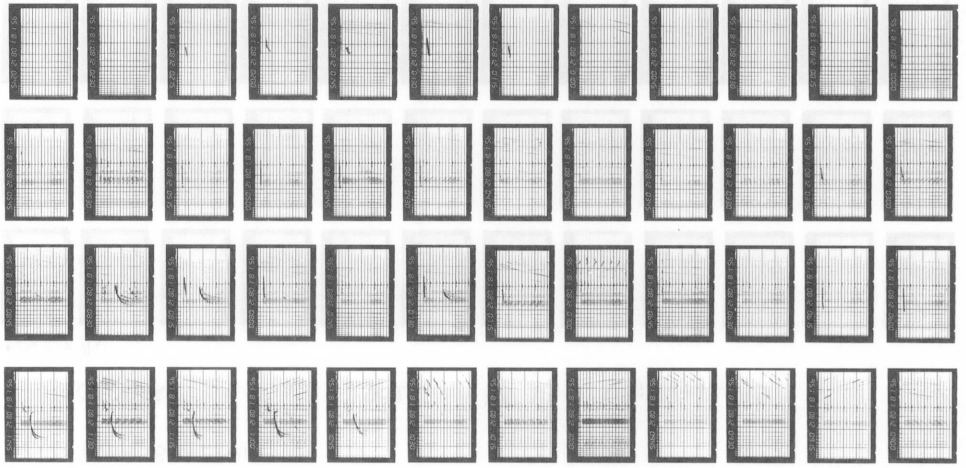
SYOWA STATION

IONOGRAM 1981 08 12 12;00-23;45



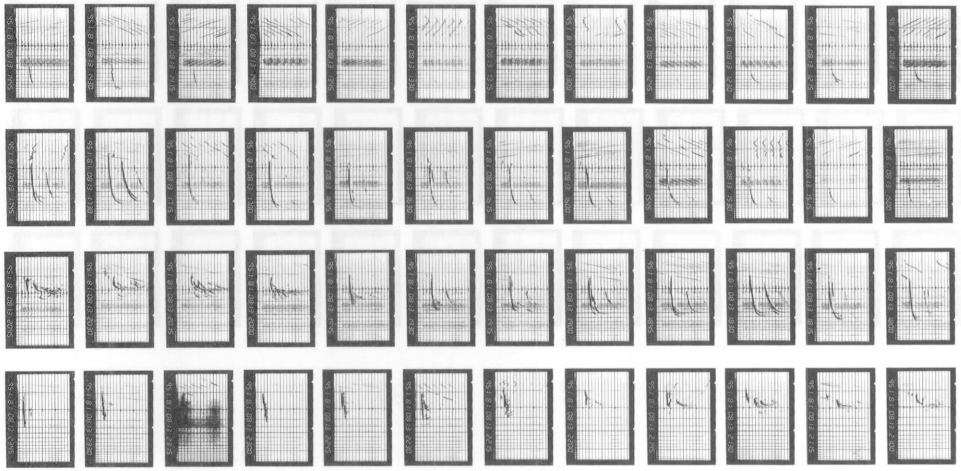
SYOWA STATION

IONOGRAM 1981 08 12 00;00-11;45



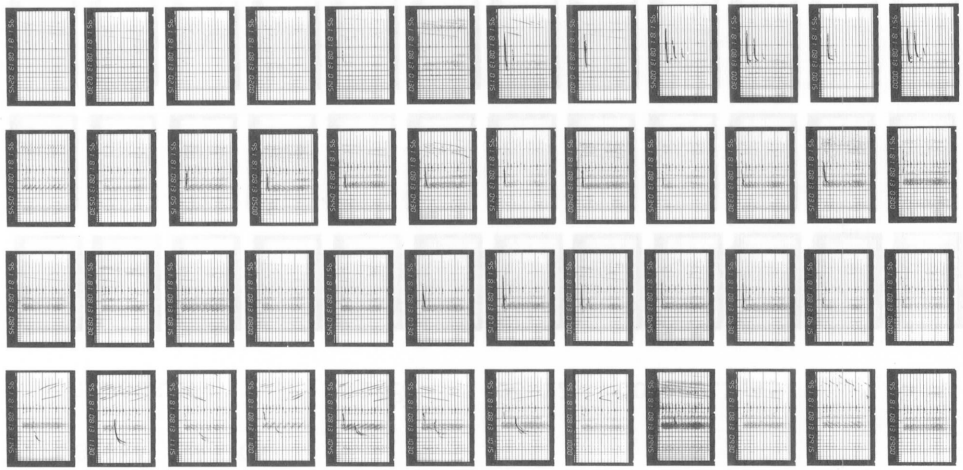
SYOWA STATION

IONOGRAM 1981 08 13 12;00-23;45



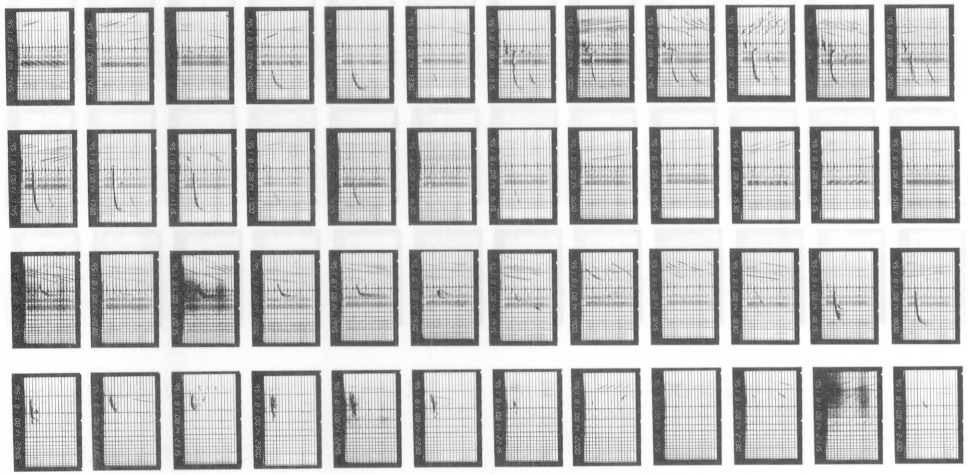
SYOWA STATION

IONOGRAM 1981 08 13 00;00-11;45



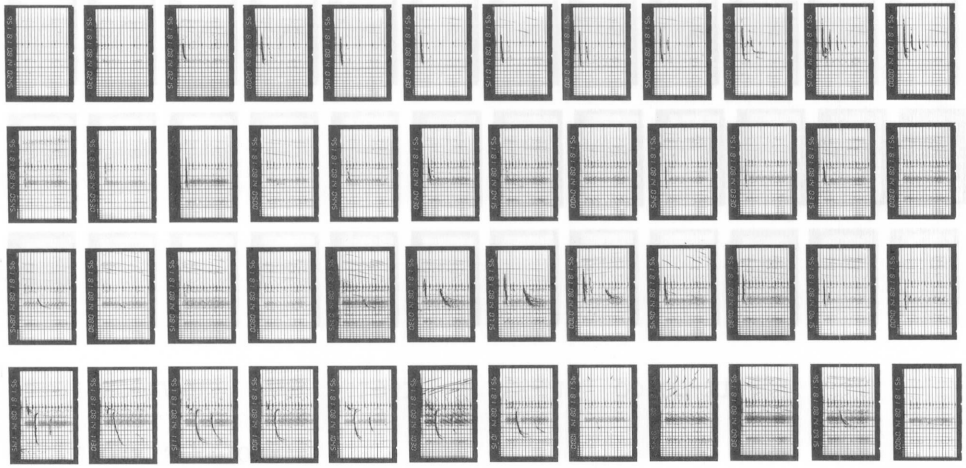
SYOWA STATION

IONOGRAM 1981 08 14 12;00-23;45



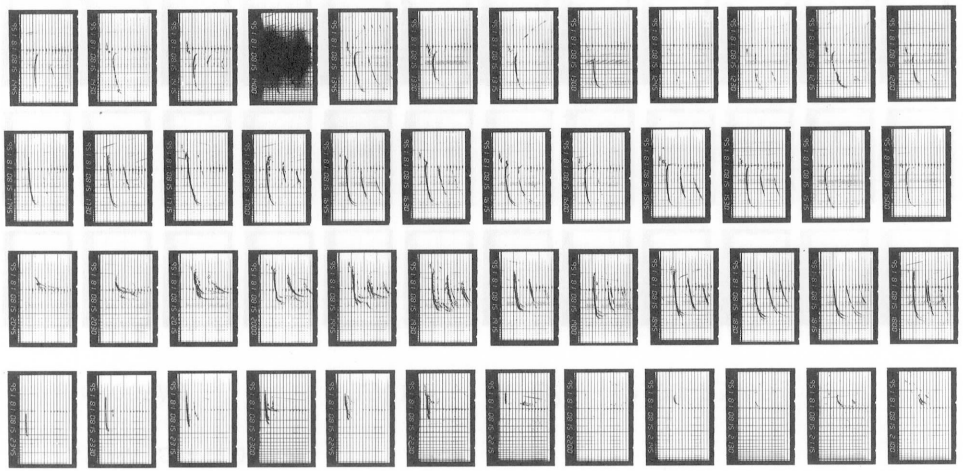
SYOWA STATION

IONOGRAM 1981 08 14 00;00-11;45



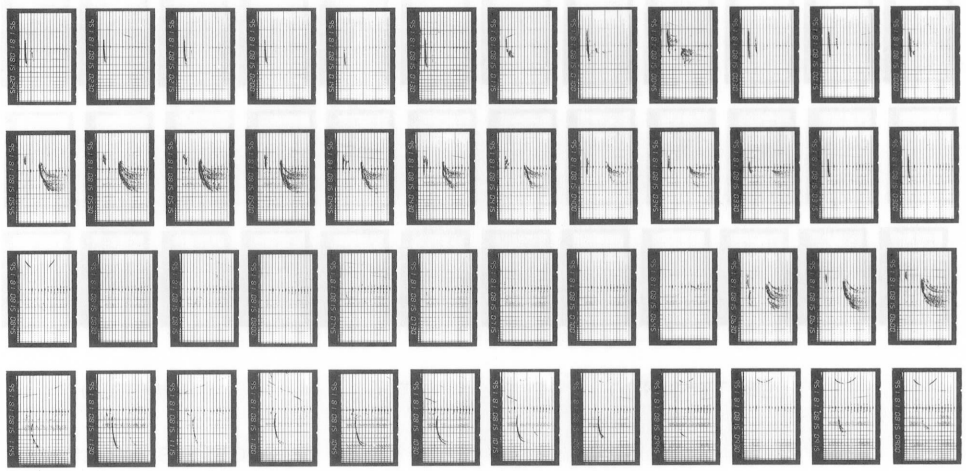
SYOWA STATION

IONOGRAM 1981 08 15 12;00-23;45



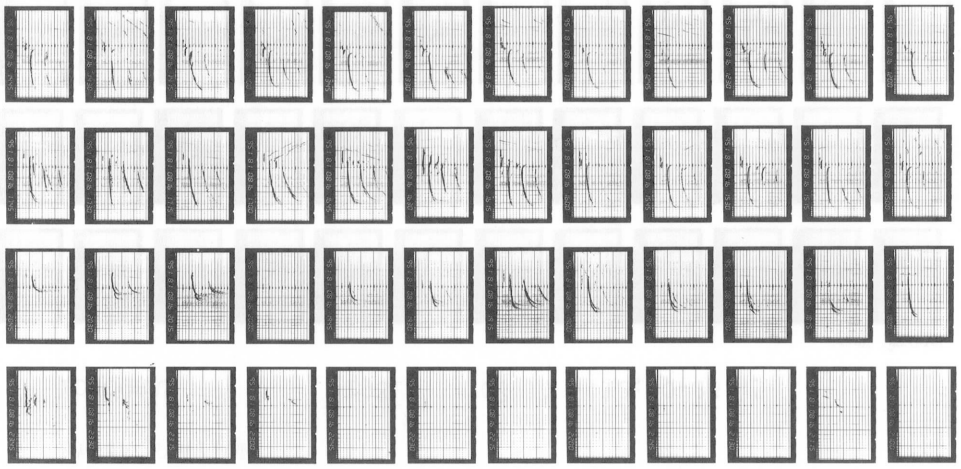
SYOWA STATION

IONOGRAM 1981 08 15 00;00-11;45



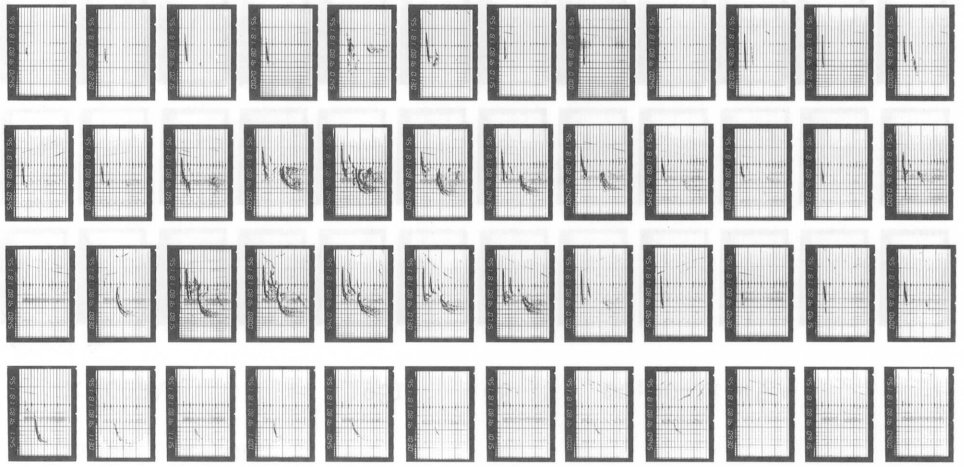
SYOWA STATION

IONOGRAM 1981 08 16 12;00-23;45



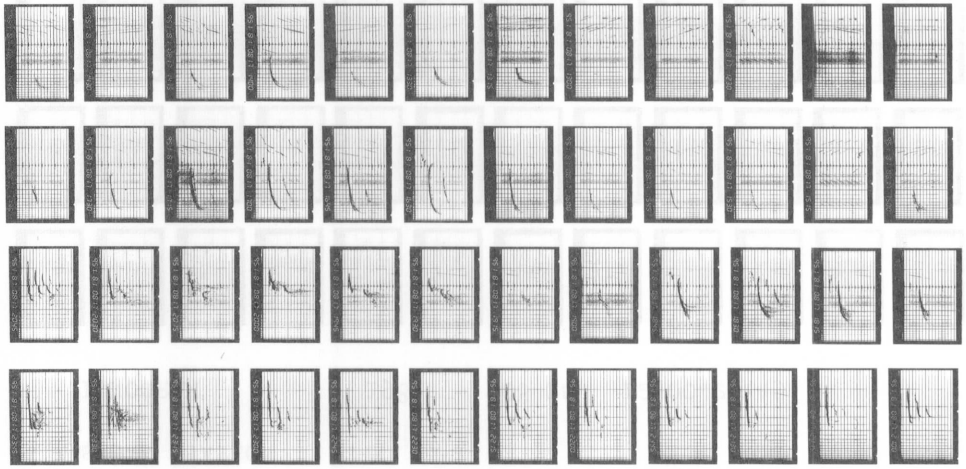
SYOWA STATION

IONOGRAM 1981 08 16 00;00-11;45



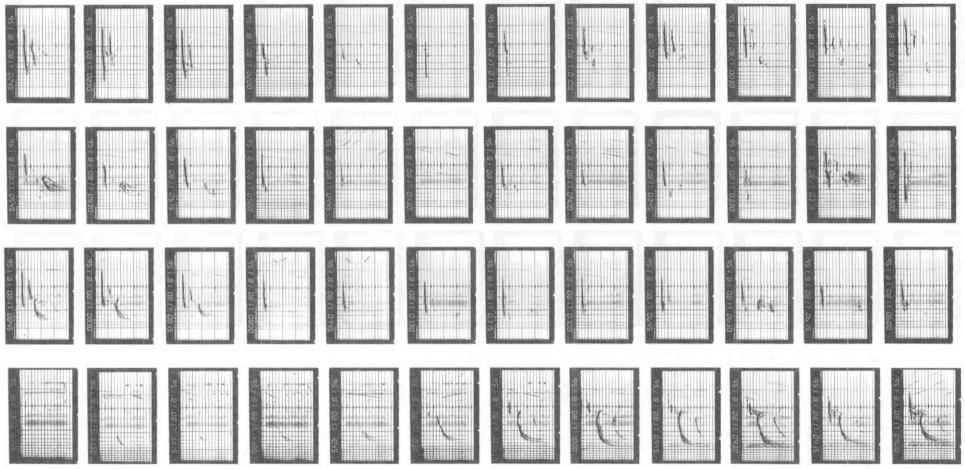
SYOWA STATION

IONOGRAM 1981 08 17 12;00-23;45



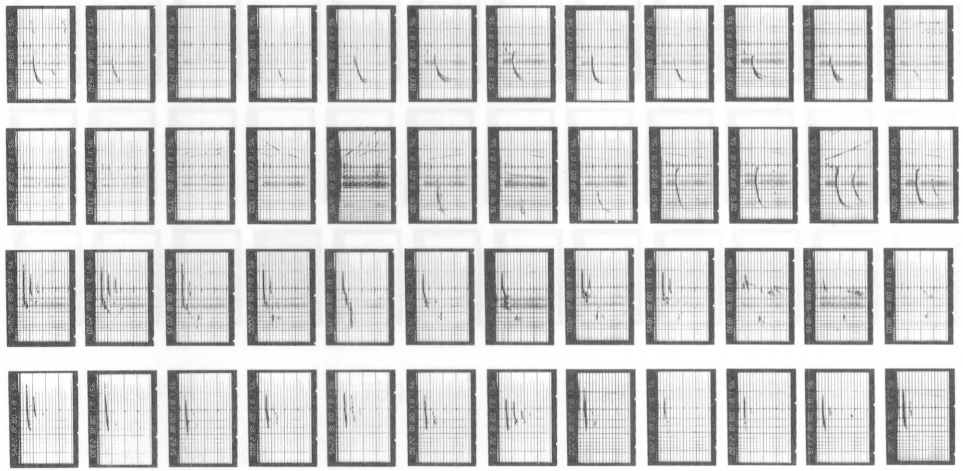
SYOWA STATION

IONOGRAM 1981 08 17 00;00-11;45



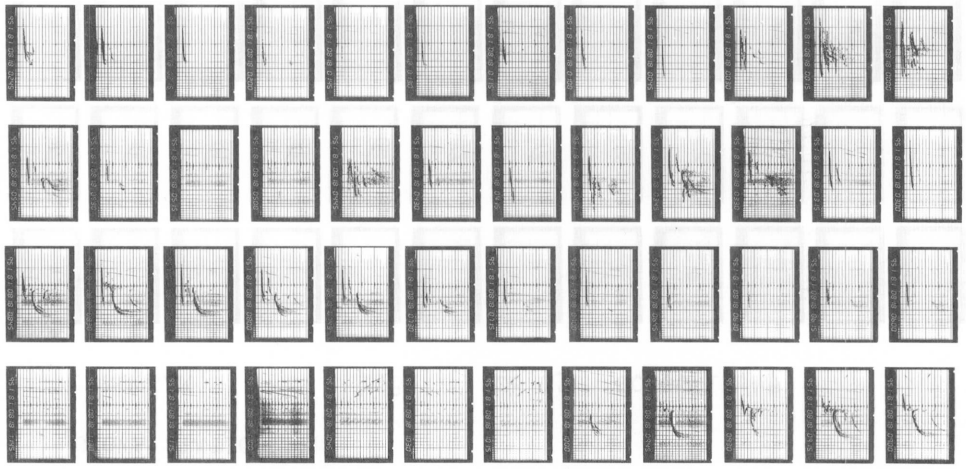
SYOWA STATION

IONOGRAM 1981 08 18 12;00-23;45



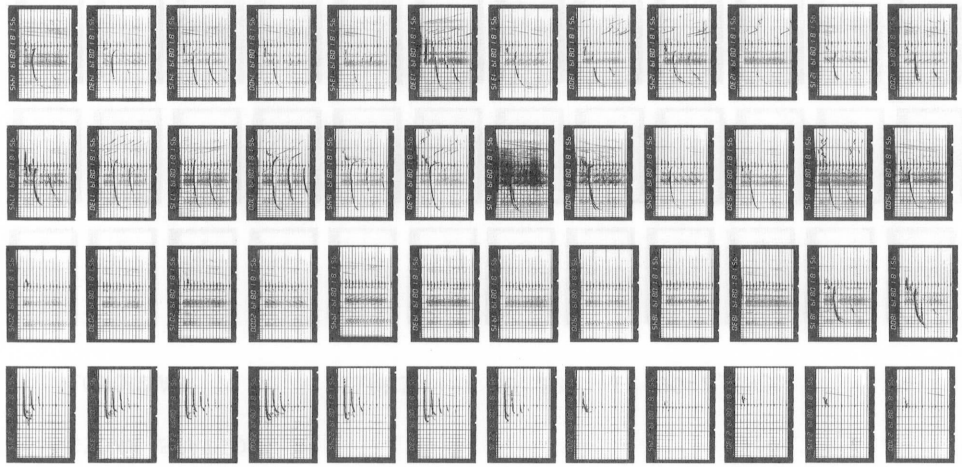
SYOWA STATION

IONOGRAM 1981 08 18 00;00-11;45



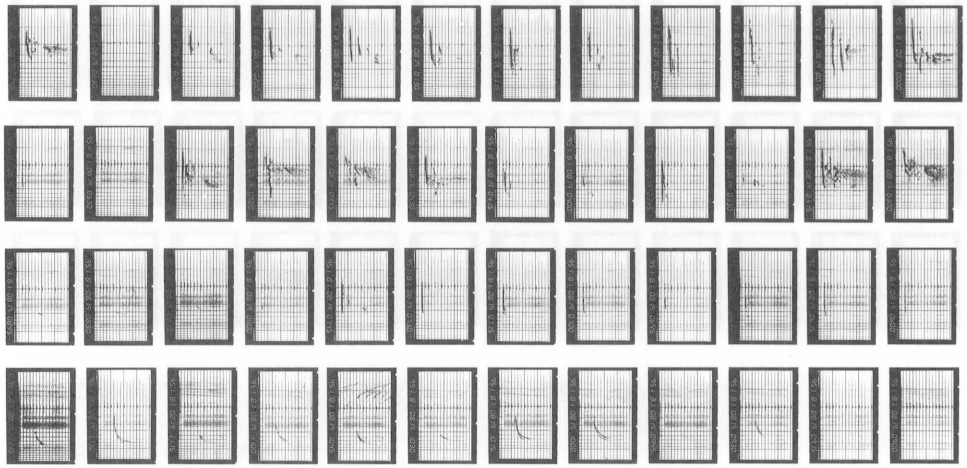
SYOWA STATION

IONOGRAM 1981 08 19 12;00-23;45



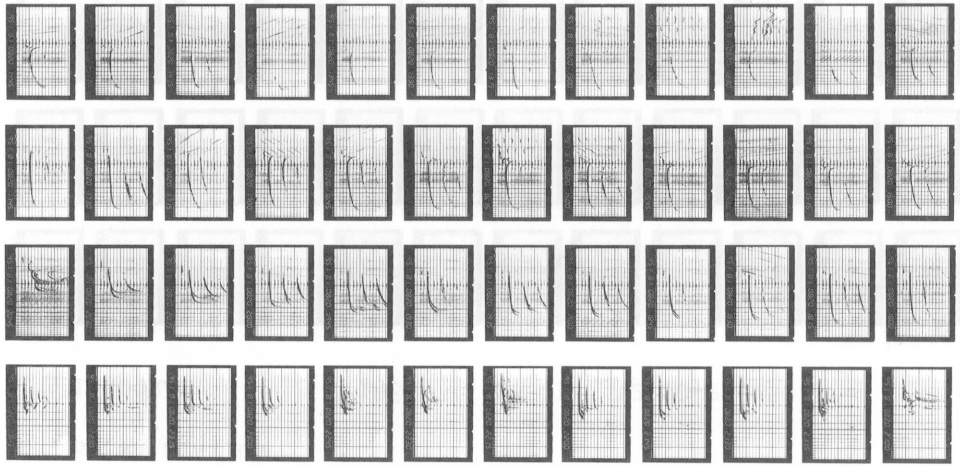
SYOWA STATION

IONOGRAM 1981 08 19 00;00-11;45



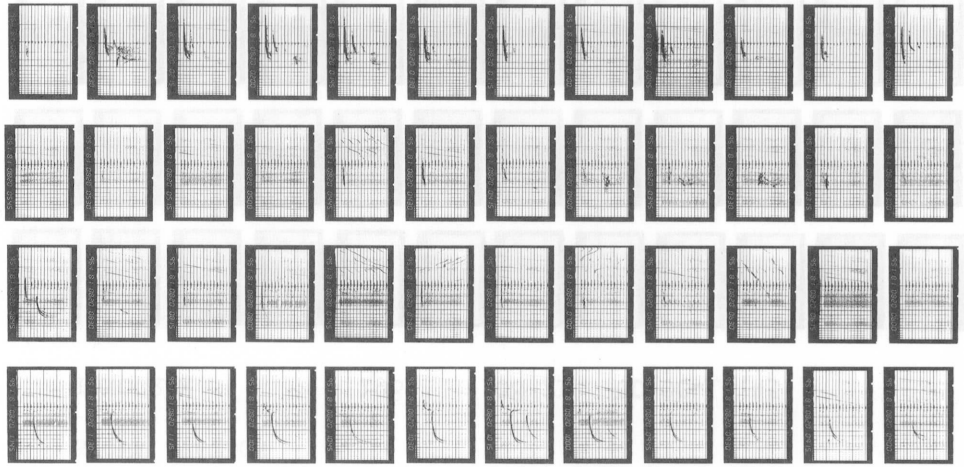
SYOWA STATION

IONOGRAM 1981 08 20 12;00-23;45



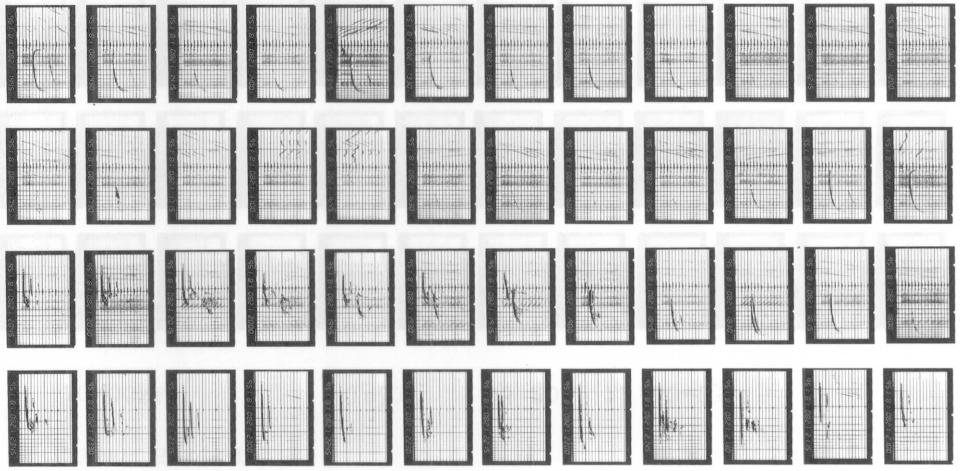
SYOWA STATION

IONOGRAM 1981 08 20 00;00-11;45



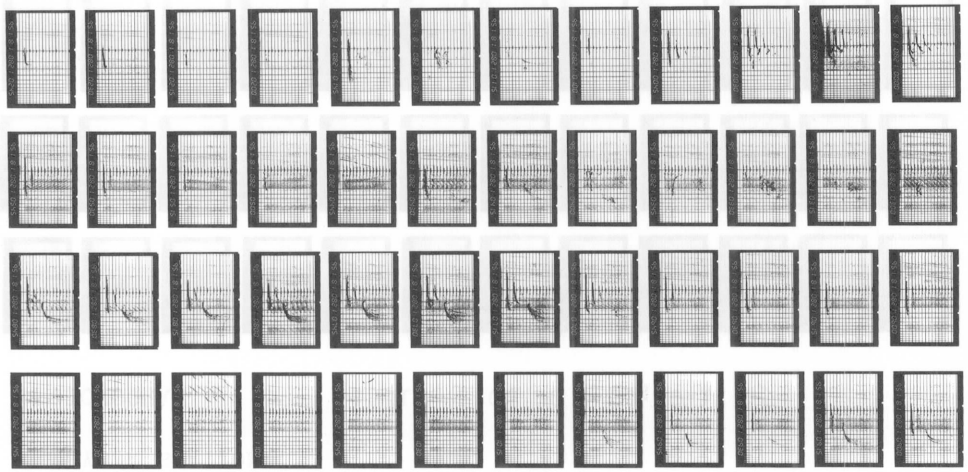
SYOWA STATION

IONOGRAM 1981 08 21 12;00-23;45



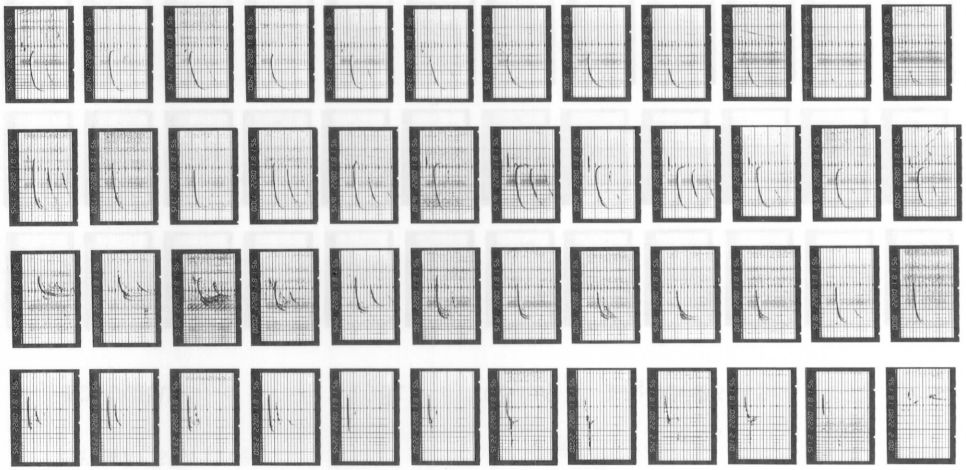
SYOWA STATION

IONOGRAM 1981 08 21 00;00-11;45



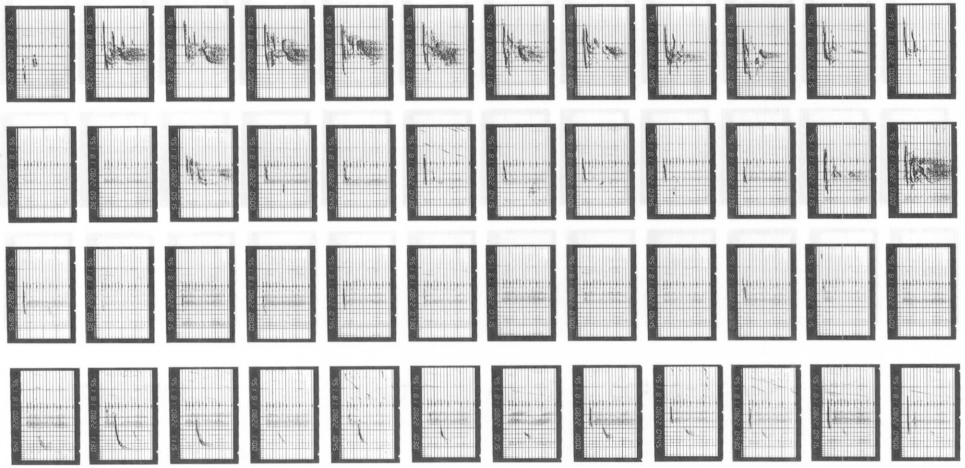
SYOWA STATION

IONOGRAM 1981 08 22 12;00-23;45



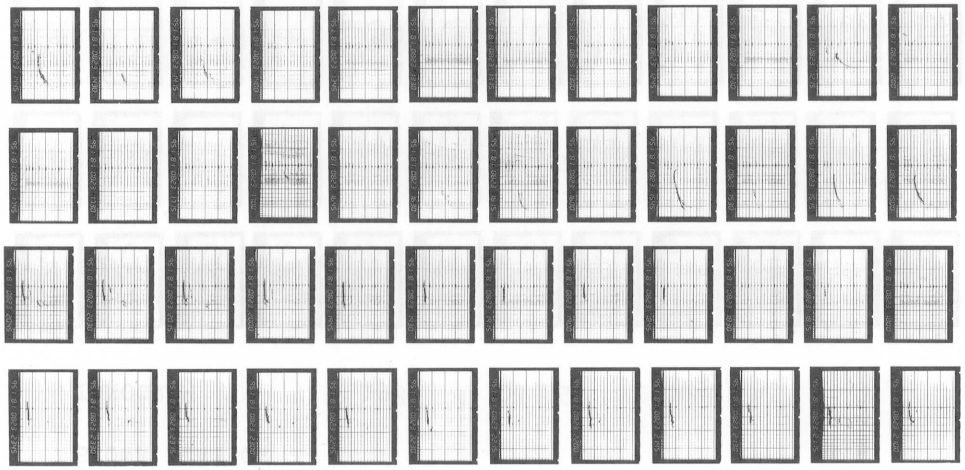
SYOWA STATION

IONOGRAM 1981 08 22 00;00-11;45



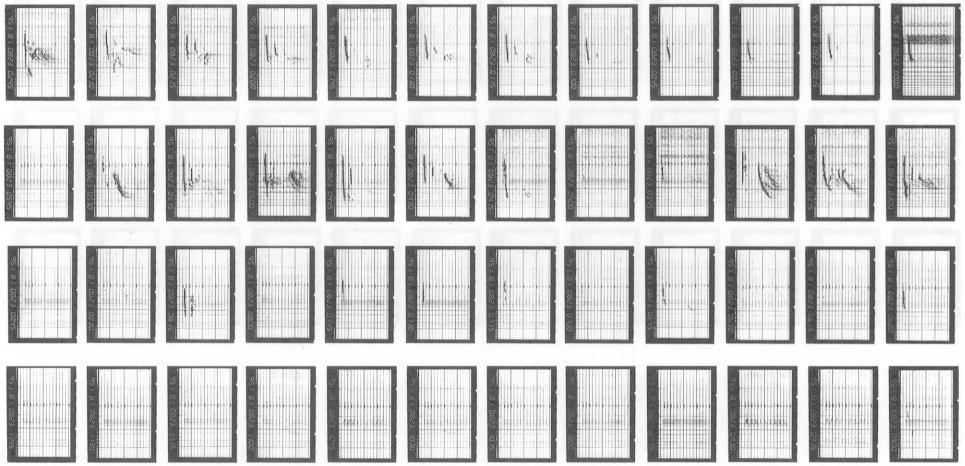
SYOWA STATION

IONOGRAM 1981 08 23 12;00-23;45



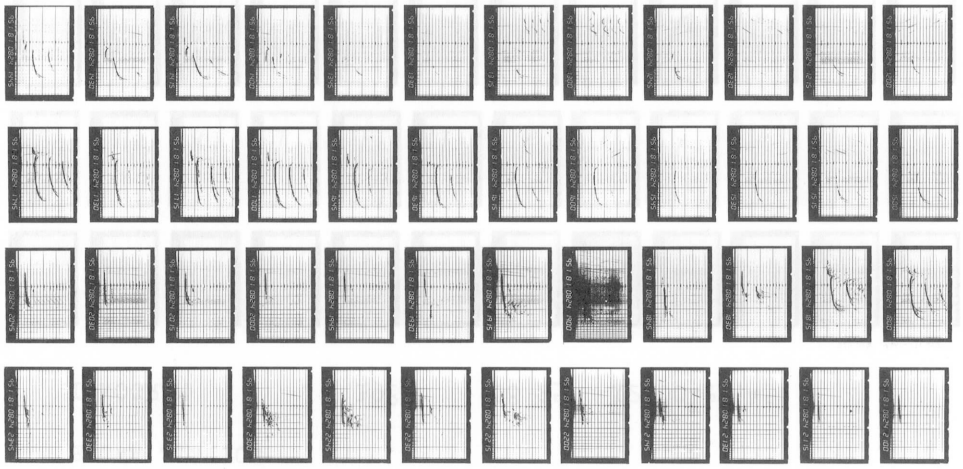
SYOWA STATION

IONOGRAM 1981 08 23 00;00-11;45



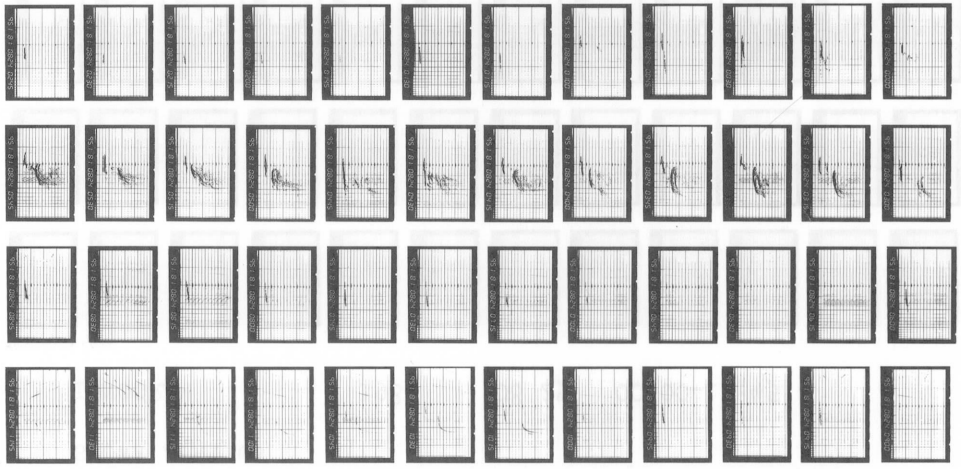
SYOWA STATION

IONOGRAM 1981 08 24 12;00-23;45



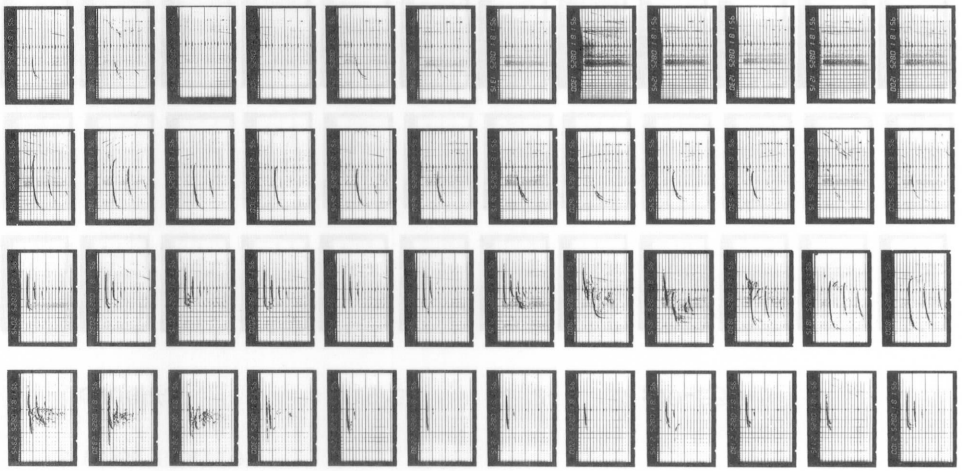
SYOWA STATION

IONOGRAM 1981 08 24 00;00-11;45



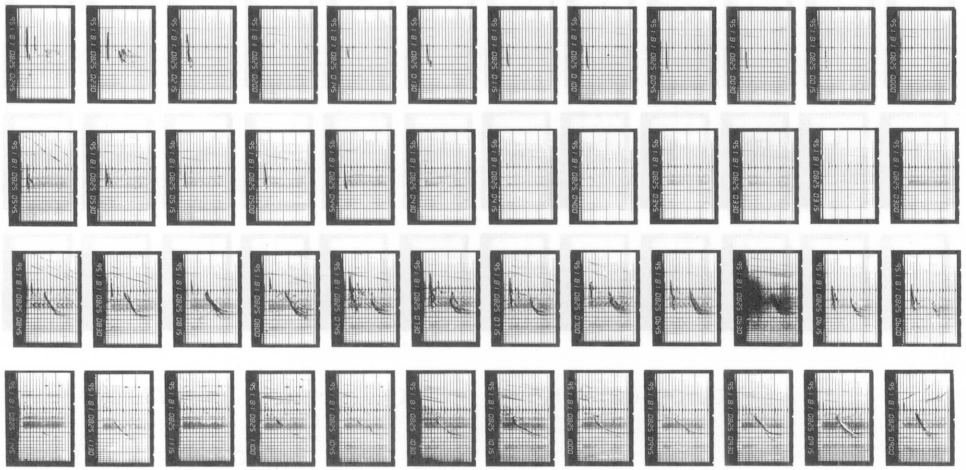
SYOWA STATION

IONOGRAM 1981 08 25 12;00-23;45



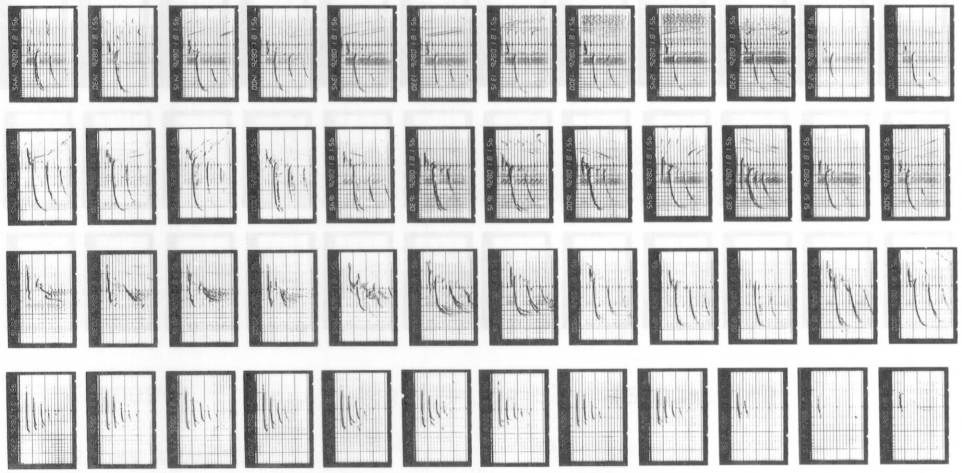
SYOWA STATION

IONOGRAM 1981 08 25 00;00-11;45



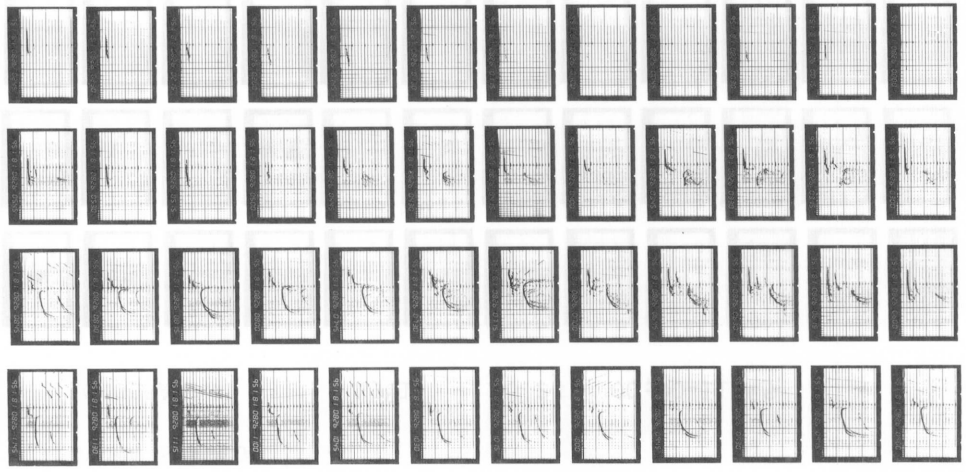
SYOWA STATION

IONOGRAM 1981 08 26 12;00-23;45



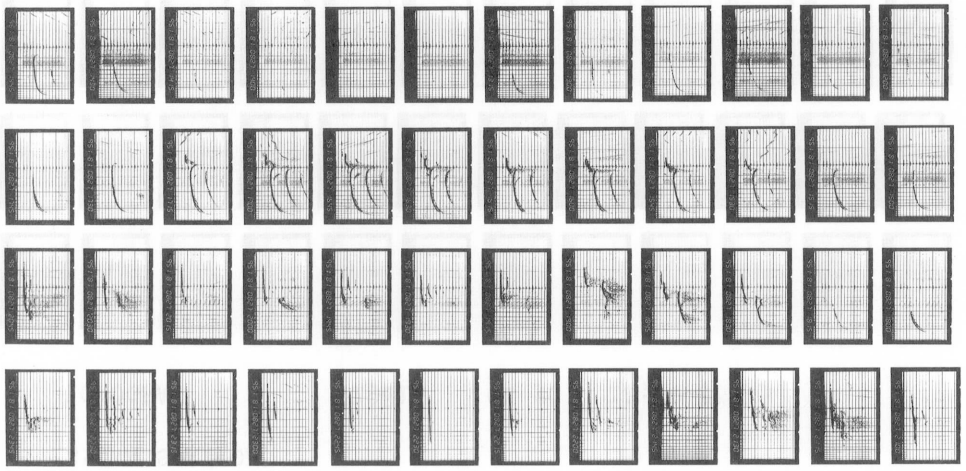
SYOWA STATION

IONOGRAM 1981 08 26 00;00-11;45



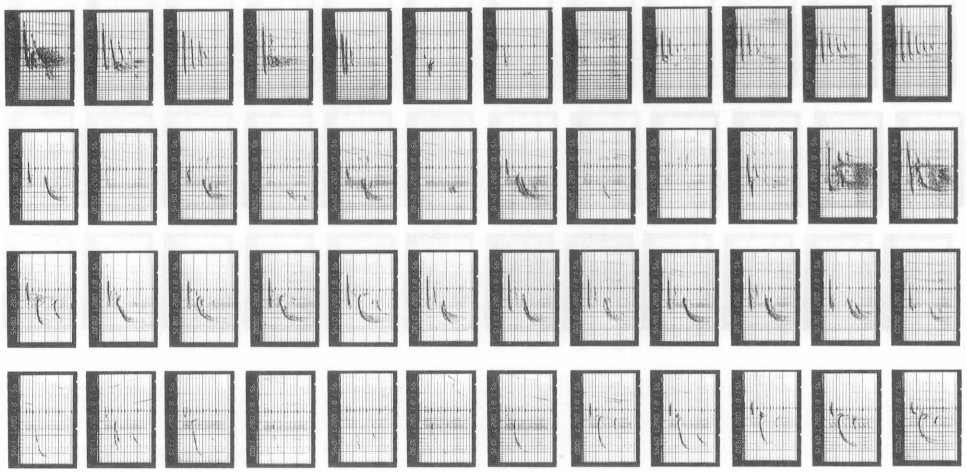
SYOWA STATION

IONOGRAM 1981 08 27 12;00-23;45



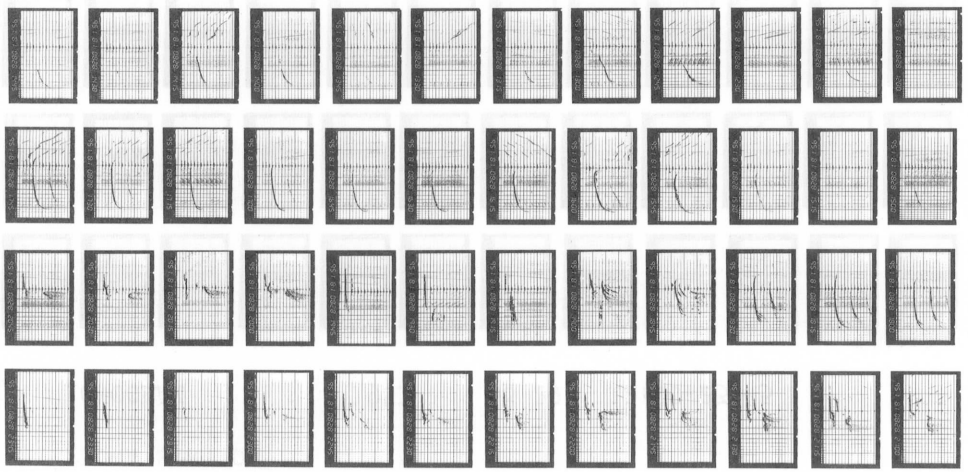
SYOWA STATION

IONOGRAM 1981 08 27 00;00-11;45



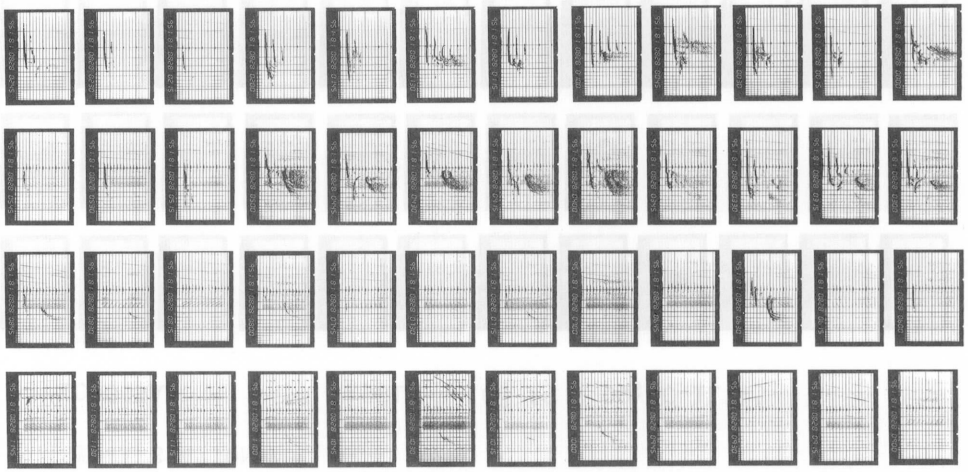
SYOWA STATION

IONOGRAM 1981 08 28 12;00-23;45



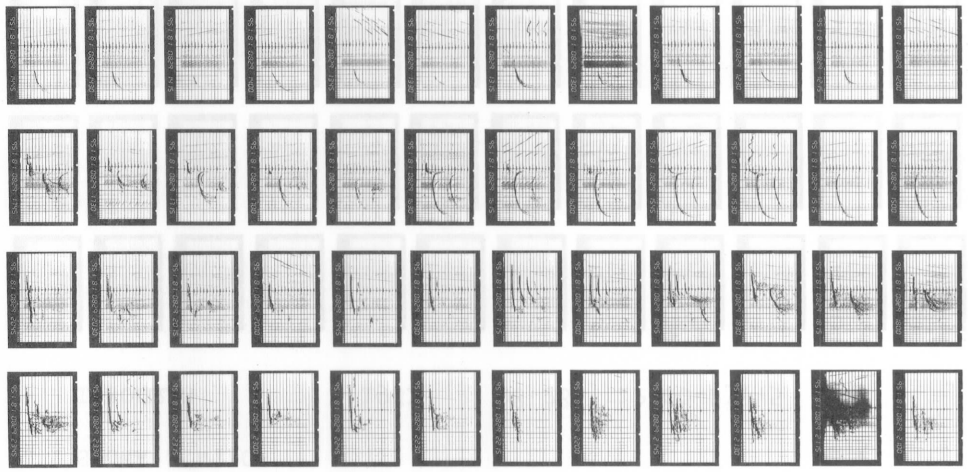
SYOWA STATION

IONOGRAM 1981 08 28 00;00-11;45



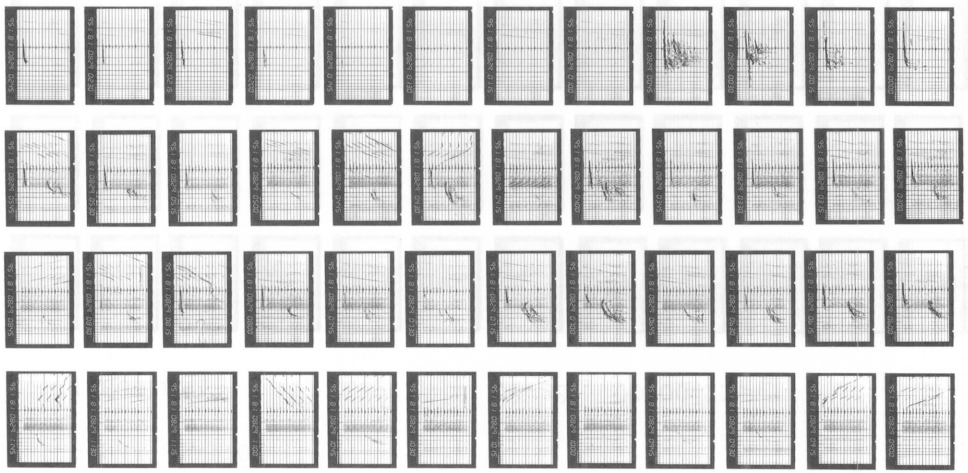
SYOWA STATION

IONOGRAM 1981 08 29 12;00-23;45



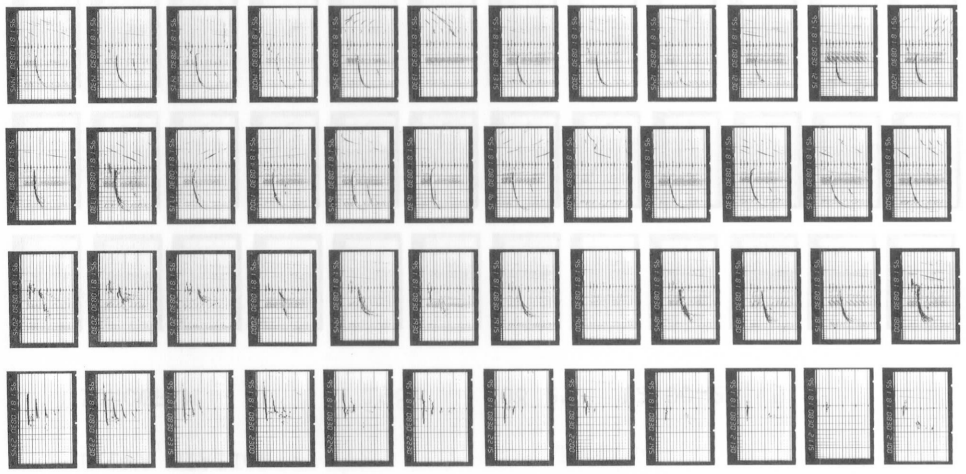
SYOWA STATION

IONOGRAM 1981 08 29 00;00-11;45



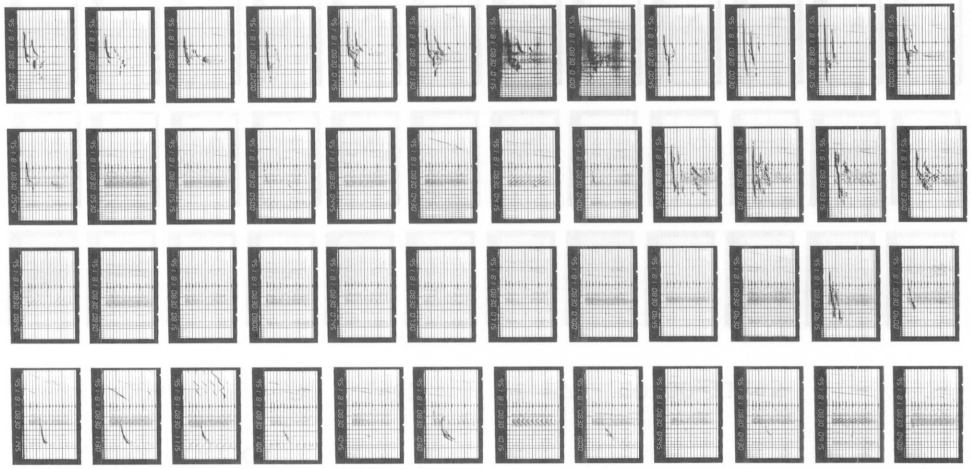
SYOWA STATION

IONOGRAM 1981 08 30 12;00-23;45



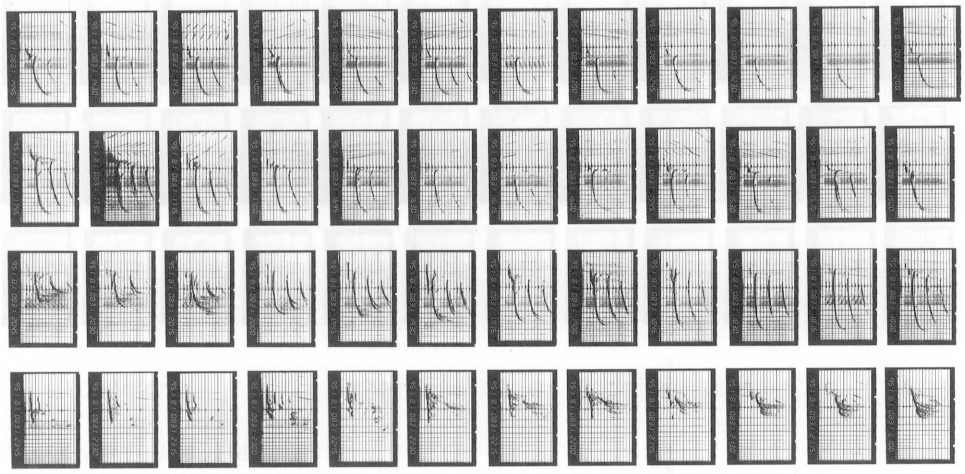
SYOWA STATION

IONOGRAM 1981 08 30 00;00-11;45



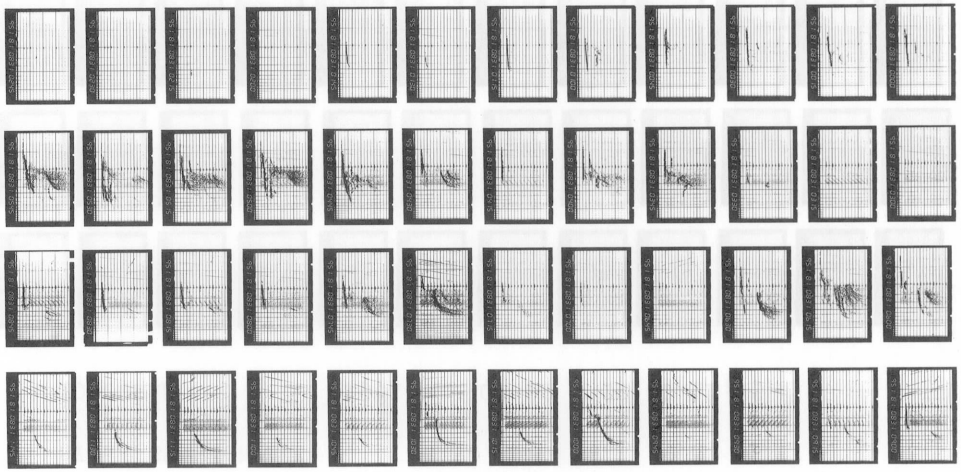
SYOWA STATION

IONOGRAM 1981 08 31 12;00-23;45



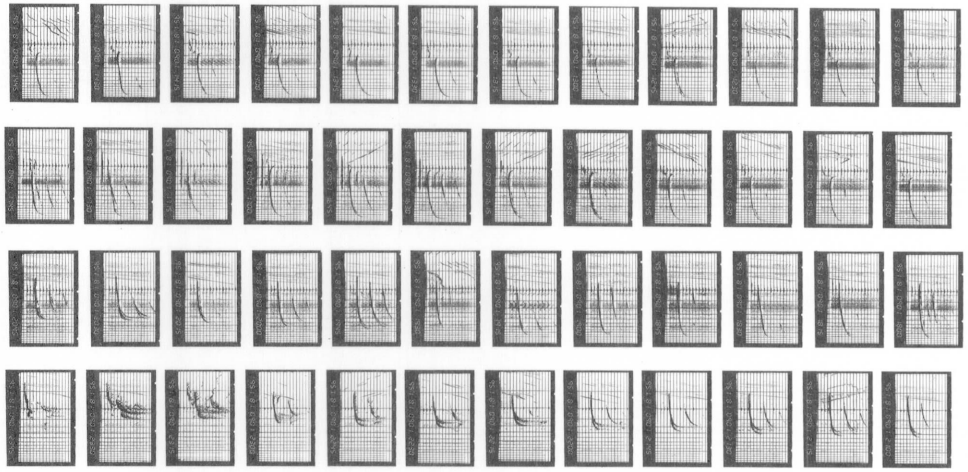
SYOWA STATION

IONOGRAM 1981 08 31 00;00-11;45



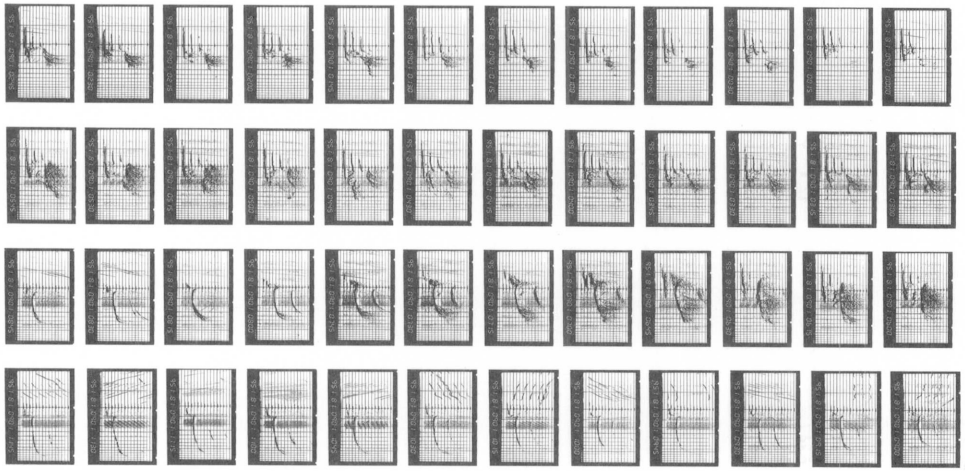
SYOWA STATION

IONOGRAM 1981 09 01 12;00-23;45



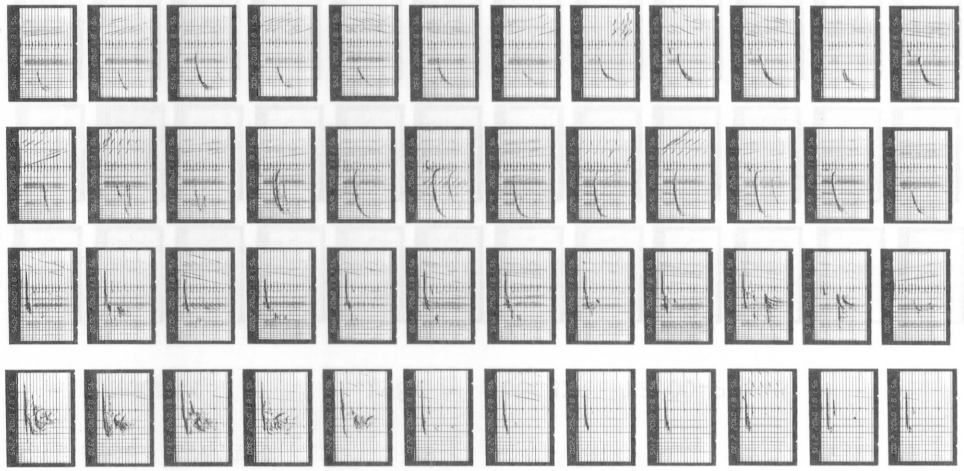
SYOWA STATION

IONOGRAM 1981 09 01 00;00-11;45



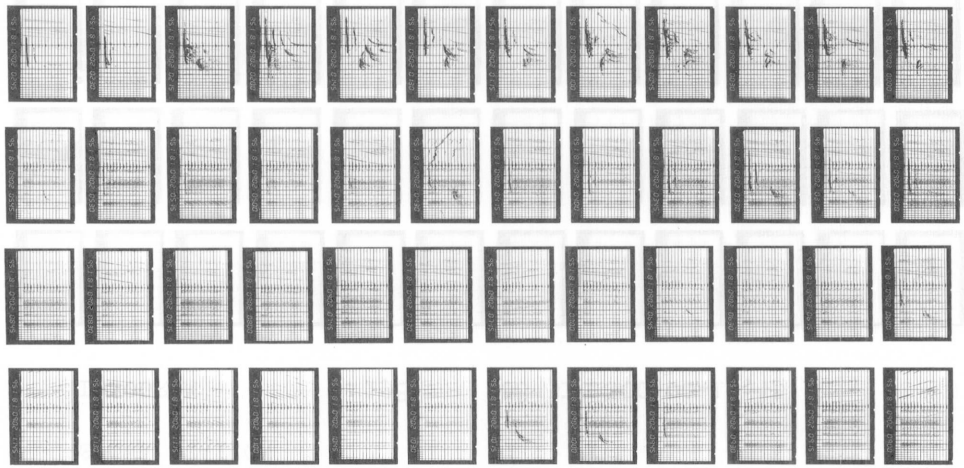
SYOWA STATION

IONOGRAM 1981 09 02 12;00-23;45



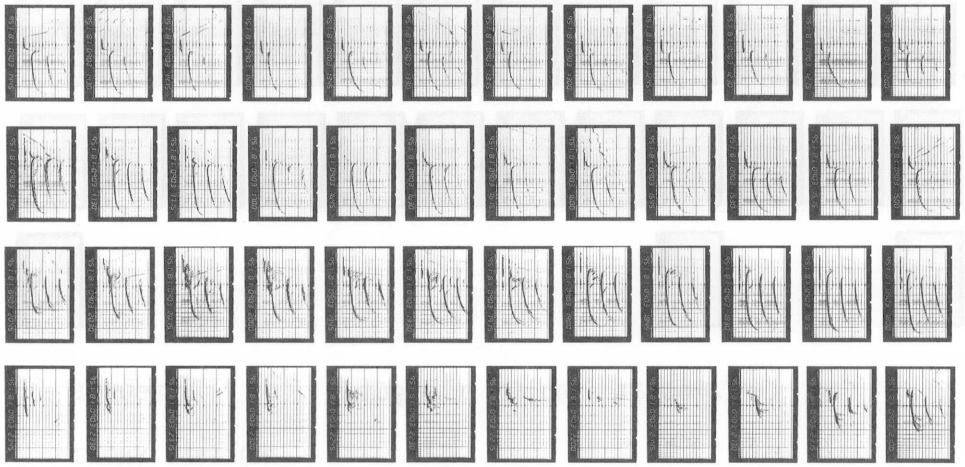
SYOWA STATION

IONOGRAM 1981 09 02 00;00-11;45



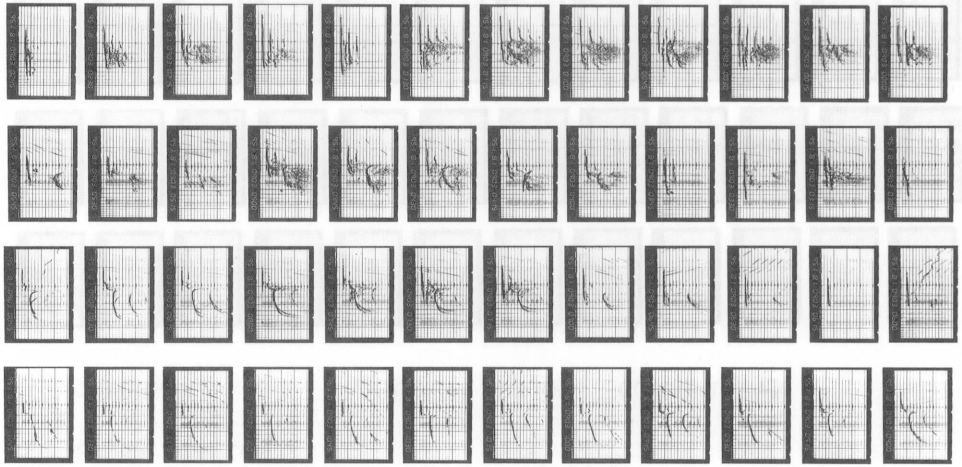
SYOWA STATION

IONOGRAM 1981 09 03 12;00-23;45



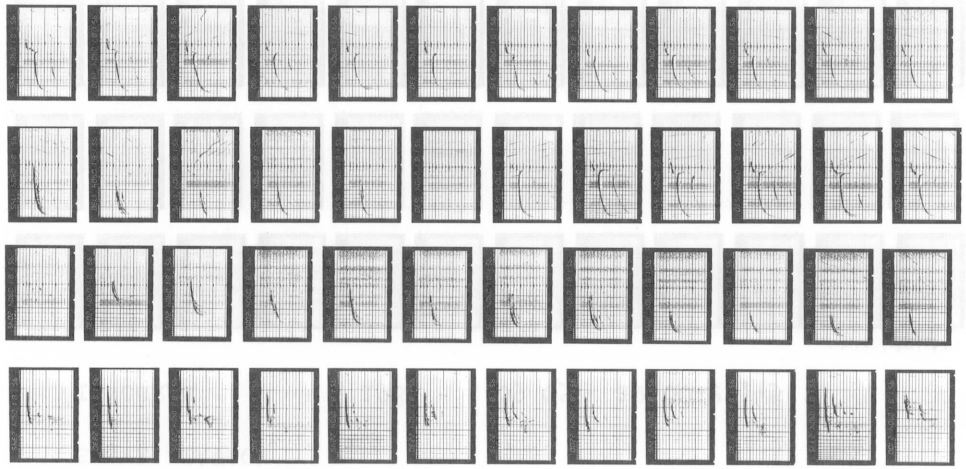
SYOWA STATION

IONOGRAM 1981 09 03 00;00-11;45



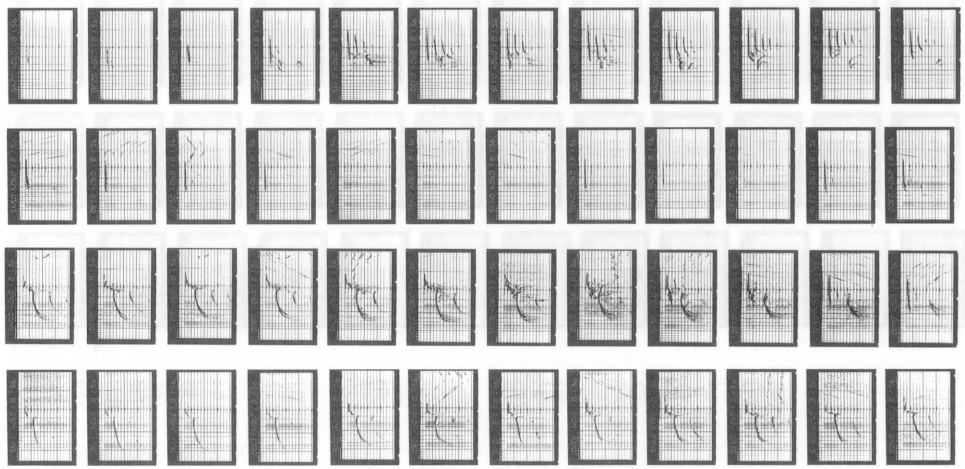
SYOWA STATION

IONOGRAM 1981 09 04 12;00-23;45



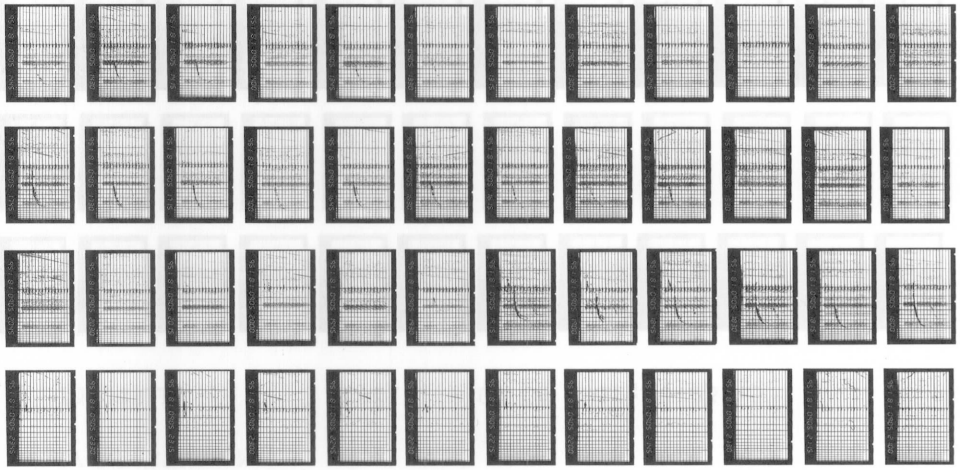
SYOWA STATION

IONOGRAM 1981 09 04 00;00-11;45



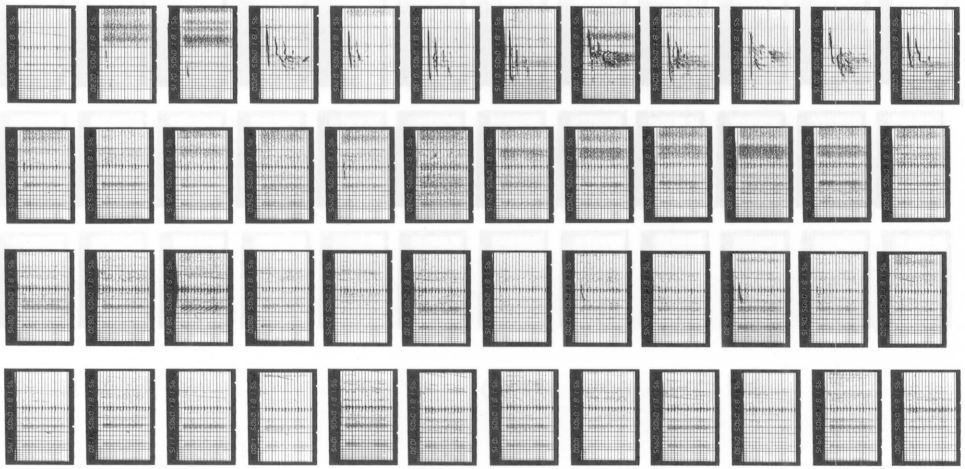
SYOWA STATION

IONOGRAM 1981 09 05 12;00-23;45



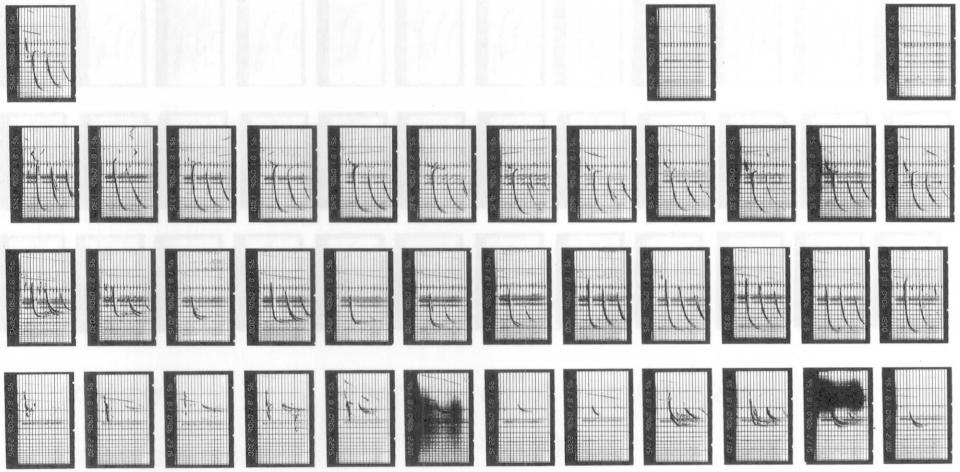
SYOWA STATION

IONOGRAM 1981 09 05 00;00-11;45



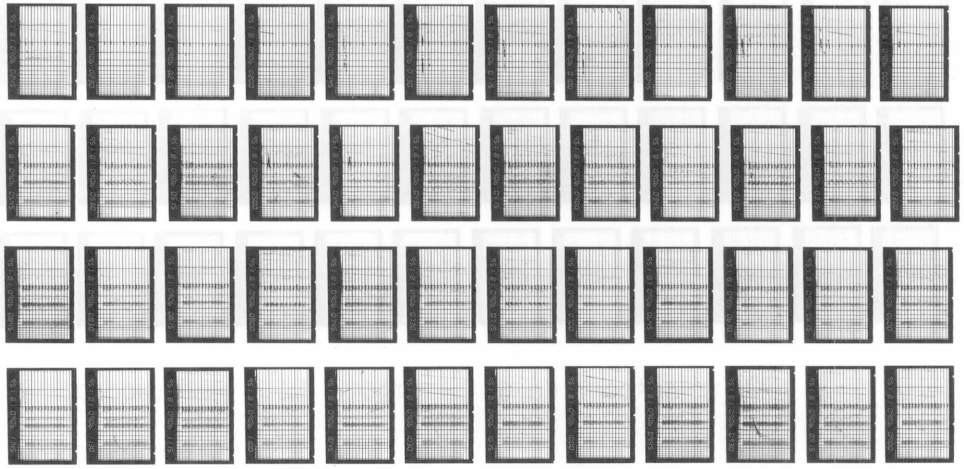
SYOWA STATION

IONOGRAM 1981 09 06 12;00-23;45



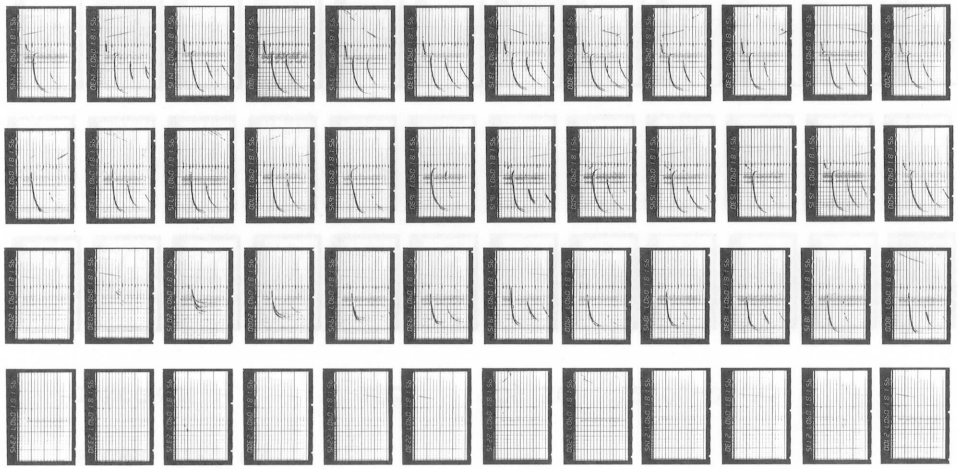
SYOWA STATION

IONOGRAM 1981 09 06 00;00-11;45



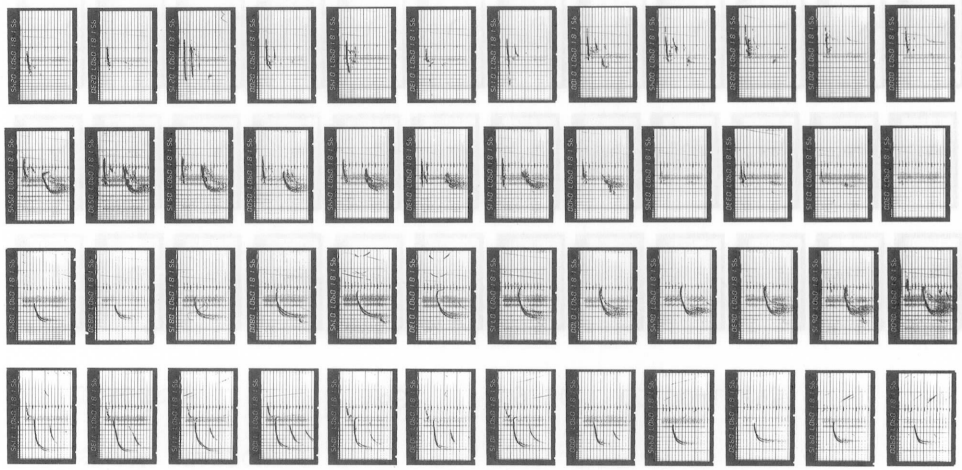
SYOWA STATION

IONOGRAM 1981 09 07 12;00-23;45



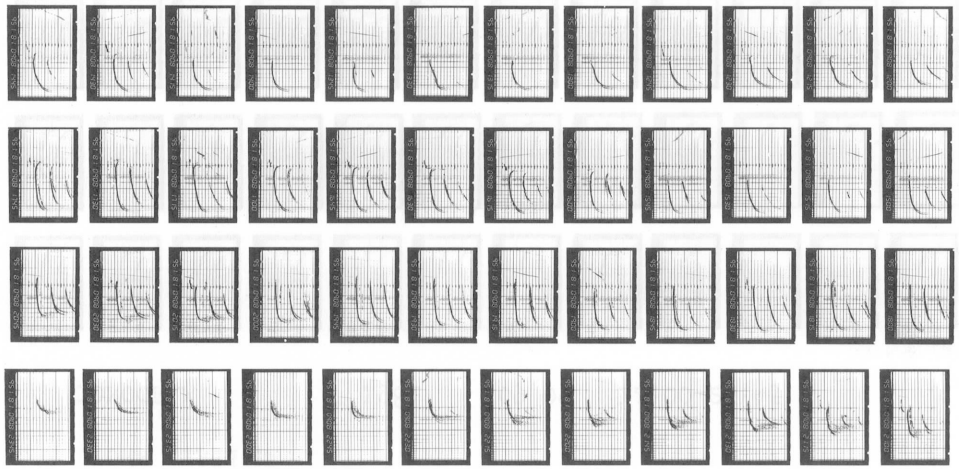
SYOWA STATION

IONOGRAM 1981 09 07 00;00-11;45



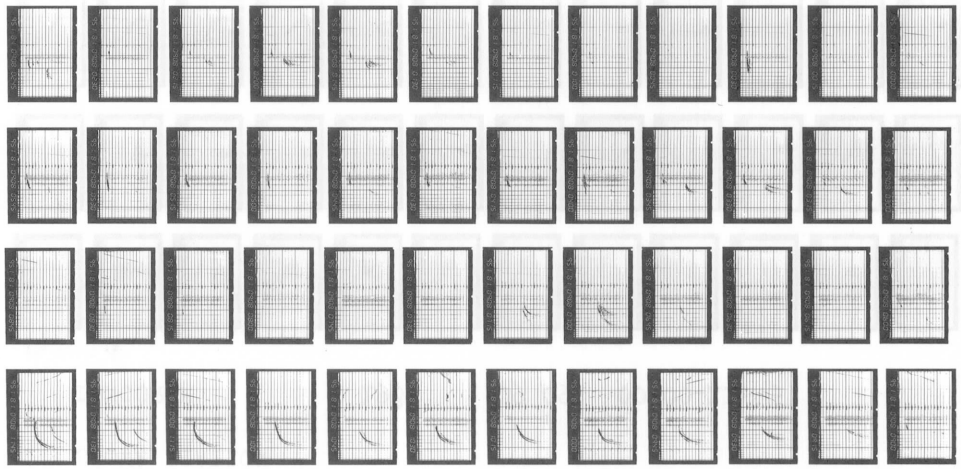
SYOWA STATION

IONOGRAM 1981 09 08 12;00-23;45



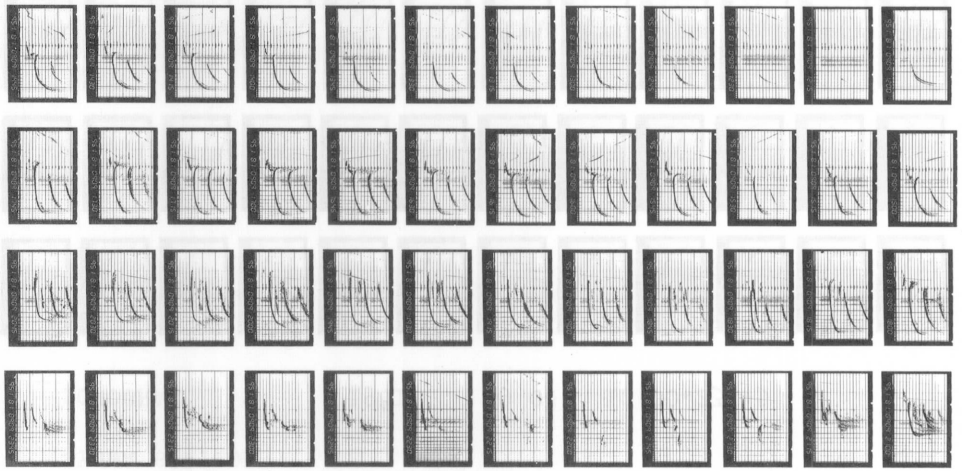
SYOWA STATION

IONOGRAM 1981 09 08 00;00-11;45



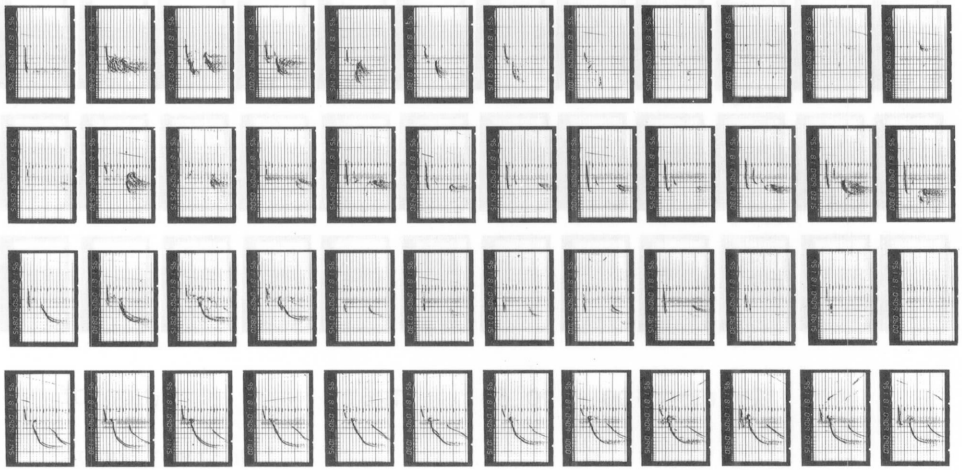
SYOWA STATION

IONOGRAM 1981 09 09 12;00-23;45



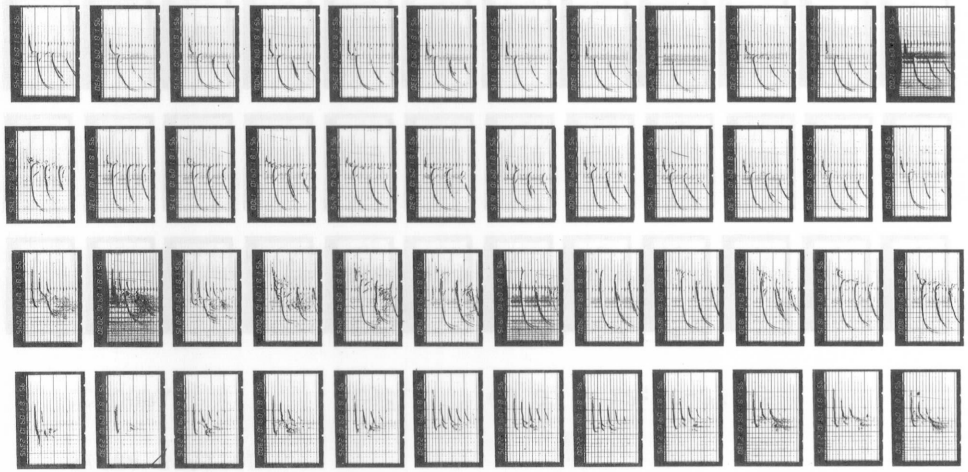
SYOWA STATION

IONOGRAM 1981 09 09 00;00-11;45



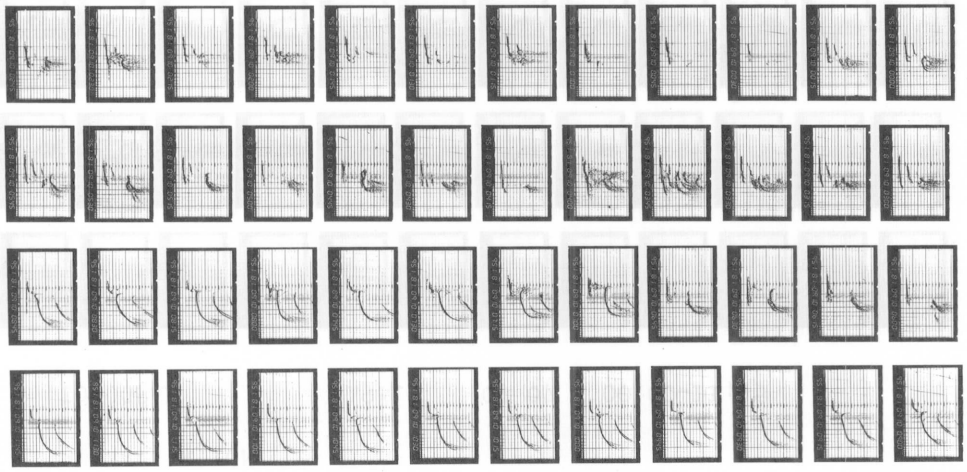
SYOWA STATION

IONOGRAM 1981 09 10 12;00-23;45



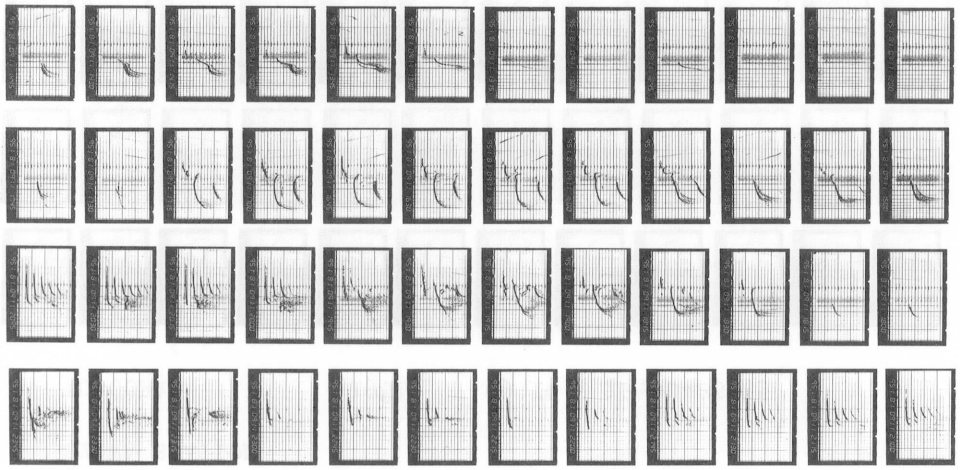
SYOWA STATION

IONOGRAM 1981 09 10 00;00-11;45



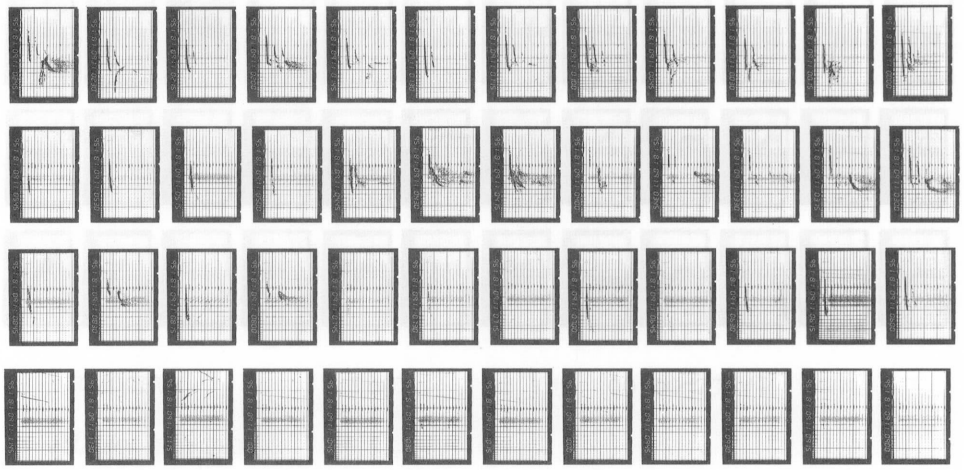
SYOWA STATION

IONOGRAM 1981 09 11 12;00-23;45



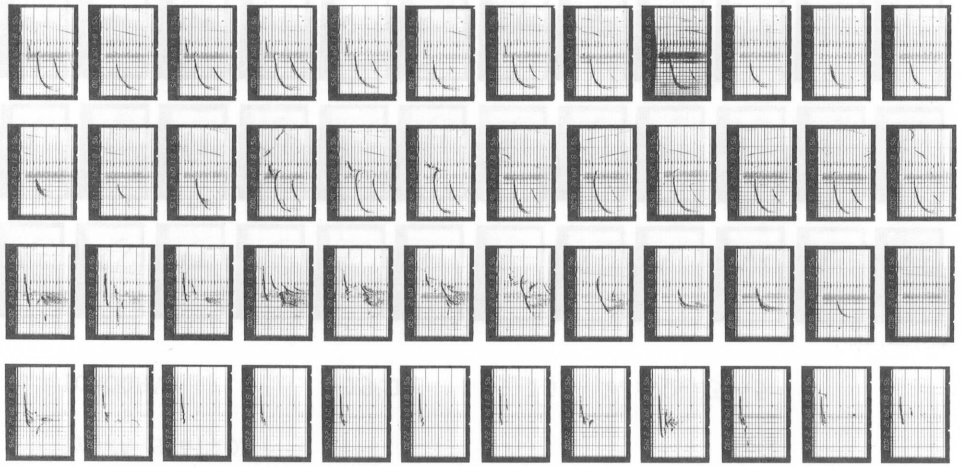
SYOWA STATION

IONOGRAM 1981 09 11 00;00-11;45



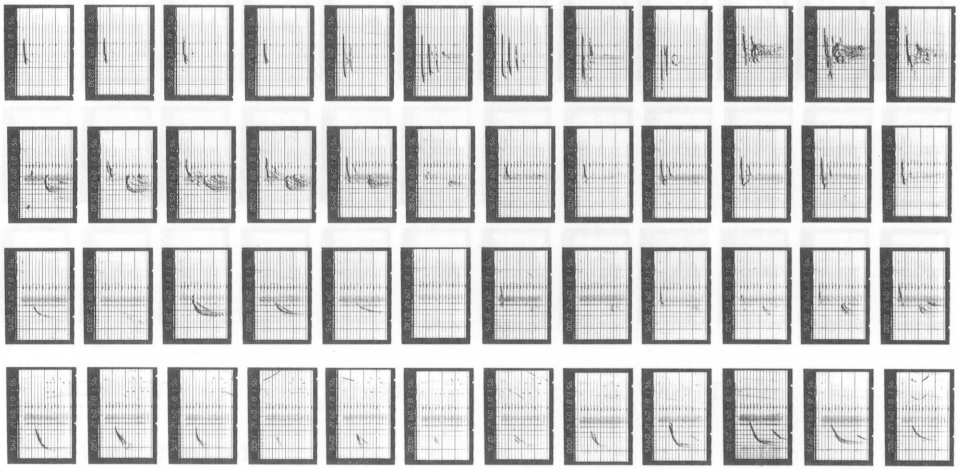
SYOWA STATION

IONOGRAM 1981 09 12 12;00-23;45



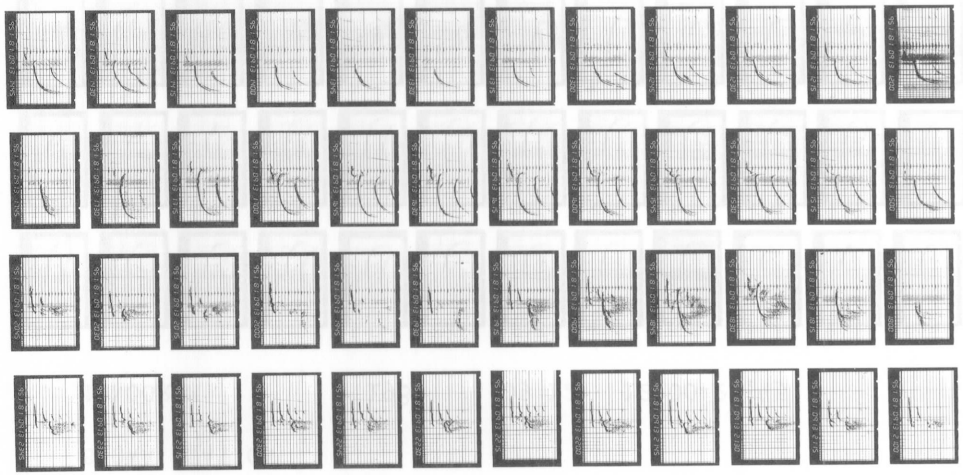
SYOWA STATION

IONOGRAM 1981 09 12 00;00-11;45



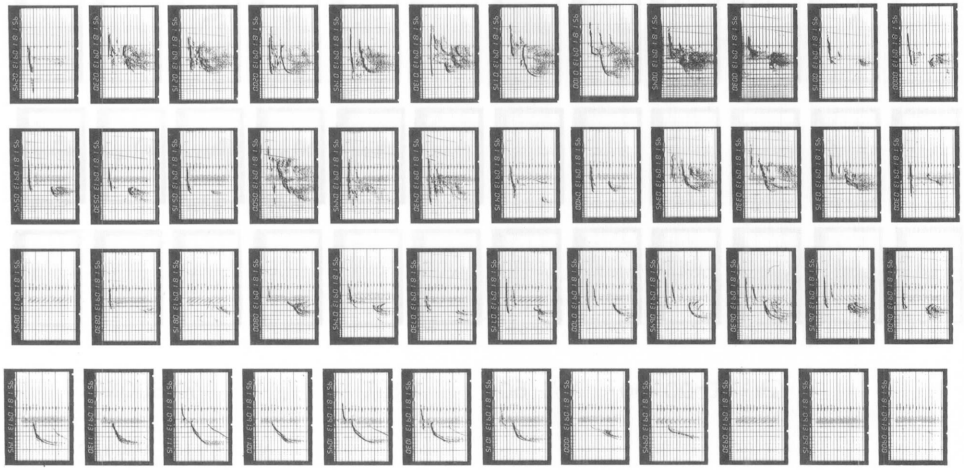
SYOWA STATION

IONOGRAM 1981 09 13 12;00-23;45



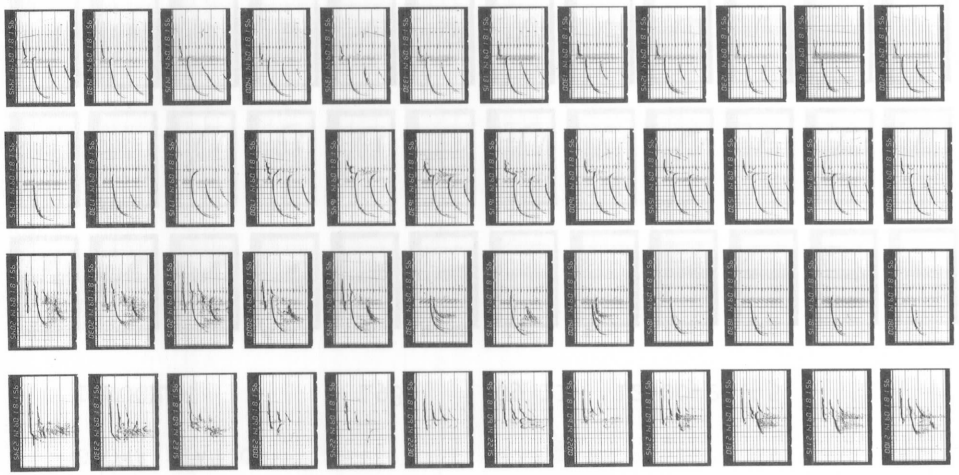
SYOWA STATION

IONOGRAM 1981 09 13 00;00-11;45



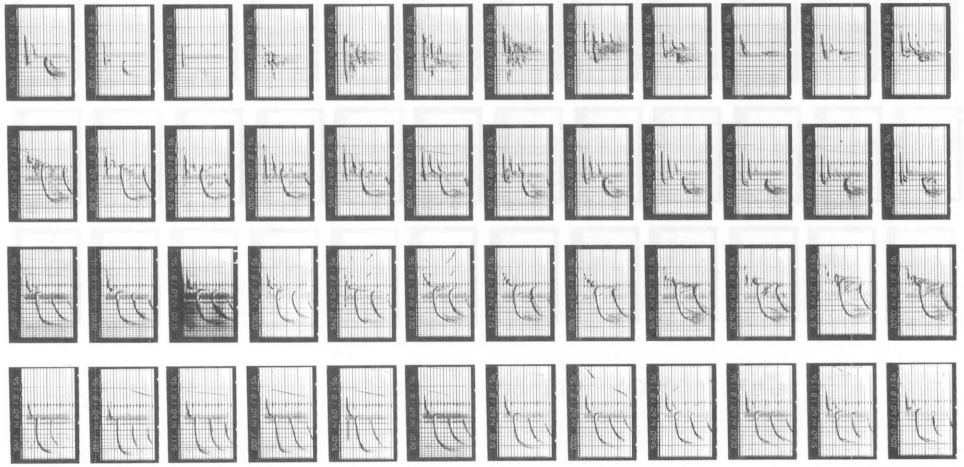
SYOWA STATION

IONOGRAM 1981 09 14 12;00-23;45



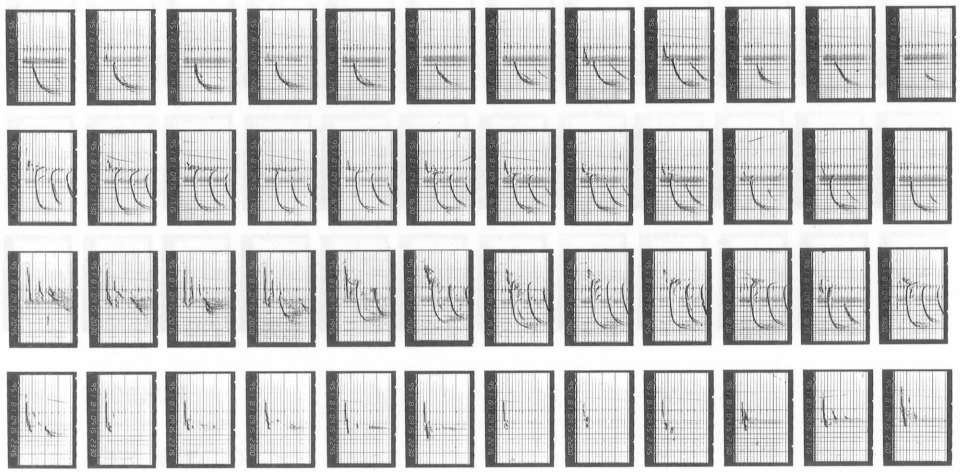
SYOWA STATION

IONOGRAM 1981 09 14 00;00-11;45



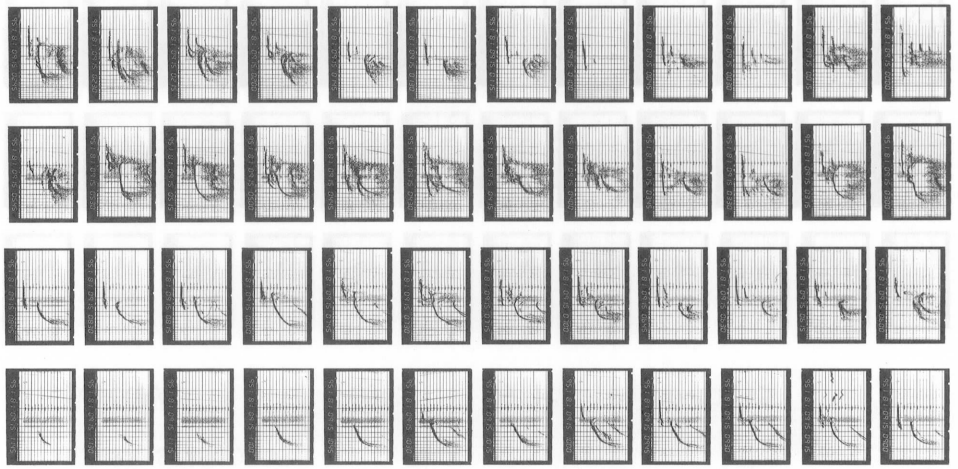
SYOWA STATION

IONOGRAM 1981 09 15 12;00-23;45



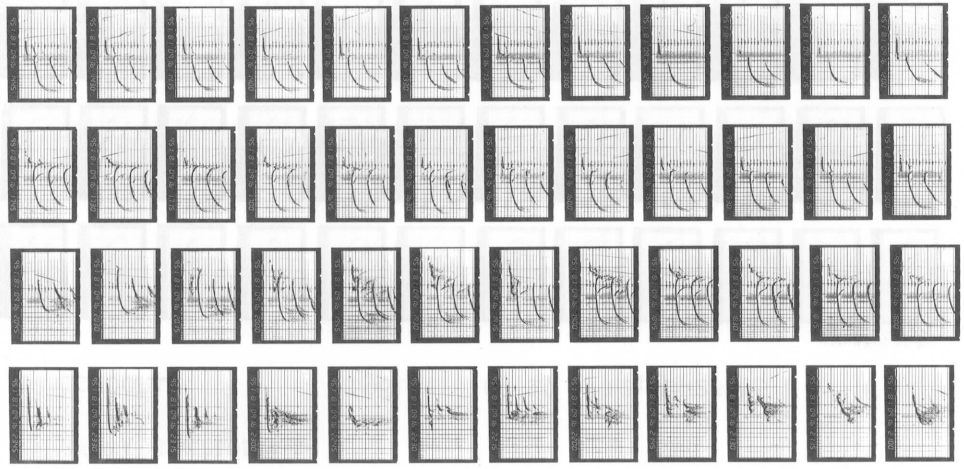
SYOWA STATION

IONOGRAM 1981 09 15 00;00-11;45



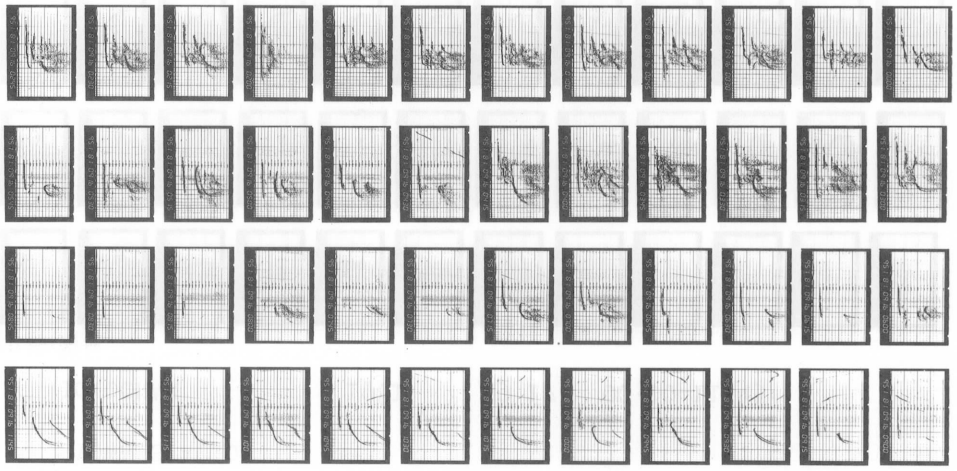
SYOWA STATION

IONOGRAM 1981 09 16 12;00-23;45



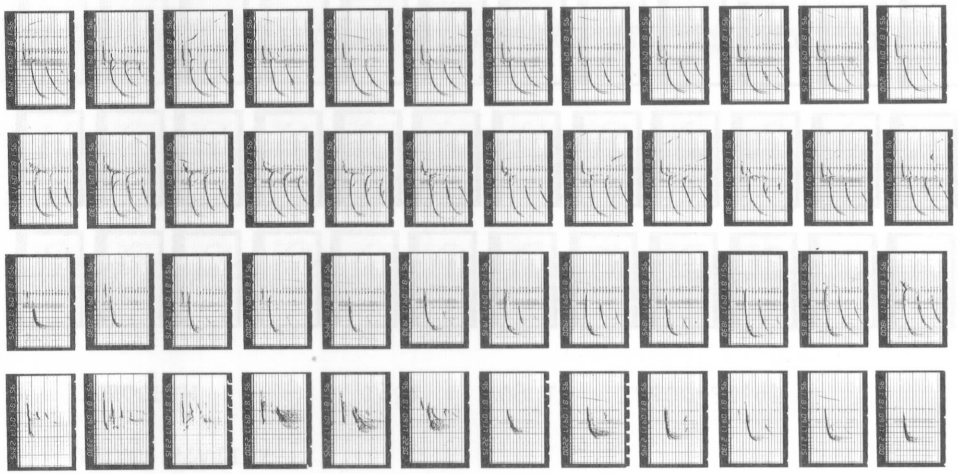
SYOWA STATION

IONOGRAM 1981 09 16 00;00-11;45



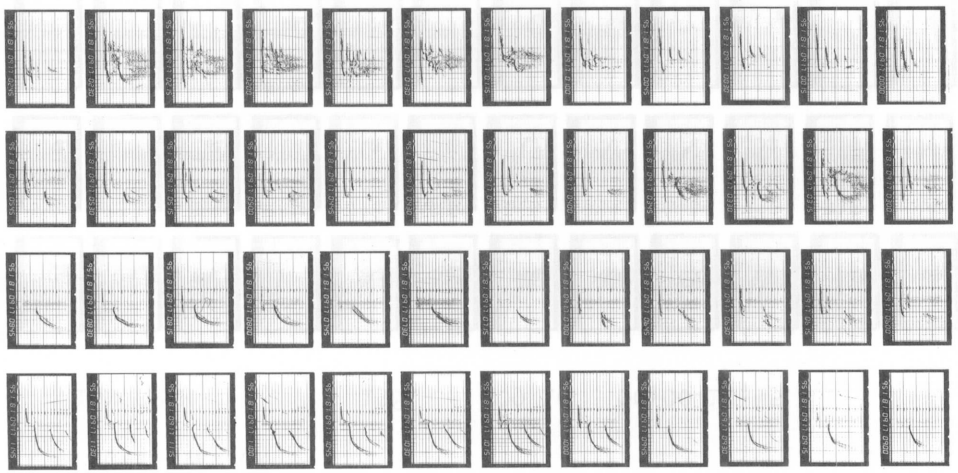
SYOWA STATION

IONOGRAM 1981 09 17 12;00-23;45



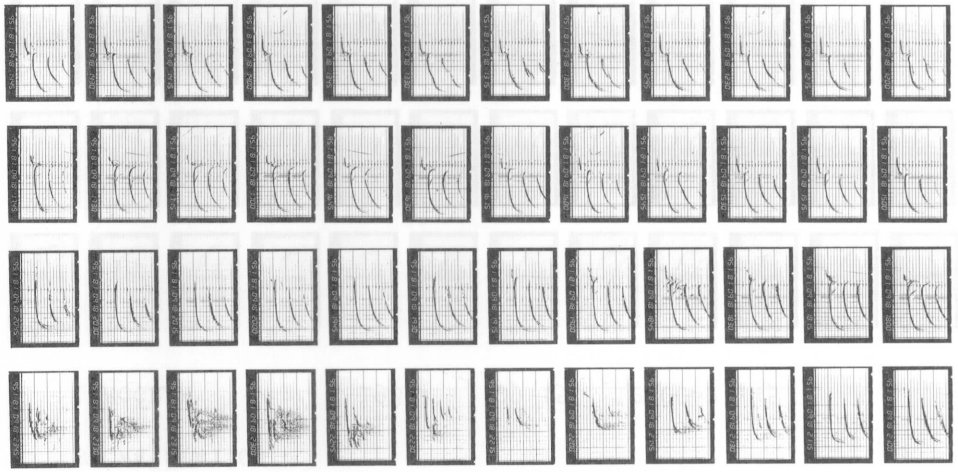
SYOWA STATION

IONOGRAM 1981 09 17 00;00-11;45



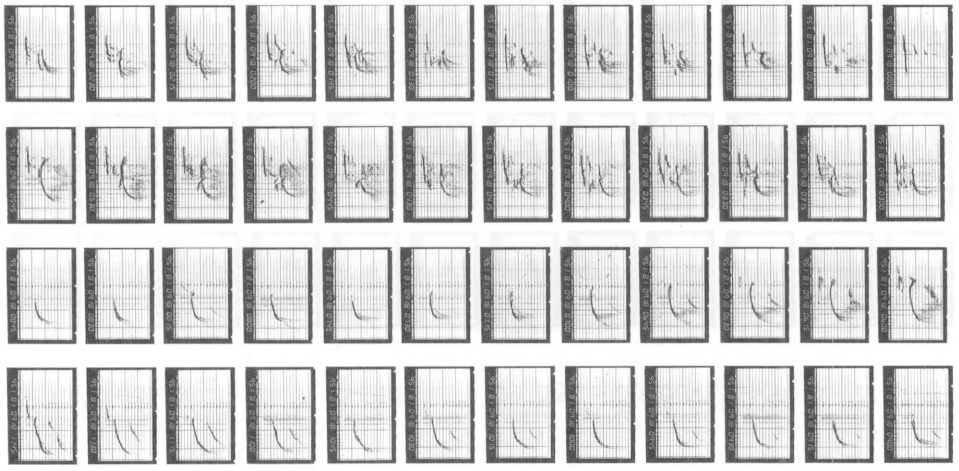
SYOWA STATION

IONOGRAM 1981 09 18 12;00-23;45



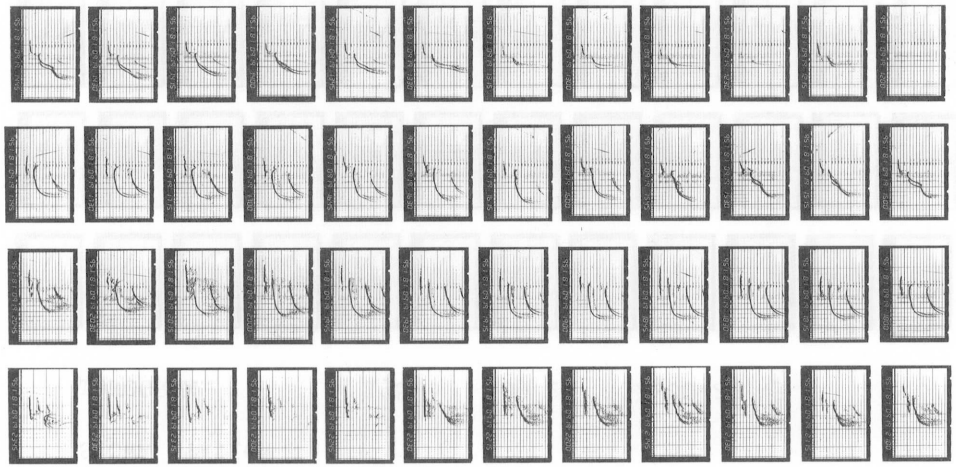
SYOWA STATION

IONOGRAM 1981 09 18 00;00-11;45



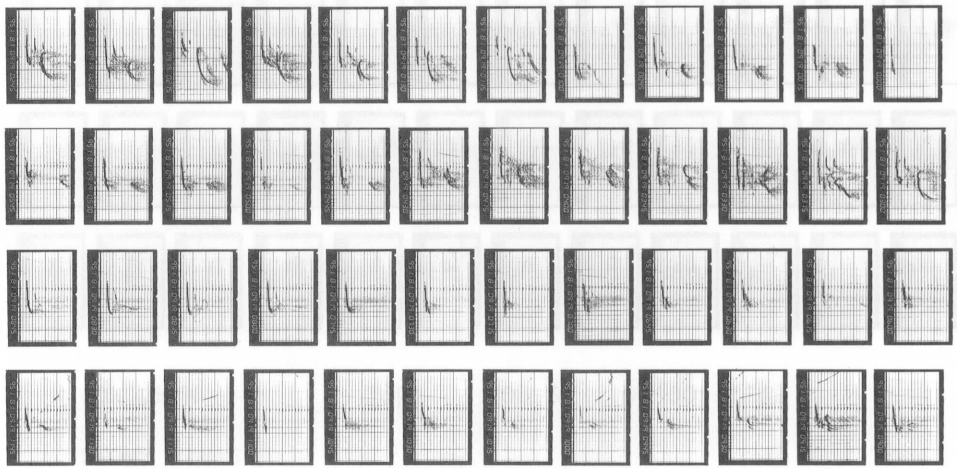
SYOWA STATION

IONOGRAM 1981 09 19 12;00-23;45



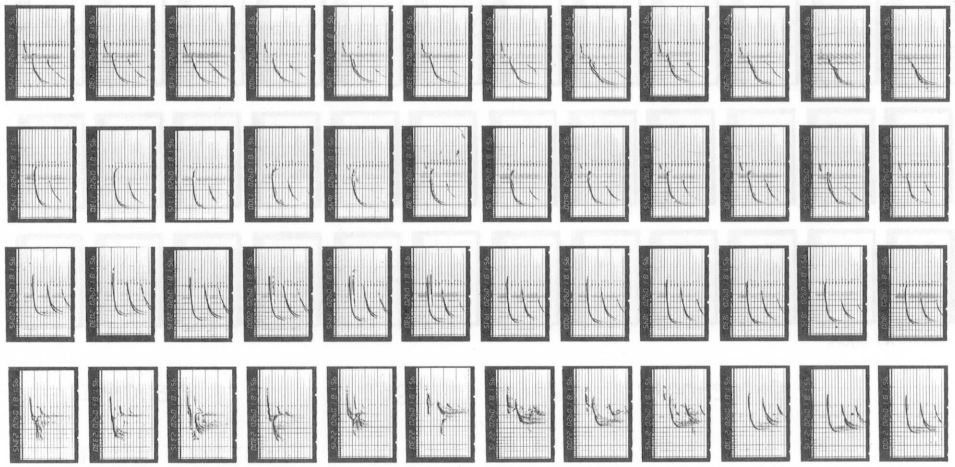
SYOWA STATION

IONOGRAM 1981 09 19 00;00-11;45



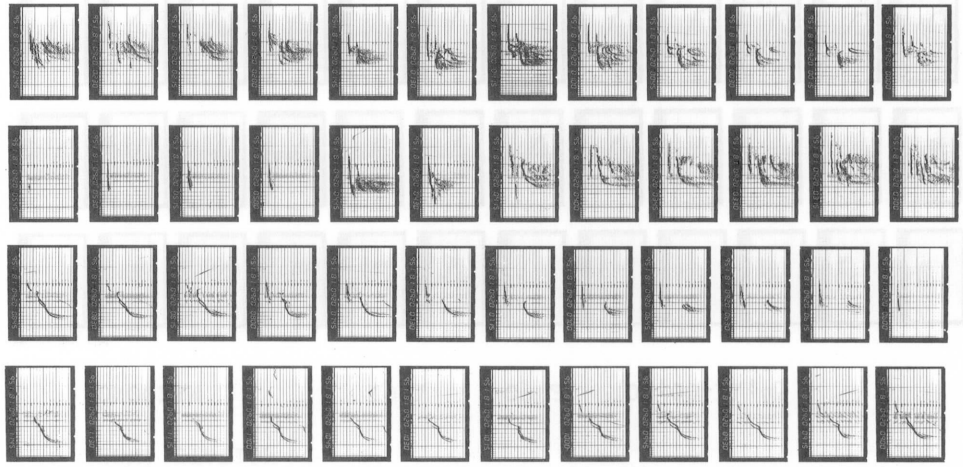
SYOWA STATION

IONOGRAM 1981 09 20 12;00-23;45



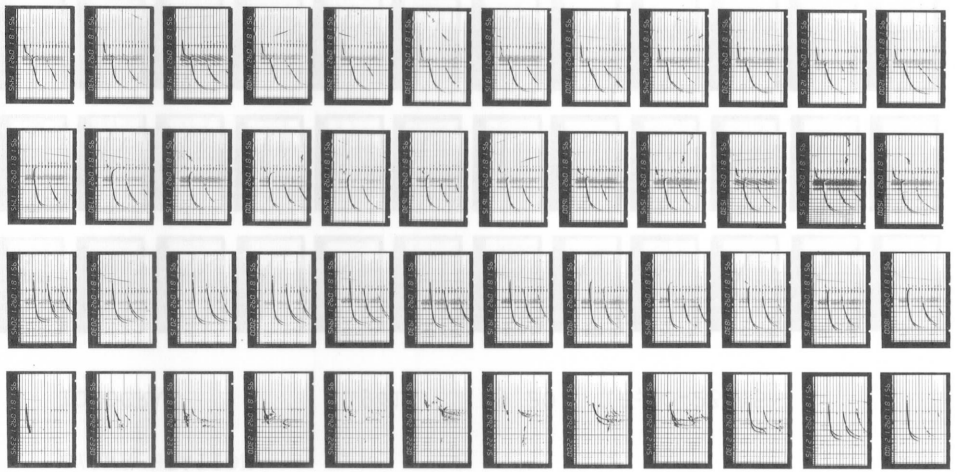
SYOWA STATION

IONOGRAM 1981 09 20 00;00-11;45



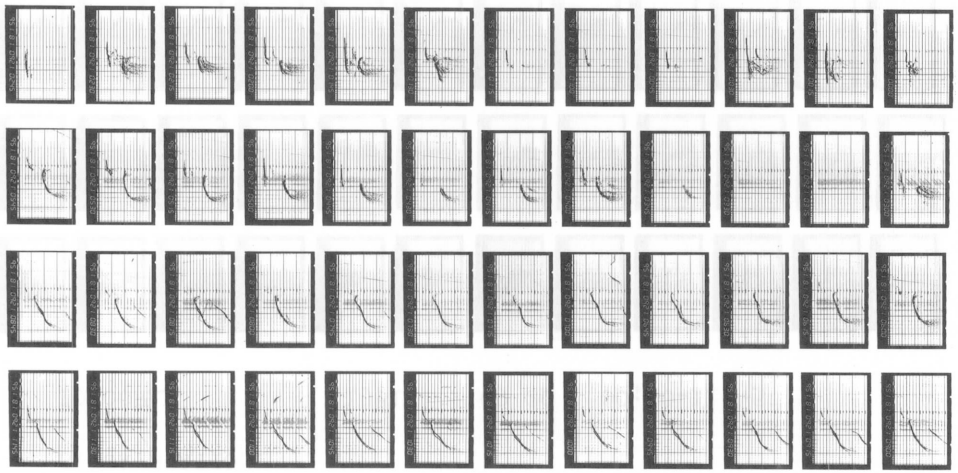
SYOWA STATION

IONOGRAM 1981 09 21 12;00-23;45



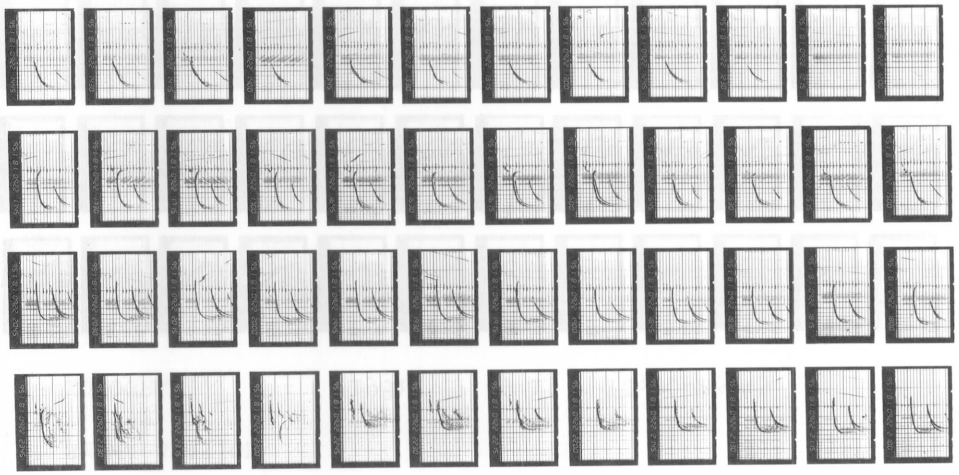
SYOWA STATION

IONOGRAM 1981 09 21 00;00-11;45



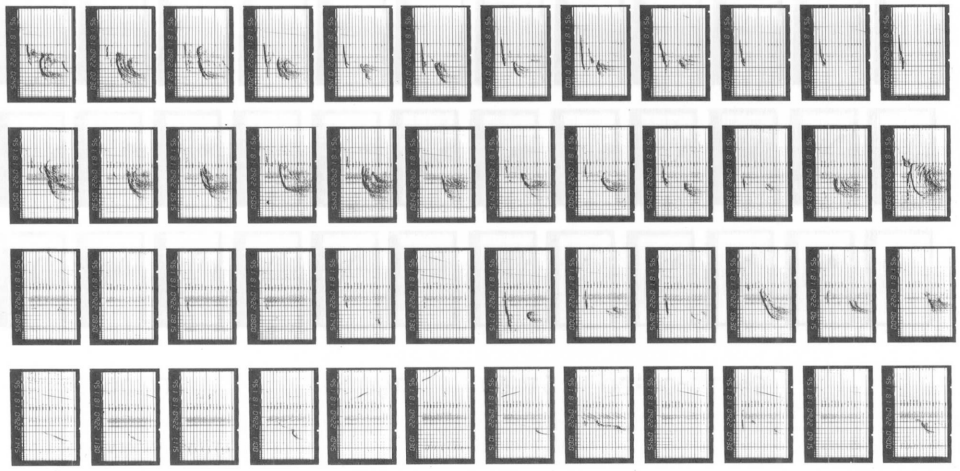
SYOWA STATION

IONOGRAM 1981 09 22 12;00-23;45



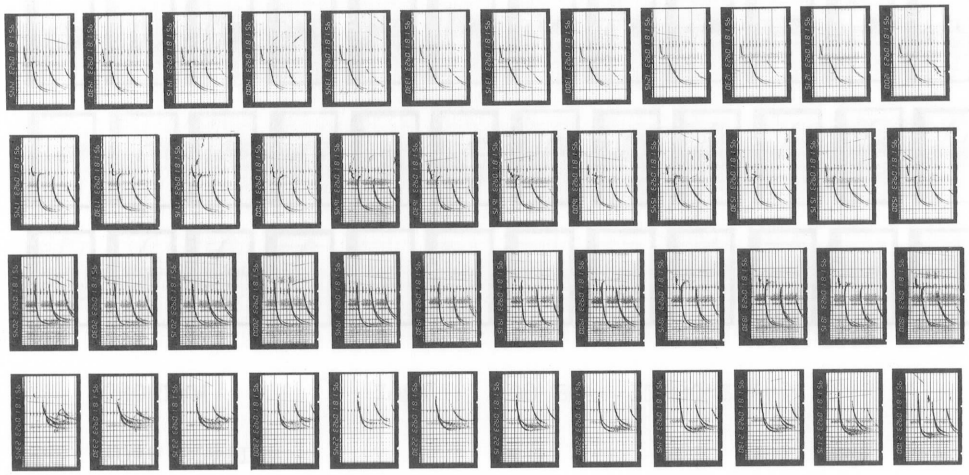
SYOWA STATION

IONOGRAM 1981 09 22 00;00-11;45



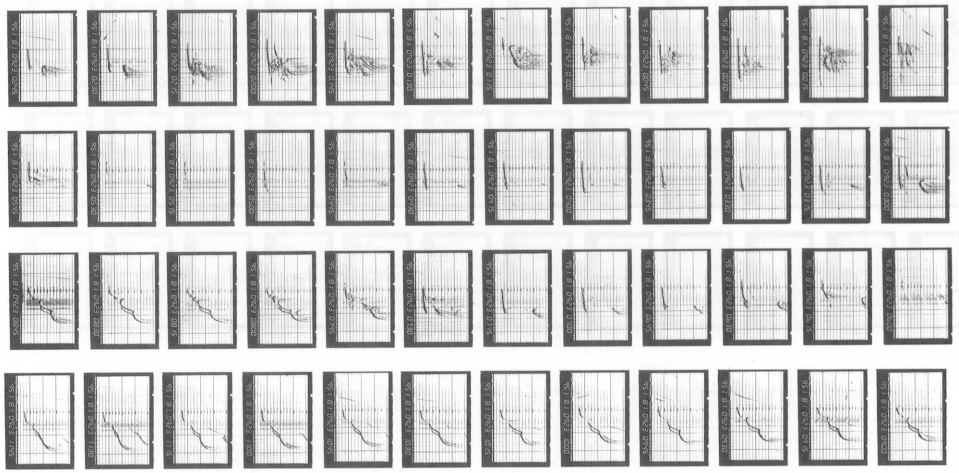
SYOWA STATION

IONOGRAM 1981 09 23 12;00-23;45



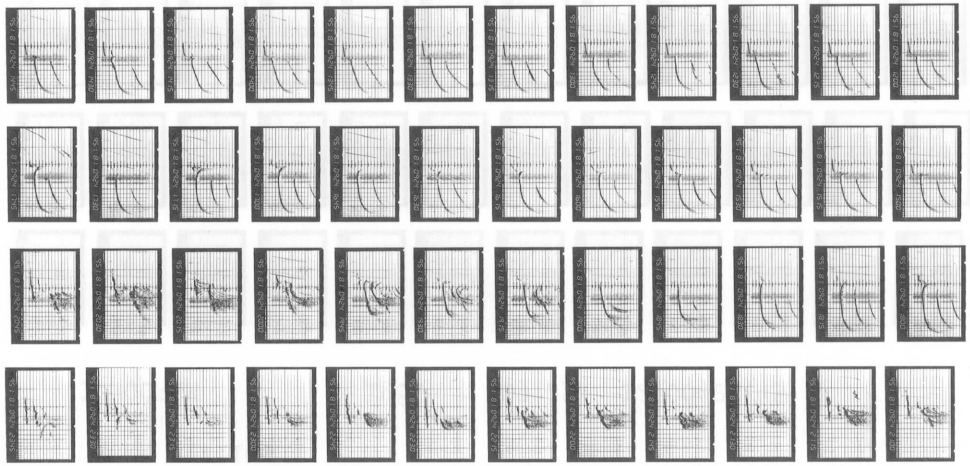
SYOWA STATION

IONOGRAM 1981 09 23 00;00-11;45



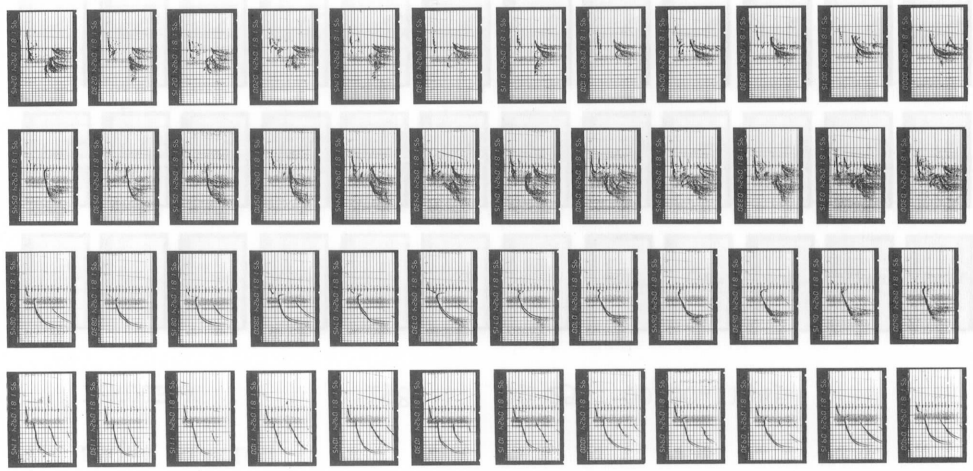
SYOWA STATION

IONOGRAM 1981 09 24 12;00-23;45



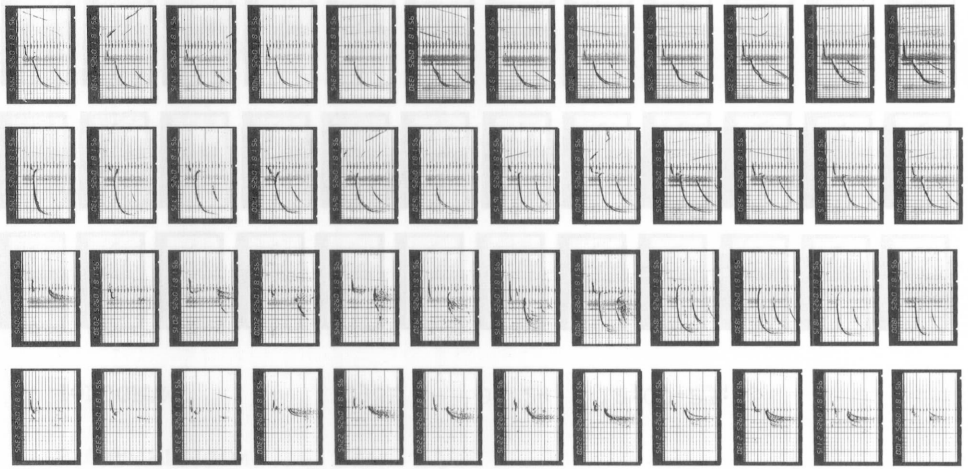
SYOWA STATION

IONOGRAM 1981 09 24 00;00-11;45



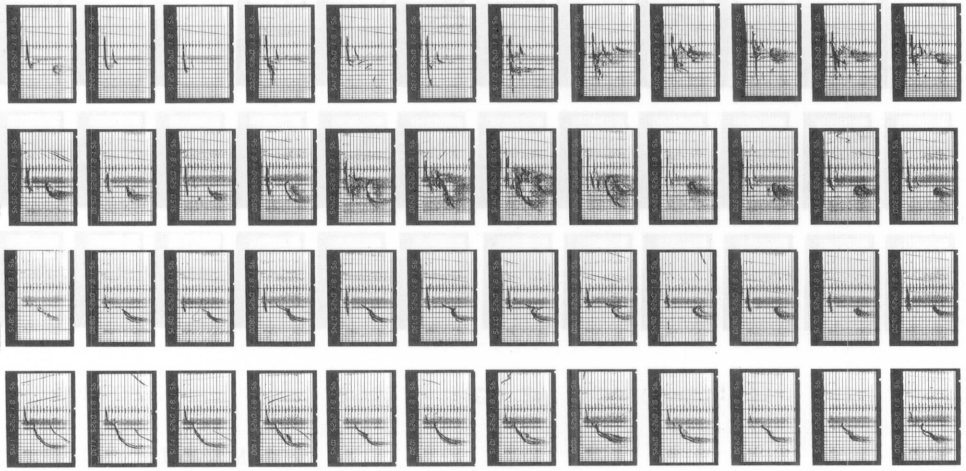
SYOWA STATION

IONOGRAM 1981 09 25 12;00-23;45



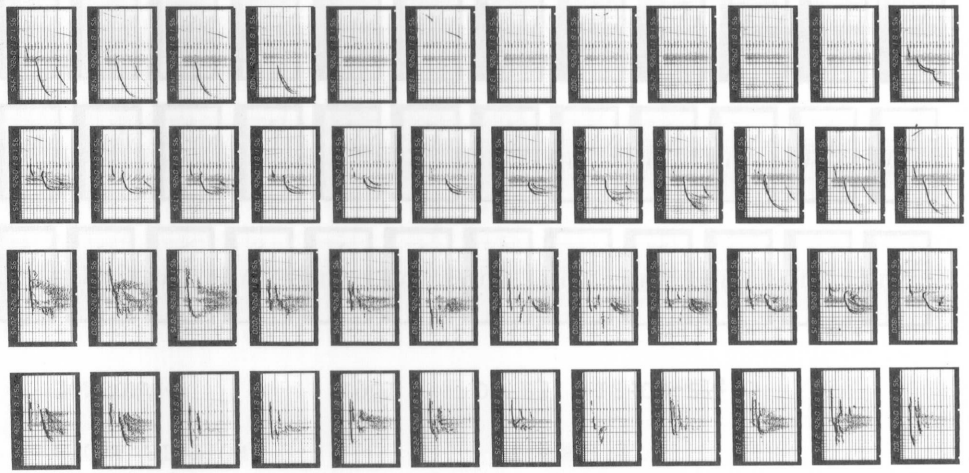
SYOWA STATION

IONOGRAM 1981 09 25 00;00-11;45



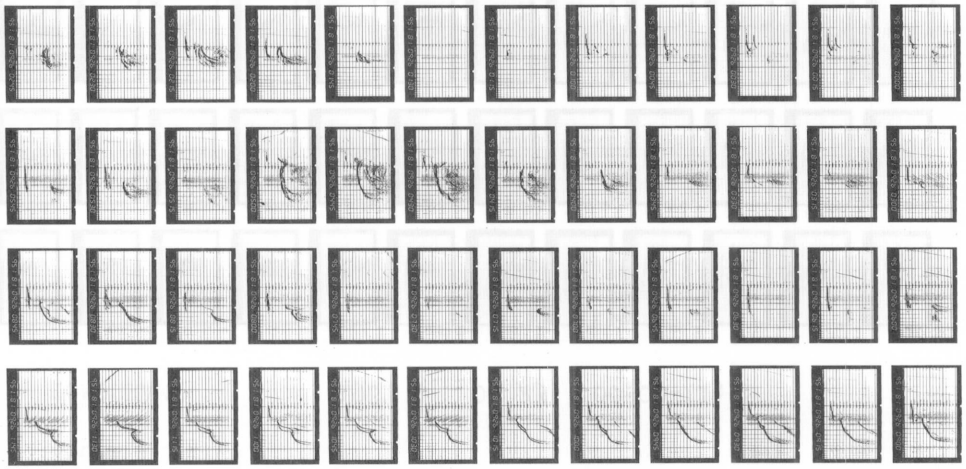
SYOWA STATION

IONOGRAM 1981 09 26 12;00-23;45



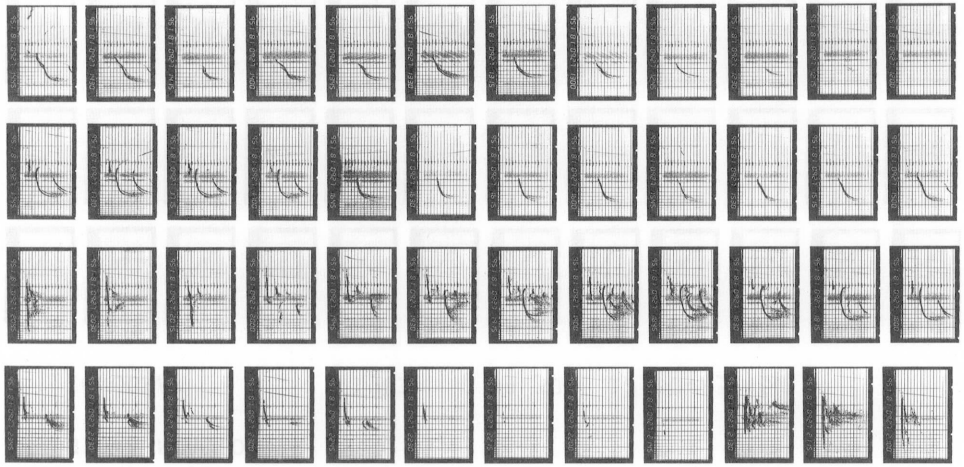
SYOWA STATION

IONOGRAM 1981 09 26 00;00-11;45



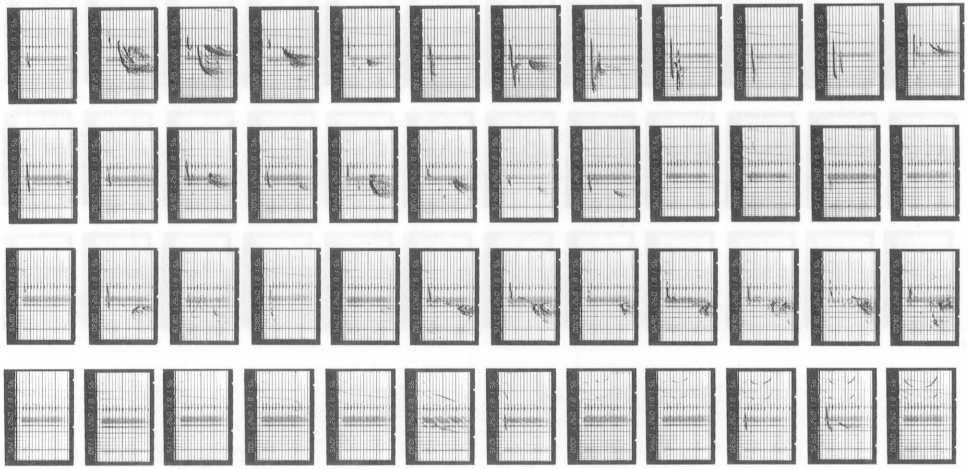
SYOWA STATION

IONOGRAM 1981 09 27 12;00-23;45



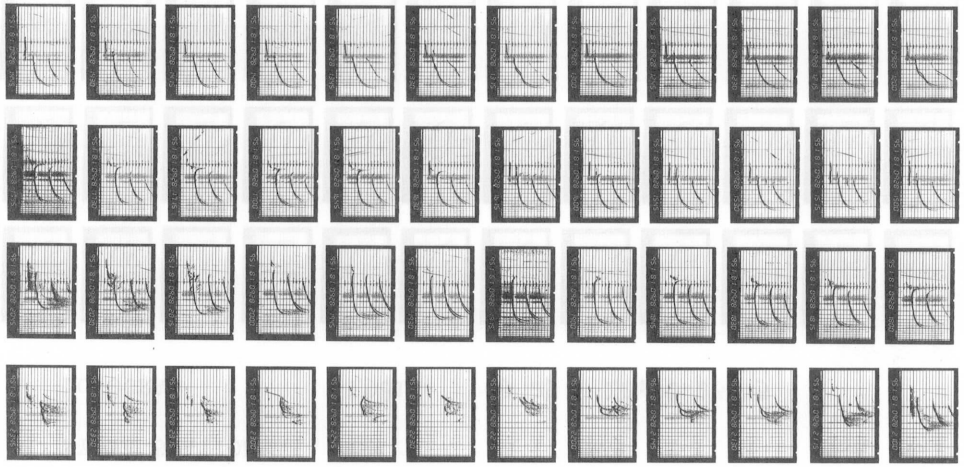
SYOWA STATION

IONOGRAM 1981 09 27 00;00-11;45



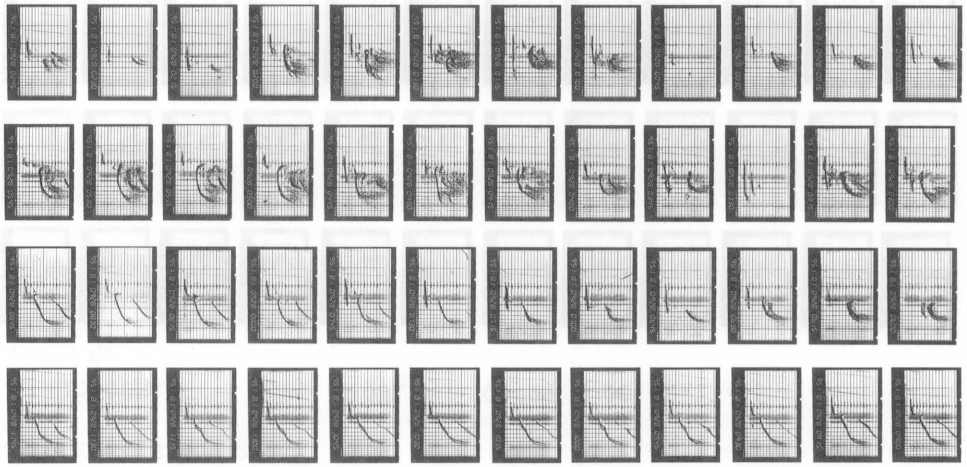
SYOWA STATION

IONOGRAM 1981 09 28 12;00-23;45



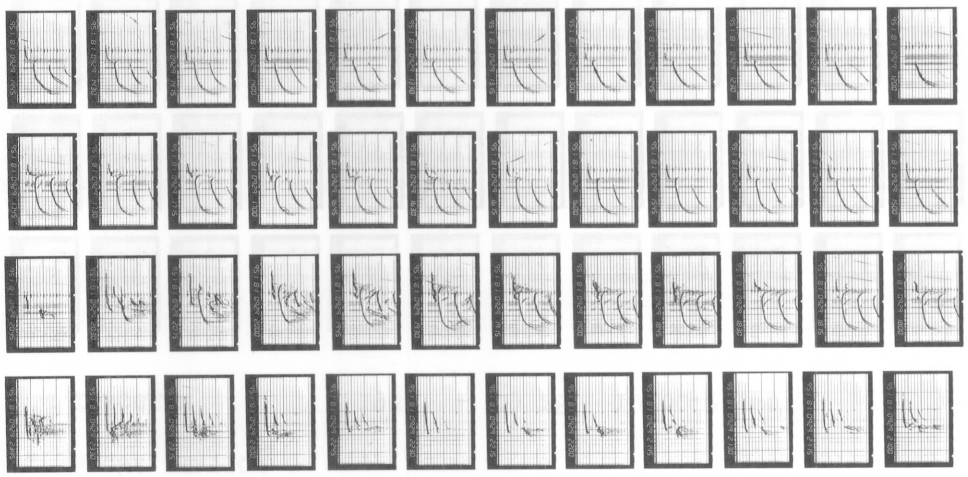
SYOWA STATION

IONOGRAM 1981 09 28 00;00-11;45



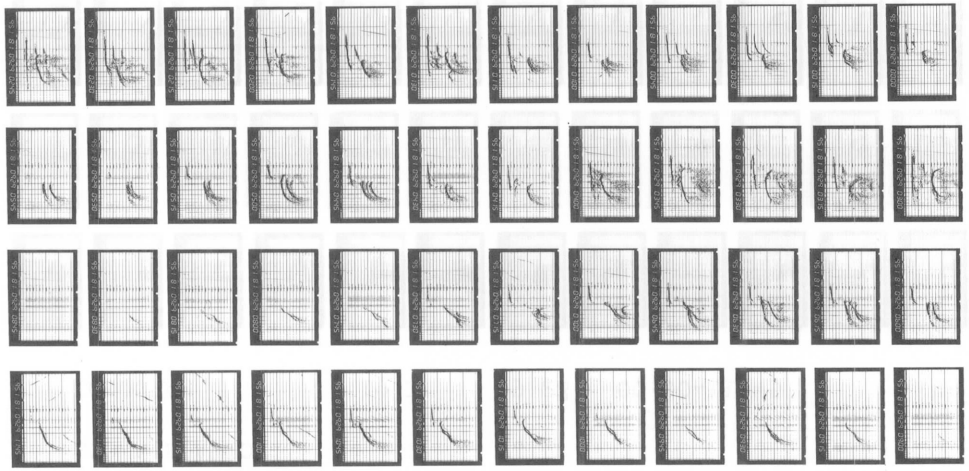
SYOWA STATION

IONOGRAM 1981 09 29 12;00-23;45



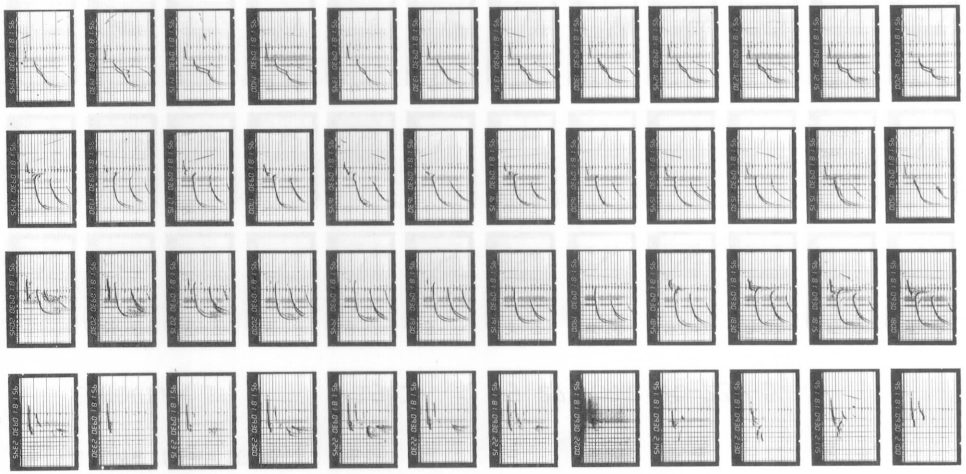
SYOWA STATION

IONOGRAM 1981 09 29 00;00-11;45



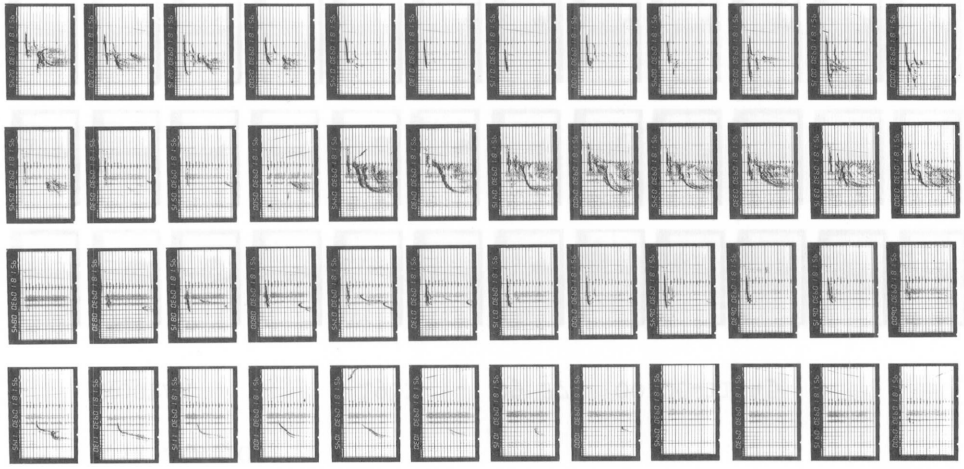
SYOWA STATION

IONOGRAM 1981 09 30 12;00-23;45



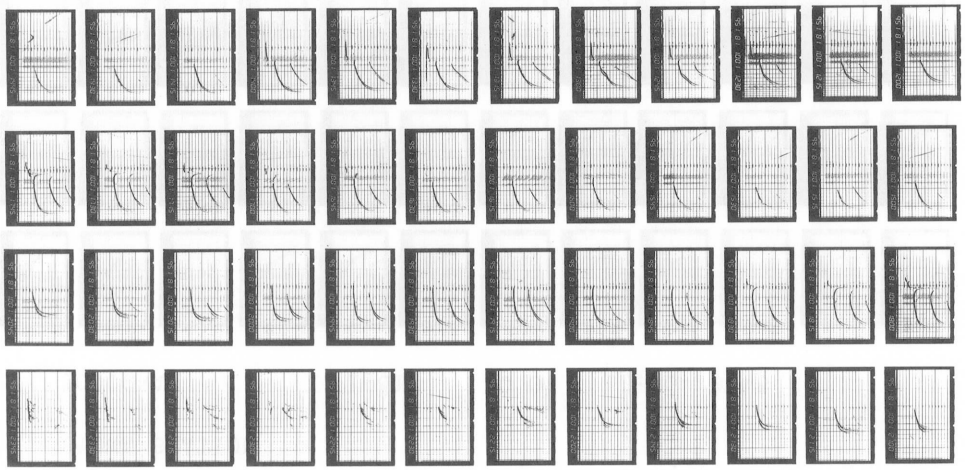
SYOWA STATION

IONOGRAM 1981 09 30 00;00-11;45



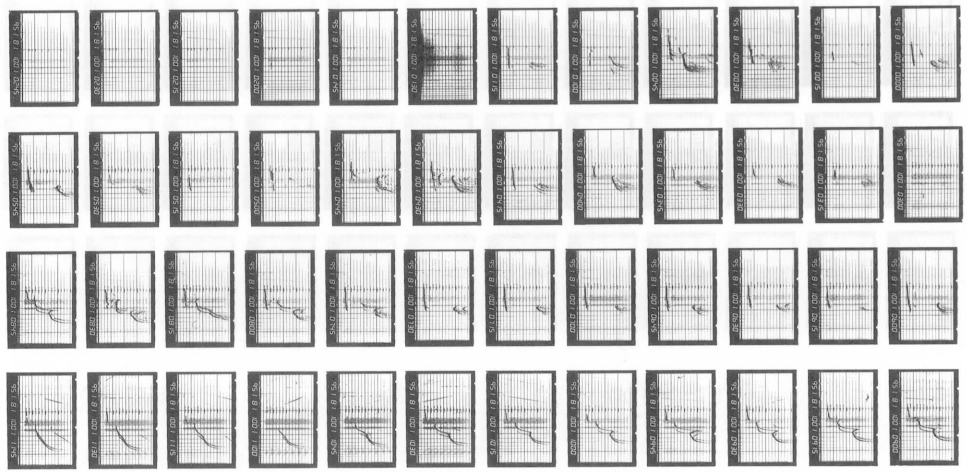
SYOWA STATION

IONOGRAM 1981 10 01 12;00-23;45



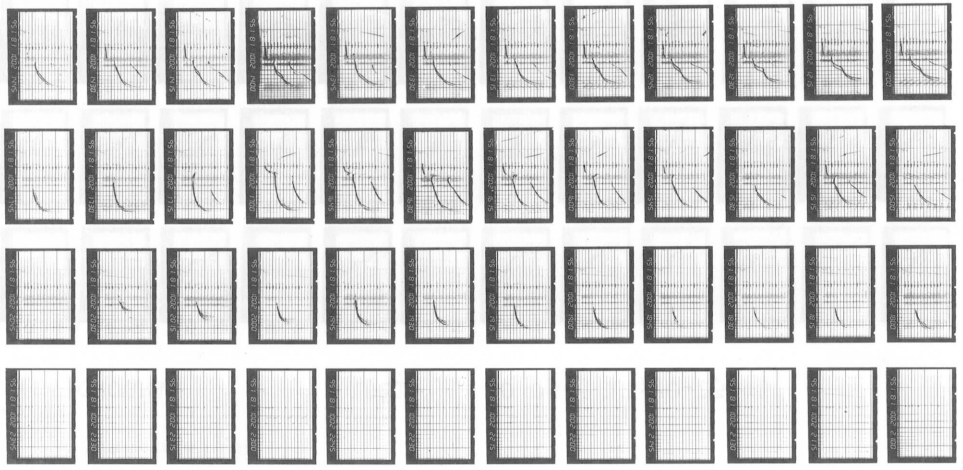
SYOWA STATION

IONOGRAM 1981 10 01 00;00-11;45



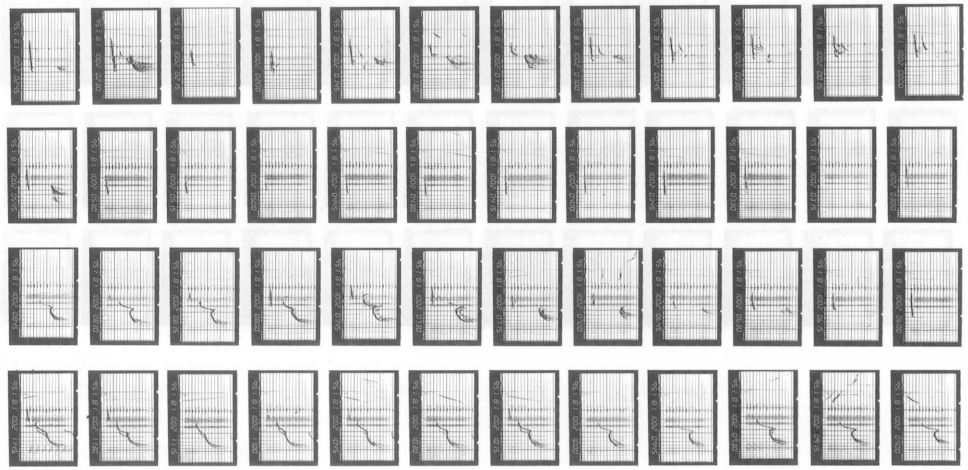
SYOWA STATION

IONOGRAM 1981 10 02 12;00-23;45



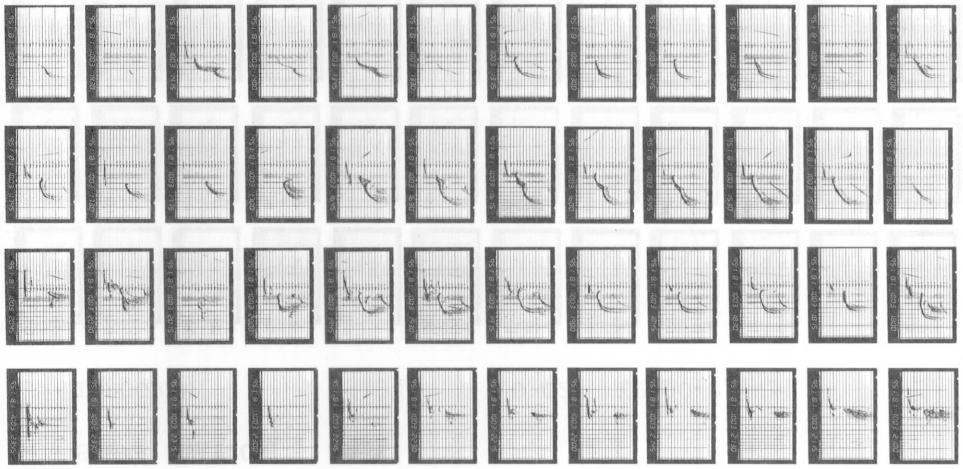
SYOWA STATION

IONOGRAM 1981 10 02 00;00-11;45



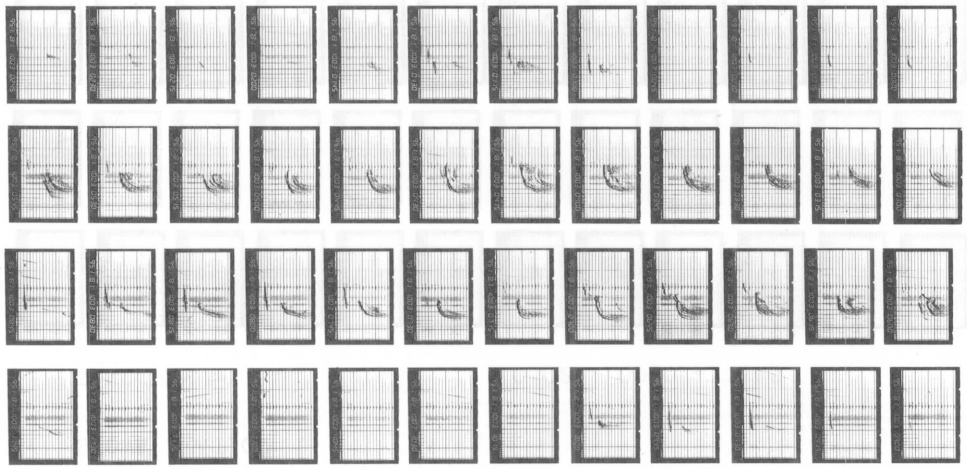
SYOWA STATION

IONOGRAM 1981 10 03 12;00-23;45



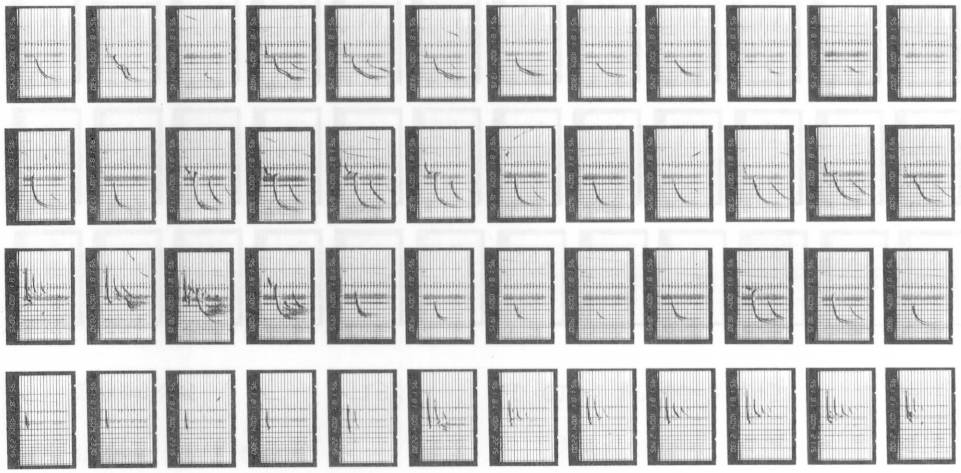
SYOWA STATION

IONOGRAM 1981 10 03 00;00-11;45



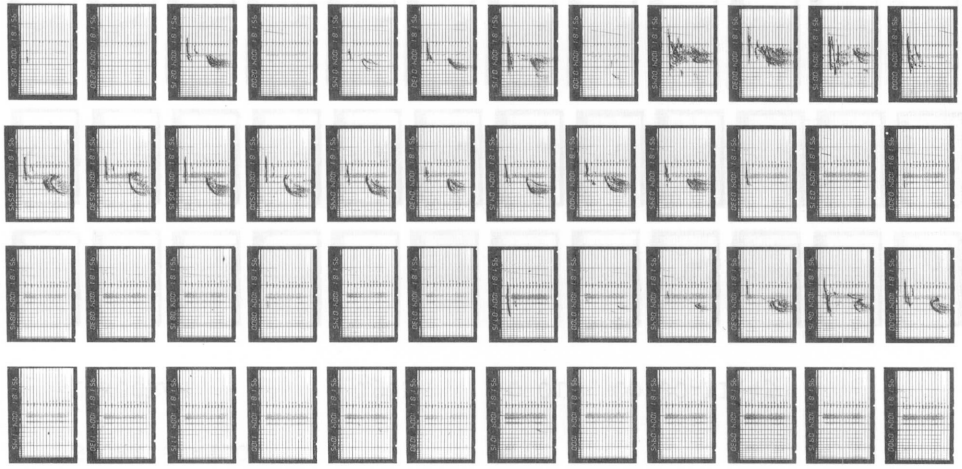
SYOWA STATION

IONOGRAM 1981 10 04 12;00-23;45



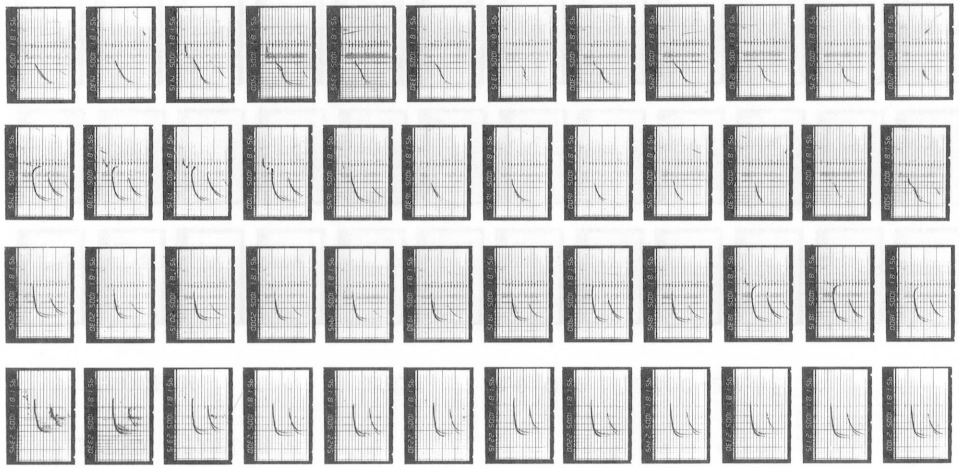
SYOWA STATION

IONOGRAM 1981 10 04 00;00-11;45



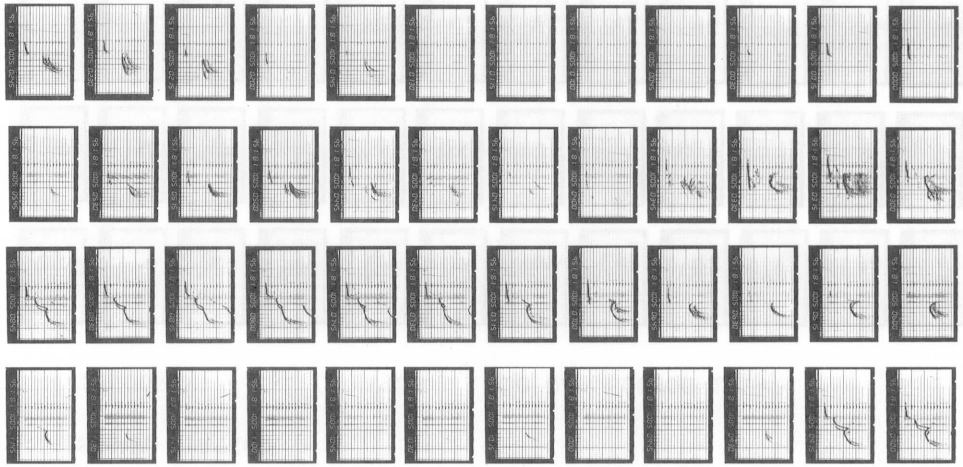
SYOWA STATION

IONOGRAM 1981 10 05 12;00-23;45



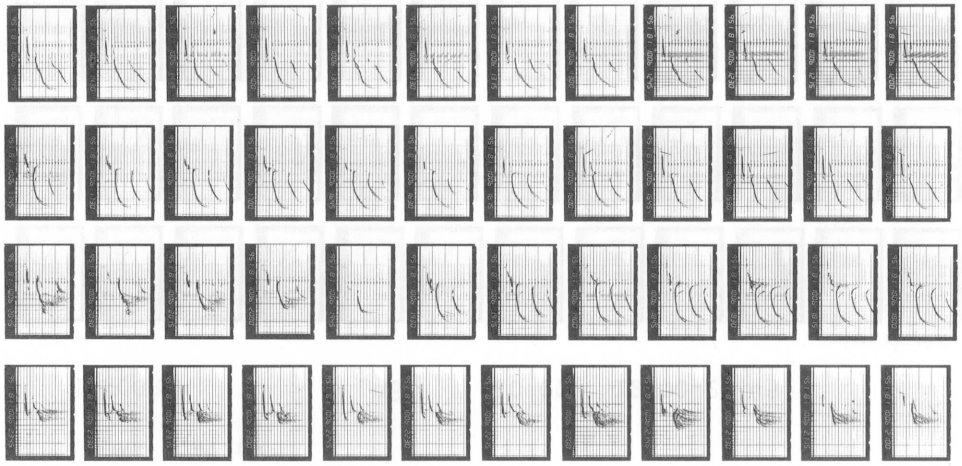
SYOWA STATION

IONOGRAM 1981 10 05 00;00-11;45



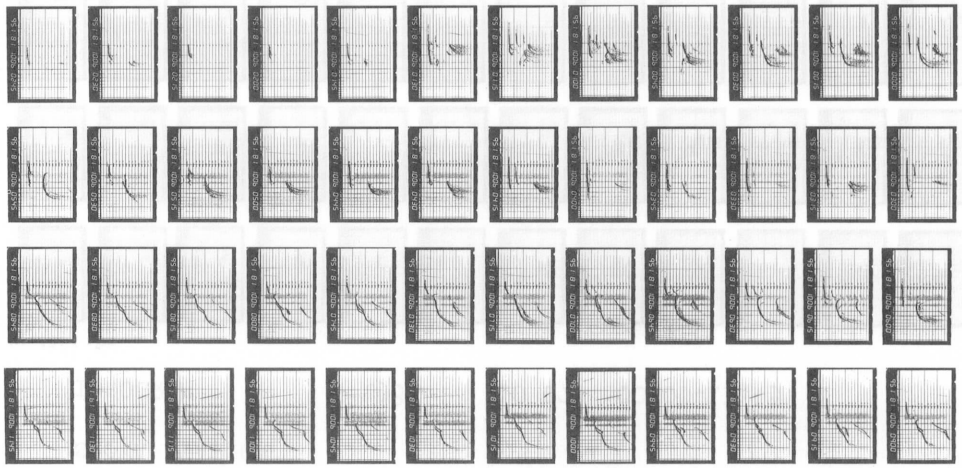
SYOWA STATION

IONOGRAM 1981 10 06 12;00-23;45



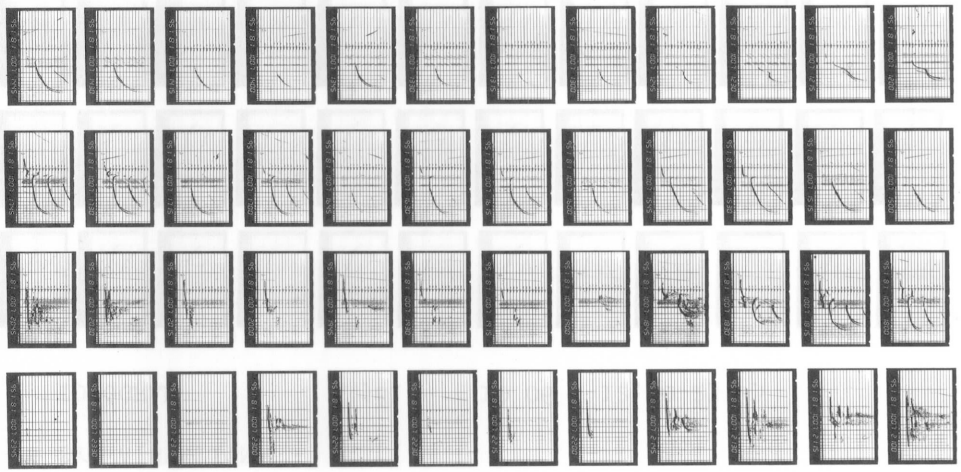
SYOWA STATION

IONOGRAM 1981 10 06 00;00-11;45



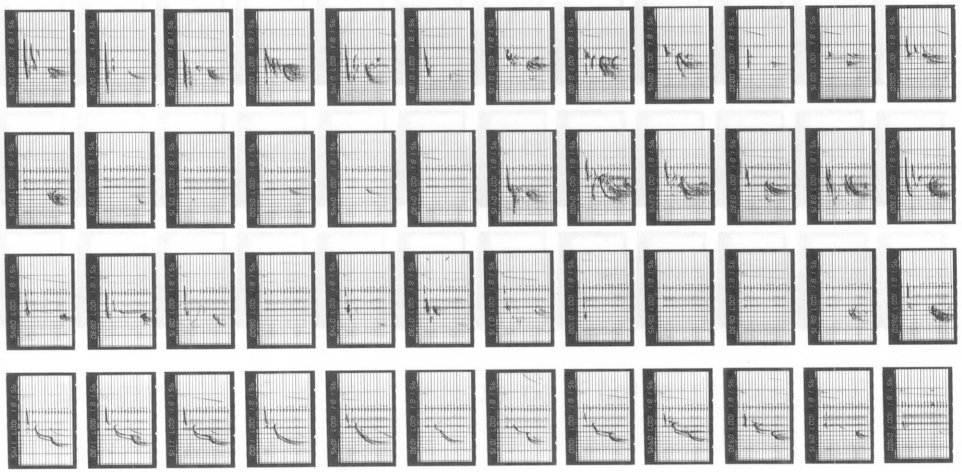
SYOWA STATION

IONOGRAM 1981 10 07 12;00-23;45



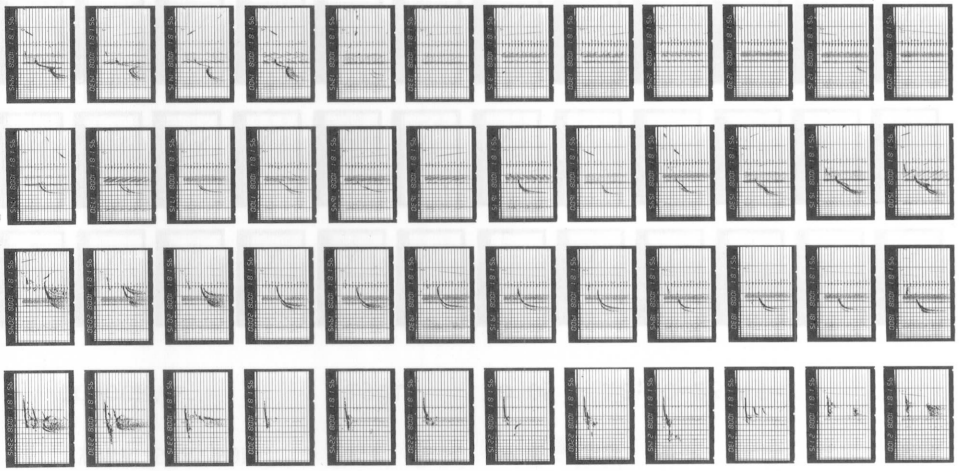
SYOWA STATION

IONOGRAM 1981 10 07 00;00-11;45



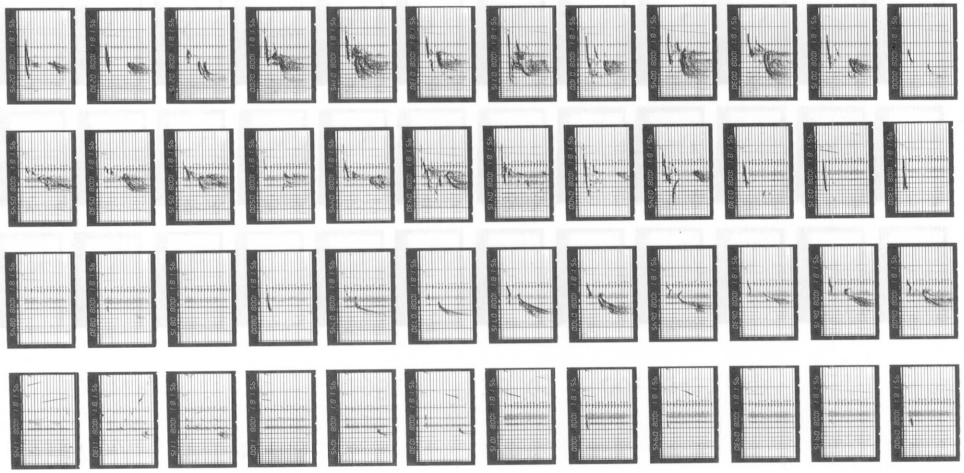
SYOWA STATION

IONOGRAM 1981 10 08 12;00-23;45



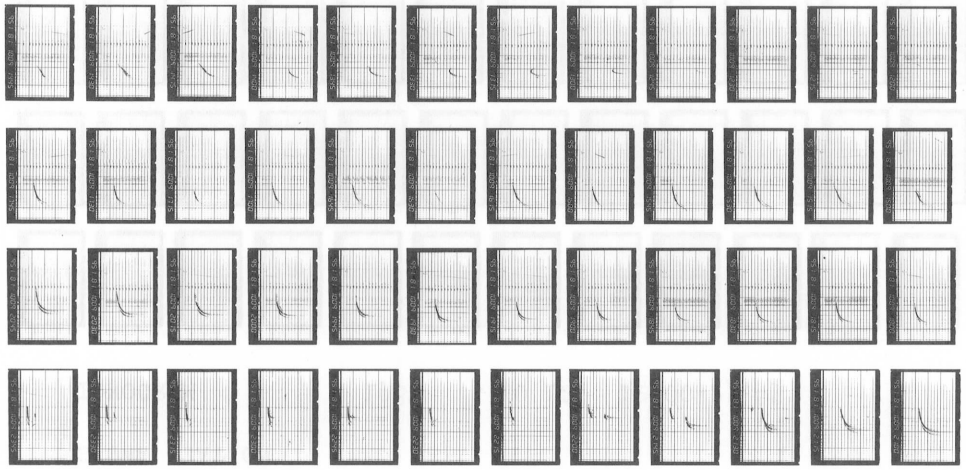
SYOWA STATION

IONOGRAM 1981 10 08 00;00-11;45



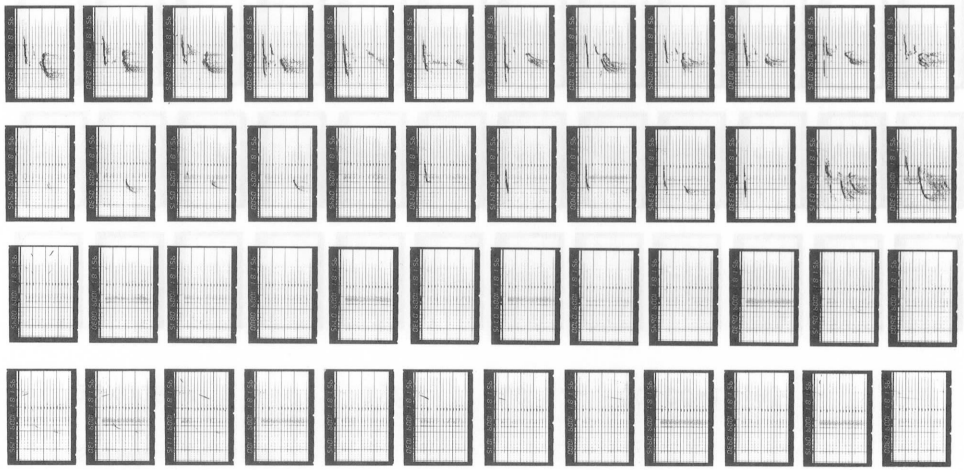
SYOWA STATION

IONOGRAM 1981 10 09 12;00-23;45



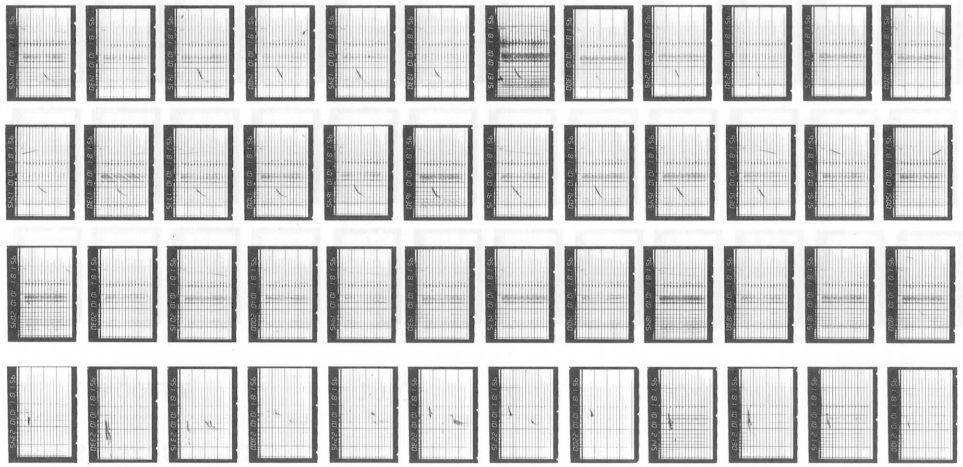
SYOWA STATION

IONOGRAM 1981 10 09 00;00-11;45



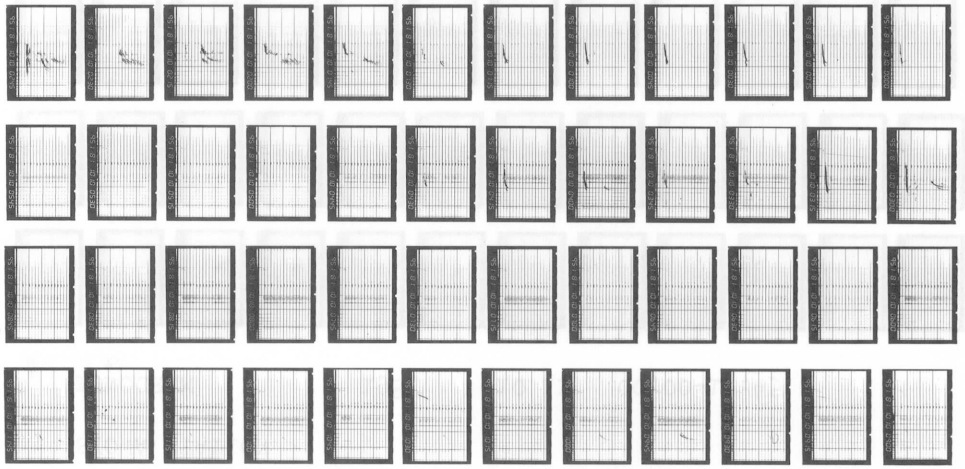
SYOWA STATION

IONOGRAM 1981 10 10 12;00-23;45



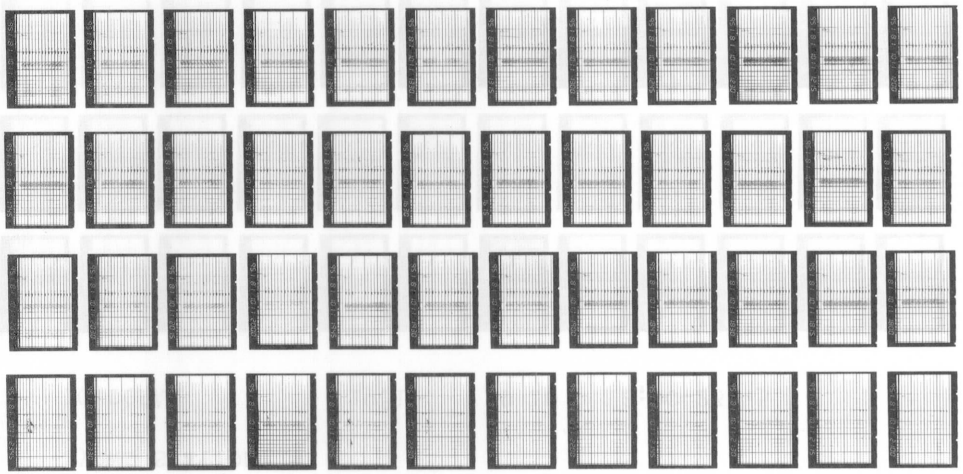
SYOWA STATION

IONOGRAM 1981 10 10 00;00-11;45



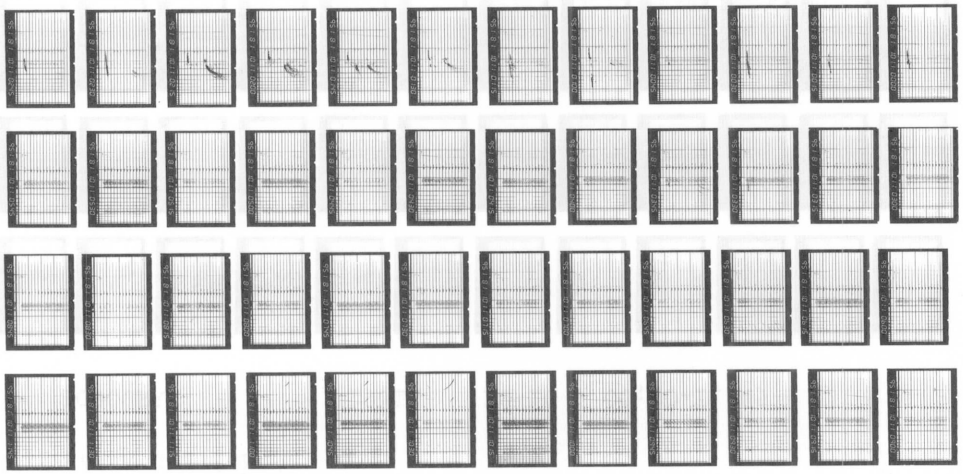
SYOWA STATION

IONOGRAM 1981 10 11 12;00-23;45



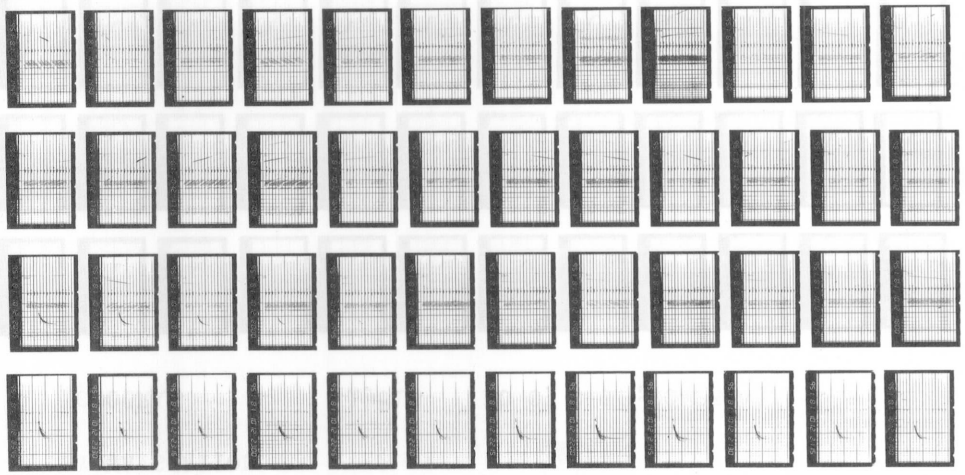
SYOWA STATION

IONOGRAM 1981 10 11 00;00-11;45



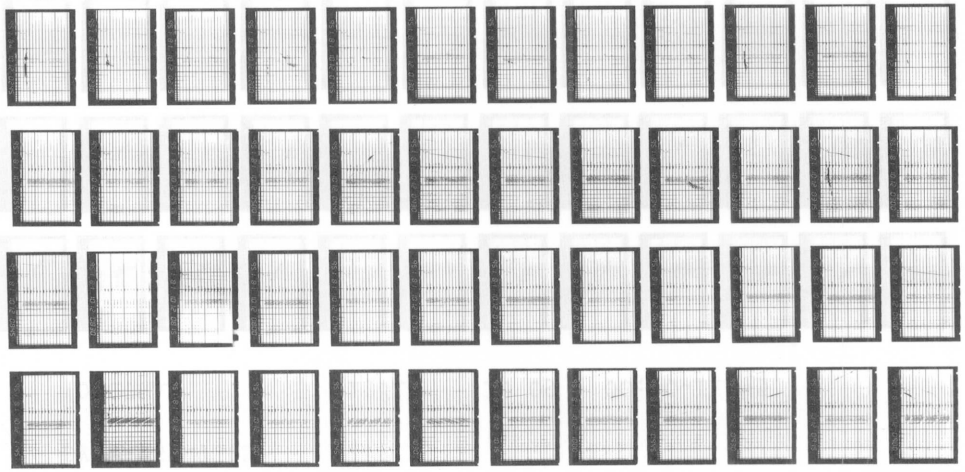
SYOWA STATION

IONOGRAM 1981 10 12 12;00-23;45



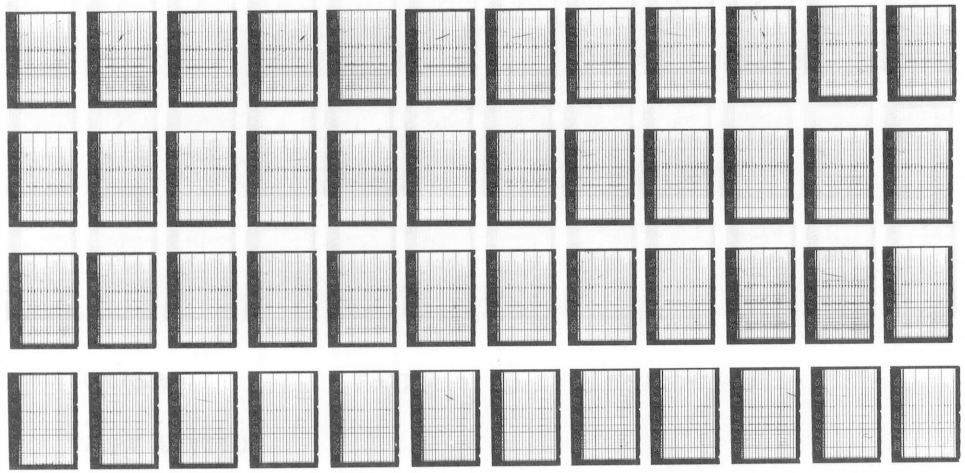
SYOWA STATION

IONOGRAM 1981 10 12 00;00-11;45



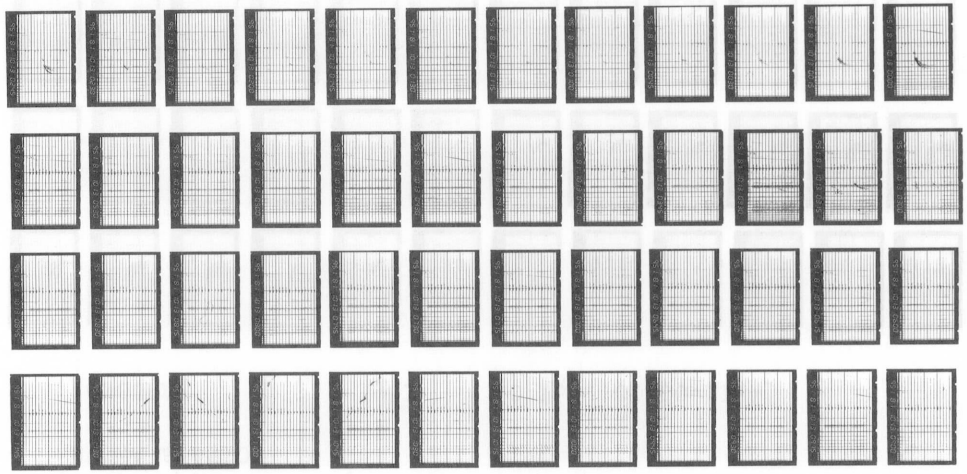
SYOWA STATION

IONOGRAM 1981 10 13 12;00-23;45



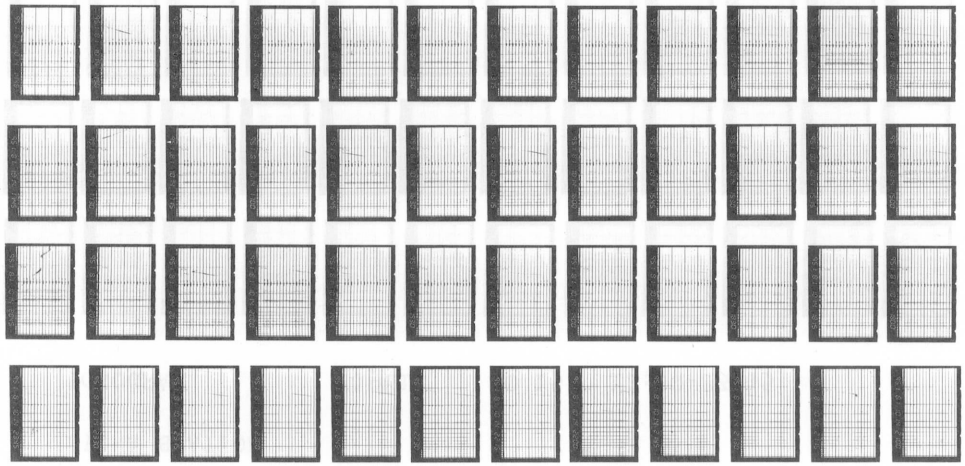
SYOWA STATION

IONOGRAM 1981 10 13 00;00-11;45



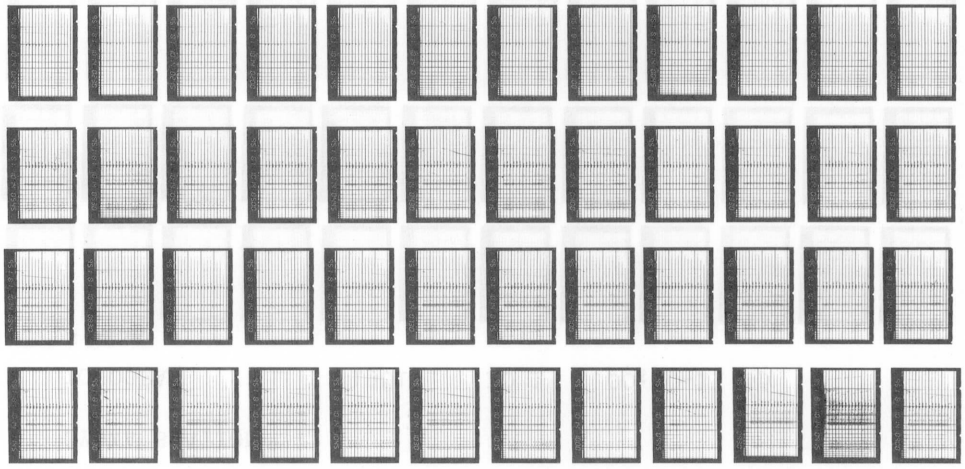
SYOWA STATION

IONOGRAM 1981 10 14 12;00-23;45



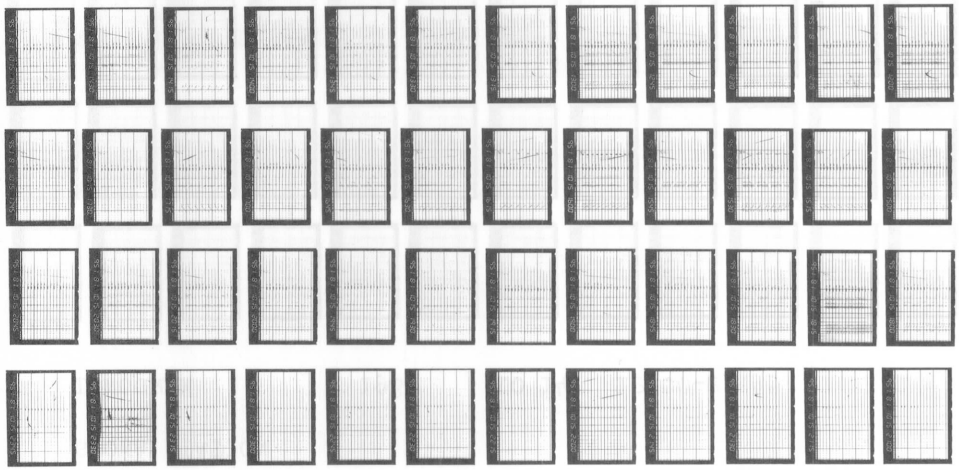
SYOWA STATION

IONOGRAM 1981 10 14 00;00-11;45



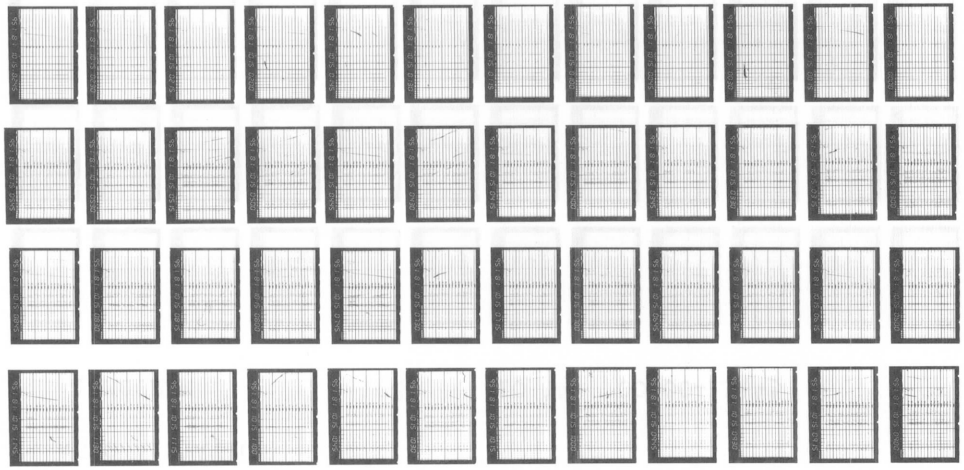
SYOWA STATION

IONOGRAM 1981 10 15 12;00-23;45



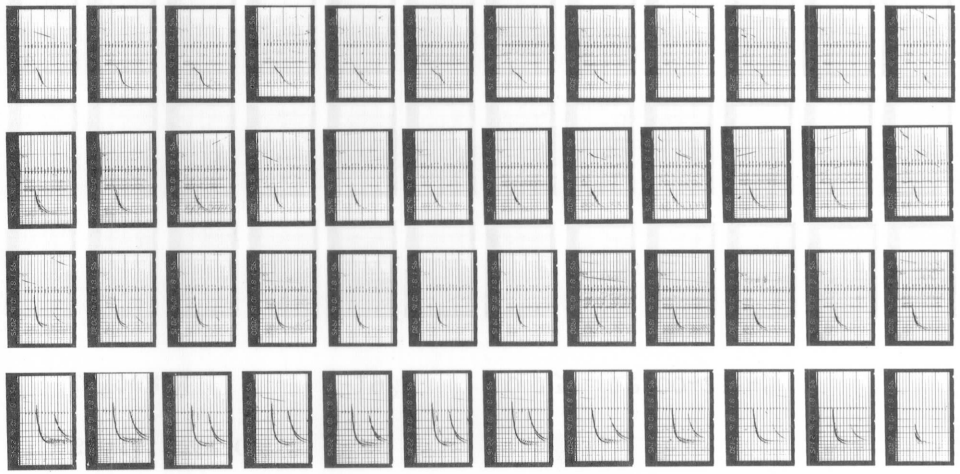
SYOWA STATION

IONOGRAM 1981 10 15 00;00-11;45



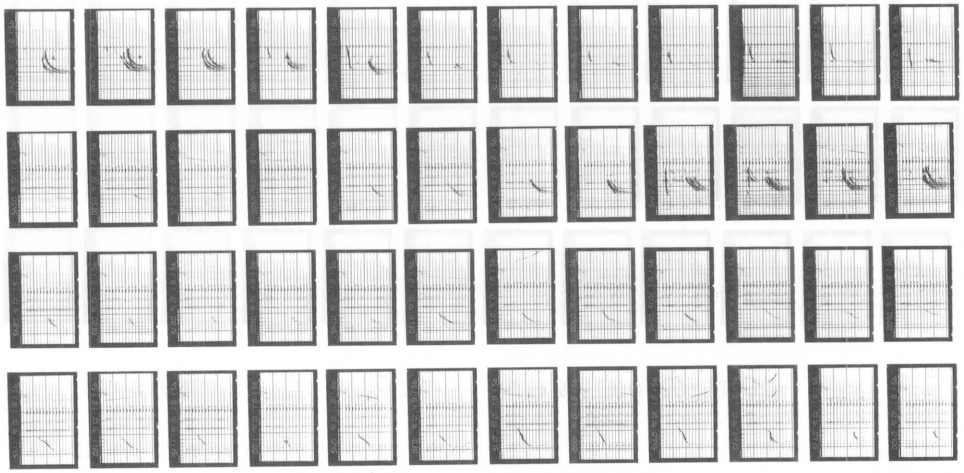
SYOWA STATION

IONOGRAM 1981 10 16 12;00-23;45



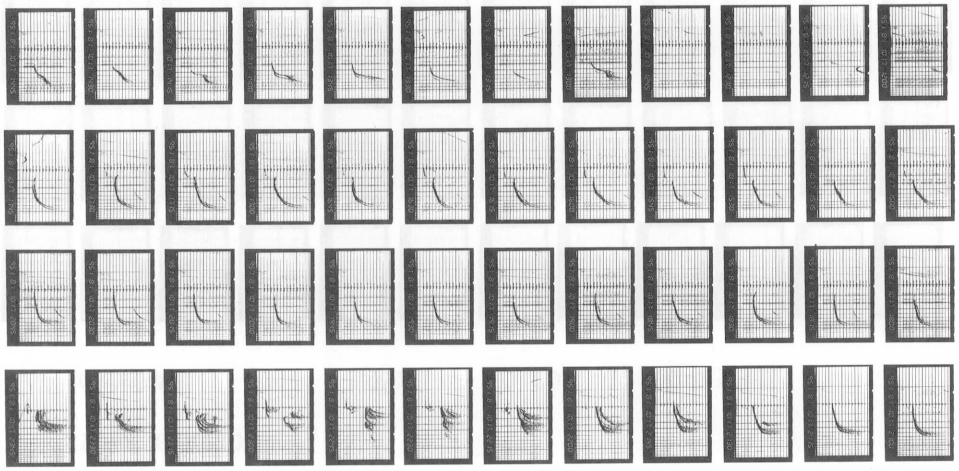
SYOWA STATION

IONOGRAM 1981 10 16 00;00-11;45



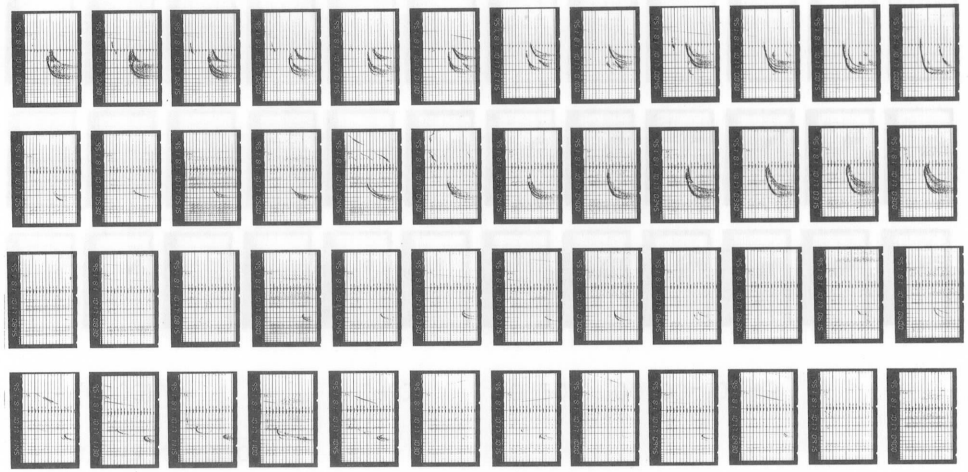
SYOWA STATION

IONOGRAM 1981 10 17 12;00-23;45



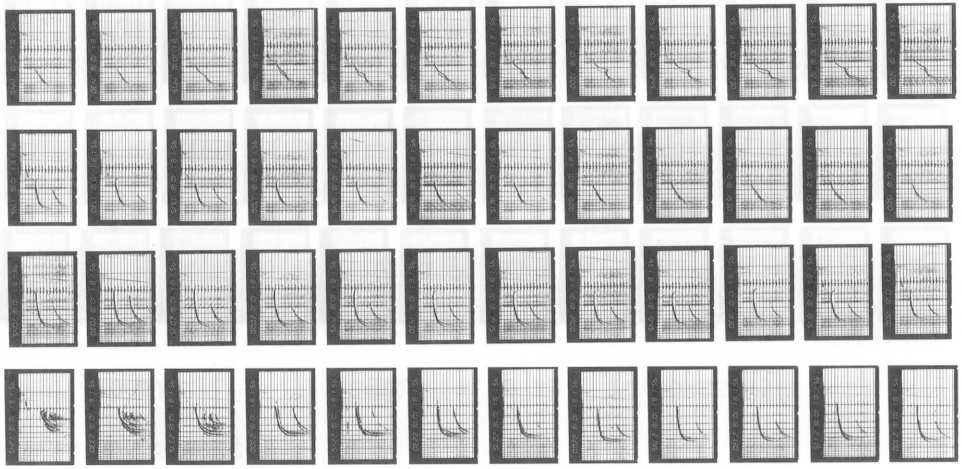
SYOWA STATION

IONOGRAM 1981 10 17 00;00-11;45



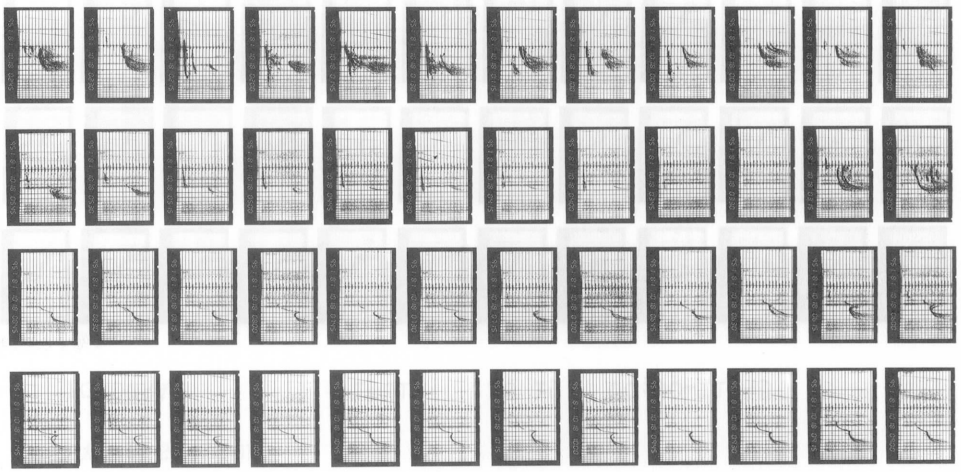
SYOWA STATION

ICNOGRAM 1981 10 18 12;00-23;45



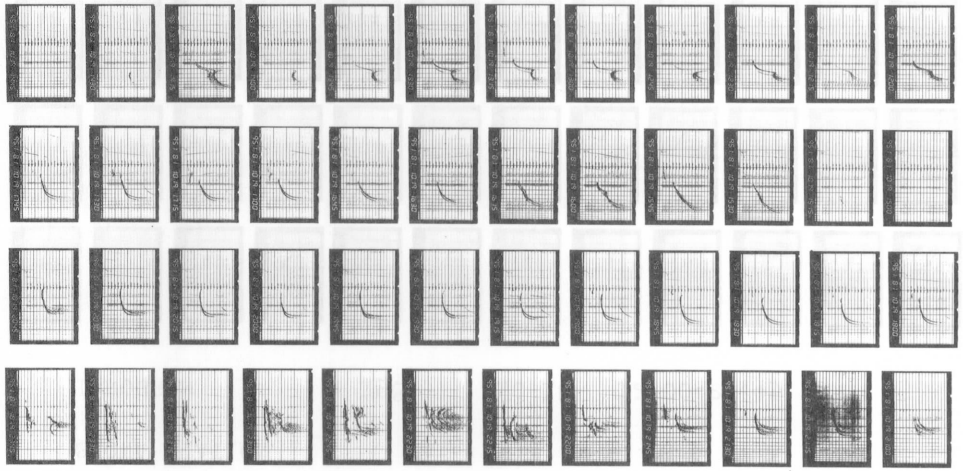
SYOWA STATION

IONOGRAM 1981 10 18 00;00-11;45



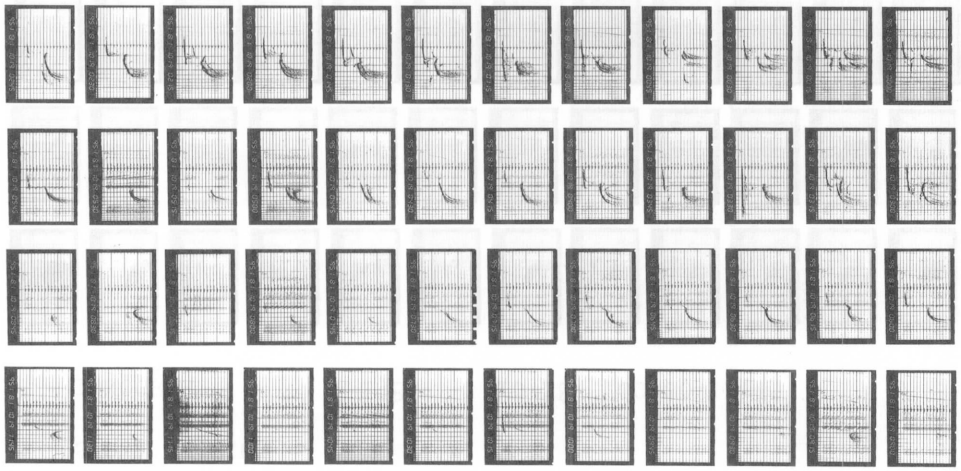
SYOWA STATION

IONOGRAM 1981 10 19 12;00-23;45



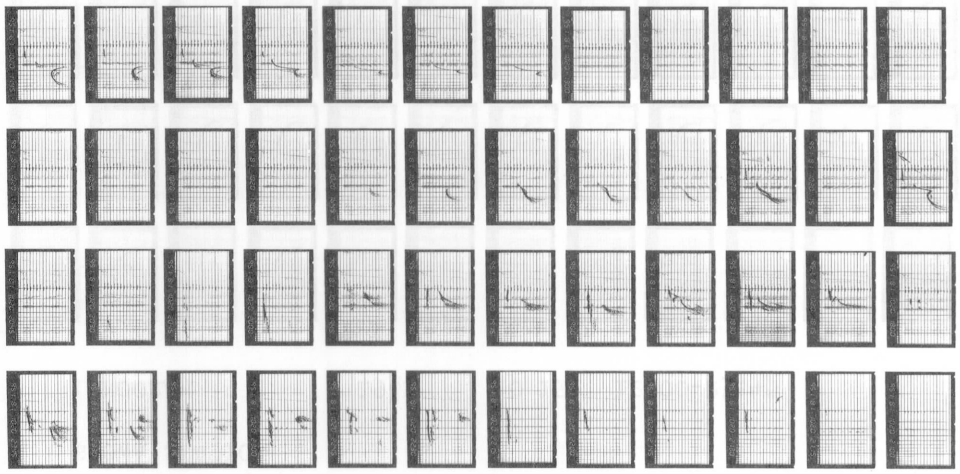
SYOWA STATION

IONOGRAM 1981 10 19 00;00-11;45



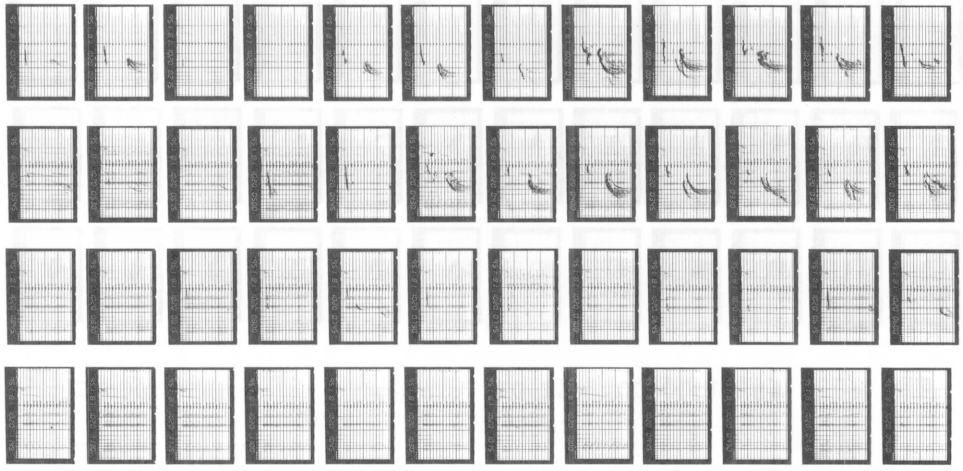
SYOWA STATION

IONOGRAM 1981 10 20 12;00-23;45



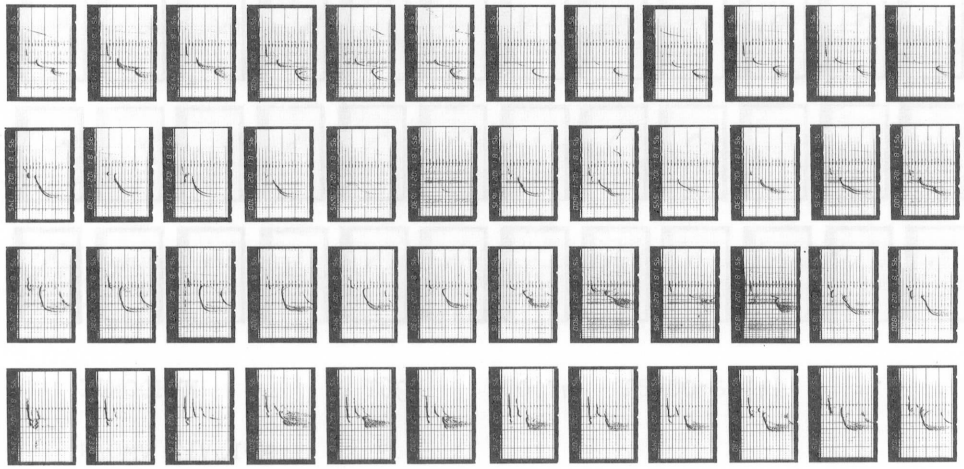
SYOWA STATION

IONOGRAM 1981 10 20 00;00-11;45



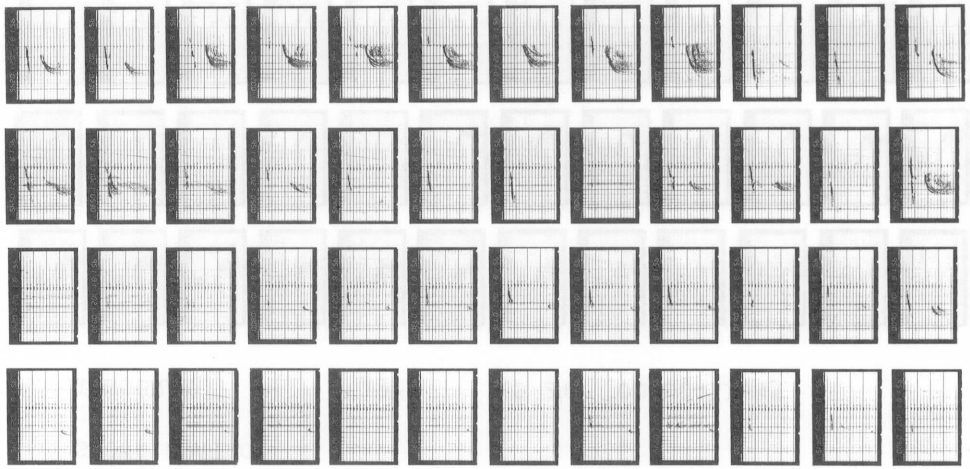
SYOWA STATION

IONOGRAM 1981 10 21 12;00-23;45



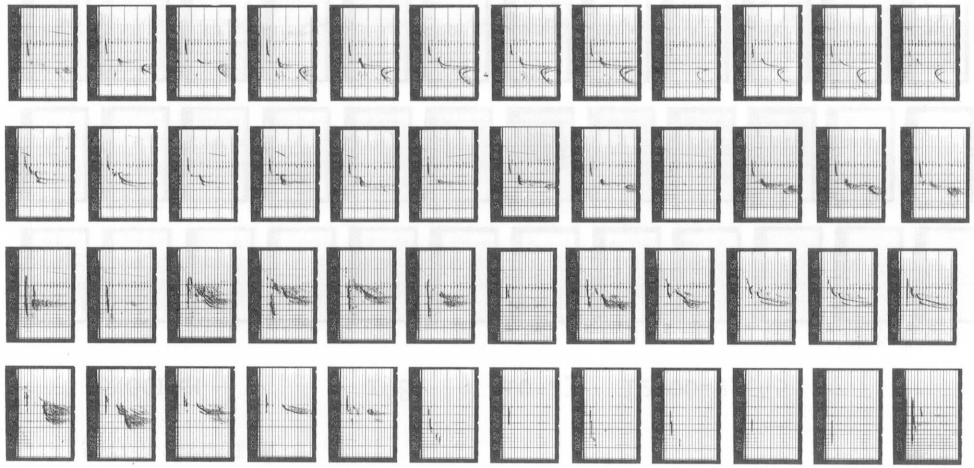
SYOWA STATION

IONOGRAM 1981 10 21 00;00-11;45



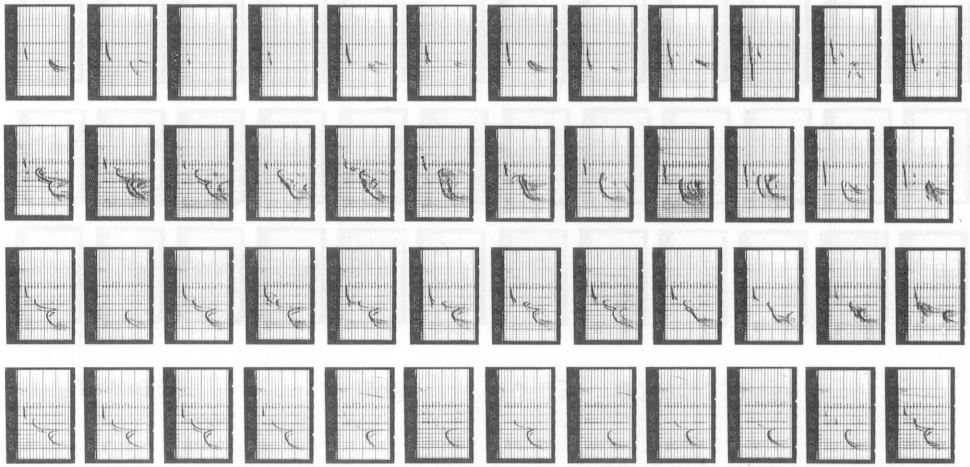
SYOWA STATION

IONOGRAM 1981 10 22 12;00-23;45



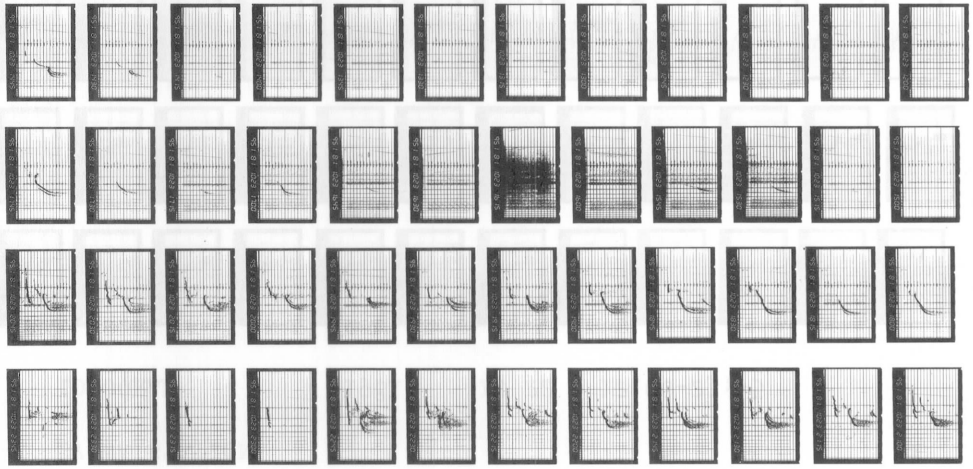
SYOWA STATION

IONOGRAM 1981 10 22 00;00-11;45



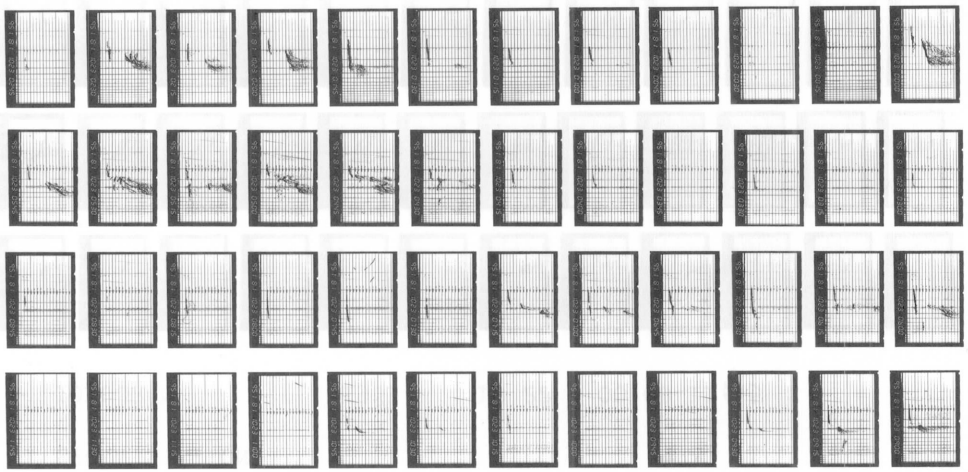
SYOWA STATION

IONOGRAM 1981 10 23 12;00-23;45



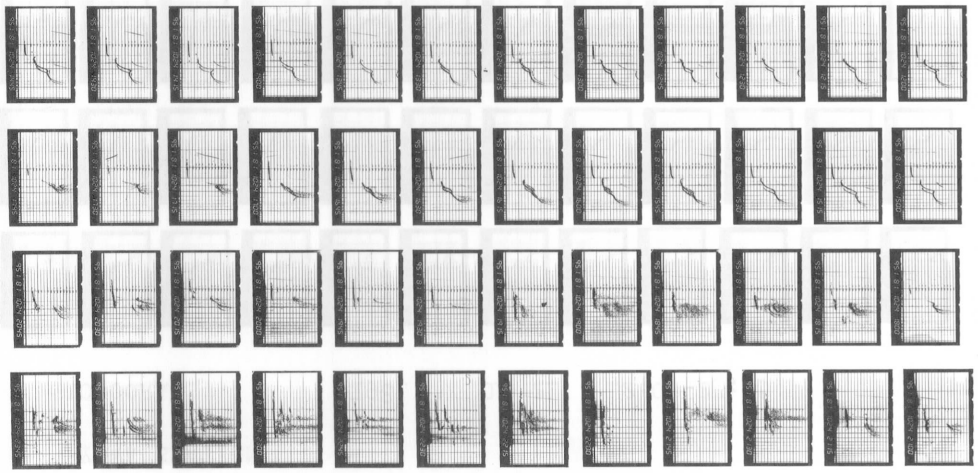
SYOWA STATION

IONOGRAM 1981 10 23 00;00-11;45



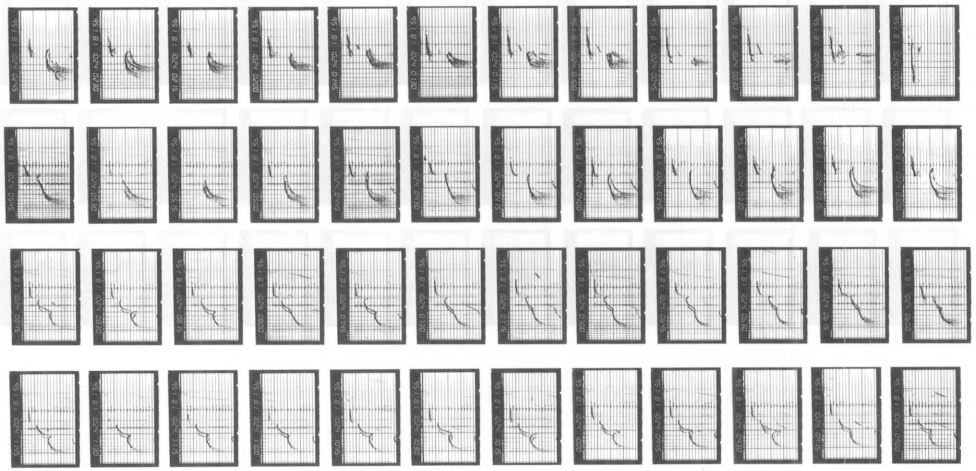
SYOWA STATION

IONOGRAM 1981 10 24 12;00-23;45



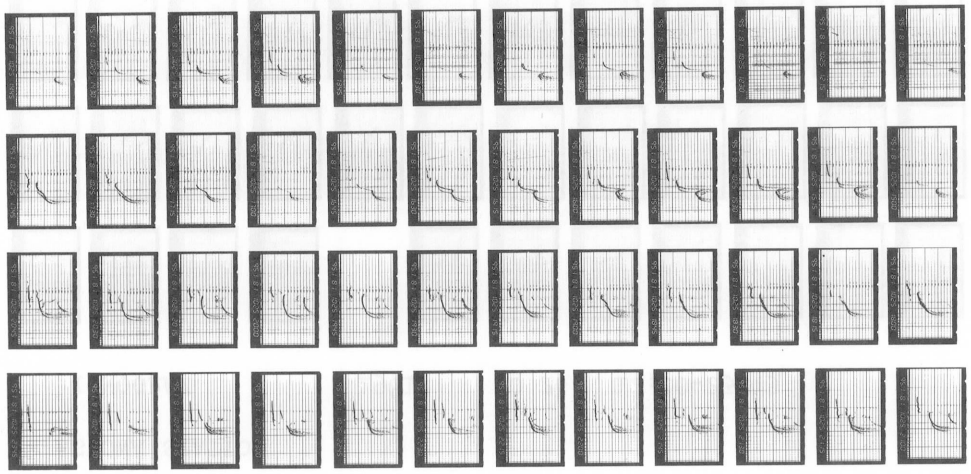
SYOWA STATION

IONOGRAM 1981 10 24 00;00-11;45



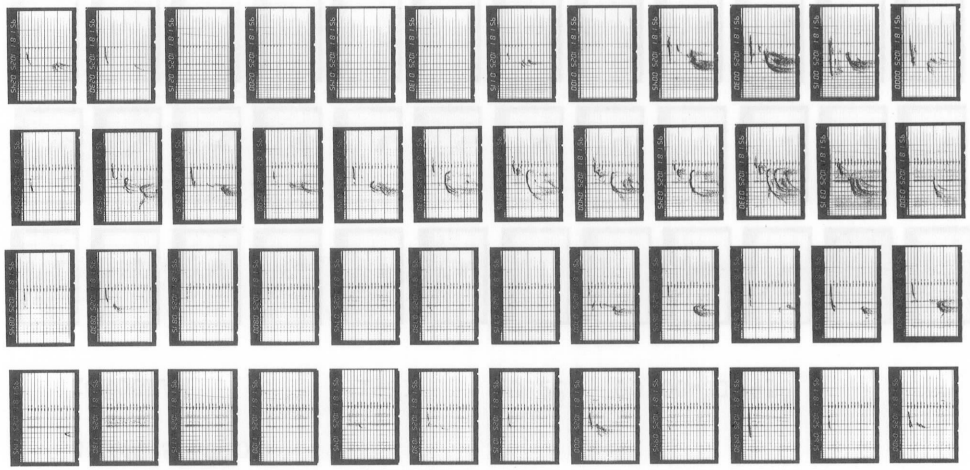
SYOWA STATION

IONOGRAM 1981 10 25 12;00-23;45



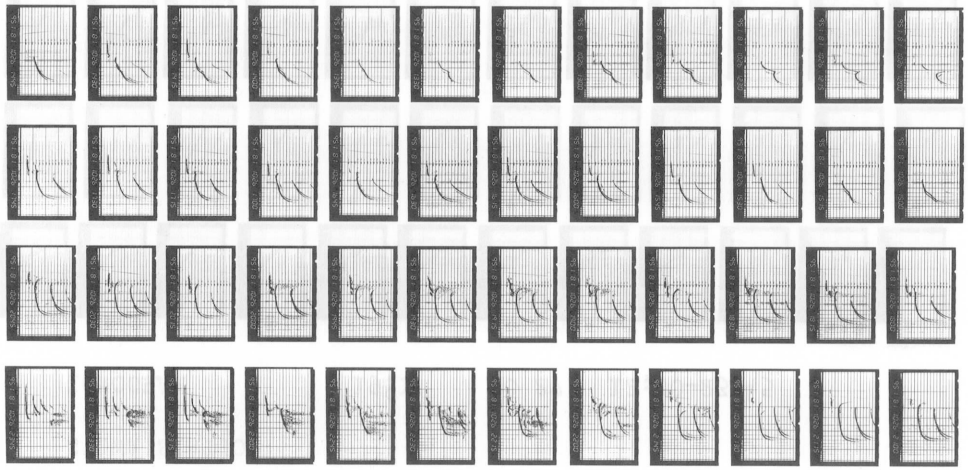
SYOWA STATION

IONOGRAM 1981 10 25 00;00-11;45



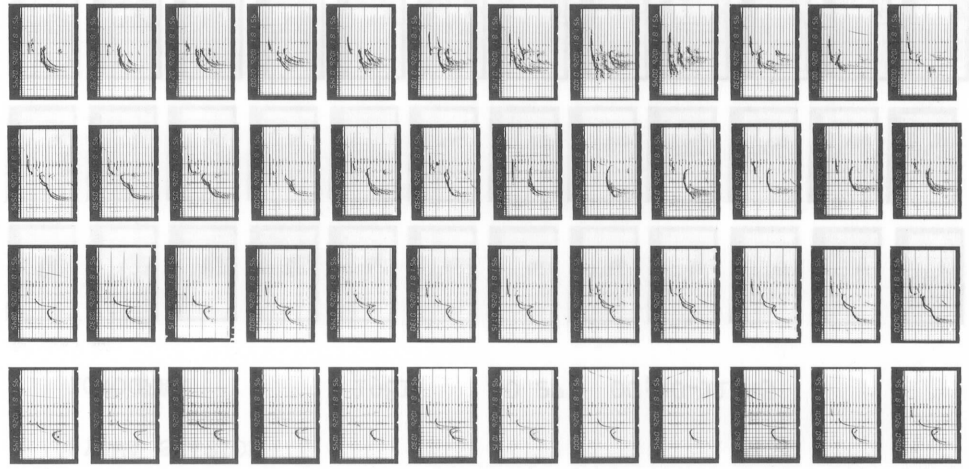
SYOWA STATION

IONOGRAM 1981 10 26 12;00-23;45



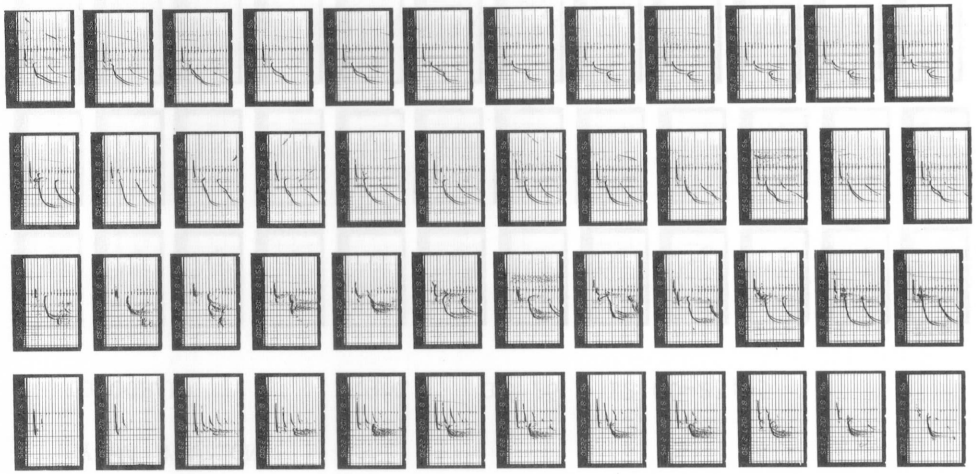
SYOWA STATION

IONOGRAM 1981 10 26 00;00-11;45



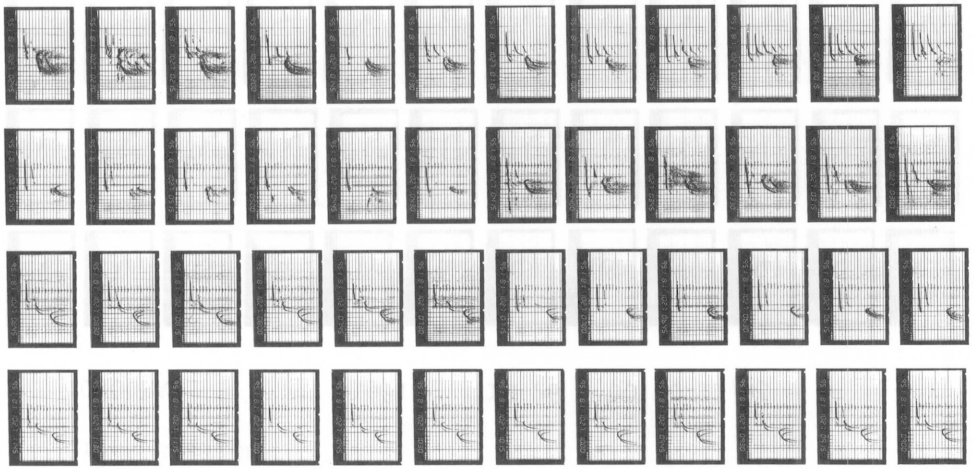
SYOWA STATION

IONOGRAM 1981 10 27 12;00-23;45



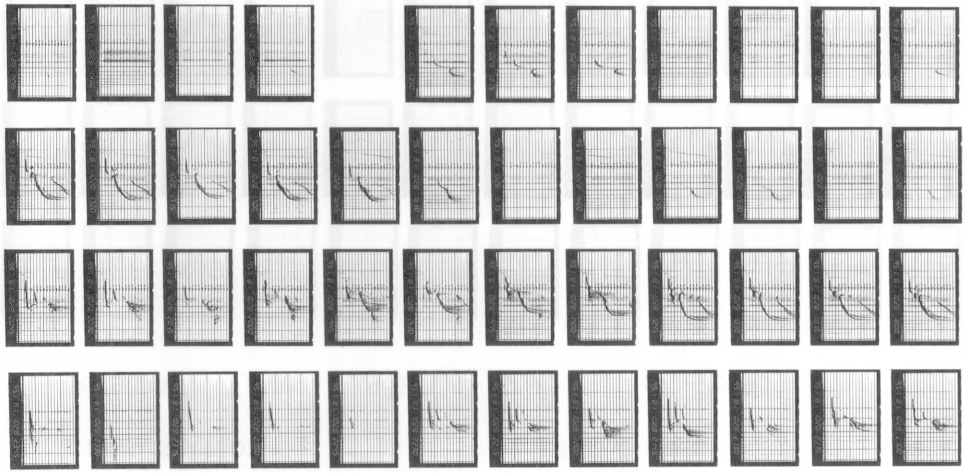
SYOWA STATION

IONOGRAM 1981 10 27 00;00-11;45



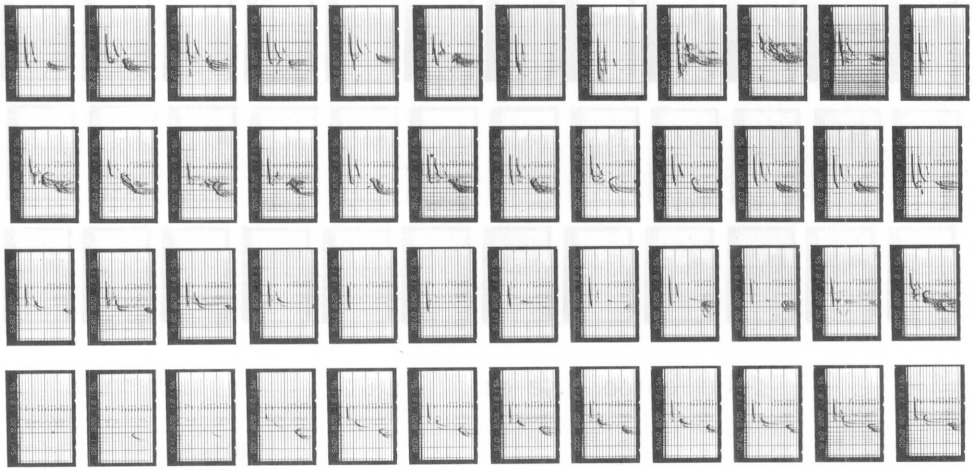
SYOWA STATION

IONOGRAM 1981 10 28 12;00-23;45



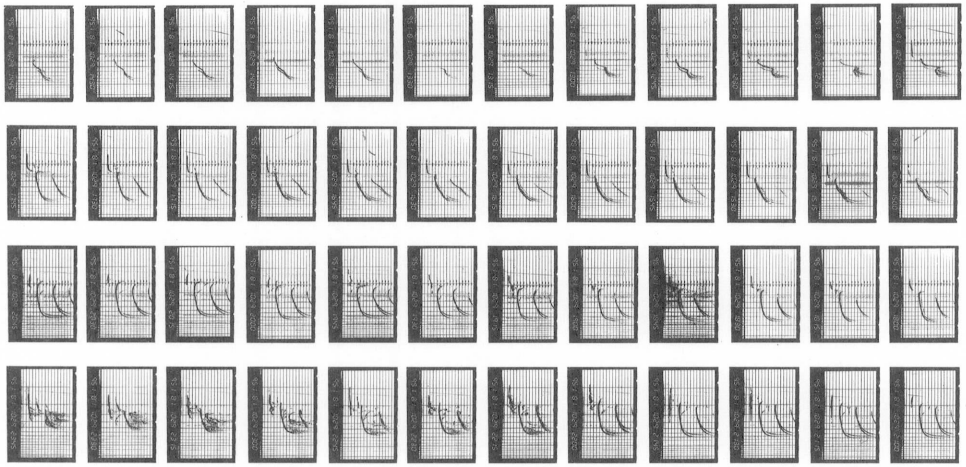
SYOWA STATION

IONOGRAM 1981 10 28 00;00-11;45



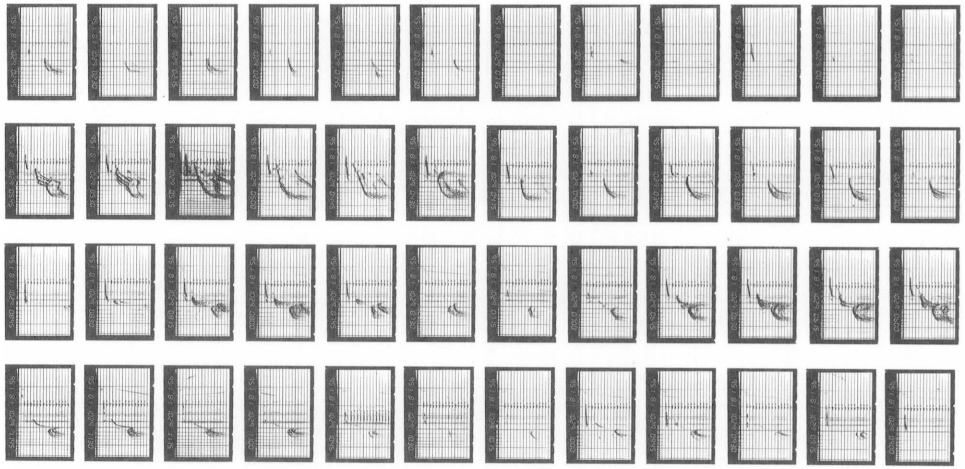
SYOWA STATION

IONOGRAM 1981 10 29 12;00-23;45



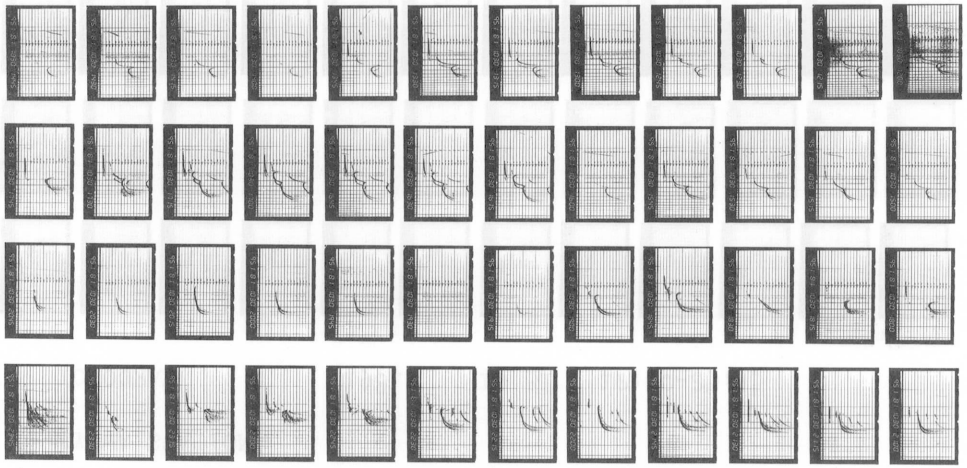
SYOWA STATION

IONOGRAM 1981 10 29 00;00-11;45



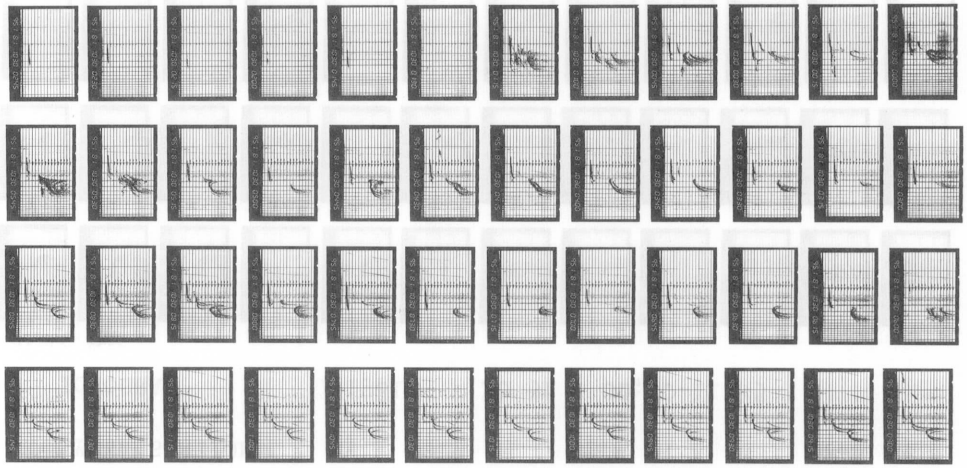
SYOWA STATION

IONOGRAM 1981 10 30 12;00-23;45



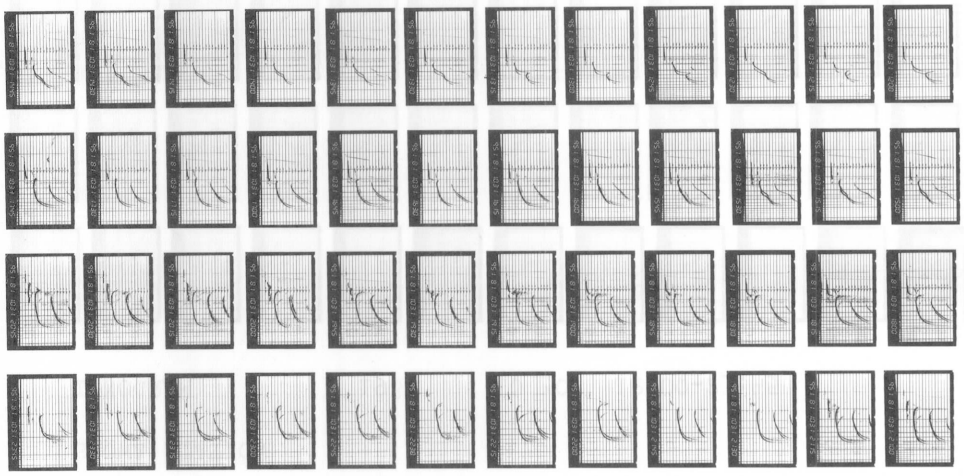
SYOWA STATION

IONOGRAM 1981 10 30 00;00-11;45



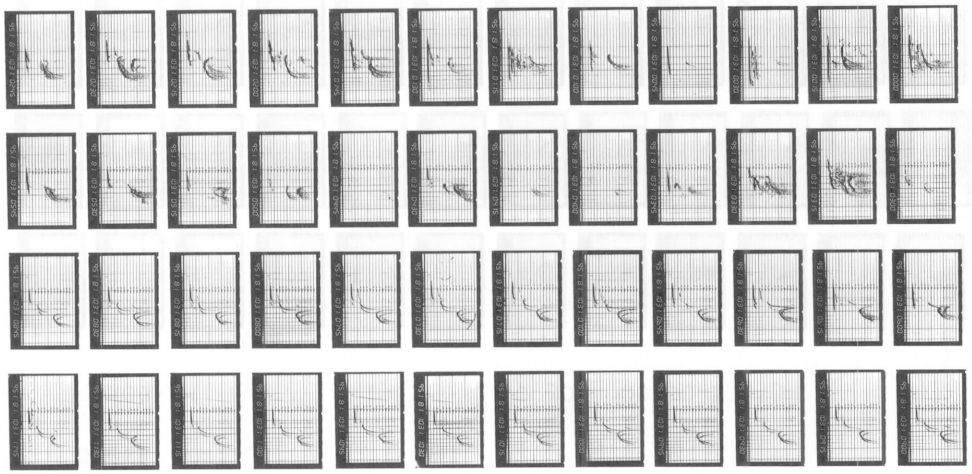
SYOWA STATION

IONOGRAM 1981 10 31 12;00-23;45



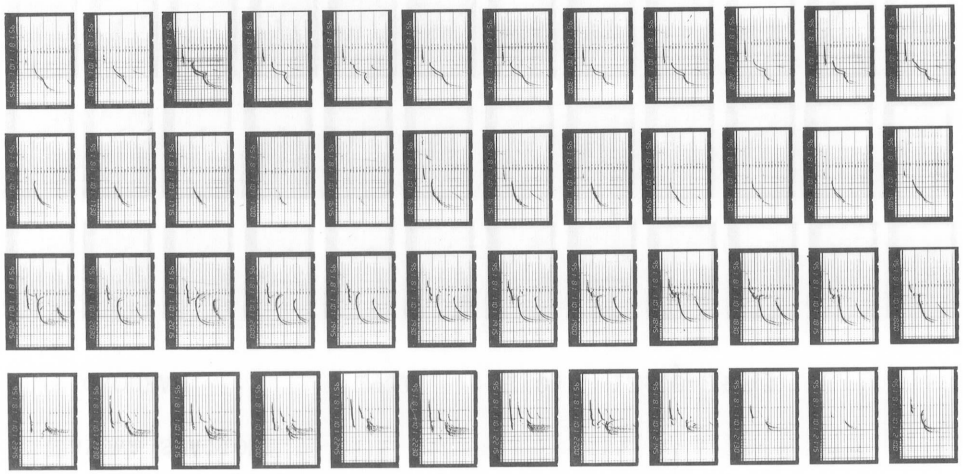
SYOWA STATION

IONOGRAM 1981 10 31 00;00-11;45



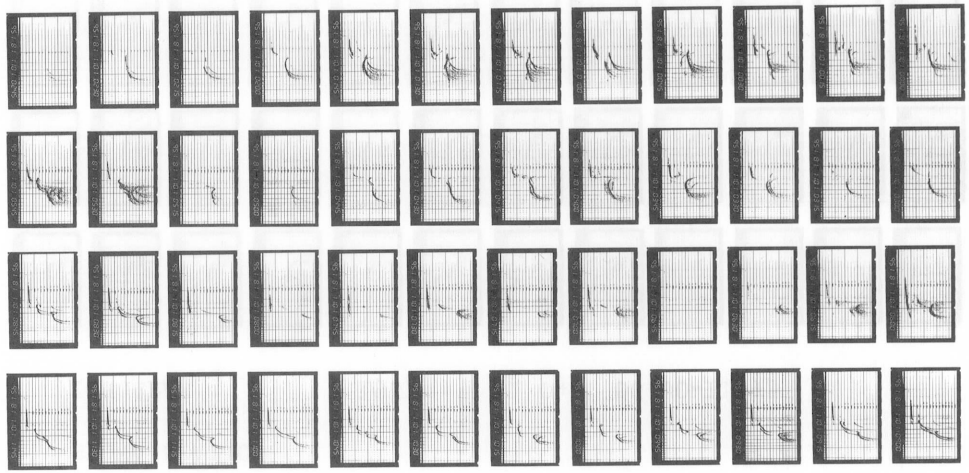
SYOWA STATION

IONOGRAM 1981 11 01 12;00-23;45



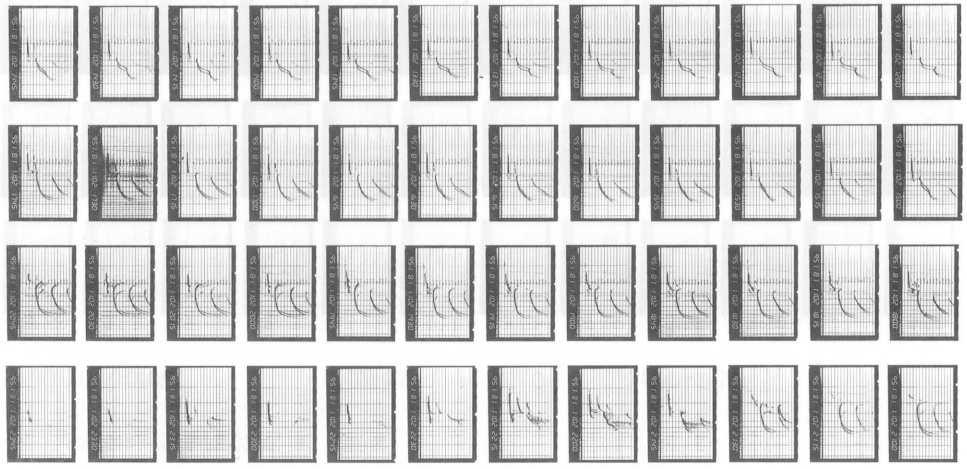
SYOWA STATION

IONOGRAM 1981 11 01 00;00-11;45



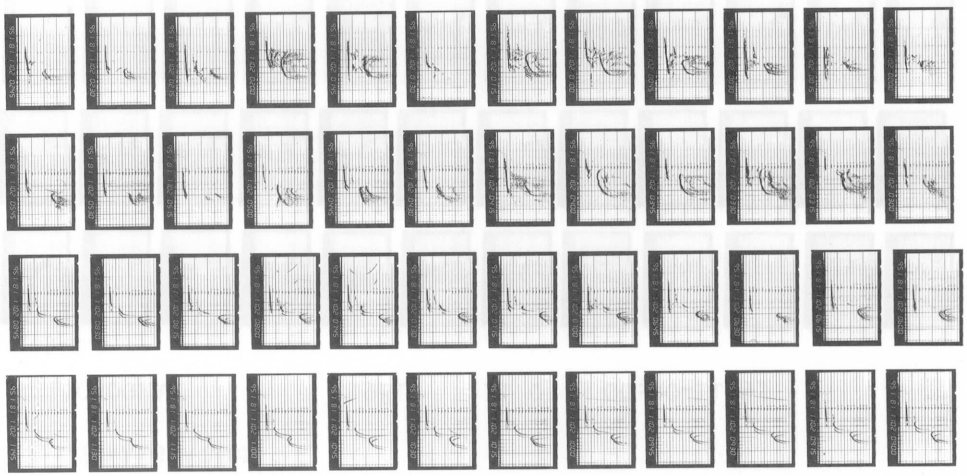
SYOWA STATION

IONOGRAM 1981 11 02 12;00-23;45



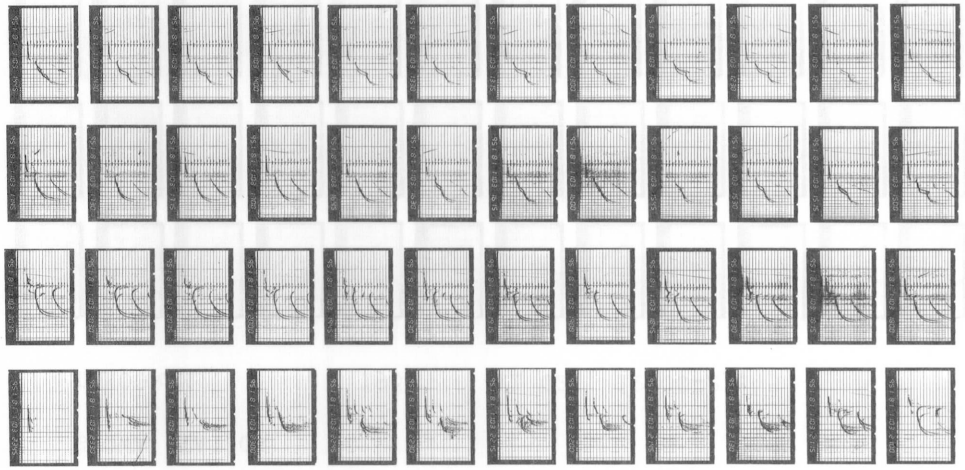
SYOWA STATION

IONOGRAM 1981 11 02 00;00-11;45



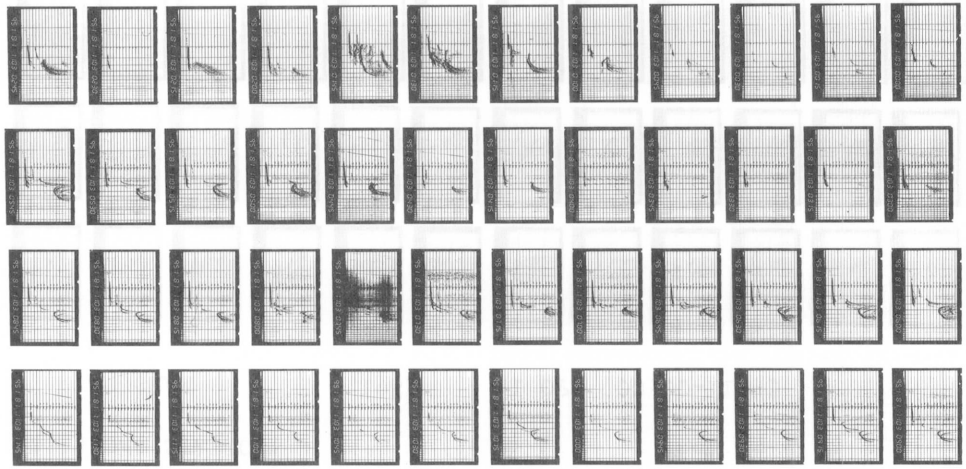
SYOWA STATION

IONOGRAM 1981 11 03 12;00-23;45



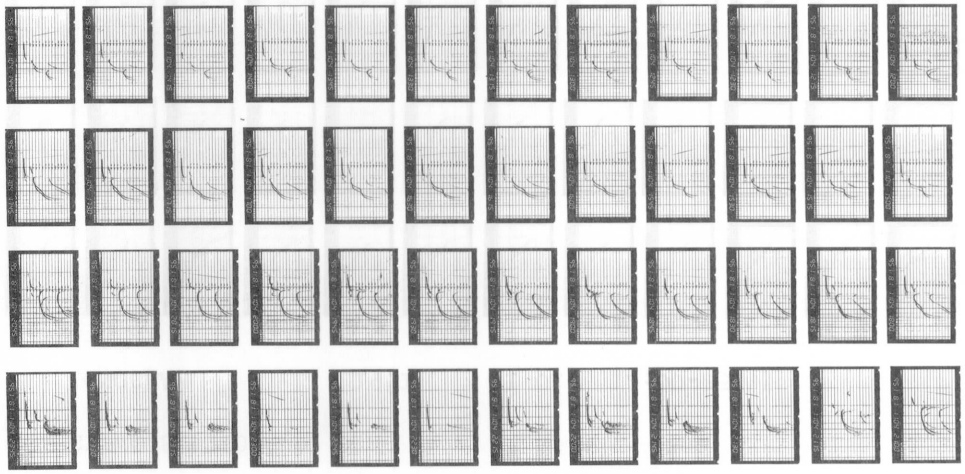
SYOWA STATION

IONOGRAM 1981 11 03 00;00-11;45



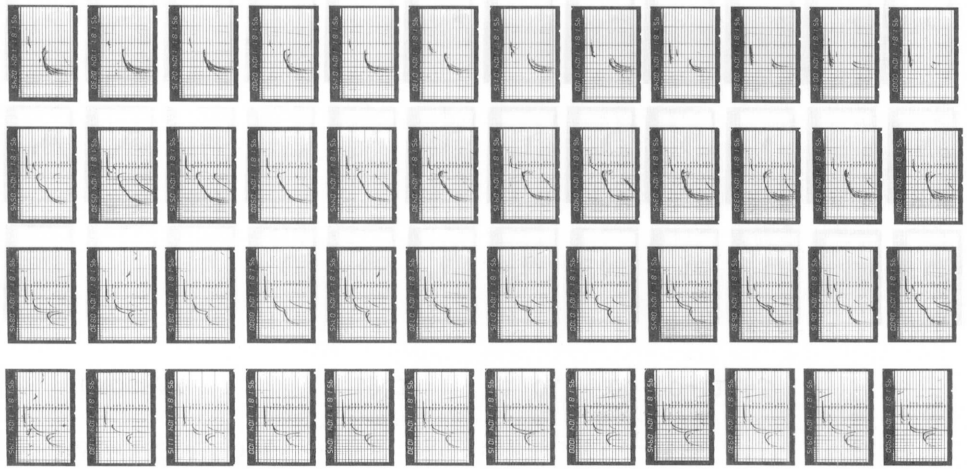
SYOWA STATION

IONOGRAM 1981 11 04 12;00-23;45



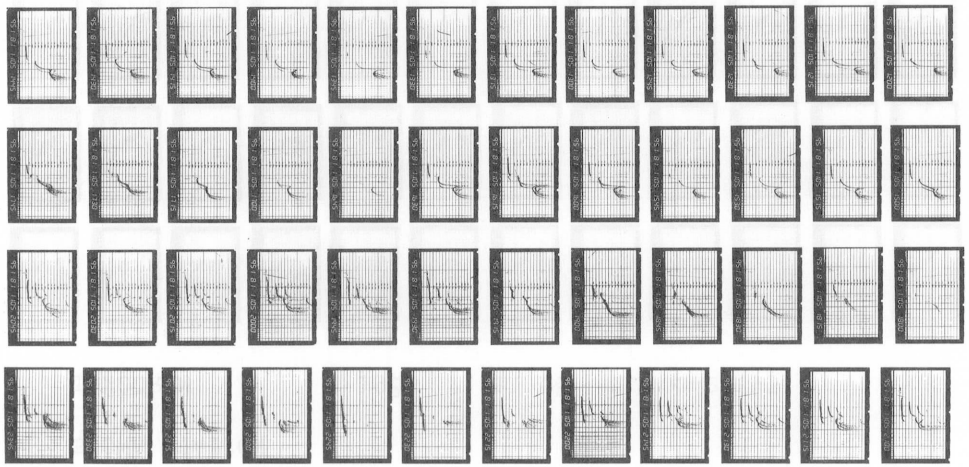
SYOWA STATION

IONOGRAM 1981 11 04 00;00-11;45



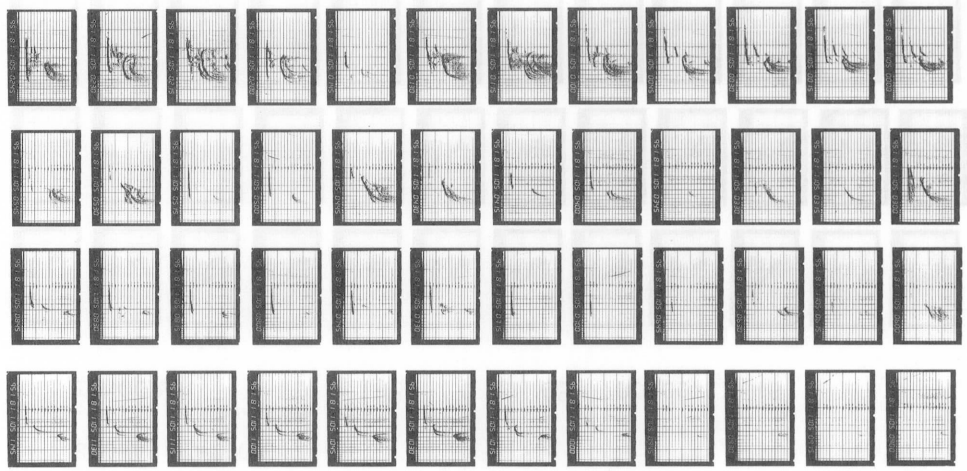
SYOWA STATION

IONOGRAM 1981 11 05 12;00-23;45



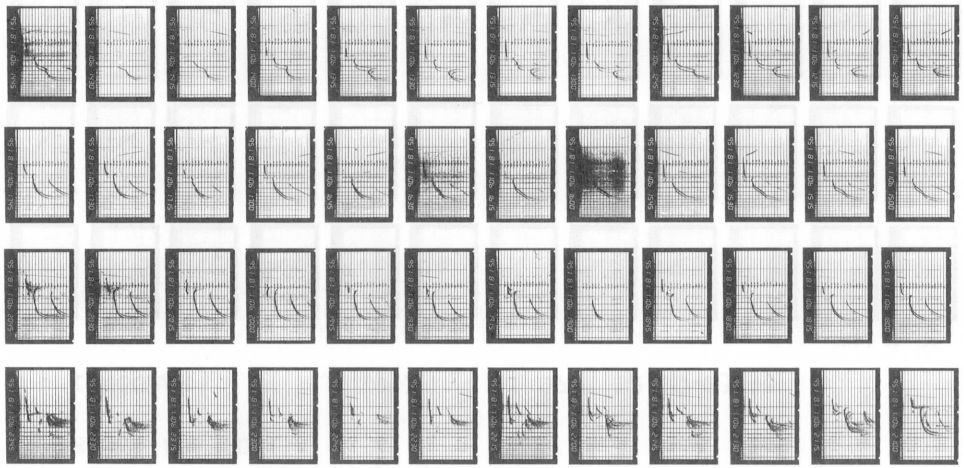
SYOWA STATION

IONOGRAM 1981 11 05 00;00-11;45



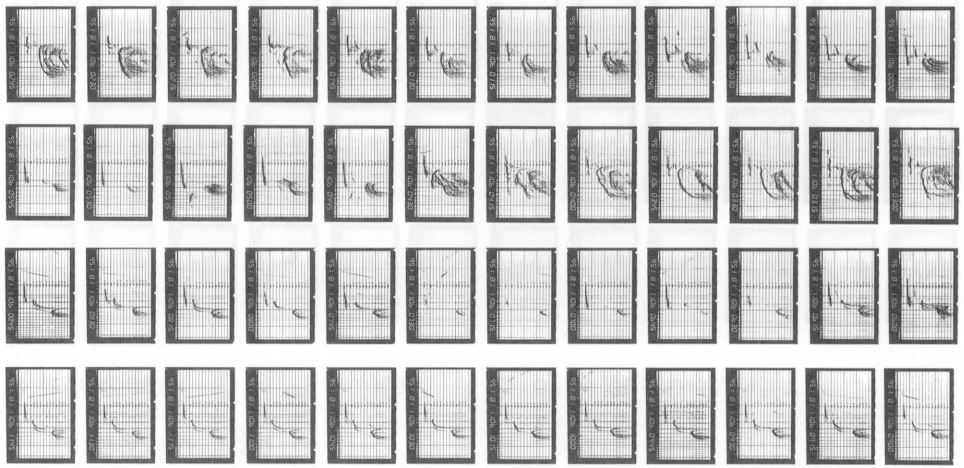
SYOWA STATION

IONOGRAM 1981 11 06 12;00-23;45



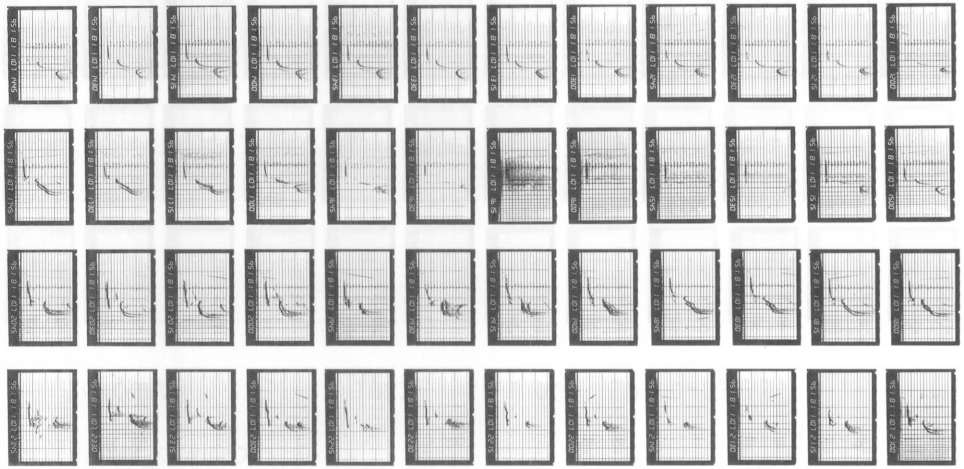
SYOWA STATION

IONOGRAM 1981 11 06 00;00-11;45



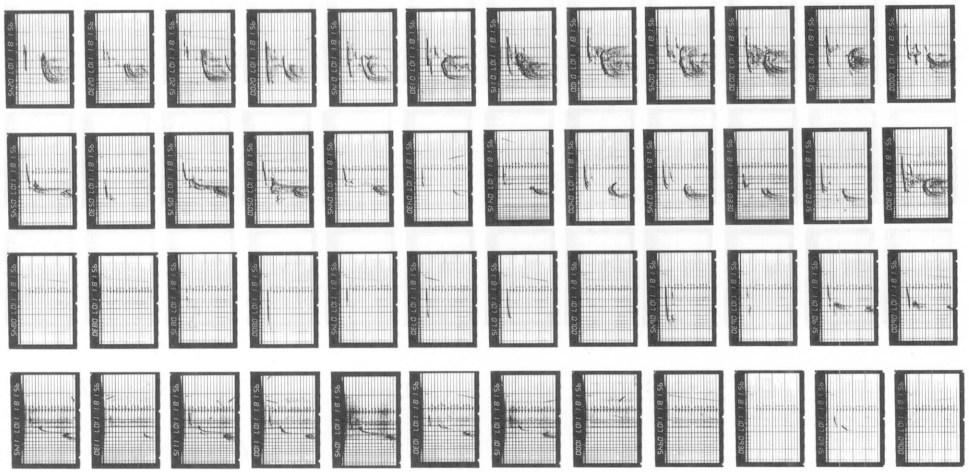
SYOWA STATION

IONOGRAM 1981 11 07 12;00-23;45



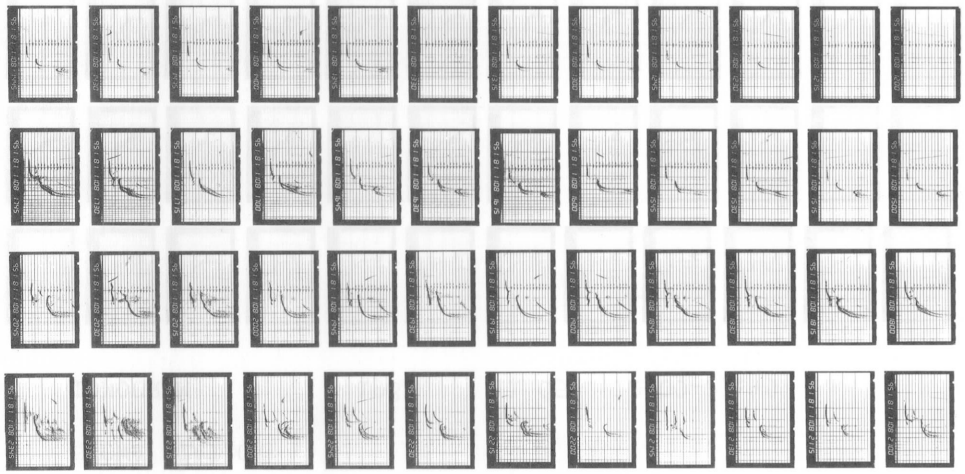
SYOWA STATION

IONOGRAM 1981 11 07 00;00-11;45



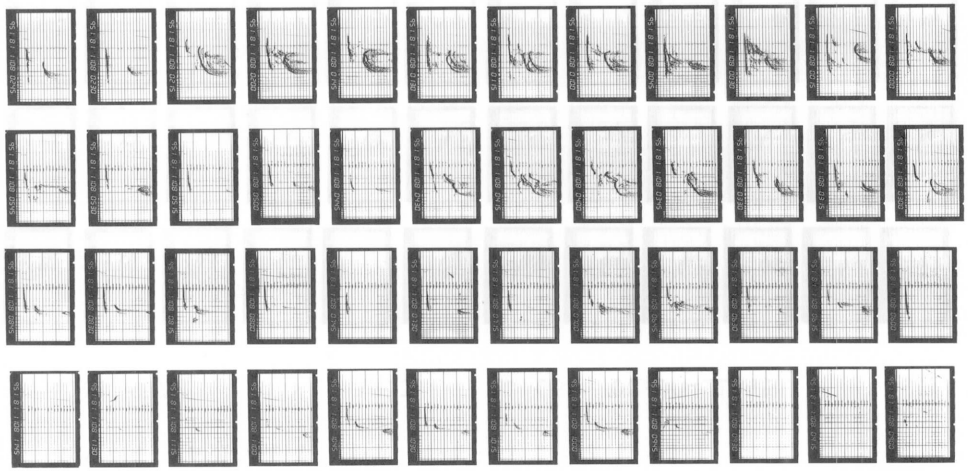
SYOWA STATION

IONOGRAM 1981 11 08 12;00-23;45



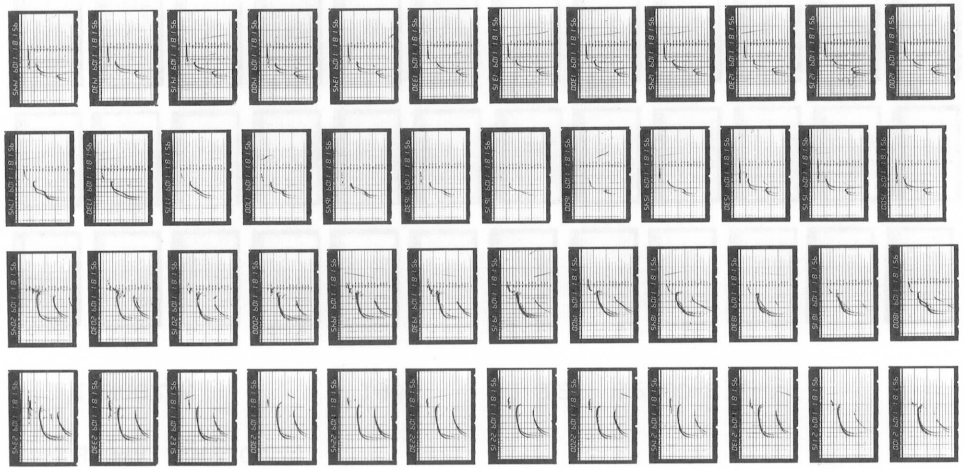
SYOWA STATION

IONOGRAM 1981 11 08 00;00-11;45



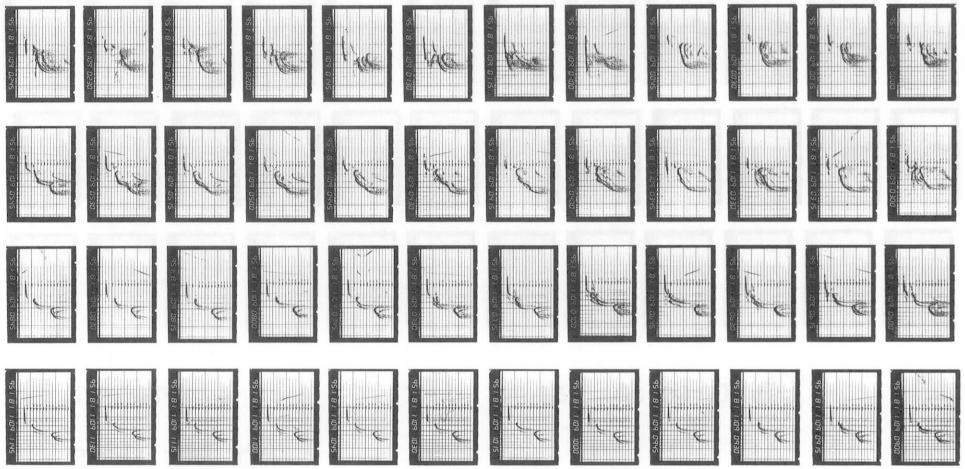
SYOWA STATION

IONOGRAM 1981 11 09 12;00-23;45



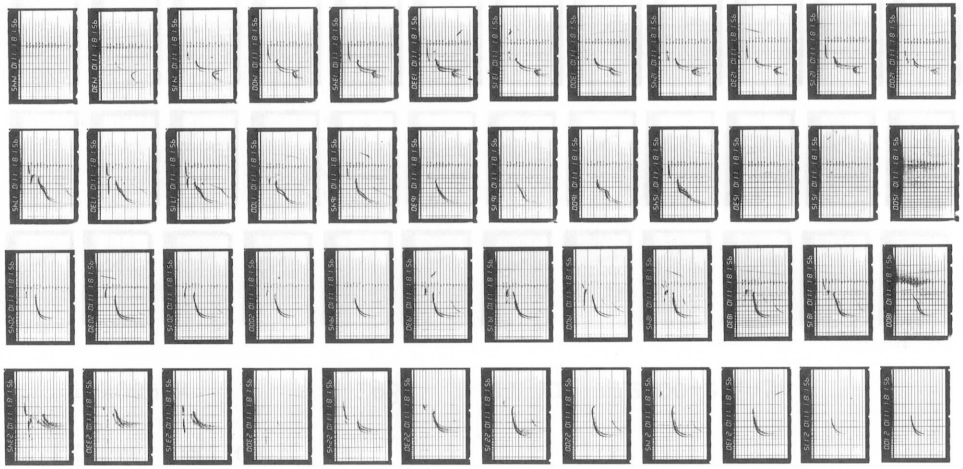
SYOWA STATION

IONOGRAM 1981 11 09 00;00-11;45



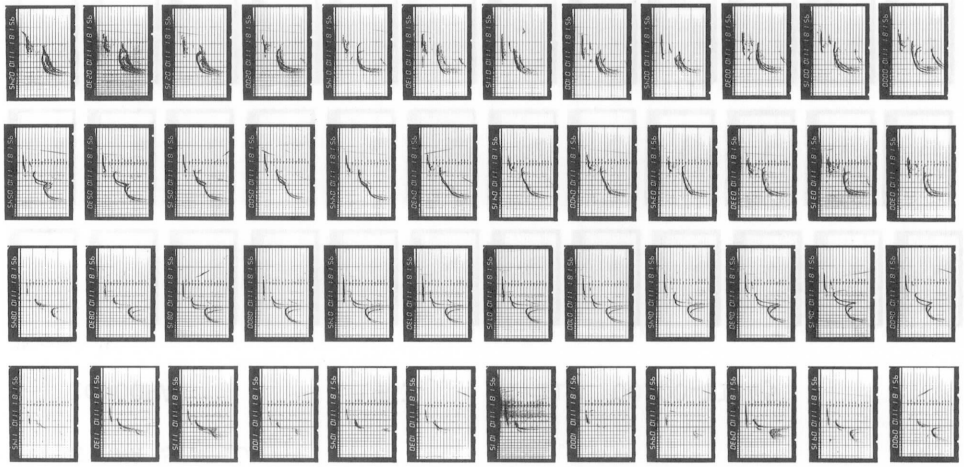
SYOWA STATION

IONOGRAM 1981 11 10 12;00-23;45



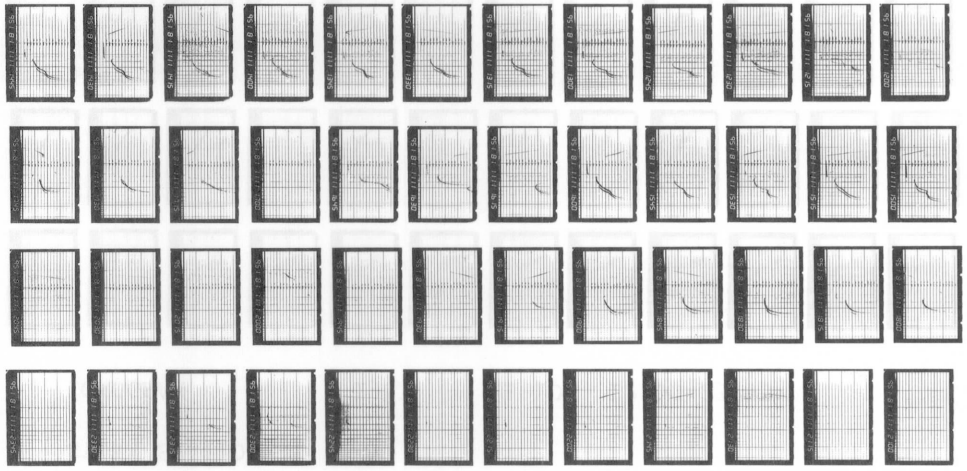
SYOWA STATION

IONOGRAM 1981 11 10 00;00-11;45



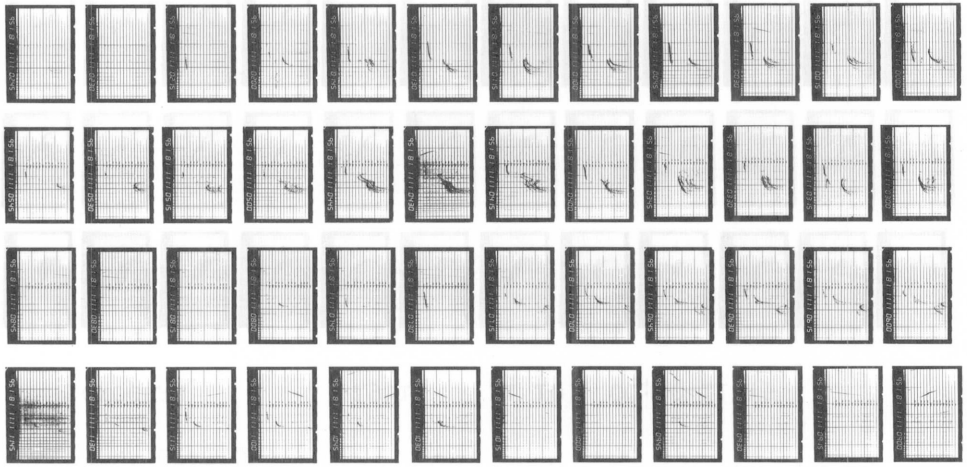
SYOWA STATION

IONOGRAM 1981 11 11 12;00-23;45



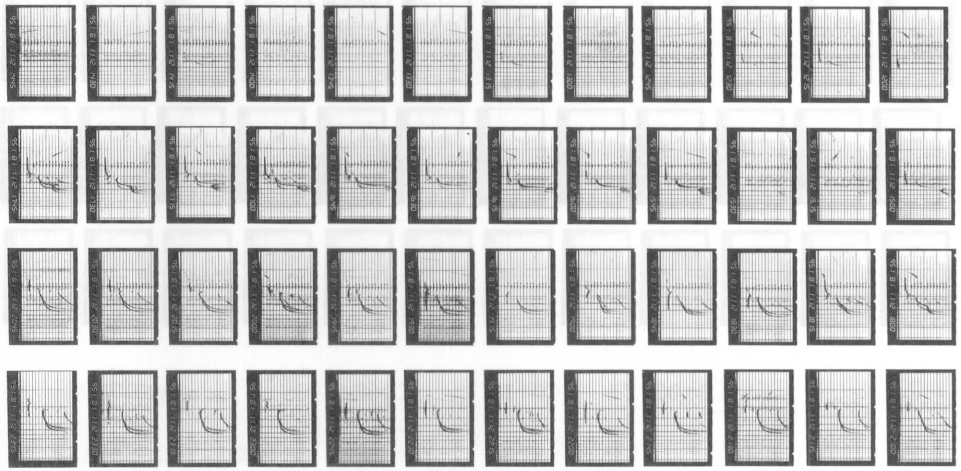
SYOWA STATION

IONOGRAM 1981 11 11 00;00-11;45



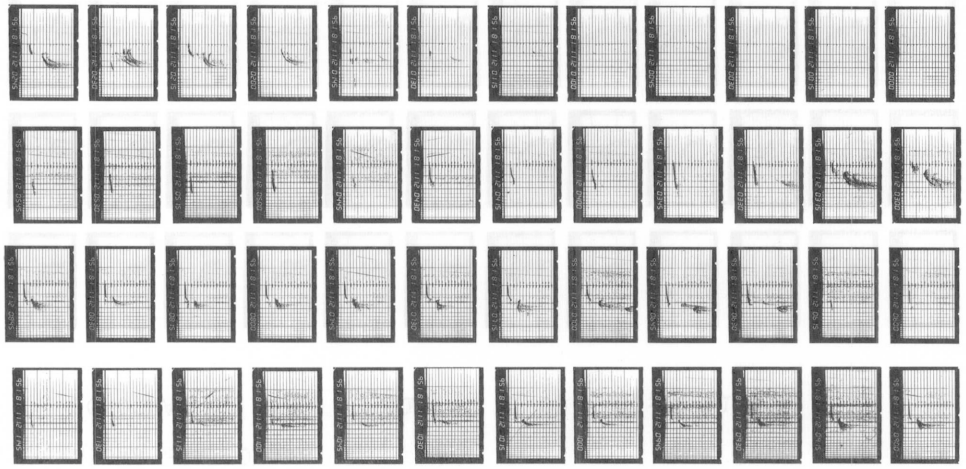
SYOWA STATION

IONOGRAM 1981 11 12 12;00-23;45



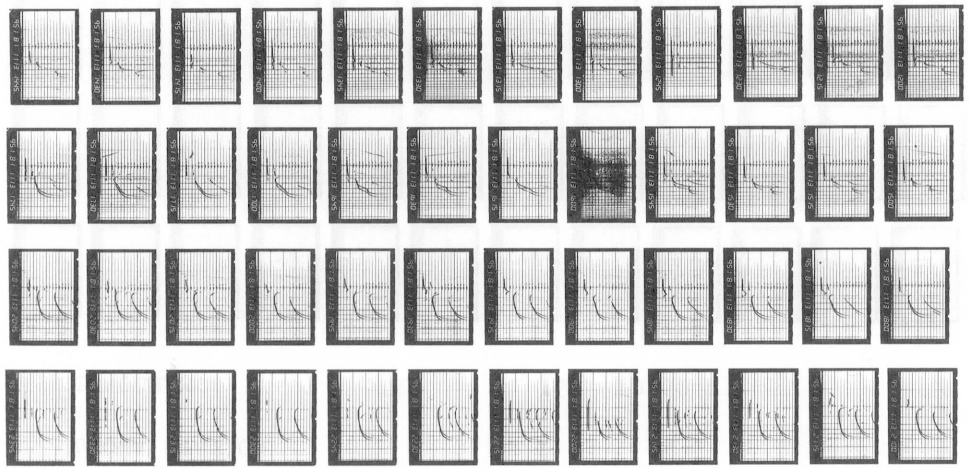
SYOWA STATION

IONOGRAM 1981 11 12 00;00-11;45



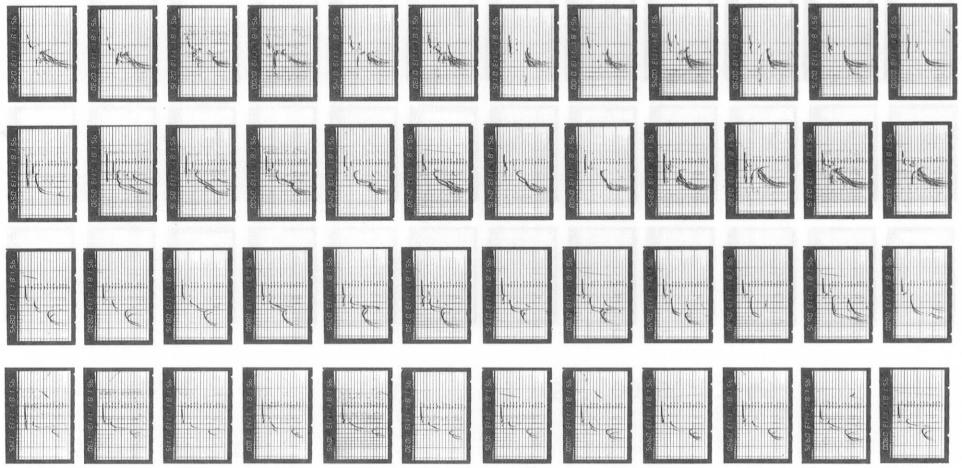
SYOWA STATION

IONOGRAM 1981 11 13 12;00-23;45



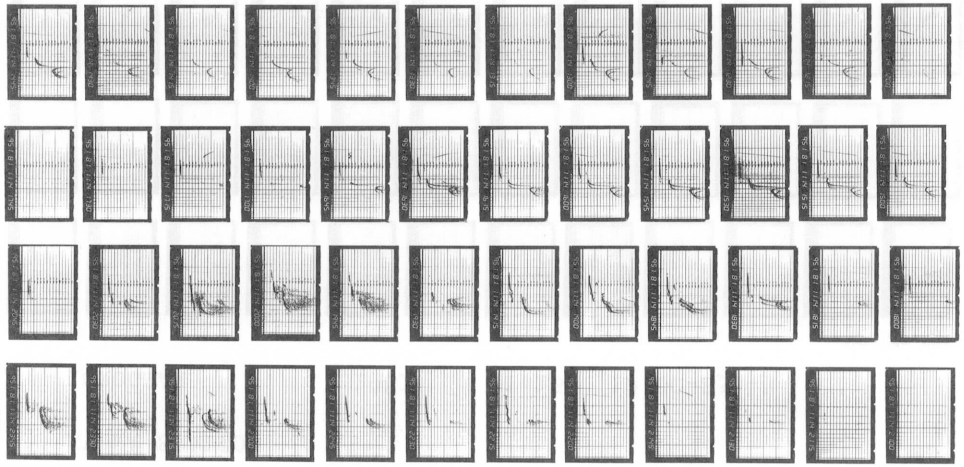
SYOWA STATION

IONOGRAM 1981 11 13 00;00-11;45



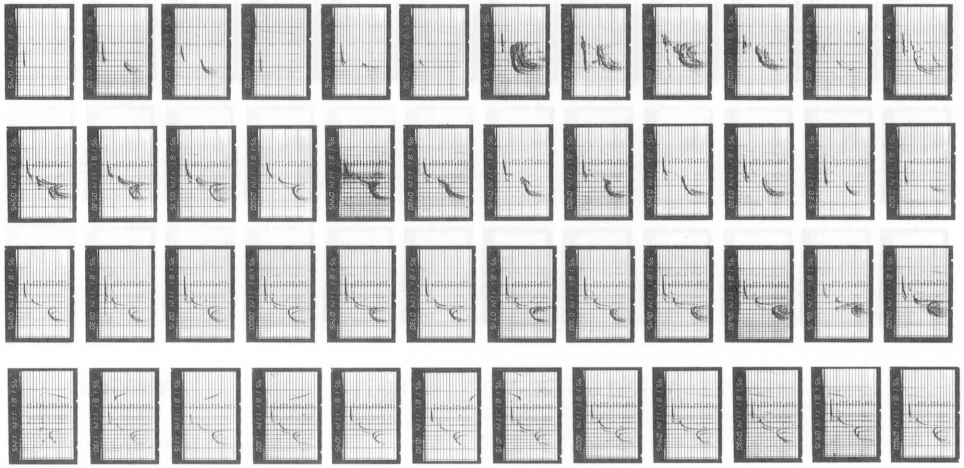
SYOWA STATION

IONOGRAM 1981 11 14 12;00-23;45



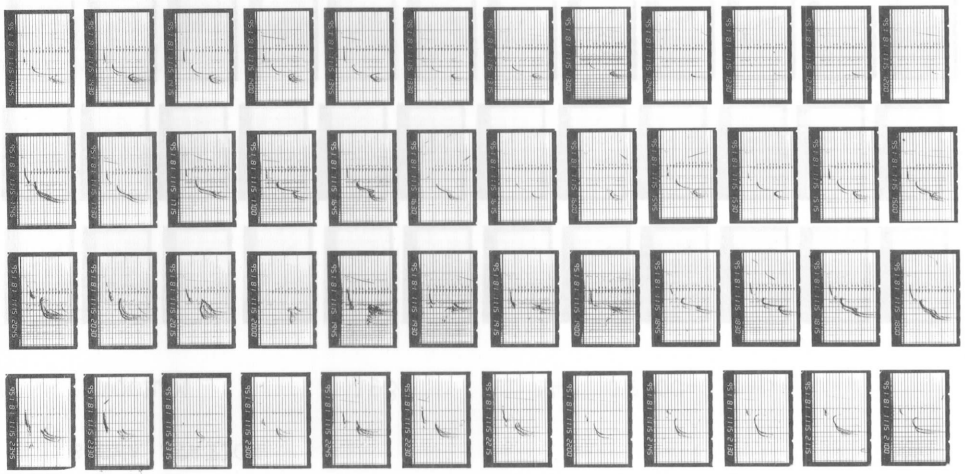
SYOWA STATION

IONOGRAM 1981 11 14 00;00-11;45



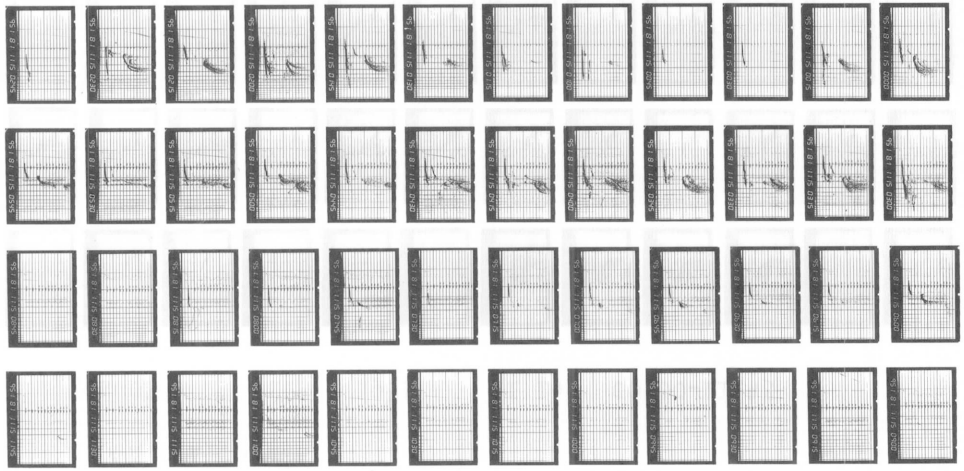
SYOWA STATION

IONOGRAM 1981 11 15 12;00-23;45



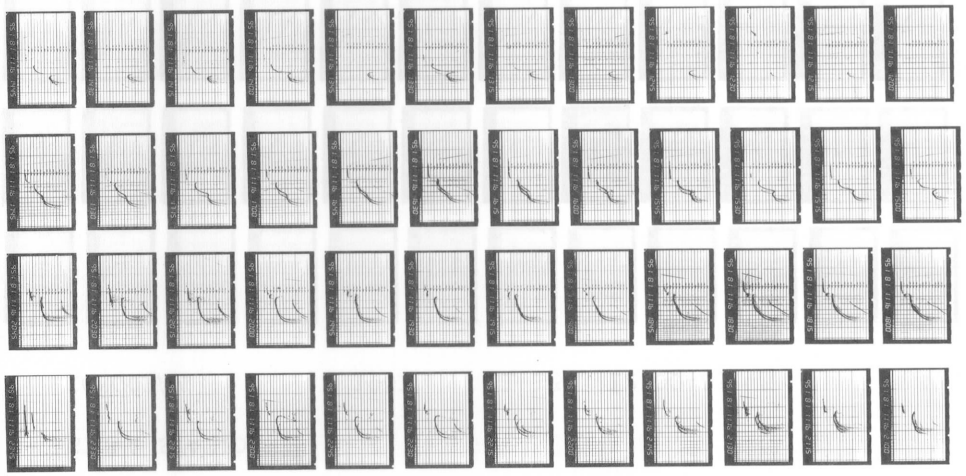
SYOWA STATION

IONOGRAM 1981 11 15 00;00-11;45



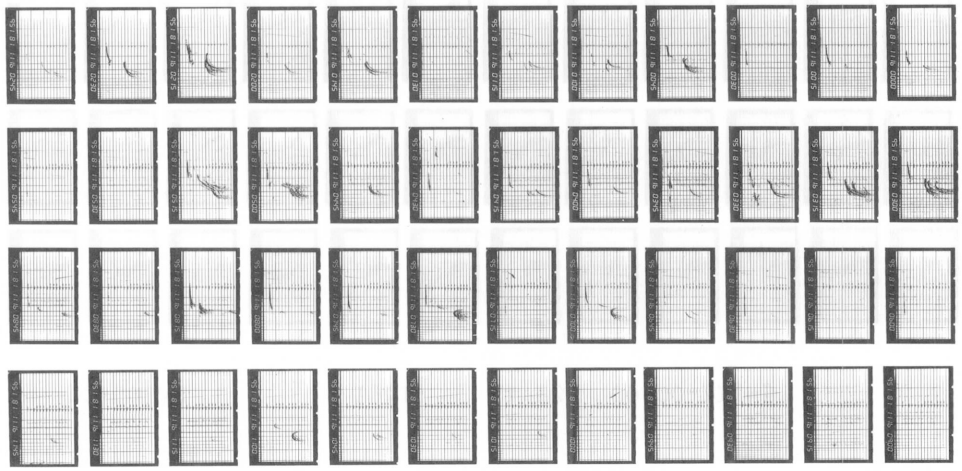
SYOWA STATION

IONOGRAM 1981 11 16 12;00-23;45



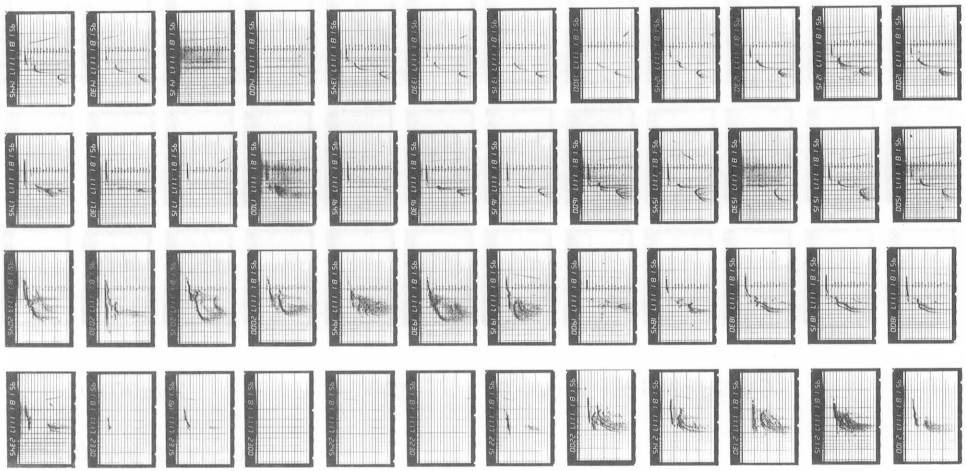
SYOWA STATION

IONOGRAM 1981 11 16 00;00-11;45



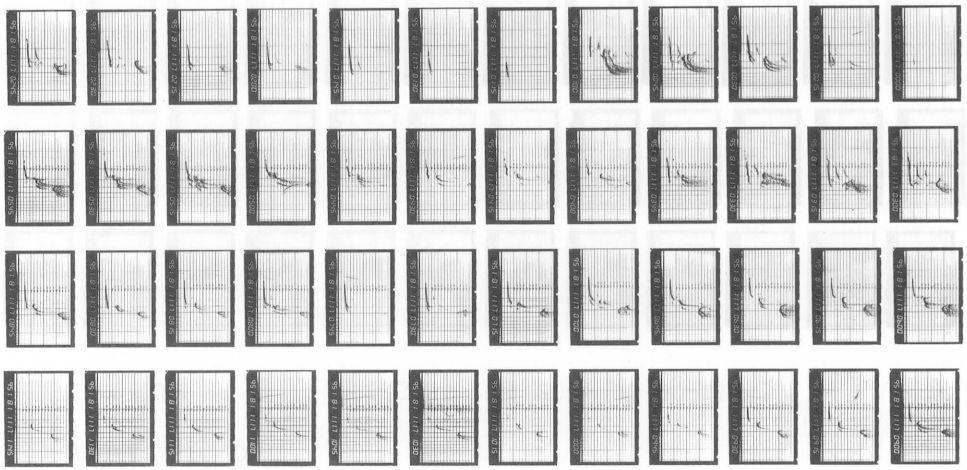
SYOWA STATION

IONOGRAM 1981 11 17 12;00-23;45



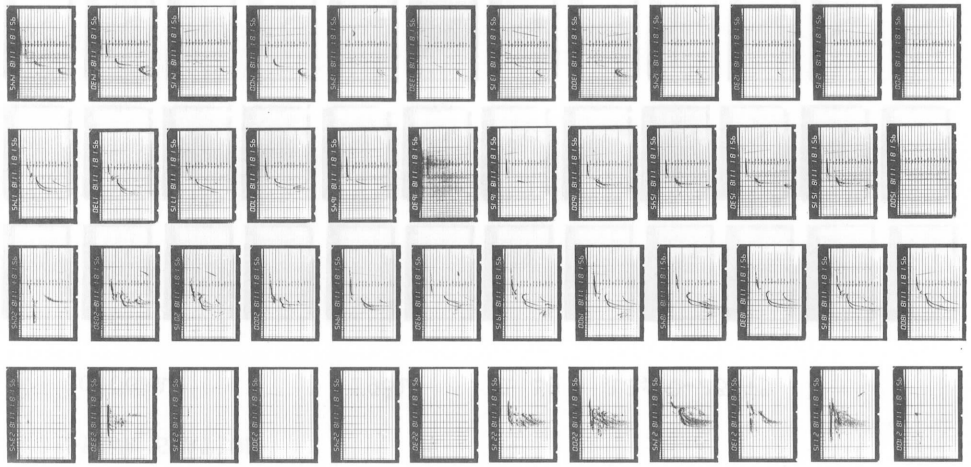
SYOWA STATION

IONOGRAM 1981 11 17 00;00-11;45



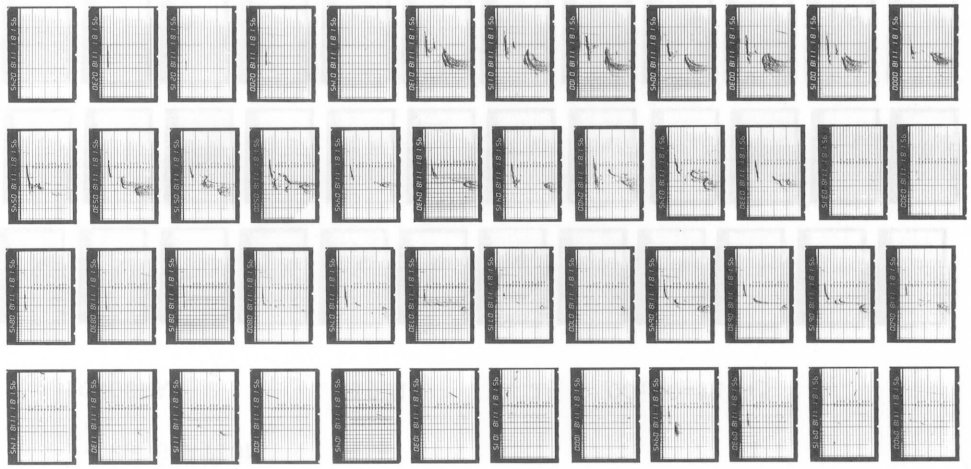
SYOWA STATION

IONOGRAM 1981 11 18 12;00-23;45



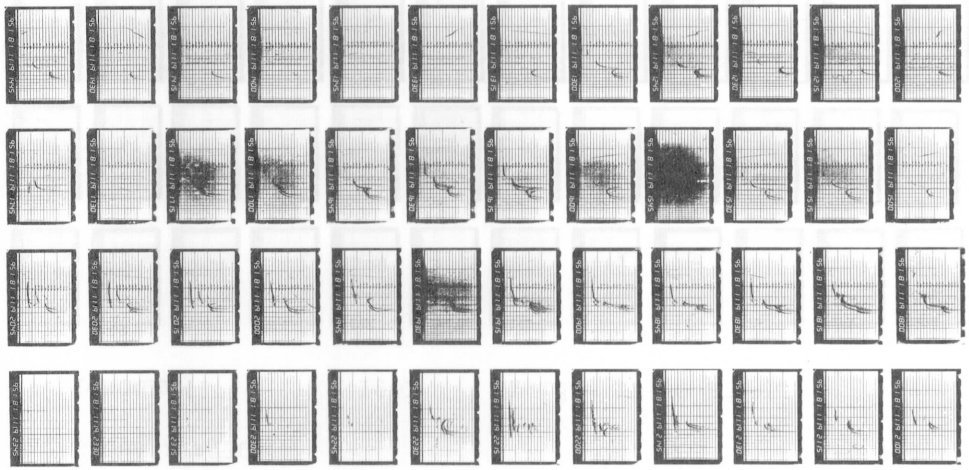
SYOWA STATION

IONOGRAM 1981 11 18 00;00-11;45



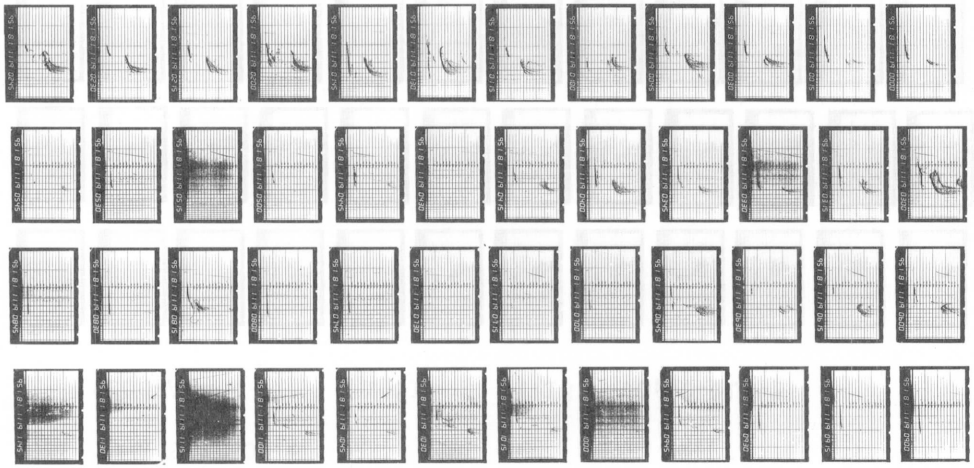
SYOWA STATION

IONOGRAM 1981 11 19 12;00-23;45



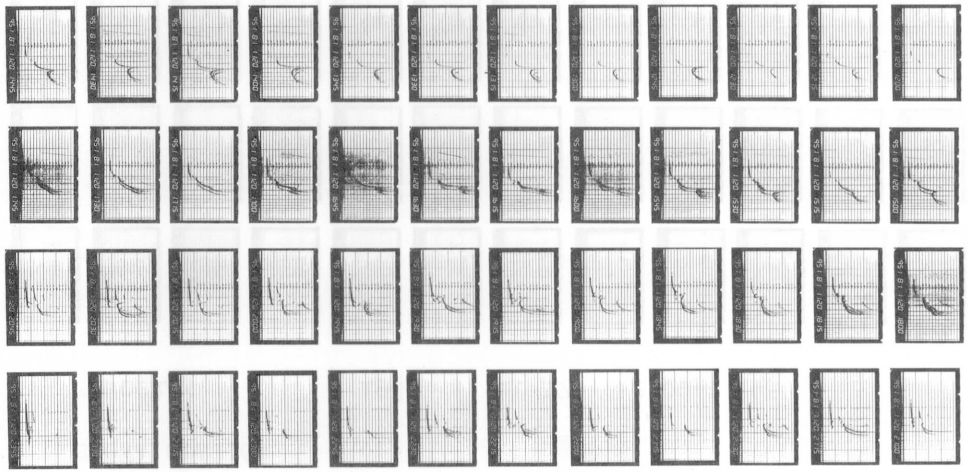
SYOWA STATION

IONOGRAM 1981 11 19 00;00-11;45



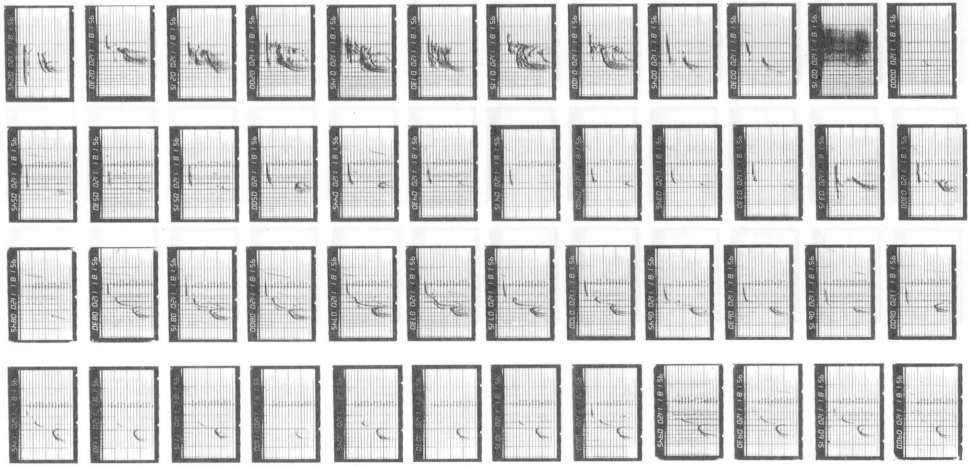
SYOWA STATION

IONOGRAM 1981 11 20 12;00-23;45



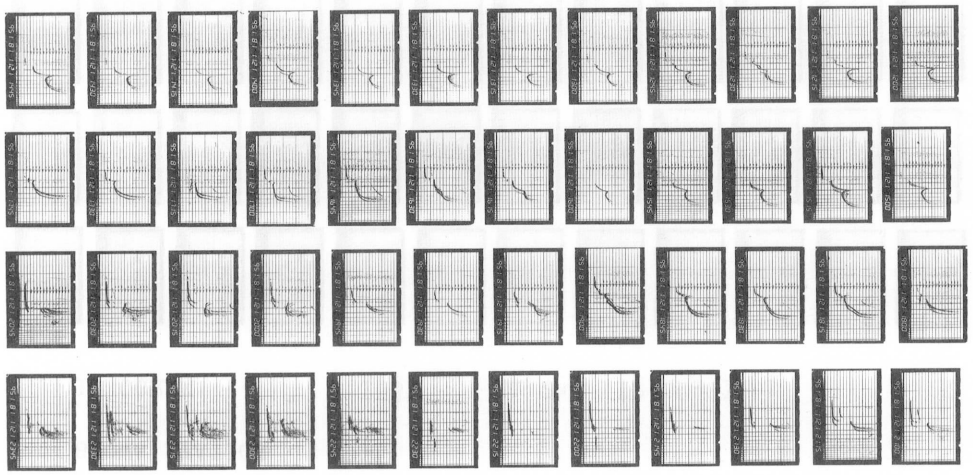
SYOWA STATION

IONOGRAM 1981 11 20 00;00-11;45



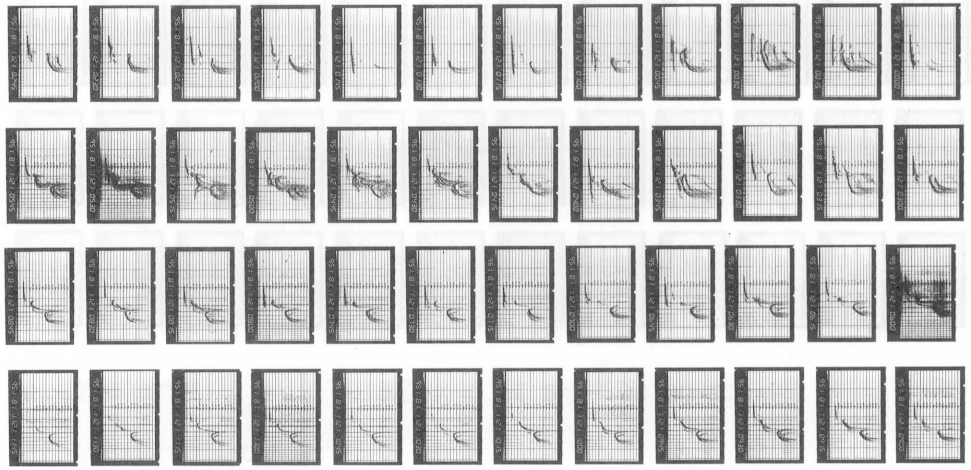
SYOWA STATION

IONOGRAM 1981 11 21 12;00-23;45



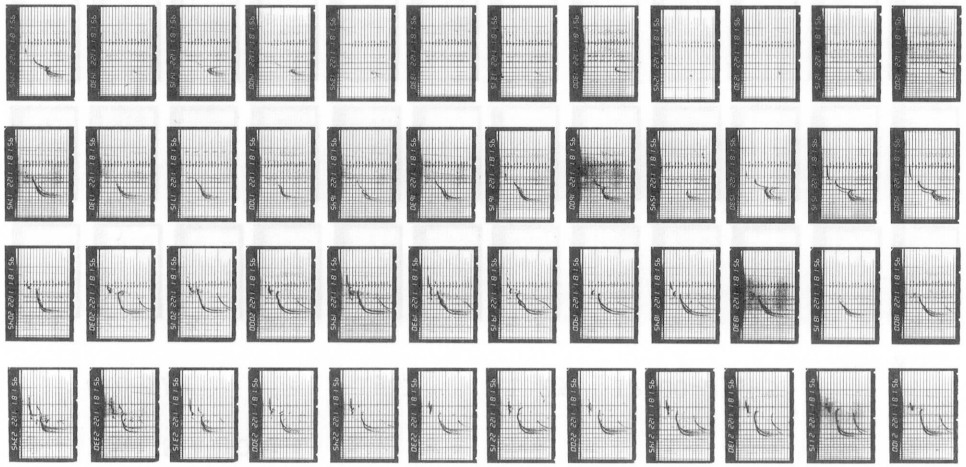
SYOWA STATION

IONOGRAM 1981 11 21 00;00-11;45



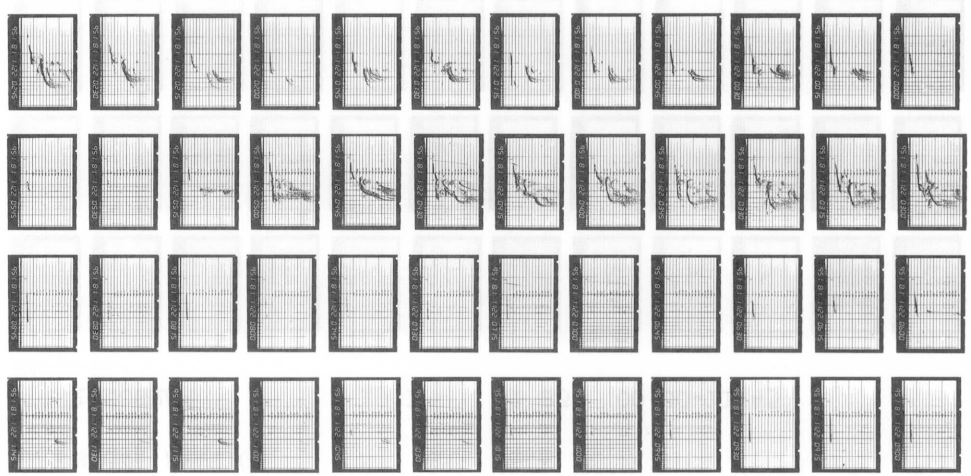
SYOWA STATION

IONOGRAM 1981 11 22 12;00-23;45



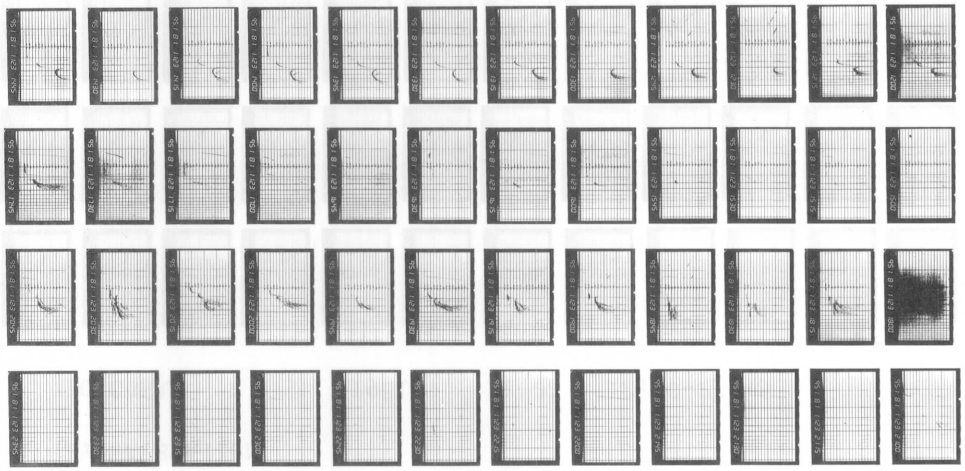
SYOWA STATION

IONOGRAM 1981 11 22 00;00-11;45



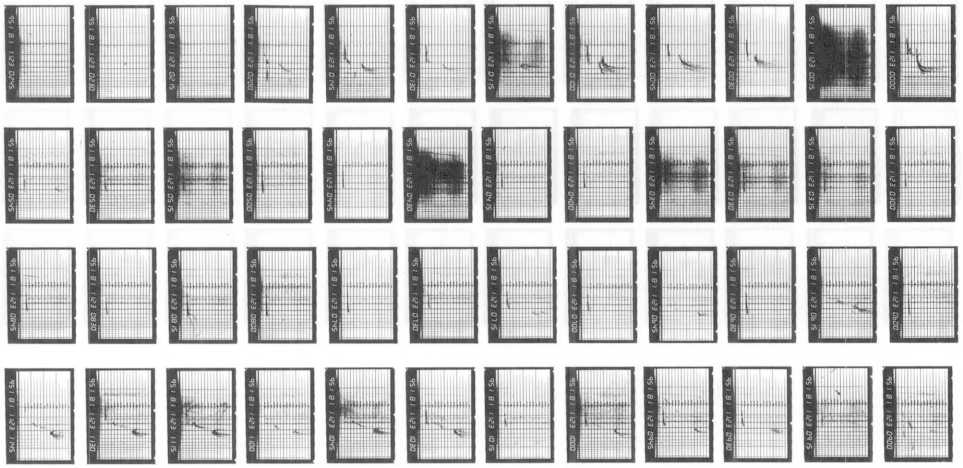
SYOWA STATION

IONOGRAM 1981 11 23 12;00-23;45



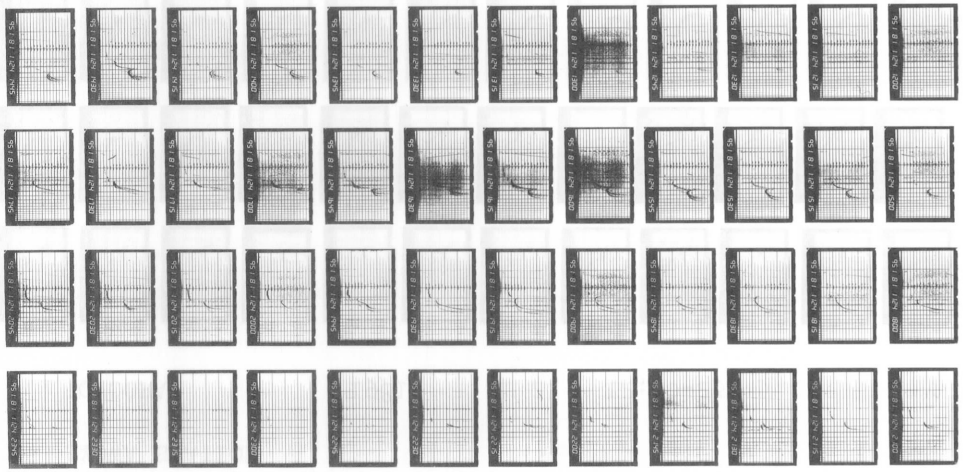
SYOWA STATION

IONOGRAM 1981 11 23 00;00-11;45



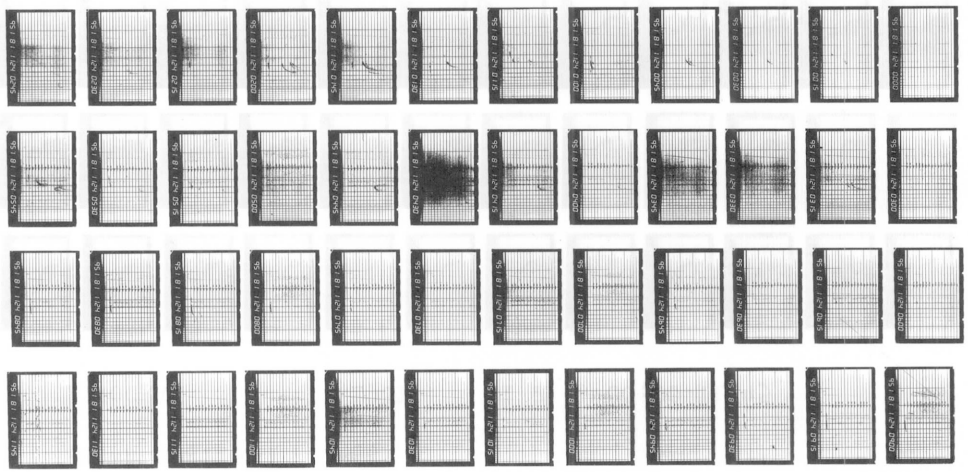
SYOWA STATION

IONOGRAM 1981 11 24 12;00-23;45



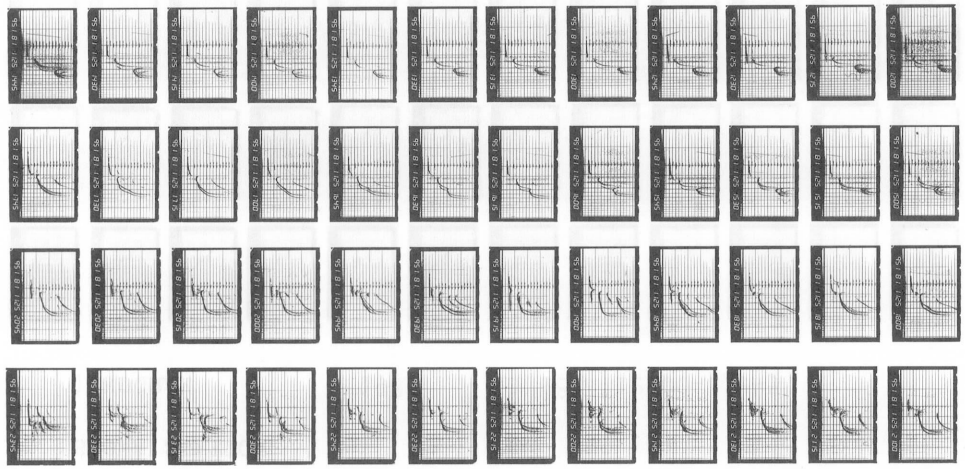
SYOWA STATION

IONOGRAM 1981 11 24 00;00-11;45



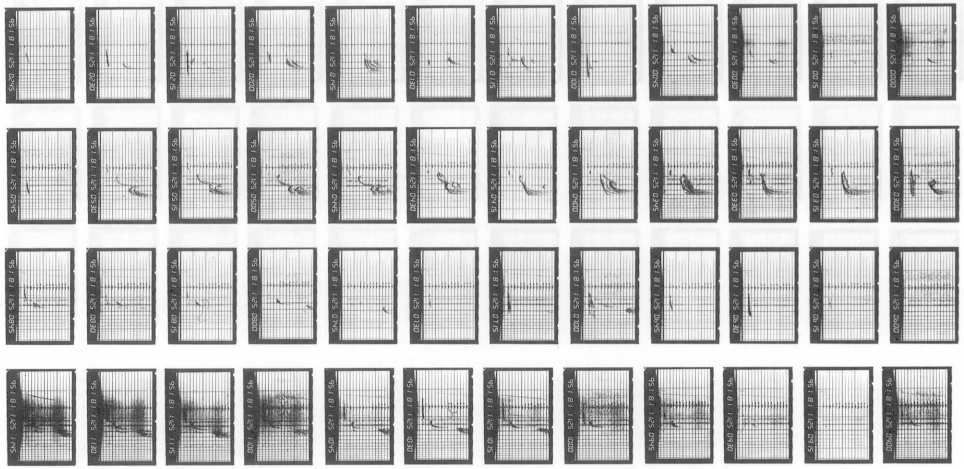
SYOWA STATION

IONOGRAM 1981 11 25 12;00-23;45



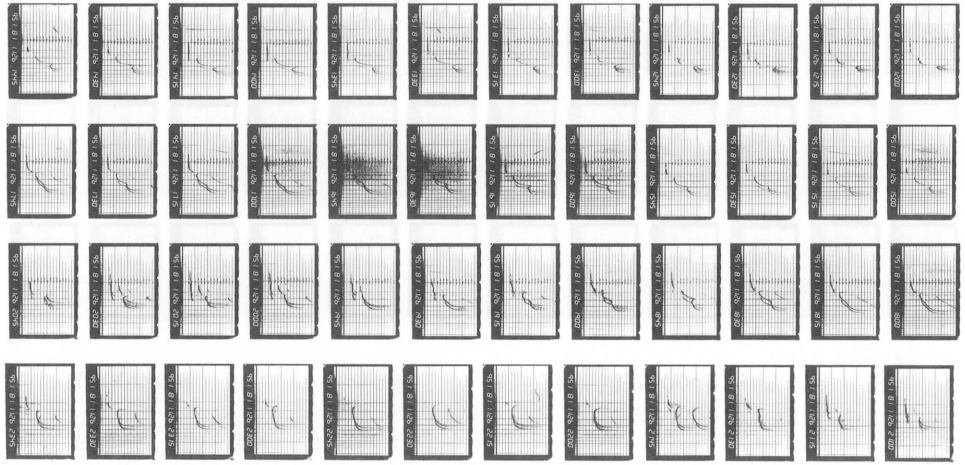
SYOWA STATION

IONOGRAM 1981 11 25 00;00-11;45



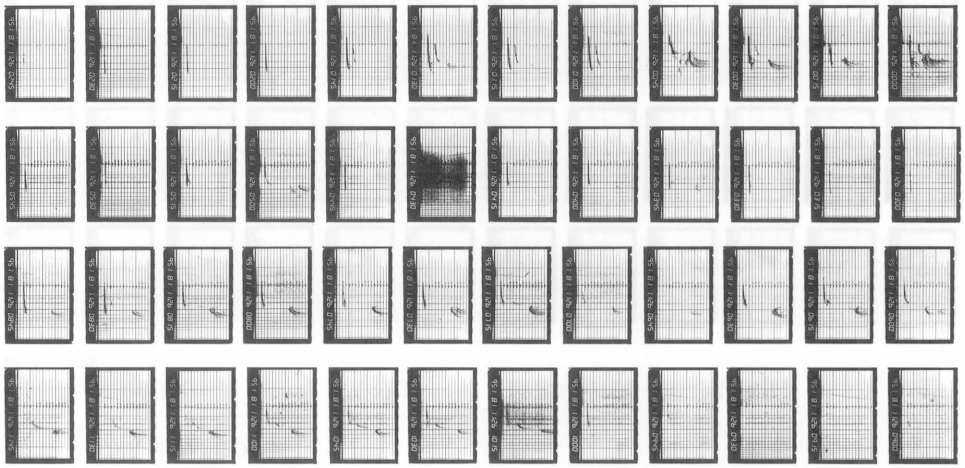
SYOWA STATION

IONOGRAM 1981 11 26 12;00-23;45



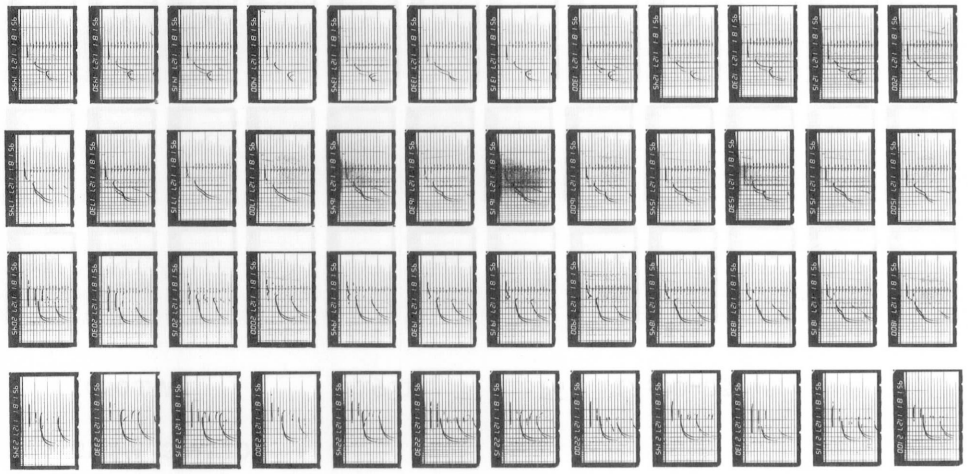
SYOWA STATION

IONOGRAM 1981 11 26 00;00-11;45



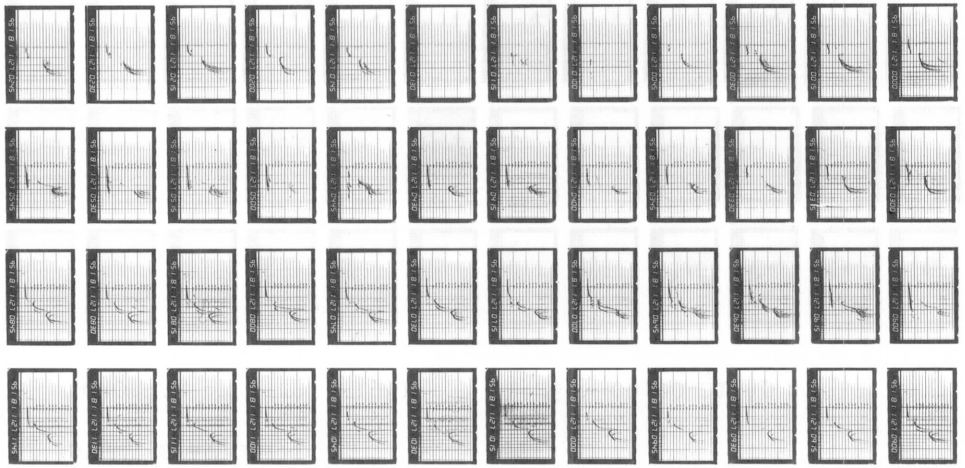
SYOWA STATION

IONOGRAM 1981 11 27 12;00-23;45



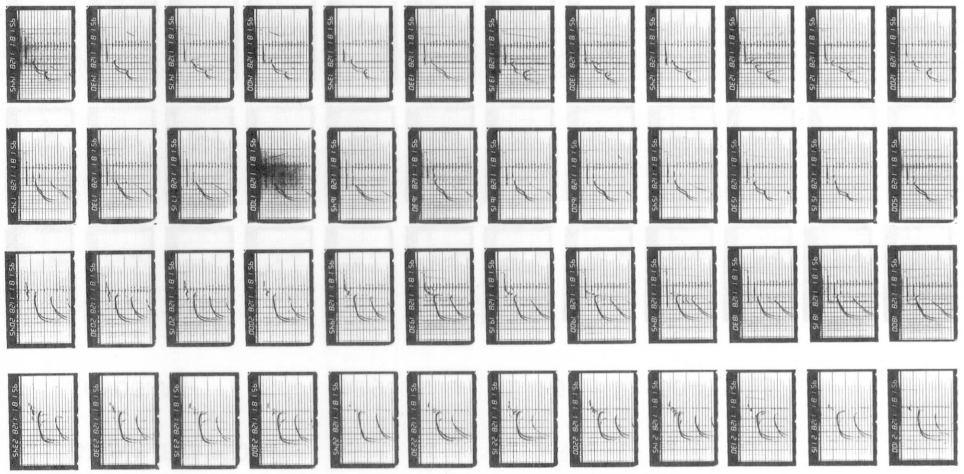
SYOWA STATION

IONOGRAM 1981 11 27 00;00-11;45



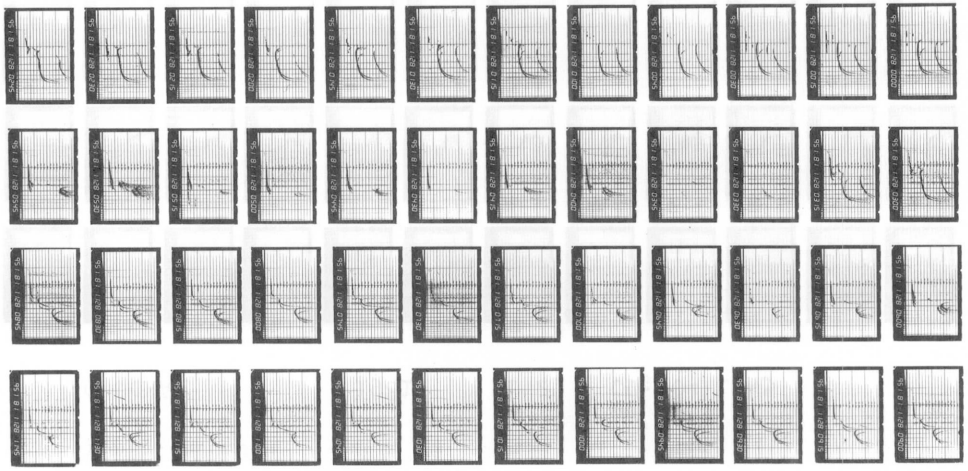
SYOWA STATION

IONOGRAM 1981 11 28 12;00-23;45



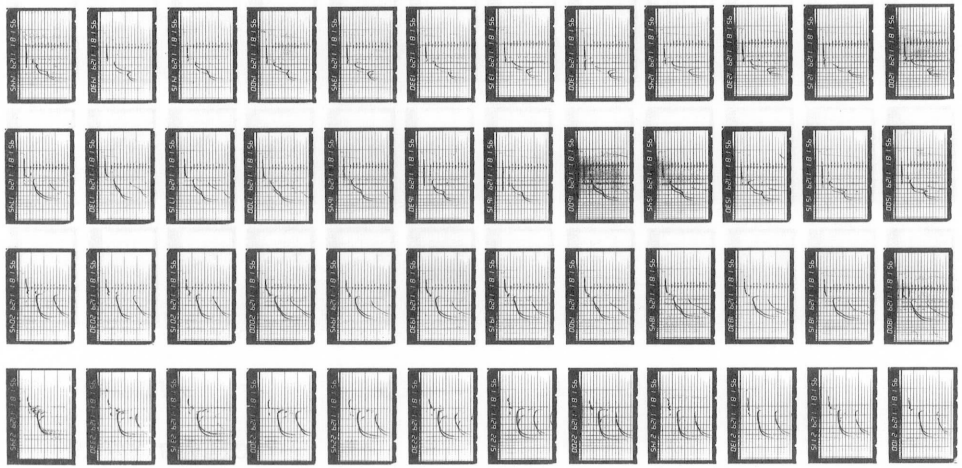
SYOWA STATION

IONOGRAM 1981 11 28 00;00-11;45



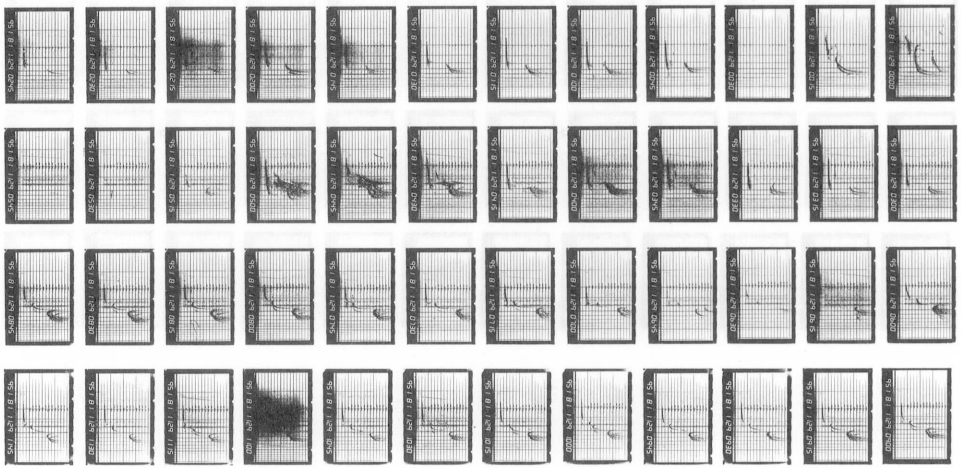
SYOWA STATION

IONOGRAM 1981 11 29 12;00-23;45



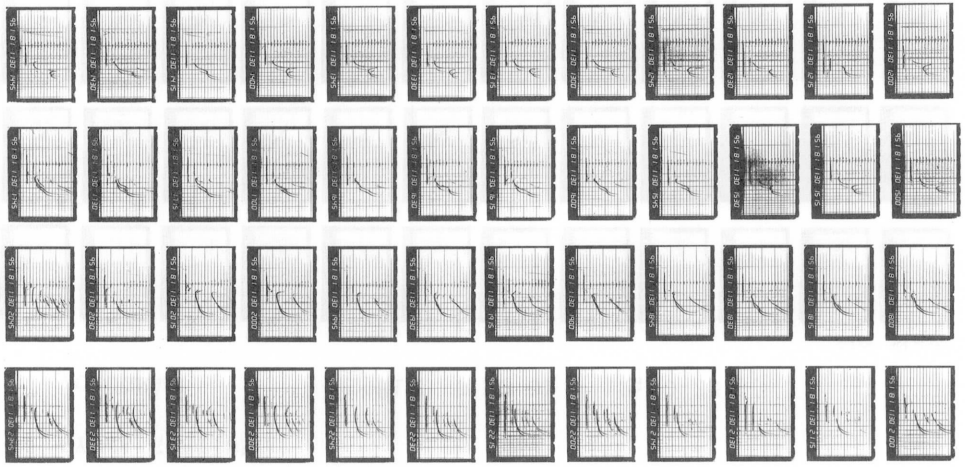
SYOWA STATION

IONOGRAM 1981 11 29 00;00-11;45



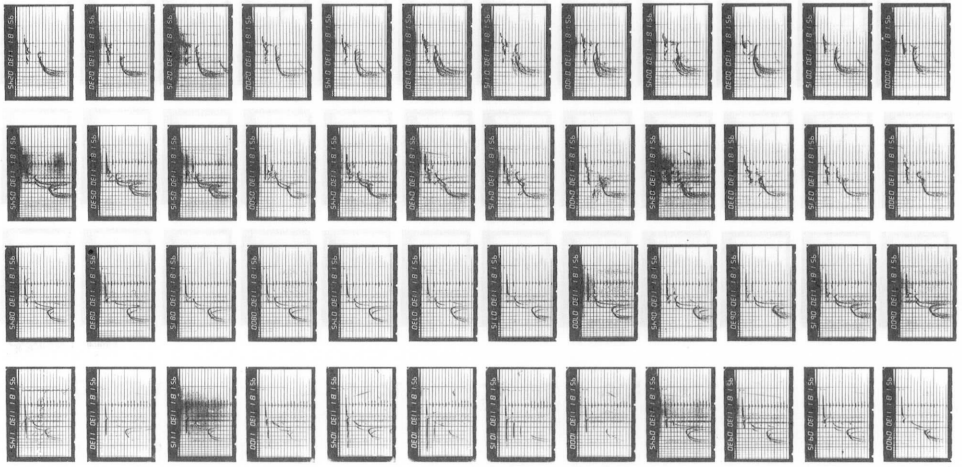
SYOWA STATION

IONOGRAM 1981 11 30 12;00-23;45



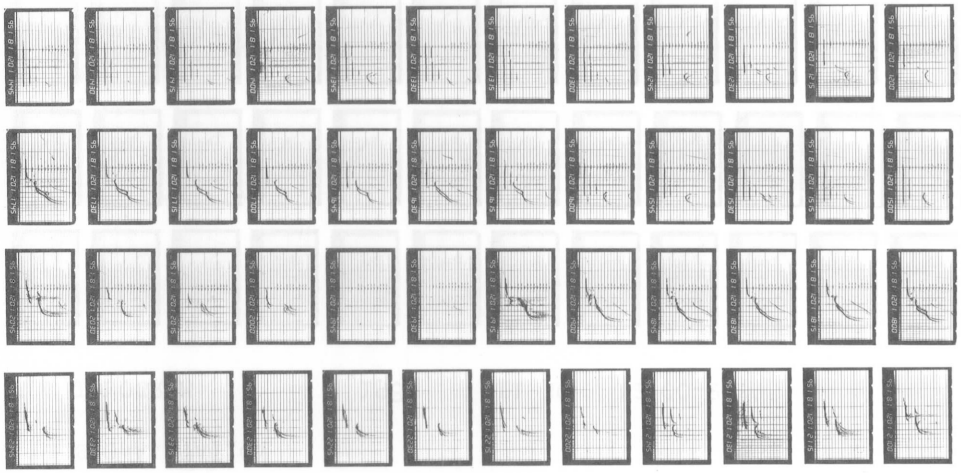
SYOWA STATION

IONOGRAM 1981 11 30 00;00-11;45



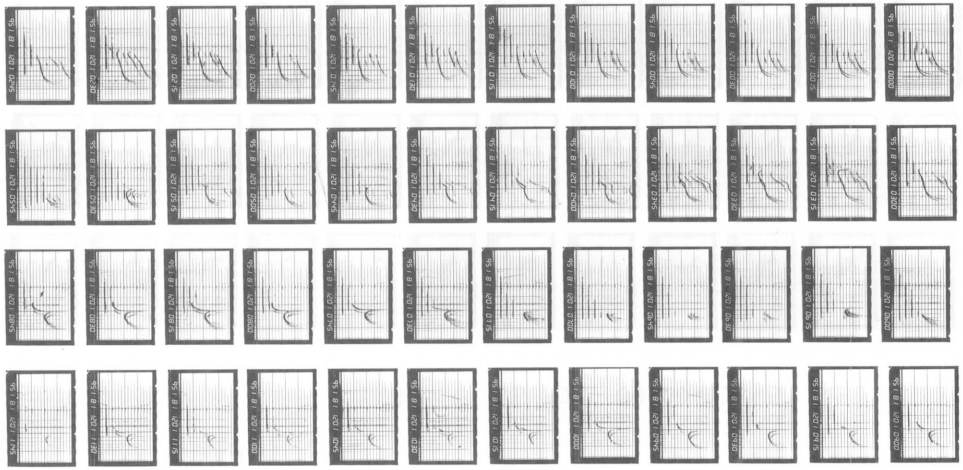
SYOWA STATION

IONOGRAM 1981 12 01 12;00-23;45



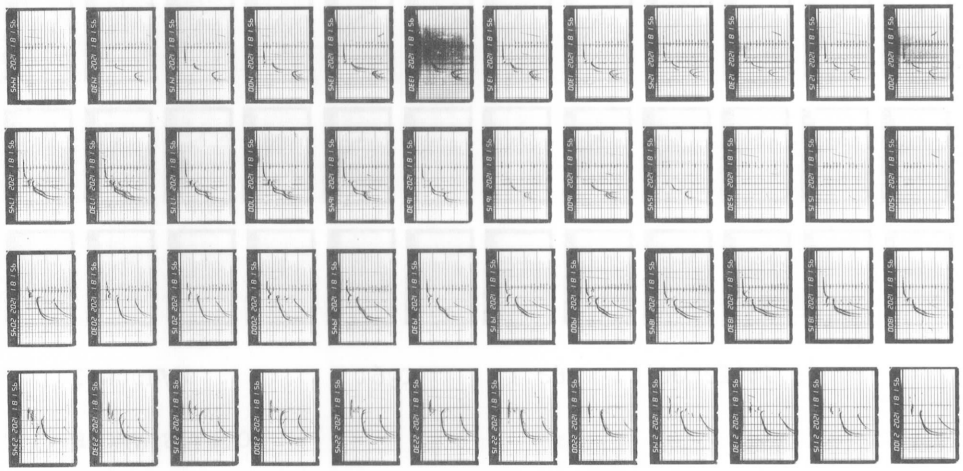
SYOWA STATION

IONOGRAM 1981 12 01 00;00-11;45



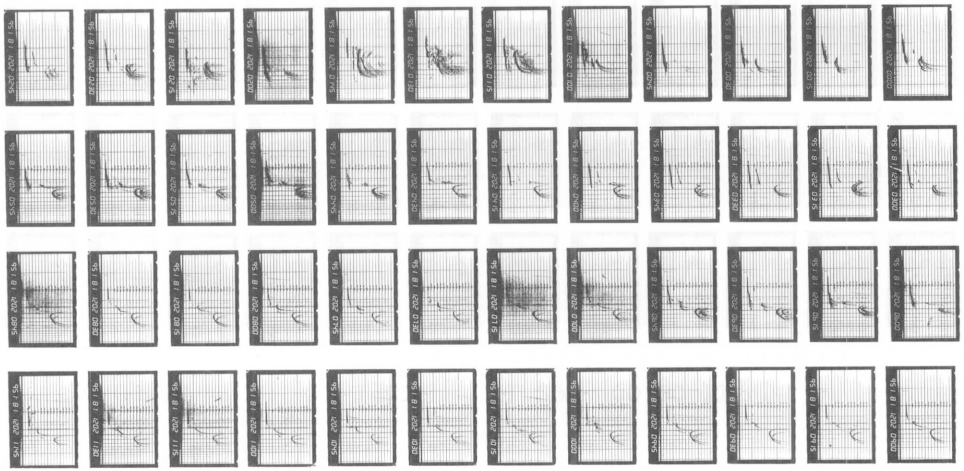
SYOWA STATION

IONOGRAM 1981 12 02 12;00-23;45



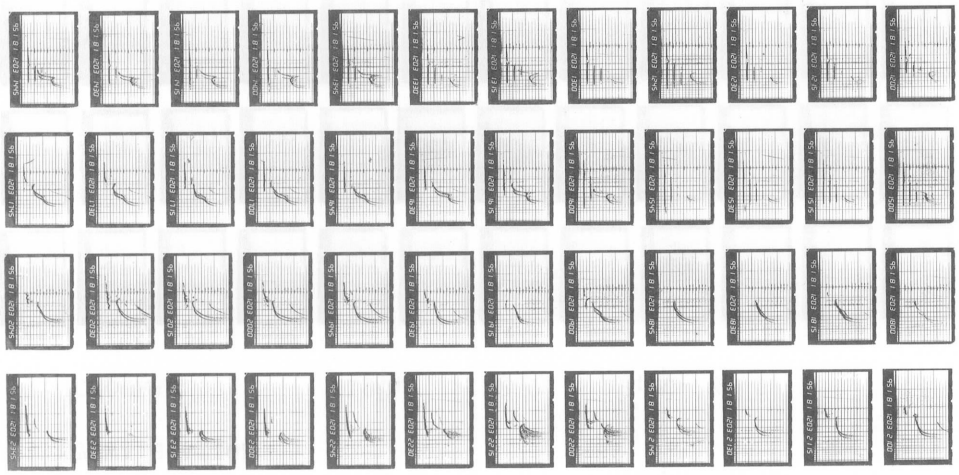
SYOWA STATION

IONOGRAM 1981 12 02 00;00-11;45



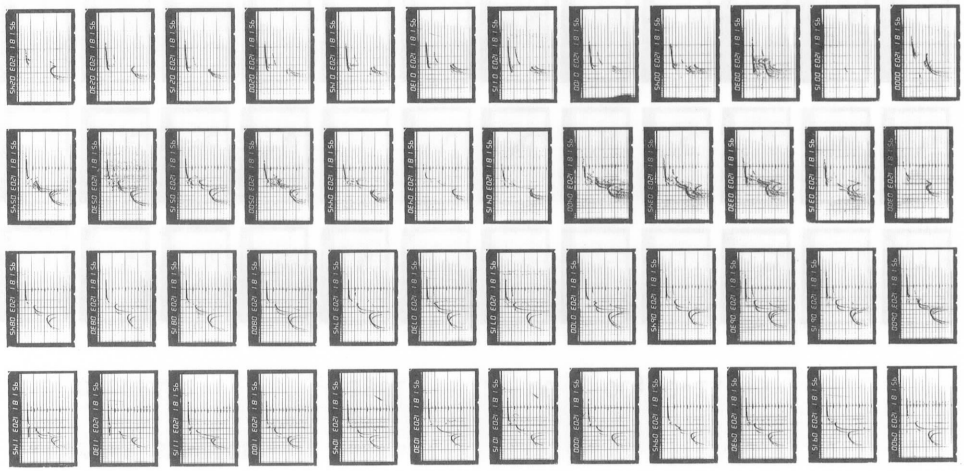
SYOWA STATION

IONOGRAM 1981 12 03 12;00-23;45



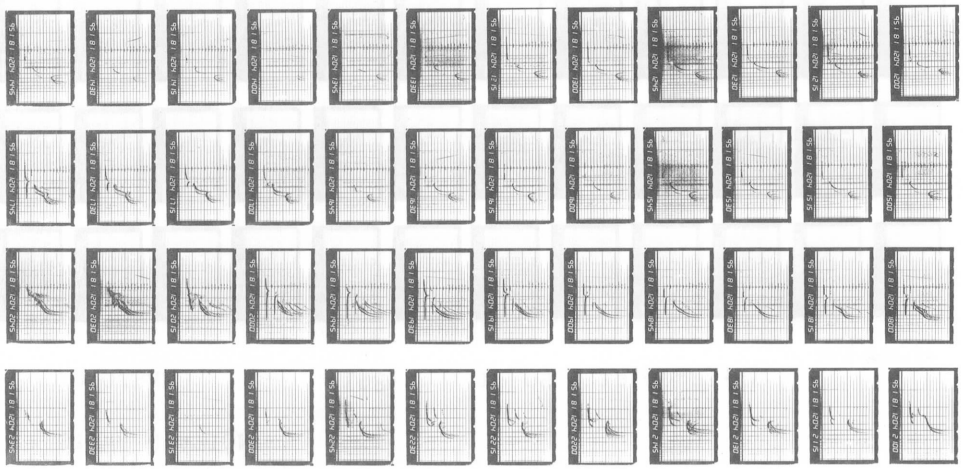
SYOWA STATION

IONOGRAM 1981 12 03 00;00-11;45



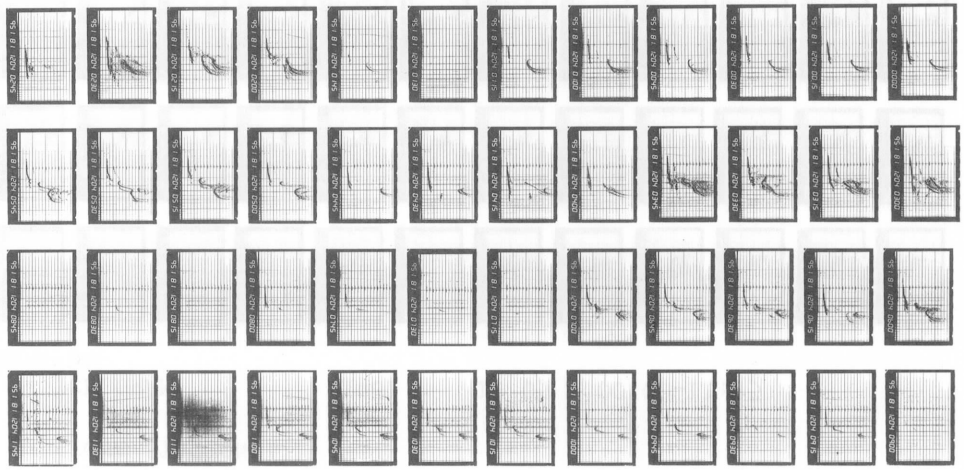
SYOWA STATION

IONOGRAM 1981 12 04 12;00-23;45



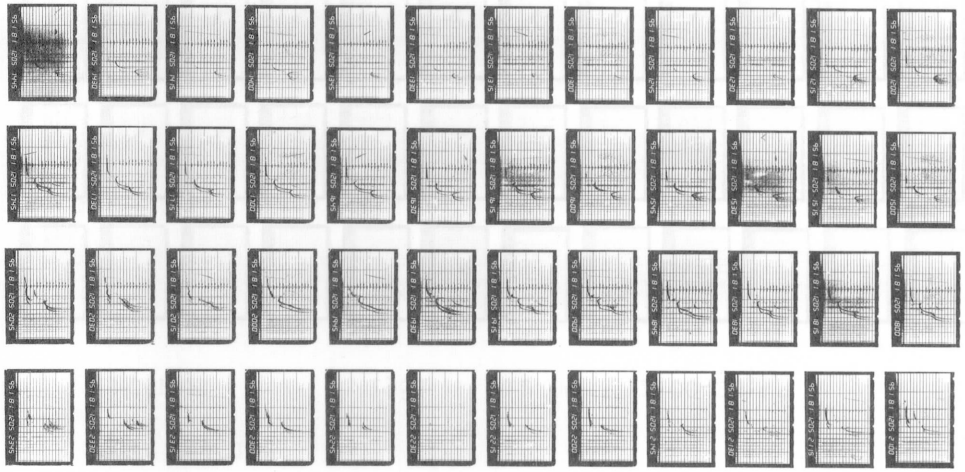
SYOWA STATION

IONOGRAM 1981 12 04 00;00-11;45



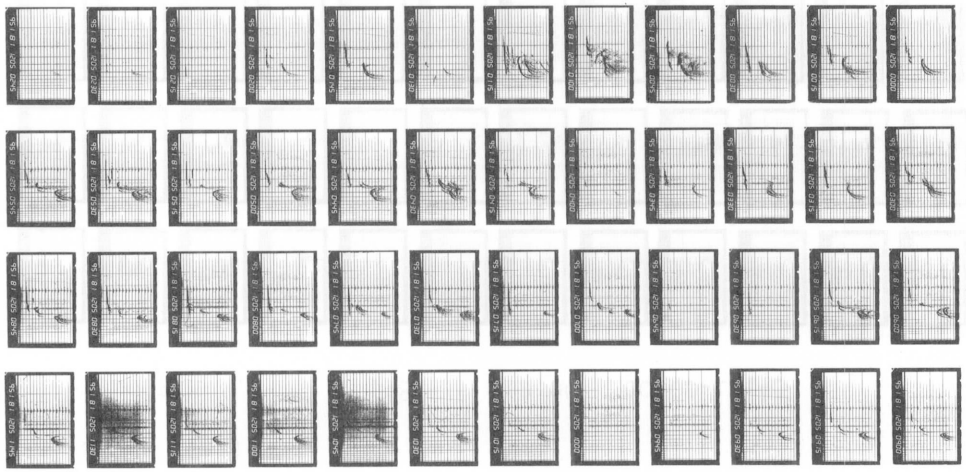
SYOWA STATION

IONOGRAM 1981 12 05 12;00-23;45



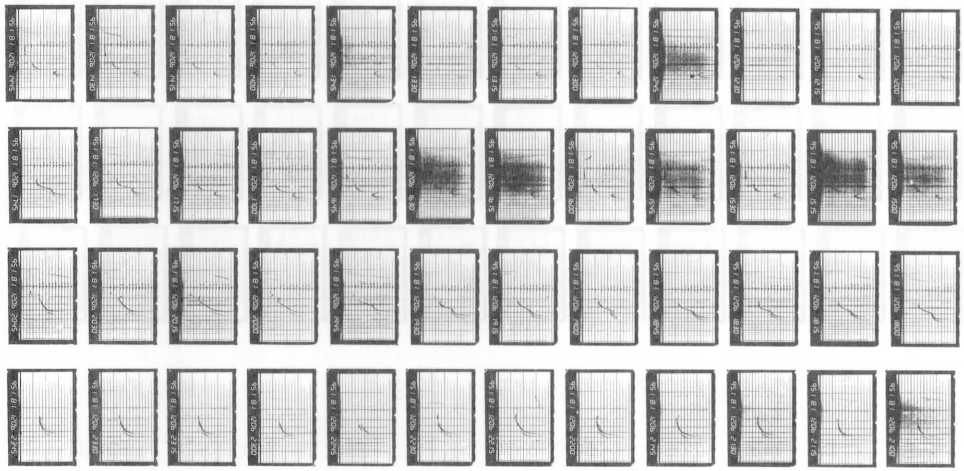
SYOWA STATION

IONOGRAM 1981 12 05 00;00-11;45



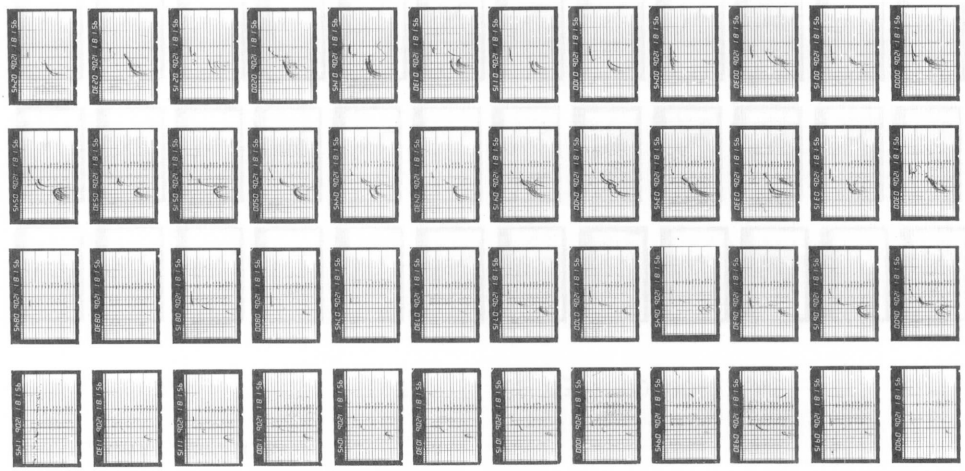
SYOWA STATION

IONOGRAM 1981 12 06 12;00-23;45



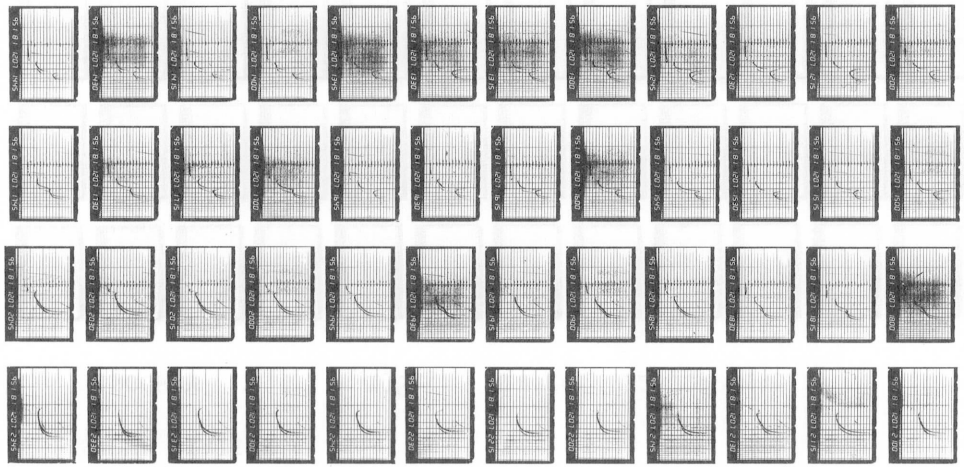
SYOWA STATION

IONOGRAM 1981 12 06 00;00-11;45



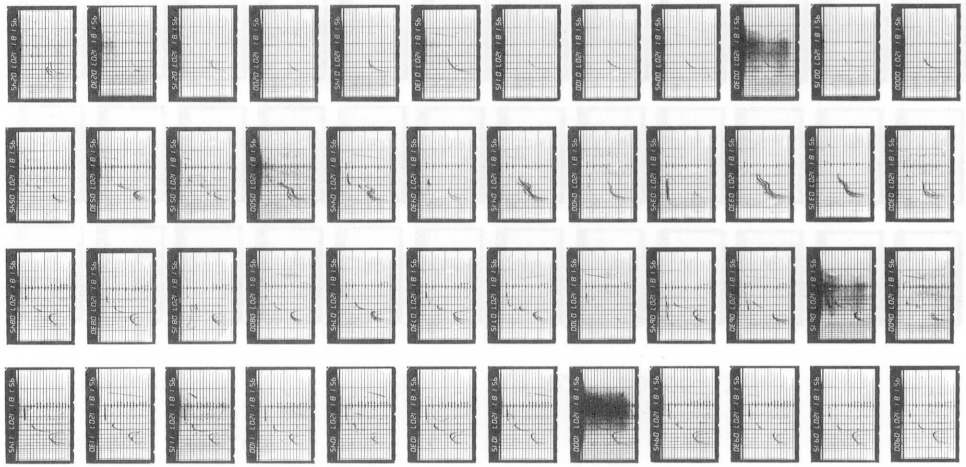
SYOWA STATION

IONOGRAM 1981 12 07 12;00-23;45



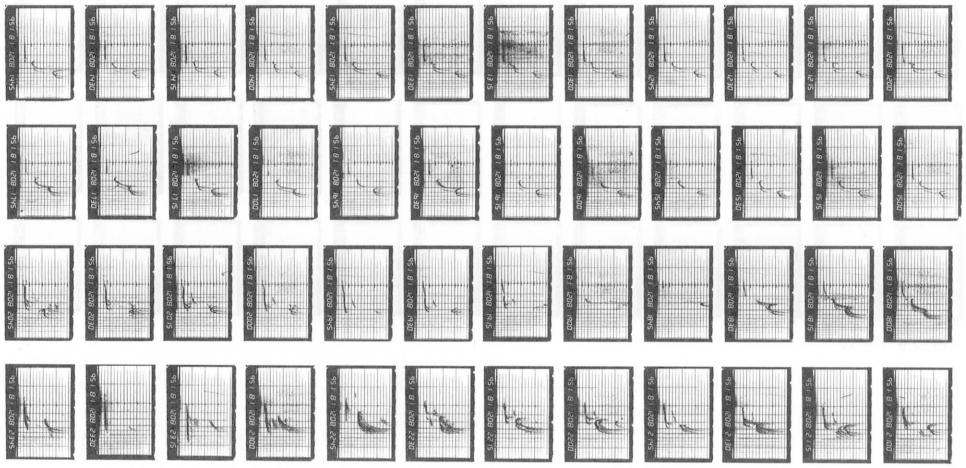
SYOWA STATION

IONOGRAM 1981 12 07 00;00-11;45



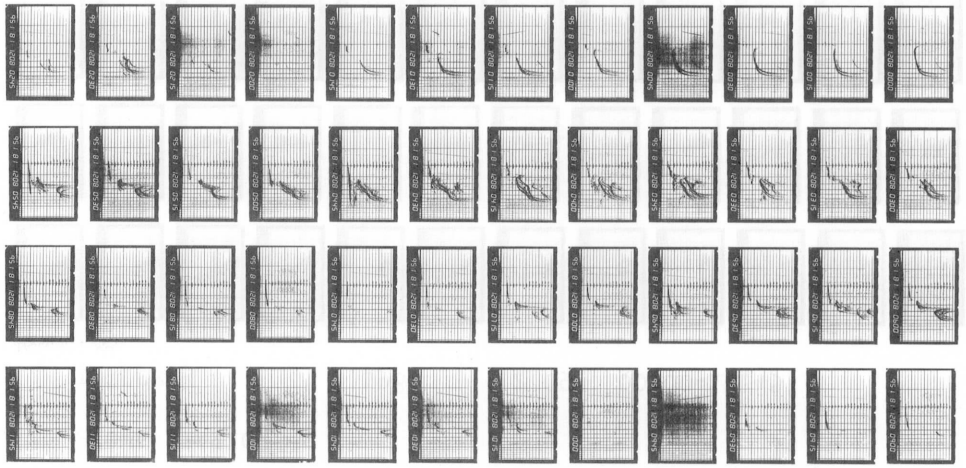
SYOWA STATION

IONOGRAM 1981 12 08 12;00-23;45



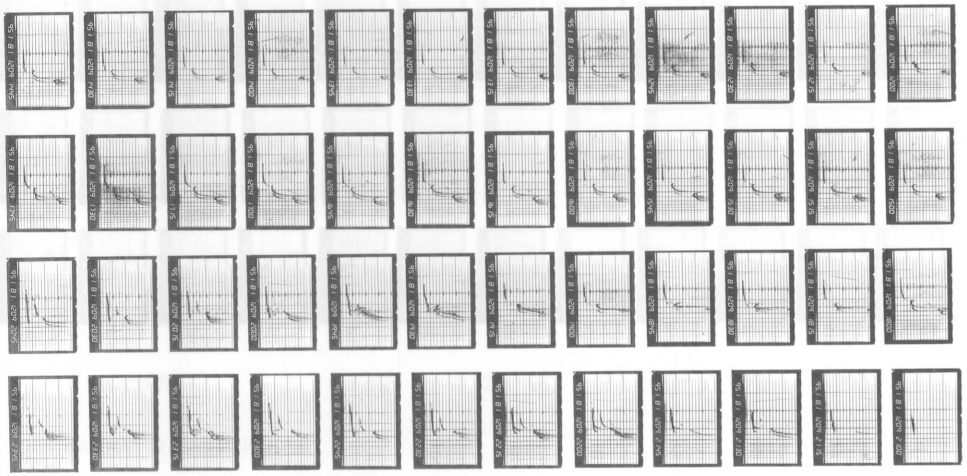
SYOWA STATION

IONOGRAM 1981 12 08 00;00-11;45



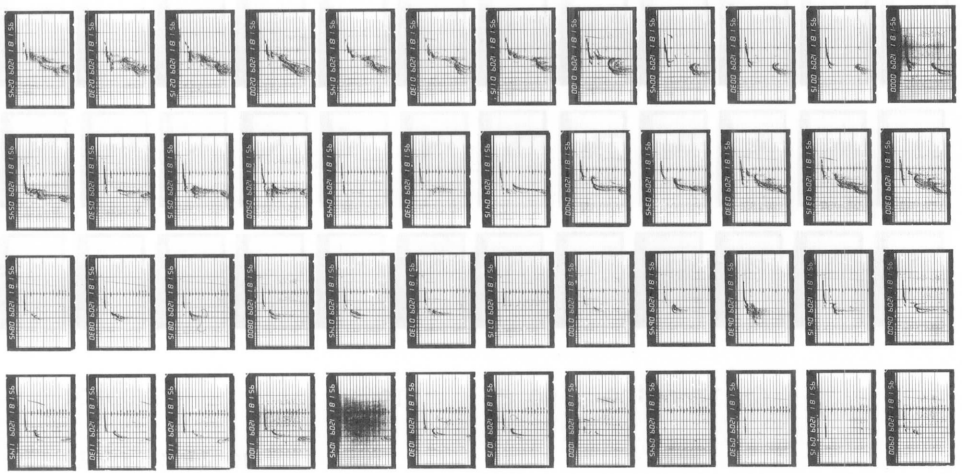
SYOWA STATION

IONOGRAM 1981 12 09 12;00-23;45



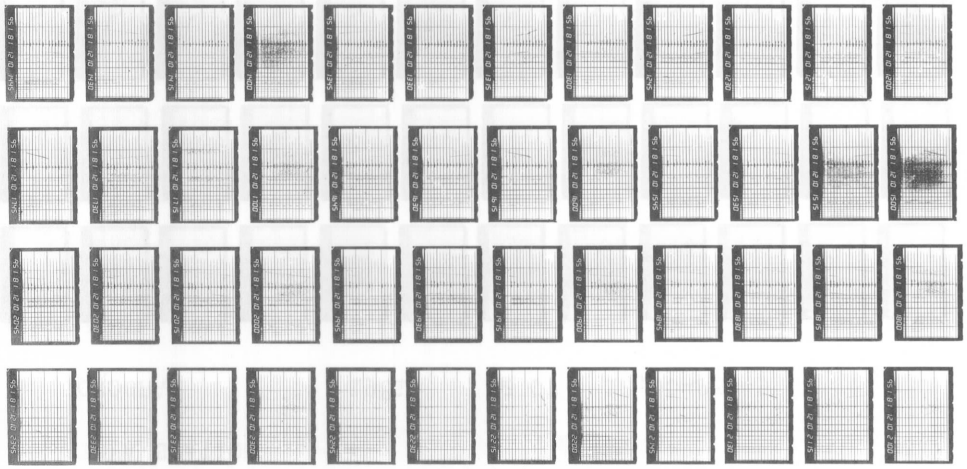
SYOWA STATION

IONOGRAM 1981 12 09 00;00-11;45



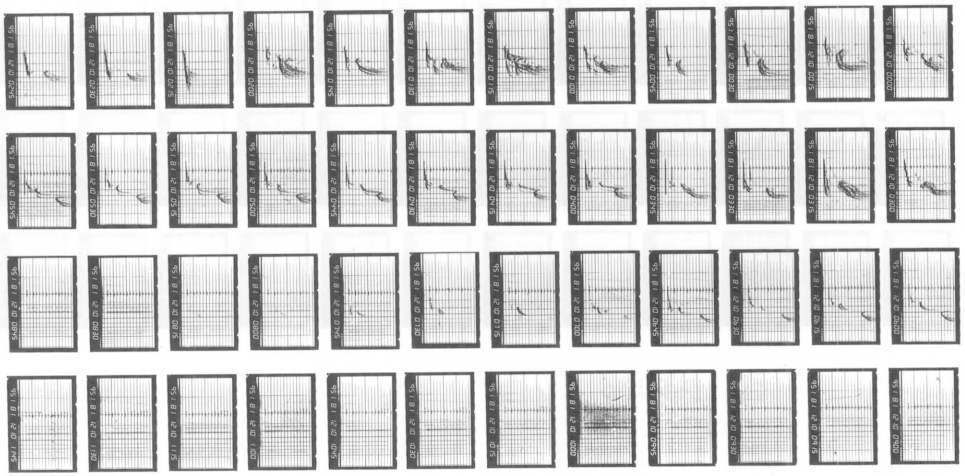
SYOWA STATION

IONOGRAM 1981 12 10 12;00-23;45



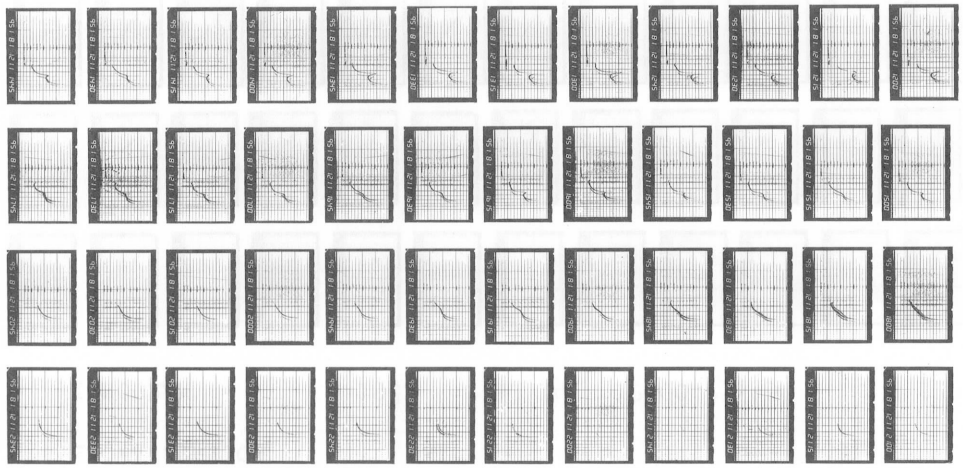
SYOWA STATION

IONOGRAM 1981 12 10 00;00-11;45



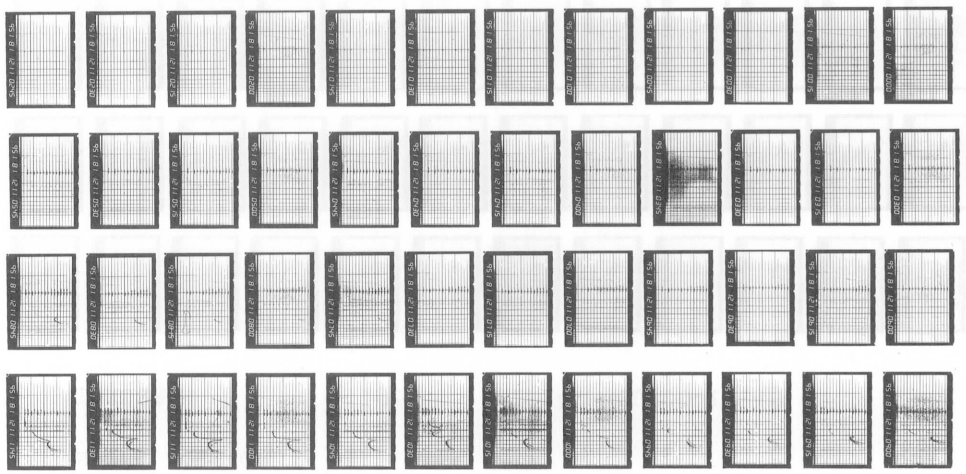
SYOWA STATION

IONOGRAM 1981 12 11 12;00-23;45



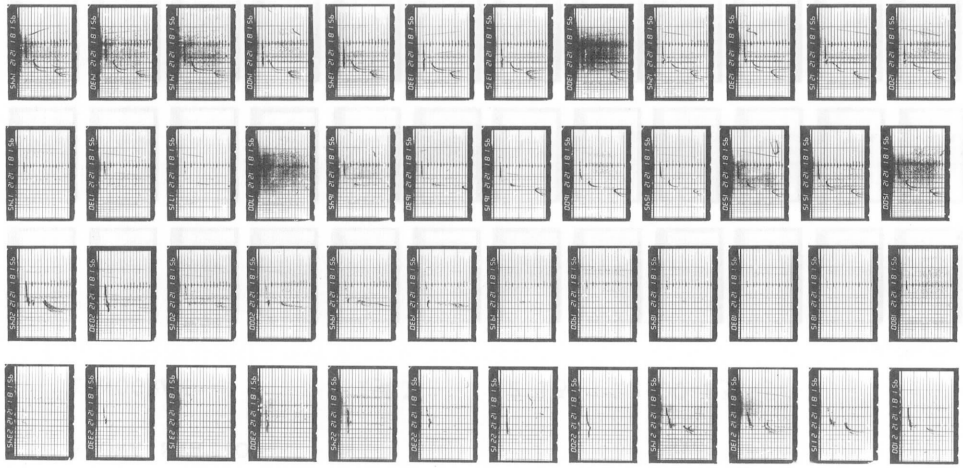
SYOWA STATION

IONOGRAM 1981 12 11 00;00-11;45



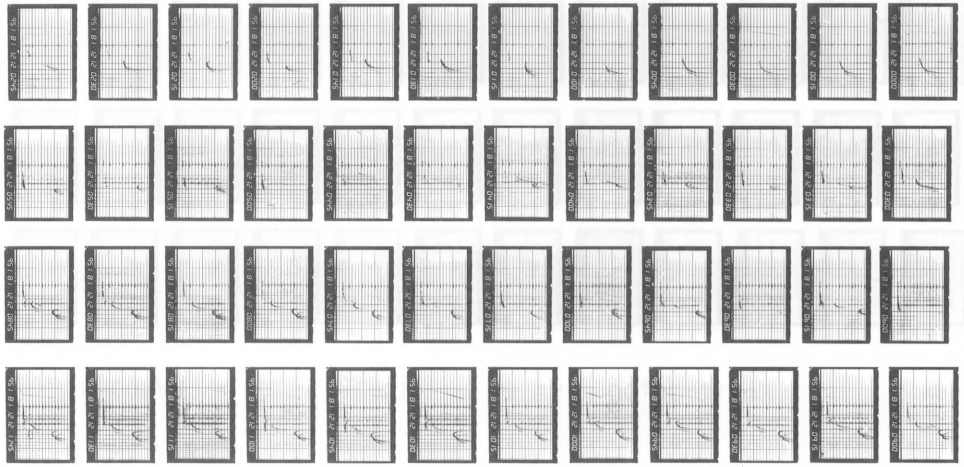
SYOWA STATION

IONOGRAM 1981 12 12 12;00-23;45



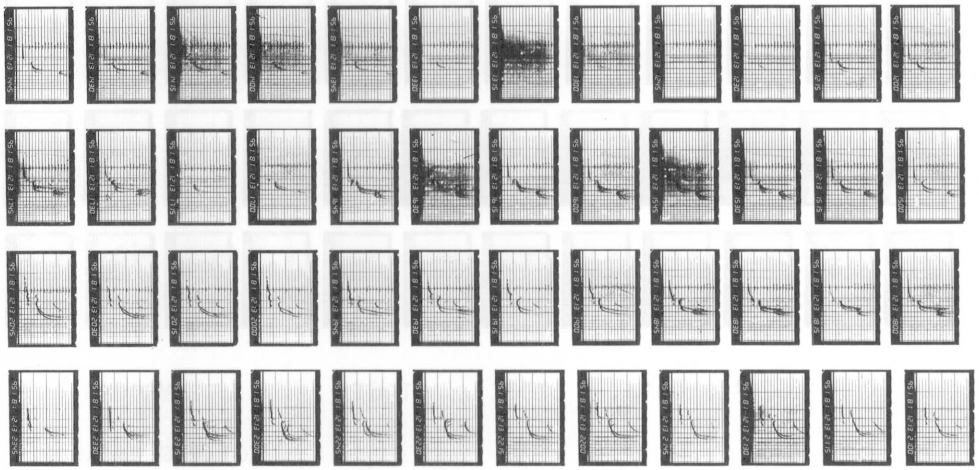
SYOWA STATION

IONOGRAM 1981 12 12 00;00-11;45



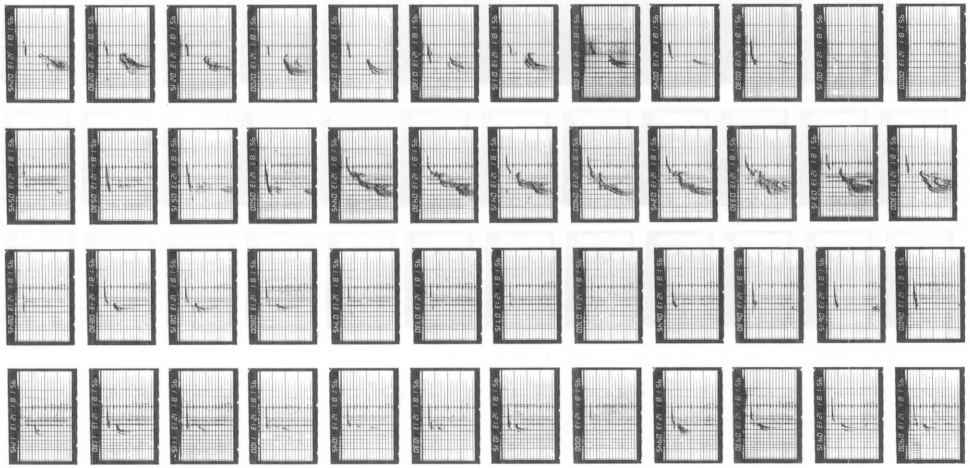
SYOWA STATION

IONOGRAM 1981 12 13 12;00-23;45



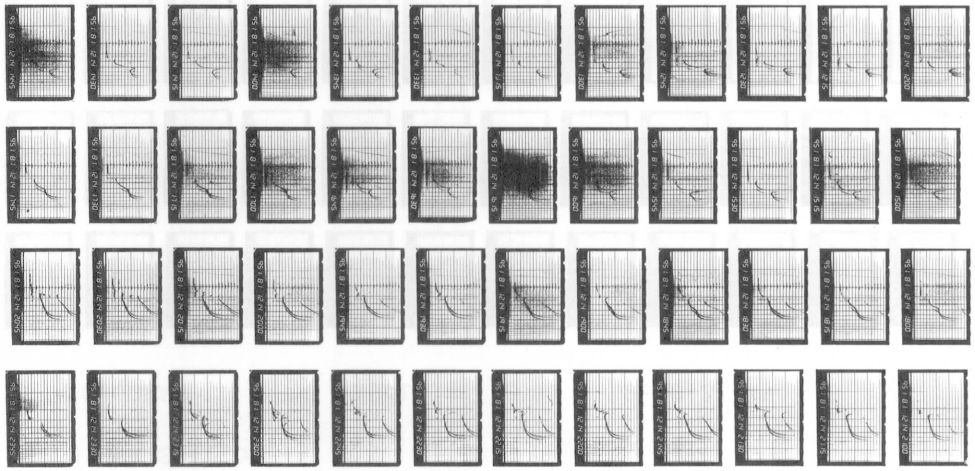
SYOWA STATION

IONOGRAM 1981 12 13 00;00-11;45



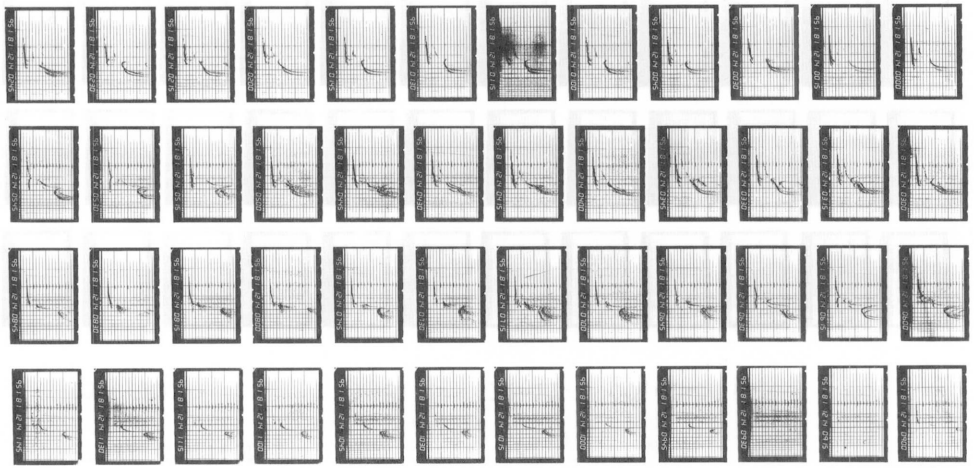
SYOWA STATION

IONOGRAM 1981 12 14 12;00-23;45



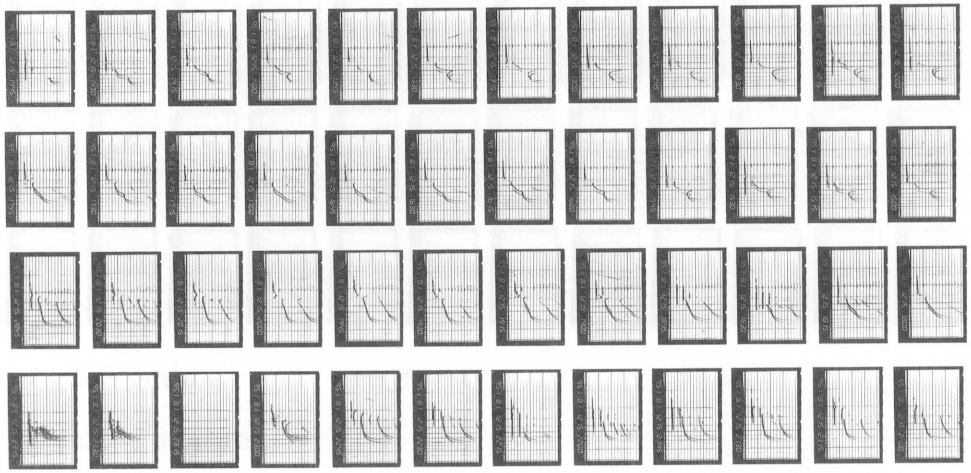
SYOWA STATION

IONOGRAM 1981 12 14 00;00-11;45



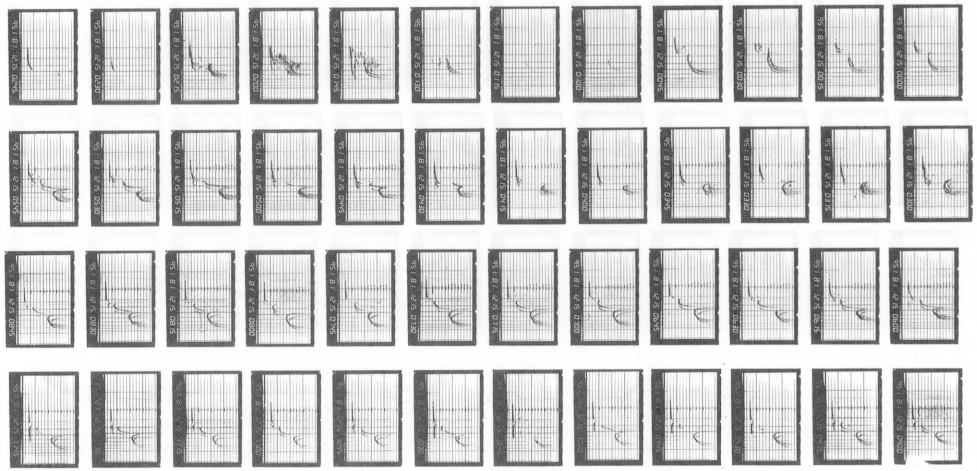
SYOWA STATION

IONOGRAM 1981 12 15 12;00-23;45



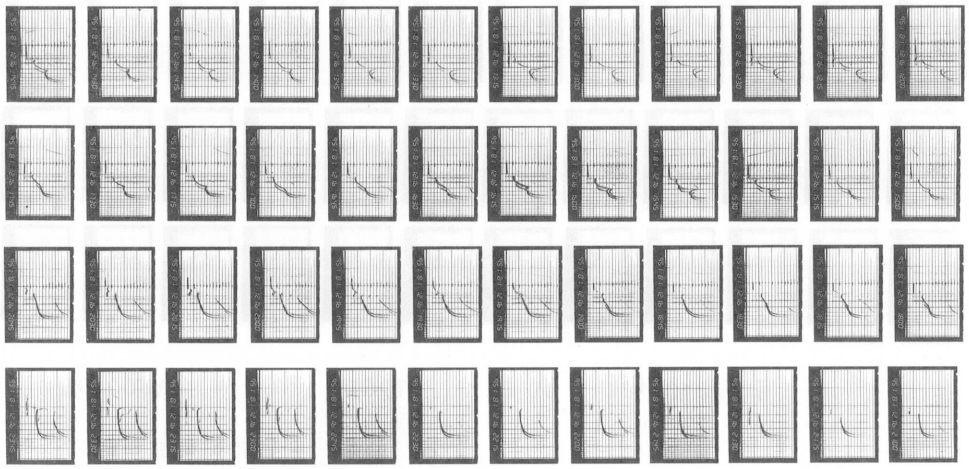
SYOWA STATION

IONOGRAM 1981 12 15 00;00-11;45



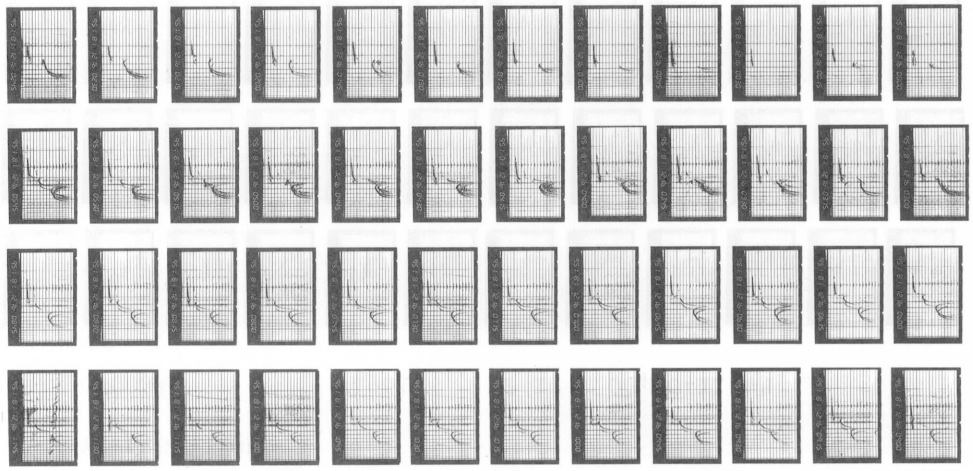
SYOWA STATION

IONOGRAM 1981 12 16 12;00-23;45



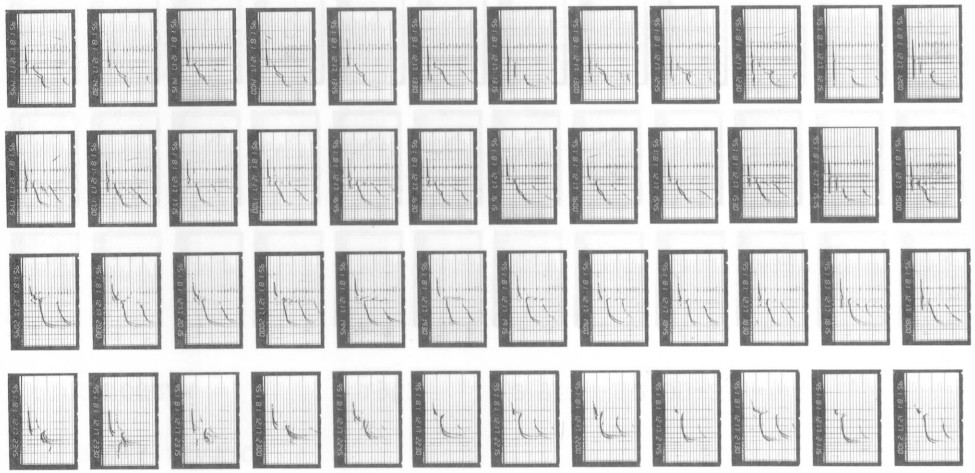
SYOWA STATION

IONOGRAM 1981 12 16 00;00-11;45



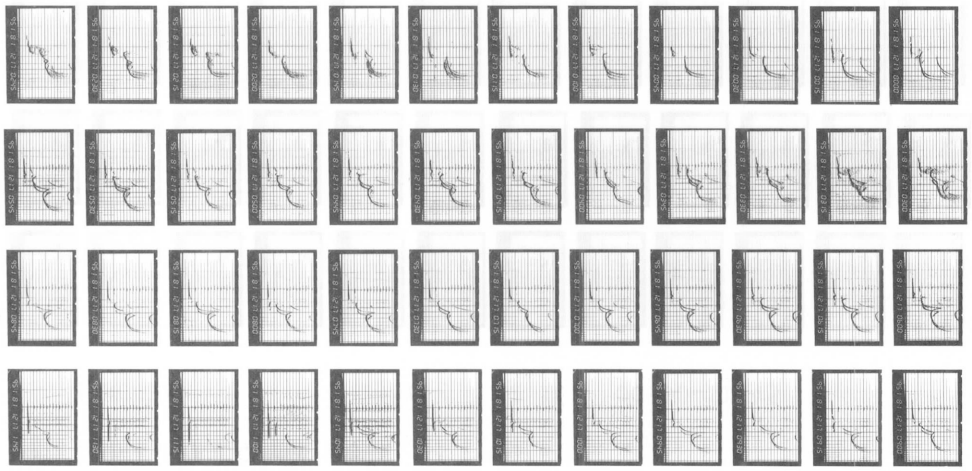
SYOWA STATION

IONOGRAM 1981 12 17 12;00-23;45



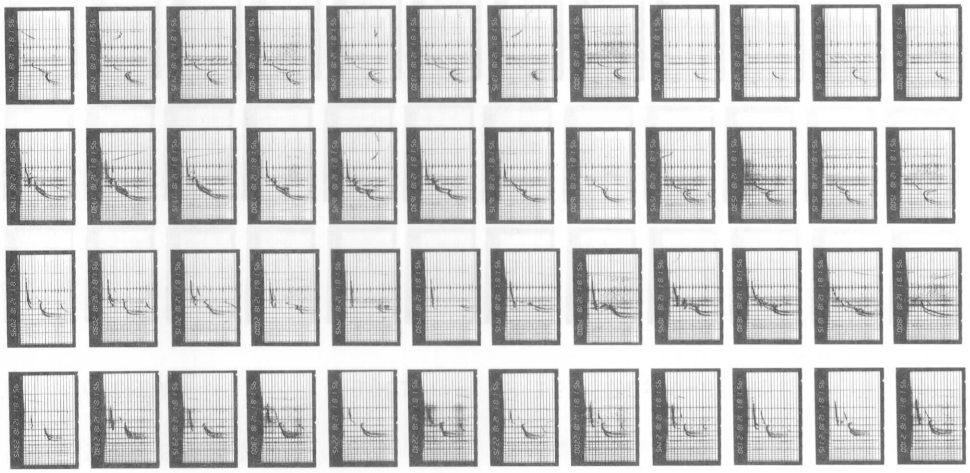
SYOWA STATION

IONOGRAM 1981 12 17 00;00-11;45



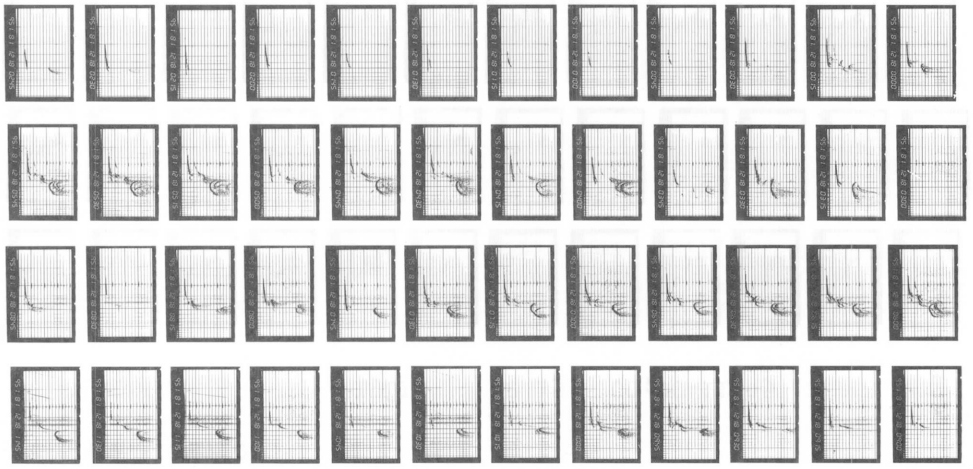
SYOWA STATION

IONOGRAM 1981 12 18 12;00-23;45



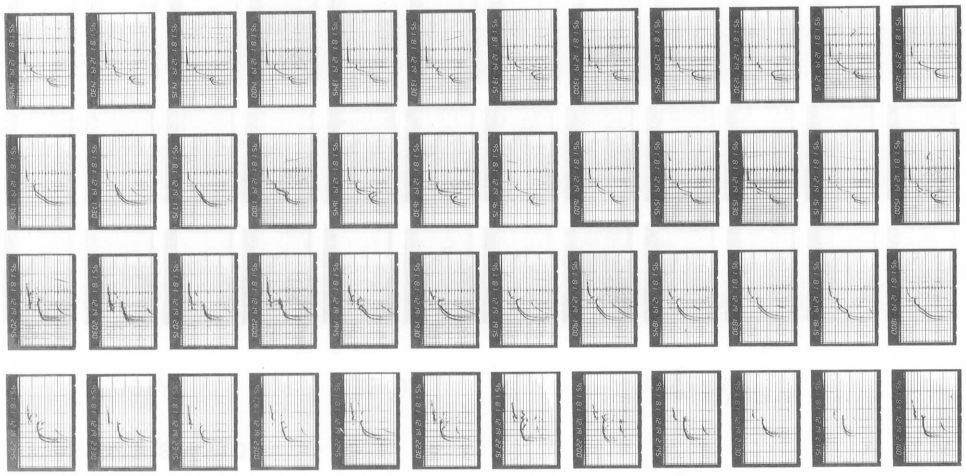
SYOWA STATION

IONOGRAM 1981 12 18 00;00-11;45



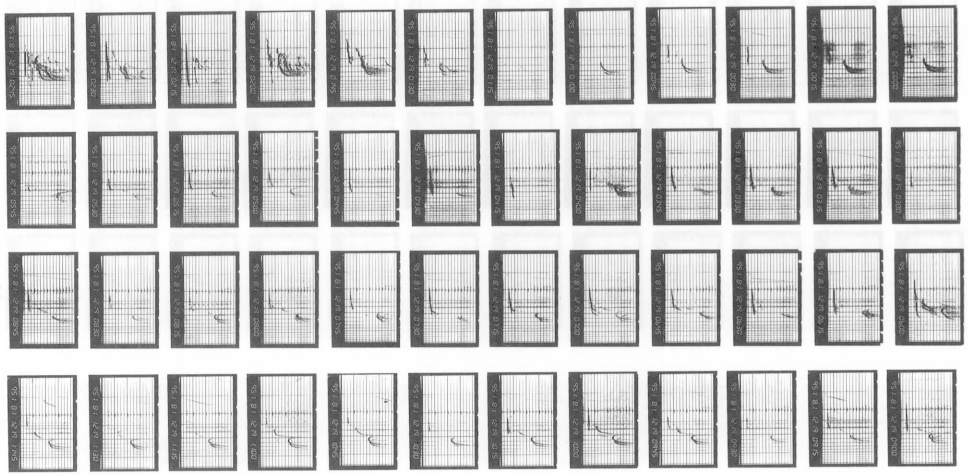
SYOWA STATION

IONOGRAM 1981 12 19 12;00-23;45



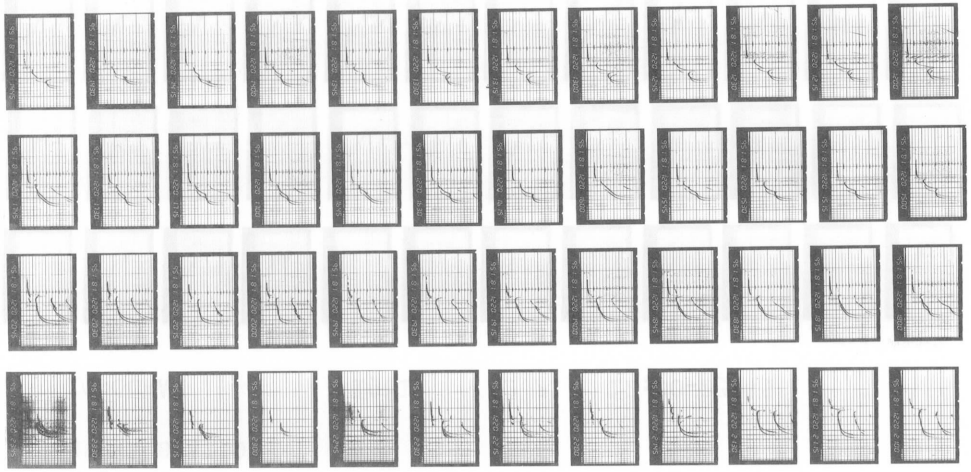
SYOWA STATION

IONOGRAM 1981 12 19 00;00-11;45



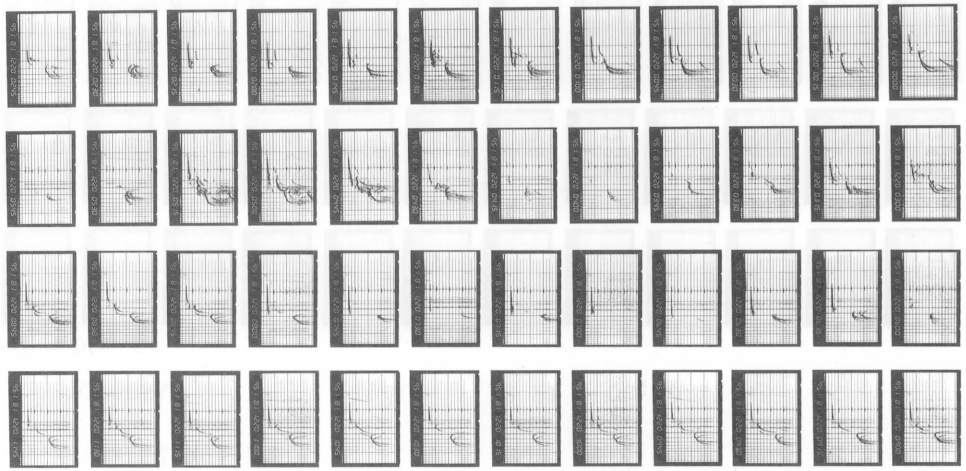
SYOWA STATION

IONOGRAM 1981 12 20 12;00-23;45



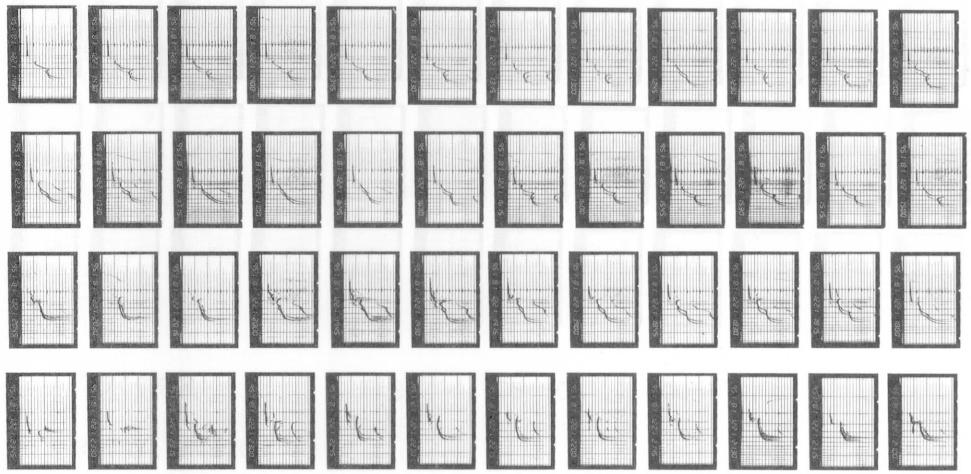
SYOWA STATION

IONOGRAM 1981 12 20 00;00-11;45



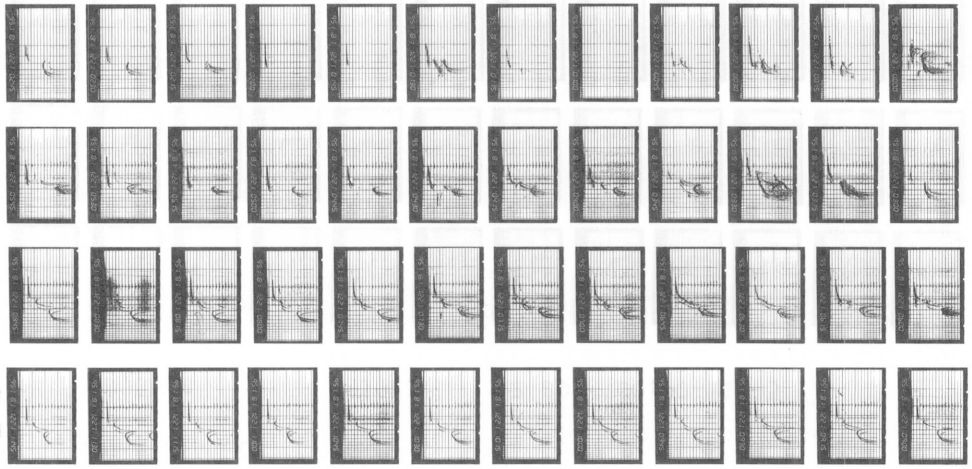
SYOWA STATION

IONOGRAM 1981 12 21 12;00-23;45



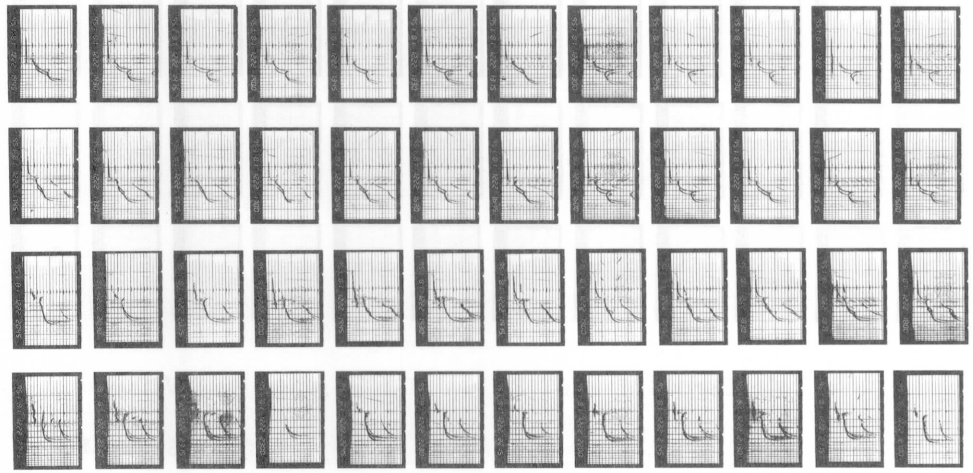
SYOWA STATION

IONOGRAM 1981 12 21 00;00-11;45



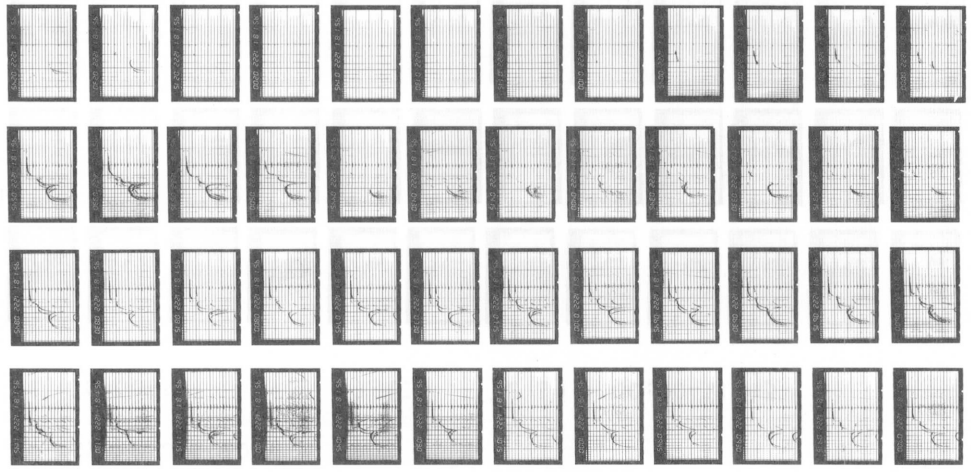
SYOWA STATION

IONOGRAM 1981 12 22 12;00-23;45



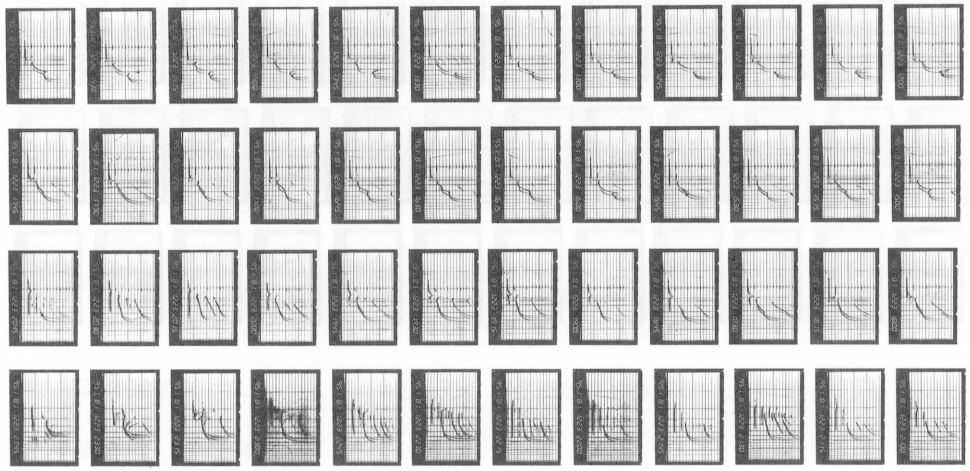
SYOWA STATION

IONOGRAM 1981 12 22 00;00-11;45



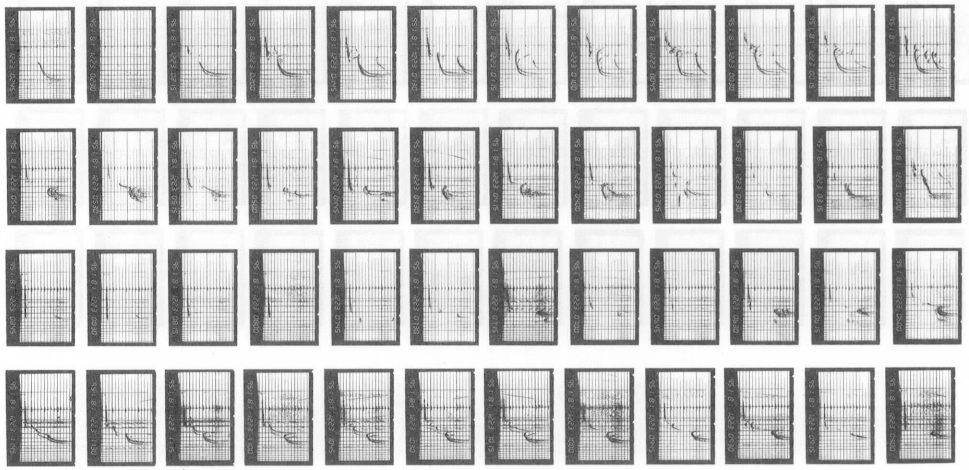
SYOWA STATION

IONOGRAM 1981 12 23 12;00-23;45



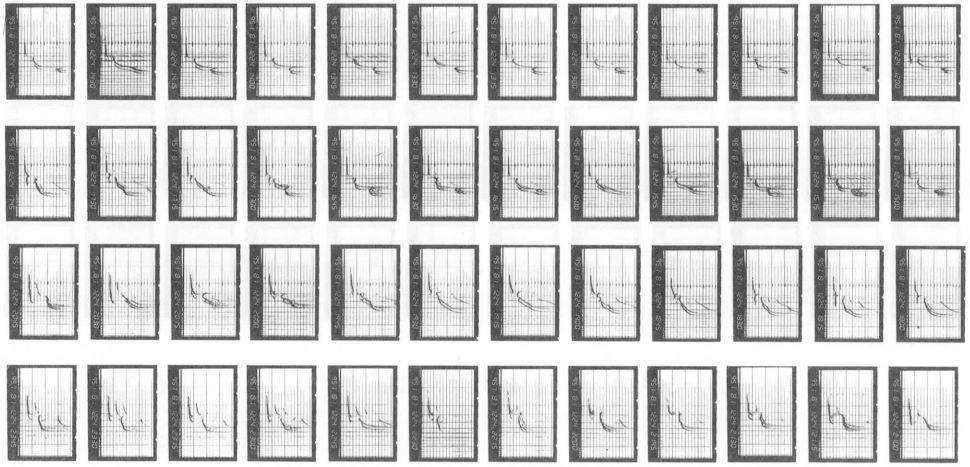
SYOWA STATION

IONOGRAM 1981 12 23 00;00-11;45



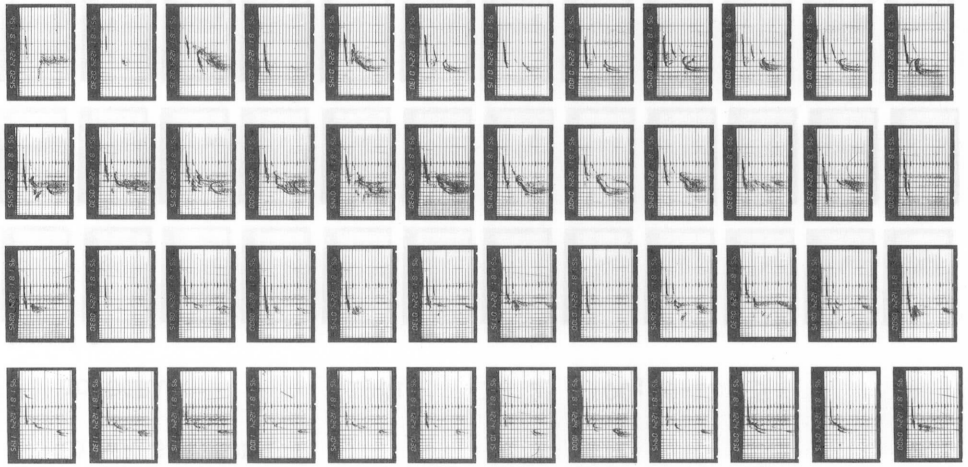
SYOWA STATION

IONOGRAM 1981 12 24 12;00-23;45



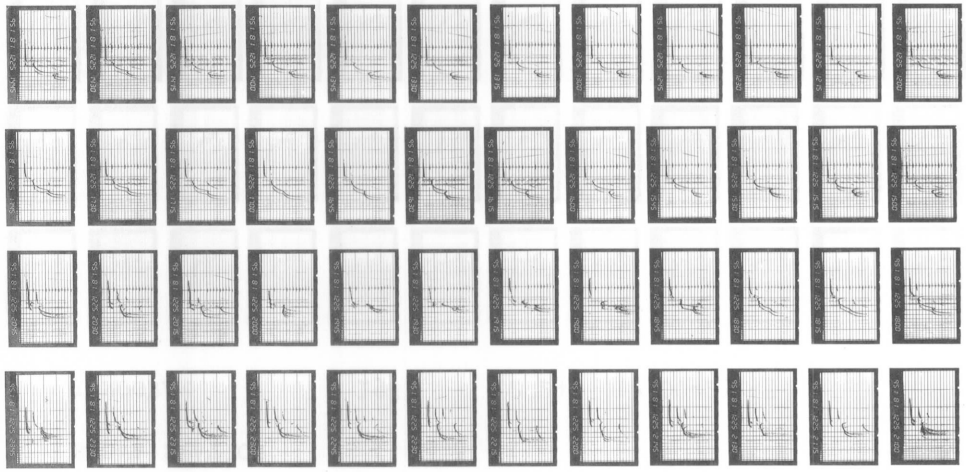
SYOWA STATION

IONOGRAM 1981 12 24 00;00-11;45



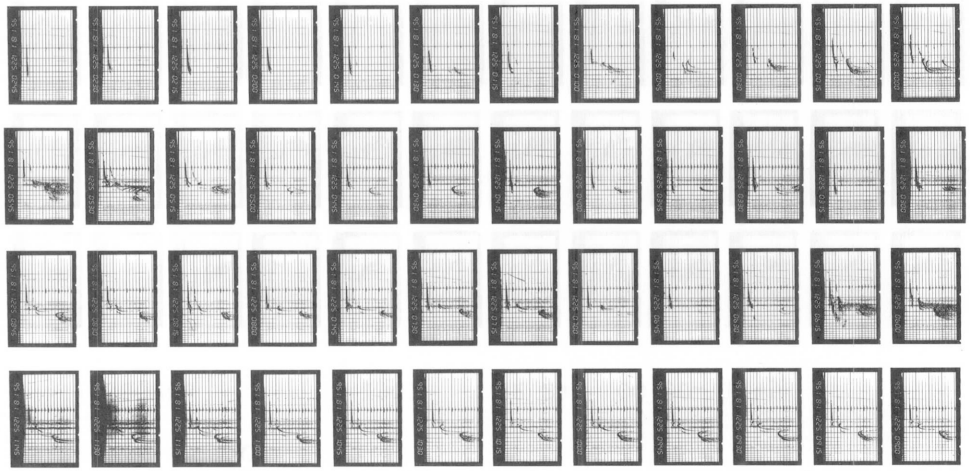
SYOWA STATION

IONOGRAM 1981 12 25 12;00-23;45



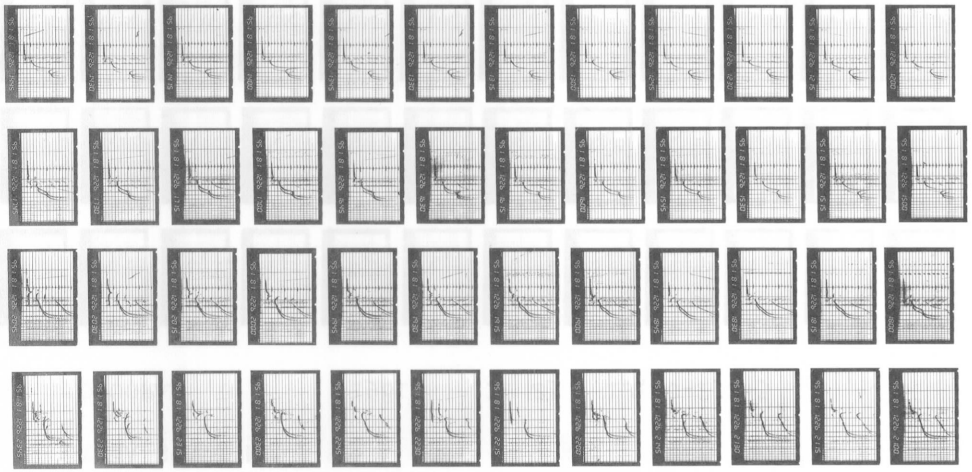
SYOWA STATION

IONOGRAM 1981 12 25 00;00-11;45



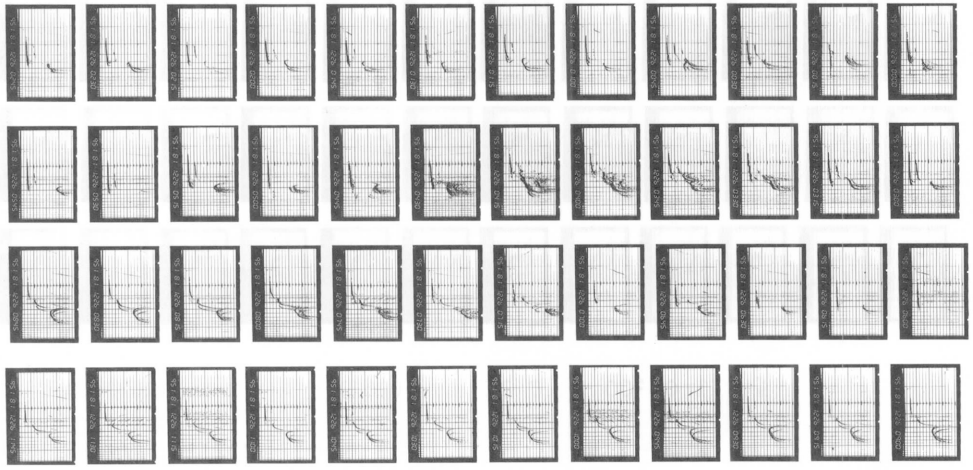
SYOWA STATION

IONOGRAM 1981 12 26 12;00-23;45



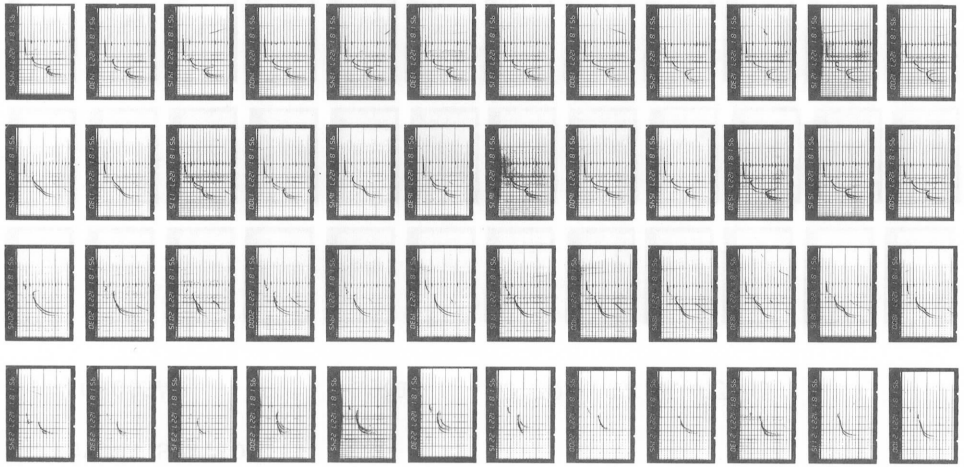
SYOWA STATION

IONOGRAM 1981 12 26 00;00-11;45



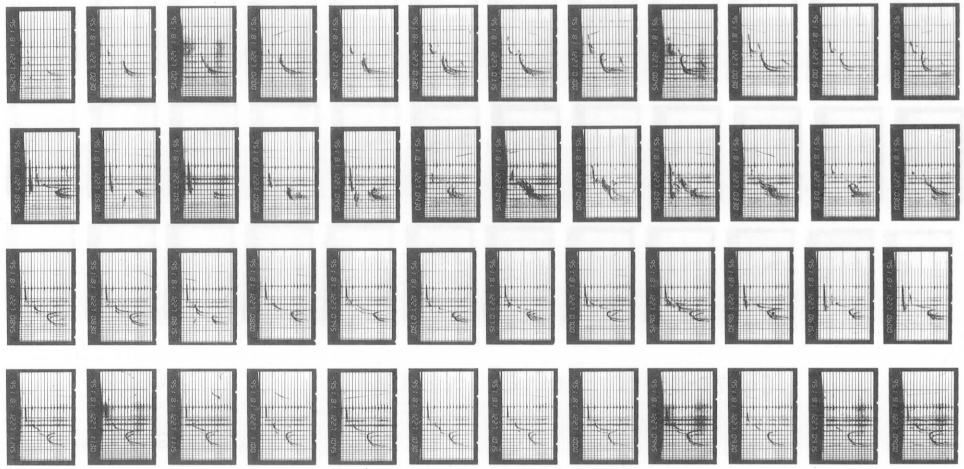
SYOWA STATION

IONOGRAM 1981 12 27 12;00-23;45



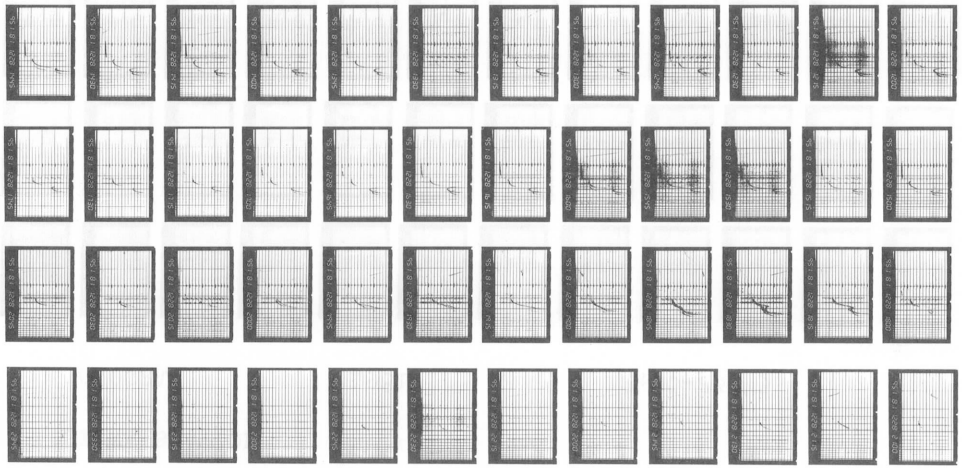
SYOWA STATION

IONOGRAM 1981 12 27 00;00-11;45



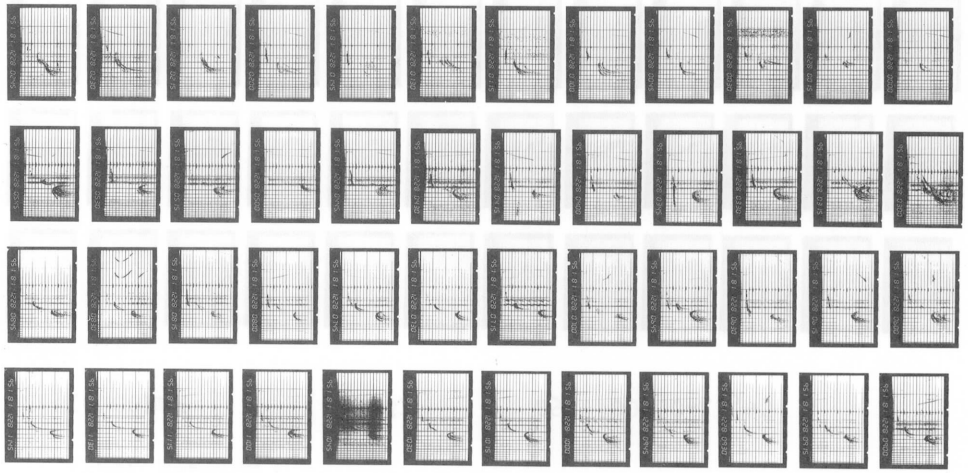
SYOWA STATION

IONOGRAM 1981 12 28 12;00-23;45



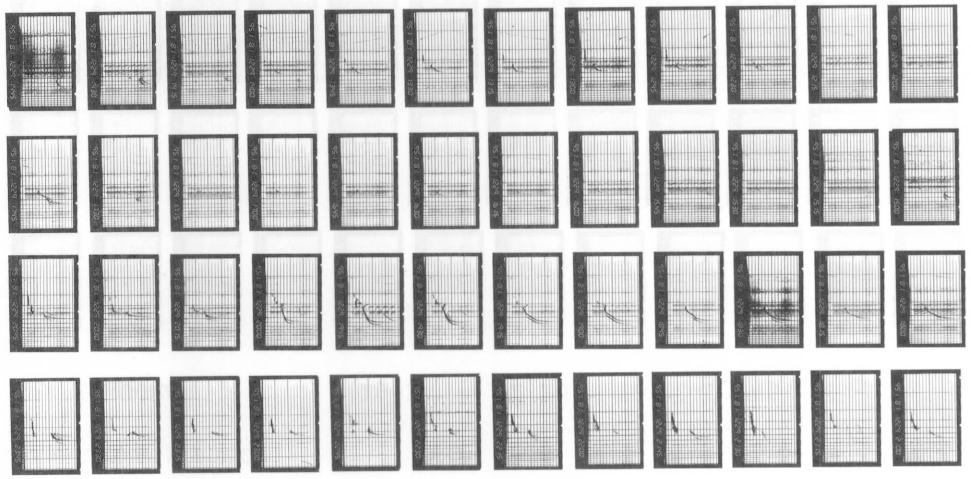
SYOWA STATION

IONOGRAM 1981 12 28 00;00-11;45



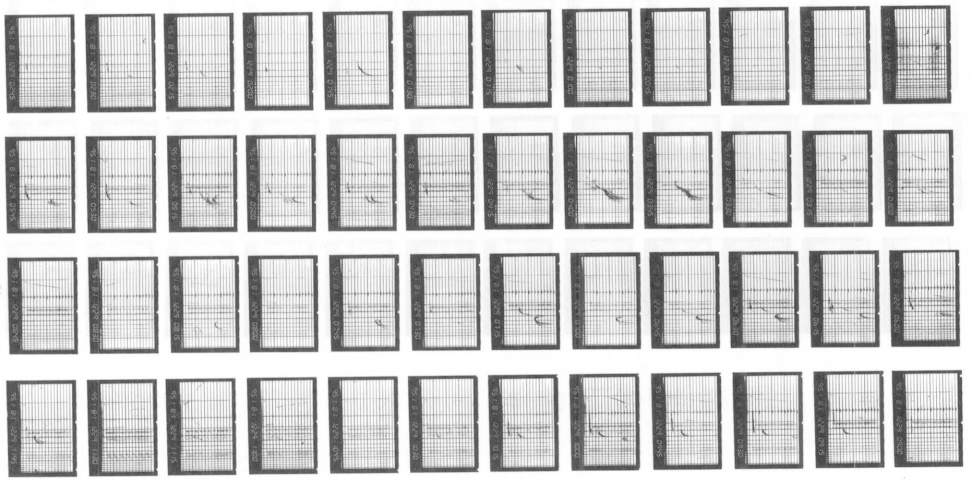
SYOWA STATION

IONOGRAM 1981 12 29 12;00-23;45



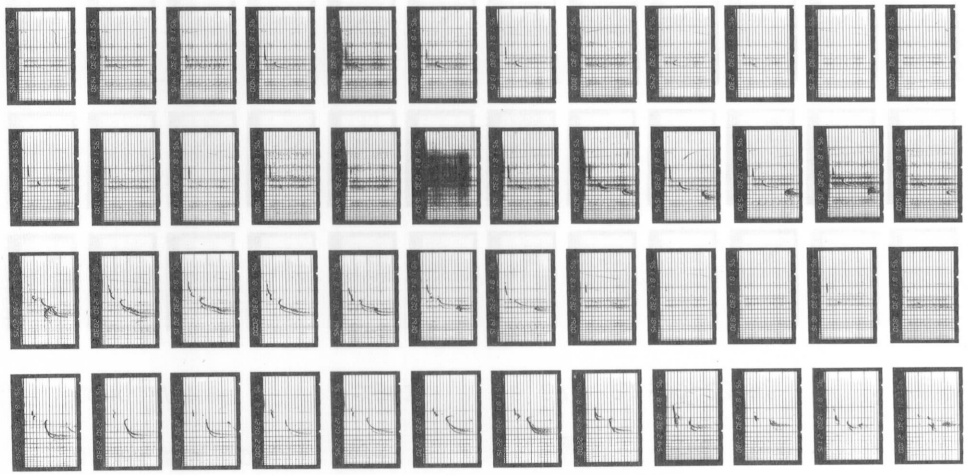
SYOWA STATION

IONOGRAM 1981 12 29 00;00-11;45



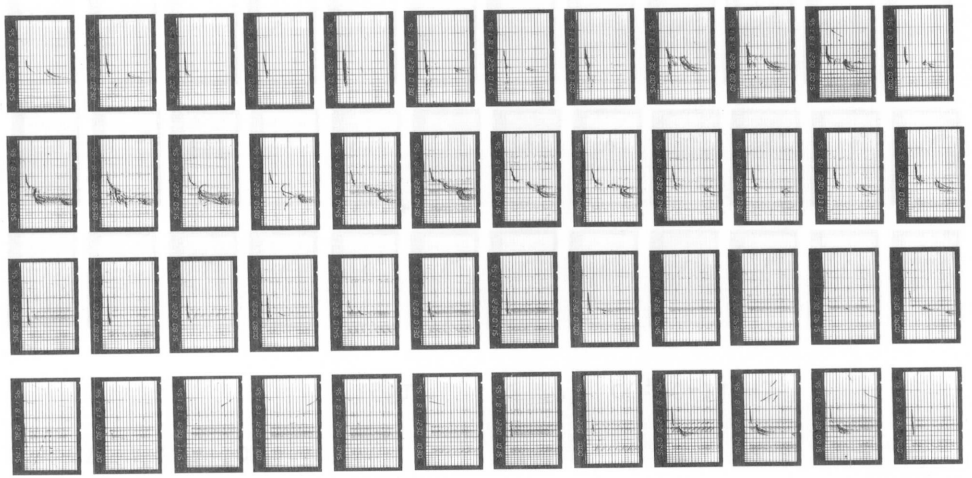
SYOWA STATION

IONOGRAM 1981 12 30 12;00-23;45



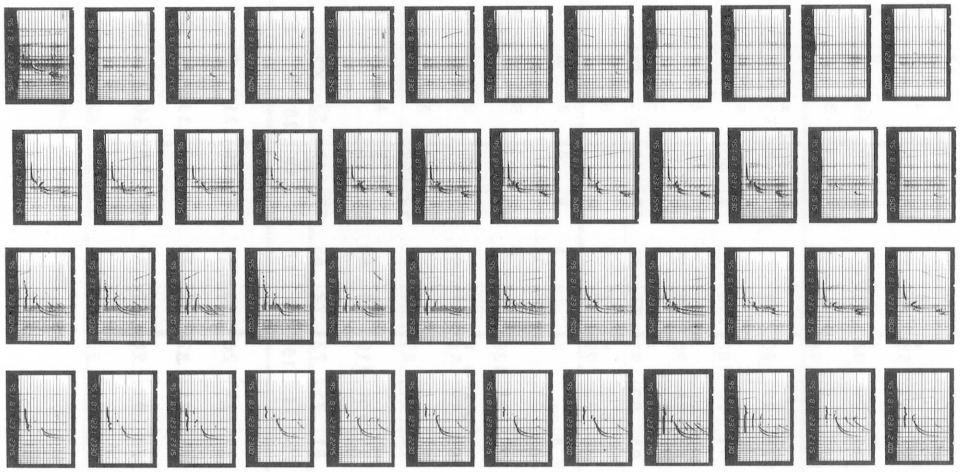
SYOWA STATION

IONOGRAM 1981 12 30 00;00-11;45



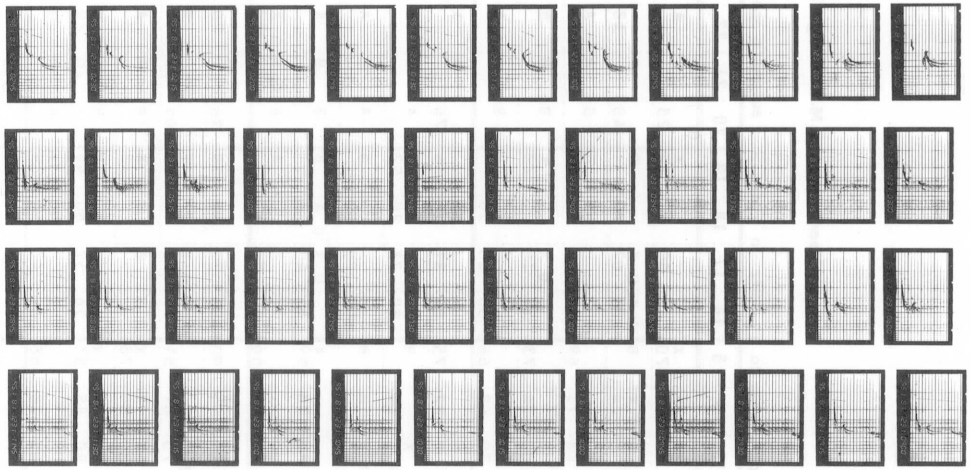
SYOWA STATION

IONOGRAM 1981 12 31 12;00-23;45



SYOWA STATION

IONOGRAM 1981 12 31 00;00-11;45



IONOSPHERIC DATA

JUL. 1981 | FXI (0.1 MHZ) | 45° E Mean Time (G.M.T. + 3 h)

Stations SYOWA STATION Lat. 69° 00.4' S, Long. 39° 35.4' E Sweep .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	O R 41	B	A	63	B	B	O X 48	B	B	B	O X 70	61	80	59	O X 39	25	A	A	A
2	A	A	A	43	A	A	43	50	A	B	B	55	B	B	O X 84	B	O X 73	O X 67	70	B	40	B	38	A
3	53	A	A	A	B	46	52	59	53	63	67	X 54	64	78	75	69	58	36	B	B	B	A	A	A
4	33	A	B	O X 44	A	70	B	A	A	A	51	63	75	85	74	73	53	O X 36	B	O X 22	B	B	B	A
5	A	A	A	A	A	A	A	A	49	46	50	60	B	70	68	66	68	66	56	B	B	A	A	A
6	A	A	A	A	A	40	A	B	A	A	B	B	B	B	72	75	66	81	51	36	76	A	A	A
7	A	29	43	45	B	A	A	A	A	A	B	60	83	X 101	84	B	80	73	80	52	A	A	A	A
8	A	A	35	A	39	43	B	A	B	B	B	63	68	O X 69	B	B	90	75	60	A	A	B	A	A
9	A	A	A	A	52	A	A	A	A	53	B	B	X 76	76	78	X 69	65	O X 61	O X 51	B	B	B	A	A
10	R 35	31	32	A	A	A	42	47	A	B	60	63	75	85	69	66	60	54	41	A	A	O X 18	O X 22	A
11	A	A	A	43	45	50	54	70	79	74	75	80	B	85	X 91	90	95	72	42	19	16	A	20	25
12	A	A	A	51	35	68	A	A	B	B	B	B	B	O X 73	81	81	O X 78	O X 71	52	B	65	70	A	A
13	A	A	B	A	A	A	B	O R 44	62	62	48	62	X 71	X 80	X 80	X 78	B	B	B	O X 28	A	A	A	A
14	O R 45	A	A	A	A	A	O R 42	46	37	B	52	77	X 80	90	85	X 83	56	57	60	O X 45	B	O X 20	O X 20	O X 23
15	A	52	49	39	A	36	43	49	35	42	63	78	80	85	78	68	64	43	51	O X 25	B	B	B	A
16	59	45	43	44	55	36	A	52	59	51	56	70	100	80	98	100	80	60	39	42	29	O X 23	27	20
17	44	44	A	90	A	50	52	O X 46	50	64	60	73	O X 52	83	93	B	106	97	63	A	39	42	48	64
18	A	B	B	A	A	A	80	A	69	33	41	B	O X 48	O X 56	X 57	O X 58	O R 46	51	25	23	A	B	A	43
19	46	A	A	A	A	A	A	A	B	B	63	76	X 97	X 85	X 94	X 102	78	78	60	39	34	B	B	69
20	63	36	O X 42	A	A	A	32	A	42	O X 50	65	73	78	100	103	98	89	X 76	83	53	B	B	B	A
21	A	45	A	53	43	65	B	52	70	60	70	71	85	101	99	90	39	85	65	48	O X 25	B	B	B
22	B	53	43	O X 51	60	A	A	55	A	75	80	80	87	X 91	90	102	110	110	74	60	A	A	43	60
23	65	53	71	70	43	70	A	56	50	60	B	O X 66	76	66	91	90	90	64	70	A	A	A	A	A
24	A	A	B	52	48	A	45	48	50	49	60	X 78	O X 81	X 91	X 90	X 91	75	75	70	33	O R 24	O R 24	A	A
25	44	46	A	81	67	51	A	46	A	B	B	B	O X 66	70	O X 80	X 99	X 89	B	60	B	B	B	B	B
26	A	A	A	B	A	B	B	B	A	B	B	B	B	O R 44	41	B	48	X 41	B	B	A	A	A	A
27	A	A	B	A	A	B	B	A	A	B	B	B	B	B	73	120	111	B	80	59	B	B	A	A
28	A	A	43	A	A	A	A	A	B	B	B	B	B	85	O X 89	O X 86	O X 87	80	80	35	B	B	B	B
29	B	A	A	A	A	A	A	32	44	49	65	X 76	89	90	80	80	70	69	45	O R 26	A	A	A	O R 22
30	O R 22	A	A	A	A	38	40	46	60	51	B	55	70	85	101	110	90	80	80	O X 38	A	A	A	A
31	A	A	A	A	A	B	A	A	A	A	B	B	80	81	X 75	78	72	65	50	41	33	O X 25	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	11	10	9	13	10	14	11	16	16	16	17	22	22	27	29	26	30	28	27	20	11	7	7	8
MED	45	45	43	51	46	48	43	48	52	52	60	68	77	85	81	82	76	70	60	38	33	O X 24	27	34
UQ	56	52	43	53	55	65	52	56	62	62	65	76	83	88	91	98	89	79	70	46	40	34	40	62
LQ	40	36	42	44	43	40	42	46	46	49	52	60	70	74	75	70	64	58	51	27	25	O X 22	21	22

The Radio Research Laboratories, Japan

JUL. 1981 | FXI (0.1 MHZ)

IONOSPHERIC DATA

JUL. 1981 | FOF2 (0.1 MHZ) | 45° E Mean Time (G.M.T. + 3 h)

Station SYOWA STATION Lat. 69° 00·4 S, Long. 39° 35·4 E Sweep .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	A	A	A	A	F 33	B	A	F 50	B	B	42	B	B	B	R 64	F	F 70	51	R 33	18	A	A	A
2	A	A	A	F	A	A	F	F	A	B	B	F 45	B	B	78	B	67	61	F	B	F	B	F	A
3	F	A	A	A	B	38	F	F	F	F	40	48	53	J R 72	F 65	62	J F 52	F 28	B	B	B	A	A	A
4	F	A	B	R 32	A	B	A	A	A	A	F	F 45	F 60	F 75	F 59	F 60	F	30	B	16	B	B	B	A
5	A	A	A	A	A	A	A	A	F	F	F	J F 54	B	61	60	R 60	F 61	F 55	F	B	B	A	A	A
6	A	A	A	A	A	F	A	B	A	A	B	B	B	B	F	F	F	F	39	F	A	A	A	A
7	A	F	F	F	B	A	A	A	A	A	B	F 43	F 61	J R 95	F 73	B	F 70	F 61		44	A	A	A	A
8	A	A	F	A	F	F	B	A	B	B	B	F	F 54	63	B	B	F	63	F 41	A	A	B	A	A
9	A	A	A	A	F	A	A	A	A	F	B	B	69	66	62	61	F 56	55	45	B	B	B	A	A
10	28	F	F 22	A	A	A	F	F 40	A	B	F	F	F 63	J F 79	F 53	55	F 50	F	33	A	A	R 12	16	A
11	A	A	A	F	F	F	F	F	F	F	F 48	F 50	B	F 77	94	J F 84	F	F 63	29	F	F	A	F	F
12	A	A	A	41	F	F	A	A	B	B	B	B	B	R 67	71	J F 75	R 72	R 65	45	B	A	F	A	A
13	A	A	B	A	A	A	B	F 35	J F 40	F 43	F 40	F 55	65	J R 74	73	71	B	B	B	22	A	A	A	A
14	F 37	A	A	A	A	A	F 30	F	F	B	F 42	J R 68	72	81	J F 79	J R 77	F 49	F 50	F 51	39	B	14	14	17
15	A	A	F	F	A	F	F	F	F	F	F	J F 64	J F 74	F	J F 72	60	56	F 33	44	18	B	B	B	A
16	F	F	F	F 30	F	F	A	F	F	F	F	F 60	F	F	J F 92	F	F	F 40	F 32	J F 30	F 20	17	F	F
17	F	F	A	F	A	F	F	R 40	J F 34	F 42	F	F	46	F	F	B	J F 100	F	F	A	F	F	A	F
18	A	B	B	A	A	A	A	A	F	F	F 34	B	41	50	50	R 52	F 39	R 42	F	F	A	B	A	A
19	35	A	A	A	A	A	A	A	B	B	F	68	J R 91	79	88	J R 96	68	F	J F 47	F 32	F	B	B	A
20	F	F	36	A	A	A	F	A	F	44	F	64	70	91	95	90	F 80	R 70	F	42	B	B	B	A
21	A	F 37	A	F	F	F	B	F	F	F	F	F	F	J F 95	81	F	F	F	F	F	18	B	B	B
22	B	A	F	45	F	A	A	A	A	F	F	F	80	83	F	F	F 85	F	F	45	A	A	F	F
23	F	F	F	F	F	F	A	F	F 38	F 40	B	R 60	F 61	R 58	F 80	F 32	F	F	F	A	A	A	A	A
24	A	A	B	F	A	A	F	F	J F 32	F 40	F 51	71	75	83	82	82	J F 69	J F 69	F 60	F 24	F 16	16	A	A
25	A	F	A	F	F	F	A	F	A	B	B	B	60	62	73	91	31	B	F	B	B	B	B	B
26	A	A	A	B	A	B	B	B	A	B	B	B	B	F 35	J F 35	B	F 38	35	B	B	A	A	A	A
27	A	A	B	A	A	B	B	A	A	B	B	B	B	B	F	F	J F 105	B	F	F	B	B	A	A
28	A	A	F	A	A	A	A	A	B	B	B	B	B	F 73	83	R 80	81	F	J F 74	J F 29	B	B	B	B
29	B	A	A	A	A	A	A	J F 26	F	F	F 55	70	83	80	72	F 71	F 60	F 61	37	F 17	A	A	A	16
30	F 13	A	A	A	A	F 31	F	F 38	F 40	F	B	F	F	J F 79	82	F	F	F	F	F 31	A	A	A	A
31	A	A	A	A	A	B	A	A	A	A	B	B	F	70	69	66	R 63	R 58	F 40	F	26	19	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	4	1	2	4		3	1	5	6	5	7	16	18	24	25	20	21	19	15	14	5	5	2	2
MED	32	F 37	29	40		F 33	F 30	F 38	F 39	F 42	F 42	58	64	74	73	71	F 67	F 58	44	30	18	16	15	16
UQ	36			43		36		F 40	F 40	F 43	F 50	66	74	80	82	82	F 80	63	49	39	20	17		
LQ	20			34		F 32		F 35	J F 34	F 40	F 40	F 46	F 60	64	65	60	F 56	41	38	F 22	18	14		

JUL. 1981 | FOF2 (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

JUL. 1981 | FES (0.1 MHZ) | 45° E Mean Time (G.M.T. + 3 h)

Stations SYOWA STATION Lat. 69° 00·4' S, Long. 39° 35·4' E Sweep 4 MHz to 15 MHz in 20sec in automatic operation

Day \ 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
1	44	68	59	53	42	39	B	43	51	B	B	E B 28	B	B	B	E B 38	E B 25	E B 23	E B 21	E B 26	15	32	47	45
2	46	70	88	52	40	47	51	60	27	B	B	30	B	B	E B 51	B	E B 51	E B 32	18	B	25	B	35	41
3	70	44	80	48	B	50	40	39	29	39	29	40	18	17	30	E B 23	18	E B 15	B	B	B	18	20	39
4	70	43	B	38	40	B	44	51	28	46	45	34	31	20	18	E B 14	E B 17	E B 23	B	28	B	B	B	33
5	40	41	45	43	43	79	31	50	45	20	30	32	B	25	20	E B 46	E B 21	E B 19	E B 18	B	B	30	44	50
6	50	75	70	69	50	44	53	B	42	63	B	B	B	B	E B 36	E B 33	E B 40	E B 50	26	38	45	36	41	51
7	45	48	70	65	B	52	58	64	50	35	B	E B 30	E B 33	15	E B 24	B	E B 20	E B 21	E B 21	E B 16	38	35	36	35
8	37	50	52	71	81	48	63	51	B	B	B	E B 26	E B 31	E B 41	B	B	E B 34	E B 28	E B 23	33	24	42	31	30
9	39	39	43	62	50	53	51	55	60	43	B	B	E B 20	23	18	35	20	E B 36	E B 30	B	B	B	23	39
10	39	36	27	35	52	41	41	44	43	B	44	E B 37	E B 28	29	13	17	18	17	52	41	47	E B 11	15	26
11	35	48	70	59	49	41	32	30	30	26	40	33	B	17	30	18	E B 18	20	E B 12	19	E B 14	41	33	38
12	38	43	38	51	62	58	49	53	B	B	B	B	B	E B 52	E B 32	E B 13	E B 59	E B 50	E B 28	B	52	40	43	45
13	40	64	B	39	51	40	B	37	43	18	14	20	16	20	18	12	B	B	B	E B 15	14	33	33	70
14	39	42	40	43	36	28	30	19	25	B	31	20	E B 25	19	27	E B 21	E B 20	E B 13	10	E B 22	B	E B 12	13	17
15	19	33	39	39	43	36	29	28	18	E B 22	22	35	35	20	E B 23	E B 19	E B 19	E B 22	E 6 21	13	B	B	B	18
16	17	25	36	34	43	30	60	48	35	27	37	E B 28	24	E B 27	E B 25	E B 19	E B 20	E B 19	25	28	E B 8	18	13	35
17	16	25	43	33	27	32	29	E B 23	45	46	E B 20	27	E B 31	E B 23	E B 29	B	E B 28	33	43	35	57	32	43	70
18	71	B	B	35	80	36	43	49	31	29	32	B	E B 33	E B 33	E B 35	E B 35	E B 23	E B 34	E B 20	E B 17	18	B	19	30
19	38	40	43	52	72	52	40	48	B	B	26	22	24	30	27	15	E B 18	19	15	E B 12	27	B	B	40
20	33	49	42	39	45	50	45	43	45	42	29	20	22	21	31	14	E B 12	E B 65	33	E B 20	B	B	B	29
21	31	29	58	90	65	91	B	50	45	30	E B 16	E B 25	E B 32	E B 30	E B 24	E B 15	E B 20	E B 12	E B 13	17	17	B	B	B
22	B	26	43	39	44	51	71	45	36	49	24	29	E B 20	E B 20	E B 50	E B 25	E B 25	E B 50	E B 18	E B 22	39	37	38	70
23	70	82	50	37	55	44	51	50	34	37	B	E B 42	E B 28	E B 35	E B 31	E B 21	50	33	80	92	67	31	30	43
24	63	120	B	58	75	90	42	43	45	31	32	E B 23	E B 40	E B 26	E B 22	14	20	30	14	E B 12	14	17	34	37
25	42	45	50	37	78	43	40	45	53	B	B	B	E B 50	E B 33	E B 50	E B 26	E B 32	B	E B 43	B	B	B	B	B
26	55	32	39	B	35	B	B	B	32	B	B	B	B	25	E B 23	B	21	E B 18	B	B	55	40	36	38
27	38	37	B	67	30	B	B	28	29	B	B	B	B	B	E B 24	E B 48	E B 26	B	E B 51	E B 30	B	B	29	27
28	36	41	60	40	42	49	52	51	B	B	B	B	B	E B 42	E B 47	E B 60	E B 56	E B 33	E B 15	E B 22	B	B	B	B
29	B	38	37	34	50	70	37	37	26	13	22	19	26	44	25	17	E B 12	70	33	31	36	37	32	28
30	14	50	41	59	45	40	30	33	9	36	B	E B 40	E B 28	E B 23	E B 28	15	35	E B 23	E B 22	E B 19	33	48	52	51
31	69	48	41	54	33	B	53	53	60	43	B	B	E B 27	29	25	24	E B 22	E B 25	32	E B 13	E B 11	19	19	20
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	26	30	29	27	26	29	27	20	17	22	22	27	29	26	30	28	27	24	21	20	24	28
MED	39	43	43	46	45	47	44	45	36	36	29	24	E B 28	21	E B 27	E B 20	E B 21	E B 24	E B 22	E B 22	27	32	33	38
UQ	50	50	59	59	55	52	52	51	45	43	32	32	E B 32	E B 32	E B 31	E B 33	E B 32	E B 34	29	30	45	38	40	45
LQ	36	37	40	38	42	40	37	37	29	26	22	21	20	20	18	14	E B 19	E B 19	E B 18	E B 16	15	18	22	30

The Radio Research Laboratories, Japan

JUL. 1981 | FES (0.1 MHZ)

IONOSPHERIC DATA

JUL. 1981 | 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	11	7	6	5	6	11	B	22	11	B	B	28	B	B	B	38	25	23	21	26	7	7	6	7
2	9	E	12	7	5	6	11	13	11	B	B	20	B	B	51	B	51	32	12	B	11	B	8	6
3	8	23	37	6	B	12	8	6	6	8	8	7	11	12	12	23	12	15	B	B	B	16	14	7
4	9	7	B	7	30	B	22	12	12	12	7	14	16	16	13	14	17	23	28	12	B	B	B	8
5	11	24	20	30	20	15	15	15	11	12	9	9	B	20	14	46	21	19	18	B	B	12	8	12
6	12	7	6	7	15	12	32	B	31	24	B	B	B	B	36	33	40	50	17	11	7	7	7	11
7	27	7	10	10	B	10	17	16	15	5	B	30	33	15	24	B	20	21	21	16	11	10	7	7
8	7	8	16	15	10	11	31	30	B	B	B	26	31	41	B	B	34	28	23	19	16	40	19	12
9	11	7	11	9	7	19	22	14	12	11	B	B	20	15	15	12	12	36	30	B	B	B	11	6
10	6	10	9	10	11	11	10	11	20	B	15	37	28	13	11	11	11	14	15	13	11	11	6	6
11	7	6	6	7	9	10	7	6	7	8	9	12	B	14	7	12	18	17	12	14	14	8	8	7
12	7	9	12	14	12	13	14	14	B	B	B	B	B	52	32	13	59	50	28	B	12	11	9	16
13	7	12	B	23	12	18	B	12	12	11	10	12	14	12	13	11	B	B	B	15	11	13	8	9
14	15	12	13	16	9	12	16	13	11	B	16	13	25	16	23	21	20	13	9	22	B	12	11	12
15	10	9	10	10	11	11	10	8	12	22	12	13	16	19	23	19	19	22	21	12	B	B	B	10
16	9	7	8	8	7	12	12	13	11	9	12	28	16	27	25	19	20	19	11	9	8	7	10	8
17	9	16	8	13	E	11	11	23	11	12	20	23	31	23	29	B	28	22	7	11	9	7	7	8
18	11	B	B	12	13	15	12	12	9	14	14	B	33	33	35	35	23	34	20	17	15	B	11	7
19	10	9	11	15	16	18	22	11	B	B	23	16	15	12	12	11	18	8	7	12	14	B	B	9
20	6	12	11	8	12	12	9	11	11	14	11	15	13	12	9	7	12	65	12	20	B	B	B	20
21	22	20	23	20	23	20	B	29	13	12	16	25	32	30	24	15	20	12	13	12	15	B	B	B
22	B	15	18	18	16	19	18	14	14	15	15	15	20	20	50	25	25	50	18	22	15	11	13	13
23	12	11	11	10	13	12	16	11	8	11	B	42	28	35	31	21	15	15	9	16	10	15	11	10
24	11	20	B	11	11	10	16	11	9	10	11	23	40	26	22	12	11	11	11	12	10	9	11	12
25	13	16	19	15	23	21	22	30	30	B	B	B	50	33	50	26	32	B	43	B	B	B	B	B
26	23	24	20	B	17	B	B	B	9	B	B	B	B	23	23	B	12	18	B	B	14	14	13	12
27	10	14	B	15	6	B	B	11	13	B	B	B	B	B	24	48	26	B	51	30	B	B	14	12
28	8	8	8	23	18	24	15	12	B	B	B	B	B	42	47	60	56	33	15	22	B	B	B	B
29	B	8	7	8	14	14	16	15	11	11	12	18	16	20	14	15	12	12	10	12	9	9	7	8
30	11	7	23	19	14	11	11	9	8	18	B	40	28	23	28	14	16	23	22	19	14	8	7	9
31	14	9	10	13	10	B	18	24	14	30	B	B	27	22	21	15	22	25	10	13	11	10	12	17
	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	11	9	12	12	12	12	16	13	12	15	20	26	31	23	24	21	20	23	18	17	14	13	11	10
UQ	12	16	22	16	16	19	22	19	14	B	B	B	B	34	34	42	27	35	26	28	B	B	16	12
LQ	8	7	10	8	10	11	12	11	11	11	12	15	18	16	14	14	16	16	12	12	11	10	8	8

JUL. 1981 | F-MIN (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

JUL. 1981 | 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	B	A	A	B	B	B	B	B	B	235	250	250	225	275	A	A	A	A
2	A	A	A	A	A	A	A	A	A	B	B	275	B	B	E B 265	B	B	255	250	B	Y	B	A	A
3	A	A	A	A	B	A	A	A	A	A	275	245	210	215	240	H 210	210	B	B	B	B	A	A	A
4	A	A	B	A	A	B	A	A	A	A	A	260	245	215	220	215	225	B	B	235	B	B	B	A
5	A	A	A	A	A	A	A	A	A	290	245	240	B	220	225	E B 260	240	245	205	B	B	A	A	A
6	A	A	A	A	A	A	A	B	A	A	B	B	B	B	250	250	E B 300	E B 240	240	A	A	A	A	A
7	A	A	A	A	B	A	A	A	A	A	B	E B 270	255	220	225	B	E B 250	215	250	235	A	A	A	A
8	A	A	A	A	A	A	B	A	B	B	B	B	250	E B 265	B	B	240	240	235	A	A	B	A	A
9	A	A	A	A	A	A	A	A	A	A	B	B	230	230	210	E A 205	240	E B 255	220	B	B	B	A	A
10	265	A	A	A	A	A	A	A	A	B	250	260	250	230	205	205	225	230	225	A	A	B	A	A
11	A	A	A	A	A	A	A	A	A	290	265	250	B	280	220	205	240	240	235	275	B	A	A	A
12	A	A	A	A	A	A	A	A	B	B	B	B	B	E B 260	225	225	305	250	260	B	A	A	A	A
13	A	A	B	A	A	A	B	A	A	290	205	240	220	195	210	205	B	B	B	250	A	A	A	A
14	E A 300	A	A	A	A	A	A	A	A	B	E A 260	230	225	230	240	H 210	205	240	230	E B 250	B	B	A	A
15	A	A	A	A	A	A	A	A	A	B	230	230	225	225	200	220	205	H 255	225	250	B	B	B	A
16	A	A	A	A	A	A	A	A	A	255	255	245	240	220	250	H 230	215	225	240	215	230	275	E A 290	A
17	A	A	A	A	A	A	A	B	A	E A 290	270	280	B	B	245	B	245	260	A	A	A	A	A	A
18	A	B	B	A	A	A	A	A	A	A	A	B	B	E B 285	B	E B 255	275	E B 270	B	E B 290	A	B	A	A
19	A	A	A	A	A	A	A	A	B	B	240	230	235	230	220	210	210	205	210	H 200	A	B	B	A
20	A	A	A	A	A	A	A	A	A	A	255	230	230	225	205	240	230	B	220	250	B	B	B	A
21	A	A	A	A	A	A	B	A	A	270	230	260	240	240	230	220	220	235	190	230	A	B	B	B
22	B	A	A	A	A	A	A	A	A	A	250	220	220	245	B	260	260	260	250	240	A	A	A	A
23	A	A	A	A	A	A	A	A	280	A	B	B	E B 245	E B 260	E B 270	B	A	A	A	A	A	A	A	A
24	A	A	B	A	A	A	A	A	A	A	280	250	E B 250	230	225	205	205	240	210	220	A	A	A	A
25	A	A	A	A	A	A	A	A	A	B	B	B	B	E B 245	B	240	B	B	B	B	B	B	B	B
26	A	A	A	B	A	B	B	B	A	B	B	B	B	B	B	B	270	E B 270	B	B	A	A	A	A
27	A	A	B	A	A	B	B	A	A	B	B	B	B	B	B	E B 270	E B 230	B	B	B	B	B	A	A
28	A	A	A	A	A	A	A	A	B	B	B	B	B	E B 260	E B 250	270	250	E B 260	210	225	B	B	B	B
29	B	A	A	A	A	A	A	A	A	265	245	220	225	200	200	200	200	230	200	285	A	A	A	A
30	A	A	A	A	A	A	A	A	275	A	B	B	H 235	240	220	225	260	260	H 220	270	A	A	A	A
31	A	A	A	A	A	B	A	A	A	A	B	B	260	210	230	225	220	230	205	205	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								2	7	15	18	19	25	24	25	27	24	22	18	2	1	1	
MED	274								278	290	250	244	232	225	222	220	232	240	225	240	240	275	E A 290	
UQ										290	262	260	245	238	236	235	249	254	240	260				
LQ										264	242	230	225	220	215	210	215	231	210	225				

IONOSPHERIC DATA

AUG. 1981 | 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 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	A	A	A	A	A	A	B	B	A	B	B	90	B	B	B	90	R	O X 48	B	25	A	A	A
2	51	40	A	A	A	A	A	A	46	47	56	X 66	O X 69	O X 71	X 72	71	B	X 87	69	49	29	A	A	A
3	A	36	B	A	43	A	A	A	A	B	B	B	B	B	69	B	O X 68	79	68	62	A	A	A	A
4	A	A	A	A	A	A	A	B	B	O X 47	62	B	B	B	B	B	B	57	55	B	B	B	30	A
5	A	O X 41	A	A	X 32	47	50	49	45	B	B	B	B	81	X 84	O X 81	77	55	61	40	O R 25	A	A	A
6	A	A	A	A	A	B	B	B	B	B	B	B	B	B	O X 59	O X 64	B	B	55	A	A	A	A	A
7	A	A	A	A	A	A	A	A	B	B	B	79	X 78	82	X 82	X 86	O X 87	B	B	B	A	A	A	A
8	A	30	35	A	A	A	A	39	39	X 42	X 53	X 65	X 69	X 81	U R 73	X 90	68	55	54	B	O R 23	B	O X 22	O X 23
9	36	45	A	A	A	B	A	A	55	54	64	X 76	X 89	X 90	X 81	O X 106	72	71	67	50	28	O X 19	A	A
10	69	A	52	90	A	39	B	61	66	55	O X 62	O X 68	B	O X 94	101	97	86	91	72	53	O X 25	B	B	B
11	B	A	A	A	71	A	52	50	54	55	X 66	X 75	88	X 89	O X 98	X 108	X 80	69	X 68	53	B	A	A	A
12	B	B	A	A	B	A	A	B	35	B	B	73	X 74	82	X 83	91	X 91	75	60	55	29	29	B	26
13	A	A	B	A	A	A	B	A	B	B	B	62	O X 85	B	B	101	98	95	X 72	55	29	O X 24	O X 24	A
14	A	A	A	B	B	B	A	53	B	B	O X 63	X 82	O X 86	X 106	105	B	B	80	X 86	B	O R 32	O R 28	A	A
15	A	O X 31	A	A	35	52	45	B	B	B	70	O X 86	X 99	X 105	X 120	X 110	95	X 85	76	62	35	O R 24	B	A
16	71	A	A	46	63	54	55	60	69	B	O X 68	O X 86	109	110	X 110	X 112	105	84	73	53	B	B	B	O X 24
17	63	A	A	A	A	A	A	A	65	80	80	80	B	B	113	125	O X 131	115	82	65	30	A	65	A
18	29	A	43	A	65	B	A	X 54	68	66	66	B	71	84	90	93	113	B	65	70	A	A	A	A
19	43	35	35	35	A	30	A	A	A	B	X 61	X 81	94	X 105	X 109	X 113	O X 123	X 115	109	B	B	A	A	A
20	A	A	45	B	60	B	B	A	A	73	X 86	X 86	X 99	X 117	117	X 119	X 118	X 108	95	71	X 48	23	A	A
21	A	A	B	55	72	A	A	55	64	69	80	B	B	118	115	X 114	O X 86	B	131	101	56	A	A	A
22	A	X 38	43	48	51	A	B	B	A	69	78	O X 84	104	X 102	X 105	X 109	104	X 101	90	79	48	O X 22	A	O X 42
23	A	41	44	52	B	55	A	B	B	Y	B	65	B	B	B	102	B	O X 40	B	A	A	A	A	41
24	62	28	A	70	68	65	A	A	A	B	O X 59	O X 67	O X 82	B	X 81	X 90	X 101	X 106	77	79	A	A	A	66
25	B	A	B	B	B	A	58	53	59	65	58	X 62	B	B	O X 71	77	X 78	103	101	61	A	A	A	O X 32
26	B	A	A	45	44	A	42	64	57	68	X 75	X 101	X 111	X 126	X 127	X 120	125	121	99	71	43	23	A	A
27	A	B	45	53	70	71	70	70	69	79	X 98	113	O X 106	X 131	126	X 121	128	124	113	70	49	42	42	A
28	44	43	A	51	63	60	A	B	55	B	75	X 80	B	90	X 105	R	110	X 114	X 105	91	32	51	45	O R 36
29	45	B	A	70	80	67	65	70	O X 63	B	B	B	B	94	105	137	X 126	87	47	70	65	45	60	31
30	O R 41	61	45	50	A	R	A	B	B	B	73	75	95	106	110	X 109	108	99	79	B	61	46	A	38
31	40	44	B	B	59	43	70	A	60	O R 74	82	X 90	108	X 113	119	120	X 111	113	X 110	81	51	32	29	36
	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	13	9	12	15	11	9	12	17	15	22	23	20	22	27	26	26	26	29	22	20	13	8	11
MED	44	40	44	52	63	54	55	54	59	66	67	X 79	X 90	X 98	X 105	X 107	100	89	73	64	32	28	36	36
UQ	62	43	45	62	69	62	65	62	65	71	78	X 85	102	X 110	112	X 114	113	108	95	71	48	42	52	40
LQ	40	35	43	47	48	45	50	52	54	54	X 62	X 68	X 80	84	X 82	90	86	75	65	53	28	O 23	26	28

IONOSPHERIC DATA

AUG. 1981 | FOF2 (0.1 MHZ) | 45° E Mean Time (G.M.T. + 3 h)

Stations YOWA STATION Lat. 69° 00.4' S, Long. 39° 35.4' E Sweep 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	A	A	A	A	A	A	B	B	A	B	B	F	B	B	B	F	D R 70	42	B	F	A	A	A
2	F	F	A	A	A	A	A	A	F 37	F 38	48	60	63	R 65	66	63	B	81	50	F	F	A	A	A
3	A	F	B	A	F	A	A	A	A	B	B	B	B	B	F	B	R 62	F	F	F	A	A	A	A
4	A	A	A	A	A	A	A	B	B	41	44	B	B	B	B	B	B	F	F	B	B	B	F	A
5	A	35	A	A	J R 26	F 28	F 27	F 27	F	B	B	B	B	73	78	75	F	F	F	F	F 17	A	A	A
6	A	A	A	A	A	B	B	B	B	B	B	B	B	B	53	58	B	B	F	A	A	A	A	A
7	A	A	A	A	A	A	A	A	B	B	B	J F 73	R 72	74	76	80	81	B	B	B	A	A	A	A
8	A	F	F	A	A	A	A	F 32	F	36	47	58	61	74	R 53	83	59	46	F 42	B	F 16	B	16	17
9	19	A	A	A	A	B	A	A	F	F 45	54	70	82	83	75	R 100	F 58	F 60	F	F	F 16	13	A	A
10	A	A	F	A	A	F	B	52	F	F	R 56	62	B	R 88	J F 95	R 89	F	83	F 61	F 46	19	B	B	B
11	B	A	A	A	A	A	F	F 38	J F 43	F 47	60	69	79	82	92	J R 102	J R 74	F 60	62	F 33	B	A	A	A
12	B	B	A	A	B	A	A	B	F	B	B	64	68	F 74	77	82	84	F 58	50	F 48	F 22	16	B	A
13	A	A	B	A	A	A	B	A	B	B	B	53	79	B	B	91	85	86	65	F 45	F	18	18	A
14	A	A	A	B	B	B	A	F	B	B	R 57	75	R 80	99	96	B	B	F	80	B	F 23	F 21	A	A
15	A	25	A	A	F 23	F 25	F 24	B	B	B	F 63	80	92	J R 99	J R 114	103	85	79	69	55	F 25	F 17	B	A
16	F	A	A	F	F	F	F	F	J F 63	B	62	R 80	100	100	101	103	J F 99	F 77	65	F 45	B	B	B	18
17	A	A	A	A	A	A	A	A	F	F 68	75	70	B	B	102	102	125	F 101	F 61	F	F	A	A	A
18	F	A	F	A	F	B	A	J R 48	F	F 55	F 54	B	F	F 77	80	F 85	104	B	F	A	A	A	A	A
19	F	F	F	F	A	F	A	A	A	B	65	75	F	98	102	107	117	109	F	B	B	A	A	A
20	A	A	F	B	F	B	B	A	A	F 62	79	80	90	J R 111	F	111	111	J R 102	85	62	41	15	A	A
21	A	A	B	F	F	A	A	F	F	F 61	F	B	B	107	105	107	R 80	B	F	F	F	A	A	A
22	A	32	F	F	A	A	B	B	A	61	F	78	93	96	99	102	96	95	J F 84	F 70	F 39	F 15	A	36
23	A	F	F	F	B	F	A	B	B	Y	B	58	B	B	B	F	B	34	B	A	A	A	A	F
24	F	F	A	F	F	F	A	A	A	B	53	R 61	76	B	75	83	J R 95	99	56	F	A	A	A	F
25	B	A	B	B	B	A	F	F	F	F 51	F 50	55	B	B	65	70	71	J F 97	92	F 50	A	A	A	27
26	B	A	A	F	F	A	F	F	F	60	69	95	104	120	120	114	J F 118	J F 115	91	J F 65	F	F	A	A
27	A	B	F	F	F	F	F	F	J F 63	70	92	F	R 100	J R 125	J R 121	113	F 121	F 116	104	F	F	F	F	A
28	F	F	A	F	F	F	A	B	F	B	F	73	B	F 80	J R 99	D R 82	102	107	86	F	F	F	26	30
29	F	B	A	F	F	F	F	F	57	B	B	B	B	F 85	F	129	J R 120	F	F	A	A	F	F	F
30	F 33	F	F	F	A	R 48	A	B	B	B	F	F	F 88	F 99	F 100	102	F	F	F	B	F	F	A	F
31	F	F	B	B	F	F	F	A	48	F 65	F	R 82	F 100	111	110	110	105	108	104	71	J F 45	F 22	F 16	F
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	2	3			2	3	2	5	6	14	17	21	17	22	24	26	22	21	19	11	10	8	4	5
MED	26	32			24	F 28	F 26	F 38	F 52	F 58	57	70	82	92	96	102	96	U 90	65	F 50	F 22	16	17	27
UQ		34				38		48	J F 63	F 62	65	78	93	100	102	107	111	102	86	64	F 39	F 20	22	30
LQ		28				F 26		F 32	F 43	F 45	53	61	76	77	76	82	80	70	58	F 46	F 17	15	16	18

The Radio Research Laboratories, Japan

AUG. 1981 | FOF2 (0.1 MHZ)

IONOSPHERIC DATA

AUG. 1981 | 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	61	45	40	42	40	40	33	B	B	44	B	B	E B 50	B	B	B	E B 27	E B 50	E B 25	B	E B 17	17	90	70
2	40	70	56	36	40	45	37	53	38	30	40	E B 21	E B 31	E B 50	E B 22	E B 33	B	E B 11	17	30	E B 16	35	39	39
3	45	50	B 40		35	71	41	46	38	B	B	B	B	B	E B 55	B	E B 55	E B 47	E B 28	E B 30	23	36	36	35
4	38	35	36	59	52	50	58	B	B	37	E B 22	B	B	B	B	B	B	E B 27	E B 32	B	B	B	17	31
5	35	37	34	33	36	33	25	33	52	B	B	B	B	E B 32	E B 33	E B 57	E B 23	E B 32	E B 22	12	28	42	35	49
6	52	39	37	35	31	B	B	B	B	B	B	B	B	B	E B 49	E B 40	B	B	E B 17	37	33	45	45	37
7	70	51	44	38	35	51	51	51	B	B	B	E B 24	E B 30	26	E B 24	E B 22	E B 51	B	B	B	51	106	36	68
8	60	43	42	51	43	41	43	30	15	19	20	22	22	23	21	21	23	E B 18	24	B	E B 14	B	14	14
9	17	29	50	62	52	B	43	50	29	17	18	23	25	25	24	23	30	19	27	13	18	E B 10	20	39
10	41	33	53	68	44	33	B	33	42	29	E B 21	E B 23	B	29	24	E B 20	30	16	E B 12	E B 11	E B 14	B	B	B
11	B	44	39	43	49	40	30	20	E B 15	E G 17	13	25	26	26	23	21	16	13	E B 10	12	B	24	43	53
12	B	B	28	36	B	51	54	B	36	B	B	24	G 12	25	24	20	17	12	E B 11	12	E B 15	14	B	19
13	41	43	B	29	40	44	B	50	B	B	B	32	E B 49	B	B	E B 33	18	E B 15	12	E B 13	E B 11	12	27	33
14	37	49	42	B	B	B	56	41	B	B	F B 48	23	28	27	E B 50	B	B	E B 50	E B 22	B	E B 16	E B 17	17	29
15	30	35	39	32	27	20	14	B	B	B	E B 27	E B 24	E B 29	E B 30	25	22	17	E B 11	11	E B 10	7	E B 12	B	34
16	43	44	43	30	39	34	44	45	34	B	E B 41	E B 41	27	27	32	25	21	16	E B 14	17	B	B	B	16
17	33	35	68	82	43	46	53	60	50	33	26	E B 50	B	B	E B 28	E B 52	E B 50	21	E B 22	E B 24	24	37	41	42
18	67	53	45	50	120	B	42	40	39	25	E B 28	B	E B 50	E B 26	E B 49	E B 22	E B 50	B	E B 23	35	37	45	46	41
19	41	38	36	35	45	70	57	53	52	B	E B 27	E B 40	27	32	32	26	21	14	25	B	B	21	25	34
20	43	38	35	B	33	B	B	50	51	E B 41	26	G 23	E G 24	E B 29	E B 69	G 20	19	17	13	E B 13	13	15	35	32
21	43	26	B	E B 34	45	43	54	47	35	50	E B 50	B	B	E B 42	E B 50	22	E B 51	B	E B 58	25	37	41	71	71
22	40	61	52	53	37	35	B	B	61	63	48	E B 53	E B 58	E B 29	25	23	26	E B 17	E B 18	E B 23	16	15	108	46
23	39	42	40	76	B	71	50	B	B	31	B	E B 46	B	B	B	E B 29	B	E B 26	B	33	45	39	43	34
24	31	23	44	36	30	31	55	41	36	B	39	E B 38	E B 38	B	40	29	E B 22	16	E G 13	85	33	40	43	49
25	B	47	B	B	B	50	45	44	18	21	E B 25	25	B	B	E B 50	E B 26	E B 31	E B 18	E B 12	32	45	43	43	72
26	B	35	43	31	26	32	40	30	19	20	26	27	26	29	29	26	28	18	21	16	39	28	40	44
27	39	B	59	58	E B 43	E B 48	46	45	42	25	27	E B 30	27	E B 31	E B 98	E B 26	24	19	E B 50	21	37	89	52	69
28	60	50	70	39	46	43	50	B	E B 31	B	E B 38	E B 61	B	26	E B 31	E B 50	22	E B 20	E B 13	32	26	29	31	31
29	41	B	43	38	43	E B 50	37	32	45	B	B	B	B	E B 50	E B 52	E B 26	23	24	45	34	47	66	68	35
30	69	37	51	46	36	25	52	B	B	B	E B 46	E B 48	26	26	25	E B 32	E B 95	E B 25	18	B	21	27	28	32
31	49	54	B	B	33	56	25	36	40	51	29	E B 58	27	26	29	27	24	18	13	18	17	9	29	29
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	28	26	27	27	26	26	22	22	17	22	23	20	22	27	27	26	27	29	24	27	27	27	30
MED	41	42	43	40	40	43	44	44	38	30	20	E B 27	22	26	E B 31	E B 26	21	E B 18	E B 18	19	23	29	39	36
UQ	50	50	51	56	44	50	53	50	45	41	E B 40	E B 44	E B 34	E B 31	E B 50	E B 30	E B 31	E B 24	E B 25	32	37	42	44	49
LQ	38	35	39	36	35	34	37	33	31	21	19	24	26	26	24	21	20	14	E B 13	13	12	16	28	32

AUG. 1981 | FES (0.1 MHZ)

IONOSPHERIC DATA

AUG. 1981 | 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 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	13	12	11	13	11	16	B	B	24	B	B	50	B	B	B	27	50	25	B	17	12	11	15
2	11	10	17	15	13	12	12	13	11	13	12	21	31	50	22	33	B	11	8	7	16	7	6	7
3	15	9	B	20	8	13	12	25	23	B	B	B	B	B	55	B	55	47	28	30	11	7	8	12
4	12	15	11	14	16	22	22	B	B	15	22	B	B	B	B	B	B	27	32	B	B	B	14	8
5	7	11	22	16	11	8	7	10	11	B	B	B	B	32	33	57	23	32	22	7	7	8	7	11
6	16	23	23	21	15	B	B	B	B	B	B	B	B	B	49	40	B	B	17	11	8	11	14	14
7	18	12	16	14	15	14	14	17	B	B	B	24	30	22	24	22	51	B	B	B	12	12	13	11
8	11	11	23	15	24	14	12	10	10	11	13	13	16	15	13	12	11	18	17	B	14	B	9	11
9	9	8	18	19	12	B	29	16	13	11	13	17	16	16	13	12	10	10	10	9	8	10	9	11
10	12	13	19	17	16	23	B	20	18	17	21	23	B	22	19	20	13	12	12	11	14	B	B	B
11	B	23	22	16	20	18	12	11	15	15	12	20	20	18	18	16	11	10	10	11	B	15	11	15
12	B	B	17	22	B	17	21	B	15	B	B	20	11	20	16	16	12	10	11	9	15	11	B	11
13	10	12	3	11	21	22	B	18	B	B	B	22	49	B	B	33	16	15	11	13	11	11	10	11
14	7	12	15	B	B	B	22	11	B	B	48	20	20	19	50	B	B	50	22	B	16	17	15	10
15	11	11	15	12	14	12	11	B	B	B	27	24	29	30	15	19	14	11	10	10	6	12	B	9
16	15	16	16	14	11	10	18	11	9	B	41	41	22	22	19	18	11	11	14	12	B	B	B	11
17	7	11	19	11	23	12	16	14	12	12	12	50	B	B	28	51	50	15	22	24	11	10	10	6
18	7	12	16	7	14	B	17	15	11	12	28	B	50	26	49	22	50	3	23	10	7	11	14	12
19	6	15	10	10	32	13	22	20	41	B	27	40	22	22	22	22	15	11	15	B	B	15	11	7
20	11	11	6	B	24	B	B	35	22	41	23	18	21	29	69	18	18	12	11	13	11	6	6	6
21	10	14	B	34	22	23	14	10	14	12	50	B	B	42	50	18	51	B	58	16	11	6	6	6
22	7	9	8	11	16	21	B	B	30	14	23	53	58	29	24	16	13	17	18	23	13	12	15	11
23	17	15	14	15	B	13	22	B	B	23	B	46	B	B	B	29	B	26	B	18	15	16	16	18
24	20	15	32	20	14	13	23	31	23	B	31	38	38	B	22	26	22	12	11	16	12	13	11	15
25	B	17	B	B	B	19	16	16	11	15	25	23	B	B	50	26	31	18	12	7	7	10	15	12
26	B	31	23	7	16	17	11	11	10	16	21	17	22	17	17	16	14	10	7	8	7	11	11	7
27	7	B	8	7	43	48	16	13	12	15	15	30	23	31	98	26	14	12	50	9	7	12	7	7
28	9	9	10	7	10	11	18	B	31	B	38	61	B	23	31	50	19	20	13	12	11	7	11	10
29	7	B	22	15	15	50	15	23	20	B	B	B	B	50	52	26	19	22	11	9	15	12	12	10
30	6	11	12	11	29	22	24	B	B	B	46	48	22	23	22	32	95	25	14	B	15	15	12	7
31	11	15	B	B	9	7	6	22	15	21	22	58	22	22	15	20	20	14	8	8	7	8	7	7
	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	11	13	17	15	16	17	17	20	20	24	28	40	38	29	28	26	20	17	14	12	12	12	11	11
UQ	16	16	23	20	24	23	22	B	B	B	B	D B 61	B	B	51	36	51	30	22	27	15	15	14	12
LQ	7	11	13	11	14	12	13	13	12	15	22	22	22	22	19	18	14	12	11	9	8	10	9	7

The Radio Research Laboratories, Japan

AUG. 1981 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

AUG. 1981 | 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	B	B	A	B	B	260	B	B	B	H 250	B	230	B	B	A	A	A
2	A	A	A	A	A	A	A	A	A	245	230	225	245	E B 270	240	240	B	240	230	300	B	A	A	A
3	A	A	B	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A
4	A	A	A	A	A	A	A	B	B	275	240	B	B	B	B	B	B	245	B	B	B	B	A	A
5	A	A	A	A	A	A	A	A	A	B	B	B	B	240	240	E B 250	205	E B 260	230	220	A	A	A	A
6	A	A	A	A	A	B	B	B	B	B	B	B	B	B	E B 320	E B 290	B	B	235	A	A	A	A	A
7	A	A	A	A	A	A	A	A	B	B	B	225	225	220	240	220	260	B	B	B	A	A	A	A
8	A	A	A	A	A	A	A	A	H 230	280	245	240	230	225	200	220	205	B	230	B	210	B	A	A
9	E A 290	A	A	A	A	B	A	A	A	220	225	235	245	225	210	225	205	215	225	210	A	260	A	A
10	A	A	A	A	A	A	B	A	A	A	230	250	B	200	240	205	215	205	220	220	275	B	B	B
11	B	A	A	A	A	A	A	A	A	250	230	230	220	210	215	230	200	190	225	250	B	A	A	A
12	B	B	A	A	B	A	A	B	A	B	B	250	230	240	220	225	225	195	H 190	210	250	A	B	A
13	A	A	B	A	A	A	B	A	B	B	B	E S 300	260	B	B	225	H 205	205	205	205	220	295	A	A
14	A	A	A	B	B	B	A	A	B	B	B	240	230	230	E B 250	B	B	B	205	B	E B 255	E B 285	A	A
15	A	A	A	A	A	A	A	B	B	B	250	230	235	225	245	205	205	205	200	215	215	B	B	A
16	A	A	A	A	A	A	A	A	A	B	B	260	245	225	225	205	205	200	195	205	B	B	B	A
17	A	A	A	A	A	A	A	A	A	275	260	B	B	B	215	B	240	210	245	B	A	A	A	A
18	A	A	A	A	A	B	A	A	A	250	275	B	B	250	B	255	275	B	B	A	A	A	A	A
19	A	A	A	A	A	A	A	A	A	B	245	260	250	240	250	225	230	245	240	B	B	A	A	A
20	A	A	A	B	A	B	B	A	A	280	255	230	250	230	280	225	235	210	205	210	215	A	A	A
21	A	A	B	B	Y	A	A	A	A	A	B	B	B	245	250	255	E B 260	B	260	215	A	A	A	A
22	A	A	A	A	A	A	B	B	A	A	A	280	260	245	240	235	205	220	210	250	225	A	A	A
23	A	A	A	A	B	A	A	B	B	Y	B	B	B	B	B	255	B	B	B	A	A	A	A	A
24	A	A	A	A	A	A	A	A	A	B	Y	B	275	B	230	250	235	230	230	A	A	A	A	A
25	B	A	B	B	B	A	A	A	A	E A 290	270	H 250	B	B	E B 290	235	250	255	230	H 255	A	A	A	A
26	B	A	A	A	A	A	A	A	A	260	245	240	235	235	230	210	205	230	220	205	A	A	A	A
27	A	B	A	A	B	B	A	A	270	240	245	240	H 250	H 260	B	250	255	235	260	A	A	A	A	A
28	A	A	A	A	A	A	A	B	B	B	B	B	B	250	270	E B 260	225	240	250	A	A	A	A	A
29	A	B	A	Y	A	B	A	A	A	B	B	B	B	E B 290	E B 250	250	270	315	A	A	A	A	A	A
30	270	A	A	A	A	Y	A	B	B	B	E B 290	E B 300	250	250	250	E B 260	B	230	240	B	A	A	A	A
31	A	A	B	B	A	A	A	A	A	A	H 250	285	240	250	230	220	210	215	205	205	215	220	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								2	11	16	19	19	22	24	26	24	22	25	15	9	4		
MED	275								250	255	245	240	245	236	235	228	222	222	230	215	218	U 256		
UQ										276	255	255	250	248	246	245	248	240	235	235	U 238	290		
LQ										248	235	232	232	225	228	220	205	205	205	208	215	240		

AUG. 1981 | H'F (KM)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

SEP. 1981 | FXI (0.1 MHZ) | 45° E Mean Time (G.M.T. + 3 h)

Stations SYOWA STATION Lat. 69° 00·4' S, Long. 39° 35·4' E Sweep 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	39	48	49	45	67	65	66	70	69	78	105	118	X 126	X 137	X 135	X 139	134	X 130	X 121	X 112	81	X 56	X 44	35
2	57	63	38	A	A	A	75	B	B	B	X 79	B	90	88	111	120	140	126	51	35	71	A	A	53
3	45	45	53	A	53	56	46	54	66	80	X 98	93	S	X 125	X 131	X 128	X 135	X 131	X 125	149	80	53	22	A
4	39	47	51	61	A	A	58	70	67	73	X 85	R 93	X 109	X 115	X 117	X 130	X 135	132	125	110	86	33	A	52
5	61	46	48	B	B	B	B	A	B	B	B	B	B	B	B	98	98	106	99	75	B	B	A	A
6	A	A	B	B	B	33	B	B	B	B	B	B	95	C	C	X 126	128	124	120	100	76	47	O X 33	45
7	O X 24	50	39	A	60	54	79	63	79	78	88	105	X 120	X 128	X 132	X 131	X 130	X 128	X 122	X 95	69	B	B	B
8	46	A	49	60	O X 59	Y	85	93	B	66	X 85	95	102	118	X 123	X 130	X 126	X 121	X 128	111	85	48	46	O X 36
9	43	108	69	92	61	52	B	80	73	86	79	86	X 87	109	118	127	126	130	119	97	91	66	78	55
10	60	55	42	58	60	70	86	70	88	100	109	112	117	X 120	X 118	X 118	X 118	X 115	X 109	X 100	X 78	52	A	52
11	60	A	55	58	60	A	A	A	O S 38	B	B	B	B	O X 57	70	83	92	106	O X 67	69	54	48	A	41
12	44	A	A	A	A	50	53	56	60	X 75	91	U R 99	110	115	124	X 130	136	128	B	66	50	A	60	A
13	62	78	59	44	58	78	68	79	65	53	69	79	85	100	99	111	128	119	110	100	90	46	48	46
14	42	46	49	78	78	79	85	84	91	99	108	128	X 128	X 129	X 131	X 131	130	130	123	111	100	59	43	60
15	49	A	90	89	60	75	80	78	88	86	90	89	O R 91	89	98	110	100	110	100	89	70	A	A	43
16	55	55	45	57	70	78	70	80	78	79	87	89	96	112	115	120	X 123	X 118	X 105	X 96	75	45	46	42
17	A	43	50	55	60	70	78	90	79	89	108	X 106	X 116	X 119	X 125	X 126	X 126	X 126	120	114	105	73	60	39
18	X 46	62	68	70	70	69	85	100	100	102	110	121	125	128	130	130	132	130	120	112	110	88	50	70
19	A	90	85	80	49	50	A	48	50	49	44	A	B	X 51	69	78	89	85	71	75	68	48	45	42
20	49	55	49	45	46	A	A	65	75	79	85	X 91	X 95	X 95	X 96	X 97	100	103	X 100	X 95	X 85	63	49	82
21	52	43	60	75	70	70	77	80	89	93	95	105	X 111	X 114	X 110	X 108	X 106	X 111	O X 98	X 92	X 79	X 67	63	O X 44
22	A	75	80	77	60	70	58	66	A	62	58	O X 76	74	89	88	100	O X 106	100	91	X 76	70	60	49	67
23	65	45	68	59	40	40	40	62	68	72	78	89	X 96	X 95	X 97	X 94	X 95	X 96	93	90	78	62	48	42
24	62	32	48	50	70	80	78	88	X 77	X 91	X 106	X 120	X 122	X 128	X 125	X 128	X 129	X 132	130	100	57	48	52	49
25	44	43	A	70	93	80	59	68	71	74	76	82	89	92	X 100	X 101	112	119	120	94	61	40	39	42
26	41	31	41	59	57	78	80	O X 61	75	82	88	X 85	95	B	135	130	95	58	53	110	55	45	76	50
27	O X 36	60	45	B	69	50	85	58	A	B	B	B	B	77	85	89	87	84	77	79	80	41	A	43
28	55	63	80	90	65	92	75	79	100	100	X 95	X 96	X 102	X 109	X 114	X 113	X 112	X 105	100	95	72	55	30	43
29	60	70	78	90	80	82	100	88	76	O X 83	92	100	102	110	110	110	110	110	101	88	68	49	52	60
30	45	A	95	78	62	76	48	45	X 58	A	O X 66	X 75	83	X 86	X 86	X 97	99	95	92	84	66	A	A	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	26	24	27	23	25	24	24	26	24	24	26	24	25	27	28	30	30	30	29	30	29	24	21	26
MED	48	52	51	61	60	70	76	70	75	80	88	94	102	X 110	X 114	X 119	120	118	105	95	76	50	48	46
UQ	60	63	68	78	70	78	82	80	84	90	98	106	X 116	X 120	X 125	X 130	130	128	120	110	85	61	52	55
LQ	43	45	43	58	59	53	58	62	66	74	79	88	91	90	93	100	100	105	93	84	68	46	44	42

The Radio Research Laboratories, Japan

SEP. 1981 | FXI (0.1 MHZ)

IONOSPHERIC DATA

SEP. 1981 | FOF2 (0.1 MHZ) | 45° E Mean Time (G.M.T. + 3 h)

Station SYOWA STATION Lat. 69° 00.4' S, Long. 39° 35.4' E Sweep 4 MHz to 15 MHz in 20sec in automatic operation

Day \ 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
1	F	F	F	F	F	F	F	F	F 60	J F 72	J S 99	110	119	131	129	133	J F 128	J R 124	J R 115	J R 106	72	50	37	J F 29
2	A	26	20	A	A	A	F	B	B	B	73	B	F	F 80	F	F	F	F	F	F	A	A	A	F
3	F	F	F	A	F	F	A	F 47	58	F 70	91	J S 87	S 74	119	J R 125	J R 122	J R 129	J R 125	J F 119	J F 143	J F 74	F	F	A
4	A	F	F	F	A	A	F	F	F 59	67	79	R 87	100	109	111	J R 124	129	F	F	F	F	24	A	A
5	A	F	F	B	B	B	B	A	B	B	B	B	B	B	B	R 80	F	F	J F 93	F 60	B	B	A	A
6	A	A	B	B	B	F	B	B	B	B	B	B	F	C	C	119	118	118	113	J F 94	F 69	F 40	F 26	F 19
7	18	A	F	A	F	F	F	F 44	F 57	F 70	F 81	97	114	122	126	124	124	122	116	89	F 61	B	B	B
8	J F 40	A	F	48	53	Y	60	F 60	B	58	78	85	F 89	F 108	117	123	119	115	111	F	J F 79	J F 37	F	30
9	25	B	F	F	F	F 41	B	49	F	F 70	J F 73	F 76	81	F 100	F 106	F 110	J H 120	F 123	110	85	J Y 84	J F 50	A	F
10	F 37	A	F	F	F	F	F	F	J F 74	F	90	100	108	113	111	111	112	107	101	93	70	F	A	F
11	F	A	F	F	F	A	A	A	S 32	B	B	B	B	R 51	F	F 69	F	F	61	F	F	F	A	F
12	F	A	A	A	A	F	41	F	F 52	69	83	U R 91	F	107	F 109	123	F	J R 114	B	F	F	A	A	A
13	F	F	J F 53	F	F	F	F	F	F	F	62	F	F 76	83	90	F 100	115	J F 113	F	F	A	F	F	F
14	F	F	F	F	F	F	F	J F 78	F 83	91	F 98	J F 125	120	123	125	125	122	121	115	99	F	F	F	A
15	F	A	F	F	F	F	F	F	F 72	J F 80	F 80	F	F 82	F	F	F	F	F 91	F	F	F	A	A	F
16	J F 49	F	F	F	F	F	F	F	F	F 71	J F 81	J F 83	F 85	F 101	103	110	115	111	98	90	J F 69	F	F	F
17	A	F	F	F	F	F 50	F	F	F	F 82	F	100	110	112	118	120	120	120	F 110	F	F	F	F	F
18	J R 40	F	F	F	F	F	F	F	F 72	F 83	100	F 110	F	F	J F 124	J F 124	F 125	122	112	F 103	F	F 80	F	F
19	A	F	F	F	F	F	A	F	F	42	F	A	B	45	60	F 68	F 77	F 70	F 63	F 65	F	F	F	A
20	29	F	F	F	F	A	A	F 52	F	F 70	78	85	89	89	90	91	91	94	93	89	77	F 51	F	F
21	F	F	F	F	F	F	F	J F 74	F	F	F	98	105	108	103	102	100	105	92	85	73	60	F 27	38
22	A	F	F	69	F	F	F	F	A	F	F 50	70	F	F	80	F 141	100	92	F	70	F 62	F 52	F	F
23	F	F	F	F	F	F	F	F 54	F 52	F 62	F 70	F 80	90	89	91	88	89	90	F 85	F 81	F 70	F 51	F 40	F 31
24	F 28	F 21	F 25	F	F	F 40	F	F 58	71	85	100	113	115	120	119	120	121	125	122	F	F	F	F	F 34
25	F 37	F 26	A	48	F	F	F 50	F	F	F	F	F	F	F 85	92	94	F 102	F 110	112	75	F	F 27	F 26	27
26	F	F	F	F	F	F	F 46	55	F	F 71	80	79	F 80	B	F	120	F 66	F 50	F 45	F	F	F	A	F
27	F 28	F	F 28	B	J F 63	F	F	F	A	B	B	B	B	F 70	F 72	F	78	F 64	J F 71	F 62	60	F	A	F
28	F	F	F	F	F	F	F	F 69	F 81	F 83	88	90	96	102	108	107	105	93	91	87	F	F	22	F 18
29	F	F	F	F	F	F	F	F	F	R 77	F	F	F	F	F 102	F 100	101	F 96	94	J F 82	F	F	F	F
30	F	A	F	F	F	F	F	F	52	A	60	69	F 74	80	80	91	91	F 85	F 82	75	J F 60	A	A	F 43
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	10	3	4	3	2	3	4	11	14	19	21	20	19	23	24	27	25	26	24	20	14	11	6	9
MED	F 33	F 26	F 26	48	58	F 41	48	F 55	F 60	F 71	80	88	90	102	107	111	115	110	100	86	F 70	F 50	F 26	F 30
UQ	J F 40	26	F 40	58		F 46	55	F 64	F 72	F 81	90	100	109	112	118	123	121	121	112	94	74	F 52	F 37	F 34
LQ	28	F 24	22	48		F 40	44	F 50	F 52	F 70	73	82	F 82	84	90	97	100	F 92	88	75	F 62	F 38	F 26	F 27

SEP. 1981 | FOF2 (0.1 MHZ)

IONOSPHERIC DATA

SEP. 1981 | 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	32	37	33	39	38	40	31	19	20	23	26	27	27	31	33	25	23	45	E B 14	E B 15	E B 14	E B 11	E B 10	E B 10
2	32	32	32	52	60	41	42	B	B	B	61	B	30	E B 33	E B 48	E B 47	E B 25	E B 22	E B 31	43	48	50	48	50
3	52	52	54	67	35	32	45	36	25	24	28	28	28	28	28	E G 25	G 18	G 17	24	13	28	14	16	29
4	32	34	41	50	51	49	47	30	21	25	27	29	30	29	E G 26	27	24	E B 30	E B 52	E B 29	E B 23	30	51	43
5	42	33	42	B	B	B	B	28	B	B	B	E B 51	B	B	B	E B 46	E B 50	E B 45	E B 18	19	B	B	20	22
6	23	63	B	B	B	22	B	B	B	B	B	B	E B 71	C	C	27	24	E G 20	E B 15	E B 15	E B 16	E B 25	E B 18	29
7	28	37	47	40	40	40	24	E B 20	E B 21	E B 36	E B 34	29	30	30	29	E G 26	E G 24	E B 22	E B 25	E B 27	E B 23	B	B	B
8	E B 39	42	31	49	56	45	48	E B 42	B	49	E B 45	E B 38	E B 36	E B 37	E B 36	E B 27	24	21	E B 18	E B 22	E B 16	23	E B 15	E B 15
9	E B 16	38	40	59	55	29	B	50	40	37	E G 26	E G 29	E B 37	E B 36	28	29	26	23	18	E B 14	11	15	40	44
10	41	40	36	53	70	45	45	31	31	E G 25	30	30	28	31	31	27	25	22	17	11	31	40	46	52
11	89	50	43	40	20	60	50	68	28	B	B	B	B	E B 41	33	E G 25	27	30	E B 37	28	39	41	45	39
12	54	83	44	45	41	31	40	E B 41	E S 36	E S 41	E B 48	E B 65	E B 38	30	27	E B 37	E B 26	30	B	E B 14	40	42	44	45
13	44	32	60	69	56	17	49	51	30	46	E B 41	E B 34	32	29	E B 36	27	27	31	E S 38	39	45	43	39	35
14	36	30	48	49	45	35	22	22	G 23	28	29	31	31	31	39	26	25	30	E B 37	E B 28	42	38	34	39
15	93	51	33	31	52	51	30	43	32	47	31	E S 40	E B 53	39	E B 35	E B 35	26	E B 21	G 16	E G 13	39	40	40	40
16	41	55	79	45	60	73	56	49	49	65	46	49	38	31	30	28	24	22	18	K 15	24	E B 10	31	55
17	60	43	70	76	60	60	60	51	44	E B 38	41	G 28	G 29	38	35	29	E G 25	21	19	E B 22	28	E B 22	E B 17	34
18	68	53	39	65	48	30	25	E B 20	E B 28	E B 28	E G 30	E S 34	37	31	39	29	25	23	K 18	18	15	12	E B 15	96
19	62	75	39	40	39	48	45	50	52	50	26	50	B	E G 31	31	32	30	39	30	26	28	29	30	31
20	33	30	30	31	31	56	56	51	42	30	E G 28	E S 33	E S 37	30	E G 29	E G 28	E G 26	23	E B 20	E B 15	E B 15	E B 13	27	38
21	38	41	40	57	38	43	22	E B 21	E B 25	E G 26	E G 26	E G 29	E G 29	28	E G 28	E G 27	E G 23	E G 23	E B 19	E B 14	E B 11	E B 11	E B 14	35
22	56	58	47	23	37	20	E B 26	51	45	E B 36	45	E B 37	E B 55	E B 42	E B 38	30	E G 26	23	E B 20	21	E B 14	E B 14	E B 14	38
23	93	39	56	49	51	52	23	52	31	E G 26	E G 28	E G 29	32	G 29	20	27	25	25	22	18	E B 13	E B 11	E B 10	E B 10
24	12	29	30	31	30	20	E B 20	E G 21	E G 24	E G 27	30	31	31	31	G 29	28	27	23	K 20	E B 17	20	31	33	42
25	55	48	51	49	50	58	49	44	49	31	38	E G 31	E G 31	E G 30	E G 30	30	E G 24	26	E B 28	K 21	25	26	21	24
26	29	35	30	38	E B 23	16	48	46	51	39	E G 30	E G 30	21	B	E B 45	31	E B 32	31	28	59	45	89	43	61
27	51	120	22	B	55	45	39	30	75	B	B	B	B	E B 37	E B 37	E G 29	E B 36	28	29	36	39	100	45	45
28	41	78	32	56	31	25	S 27	50	E G 30	E G 29	E G 30	E G 31	34	32	38	42	30	25	22	E G 16	E G 11	32	14	16
29	31	40	56	88	58	33	39	39	E B 42	E B 60	31	40	E B 38	E B 24	E G 30	E G 30	29	30	K 22	30	27	40	48	48
30	130	52	48	49	29	24	42	48	50	45	E B 47	E B 38	E G 33	E G 32	E G 31	E G 29	E G 27	26	30	E B 20	E B 15	40	41	47
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	29	27	28	29	27	28	26	25	26	26	26	27	28	30	30	30	29	30	29	28	29	29
MED	41	42	41	49	46	40	42	42	31	30	28	E E 31	30	30	28	27	25	24	19	16	24	30	31	39
UQ	56	53	48	56	56	49	48	50	45	42	36	E E 38	E B 37	32	34	30	26	30	26	24	39	40	43	45
LQ	32	35	33	40	36	29	26	24	23	E E 27	E G 28	G 28	30	30	26	26	24	22	17	E E 15	E B 15	E B 14	E B 16	29

SEP. 1981 | FES (0.1 MHZ)

IONOSPHERIC DATA

SEP. 1981 | 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	10	11	9	7	7	6	8	15	21	15	21	23	22	21	21	18	12	14	15	14	11	10	10
2	6	6	6	15	14	22	15	B	B	B	23	B	23	33	48	47	25	22	31	11	15	10	7	6
3	6	6	6	15	11	6	12	11	9	11	11	19	16	14	17	14	11	12	6	5	6	11	10	7
4	9	7	14	15	14	21	13	12	8	13	14	22	21	23	22	16	18	30	52	29	23	12	13	11
5	12	11	9	B	B	B	B	17	B	B	B	51	B	B	B	46	50	45	18	15	B	B	16	16
6	10	27	B	B	B	14	B	B	B	B	B	B	71	C	C	19	20	16	15	15	16	25	18	9
7	10	10	15	37	15	13	15	20	21	36	34	19	20	18	17	19	22	22	25	27	23	B	B	B
8	39	27	25	43	26	27	43	42	B	43	45	38	36	37	36	27	22	15	18	22	16	15	15	15
9	16	25	16	16	17	21	B	24	21	18	21	21	37	36	22	21	16	15	11	14	9	8	14	13
10	15	17	15	14	15	20	15	15	15	16	15	17	20	21	15	15	15	14	9	9	7	10	10	11
11	14	10	13	9	10	15	13	22	15	B	B	B	B	41	24	23	16	15	37	13	8	10	15	10
12	9	13	17	18	21	14	20	41	E S 36	E S 41	48	65	38	29	18	37	26	21	B	14	10	15	15	9
13	13	9	10	18	21	8	15	15	22	43	41	34	24	27	36	24	15	16	E S 38	13	13	13	13	13
14	11	8	22	13	13	8	10	13	14	14	15	16	21	21	17	14	15	15	37	28	14	10	9	10
15	9	15	13	7	13	10	15	13	14	17	19	E S 40	53	21	35	35	17	21	14	9	8	8	15	14
16	9	9	5	5	10	19	18	17	S 36	22	21	14	17	15	13	15	14	15	15	8	6	10	9	10
17	9	8	10	13	14	14	14	23	24	38	17	17	15	17	18	15	14	15	14	22	18	22	17	9
18	14	14	13	13	11	9	9	20	28	28	26	E S 34	18	20	14	15	15	15	13	9	14	9	15	10
19	15	21	11	9	10	13	14	18	15	18	21	20	B	21	21	18	16	15	14	13	8	9	6	8
20	11	9	8	9	9	20	20	20	19	20	21	E S 33	E S 37	21	20	21	20	20	20	15	15	13	10	10
21	20	21	15	21	20	14	16	21	25	21	20	21	21	19	20	20	19	20	19	14	11	11	14	14
22	14	15	19	14	21	15	26	24	38	36	36	37	55	42	38	22	21	20	20	21	14	14	14	10
23	15	14	13	14	15	14	15	21	18	17	18	19	21	19	19	18	16	15	14	13	13	11	10	10
24	9	11	9	11	11	10	20	16	19	20	20	20	20	21	17	21	20	17	15	17	13	11	14	13
25	14	14	14	15	10	20	21	21	21	23	21	20	20	22	21	20	20	20	28	14	17	18	14	14
26	14	13	15	21	23	11	27	28	25	20	20	21	21	B	45	21	32	22	14	14	14	14	15	14
27	14	15	15	B	29	24	21	23	23	B	B	B	B	37	37	22	36	21	17	15	9	14	24	16
28	14	14	14	14	18	14	26	20	16	15	17	20	20	20	19	16	17	18	16	14	8	8	9	9
29	10	19	14	12	18	16	20	20	42	60	26	20	38	24	18	15	15	14	14	13	8	10	14	10
30	19	14	17	10	9	21	21	16	21	35	47	38	26	21	20	21	20	17	14	20	15	10	13	11
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	29	29	30	30	30	30	30	30	30	30	30
MED	12	14	14	14	14	14	17	20	21	22	21	20	22	21	20	20	18	16	16	14	14	11	14	10
UQ	14	15	15	18	21	20	21	23	36	43	41	38	38	33	35	22	21	21	U 22	17	15	14	15	14
LQ	9	9	10	11	11	11	14	16	15	18	18	20	20	20	18	16	15	15	14	13	8	10	10	10

SEP. 1981 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

SEP. 1981 | H'F (KM) | 45° E Mean Time (G.M.T. + 3 h)

Stations 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	305	270	245	235	225	230	225	225	230	225	210	205	210	205	210	235	235
2	A	A	A	A	A	A	A	B	B	B	A	B	270	260	E B 270	270	250	250	325	A	A	A	A	A
3	A	A	A	A	A	A	A	A	270	240	245	245	230	240	225	225	215	210	205	205	235	215	A	A
4	A	A	A	A	A	A	A	A	260	240	240	240	240	230	225	240	225	250	250	220	250	E B 350	A	A
5	A	A	A	B	B	B	B	A	B	B	B	B	B	B	B	E B 290	E B 260	E B 275	235	255	B	B	A	A
6	A	A	B	B	B	Y	B	B	B	B	B	B	B	C	C	225	230	220	220	225	215	245	E B 255	A
7	A	A	A	A	A	A	360	305	280	255	245	230	230	225	230	H 225	215	230	230	215	240	B	B	B
8	E B 320	A	A	S	A	A	Y	E B 350	B	Y	E B 300	260	245	H 230	240	235	225	205	210	230	205	230	230	E B 250
9	B	B	A	A	A	S	B	A	H 290	275	210	H 200	E B 260	245	240	225	225	225	210	205	205	225	A	A
10	A	A	A	A	A	A	A	A	270	250	250	245	230	230	230	235	220	225	225	225	250	A	A	A
11	A	A	A	A	240		A	A	A	B	B	B	B	B	S	S	A	A	S	A	A	A	A	A
12	A	A	A	A	A	A	A	B	S	255	260	270	250	240	240	240	230	250	B	B	A	A	A	A
13	A	A	A	A	A	A	A	A	S	A	E B 285	265	255	240	255	260	275	260	S	A	A	A	A	A
14	A	A	A	A	A	A	A	265	245	255	240	235	220	230	220	245	250	230	235	245	260	E A 270	A	A
15	A	A	A	A	A	A	A	A	260	300	250	E S 275	B	250	250	255	225	250	245	245	A	A	A	A
16	A	A	A	A	A	A	A	A	A	A	A	A	255	245	240	240	235	240	240	240	220	250	A	A
17	A	A	A	A	A	A	A	A	A	290	260	225	235	235	H 240	220	240	215	220	230	235	250	250	A
18	A	A	A	A	A	A	A	270	250	250	240	E S 230	235	220	225	230	235	235	210	225	220	205	H 240	A
19	A	A	A	A	A	A	A	A	A	A	S	A	B	265	250	250	260	255	270	260	260	280	E A 295	A
20	A	A	A	A	A	A	A	A	S	H 290	250	250	250	H 250	240	240	240	240	235	220	210	225	255	210
21	A	A	A	A	A	A	A	265	270	230	250	E S 240	E S 240	230	235	240	240	235	220	210	210	210	E B 265	A
22	A	A	A	255	A	A	B	A	A	B	S	280	B	E B 270	E B 255	235	250	255	250	230	240	245	250	A
23	A	A	A	A	A	A	A	A	300	270	250	245	270	H 245	240	240	235	225	225	225	210	210	230	255
24	300	A	A	A	A	A	330	235	250	240	235	235	235	235	225	250	235	240	220	230	A	A	A	A
25	A	A	A	A	A	A	A	A	A	280	255	245	235	250	240	250	245	230	240	250	A	A	A	A
26	A	A	A	A	B	A	A	A	A	275	225	245	250	B	B	260	B	A	A	A	A	A	A	A
27	A	A	A	B	A	A	A	A	A	B	B	B	B	255	E B 275	270	E B 280	270	270	A	A	A	A	A
28	A	A	A	A	A	A	S	A	280	250	250	240	240	230	240	235	235	230	220	220	230	250	E A 270	A
29	A	A	A	A	A	A	A	A	S	B	260	235	250	225	245	240	250	235	250	250	250	A	A	A
30	A	A	A	A	A	A	A	A	A	A	B	260	240	240	245	250	250	255	250	235	235	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	2			1	1		2	7	13	18	21	23	23	26	26	29	28	28	26	24	20	16	11	4
MED	305			255	240		345	268	270	255	248	242	240	239	240	240	235	235	232	228	232	232	240	232
UQ								296	280	275	252	252	250	248	242	250	249	250	250	242	245	249	E E 260	252
LQ								265	260	245	240	234	234	230	230	235	225	225	220	220	210	212	238	222

IONOSPHERIC DATA

OCT. 1981 | 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 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	58	59	A	73	54	44	60	55	69	73	X 75	X 85	X 95	X 101	X 113	X 115	X 116	X 115	X 104	93	78	55	45	45
2	42	40	A	A	A	A	A	70	83	86	91	92	X 88	X 94	99	98	X 101	111	118	110	86	B	B	B
3	A	58	42	47	56	59	69	78	68	A	50	B	70	74	73	85	100	78	75	56	69	40	42	A
4	A	78	B	A	62	72	60	59	A	B	B	B	B	72	81	X 89	96	105	91	O X 76	73	42	A	A
5	A	B	75	78	A	75	78	88	93	96	B	B	92	94	X 98	92	94	90	X 86	X 82	X 79	72	65	61
6	51	45	A	45	57	66	85	94	100	103	X 106	110	X 110	X 111	X 115	X 116	X 112	119	X 110	101	61	52	53	48
7	41	66	70	68	75	54	78	A	B	O X 66	76	78	80	O X 93	O X 103	112	X 115	X 118	104	46	90	51	A	43
8	70	66	75	A	40	50	56	65	U W 55	A	A	B	B	B	80	75	O X 66	X 61	X 61	X 55	50	30	A	A
9	51	70	60	80	63	58	B	B	B	B	B	B	O X 62	O X 67	O X 78	95	109	X 96	X 85	78	57	58	40	85
10	A	A	48	50	O X 59	B	B	B	B	B	O X 76	98	B	90	R	B	O X 92	O X 82	O X 69	B	B	A	A	43
11	A	43	60	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A
12	A	31	43	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	O X 75	O X 68	67	59
13	54	45	43	45	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
15	B	B	A	B	B	B	B	B	B	B	B	B	O X 80	B	O X 78	O X 73	B	B	B	O X 64	B	B	B	B
16	45	45	59	60	65	60	O X 71	O X 82	83	O X 85	R	92	91	O X 99	X 106	X 108	105	102	100	98	X 88	O X 83	78	78
17	65	50	68	66	70	67	72	76	71	B	61	67	62	80	83	100	89	90	98	89	84	70	59	53
18	51	50	53	60	O X 52	55	69	73	78	83	84	X 81	87	X 88	X 88	X 91	X 91	X 93	X 94	X 92	X 86	X 81	85	61
19	46	53	70	81	85	80	77	85	80	76	O X 66	B	79	89	S	B	95	X 77	74	X 71	X 65	55	63	55
20	53	100	B	69	73	49	59	A	A	B	B	B	B	B	69	X 92	78	B	40	56	A	B	A	42
21	75	50	50	60	B	53	63	U W 57	O X 57	A	O X 59	O X 57	X 68	R 75	78	69	69	X 68	63	48	54	53	51	45
22	69	O X 65	A	88	83	76	82	100	110	110	105	106	X 96	97	95	69	58	E G 45	E G 46	49	42	31	A	O X 38
23	45	40	43	A	A	53	65	55	A	50	B	B	B	B	B	B	B	X 65	65	58	48	47	46	A
24	A	51	50	78	85	90	85	95	98	X 104	X 104	X 102	X 102	X 98	X 93	X 91	91	69	54	61	44	52	A	45
25	65	B	B	80	78	59	75	59	B	O X 52	60	B	60	78	76	72	75	X 65	68	60	60	56	55	53
26	78	70	60	69	78	71	80	90	93	92	X 87	O X 86	X 95	R 96	X 96	X 92	X 87	X 86	83	88	79	X 72	72	70
27	70	54	60	70	60	76	76	74	77	X 80	X 83	X 79	X 77	X 78	X 80	X 81	X 83	X 86	X 83	65	80	66	62	50
28	A	65	56	55	61	66	60	56	O X 57	X 61	64	70	O X 73	O X 71	O X 74	73	O X 74	76	X 70	61	69	48	60	40
29	A	O X 51	80	76	82	80	87	80	78	A	75	76	78	80	87	95	91	87	90	85	78	75	68	64
30	48	60	A	50	64	68	76	O X 69	75	81	X 84	X 84	X 82	X 82	O X 84	X 83	O X 83	86	72	65	69	62	59	49
31	56	50	60	61	61	68	75	76	80	83	X 86	X 85	X 87	X 87	X 91	X 93	X 93	X 91	X 86	X 86	85	79	69	61
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	20	26	21	23	22	24	23	22	19	17	19	17	22	23	24	24	25	25	26	26	25	24	19	22
MED	54	52	60	68	64	66	75	75	78	83	X 76	85	X 81	X 88	X 86	92	91	X 86	83	68	73	56	60	52
UQ	67	65	68	77	78	74	78	85	88	92	X 86	92	X 92	X 95	X 97	96	X 100	96	94	88	80	71	68	61
LQ	47	45	50	58	59	54	64	59	70	73	65	X 78	73	78	78	78	83	X 76	68	58	60	50	52	45

OCT. 1981 | FXI (0.1 MHZ)

IONOSPHERIC DATA

OCT. 1981 | FOF2 (0.1 MHZ) | 45° E Mean Time (G.M.T. + 3 h)

Station SYOWA STATION Lat. 69° 00.4' S, Long. 39° 35.4' E Sweep 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	F	45	A	F	F 40	F	F 50	F	F 58	F 65	68	79	89	95	106	109	109	107	98	81	F 70	F 46	F 23	22
2	F	F	A	A	A	A	A	F 58	F 71	F 77	82	83	81	88	91	91	95	F 103	F 102	F 100	F 70	B	B	B
3	A	F	F	F	F	F	F	F	F	A	F	B	62	66	F 66	F 75	F	F	68	48	F	F	F	A
4	A	B	B	A	F	F	F	50	A	B	B	B	B	F 65	F	82	90	F 94	83	70	F	A	A	A
5	A	B	F	F	A	F 55	F	F 30	F 81	F 85	B	B	84	86	92	83	86	F 80	80	76	72	64	F 57	53
6	F 42	F	A	F	50	F 55	F 59	F 83	F	F	100	103	103	105	108	110	105	111	103	92	F 41	F 35	F	F
7	F 30	F	F	F	F	F	F	A	B	60	F 68	F 70	F 72	87	96	103	108	112	92	F	A	F	A	F
8	F	F	F	A	F	F	F	F	U W 44	A	A	B	B	B	F	F	61	55	55	49	F	F	A	A
9	F	F	F	F	F	50	B	B	B	B	B	B	56	61	72	F 87	100	90	78	68	50	F 48	30	A
10	A	A	F	F 43	53	B	B	B	B	B	70	F	B	F	R 75	B	86	76	63	B	B	A	A	F
11	A	F	F	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A
12	A	F	F	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	69	62	F 59	F 51
13	F 46	F	F	F	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
15	B	B	A	B	B	B	B	B	B	B	B	B	74	B	72	R 67	B	B	B	58	B	B	B	B
16	F	F	F	F	F	F	65	76	F 75	79	R 85	F	F	93	100	102	F	R 95	93	85	82	77	F 67	F 67
17	F	F 29	F 29	F 39	J F 64	F 55	60	J R 66	J H 65	B	F	F 60	F	F 71	F 75	F	82	F 81	91	82	F 76	F 60	F	F
18	F	F	F	F	46	48	F 59	F 65	70	75	77	75	81	82	82	85	85	87	87	85	80	75	F 67	F 53
19	F 38	F	F 50	F	70	F	F 70	F	F	F 53	E G 60	B	F 70	F 76	F 85	B	F 85	71	66	65	58	F 40	F	F
20	F	F	B	F	F	F	48	A	A	B	B	B	B	B	F 60	85	F 62	B	F	F 46	A	B	A	F
21	F	F	F	F	B	F	F 52	U W 51	52	A	53	52	62	68	70	F	F	61	J F 57	F	F	F	F 39	F 27
22	F	F 54	A	F	F	F	F	F	F	F	95	F 98	90	89	F	F	F	E G 38	E G 37	F	F	F	A	32
23	F	F	F	A	A	F	F 52	F	A	F	B	B	B	B	B	B	B	59	56	J F 52	F	F 35	F 35	A
24	A	F	F	F 48	F 60	F 65	F 75	85	91	98	98	96	95	92	87	85	83	F	F 46	F	F 34	F	A	F
25	F	B	B	F	F	F	F	F	B	46	F 48	B	F	F	F	F	F 67	59	F 58	J F 54	54	46	F 41	F 43
26	F 38	F	F	F 50	F 59	F	F	82	85	83	81	79	89	90	90	85	81	80	75	80	F 70	65	F 62	F
27	F	F	F	F	F	52	65	F	69	73	77	72	70	71	73	75	77	80	76	F	F	F 50	F 48	F
28	A	F	F	F 47	F	F	F	F	U W 51	55	F	F	66	F 64	68	F	R 68	F	73	F	F	F	F 41	F
29	A	F 43	F	F 59	F 67	F	F	F	F	A	52	F	F 65	F 71	F 80	85	82	80	83	77	70	65	J F 62	J F 58
30	F	F	A	F	F	F 60	56	F 59	F	F 72	78	78	75	75	78	77	77	78	F	F 58	61	F 52	F 50	F
31	F	F 42	F	F	52	F	F	F	F 70	74	80	79	81	81	84	87	87	84	80	80	J F 79	71	F 60	F 50
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	5	5	2	6	10	8	12	11	13	14	17	13	19	21	22	18	21	22	24	20	16	16	15	10
MED	F 38	F 43	F 40	F 48	56	F 55	F 59	66	70	74	77	79	75	81	81	85	85	80	77	73	70	56	F 50	F 50
UQ	F 42	F 45		F 50	F 64	F 58	65	81	F 75	79	82	83	86	89	91	91	90	94	89	82	F 74	65	F 61	F 53
LQ	F 38	F 42		F 43	50	51	F 52	58	58	60	68	72	68	71	72	82	77	71	60	56	56	F 46	F 40	F 32

OCT. 1981 | FOF2 (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

OCT. 1981 | 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 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	45	41	45	30	33	46	54	49	43	E G 28	32	E B 42	E G 32	34	40	E B 38	E B 33	24	E G 22	E B 19	E B 18	E B 21	E B 18	26
2	35	36	55	48	58	53	60	42	42	E B 37	E B 37	E G 31	34	E G 33	E G 32	E B 43	E G 26	26	E B 51	E B 45	E B 37	B	B	B
3	48	60	E B 38	E B 23	E B 18	27	25	27	49	50	35	B	E G 31	E B 37	E B 36	E B 38	27	E B 32	30	27	29	29	32	45
4	60	E B 39	B	50	45	40	45	37	49	B	B	B	B	E B 40	E G 30	E G 30	E B 37	25	E B 40	E B 52	20	39	40	44
5	35	B	43	38	51	39	E B 40	43	E G 30	G 30	B	B	E B 50	E B 37	31	E B 35	E B 45	27	21	E B 20	E B 26	E B 20	E B 16	E B 18
6	30	35	35	56	77	45	42	E G 28	E G 27	G 31	E G 31	E G 32	41	38	41	38	34	27	28	23	24	21	36	39
7	30	58	78	60	33	E B 40	46	68	B	49	E G 33	39	E B 38	E B 47	E B 52	E B 41	E B 36	28	29	E B 25	48	93	61	137
8	42	68	42	66	71	29	30	30	50	50	50	B	B	B	E B 36	E G 32	E B 45	E S 36	30	26	E B 20	30	50	44
9	36	51	70	30	56	E B 37	B	B	B	B	B	B	E B 42	E B 50	E B 51	E B 45	E B 42	E B 38	E B 38	E B 38	E B 26	E B 20	30	42
10	48	45	30	56	55	B	B	B	B	B	E B 52	E B 60	B	E B 60	E B 50	B	E B 48	E B 48	E B 52	B	B	48	40	E B 25
11	51	95	39	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	26
12	43	E B 27	E B 26	39	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E B 50	E B 38	E B 28	E B 29
13	E B 28	E B 28	E B 28	53	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
15	B	B	49	B	B	B	B	B	B	B	B	B	E B 52	B	E B 55	E B 53	B	B	B	E B 50	B	B	B	B
16	53	36	30	E B 25	E B 35	E B 42	E B 42	E B 46	E B 59	E B 52	E B 45	E B 50	E B 47	E B 51	E B 45	E B 47	E B 42	E B 37	E B 36	E B 35	E B 29	E B 37	E B 20	E B 14
17	E B 16	E B 19	22	E B 20	E B 20	E B 41	E B 43	E B 46	E B 51	B	E B 52	E B 40	E B 51	E B 40	E B 38	E G 32	E G 30	E G 26	E G 30	E B 26	E B 28	E B 20	E B 20	29
18	23	60	91	E B 20	52	45	E G 32	E B 42	E B 37	E B 36	E B 36	E B 38	E B 38	E G 33	E G 32	E B 43	E B 38	E B 30	E G 24	E B 22	E B 20	E B 20	E B 21	E B 15
19	30	60	39	55	45	50	40	44	50	E B 48	E B 45	B	E B 36	E B 37	E B 48	B	E B 35	38	27	25	E B 25	E B 27	39	75
20	49	43	B	29	28	68	33	46	44	B	B	B	B	B	E G 32	31	E B 37	B	40	73	78	B	43	75
21	32	29	23	89	B	37	53	45	42	48	43	E B 37	E G 33	E B 38	E G 32	E G 32	39	32	33	K 25	23	31	39	31
22	57	55	45	48	31	24	49	37	43	E G 31	E B 50	31	33	33	E G 33	43	E G 31	28	43	45	66	85	70	29
23	26	39	23	40	39	26	52	60	58	24	B	B	B	B	B	B	B	E B 37	29	28	32	32	30	42
24	90	35	31	31	48	31	37	E G 28	E G 29	30	E G 33	E G 34	E G 33	33	33	E G 30	31	38	S 24	45	30	49	78	60
25	49	B	B	E B 36	31	33	40	27	B	45	45	B	E B 37	31	E G 33	E G 37	E G 30	E B 37	38	31	26	27	31	35
26	39	50	27	26	31	49	27	G 26	29	E G 31	E G 32	E G 38	41	39	E G 33	E B 35	31	31	32	31	30	18	23	31
27	38	41	41	93	65	50	51	49	37	39	E G 33	38	41	33	38	38	36	31	31	31	29	25	39	42
28	70	93	47	51	40	42	37	48	48	38	38	32	E B 52	E B 35	E B 52	E B 48	E B 59	E G 28	29	30	39	40	42	45
29	39	35	30	30	31	30	29	39	39	49	45	39	E G 35	E G 34	E B 36	E G 32	37	30	E G 26	24	29	23	25	30
30	33	37	41	43	40	40	24	42	47	E G 32	E G 33	E G 32	E G 34	E G 35	E B 42	29	E B 40	34	31	31	E B 28	32	23	33
31	65	52	43	44	E B 48	45	46	40	36	E G 32	E G 33	36	35	40	39	39	37	35	30	30	31	29	13	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	29	27	27	28	25	25	24	24	22	21	21	17	22	23	26	24	25	25	26	26	26	25	26	27
MED	39	41	39	42	40	40	40	41	42	34	E E 37	E E 38	E E 38	E E 37	E E 37	E E 38	E B 37	28	29	28	26	28	32	33
UQ	49	56	45	54	52	45	48	46	48	46	E B 45	E B 39	E B 42	E B 40	E B 45	E B 43	E B 40	E E 37	34	34	31	38	40	44
LQ	32	36	29	30	31	32	31	31	37	E G 31	E G 33	E G 32	E G 34	E E 34	E G 33	E E 32	E E 31	28	28	24	E B 25	20	18	27

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

OCT. 1981 | 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 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	18	21	35	27	20	17	19	19	18	19	24	42	25	18	16	38	33	20	14	19	18	21	18	15
2	14	13	23	18	19	36	23	27	21	37	37	21	21	20	21	43	20	20	51	45	37	B	B	B
3	28	27	38	23	18	20	22	19	17	38	22	B	21	37	36	38	21	32	14	18	14	9	10	20
4	13	39	B	23	19	14	15	35	37	B	B	B	B	40	22	22	37	20	40	52	14	11	13	21
5	15	B	28	16	25	23	40	18	19	20	B	B	50	37	22	35	45	16	20	20	20	20	16	18
6	9	10	20	15	20	22	14	15	21	17	19	20	17	20	16	13	13	14	13	14	14	14	10	9
7	14	21	20	13	13	40	20	30	B	37	24	21	38	47	52	41	36	21	15	25	14	11	14	17
8	26	14	9	20	9	14	19	19	22	37	29	B	B	B	36	22	45	36	22	20	20	13	14	15
9	13	13	14	13	20	37	B	B	B	B	B	B	42	50	51	45	42	38	38	38	26	20	18	20
10	21	19	20	20	27	B	B	B	B	B	52	60	B	60	50	B	48	48	52	B	B	36	21	25
11	25	21	21	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	23
12	29	27	26	28	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	50	38	28	29
13	28	28	28	37	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
15	B	B	38	B	B	B	B	B	B	B	B	B	52	B	55	53	B	B	B	50	B	B	B	B
16	24	25	20	25	35	42	42	46	59	52	45	50	47	51	45	47	42	37	36	35	29	37	20	14
17	16	19	16	20	20	41	43	46	51	B	52	40	51	40	38	25	22	21	30	26	28	20	20	15
18	20	16	20	20	21	22	26	42	37	36	36	38	38	28	26	43	38	30	21	22	20	20	21	15
19	16	15	15	18	22	23	24	26	45	48	45	B	36	37	43	B	35	23	22	21	25	27	18	15
20	20	15	B	20	20	26	26	31	30	B	B	B	B	B	25	21	37	B	28	22	21	B	20	18
21	15	13	15	13	B	21	24	22	36	37	27	37	28	38	21	26	21	30	20	20	14	14	13	12
22	13	22	28	18	19	18	22	18	21	22	50	20	27	20	17	19	18	15	14	15	15	14	24	13
23	9	20	14	23	23	16	20	21	20	20	B	B	B	B	B	B	B	37	21	18	16	9	11	20
24	15	8	14	14	14	20	20	14	19	17	21	23	21	20	19	21	15	15	20	20	15	20	10	9
25	15	B	B	36	15	24	21	24	B	24	24	B	37	26	21	37	22	37	20	19	17	14	11	13
26	13	11	19	21	19	14	14	15	21	21	27	38	30	25	22	35	22	20	14	15	14	13	9	13
27	9	11	11	15	14	19	17	18	15	15	16	19	18	20	15	16	15	14	14	14	14	16	12	10
28	13	15	13	9	9	14	13	15	19	20	20	25	52	35	52	48	59	18	14	13	14	13	19	15
29	29	22	25	26	26	14	14	27	20	25	21	36	20	27	36	21	17	14	16	15	14	14	9	11
30	13	15	28	20	16	24	20	23	20	15	18	17	17	17	42	28	40	14	17	21	28	20	15	11
31	14	16	11	23	48	29	17	16	17	20	20	19	20	20	15	16	17	13	13	11	10	9	10	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	15	19	20	20	20	23	22	26	30	37	37	50	38	37	36	38	37	23	21	21	20	20	18	15
UQ	24	26	28	26	31	40	42	46	B	B	B	B	B	D B 60	52	50	46	38	39	42	28	36	21	20
LQ	13	14	15	17	18	18	19	18	20	20	23	24	23	22	21	22	21	17	14	18	14	14	12	13

IONOSPHERIC DATA

OCT. 1981 | 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 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	A	A	B	A	A	A	A	A	H 250	255	E S 290	250	235	245	250	235	235	255	235	230	270	E B 280	A
2	A	A	A	A	A	A	A	A	A	B	260	250	250	H 240	H 240	E B 260	245	260	260	260	260	B	B	B
3	A	A	B	B	B	B	A	B	A	A	250	B	235	250	270	265	270	B	B	290	A	A	A	A
4	A	B	B	A	A	A	A	A	A	B	B	B	B	E B 260	240	250	260	245	255	B	265	A	A	A
5	A	B	A	A	A	B	B	A	275	250	B	B	B	245	250	240	E B 280	250	245	240	245	250	245	255
6	270	A	A	A	A	A	A	H 260	210	260	240	230	225	240	225	240	255	250	245	235	A	275	A	A
7	A	A	A	A	A	B	A	A	B	A	240	250	240	B	B	E B 250	E B 260	240	245	B	A	A	A	A
8	A	A	A	A	A	A	A	A	A	A	A	B	B	B	E B 270	270	B	B	A	A	B	A	A	A
9	A	A	A	A	A	B	B	B	B	B	B	B	E B 290	B	B	B	250	245	260	E B 280	250	260	A	A
10	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	E B 270	B	B	B	B	A	A	250
11	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A
12	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E B 270	260	B
13	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
15	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
16	A	A	A	B	B	B	B	B	B	B	E B 260	E B 260	250	260	E B 255	E B 280	245	250	245	240	240	B	245	255
17	280	B	A	B	B	B	B	B	B	B	B	270	B	270	245	240	245	250	260	270	255	250	A	A
18	A	A	A	A	A	A	A	B	270	270	240	250	240	240	240	265	250	250	250	240	230	240	260	260
19	A	A	A	A	A	A	A	A	A	B	270	B	255	255	B	B	270	275	E B 270	275	B	B	A	A
20	A	A	B	A	A	A	A	A	A	B	B	B	B	B	255	E Y 285	B	B	A	A	A	B	A	A
21	A	A	A	A	B	A	A	A	A	A	A	E S 255	260	275	275	270	270	260	A	A	A	A	A	A
22	A	A	A	A	A	A	A	275	E A 280	260	B	E Y 250	235	250	275	A	270	280	255	A	A	A	A	A
23	A	A	A	A	A	A	A	A	A	250	B	B	B	B	B	B	B	E B 280	255	A	A	A	A	A
24	A	A	A	A	A	A	A	255	240	235	230	235	220	220	240	250	270	A	Y	A	A	A	A	A
25	A	B	B	B	A	A	A	A	B	A	A	B	260	250	235	270	255	B	270	A	A	A	A	A
26	A	A	A	A	E A 240	A	H 270	250	250	240	245	240	250	230	235	240	235	230	250	255	240	250	260	A
27	A	A	A	A	A	A	A	A	255	240	230	235	230	240	235	230	235	245	255	A	A	A	A	A
28	A	A	A	A	A	A	A	A	240	250	210	E Y 240	A	E B 250	B	B	B	240	255	A	A	A	A	A
29	A	A	A	A	A	275	270	A	240	A	E A 255	E A 250	245	250	235	235	240	225	255	255	250	250	270	245
30	A	A	A	A	A	Y	Y	A	A	245	215	225	220	245	B	245	E B 250	250	A	260	260	245	A	A
31	A	A	A	A	B	A	A	A	250	230	240	230	235	230	240	225	230	240	245	245	240	250	275	280
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	2				1	1	2	4	10	12	15	16	18	20	19	20	22	20	19	14	12	11	8	6
MED	275				E A 240	275	270	258	248	250	240	240	241	245	240	245	248	249	255	252	248	250	260	255
UQ								268	262	255	252	251	250	251	252	263	265	252	256	265	258	260	268	260
LQ								252	240	240	235	232	235	240	238	240	242	240	248	240	240	250	252	250

OCT. 1981 | H'F (KM)

IONOSPHERIC DATA

NOV. 1981 | 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 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	72	73	69	70	75	75	78	75	R 71	80	80	86	X 93	98	X 101	X 106	105	R 90	88	76	73	59	54	60
2	68	62	65	70	67	78	76	75	75	80	80	X 85	X 84	X 86	X 88	X 92	X 91	X 87	X 85	X 82	X 76	X 72	54	46
3	70	60	66	58	69	70	75	65	79	X 77	X 83	X 83	X 95	X 98	X 98	X 98	X 96	X 91	X 83	X 78	X 72	X 63	52	54
4	49	67	62	75	77	82	92	O X 97	X 103	X 102	X 101	X 97	X 94	X 86	X 83	X 80	X 77	X 76	X 75	X 73	X 69	X 64	59	O X 50
5	55	74	76	75	76	80	78	A	71	O X 66	62	73	74	75	79	82	77	X 76	60	69	54	54	51	60
6	62	68	80	76	77	72	74	68	X 75	75	86	78	X 81	X 85	X 80	X 86	X 83	X 84	79	X 81	X 77	X 66	70	65
7	60	75	75	77	73	60	O X 55	B	A	B	B	64	70	79	86	X 76	Y	61	63	62	67	X 58	53	52
8	49	60	62	93	69	55	A	E G 64	O X 55	O X 57	64	61	O X 63	60	61	68	61	65	65	66	61	60	61	60
9	53	57	65	60	65	69	70	75	79	81	81	79	X 75	X 71	X 72	X 70	X 70	X 69	X 71	72	74	70	X 72	73
10	70	70	68	72	78	87	93	X 93	101	O X 96	O X 58	68	71	78	85	B	100	X 91	O X 82	X 77	X 72	X 73	X 72	O X 56
11	60	59	O X 56	70	70	60	64	U W 56	O X 51	B	B	O X 58	O X 63	X 76	83	X 85	X 84	O X 65	O X 64	61	B	B	B	O X 50
12	B	B	49	52	A	A	A	O X 61	E G 53	E G 53	E G 51	E G 51	A	B	B	U W 64	60	57	X 60	X 60	X 56	X 55	56	X 53
13	53	57	53	57	64	70	79	101	106	85	78	X 72	X 69	X 68	X 68	X 67	X 67	X 71	X 71	X 74	X 73	X 74	X 74	X 74
14	68	57	A	67	76	85	75	89	X 92	92	X 93	X 94	X 93	X 88	X 87	X 77	73	O X 52	O X 50	64	66	B	48	68
15	70	47	67	60	96	57	63	61	O X 47	O X 43	B	O X 61	O X 66	70	76	75	74	X 65	65	78	71	X 54	X 57	60
16	61	55	62	65	O R 67	68	A	75	60	B	B	76	67	X 76	X 77	78	X 80	X 77	78	X 72	70	58	55	X 60
17	A	60	56	60	O R 47	46	61	67	O R 64	65	64	X 67	72	X 71	O X 68	80	68	61	X 57	50	60	53	55	B
18	46	67	A	A	55	59	56	55	O R 58	O X 52	B	B	B	75	75	B	O R 54	55	X 56	X 55	X 51	A	50	B
19	50	56	60	63	60	A	61	A	A	A	O X 59	63	X 66	73	O X 73	X 76	X 73	X 68	59	51	X 52	52	60	A
20	O X 56	56	60	60	O X 54	61	63	72	75	X 77	78	O X 78	O X 80	O X 87	O X 96	90	64	60	60	X 60	62	X 57	62	58
21	58	62	62	65	68	70	72	75	79	79	84	X 87	X 90	X 91	X 92	93	85	68	61	64	59	55	44	57
22	A	70	75	75	72	65	U W 49	B	A	O R 56	A	X 60	62	O X 68	73	80	85	79	70	64	X 62	X 64	63	58
23	64	61	O X 62	A	A	A	A	A	A	60	68	O R 66	70	77	X 86	X 50	O X 48	B	60	56	45	R 50	B	B
24	B	41	52	B	O X 56	B	B	B	A	A	A	B	B	O R 66	73	76	72	55	X 55	X 53	X 51	49	O X 49	B
25	O R 51	42	50	63	61	61	B	58	59	O X 49	O X 56	59	63	66	X 70	X 71	X 71	X 70	67	70	64	60	X 58	70
26	55	A	A	A	50	70	65	O R 66	69	A	A	67	67	70	X 71	X 71	X 70	X 72	X 69	62	X 56	58	60	X 60
27	58	A	60	60	55	70	66	70	X 77	X 82	X 82	X 86	X 87	X 84	X 80	X 78	X 76	X 71	X 71	X 71	X 70	X 70	X 68	X 69
28	X 72	X 76	80	X 82	76	62	73	81	87	95	95	X 93	X 88	X 86	X 81	X 80	X 77	X 77	X 76	X 76	72	X 68	68	69
29	68	64	61	63	64	72	73	65	73	74	72	73	X 74	X 77	X 79	X 77	X 76	X 76	X 72	X 72	X 69	X 68	X 69	63
30	65	73	73	70	76	78	75	80	85	85	88	X 86	X 83	X 77	X 77	X 74	X 74	X 71	X 70	X 71	X 70	X 71	X 75	X 74
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	27	27	26	28	26	24	24	25	24	22	28	27	29	29	28	29	29	30	30	29	27	28	25
MED	60	61	62	66	68	70	72	71	75	77	79	73	X 74	X 77	X 79	X 78	X 74	X 71	X 68	70	X 67	X 60	58	60
UQ	68	69	68	75	76	75	76	78	79	84	84	X 86	X 86	X 86	X 86	X 84	X 83	X 77	X 75	X 74	X 72	X 68	68	68
LQ	53	57	60	60	60	61	63	64	60	58	64	64	67	71	X 73	X 72	70	65	60	61	59	55	54	56

NOV. 1981 | FXI (0.1 MHZ)

IONOSPHERIC DATA

NOV. 1981 | FOF2 (0.1 MHZ) | 45° E Mean Time (G.M.T. + 3 h)

Station SYOWA STATION Lat. 69° 00.4' S, Long. 39° 35.4' E Sweep .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	F 47	F 46	50	F	F	65	F	F	65	F 71	F 70	79	86	90	95	100	F	R 84	81	F 67	66	50	F	F
2	F	F	F	F	F	F	F 61	F	F	73	73	78	78	81	82	86	85	81	79	76	69	66	F	F
3	F	F	F	F	F	F	F	F	61	71	77	77	89	91	92	92	90	85	76	72	66	56	F	J F 48
4	40	F 45	F 52	F 60	J F 71	F 73	F 85	91	97	96	95	91	88	80	77	73	71	70	69	67	63	58	F 50	44
5	F	F	F	F	F 67	F	F	A	F	60	F	J F 67	F	J F 69	F 70	F	J F 71	70	F	F 59	F 45	F 45	F 40	F
6	F 38	F	F	F	F	F	F	F 61	69	F	F 78	F 71	73	78	73	80	77	78	71	75	71	60	F 40	F
7	F	F	F	F	F	F	U W 49	B	A	B	B	F	F 61	F 69	78	70	Y	F 54	F 55	F	F 53	51	F	F
8	F	F	F	J F 64	F	F	A	F	E G 48	E G 51	F	F	U W 57	F	F	F 60	F 54	F 58	F 57	59	F 49	50	54	F
9	F	F	F	F	F	F	J F 64	F	F 69	F 73	F 72	F 69	68	65	65	63	63	63	65	F 64	F 66	63	65	65
10	F	F	F 56	F	F	79	F 85	87	J F 95	90	E G 52	F	F	68	76	B	92	85	76	70	66	67	65	52
11	F 42	F 48	50	F 55	F 54	F	F	U W 49	E G 45	B	B	U W 52	57	70	F 75	79	78	59	58	F 53	B	B	B	44
12	B	B	F	F	A	A	A	55	E G 42	E G 45	E G 45	E G 43	A	B	B	58	52	F	54	54	49	49	48	46
13	F 45	F	F	F	F	F 61	F	94	Z 99	75	70	66	63	62	62	61	61	64	65	68	67	68	68	68
14	58	F	A	F 58	F 66	F	F	J F 83	85	83	87	88	87	82	81	71	66	46	43	F 55	F	B	F 41	F
15	F	F	F 45	F	F	F	F	F	E G 41	E G 42	B	55	60	F	F 68	F 68	64	59	58	45	45	48	51	46
16	54	46	F	F	F 58	F	A	F	F	B	B	F	F	70	70	70	73	71	F 70	65	F 61	F 48	F 47	54
17	A	F	F	F	U W 41	F	F	F	F 57	F 58	57	60	F 61	65	62	70	60	F	50	F	F	F	F	B
18	F	F	A	A	F	F 50	F	48	U R 52	E G 46	B	B	B	F 66	F 65	B	U W 48	F	50	49	44	A	F	B
19	F 43	F	F	F	F	A	F	A	A	A	53	F 55	60	66	67	70	67	62	52	F	45	44	45	A
20	50	F	F 51	F	48	F	F 55	65	J F 69	71	71	72	74	81	90	78	F 56	52	F 52	54	F 51	50	55	51
21	46	F	F	F	F	F	F	F 66	F 71	F 70	F 75	81	84	85	86	84	76	59	53	50	F 45	44	F	F
22	A	F	F	F	F	F	U W 43	B	A	49	A	J R 54	F	62	F 66	F 68	F 73	F 71	F 60	F 57	55	57	F 52	51
23	F 51	F 48	56	A	A	A	A	A	A	F	60	F 59	F 62	F 69	80	J R 44	E G 42	B	F	F 43	F	43	B	B
24	B	F	J R 46	B	50	B	B	B	A	A	A	B	B	F 58	F 65	70	63	F	49	46	45	43	R 43	B
25	F 43	F	F	F	F 49	F	B	F	F	E G 43	R 50	F	F	57	63	64	64	63	59	F 60	F 54	F 50	48	49
26	F 38	A	A	A	F	49	F 57	F 56	F 60	A	A	F 60	F	F 60	64	65	64	66	62	F 49	50	49	52	54
27	49	A	F 49	51	F 46	59	F 56	F 60	70	75	75	80	81	78	74	72	70	65	65	65	64	64	61	63
28	66	70	72	76	F 59	F	F	F	F	F 82	86	86	81	80	75	74	71	71	70	70	F 63	61	58	61
29	60	F 55	F 52	55	F	F	F	57	F	F	F	F 65	68	71	73	71	70	70	67	66	63	62	63	55
30	F	F	F	J F 64	F	F 60	F	F 70	F 76	76	F	80	77	71	71	68	68	65	64	65	64	65	69	68
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	16	7	11	8	11	8	9	14	19	21	18	23	21	27	28	27	28	25	28	27	26	26	21	17
MED	46	F 48	F 51	F 59	F 54	60	F 57	63	69	71	72	69	73	70	73	70	68	65	61	60	58	50	52	52
UQ	52	F 52	F 54	F 64	F 62	69	F 64	83	74	75	77	80	81	80	79	76	73	71	70	67	66	62	61	61
LQ	F 42	F 46	50	55	48	54	F 55	56	54	51	57	60	61	66	66	66	62	59	54	54	49	48	47	48

NOV. 1981 | FOF2 (0.1 MHZ)

IONOSPHERIC DATA

NOV. 1981 | 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 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	37	33	26	29	30	E B 37	74	47	50	41	40	40	42	39	36	E G 32	30	E B 40	30	27	30	28	39	42
2	60	38	42	48	30	39	51	46	45	40	E G 34	E G 35	38	41	42	42	38	38	32	30	29	E G 19	33	46
3	41	33	46	48	43	44	43	43	43	41	E G 35	E G 36	E G 36	E G 35	37	36	34	30	30	30	30	27	35	42
4	47	32	25	E G 25	E G 22	E G 24	30	35	37	38	41	42	42	G 35	E G 35	E G 34	39	38	30	30	K 22	K 20	45	45
5	29	38	66	77	50	61	E B 40	66	60	E B 52	39	40	E G 35	E G 34	E G 37	36	E G 32	E B 36	31	33	38	38	42	45
6	43	33	29	29	30	48	45	50	45	33	30	E G 35	E G 35	E G 37	E G 36	32	30	E G 30	E G 28	E G 34	30	28	37	K 31
7	35	40	76	60	48	37	46	B	90	B	B	36	E B 42	40	39	38	40	38	40	40	42	42	42	42
8	63	59	50	39	28	46	75	45	53	46	39	40	E B 40	E G 34	E G 34	E G 33	E G 32	40	39	41	37	36	39	36
9	27	60	34	30	30	E G 26	35	30	E G 33	25	38	E G 35	38	E G 36	43	42	E B 35	34	E G 30	E G 26	27	22	23	20
10	30	37	35	33	26	34	G 26	37	39	E B 40	45	47	45	40	37	B	E B 35	40	E B 35	59	30	E B 33	E B 20	90
11	44	40	36	35	35	31	E G 30	E G 29	E B 40	B	B	E G 35	40	35	38	39	E G 31	E B 43	E B 37	E B 29	B	B	45	K 38
12	B	B	E B 25	29	55	59	51	36	E G 34	E G 34	E G 34	40	48	B	B	38	34	39	32	39	23	23	36	19
13	38	30	25	30	33	31	31	34	41	34	42	41	49	75	50	43	37	36	G 25	27	24	20	50	23
14	33	59	60	49	34	33	39	36	37	E G 33	E G 33	37	41	43	E G 34	38	38	31	29	40	40	B	45	44
15	43	78	65	76	51	37	28	40	41	E B 40	B	E B 43	E B 51	E B 37	32	32	E B 37	23	30	35	E B 36	K 28	30	36
16	45	42	38	37	43	41	58	48	46	B	B	E B 38	E B 60	E B 47	37	31	31	E G 29	30	27	27	27	27	23
17	43	31	50	46	27	29	30	42	42	35	30	30	E G 34	E B 37	E B 50	23	39	43	38	20	41	41	39	B
18	35	37	42	40	52	50	30	E B 42	40	30	B	B	B	E B 46	32	B	31	E G 31	E G 25	37	42	32	52	B
19	37	53	48	50	45	39	40	51	63	59	30	38	E B 50	29	E B 52	E B 40	29	27	32	41	38	39	56	39
20	E B 40	37	50	43	41	41	43	38	30	30	32	E B 50	31	E B 37	30	E G 31	E G 30	33	30	35	41	42	49	48
21	54	60	38	38	81	26	E G 31	E G 35	44	E G 33	E G 33	30	30	31	30	30	E B 38	31	41	30	39	K 33	47	59
22	42	43	45	40	29	63	45	B	49	59	42	E B 52	E B 50	E B 50	E B 40	E G 30	30	E B 44	33	29	29	23	30	33
23	36	42	82	48	49	59	63	58	61	73	43	E B 42	E B 37	E B 40	E G 30	29	29	B	23	32	E B 22	E B 28	B	B
24	B	54	60	B	E B 43	B	40	B	50	55	46	B	B	E B 52	E B 40	E B 37	35	E B 33	32	26	K 30	K 31	K 34	B
25	33	75	40	67	26	27	B	60	E B 32	30	39	E G 32	E G 34	39	E G 31	40	E G 30	31	31	40	38	29	37	35
26	70	55	60	59	43	32	E G 38	40	49	45	44	39	E G 33	34	40	31	31	28	32	31	41	42	K 23	25
27	29	46	K 28	40	42	60	68	45	E G 30	E G 31	35	35	40	24	33	40	E G 32	E G 31	30	29	32	33	39	31
28	23	16	29	34	58	54	52	40	G 29	E G 33	E G 35	38	E G 34	39	40	40	39	49	37	32	26	23	27	24
29	30	50	44	43	51	60	33	40	E G 32	E G 33	39	37	39	53	39	42	39	E G 31	E G 30	E G 29	28	29	22	K 20
30	30	45	42	42	46	36	39	40	E G 33	41	62	47	60	54	45	44	31	42	34	40	38	37	55	45
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	29	30	29	30	29	29	27	30	27	25	28	28	29	29	28	30	29	30	30	29	28	29	26
MED	38	42	42	40	42	39	40	40	42	36	39	37	35	34	34	35	32	32	30	31	30	28	39	37
UQ	44	54	50	48	49	50	51	46	49	42	42	41	43	41	40	40	38	39	33	39	38	36	45	45
LQ	32	37	34	34	30	32	30	36	32	30	32	32	E E 35	E E 35	32	31	30	30	30	29	28	24	30	25

IONOSPHERIC DATA

NOV. 1981 | 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 20sec in automatic operation

Day \ 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
1	9	15	15	18	15	37	15	20	25	16	20	20	20	21	24	26	26	40	20	13	13	14	13	13
2	17	11	13	16	14	15	20	15	18	15	17	15	17	20	14	15	16	13	13	9	14	13	11	19
3	21	20	19	18	20	18	15	15	18	20	28	28	23	23	20	19	21	15	14	13	10	13	11	13
4	20	18	19	15	14	14	14	13	14	17	18	19	20	19	20	20	19	14	14	12	12	14	14	20
5	9	8	15	20	20	21	40	21	22	52	28	23	20	20	22	20	18	36	28	20	11	10	14	10
6	10	14	14	10	11	16	15	21	24	21	20	20	20	18	20	16	28	20	18	34	18	14	14	14
7	14	9	14	15	15	14	20	B	20	B	B	22	42	25	19	23	16	18	16	14	16	19	16	15
8	13	13	15	20	16	21	20	22	20	36	21	29	40	20	21	21	21	15	15	14	15	16	18	15
9	13	14	14	15	16	14	14	16	21	17	20	18	20	20	20	19	35	26	21	16	20	19	15	15
10	12	13	15	15	14	14	15	14	15	40	27	28	28	29	20	B	35	31	35	21	24	33	20	30
11	22	20	28	22	21	27	24	20	40	B	B	27	34	27	28	19	20	43	37	29	B	B	41	27
12	B	B	25	18	26	26	24	21	20	17	23	36	23	B	B	24	24	14	14	20	18	16	15	14
13	11	15	15	13	14	15	15	16	18	21	19	16	18	15	15	15	14	14	15	12	18	15	14	14
14	14	14	26	19	15	18	15	14	14	18	16	20	37	20	28	17	14	15	14	14	13	B	14	15
15	15	20	16	17	15	15	16	18	20	40	B	43	51	37	22	23	37	21	16	20	36	20	23	25
16	26	25	27	21	23	20	25	20	20	B	B	38	60	47	25	20	20	20	17	22	20	18	15	14
17	34	14	17	12	14	13	14	14	15	17	29	26	20	37	50	20	17	15	15	15	14	15	15	B
18	20	15	21	29	14	16	21	42	20	29	B	B	B	46	21	B	20	15	14	8	12	28	15	B
19	13	33	19	18	15	20	22	24	22	20	27	25	50	24	52	40	23	20	25	14	16	22	15	22
20	40	13	13	20	24	20	23	18	15	29	24	50	26	37	26	16	18	15	14	14	14	15	20	20
21	12	20	14	14	15	15	15	20	20	20	16	24	29	25	28	29	38	19	22	14	13	14	13	15
22	21	15	20	9	14	14	21	B	26	21	29	52	50	50	40	21	28	44	28	25	21	18	18	14
23	17	21	29	27	20	23	23	24	26	27	25	42	37	40	20	23	23	B	20	26	22	28	B	B
24	B	30	28	B	43	B	38	B	36	30	28	B	B	52	40	37	22	33	28	25	21	22	27	B
25	29	22	28	24	24	26	B	24	32	26	21	20	15	15	15	14	17	14	12	15	15	15	16	14
26	14	15	20	21	17	15	15	27	21	38	20	22	21	20	22	20	20	15	15	13	14	16	18	20
27	18	36	18	18	22	21	18	14	15	18	26	21	19	20	20	19	16	17	15	14	13	18	14	11
28	13	12	14	12	20	16	21	23	15	14	14	20	20	20	17	14	15	12	14	9	14	19	14	15
29	14	17	17	20	15	15	20	20	18	18	15	15	17	14	14	18	15	12	14	13	13	14	15	14
30	14	13	15	14	13	14	13	12	14	14	15	18	20	18	17	18	16	13	13	12	13	14	14	14
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	14	15	17	18	15	16	20	20	20	21	24	24	23	22	21	20	20	16	15	14	14	16	15	15
UQ	21	20	21	20	20	21	23	24	22	36	28	36	40	37	28	23	24	26	21	20	20	20	18	22
LQ	13	13	15	15	14	15	15	15	15	17	19	20	20	20	20	18	16	14	14	13	13	14	14	14

NOV. 1981 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

NOV. 1981 | 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 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	310	A	A	A	A	B	A	A	A	220	240	220	225	240	250	250	245	260	250	260	275	A	A	A
2	A	A	A	A	280	A	A	A	270	230	235	225	250	240	220	225	240	245	250	250	250	260	A	A
3	A	A	A	A	A	A	330	230	A	265	250	240	250	240	230	235	230	245	245	265	265	290	A	A
4	A	A	A	A	A	275	265	260	245	235	240	230	245	225	225	225	240	240	250	255	280	295	A	A
5	A	A	A	A	A	A	B	A	A	B	275	250	235	240	255	255	255	270	E S 330	270	A	A	A	A
6	A	A	A	A	270	A	A	A	255	240	240	220	230	230	230	235	Y 250	240	245	250	250	290	A	A
7	A	A	A	A	A	A	A	B	A	B	B	H 270	B	250	255	E A 280	A	E A 280	A	A	A	A	A	A
8	A	A	A	A	A	A	A	260	A	A	240	260	B	250	240	260	260	240	280	260	A	A	A	A
9	A	E A 270	A	A	H 280	270	230	A	240	230	230	240	240	240	235	240	245	260	250	250	H 250	250	275	265
10	E A 320	A	A	A	A	285	255	245	240	E B 250	A	235	230	240	240	B	E B 250	240	B	270	265	E B 285	280	B
11	A	A	A	A	A	A	S	E B 250	B	B	B	250	250	260	250	240	250	B	275	B	B	B	B	B
12	B	B	B	A	A	A	A	E A 290	255	235	220	E A 250	A	B	B	E A 230	270	270	275	A	A	A	A	A
13	A	A	A	A	A	265	250	230	230	240	240	240	E A 280	240	270	225	240	235	250	250	255	260	A	275
14	A	A	A	A	A	E A 290	E A 280	260	220	220	225	230	225	225	230	240	250	E Y 260	Y	A	A	B	A	A
15	A	A	A	A	A	A	295	250	A	B	B	E B 270	A	240	240	240	250	270	250	A	B	A	A	A
16	A	A	A	A	A	A	A	A	270	B	B	220	B	B	215	220	240	255	240	255	275	A	A	A
17	A	A	A	A	A	A	275	A	H 250	225	250	240	210	245	B	260	275	A	275	B	A	A	A	B
18	A	A	A	A	A	250	Y	B	A	A	B	B	B	B	235	B	Y 240	250	240	280	265	A	A	B
19	A	A	A	A	A	A	A	A	A	A	Y	E A 270	B	250	B	245	245	240	250	285	A	A	A	A
20	B	A	A	A	A	A	A	275	210	E S 250	240	B	235	270	250	250	230	220	250	260	A	A	A	A
21	A	A	A	A	A	A	260	A	230	225	240	S 220	S 230	250	240	S 245	E B 280	240	250	260	A	A	A	A
22	A	A	A	A	275	A	A	B	A	A	A	B	B	B	270	240	250	B	250	250	270	290	A	A
23	A	A	A	A	A	A	A	A	A	210	A	E B 260	E B 230	260	250	Y	235	B	Y	255	300	B	B	B
24	B	A	A	B	B	B	B	B	A	A	A	B	B	B	250	250	230	240	250	255	350	350	335	B
25	A	A	A	A	A	270	B	A	E B 250	E A 250	200	235	220	225	220	245	245	240	250	250	250	280	290	A
26	A	A	A	A	A	A	B	A	A	A	A	E A 250	225	240	H 225	235	230	230	255	A	A	A	275	260
27	290	A	335	A	A	A	A	265	240	220	210	210	H 210	240	220	220	230	240	230	255	250	260	260	270
28	230	280	280	290	A	A	A	A	230	210	220	205	235	240	230	210	215	255	240	250	250	265	260	270
29	260	A	A	A	A	A	270	275	220	230	H 225	230	220	E A 270	220	240	230	225	240	240	250	280	275	290
30	A	A	A	A	A	265	240	210	225	255	A	215	E A 250	240	225	250	225	230	220	225	255	E A 270	280	270
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	5	2	2	1	4	8	11	13	17	19	18	26	21	25	27	27	29	26	26	23	18	14	9	7
MED	U 275	275	308	290	278	269	262	255	240	228	240	233	230	240	235	240	242	240	250	255	260	276	275	270
UQ	300				280	276	275	262	250	240	240	245	240	250	250	249	250	258	250	260	275	290	280	272
LQ	260				272	265	252	238	230	222	225	220	225	240	225	235	230	240	245	250	250	260	275	268

NOV. 1981 | H'F (KM)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

DEC. 1981 | 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 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	X 73	X 76	X 81	X 86	92	93	95	86	103	108	106	O X 102	X 100	O X 90	O X 91	X 90	X 87	X 84	X 78	X 75	57	63	61	61
2	62	60	67	69	70	74	100	X 78	X 86	X 84	X 84	X 81	X 78	X 78	78	B	75	X 71	X 66	X 64	79	X 64	X 64	78
3	68	60	64	66	70	82	90	100	X 101	X 101	X 96	X 94	X 90	X 91	X 88	84	X 80	79	X 77	X 74	64	66	70	70
4	59	63	70	70	X 67	70	77	70	O X 54	B	67	70	73	75	O X 83	78	R 76	77	75	69	65	58	58	63
5	61	70	64	73	65	70	70	66	69	84	B	77	76	O X 74	X 76	X 72	X 71	X 71	X 65	59	X 55	X 54	X 56	O R 56
6	55	62	69	65	72	78	74	65	64	X 63	O X 65	70	O X 73	O X 74	O X 73	X 72	O R 72	X 69	X 69	X 66	X 57	X 58	X 61	X 61
7	X 59	O X 55	O X 61	71	O R 76	78	O X 81	74	83	O X 93	X 93	X 91	X 89	X 87	X 84	X 81	X 77	X 75	X 76	X 73	68	65	61	63
8	68	66	60	70	75	78	72	70	68	O R 71	B	70	70	75	X 60	X 74	73	71	70	49	X 64	64	60	61
9	58	55	56	55	55	U W 55	U W 55	O X 49	E G 55	O X 58	O X 56	78	65	68	66	69	71	68	X 58	46	56	A	57	54
10	58	54	60	60	65	70	72	O X 68	49	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11	B	B	B	B	B	B	B	B	B	67	O X 86	X 92	O R 94	X 90	X 91	X 85	X 82	X 77	X 76	X 72	X 69	O X 62	R	O X 62
12	67	66	O X 61	56	O R 54	A	56	X 71	74	74	78	77	X 77	X 76	X 75	X 70	X 68	50	B	B	O X 54	X 57	A	A
13	B	50	63	60	66	63	54	A	E G 49	E G 54	B	O X 54	E G 56	O X 53	58	65	70	O X 63	60	56	X 57	X 60	64	72
14	58	61	63	61	65	69	75	77	U W 62	O R 62	70	62	71	75	X 77	X 78	X 78	X 76	X 75	X 71	69	68	65	65
15	60	O X 61	65	67	68	66	74	85	89	86	X 88	X 88	X 87	X 86	X 85	X 77	X 78	X 75	X 75	X 76	X 76	X 76	X 75	70
16	52	60	68	70	70	74	81	86	91	O X 92	X 90	X 88	X 87	X 88	X 86	X 82	X 78	75	77	72	70	X 72	X 71	X 71
17	X 69	70	69	70	86	95	110	110	110	X 108	103	X 101	X 101	X 101	O X 95	X 93	X 88	X 87	X 85	X 78	X 77	X 76	65	70
18	65	A	A	B	70	67	71	72	65	E G 54	69	70	O R 82	U R 82	89	X 86	79	70	84	58	X 51	59	62	60
19	60	60	60	53	60	62	67	X 70	75	X 73	75	75	X 73	X 73	X 75	X 75	X 77	75	X 67	X 64	60	59	65	60
20	60	60	64	60	73	80	71	Y	71	75	X 76	X 79	X 81	X 81	X 78	X 74	X 71	X 72	X 72	X 73	X 70	X 66	X 59	57
21	59	B	R	75	68	67	68	70	79	84	X 86	90	X 91	X 85	X 79	X 77	X 77	X 74	X 71	X 71	65	59	60	61
22	60	B	B	65	68	79	85	90	X 92	X 97	X 97	X 96	X 91	X 89	X 85	X 82	X 82	80	X 75	X 73	70	67	64	X 60
23	X 60	X 66	65	73	74	73	78	61	A	70	78	78	75	X 76	X 76	X 79	X 75	X 77	X 74	X 74	X 72	X 69	72	69
24	70	60	55	A	69	67	59	A	58	O X 53	68	60	63	65	X 66	68	65	X 68	X 68	X 61	56	54	58	58
25	61	81	A	54	60	58	70	58	61	68	70	71	71	69	X 69	70	X 71	X 69	X 62	56	60	68	71	62
26	62	63	60	60	73	63	O X 66	70	78	88	90	79	X 77	X 76	X 76	X 74	X 72	70	68	X 66	X 65	X 65	53	60
27	R 61	60	67	76	80	72	70	X 75	X 79	X 91	95	R 92	U R 90	88	82	80	X 76	78	X 75	X 73	X 69	X 68	O R 55	62
28	50	60	60	70	65	65	75	69	75	75	78	70	72	68	70	X 66	X 64	66	59	59	O X 54	O X 50	O X 51	B
29	B	O X 51	A	R 54	65	66	O X 67	X 73	B	A	60	B	B	O X 51	64	66	O X 58	O X 51	R 62	X 67	X 64	57	O X 53	O X 49
30	55	47	A	60	60	80	60	E G 51	O X 51	A	A	B	B	O X 54	E G 51	62	61	Y	Y	45	52	50	X 51	50
31	55	58	54	50	46	A	E G 50	O X 51	O X 51	59	59	E G 54	B	O X 66	O X 70	O X 70	63	58	57	E G 52	61	X 57	X 57	58
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	27	24	28	30	28	30	27	28	27	26	28	27	30	30	29	30	29	28	29	30	29	28	28
MED	60	60	64	66	68	70	72	70	72	75	78	78	X 77	X 76	X 76	X 75	X 75	X 72	X 72	X 67	64	X 63	61	61
UQ	64	64	67	70	73	78	78	78	84	90	X 90	X 90	X 90	X 87	X 85	X 81	X 78	X 77	X 76	X 73	69	X 67	65	67
LQ	58	59	60	60	65	66	67	67	60	65	69	70	72	X 69	X 70	X 70	X 71	X 69	X 66	59	X 57	58	57	59

DEC. 1981 | FXI (0.1 MHZ)

IONOSPHERIC DATA

DEC. 1981 | FOF2 (0.1 MHZ) | 45° E Mean Time (G.M.T. + 3 h)

Station SYOWA STATION Lat. 69° 00.4' S, Long. 39° 35.4' E Sweep .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	67	70	75	80	J F 86	F 84	F 80	F 71	F	F	99	96	93	R 84	85	83	81	78	70	68	F	F 56	F 53	F 54
2	F 55	F	F	F 60	F 62	F	F	72	80	78	78	75	72	72	F 70	B	F 68	65	60	58	61	58	58	F 62
3	60	F	F 56	F	F	F	F 82	92	95	95	90	88	84	84	82	75	74	71	71	68	F 55	58	F 45	F 57
4	52	F 52	F 50	F	60	F	J F 71	F	E G 48	B	F	F	F 65	F 67	77	F 69	70	J F 71	F 66	61	F	50	50	F 54
5	F 53	F	57	F	F	F	F	F	F	F	B	F 69	F	68	70	66	65	64	59	51	47	48	50	48
6	F 48	50	F	F	F 61	F	66	F	J F 58	J R 57	R 59	63	66	68	67	65	F 62	63	63	60	51	52	55	55
7	53	49	55	F	F 68	F	75	F	75	F 85	87	85	83	81	78	75	71	69	70	67	60	57	53	55
8	60	F 58	F	F 58	F	F	F	F	F	F 63	B	F 61	63	67	54	68	F	63	F	F	58	55	F	F
9	F 50	F	F	F	F	F	F	E G 43	E G 49	E G 52	E G 50	F	F	F	F	F	62	61	52	F	F 48	A	F 48	F 46
10	F	F	F	F	F 55	F	F 64	62	F	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11	B	B	B	B	B	B	B	B	B	F	R 80	85	F 85	83	85	79	76	71	70	68	62	56	R 59	56
12	60	59	55	49	F 46	A	F	65	F 65	65	71	69	71	70	69	63	62	F	B	B	E G 48	R 50	A	A
13	B	43	F	F	F	F	F	A	E G 42	E G 45	B	E G 48	E G 50	E G 47	F	F	62	56	52	48	51	54	56	65
14	50	52	55	F 52	F 55	F	J F 69	F	F	F 54	F	F 65	J F 65	F 66	71	72	72	70	69	65	62	61	56	52
15	F 53	55	F	F	F 54	J F 60	F	77	82	76	82	82	81	80	79	71	72	69	69	70	70	70	69	F 58
16	F	53	60	F 60	F 60	J F 68	72	R 80	84	86	84	82	81	82	80	75	71	67	70	F 63	62	66	64	65
17	62	F 58	F	F	F	85	J F 104	F 98	F	101	96	94	95	95	U R 89	87	82	81	79	72	71	70	F 55	F 50
18	F	A	A	B	F	F	F	F	J F 59	E G 47	F	F	F 74	F 74	F 80	80	70	J F 64	F 57	F 49	45	49	53	F
19	F 50	F 51	F	F	F 50	F 55	J F 60	63	F 60	66	F 67	68	66	66	69	69	71	F 66	60	58	51	F 50	55	F 53
20	F 51	F 49	F 49	F	F	J F 66	F 60	Y	62	65	70	72	75	75	72	68	65	66	66	67	64	60	53	50
21	F	B	R	60	F	F 59	F	62	69	76	80	82	85	78	73	71	71	68	65	65	F 55	F 51	52	J F 55
22	53	B	B	F	F	F	F	83	85	91	91	90	85	83	78	75	75	72	69	66	62	60	F 54	53
23	54	60	F 58	F	F	F	F	51	A	F 63	F 70	70	66	70	70	72	69	71	68	68	66	63	65	60
24	F	F	F	A	F	F	F	A	F	52	J F 62	F	F 56	58	60	F	58	61	61	55	F 45	F 46	F 48	F 50
25	F 51	F	A	F	F	F	F	F	F	F	J F 64	J F 65	F	61	63	62	65	63	56	F	F	F	61	F 53
26	F	57	53	F	F	F	60	F	J F 72	80	F 80	73	70	70	70	68	66	63	62	60	59	59	56	53
27	R 54	F 53	F 57	F 58	F	F	F 60	69	73	85	87	87	84	90	75	72	70	70	69	67	63	62	F 48	F
28	F	F	F	F	F	F	F	F	F	F	F	F	64	61	61	60	58	59	F	F	48	R 44	R 45	B
29	B	R 45	A	R 48	F	F	61	67	B	A	F	B	B	E G 45	F	F	52	E G 45	55	60	58	F	R 47	43
30	F	F	A	F	F	F	F	E G 45	E G 45	A	A	B	B	E G 48	E G 45	F	F	Y	Y	F	F 45	F	45	43
31	45	F	F 45	42	F	A	E G 42	E G 45	E G 45	F	U W 53	E G 48	B	61	R 64	64	F	F	F	E G 45	53	51	50	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	20	17	13	10	11	7	15	17	19	21	21	23	24	29	27	24	27	27	25	24	27	26	28	25
MED	53	53	55	58	F 60	F 66	F 66	67	65	66	80	73	73	70	71	71	70	66	66	64	58	56	53	53
UQ	58	58	57	F 60	F 62	F 76	F 74	77	78	85	87	85	84	81	78	75	72	70	69	68	62	60	56	F 56
LQ	F 50	50	53	49	F 54	F 60	60	62	54	57	67	66	66	66	68	67	64	63	60	58	50	50	49	50

DEC. 1981 | FOF2 (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

DEC. 1981 | 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 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	39	49	45	47	63	69	79	72	54	54	56	50	50	76	72	81	61	30	33	40	44	36	48	42
2	48	60	75	49	45	40	46	36	37	E G 35	38	E G 35	38	39	38	B	E B 38	41	34	38	35	29	40	30
3	34	50	49	36	42	34	38	G 30	E G 33	57	40	40	60	85	100	89	92	46	E B 33	42	31	K 26	40	52
4	45	41	40	63	50	40	49	40	43	B	E G 40	43	41	E G 36	E B 57	E G 34	30	37	61	61	76	39	40	40
5	39	47	43	40	43	31	31	E G 34	54	43	B	37	E G 35	E B 59	E B 42	34	30	E G 34	E G 32	G 30	30	41	41	39
6	41	39	K 23	36	28	31	E G 32	38	44	43	42	E B 45	E B 56	E B 43	30	28	30	30	E B 33	E B 31	K 28	E B 28	E B 26	E B 33
7	E B 35	E B 36	E B 41	E B 37	45	E B 36	39	39	E G 34	32	E G 34	E G 35	36	41	36	37	35	34	E G 30	30	27	K 25	E B 26	E B 23
8	E B 21	23	E B 43	32	30	45	33	35	47	50	B	E G 36	E G 39	39	40	35	E G 34	31	34	E B 38	55	49	K 35	60
9	50	36	29	38	30	41	40	E G 34	E G 35	48	42	38	E G 37	36	E G 34	E G 36	E G 31	E G 31	31	30	48	52	45	47
10	38	48	34	43	47	41	43	41	E B 38	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11	B	B	B	B	B	B	B	B	B	E B 40	E B 39	35	46	40	40	38	D S 33	31	E S 35	E S 35	E S 35	E B 37	E B 53	E B 36
12	E B 34	E B 40	41	41	39	50	50	46	30	37	39	53	42	54	48	E G 34	34	30	B	B	45	47	66	60
13	B	30	30	28	39	62	50	45	35	45	32	43	E G 38	30	30	E G 34	E G 32	35	34	37	40	37	K 30	K 32
14	52	42	40	43	49	47	41	44	43	41	E B 41	40	40	41	36	34	40	45	29	31	29	25	24	31
15	K 28	E B 37	50	45	43	41	38	E G 29	E G 33	42	54	39	60	48	36	39	38	E G 32	G 29	31	28	40	56	37
16	45	47	42	39	40	38	E G 28	32	33	50	40	E G 33	46	46	34	34	32	30	29	G 25	29	29	23	29
17	30	29	31	30	31	33	35	G 30	45	35	36	66	75	76	39	53	34	40	47	30	29	25	31	40
18	50	50	50	B	42	39	38	45	45	43	44	40	E B 54	E B 38	33	E B 38	30	33	35	42	41	40	41	K 33
19	40	E B 36	77	43	50	40	61	54	41	45	42	32	31	33	E G 33	E G 31	30	E G 31	E G 29	28	35	30	28	31
20	31	40	42	40	36	49	39	46	48	E G 32	E G 32	38	38	35	E G 34	E G 33	E G 31	G 28	E G 30	28	29	K 23	31	33
21	40	B	49	34	48	52	45	41	E G 32	E G 32	40	E G 34	41	E G 35	E G 33	32	34	32	30	29	34	43	40	35
22	40	40	B	E G 30	E G 28	E G 29	G 30	E G 31	E G 31	E G 32	38	41	62	E G 34	41	39	38	32	E G 29	29	41	25	25	E B 30
23	31	33	34	31	40	46	30	45	61	49	S 32	39	38	37	39	39	37	36	34	35	45	41	55	39
24	45	50	60	68	38	41	68	58	52	48	39	56	43	36	38	32	S 30	42	40	30	37	42	35	42
25	42	40	53	50	49	48	42	43	42	34	38	37	S 32	34	31	38	S 31	E G 30	40	30	41	40	40	41
26	46	50	45	50	31	52	56	43	E G 33	S 30	E G 34	E G 33	35	39	37	36	34	38	41	40	35	29	31	29
27	30	K 29	28	29	48	43	51	43	S 33	E G 36	S 33	S 30	S 32	38	E G 35	E G 34	E G 33	E G 29	E G 29	30	27	24	K 27	E B 26
28	E B 37	33	40	E B 23	45	E S 40	30	44	45	30	30	36	32	38	31	32	32	E G 31	28	E B 36	E B 35	E B 33	E B 38	B
29	B	E B 41	42	E B 40	28	41	45	E B 50	B	50	46	B	B	32	30	E B 39	E B 37	E B 37	E B 36	31	29	45	42	40
30	43	66	54	38	37	30	30	50	52	59	45	B	B	E B 43	E G 35	30	S 32	30	26	24	29	K 29	K 30	25
31	27	30	G 23	40	30	52	43	46	E G 38	45	E G 33	40	B	E B 52	E B 53	E B 55	E G 32	E G 32	36	32	48	41	34	28
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	29	29	29	30	30	30	30	29	29	28	28	27	30	30	29	30	30	29	29	30	30	30	29
MED	40	40	42	40	41	41	40	42	41	43	38	38	39	38	35	34	32	31	31	30	35	34	35	34
UQ	45	48	49	43	47	48	49	46	45	48	42	41	46	44	40	38	36	37	34	36	41	41	41	40
LQ	31	33	34	32	31	36	33	35	E G 33	32	33	33	34	35	32	34	30	G 29	E E 29	30	29	26	30	30

IONOSPHERIC DATA

DEC. 1981 | 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 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	13	8	13	8	13	13	13	14	13	19	14	17	20	14	14	14	15	13	14	13	20	14	20	17
2	13	17	19	17	18	15	16	18	20	18	17	14	20	19	23	B	38	15	13	14	15	15	18	14
3	14	17	17	22	20	15	12	13	15	16	14	14	18	20	14	17	14	14	33	20	13	20	15	17
4	18	16	14	15	19	17	13	18	20	B	20	18	19	16	57	21	17	20	15	18	14	16	15	21
5	14	15	21	22	36	14	14	17	19	25	B	20	20	59	42	23	26	14	15	14	14	14	20	18
6	20	21	19	20	21	21	21	21	25	28	21	45	56	43	27	23	21	24	33	31	23	28	26	33
7	35	36	41	37	28	36	36	26	29	27	18	20	21	19	16	20	20	25	21	19	21	22	26	23
8	21	20	43	21	22	21	18	18	20	22	B	18	19	14	15	18	20	24	20	38	20	22	17	19
9	15	14	14	13	14	14	14	24	17	21	26	15	14	14	18	17	13	14	14	15	14	20	18	14
10	17	19	18	15	13	14	19	36	38	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11	B	B	B	B	B	B	B	B	B	40	39	29	23	20	20	23	20	20	35	35	35	37	53	36
12	34	40	28	22	26	28	21	19	21	19	18	15	17	20	18	14	20	20	B	B	21	20	21	25
13	B	19	20	14	14	17	20	20	14	18	20	19	18	27	23	14	15	33	14	14	12	19	11	14
14	15	14	15	14	12	9	14	15	16	20	41	37	15	20	18	18	15	18	16	18	14	21	16	14
15	18	37	18	14	18	15	16	16	14	14	15	14	15	18	18	20	14	14	14	14	13	14	13	16
16	25	20	19	20	14	14	13	15	14	14	16	20	16	20	17	19	18	18	20	19	14	22	18	14
17	13	14	17	13	13	14	14	13	16	13	14	15	17	13	13	14	14	14	14	10	9	17	15	15
18	18	28	19	B	15	14	14	15	17	20	15	23	54	38	23	38	24	15	30	11	15	14	16	16
19	20	36	14	20	18	22	14	20	20	16	20	20	21	15	14	17	18	18	19	14	13	14	17	15
20	14	13	15	16	32	10	21	20	15	15	14	18	20	18	17	20	19	16	14	14	14	14	13	21
21	16	B	20	21	22	20	18	13	15	14	15	16	17	19	15	15	20	15	13	17	15	20	18	13
22	27	37	B	28	25	20	13	11	13	14	15	15	17	14	18	15	13	17	12	14	12	15	15	30
23	10	12	13	17	18	17	20	29	25	20	18	14	16	16	14	14	14	12	14	17	16	15	14	11
24	15	16	20	9	13	13	14	20	15	14	15	21	20	19	14	17	17	14	17	14	13	14	15	14
25	14	22	20	13	14	15	16	15	20	18	14	14	17	15	16	14	14	14	14	13	21	14	14	15
26	13	16	17	13	14	15	20	20	14	16	17	18	19	19	15	20	15	17	14	14	13	14	14	13
27	19	14	25	26	21	25	16	18	17	19	18	19	18	18	15	18	14	16	18	17	18	21	21	26
28	37	21	22	23	20	40	24	27	27	24	20	28	20	25	20	18	19	20	23	36	35	33	38	B
29	B	41	33	40	25	26	28	50	B	25	20	B	B	21	28	39	37	37	36	27	20	22	21	21
30	22	19	20	19	19	18	23	21	20	21	26	B	B	43	19	28	18	18	23	18	15	26	18	18
31	17	17	17	17	15	18	14	17	15	15	14	15	B	52	53	55	19	19	15	18	15	19	18	18
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	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	18	19	19	19	18	17	16	18	17	19	18	18	19	19	18	18	18	17	16	17	15	19	18	17
UQ	24	32	22	22	22	21	20	21	20	23	20	22	21	23	23	23	20	20	23	20	20	22	20	22
LQ	14	16	17	14	14	14	14	15	15	16	15	15	17	16	15	16	14	14	14	14	14	14	15	14

DEC. 1981 | F-MIN (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

DEC. 1981 | 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 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	280	A	A	290	A	A	A	A	A 240	230	230	220	A	A	A	A	A	230	230	240	A	A	A	A
2	A	E A 320	A	A	A	A	A	280	225	205	A	230	235	225	245	B	E B 250	230	250	250	265	270	A 310	280
3	A	A	A	A	A	A	H 250	240	235	235	225	225	A	A	E A 250	E A 250	250	240	255	240	255	310	A	A
4	A	A	A	A	A	A	A	Q 225	E A 320	B	240	250	225	225	B	225	240	230	E A 270	E A 280	A	A	A	A
5	E A 350	A	A	A	A	A	E S 260	225	E G 310	235	B	E S 250	240	B	240	230	240	235	250	265	280	A	325	A
6	A	A	H 250	A	280	280	250	E A 250	A	A	275	E B 250	A	E B 240	S 235	S 220	S 230	S 240	240	255	260	E B 300	280	E B 300
7	B	B	B	B	A	Y	A	Y	H 240	E Y 240	225	240	H 225	235	H 230	215	225	230	H 250	250	250	270	300	280
8	275	265	B	E A 210	A	A	225	230	A	A	B	225	250	H 225	250	225	250	230	250	B	260	A	285	A
9	A	A	A	A	280	A	280	E B 250	200	A	290	225	H 215	230	240	235	Y 245	240	250	300	A	A	A	A
10	A	A	A	A	E A 315	300	H 275	225	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11	B	B	B	B	B	B	B	B	B	235	205	H 225	255	240	225	240	230	220	E S 230	E S 250	E S 280	B	B	B
12	E B 310	B	A	355	A	A	A	A	245	235	H 225	E A 265	250	250	240	225	245	Y	B	B	S	A	A	A
13	B	B	A	E A 320	E A 280	A	A	A	E A 270	E S 250	B	A	235	E Y 285	Y 230	230	240	245	250	250	280	290	310	285
14	A	A	A 240	A	A	A	A	255	A	A	260	225	230	250	220	Y 230	230	230	240	250	250	270	280	295
15	B	B	A	A	A	E A 330	280	240	230	240	E A 250	225	E A 240	230	235	230	230	230	230	240	250	E A 260	270	290
16	A	A	A	A	A	A	255	240	230	A	225	215	230	240	E S 240	225	215	225	240	235	260	280	275	275
17	270	340	A	300	260	250	235	235	230	205	210	A	A	E A 250	225	E A 265	230	220	E A 245	230	245	265	245	A
18	A	A	A	B	A	A	250	250	Q 210	230	240	240	B	250	230	240	S 230	225	250	A	A	310	295	310
19	A	B	A	A	A	A	220	A	A	A	210	225	220	230	225	H 215	225	225	H 225	240	A	H 250	280	290
20	270	A	A	A	A	245	Y	A	A	H 190	H 200	H 205	225	235	215	215	200	H 210	225	240	250	255	275	300
21	310	B	A	A	A	A	A	255	240	200	H 200	210	205	225	210	210	215	E S 220	225	235	240	290	270	270
22	A	B	B	B	290	310	245	225	210	H 225	215	205	H 200	210	210	210	210	210	225	240	275	245	255	270
23	260	270	300	H 255	A	A	S	A	A	A	210	H 205	250	H 210	215	220	220	210	225	E A 250	E A 250	260	275	275
24	A	A	A	A	A 295	A	A	A	A	210	200	255	225	225	220	230	210	220	250	H 205	295	A	A	A
25	A	A	A	A	A	A	225	A	280	230	210	205	210	240	225	240	225	215	230	290	A	A	295	A
26	A	A	A	A	A	A	A	A	220	E S 210	210	225	H 220	205	225	220	225	220	225	E A 230	250	260	300	270
27	290	300	320	A	A	A	A	A	240	225	210	H 225	230	225	225	225	215	235	240	240	250	260	310	280
28	B	A	A	B	A	S	S	A	E A 250	215	205	E A 235	225	E S 270	225	220	230	245	250	E S 260	E S 310	270	E B 325	B
29	B	B	A	S	B	S	A	B	B	A	250	B	B	240	S 270	250	240	E B 250	E B 260	270	265	A	A	A
30	A	A	A	A	A	290	Y	A	285	A	A	B	B	285	250	Y 270	S 250	Y	E Y 265	E Y 250	280	340	370	350
31	A	A	325	A	Y	A	A	A	310	270	225	240	B	B	B	B	215	230	215	255	E A 300	E A 275	290	305
	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	9	5	5	6	7	7	13	15	21	20	25	26	22	26	27	27	29	28	29	27	23	20	22	17
MED	275	U 285	300	284	280	285	250	238	235	228	220	225	226	232	228	225	230	230	235	245	255	269	285	282
UQ	U 295	320	320	320	288	300	260	250	U 255	235	235	232	240	245	239	234	240	234	250	252	272	288	305	300
LQ	270	270	250	255	280	265	235	228	230	210	210	220	220	225	225	220	220	220	230	239	250	260	275	275

DEC. 1981 | H'F (KM)

IONOSPHERIC DATA AT SYOWA STATION (ANTARCTICA)

ION.ANT.—37 July 1981—December 1981 (Not for Sale)

昭和基地電離層資料（南極）

（1981年7月—1981年12月）

1987年1月20日 印 刷
1987年1月26日 発 行
（非売品）

編集兼発行所 郵政省電波研究所
〒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 Radio Research Laboratory, Ministry of Posts and Telecommunications, 2-1 Nukui-Kitamachi 4-chome, Koganei-shi, Tokyo 184 JAPAN.