

RECORDS OF RADIO AURORA AT SYOWA STATION,

ANTARCTICA IN 1991

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1. Introduction

This report presents a summary of data obtained during the period of 1991 with the auroral radar at Syowa Station, Antarctica.

Three kinds of data are available; a) chart records of the time variation of echo intensity, b) digital MT, c) 35 mm film records of radio auroral echo intensity (A-scope) and range-time intensity (A<sup>-</sup>-scope).

Inquiries about details of the data should be addressed to:

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2. Location

Syowa Station			
Geographic		Geomagnetic	
Latitude	Longitude	Latitude	Longitude
69° 00' S	39° 35' E	70.0° S	80.2° E

3. Observer

Kenro NOZAKI (Communications Research Laboratory)

#### 4. Equipments

The main parameters of the auroral radar at Syowa Station are shown in Table 1. The three antenna beams with the half power width of about 4 degrees are directed toward the geomagnetic south, 32.8° west from the geomagnetic south, and 47.0° east from the geomagnetic south, respectively. In 1991 two antennas directed to the geomagnetic south and 32.8° west from the geomagnetic south were used. These two antennas are switched alternately. The details of the data processing and radar system are described in the reference.

Table 1. Parameters of the auroral radar at Syowa Station

Site	Syowa Station ( 69° 00' S, 39° 35' E )
Type	Coherent pulse radar
Frequency	50, 112 MHz
Peak power	15 kW
Pulse width	100 $\mu$ s
PRF	50 Hz (333 Hz for spectrum observation)
Antenna	Three 14-element coaxial collinear (three-way)
Antenna gain	25 dB
Antenna beamwidth	4° (half power) in horizontal plane
Receiver bandwidth	10 kHz
Receiver noise figure	less than 4 dB
Display and recorder	A - scope display, A' - scope display, pen recorder and digital MT

#### 5. Explanation of Diagrams

The backscattered power intensities observed with the 50 MHz auroral radar were sampled every 1 second and stored by the digital data logger. Figure 1 shows radio auroral intensities obtained from the records with this data logger during the period of 1991. The blank shows a lack of observations caused by the recording troubles. Figure 2 shows a summary plot of range time intensity and half power width of doppler spectrum at the range of maximum echo power with the 50 MHz auroral radar.

#### 6. Remarks

Figure 1 does not show the data of January because of some analyzing troubles. The data of January will be shown on the next data report, that is "RECORDS OF RADIO AURORA AT SYOWA STATION, ANTARCTICA IN 1992".

#### Reference

Igarashi, K., Ogawa, T., Ose, M., Fujii R. and Hirasawa T. (1982): A new VHF doppler radar experiment at Syowa Station, Antarctica. Mem. Natl Inst. Polar Res., Spec. Issue, 22, 258-267.

Bibliography relevant to  
ROMETER RECORDS OF 30 MHz COSMIC NOISE AT SYOWA STATION, ANTARCTICA (1)

Observing Period	Observers	Literature		
		JARE Data Reports		
		Volume	Pages	Year
Feb. 1967 - Feb. 1968	Ose, M Nishimuta, I.	2 (Ionosphere 1)	62	1968
Feb. 1968 - Jan. 1969	Ishizawa, K.	7 (Ionosphere 3)	65	1970
1969	Ota, Y.	8 (Ionosphere 4)	74	1970
1970	Shiro, I. Sakamoto, T.	14 (Ionosphere 5)	62	1971
1971	Ogata, T. Ose, M.	18 (Ionosphere 7)	62	1971
1972	Isozaki, S. Miyazaki, S.	20 (Ionosphere 8)	76	1973
1973	Nishimuta, I. Yabuuma, H.	24 (Ionosphere 11)	74	1974
1974	Yamazaki, I. Shiro, I.	29 (Ionosphere 13)	84	1975
1975	Sugiuchi, H. Komiya, N.	35 (Ionosphere 15)	84	1976
1976	Ose M. Yamakoshi, A. Sasaki, T.	41 (Ionosphere 17)	87	1977
1977	Ose M. Nishiyama, N. Sakamoto, J.	46 (Ionosphere 19)	82	1978
1978	Ose M. Igarashi, K. Tsuzurahara, S.	51 (Ionosphere 20)	86	1979
(cont.)				

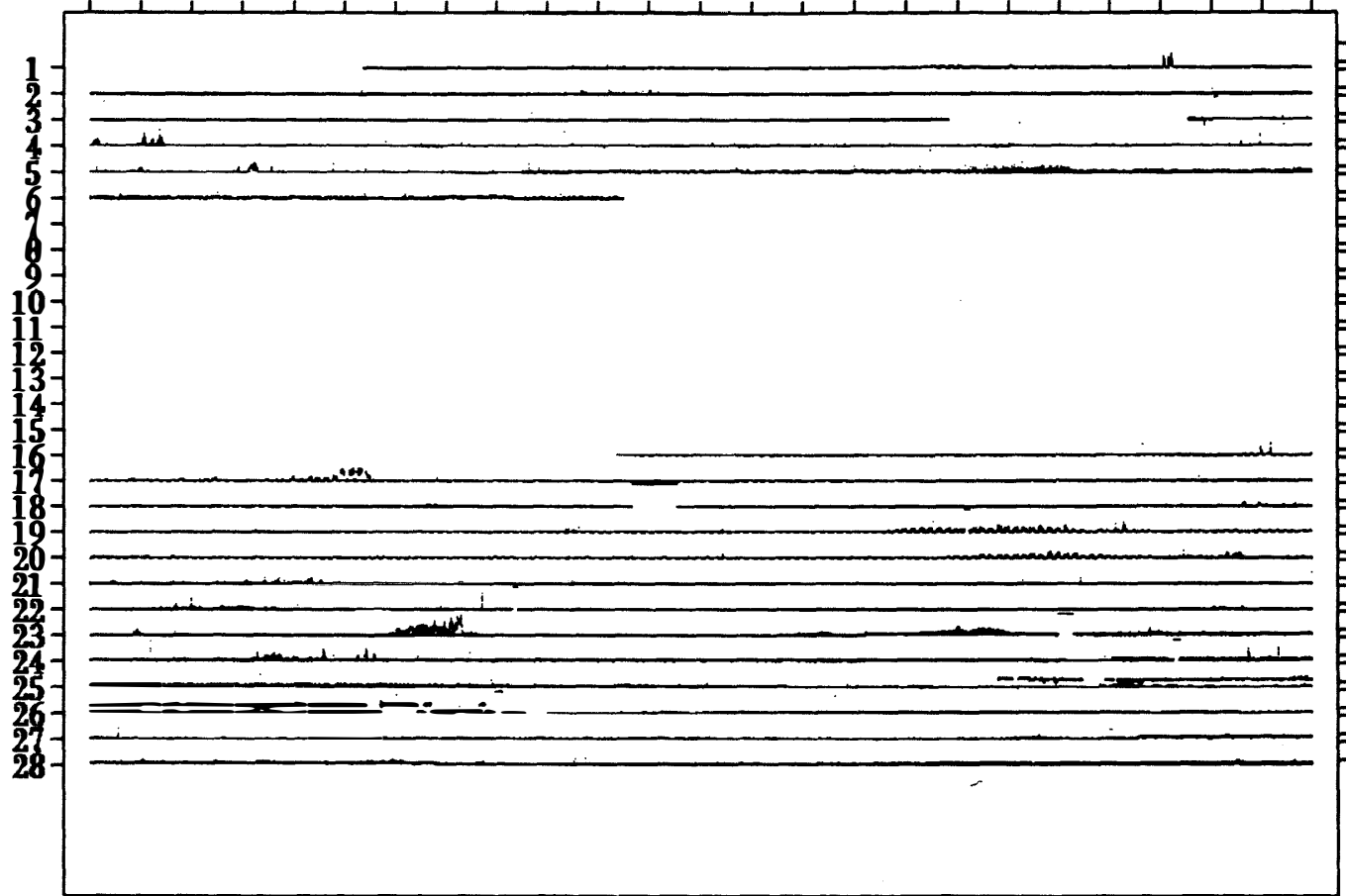
Bibliography relevant to  
 ROMETER RECORDS OF 30 MHz COSMIC NOISE AT SYOWA STATION, ANTARCTICA (2)

Observing Period	Observers	Literature		
		JARE Data Reports		
		Volume	Pages	Year
1979	Ose, M. Ojima, S. Komiya, N.	56 (Ionosphere 22)	84	1980
1980	Ose, M. Nozaki, K.	70 (Ionosphere 26)	97	1982
1981	Ose, M. Kurihara, N.	80 (Ionosphere 27)	94	1983
1982	Kuratani, Y. Igarashi, K.	87 (Ionosphere 29)	86	1984
1983	Kuratani, Y. Yamazaki, I. Tanaka, T.	99 (Ionosphere 31)	93	1985
1984	Kuratani, Y. Yamamoto, S.	112 (Ionosphere 33)	95	1986
1985	Kuratani, Y. Maeno, H.	122 (Ionosphere 35)	94	1987
1986	Maeno, H. Suzuki, A.	133 (Ionosphere 37)	96	1988
1987	Maeno, H. Inamori, K.	141 (Ionosphere 39)	99	1989
1988	Maeno, H. Ohtsuka, A.	155 (Ionosphere 42)	98	1990
1989	Maeno, H. Yamamoto, S.	168 (Ionosphere 44)	184	1991
1990	Ohtaka, K. Kunitake, M.	176 (Ionosphere 47)	204	1992

CRL Syowa Station Auroral Radar (50MHz) February 1991

Date

[dBm]



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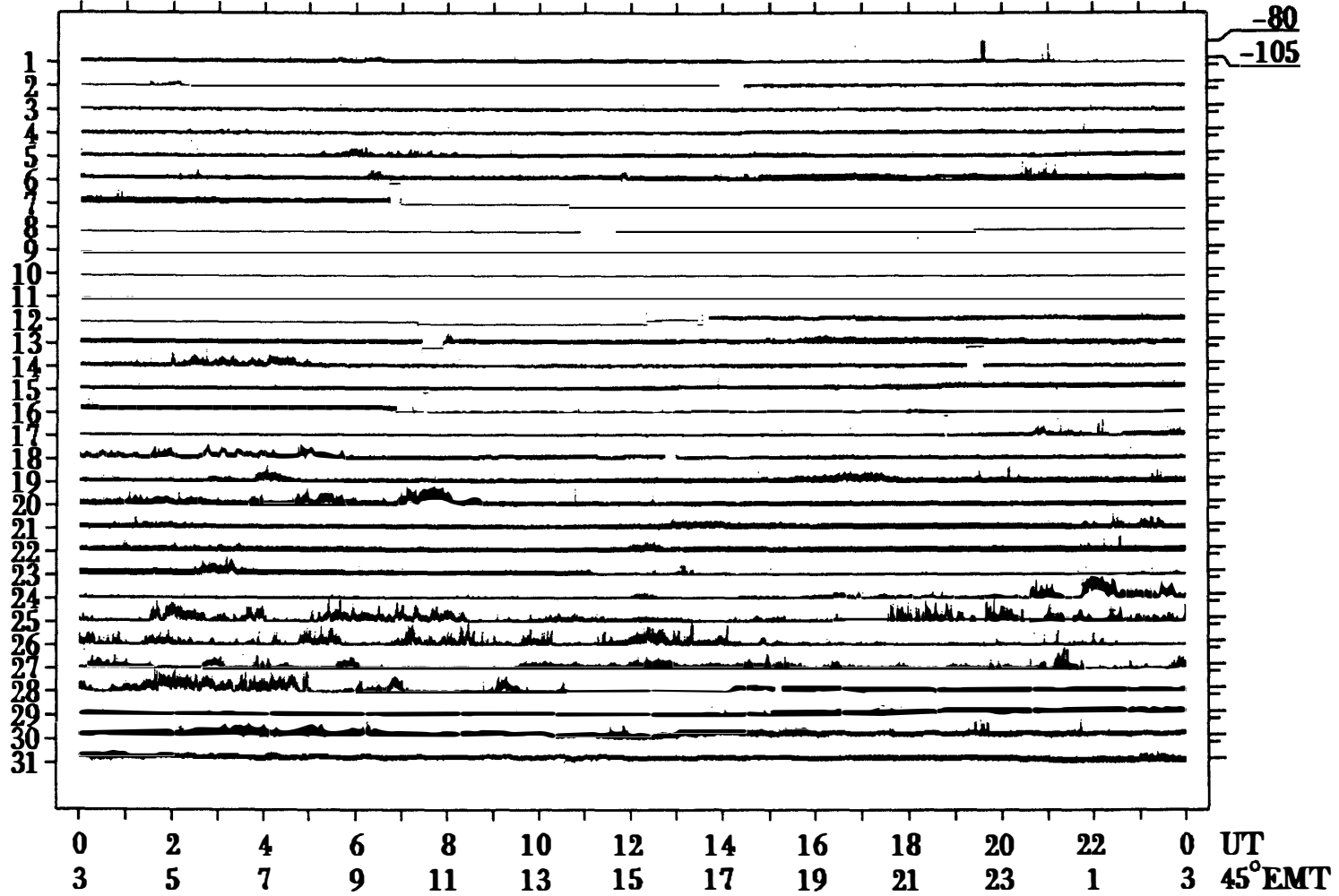
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3 5 7 9 11 13 15 17 19 21 23 1 3 45° EMT

CRL Syowa Station Auroral Radar (50MHz)

March 1991

Date

[dBm]



CRL Syowa Station Auroral Radar (50MHz)

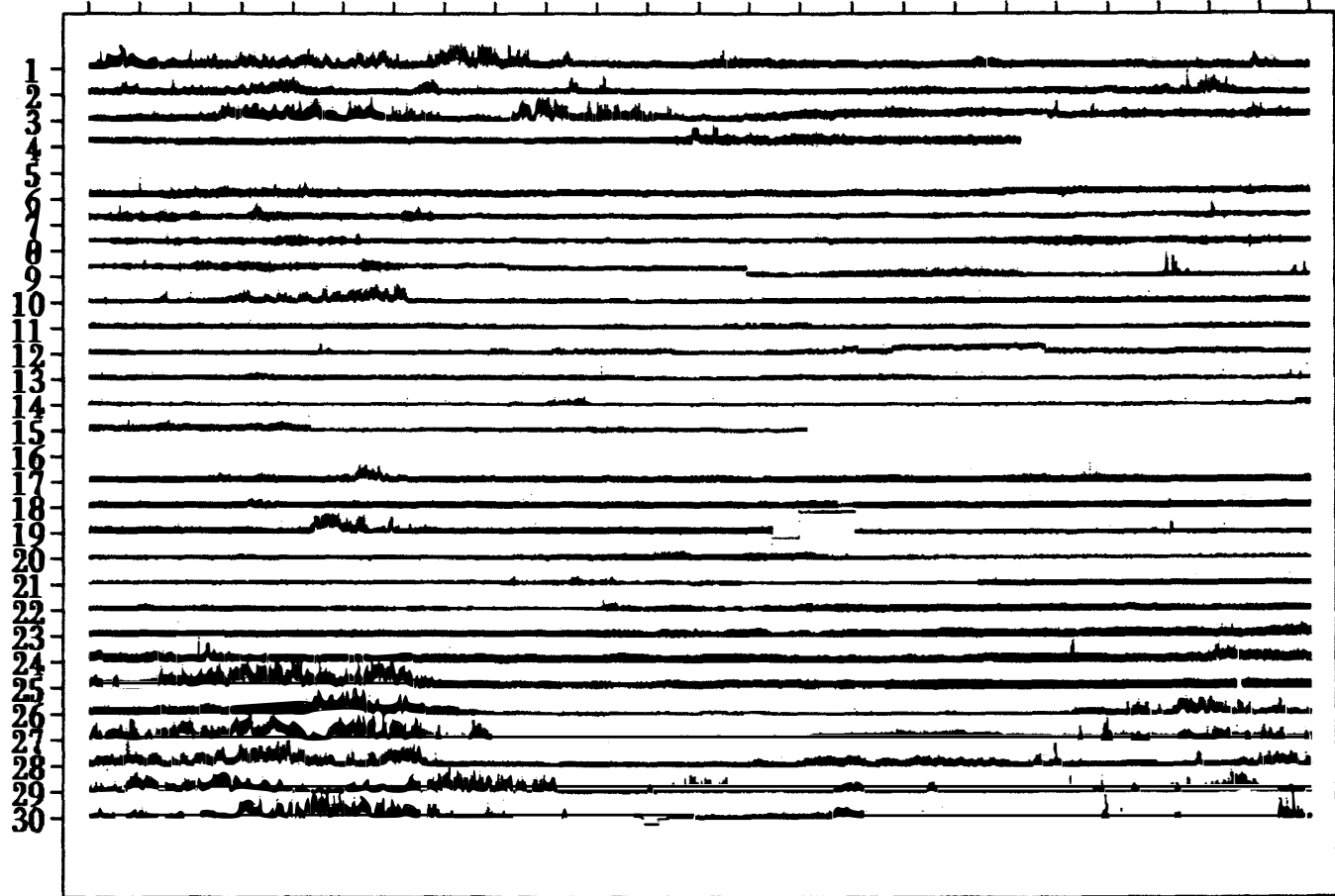
April 1991

Date

[dBm]

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0 2 4 6 8 10 12 14 16 18 20 22 0 UT  
3 5 7 9 11 13 15 17 19 21 23 1 3 45° EMT

CRL Syowa Station Auroral Radar (50MHz)

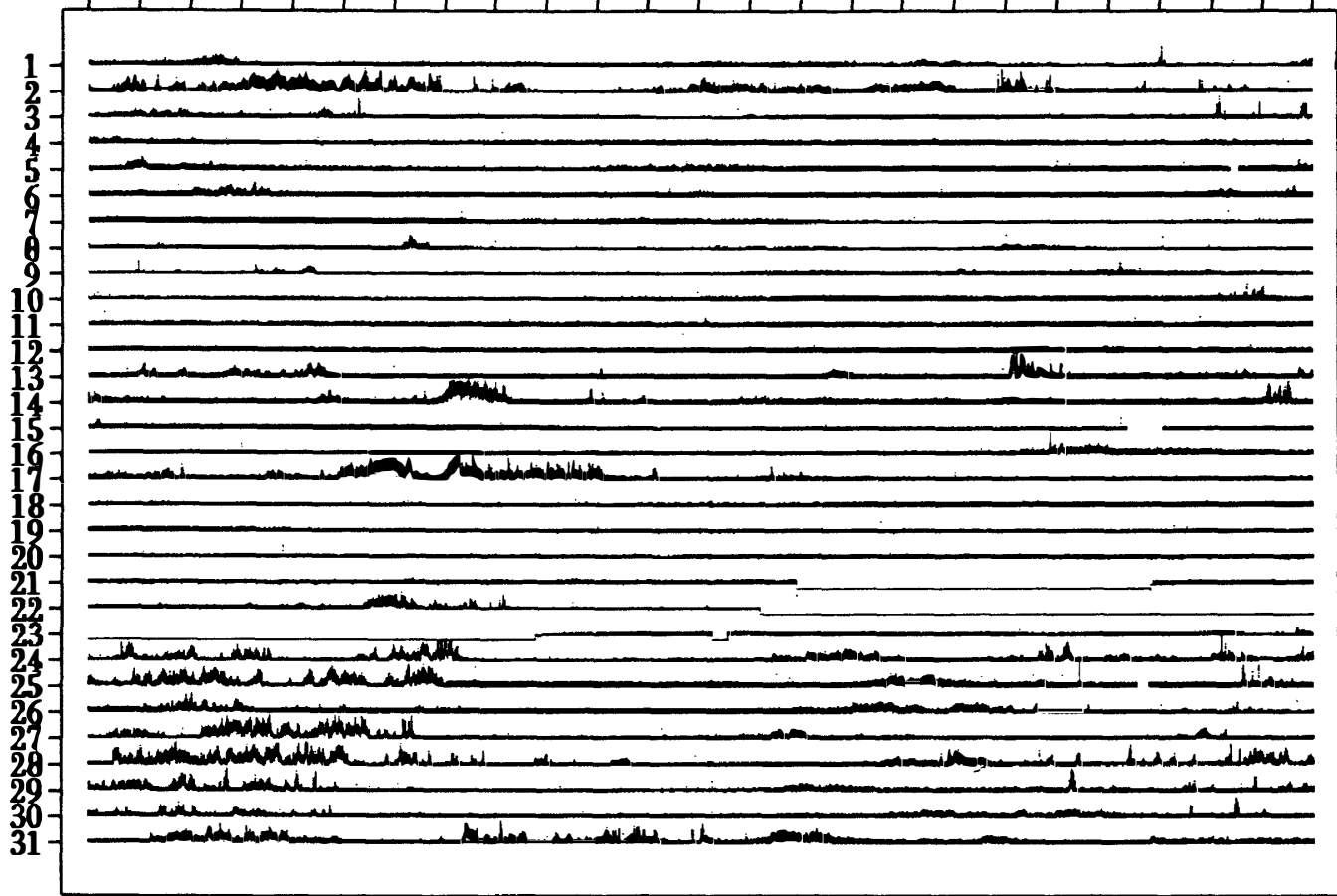
May 1991

Date

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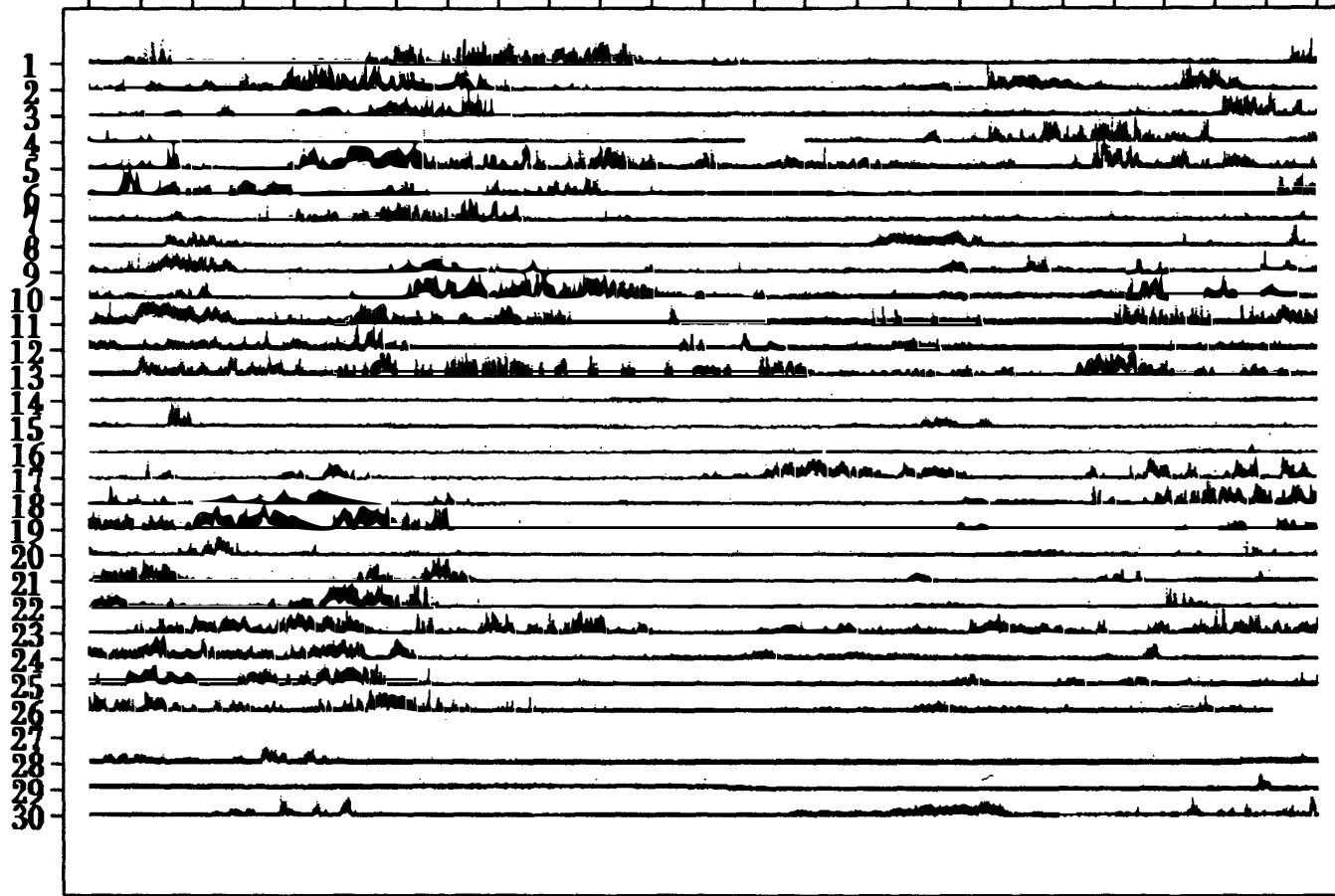
CRL Syowa Station Auroral Radar (50MHz)

June 1991

Date

[dBm]

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0 2 4 6 8 10 12 14 16 18 20 22 0 UT  
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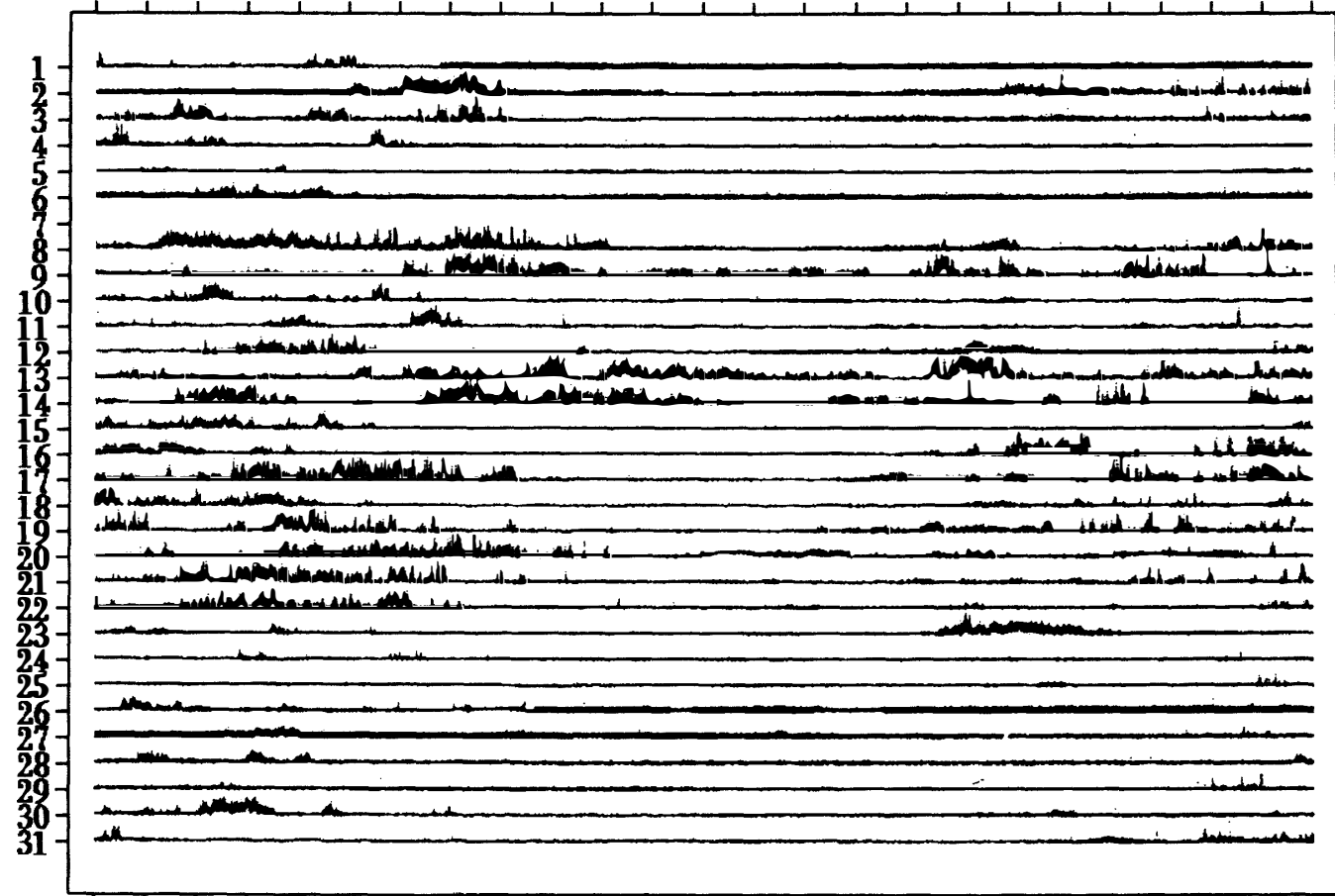
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July 1991

Date

[dBm]

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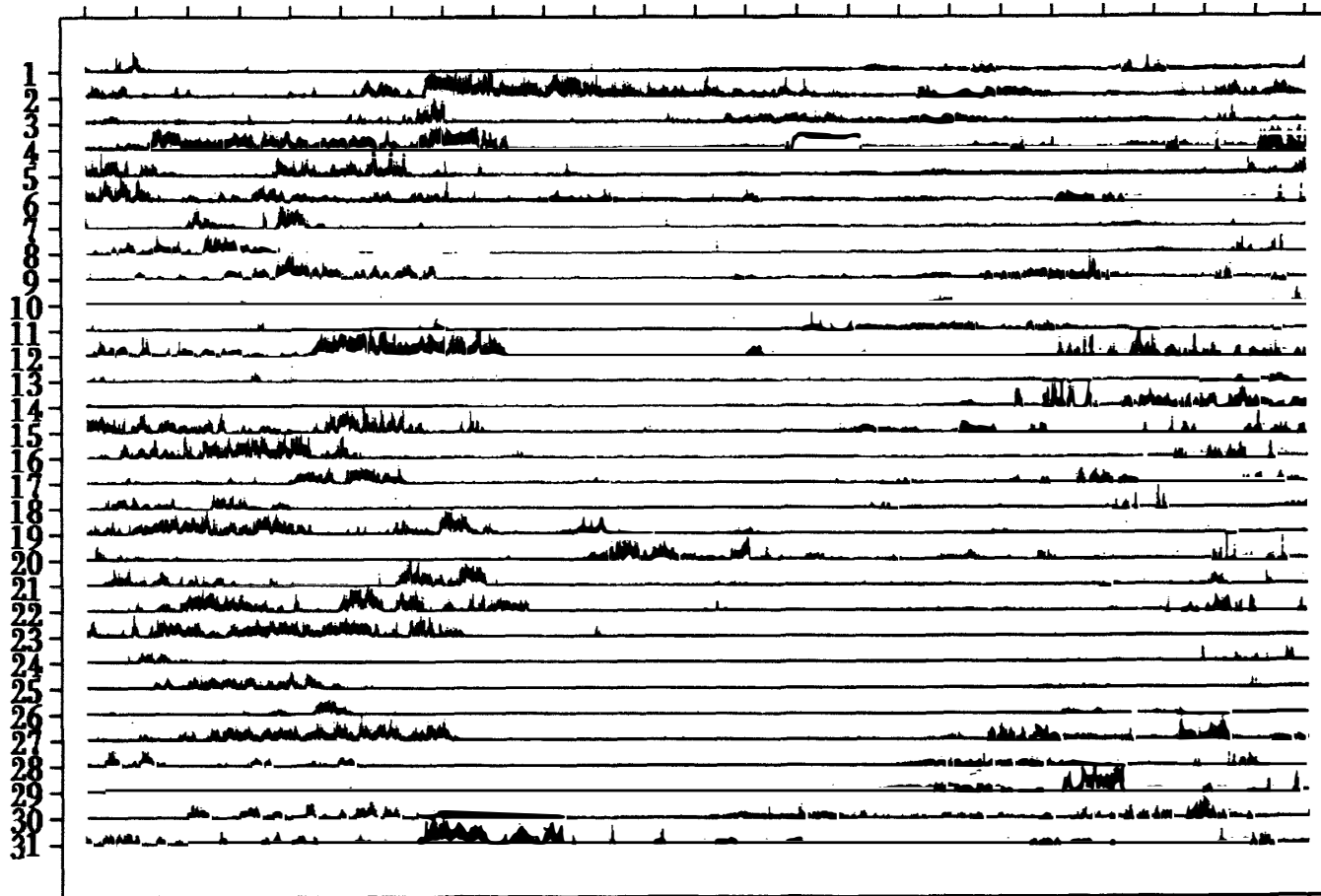
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Date

[dBm]

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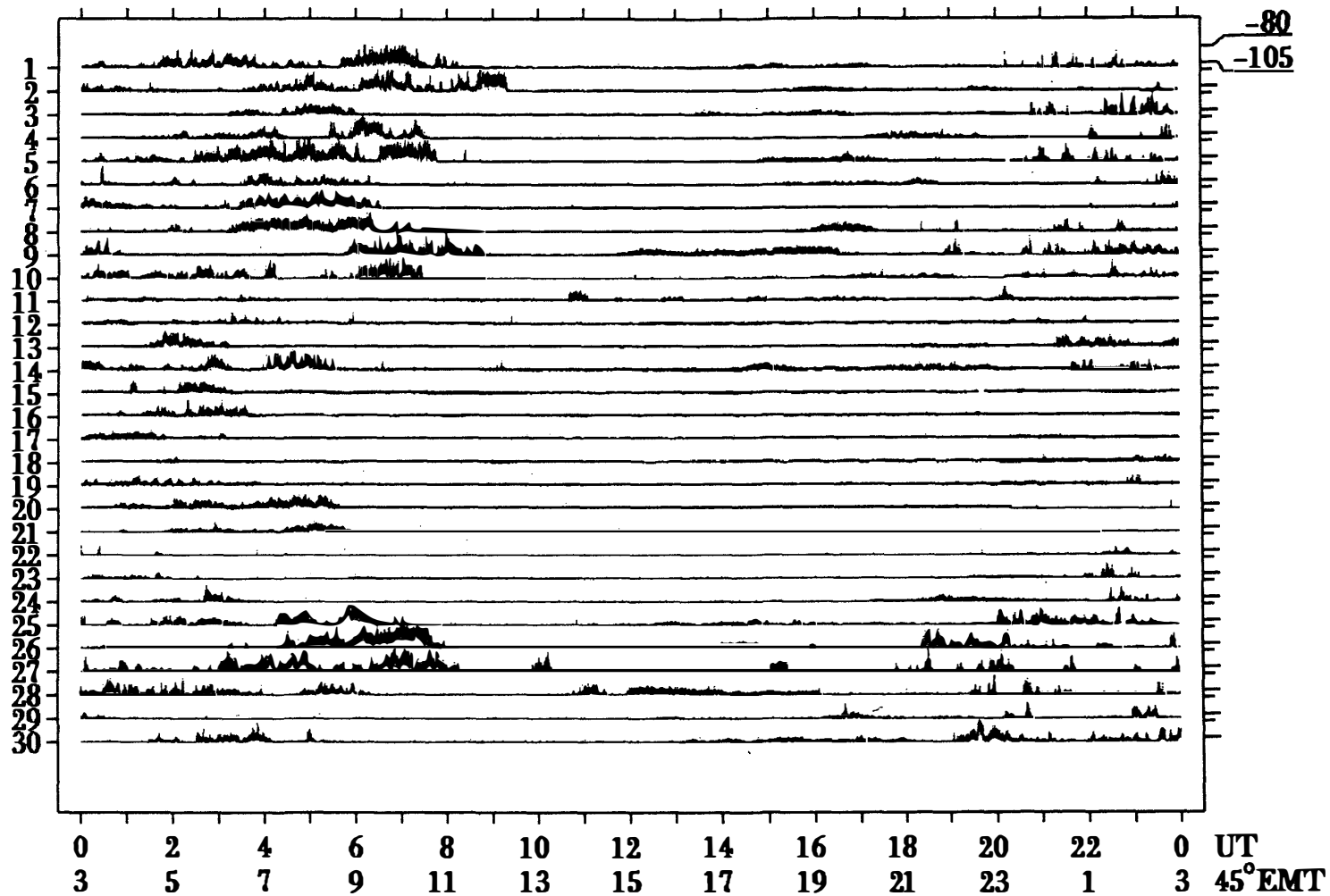
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CRL Syowa Station Auroral Radar (50MHz) September 1991

Date

[dBm]

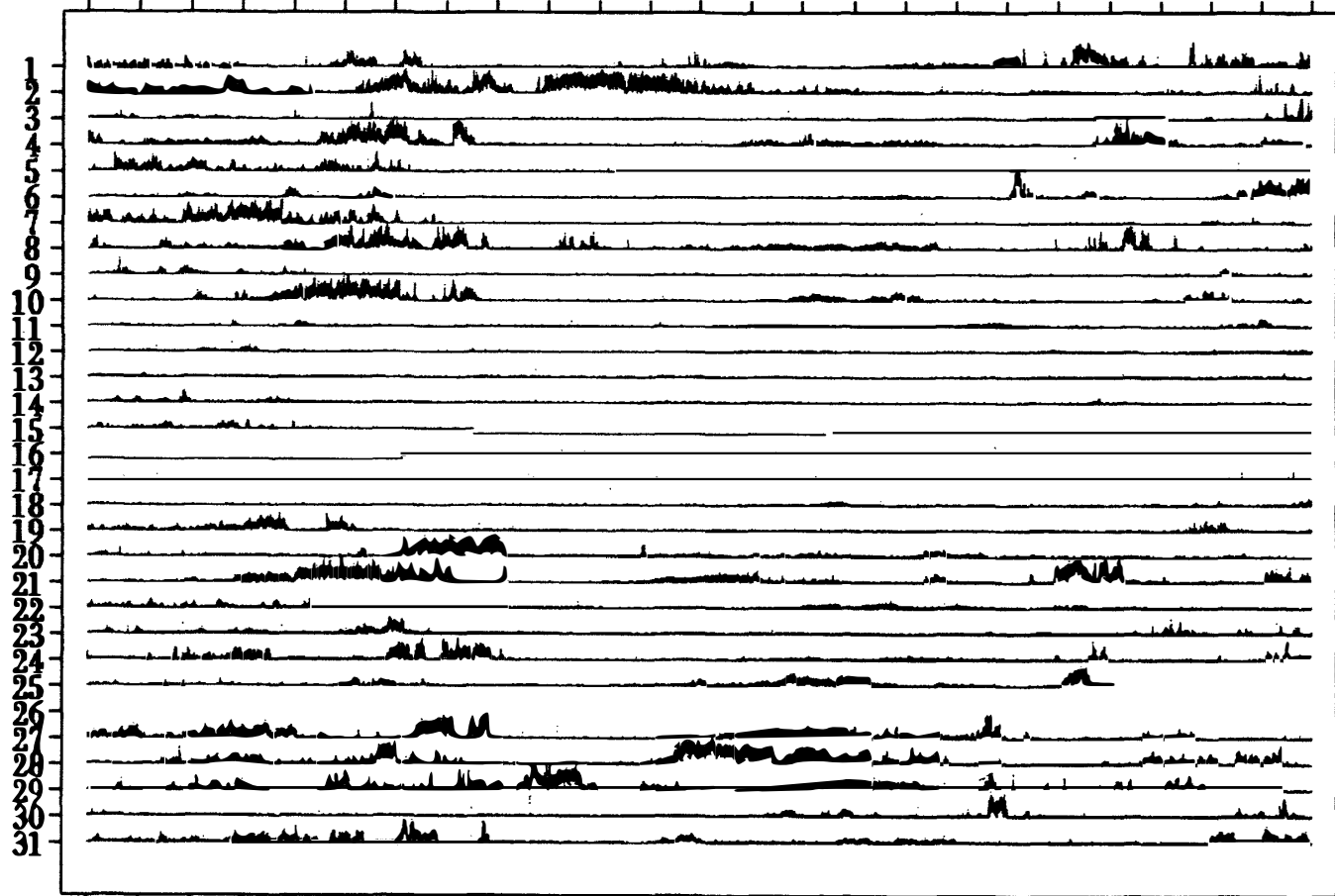


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Date

[dBm]

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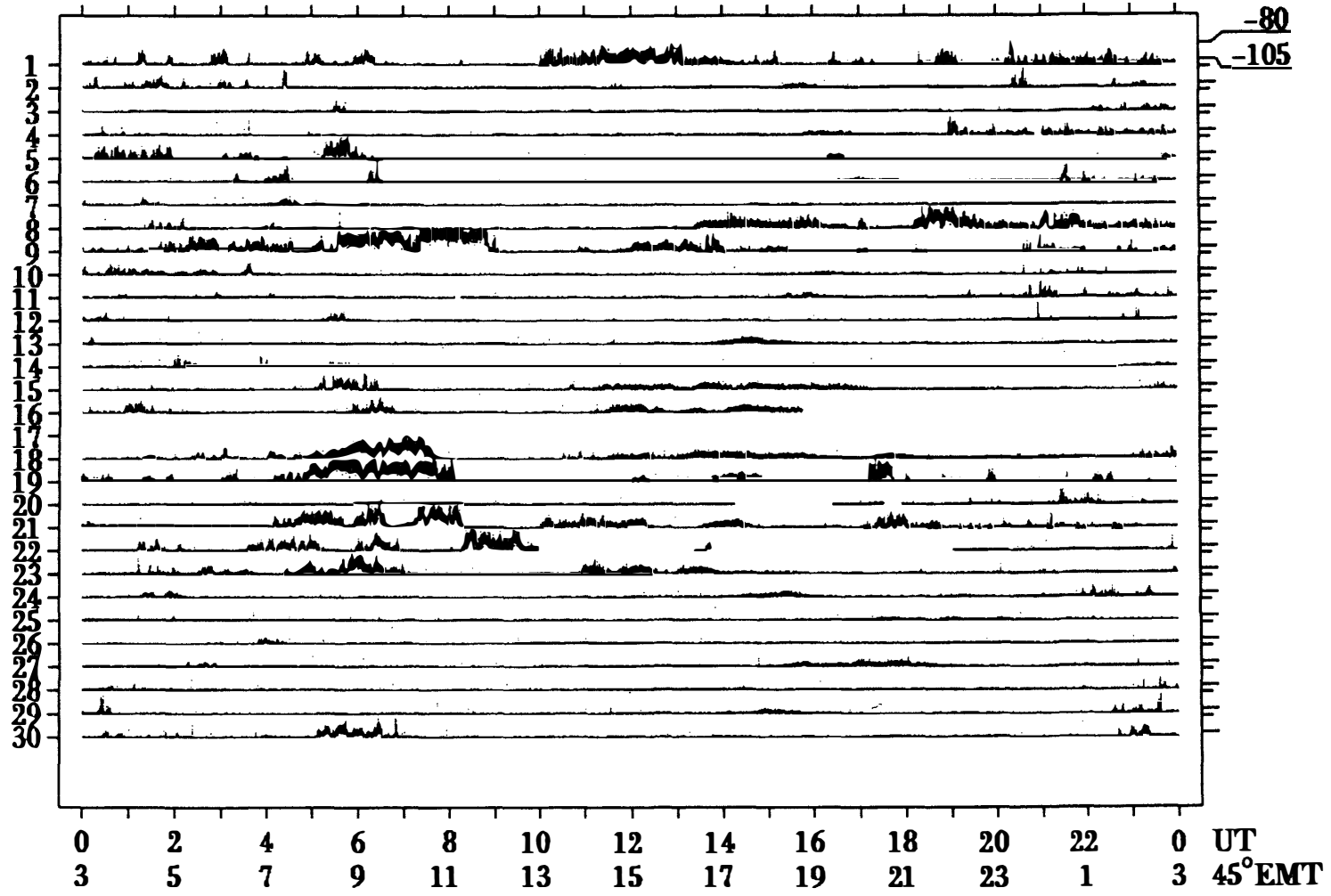


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CRL Syowa Station Auroral Radar (50MHz) November 1991

Date

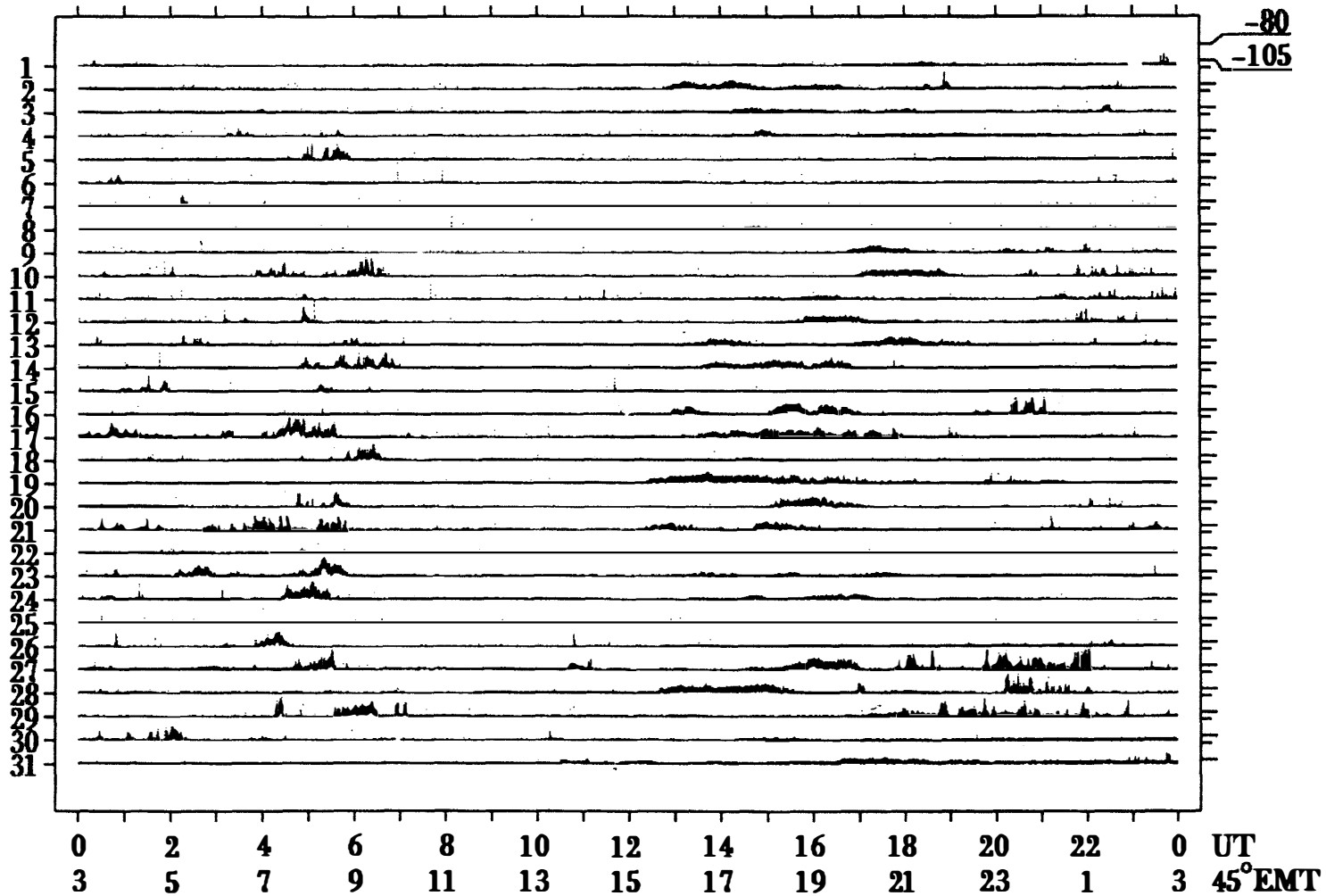
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CRL Syowa Station Auroral Radar (50MHz) December 1991

Date

[dBm]

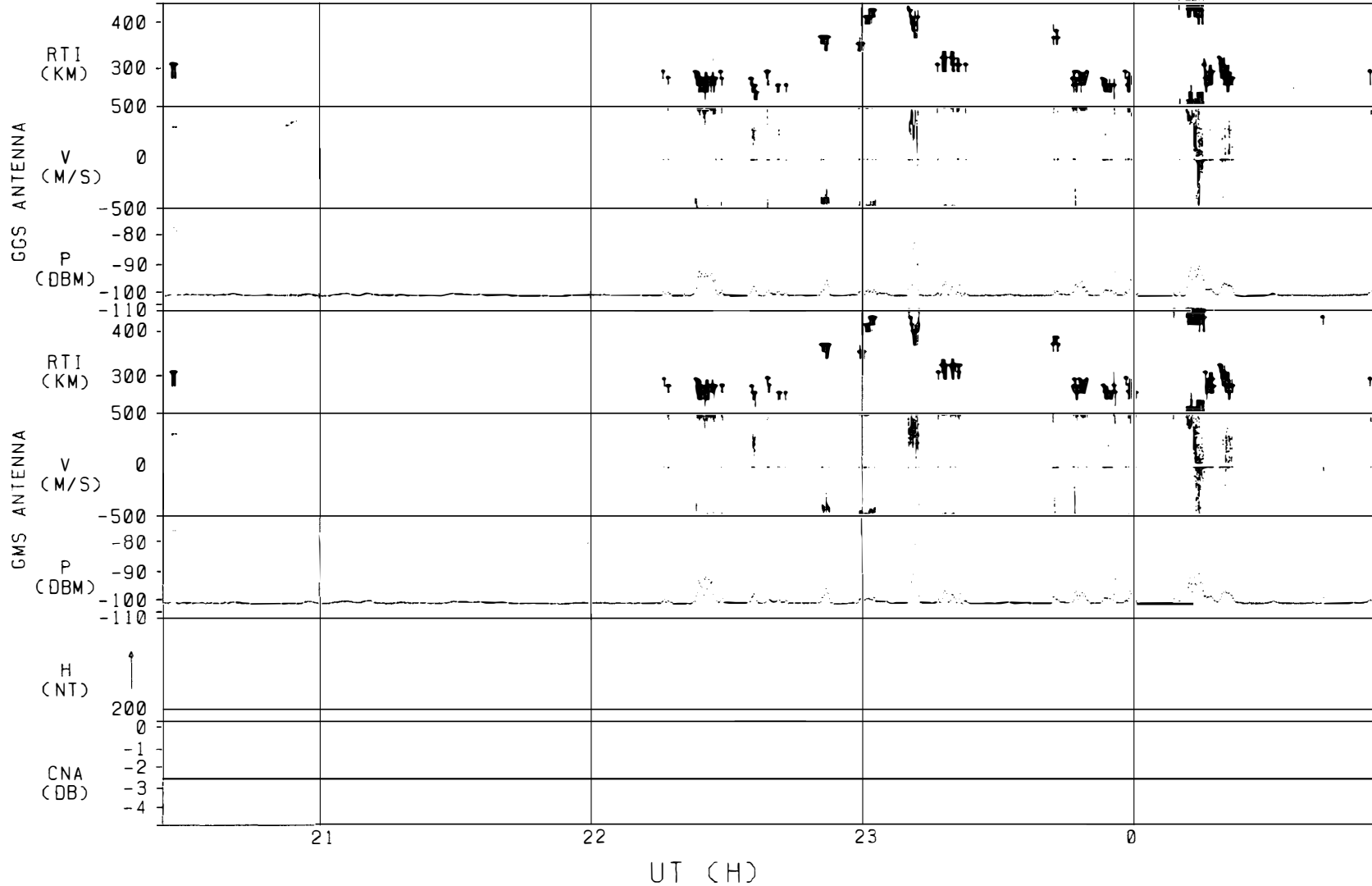


# AURORA RADAR/CRL, SYOWA STATION

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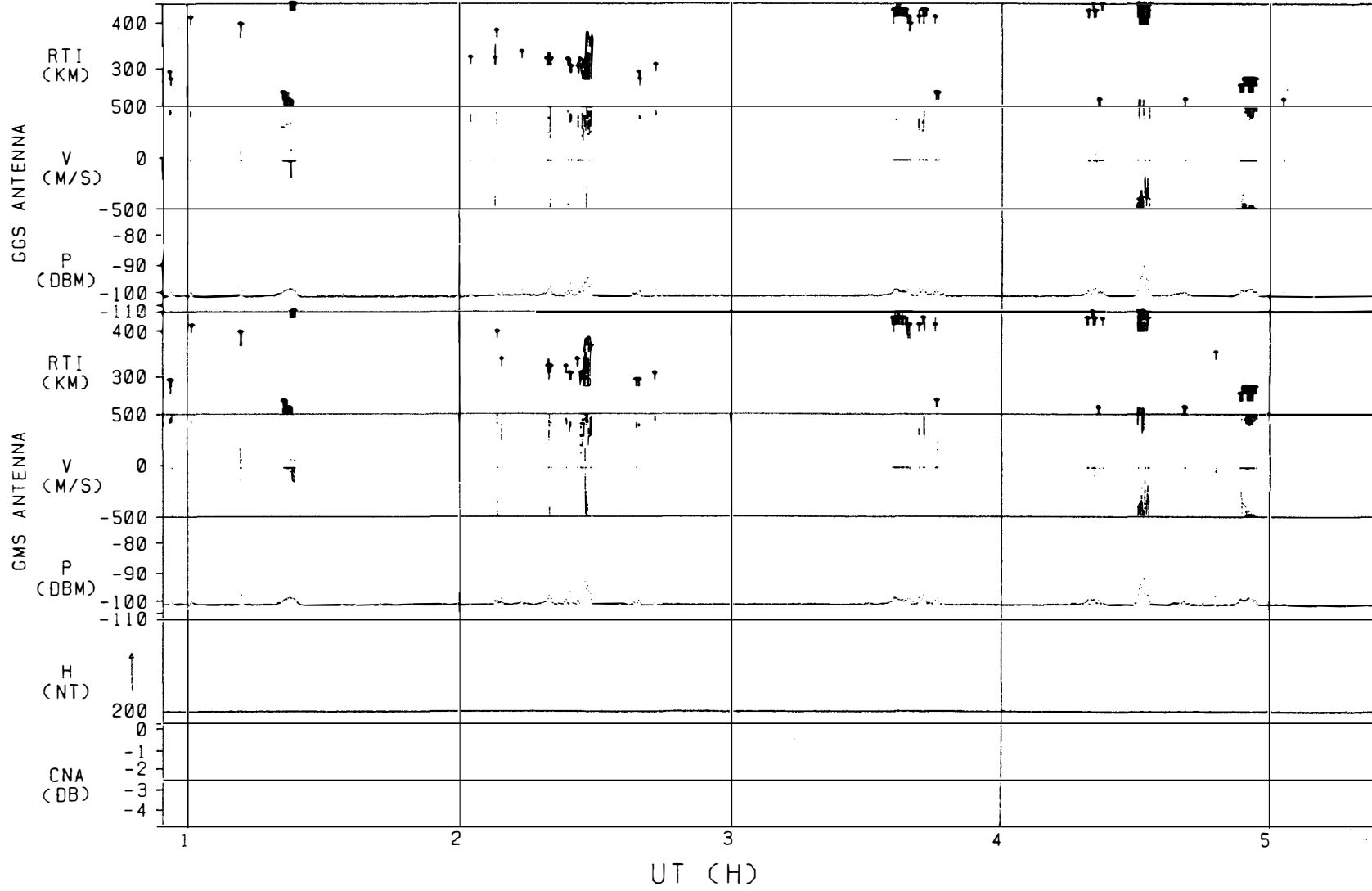




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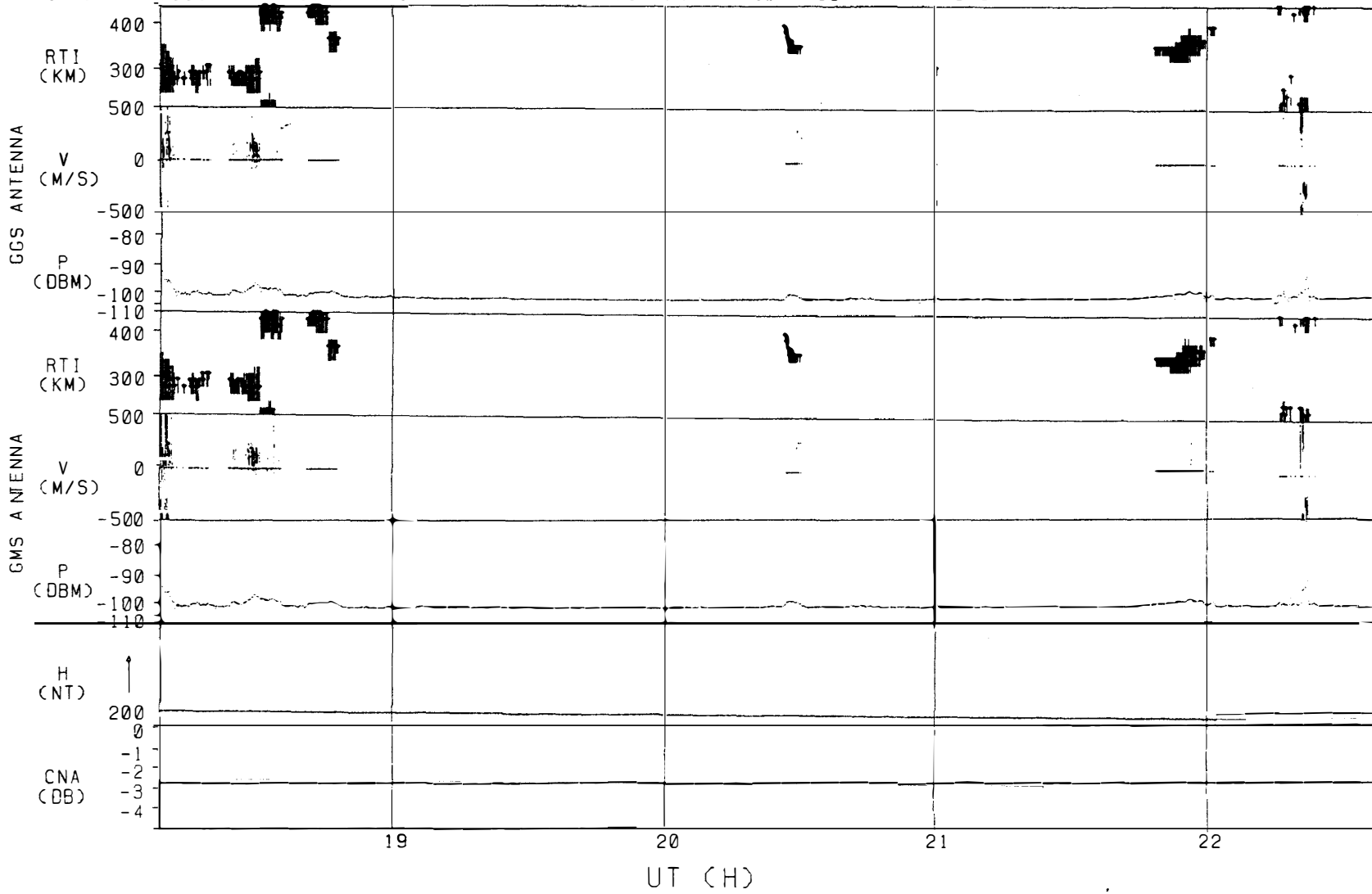
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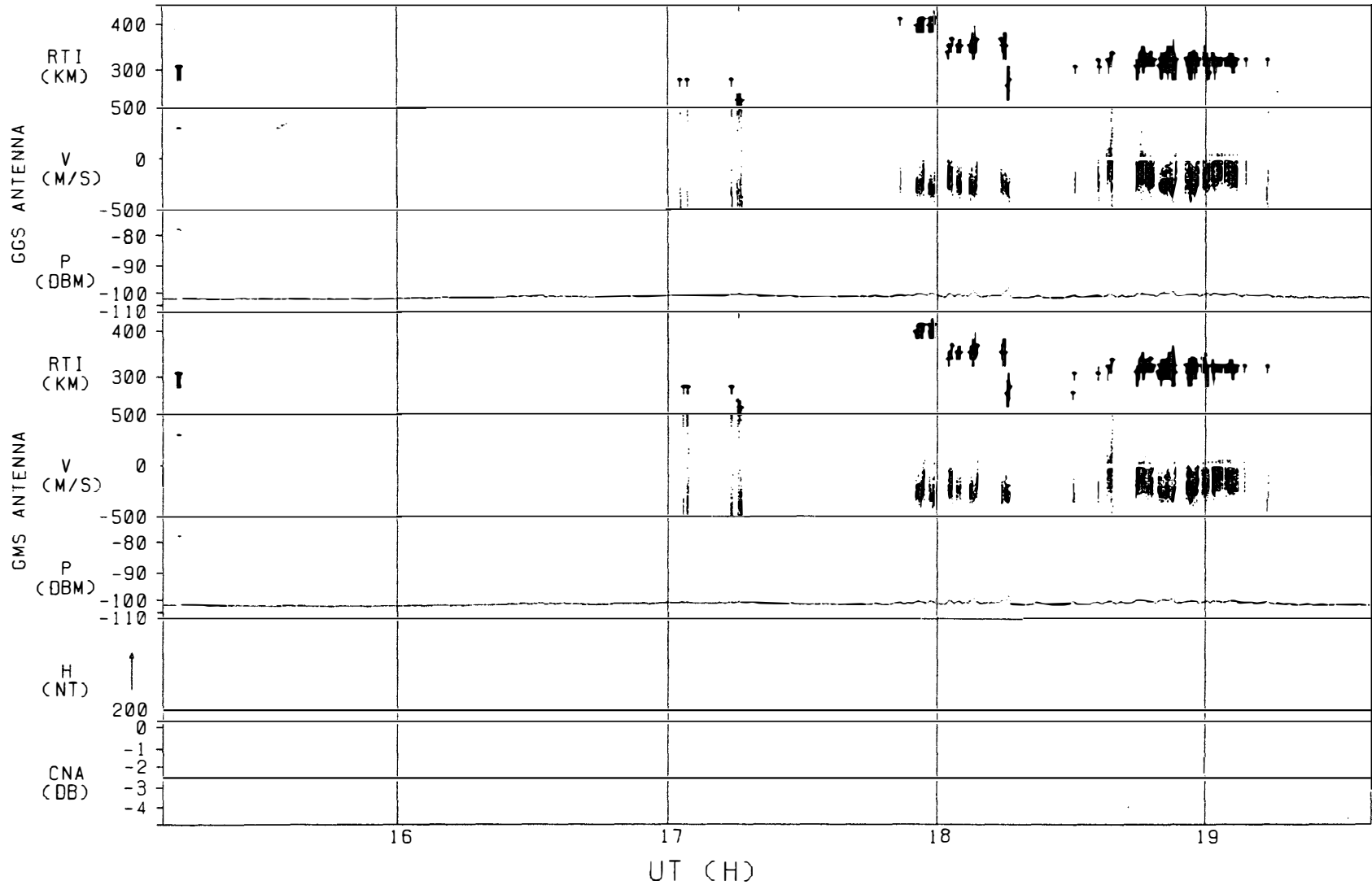
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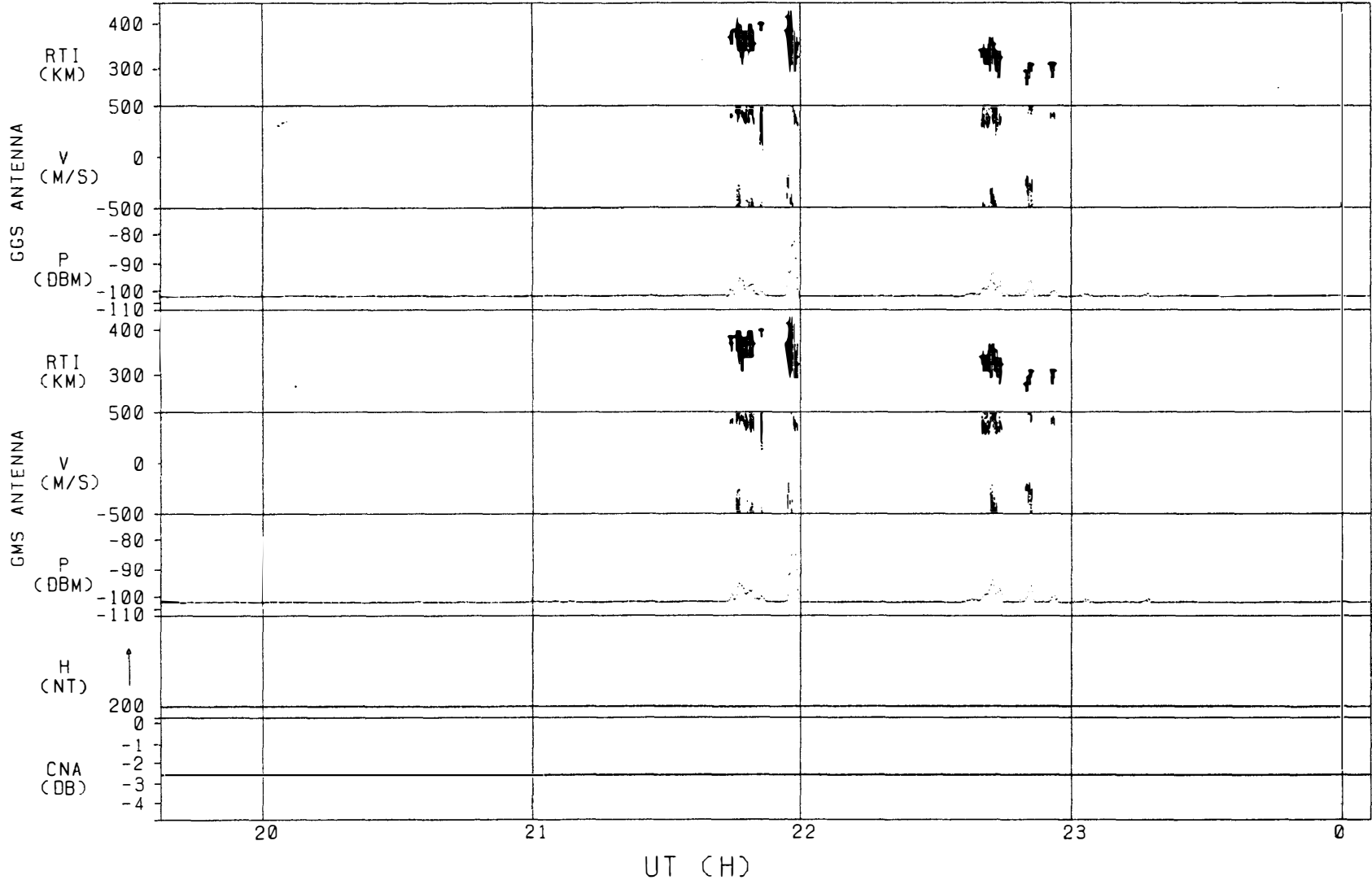


AURORA RADAR/CRL, SYOWA STATION

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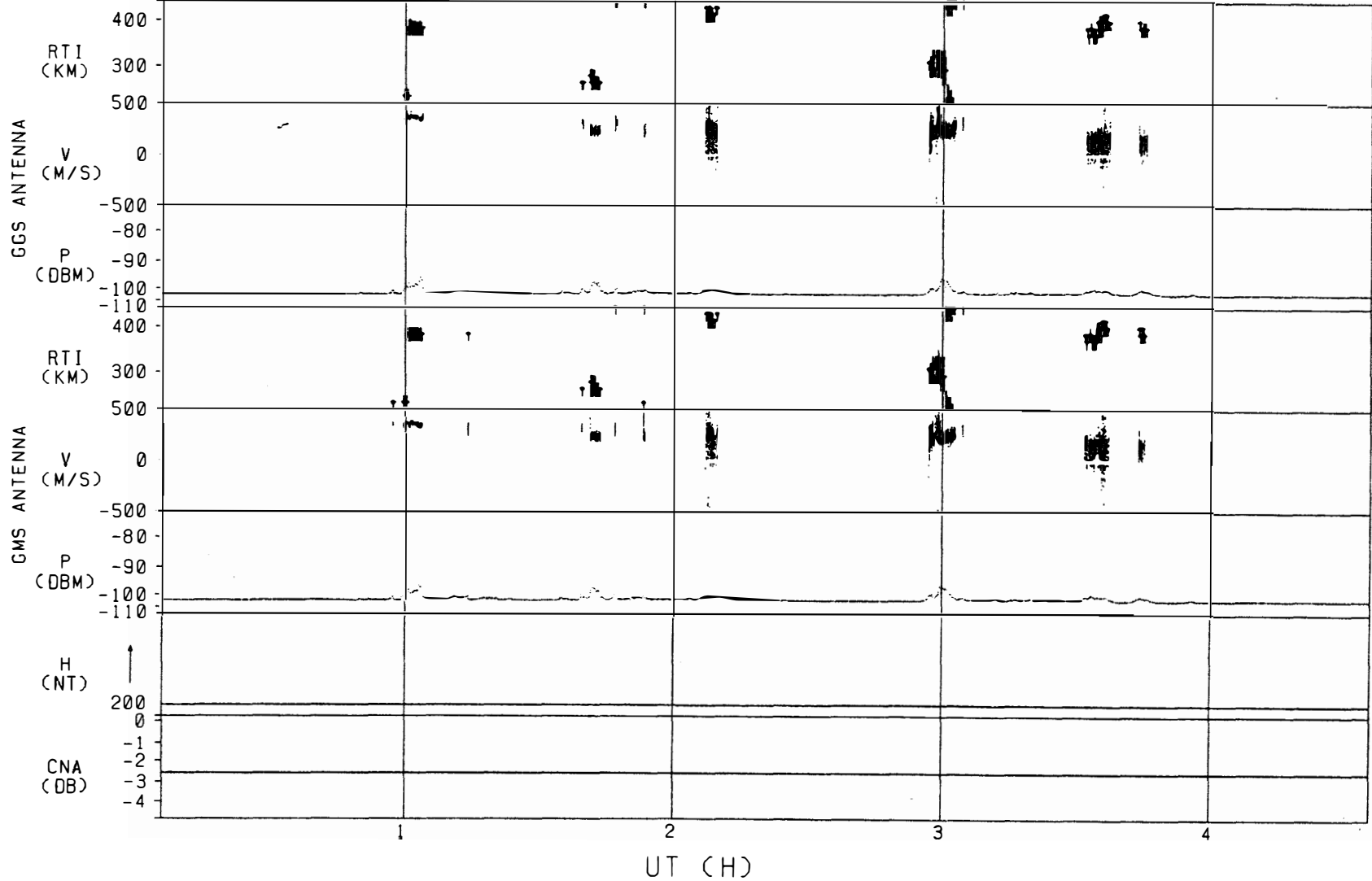
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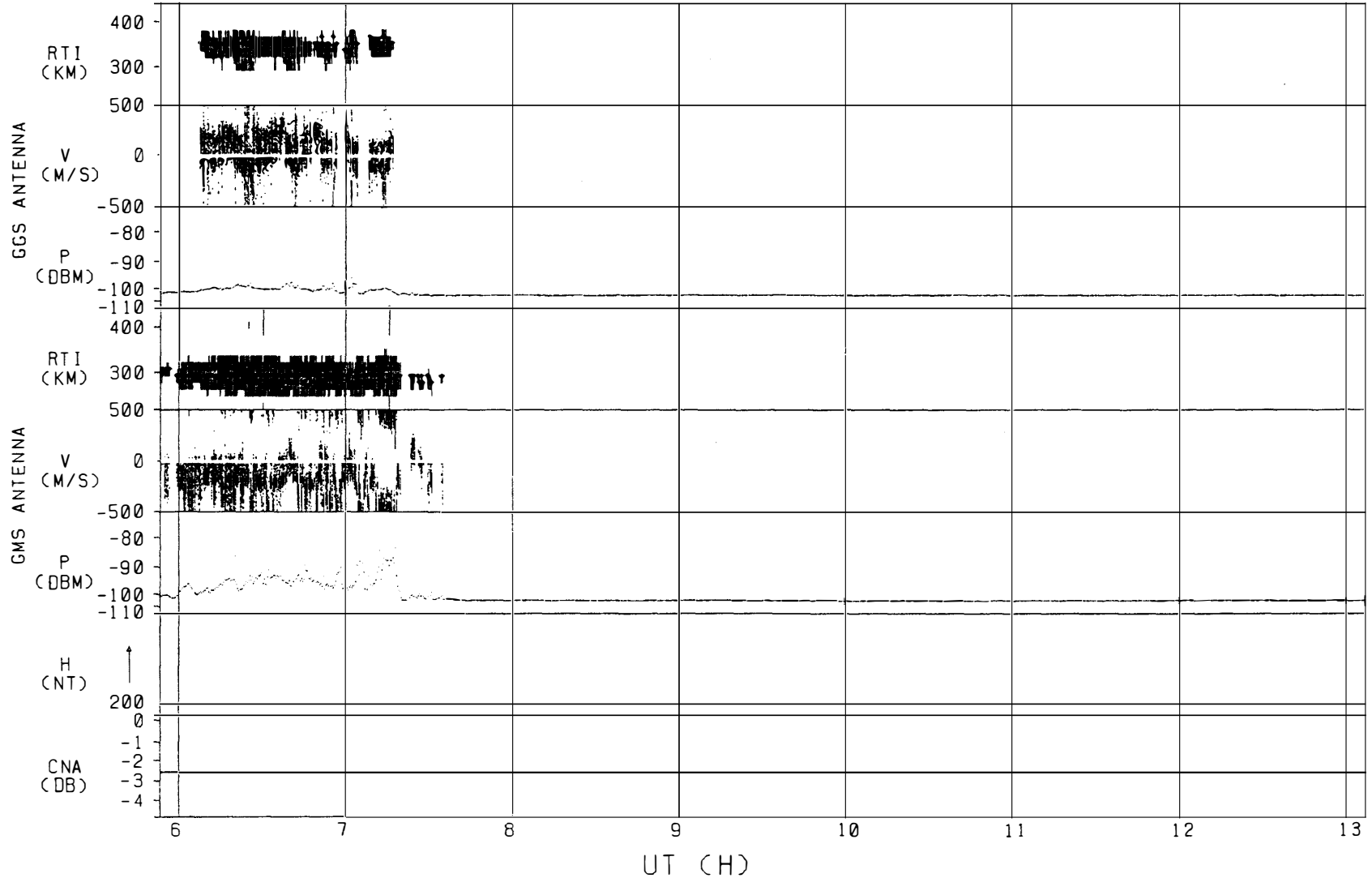
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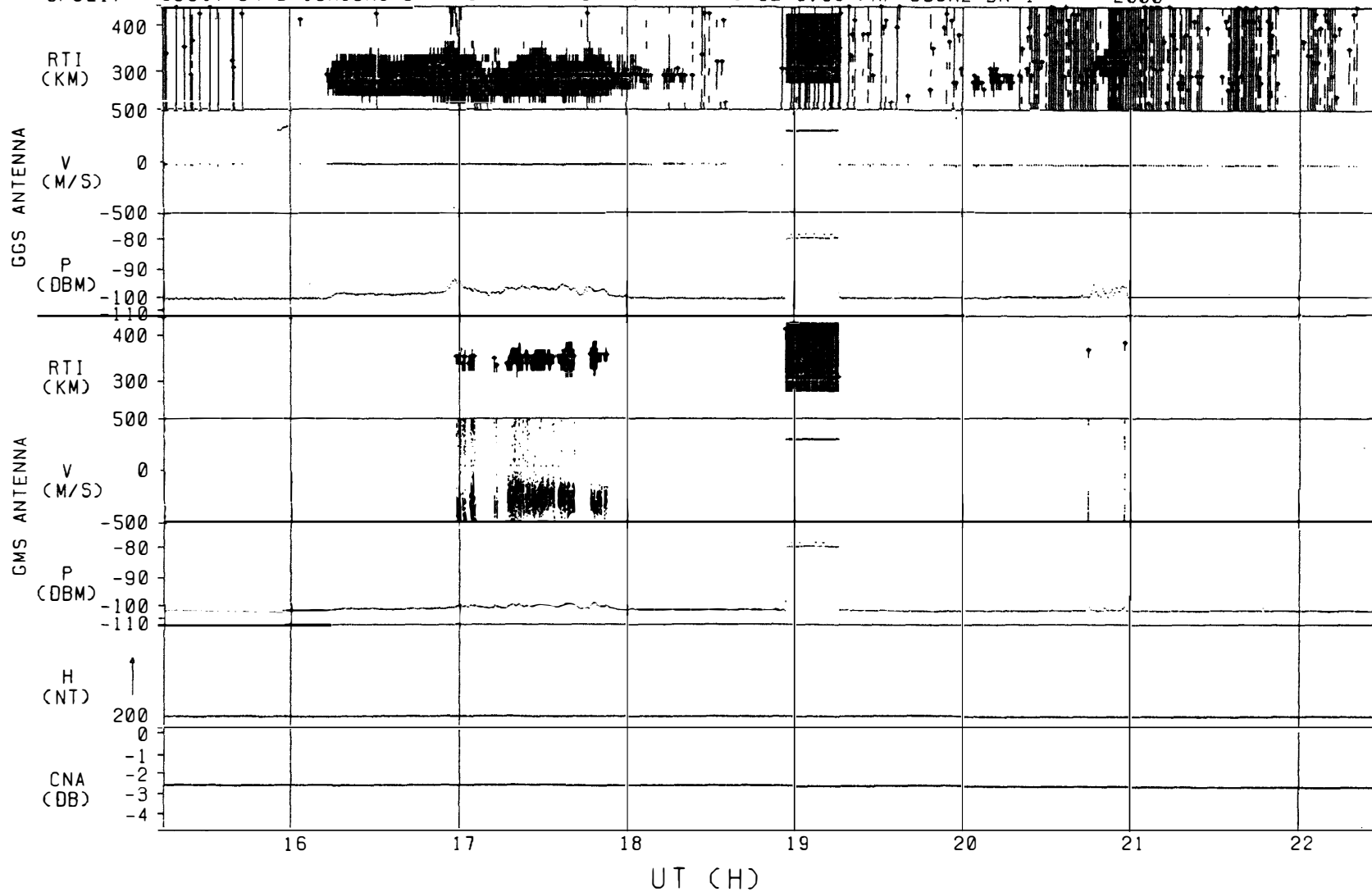
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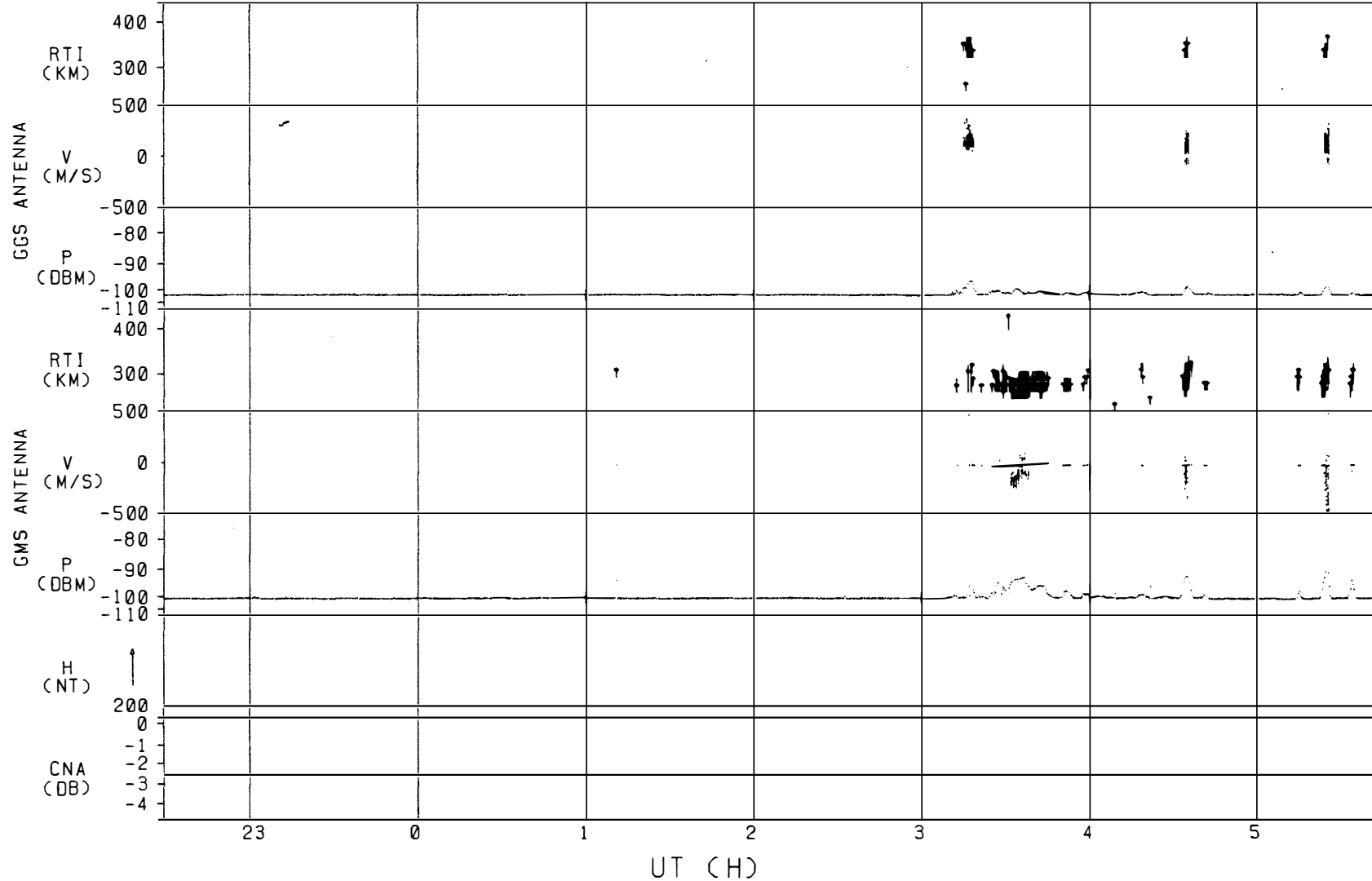


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# AURORA RADAR/CRL, SYOWA STATION

MAR. 17

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