

RIOMETER RECORDS OF 30 MHz COSMIC NOISE

AT SYOWA STATION, ANTARCTICA IN 1990

Kazuhiro OHTAKA and Manabu KUNITAKE

(Communications Research Laboratory, Koganei-shi, Tokyo 184)

I. Introduction

At Syowa Station, Antarctica, absorption of cosmic radio noise has been observed with a standard riometer (relative ionospheric opacity meter) at 30 MHz, since February 1966. This report presents data observed from January 1 to December 31, 1990, in the format of hourly values and combined data plots. Besides riometer data, other observation data are also presented in the combined data plots for reference. These plots include geomagnetic field, HF, VLF and radar observations. In case of lack of the combined plots, riometer and geomagnetic field observation data are presented.

Copies of digital MT are available to users on request. The request should be addressed to:

Antarctic Research Section
Communications Research Laboratory (C R L)
Ministry of Posts and Telecommunications
2-1, Nukui-Kitamachi 4-chome, Koganei-shi
Tokyo 184, Japan.

TEL: +81-423-27-6886, FAX: +81-423-27-7618, TELEX: 2832611 DEMPA J

2. Location

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

3. Observer

Kazuhiro OHTAKA (Communications Research Laboratory)

4. Instrumentation

The receiver of the riometer which has a center frequency of 30 MHz and a band width of 7.5 kHz is connected to a vertically directed five-element Yagi antenna whose elements are oriented in the east-west direction. The antenna is designed to match a 50 ohm coaxial transmission line (8D-2V) of 80 m in length.

Noise from a reference noise diode with power levels of 0, 1, 2, 3 and 4 dB is added once a day at 8h in 45° EMT (Eastern Meridian Time: UT + 3 hours). The data are recorded on MT by a digital recorder.

5. Remarks

The cosmic noise power level shows a remarkable sidereal diurnal variation caused by the passage of the cosmic radio source across the zenith. According to the revolution of the earth, the time (local time) when the same cosmic radio source passes the zenith becomes earlier about 4 minutes a day and returns to its initial value after a year. If the ionosphere is in a quiet condition, the diurnal variation of the cosmic noise power is easily extracted from the record.

The hourly values of ionospheric absorption given in the CNA (Cosmic Noise Absorption) tables are the deviations (in dB) of cosmic noise intensity from the reference sidereal diurnal variation. The reference sidereal diurnal variation is determined from the diurnal variations on several selected quiet days in each month.

The combined data plots include, not only cosmic noise intensity but also geomagnetic H-component, HF and VLF propagation, and VHF radar echo intensity at Syowa Station. In the figure, the H-component increases upward and the calibration signals are added at each hour as a depression by 200 nT.

Inquiries about details of the data should be addressed to CRL.

Bibliography relevant to

RIOMETER RECORDS OF 30 MHz COSMIC NOISE AT SYOWA STATION, ANTARCTICA (1)

Observation 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	1972
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
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
(cont.)				

Bibliography relevant to

RIOMETER RECORDS OF 30 MHz COSMIC NOISE AT SYOWA STATION, ANTARCTICA (2)

Observation period	Observers	Literature JARE Data Reports		
		Volume	Pages	Year
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

Table 1. 30 MHz cosmic noise absorption (in dB) at the first minute of each hour.

SYOWA STATION

45° EAST MERIDIAN TIME (U.T. + 3 hours)

January 1990

Date	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		0.1			0.3			0.2	0.2	0.1	0.4	0.3	0.1					0.1						
2					0.1																			
3				0.2		0.1			0.1		0.1													
4					0.3		0.2																	
5				0.1					0.2						0.3	0.2								
6				0.1	0.1																			
7	0.1								0.2															
8					0.1																0.1			
9						0.1																		
10									0.1				0.2											
11								0.2									0.2	0.2	0.3	0.1				
12	0.5	0.3			0.2	0.2	0.2	0.1	0.1	0.2						0.1	0.5	0.1						
13			0.2		0.2	0.2																		
14					0.1	0.1				0.2														
15																								
16																						0.1		
17		0.1			0.1																0.1			
18																								
19			0.1																					
20																0.1	0.2						0.1	
21									0.1			0.1			C	0.1								
22							0.1							0.3										
23	0.1				0.1	0.1			0.2		0.1	0.1					0.3							
24			0.1								0.1	0.4	0.1	0.5	0.5	0.2							0.2	0.1
25	0.1	0.8	0.2	0.3		0.8	0.1				0.2			0.2	0.1					0.1				
26	0.3	0.2		0.1																				
27					0.2	0.1	0.1									0.2					0.1			
28																								
29					0.3						0.1	0.2												
30		0.1			0.2							0.1												
31	0.2													0.2										
Mean	0.04	0.02	0.01	0.02	0.07	0.05	0.02	0.01	0.03	0.01	0.03	0.03	0.01	0.03	0.02	0.03	0.03	0.01	0.01	0.01	0.01	0.01	0.01	0.01

Open spaces without figures correspond to quiet level

* : Quiet day

C : Failure of equipment 21 1318-1425

SYOWA STATION			45° EAST MERIDIAN TIME (U.T. + 3 hours)																			February 1990				
Date	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				0.3	0.2		0.2			0.6	0.3	0.2									0.1					
2				0.2	0.4	0.3					0.2	0.1	0.1	0.4	0.3									0.1		
3		0.3		0.2	0.1	0.1														0.2	0.2					
4			0.1					0.1		0.1	0.1															
5	0.4			0.3		0.3	0.4				0.2	0.1	0.2	0.2	0.1	0.2	0.3									
6			0.1			0.3	0.3	0.1	0.1	0.1	0.1		0.2													
7											0.2	0.3	0.4	0.3	0.1							0.1		0.3		
8			0.2				0.1																			
9											0.3	0.1														
10																				0.1						
11							0.1	0.1	0.2	0.1				0.1	0.2											
12						0.7	0.2	0.2	0.1																	
13																										
14				0.1	0.2					0.1																
15																C										
16	0.2	0.2	0.1		0.3	0.1	0.2		0.1	0.1			0.1				0.2	0.1								
17	0.2		0.1		0.5			0.1	0.2	0.1			0.1	0.4	0.2		0.2									
18		1.0	0.3		0.5	0.2	0.4	0.2	0.2	0.1		0.2	0.2	0.1		0.1		0.2								
19		0.2	0.3	0.1		0.1								0.1	0.1			0.2						0.1		
20	0.1		0.3	0.2			0.5		0.1		0.5	0.2	0.3	0.4	0.3	0.2								0.1 0.2		
21	0.2	0.1			0.1			0.1	0.1	0.2	0.1				0.2	0.1	0.1			0.2						
22	0.2		0.1	0.1	0.2	0.1	0.2	0.3	0.3		0.4	0.2	0.1	0.2			0.1		0.1	0.2		0.2	0.2	0.2		
23			0.2	1.0			0.2					0.7	0.3	0.2	0.1		0.1							0.2		
24	0.2	0.3	0.2	0.1	0.2	0.2	0.2		0.1		0.5	0.8	0.3									0.1		0.2		
25			0.3	0.1	0.1	0.1	0.1	0.1	0.2		0.2	0.5	0.2	0.1	0.1									0.3		
26		0.1			0.2	0.2	0.2	0.2	0.5	0.2			0.1	0.2	0.1									0.1		
27	0.2	0.1	0.1							0.4	0.5	0.4	0.2	0.2	0.2	0.2	0.2			0.1	0.1					
28						0.1	0.7	1.5	0.6	1.4	1.4	0.3	0.4	0.1	0.5	0.1	0.2		0.1		0.1					
29																										
30																										
31																										
Mean	0.06	0.08	0.08	0.09	0.10	0.10	0.14	0.10	0.10	0.12	0.17	0.14	0.11	0.10	0.08	0.03	0.04	0.01	0.01	0.02	0.01	0.01	0.01	0.05		

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Open spaces without figures correspond to quiet level * : Quiet day
 C : Failure of equipment 14 1457-1505

SYOWA STATION

45° EAST MERIDIAN TIME (U.T. + 3 hours)

March 1990

Date	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	0.1			0.1	1.1	0.1	0.1	0.1	0.7	0.1	0.1								0.1						
2	0.2	0.3	0.5		0.2		0.1	0.3		0.4	0.2			0.2											
3		0.1	0.7	0.1			0.1	0.1			0.2														
4	0.1													0.4											
5			0.2		0.2		0.2	0.1																	
6					0.1	0.8	0.2	0.7		0.1		0.2													
7					0.1	0.1		0.1	0.3																
8															0.3	0.2									
9																			0.1	0.1					
10												0.4													
11					0.1		0.5														0.1				
12							0.2	0.2	0.1															0.1	
13	0.1	0.1	0.1																						
14	0.1	0.2	0.3	0.1	0.1	0.1	0.2	0.1																	
15						0.7		0.5	0.2		0.2				0.1										
16				0.4	0.3	0.2				0.3															
17			0.2	0.2																					
18							0.1																		0.2
19	0.2					0.2	0.2	0.1																	
20				0.3		0.1	0.3	0.1					0.1	0.1									0.1		
21				0.4	0.1		0.1	0.2	0.3	0.1			0.2												0.2
22	0.1			0.1		0.1	0.2	0.2	0.2		0.2	0.4	0.4		0.2	0.2		0.1				0.1	0.1	0.4	
23		0.1	0.2	0.2	0.2	0.7		1.2	0.5		0.5	0.5	0.3	0.2	0.5	0.6	0.2								0.2
24	0.2	0.1	0.2	0.2	0.3		0.5	0.5	0.2	0.4	0.2	0.7	0.4	0.2	0.2		0.2							0.2	0.6
25	0.1		0.6	1.0	0.3	0.3		0.1						0.3	0.1										0.1
26		0.2	0.2		0.7	0.2				0.5	0.2	0.1	0.2		0.1		0.1	0.1					0.5	0.1	
27		0.1	0.1		0.2	0.2	0.1		0.4	0.2	0.4	0.1	0.1			0.1	0.1	0.1				0.4	0.2		
28	0.5		0.1		0.2	0.1	0.5		0.2	0.7	0.2	0.3	0.7	0.2	0.3	0.4	0.2								
29	0.4	0.4	0.1	0.9				0.2		0.1	0.1	0.1													
30			0.2	0.2	0.2	0.1	0.1	0.3	0.5	0.1	0.4	0.6	0.1		0.1										
31																									
Mean	0.06	0.05	0.11	0.13	0.14	0.13	0.11	0.16	0.11	0.11	0.09	0.10	0.08	0.05	0.06	0.04	0.02	0.01	0.01	0.01	0.01	0.01	0.03	0.06	

Open spaces without figures correspond to quiet level

* : Quiet day

SYOWA STATION

45° EAST MERIDIAN TIME (U.T. + 3 hours)

April 1990

Date	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					0.1	0.4																		
2					0.2																			
3						0.1											0.2	0.2						
4			0.1							0.1														
5														0.2						0.1				
6				0.1																				
7									0.1	0.2														
8																								
9														0.4										
10					0.1				0.5	0.6	0.2													
11	0.1	0.3	0.2	0.1	0.2	0.5	0.3	0.1	0.2	0.3	0.1	0.3	0.1	0.2	0.1	0.1	0.1							0.1
12				0.1	0.3	0.1	0.1	1.6	0.8		0.1			0.1	0.1		0.4	0.4						0.7
13	0.4		0.1	0.2		0.4		0.1	0.2	0.1			0.8	0.5		0.2								
14	0.1	0.1			0.3	0.9			0.3	1.0	0.4	0.2	0.8	0.2		0.3	0.1			0.3				
15			0.1		0.2	0.5	0.2	0.5	0.8	0.1	0.8	0.6	0.2	0.4	0.2	0.2								
16			0.1	0.2	0.1		0.1					0.1	0.2		0.1	0.5	0.3	0.2						
17			0.5		0.5			0.1				0.2												
18		0.4	0.3		1.2	0.1	0.1			0.7	0.2													
19		0.1			0.1	0.1	0.1	0.1																
20				0.2	0.2	0.1	0.2				0.2													
21	0.5								0.1															
22								0.1	0.1															
23			0.5	0.1	0.1	0.2	0.2	0.5	0.4	0.1			0.1	0.1										
24			0.5								0.2	0.5	0.2	0.1		0.2	0.4							
25	0.2		0.2	0.2		0.1	0.1	0.5	0.1	0.7	0.6	0.1	0.2	0.5	0.2	0.1	0.2							
26			0.1	0.2	0.8	0.2	0.1	1.0	0.4	1.0	0.5													
27		0.1	0.1					0.6	0.6	0.2														
28				0.5				0.2	0.3				0.2	0.2	0.1									0.1
29			0.1	0.2					0.7	0.4	0.4					0.1				0.4				
30					0.3	0.1																		
31																								
Mean	0.04	0.03	0.09	0.07	0.15	0.12	0.05	0.18	0.18	0.18	0.12	0.06	0.09	0.09	0.02	0.05	0.05	0.04		0.01				0.03

Open spaces without figures correspond to quiet level

* : Quiet day

SYOWA STATION

45° EAST MERIDIAN TIME (U.T. + 3 hours)

May 1990

Date	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			0.6	0.2																					
2																		0.1							
3																									
4		0.4		0.1		0.2																			
5												0.2	0.2	0.1	0.5	0.1	0.4	0.4	0.2						
6																									
7																									
8																									
9			0.2	0.1														0.2							
10			0.1		0.1			0.1			0.4	0.4		0.1										0.1	
11	0.2				0.6	0.1	0.2	0.7	0.5	0.1			0.2				0.3								
12						0.1																			
13																									
14		0.1	0.3		0.1					0.1															
15																									
16																									
17																									
18			0.2	0.4	0.5																			0.4	
19	0.2	0.2	0.4	0.2	0.2	0.4	0.2	0.4																	
20	0.1	0.6	0.4	0.2	0.4	0.2	0.5	0.2																0.1	
21	0.1					0.7	0.2	0.1								0.2									
22		0.1				0.2	0.1			0.1		0.2		0.3	0.3										
23			0.2		0.4	0.1																			
24																									
25						0.2		0.2	0.1				0.2	0.2											
26					0.1	0.3															0.1				
27	0.1								0.1	0.3			0.9	0.7		0.2	0.5	0.1							
28	0.2	0.1			0.1					0.2					0.2	0.2	0.2	0.2							
29																									
30				0.5				0.1	0.2		0.1	0.5	0.5	0.2			0.1							0.1	
31	0.1	0.1		0.1		0.2	0.4	0.1							0.2	0.2				0.2	0.2				
Mean	0.03	0.05	0.07	0.05	0.11	0.05	0.05	0.05	0.03	0.02	0.01	0.07	0.05	0.02	0.04	0.04	0.04	0.02	0.01	0.01	0.01				0.02

*
*
*
*

Open apaces without figures correspond to quiet level

* : Quiet day

SYOWA STATION

45° EAST MERIDIAN TIME (U.T. + 3 hours)

June 1990

Date	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				0.1		0.1	0.2	0.1				0.1							0.2	0.1				
2															0.5	0.5	0.2							
3																			0.2	0.2				
4												0.2	0.2											
5																								
6																								
7			0.2		0.1	0.3	0.1																	
8	0.2		0.1	0.1	0.1	0.1	0.1			0.1	0.2	0.1						0.1						
9	0.1	0.2								0.1	0.1					0.3	0.2		0.1					
10	0.1				0.3	0.8	0.2	0.2			0.1										0.1			
11		0.2	0.7			0.4	0.2	0.3	0.3												0.2	0.1		
12	0.2		0.1			0.4	0.5			0.3		0.1	0.5	0.3	0.2	0.4	0.4				0.2		0.1	
13			0.2			1.0	0.2		0.2	0.5	0.2		0.7	0.6	0.2	0.4	0.4							0.2
14				0.1		0.2	0.3				0.1					0.4					0.2			
15				0.1	0.2																			
16																								
17																								
18													0.5	0.2			0.1							
19	0.1	0.2	0.1		0.2	0.1	0.4		0.1	0.1	0.1													
20																								
21			0.2	0.2	0.2	0.1	0.1																	
22																								
23	0.3	0.1																	0.1	0.1				
24	0.1																							
25										0.5	0.1	0.2												
26														0.2										
27																	0.2	0.2	0.1					
28															0.2									
29									0.2	0.5	0.1	0.3												
30											0.2													
31																								
Mean	0.03	0.02	0.05	0.02	0.03	0.12	0.08	0.02	0.02	0.07	0.04	0.05	0.09	0.04	0.03	0.05	0.05	0.01	0.03	0.02	0.01	0.01		0.01

Open spaces without figures correspond to quiet level

* : Quiet day

SYOWA STATION

45° EAST MERIDIAN TIME (U.T. + 3 hours)

July 1990

Date	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													0.5	0.3											
2	0.1					0.2	0.5	0.1	0.5																
3									0.1	0.3															
4																									
5																	0.2	0.4							
6																									
7				0.2																				0.1	
8				0.1									0.2	0.1											
9				0.2																					
10									0.1																
11												0.1	0.2												1.1
12	0.2									0.5		0.2													
13						0.2	0.2	0.2	0.2		0.2	0.1	0.6	0.5	0.3	0.2									0.2
14											0.2	C	C	C	C	C	C								0.2
15			0.1			0.2				0.2							C	C	C						
16																									
17									0.3	0.1															
18			0.3							0.2															
19										0.3															
20			0.2						0.1	0.4		0.3	0.9	0.6	0.5	0.1	0.5	0.9	0.2	0.1					
21		0.4															0.3	0.2							
22			0.2		0.2							0.4													
23																									
24																									
25																									
26																									
27														0.3	0.2	0.2									
28										0.1	0.2							0.1	0.1	0.1		0.2	0.1		
29	0.2			0.2			0.2	0.2			0.7	0.1	0.1	0.6	0.5		0.4	0.3	0.1						
30		0.5				S	C	C	C	C	C	C	C	C	C	C	C	C	0.1						
31		0.2	0.1									0.5													
Mean	0.01	0.03	0.02	0.02	0.01	0.01	0.03	0.01	0.04	0.07	0.03	0.05	0.08	0.09	0.06	0.02	0.04	0.07	0.02	0.01	0.01	0.01	0.01	0.01	0.05

Open spaces without figures correspond to quiet level

* : Quiet day S : Interference
 C : Failure of equipment 14 0950-1830 30 0520-1705

SYOWA STATION

45° EAST MERIDIAN TIME (U.T. + 3 hours)

August 1990

Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1																								
2	0.1																							
3				0.1													0.5	0.1	0.2					
4	0.1		0.2	0.3							0.3	0.3		0.1				0.1	0.1					
5																								
6																								
7		0.2												0.3	0.1									
8								0.1			0.1													
9																								
10																								
11					0.1				0.2			0.4	0.2					0.1						
12								0.1	0.3															
13									0.5	0.1		0.2			0.3									
14					0.1				0.2	0.2		0.2	0.5		0.1									
15								0.1	0.2	0.2	0.1		0.1			0.6	0.3							
16			0.1	0.2								0.9	0.2	0.5		0.1	0.2	0.5						
17	0.2		0.1	0.7	0.1	0.1						0.6	0.3											
18				0.1	0.2	0.1							0.5											
19					0.5	0.3	0.4	0.3	0.1	0.3	0.1	0.2	0.2	0.2	0.2	0.4	0.2	0.1	0.1					
20		0.1	0.1					0.5	0.2		0.2	0.5	0.3	0.1	0.3	0.4	0.2	0.1						
21										0.1	1.0	0.5		0.2	0.3	0.3	0.4	0.2						
22		0.3						0.2	0.6	0.2		C	C	C	C	C	C	C						
23				0.7				0.5	0.3		0.4	0.5	0.1	0.1									0.1	
24					0.1			0.7	0.5			0.2						C	C	C	C	C	C	C
25																								
26													0.1	0.7	0.3		0.1		0.1	0.1				
27	0.1															C	C	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	C													
29																								
30			0.2						0.1	0.1														
31				0.1	0.1	0.5	0.1			0.5	0.7	0.2	0.2		0.5		0.1	0.2	0.1	0.2	0.1			
Mean	0.01	0.02	0.01	0.07	0.04	0.03	0.01	0.08	0.10	0.05	0.10	0.15	0.09	0.07	0.07	0.04	0.06	0.04	0.02	0.01	0.01		0.01	

Open spaces without figures correspond to quiet level

* : Quiet day

C : Failure or equipment 22 1030-1755 24 1652-2359 27 1453-28 1059

SYOWA STATION

45° EAST MERIDIAN TIME (U.T. + 3 hours)

September 1990

Date	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								0.2	0.1								0.6							
2																								
3																								
4																								
5				0.1			0.2		0.2	0.2	0.2	0.1	0.1	0.1		0.1				0.1				
6						0.1							0.5	0.3										
7												0.3		0.5		0.8	0.3							
8				0.1							0.1	0.1							0.2					
9							0.1																	
10				0.2	0.5					0.5	0.5													
11			0.3																					
12		0.2	0.2	0.3					0.1	0.5	0.1	0.2	0.3	0.1	0.3	0.2		0.5	0.2					
13								0.2					0.2	0.2	0.2									
14				0.2			0.2			0.2	0.5	0.1	0.1	0.2	0.1		0.1	0.5	0.6					
15								0.1		0.1		0.2		0.1			0.5	0.6						
16						0.2	0.6	0.2				0.5	0.5	0.2	0.5	0.7	0.4		0.2					
17				0.1								0.2	0.5	0.2	0.1	0.2		0.2						
18		0.2								0.5	0.3		0.2	0.1	0.8	0.2	0.2	0.2						
19				0.1	0.2						0.3	0.5	0.1											
20	0.3			0.7							0.3	0.5	0.1											
21										0.5		0.2	0.2		0.2									
22					0.2				0.1		0.1	0.2												
23		0.1			0.2	0.1		0.2	0.2		0.1	0.6	0.4	0.2		0.1	0.2	0.5	0.2		0.1			
24												0.4	0.5	0.5										
25							0.2																	
26	0.1																							
27										0.1	0.2	0.1						0.2						
28						0.1	0.1																	
29												0.2												
30																								
31																								
Mean	0.01	0.01	0.01	0.05	0.03	0.02	0.04	0.03	0.02	0.08	0.08	0.13	0.11	0.09	0.07	0.07	0.07	0.06	0.03	0.01	0.01			

*
*
*

Open spaces without figures correspond to quiet level

* : Quiet day

SYOWA STATION

45° EAST MERIDIAN TIME (U.T. + 3 hours)

October 1990

Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
* 1																								
* 2																								
* 3																								
4										0.2	0.2												0.1	
5		0.1	0.1				0.2	0.2	0.2		0.1	0.2				0.2	0.5		0.1	0.1				
6											0.2	0.4		0.5	0.2						0.3			
7																								
* 8																								
9																								
10					0.1		0.2		0.1	0.3			0.1	0.2	0.2	0.3					0.2			
11					0.5	0.2	0.2	0.1		0.6	0.6	1.0	1.0	0.2			0.4				0.2		0.1	0.1
12				0.2	0.2		0.1	0.1		0.2	0.7	1.0	0.6	0.5				0.1						
13					0.2		0.3	0.1	0.1		0.3	0.5	0.3	0.4	0.1			0.2						
14			0.2	0.1			0.1			0.1		0.2		0.1	0.1	0.2					0.2			
15	0.1		0.5	0.2	0.5						0.5	0.4	0.1		0.2	0.2								
16											0.5	0.5	0.5	0.5	0.2	0.2	0.1							
17					0.2	0.2				0.5	0.3	0.2												
18								0.1	0.1															
19																								
20																								
21										0.1			0.1	0.4	0.2		0.5	0.5	0.5	0.2				
22						0.1	0.2	0.1																
23																								
24		0.1																						
25			0.1	0.1	0.5			0.1	0.1					0.1										
26																								
27					0.1																			
28					0.2																			
29																0.2	0.2							
30						0.2	0.2																	
31									0.1	0.2	0.5	0.1		0.2	0.5	0.4	0.2	0.1		0.1				0.7
Mean	0.01	0.01	0.02	0.02	0.07	0.02	0.05	0.02	0.03	0.07	0.12	0.12	0.10	0.09	0.04	0.06	0.06	0.04	0.04	0.01		0.01	0.01	0.02

Open spaces without figures correspond to quiet level

* : Quiet day

SYOWA STATION

45° EAST MERIDIAN TIME (U.T. + 3 hours)

November 1990

Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
* 1																								
2			0.1		0.2				0.2															
3				0.2	0.1	0.1	0.1	0.1																
4																								
* 5																								
6			0.1																					
7																								
8																								
9							0.1	0.1	0.1							C								
10					0.1	0.5		0.1	0.2				0.2											
11					0.2			0.1			0.2	0.1	0.2		0.1	0.1	0.1				0.2			
12																								
13			0.1	0.1																				
* 14																								
15																								
16										0.1	0.2	0.2		0.5	0.2	0.4								
17																								
18				0.1						0.2				0.3						0.2				
19				0.1				0.1		0.1	0.2													
20																								
21								0.5	0.5	0.1														
22																								
* 23																								
24				0.3																				
25																								
26			0.1		0.1																			
27							0.1																	
28										0.2	0.2													
29	0.2	0.1								0.2	0.1													0.1
30				0.3																				
31																								
Mean	0.01	0.01	0.01	0.03	0.02	0.02	0.01	0.03	0.02	0.02	0.03	0.01	0.01	0.02	0.01	0.01	0.01		0.01	0.01	0.01			0.01

Open spaces without figures correspond to quiet level

* : Quiet day

C : Failure of equipment 8 1423-1517

SYOWA STATION

45° EAST MERIDIAN TIME (U.T. + 3 hours)

December 1990

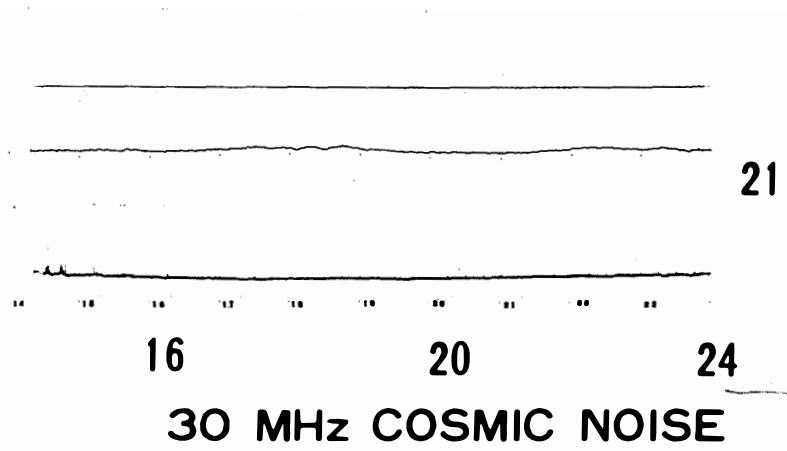
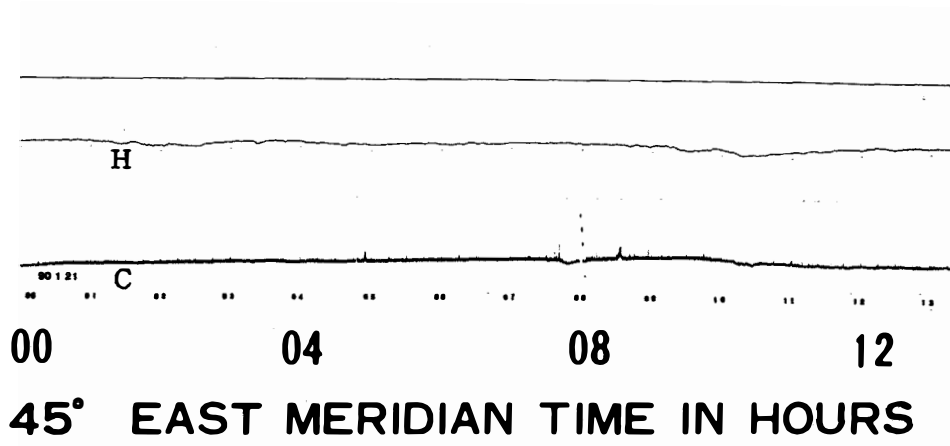
Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1																								
2																								
3		0.2	0.2																					
4							0.1	0.1	0.2						0.1									
5					0.1							0.2	0.1				0.1							
6																								
7				0.1																				
8																								
9																								
10																								
11																								
12								0.1				0.3										0.1		
13								0.1					0.1											
14									0.1															
15																								
16		0.1				0.1	0.3																	
17																								
18				0.1				0.1																
19						0.1	0.1																	
20																								
21	0.2									0.1														
22								0.1	0.1		0.1													
23							0.2	0.1	0.3	0.1	0.2	0.2	0.2	0.2										
24				0.2	0.1		0.1		0.2		0.1	0.2	0.1	0.1			0.2	0.1		0.1				
25																	0.2							
26				0.2		0.1									0.1					0.1	0.1			
27						0.1															0.1			
28		0.1																						
29											0.2	0.2				0.2		0.2	0.2	0.2	0.2			
30		0.2	0.2	0.2			0.1			0.1				0.2	0.1	0.2			0.2	0.1				
31		0.1	0.1	0.1			0.1						0.3	0.2	0.2						0.1			
Mean	0.01	0.02	0.01	0.02	0.01	0.01	0.03	0.02	0.02	0.01	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

Open spaces without figures correspond to quiet level

* : Quiet day

Period of lack of combined data plots

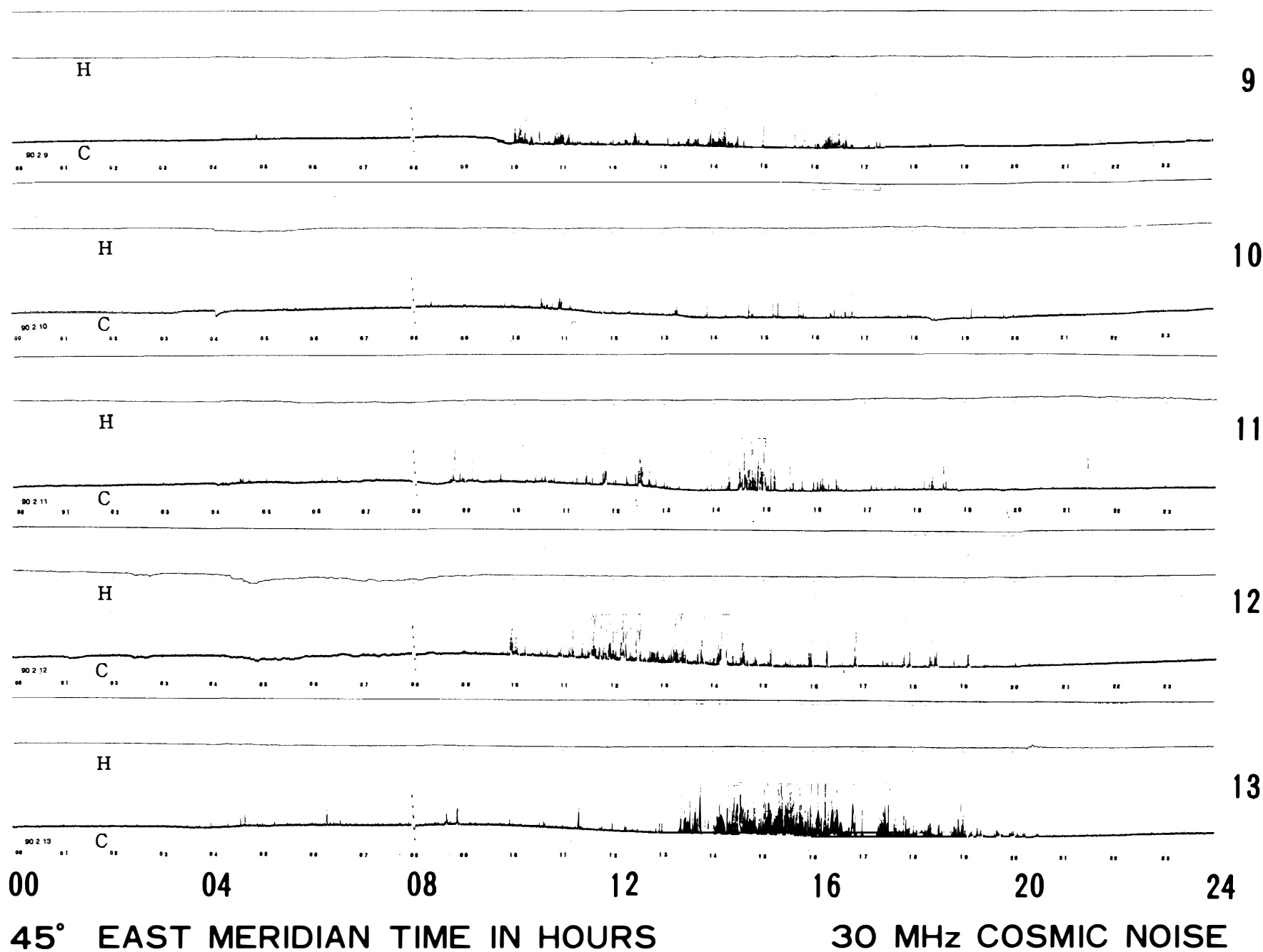
January	21	1020 - 1140
February	9	2120 -
	13	- 0800
	24	1150 -
	28	- 1400
March	21	0520 -
	22	- 0810
	23	0250 -
	30	- 0550
April	19	0810 -
	21	- 1300
May	10	1420 -
	11	- 0940
	31	1130 -
June	1	- 0700
July	28	1150 -
	30	- 2400
August	6	1150 -
	10	- 1900
	16	1840 -
	20	- 2400
	22	0730 - 1650
	24	1350 - 1800
	27	0900 -
	28	- 0800
	31	2210 - 2400
September	5	0030 - 0650
	15	0720 - 2110
	16	1530 -
	17	- 0510
October	1	0620 - 0800
	11	2020 -
	12	- 0810
	23	0410 - 1210
	29	0840 -
November	2	- 0600
	12	1240 - 1450
	29	0730 -
	30	- 0740
December	15	0750 - 1930
	30	2120 -
	31	- 0550



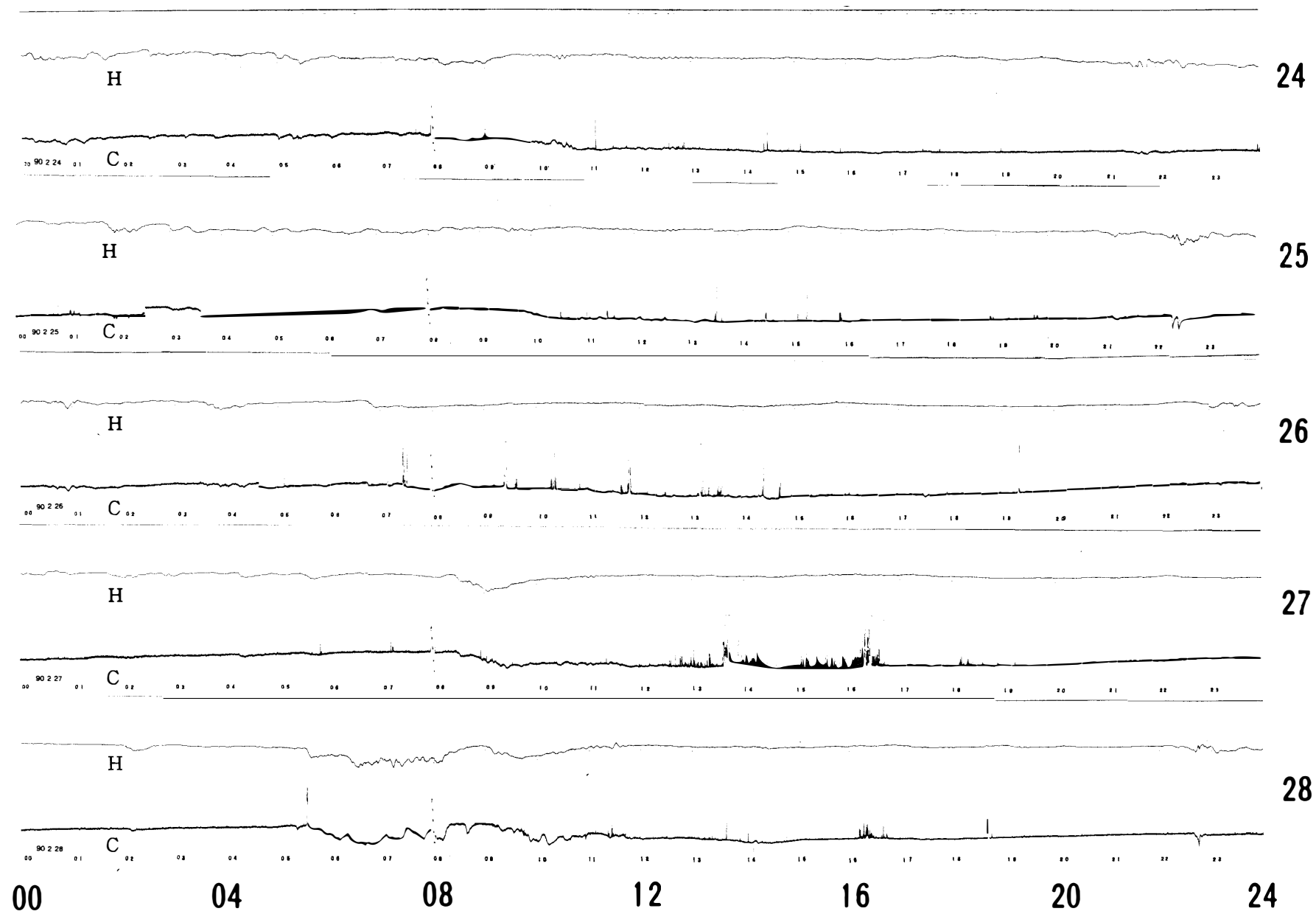
JAN. 1990

21
24

FEB. 1990

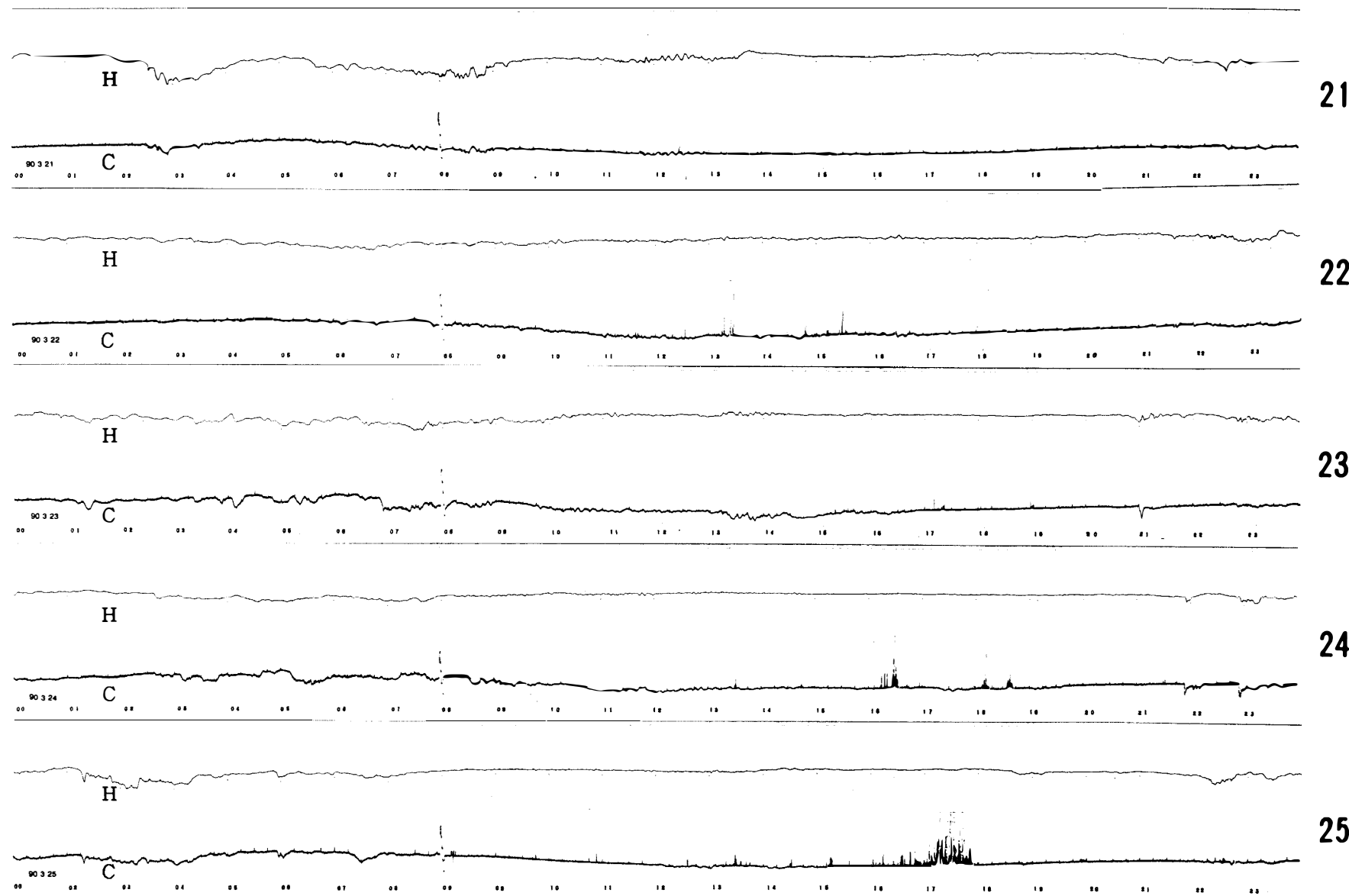


FEB. 1990



45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

MAR. 1990



21

22

23

24

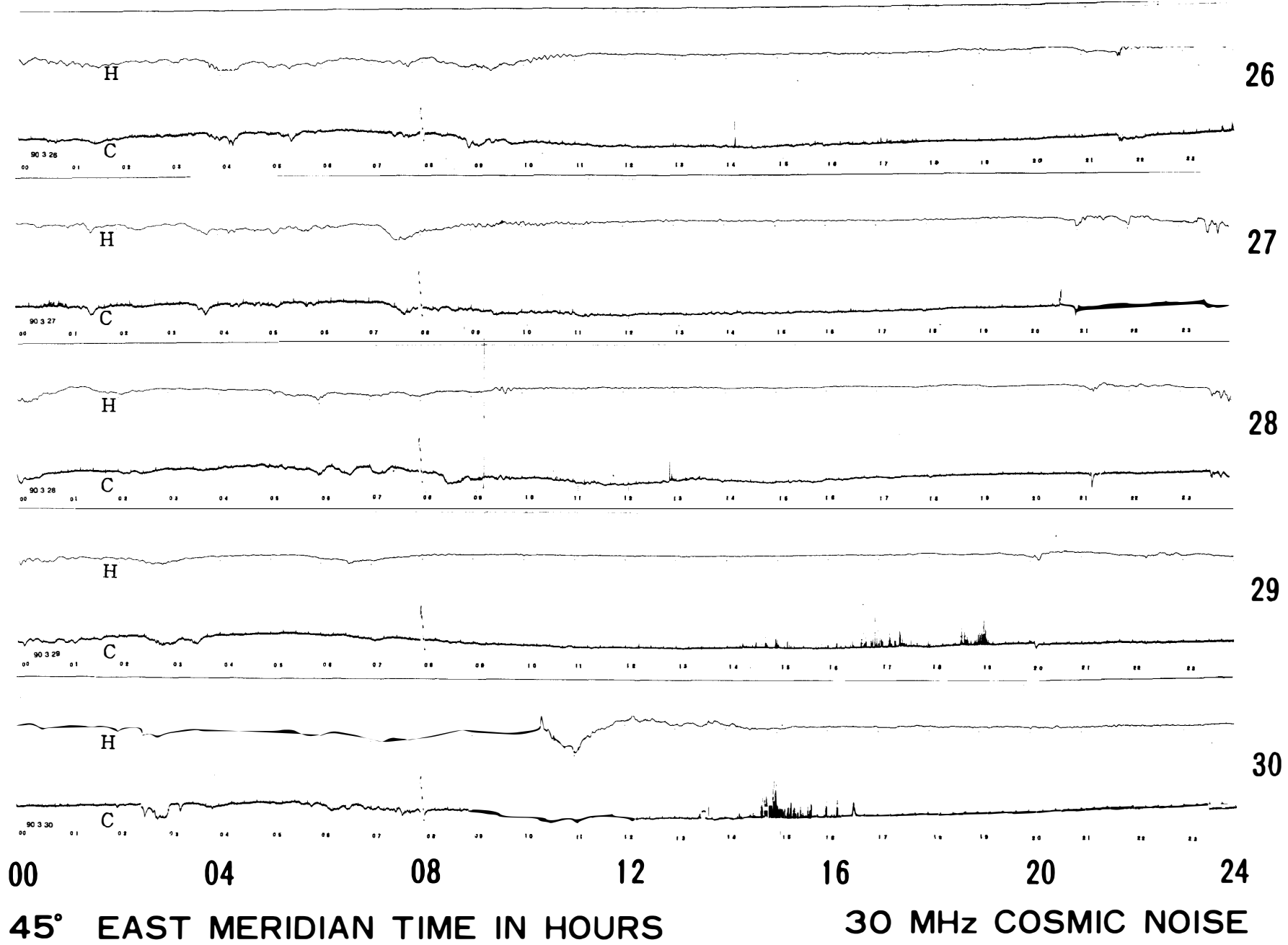
25

21

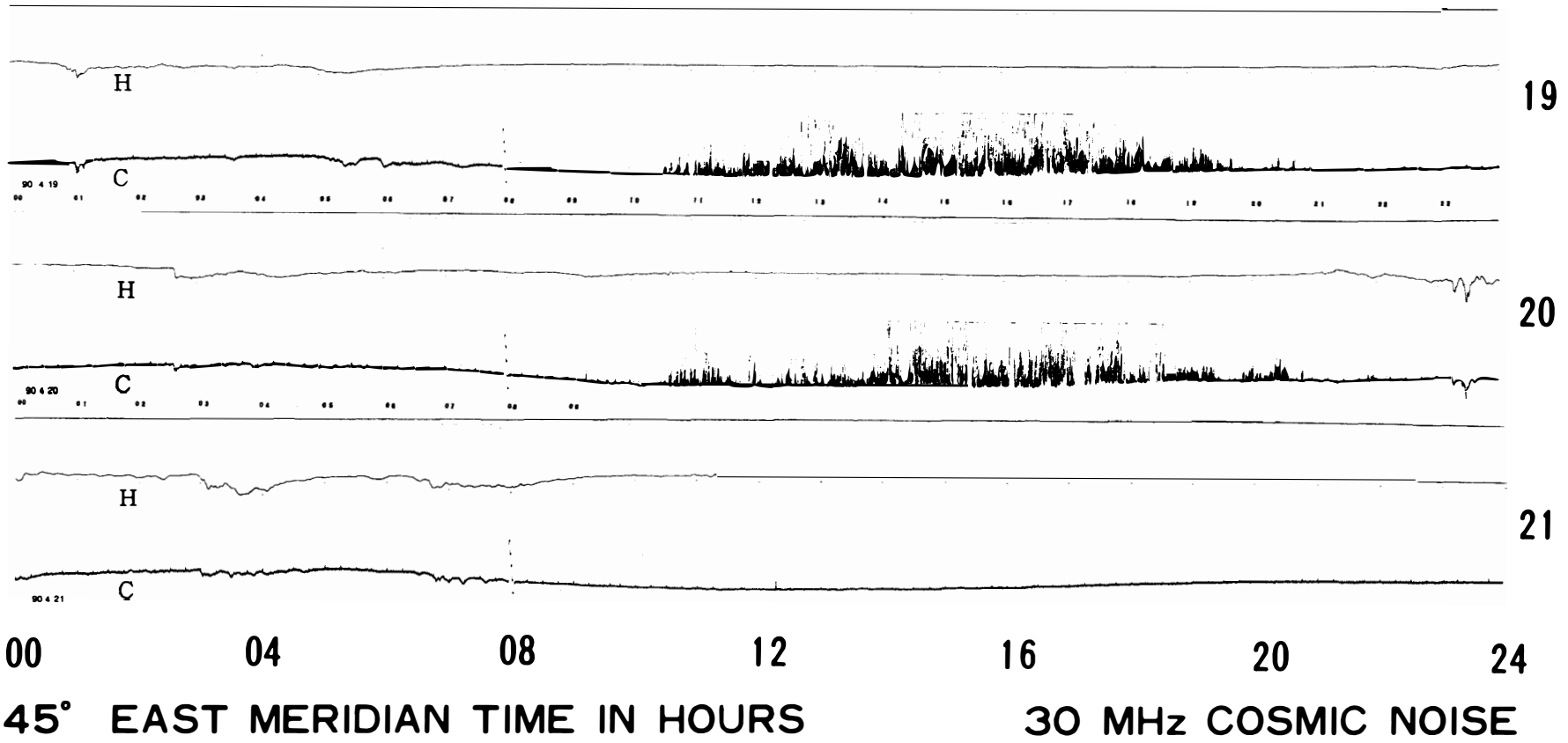
00 04 08 12 16 20 24

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

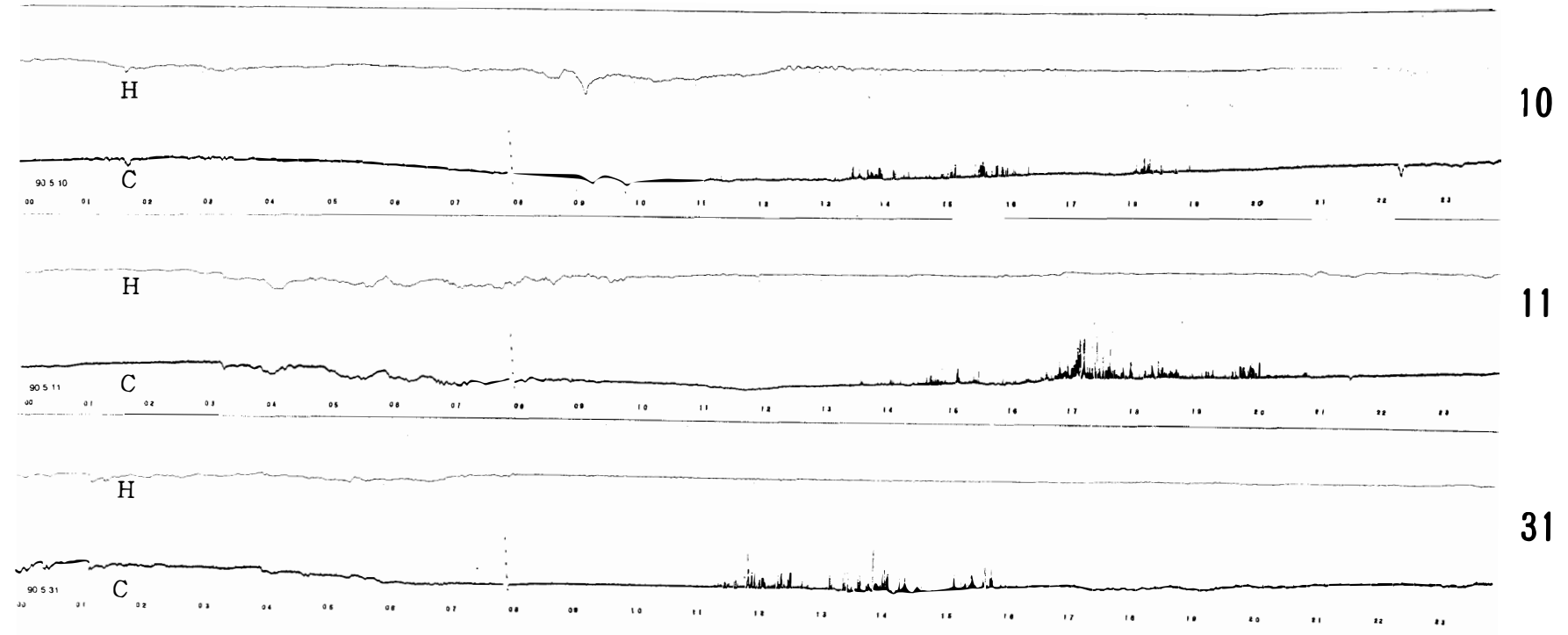
MAR. 1990



APR. 1990



MAY 1990

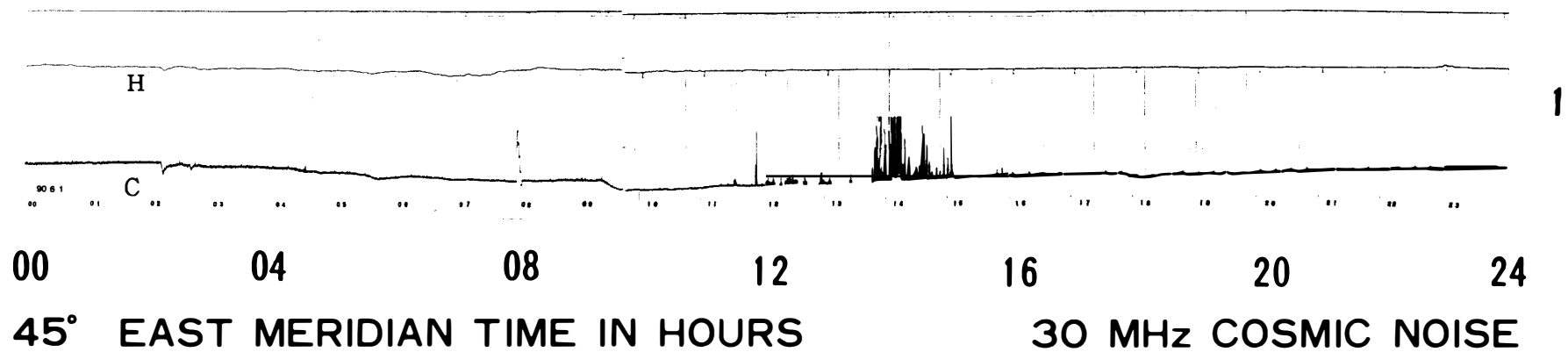


00 04 08 12 16 20 24

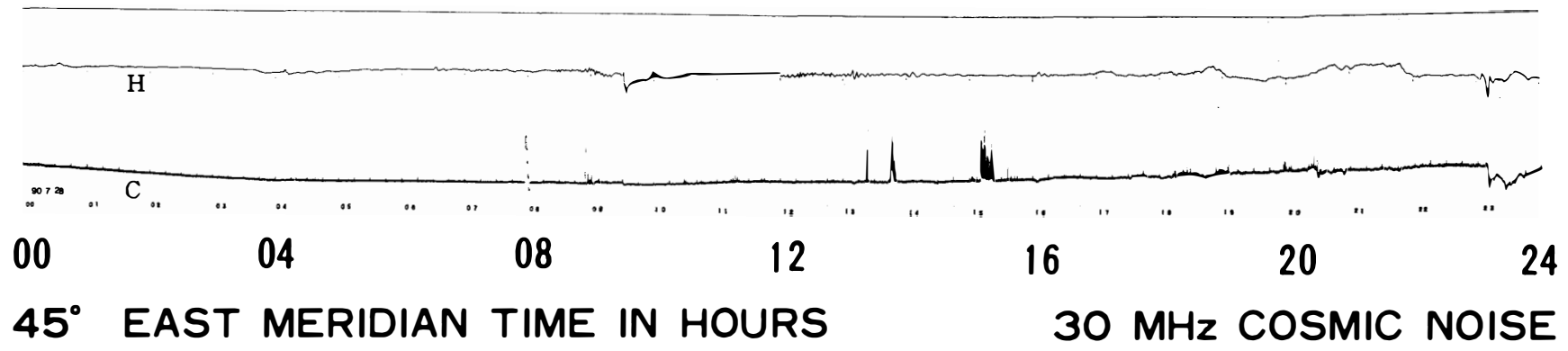
45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

24

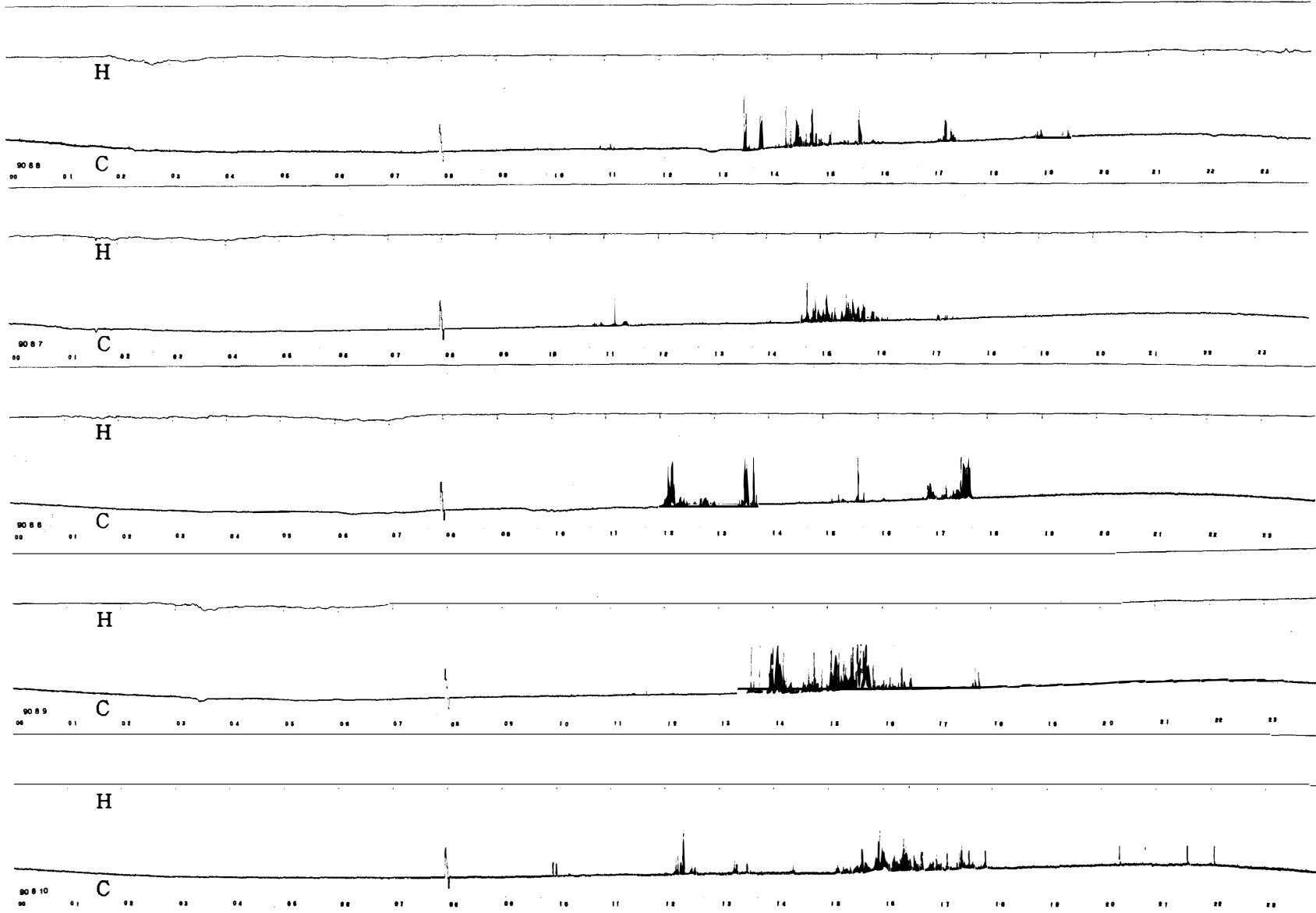
JUNE 1990



JULY 1990



AUG. 1990



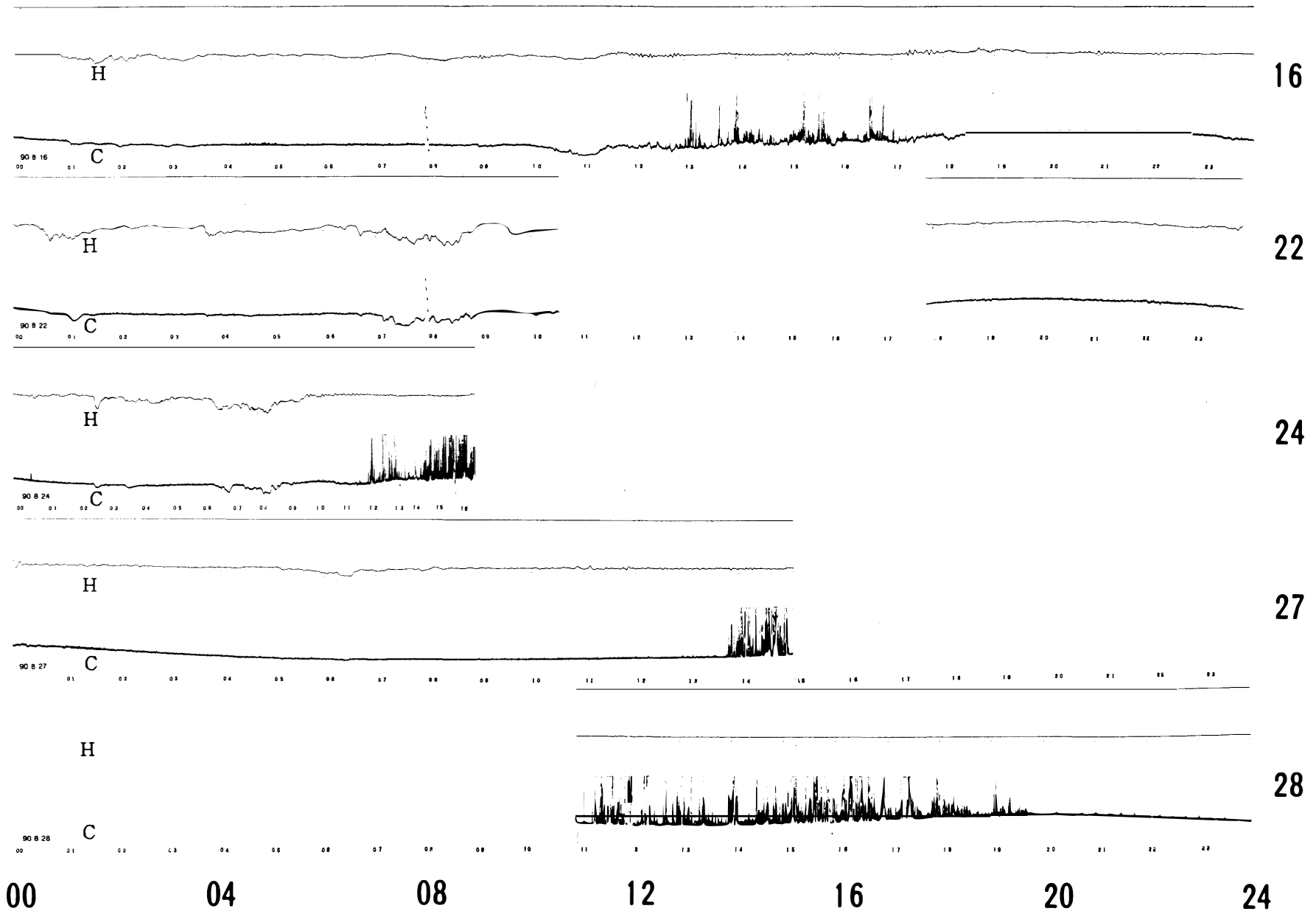
6
7
8
9
10

00 04 08 12 16 20 24

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

AUG. 1990



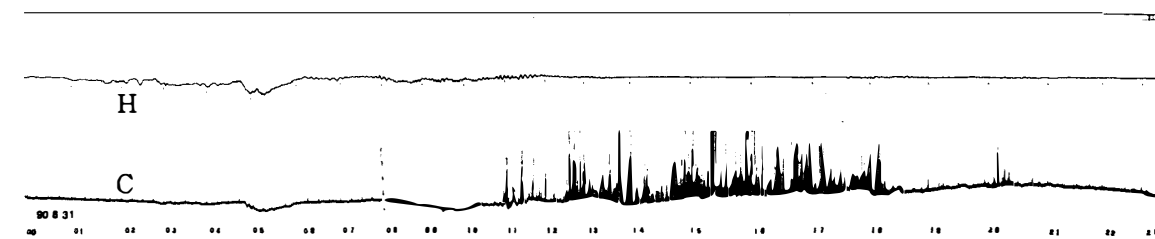
28

00 04 08 12 16 20 24

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

AUG. 1990

31

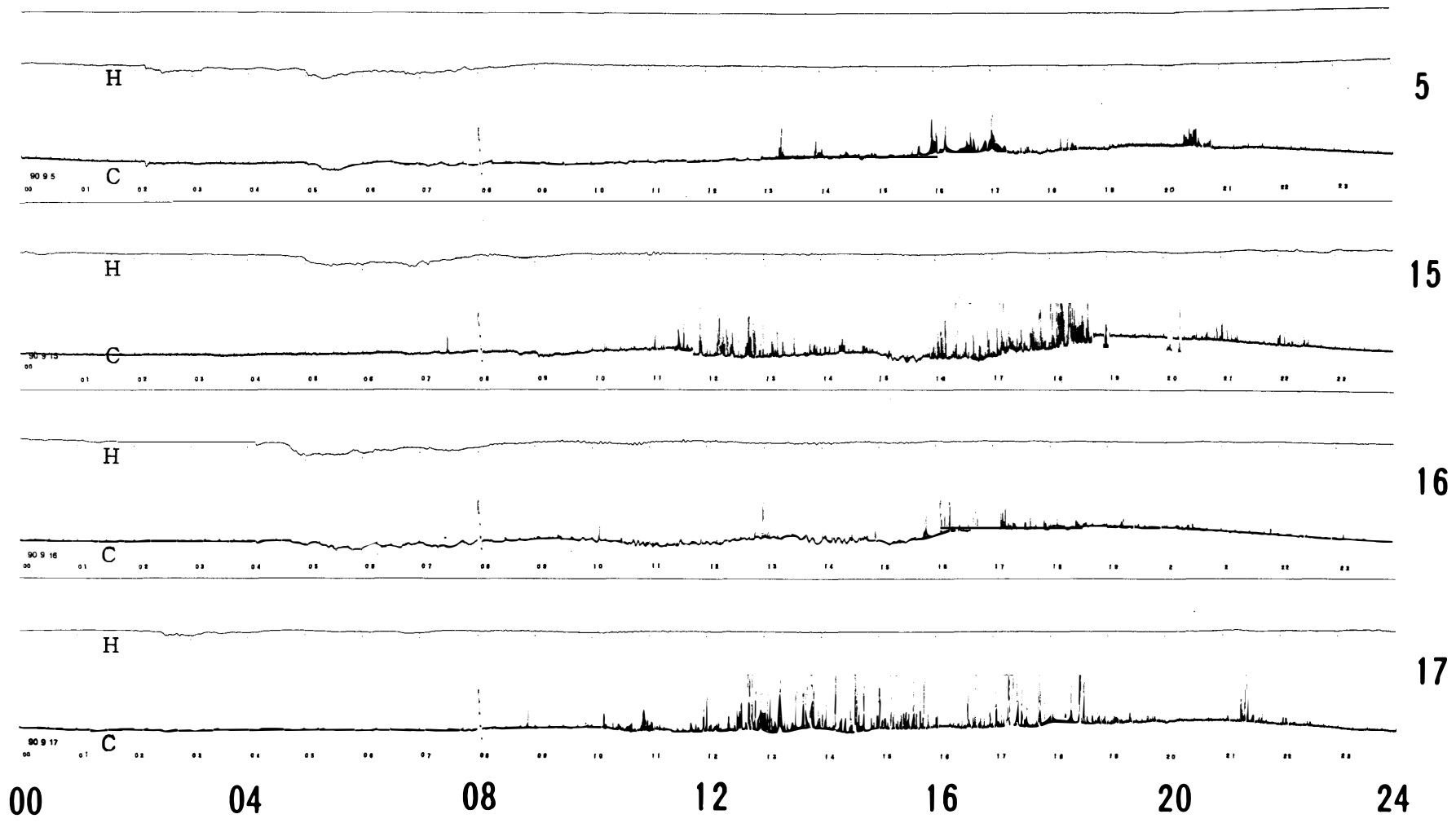


00 04 08 12 16 20 24

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

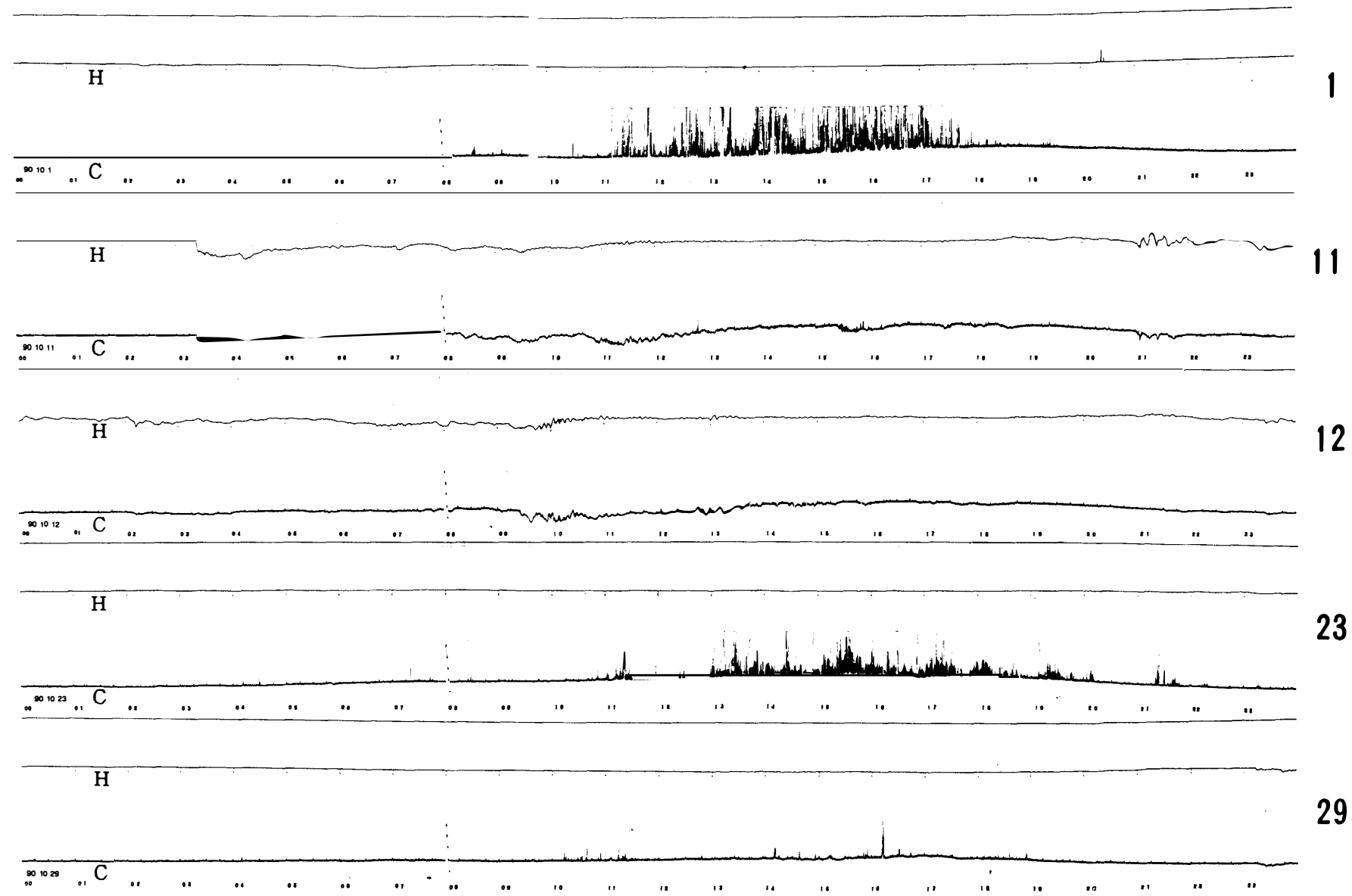
SEP. 1990



45° EAST MERIDIAN TIME IN HOURS

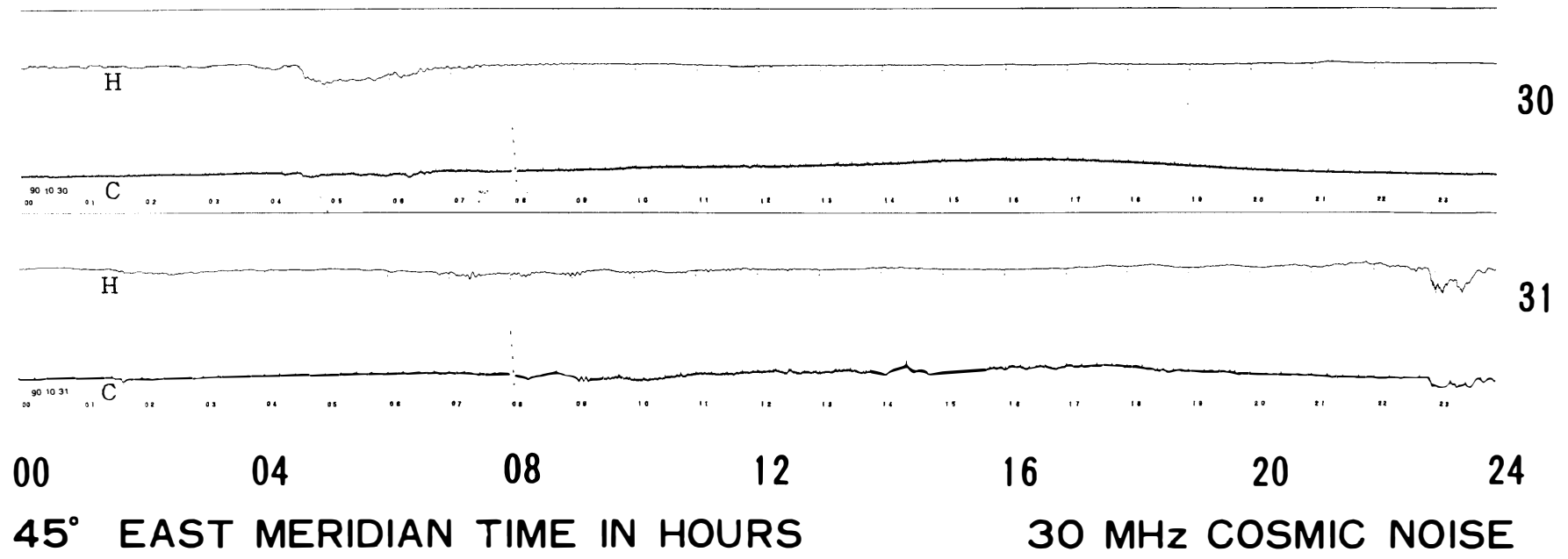
30 MHz COSMIC NOISE

OCT. 1990

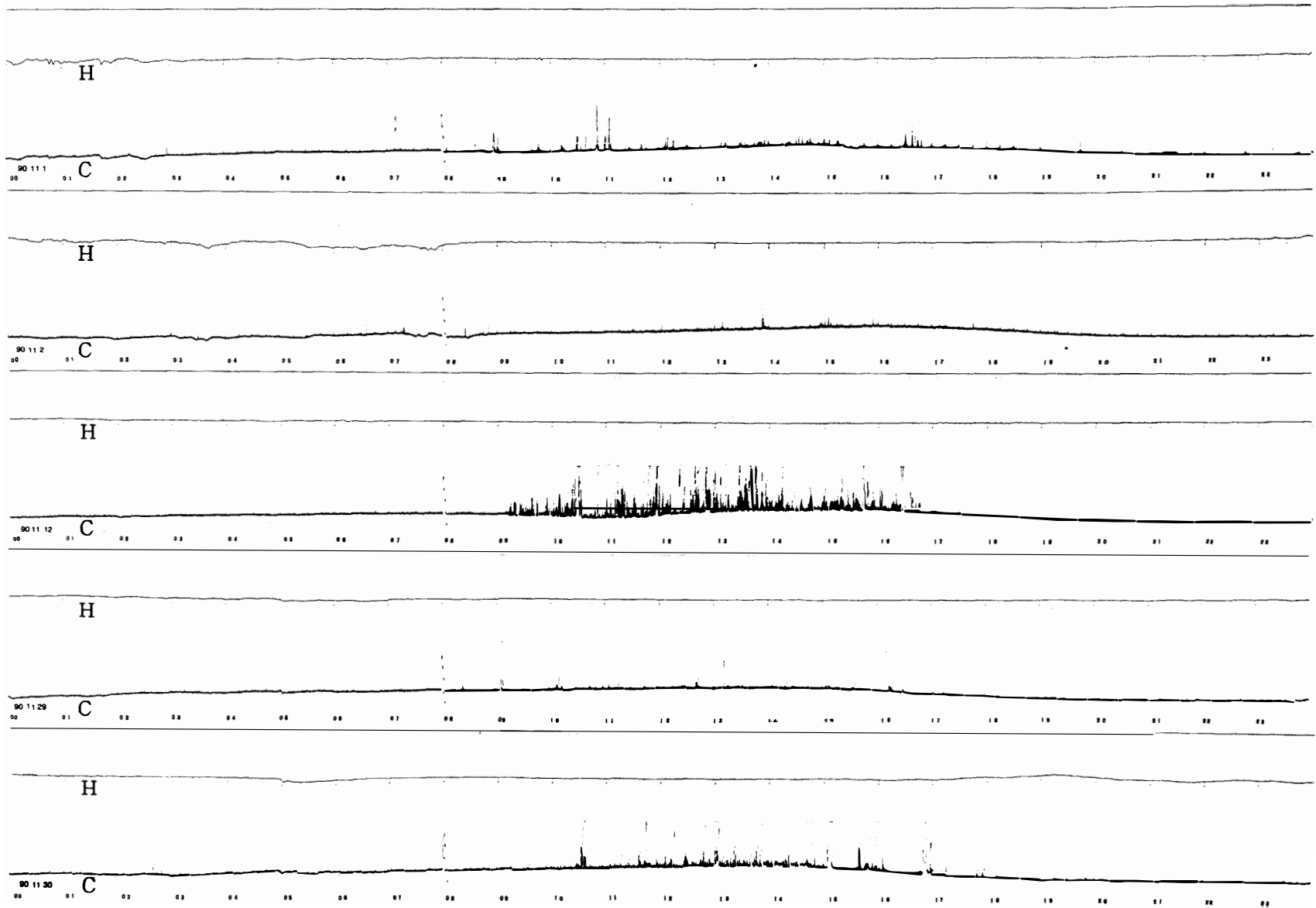


00 04 08 12 16 20 24
45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

OCT. 1990

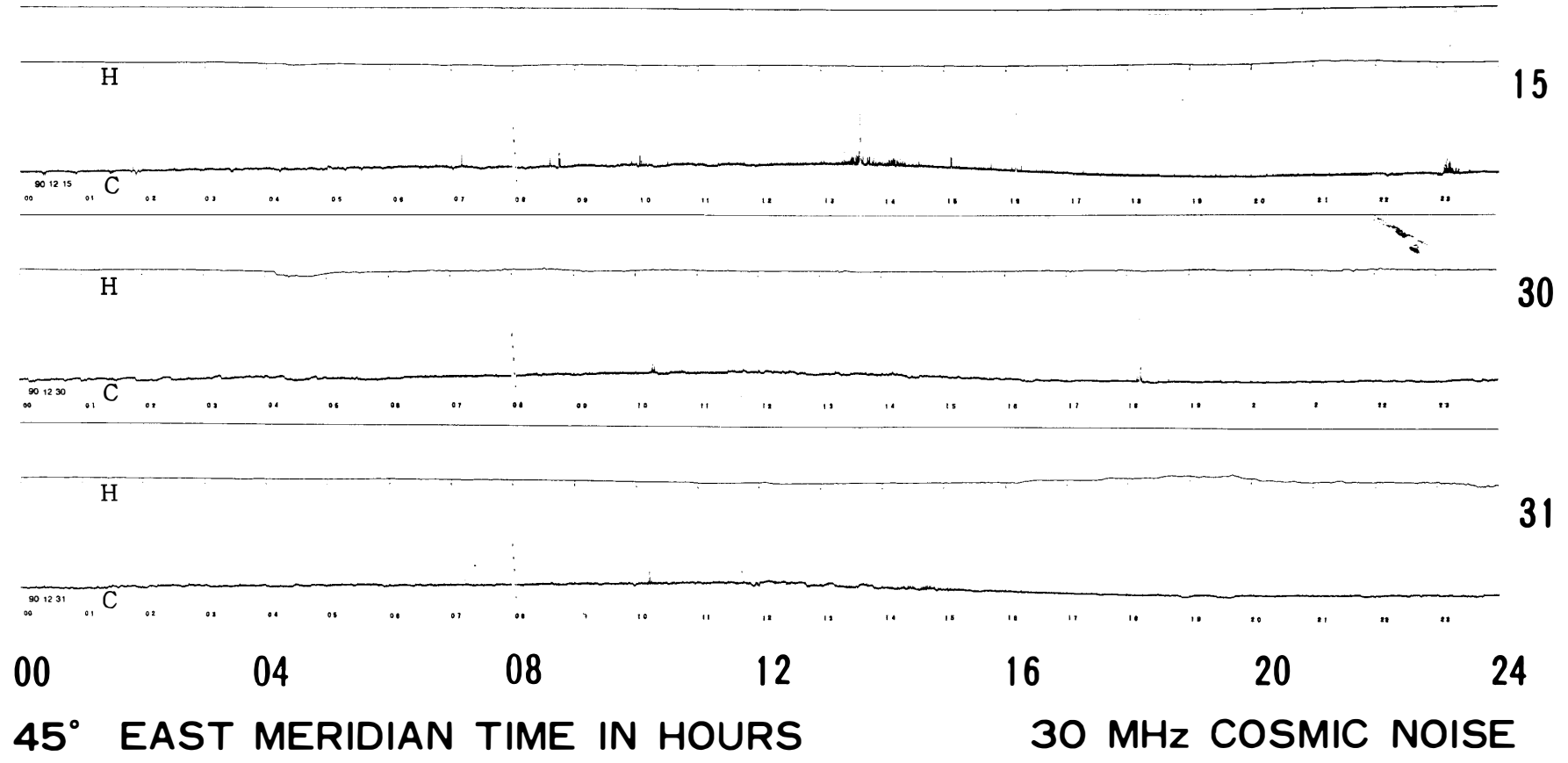


NOV. 1990



00 04 08 12 16 20 24
45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

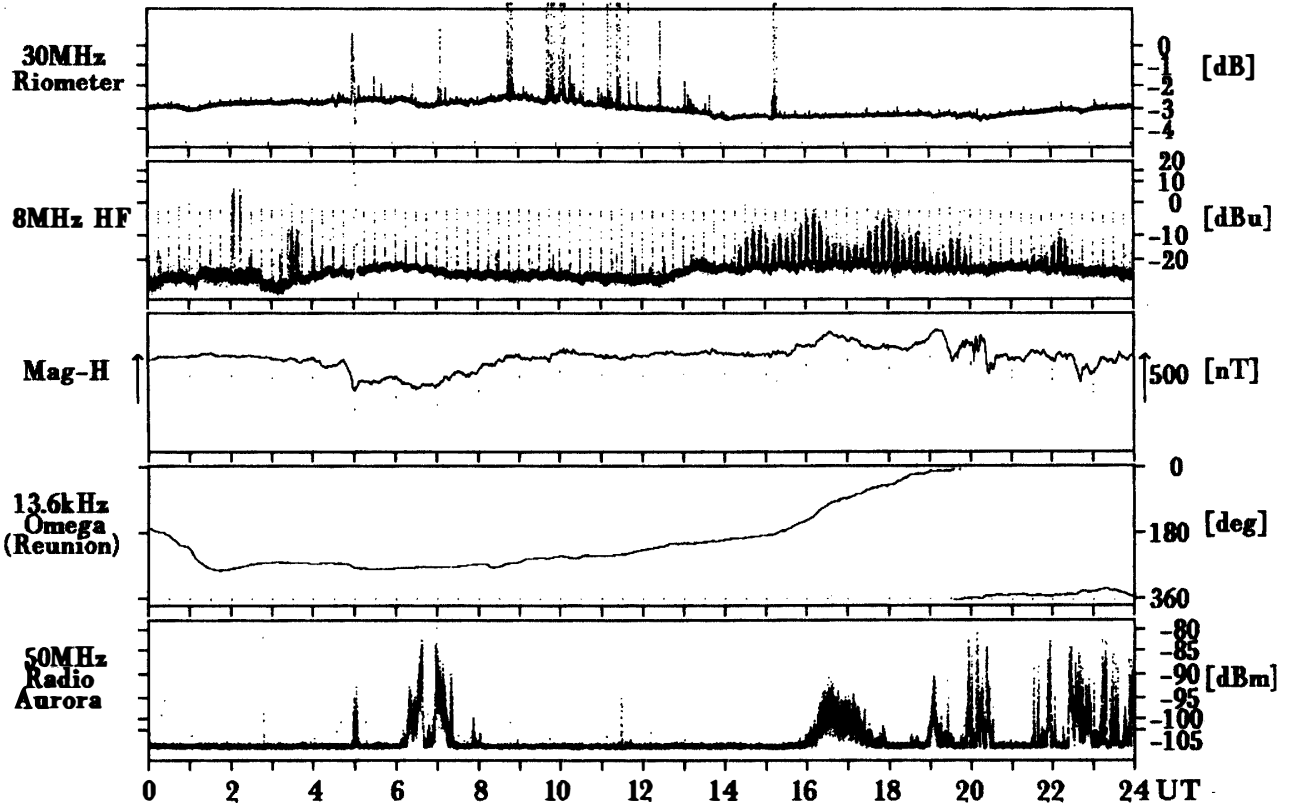
DEC. 1990



34

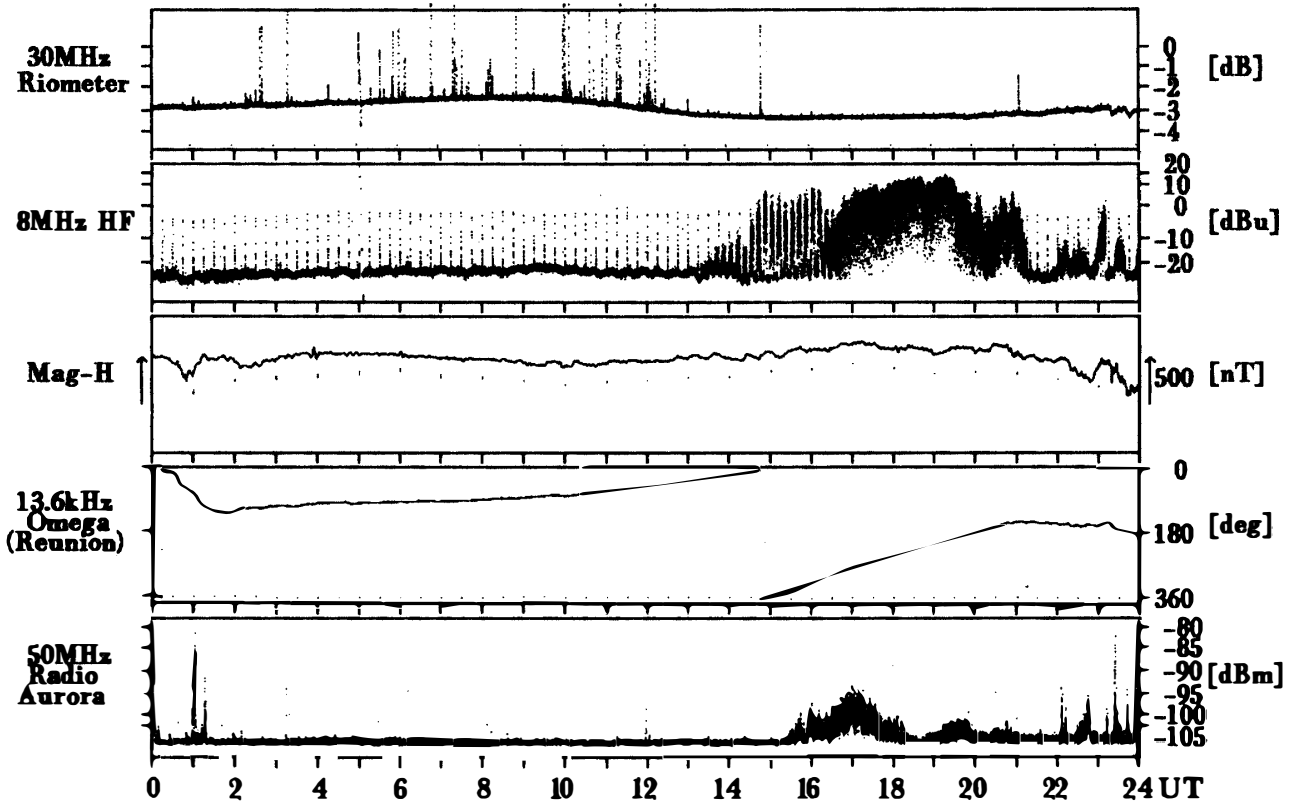
Syowa Station

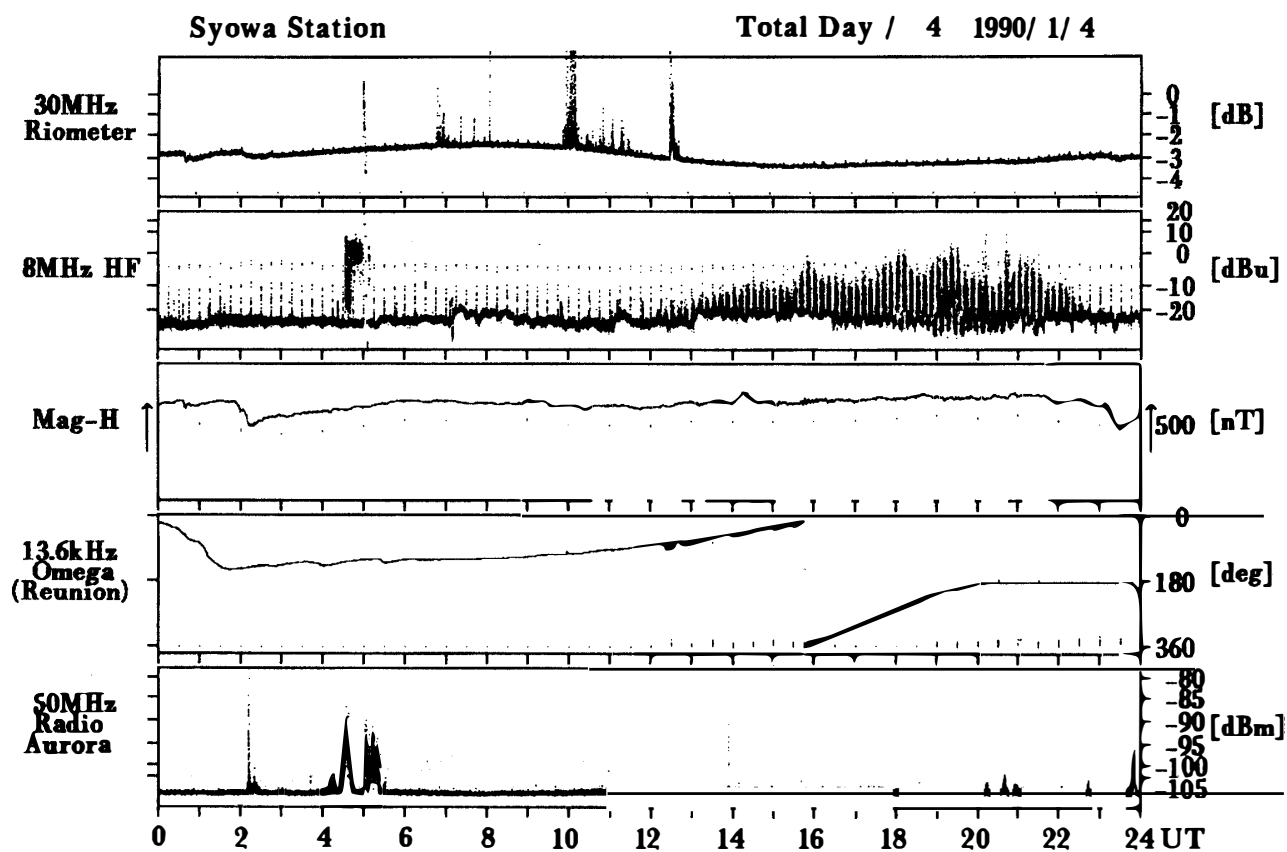
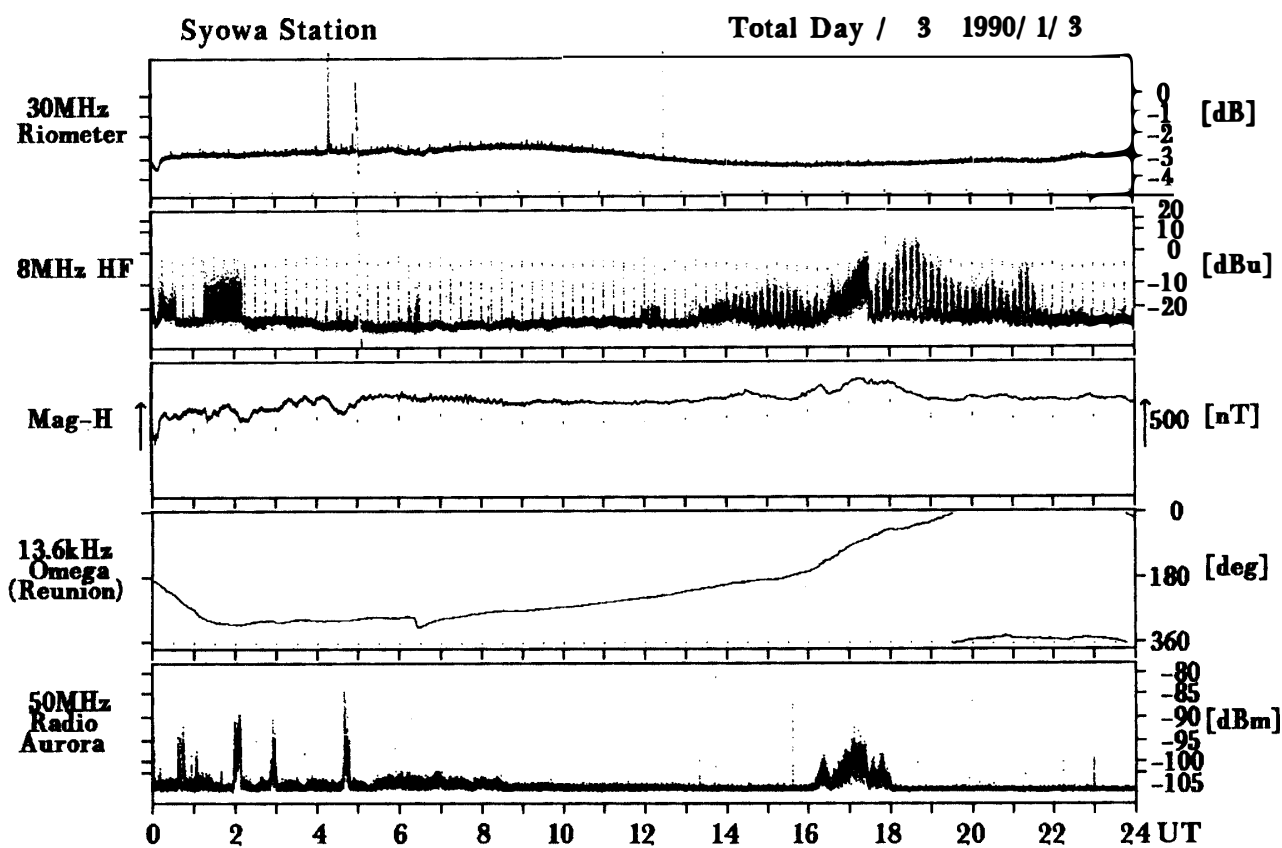
Total Day / 1 1990/ 1/ 1



Syowa Station

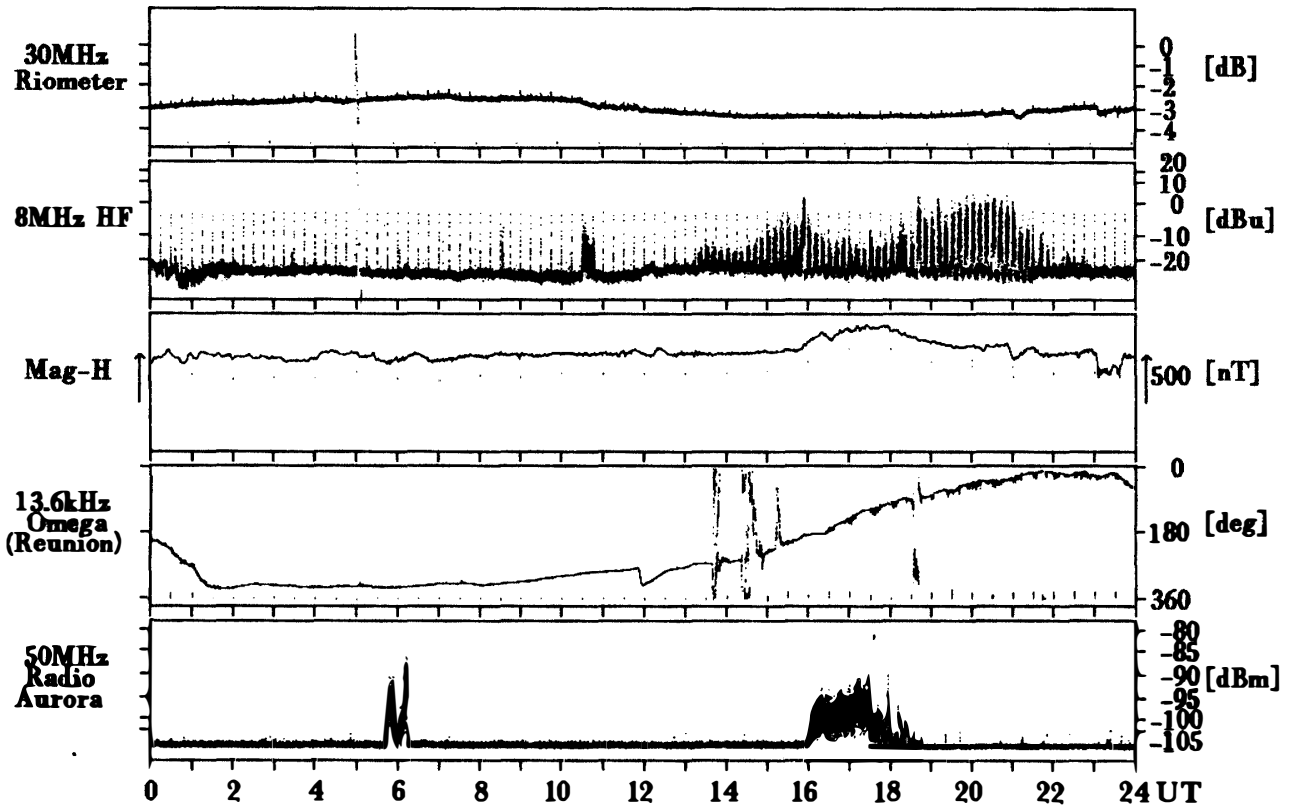
Total Day / 2 1990/ 1/ 2





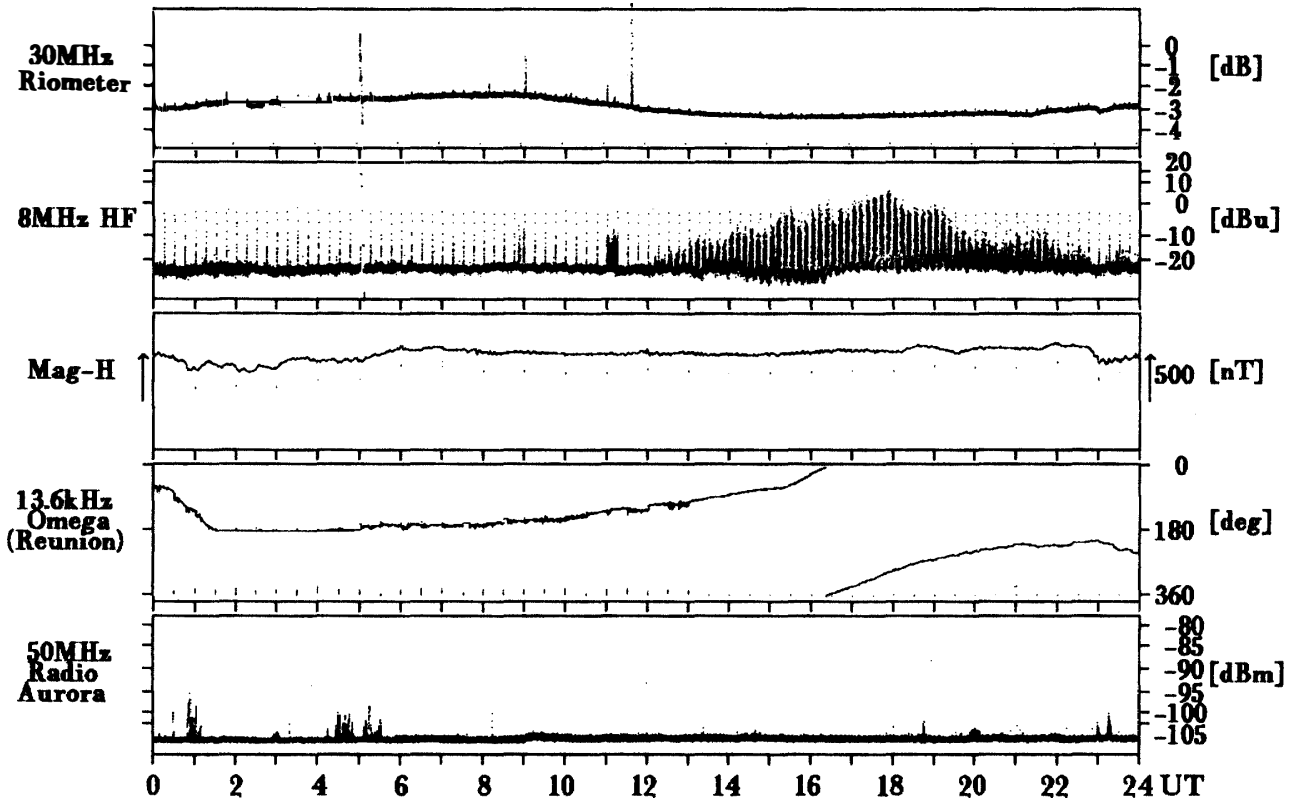
Syowa Station

Total Day / 5 1990/ 1/ 5



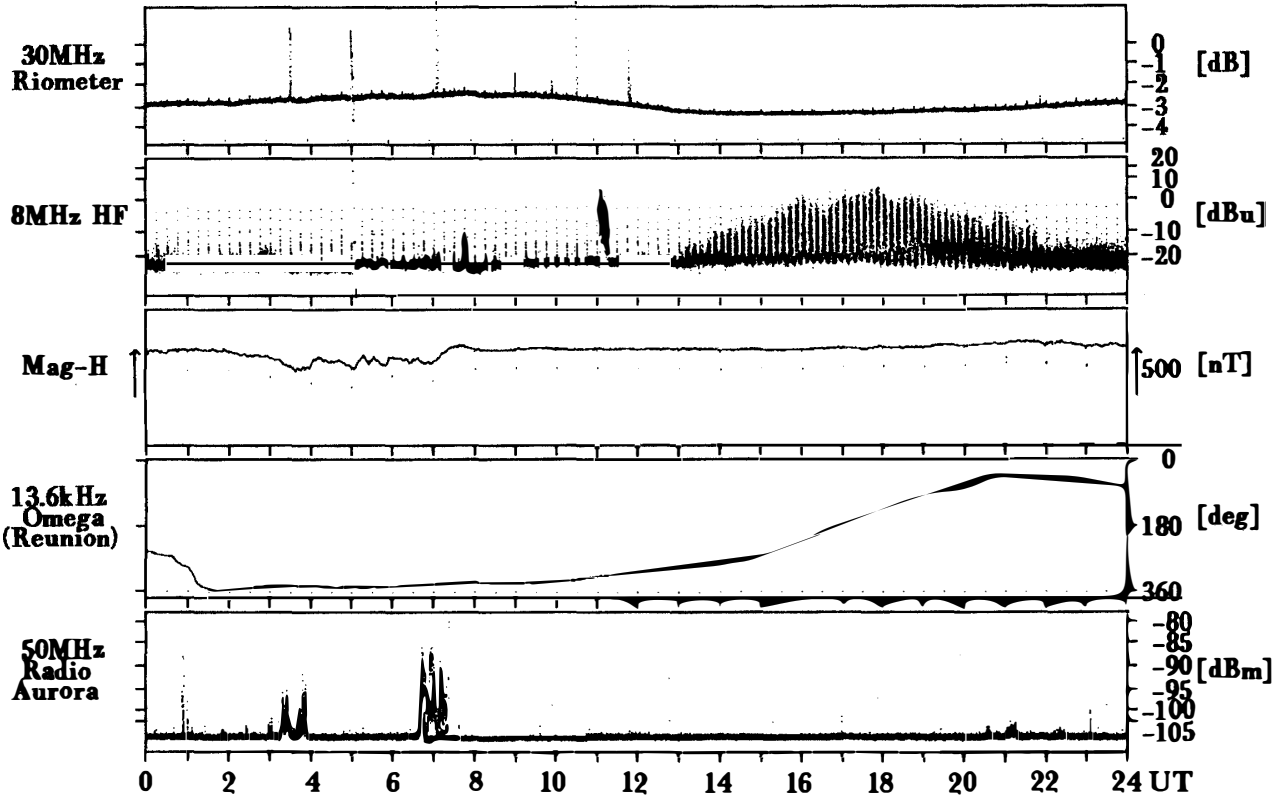
Syowa Station

Total Day / 6 1990/ 1/ 6



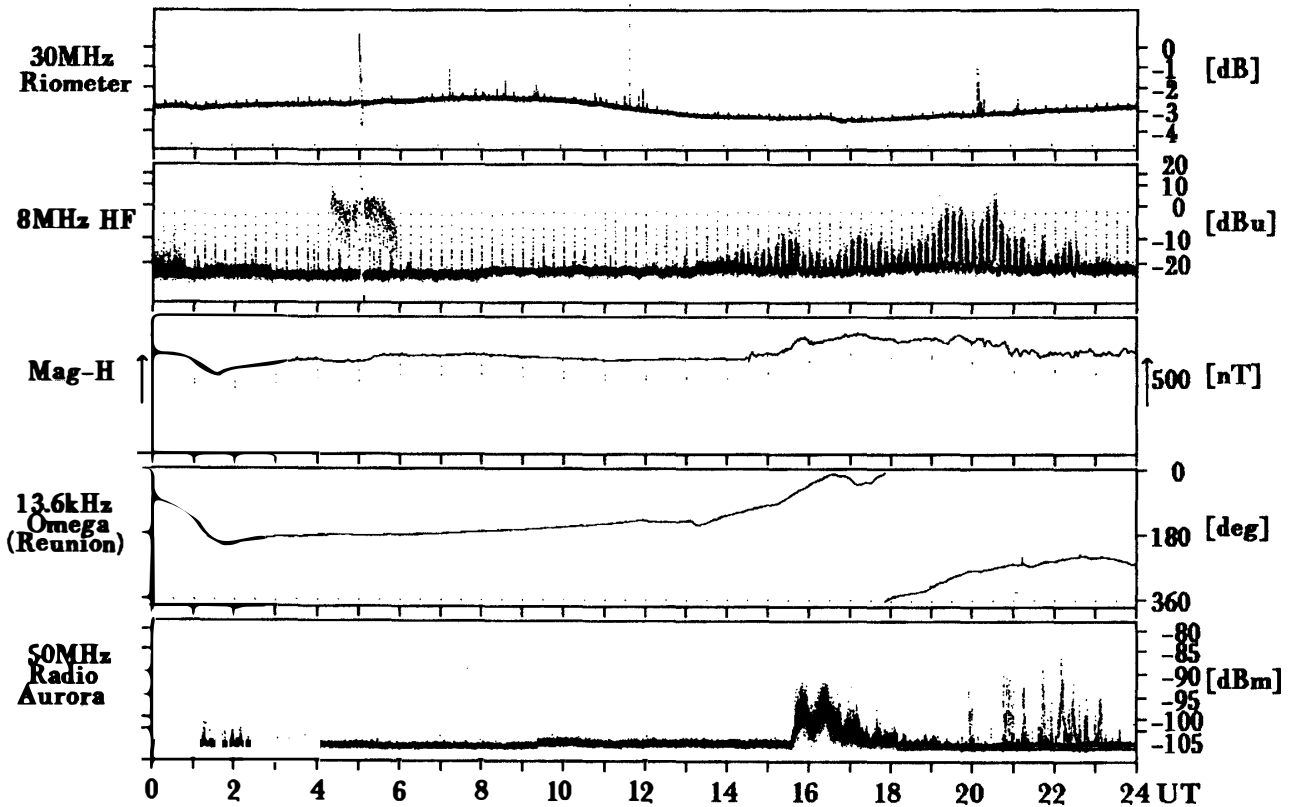
Syowa Station

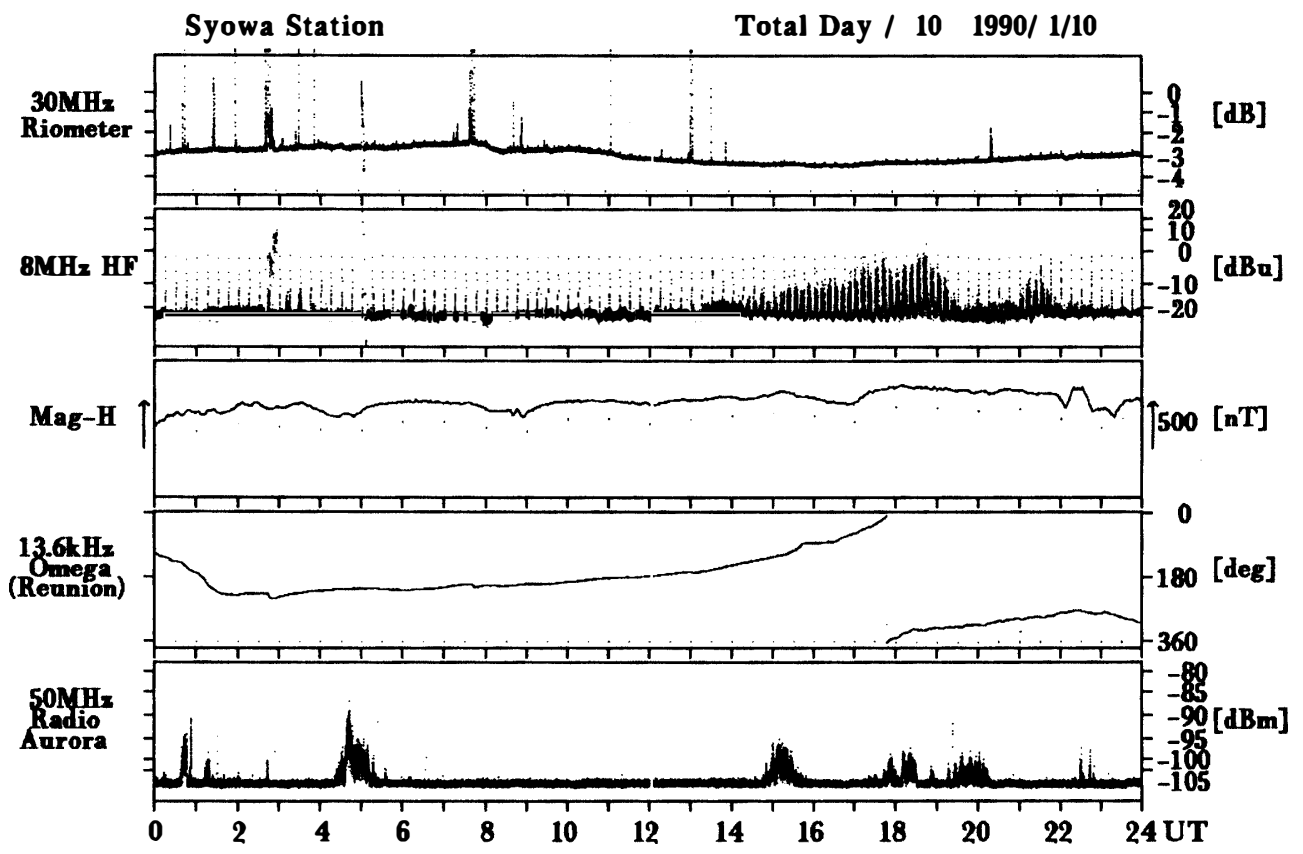
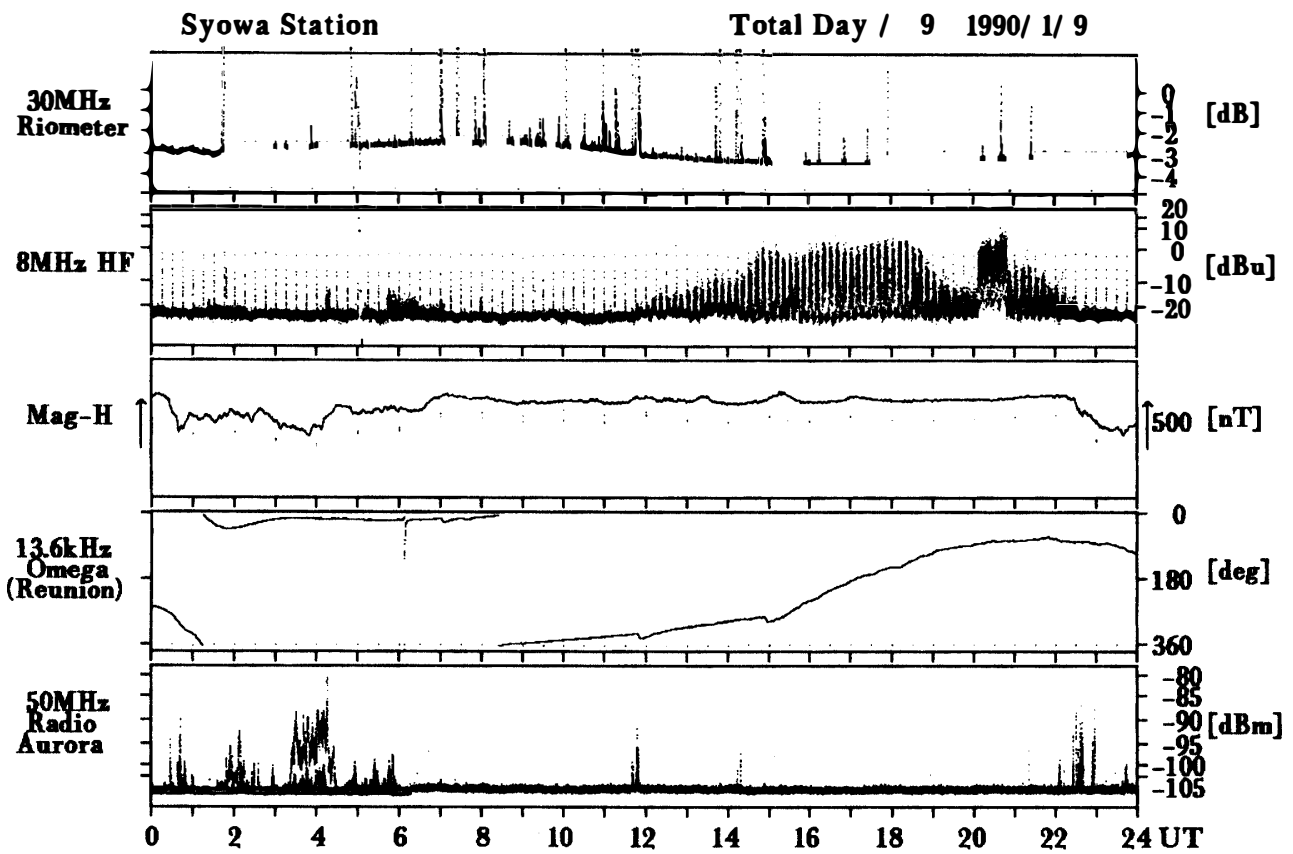
Total Day / 7 1990/ 1/ 7



Syowa Station

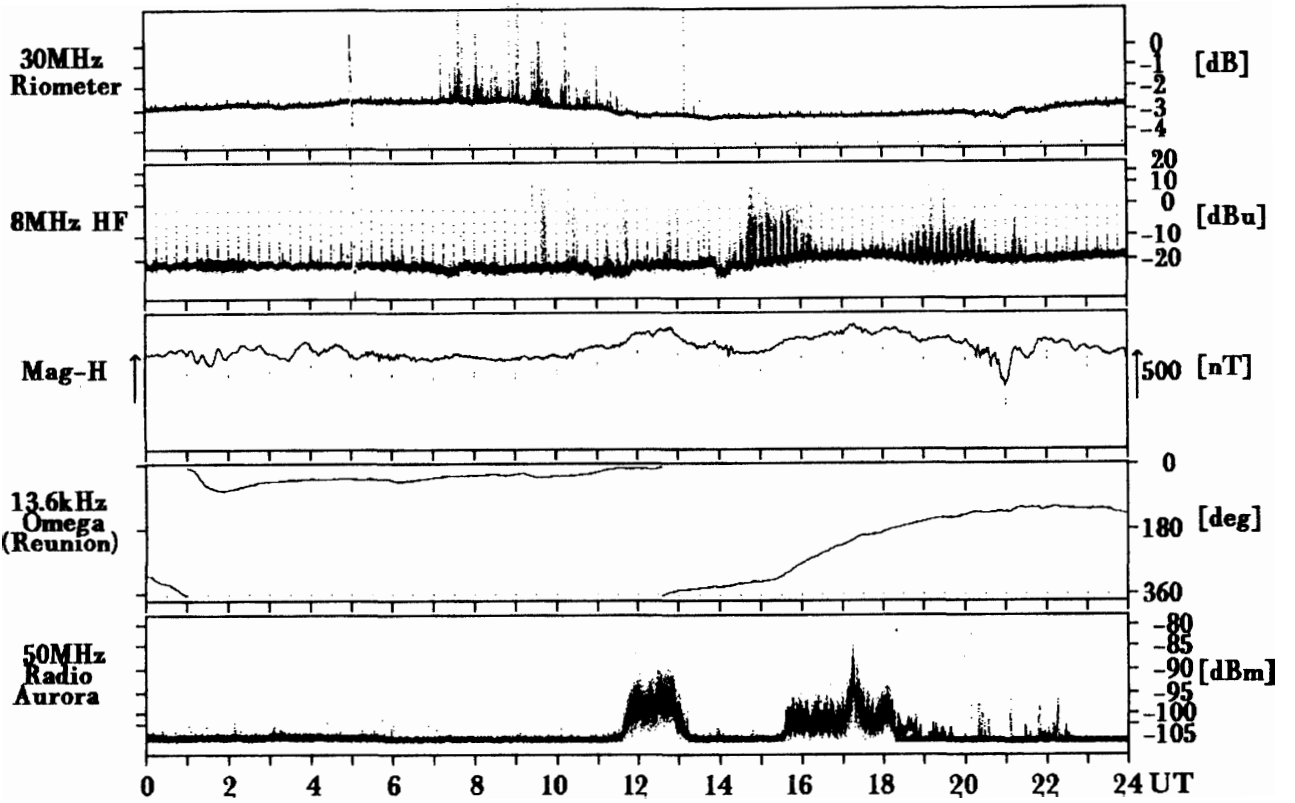
Total Day / 8 1990/ 1/ 8





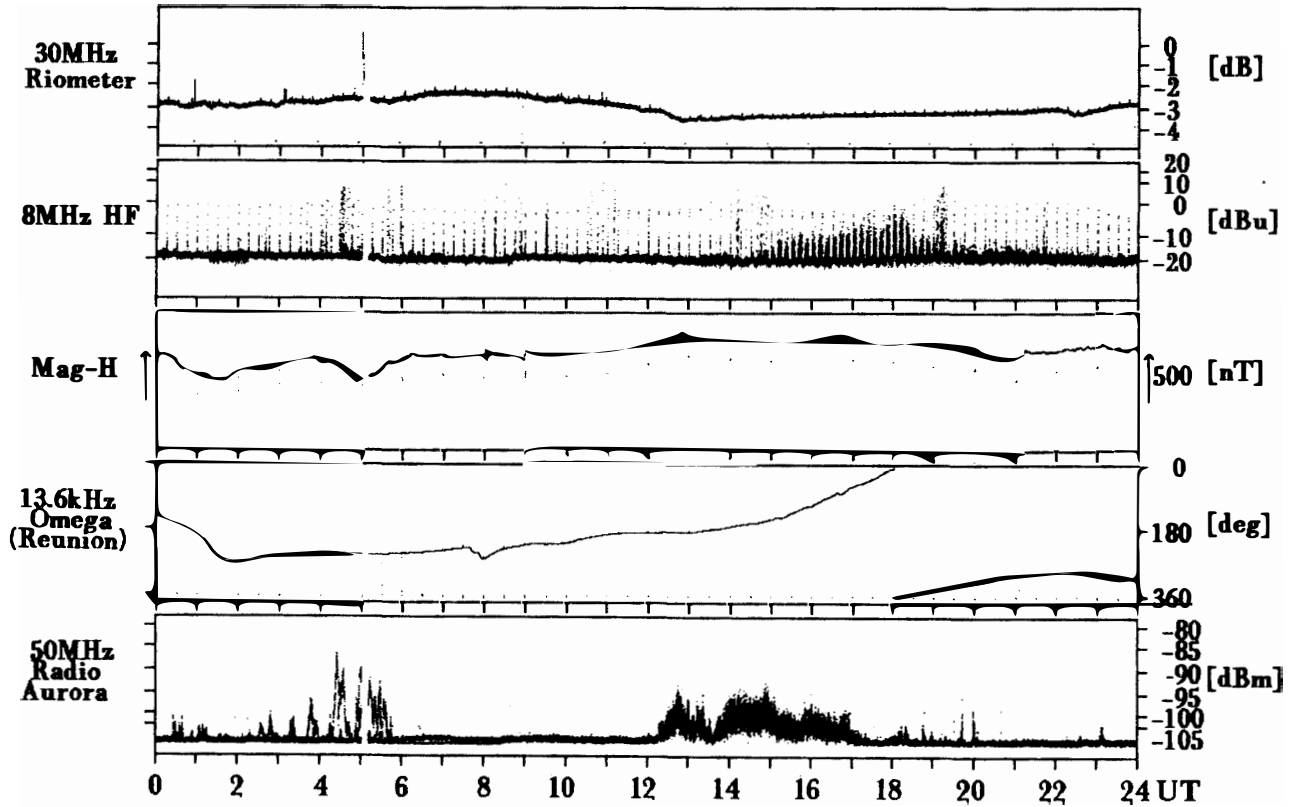
Syowa Station

Total Day / 11 1990/ 1/11



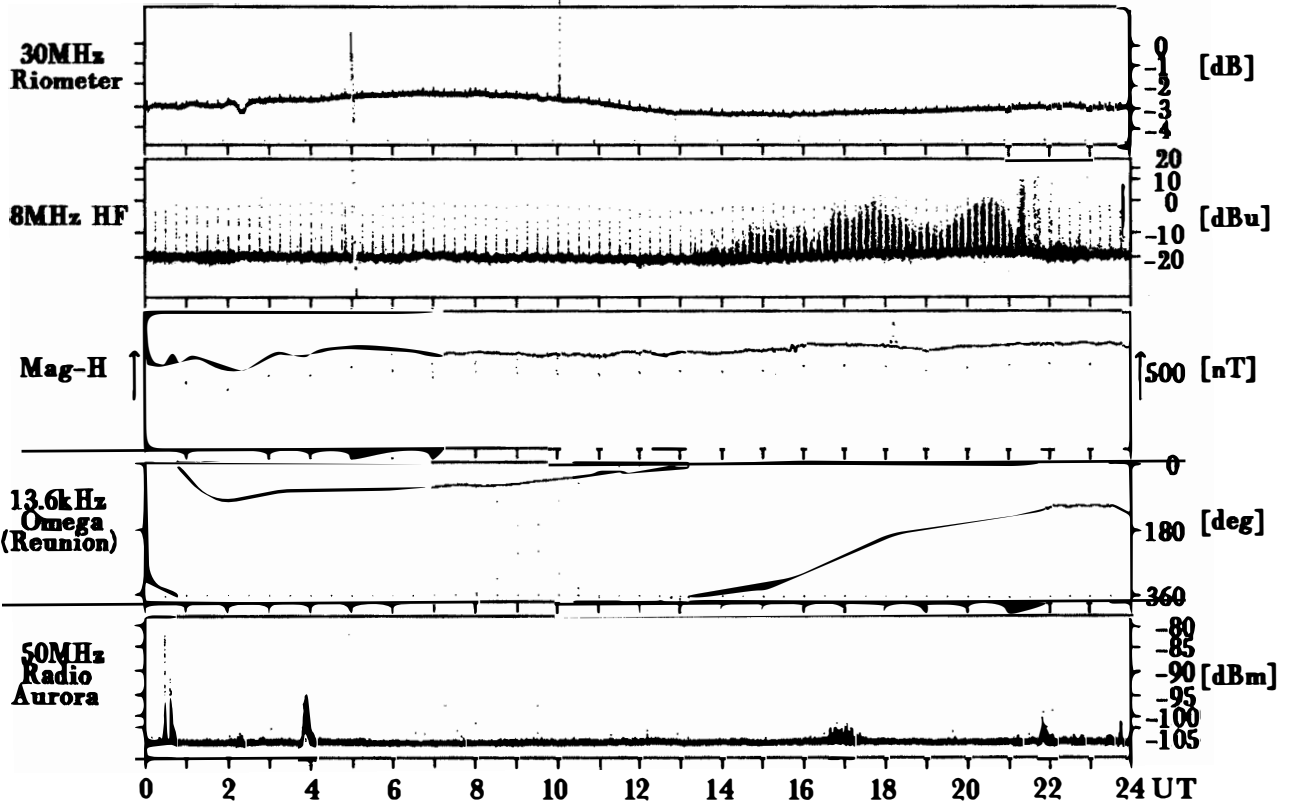
Syowa Station

Total Day / 12 1990/ 1/12



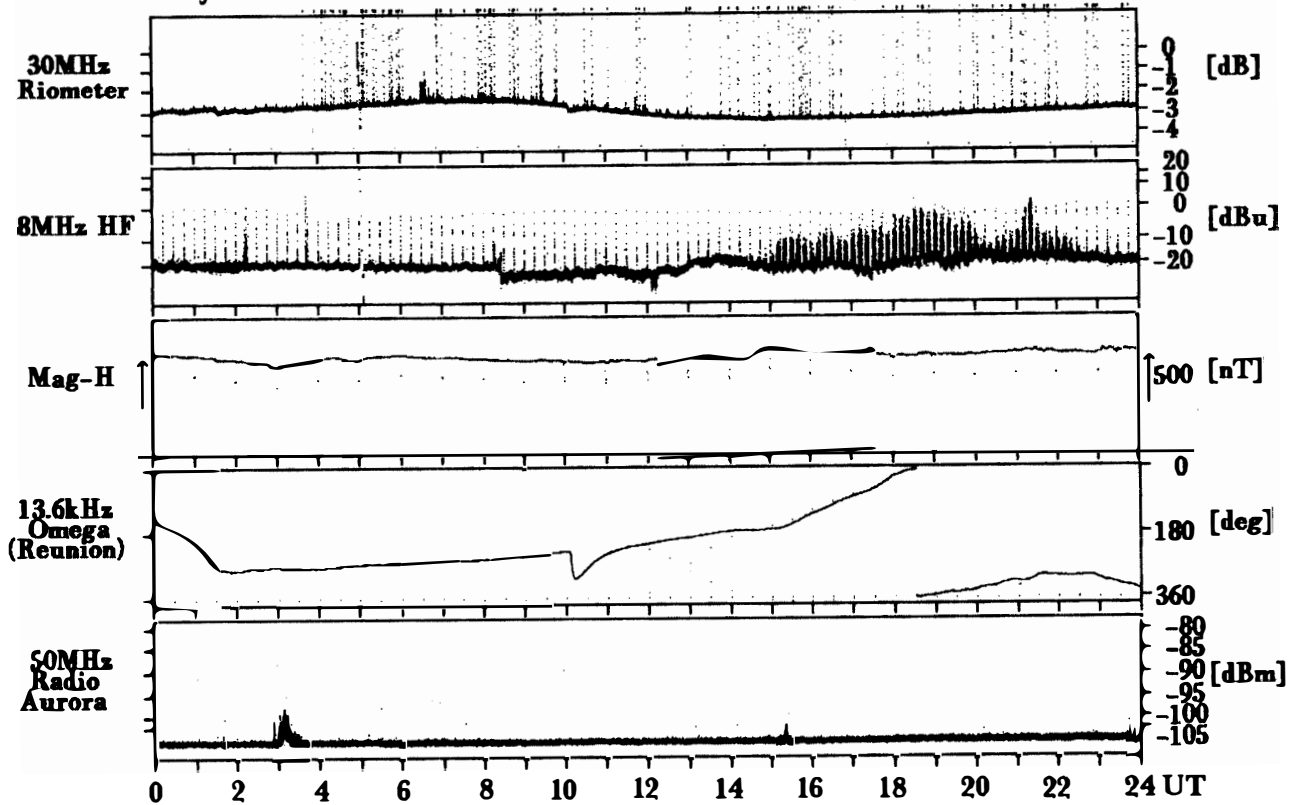
Syowa Station

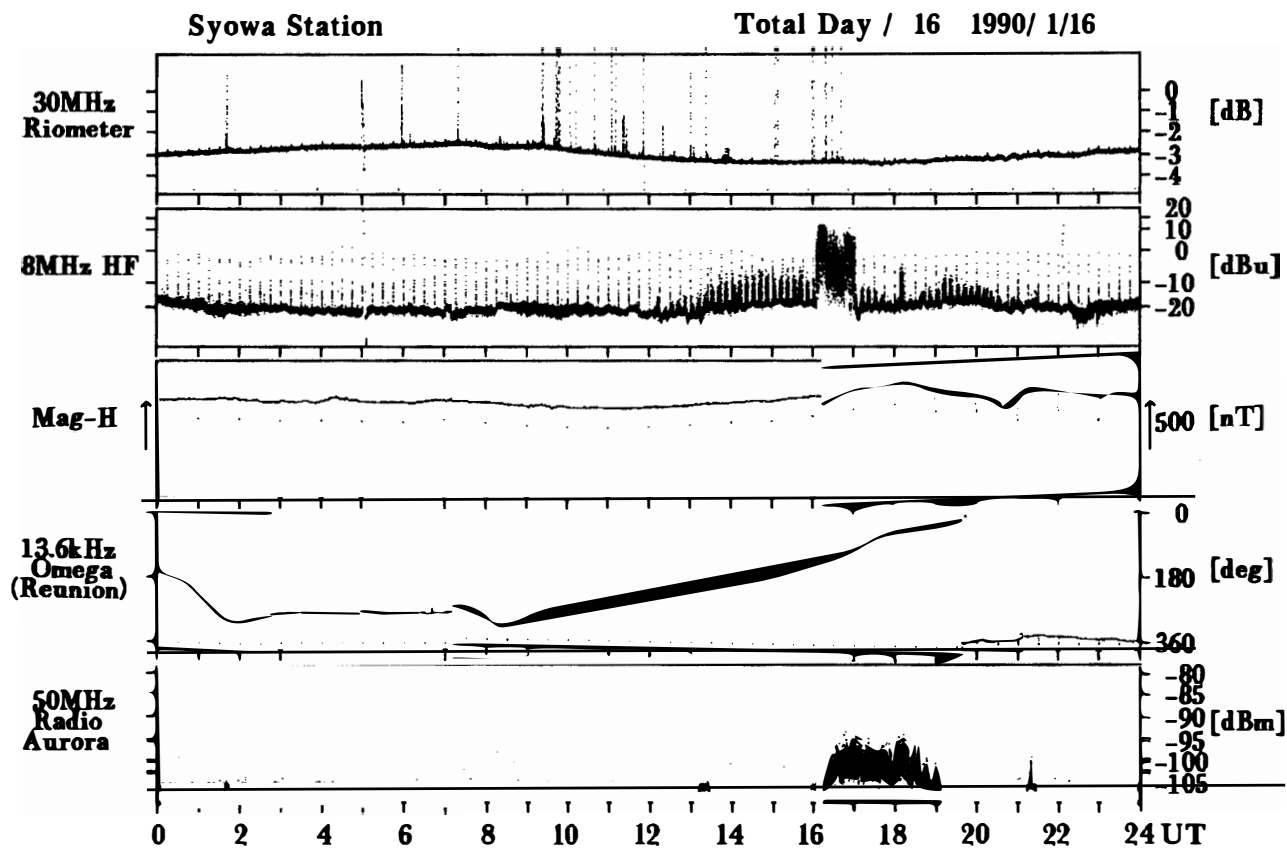
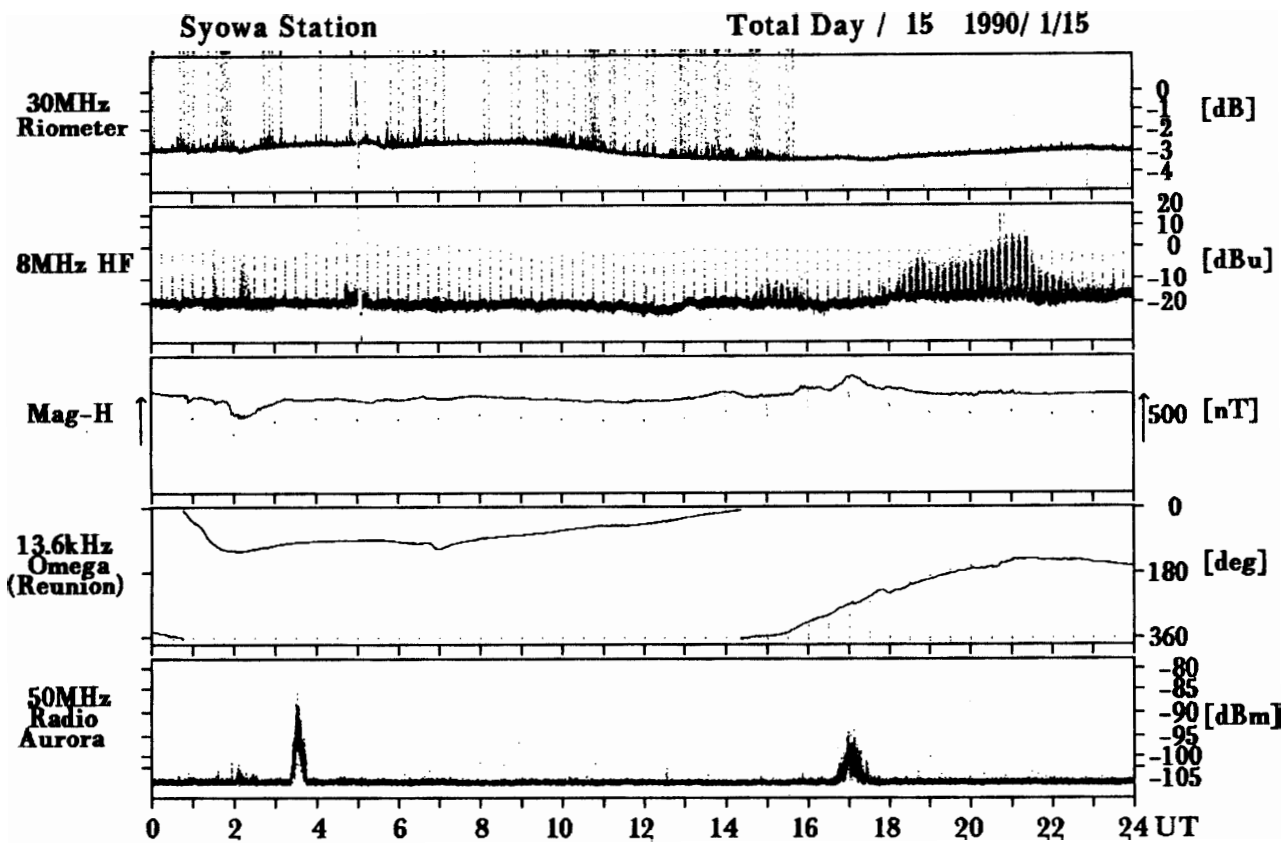
Total Day / 13 1990/ 1/13



Syowa Station

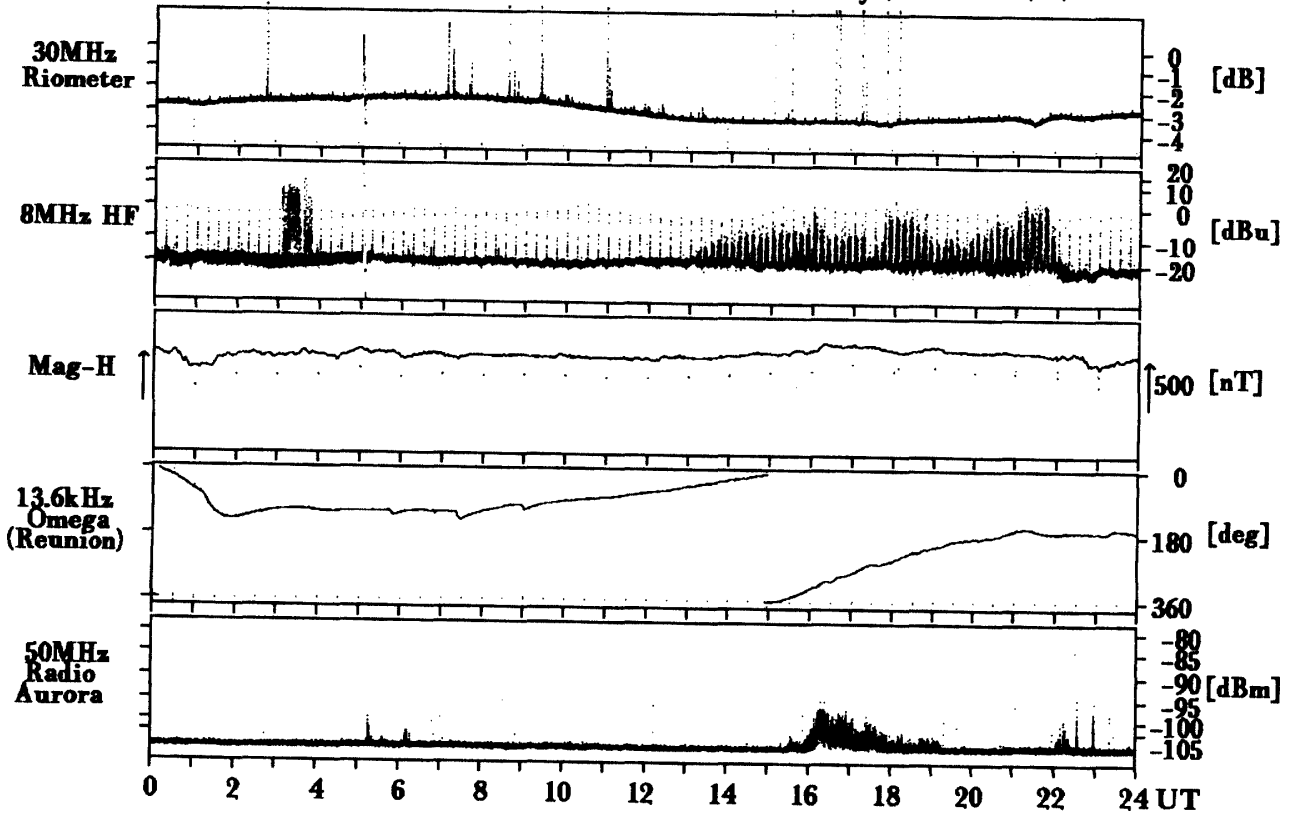
Total Day / 14 1990/ 1/14





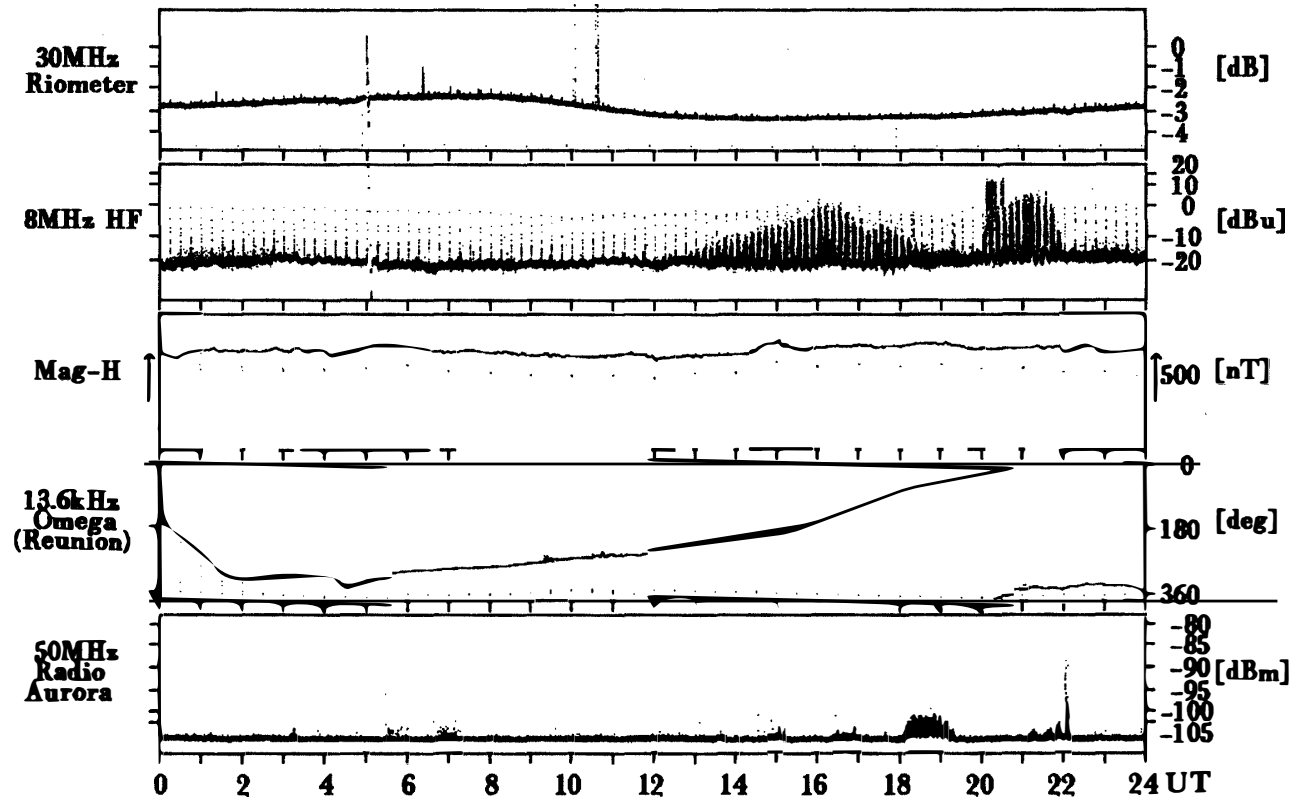
Syowa Station

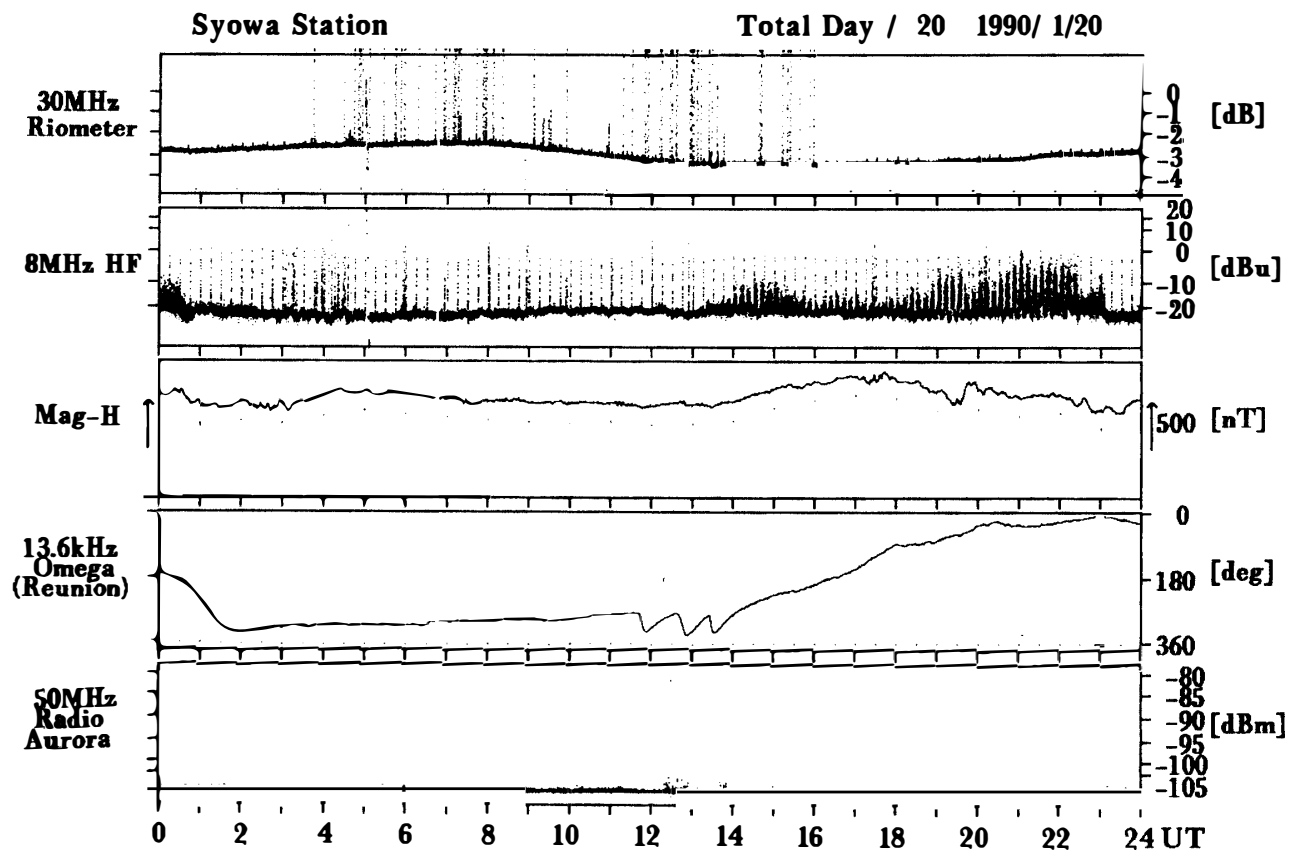
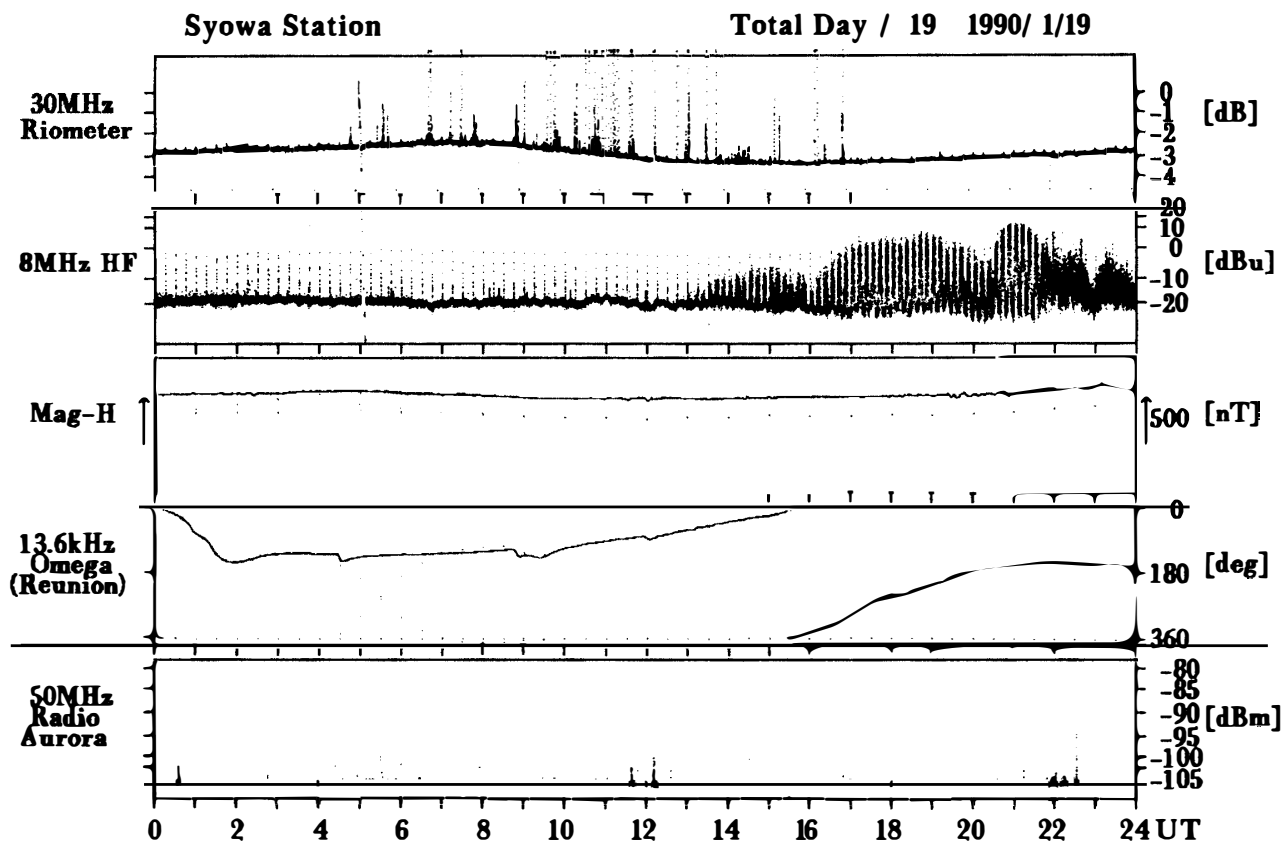
Total Day / 17 1990/ 1/17

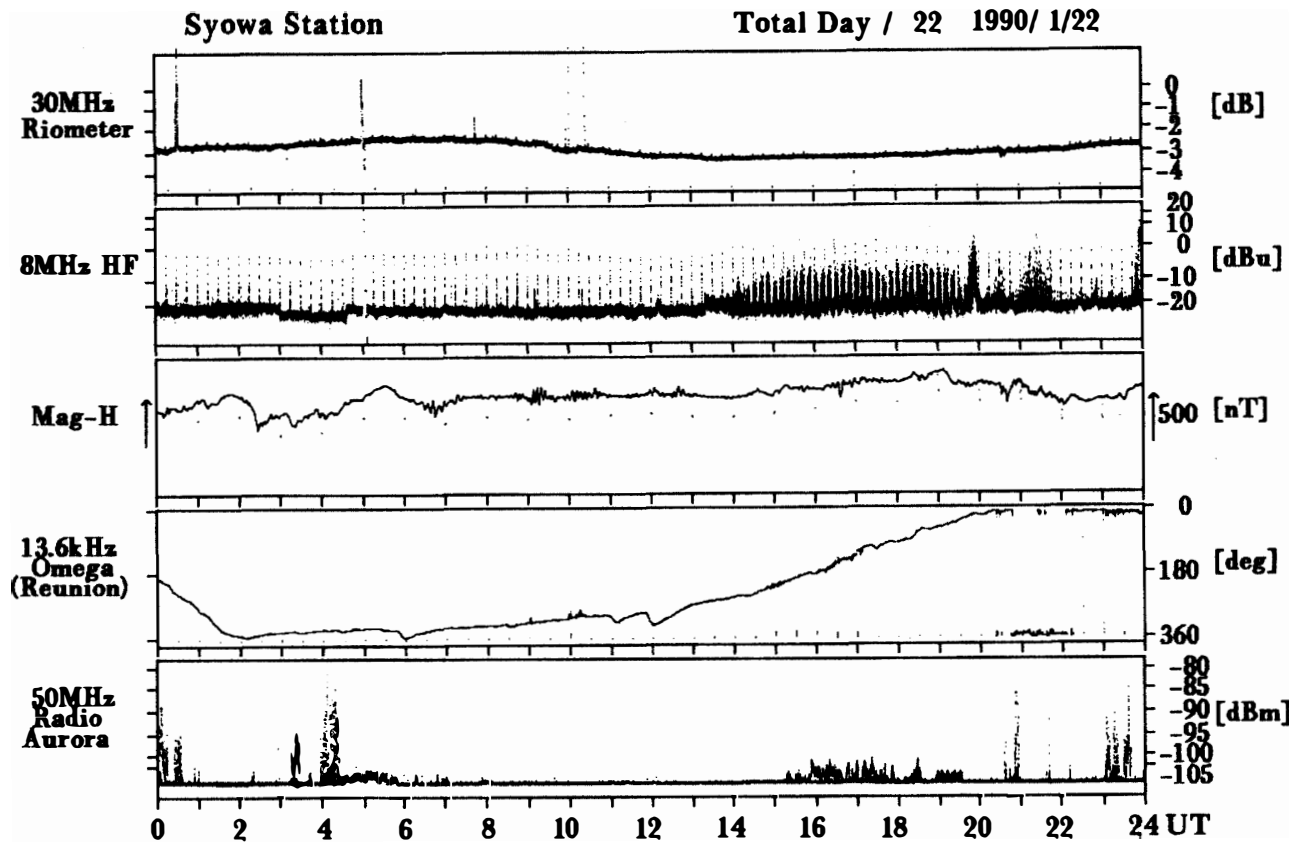
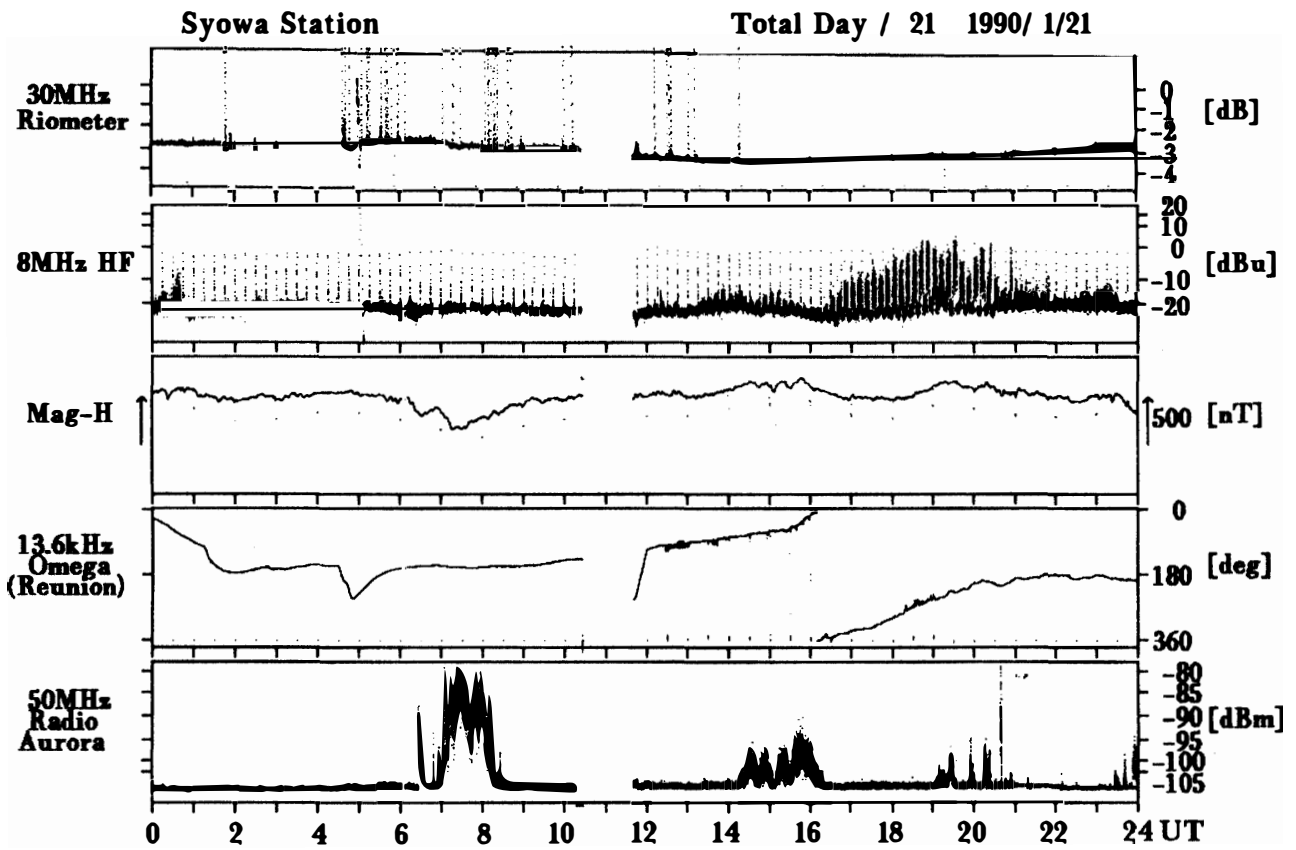


Syowa Station

Total Day / 18 1990/ 1/18

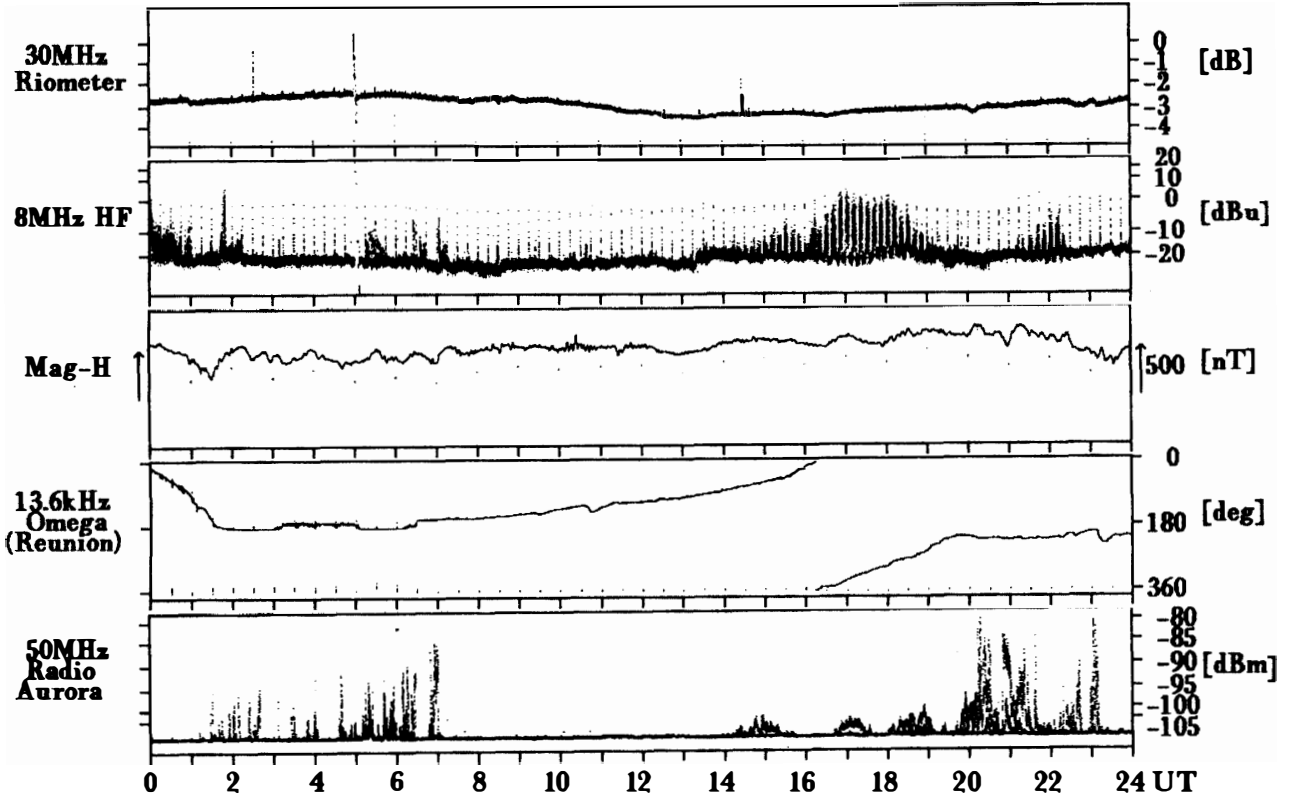






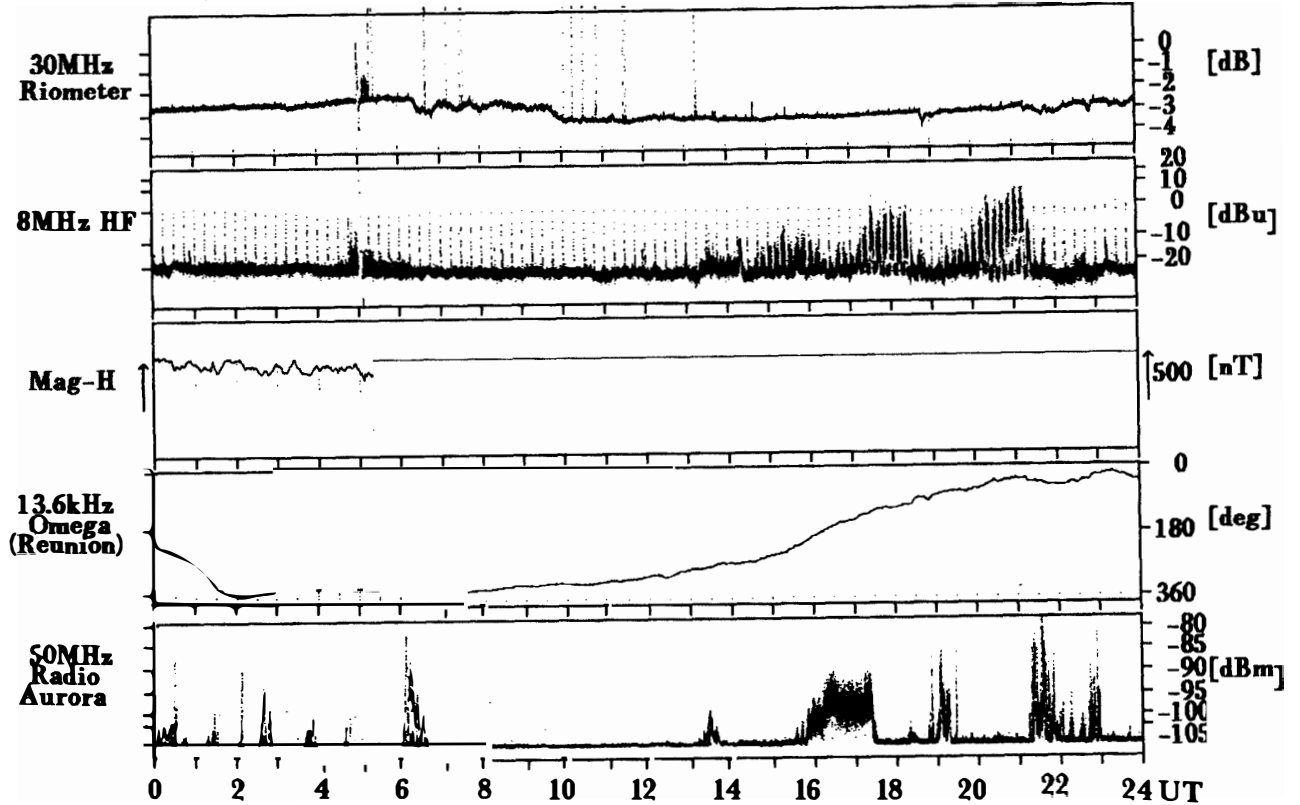
Syowa Station

Total Day / 23 1990/ 1/23



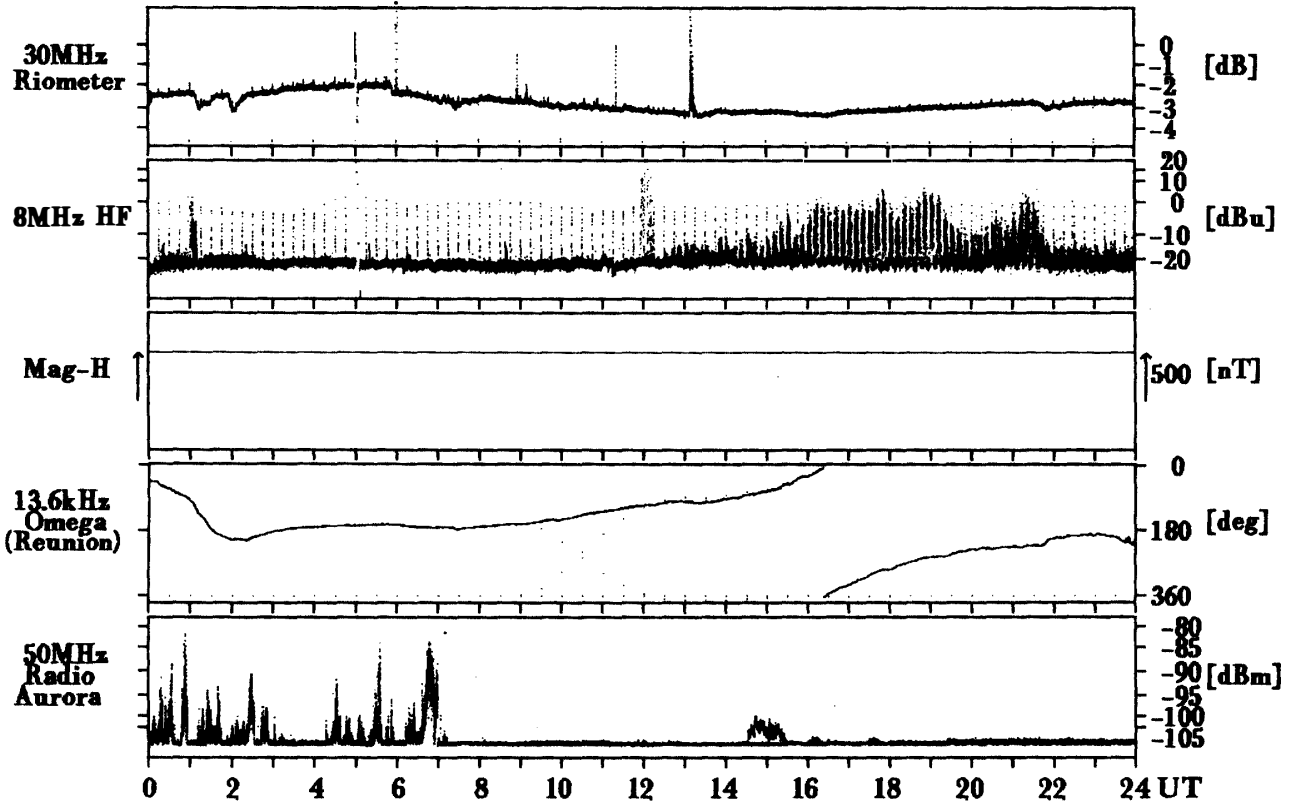
Syowa Station

Total Day / 24 1990/ 1/24



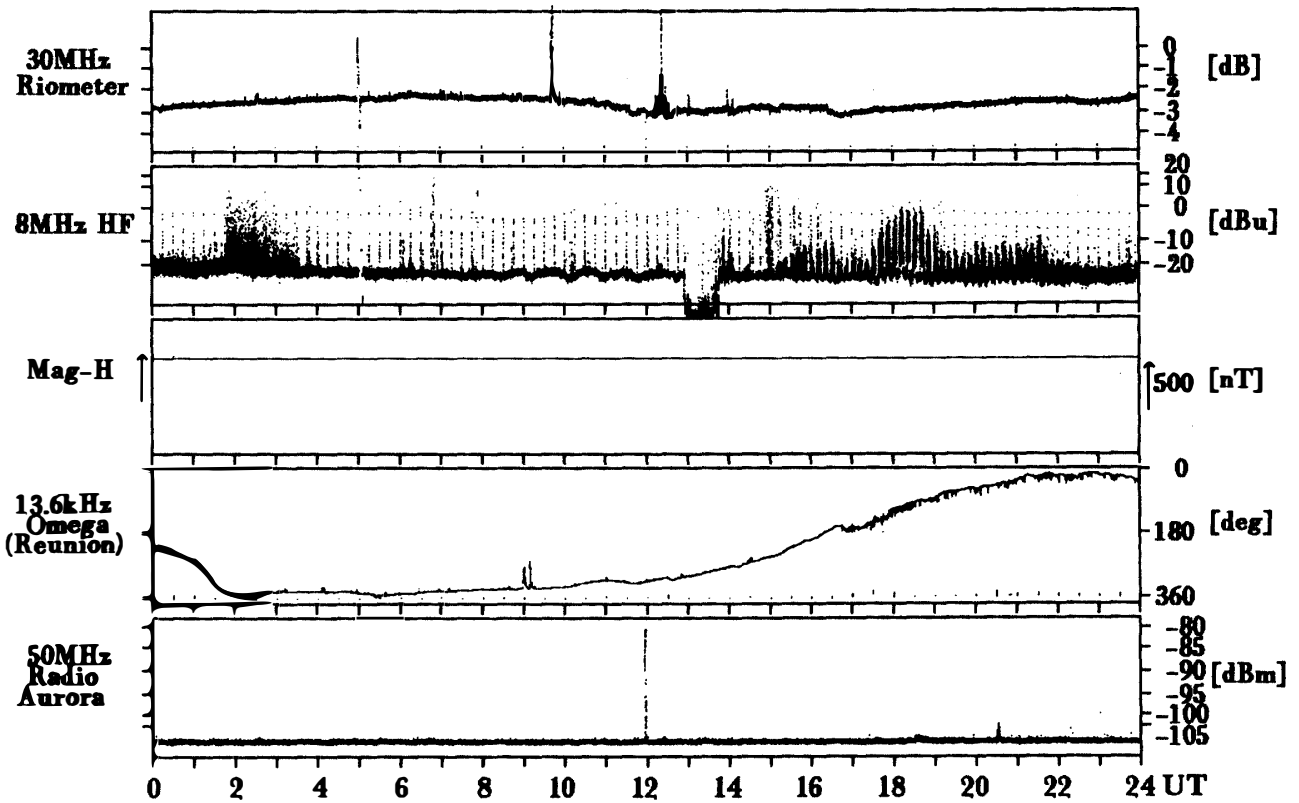
Syowa Station

Total Day / 25 1990/ 1/25



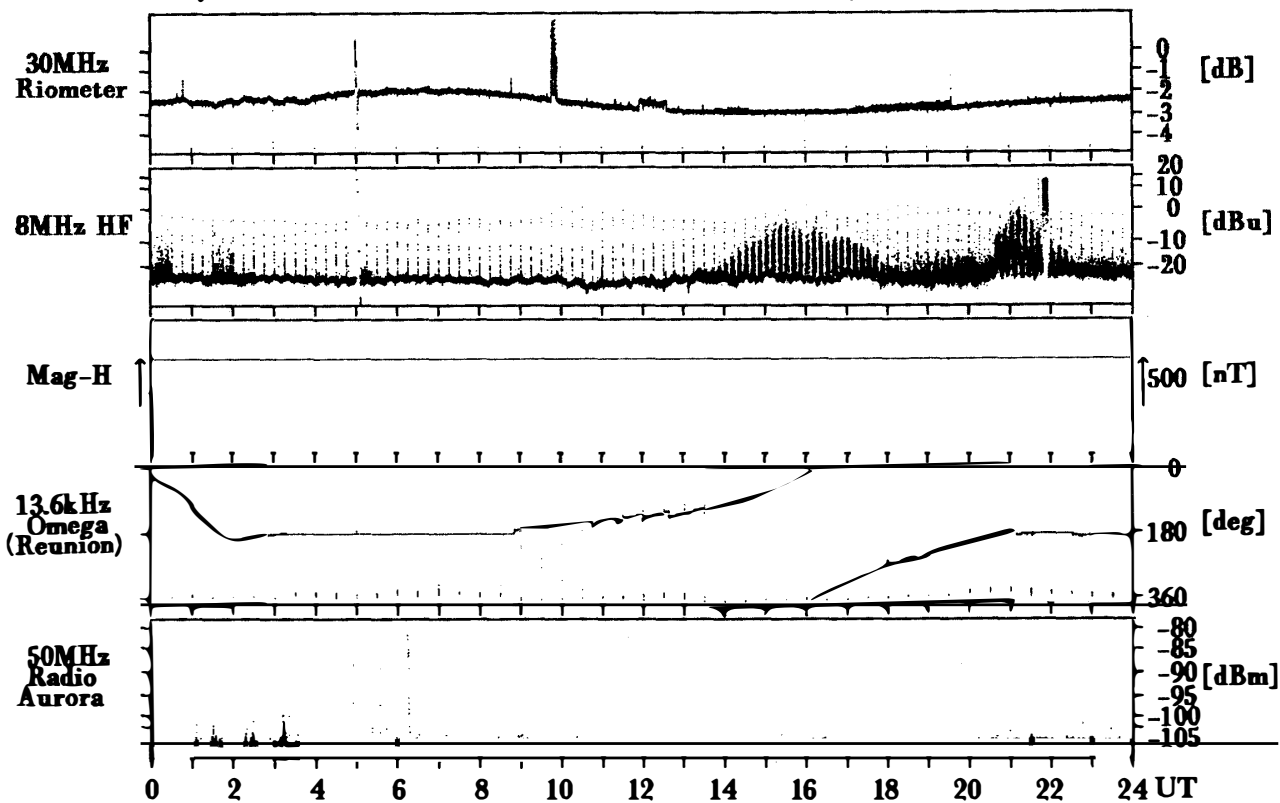
Syowa Station

Total Day / 26 1990/ 1/26



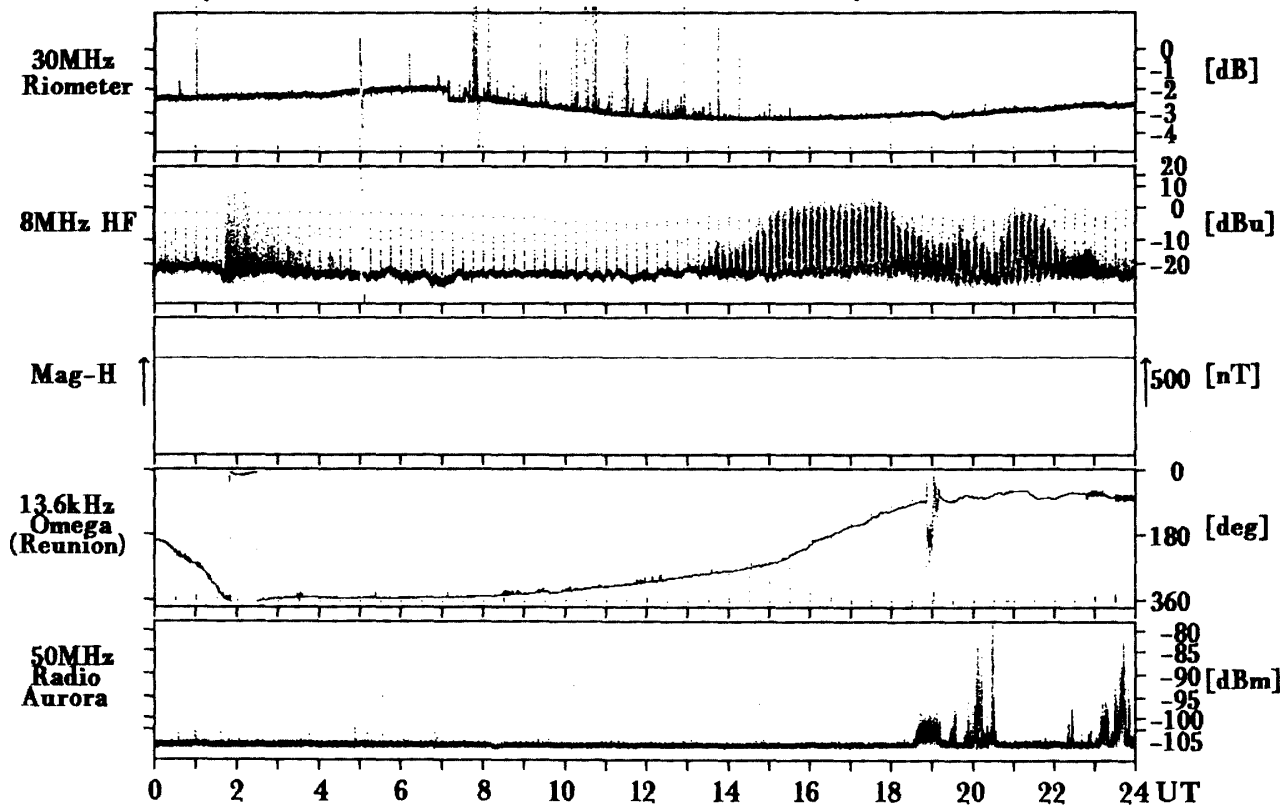
Syowa Station

Total Day / 27 1990/ 1/27



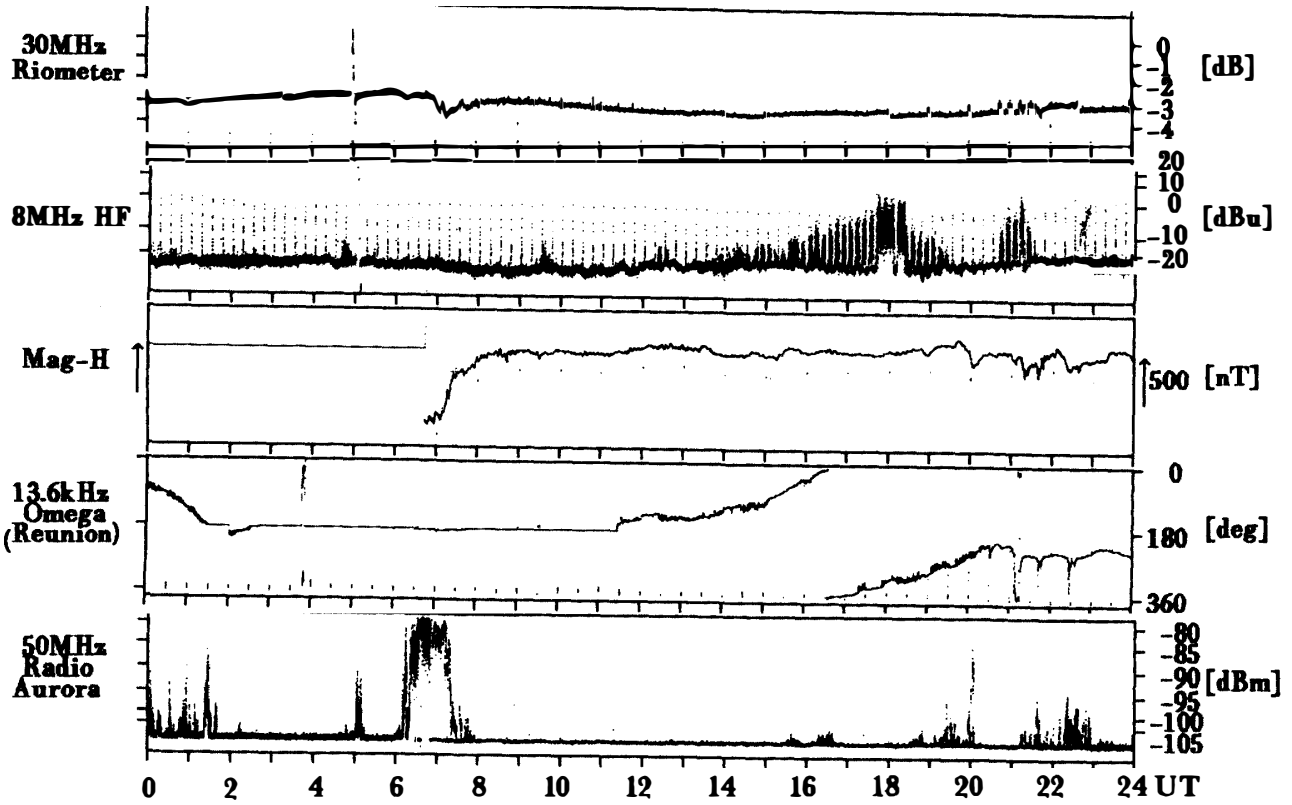
Syowa Station

Total Day / 28 1990/ 1/28



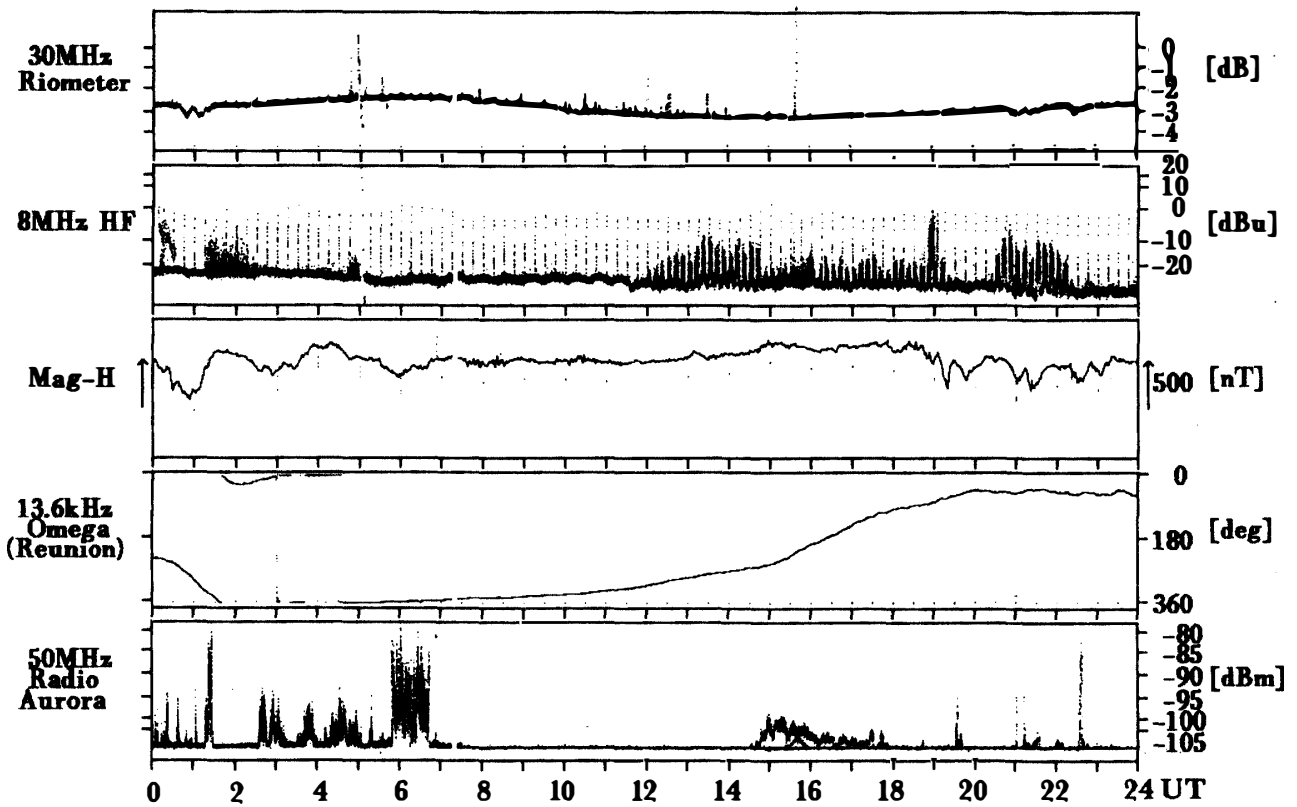
Syowa Station

Total Day / 29 1990/ 1/29



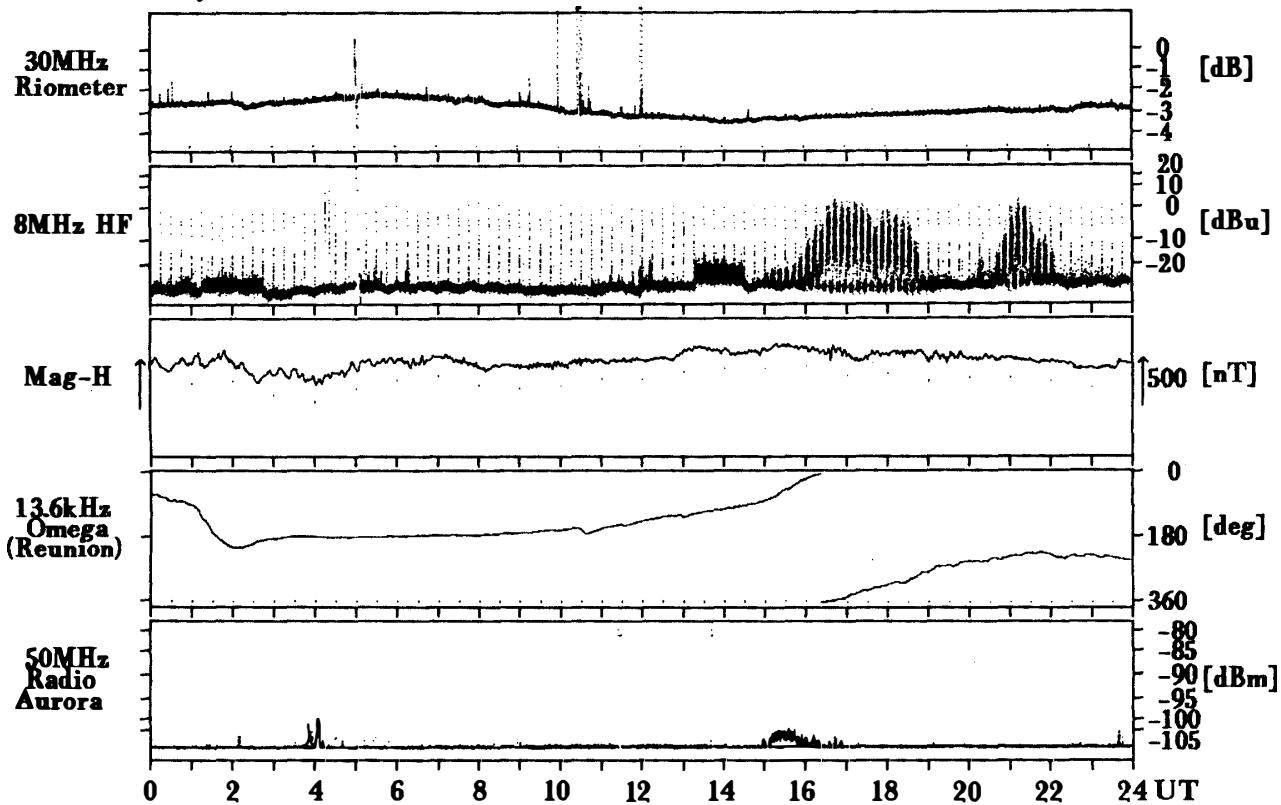
Syowa Station

Total Day / 30 1990/ 1/30



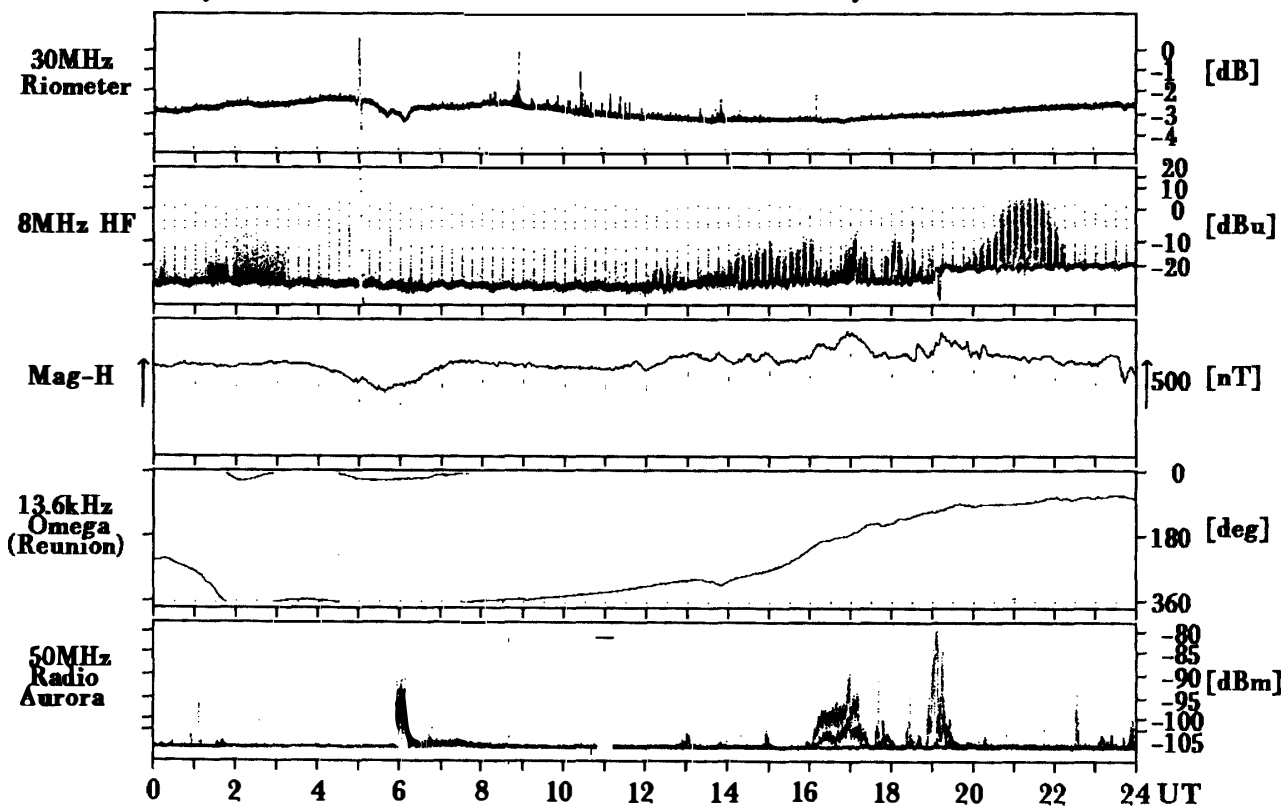
Syowa Station

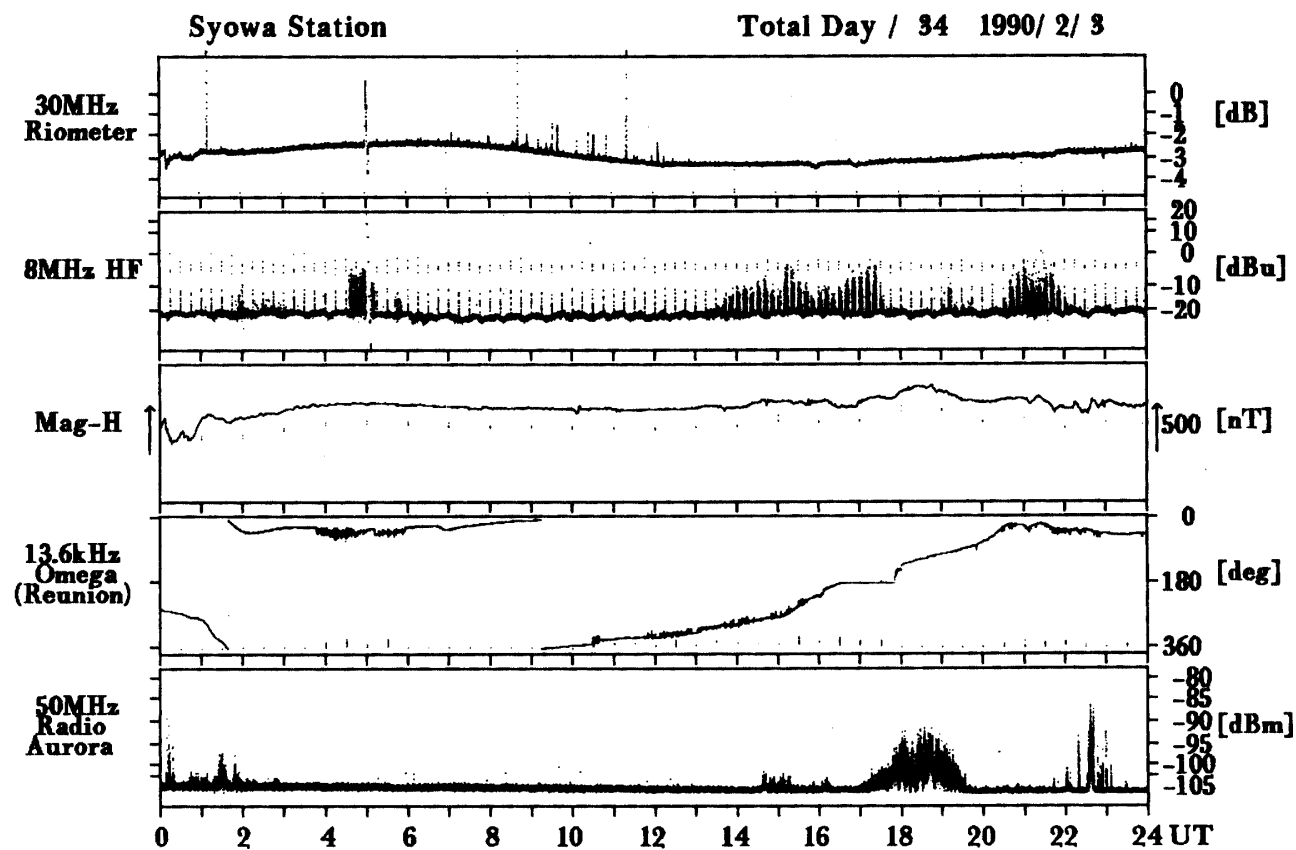
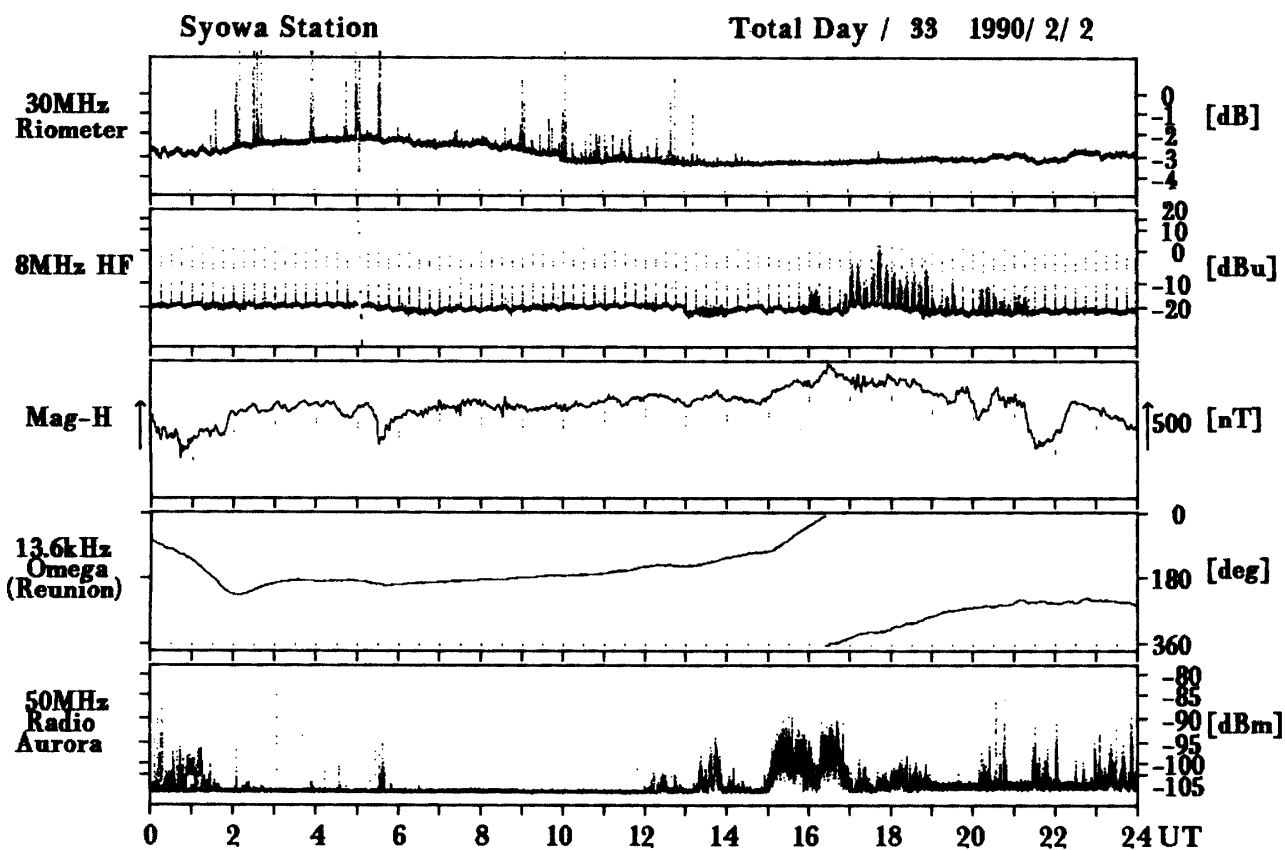
Total Day / 31 1990/ 1/31



Syowa Station

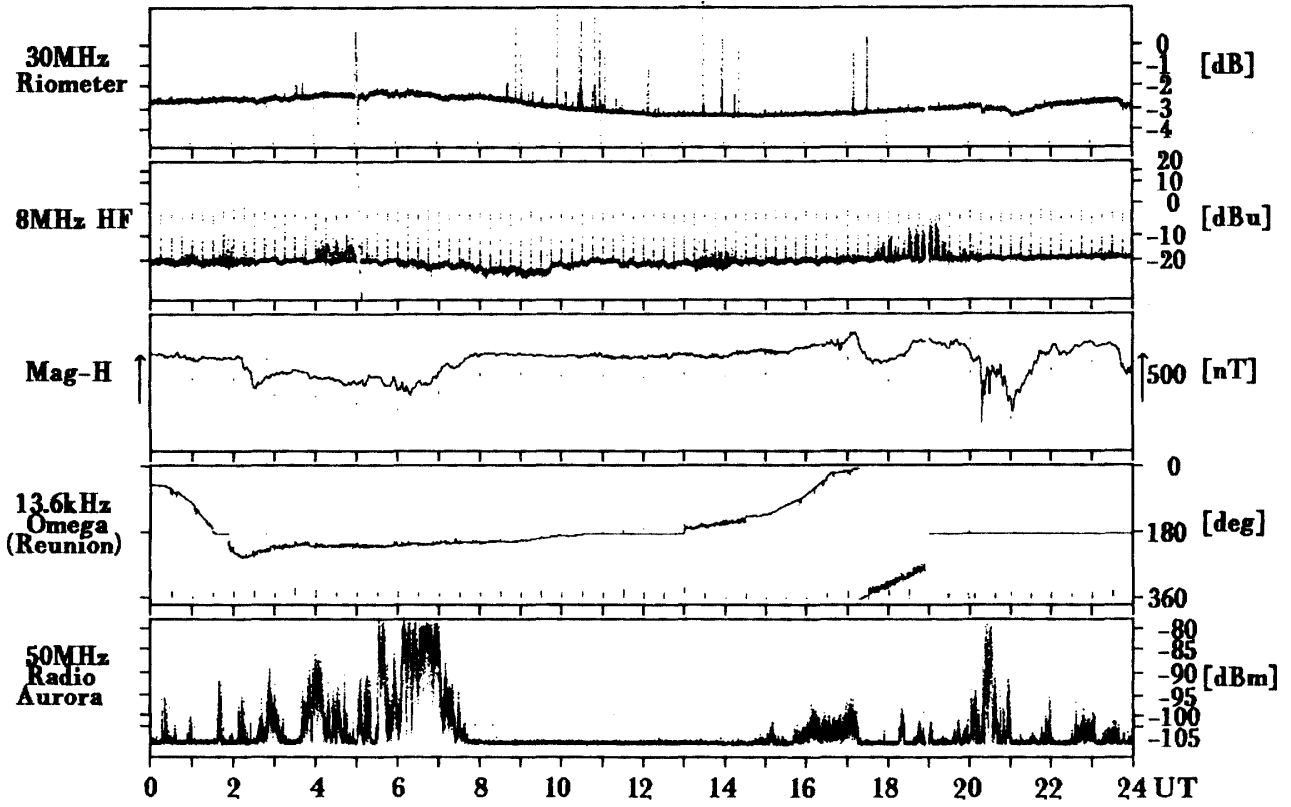
Total Day / 32 1990/ 2/ 1





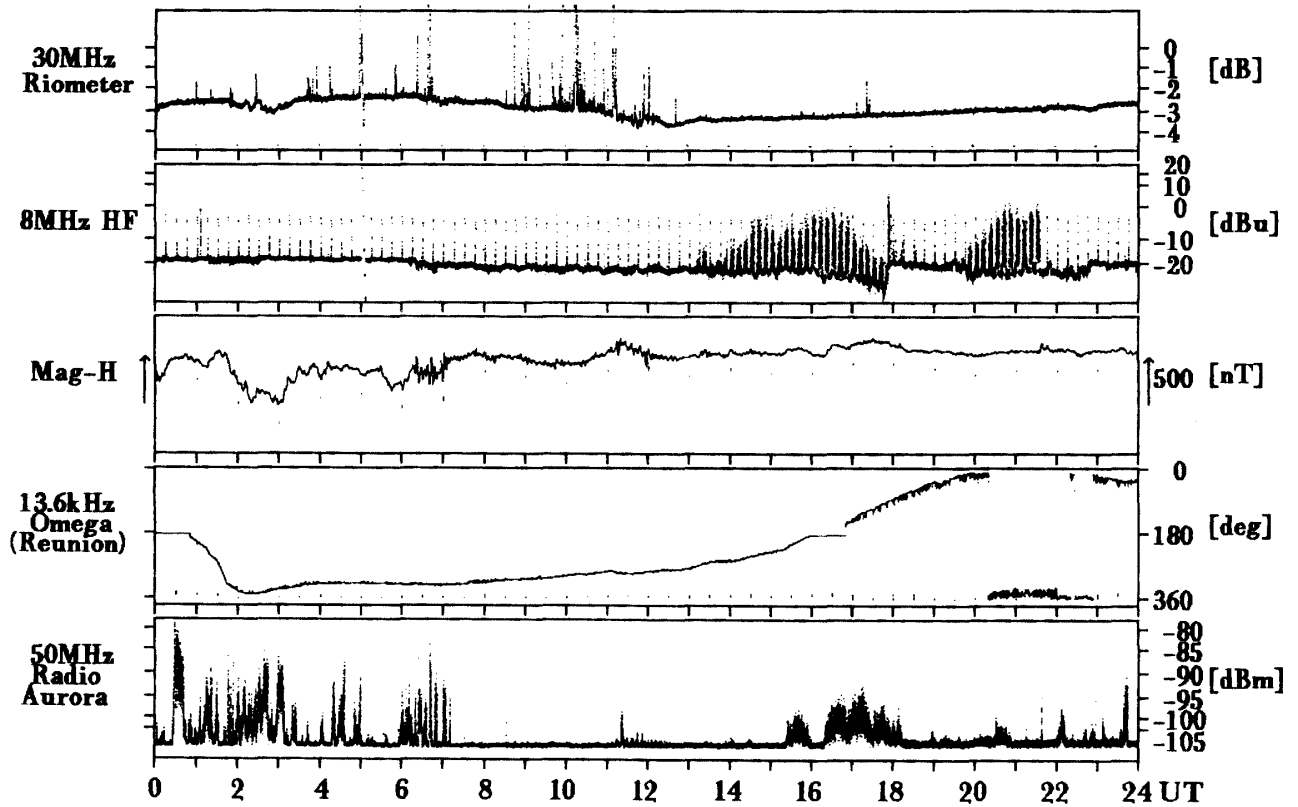
Syowa Station

Total Day / 35 1990/ 2/ 4



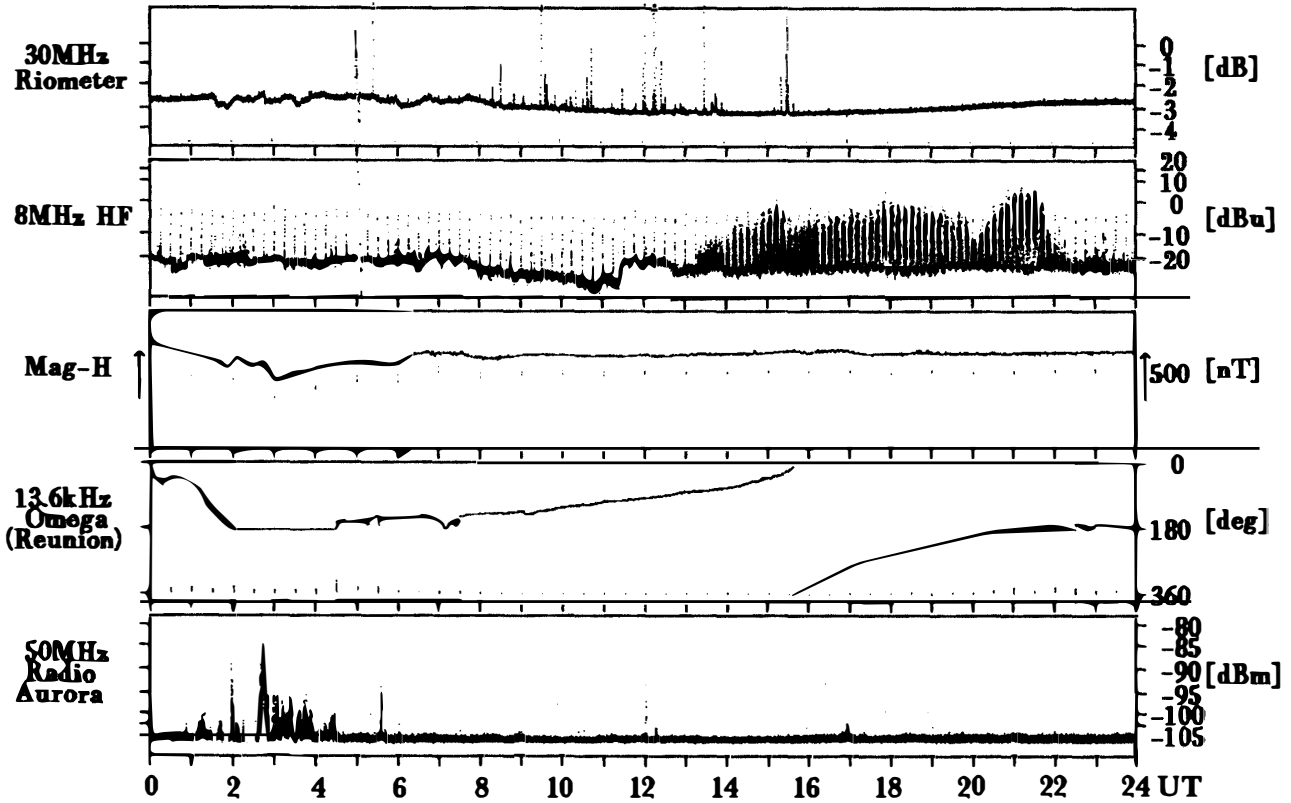
Syowa Station

Total Day / 36 1990/ 2/ 5



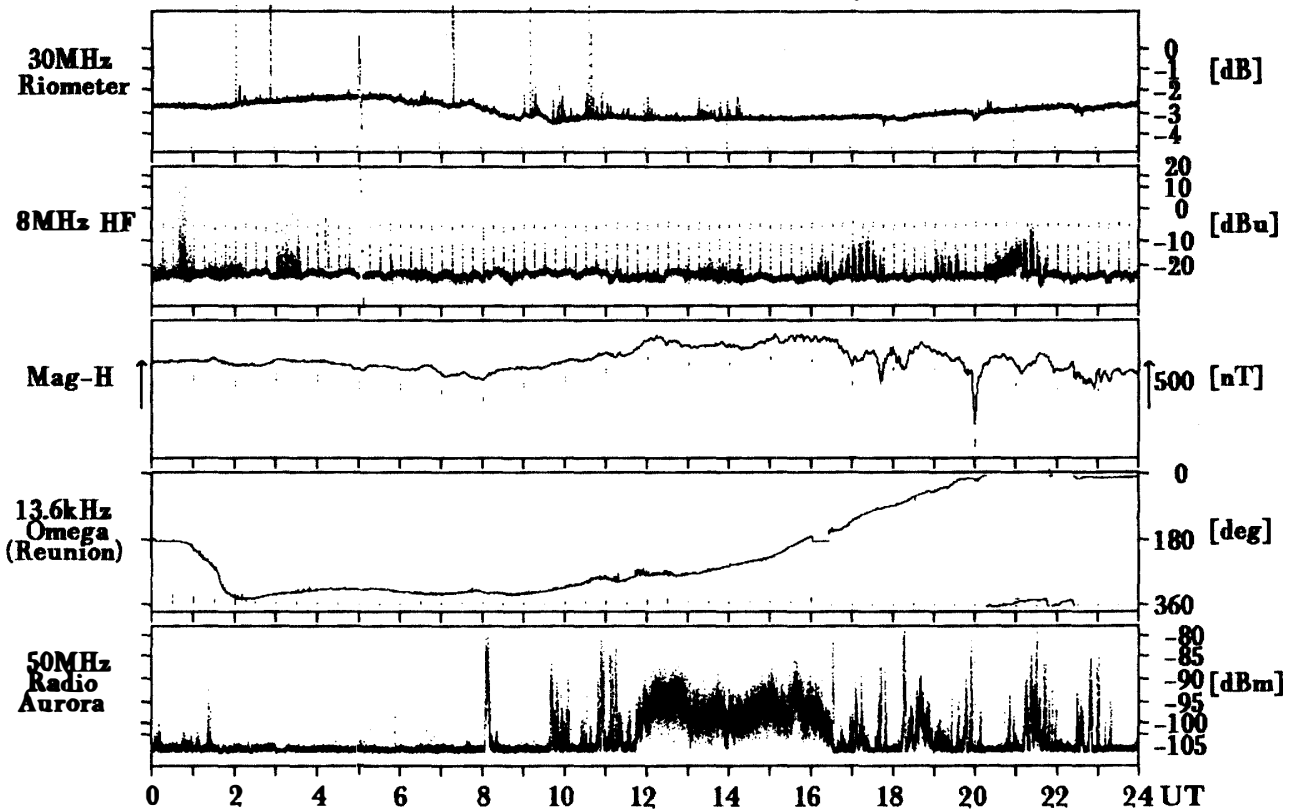
Syowa Station

Total Day / 37 1990/ 2/ 6



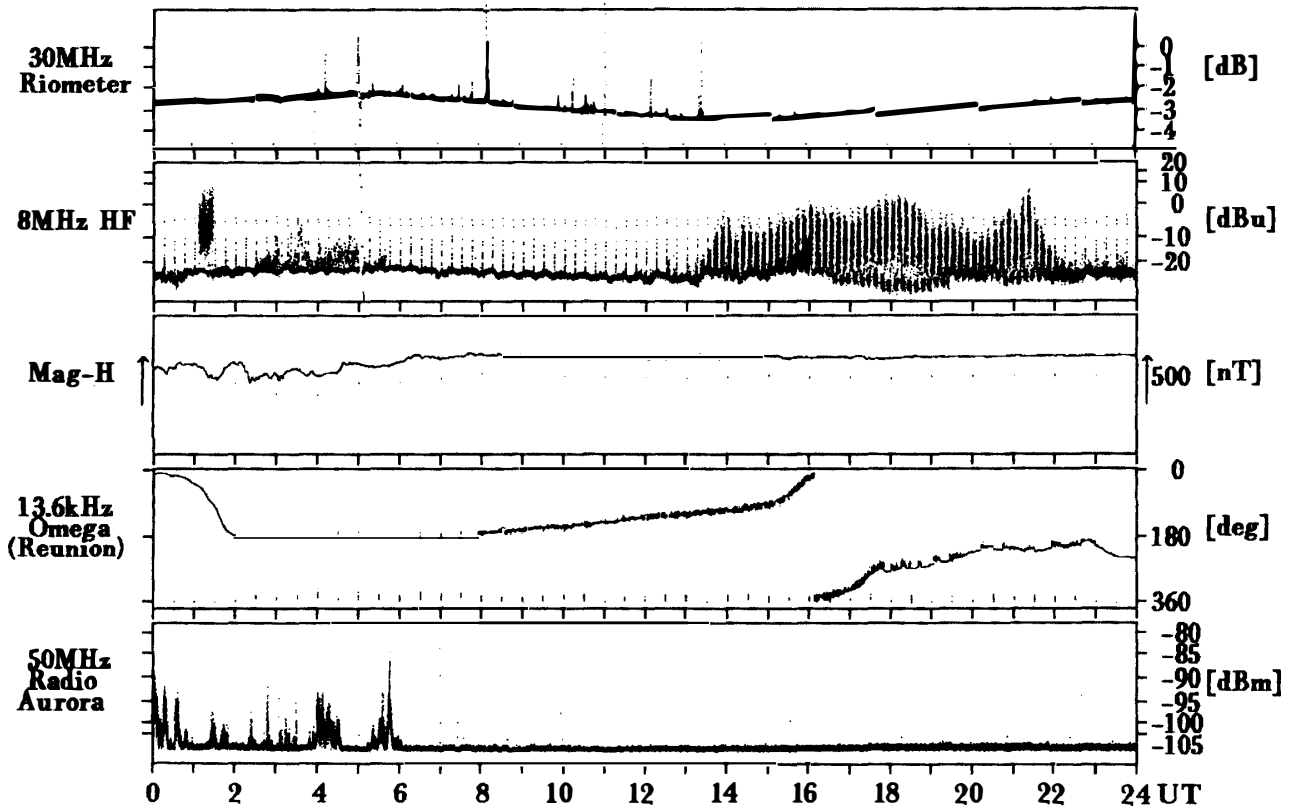
Syowa Station

Total Day / 38 1990/ 2/ 7



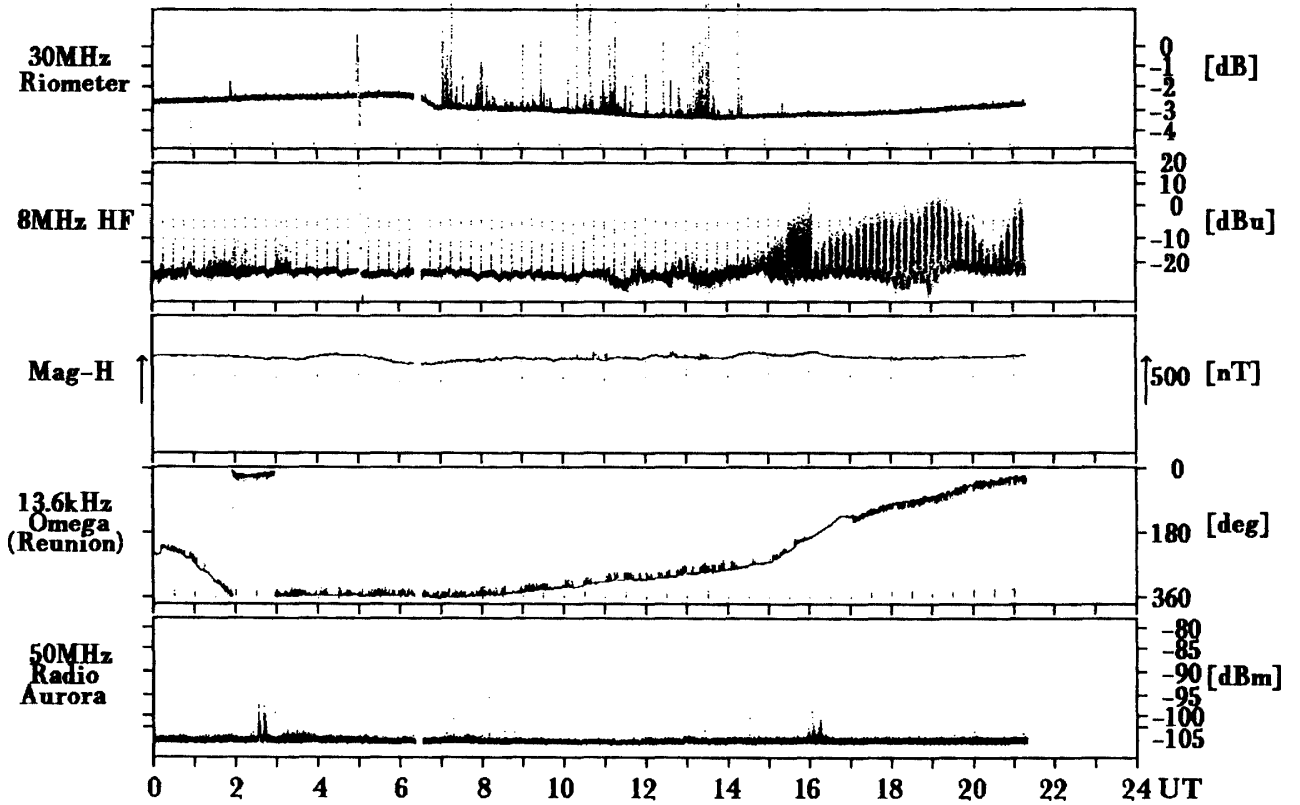
Syowa Station

Total Day / 39 1990/ 2/ 8



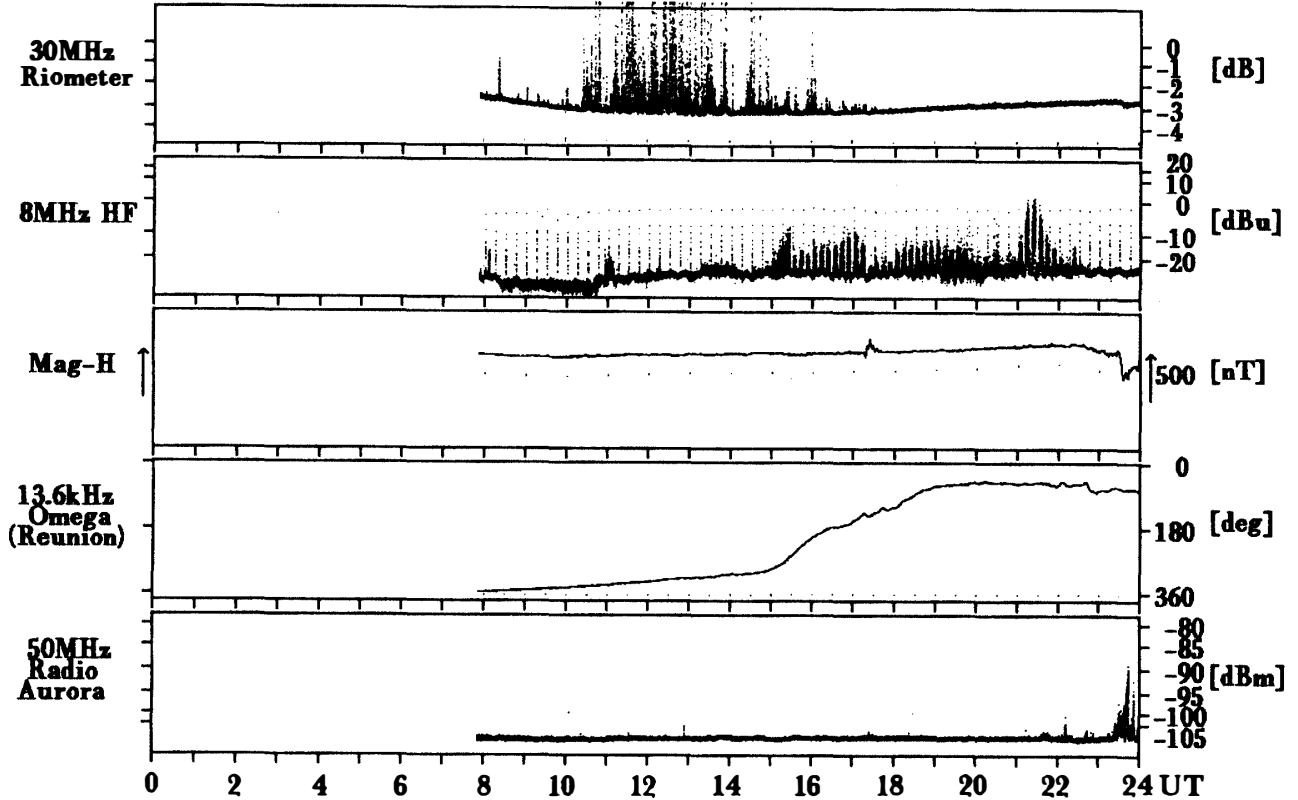
Syowa Station

Total Day / 40 1990/ 2/ 9



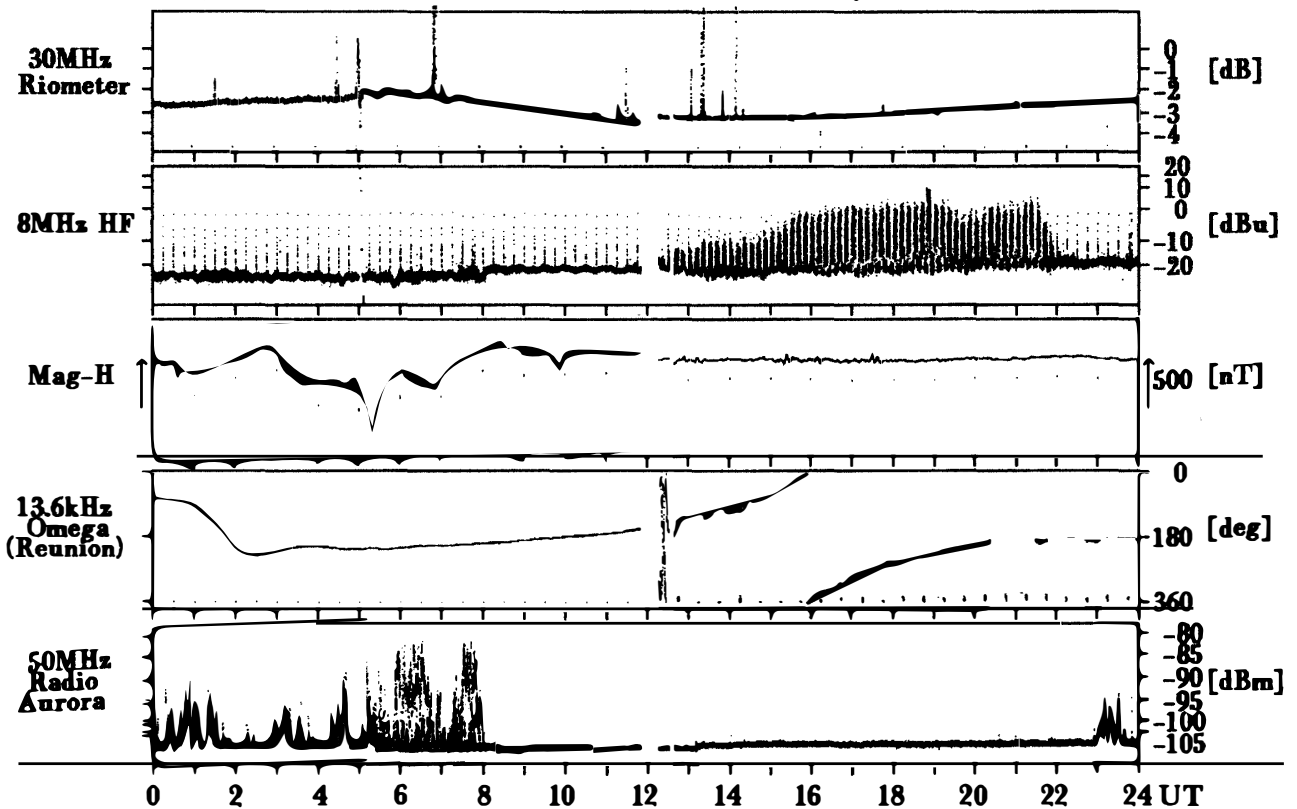
Syowa Station

Total Day / 44 1990/ 2/13



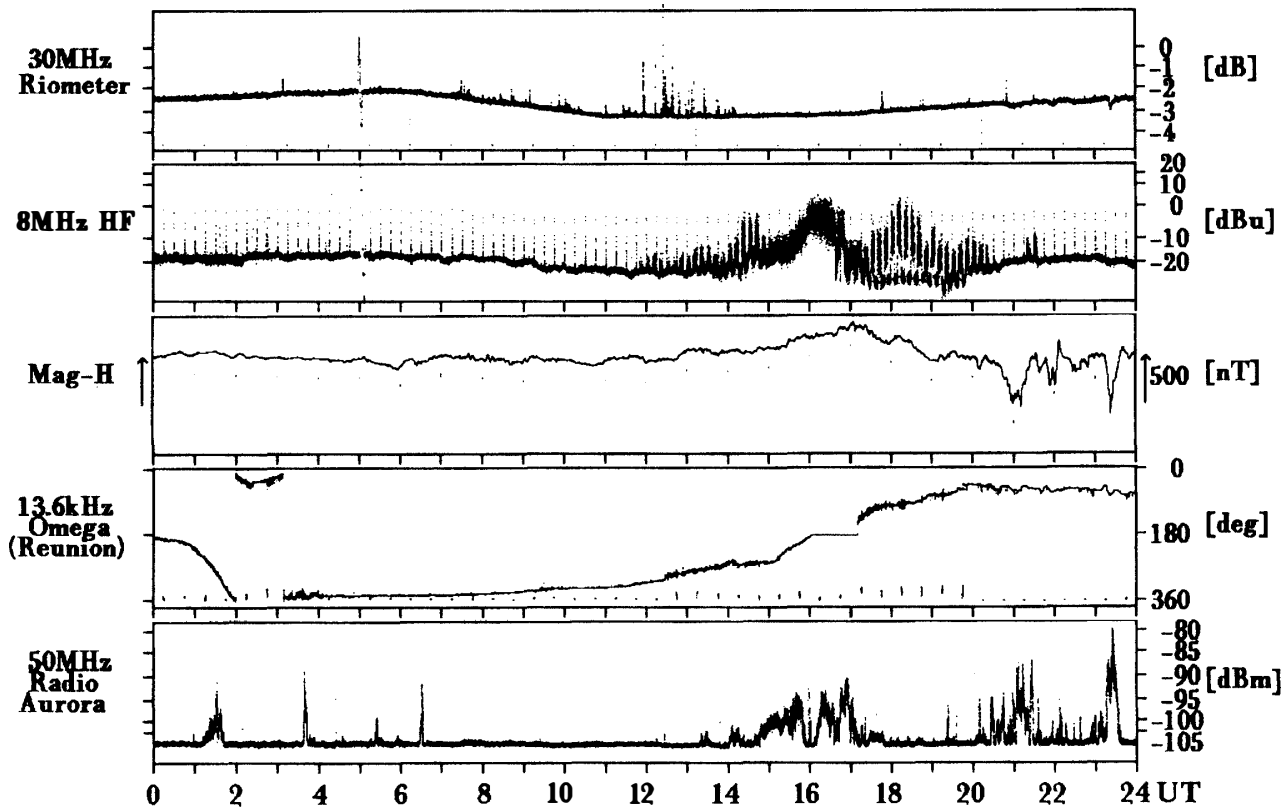
Syowa Station

Total Day / 45 1990/ 2/14



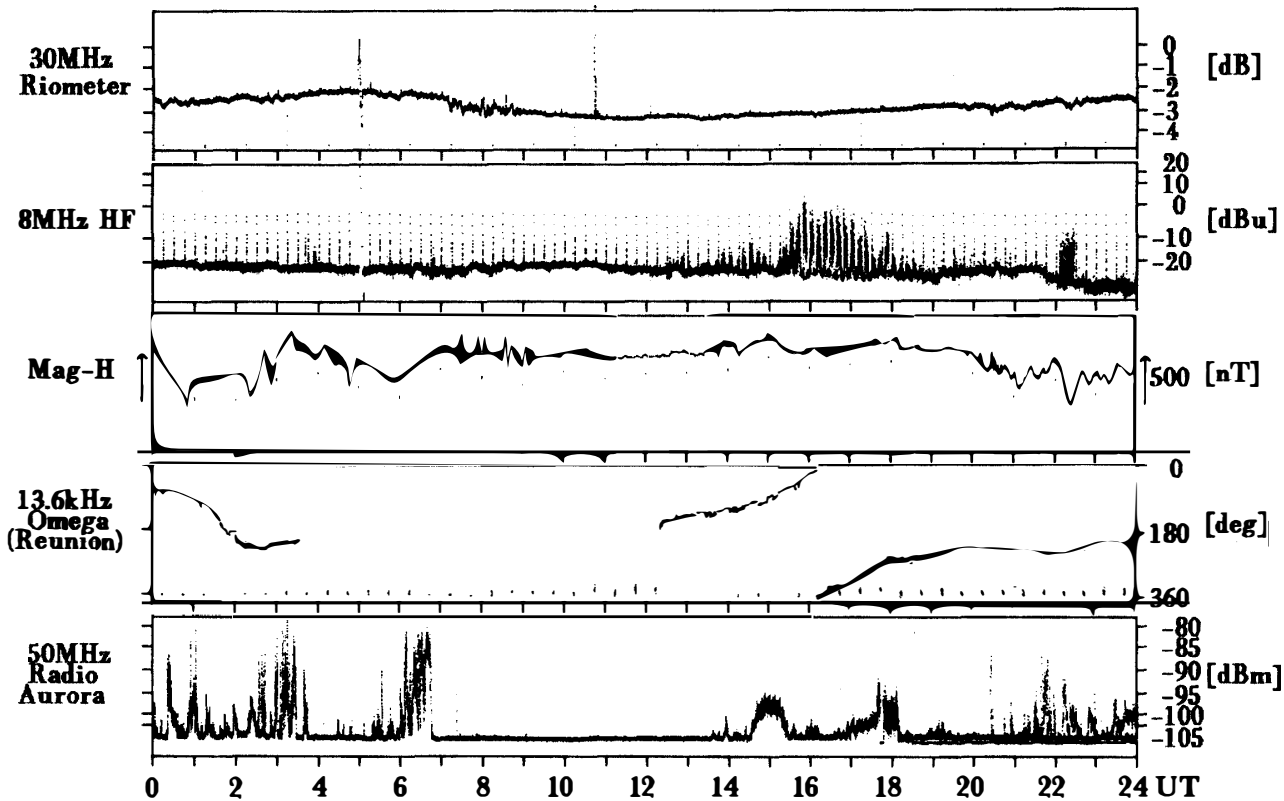
Syowa Station

Total Day / 46 1990/ 2/15



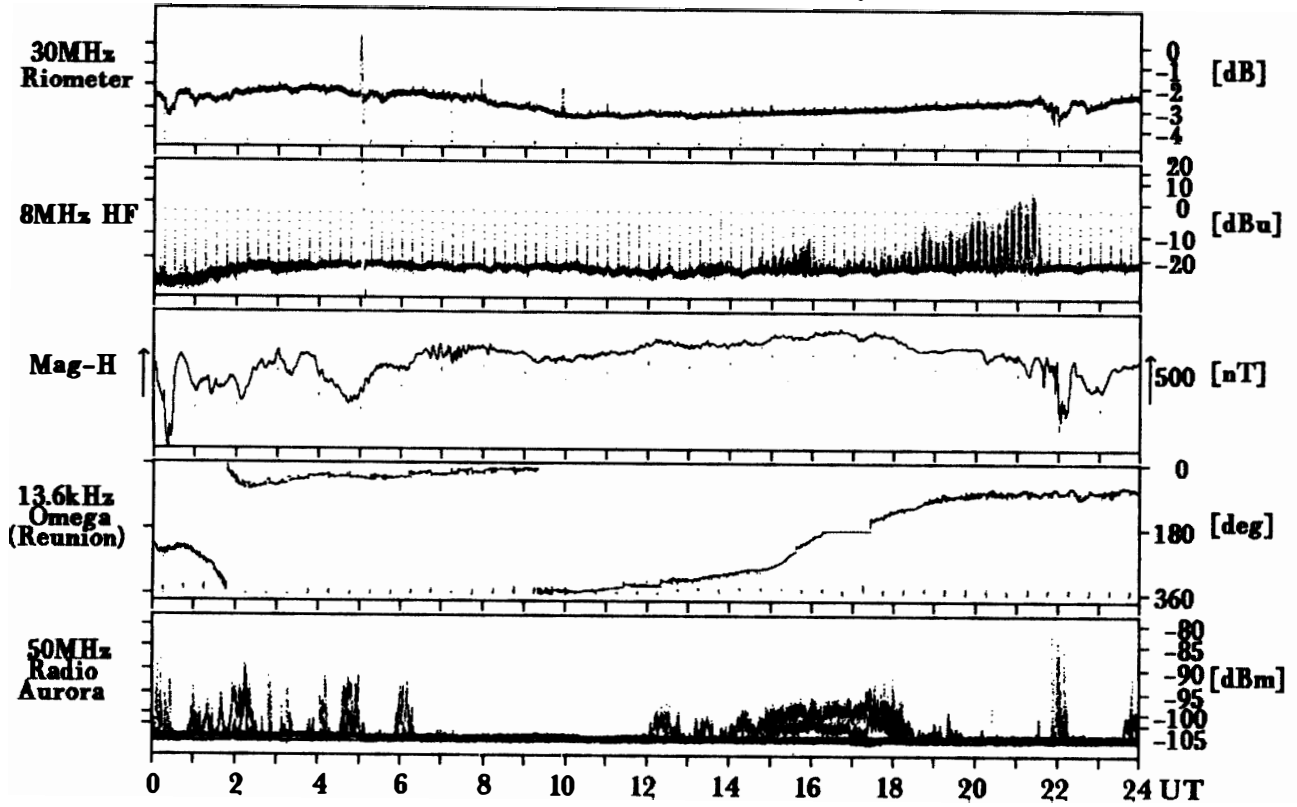
Syowa Station

Total Day / 47 1990/ 2/16



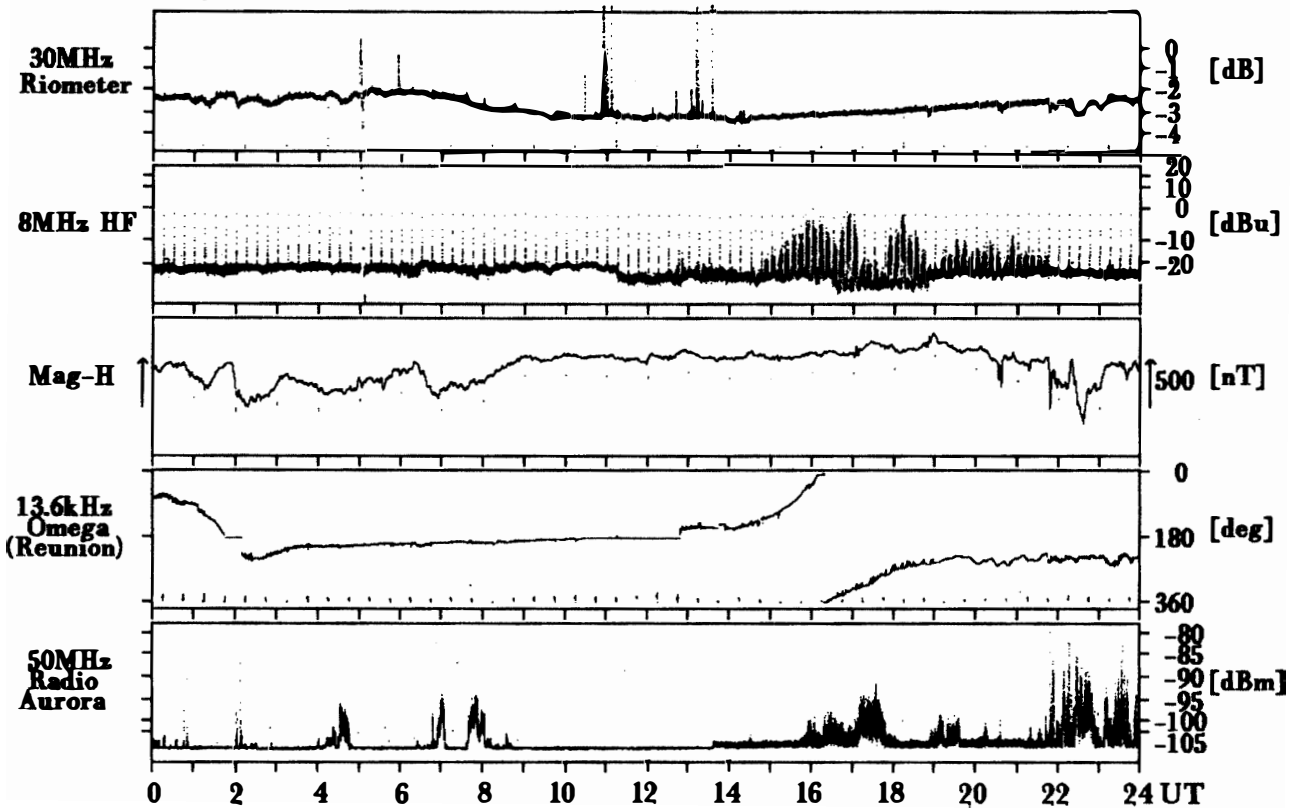
Syowa Station

Total Day / 48 1990/ 2/17



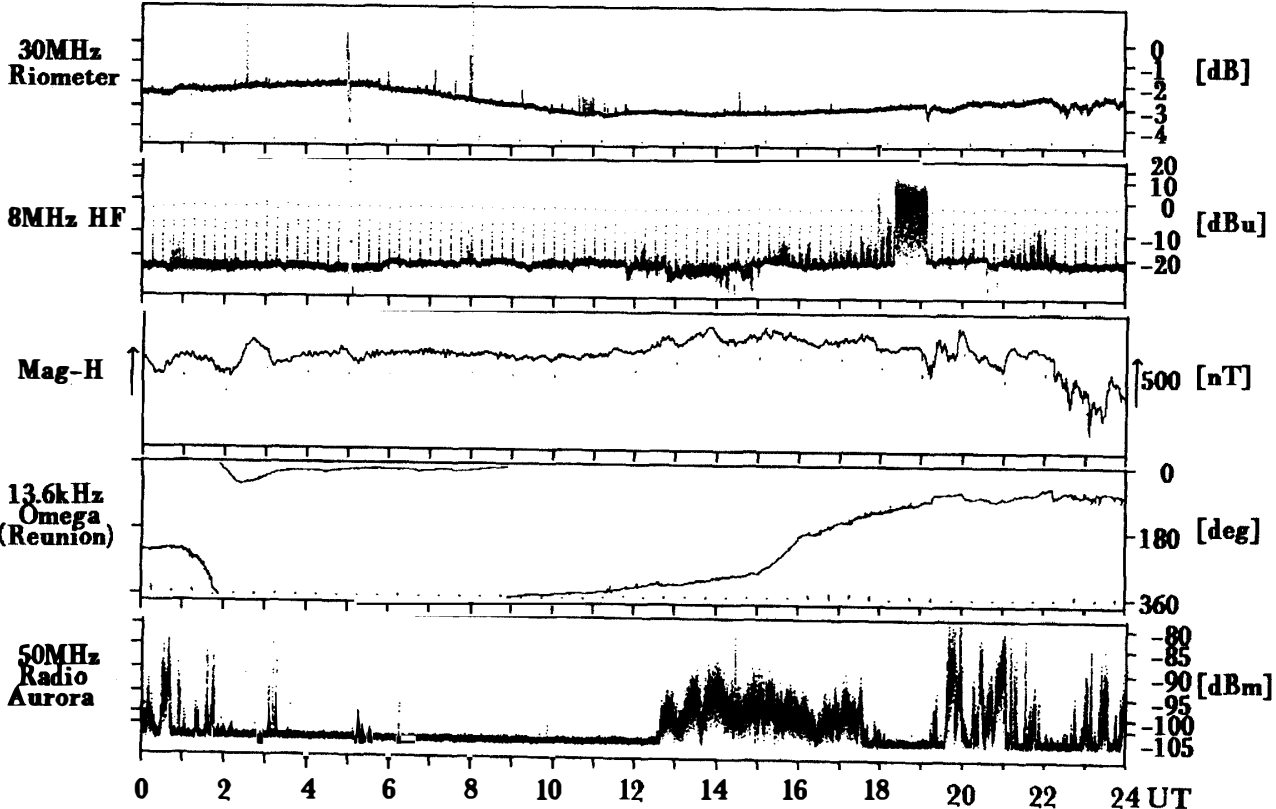
Syowa Station

Total Day / 49 1990/ 2/18



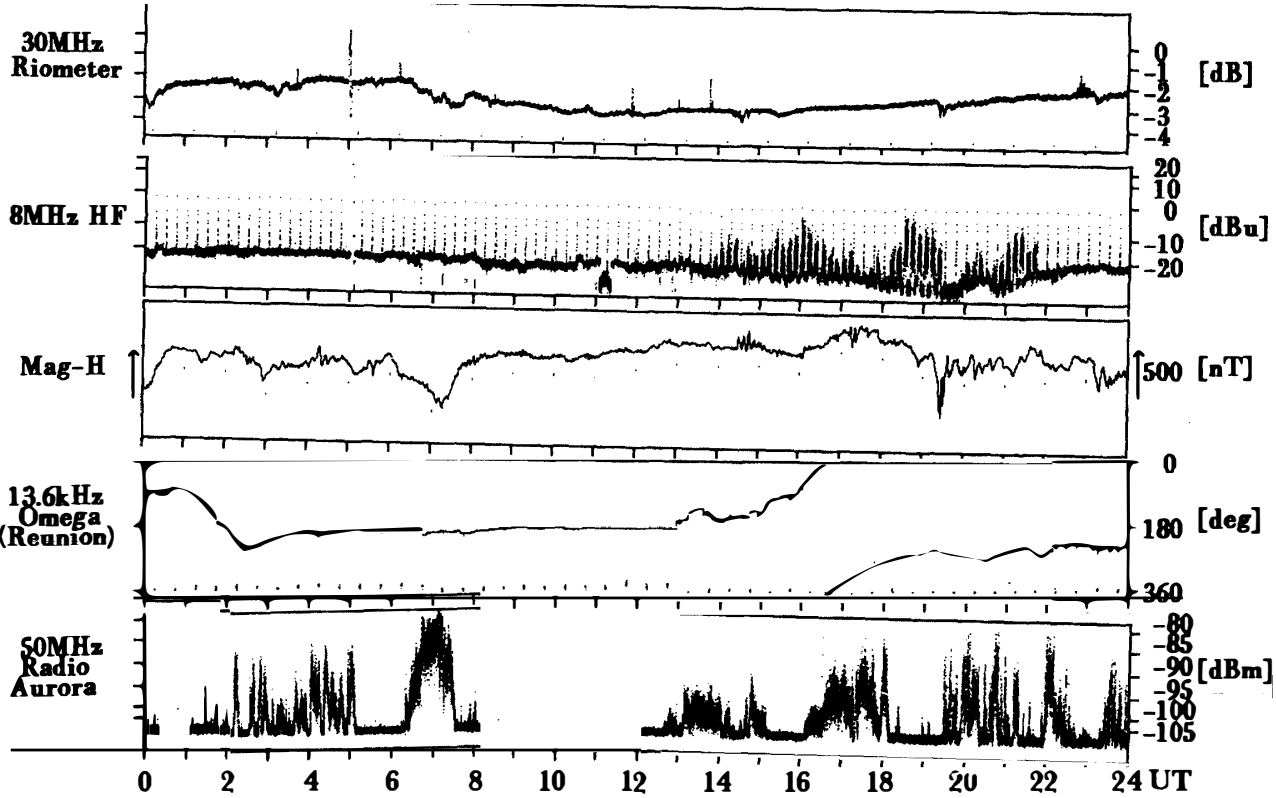
Syowa Station

Total Day / 50 1990/ 2/19



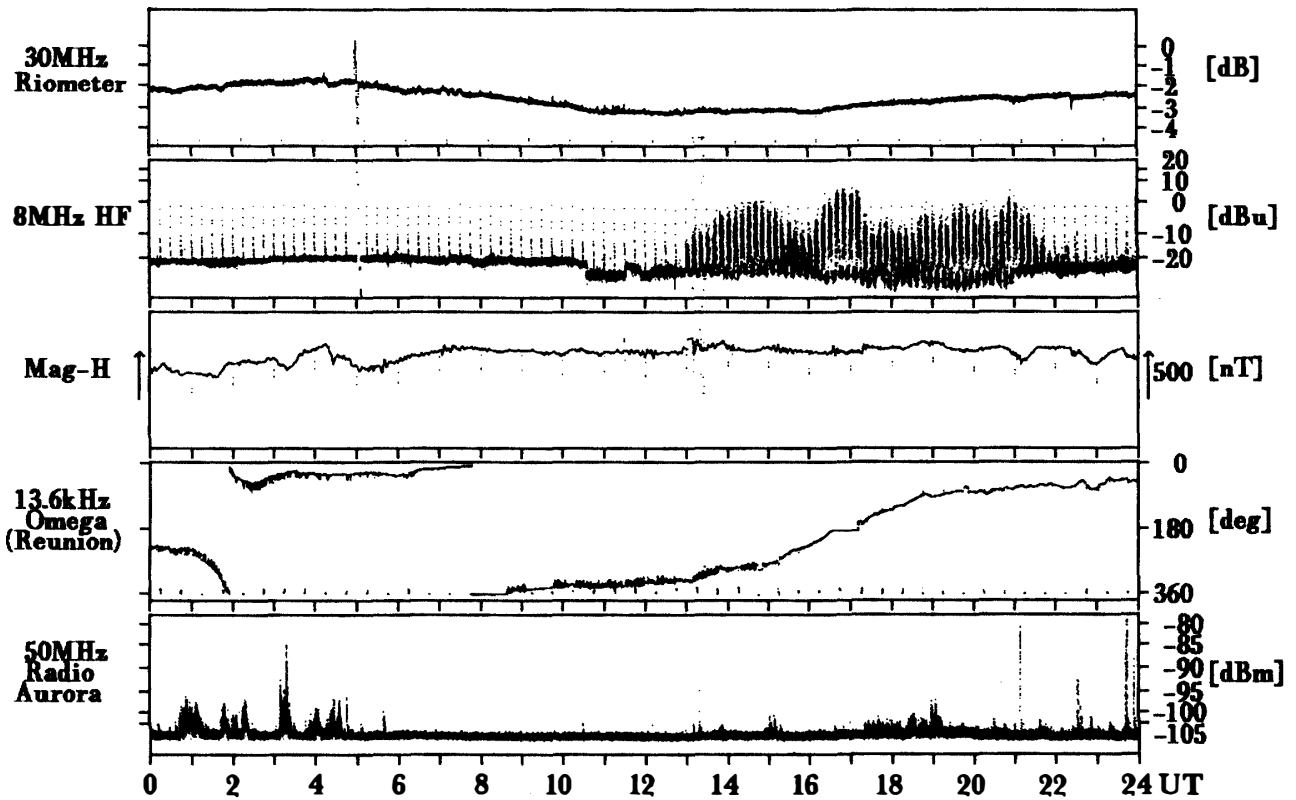
Syowa Station

Total Day / 51 1990/ 2/20



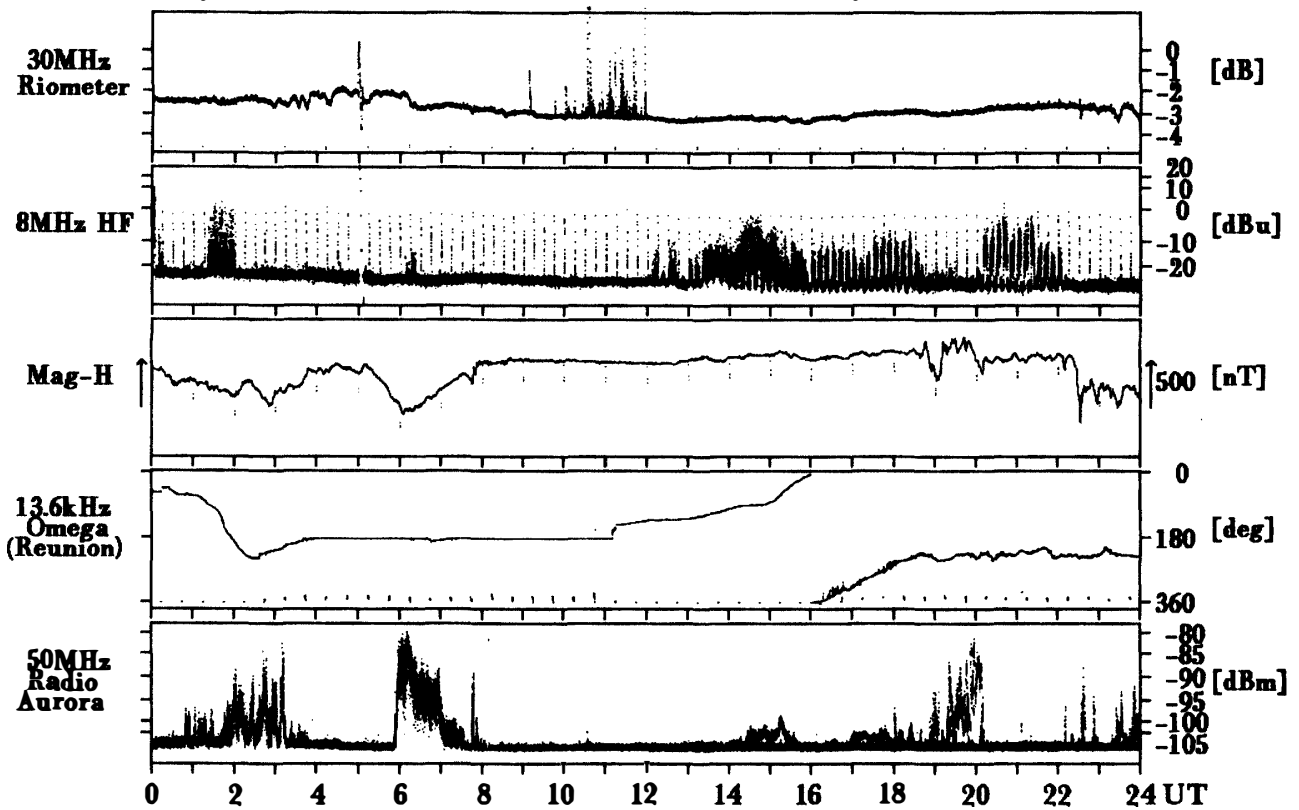
Syowa Station

Total Day / 52 1990/ 2/21



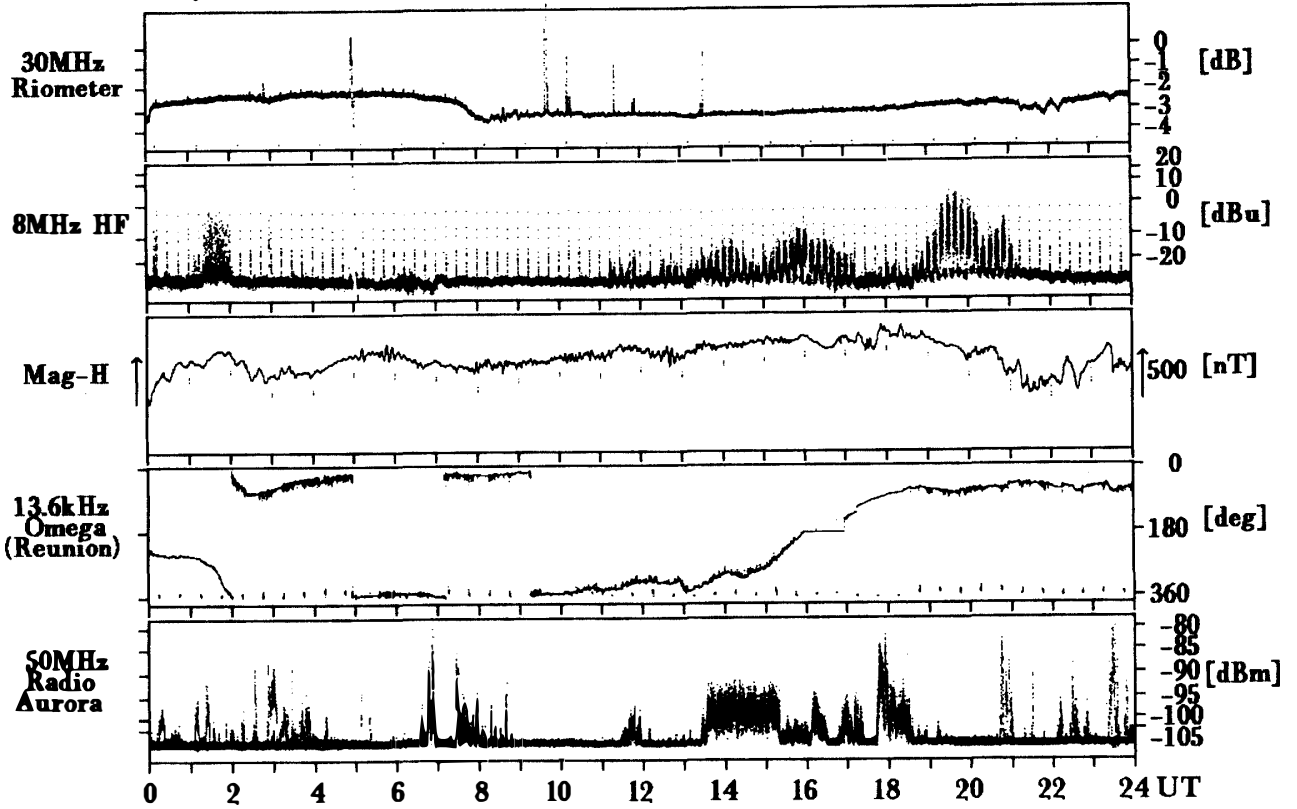
Syowa Station

Total Day / 53 1990/ 2/22



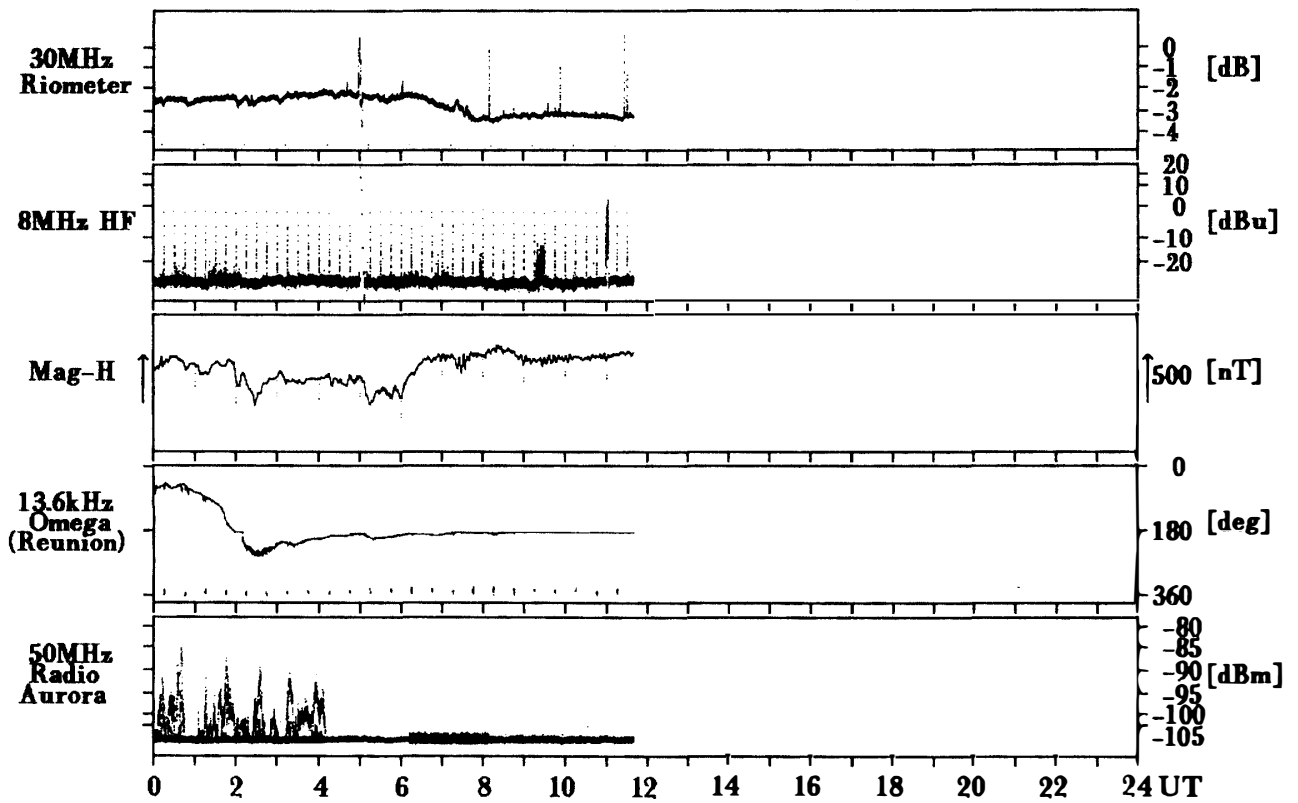
Syowa Station

Total Day / 54 1990/ 2/23



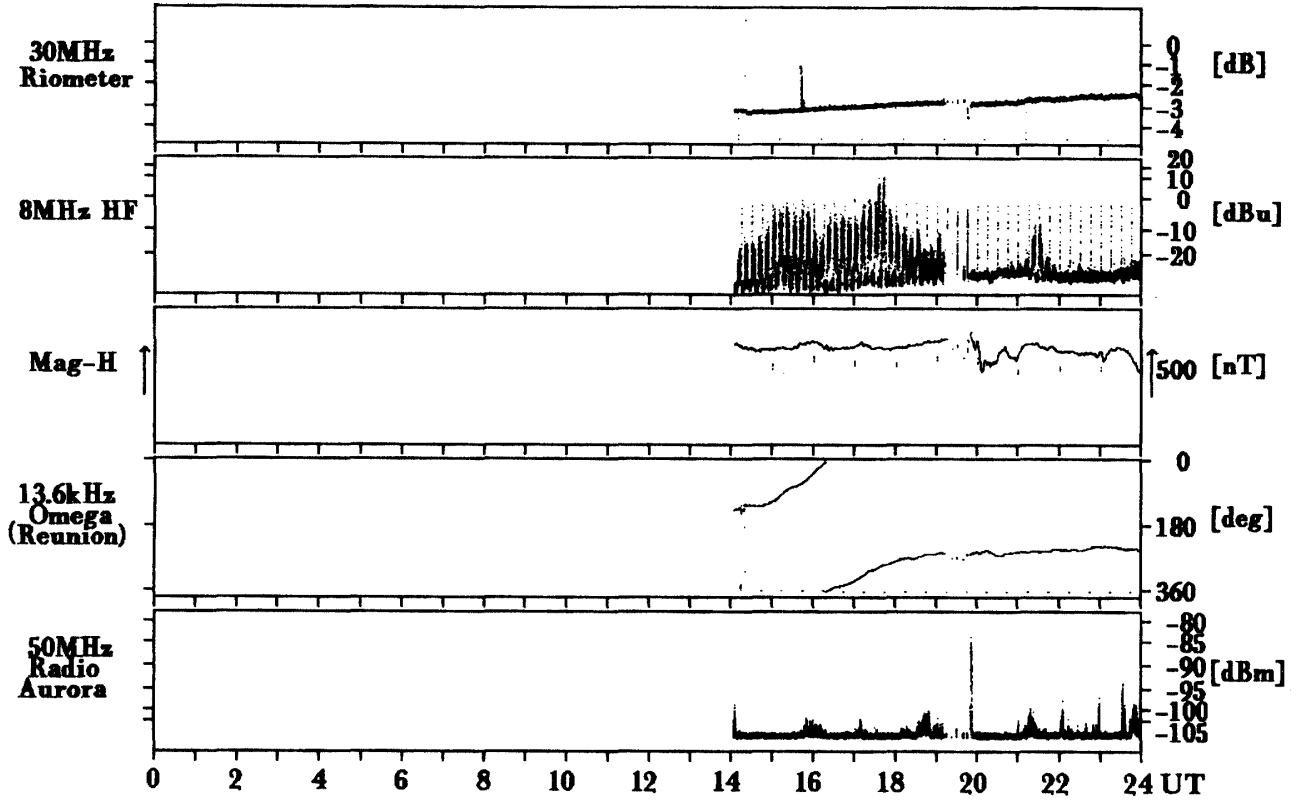
Syowa Station

Total Day / 55 1990/ 2/24



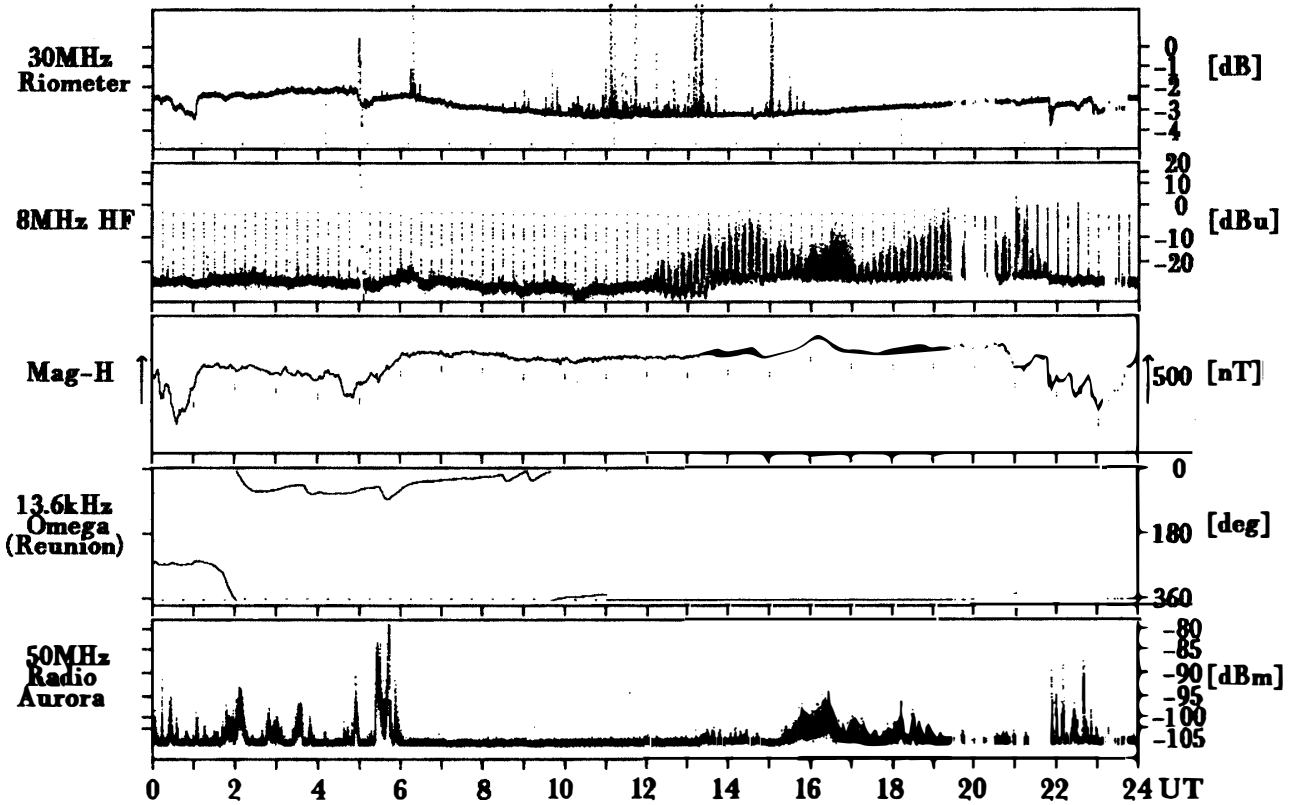
Syowa Station

Total Day / 59 1990/ 2/28



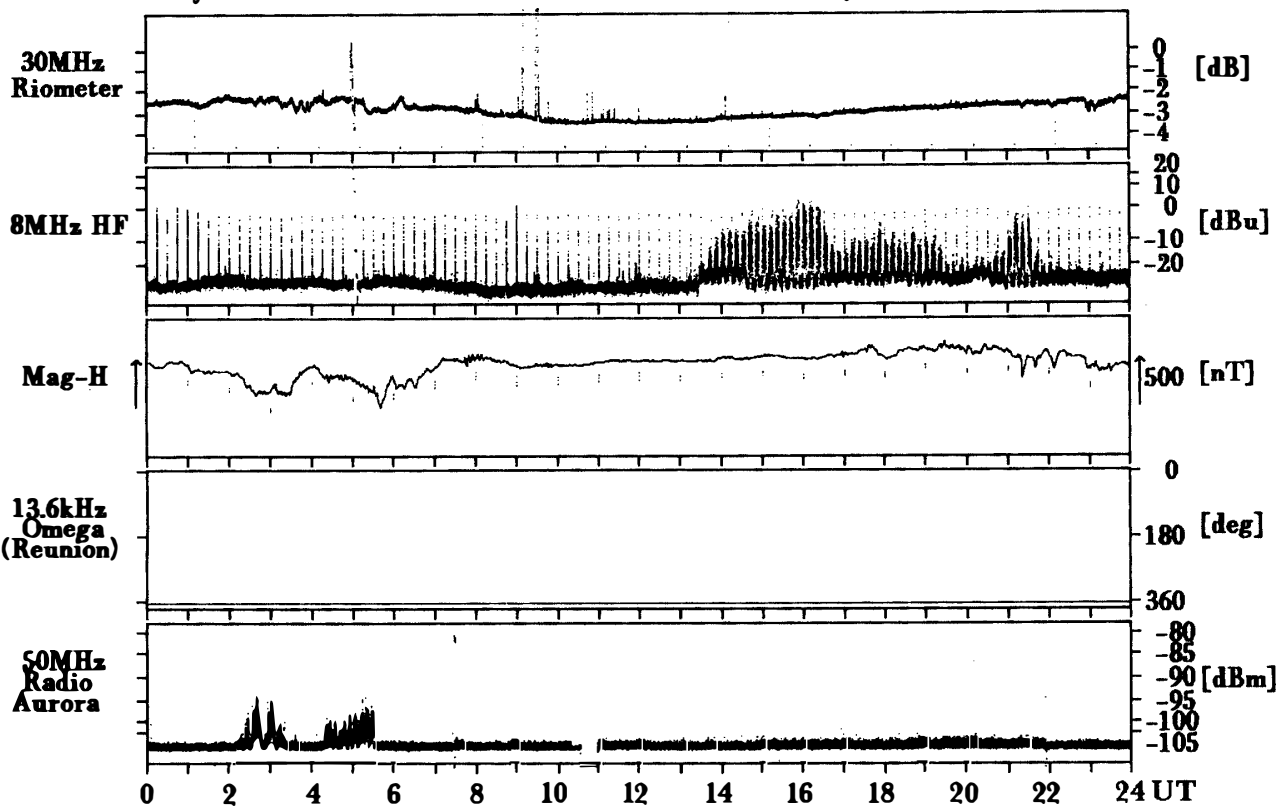
Syowa Station

Total Day / 60 1990/ 3/ 1



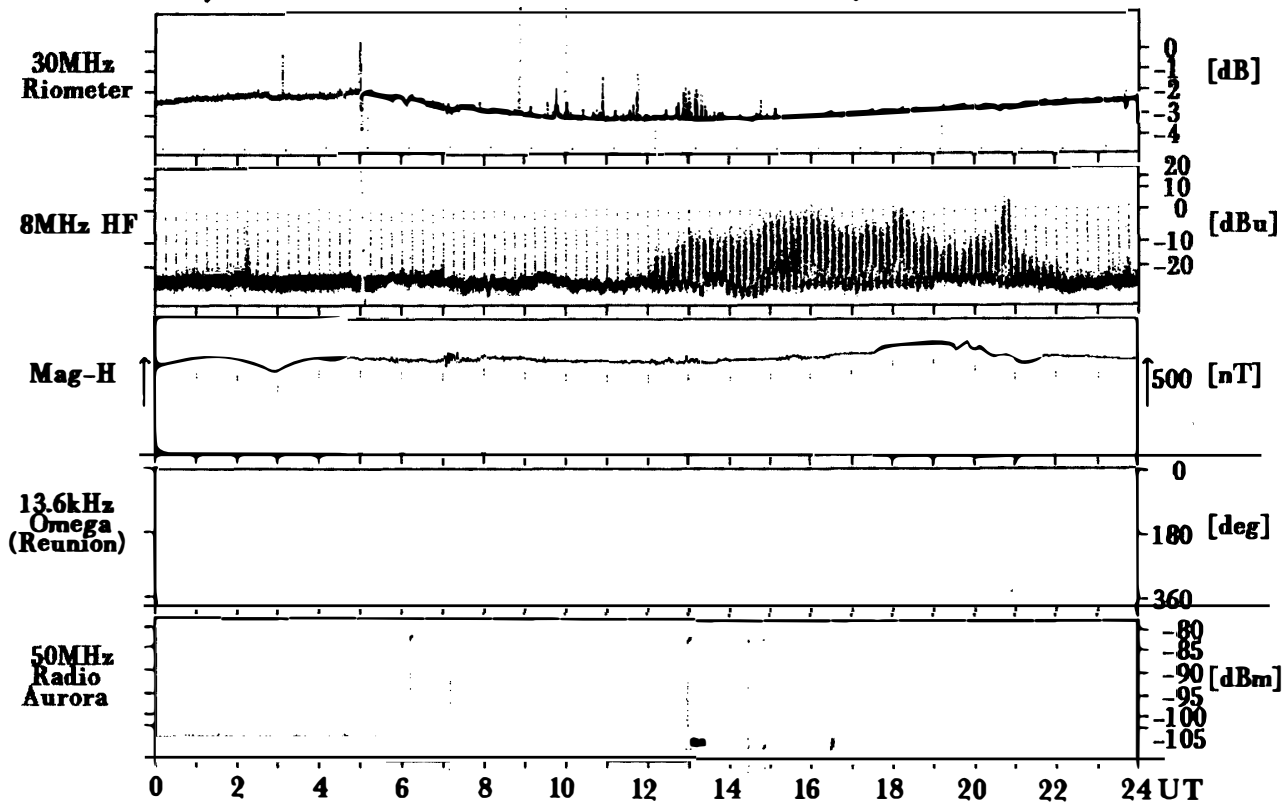
Syowa Station

Total Day / 61 1990/ 3/ 2



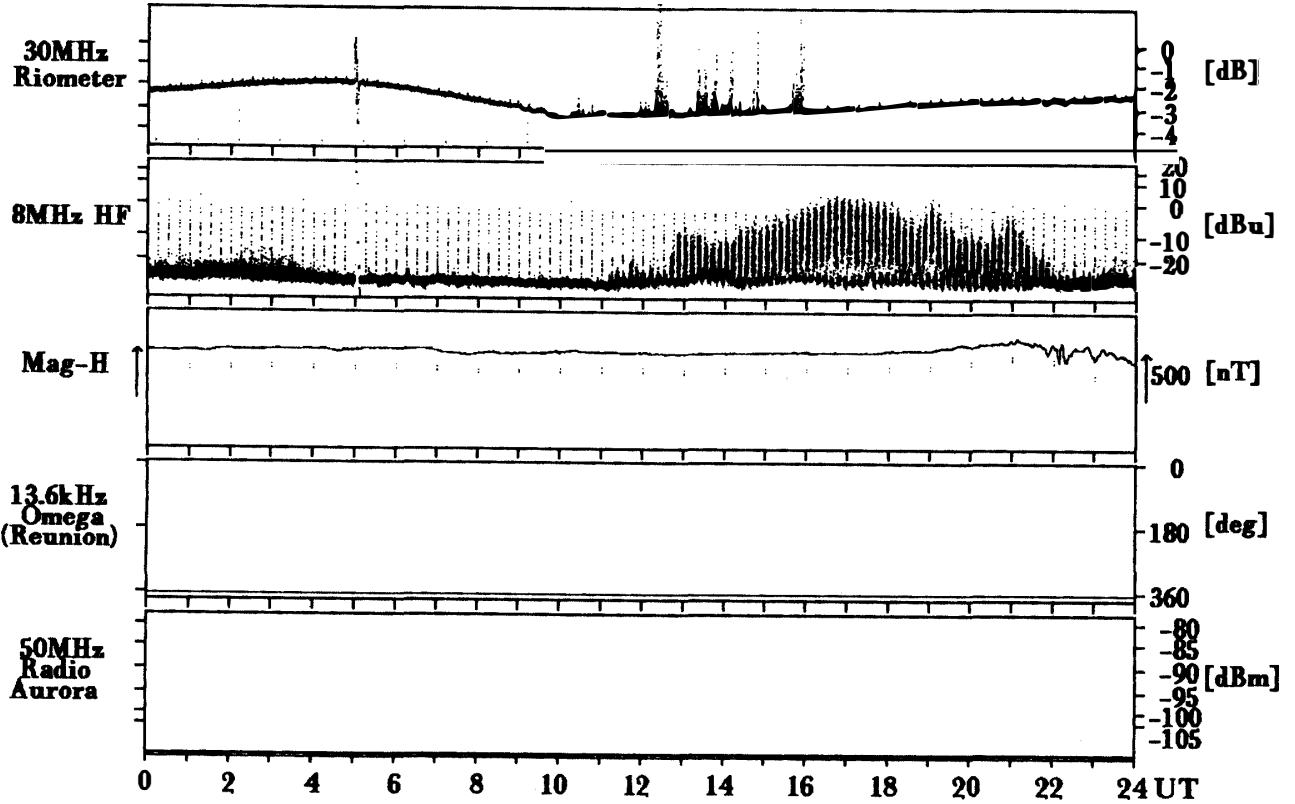
Syowa Station

Total Day / 62 1990/ 3/ 3



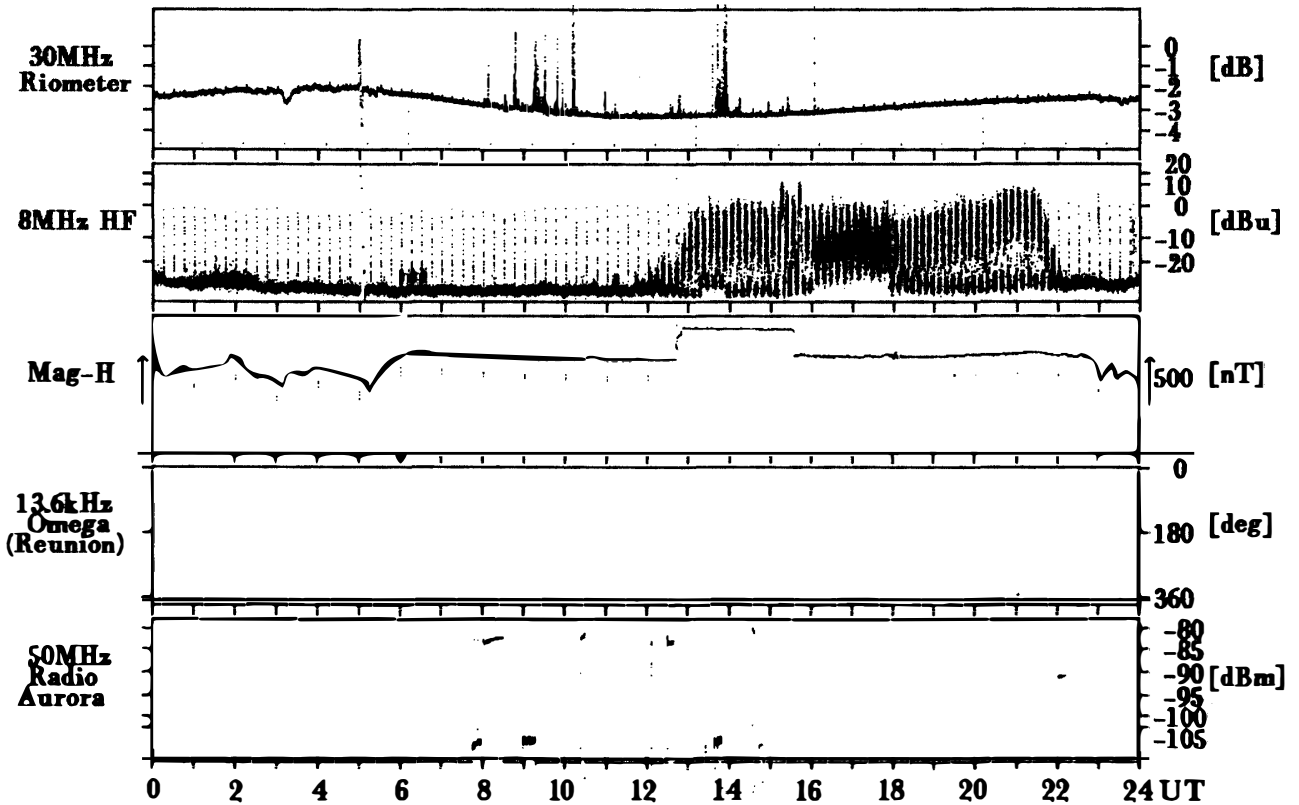
Syowa Station

Total Day / 63 1990/ 3/ 4



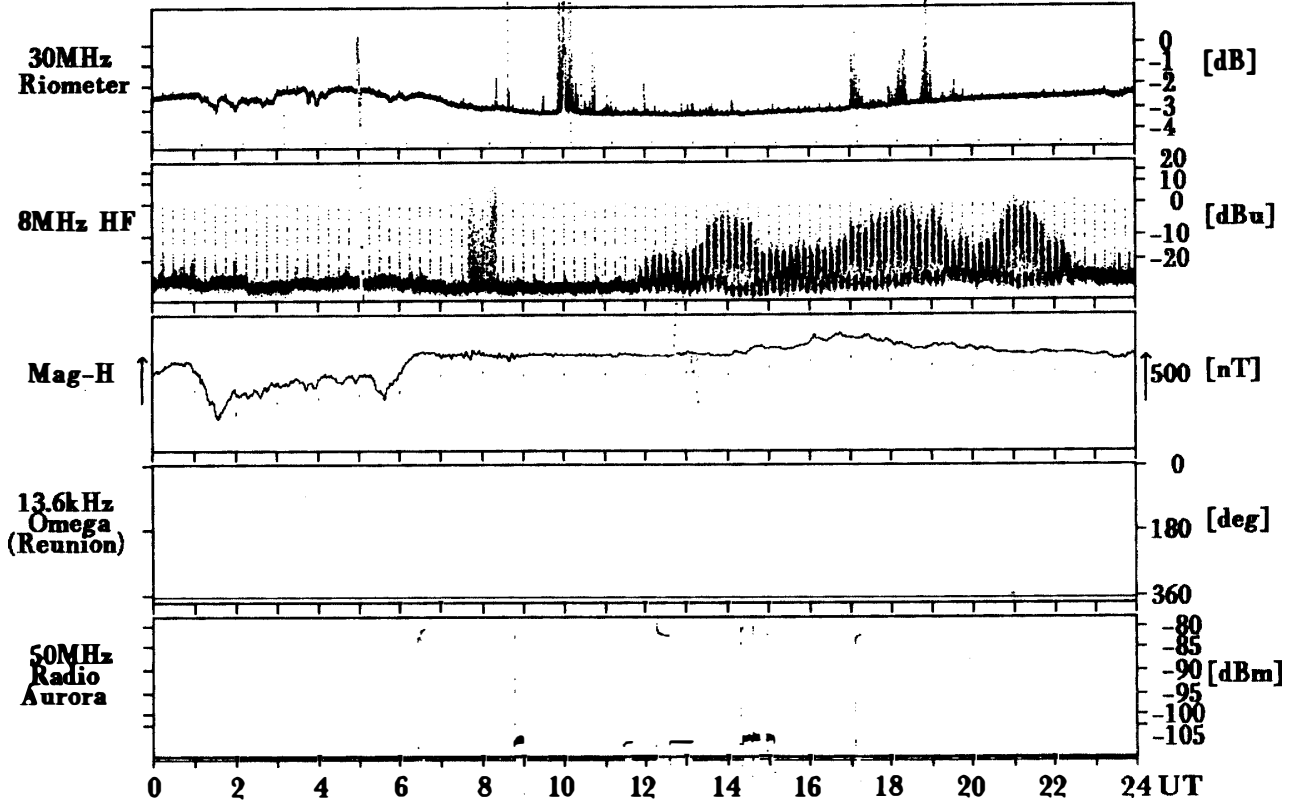
Syowa Station

Total Day / 64 1990/ 3/ 5



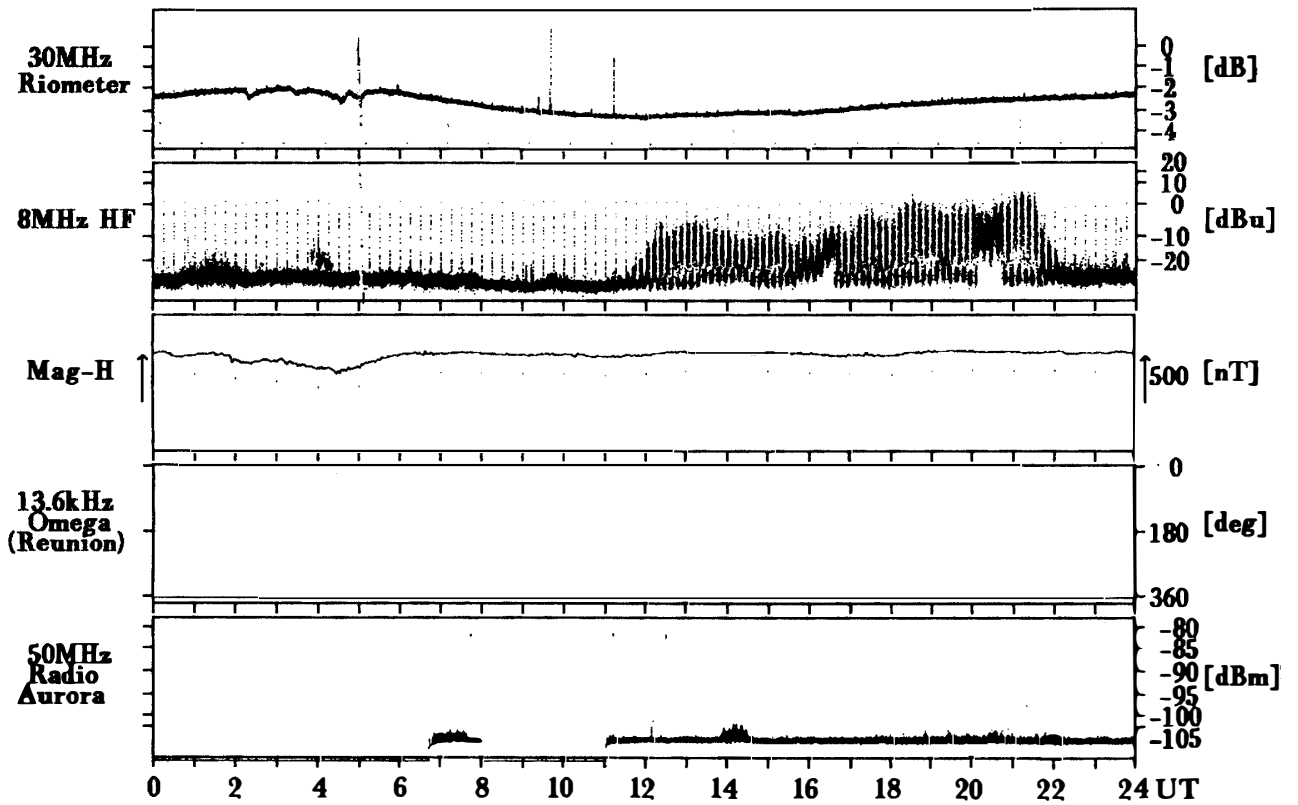
Syowa Station

Total Day / 65 1990/ 3/ 6



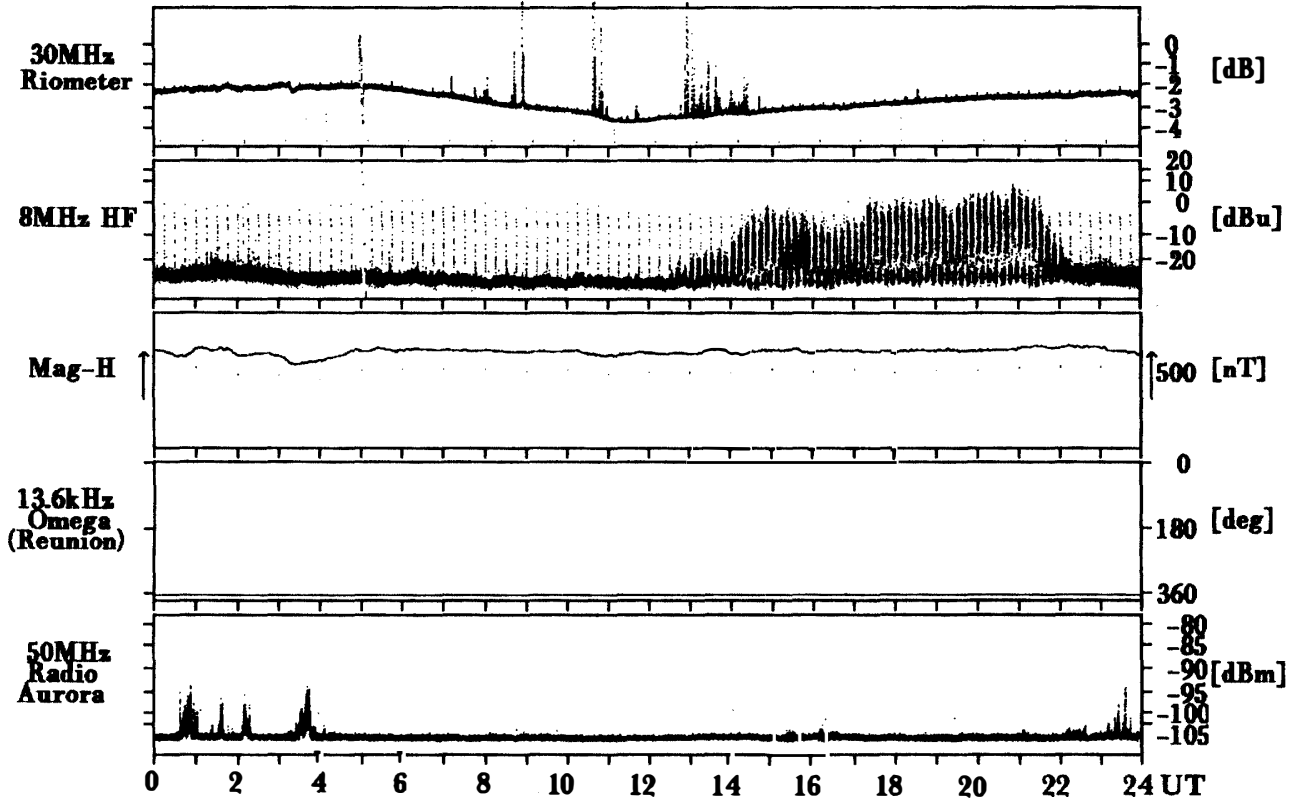
Syowa Station

Total Day / 66 1990/ 3/ 7



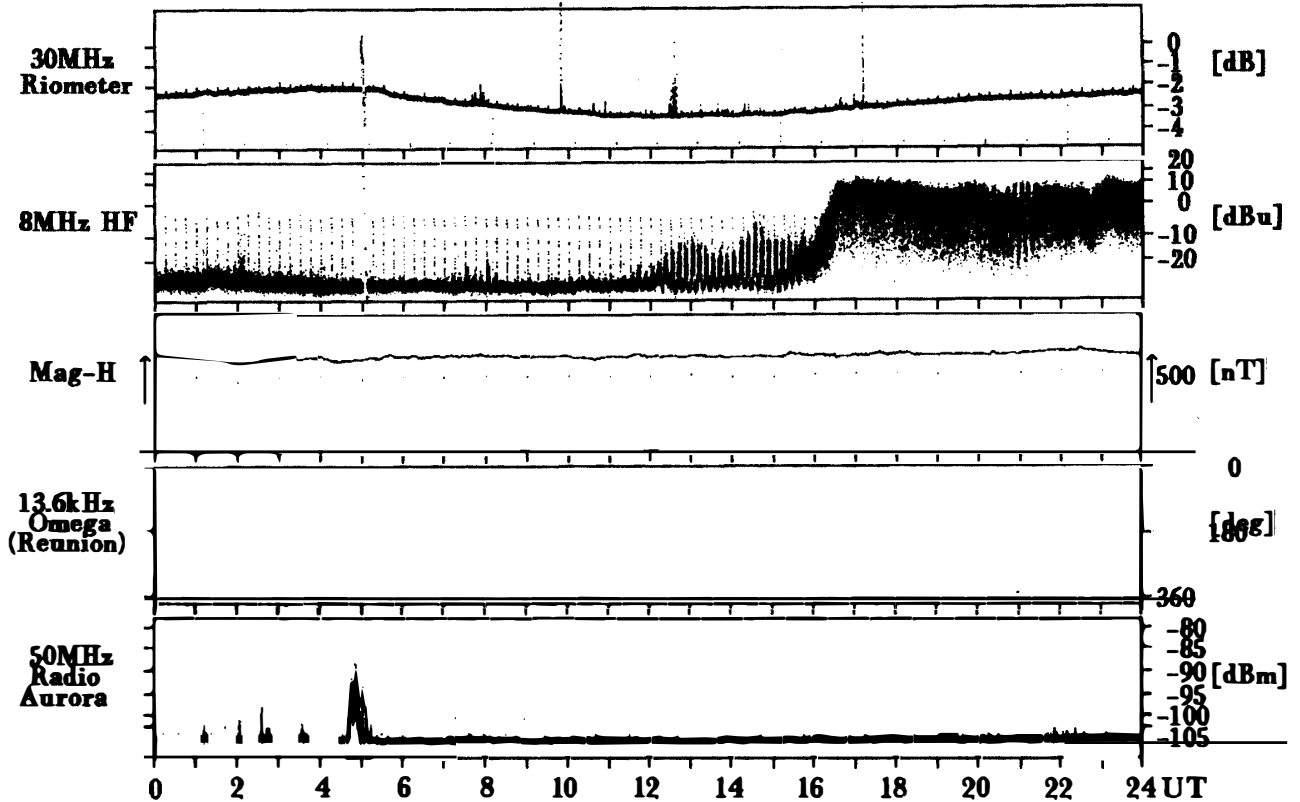
Syowa Station

Total Day / 67 1990/ 3/ 8



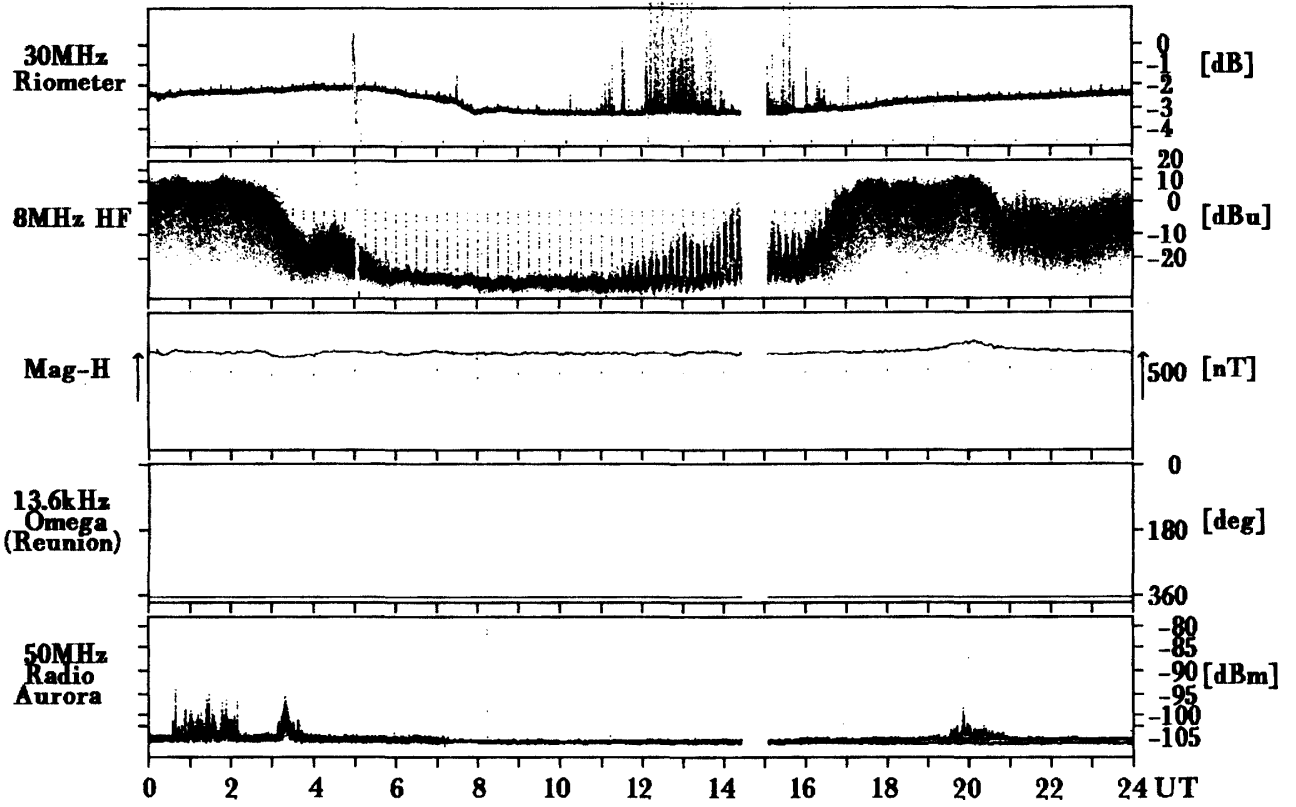
Syowa Station

Total Day / 68 1990/ 3/ 9



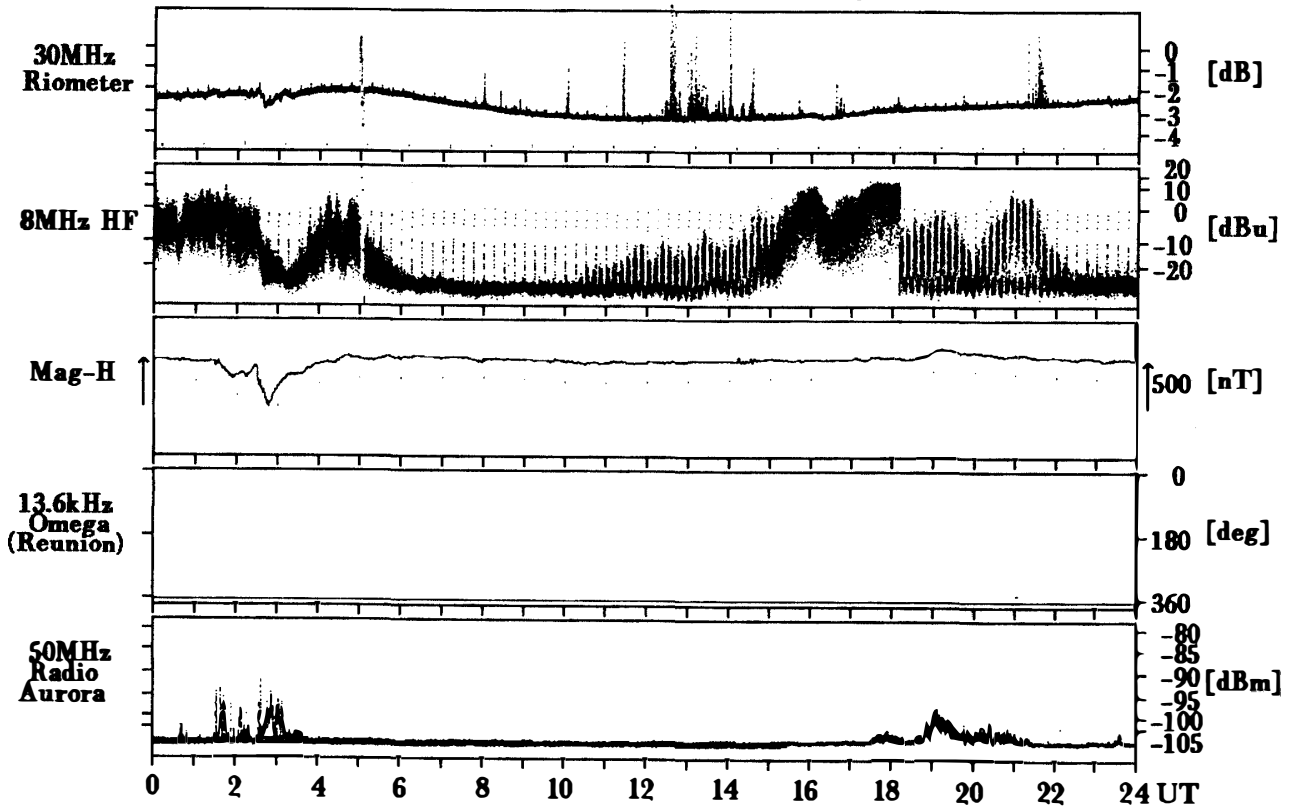
Syowa Station

Total Day / 69 1990/ 3/10



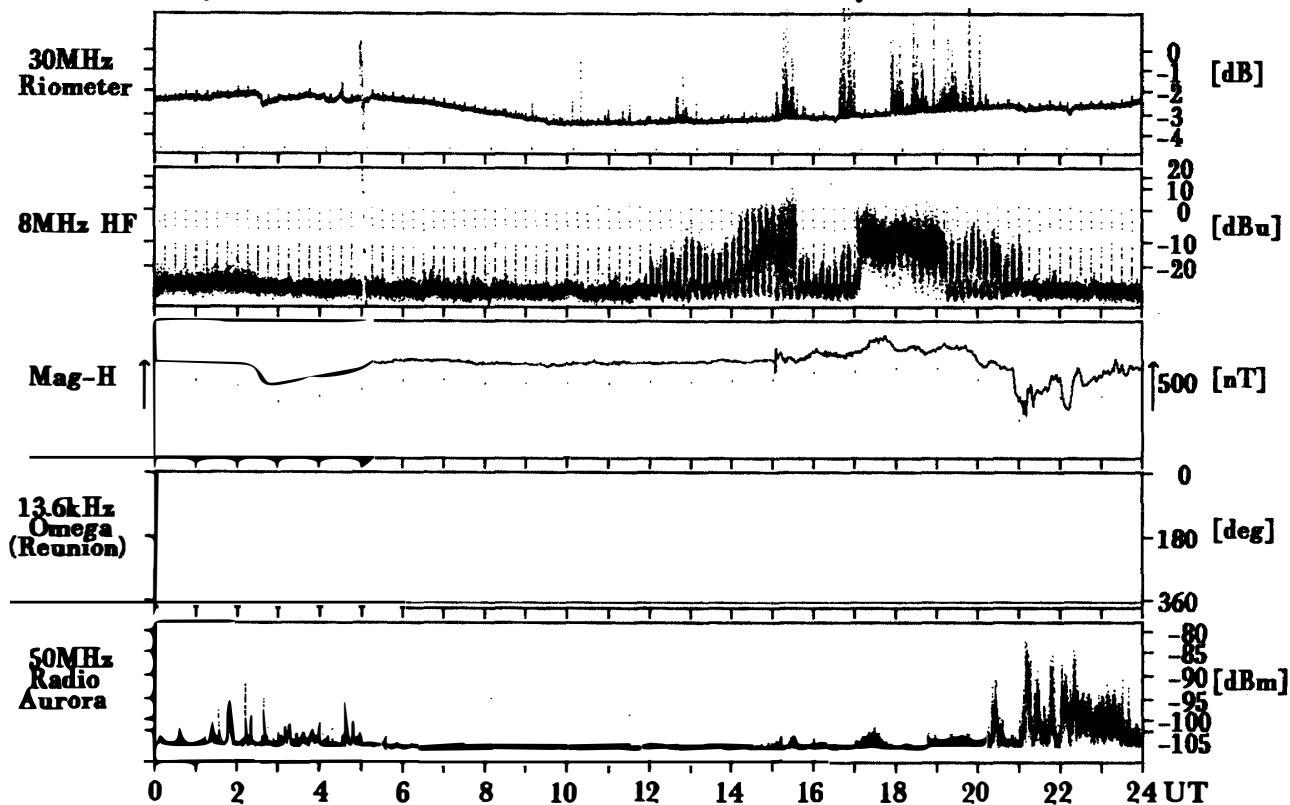
Syowa Station

Total Day / 70 1990/ 3/11



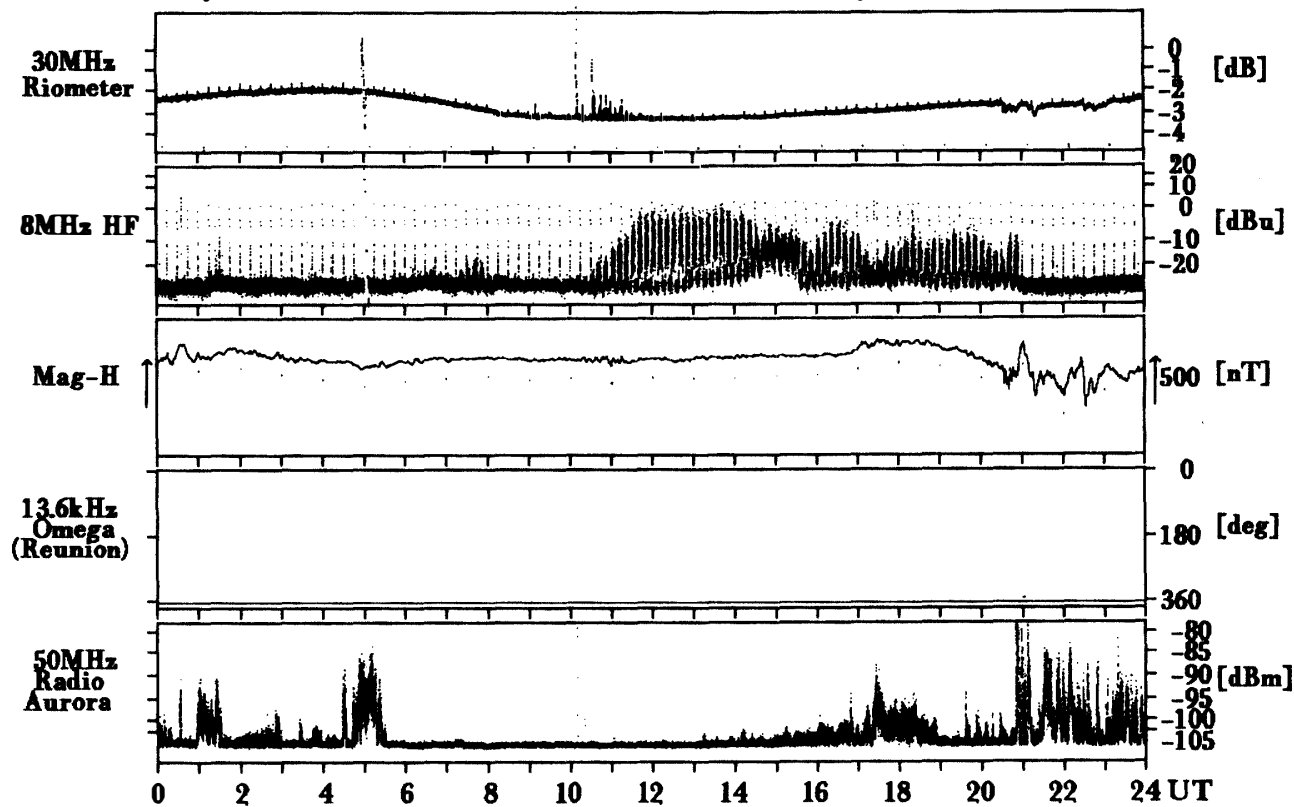
Syowa Station

Total Day / 71 1990/ 3/12



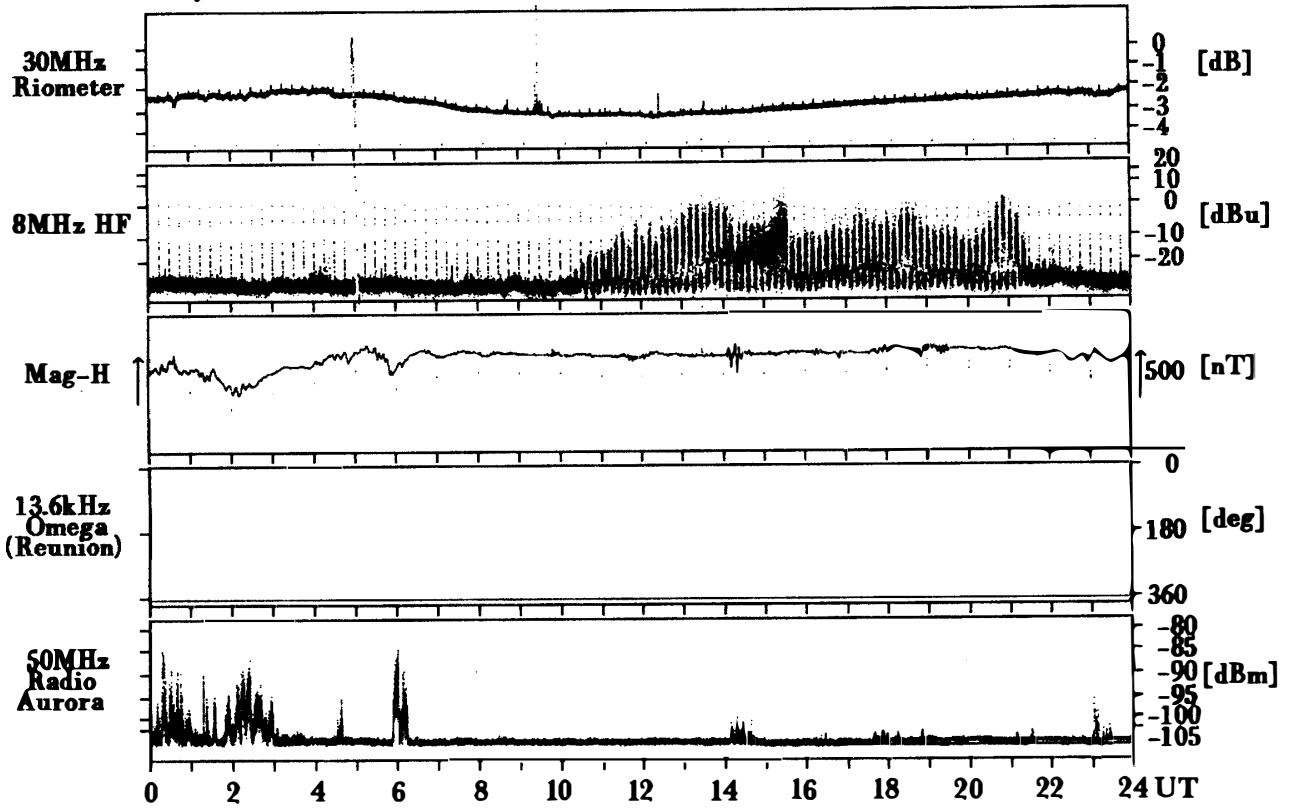
Syowa Station

Total Day / 72 1990/ 3/13



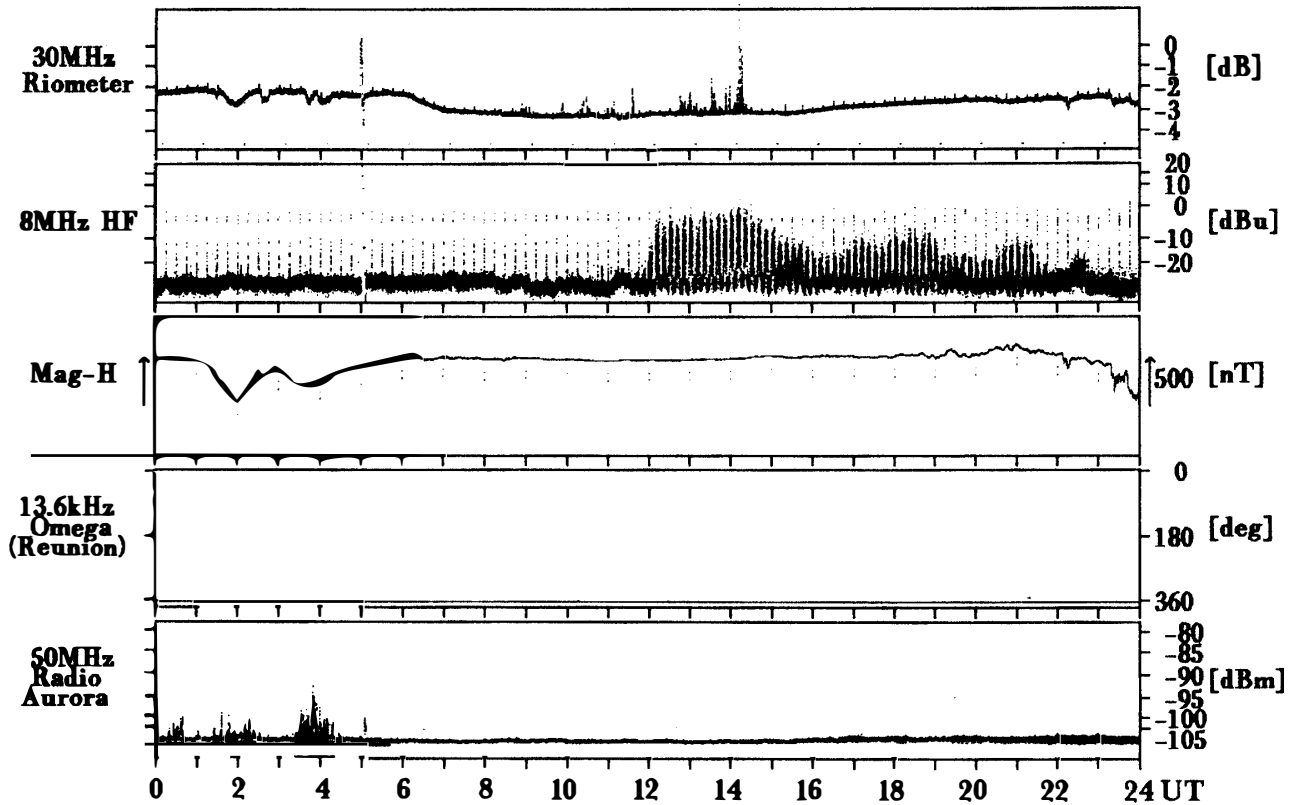
Syowa Station

Total Day / 73 1990/ 3/14



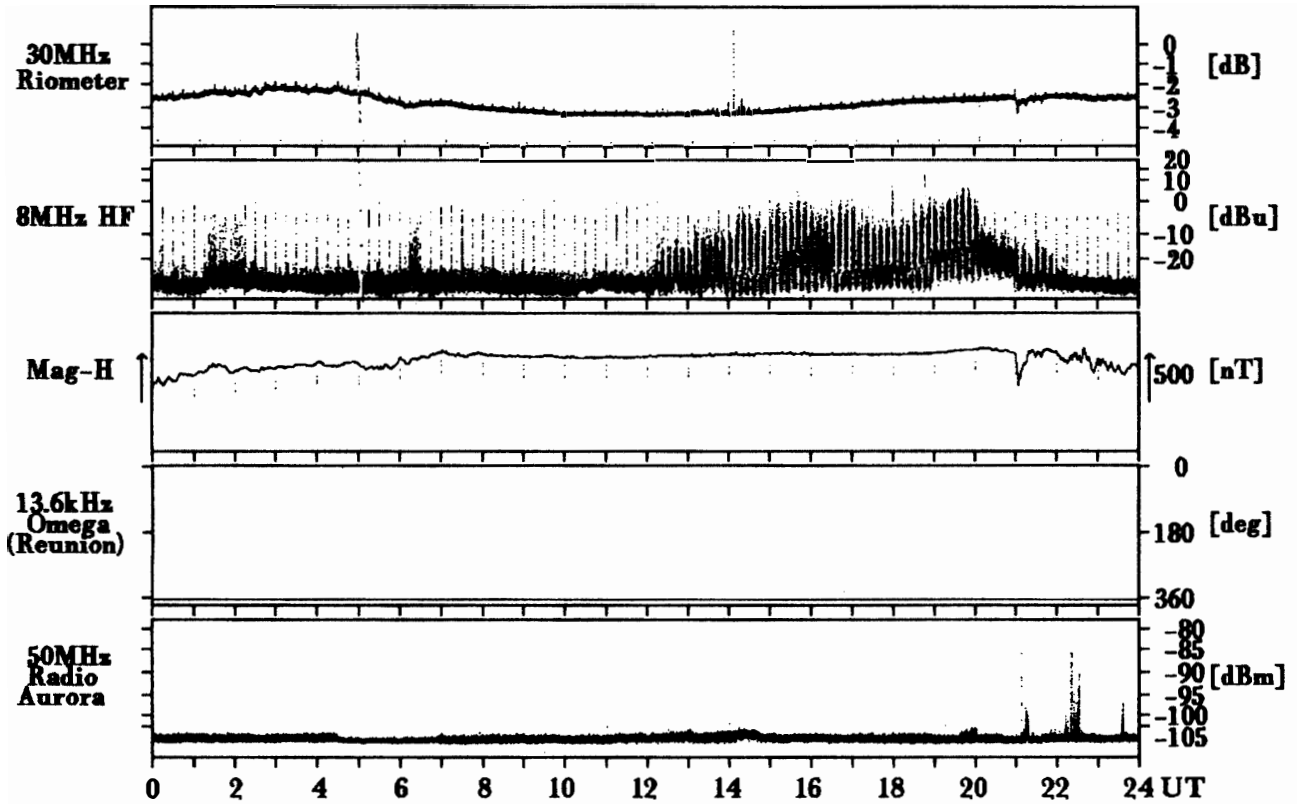
Syowa Station

Total Day / 74 1990/ 3/15



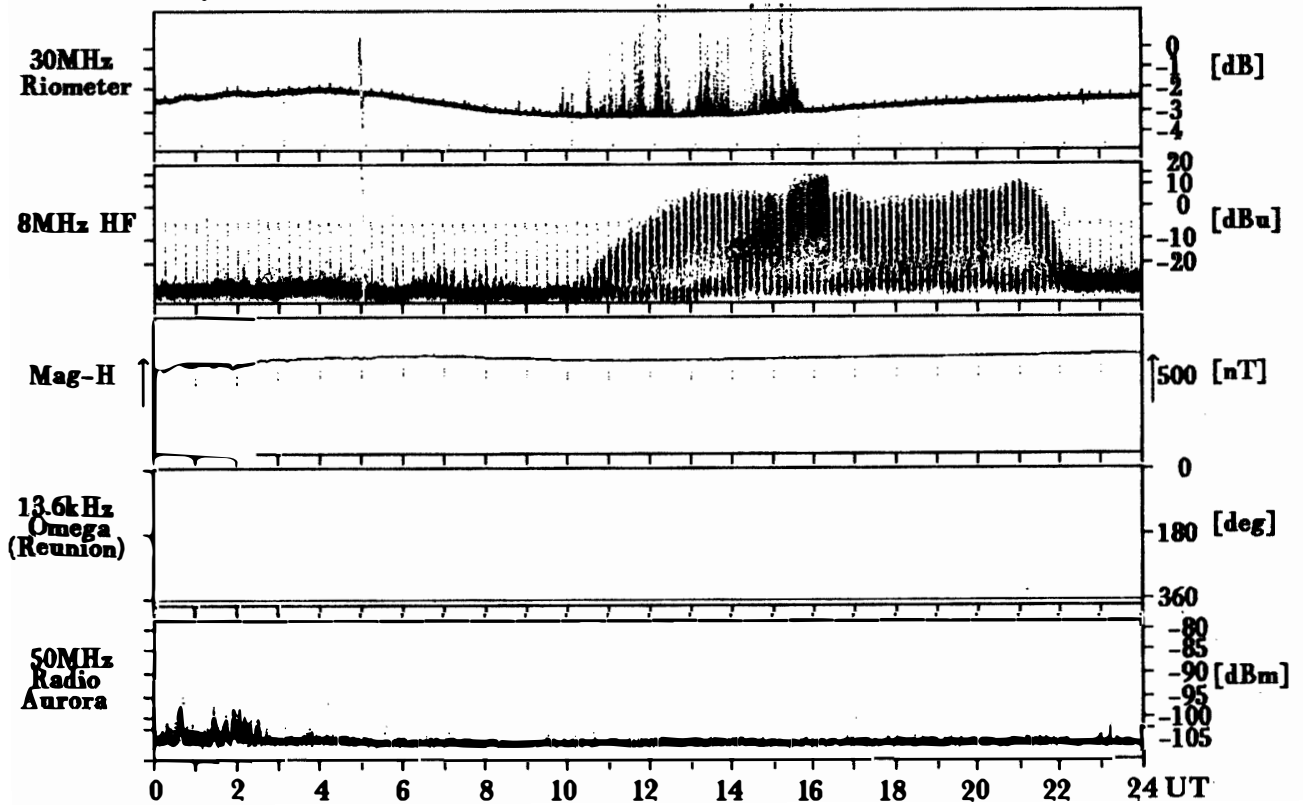
Syowa Station

Total Day / 75 1990/ 3/16



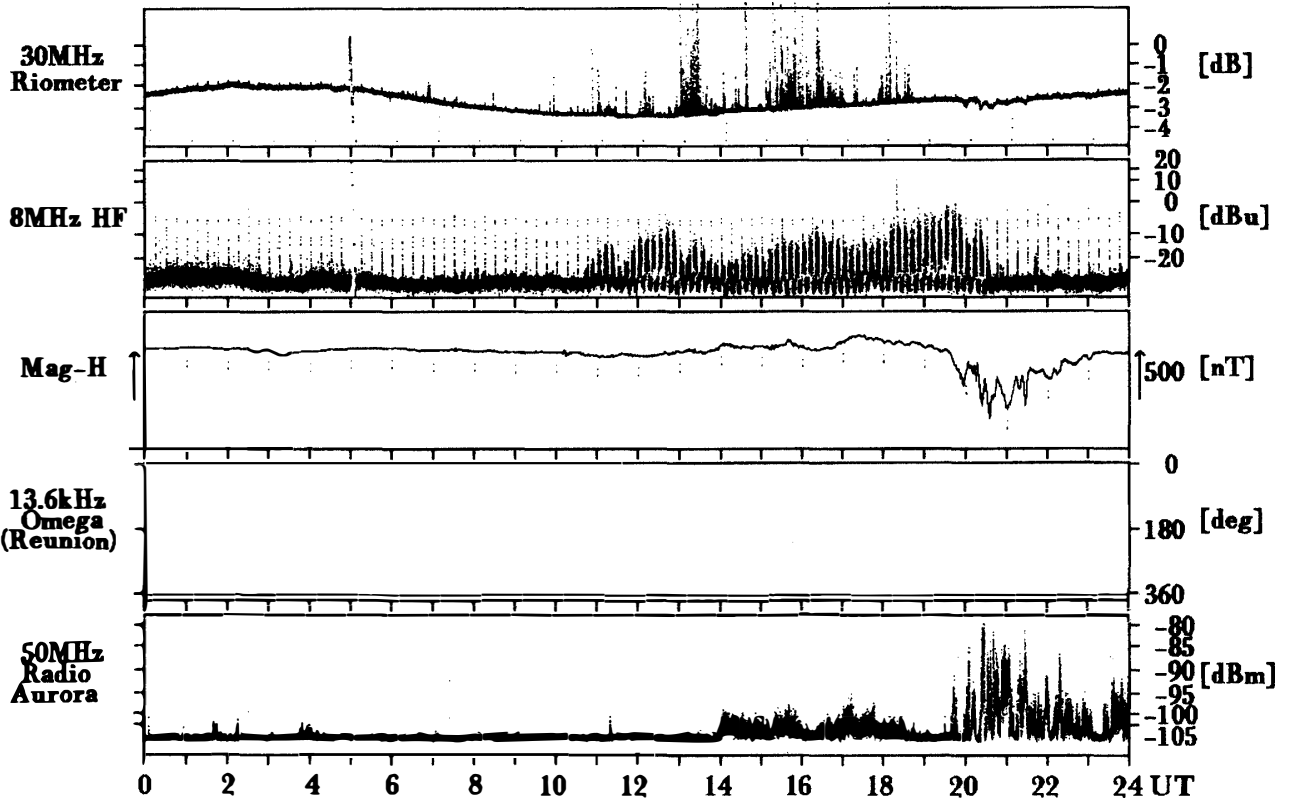
Syowa Station

Total Day / 76 1990/ 3/17



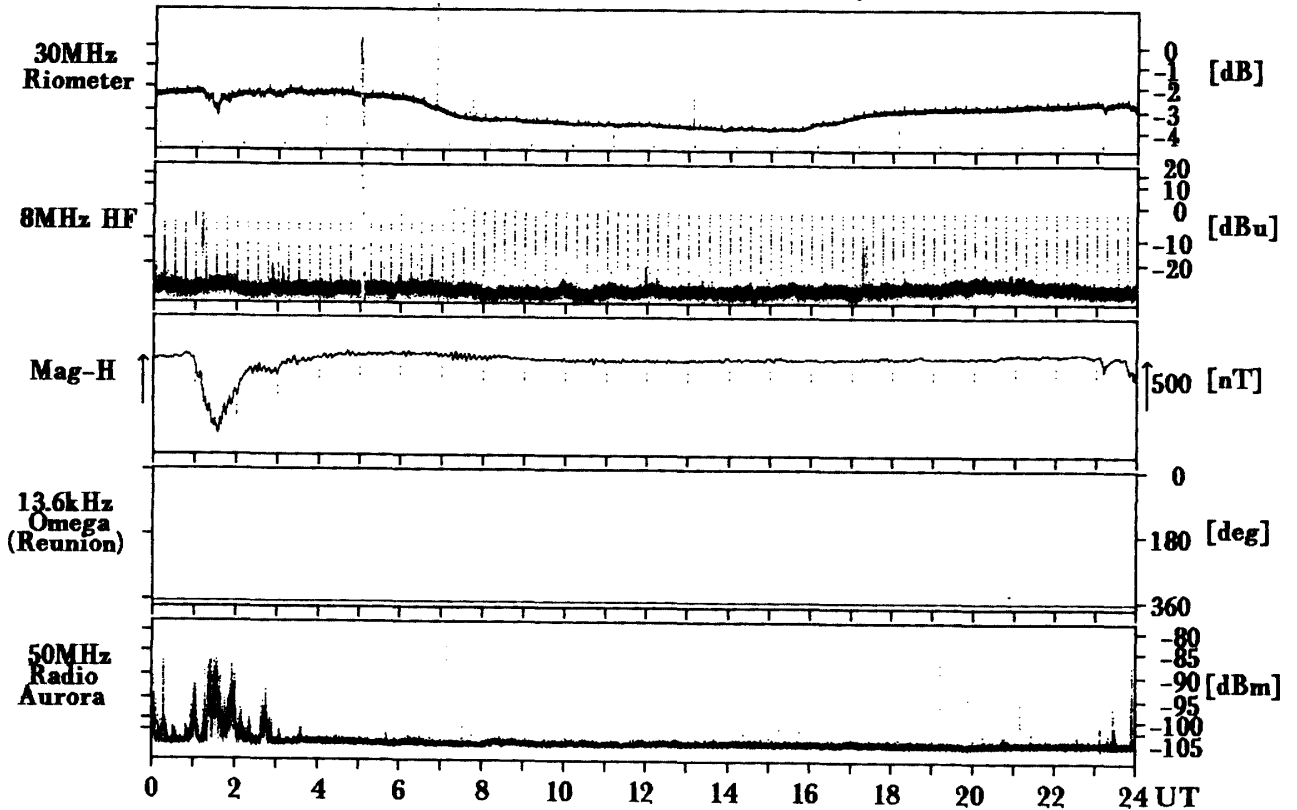
Syowa Station

Total Day / 77 1990/ 3/18



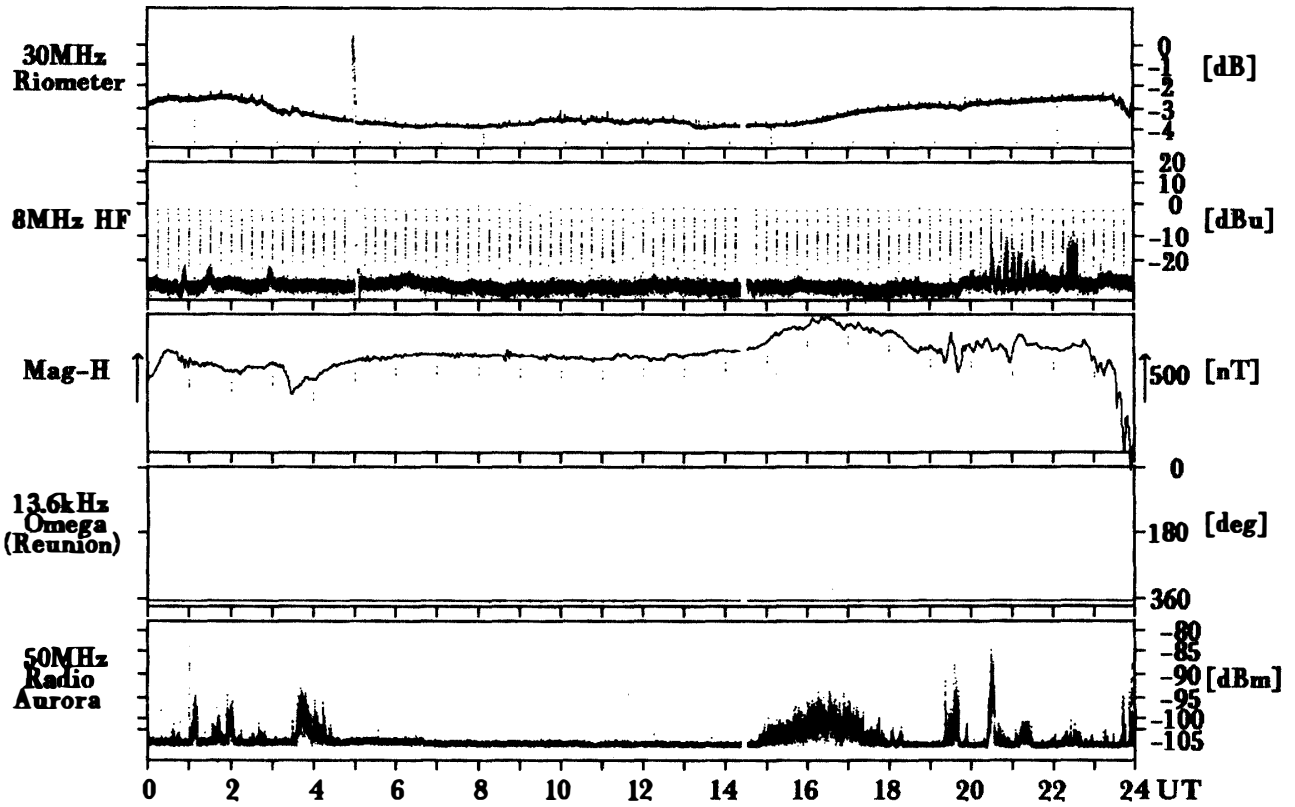
Syowa Station

Total Day / 78 1990/ 3/19



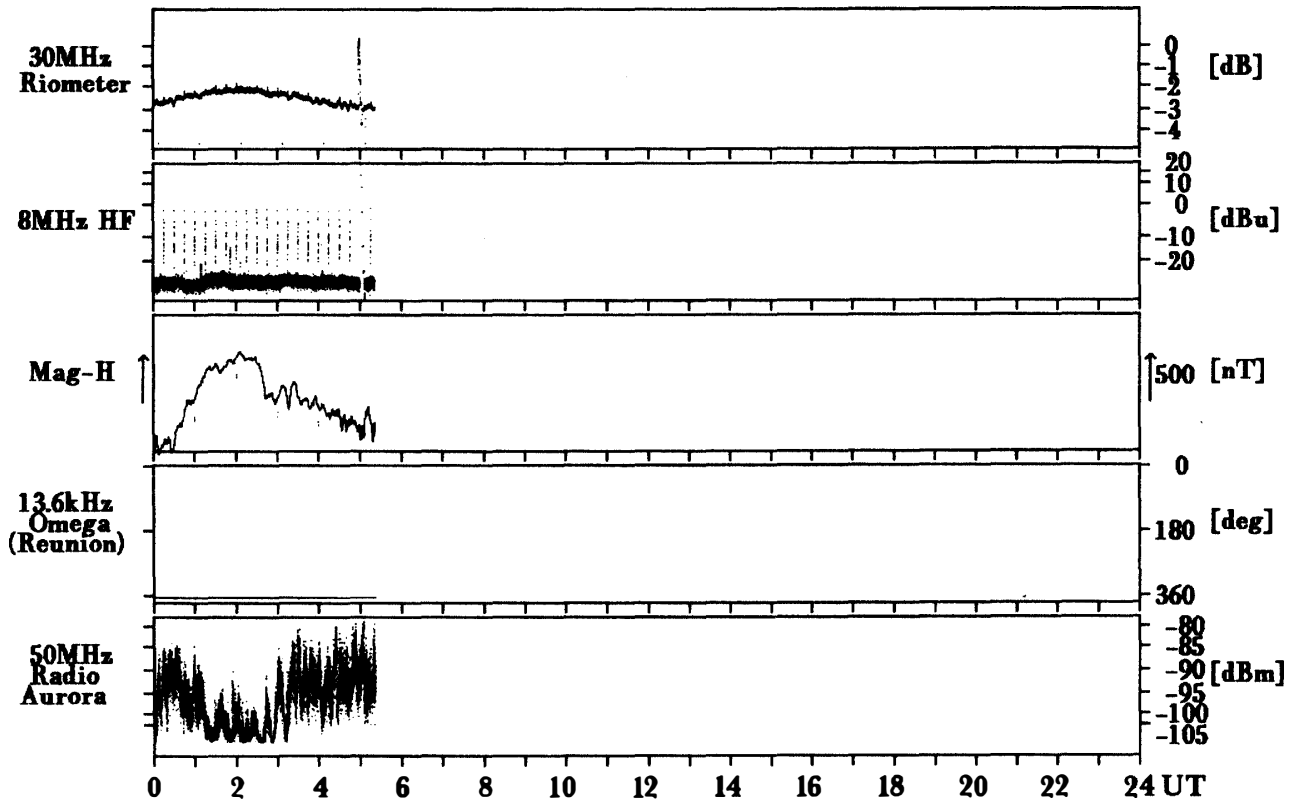
Syowa Station

Total Day / 79 1990/ 3/20



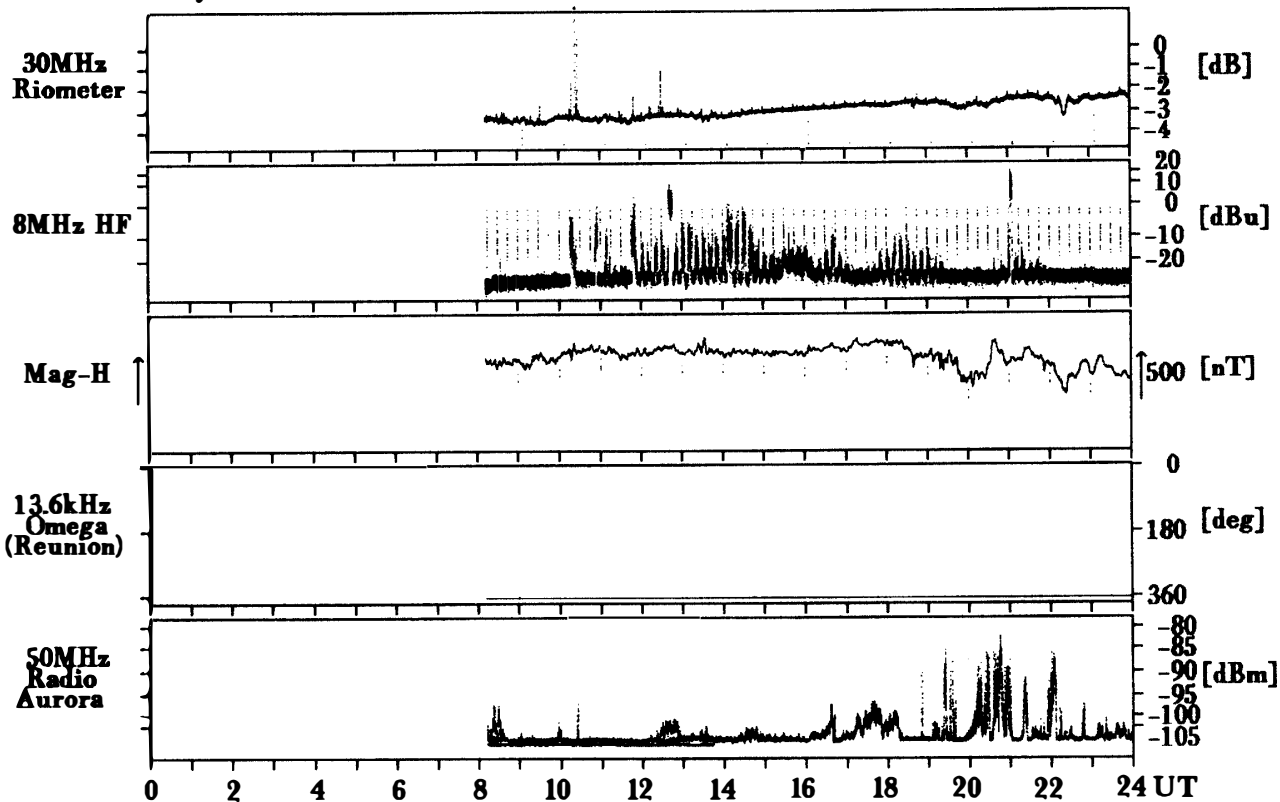
Syowa Station

Total Day / 80 1990/ 3/21



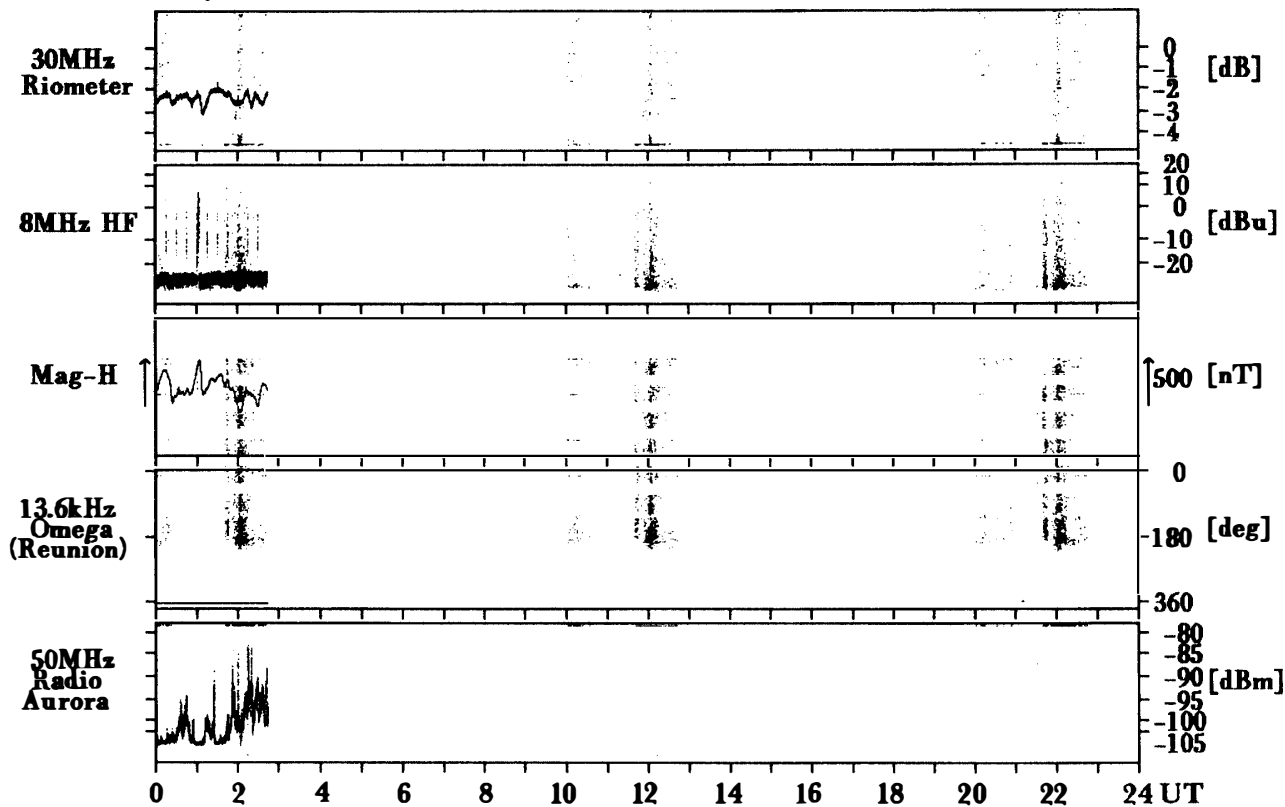
Syowa Station

Total Day / 81 1990/ 3/22



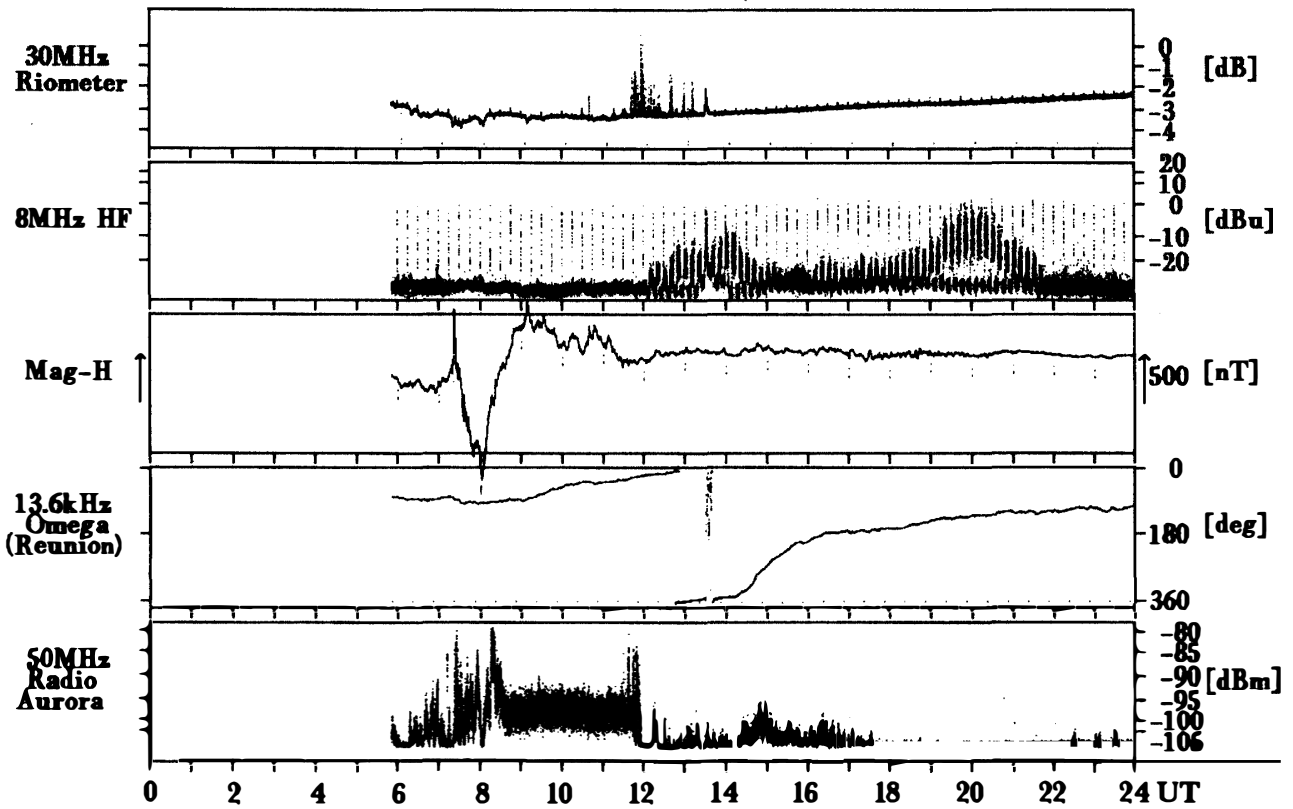
Syowa Station

Total Day / 82 1990/ 3/23



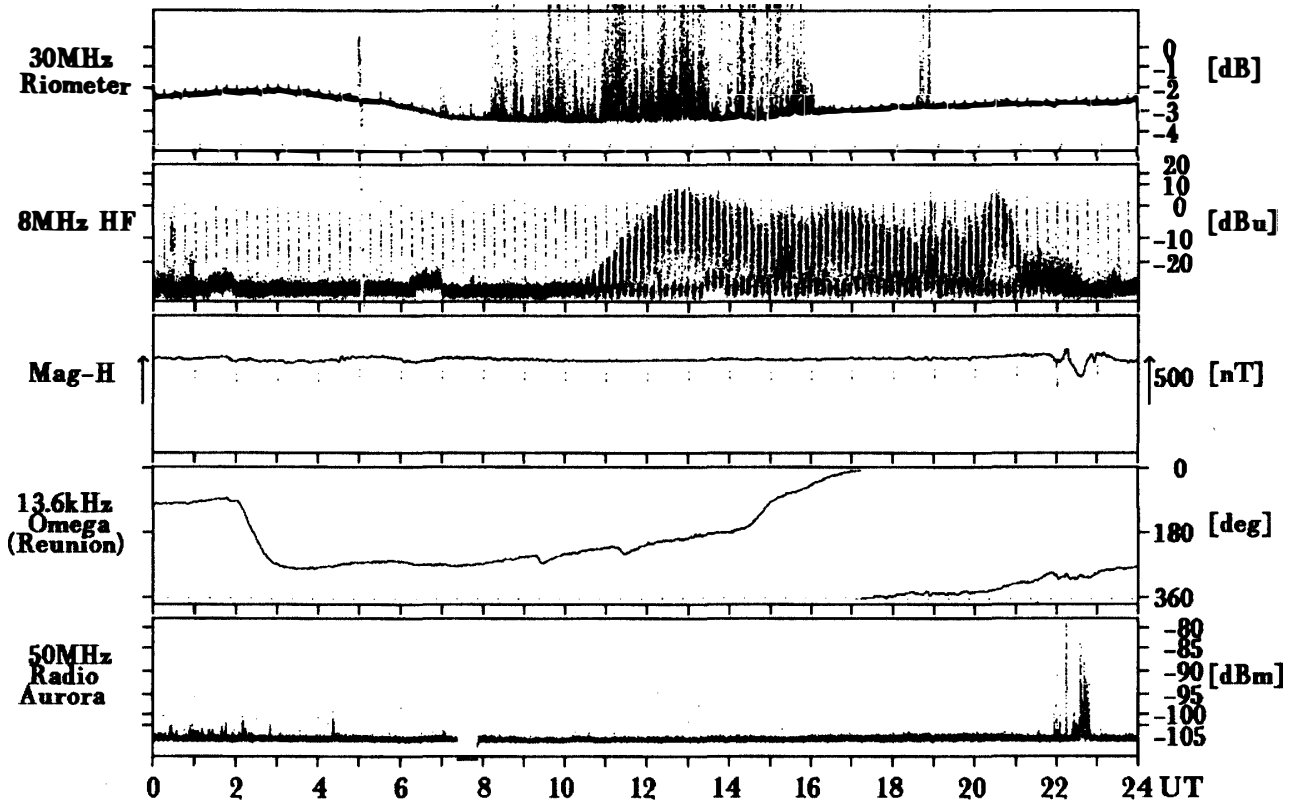
Syowa Station

Total Day / 89 1990/ 3/30



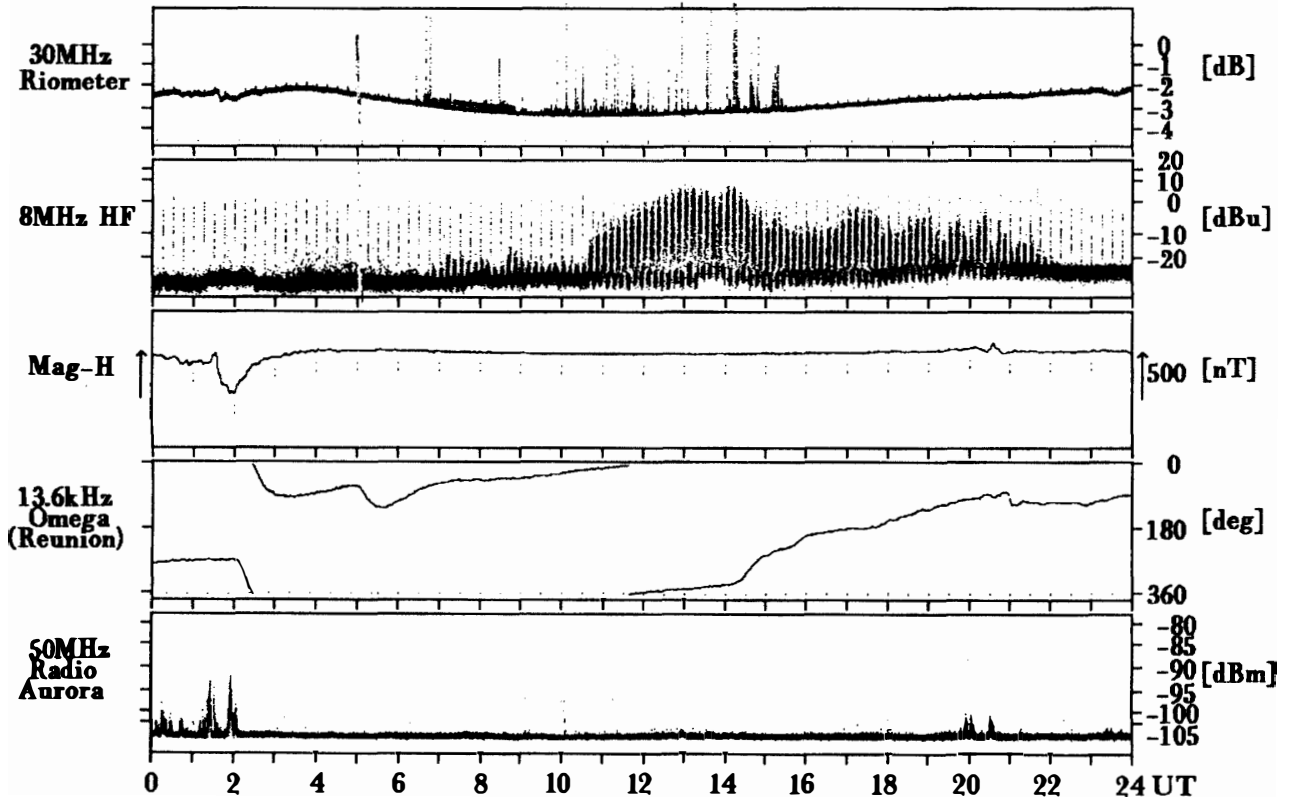
Syowa Station

Total Day / 90 1990/ 3/31



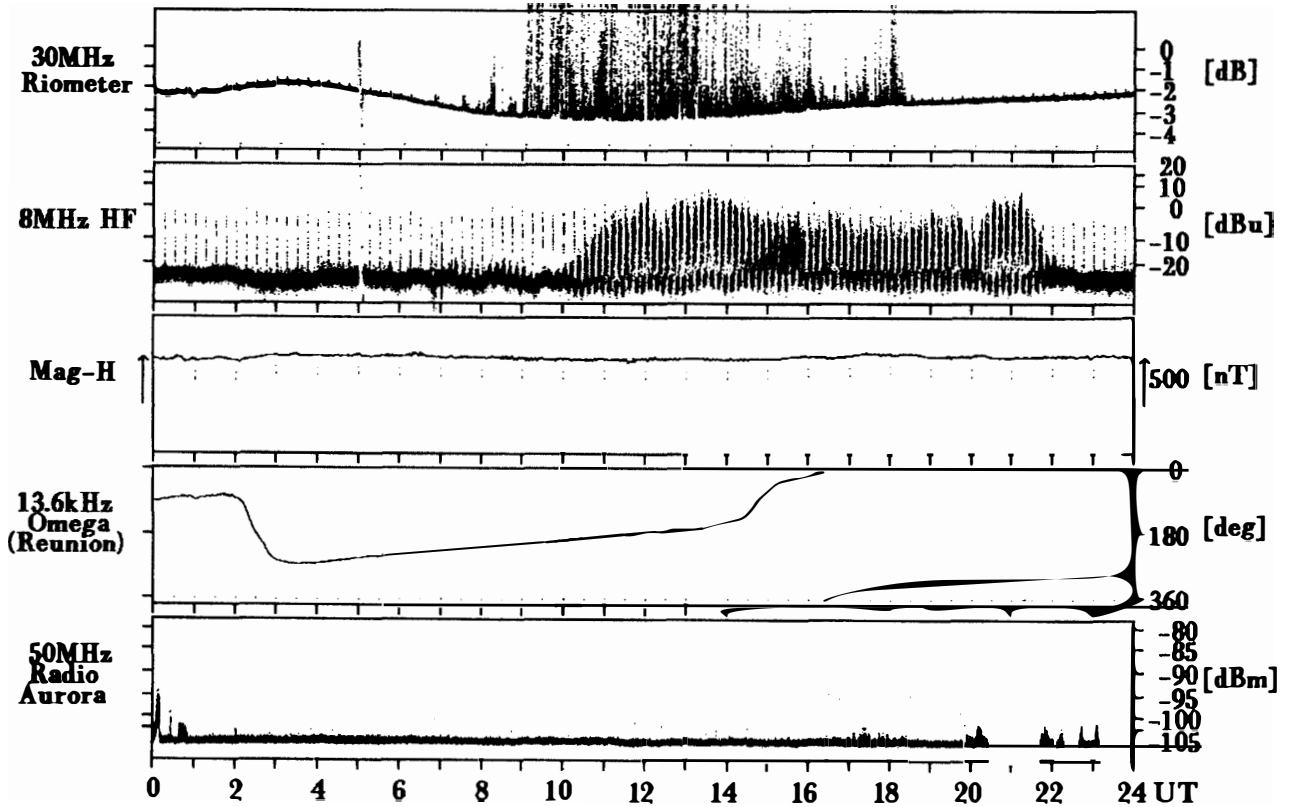
Syowa Station

Total Day / 91 1990/ 4/ 1



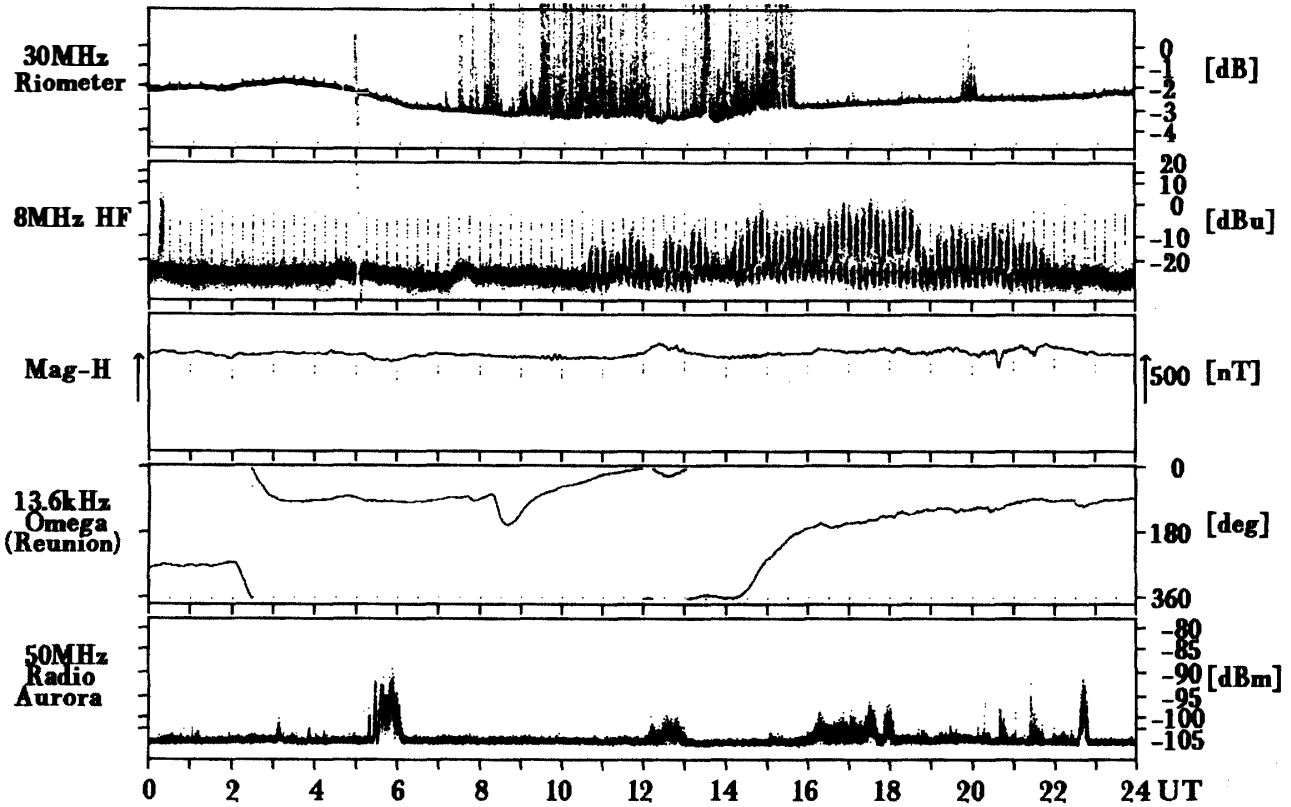
Syowa Station

Total Day / 92 1990/ 4/ 2



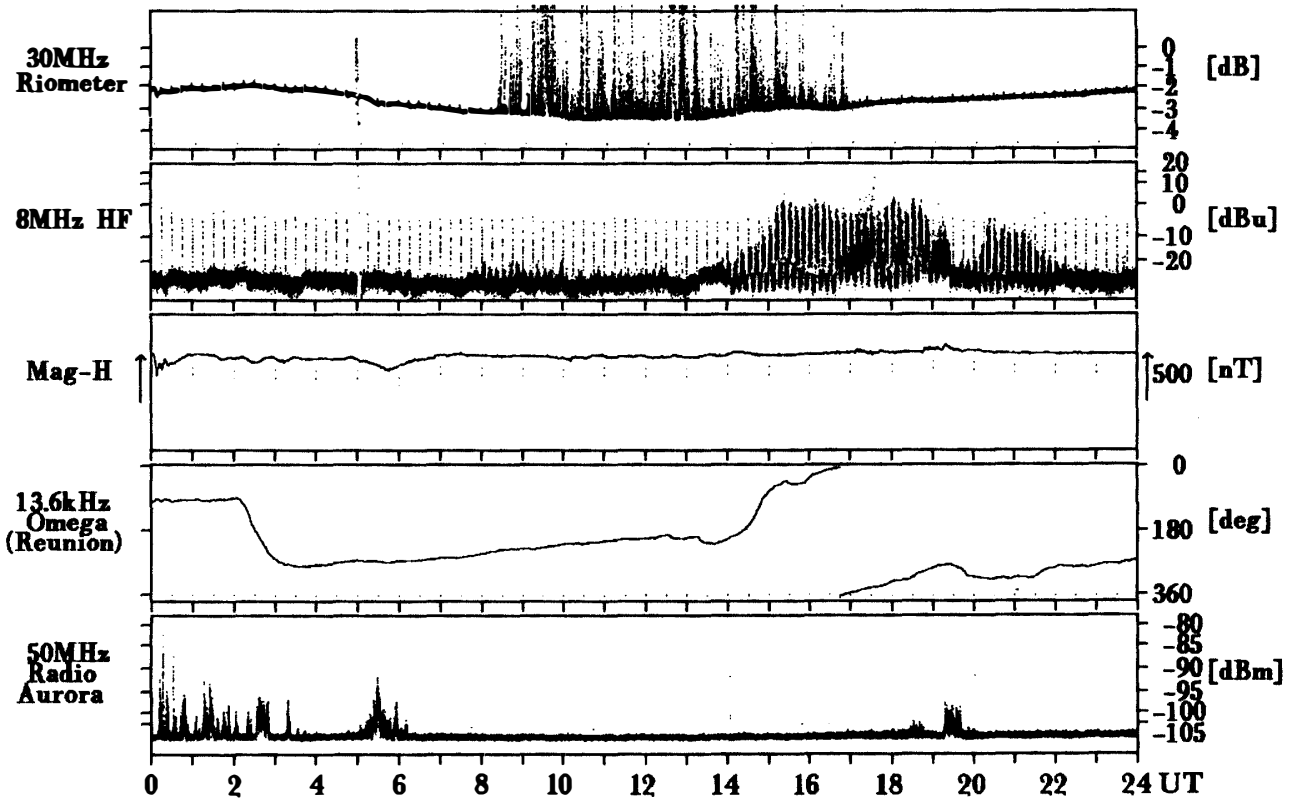
Syowa Station

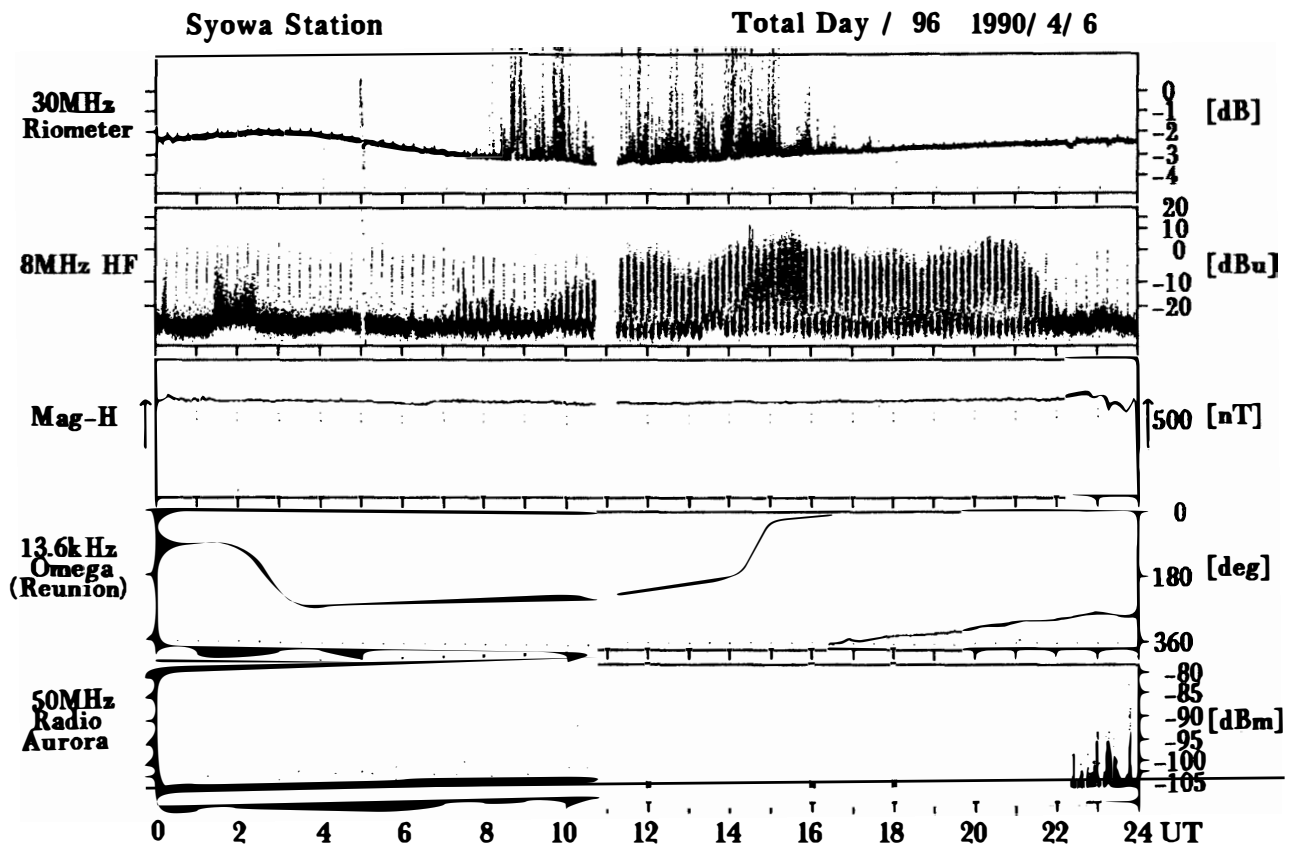
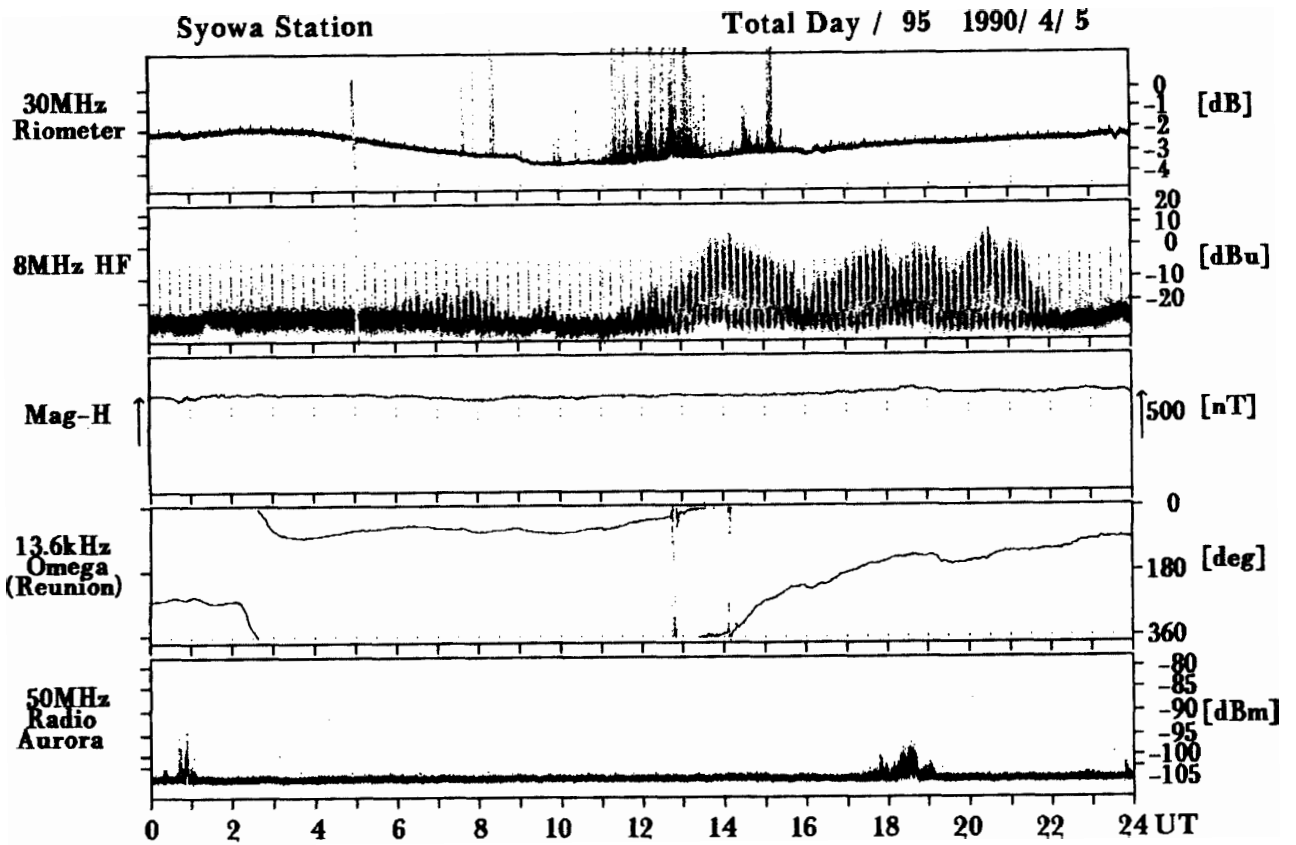
Total Day / 93 1990/ 4/ 3



Syowa Station

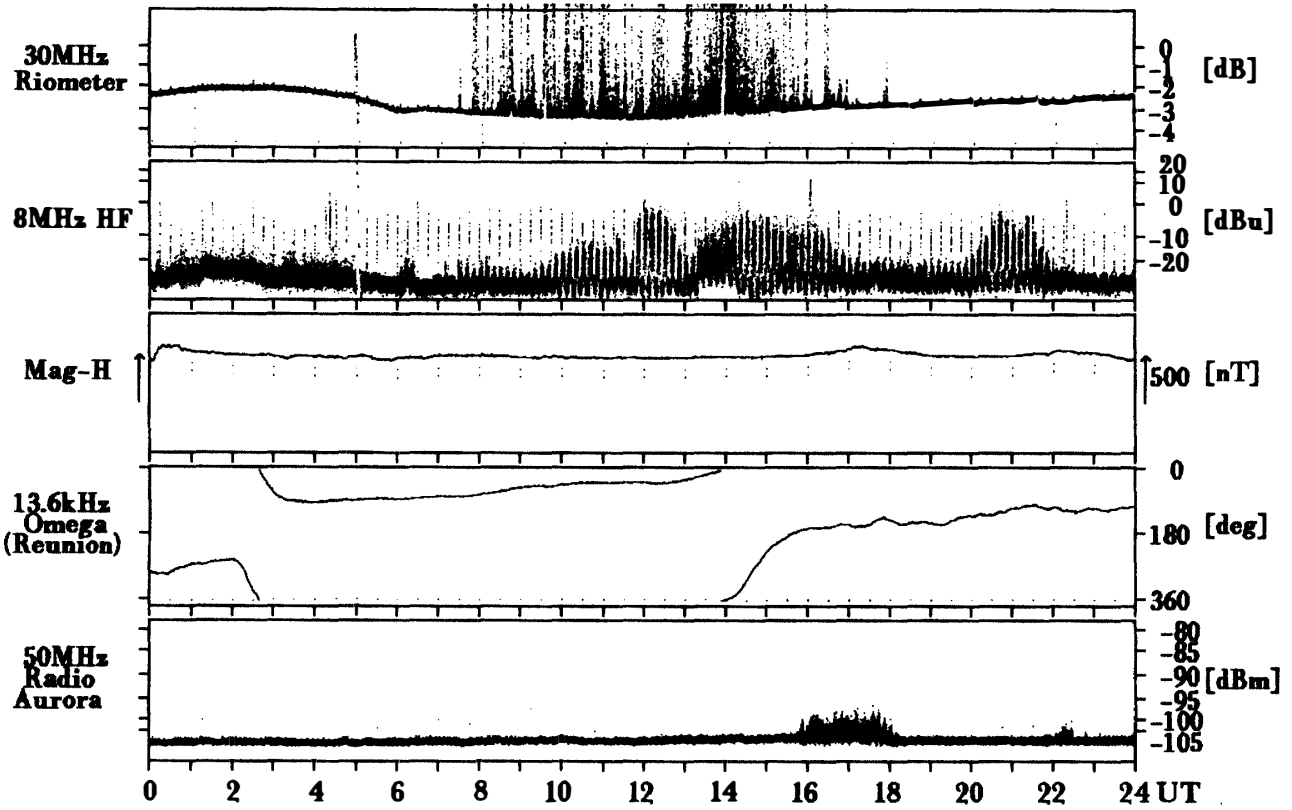
Total Day / 94 1990/ 4/ 4





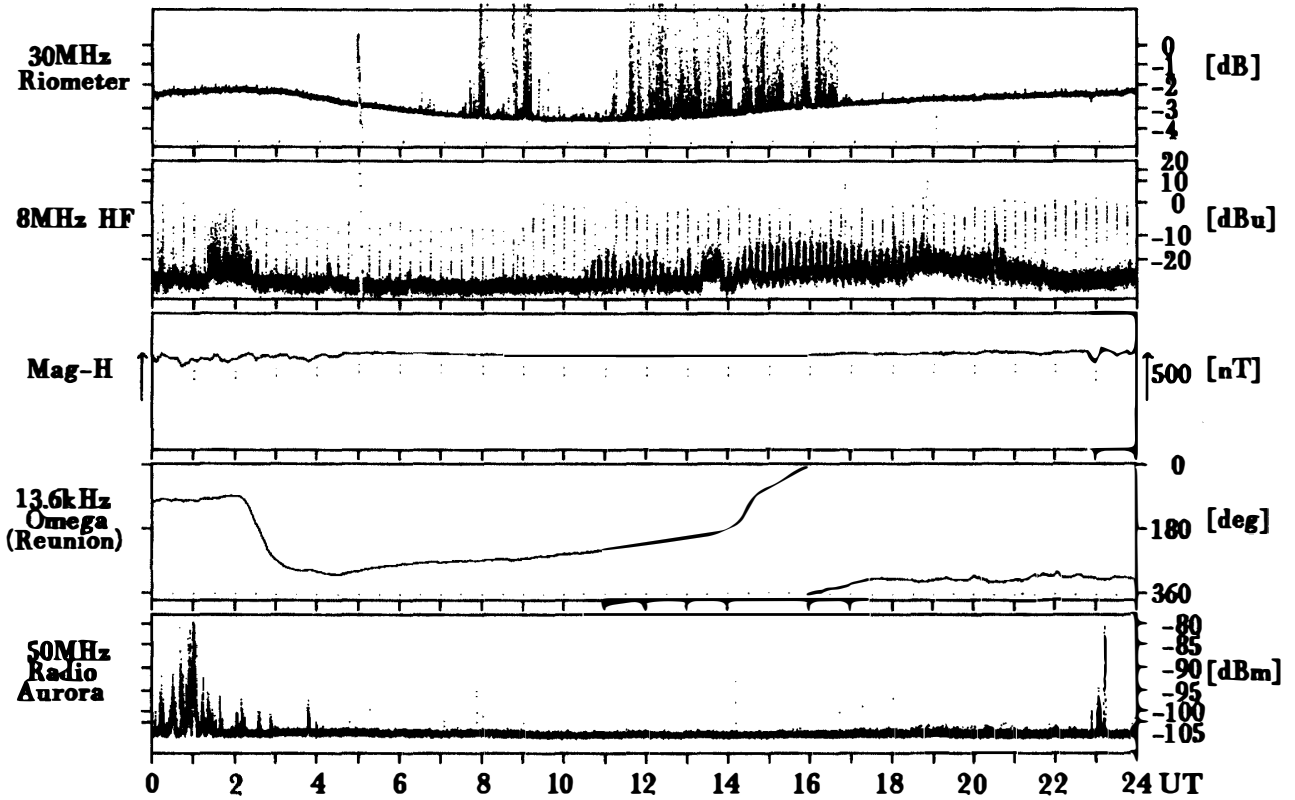
Syowa Station

Total Day / 97 1990/ 4/ 7



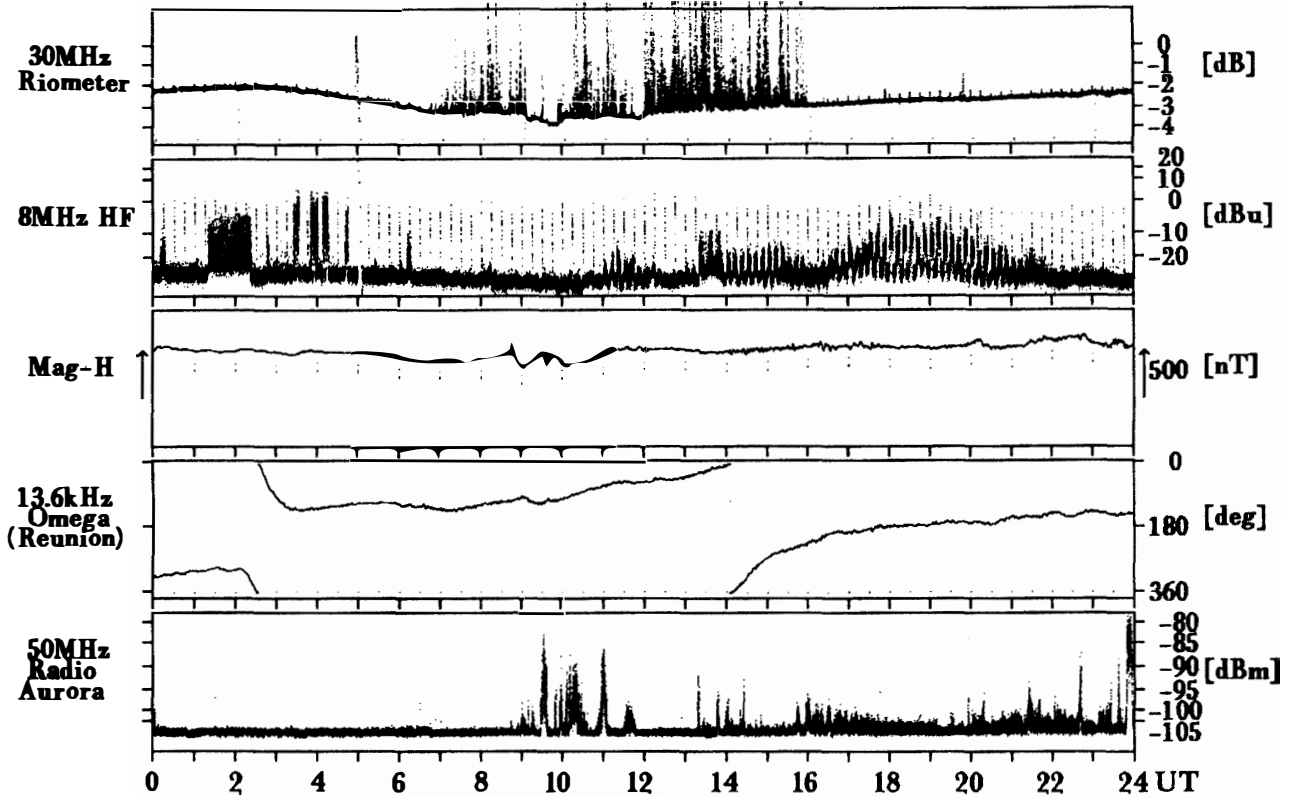
Syowa Station

Total Day / 98 1990/ 4/ 8



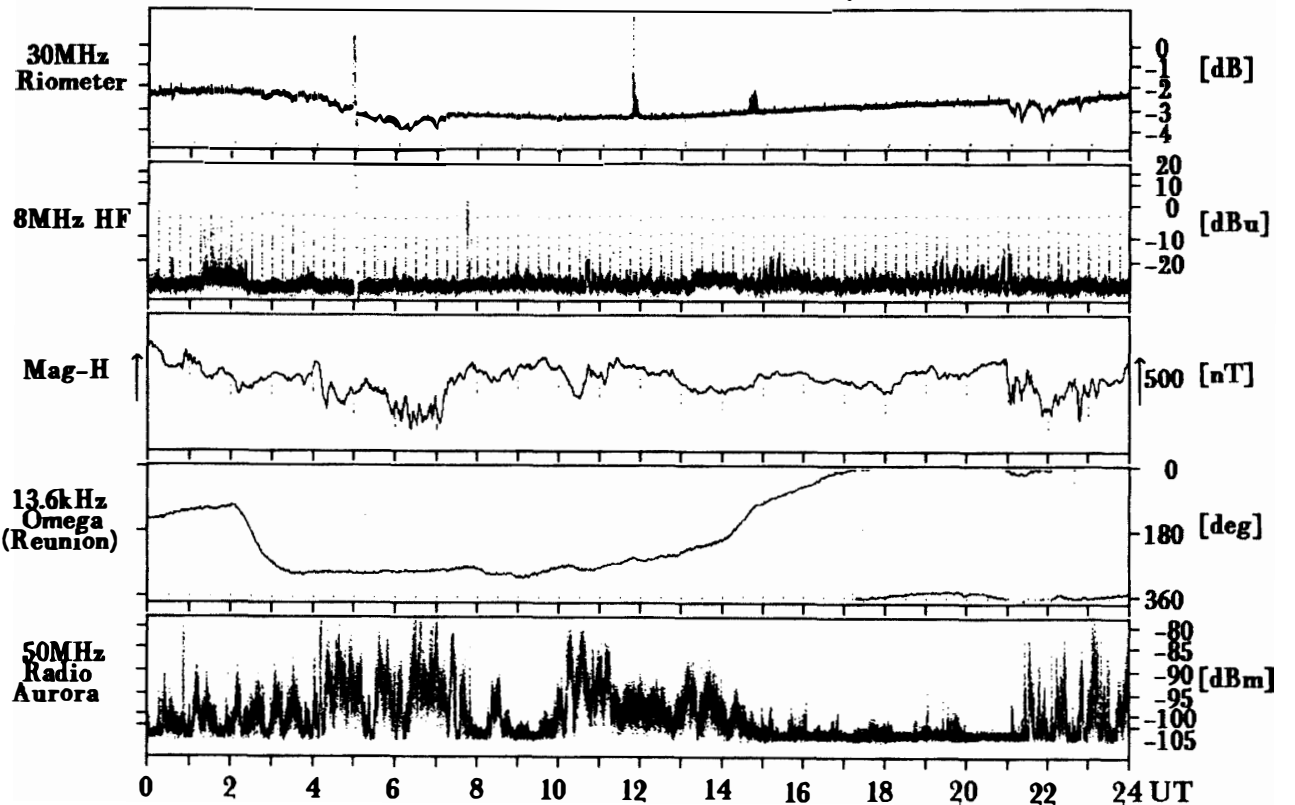
Syowa Station

Total Day / 99 1990/ 4/ 9



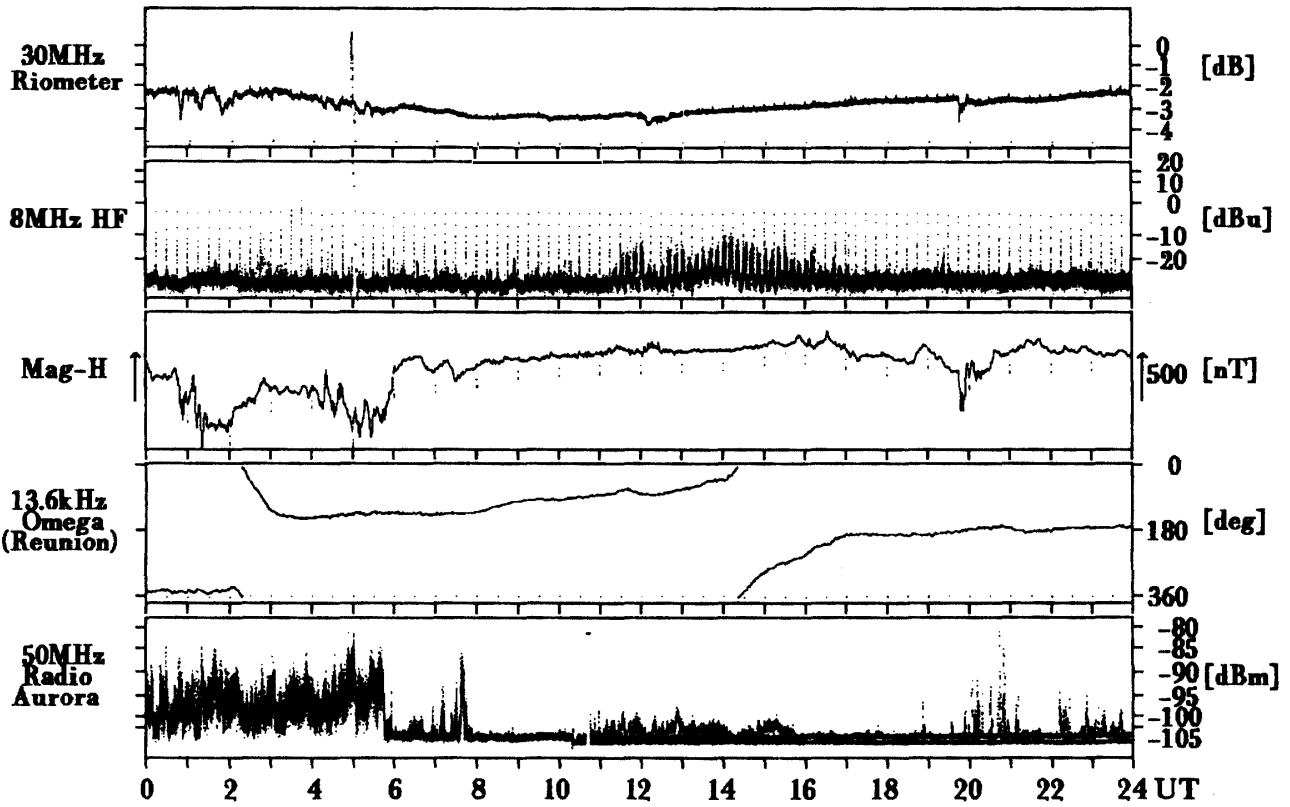
Syowa Station

Total Day / 100 1990/ 4/10



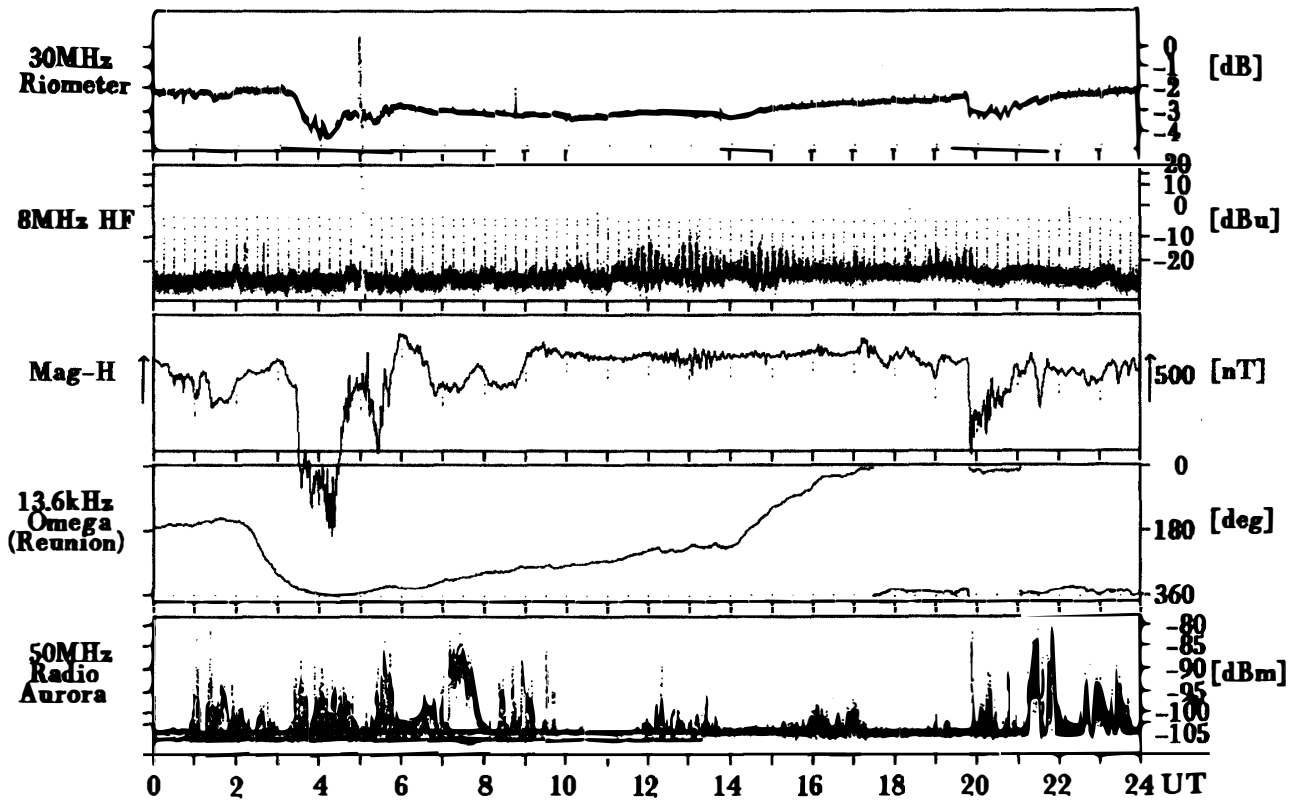
Syowa Station

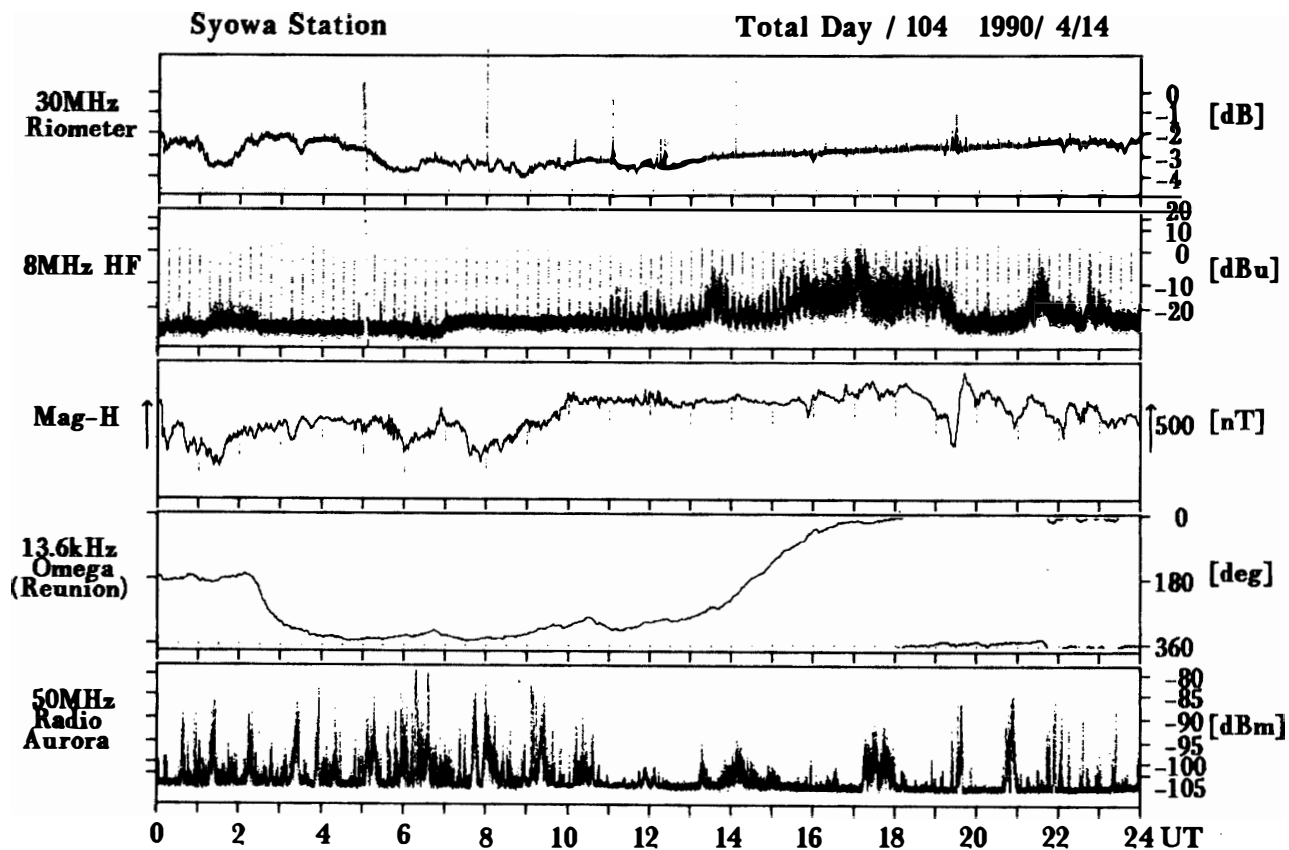
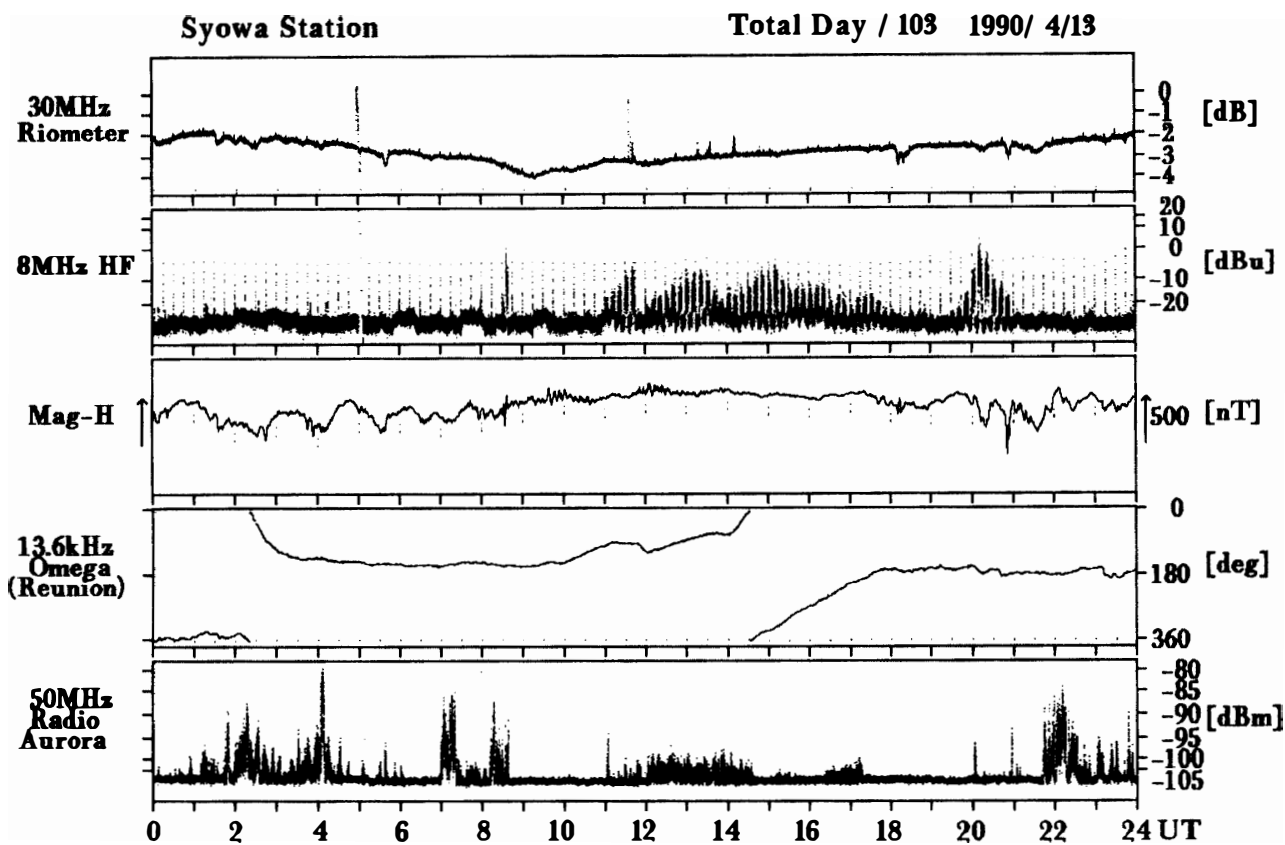
Total Day / 101 1990/ 4/11



Syowa Station

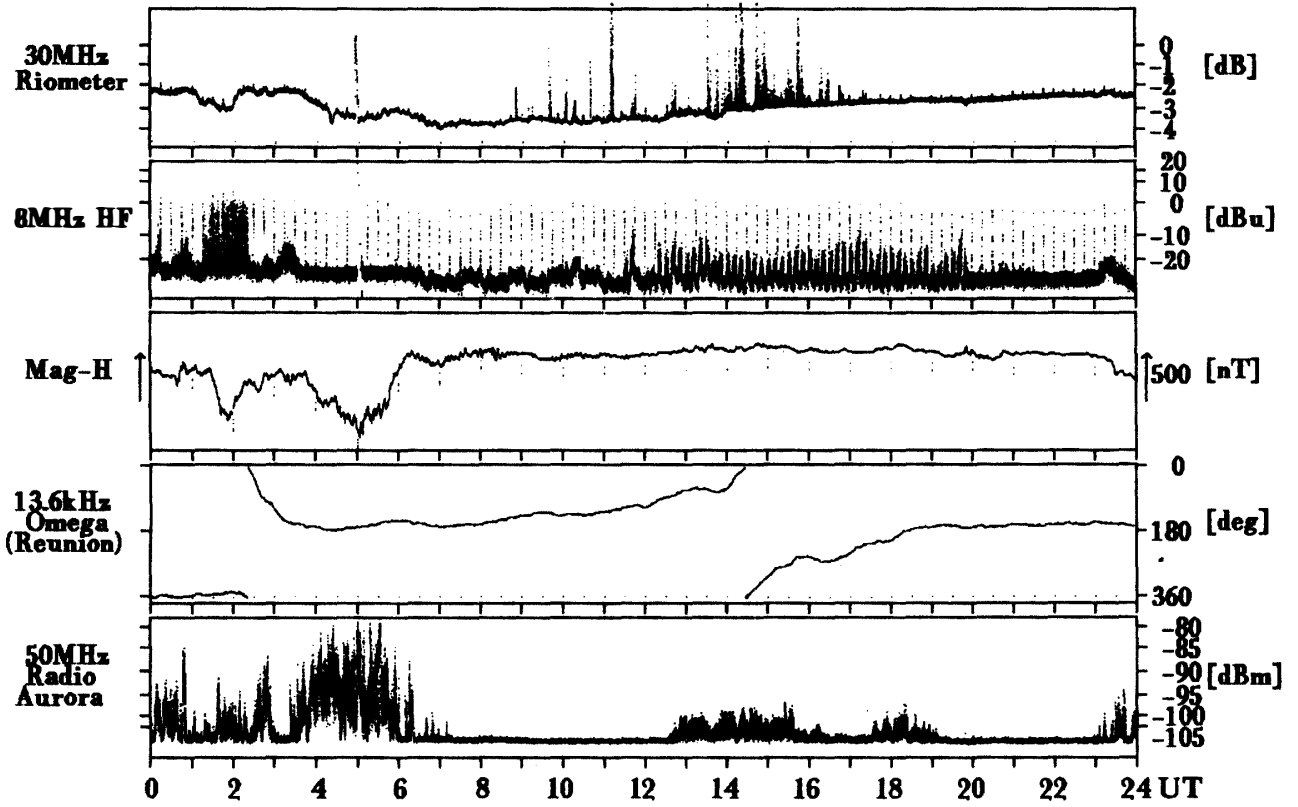
Total Day / 102 1990/ 4/12





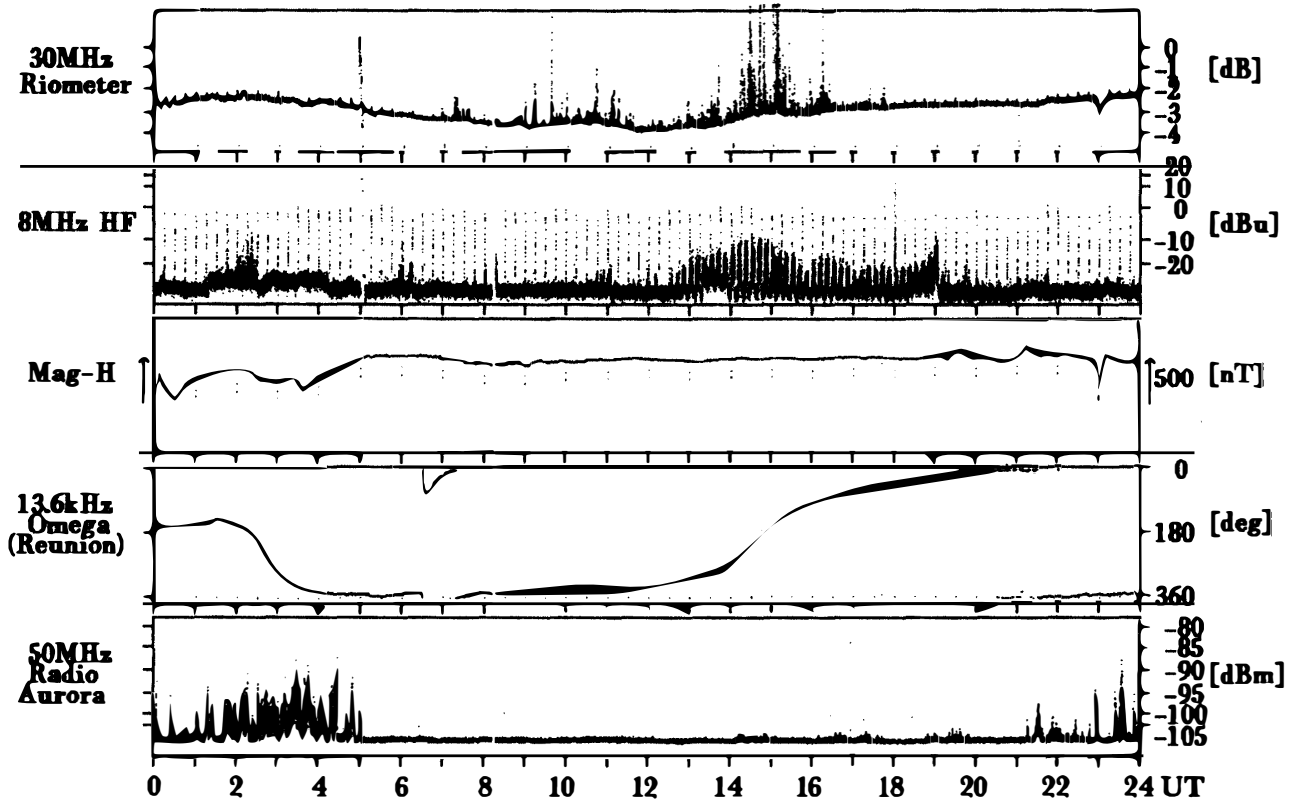
Syowa Station

Total Day / 105 1990/ 4/15



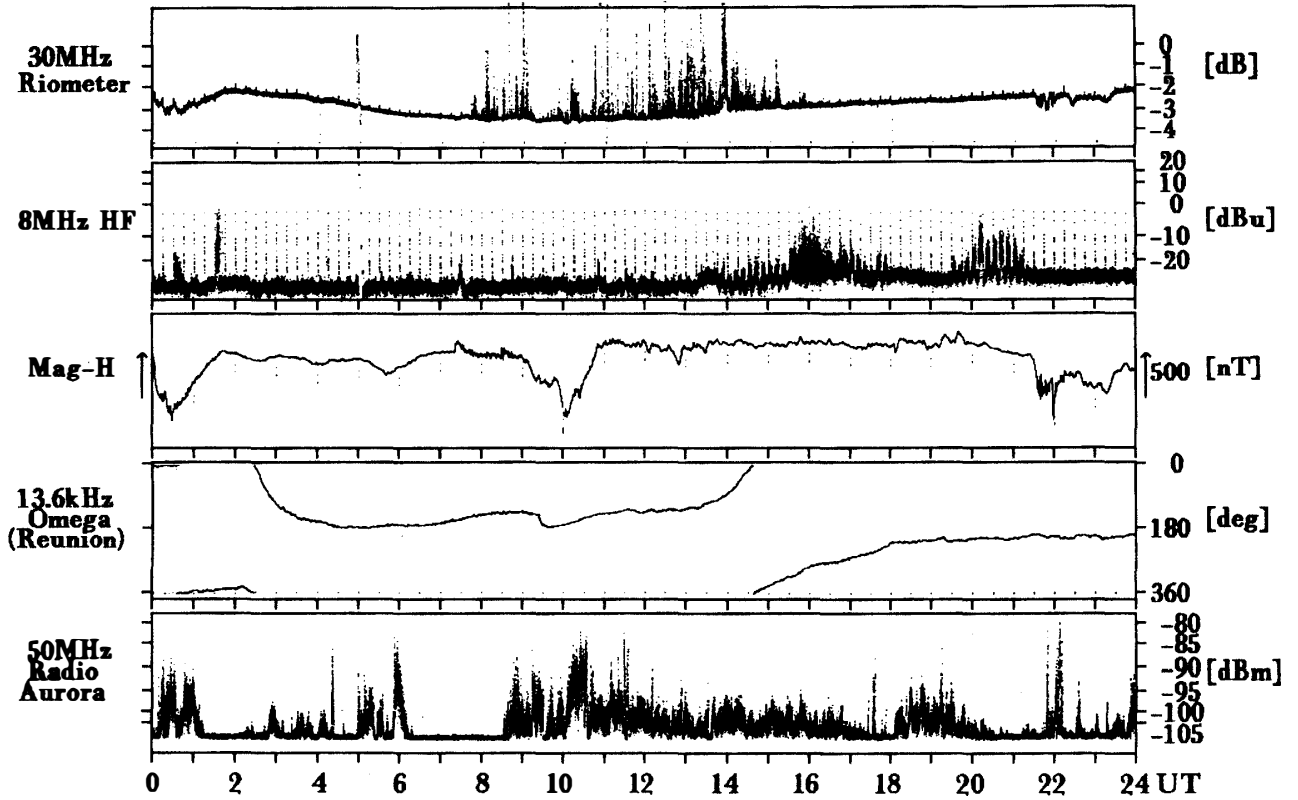
Syowa Station

Total Day / 106 1990/ 4/16



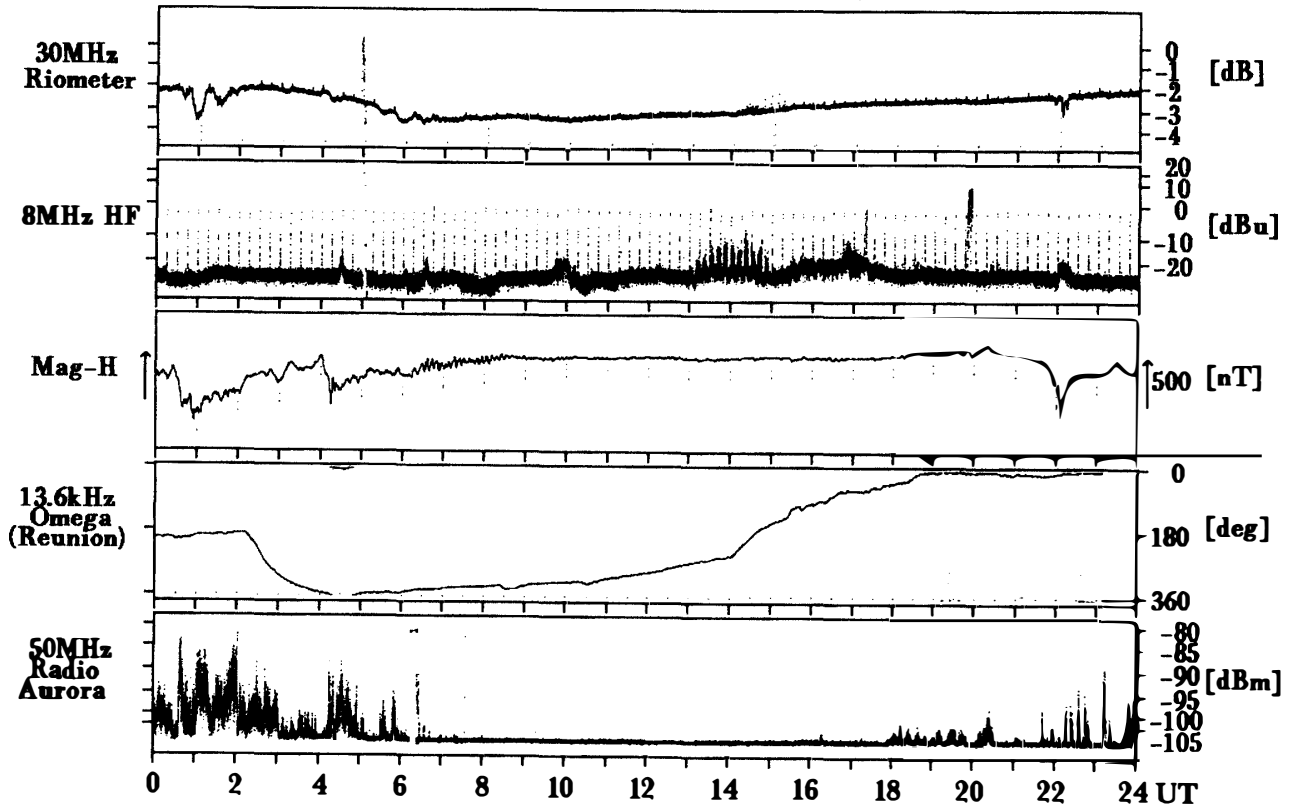
Syowa Station

Total Day / 107 1990/ 4/17



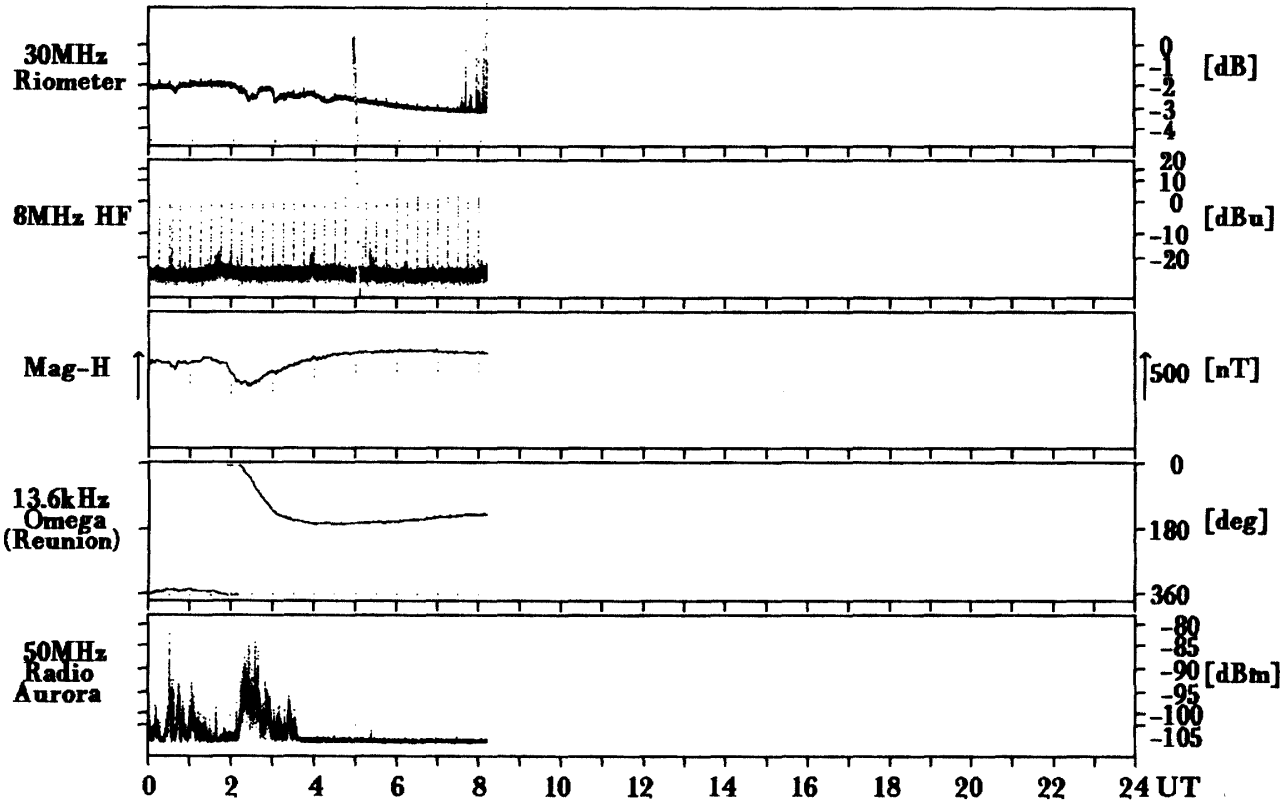
Syowa Station

Total Day / 108 1990/ 4/18



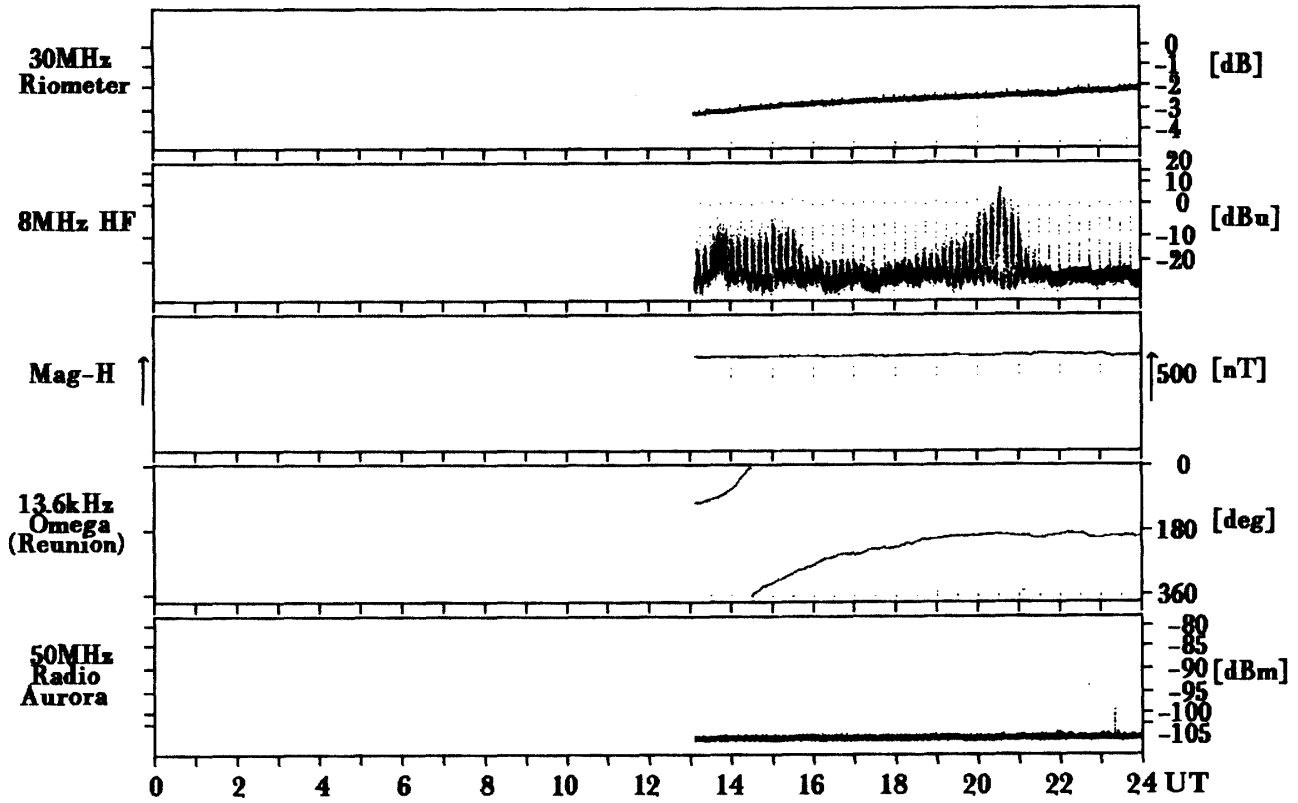
Syowa Station

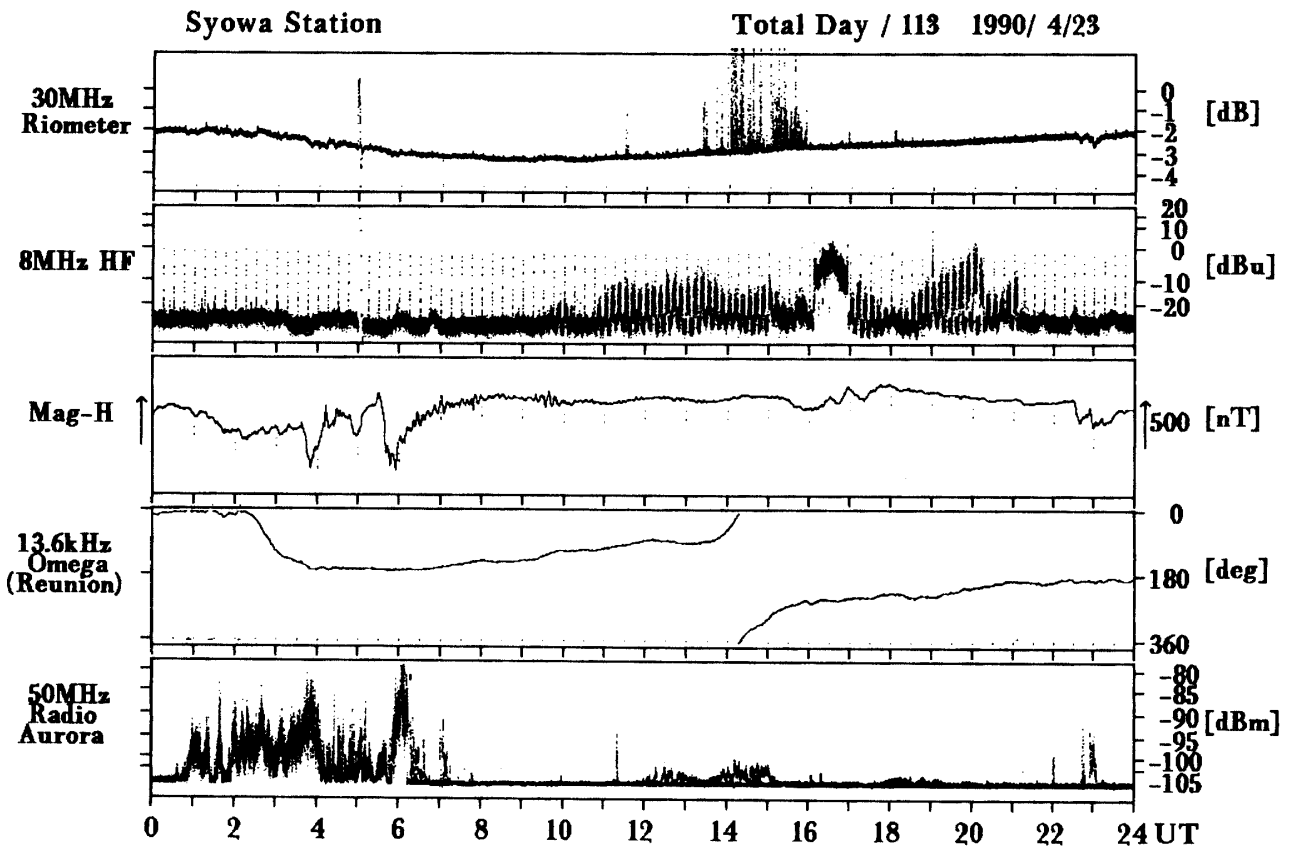
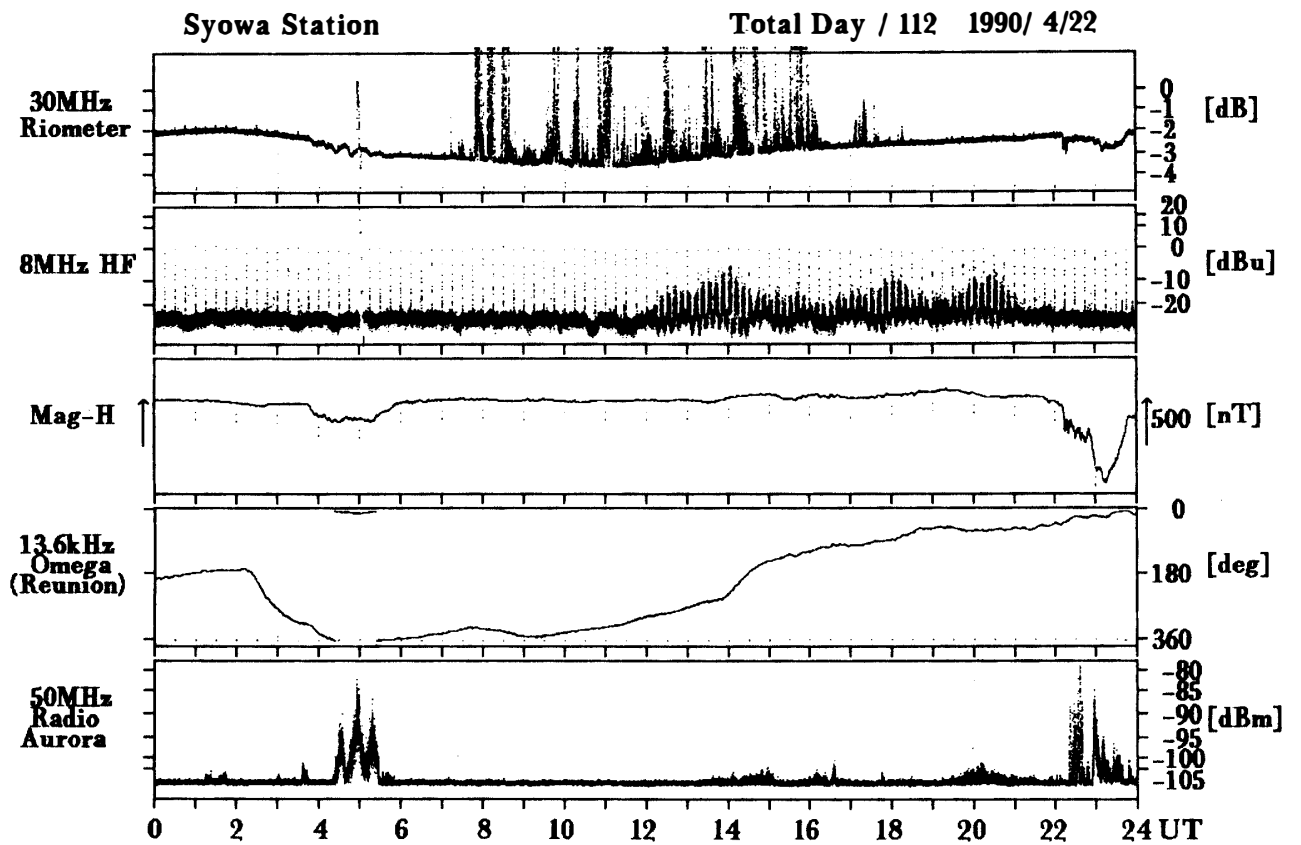
Total Day / 109 1990/ 4/19



Syowa Station

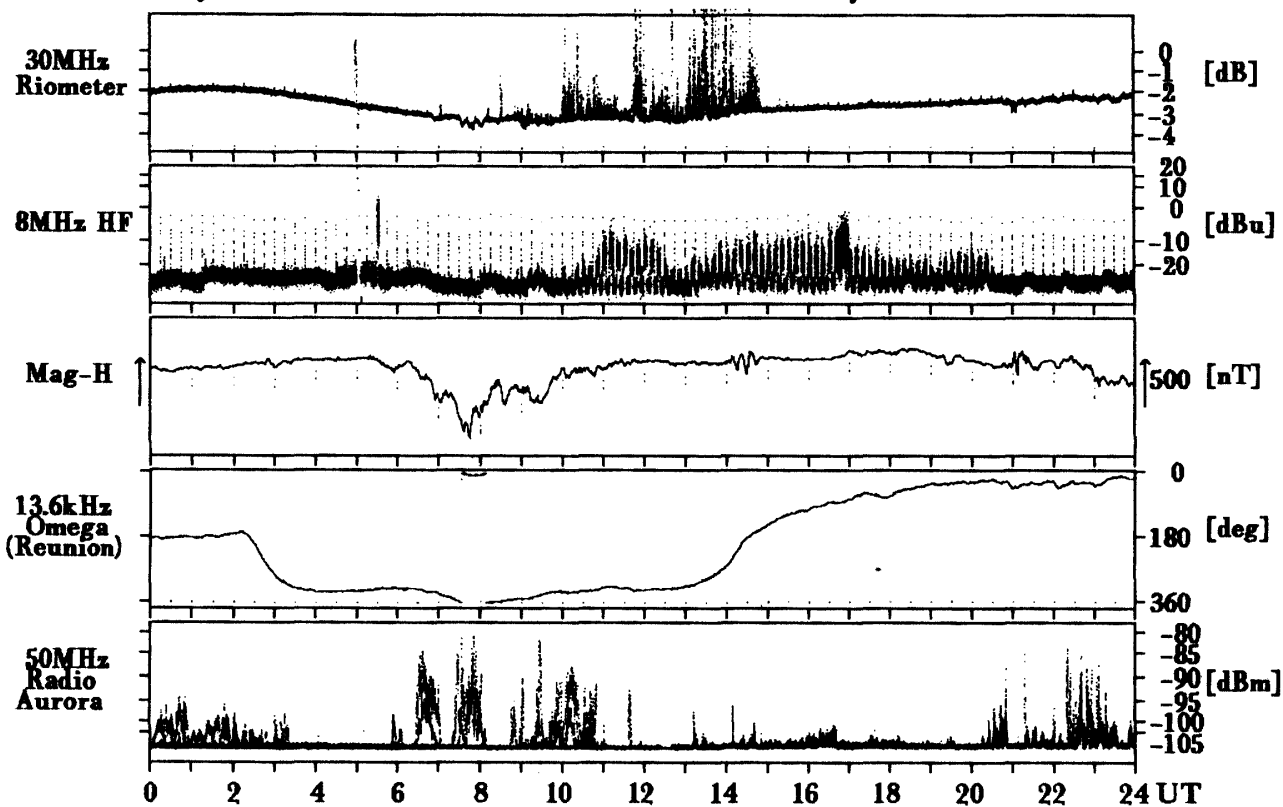
Total Day / 111 1990/ 4/21





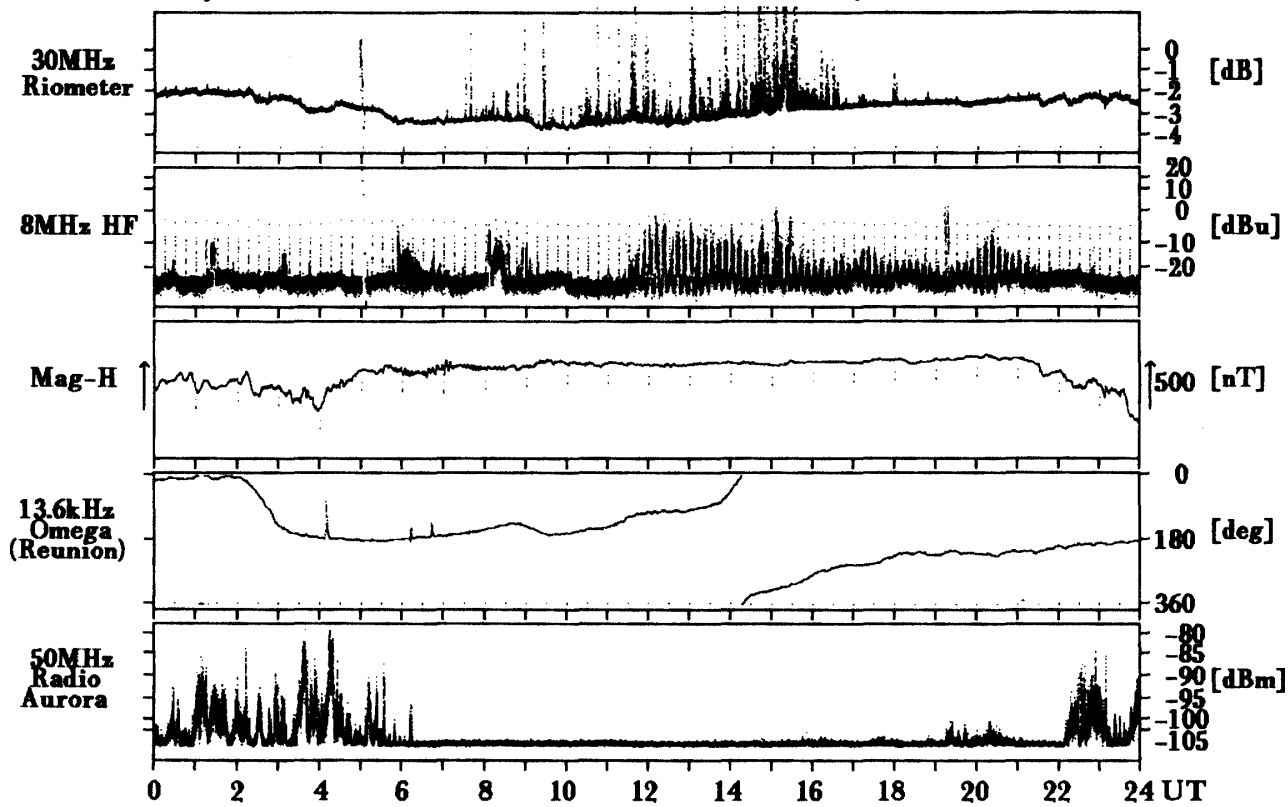
Syowa Station

Total Day / 114 1990/ 4/24



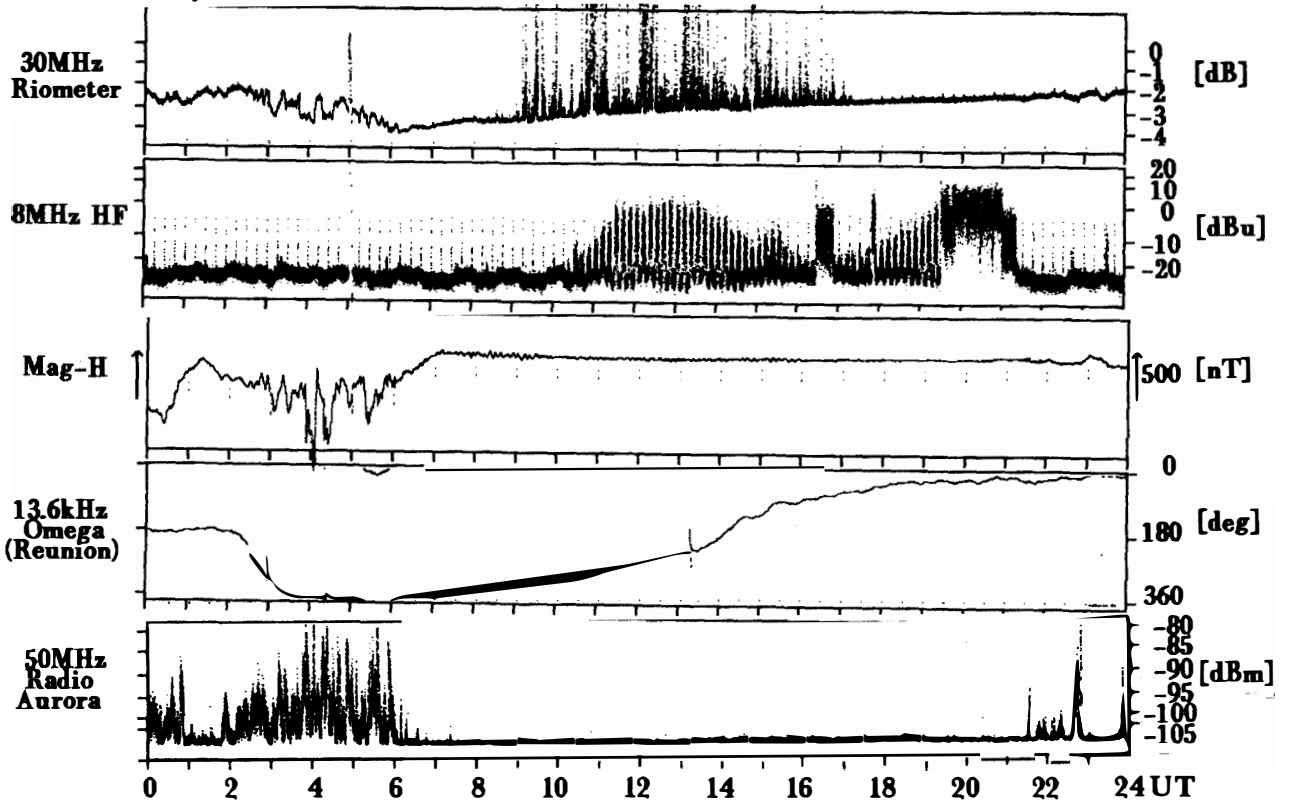
Syowa Station

Total Day / 115 1990/ 4/25



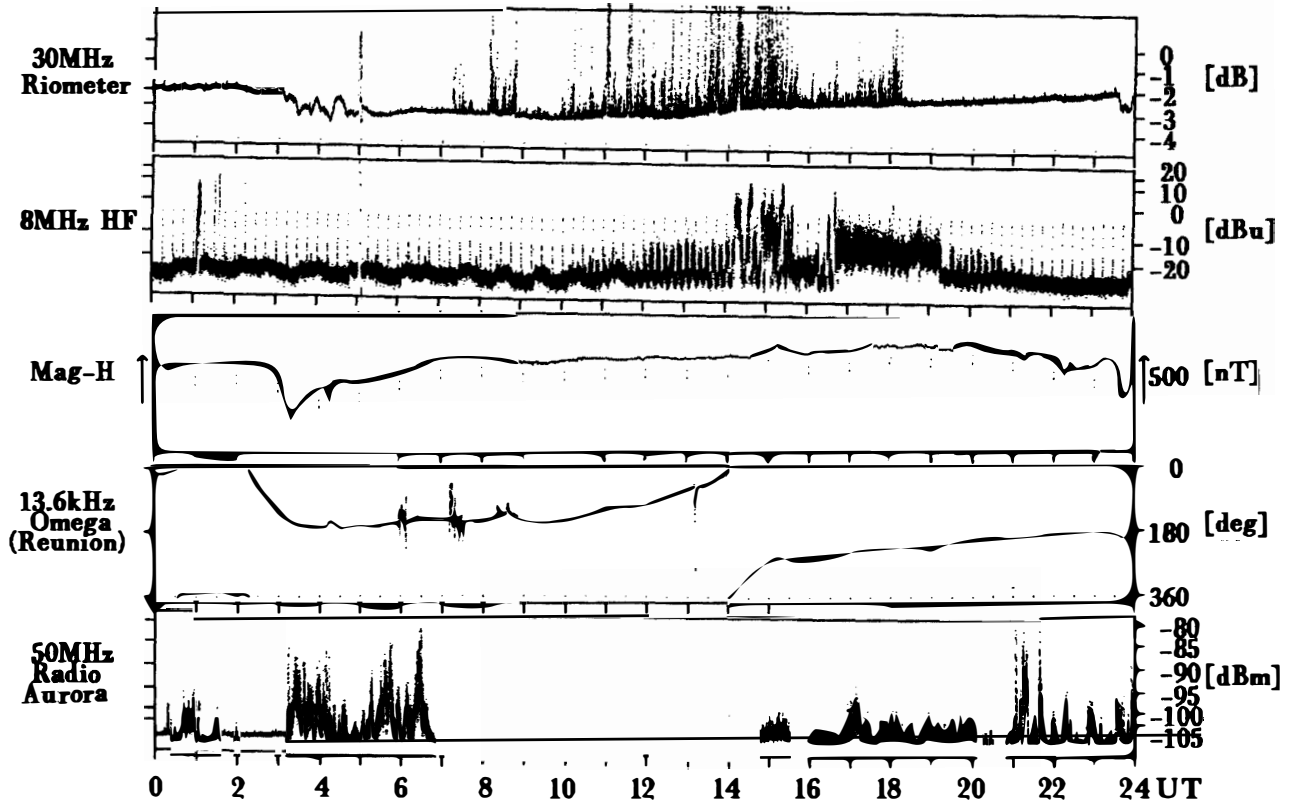
Syowa Station

Total Day / 116 1990/ 4/26



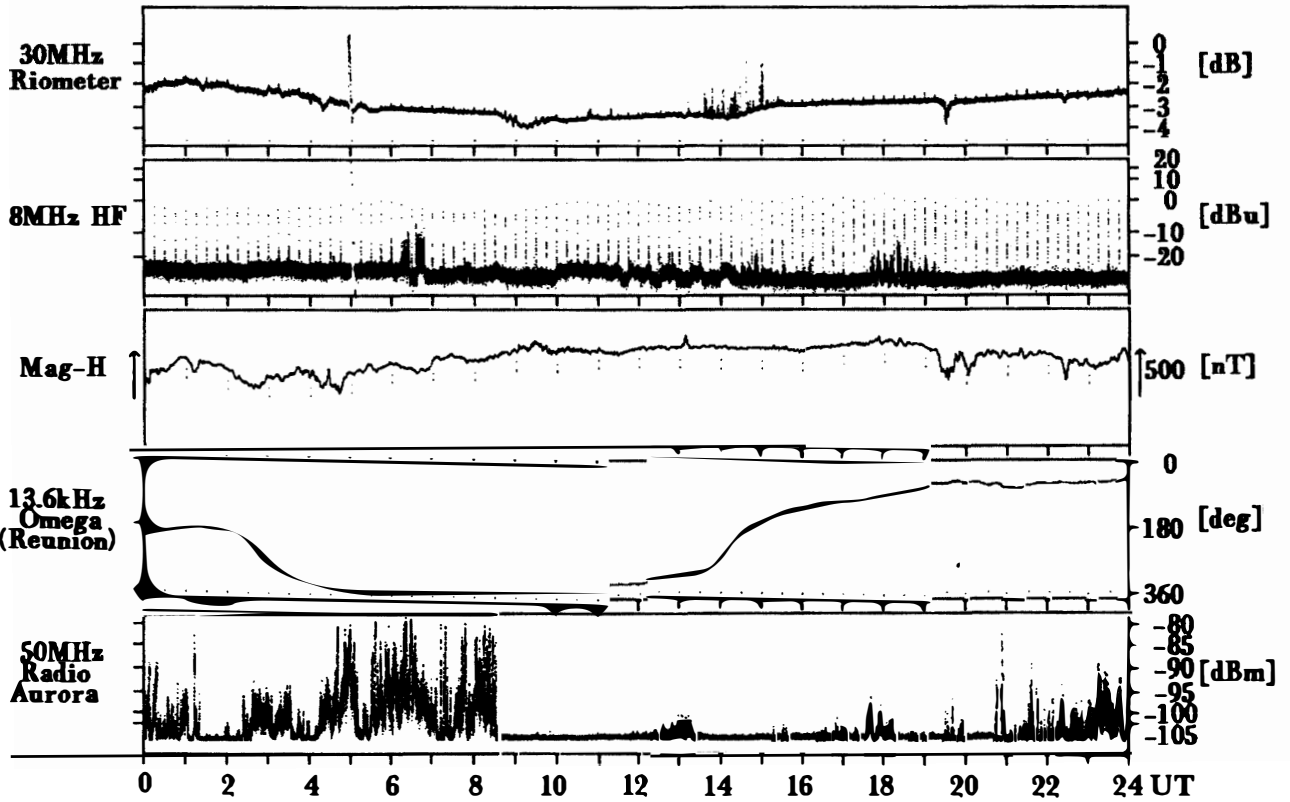
Syowa Station

Total Day / 117 1990/ 4/27



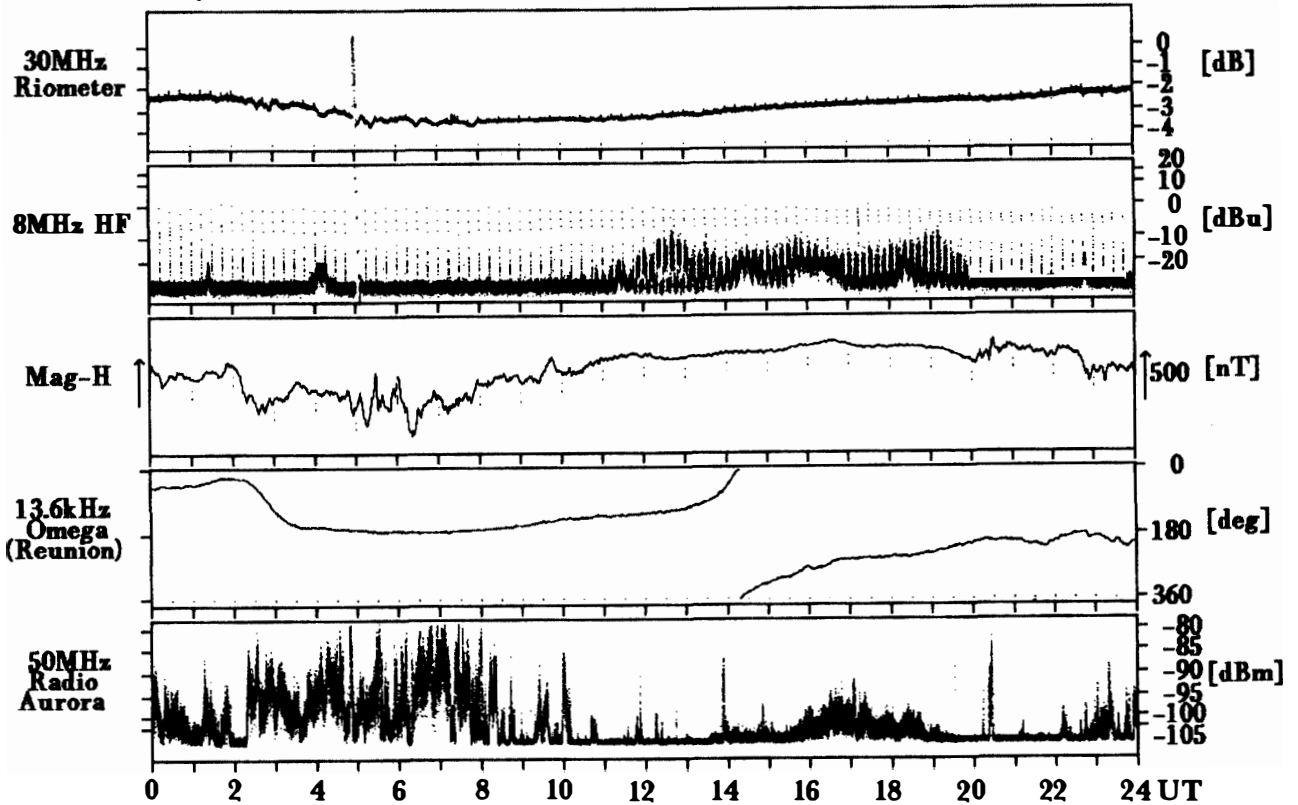
Syowa Station

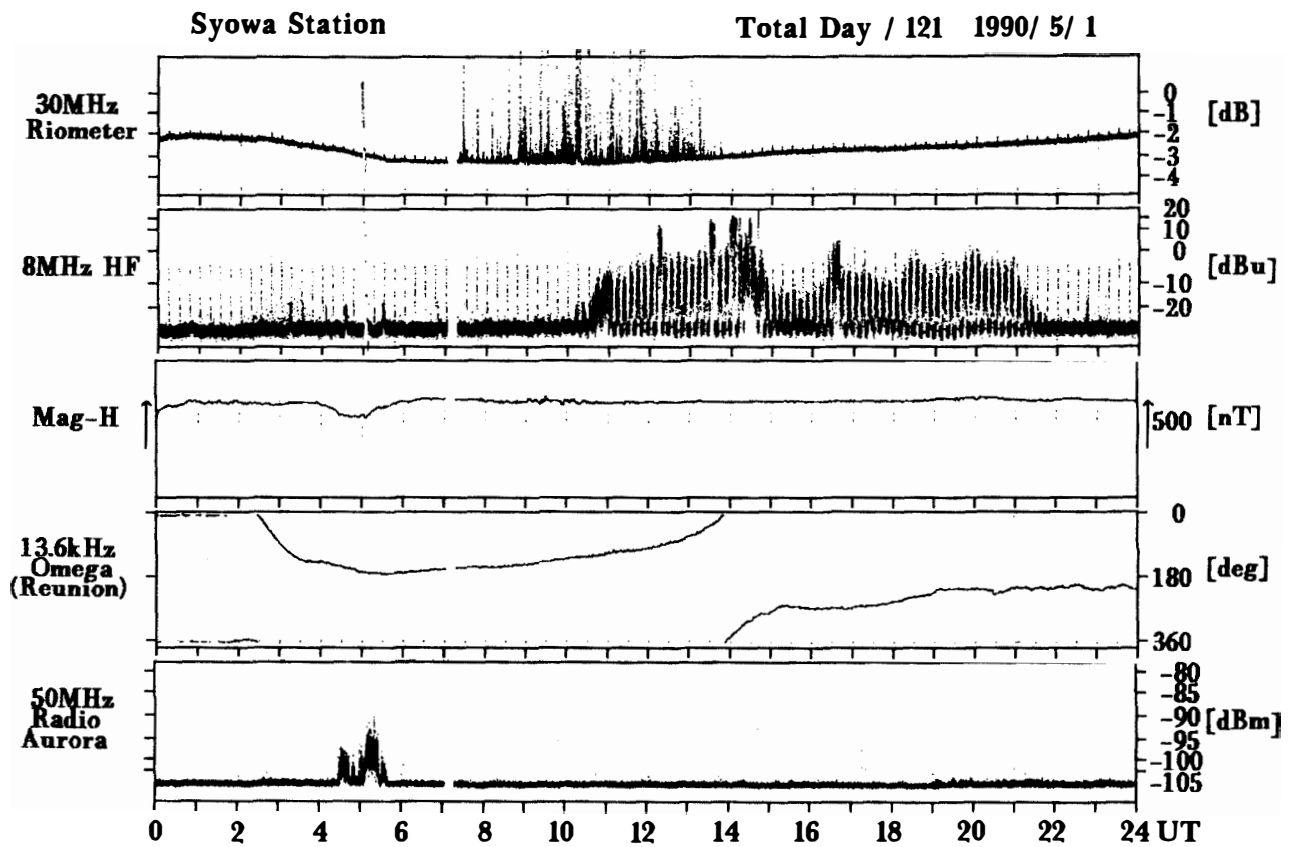
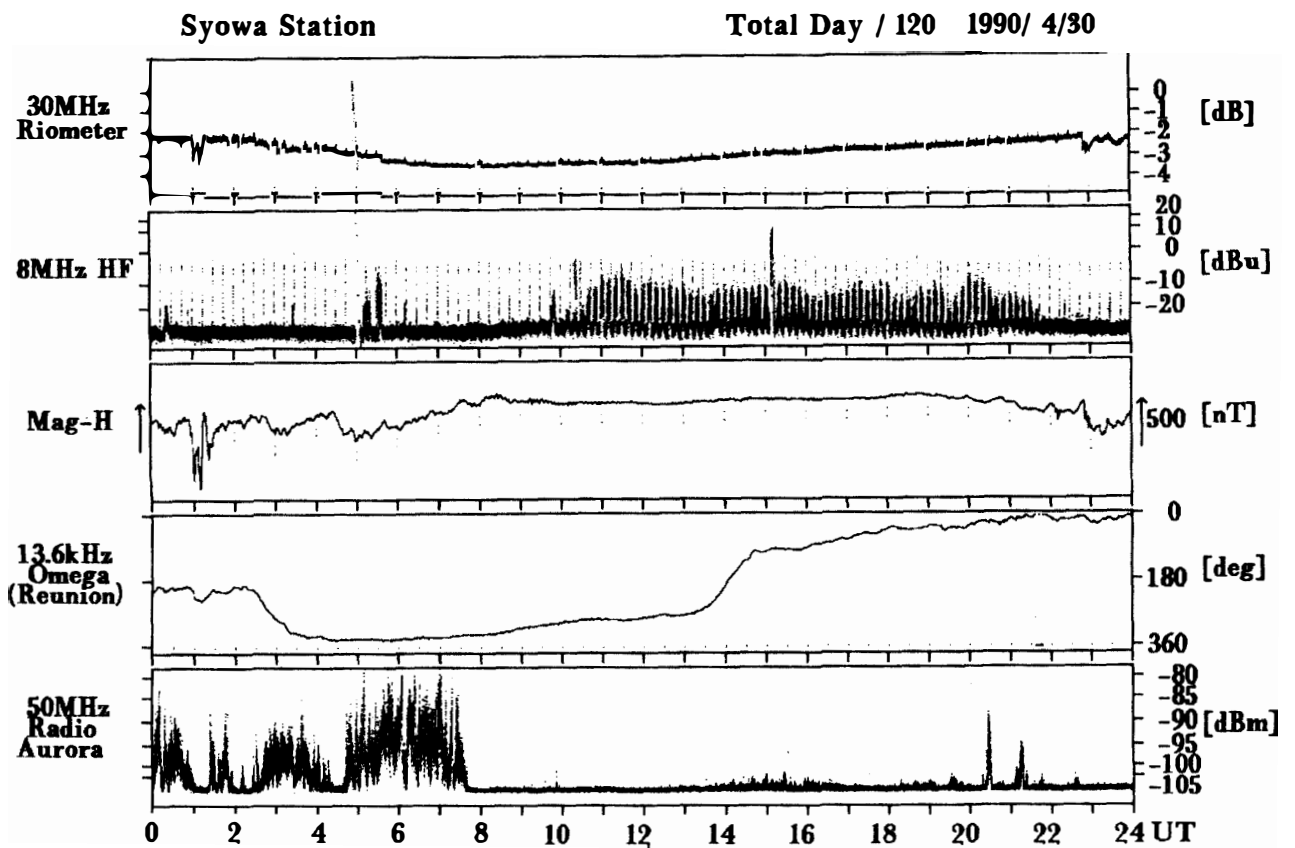
Total Day / 118 1990/ 4/28

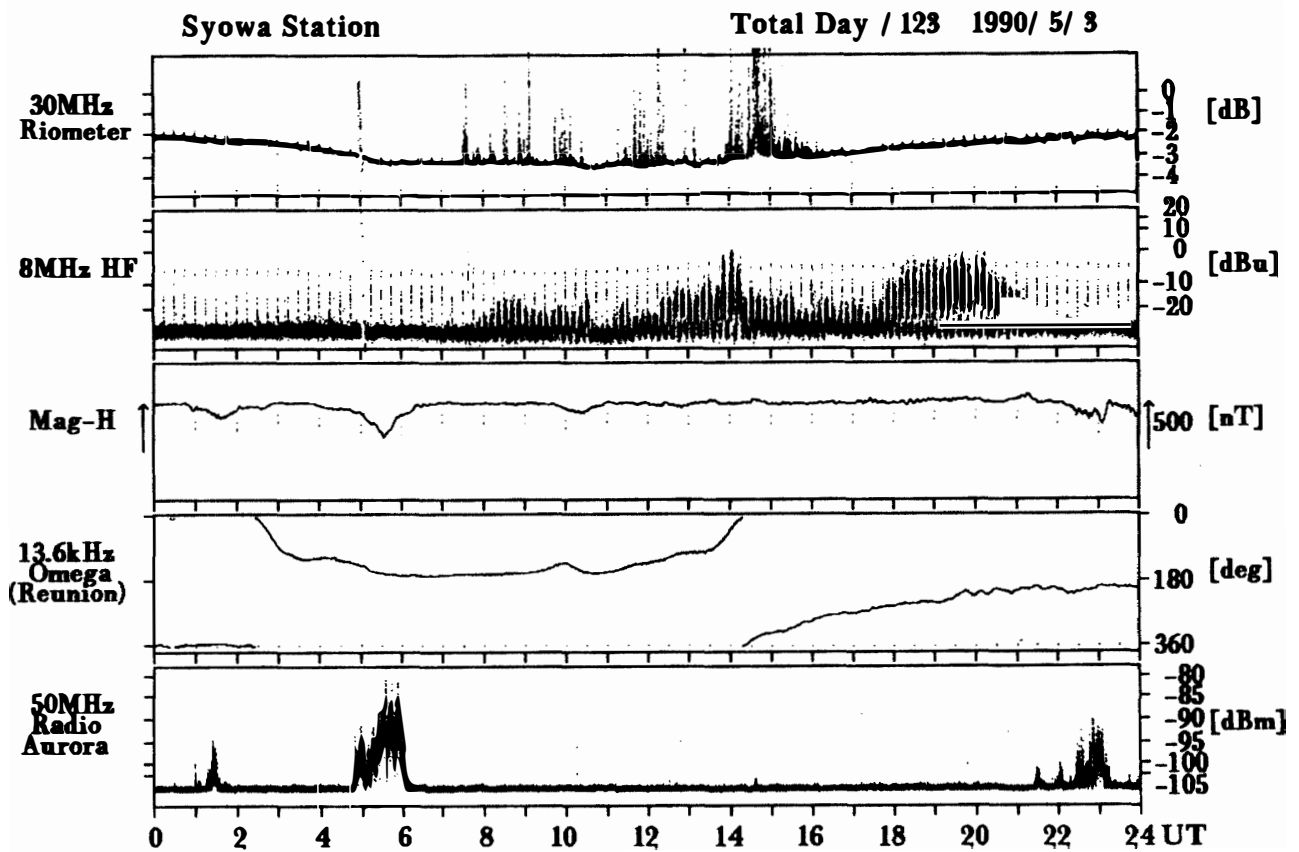
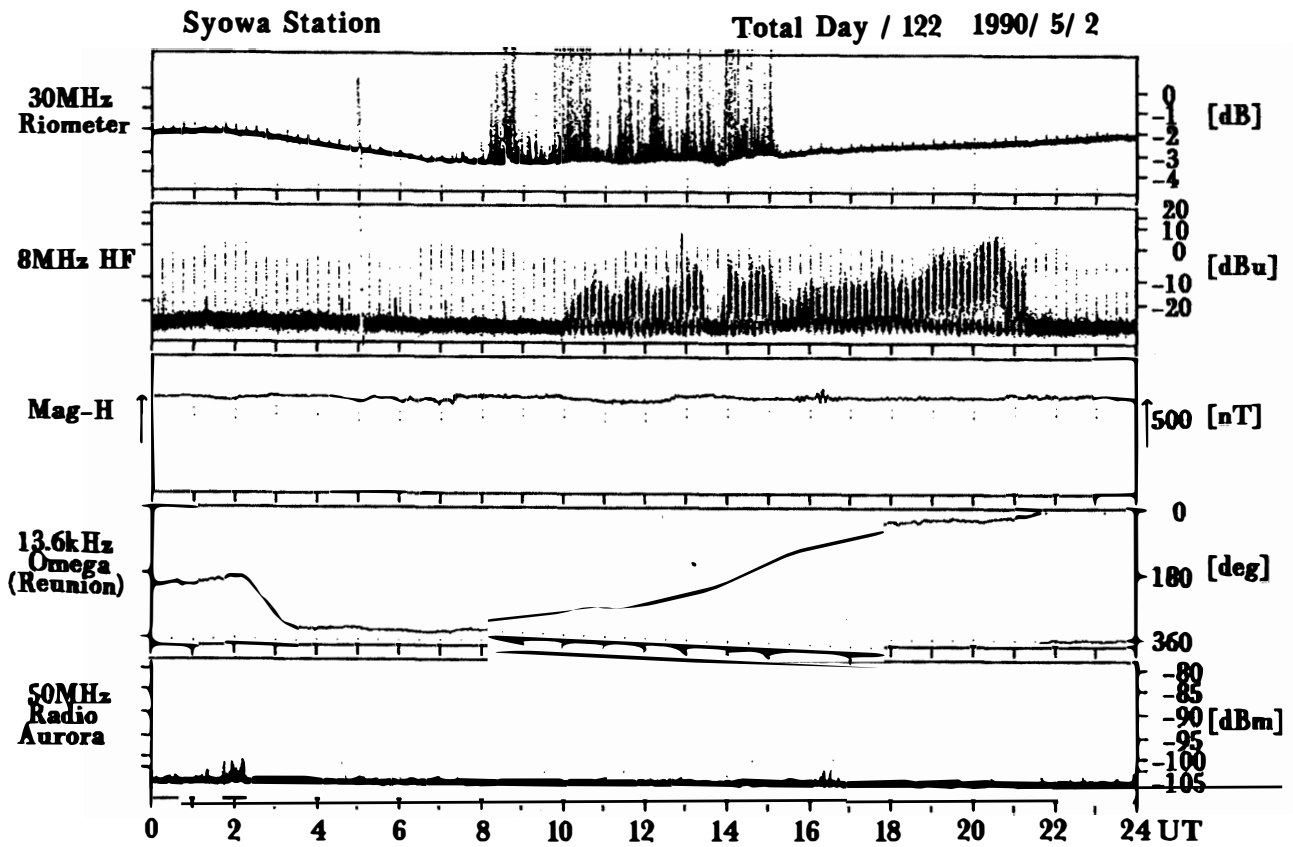


Syowa Station

Total Day / 119 1990/ 4/29

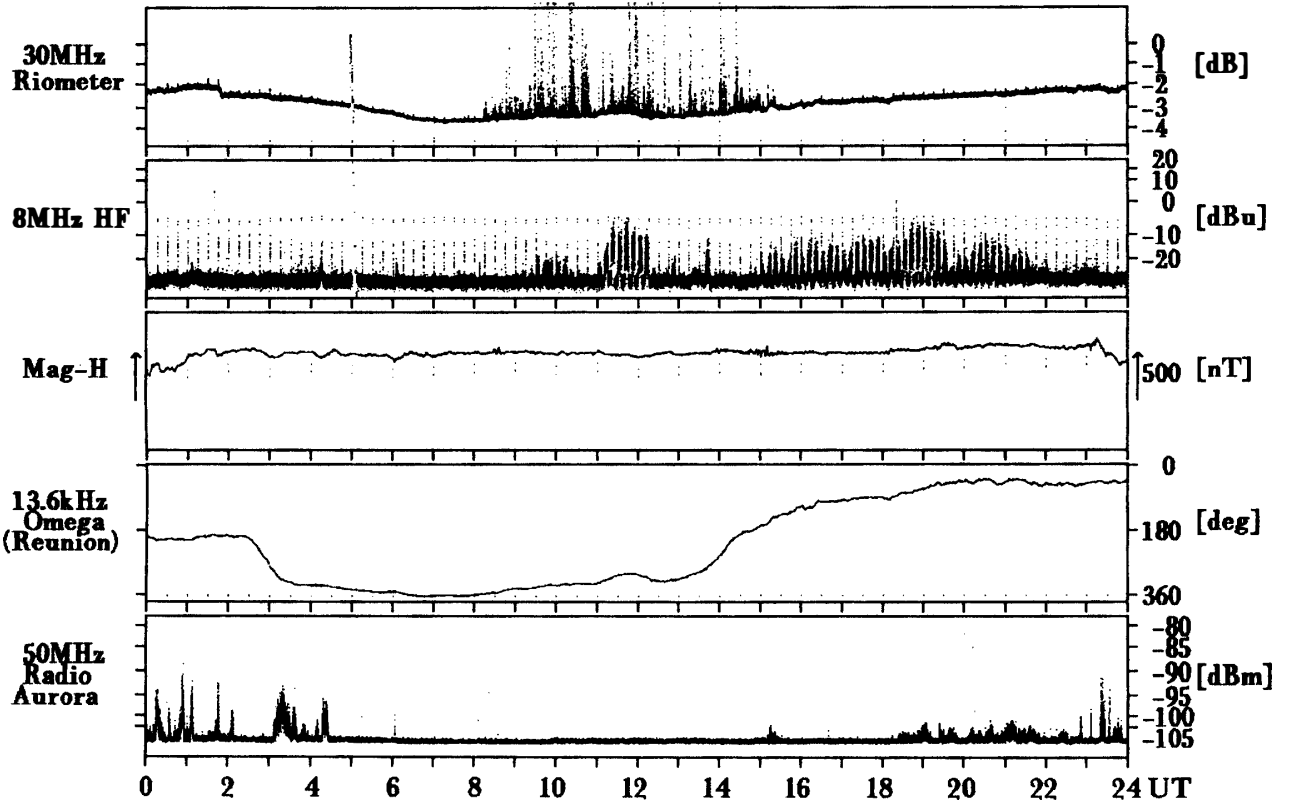






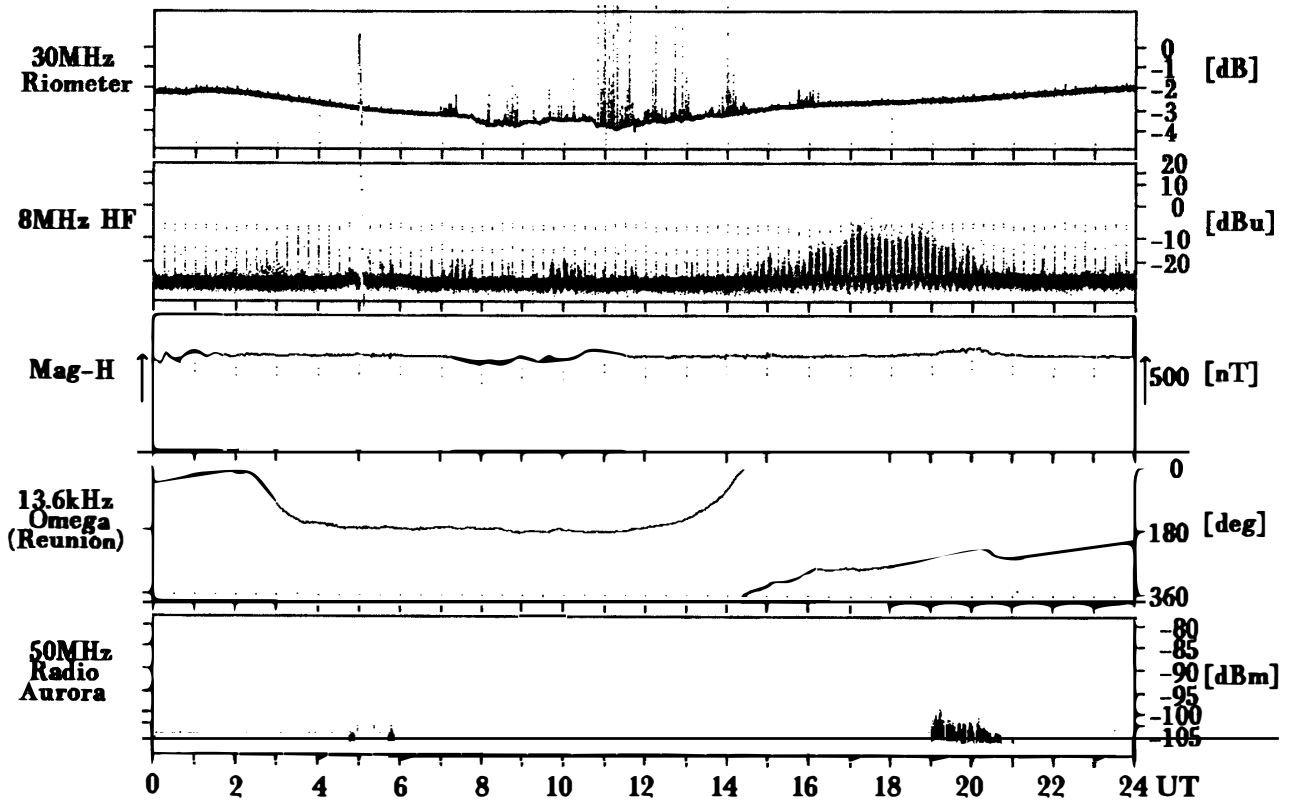
Syowa Station

Total Day / 124 1990/ 5/ 4



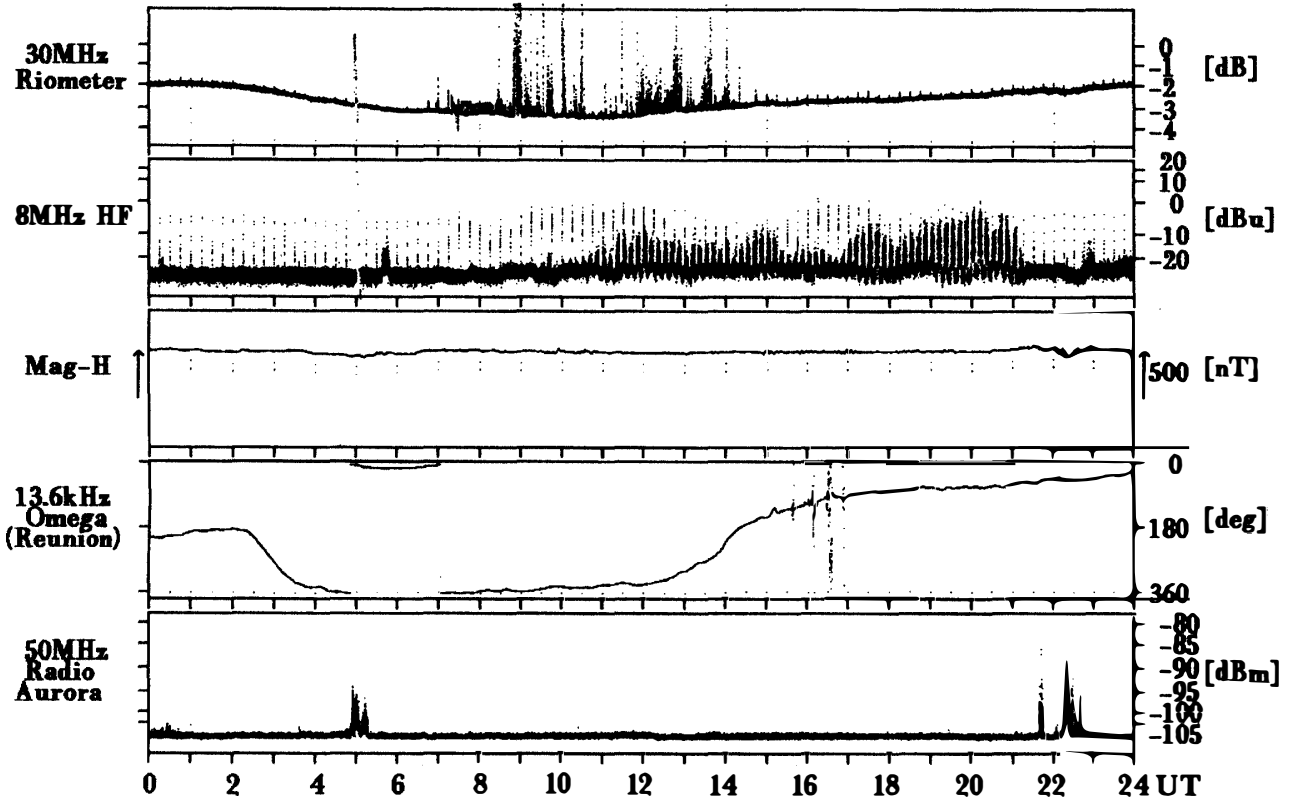
Syowa Station

Total Day / 125 1990/ 5/ 5



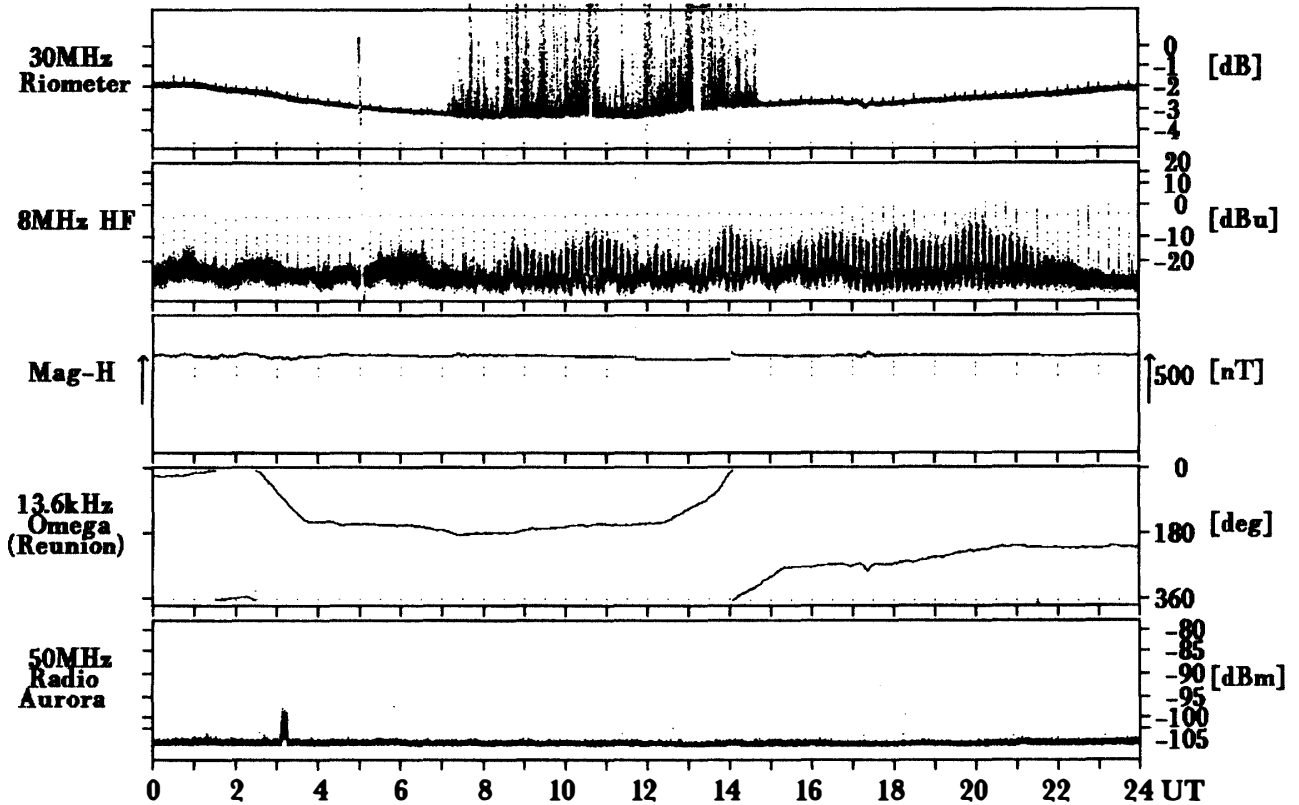
Syowa Station

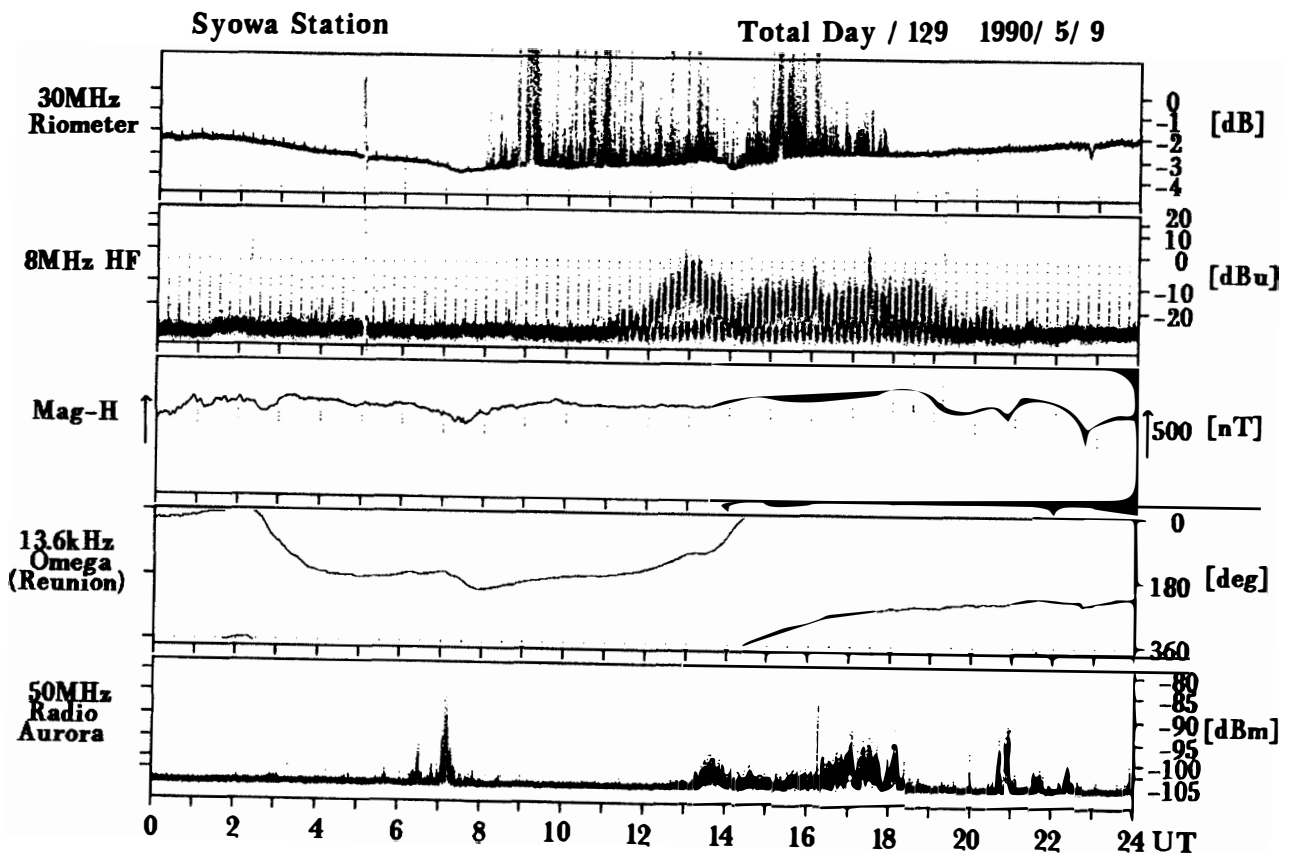
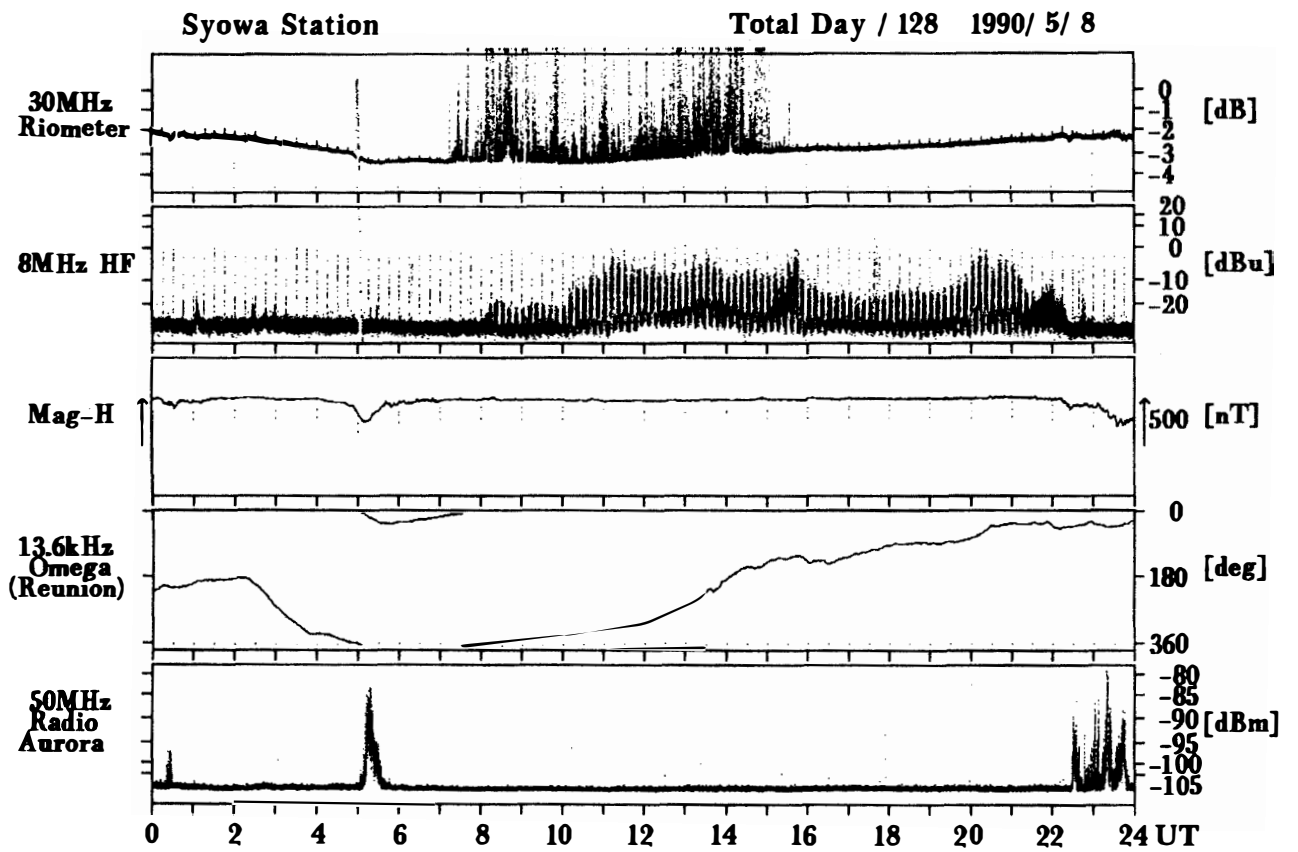
Total Day / 126 1990/ 5/ 6



Syowa Station

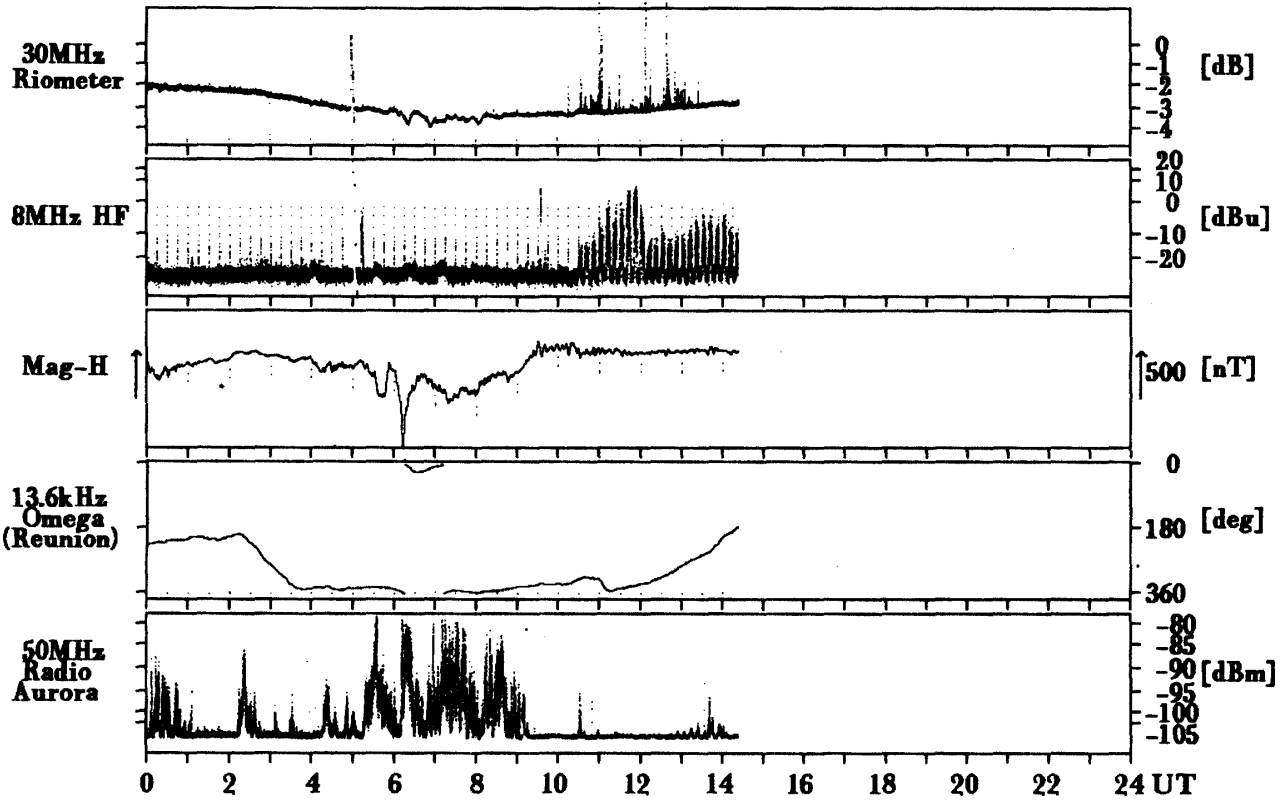
Total Day / 127 1990/ 5/ 7





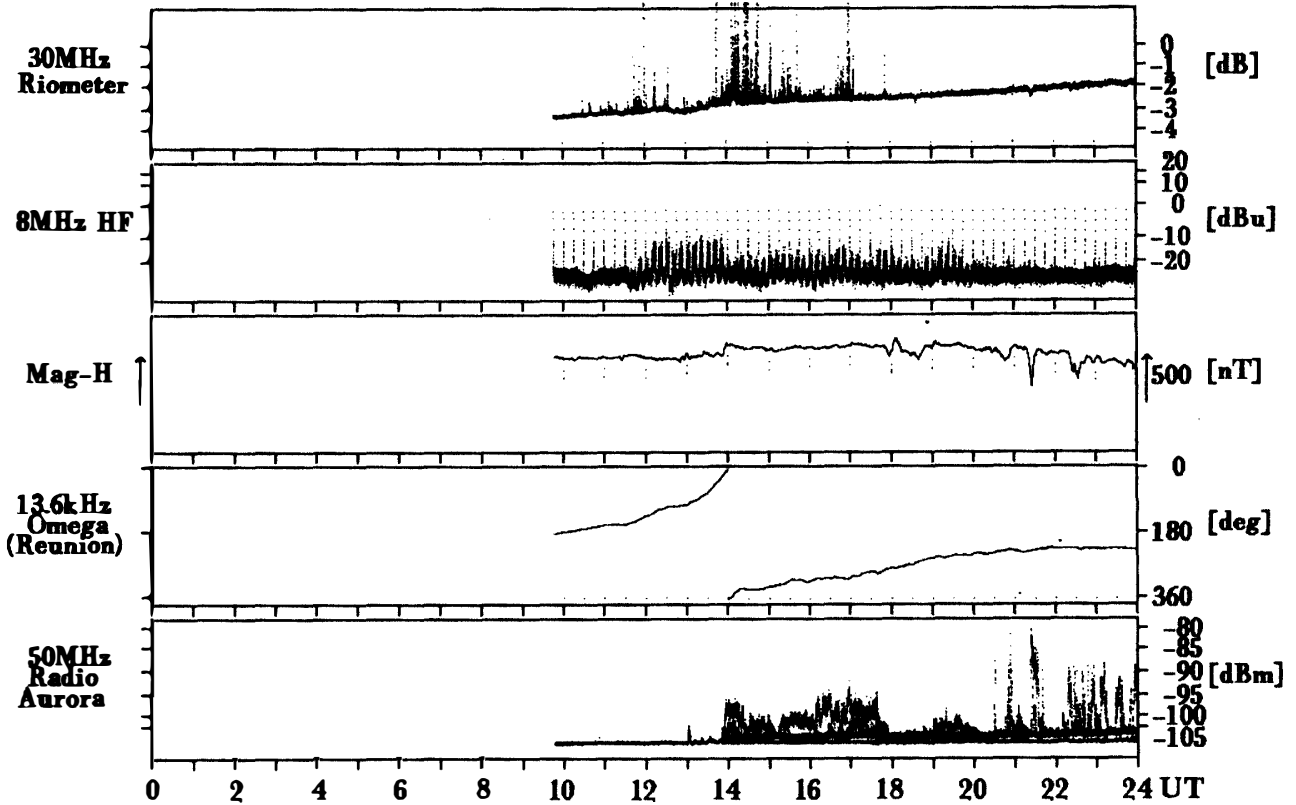
Syowa Station

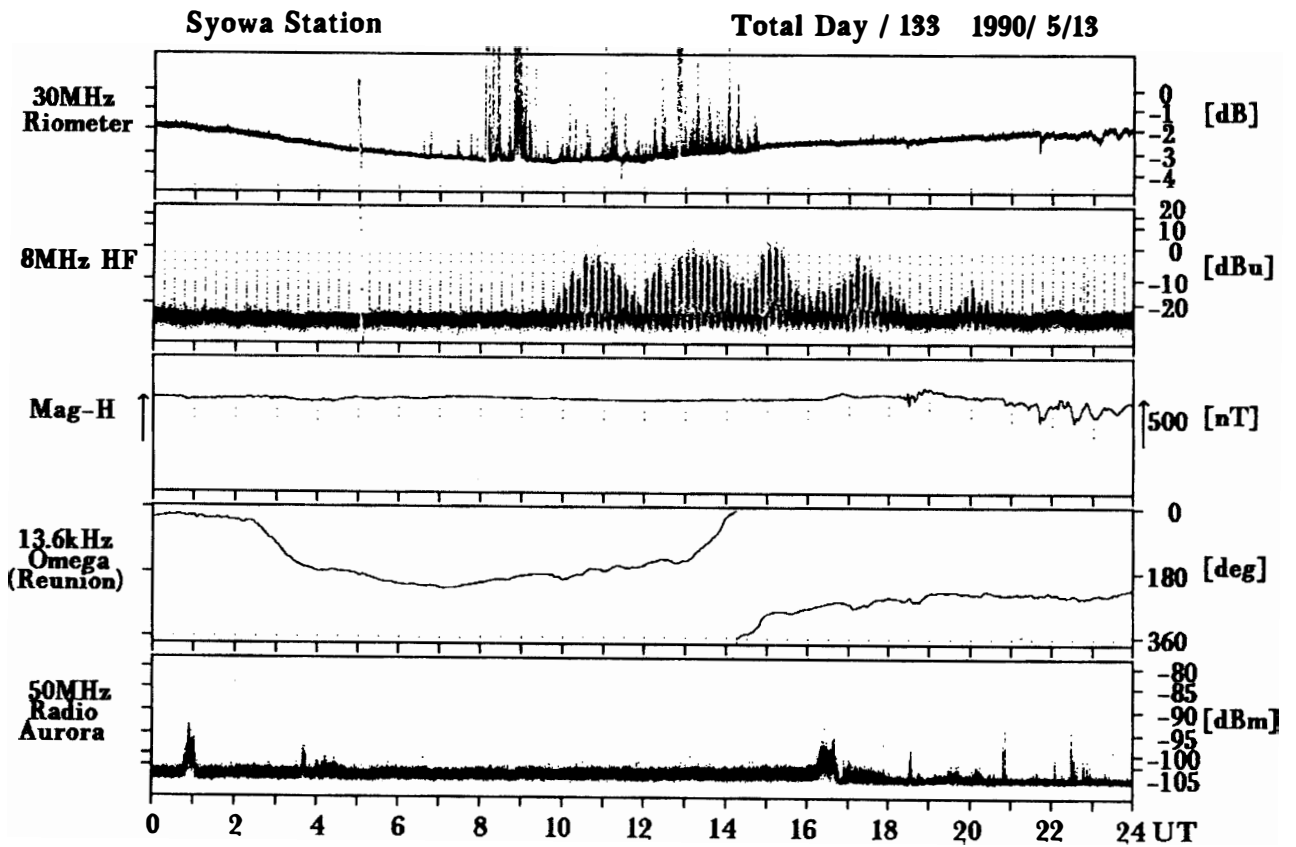
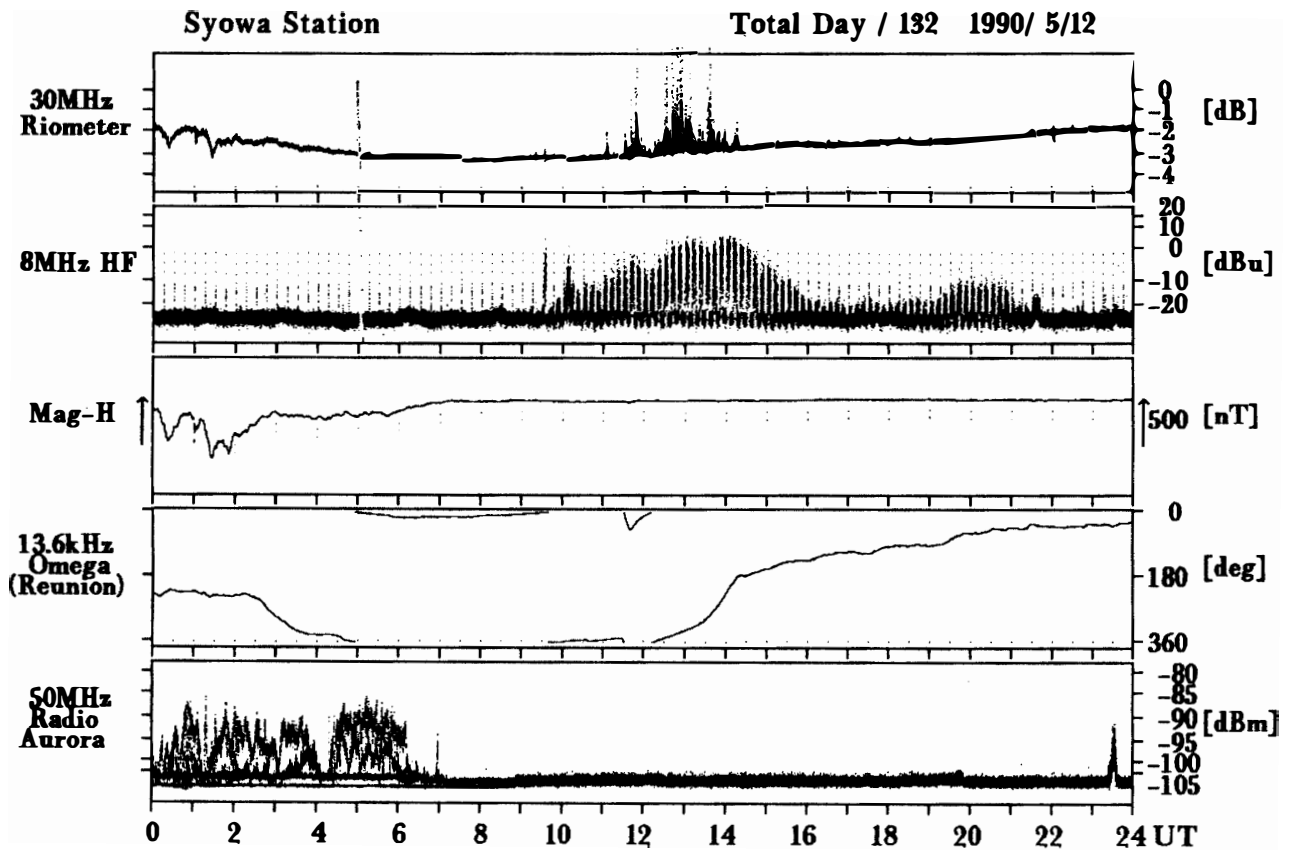
Total Day / 130 1990/ 5/10



Syowa Station

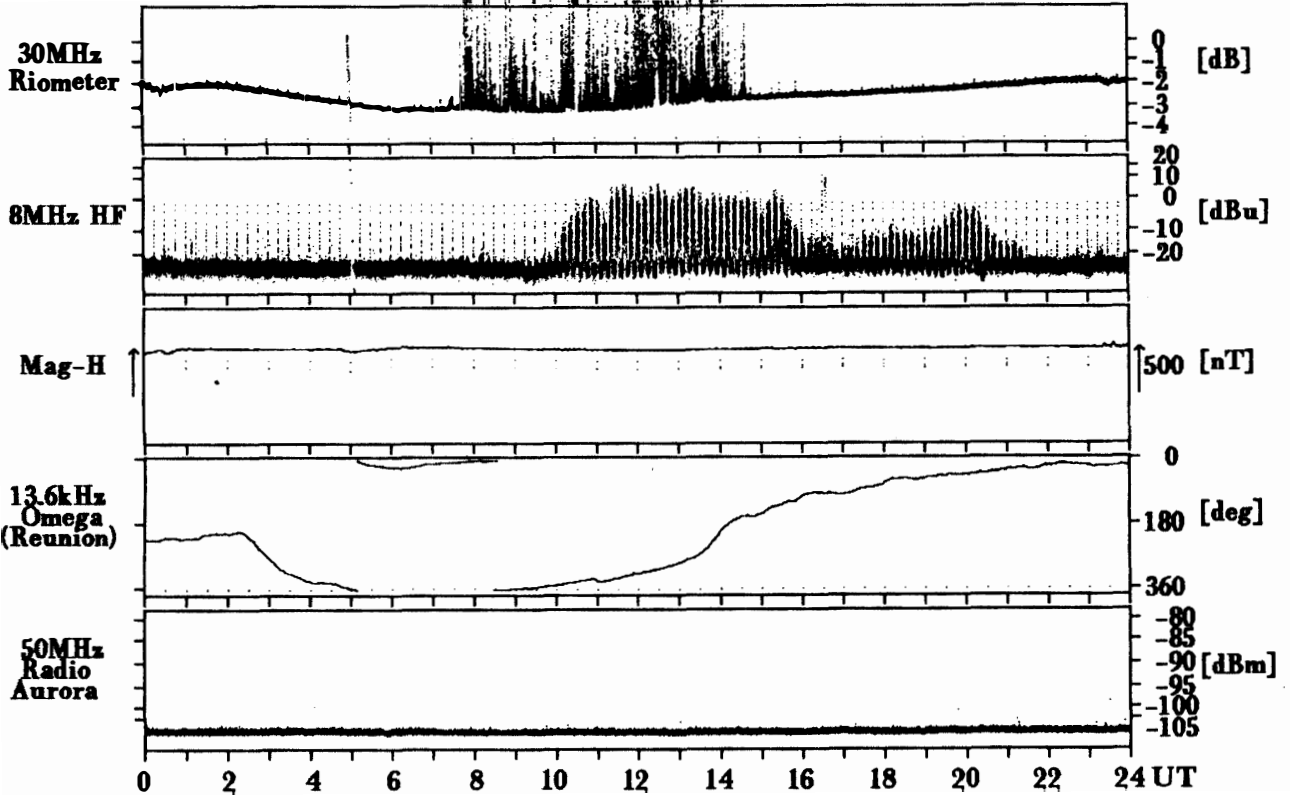
Total Day / 131 1990/ 5/11





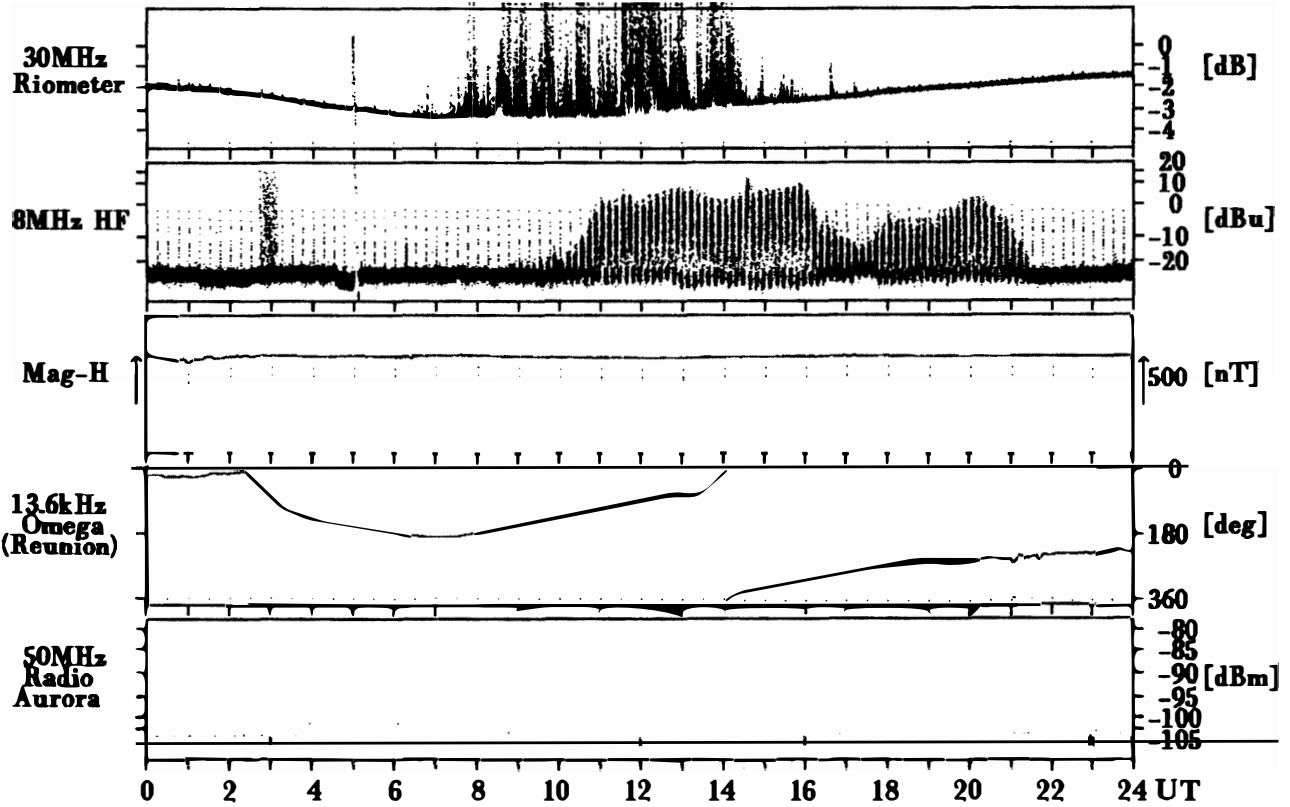
Syowa Station

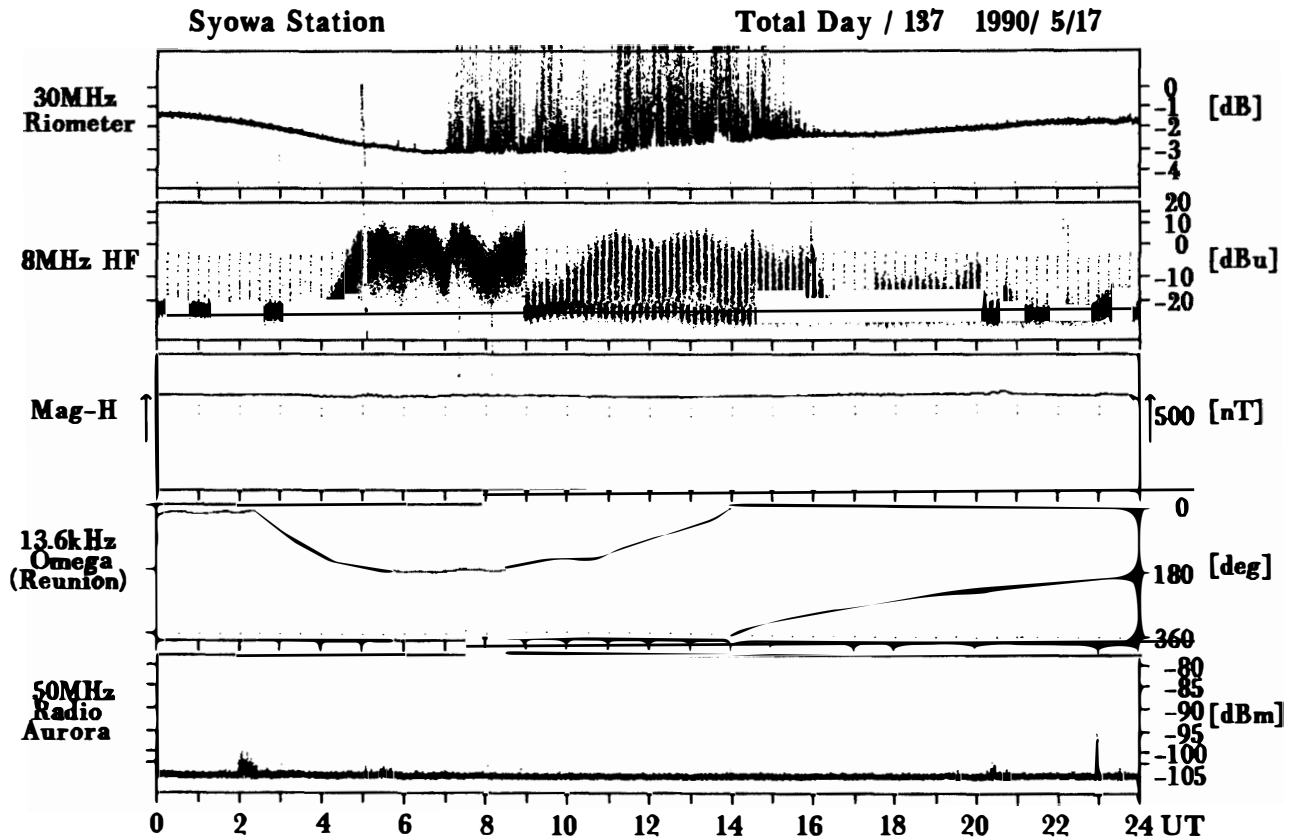
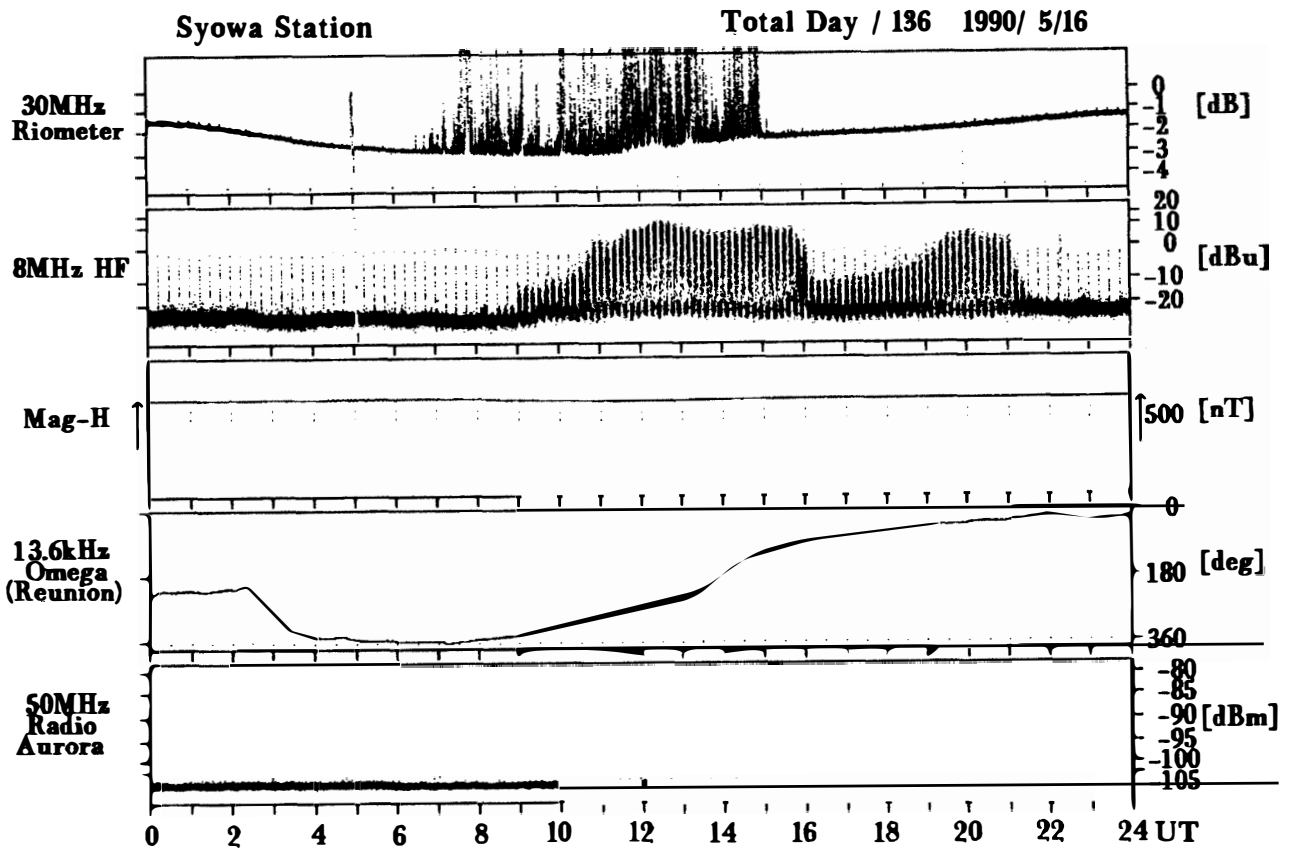
Total Day / 134 1990/ 5/14



Syowa Station

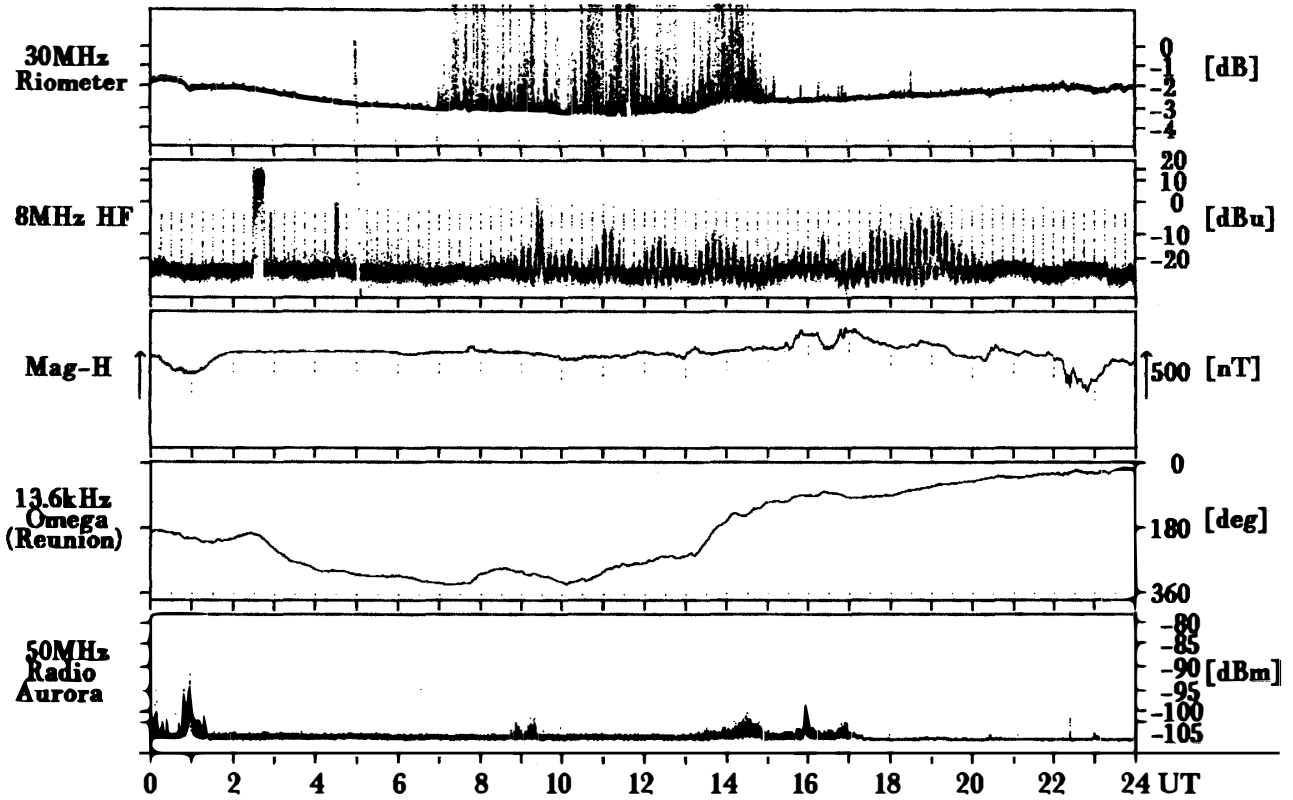
Total Day / 135 1990/ 5/15





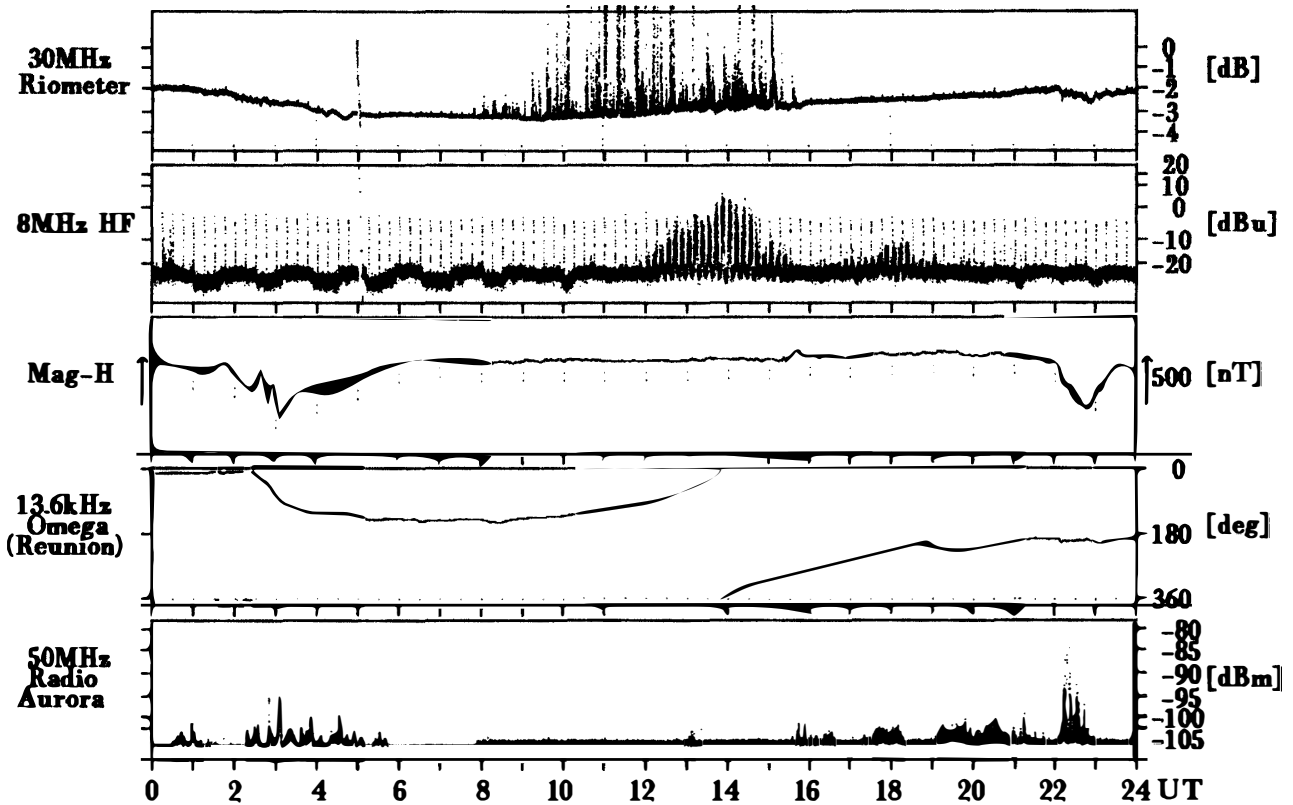
Syowa Station

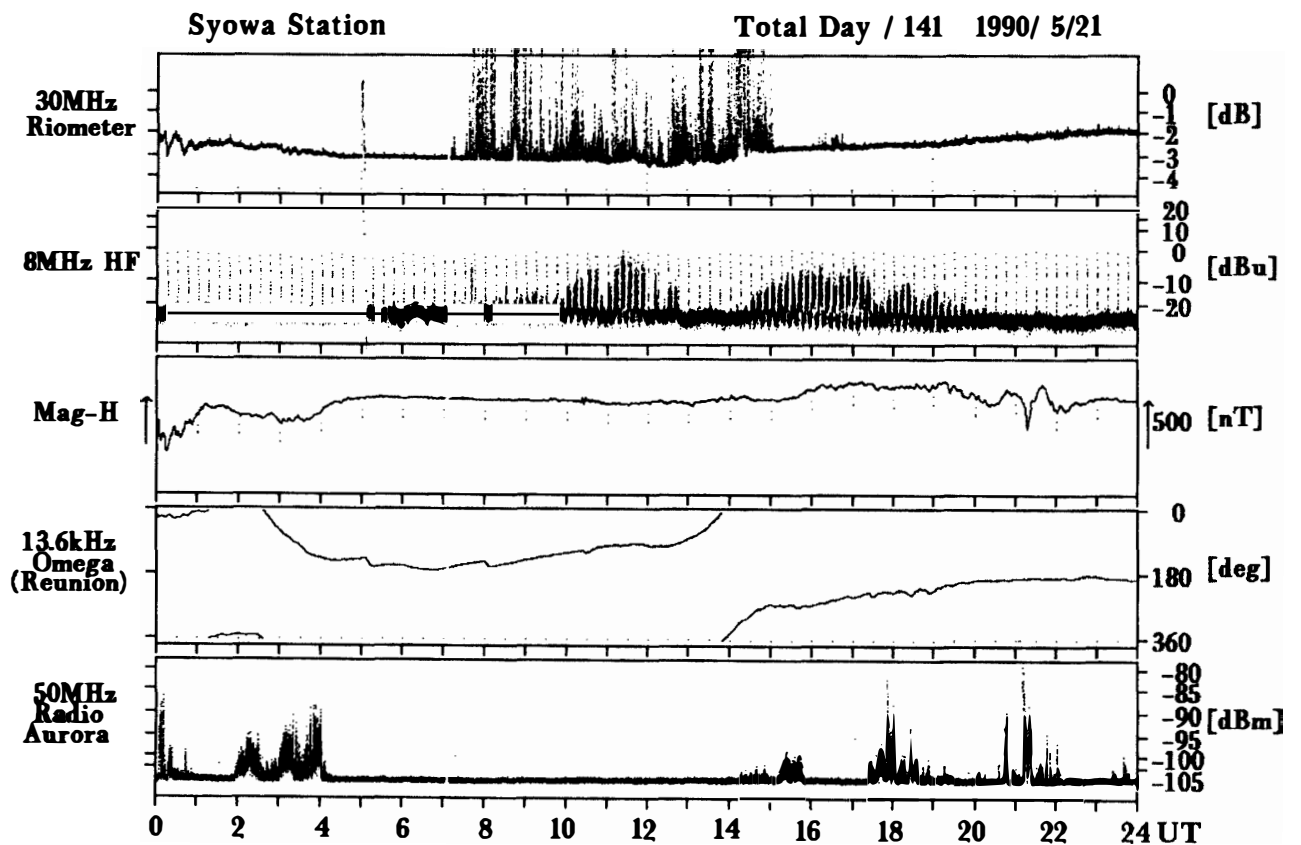
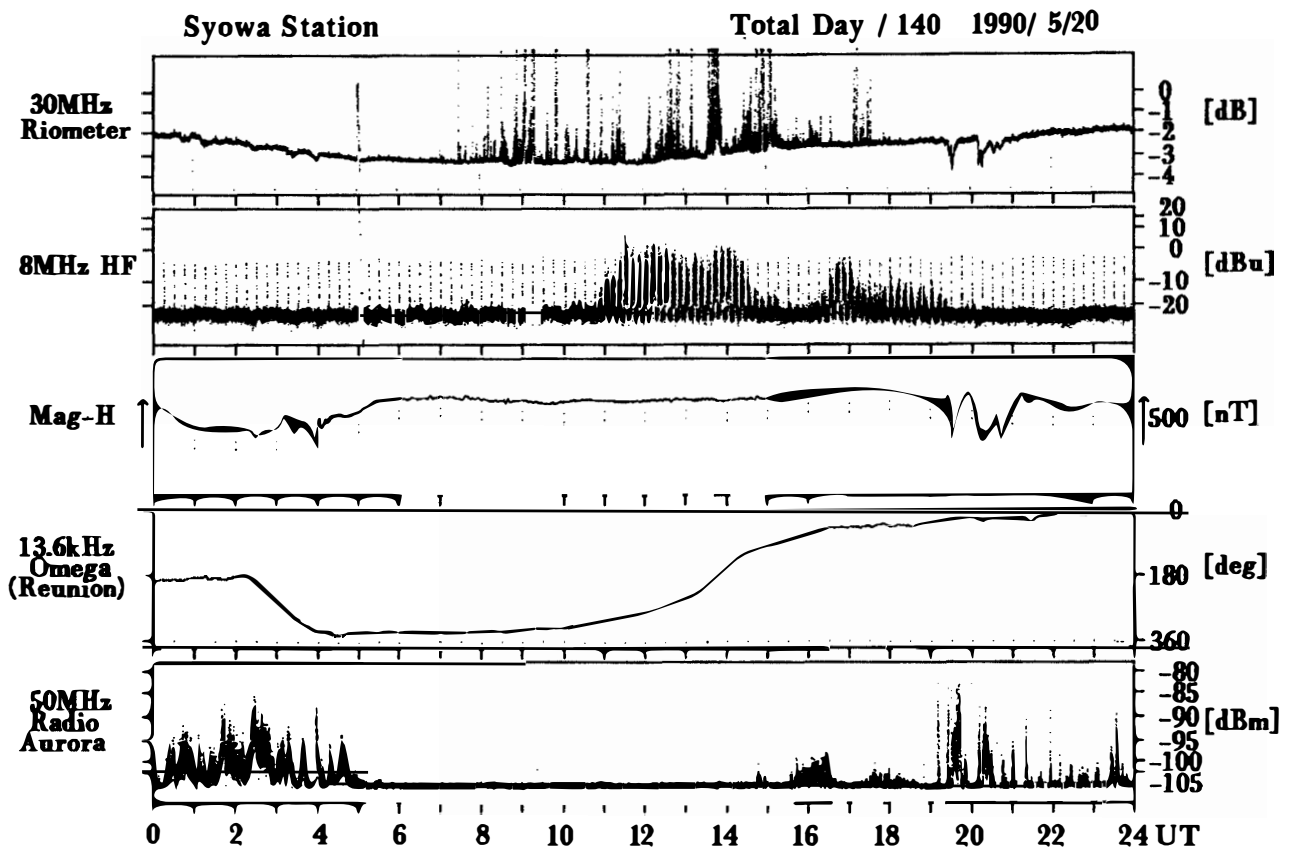
Total Day / 138 1990/ 5/18

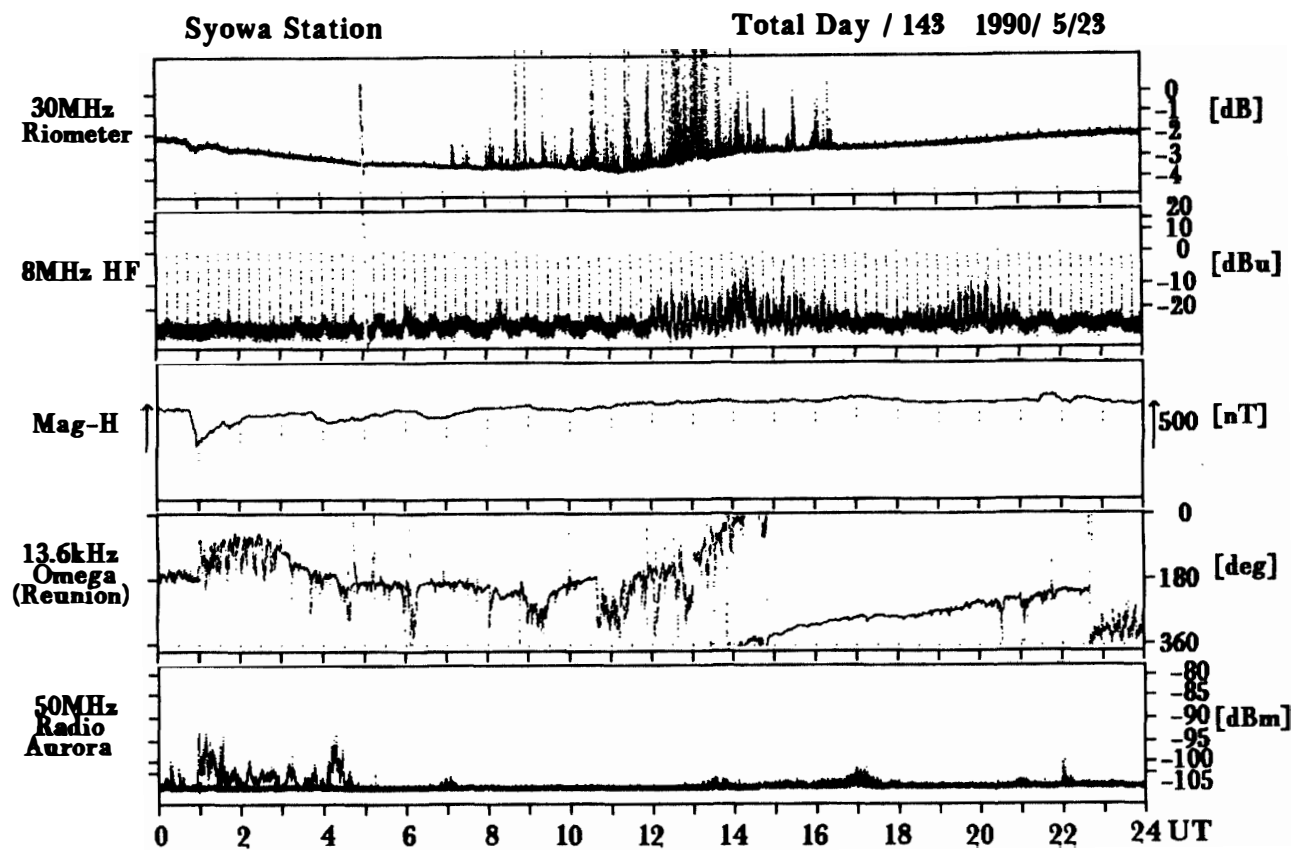
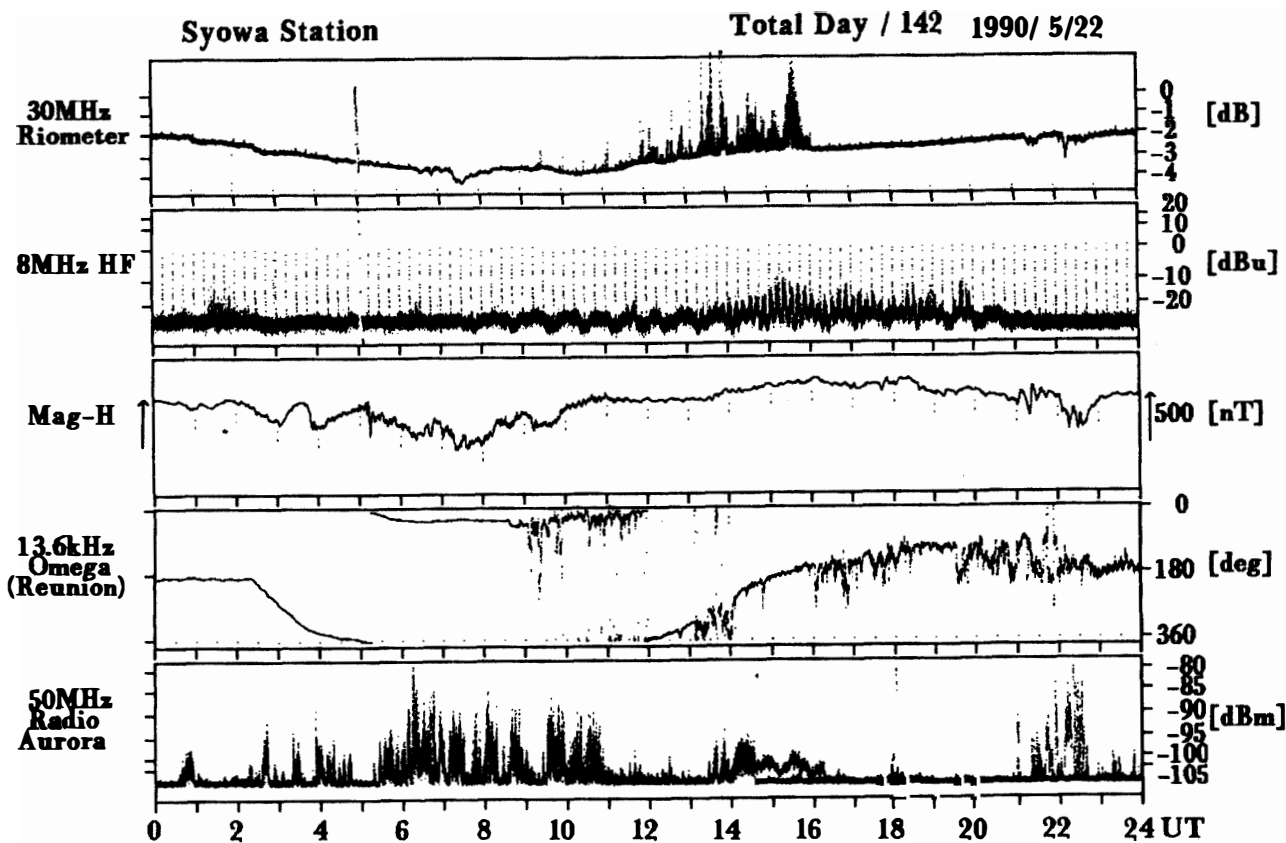


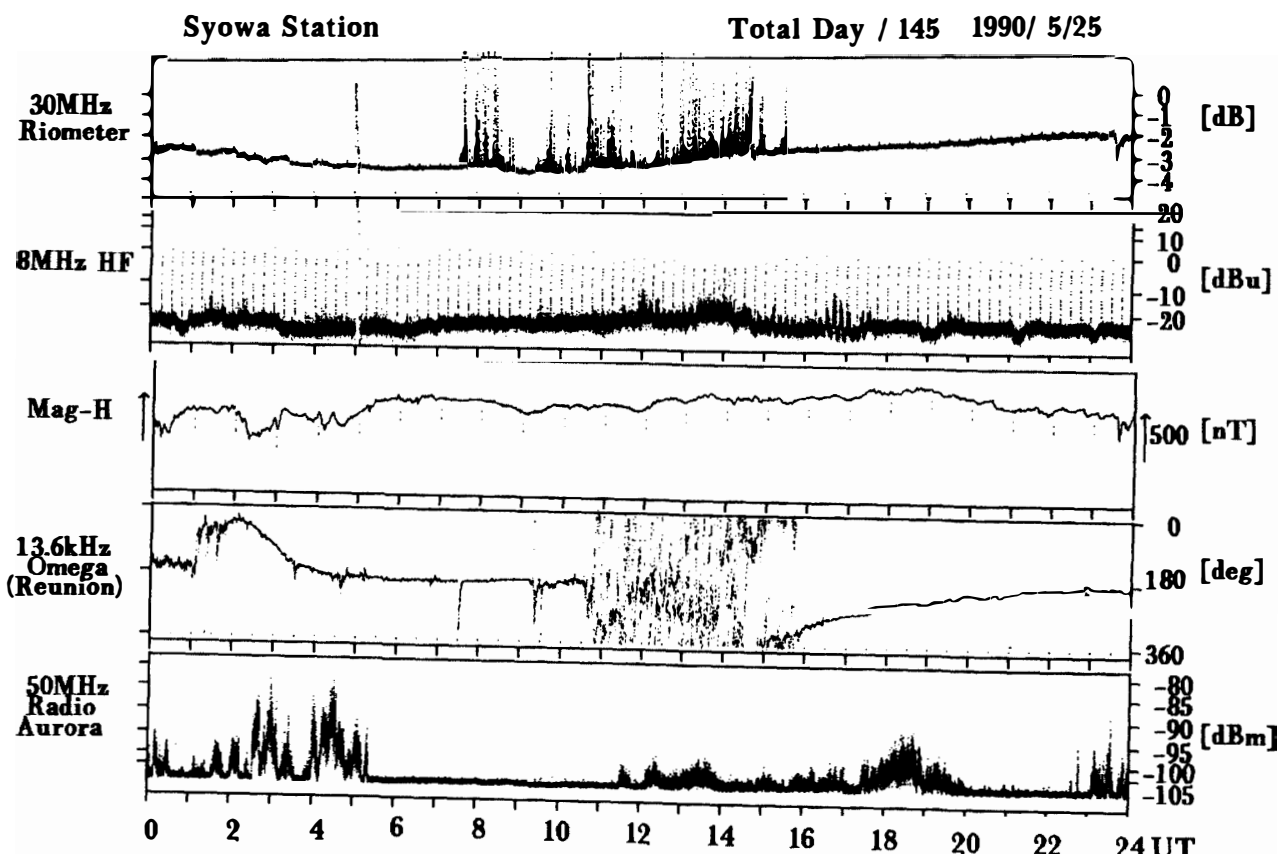
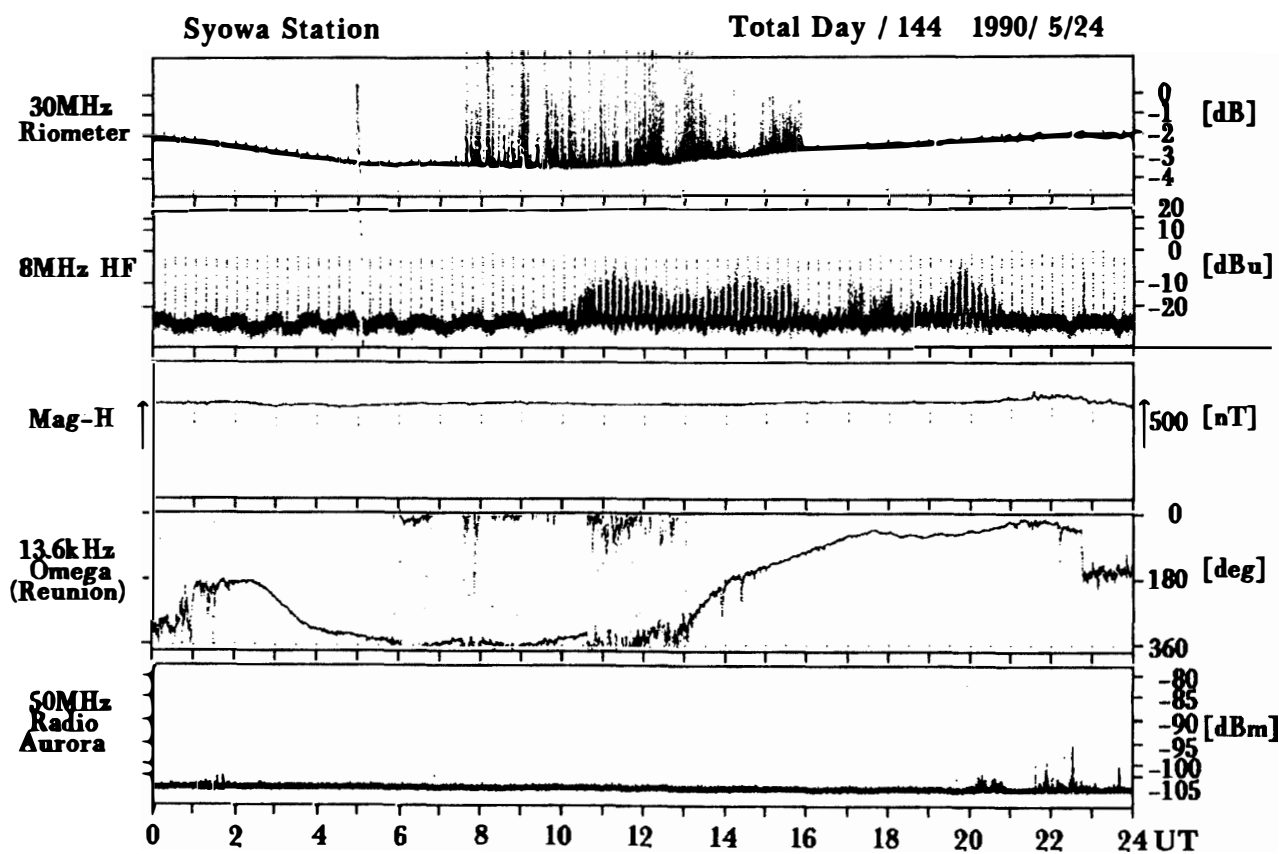
Syowa Station

Total Day / 139 1990/ 5/19



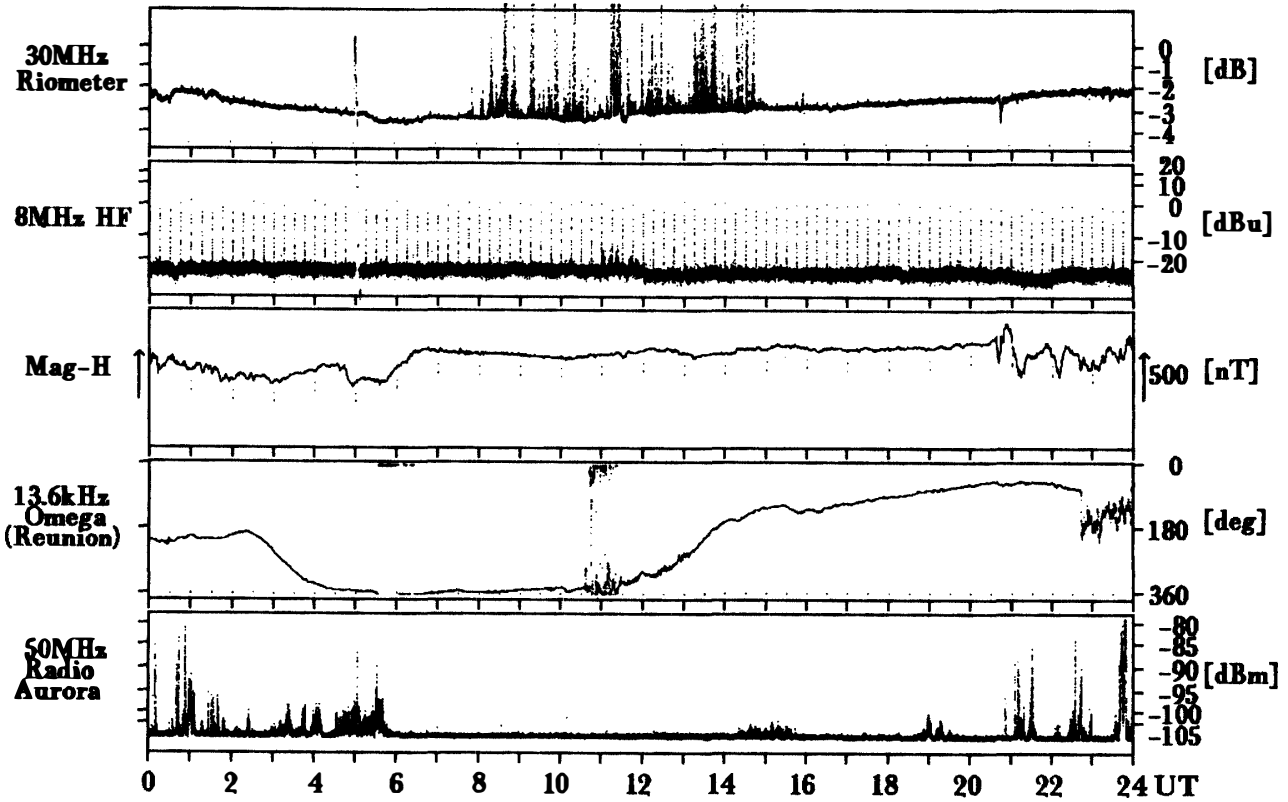






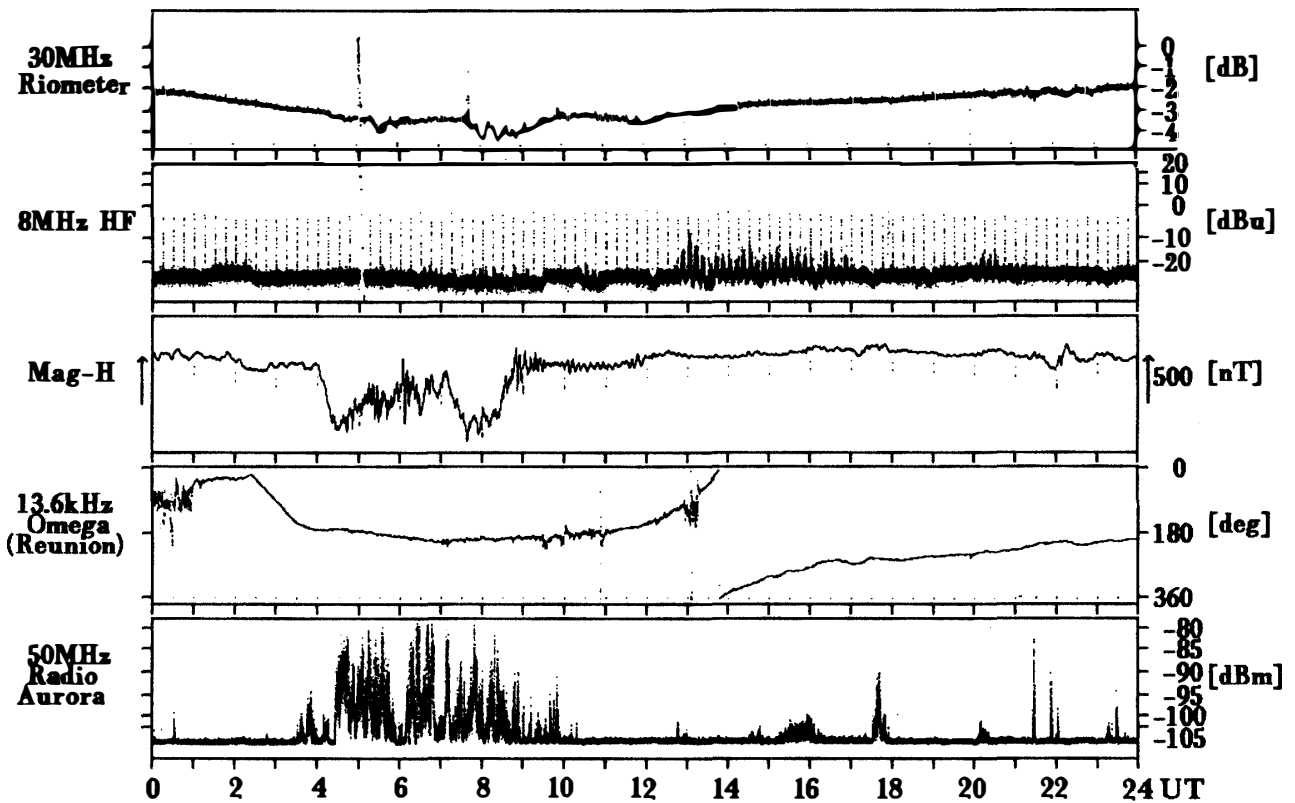
Syowa Station

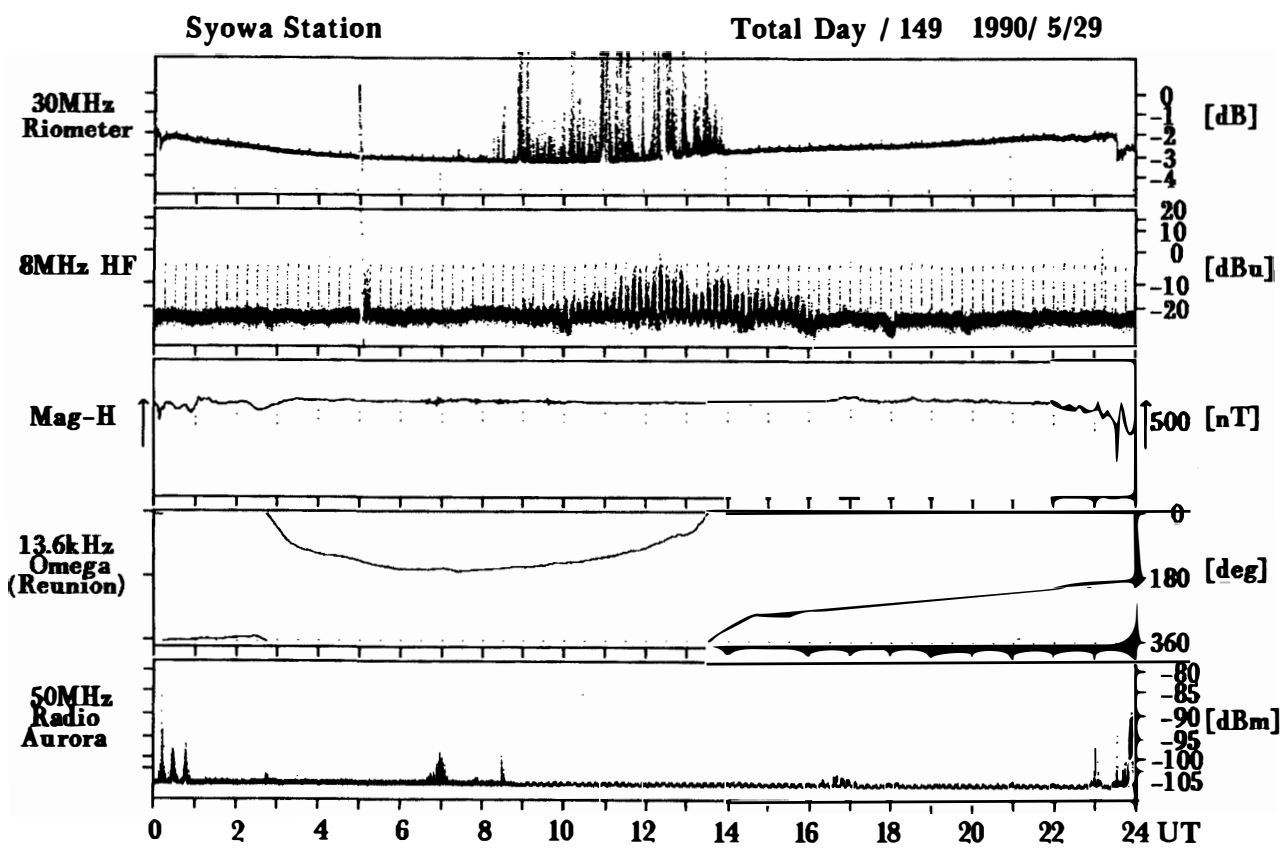
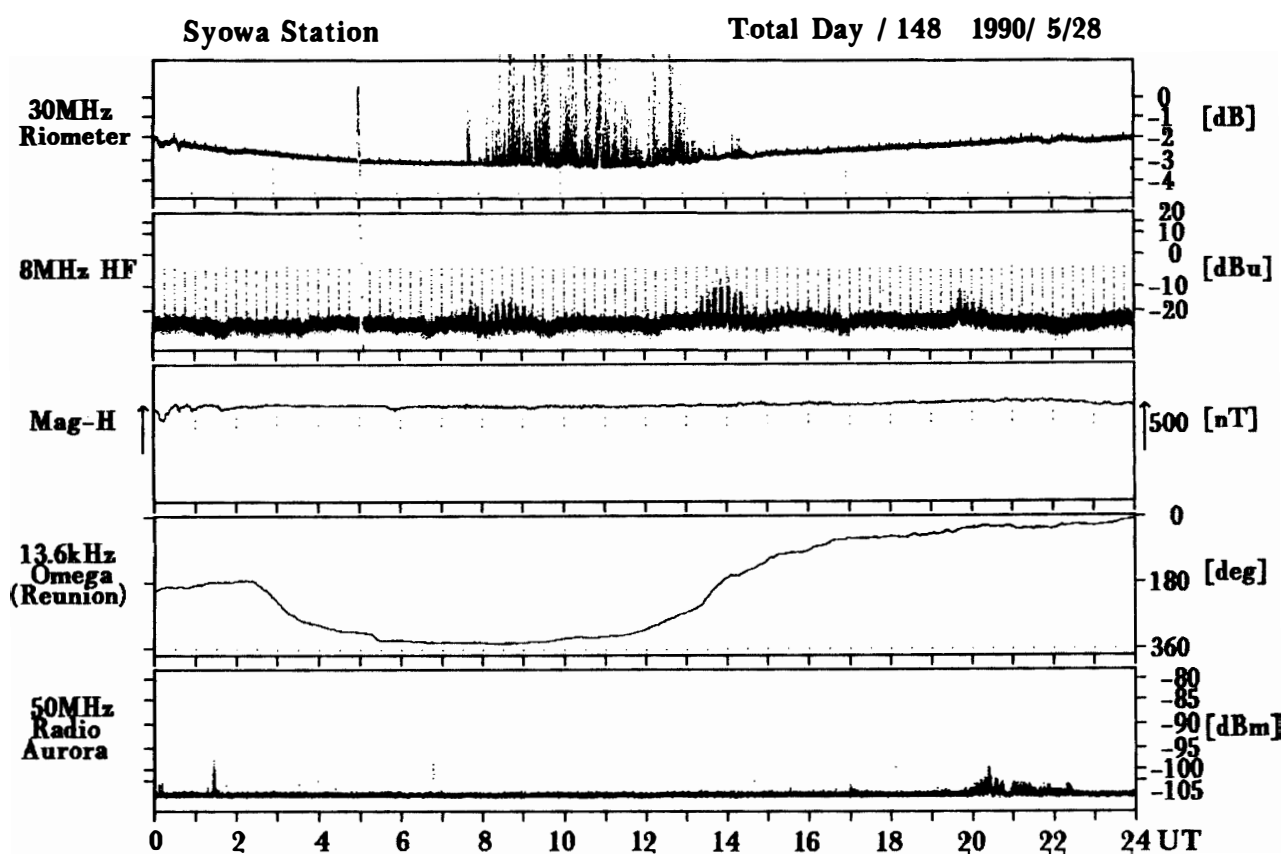
Total Day / 146 1990/ 5/26

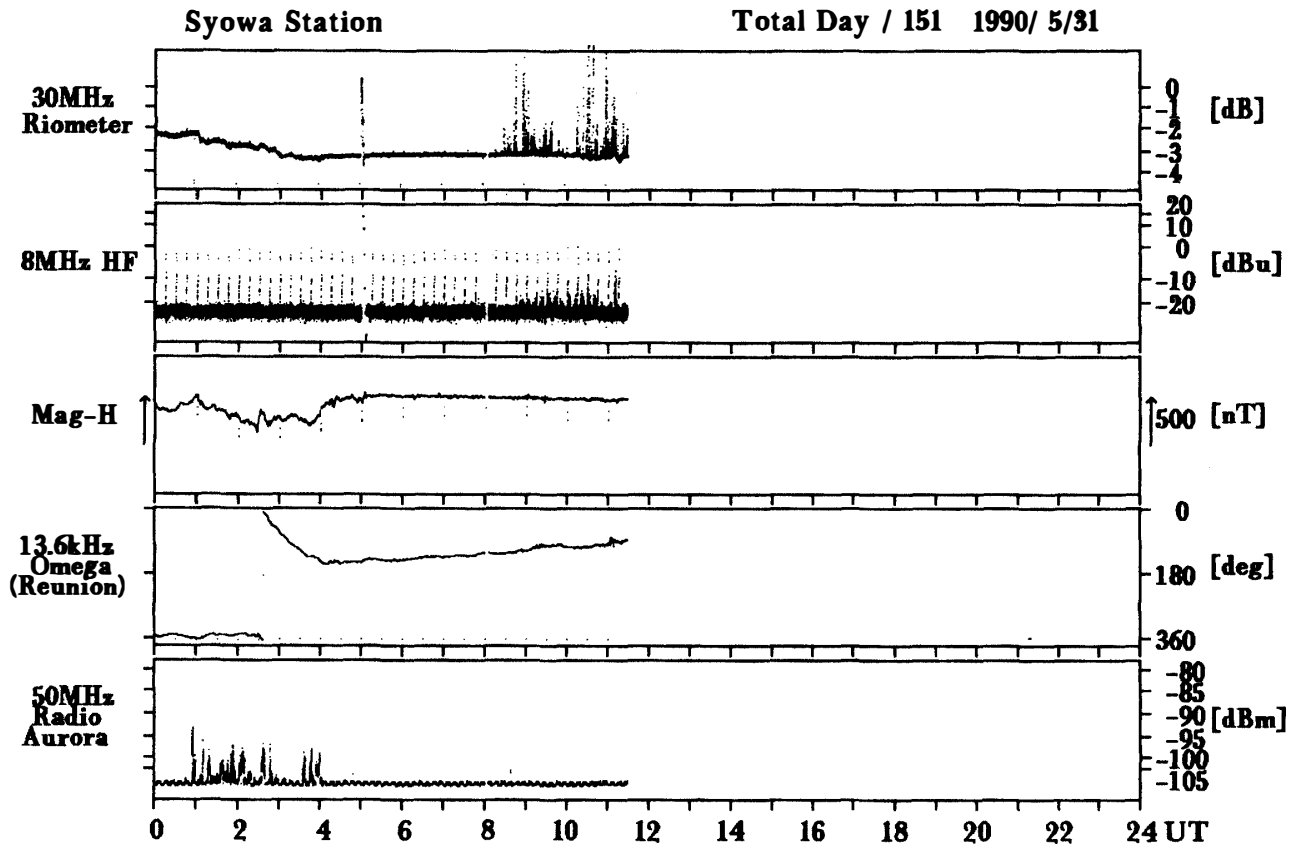
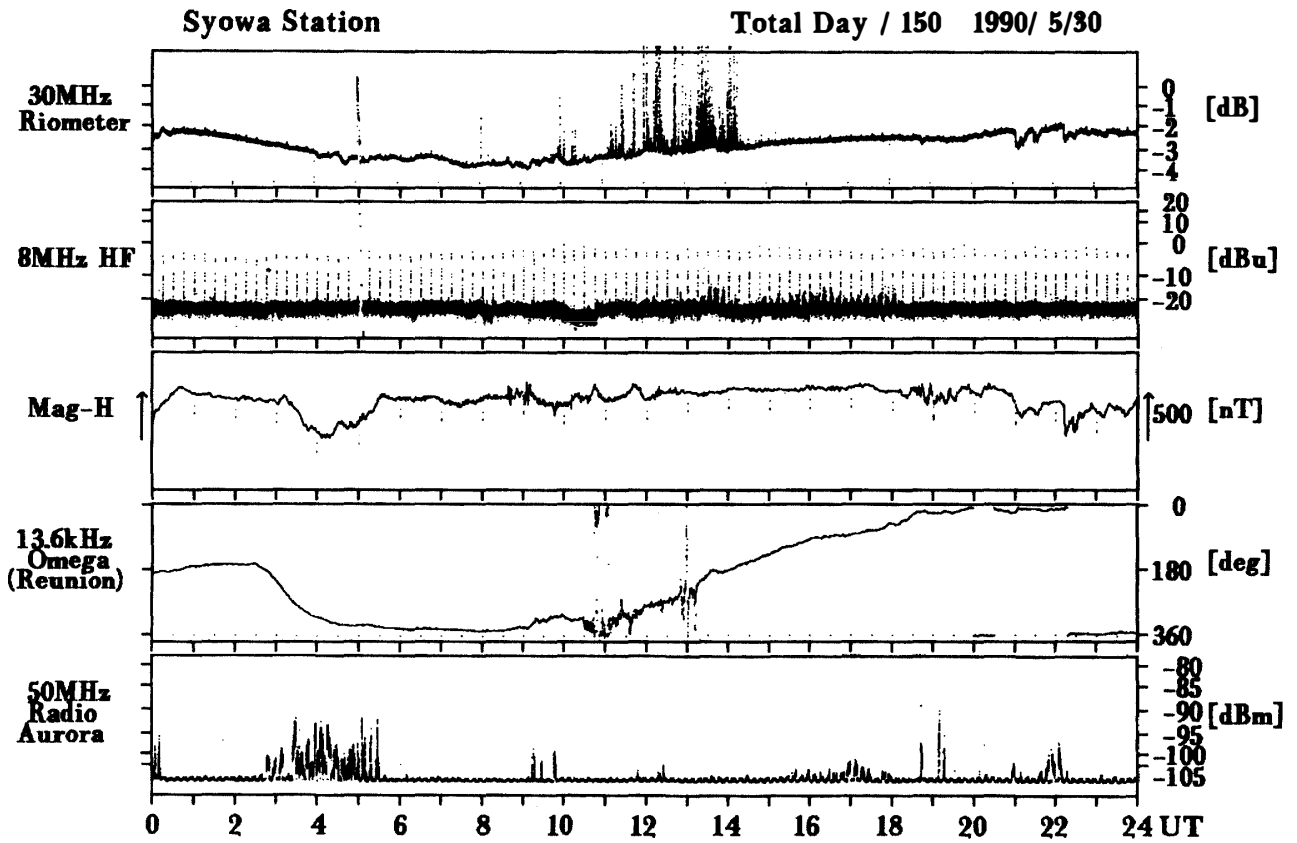


Syowa Station

Total Day / 147 1990/ 5/27

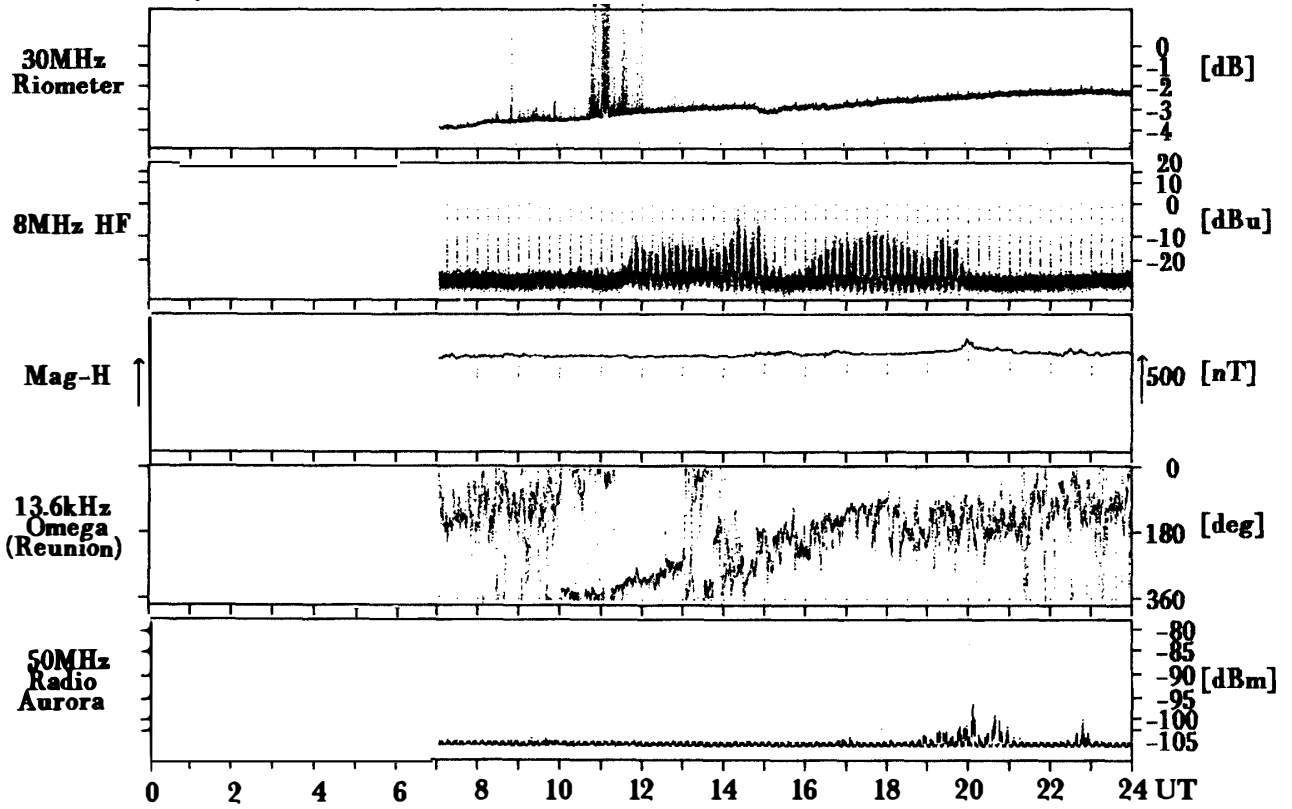






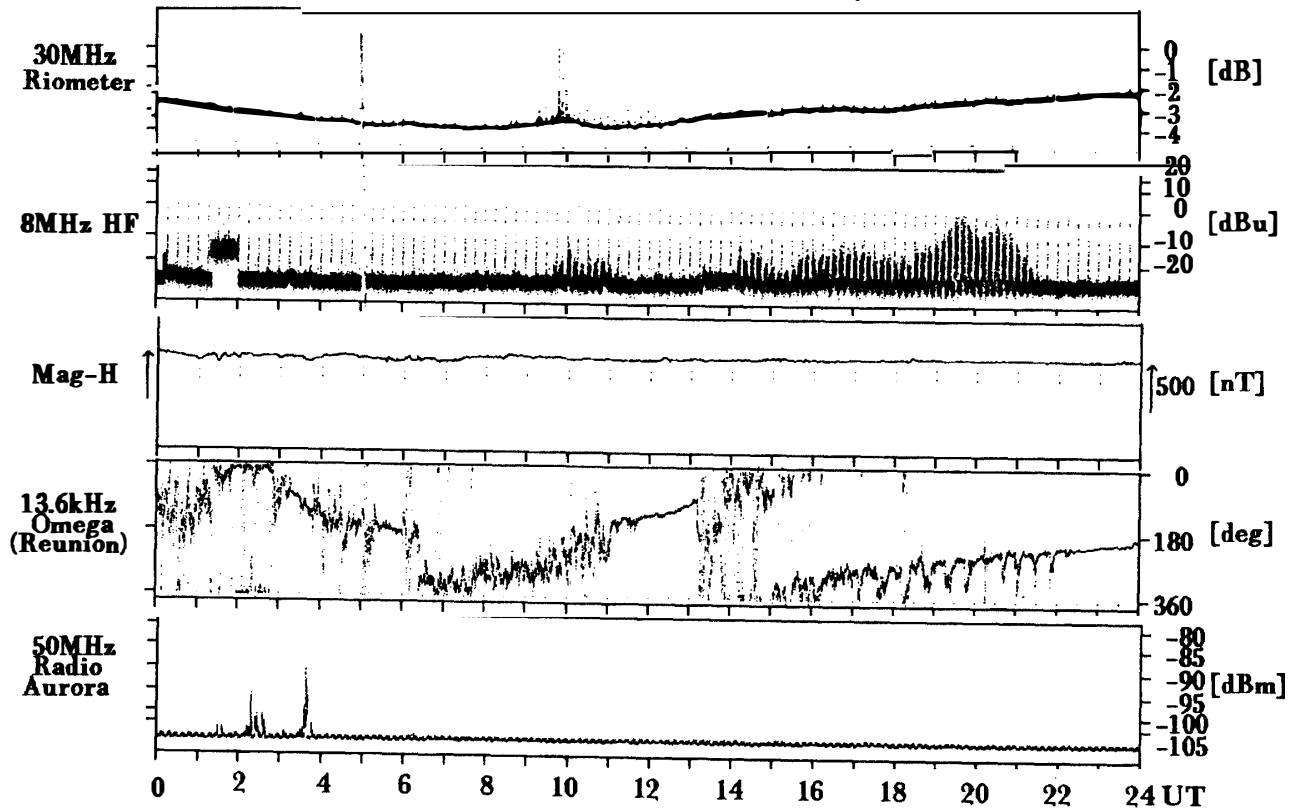
Syowa Station

Total Day / 152 1990/ 6/ 1



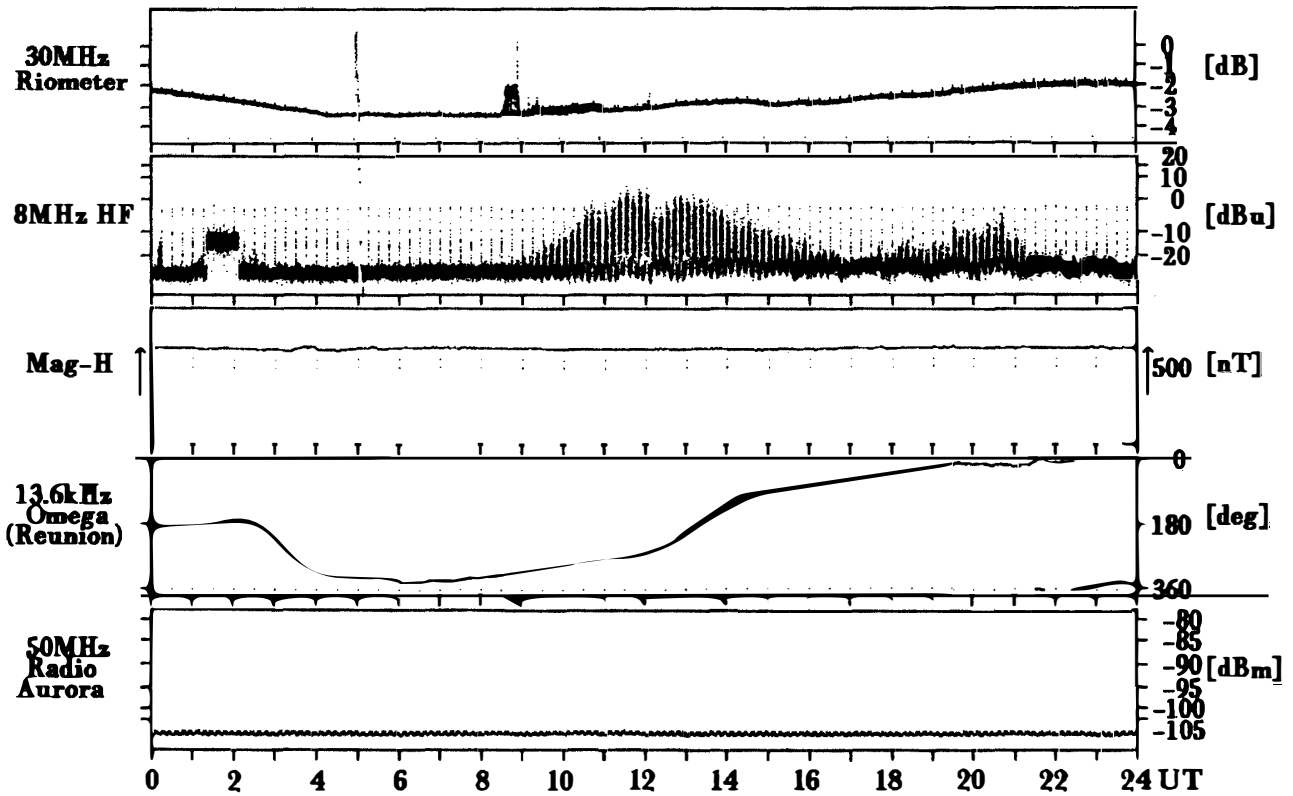
Syowa Station

Total Day / 153 1990/ 6/ 2



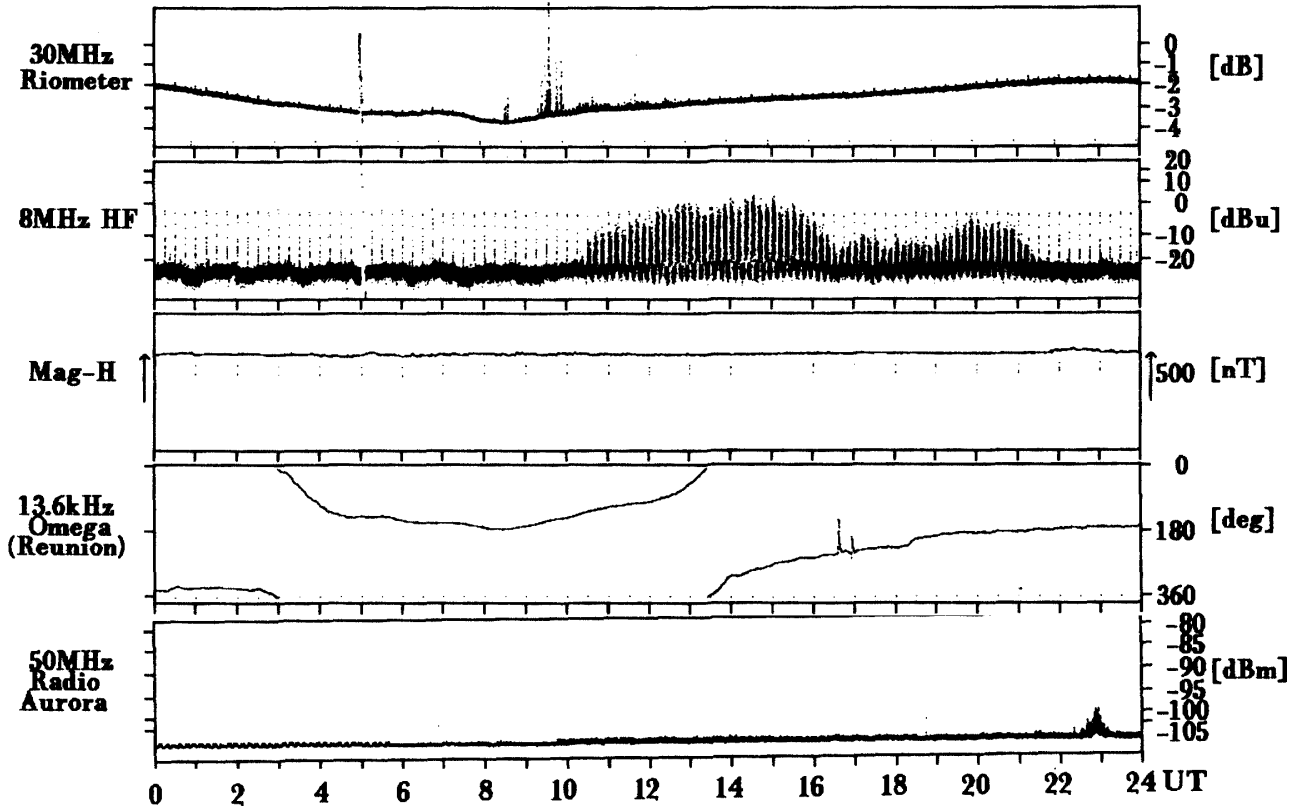
Syowa Station

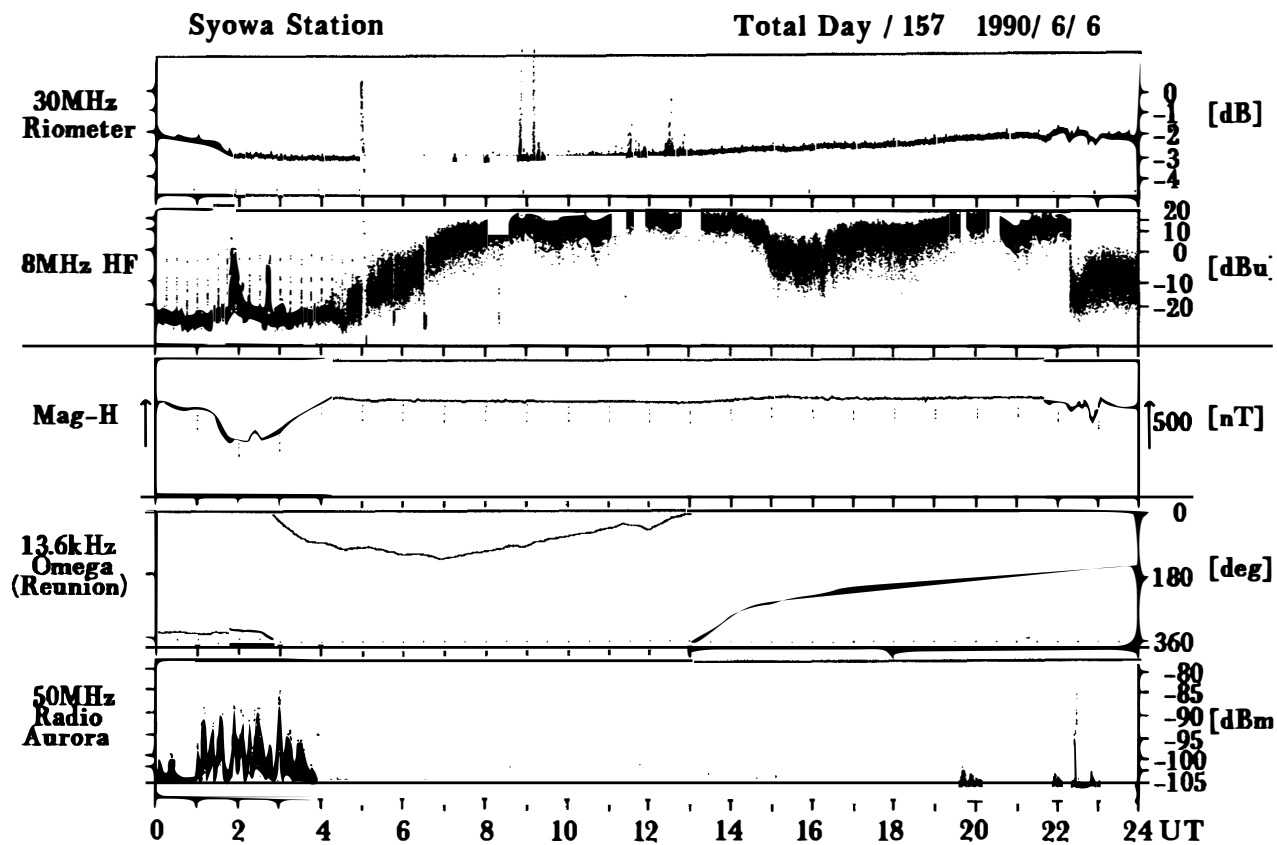
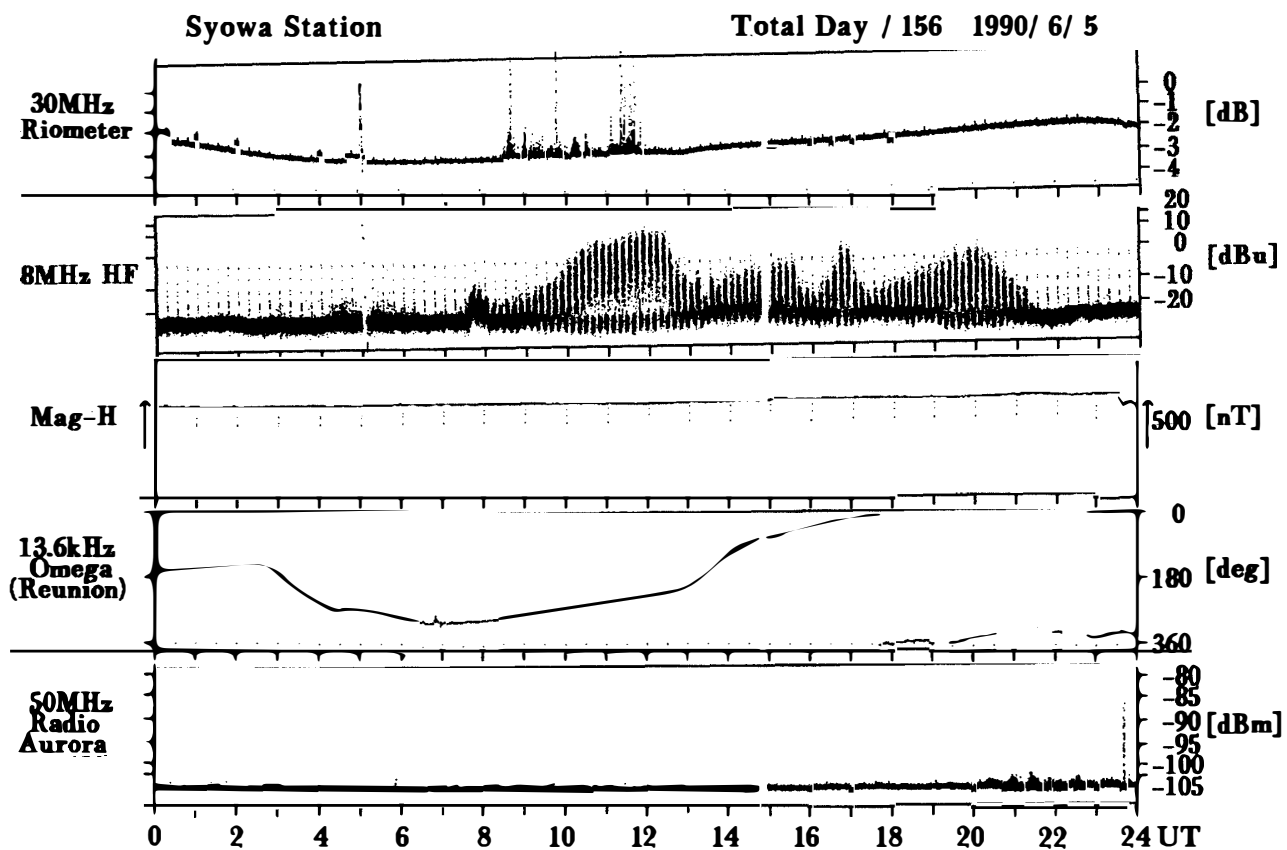
Total Day / 154 1990/ 6/ 3



Syowa Station

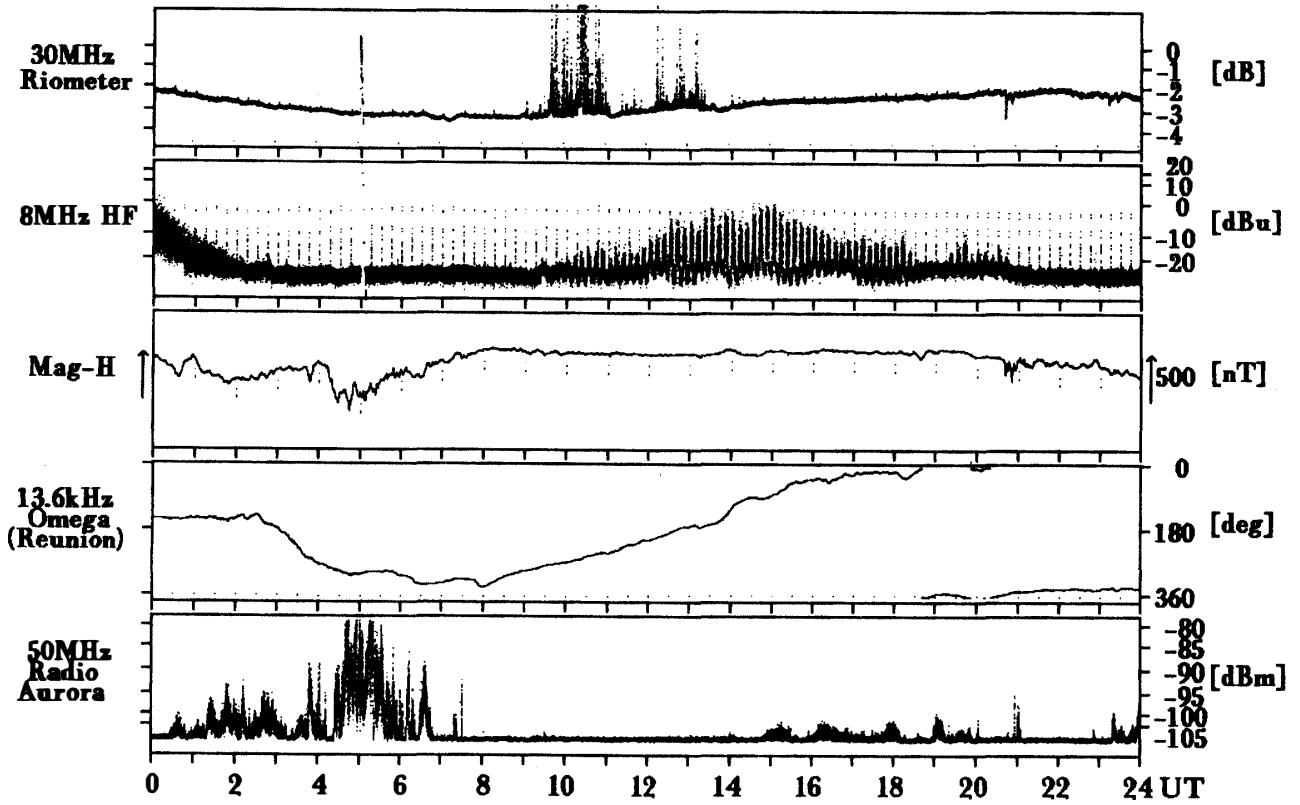
Total Day / 155 1990/ 6/ 4





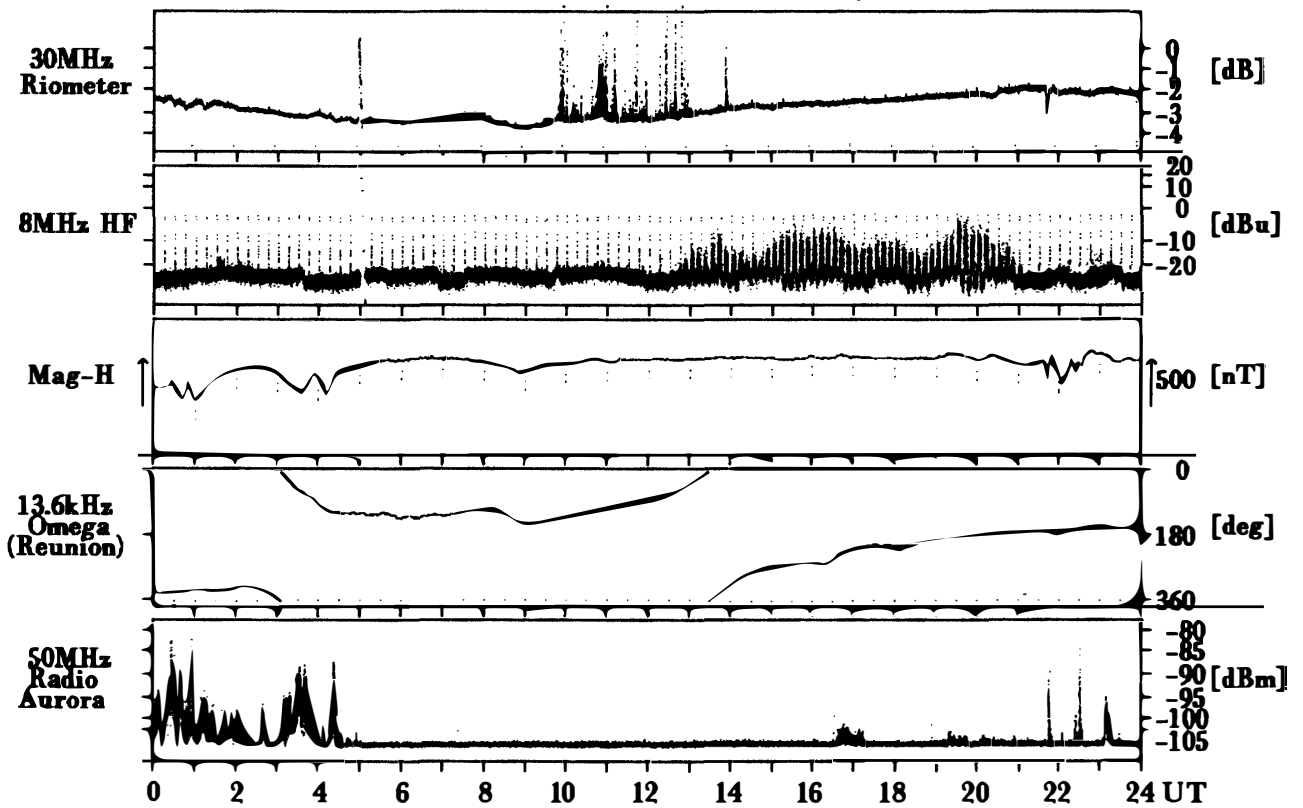
Syowa Station

Total Day / 158 1990/ 6/ 7



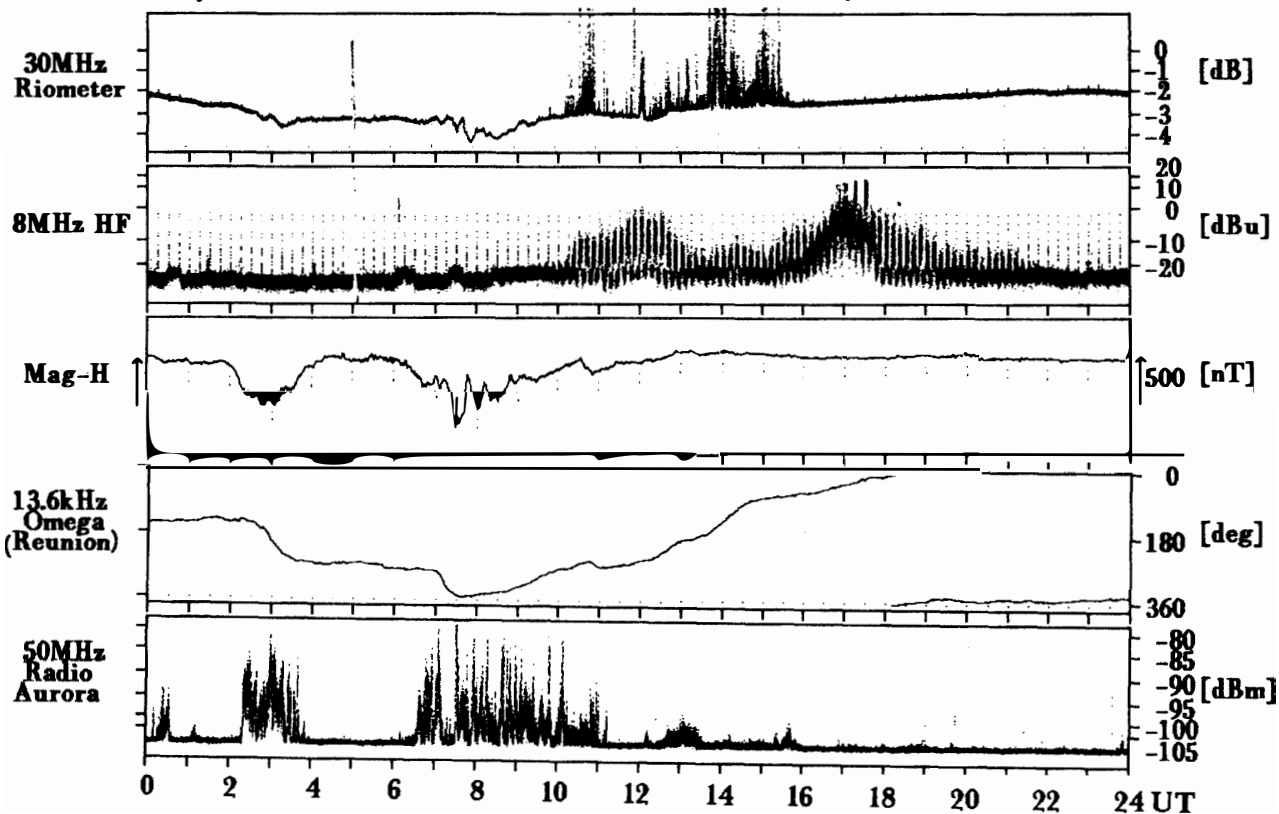
Syowa Station

Total Day / 159 1990/ 6/ 8



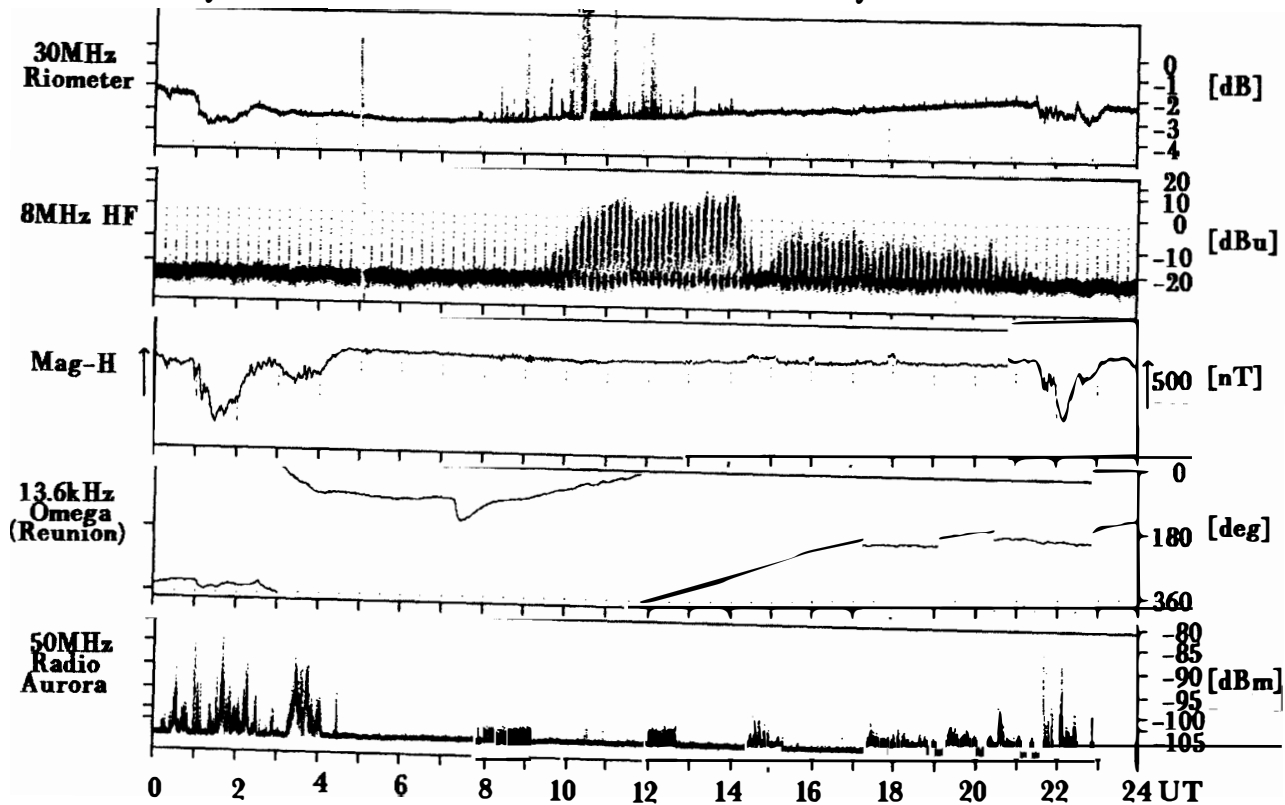
Syowa Station

Total Day / 160 1990/ 6/ 9



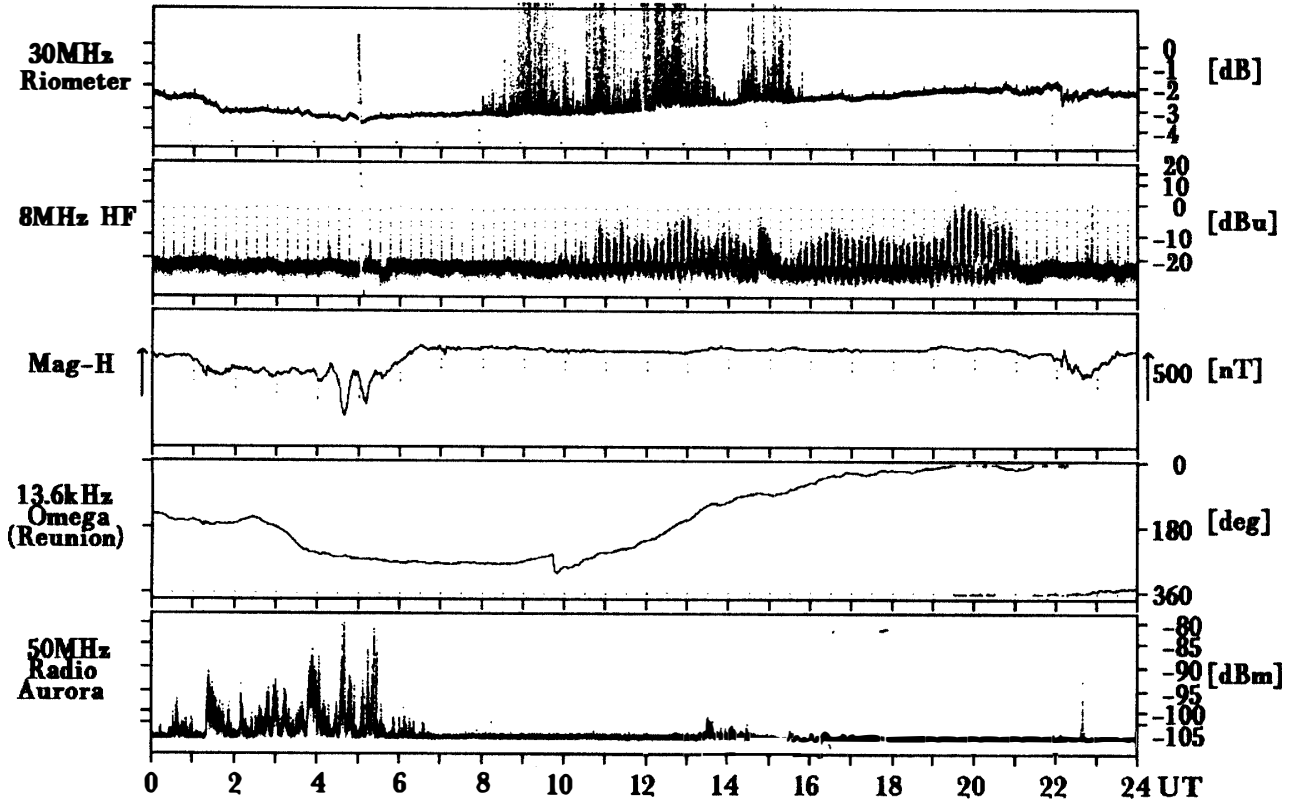
Syowa Station

Total Day / 161 1990/ 6/10



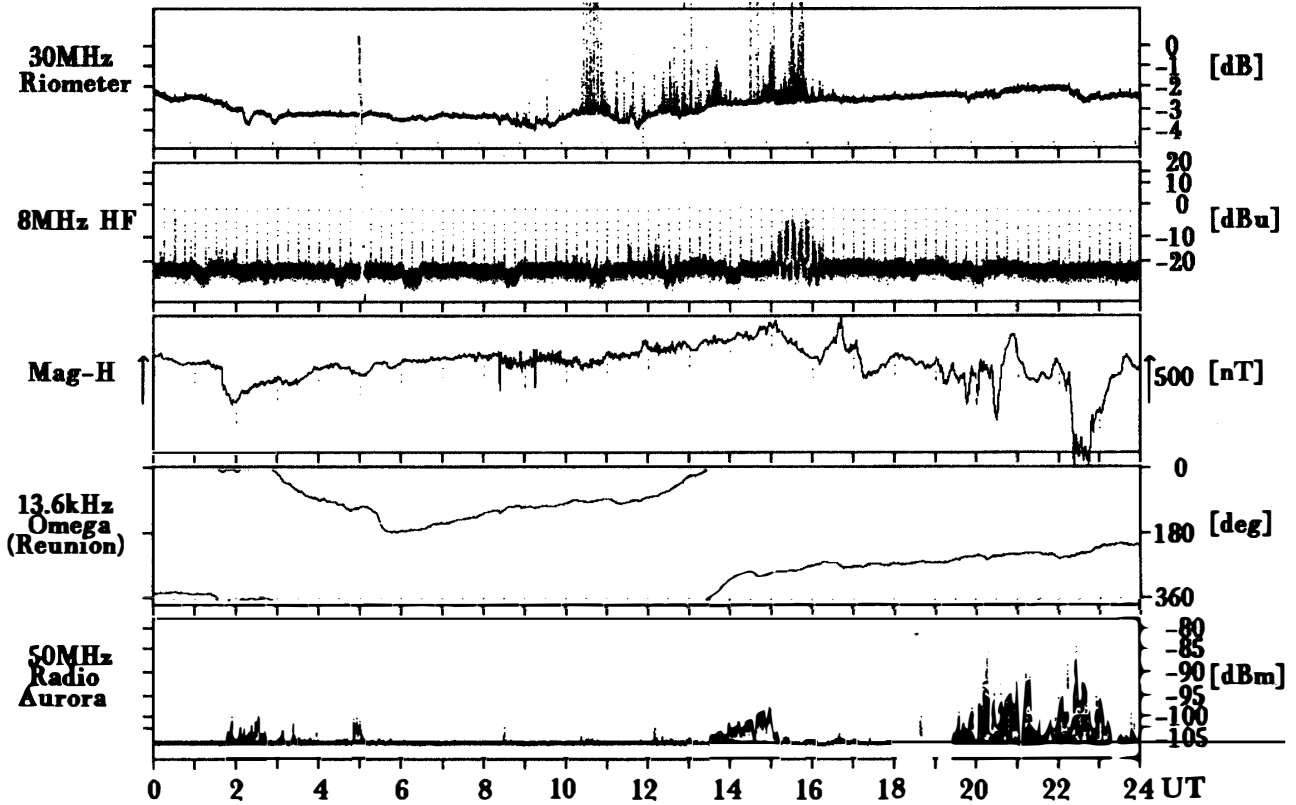
Syowa Station

Total Day / 162 1990/ 6/11



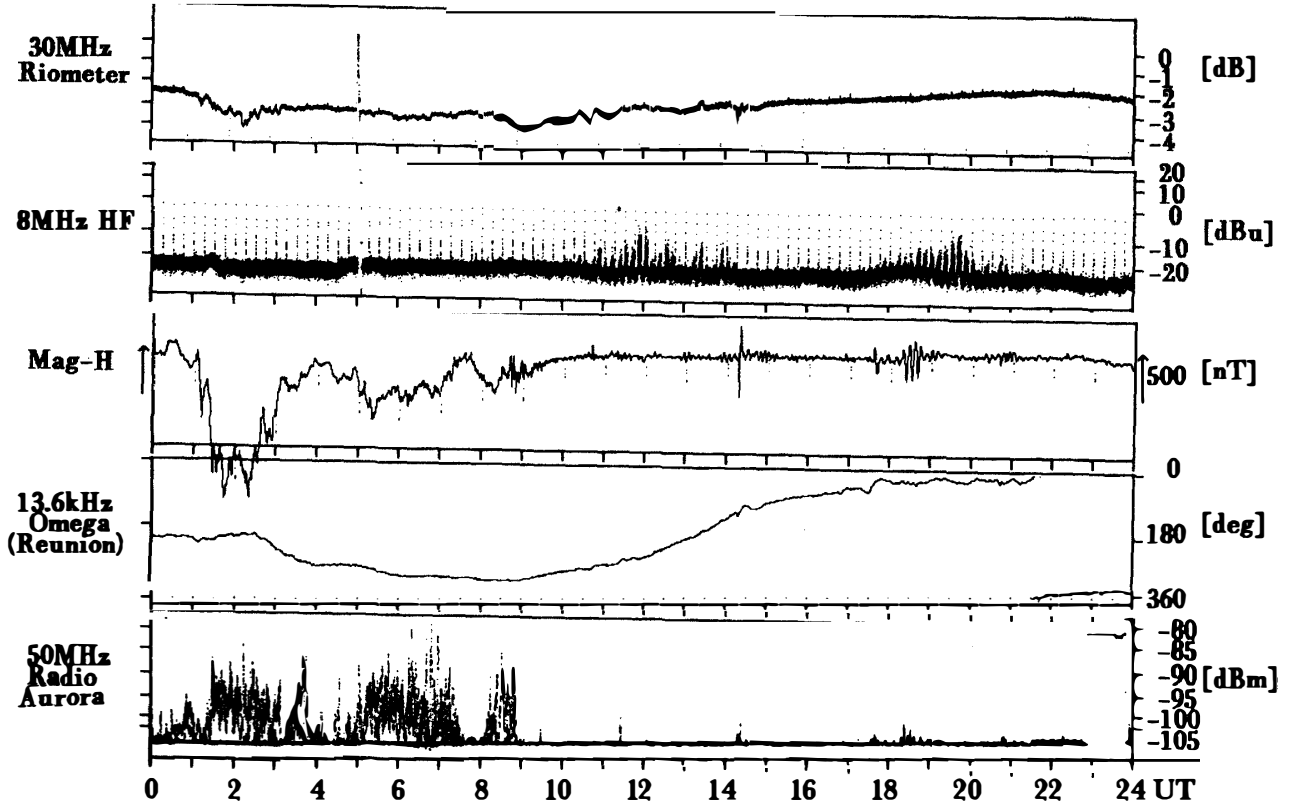
Syowa Station

Total Day / 163 1990/ 6/12



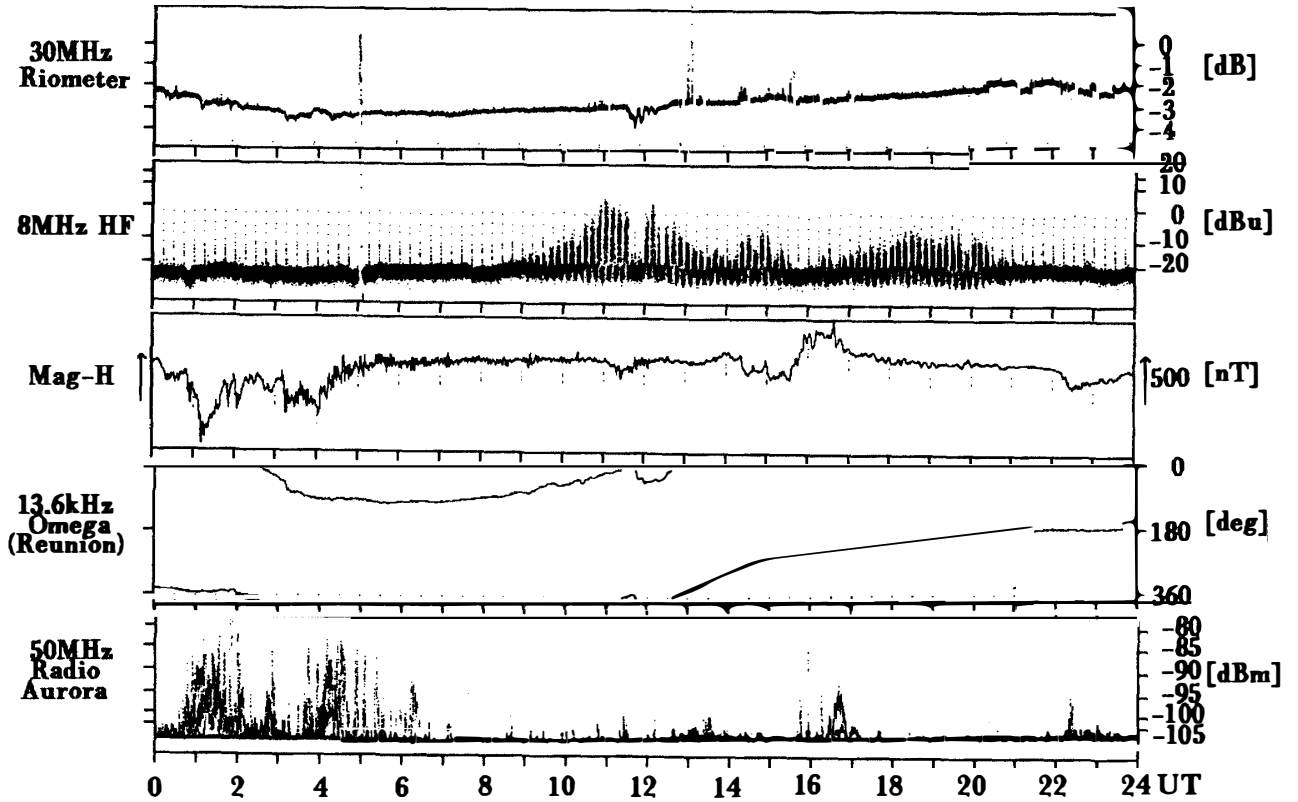
Syowa Station

Total Day / 164 1990/ 6/13



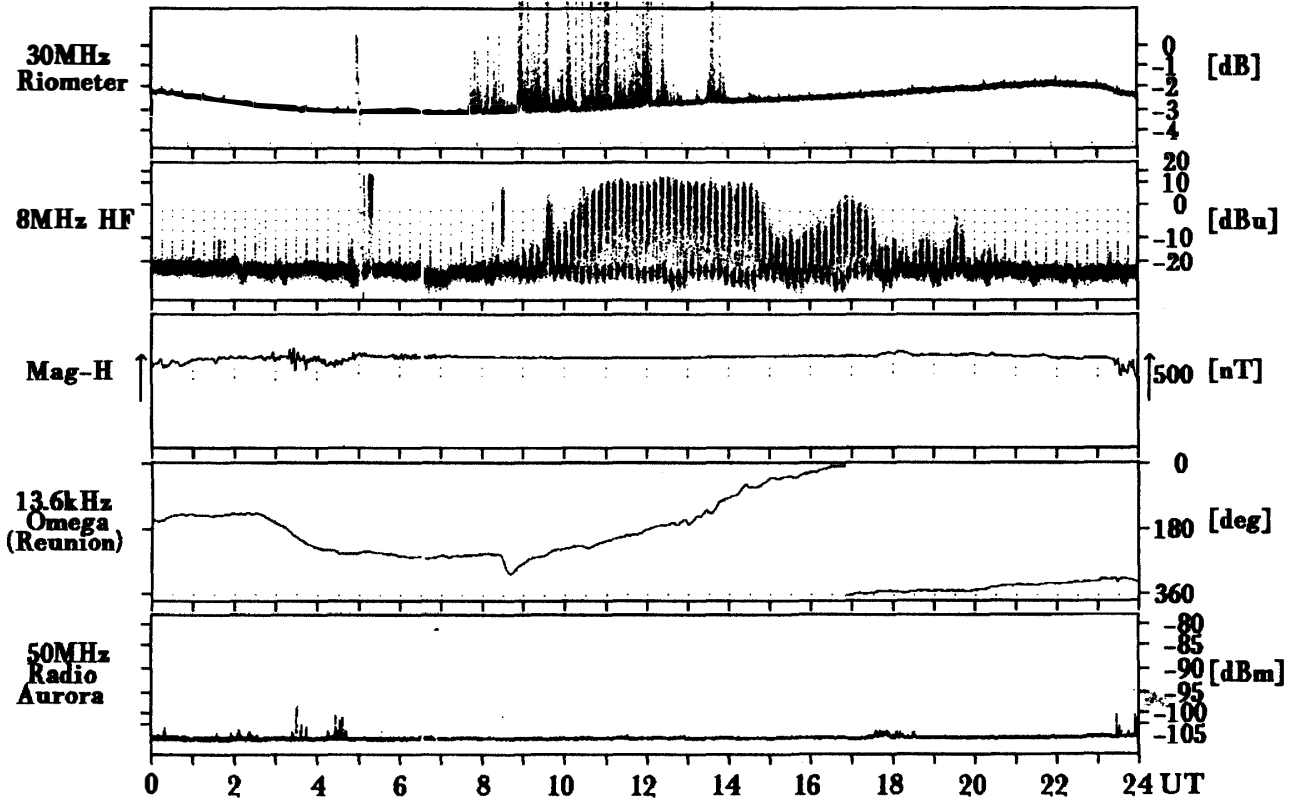
Syowa Station

Total Day / 165 1990/ 6/14



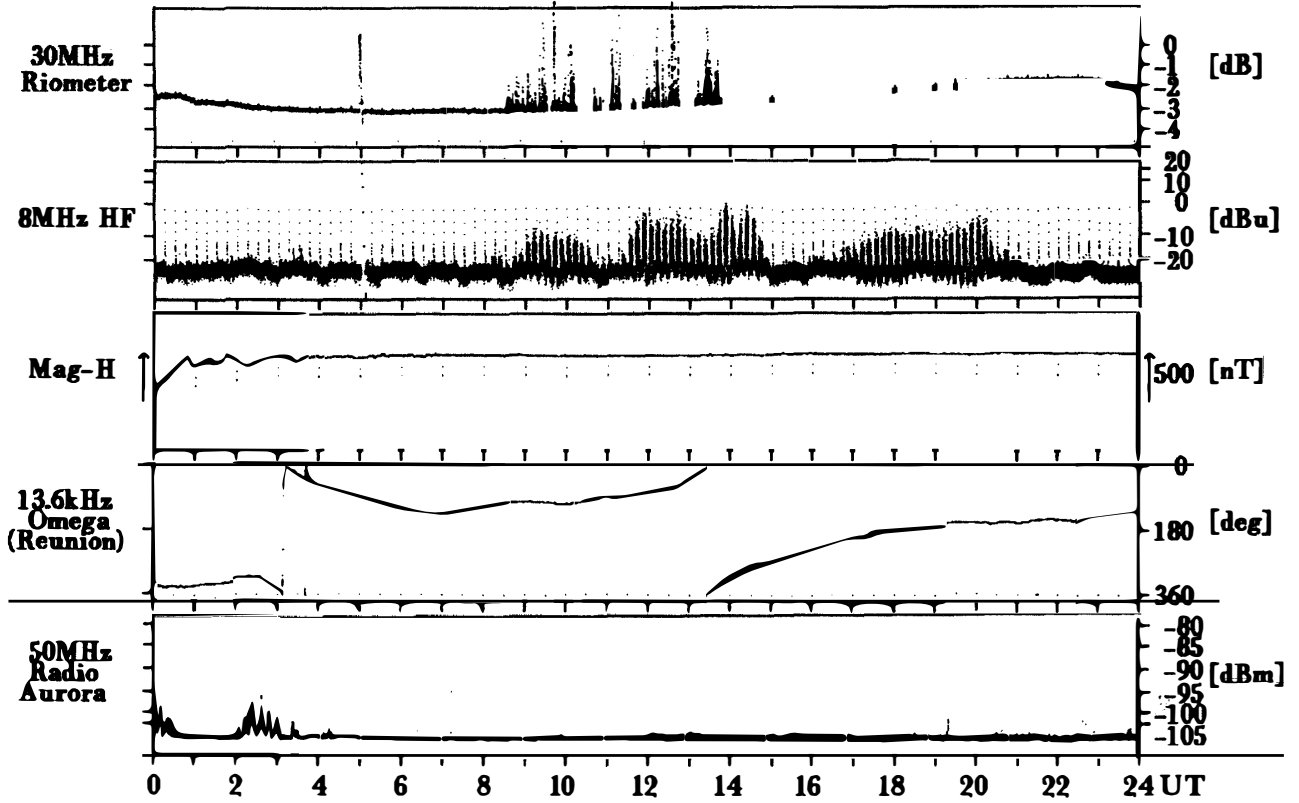
Syowa Station

Total Day / 166 1990/ 6/15



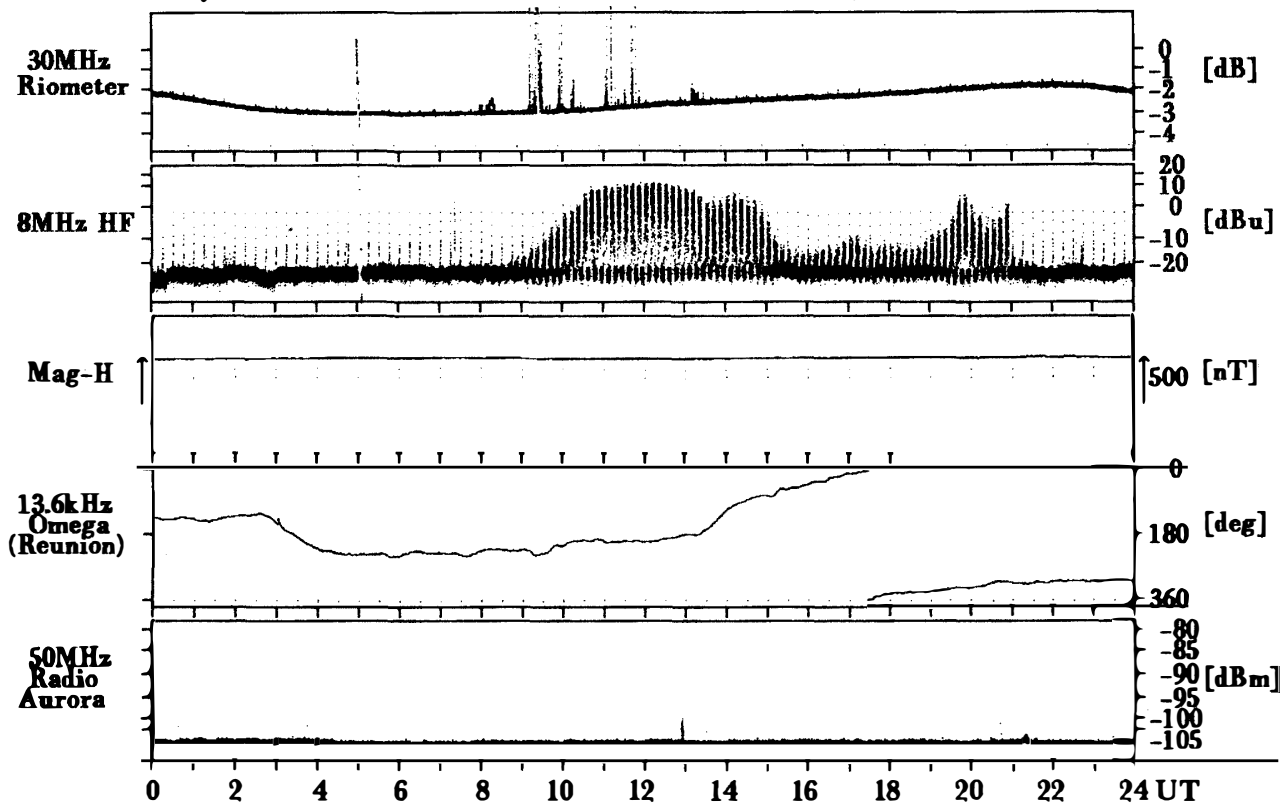
Syowa Station

Total Day / 167 1990/ 6/16



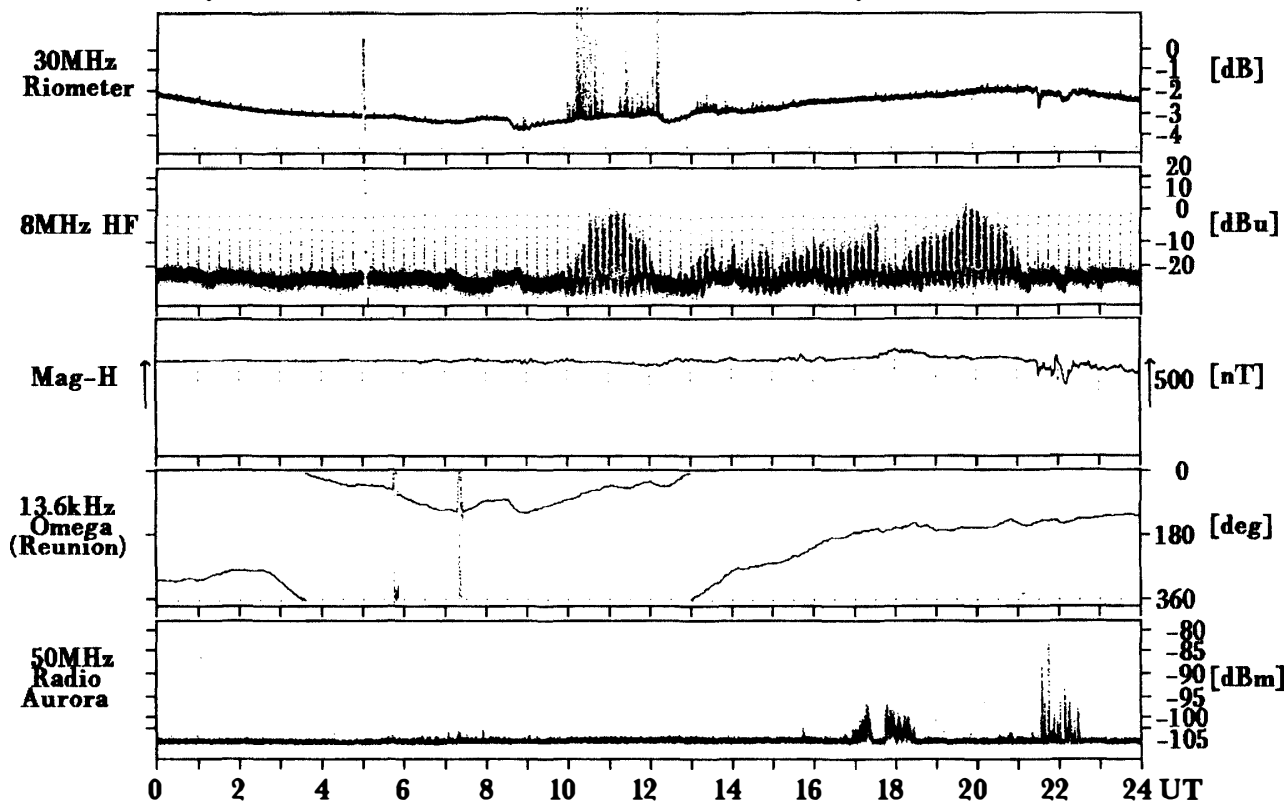
Syowa Station

Total Day / 168 1990/ 6/17



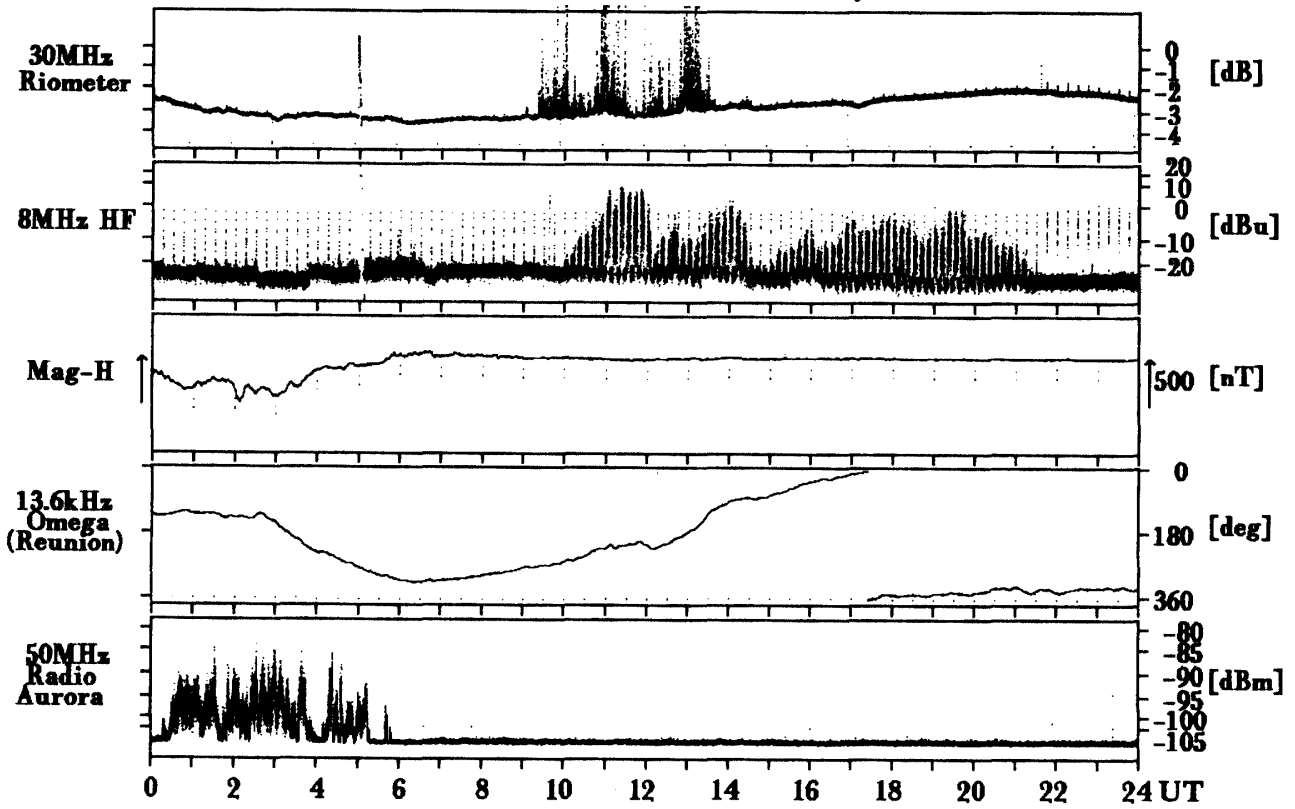
Syowa Station

Total Day / 169 1990/ 6/18



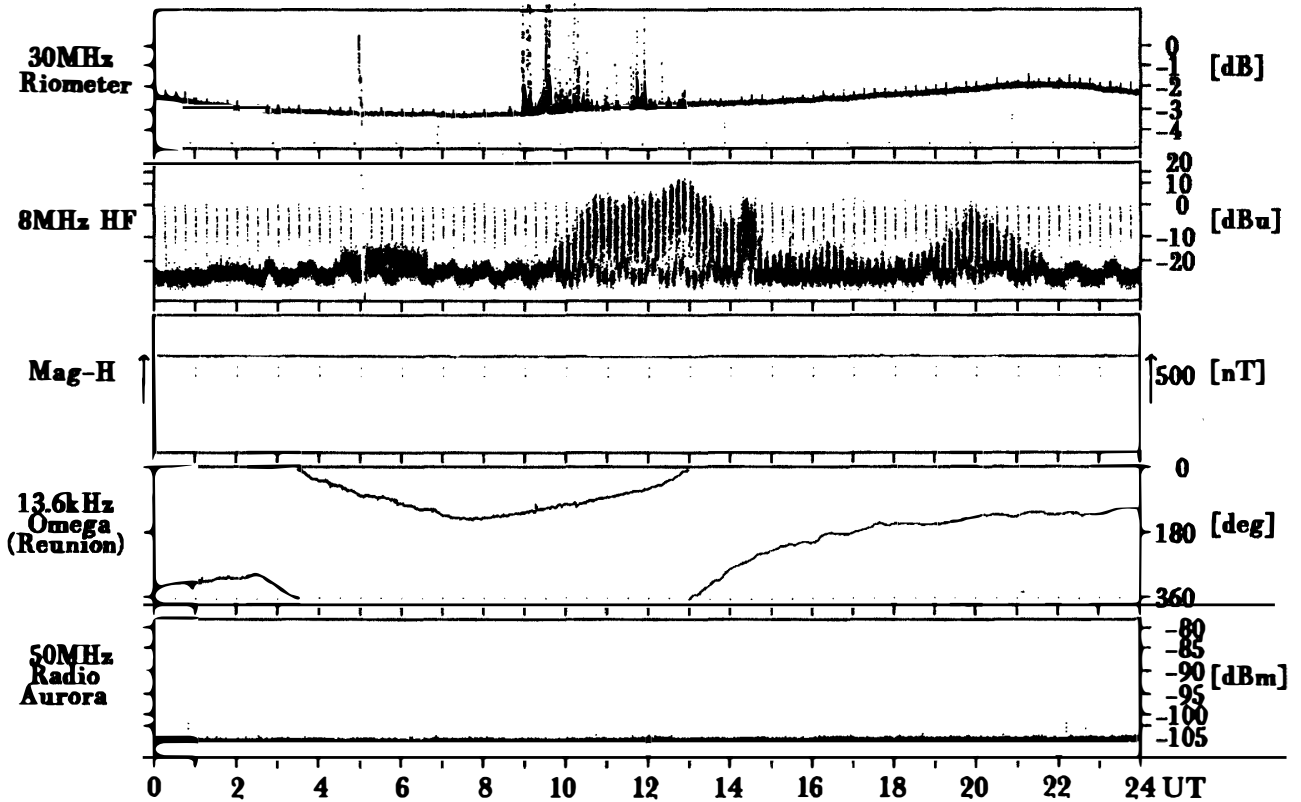
Syowa Station

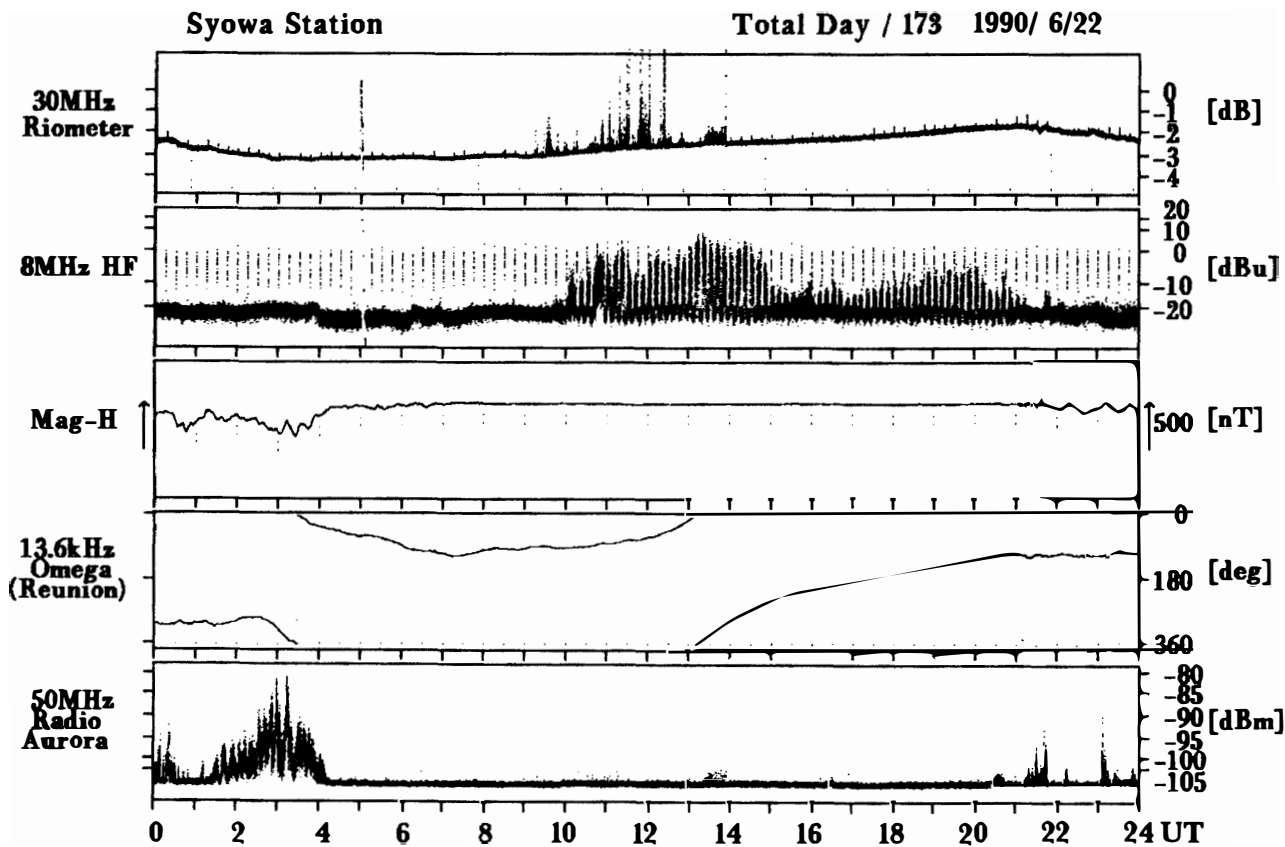
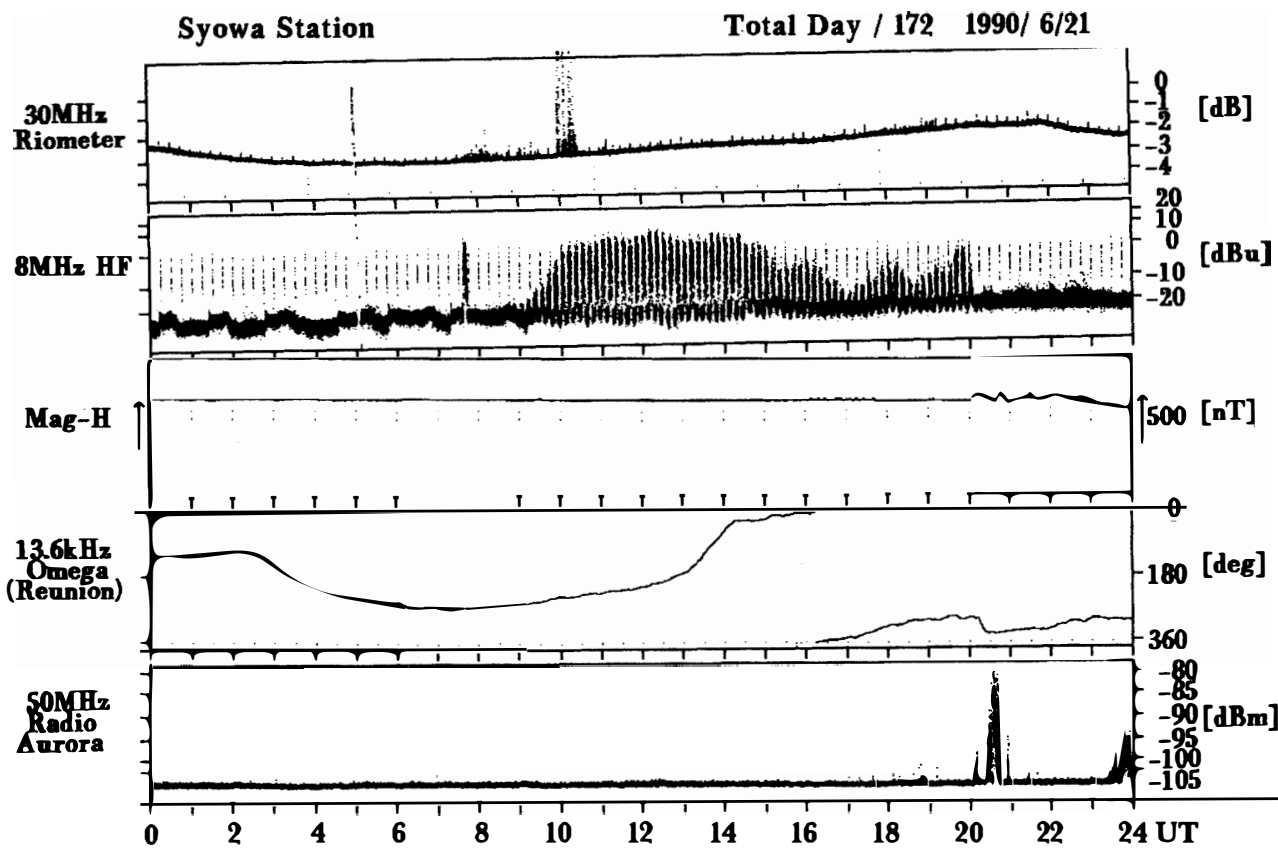
Total Day / 170 1990/ 6/19



Syowa Station

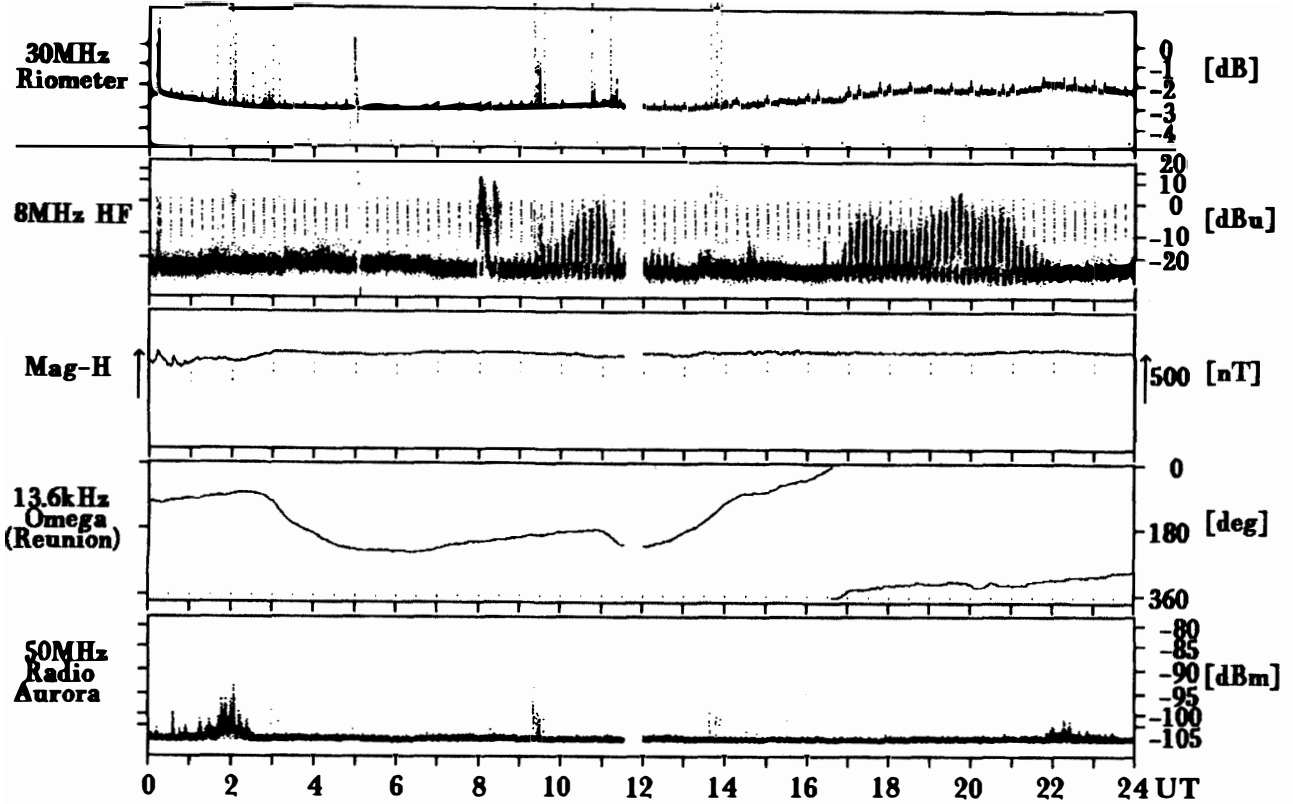
Total Day / 171 1990/ 6/20





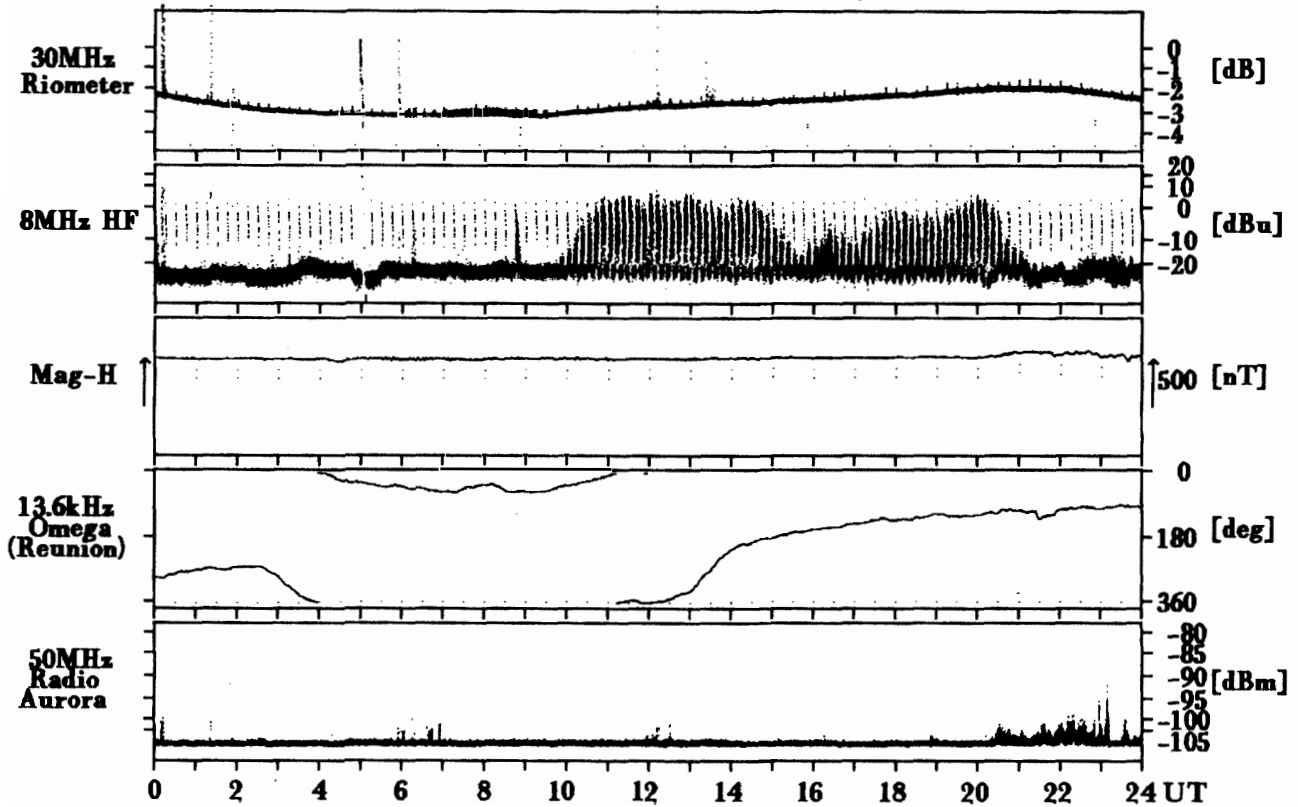
Syowa Station

Total Day / 174 1990/ 6/23



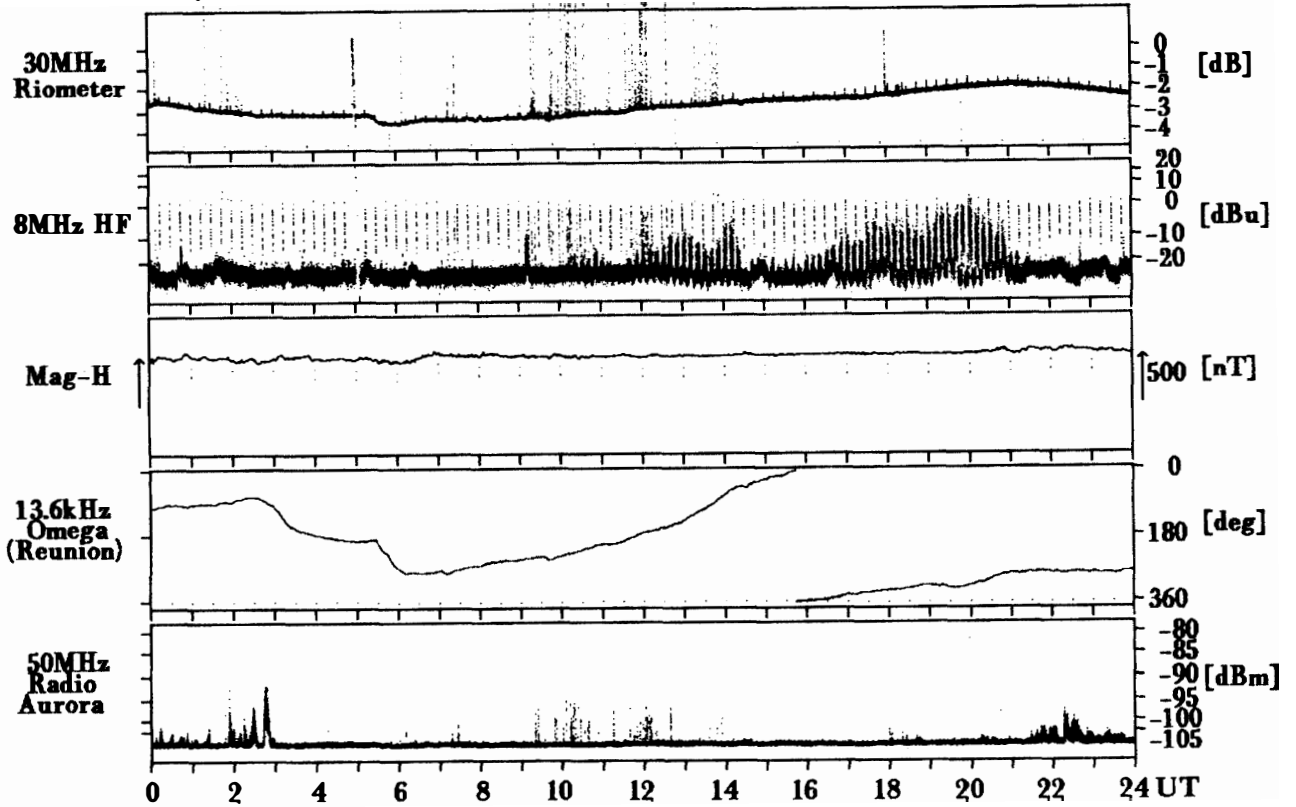
Syowa Station

Total Day / 175 1990/ 6/24



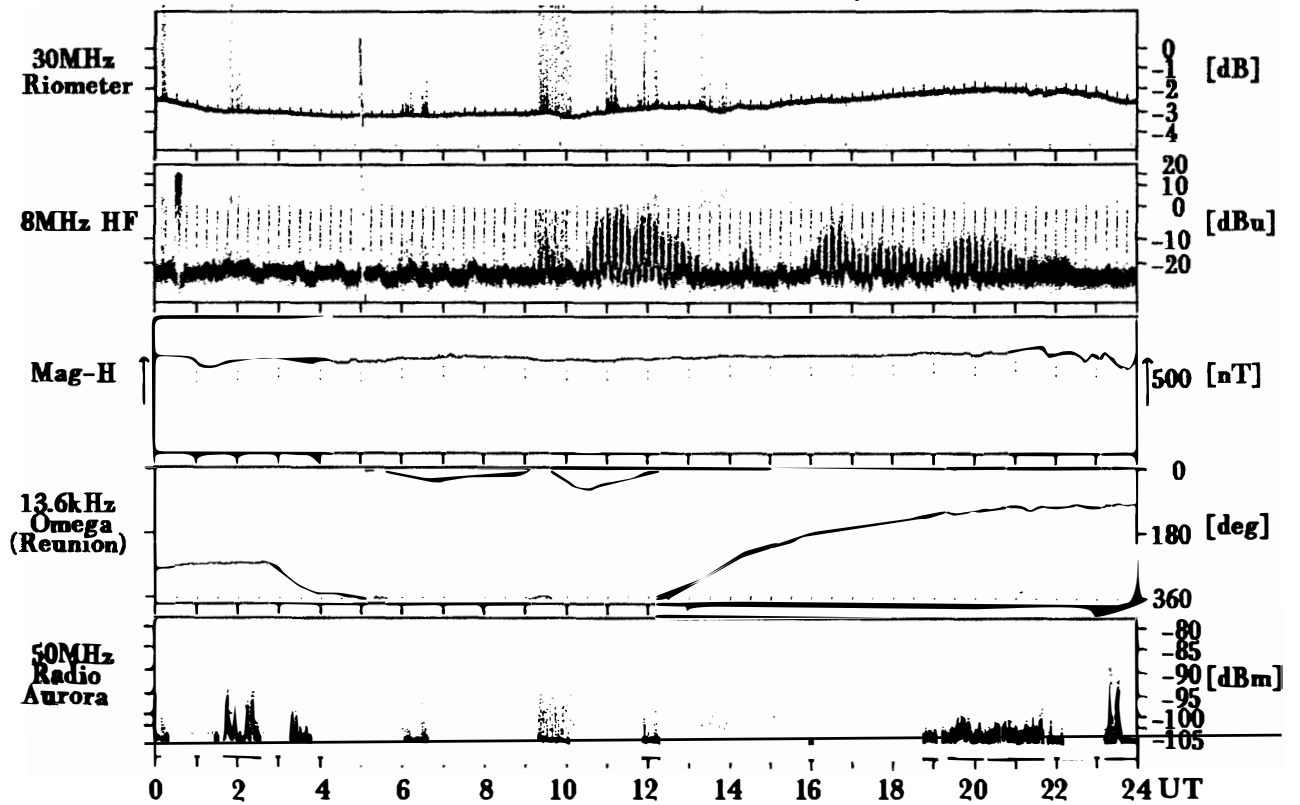
Syowa Station

Total Day / 176 1990/ 6/25



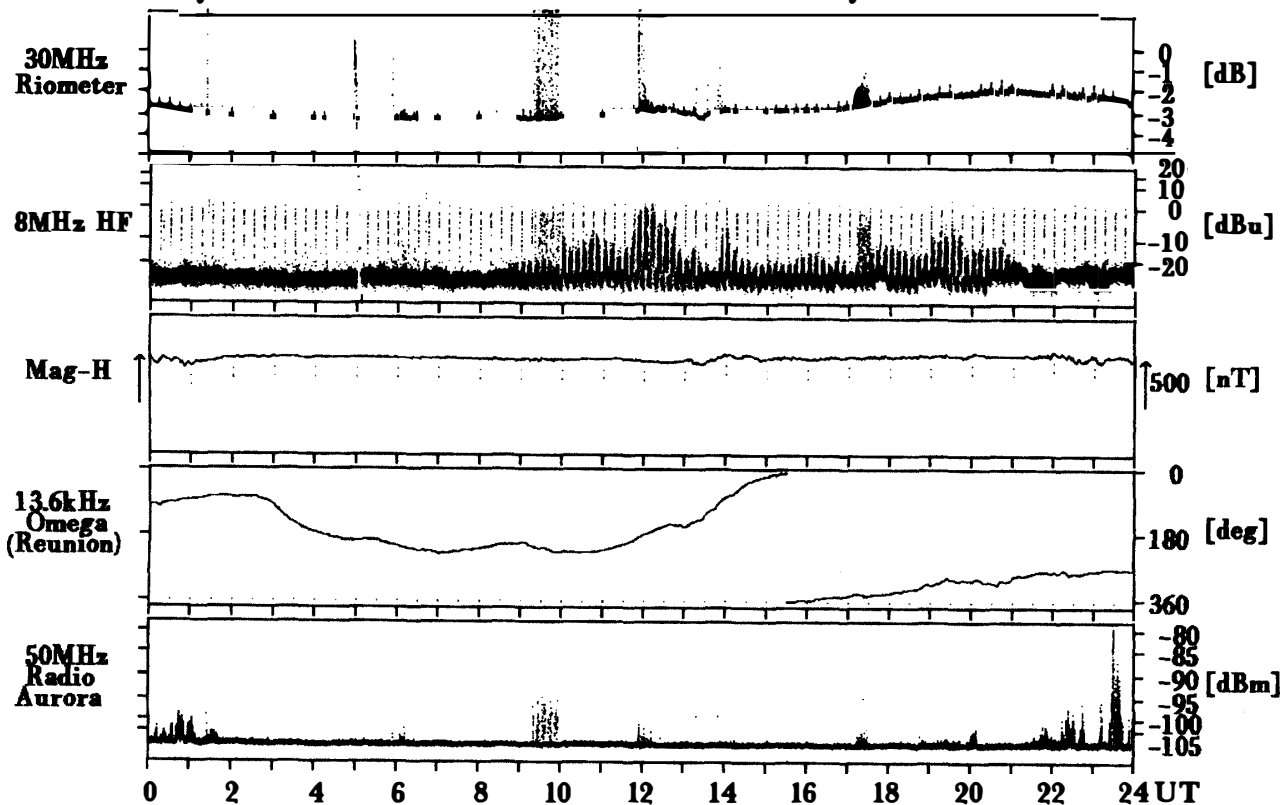
Syowa Station

Total Day / 177 1990/ 6/26



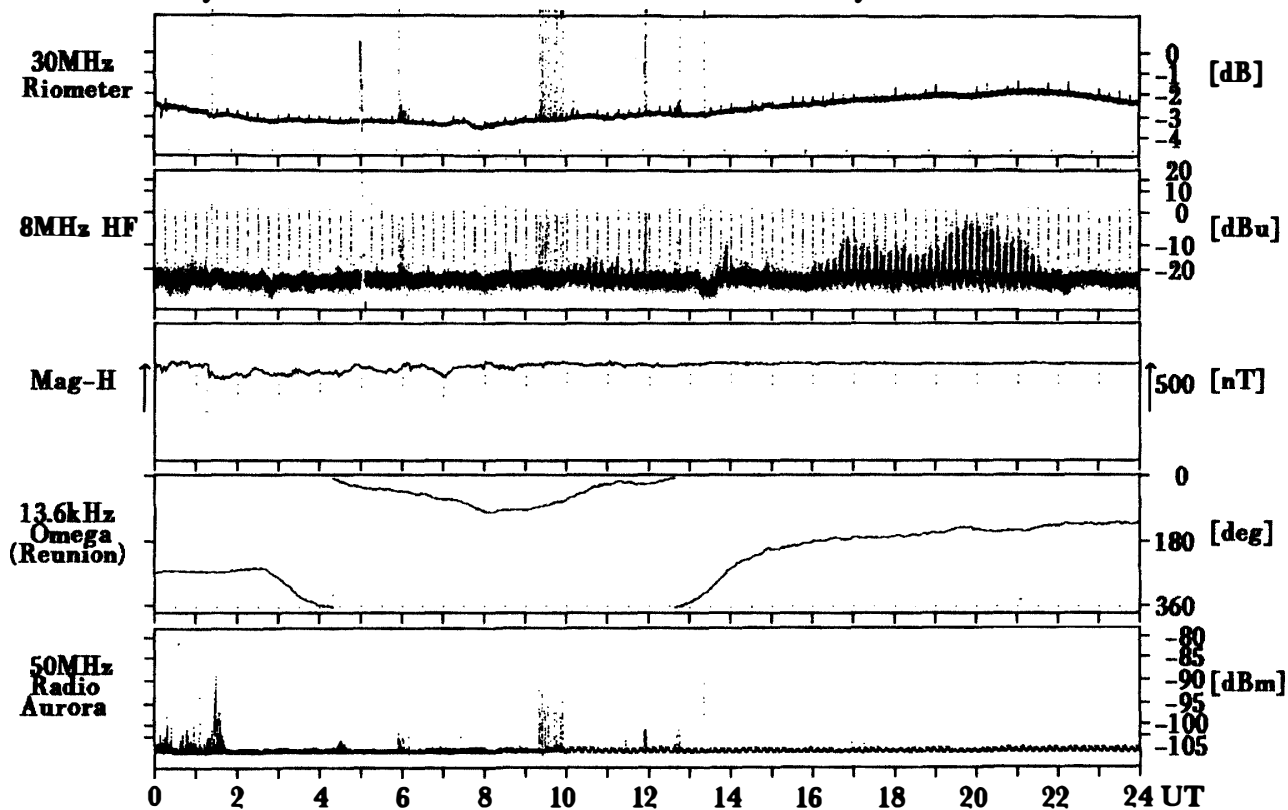
Syowa Station

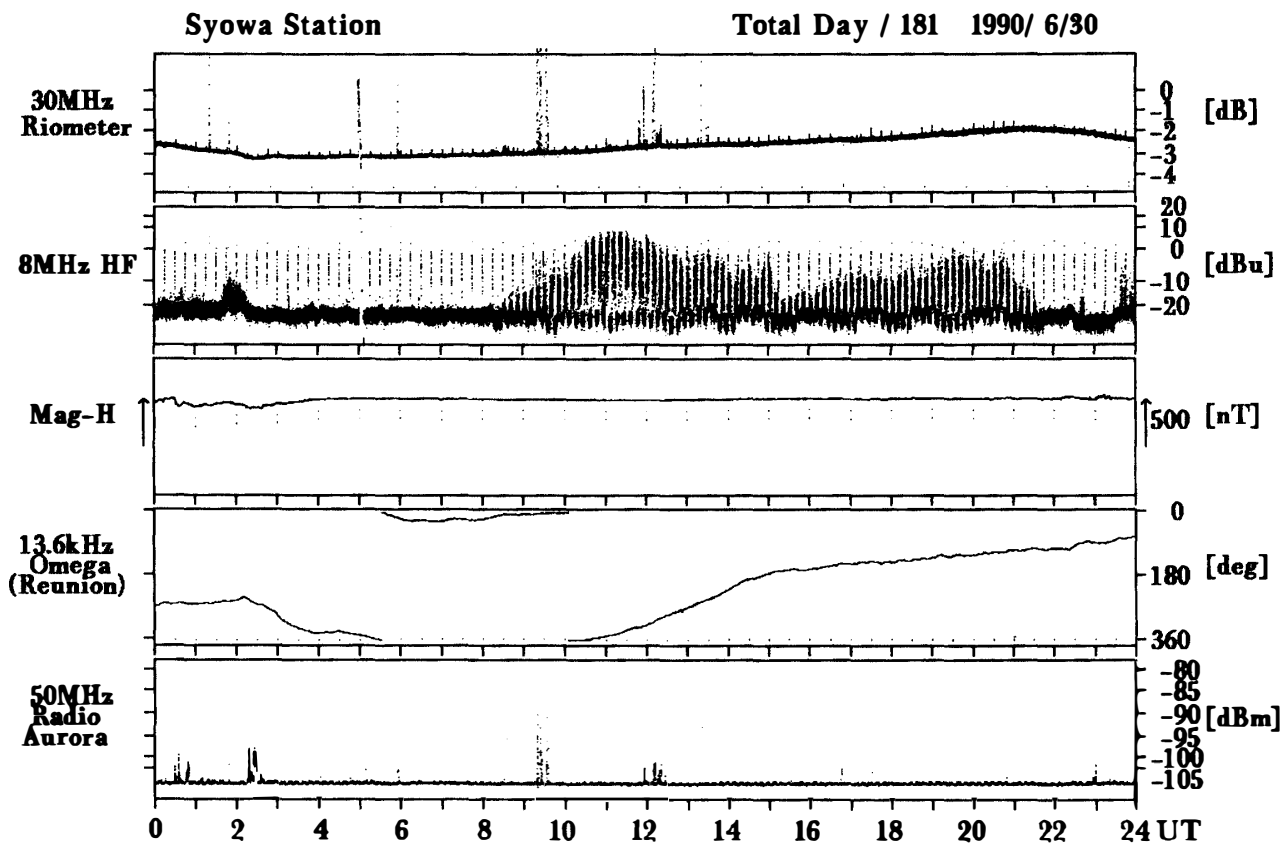
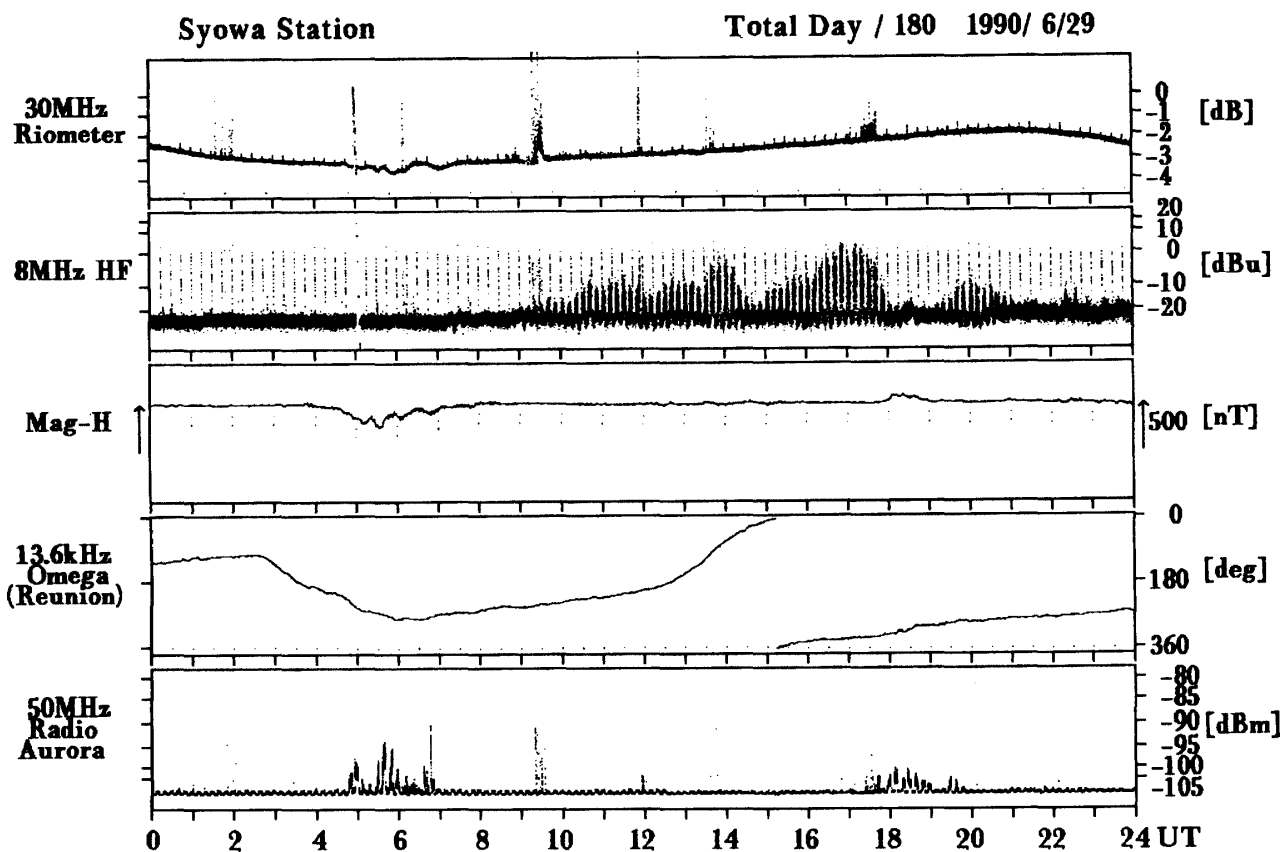
Total Day / 178 1990/ 6/27



Syowa Station

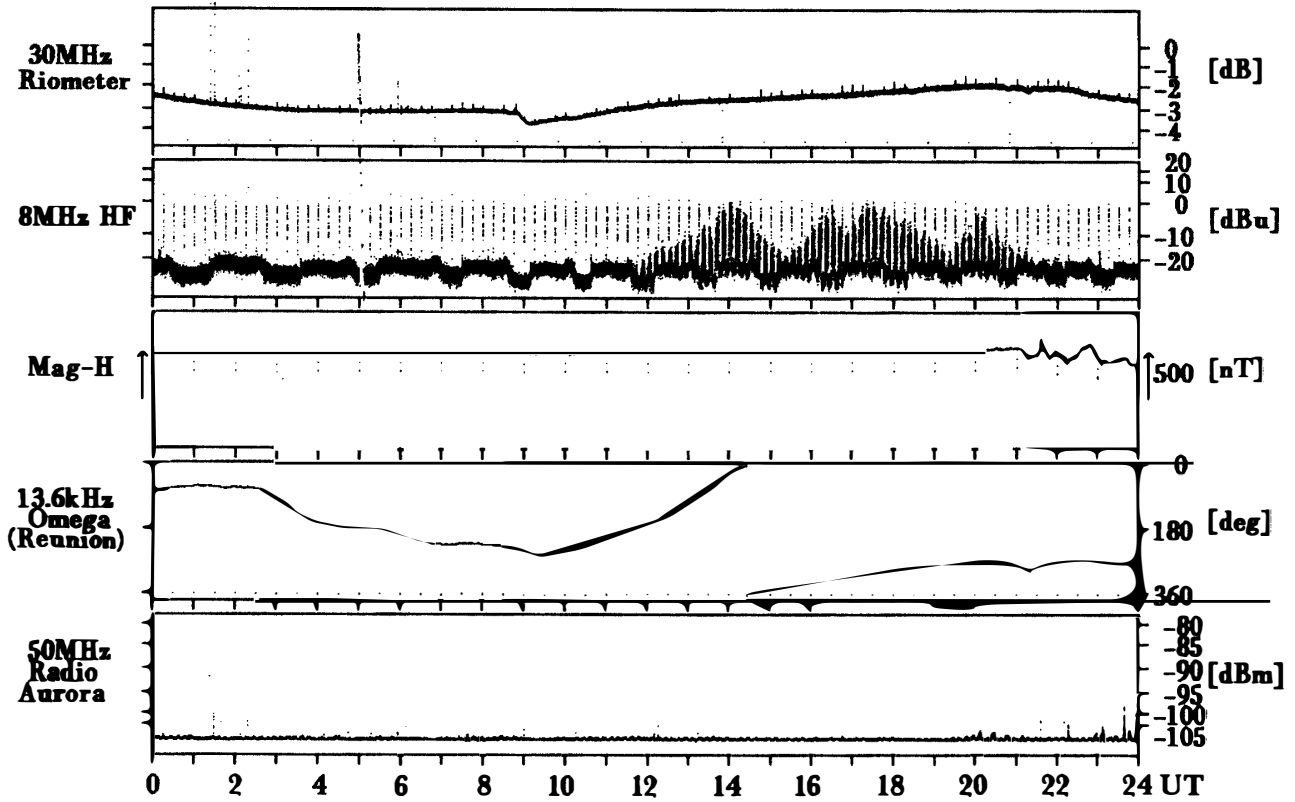
Total Day / 179 1990/ 6/28





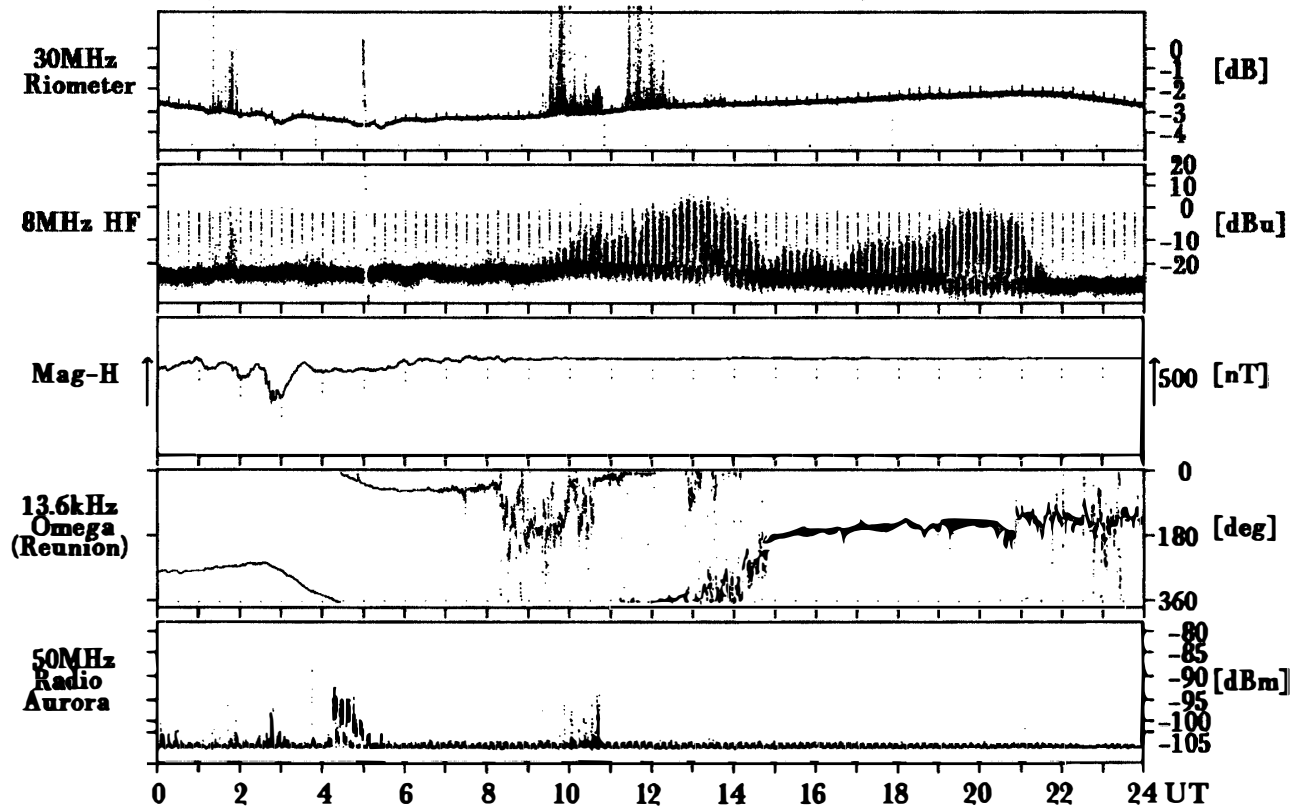
Syowa Station

Total Day / 182 1990/ 7/ 1



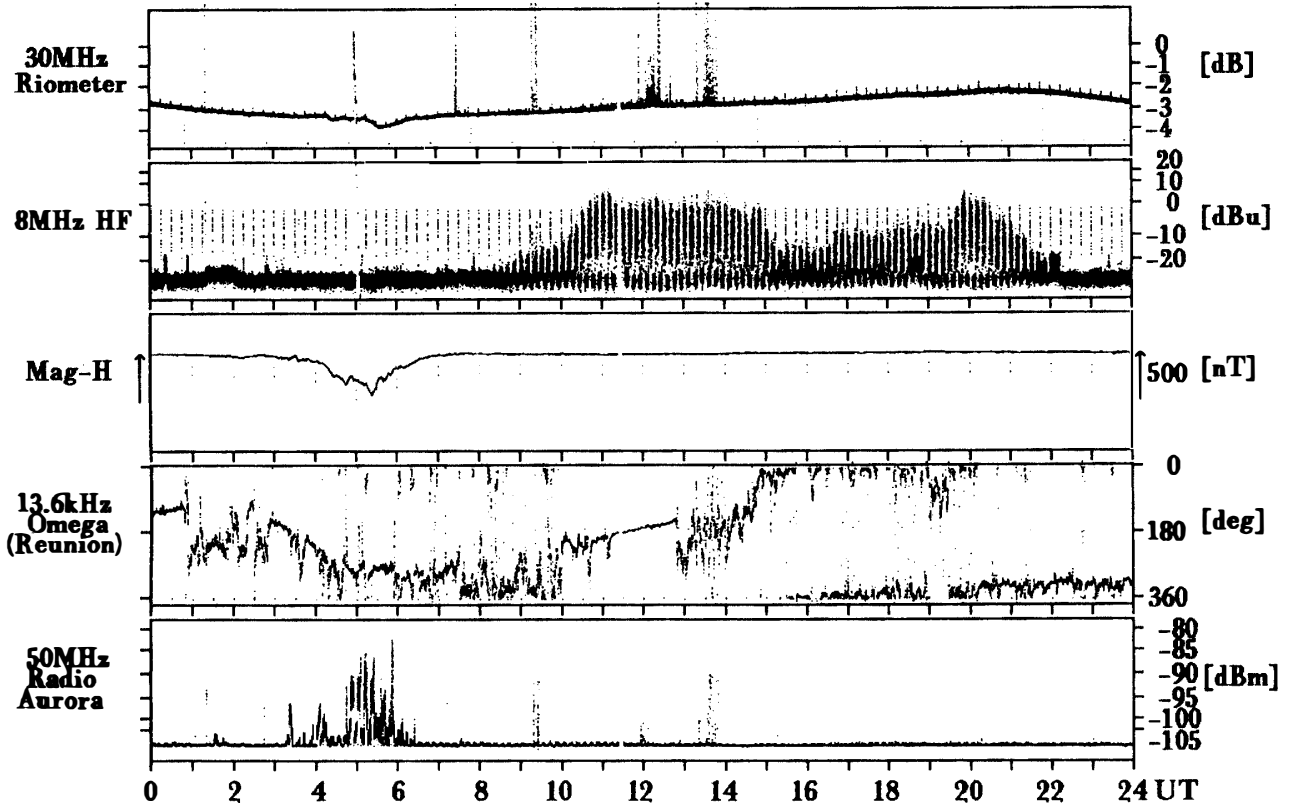
Syowa Station

Total Day / 183 1990/ 7/ 2



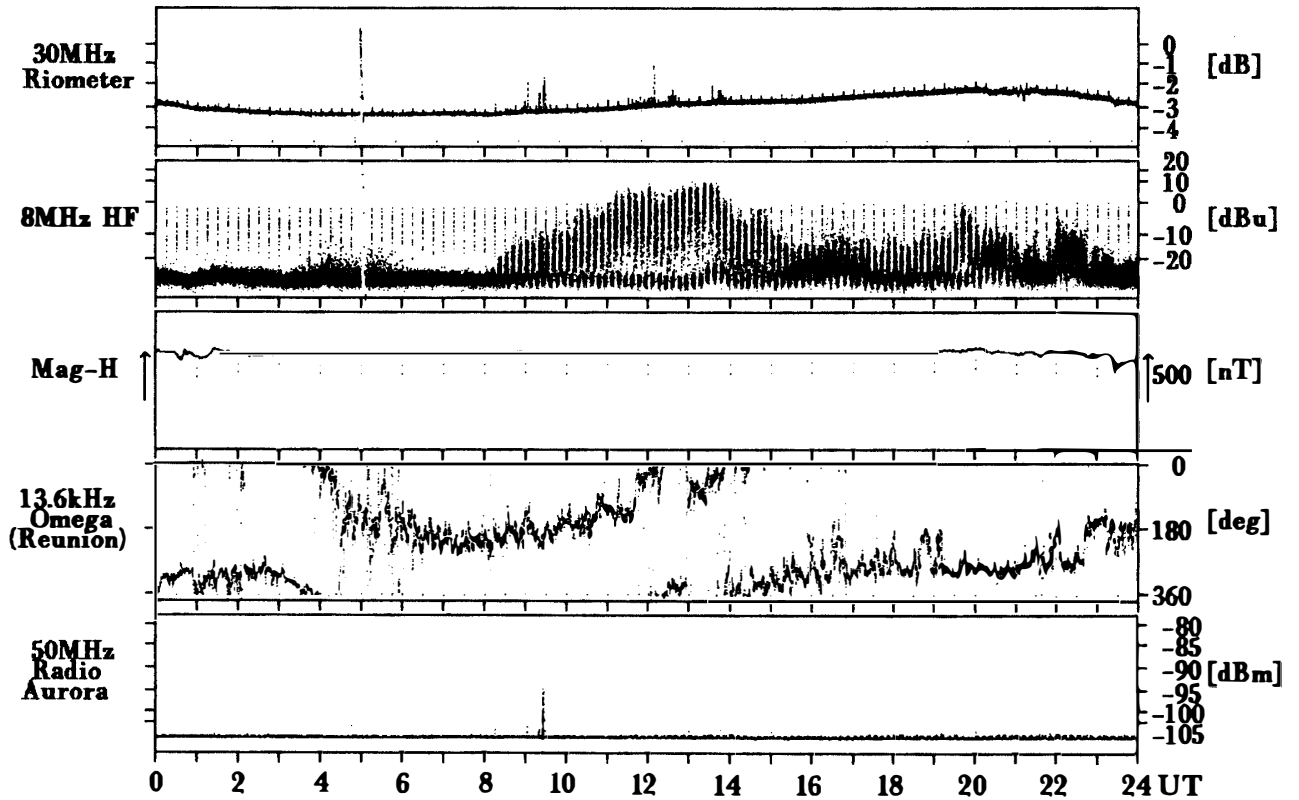
Syowa Station

Total Day / 184 1990/ 7/ 3



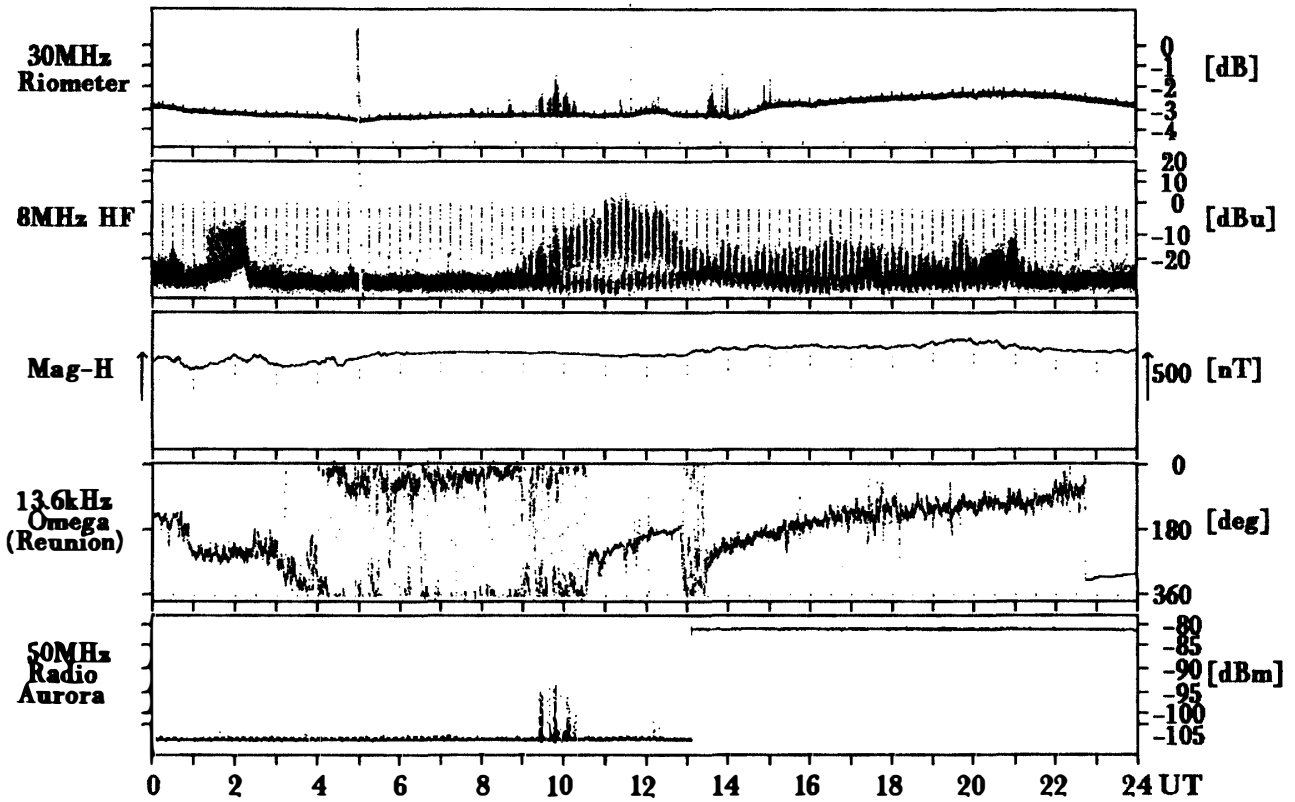
Syowa Station

Total Day / 185 1990/ 7/ 4



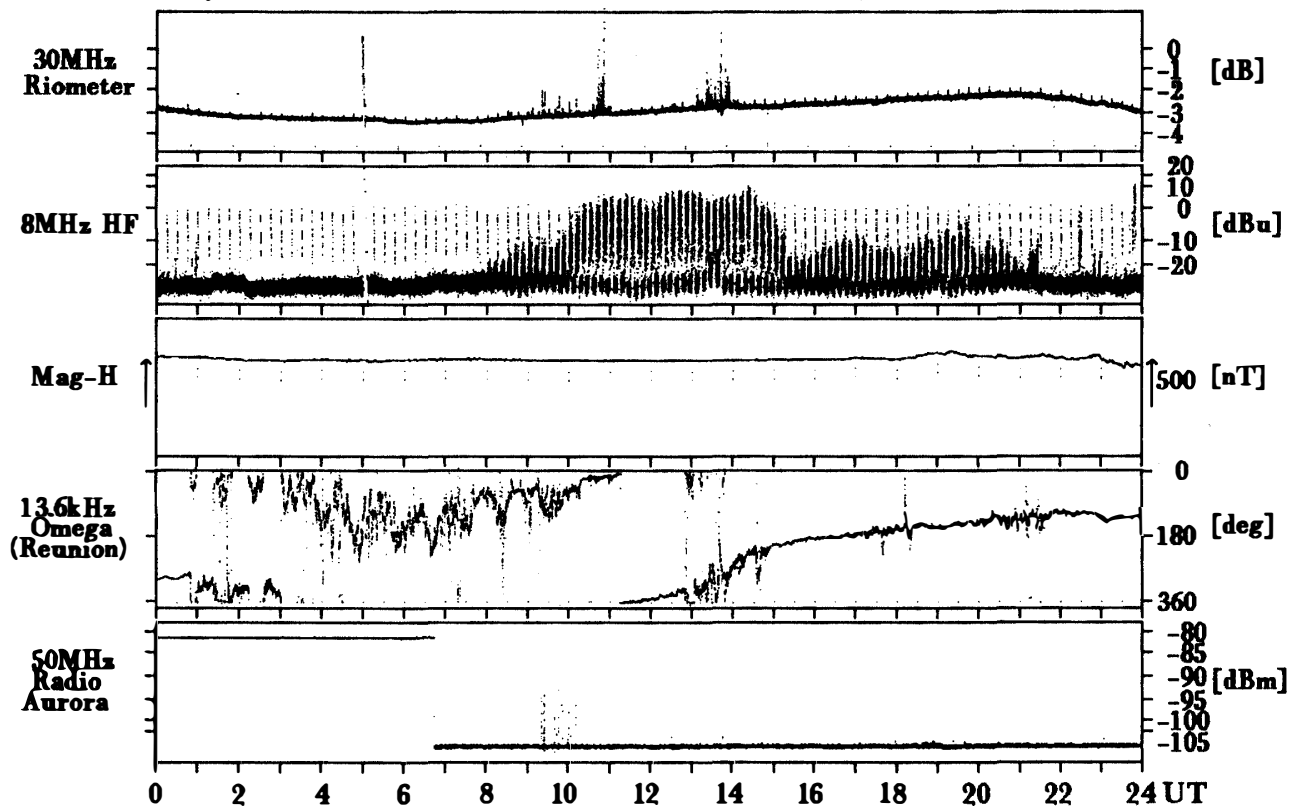
Syowa Station

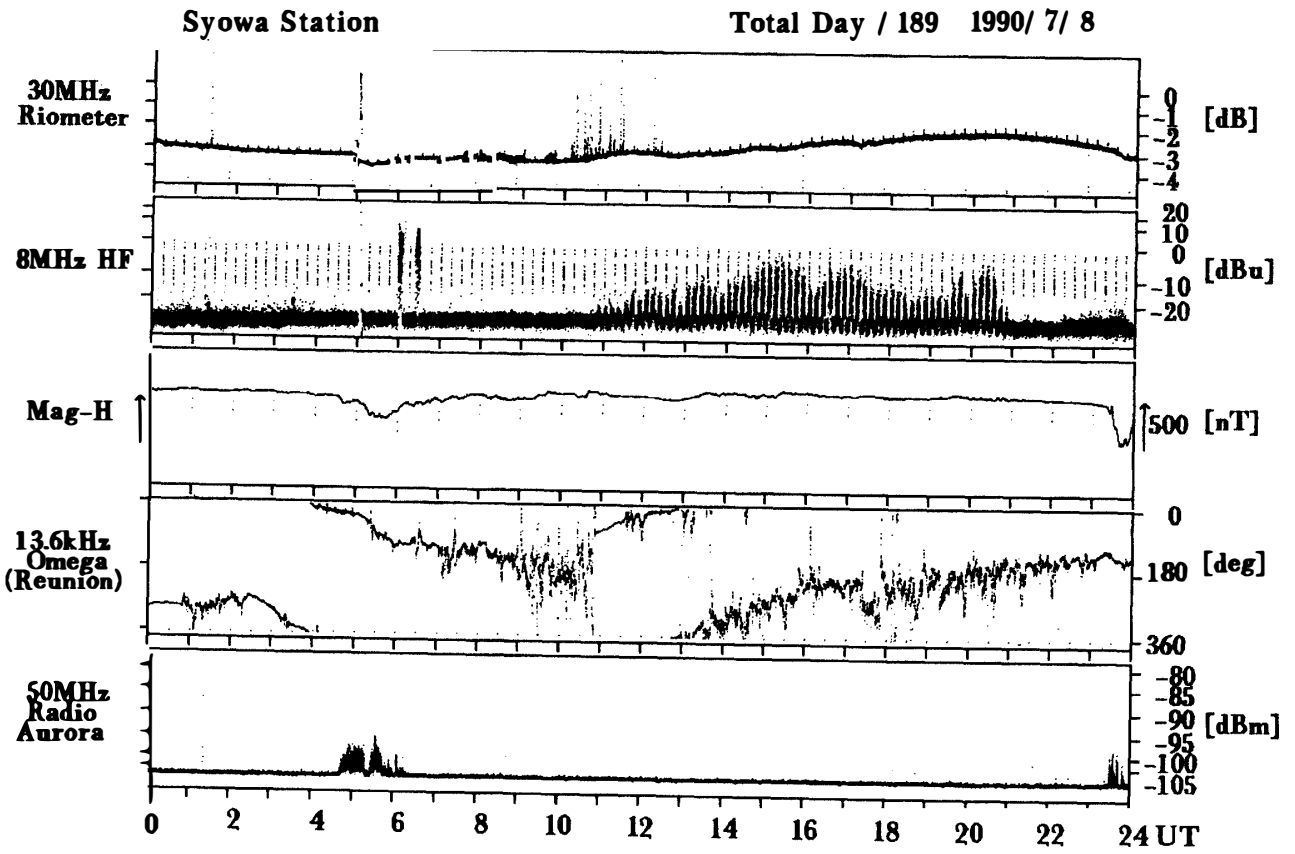
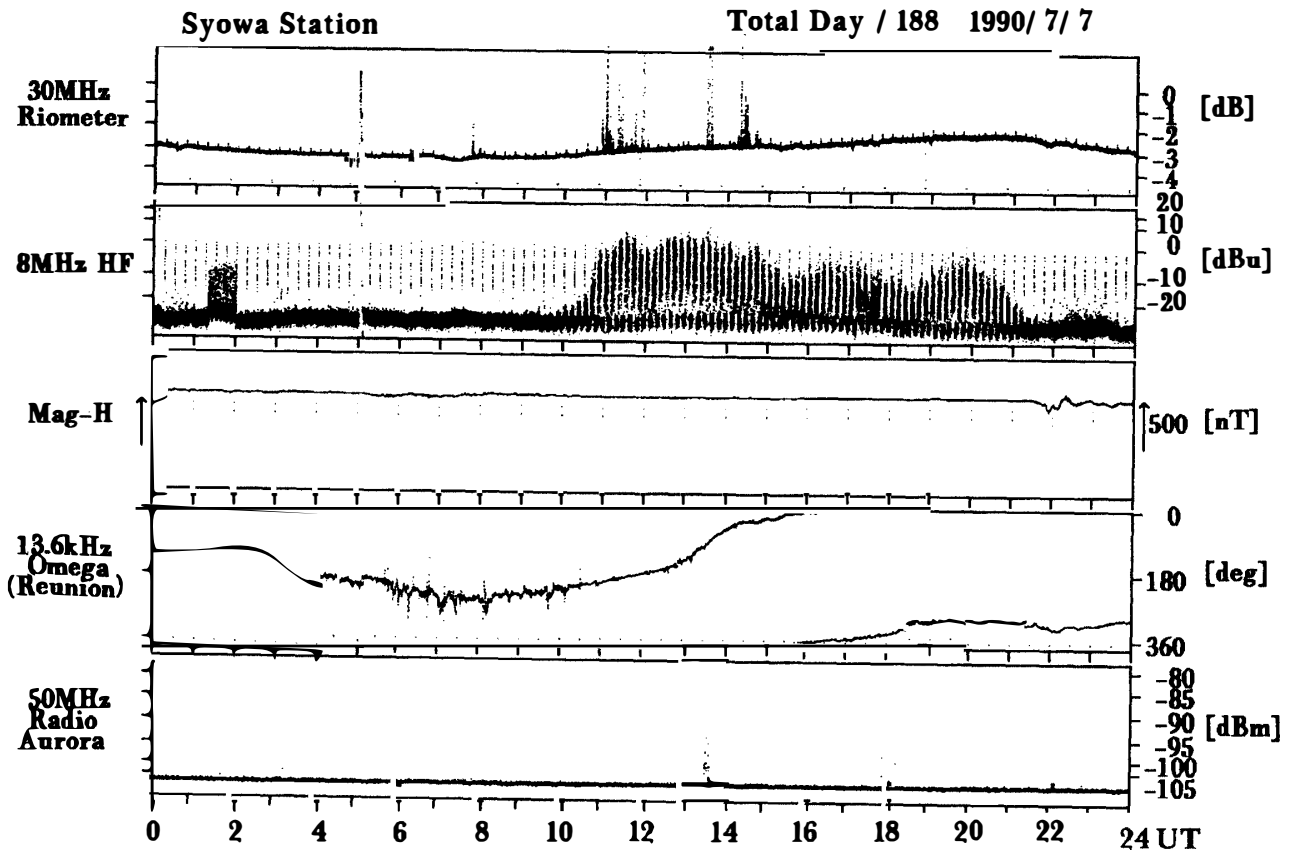
Total Day / 186 1990/ 7/ 5



Syowa Station

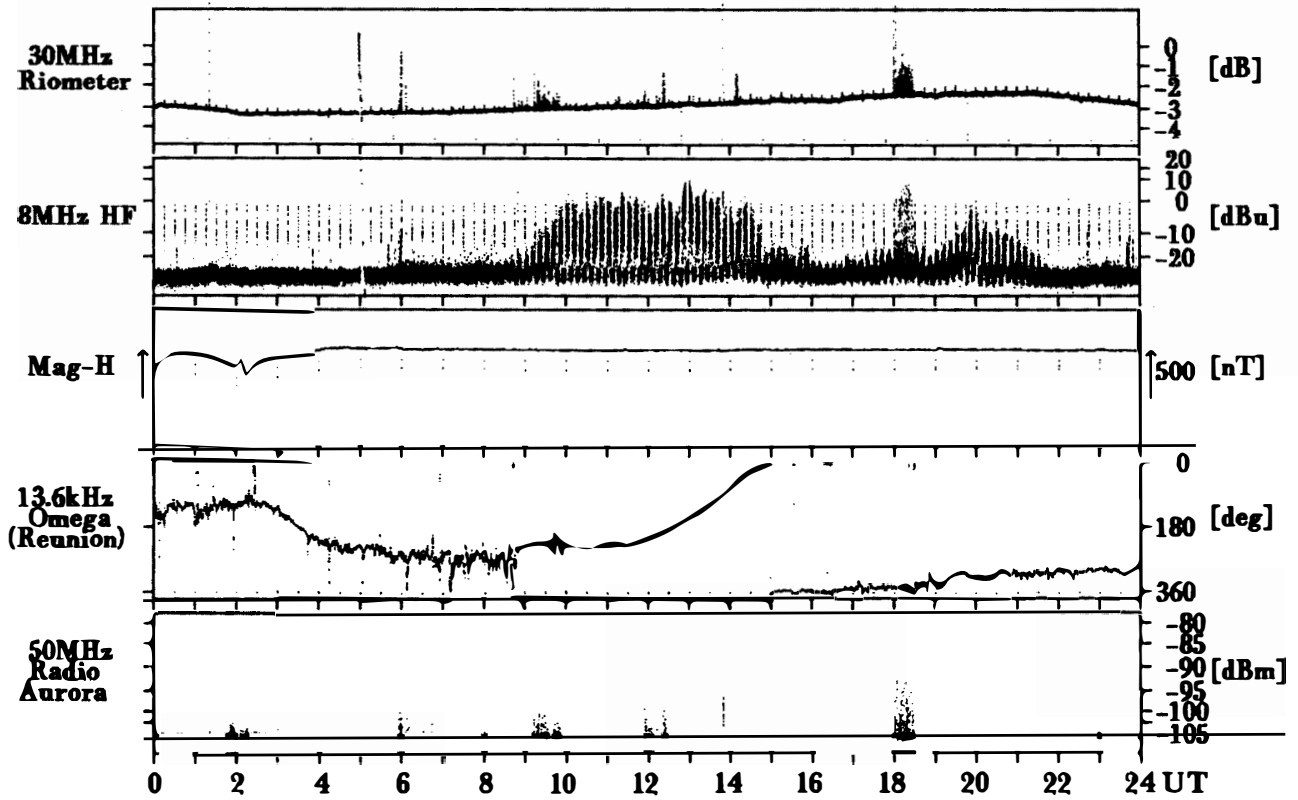
Total Day / 187 1990/ 7/ 6





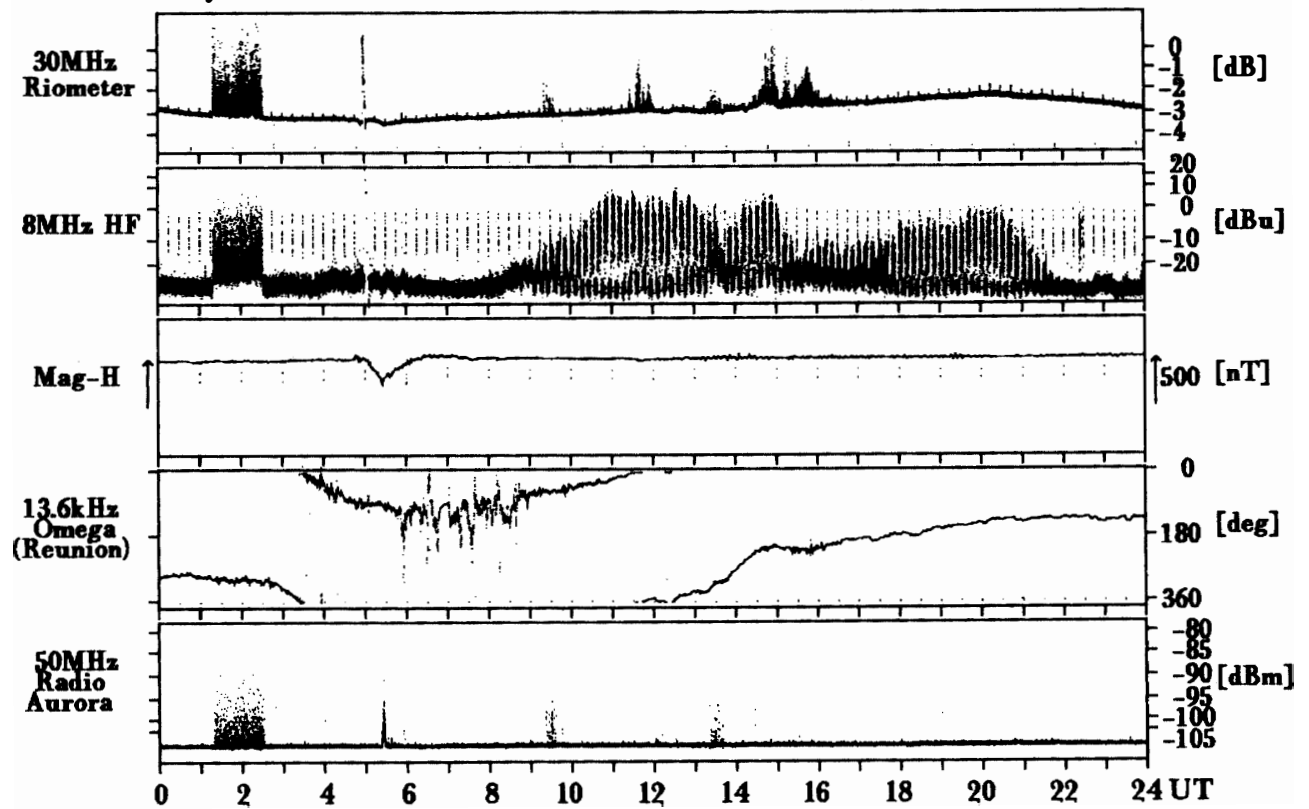
Syowa Station

Total Day / 190 1990/ 7/ 9



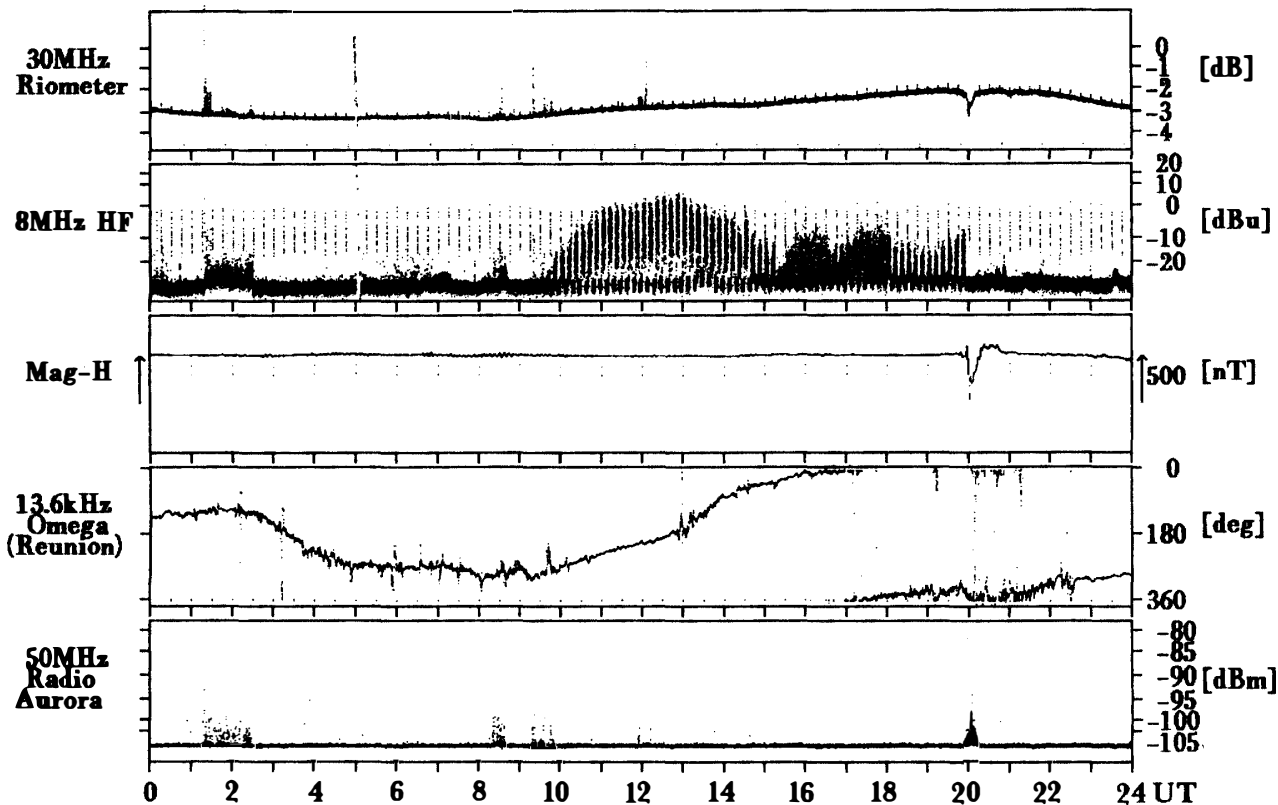
Syowa Station

Total Day / 191 1990/ 7/10



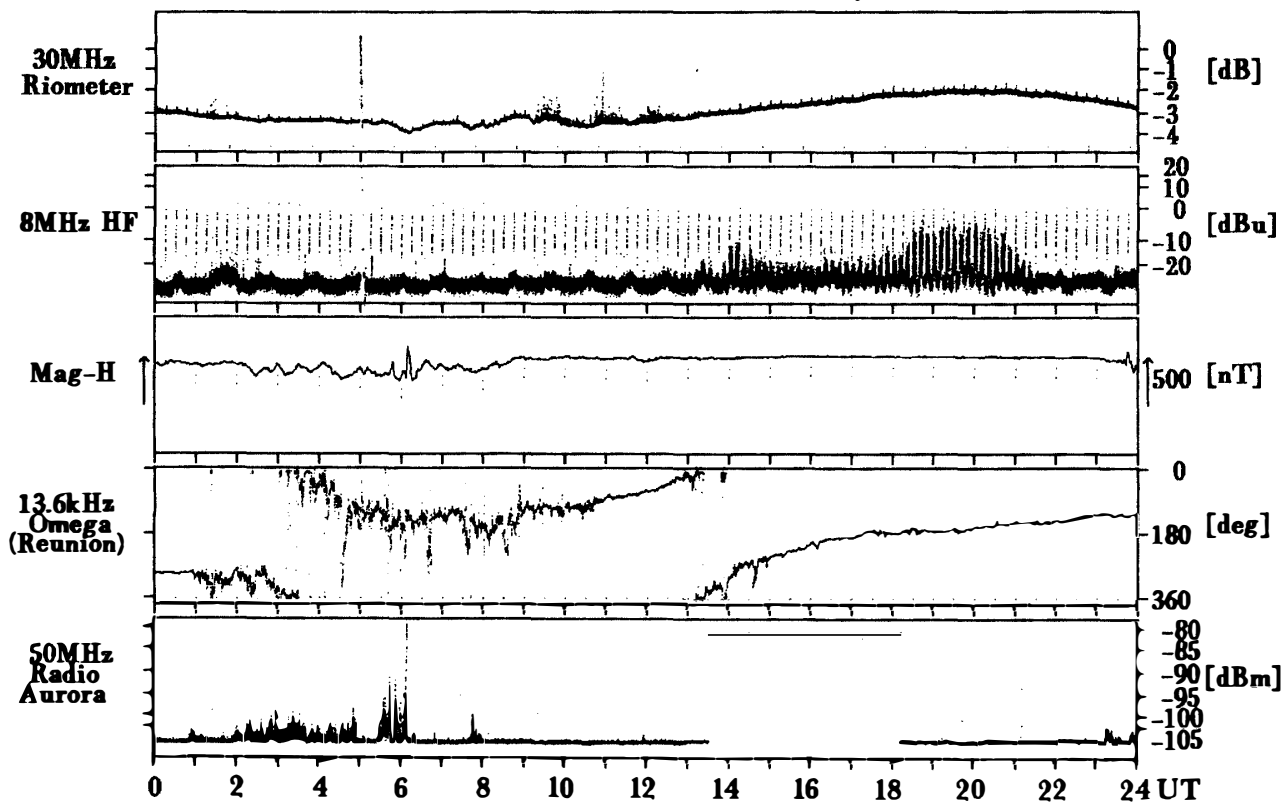
Syowa Station

Total Day / 192 1990/ 7/11



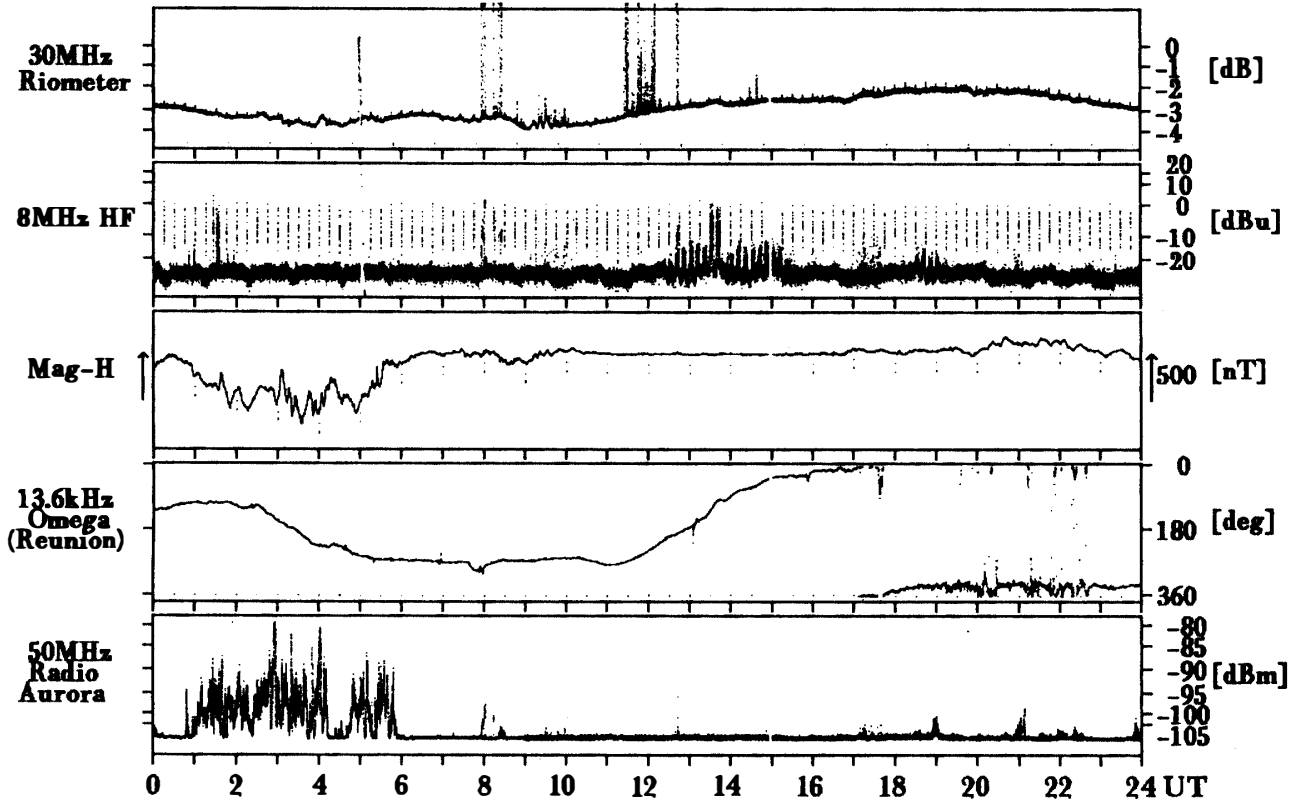
Syowa Station

Total Day / 193 1990/ 7/12



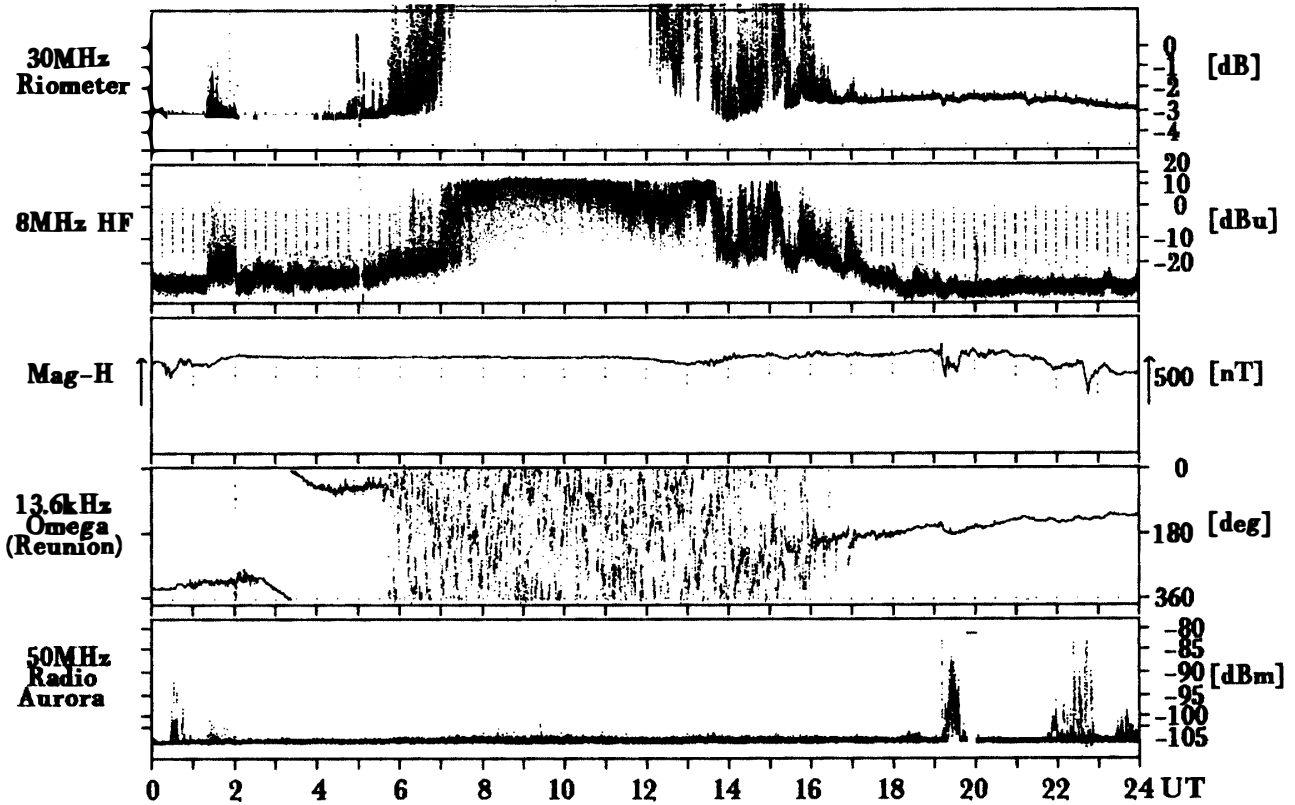
Syowa Station

Total Day / 194 1990/ 7/13



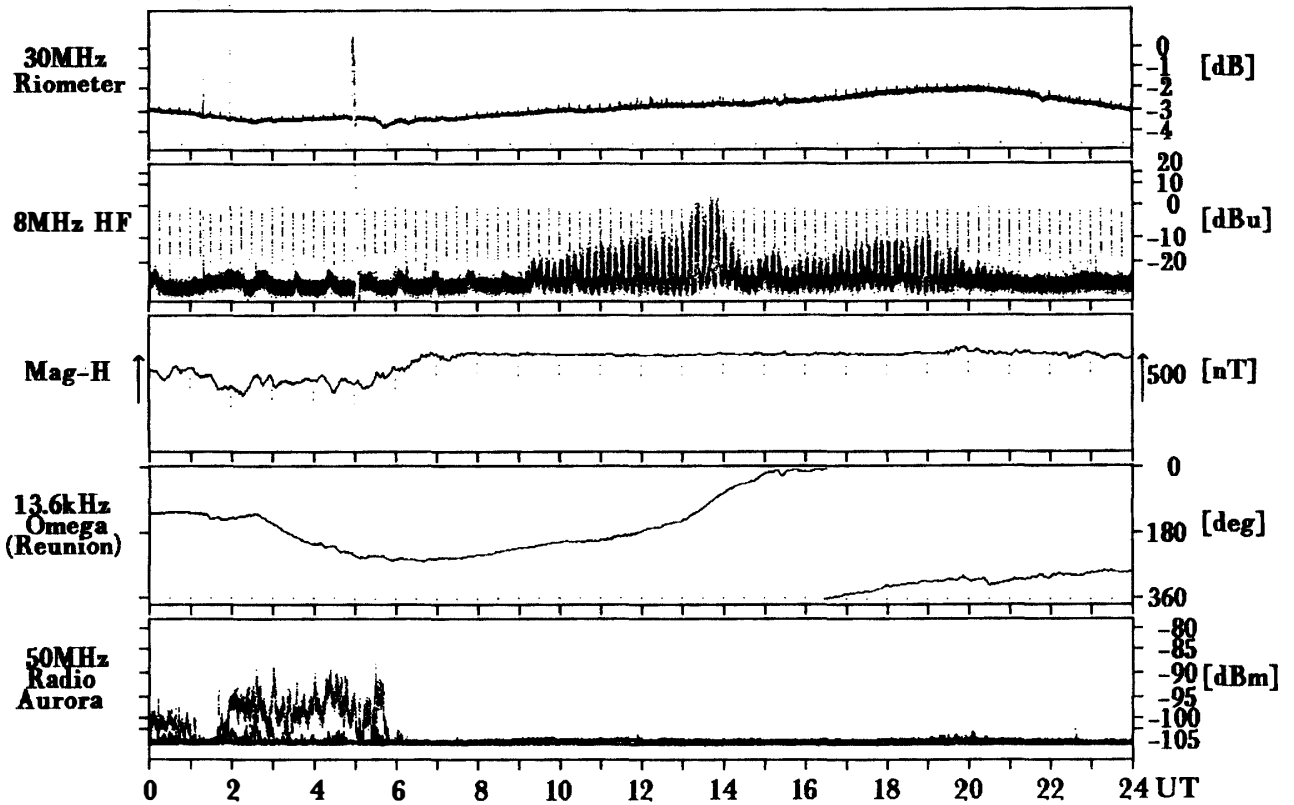
Syowa Station

Total Day / 195 1990/ 7/14



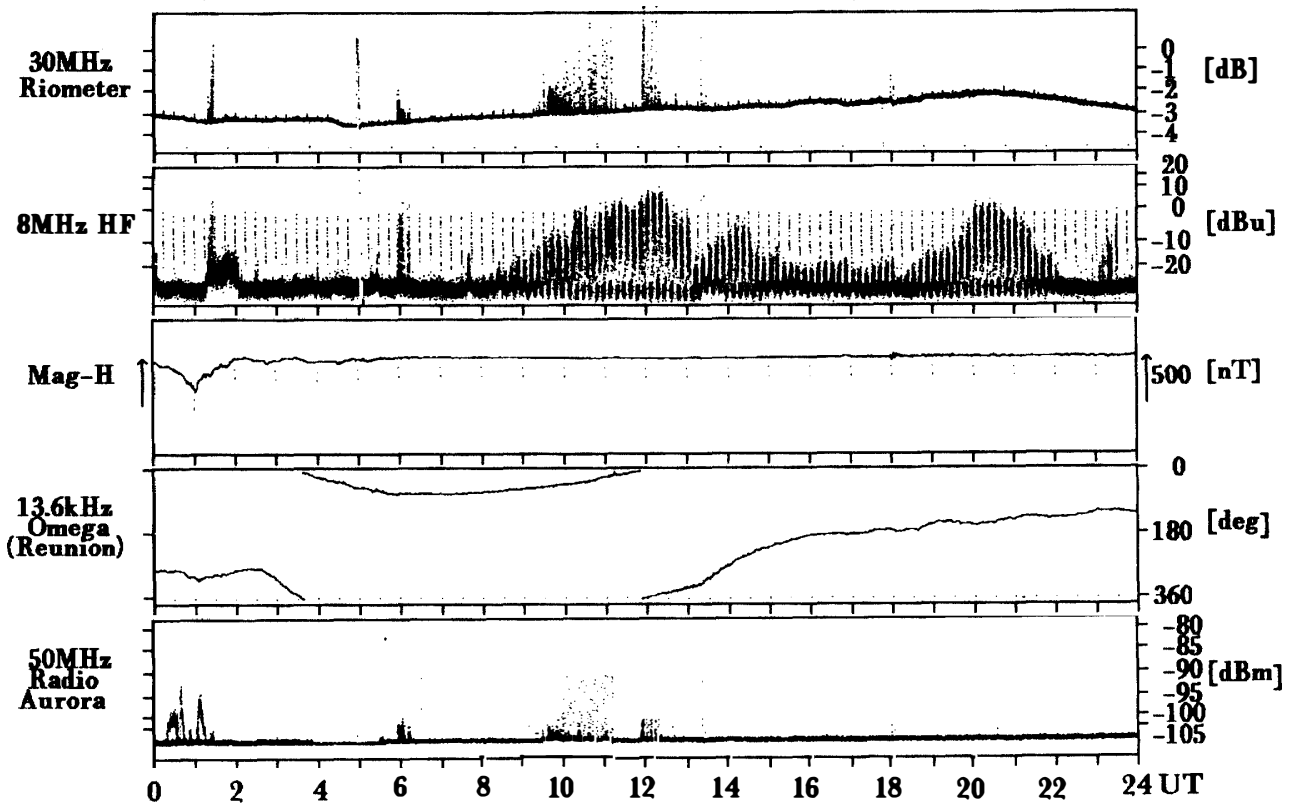
Syowa Station

Total Day / 196 1990/ 7/15



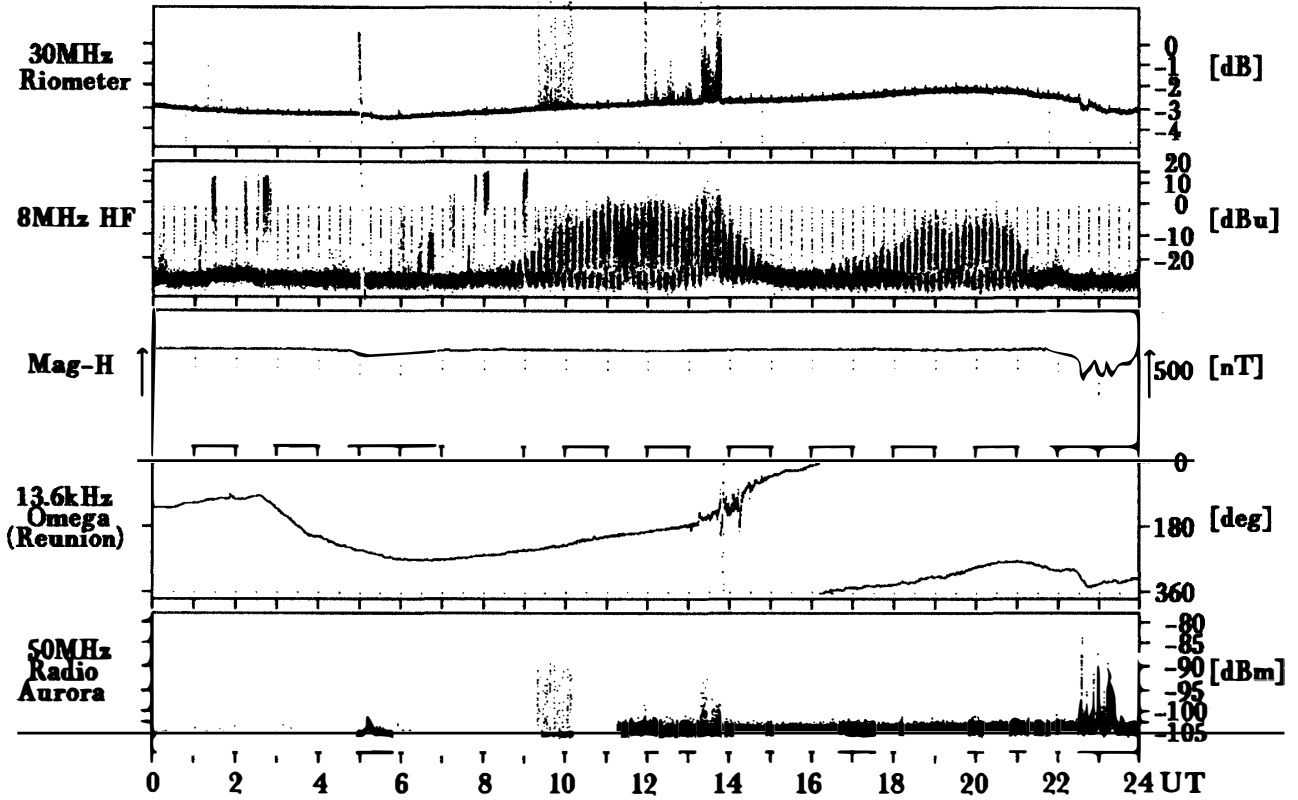
Syowa Station

Total Day / 197 1990/ 7/16



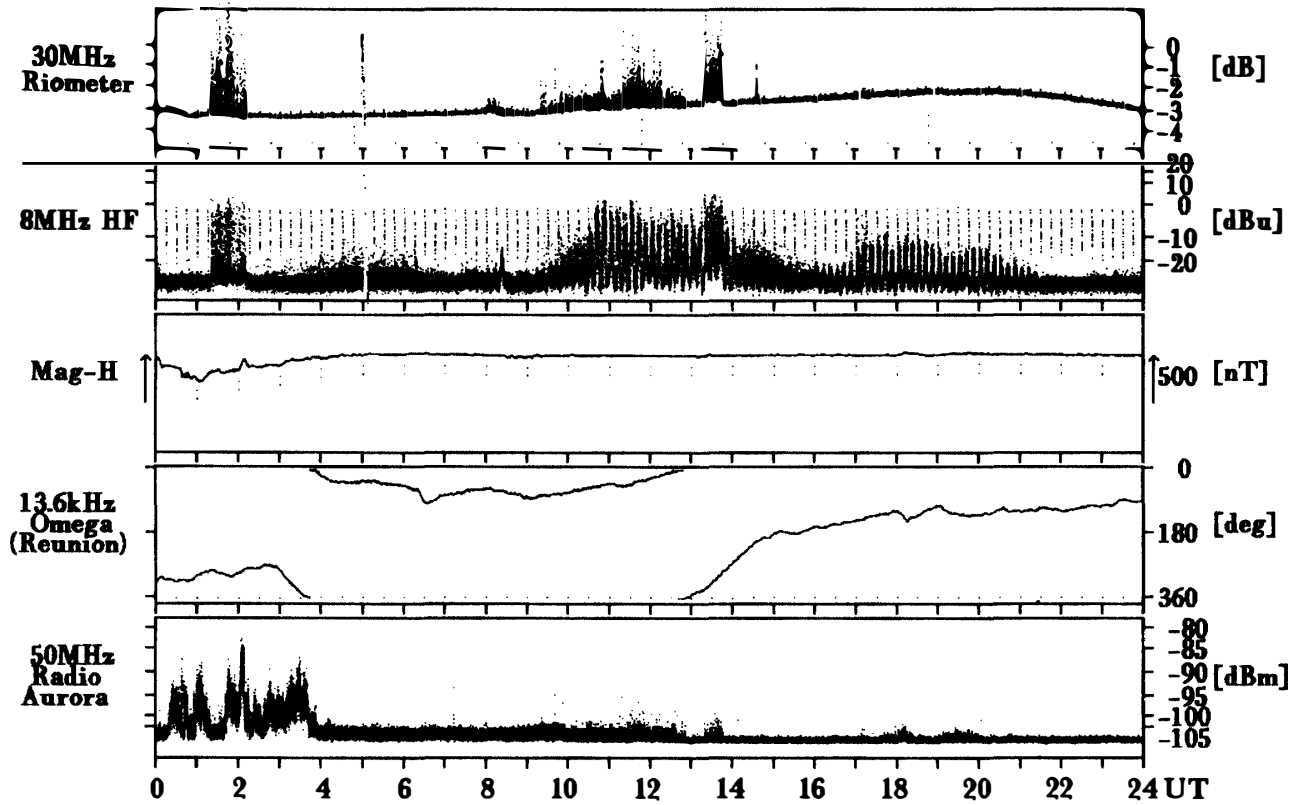
Syowa Station

Total Day / 198 1990/ 7/17



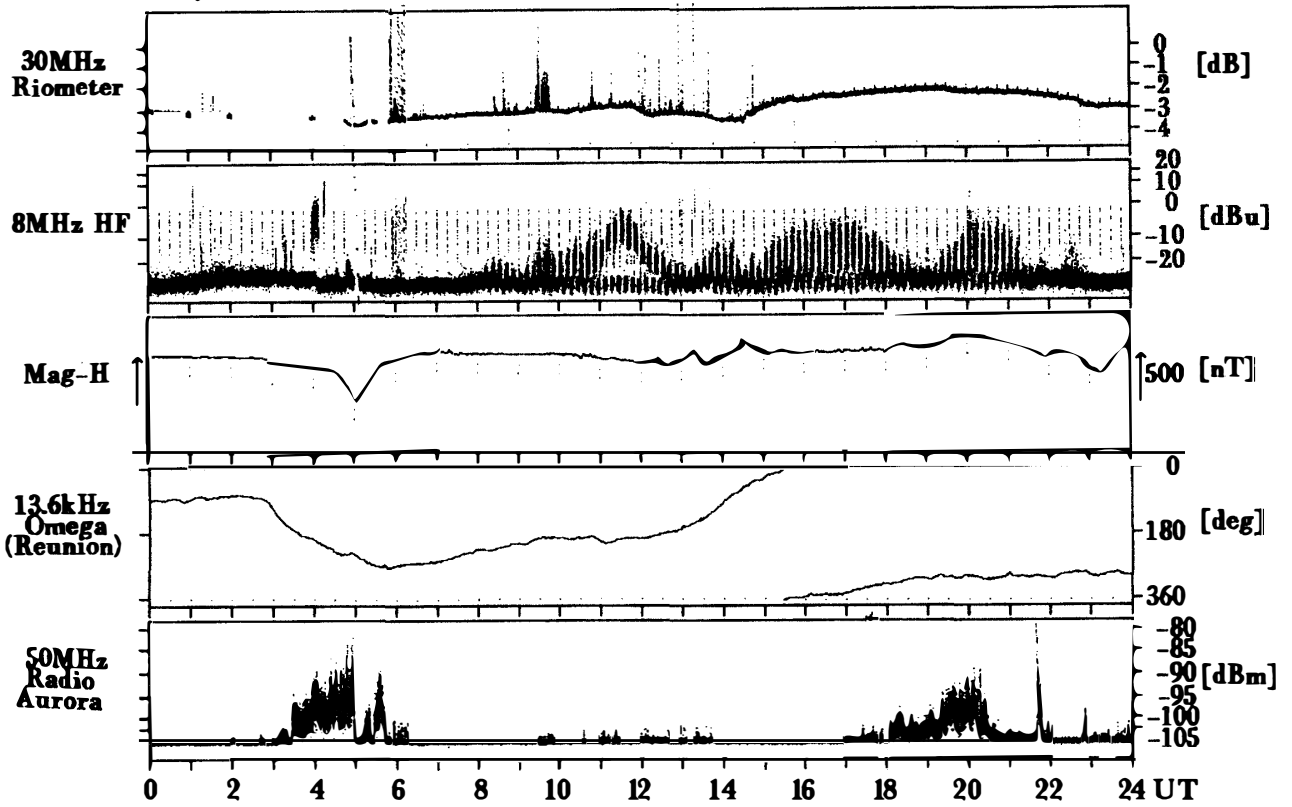
Syowa Station

Total Day / 199 1990/ 7/18



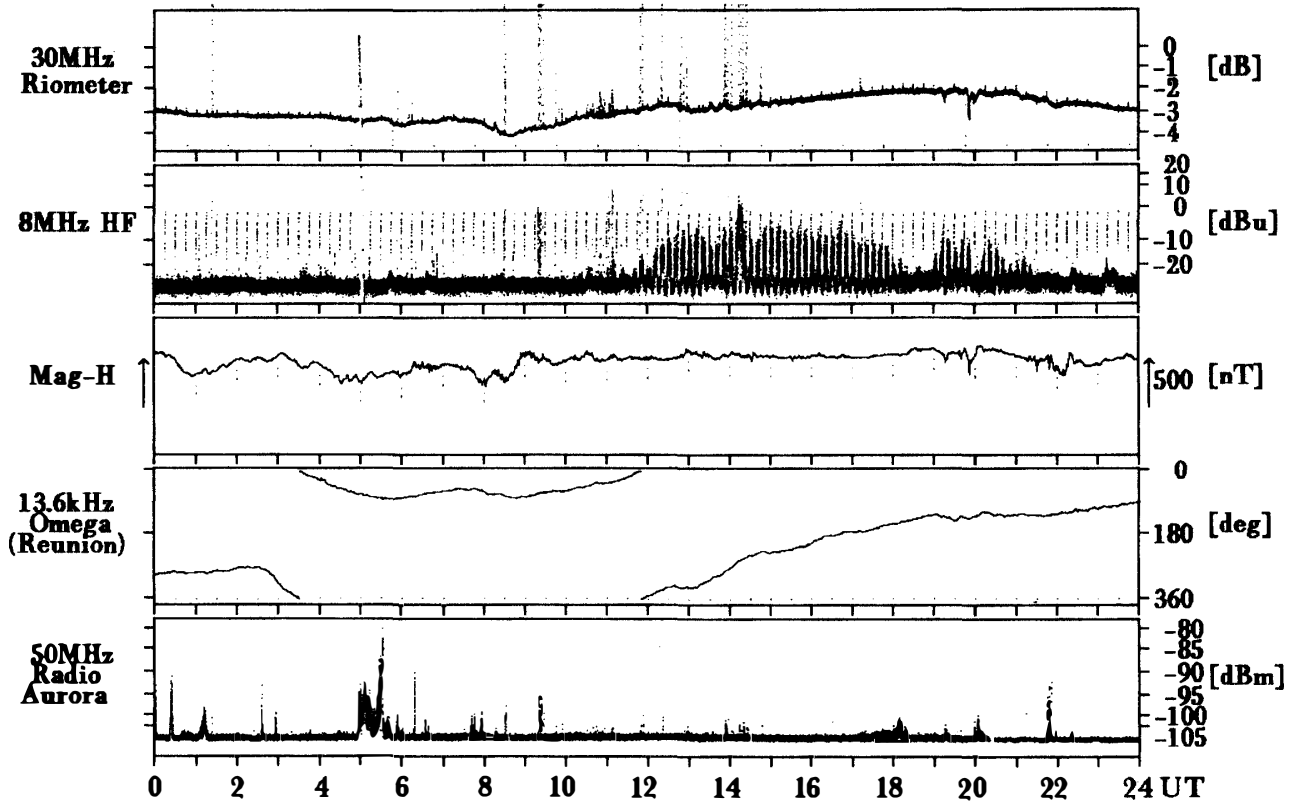
Syowa Station

Total Day / 200 1990/ 7/19



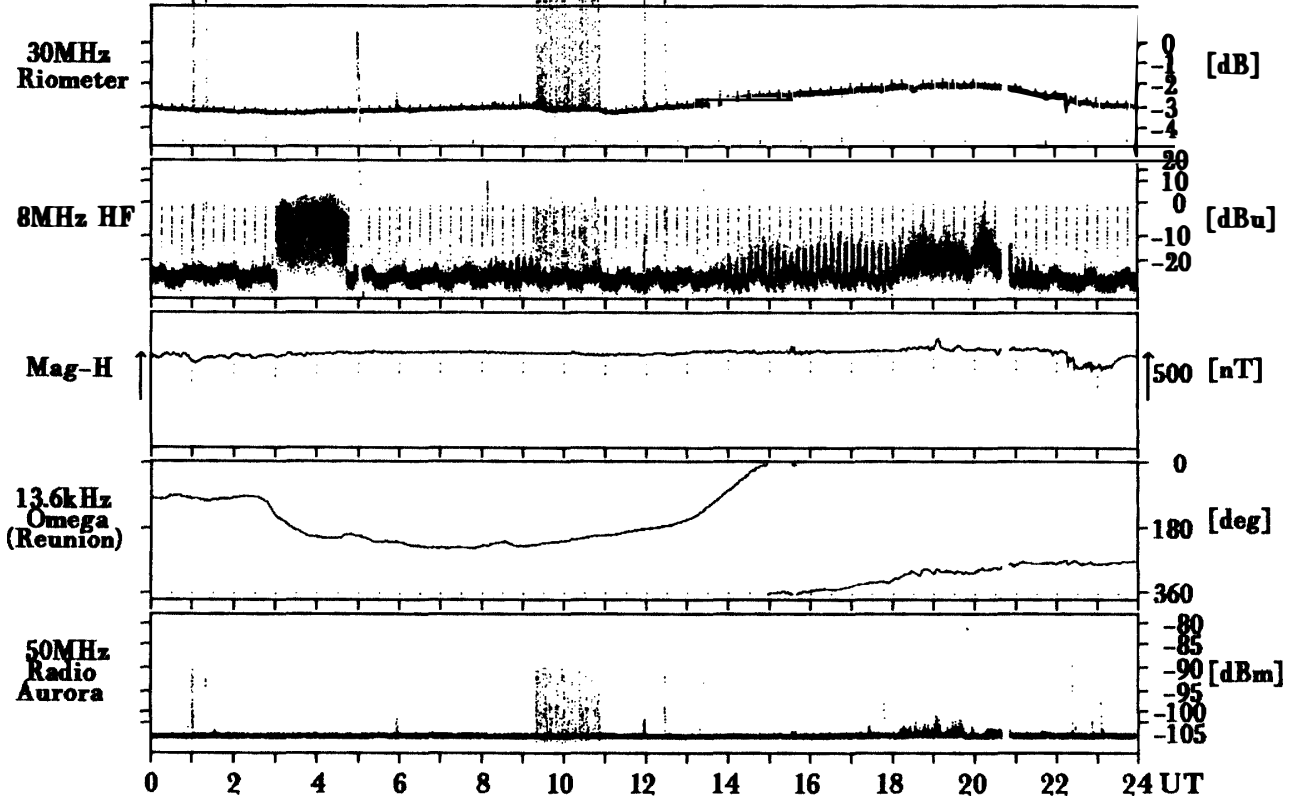
Syowa Station

Total Day / 201 1990/ 7/20



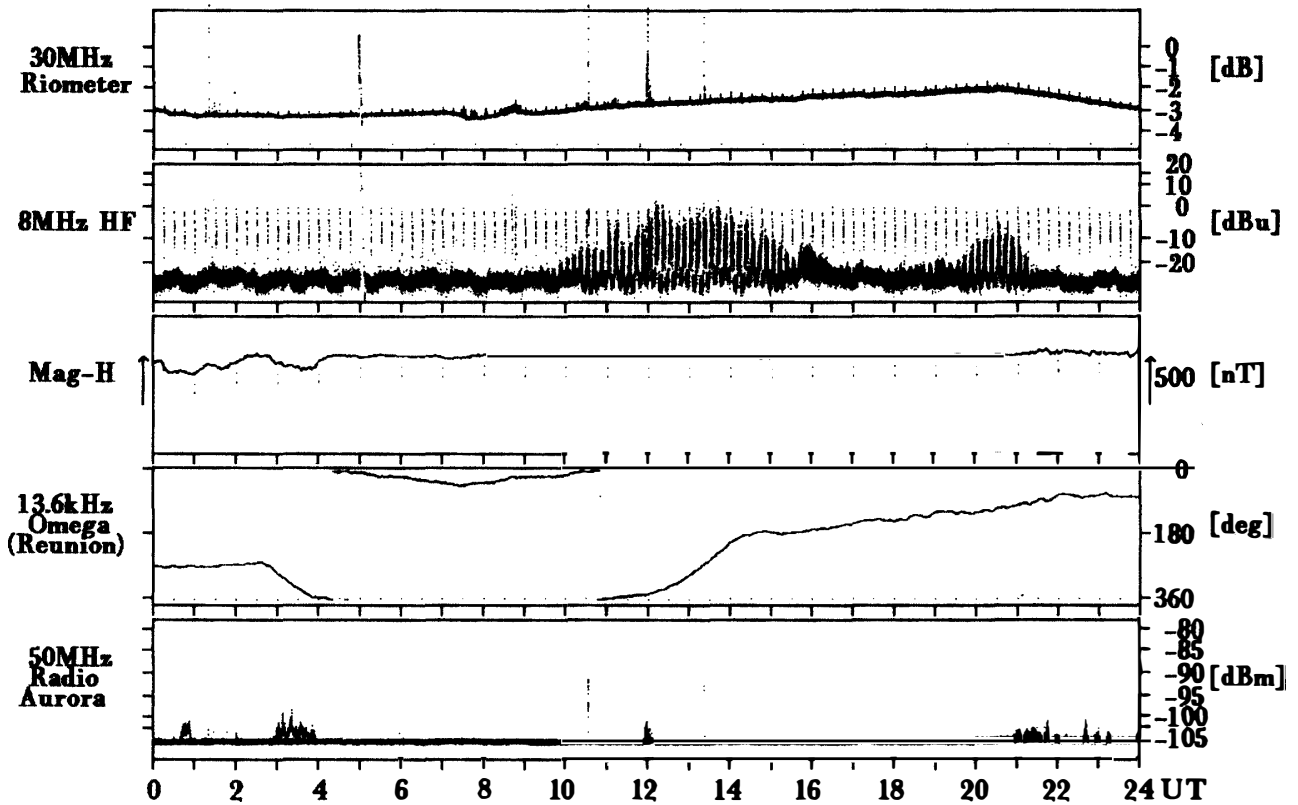
Syowa Station

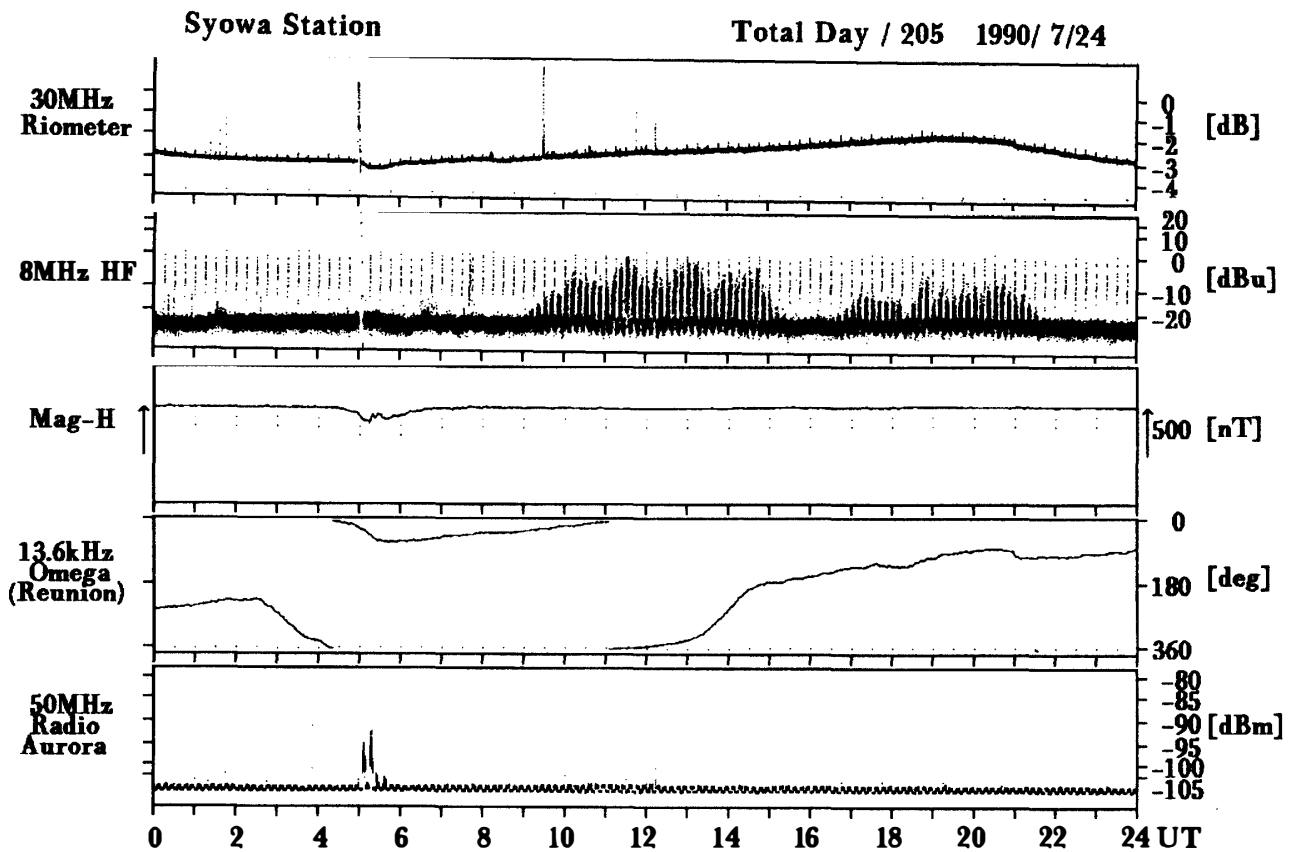
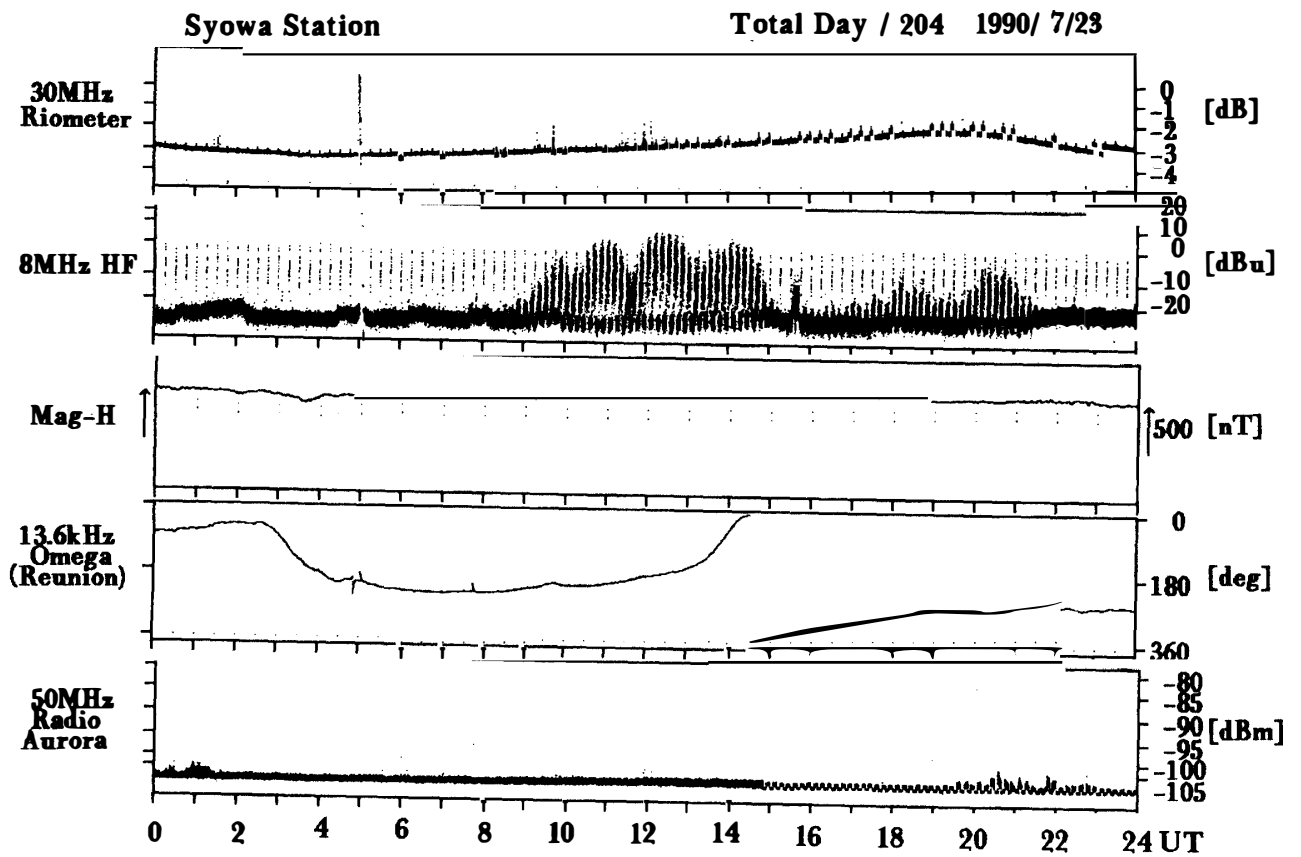
Total Day / 202 1990/ 7/21



Syowa Station

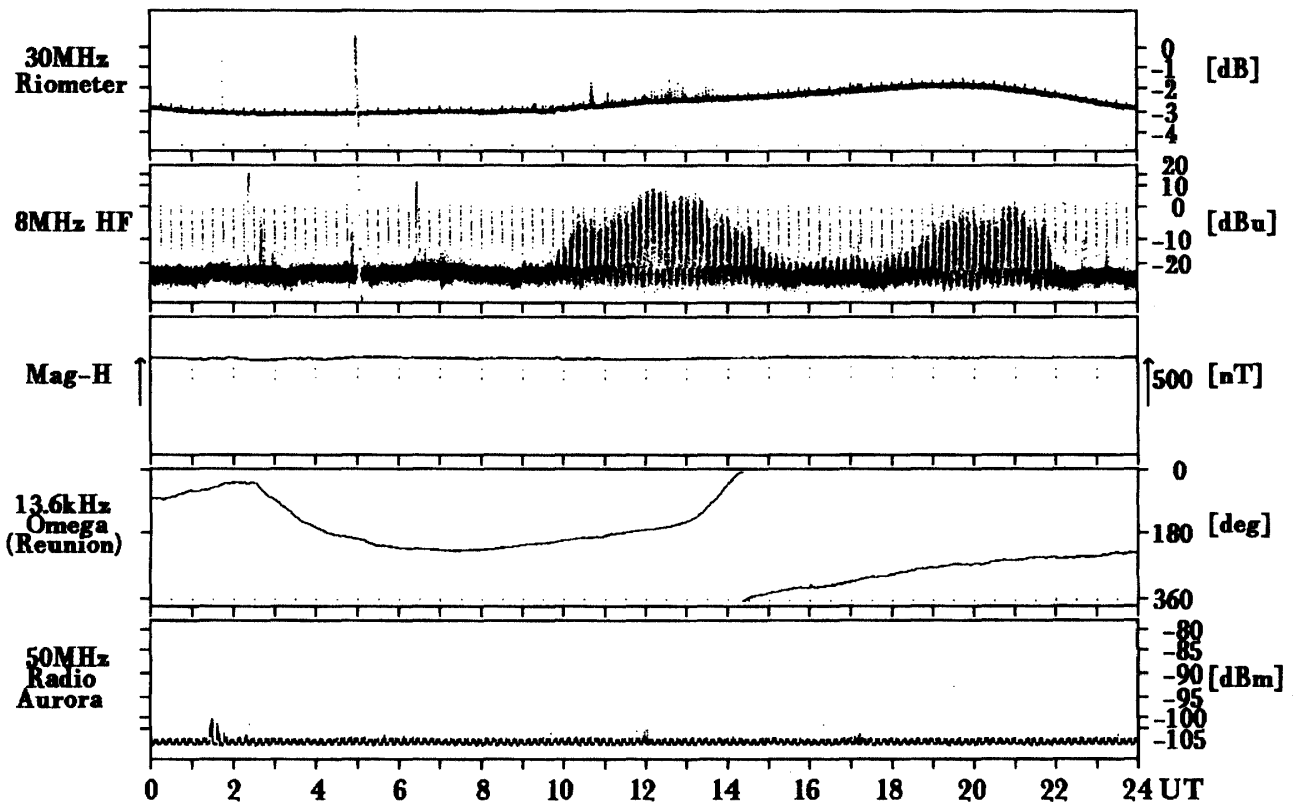
Total Day / 203 1990/ 7/22





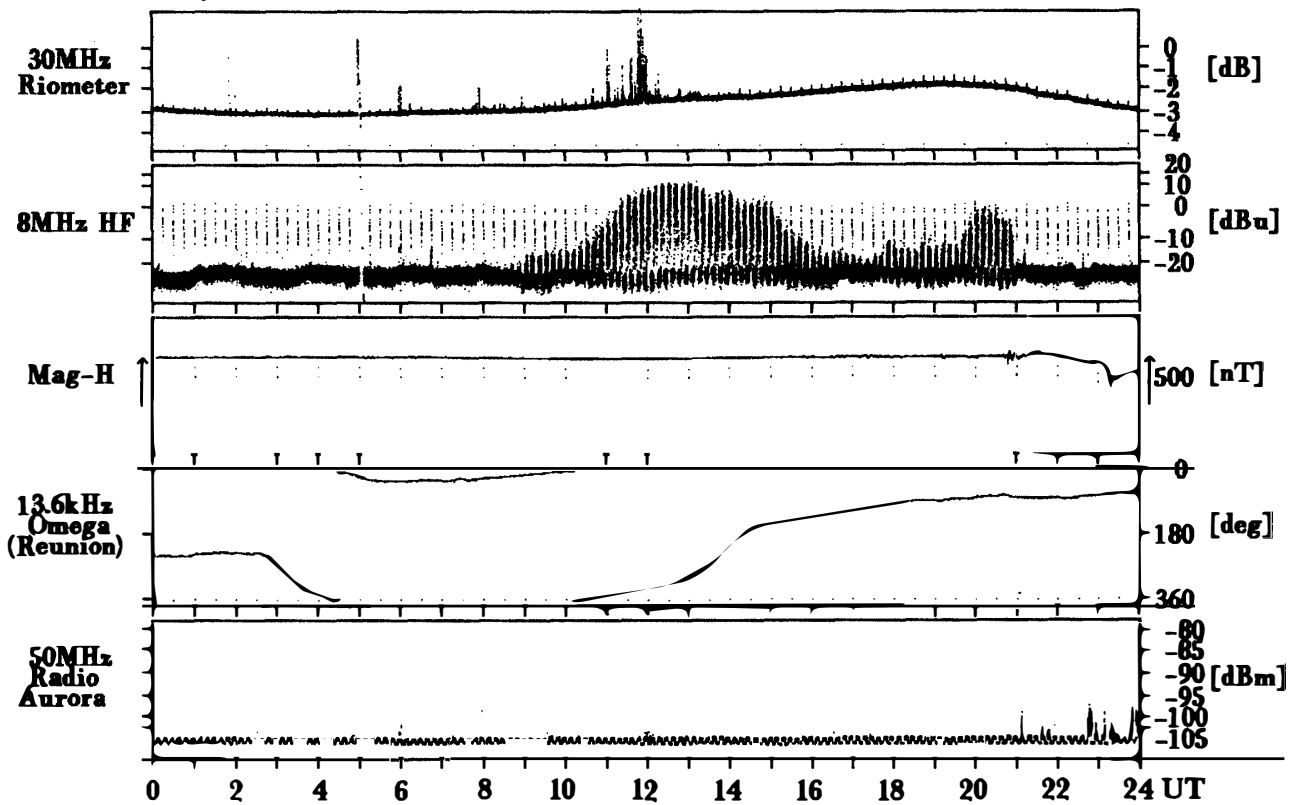
Syowa Station

Total Day / 206 1990/ 7/25



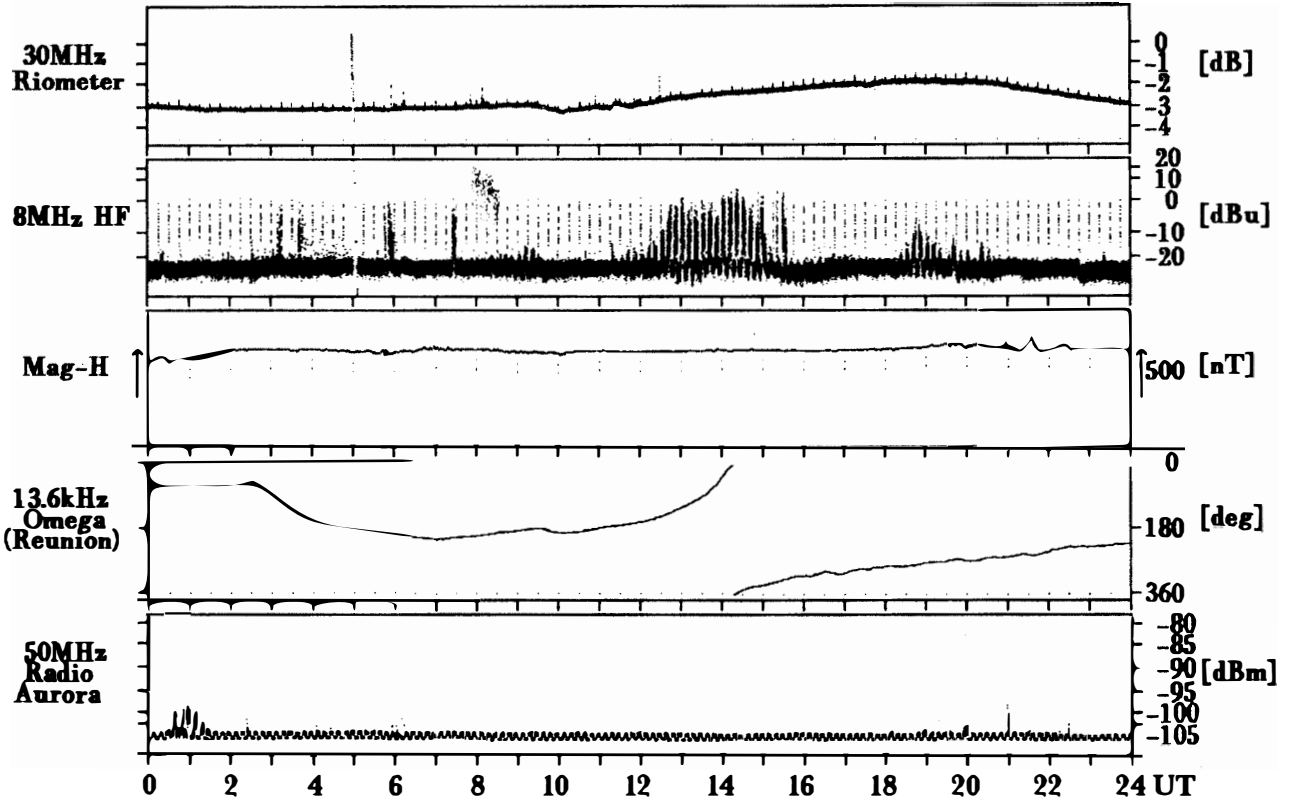
Syowa Station

Total Day / 207 1990/ 7/26



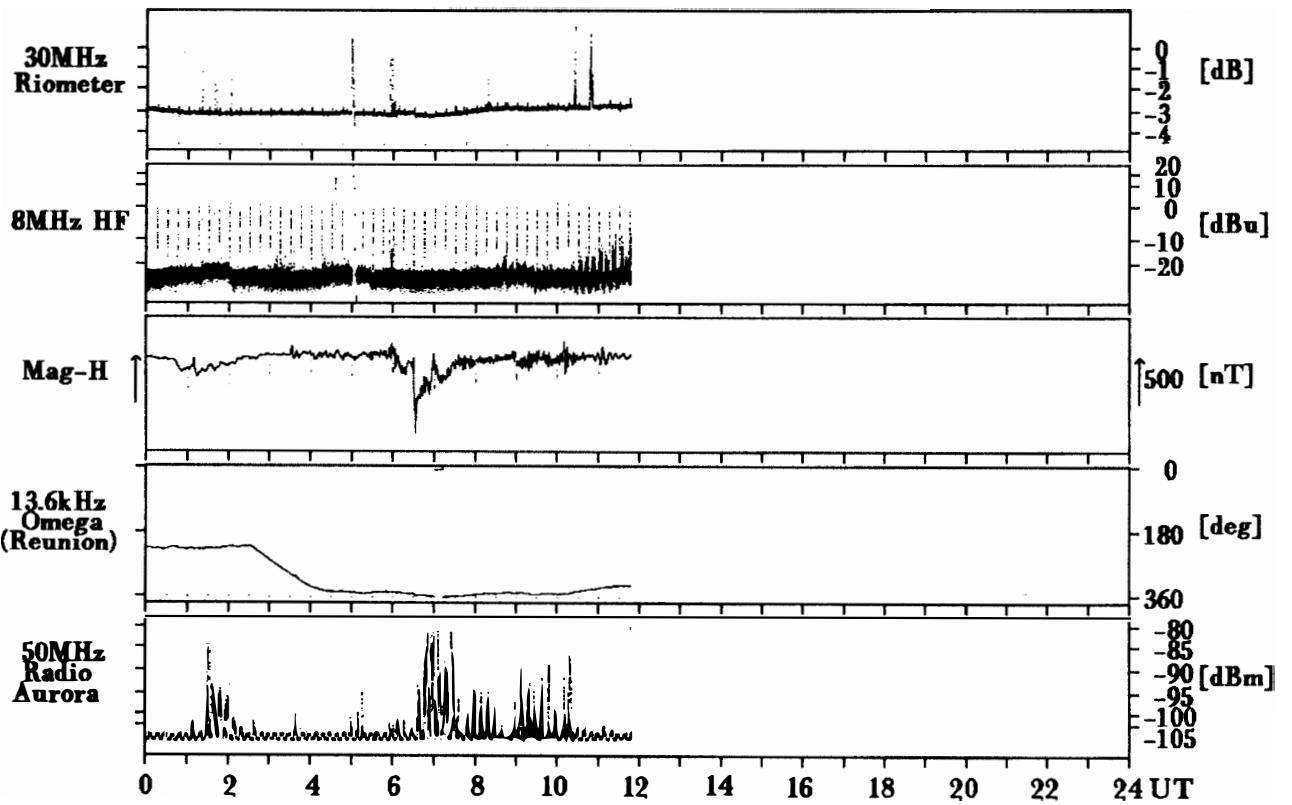
Syowa Station

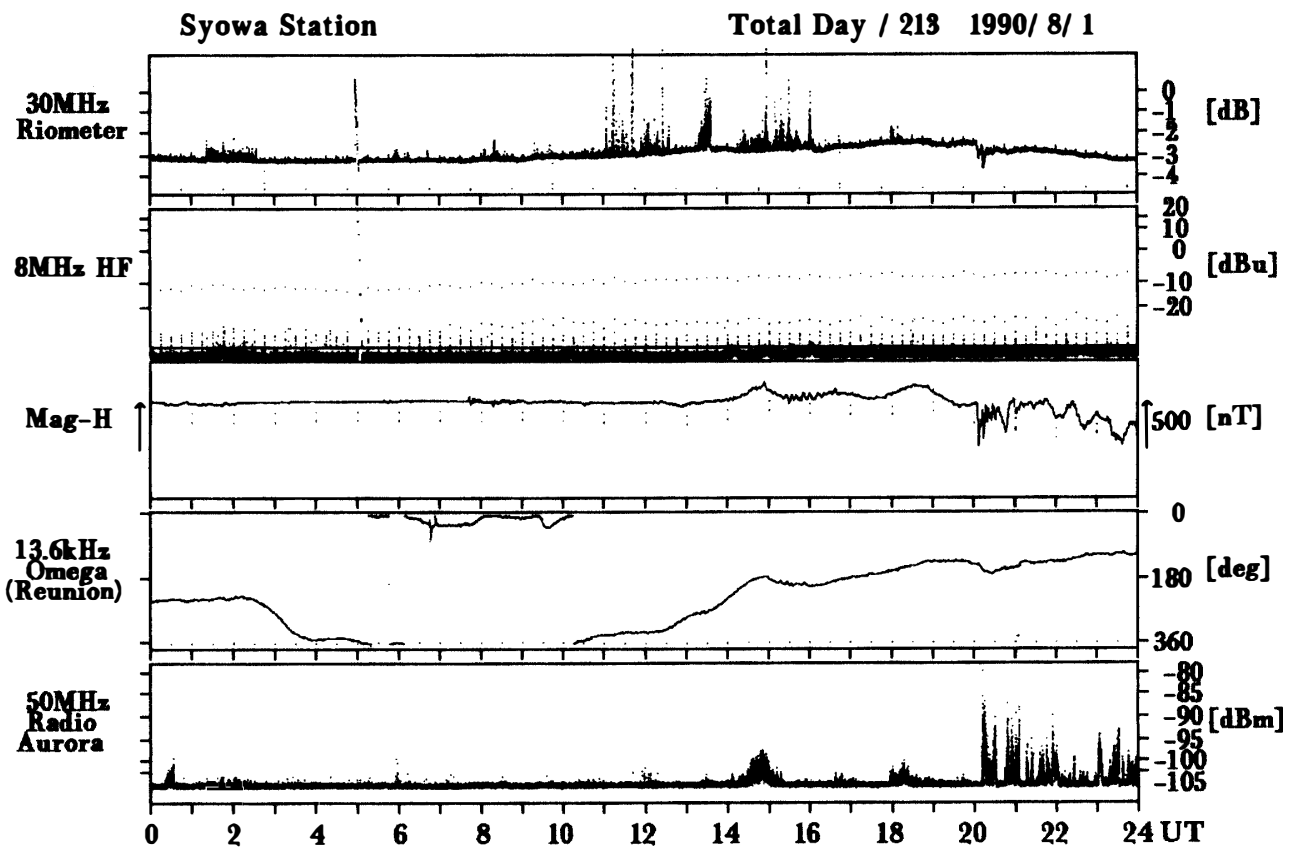
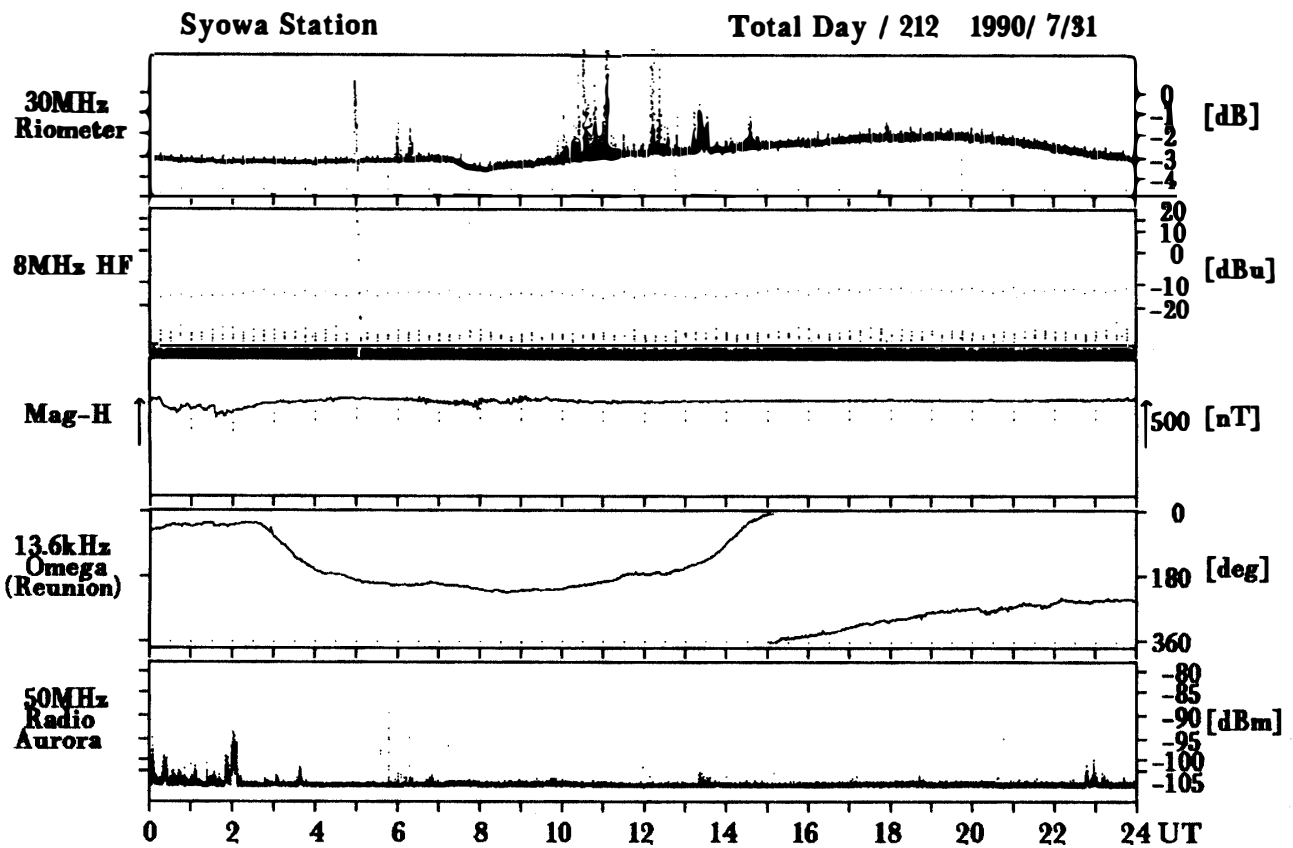
Total Day / 208 1990/ 7/27



Syowa Station

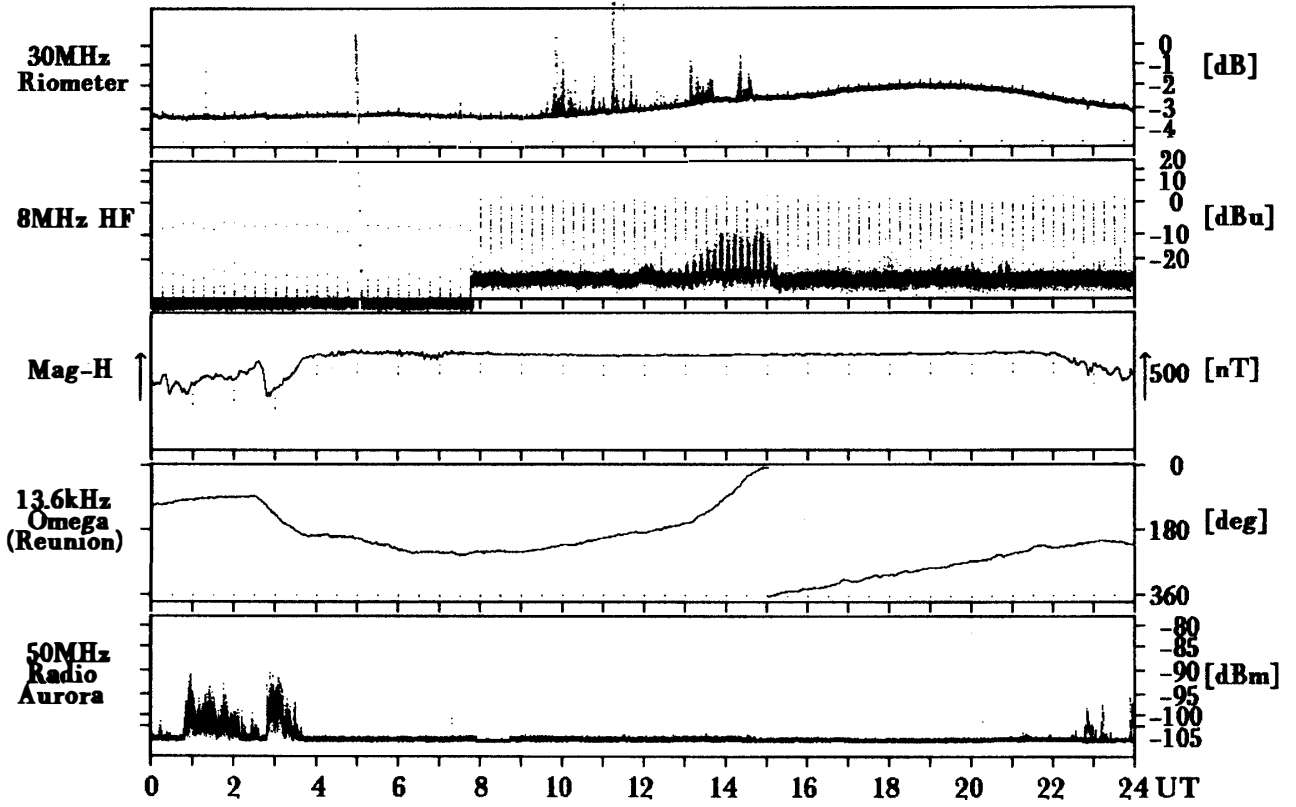
Total Day / 209 1990/ 7/28





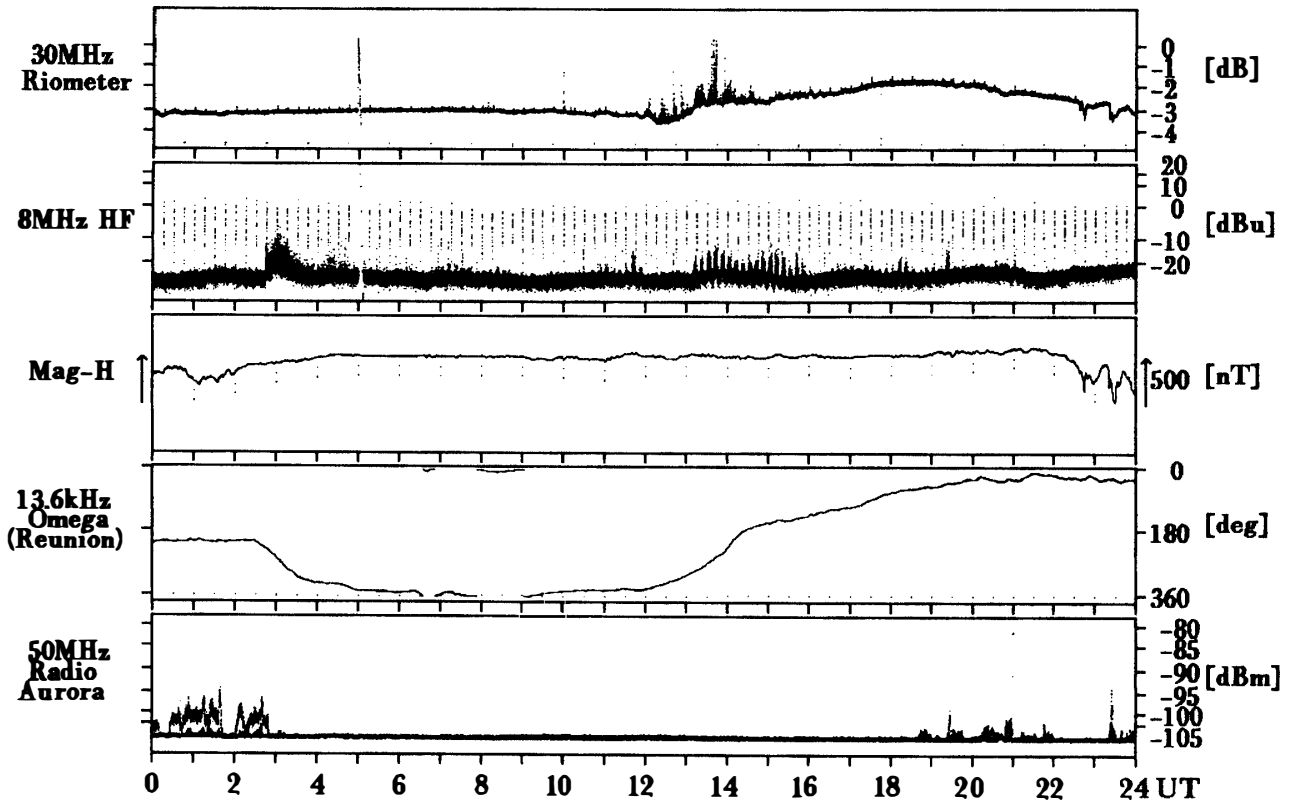
Syowa Station

Total Day / 214 1990/ 8/ 2



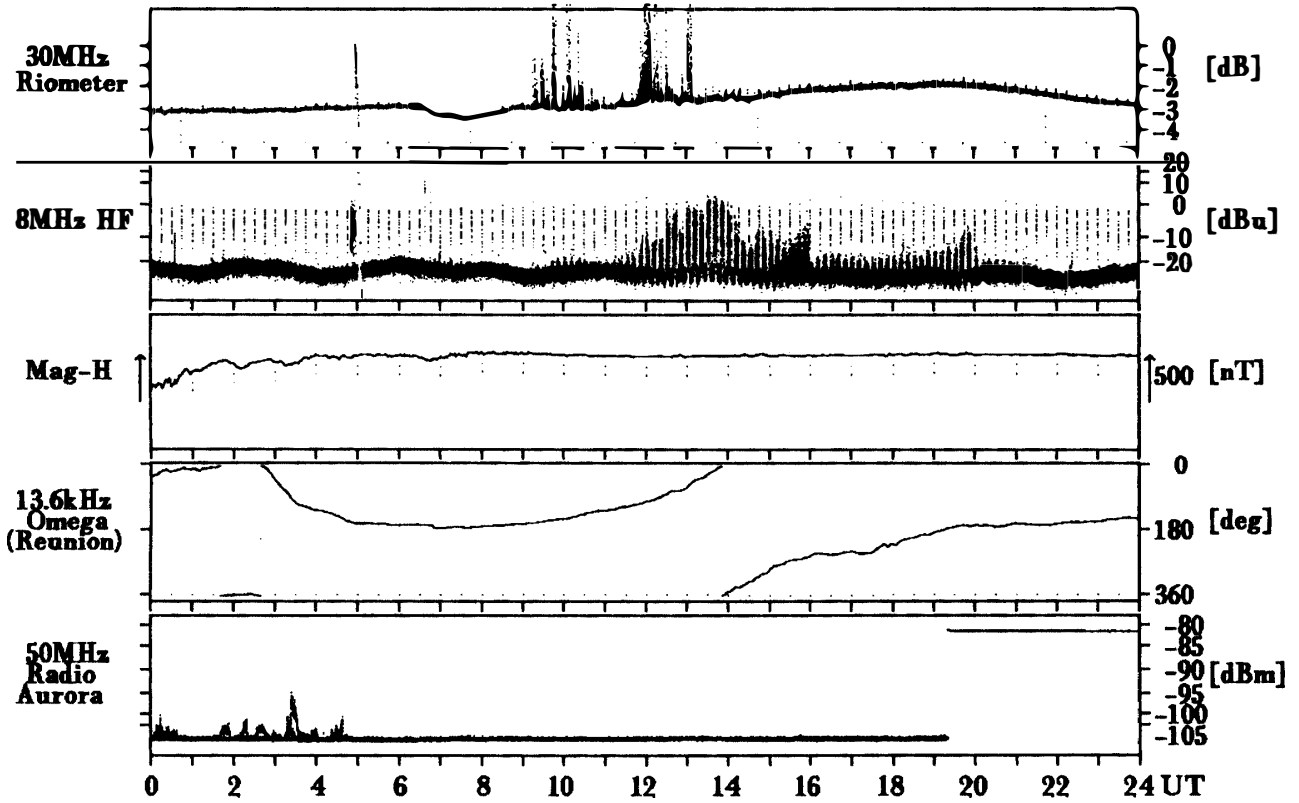
Syowa Station

Total Day / 215 1990/ 8/ 3



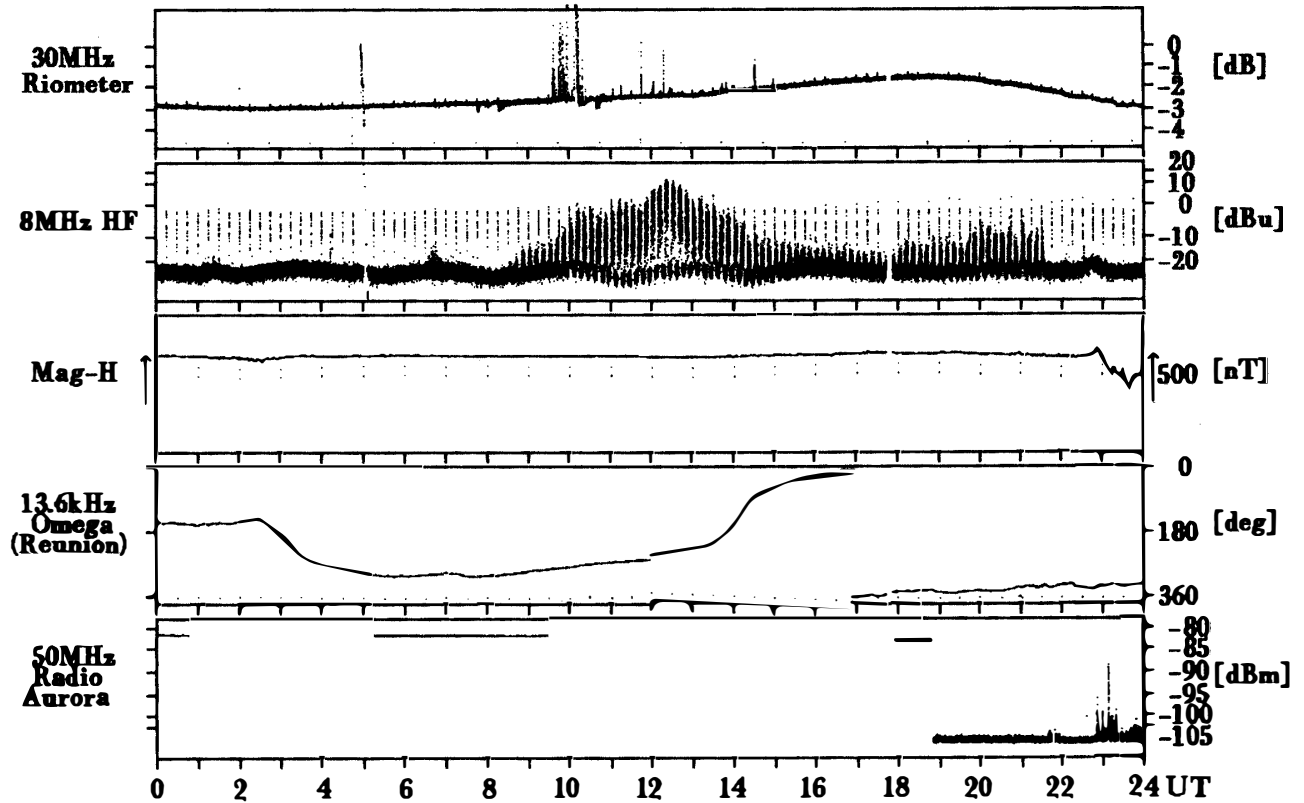
Syowa Station

Total Day / 216 1990/ 8/ 4



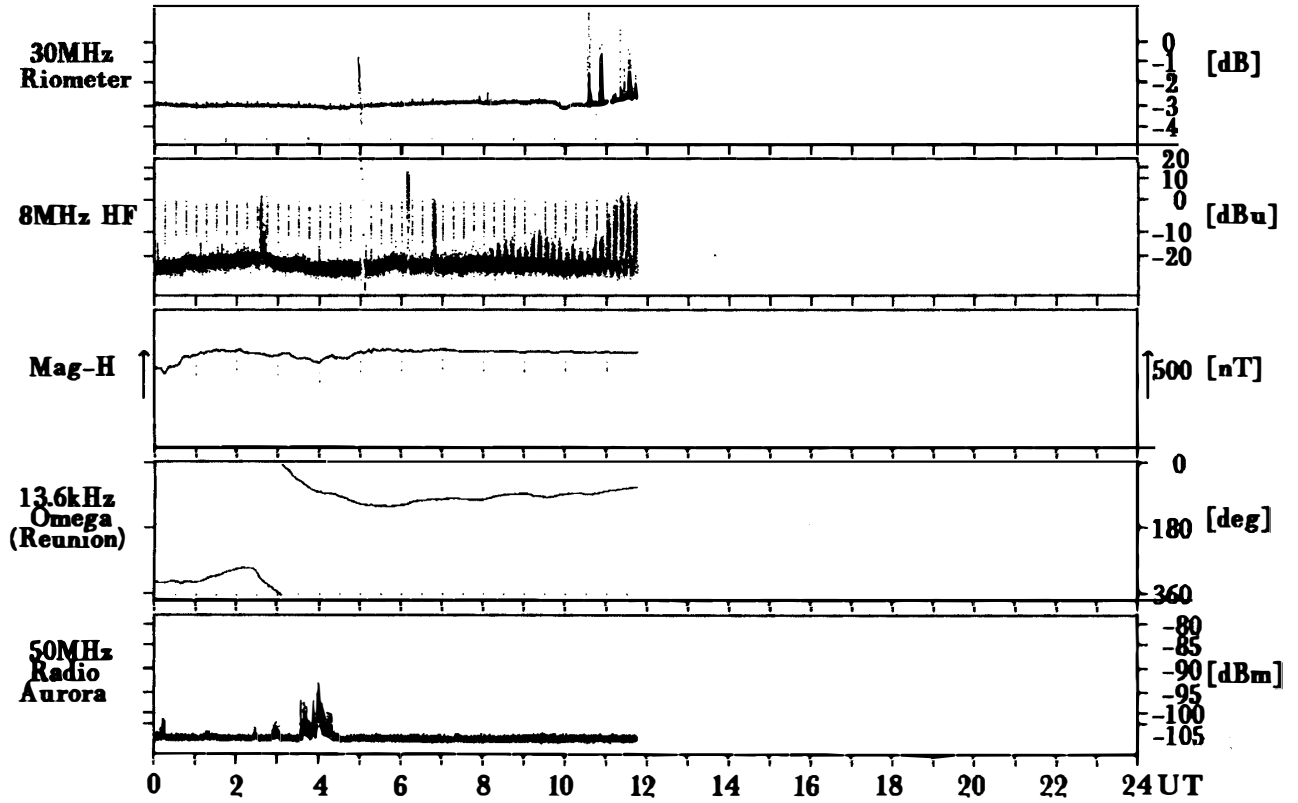
Syowa Station

Total Day / 217 1990/ 8/ 5



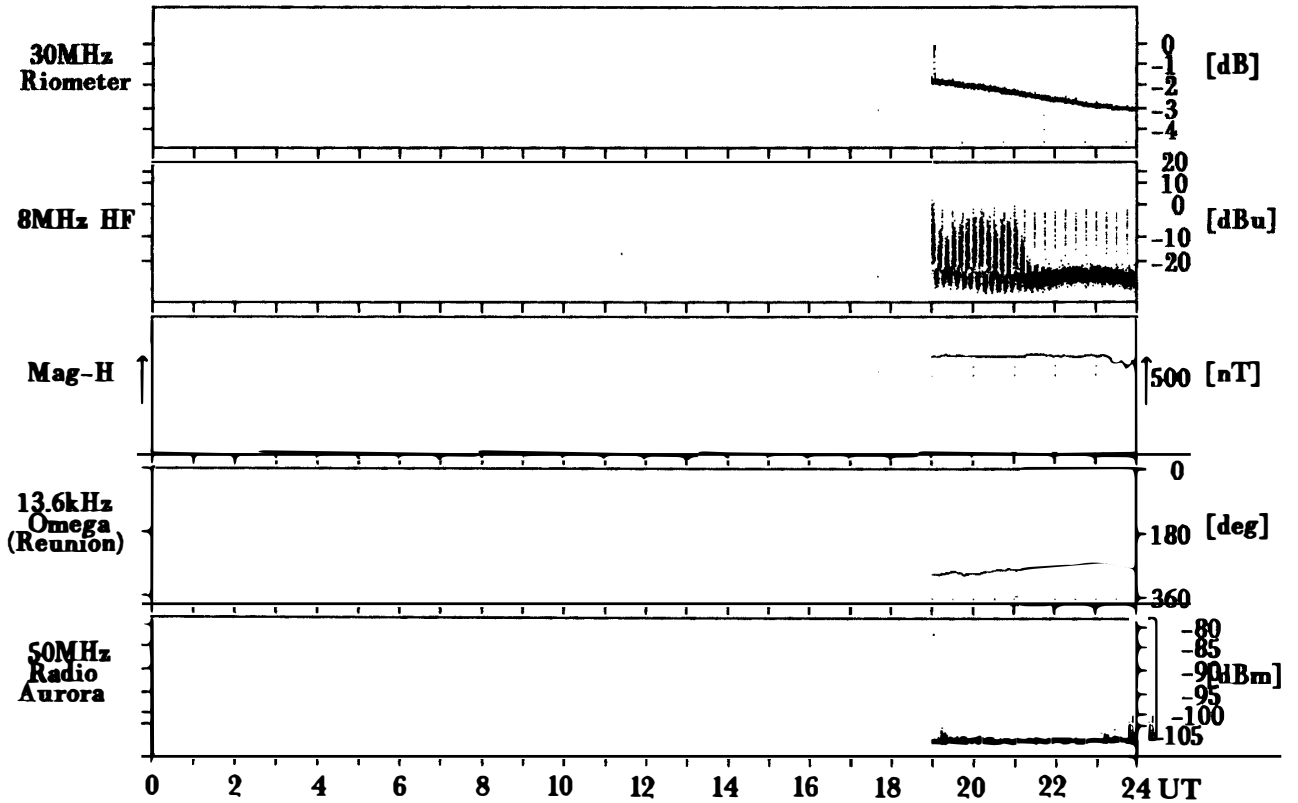
Syowa Station

Total Day / 218 1990/ 8/ 6



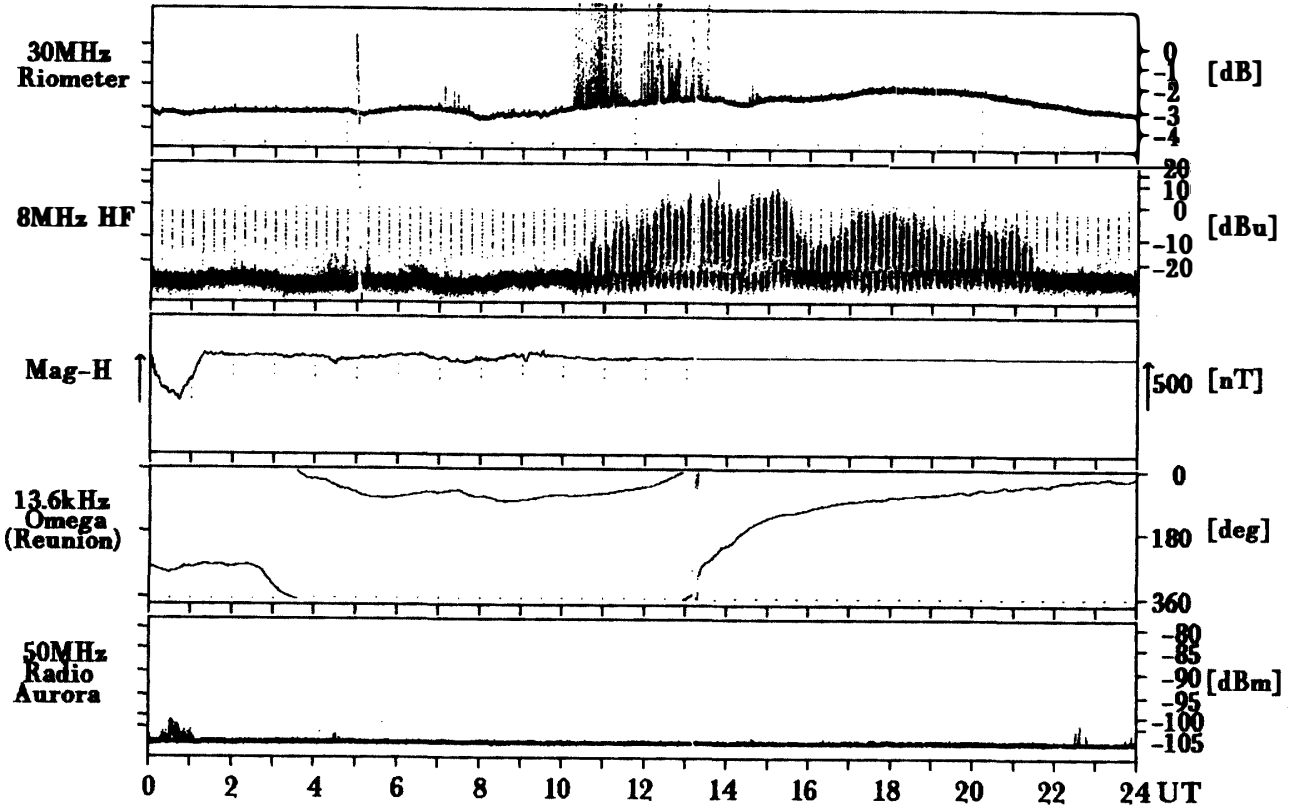
Syowa Station

Total Day / 222 1990/ 8/10



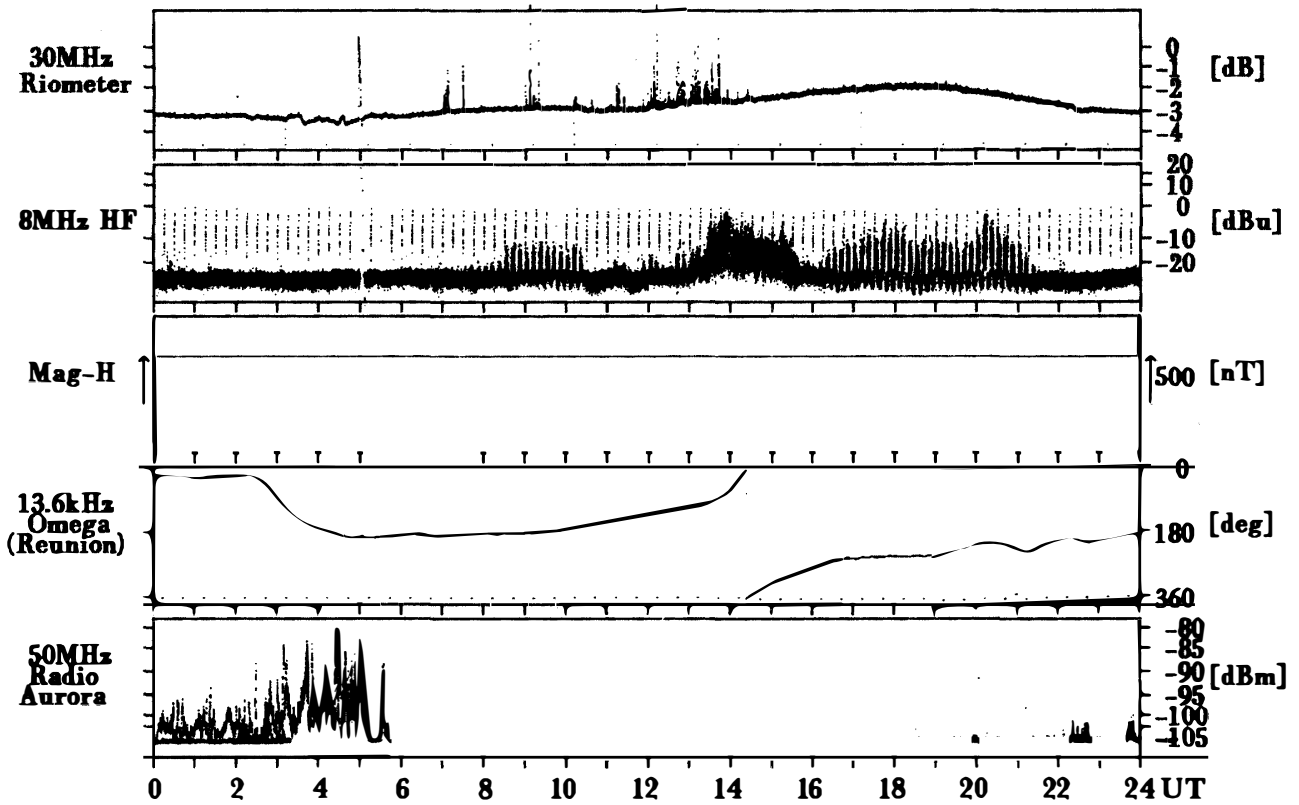
Syowa Station

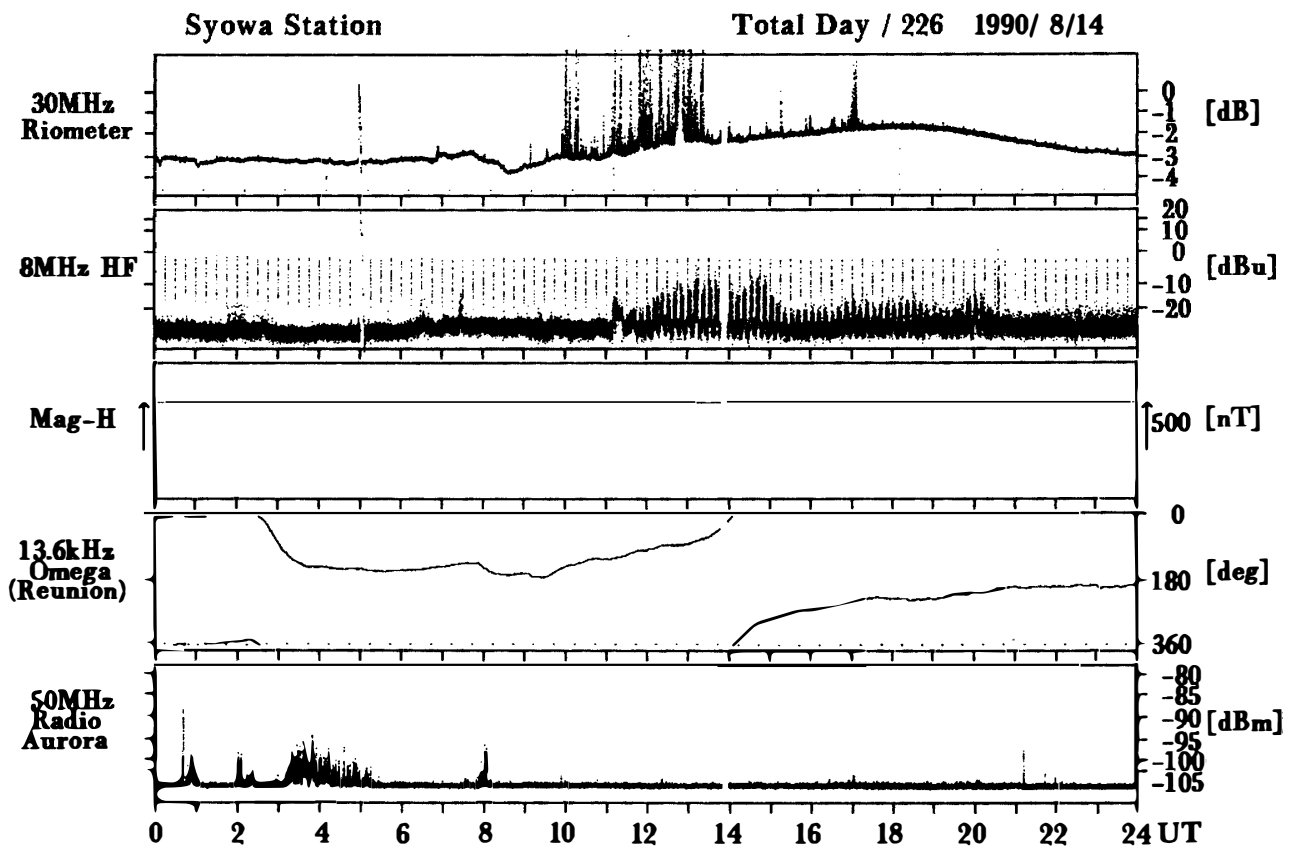
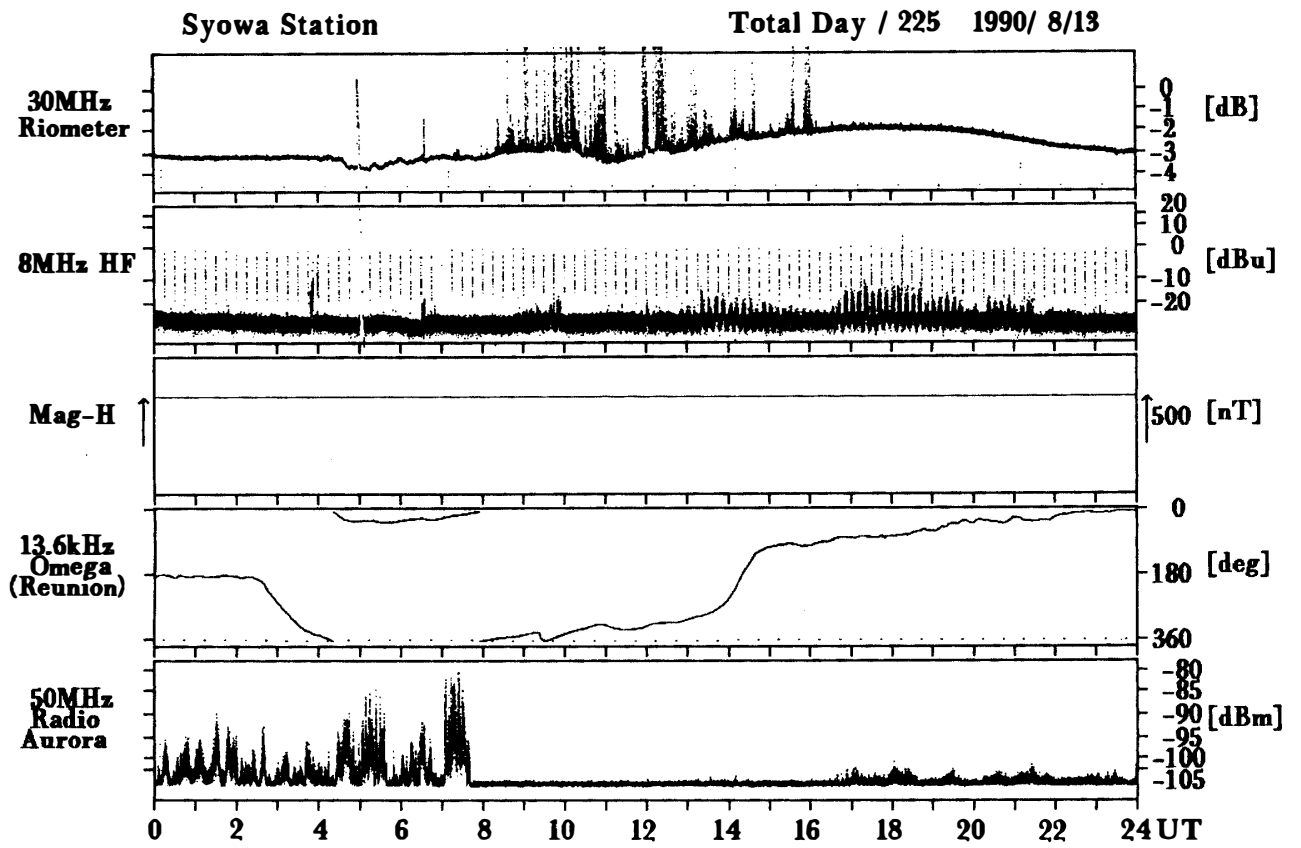
Total Day / 223 1990/ 8/11



Syowa Station

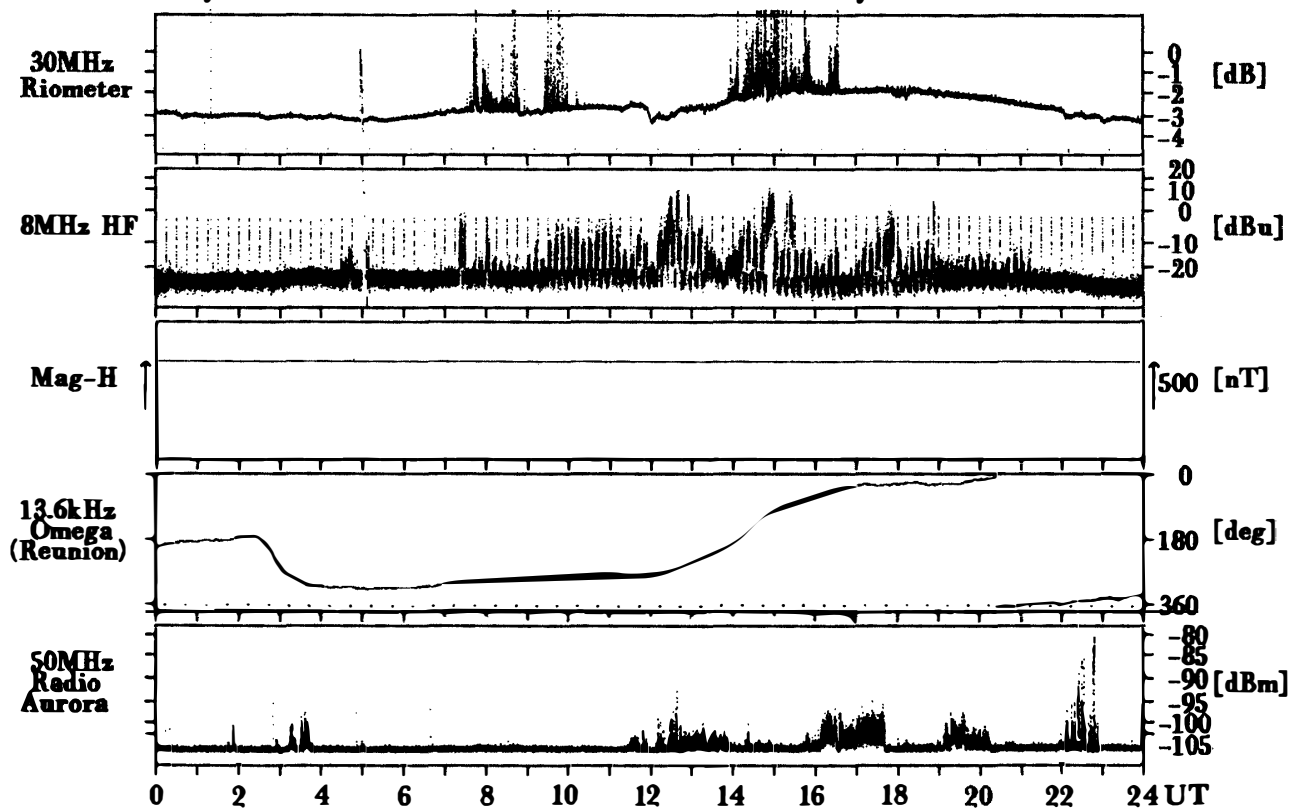
Total Day / 224 1990/ 8/12





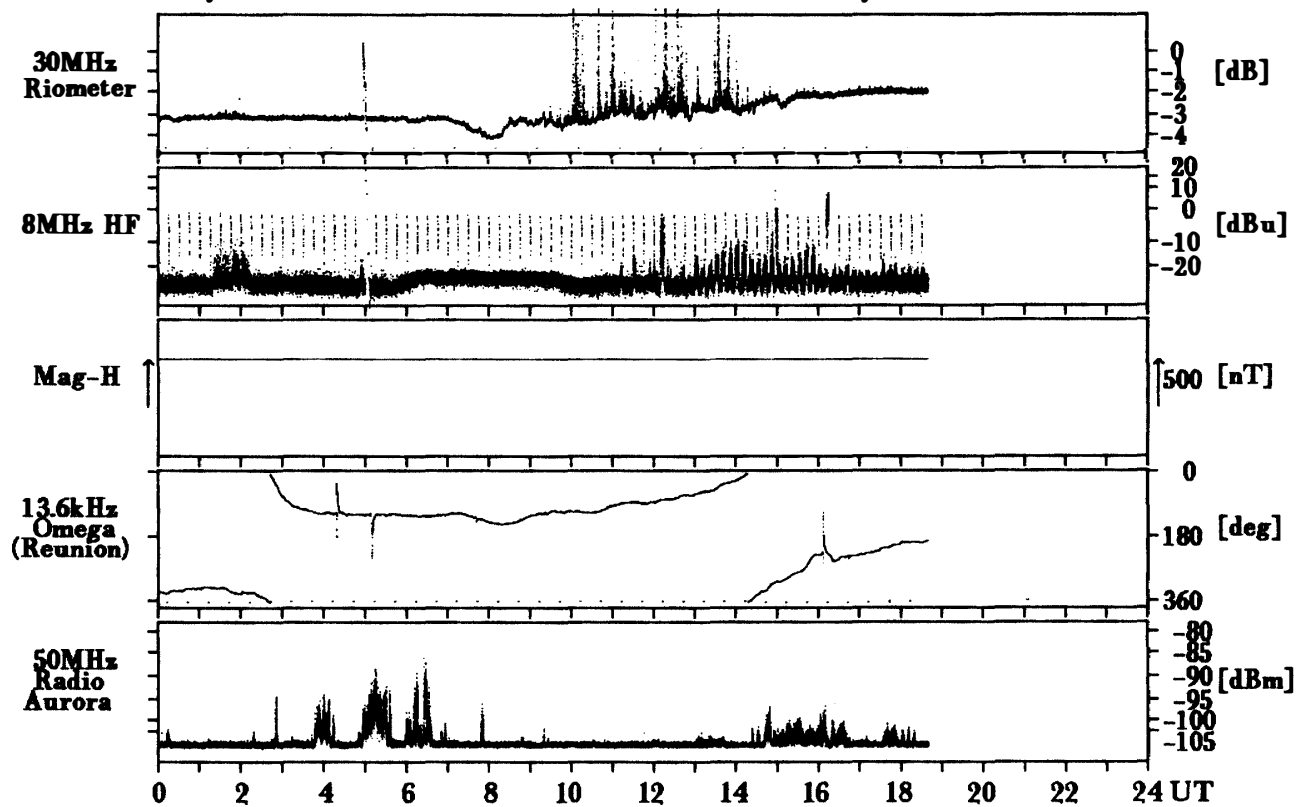
Syowa Station

Total Day / 227 1990/ 8/15



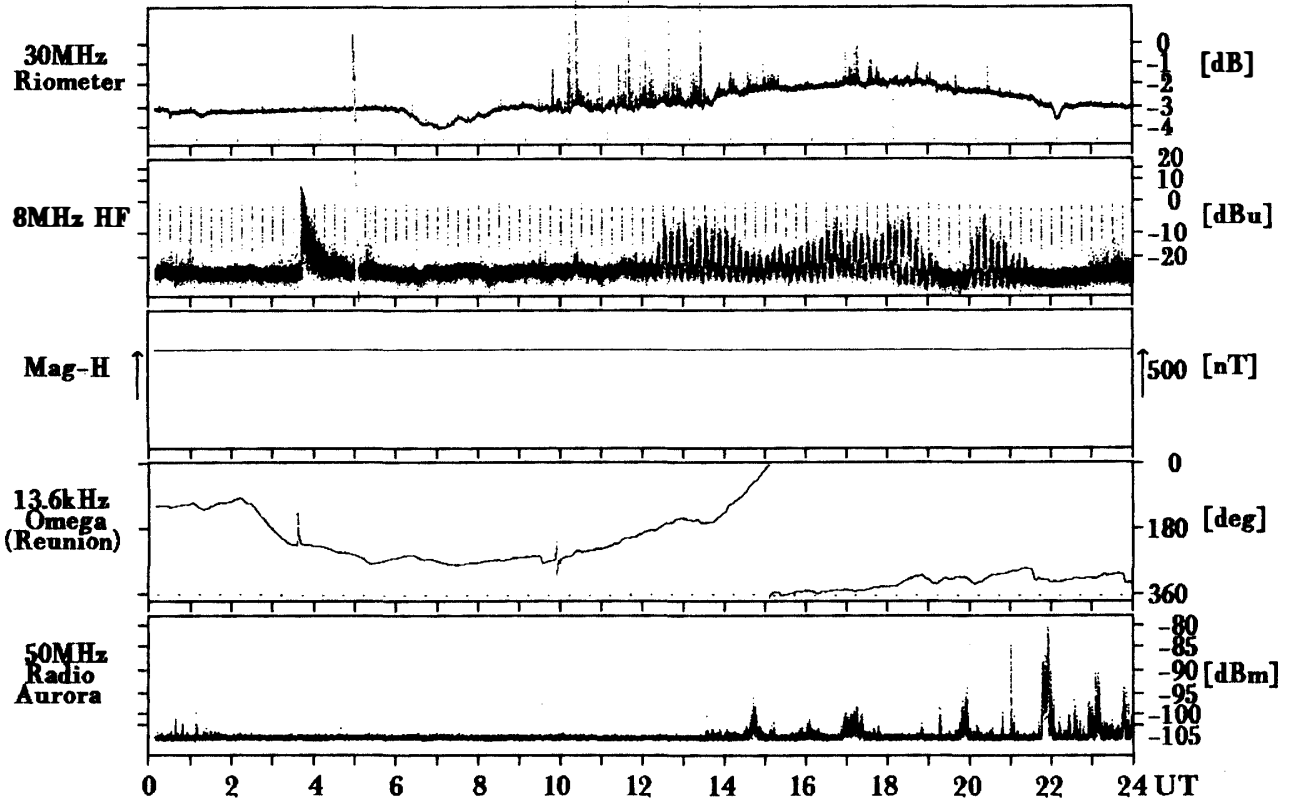
Syowa Station

Total Day / 228 1990/ 8/16



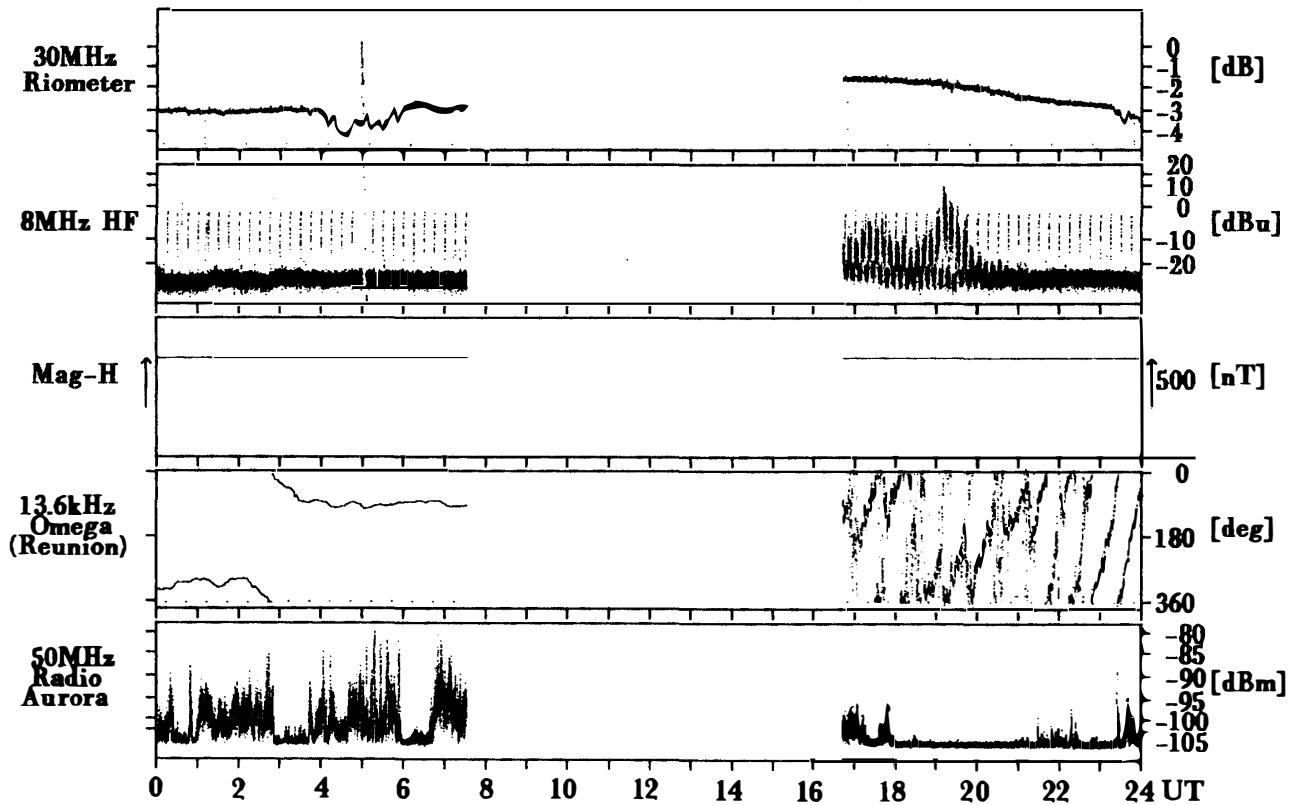
Syowa Station

Total Day / 233 1990/ 8/21



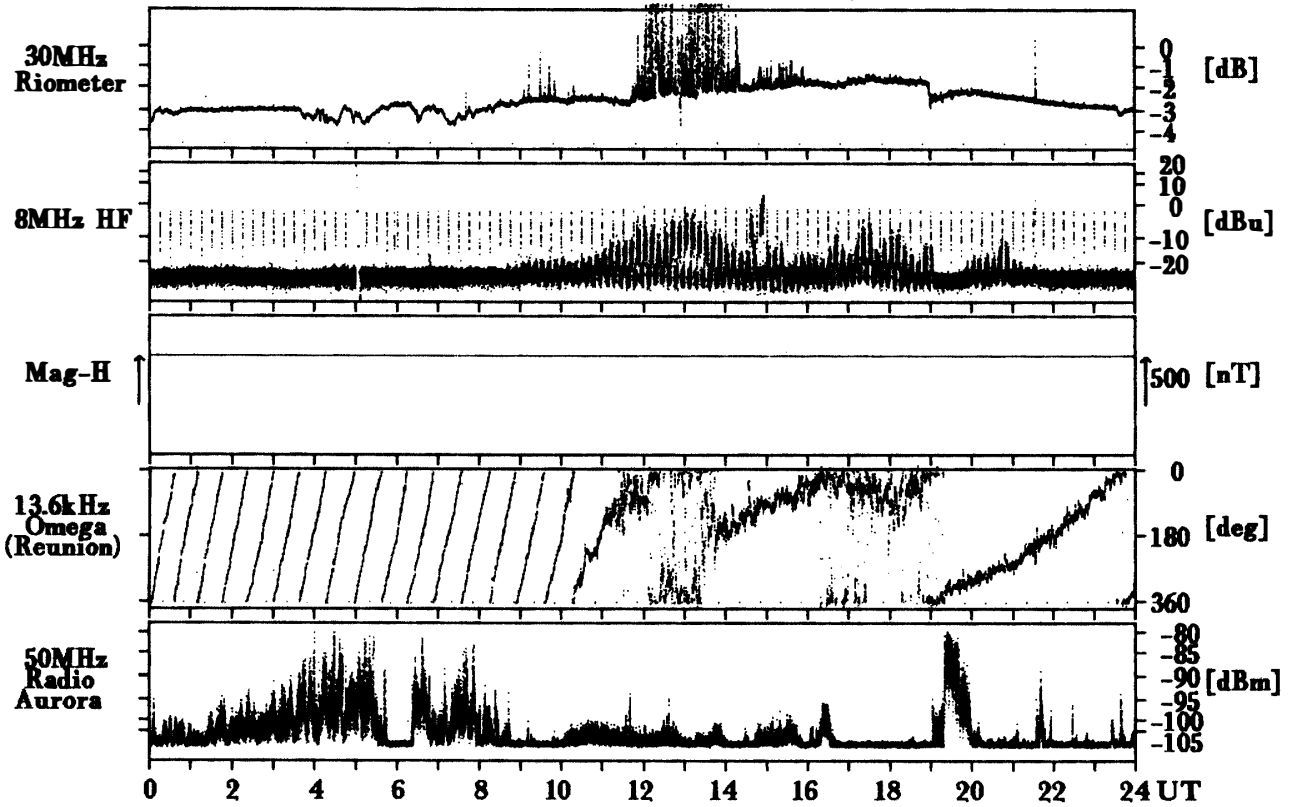
Syowa Station

Total Day / 234 1990/ 8/22



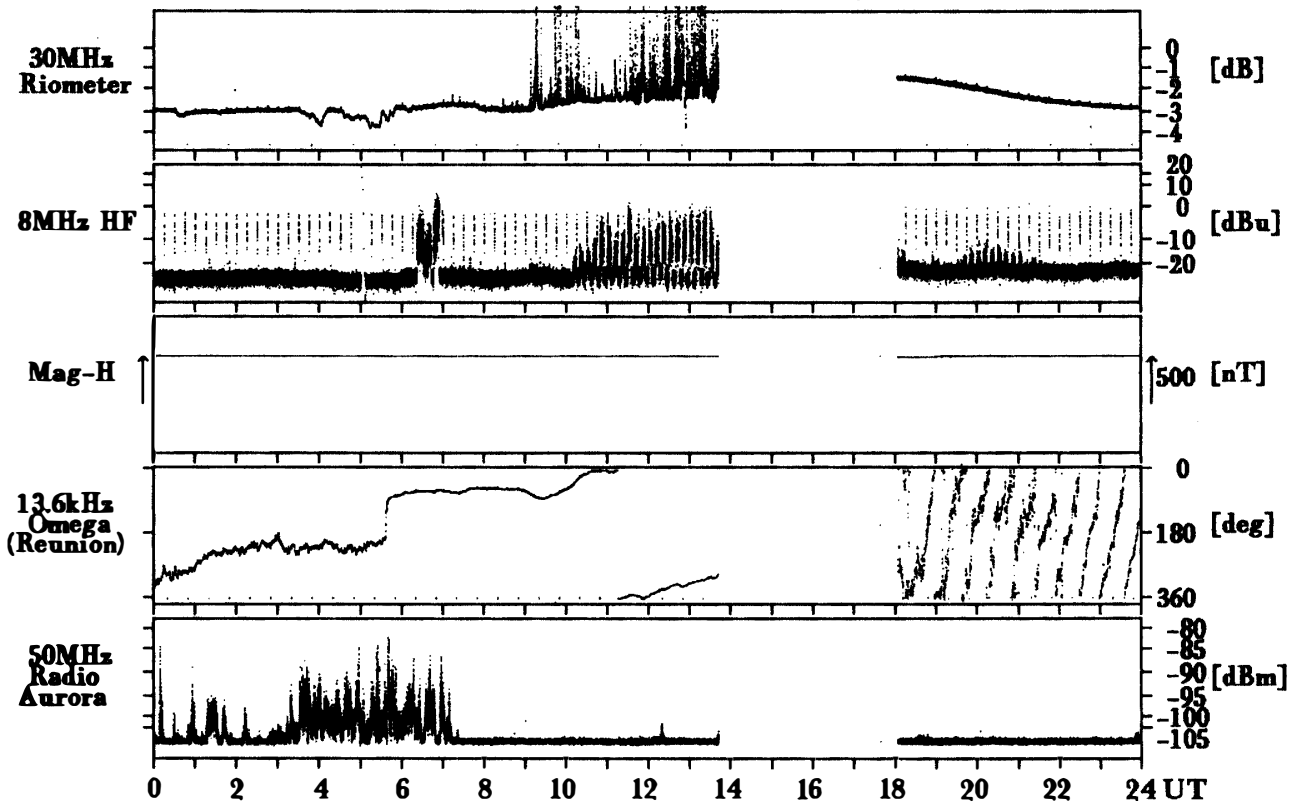
Syowa Station

Total Day / 235 1990/ 8/23



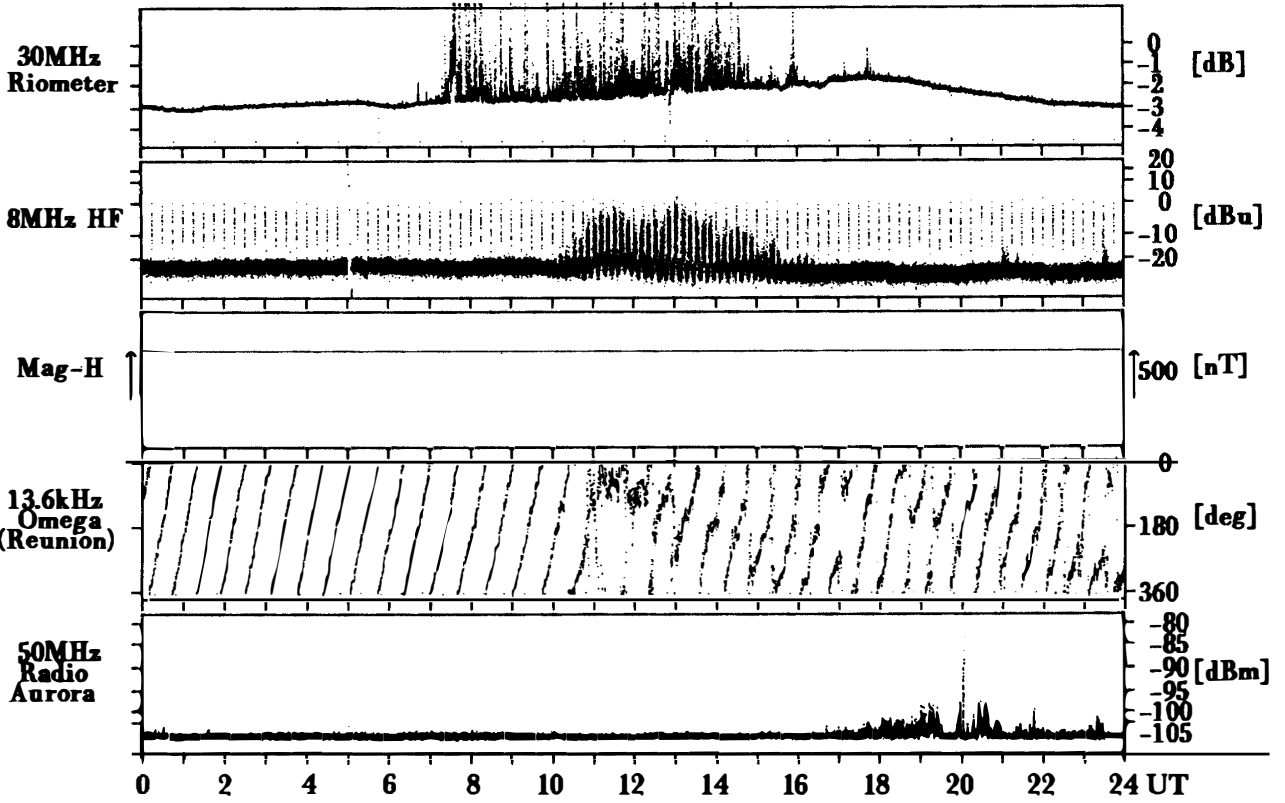
Syowa Station

Total Day / 236 1990/ 8/24



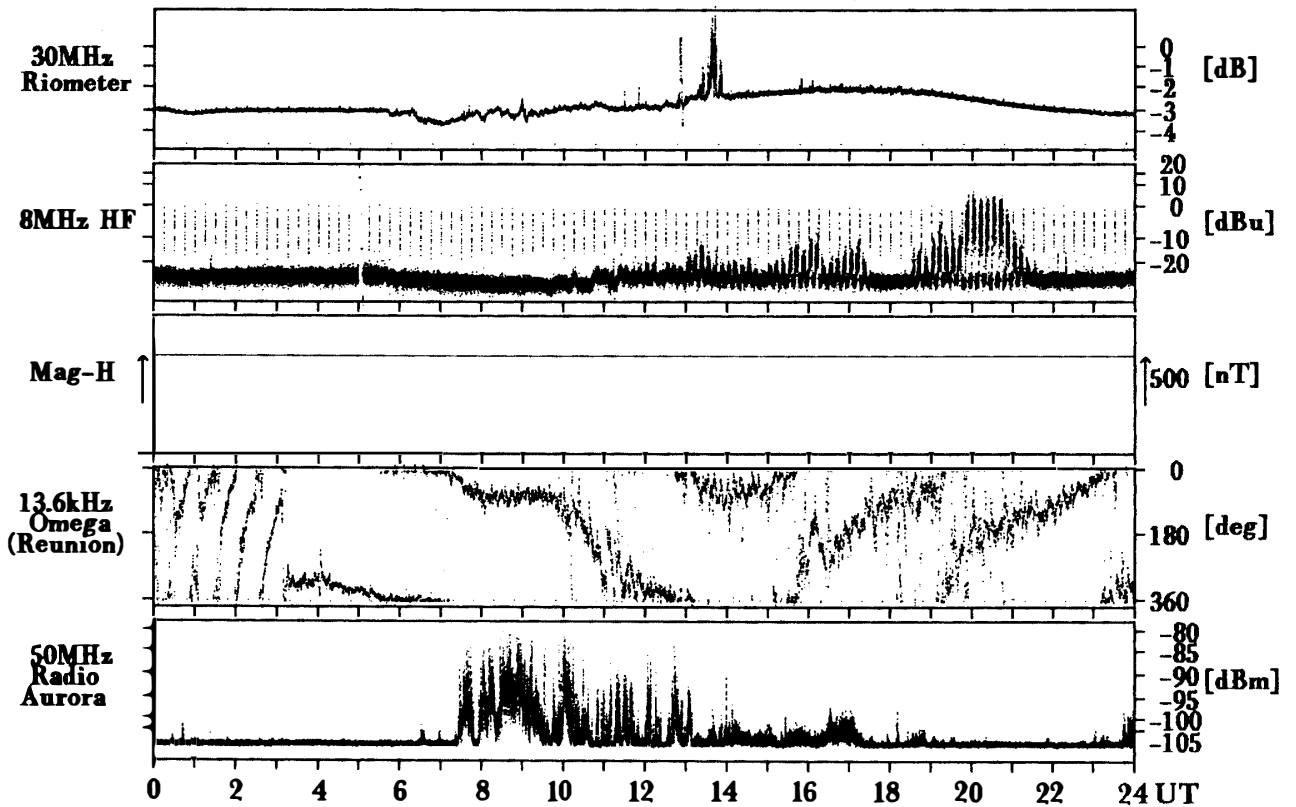
Syowa Station

Total Day / 237 1990/ 8/25



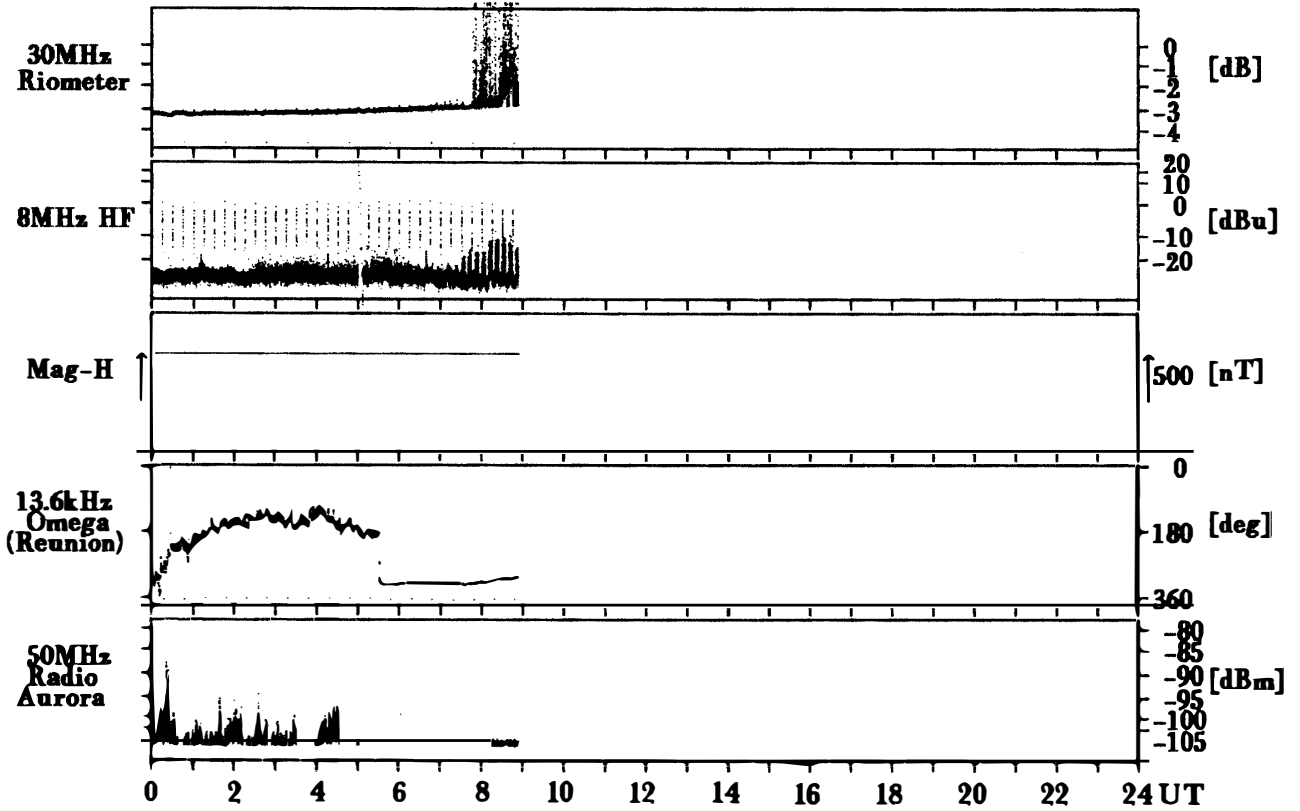
Syowa Station

Total Day / 238 1990/ 8/26



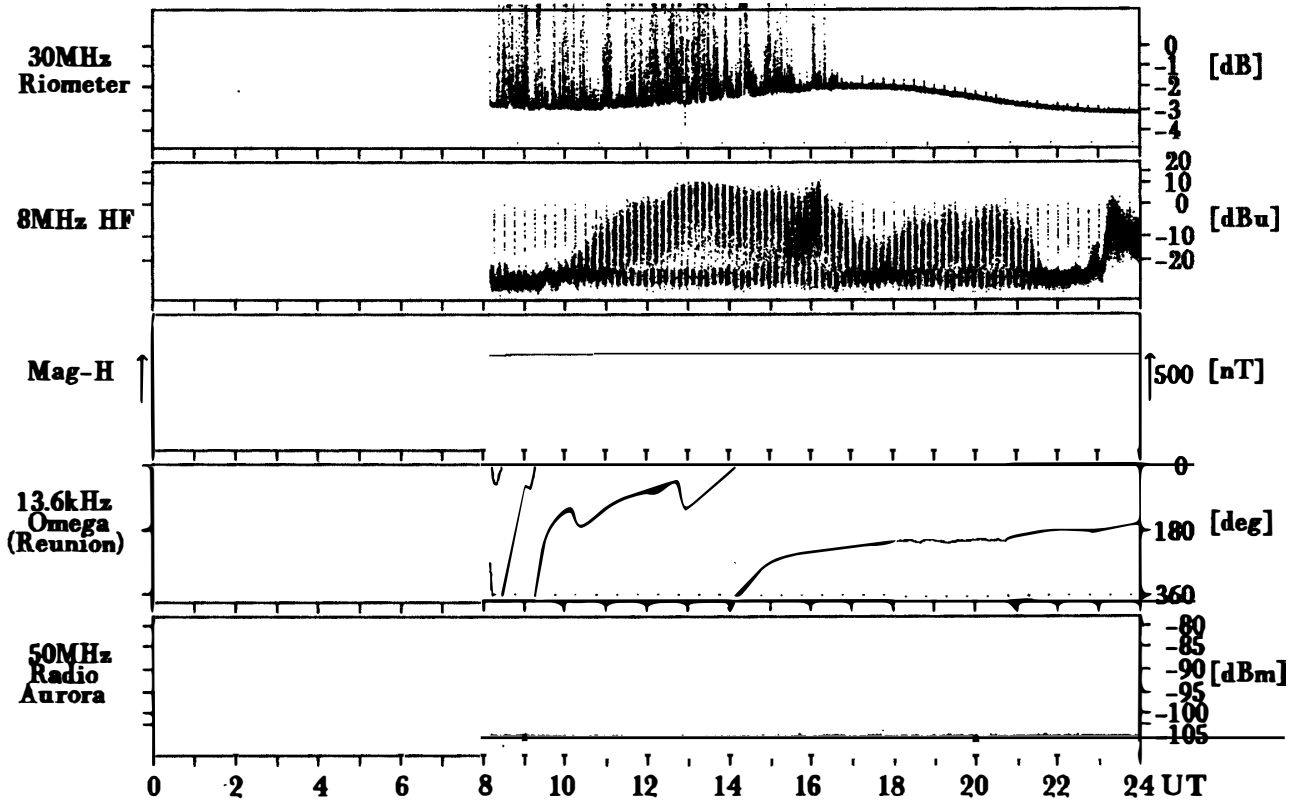
Syowa Station

Total Day / 239 1990/ 8/27



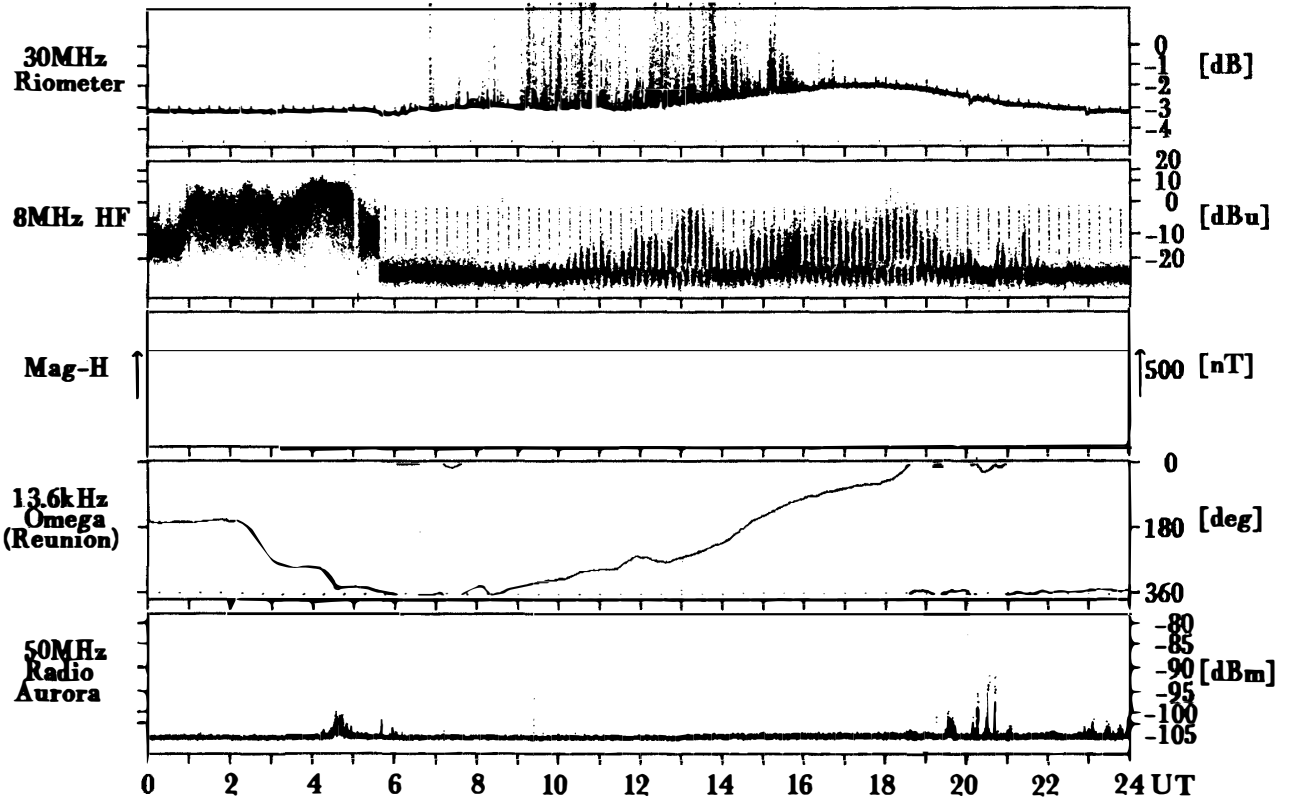
Syowa Station

Total Day / 240 1990/ 8/28



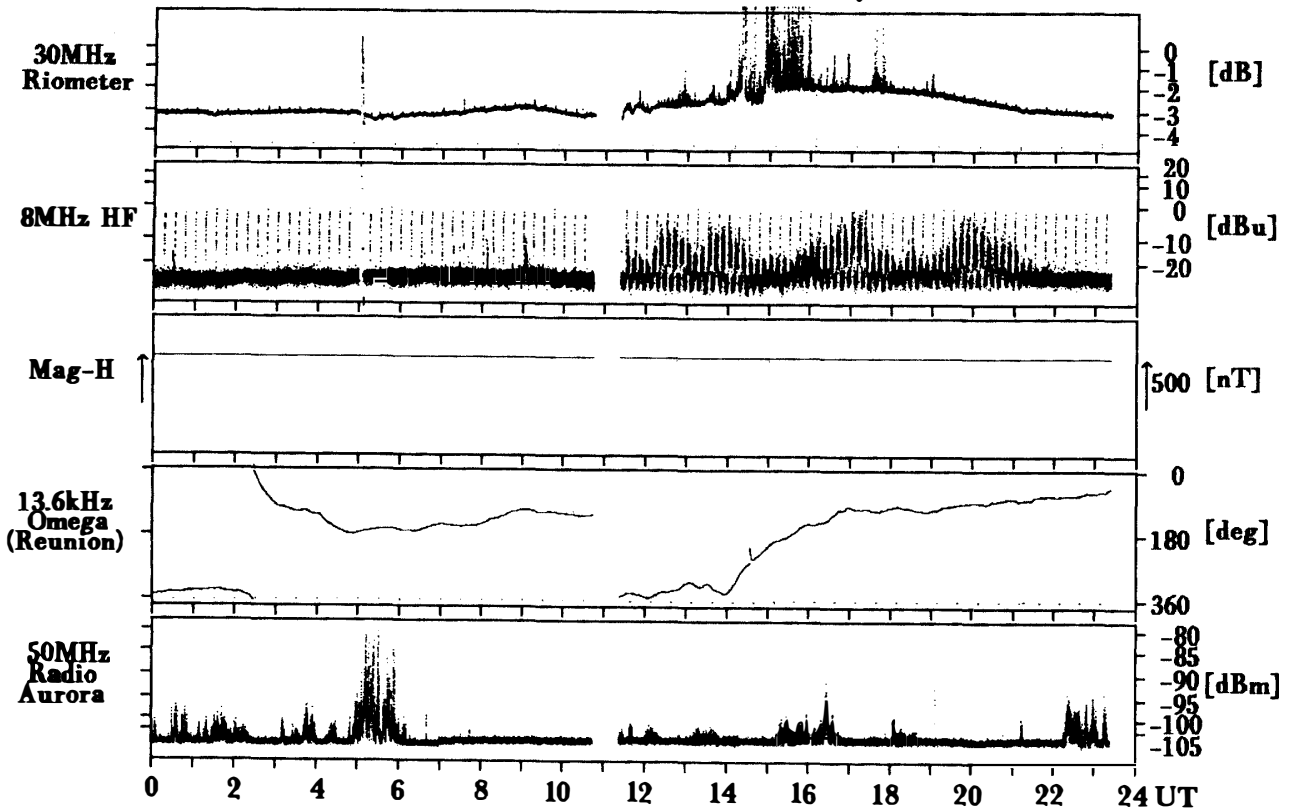
Syowa Station

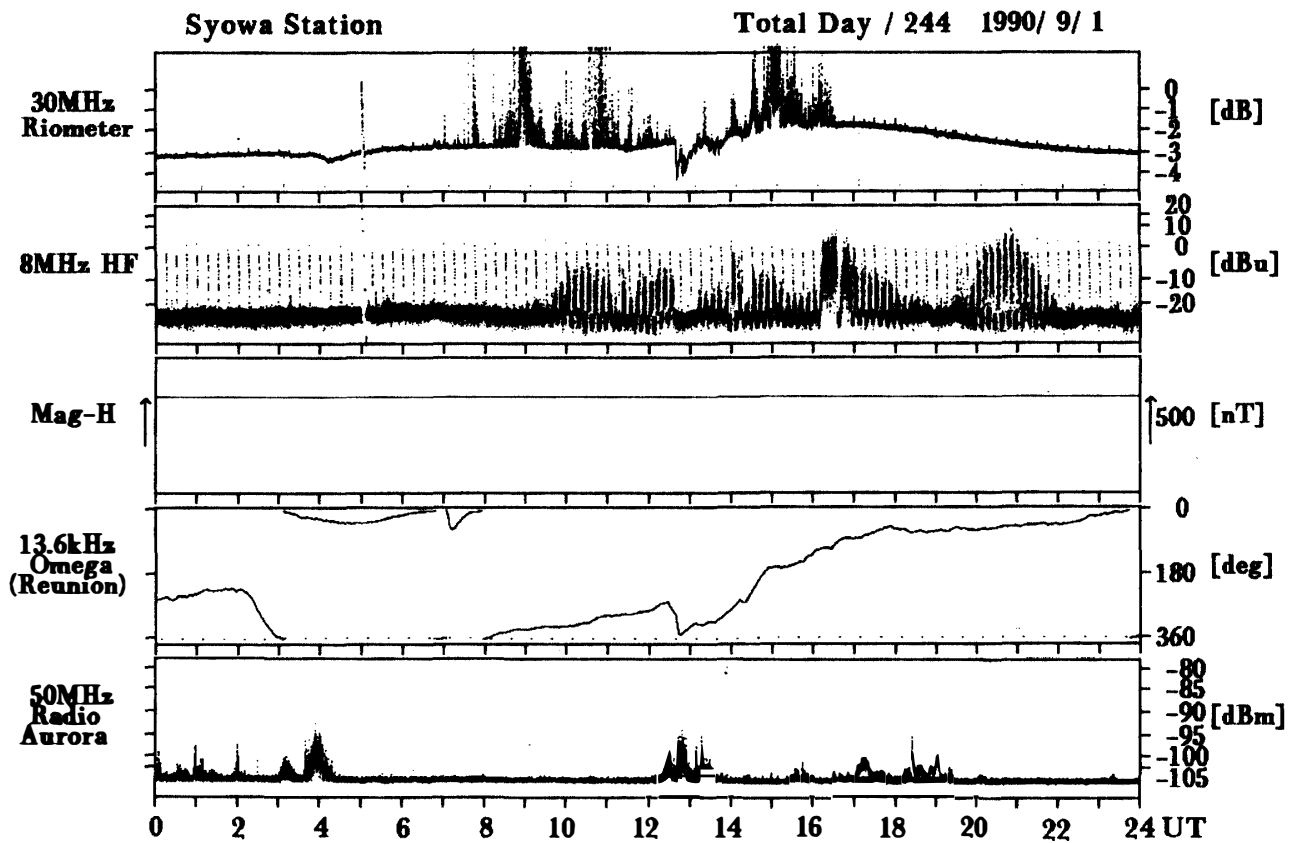
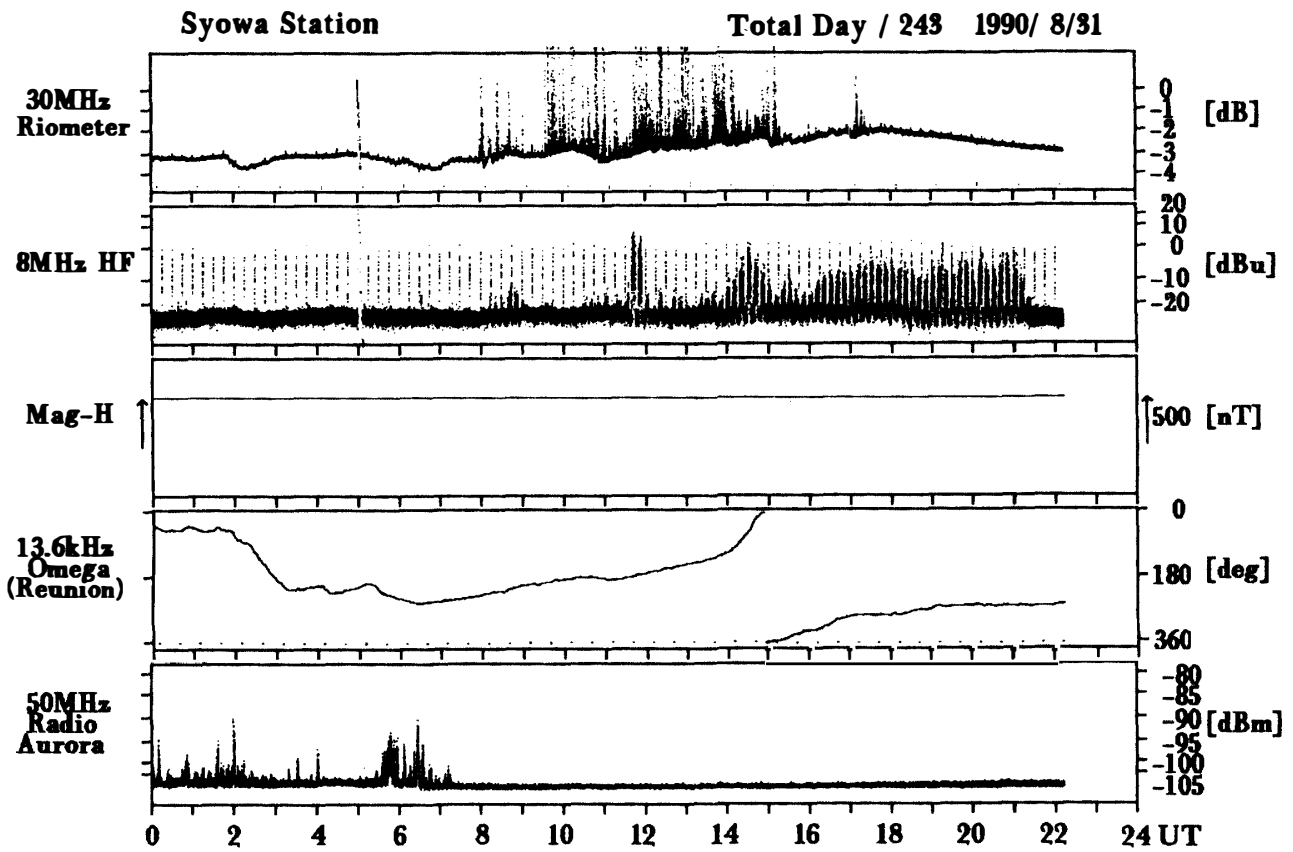
Total Day / 241 1990/ 8/29

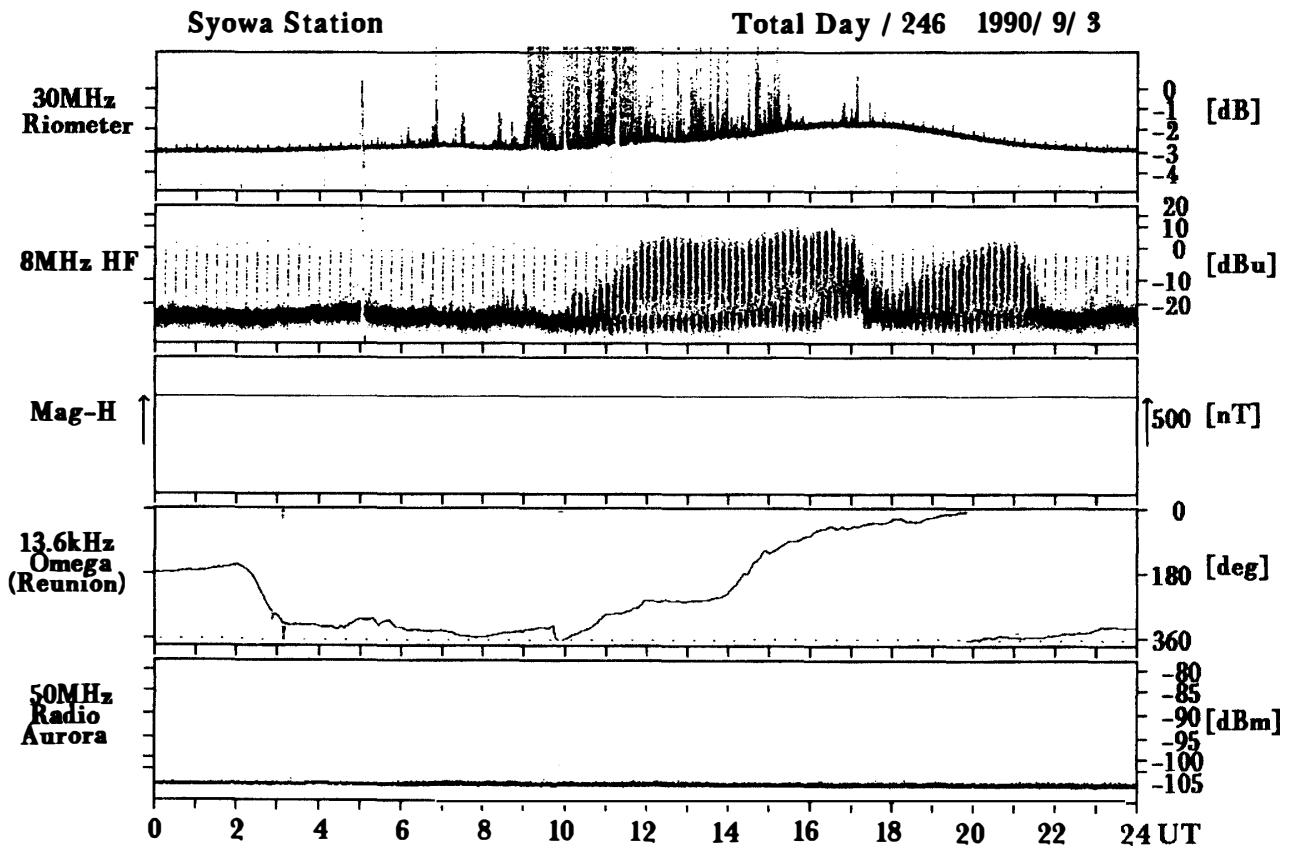
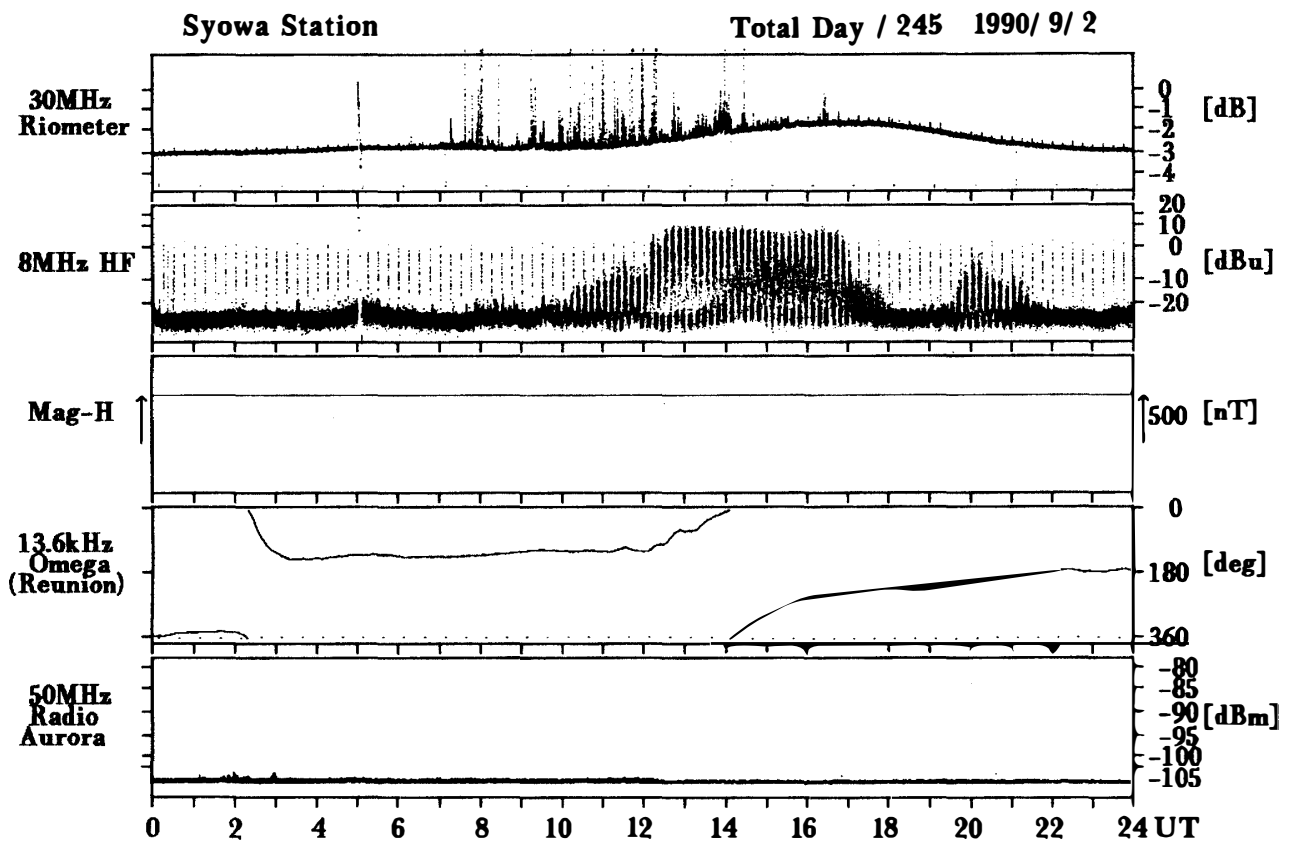


Syowa Station

Total Day / 242 1990/ 8/30

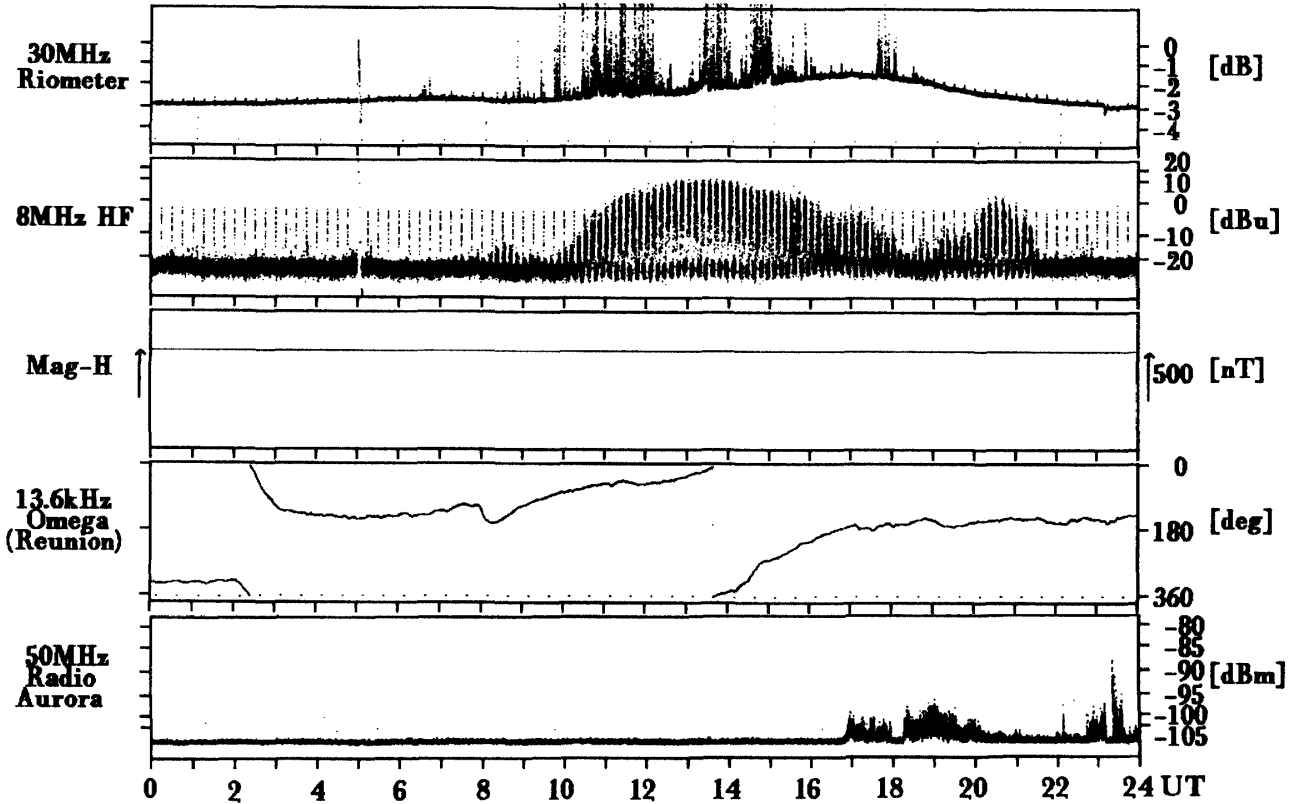






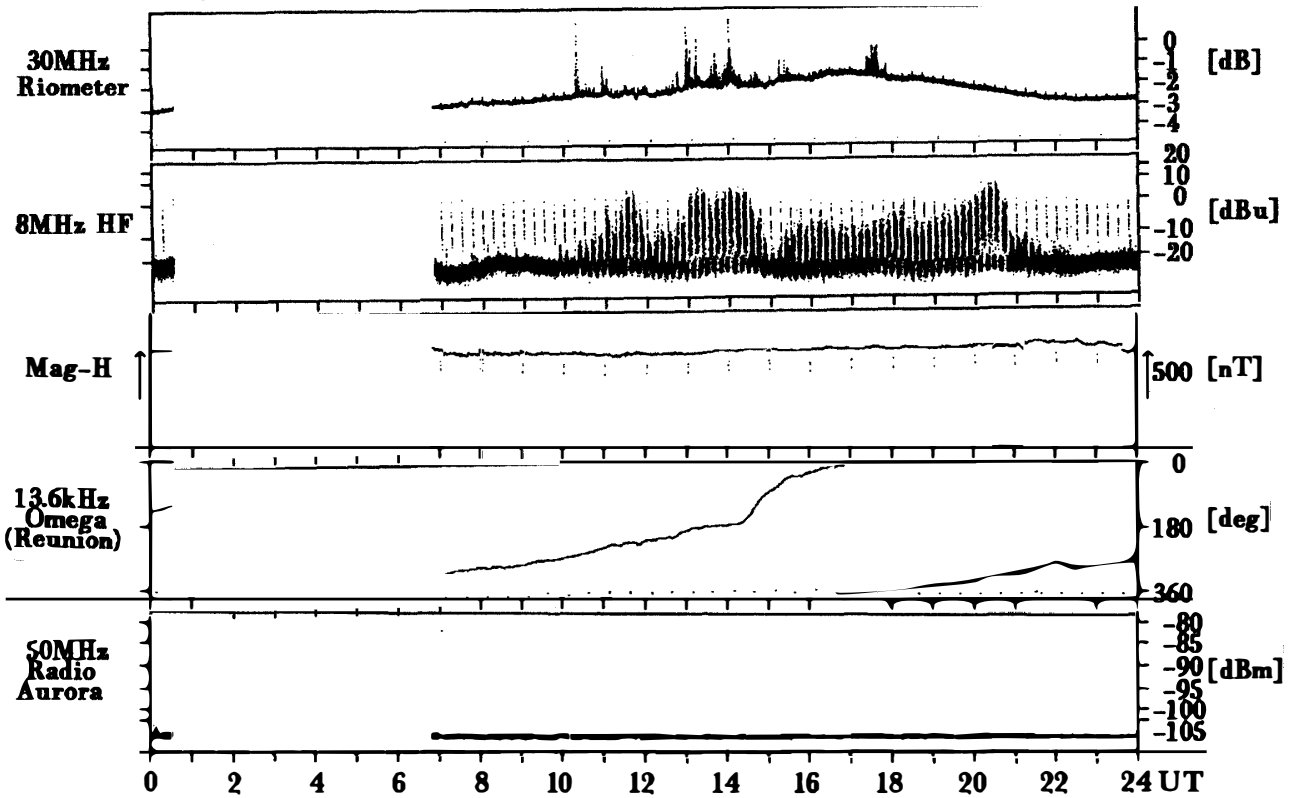
Syowa Station

Total Day / 247 1990/ 9/ 4



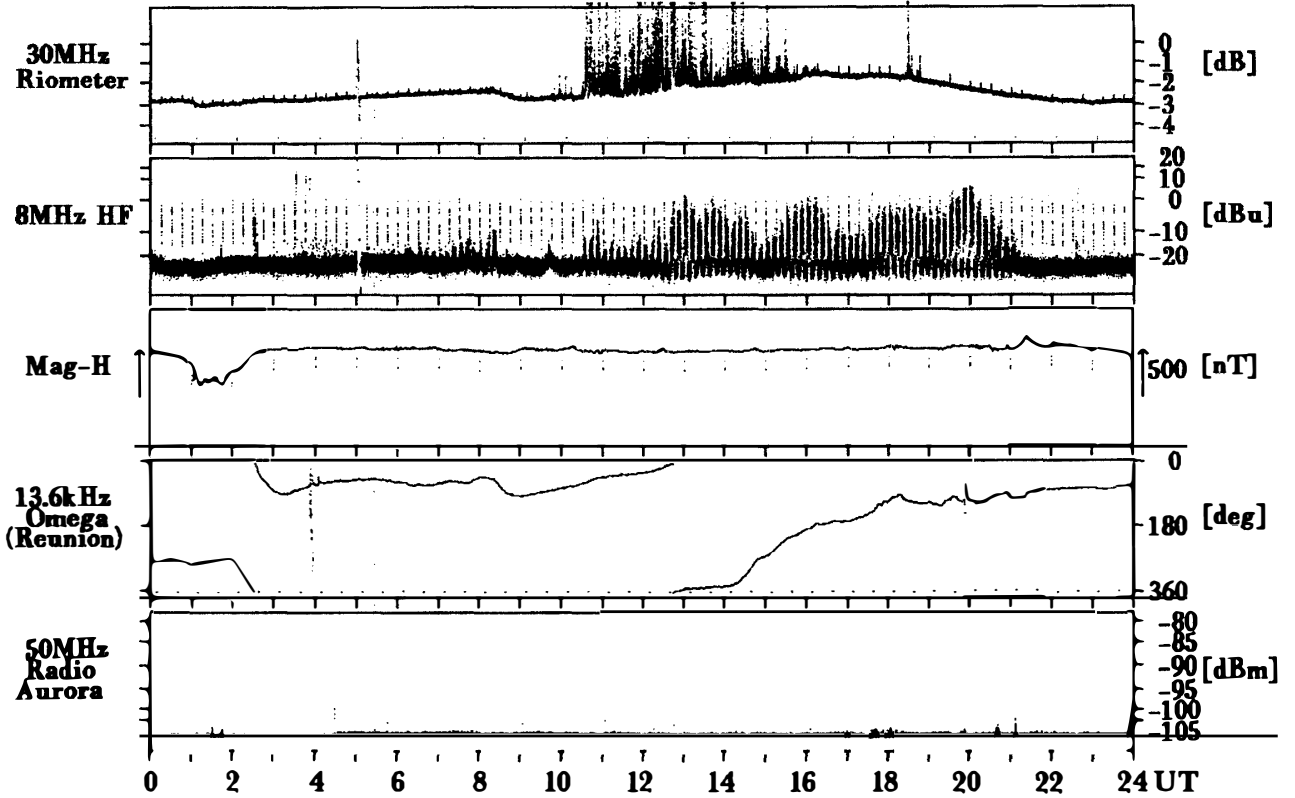
Syowa Station

Total Day / 248 1990/ 9/ 5



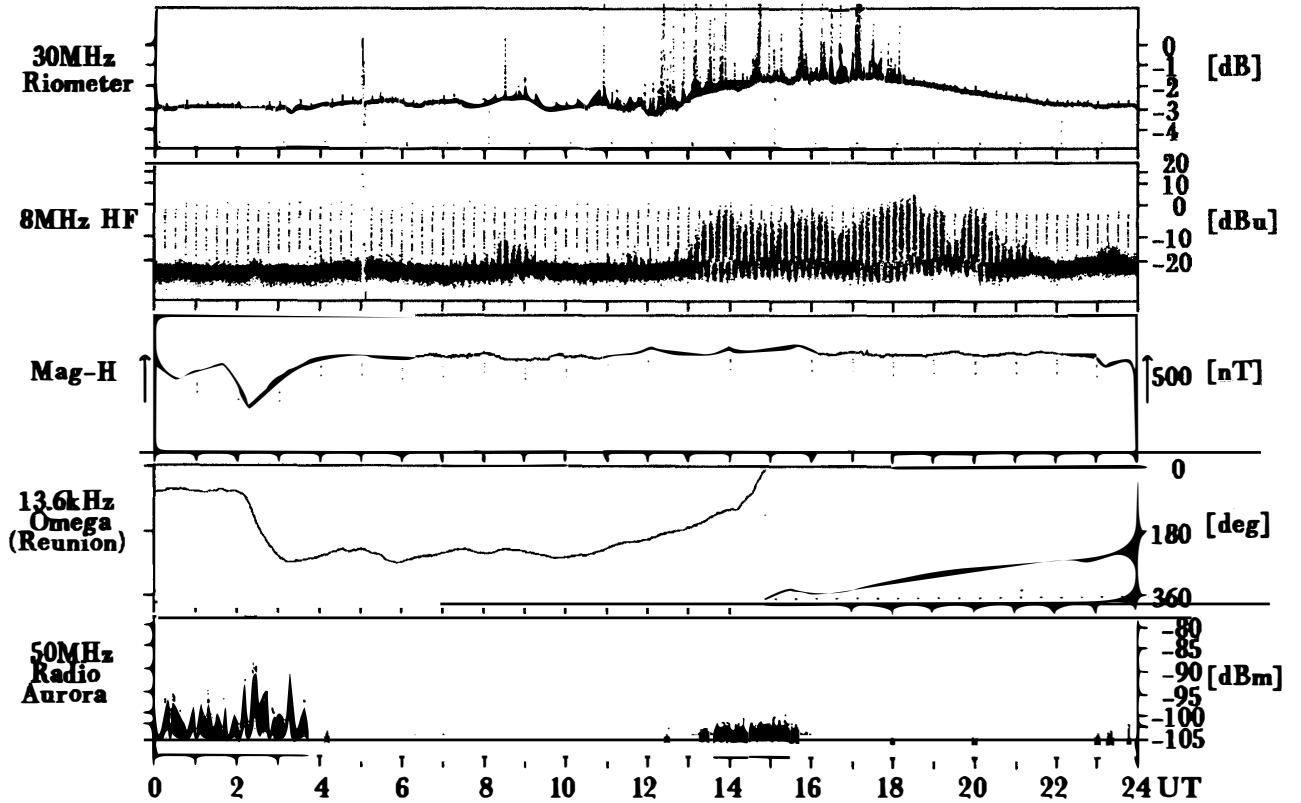
Syowa Station

Total Day / 249 1990/ 9/ 6



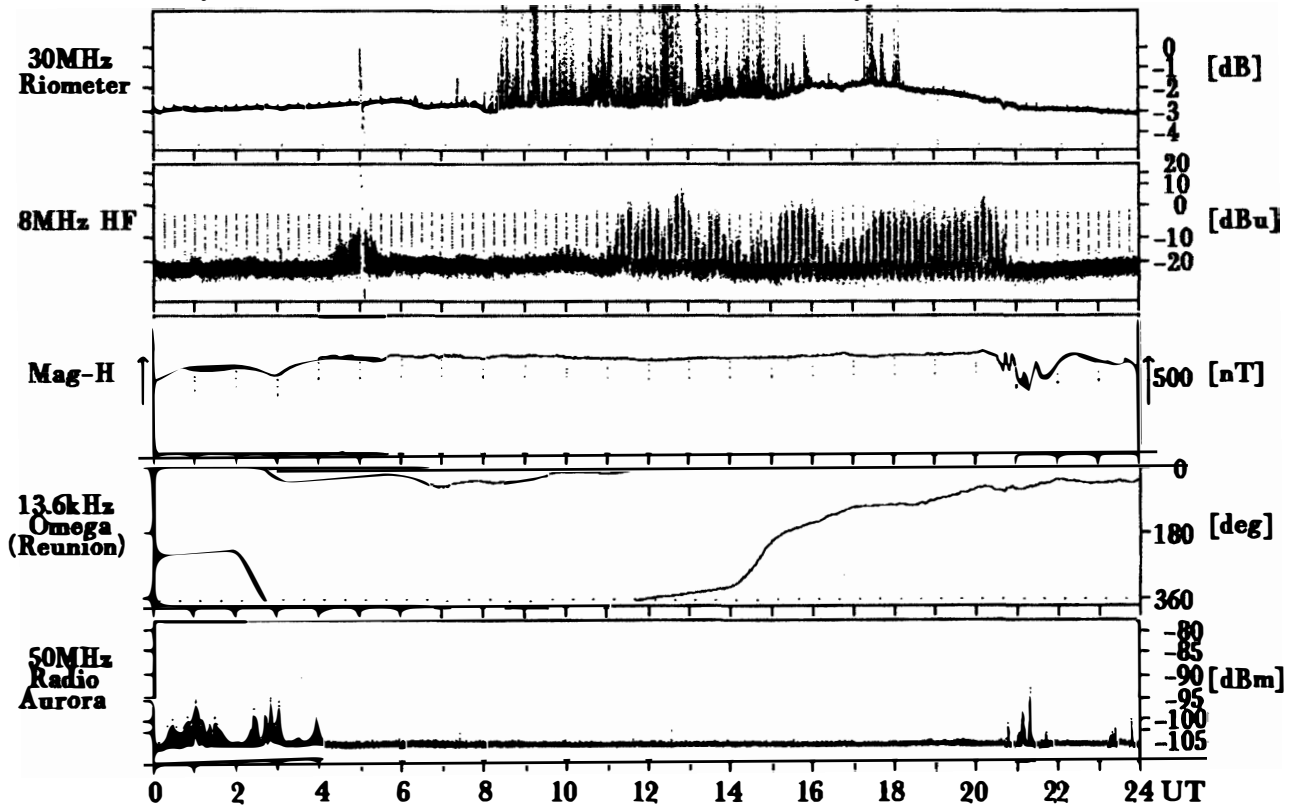
Syowa Station

Total Day / 250 1990/ 9/ 7



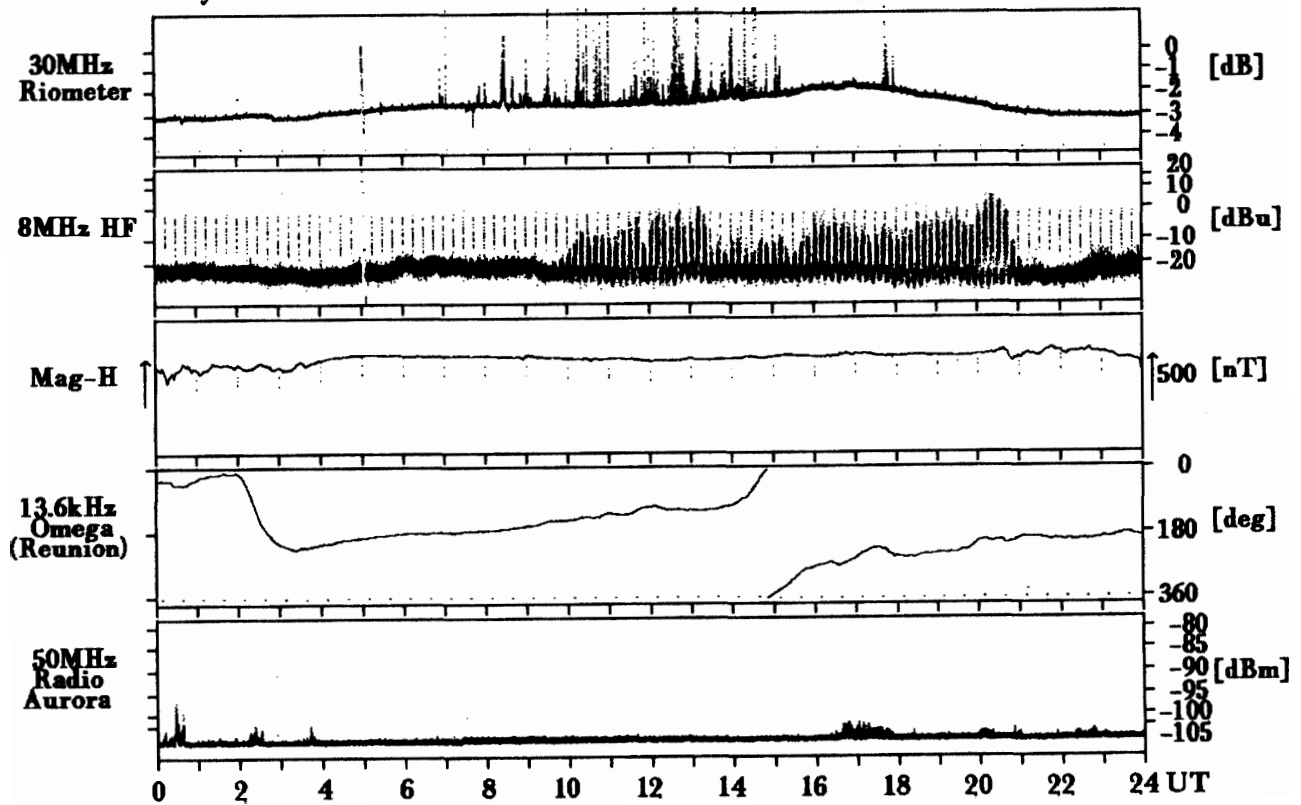
Syowa Station

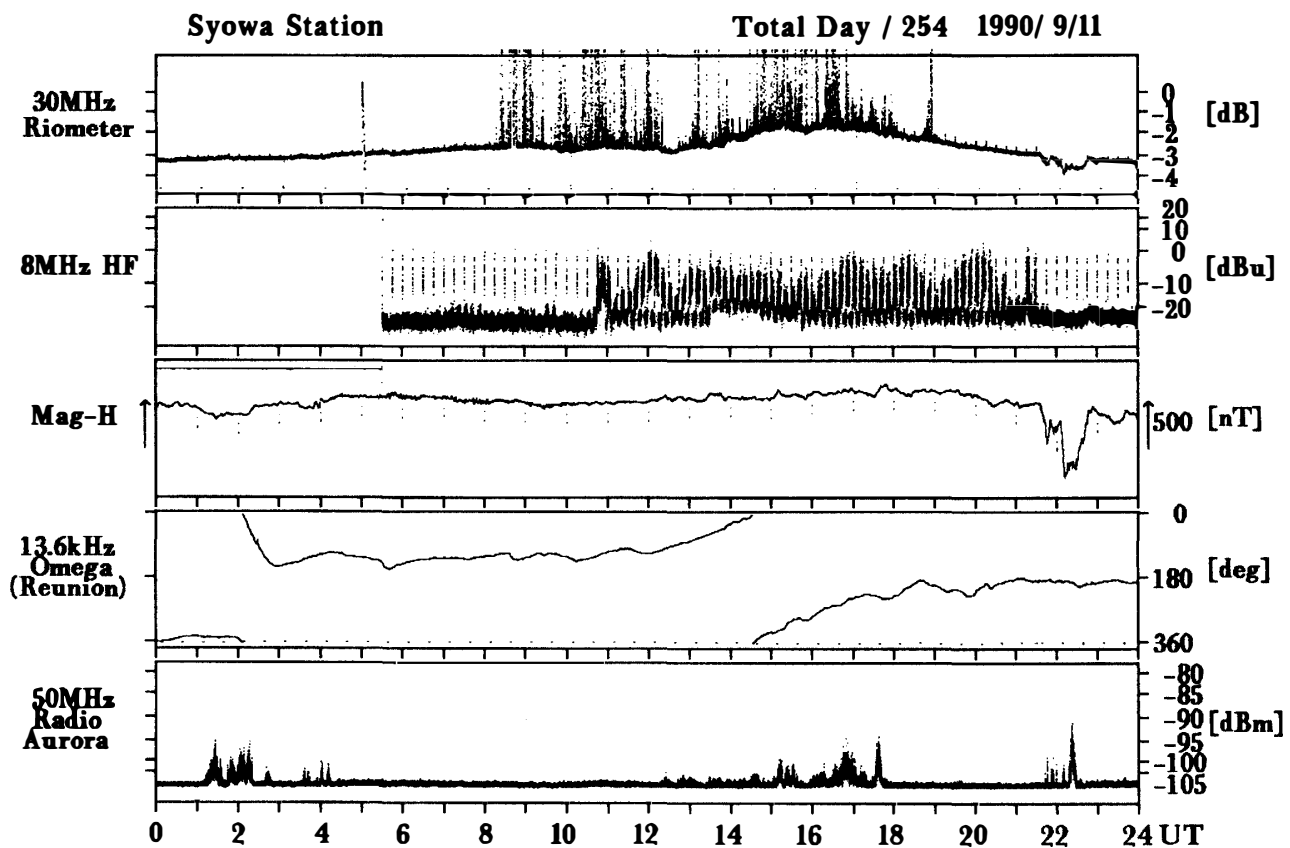
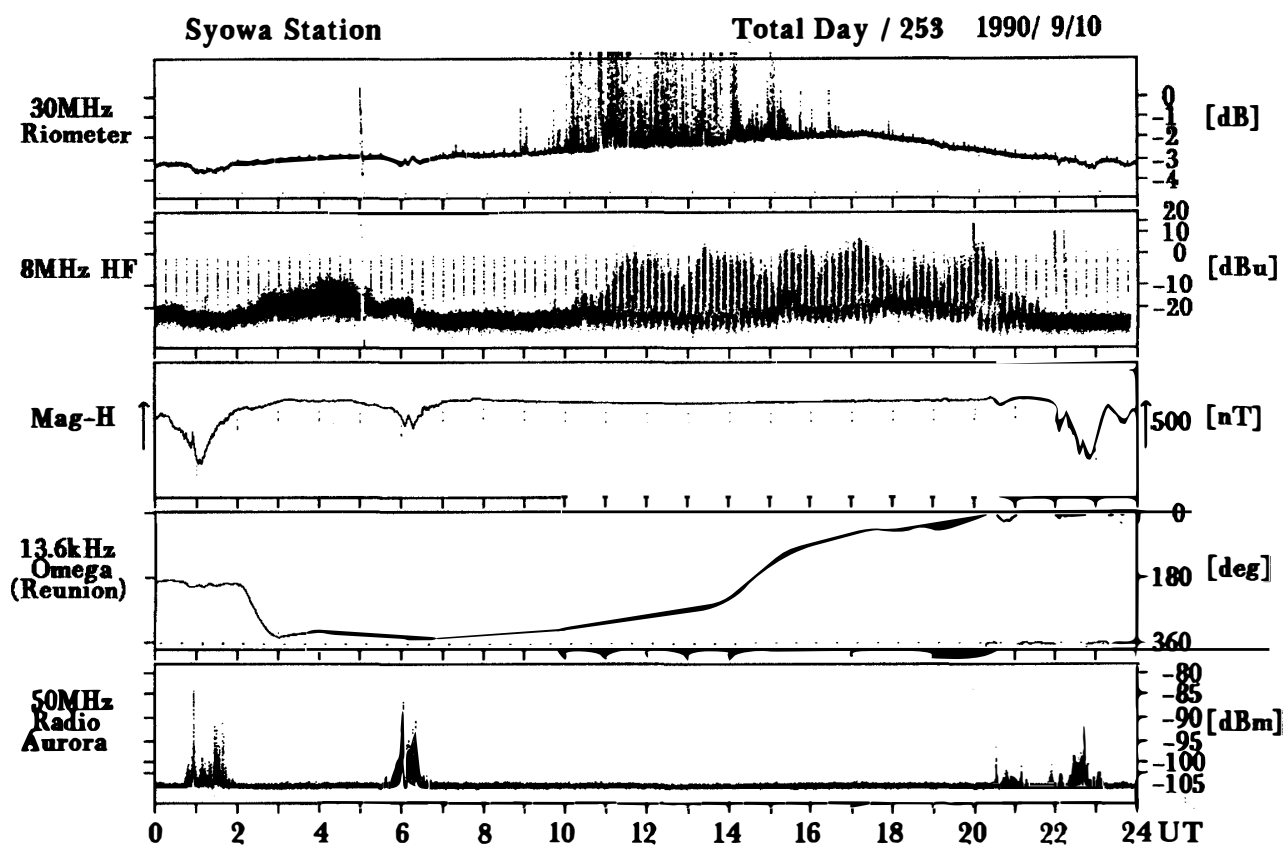
Total Day / 251 1990/ 9/ 8



Syowa Station

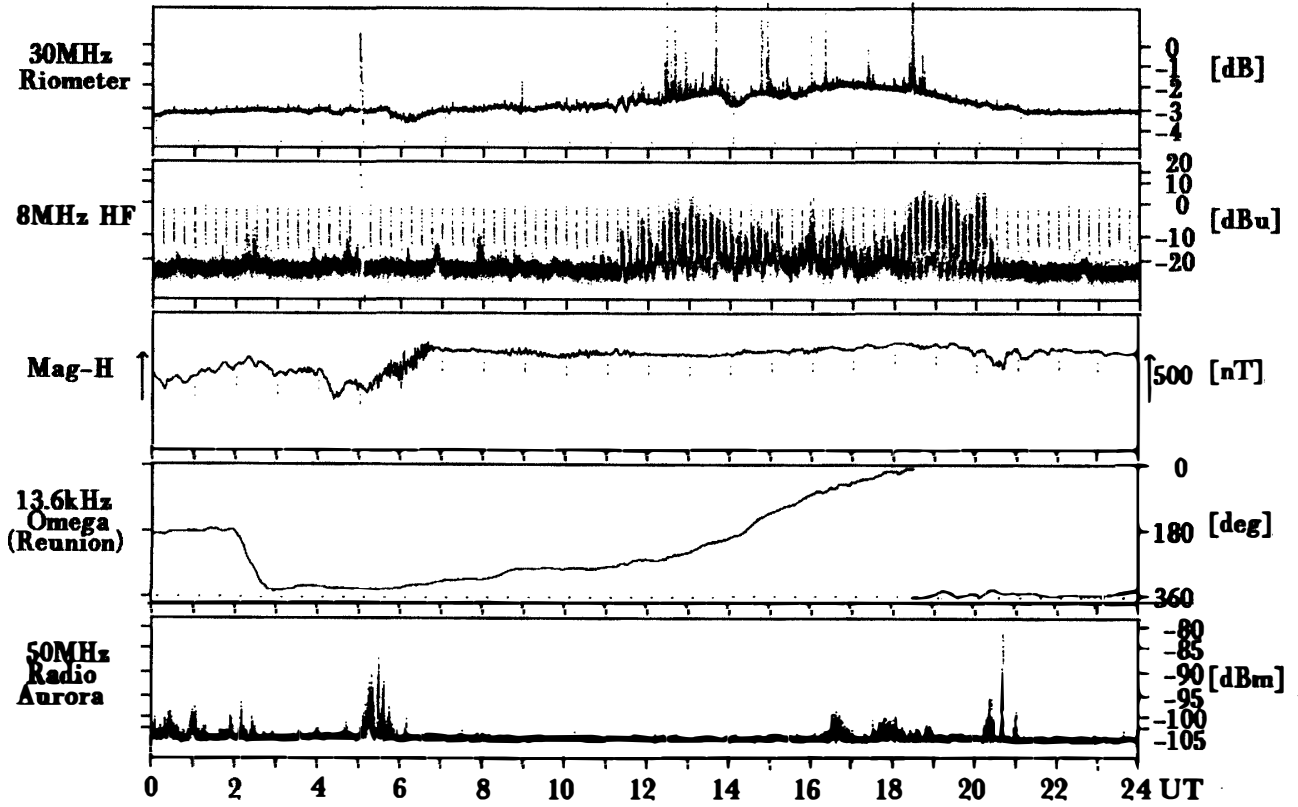
Total Day / 252 1990/ 9/ 9





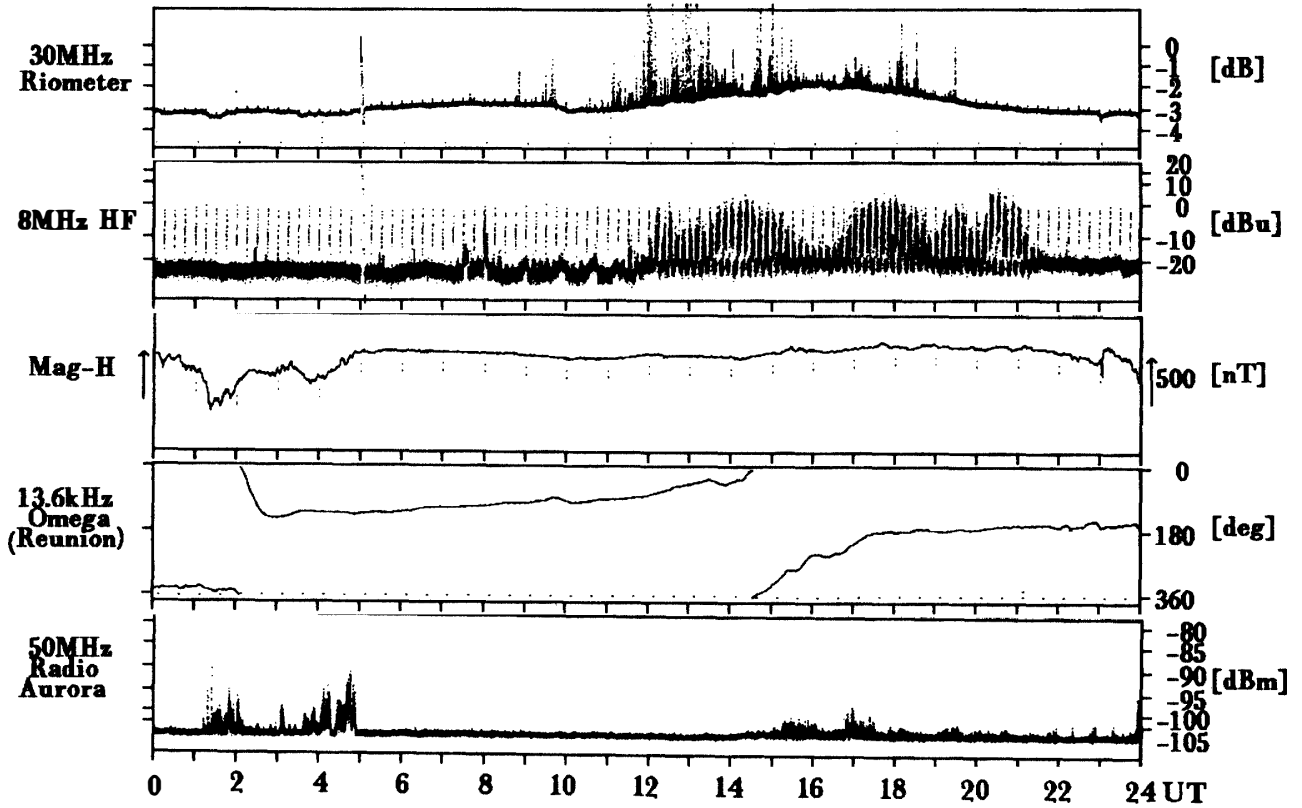
Syowa Station

Total Day / 255 1990/ 9/12



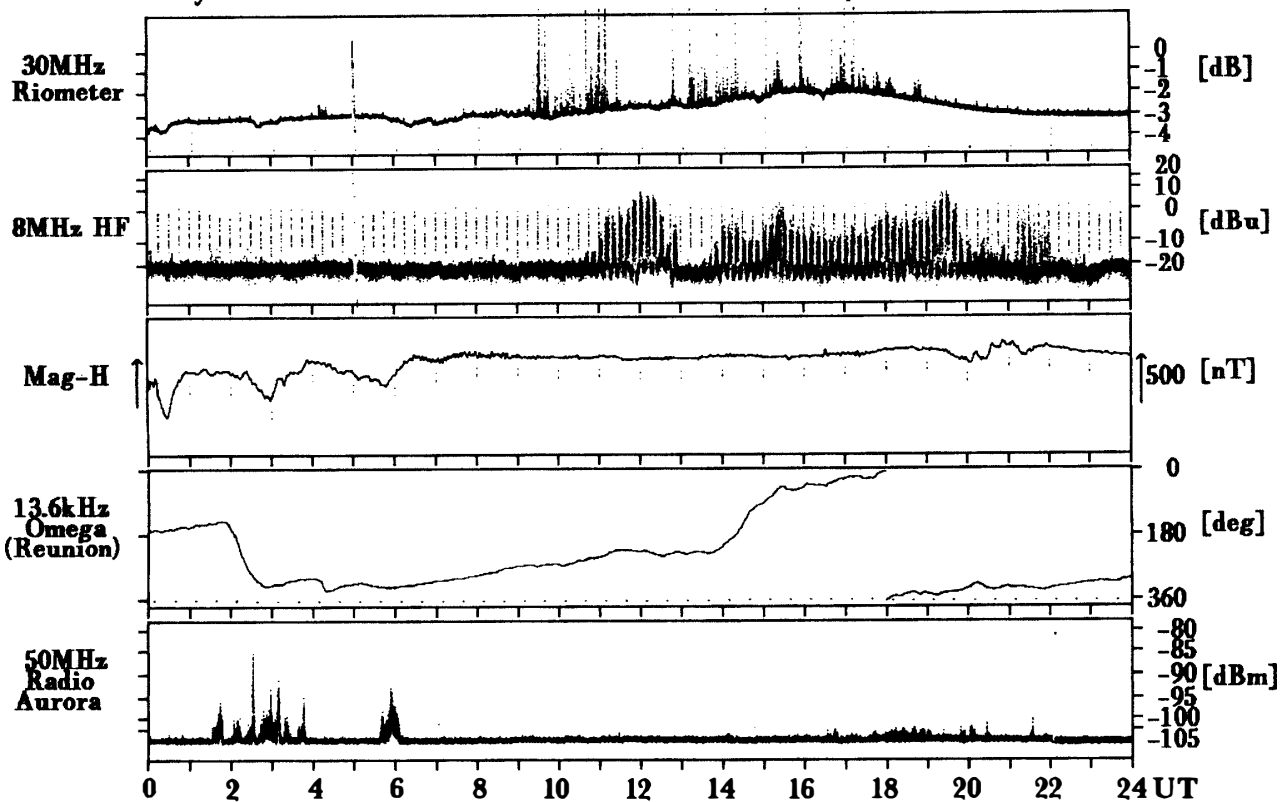
Syowa Station

Total Day / 256 1990/ 9/13



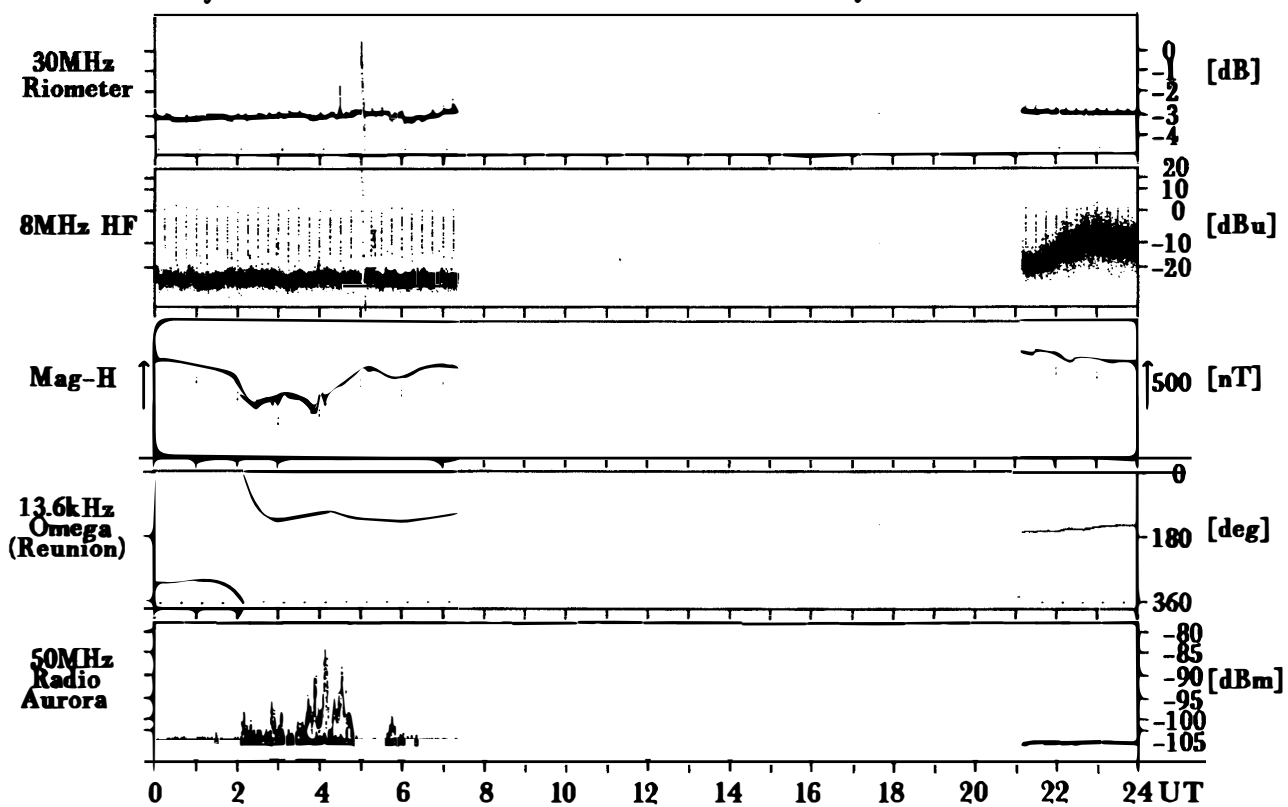
Syowa Station

Total Day / 257 1990/ 9/14



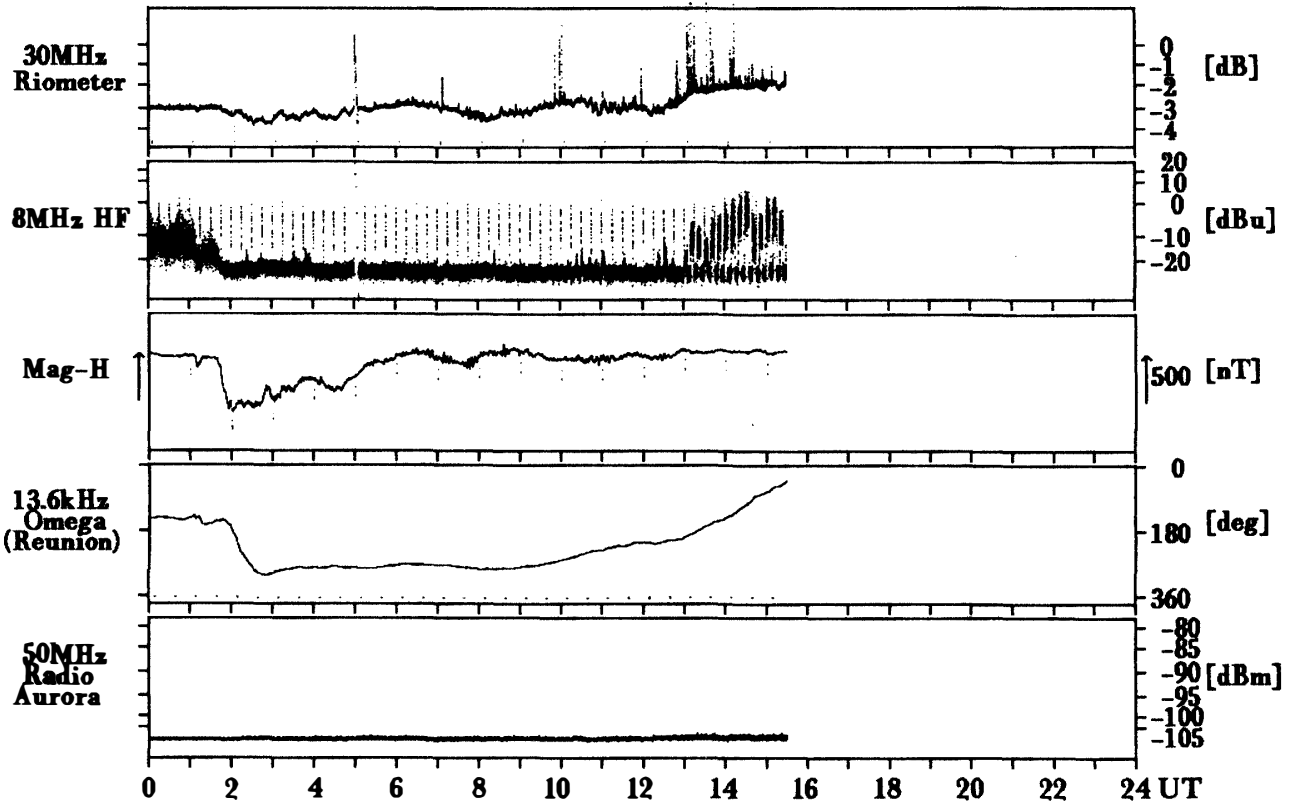
Syowa Station

Total Day / 258 1990/ 9/15



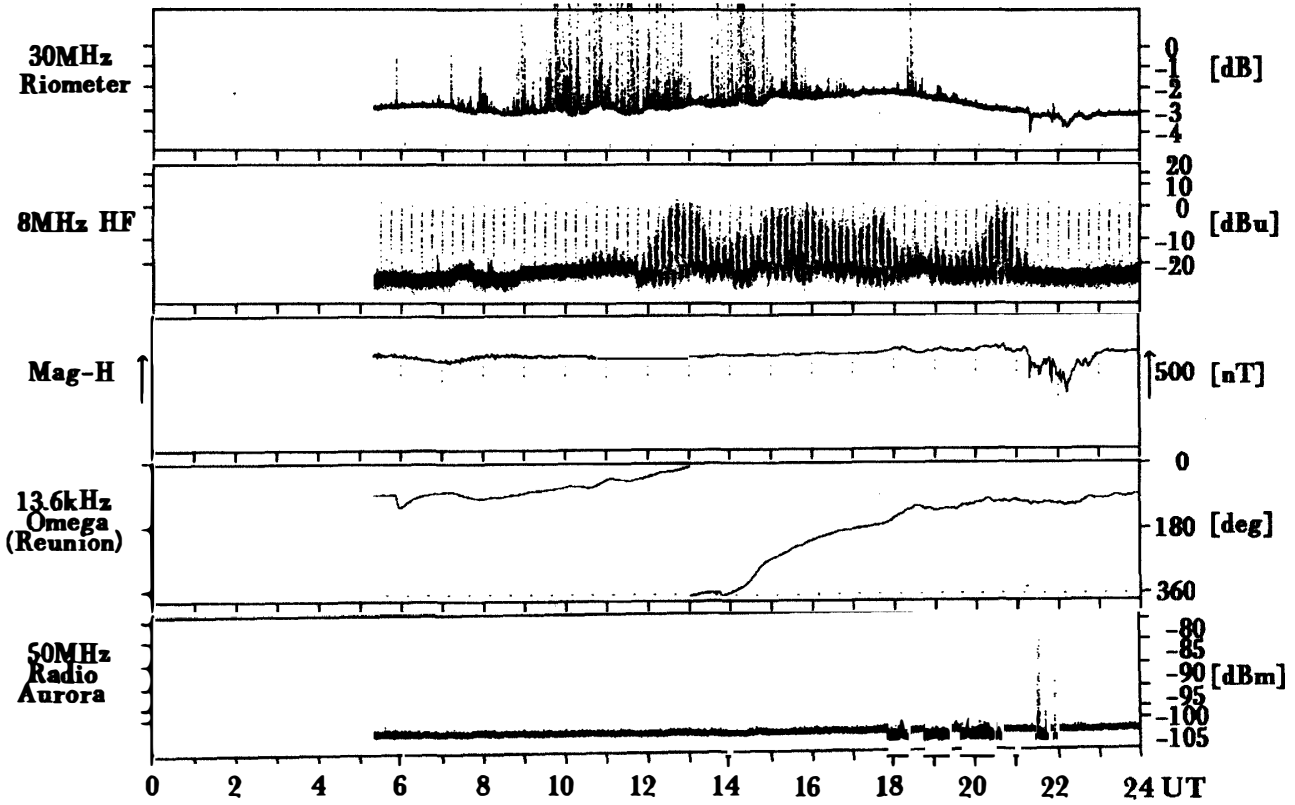
Syowa Station

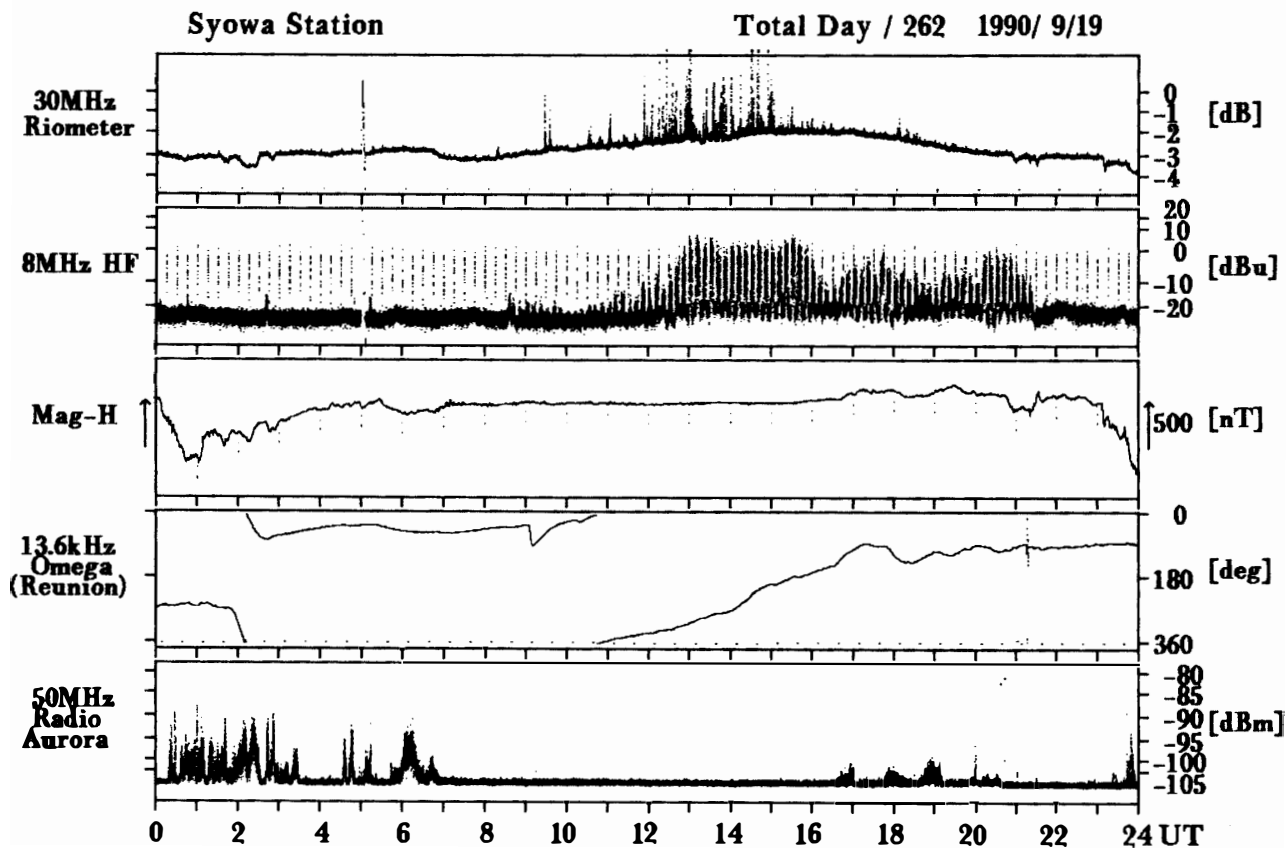
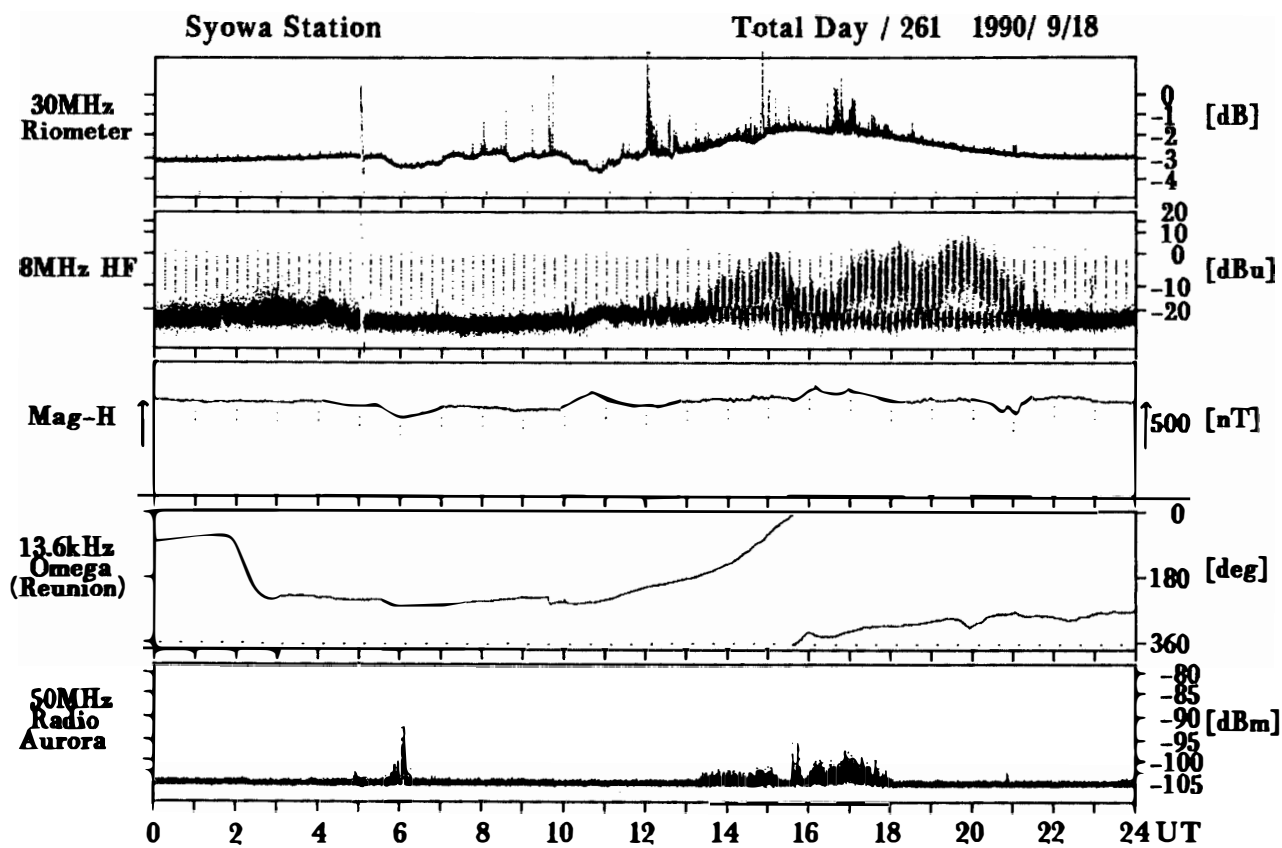
Total Day / 259 1990/ 9/16

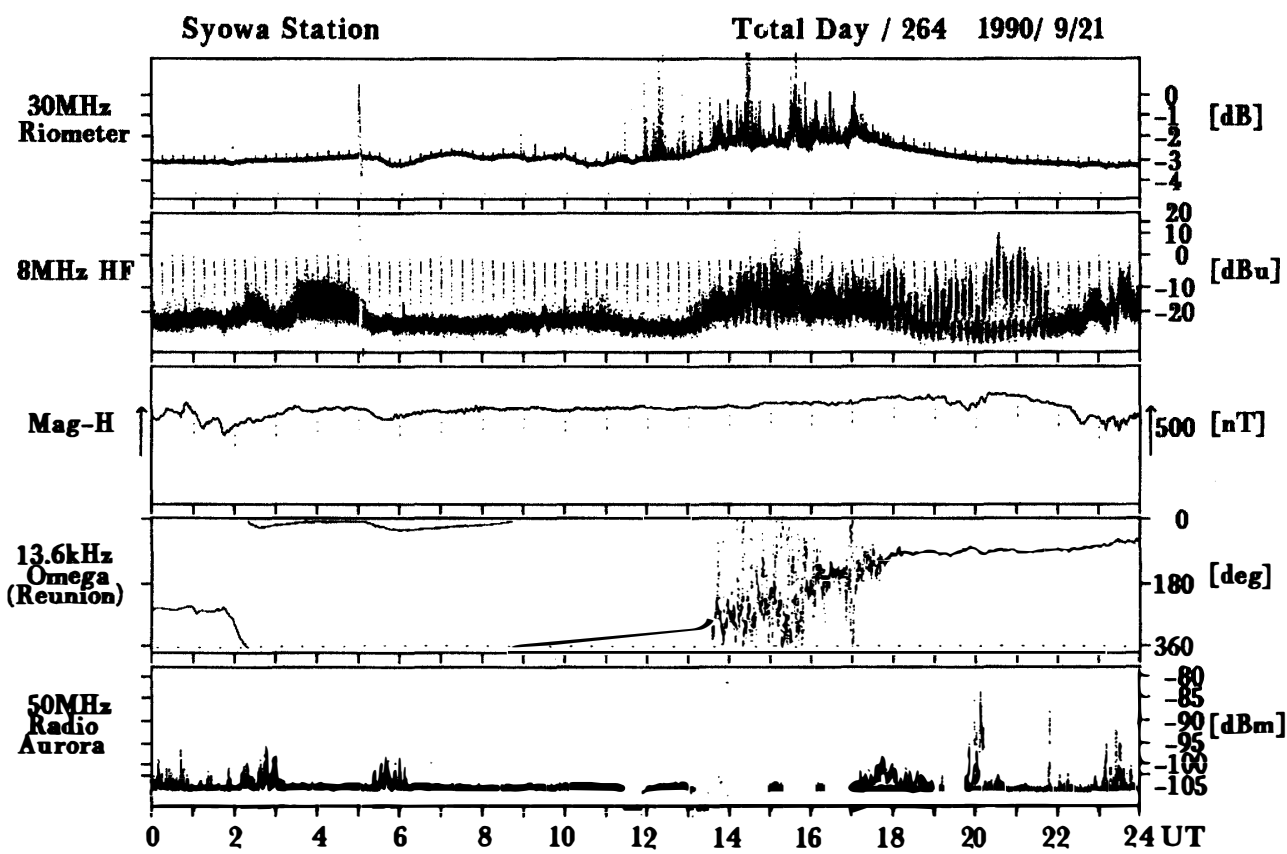
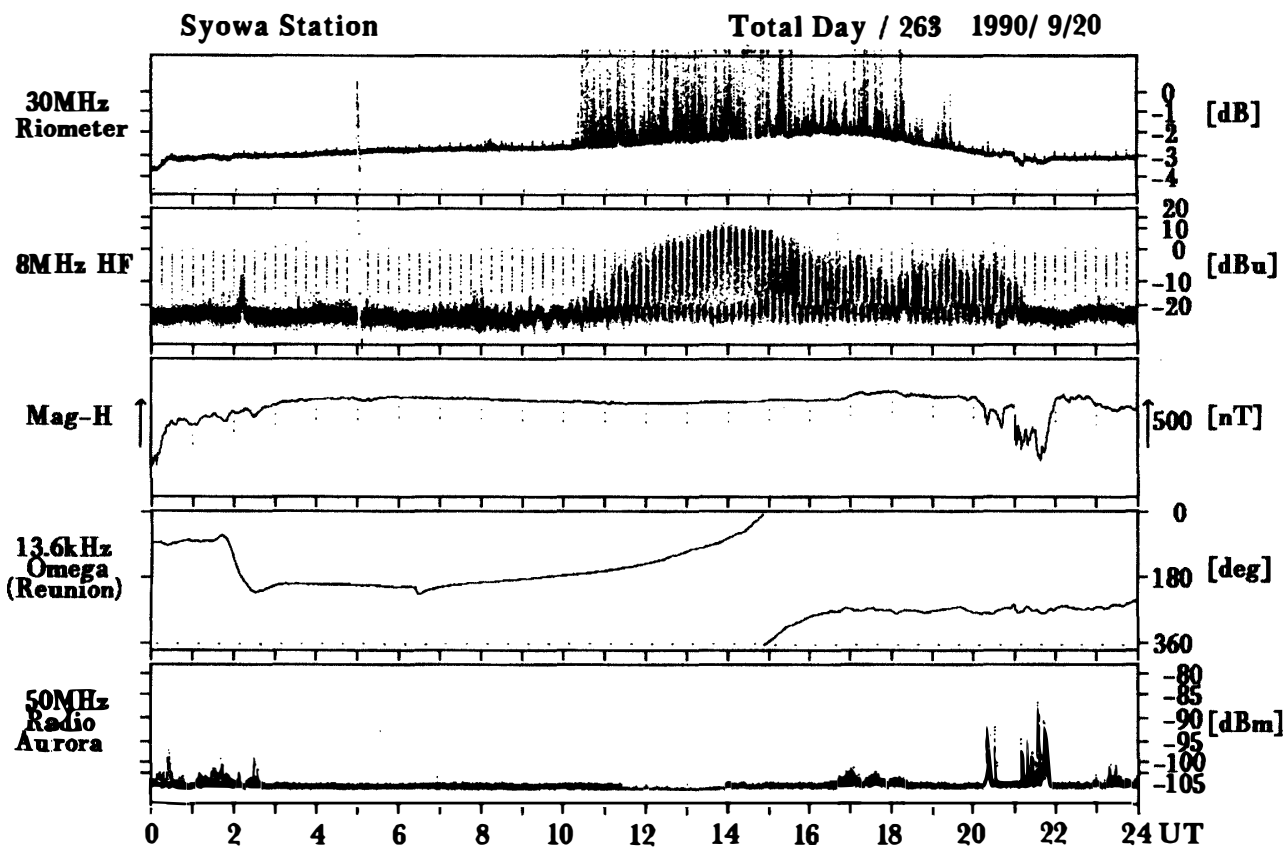


Syowa Station

Total Day / 260 1990/ 9/17

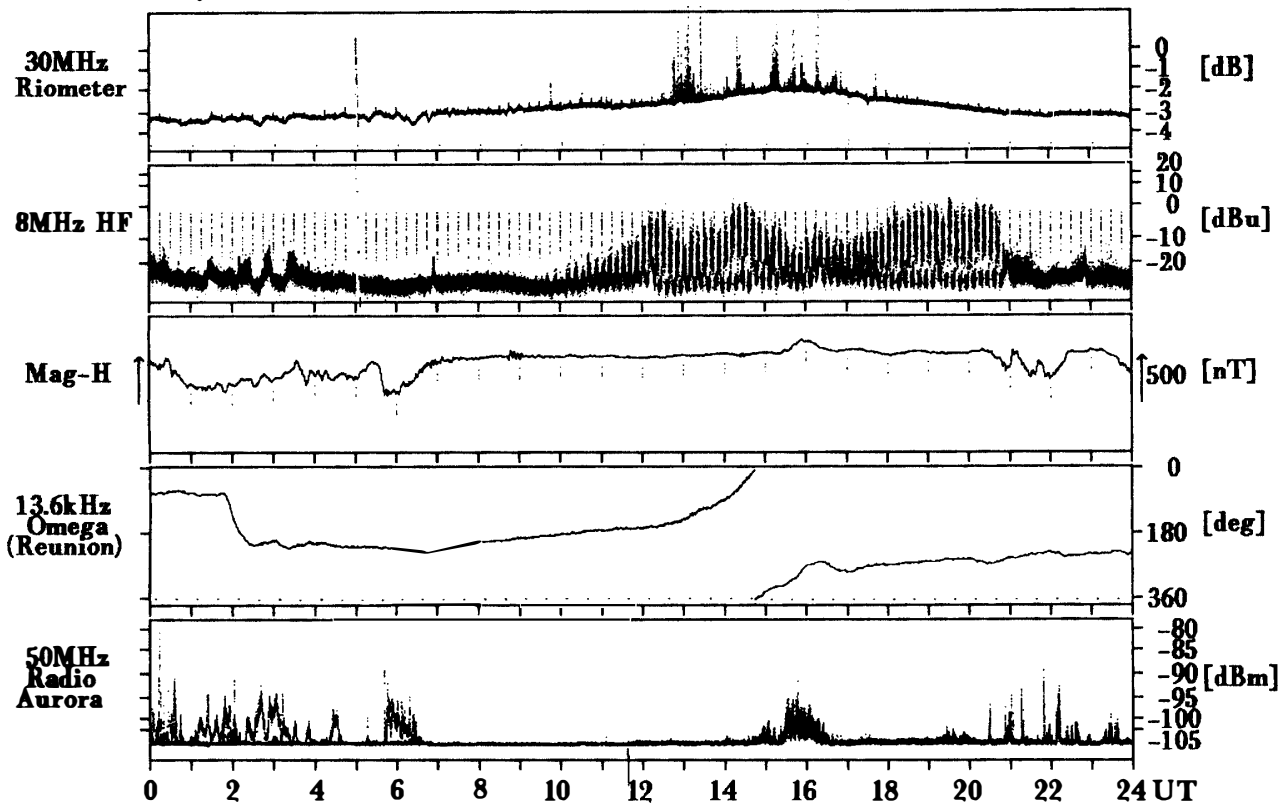






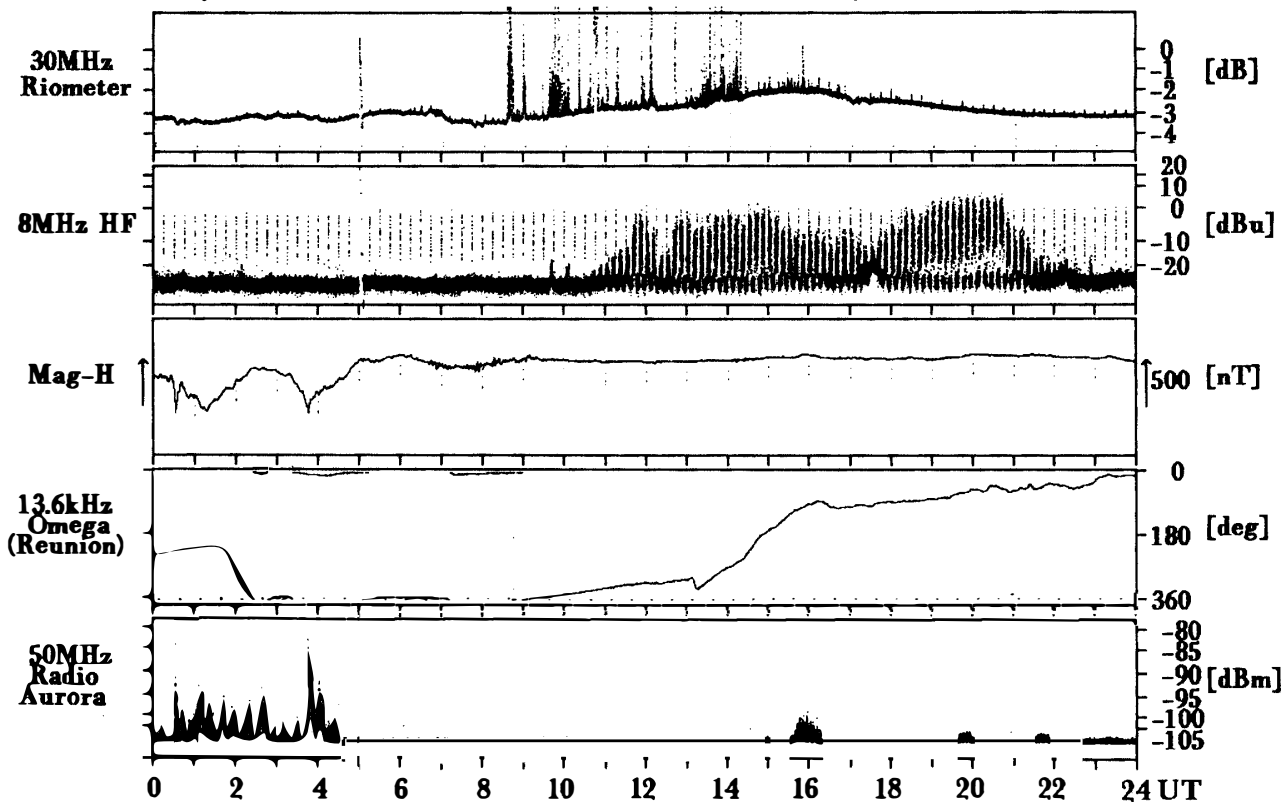
Syowa Station

Total Day / 265 1990/ 9/22



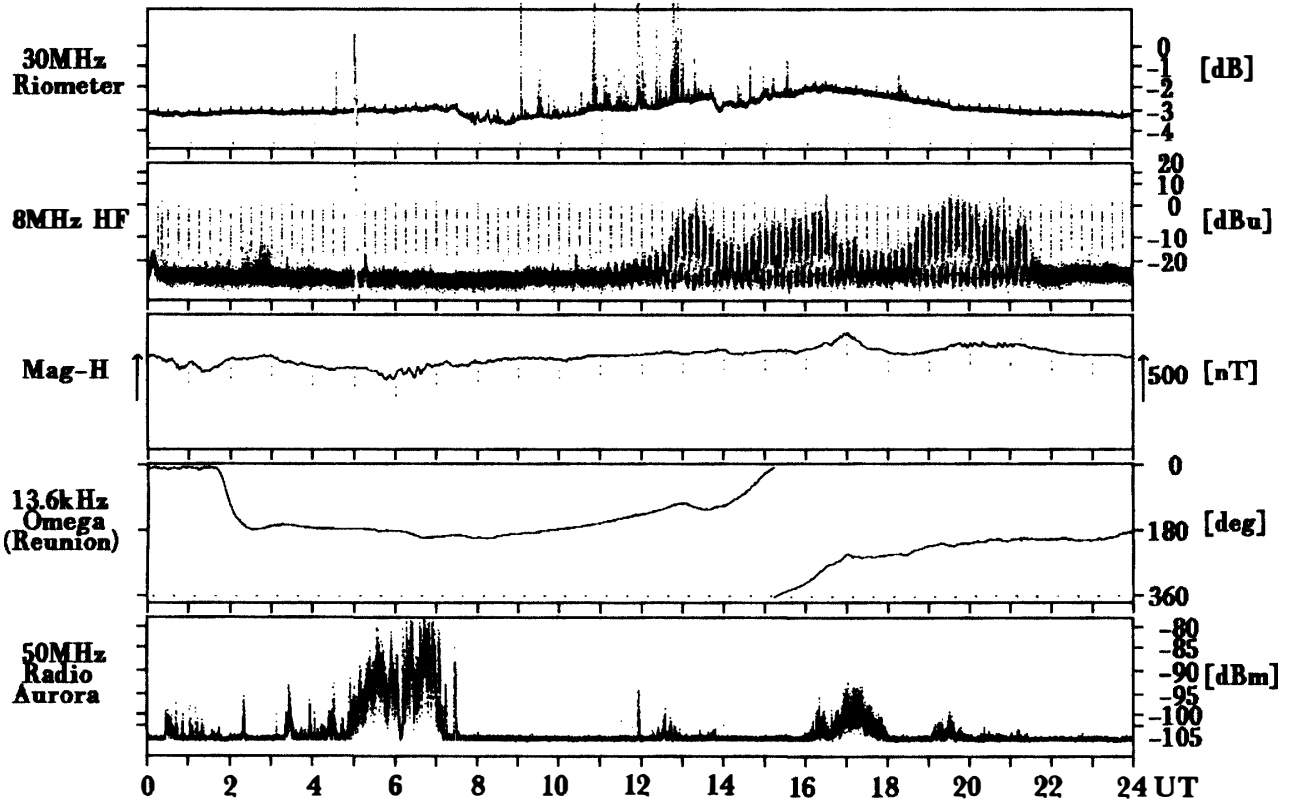
Syowa Station

Total Day / 266 1990/ 9/23



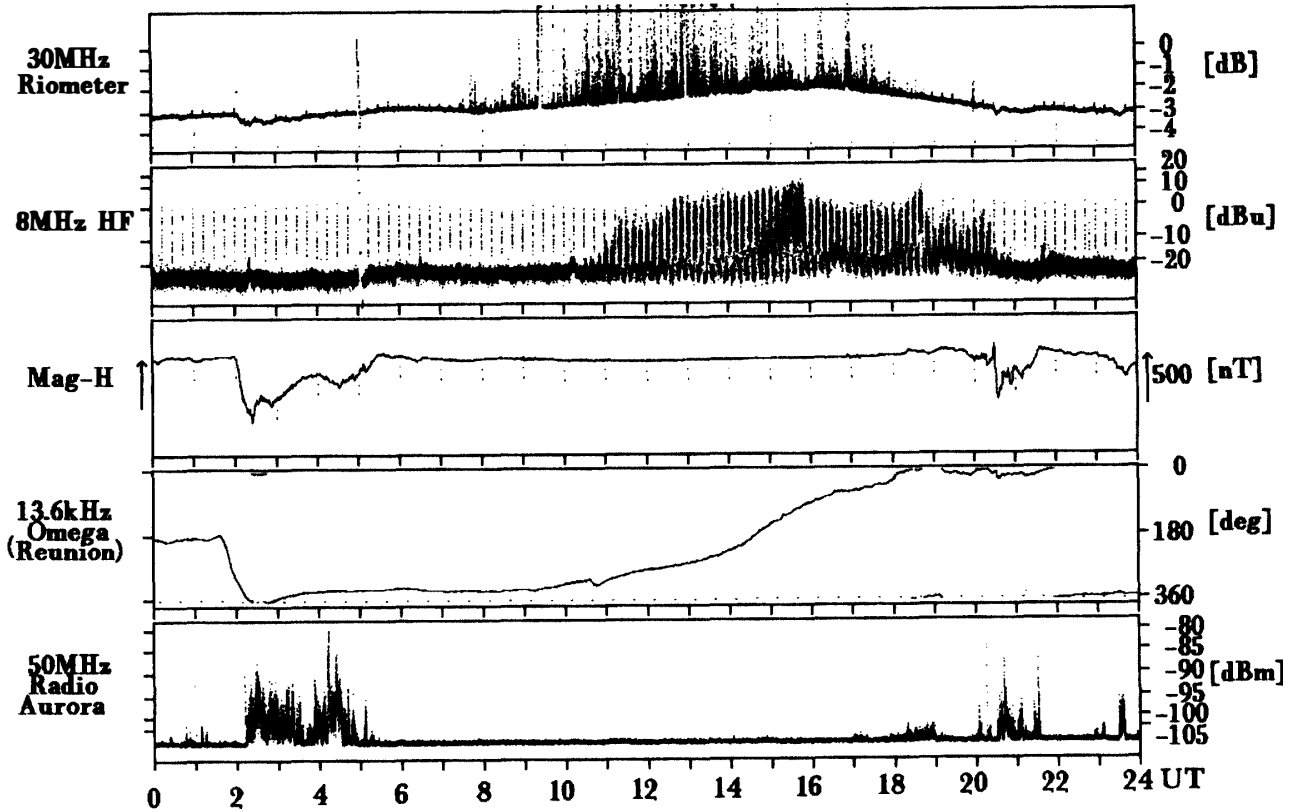
Syowa Station

Total Day / 267 1990/ 9/24



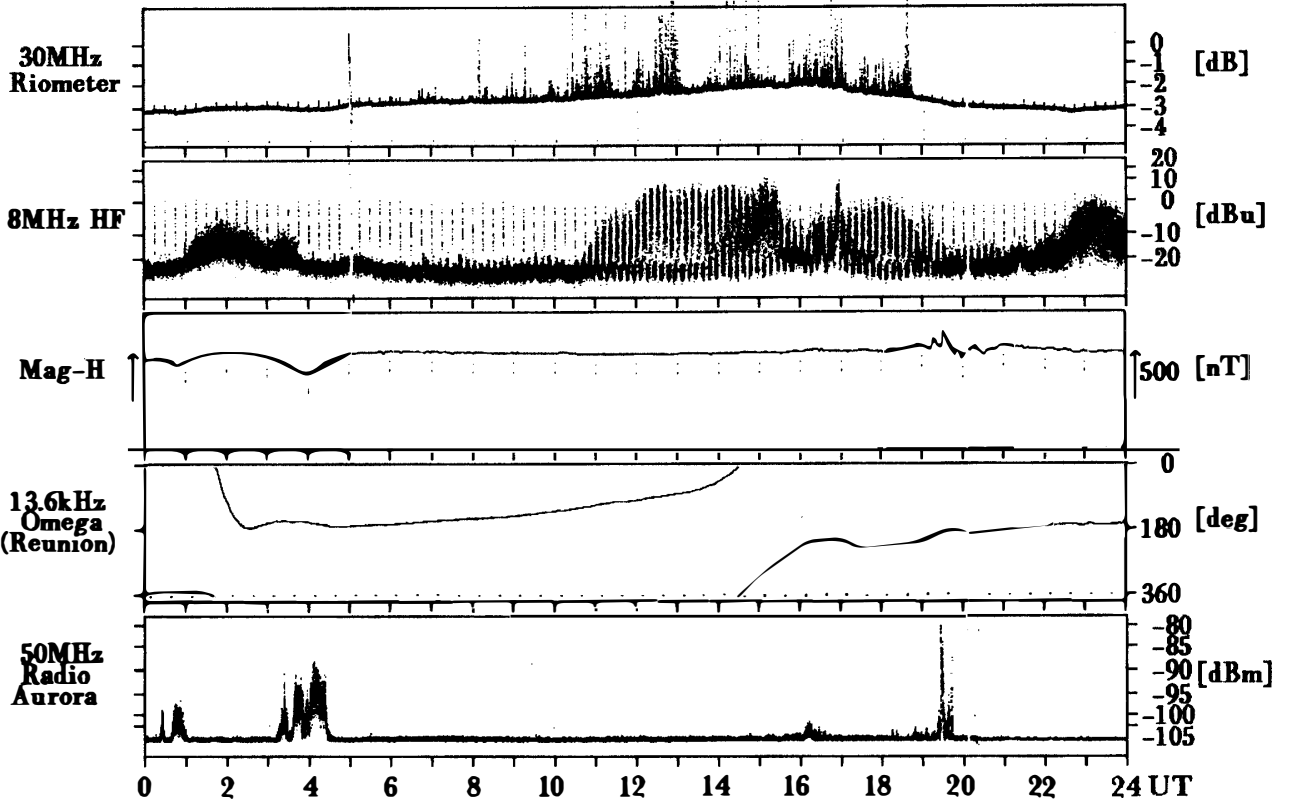
Syowa Station

Total Day / 268 1990/ 9/25



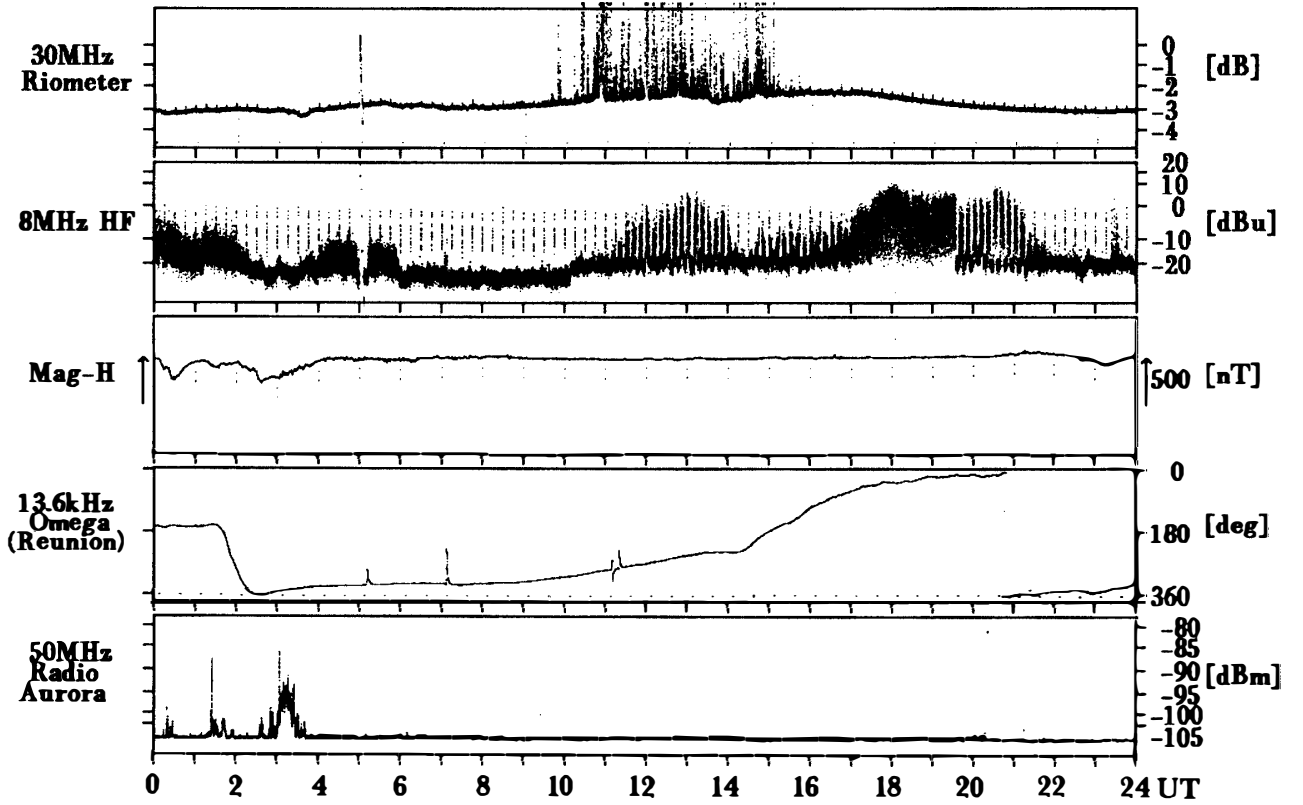
Syowa Station

Total Day / 269 1990/ 9/26



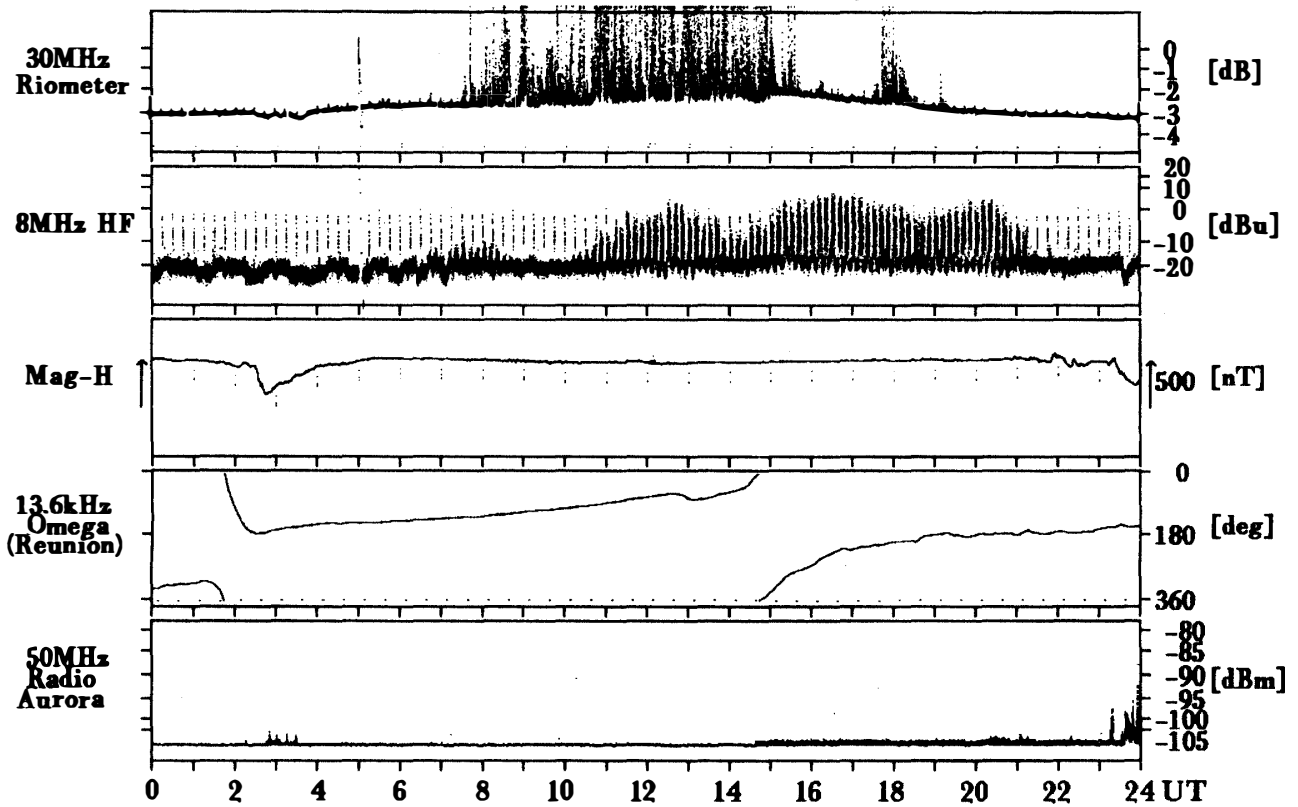
Syowa Station

Total Day / 270 1990/ 9/27



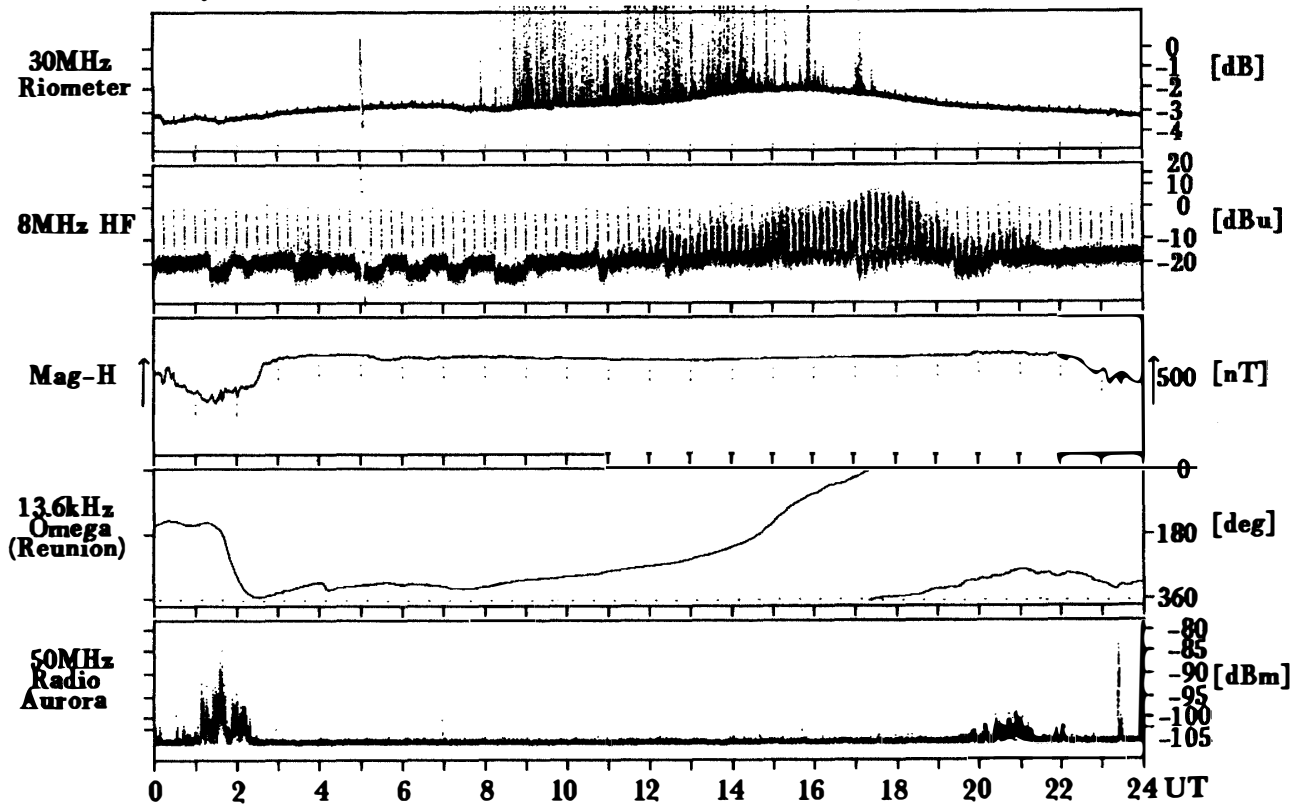
Syowa Station

Total Day / 271 1990/ 9/28



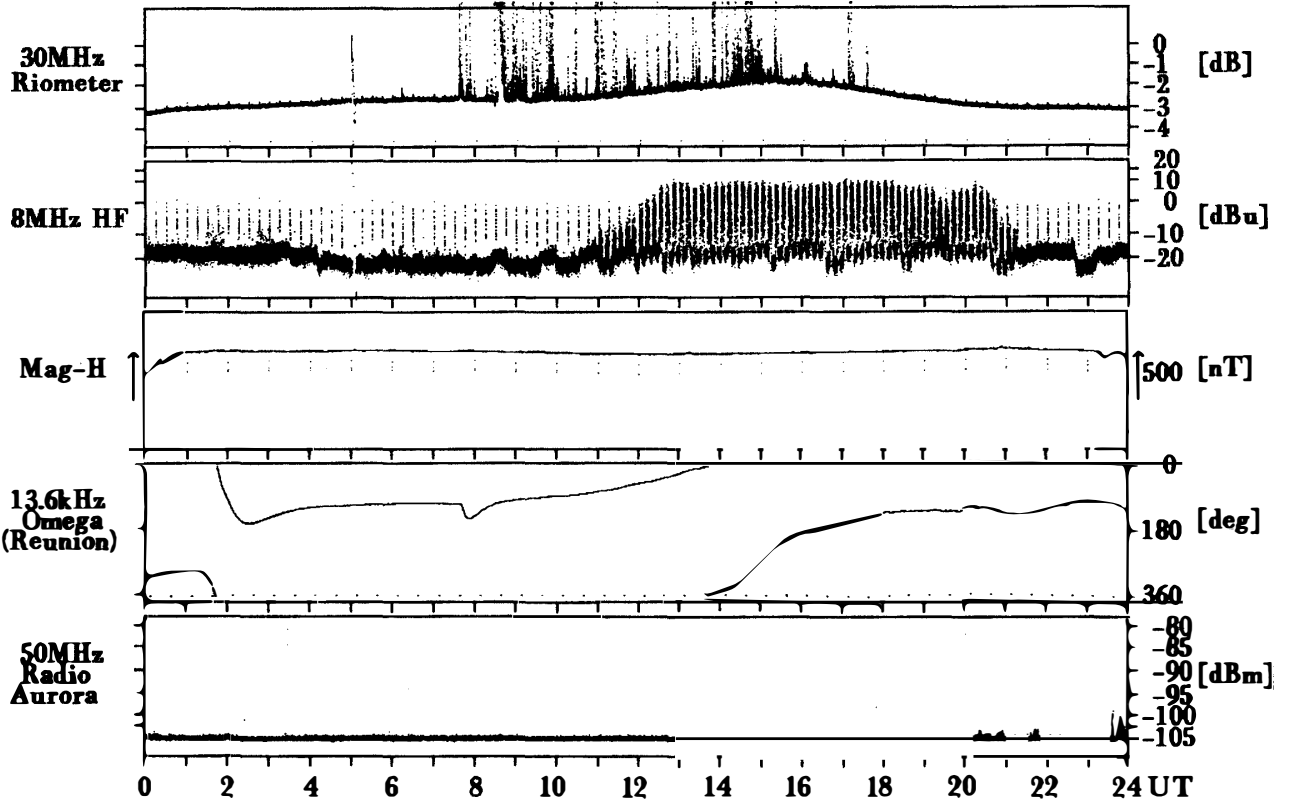
Syowa Station

Total Day / 272 1990/ 9/29



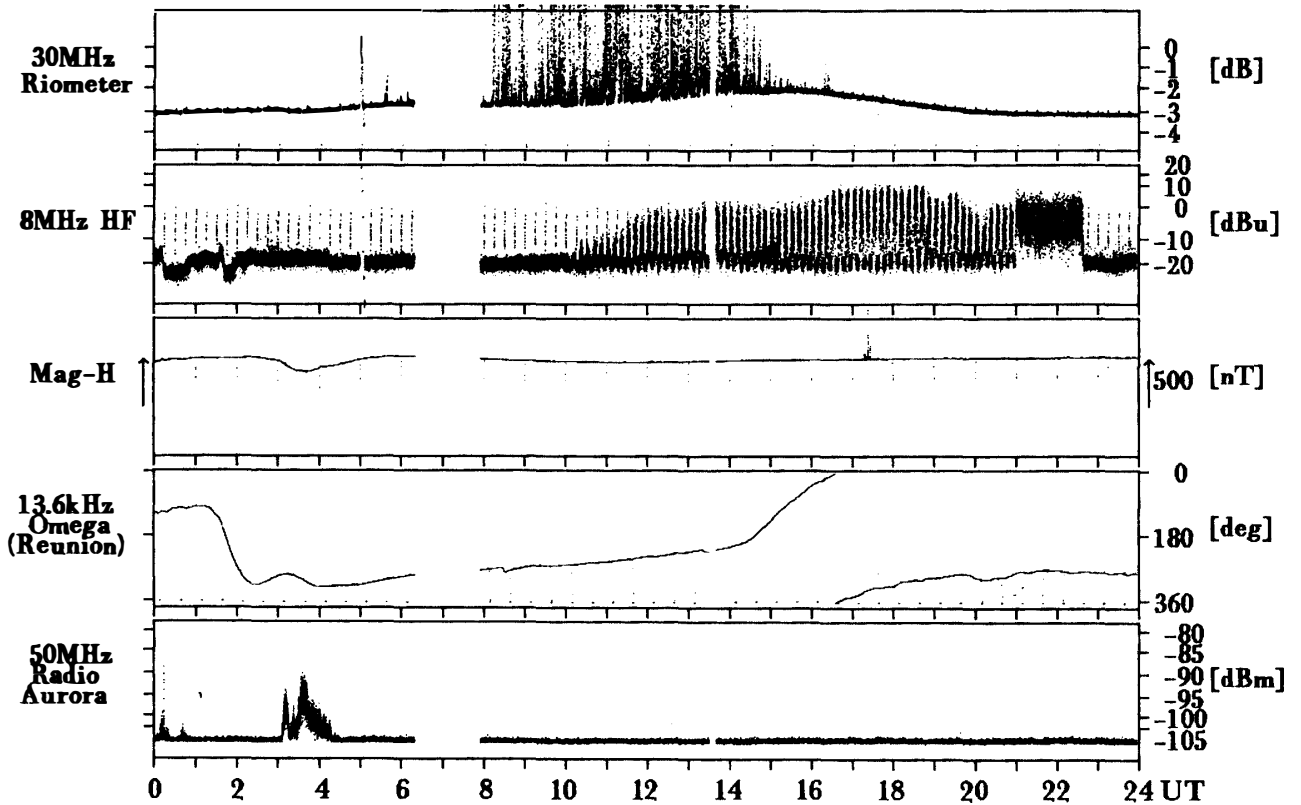
Syowa Station

Total Day / 273 1990/ 9/30



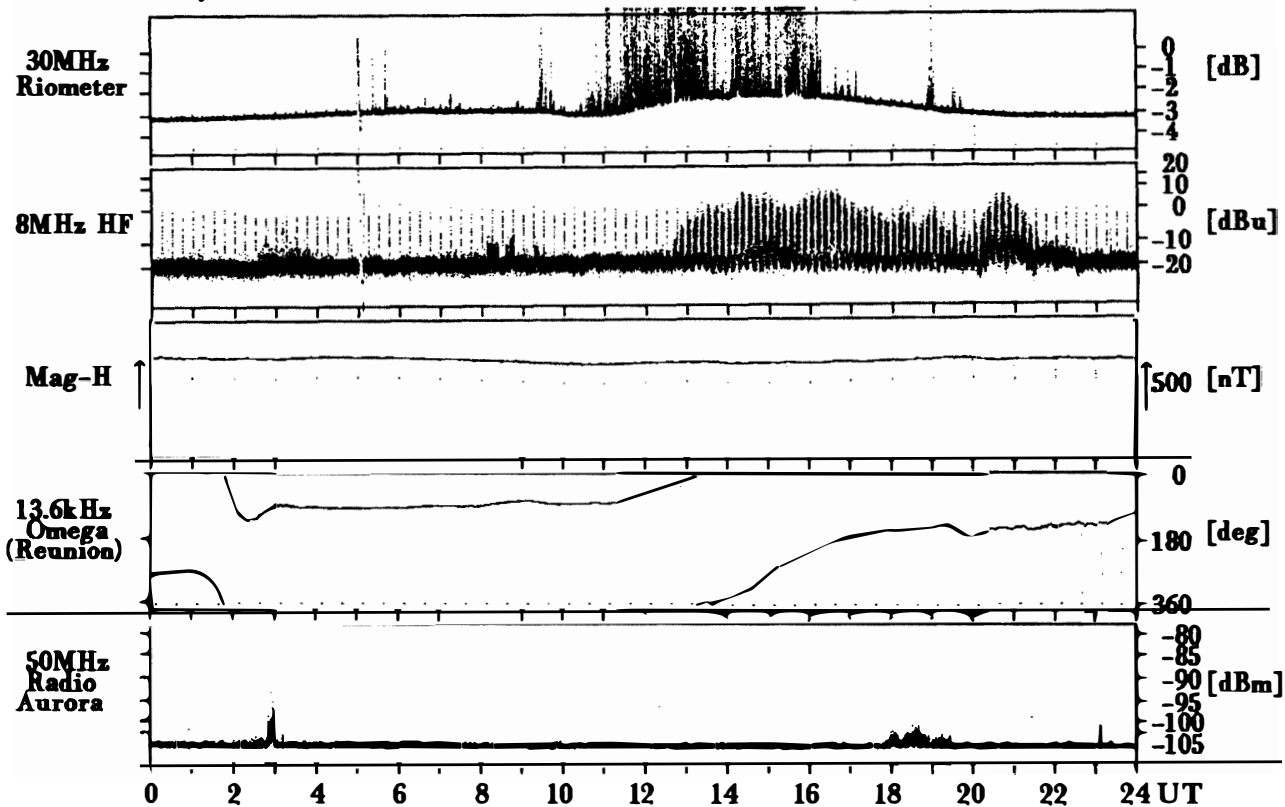
Syowa Station

Total Day / 274 1990/10/ 1



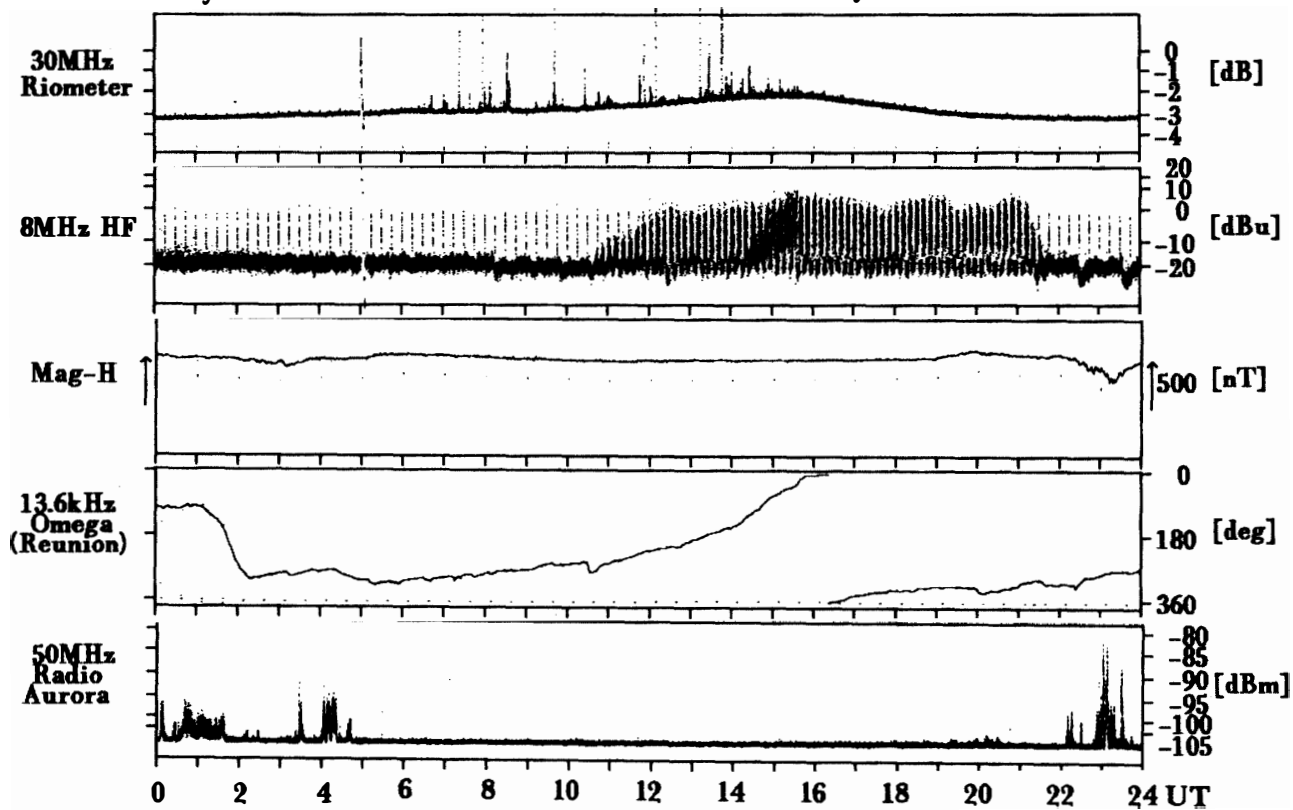
Syowa Station

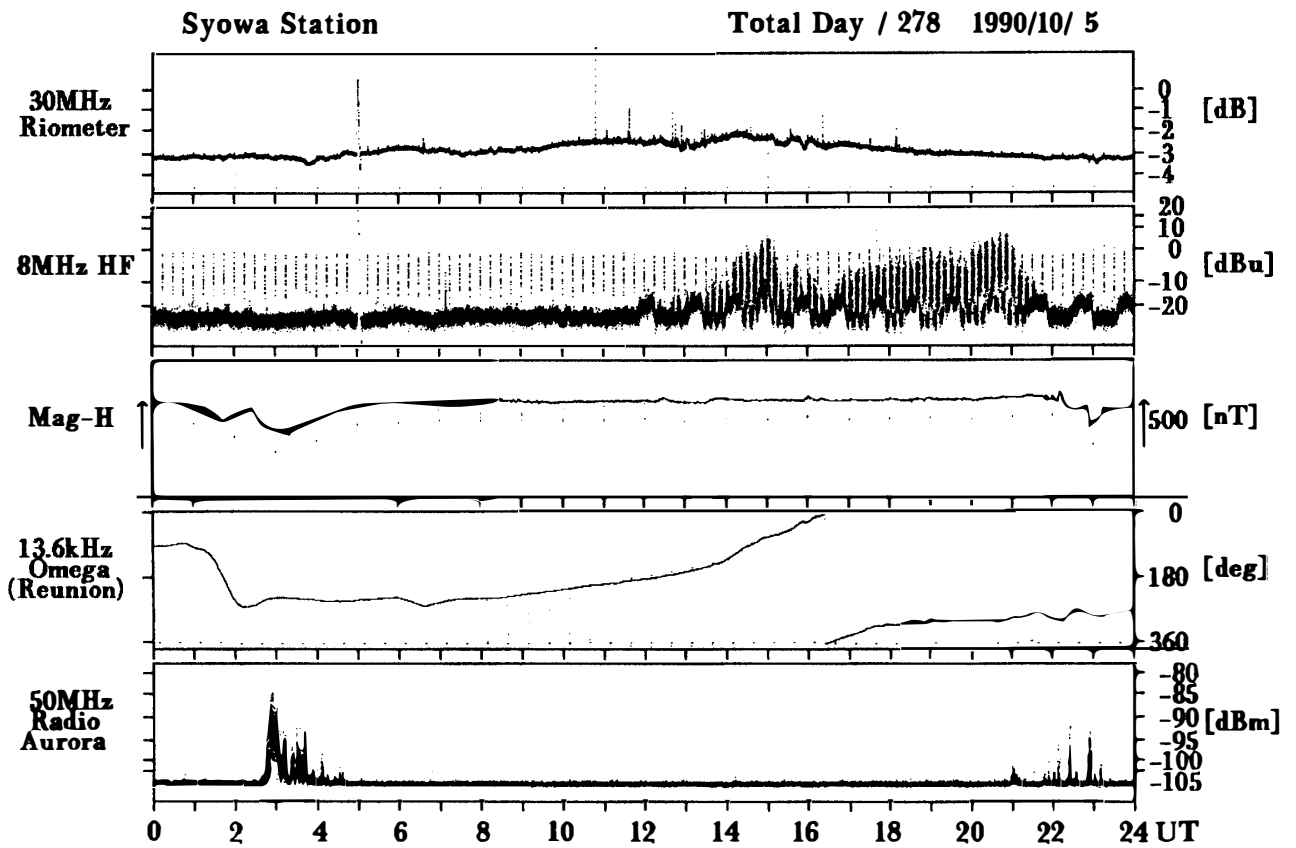
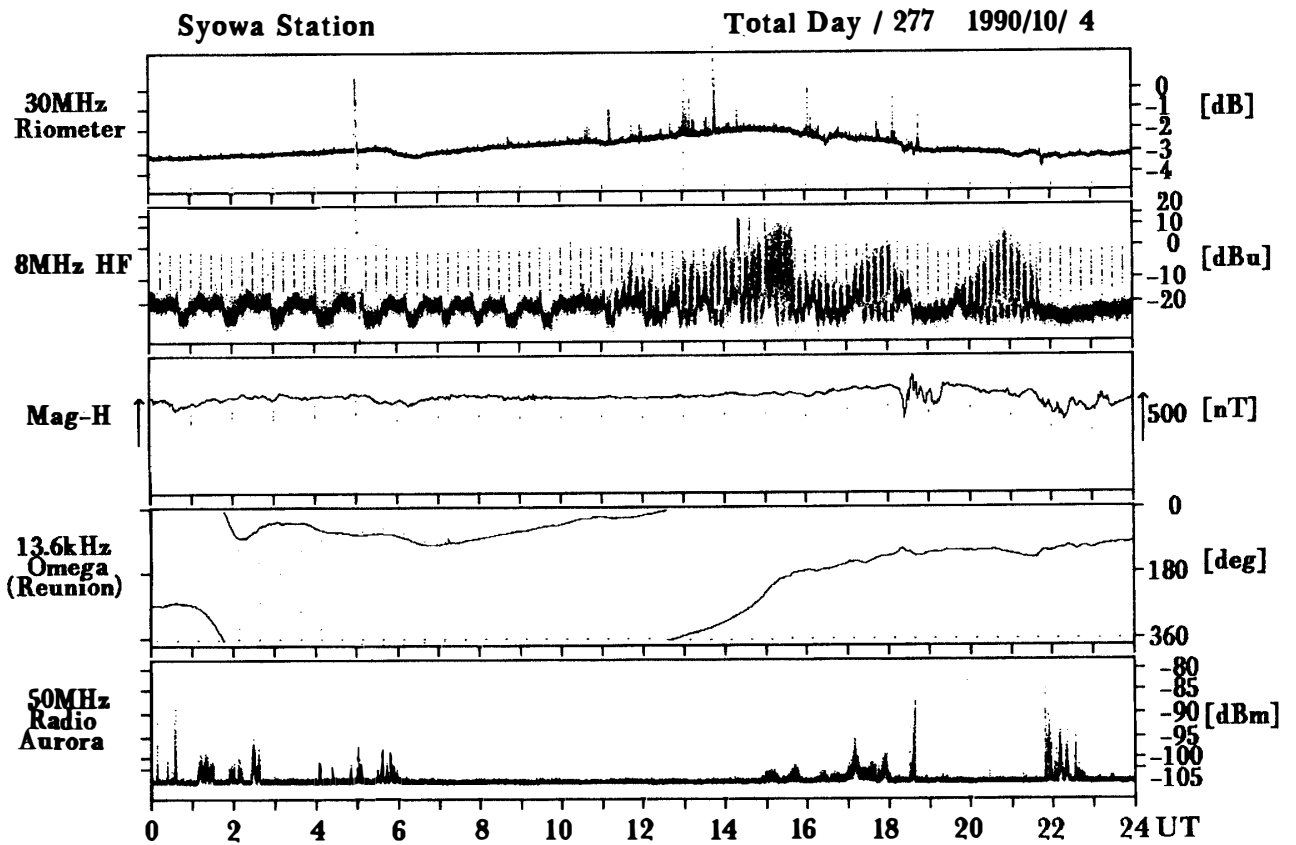
Total Day / 275 1990/10/ 2



Syowa Station

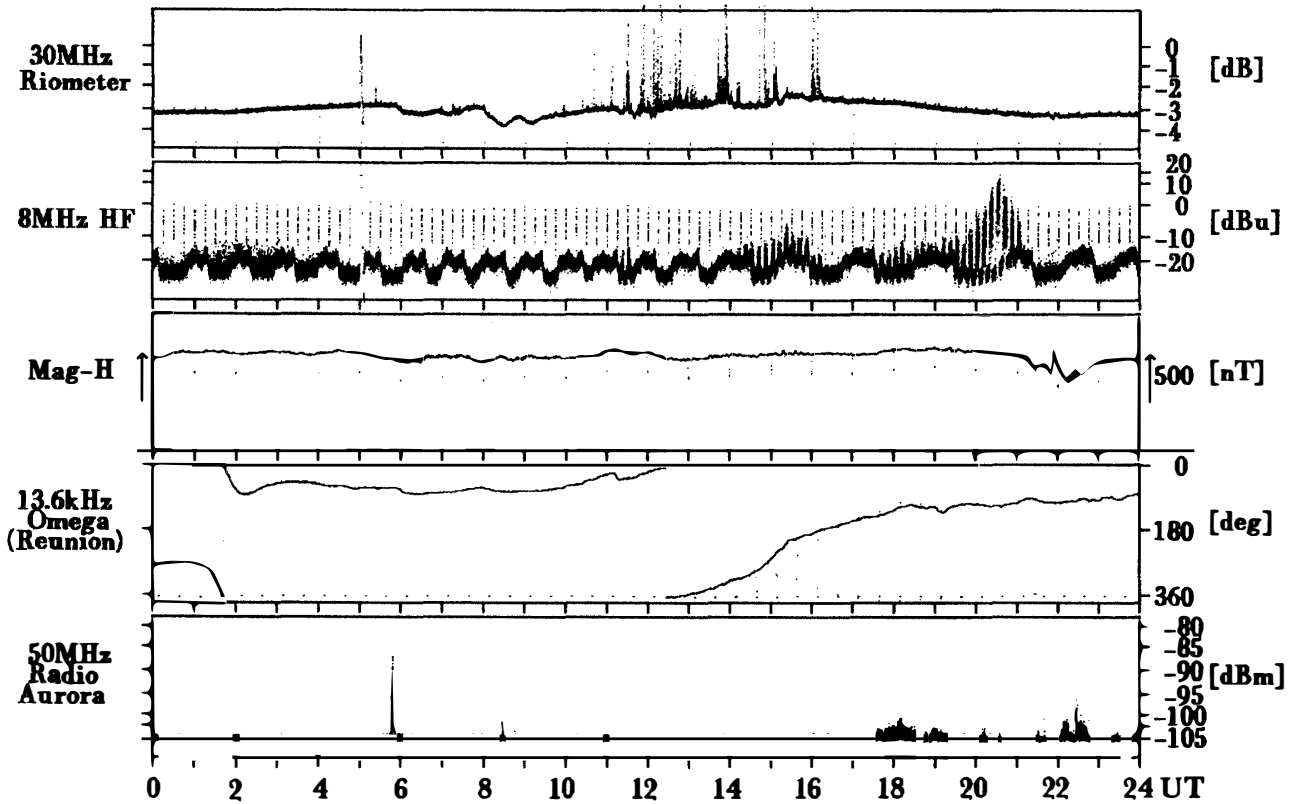
Total Day / 276 1990/10/ 3





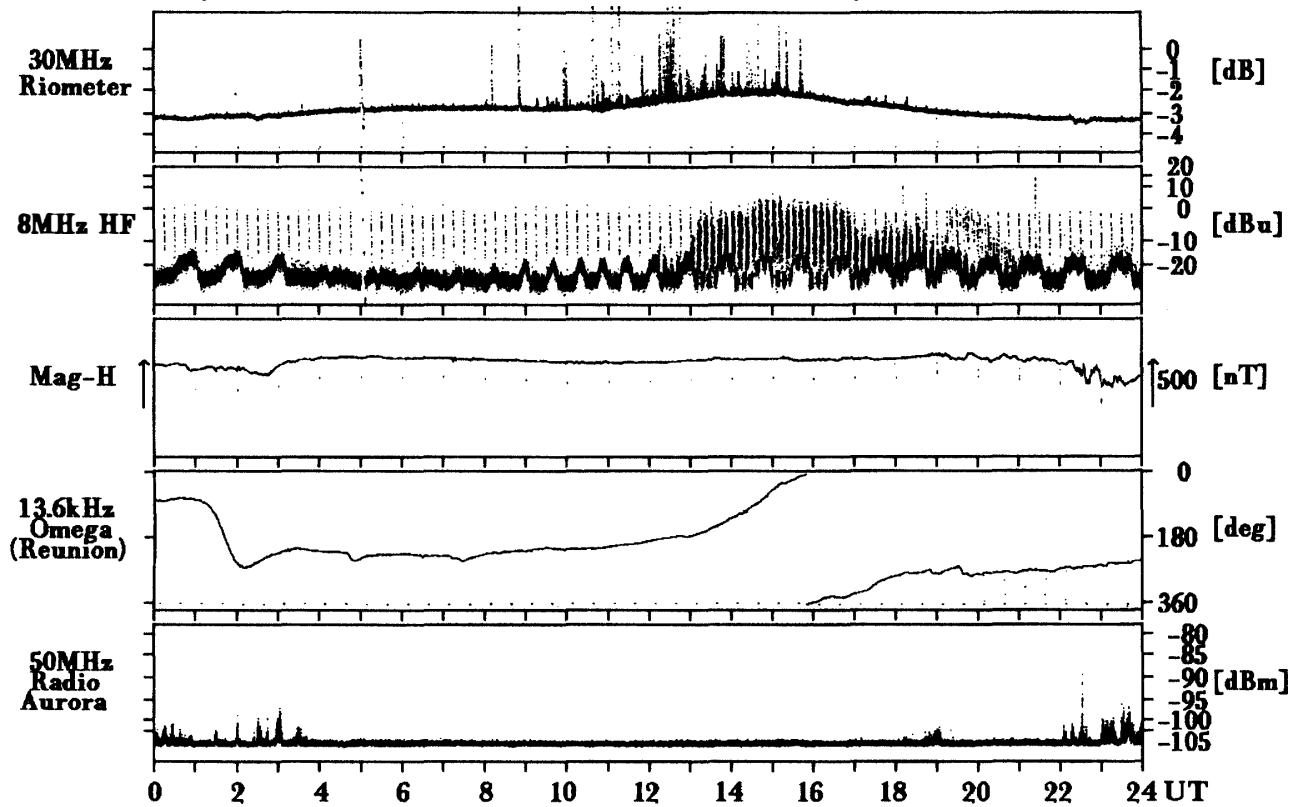
Syowa Station

Total Day / 279 1990/10/ 6



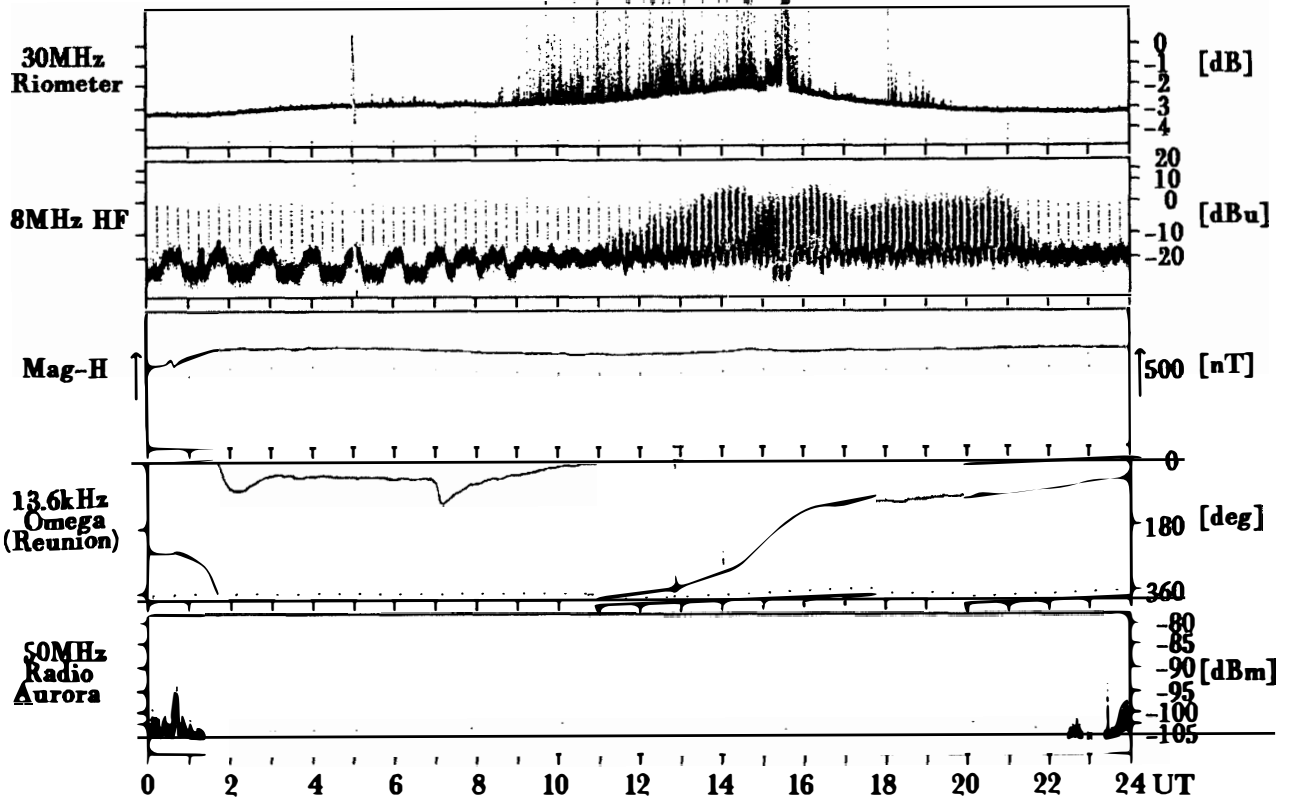
Syowa Station

Total Day / 280 1990/10/ 7



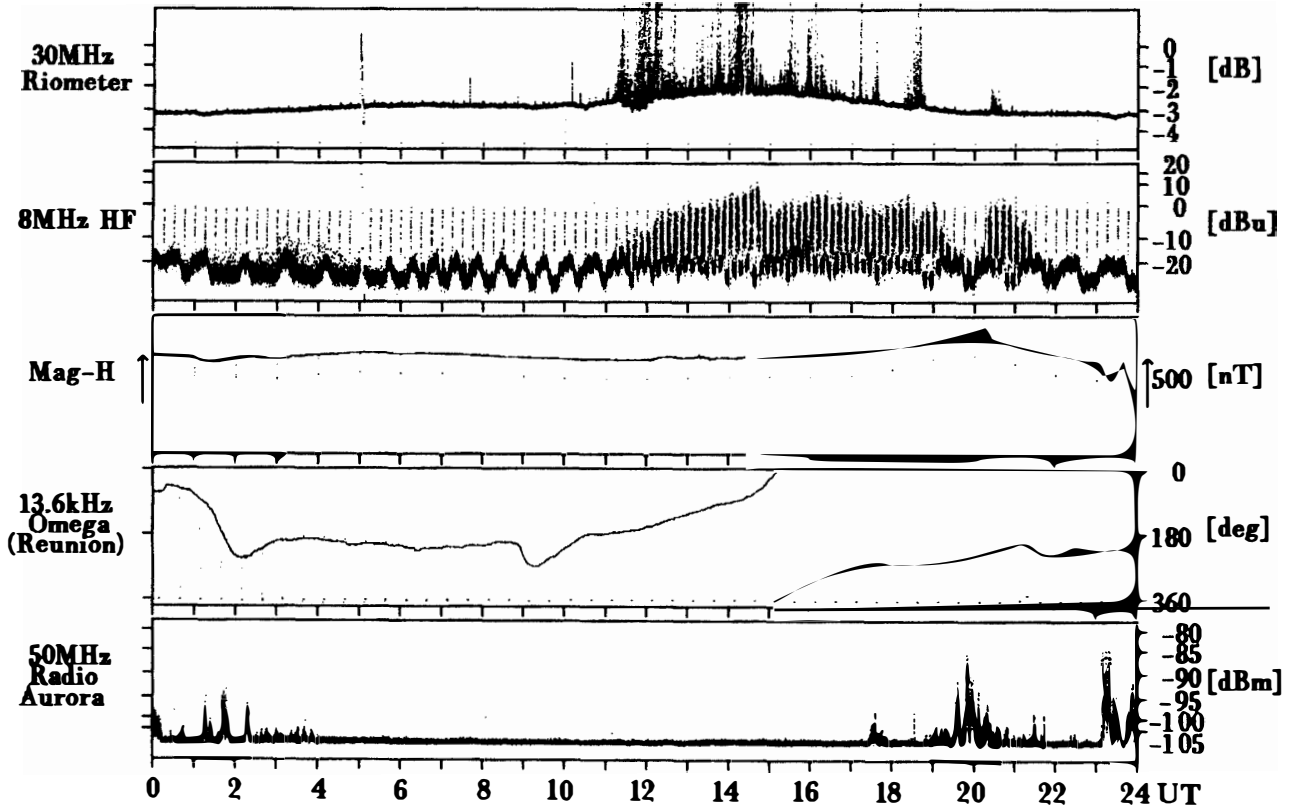
Syowa Station

Total Day / 281 1990/10/ 8



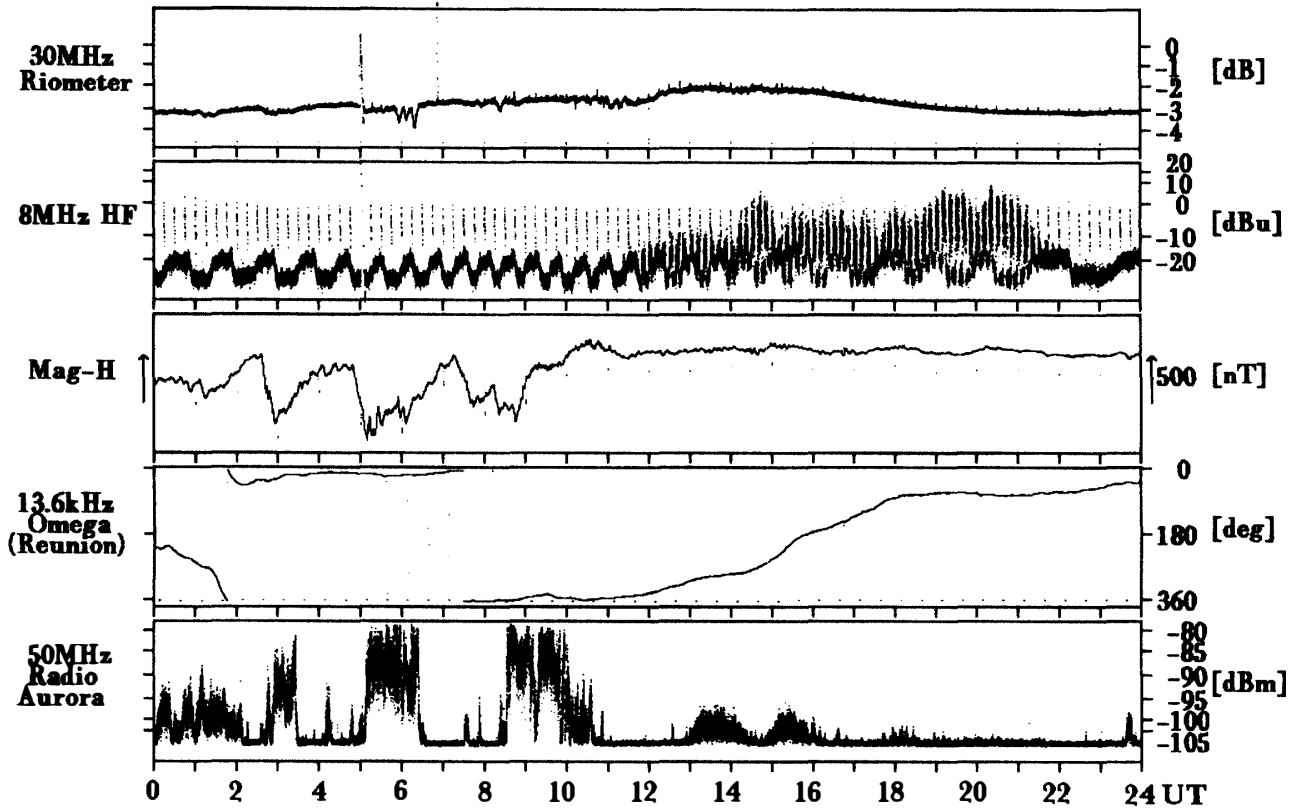
Syowa Station

Total Day / 282 1990/10/ 9



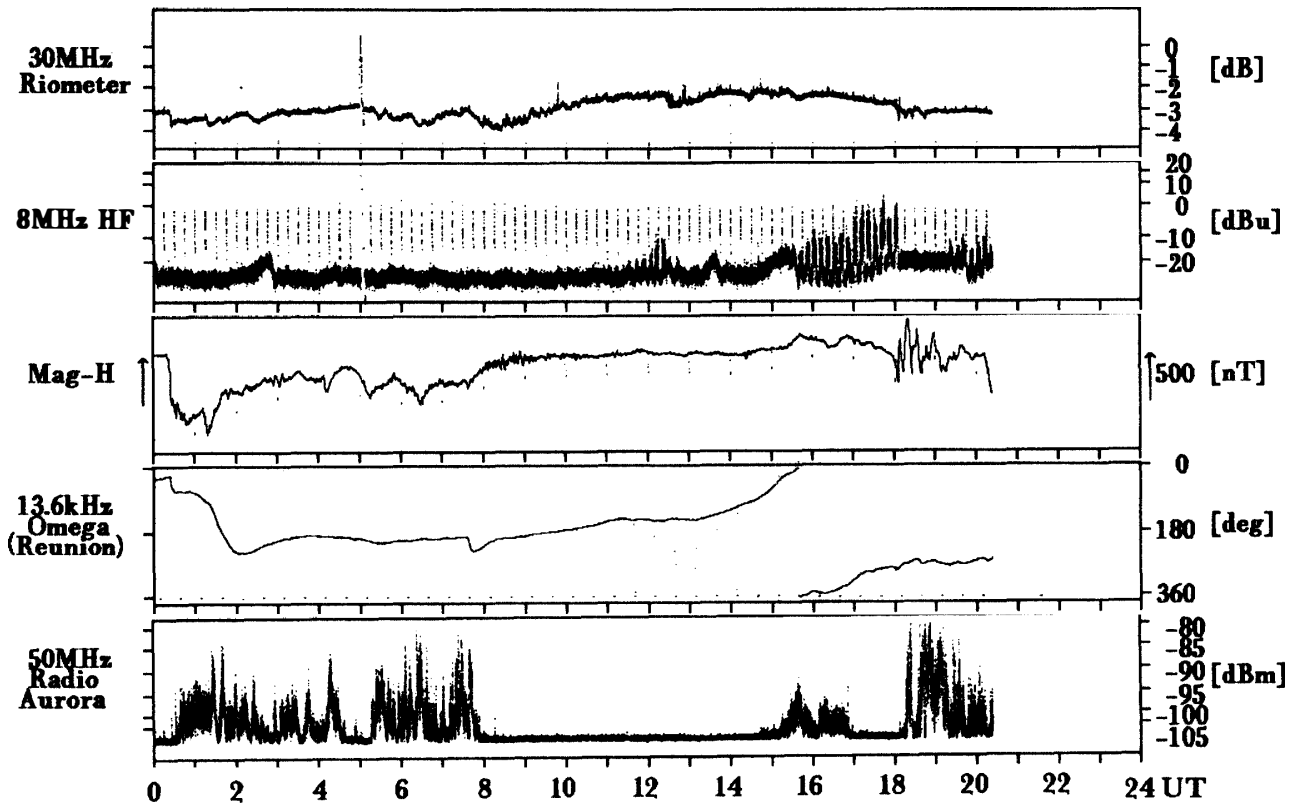
Syowa Station

Total Day / 283 1990/10/10



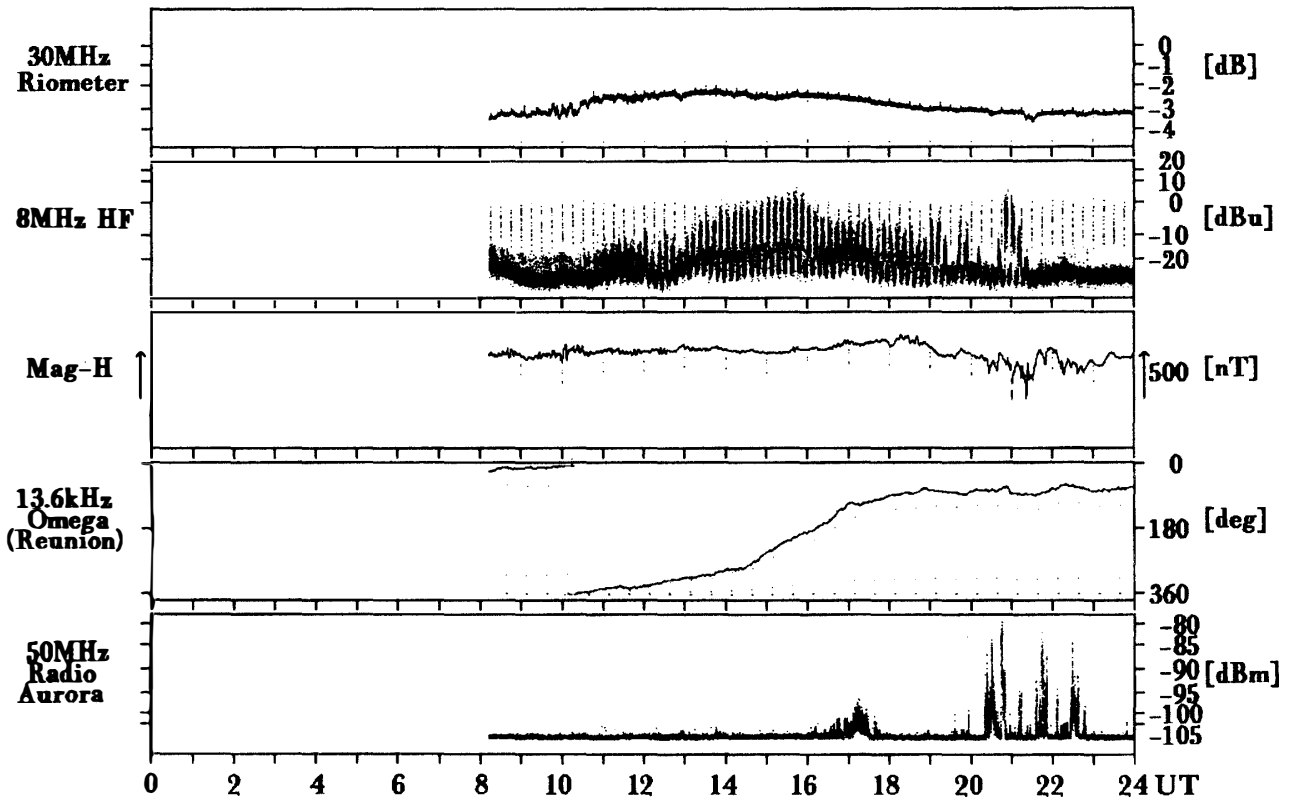
Syowa Station

Total Day / 284 1990/10/11



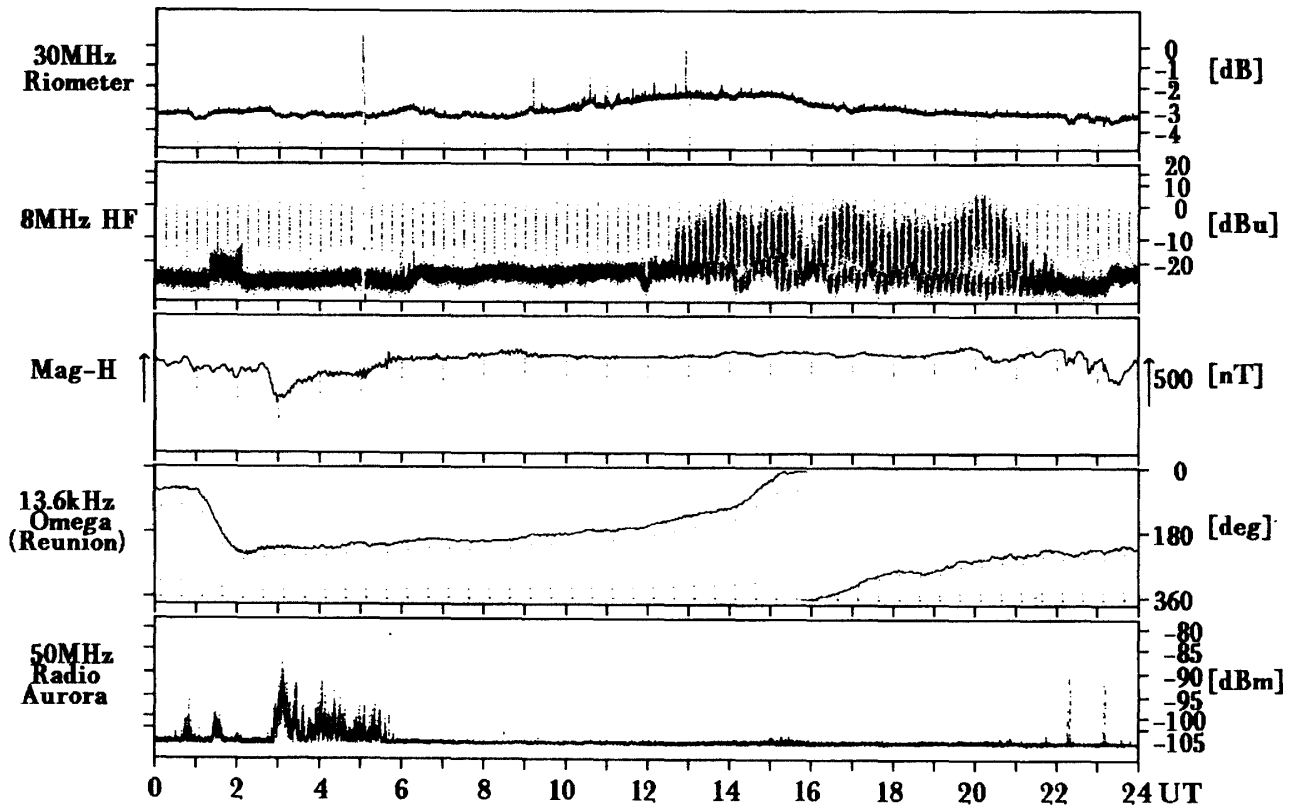
Syowa Station

Total Day / 285 1990/10/12



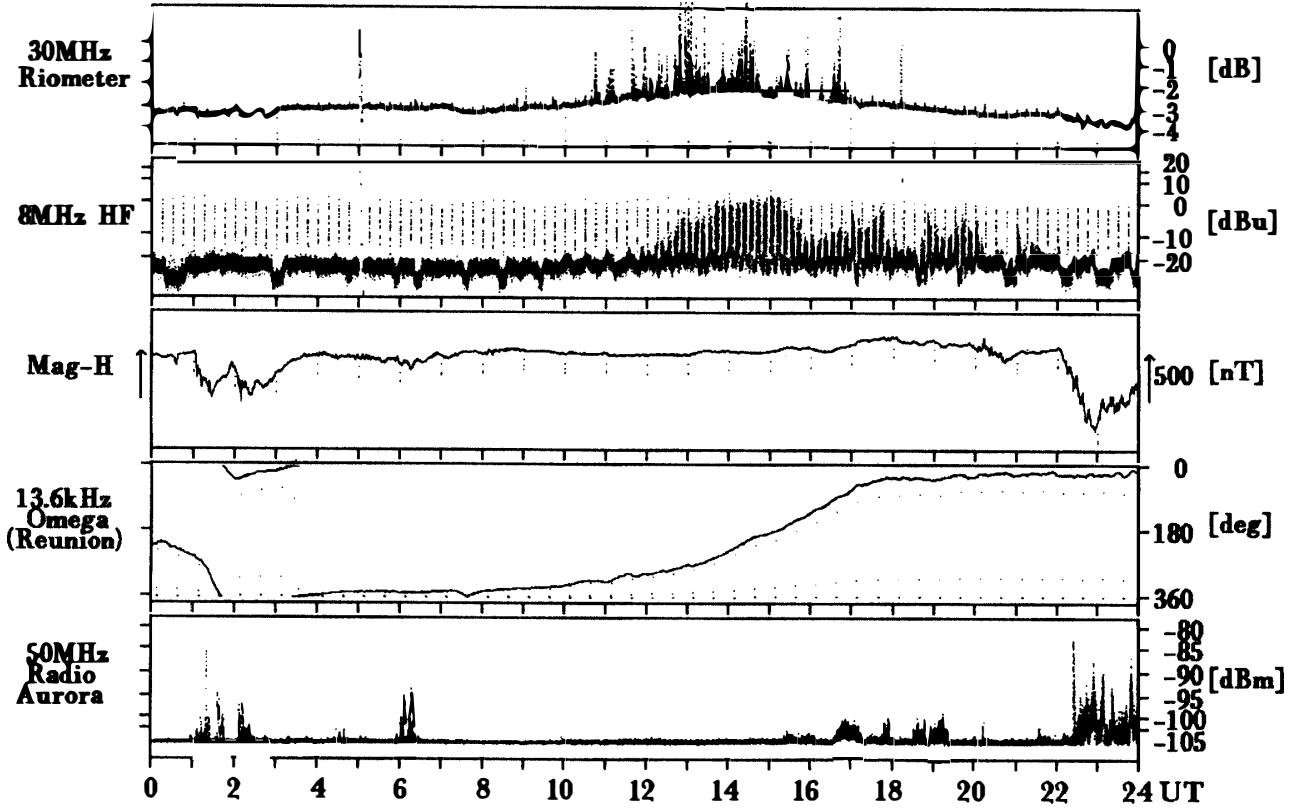
Syowa Station

Total Day / 286 1990/10/13



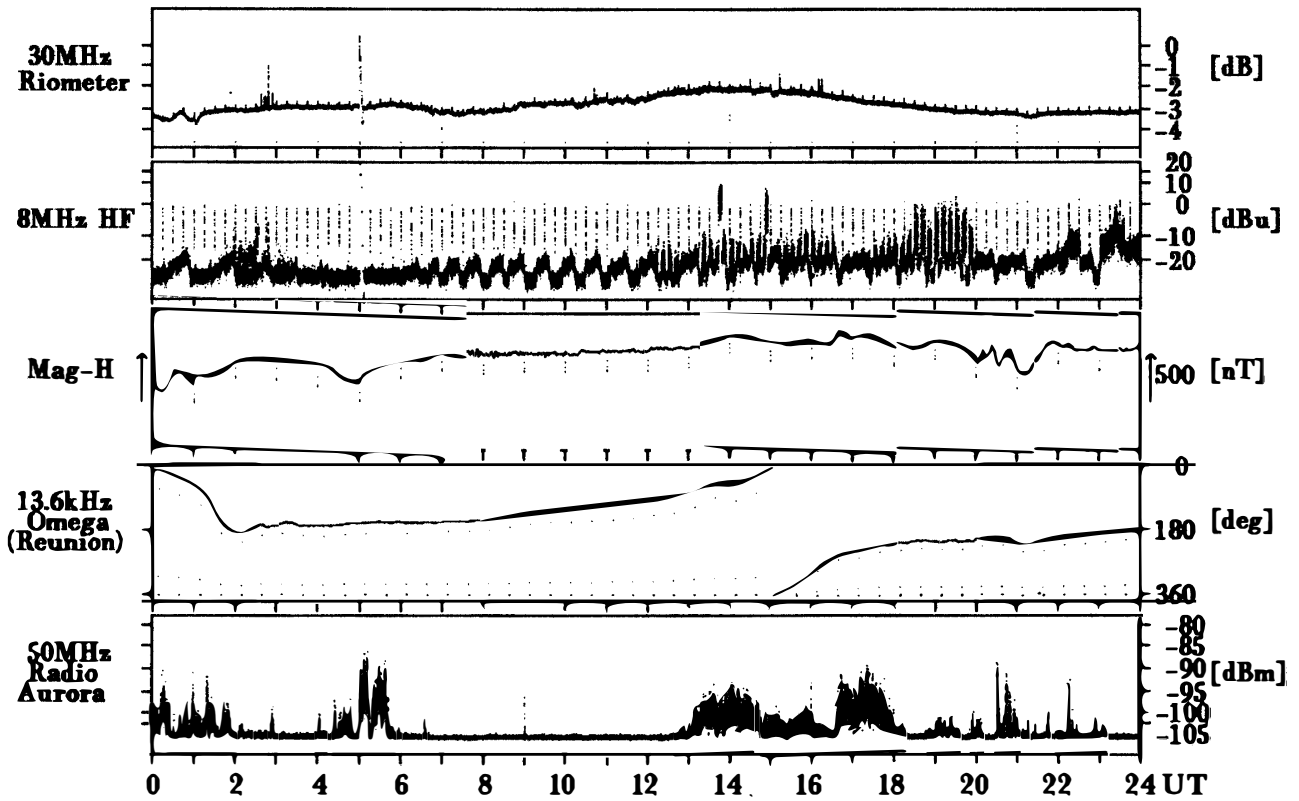
Syowa Station

Total Day / 287 1990/10/14



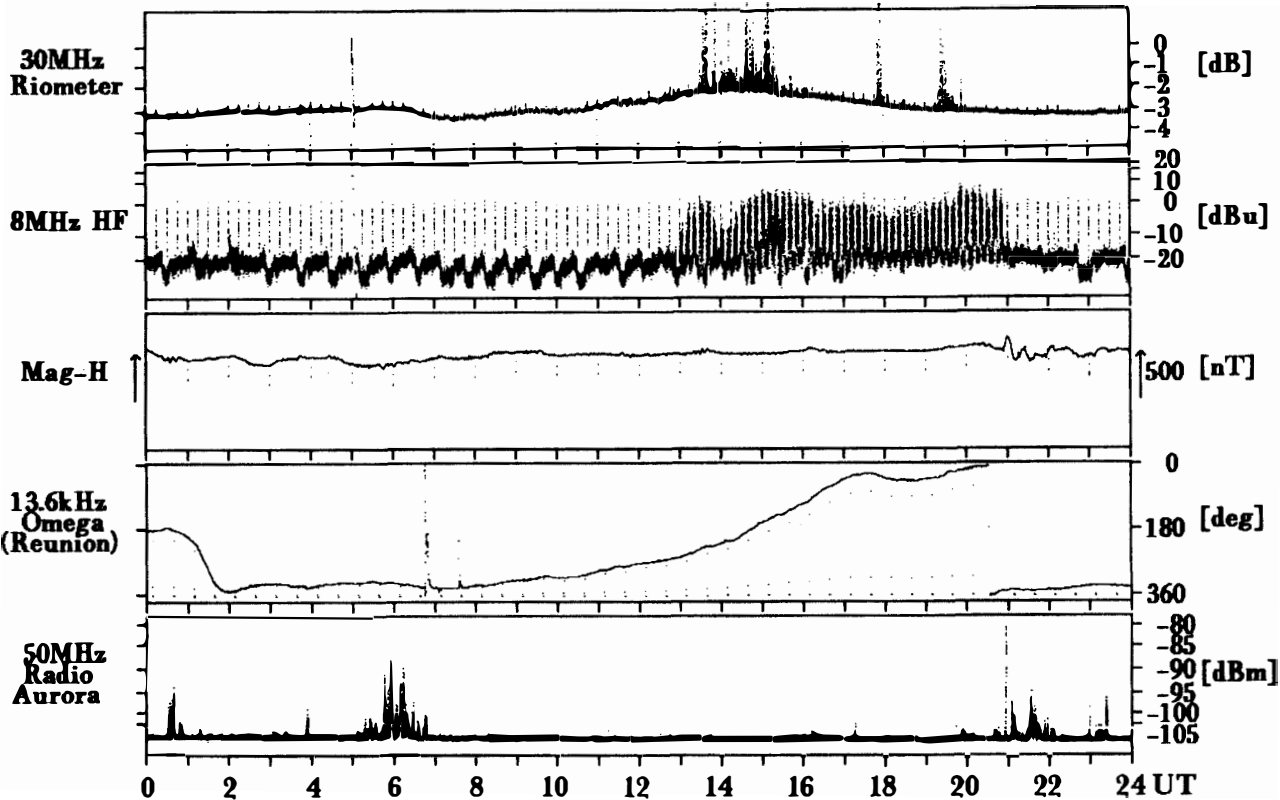
Syowa Station

Total Day / 288 1990/10/15



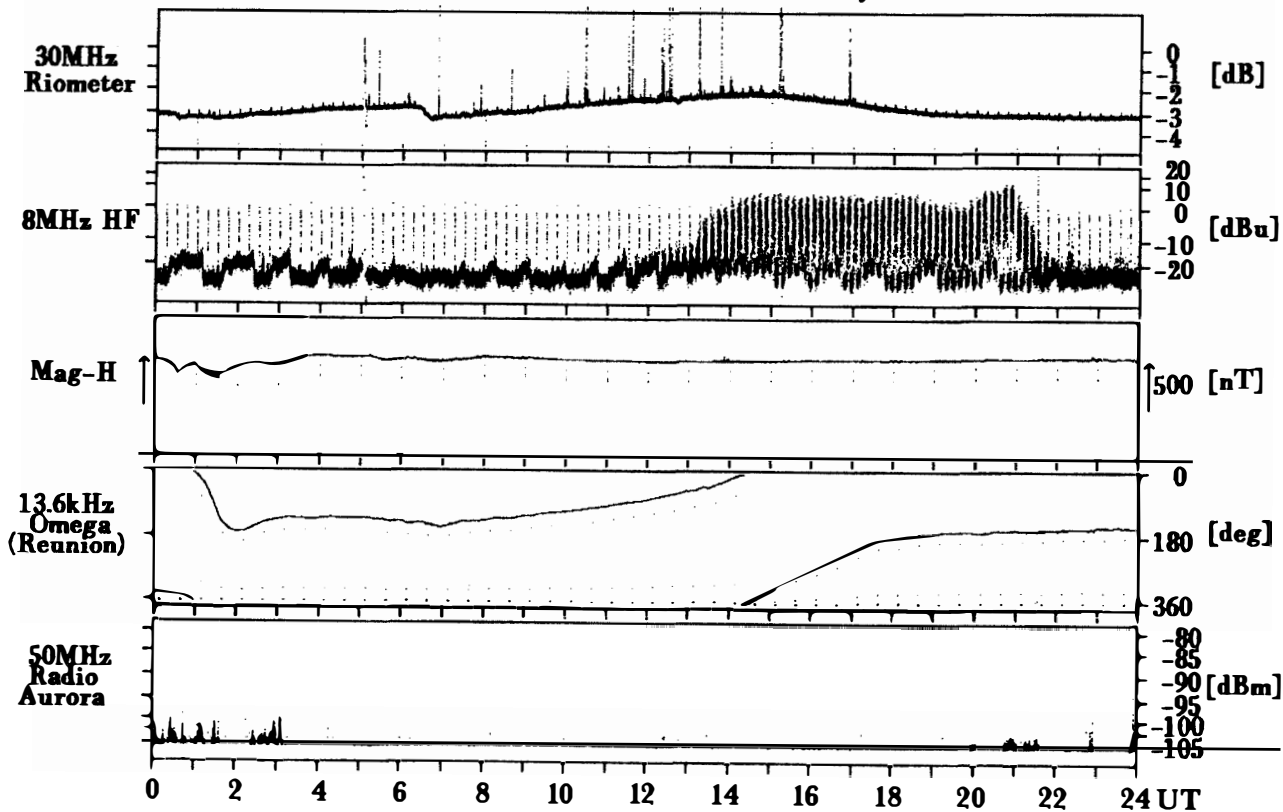
Syowa Station

Total Day / 289 1990/10/16



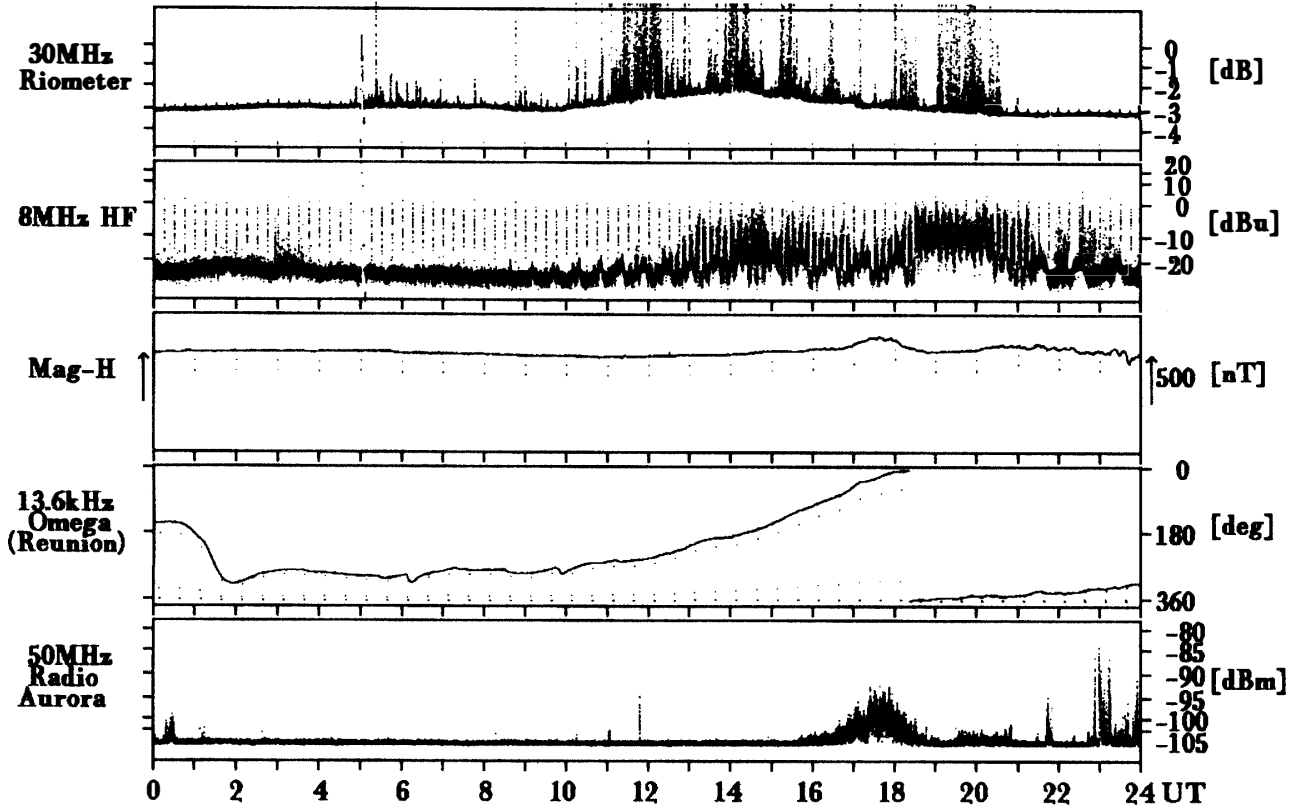
Syowa Station

Total Day / 290 1990/10/17



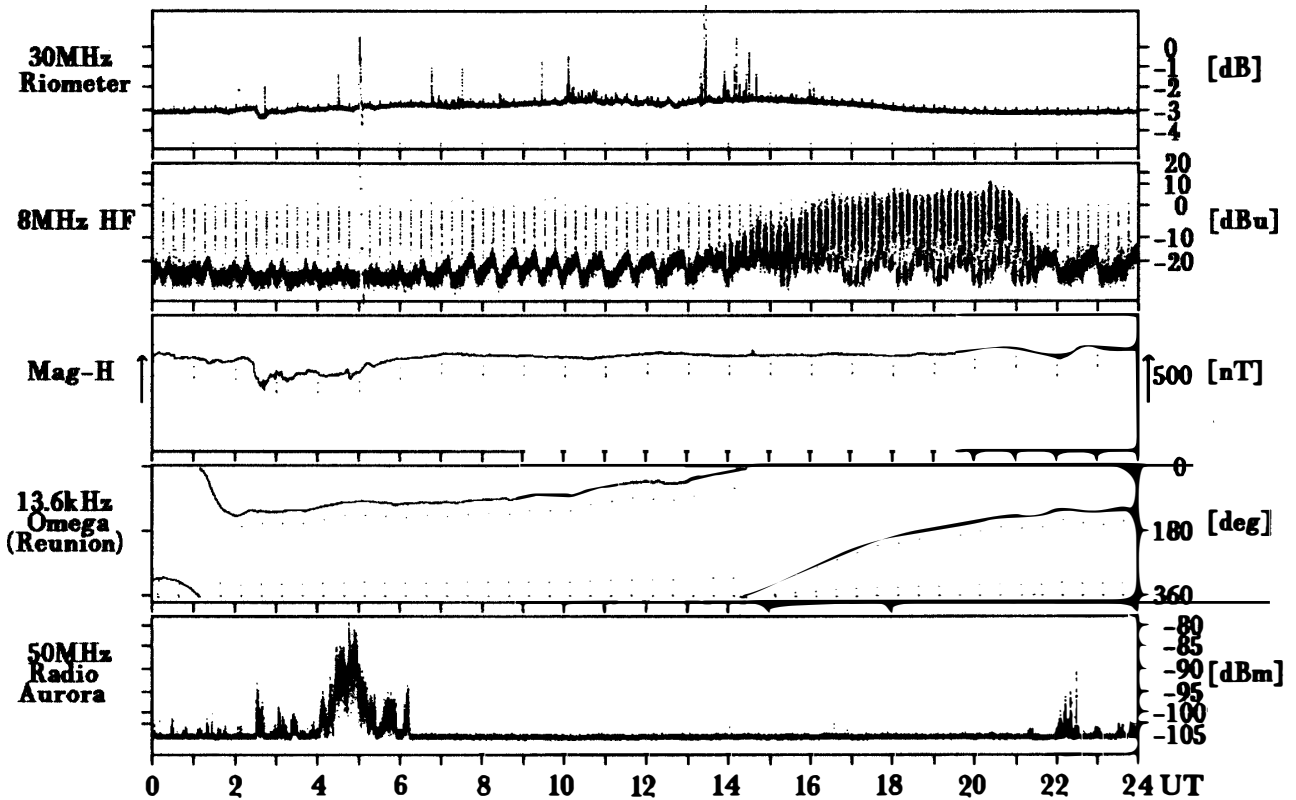
Syowa Station

Total Day / 291 1990/10/18



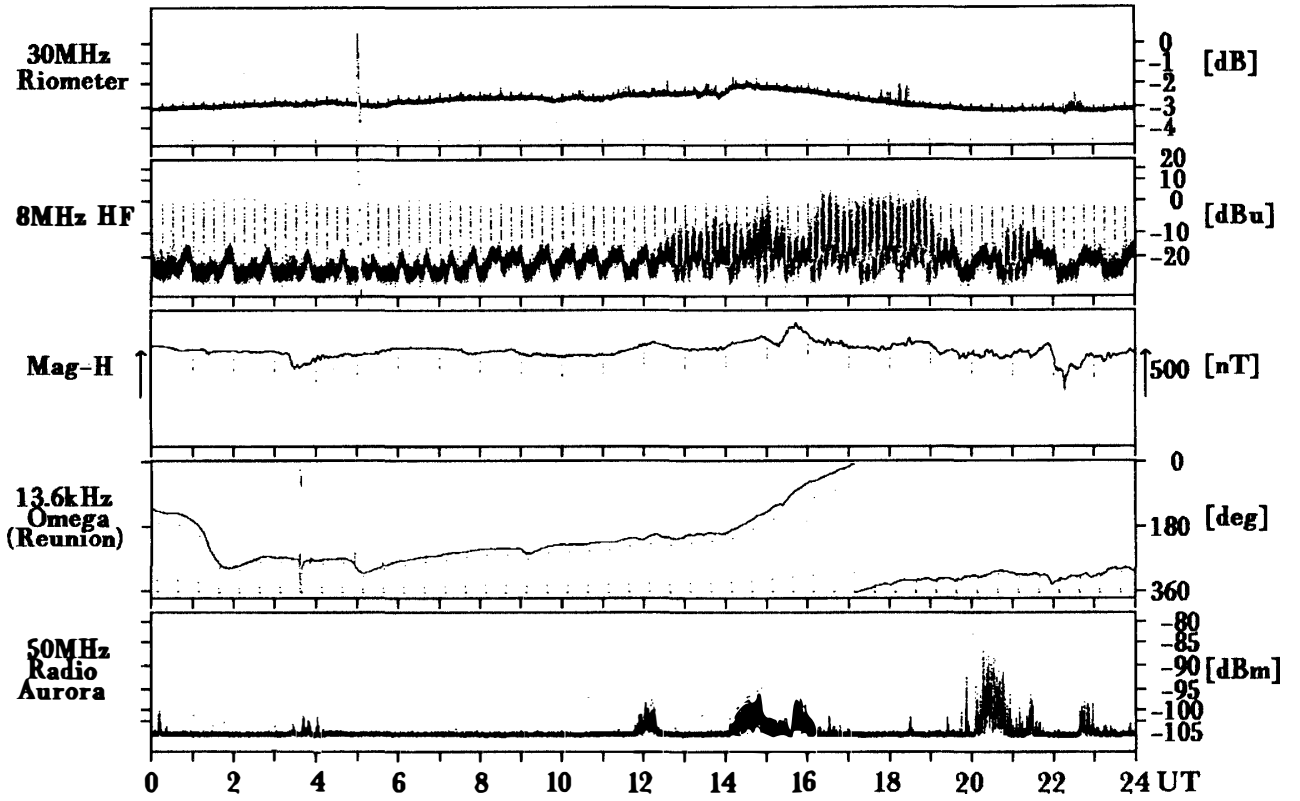
Syowa Station

Total Day / 292 1990/10/19



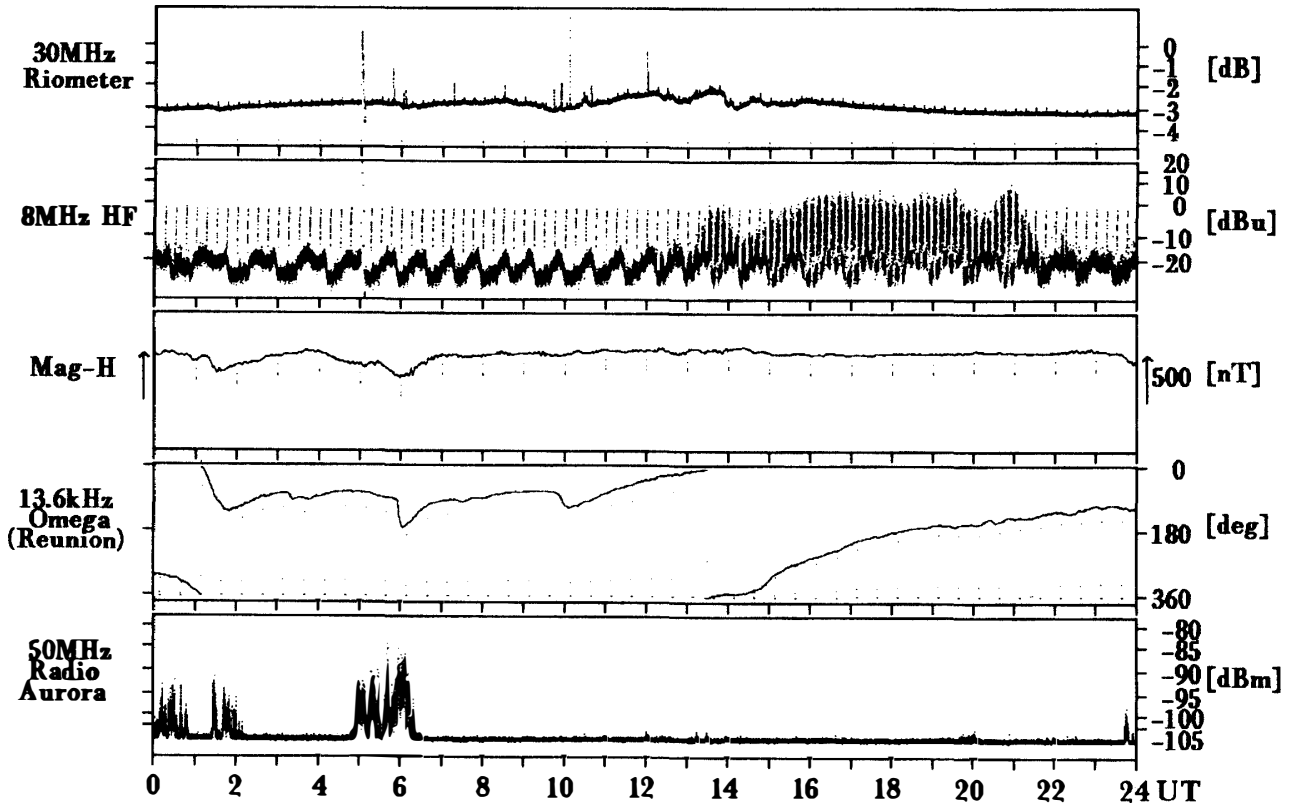
Syowa Station

Total Day / 293 1990/10/20



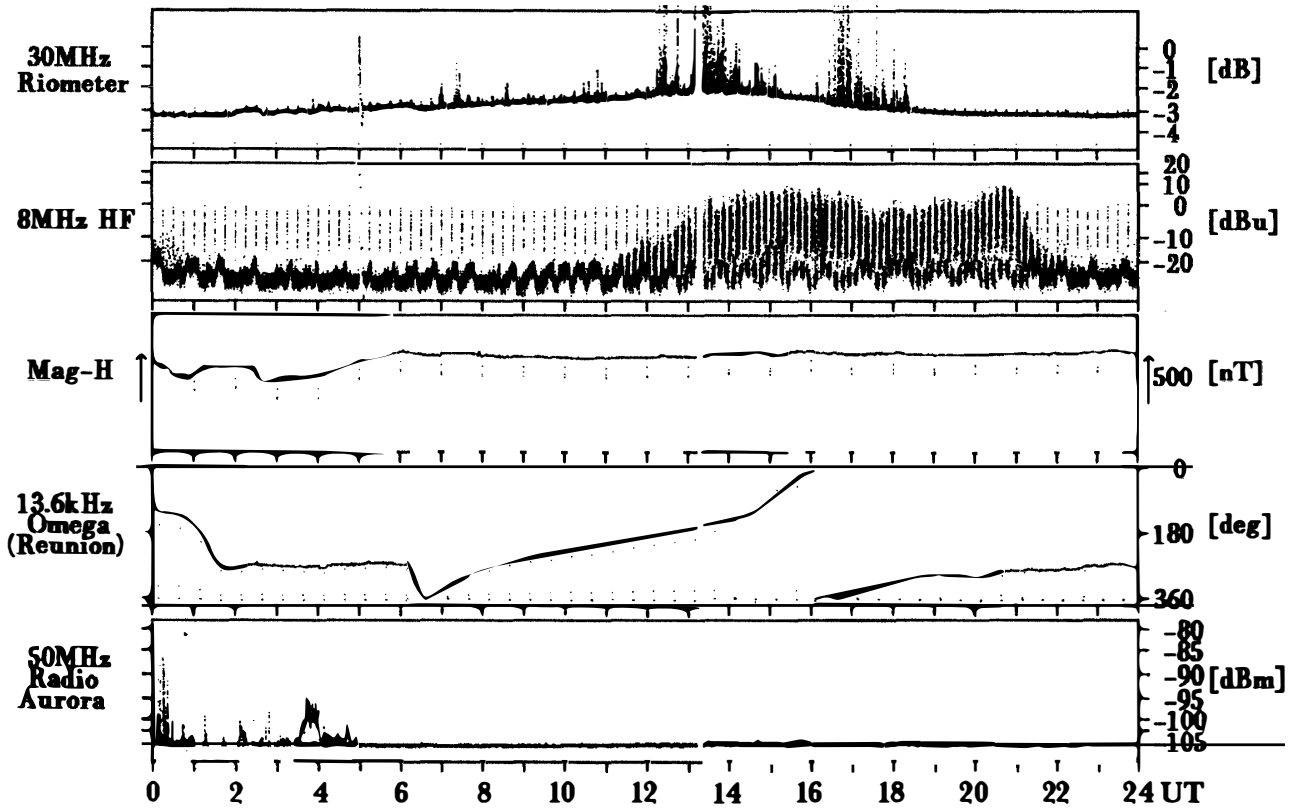
Syowa Station

Total Day / 294 1990/10/21



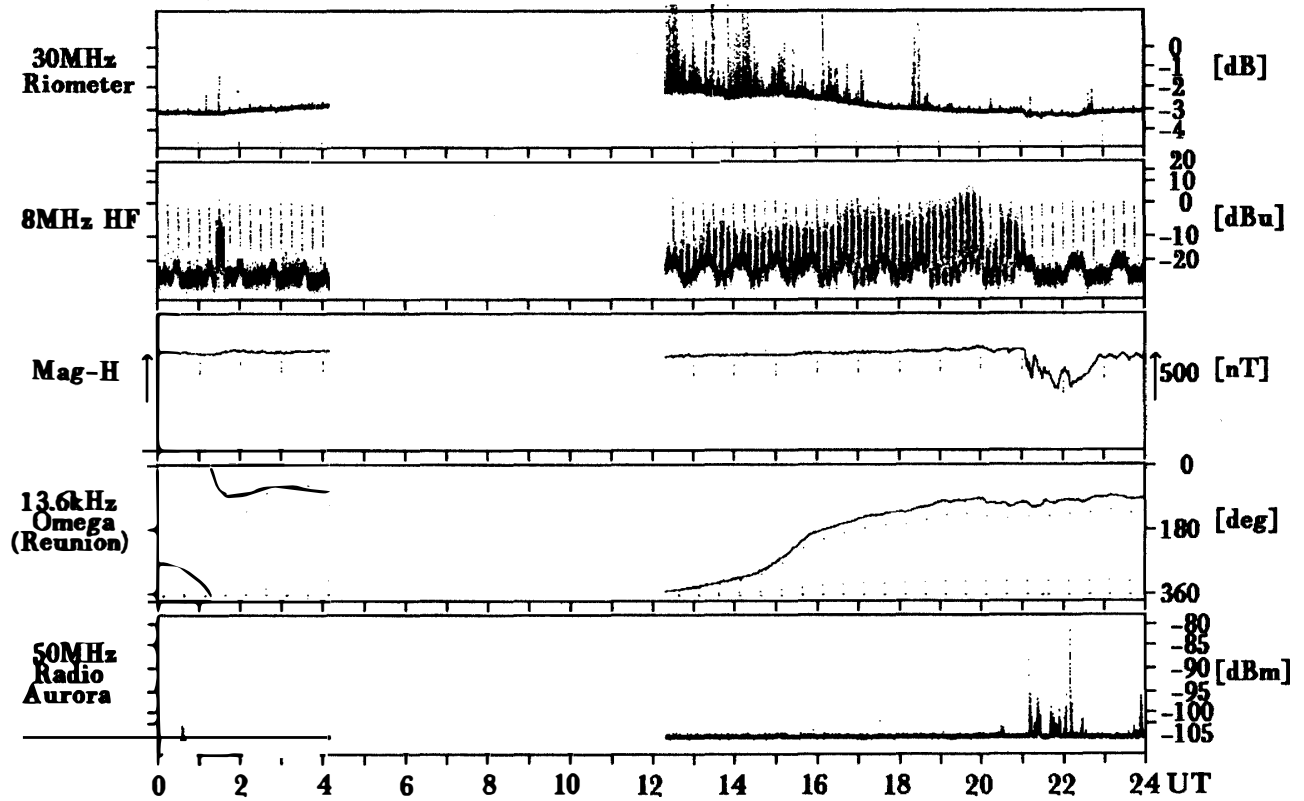
Syowa Station

Total Day / 295 1990/10/22



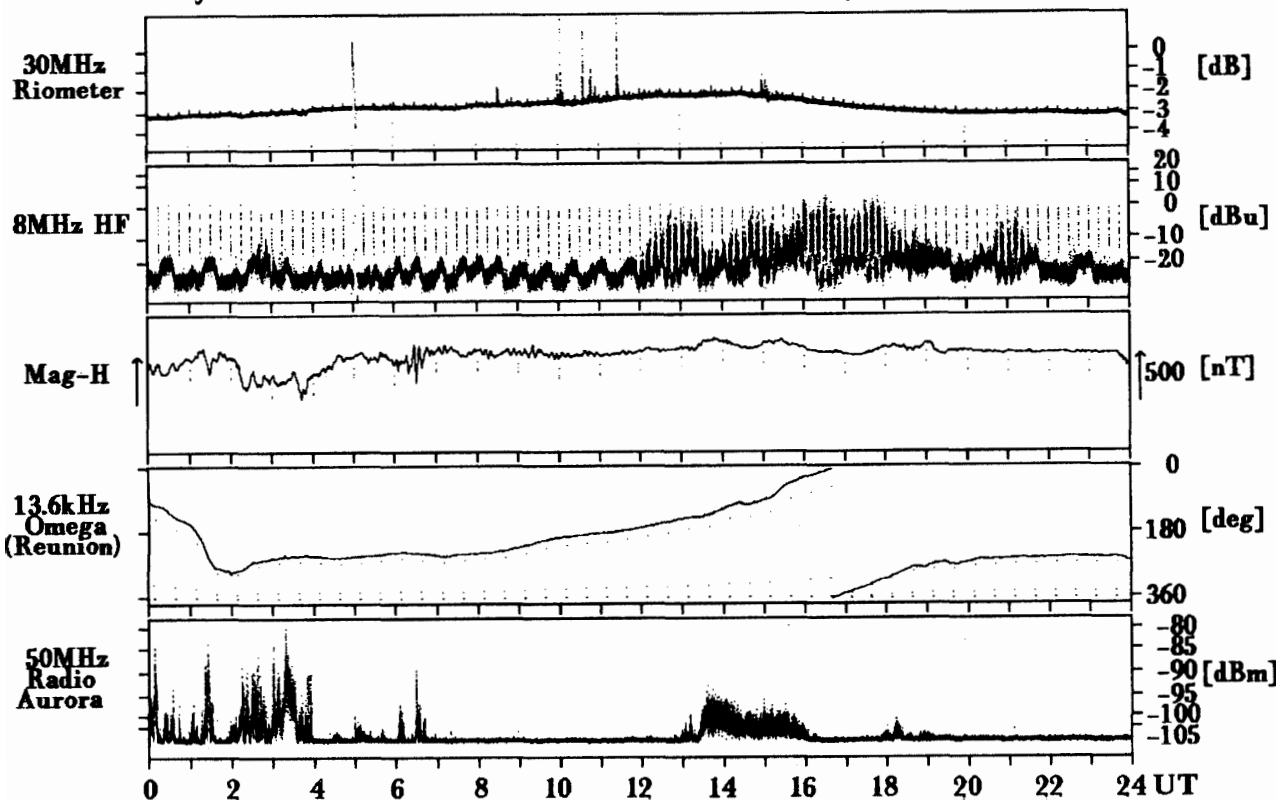
Syowa Station

Total Day / 296 1990/10/23



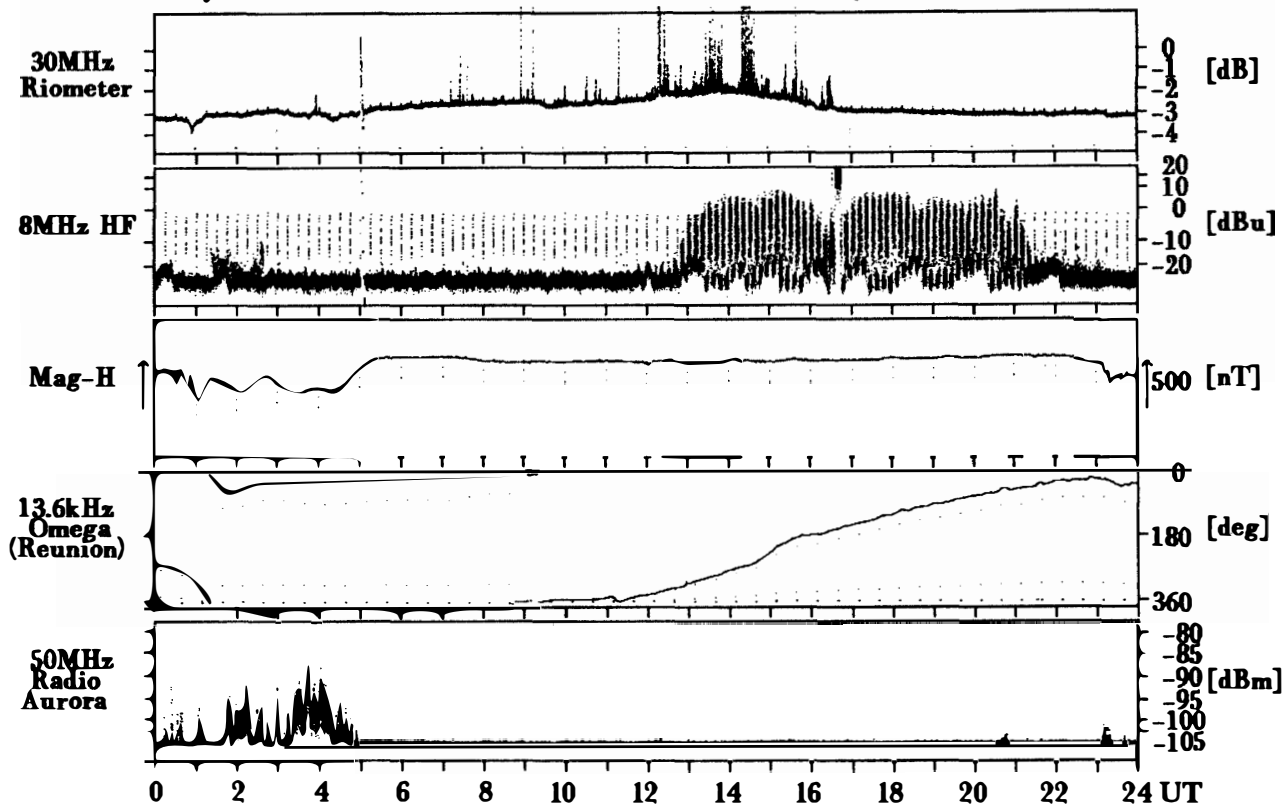
Syowa Station

Total Day / 297 1990/10/24



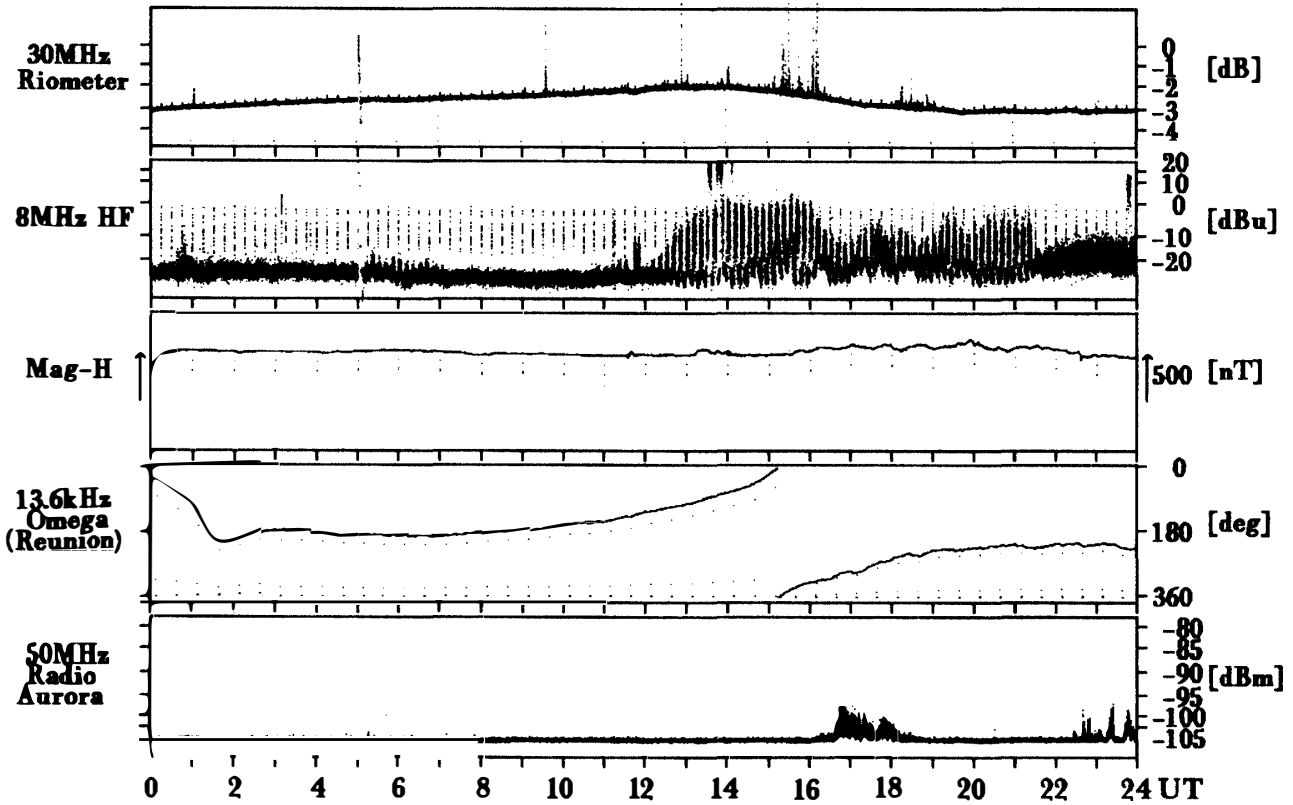
Syowa Station

Total Day / 298 1990/10/25



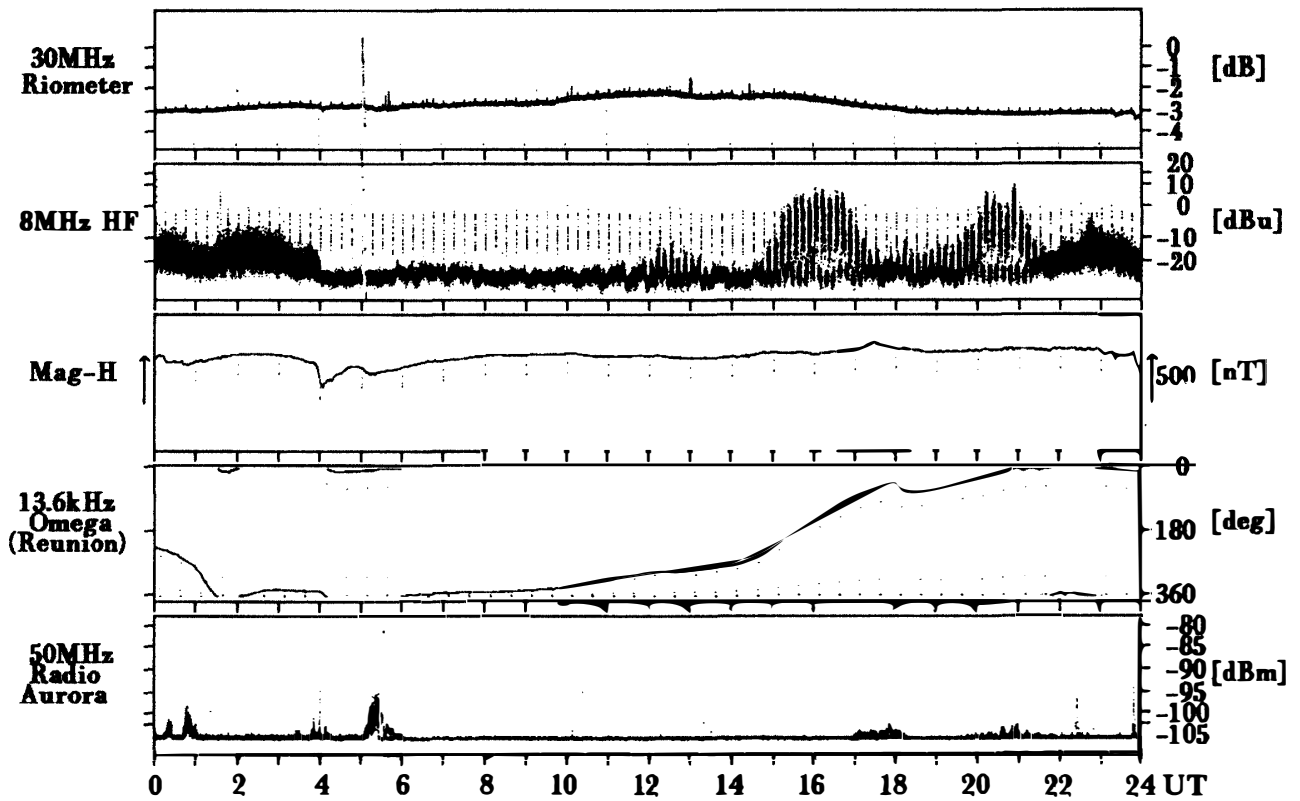
Syowa Station

Total Day / 299 1990/10/26



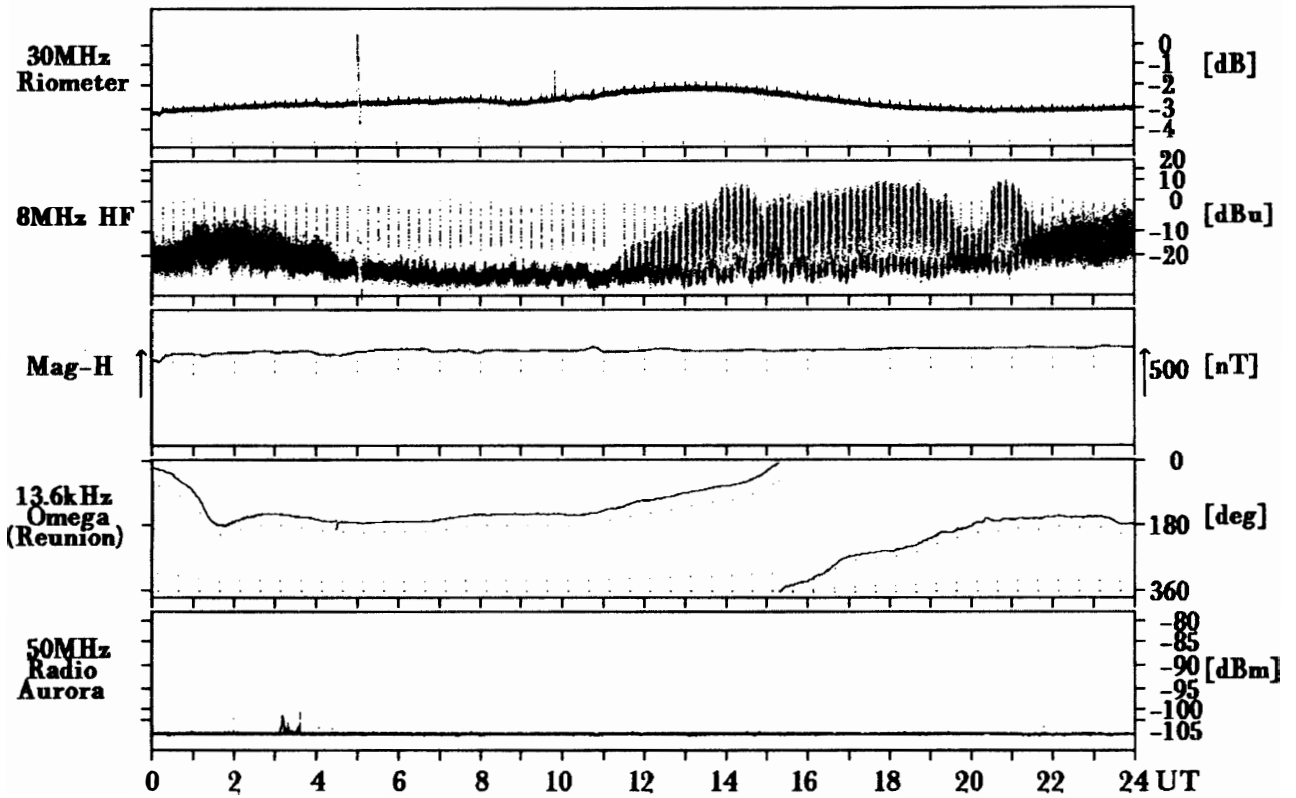
Syowa Station

Total Day / 300 1990/10/27



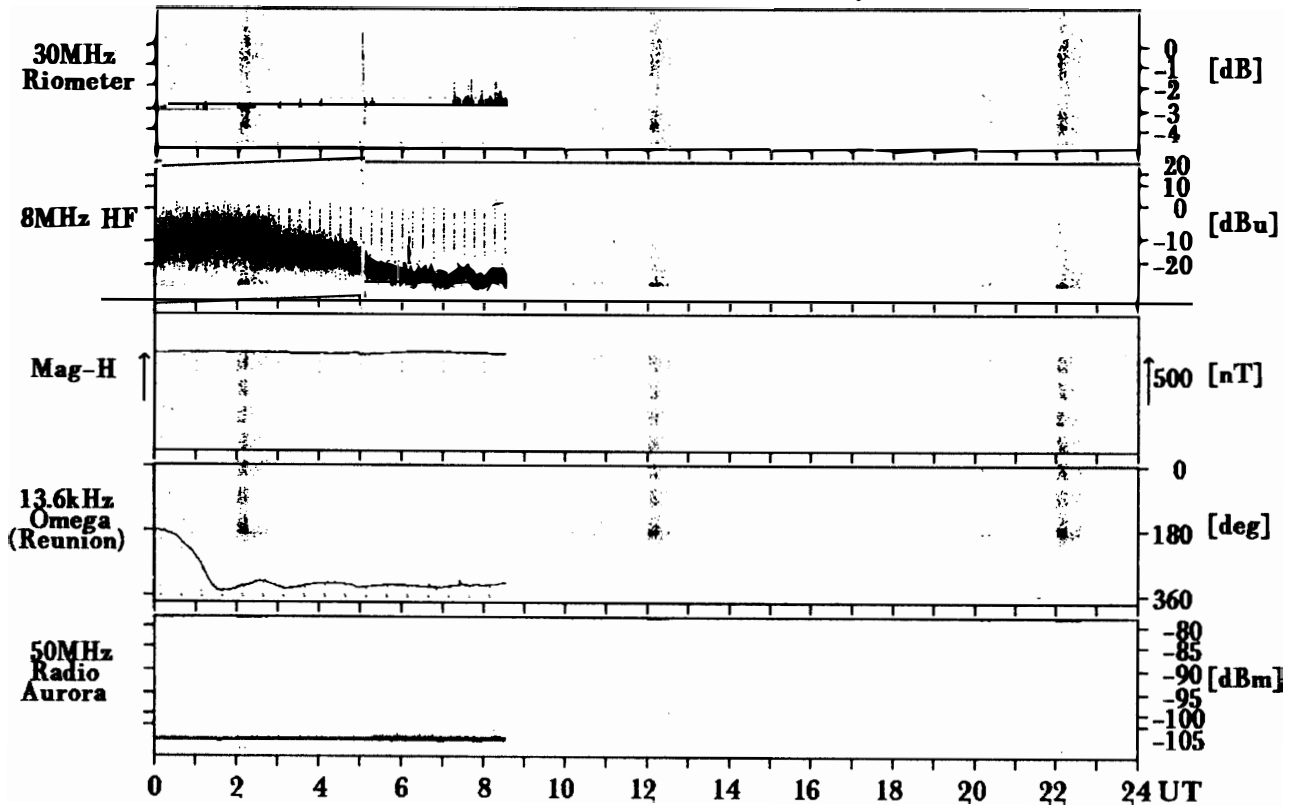
Syowa Station

Total Day / 301 1990/10/28



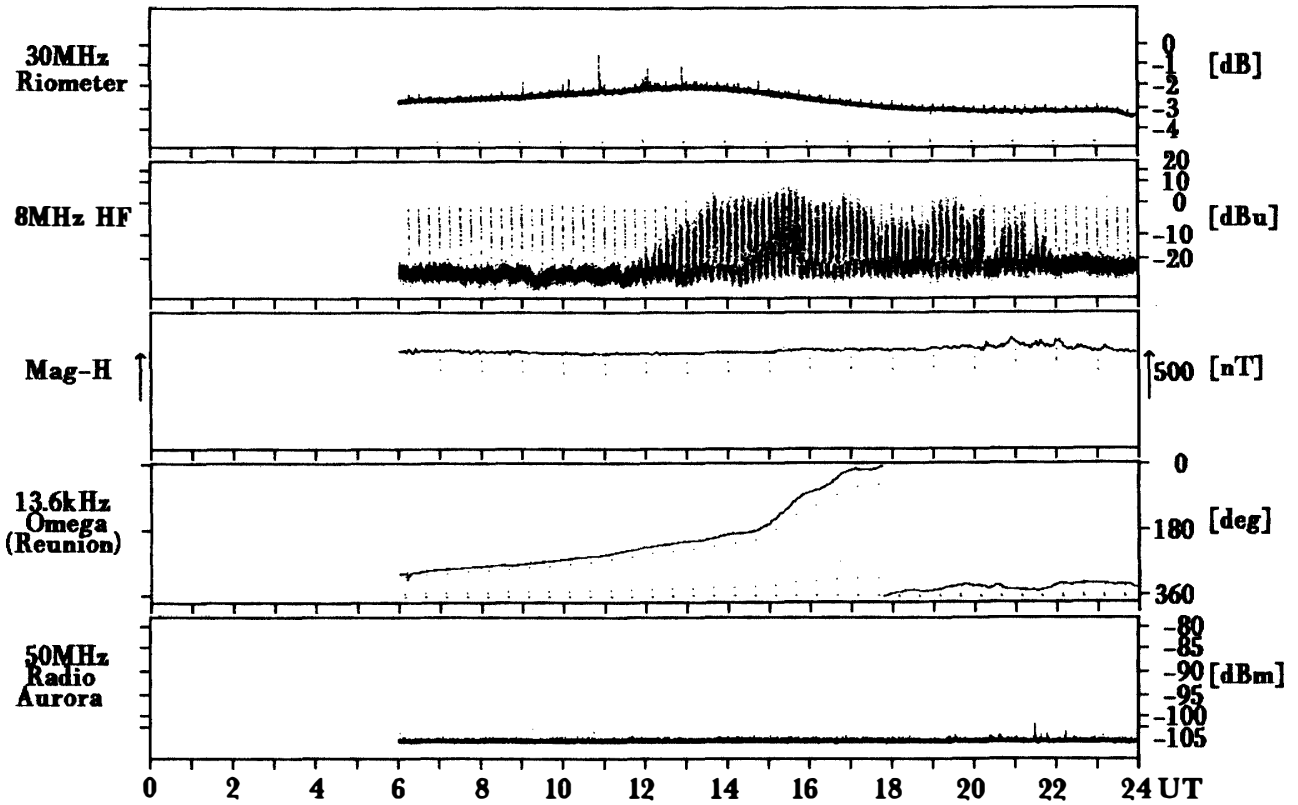
Syowa Station

Total Day / 302 1990/10/29



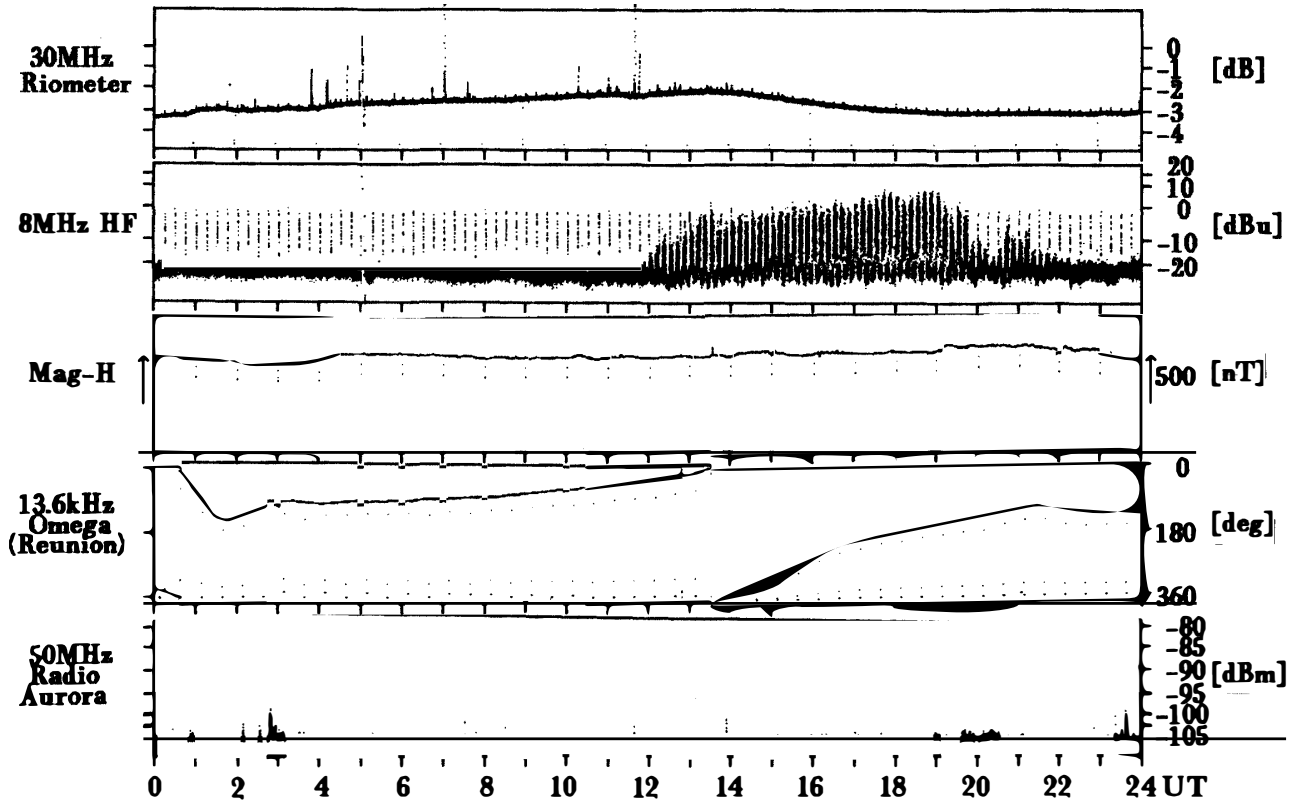
Syowa Station

Total Day / 306 1990/11/ 2



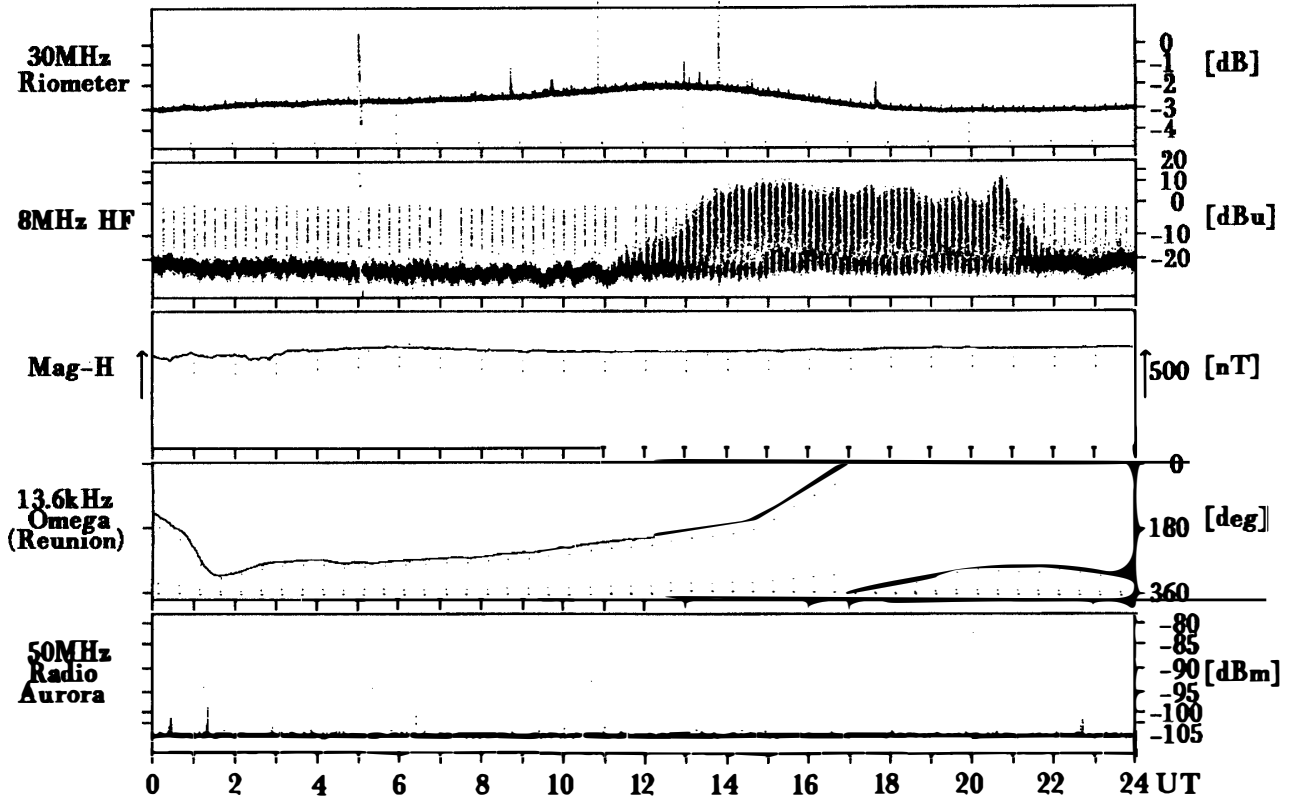
Syowa Station

Total Day / 307 1990/11/ 3



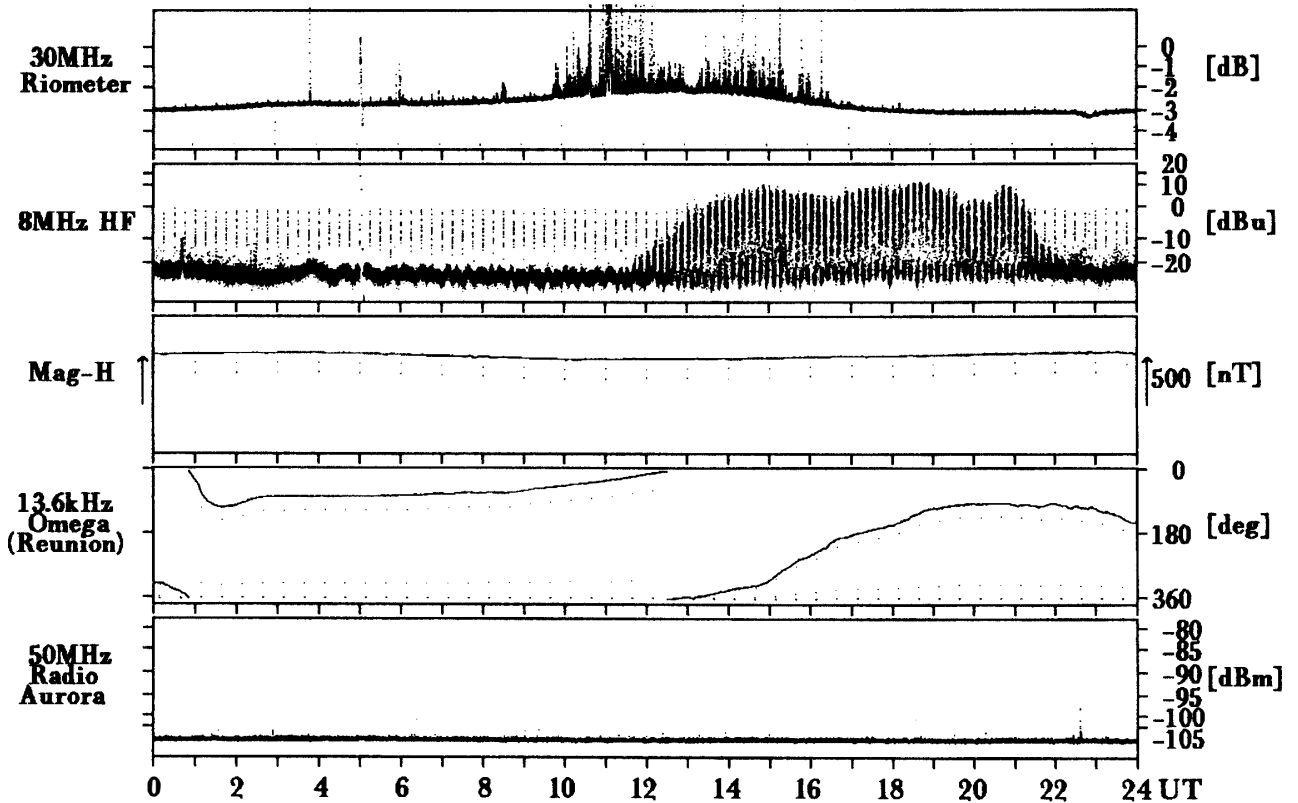
Syowa Station

Total Day / 308 1990/11/ 4



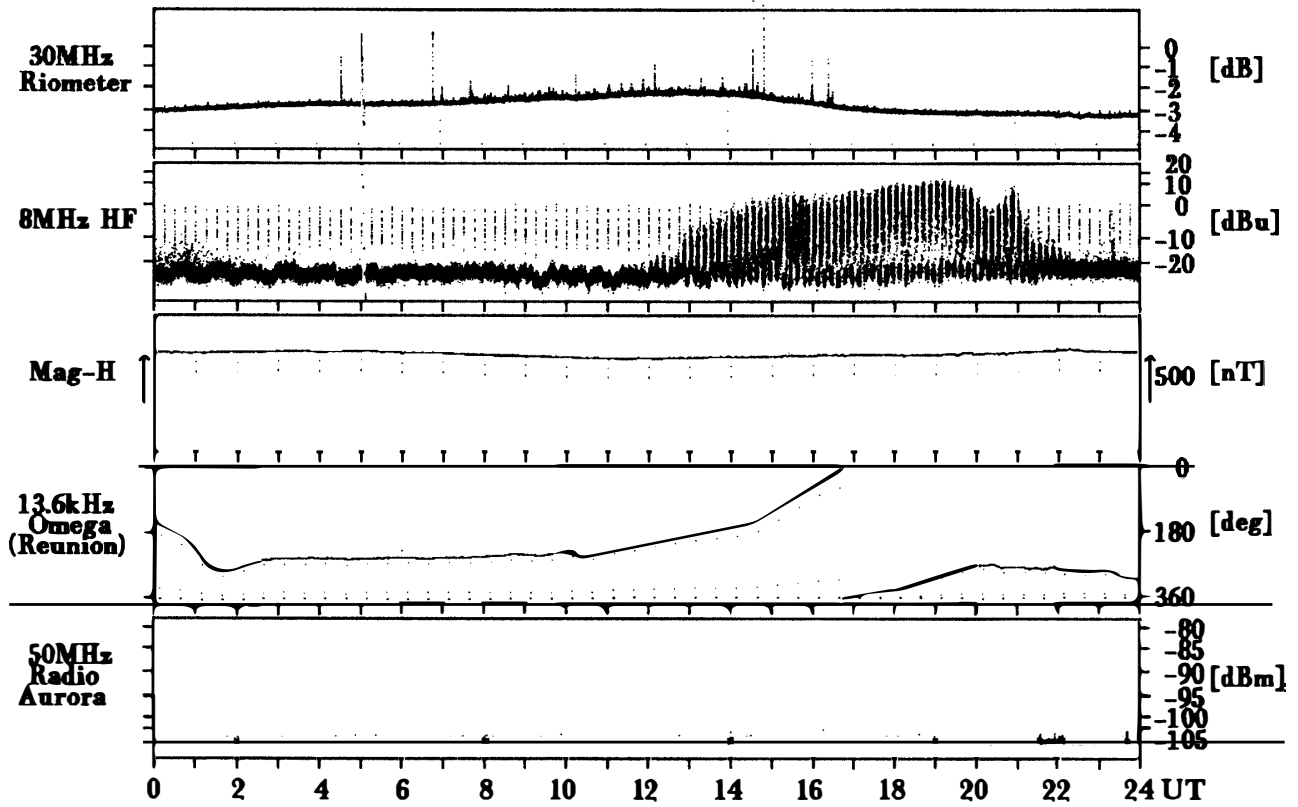
Syowa Station

Total Day / 309 1990/11/ 5



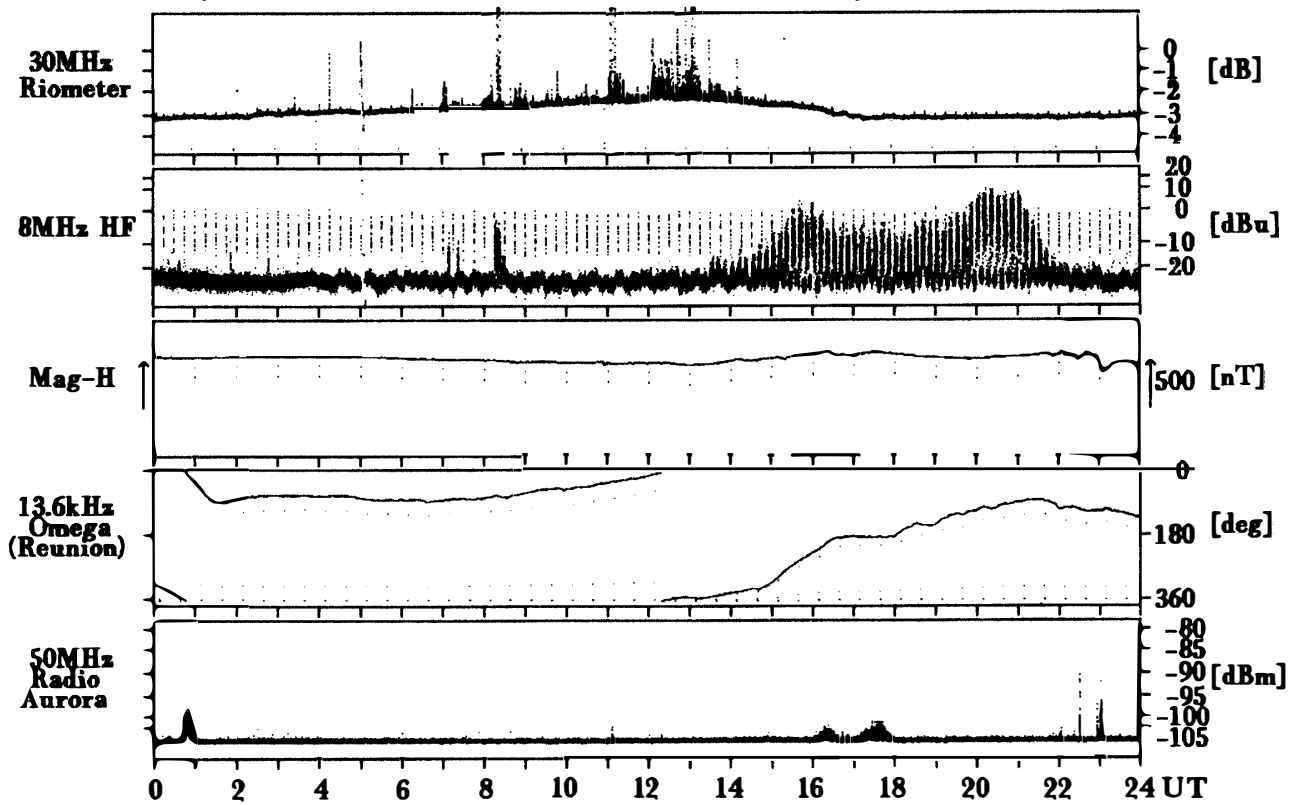
Syowa Station

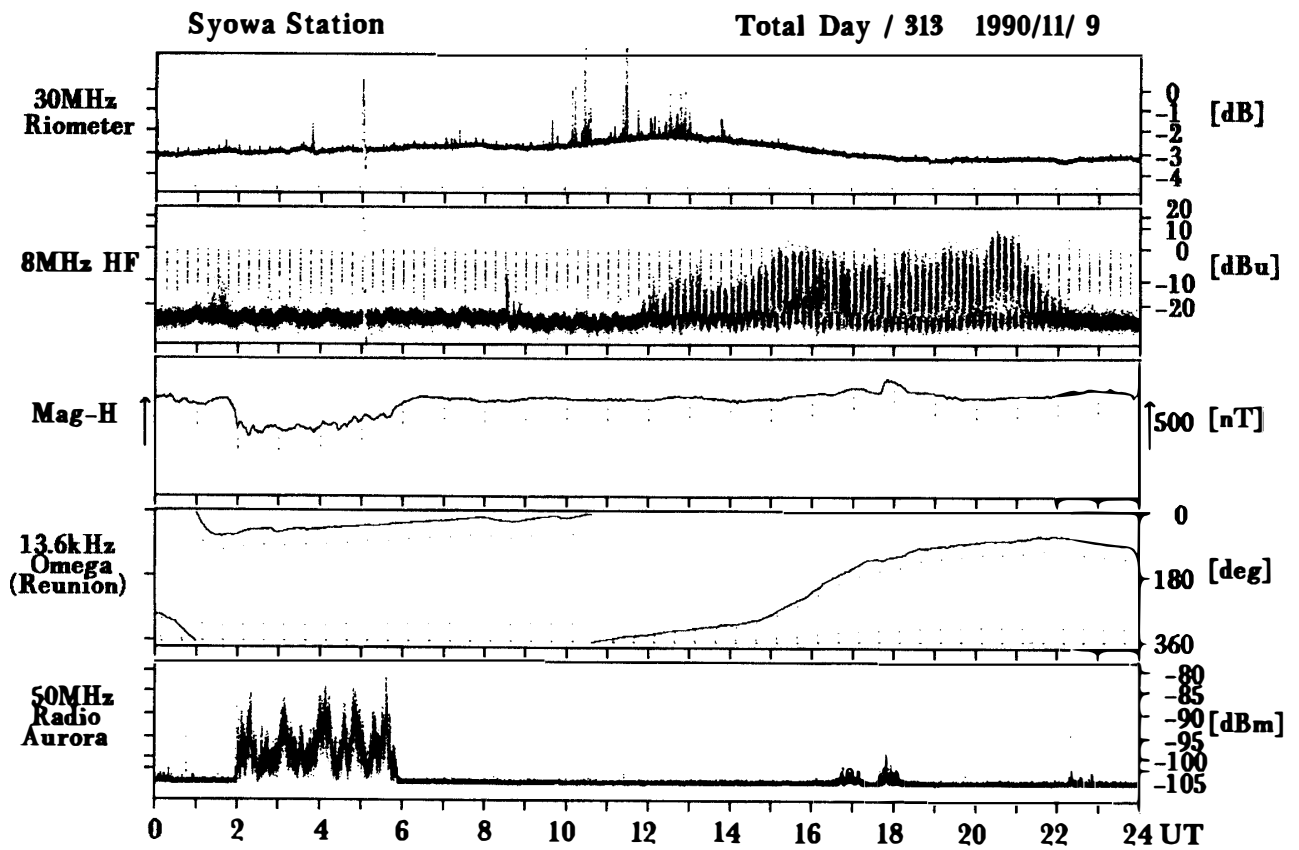
Total Day / 310 1990/11/ 6



Syowa Station

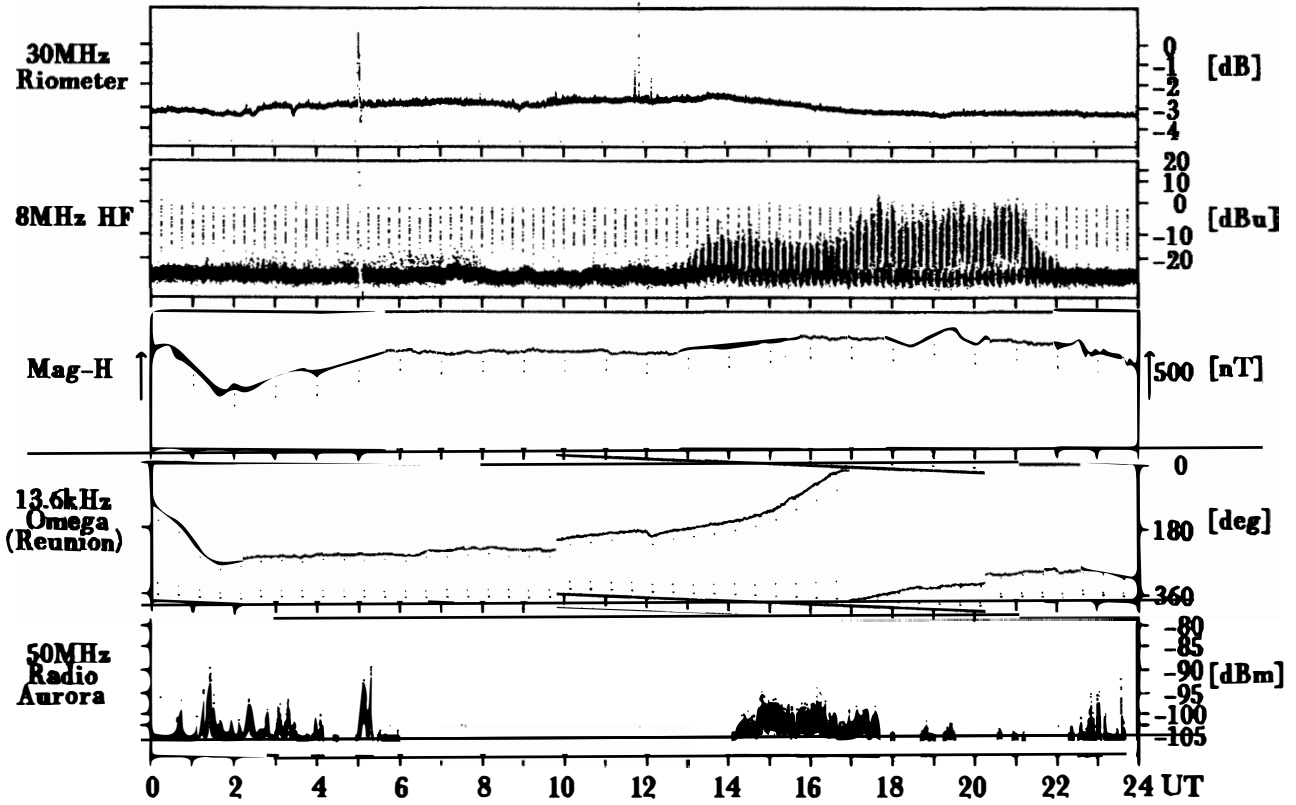
Total Day / 311 1990/11/ 7





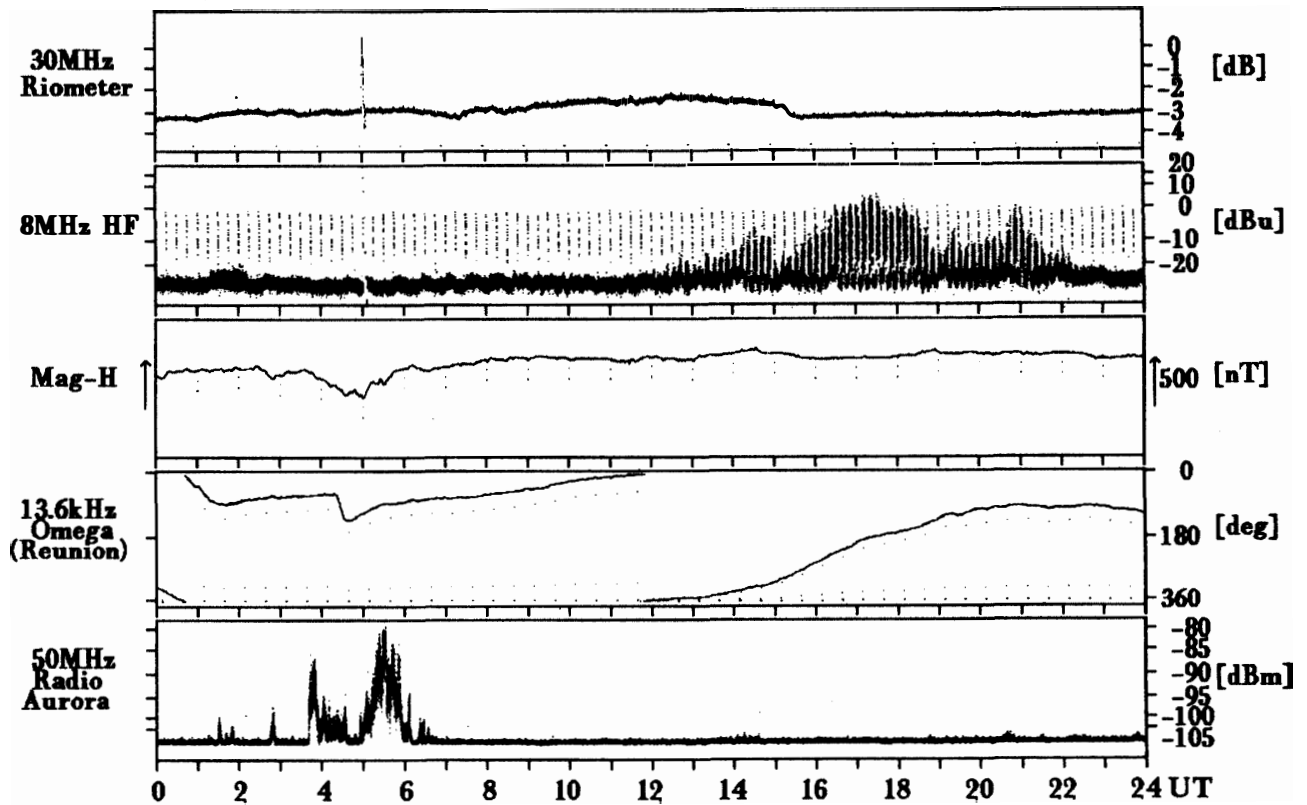
Syowa Station

Total Day / 314 1990/11/10



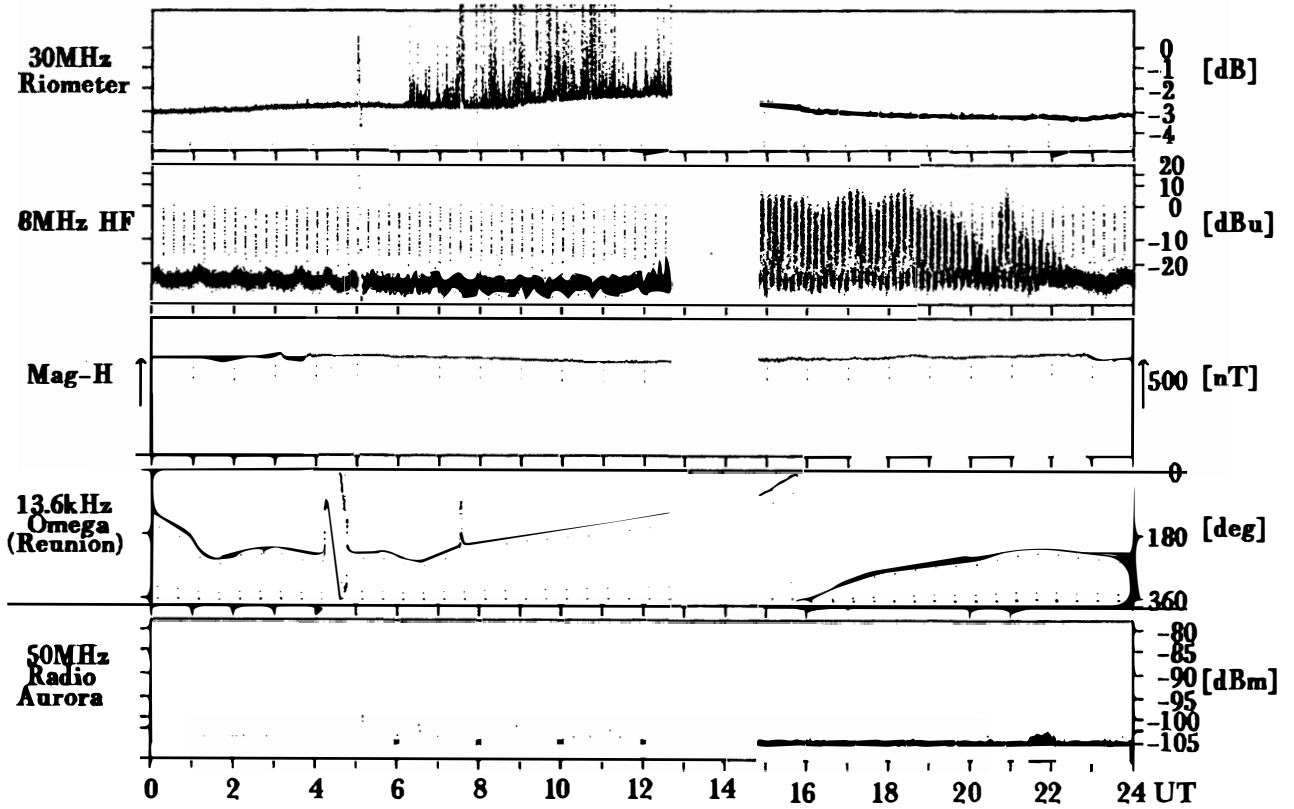
Syowa Station

Total Day / 315 1990/11/11



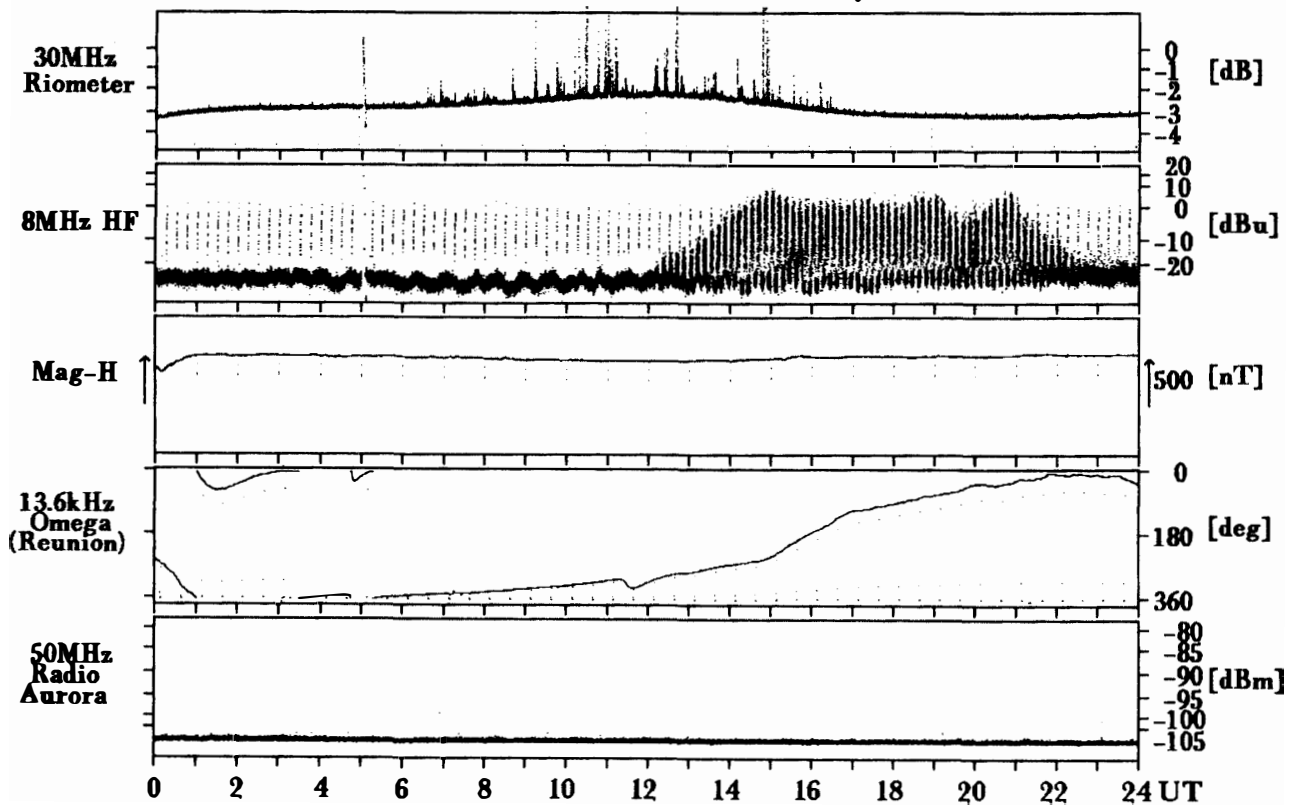
Syowa Station

Total Day / 316 1990/11/12



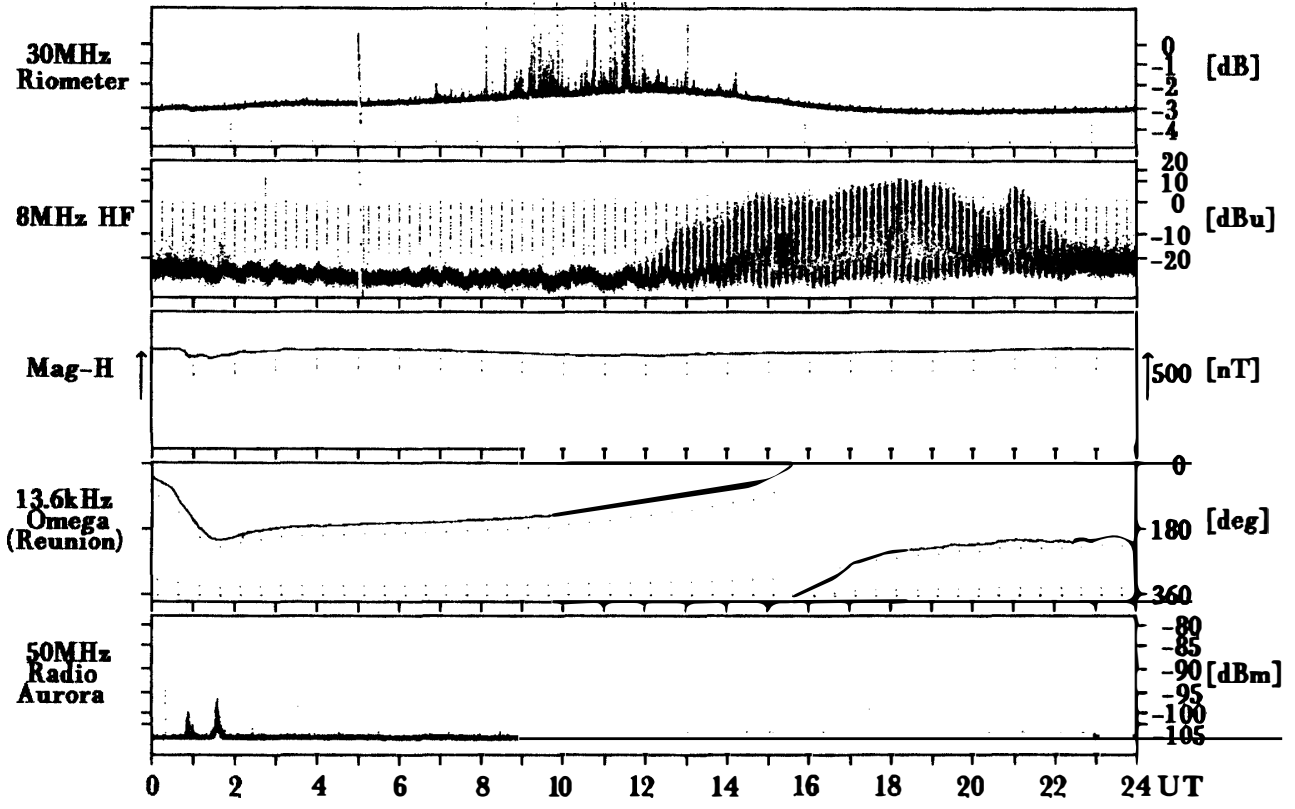
Syowa Station

Total Day / 317 1990/11/13



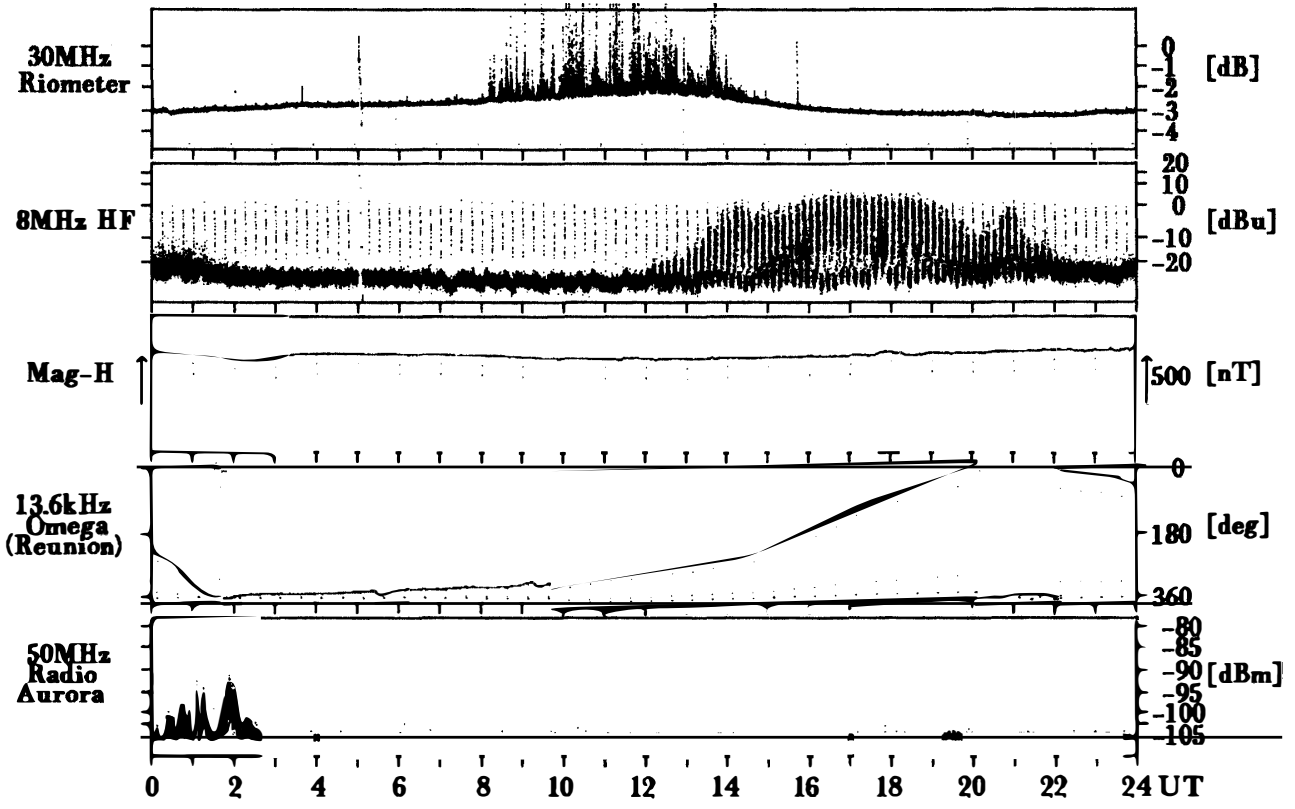
Syowa Station

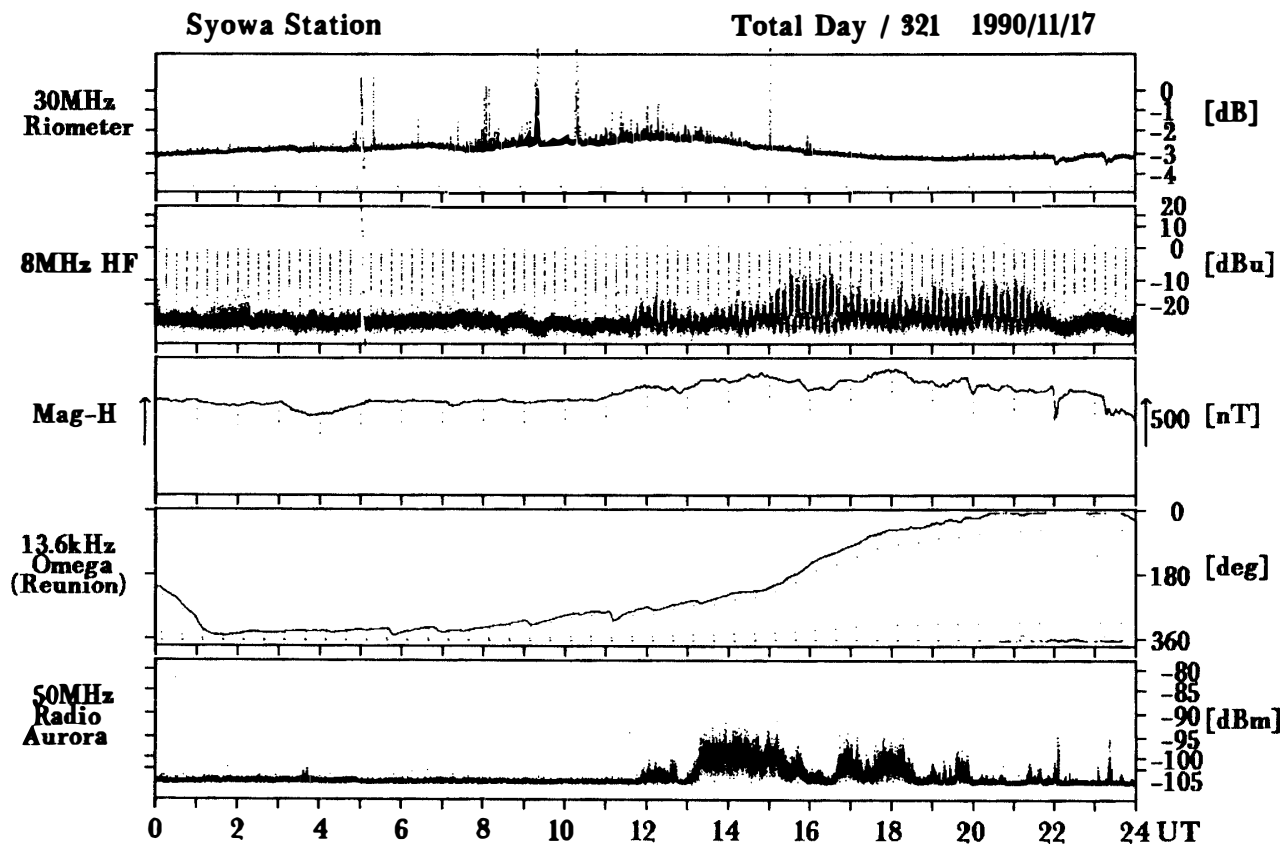
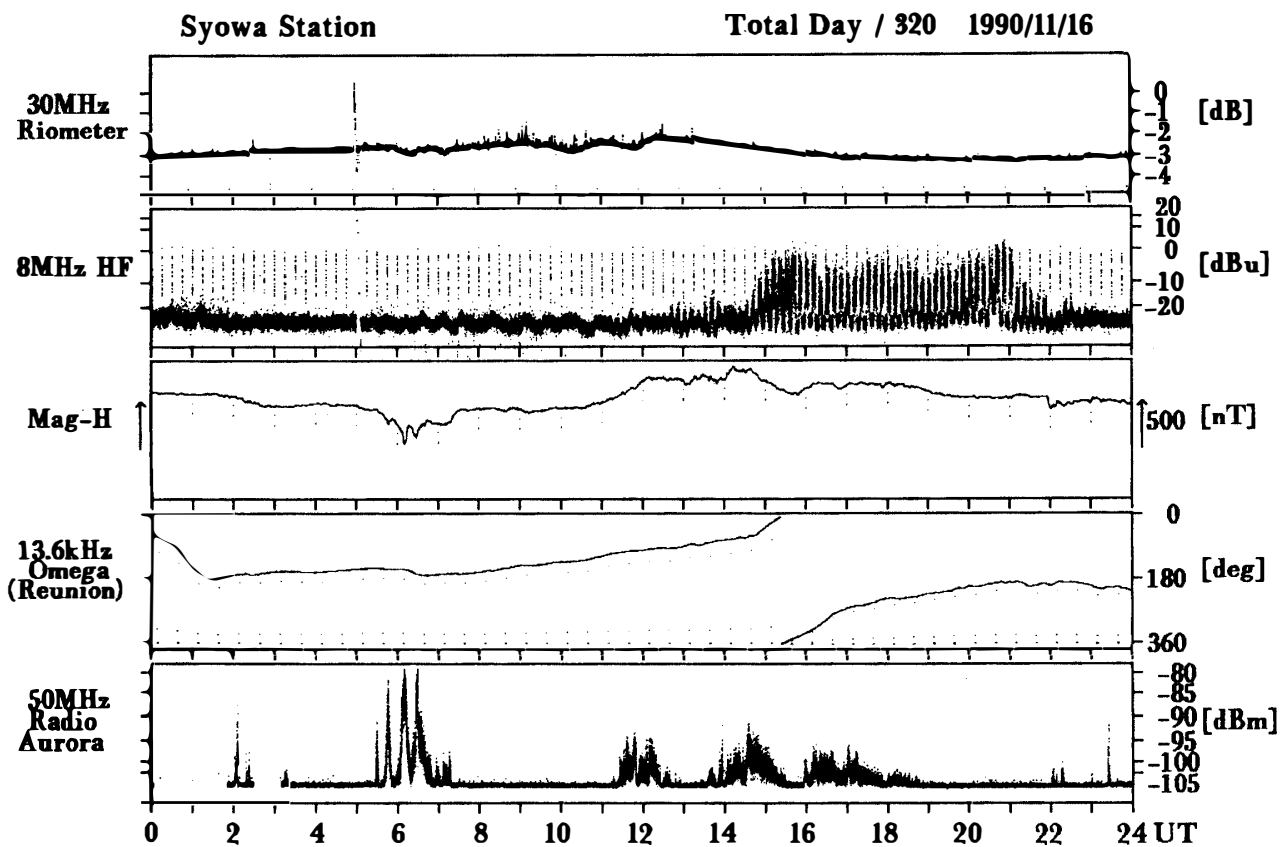
Total Day / 318 1990/11/14



Syowa Station

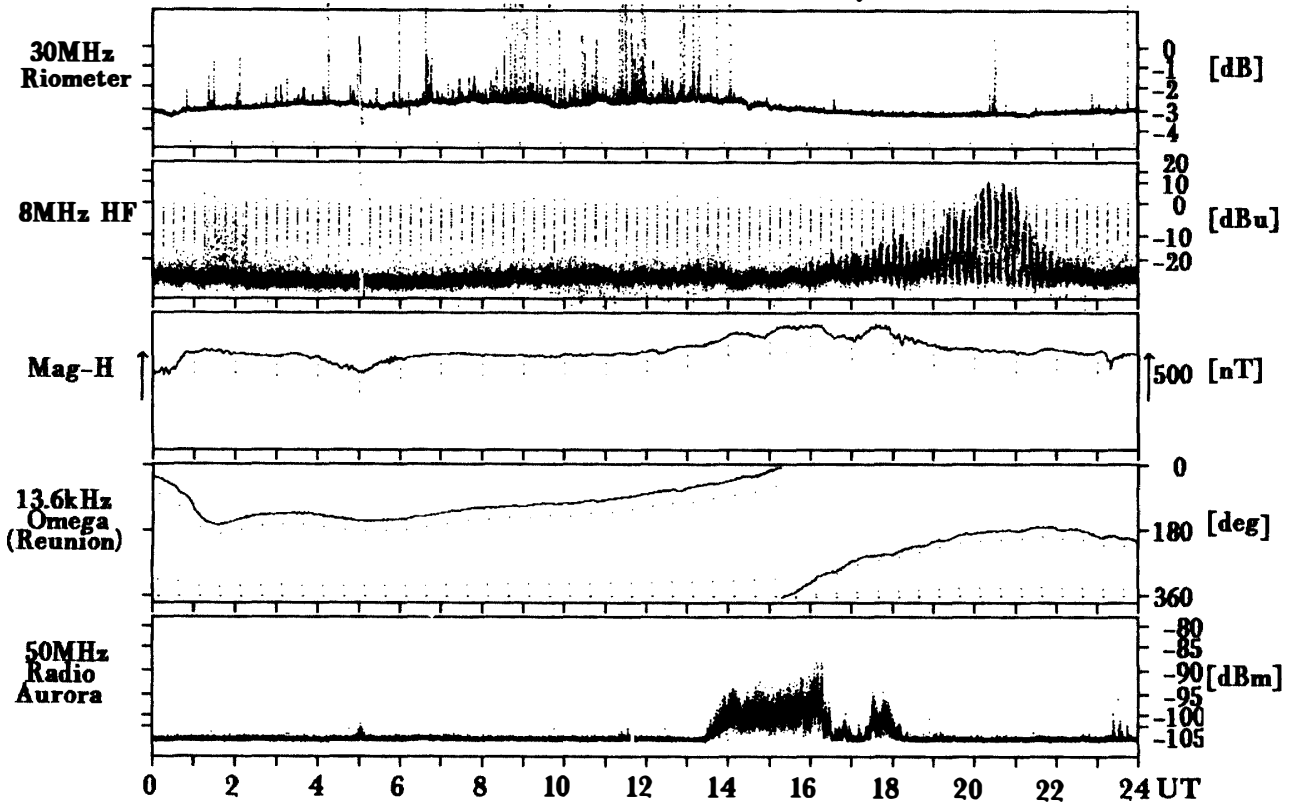
Total Day / 319 1990/11/15





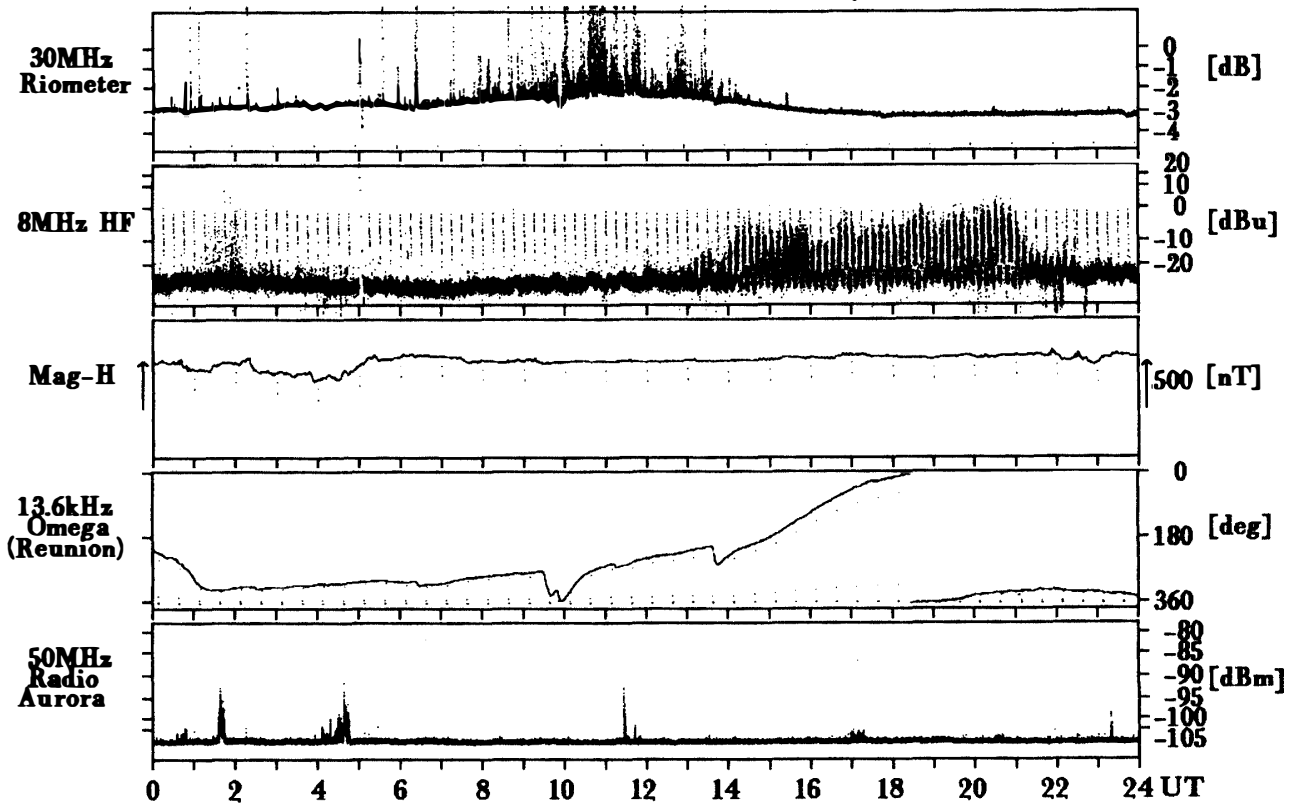
Syowa Station

Total Day / 322 1990/11/18



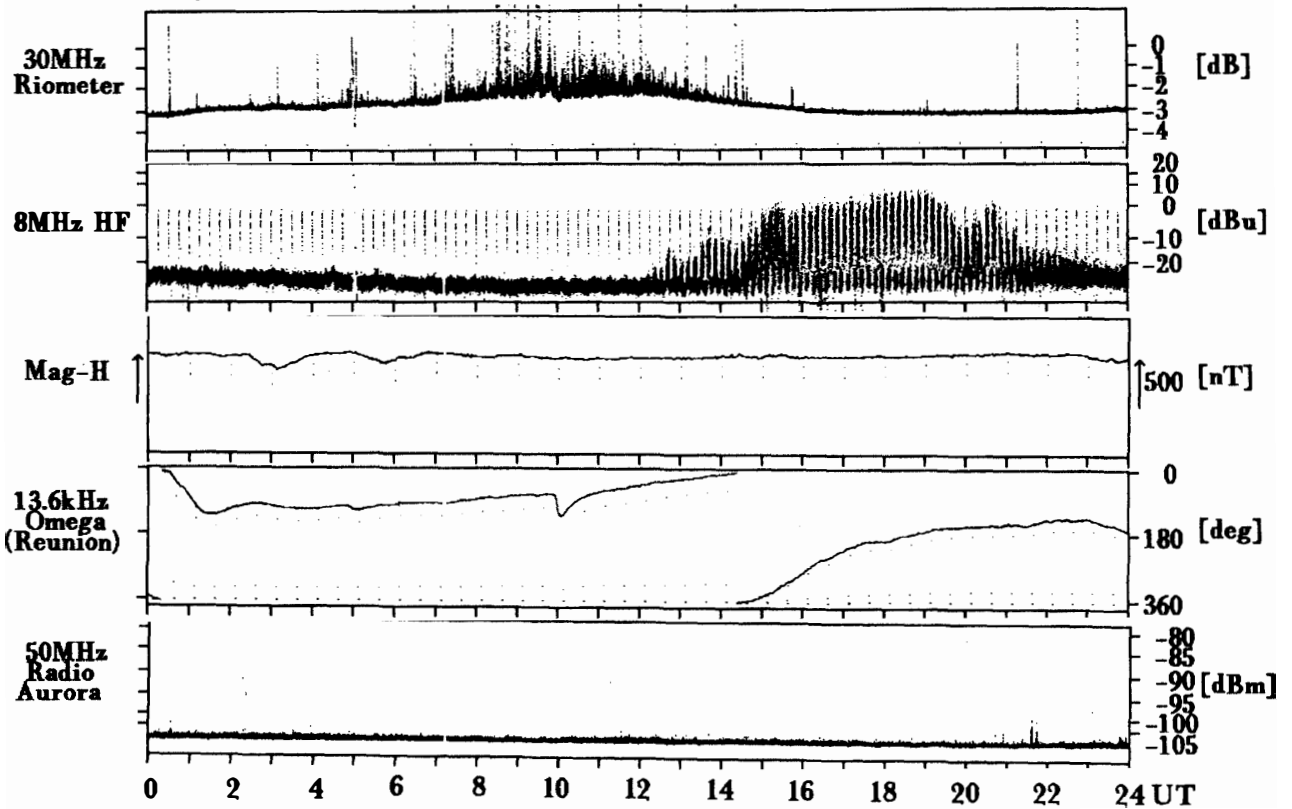
Syowa Station

Total Day / 323 1990/11/19



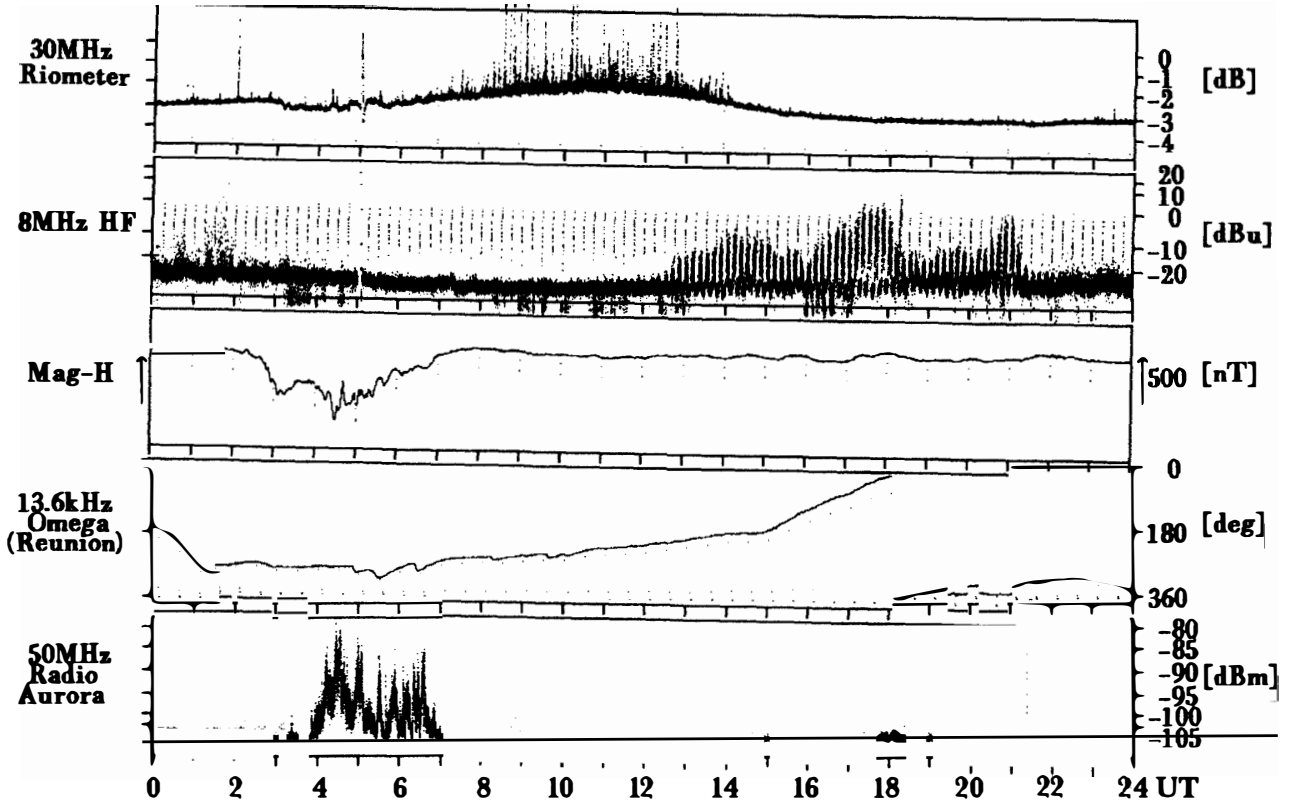
Syowa Station

Total Day / 324 1990/11/20



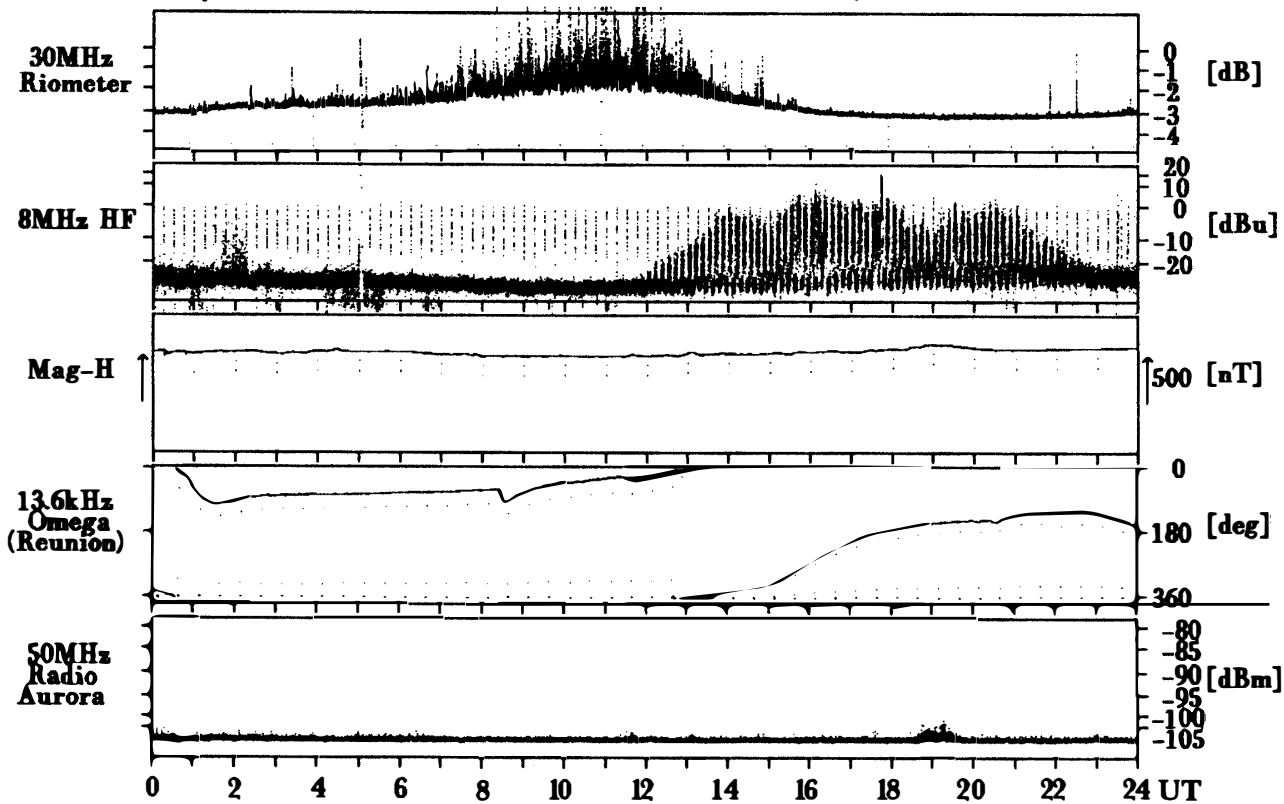
Syowa Station

Total Day / 325 1990/11/21



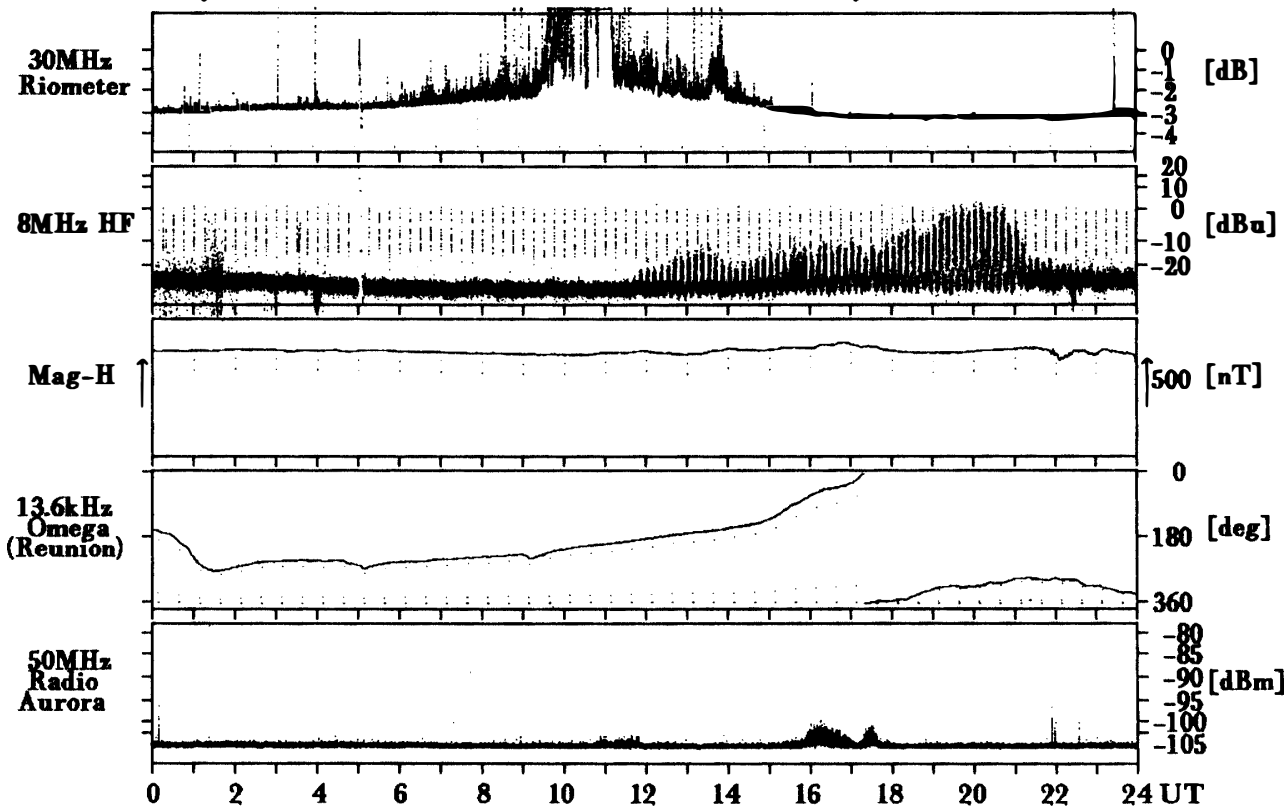
Syowa Station

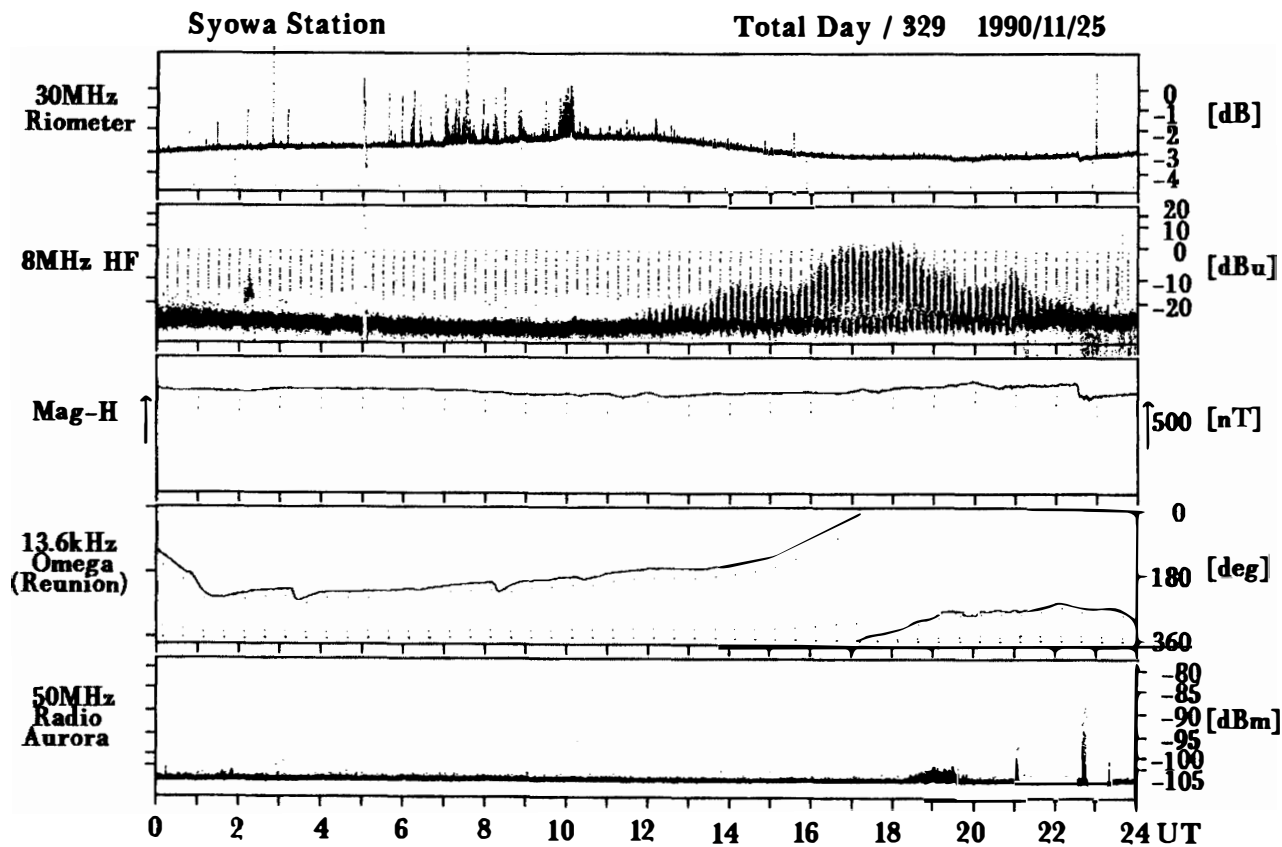
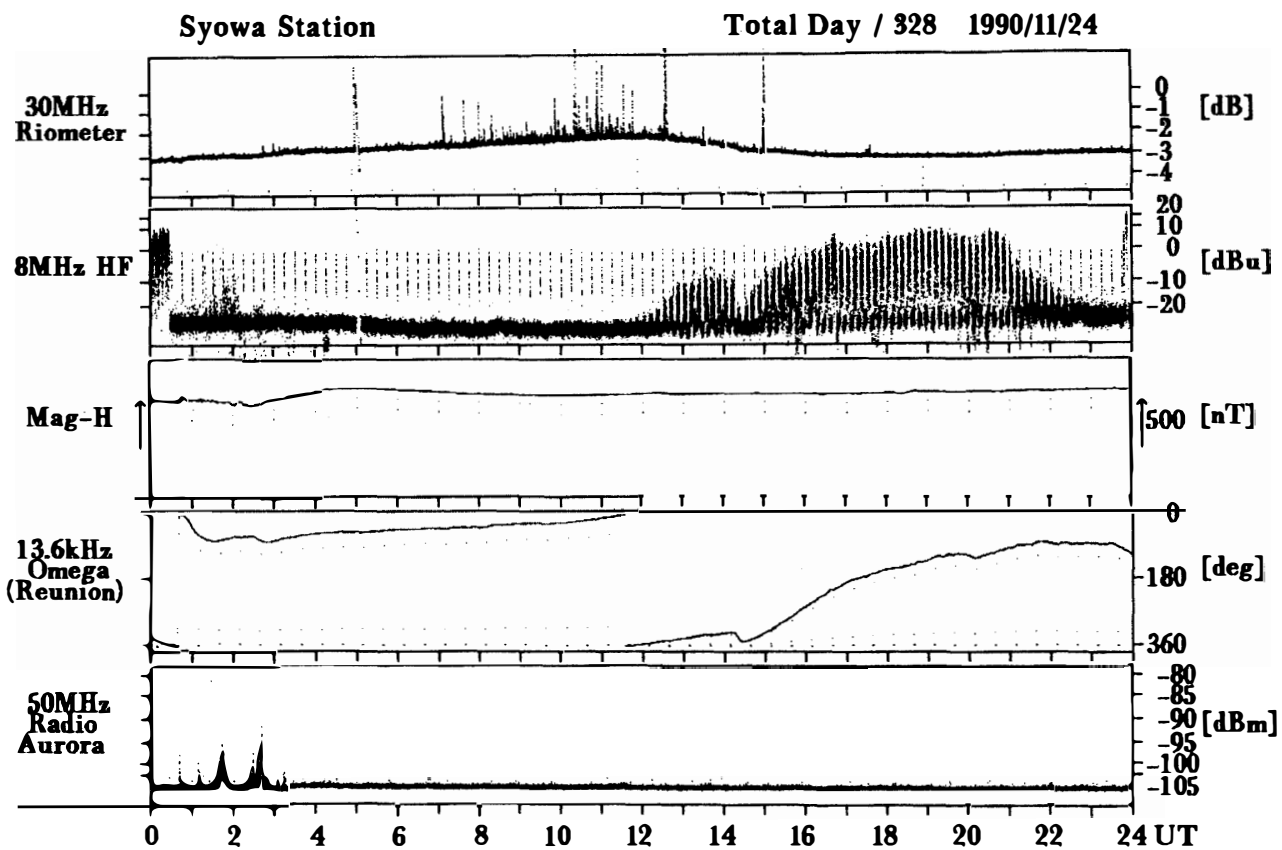
Total Day / 326 1990/11/22



Syowa Station

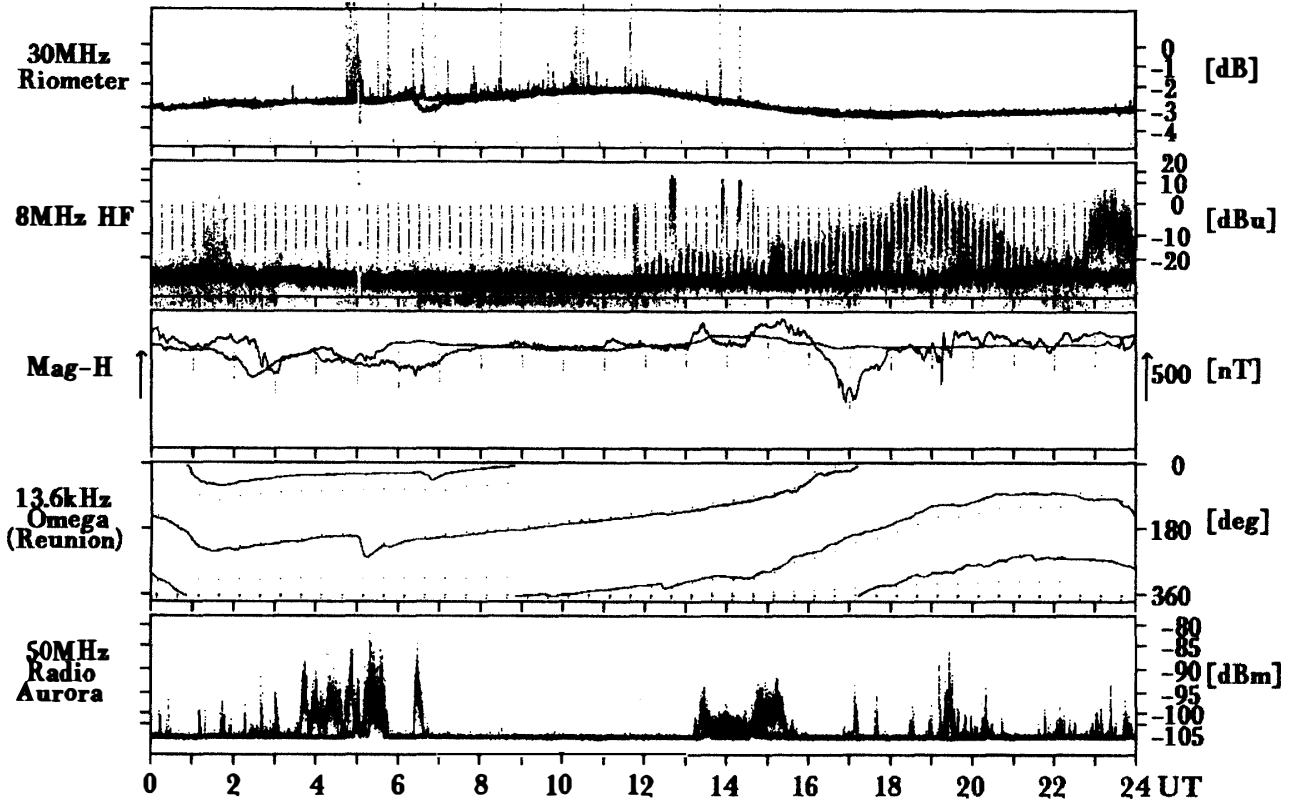
Total Day / 327 1990/11/23





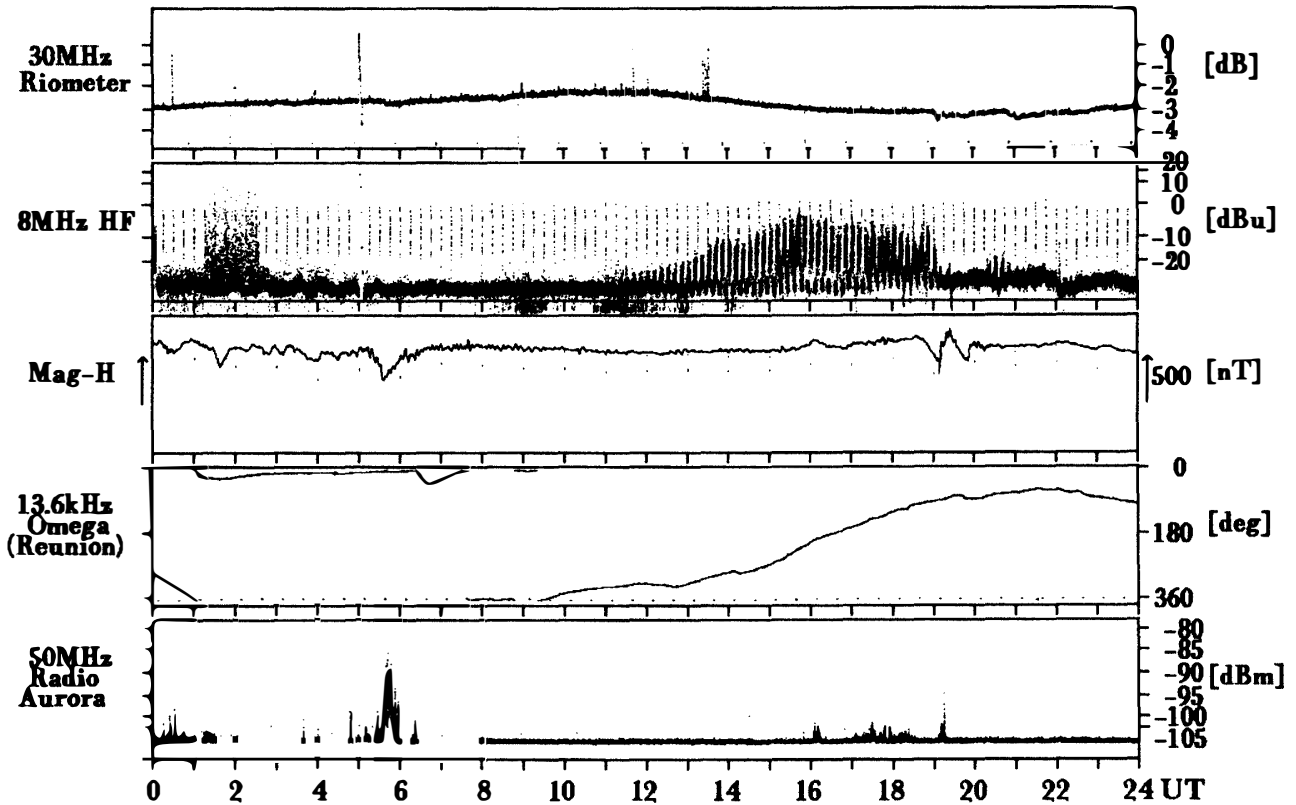
Syowa Station

Total Day / 330 1990/11/26



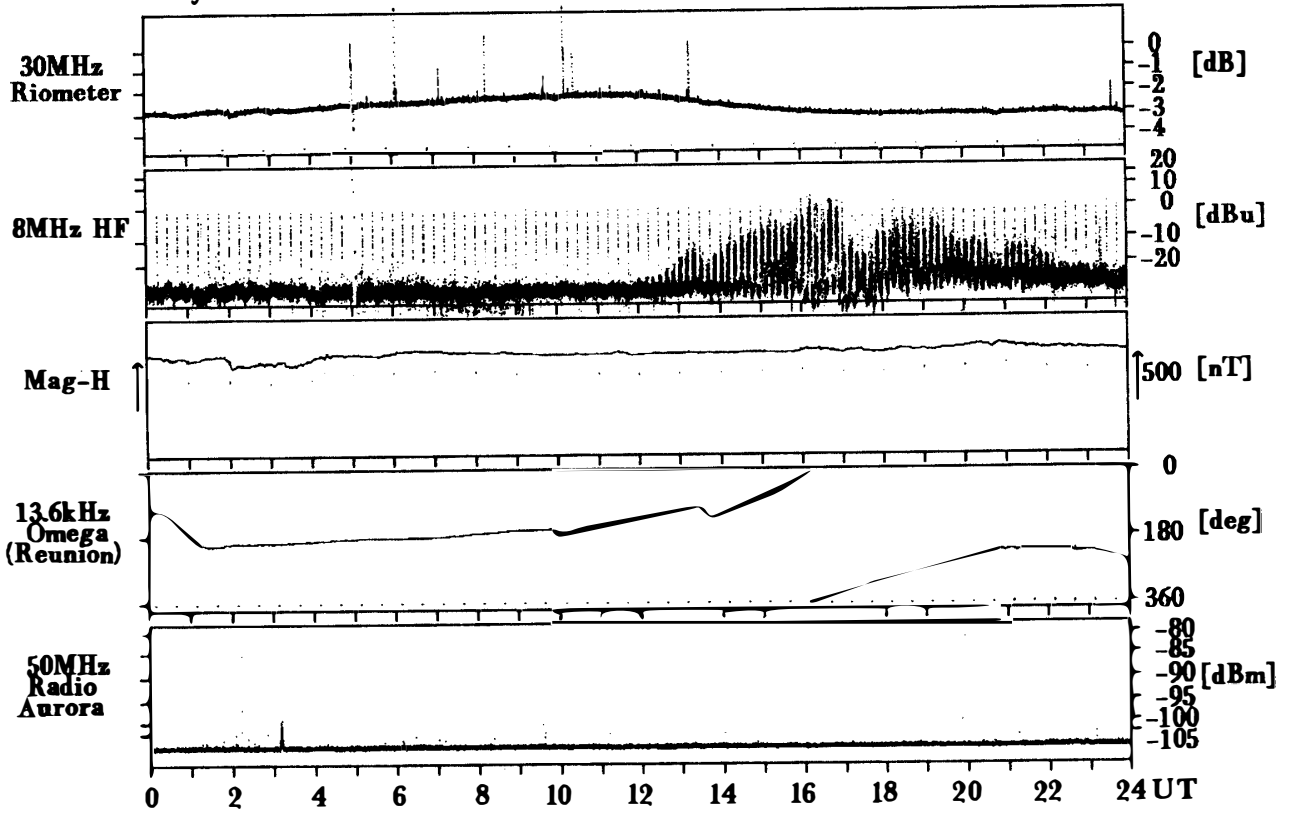
Syowa Station

Total Day / 331 1990/11/27



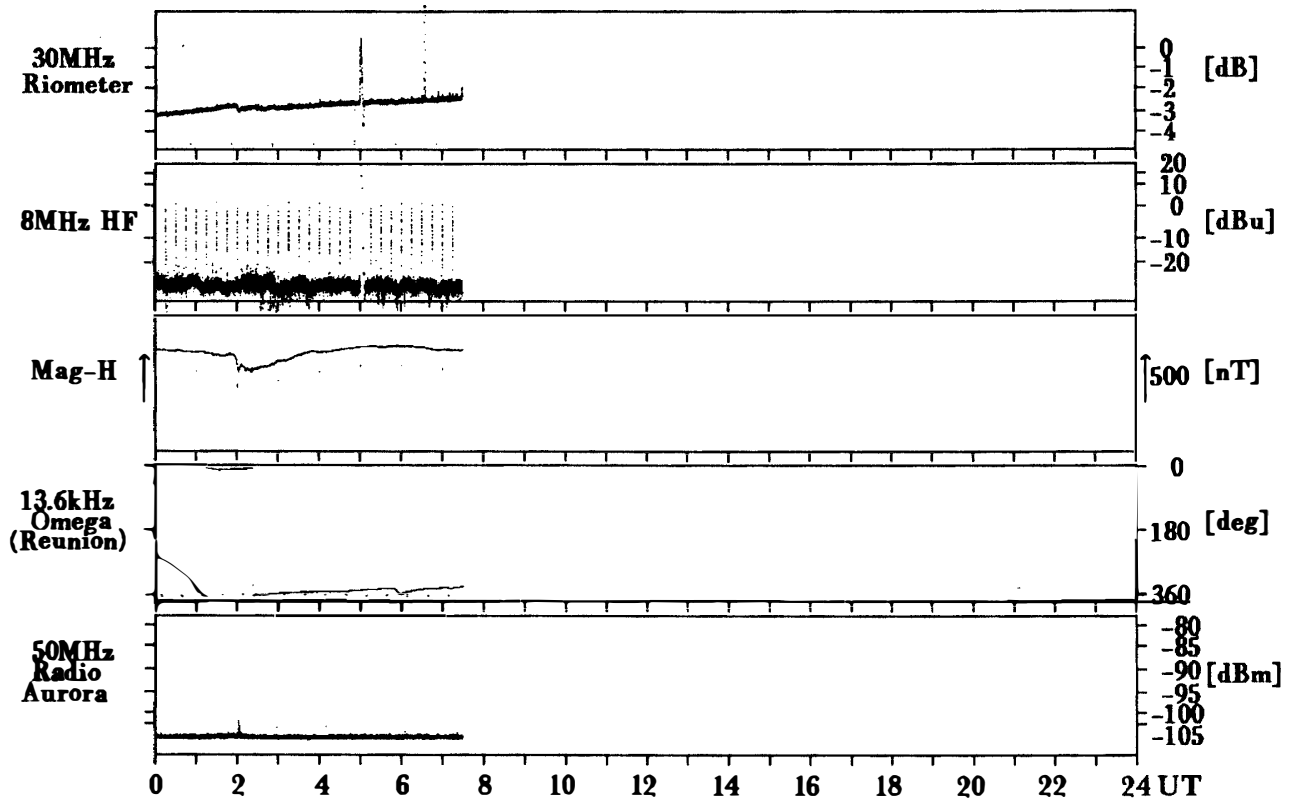
Syowa Station

Total Day / 332 1990/11/28



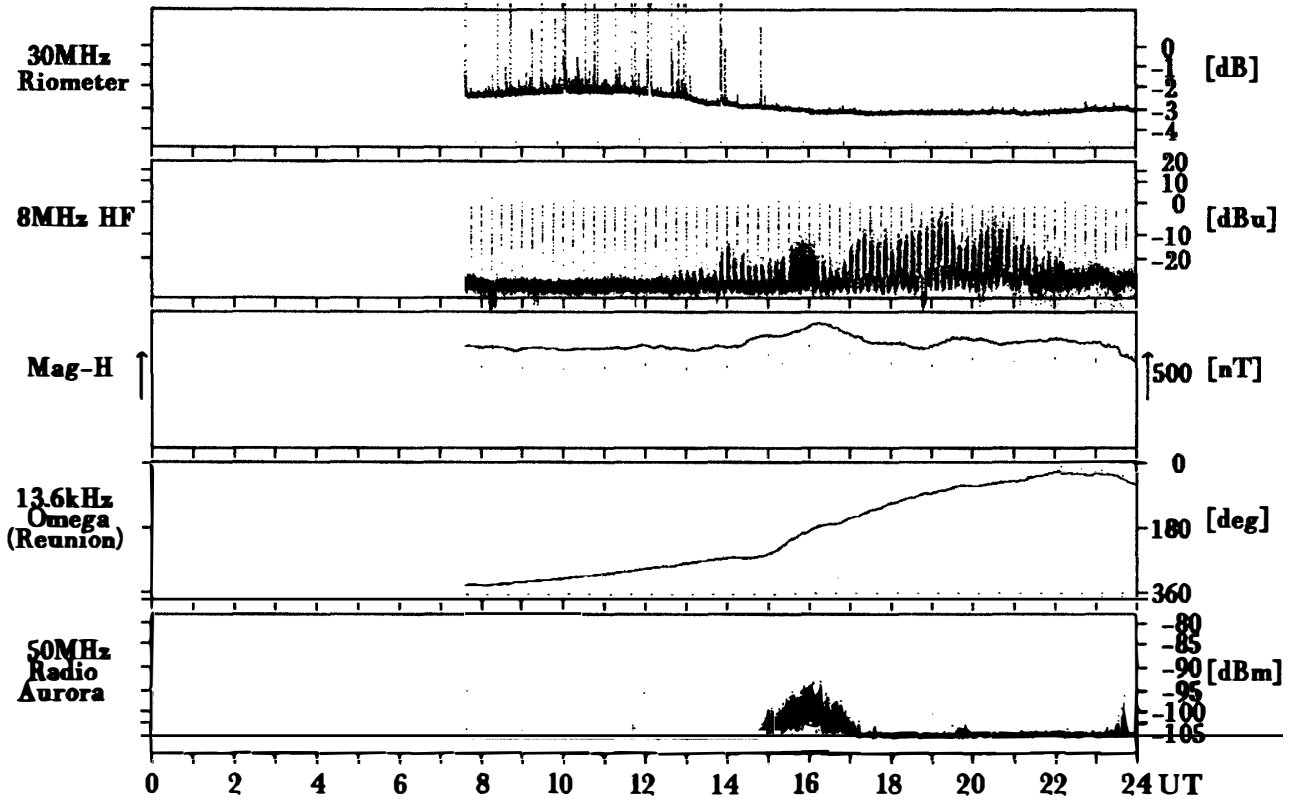
Syowa Station

Total Day / 333 1990/11/29



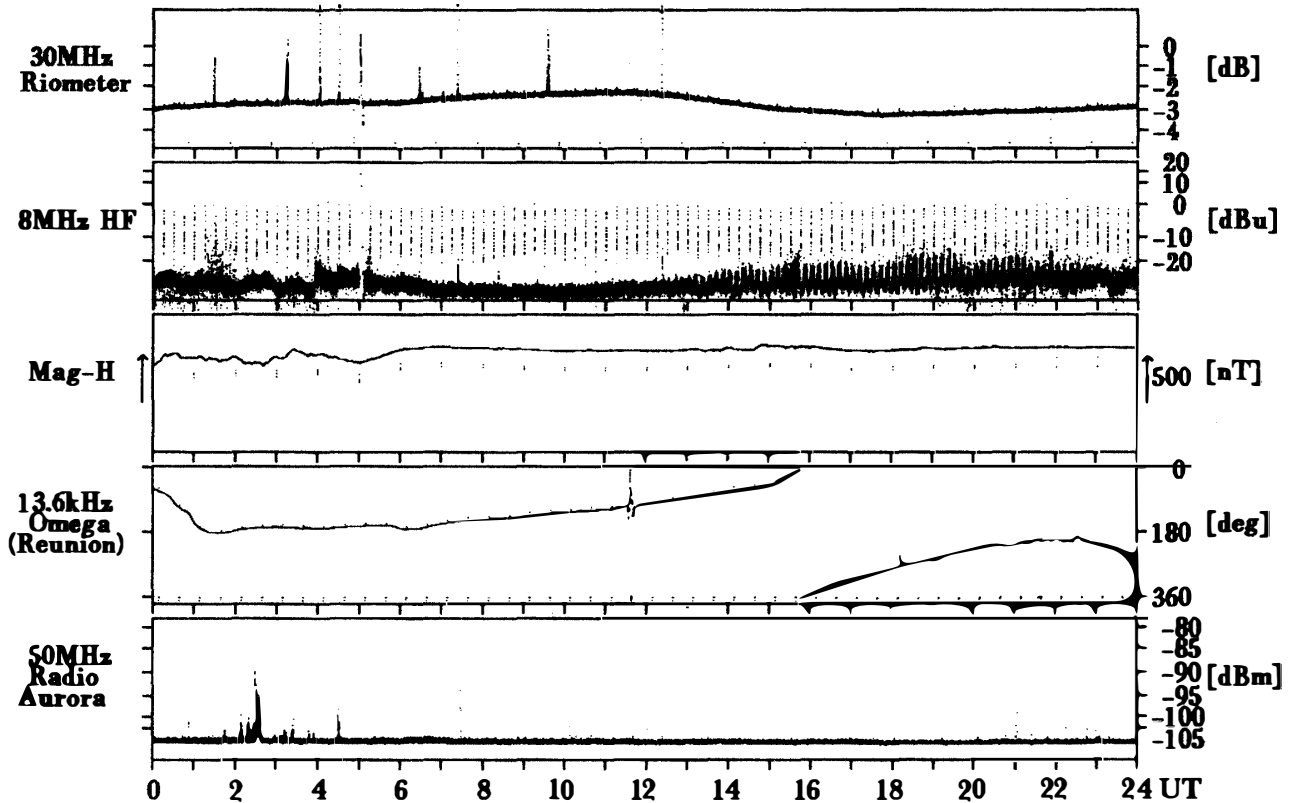
Syowa Station

Total Day / 334 1990/11/30



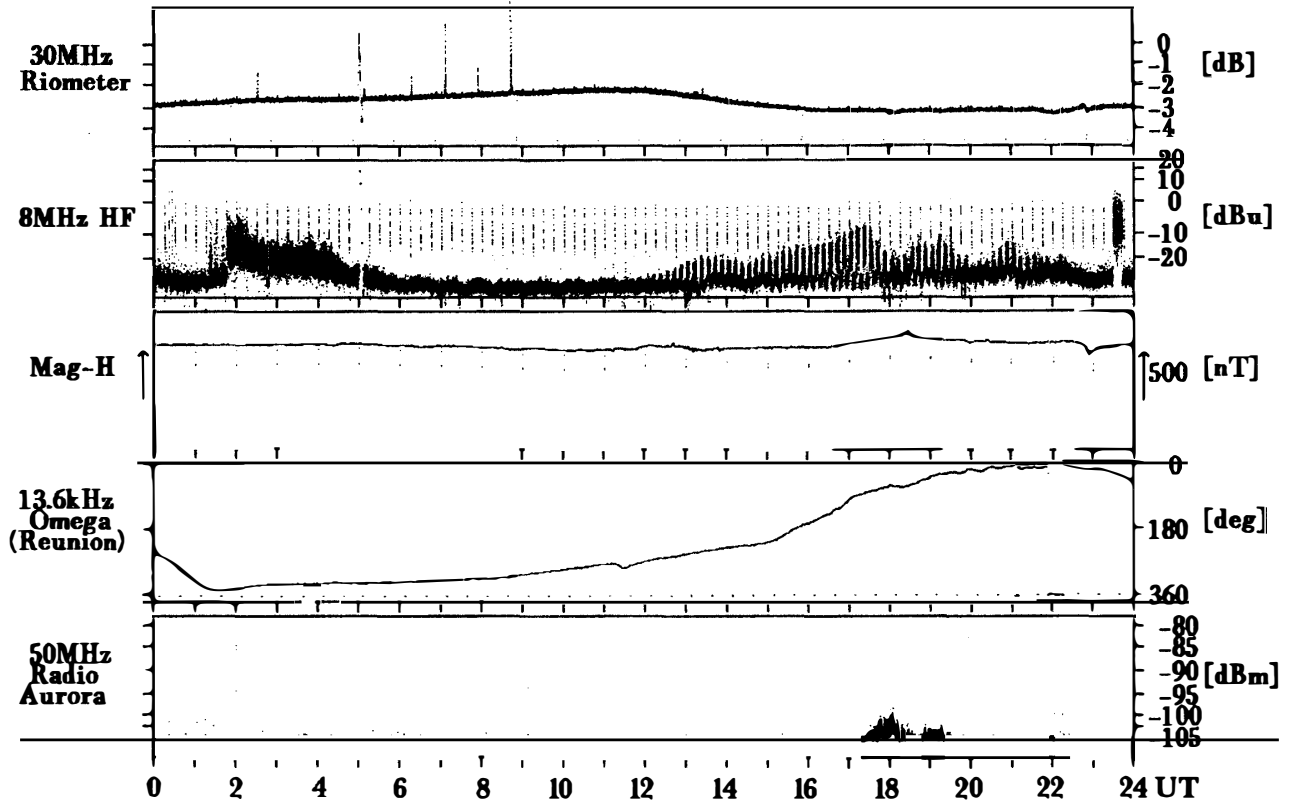
Syowa Station

Total Day / 335 1990/12/1



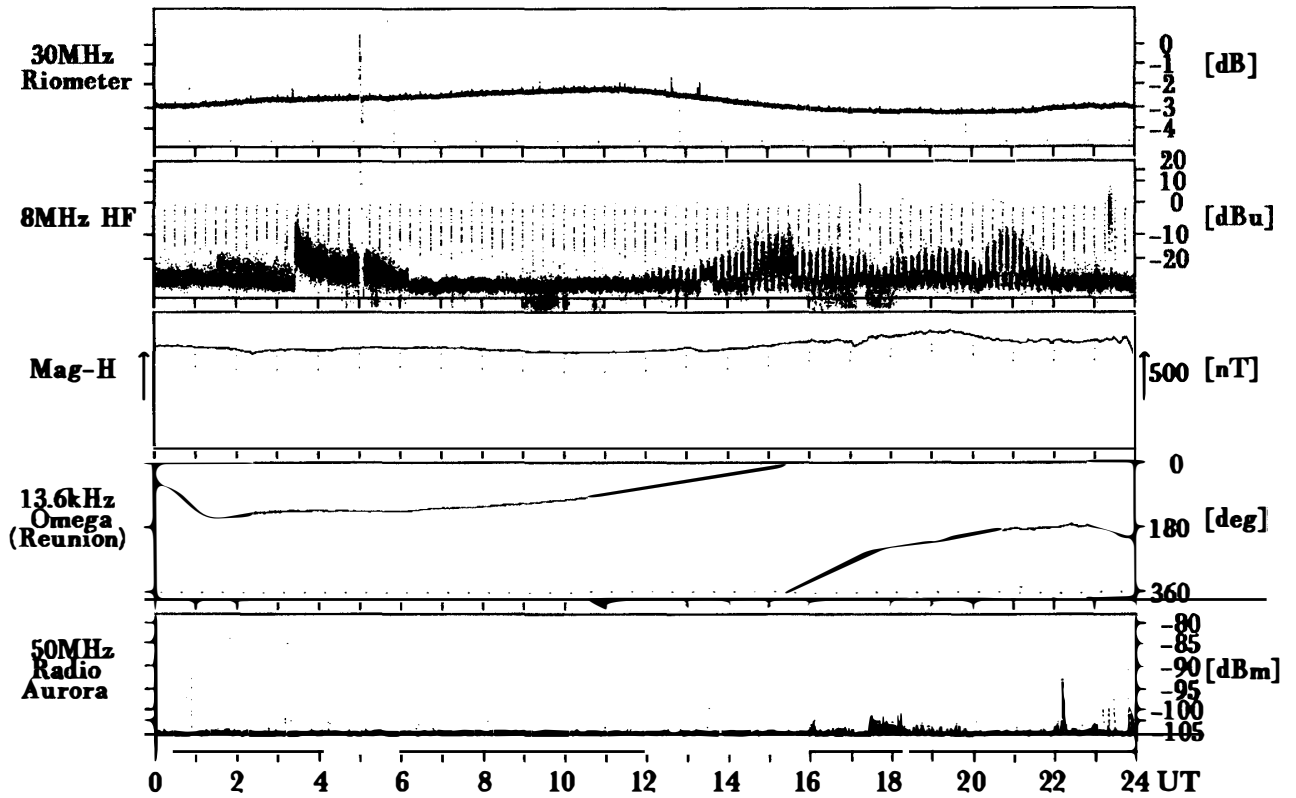
Syowa Station

Total Day / 336 1990/12/ 2



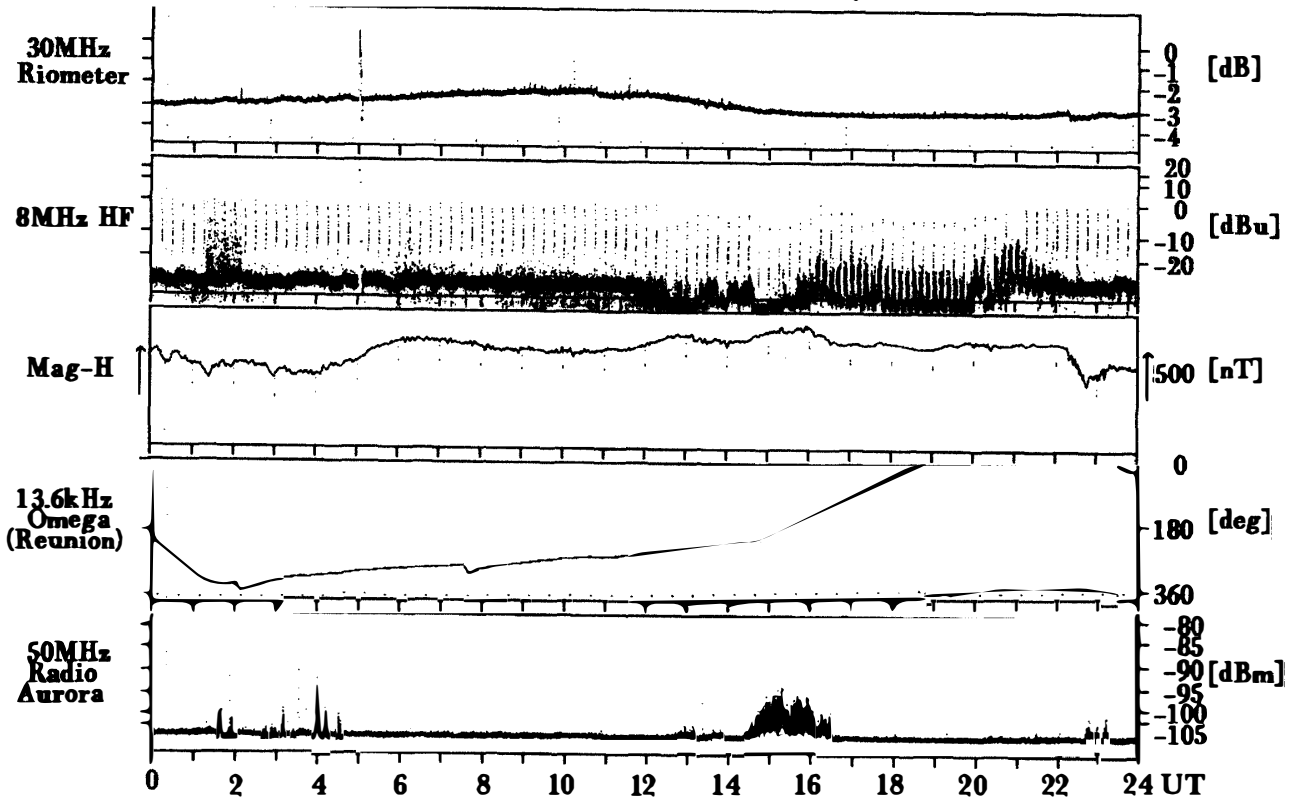
Syowa Station

Total Day / 337 1990/12/ 3



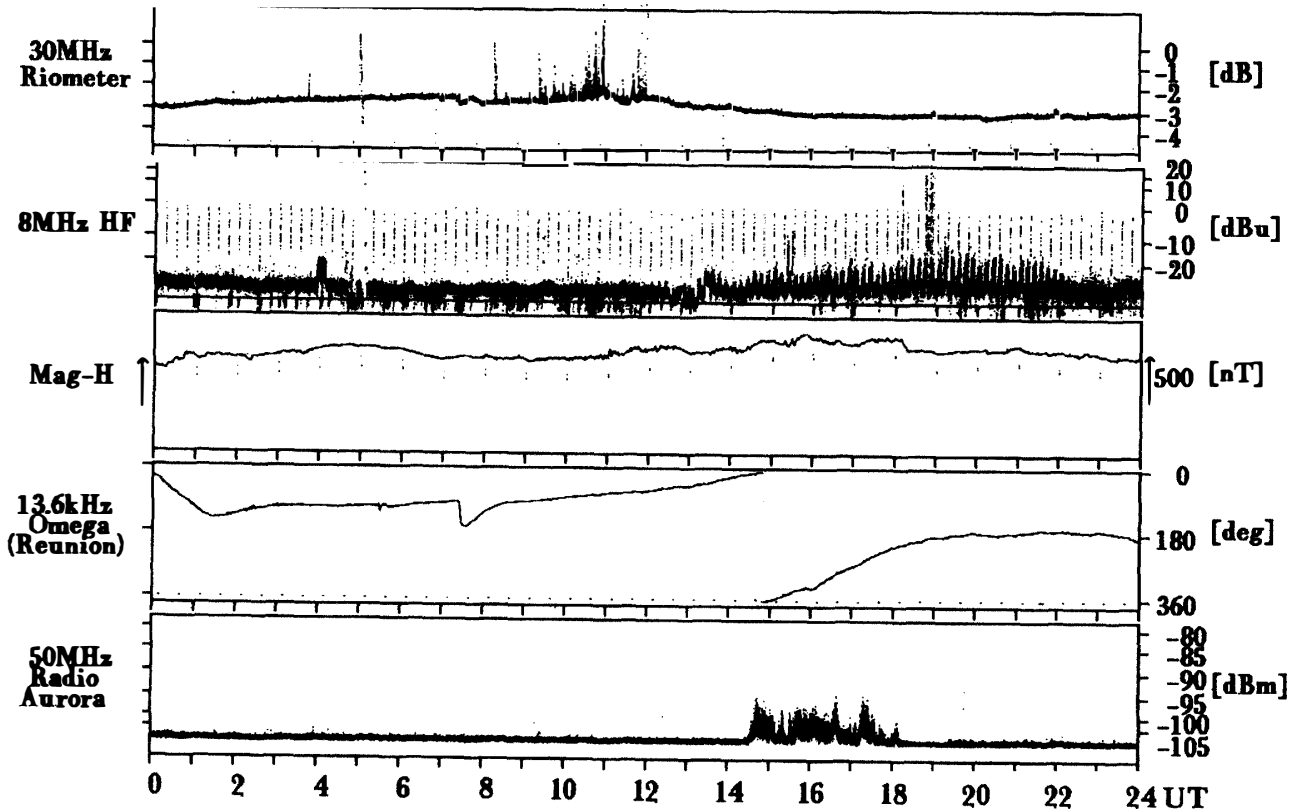
Syowa Station

Total Day / 338 1990/12/ 4



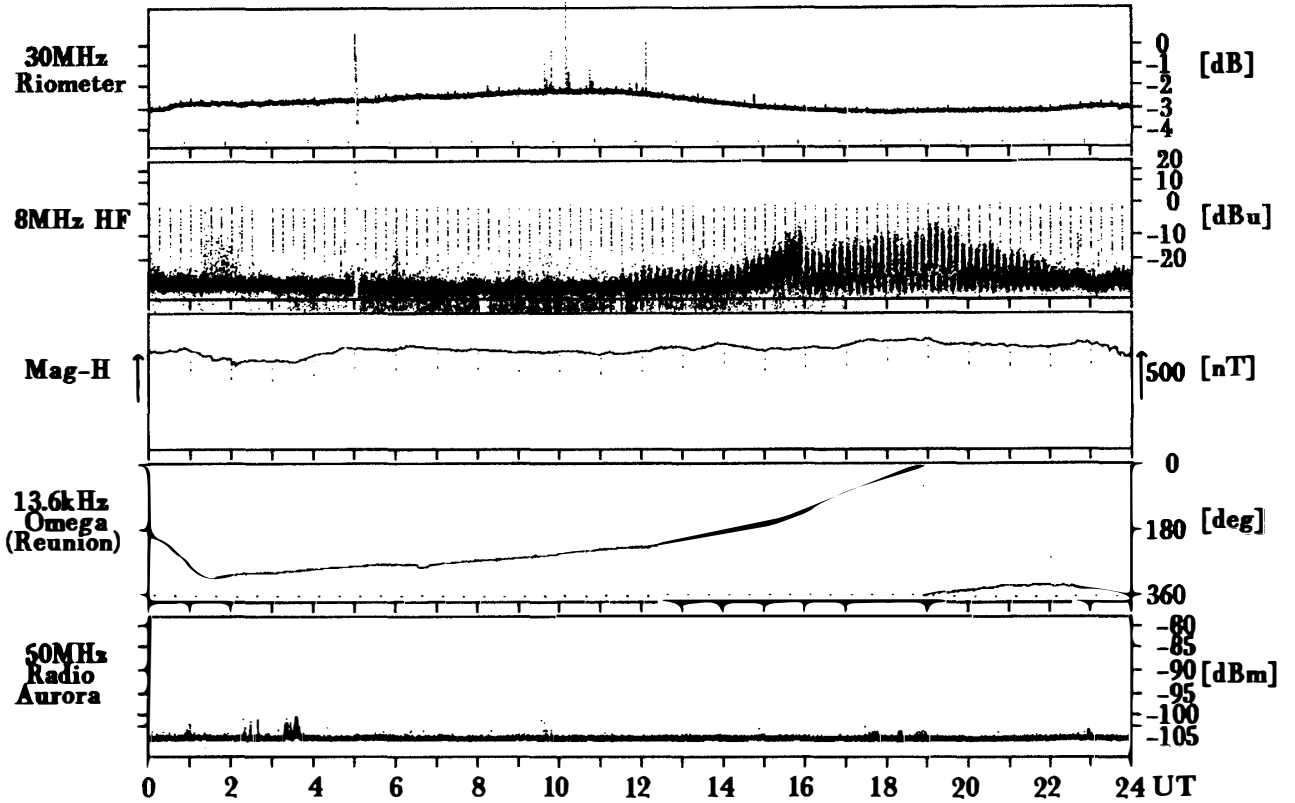
Syowa Station

Total Day / 339 1990/12/ 5



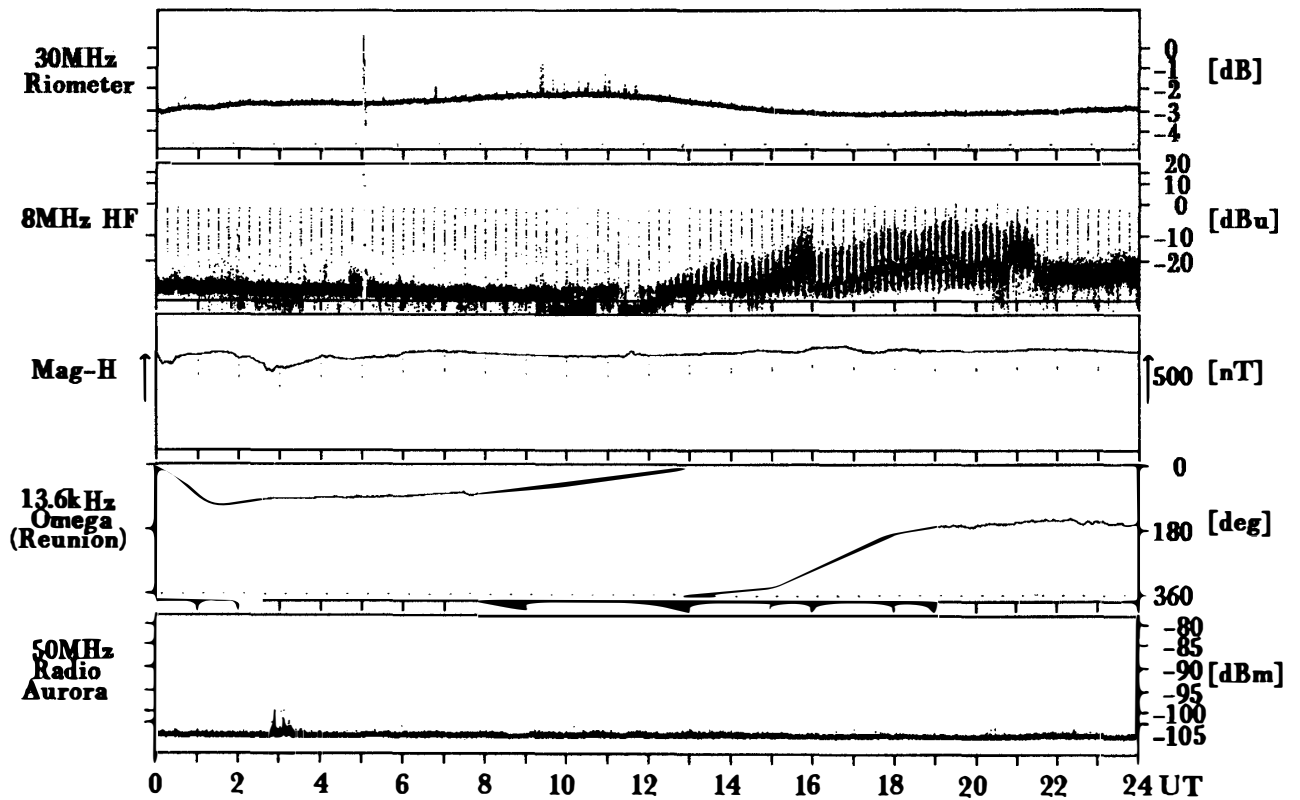
Syowa Station

Total Day / 340 1990/12/ 6



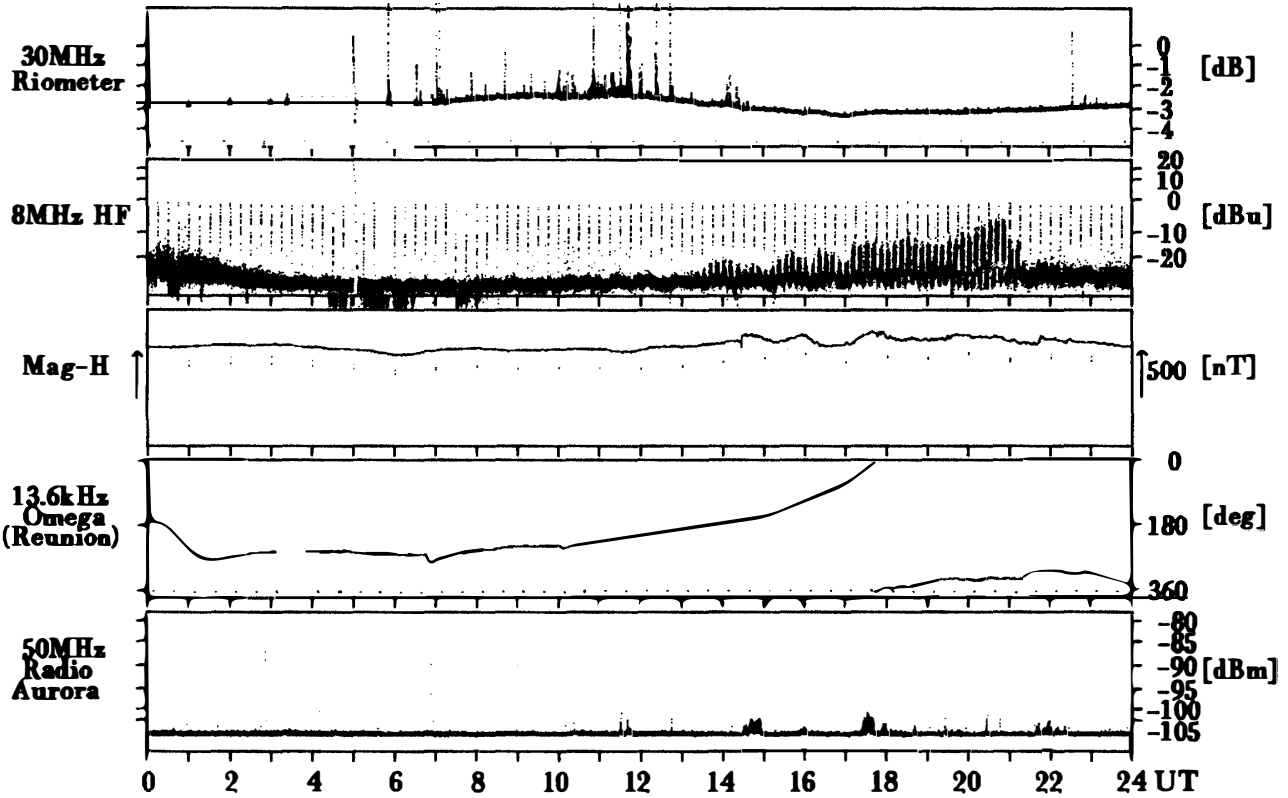
Syowa Station

Total Day / 341 1990/12/ 7



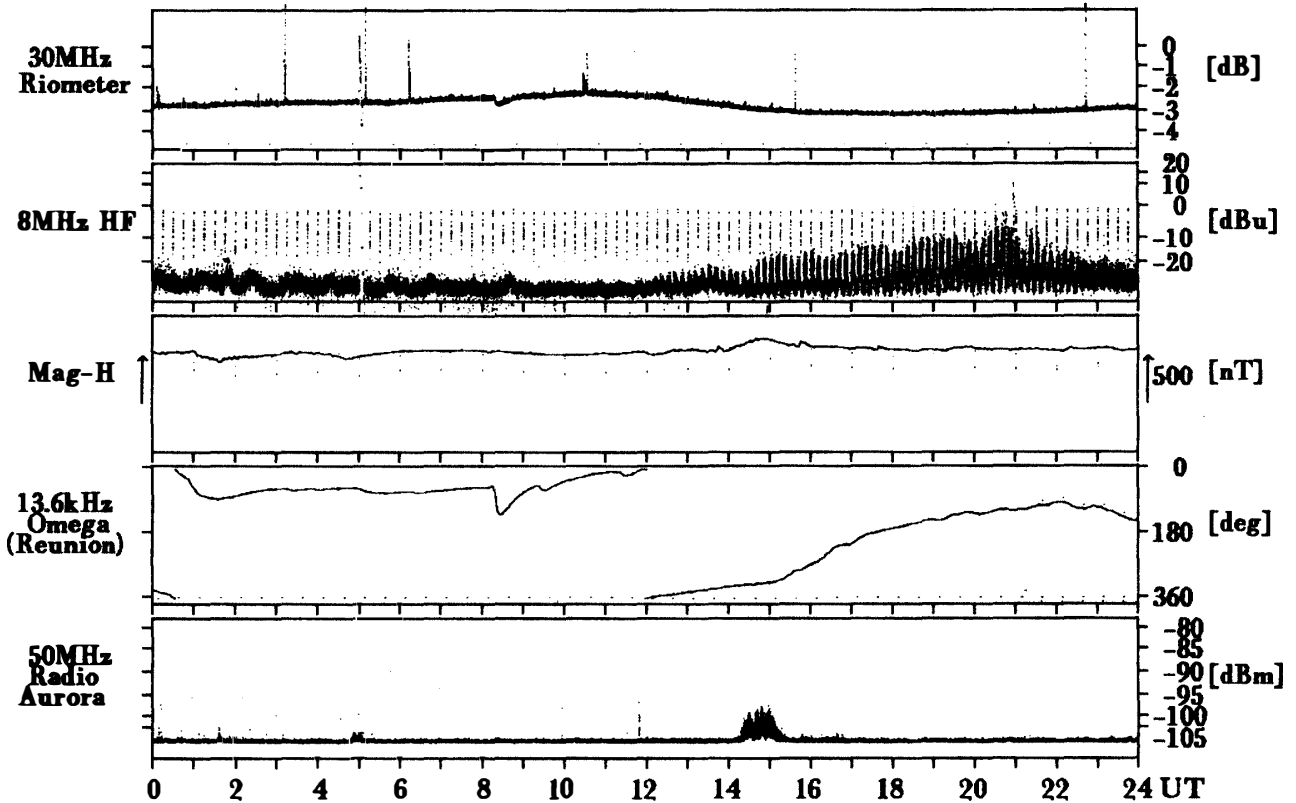
Syowa Station

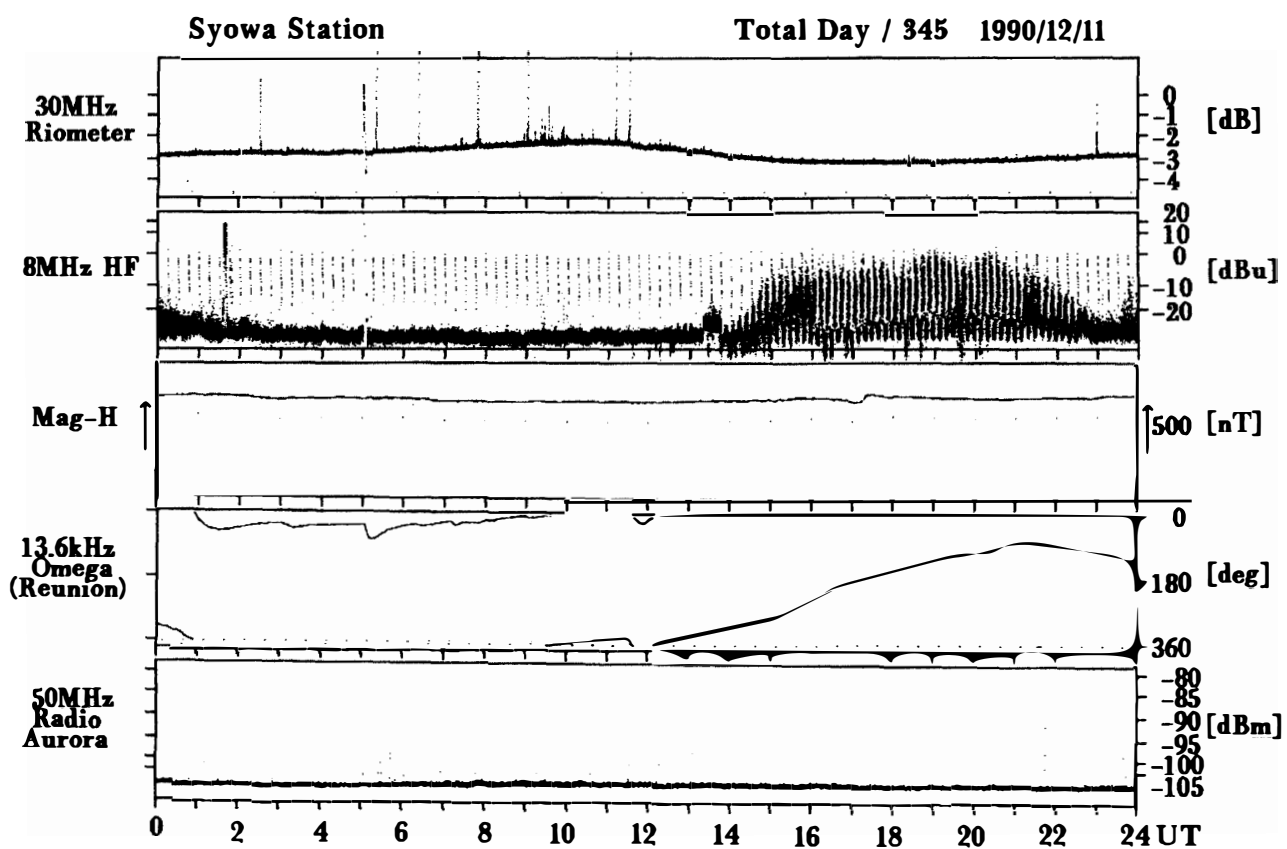
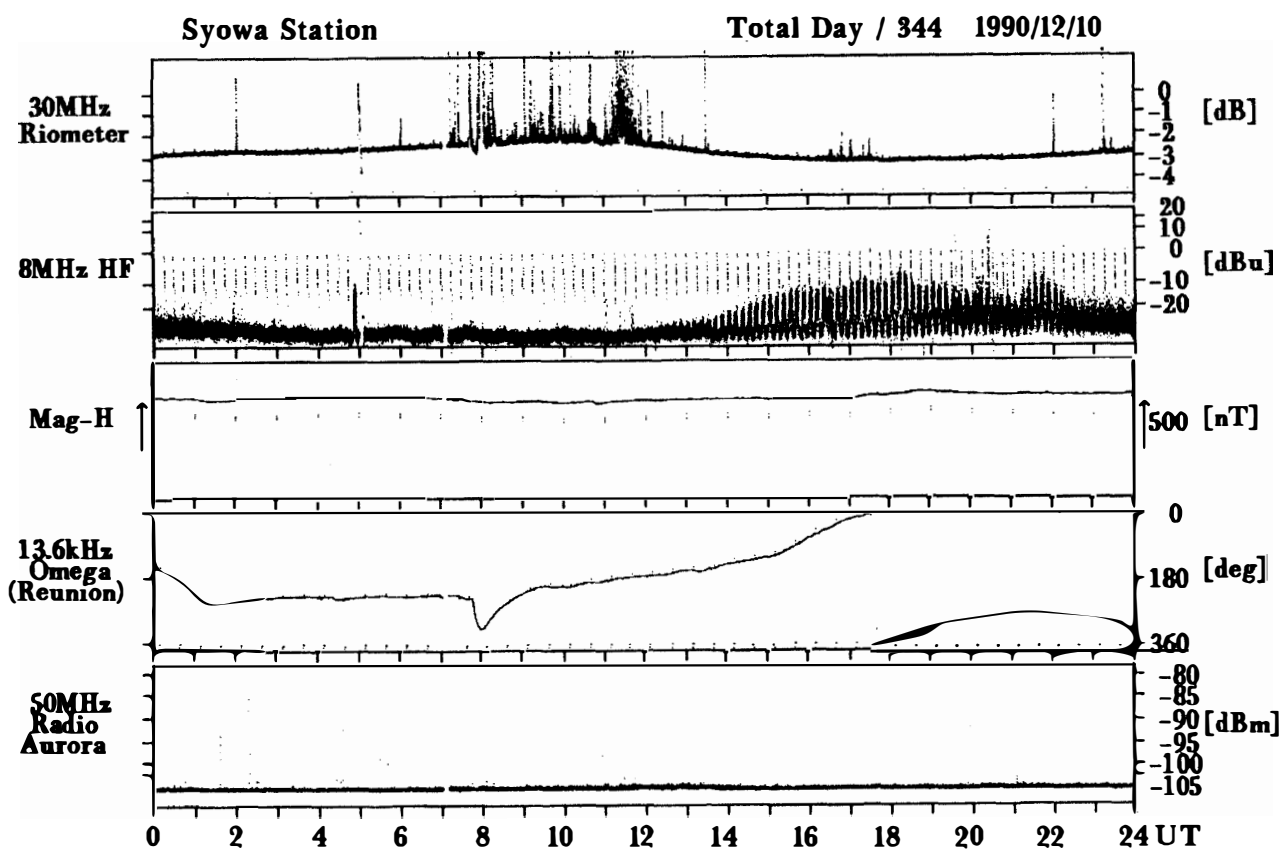
Total Day / 342 1990/12/ 8



Syowa Station

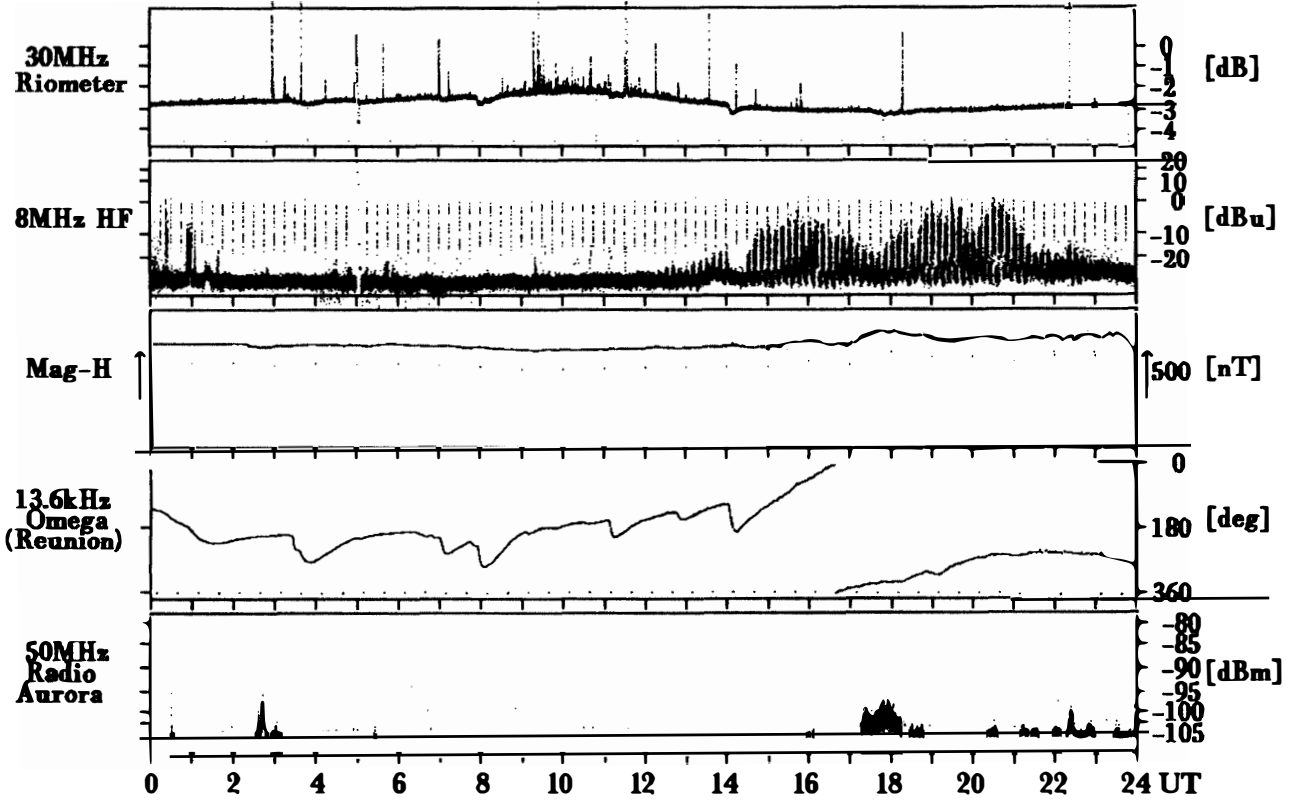
Total Day / 343 1990/12/ 9





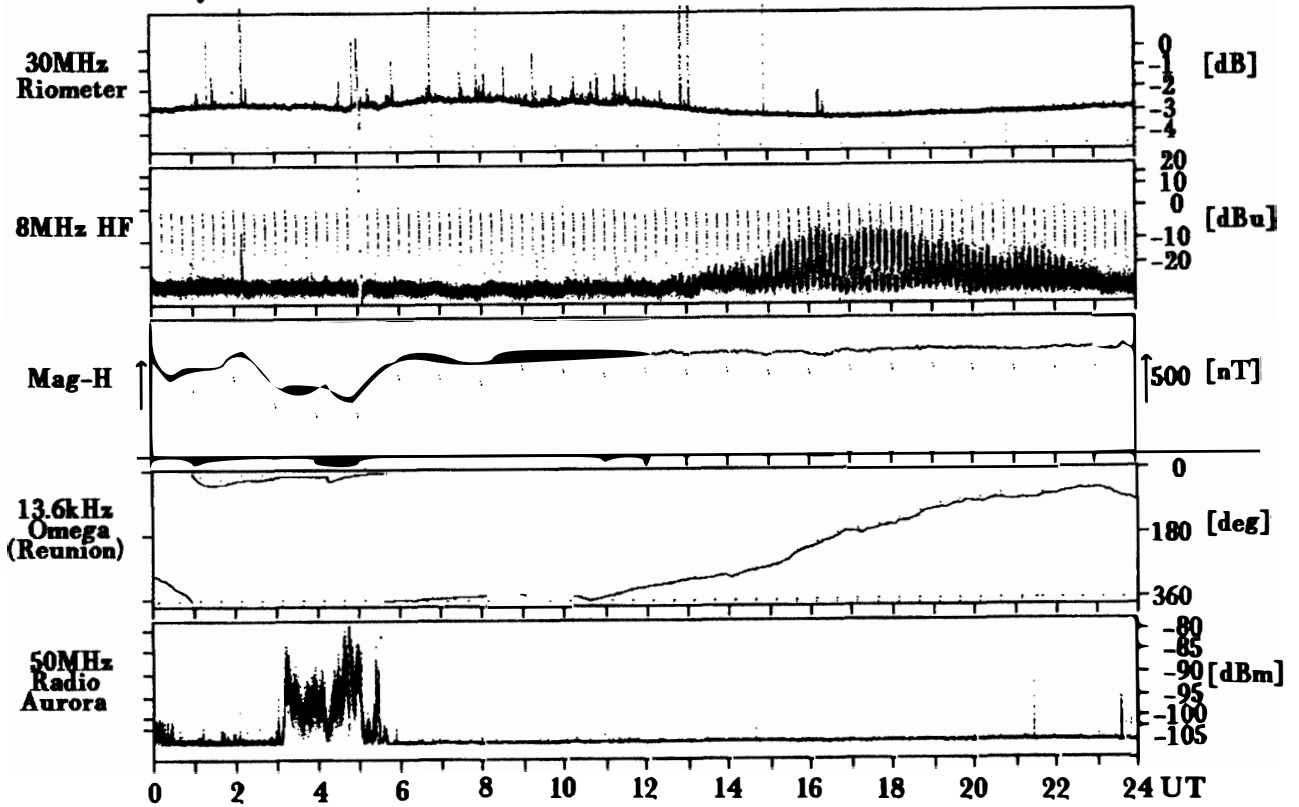
Syowa Station

Total Day / 346 1990/12/12



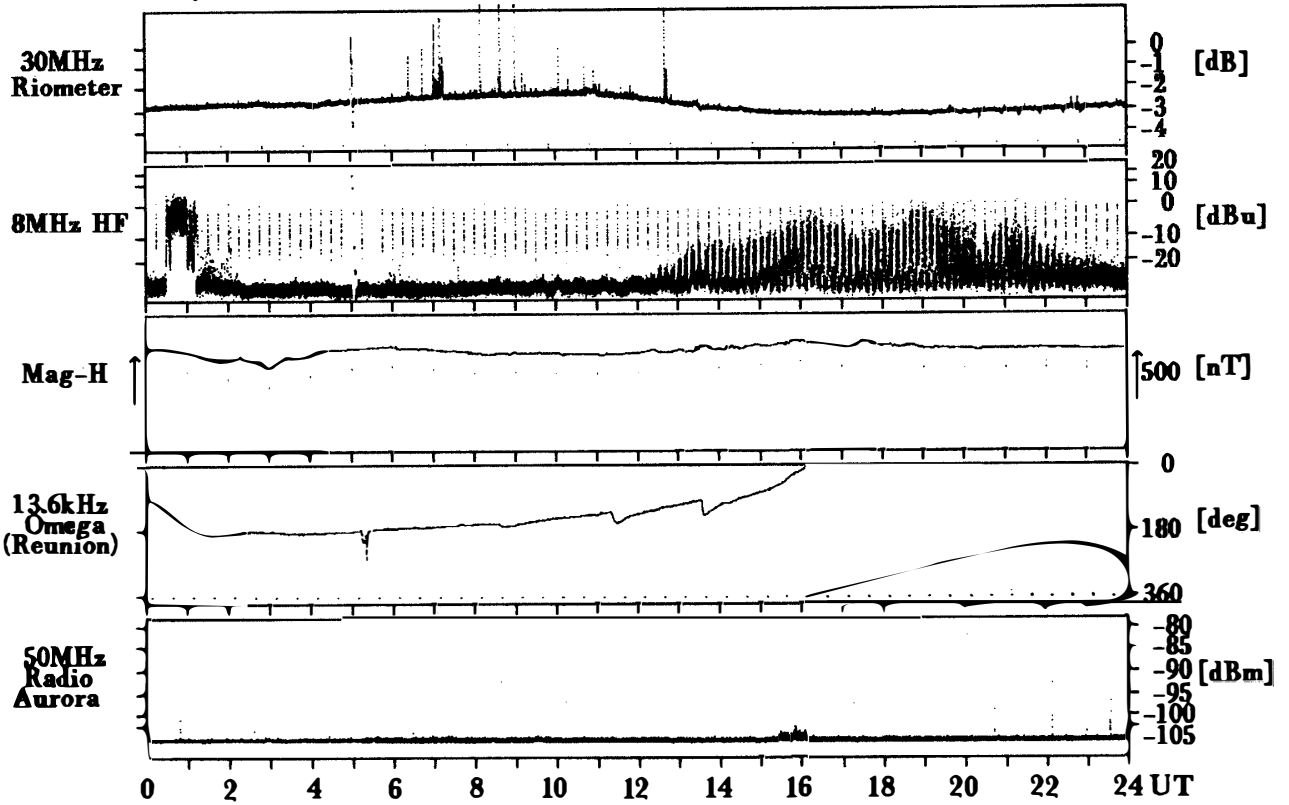
Syowa Station

Total Day / 347 1990/12/13



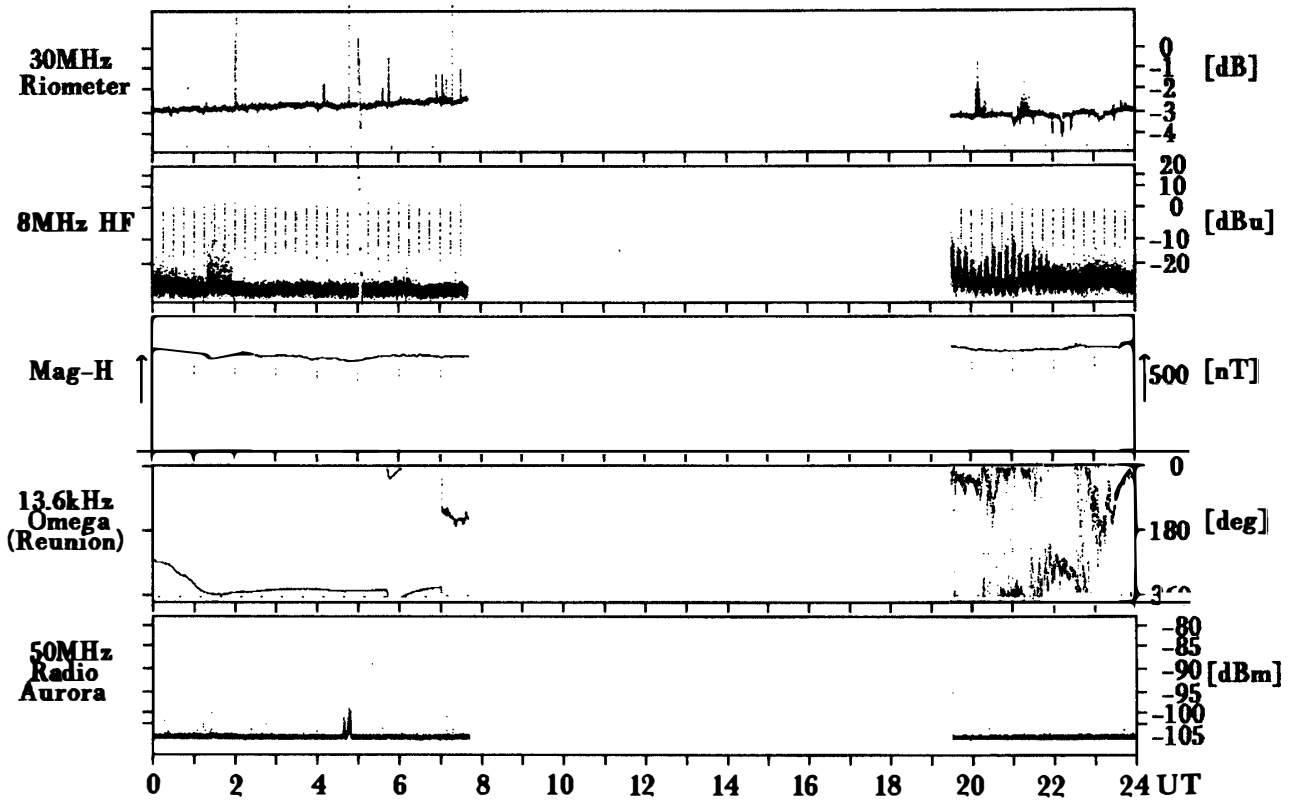
Syowa Station

Total Day / 348 1990/12/14



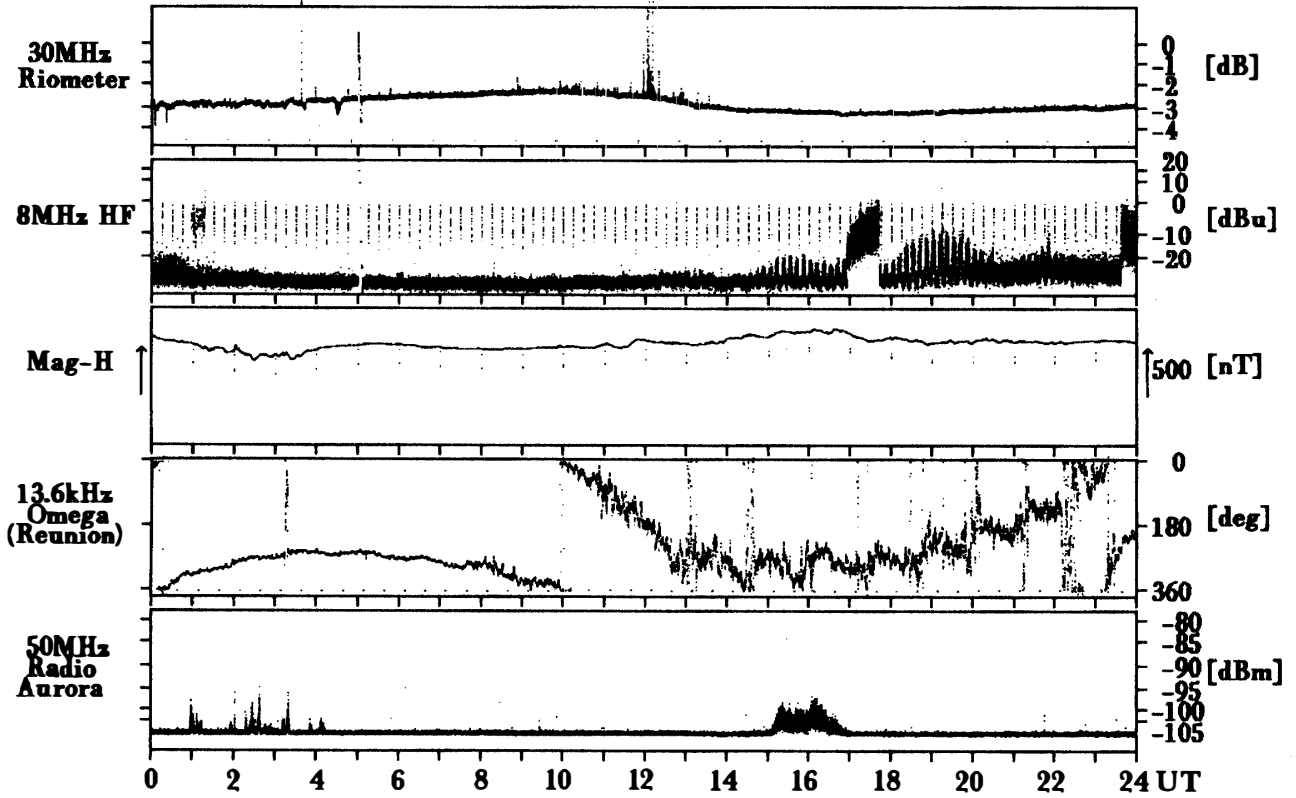
Syowa Station

Total Day / 349 1990/12/15



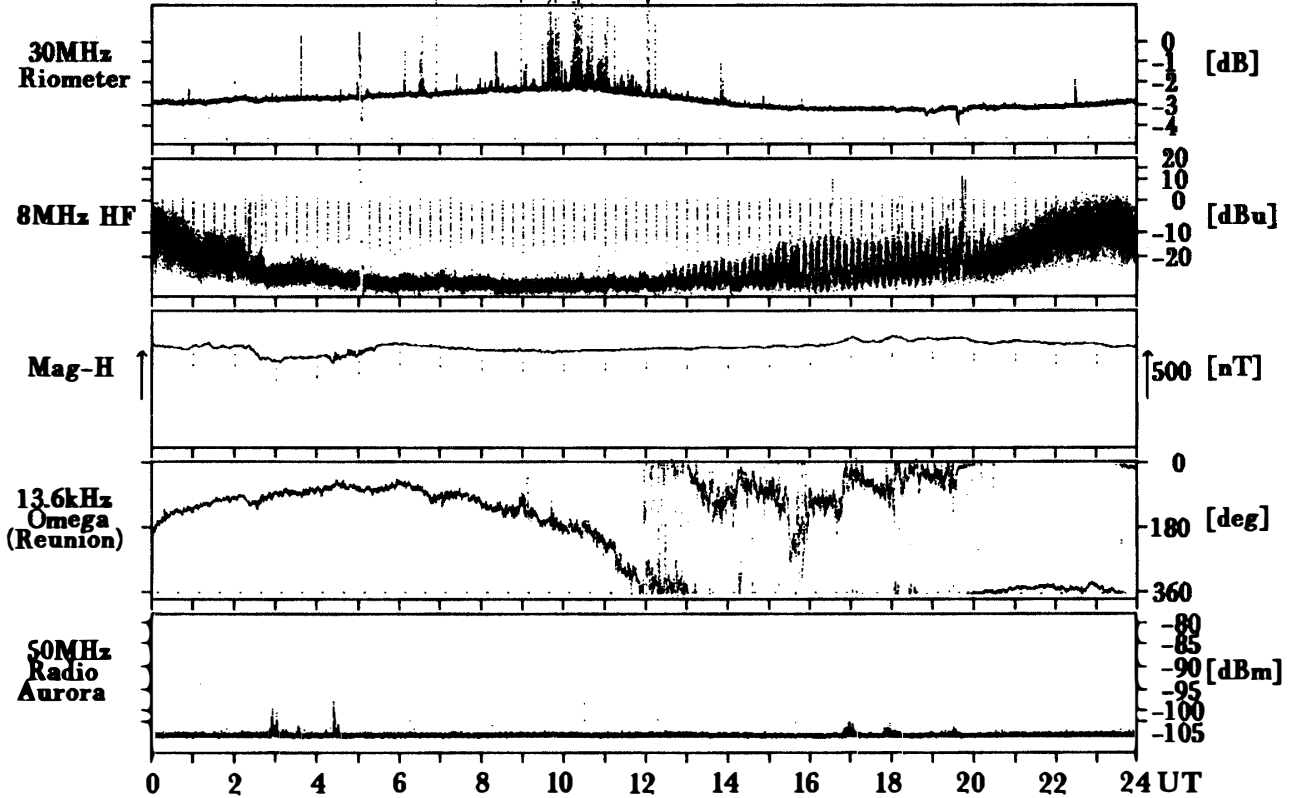
Syowa Station

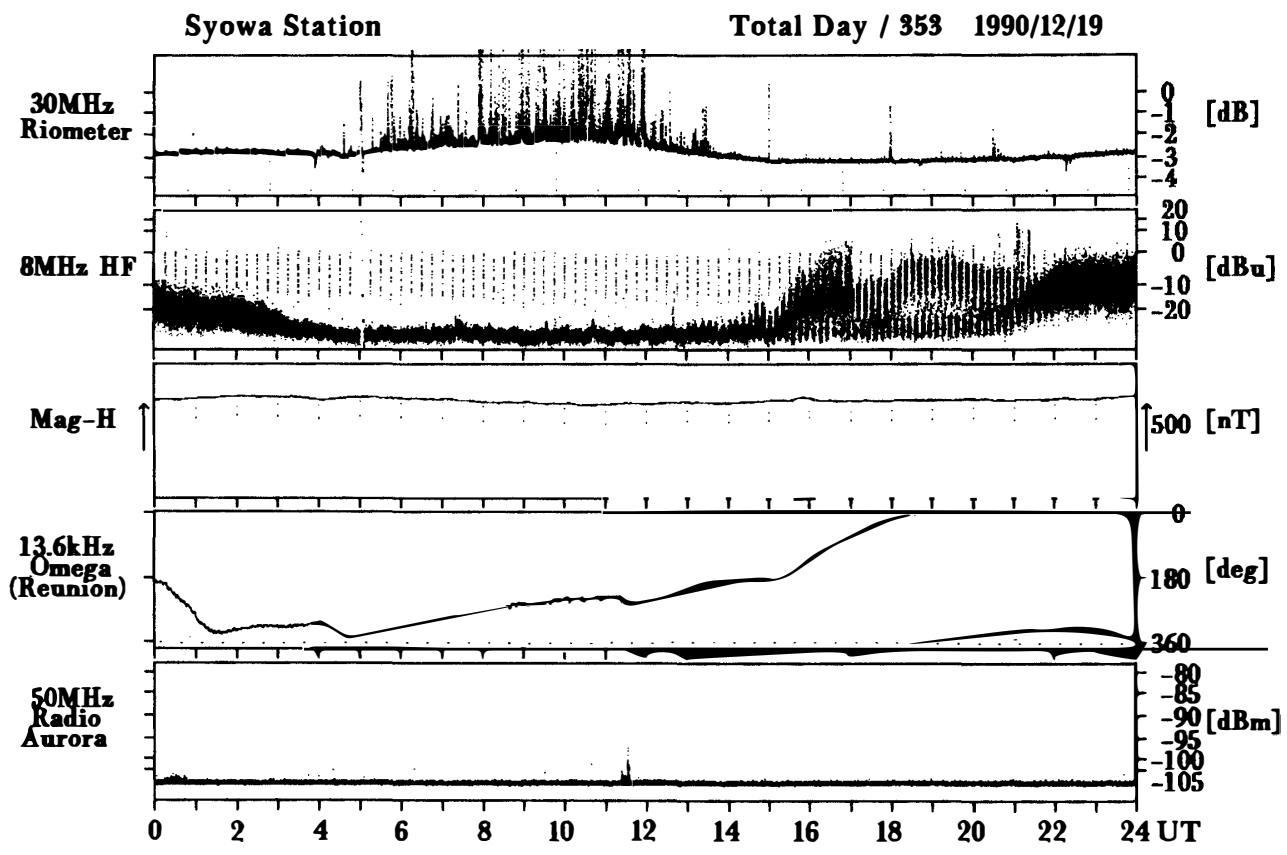
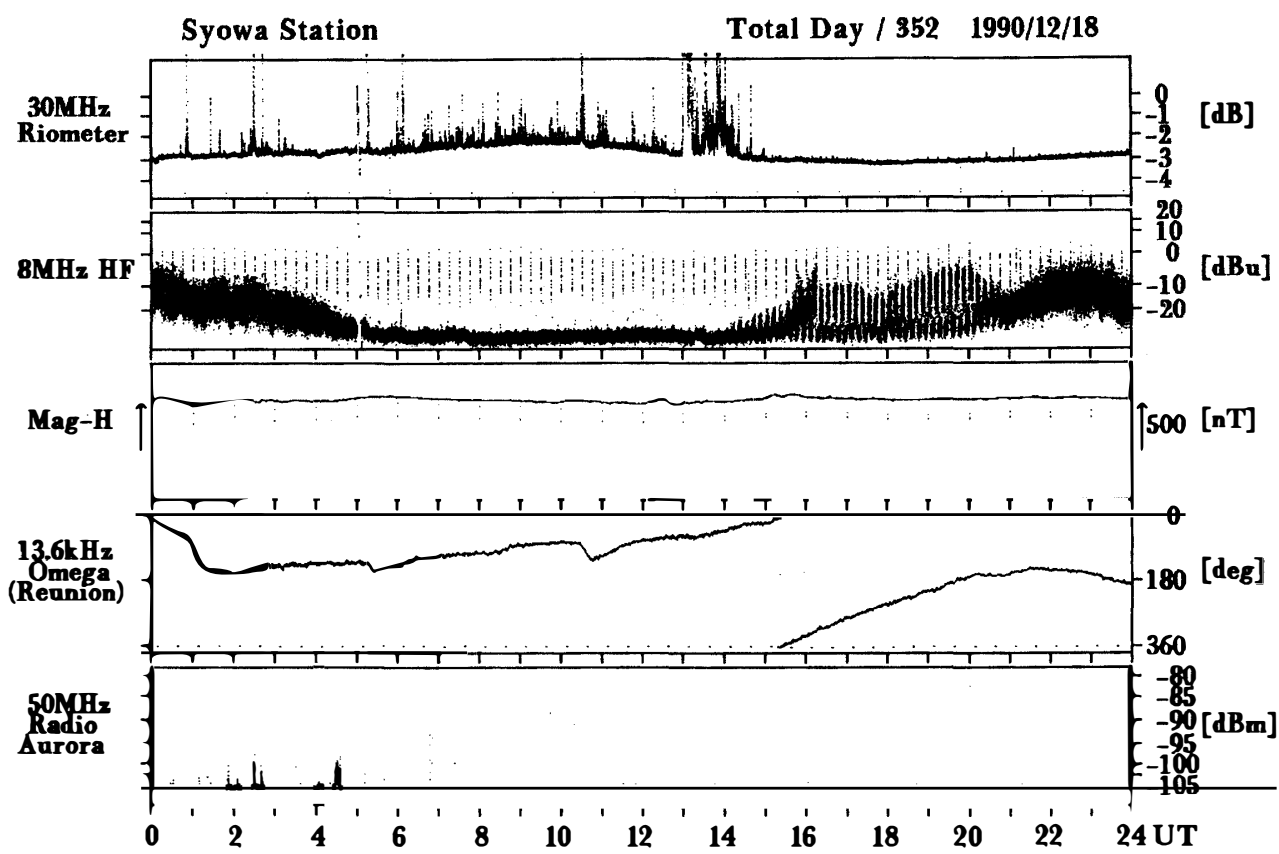
Total Day / 350 1990/12/16

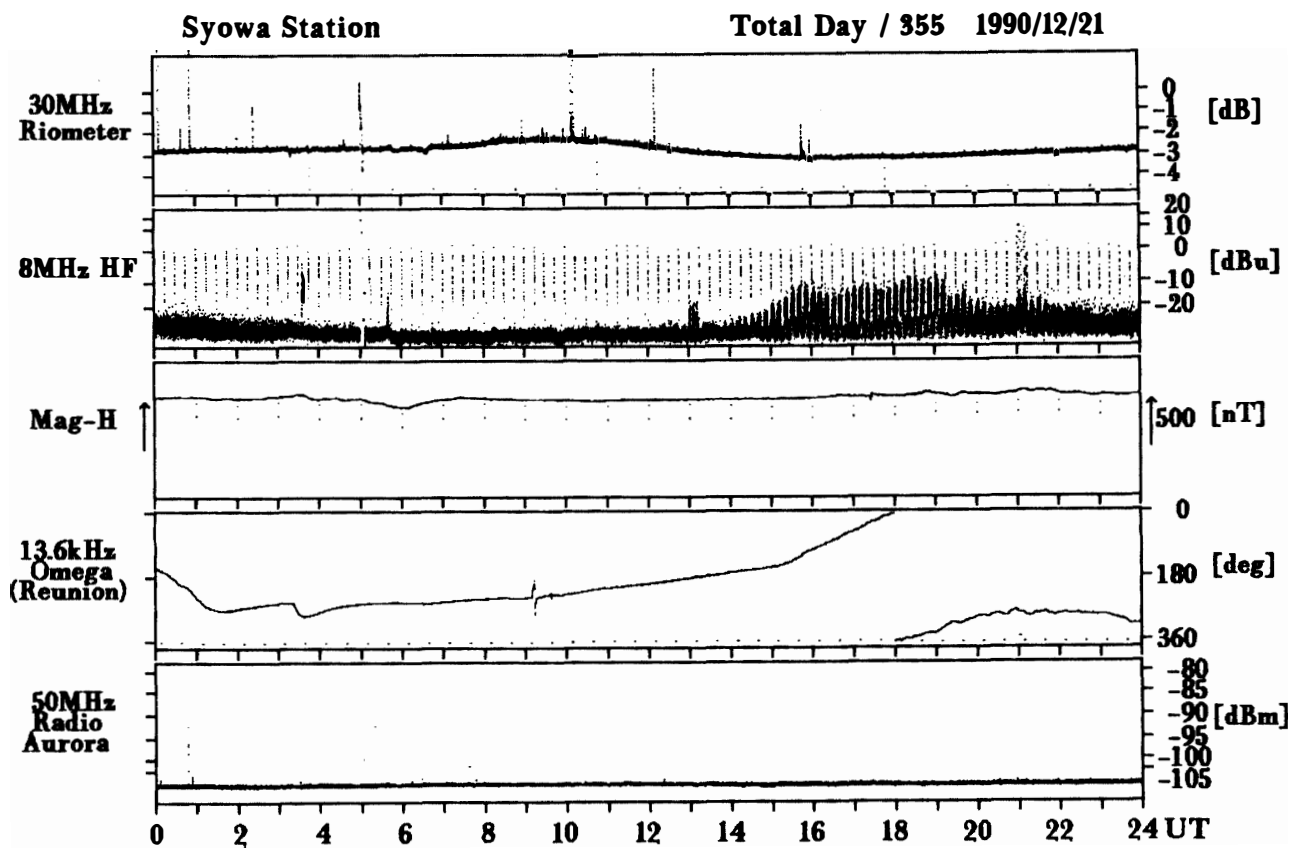
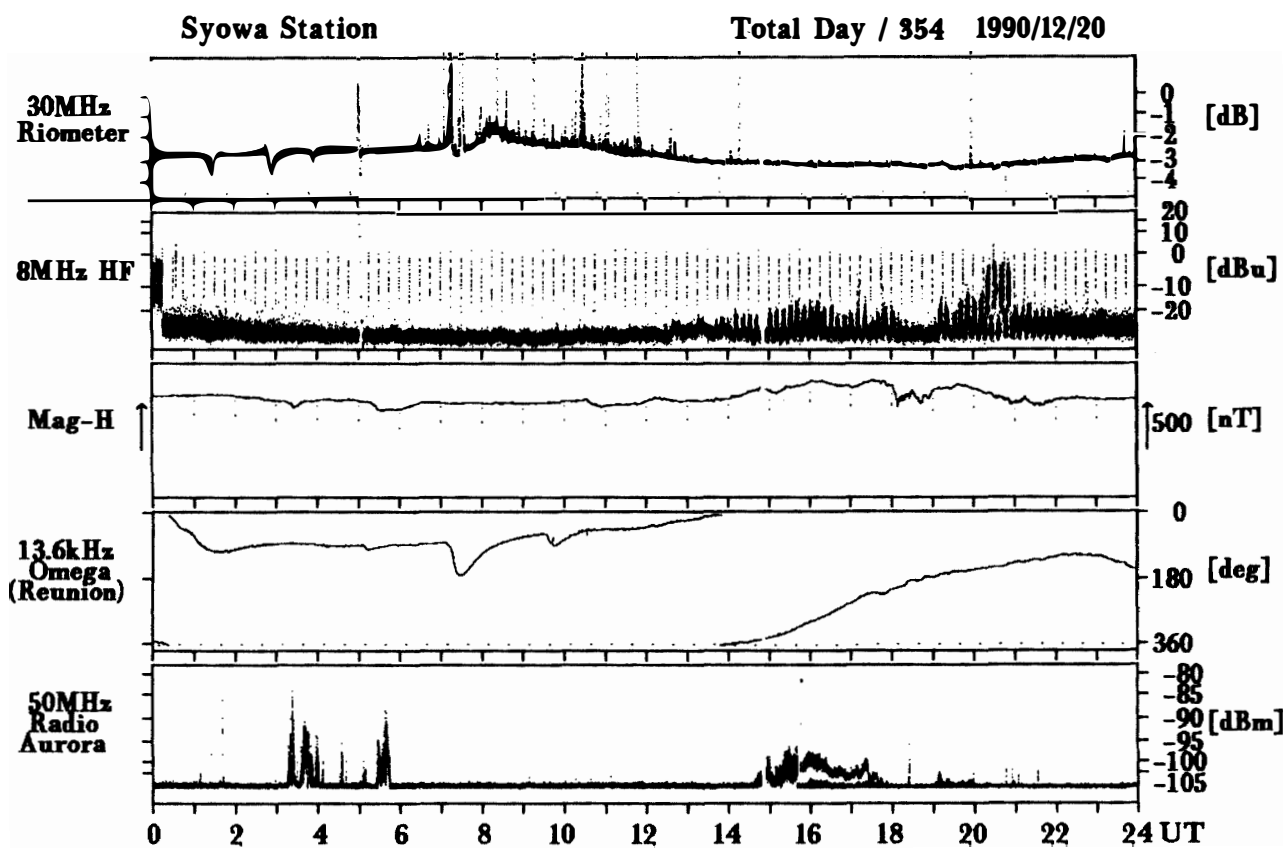


Syowa Station

Total Day / 351 1990/12/17

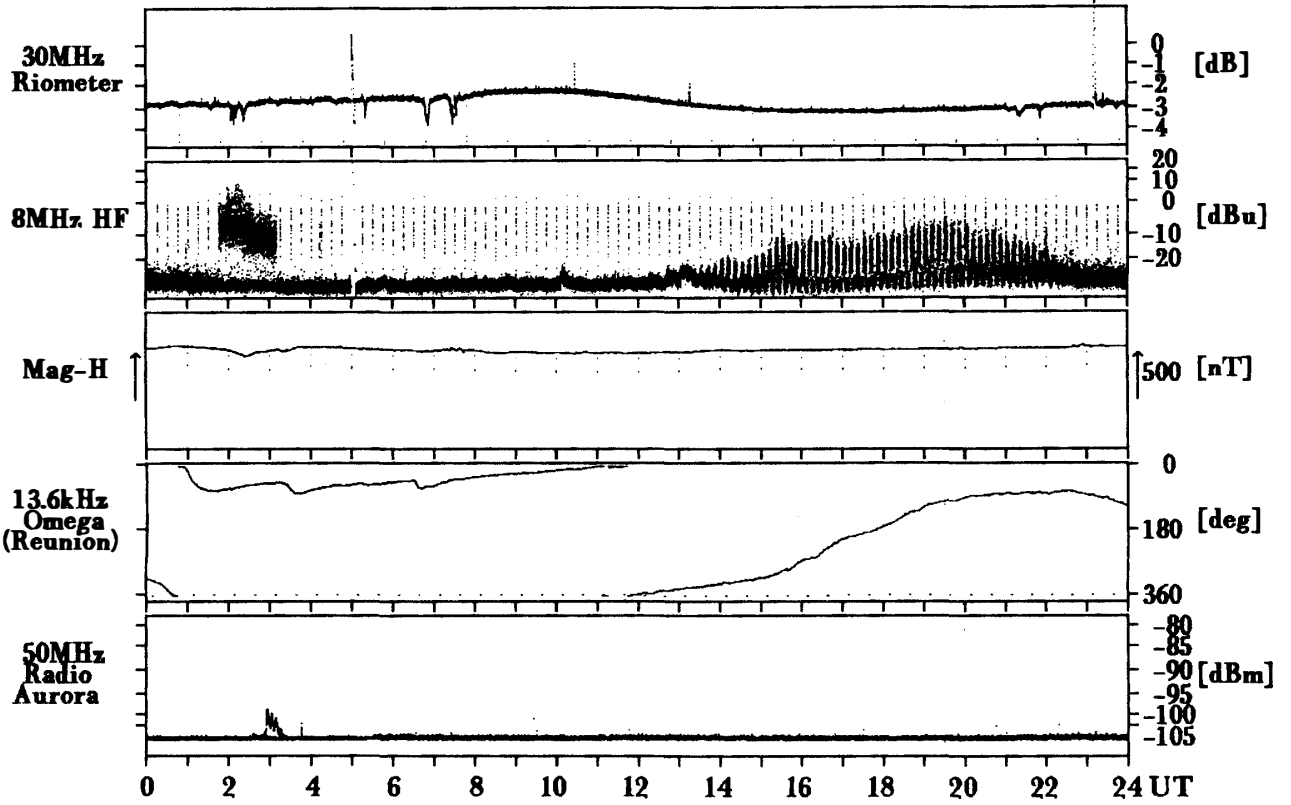






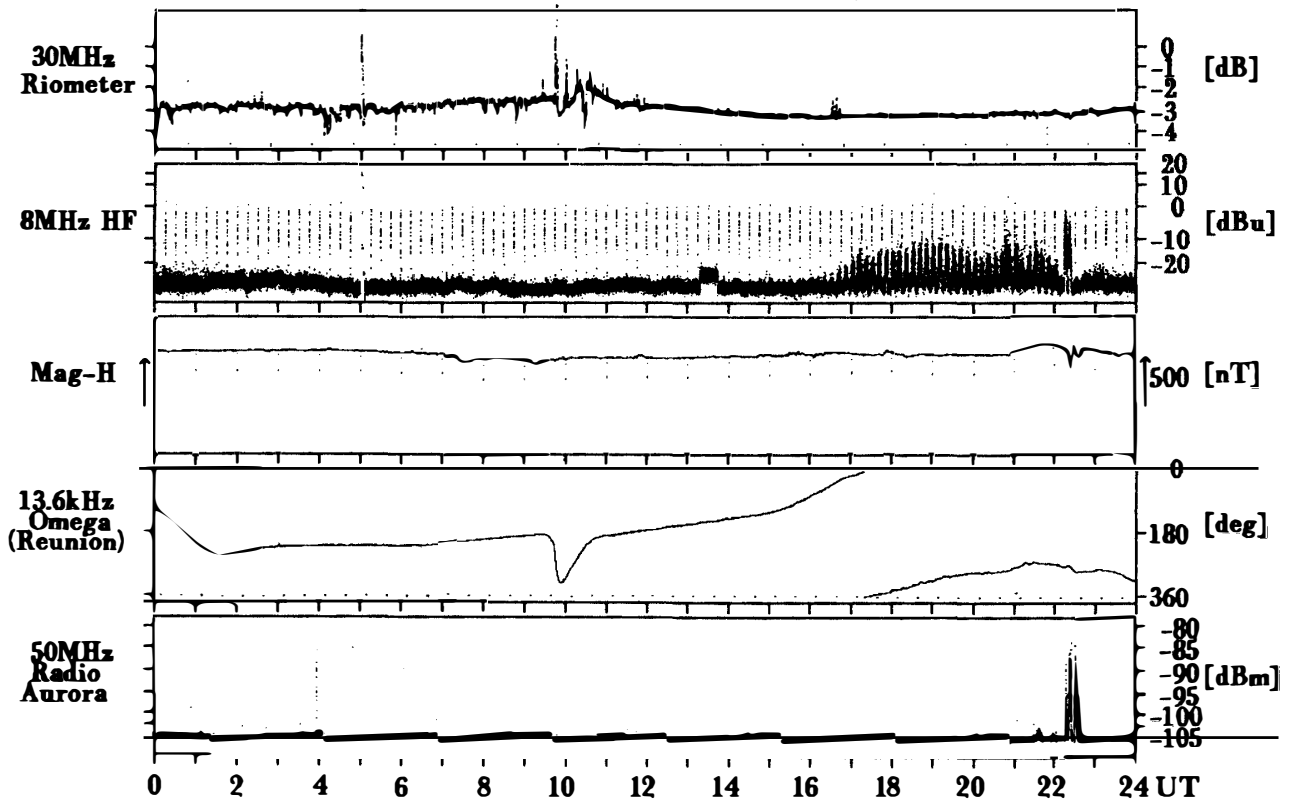
Syowa Station

Total Day / 356 1990/12/22



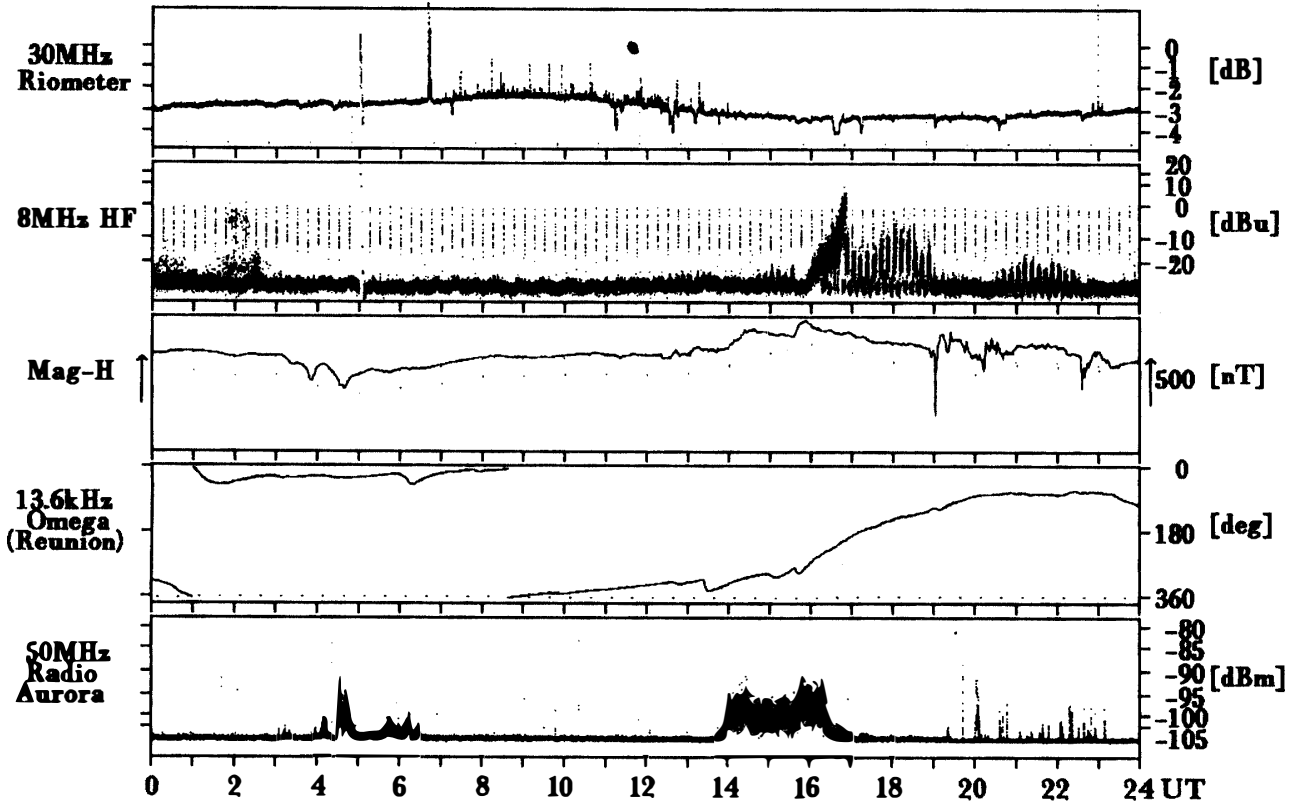
Syowa Station

Total Day / 357 1990/12/23



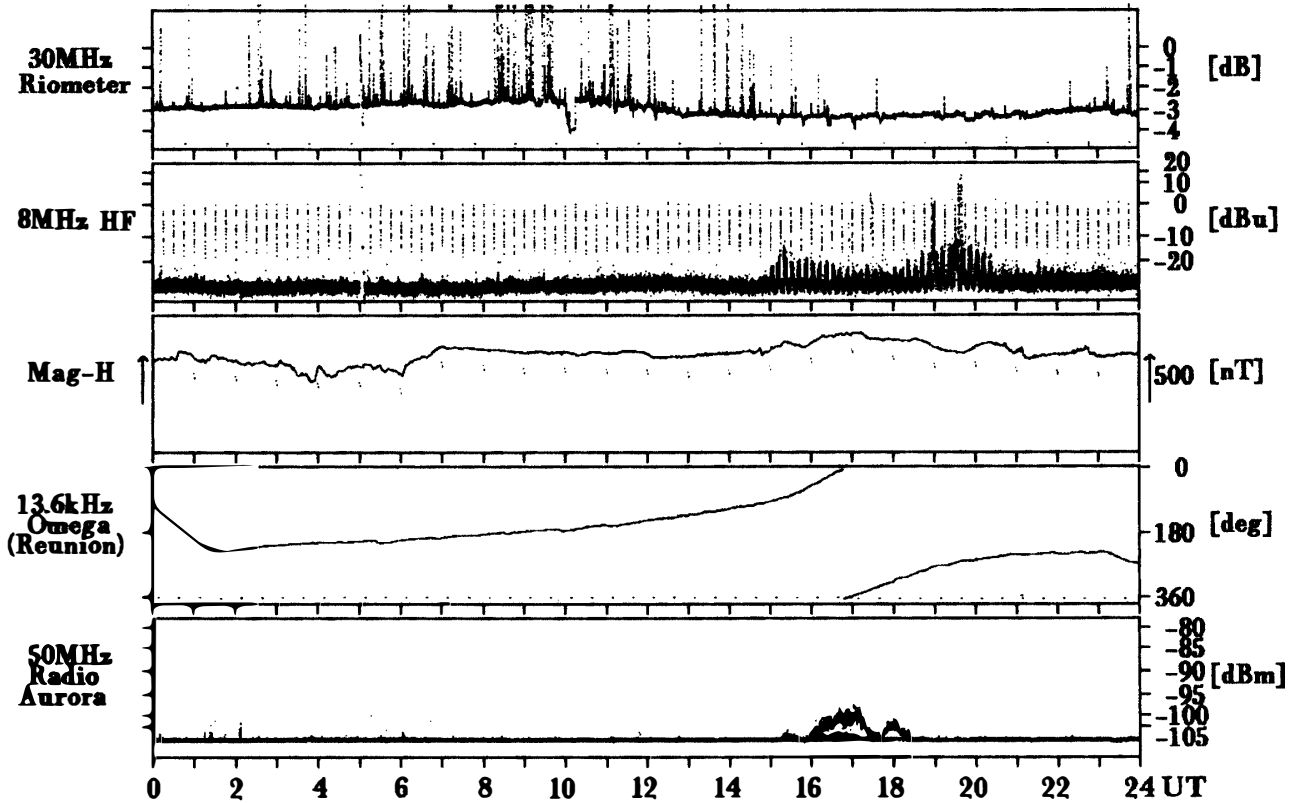
Syowa Station

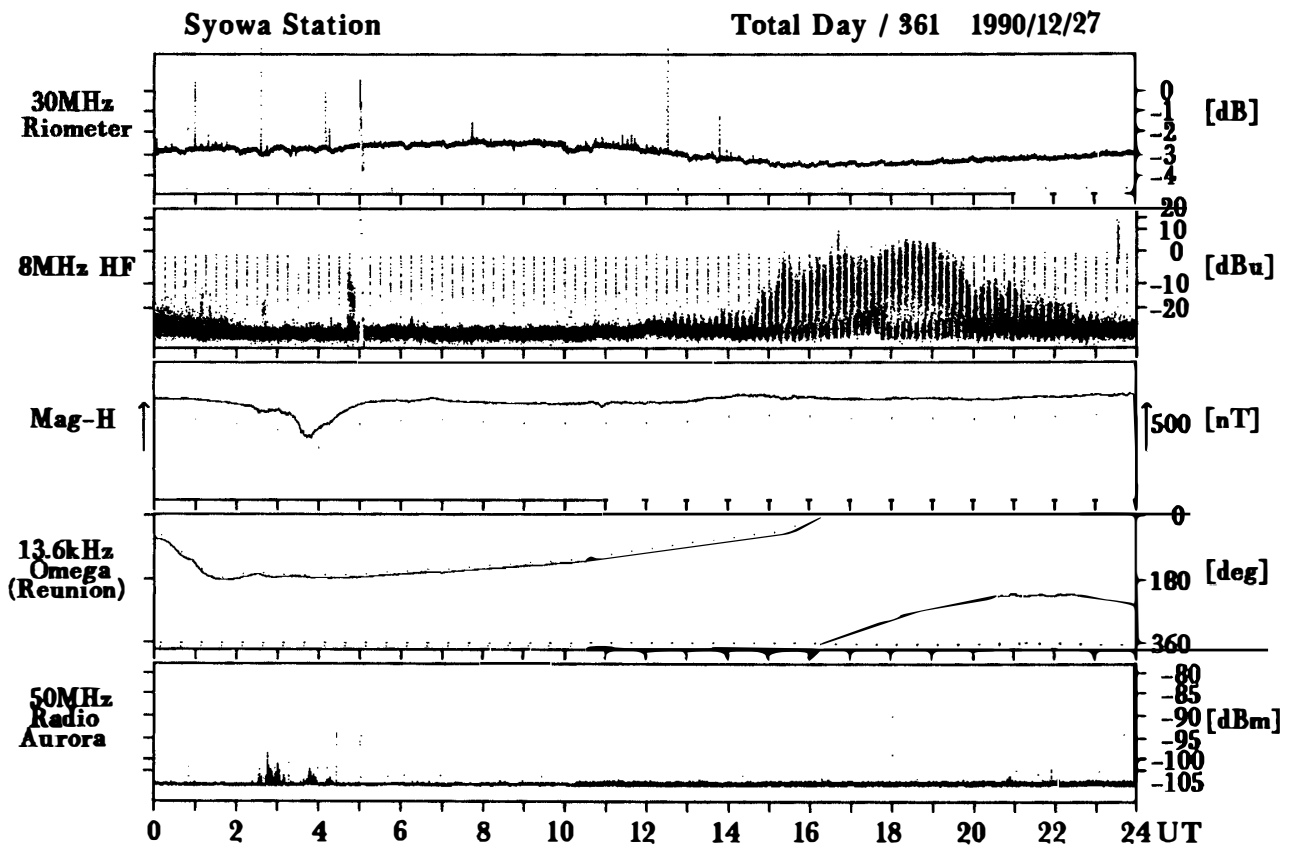
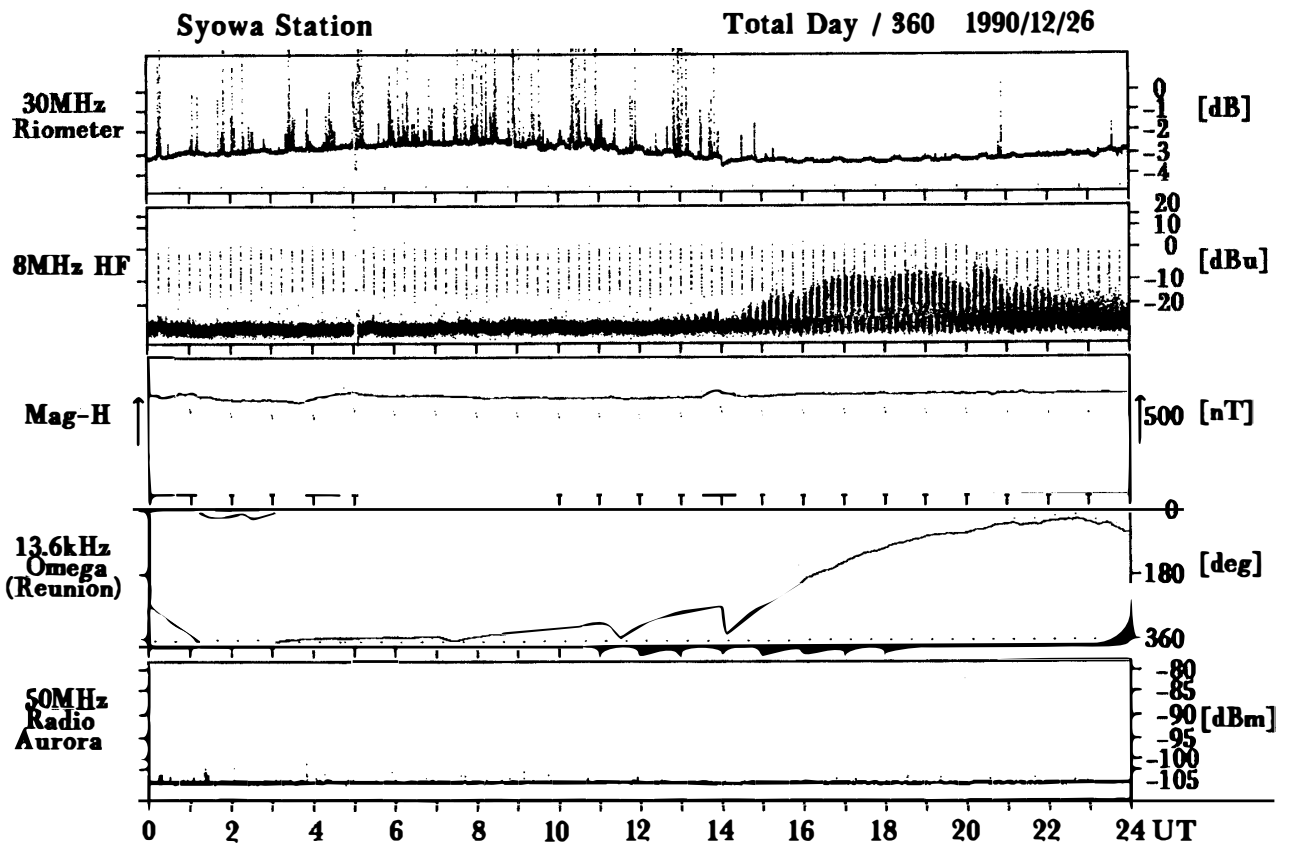
Total Day / 358 1990/12/24



Syowa Station

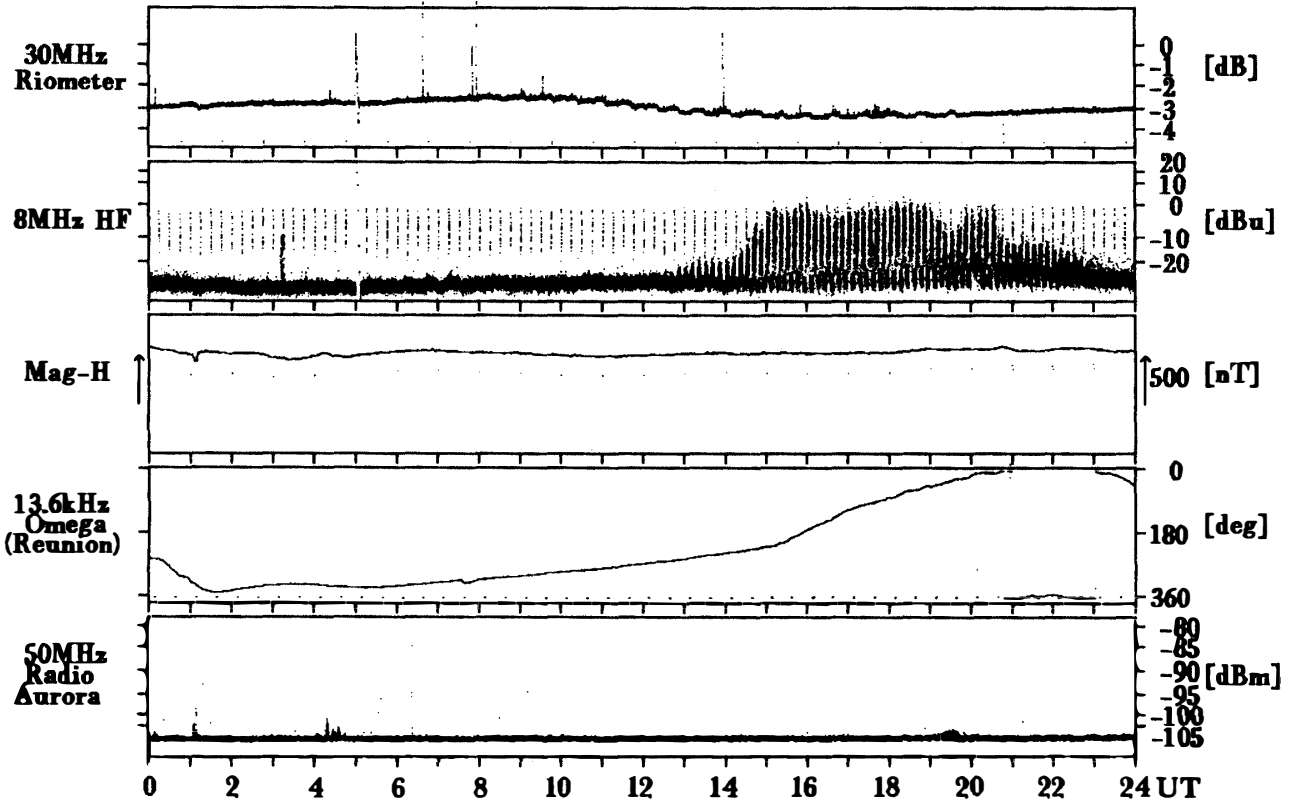
Total Day / 359 1990/12/25





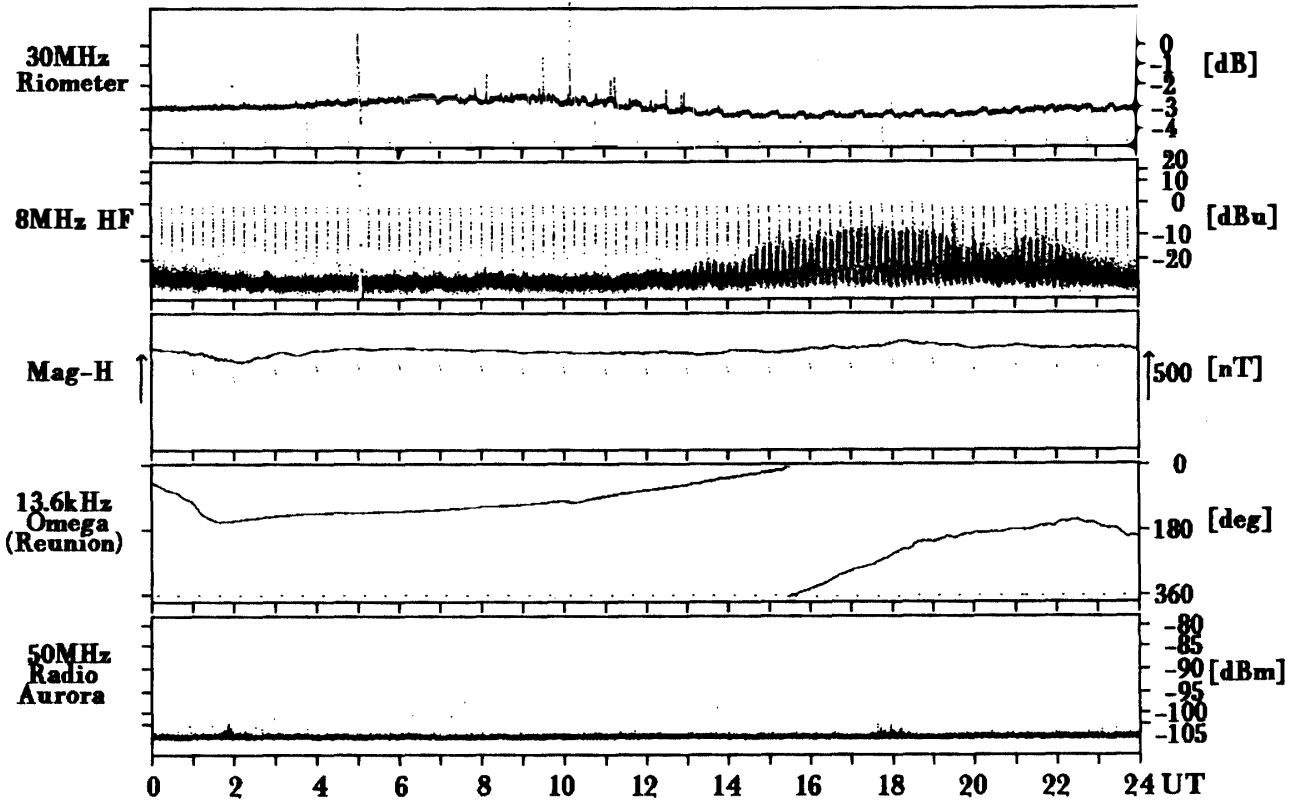
Syowa Station

Total Day / 362 1990/12/28



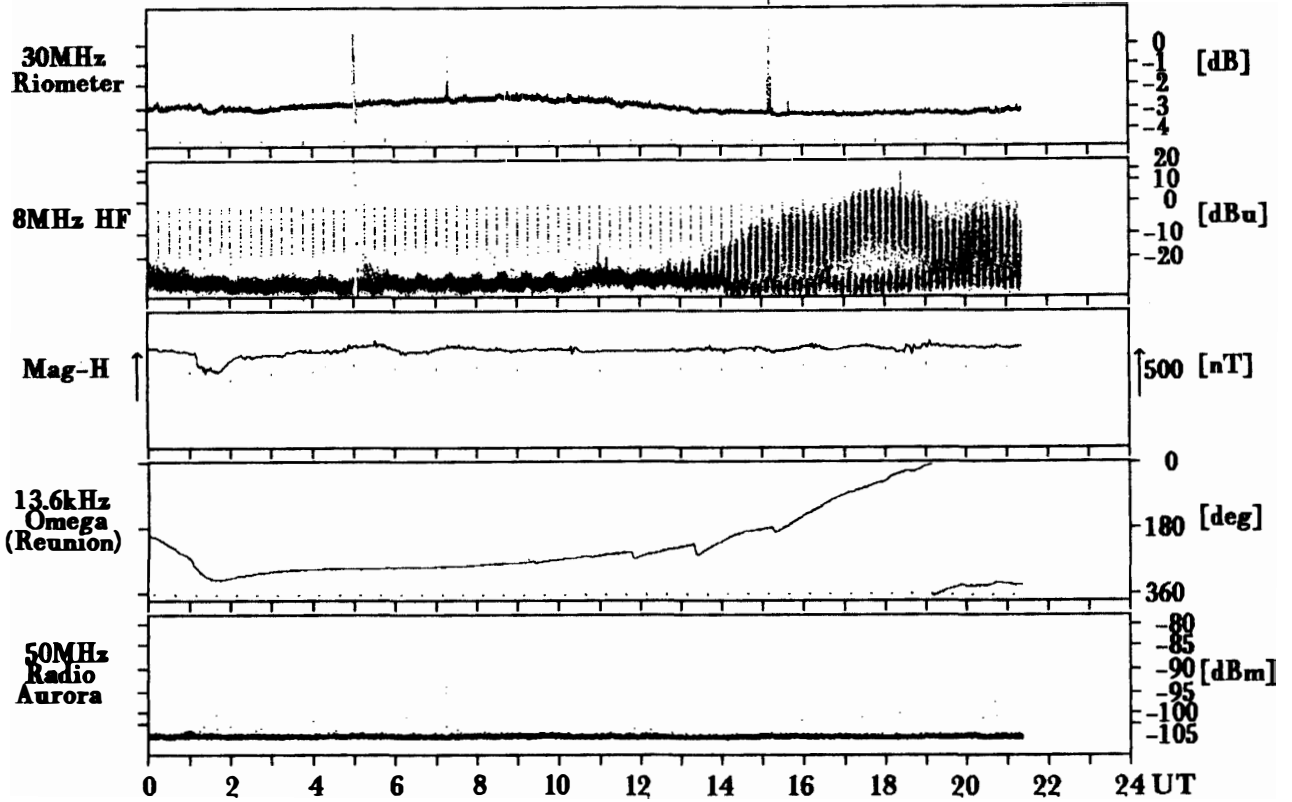
Syowa Station

Total Day / 363 1990/12/29



Syowa Station

Total Day / 364 1990/12/30



Syowa Station

Total Day / 365 1990/12/31

