

RADIO OBSERVATION DATA
AT SYOWA STATION, ANTARCTICA DURING 1995

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1. Introduction

CRL has been observing the absorption of cosmic radio noise with a standard riometer (relative ionospheric opacity meter) at 30 MHz at Syowa Station, Antarctica since February 1966. This report presents the data observed in January 1 through December 31, 1995. The combined data plots also contain geomagnetic field, HF, VLF, and radar observations for reference.

Copies of these data in digital form are available on request.

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2. Location

| Syowa Station | | | |
|-----------------|------------------|-----------------|------------------|
| Geographic | | Geomagnetic | |
| Latitude (Deg.) | Longitude (Deg.) | Latitude (Deg.) | Longitude (Deg.) |
| 69.00 S | 39.58 E | -70.0 | 80.2 |

3. Observer

Koji INAMORI (Communications Research Laboratory)

4. Instrumentation

The riometer receiver has a center frequency of 30 MHz and a band width of 7.5 kHz; it 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 the 50-ohm coaxial transmission line (8D-2V), which is 80 m long. Noise from a reference noise diode, with power levels of 20000 K, 16000 K, 12000 K, 8000 K, and

4000 K, is inserted each day at 0800 at 45° EMT (Eastern Meridian Time: UT + 3 hours). The data are recorded on magnetic tape in digital form.

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. Due to the earth's revolution, the time of the zenith passage of a particular cosmic radio source shifts about four minutes earlier each day and returns to its initial time after one year. This diurnal variation of the cosmic noise power is deduced from the record on the quiet days.

The ionospheric absorption in dB is obtained as follows:

- 1) The reference sidereal diurnal variation of the cosmic noise power in K, T_0 , is determined from the diurnal variations on several selected quiet days each month.
- 2) Actual received power, T_1 , is read in K.
- 3) Ionospheric absorption in dB, A , is calculated with the following conversion equation:

$$A = -10 \times \log \left(\frac{T_1}{T_0} \right)$$

The combined data plots also include the variation of H-component of the geomagnetic field, HF field strength, phase variation of VLF waves, and auroral radar echo intensity at Syowa Station. In the panel of geomagnetic variations, the H-component increases upward and the calibration signals are added each hour as a depression of 200 nT.

Because of troubles in the data acquisition system, any plot during period showing in Table 1 do not appear in the combined data plots.

Variations of riometer during period from May 1 to December 31 are not shown because of troubles in the observation system.

Auroral radar echo intensity throughout the year and H-component of the geomagnetic field during period from 0500 on September 9 to 0600 on September 10 are not shown because of a technical trouble.

If there is any unclear point you would raise or if you have any question, do not hesitate to write us at the address in the introduction section.

Table 1

| from | to |
|----------------|----------------|
| Jan. 2, 06 20 | Jan. 2, 24 00 |
| Jan. 10, 19 50 | Jan. 10, 24 00 |
| Jan. 20, 12 30 | Jan. 20, 14 50 |
| Jan. 30, 06 10 | Feb. 6, 06 10 |
| Feb. 13, 06 10 | Feb. 20, 06 10 |
| Jun. 29, 19 40 | Jun. 30, 19 50 |
| Dec. 24, 17 10 | Dec. 26, 12 00 |

Bibliography relevant to RADIO OBSERVATION DATA AT SYOWA STATION , ANTARCTICA (1)
(RIOMETER RECORDS OF 30 MHz COSMIC NOISE AT SYOWA STATION, ANTARCTICA)

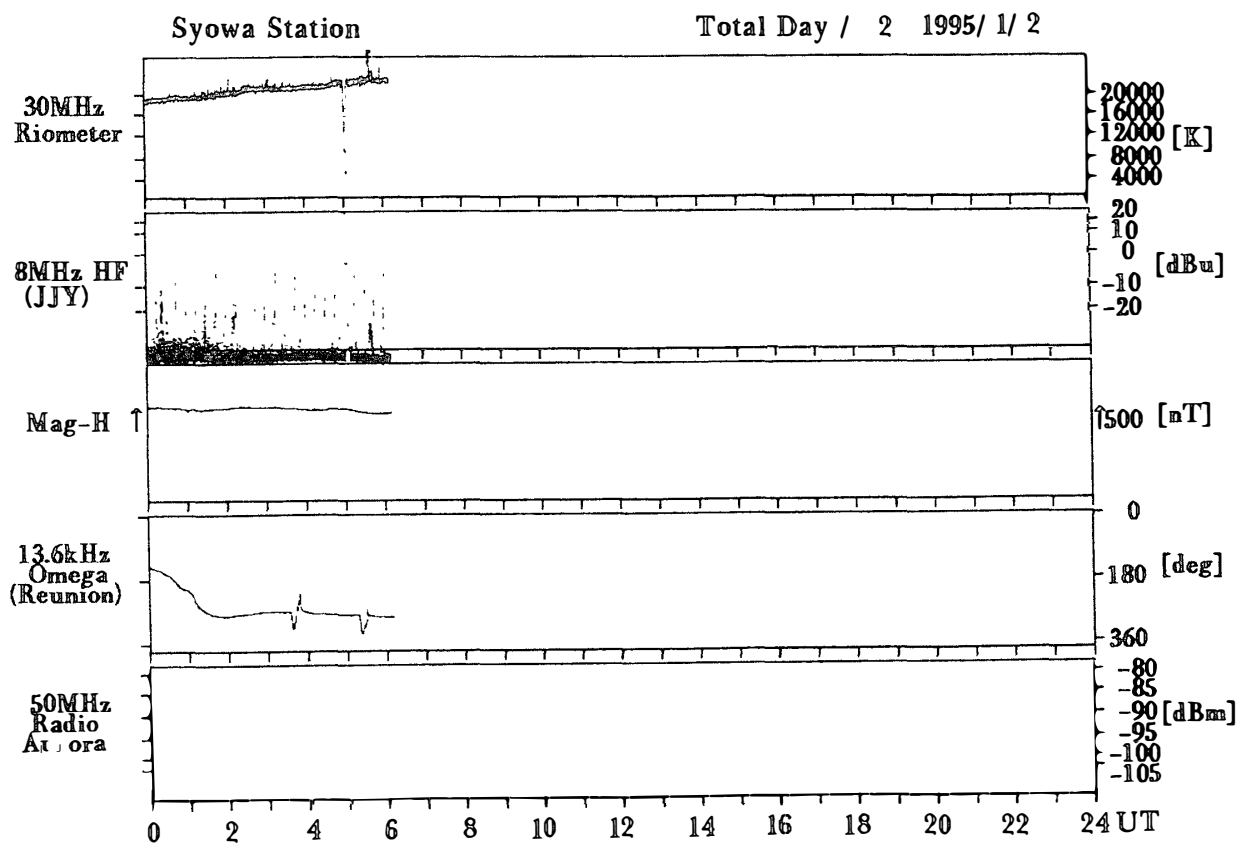
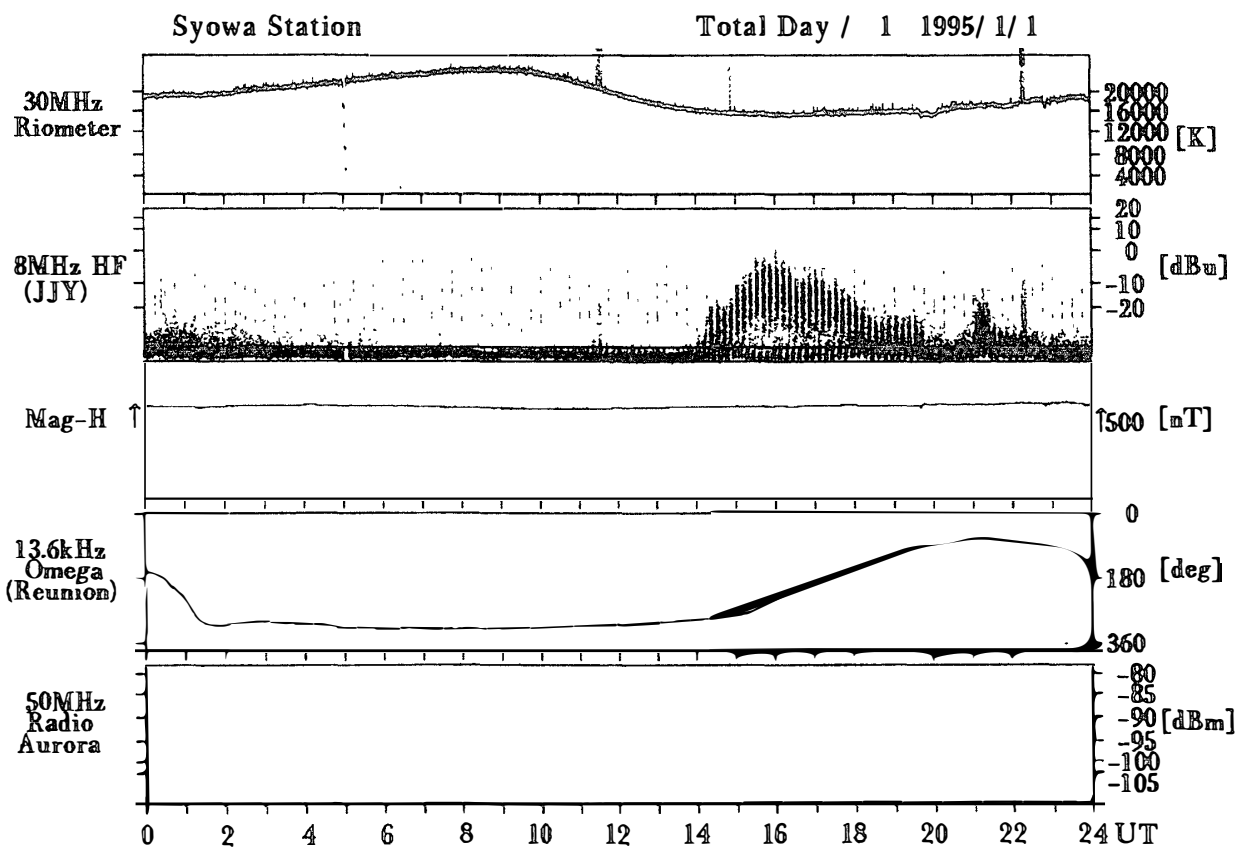
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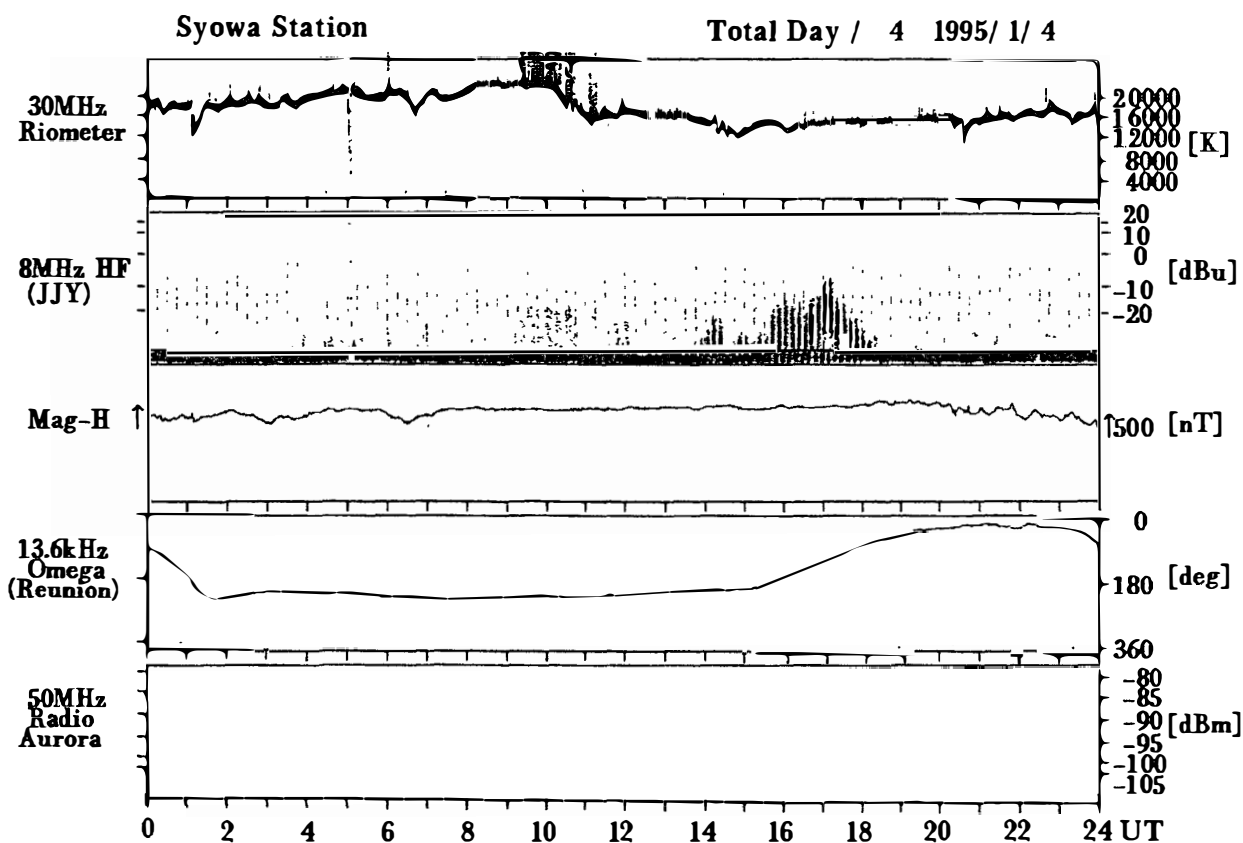
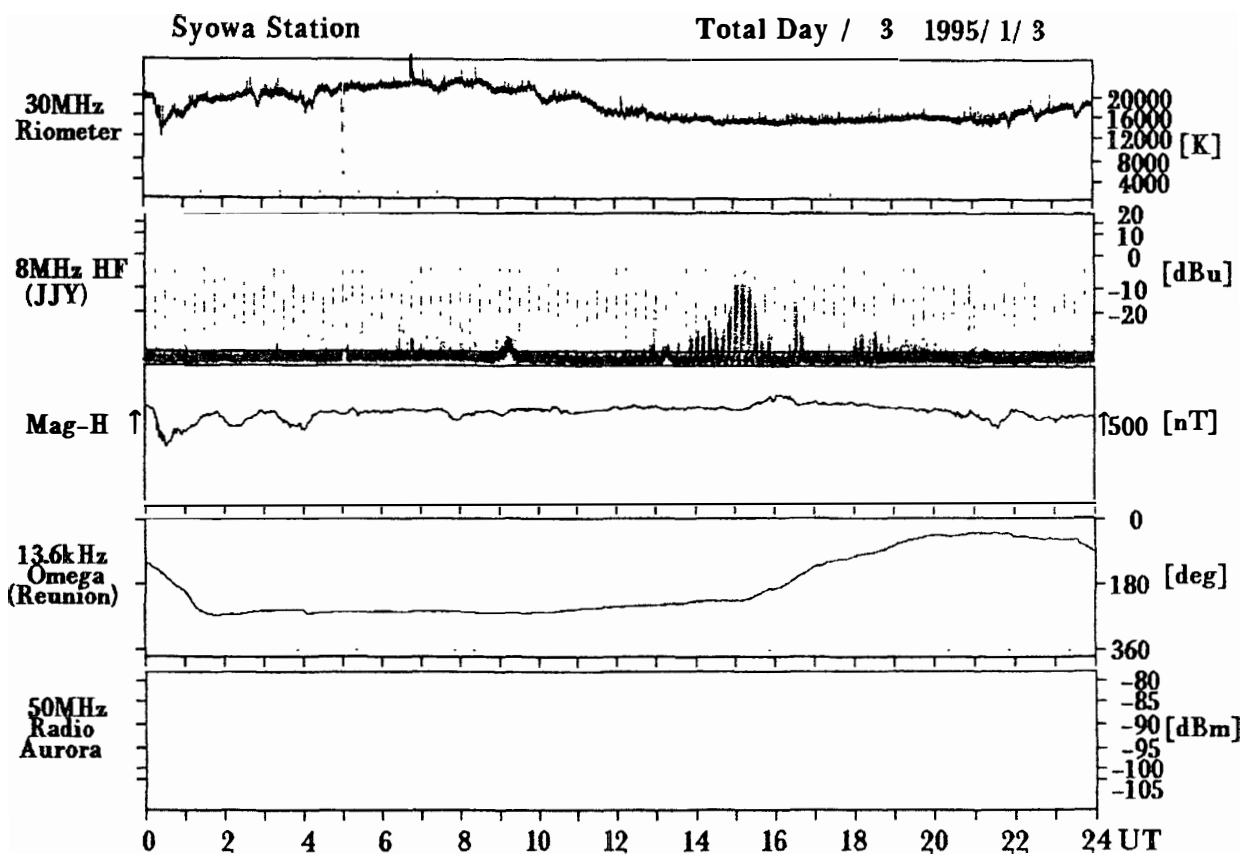
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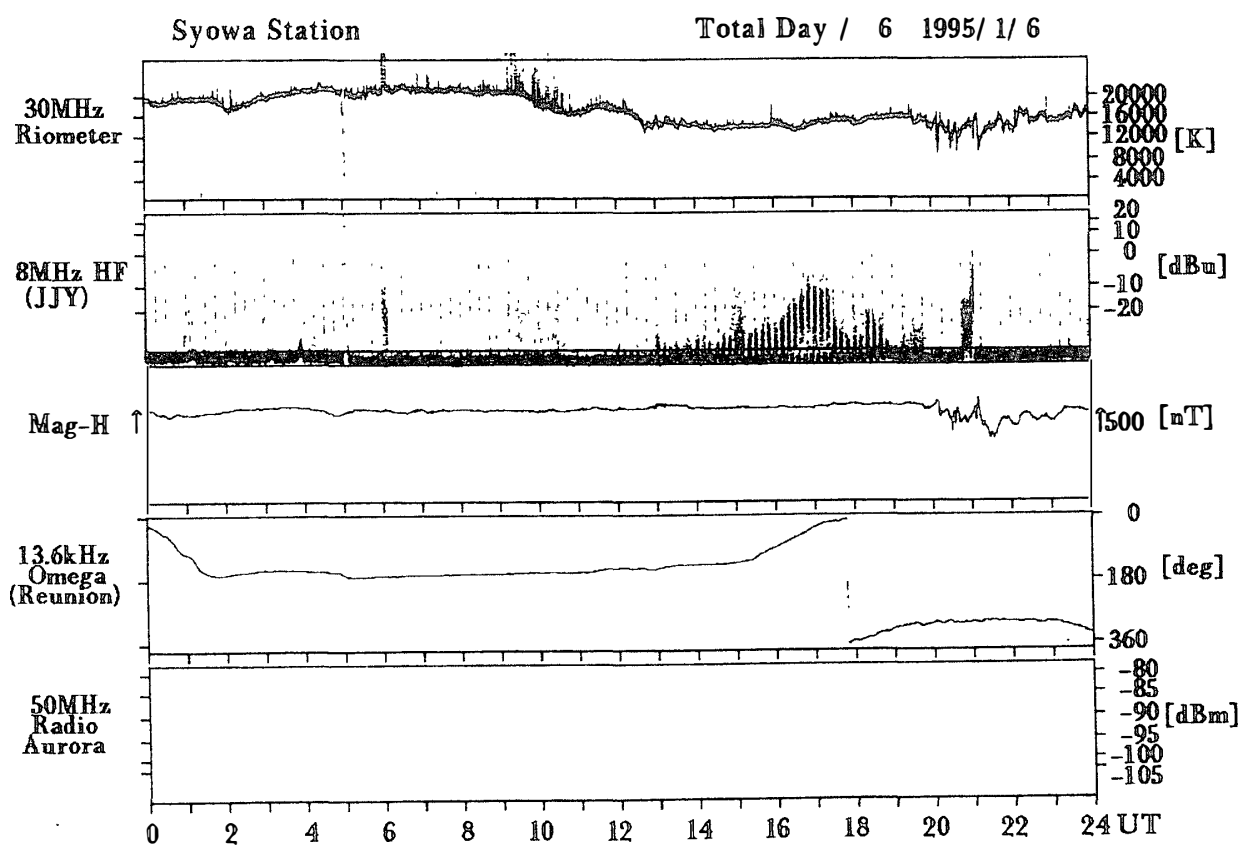
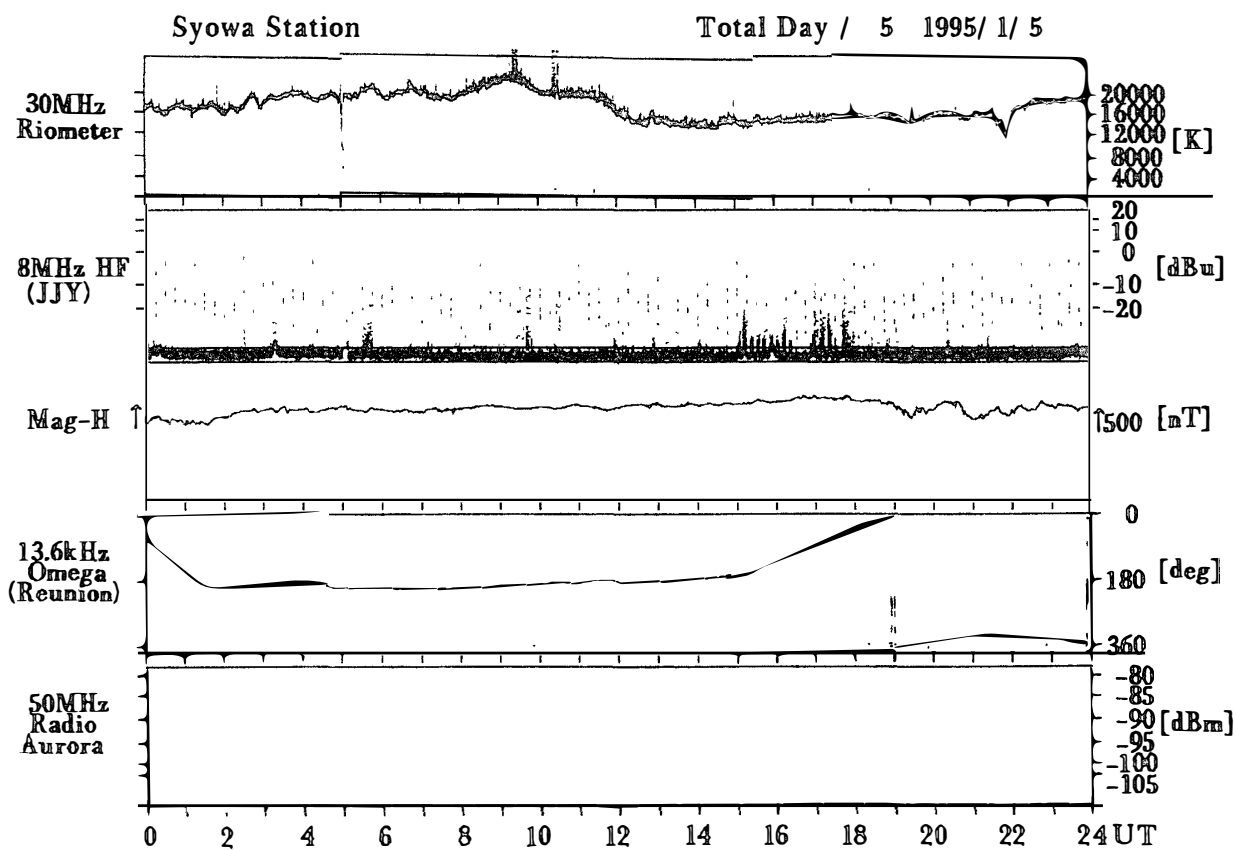
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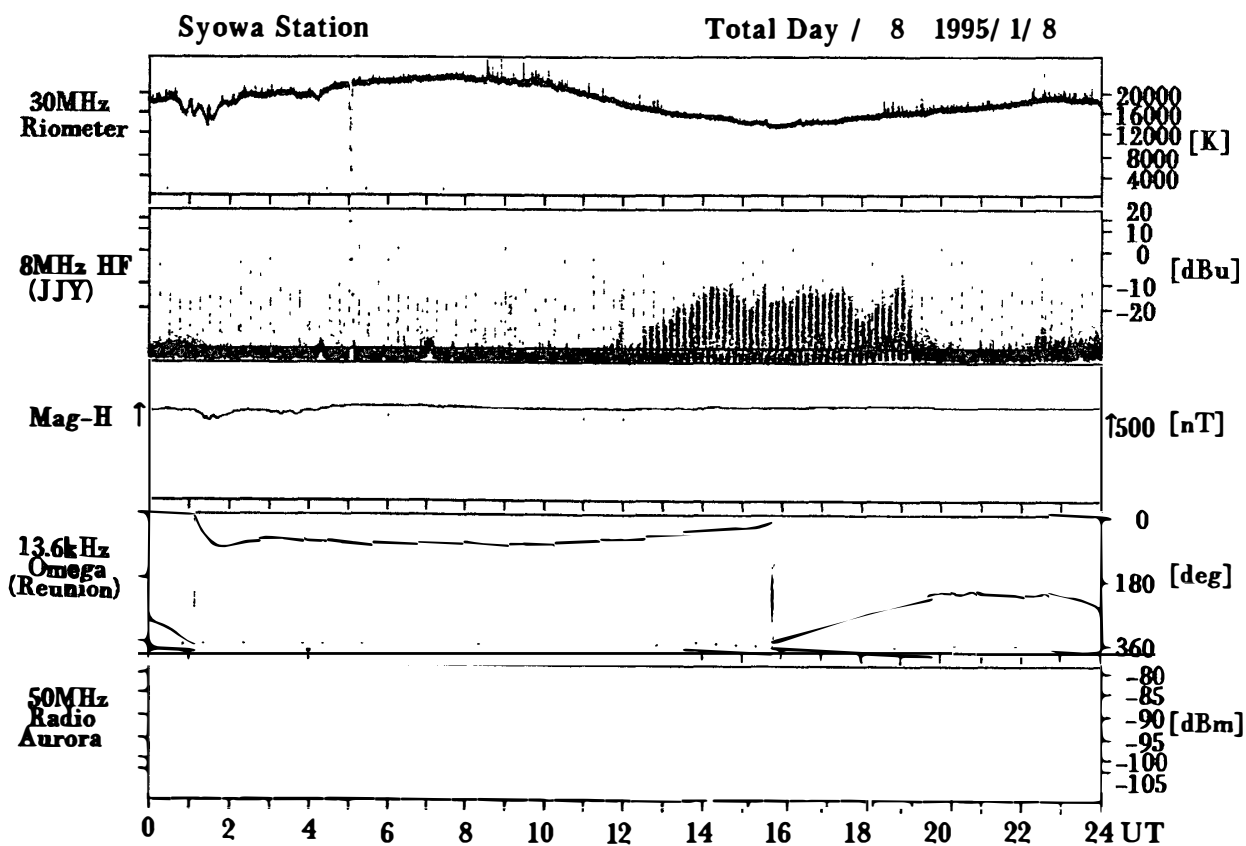
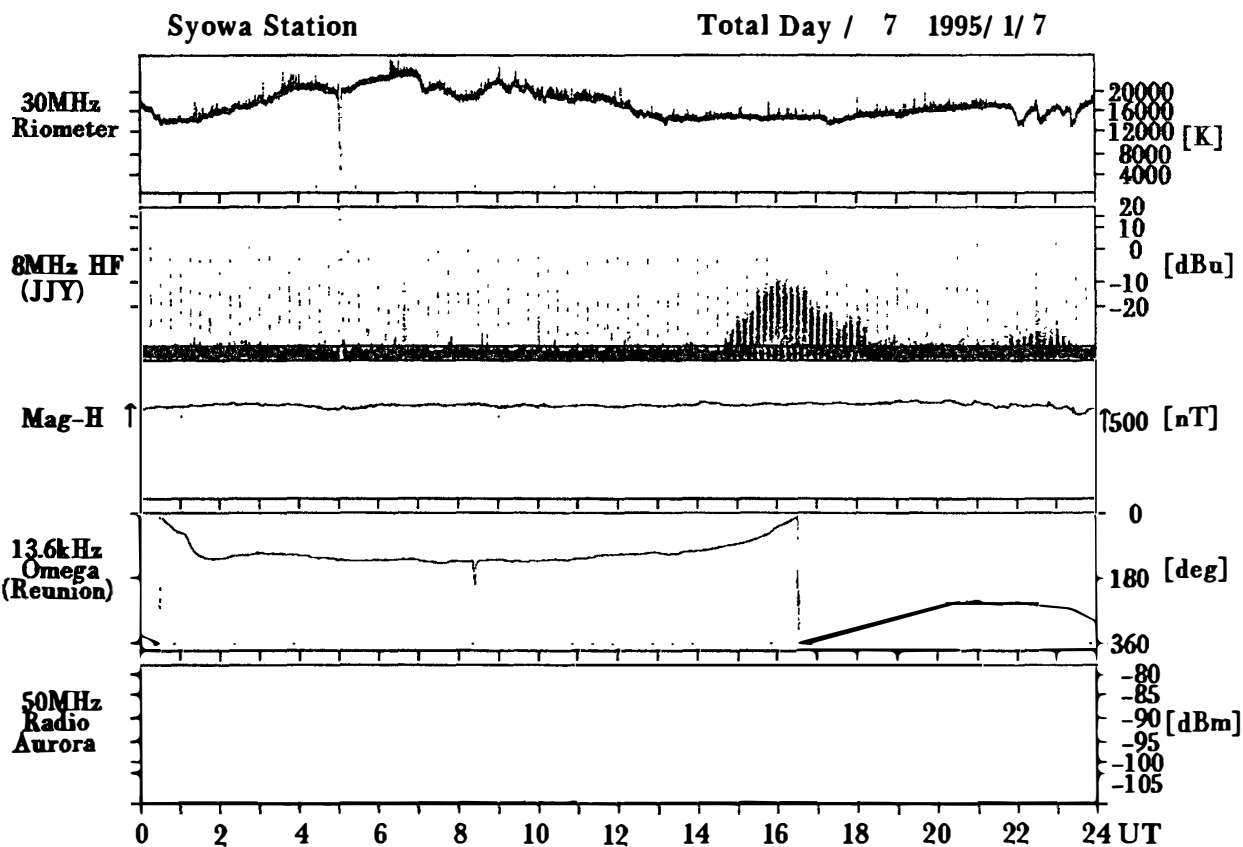
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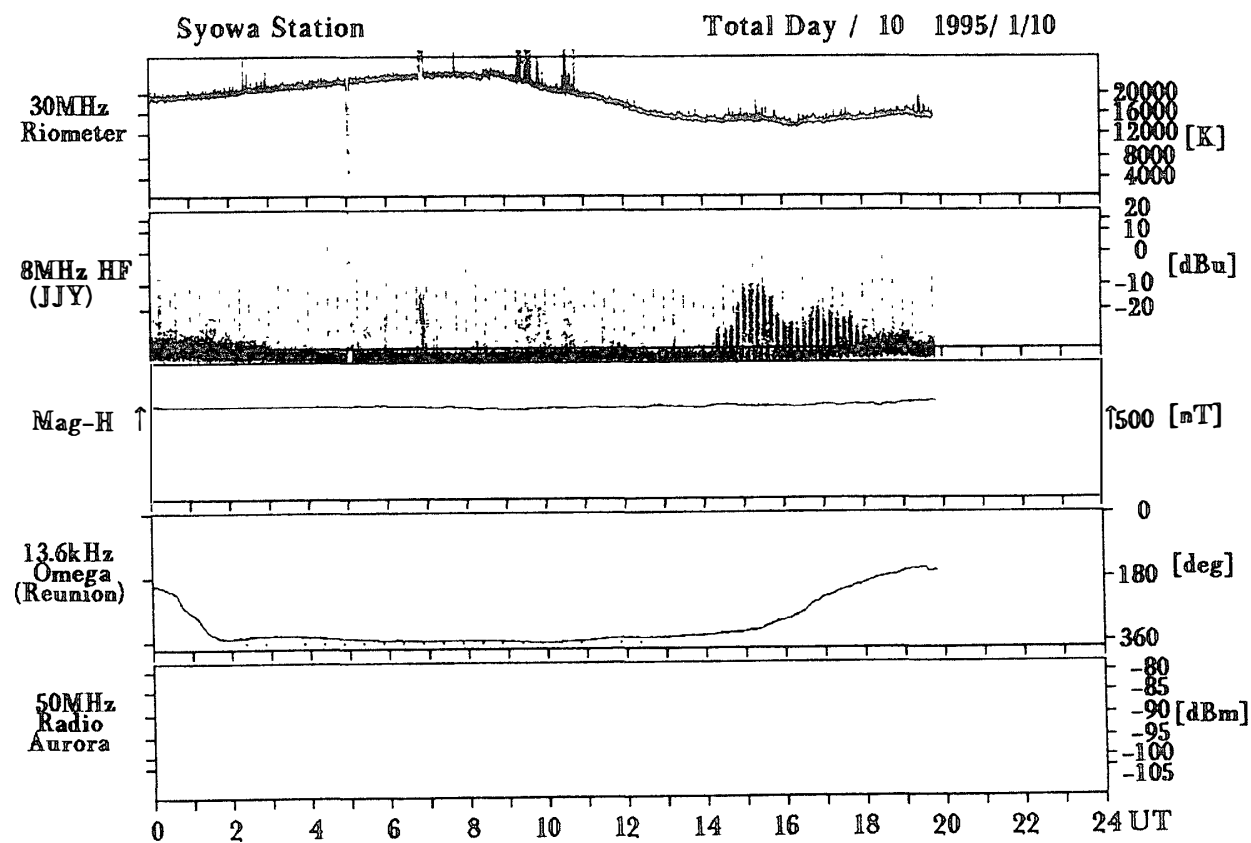
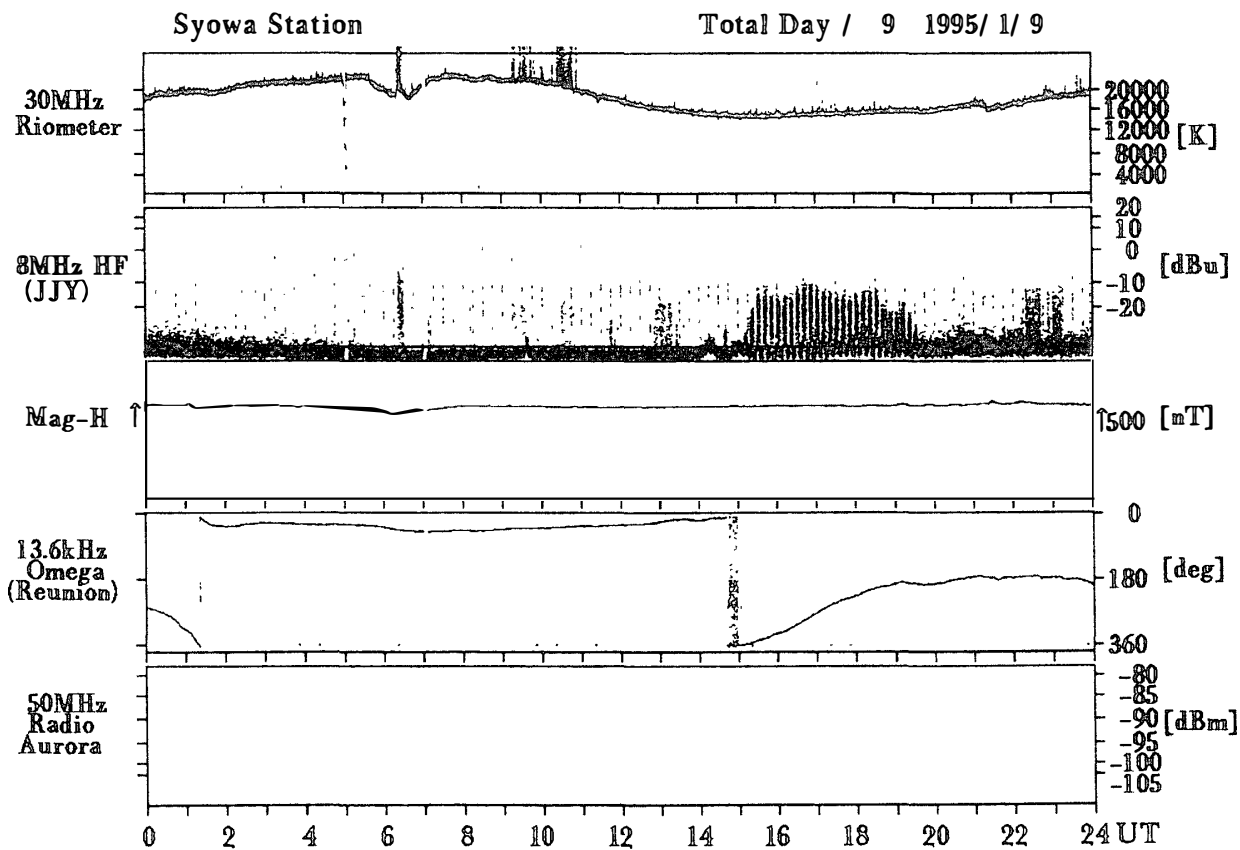
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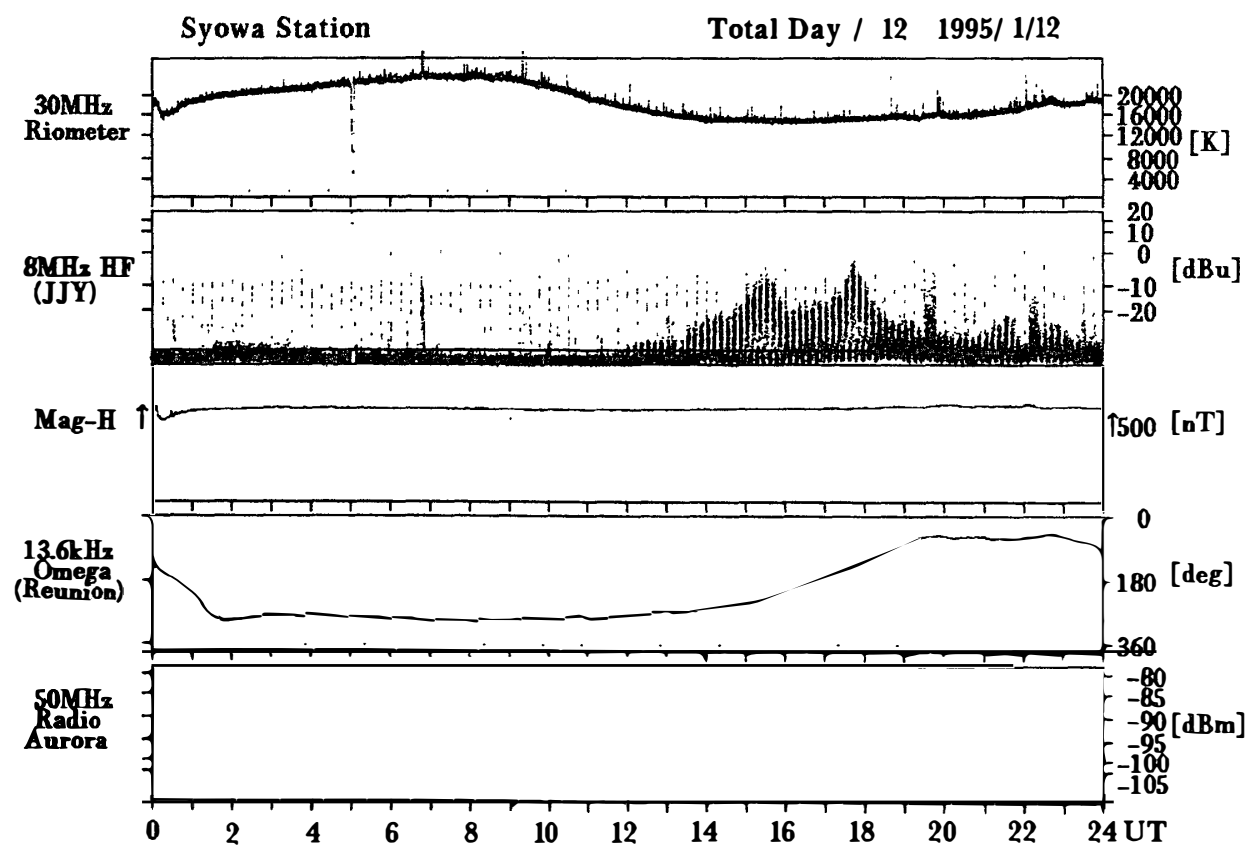
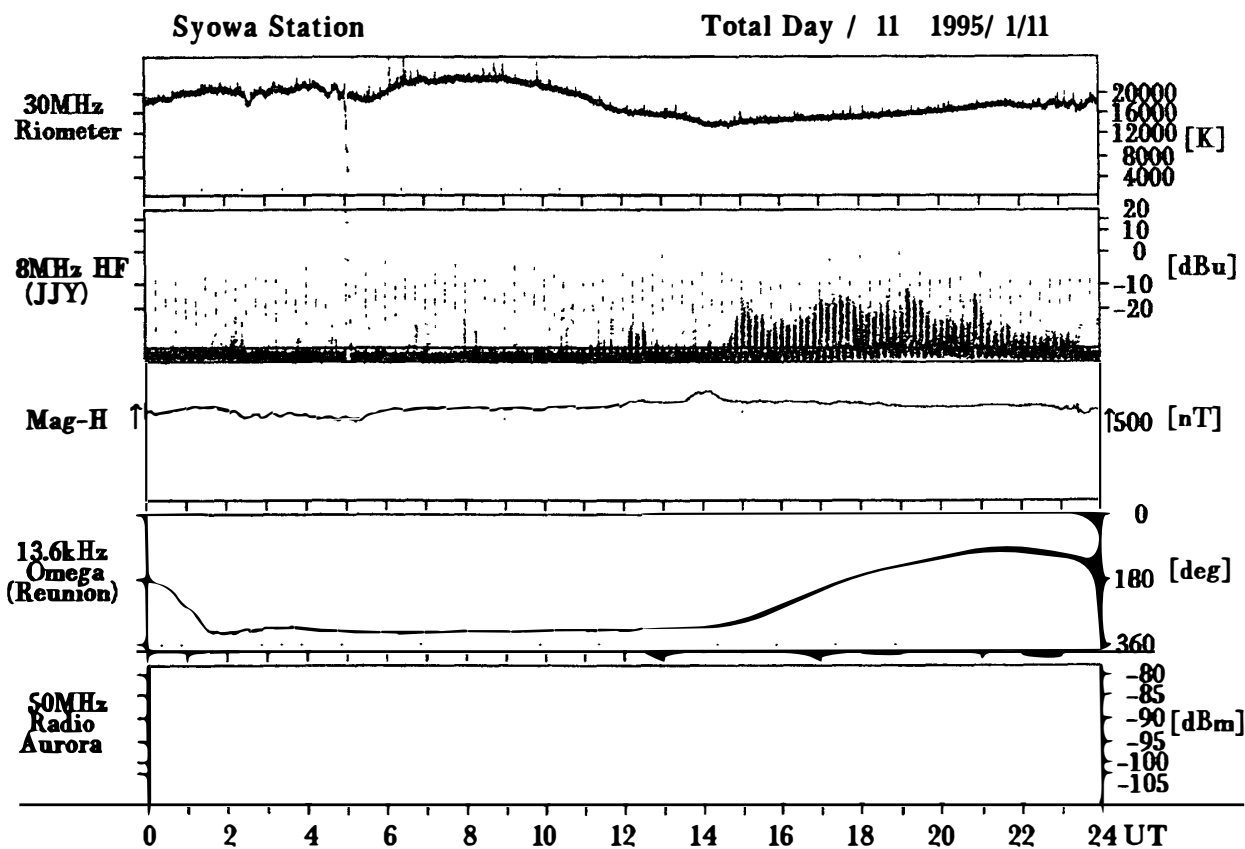


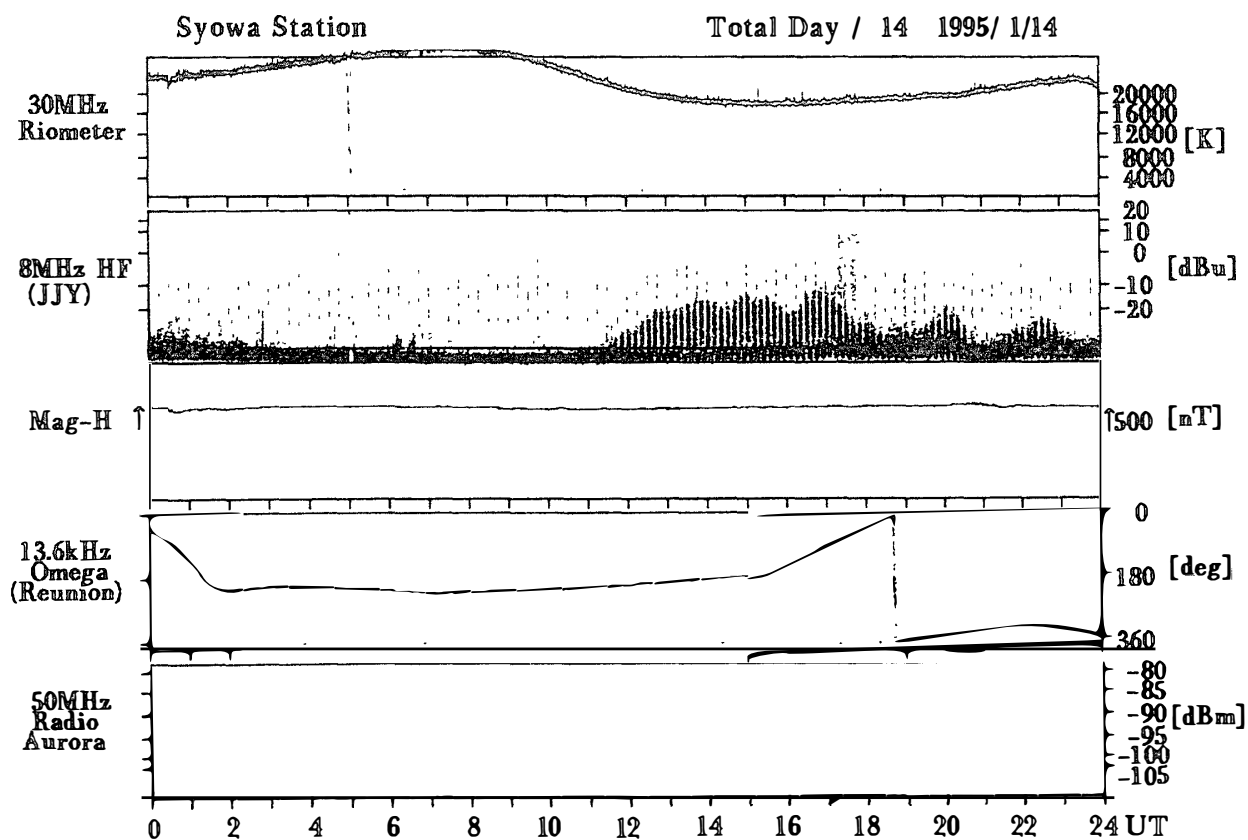
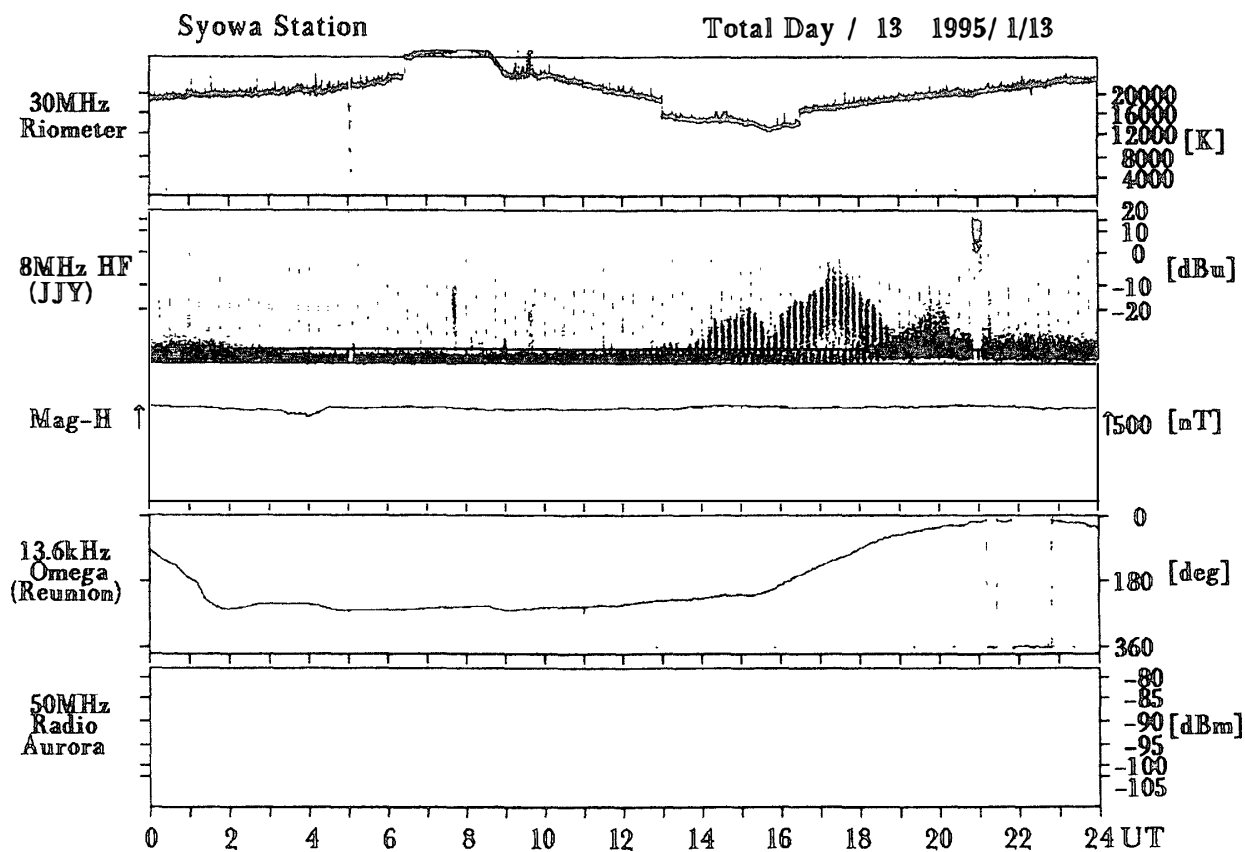


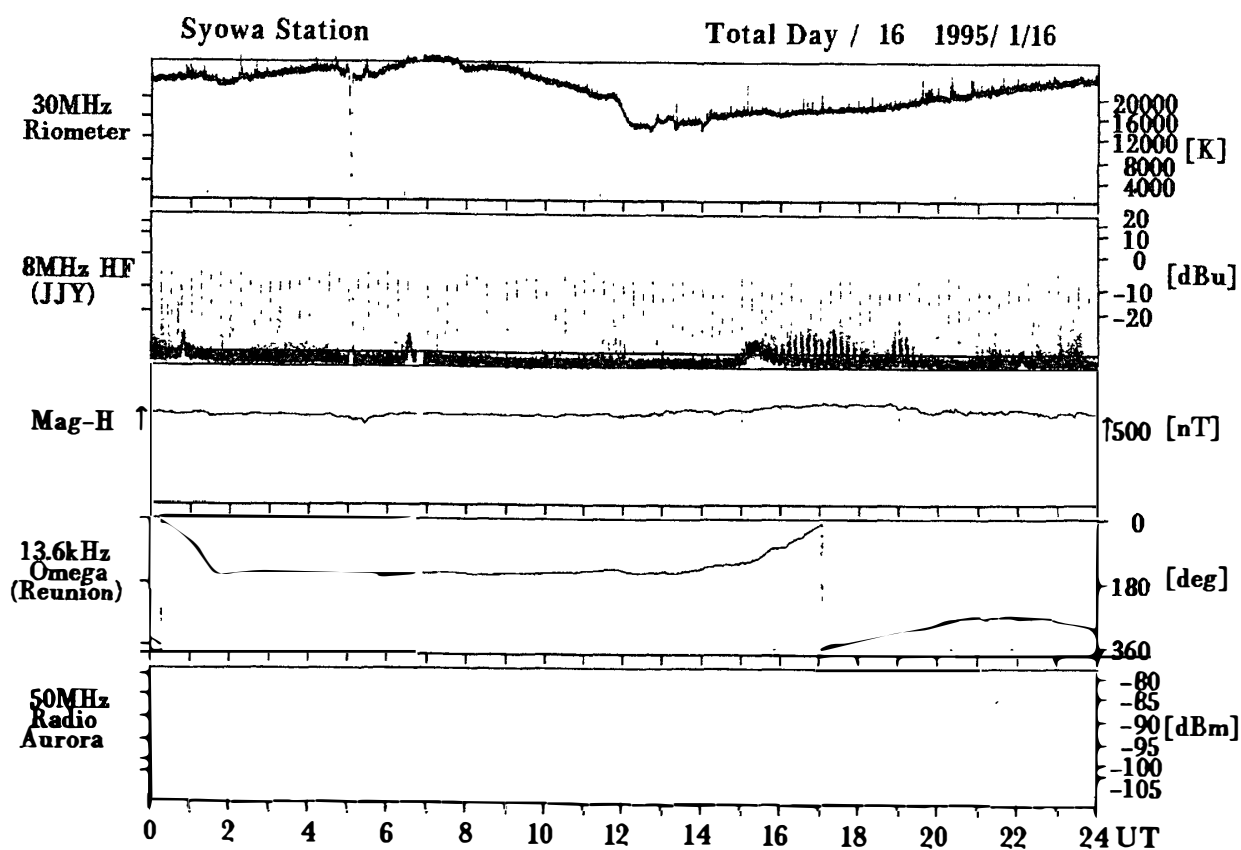
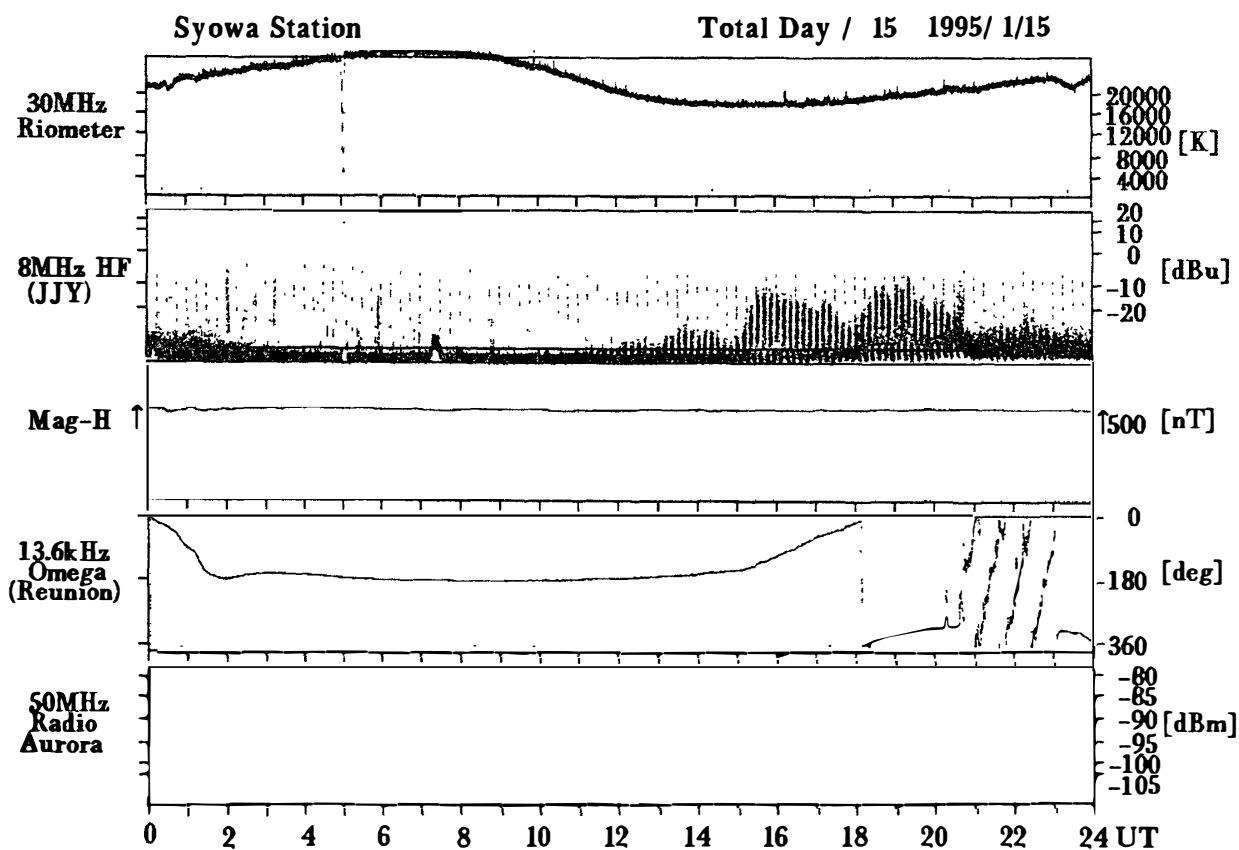


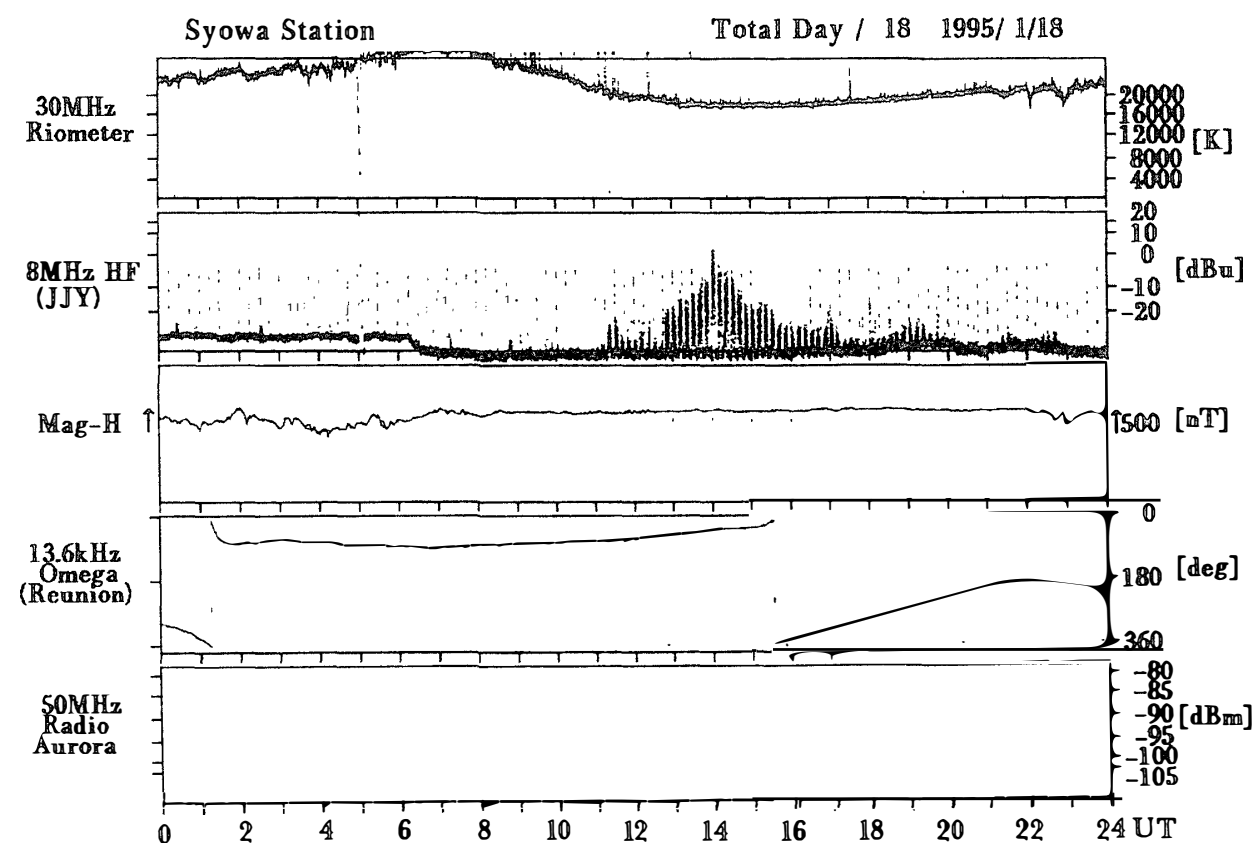
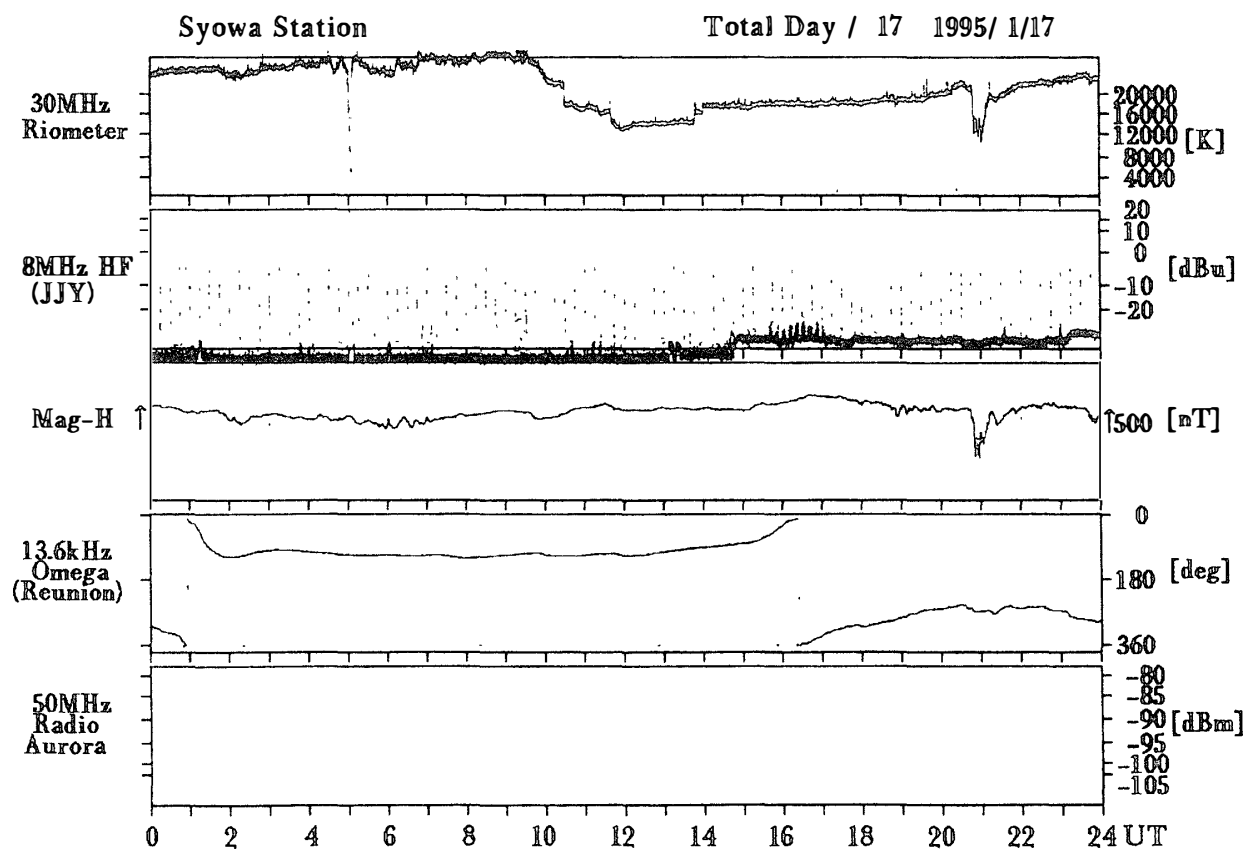


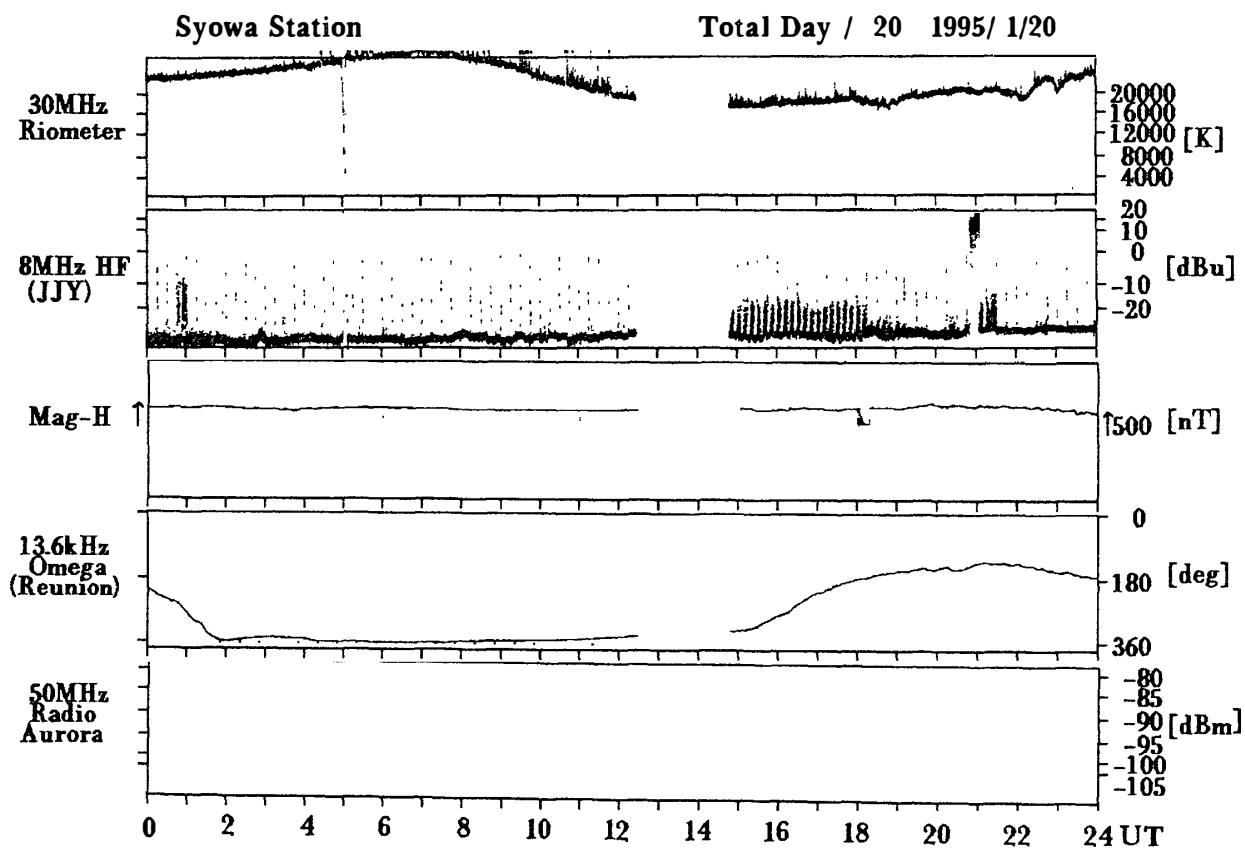
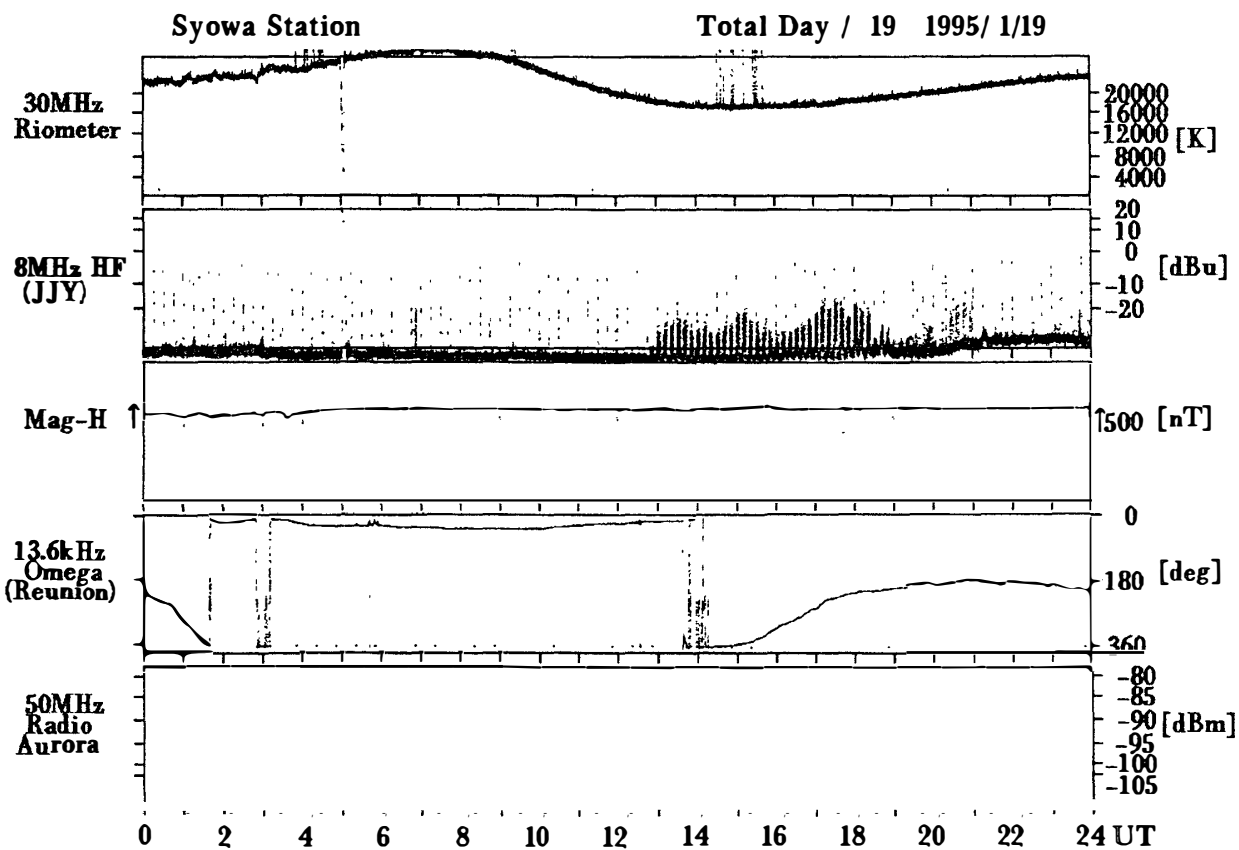


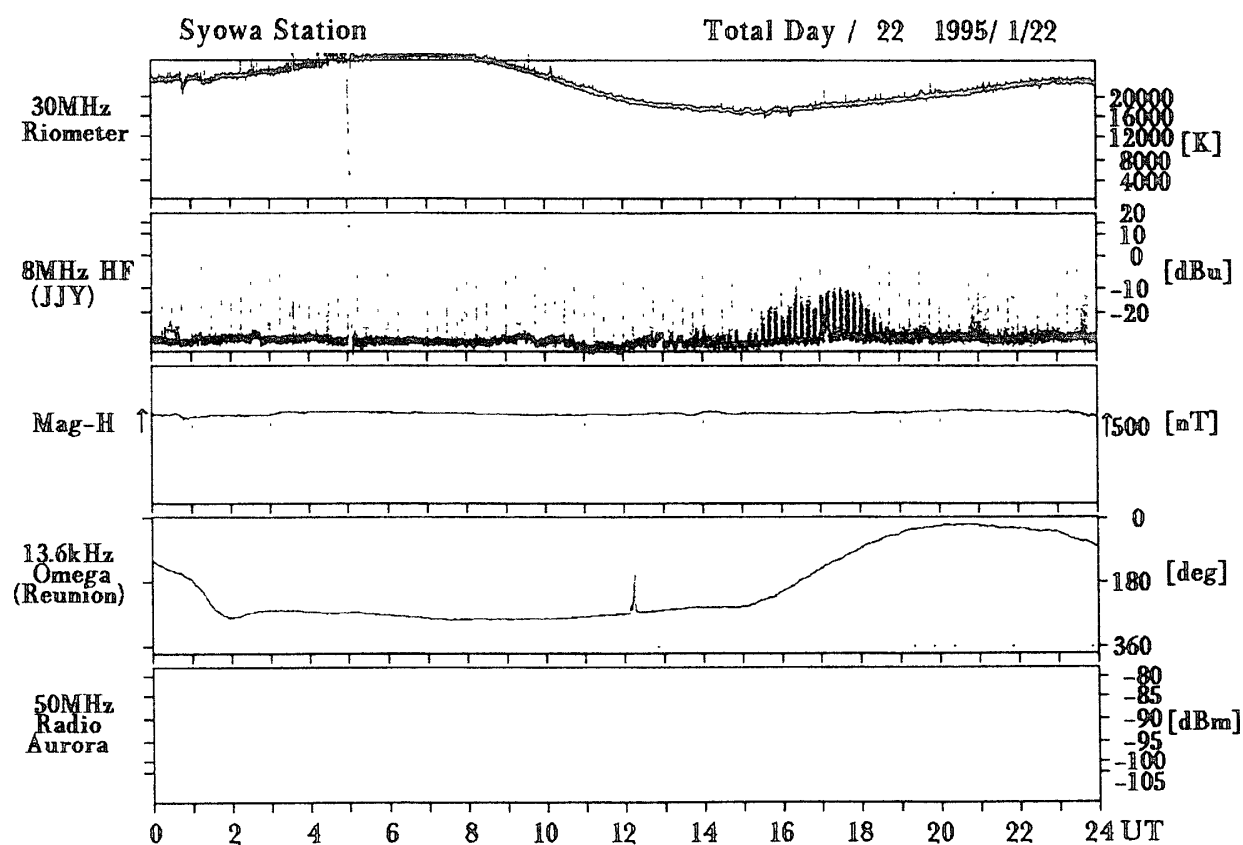
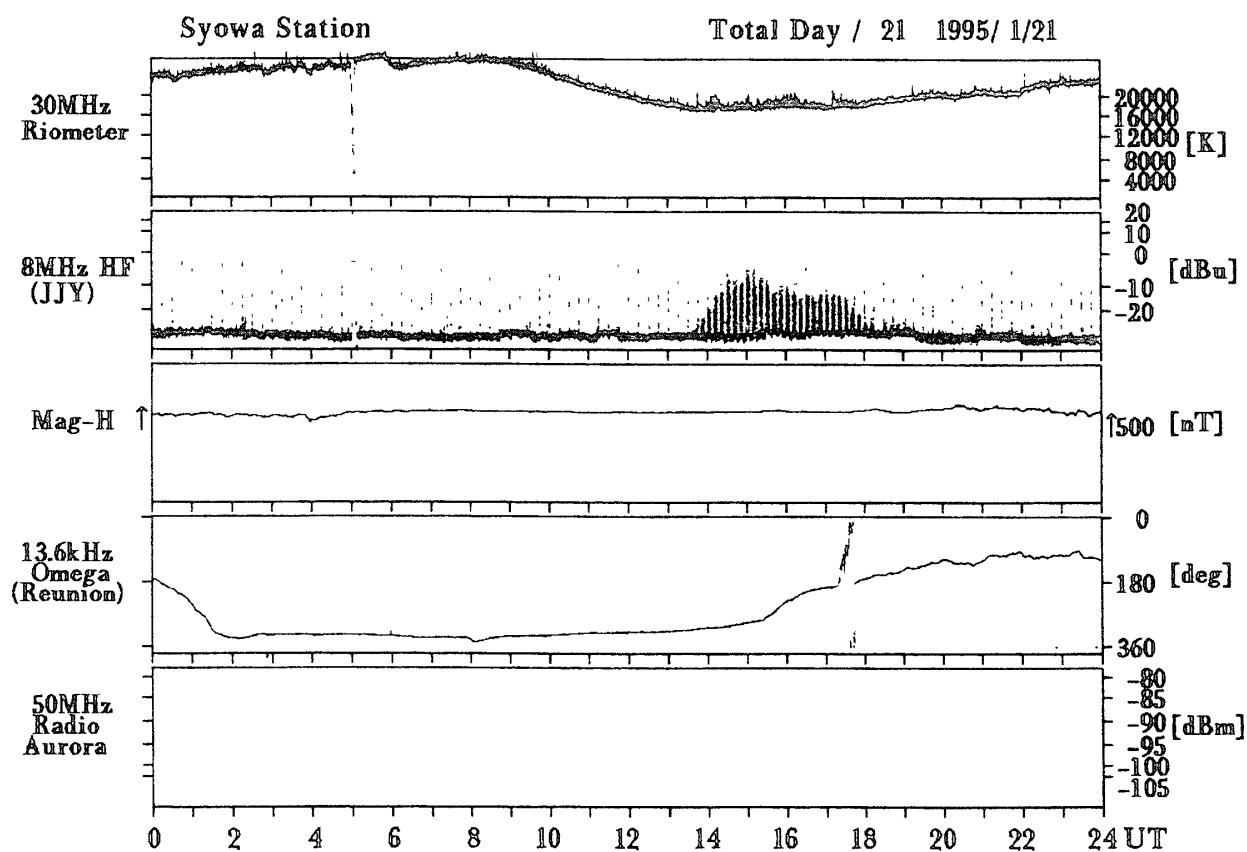


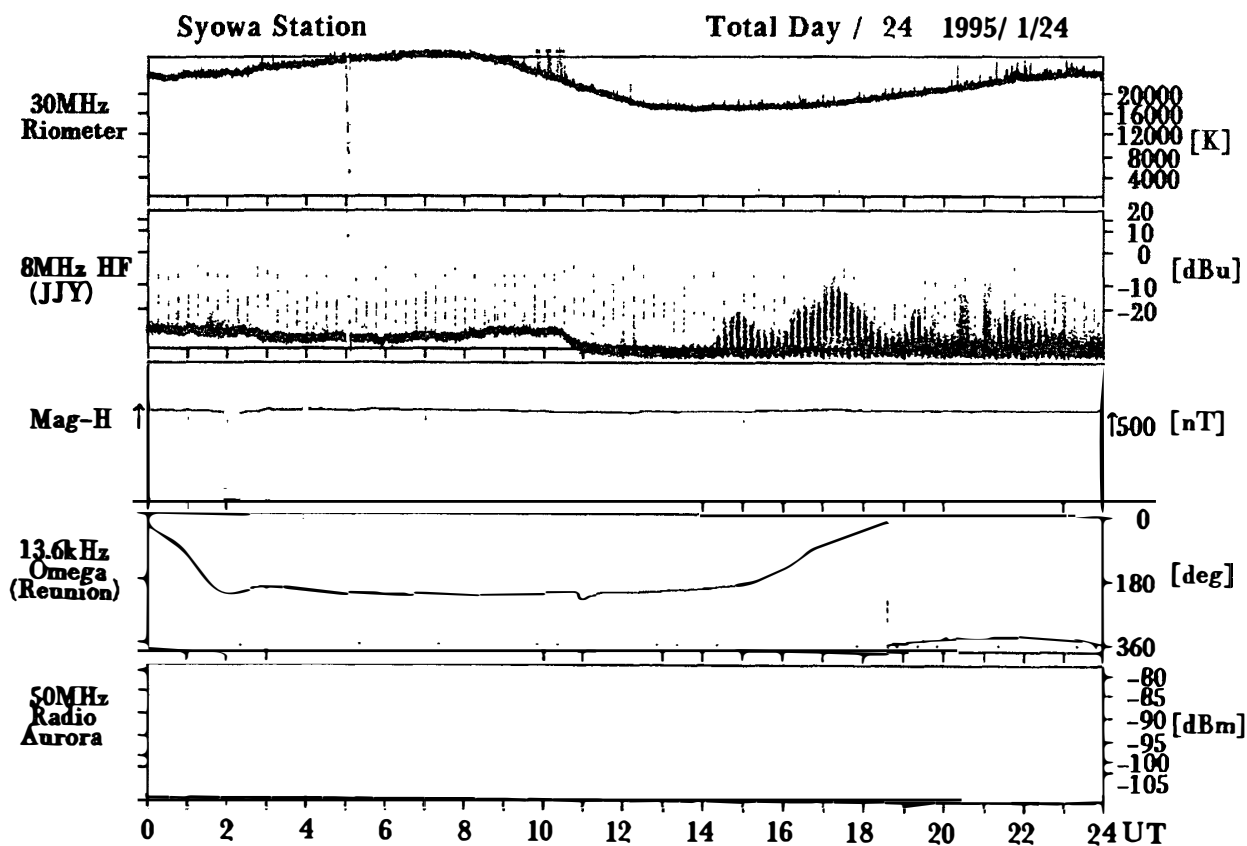
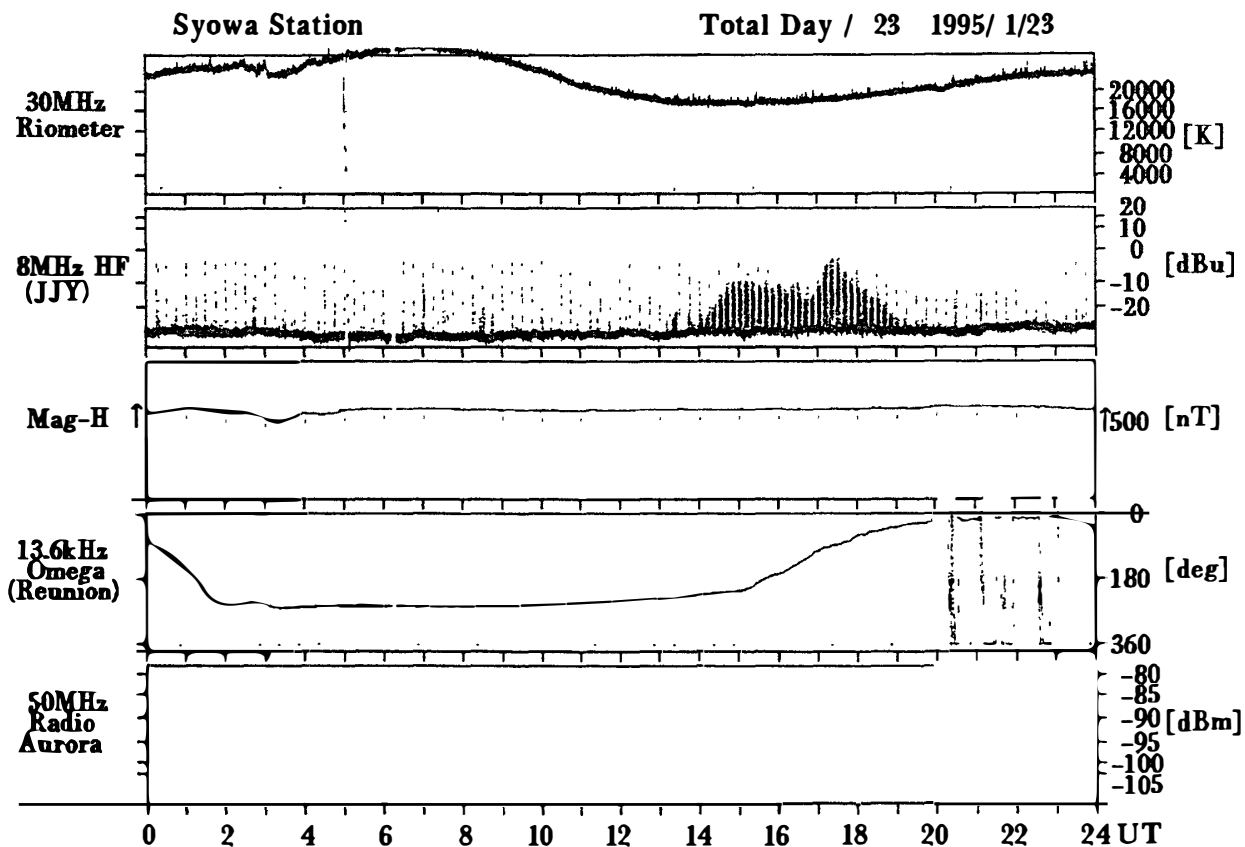


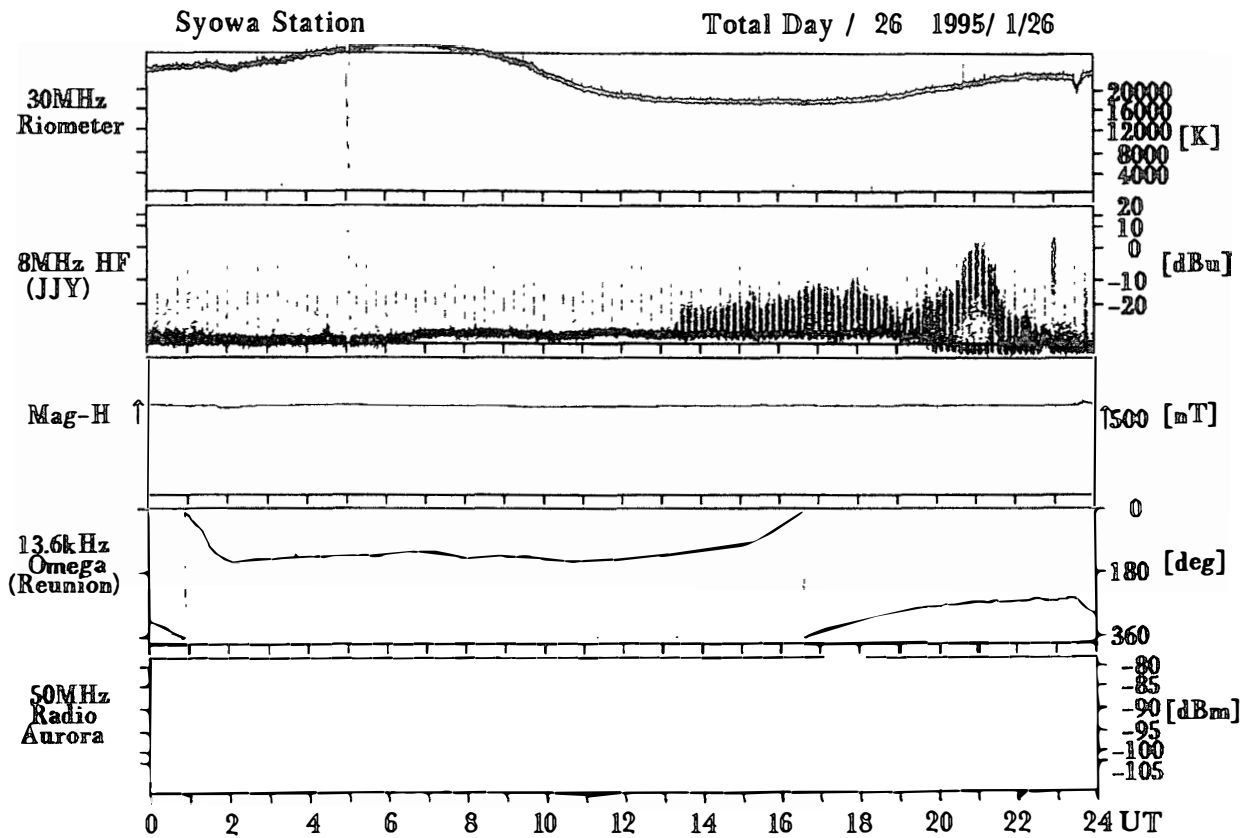
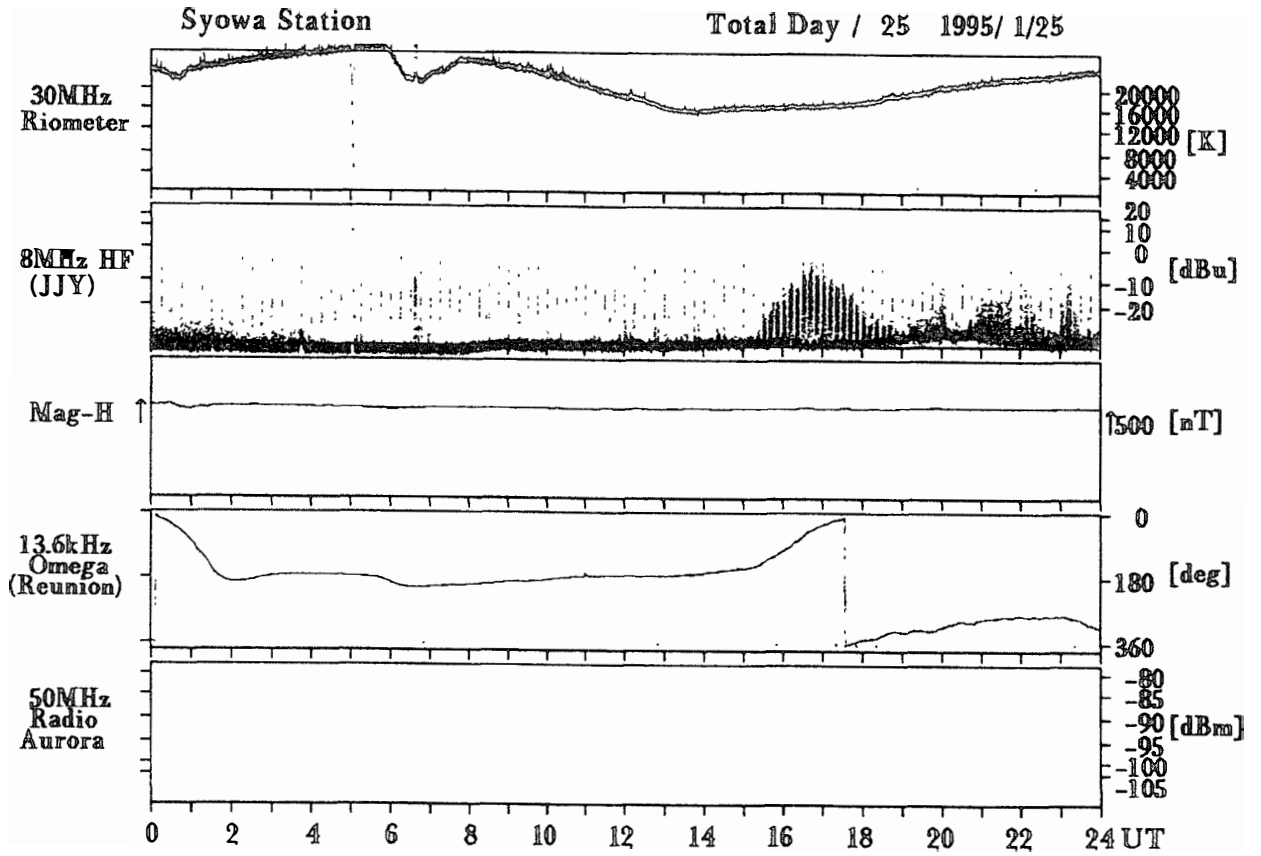


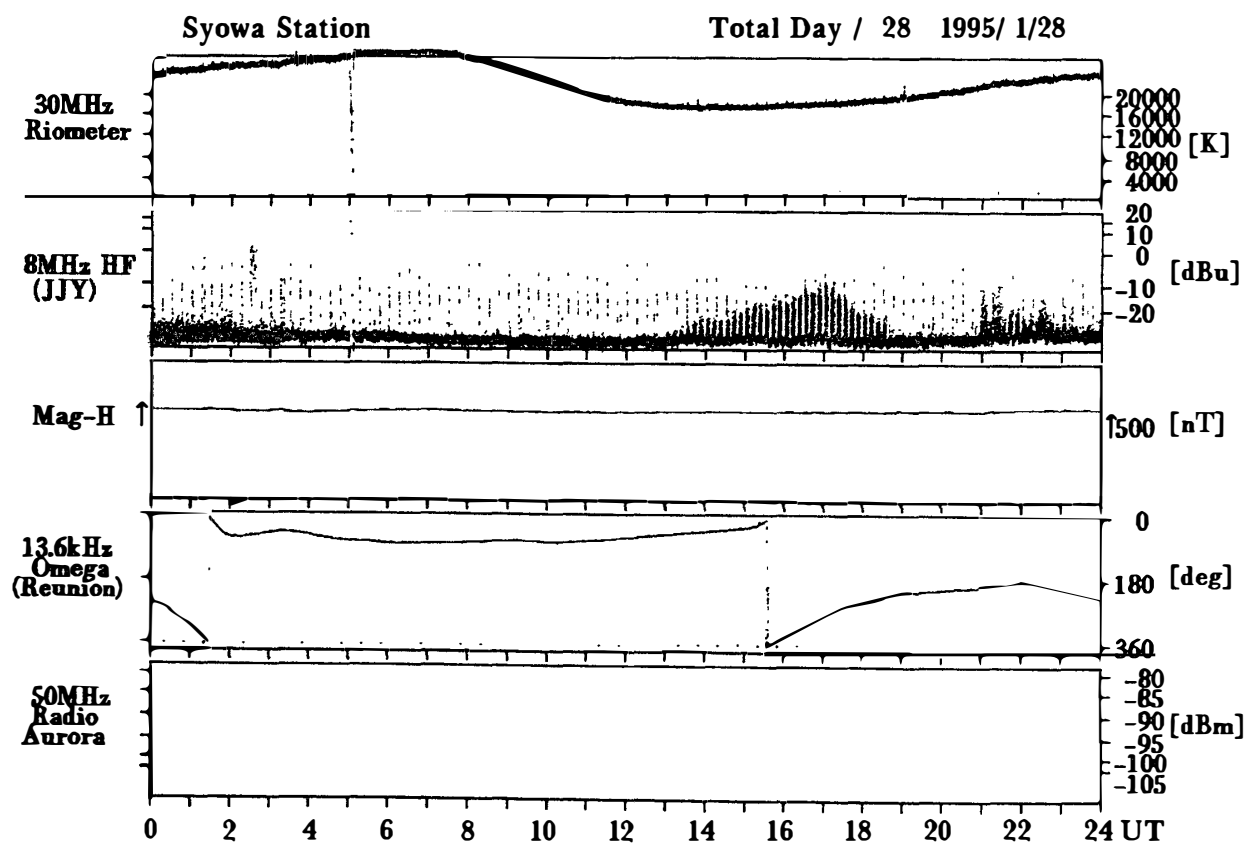
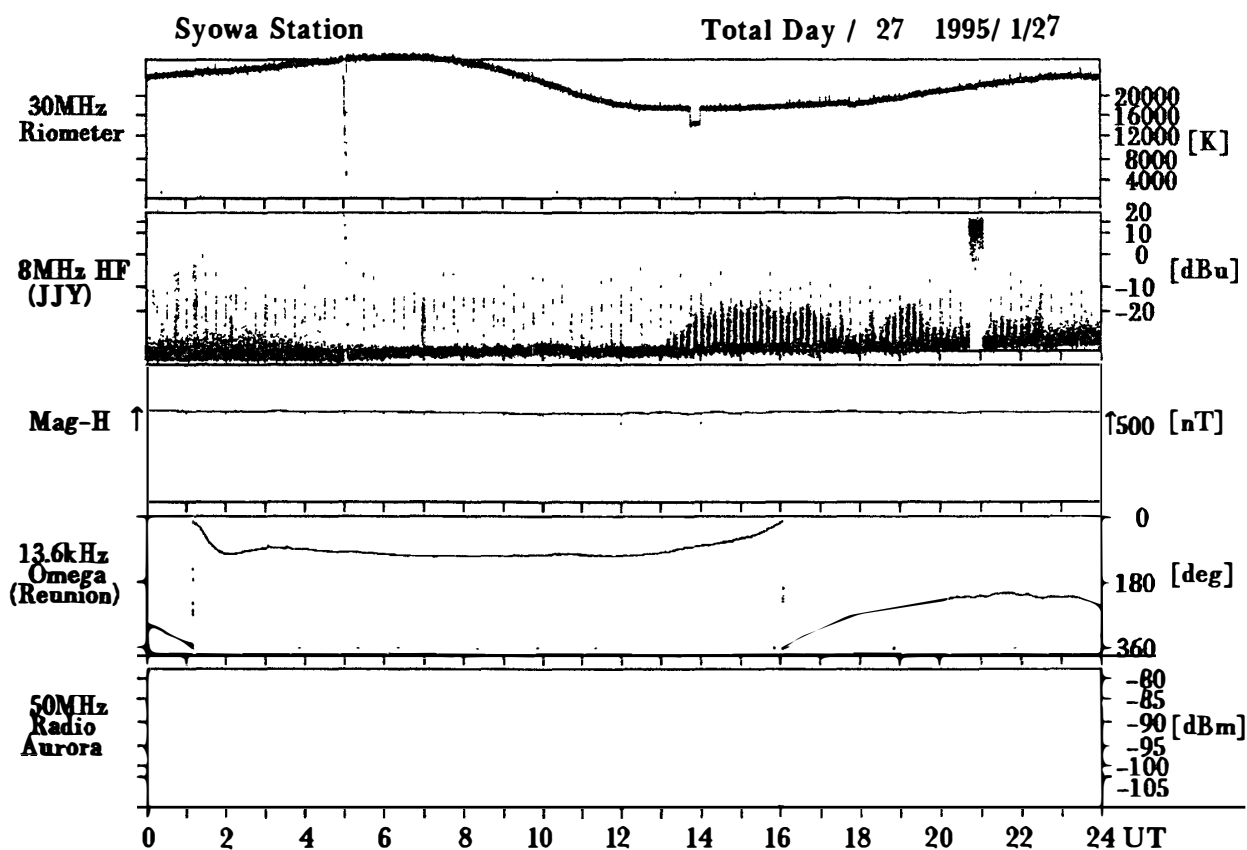


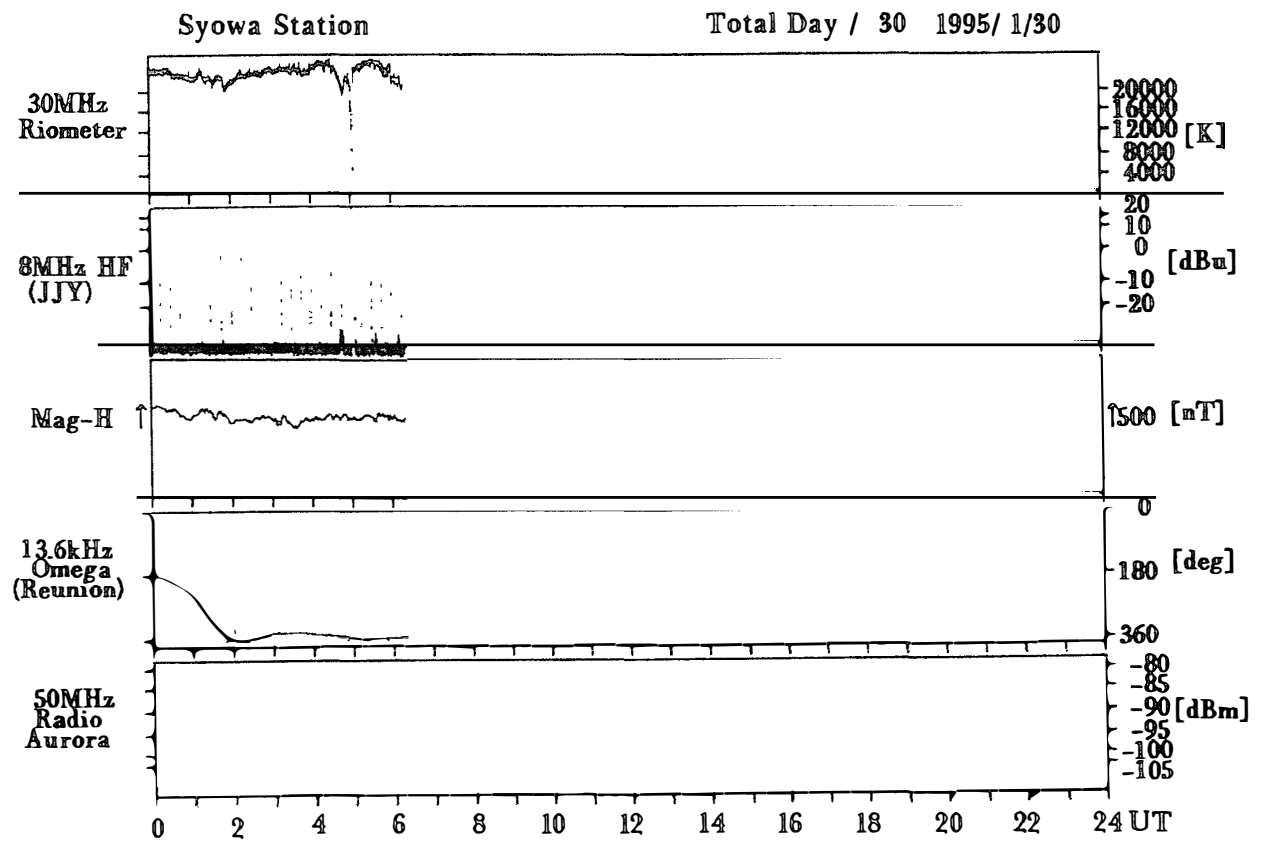
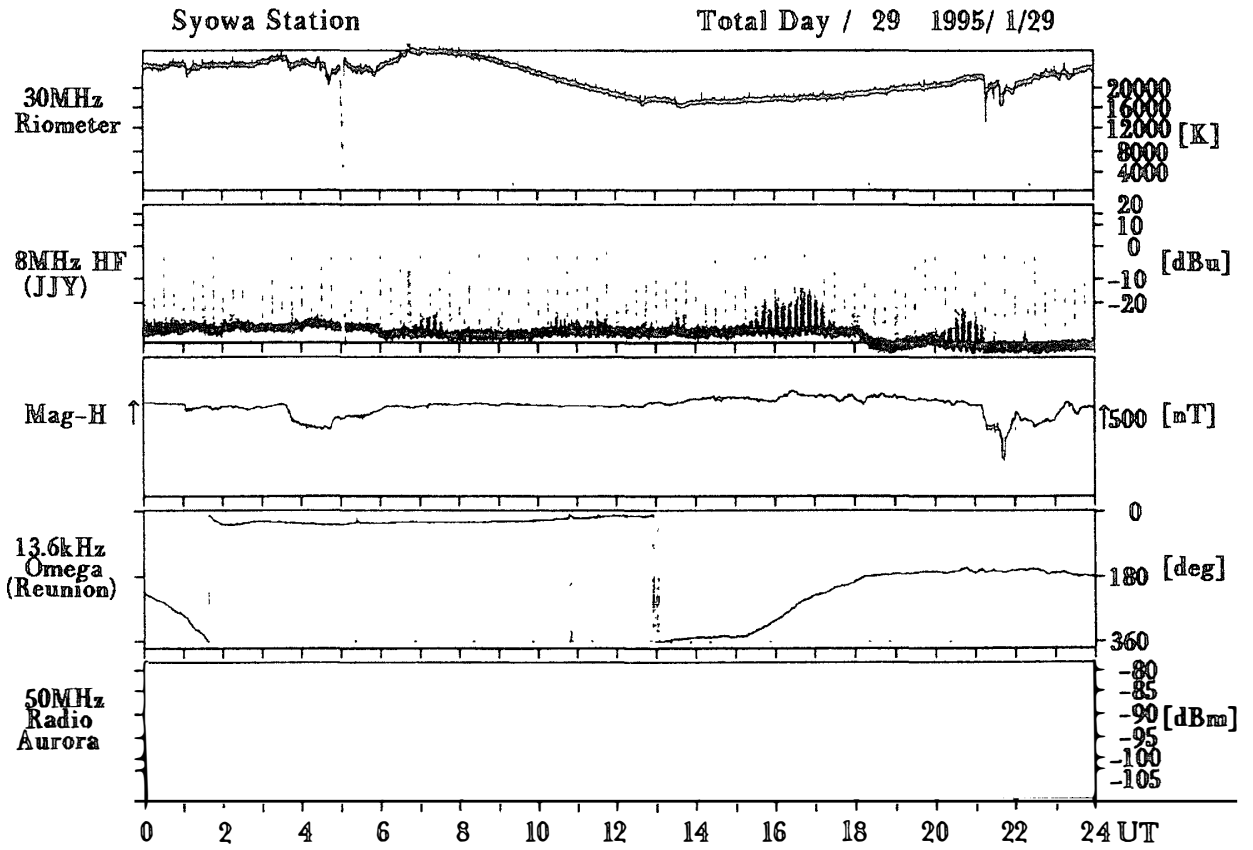


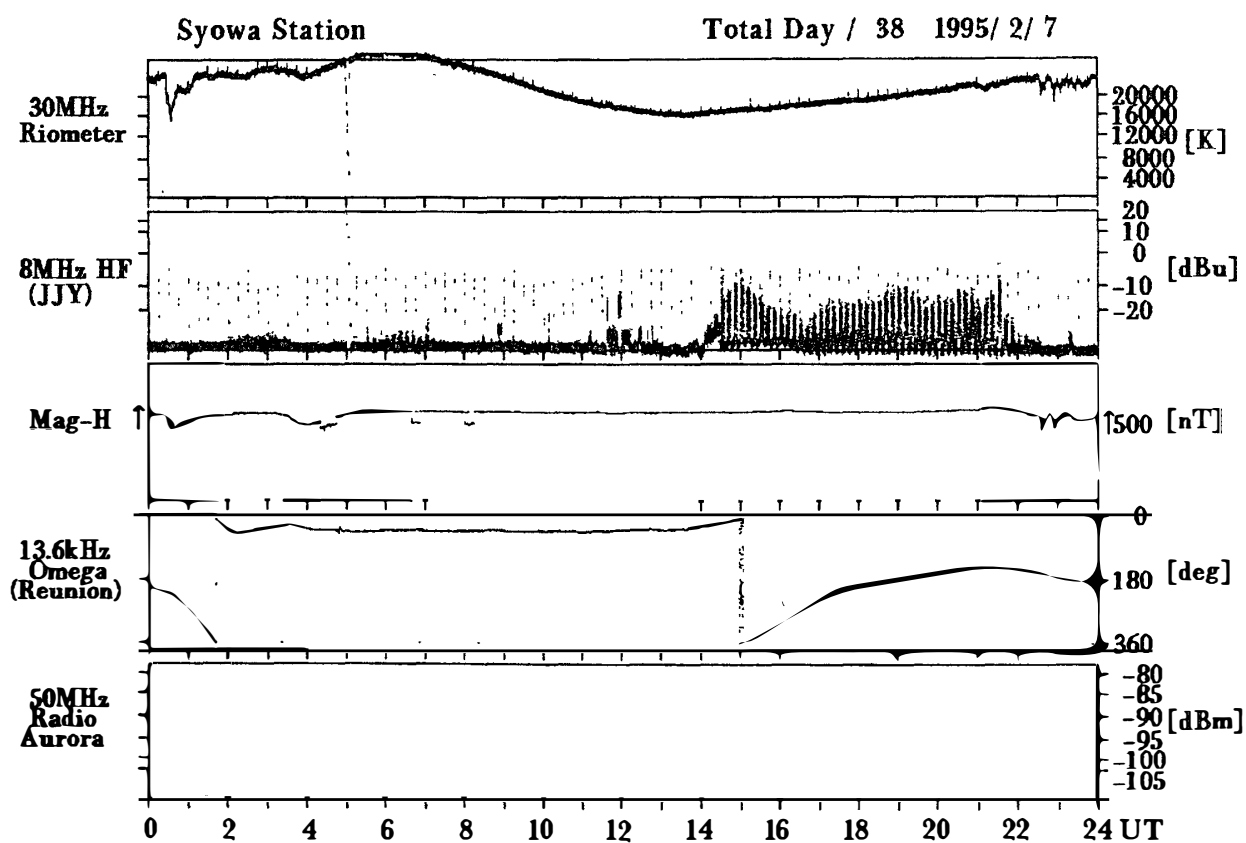
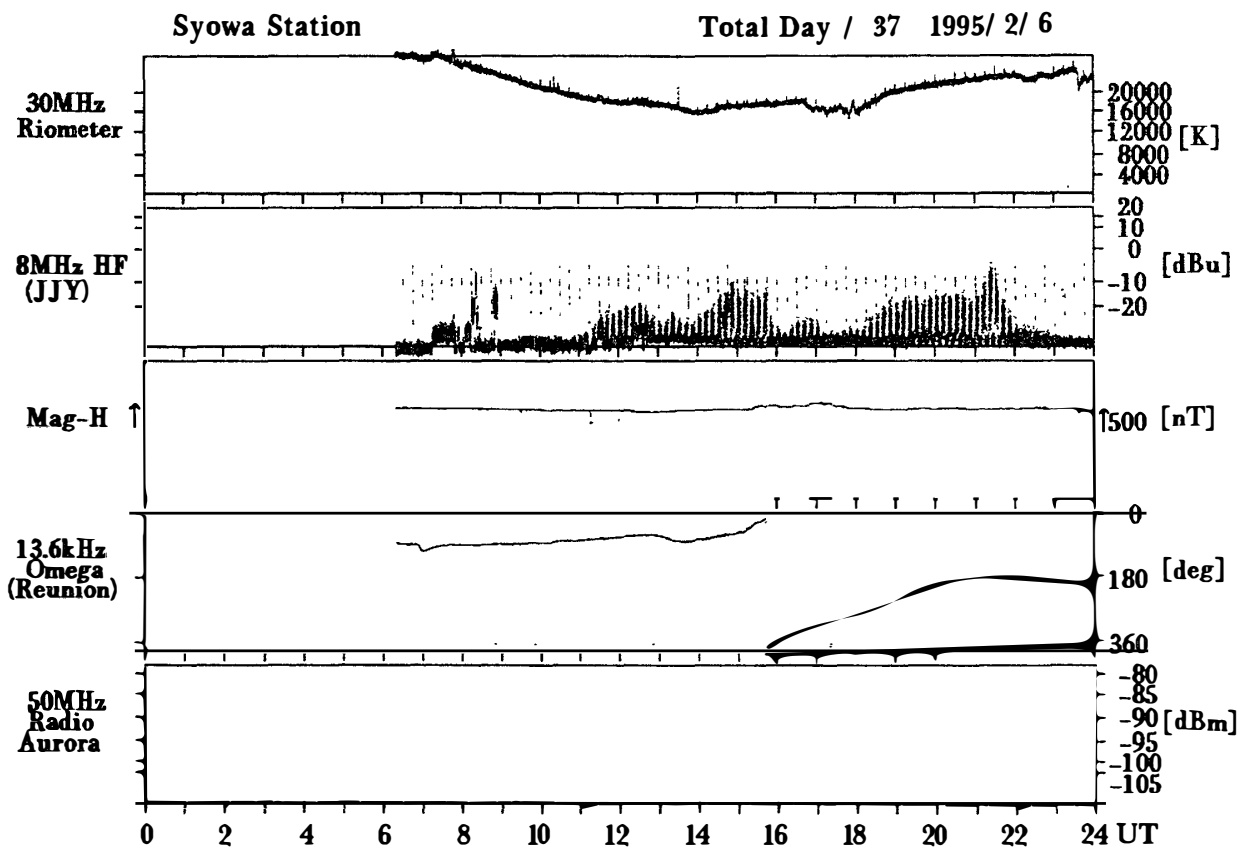


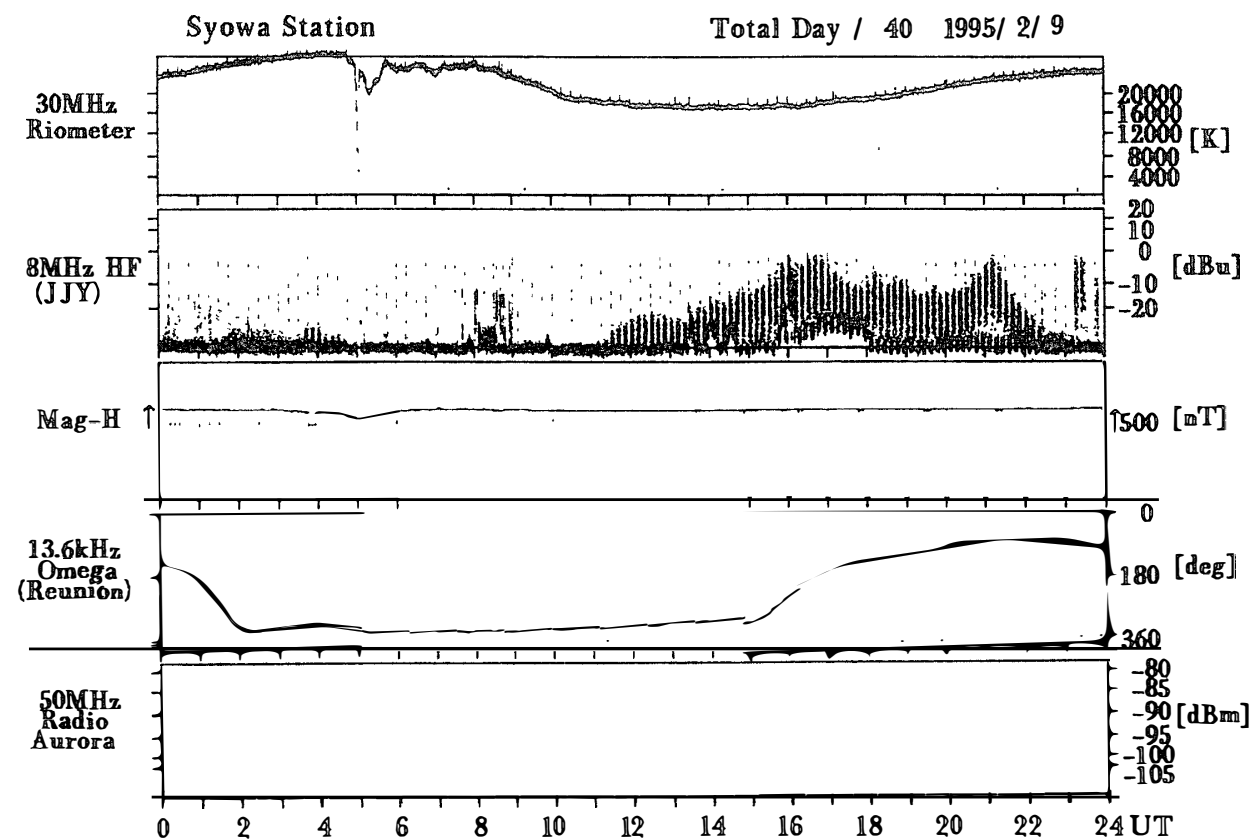
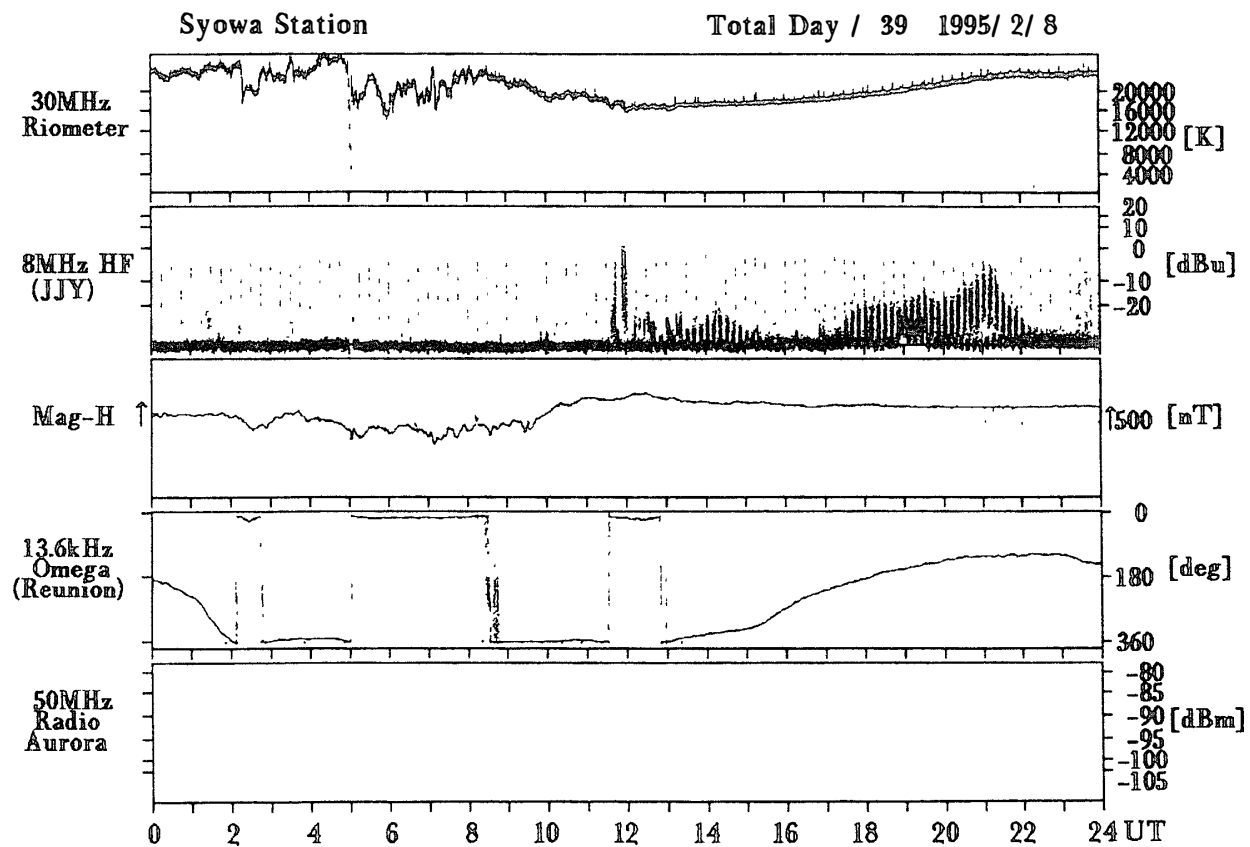


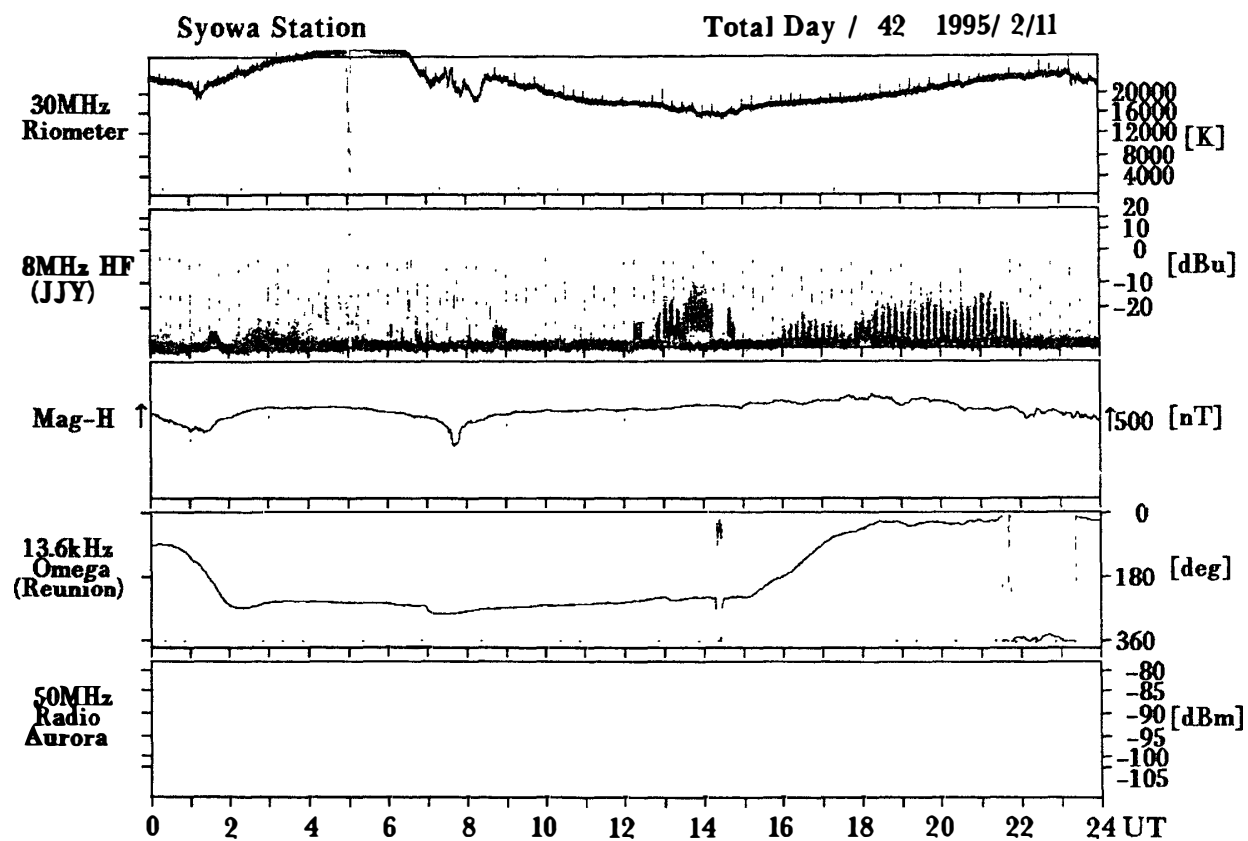
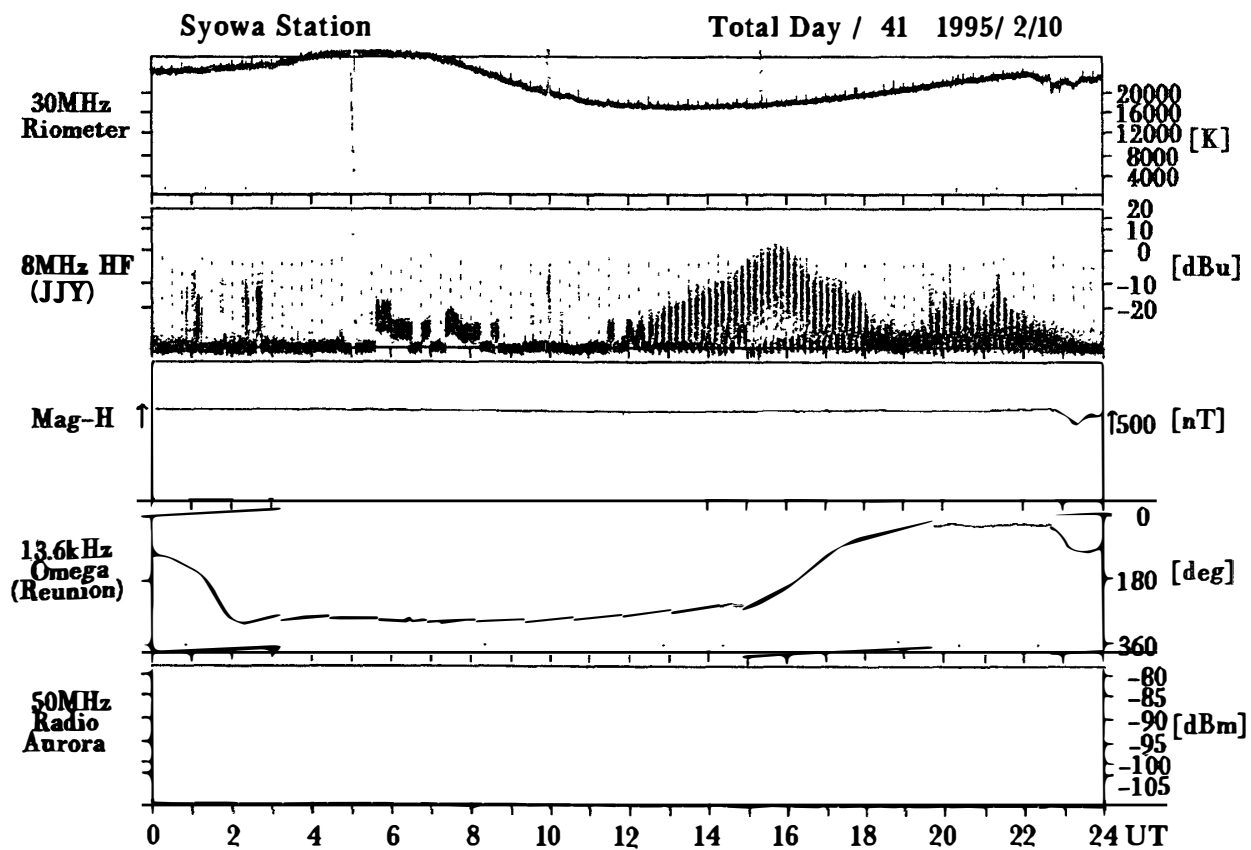


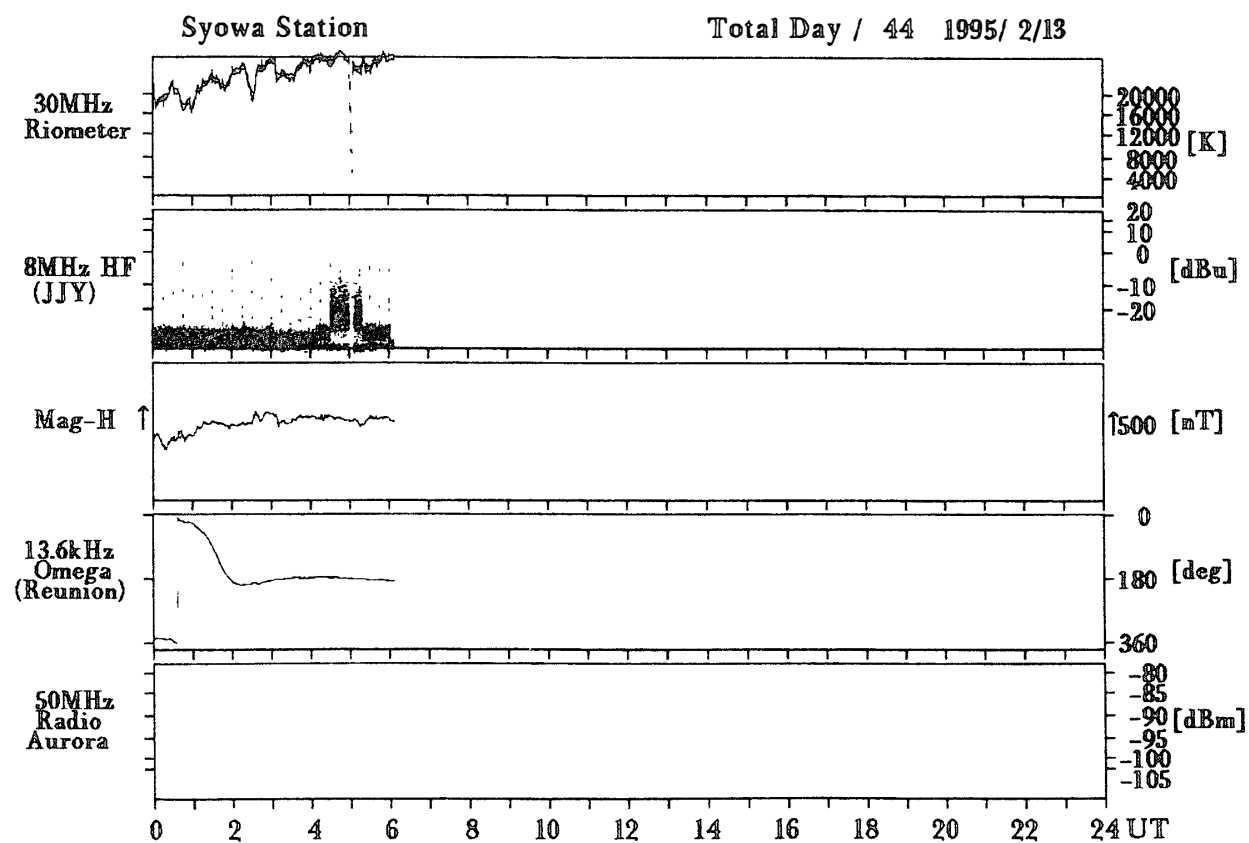
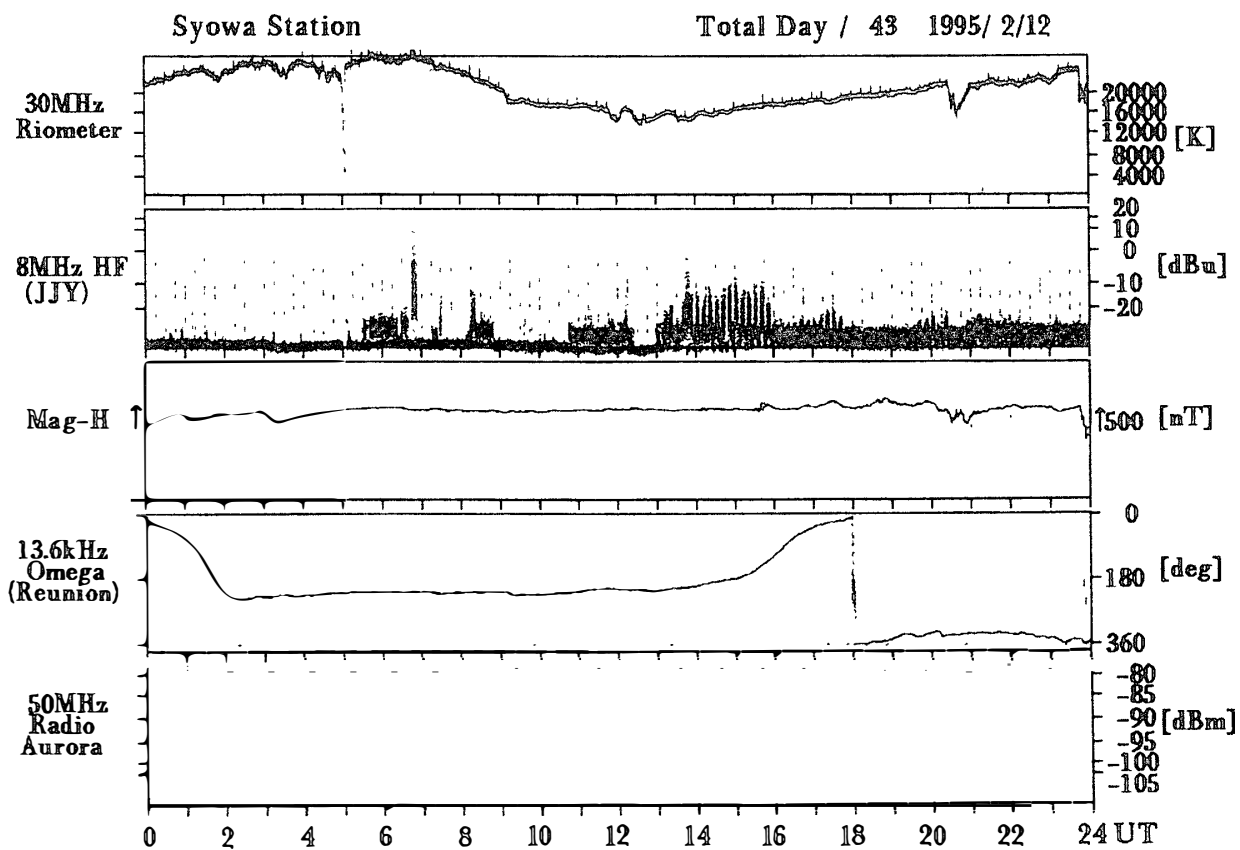


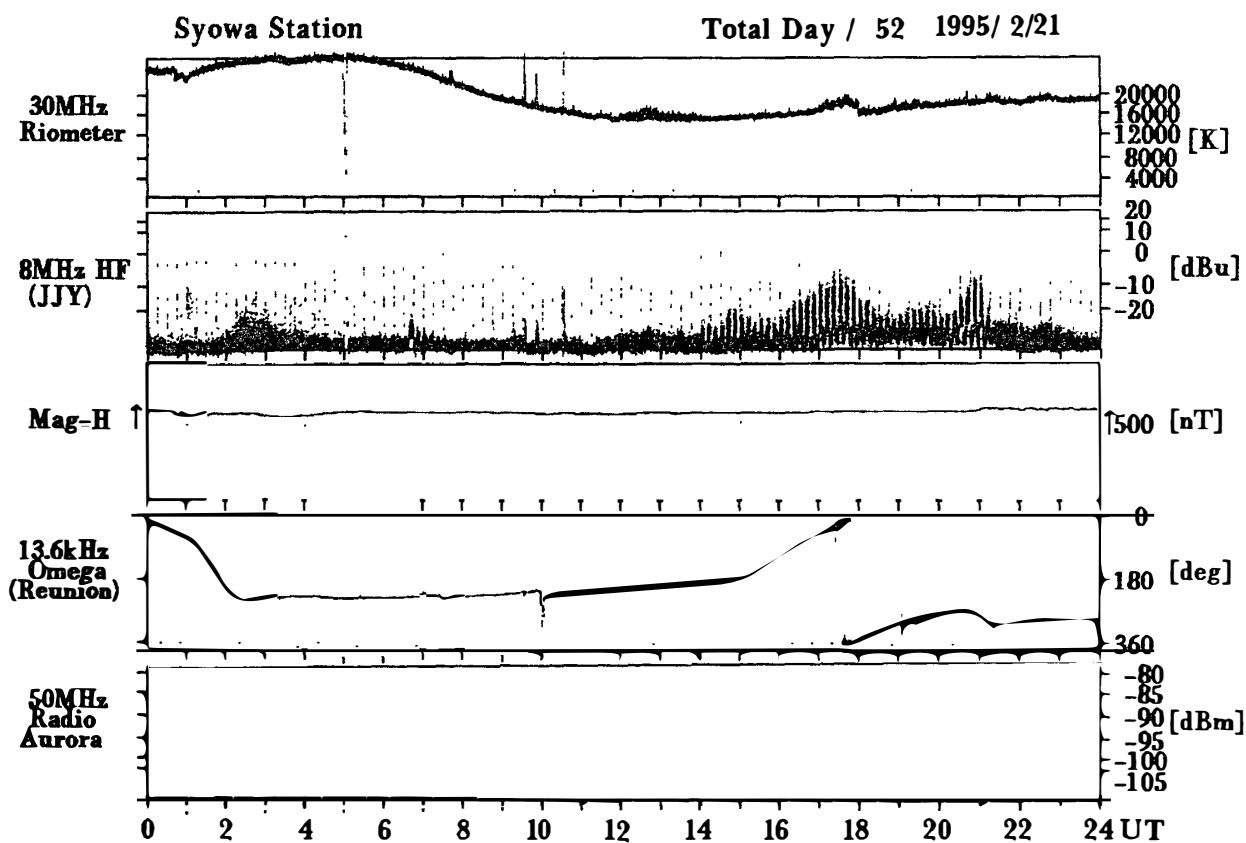
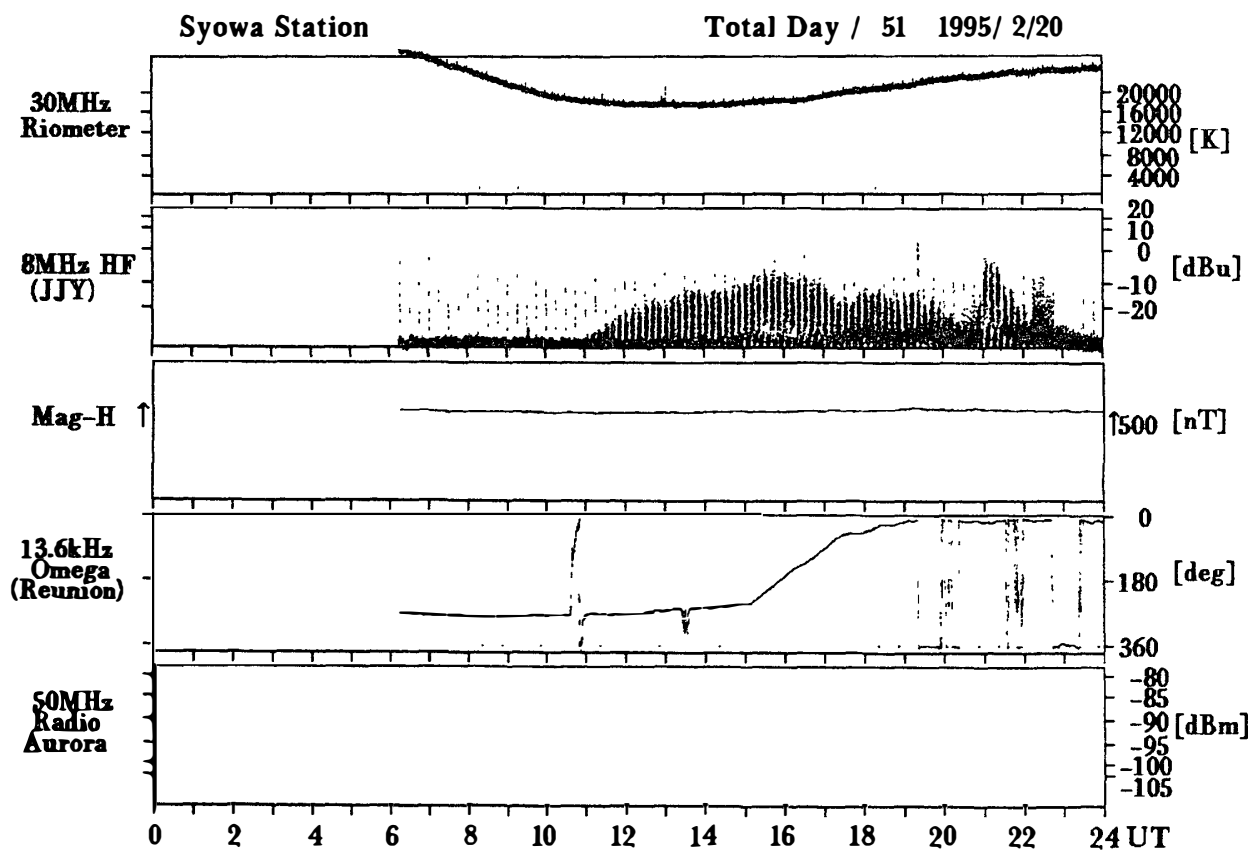


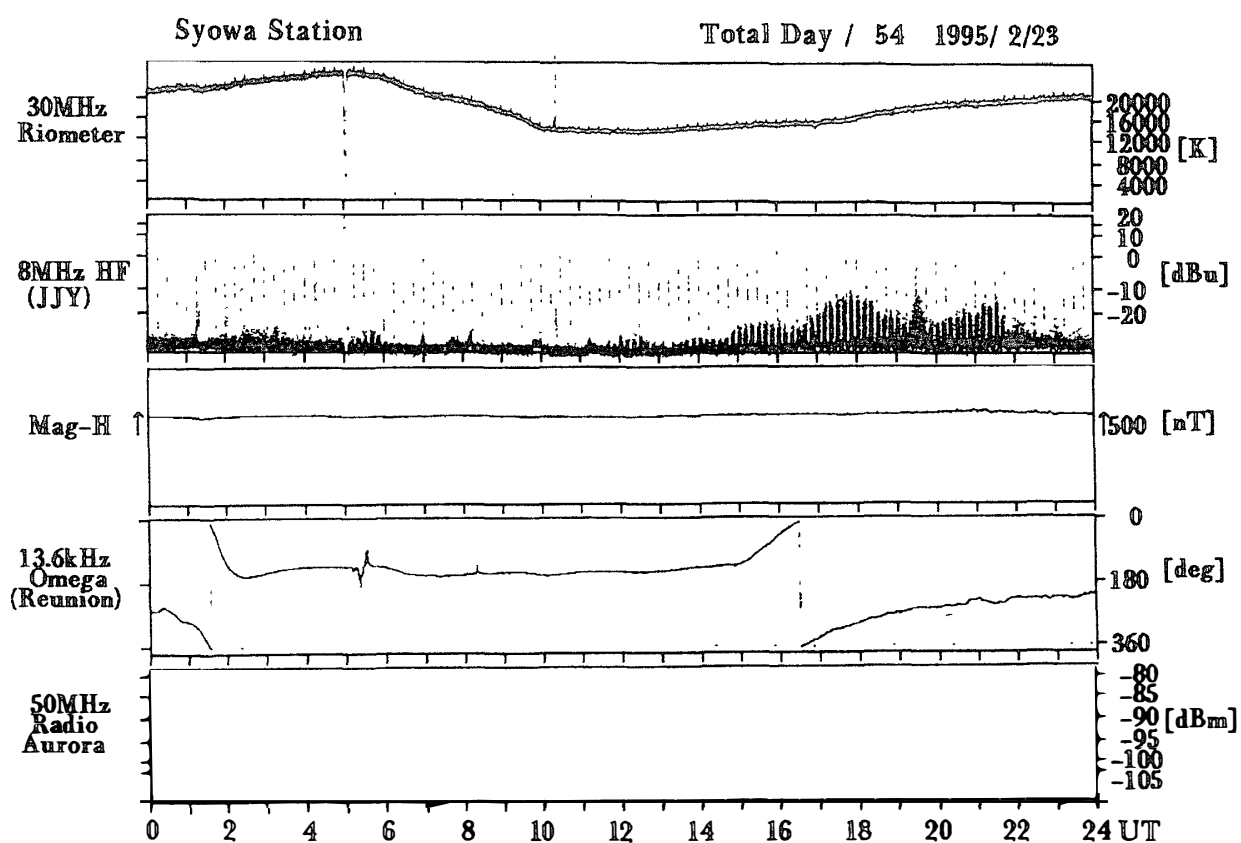
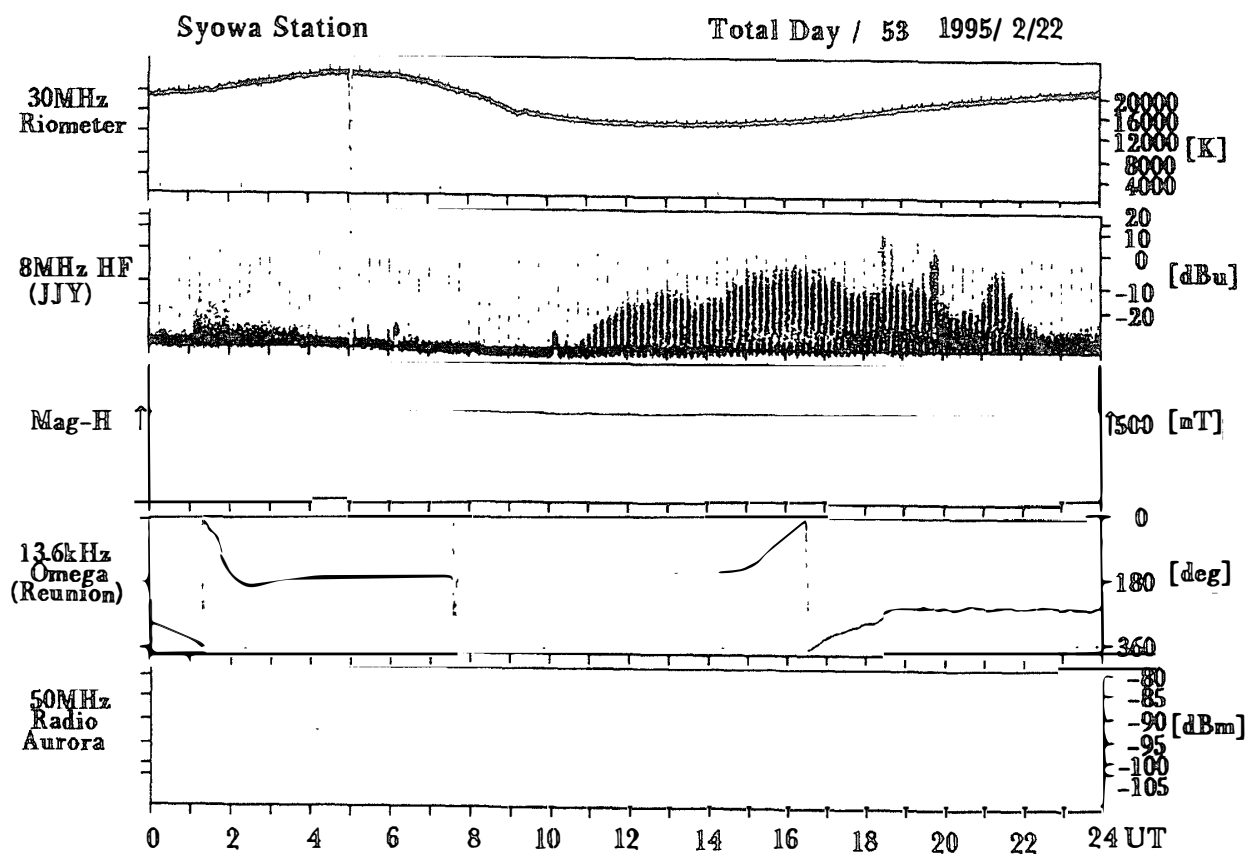


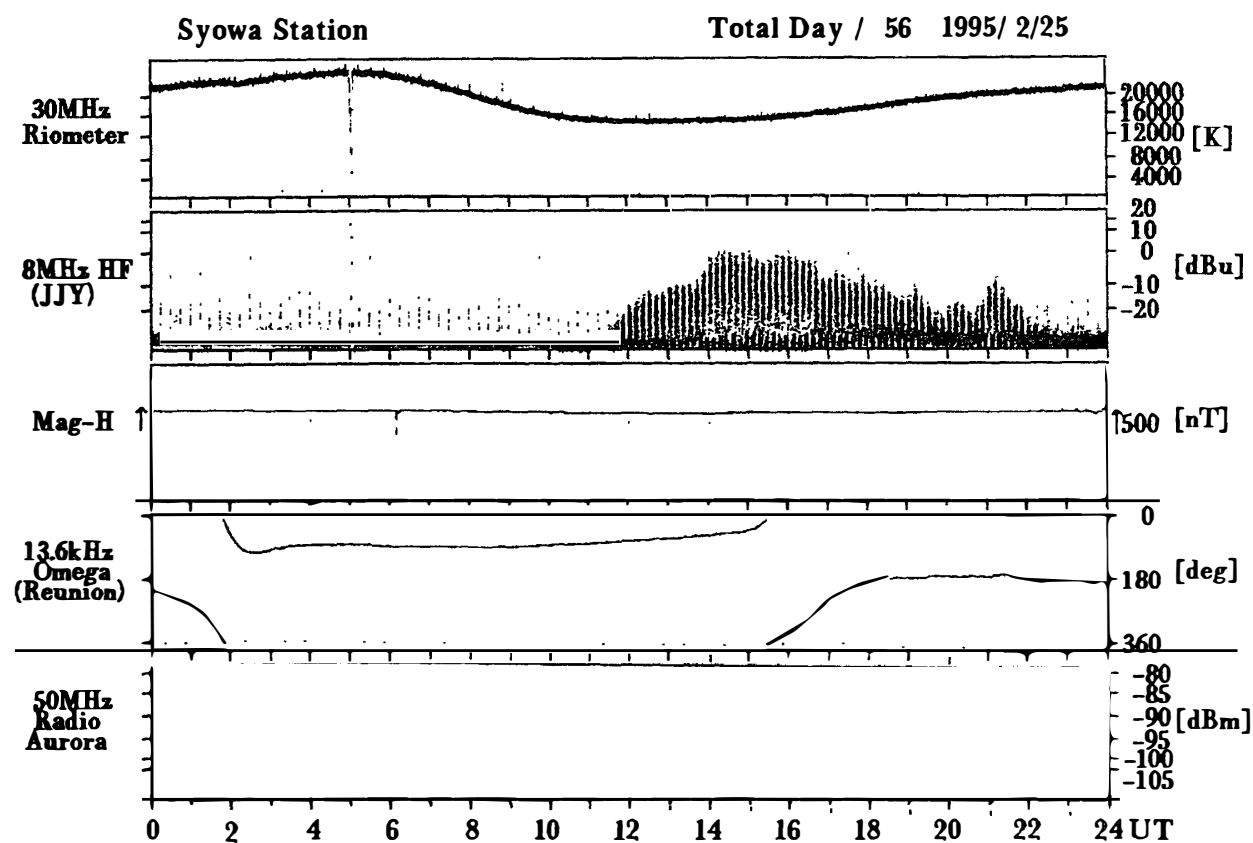
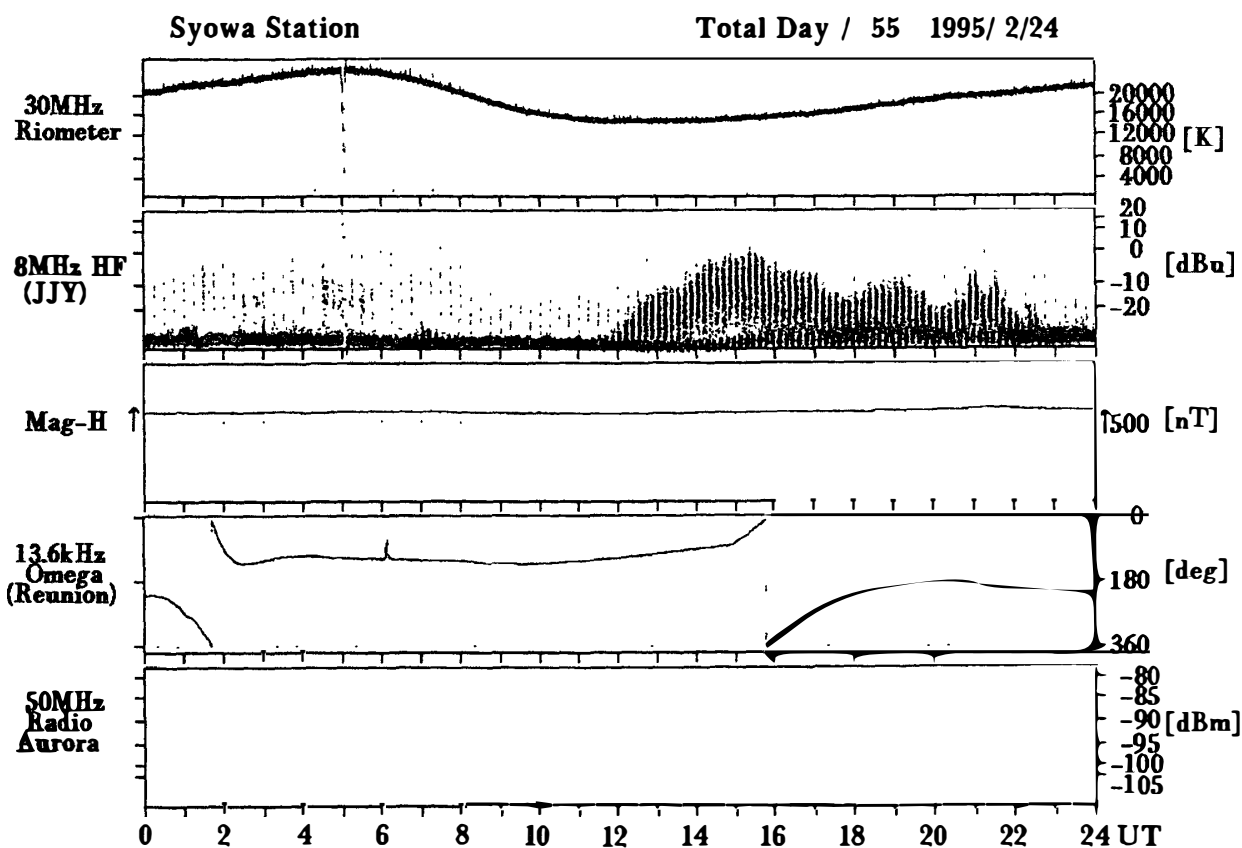


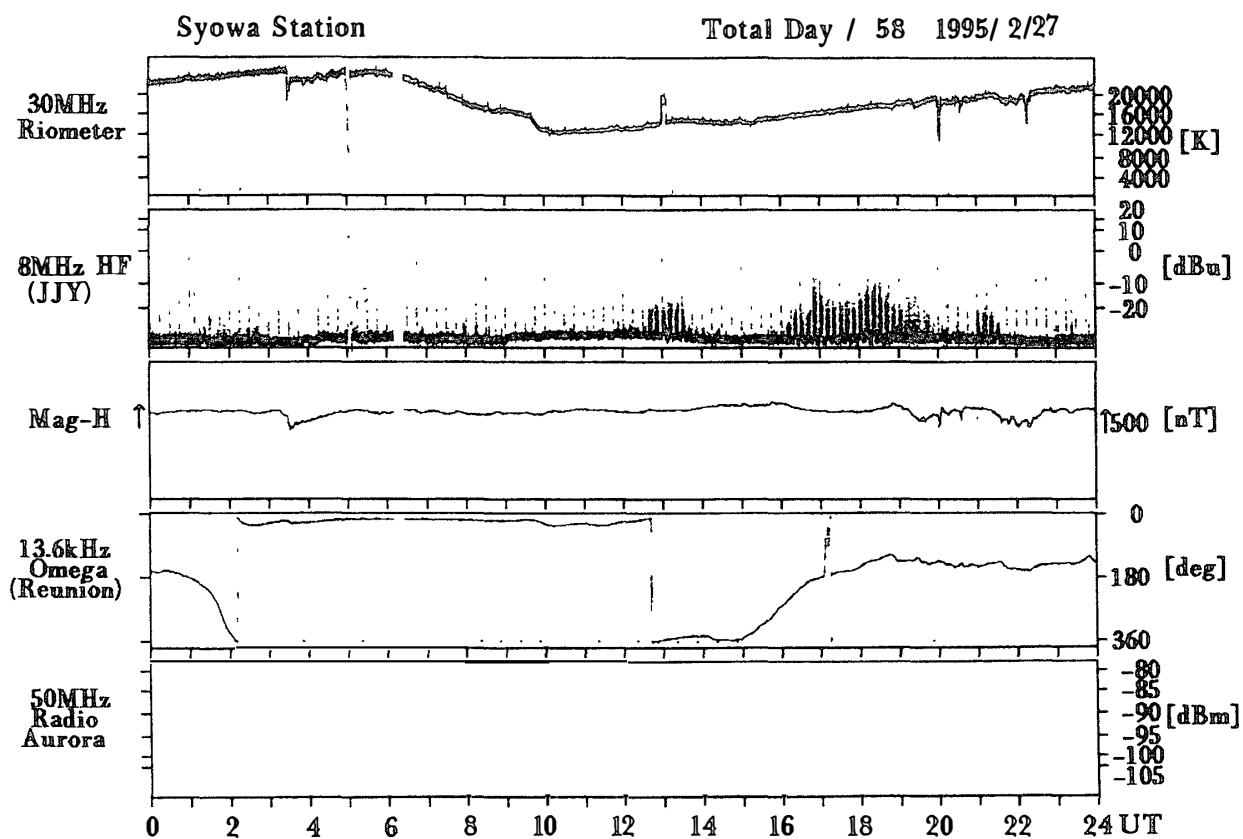
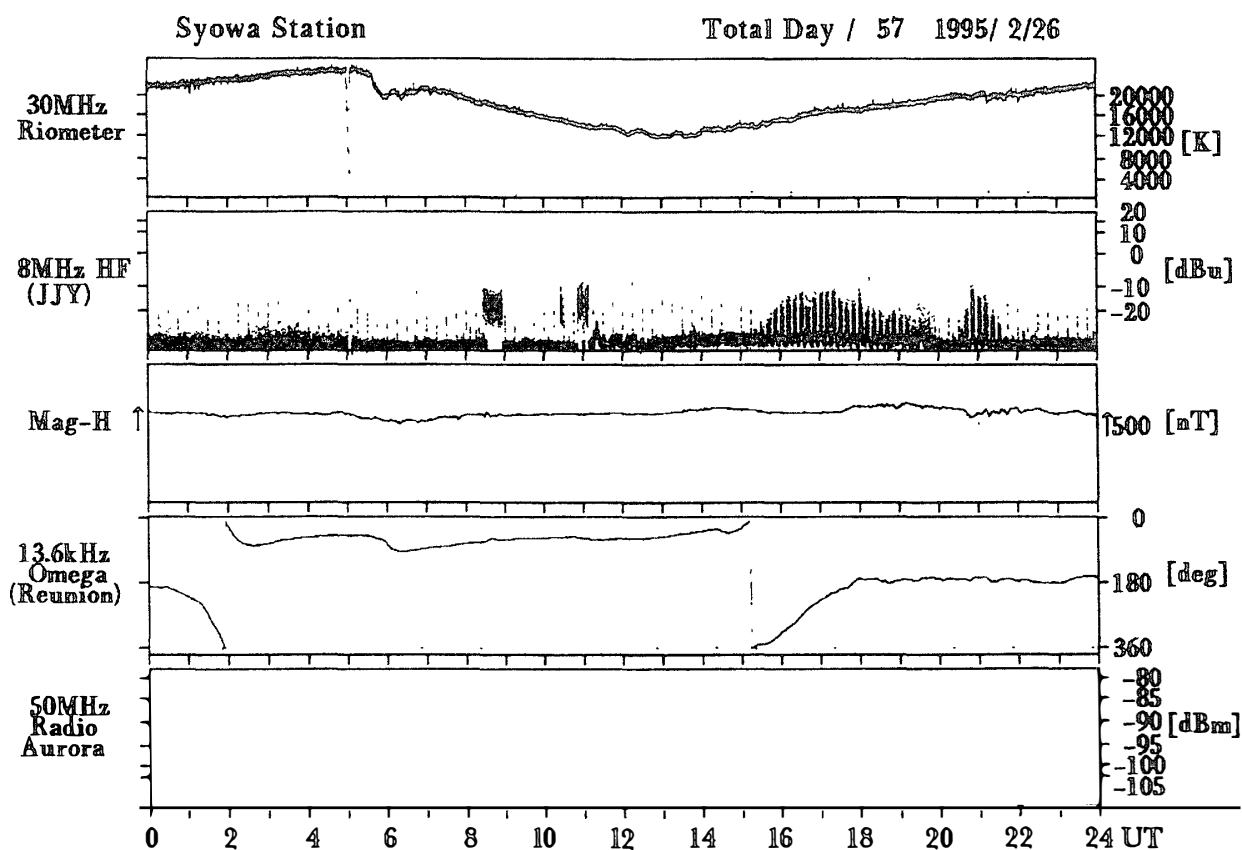


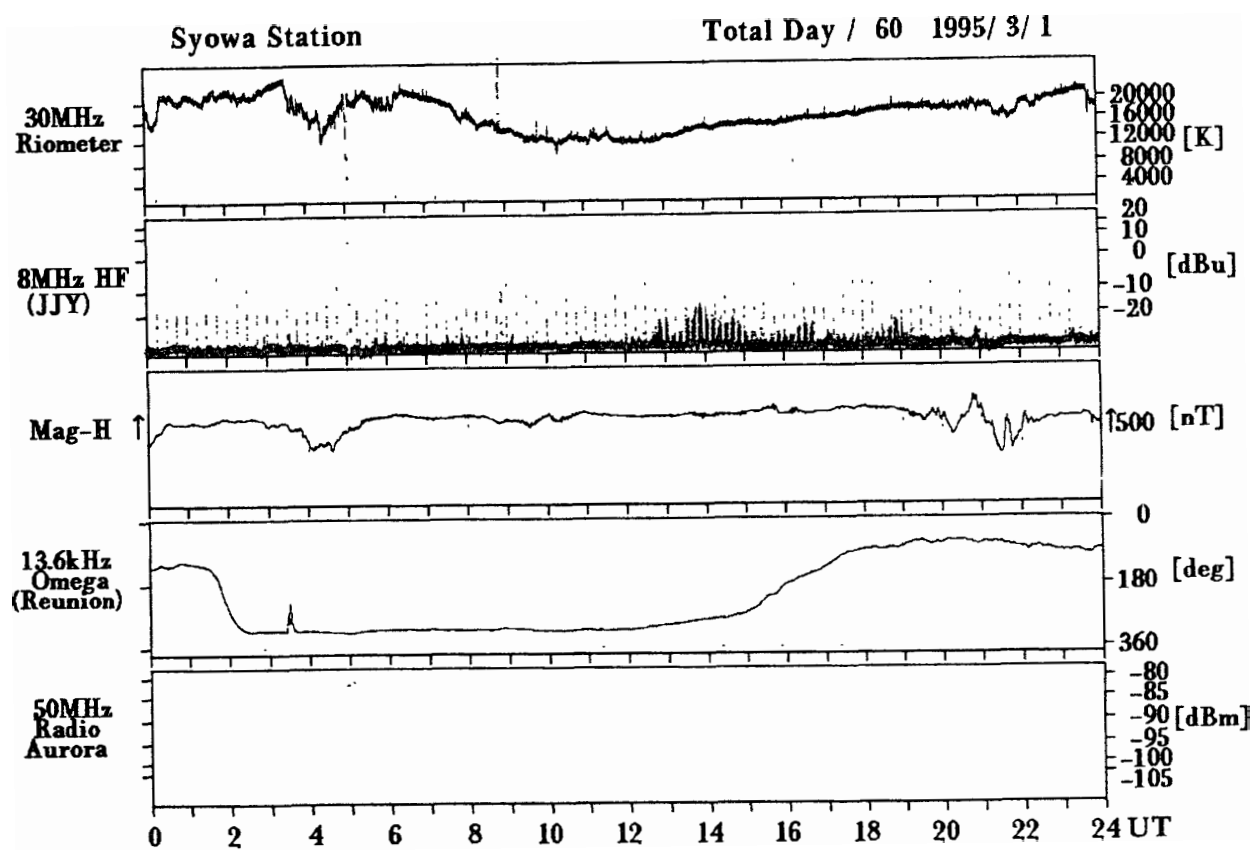
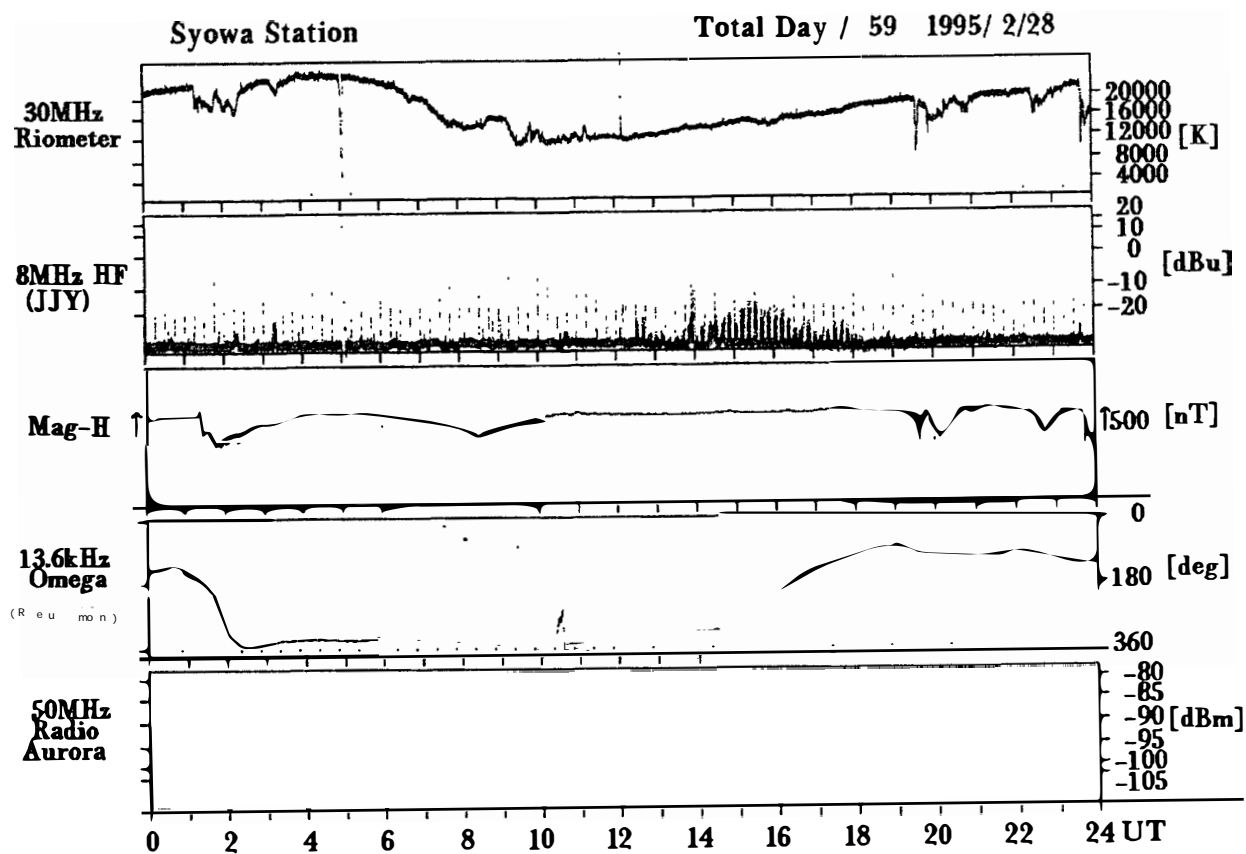


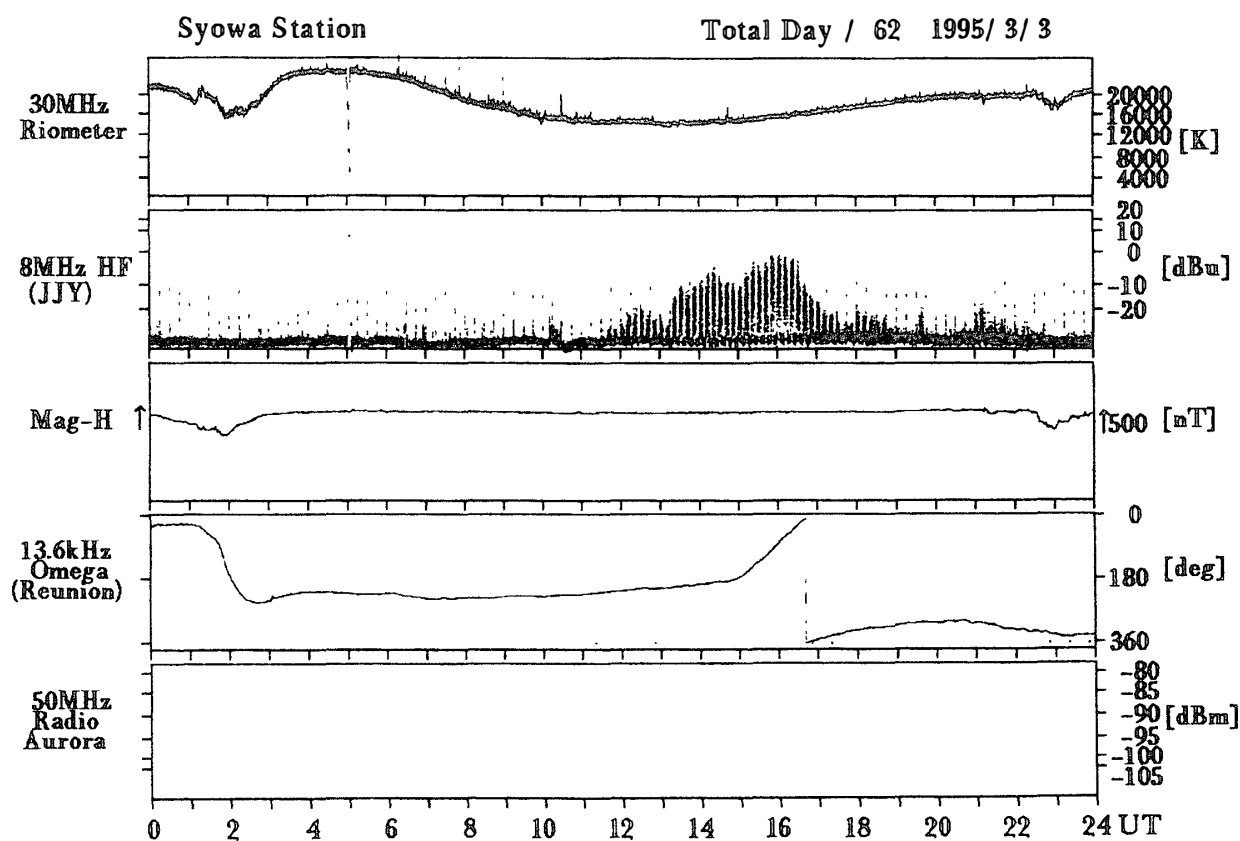
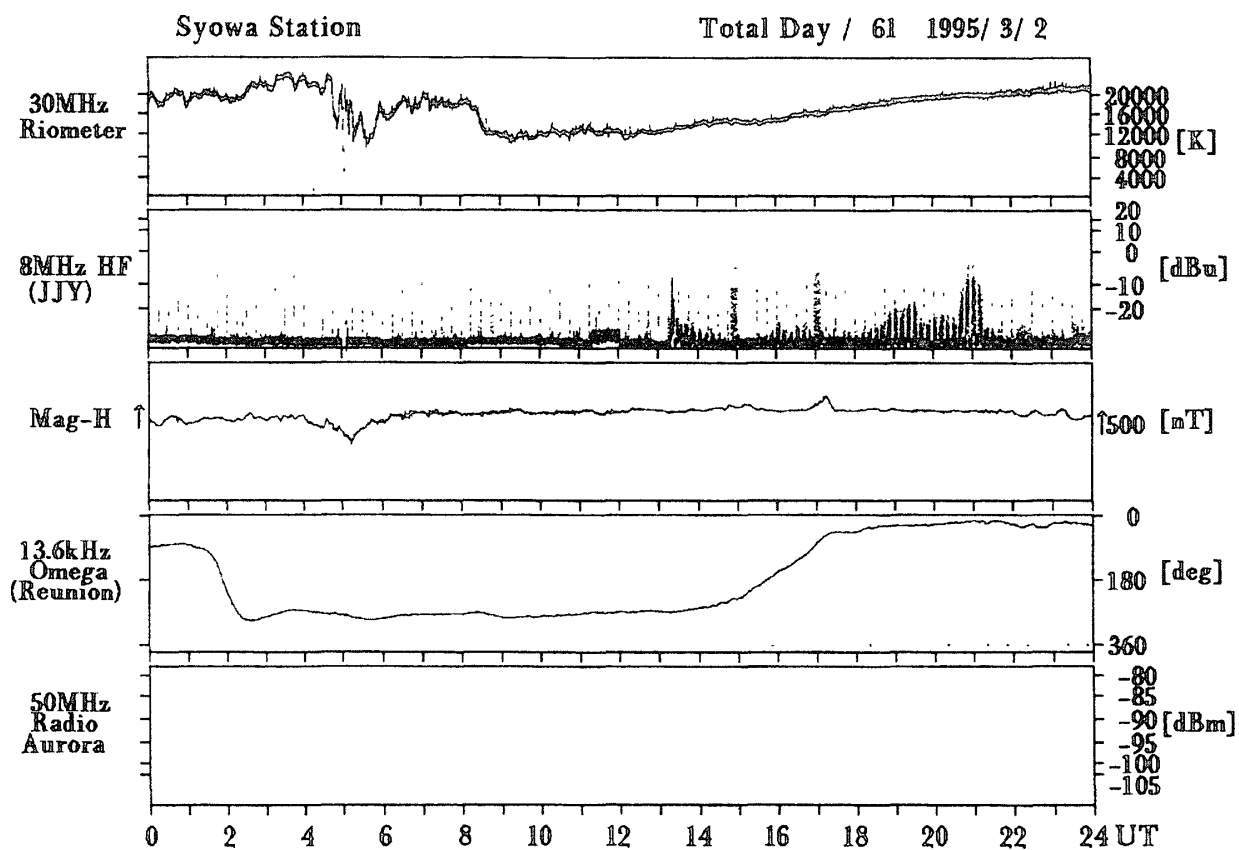


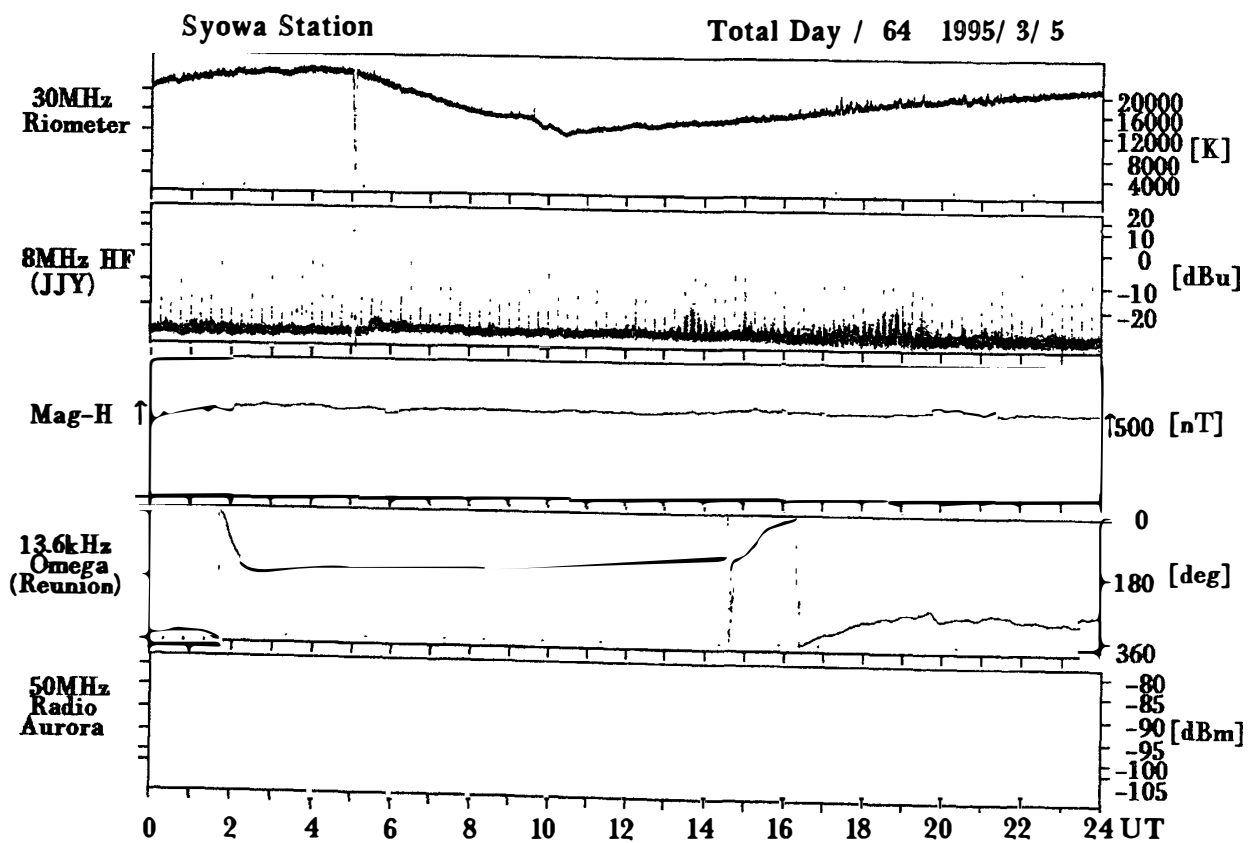
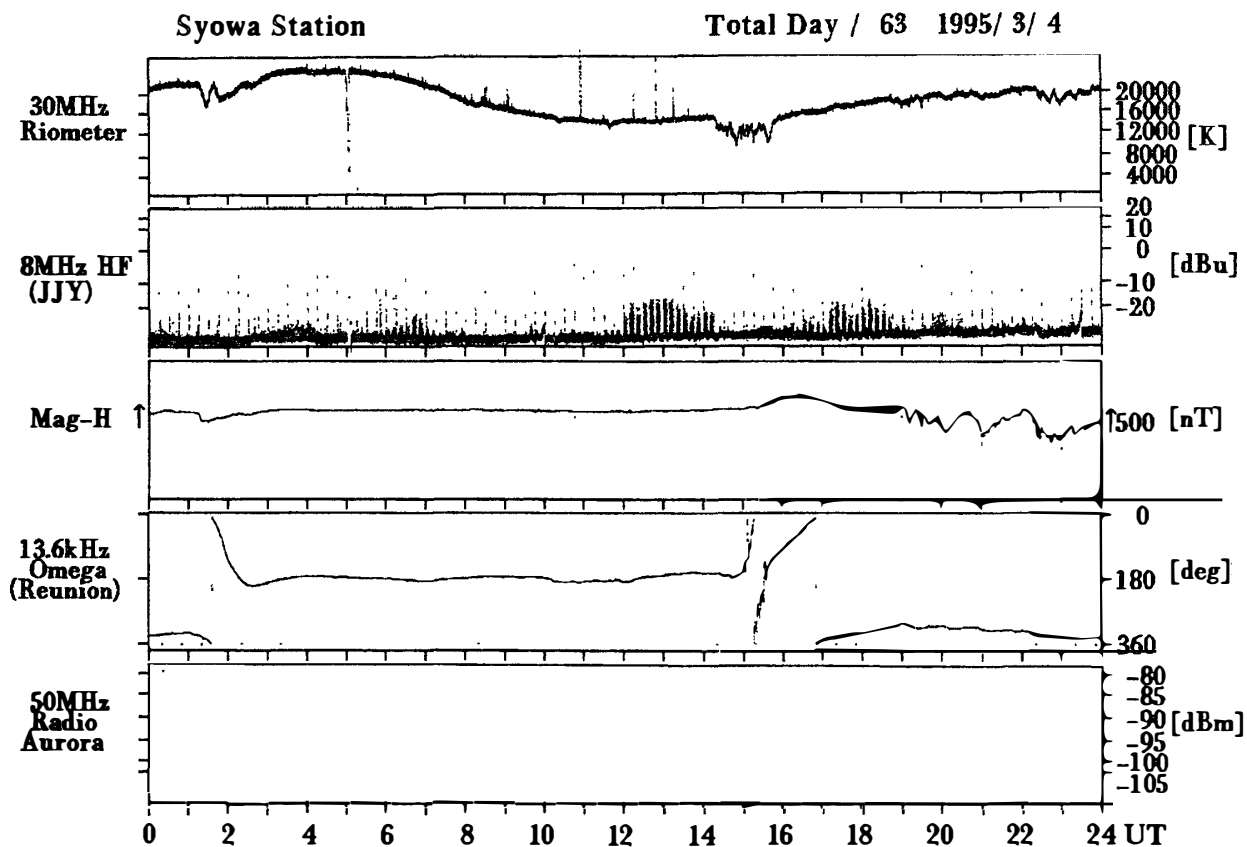


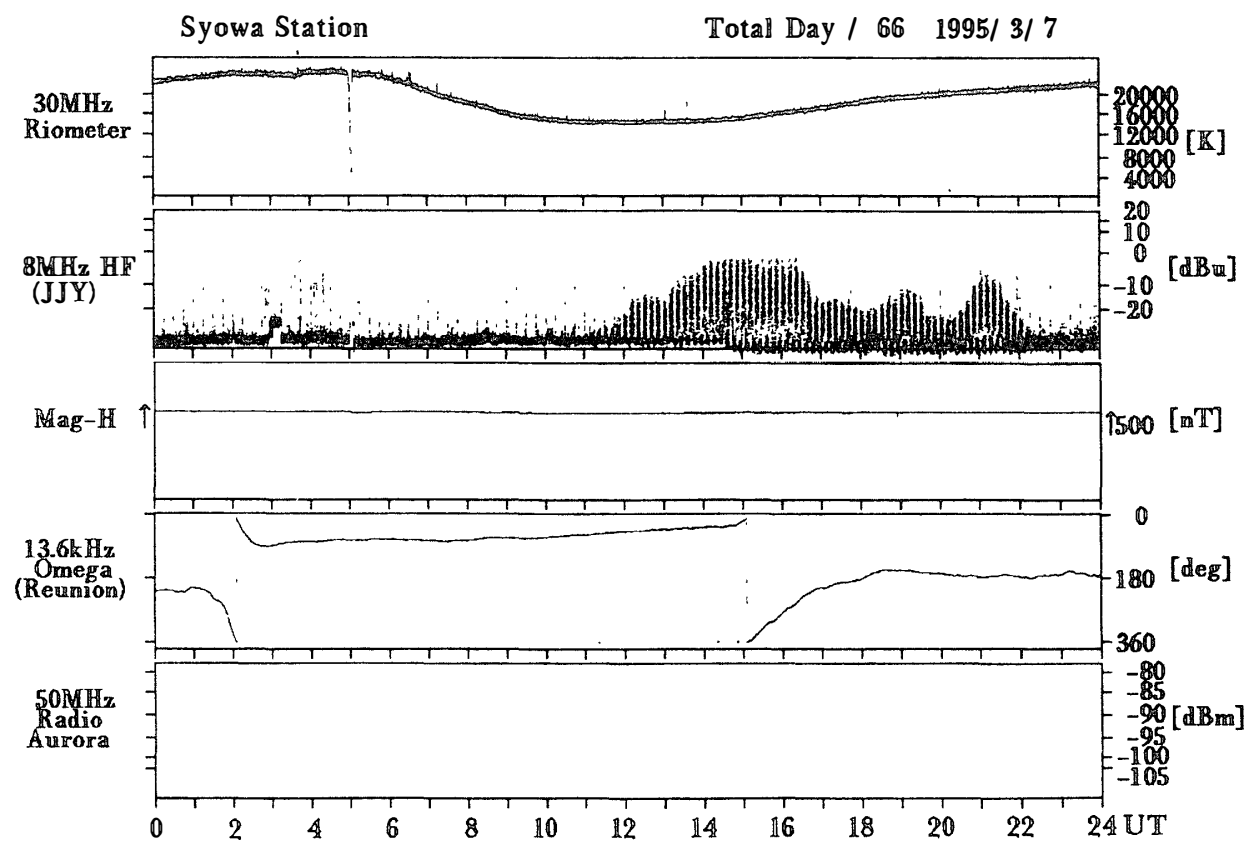
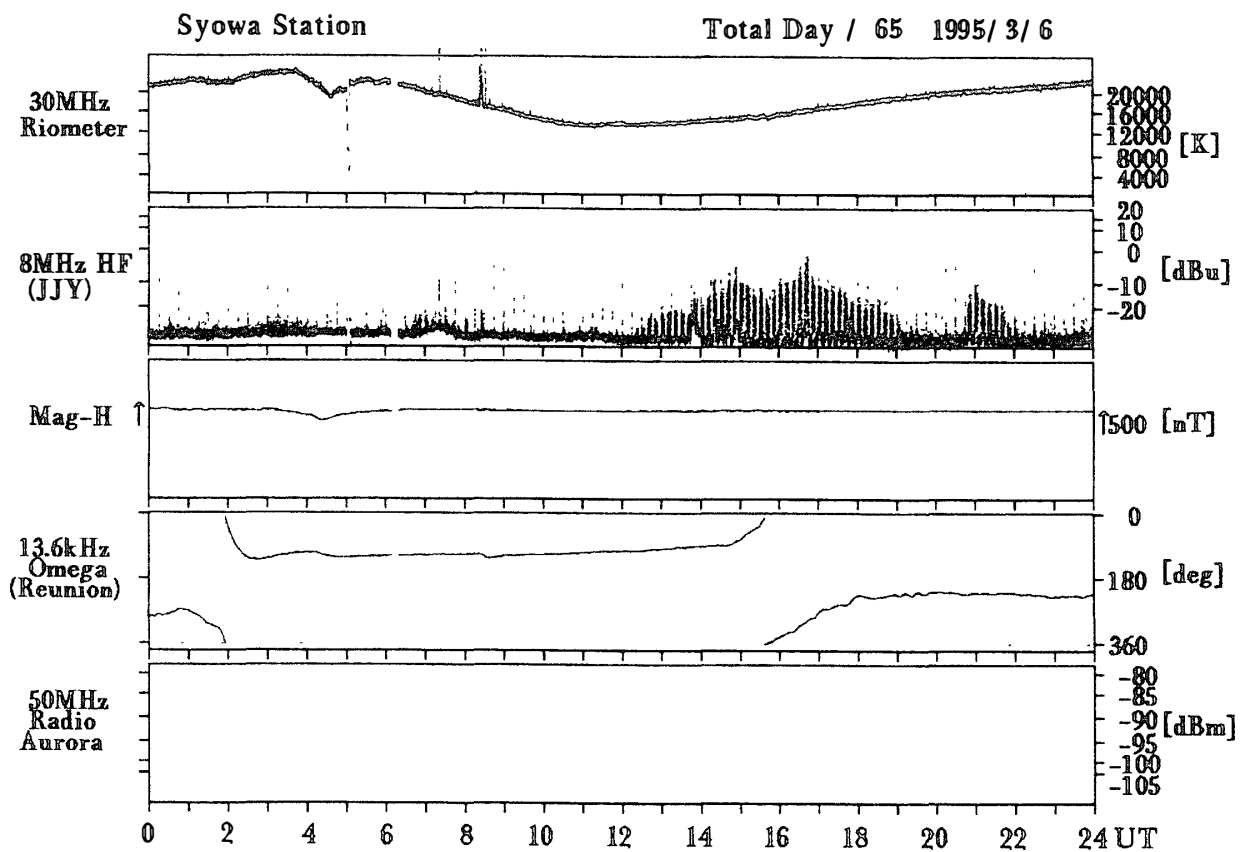


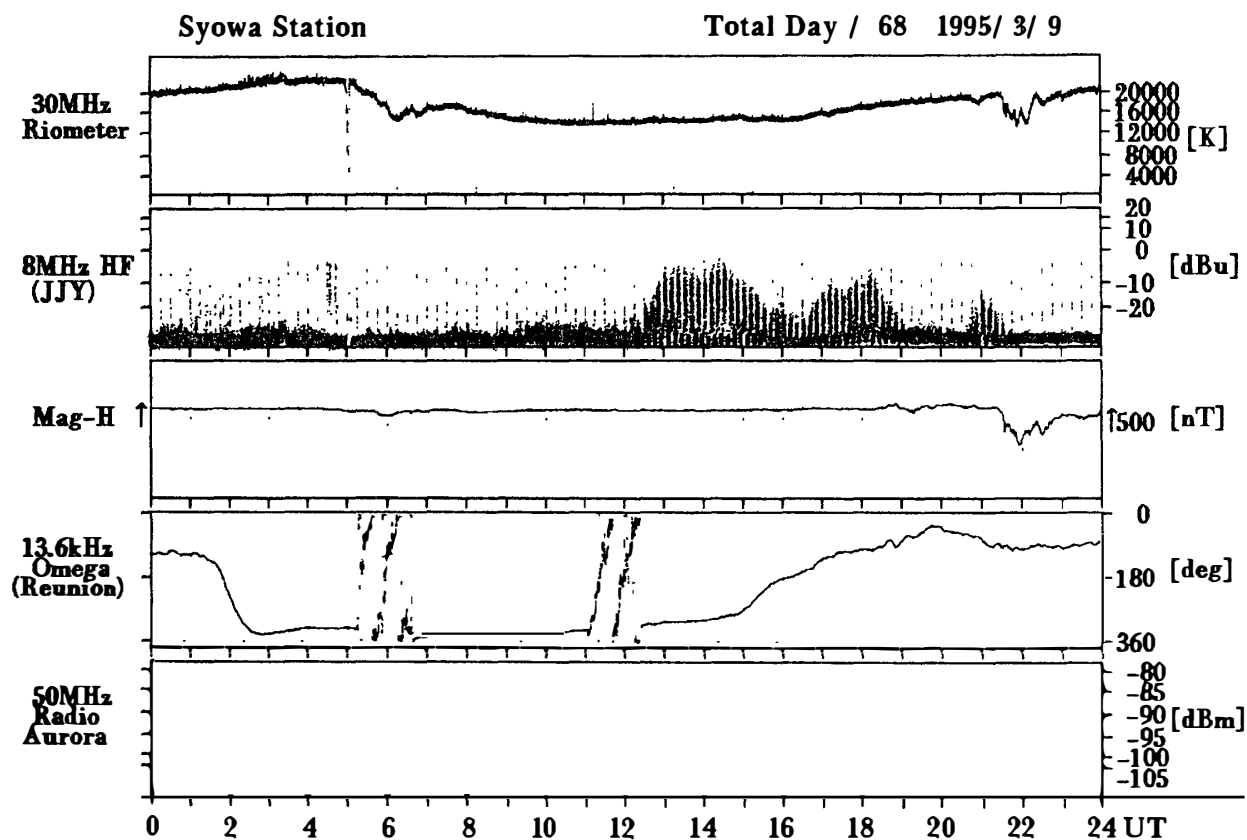
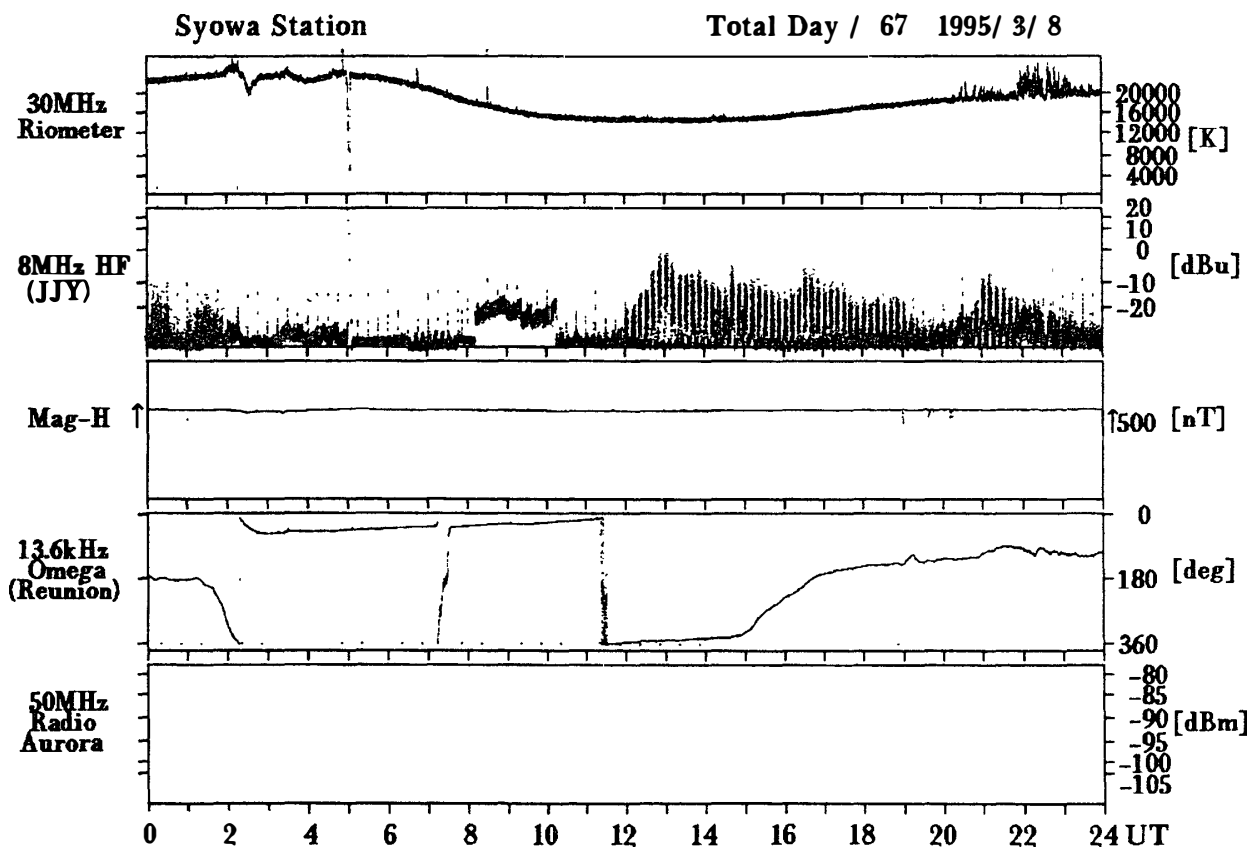


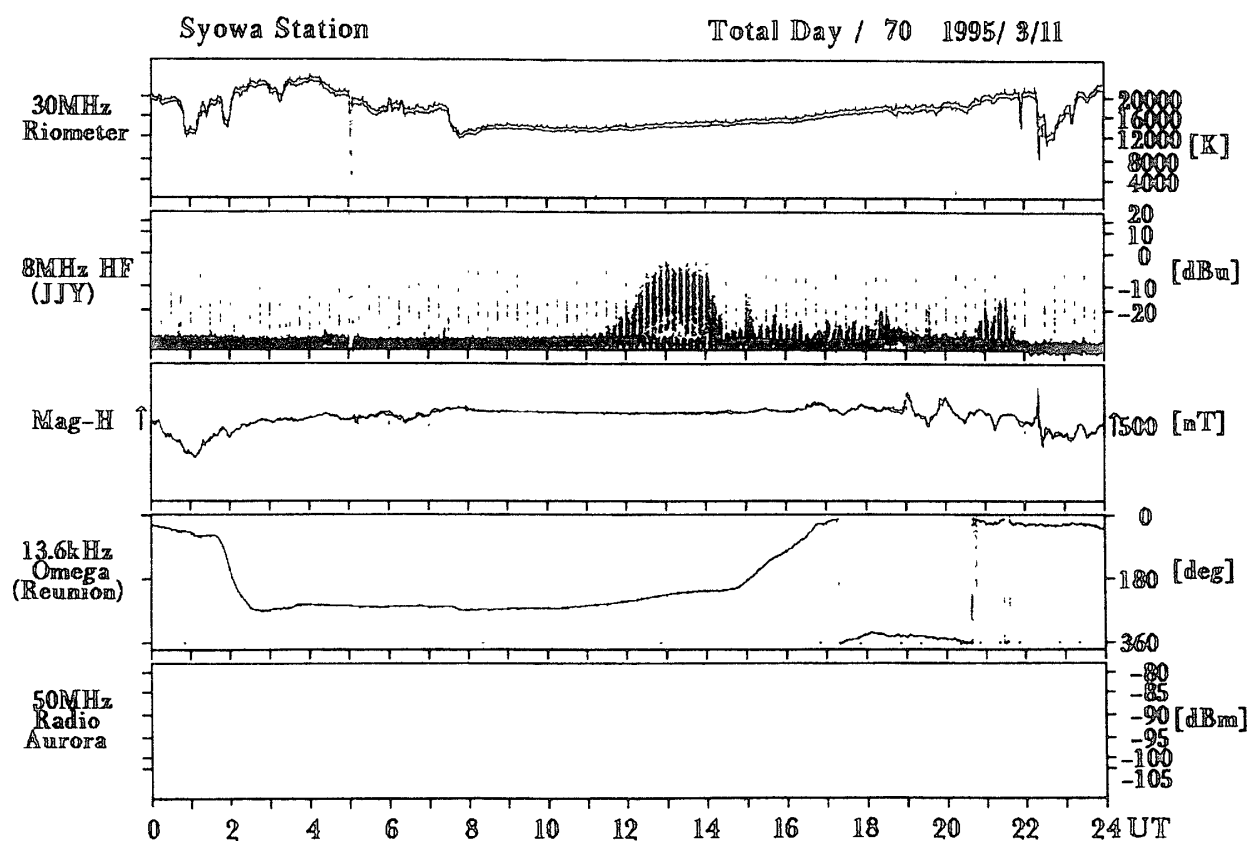
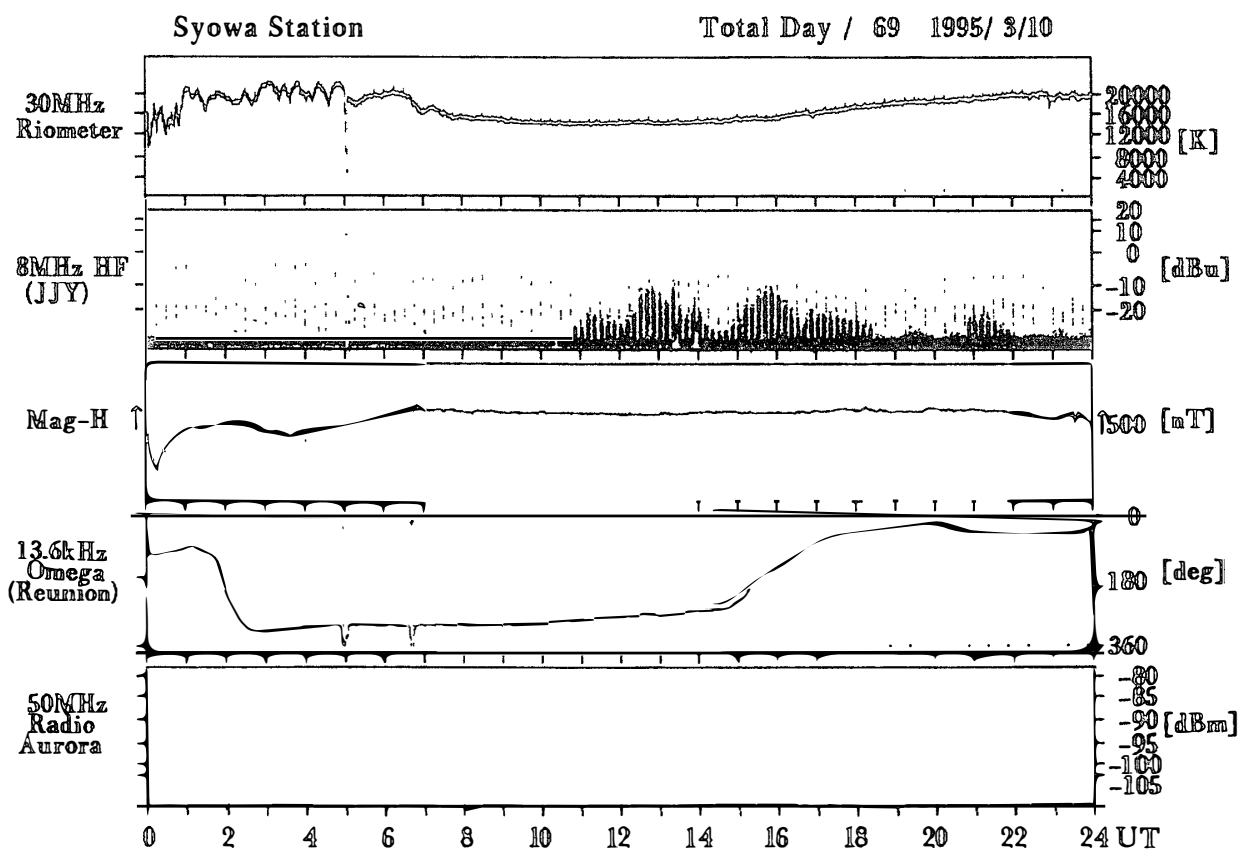


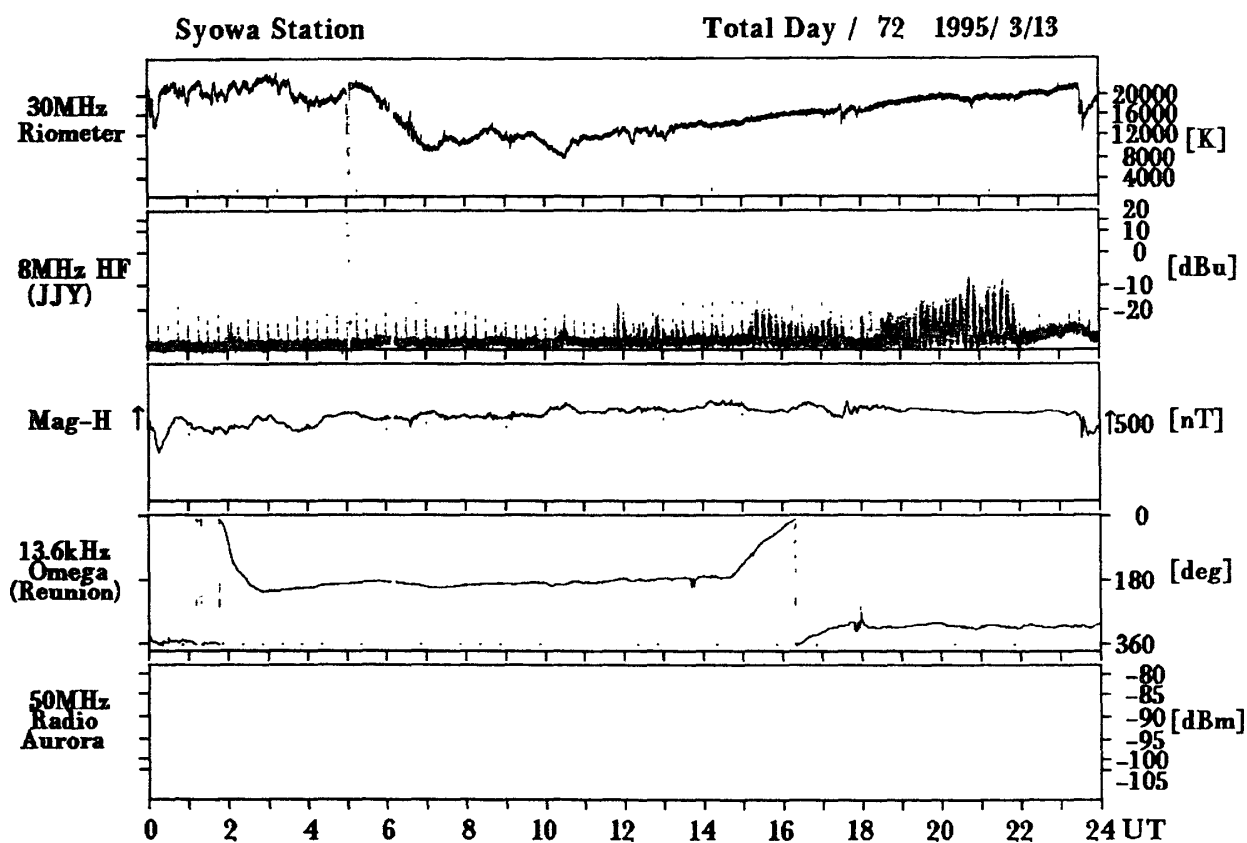
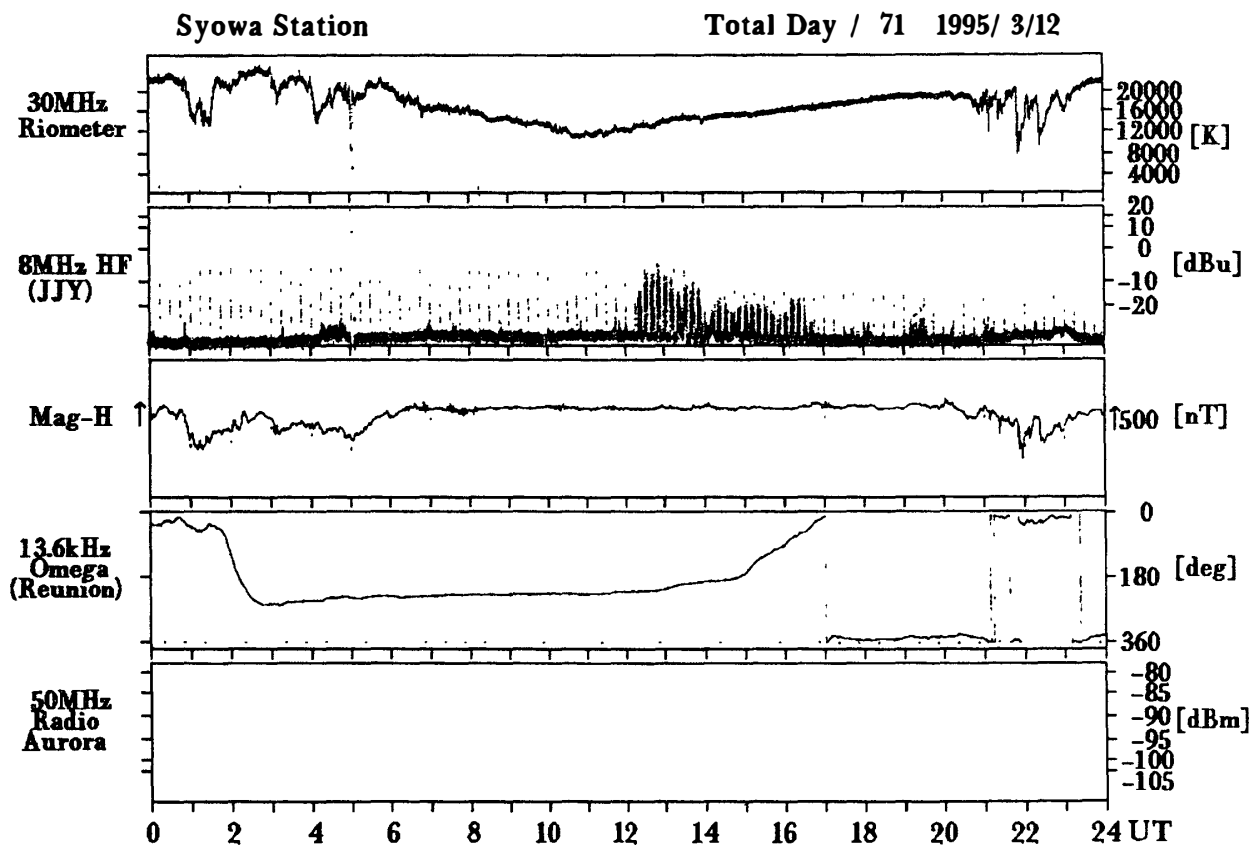


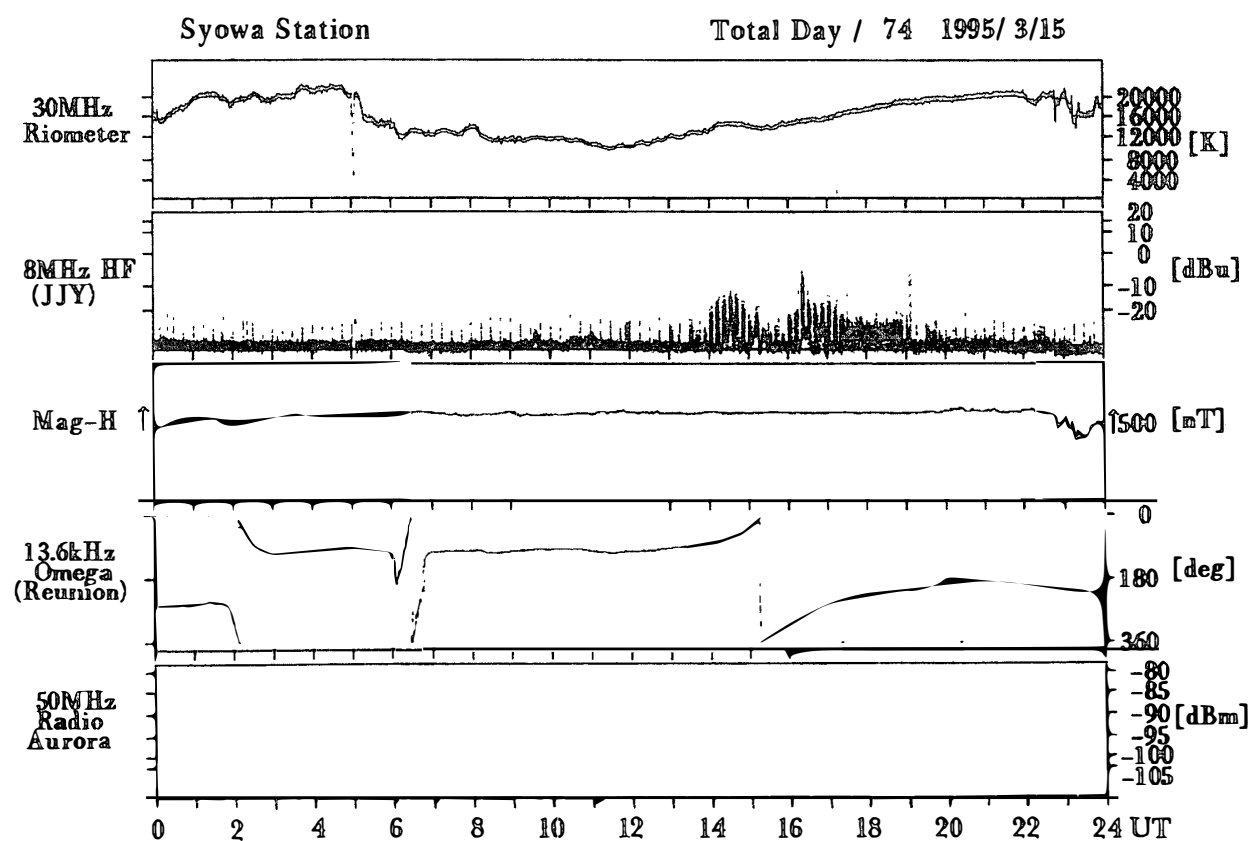
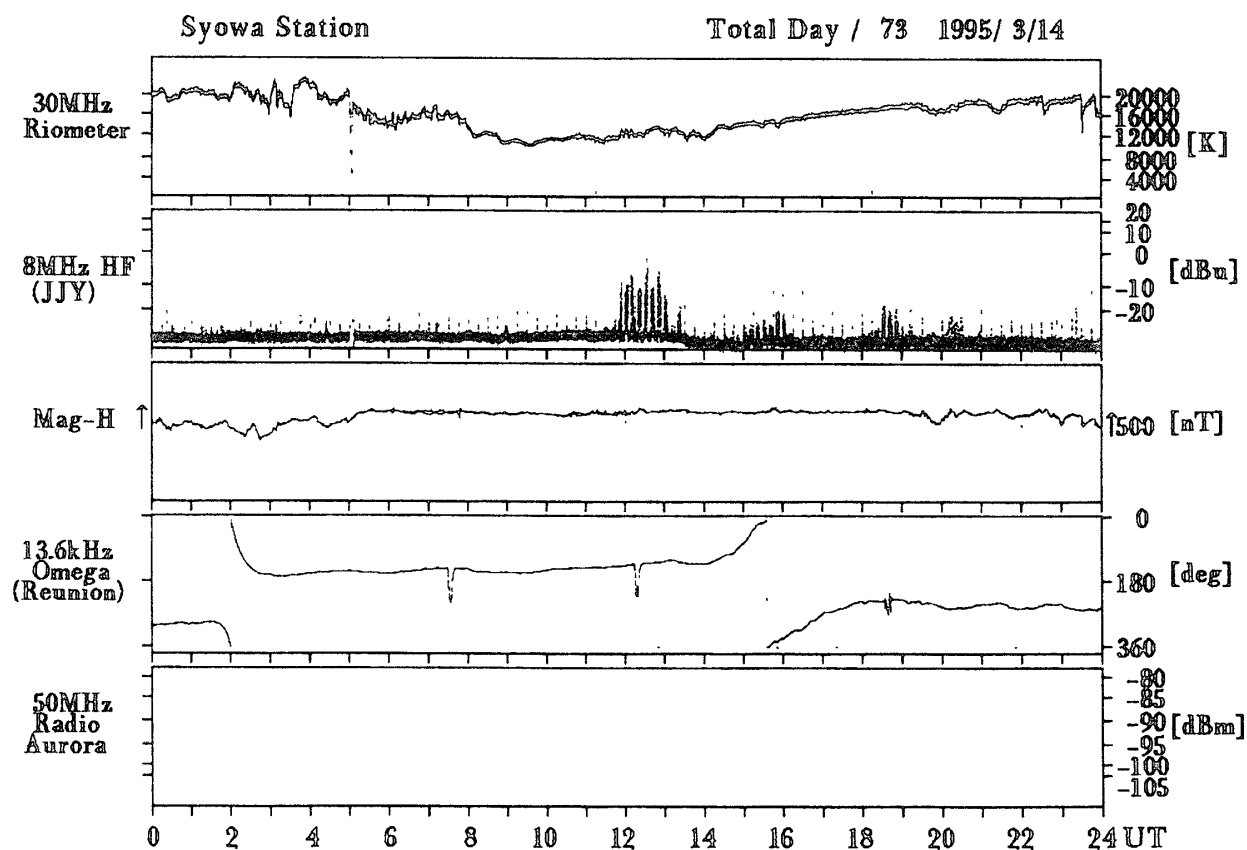


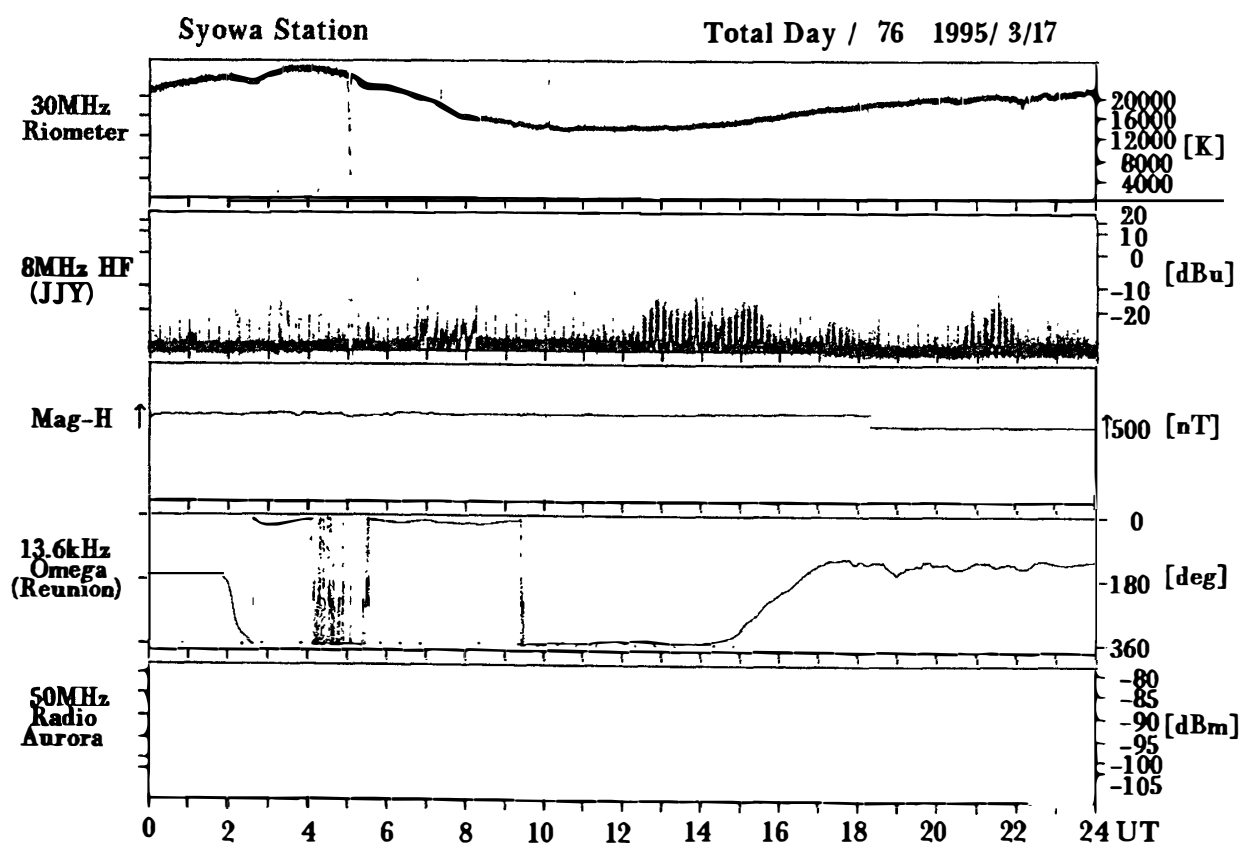
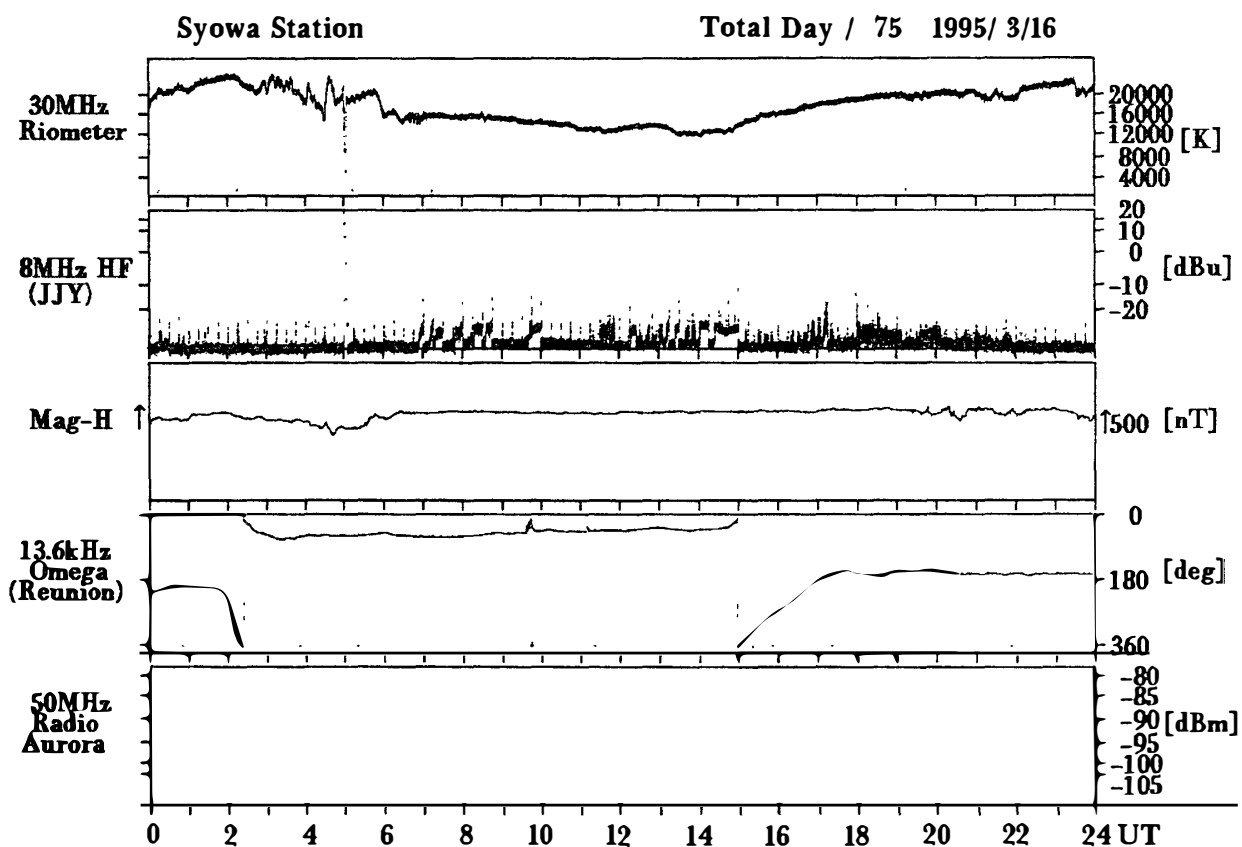


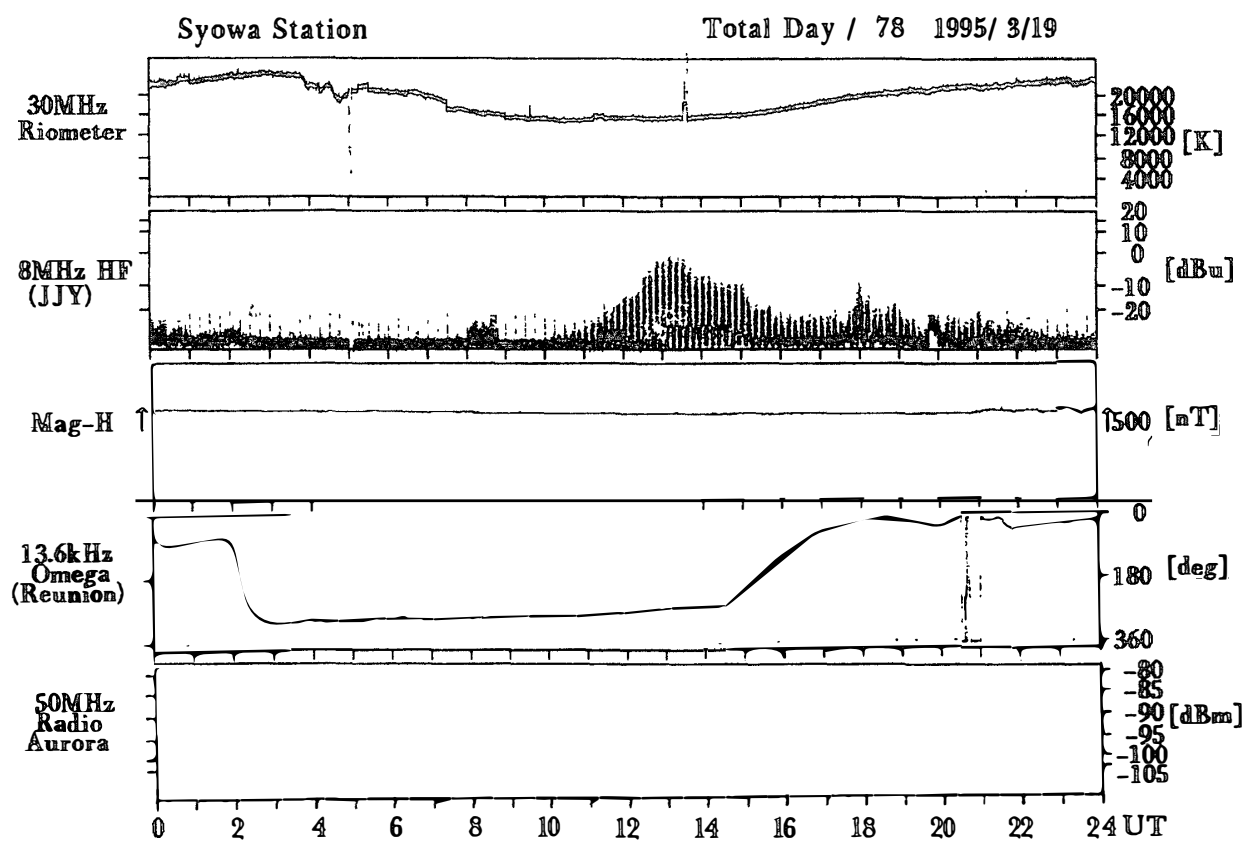
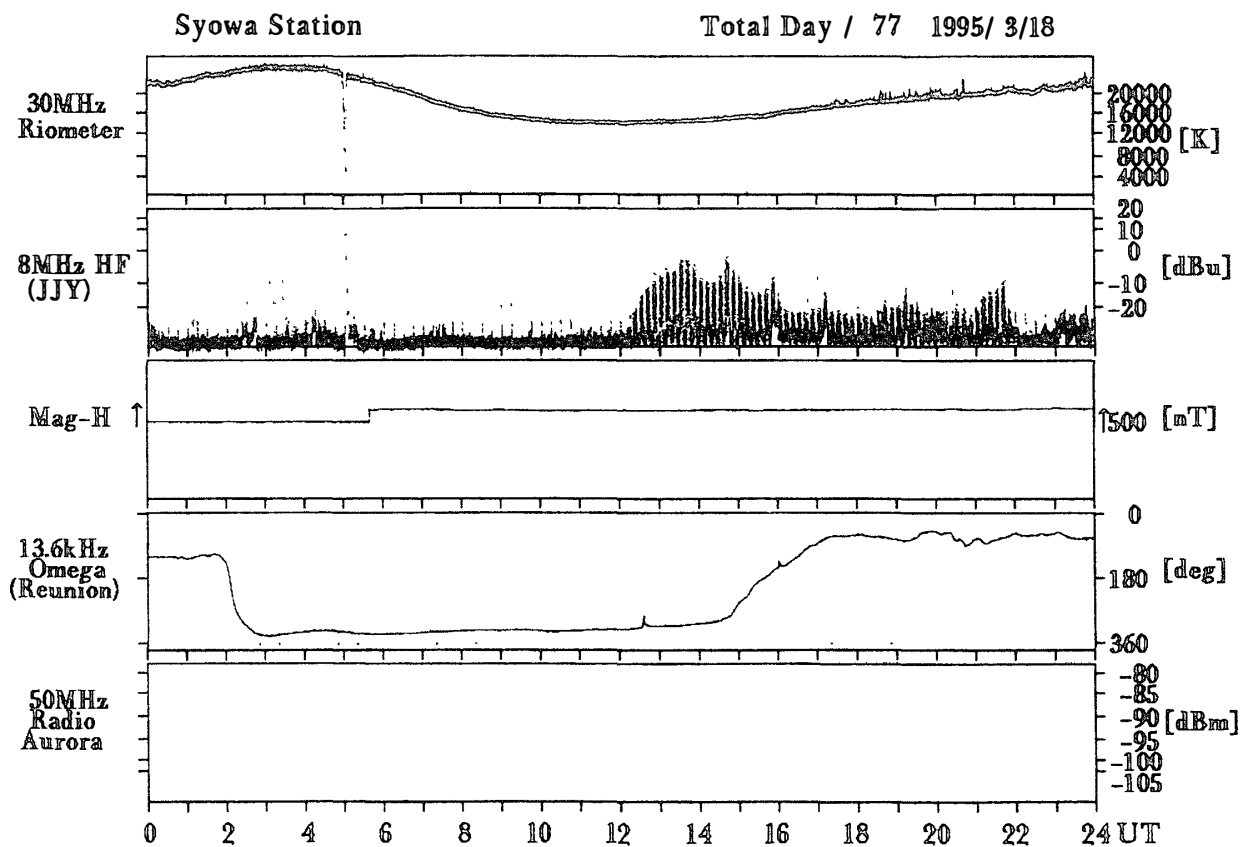


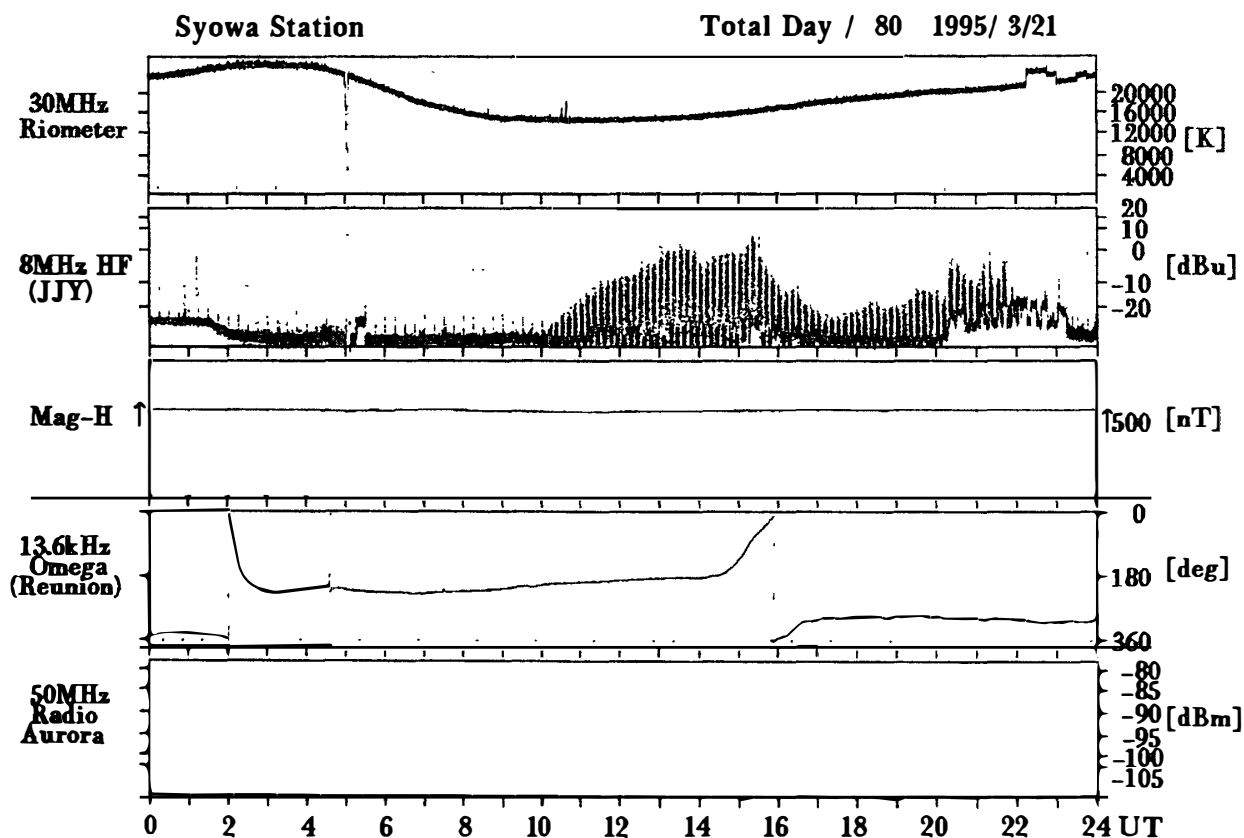
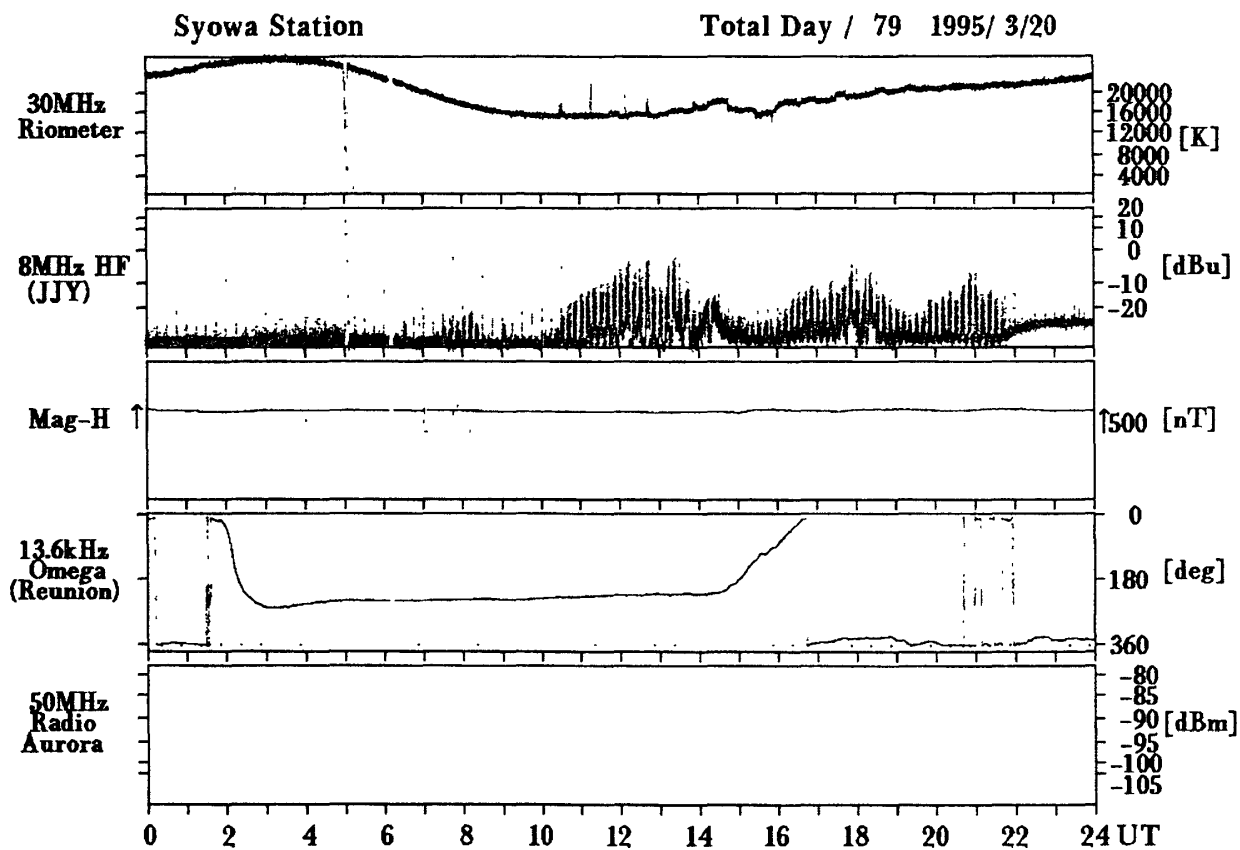


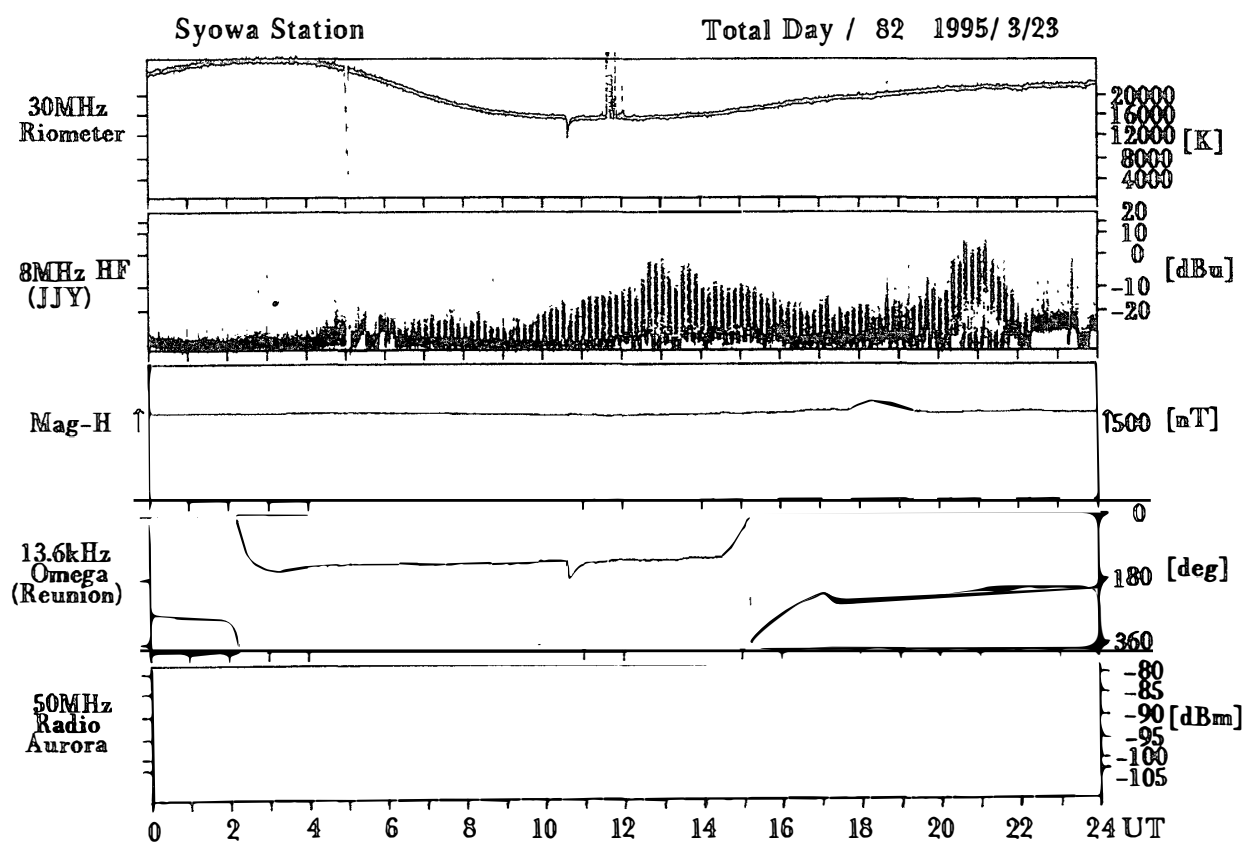
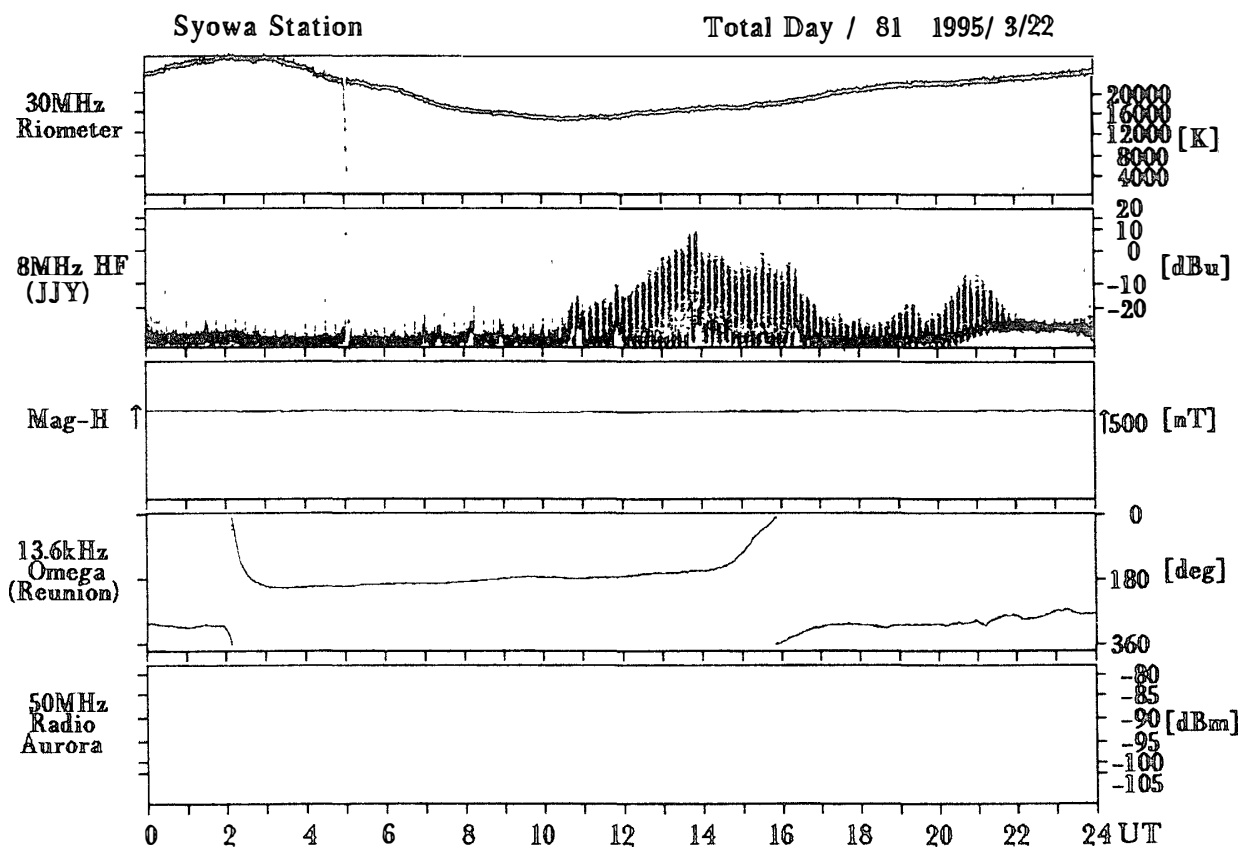


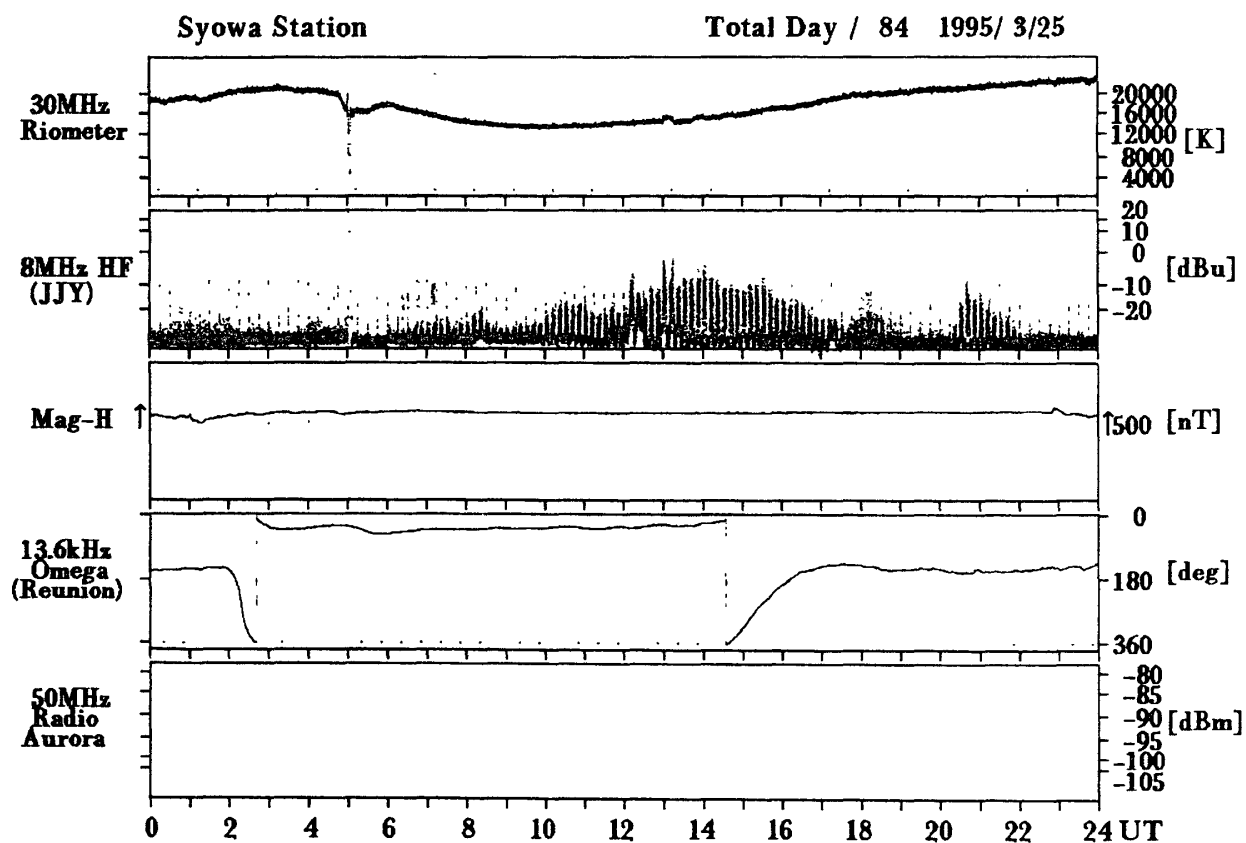
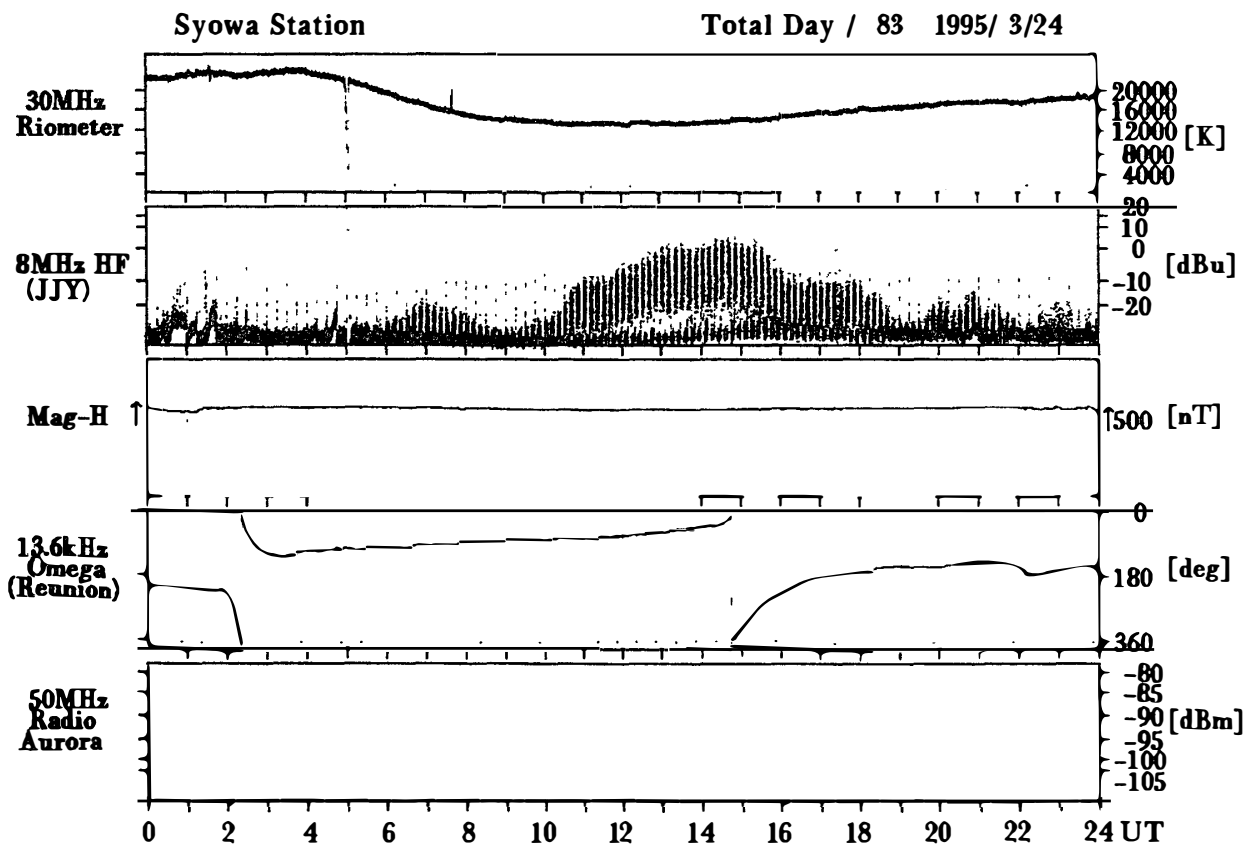


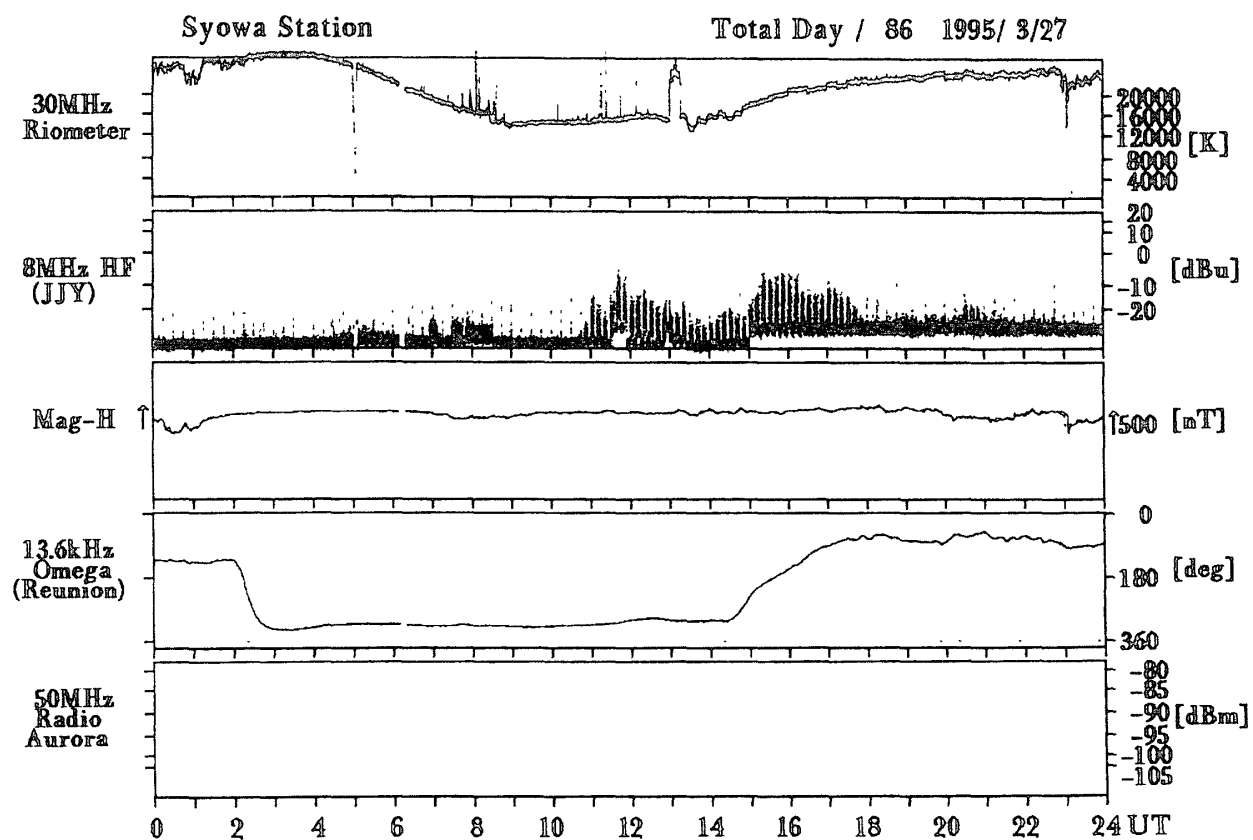
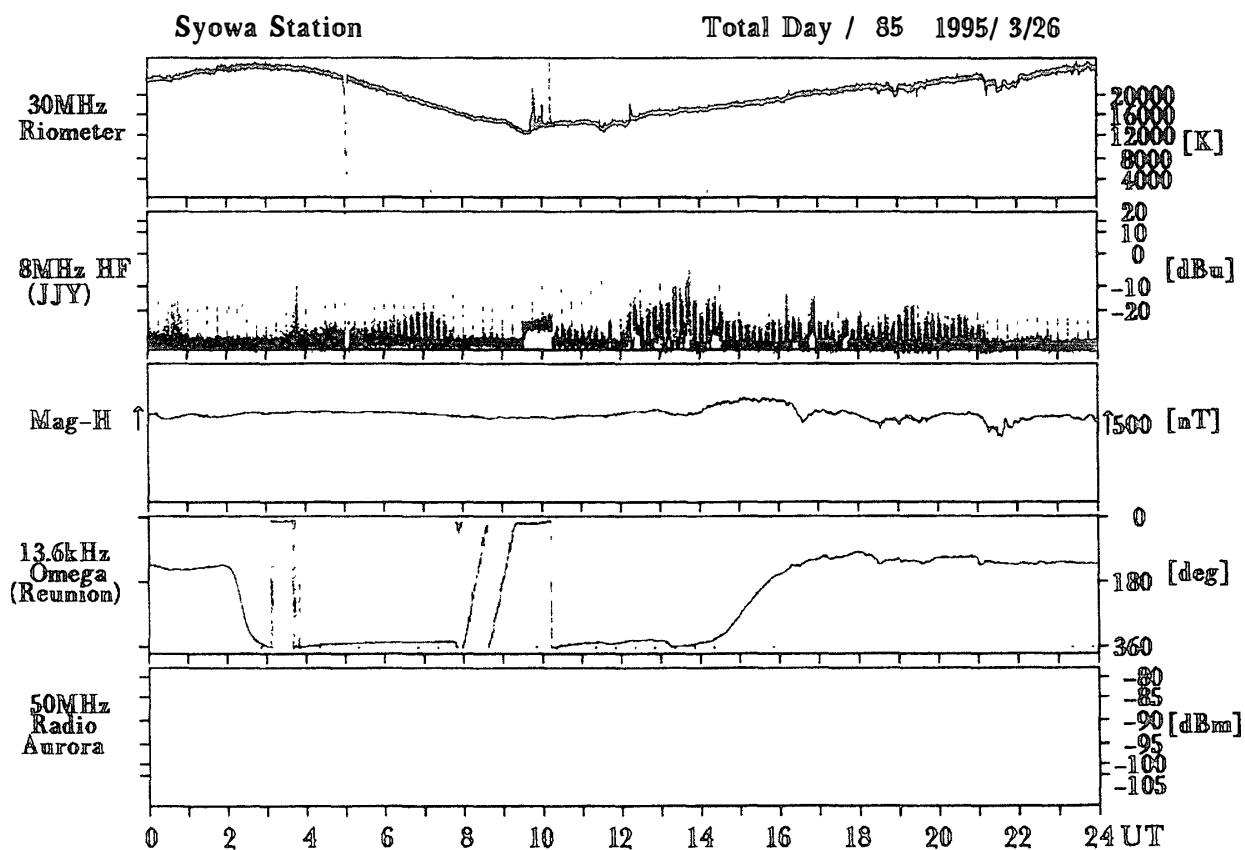


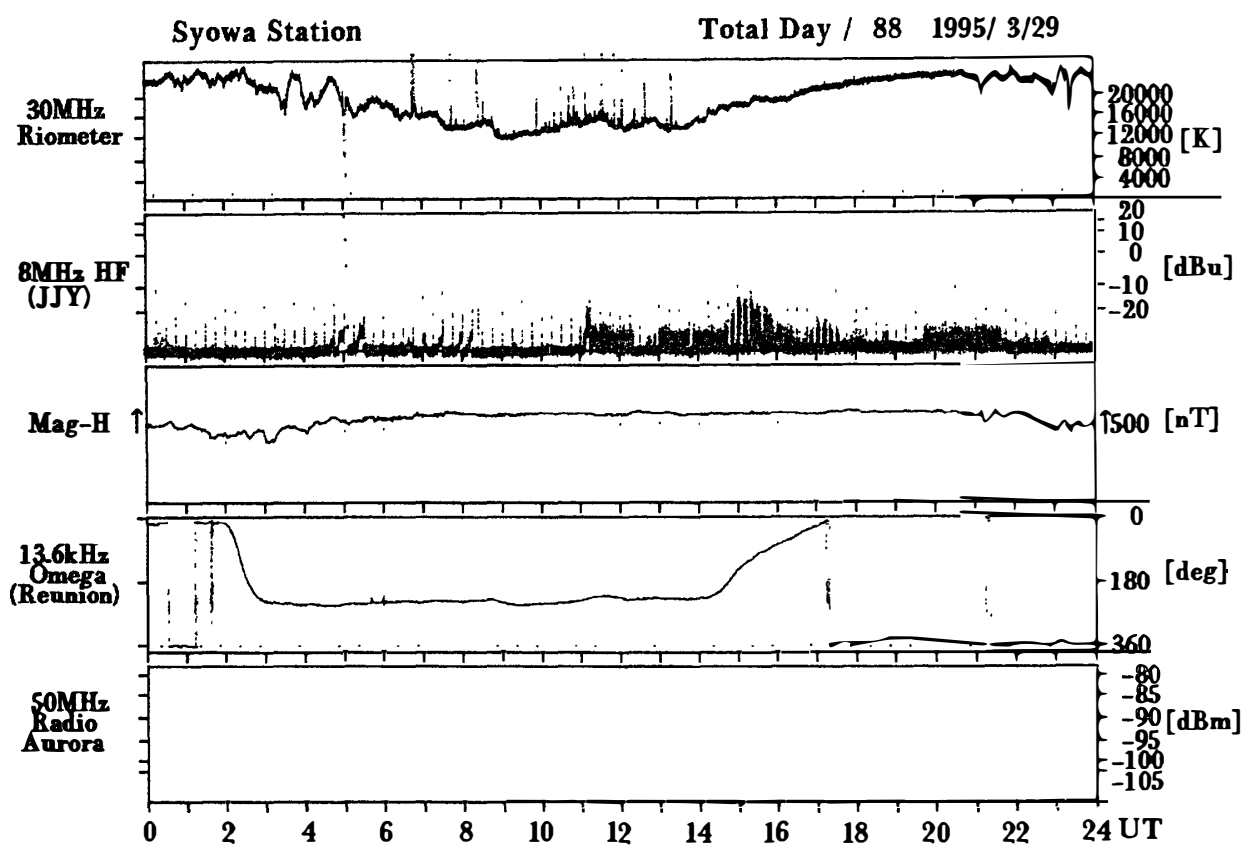
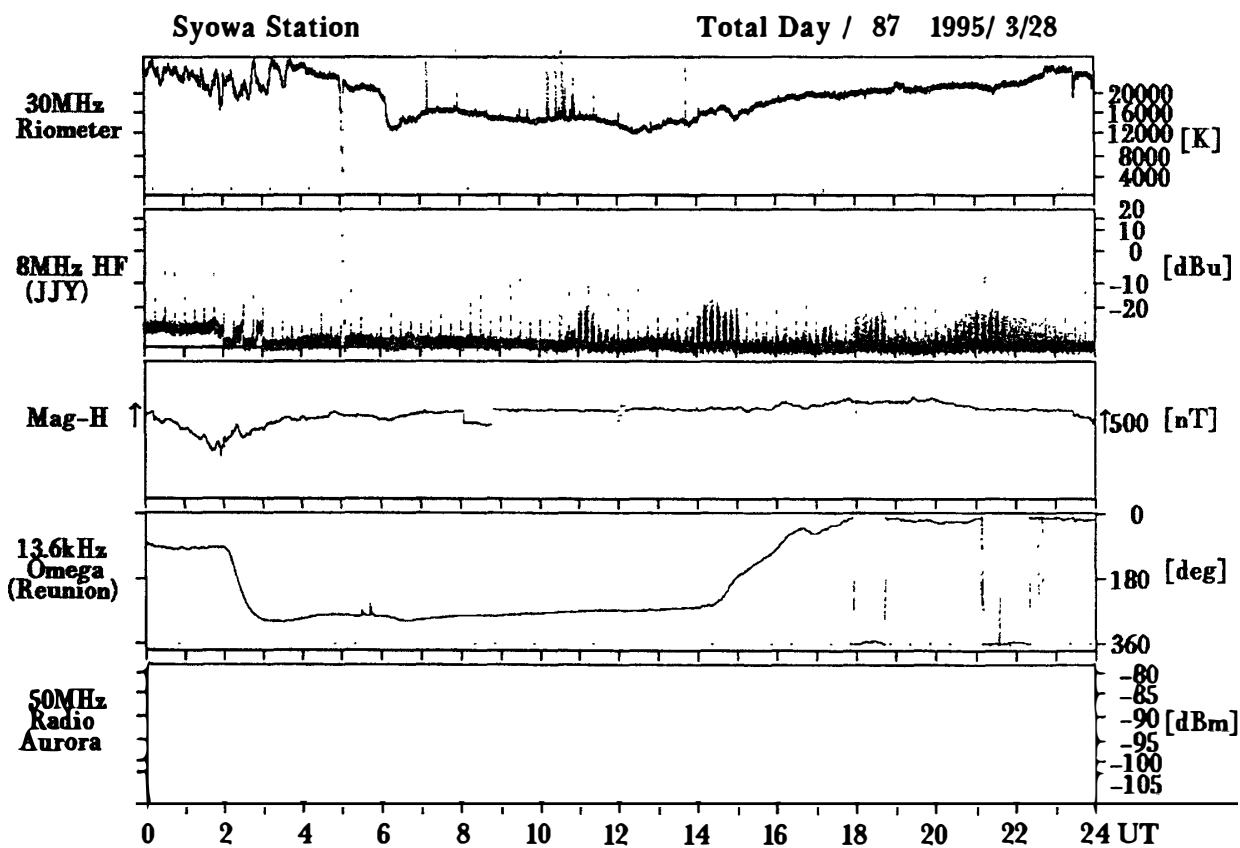


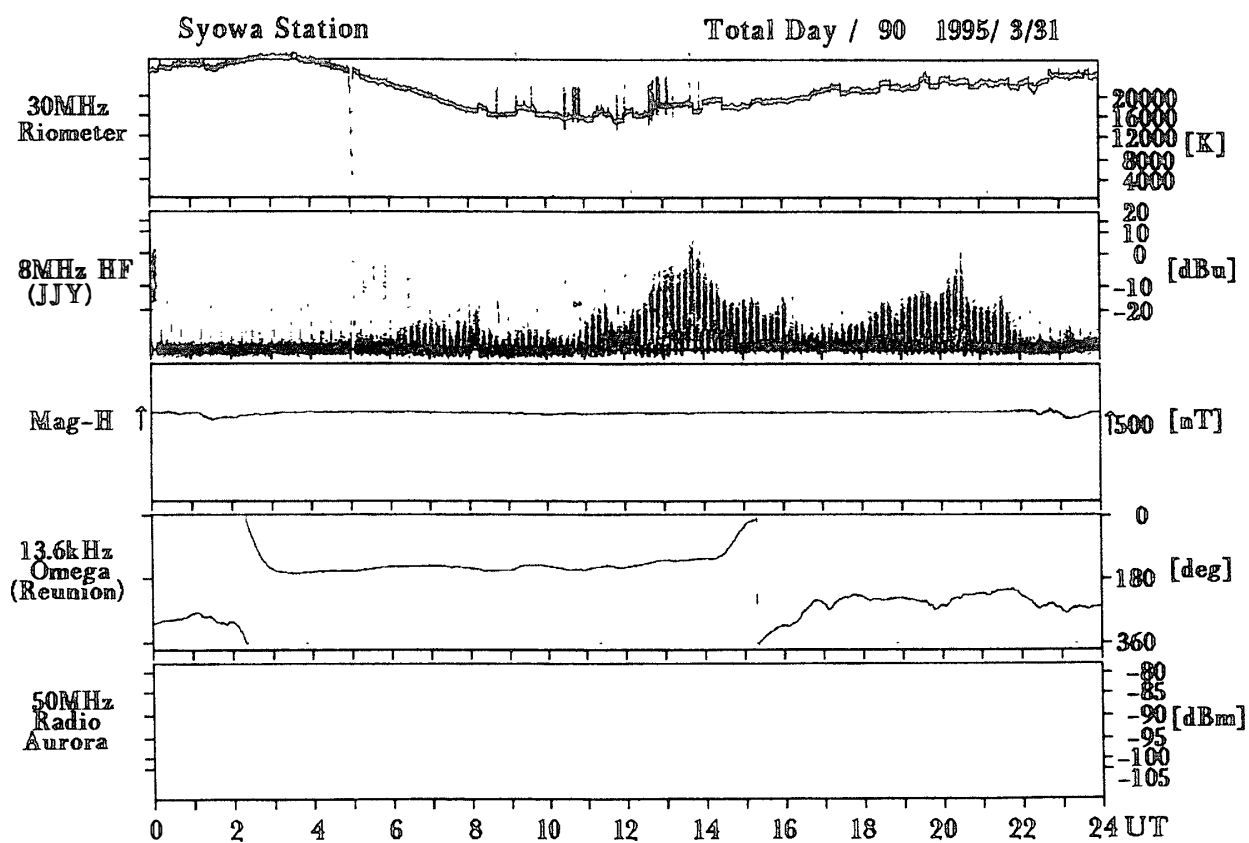
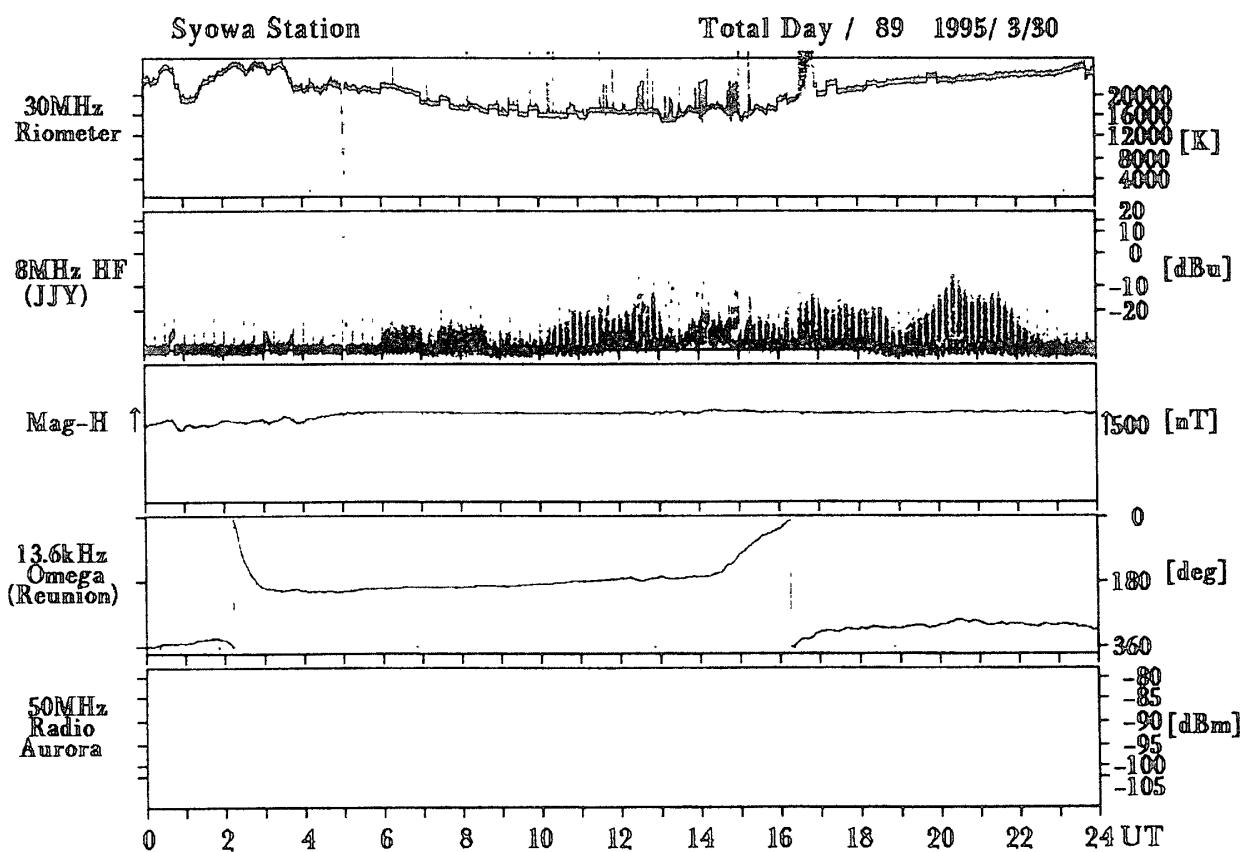


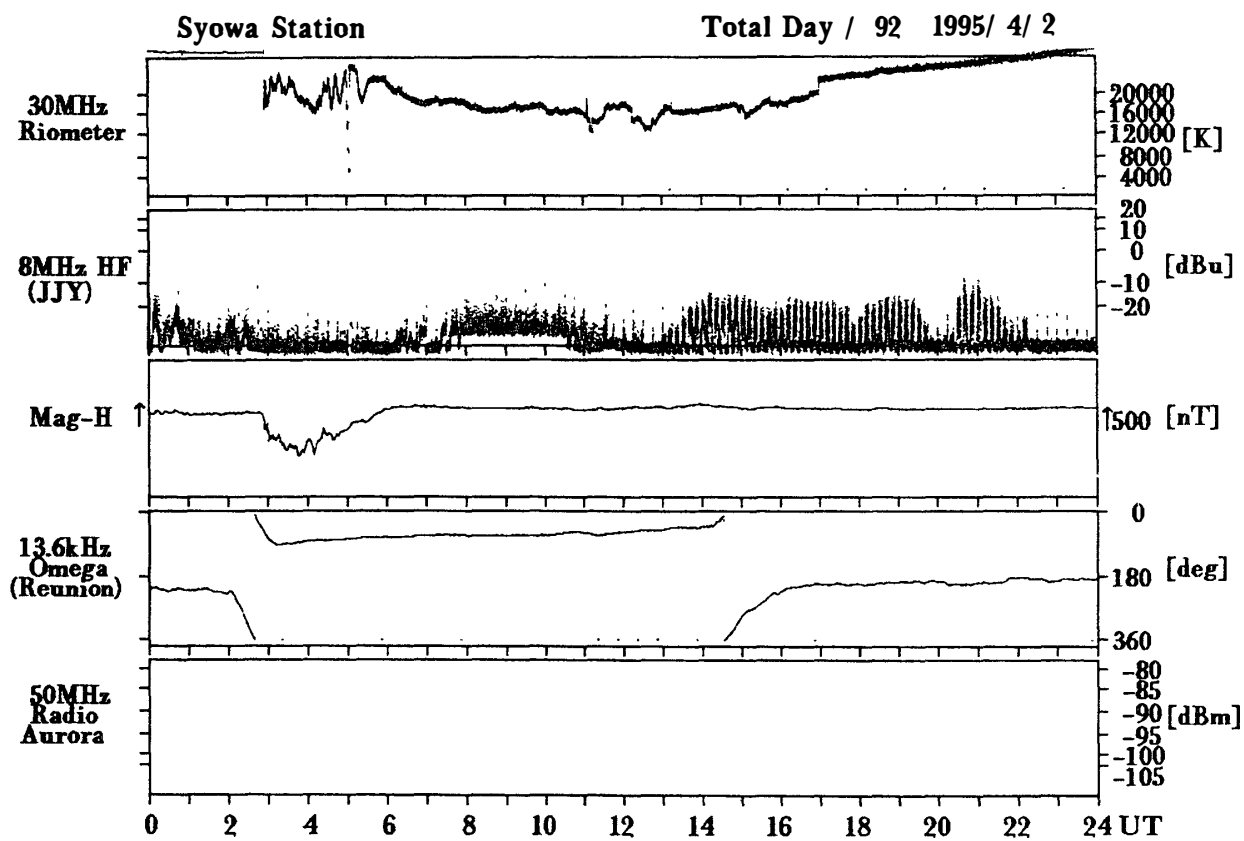
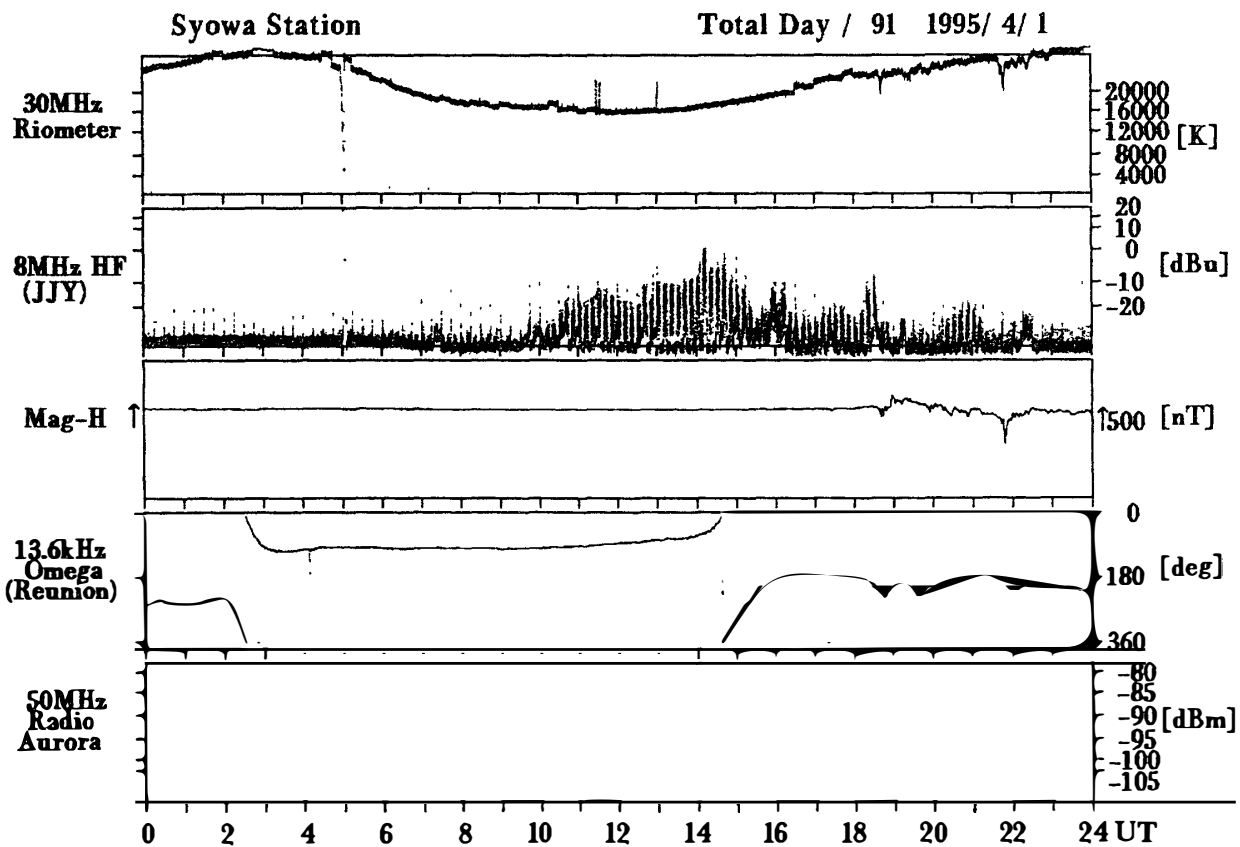


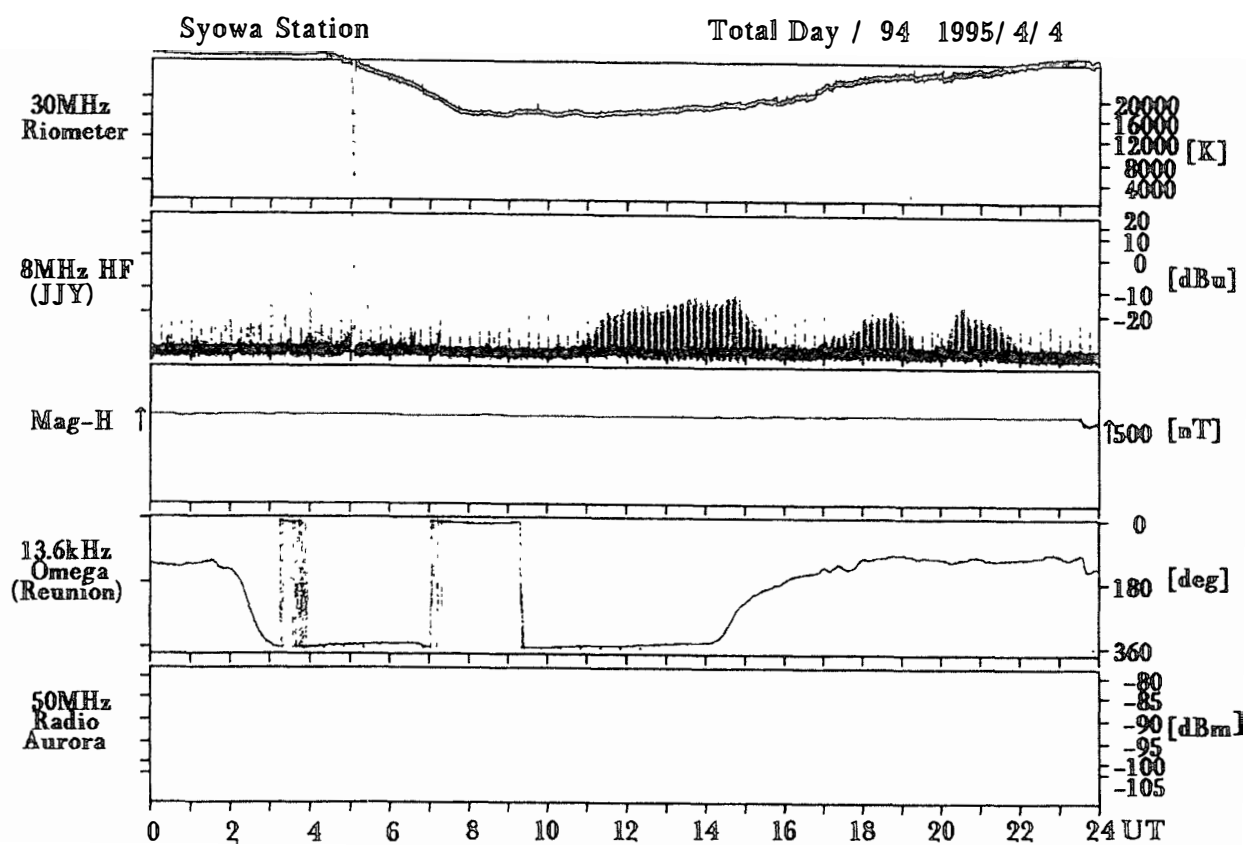
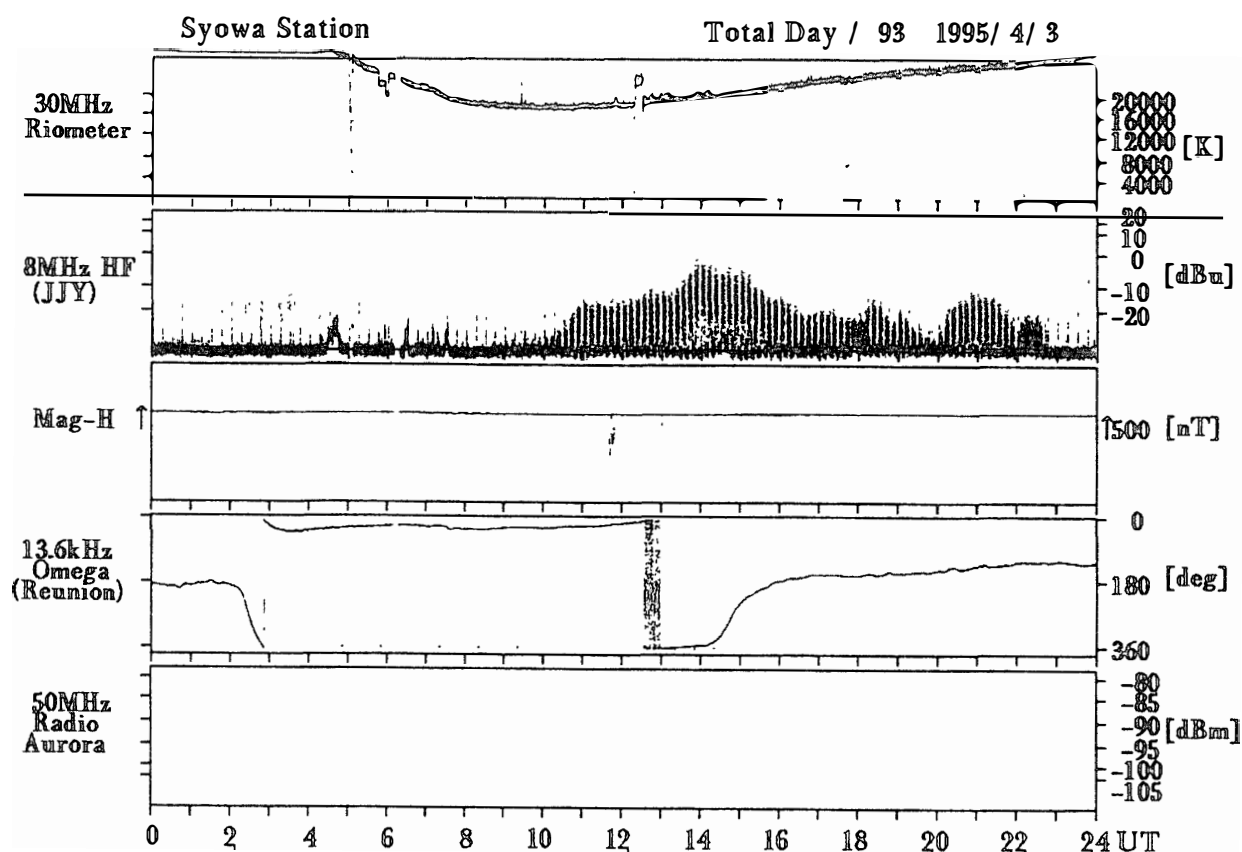


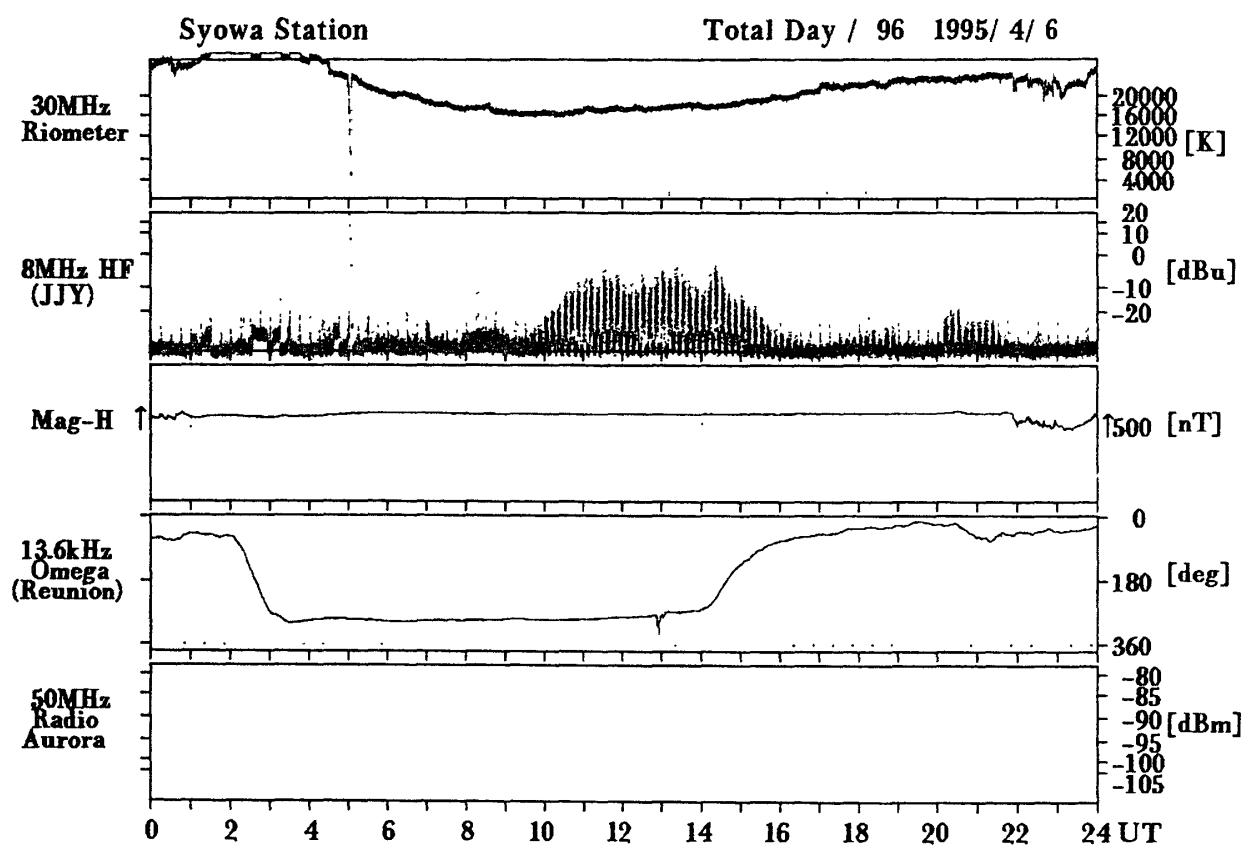
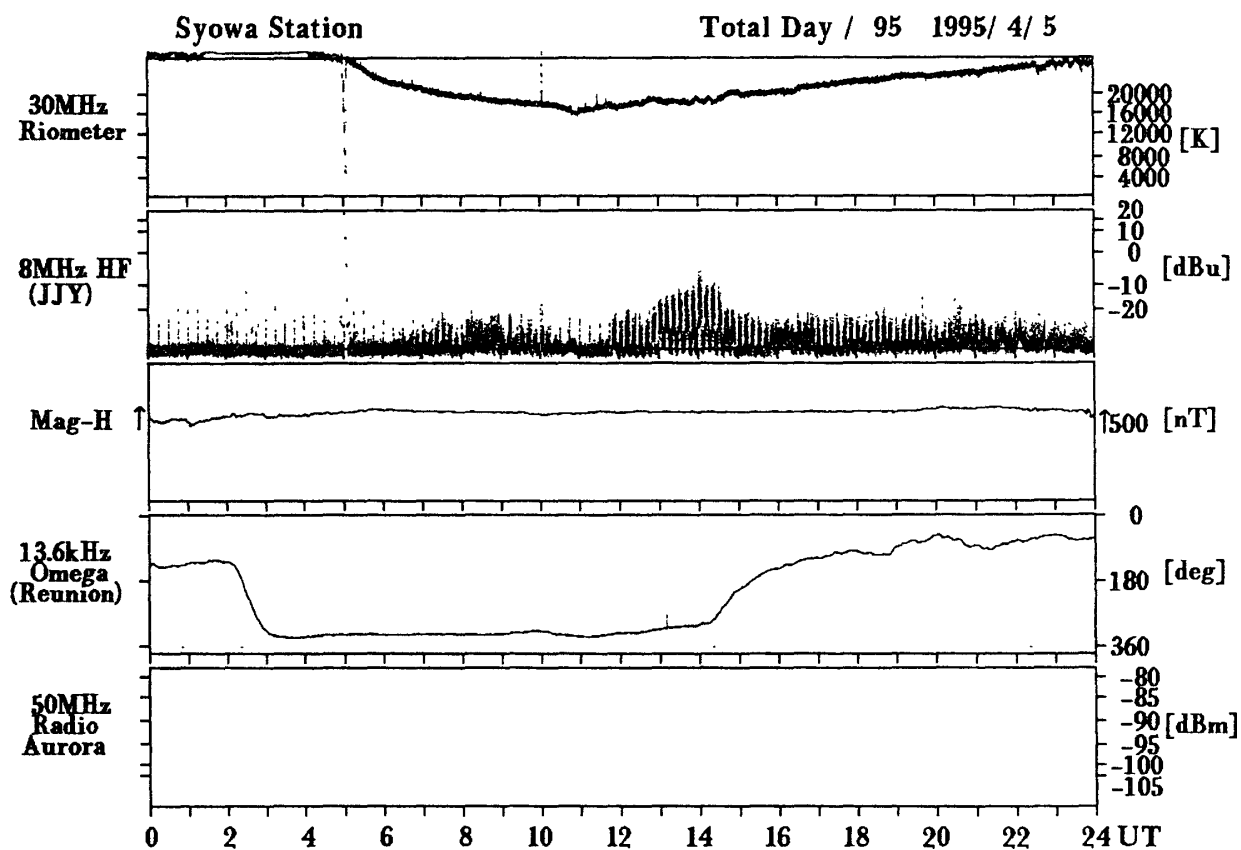


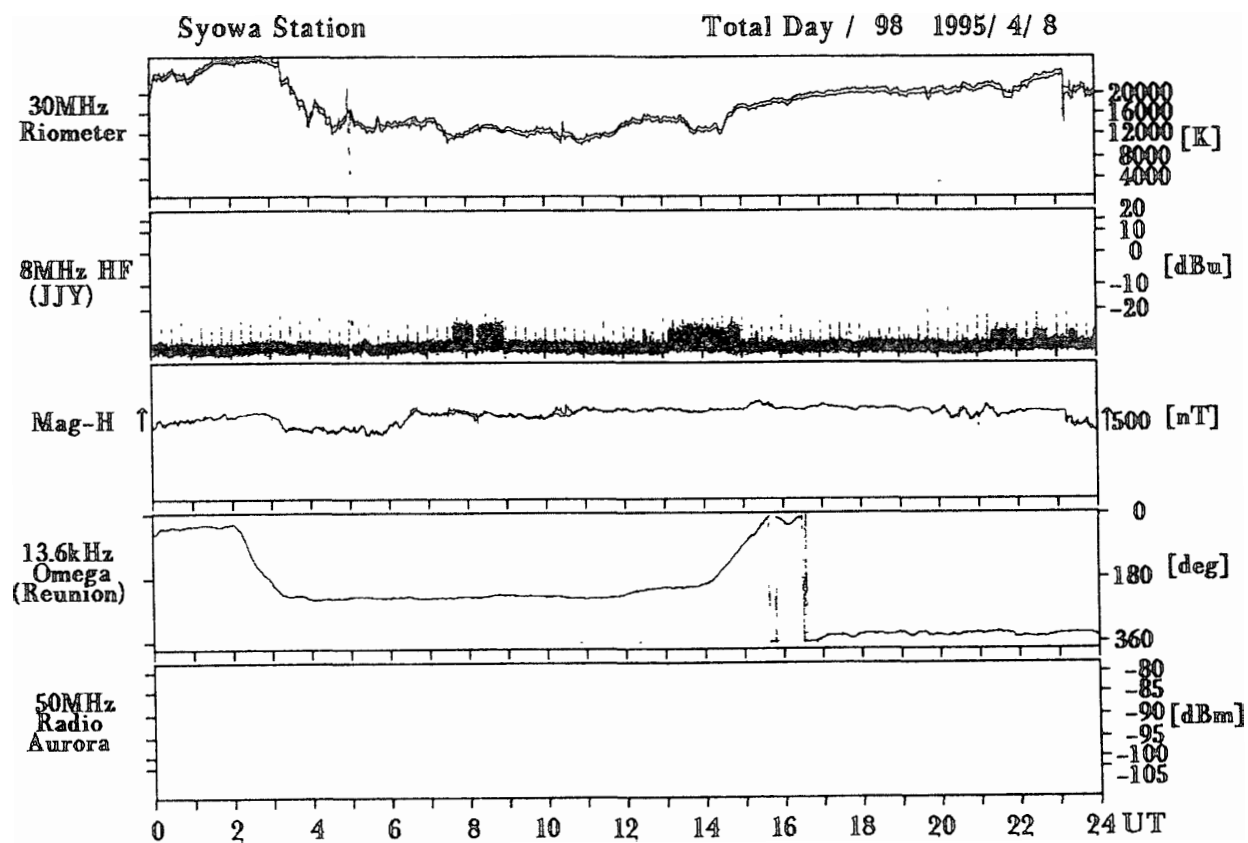
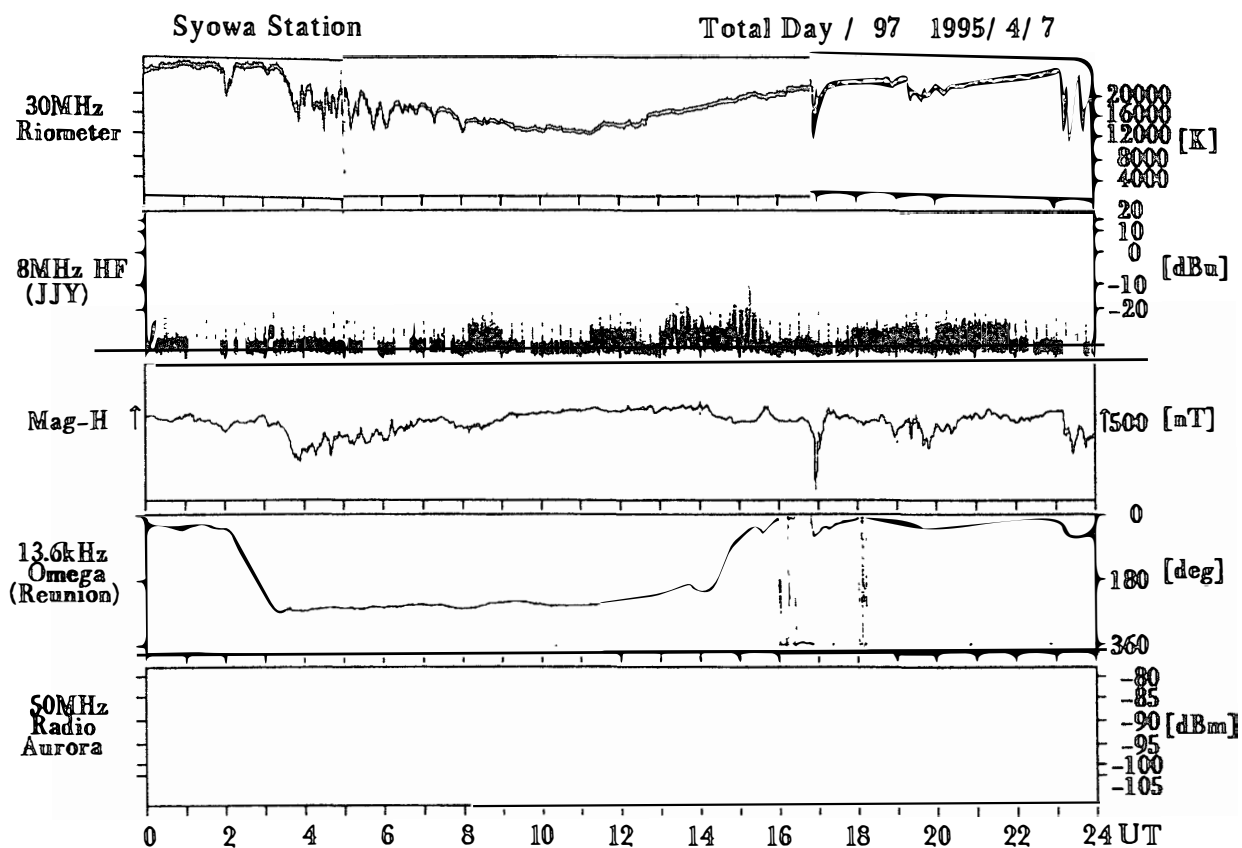


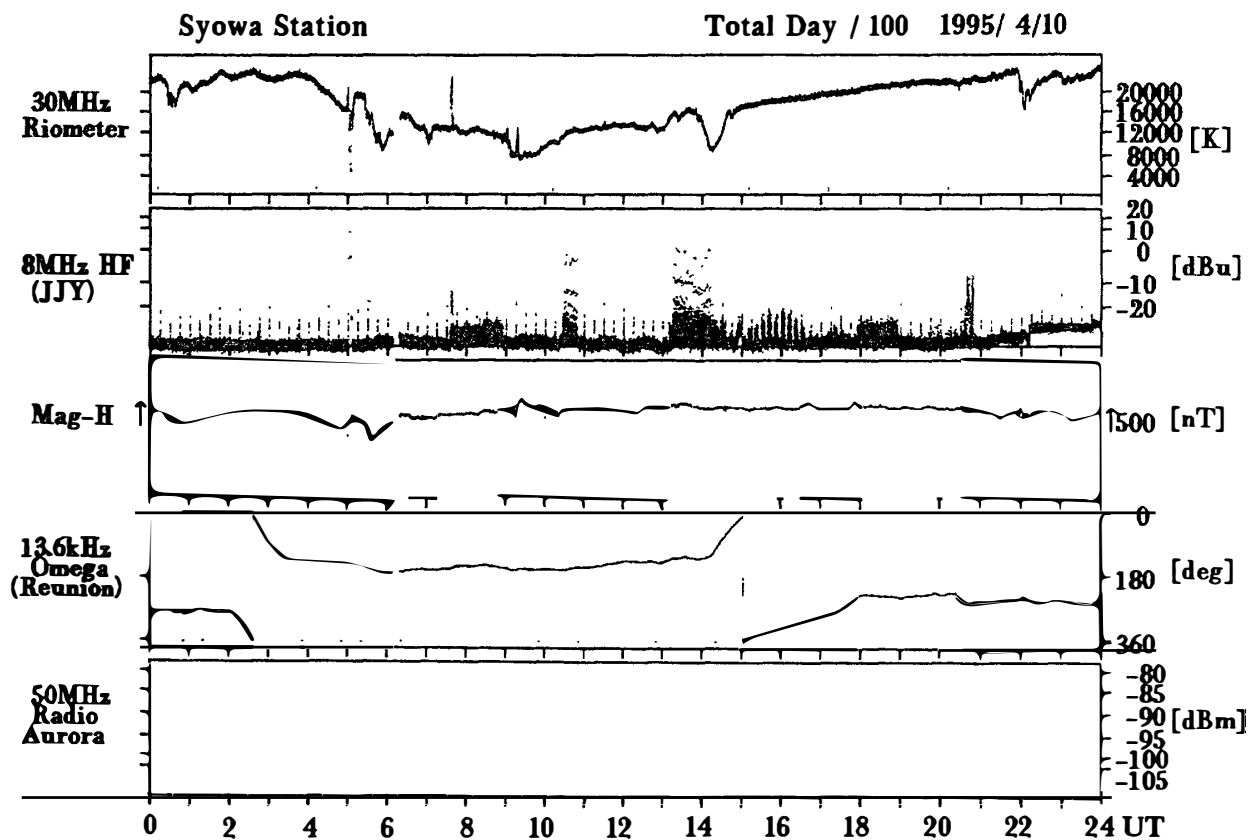
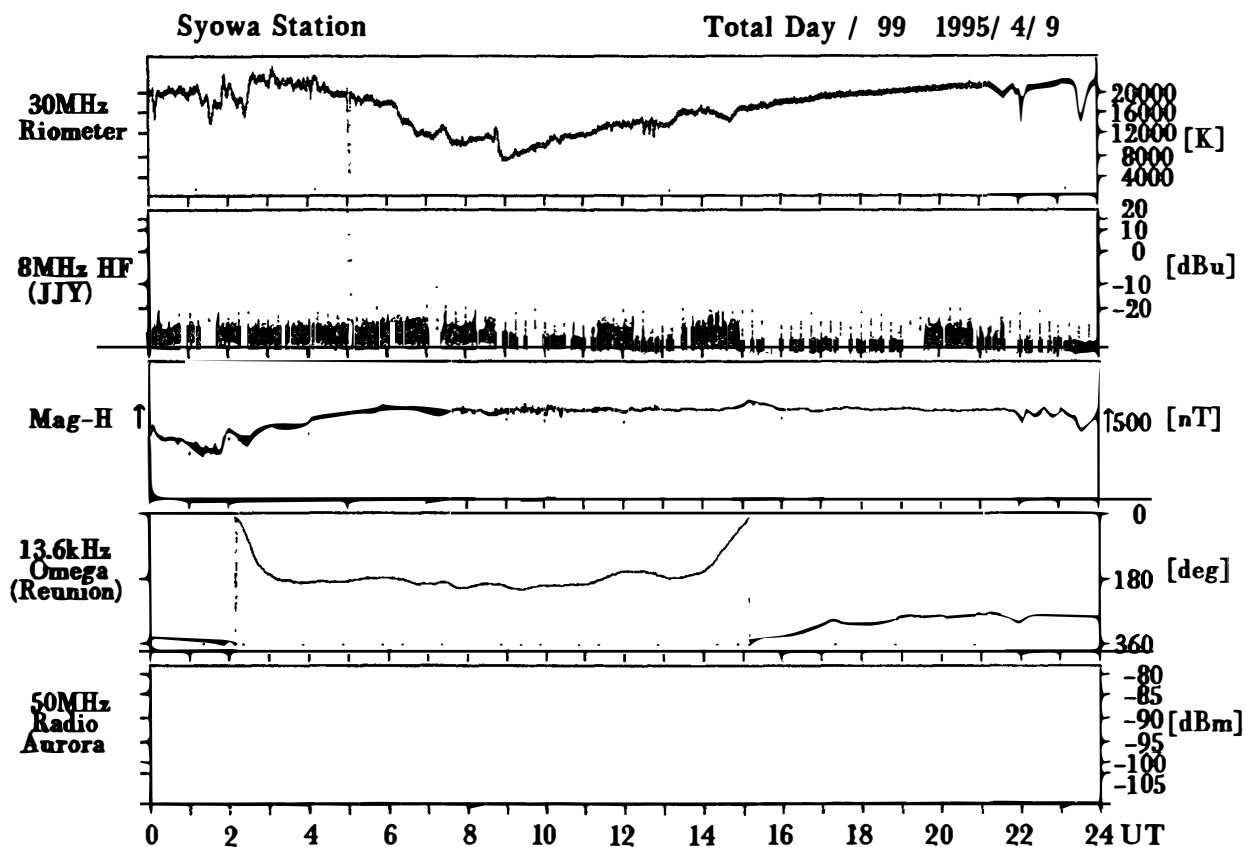


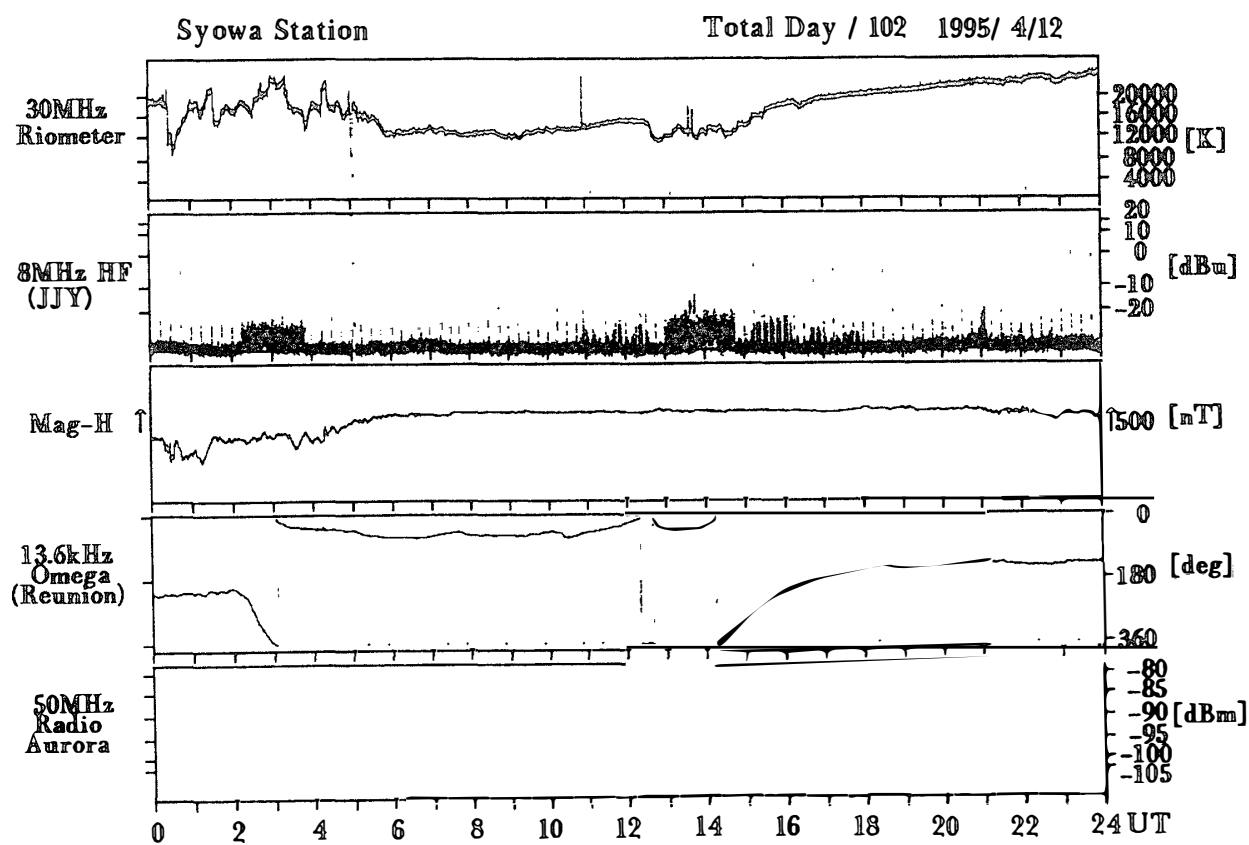
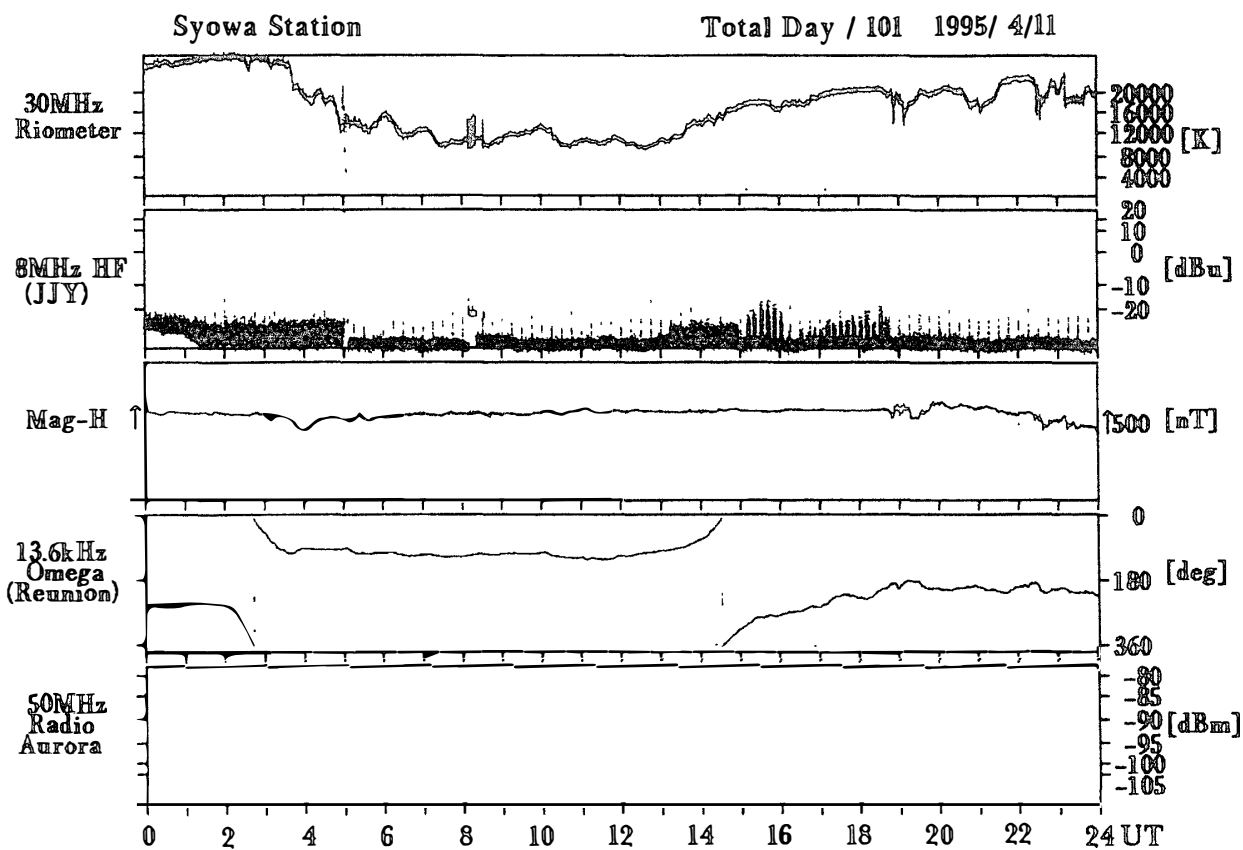


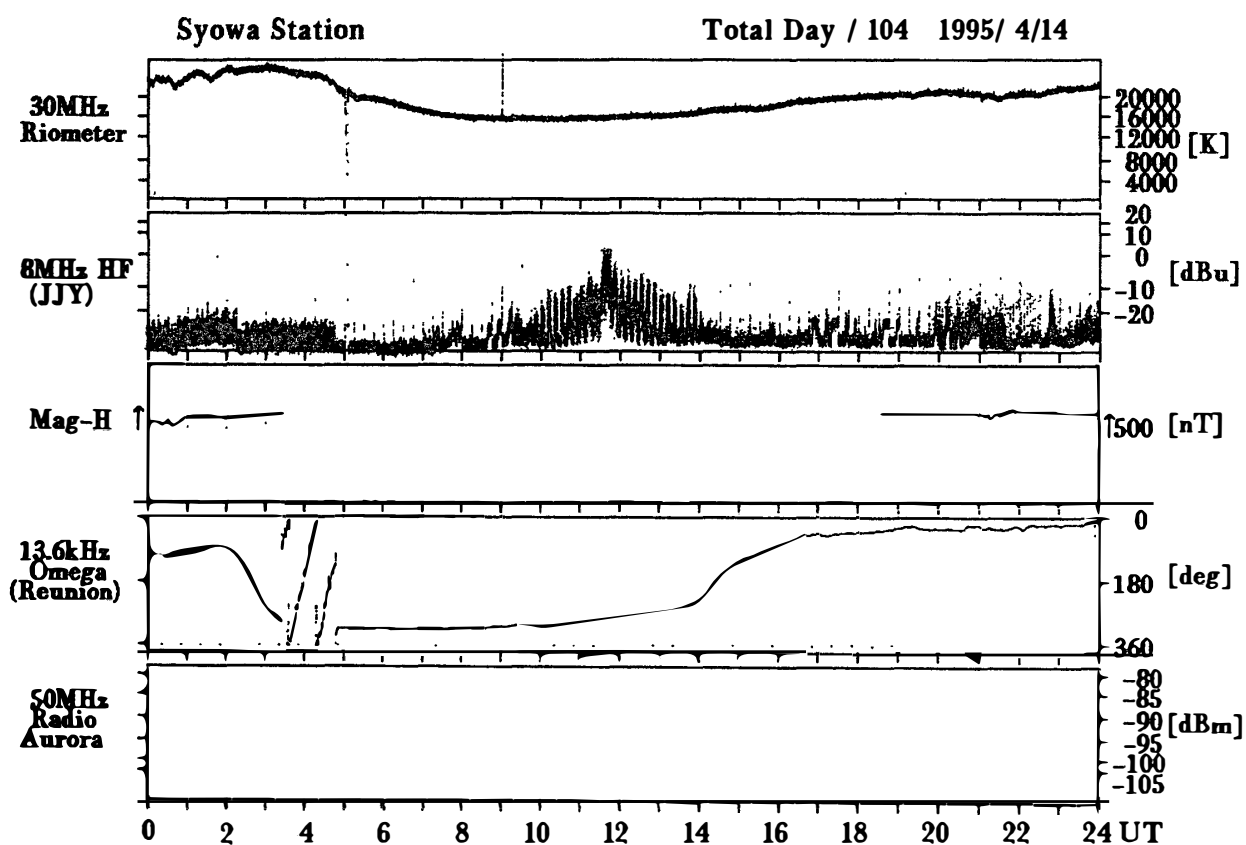
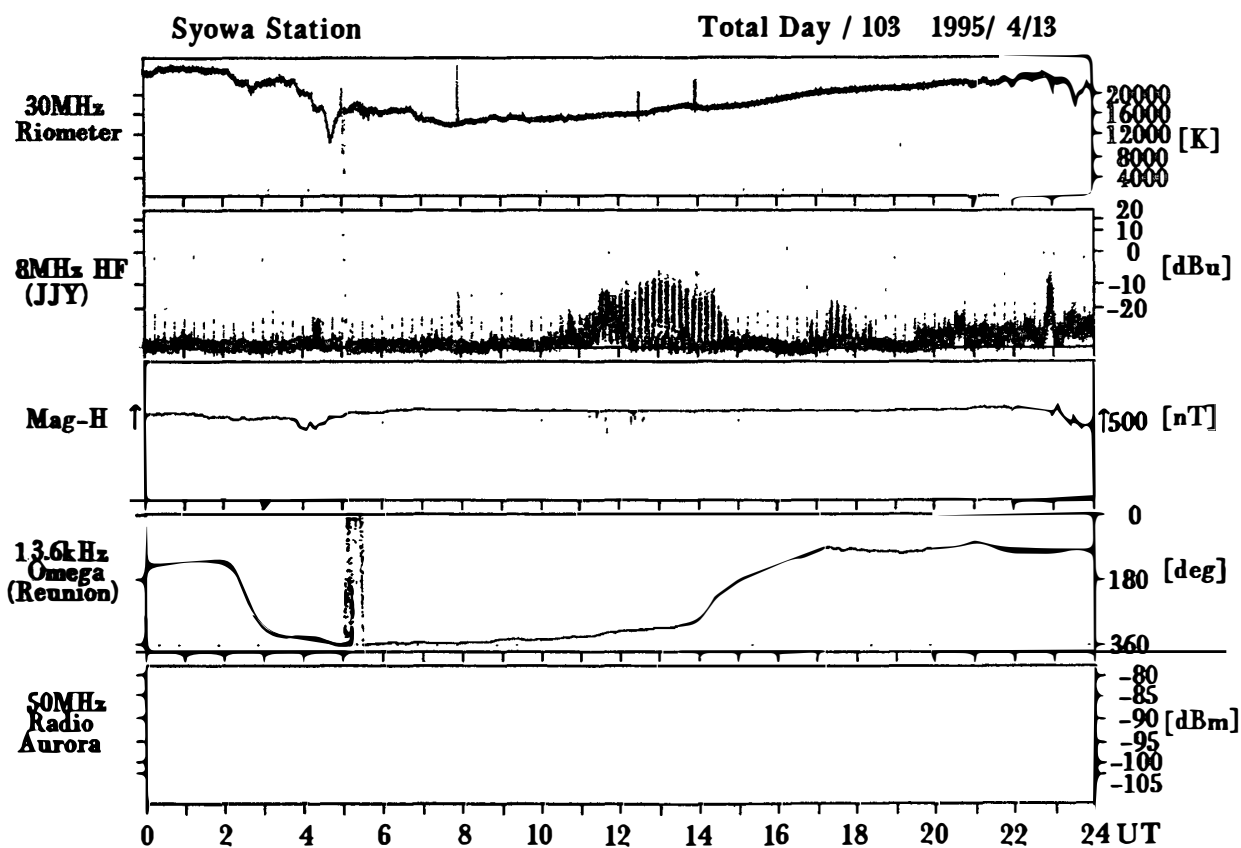


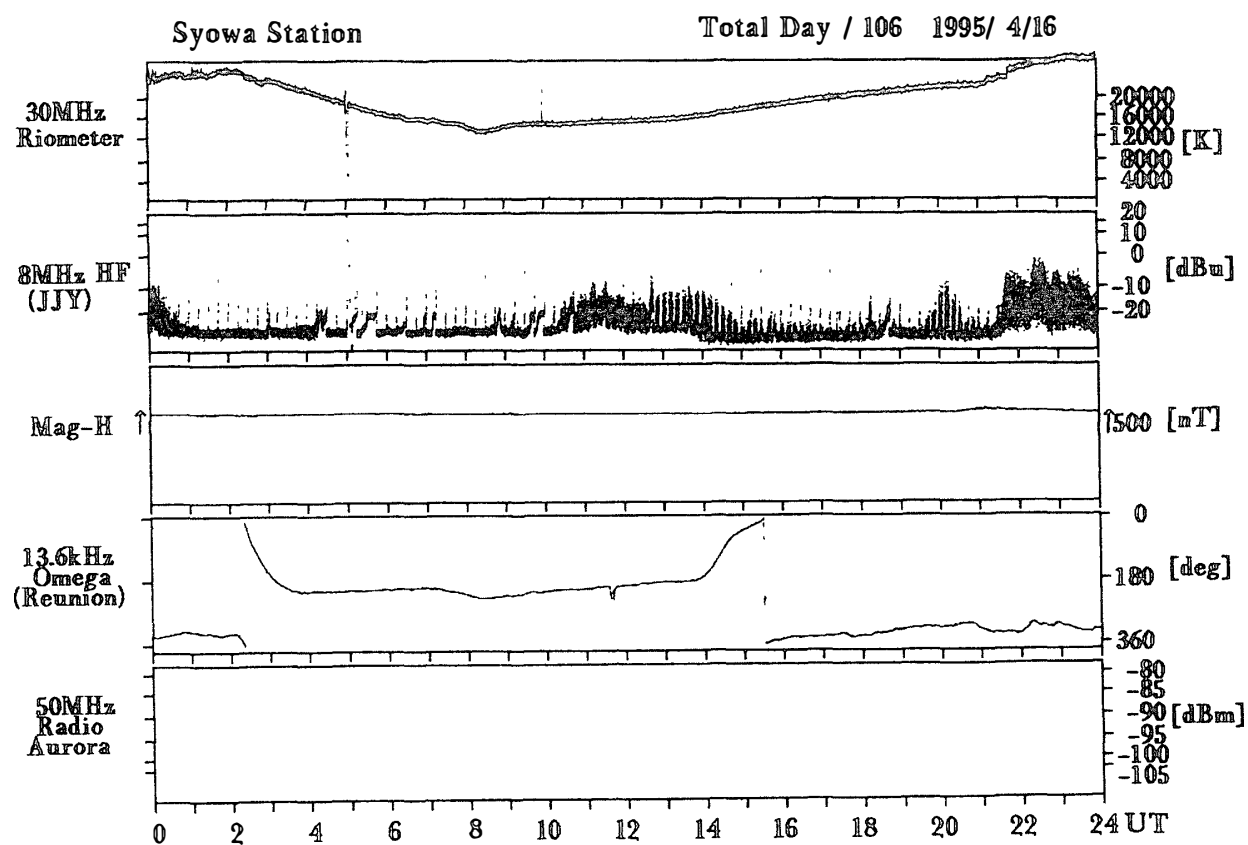
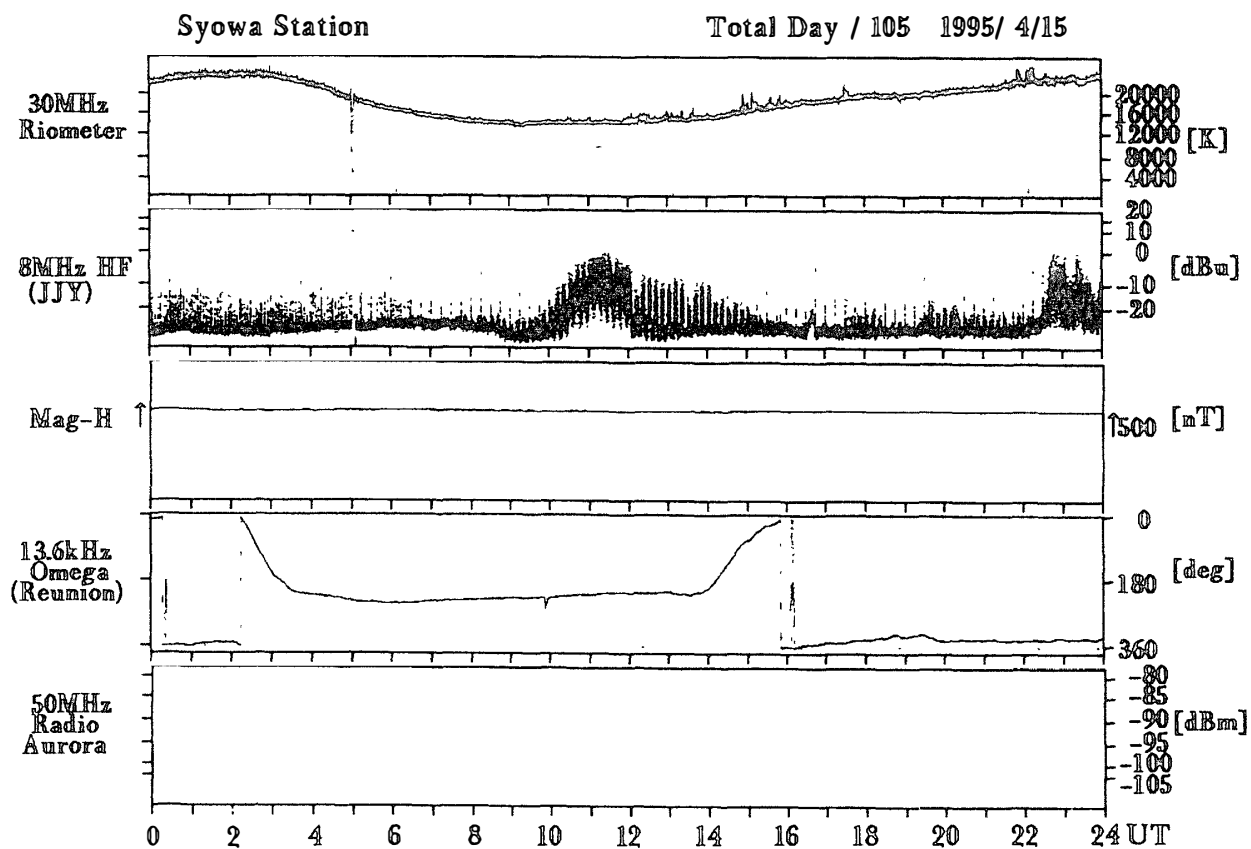


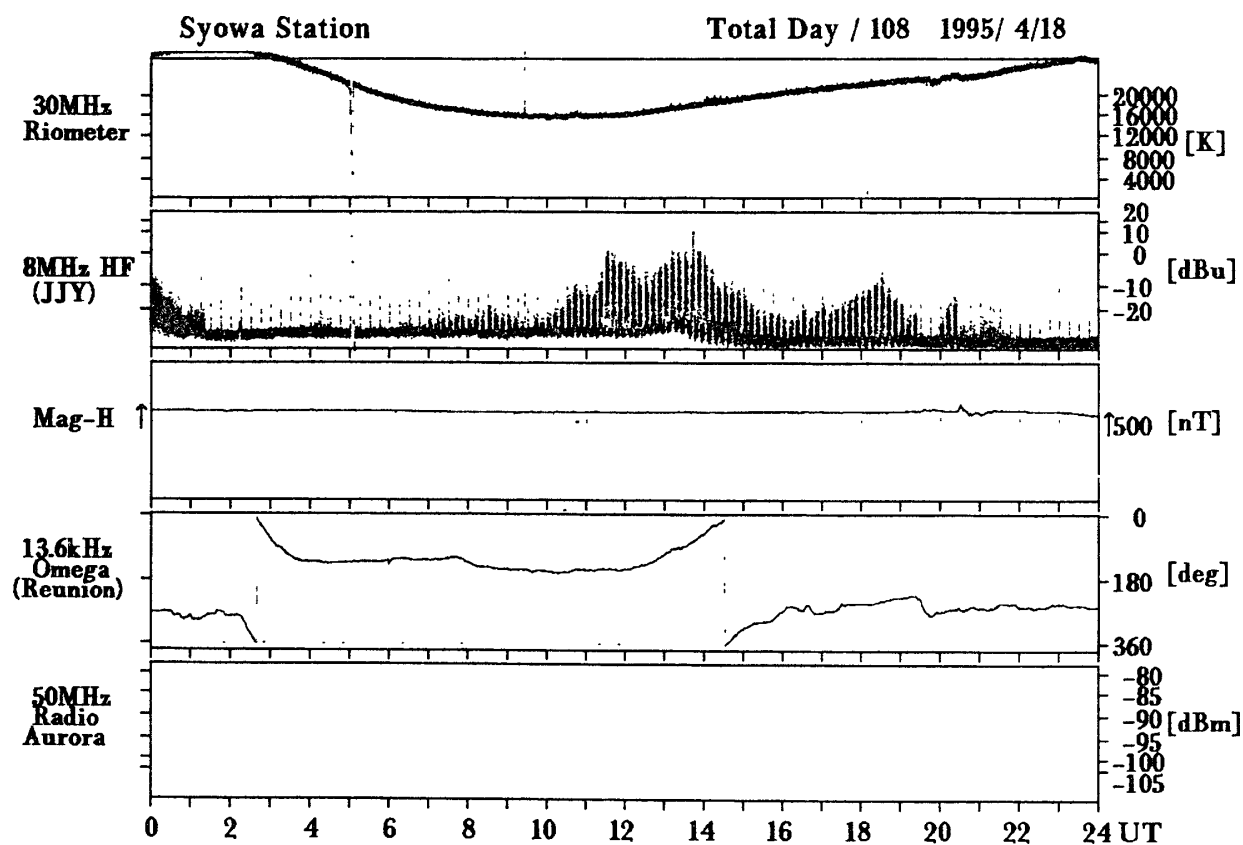
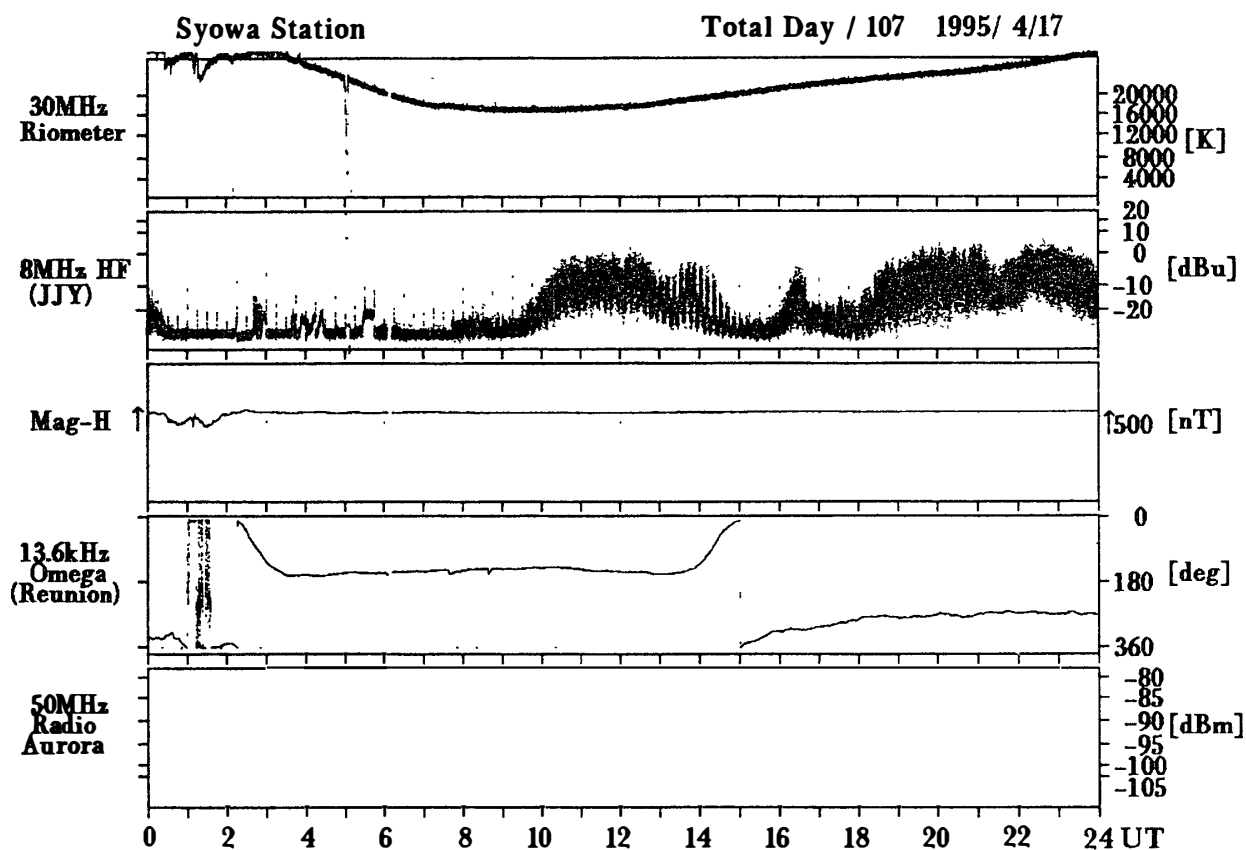


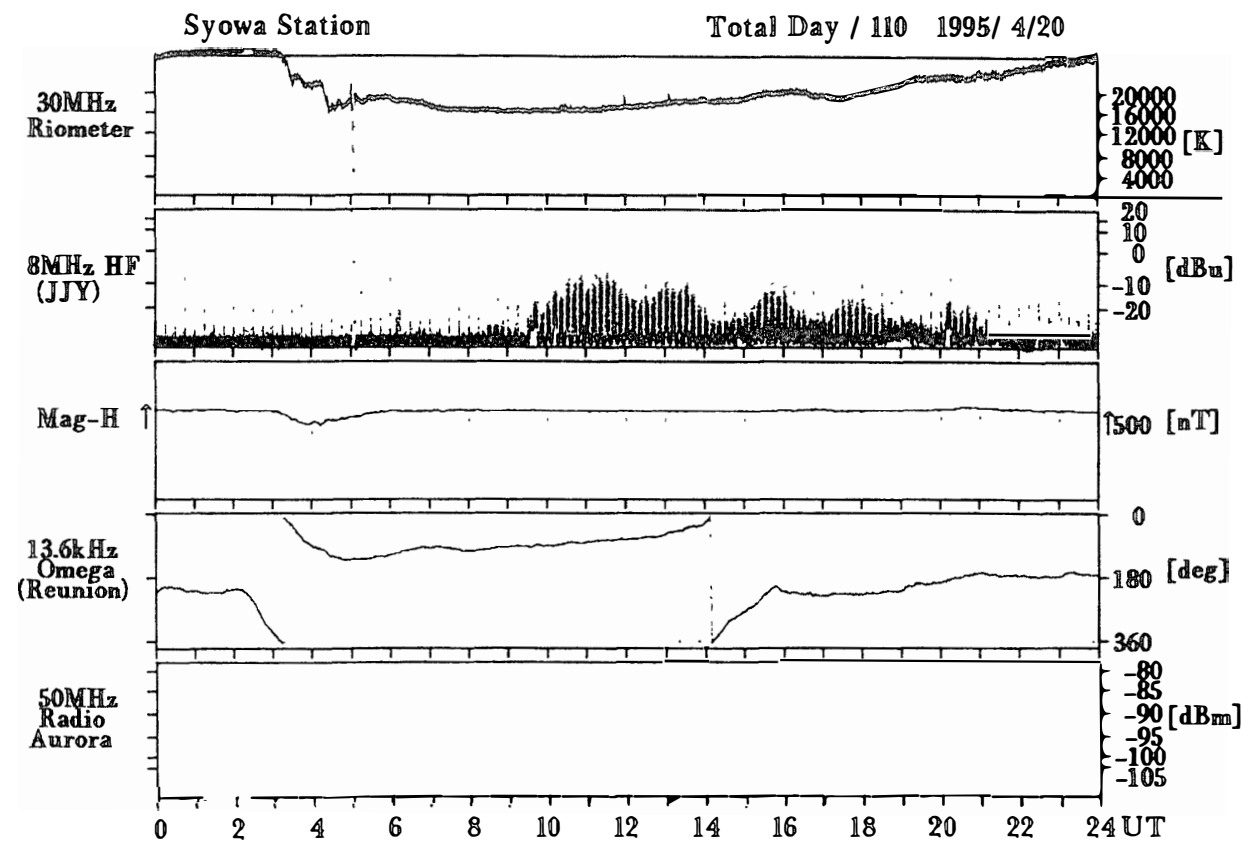
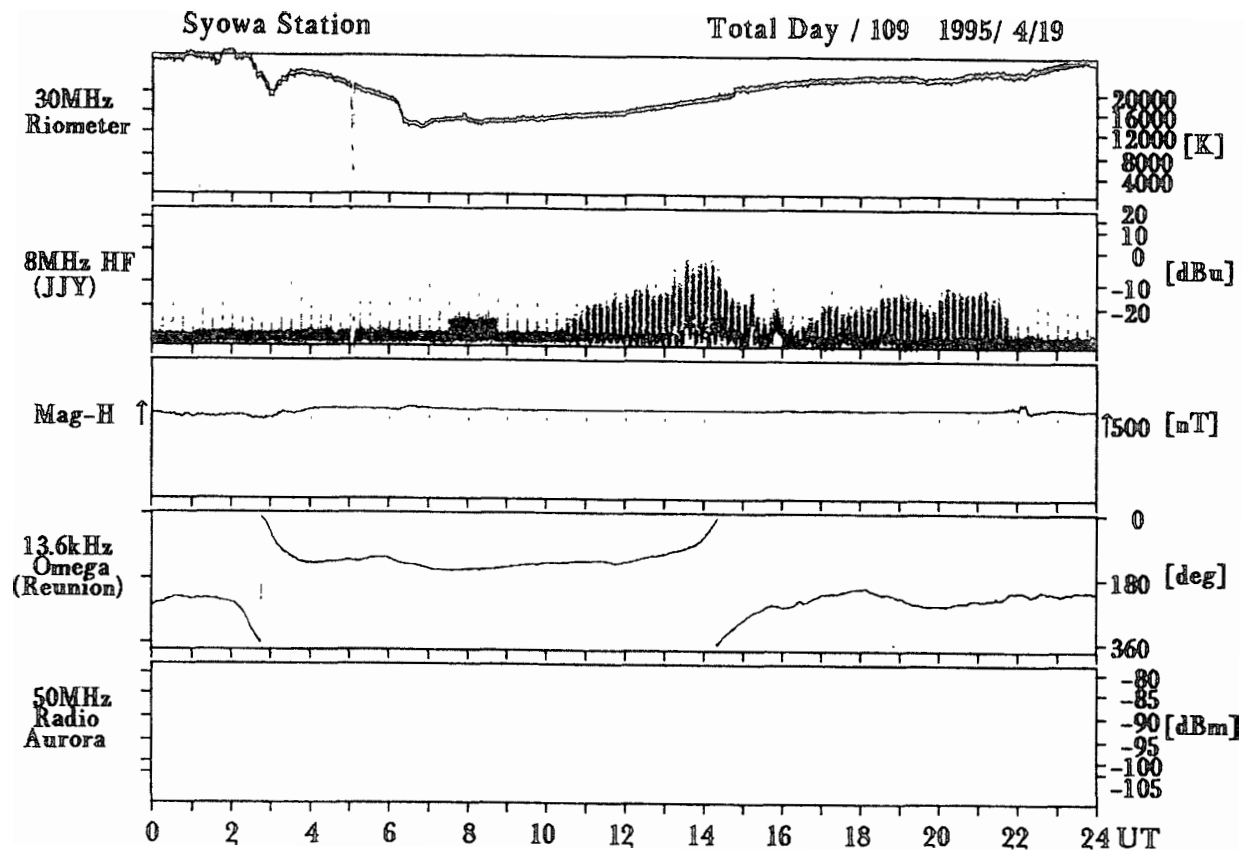


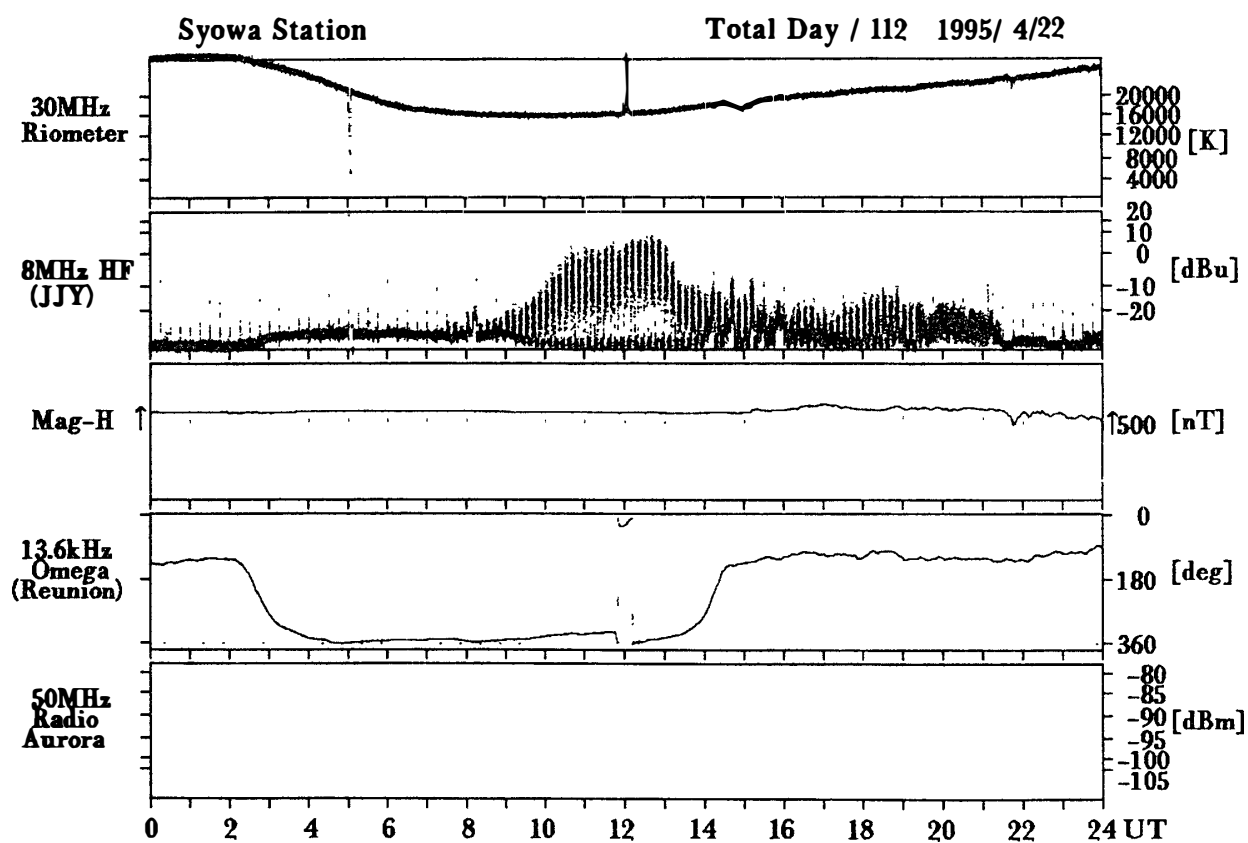
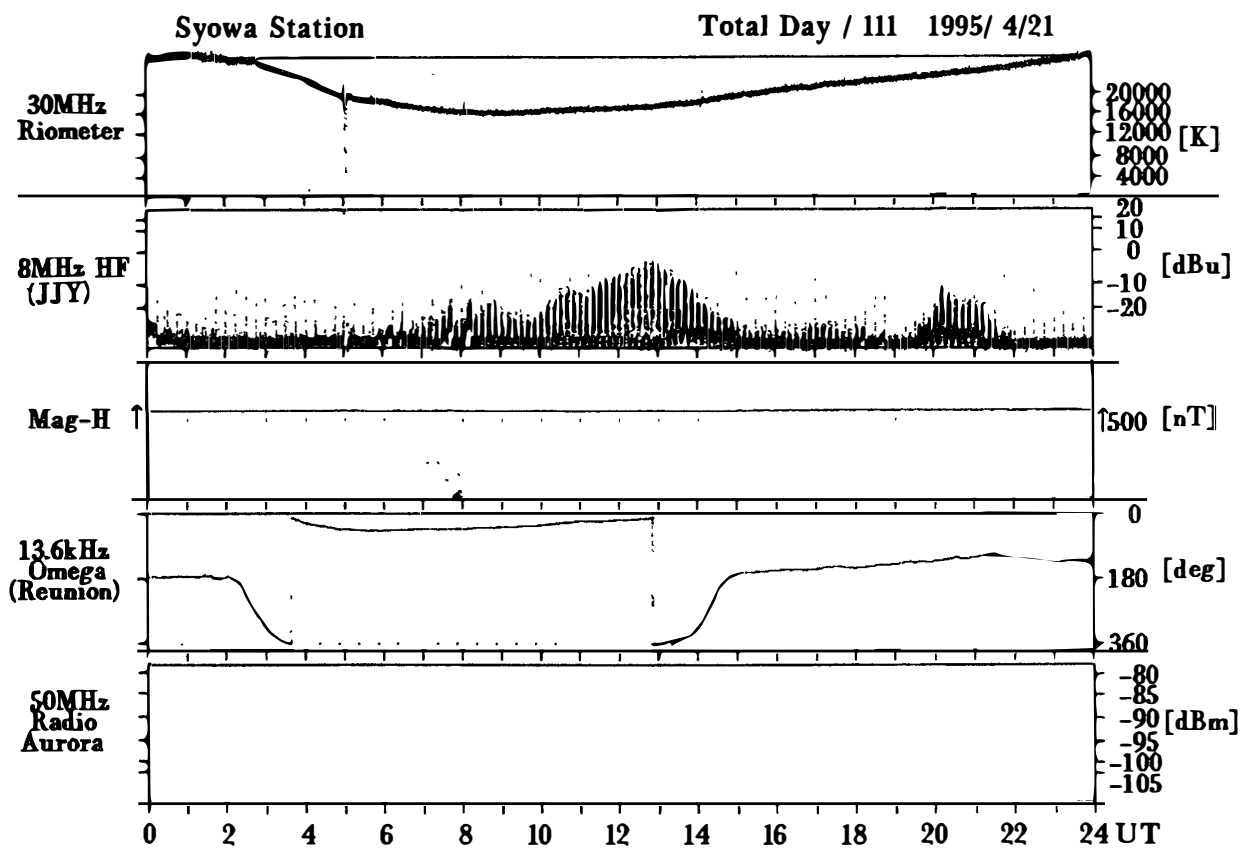


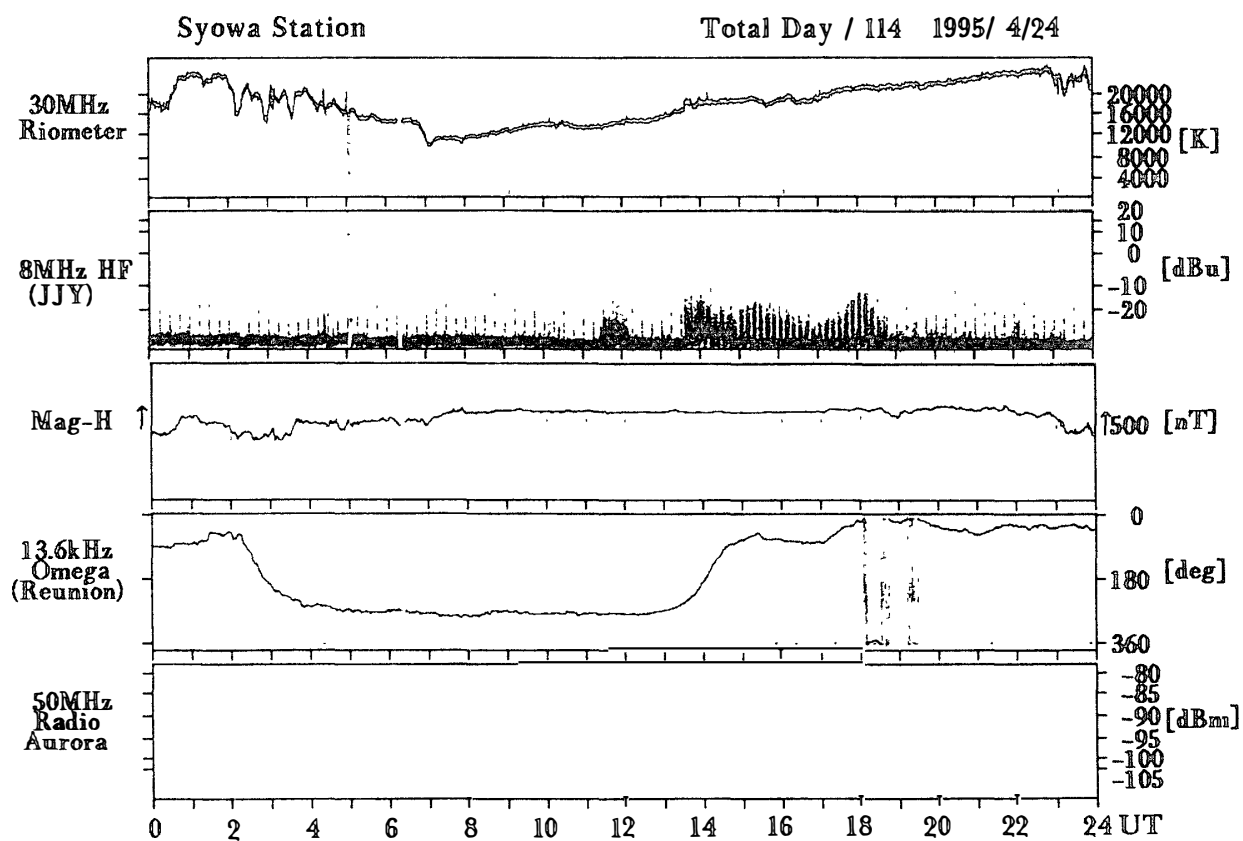
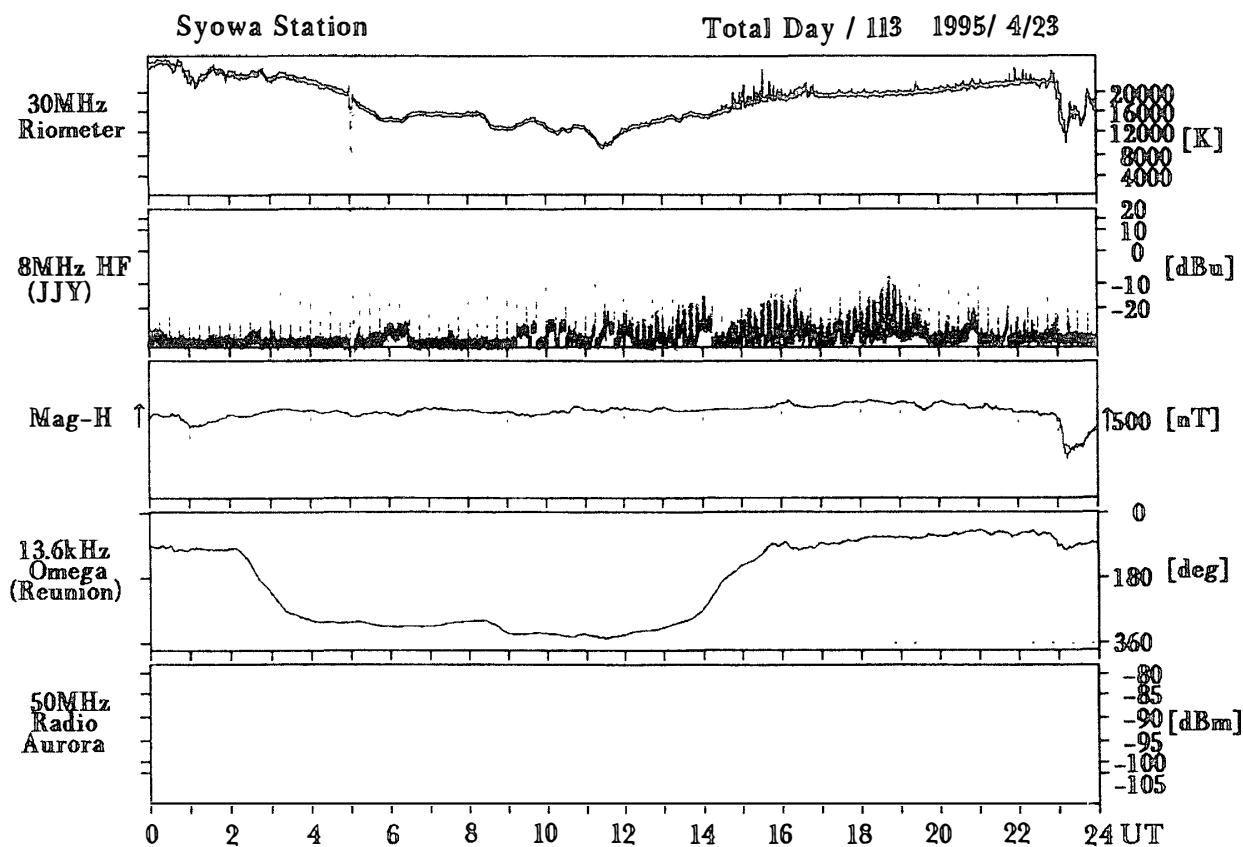


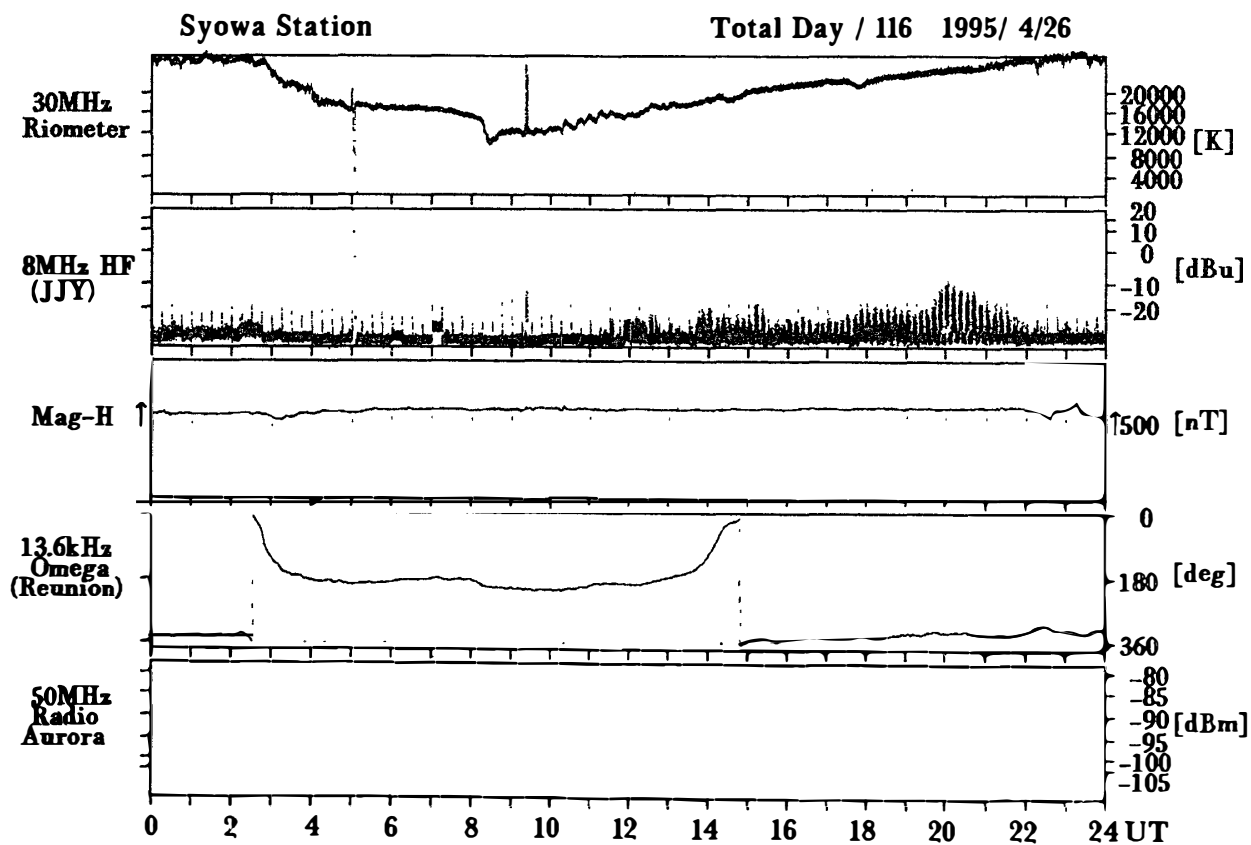
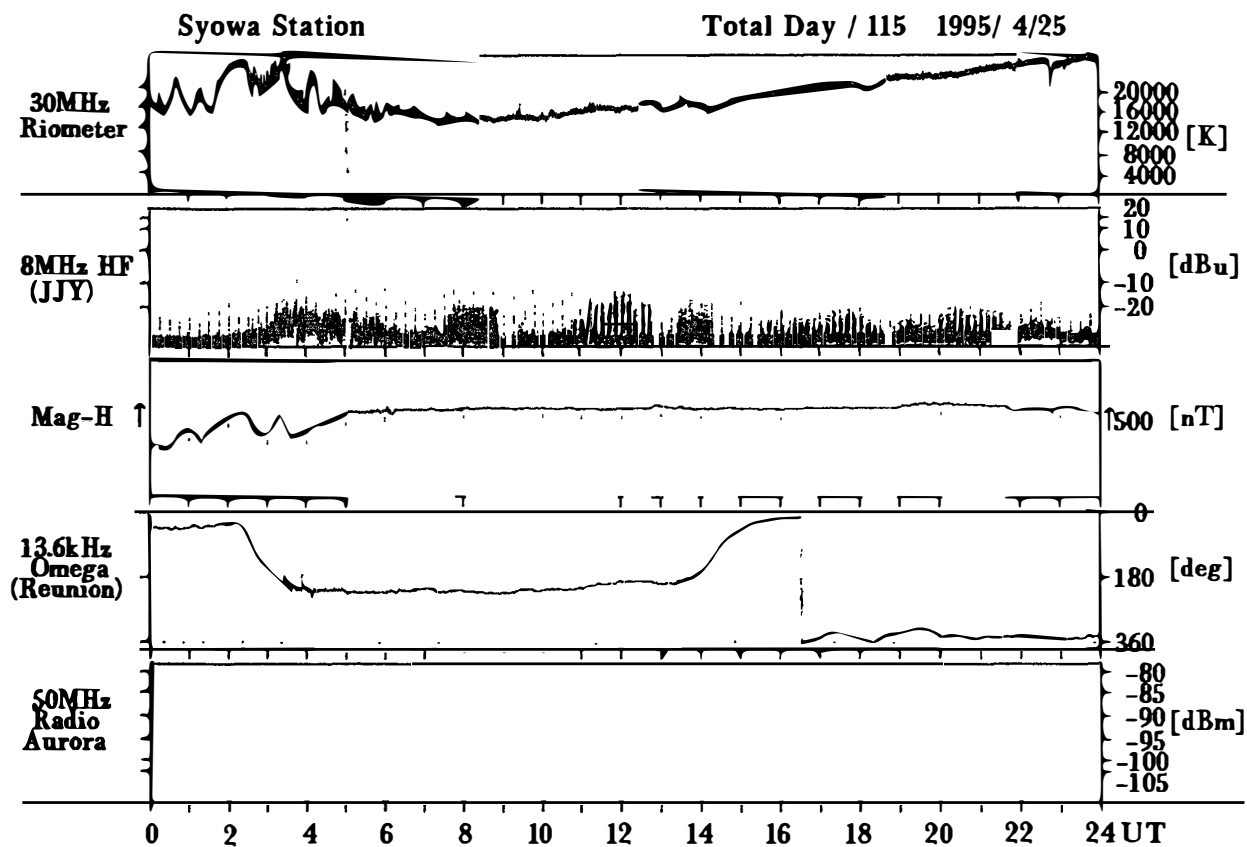


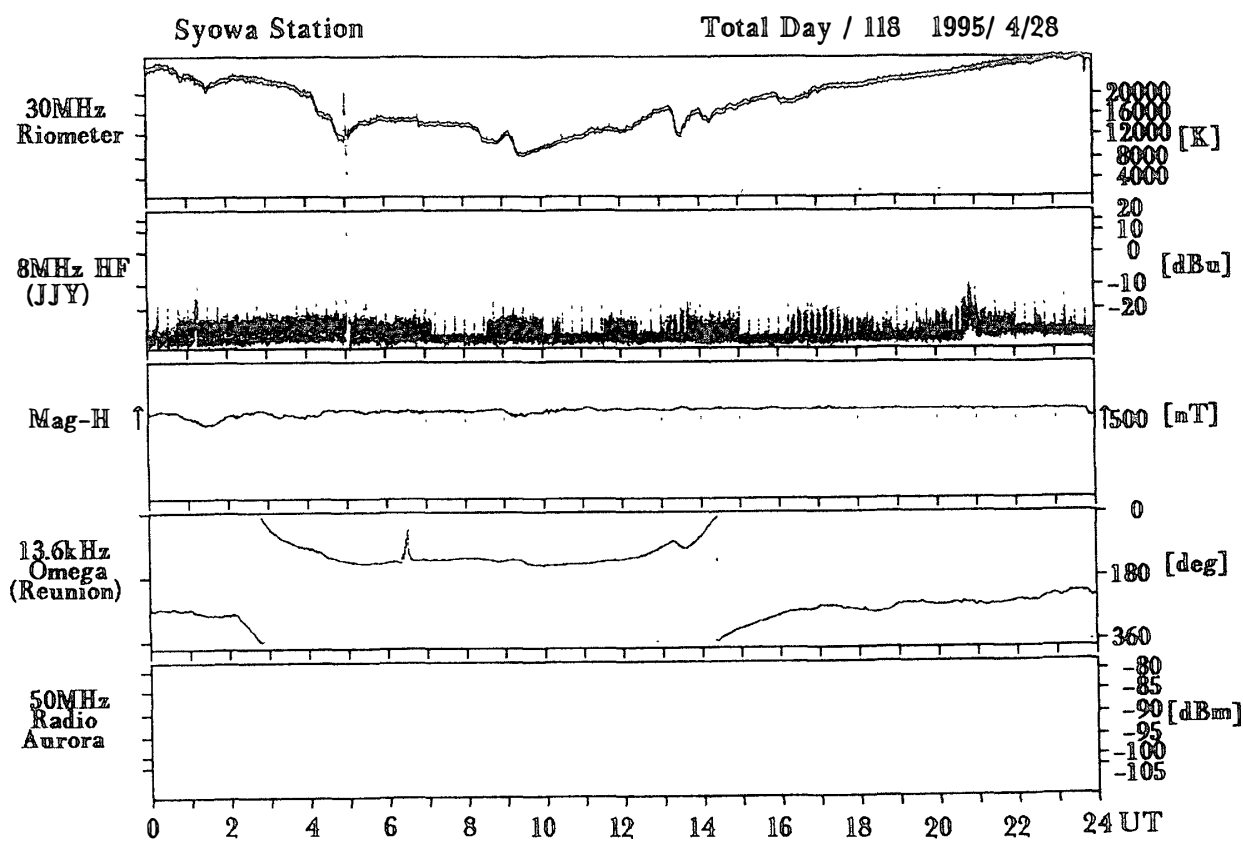
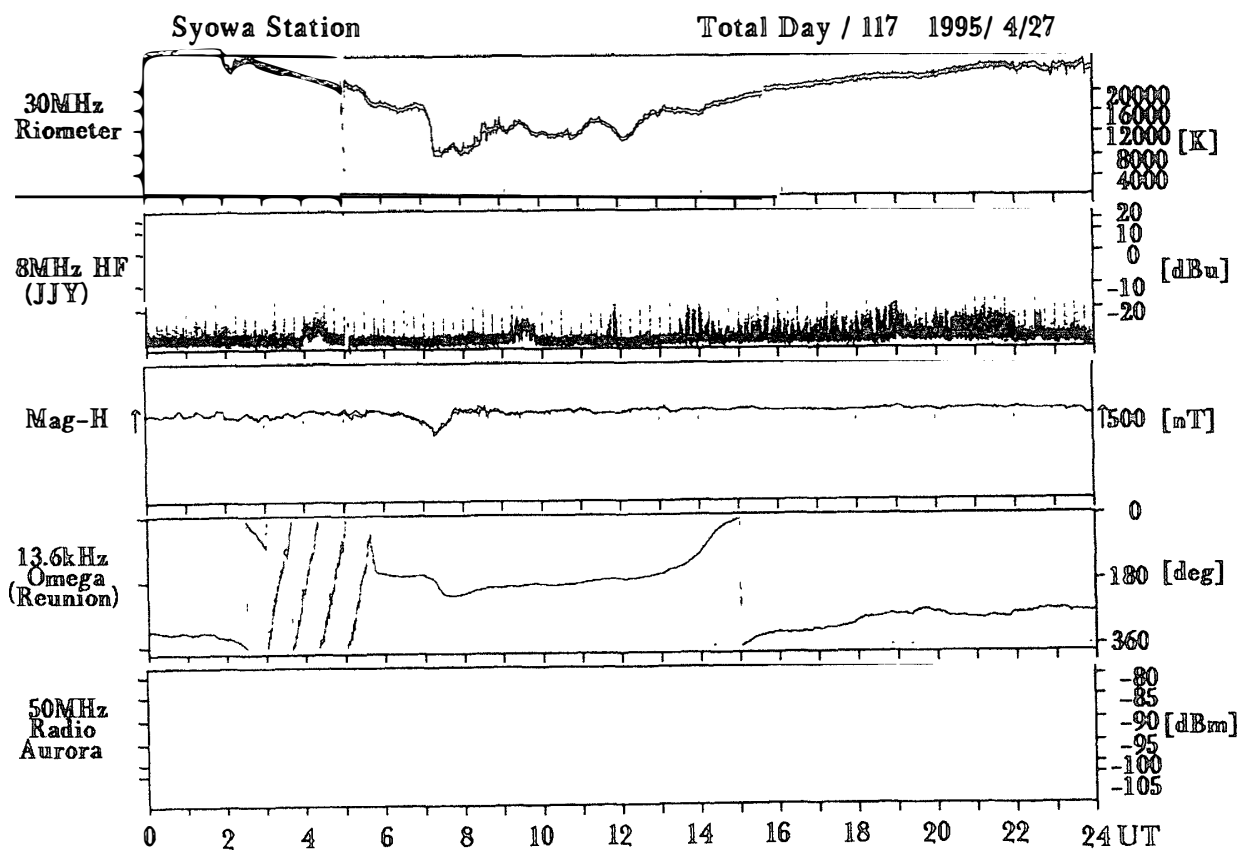


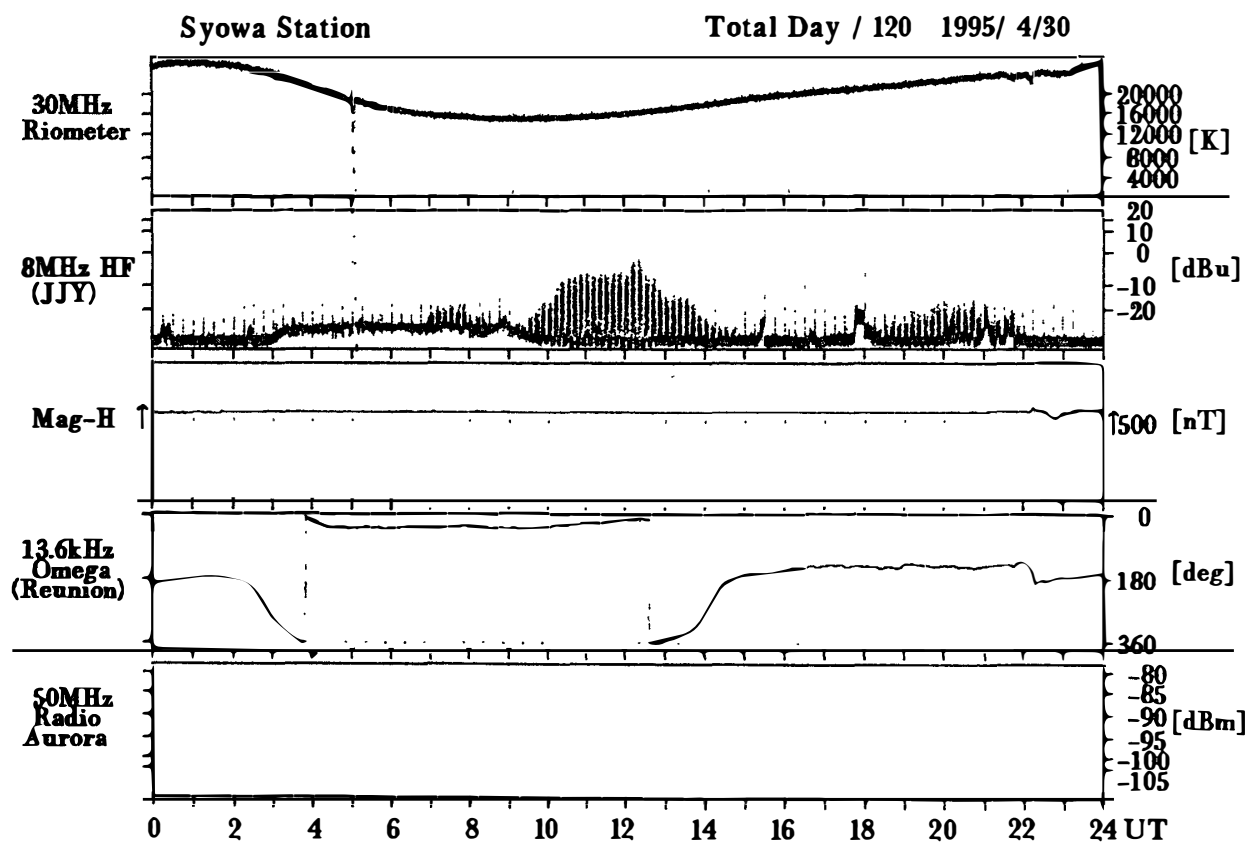
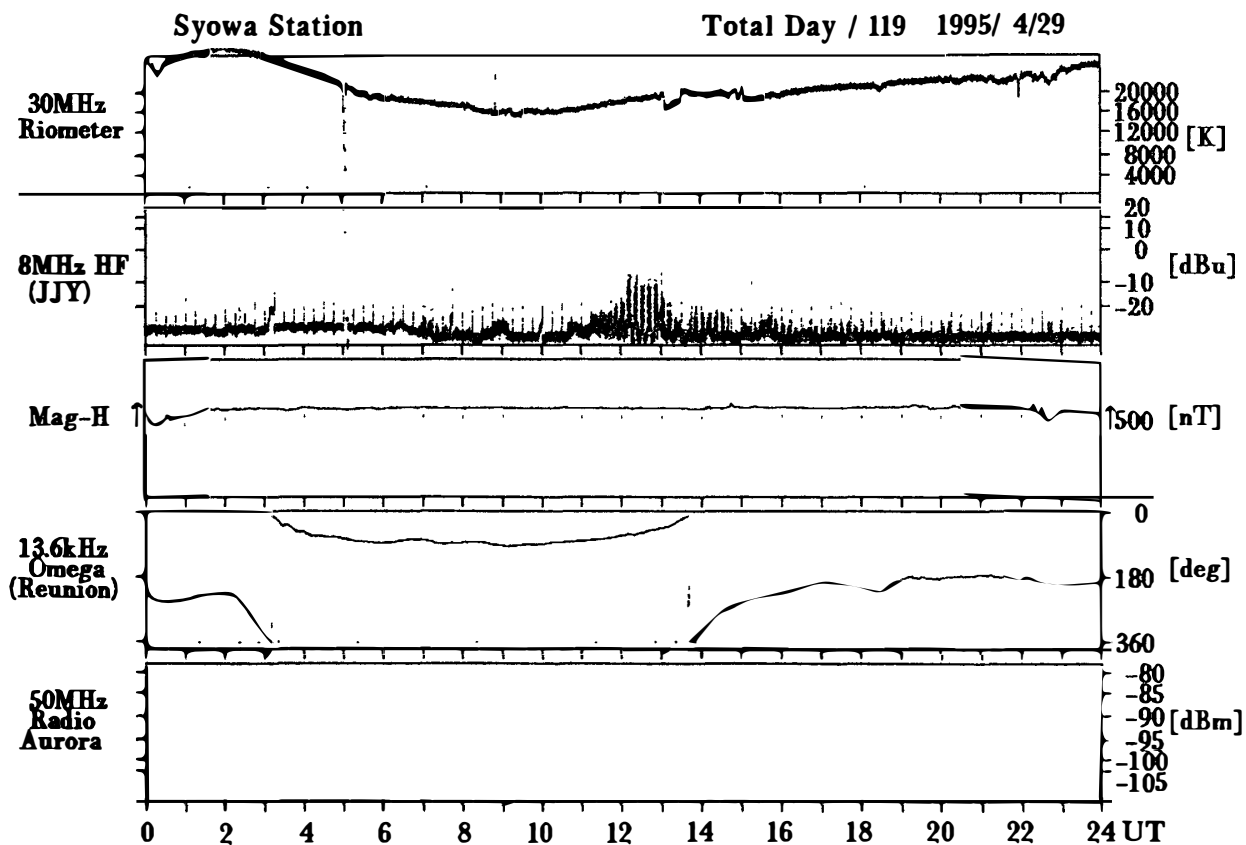


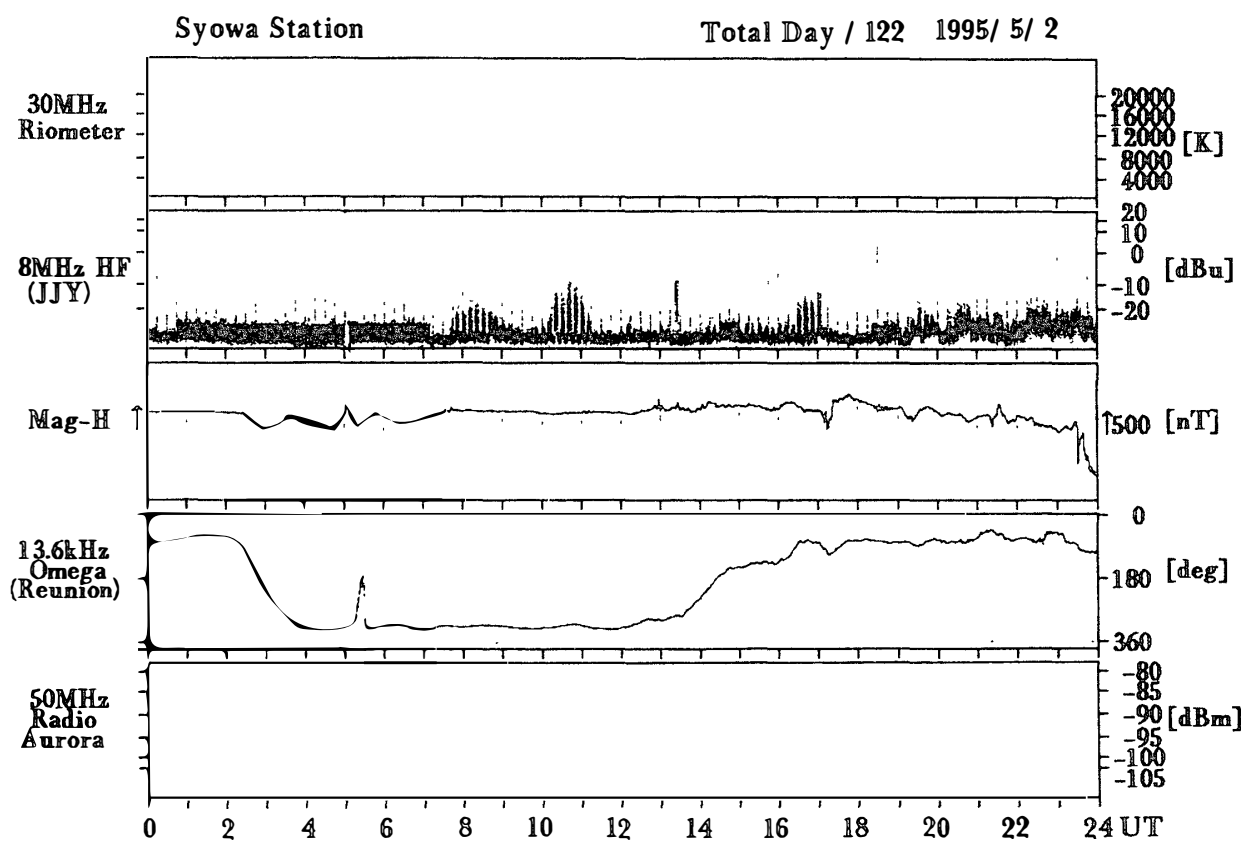
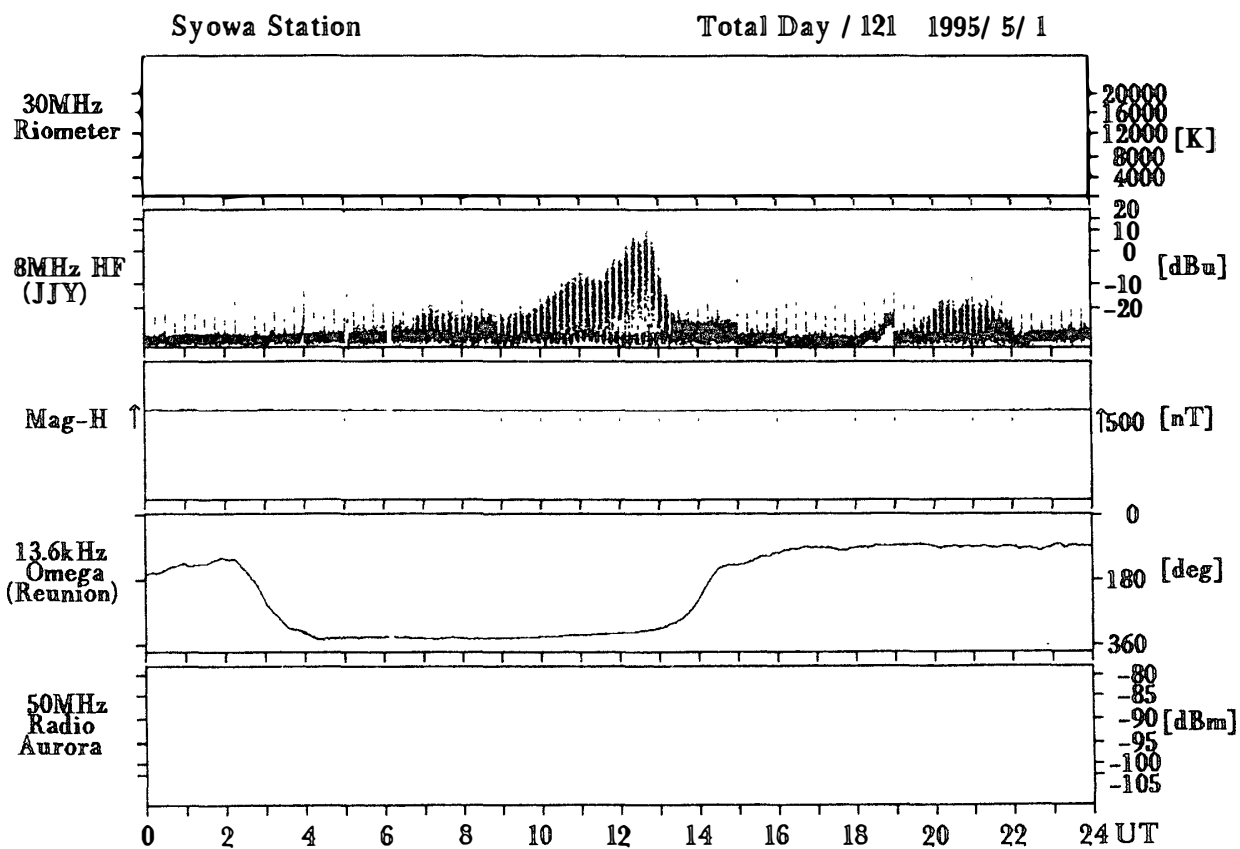






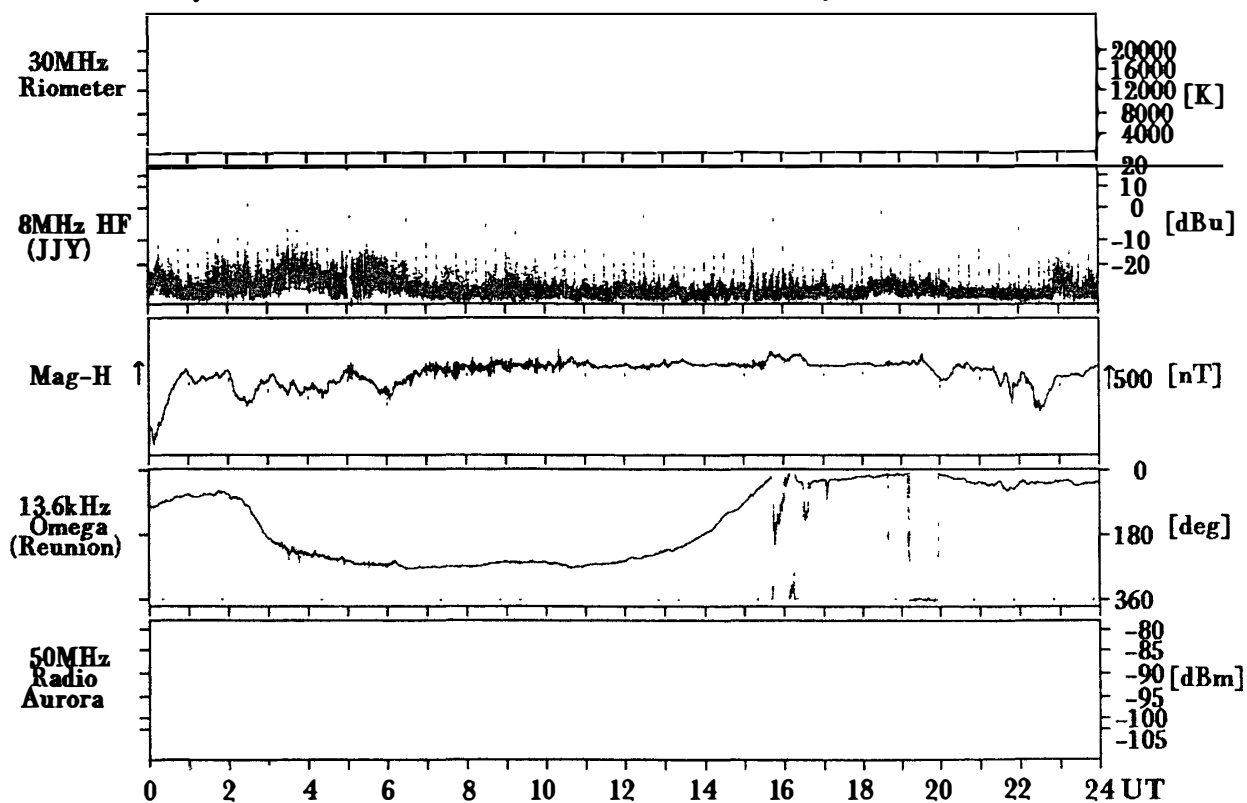






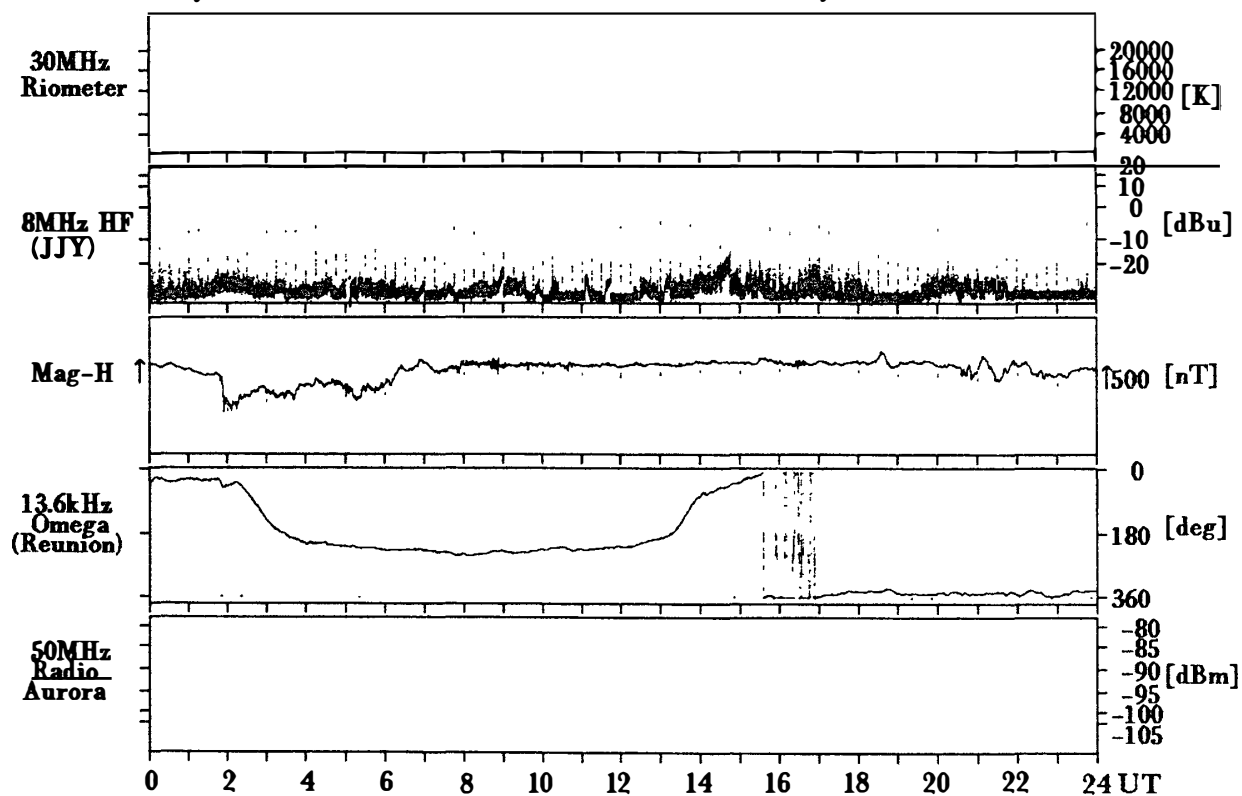
Syowa Station

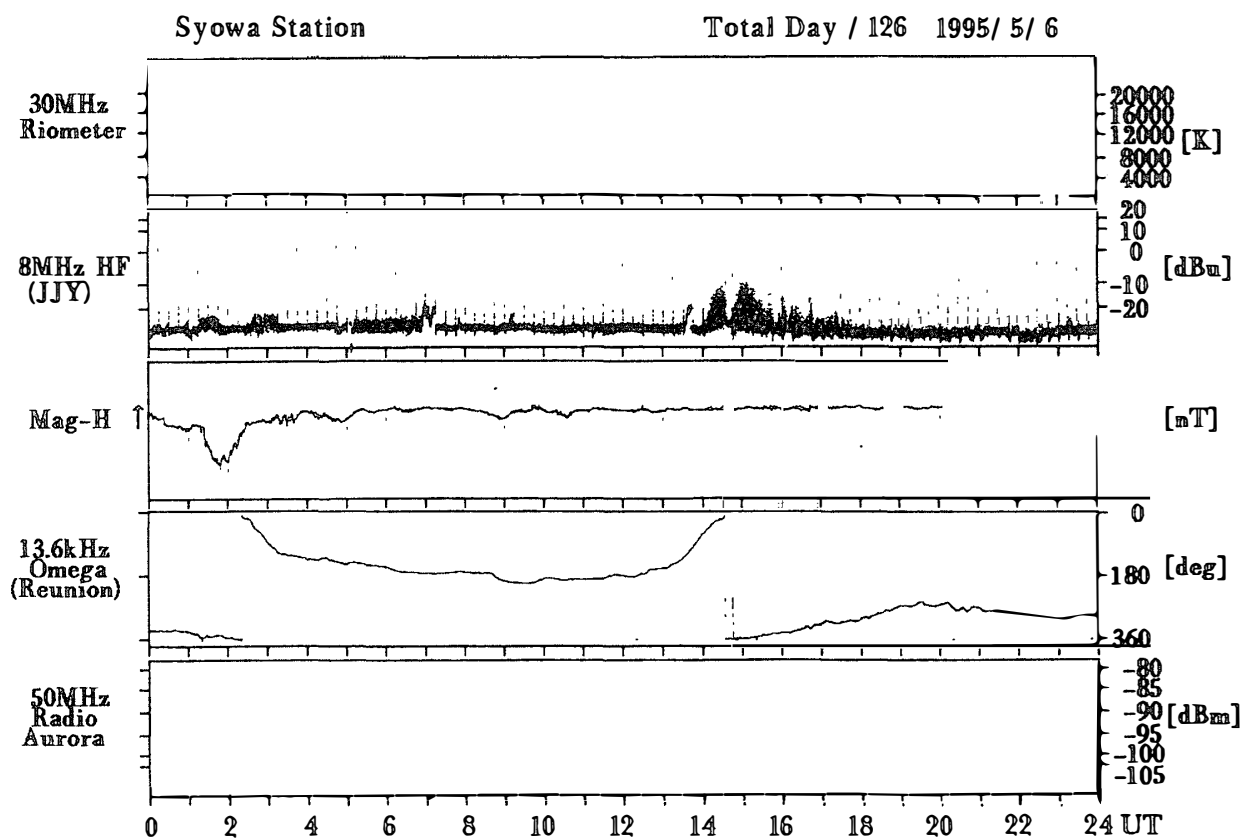
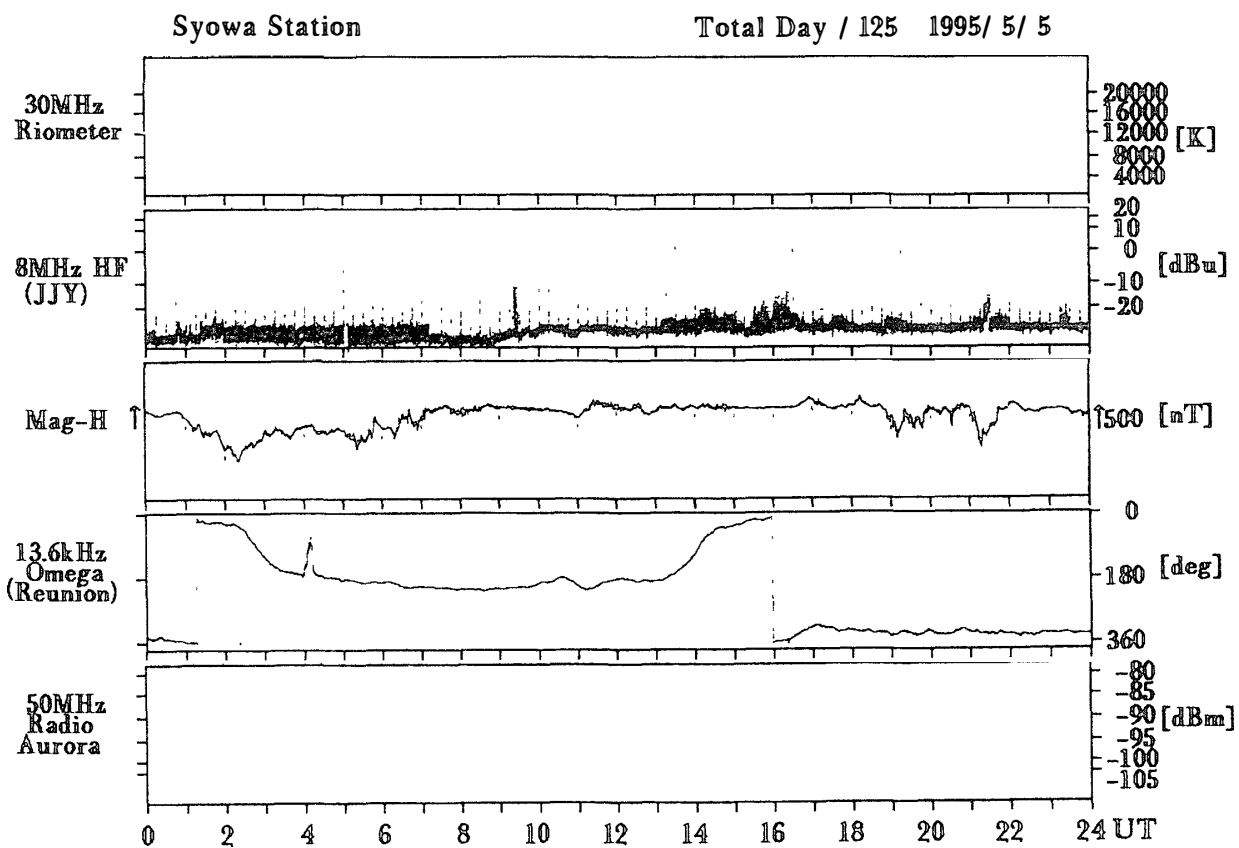
Total Day / 123 1995/ 5/ 3

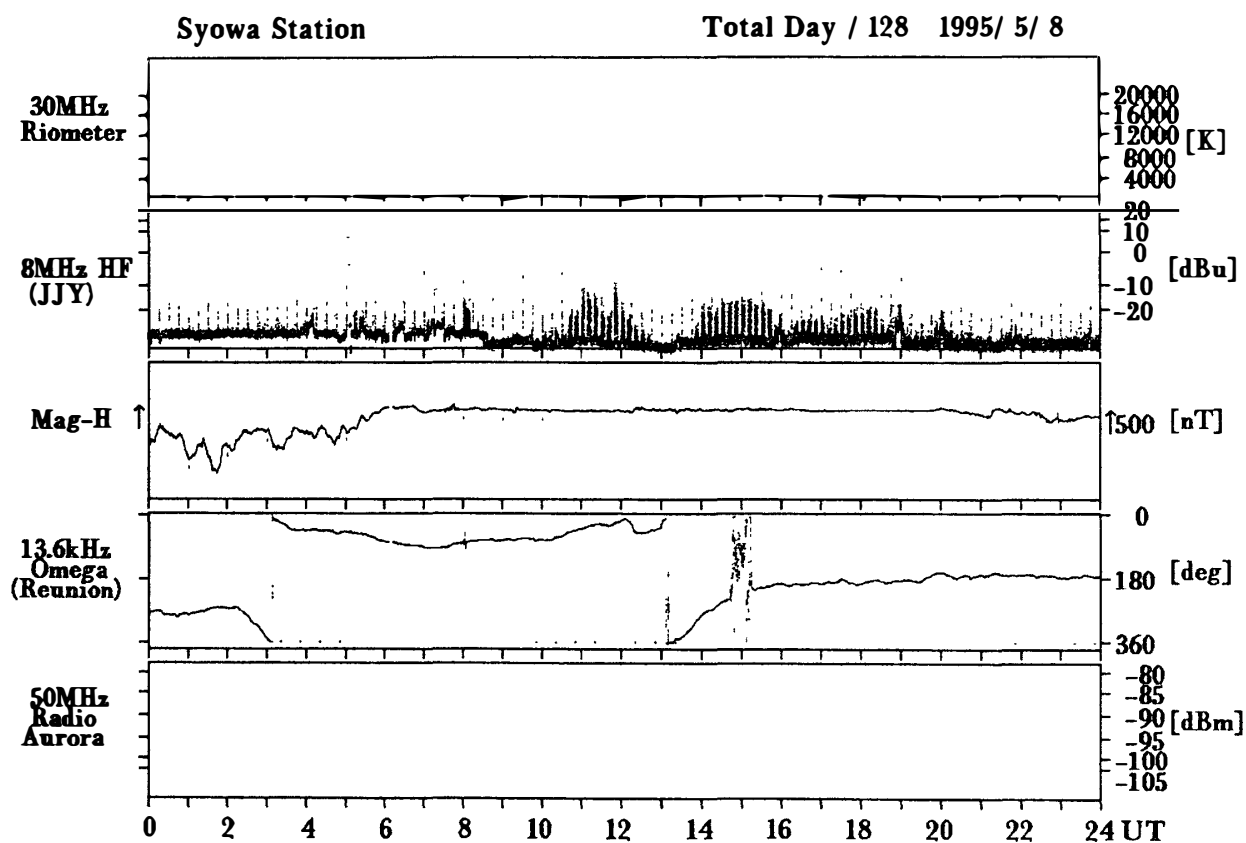
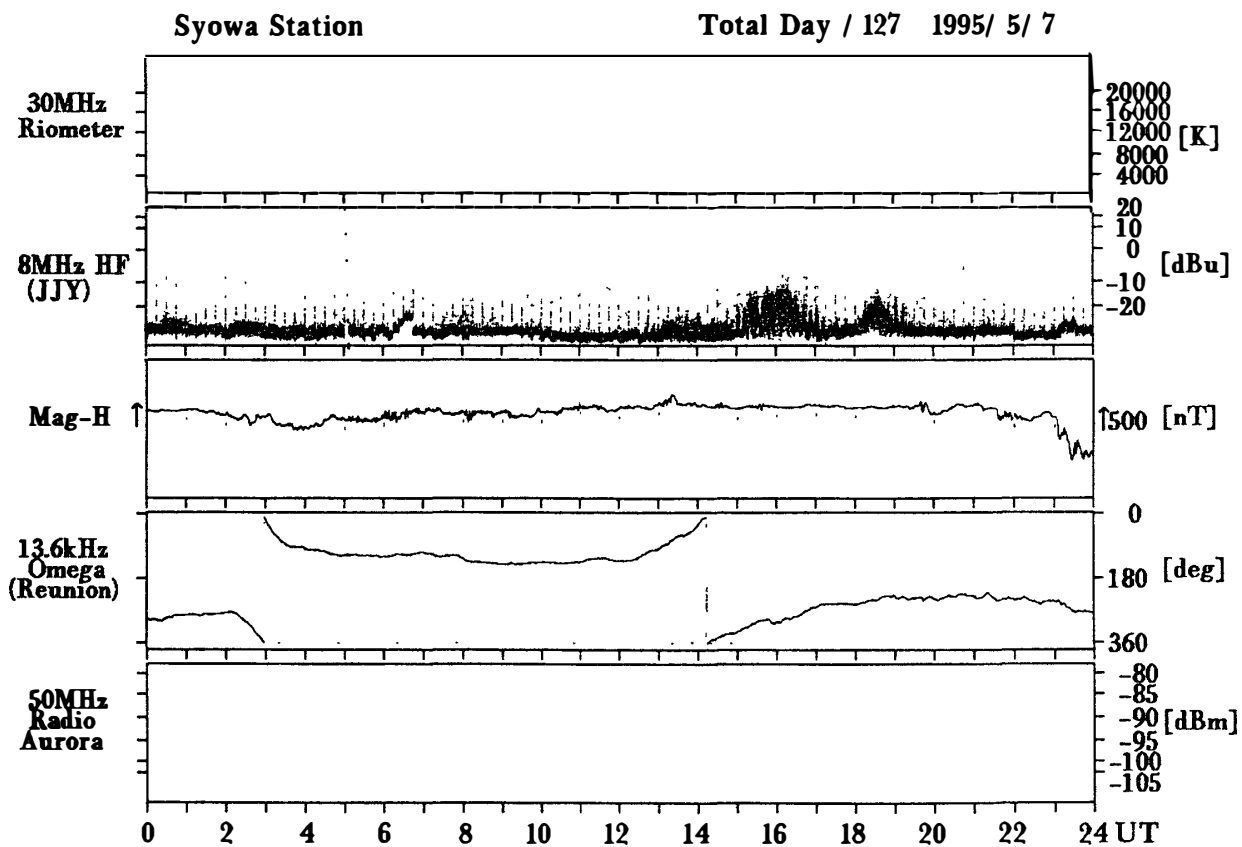


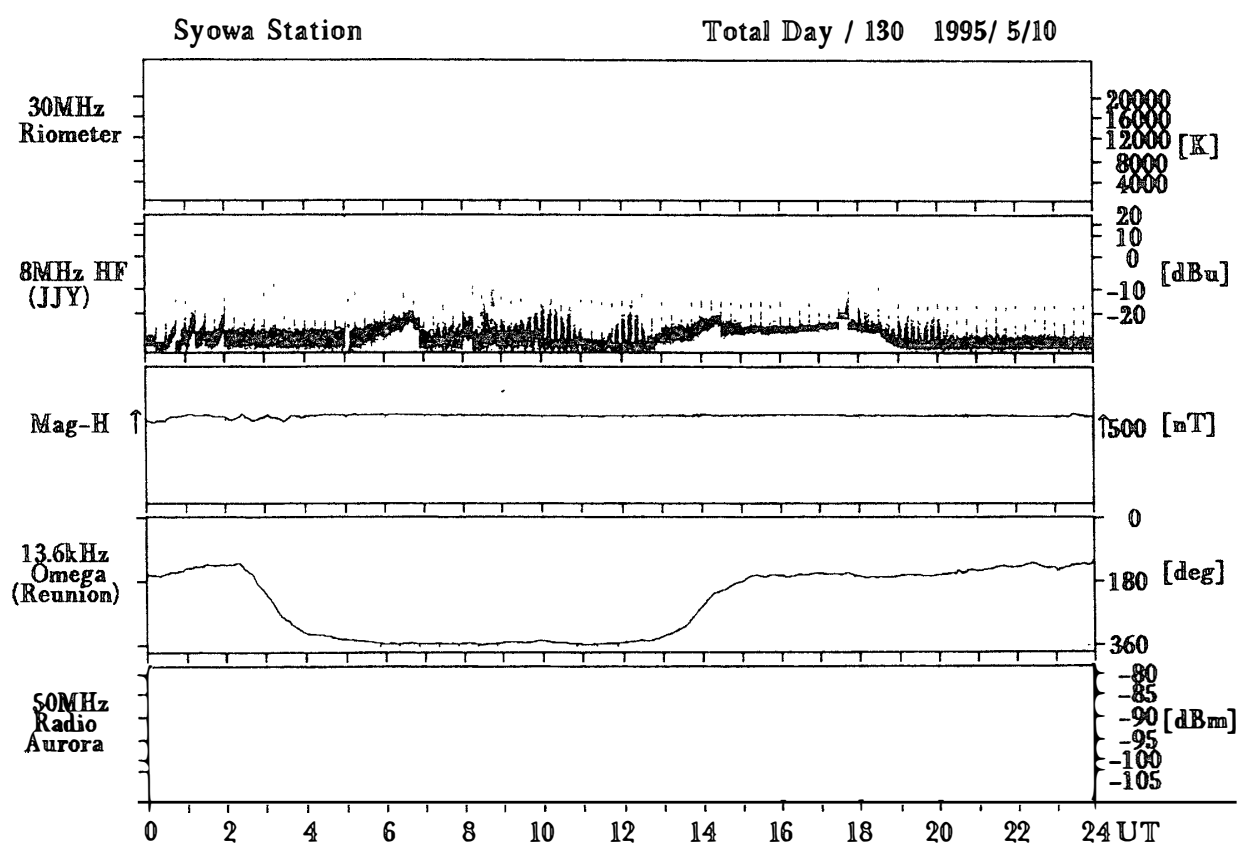
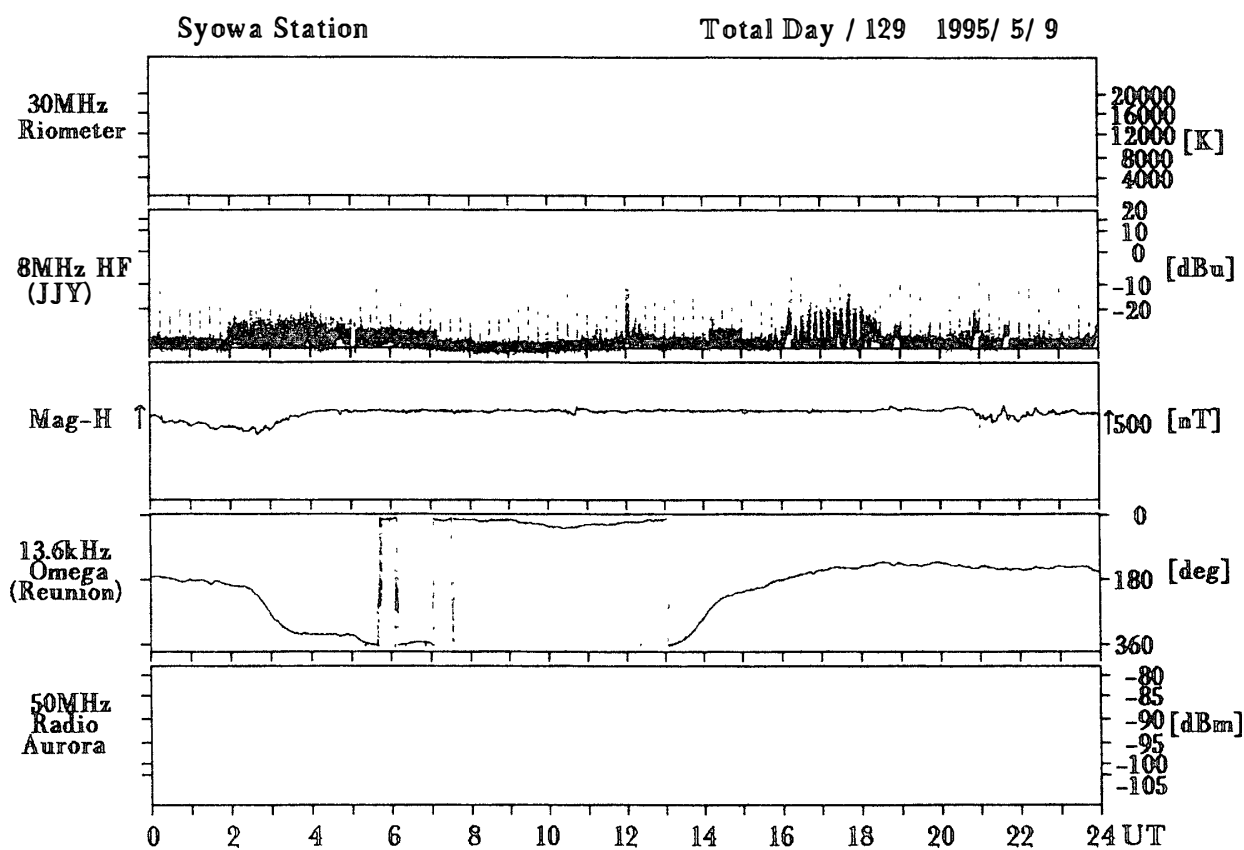
Syowa Station

Total Day / 124 1995/ 5/ 4



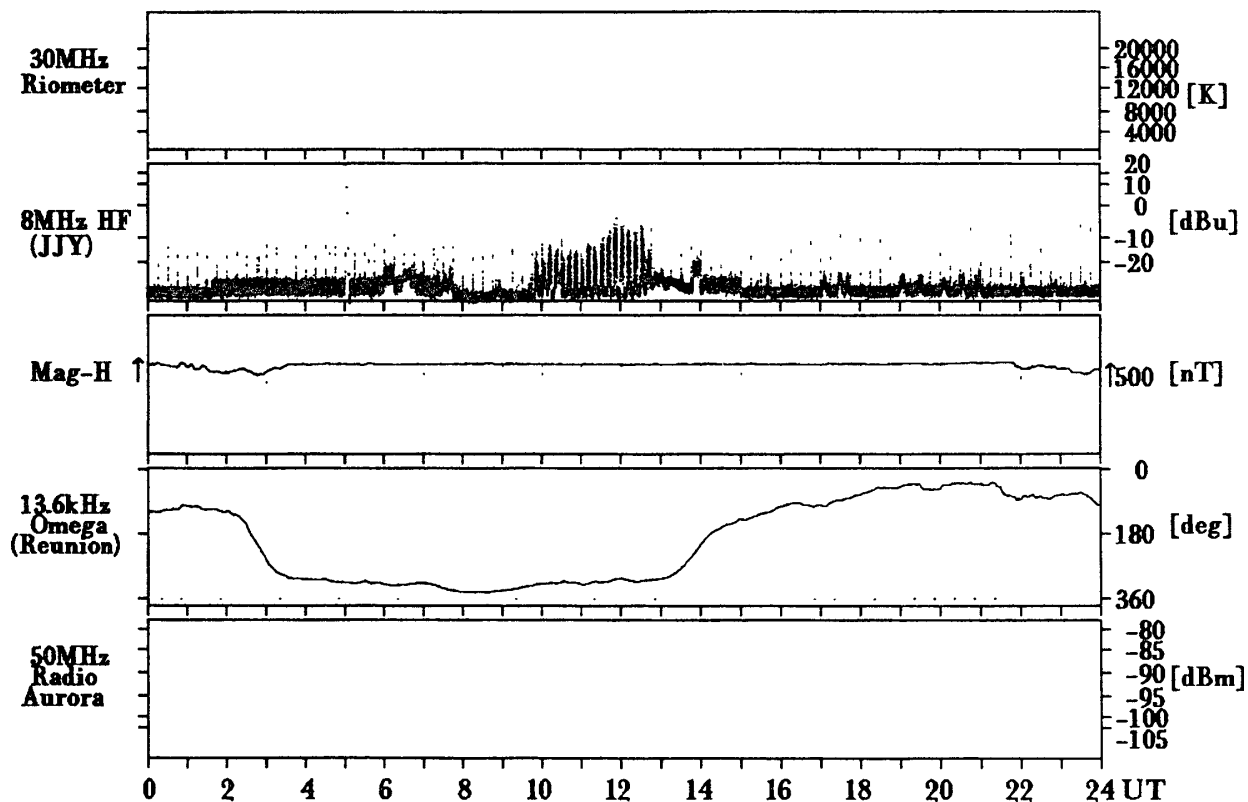






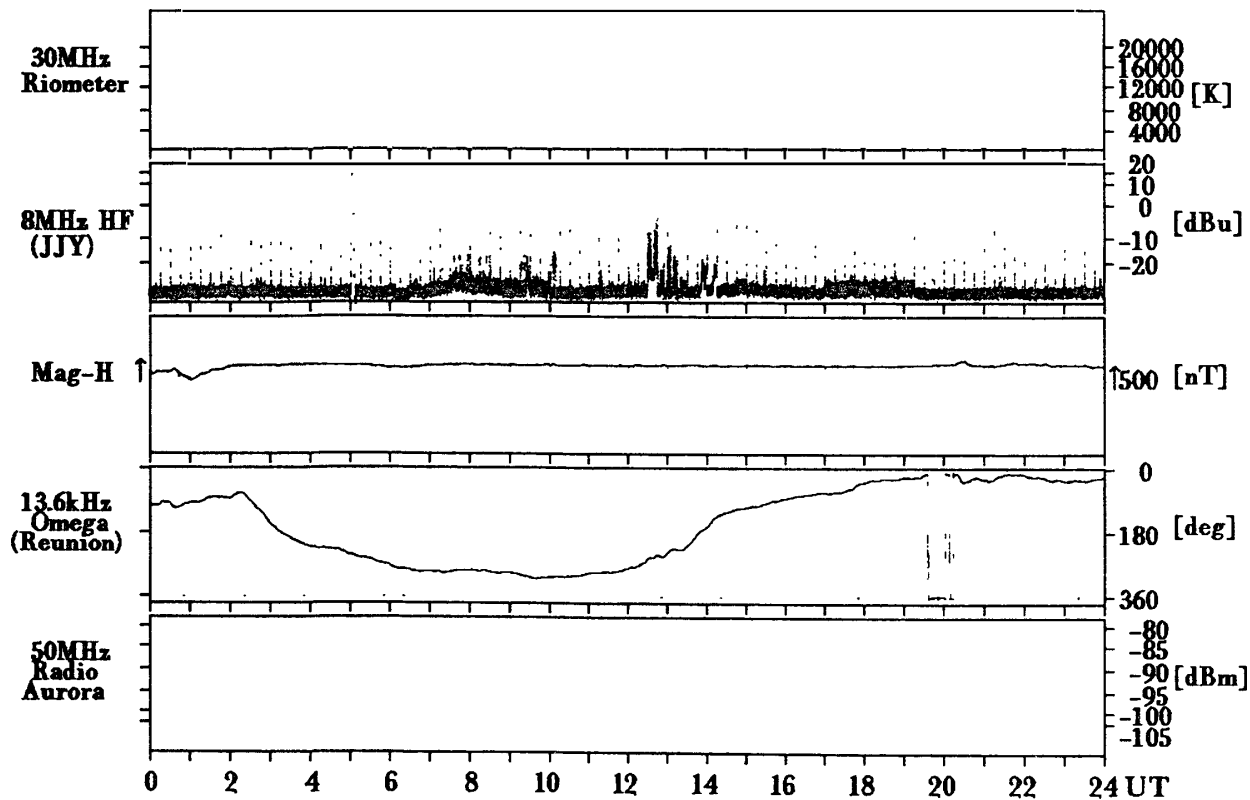
Syowa Station

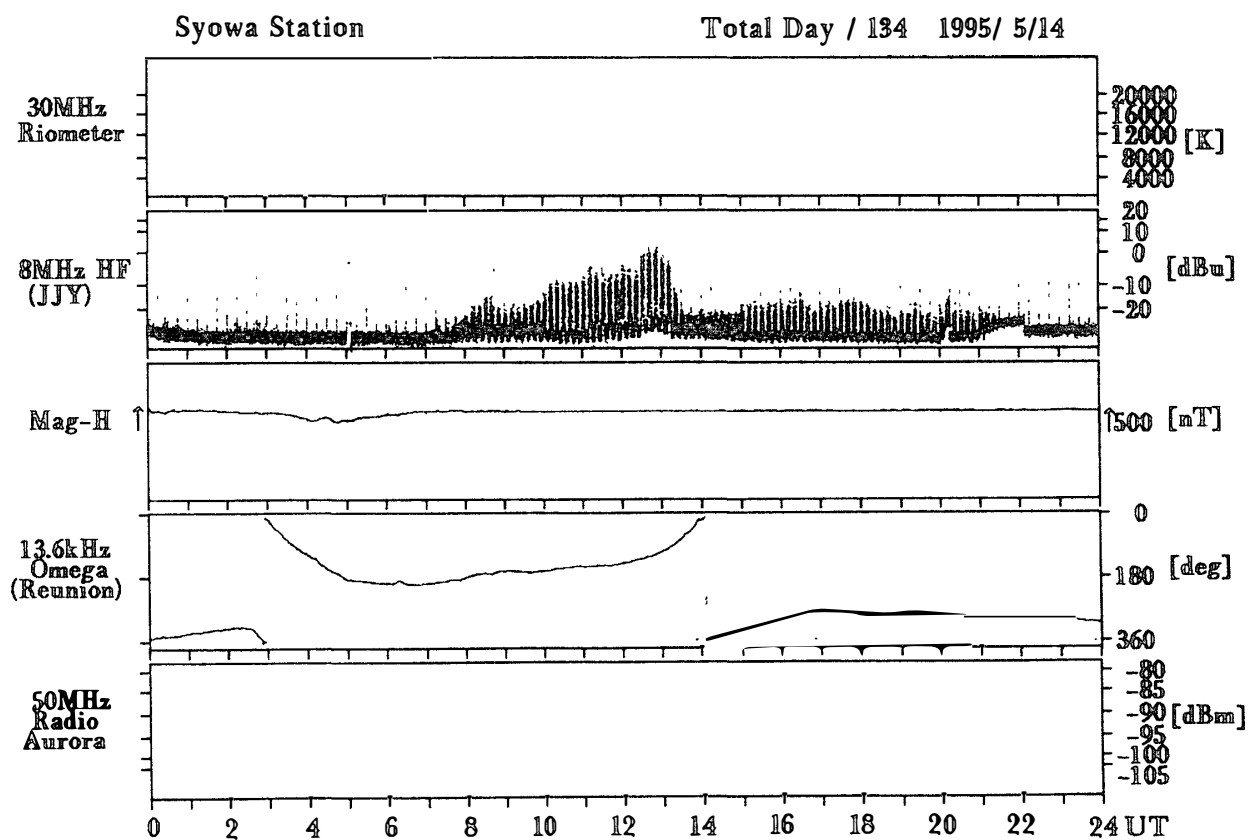
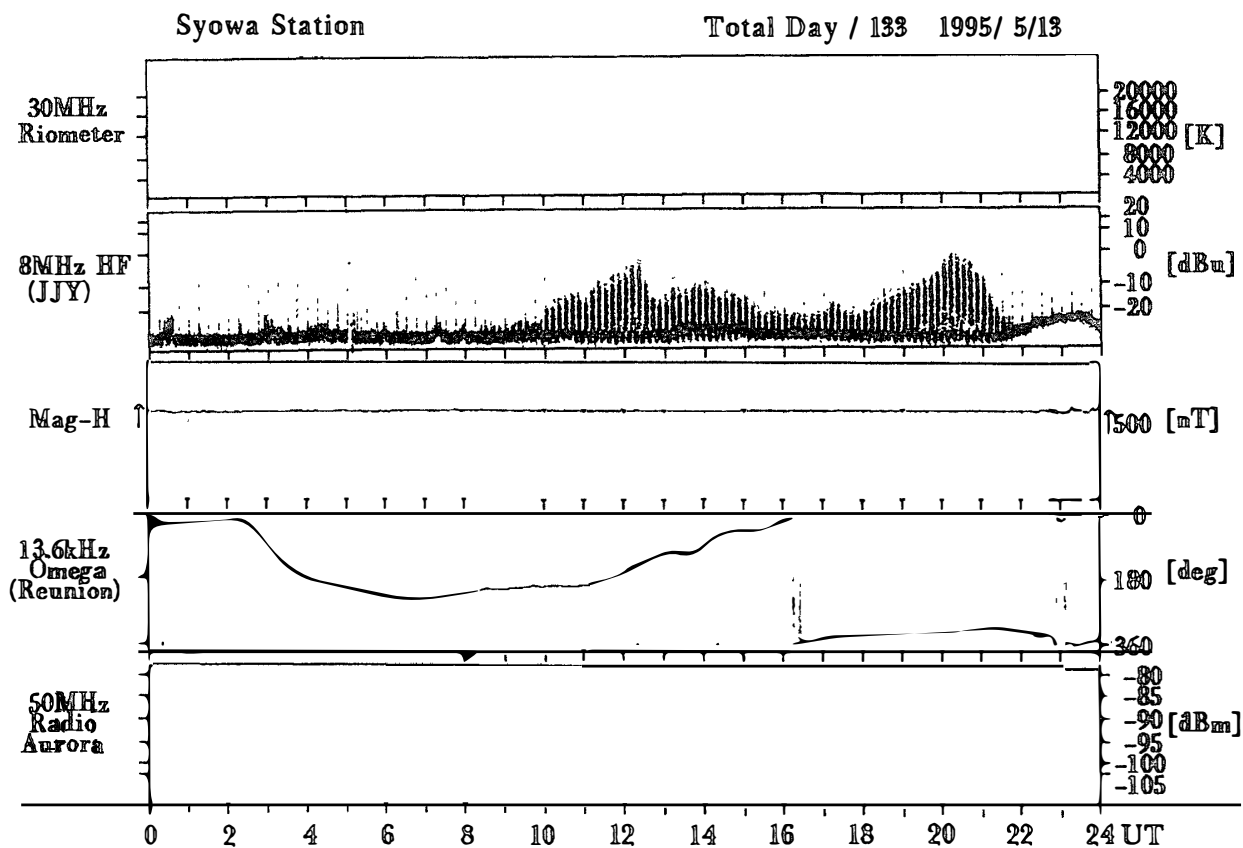
Total Day / 131 1995/ 5/11

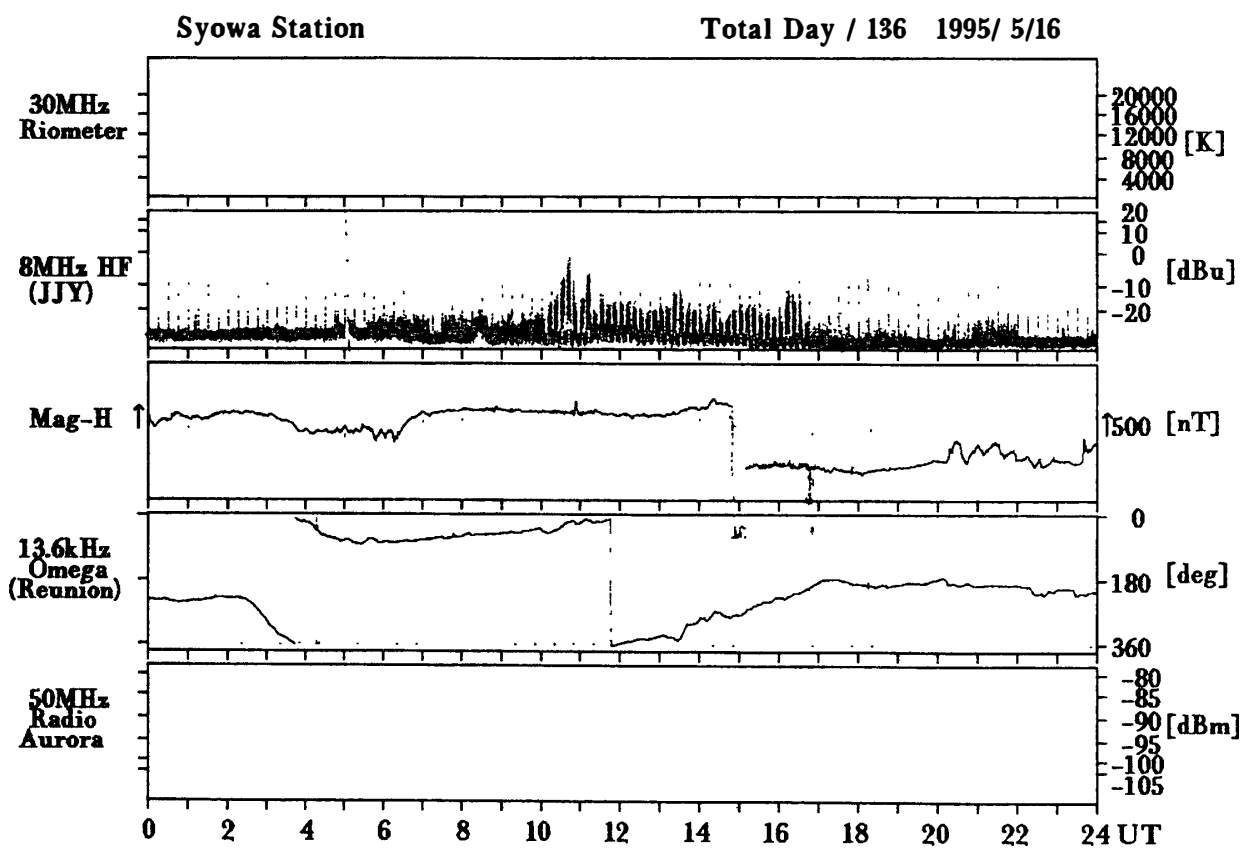
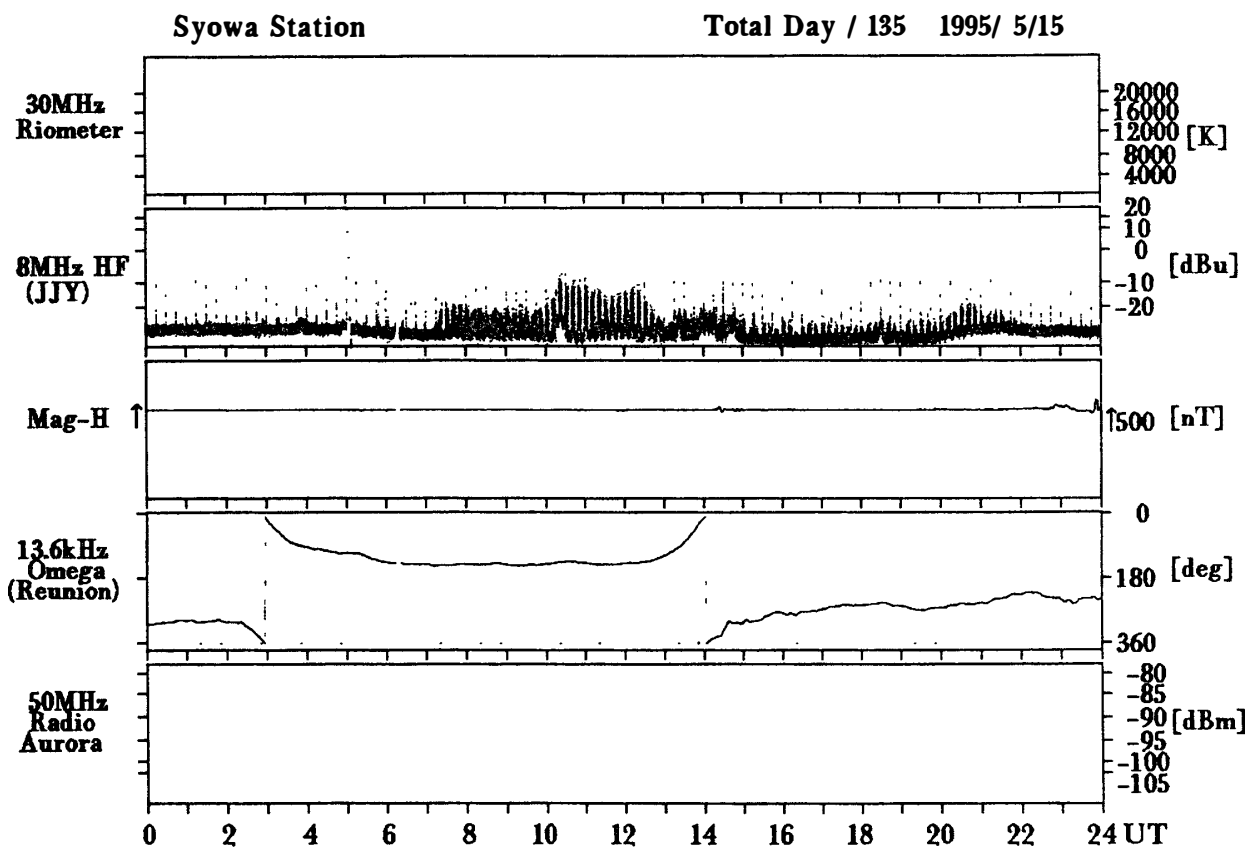


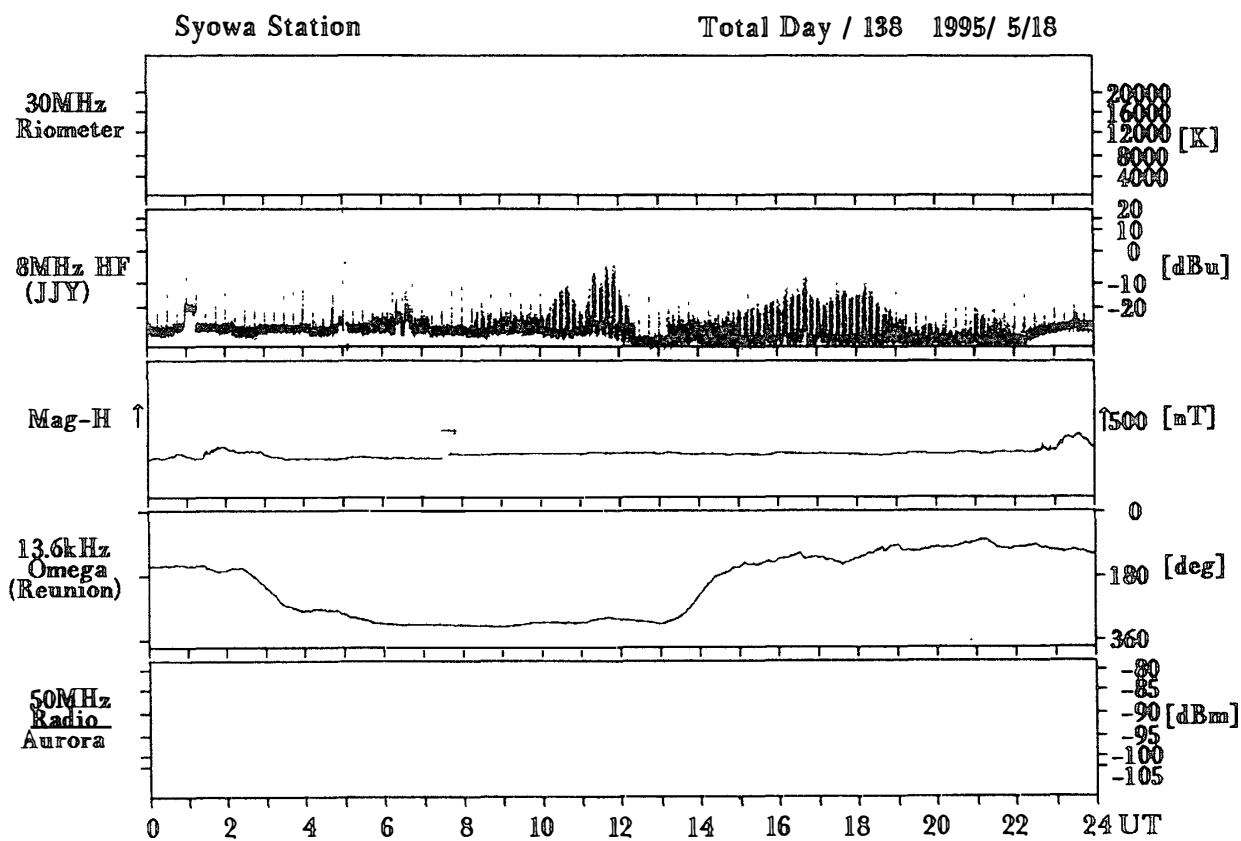
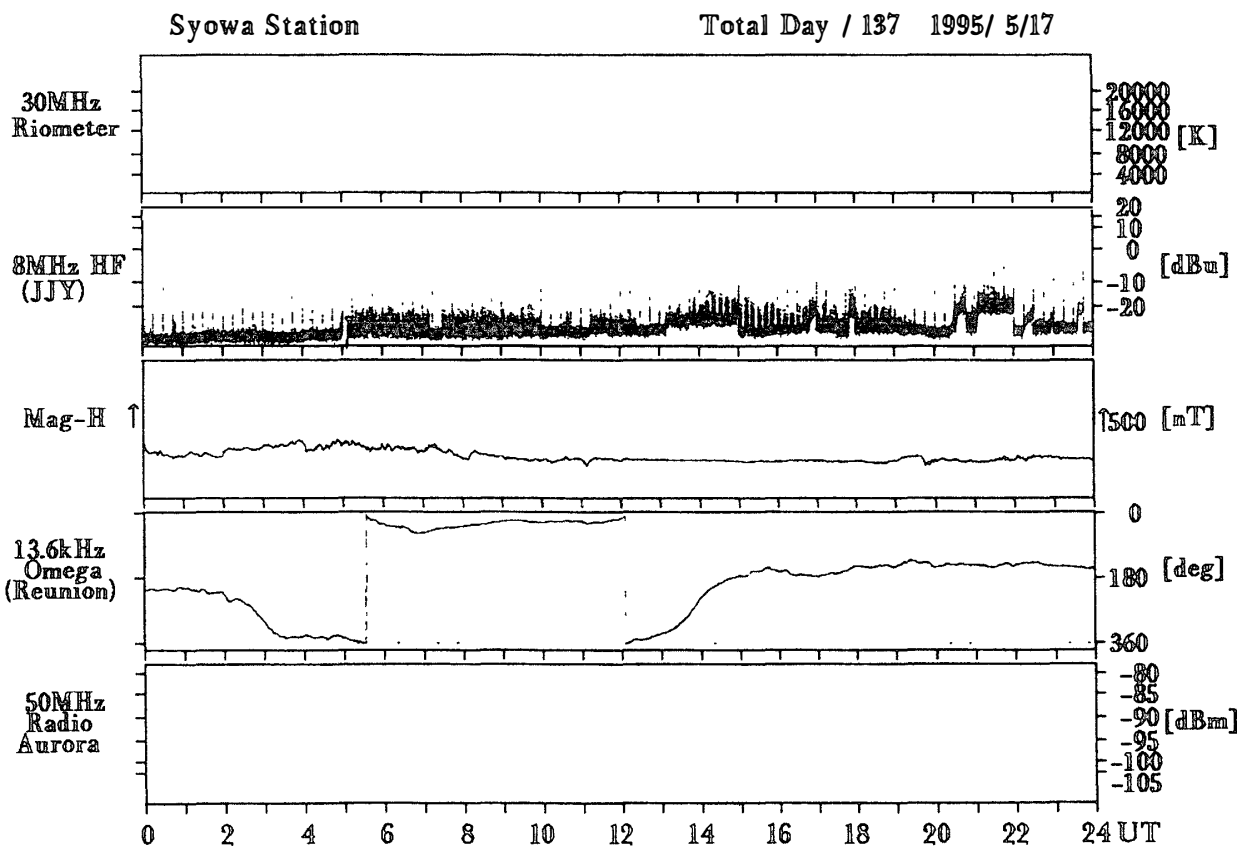
Syowa Station

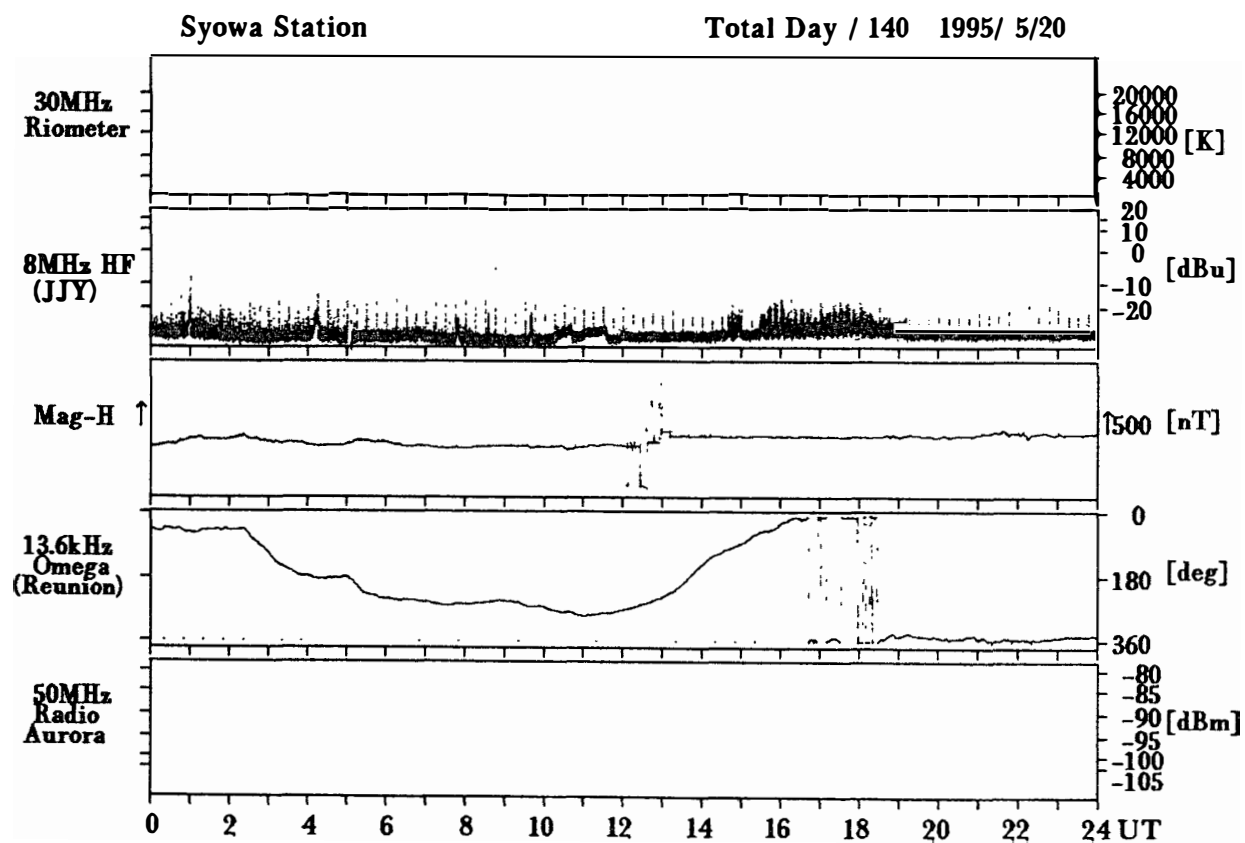
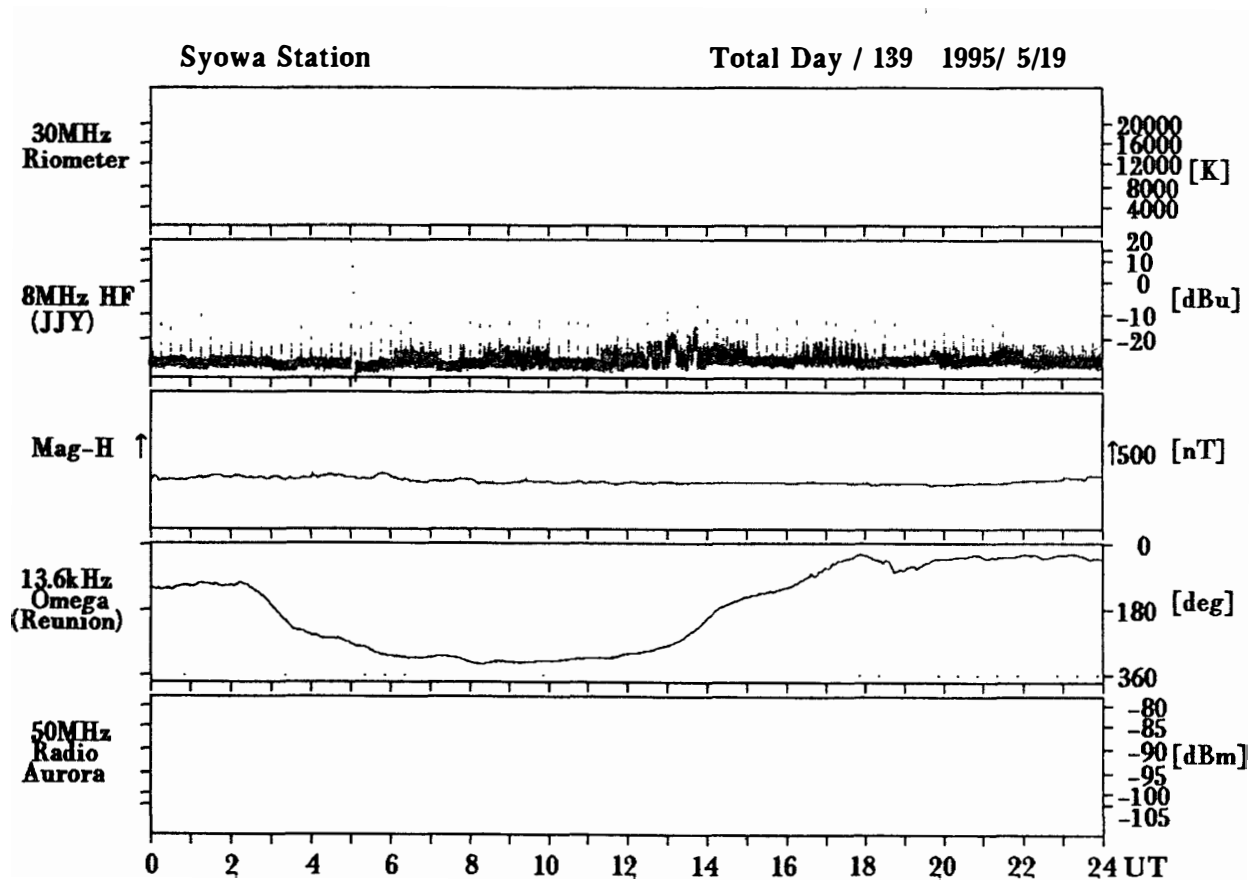
Total Day / 132 1995/ 5/12

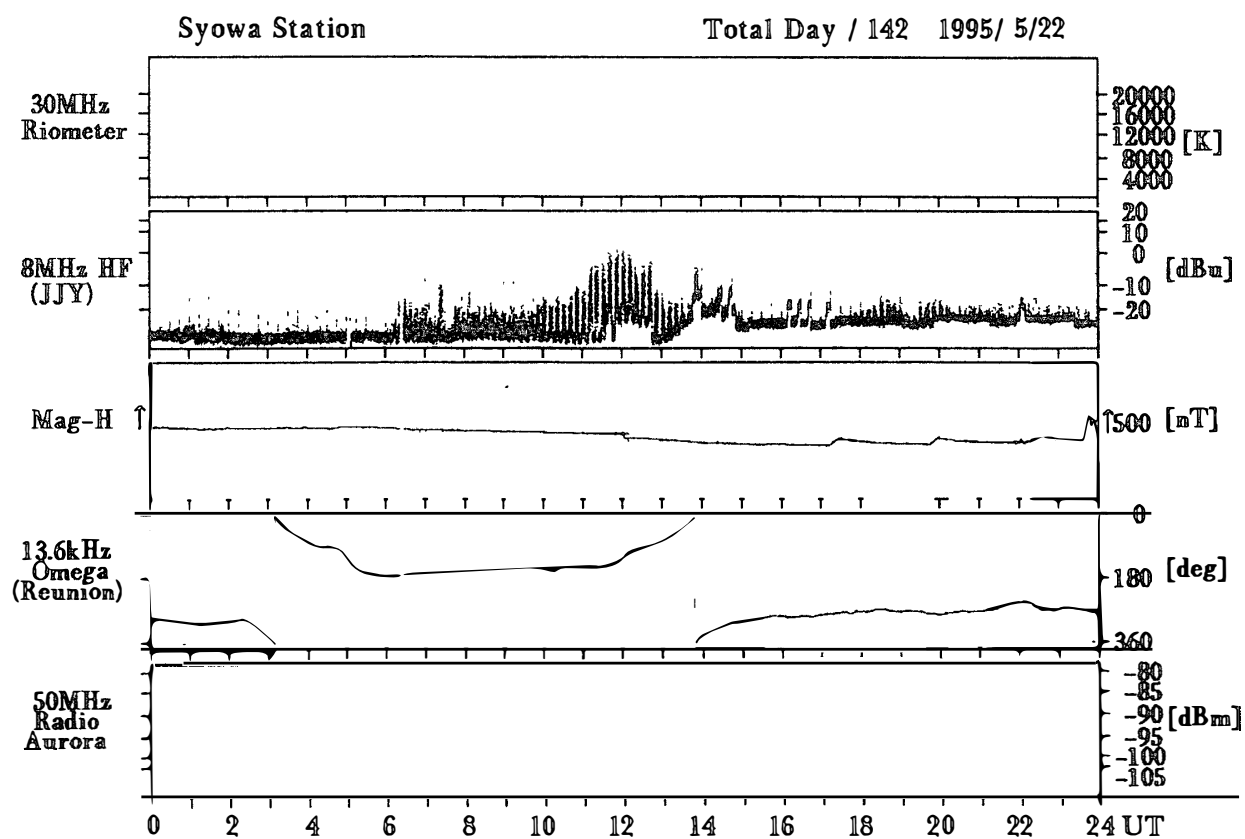
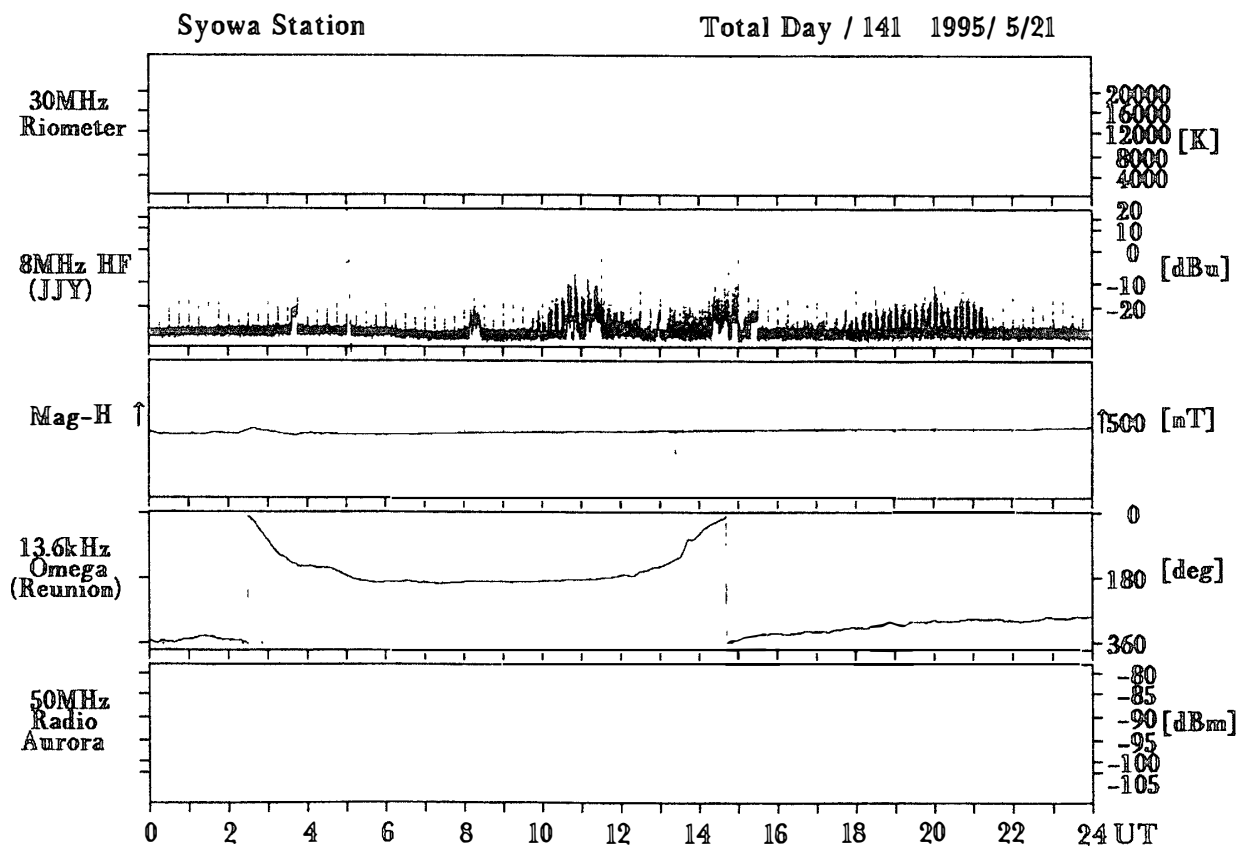


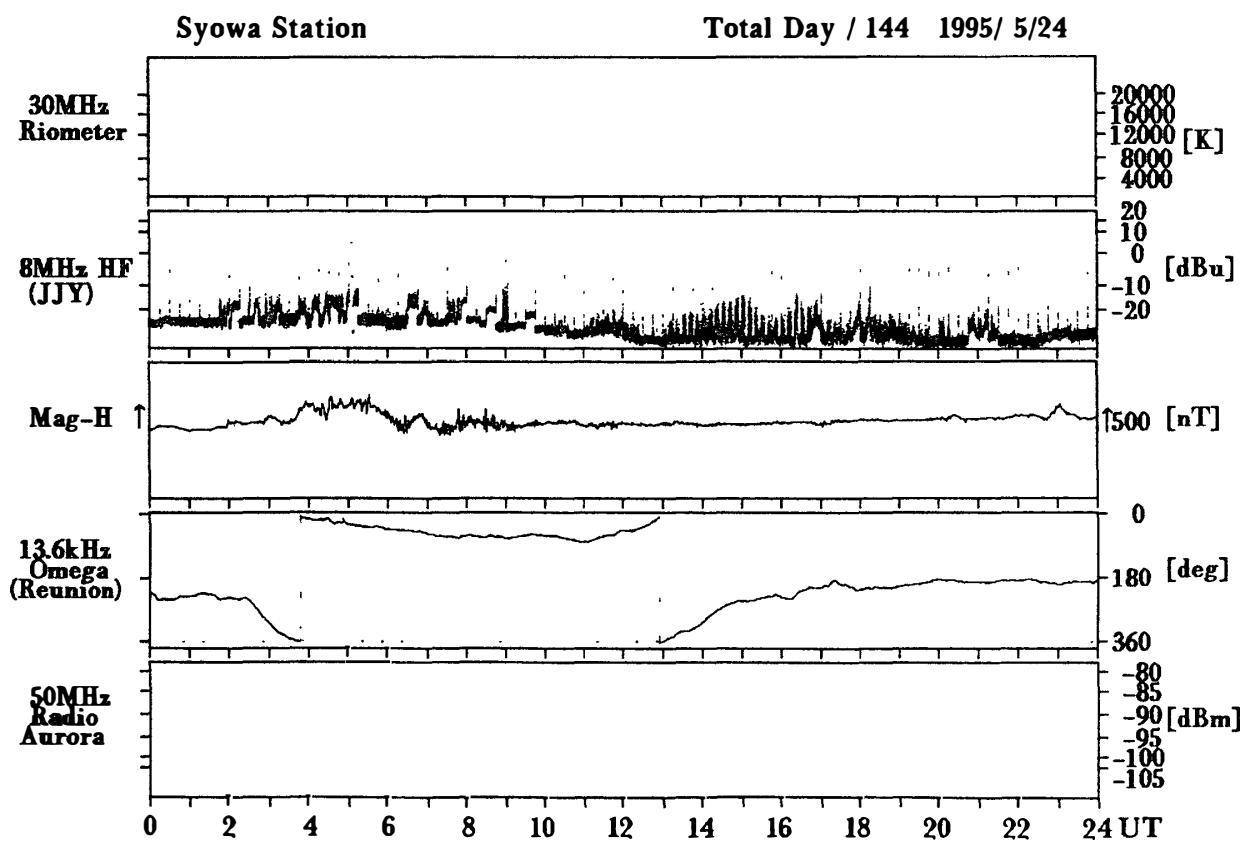
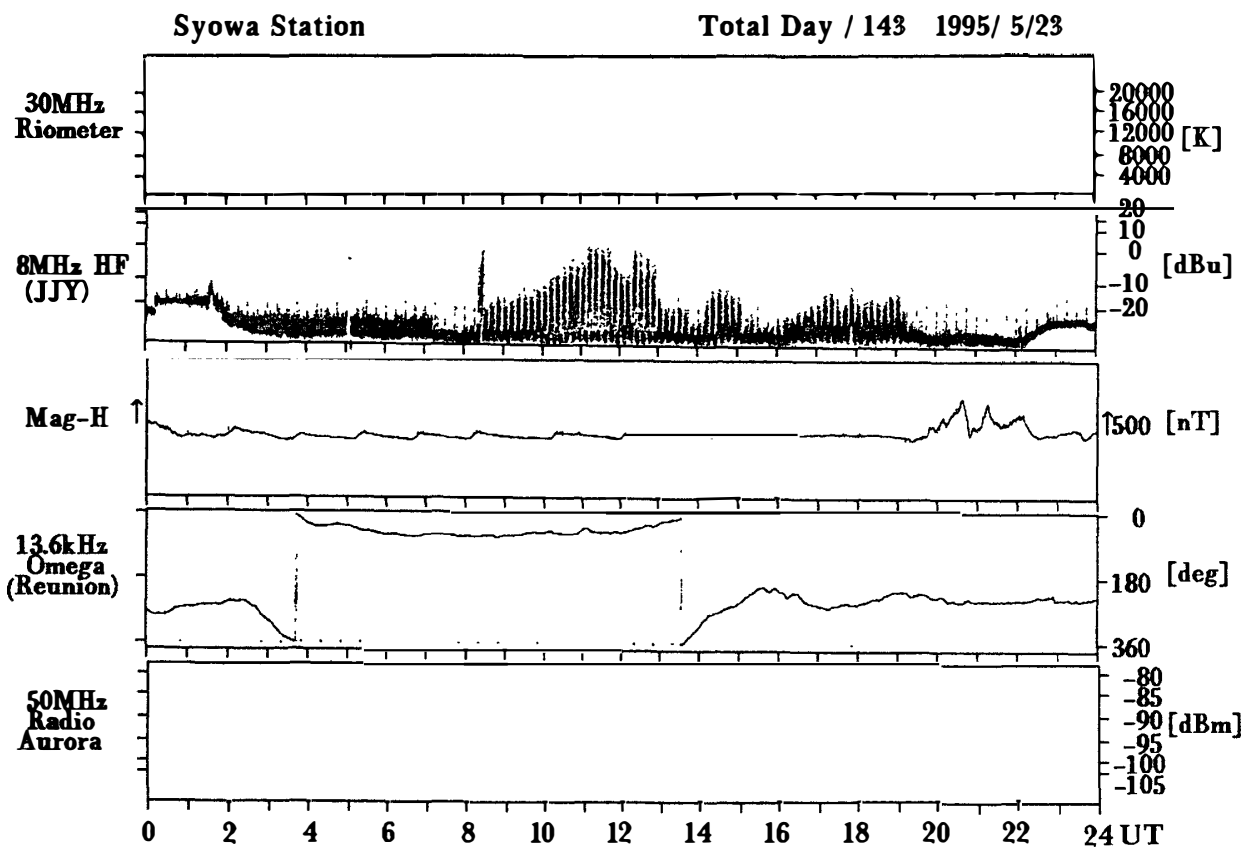


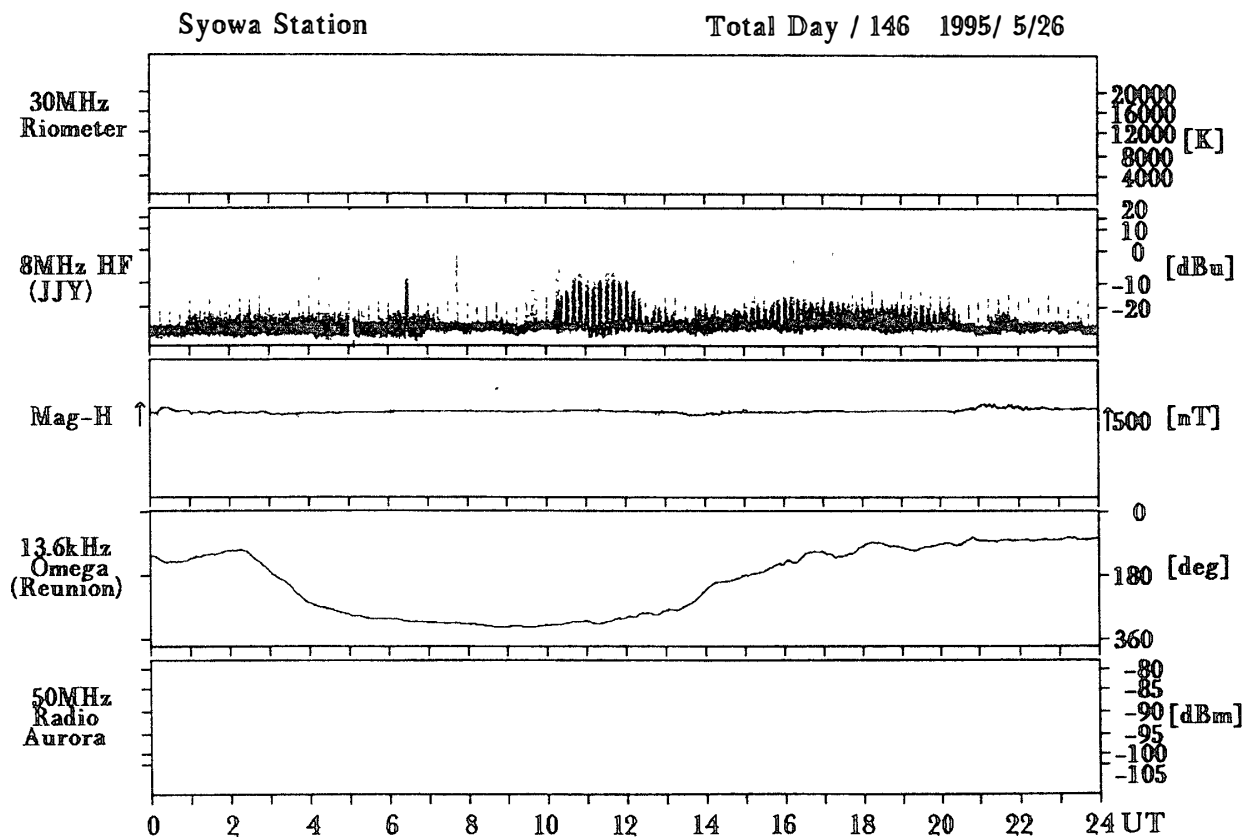
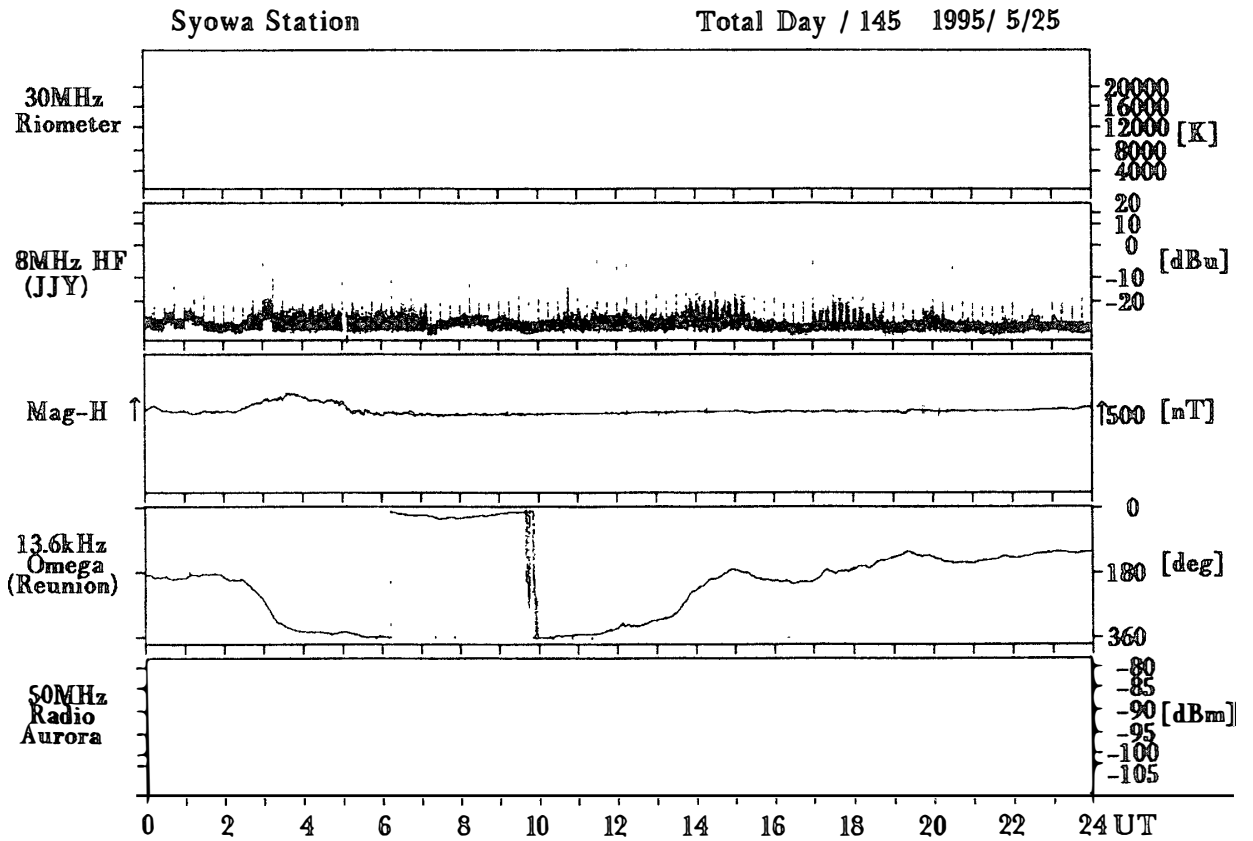


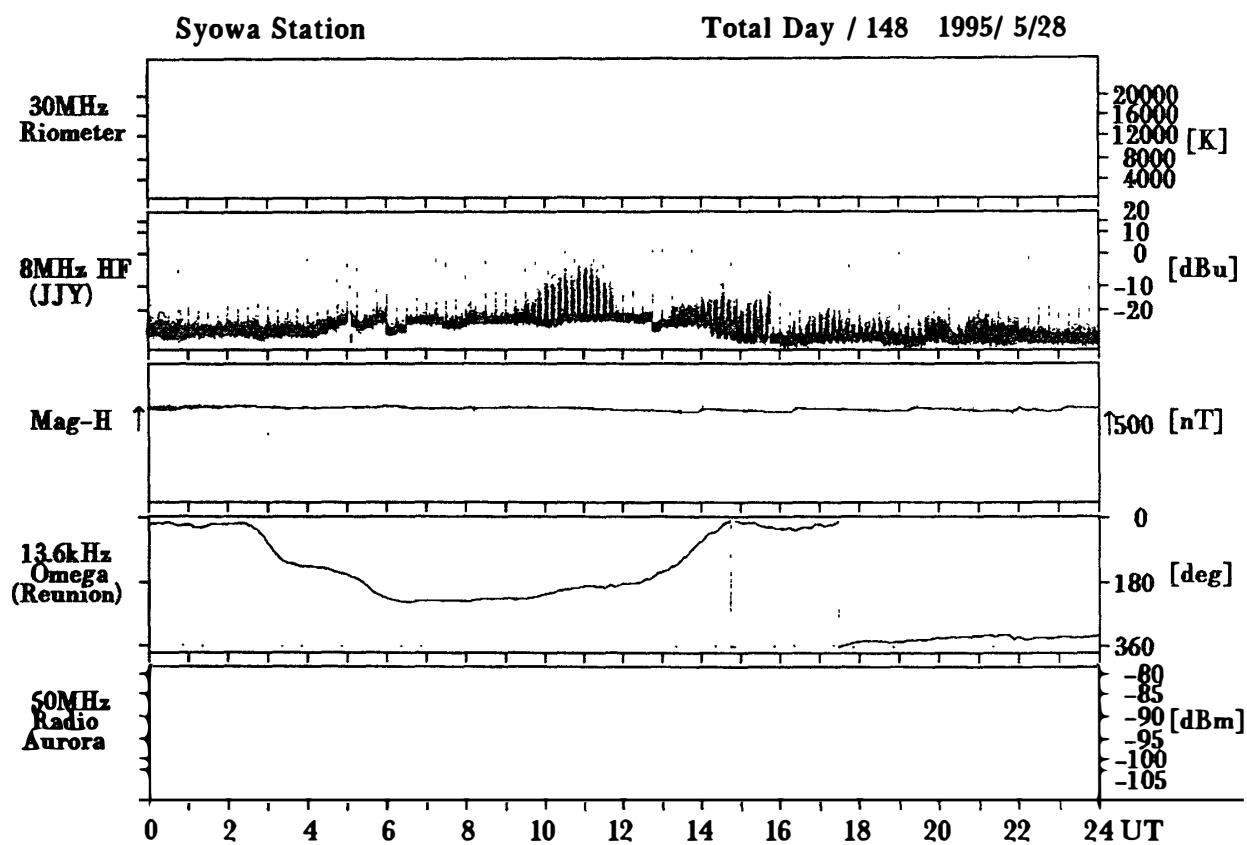
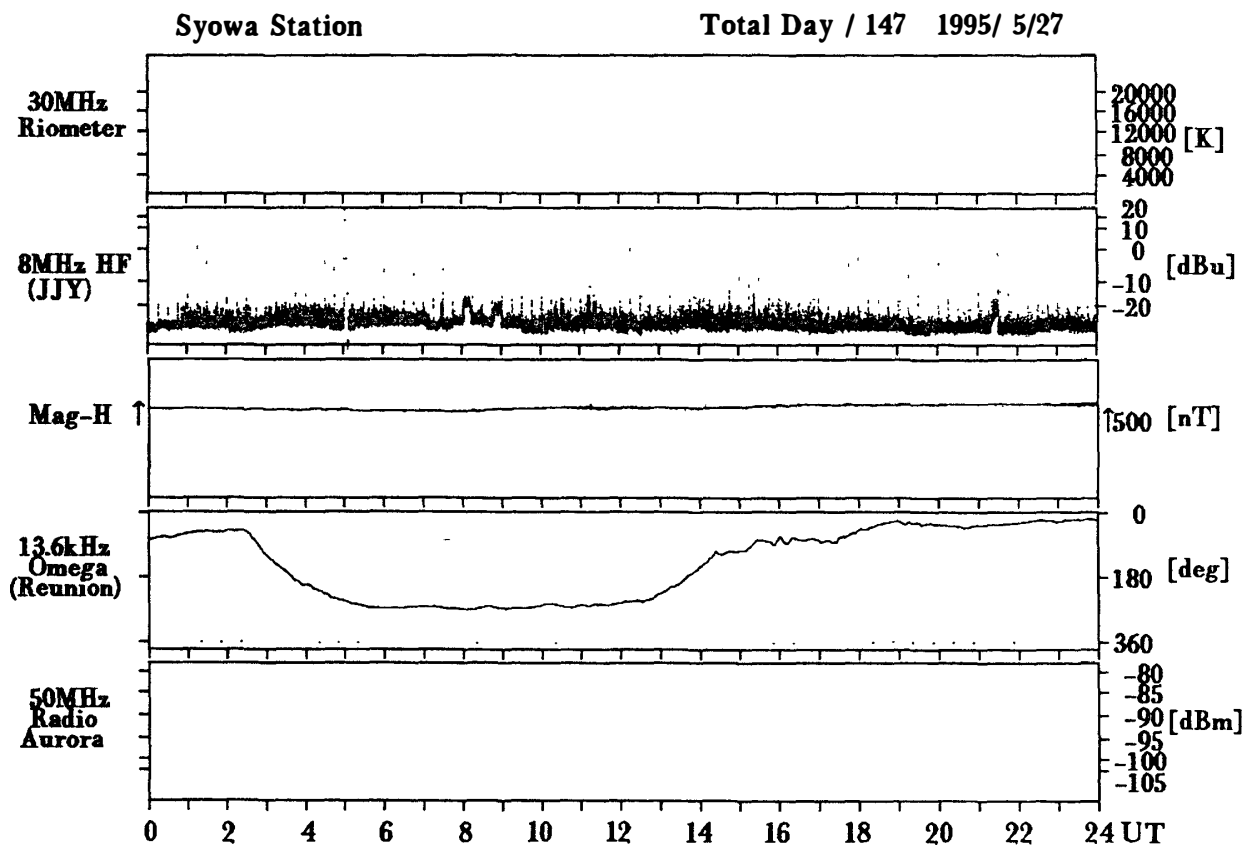






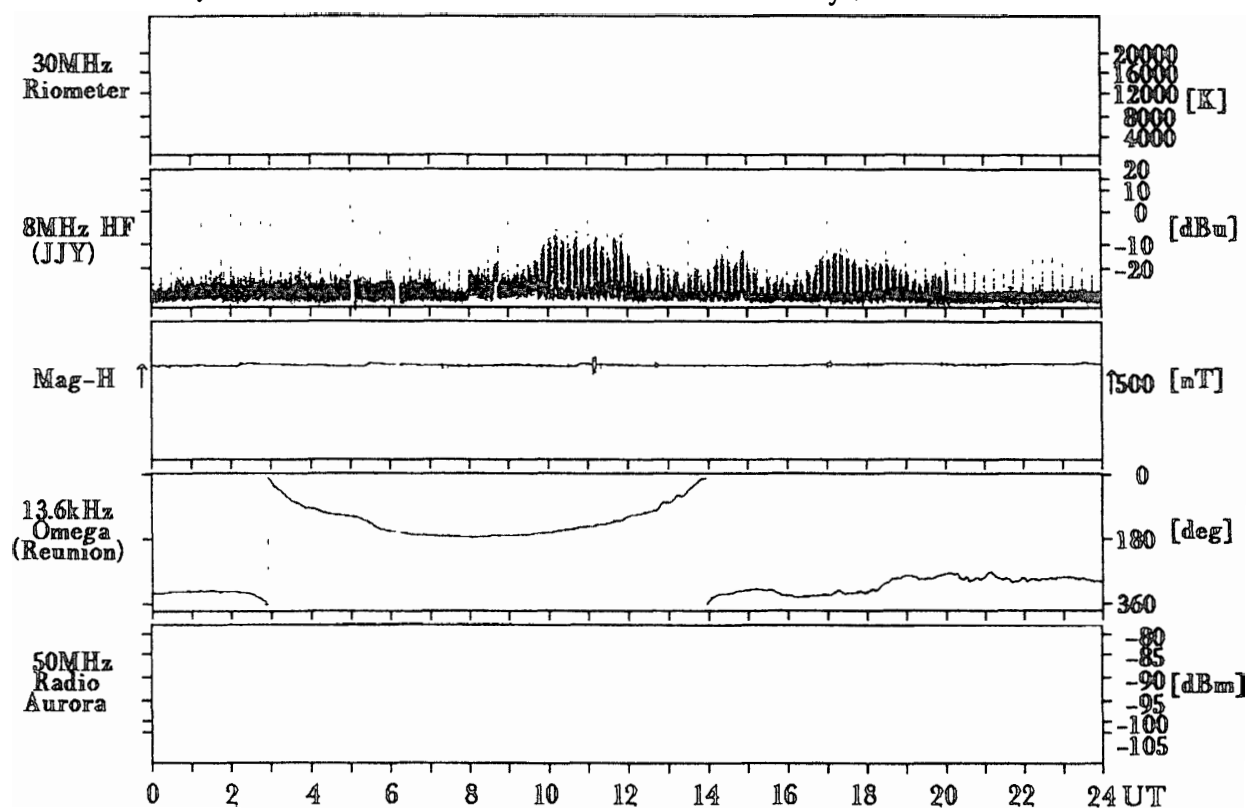






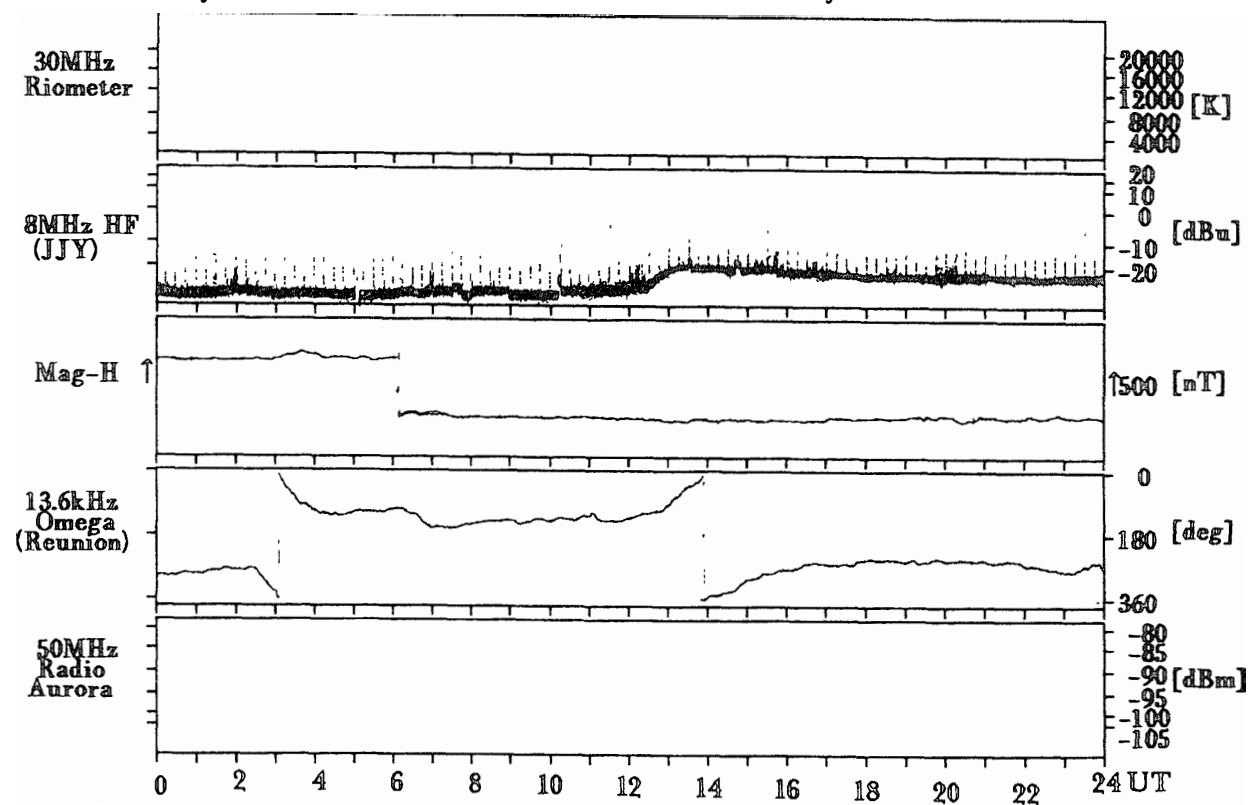
Syowa Station

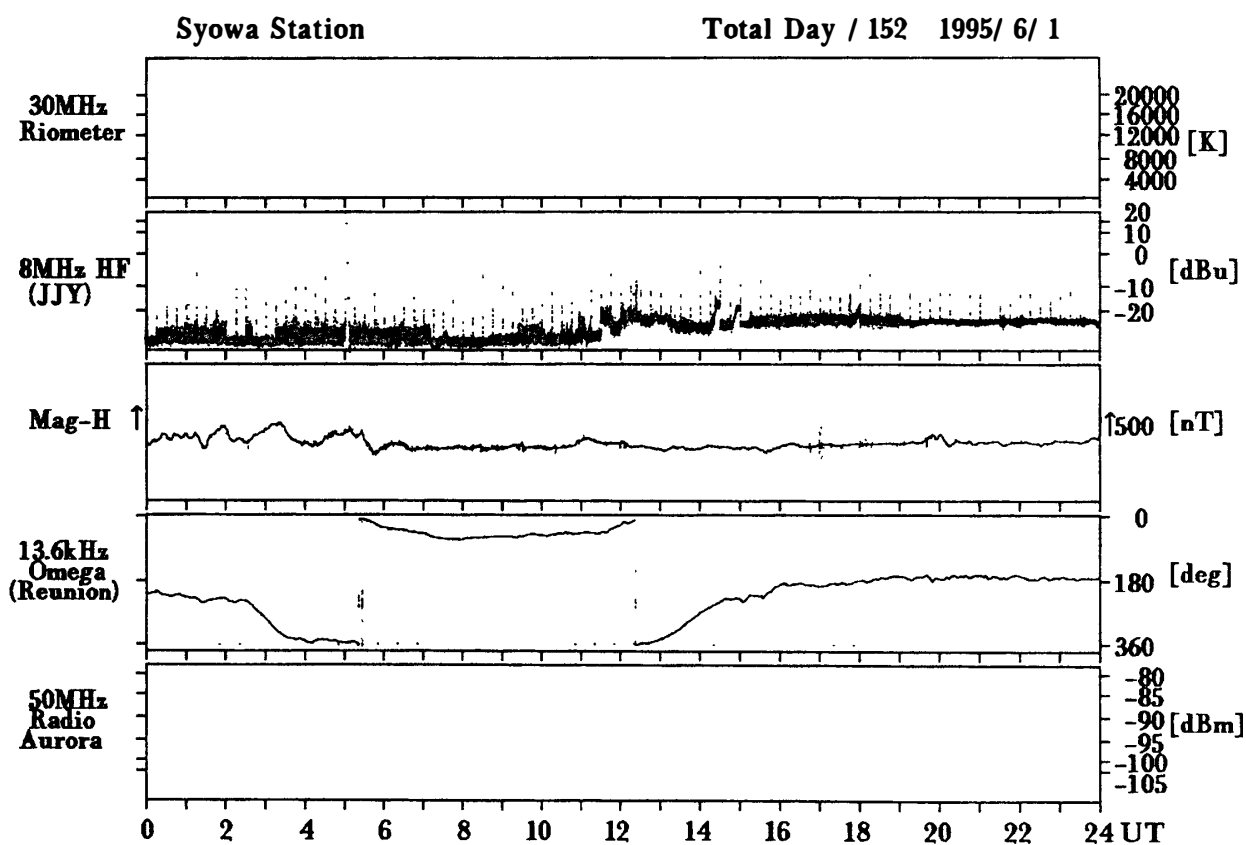
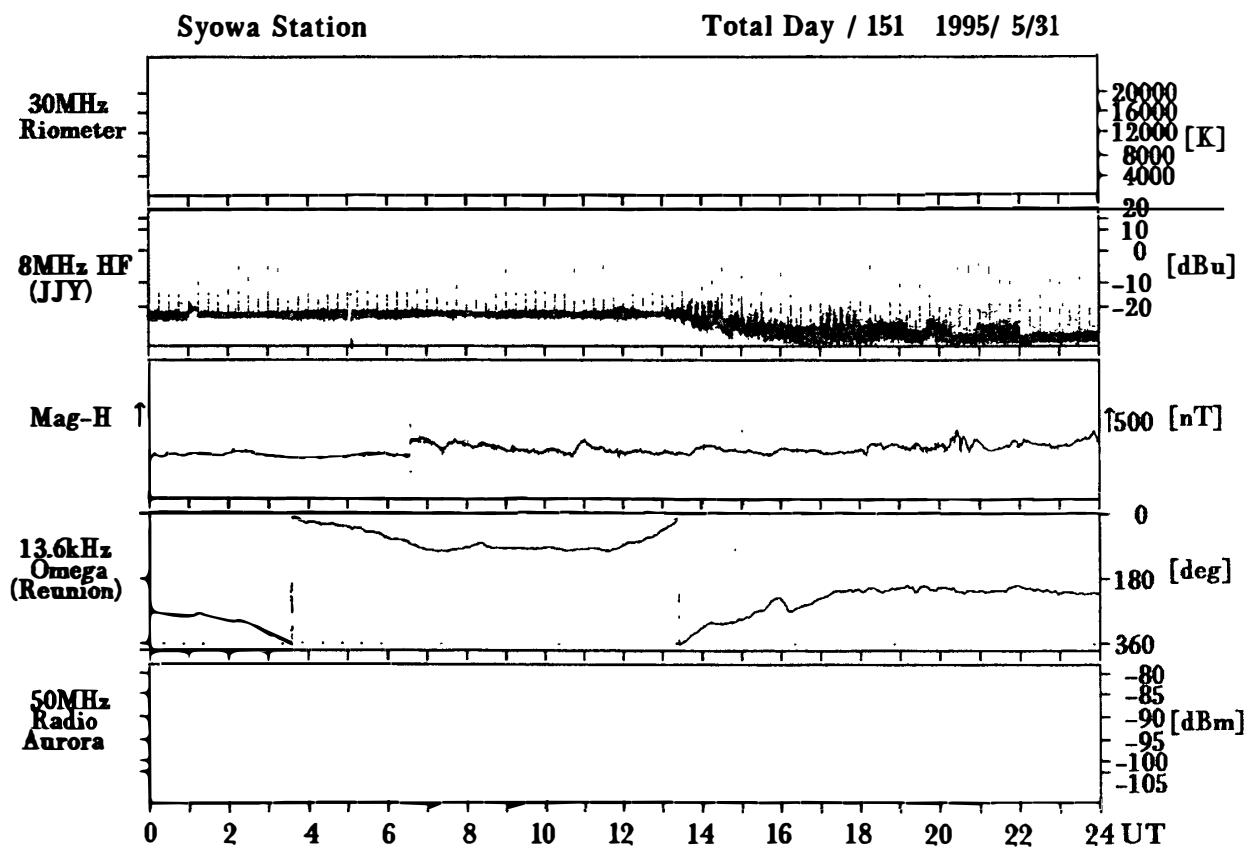
Total Day / 149 1995/ 5/29

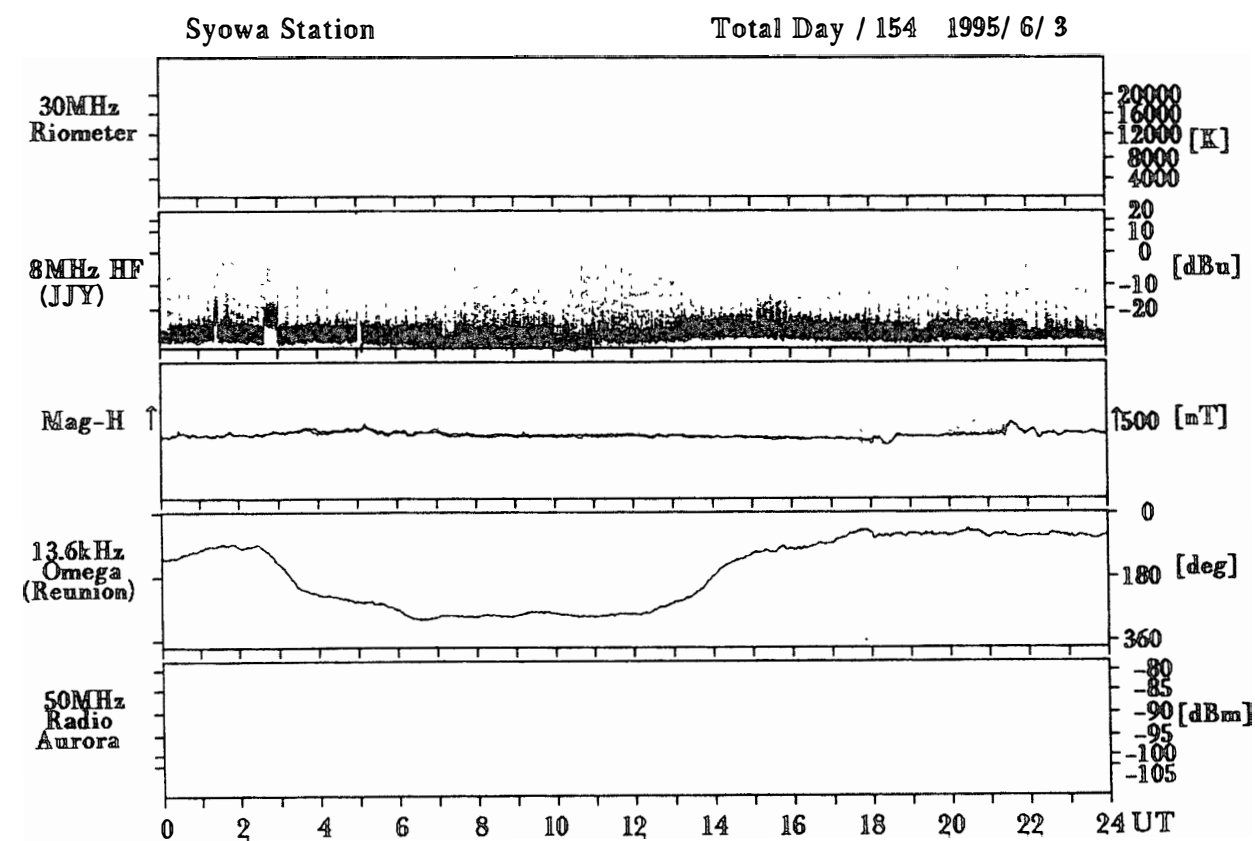
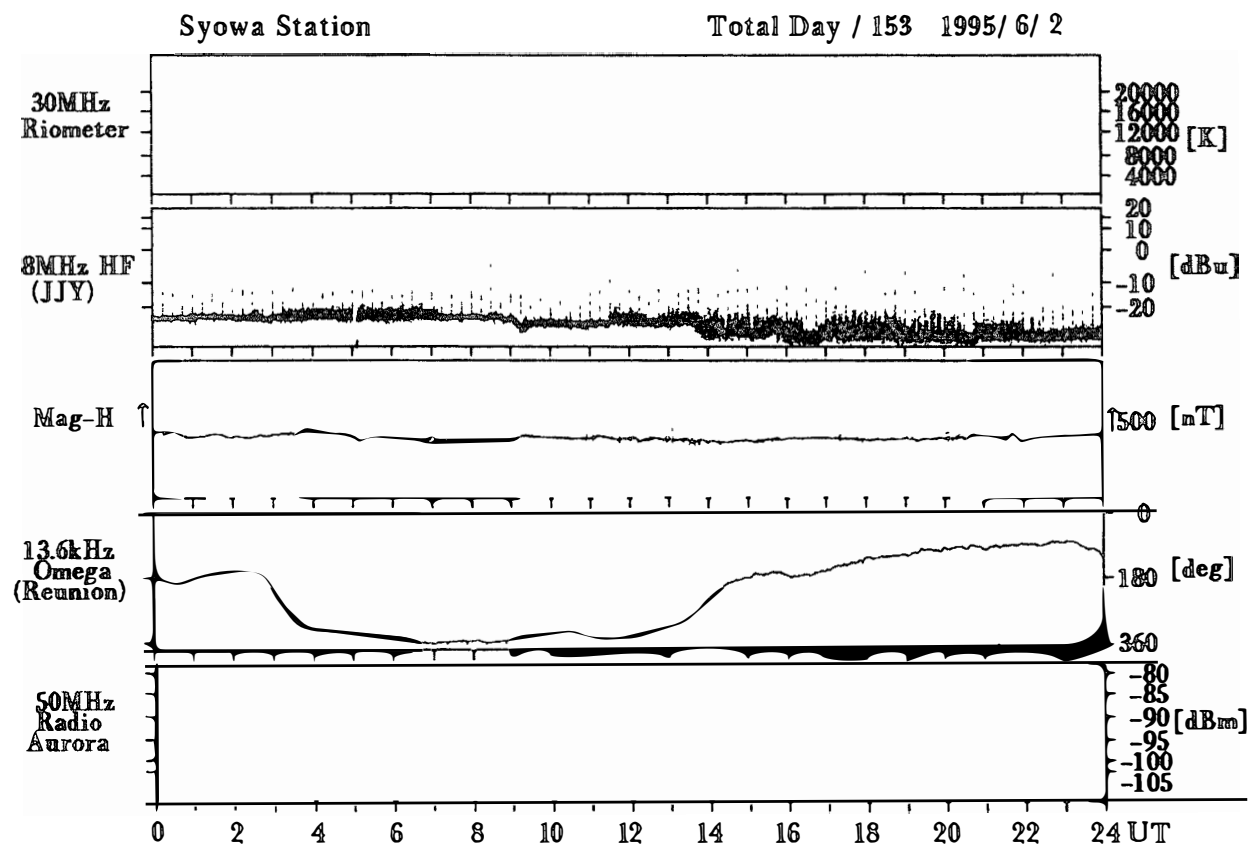


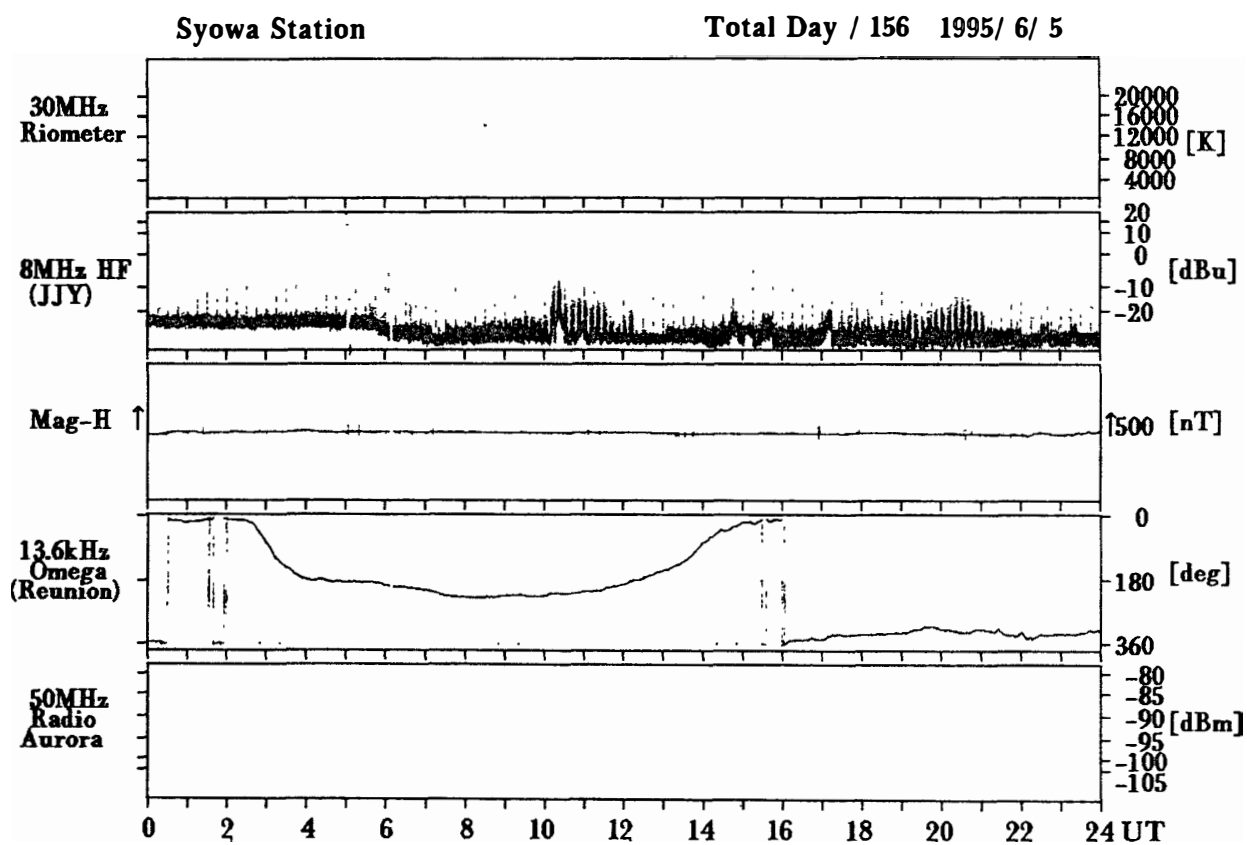
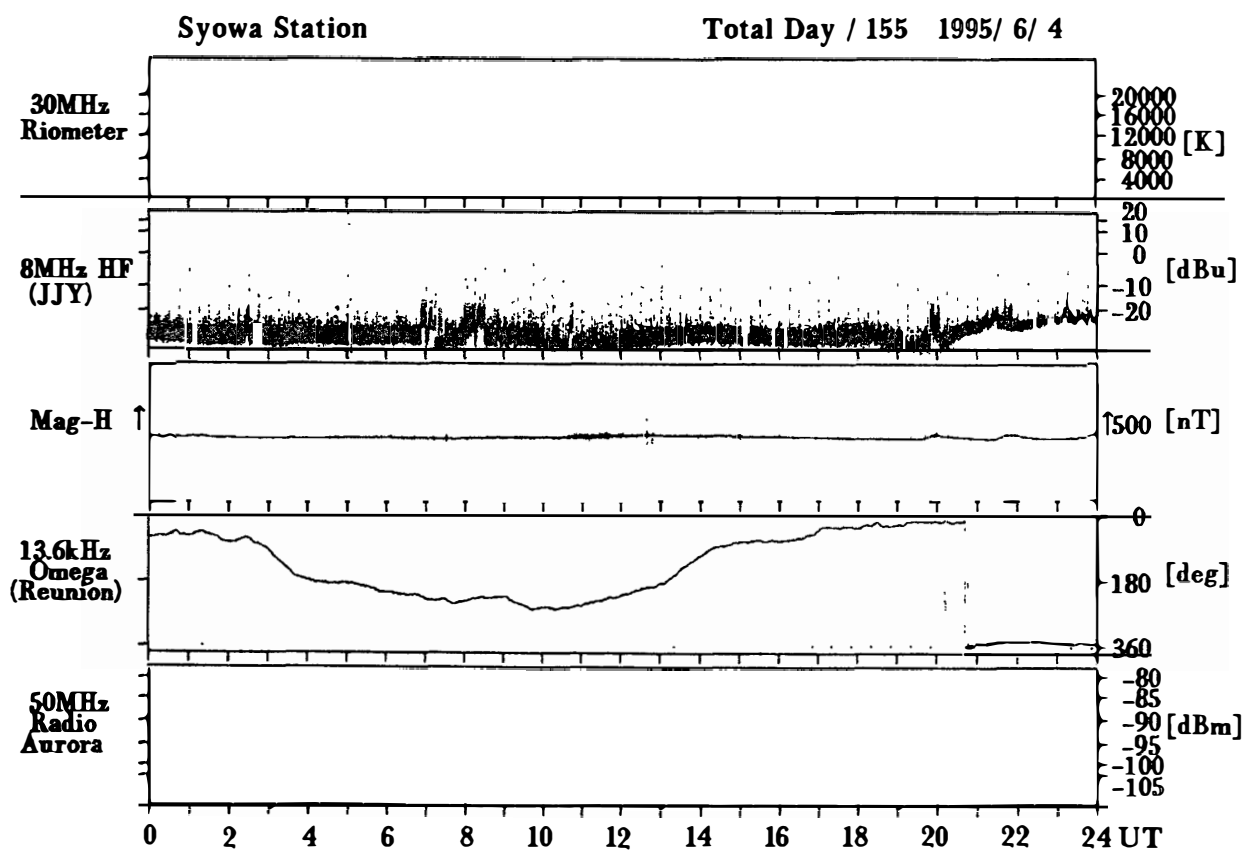
Syowa Station

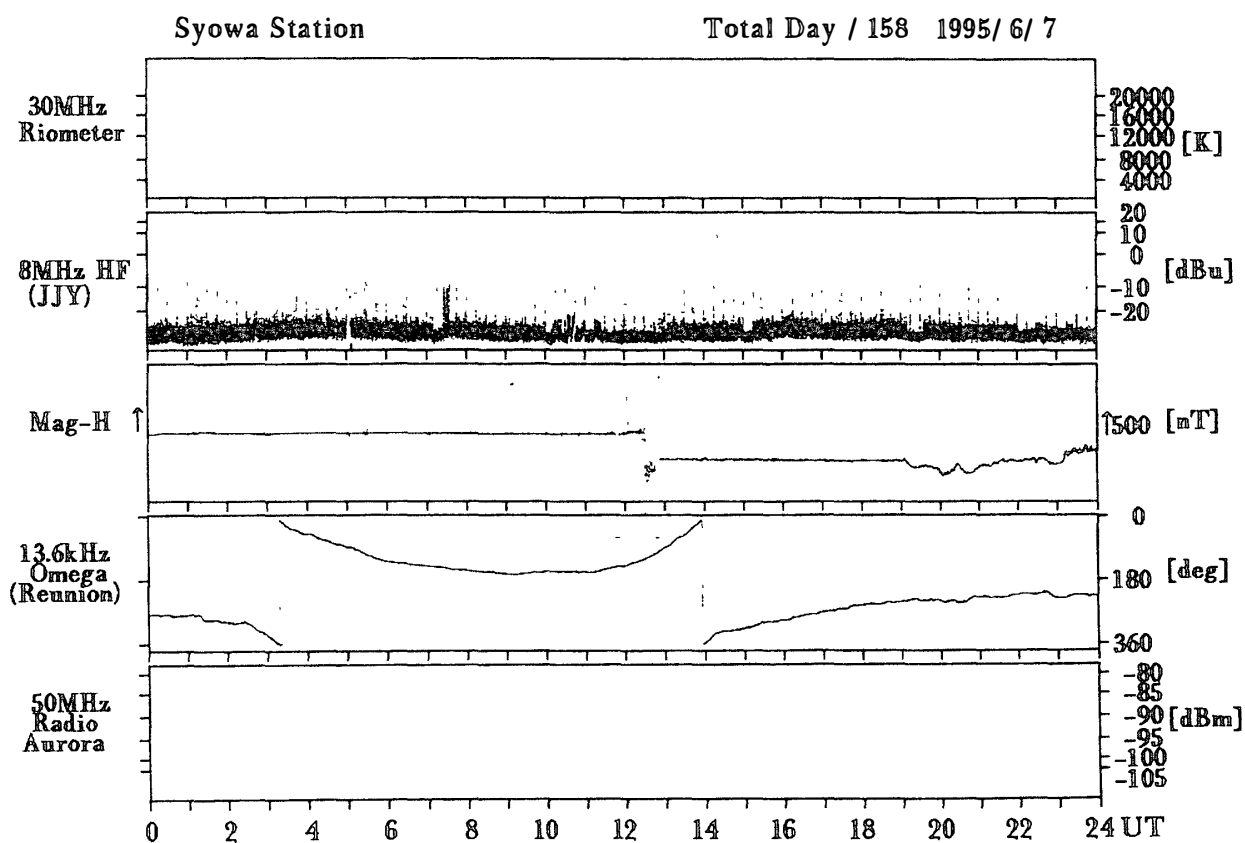
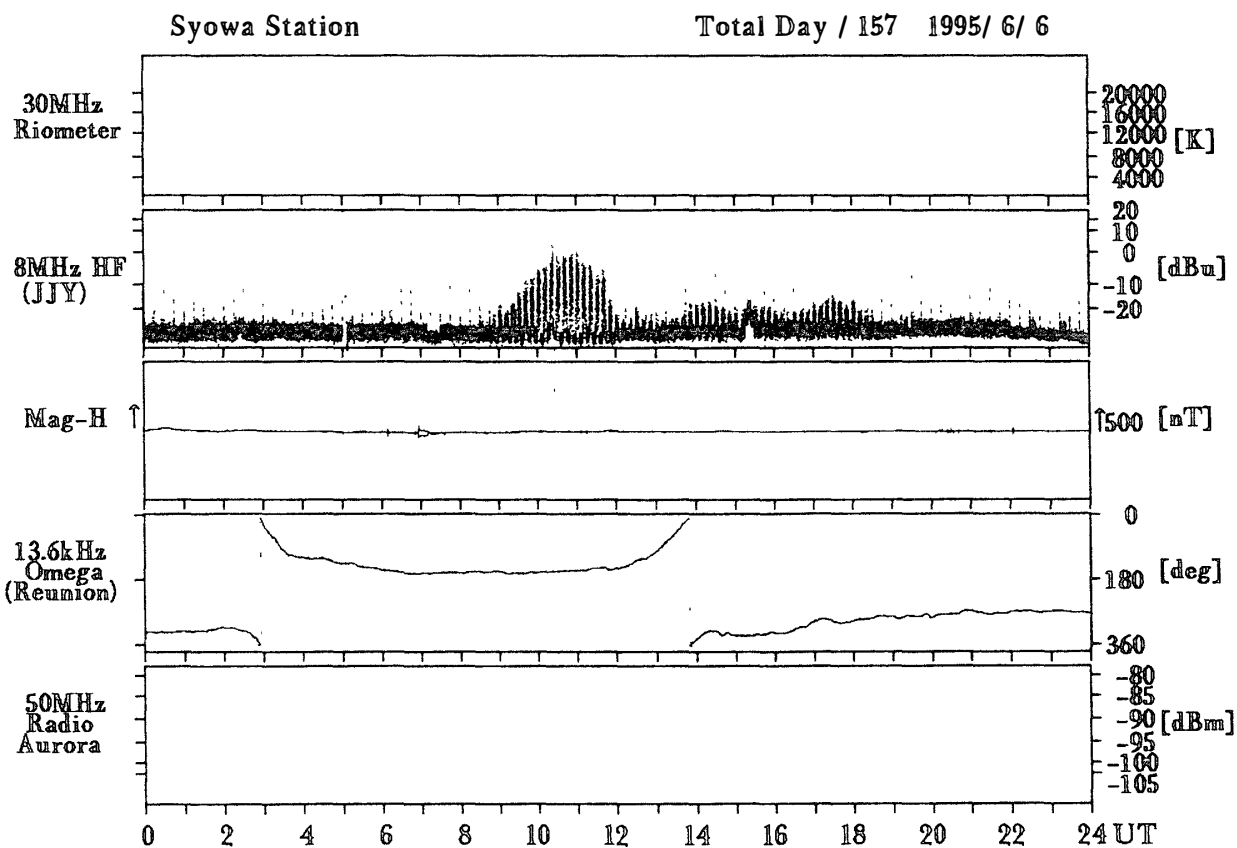
Total Day / 150 1995/ 5/30





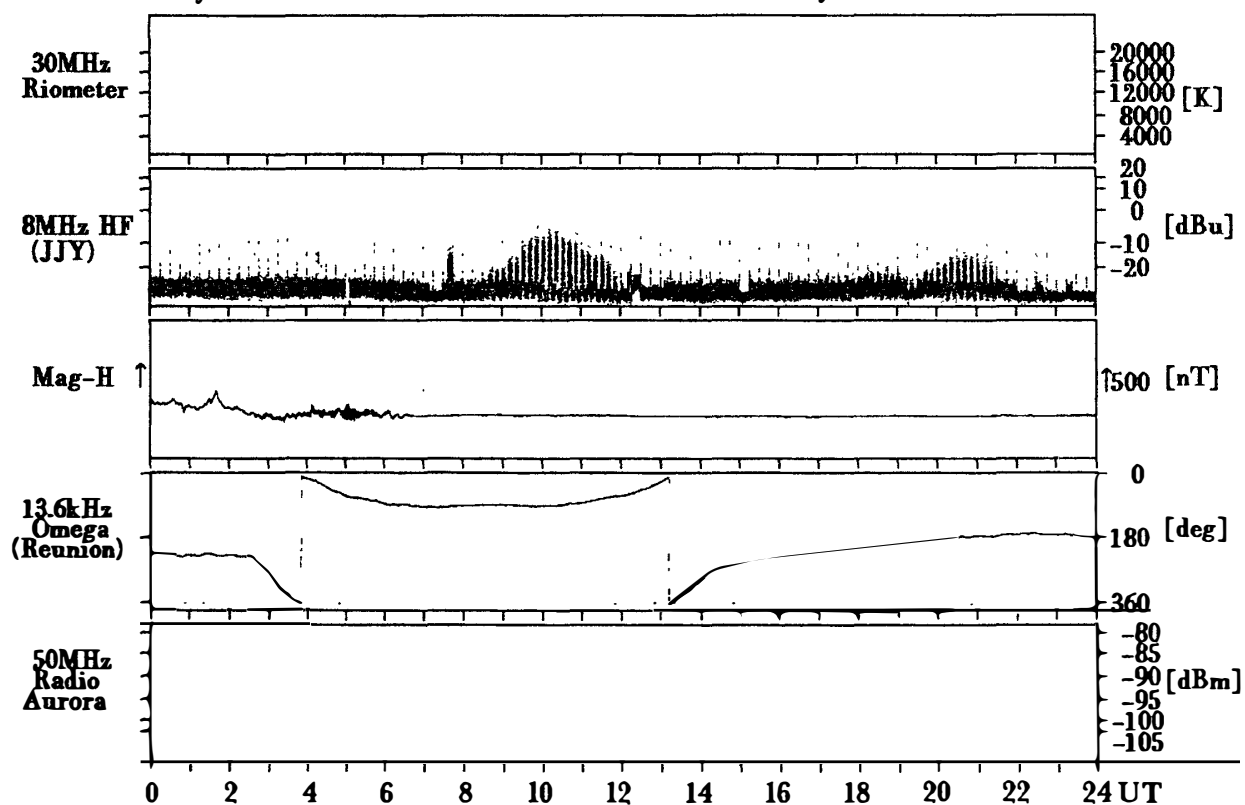






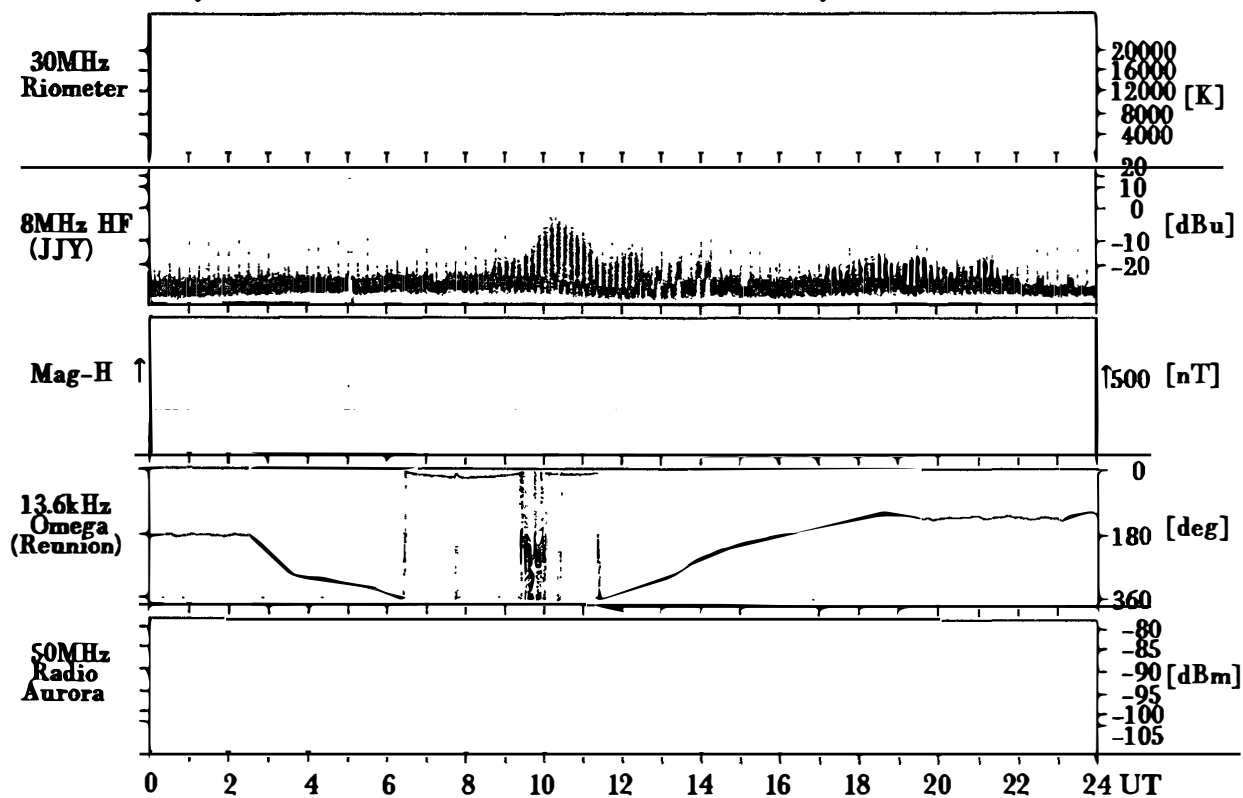
Syowa Station

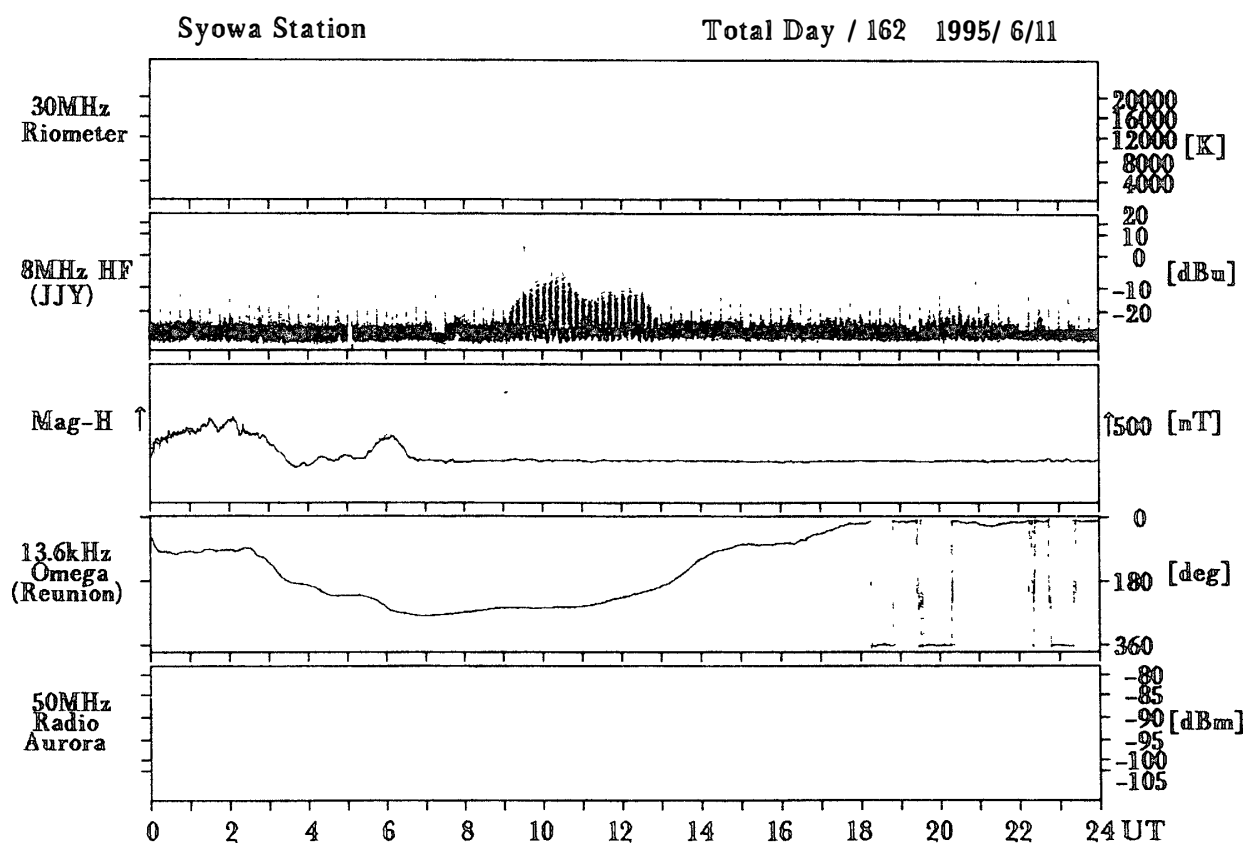
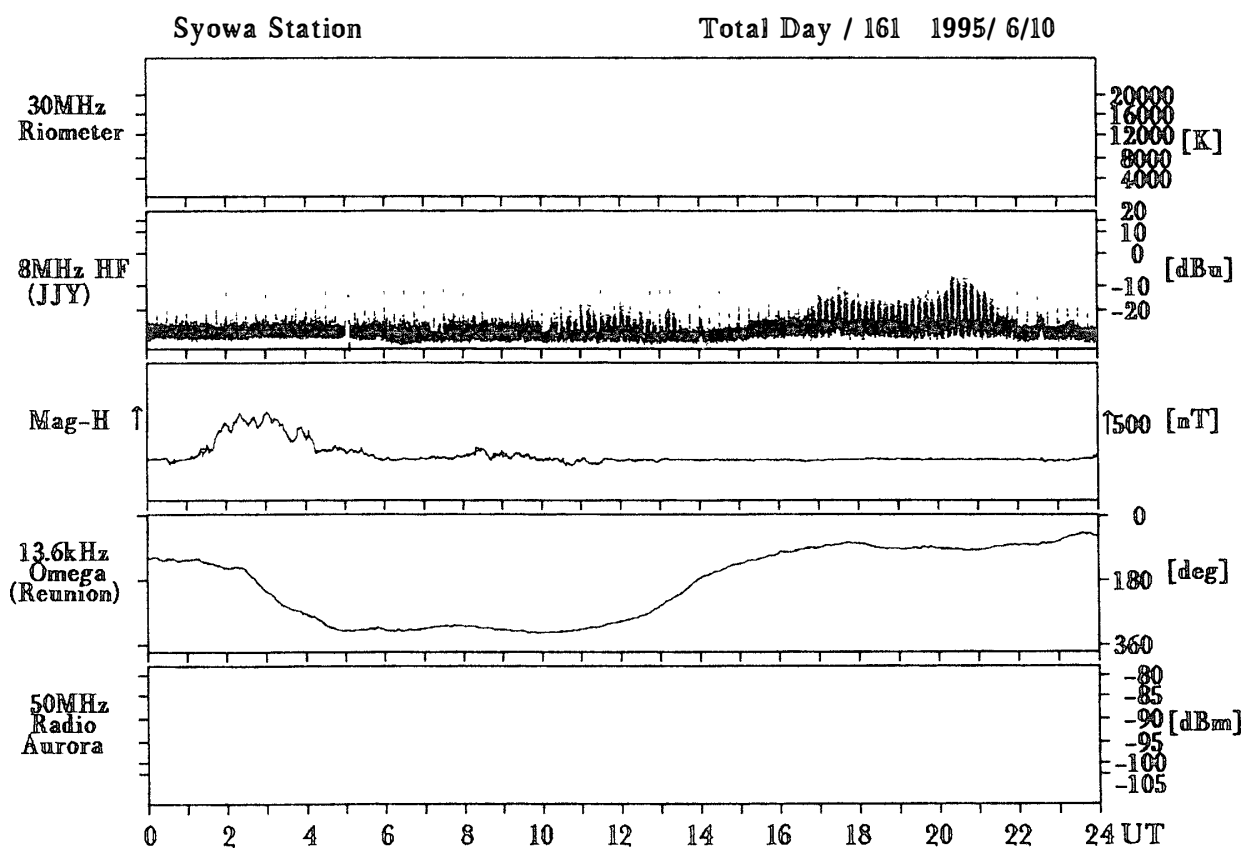
Total Day / 159 1995/ 6/ 8



Syowa Station

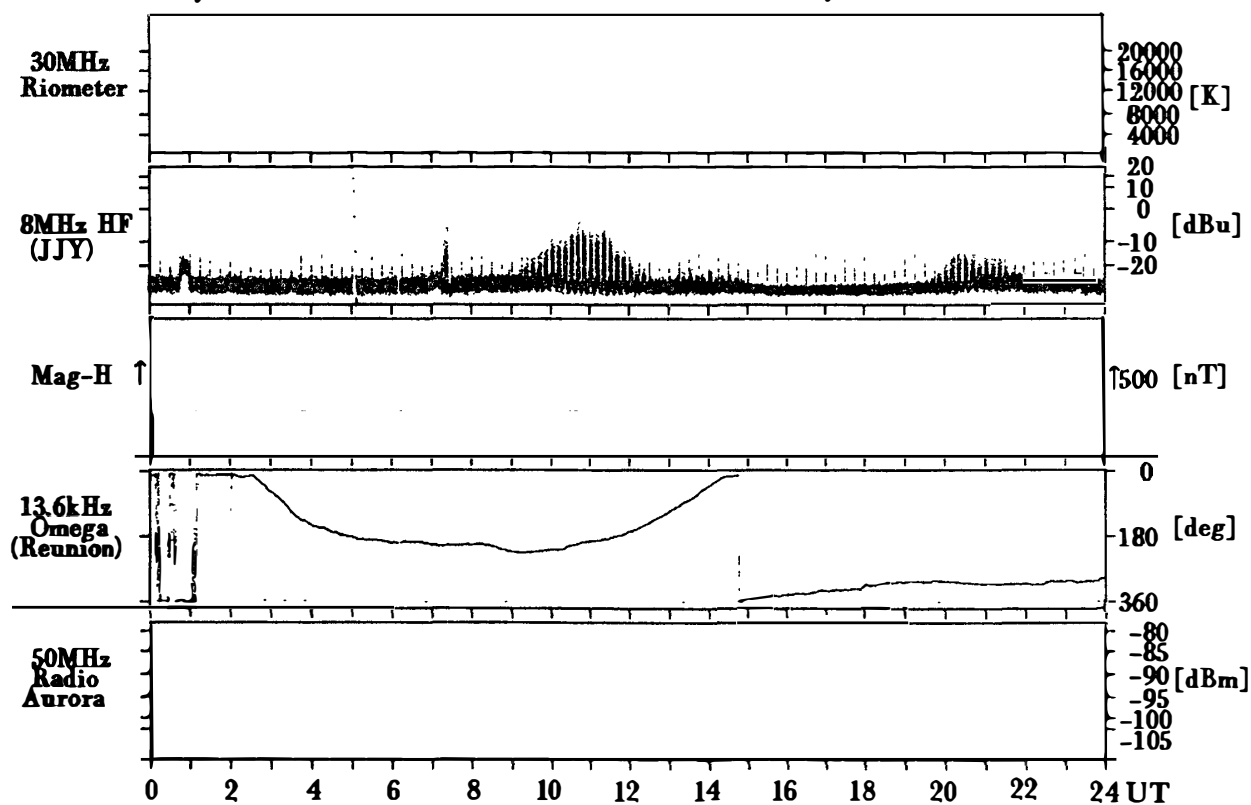
Total Day / 160 1995/ 6/ 9





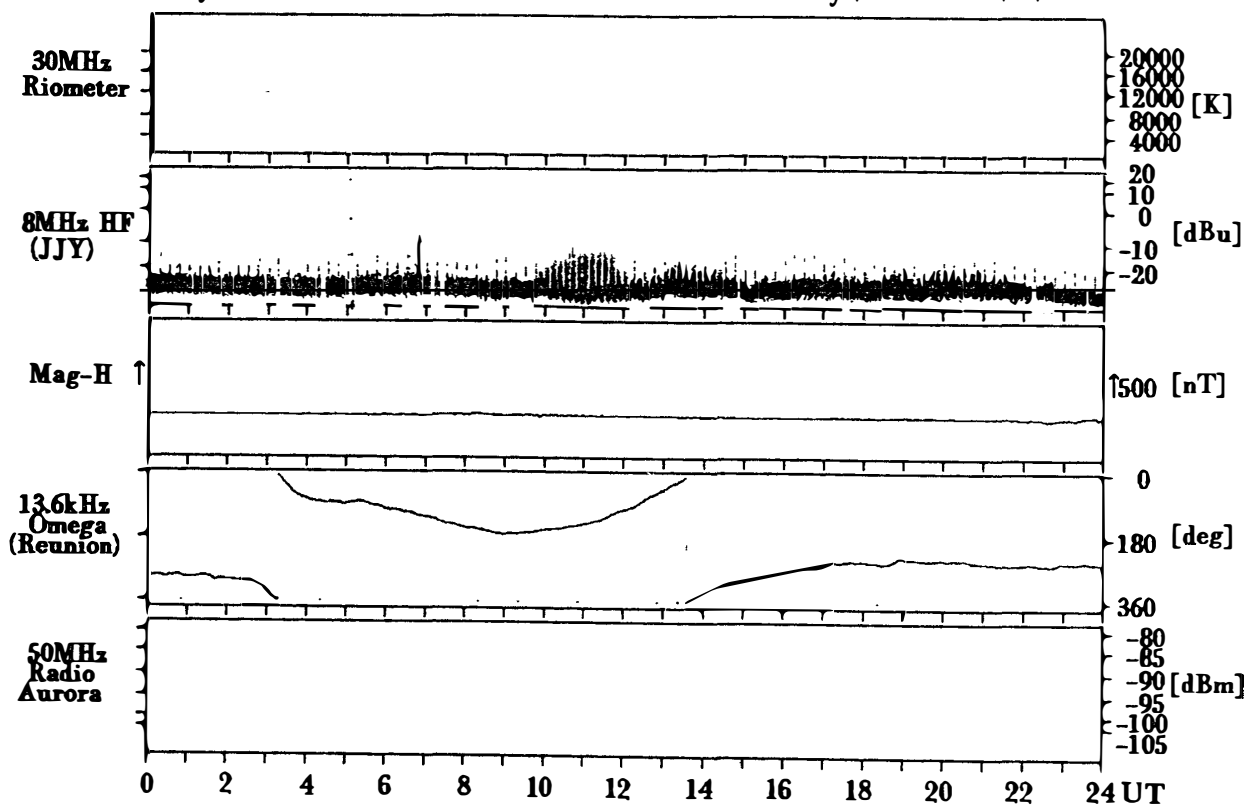
Syowa Station

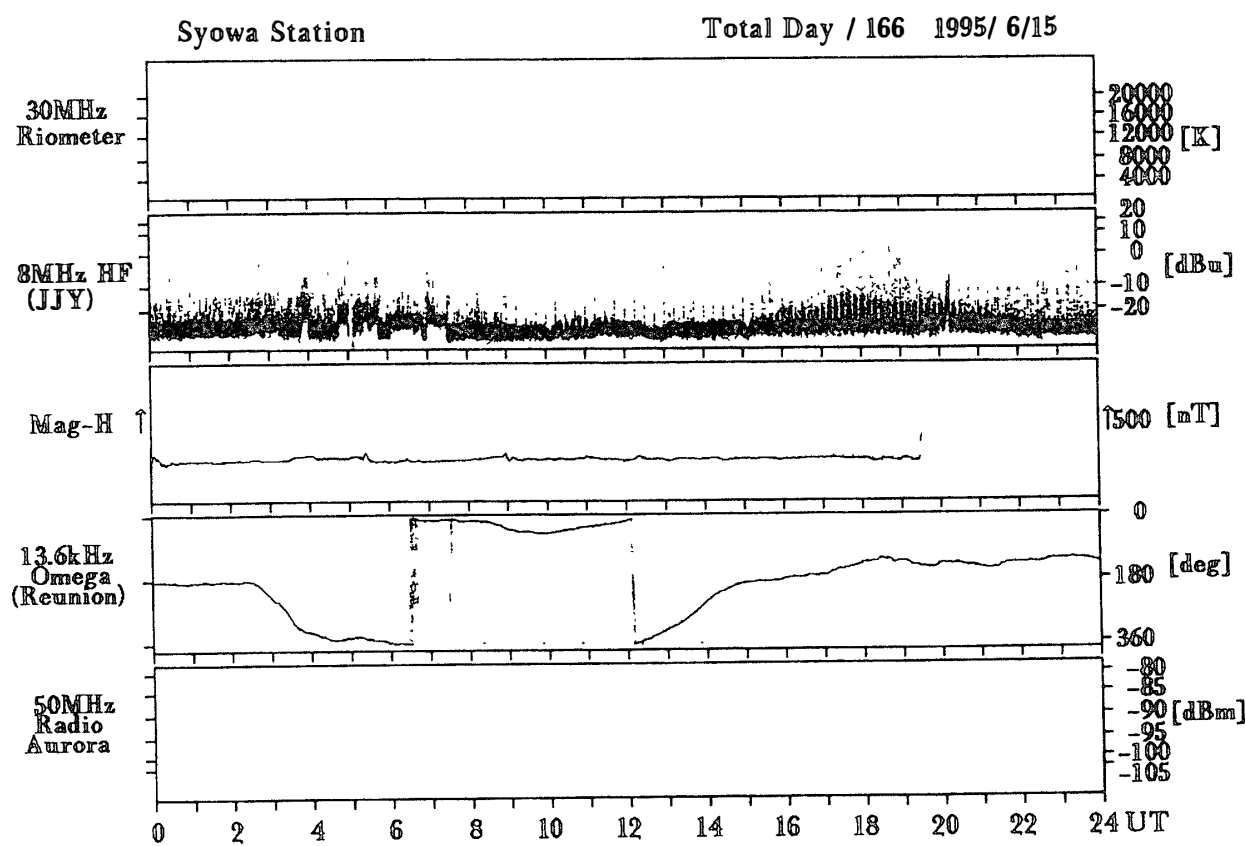
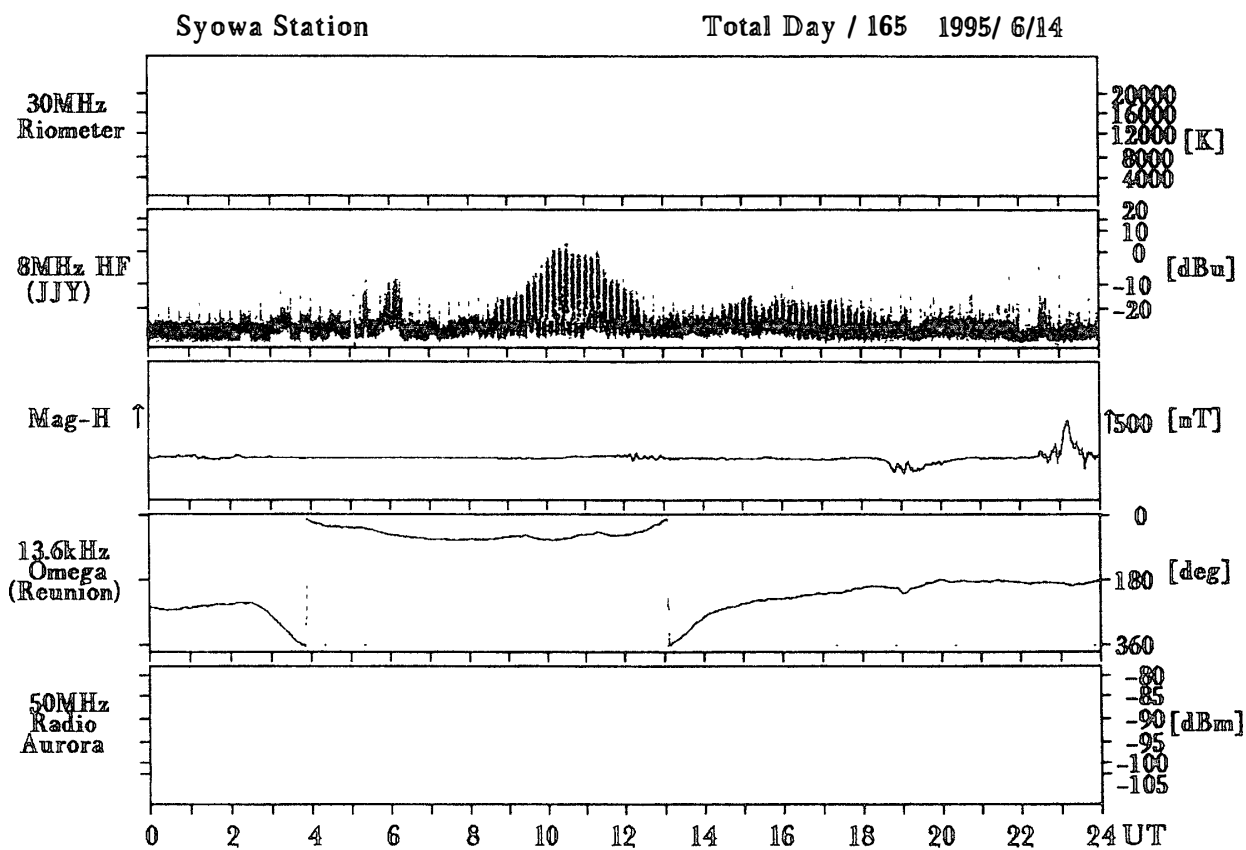
Total Day / 163 1995/ 6/12



Syowa Station

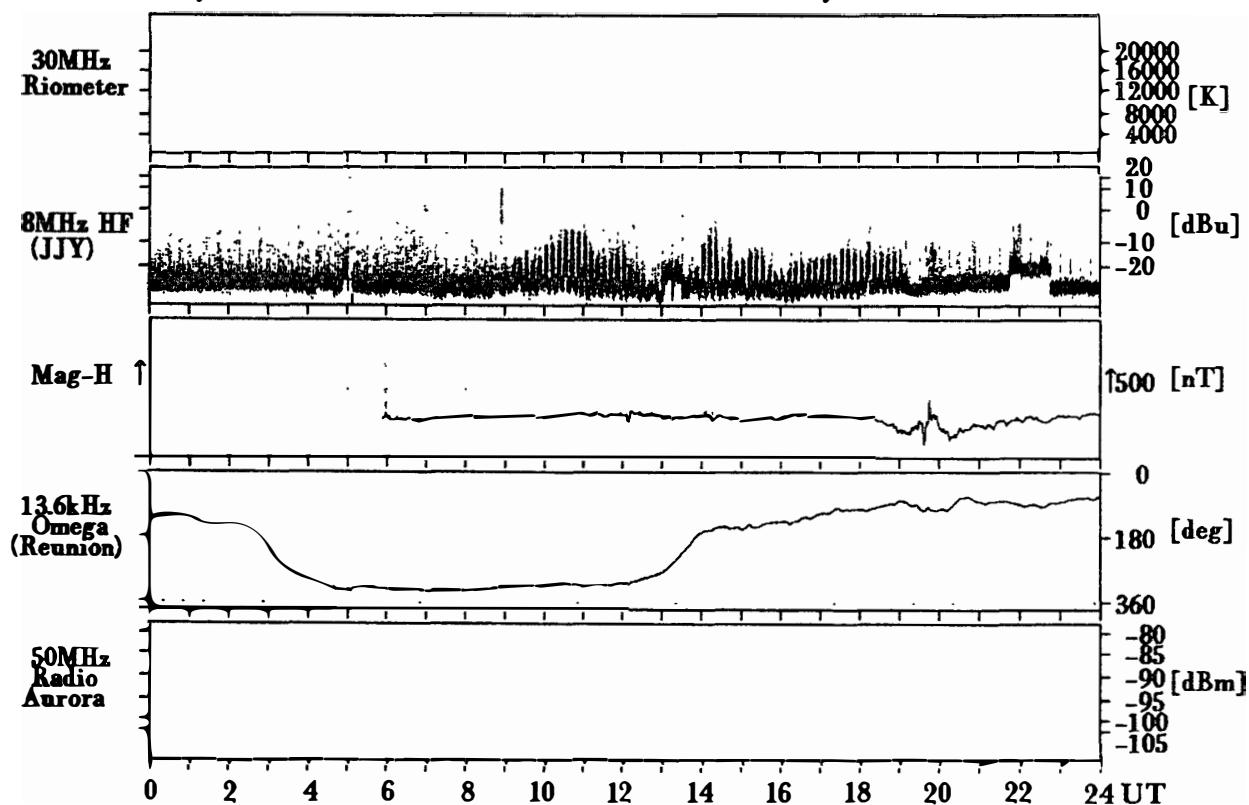
Total Day / 164 1995/ 6/13





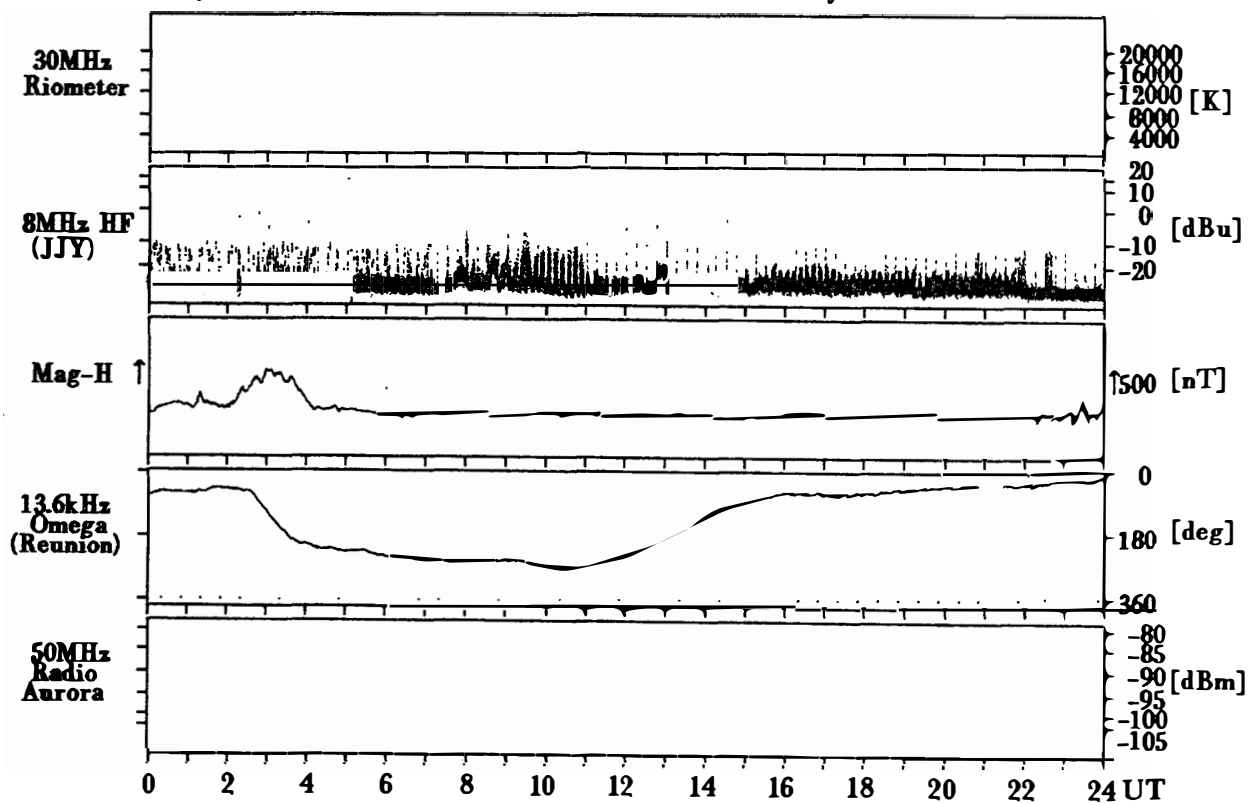
Syowa Station

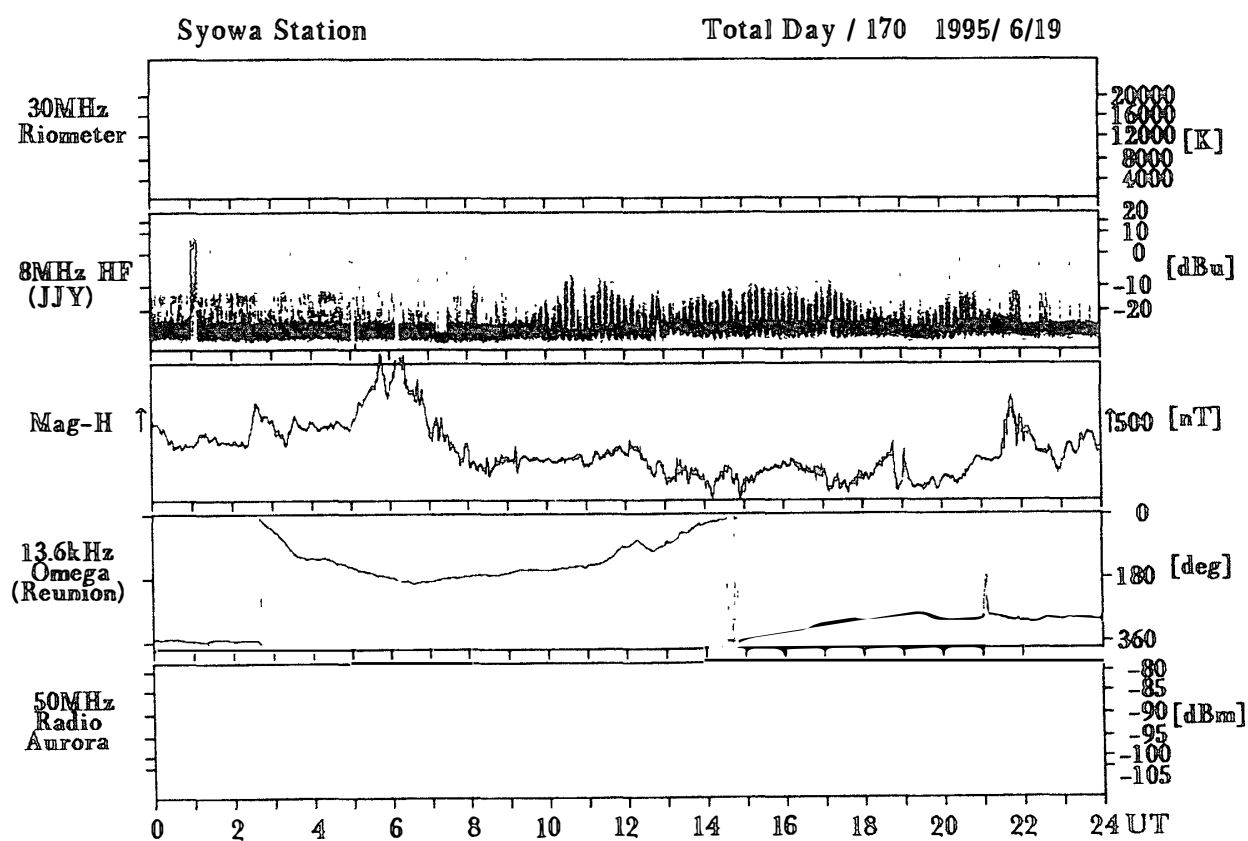
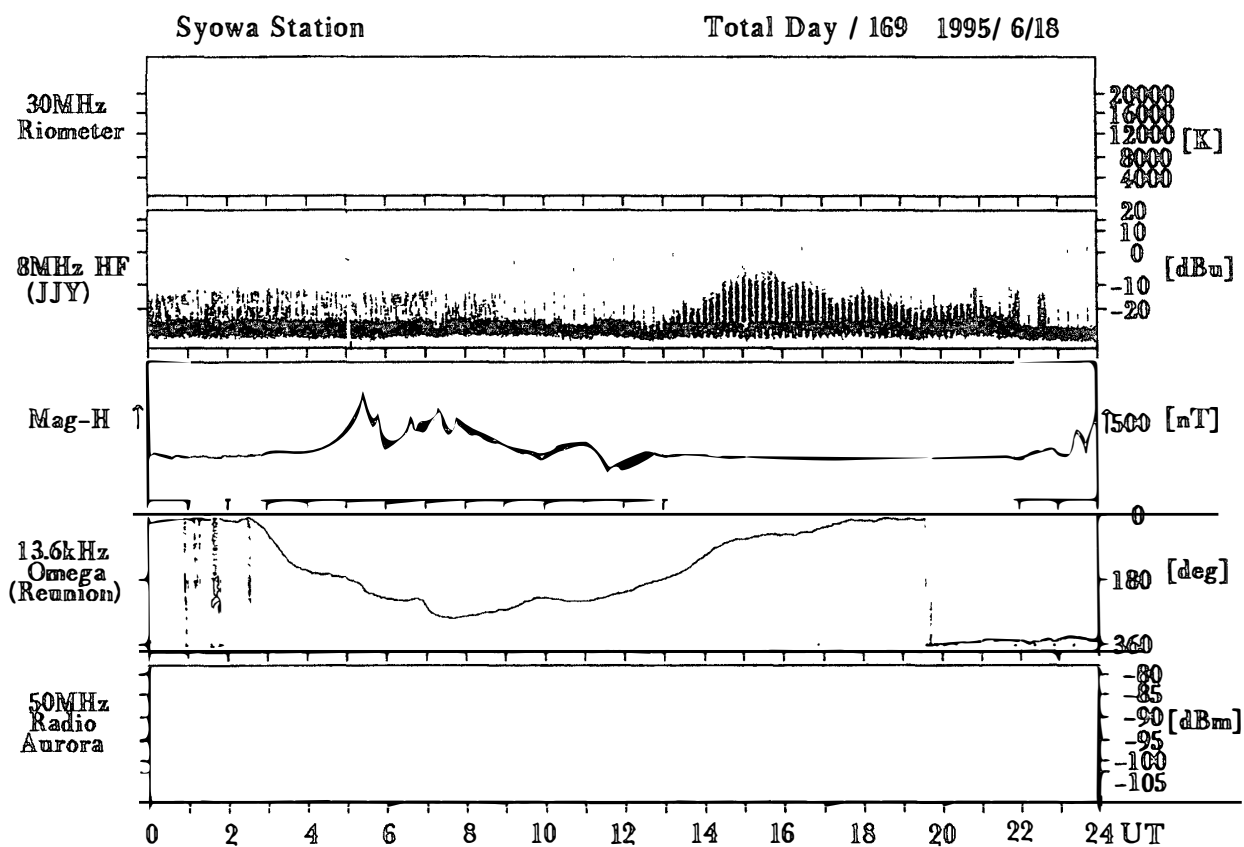
Total Day / 167 1995/ 6/16



Syowa Station

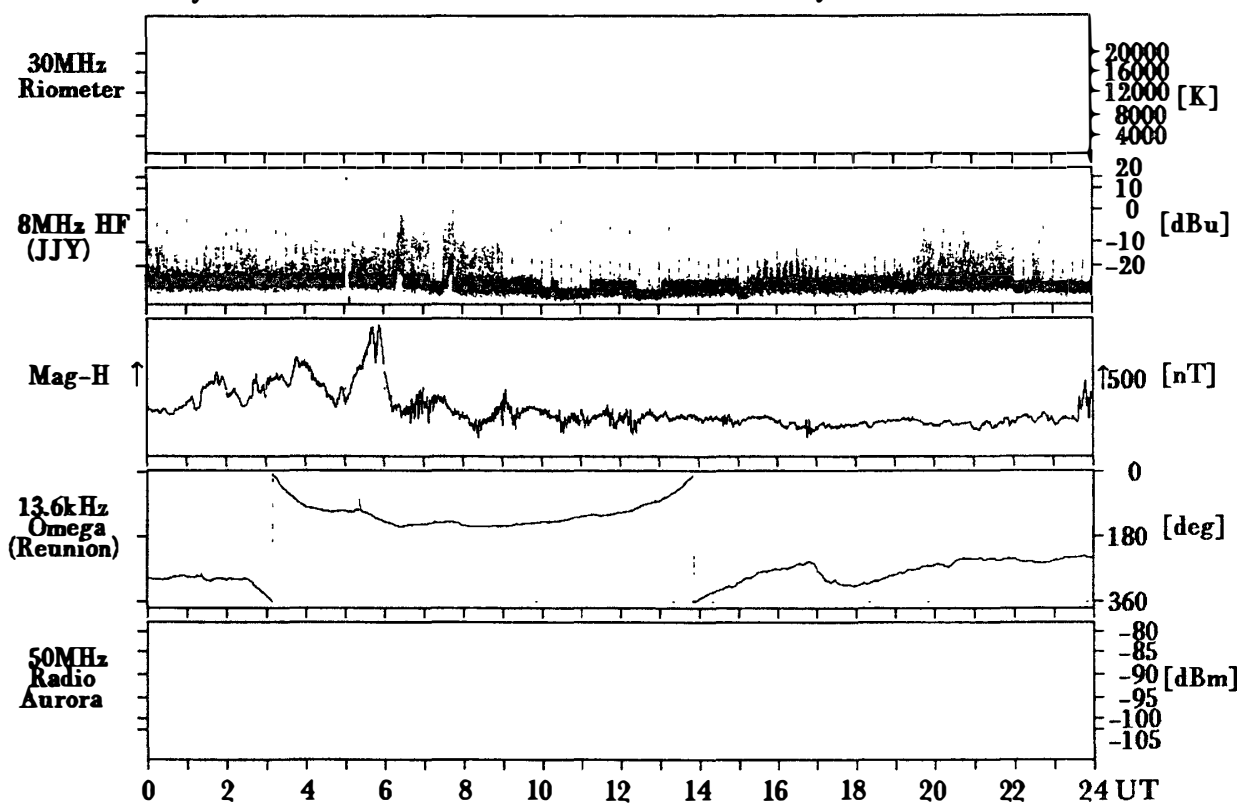
Total Day / 168 1995/ 6/17





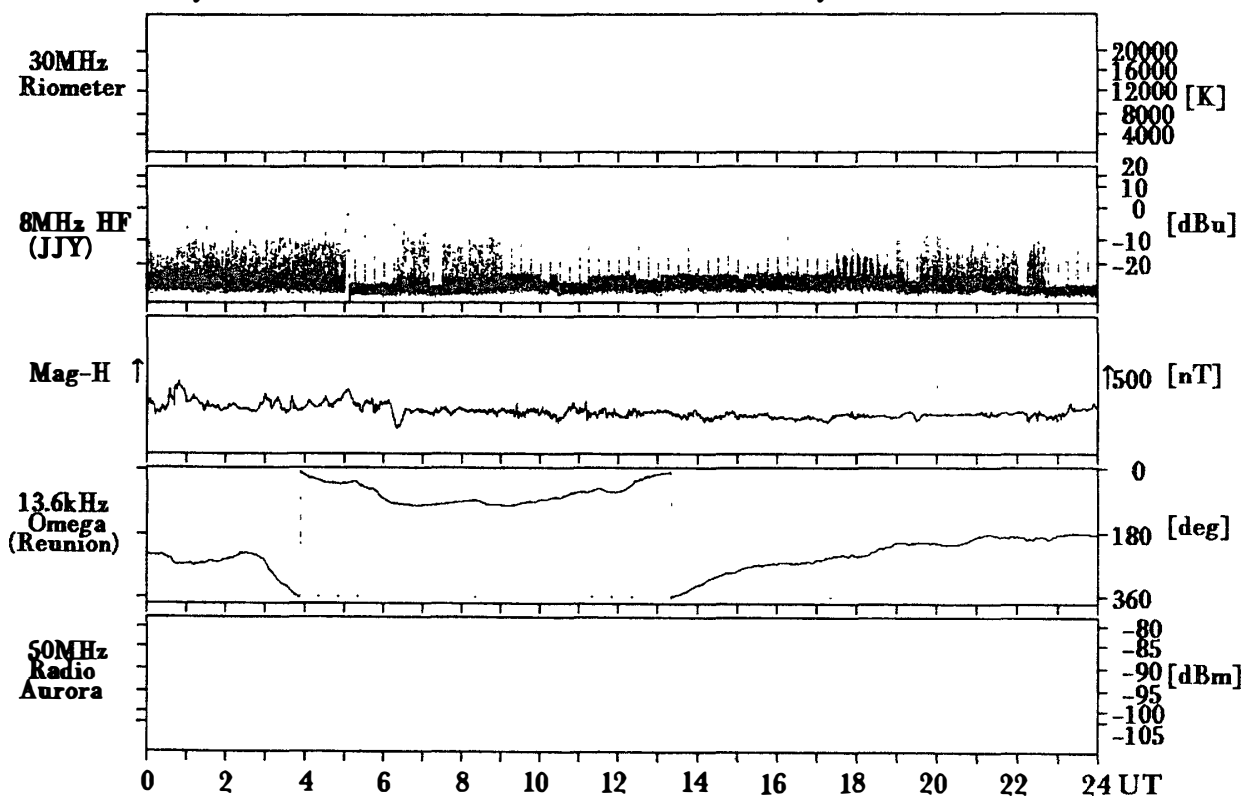
Syowa Station

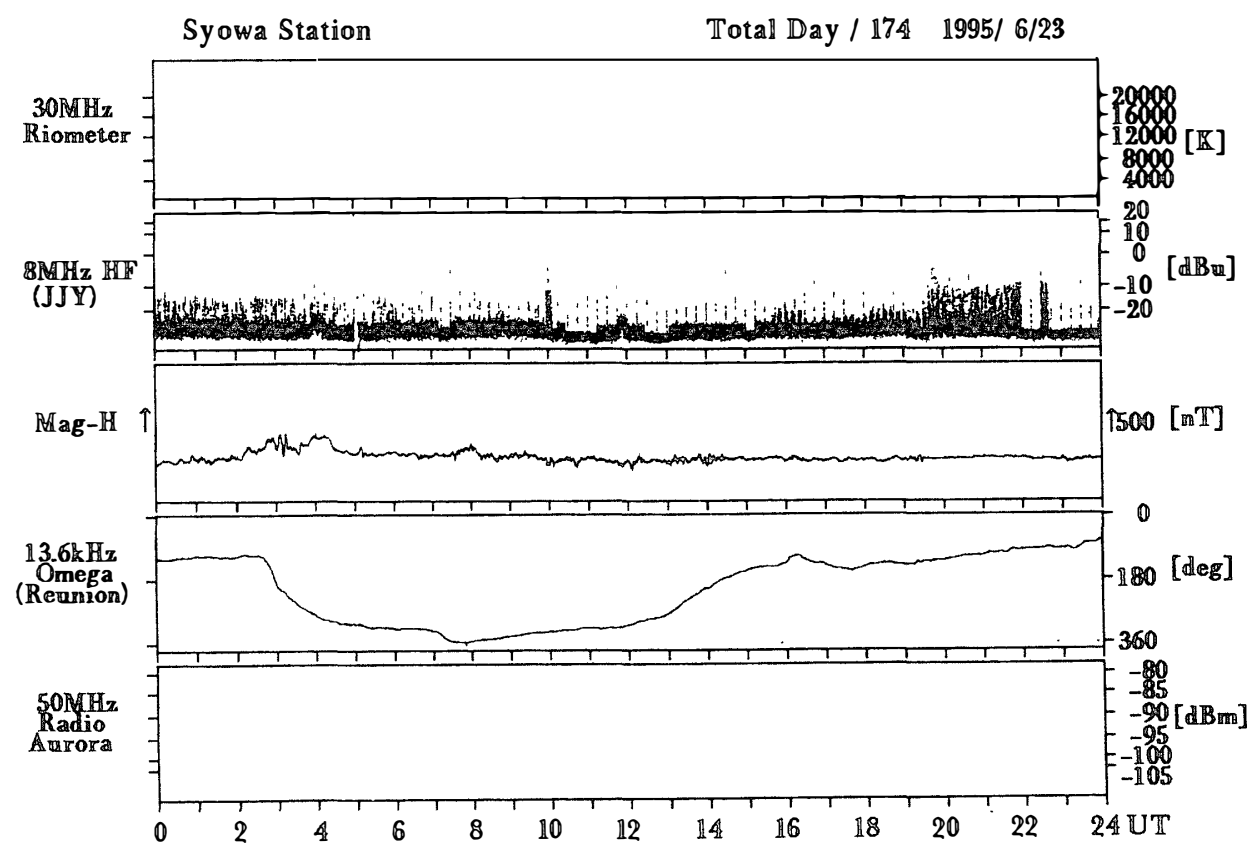
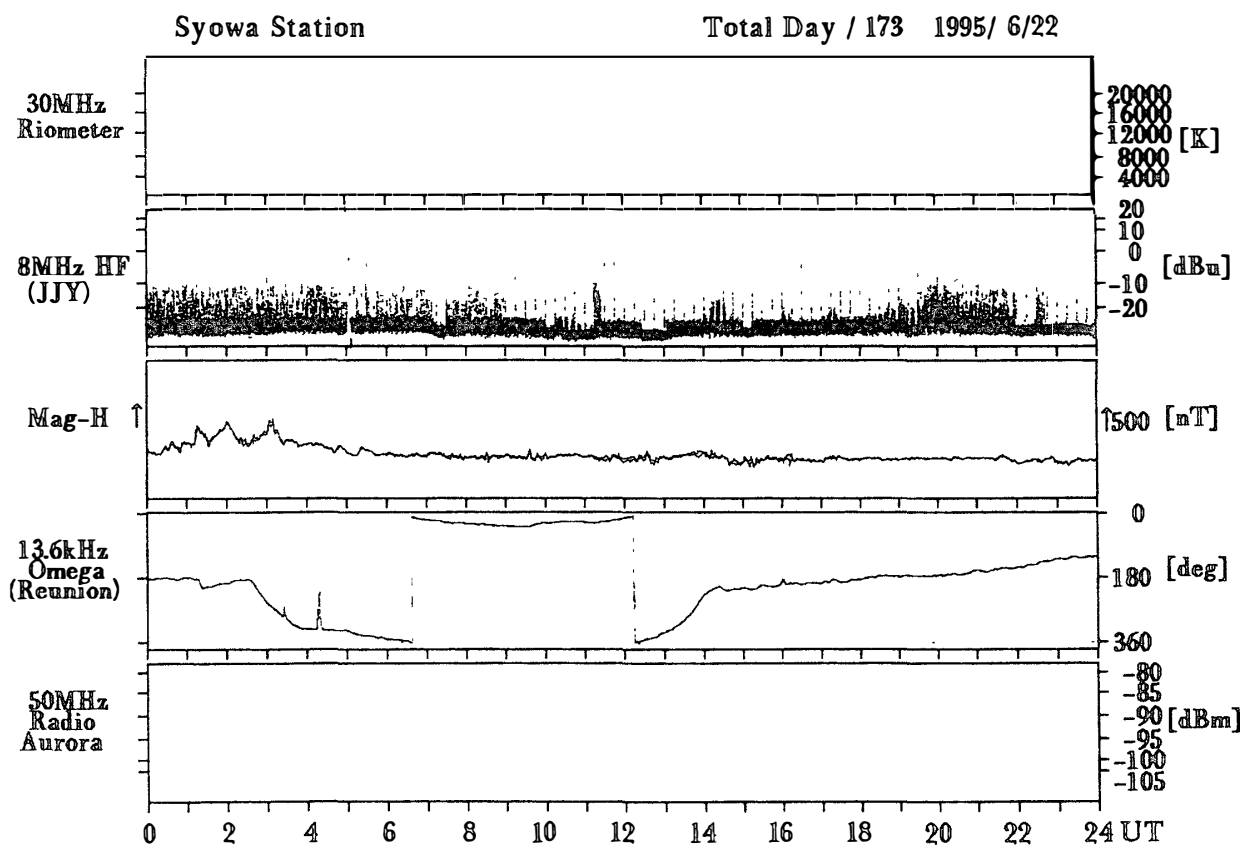
Total Day / 171 1995/ 6/20

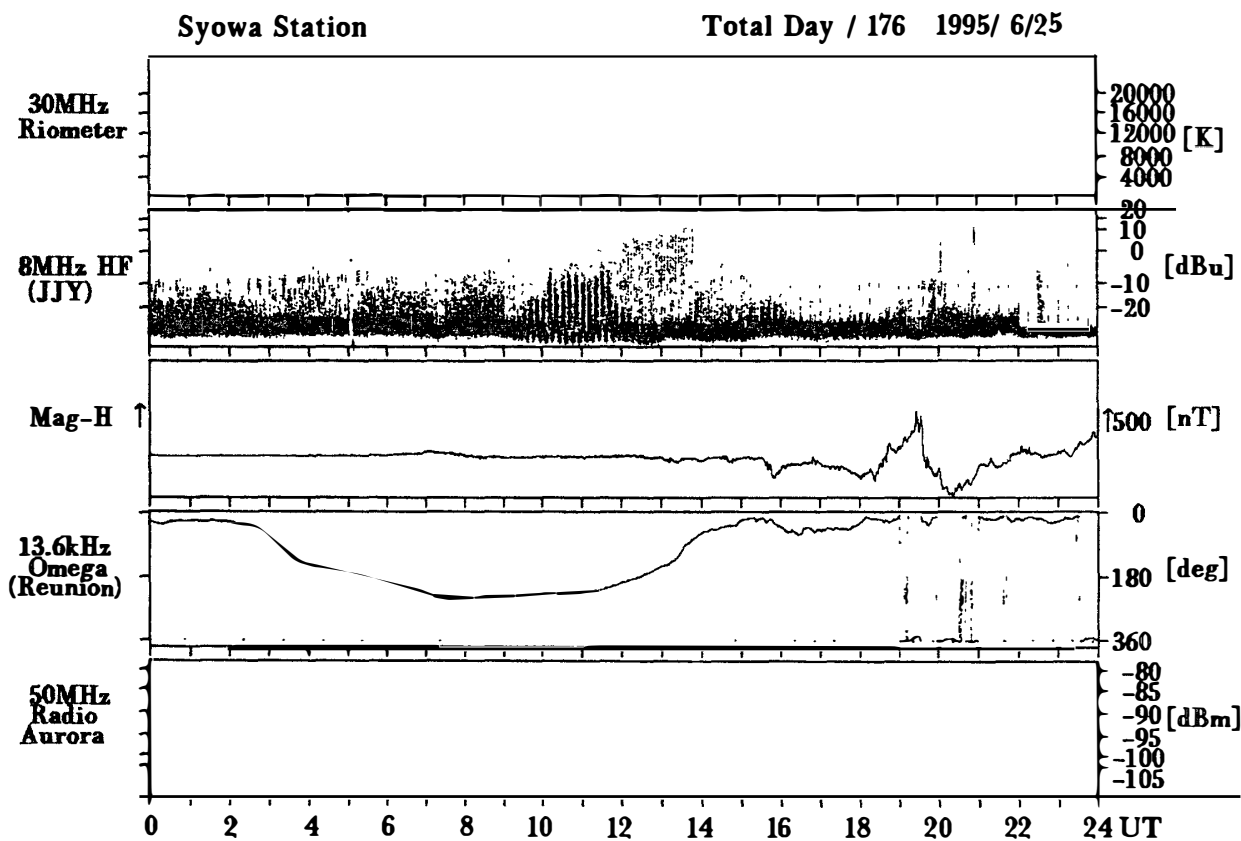
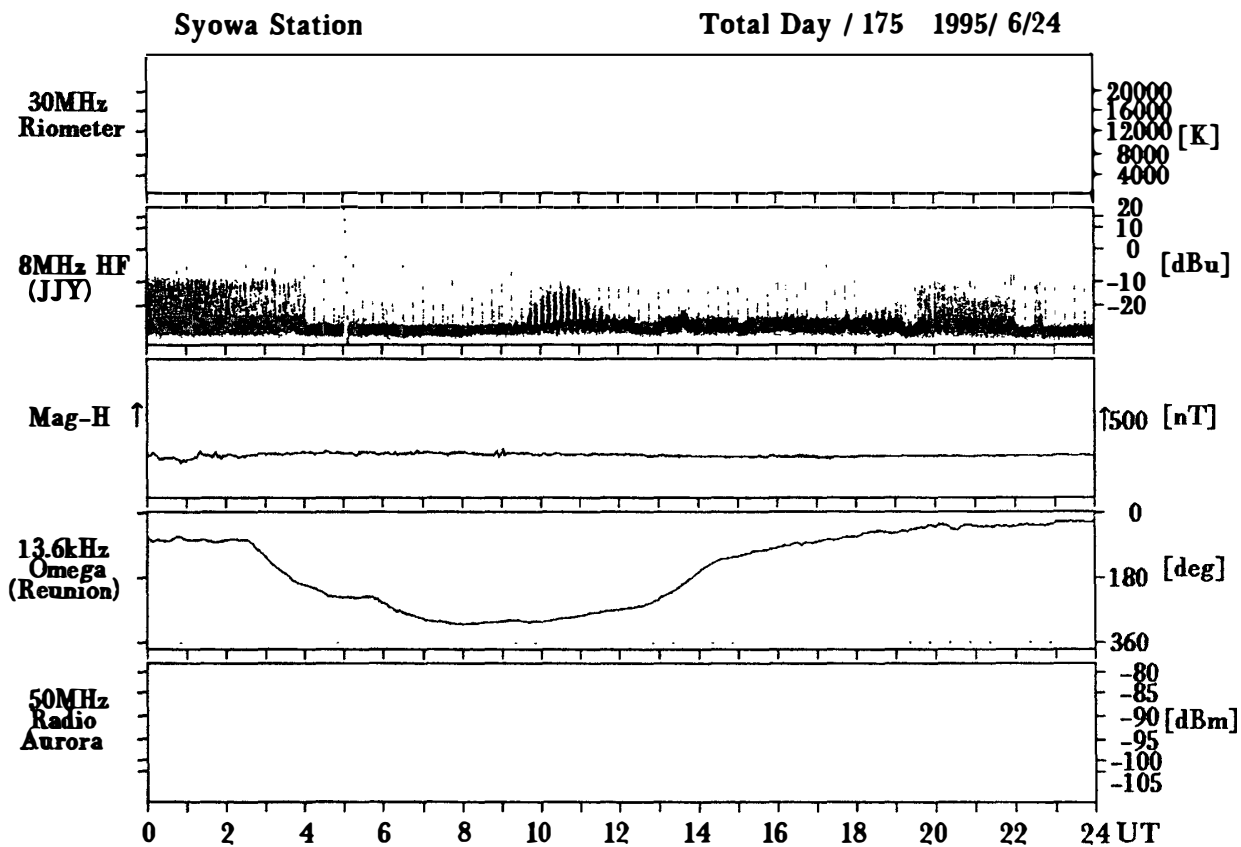


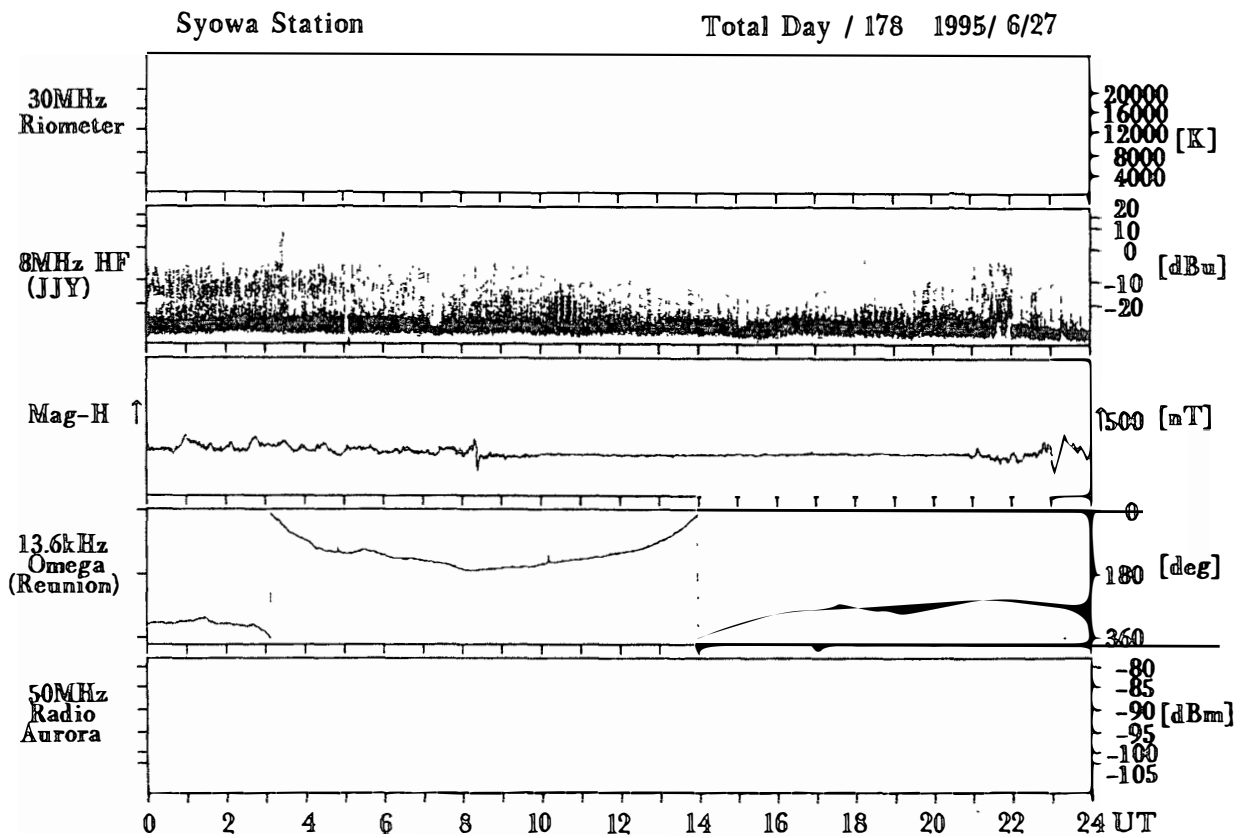
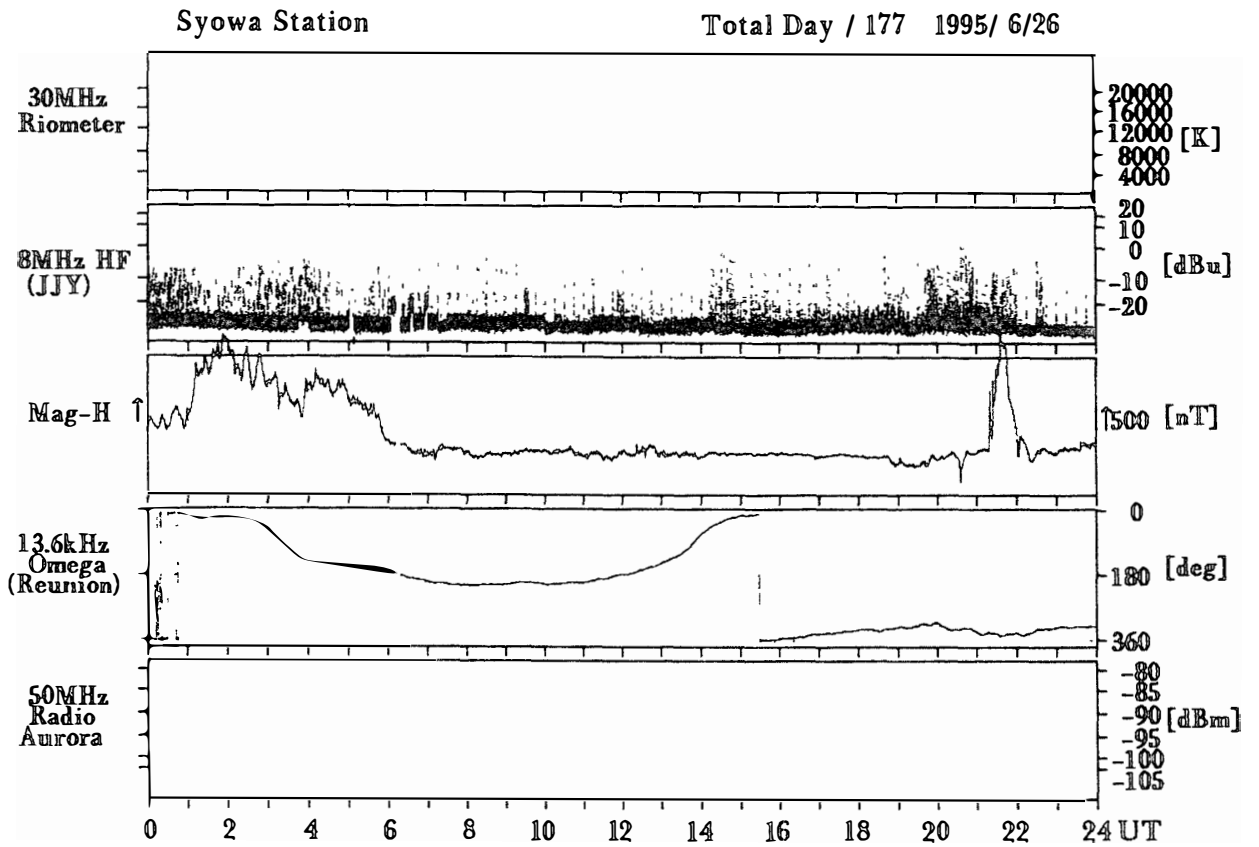
Syowa Station

Total Day / 172 1995/ 6/21



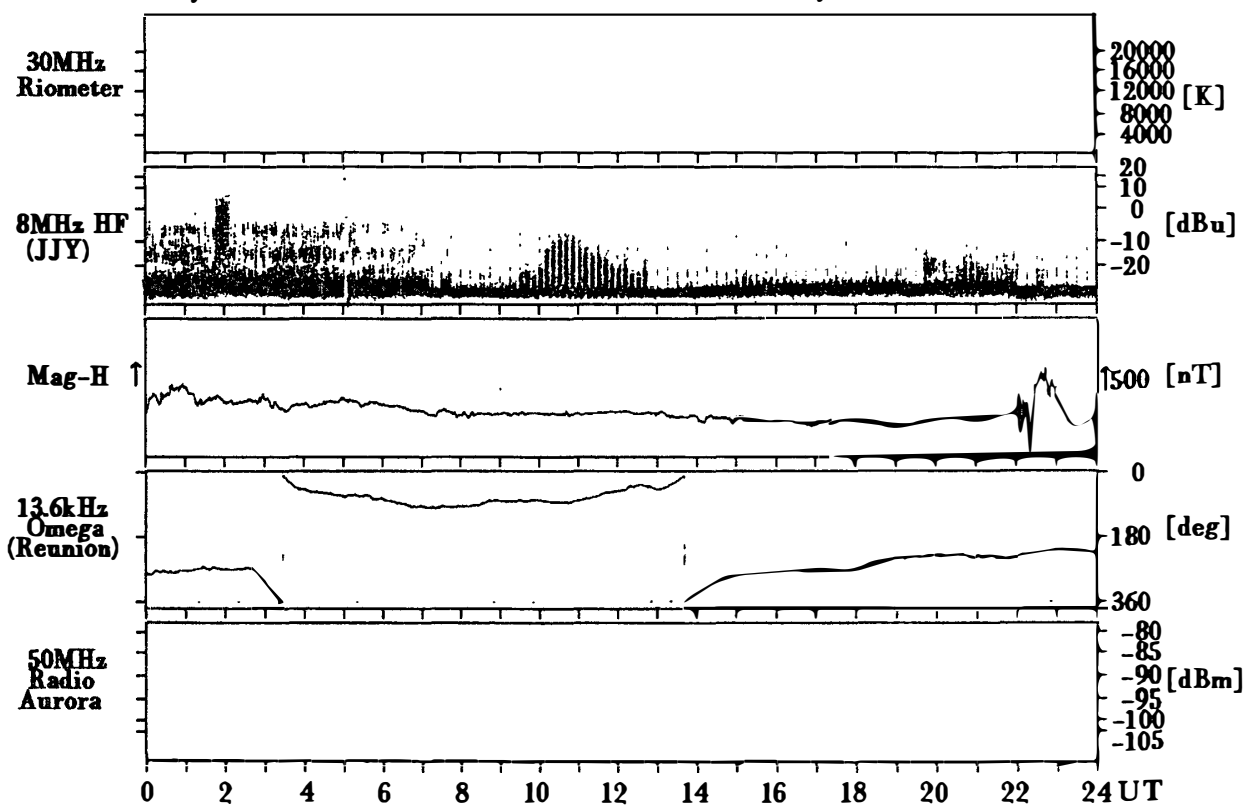






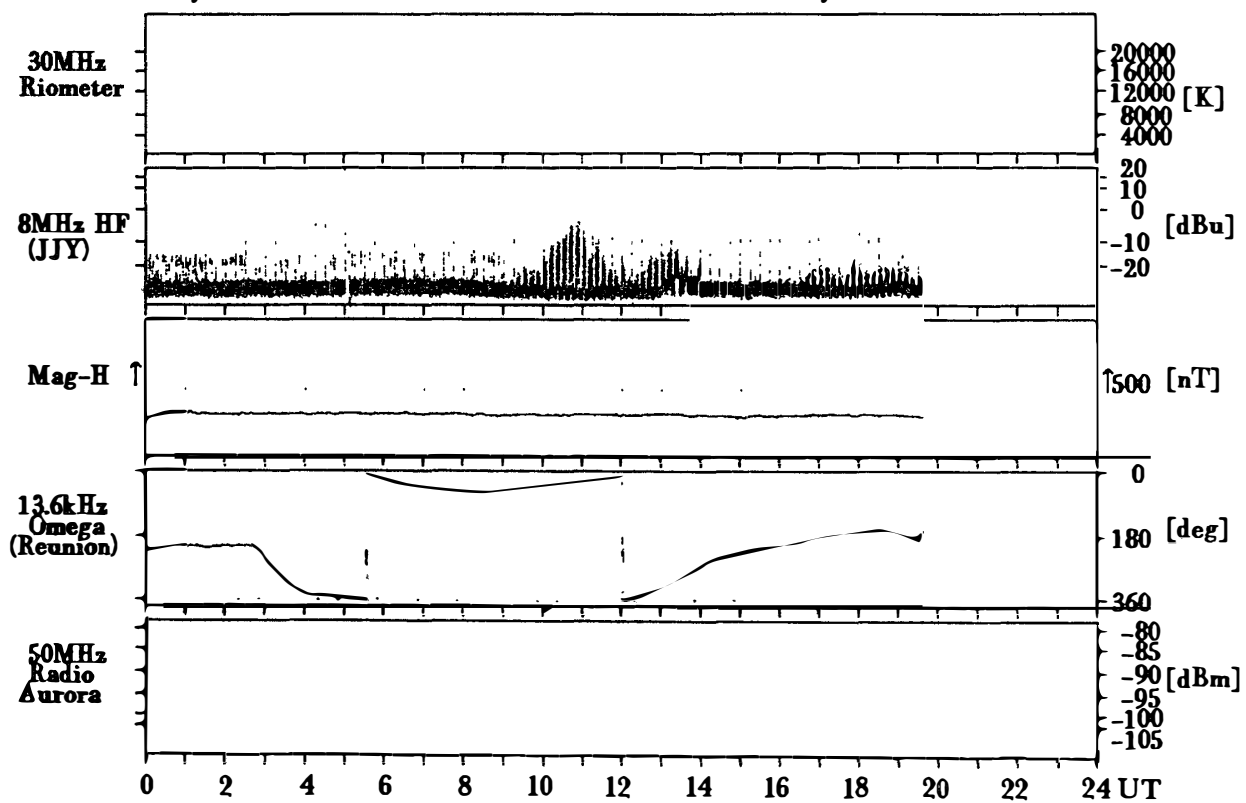
Syowa Station

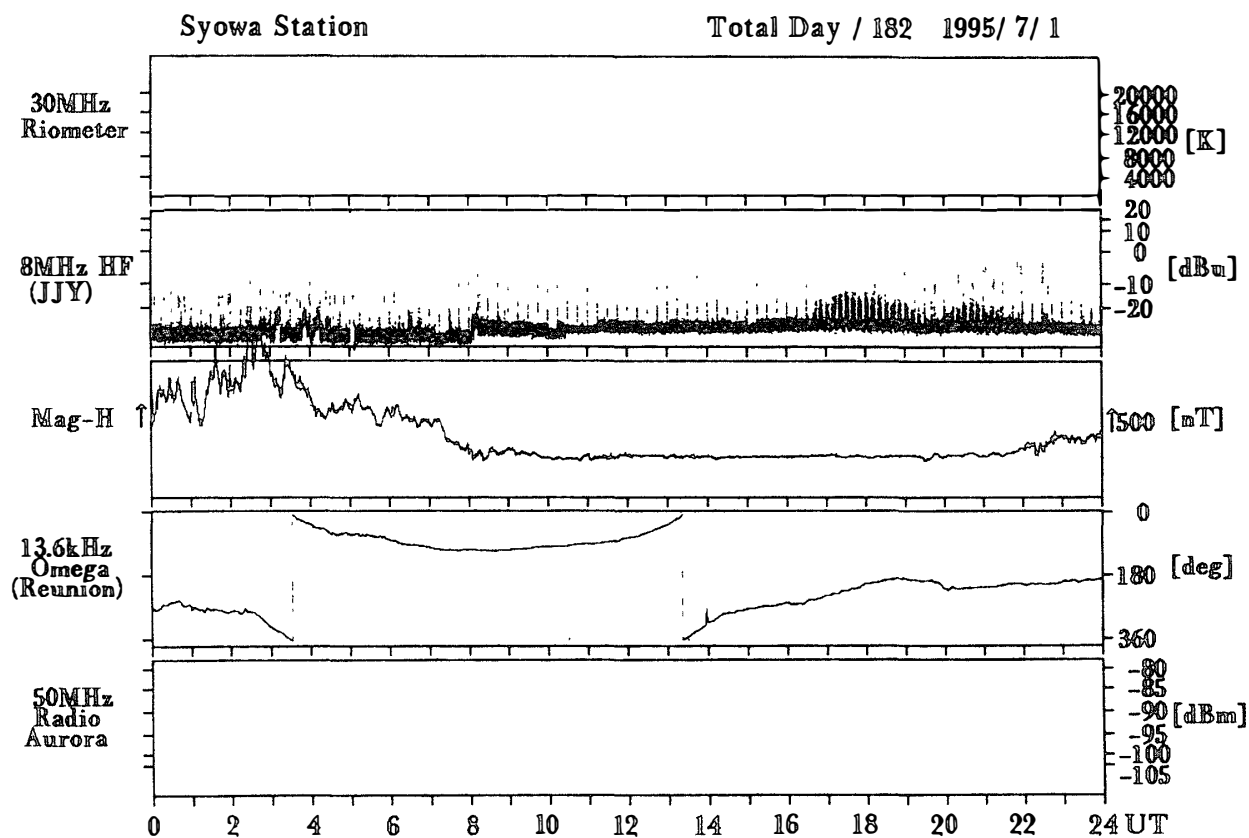
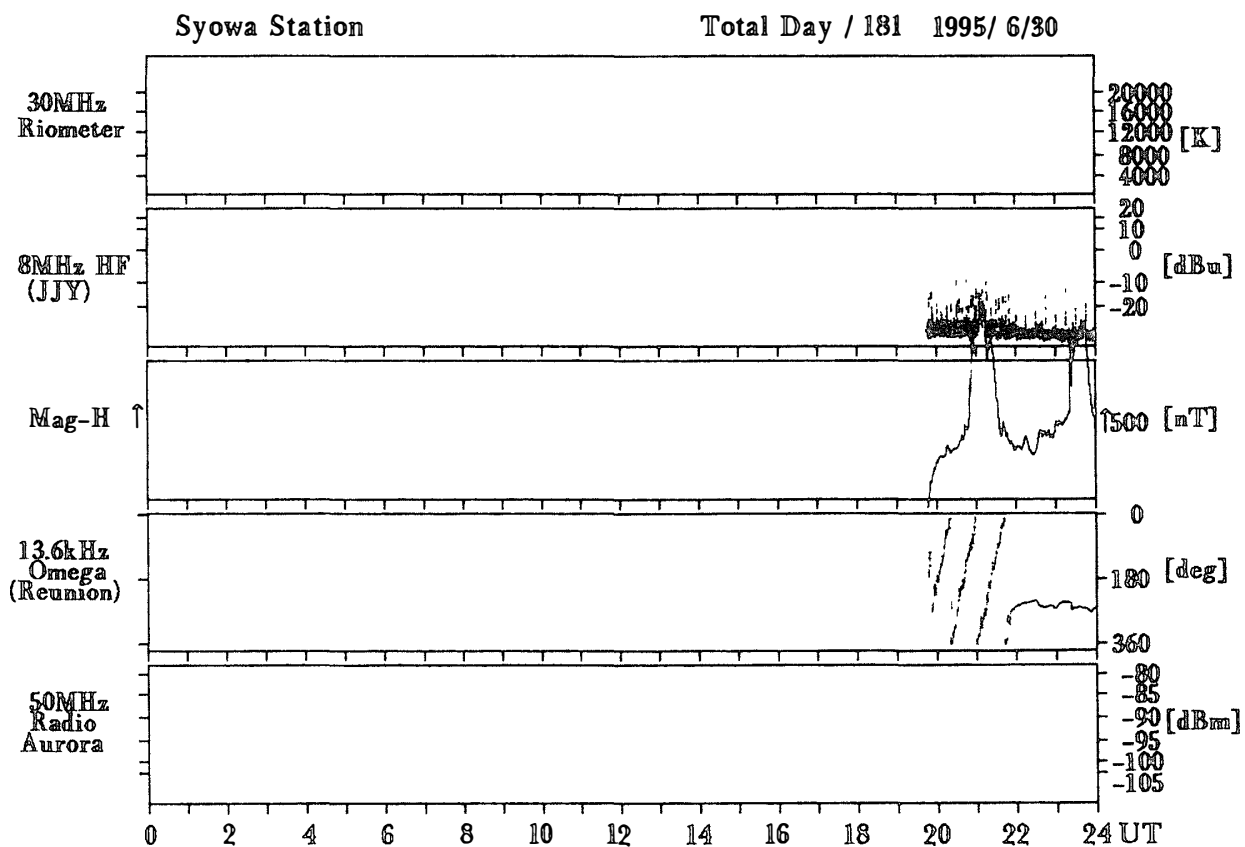
Total Day / 179 1995/ 6/28

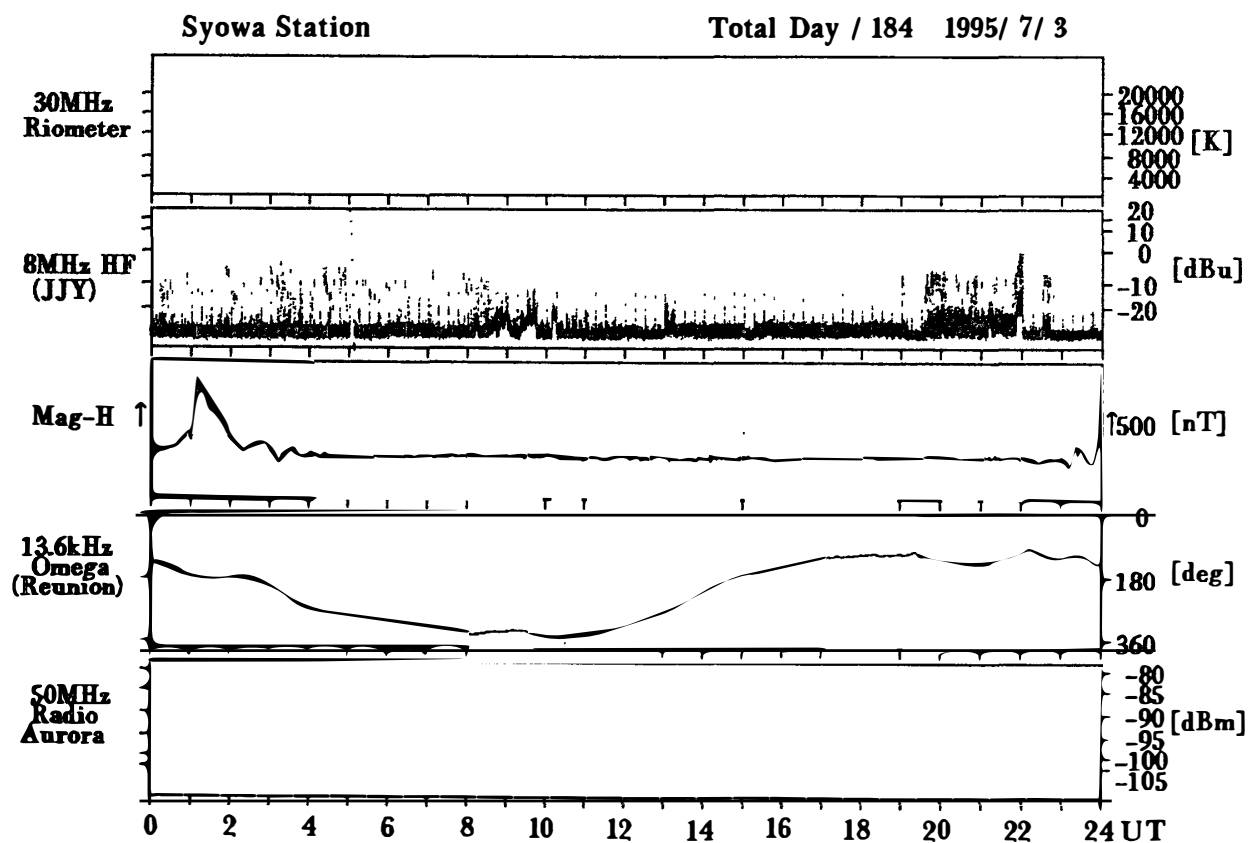
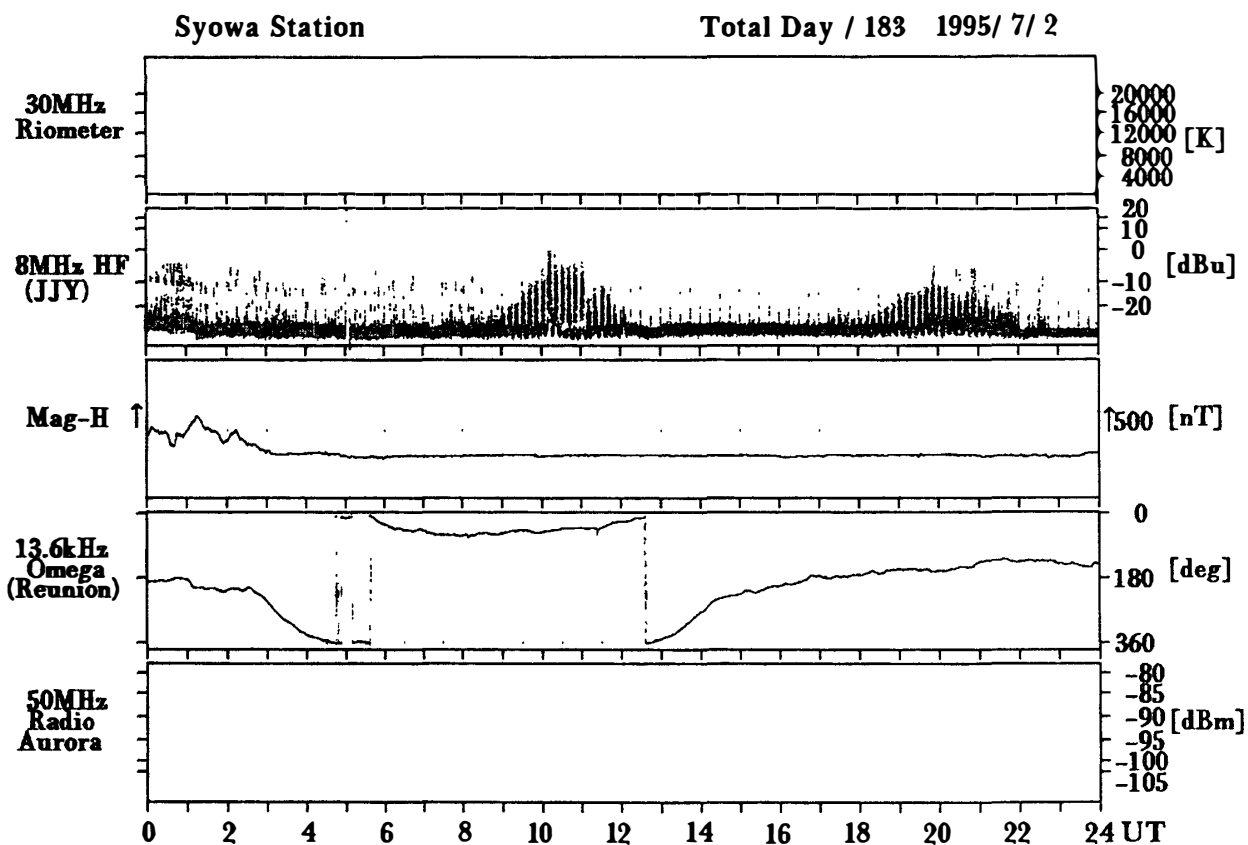


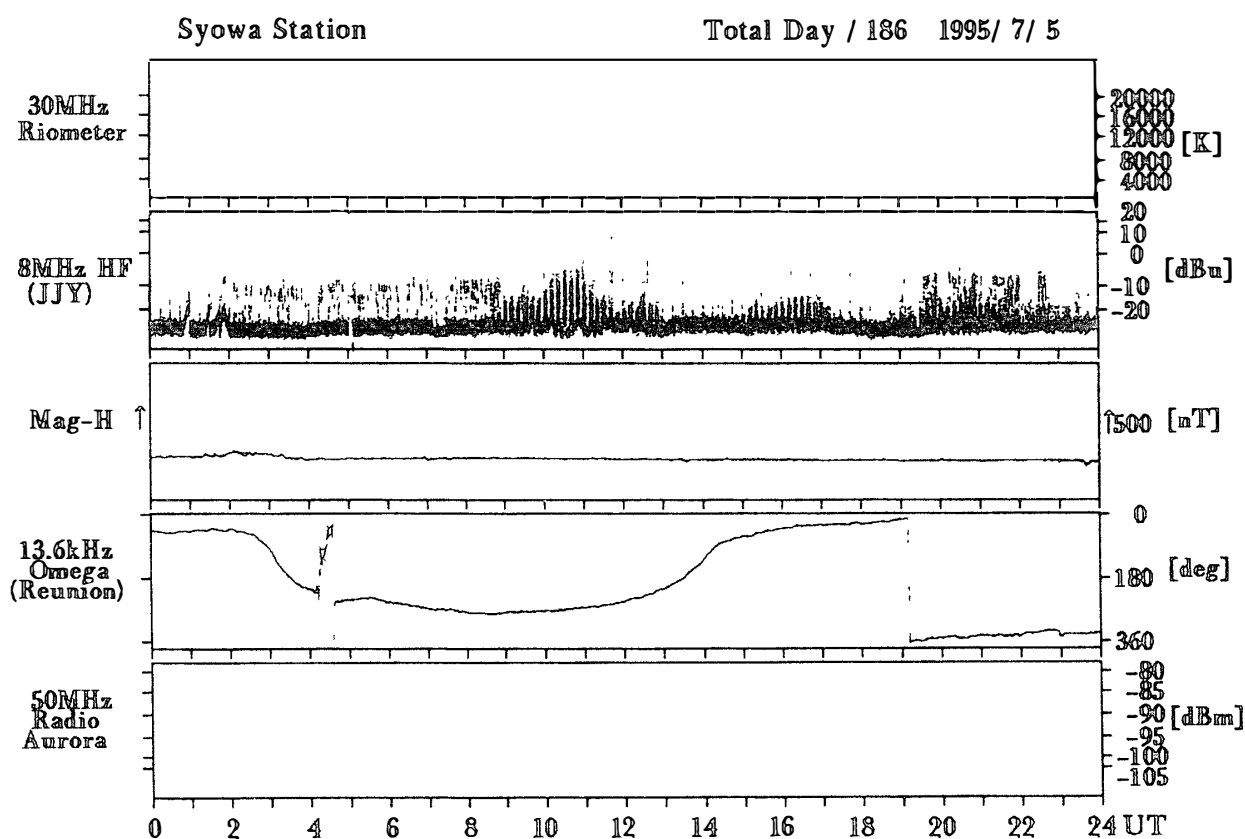
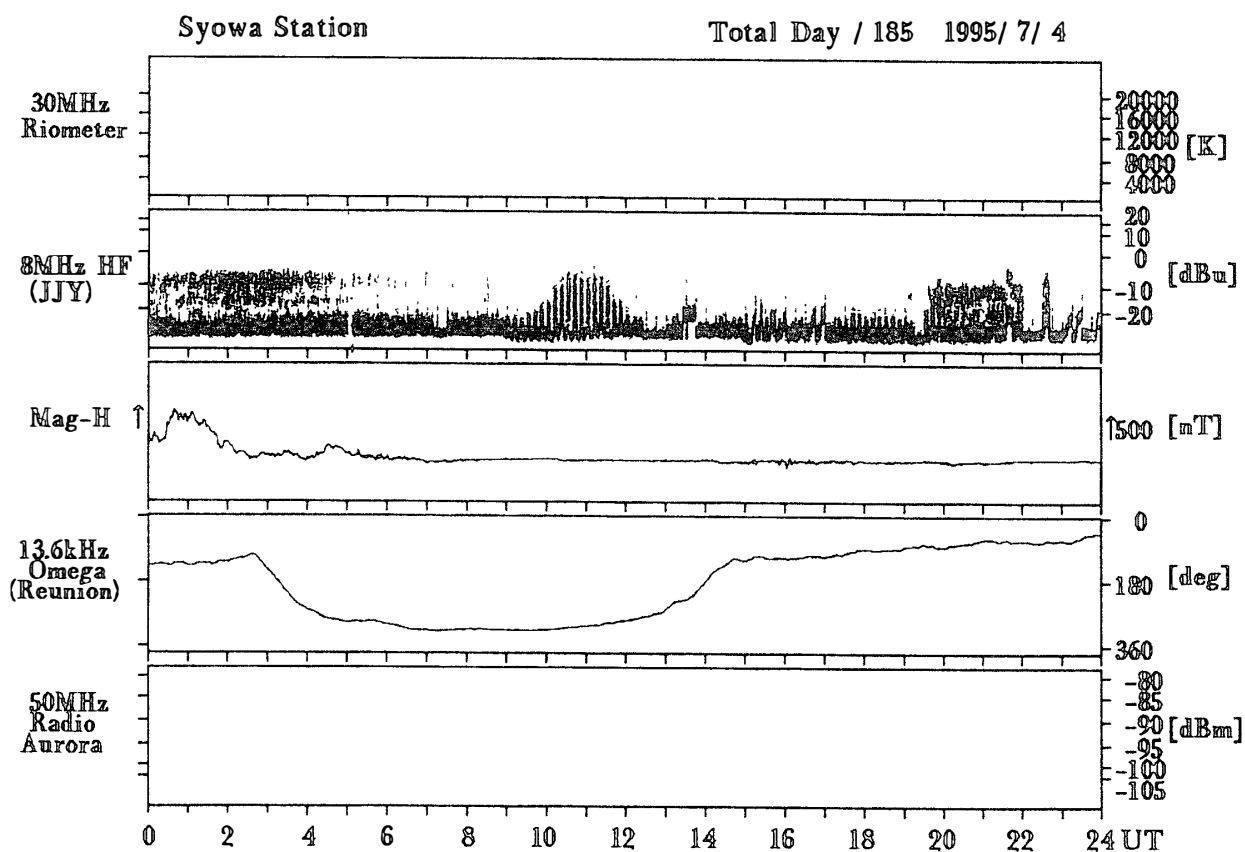
Syowa Station

Total Day / 180 1995/ 6/29



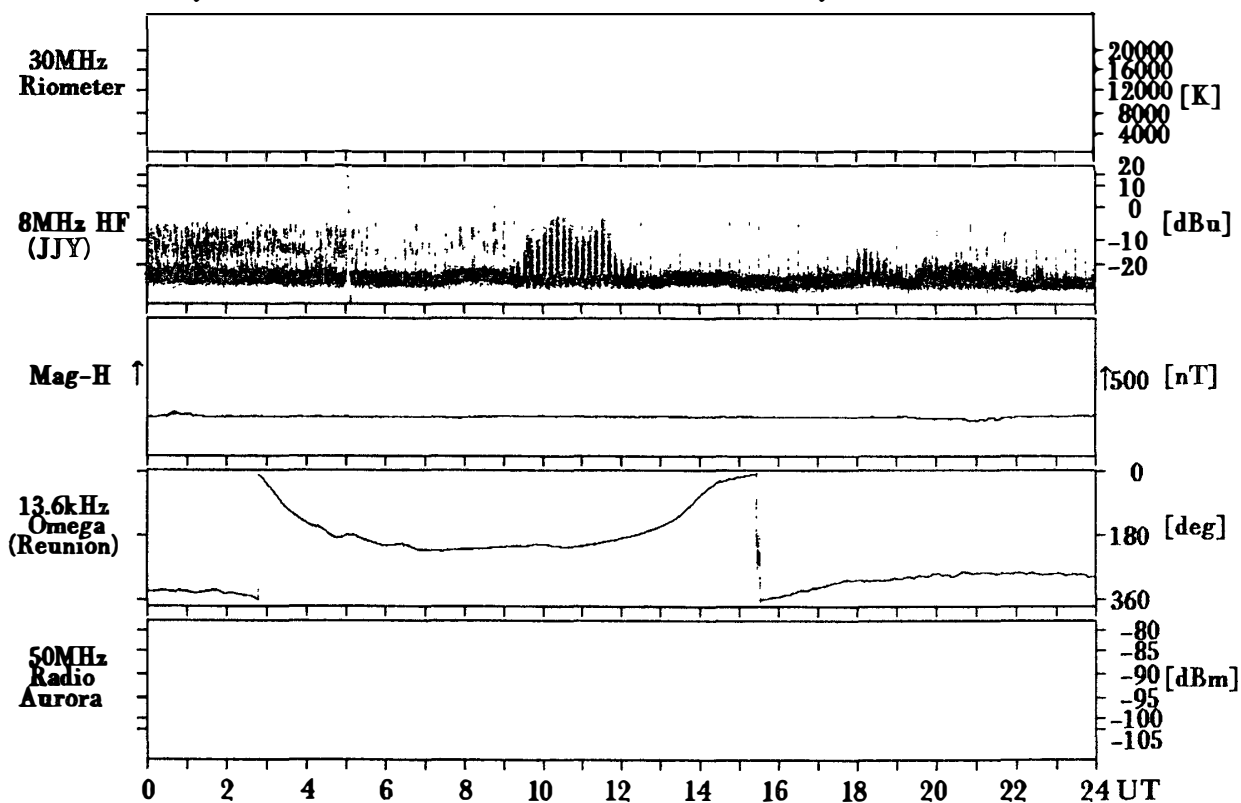






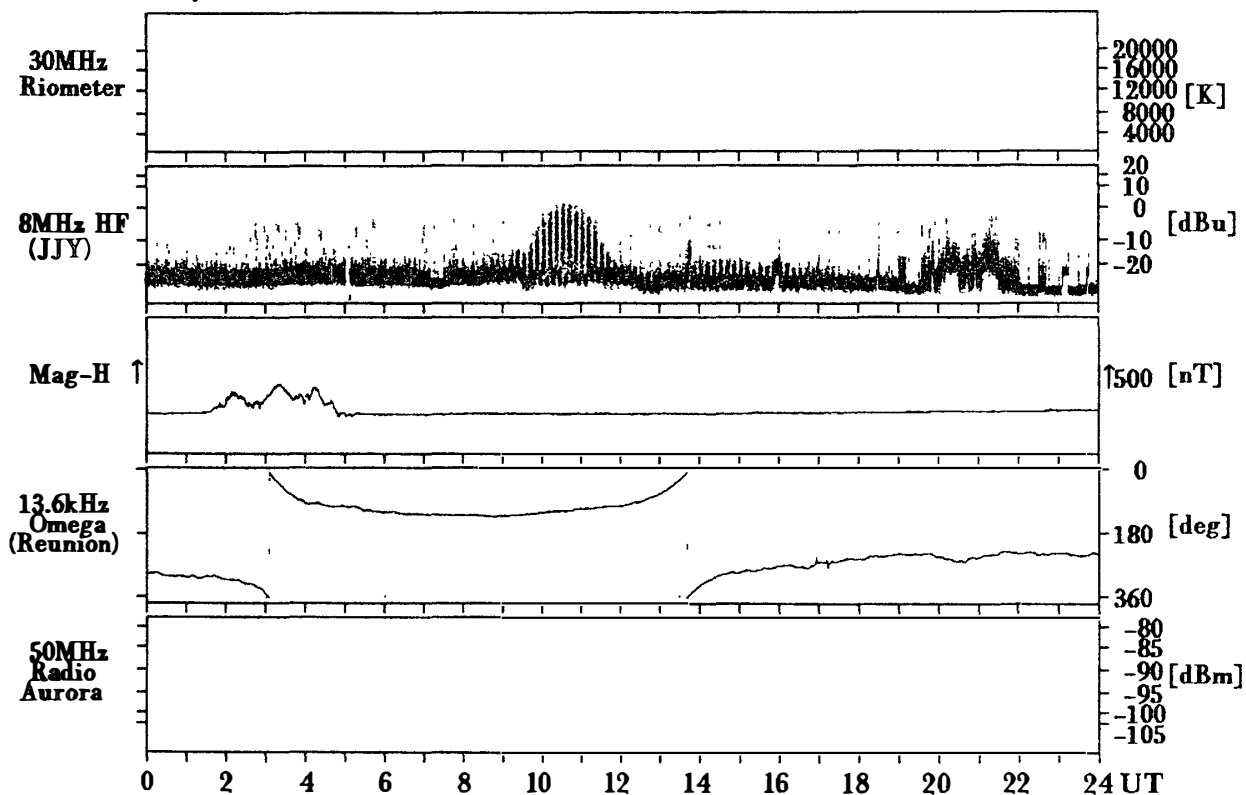
Syowa Station

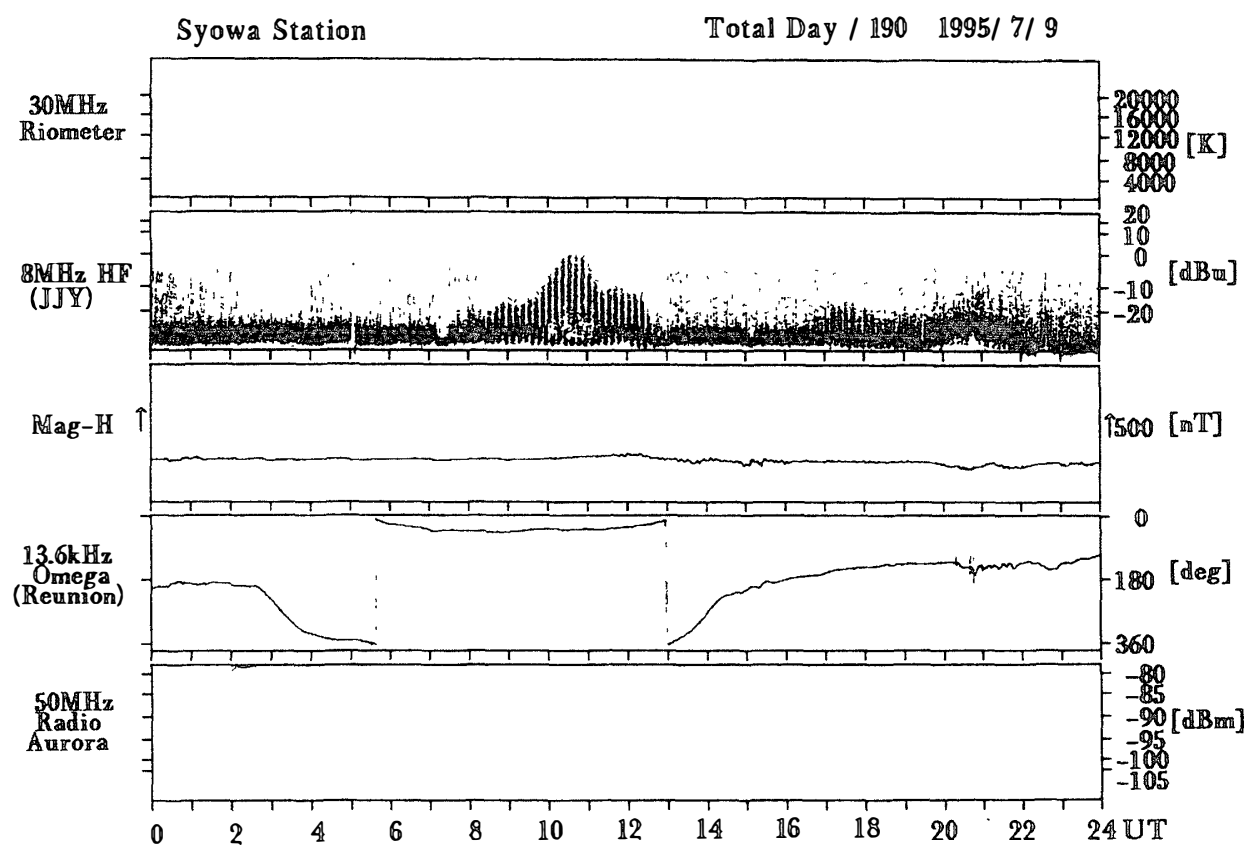
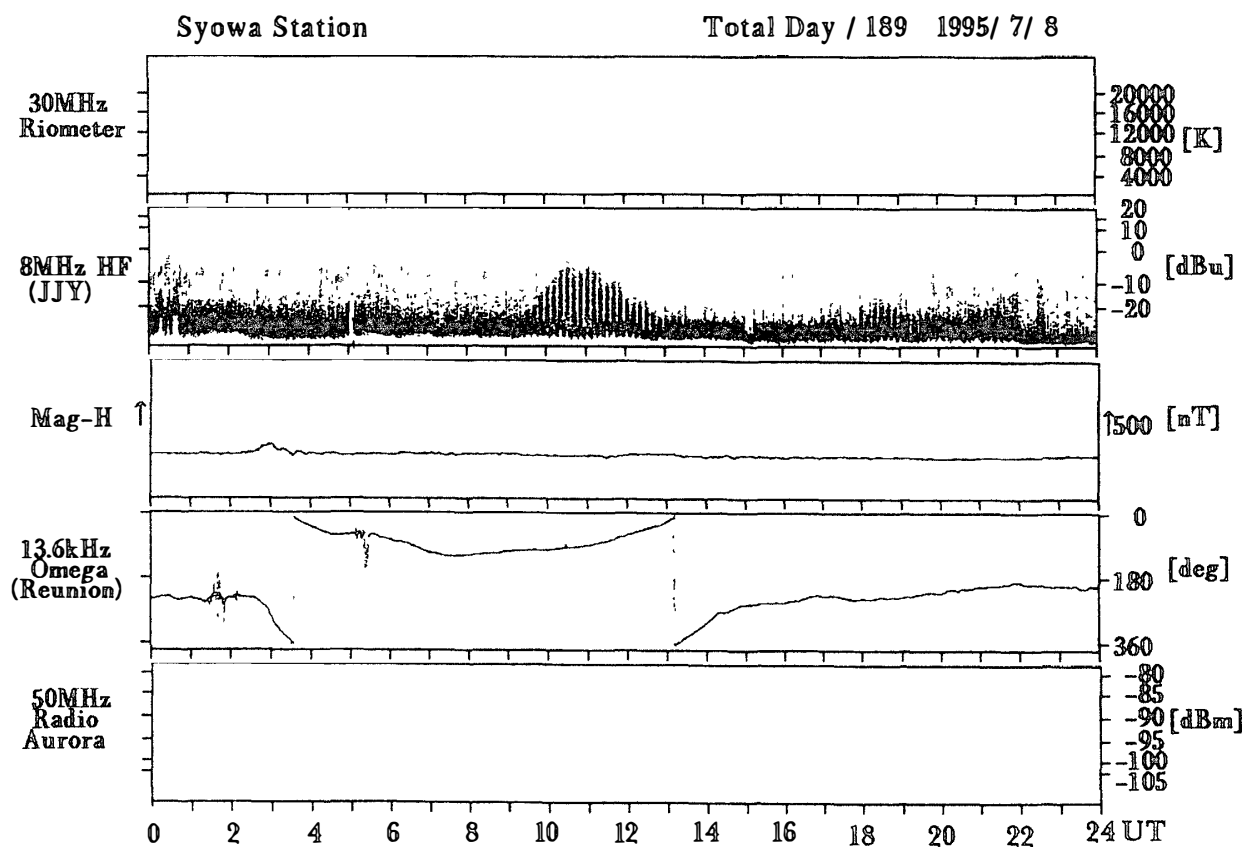
Total Day / 187 1995/ 7/ 6

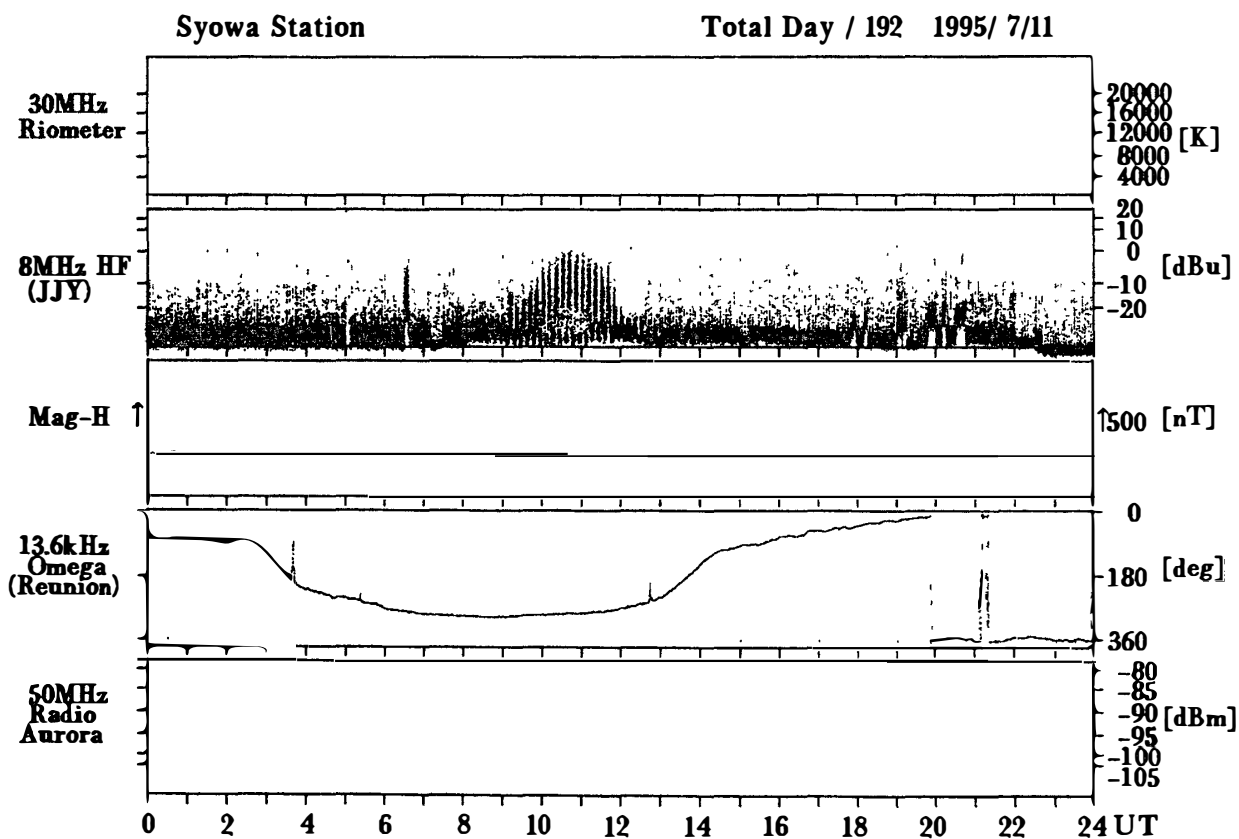
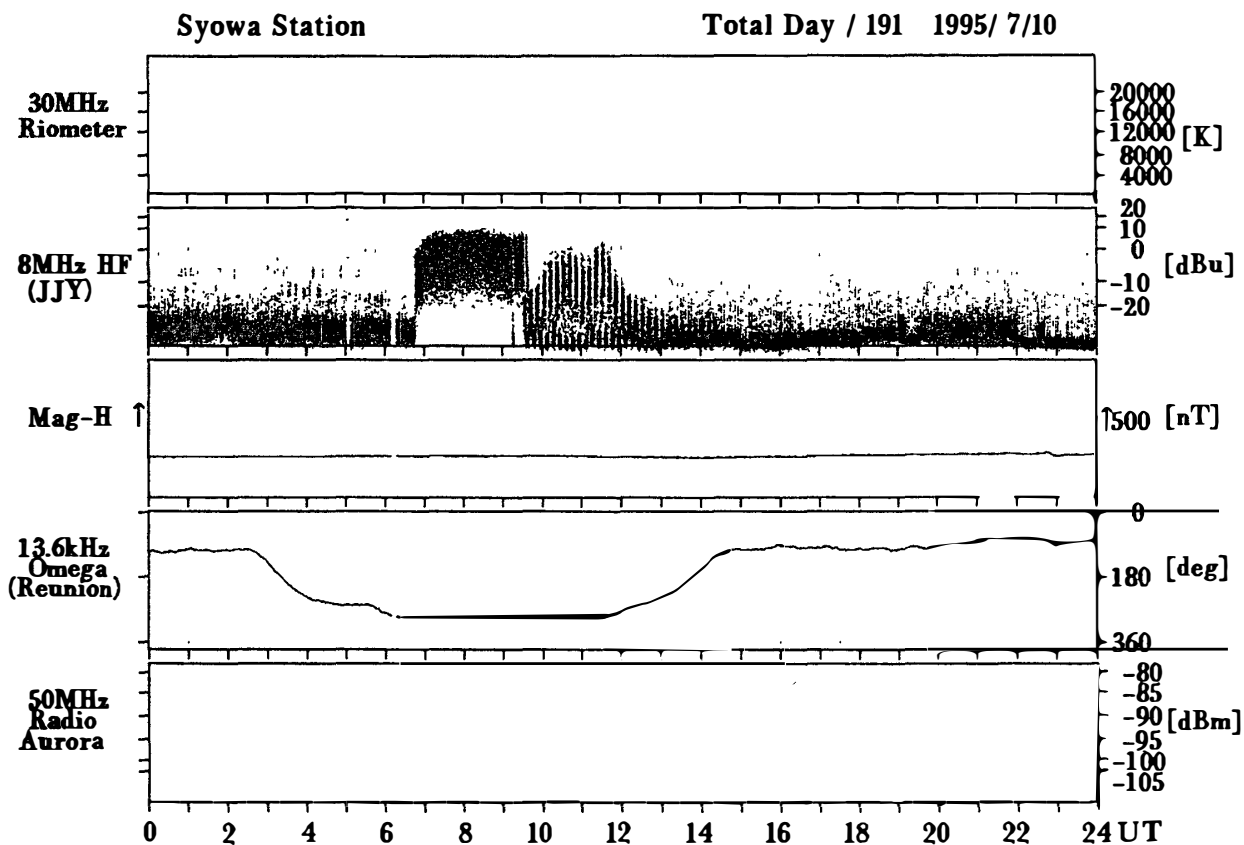


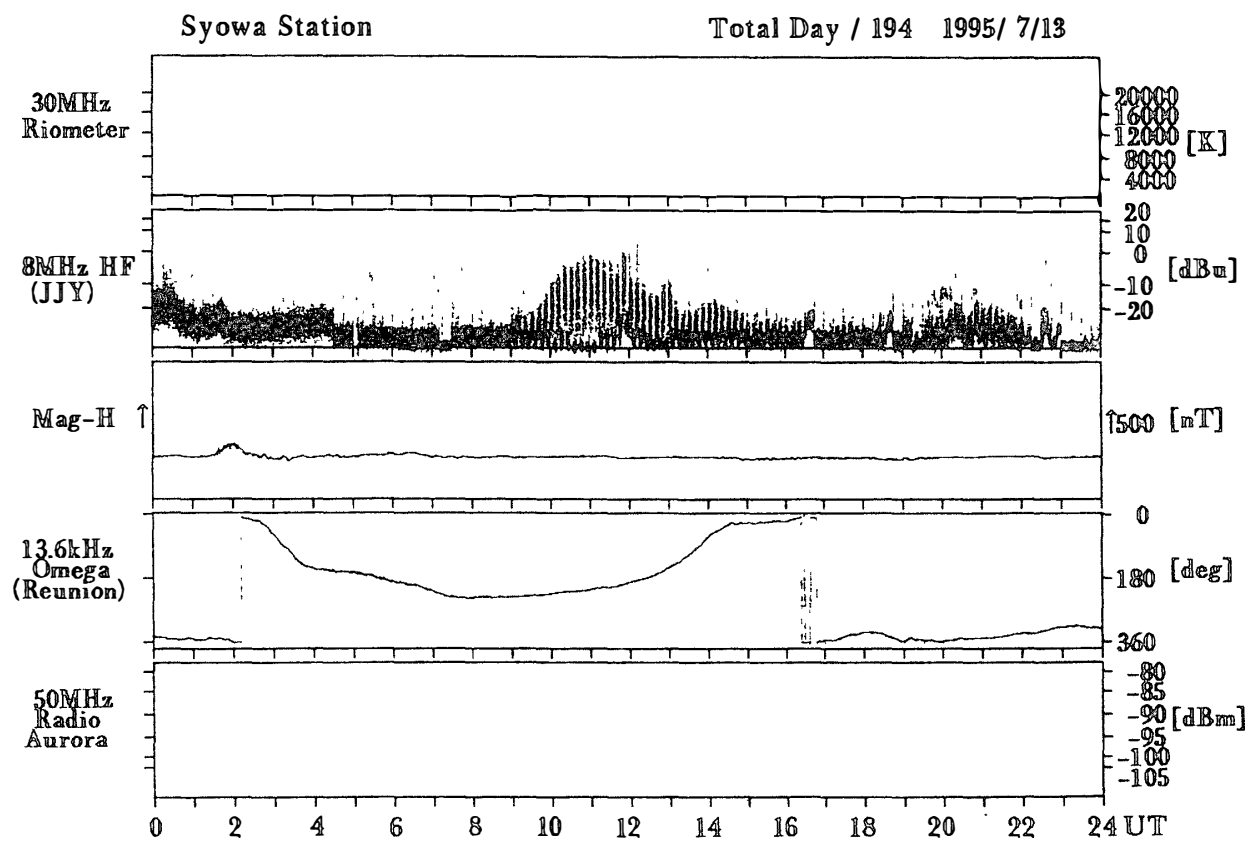
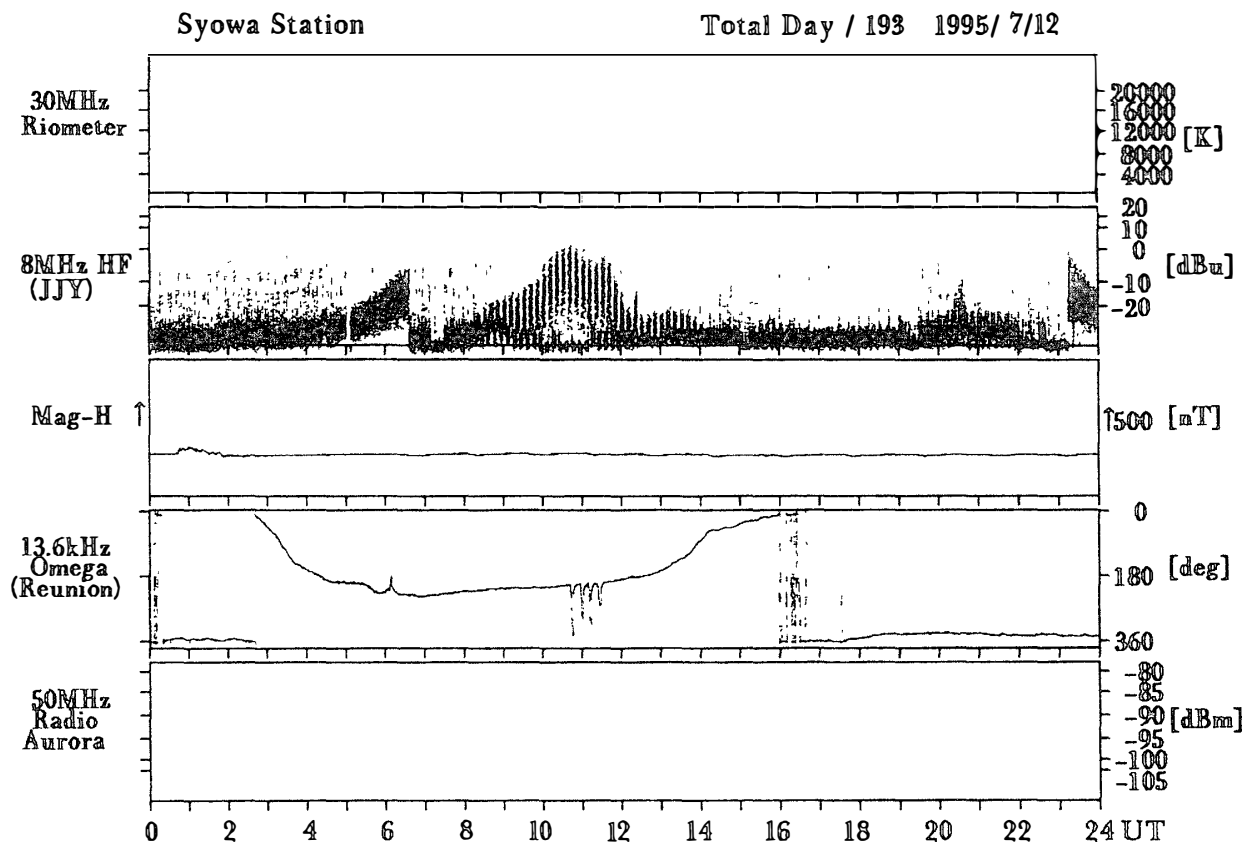
Syowa Station

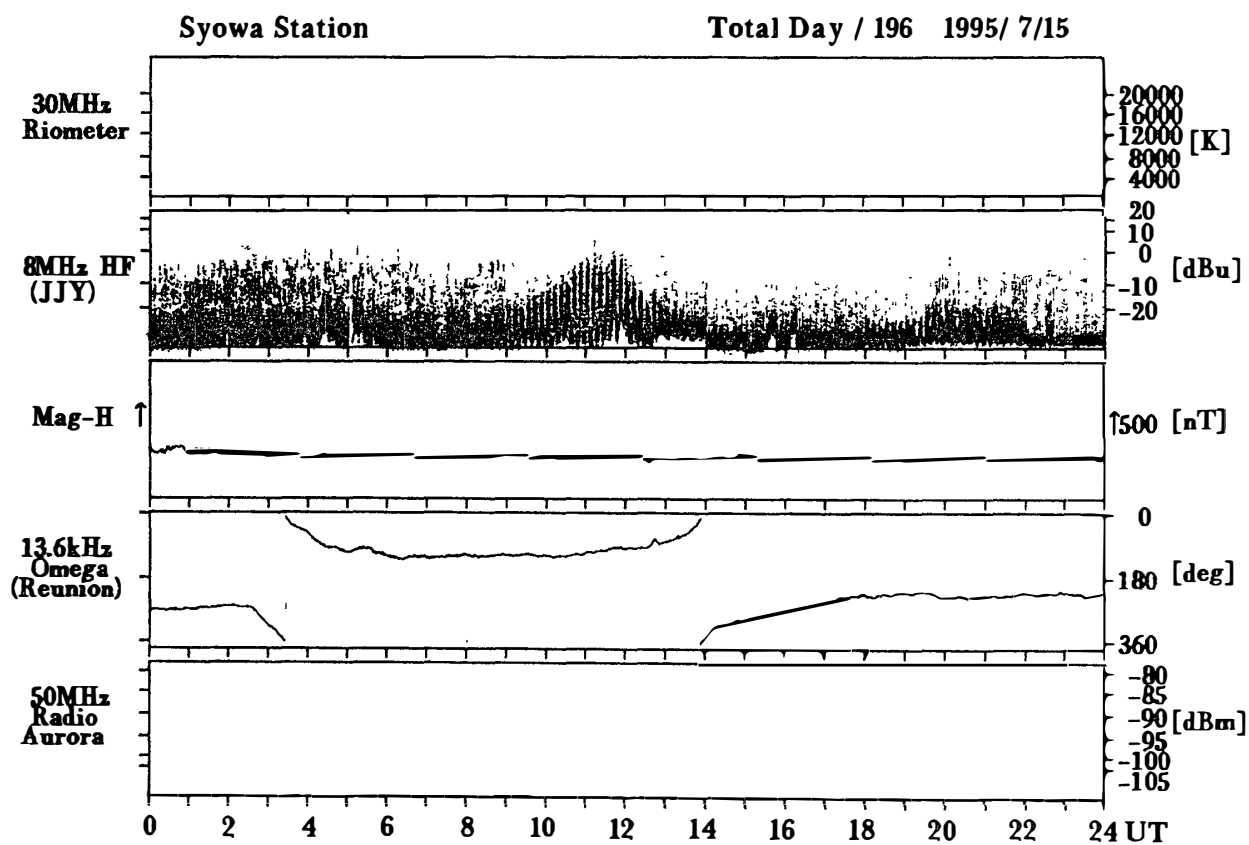
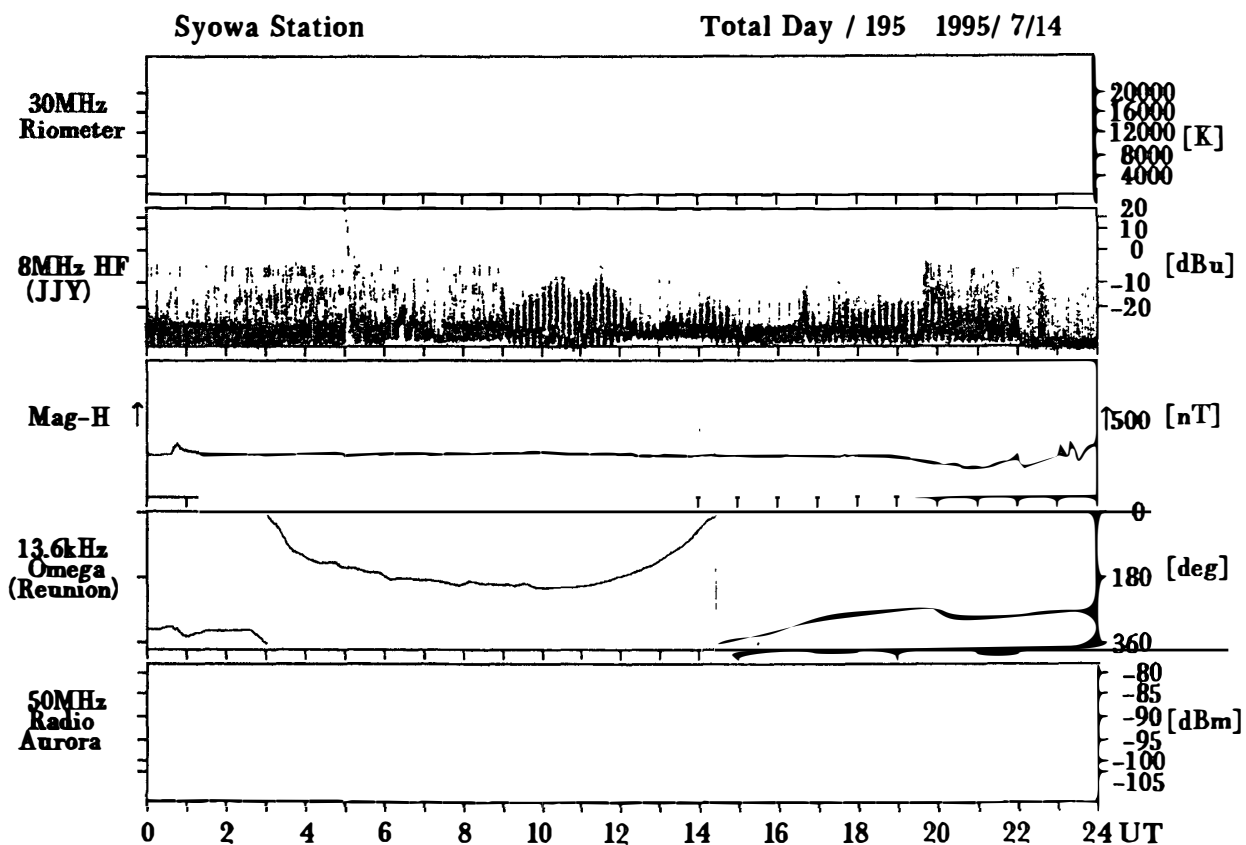
Total Day / 188 1995/ 7/ 7

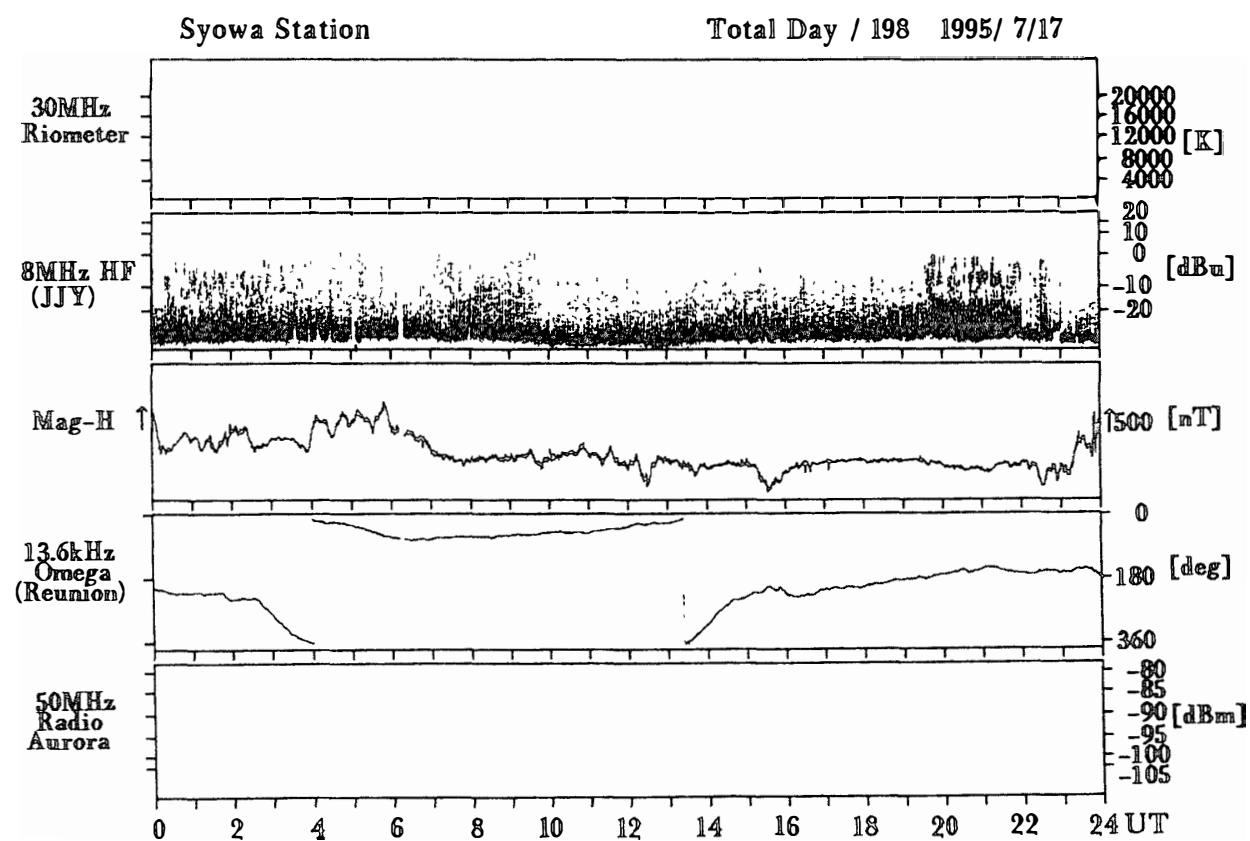
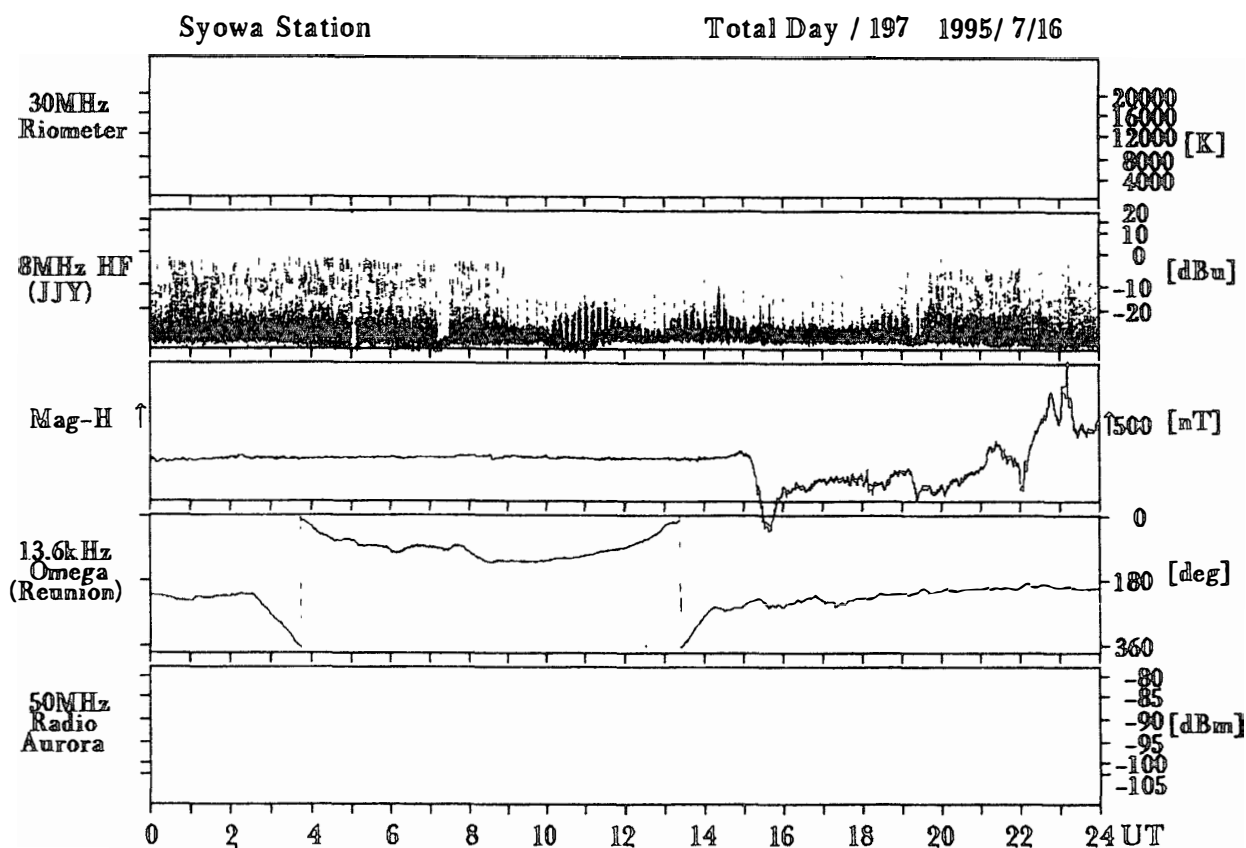






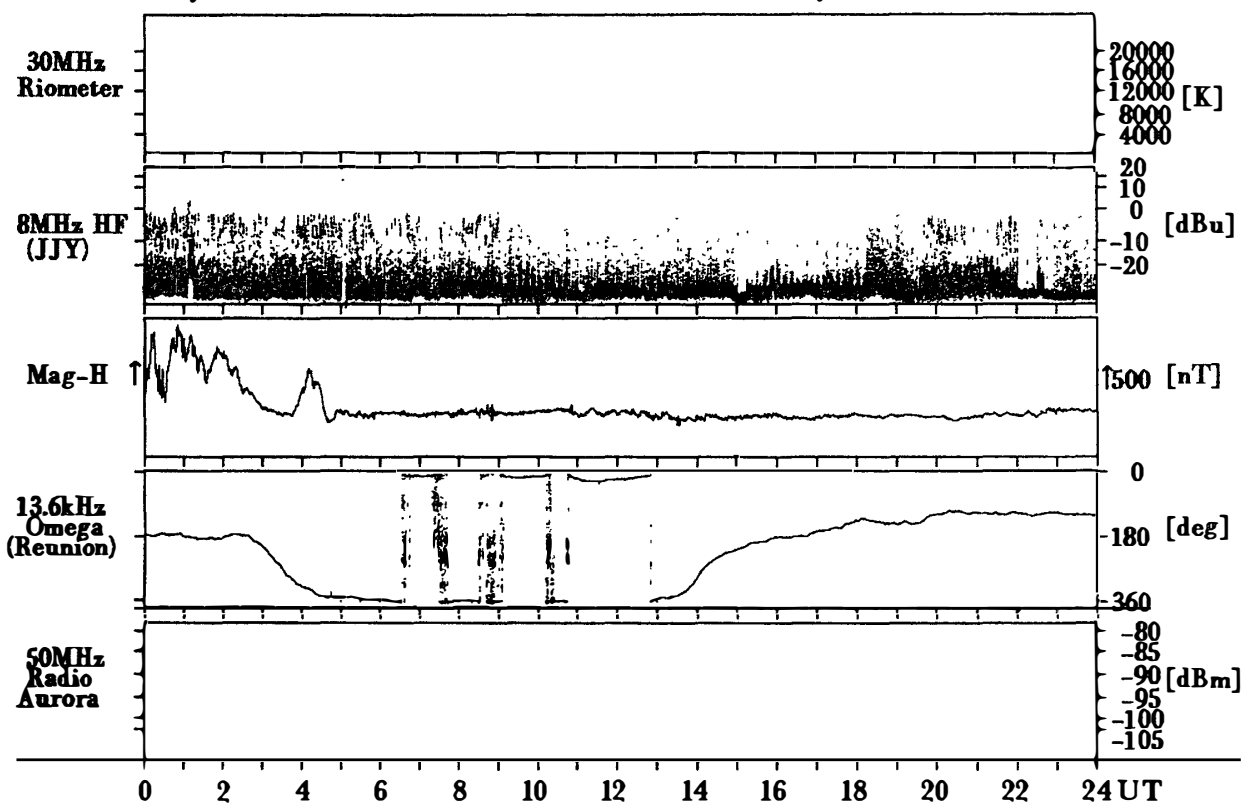






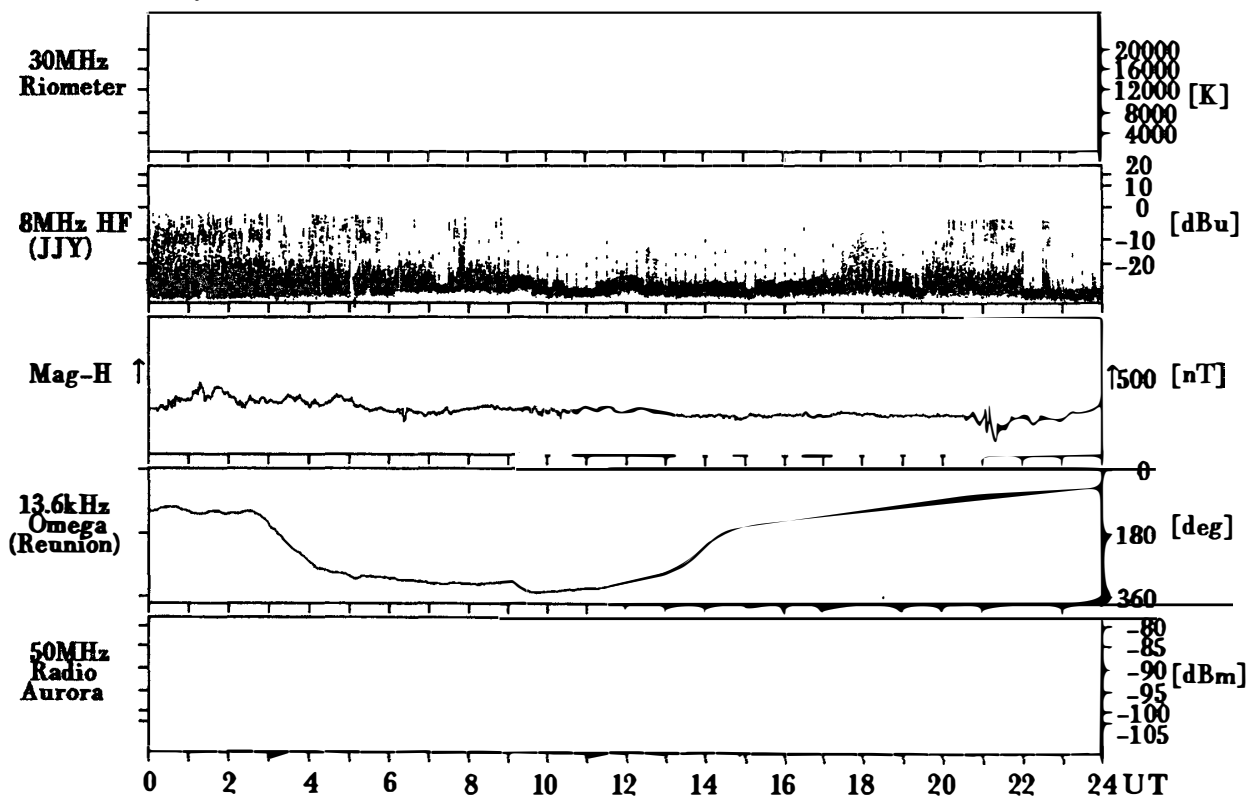
Syowa Station

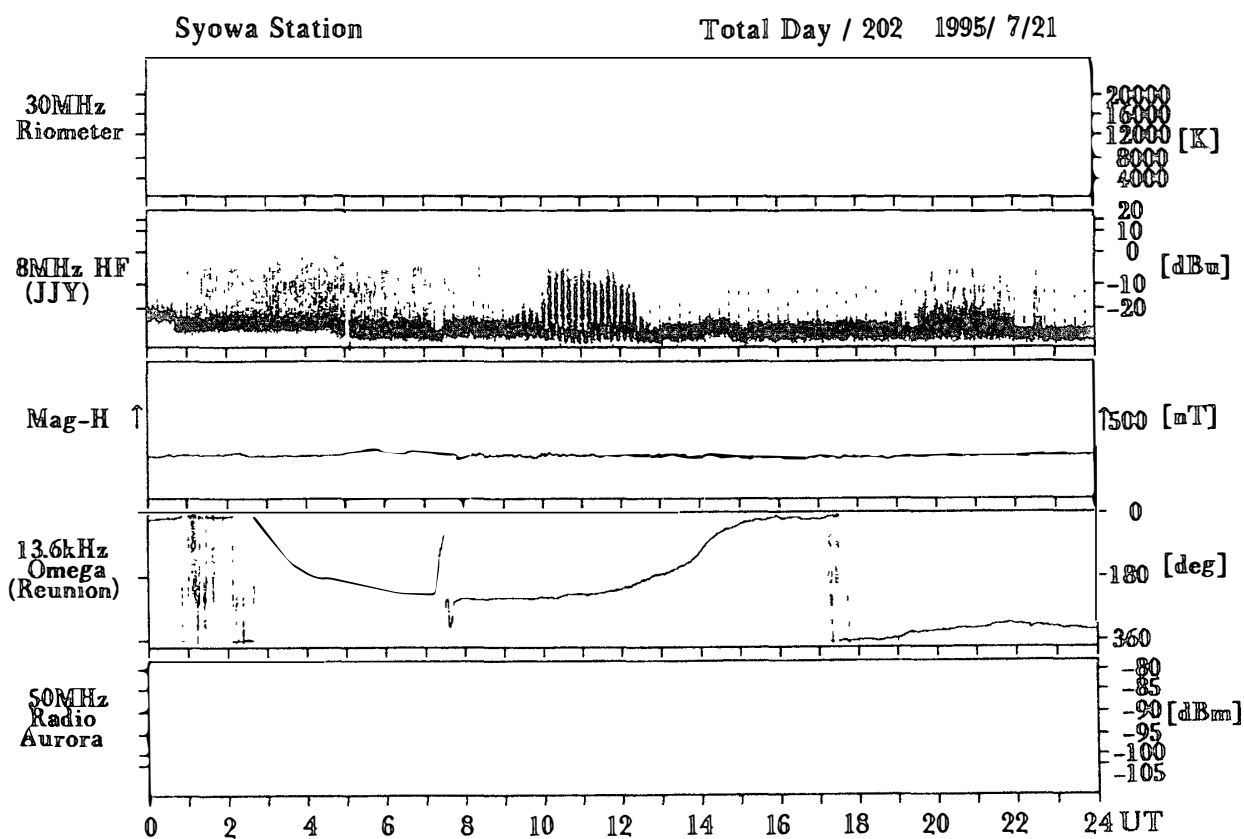
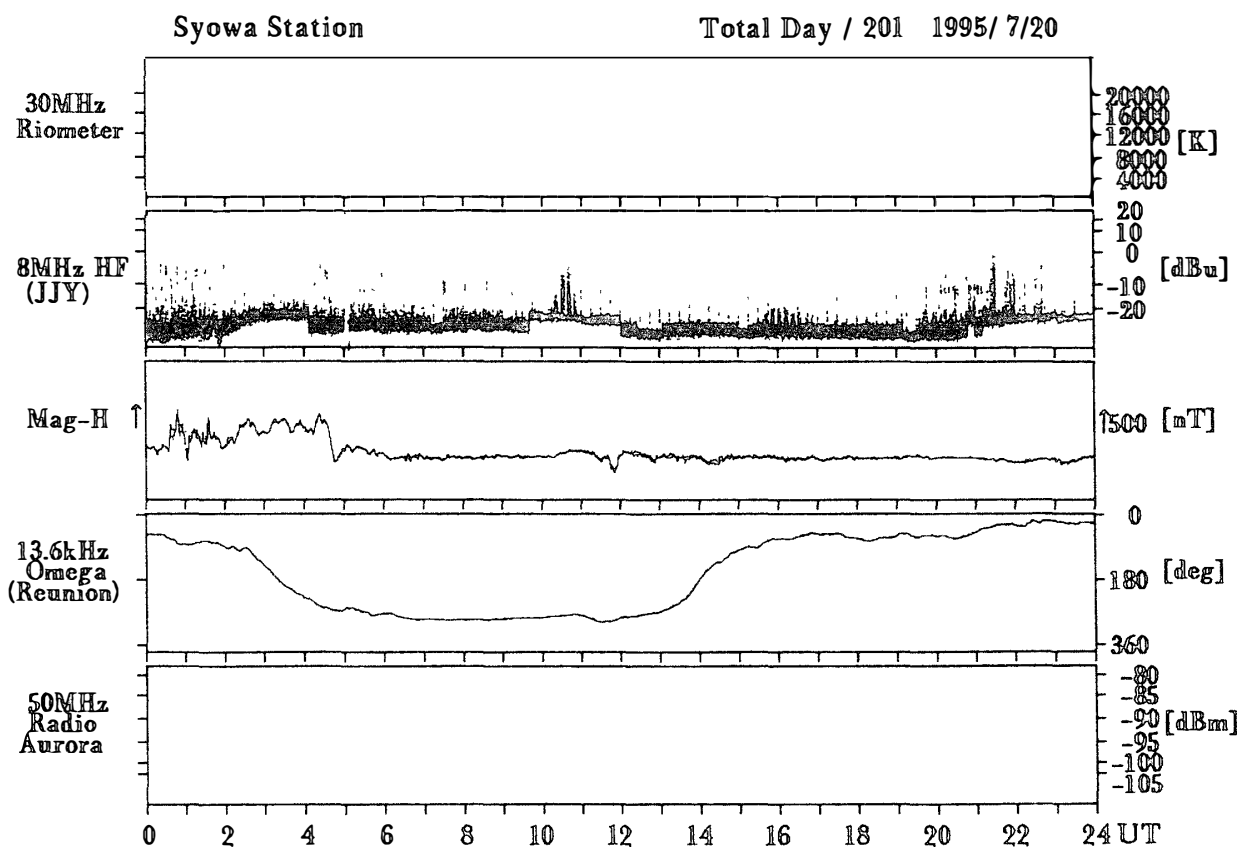
Total Day / 199 1995/ 7/18



Syowa Station

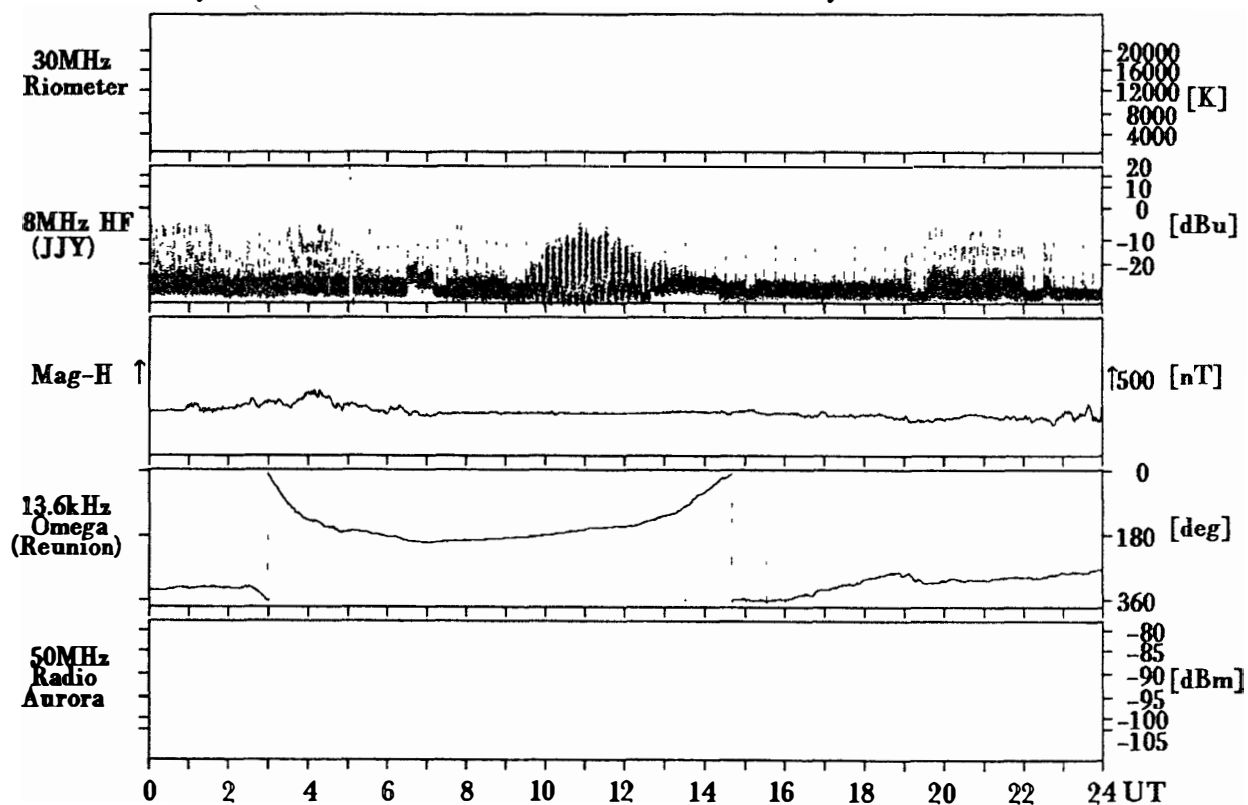
Total Day / 200 1995/ 7/19





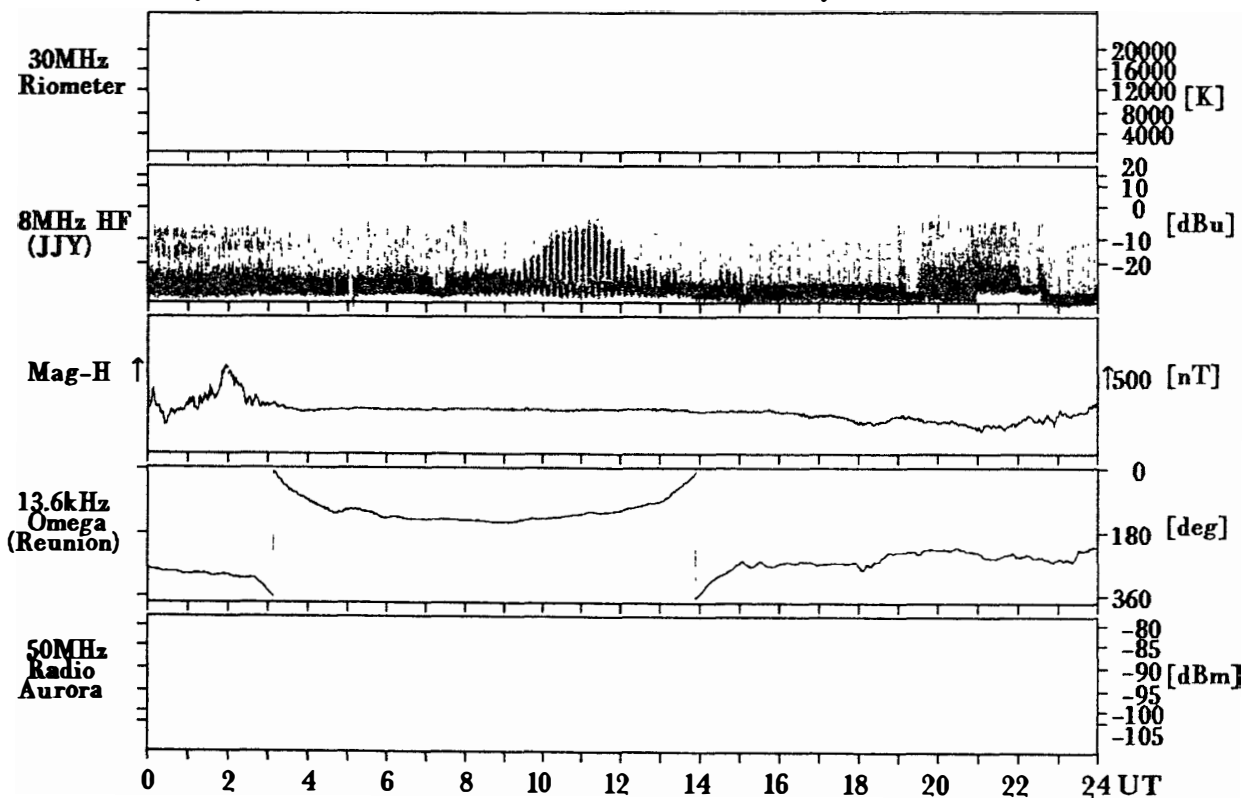
Syowa Station

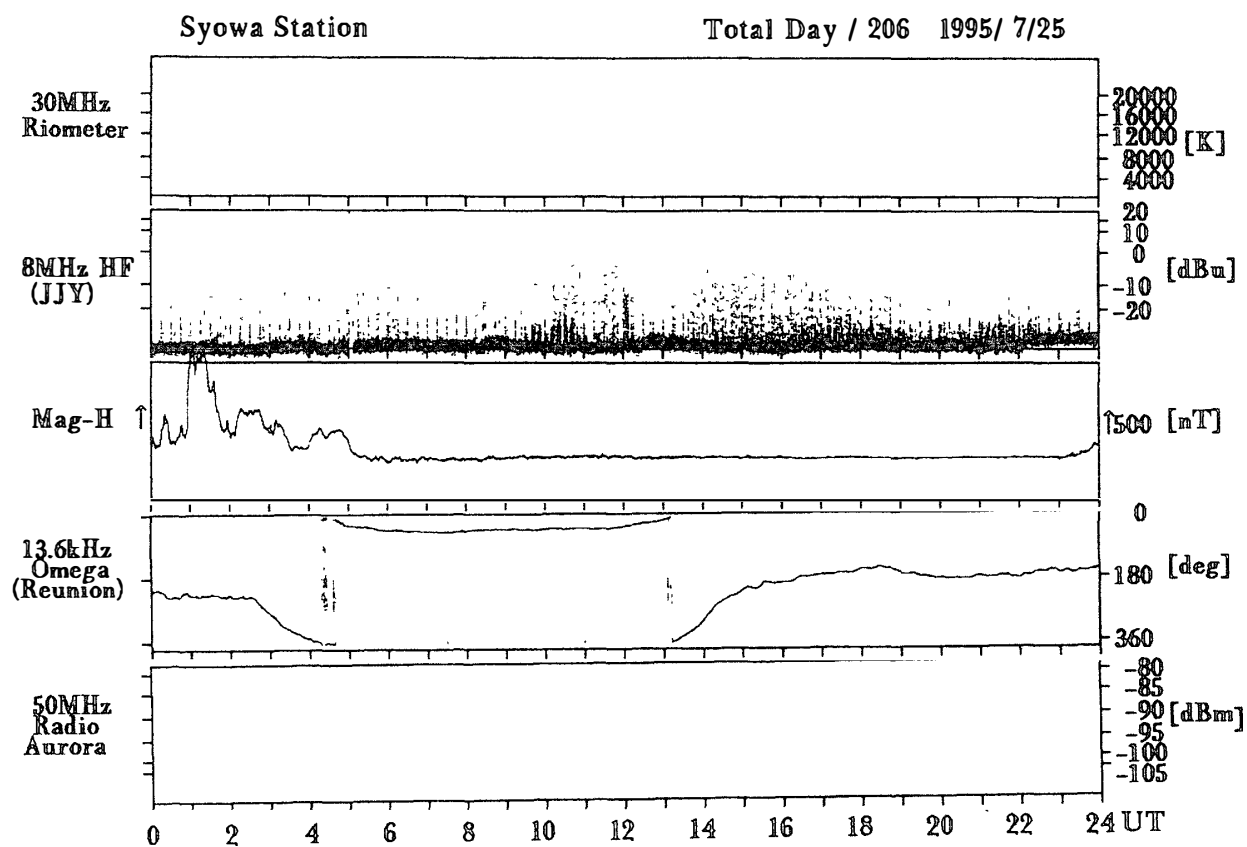
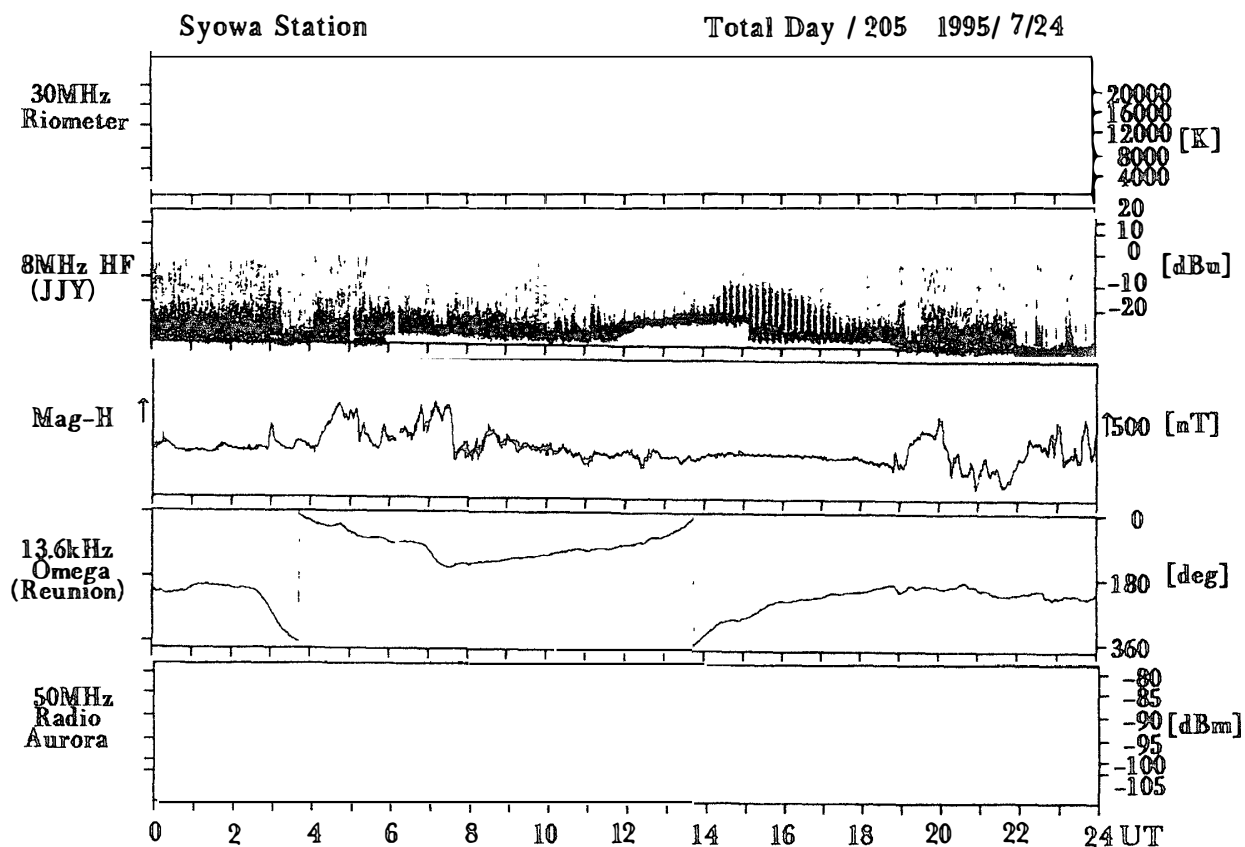
Total Day / 203 1995/ 7/22

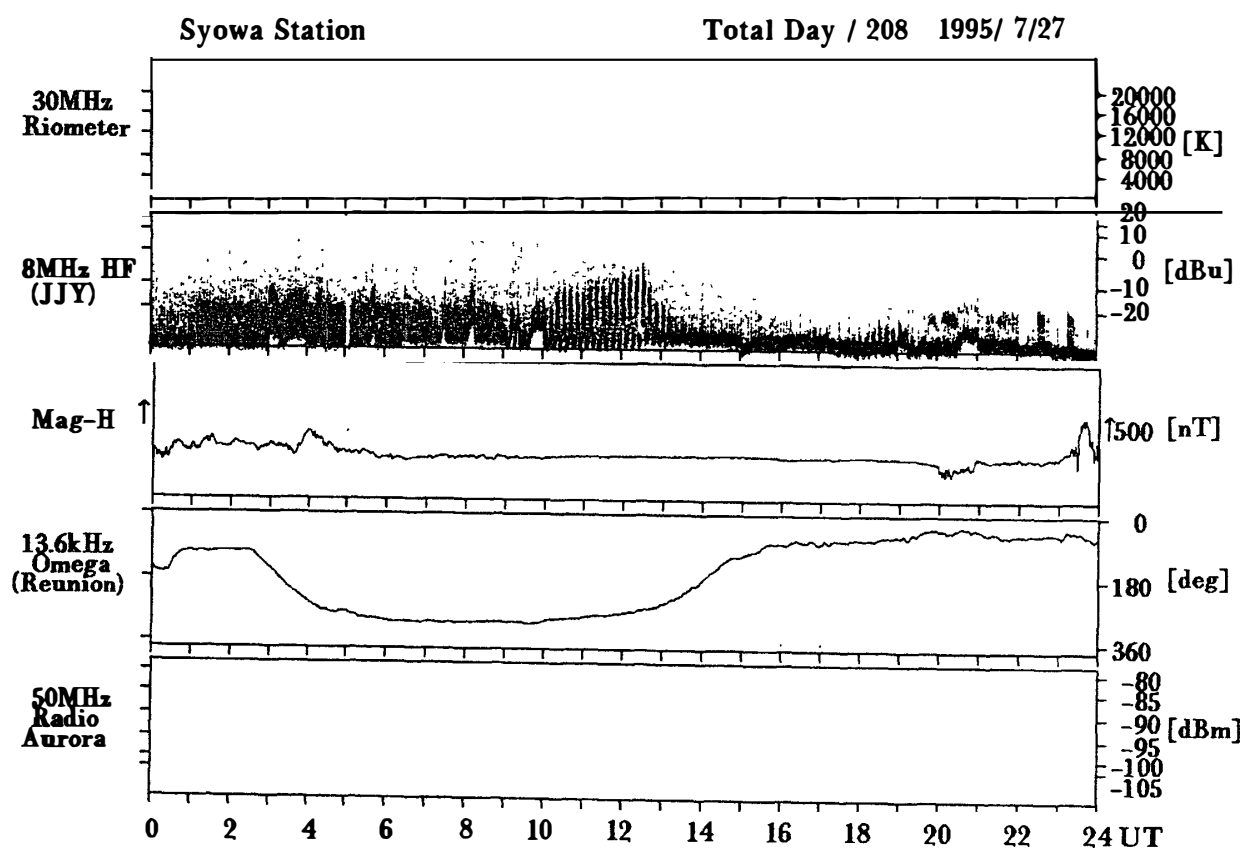
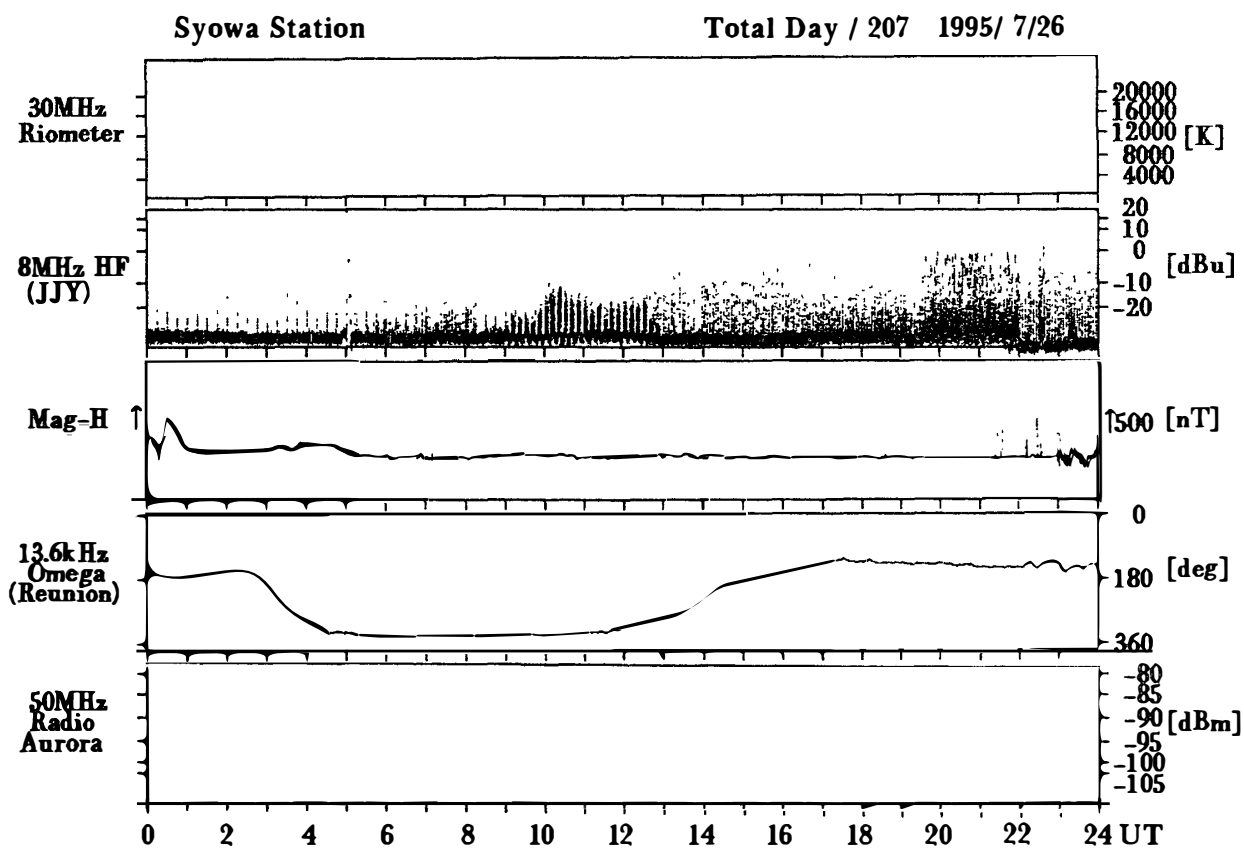


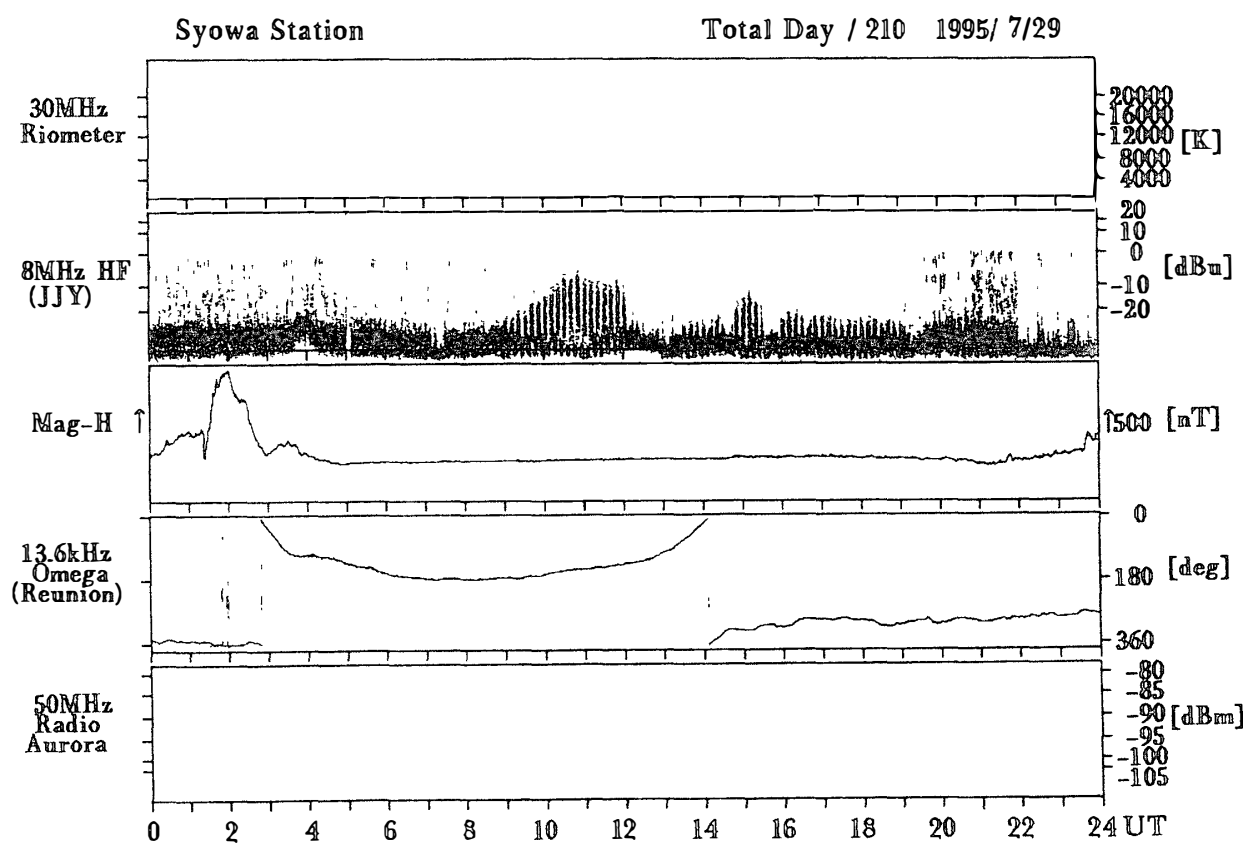
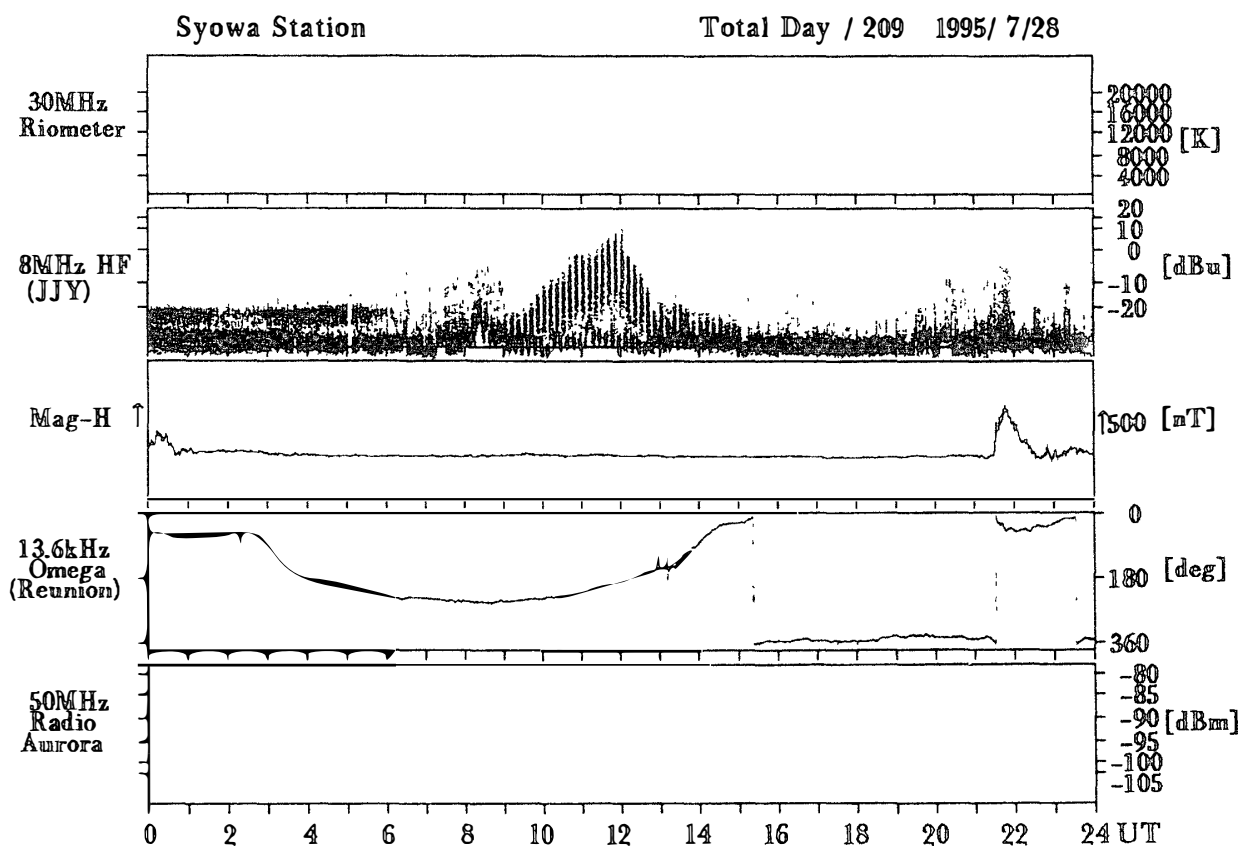
Syowa Station

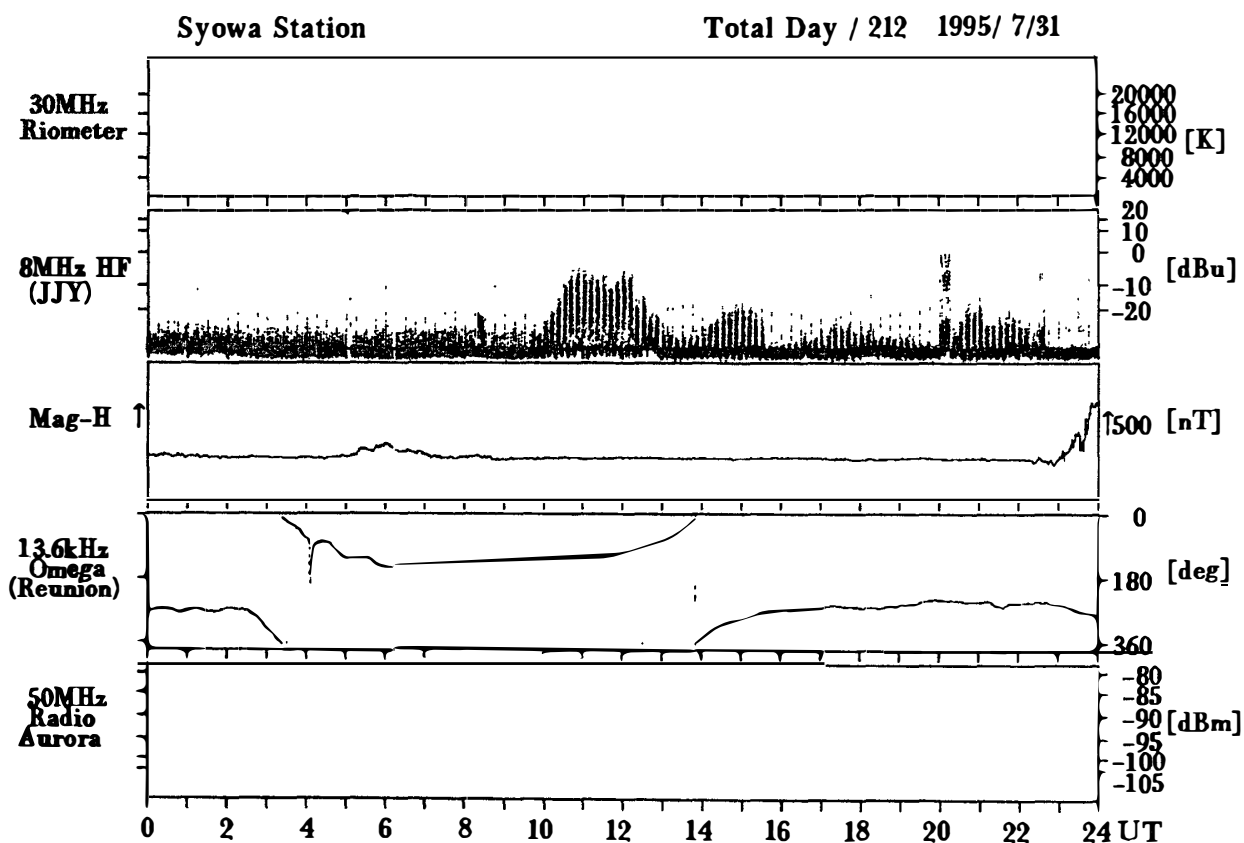
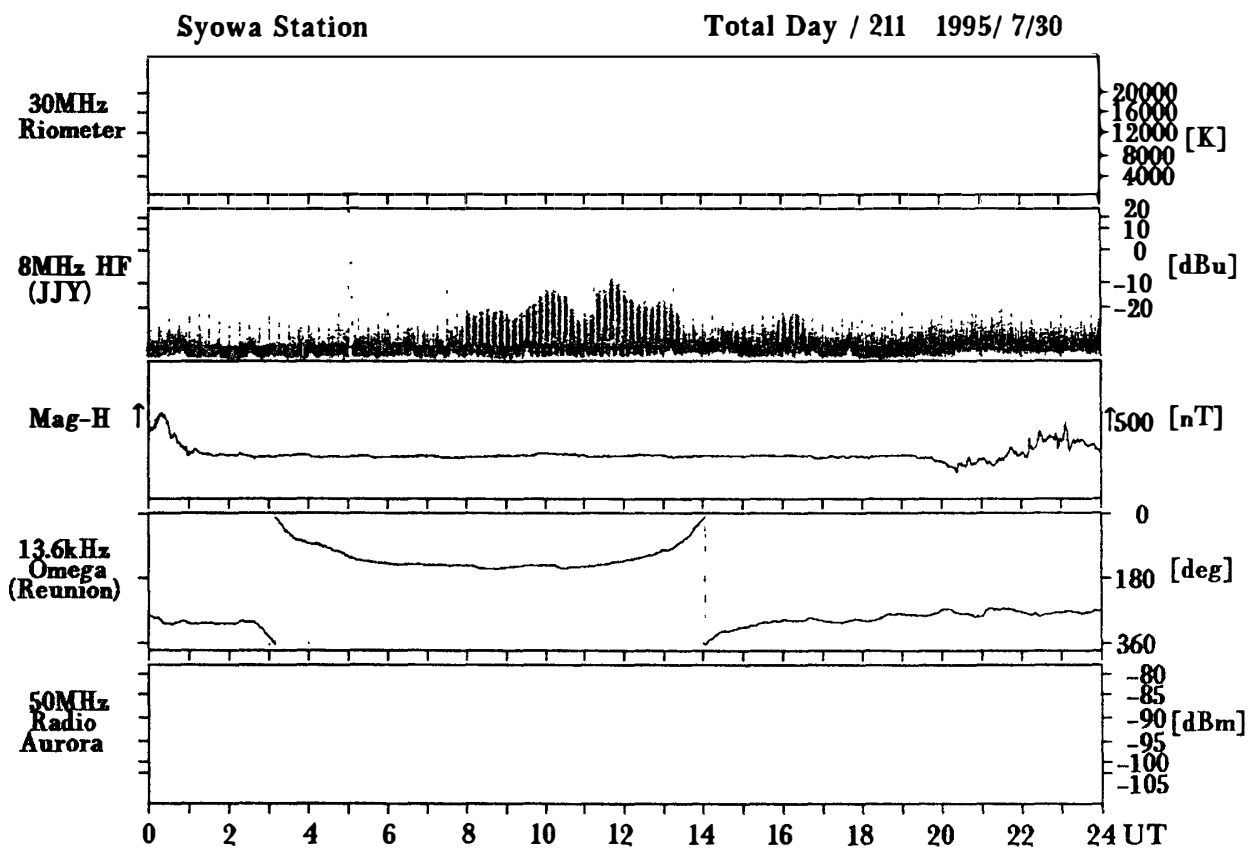
Total Day / 204 1995/ 7/23

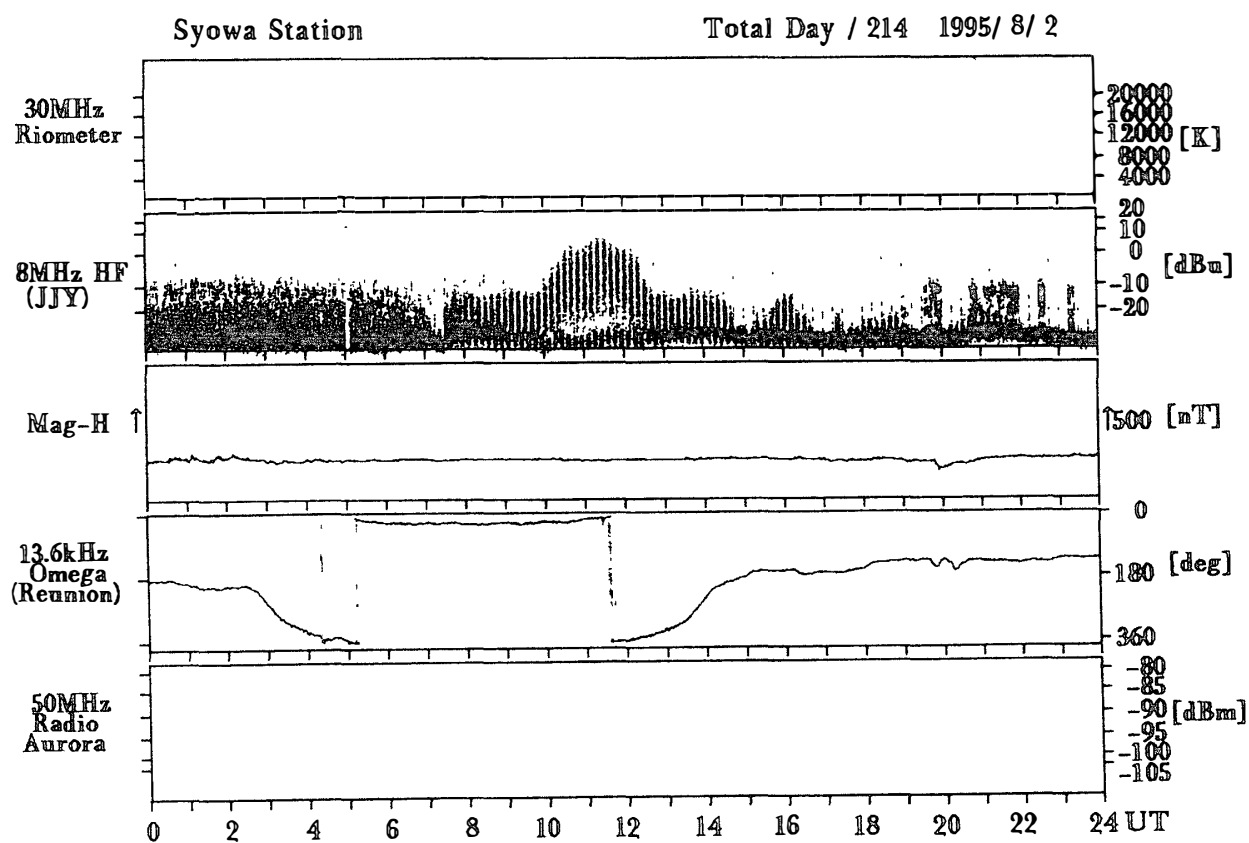
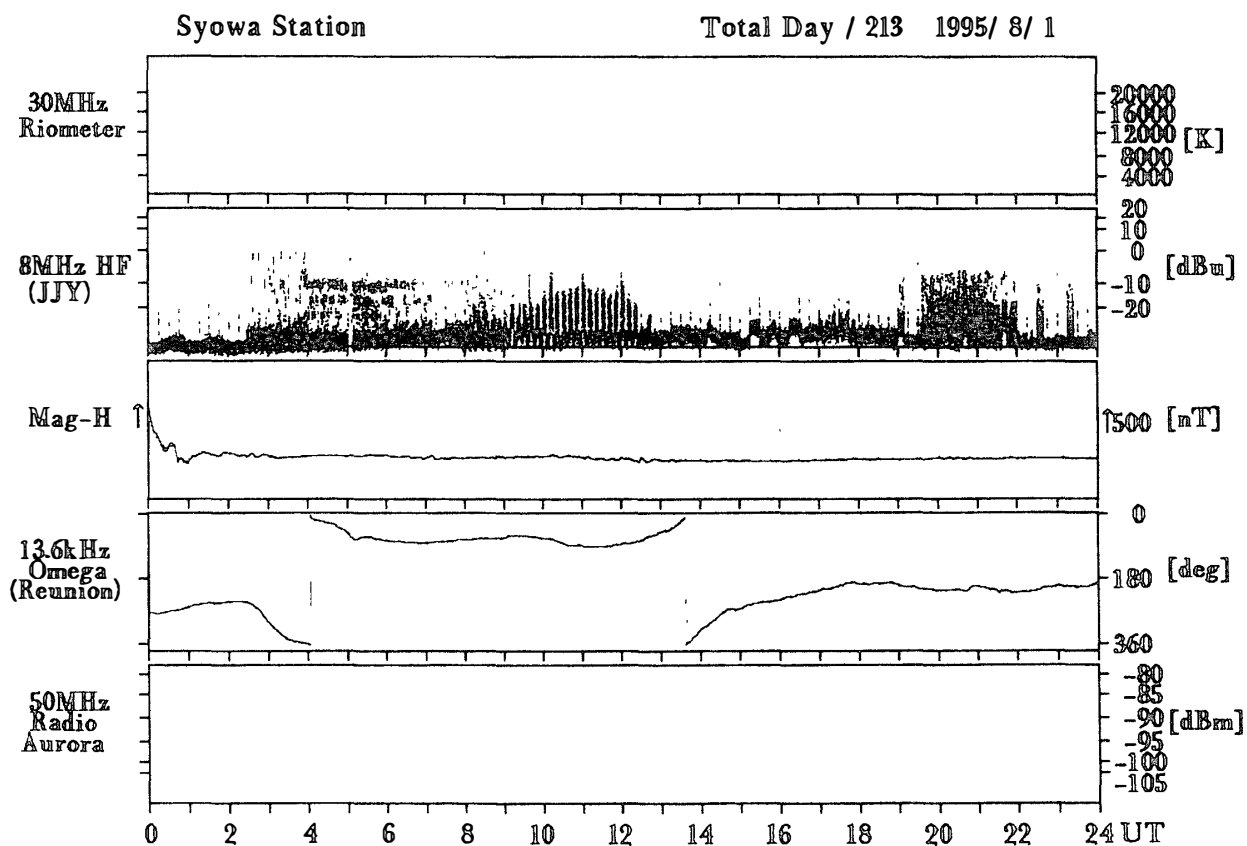


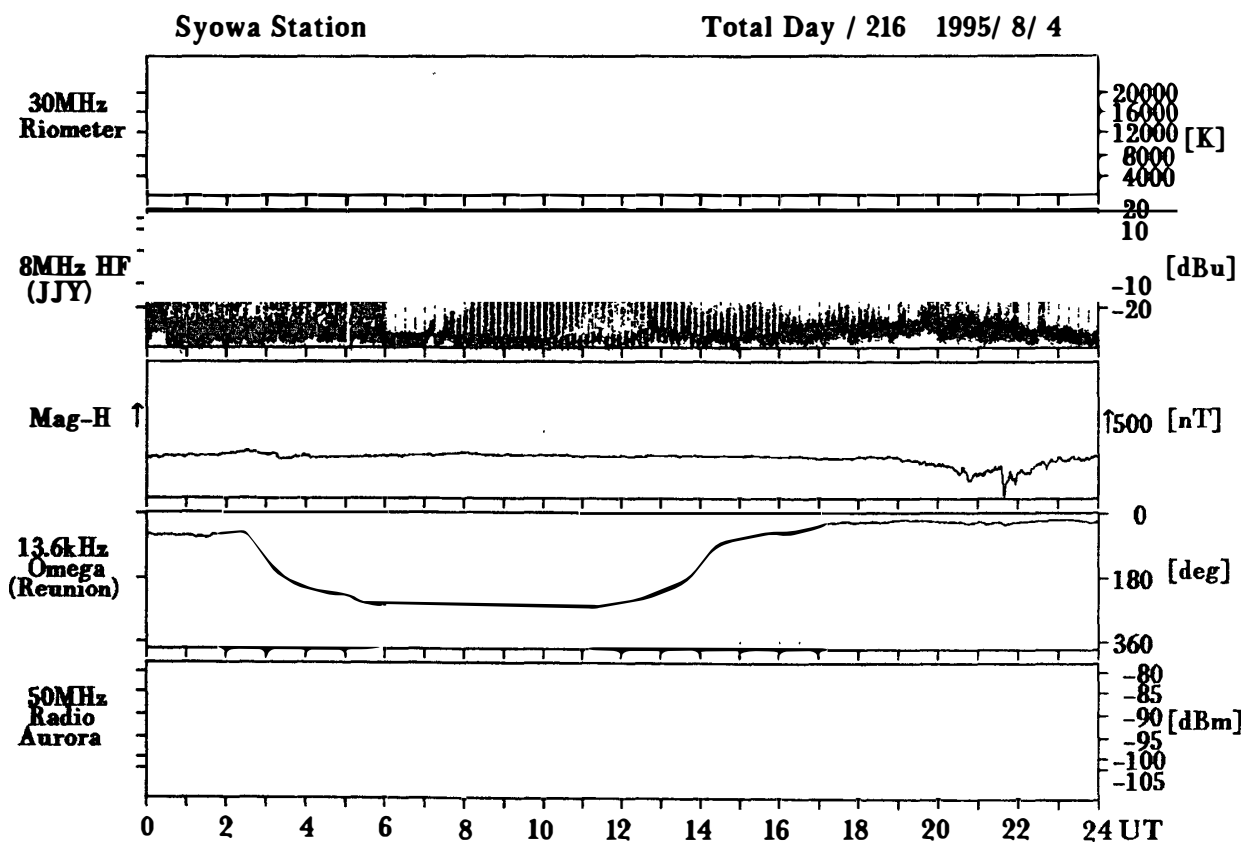
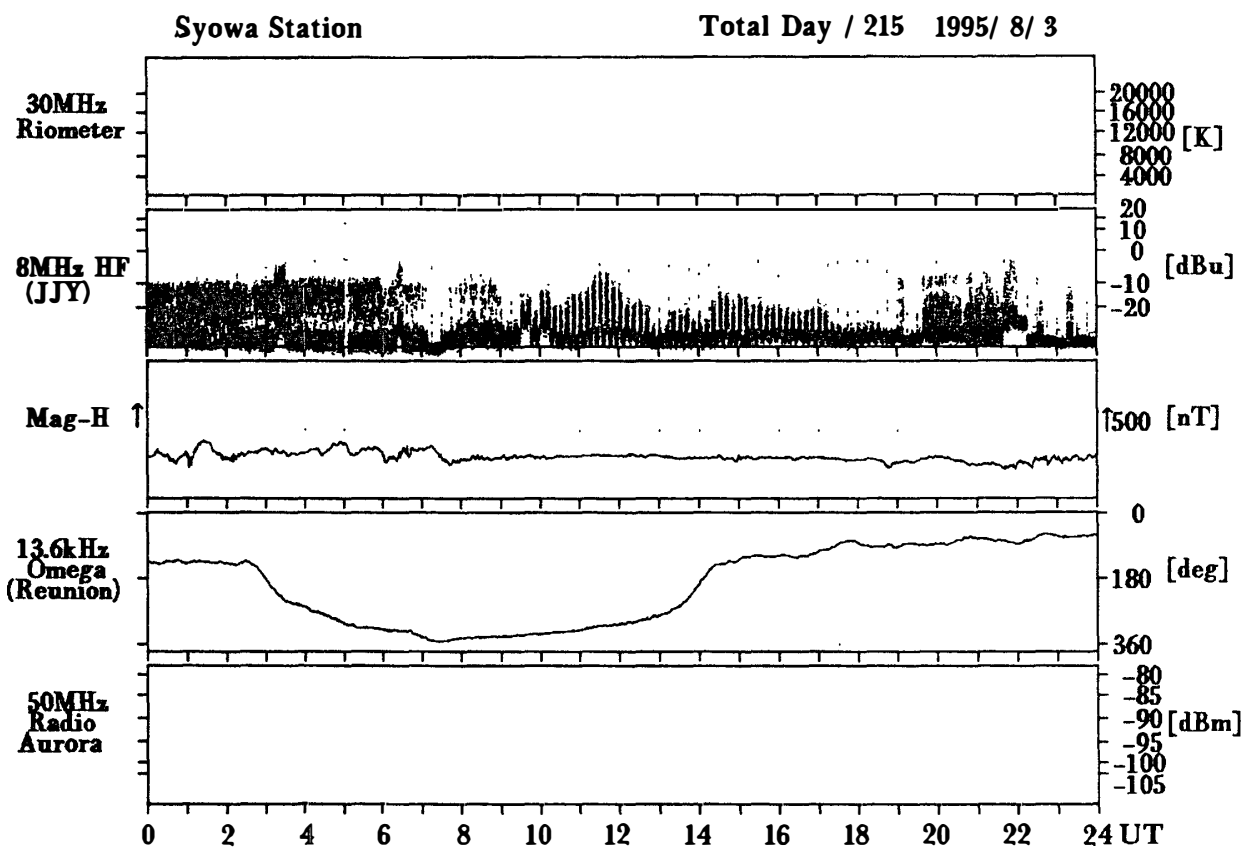


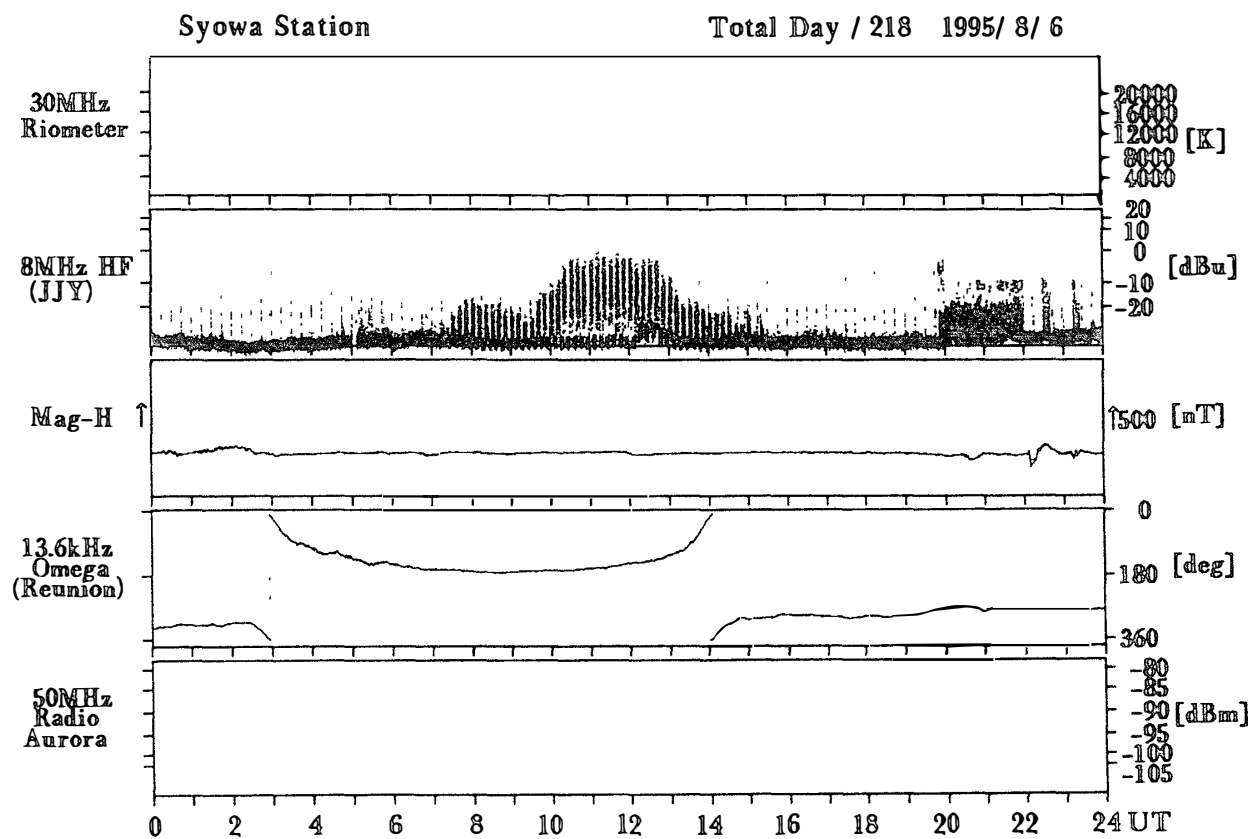
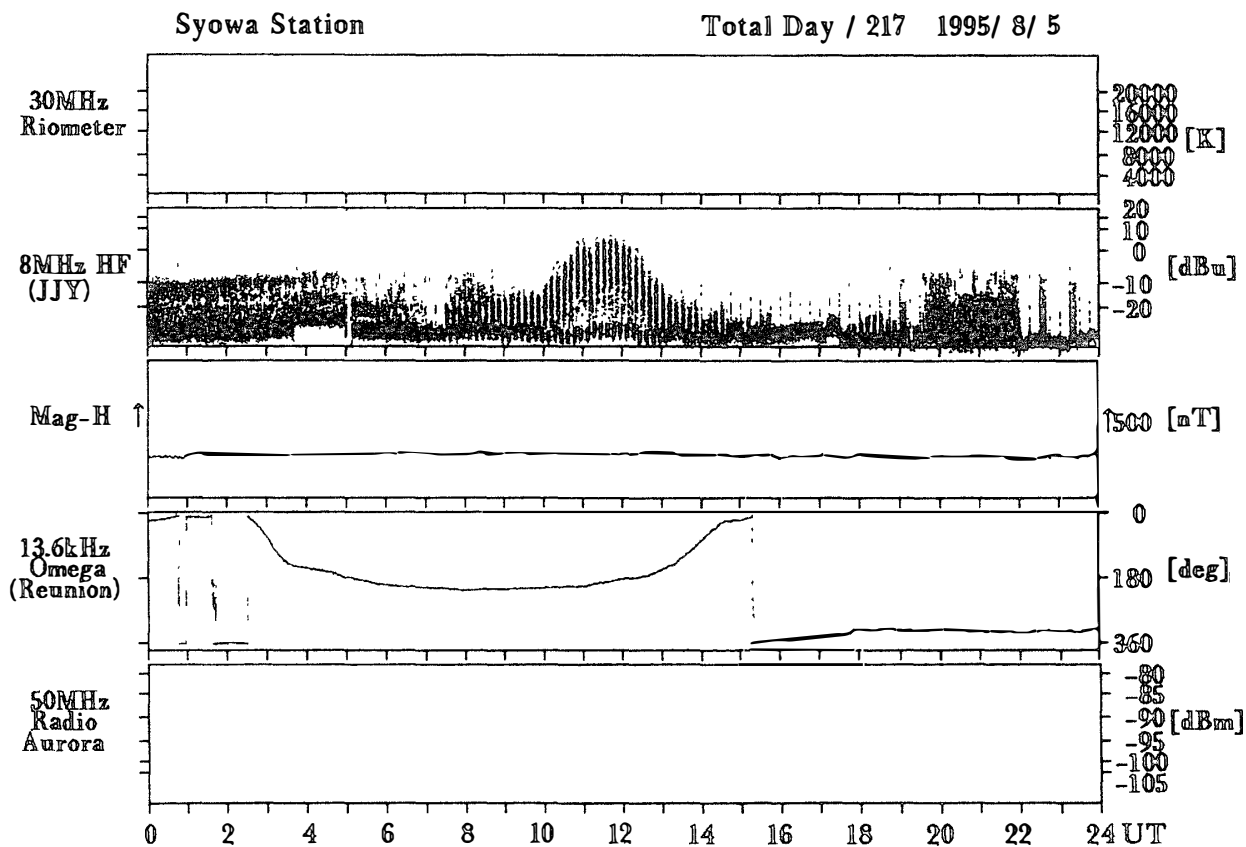






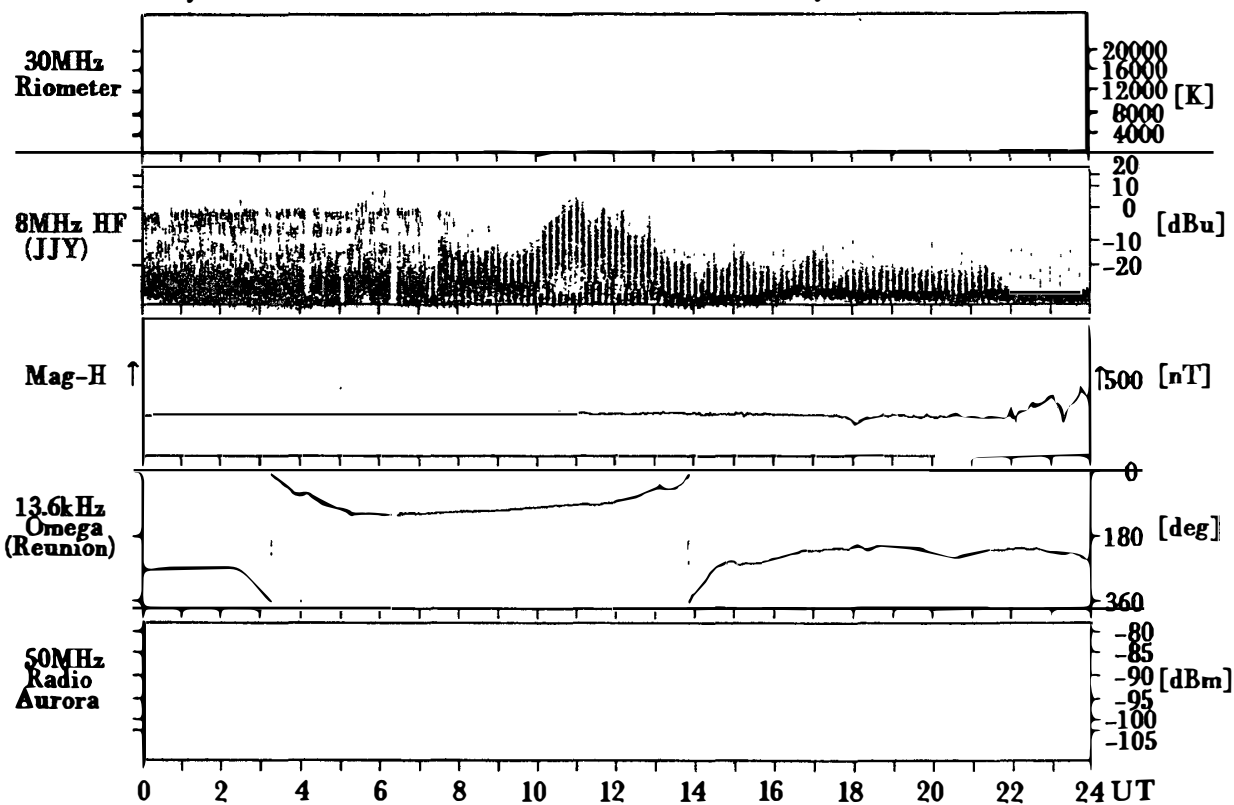






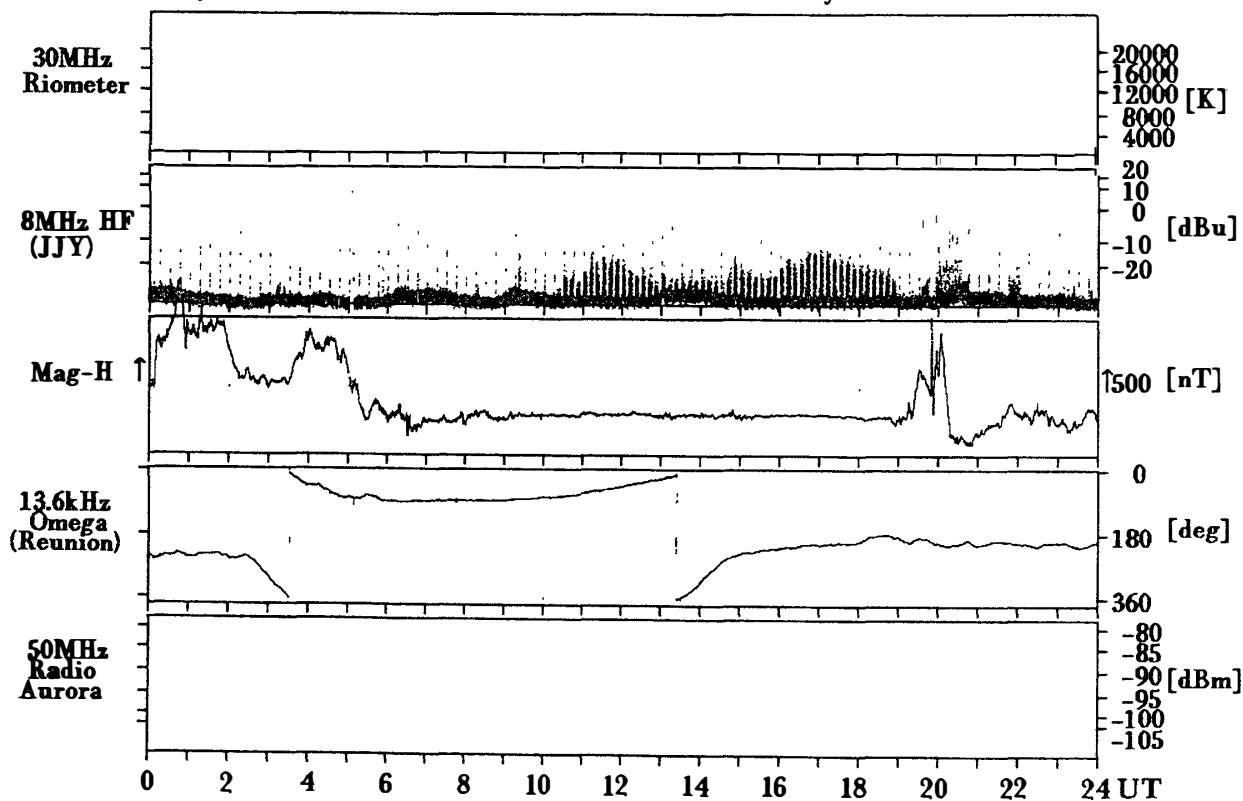
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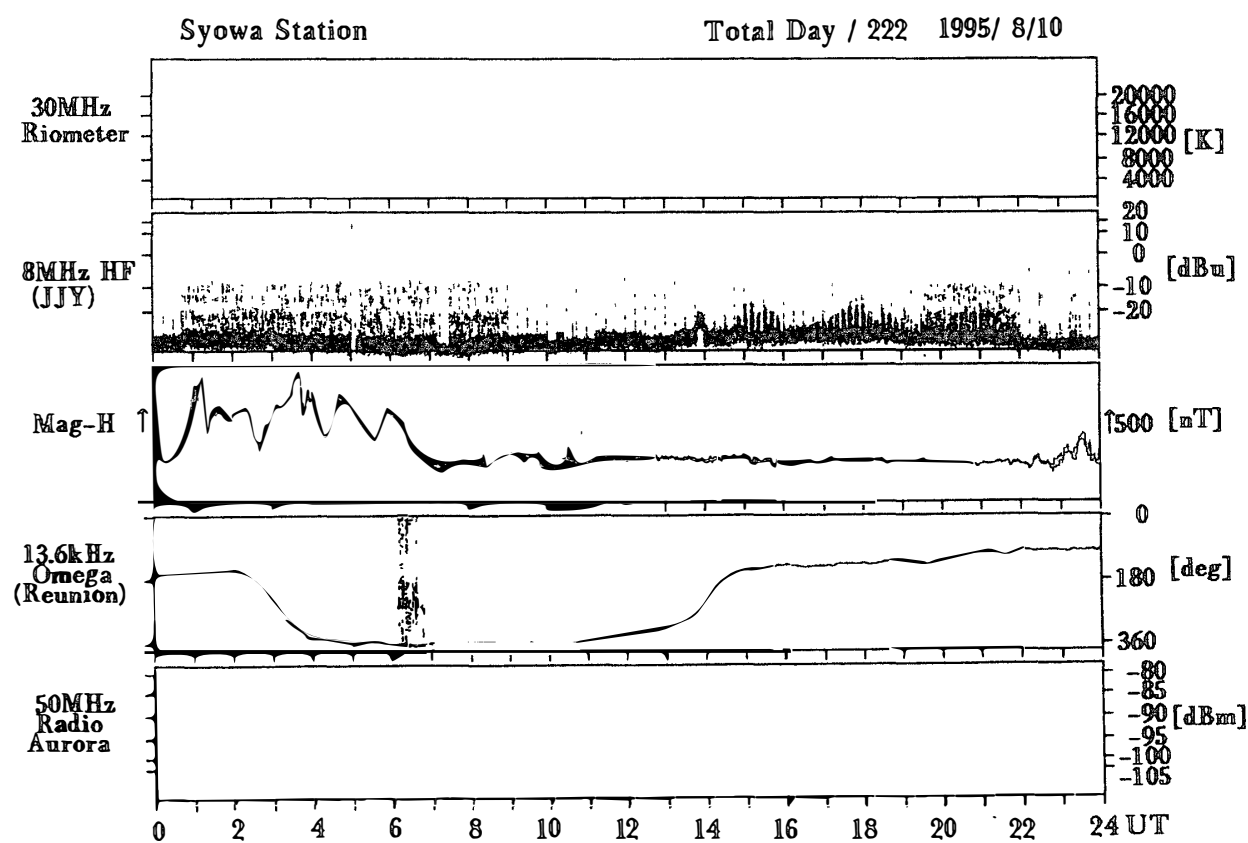
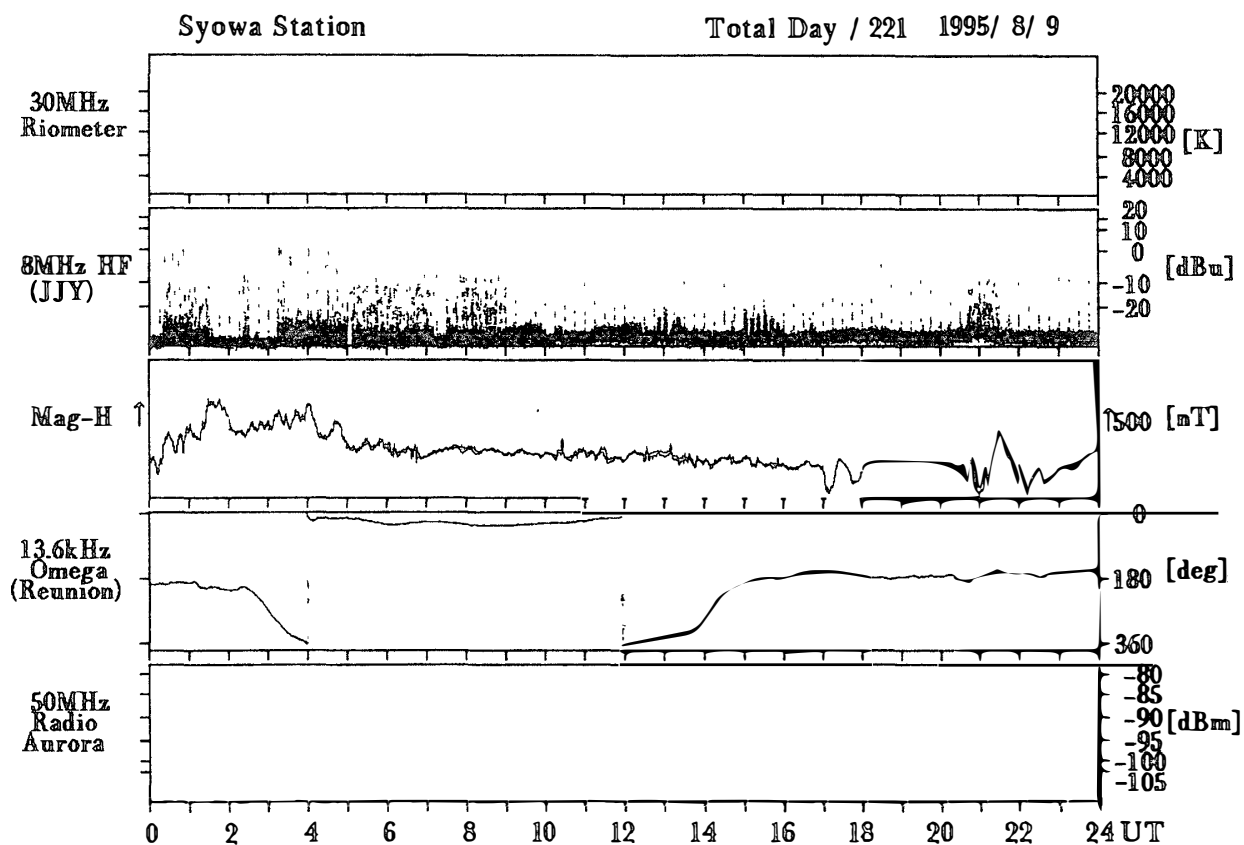
Total Day / 219 1995/ 8/ 7

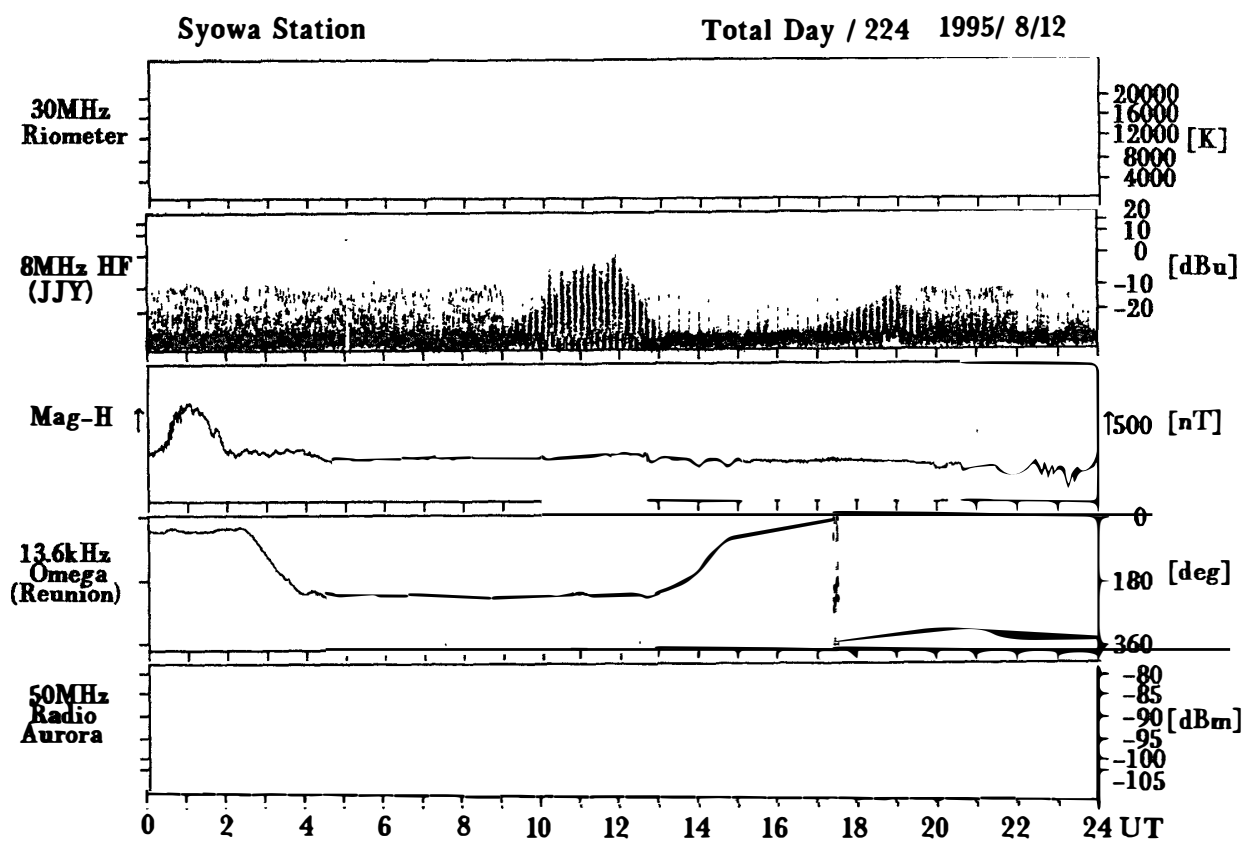
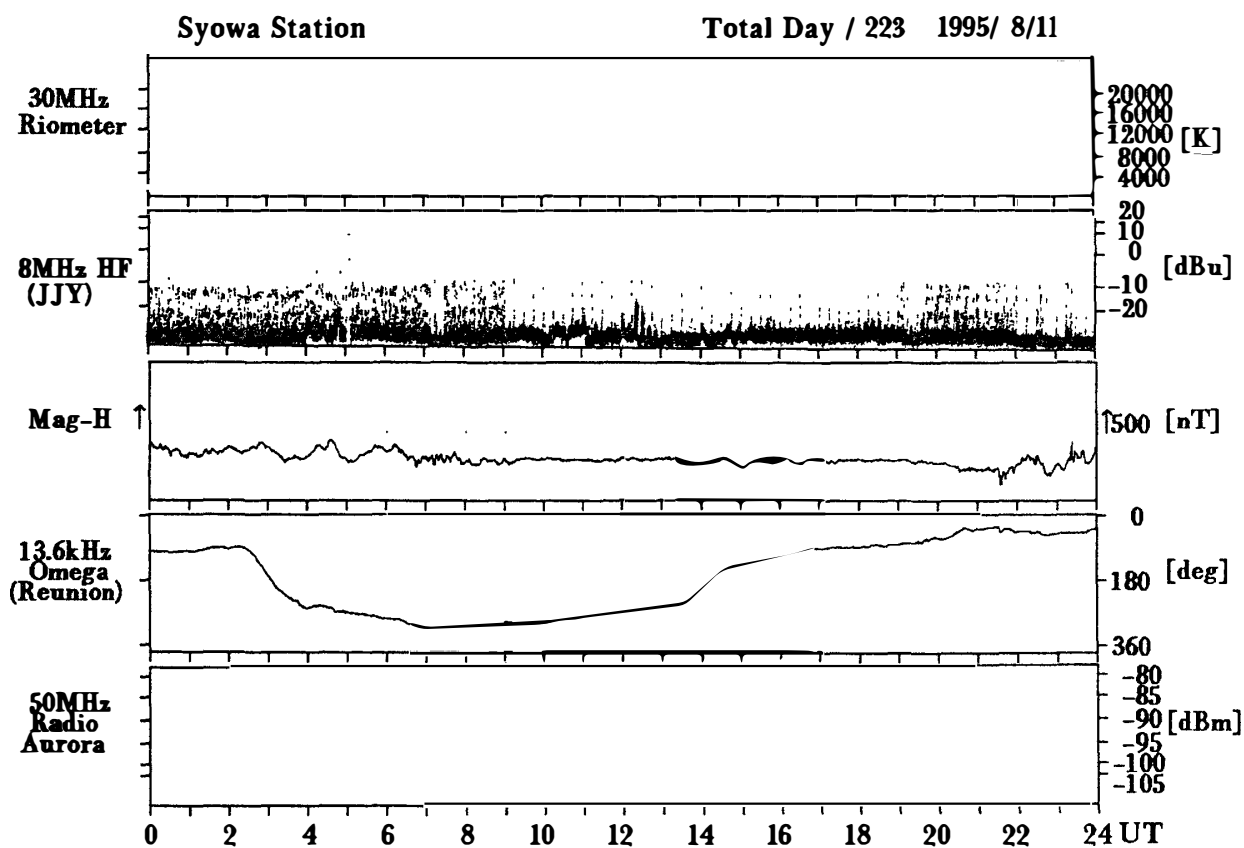


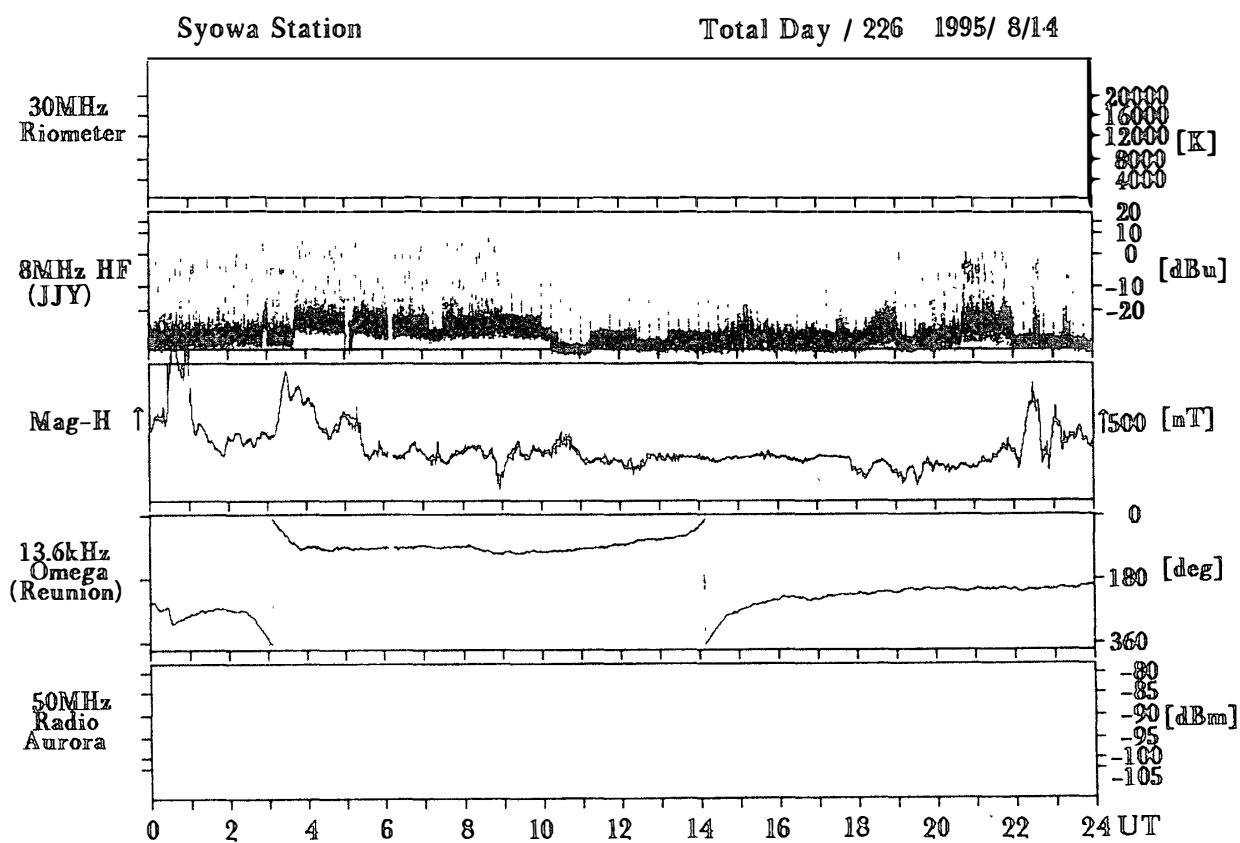
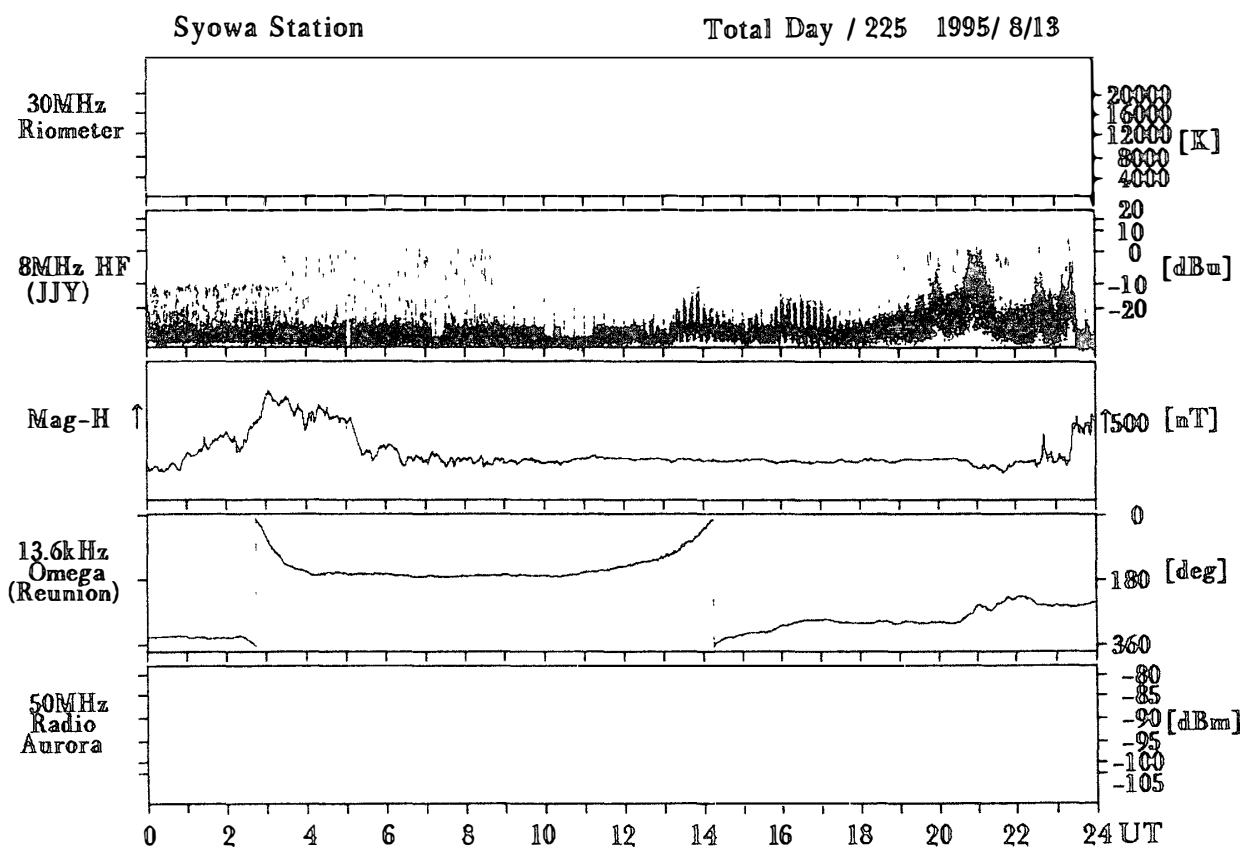
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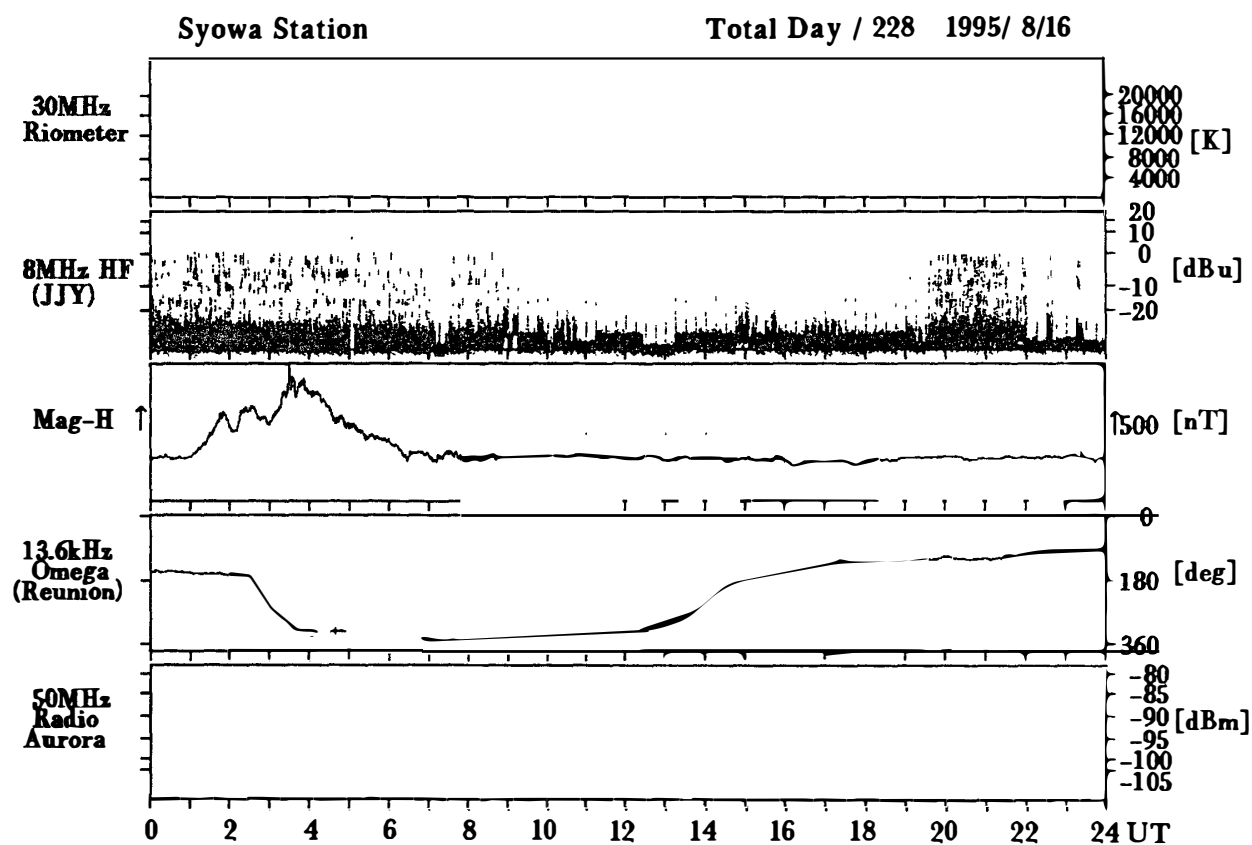
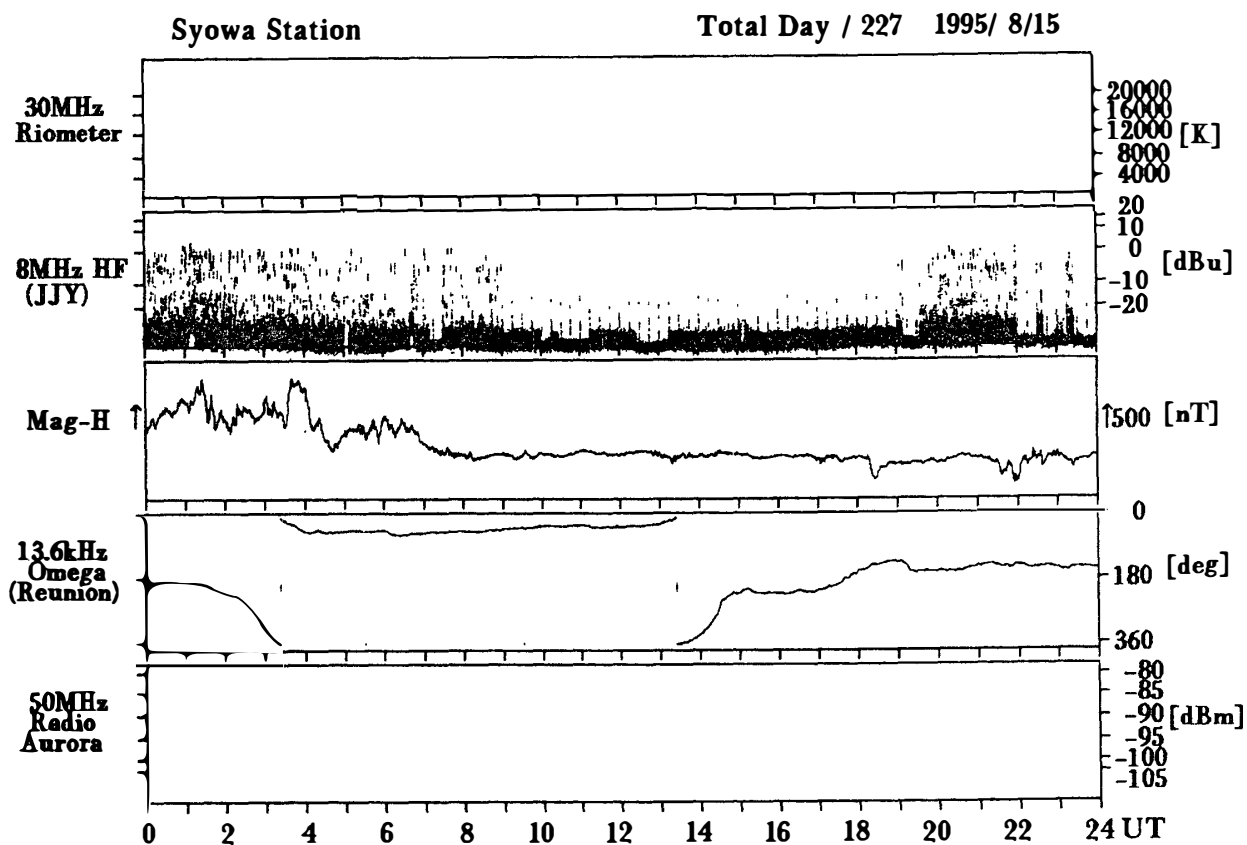
Total Day / 220 1995/ 8/ 8

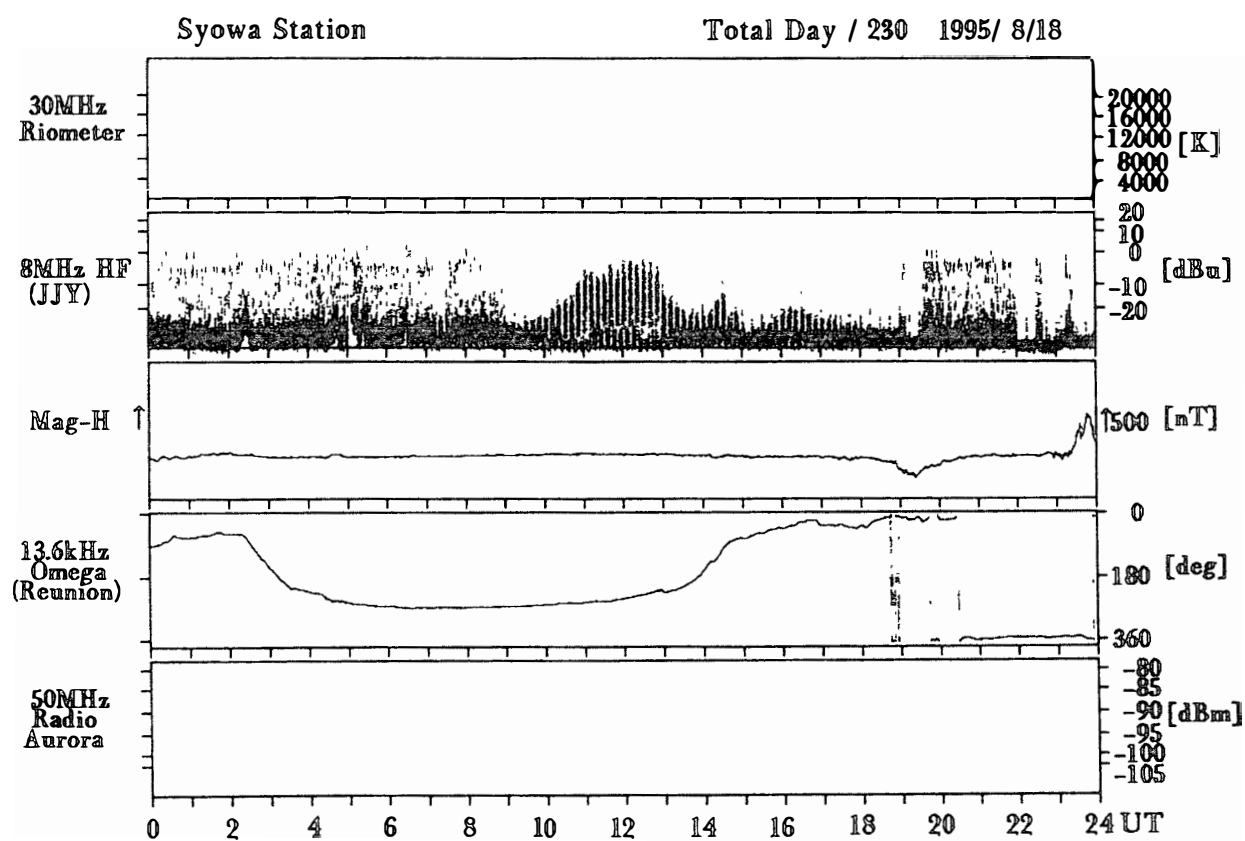
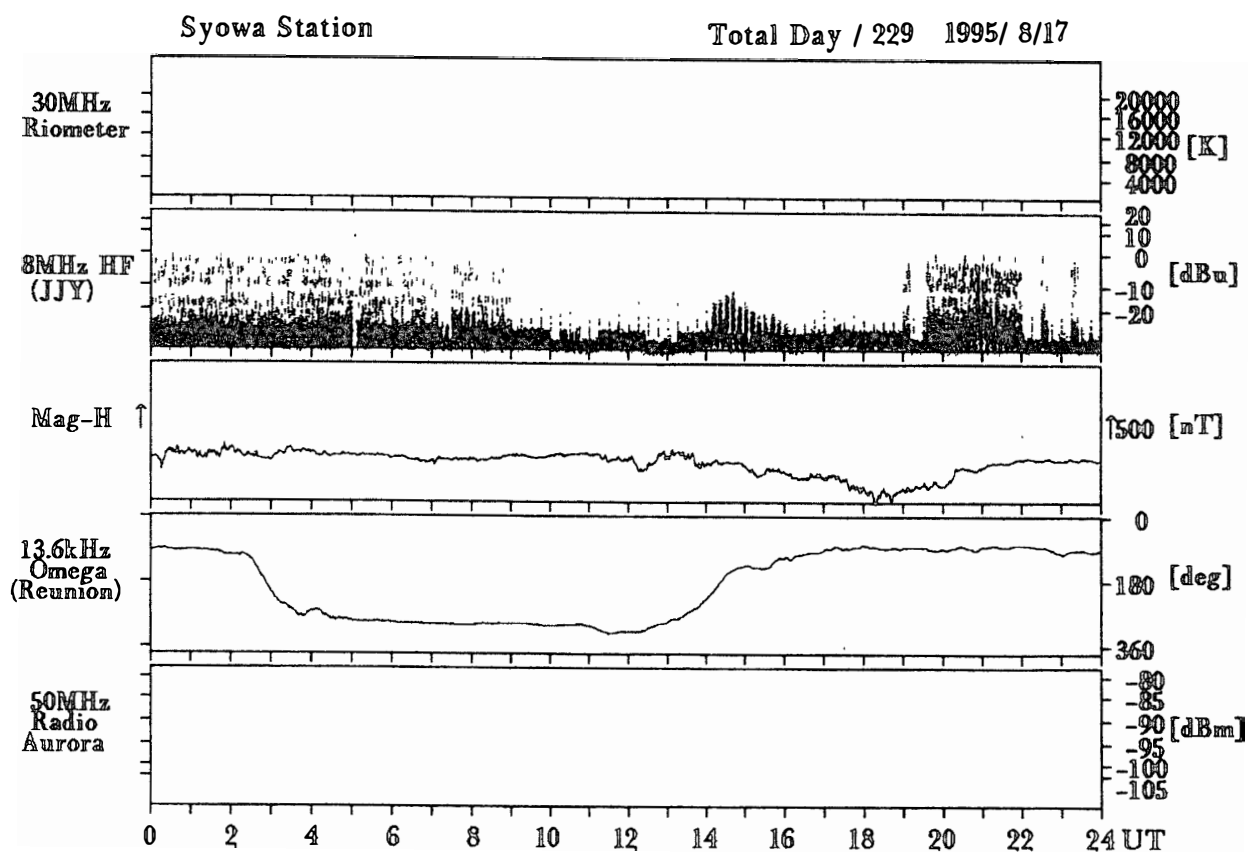






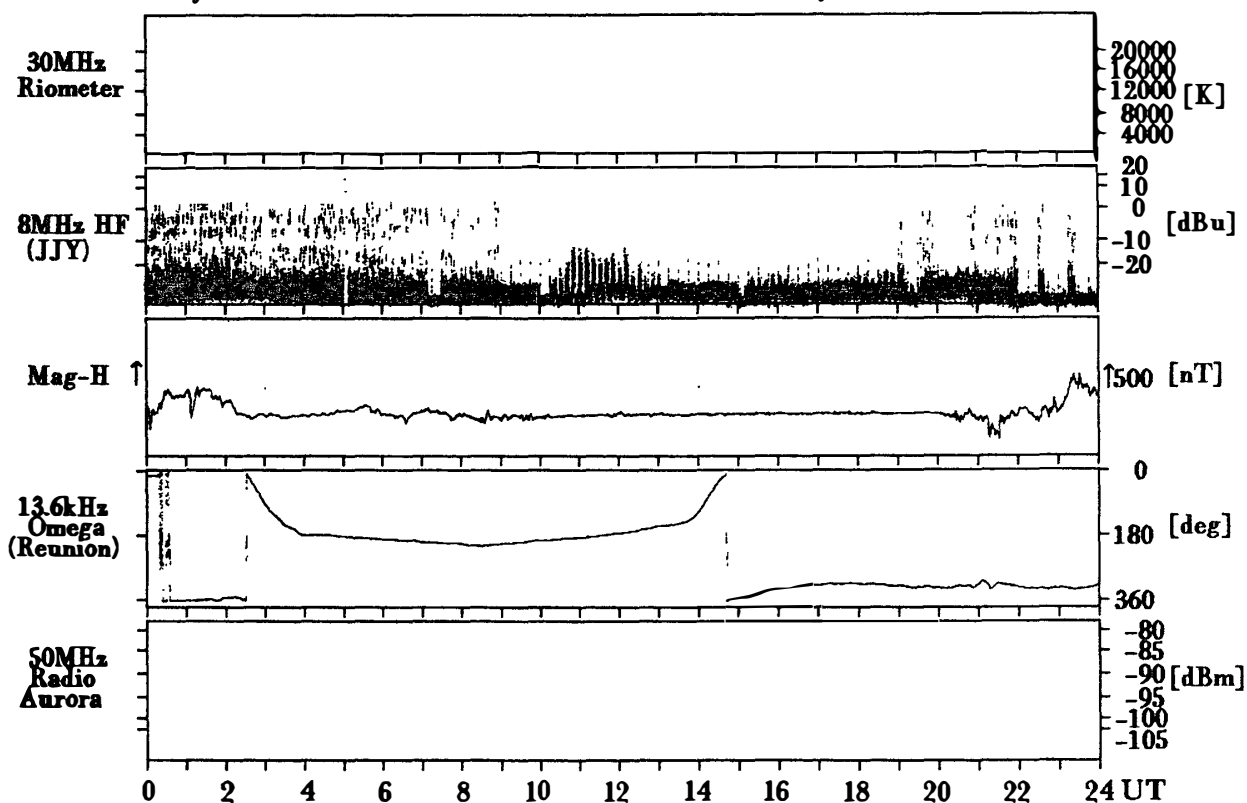






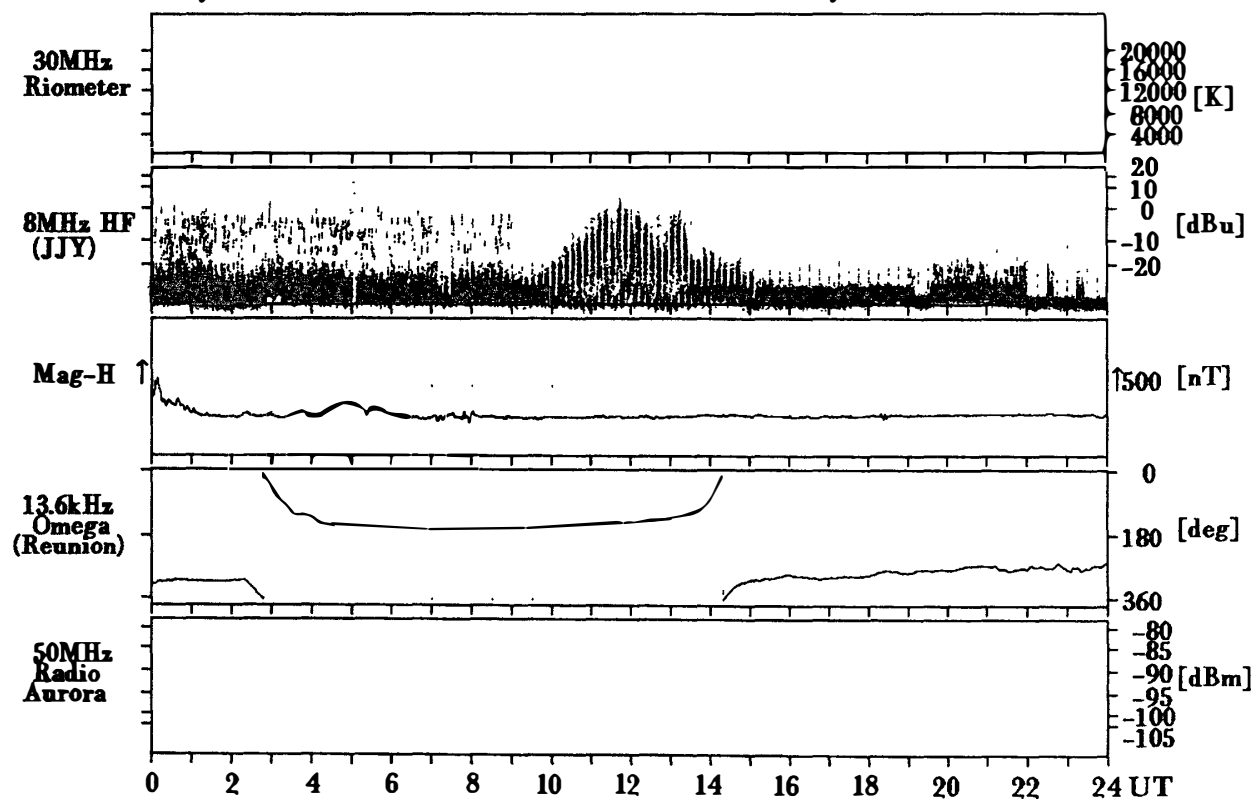
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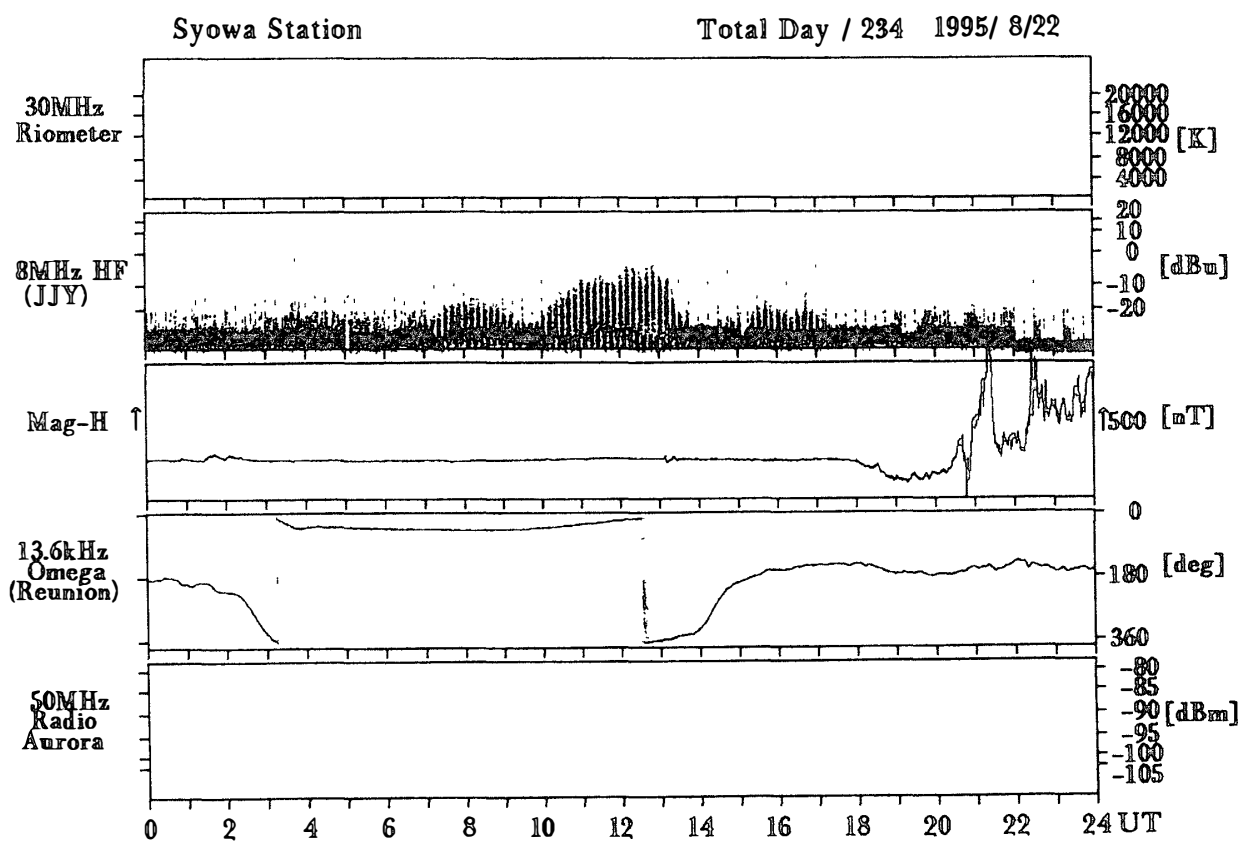
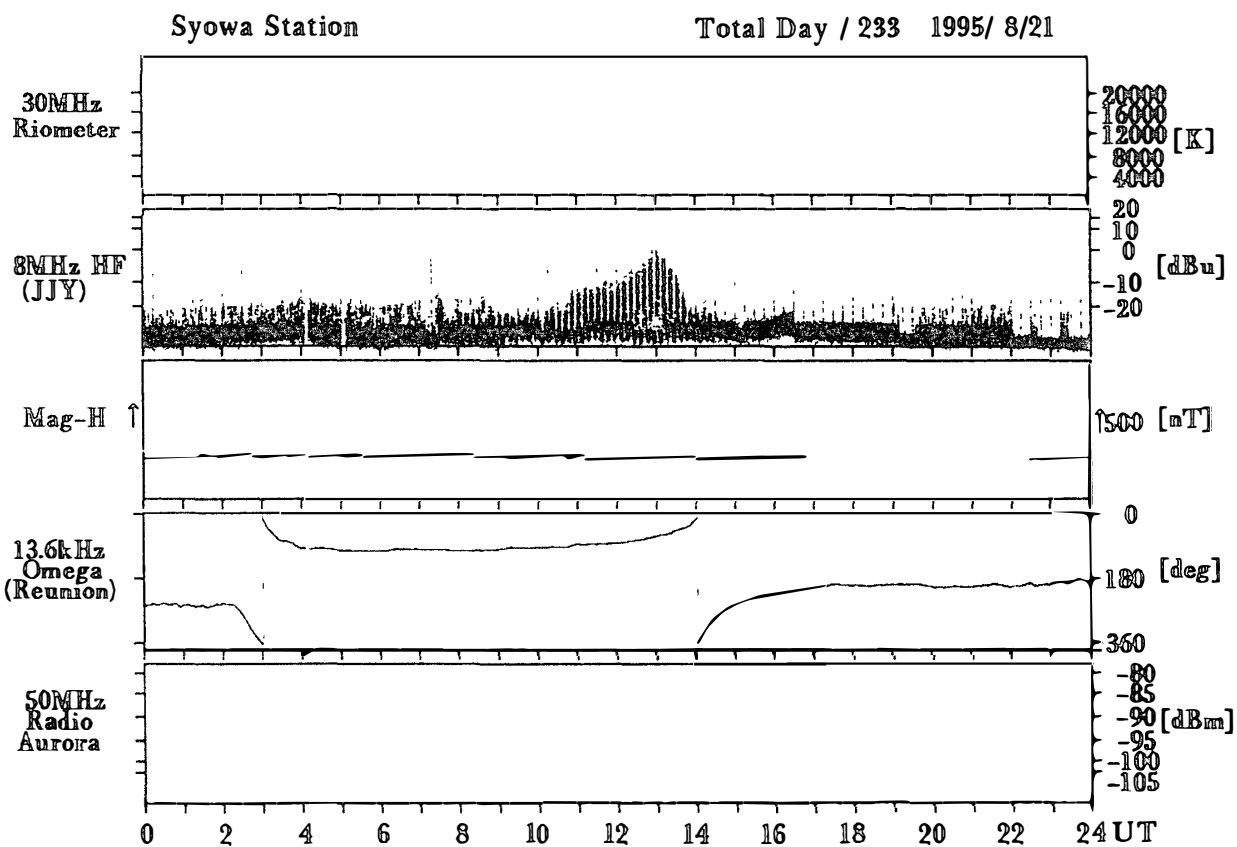
Total Day / 231 1995/ 8/19

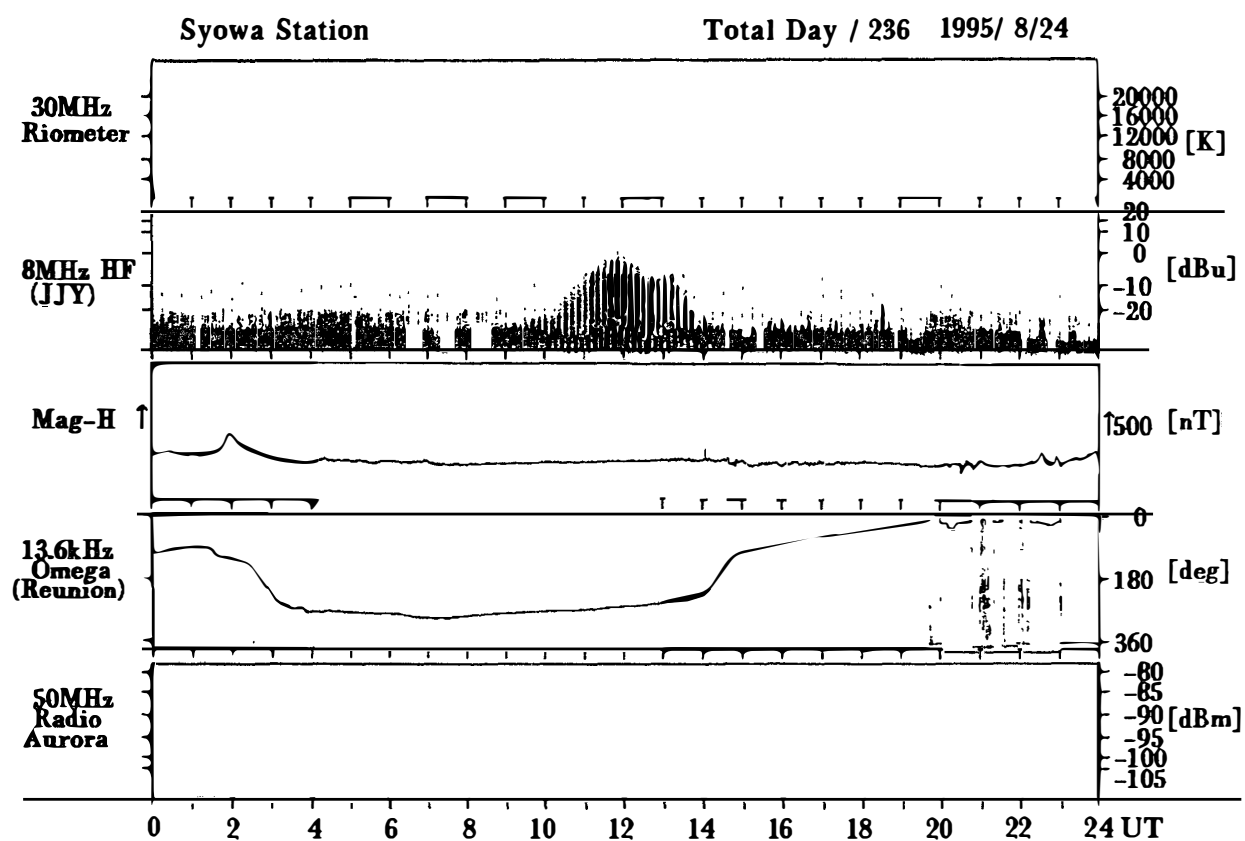
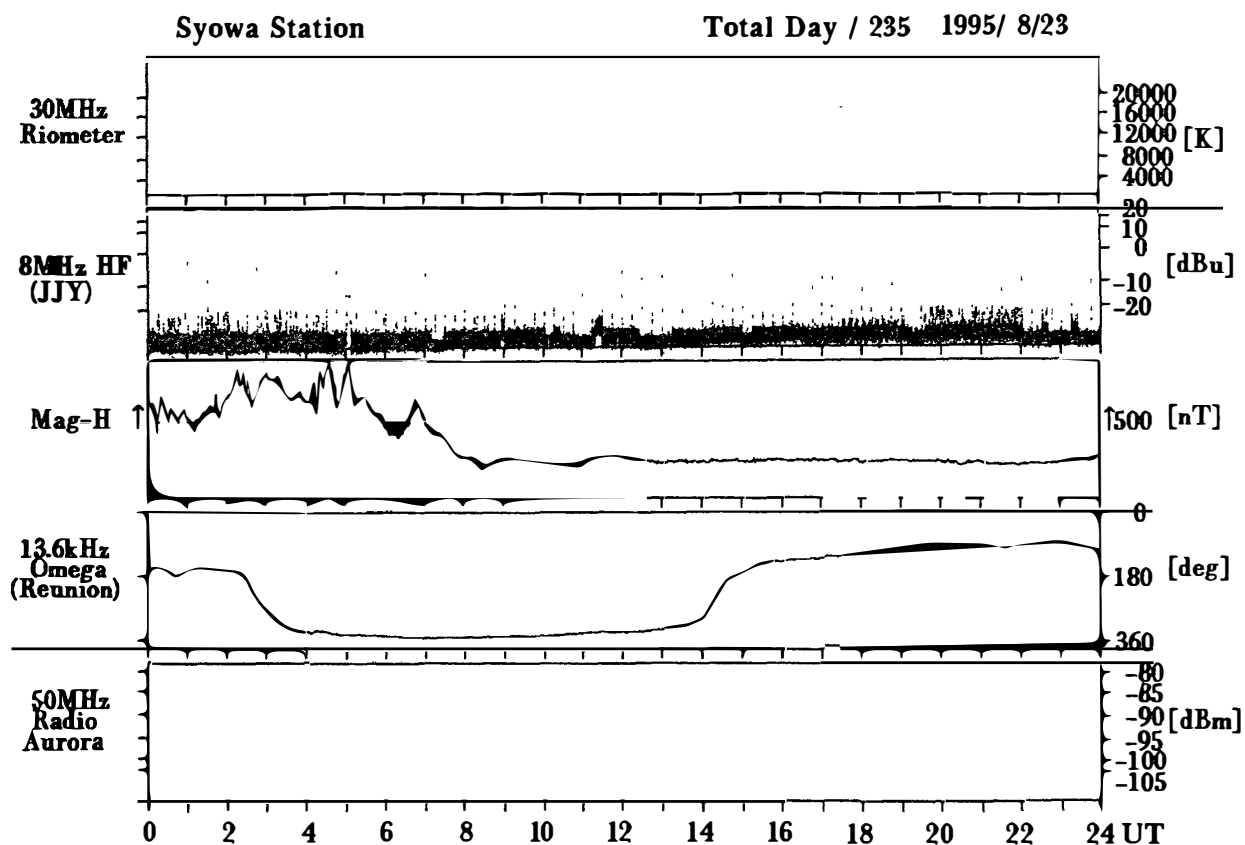


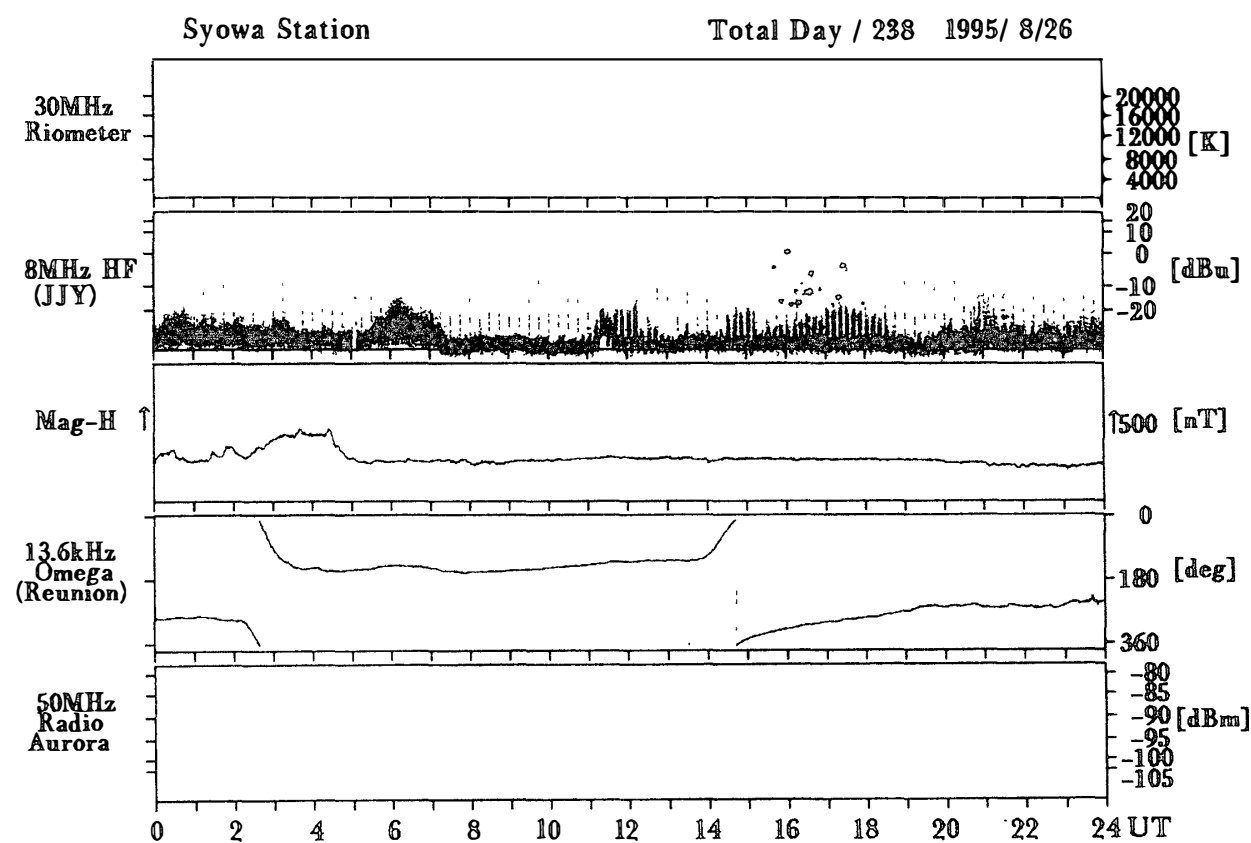
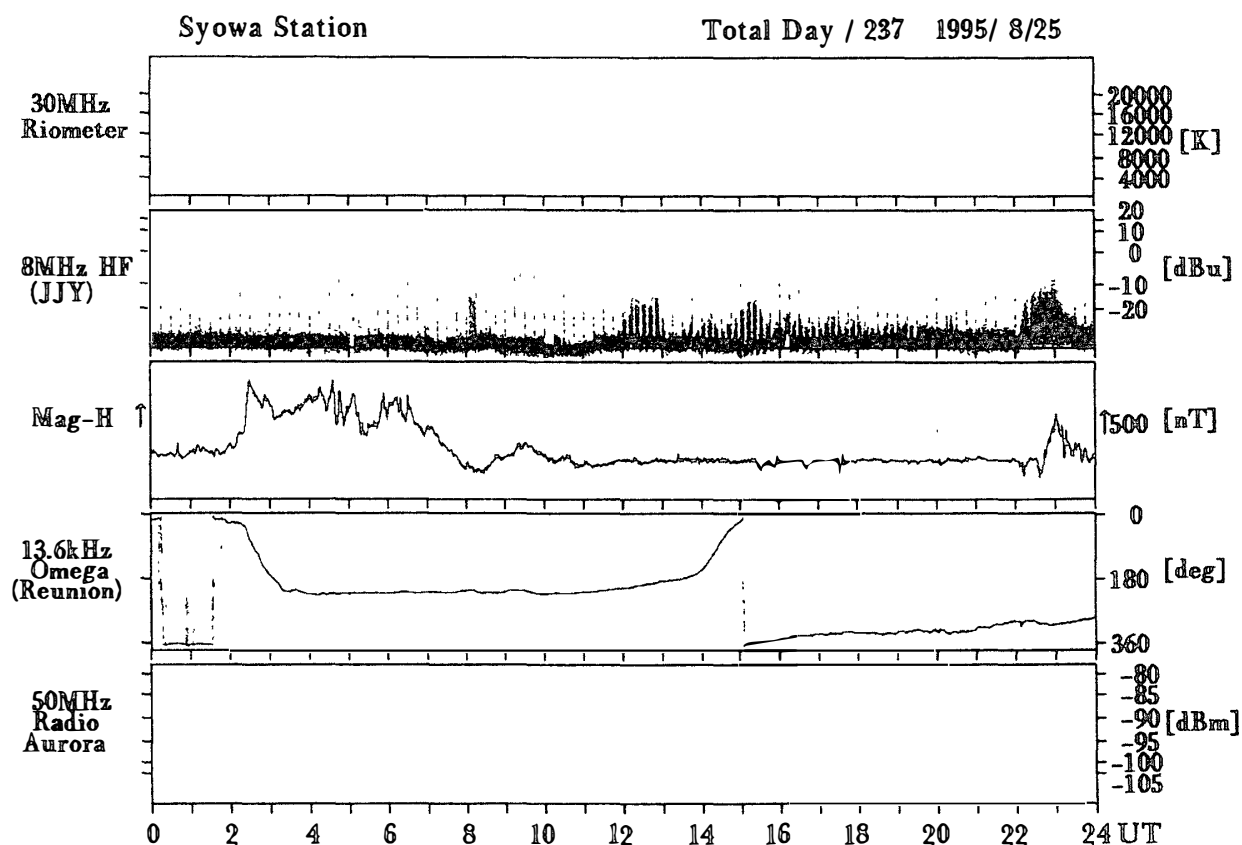
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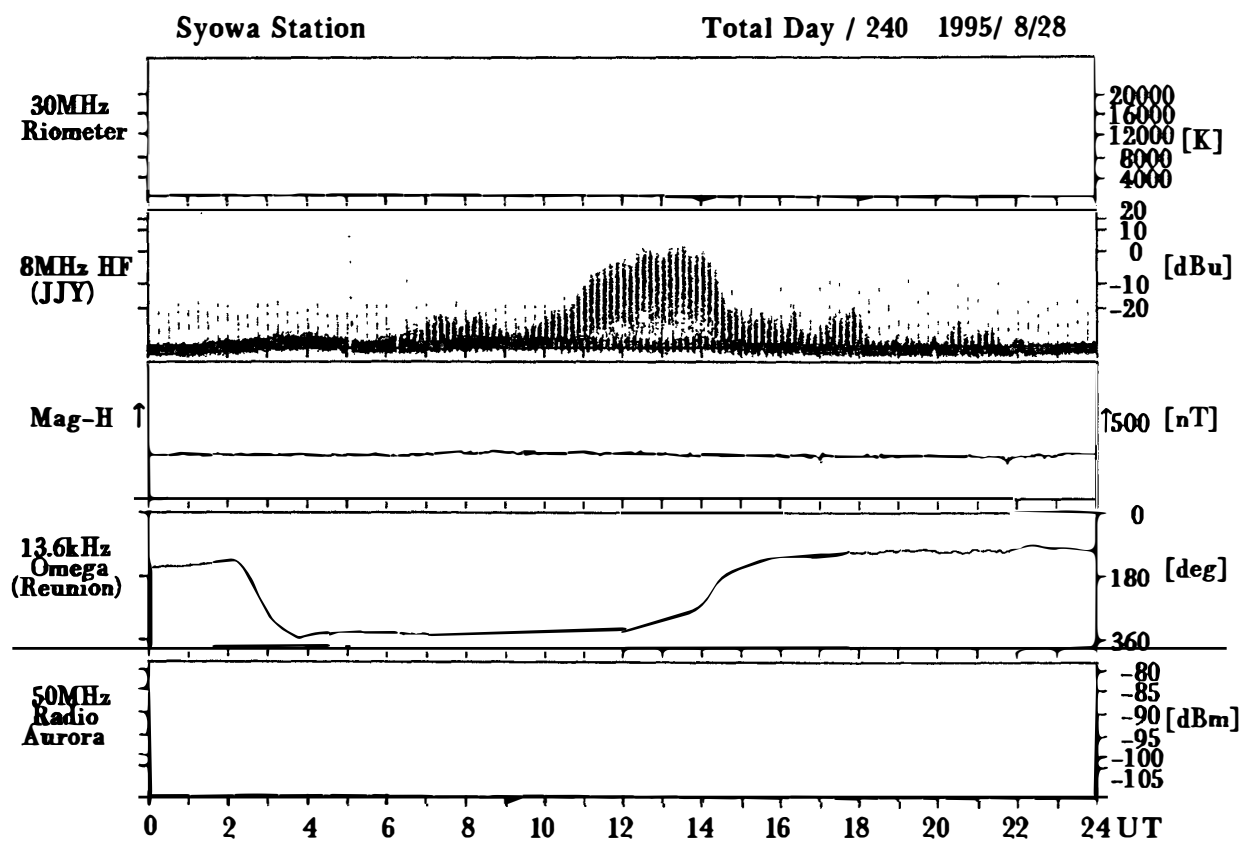
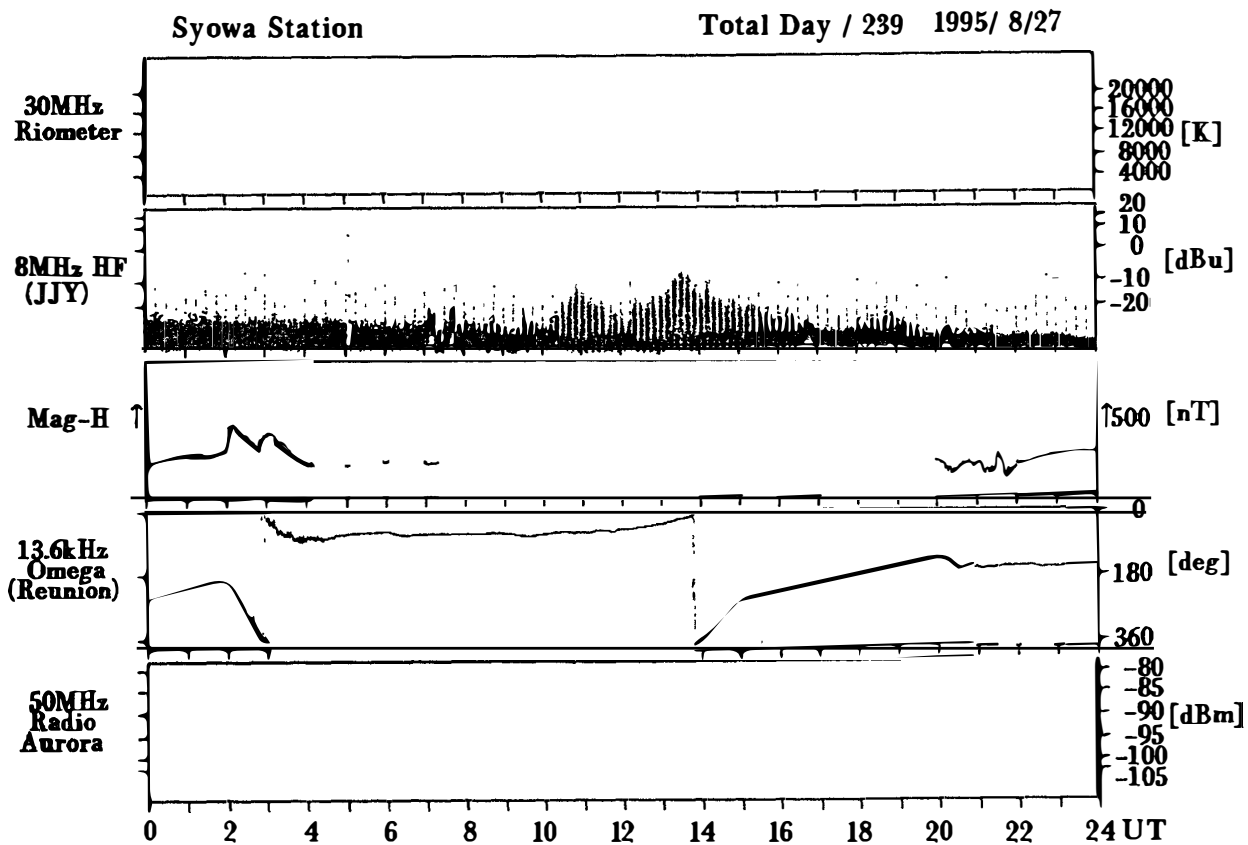
Total Day / 232 1995/ 8/20

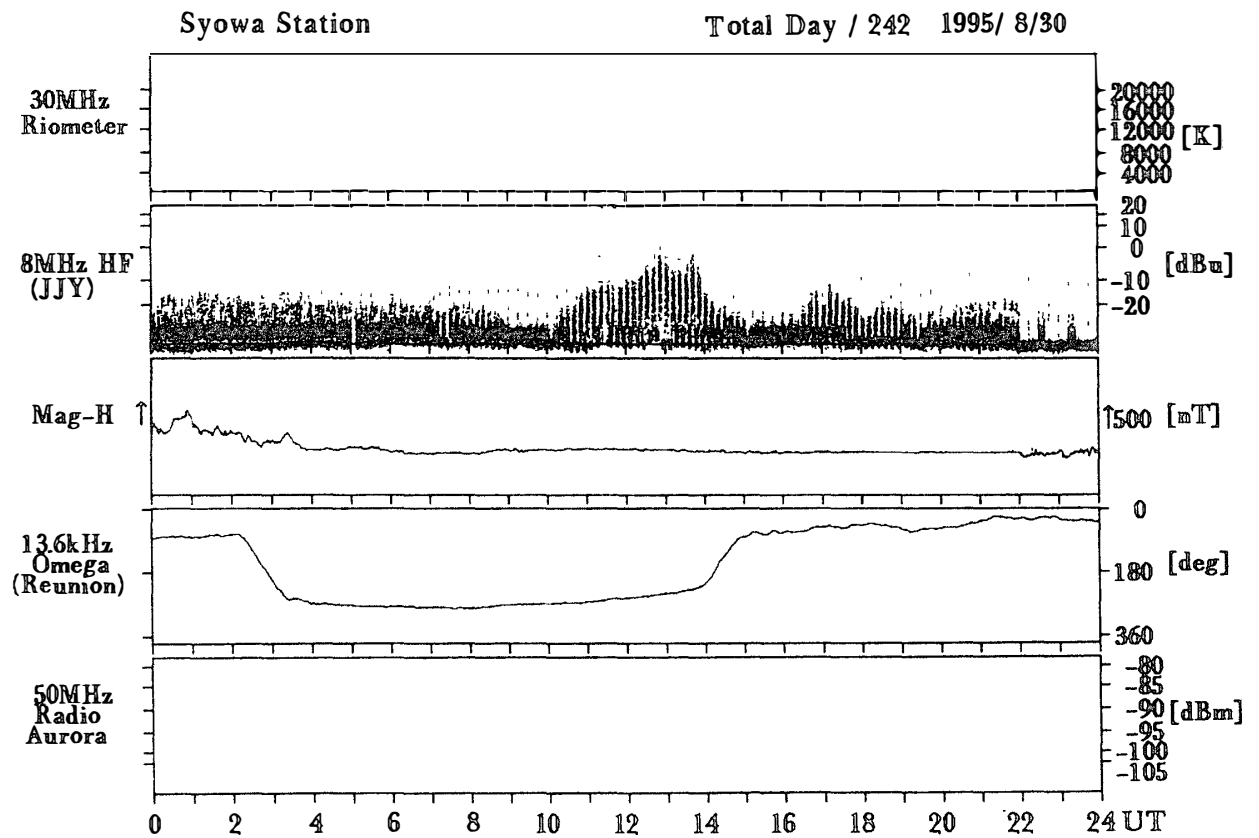
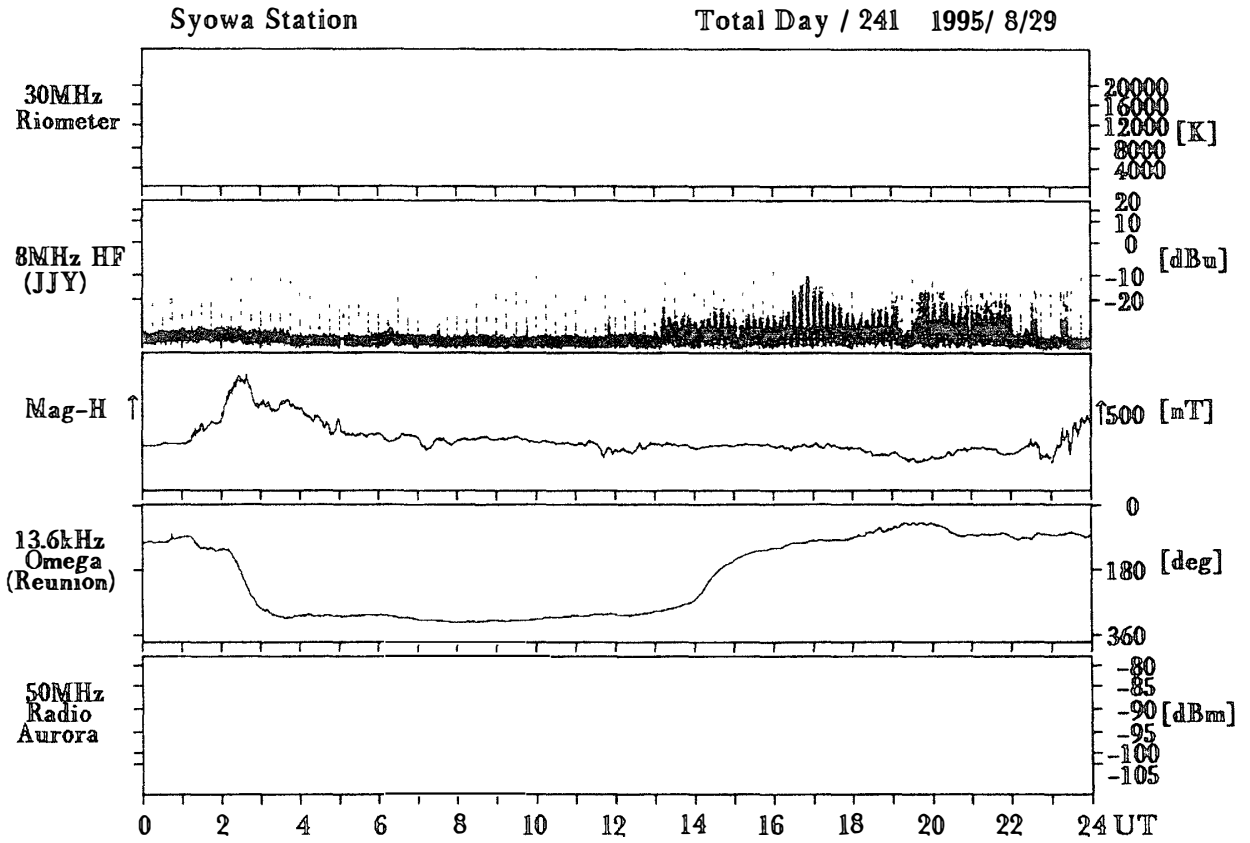






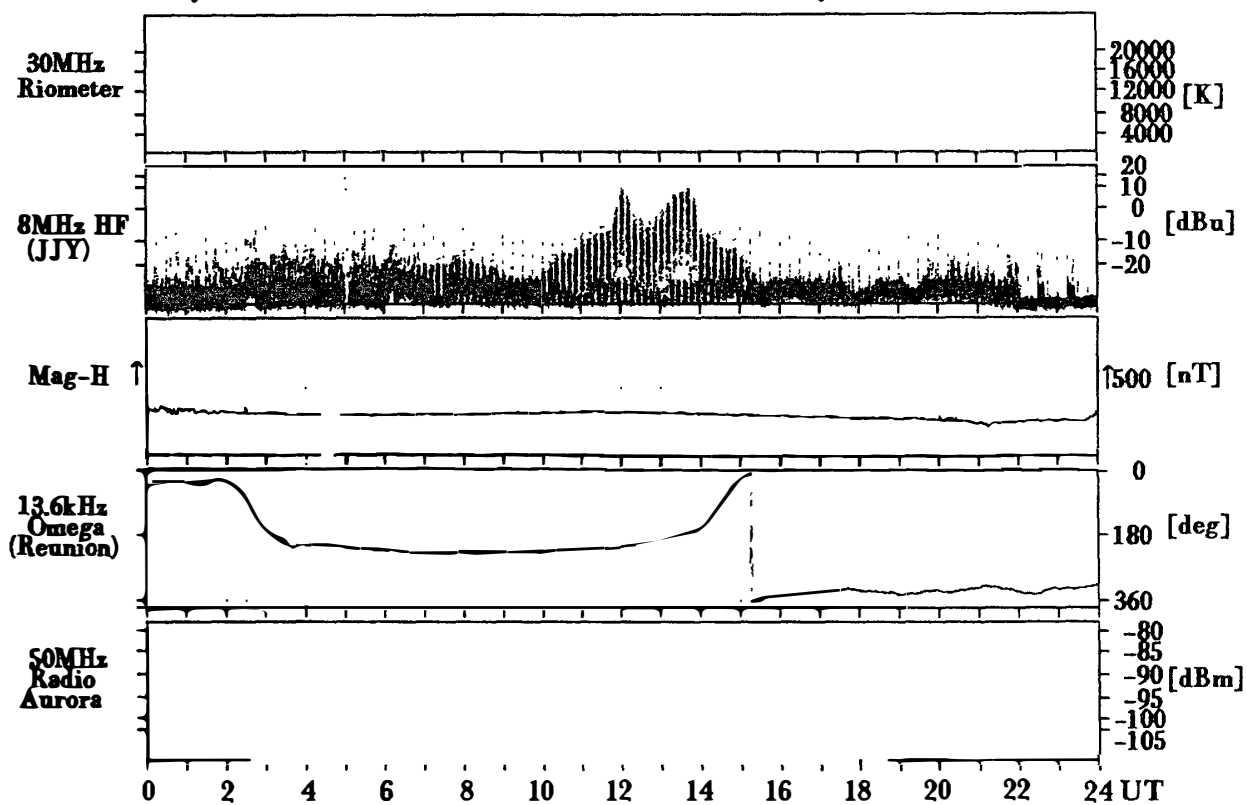






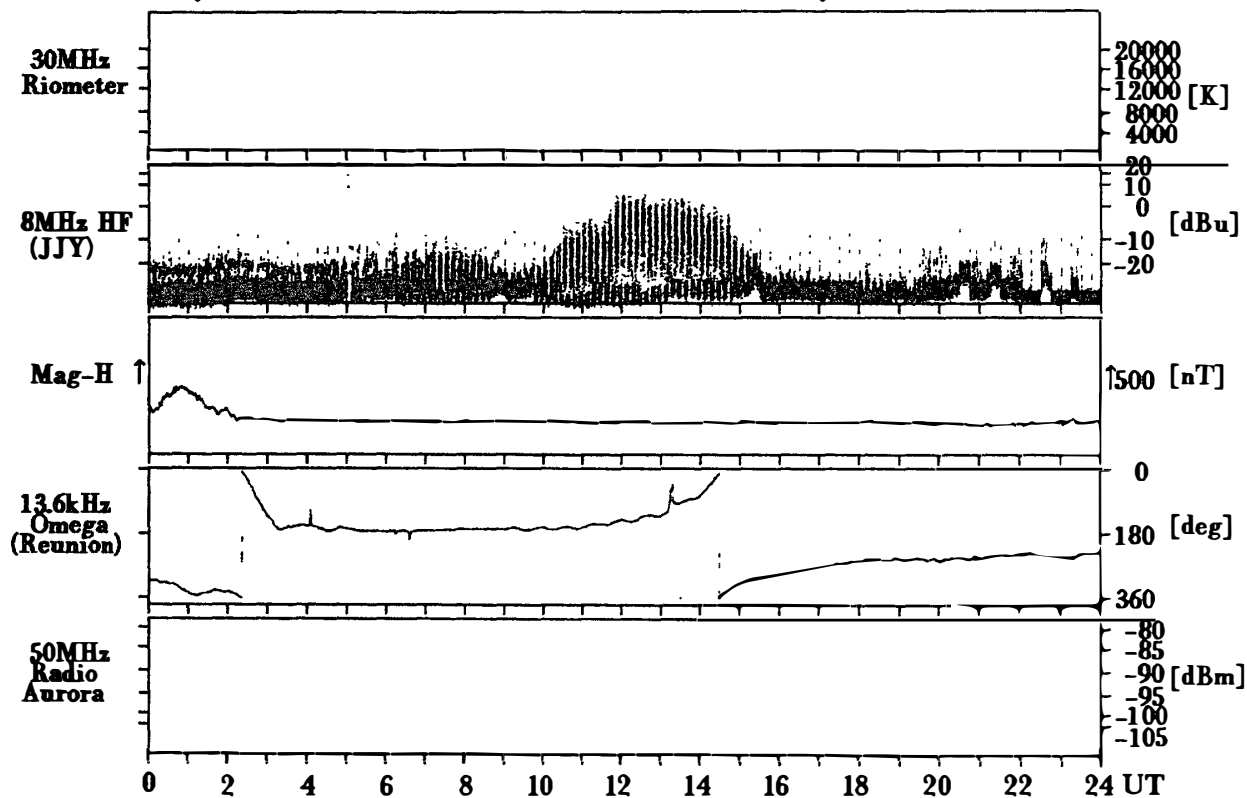
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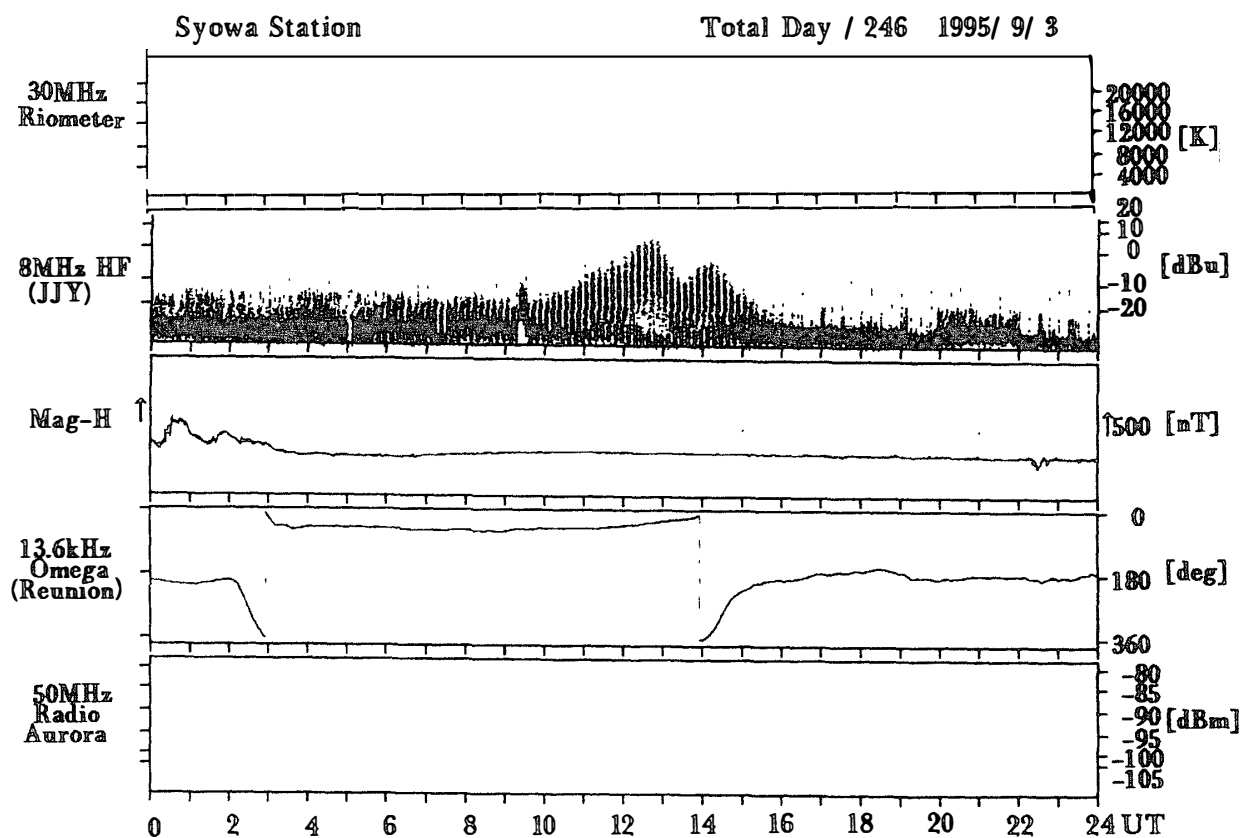
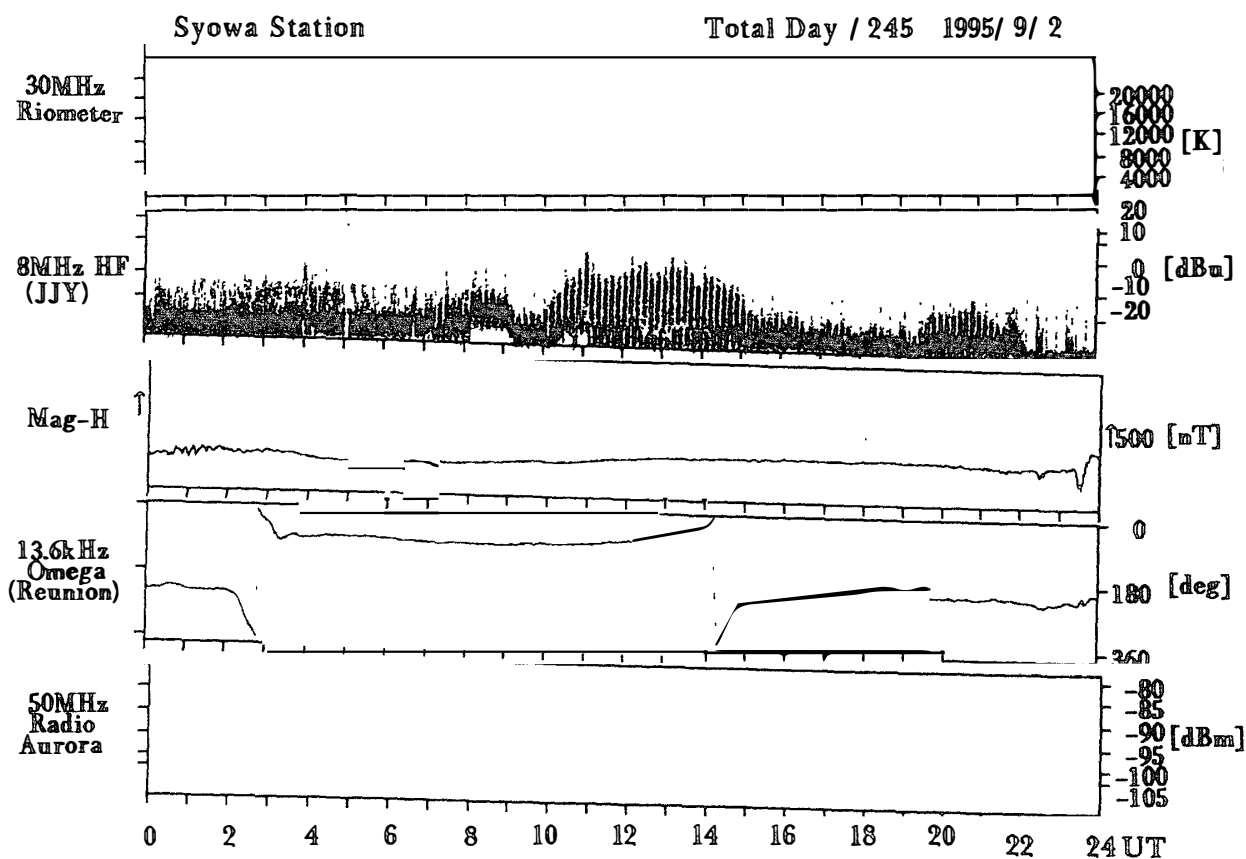
Total Day / 243 1995/ 8/31



Syowa Station

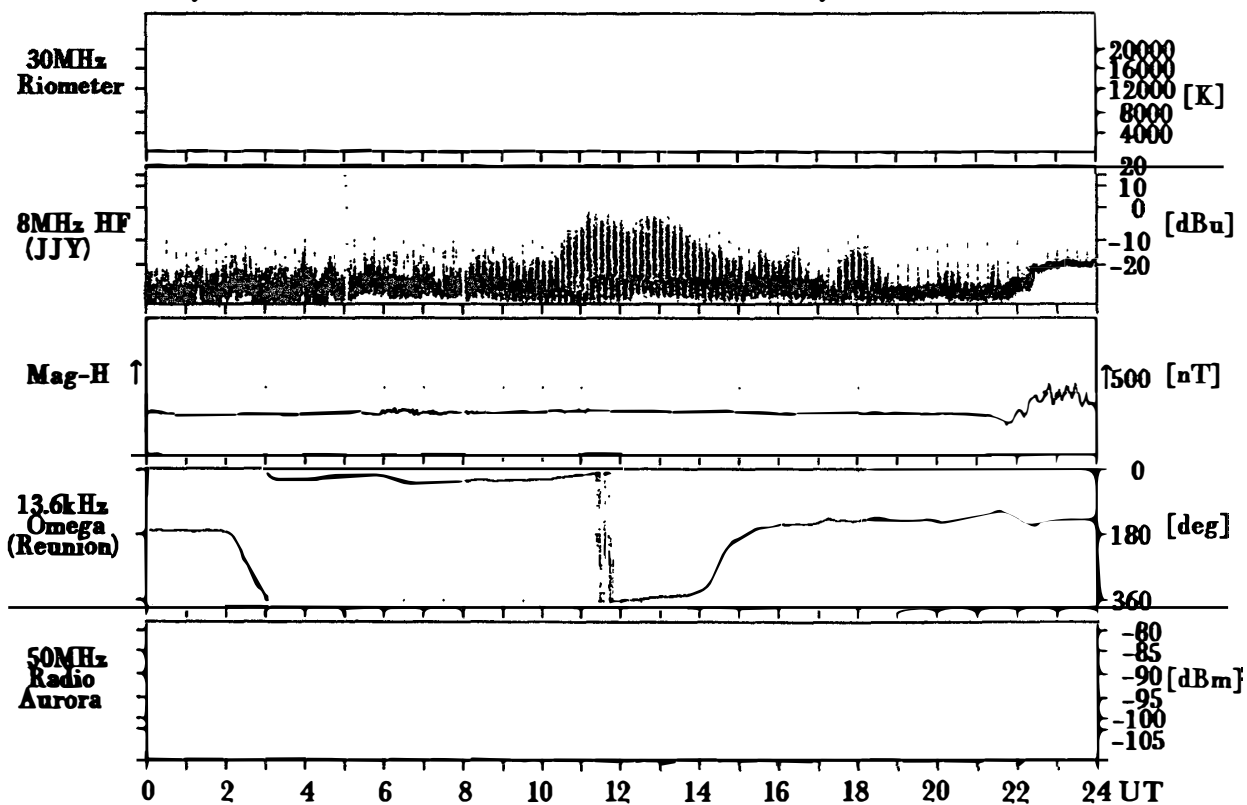
Total Day / 244 1995/ 9/ 1





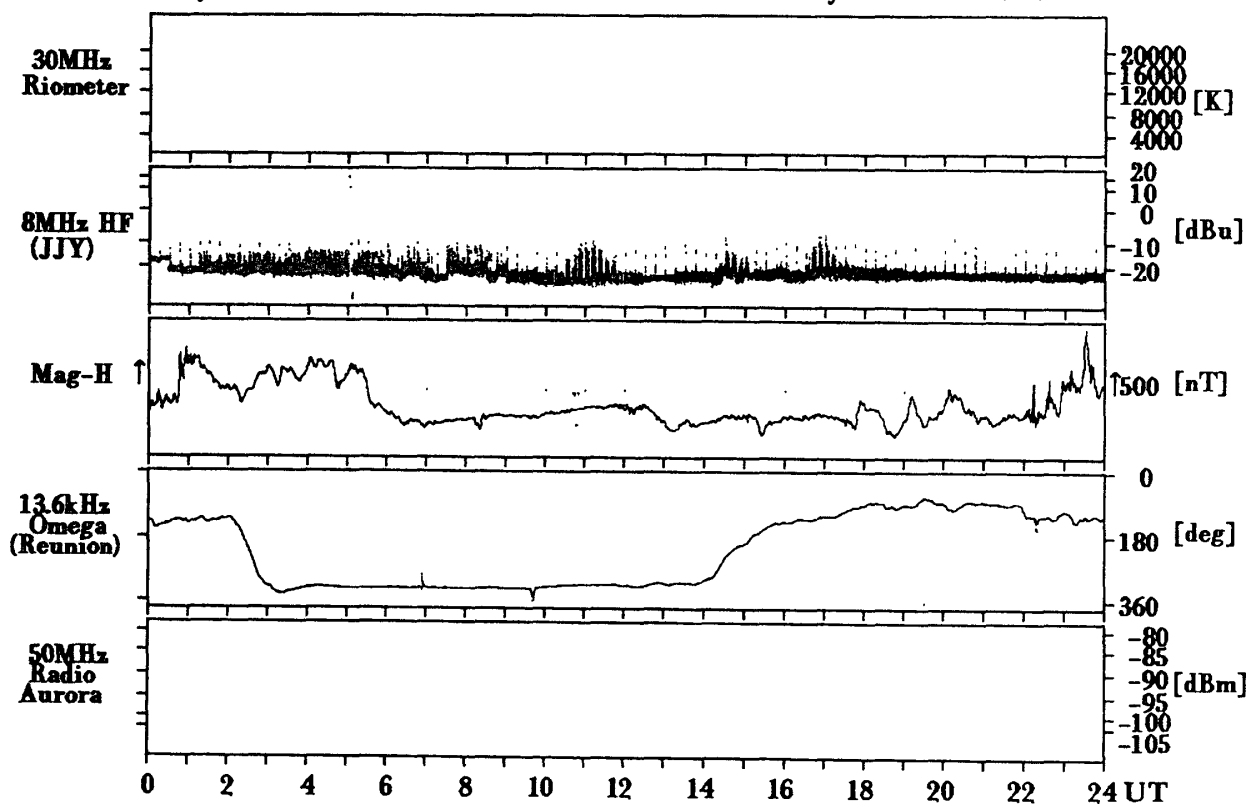
Syowa Station

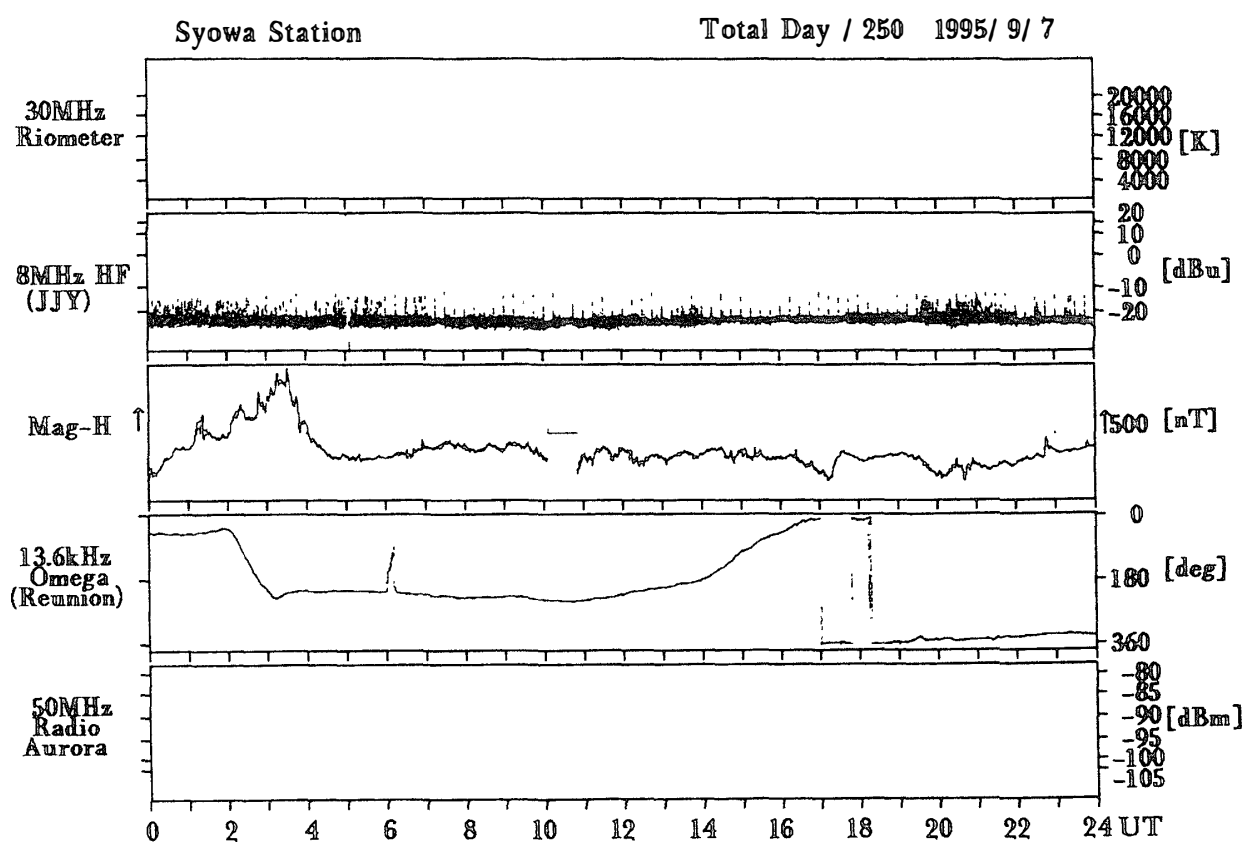
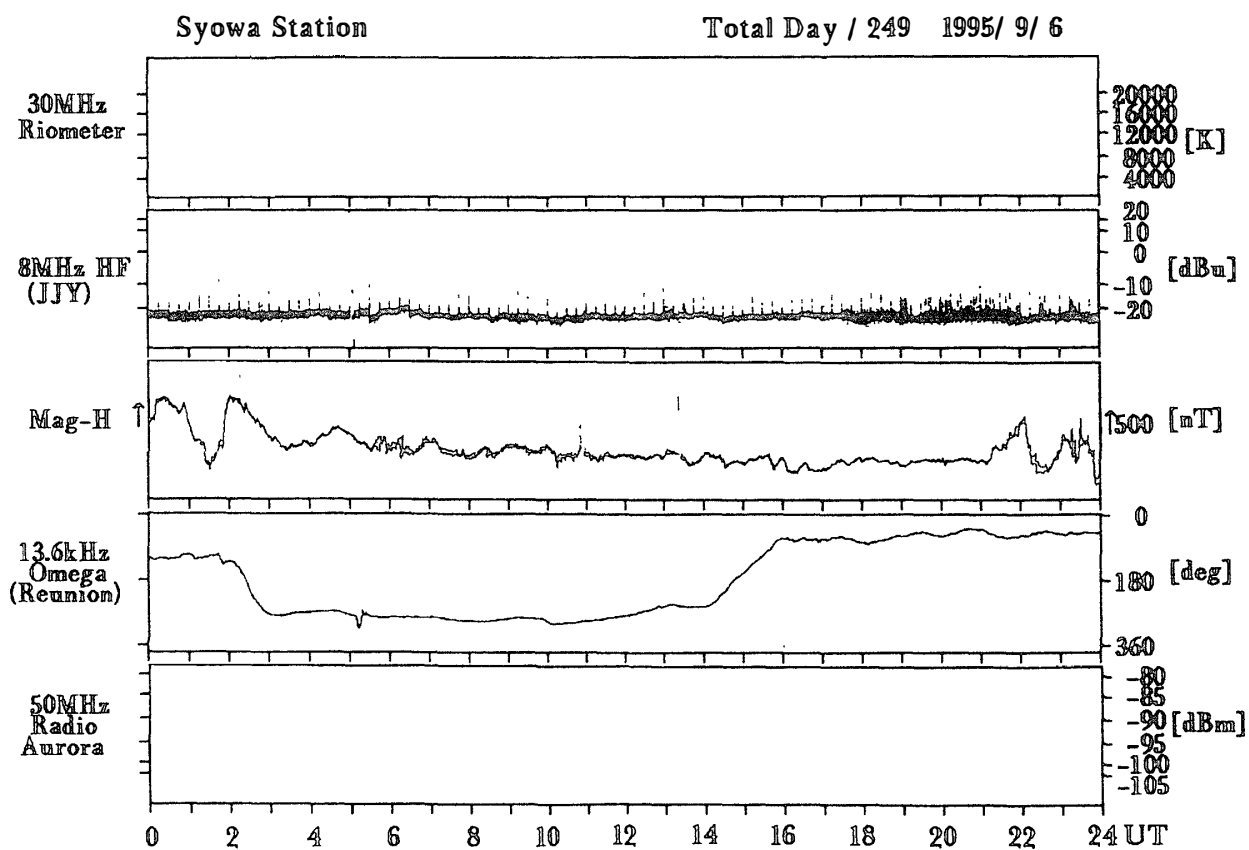
Total Day / 247 1995/ 9/ 4

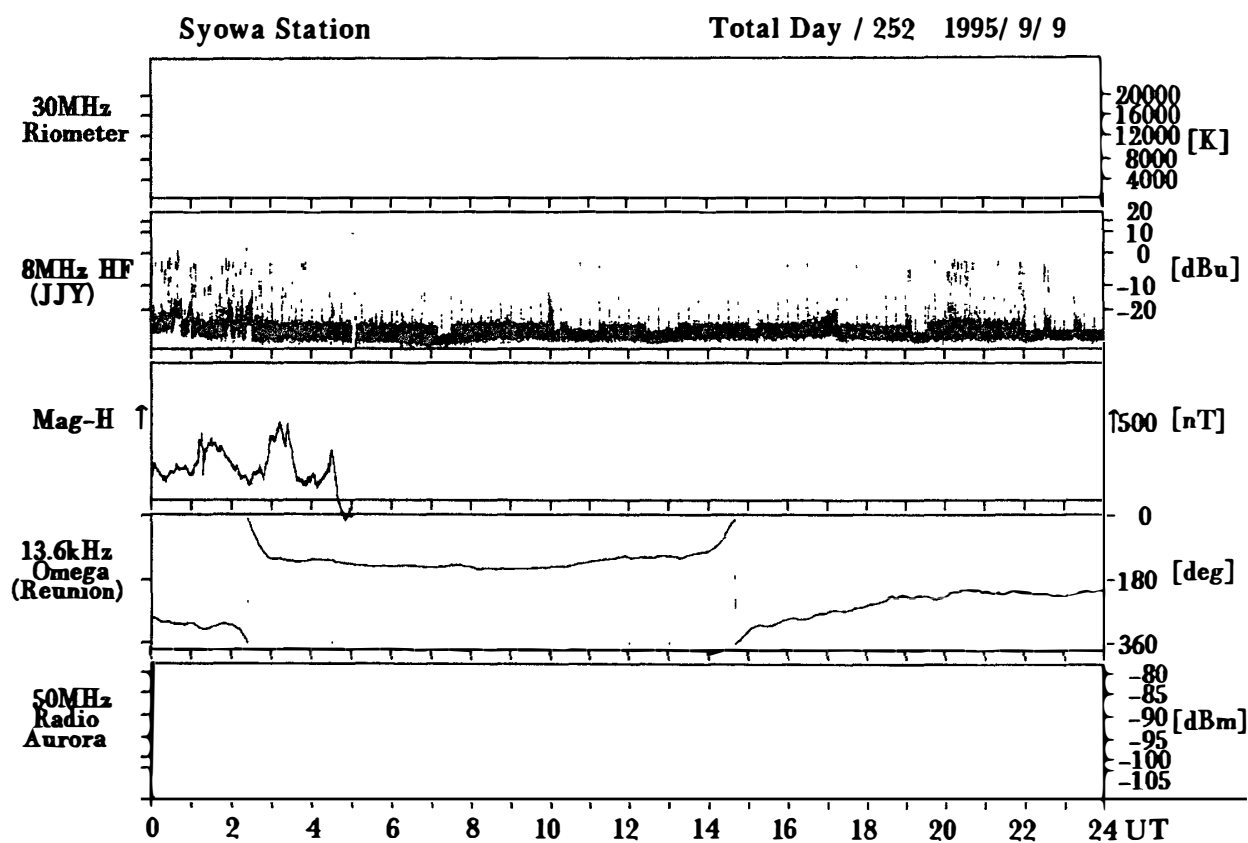
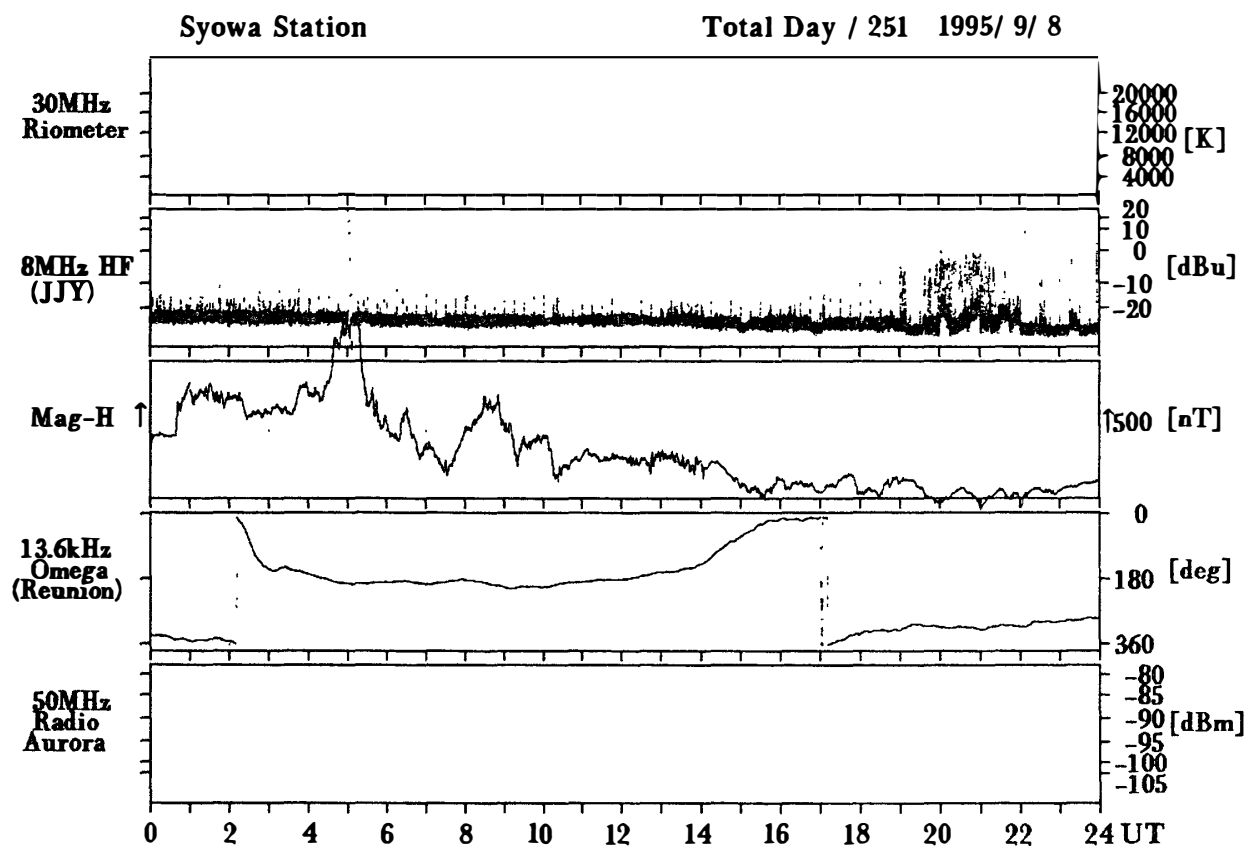


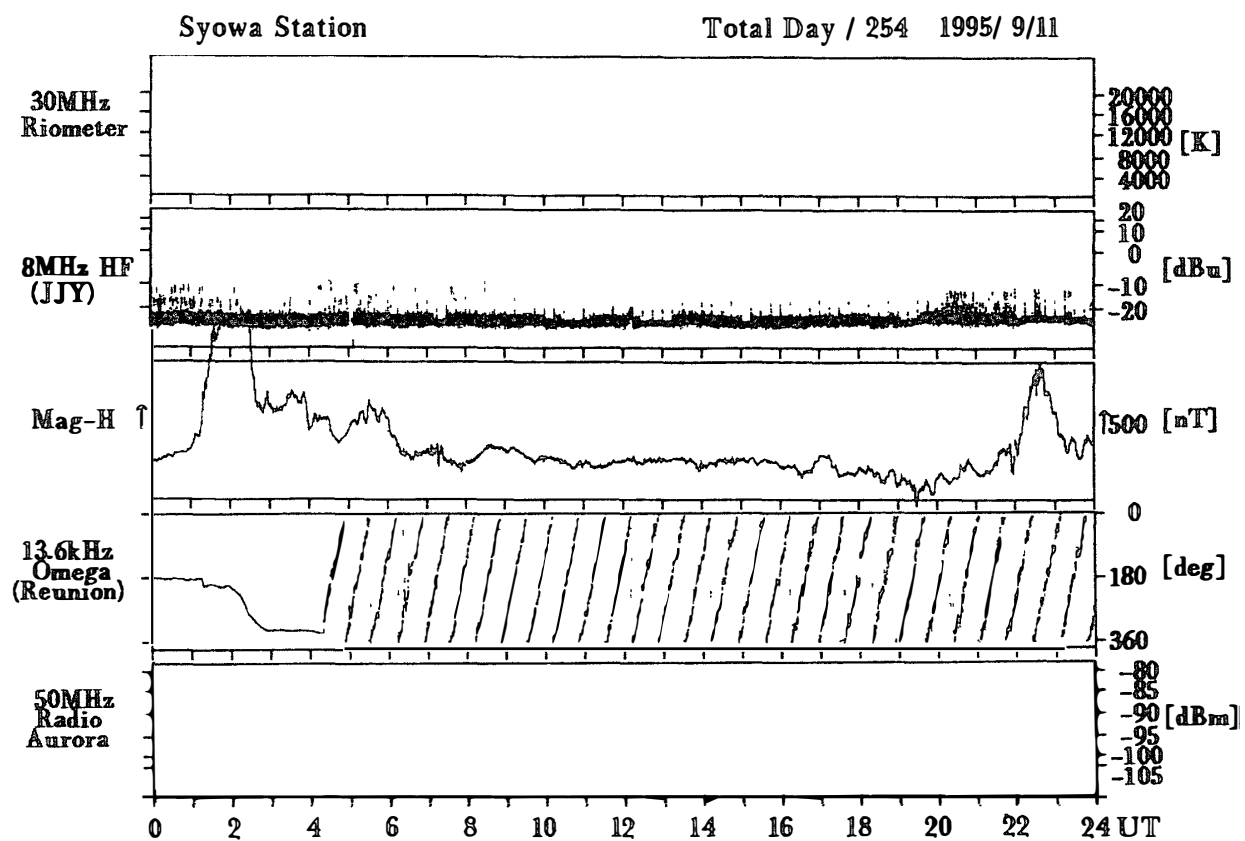
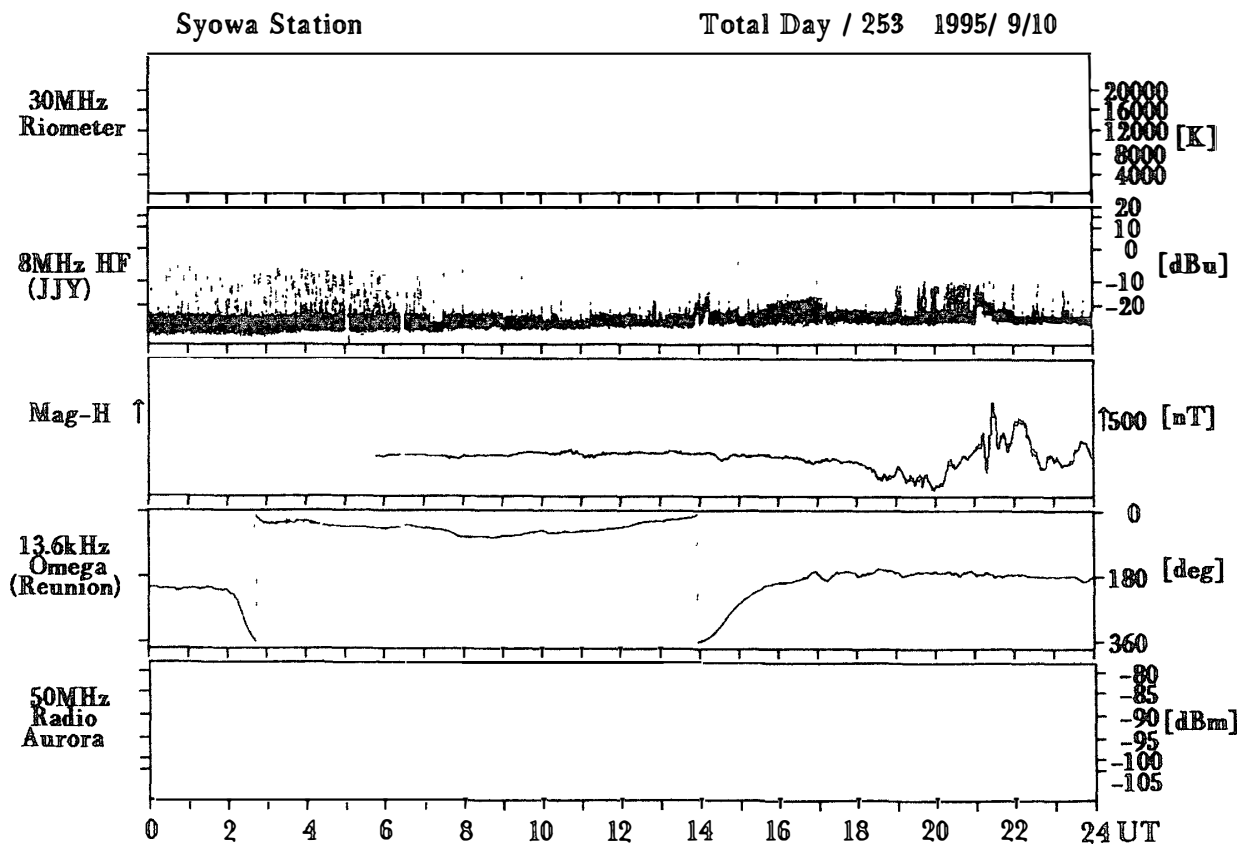
Syowa Station

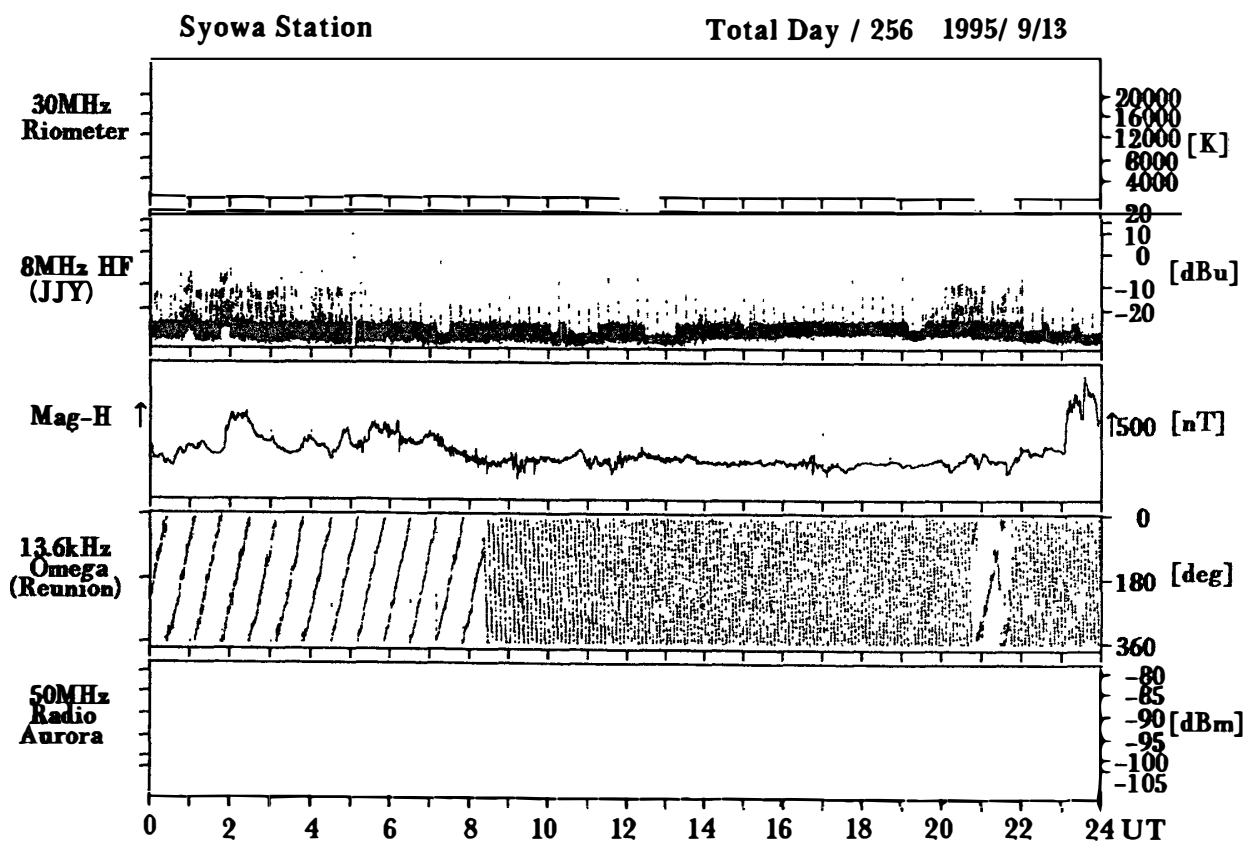
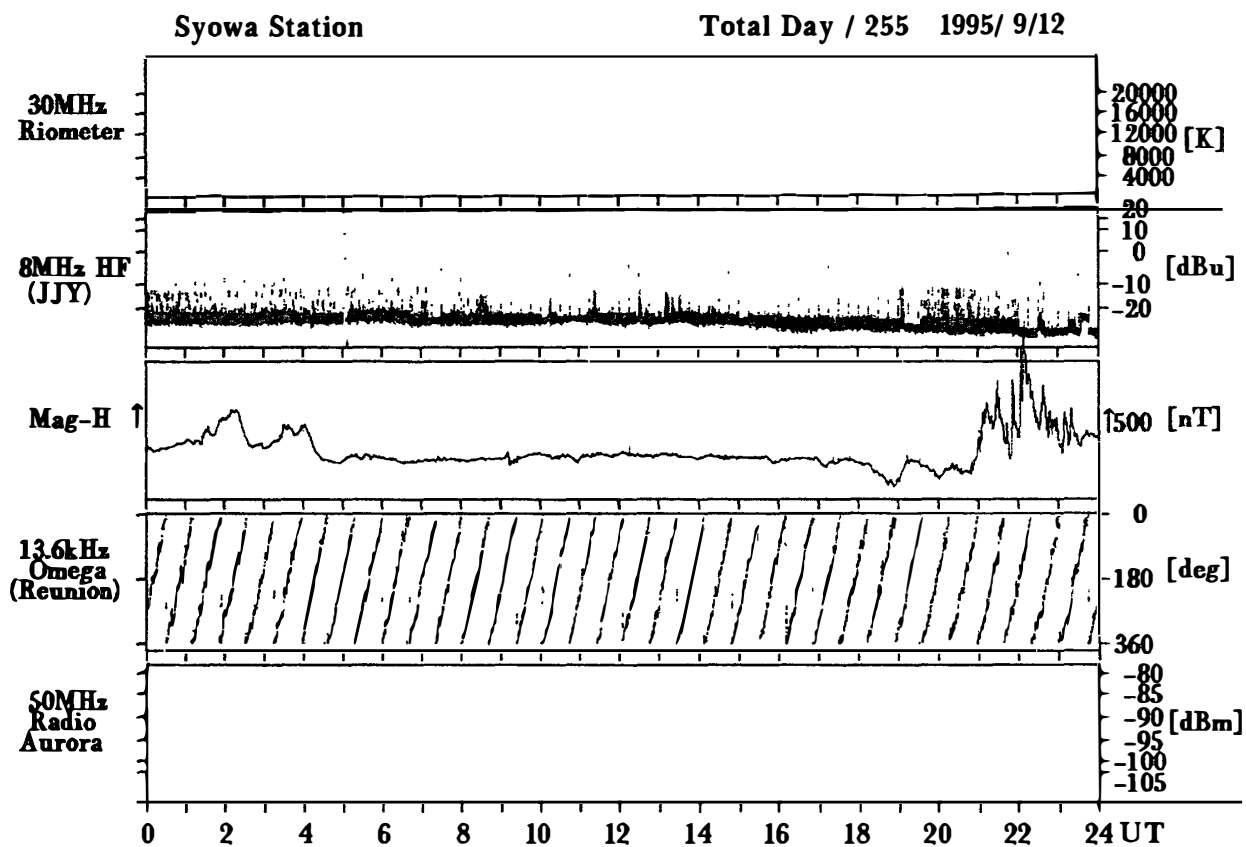
Total Day / 248 1995/ 9/ 5

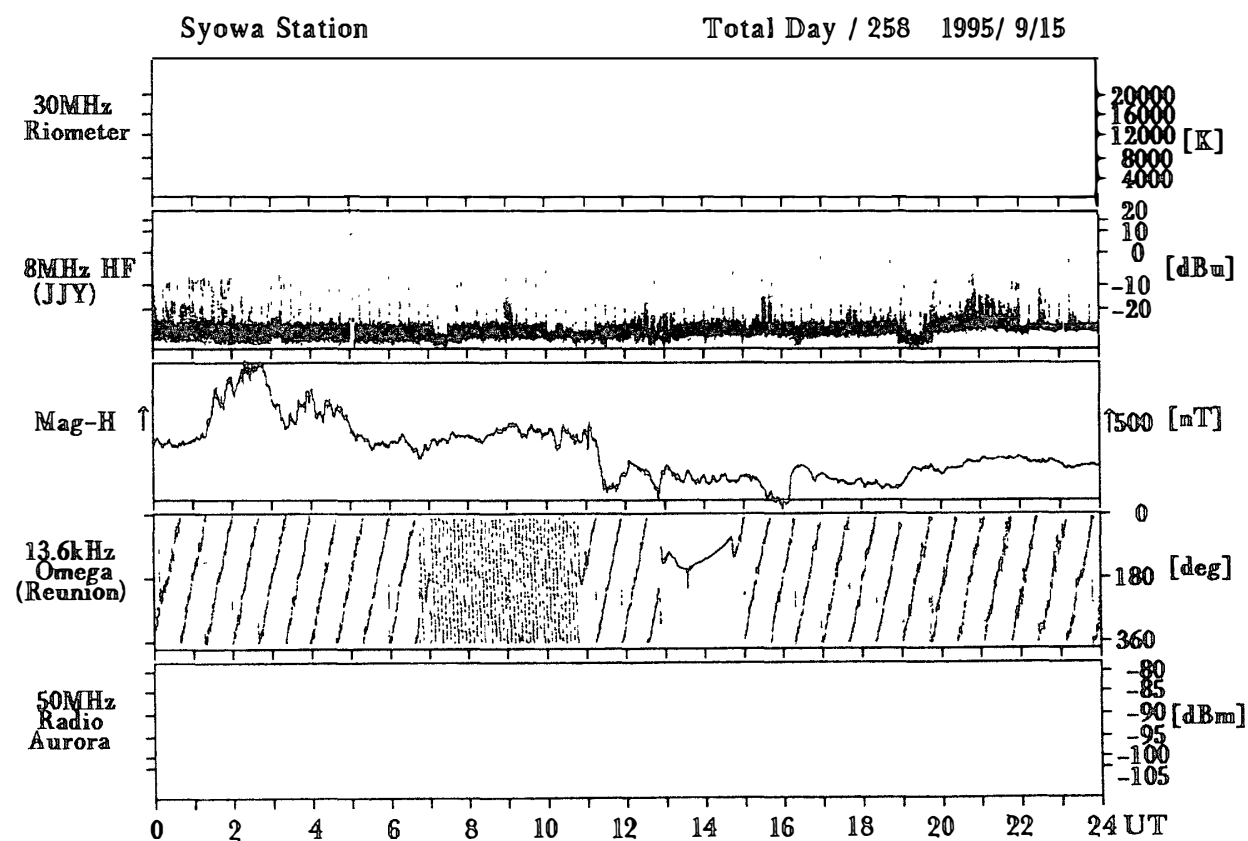
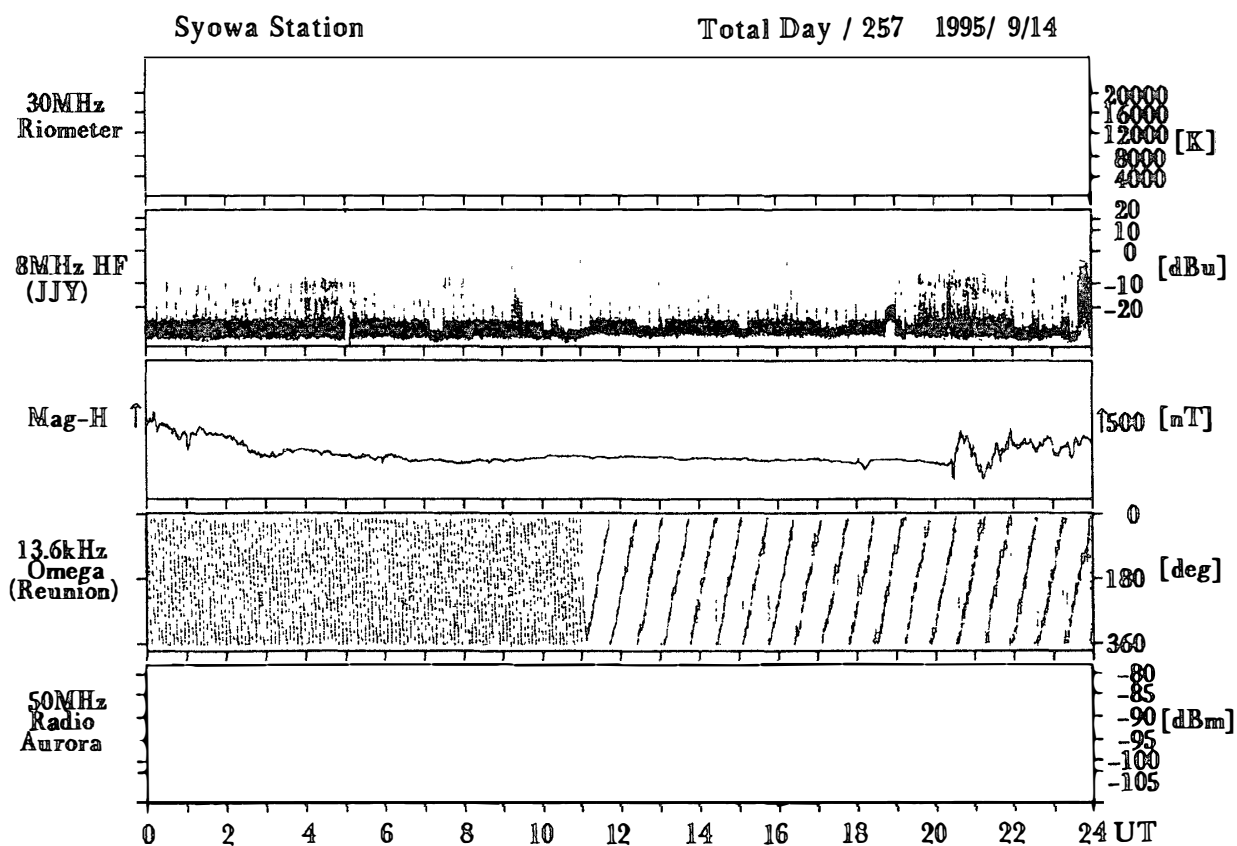






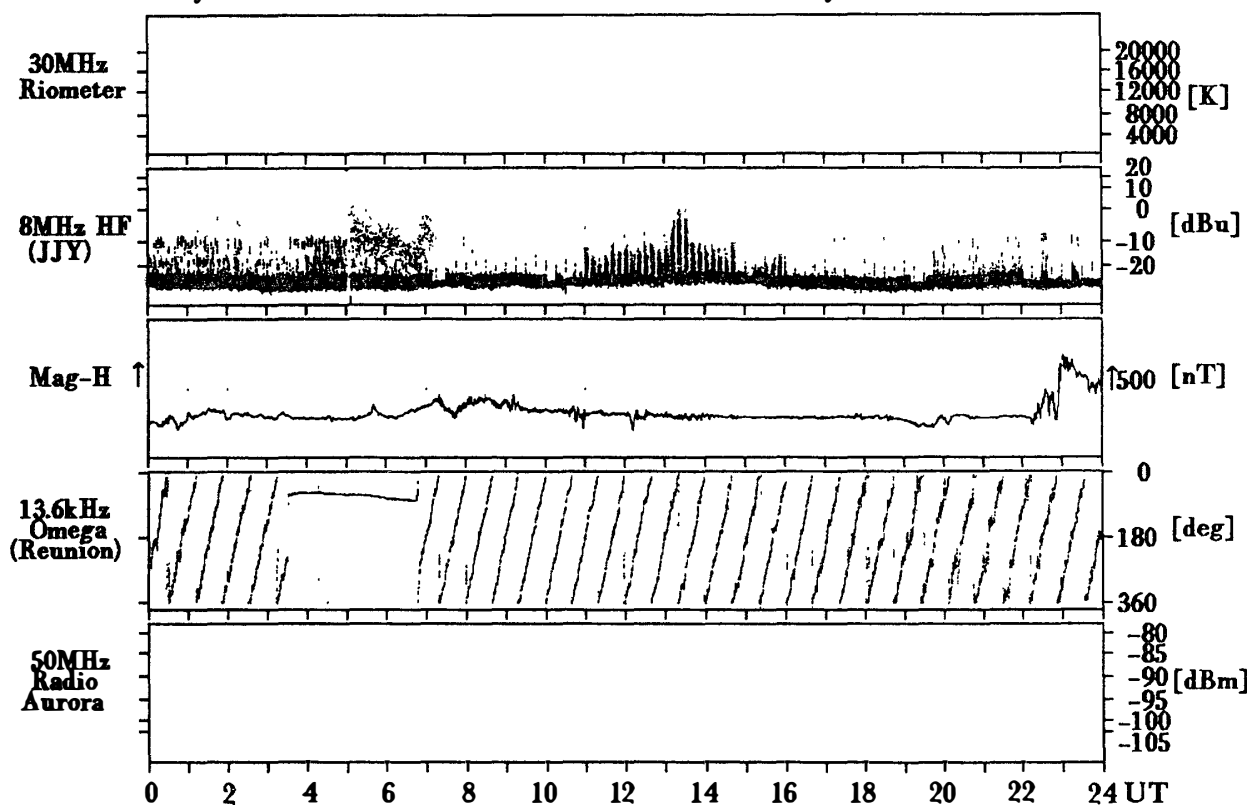






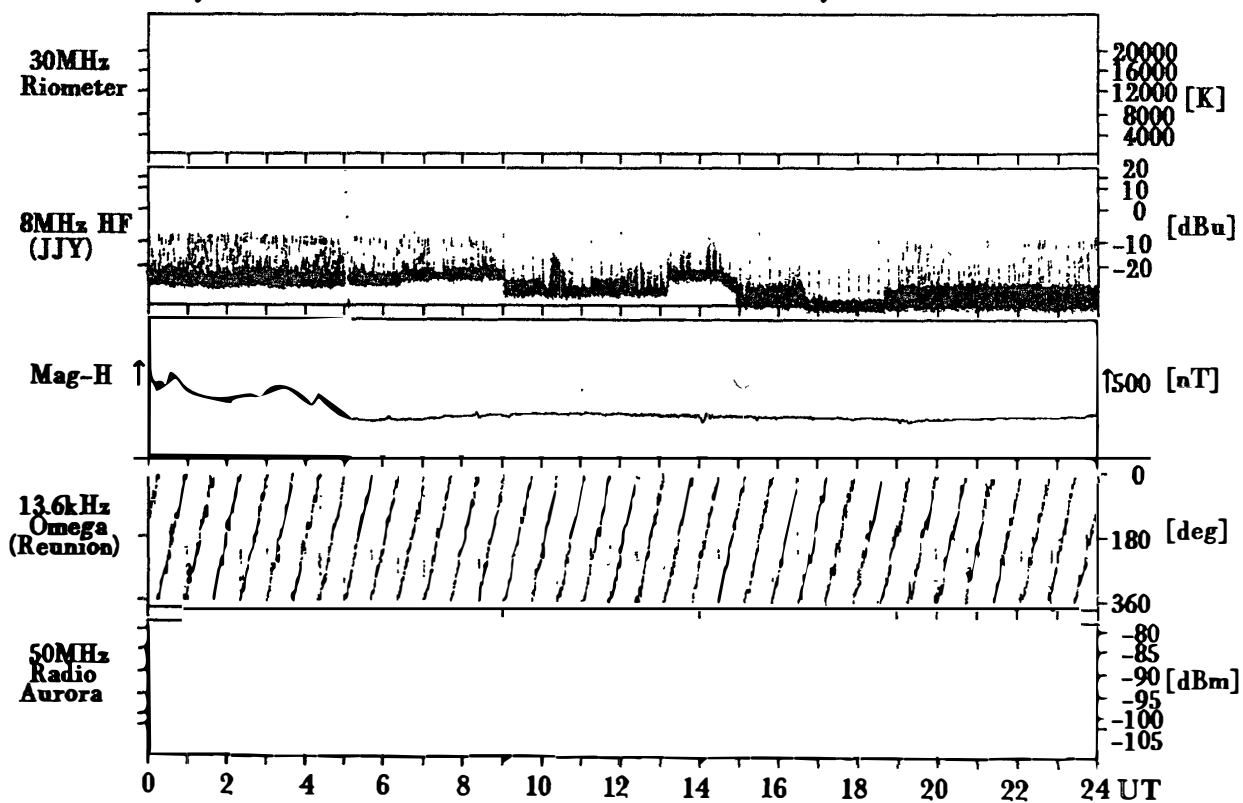
Syowa Station

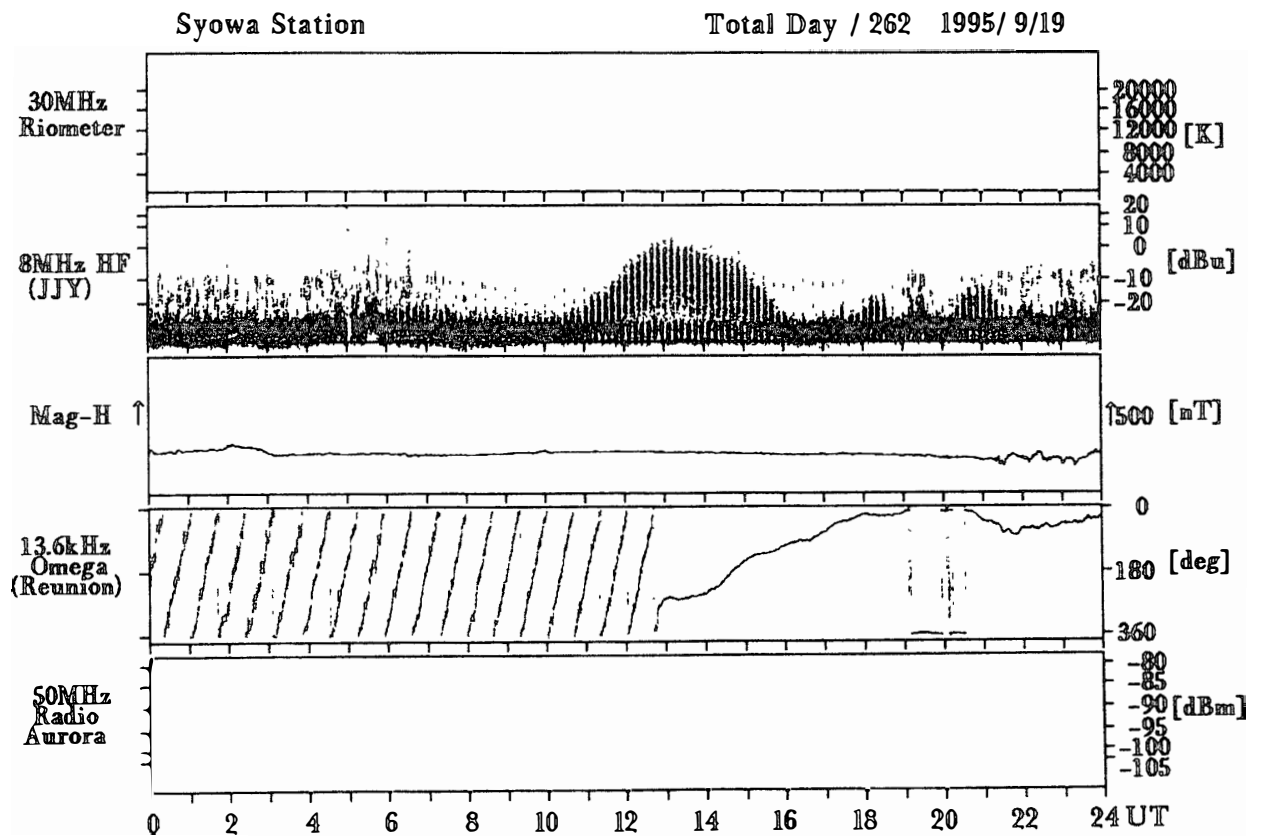
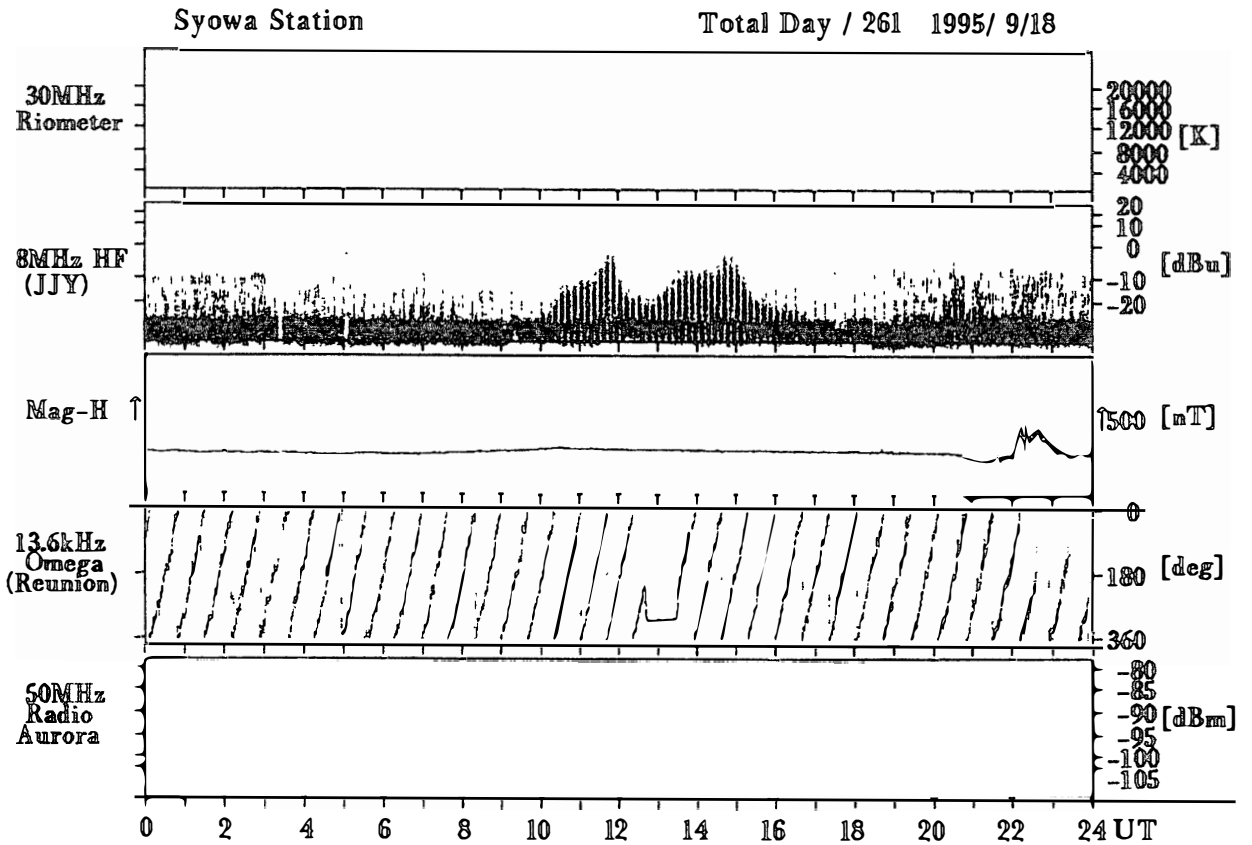
Total Day / 259 1995/ 9/16

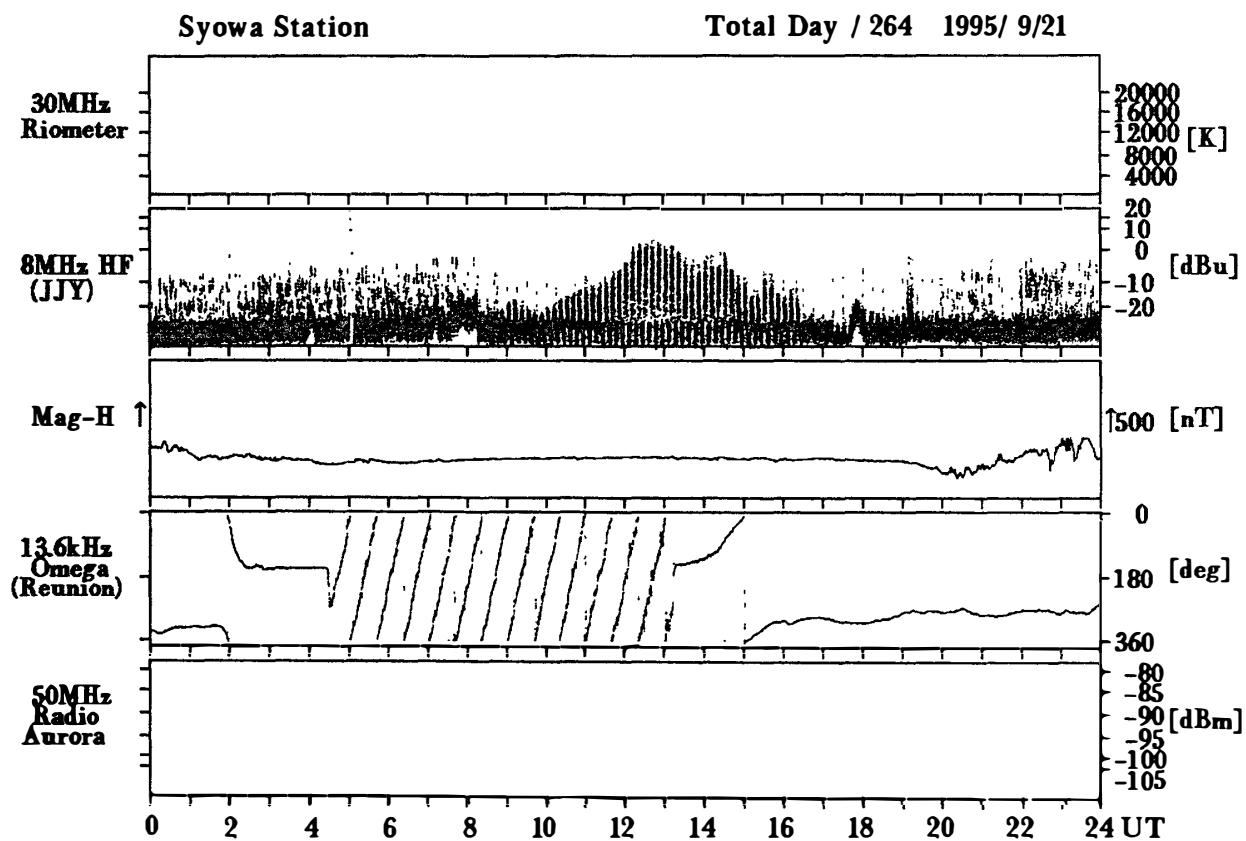
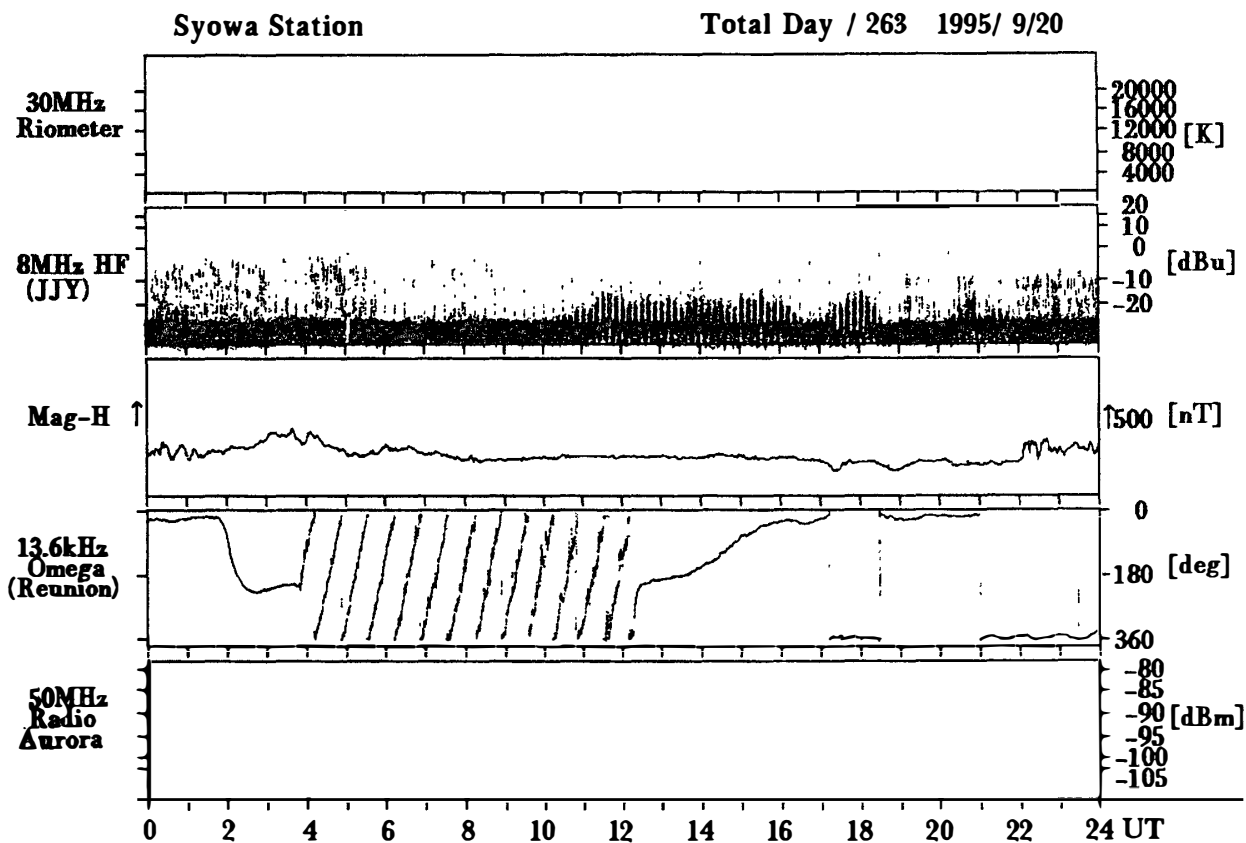


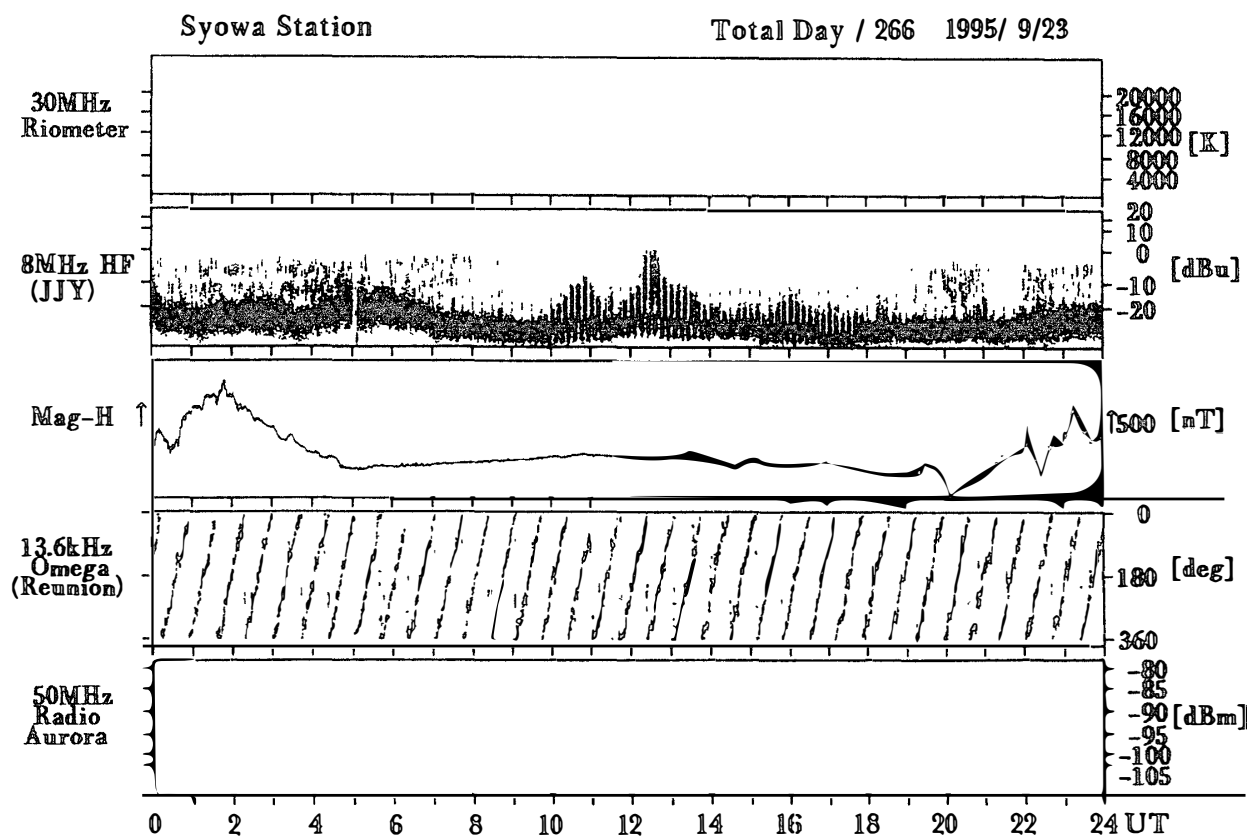
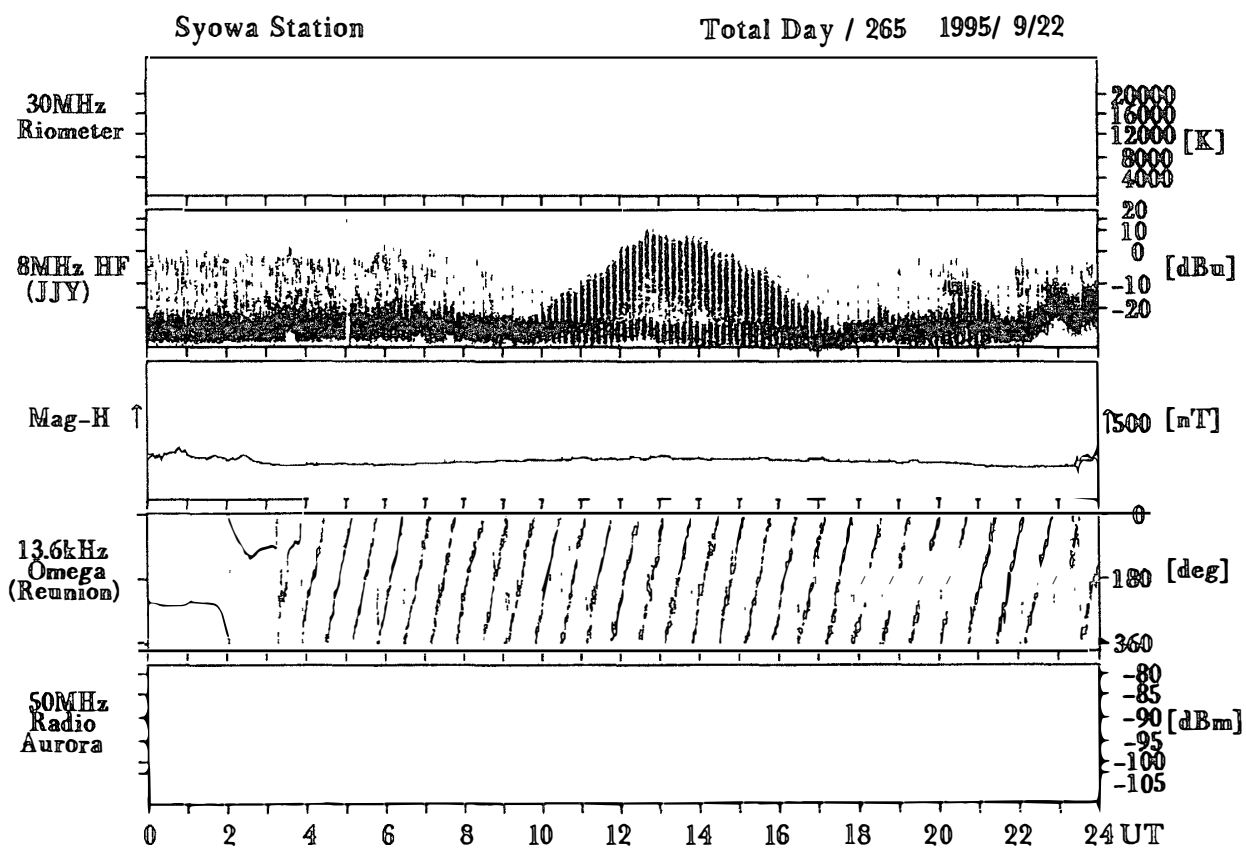
Syowa Station

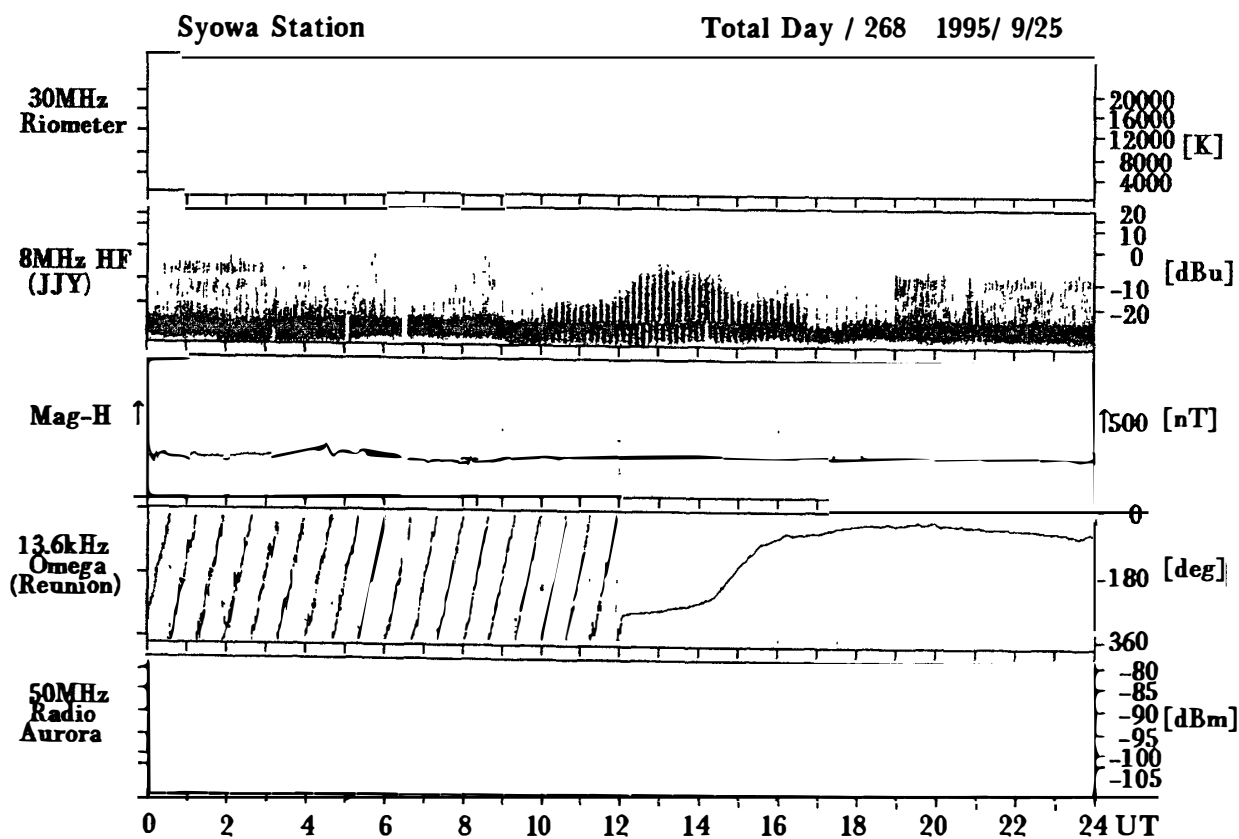
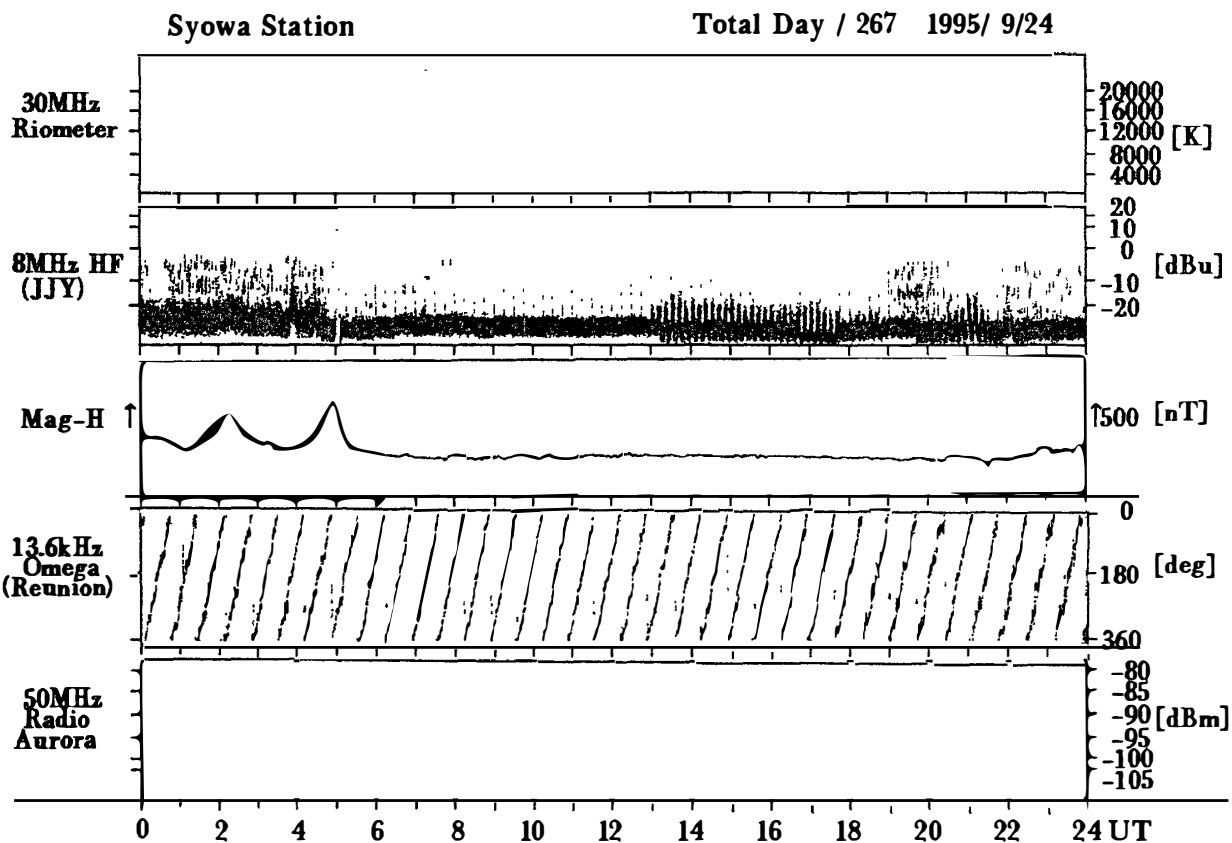
Total Day / 260 1995/ 9/17

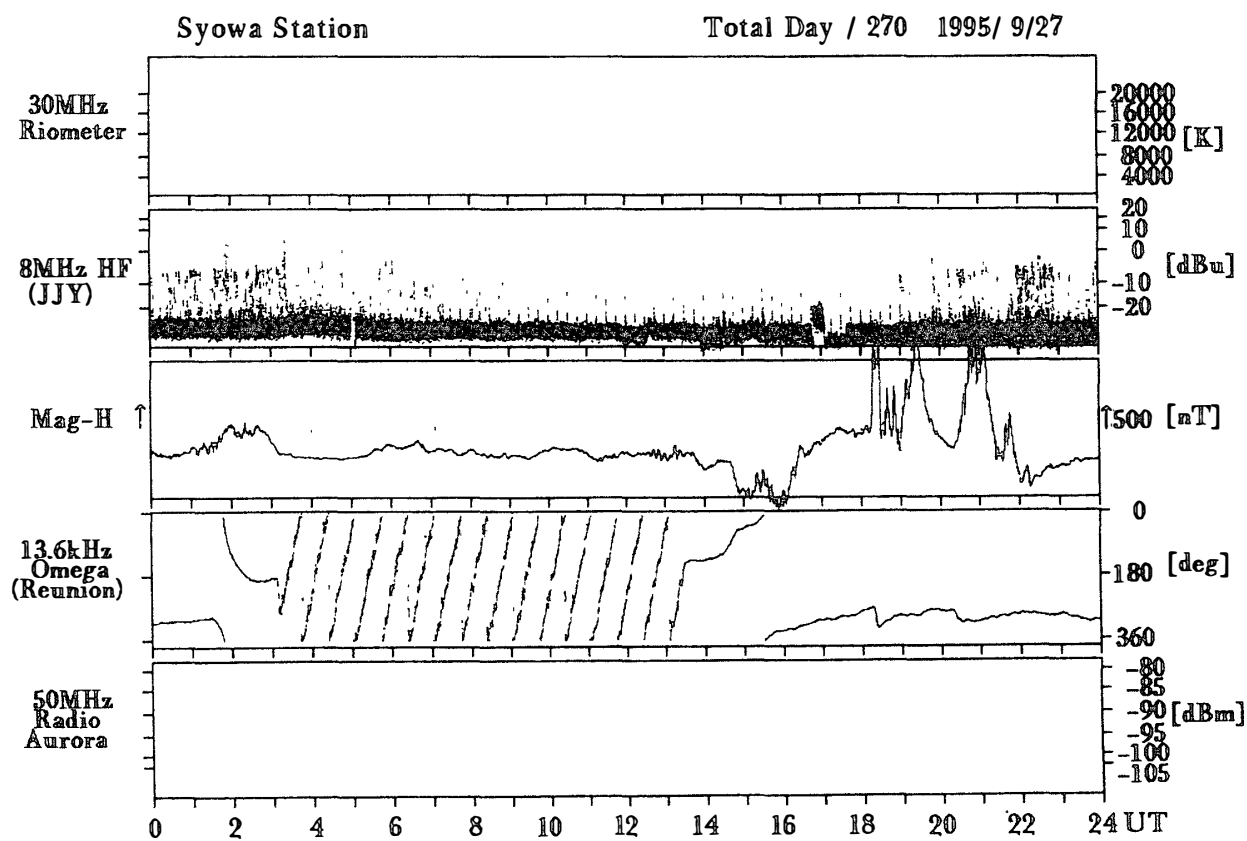
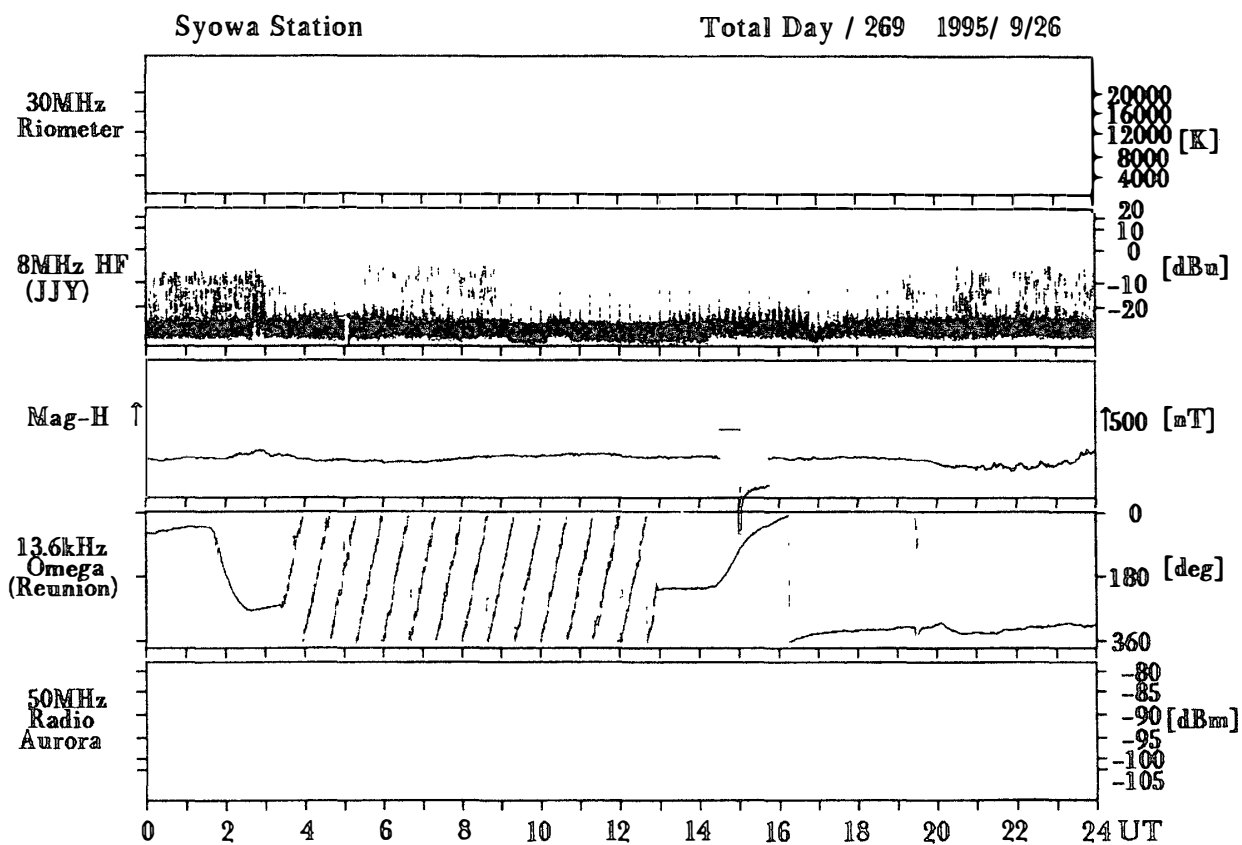


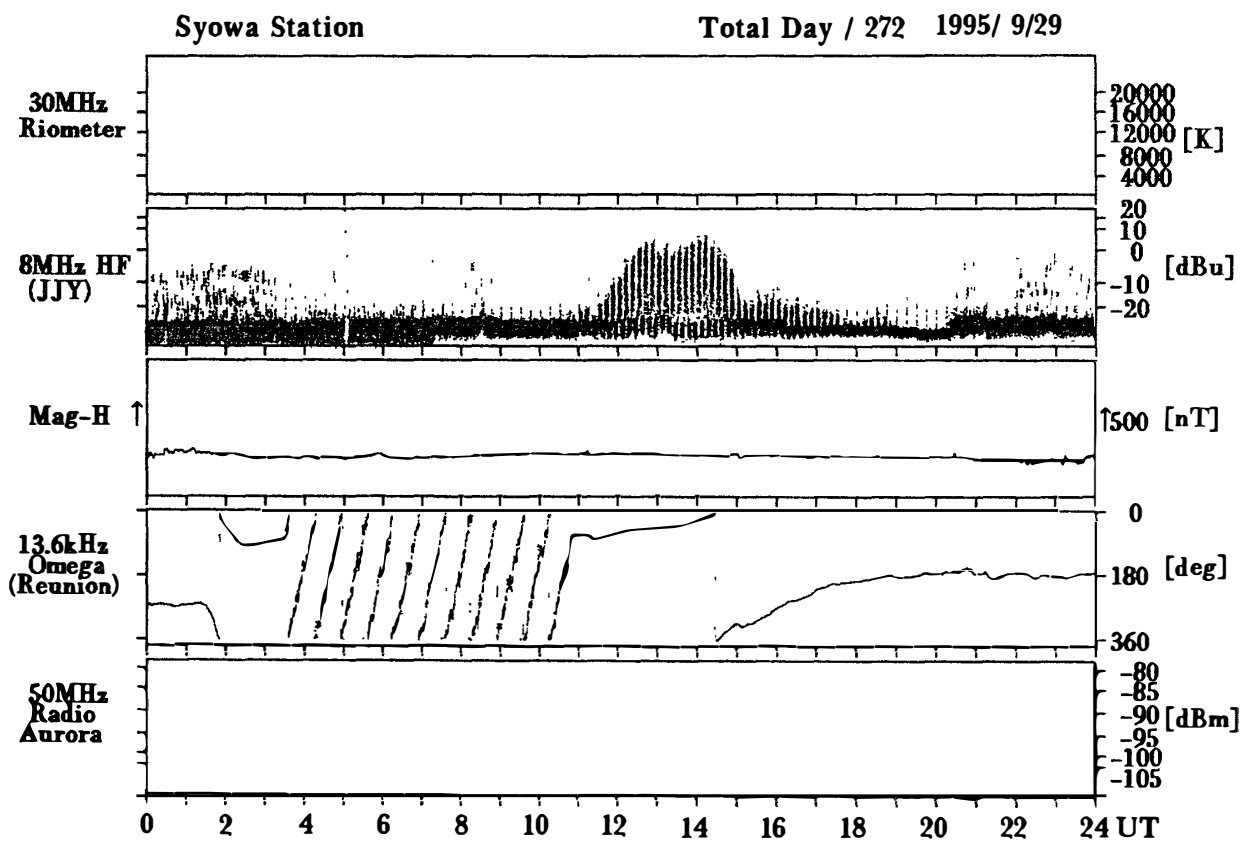
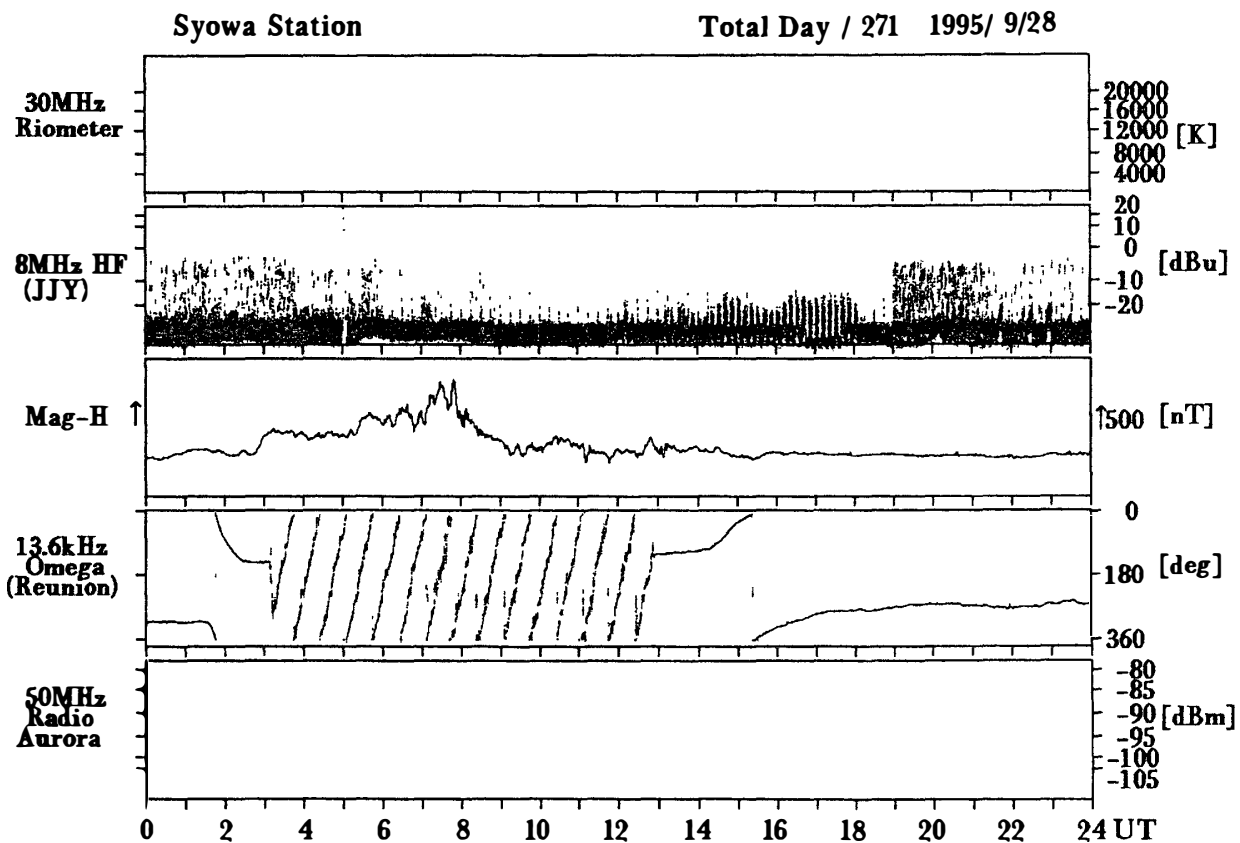


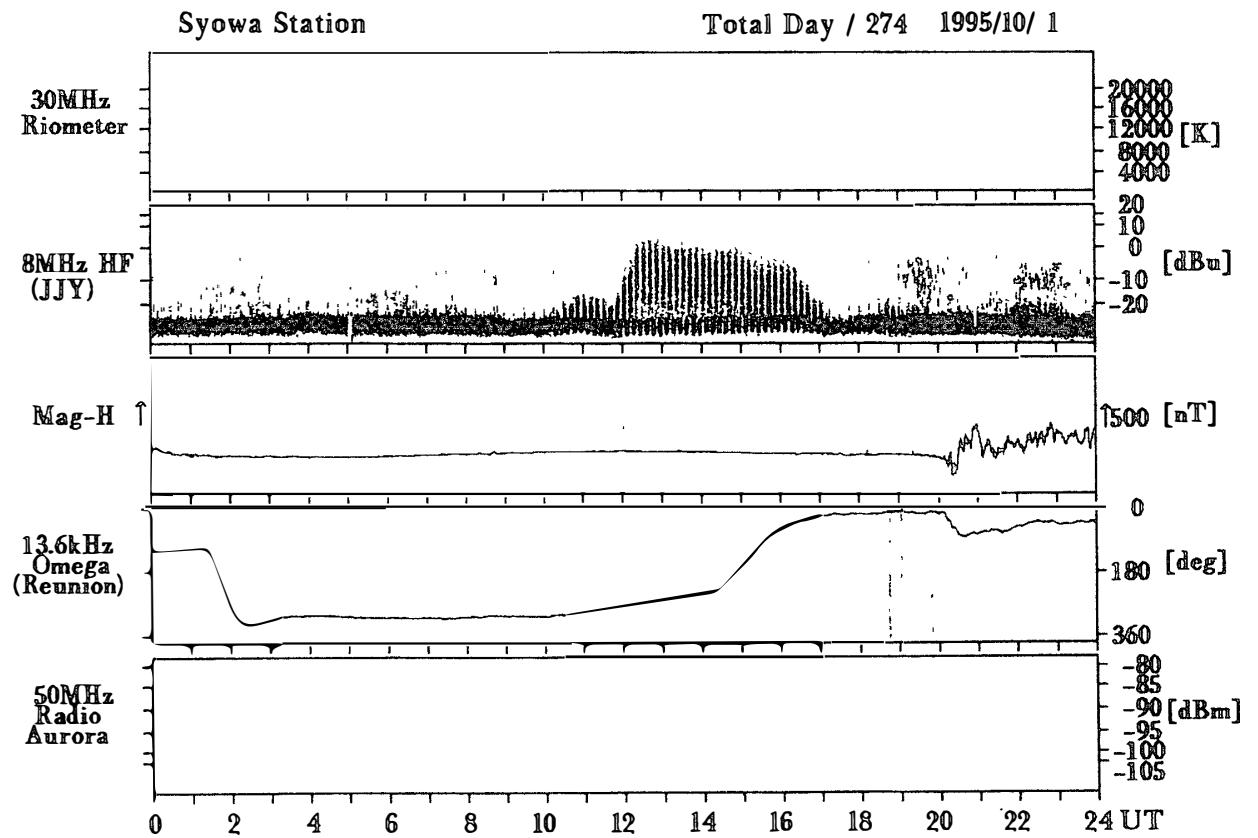
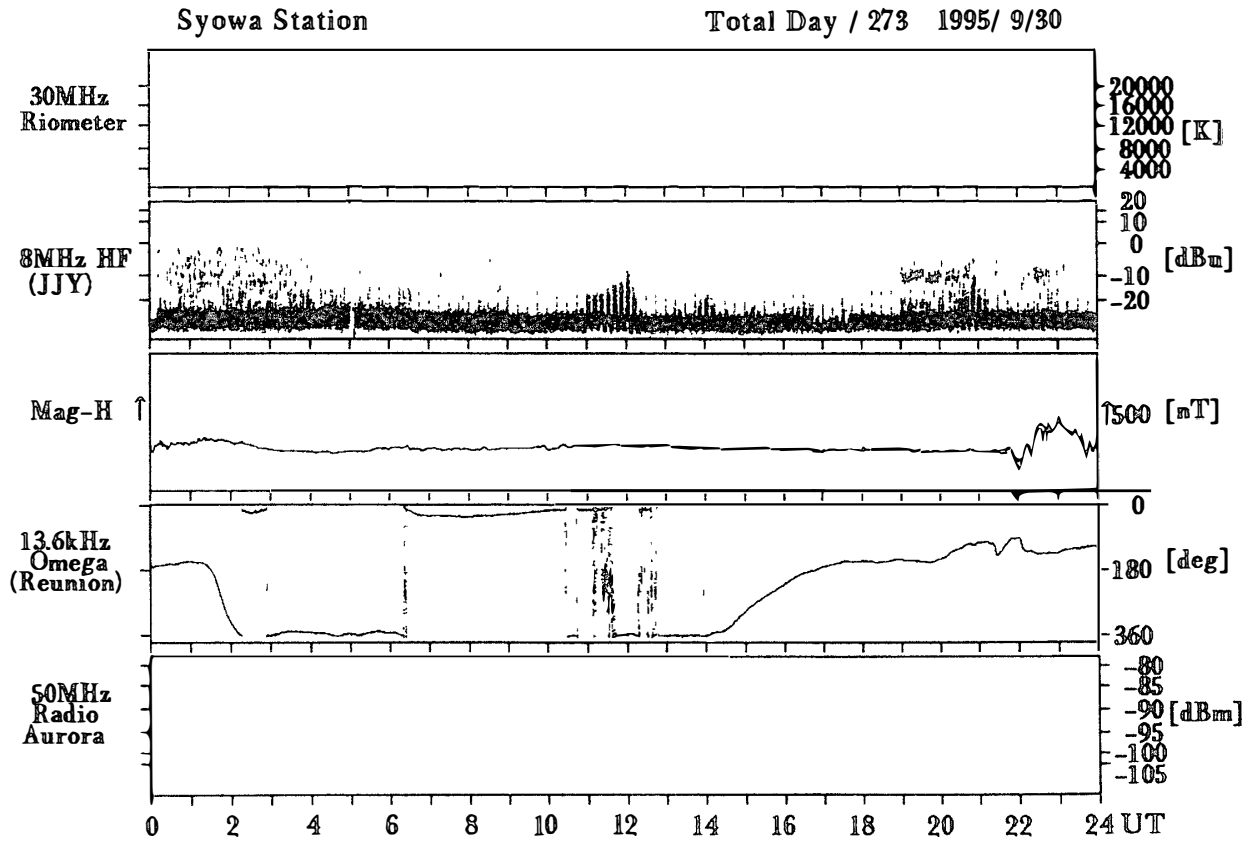


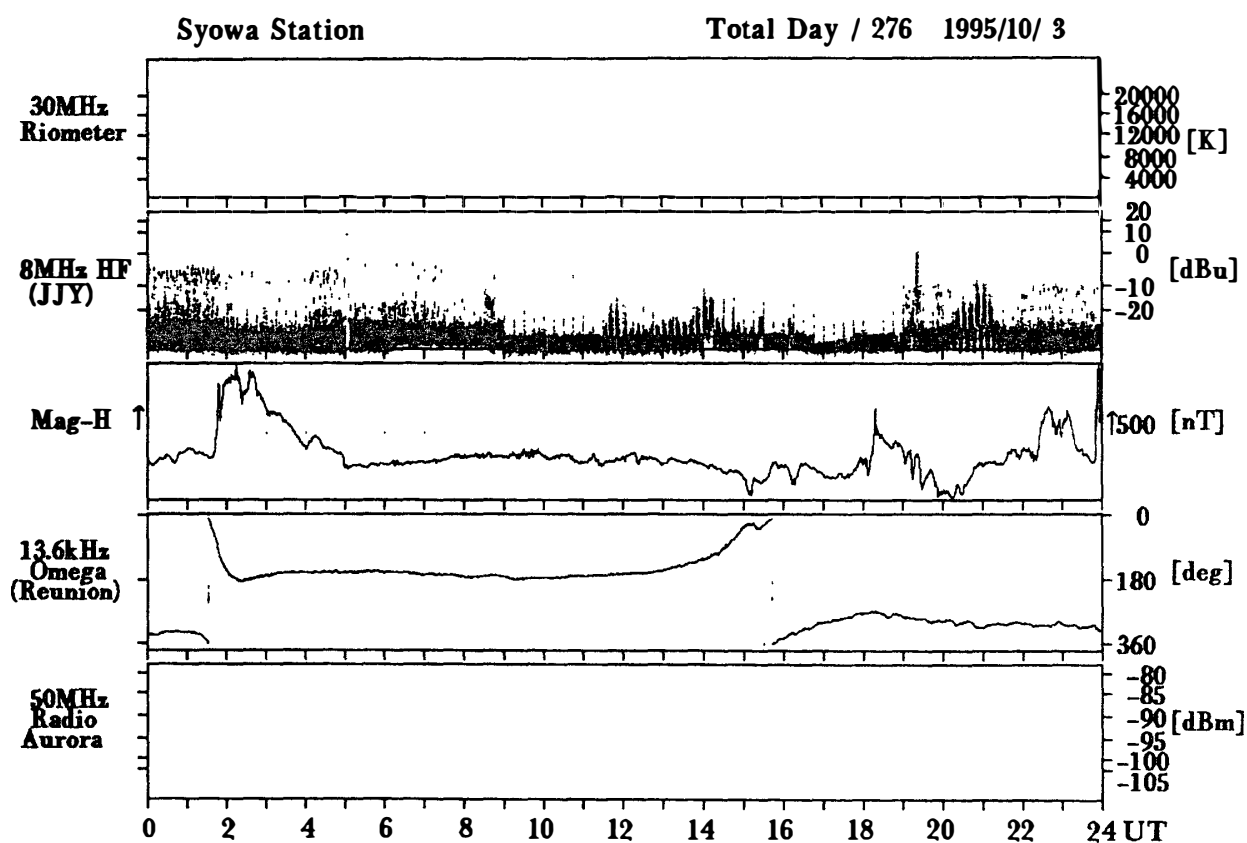
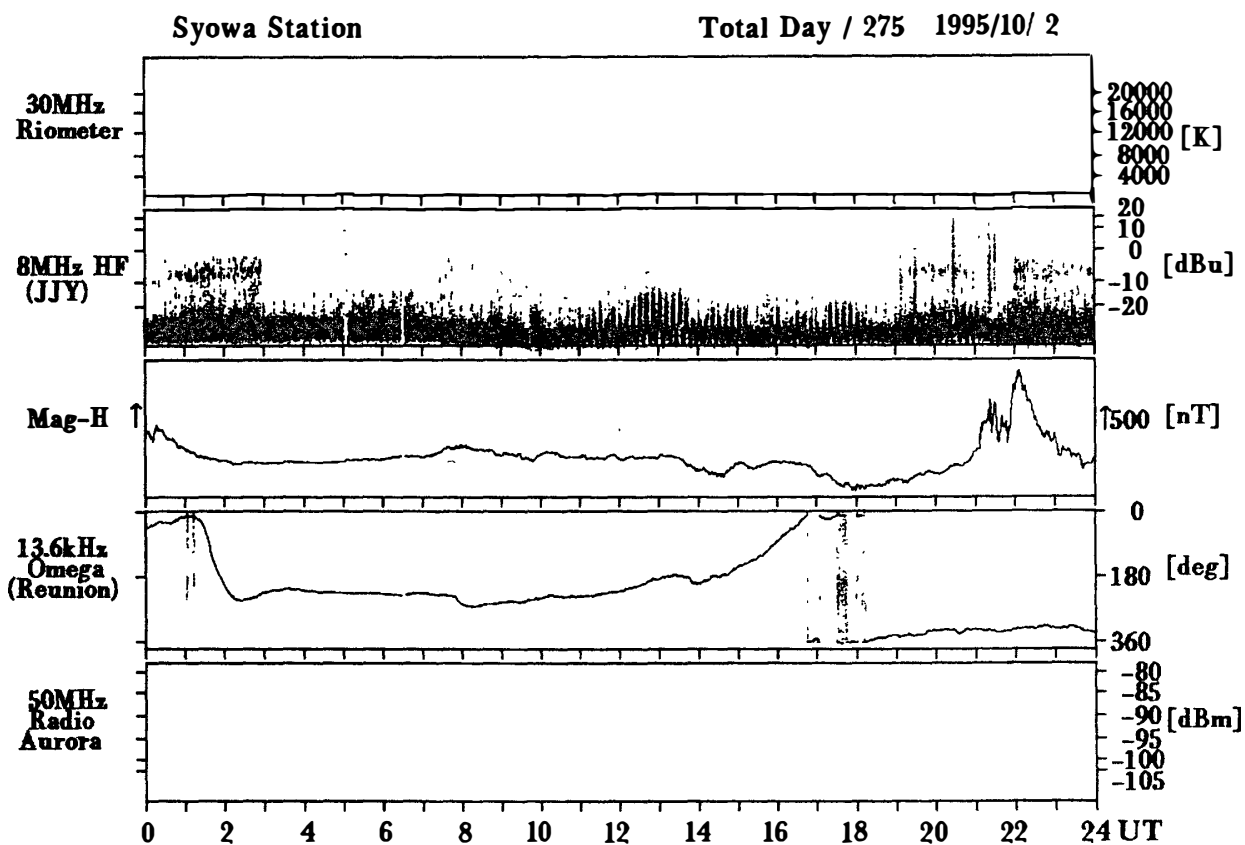


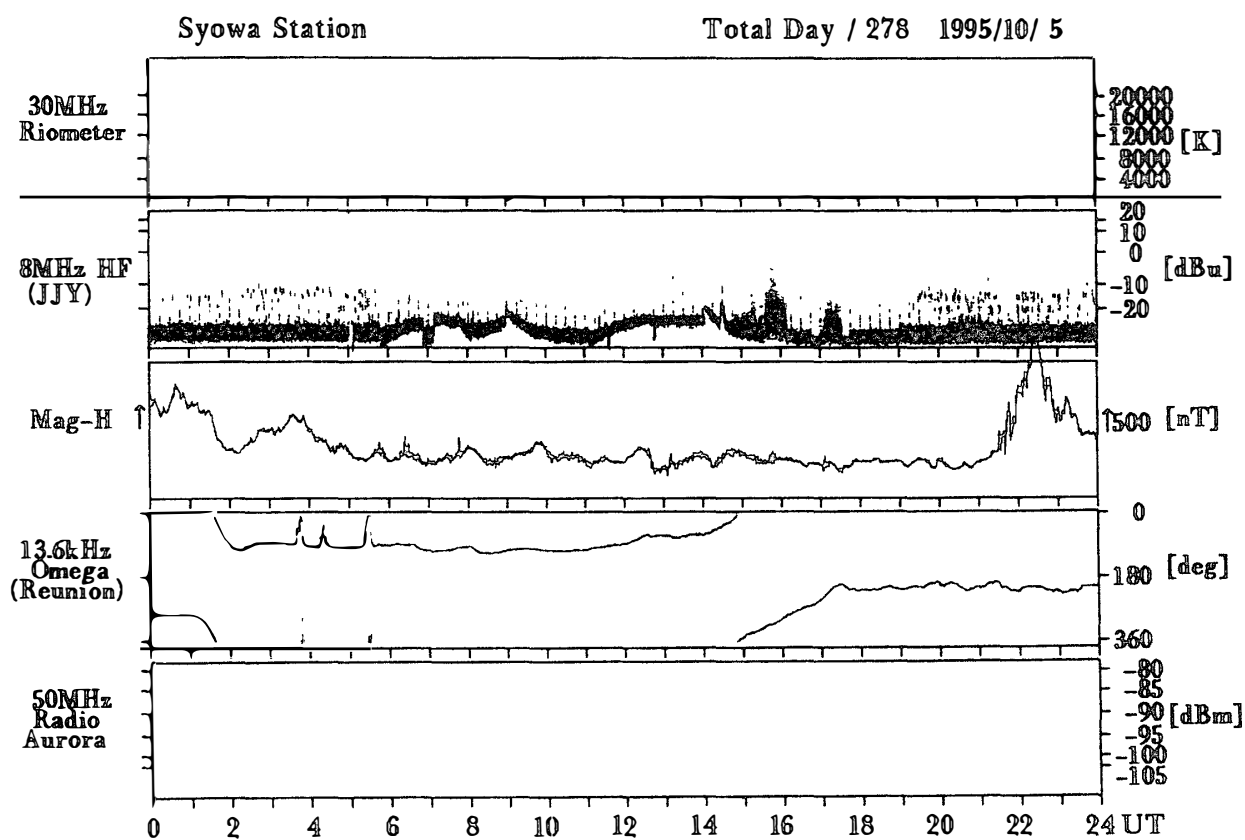
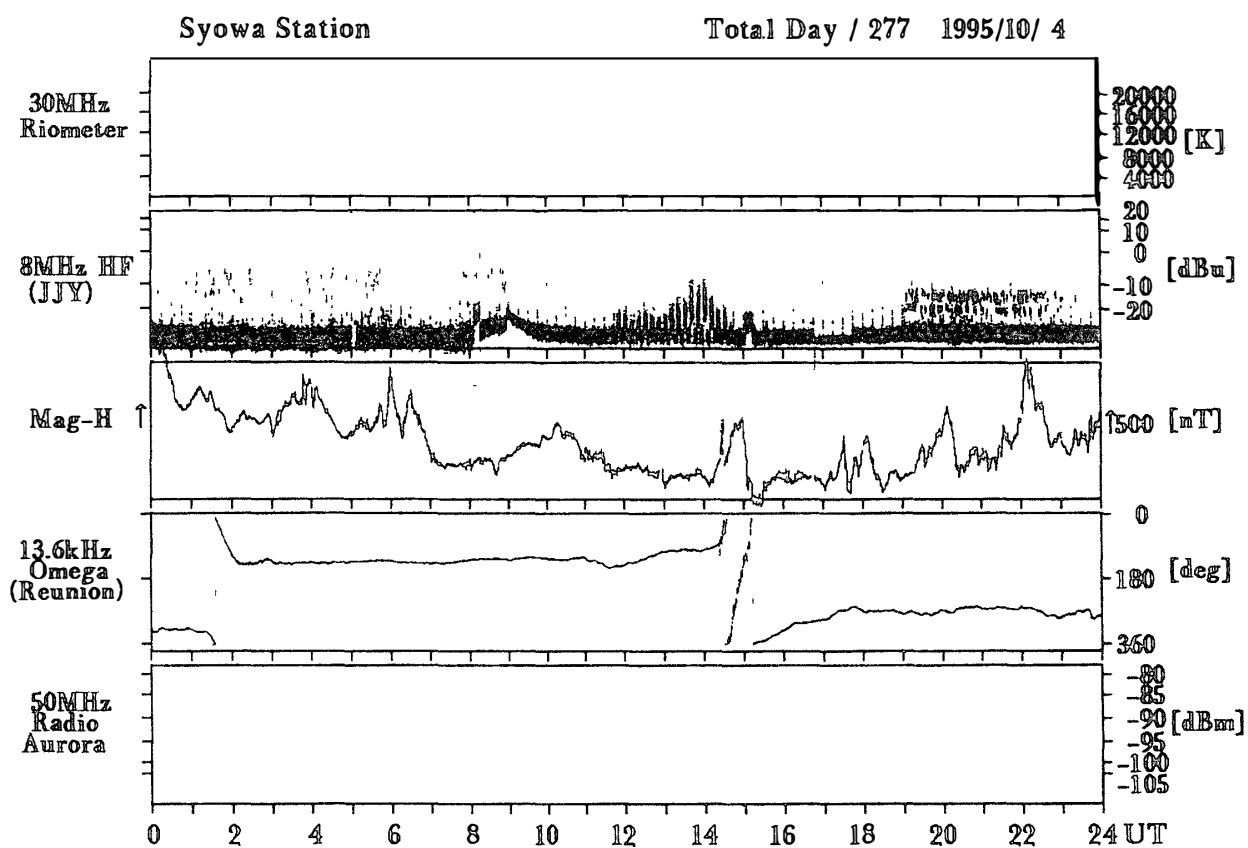


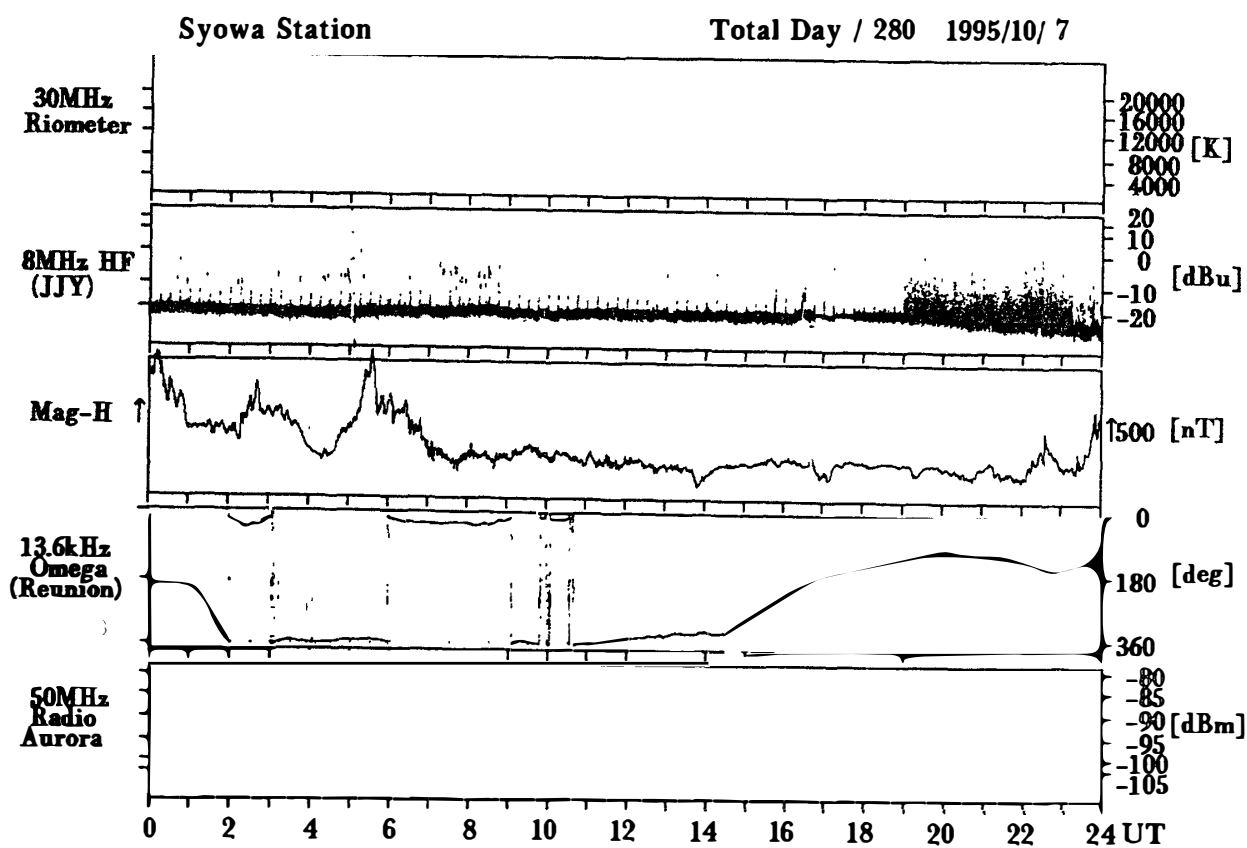
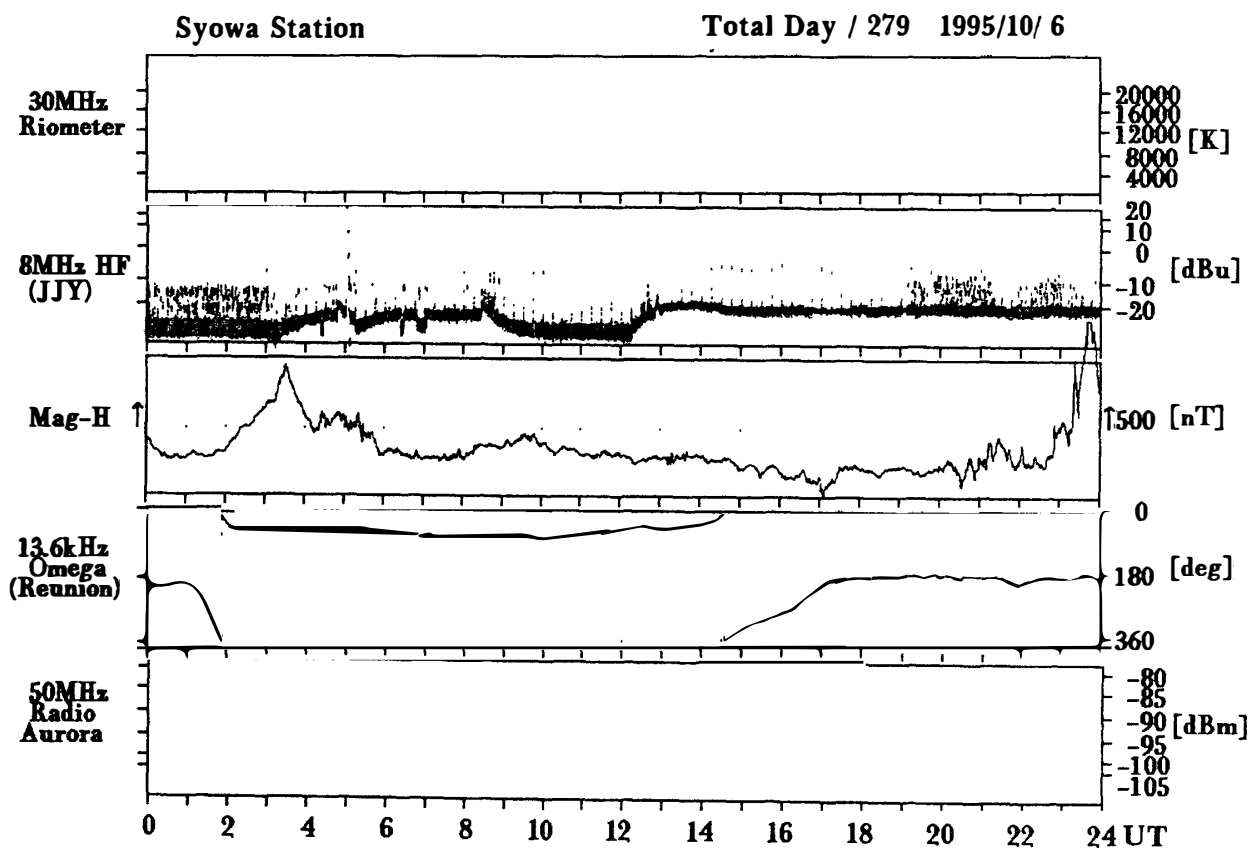


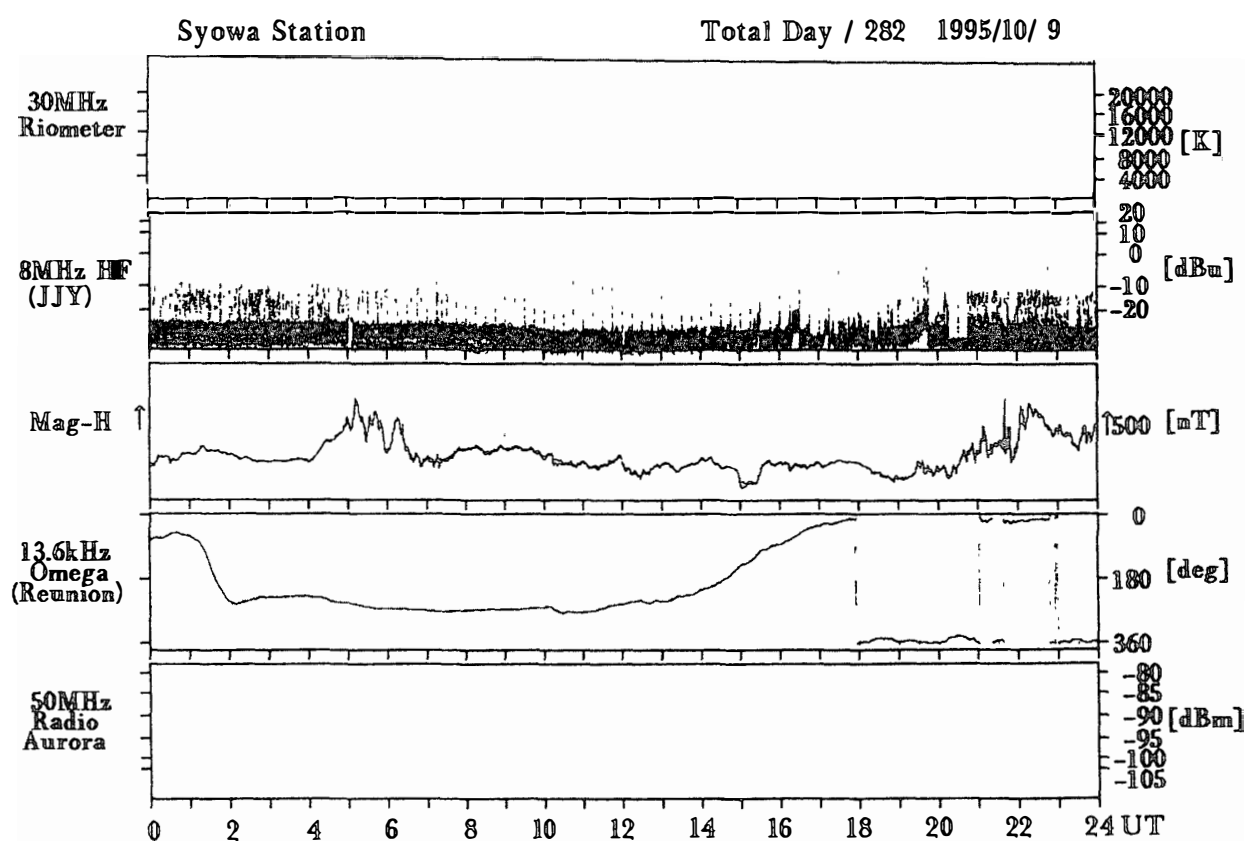
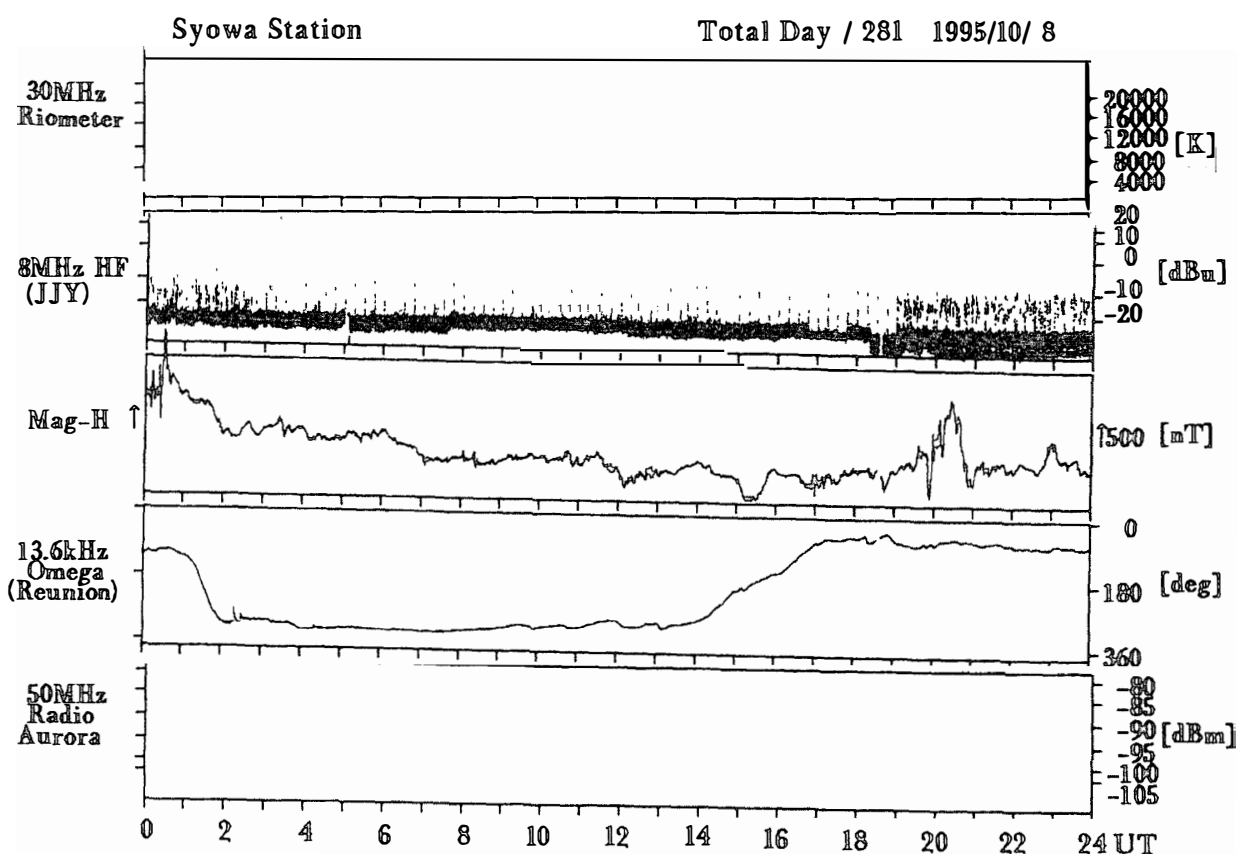


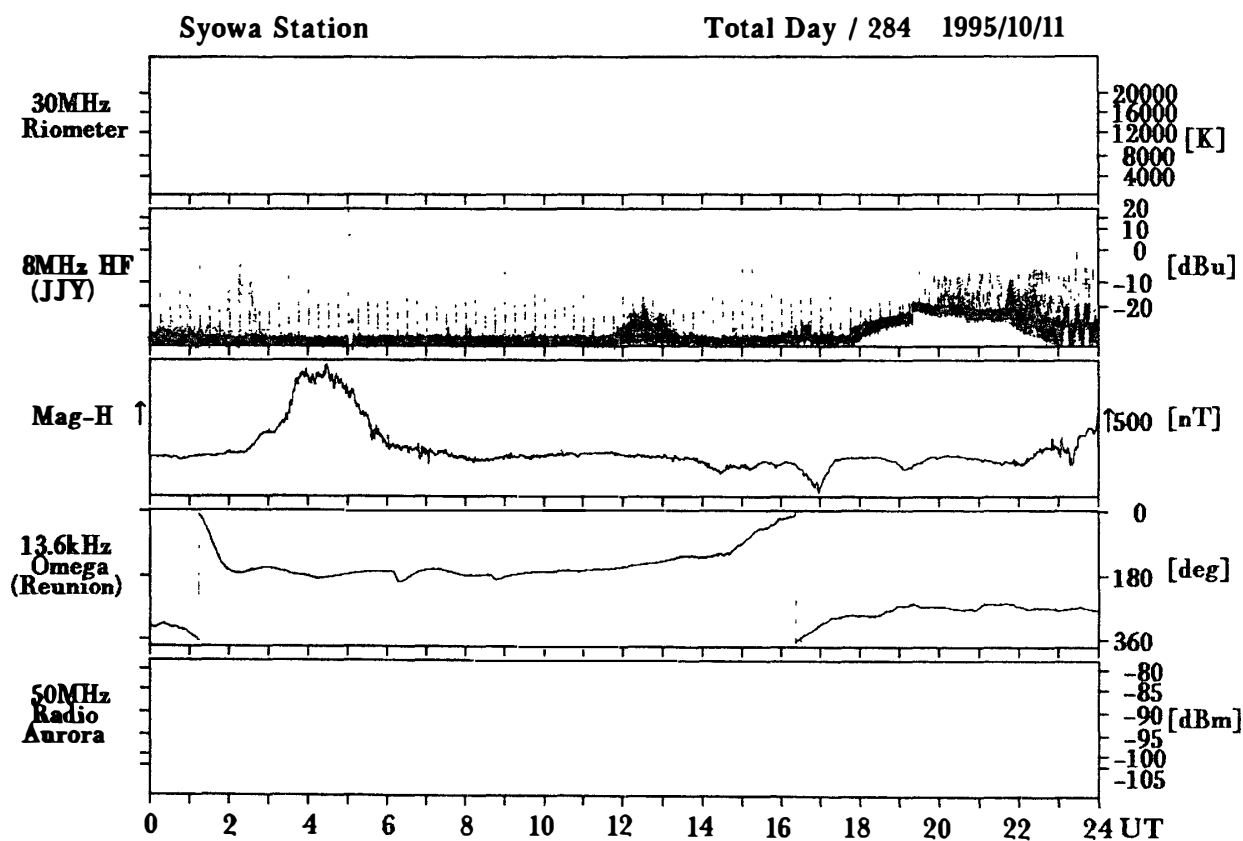
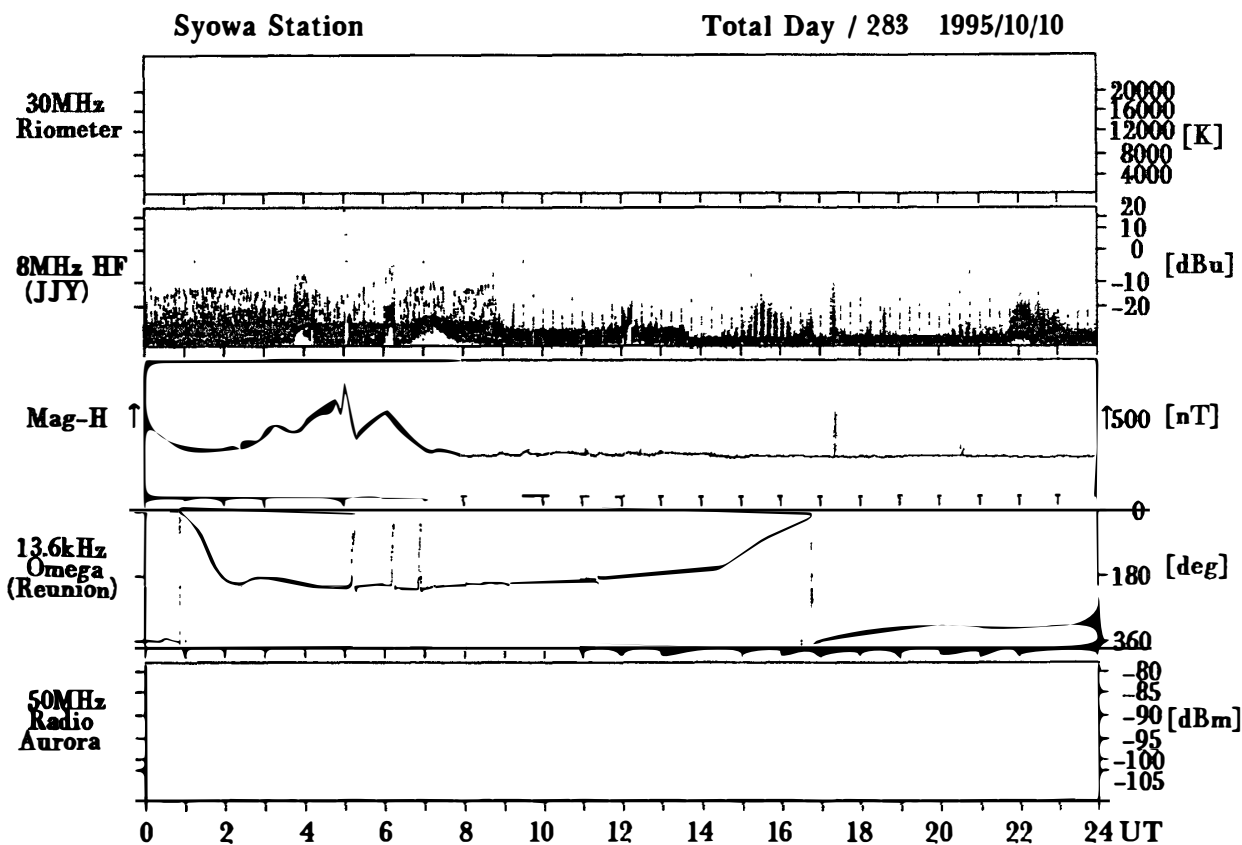


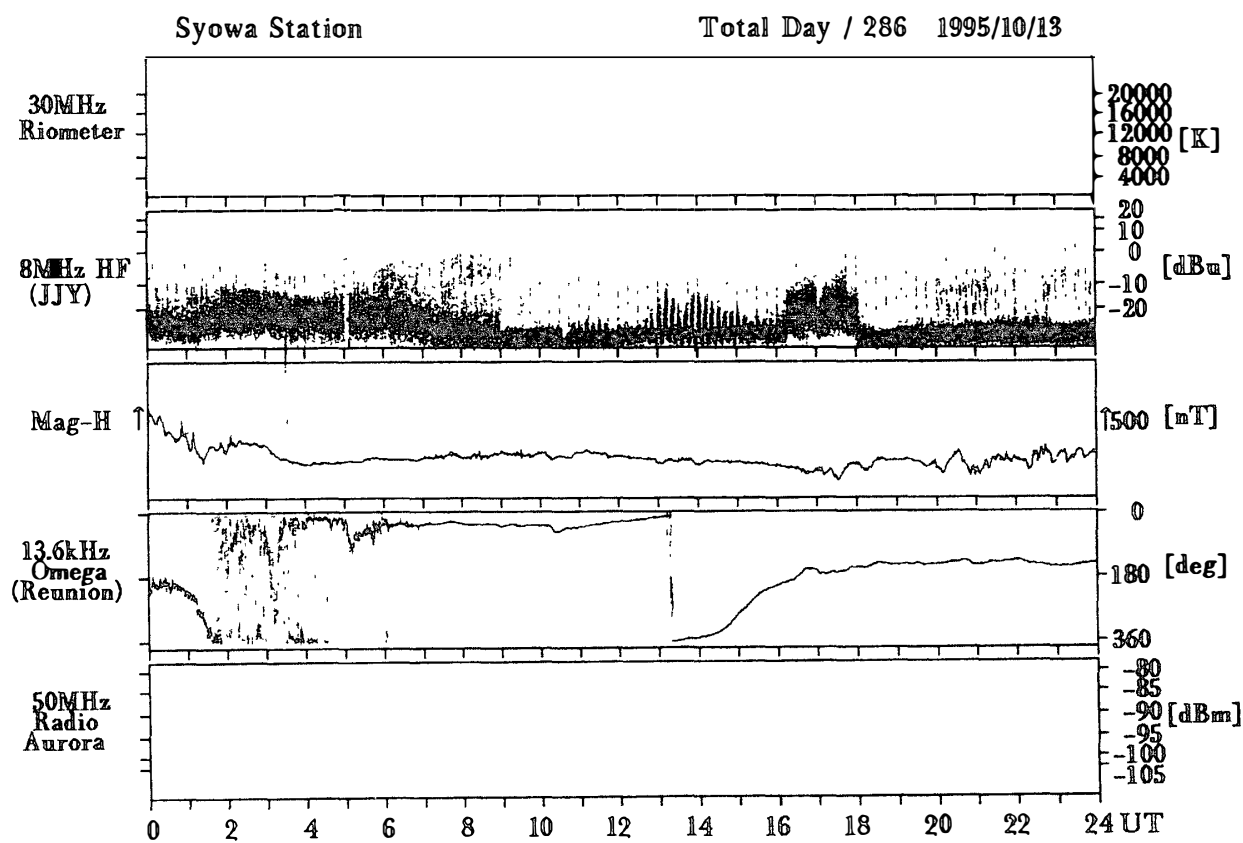
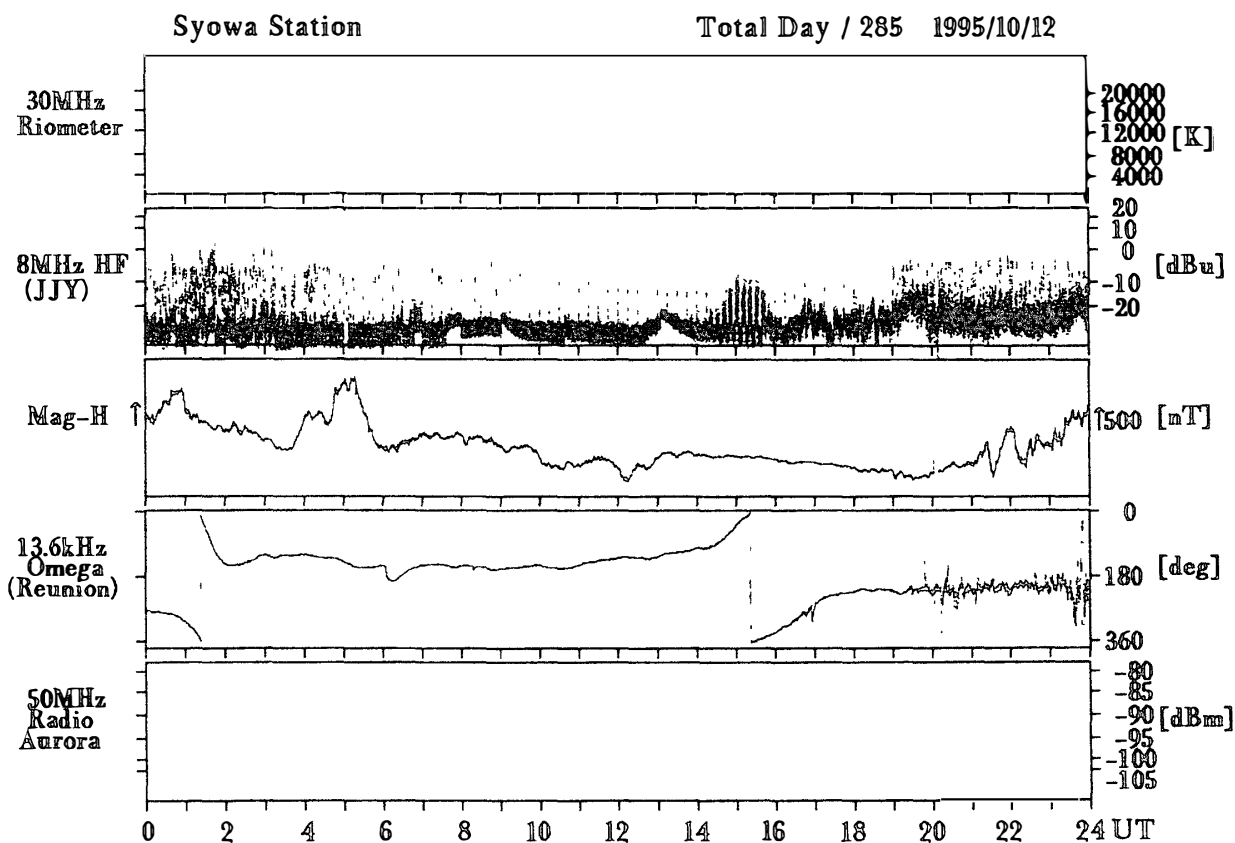


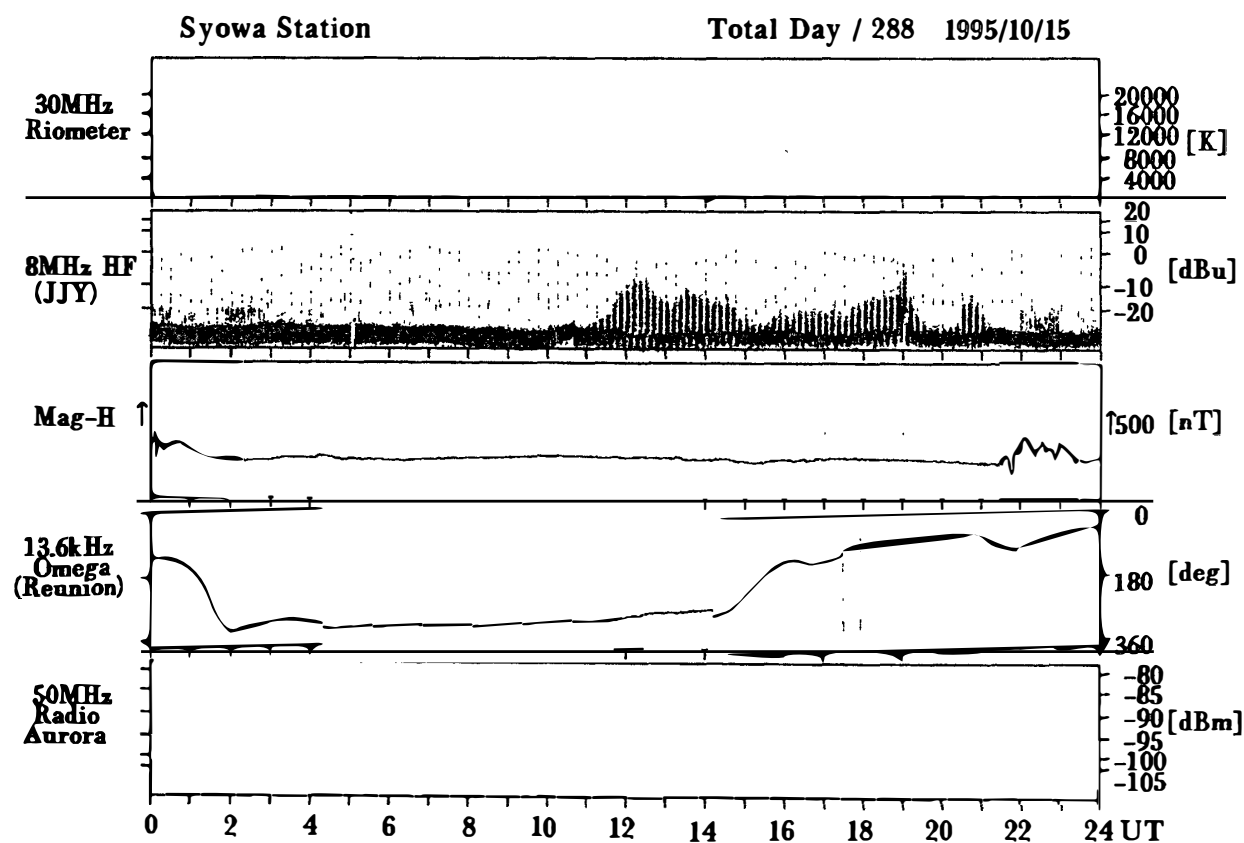
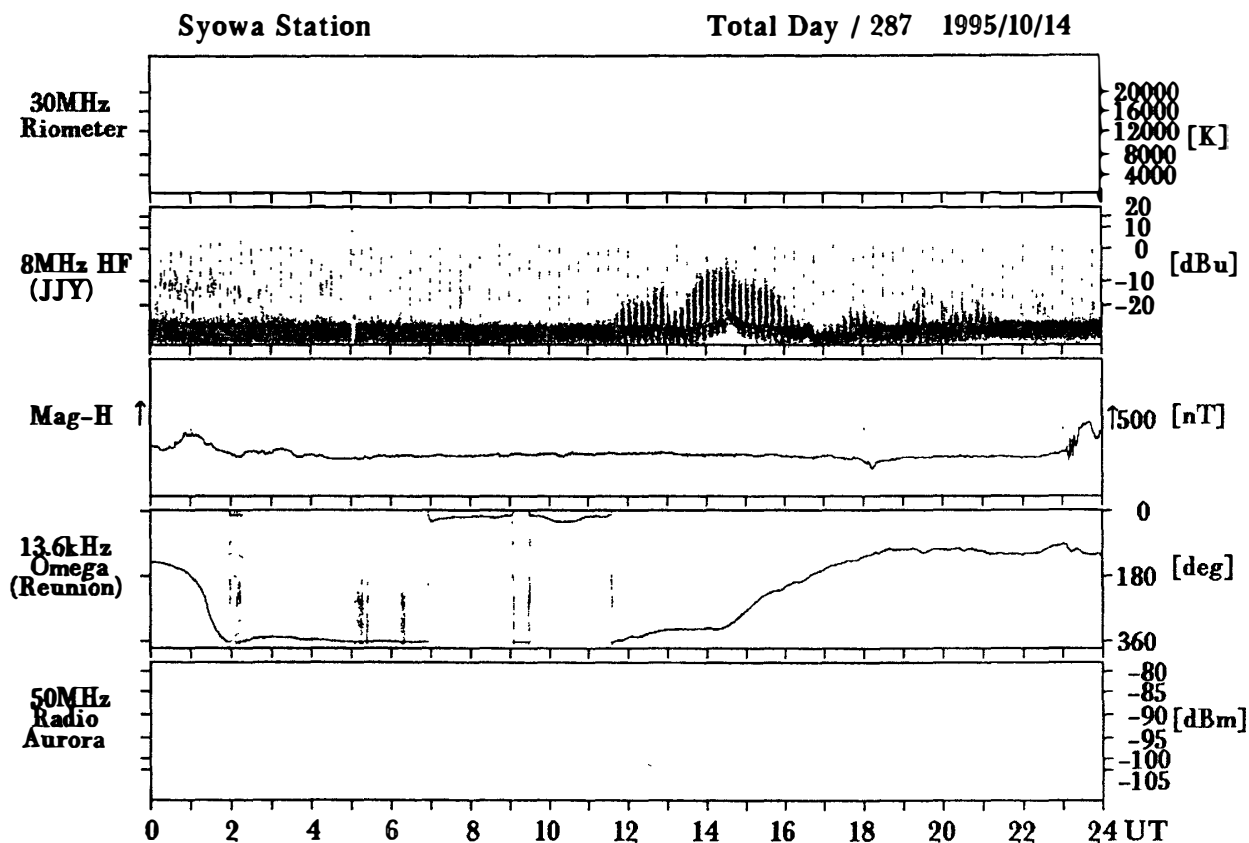


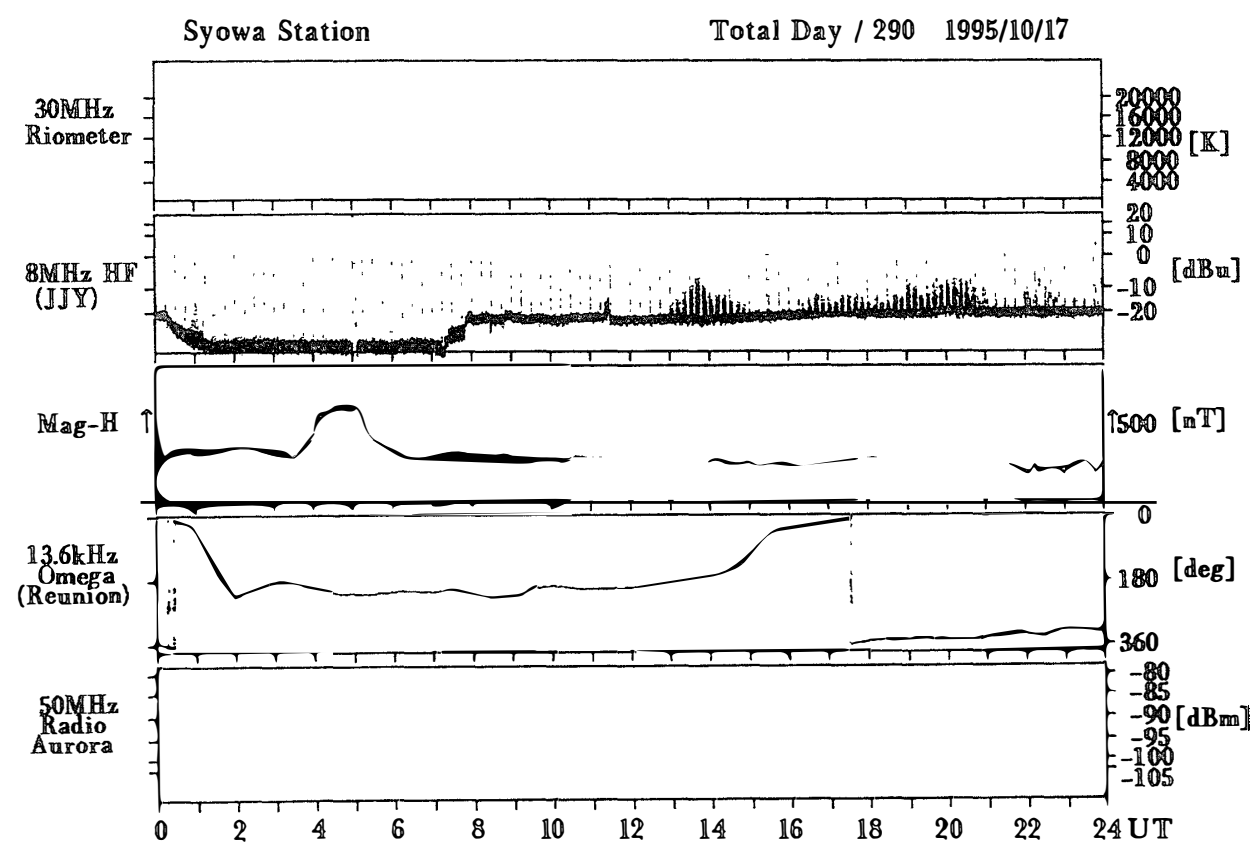
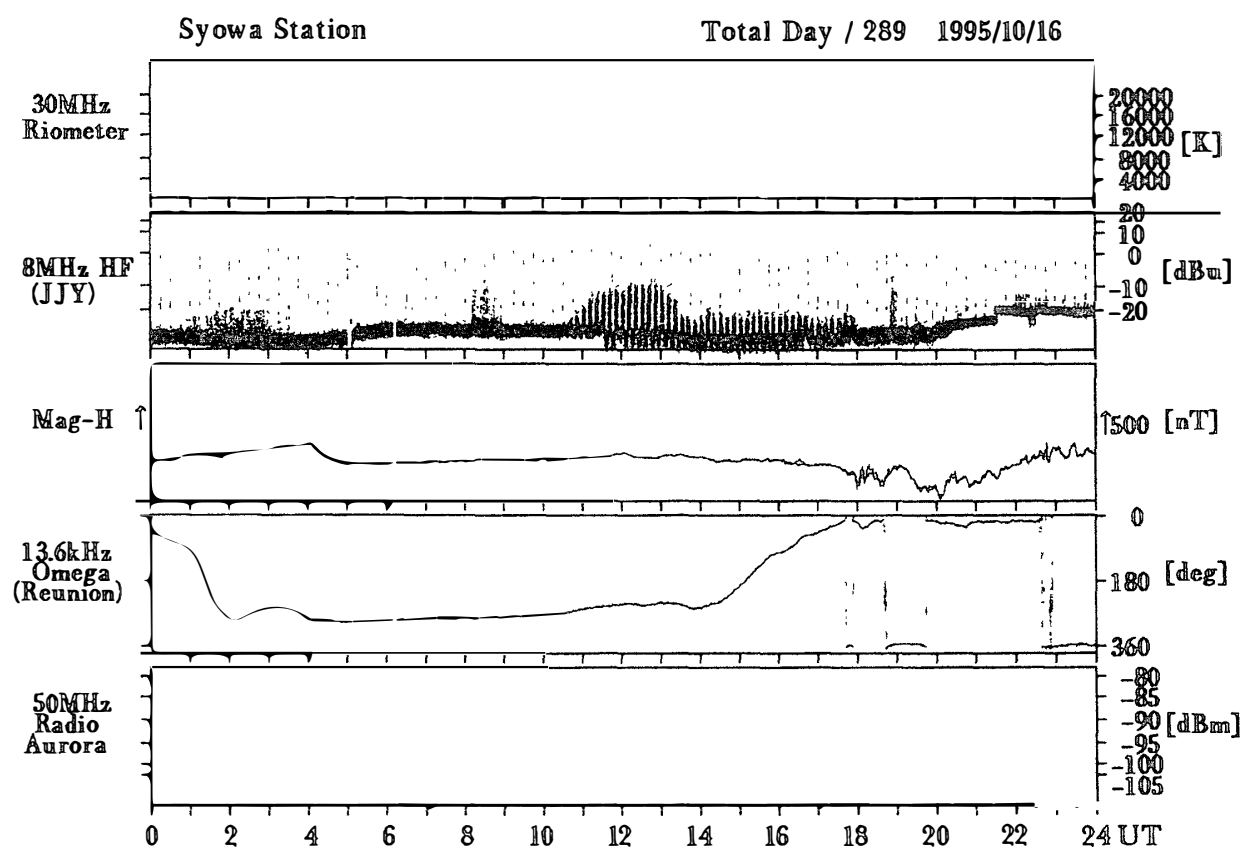


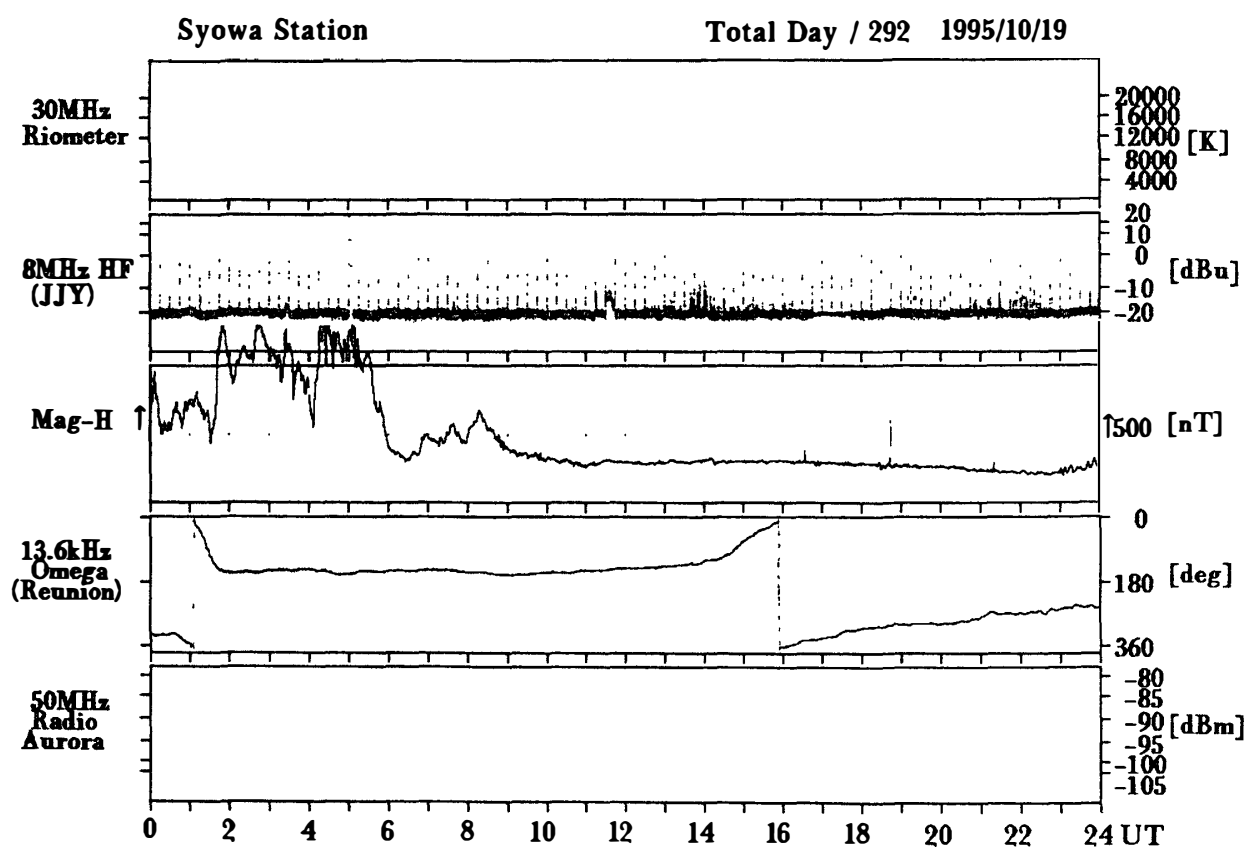
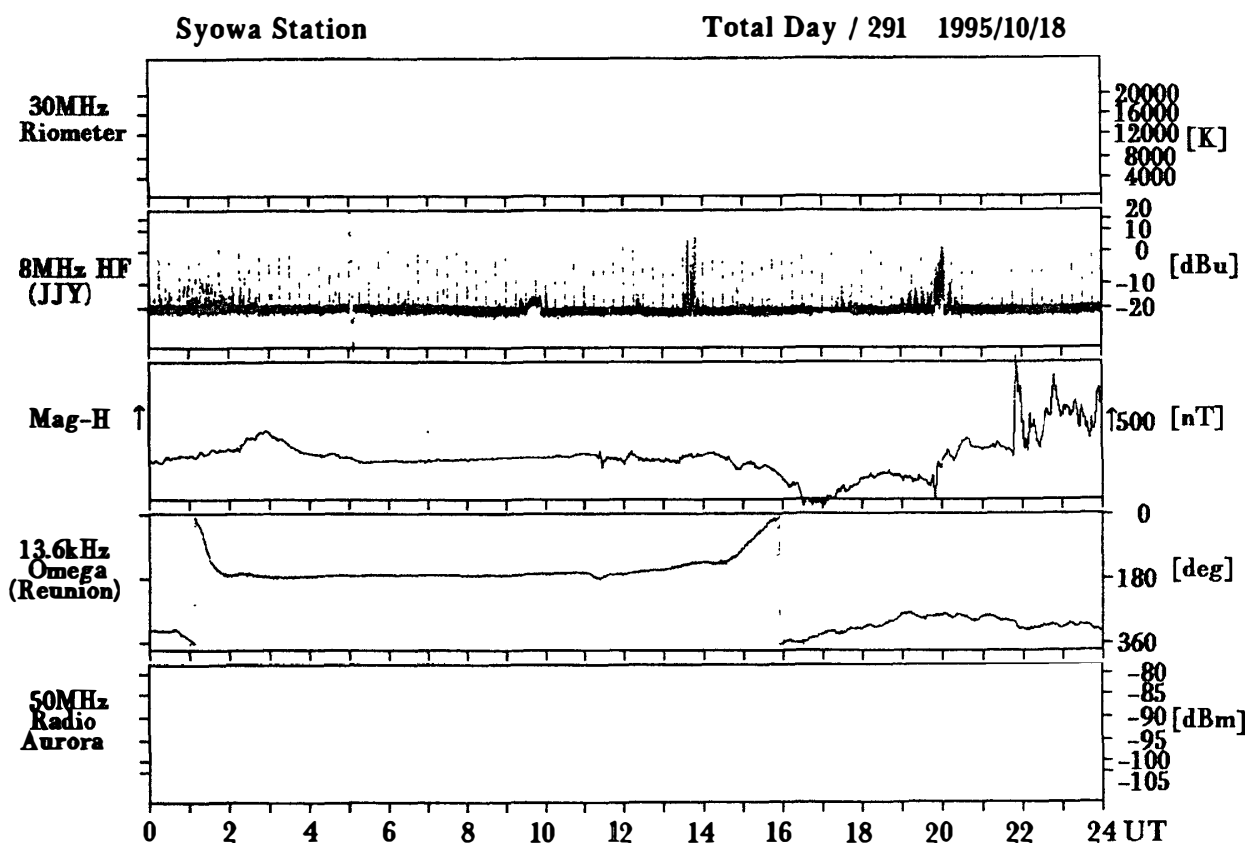


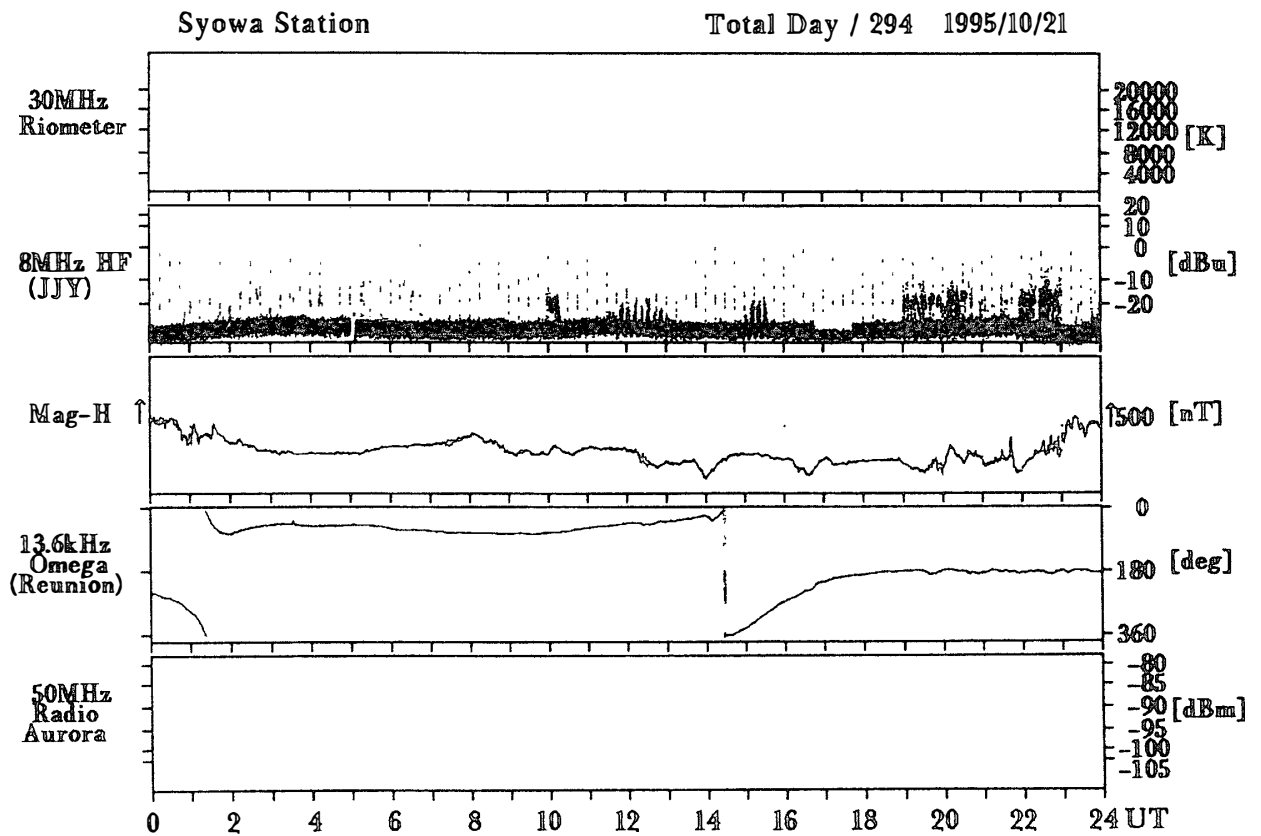
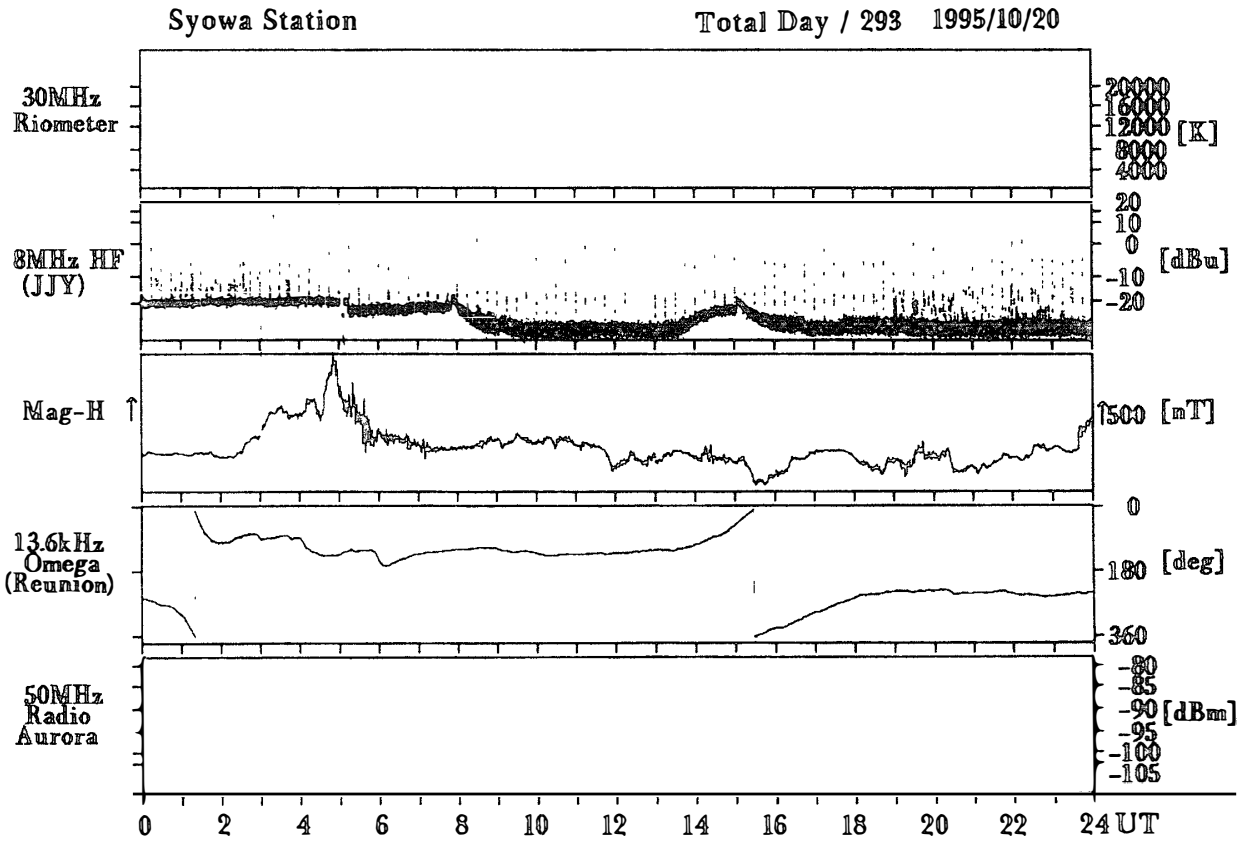


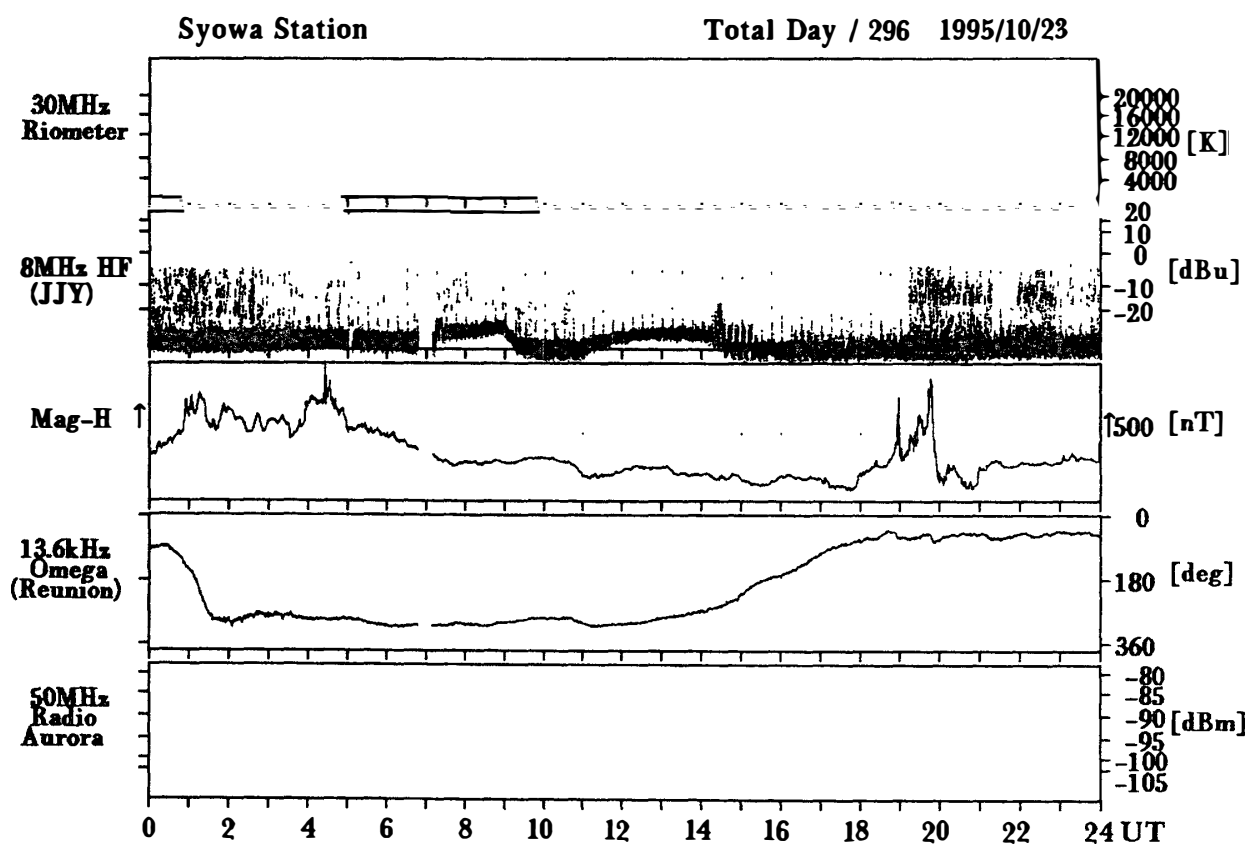
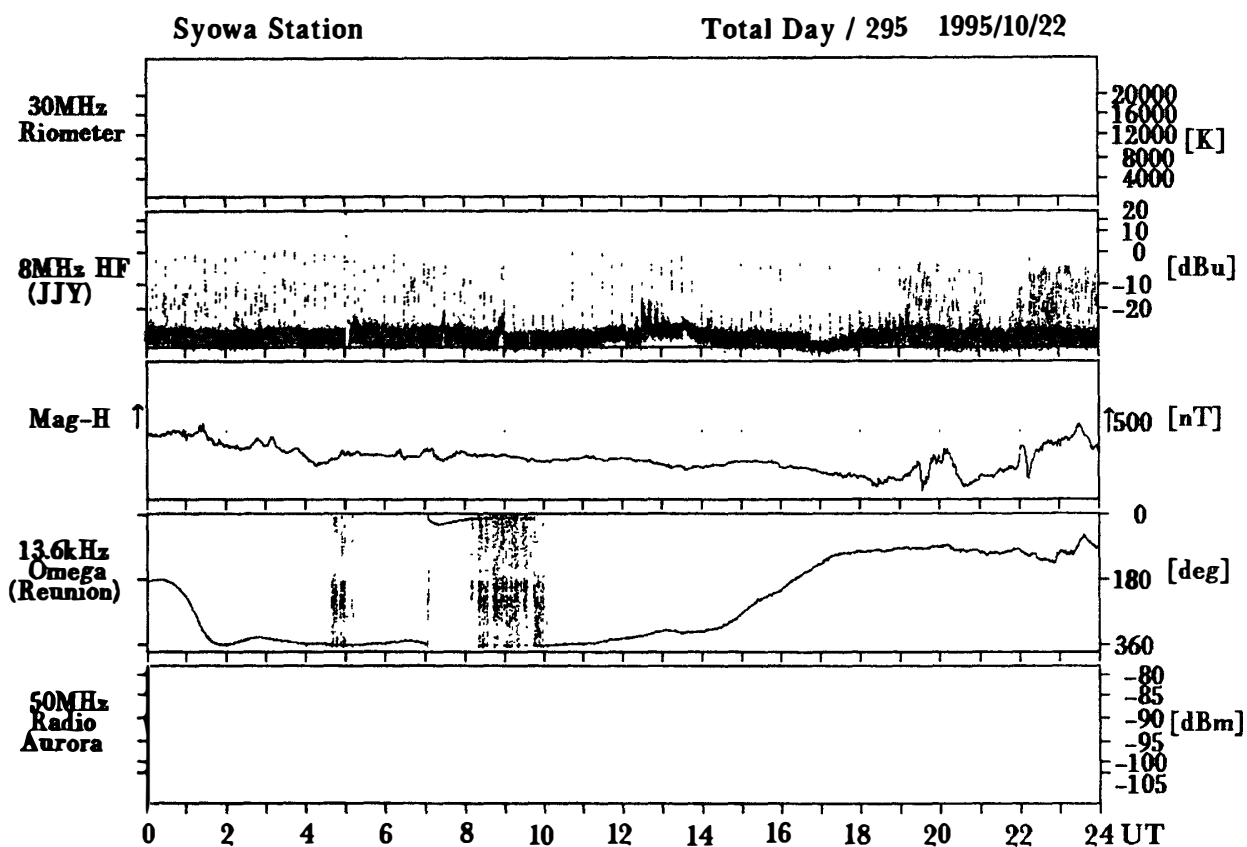






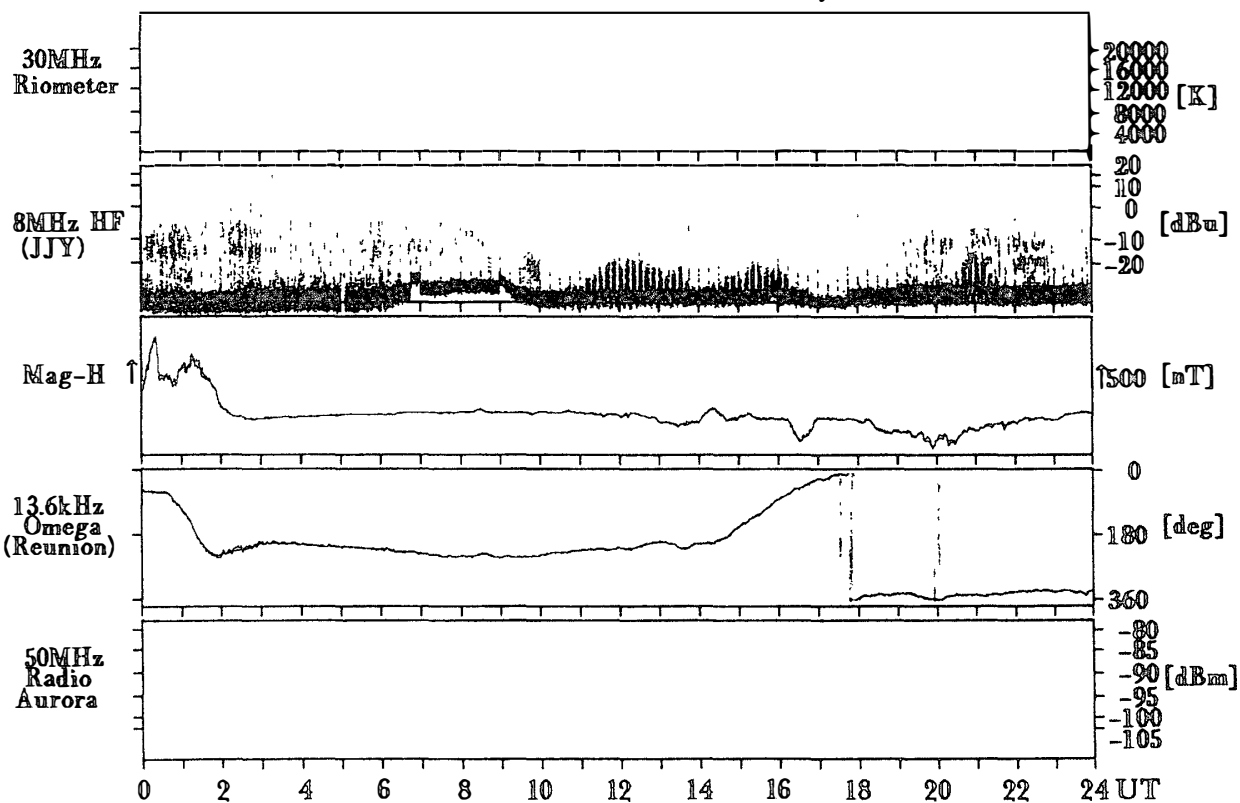






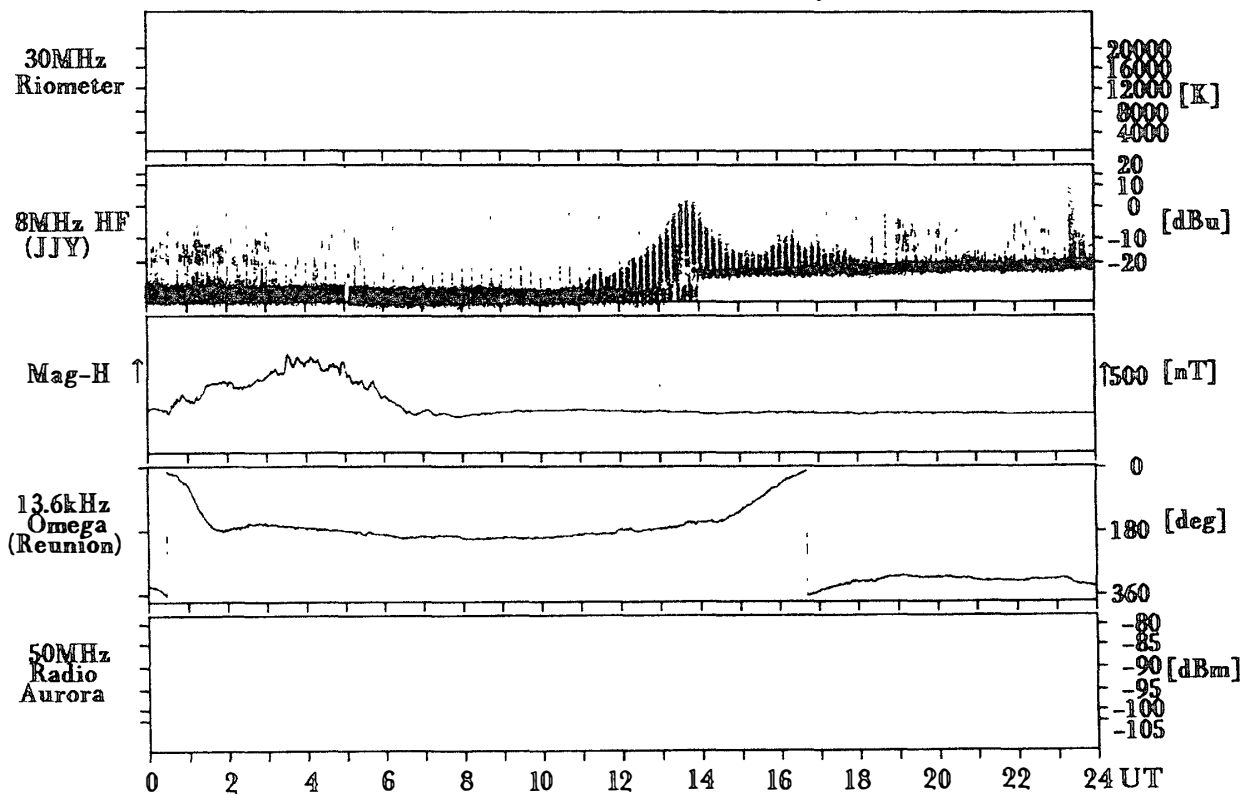
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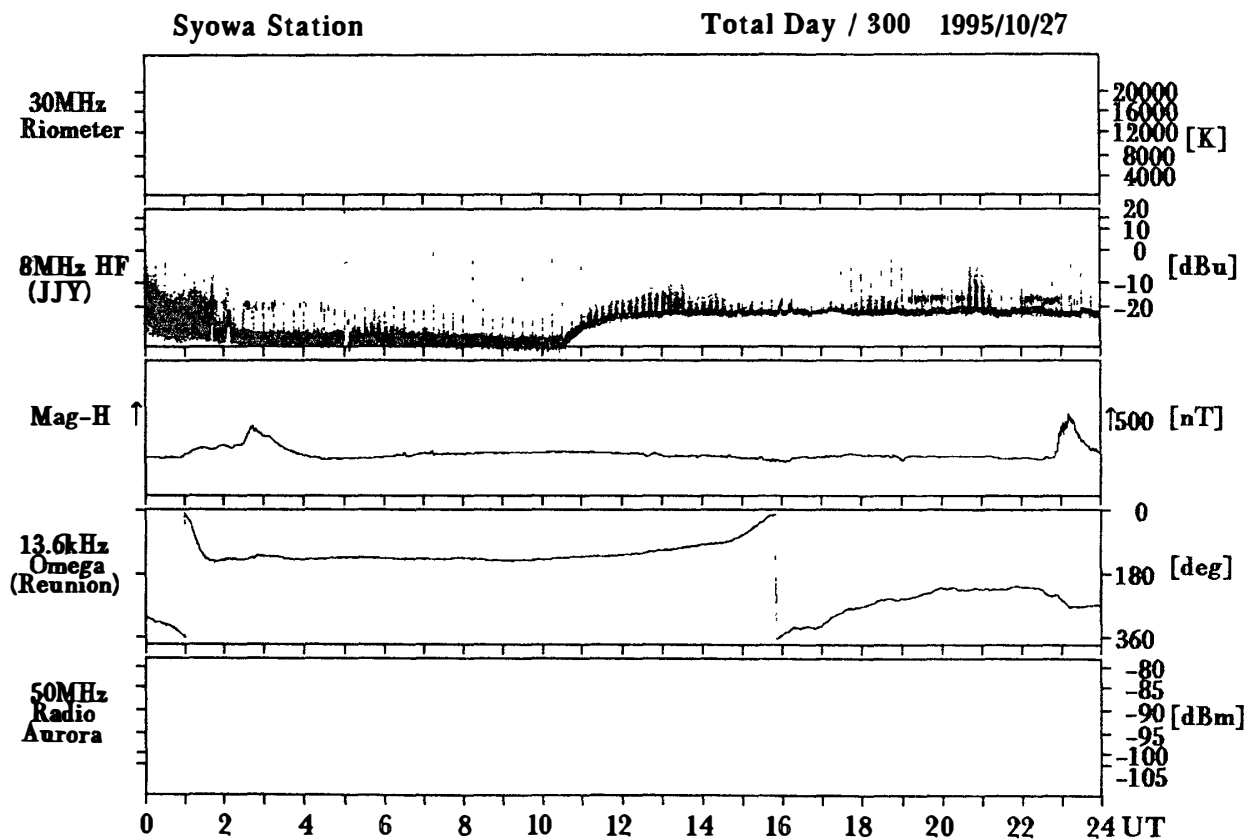
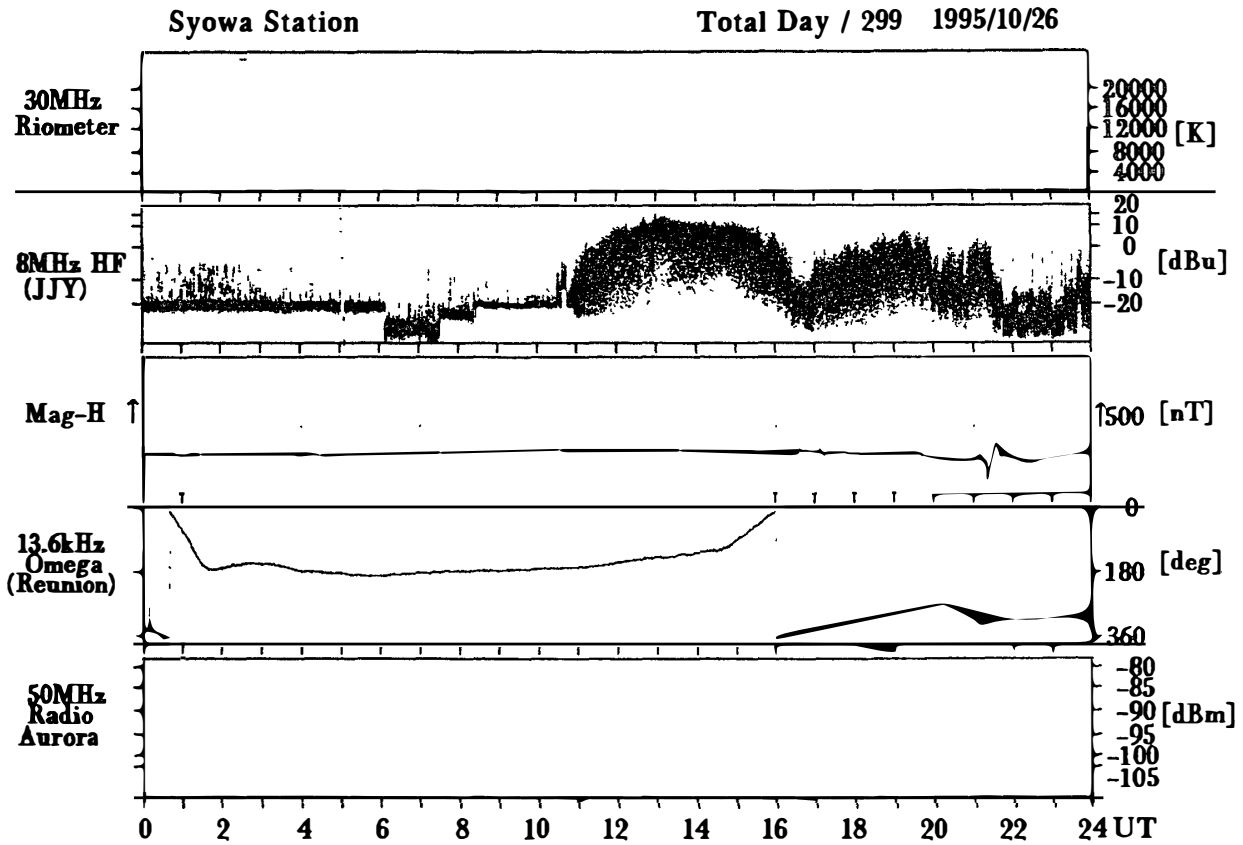
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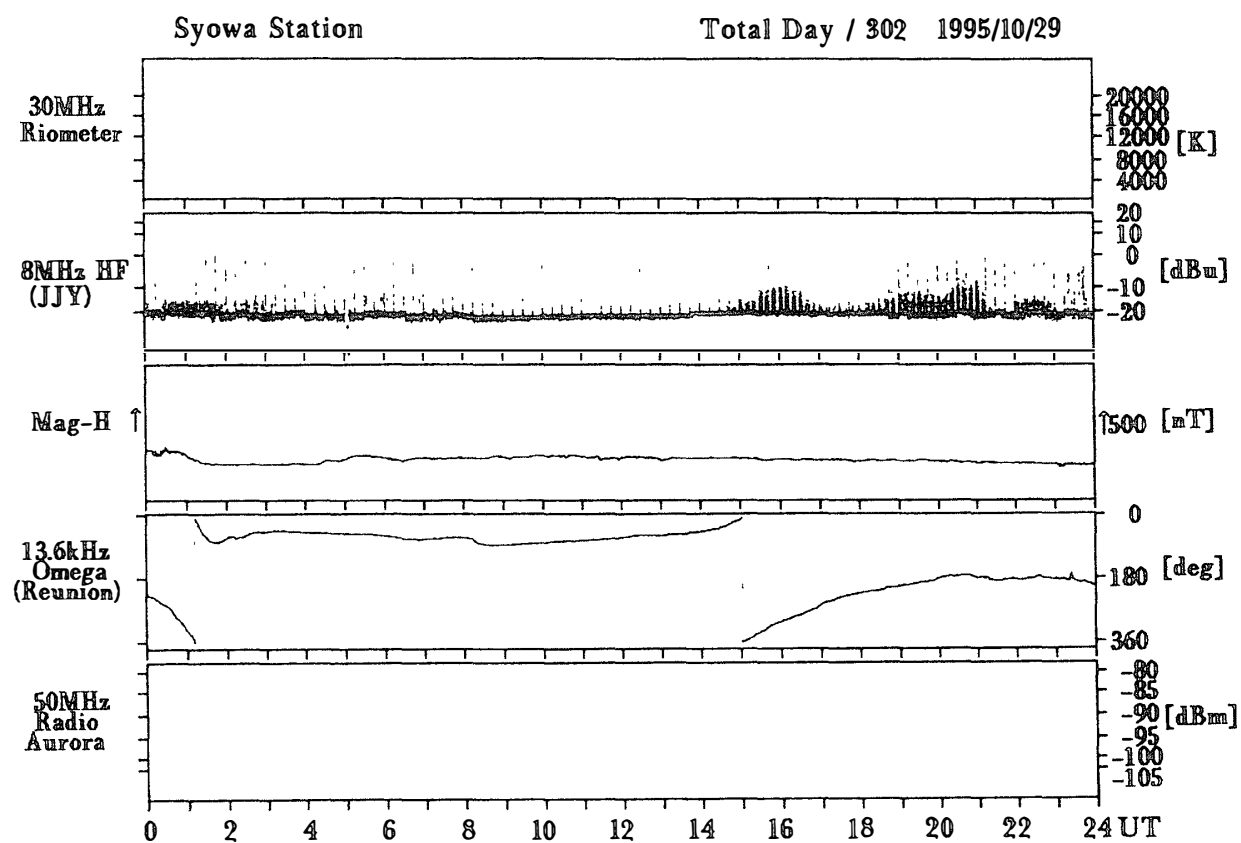
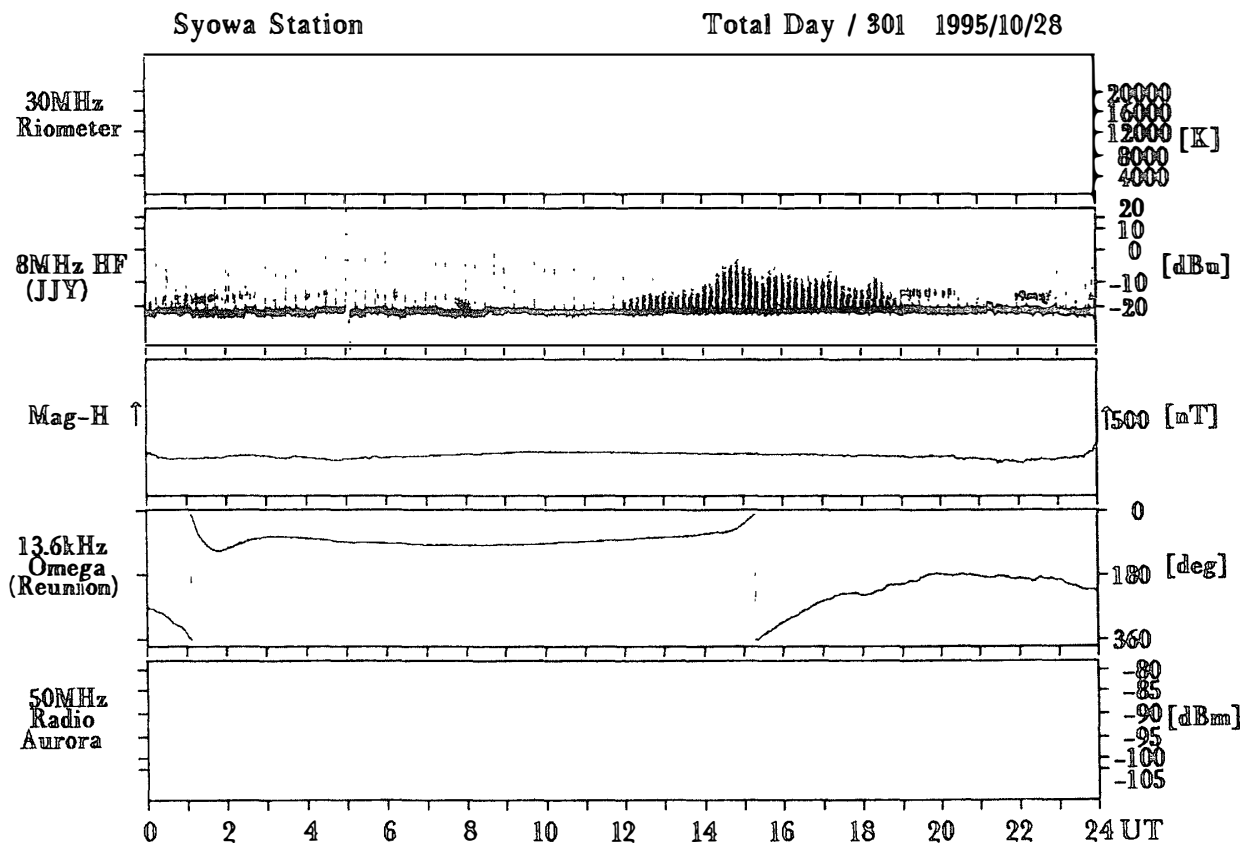


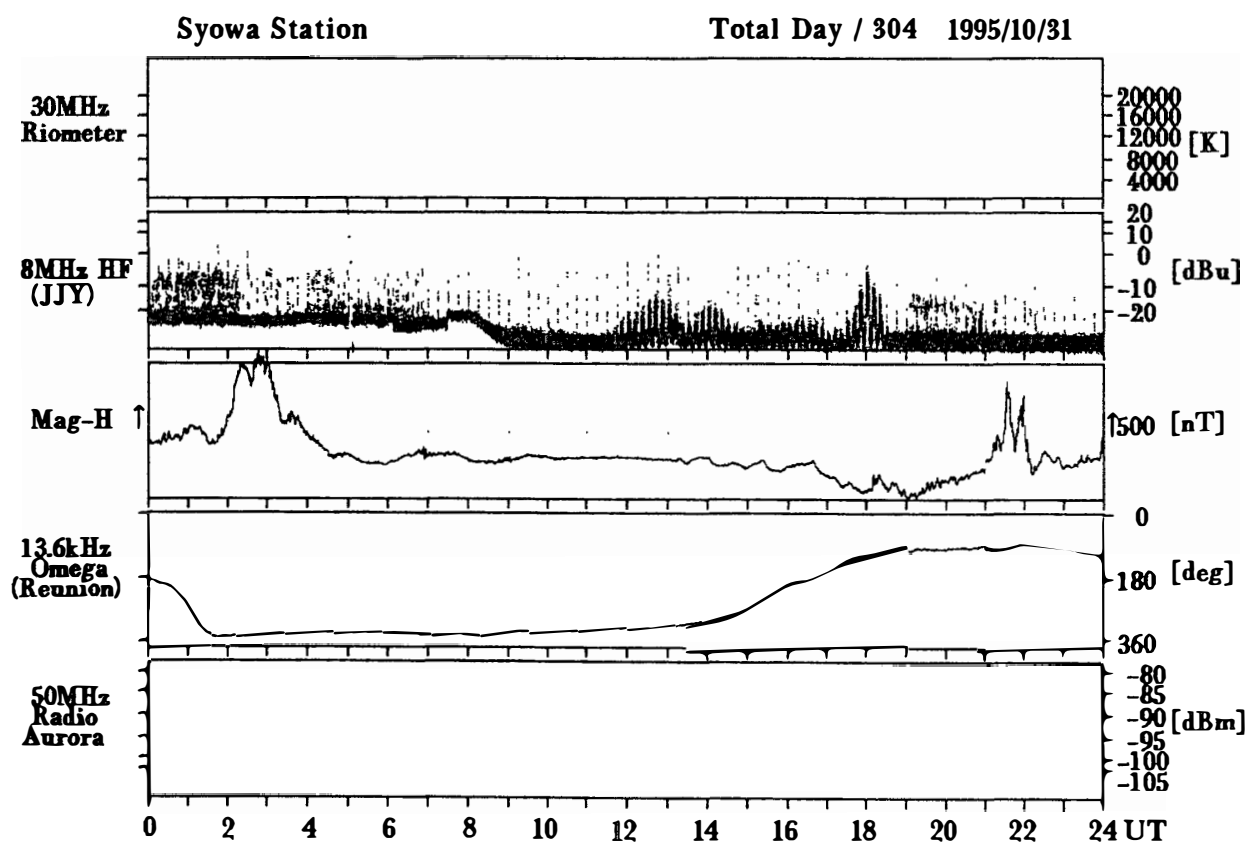
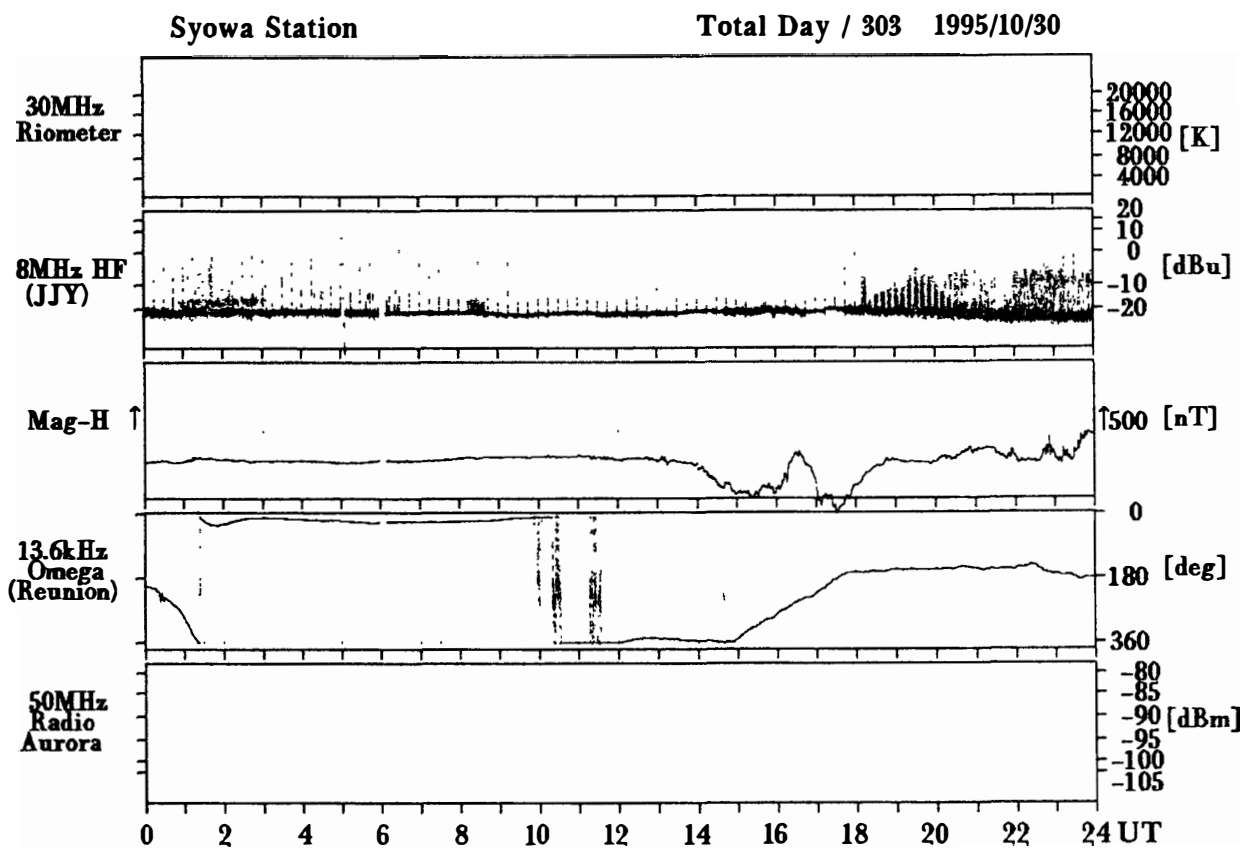
Syowa Station

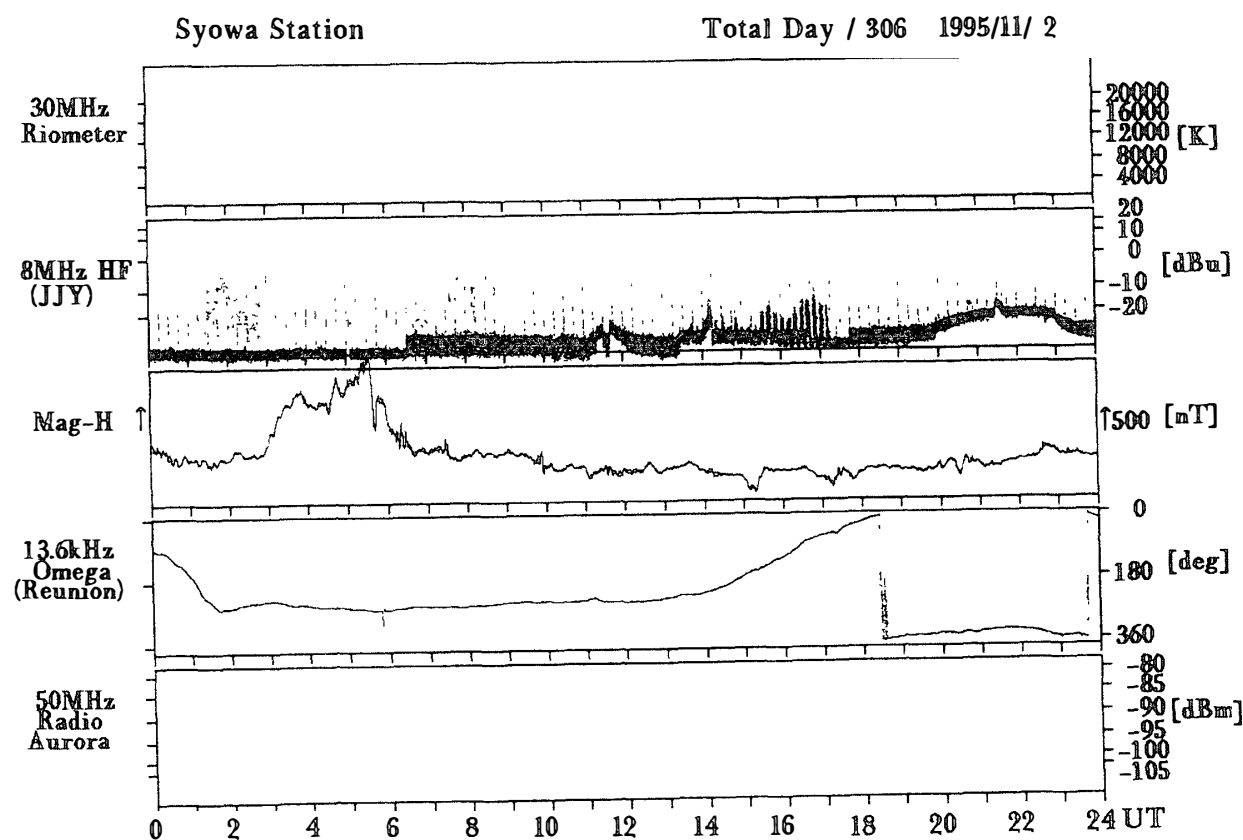
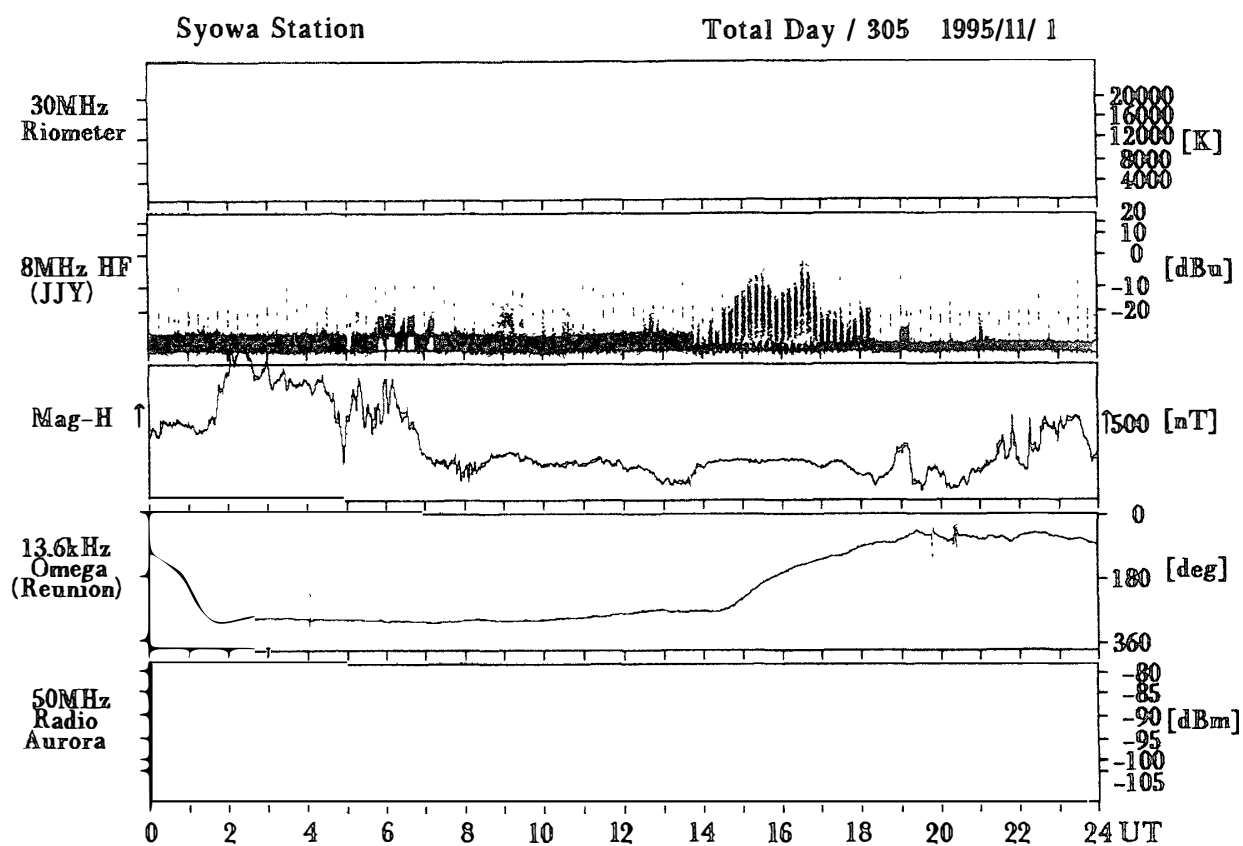
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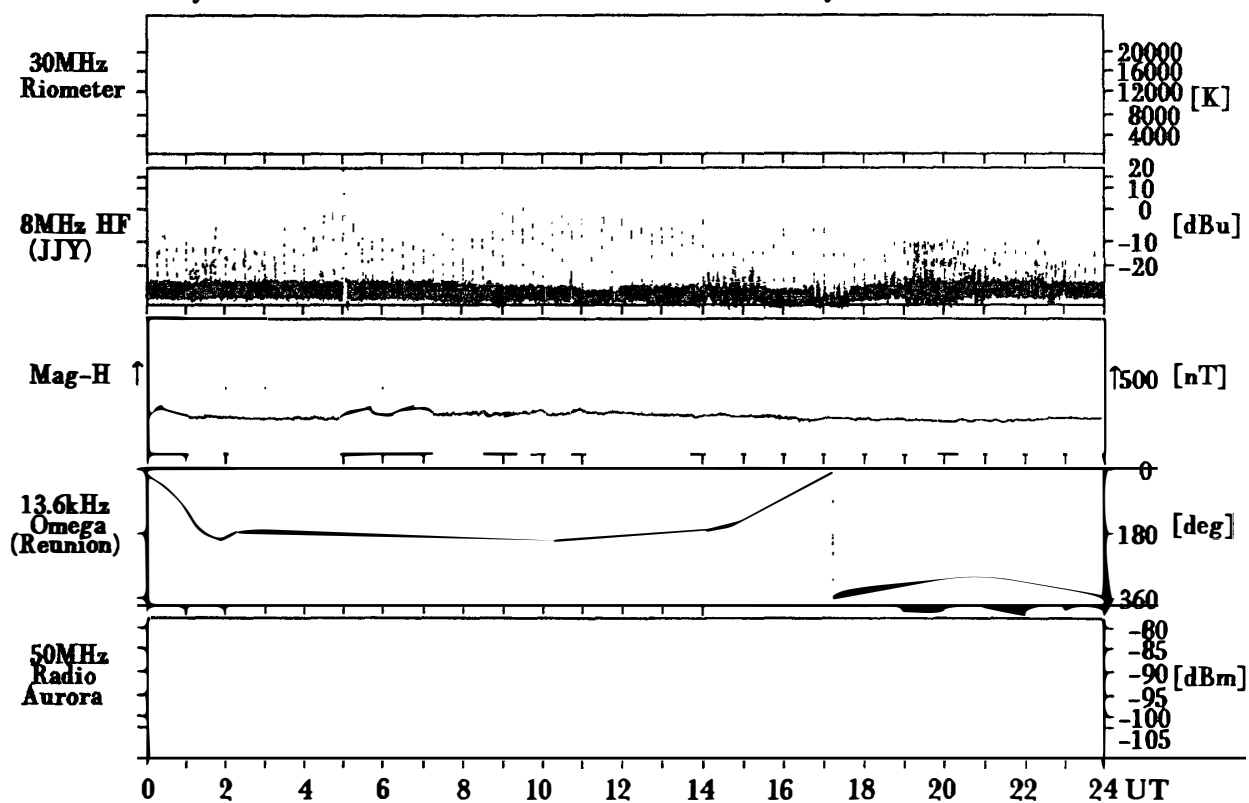






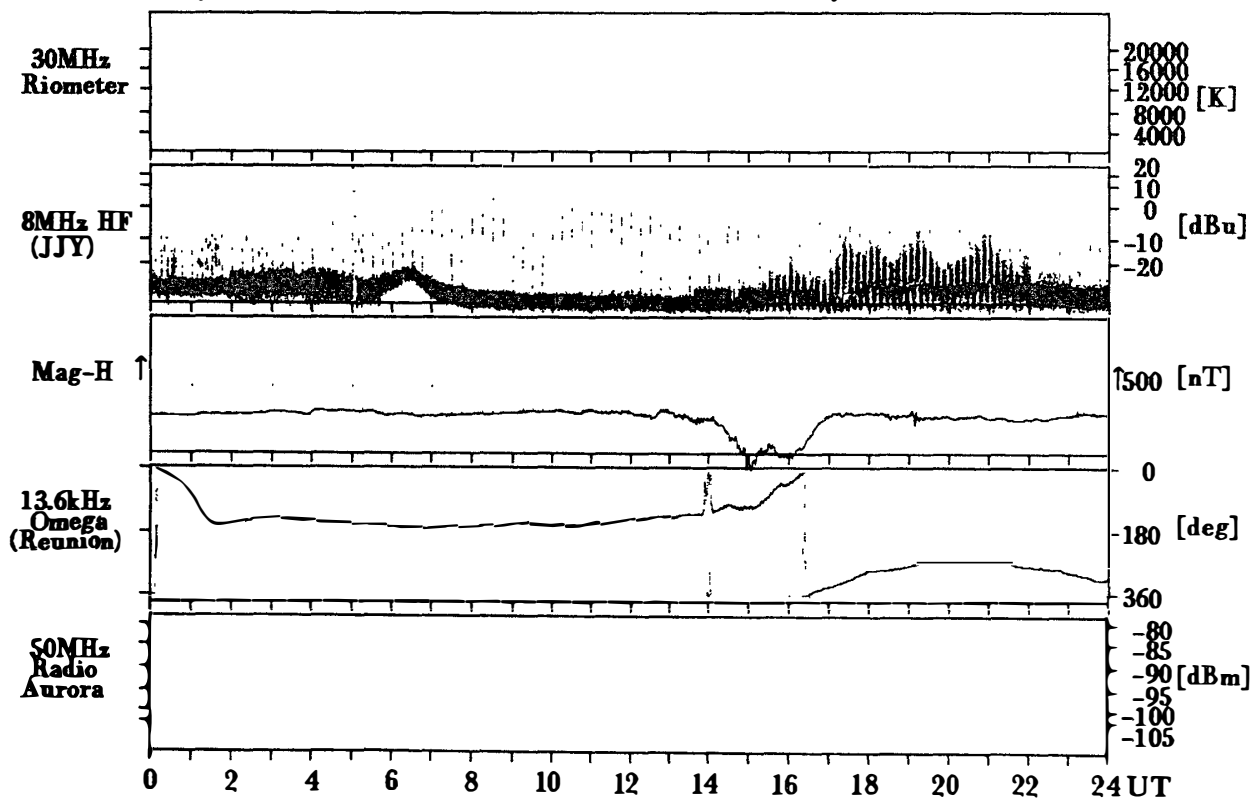
Syowa Station

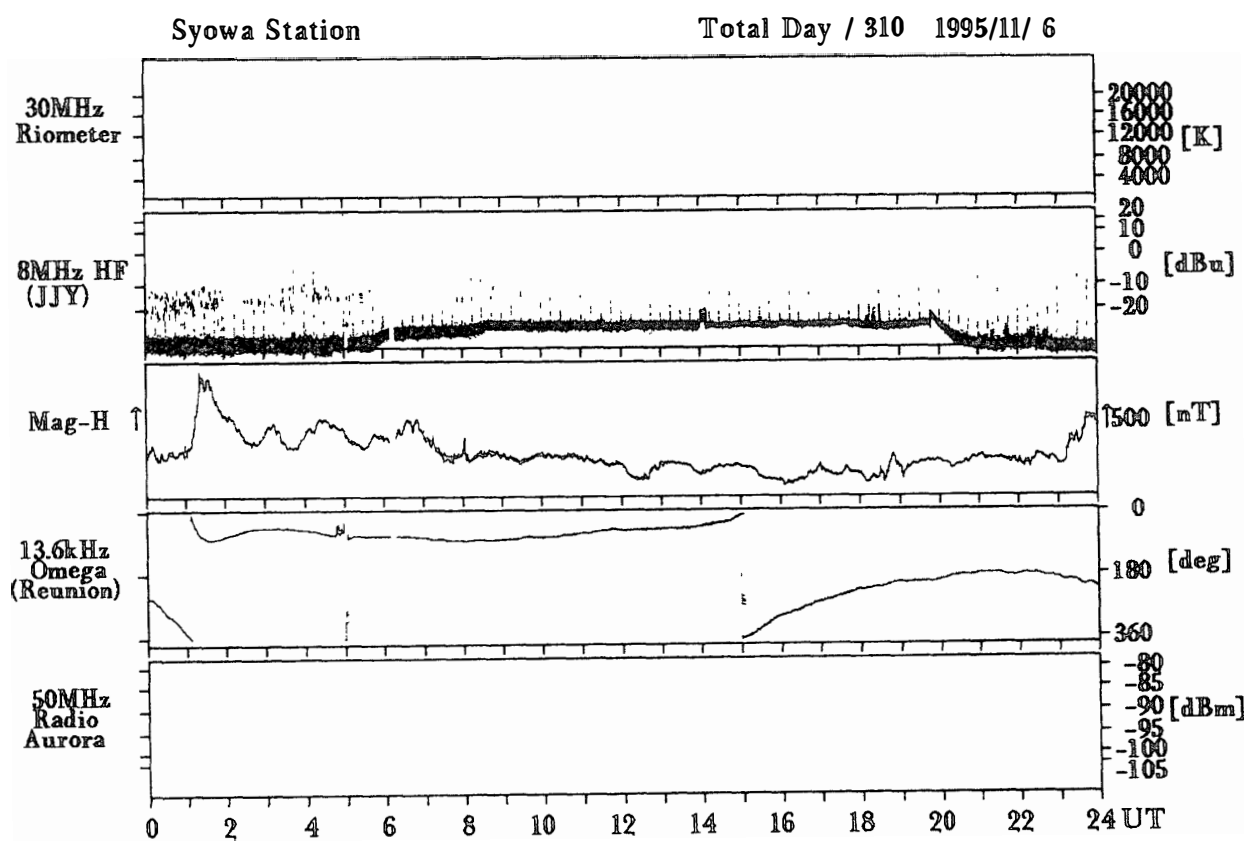
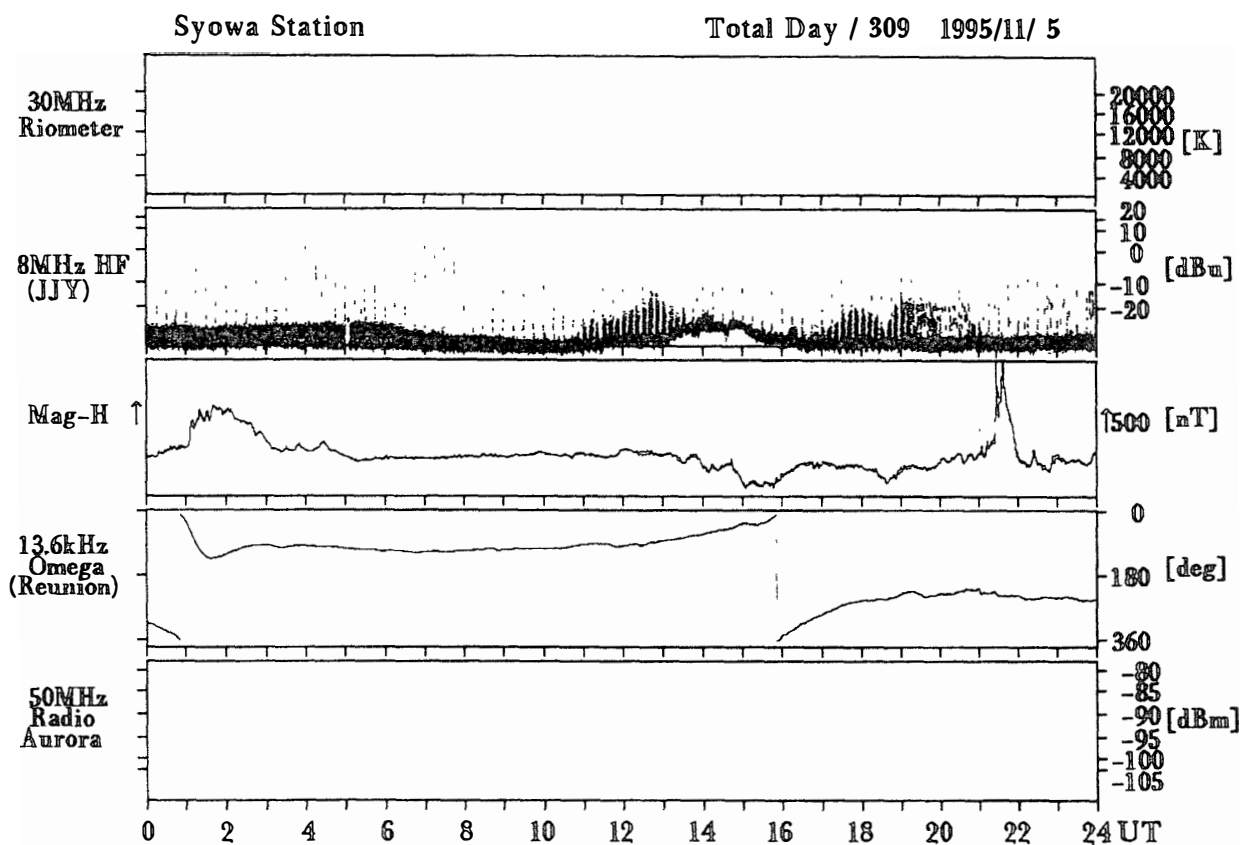
Total Day / 307 1995/11/ 3

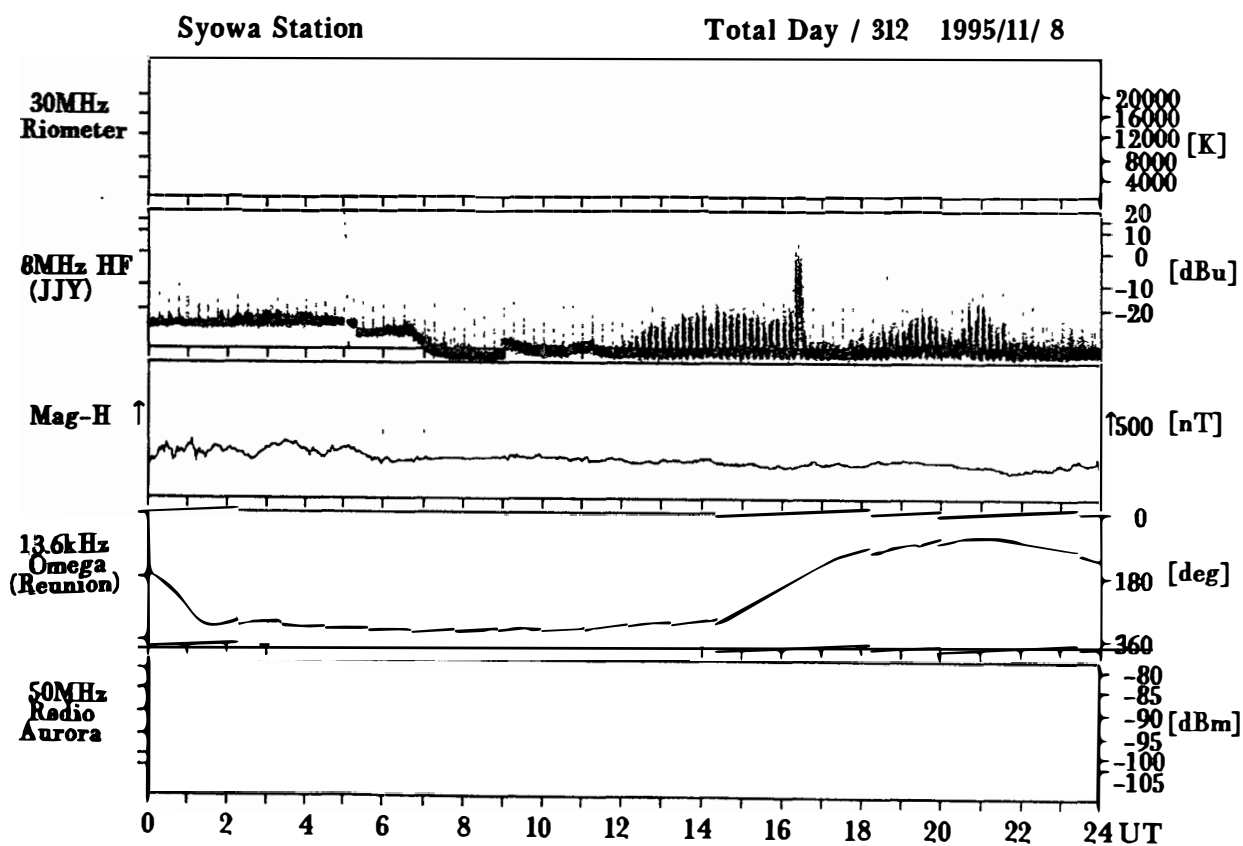
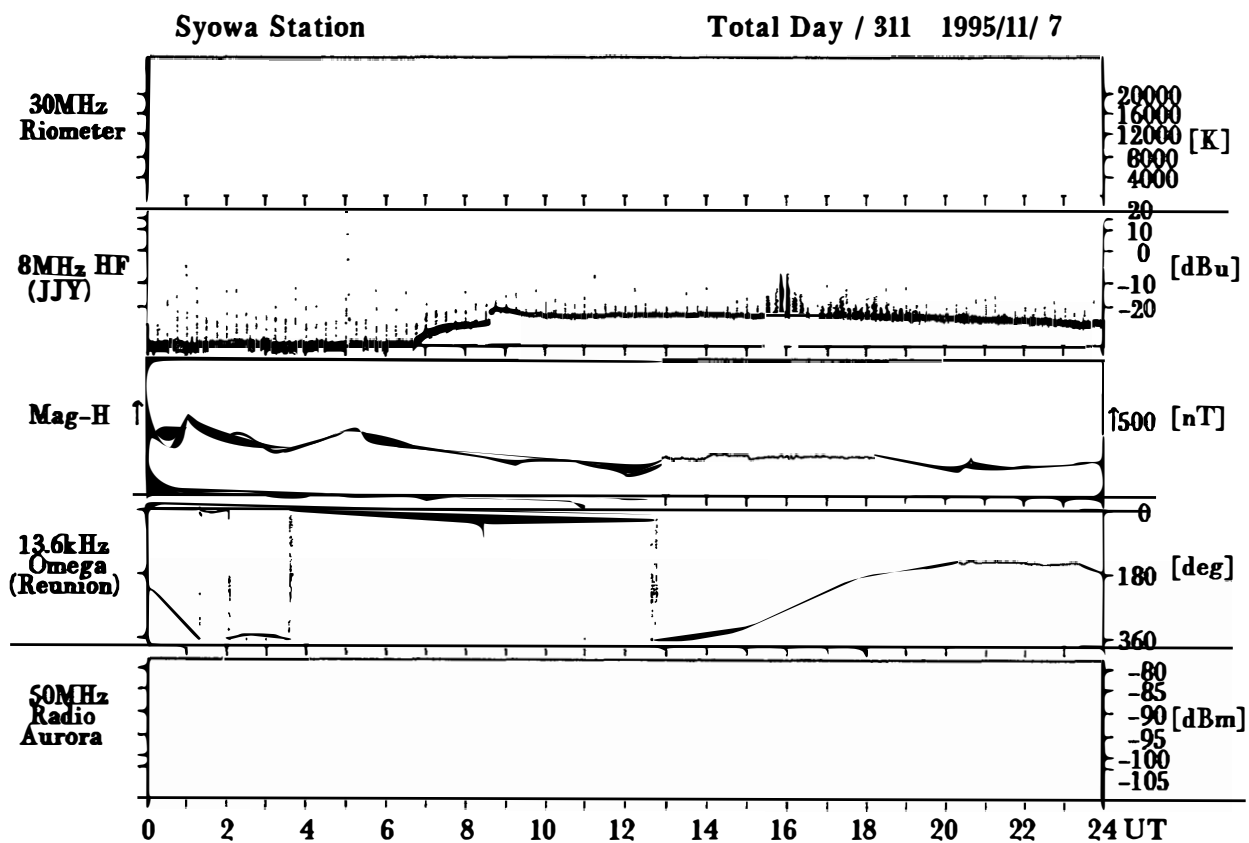


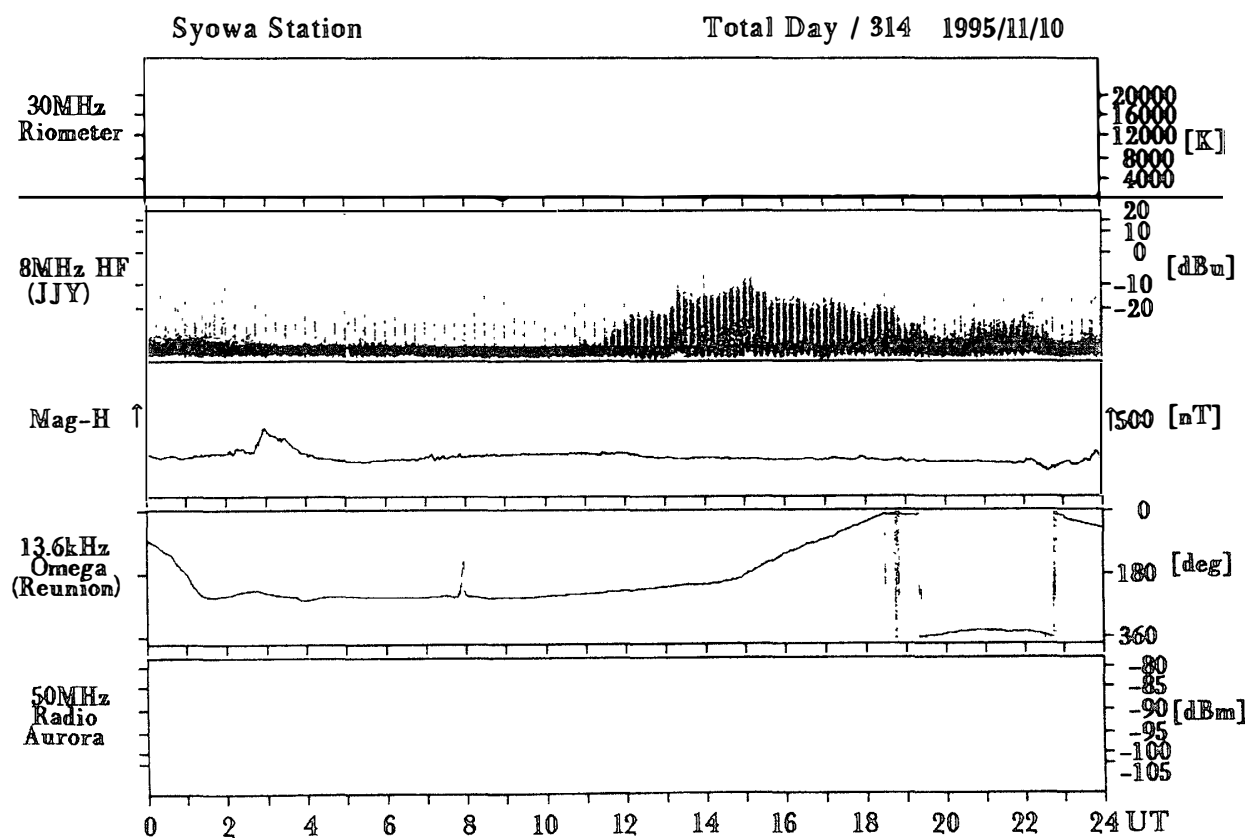
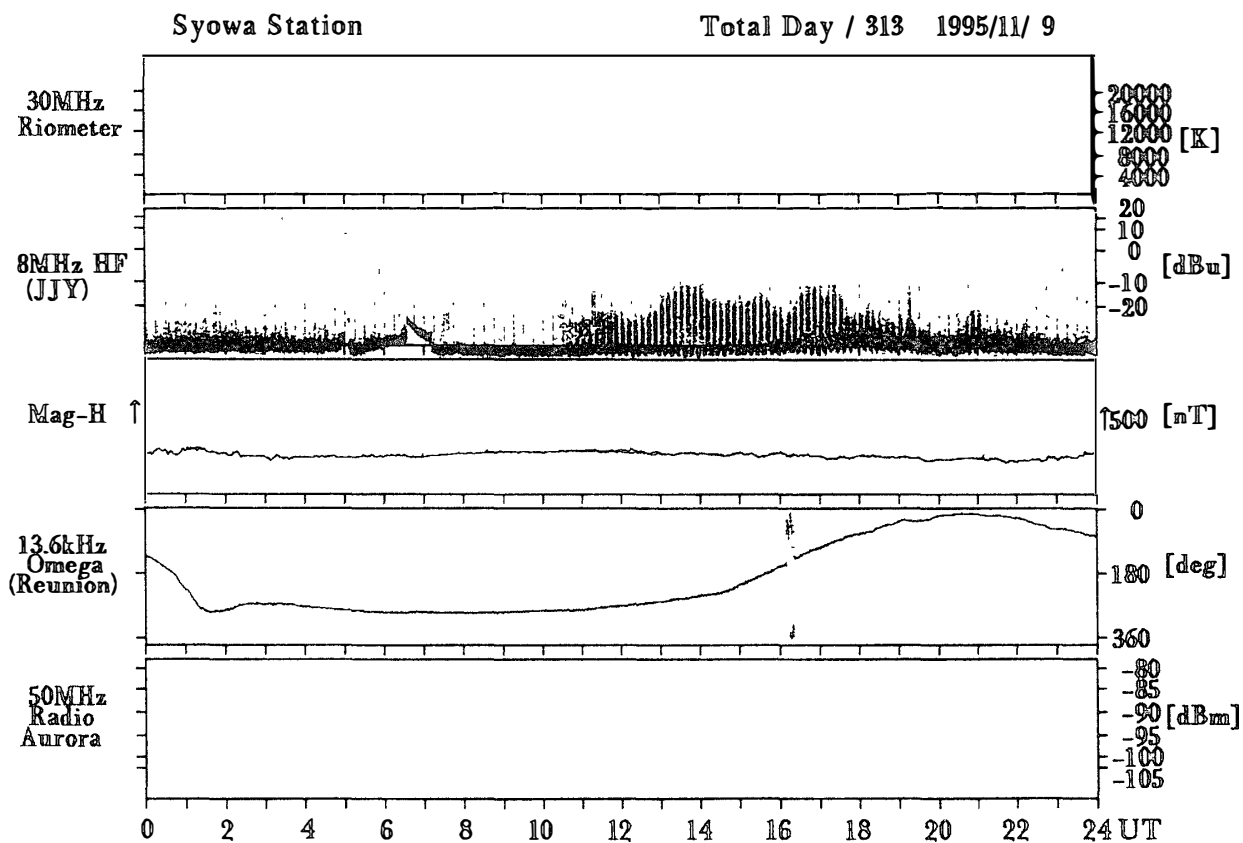
Syowa Station

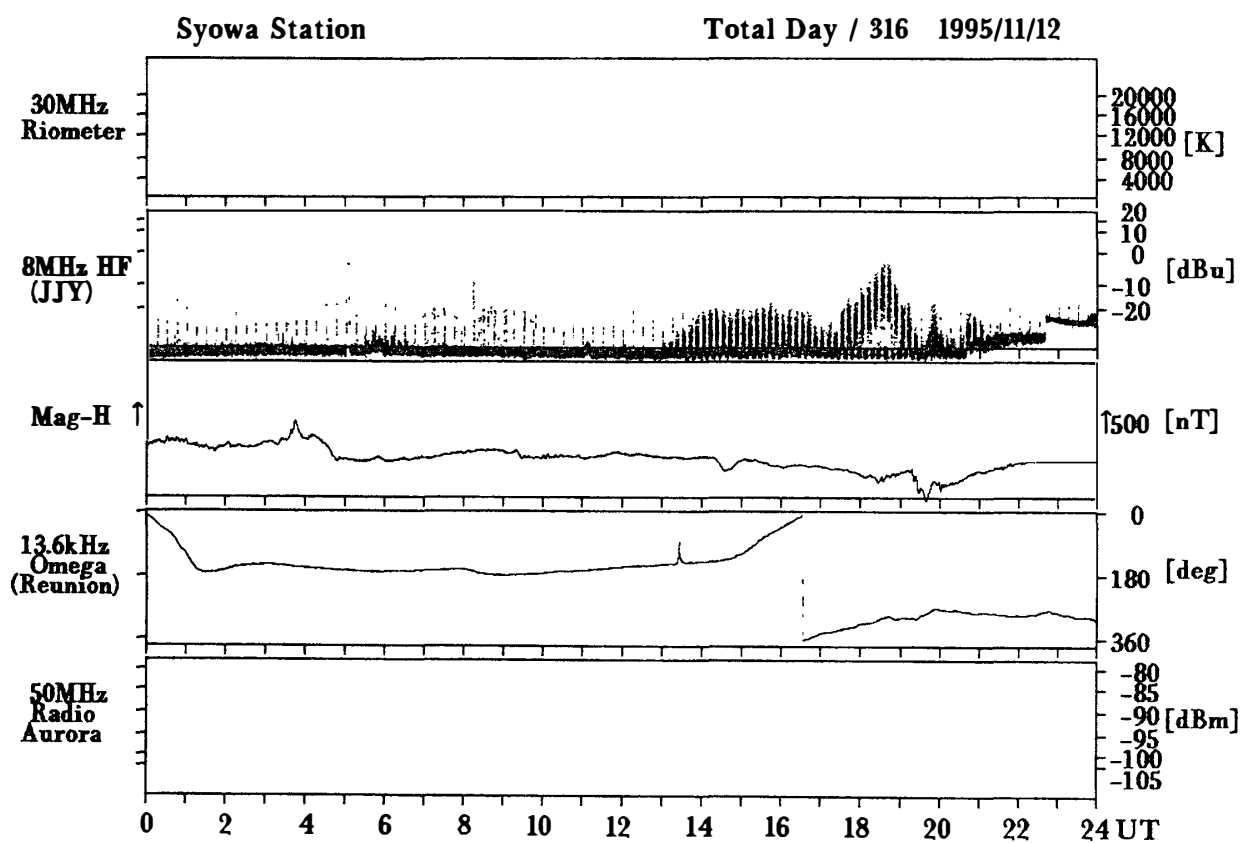
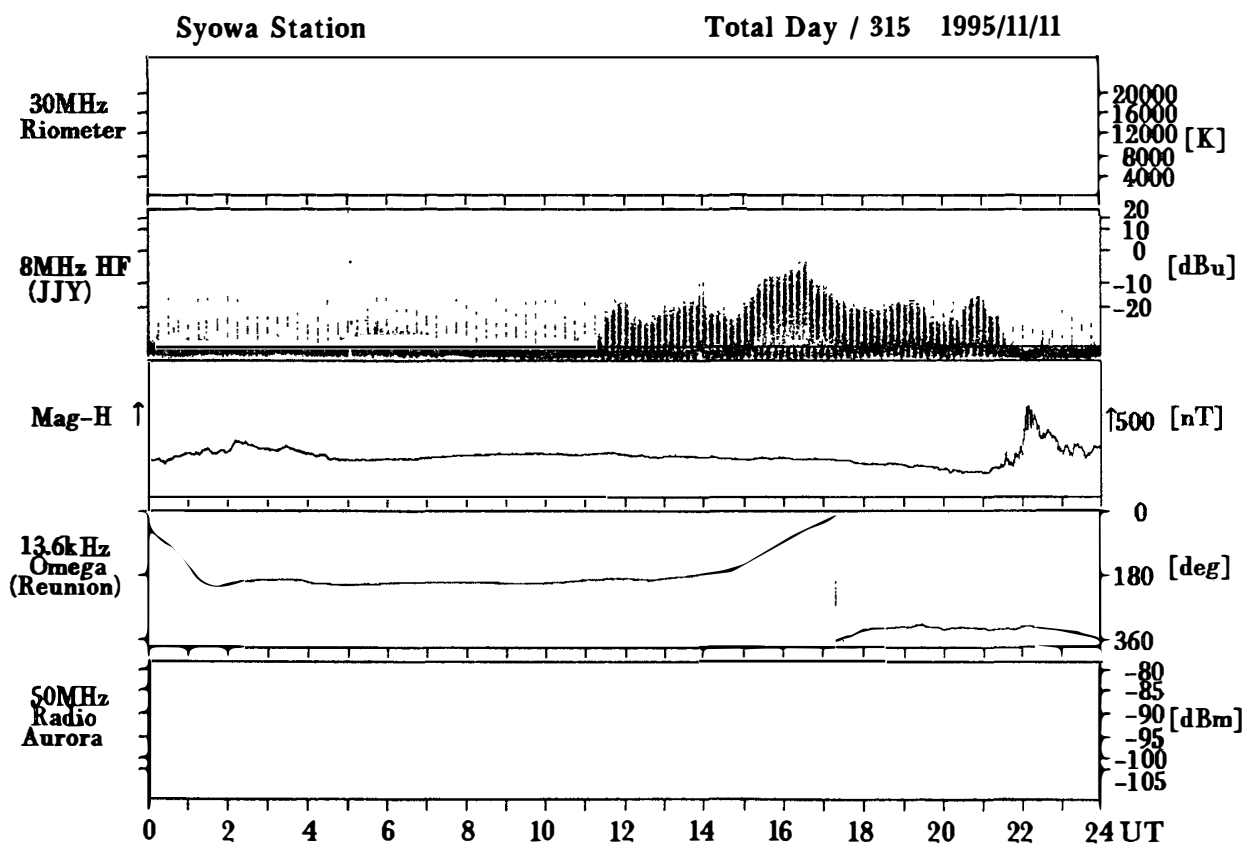
Total Day / 308 1995/11/ 4

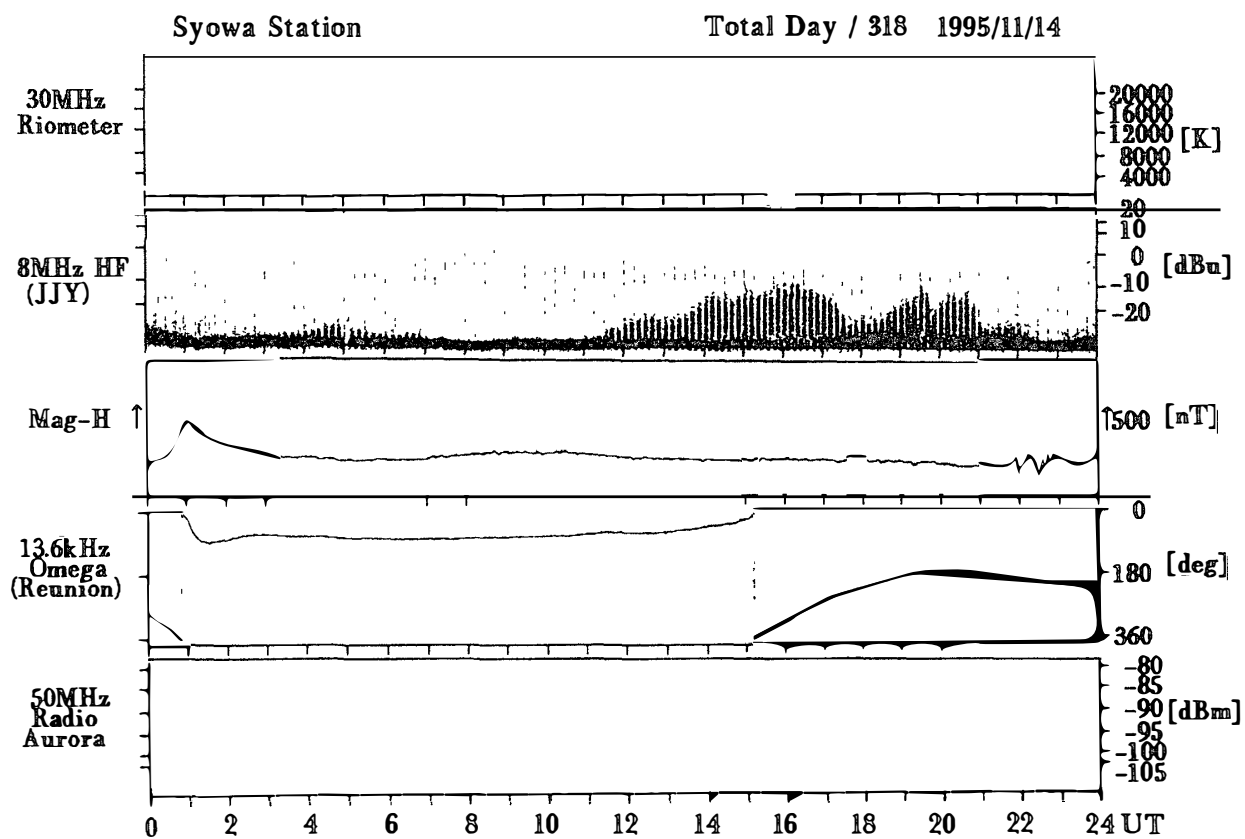
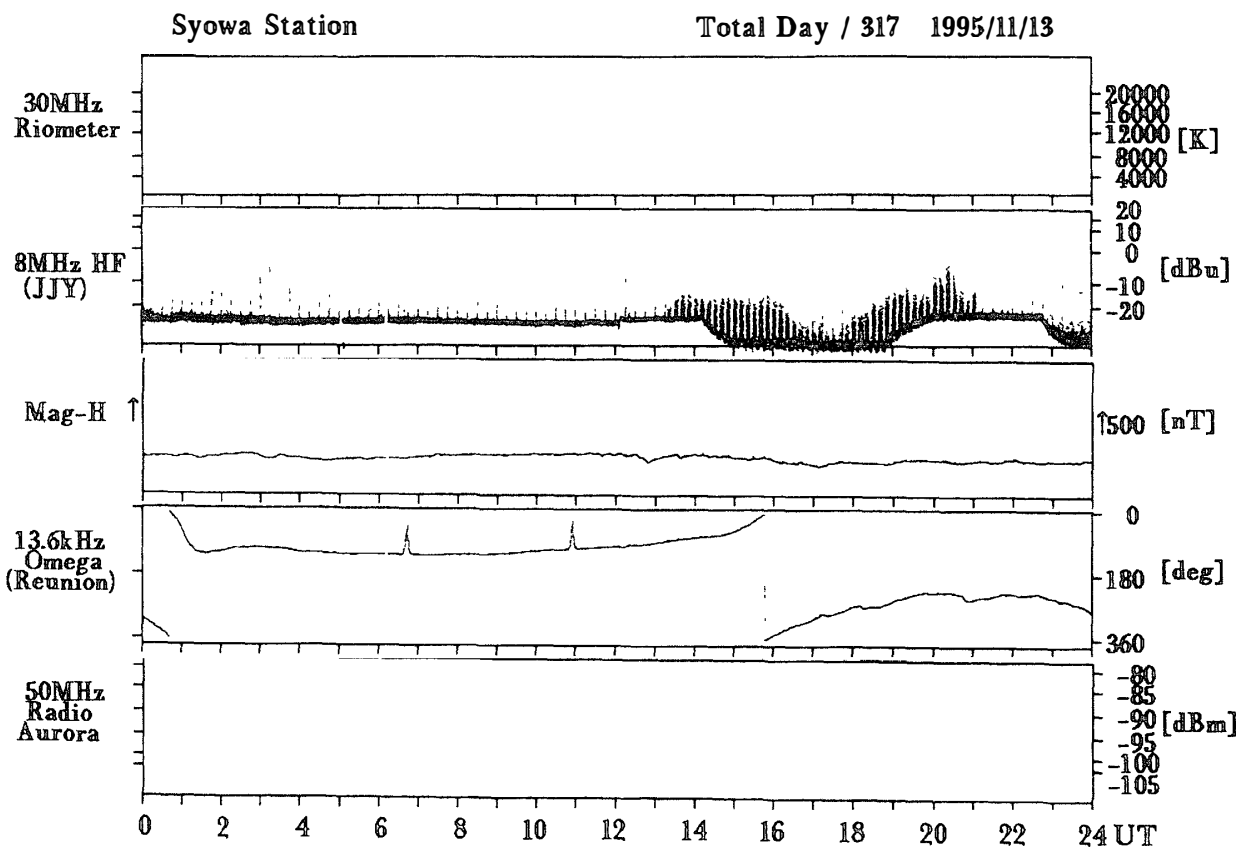


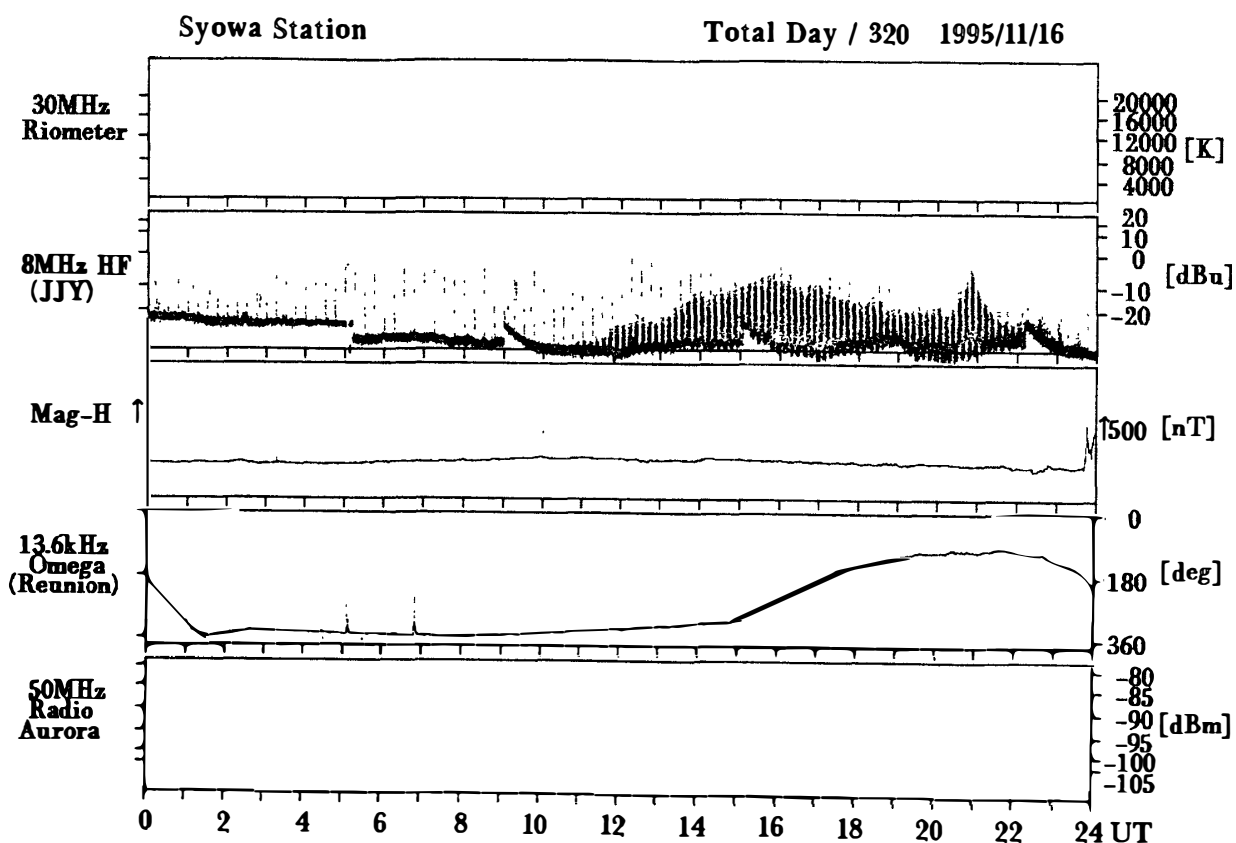
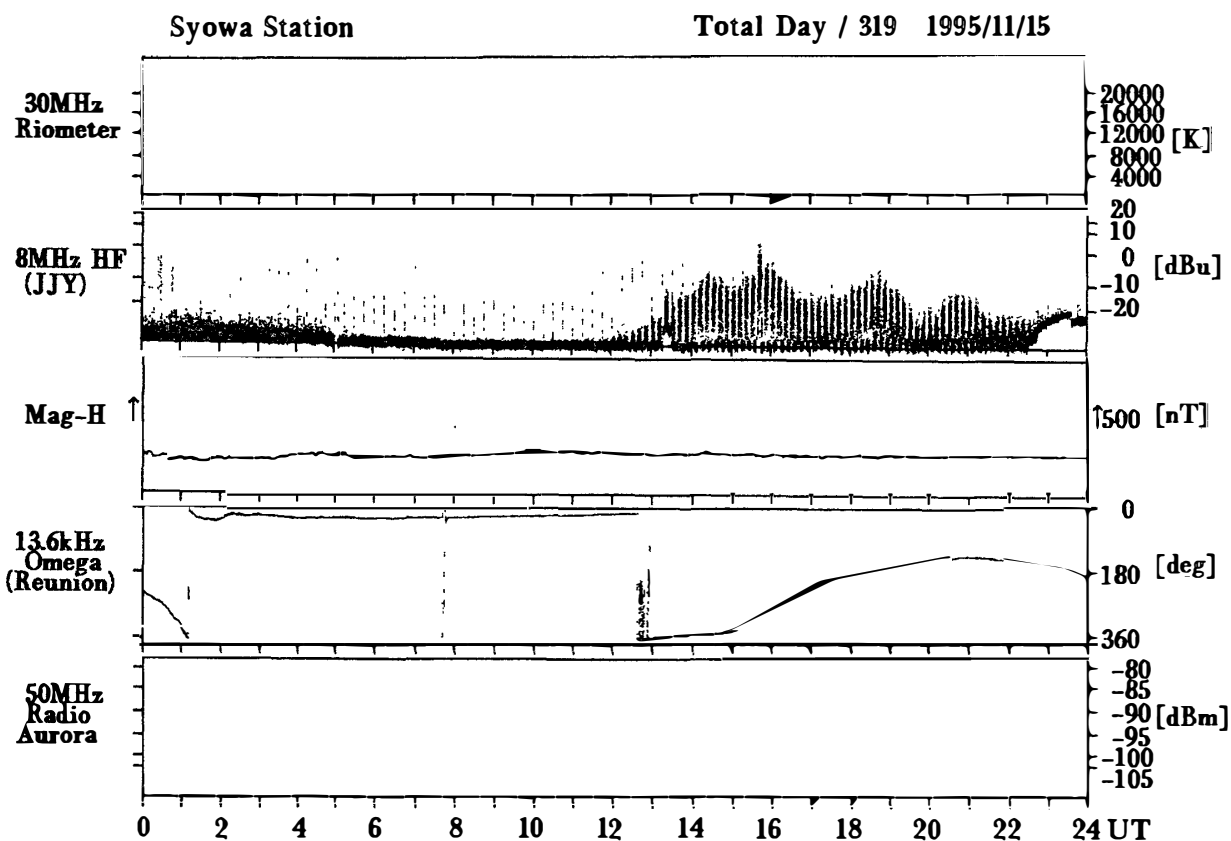


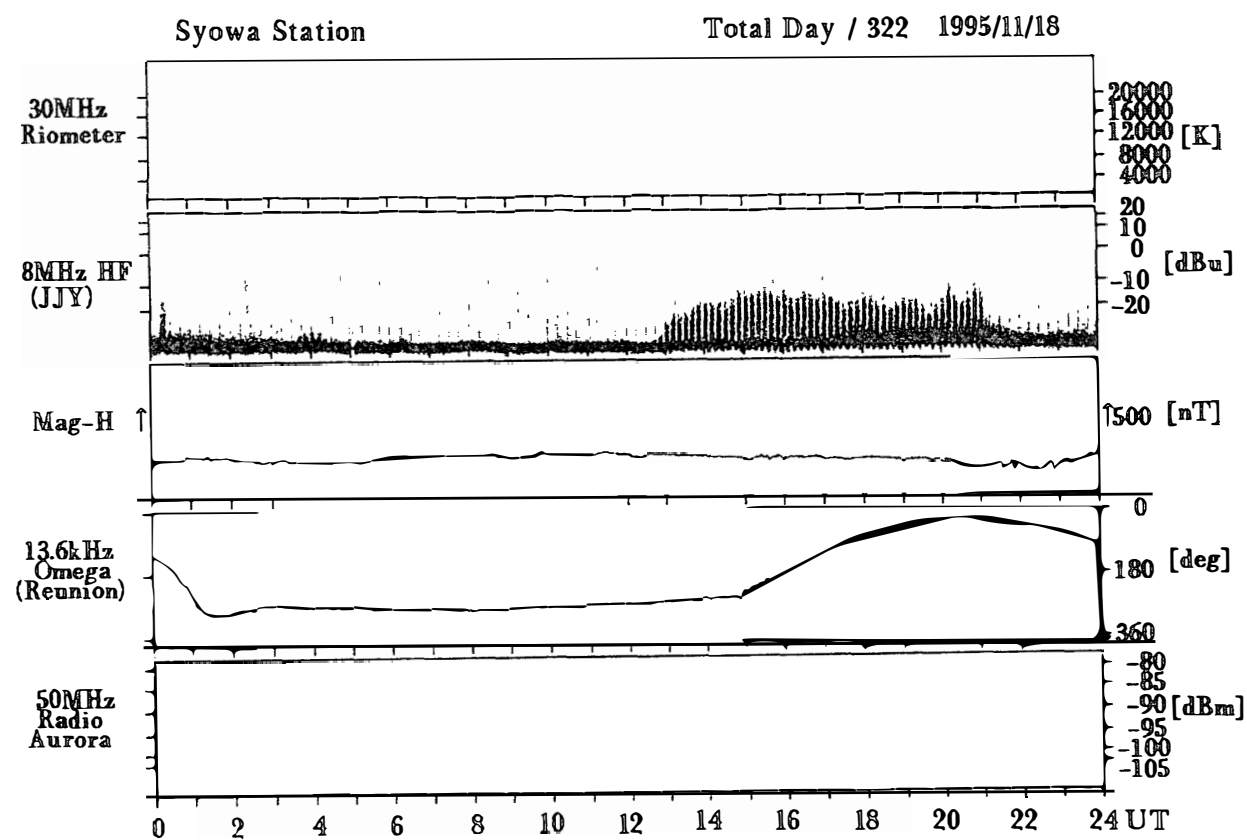
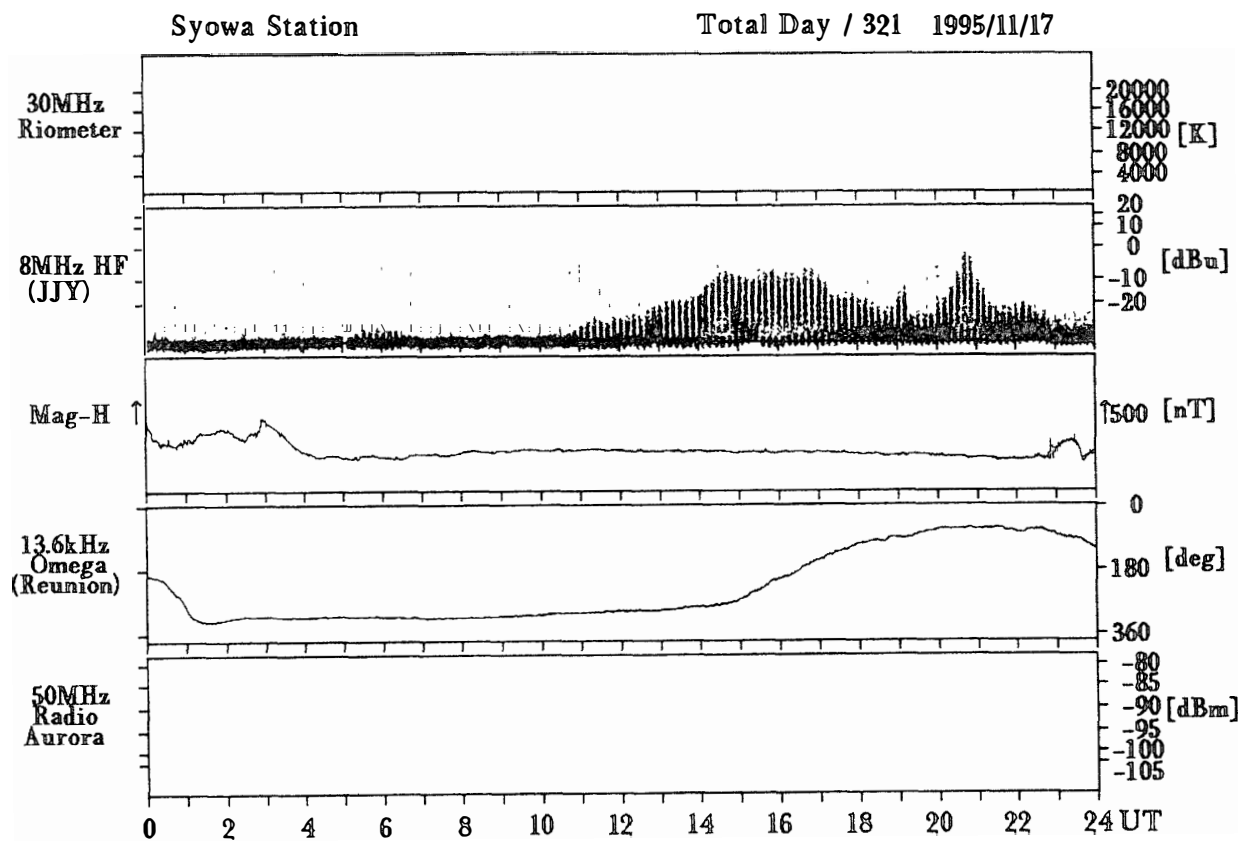


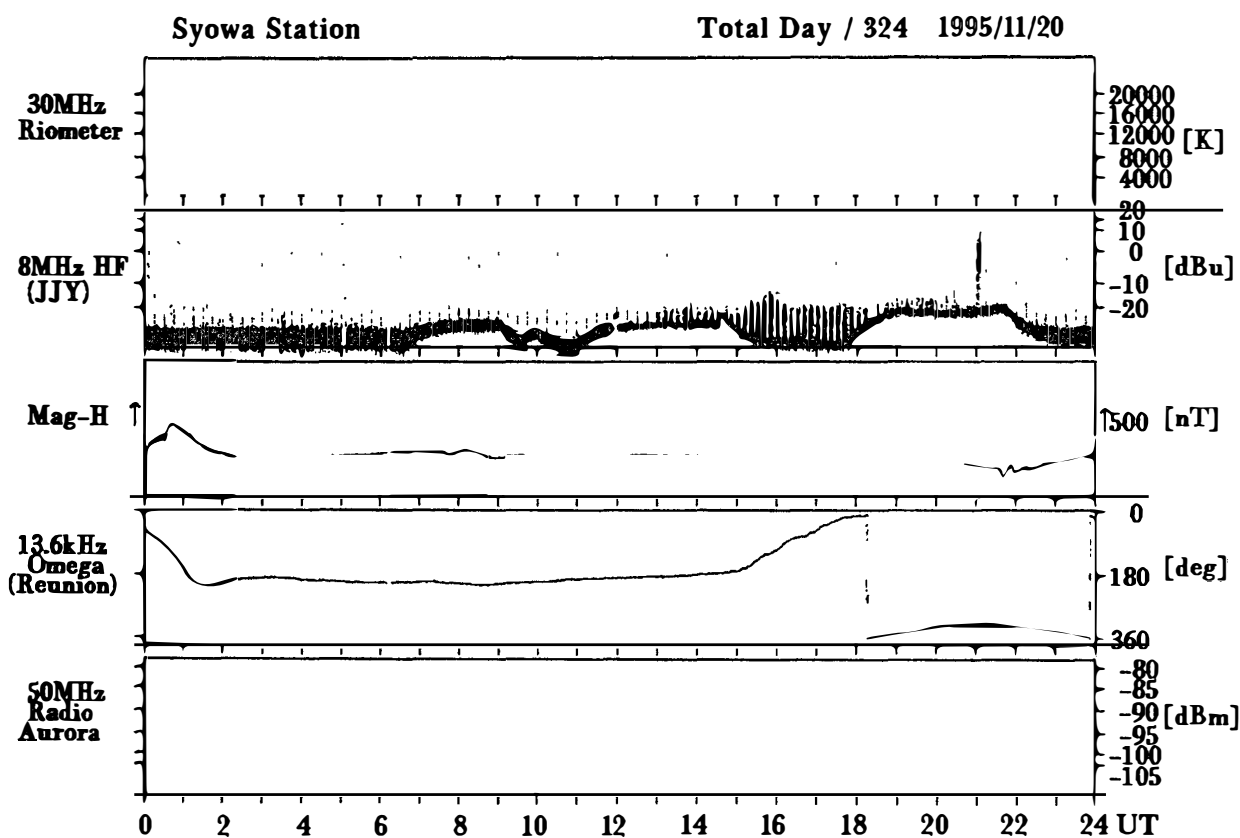
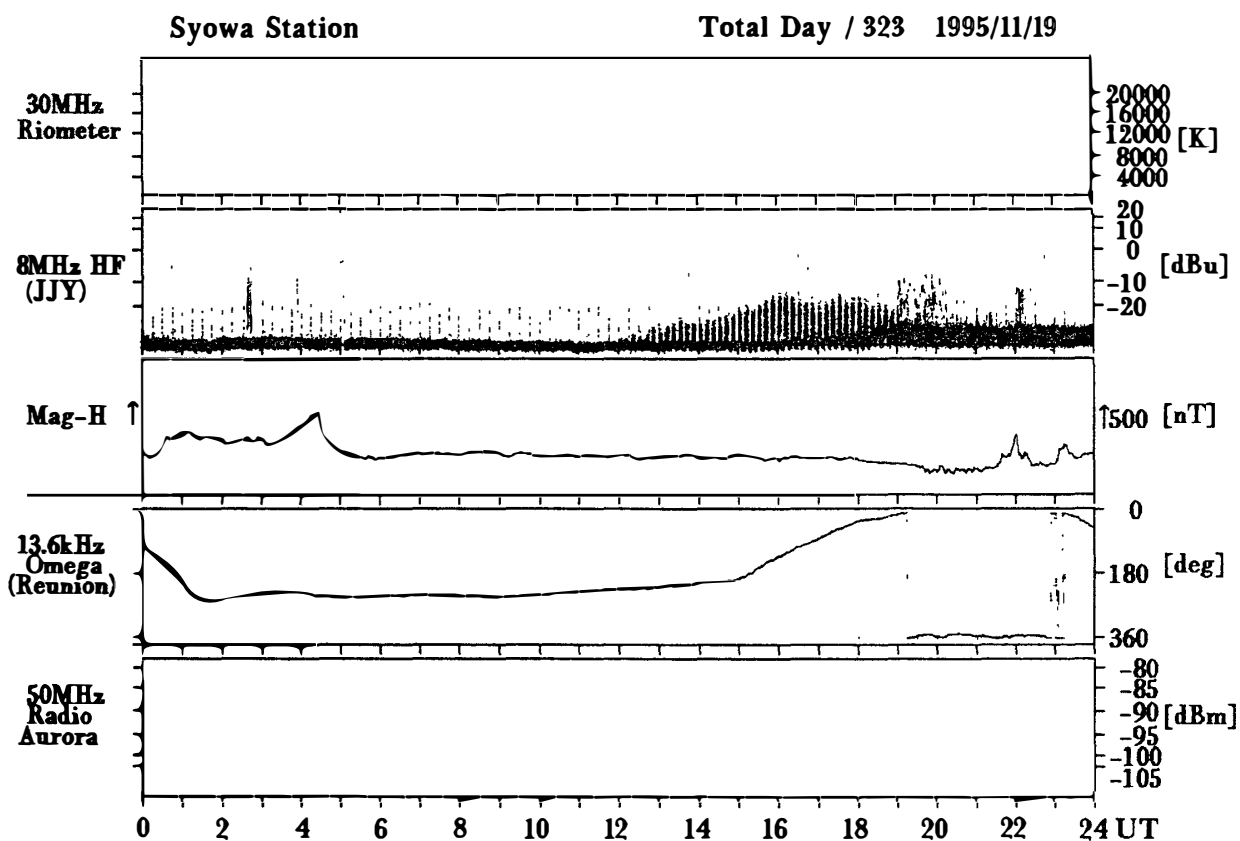






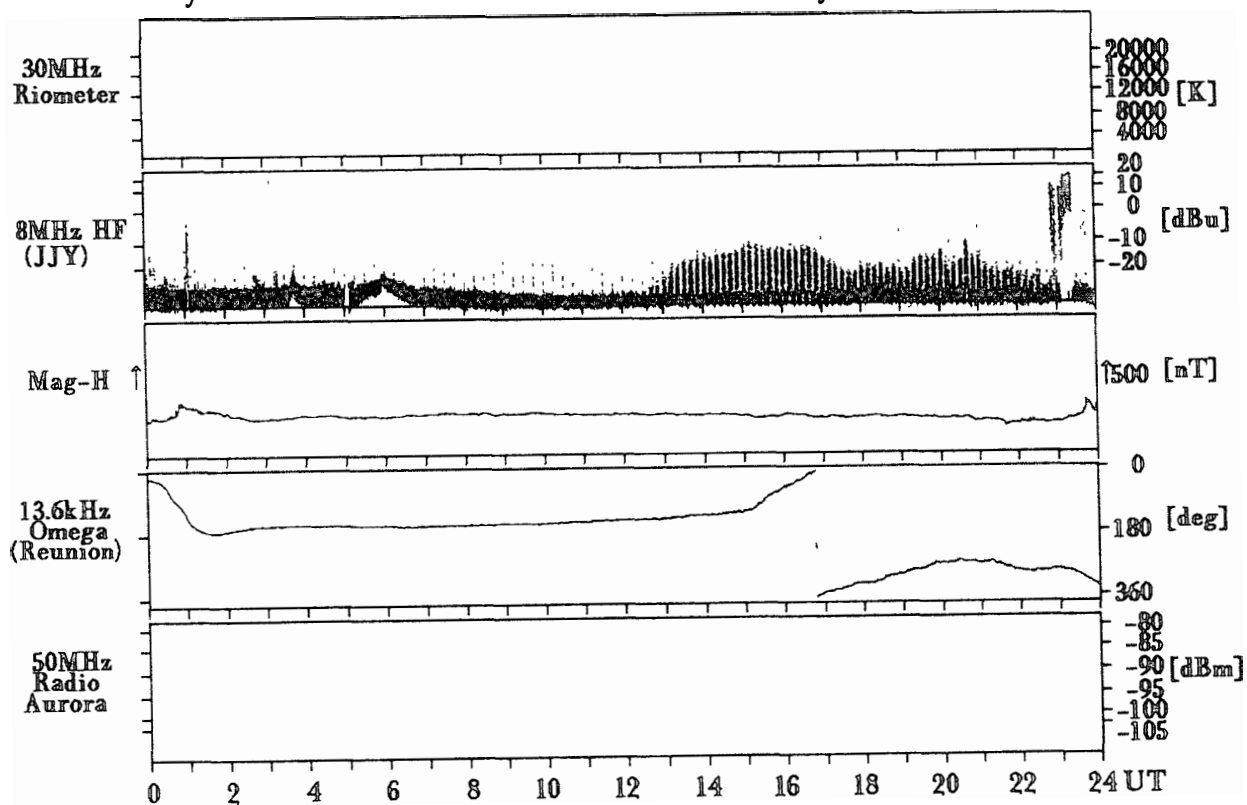






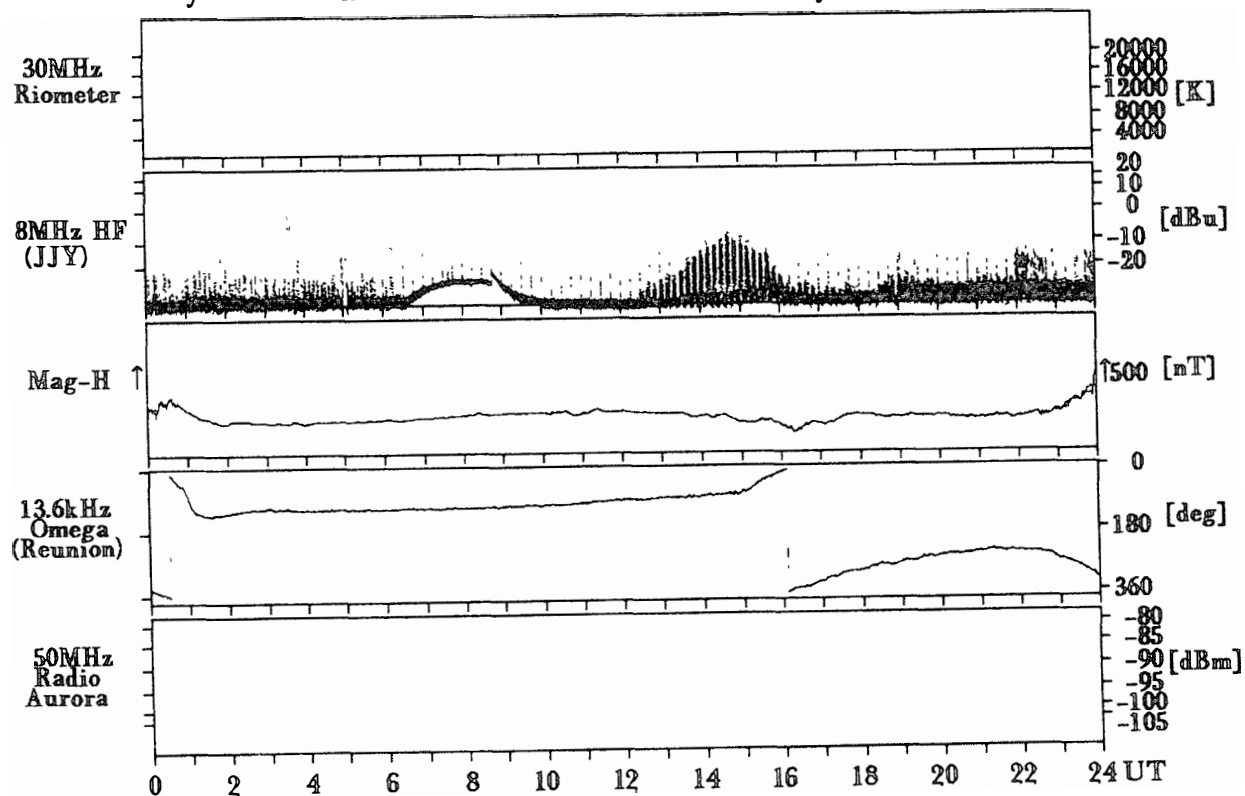
Syowa Station

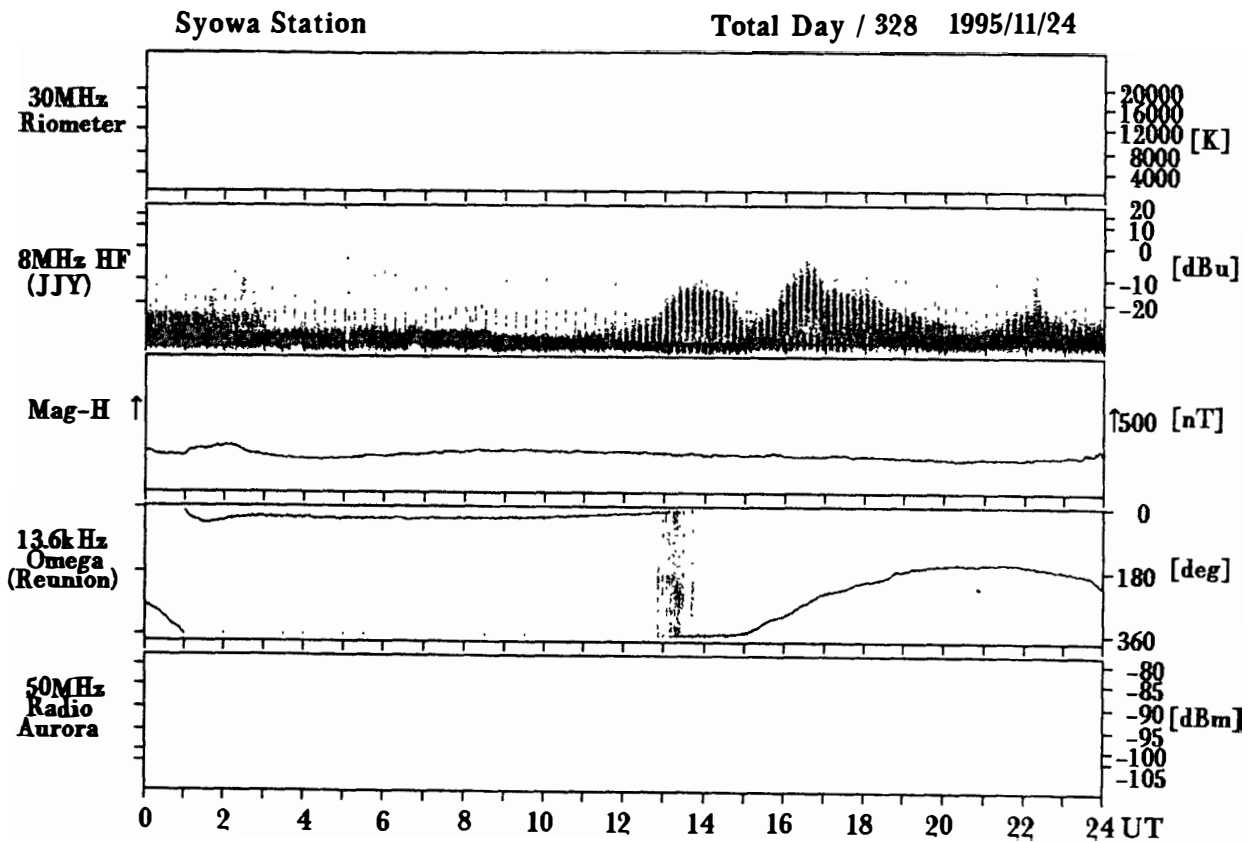
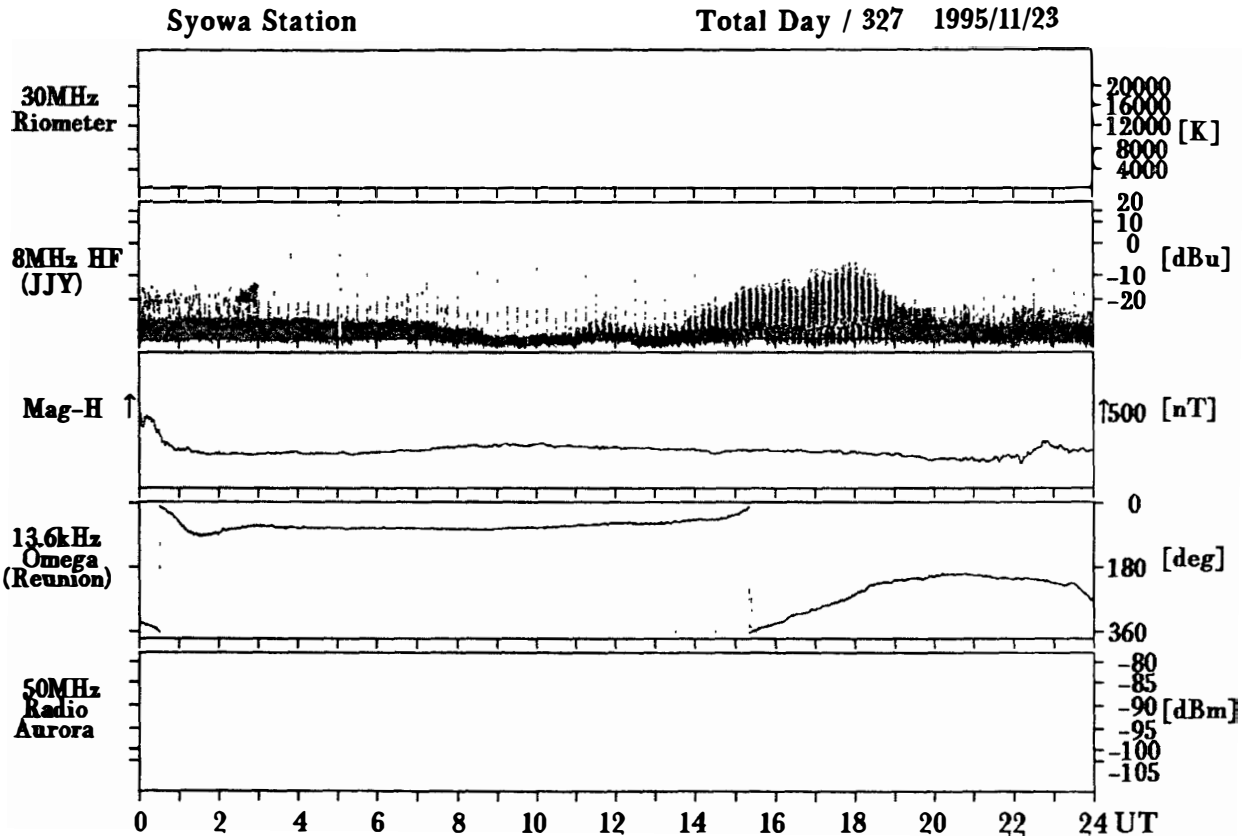
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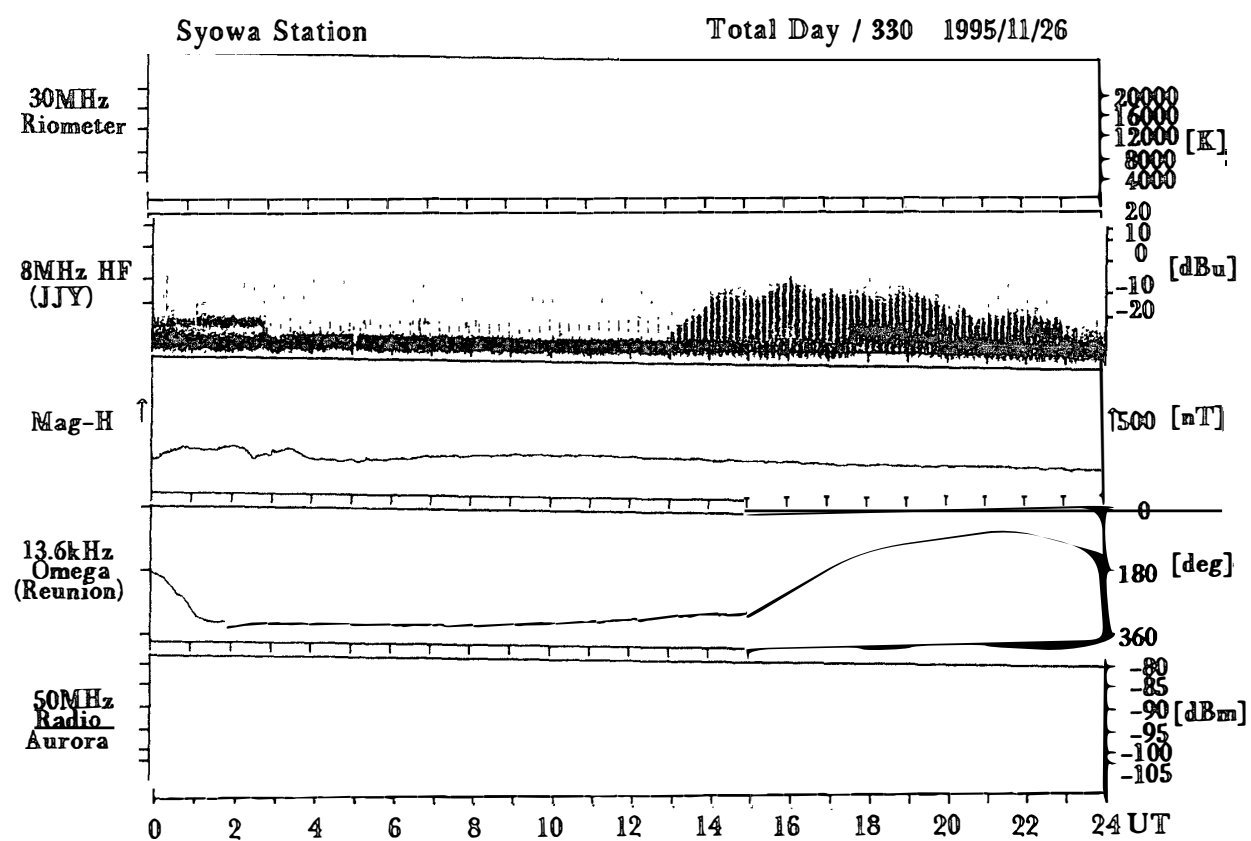
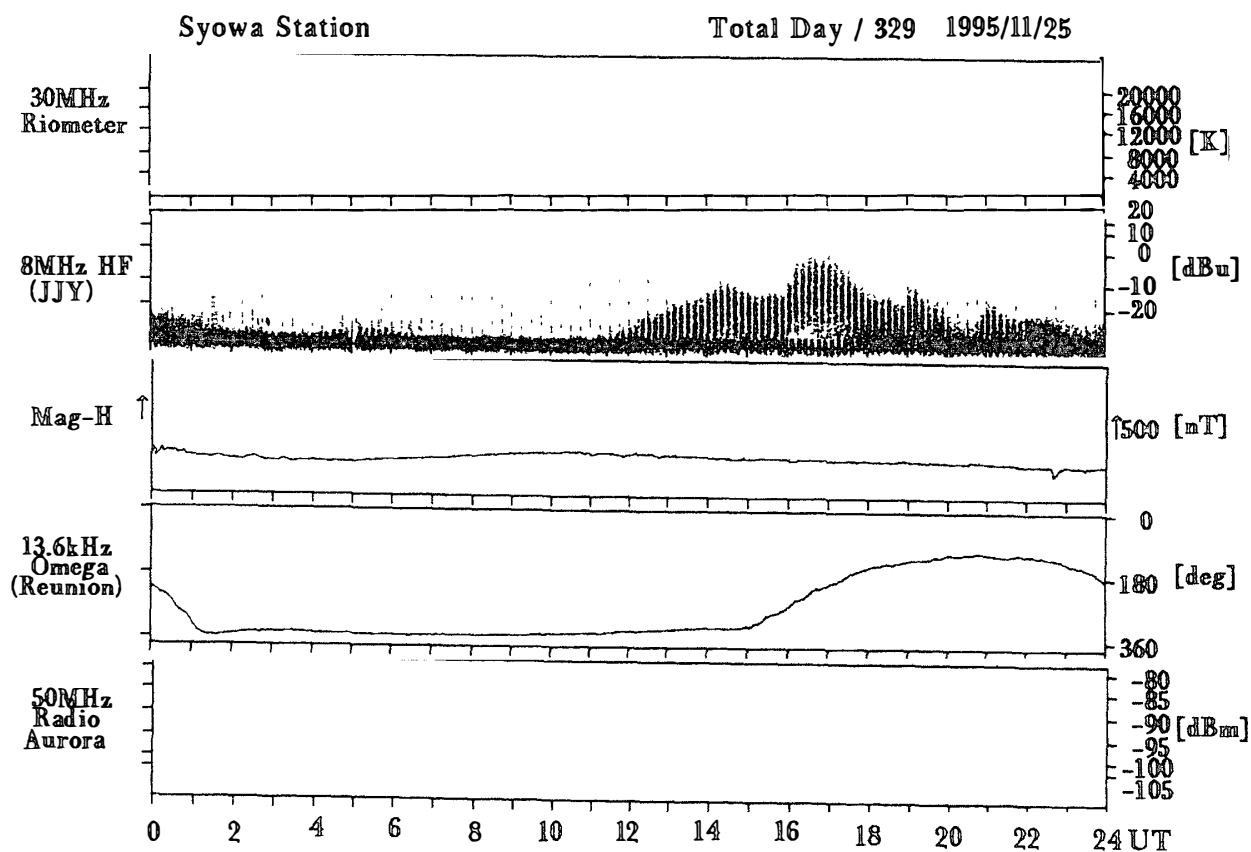


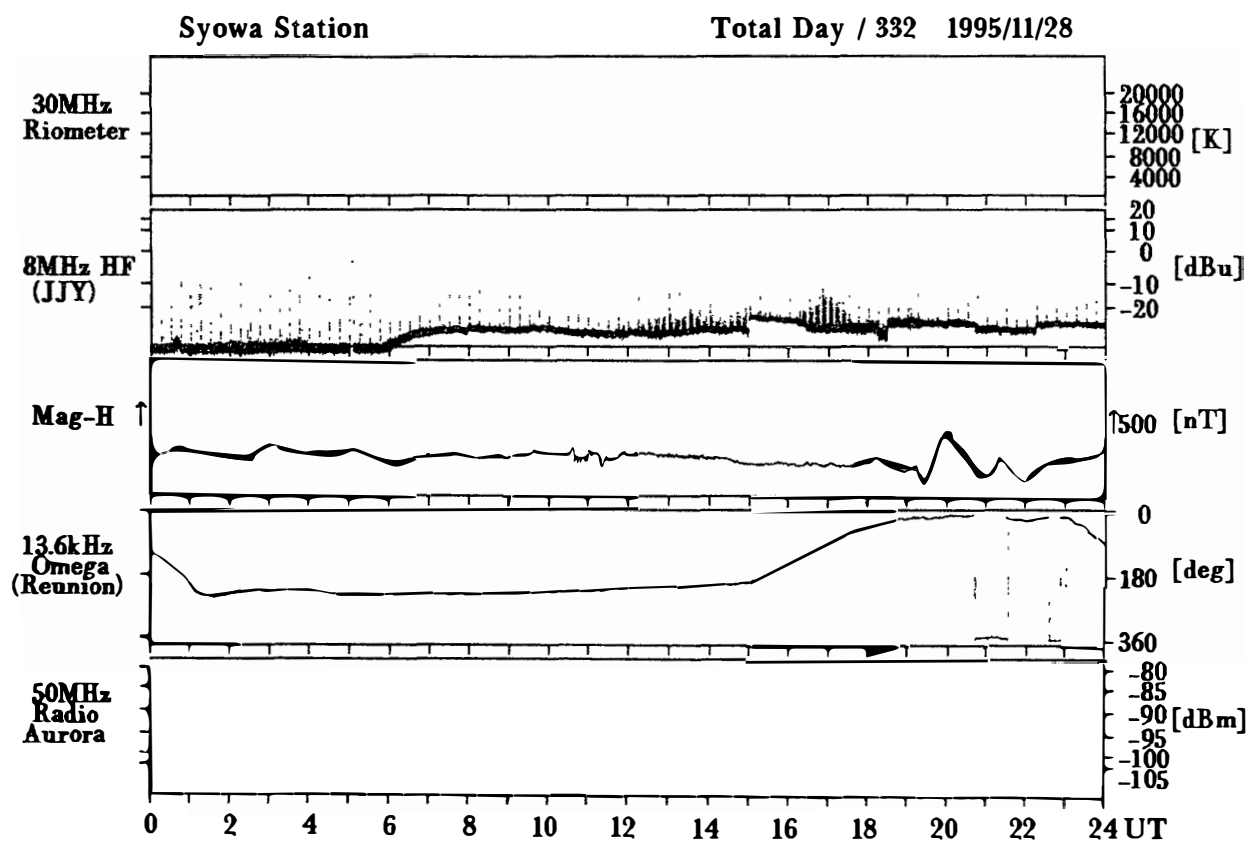
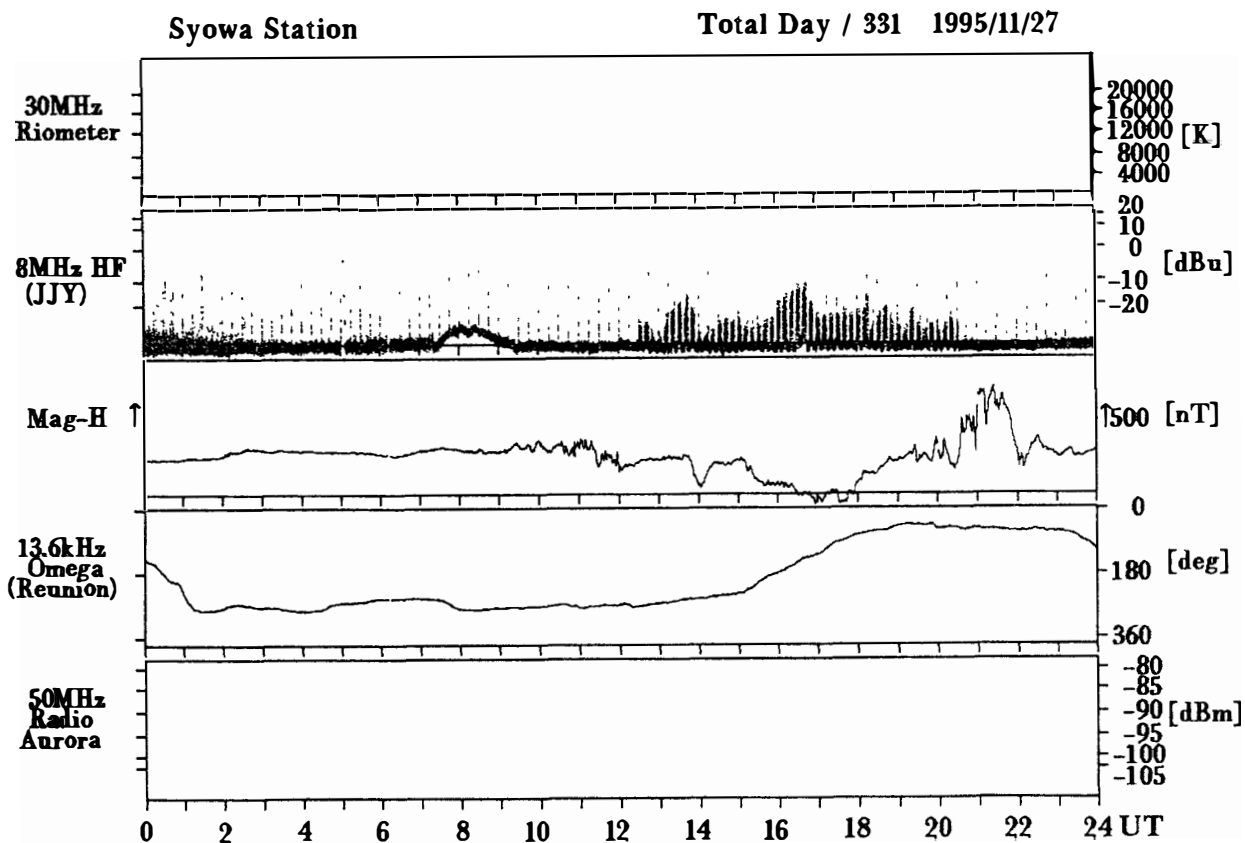
Syowa Station

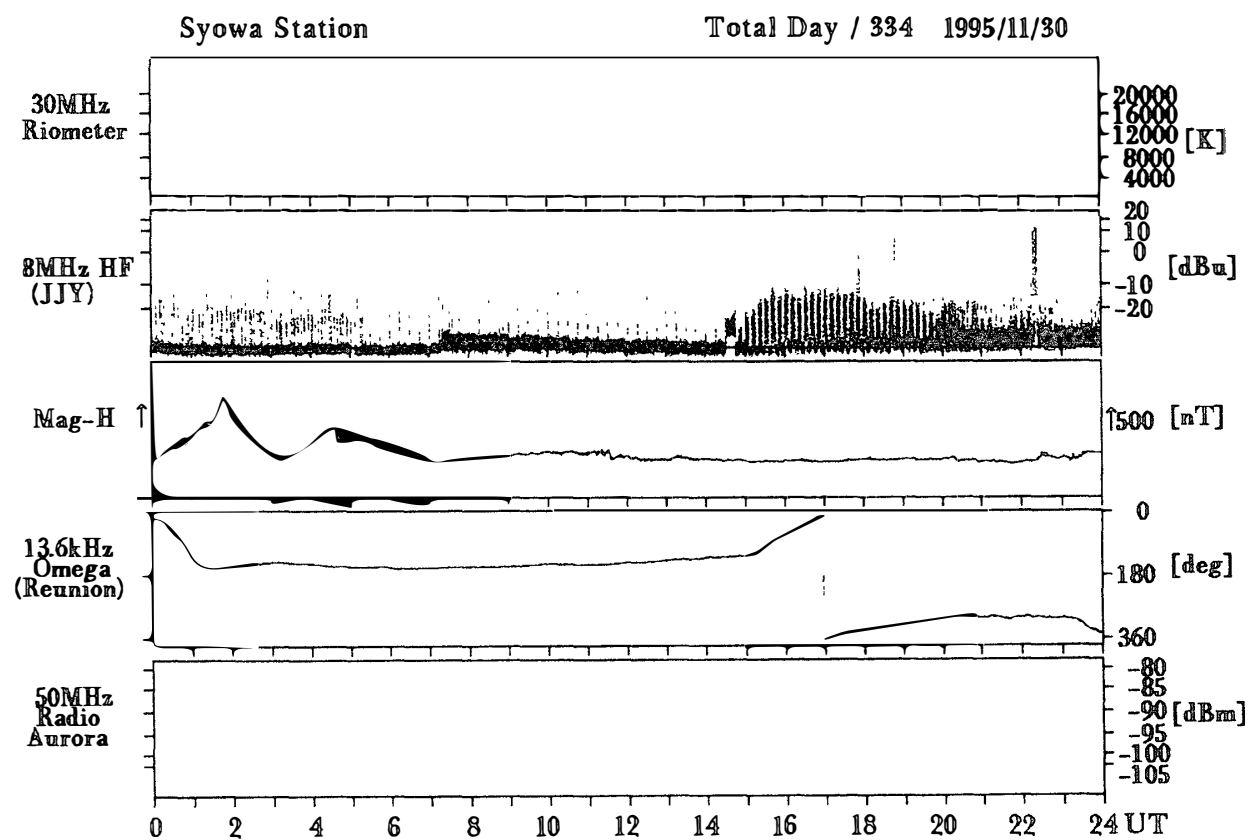
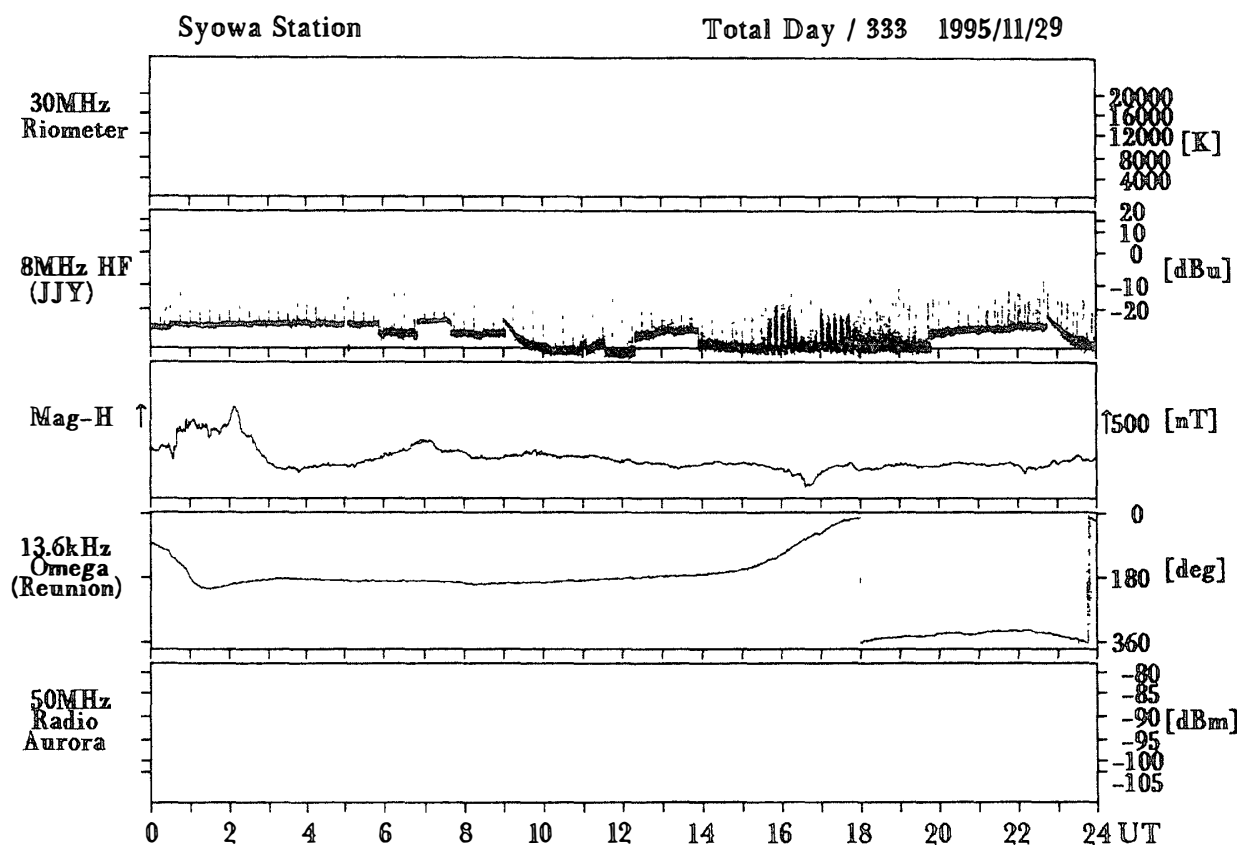
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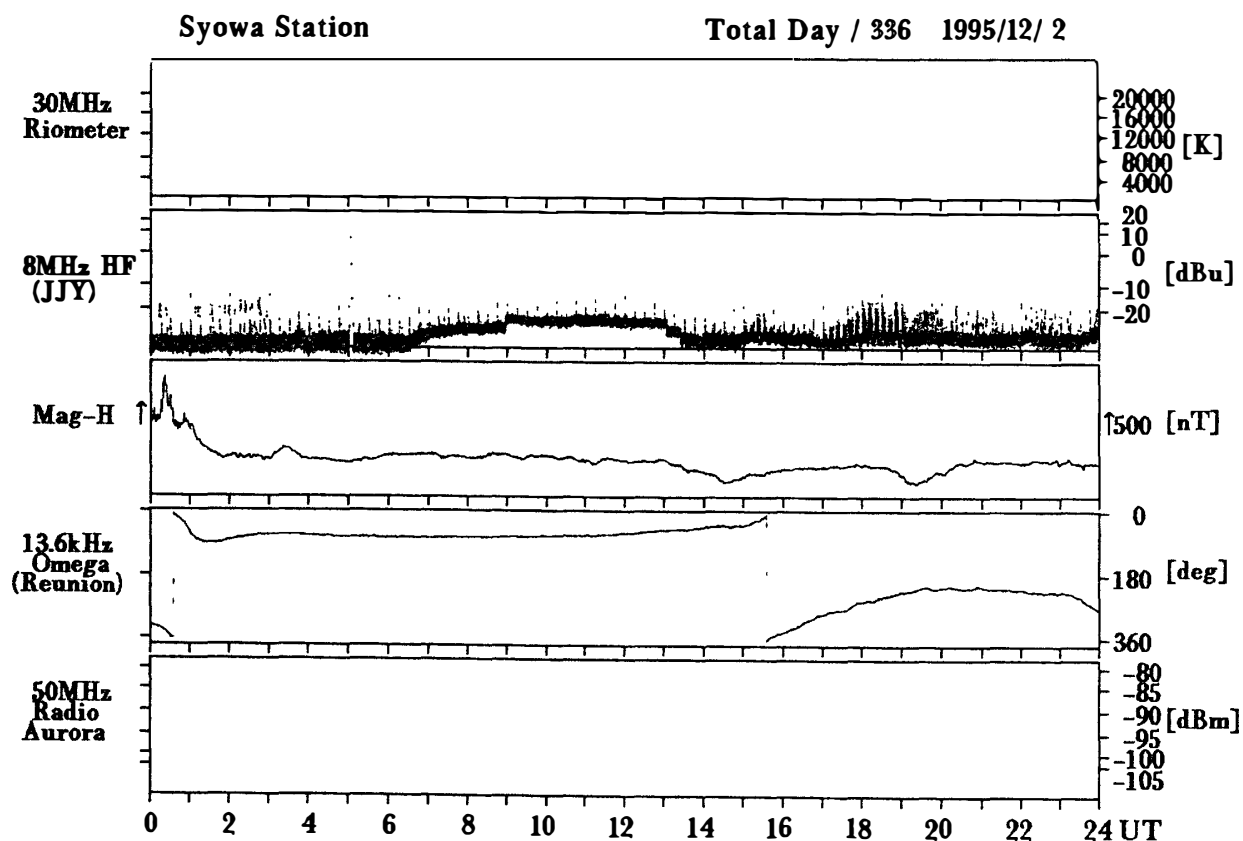
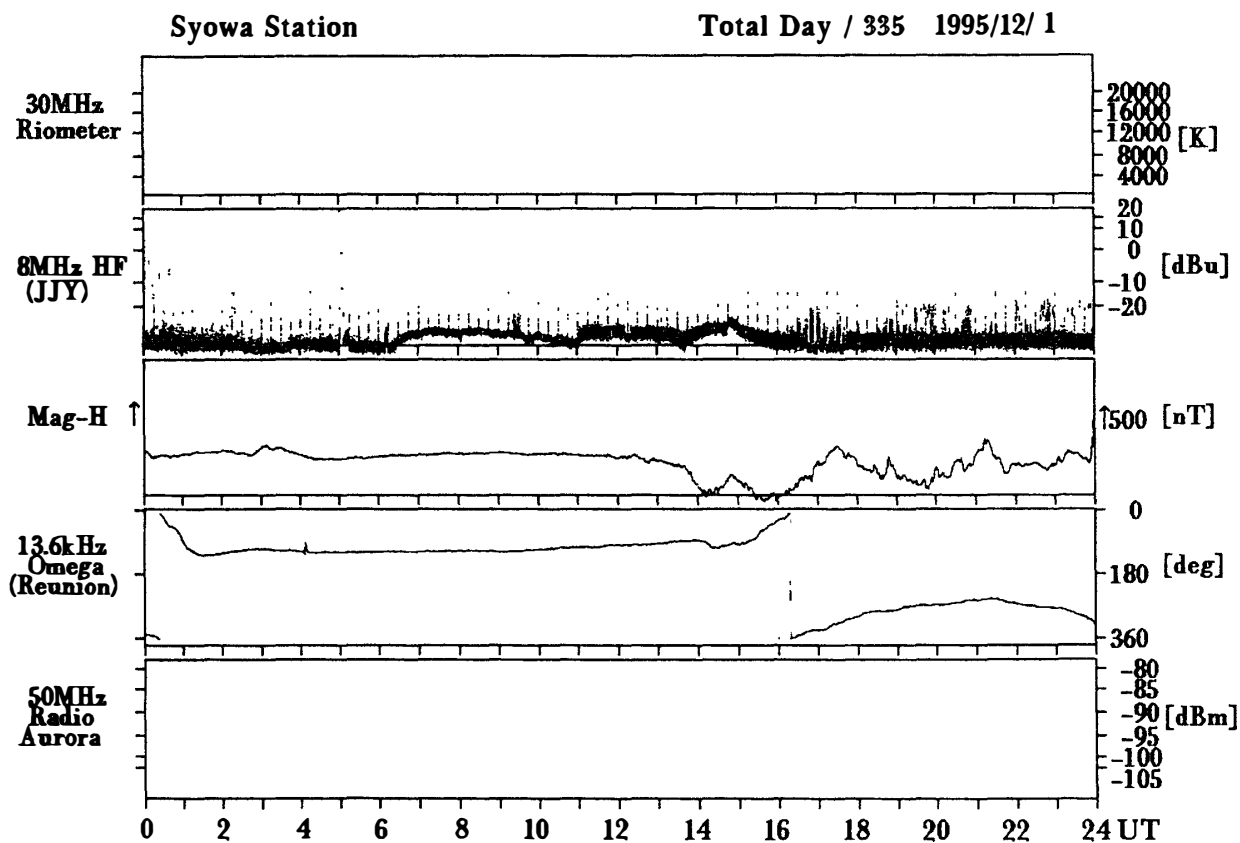


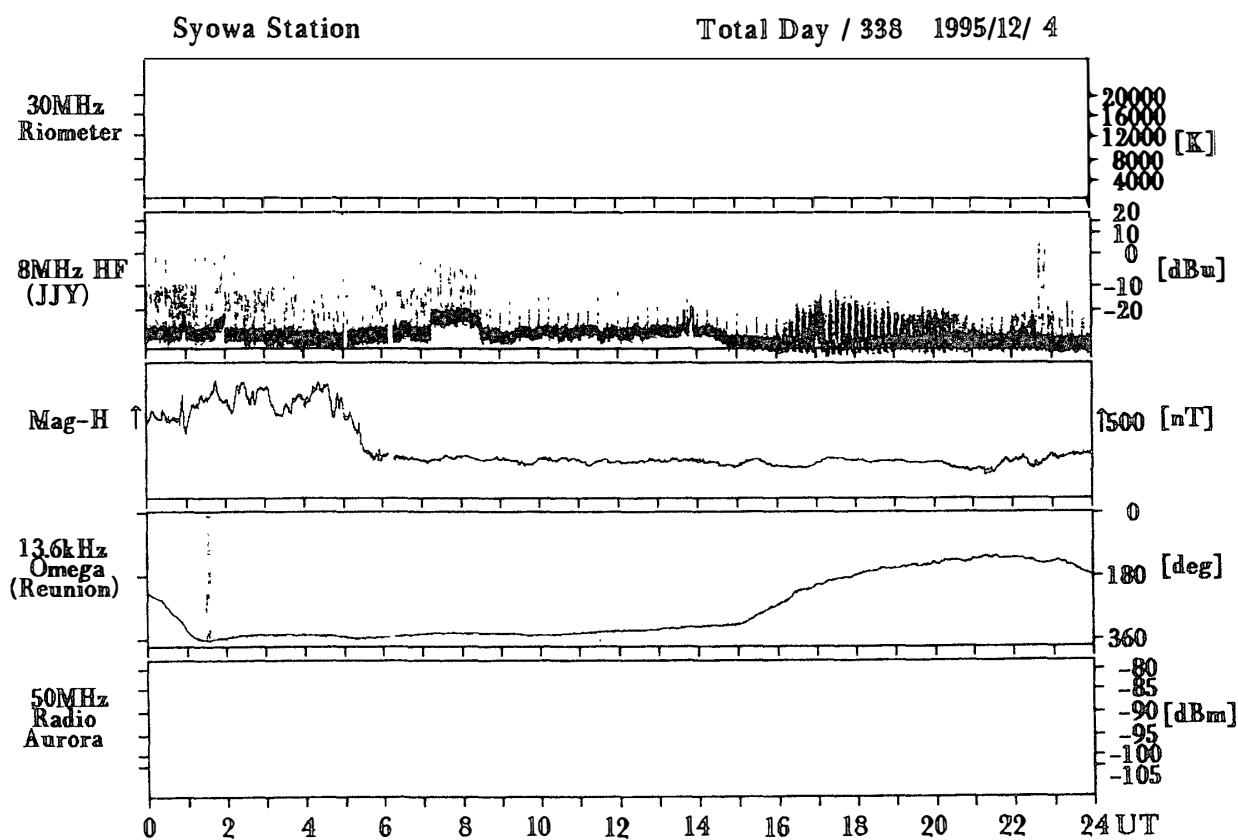
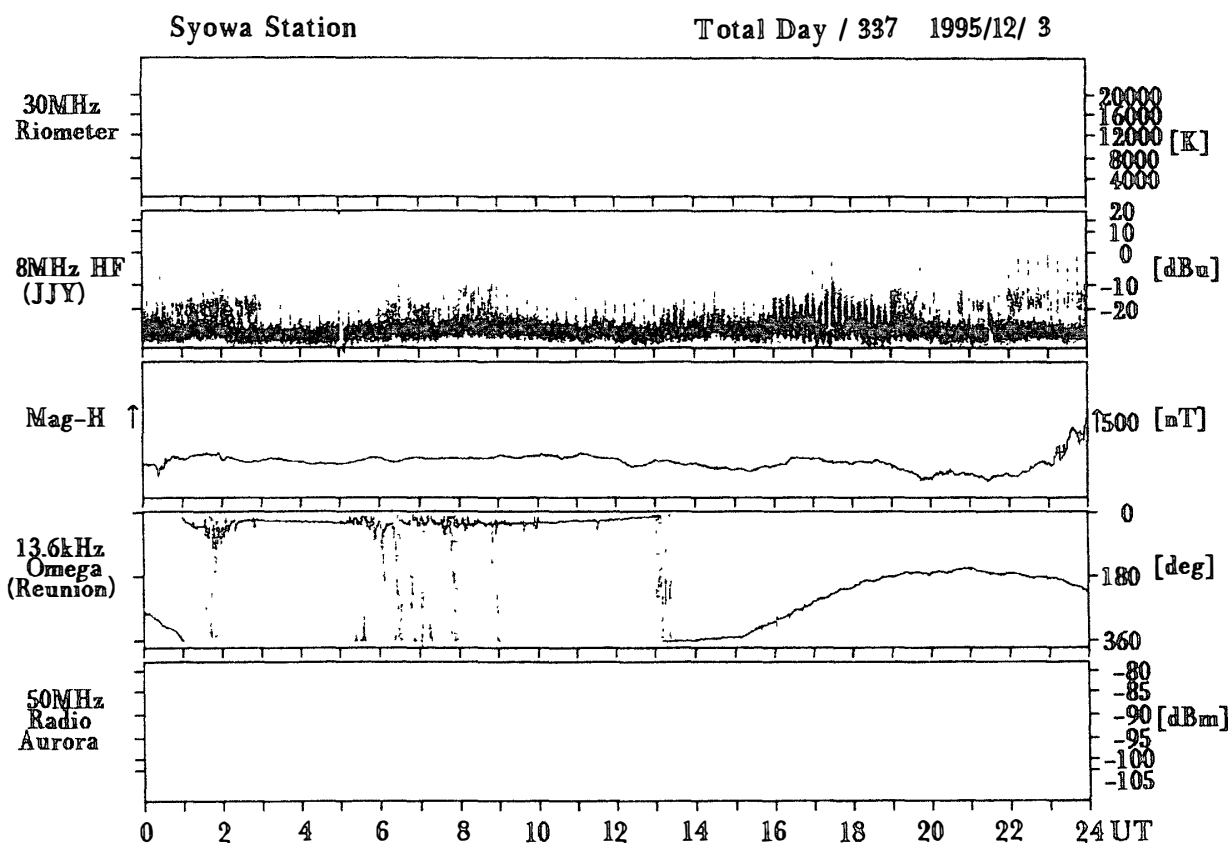


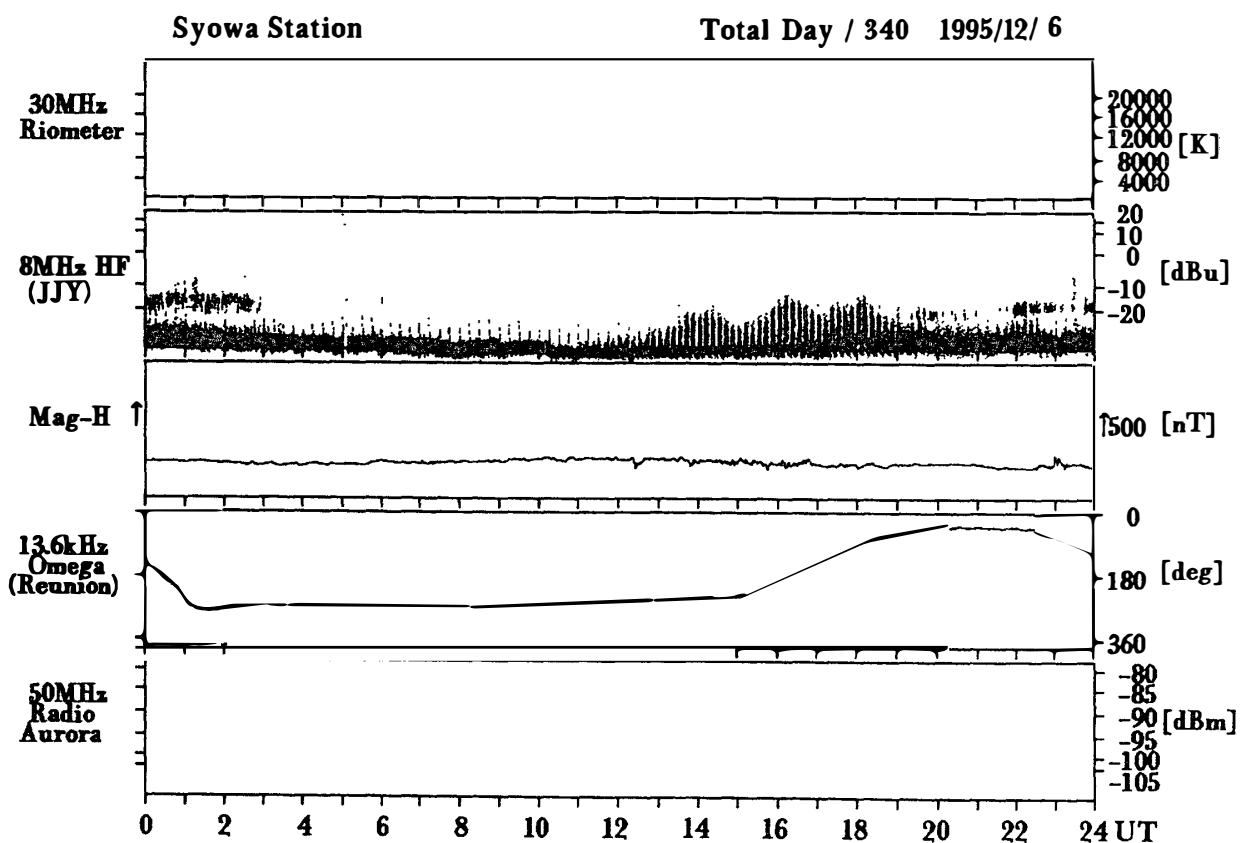
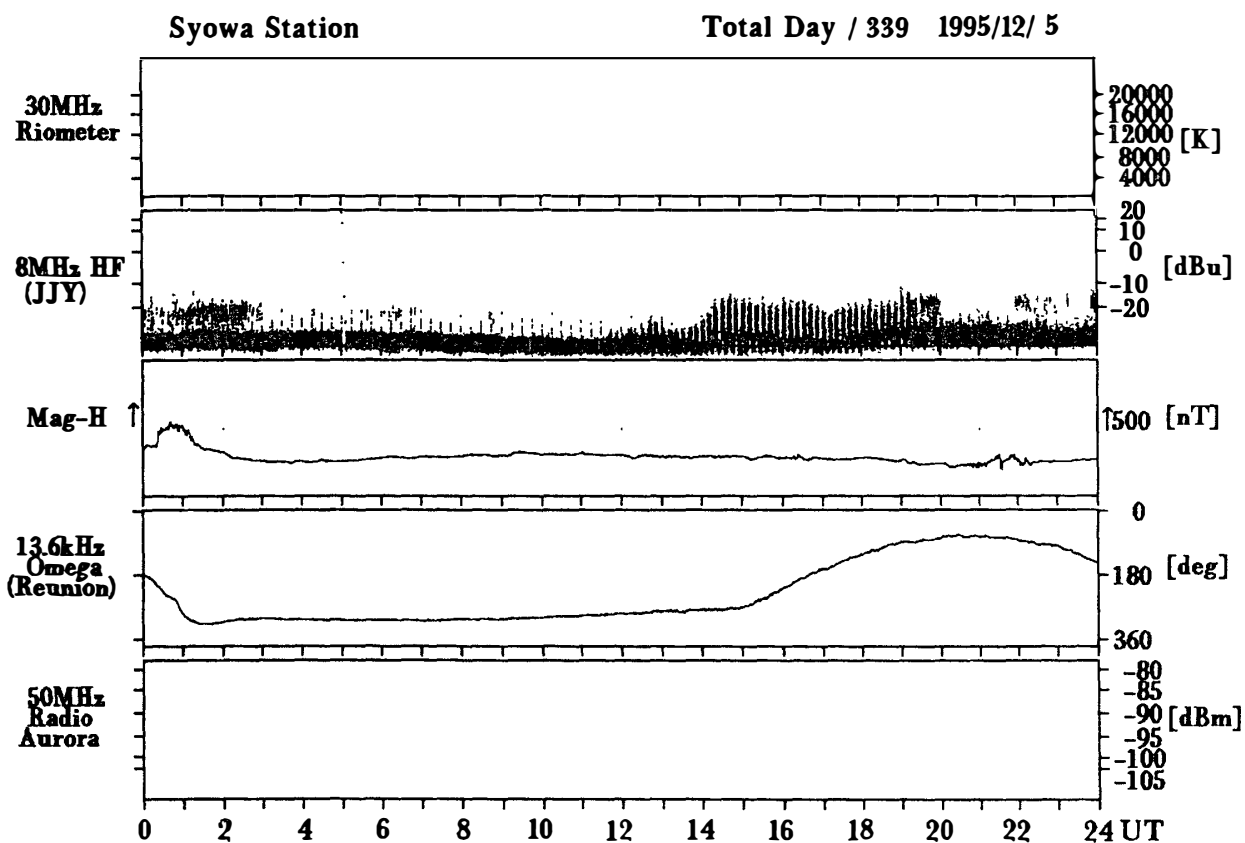


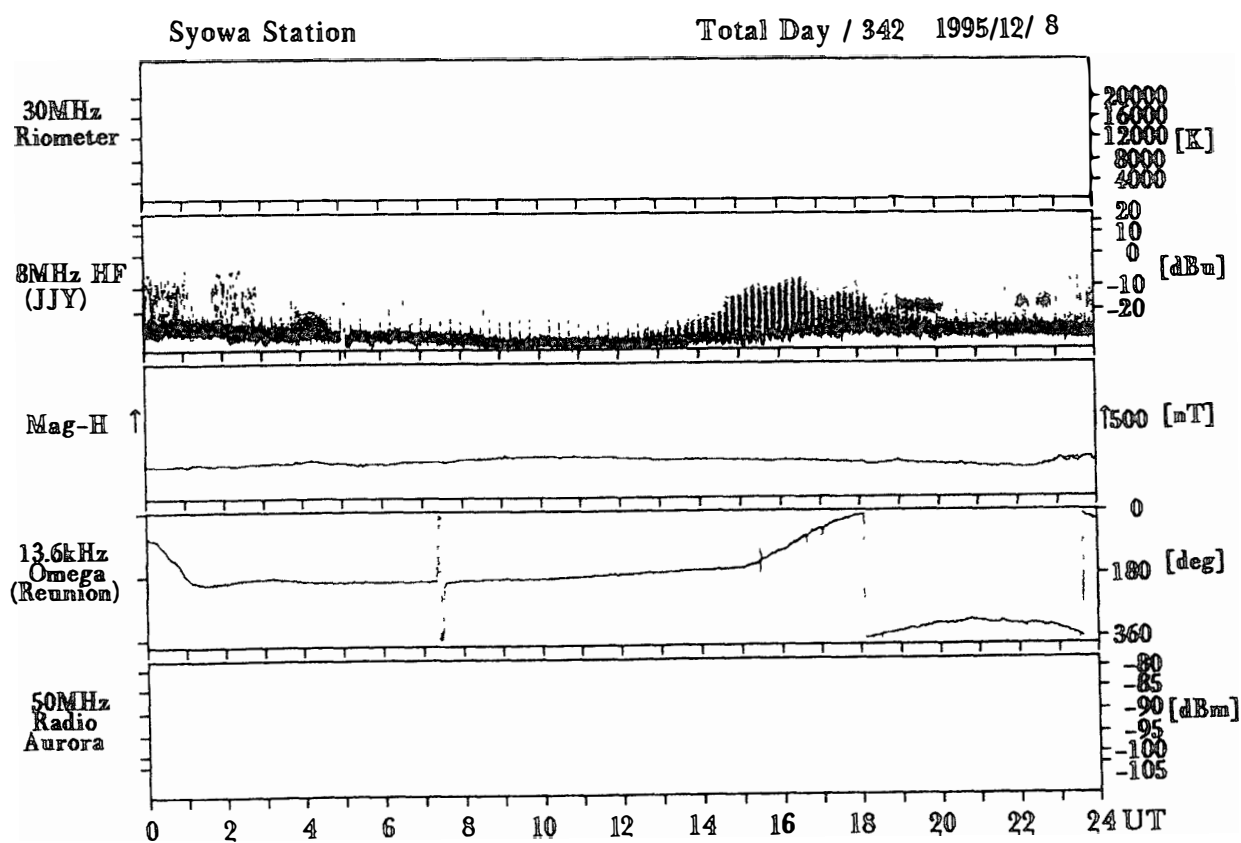
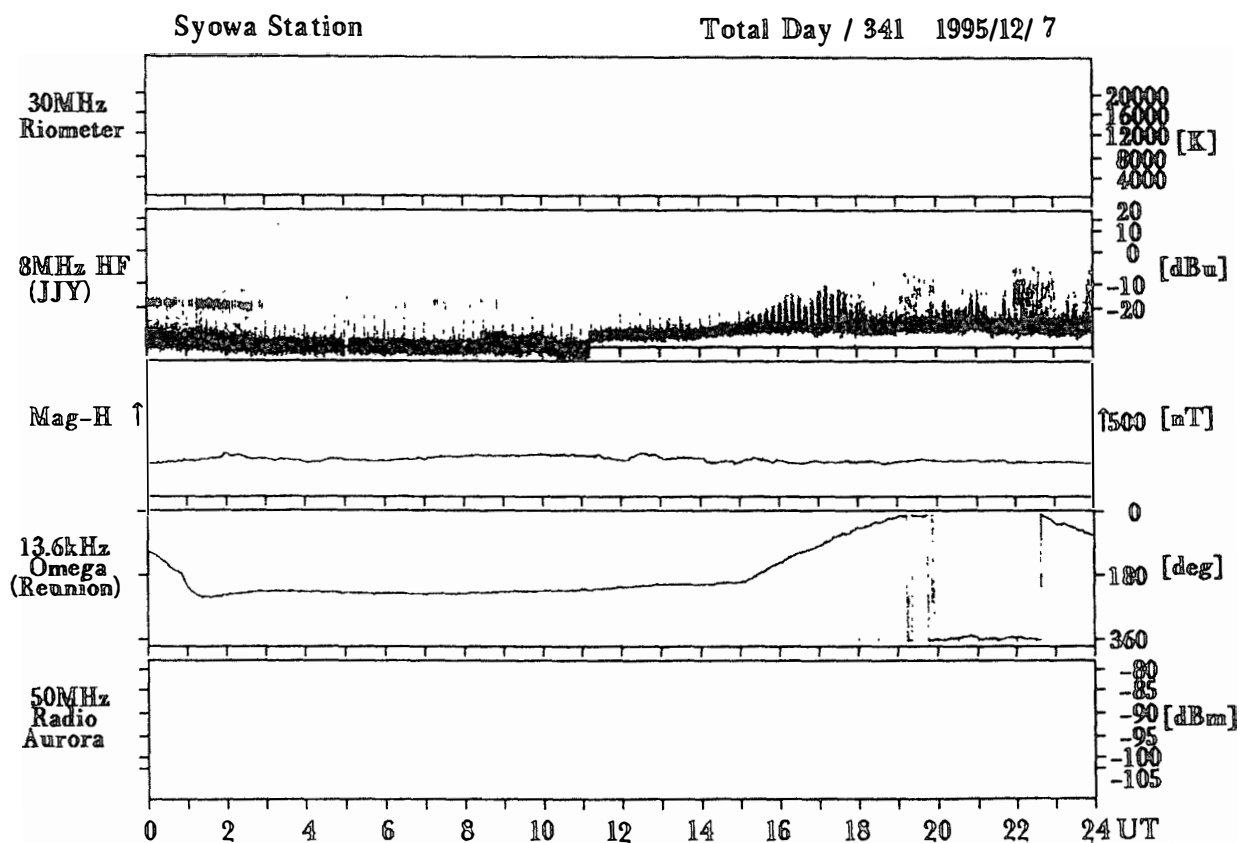


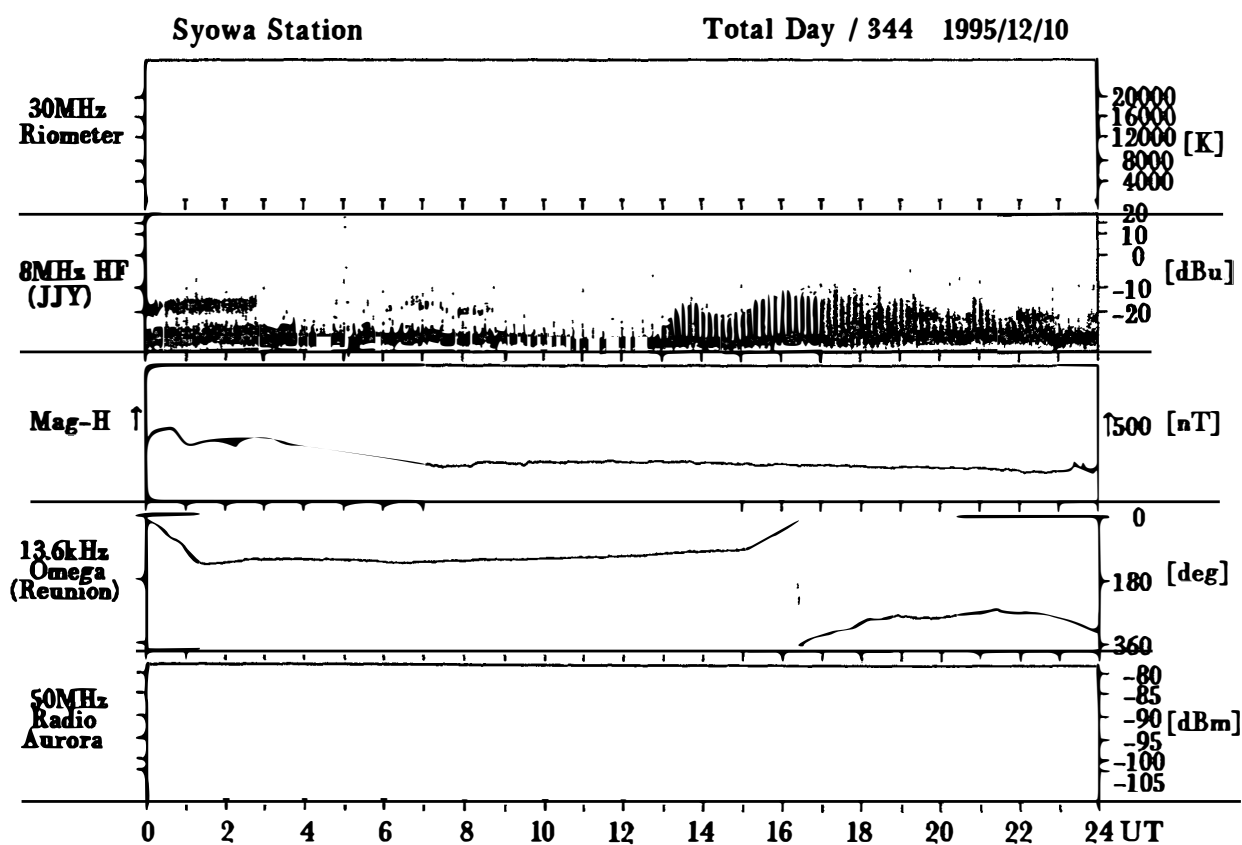
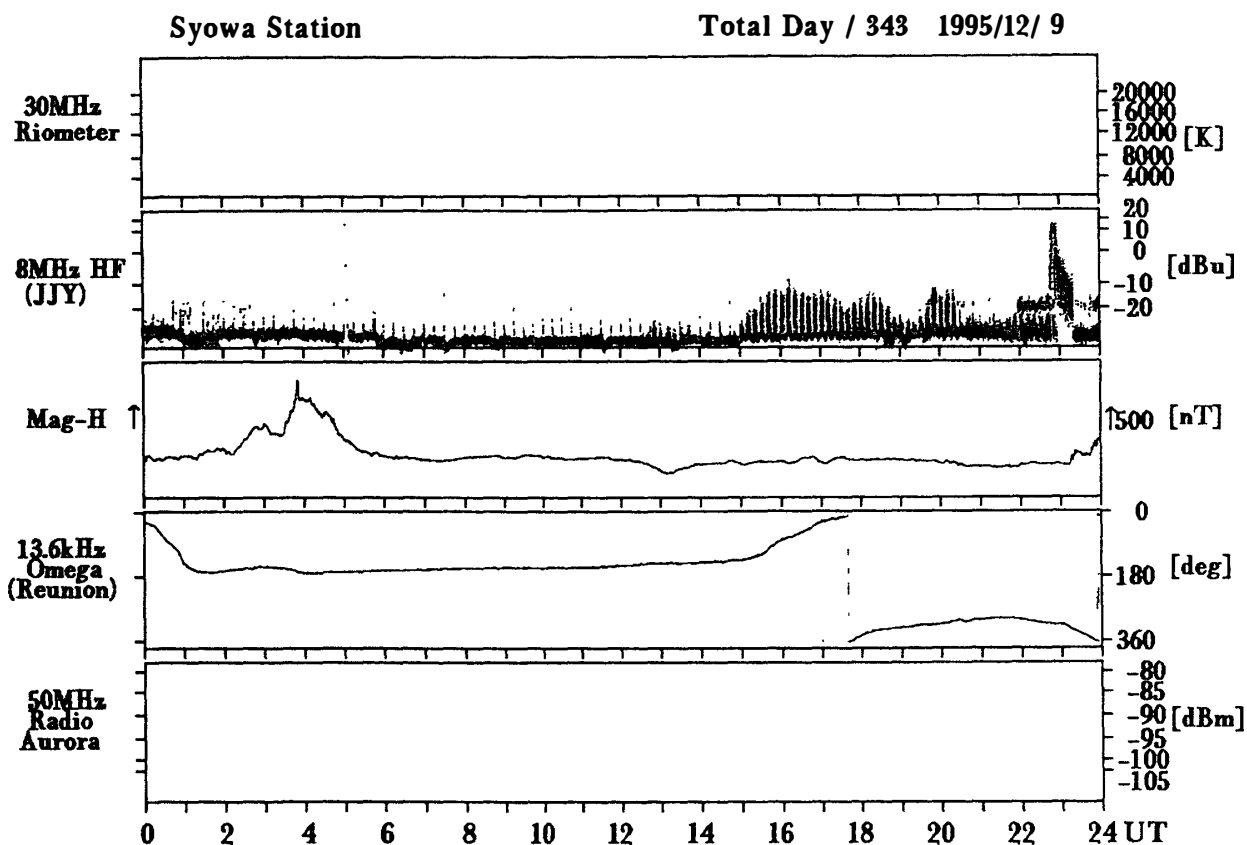


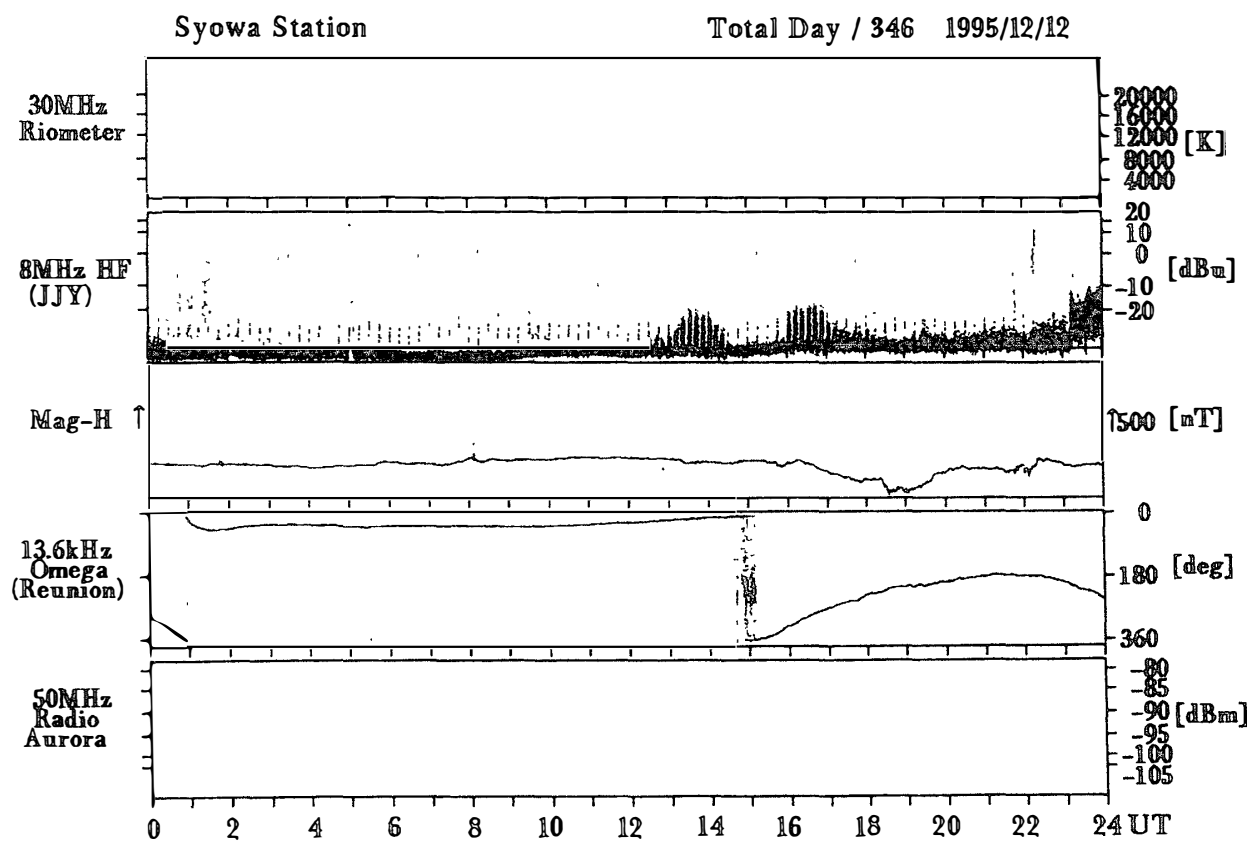
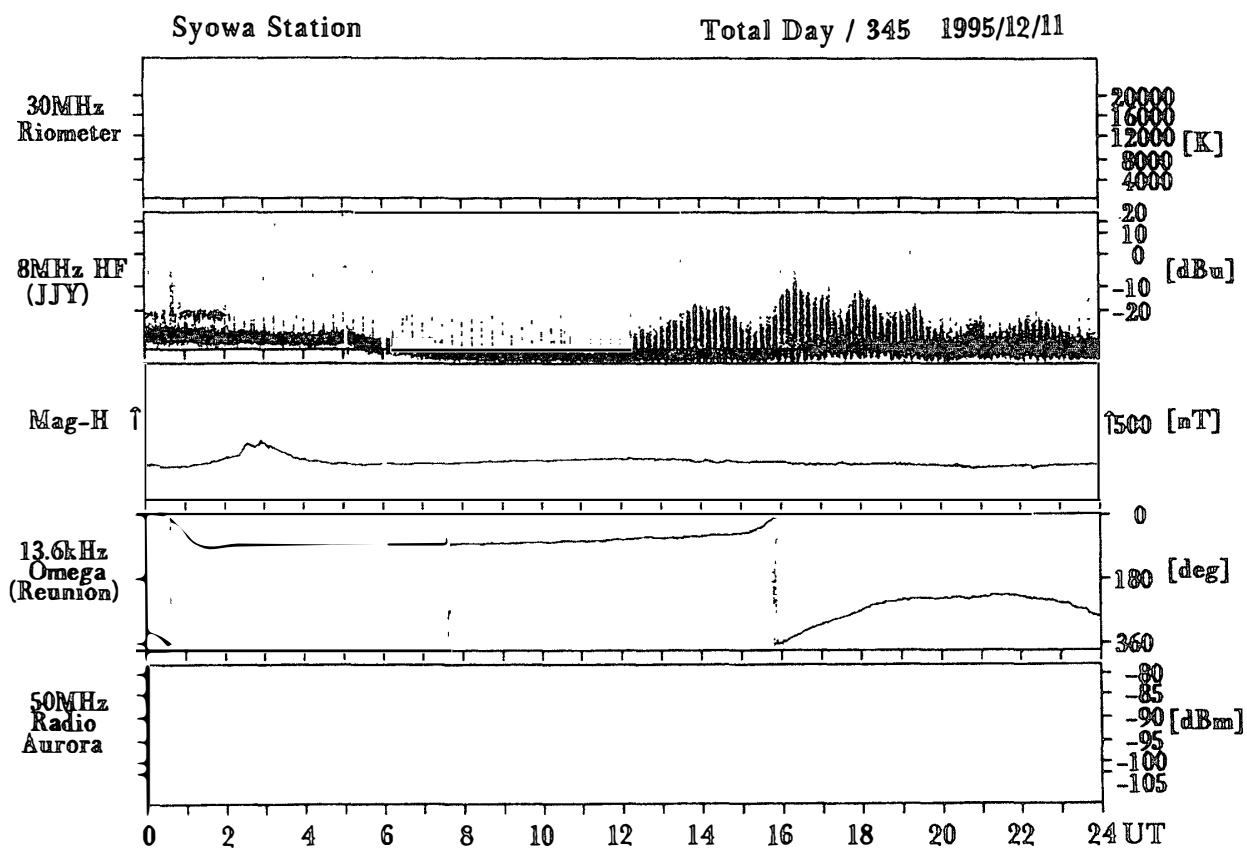


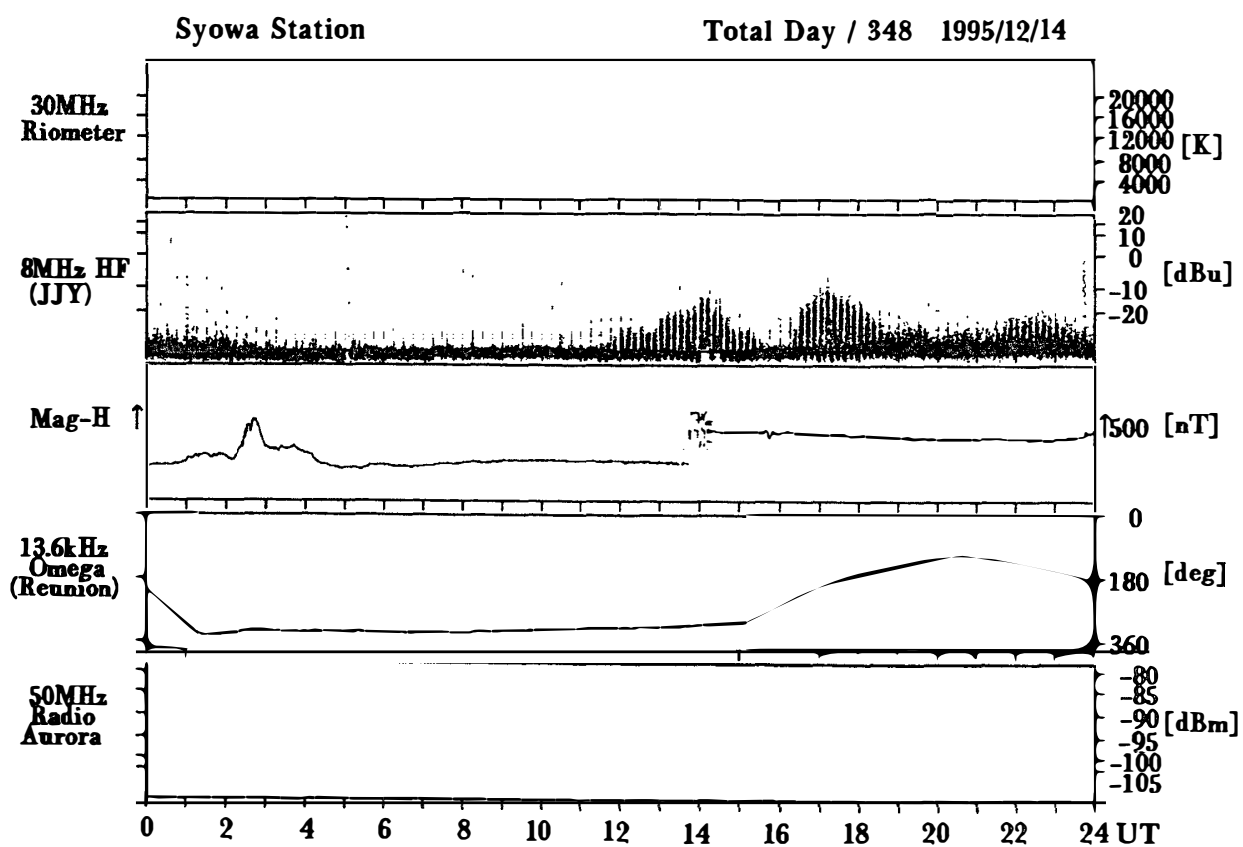
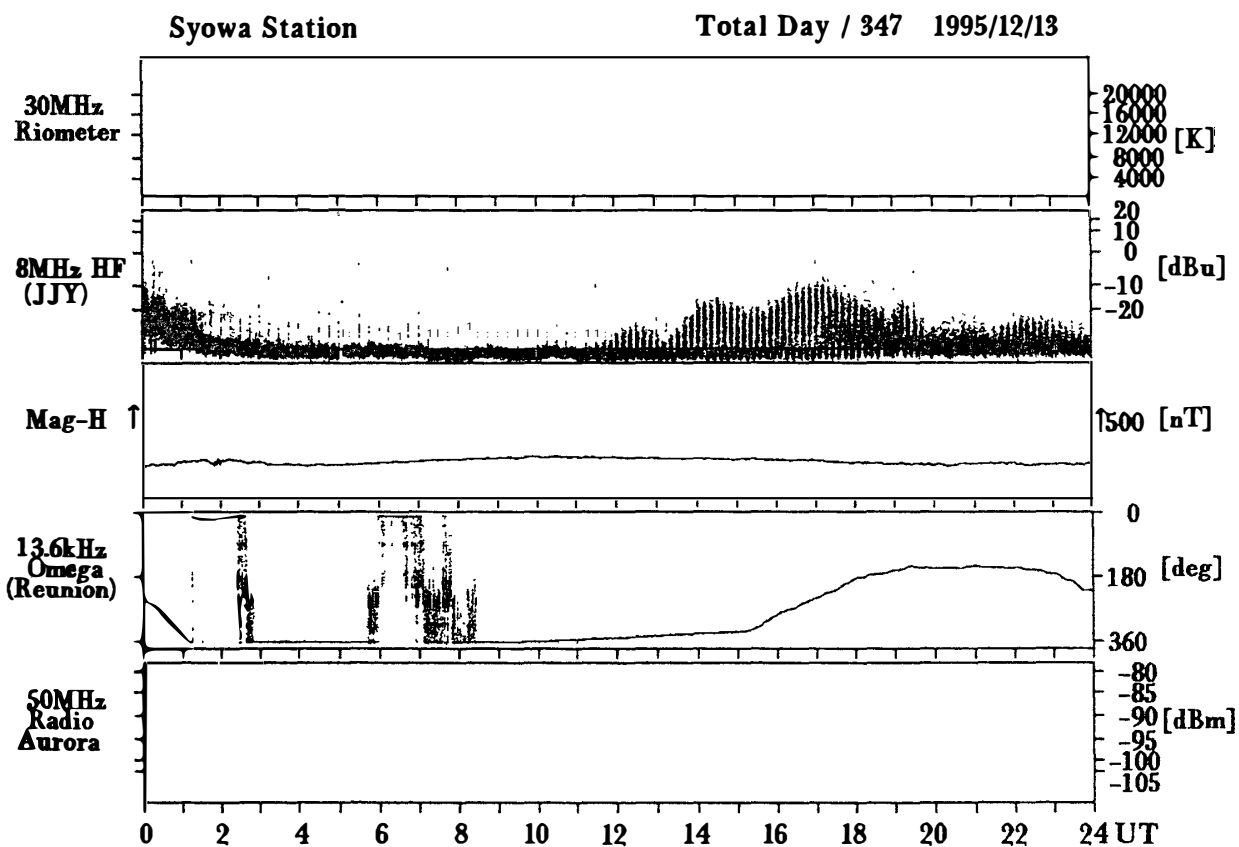


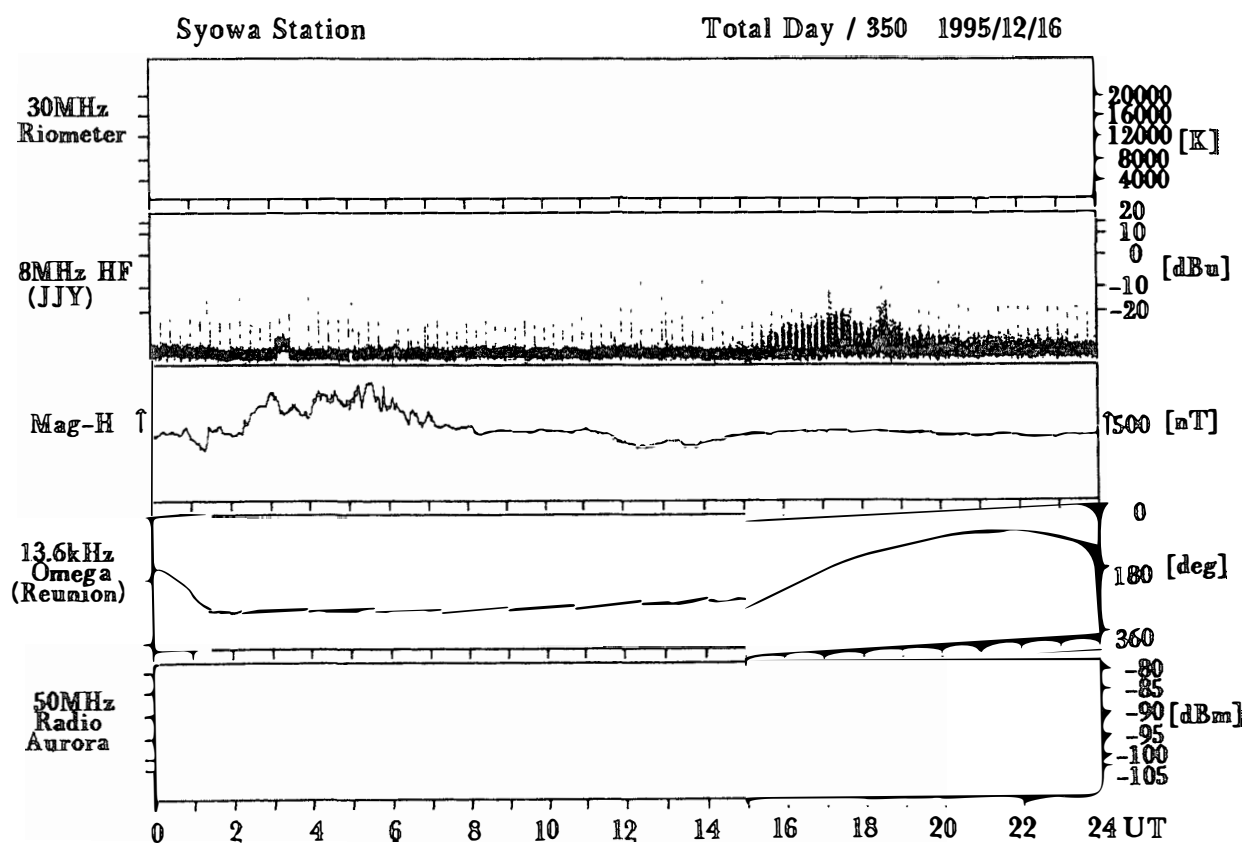
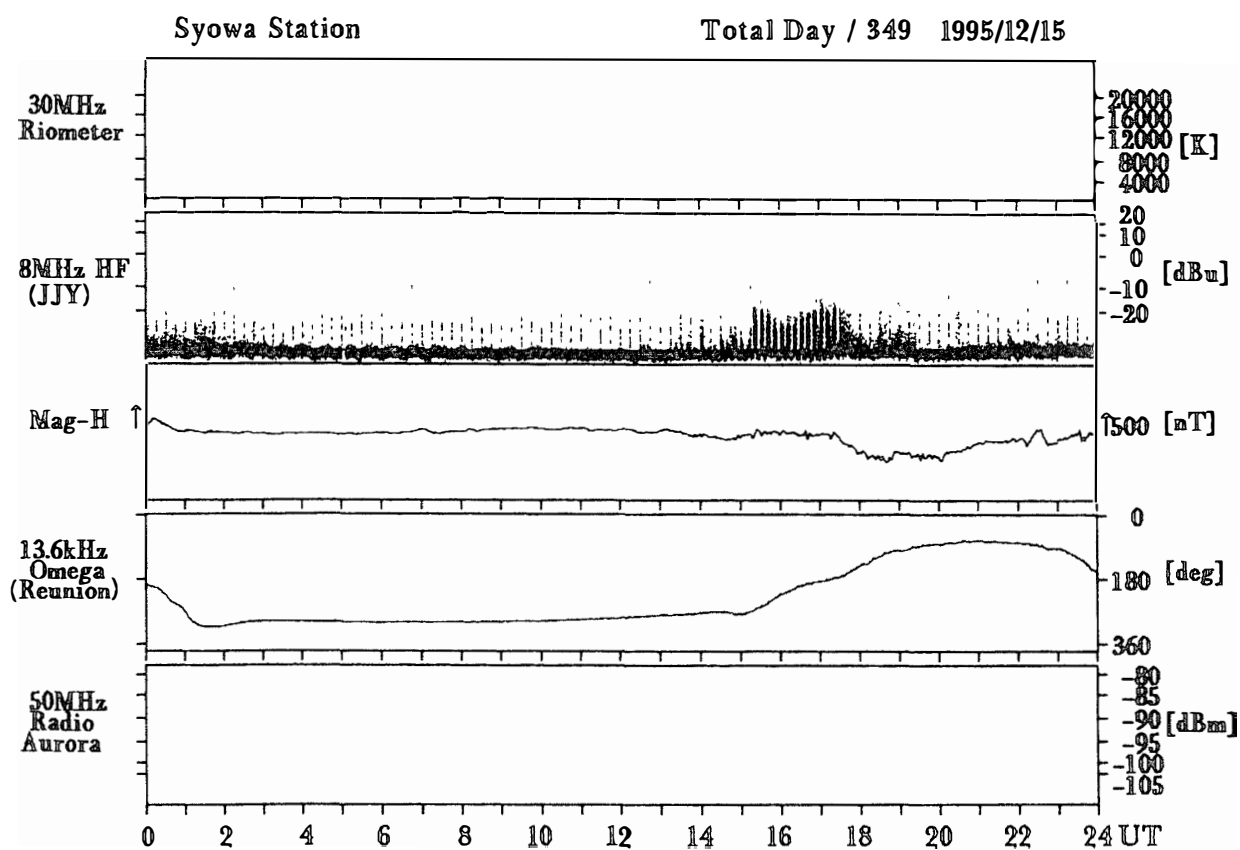


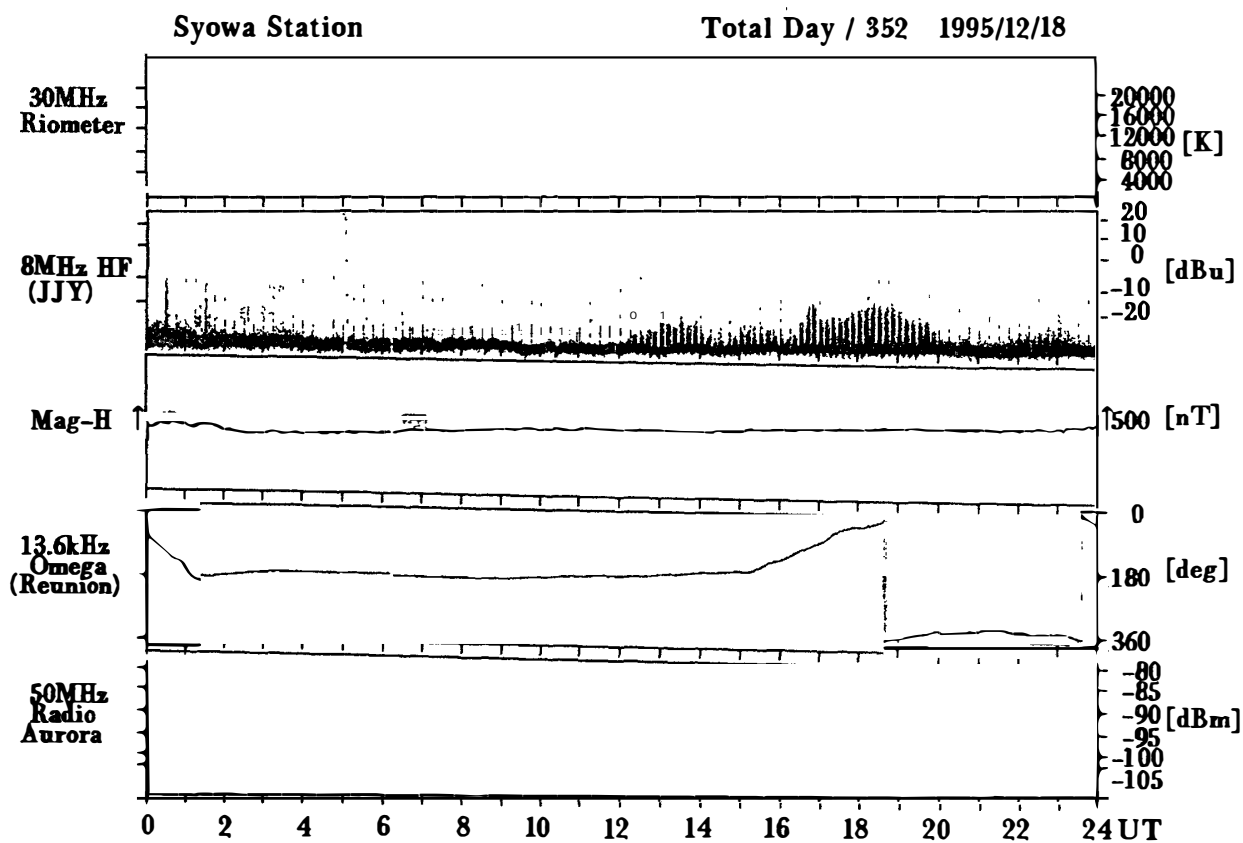
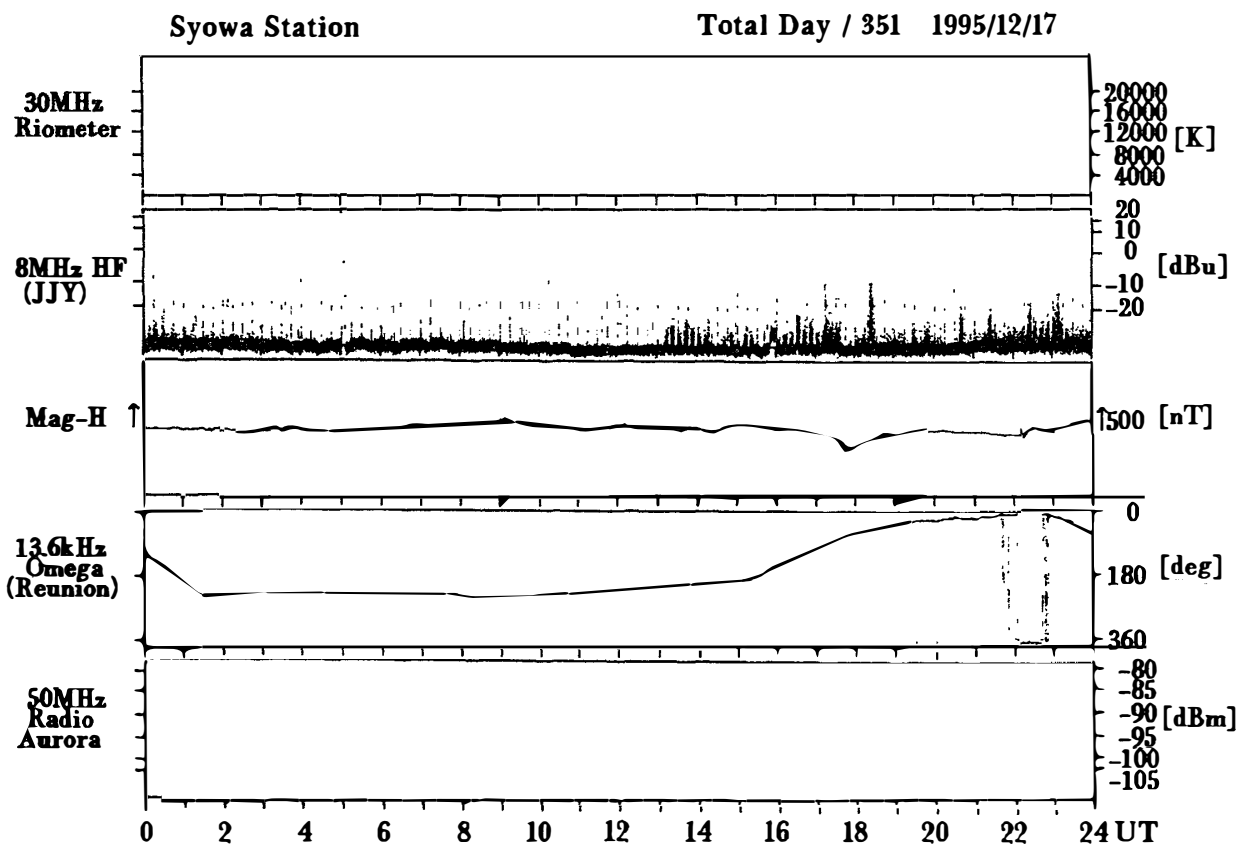


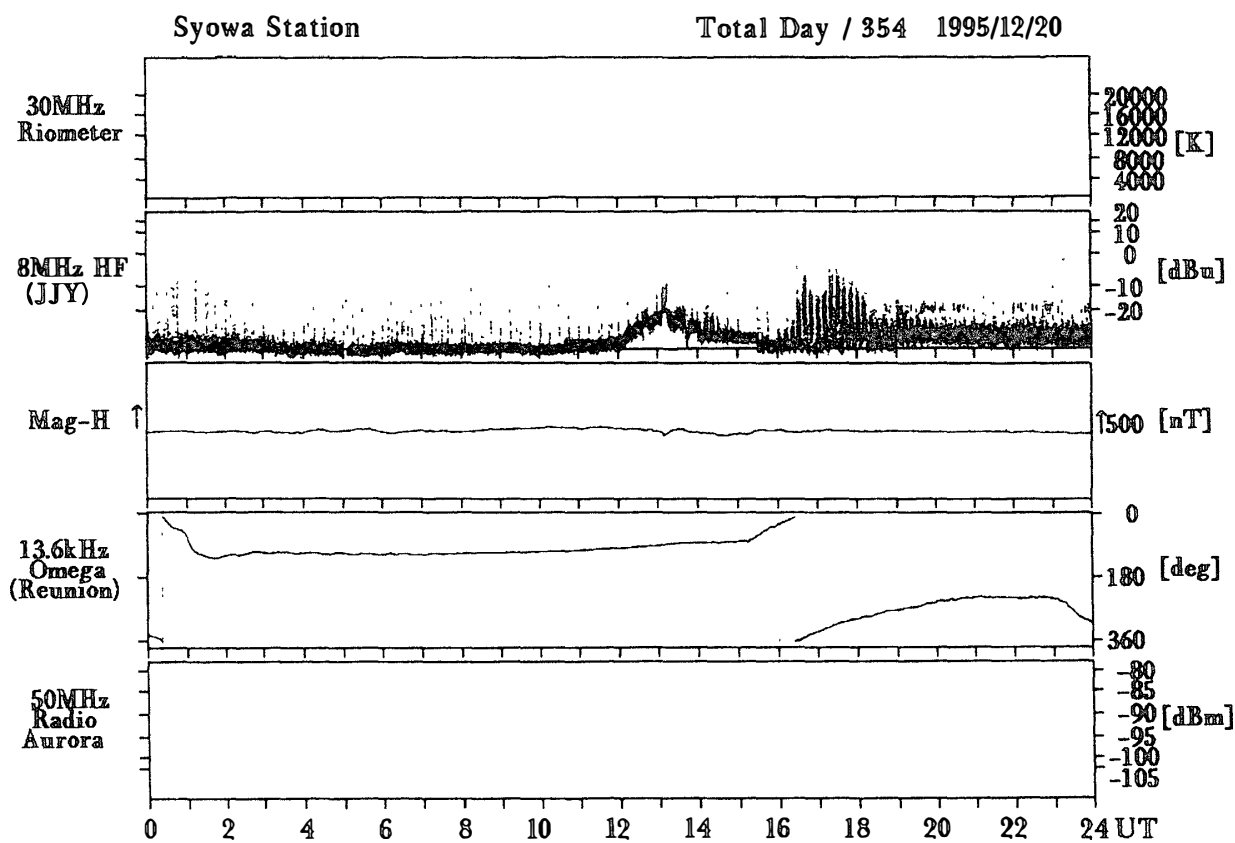
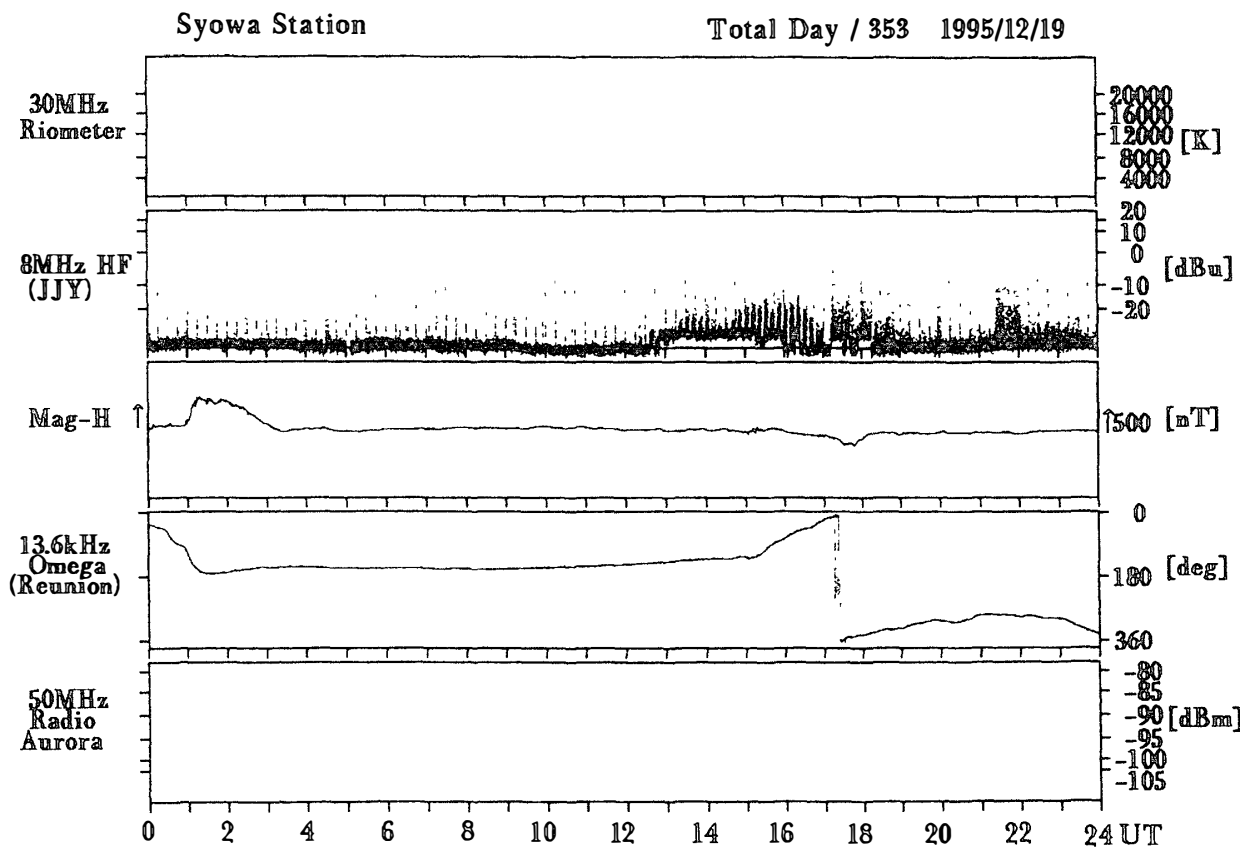


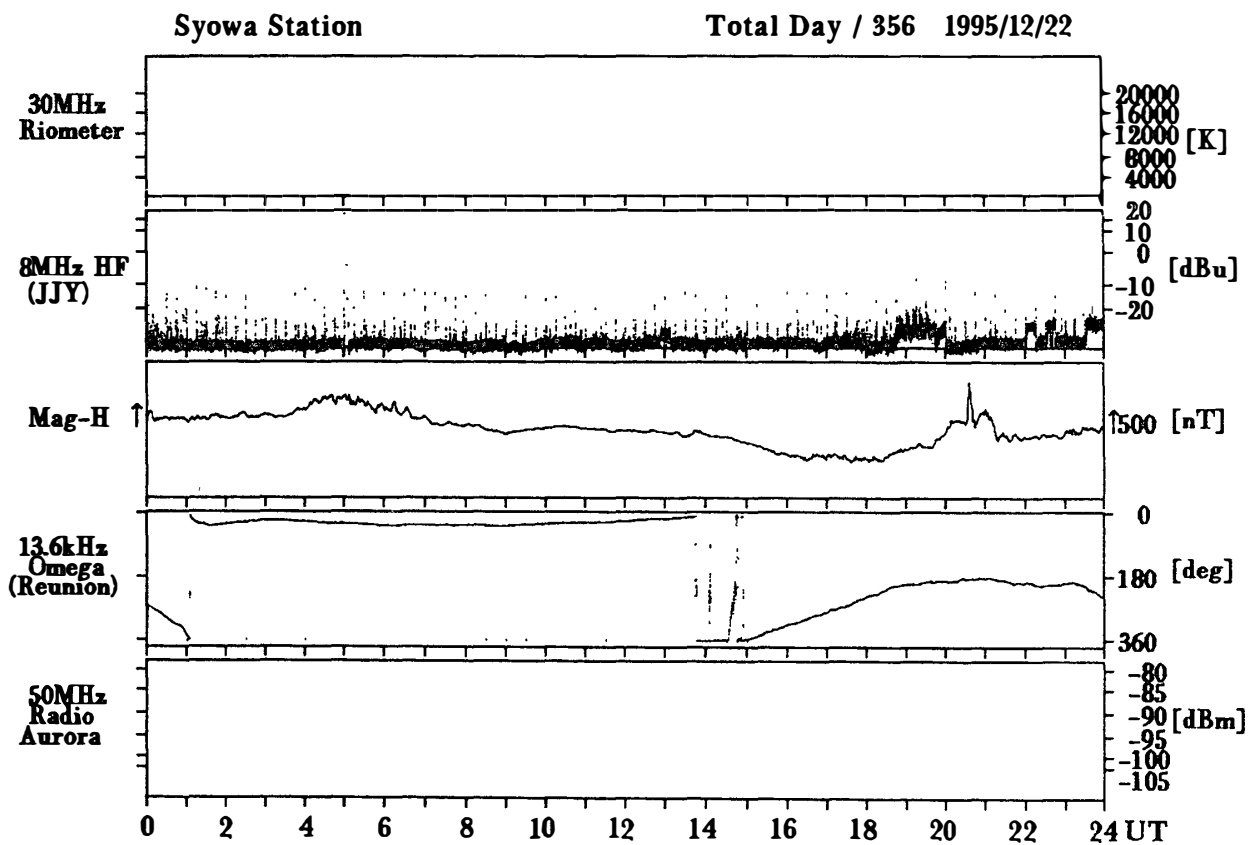
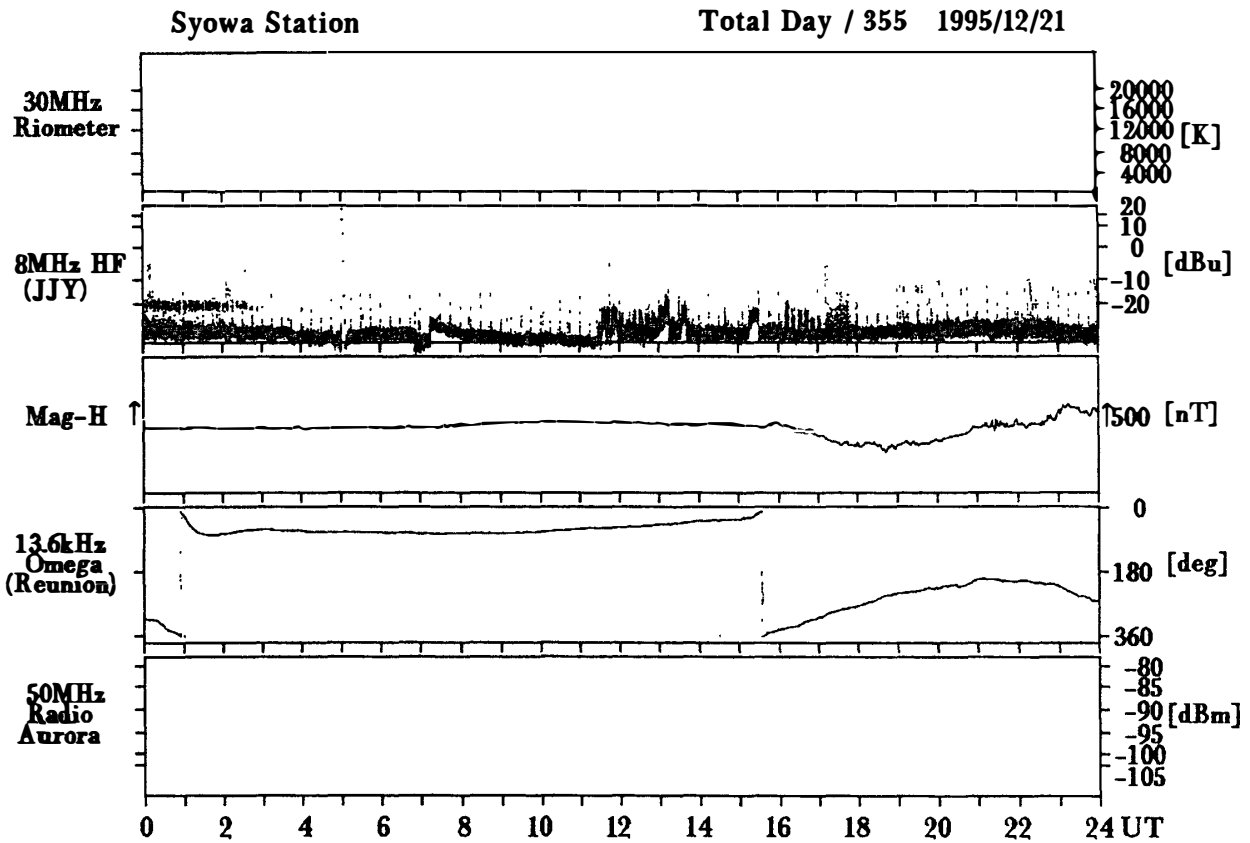


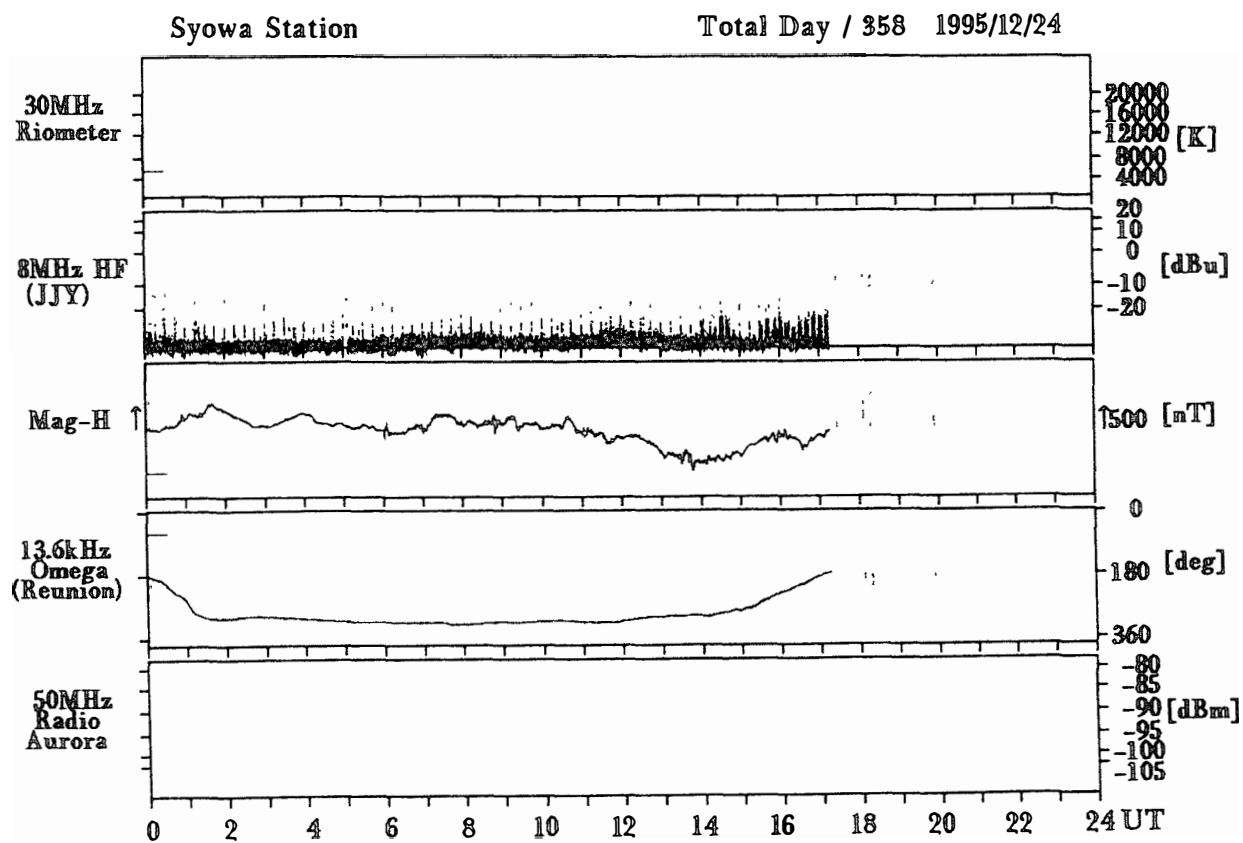
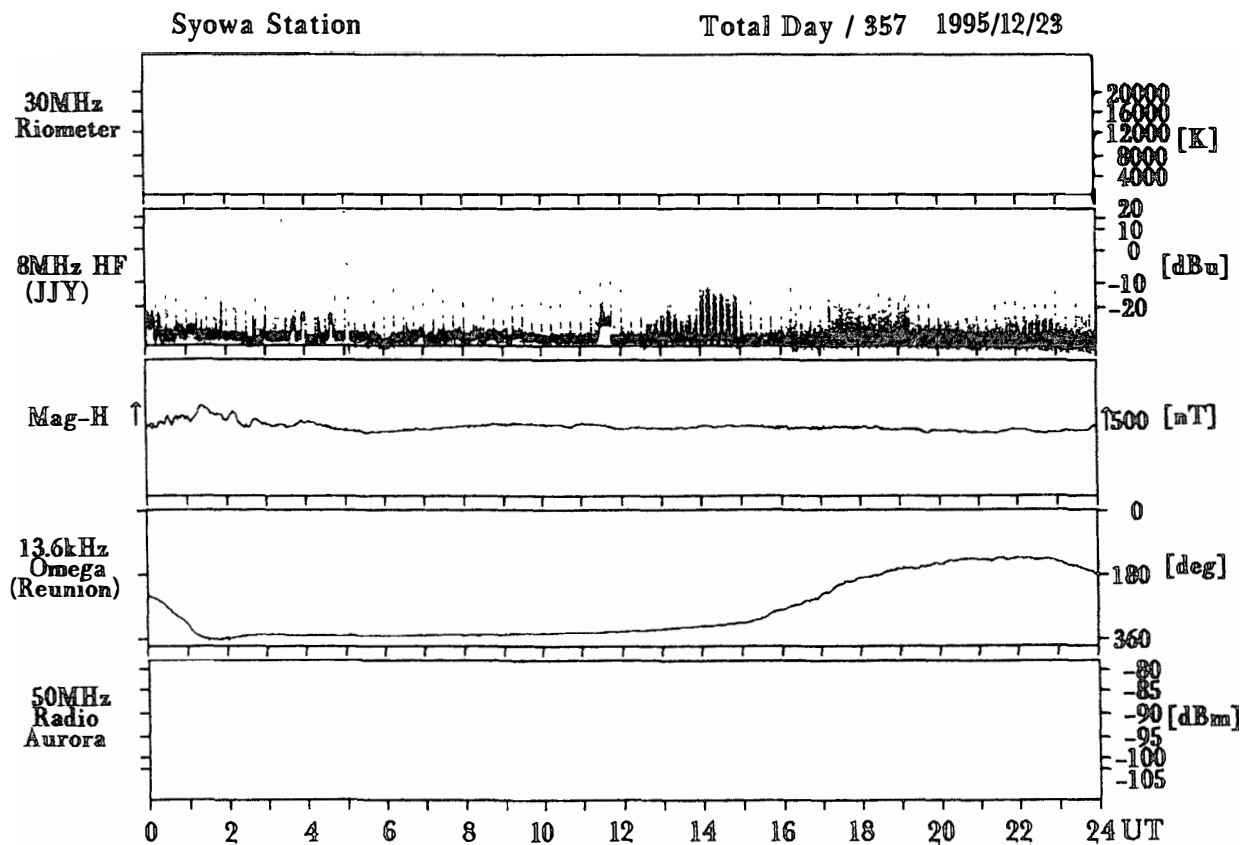






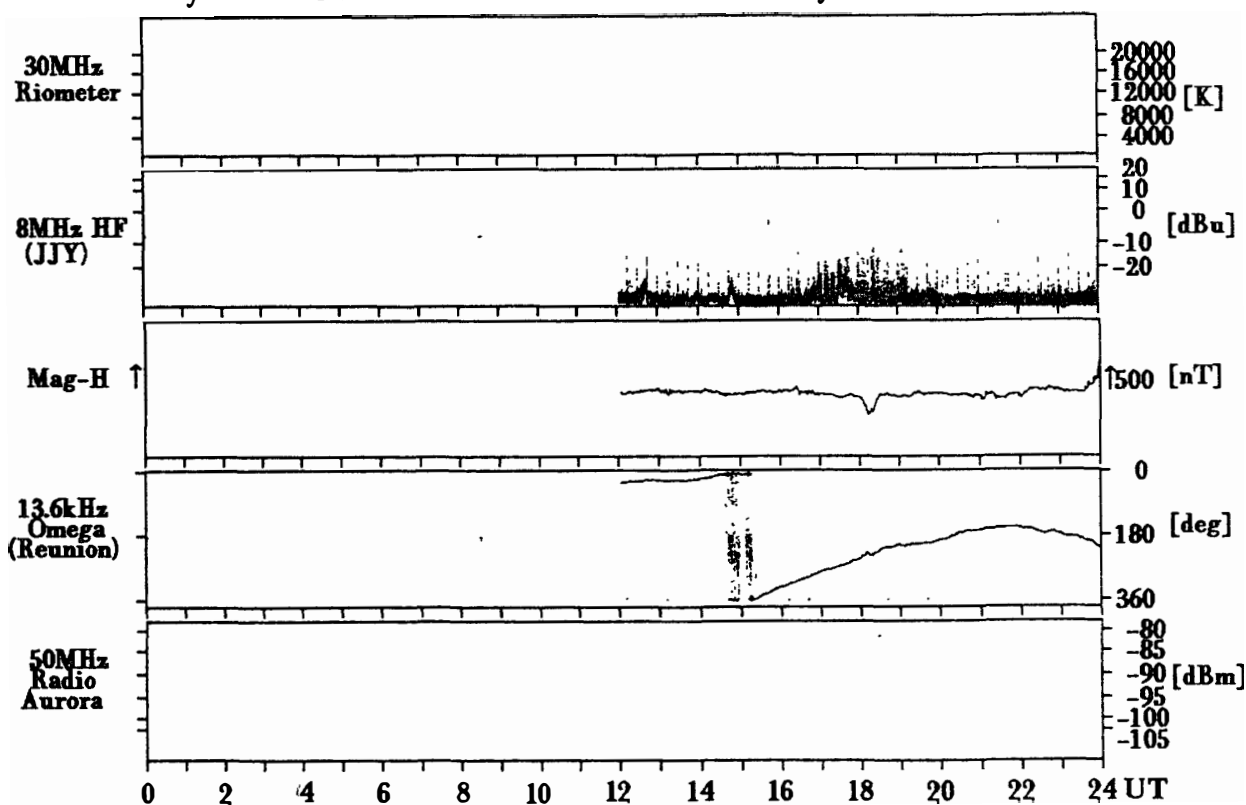






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