UPPER ATMOSPHERE PHYSICS DATA OBTAINED AT SYOWA STATION IN 2002

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1. Introduction

This data book summarizes upper atmosphere physics data acquired by the 43rd Japanese Antarctic Research Expedition (JARE-43) with the "Upper Atmosphere Physics Monitoring (UAPM) System" at Syowa Station in 2002. Observation items are as follows:

1) Geomagnetism :
- H-, D- and Z-components of magnetic variations
- Total force of the geomagnetic field
- H-, D- and Z-components of magnetic pulsations

2) ELF-VLF wave :
- Intensities at 0.35, 0.75, 1.2, 2, 4, 8, 30, 60 and 95 kHz
- Wide-band (0–10 kHz) signal of ELF-VLF emissions

3) Ionosphere :
- Cosmic noise absorption at 30 MHz observed with a broad-beam riometer

4) Aurora :
- All-sky imagers :
  CCD type : Panchromatic images recorded in a digital format
  Video type : Panchromatic video signal recorded by analog tapes
- Scanning photometers :
  Meridian-scanning record at the following seven wavelengths
  427.8 nm (N_2^+1NG), 486.1 nm (Hβ), 487.4 nm (BG of Hβ),
  557.7 nm (OI), 630.0 nm (OI), 777.4 nm (OI), and 844.6 nm (OI)

An outline of the observation system is given in Section 2. Section 3 describes specifications of the observation instruments and the data acquisition systems. Observation periods are also listed in Section 3. Format of the compiled digital data is shown in Section 4. Summary plots in the period of January 1–December 31, 2002 are given in the Appendix.

All-sky imager observation data, magnetograms, summary plots and digital data of the monitoring data are available to users on the following Web site, or on request. The request should be addressed to:

Space and Upper Atmospheric Science Group
via World Data Center for Aurora
National Institute of Polar Research
9-10, Kaga 1-chome, Itabashi-ku,
Tokyo 173-8515, Japan.
E-mail: aurora@nipr.ac.jp
http://polaris.nipr.ac.jp/~aurora/

2. Upper Atmosphere Physics Monitoring (UAPM) System

A real-time digital data acquisition system for the upper atmosphere physics observation was constructed at Syowa Station in January 1981 (Sato *et al.*, 1984). Data obtained from the system have been collected and published annually in the JARE Data Reports (Upper Atmosphere Physics) (Sato *et al.*, 1984, 1991; Fujii *et al.*, 1985, 1994; Sakurai *et al.*, 1985; Ono *et al.*, 1986, 1993; Yamagishi *et al.*, 1987; Kikuchi *et al.*, 1988; Miyaoka *et al.*, 1990; Kadokura *et al.*, 1992; Yamazaki *et al.*, 1995; Tonegawa *et al.*, 1996; Obara *et al.*, 1996; Arisawa *et al.*, 1997; Kawana *et al.*, 1998; Takeuchi *et al.*, 1999: Okano *et al.*, 2000; Maegawa *et al.*, 2000; Kato *et al.*, 2001; Taguchi *et al.*, 2003). This report is the 22nd of this series.

A block diagram of the system, including other ground observations, is shown in Fig. 1. The sensors for measuring weak natural electromagnetic waves such as ELF-VLF emissions, the three components of ULF magnetic pulsations and cosmic radio noise absorption (CNA) have been placed at a remote station on West Ongul Island, located about 5 km from Syowa Station in order to avoid man-made electromagnetic interference. Data of the magnetic pulsations and CNA are transmitted continuously to Syowa Station by a PCM telemeter in VHF band. Wide-band signals of ELF-VLF emissions are transmitted to Syowa Station through an FM telemeter in UHF band.

At the remote station, the electric power which drives all the instruments has been supplied by a solar battery system with maximum output power of 530 W since February 1985. An additional solar battery system with maximum power of 365 W was installed in January 1987 to reinforce the original battery system. The solar battery system consists of eighteen rechargeable car batteries (200 Ah each), five solar panels and three controllers in total. During winter when no sunlight is available, these batteries are charged manually about once a month by using a 10 kVA diesel-engine dynamo, which was installed in 1992 in place of the previous 16 kVA one.

The fluxgate and proton magnetometer sensors are placed at Syowa Station on East Ongul Island, about 150 m distant from the Data Processing Building. All the auroral photometric instruments are placed on the

roof of the building, and the data acquisition facilities are installed inside the building. All the outputs obtained from the observation instruments except the auroral photometric ones are transferred to the matrix terminal board and then recorded with pen recorders, analog data recorders and a computer system. These data had been recorded simultaneously with two sets of the TEAC DR-200 digital data logger systems since January 1987 and with the Accurate Timing data Logging and Analysis support System (ATLAS) since February 1997. Recording by the TEAC systems was terminated in January 1999, and ATLAS was succeeded them since then. An 8 mm video tape recorder is used to record wide-band VLF emissions, and 24-hour data can be stored on one volume of 8 mm video tape.

Universal time (UT) is supplied from a precise time-keeping system. This system consists of a GPS satellite timing receiver, a quartz frequency standard with a stability of 2×10^{-11}/day, and time code generators. The time code generators supply the IRIG-A, -B and slow codes for analog data recorders and the 36-bit BCD code for the digital recording systems, respectively. The absolute accuracy of this system is estimated to be about 1 ms.

3. Specifications of Instruments

3.1. Geomagnetism

(1) *Magnetogram*

Magnetic variations were measured by a three-axis fluxgate magnetometer. Full scale ranges were +1250 to −3750 nT for H-component and ±2500 nT for D- and Z-components, respectively, with the frequency response of DC–2 Hz and noise levels less than 0.5 nT. The magnetometer data were recorded in digital form at the sampling rate of 1 Hz. The H-component data were also recorded on a chart recorder.

(2) *ULF magnetic pulsations*

The H-, D-, and Z-components of ULF magnetic pulsations are detected by three sets of search coil magnetometers. The search coil sensors have copper wires (0.4 mmϕ, 40000 turns each) wound around permalloy cores (1 cm in diameter × 100 cm in length). Measurable intensity range of the magnetometer is 0.001–5 nT/s and the frequency response is 0.001–3 Hz. The search coil magnetometers are installed at the remote station on West Ongul Island. The output signals transmitted by the PCM telemeter are recorded on a chart recorder and a digital data recorder. The sampling frequency of the digital data is 10 Hz for each component.

(3) *Absolute observation of geomagnetic field*

Absolute values of the magnetic field were observed, basically, once per month during a magnetically quiet day. At that time, total force observation was carried out using a portable proton magnetometer. Based on those observations, baseline values for the fluxgate magnetometer were calculated. Observed absolute values

and baseline values are listed in Table 1 and Table 2, respectively.

(4) *K-index*

K-indices are calculated for every 3-hour interval measuring the amplitudes of the H- and D-component magnetic fields from the quiet-day variations. The definition of the K-indices at Syowa Station is as follows:

K-index		Deviation	K-index		Deviation
0	:	0 – 25 nT	5	:	350 – 600 nT
1	:	25 – 50	6	:	600 – 1000
2	:	50 – 100	7	:	1000 – 1650
3	:	100 – 200	8	:	1650 – 2500
4	:	200 – 350	9	:	2500 and more

The ordinary magnetogram is also available on chart papers with a recording speed of 5 cm/hr. The sensitivity of each component on the chart papers is about 100 nT/cm. Table 3 gives the K-indices at Syowa Station in February 2002–January 2003. Inquiries or requests for the data copies of the magnetic field measurements should be addressed to World Data Center for Aurora in NIPR.

3.2. ELF-VLF waves

The natural ELF-VLF wave receiving system at the remote station has consisted of a triangle-shaped three turn loop antenna (10 m in height, 20 m in the bottom side), a pre-amplifier and a main amplifier with gains of 60 and 40 dB, respectively. The ELF-VLF wave intensities at the frequency bands of 0.35, 0.75, 1.2, 2, 4, 8, 30, 60, 95 kHz were obtained from wide band waveforms using a 9-channel filter bank and detectors. The ELF-VLF emissions within the intensity range of 10^{-17} to 10^{-13} W/m^2 Hz were detectable with this system. These data were recorded continuously in digital form at the sampling rate of 1 Hz. Some of the wide-band ELF-VLF signals up to 10 kHz were recorded on 8 mm video tape recorders. The wide-band recording was executed during 0900–1300 UT on Sunday–Friday.

3.3. Ionosphere

Cosmic noise absorption at 30 MHz was observed with a broad-beam riometer, which has been installed at the remote station on West Ongul Island since 1981. Its beam half-width is 60°. A receiver used is made by La Jolla Science, and bandwidth and time constant are 150 kHz and 0.25 s, respectively. The riometer data were recorded in digital form at the sampling rate of 1 Hz in the UAPM system.

Data of ionospheric vertical sounders, broad-beam riometers (20 and 30 MHz), HF field strength receivers (8 and 10 MHz) and the VHF auroral radar (50 and 112 MHz) were recorded with other observation systems at Syowa Station, and the observational results have been published in another JARE Data Report (Ionosphere). Inquiries and requests for the data copies are to be addressed to:

World Data Center for Ionosphere
National Institute of Information and Communications Technology
2-1, Nukui-Kitamachi 4-chome, Koganei-shi,
Tokyo 184-8795, Japan.

3.4. Aurora

(1) *CCD all-sky imager*

All-sky observation of aurora was made by a CCD all-sky imager which was installed at Syowa Station by JARE-39 in 1998. Panchromatic auroral images are taken every twenty seconds with an exposure time of three to five seconds. Image data are saved in a DVD-RAM disk. An observation list for the CCD all-sky imager is given in Table 4. Inquiries or requests for the all-sky data should be addressed to World Data Center for Aurora in NIPR. Observation by the film-type all-sky camera which have been operated until the end of the 1997 season was terminated on April 8, 1998.

(2) *Aurora TV camera*

All-sky observation of aurora was also made by an all-sky TV camera newly introduced at Syowa Station by JARE-40 in 1999. The TV camera consists of an image intensifier and an interline CCD camera. Video signal from the CCD camera is recorded in S-VHS video tapes. Inquiries or requests for the all-sky data should be addressed to World Data Center for Aurora in NIPR.

(3) *Meridian-scanning photometer*

A meridian-scanning photometer (SPM) measures intensities of auroral emissions along a geomagnetic meridian at the wavelengths of 557.7 nm (OI), 630.0 nm (OI), 777.4 nm (OI), 844.6 nm (OI), 427.8 (N_2^+), 486.1 nm (Hβ), and 487.4 nm (Back-ground of Hβ). The photometers have a field-of-view of 3 degrees except for 6 degrees for the channels of Hβ and its background. A scan along a meridian is triggered every 20 s starting from the equatorward horizon to the poleward horizon, and requires approximately 18 s. Shutters of the photometers are closed during every first scan of hour to obtain dark correction signals. Each photometer has two outputs of which signal gains differ exactly by ten times to expand its dynamic range. The output and scanning angle data are recorded with a PC at a sampling frequency of 10 Hz with a depth of 16 bits for each channel. The photometers are removable from a scanner for yearly calibration of sensitivity. We have two identical sets of photometers. While one is in operation at Syowa Station, the other is calibrated at NIPR. Observations were carried out during 101 clear nights from March 1 until October 4 in 2000.

4. Compiled Digital Data Format

MO media has been added since 1998 recorded by ATLAS (AT compatible computer with QNX operating system). This system has GPS clock and 16bit straight binary A/D converter (from –10 V to 10 V). Data in MO are written by Common Data Format (CDF) based on NASA NSSDC (see [1] or [2] for more detail of CDF). Each record has one time stamp and 16 kinds of data. Variable names of CDF for each data are follows;

EPOCH: Time stamp (unit: CDF Epoch)
MGFH: H component of flux gate magnet meter
MGFD: D component of flux gate magnet meter
MGFZ: Z component of flux gate magnet meter
ULFH: H component of induction coil
ULFD: D component of induction coil
ULFZ: Z component of induction coil
CNA: CNA
VLF350: Intensity of natural VLF wave at 350 Hz
VLF750: Intensity of natural VLF wave at 750 Hz
VLF1.2k: Intensity of natural VLF wave at 1.2 kHz
VLF2.0k: Intensity of natural VLF wave at 2.0 kHz
VLF4.0k: Intensity of natural VLF wave at 4.0 kHz
VLF8.0k: Intensity of natural VLF wave at 8.0 kHz
VLF30k: Intensity of natural VLF wave at 30 kHz
VLF60k: Intensity of natural VLF wave at 60 kHz
VLF95k: Intensity of natural VLF wave at 95 kHz.

Each CDF valuable has 5 attributes. The names of attributes and characteristics are as follows;
Attributes (based on CDF standard attribute name)

VALIDMIN: Minimum valid value of raw AD data (usually, 0).
VALIDMAX: Maximum valid value of raw AD data (usually, 65534)
SCALEMIN: Minimum value as unit for VALIDMIN
SCALEMAX: Maximum value as unit for VALIDMAX
UNIT: Unit (e.g. nT, V/mHz, dB: written by characters)

Using these valuables, user can convert from A/D value to physical value by the following equation.

(Physical value) = SCALEMIN +
(SCALEMAX-SCALEMIN)/(VALIDMAX-VALIDMIN)*
((Variable data)-VALIDMIN)

[1] CDF User's Guide (Version2.6) NASA/GSFC/NSSDC,
[2] http://nssdc.gsfc.nasa.gov/cdf/cdf_home.html

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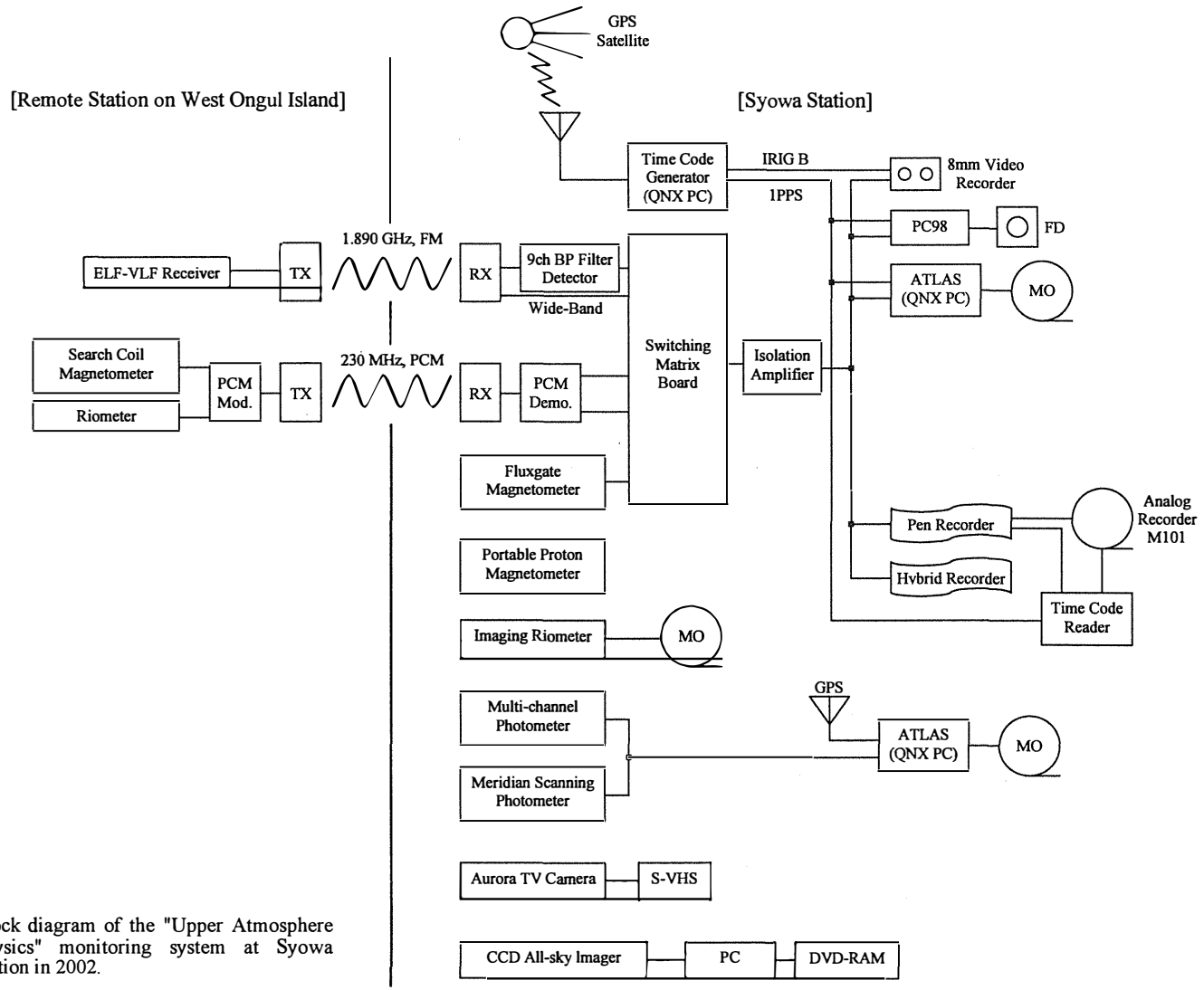


Fig. 1. Block diagram of the "Upper Atmosphere Physics" monitoring system at Syowa Station in 2002.

Table 1. Absolute values of geomagnetic field at Syowa Station in March 2002–January 2003.

DATE	TIME (hh:mm)	DECLINATION (deg:min)	DIP ANGLE (deg:min)	TOTAL (nT)	HORIZONTAL (nT)	VERTICAL (nT)
2002.2.22	12:07	-48:42.28	-63:44.36	43301.3	19159.0	-38832.5
2002.3.16	12:04	-48:43.98	-63:44.67	43292.7	19151.7	-38826.4
2002.4.26	11:28	-49:53.26	-63:42.77	43310.2	19180.8	-38831.3
2002.5.24	11:28	-48:47.84	-63:43.82	43314.4	19170.8	-38841.0
2002.6.18	10:58	-48:45.96	-63:40.99	43310.7	19201.2	-38821.9
2002.7.19	10:37	-48:48.12	-63:41.01	43294.2	19193.2	-38806.4
2002.8.23	11:02	-48:47.79	-63:42.15	43302.4	19184.6	-38821.1
2002.9.20	10:42	-48:50.74	-63:42.41	43278.4	19170.7	-38800.6
2002.10.22	10:43	-48:46.16	-63:41.83	43321.4	19195.3	-38834.0
2002.11.29	10:28	-48:48.45	-63:41.48	43293.4	19187.0	-38807.2
2002.12.25	09:21	-48:51.71	-63:40.46	43255.4	19184.0	-38772.2
2003.1.15	09:16	-48:53.90	-63:39.84	43277.5	19199.1	-38785.0

Table 2. Baseline values of fluxgate magnetometer at Syowa Station in March 2002–January 2003.

DATE	TIME (UT) hh:mm	H (nT)	D (nT)	Z (nT)
2002.2.22	12:07	18153.89	18715.602	-38864.43
2002.3.16	12:04	18153.23	18715.842	-39068.49
2002.4.26	11:28	18152.21	18649.031	-39066.59
2002.5.24	11:28	18153.39	18715.154	-39071.20
2002.6.18	10:58	18154.34	18713.954	-39073.24
2002.7.19	10:37	18154.29	18716.108	-39072.14
2002.8.23	11:02	18154.48	18716.017	-39074.15
2002.9.20	10:42	18153.98	18715.994	-39071.62
2002.10.22	10:43	18153.27	18716.129	-39067.62
2002.11.29	10:28	18146.27	18715.737	-39062.29
2002.12.25	09:21	18151.62	18716.665	-39069.67
2003.1.15	09:16	18145.65	18716.767	-39059.86

Table 3. K-indices at Syowa Station in February 2002–January 2003.

	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY
1	4433 3322	5432 2211	5563 3233	1111 0110	0011 1113	6533 3223	1543 4334	4321 1125	3334 4757	3322 2323	5533 3434	2322 2135
2	4655 3425	2221 1212	4553 2123	3201 1100	5531 1435	4221 0122	6742 3345	5332 2111	5563 2346	5344 4364	3333 3445	3322 2232
3	4321 2211	2232 2454	5442 2134	1421 1010	4342 2134	2011 0120	5443 3214	2111 1123	5432 4556	4563 5556	3523 3232	3222 3554
4	3422 2322	4432 1222	4372 2111	0221 1122	5552 1222	3100 1013	6662 1121	5754 3344	5655 3476	4533 3446	2232 3344	5433 3235
5	3332 3345	5544 3344	1211 1111	2111 0001	5411 0023	3221 1124	1110 0123	3322 2331	4523 3444	4553 3334	4422 2332	3331 3334
6	5554 4334	3553 3344	1211 0112	1112 1344	3211 0112	6644 3447	5311 1012	3322 2213	3552 2346	6433 3365	3422 1345	1222 2225
7	4333 3226	3322 3214	3211 1110	3211 1334	2111 0033	5232 2113	3221 1110	3542 2656	3563 3456	5423 3334	5443 3343	3222 2333
8	5222 2333	2222 1100	1111 1001	4531 1223	0111 1145	4112 1104	3410 0134	6542 1124	6744 3335	3322 1230	3532 4445	3322 1122
9	4432 3135	2111 1321	1111 1001	4112 1114	5432 2234	5532 2234	3111 2465	2111 1157	3433 2465	3122 1233	5222 2222	3222 1332
10	4431 1212	1222 2215	1122 1111	3333 2225	3432 3345	5322 2234	4522 2214	4332 3466	3543 3335	3562 2222	4221 2222	3422 2334
11	5322 3424	3532 2222	1133 2213	2124 3655	4333 1143	2111 1044	2332 2345	3334 2446	3221 2124	4433 3233	1322 2121	4521 2324
12	5422 2224	2332 2225	4222 2222	4332 3214	5311 1115	4234 3433	4532 2224	5532 2234	3322 2223	2333 3255	2222 2213	3452 1332
13	3333 3421	4221 1111	5432 3235	5521 1101	3531 2142	4322 1212	4422 1123	4442 2233	3332 1234	4532 3225	2321 1222	4432 1224
14	1222 1101	1112 1111	4521 2111	5553 3565	4211 0024	2011 1001	4322 2245	3422 2221	4453 4324	5421 2333	4423 2454	3452 2223
15	1222 1222	1212 1122	2111 1223	5632 1234	3111 0023	2101 0112	4343 3355	3212 1223	4433 2453	4433 3343	4432 2222	4222 2323
16	4322 1212	1221 1111	3331 1034	4422 2134	3221 1114	1311 1144	4453 2311	2112 2111	4223 2365	4322 1235	3222 2212	3311 1233
17	4432 2224	1111 1111	4425 4565	3011 1115	4311 1101	5533 2434	1441 2224	1432 2335	5432 2236	5331 1233	2221 1111	3332 2322
18	3322 1244	3222 3244	6664 4556	3111 1155	1001 1233	3212 2000	4431 2256	5423 2214	5633 2344	5442 2343	1221 1111	3322 2333
19	3231 1222	6642 2121	5554 4566	4561 0000	3342 1124	1103 1314	5564 3246	5322 2435	5332 2255	4532 2234	3344 4463	3443 4443
20	3221 2224	1111 2322	6854 4454	1322 2112	5432 1102	6532 2246	5542 2367	4121 1001	4322 3123	4423 2466	5532 4346	6533 3334
21	2422 1224	3232 1123	3311 1124	5143 1112	2421 0122	5541 3344	5664 3234	3122 1111	3422 2222	4665 4366	4632 3323	5533 3324
22	5522 2234	5521 0111	4522 2332	1222 2233	2111 1134	4334 3334	3431 1111	2111 1333	5322 2232	6434 4456	3322 3333	3532 1436
23	4321 1112	1211 2355	2563 2434	3434 5655	2343 3222	4442 3367	1122 0133	3111 1110	3222 2435	5533 3343	5444 5345	6523 3323
24	3322 1123	5654 3444	5222 1223	2110 1001	3221 1112	4432 1123	5211 0123	0111 1111	6554 4665	4432 4343	3232 4464	5433 3454
25	3221 2233	4421 1211	4111 1010	1100 1111	3221 2133	4422 2225	4111 1014	1111 1113	6563 4355	4424 3336	5522 4353	5464 4433
26	4332 2335	2323 2125	1111 0011	1122 1223	4110 1122	3333 2243	2332 1454	3111 1134	4533 4565	4322 3235	4333 4444	6443 3333
27	5321 4124	2111 0021	2212 1243	5456 3324	1001 1100	5533 3336	4652 2126	4312 1114	4543 4445	5543 3344	5665 4446	3321 1324
28	4433 2266	2211 0010	5554 3322	2442 1123	1100 1001	5532 1214	3322 1155	2111 1111	5453 3344	4333 4343	3444 4433	4552 2234
29		0111 1113	3121 1333	4331 2112	2100 0125	3321 3213	5211 2221	1111 1122	5523 3134	5432 3534	3222 3435	3222 3454
30		2542 3343	4221 2211	1121 1102	4423 1226	1111 1232	2554 2232	4343 3323	3453 3363	4433 4335	4322 2344	5553 3443
31		3533 2355		2101 1111		3100 1311	2222 2225		5553 3435		5322 1112	4443 3343

Table 4. Observation periods of a CCD all-sky imager at Syowa Station in 2002.

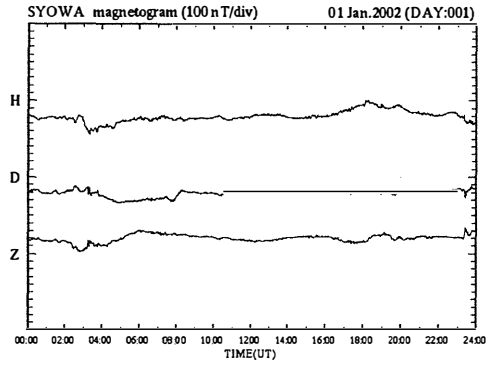
Date	Hours (UT)		Date	Hours (UT)		Date	Hours (UT)	
	Start	End		Start	End		Start	End
20020312	1900	0000	20020526	1400	1830	20020719	1400	1640
20020313	1900	0000		0100	0400	20020728	1430	1710
20020314	1900	0200	20020527	1340	1600	20020730	1420	0020
20020315	1840	0040	20020528	1450	1600	20020731	1440	0200
20020316	1830	2040		1830	2010	20020802	1440	0400
20020317	1830	2140		0200	0410	20020803	1530	0400
20020320	2210	0040	20020601	1340	0500	20020804	1500	1650
20020321	2130	0040	20020602	1340	0150	20020809	1600	0340
20020322	1820	0040	20020603	1330	1550	20020810	1450	0320
20020323	1820	0040	20020604	1330	0450	20020811	1500	0330
20020324	1830	2000	20020605	1330	0450	20020812	1520	0220
20020327	1800	0040	20020606	1640	1730	20020813	1630	0320
20020330	1730	0100	20020608	0210	0450	20020814	1520	0140
20020404	1740	0130	20020609	1630	0430	20020826	1610	0240
20020405	2010	2140	20020612	1600	0330	20020830	1620	2240
20020407	1650	0150	20020614	1350	0500		2350	0200
20020412	2330	0150	20020615	1330	0510	20020903	1700	2230
20020413	1640	0200	20020616	1330	0510	20020904	1640	0210
20020414	1700	0200	20020619	1720	0500	20020905	1620	0210
20020416	1640	0200	20020620	1340	2250	20020906	1630	2340
20020417	1610	0220		0020	0450	20020908	1950	0150
20020418	1600	0230	20020622	2130	0510	20020909	1650	0150
20020419	2240	0230	20020623	1500	1900	20020917	2010	0110
20020421	1600	0230	20020627	1330	2230	20020920	1800	0050
20020422	1550	0230	20020629	1440	2230	20020921	1750	0040
20020427	1530	0320		2340	0500	20020922	1800	2110
20020501	1450	2330	20020630	1320	2030	20020923	2010	0040
20020506	2120	0340	20020703	1420	1930	20020924	1750	0040
20020507	1440	1650		2300	0320	20020925	1750	2100
20020508	1600	0340	20020704	1600	0310	20020930	1820	0010
20020509	1600	0340	20020706	1340	2330	20021001	1820	1950
20020511	2300	0230	20020707	1720	0450	20021002	1830	2350
20020512	1430	0350	20020708	1430	1650	20021003	1830	2340
20020513	1420	0410	20020709	1600	0450	20021004	1840	2340
20020514	1430	1640	20020710	1340	1940	20021005	1900	2330
	2350	0400		2200	0500	20021006	1900	2330
20020516	1420	2130	20020711	1510	0310	20021008	1930	2140
	2310	0200	20020714	1810	2220	20021010	1920	2020
20020521	1450	0410	20020717	1350	0440	20021011	1930	2240

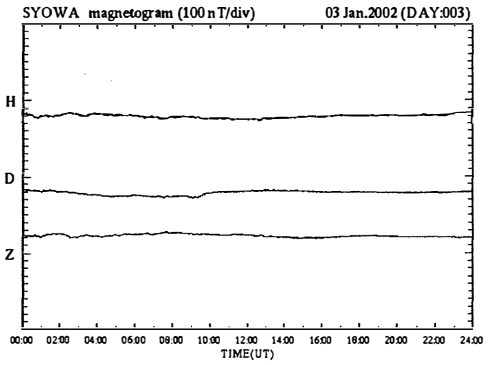
Appendix

Summary plots of the Upper Atmosphere Physics Monitoring data in 2002

- Plotted data from top:
  - H : northward component of the magnetic variation
  - D : eastward component of the magnetic variation
  - Z : downward component of the magnetic variation

- Plotting vertical scale:
  - H, D, Z : 100 nT/div


SYOWA magnetogram (100 nT/div)
01 Jan.2002 (DAY:001)
H
D
Z
00:00 02:00 04:00 06:00 08:00 10:00 12:00 14:00 16:00 18:00 20:00 22:00 24:00
TIME(UT)


SYOWA magnetogram (100 nT/div)
03 Jan.2002 (DAY:003)
H
D
Z
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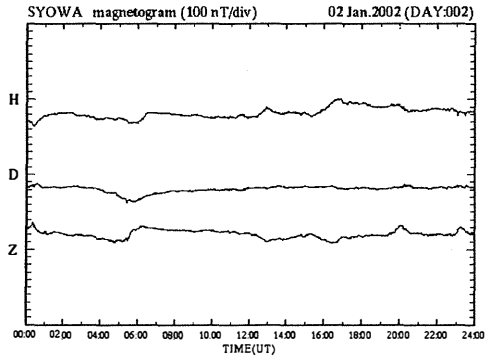
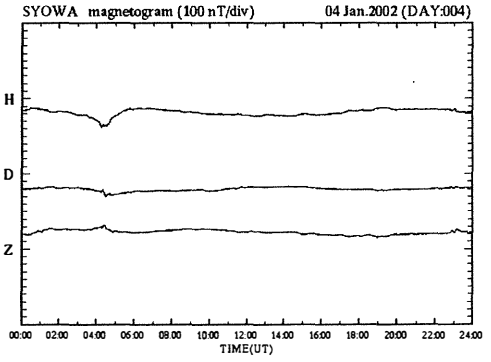
TIME(UT)


SYOWA magnetogram (100 nT/div)
02 Jan.2002 (DAY:002)
H
D
Z
00:00 02:00 04:00 06:00 08:00 10:00 12:00 14:00 16:00 18:00 20:00 22:00 24:00
TIME(UT)


SYOWA magnetogram (100 nT/div)
04 Jan.2002 (DAY:004)
H
D
Z
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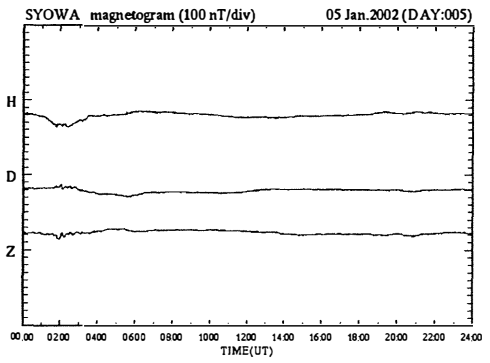
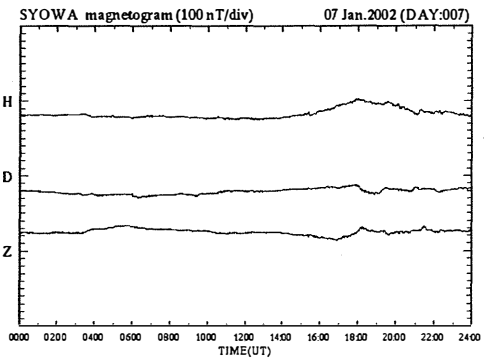
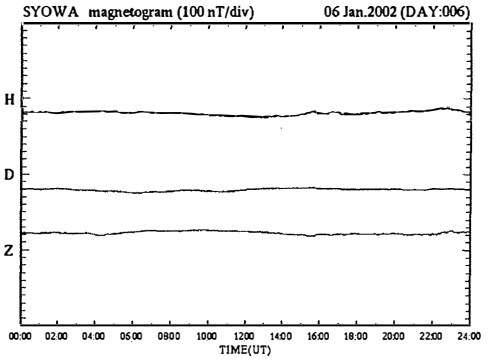
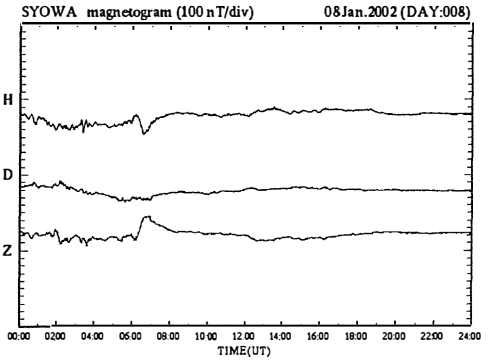
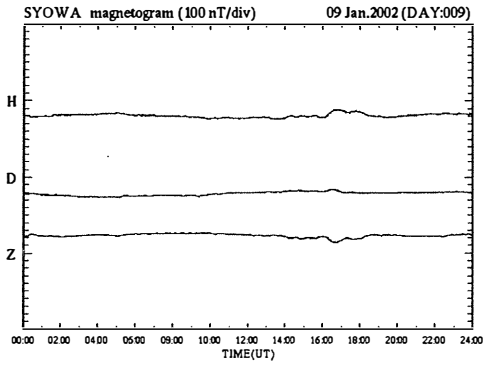
TIME(UT)

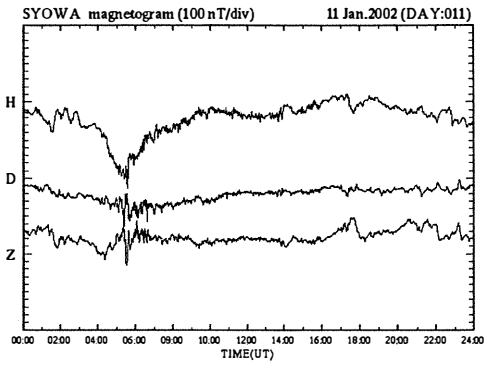

SYOWA magnetogram (100 nT/div)
05 Jan.2002 (DAY:005)
H
D
Z
00:00 02:00 04:00 06:00 08:00 10:00 12:00 14:00 16:00 18:00 20:00 22:00 24:00
TIME(UT)

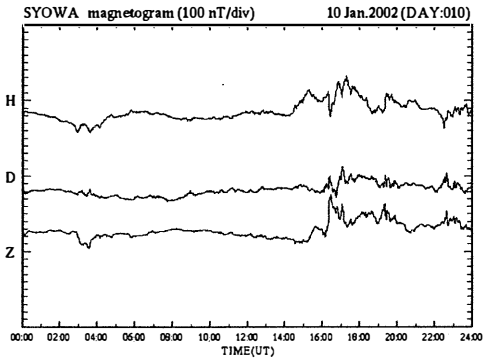

SYOWA magnetogram (100 nT/div)
07 Jan.2002 (DAY:007)
H
D
Z
00:00 02:00 04:00 06:00 08:00 10:00 12:00 14:00 16:00 18:00 20:00 22:00 24:00
TIME(UT)

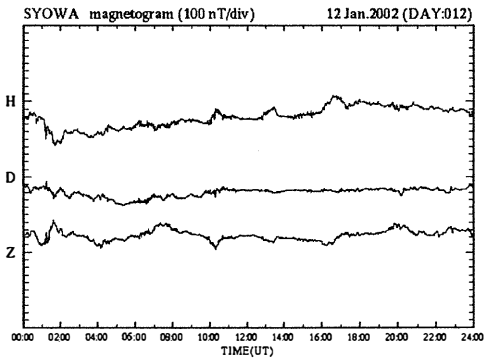

SYOWA magnetogram (100 nT/div)
06 Jan.2002 (DAY:006)
H
D
Z
00:00 02:00 04:00 06:00 08:00 10:00 12:00 14:00 16:00 18:00 20:00 22:00 24:00
TIME(UT)

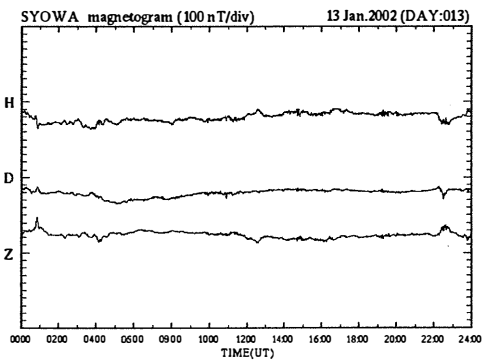

SYOWA magnetogram (100 nT/div)
08 Jan.2002 (DAY:008)
H
D
Z
00:00 02:00 04:00 06:00 08:00 10:00 12:00 14:00 16:00 18:00 20:00 22:00 24:00
TIME(UT)

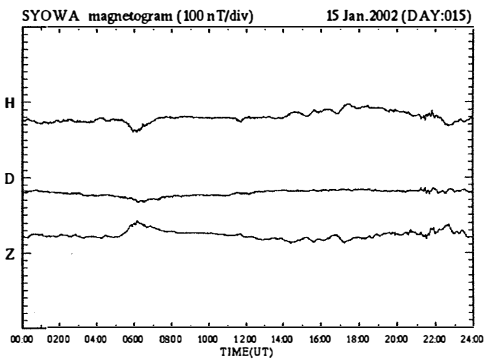

SYOWA magnetogram (100 nT/div)
09 Jan.2002 (DAY:009)
H
D
Z
00:00 02:00 04:00 06:00 08:00 10:00 12:00 14:00 16:00 18:00 20:00 22:00 24:00
TIME(UT)

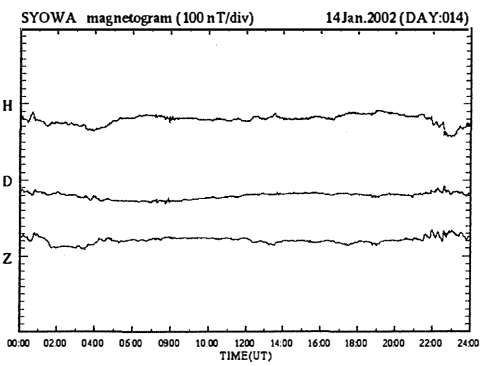

SYOWA magnetogram (100 nT/div)
11 Jan.2002 (DAY:011)
H
D
Z
00:00 02:00 04:00 06:00 08:00 10:00 12:00 14:00 16:00 18:00 20:00 22:00 24:00
TIME(UT)

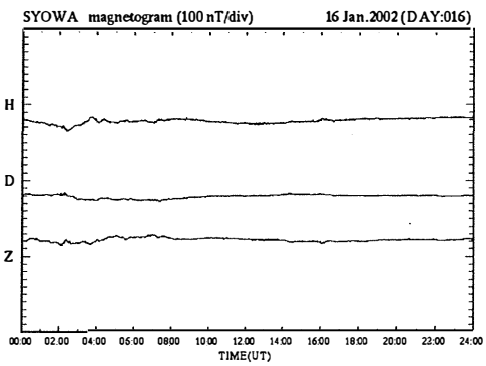

SYOWA magnetogram (100 nT/div)
10 Jan.2002 (DAY:010)
H
D
Z
00:00 02:00 04:00 06:00 08:00 10:00 12:00 14:00 16:00 18:00 20:00 22:00 24:00
TIME(UT)

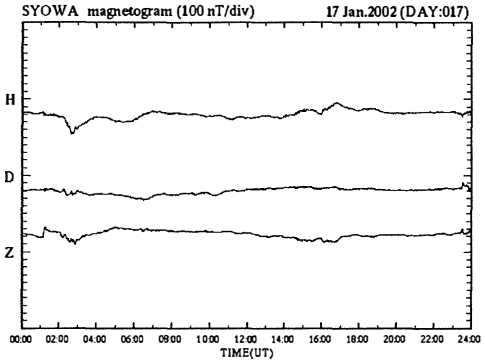

SYOWA magnetogram (100 nT/div)
12 Jan.2002 (DAY:012)
H
D
Z
00:00 02:00 04:00 06:00 08:00 10:00 12:00 14:00 16:00 18:00 20:00 22:00 24:00
TIME(UT)

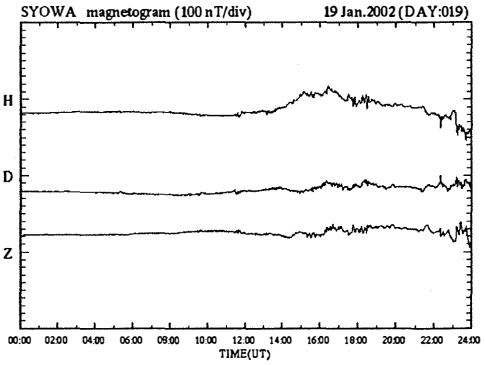

SYOWA magnetogram (100 nT/div)
13 Jan.2002 (DAY:013)
H
D
Z
00:00 02:00 04:00 06:00 08:00 10:00 12:00 14:00 16:00 18:00 20:00 22:00 24:00
TIME(UT)

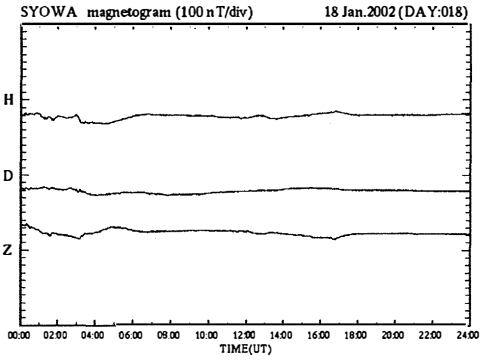

SYOWA magnetogram (100 nT/div)
15 Jan.2002 (DAY:015)
H
D
Z
00:00 02:00 04:00 06:00 08:00 10:00 12:00 14:00 16:00 18:00 20:00 22:00 24:00
TIME(UT)

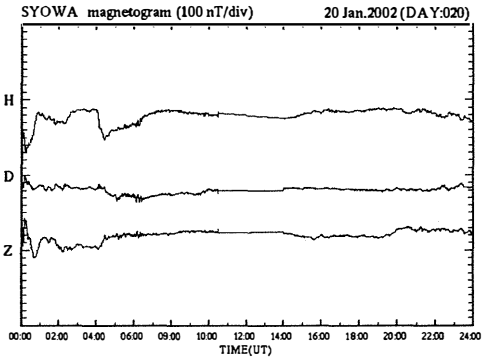

SYOWA magnetogram (100 nT/div)
14 Jan.2002 (DAY:014)
H
D
Z
00:00 02:00 04:00 06:00 08:00 10:00 12:00 14:00 16:00 18:00 20:00 22:00 24:00
TIME(UT)

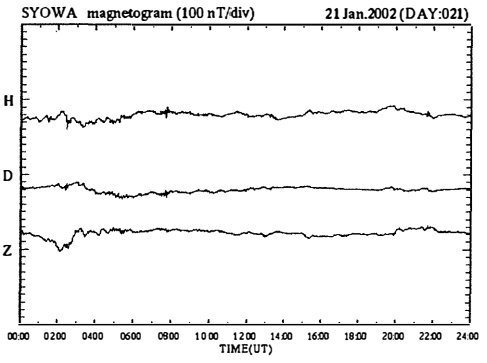

SYOWA magnetogram (100 nT/div)
16 Jan.2002 (DAY:016)
H
D
Z
00:00 02:00 04:00 06:00 08:00 10:00 12:00 14:00 16:00 18:00 20:00 22:00 24:00
TIME(UT)

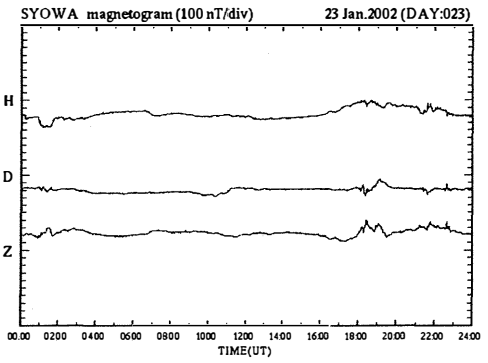

SYOWA magnetogram (100 nT/div)
17 Jan.2002 (DAY:017)
H
D
Z
00:00 02:00 04:00 06:00 08:00 10:00 12:00 14:00 16:00 18:00 20:00 22:00 24:00
TIME(UT)

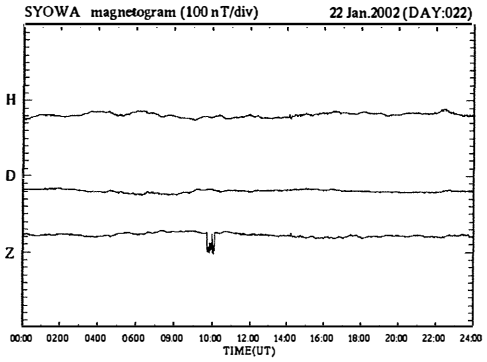

SYOWA magnetogram (100 nT/div)
19 Jan.2002 (DAY:019)
H
D
Z
00:00 02:00 04:00 06:00 08:00 10:00 12:00 14:00 16:00 18:00 20:00 22:00 24:00
TIME(UT)

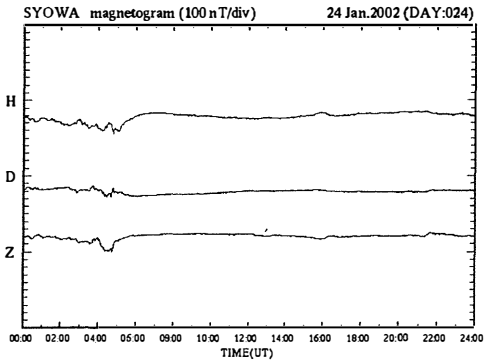

SYOWA magnetogram (100 nT/div)
18 Jan.2002 (DAY:018)
H
D
Z
00:00 02:00 04:00 06:00 08:00 10:00 12:00 14:00 16:00 18:00 20:00 22:00 24:00
TIME(UT)

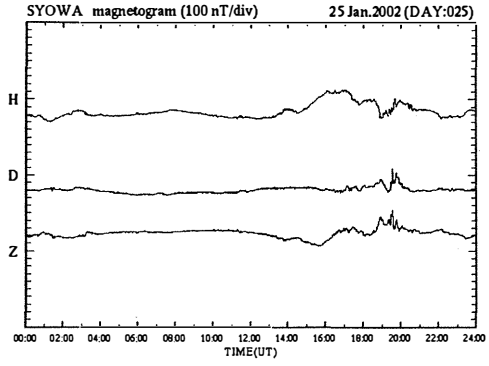

SYOWA magnetogram (100 nT/div)
20 Jan.2002 (DAY:020)
H
D
Z
00:00 02:00 04:00 06:00 08:00 10:00 12:00 14:00 16:00 18:00 20:00 22:00 24:00
TIME(UT)

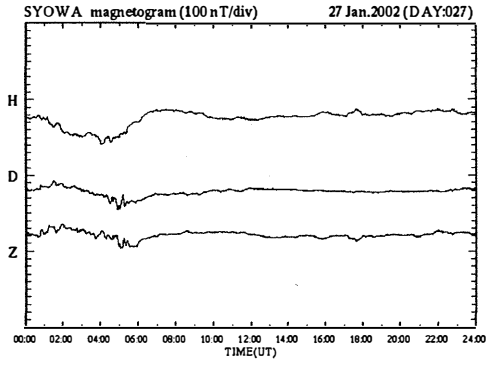

SYOWA magnetogram (100 nT/div)
21 Jan.2002 (DAY:021)
H
D
Z
00:00 02:00 04:00 06:00 08:00 10:00 12:00 14:00 16:00 18:00 20:00 22:00 24:00
TIME(UT)

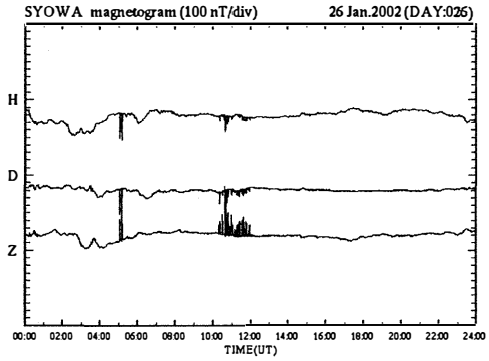

SYOWA magnetogram (100 nT/div)
23 Jan.2002 (DAY:023)
H
D
Z
00:00 02:00 04:00 06:00 08:00 10:00 12:00 14:00 16:00 18:00 20:00 22:00 24:00
TIME(UT)

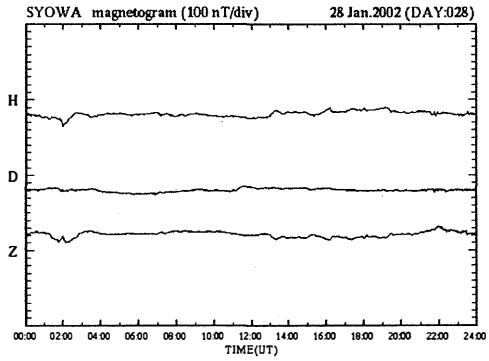

SYOWA magnetogram (100 nT/div)
22 Jan.2002 (DAY:022)
H
D
Z
00:00 02:00 04:00 06:00 08:00 10:00 12:00 14:00 16:00 18:00 20:00 22:00 24:00
TIME(UT)

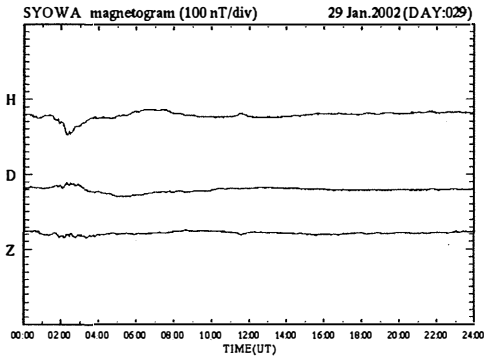

SYOWA magnetogram (100 nT/div)
24 Jan.2002 (DAY:024)
H
D
Z
00:00 02:00 04:00 06:00 08:00 10:00 12:00 14:00 16:00 18:00 20:00 22:00 24:00
TIME(UT)

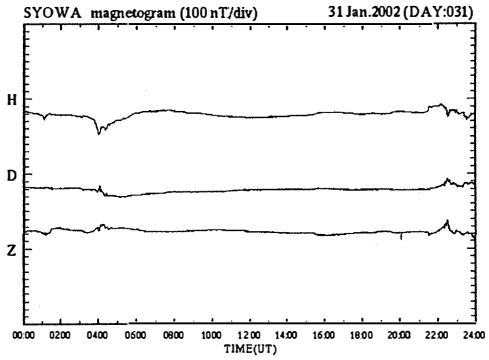

SYOWA magnetogram (100 nT/div)
25 Jan.2002 (DAY:025)
H
D
Z
00:00 02:00 04:00 06:00 08:00 10:00 12:00 14:00 16:00 18:00 20:00 22:00 24:00
TIME(UT)


SYOWA magnetogram (100 nT/div)
27 Jan.2002 (DAY:027)
H
D
Z
00:00 02:00 04:00 06:00 08:00 10:00 12:00 14:00 16:00 18:00 20:00 22:00 24:00
TIME(UT)


SYOWA magnetogram (100 nT/div)
26 Jan.2002 (DAY:026)
H
D
Z
00:00 02:00 04:00 06:00 08:00 10:00 12:00 14:00 16:00 18:00 20:00 22:00 24:00
TIME(UT)


SYOWA magnetogram (100 nT/div)
28 Jan.2002 (DAY:028)
H
D
Z
00:00 02:00 04:00 06:00 08:00 10:00 12:00 14:00 16:00 18:00 20:00 22:00 24:00
TIME(UT)


SYOWA magnetogram (100 nT/div)
29 Jan.2002 (DAY:029)
H
D
Z
00:00 02:00 04:00 06:00 08:00 10:00 12:00 14:00 16:00 18:00 20:00 22:00 24:00
TIME(UT)


SYOWA magnetogram (100 nT/div)
31 Jan.2002 (DAY:031)
H
D
Z
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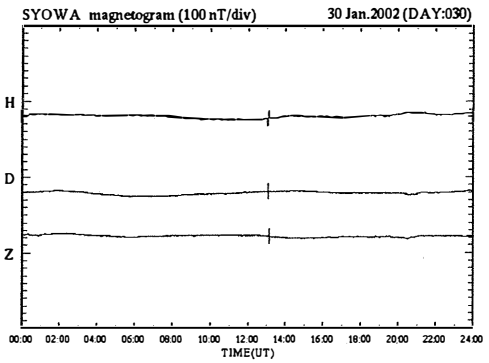
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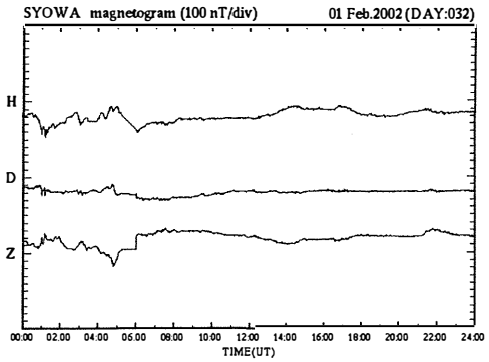
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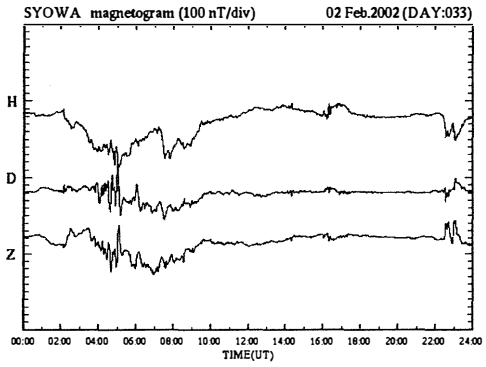
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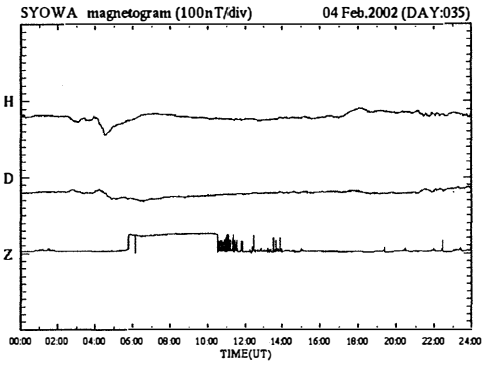
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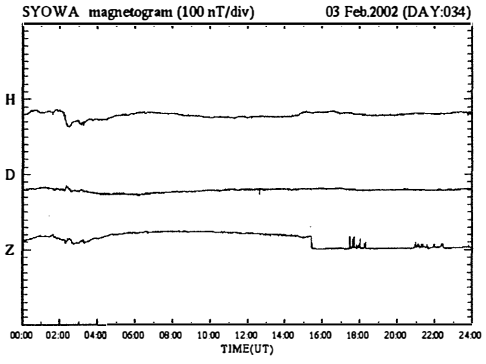
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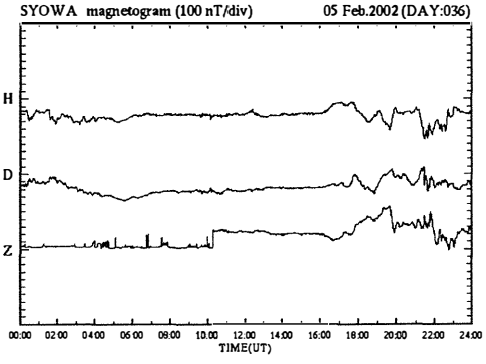
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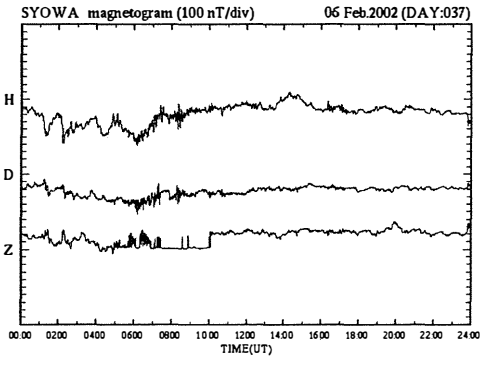
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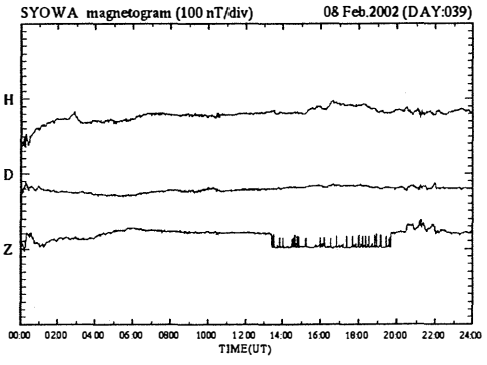
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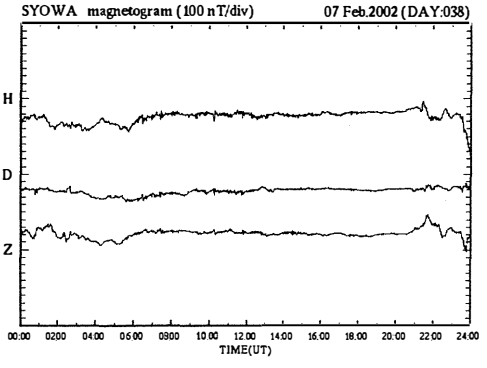
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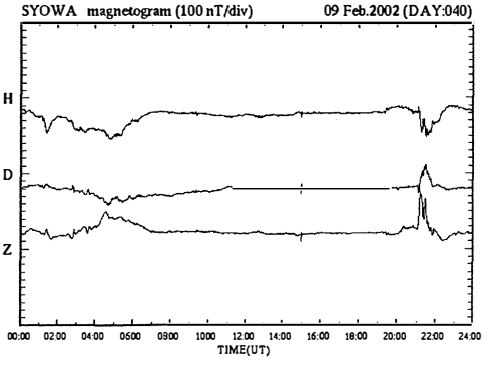
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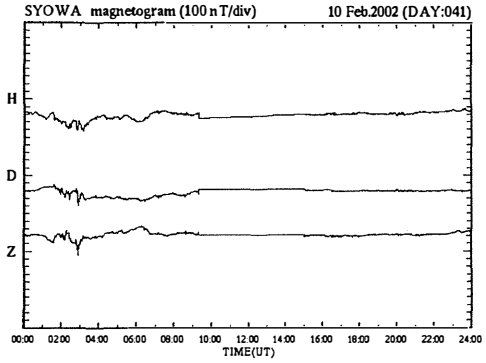
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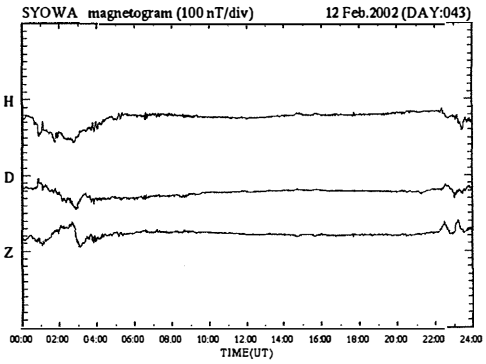
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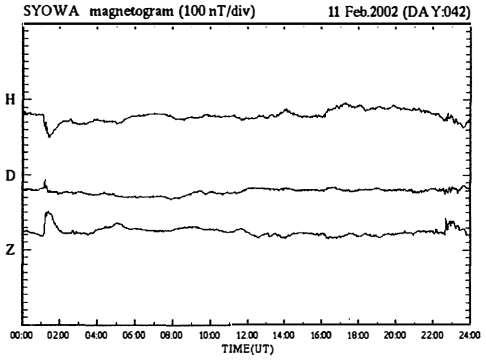
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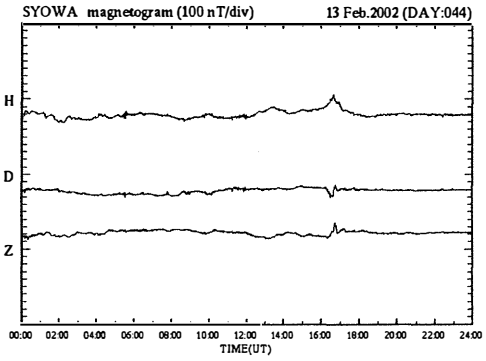
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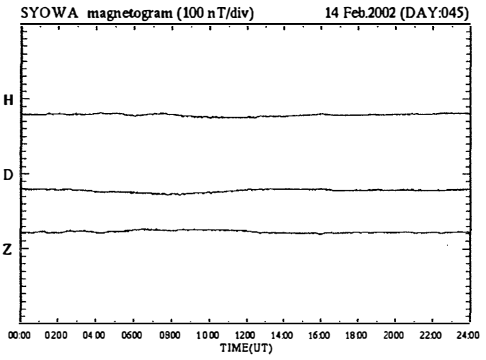
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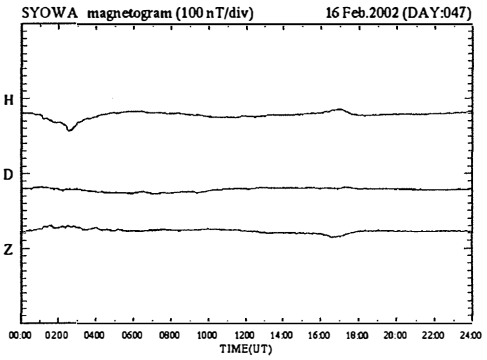
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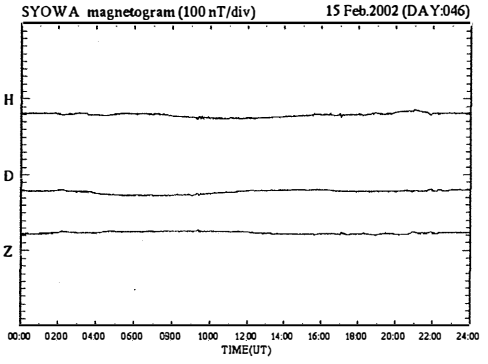
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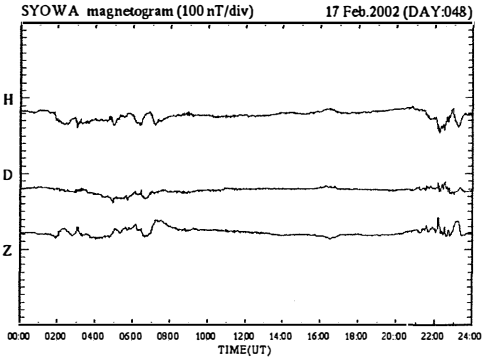
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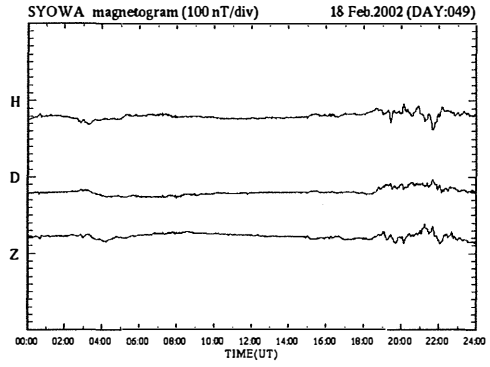
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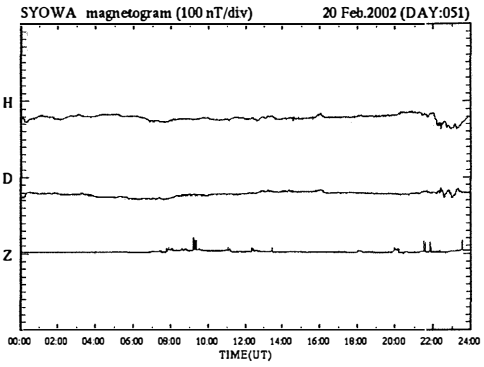
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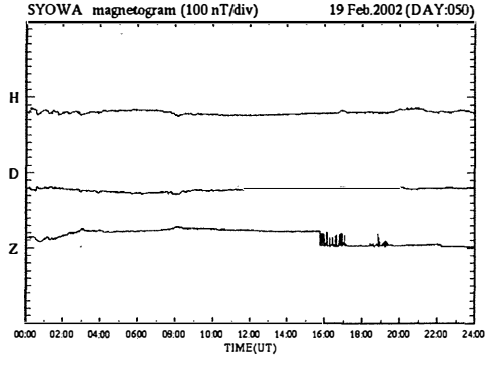
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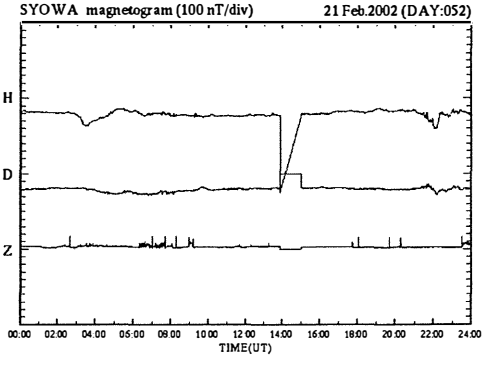
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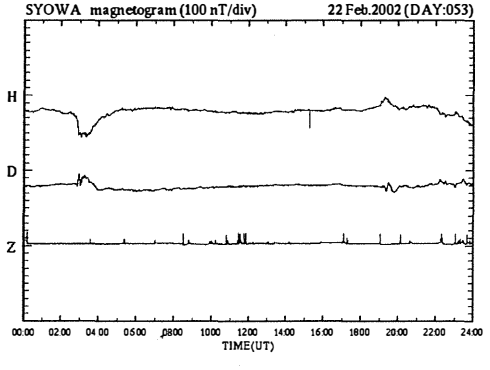
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22 Feb.2002 (DAY:053)
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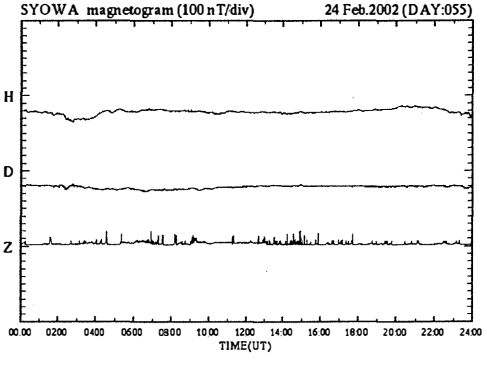
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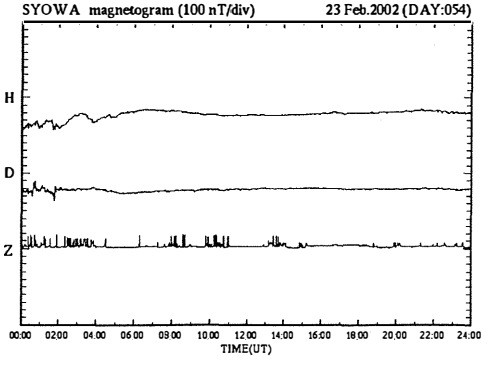
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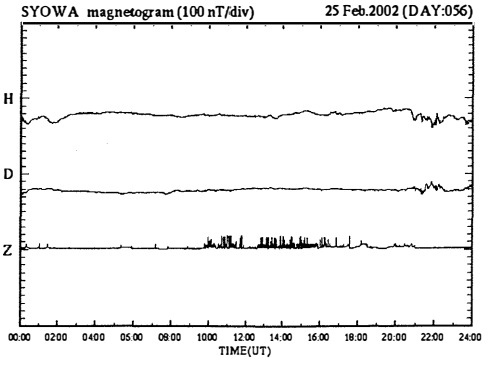
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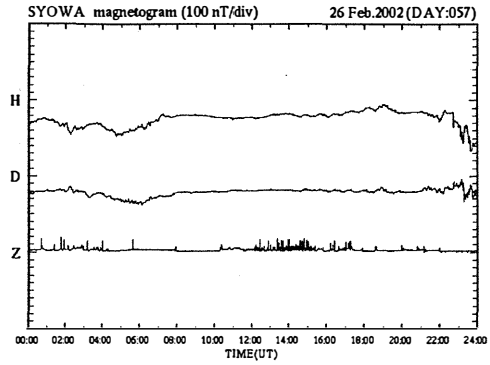
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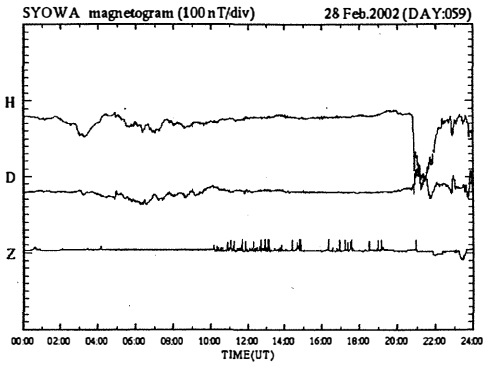
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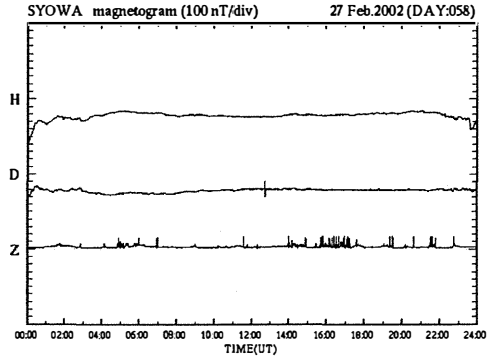
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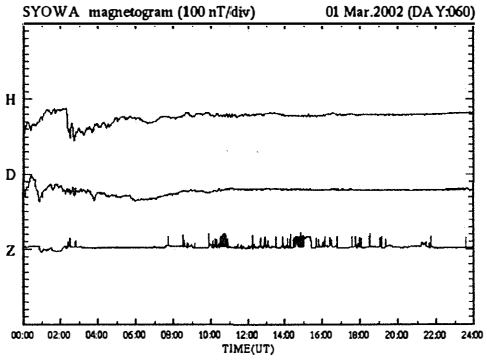
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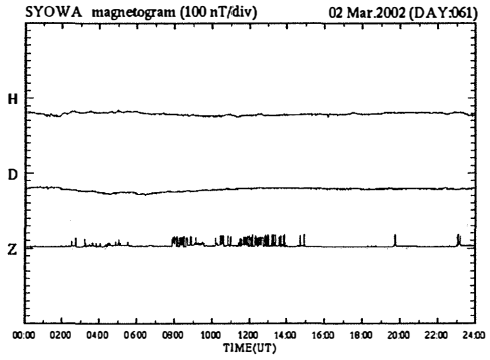
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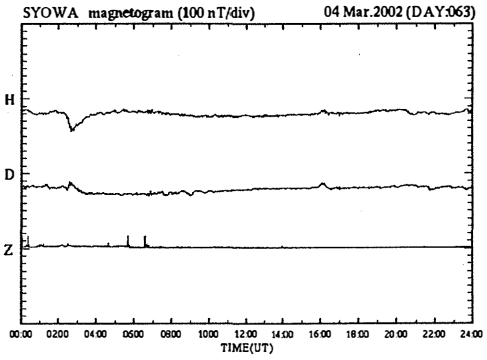
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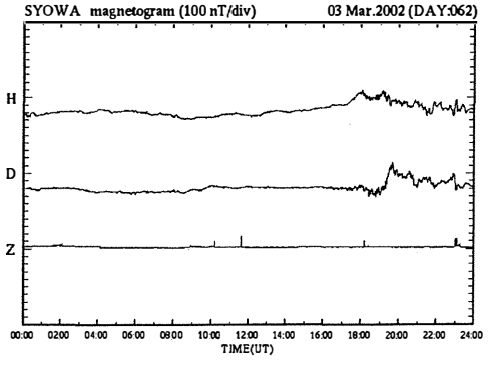
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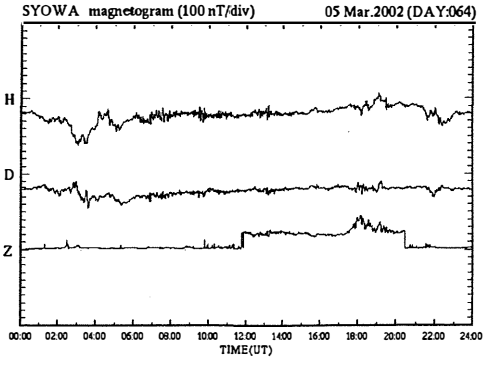
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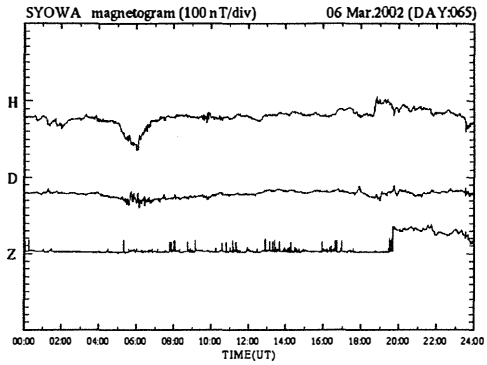
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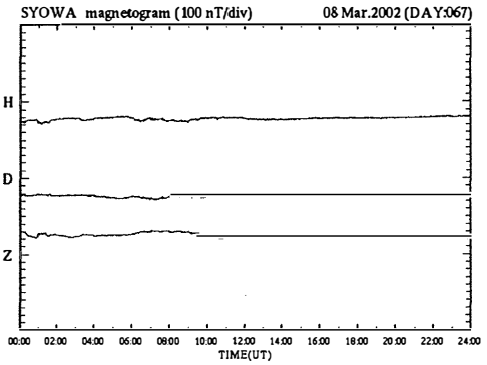
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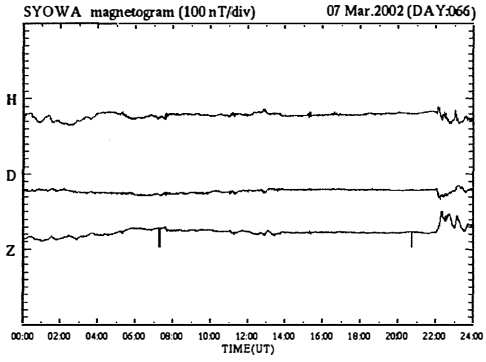
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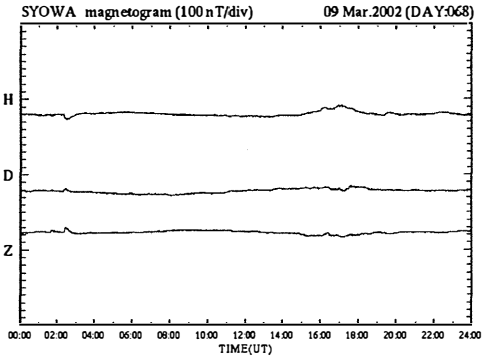
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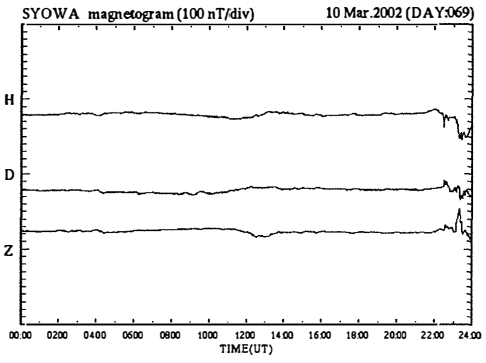
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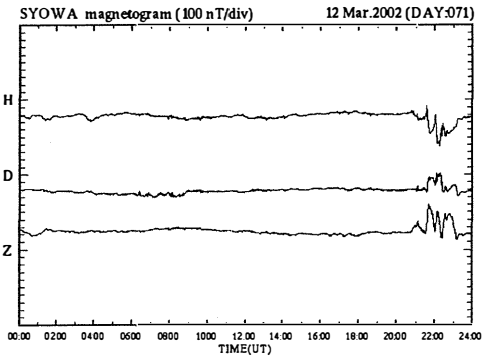
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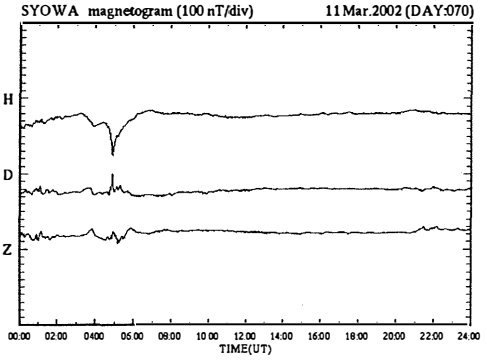
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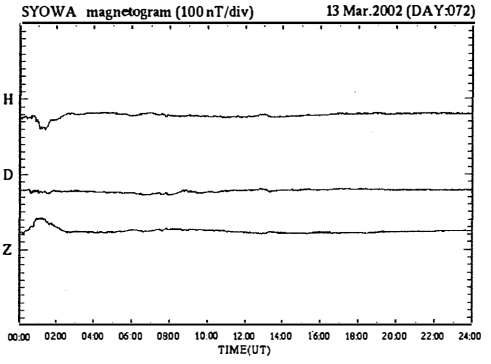
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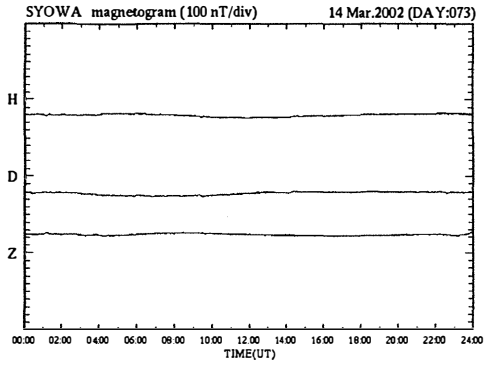
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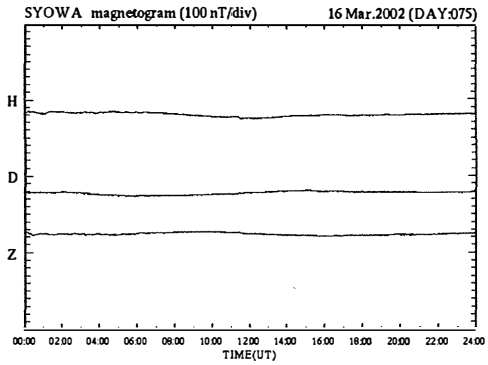
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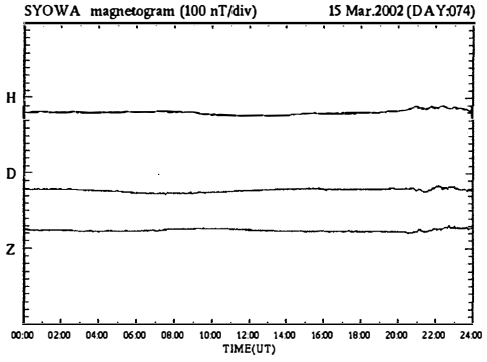
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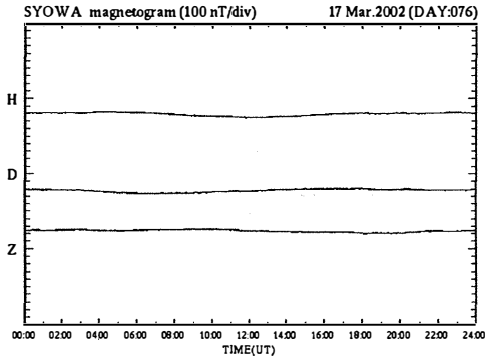
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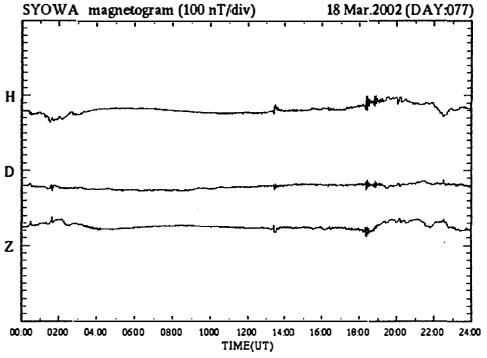
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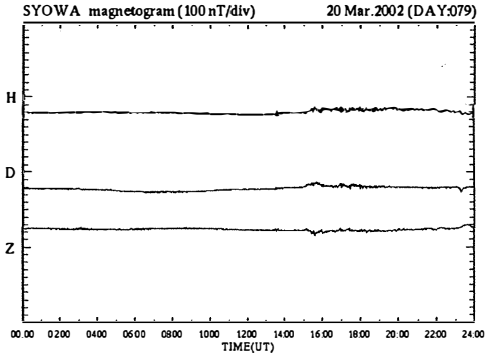
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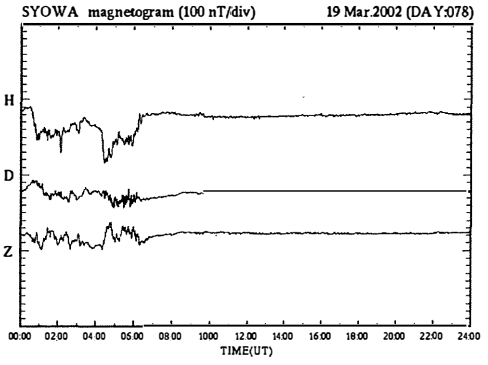
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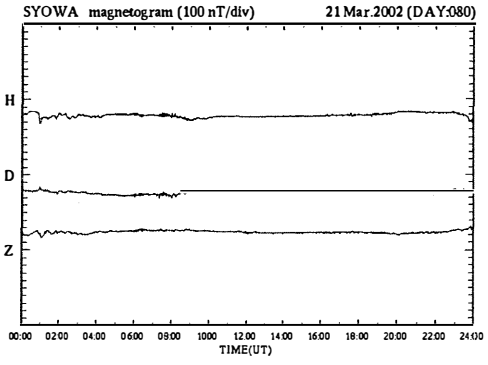
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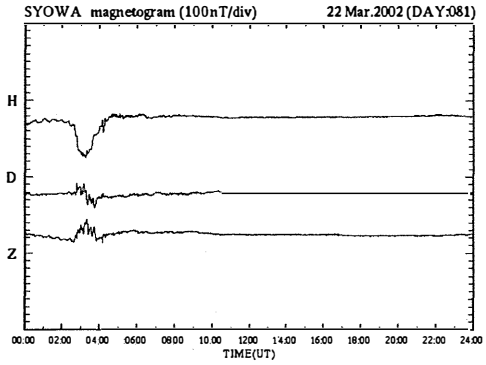
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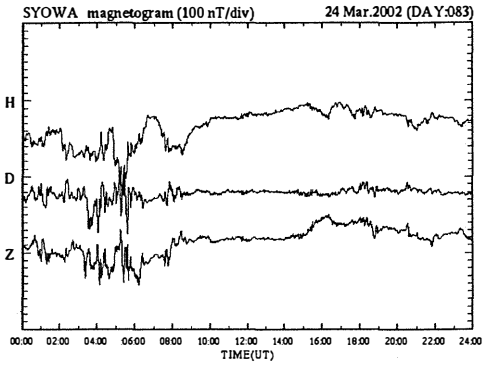
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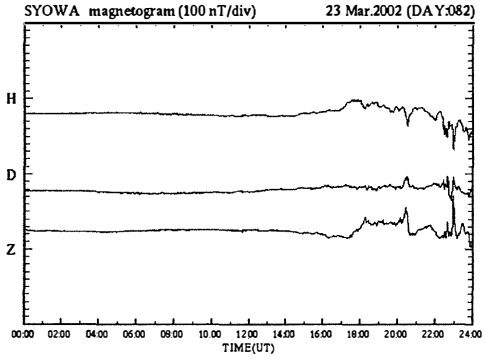
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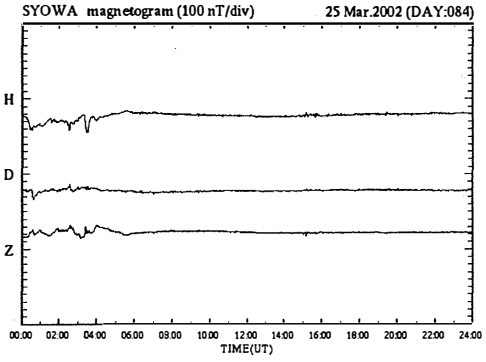
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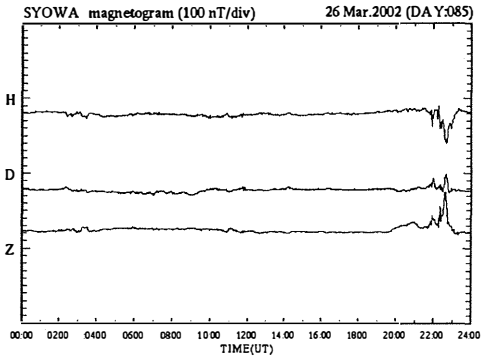
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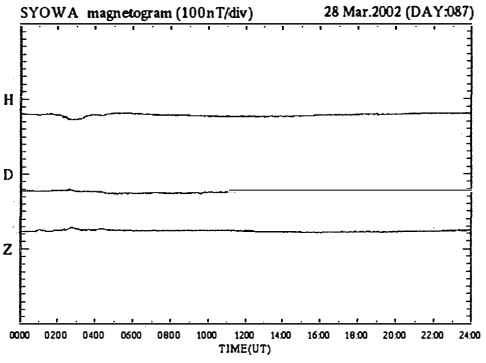
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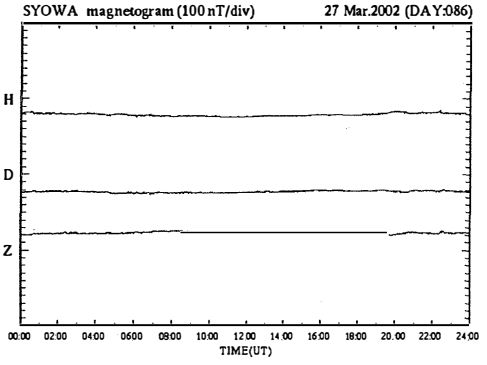
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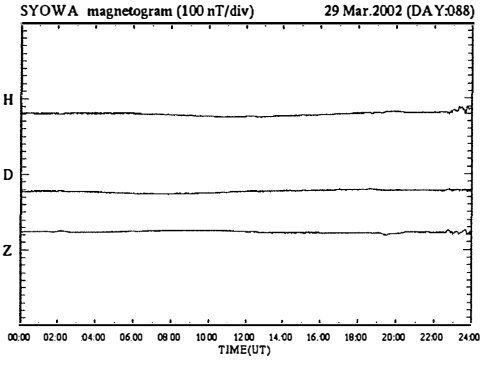
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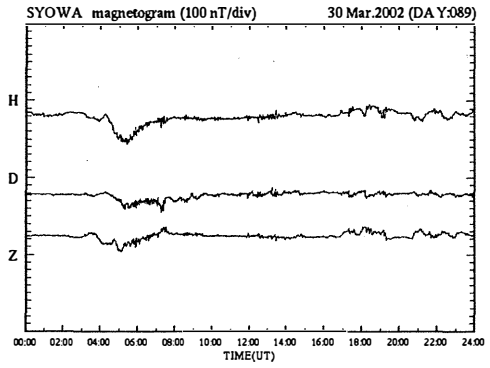
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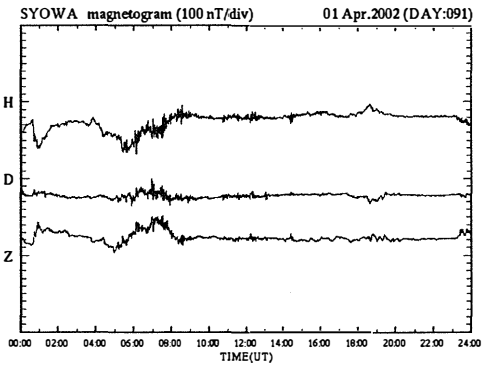
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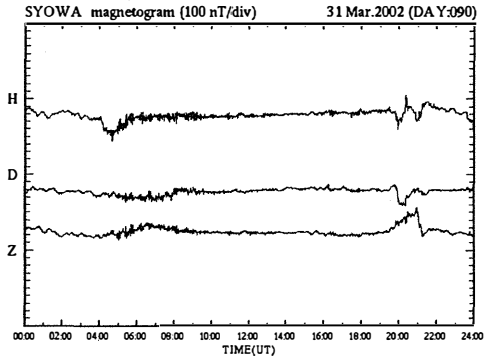
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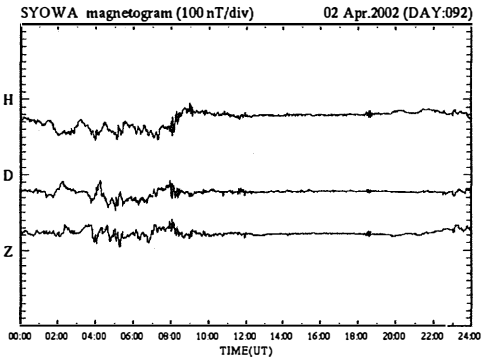
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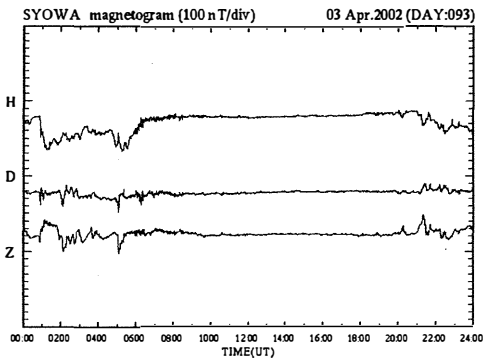
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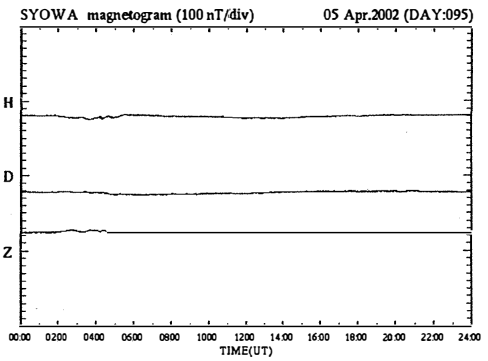
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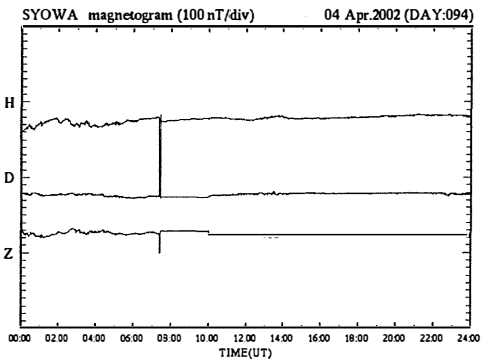
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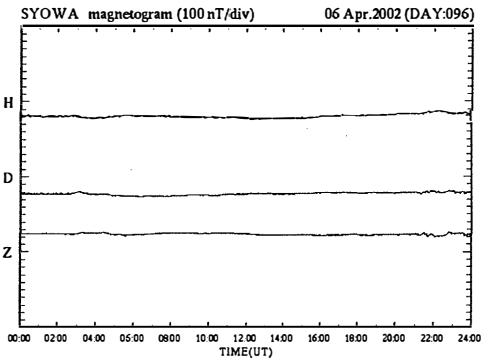
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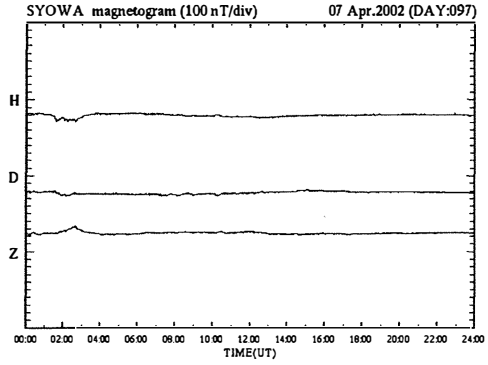
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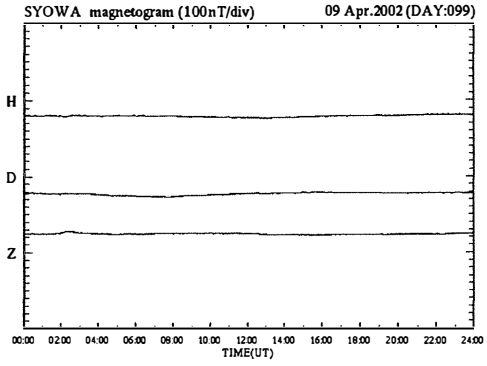
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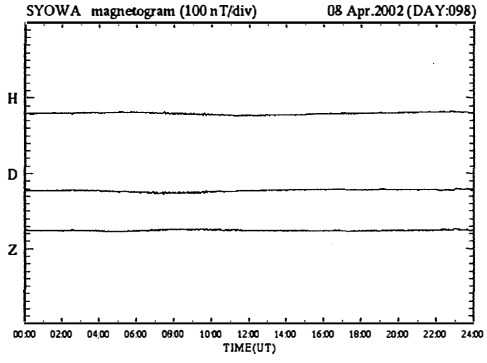
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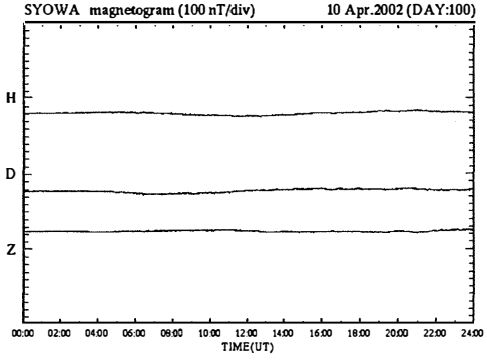
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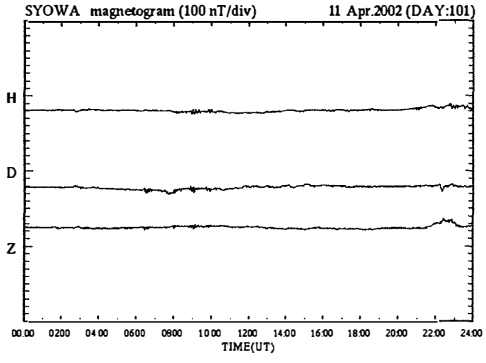
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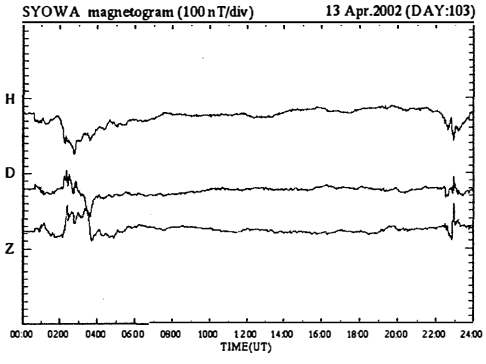
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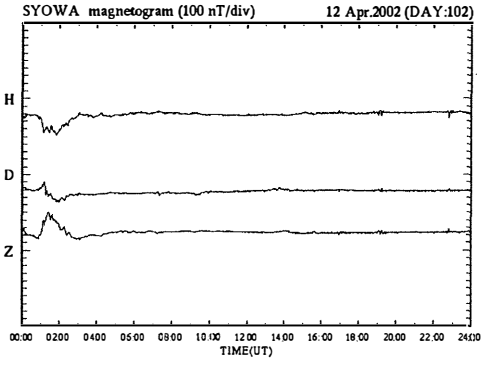
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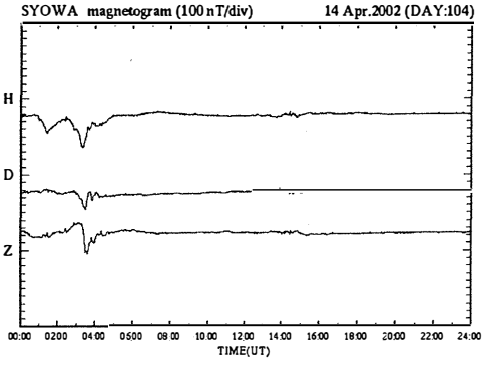
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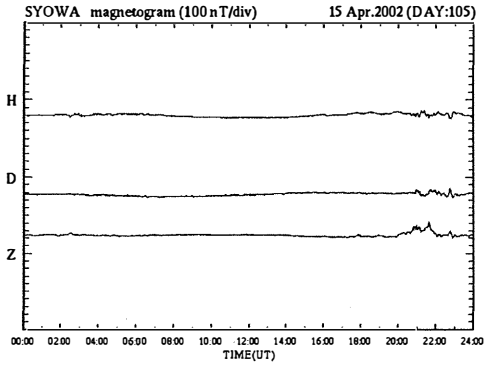
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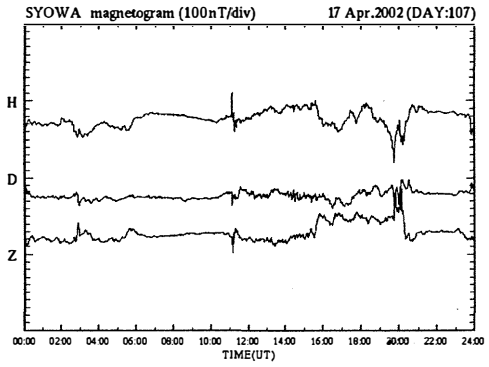
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17 Apr.2002 (DAY:107)
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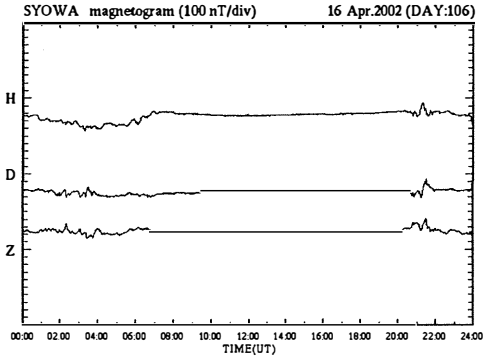
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16 Apr.2002 (DAY:106)
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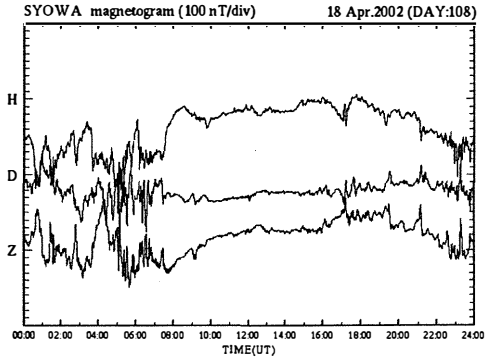
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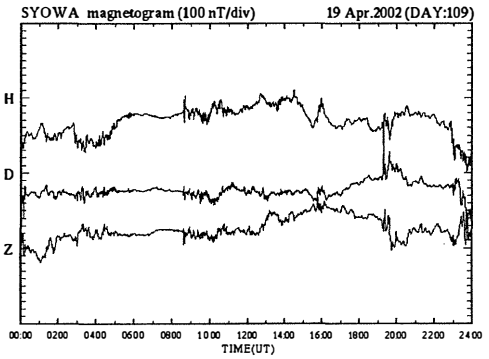
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19 Apr.2002 (DAY:109)
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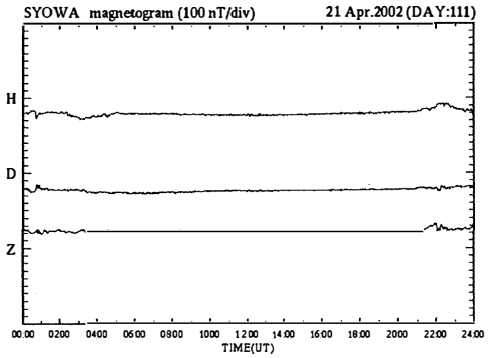
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21 Apr.2002 (DAY:111)
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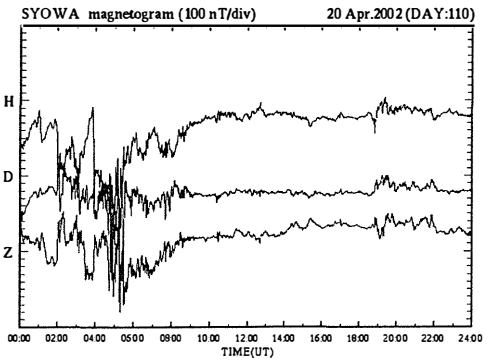
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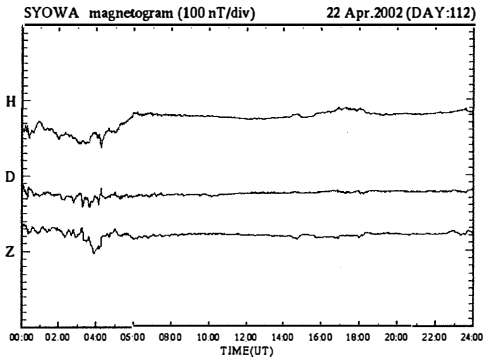
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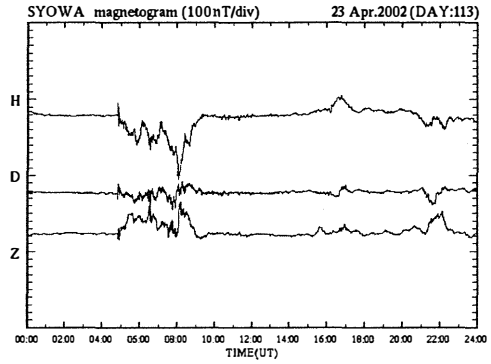
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23 Apr.2002 (DAY:113)
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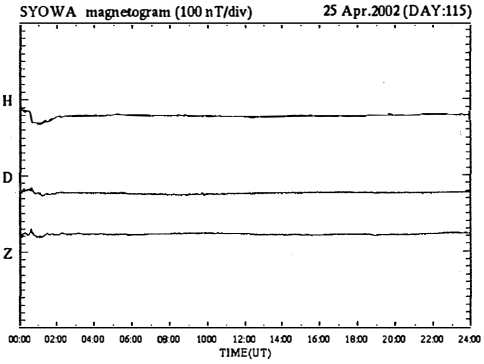
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25 Apr.2002 (DAY:115)
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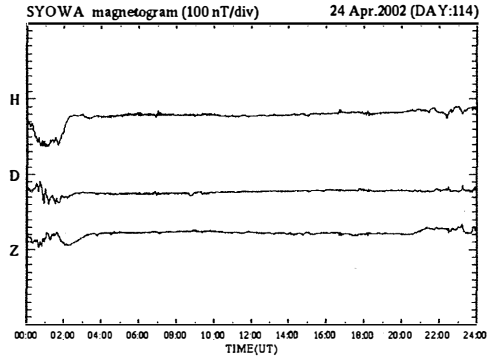
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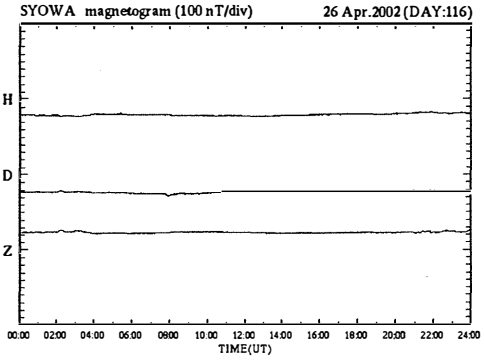
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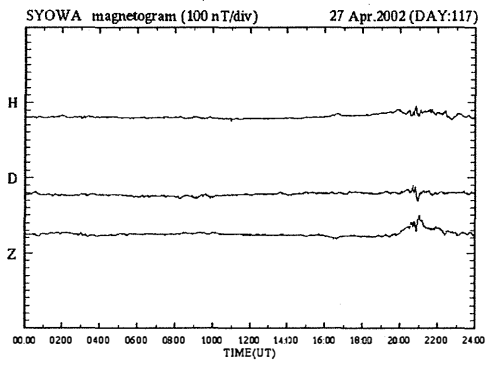
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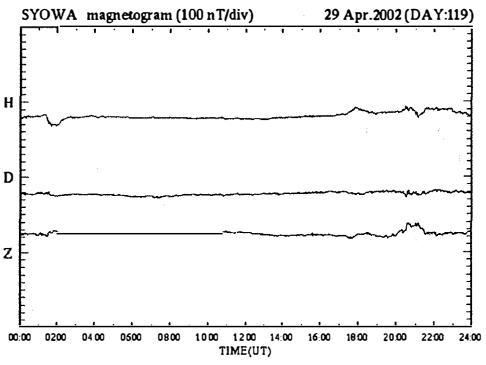
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29 Apr.2002 (DAY:119)
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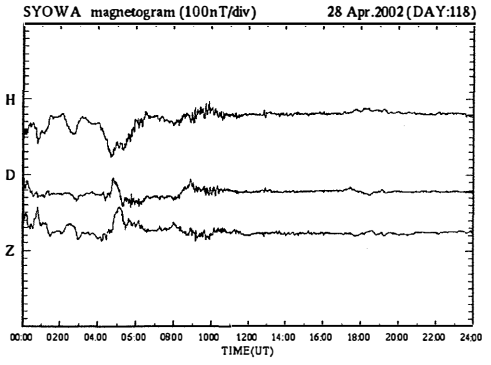
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28 Apr.2002 (DAY:118)
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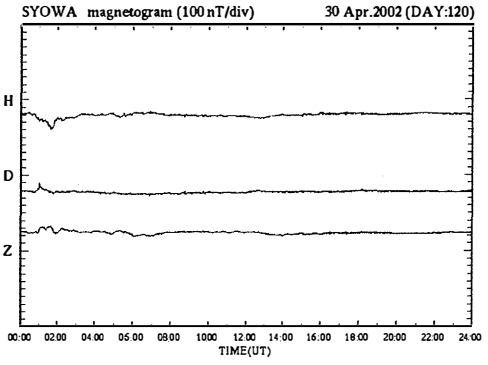
SYOWA magnetogram (100 nT/div)
30 Apr.2002 (DAY:120)
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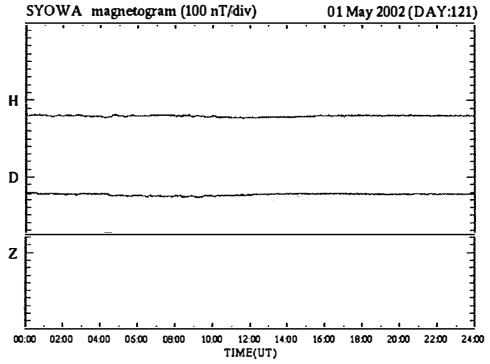
SYOWA magnetogram (100 nT/div)
01 May 2002 (DAY:121)
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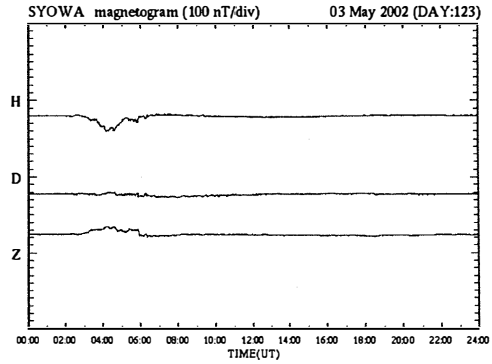
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03 May 2002 (DAY:123)
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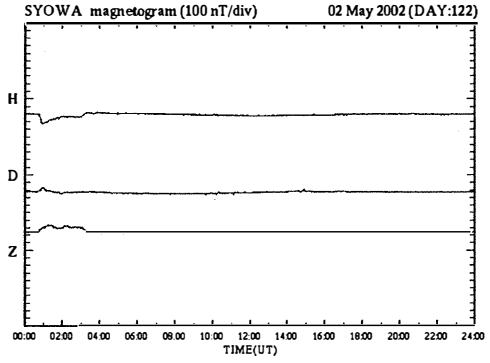
SYOWA magnetogram (100 nT/div)
02 May 2002 (DAY:122)
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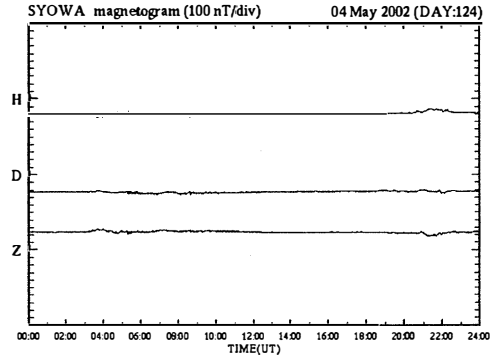
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04 May 2002 (DAY:124)
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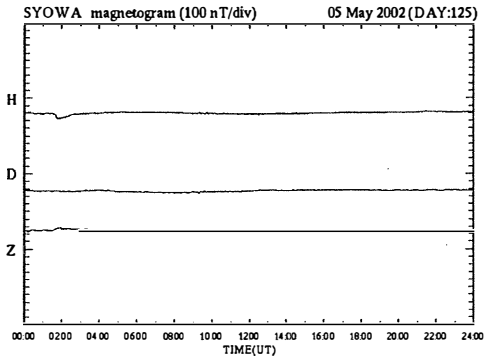
SYOWA magnetogram (100 nT/div)
05 May 2002 (DAY:125)
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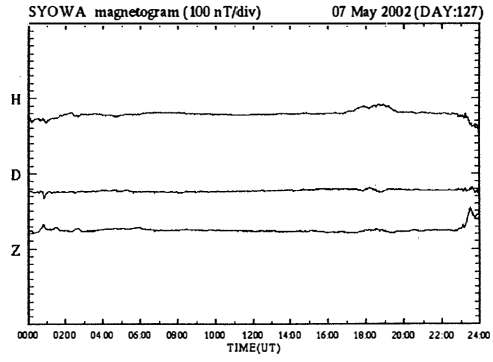
SYOWA magnetogram (100 nT/div)
07 May 2002 (DAY:127)
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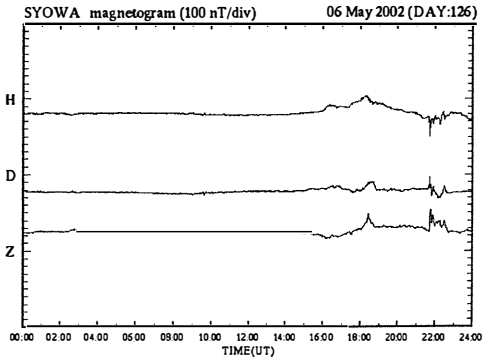
SYOWA magnetogram (100 nT/div)
06 May 2002 (DAY:126)
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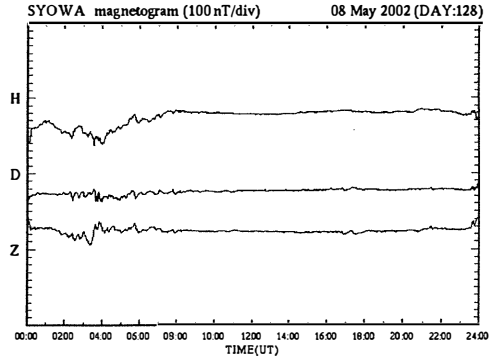
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08 May 2002 (DAY:128)
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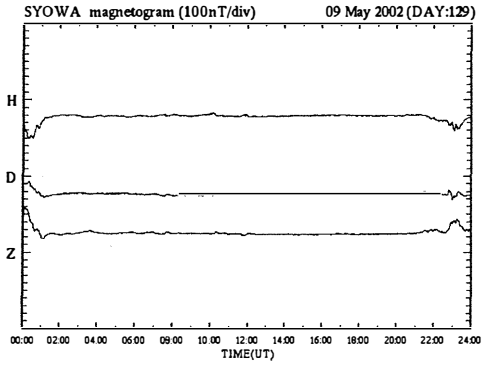
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09 May 2002 (DAY:129)
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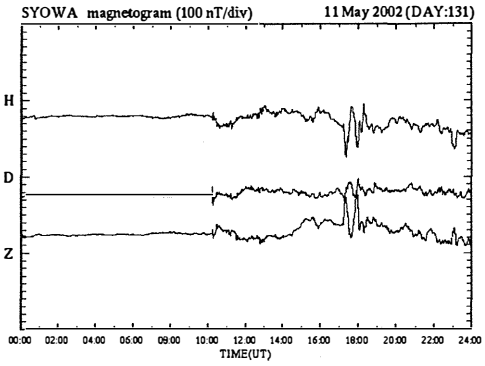
SYOWA magnetogram (100 nT/div)
11 May 2002 (DAY:131)
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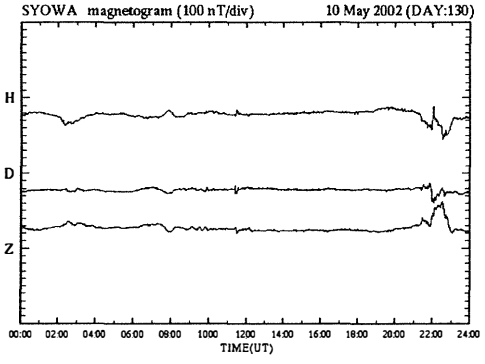
SYOWA magnetogram (100 nT/div)
10 May 2002 (DAY:130)
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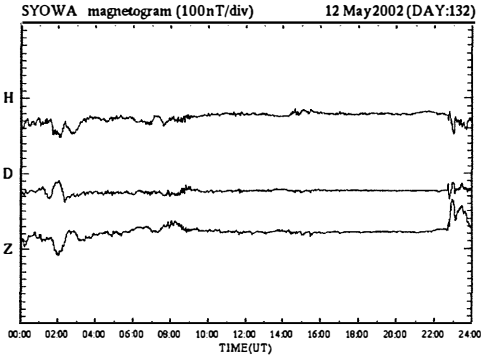
SYOWA magnetogram (100nT/div)
12 May2002 (DAY:132)
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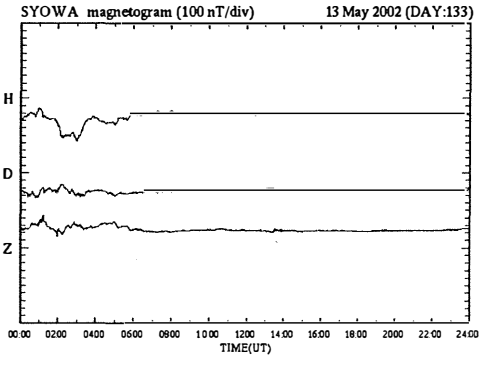
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13 May 2002 (DAY:133)
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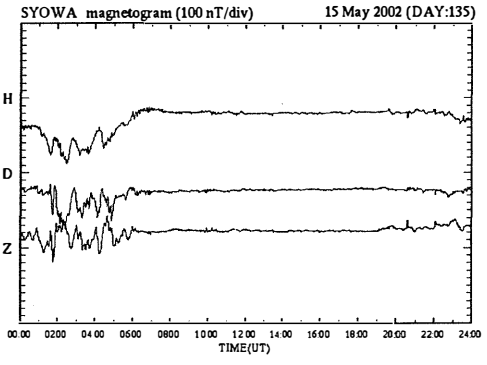
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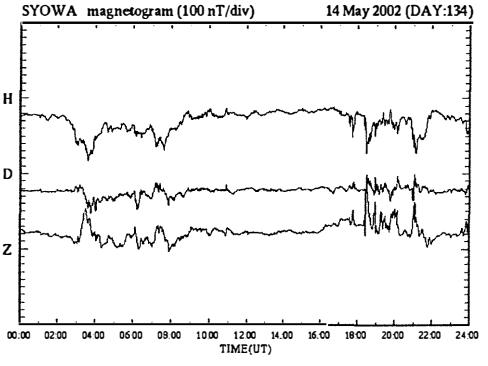
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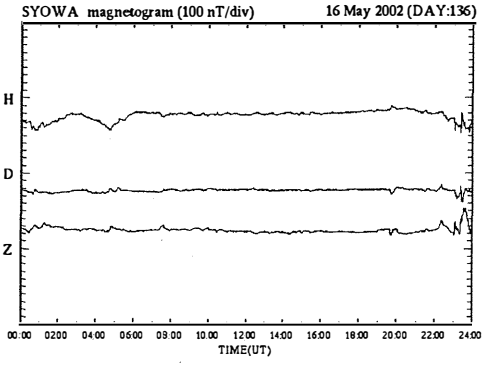
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16 May 2002 (DAY:136)
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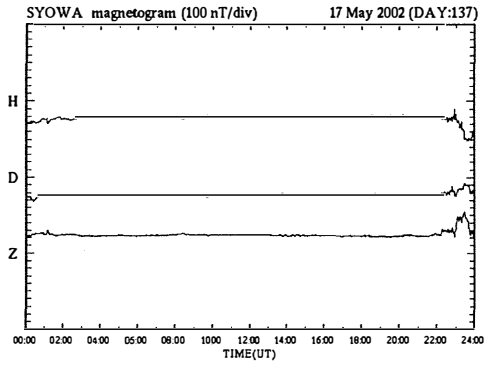
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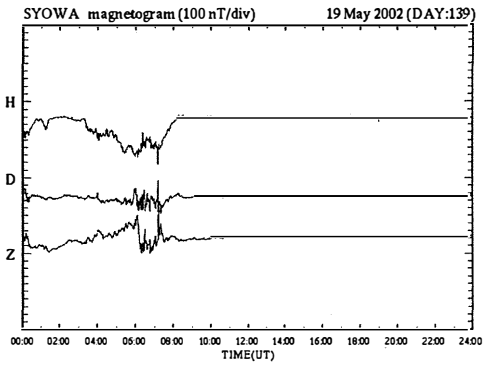
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19 May 2002 (DAY:139)
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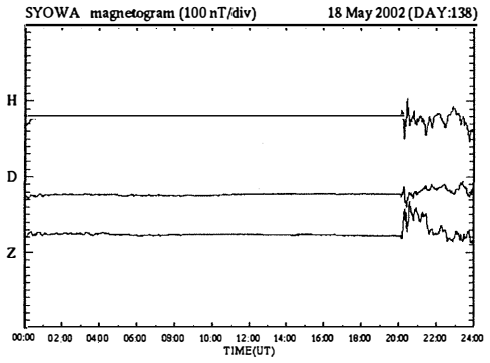
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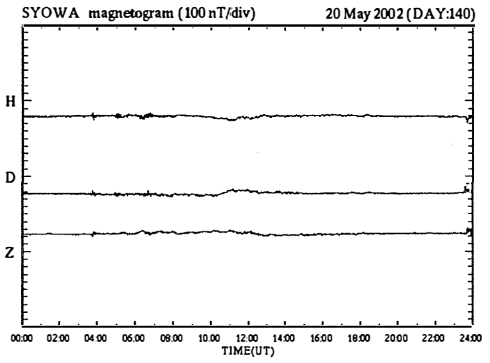
SYOWA magnetogram (100 nT/div)
20 May 2002 (DAY:140)
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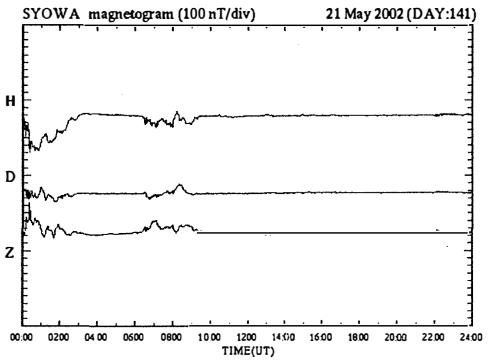
SYOWA magnetogram (100 nT/div)
21 May 2002 (DAY:141)
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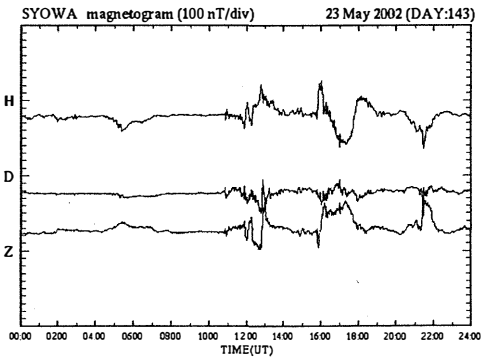
SYOWA magnetogram (100 nT/div)
23 May 2002 (DAY:143)
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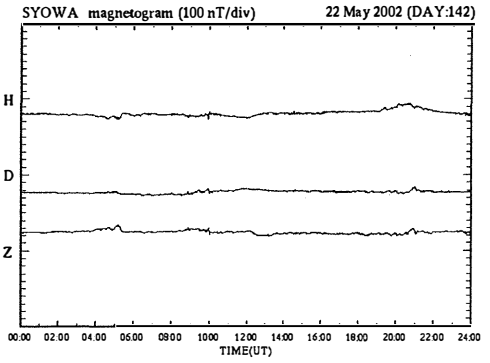
SYOWA magnetogram (100 nT/div)
22 May 2002 (DAY:142)
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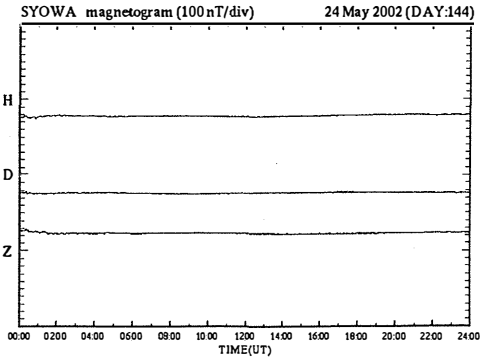
SYOWA magnetogram (100 nT/div)
24 May 2002 (DAY:144)
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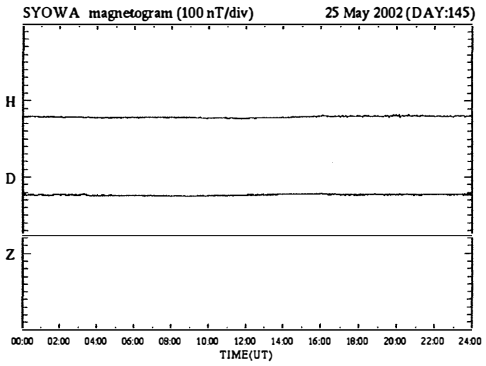
SYOWA magnetogram (100 nT/div)
25 May 2002 (DAY:145)
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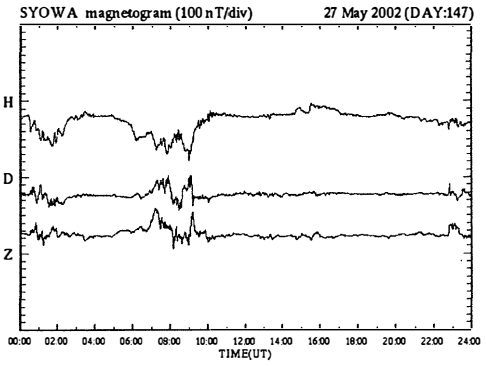
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27 May 2002 (DAY:147)
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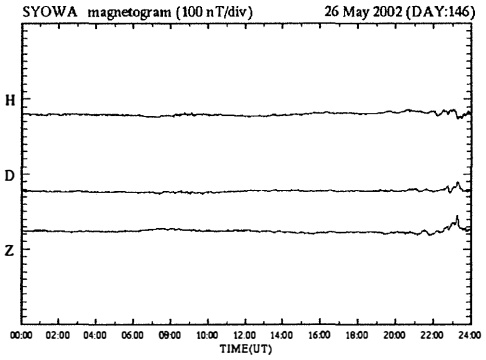
SYOWA magnetogram (100 nT/div)
26 May 2002 (DAY:146)
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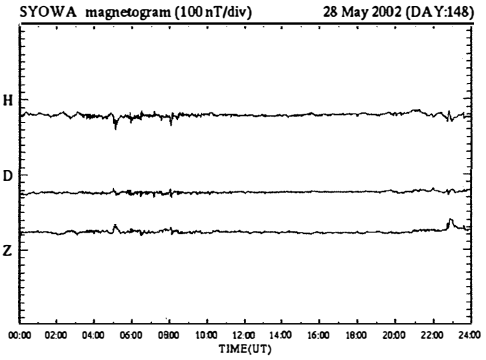
SYOWA magnetogram (100 nT/div)
28 May 2002 (DAY:148)
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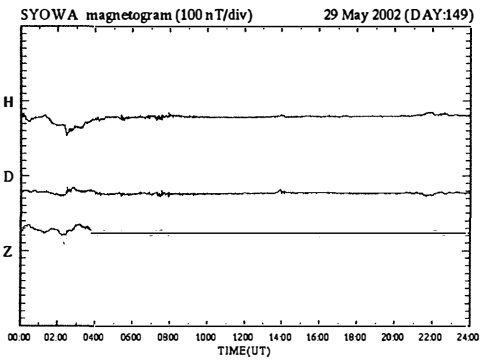
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29 May 2002 (DAY:149)
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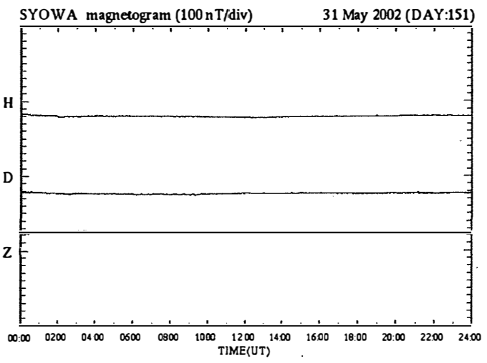
SYOWA magnetogram (100 nT/div)
31 May 2002 (DAY:151)
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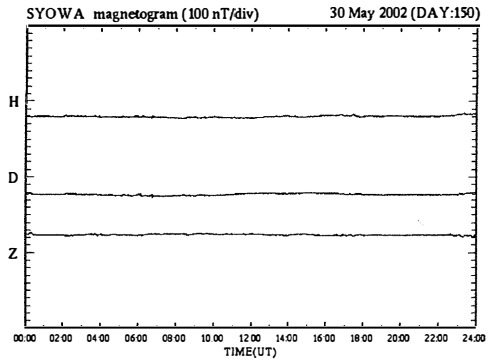
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30 May 2002 (DAY:150)
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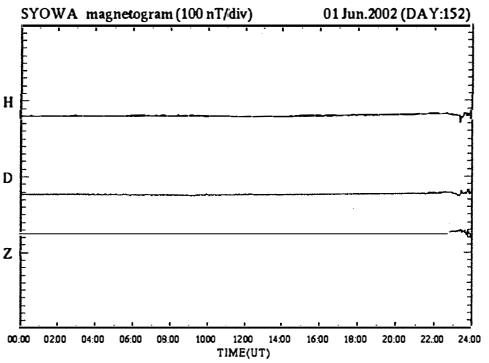
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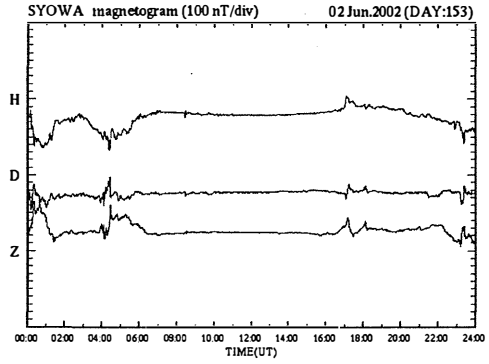
SYOWA magnetogram (100 nT/div)
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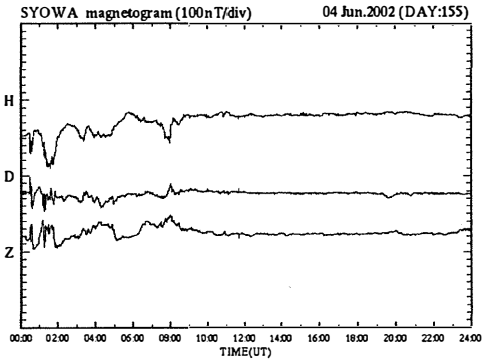
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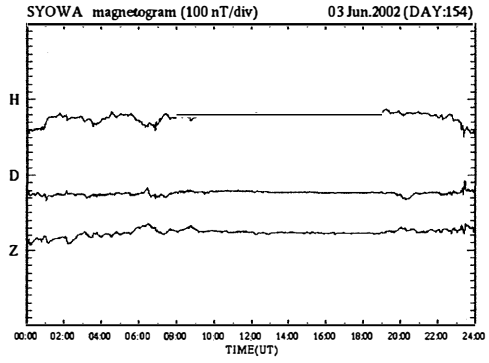
SYOWA magnetogram (100 nT/div)
03 Jun.2002 (DAY:154)
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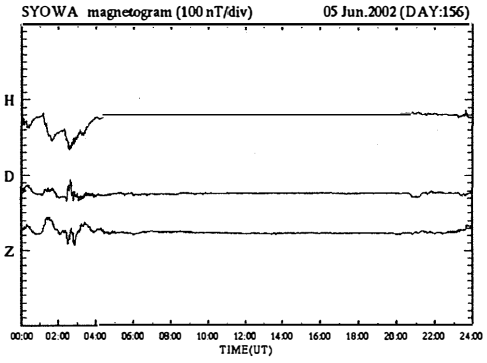
SYOWA magnetogram (100 nT/div)
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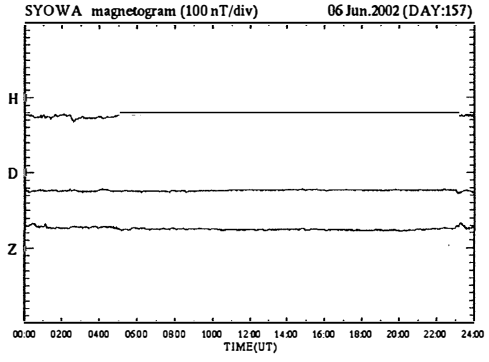
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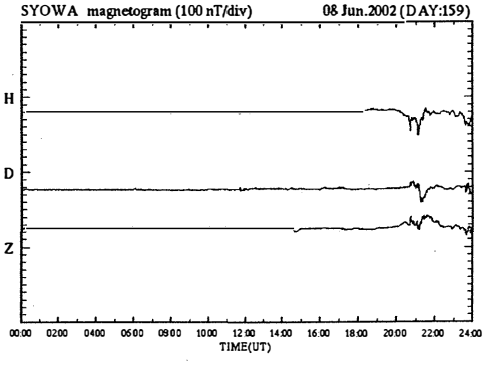
SYOWA magnetogram (100 nT/div)
08 Jun.2002 (DAY:159)
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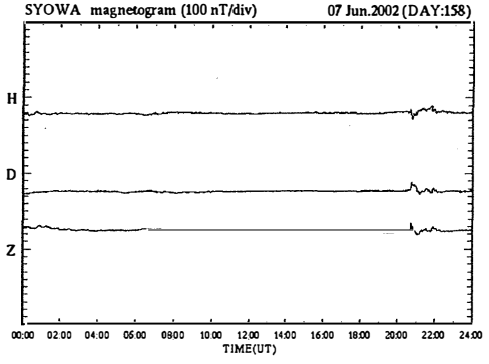
SYOWA magnetogram (100 nT/div)
07 Jun.2002 (DAY:158)
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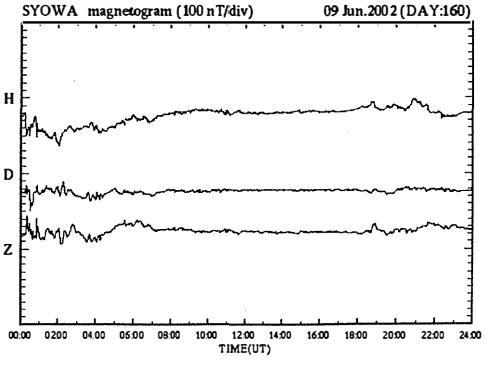
SYOWA magnetogram (100 nT/div)
09 Jun.2002 (DAY:160)
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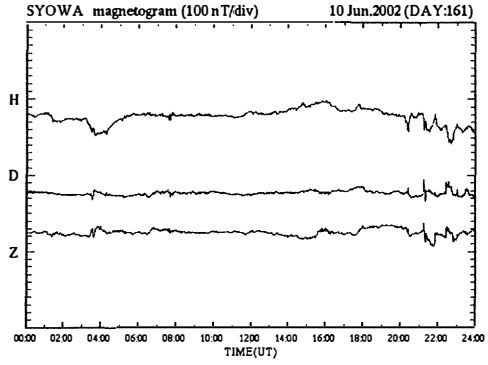
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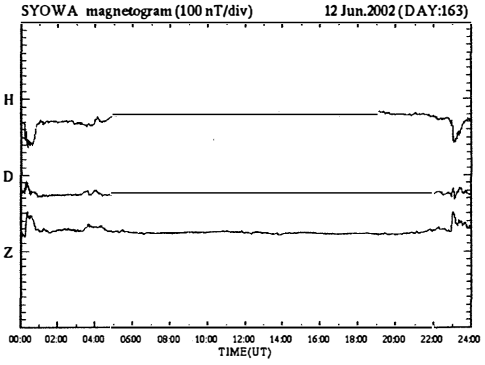
SYOWA magnetogram (100 nT/div)
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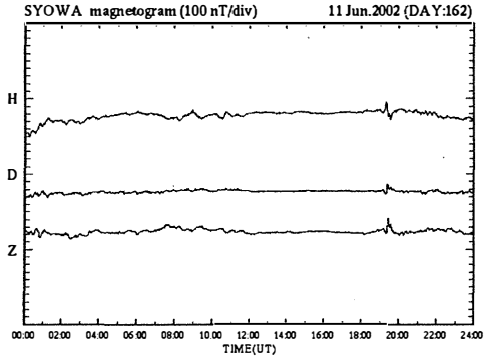
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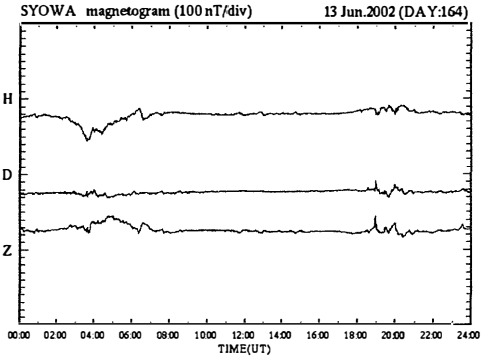
SYOWA magnetogram (100 nT/div)
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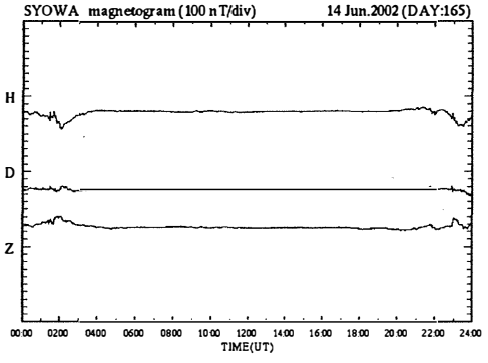
SYOWA magnetogram (100 nT/div)
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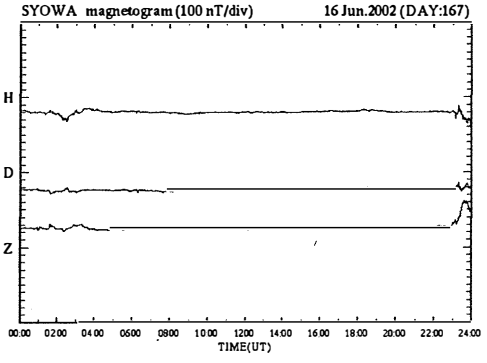
SYOWA magnetogram (100 nT/div)
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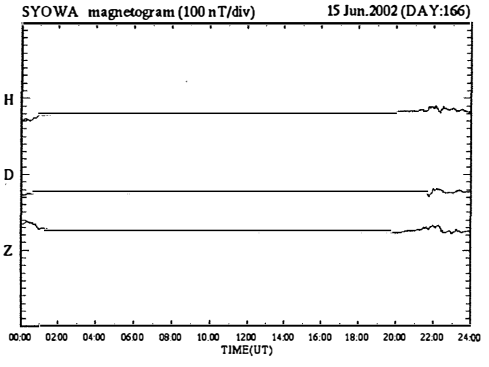
SYOWA magnetogram (100 nT/div)
15 Jun.2002 (DAY:166)
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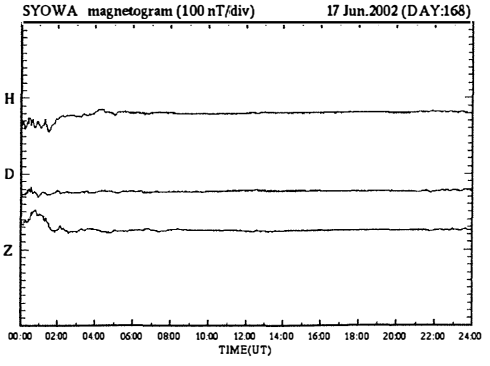
SYOWA magnetogram (100 nT/div)
17 Jun.2002 (DAY:168)
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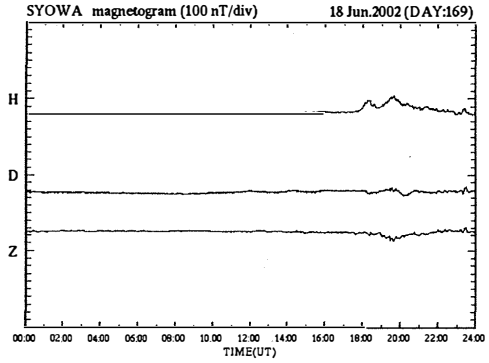
SYOWA magnetogram (100 nT/div)
18 Jun.2002 (DAY:169)
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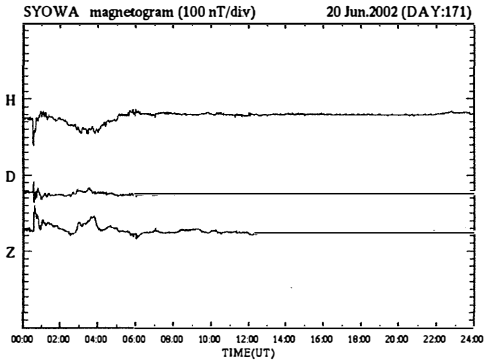
SYOWA magnetogram (100 nT/div)
20 Jun.2002 (DAY:171)
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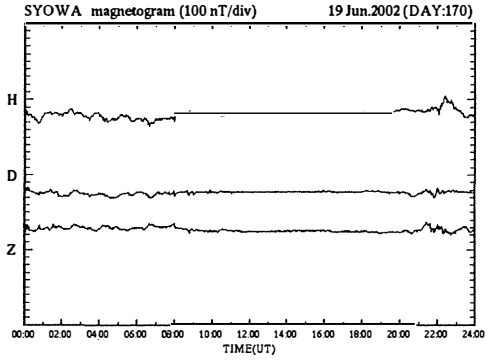
SYOWA magnetogram (100 nT/div)
19 Jun.2002 (DAY:170)
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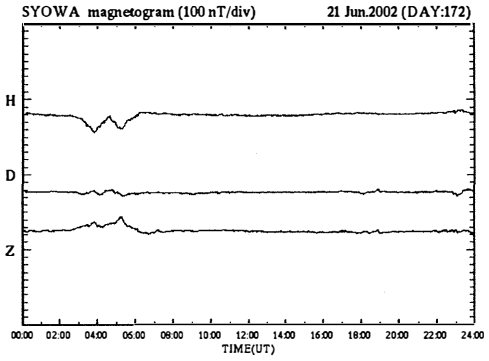
SYOWA magnetogram (100 nT/div)
21 Jun.2002 (DAY:172)
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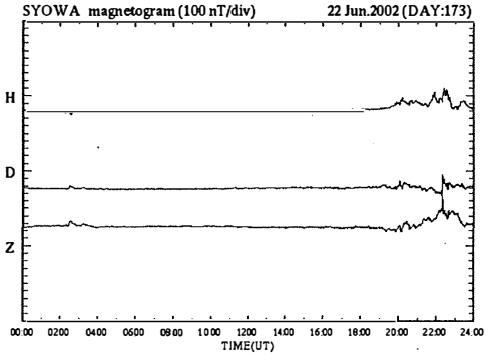
SYOWA magnetogram (100 nT/div)
22 Jun.2002 (DAY:173)
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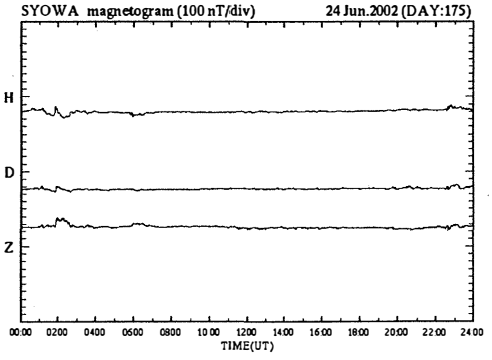
SYOWA magnetogram (100 nT/div)
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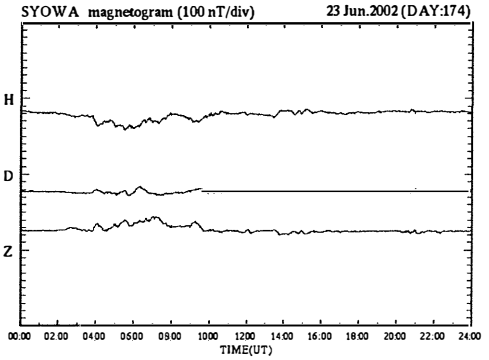
SYOWA magnetogram (100 nT/div)
23 Jun.2002 (DAY:174)
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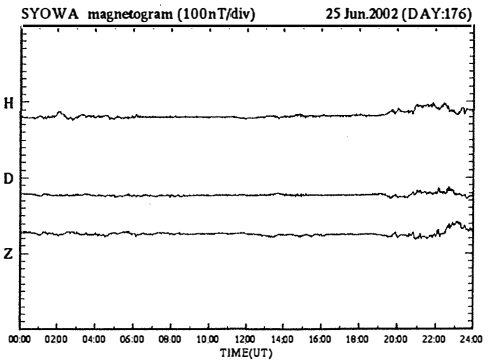
SYOWA magnetogram (100 nT/div)
25 Jun.2002 (DAY:176)
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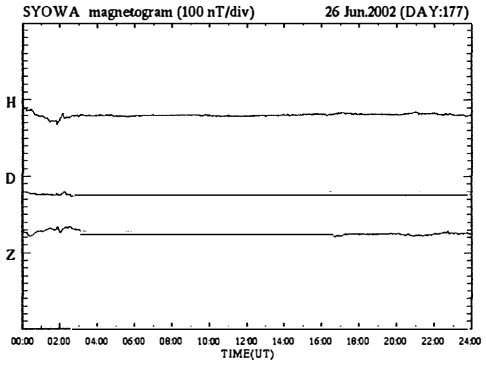
SYOWA magnetogram (100 nT/div)
26 Jun.2002 (DAY:177)
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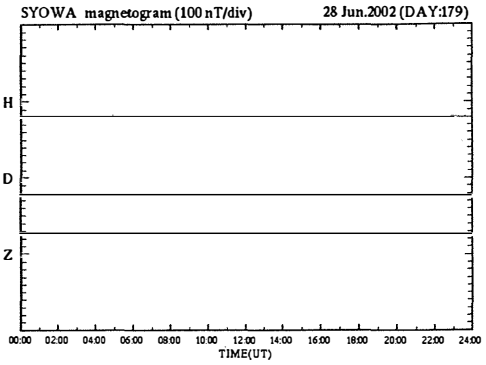
SYOWA magnetogram (100 nT/div)
28 Jun.2002 (DAY:179)
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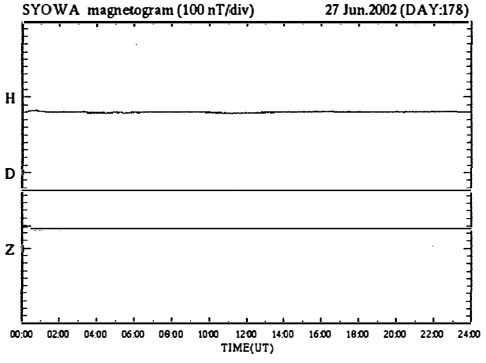
SYOWA magnetogram (100 nT/div)
27 Jun.2002 (DAY:178)
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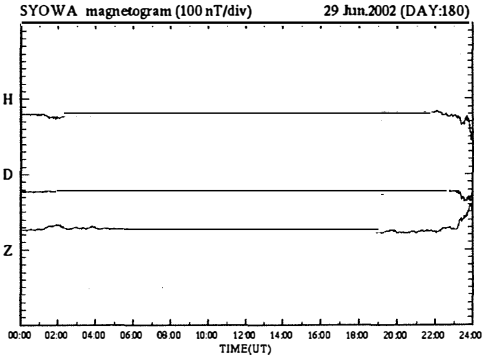
SYOWA magnetogram (100 nT/div)
29 Jun.2002 (DAY:180)
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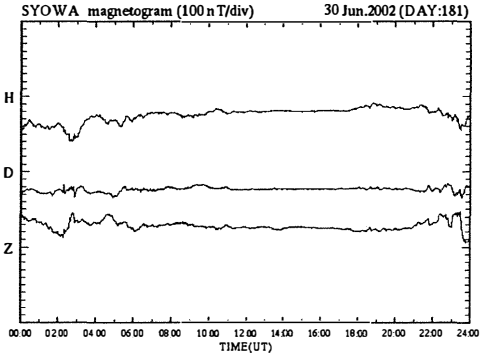
SYOWA magnetogram (100 nT/div)
30 Jun.2002 (DAY:181)
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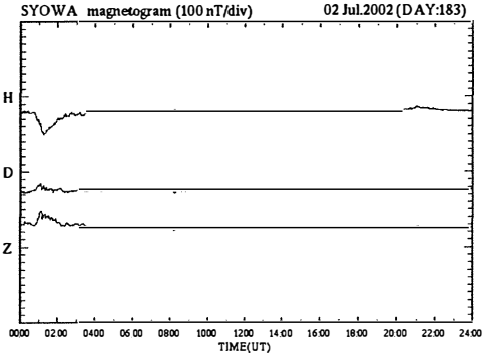
SYOWA magnetogram (100 nT/div)
02 Jul.2002 (DAY:183)
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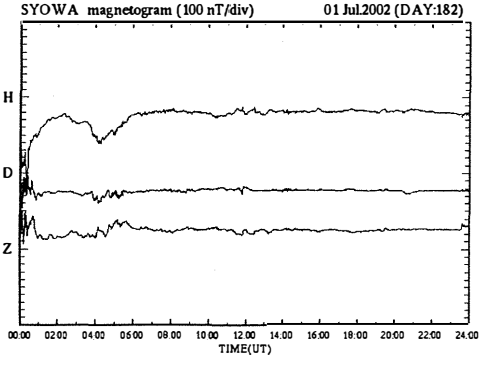
SYOWA magnetogram (100 nT/div)
01 Jul.2002 (DAY:182)
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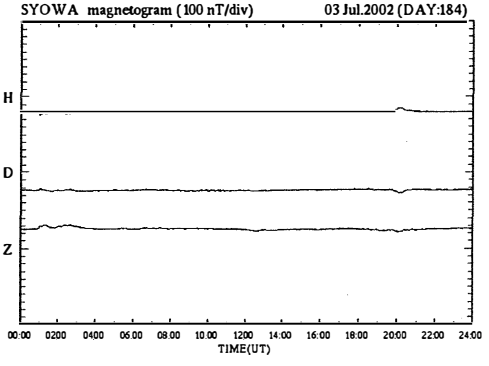
SYOWA magnetogram (100 nT/div)
03 Jul.2002 (DAY:184)
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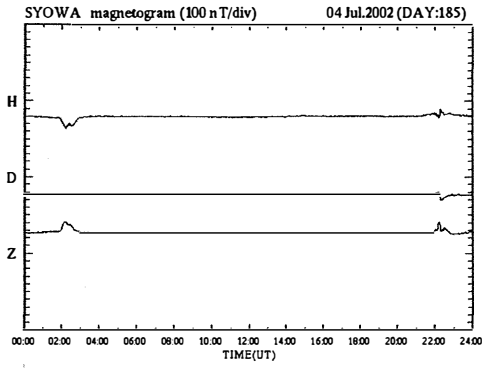
SYOWA magnetogram (100 nT/div)
04 Jul.2002 (DAY:185)
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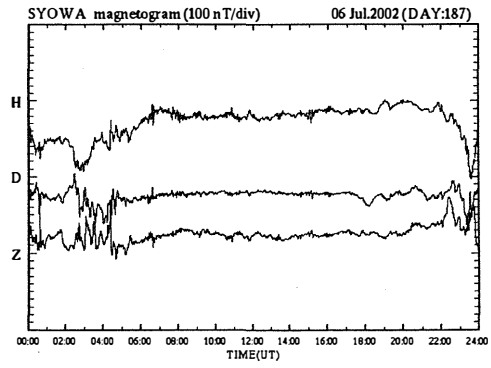
SYOWA magnetogram (100 nT/div)
06 Jul.2002 (DAY:187)
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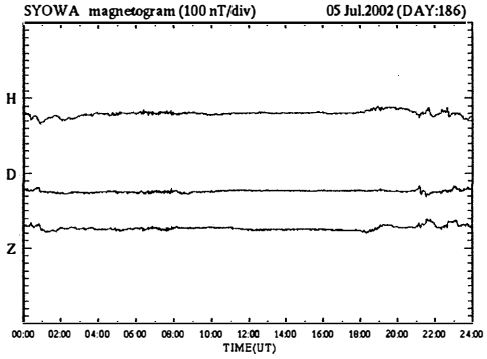
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05 Jul.2002 (DAY:186)
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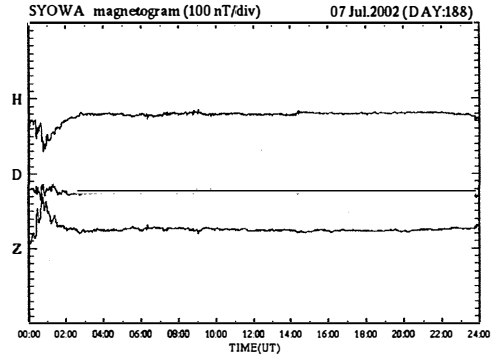
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07 Jul.2002 (DAY:188)
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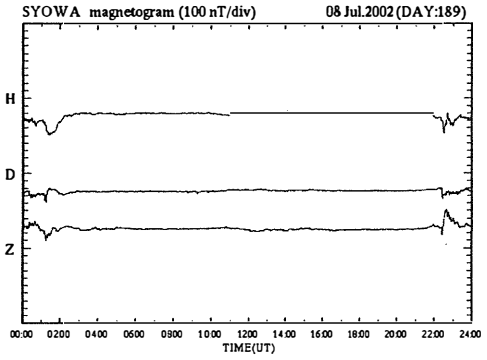
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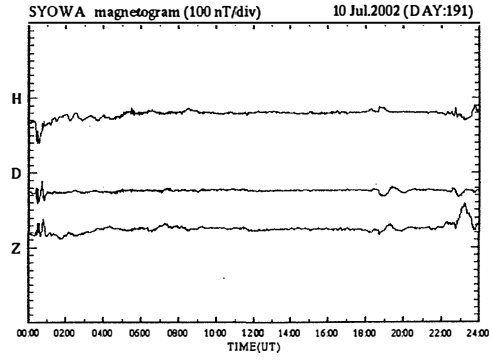
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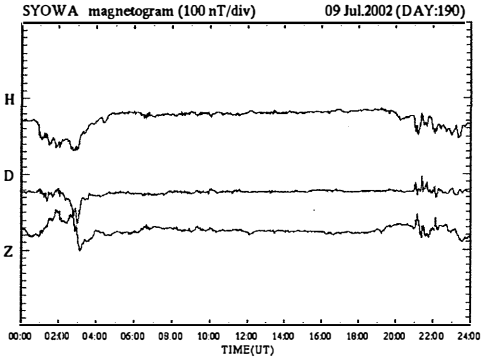
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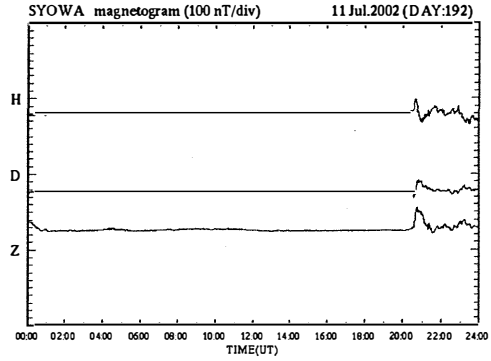
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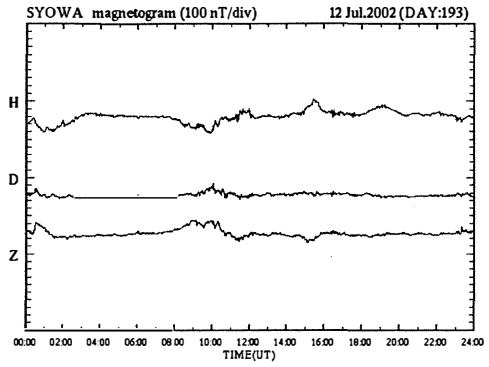
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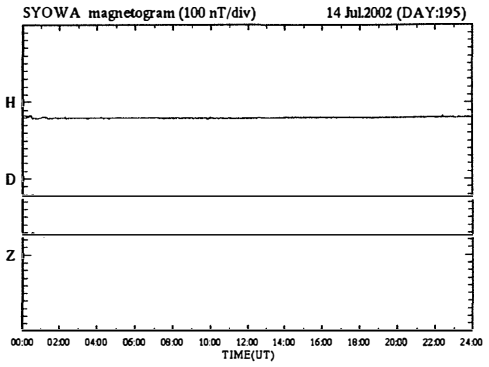
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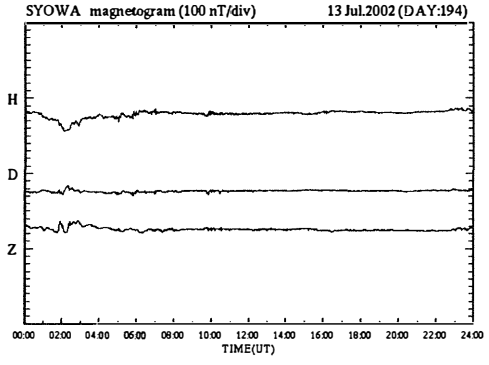
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13 Jul.2002 (DAY:194)
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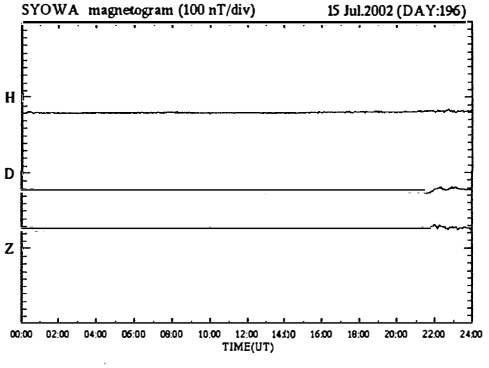
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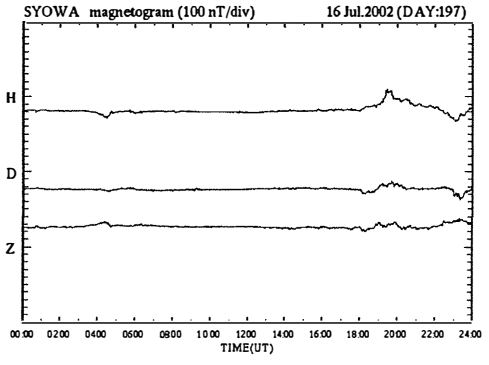
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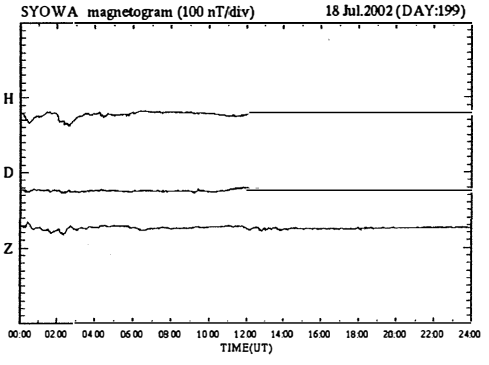
SYOWA magnetogram (100 nT/div)
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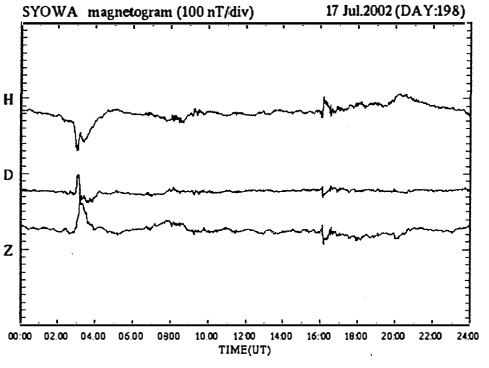
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17 Jul.2002 (DAY:198)
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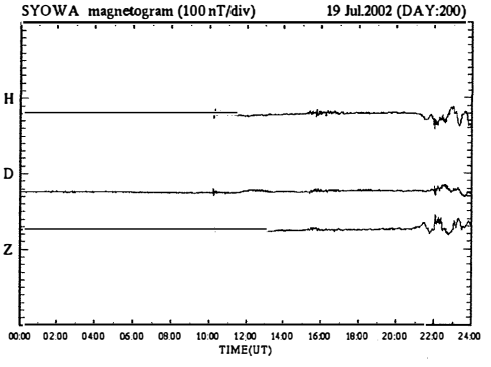
SYOWA magnetogram (100 nT/div)
19 Jul.2002 (DAY:200)
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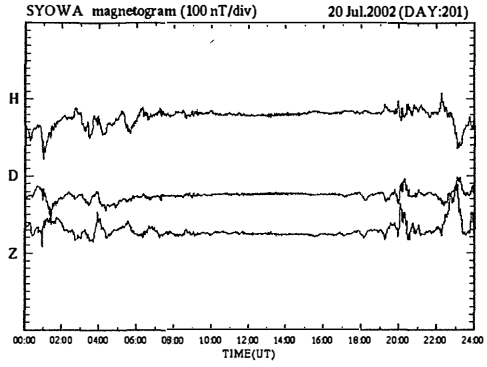
SYOWA magnetogram (100 nT/div)
20 Jul.2002 (DAY:201)
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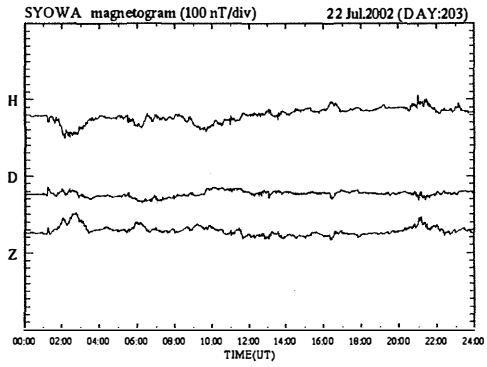
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22 Jul.2002 (DAY:203)
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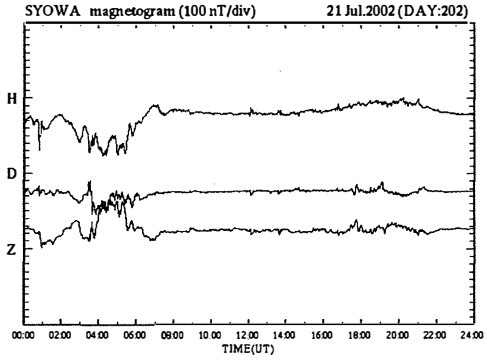
SYOWA magnetogram (100 nT/div)
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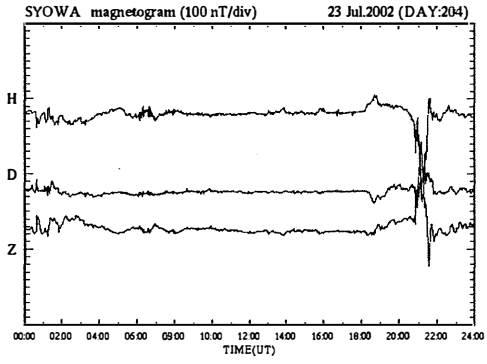
SYOWA magnetogram (100 nT/div)
23 Jul.2002 (DAY:204)
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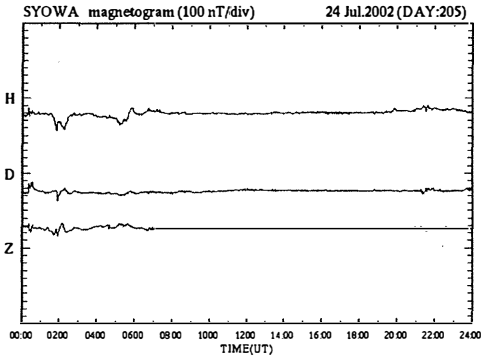
SYOWA magnetogram (100 nT/div)
24 Jul.2002 (DAY:205)
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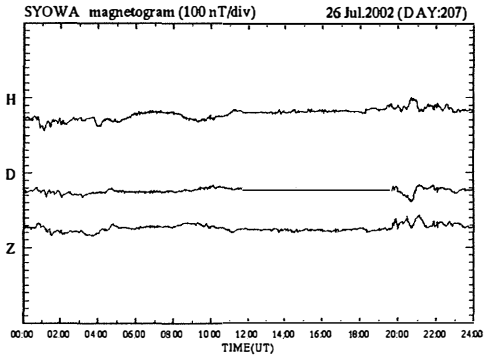
SYOWA magnetogram (100 nT/div)
26 Jul.2002 (DAY:207)
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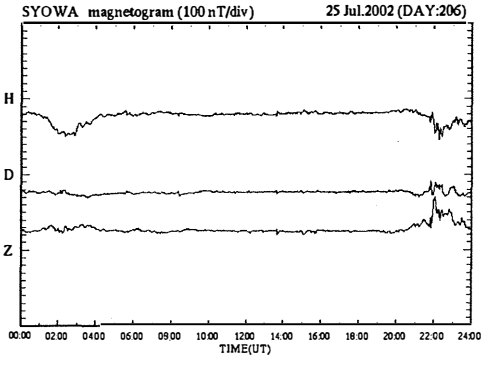
SYOWA magnetogram (100 nT/div)
25 Jul.2002 (DAY:206)
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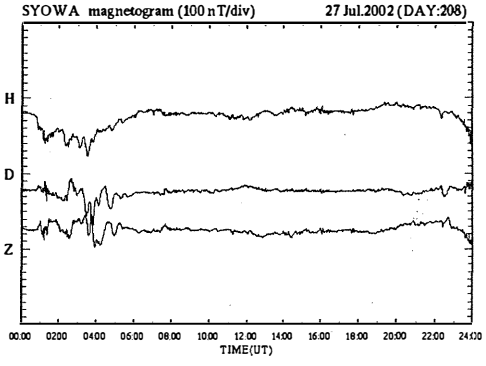
SYOWA magnetogram (100 nT/div)
27 Jul.2002 (DAY:208)
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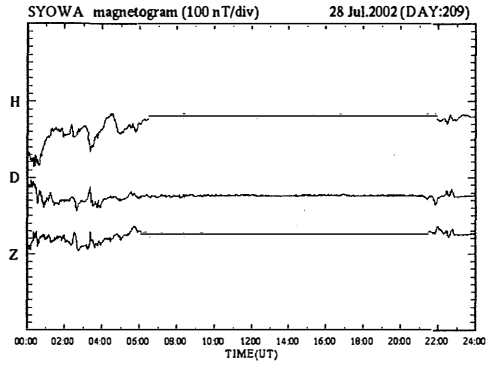
SYOWA magnetogram (100 nT/div)
28 Jul.2002 (DAY:209)
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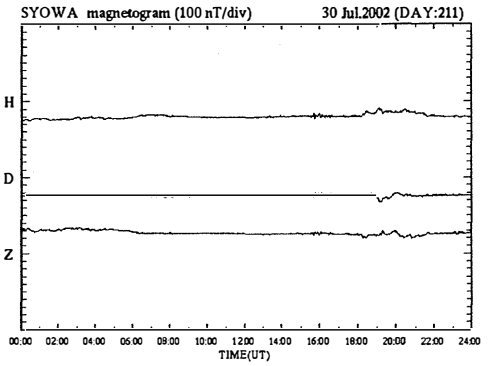
SYOWA magnetogram (100 nT/div)
30 Jul.2002 (DAY:211)
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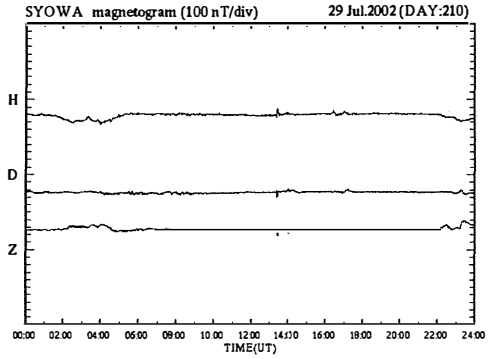
SYOWA magnetogram (100 nT/div)
29 Jul.2002 (DAY:210)
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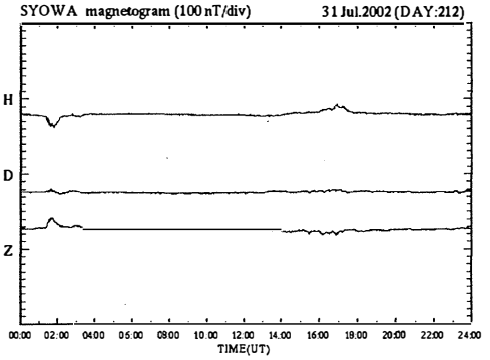
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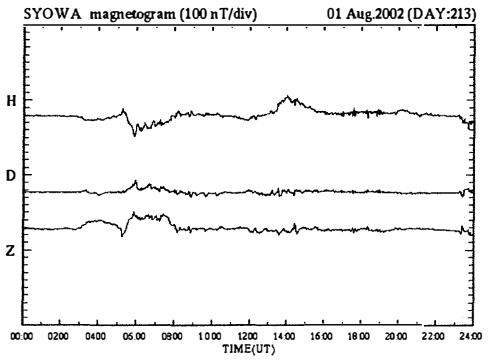
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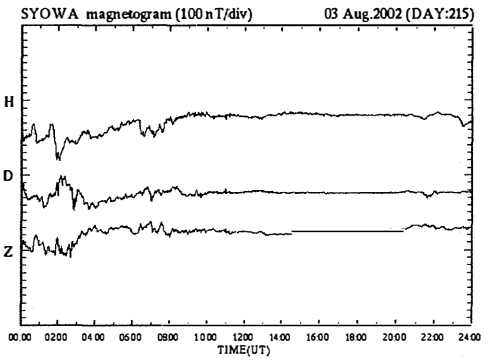
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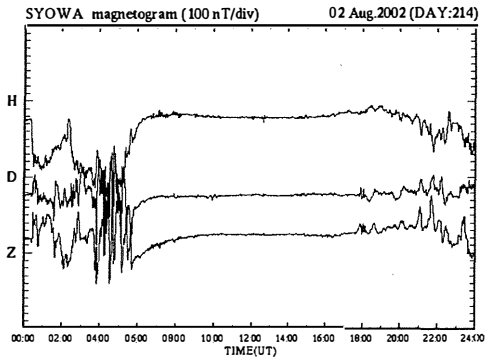
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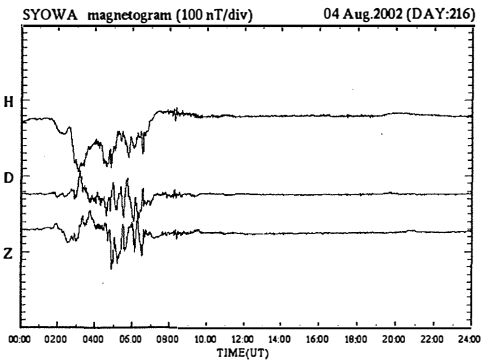
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04 Aug.2002 (DAY:216)
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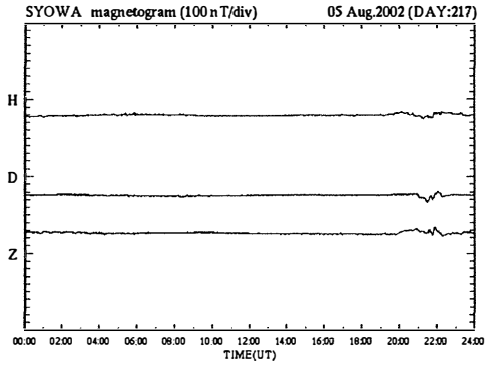
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05 Aug.2002 (DAY:217)
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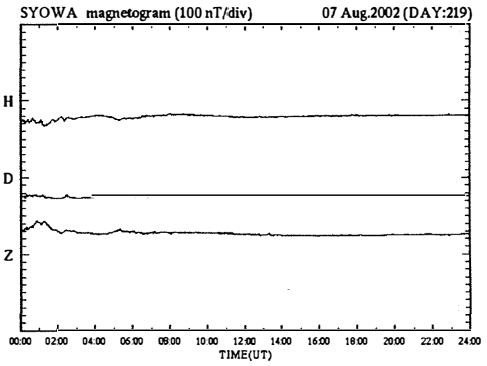
SYOWA magnetogram (100 nT/div)
07 Aug.2002 (DAY:219)
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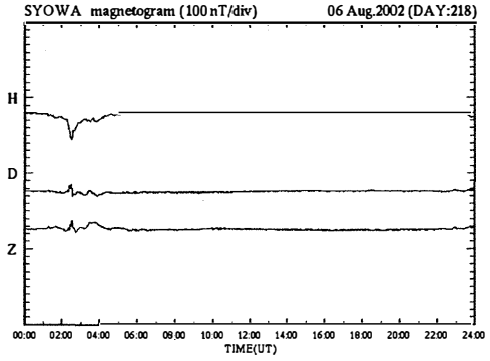
SYOWA magnetogram (100 nT/div)
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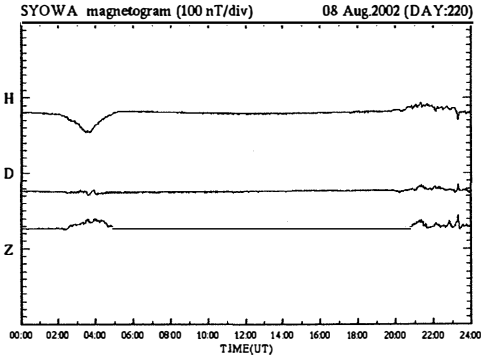
SYOWA magnetogram (100 nT/div)
08 Aug.2002 (DAY:220)
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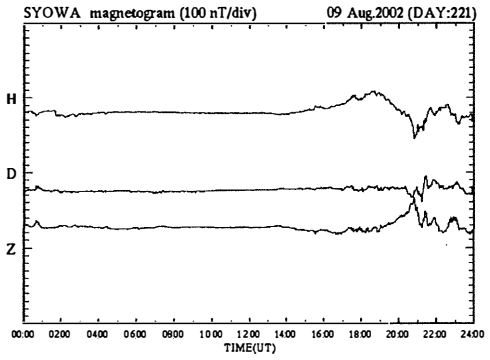
SYOWA magnetogram (100 nT/div)
09 Aug.2002 (DAY:221)
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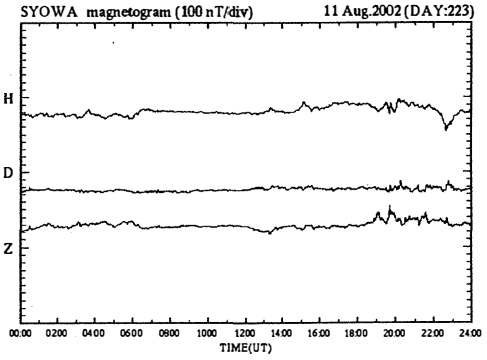
TIME(UT)


SYOWA magnetogram (100 nT/div)
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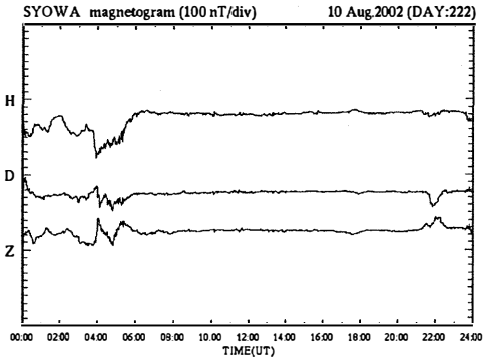
TIME(UT)


SYOWA magnetogram (100 nT/div)
10 Aug.2002 (DAY:222)
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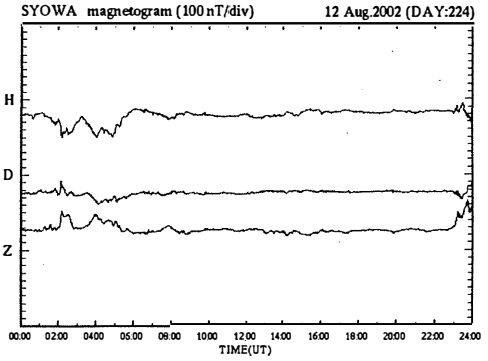
SYOWA magnetogram (100 nT/div)
12 Aug.2002 (DAY:224)
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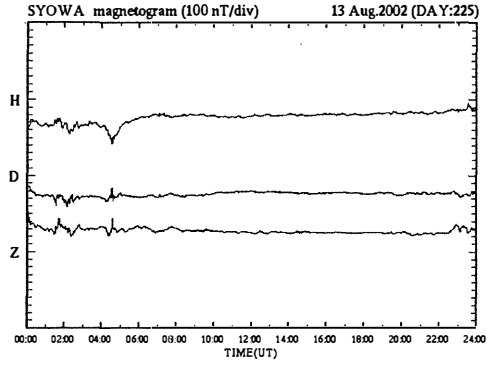
SYOWA magnetogram (100 nT/div)
13 Aug.2002 (DAY:225)
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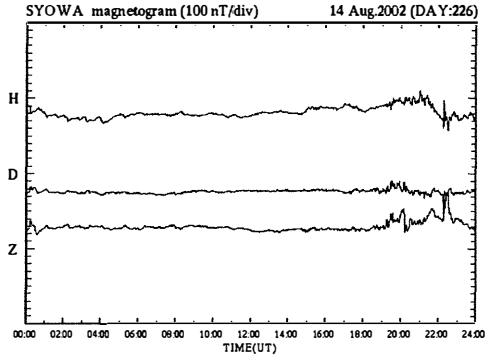
SYOWA magnetogram (100 nT/div)
14 Aug.2002 (DAY:226)
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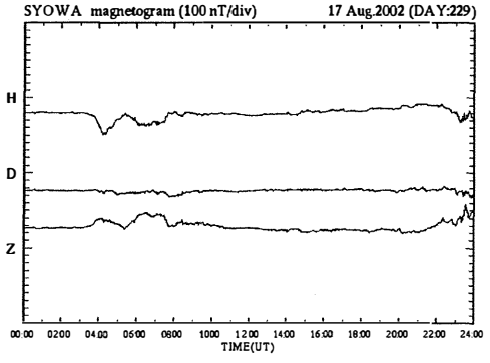
SYOWA magnetogram (100 nT/div)
17 Aug.2002 (DAY:229)
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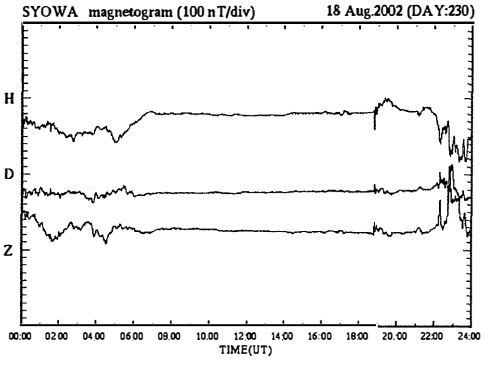
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18 Aug.2002 (DAY:230)
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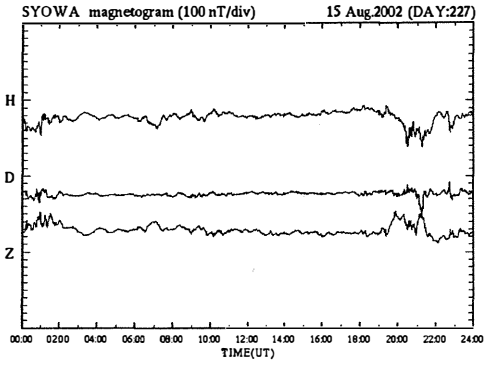
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15 Aug.2002 (DAY:227)
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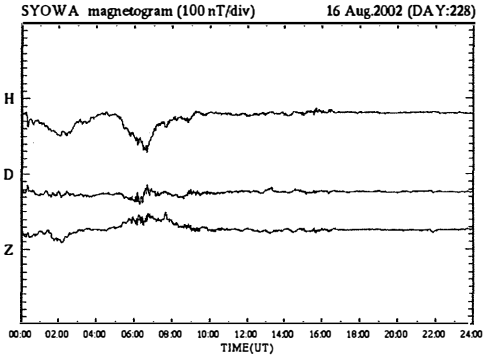
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16 Aug.2002 (DAY:228)
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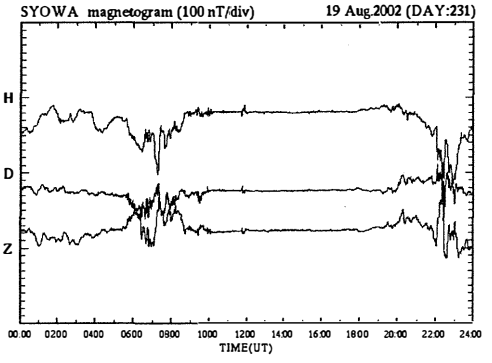
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19 Aug.2002 (DAY:231)
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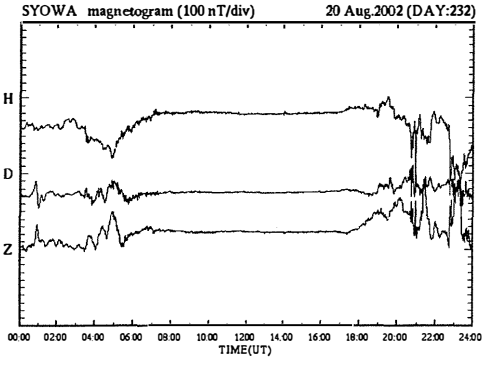
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20 Aug.2002 (DAY:232)
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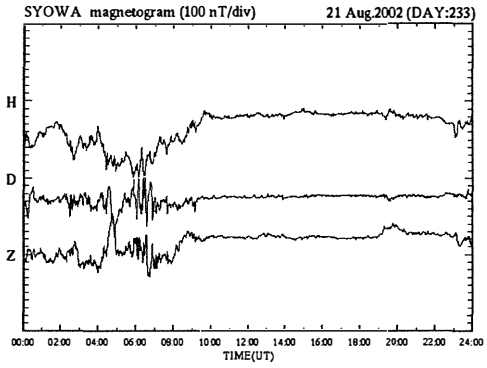
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21 Aug.2002 (DAY:233)
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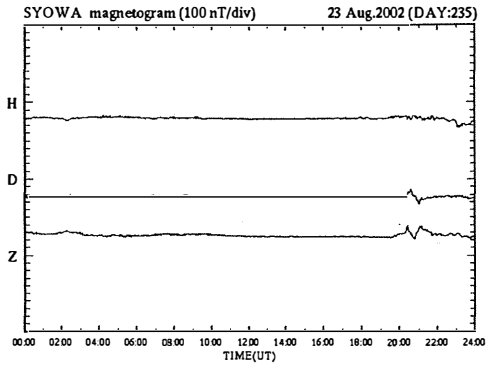
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23 Aug.2002 (DAY:235)
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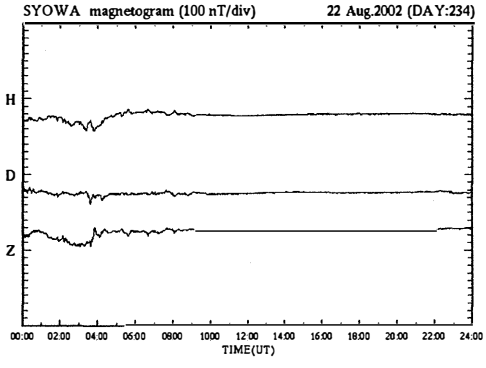
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22 Aug.2002 (DAY:234)
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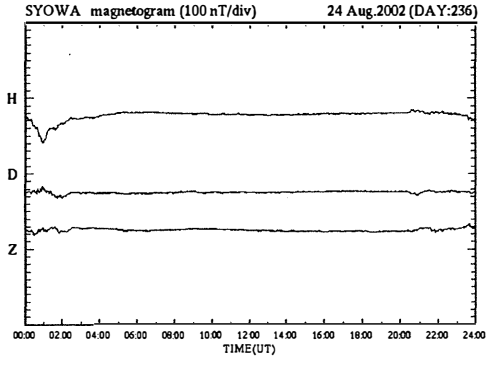
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24 Aug.2002 (DAY:236)
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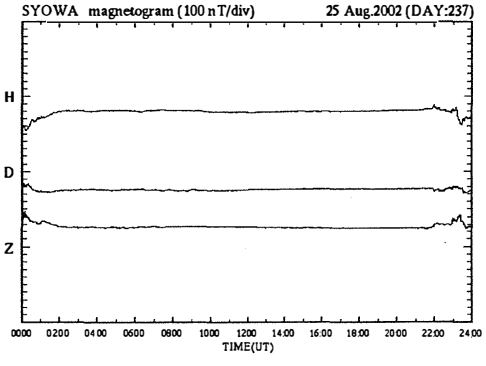
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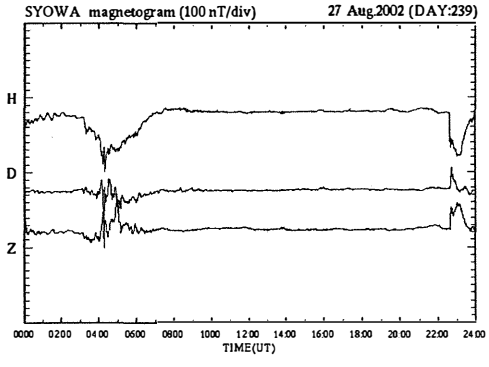
TIME(UT)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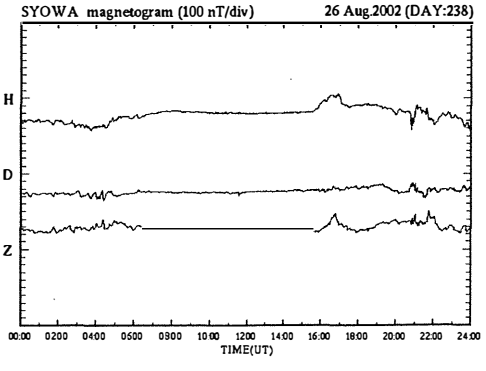
TIME(UT)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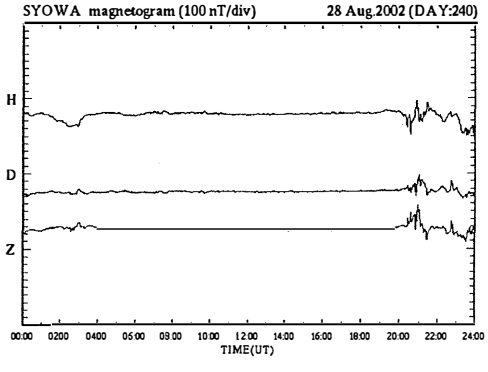
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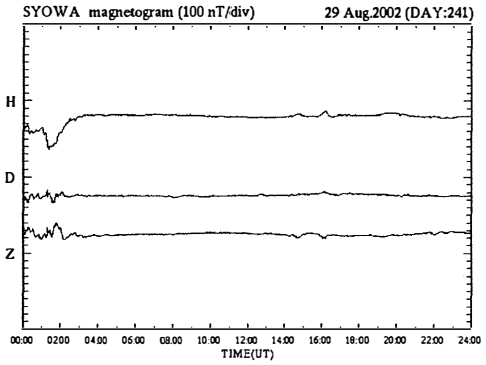
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29 Aug.2002 (DAY:241)
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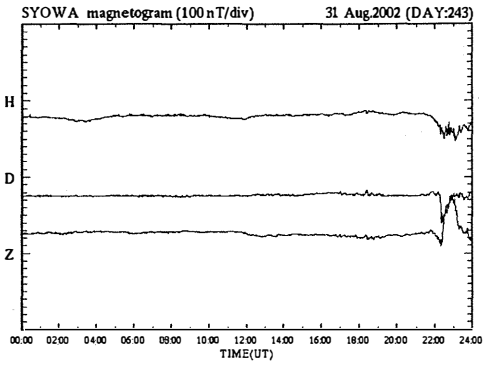
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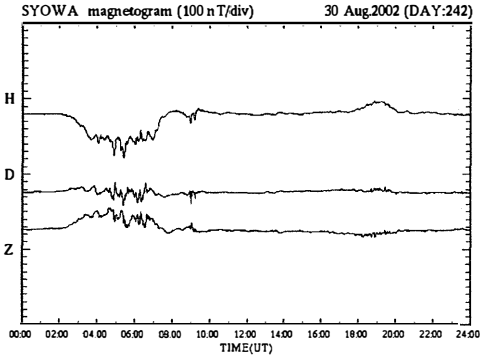
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30 Aug.2002 (DAY:242)
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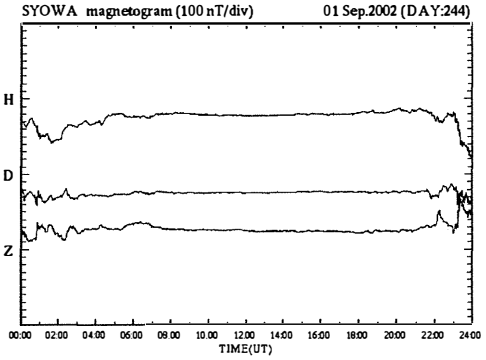
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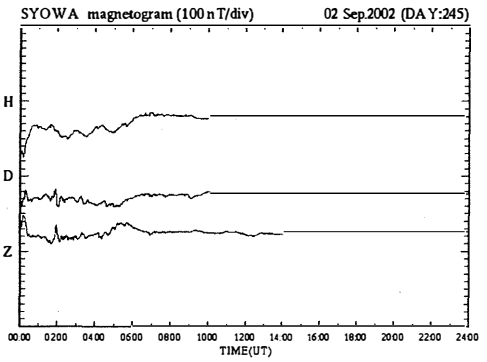
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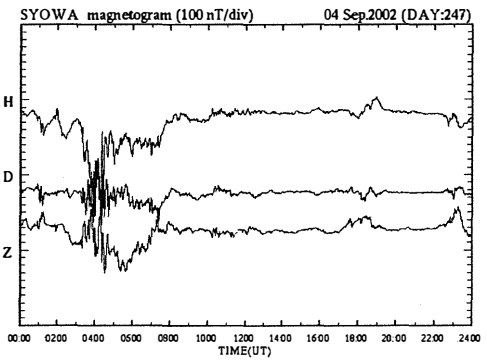
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04 Sep.2002 (DAY:247)
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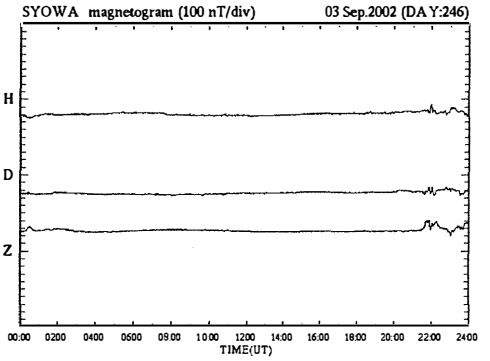
SYOWA magnetogram (100 nT/div)
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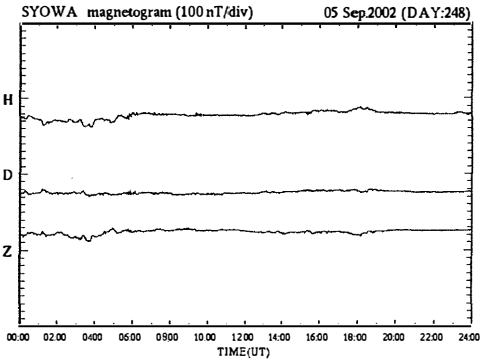
SYOWA magnetogram (100 nT/div)
05 Sep.2002 (DAY:248)
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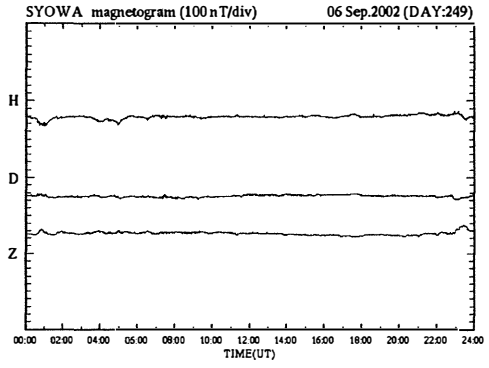
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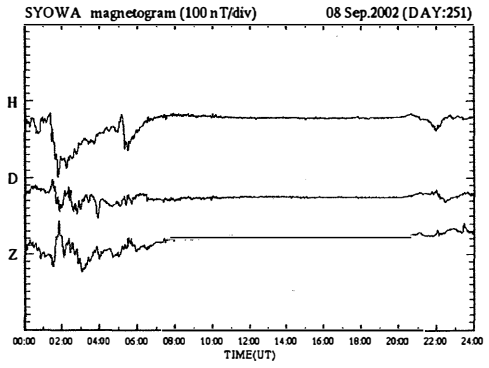
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08 Sep.2002 (DAY:251)
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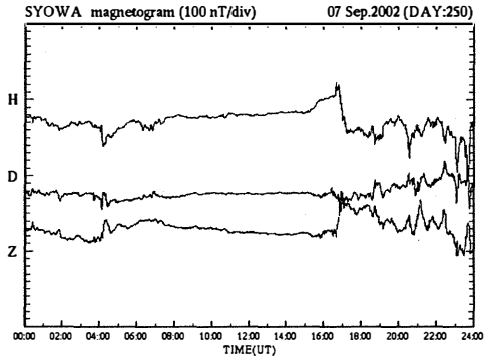
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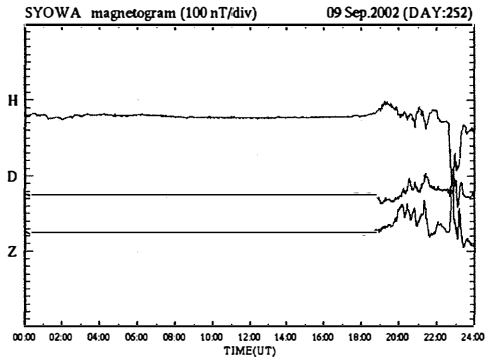
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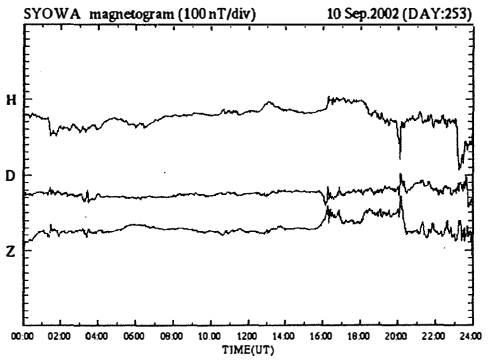
SYOWA magnetogram (100 nT/div)
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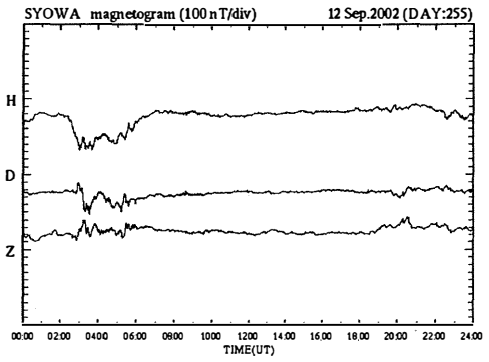
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12 Sep.2002 (DAY:255)
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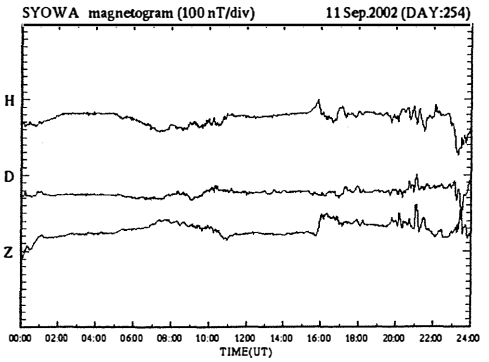
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11 Sep.2002 (DAY:254)
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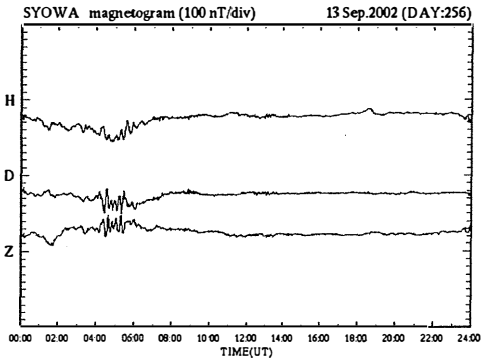
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13 Sep.2002 (DAY:256)
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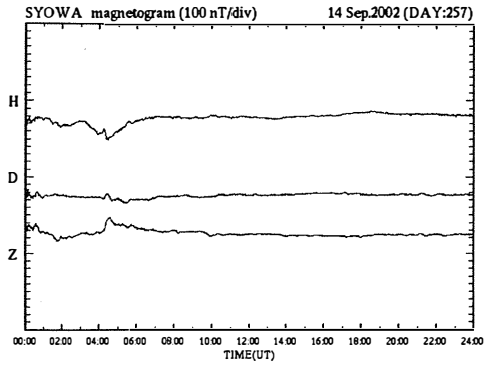
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14 Sep.2002 (DAY:257)
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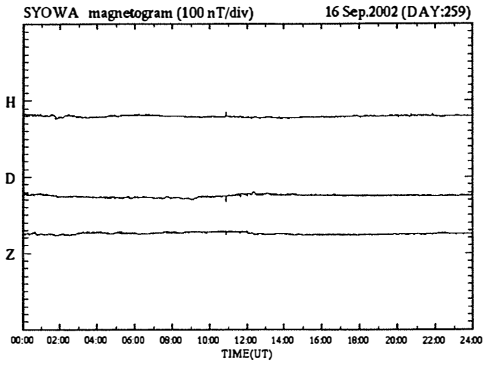
TIME(UT)


SYOWA magnetogram (100 nT/div)
16 Sep.2002 (DAY:259)
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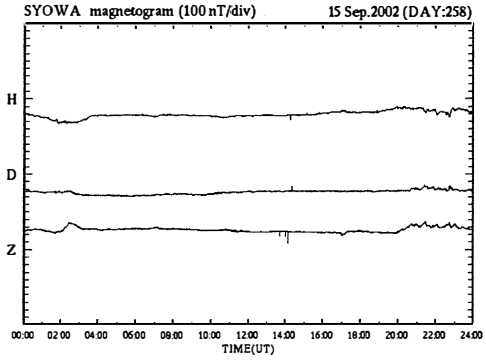
SYOWA magnetogram (100 nT/div)
15 Sep.2002 (DAY:258)
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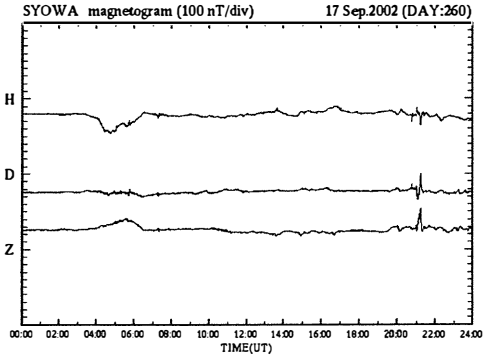
SYOWA magnetogram (100 nT/div)
17 Sep.2002 (DAY:260)
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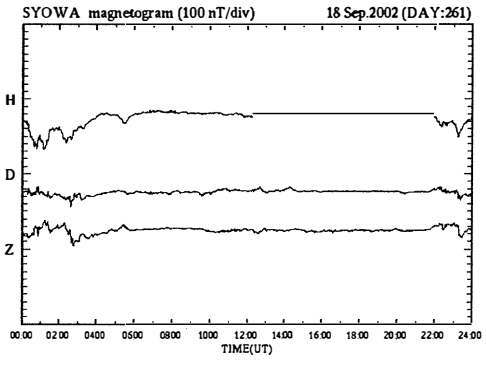
SYOWA magnetogram (100 nT/div)
18 Sep.2002 (DAY:261)
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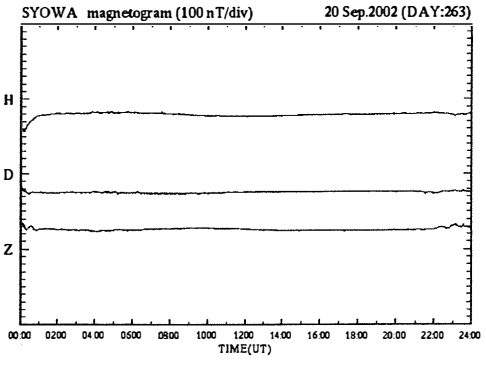
TIME(UT)


SYOWA magnetogram (100 nT/div)
20 Sep.2002 (DAY:263)
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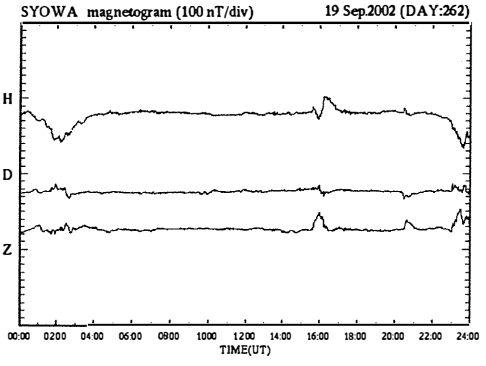
SYOWA magnetogram (100 nT/div)
19 Sep.2002 (DAY:262)
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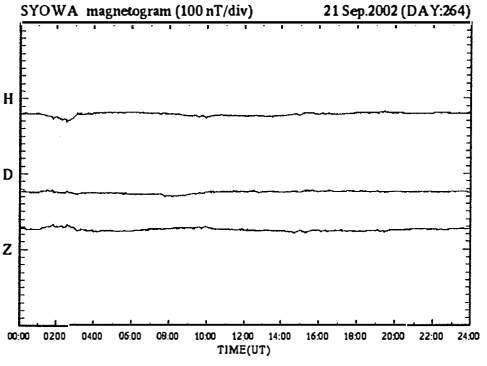
SYOWA magnetogram (100 nT/div)
21 Sep.2002 (DAY:264)
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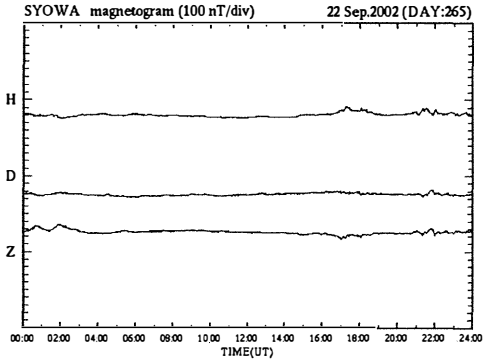
TIME(UT)


SYOWA magnetogram (100 nT/div)
22 Sep.2002 (DAY:265)
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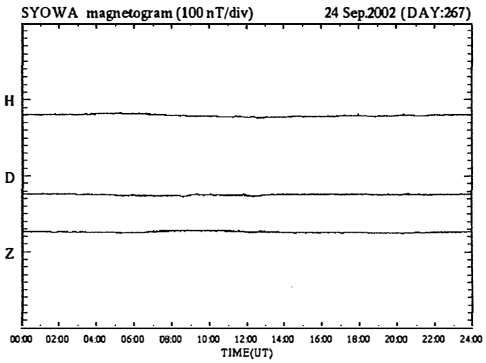
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24 Sep.2002 (DAY:267)
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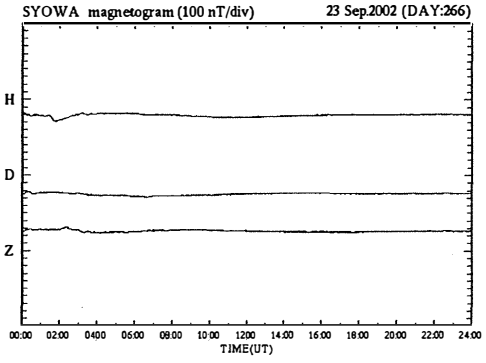
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23 Sep.2002 (DAY:266)
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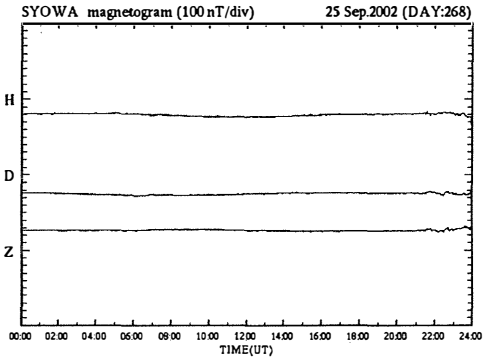
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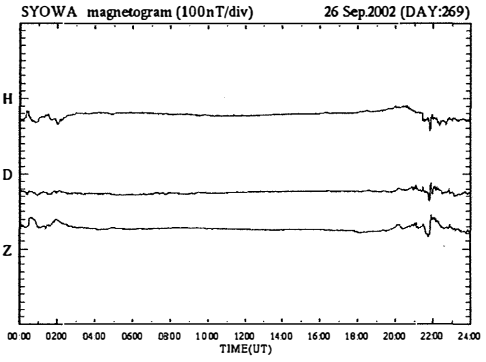
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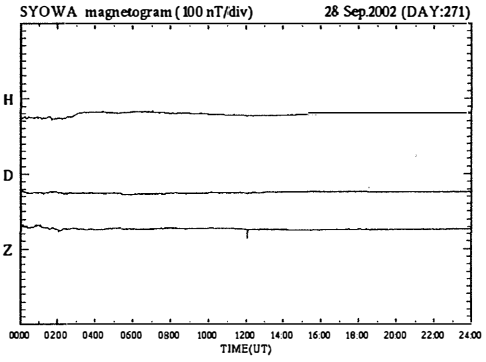
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28 Sep.2002 (DAY:271)
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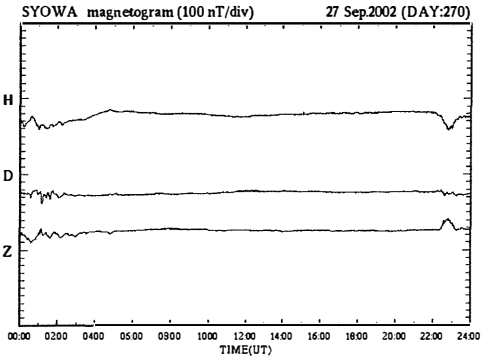
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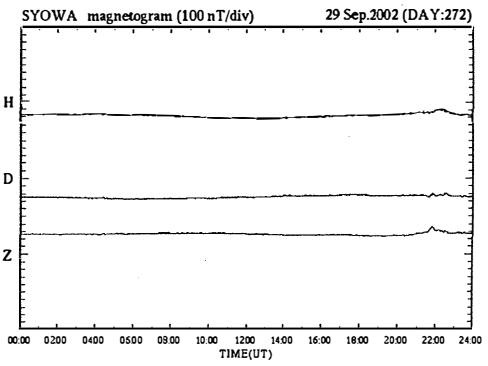
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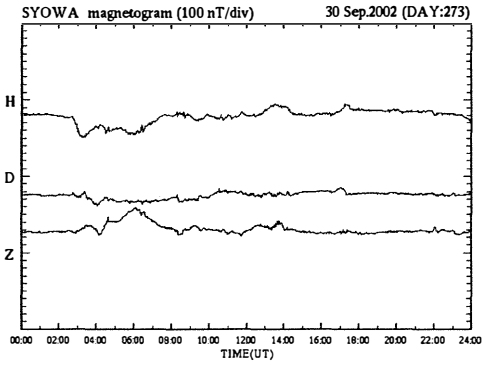
SYOWA magnetogram (100 nT/div)
30 Sep.2002 (DAY:273)
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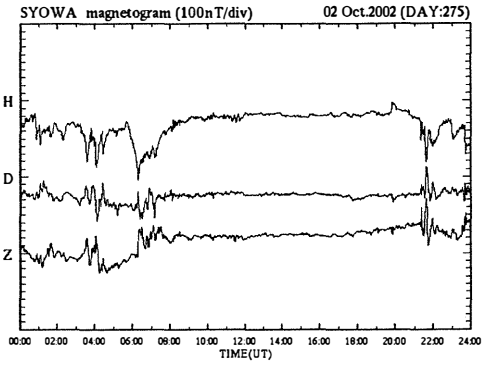
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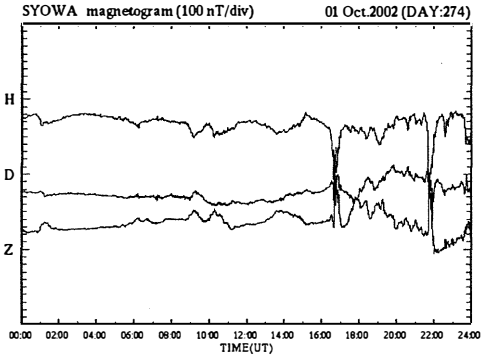
SYOWA magnetogram (100 nT/div)
01 Oct.2002 (DAY:274)
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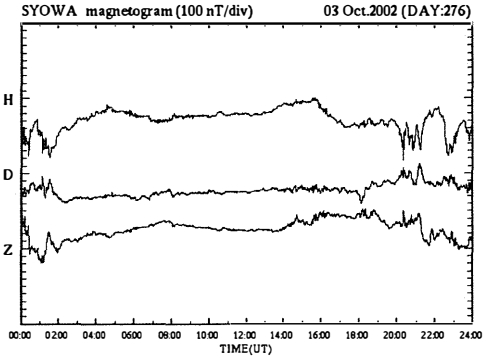
SYOWA magnetogram (100 nT/div)
03 Oct.2002 (DAY:276)
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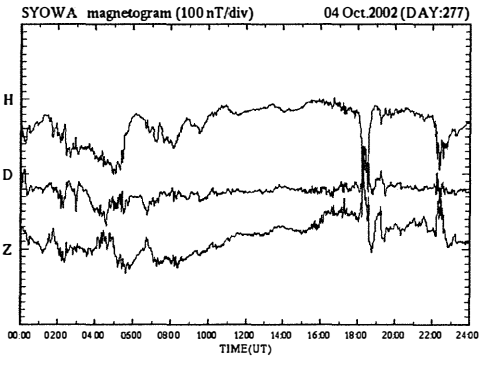
SYOWA magnetogram (100 nT/div)
04 Oct.2002 (DAY:277)
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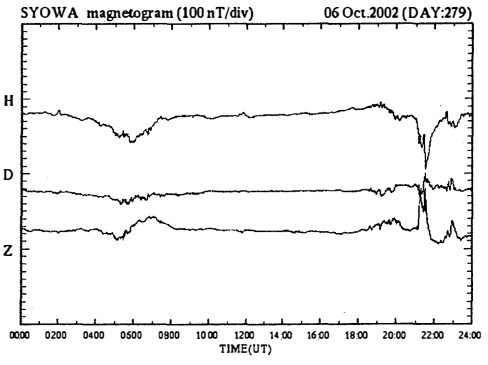
SYOWA magnetogram (100 nT/div)
06 Oct.2002 (DAY:279)
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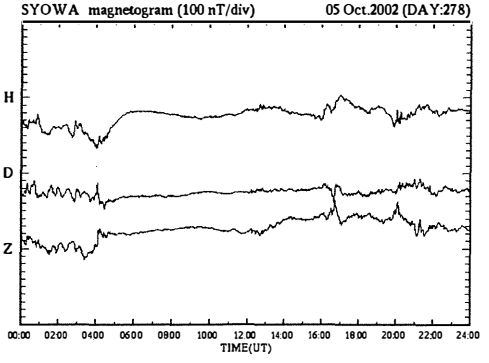
TIME(UT)


SYOWA magnetogram (100 nT/div)
05 Oct.2002 (DAY:278)
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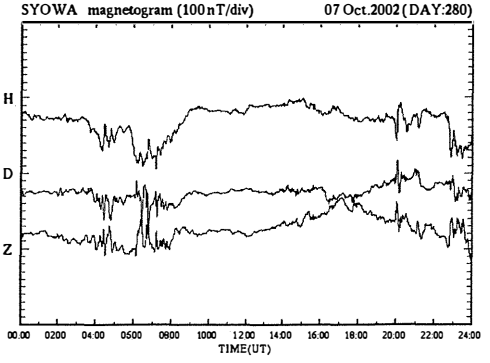
SYOWA magnetogram (100 nT/div)
07 Oct.2002 (DAY:280)
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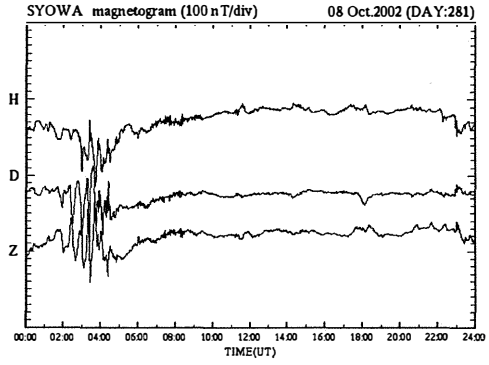
SYOWA magnetogram (100 nT/div)
08 Oct.2002 (DAY:281)
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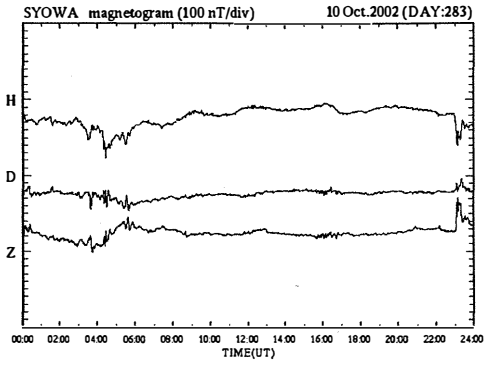
SYOWA magnetogram (100 nT/div)
10 Oct.2002 (DAY:283)
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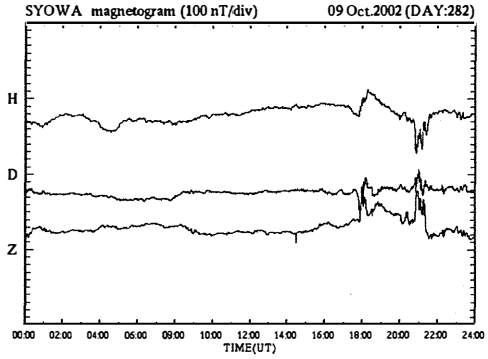
SYOWA magnetogram (100 nT/div)
09 Oct.2002 (DAY:282)
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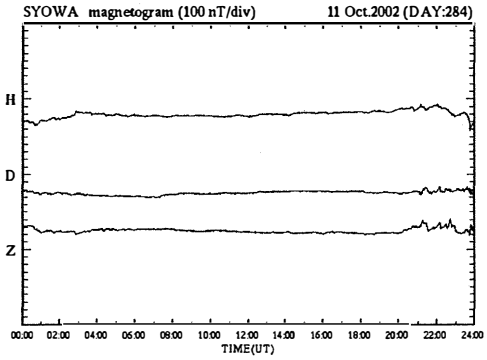
SYOWA magnetogram (100 nT/div)
11 Oct.2002 (DAY:284)
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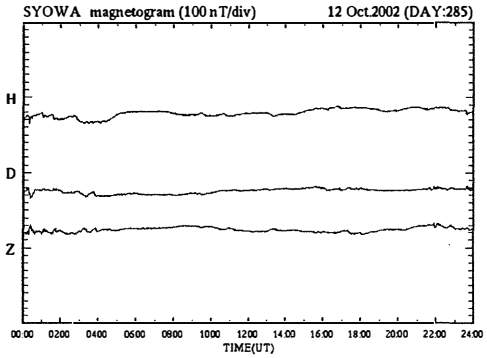
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12 Oct.2002 (DAY:285)
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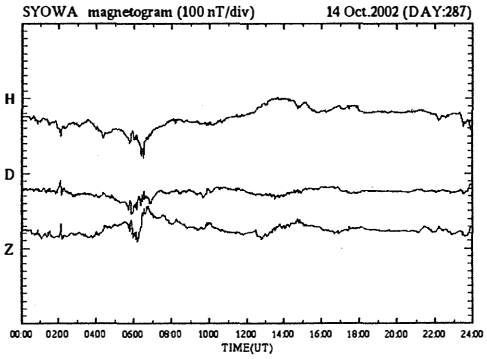
SYOWA magnetogram (100 nT/div)
14 Oct.2002 (DAY:287)
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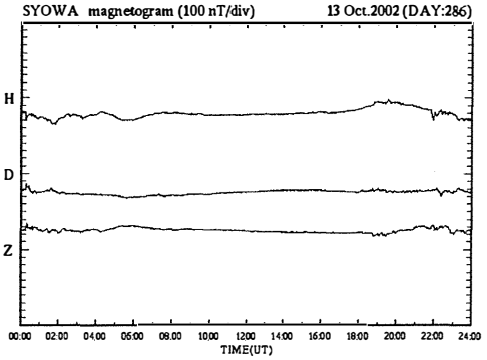
SYOWA magnetogram (100 nT/div)
13 Oct.2002 (DAY:286)
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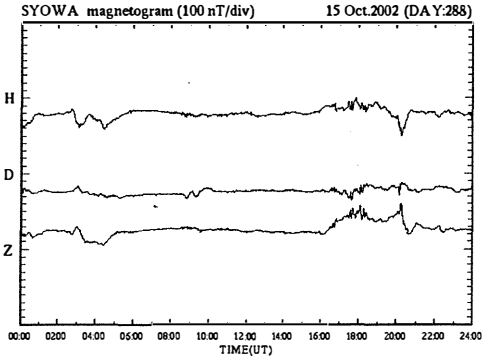
SYOWA magnetogram (100 nT/div)
15 Oct.2002 (DAY:288)
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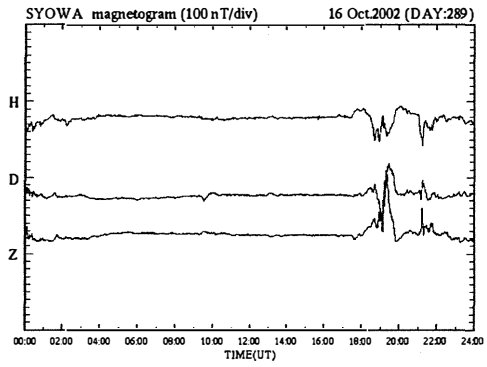
SYOWA magnetogram (100 nT/div)
16 Oct.2002 (DAY:289)
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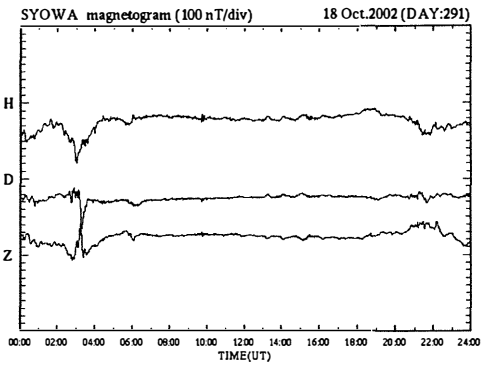
SYOWA magnetogram (100 nT/div)
18 Oct.2002 (DAY:291)
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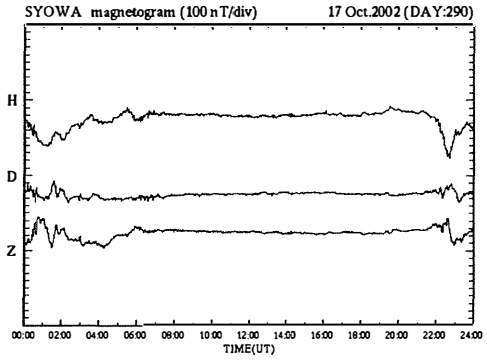
SYOWA magnetogram (100 nT/div)
17 Oct.2002 (DAY:290)
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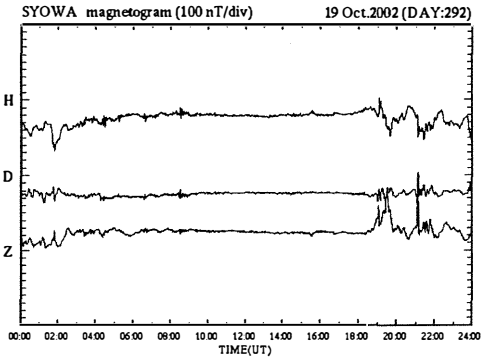
SYOWA magnetogram (100 nT/div)
19 Oct.2002 (DAY:292)
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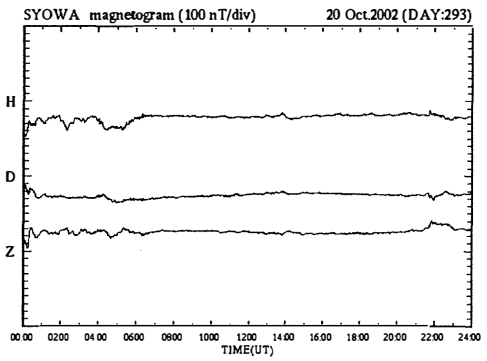
SYOWA magnetogram (100 nT/div)
20 Oct.2002 (DAY:293)
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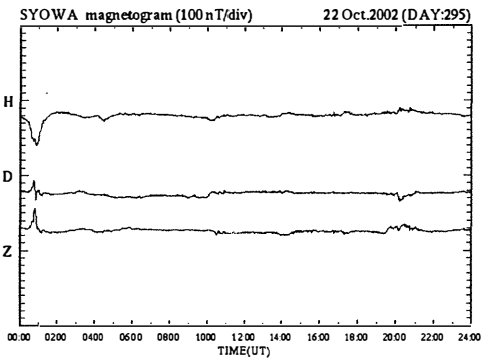
TIME(UT)


SYOWA magnetogram (100 nT/div)
22 Oct.2002 (DAY:295)
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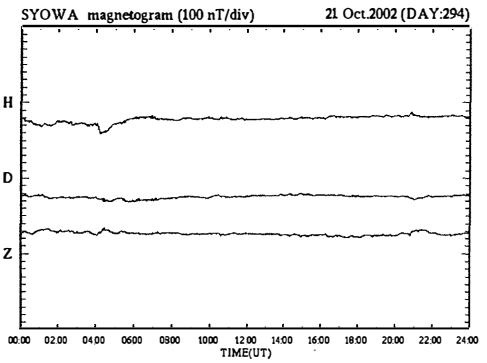
SYOWA magnetogram (100 nT/div)
21 Oct.2002 (DAY:294)
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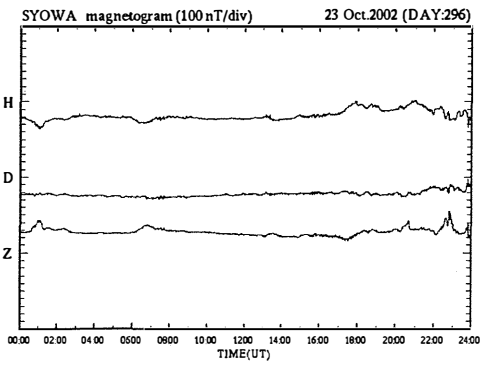
SYOWA magnetogram (100 nT/div)
23 Oct.2002 (DAY:296)
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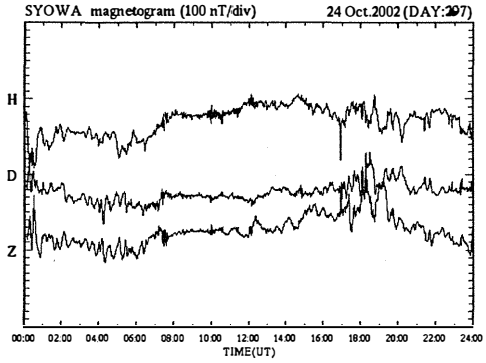
TIME(UT)


SYOWA magnetogram (100 nT/div)
24 Oct.2002 (DAY:297)
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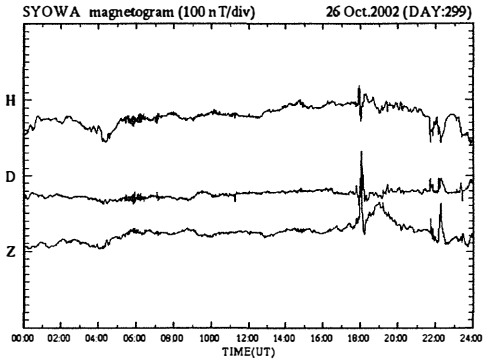
SYOWA magnetogram (100 nT/div)
26 Oct.2002 (DAY:299)
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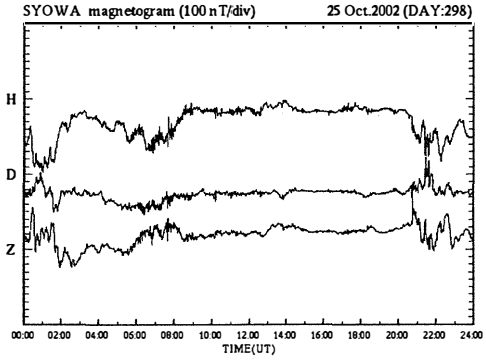
TIME(UT)


SYOWA magnetogram (100 nT/div)
25 Oct.2002 (DAY:298)
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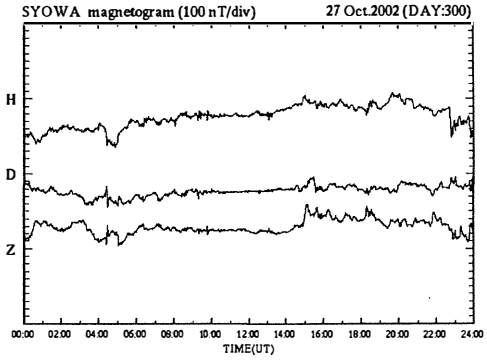
TIME(UT)


SYOWA magnetogram (100 nT/div)
27 Oct.2002 (DAY:300)
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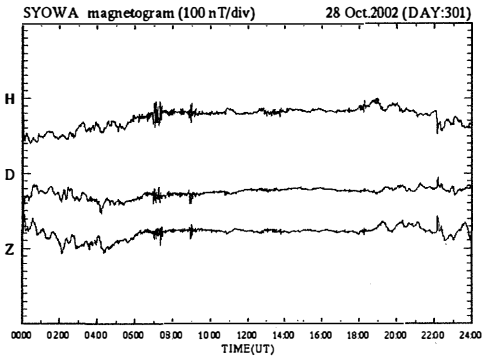
TIME(UT)


SYOWA magnetogram (100 nT/div)
28 Oct.2002 (DAY:301)
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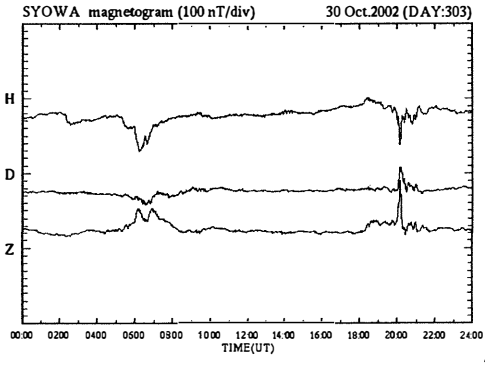
TIME(UT)


SYOWA magnetogram (100 nT/div)
30 Oct.2002 (DAY:303)
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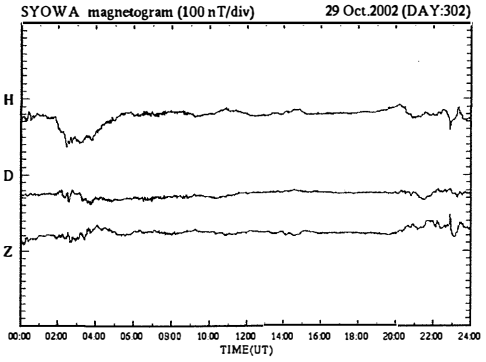
TIME(UT)


SYOWA magnetogram (100 nT/div)
29 Oct.2002 (DAY:302)
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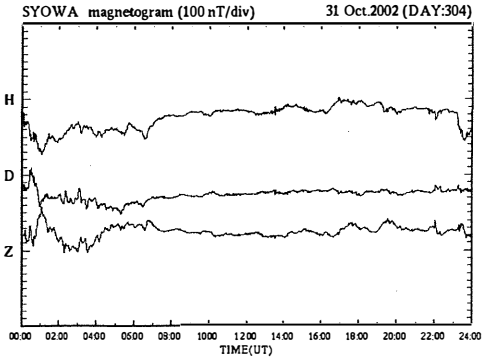
SYOWA magnetogram (100 nT/div)
31 Oct.2002 (DAY:304)
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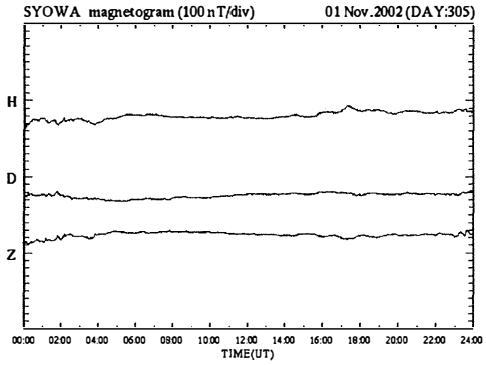
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01 Nov.2002 (DAY:305)
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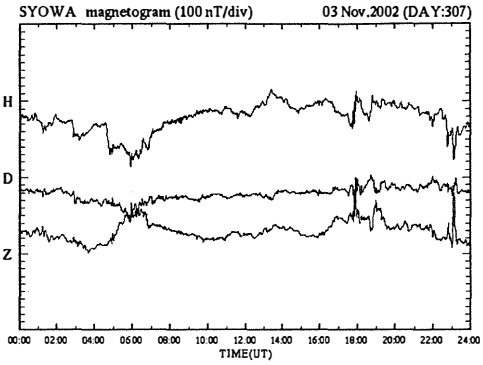
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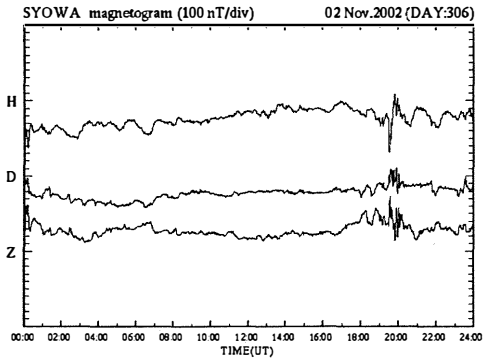
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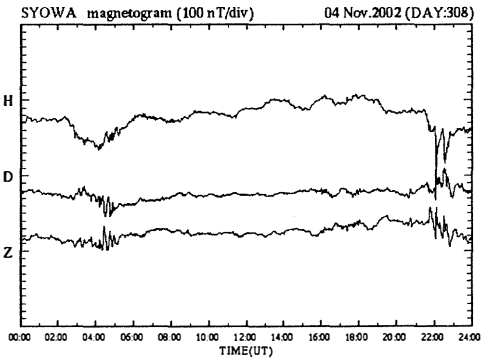
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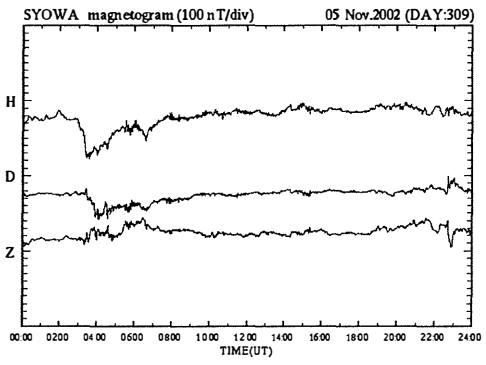
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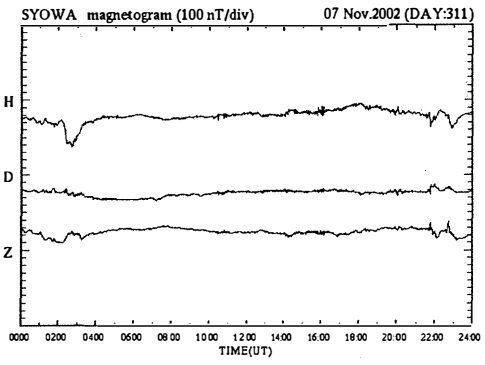
SYOWA magnetogram (100 nT/div)
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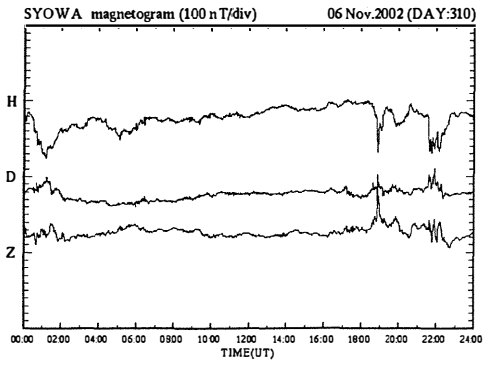
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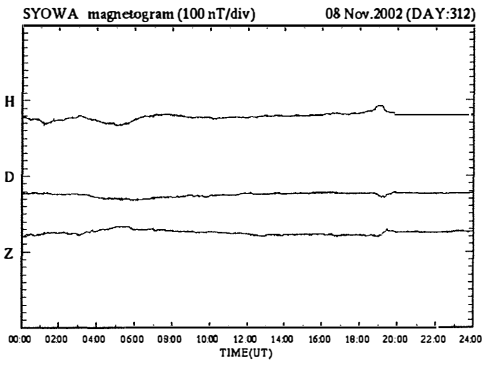
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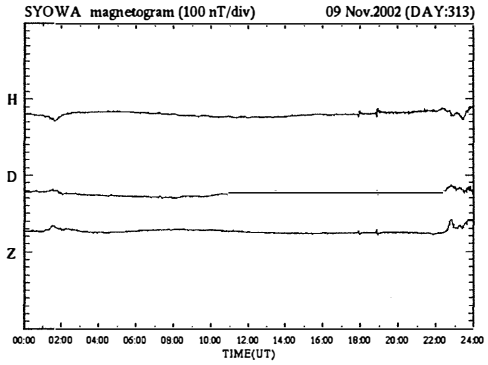
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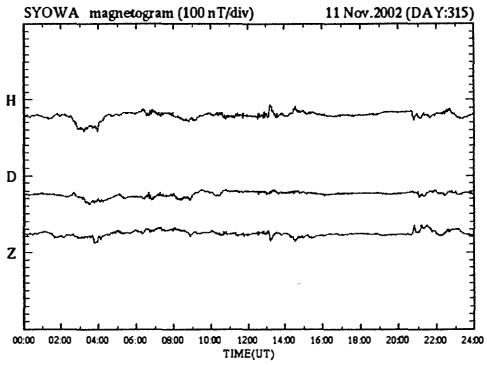
SYOWA magnetogram (100 nT/div)
11 Nov.2002 (DAY:315)
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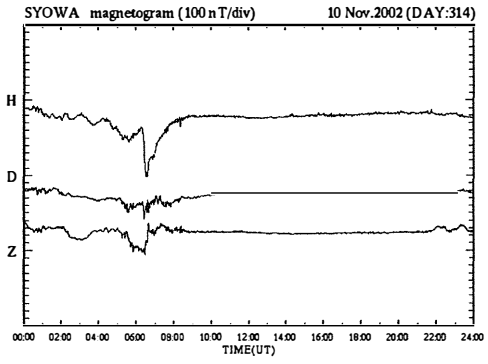
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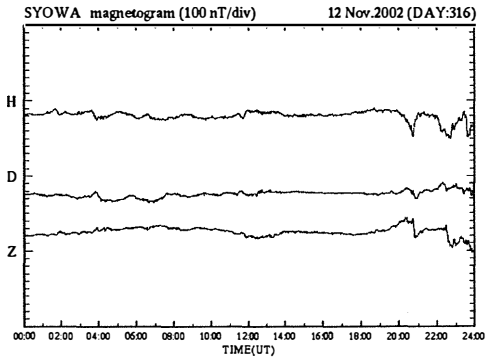
SYOWA magnetogram (100 nT/div)
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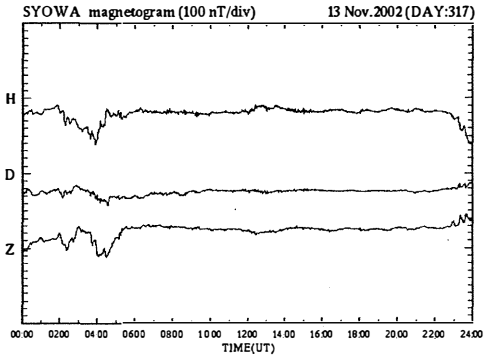
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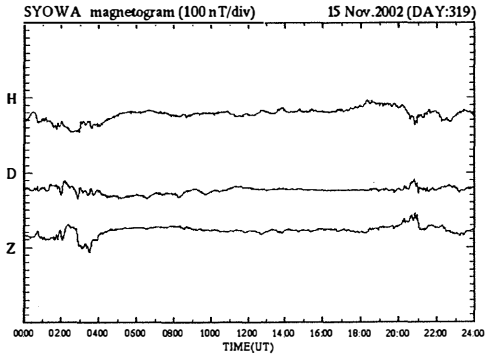
SYOWA magnetogram (100 nT/div)
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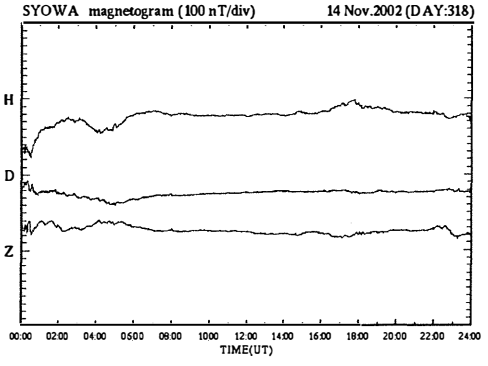
SYOWA magnetogram (100 nT/div)
14 Nov.2002 (DAY:318)
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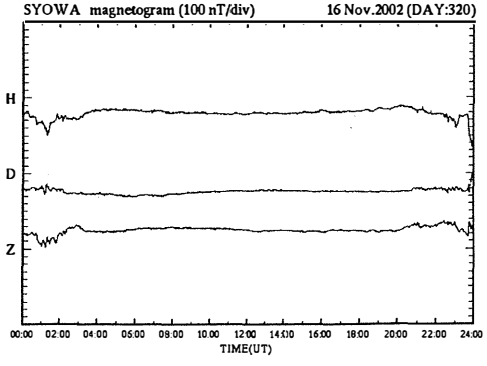
SYOWA magnetogram (100 nT/div)
16 Nov.2002 (DAY:320)
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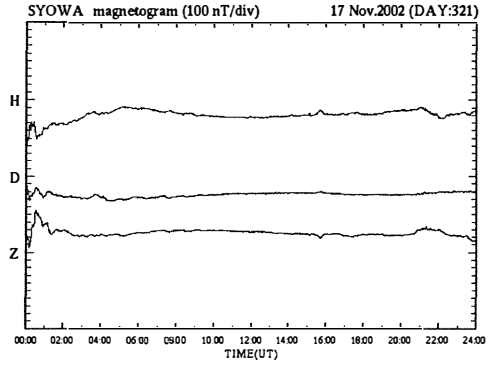
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17 Nov.2002 (DAY:321)
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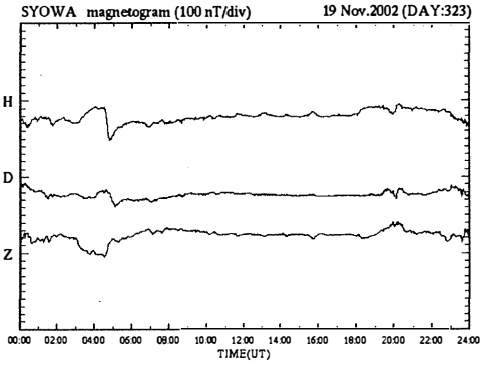
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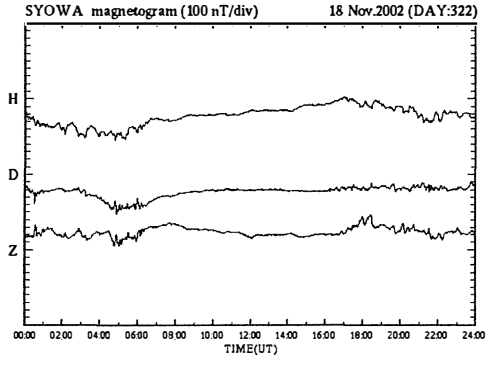
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18 Nov.2002 (DAY:322)
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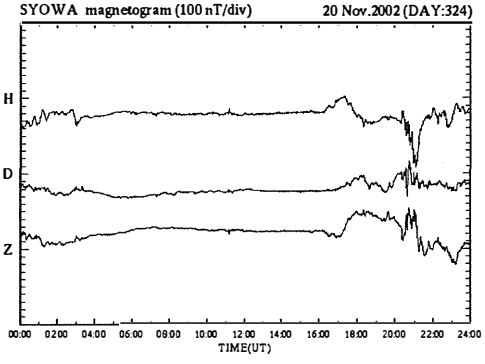
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20 Nov.2002 (DAY:324)
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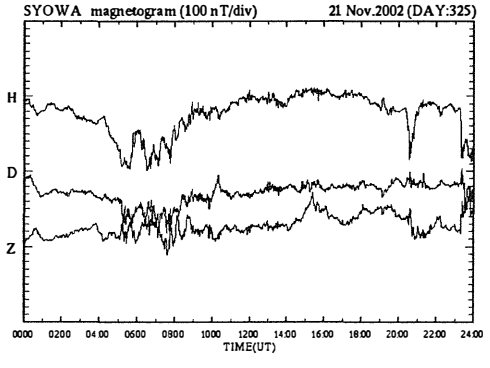
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21 Nov.2002 (DAY:325)
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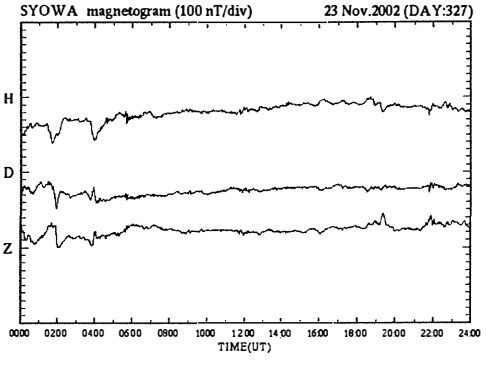
TIME(UT)


SYOWA magnetogram (100 nT/div)
23 Nov.2002 (DAY:327)
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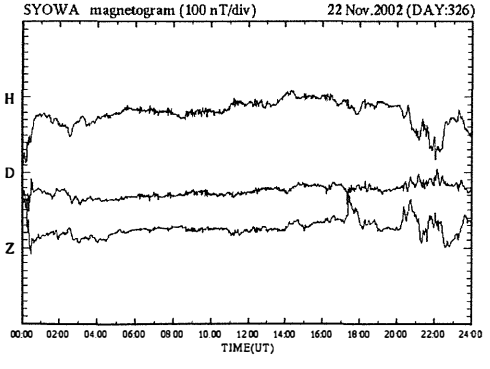
TIME(UT)


SYOWA magnetogram (100 nT/div)
22 Nov.2002 (DAY:326)
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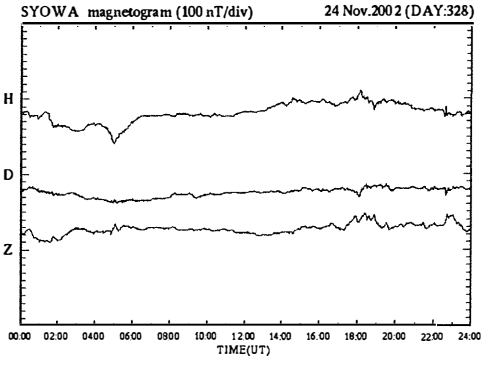
SYOWA magnetogram (100 nT/div)
24 Nov.2002 (DAY:328)
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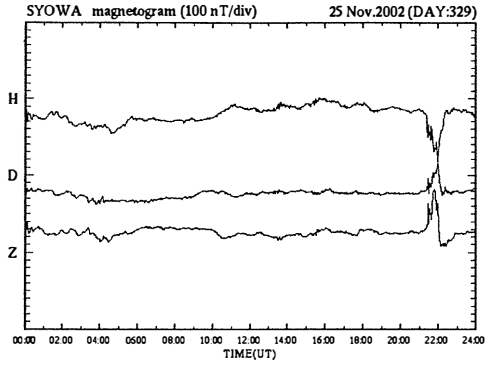
SYOWA magnetogram (100 nT/div)
25 Nov.2002 (DAY:329)
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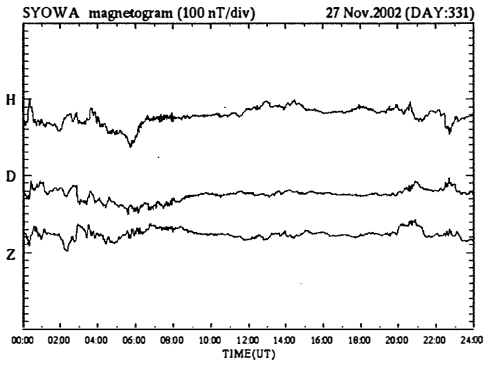
SYOWA magnetogram (100 nT/div)
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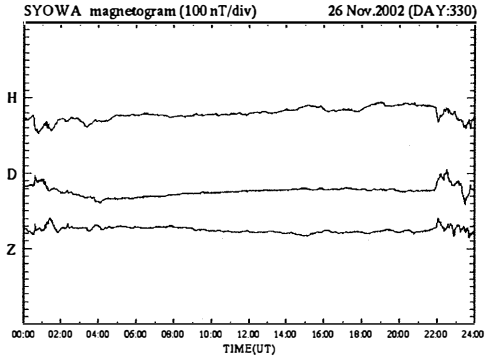
SYOWA magnetogram (100 nT/div)
26 Nov.2002 (DAY:330)
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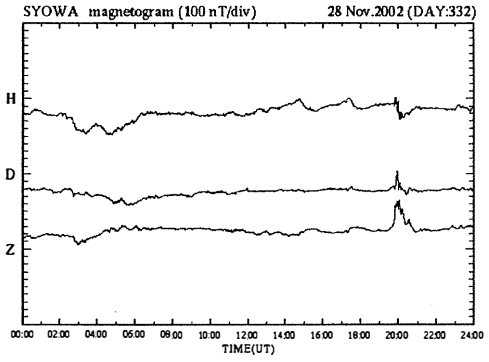
SYOWA magnetogram (100 nT/div)
28 Nov.2002 (DAY:332)
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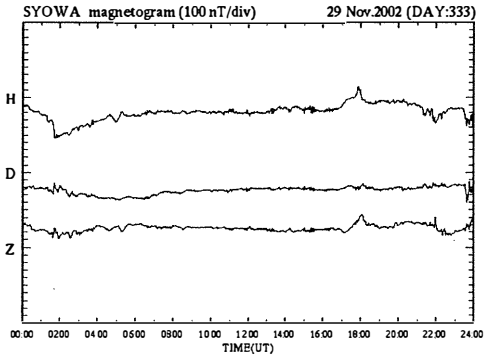
SYOWA magnetogram (100 nT/div)
29 Nov.2002 (DAY:333)
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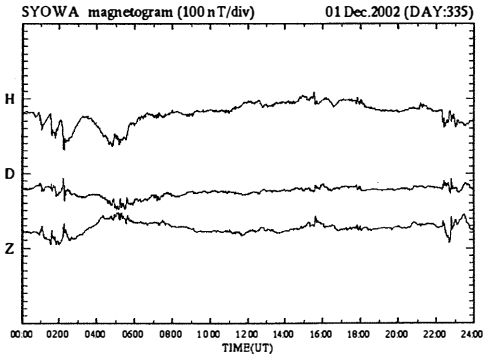
SYOWA magnetogram (100 nT/div)
01 Dec.2002 (DAY:335)
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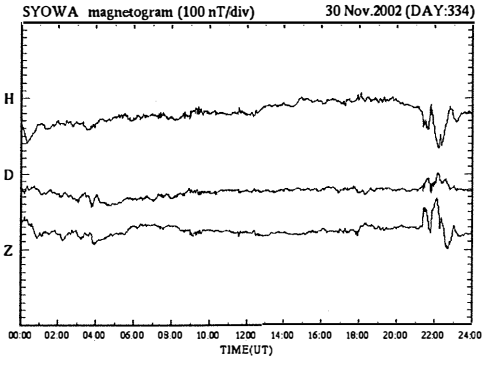
SYOWA magnetogram (100 nT/div)
30 Nov.2002 (DAY:334)
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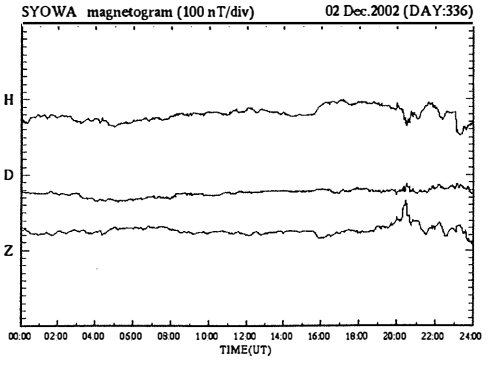
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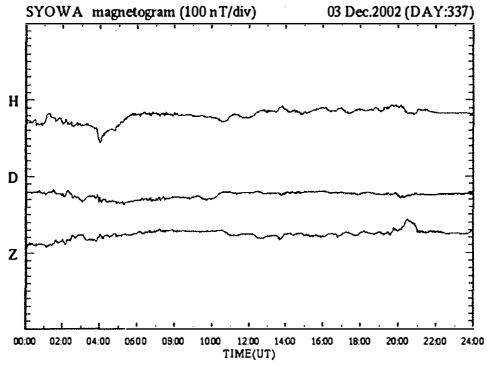
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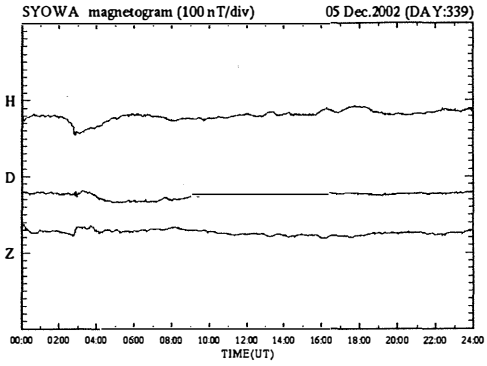
SYOWA magnetogram (100 nT/div)
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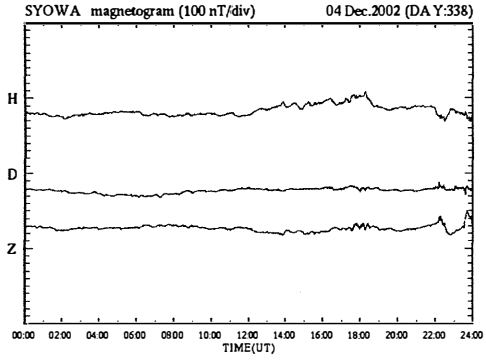
SYOWA magnetogram (100 nT/div)
04 Dec.2002 (DAY:338)
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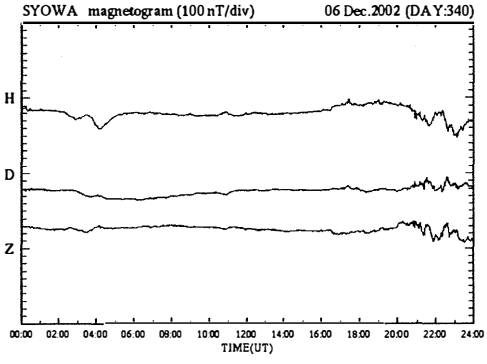
SYOWA magnetogram (100 nT/div)
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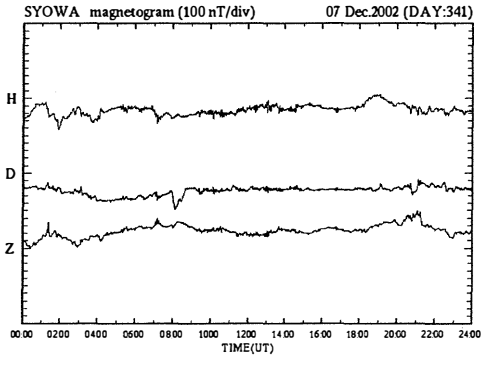
SYOWA magnetogram (100 nT/div)
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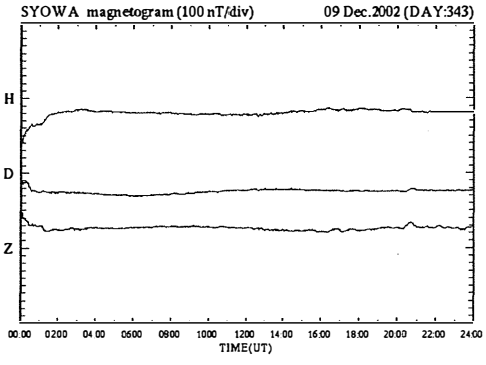
SYOWA magnetogram (100 nT/div)
09 Dec.2002 (DAY:343)
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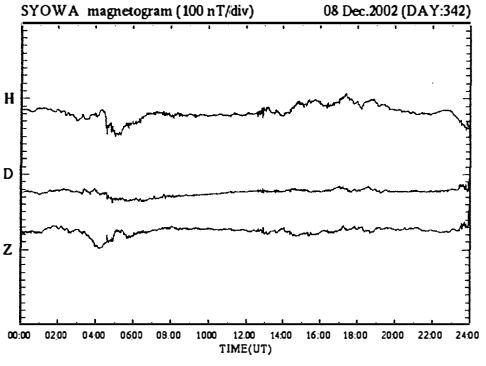
TIME(UT)


SYOWA magnetogram (100 nT/div)
08 Dec.2002 (DAY:342)
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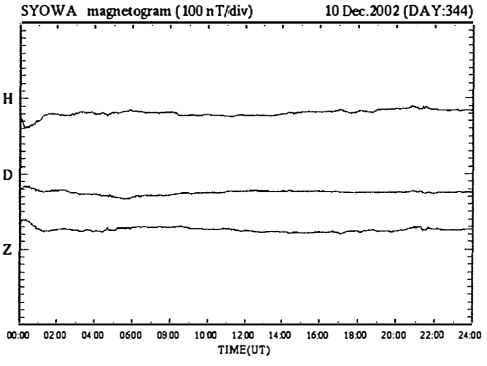
SYOWA magnetogram (100 nT/div)
10 Dec.2002 (DAY:344)
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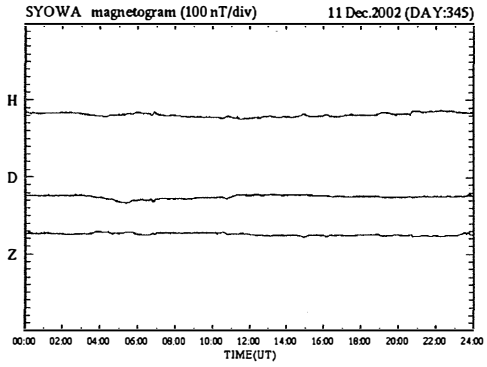
TIME(UT)


SYOWA magnetogram (100 nT/div)
11 Dec.2002 (DAY:345)
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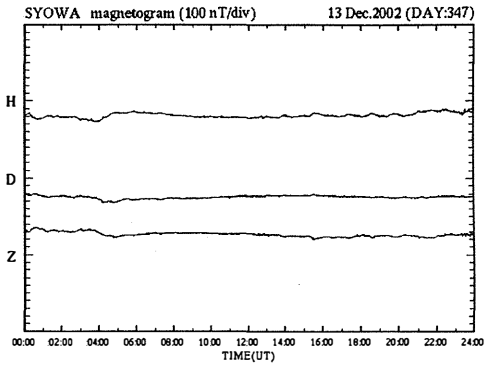
SYOWA magnetogram (100 nT/div)
13 Dec.2002 (DAY:347)
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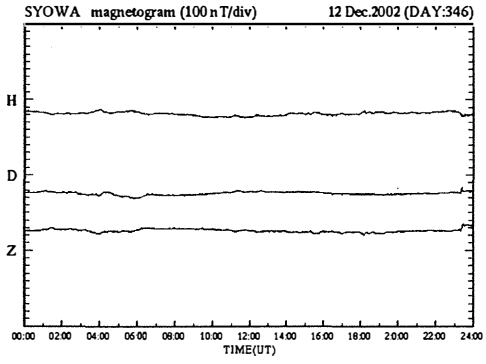
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12 Dec.2002 (DAY:346)
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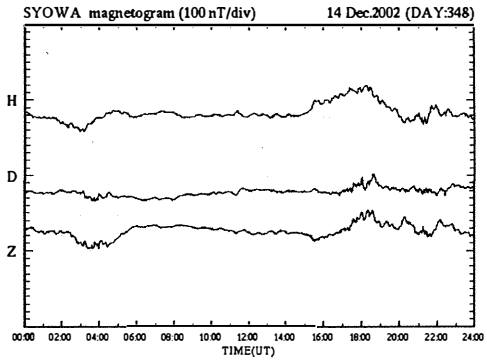
SYOWA magnetogram (100 nT/div)
14 Dec.2002 (DAY:348)
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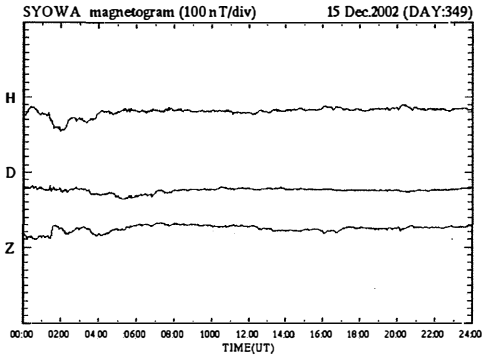
SYOWA magnetogram (100 nT/div)
15 Dec.2002 (DAY:349)
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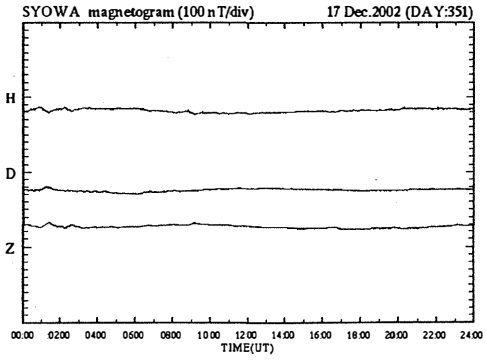
SYOWA magnetogram (100 nT/div)
17 Dec.2002 (DAY:351)
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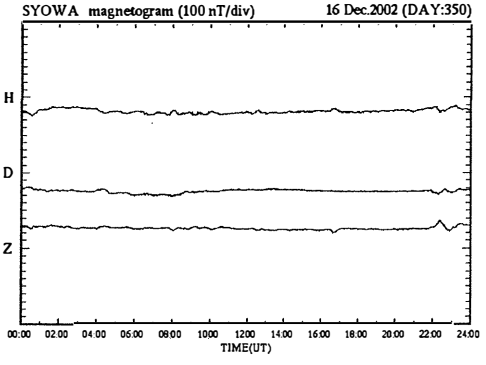
SYOWA magnetogram (100 nT/div)
16 Dec.2002 (DAY:350)
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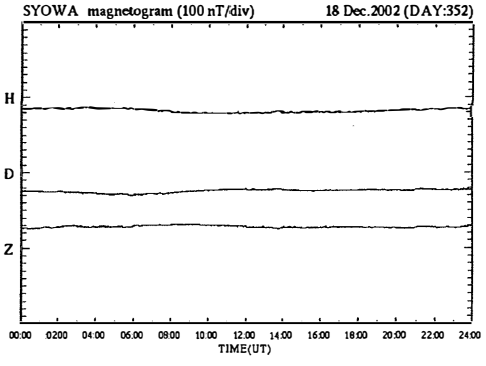
SYOWA magnetogram (100 nT/div)
18 Dec.2002 (DAY:352)
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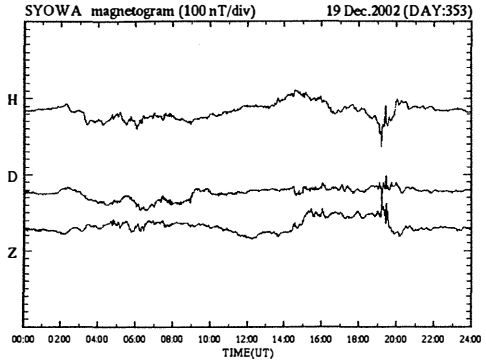
SYOWA magnetogram (100 nT/div)
19 Dec.2002 (DAY:353)
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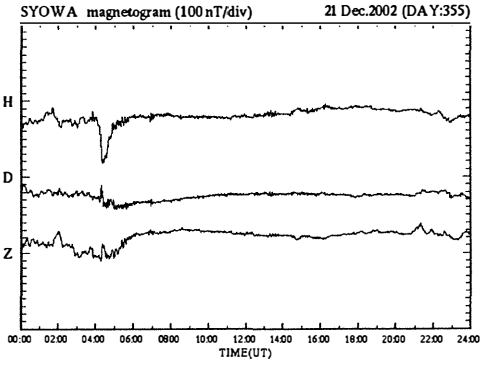
SYOWA magnetogram (100 nT/div)
21 Dec.2002 (DAY:355)
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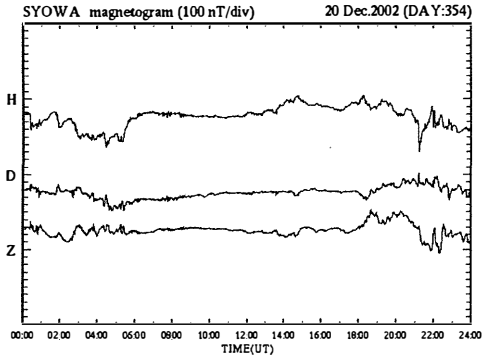
SYOWA magnetogram (100 nT/div)
20 Dec.2002 (DAY:354)
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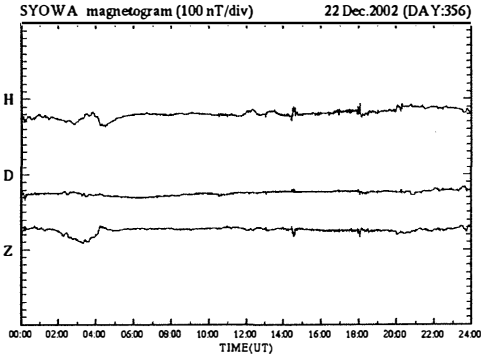
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22 Dec.2002 (DAY:356)
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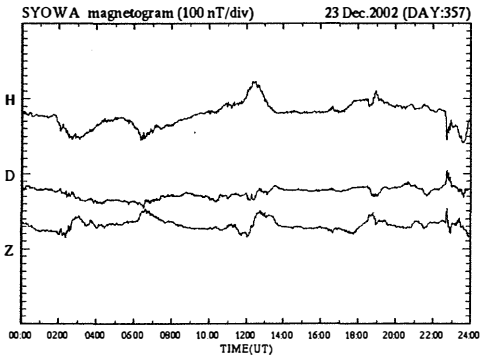
SYOWA magnetogram (100 nT/div)
23 Dec.2002 (DAY:357)
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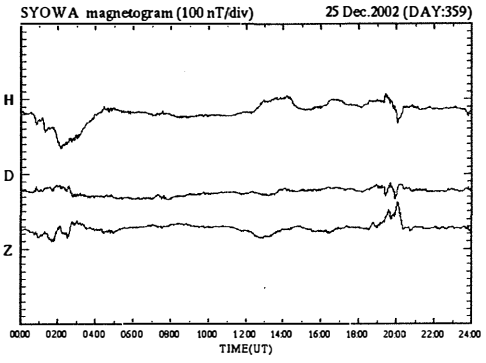
SYOWA magnetogram (100 nT/div)
25 Dec.2002 (DAY:359)
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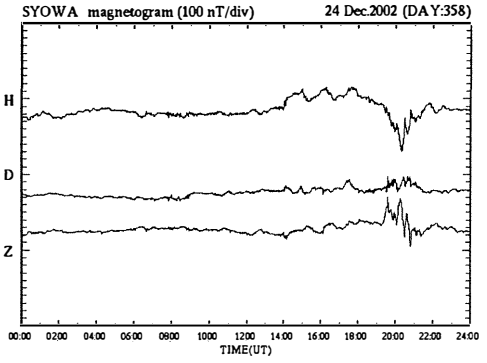
SYOWA magnetogram (100 nT/div)
24 Dec.2002 (DAY:358)
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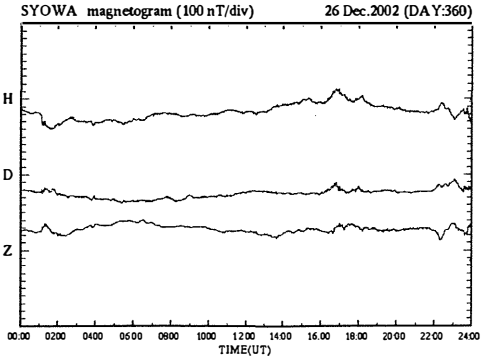
SYOWA magnetogram (100 nT/div)
26 Dec.2002 (DAY:360)
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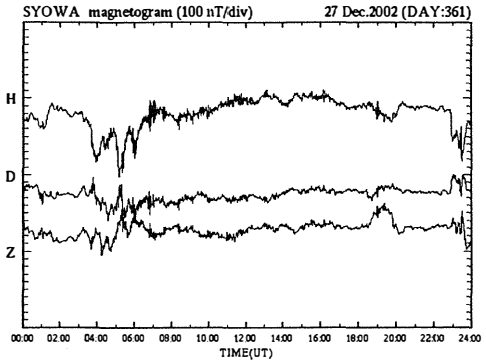
SYOWA magnetogram (100 nT/div)
27 Dec.2002 (DAY:361)
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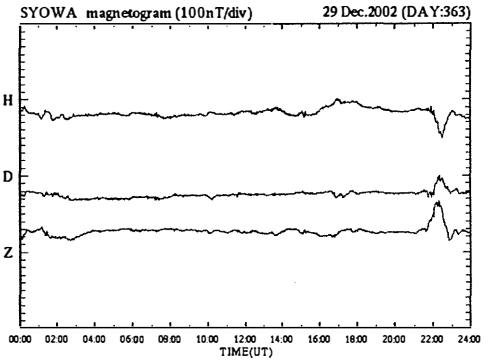
SYOWA magnetogram (100nT/div)
29 Dec.2002 (DAY:363)
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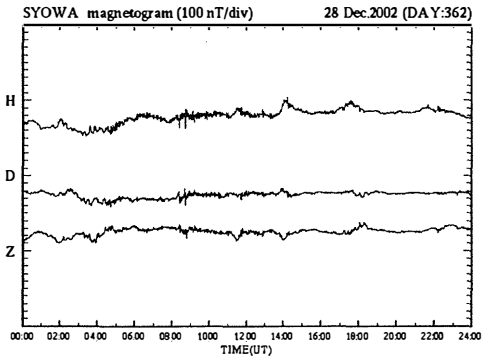
SYOWA magnetogram (100 nT/div)
28 Dec.2002 (DAY:362)
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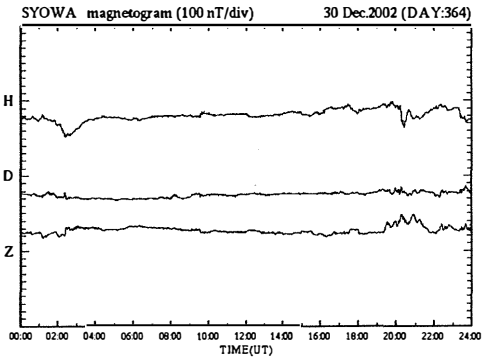
SYOWA magnetogram (100 nT/div)
30 Dec.2002 (DAY:364)
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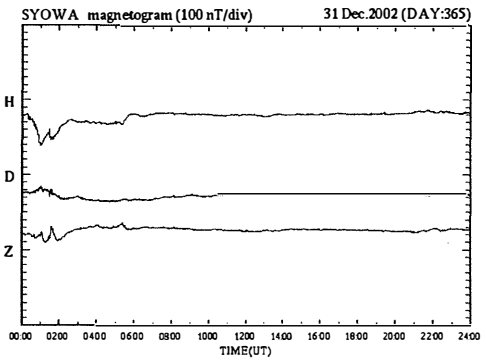
TIME(UT)


SYOWA magnetogram (100 nT/div)
31 Dec.2002 (DAY:365)
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TIME(UT)