

# UPPER ATMOSPHERE PHYSICS DATA OBTAINED AT SYOWA STATION IN 2001

Makoto TAGUCHI<sup>1</sup>, Fumitoshi KOBAYASHI<sup>2</sup>, Kengo IOKIBE<sup>3</sup>, Nobuyuki FUJITA<sup>4</sup>,  
Hiroki KISHIDA<sup>5</sup>, Masayuki KIKUCHI<sup>1</sup> and Akira KADOKURA<sup>1</sup>

<sup>1</sup>*National Institute of Polar Research, Itabashi-ku, Tokyo 173-8515*

<sup>2</sup>*Shinshu University, Nagano 380-8553*

<sup>3</sup>*Okayama University, Okayama 700-8530*

<sup>4</sup>*Kyoto University, Kyoto 606-8502*

<sup>5</sup>*Communications Research Laboratory, Koganei-shi, Tokyo 184-8795*

## 1. Introduction

This data book summarizes upper atmosphere physics data acquired by the 42nd Japanese Antarctic Research Expedition (JARE-42) with the "Upper Atmosphere Physics Monitoring (UAPM) System" at Syowa Station in 2001. 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 ( $H\beta$ ), 487.4 nm (BG of  $H\beta$ ),  
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, 2001 are given in the Appendix.

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

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](mailto:aurora@nipr.ac.jp)

Digital and analog data described here are available to researchers who will do collaborative studies with the upper atmosphere physics group of NIPR. The request should be addressed to:

Upper Atmosphere Physics Research Division  
National Institute of Polar Research  
9-10, Kaga 1-chome, Itabashi-ku,  
Tokyo 173-8515, Japan.

## **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). This report is the 21st 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 instead of the previous 16 kVA one.

The fluxgate and proton magnetometer sensors are placed at Syowa Station on East Ongul Island, about 150 m apart 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  $2 \times 10^{-11}$ /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  $\pm 2500$  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 mm $\phi$ , 40000 turns each) wound around permalloy cores (1 cm in diameter  $\times$  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 are listed in Table 1.

### (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:

<u>K-index</u>	<u>Deviation</u>	<u>K-index</u>	<u>Deviation</u>
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 2 gives the K-indices at Syowa Station in February 2001 – January 2002. 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<sup>2</sup> 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 900 - 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  
Communications Research Laboratory  
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. Panchromatic auroral images are taken every twenty seconds with an exposure time of three to five seconds. Image data are saved in a DLT (digital linear tape). An observation list for the CCD all-sky imager is given in Table 3. 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 has 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. 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<sub>2</sub><sup>+</sup>), 486.1 nm (H<sub>β</sub>), and 487.4 nm (Back-ground of H<sub>β</sub>). The photometers have a field-of-view of 3 degrees except for 6 degrees for the channels of H<sub>β</sub> 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 enlarge 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, another 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 16 bit straight binary A/D converter (from -10V to 10V). 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 350Hz

VLF750: Intensity of natural VLF wave at 750Hz

VLF1.2k: Intensity of natural VLF wave at 1.2kHz

VLF2.0k: Intensity of natural VLF wave at 2.0kHz

VLF4.0k: Intensity of natural VLF wave at 4.0kHz

VLF8.0k: Intensity of natural VLF wave at 8.0kHz

VLF30k: Intensity of natural VLF wave at 30kHz

VLF60k: Intensity of natural VLF wave at 60kHz

VLF95k: Intensity of natural VLF wave at 95kHz.

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.

$$\begin{aligned} \text{(Physical value)} = & \text{SCALEMIN} + \\ & (\text{SCALEMAX}-\text{SCALEMIN})/(\text{VALIDMAX}-\text{VALIDMIN}) * \\ & ((\text{Variable data})-\text{VALIDMIN}) \end{aligned}$$

[1] CDF User's Guide (Version2.6) NASA/GSFC/NSSDC,

[2] [http://nssdc.gsfc.nasa.gov/cdf/cdf\\_home.html](http://nssdc.gsfc.nasa.gov/cdf/cdf_home.html)

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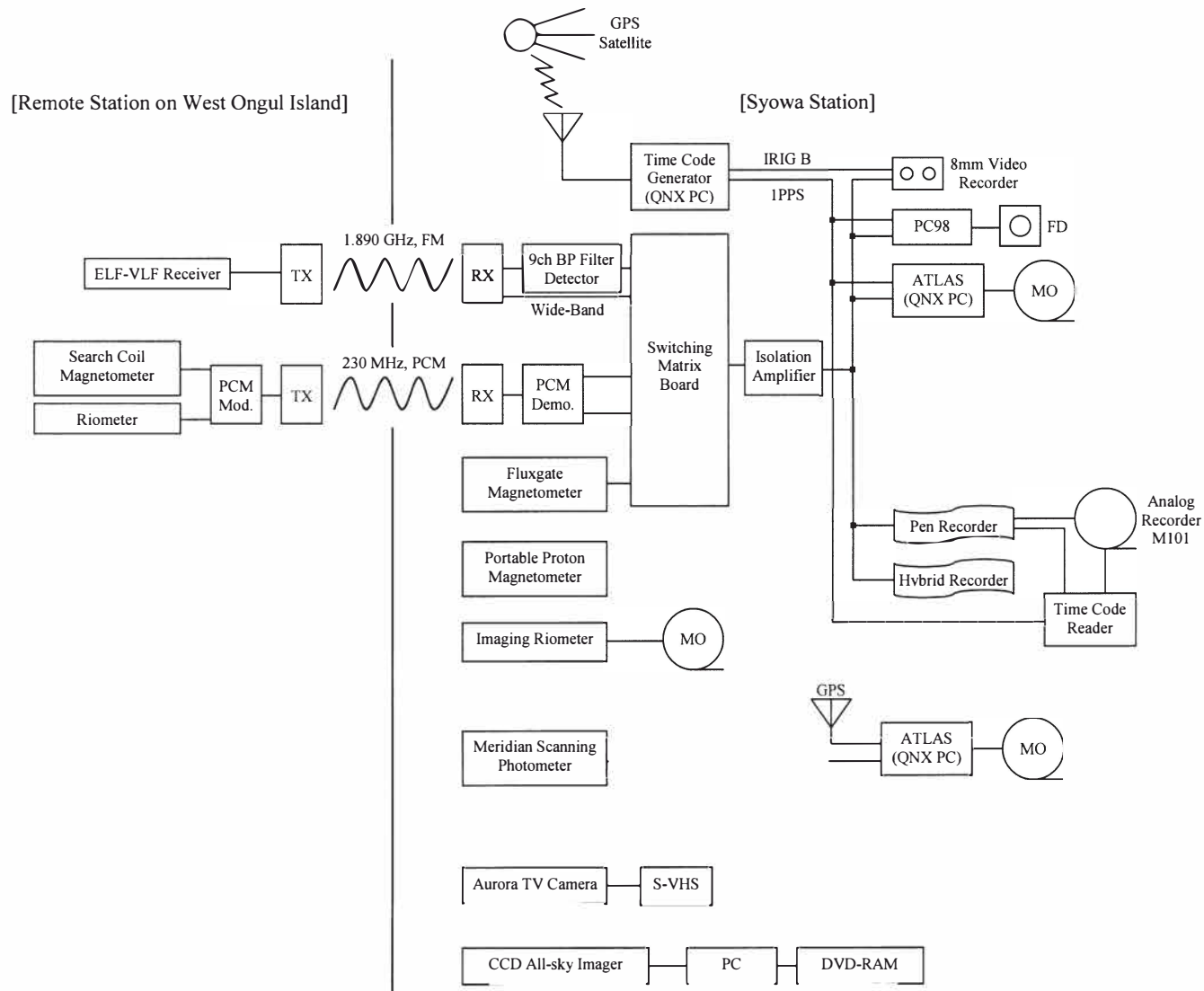


Fig. 1. Block diagram of the "Upper Atmosphere Physics" monitoring system at Syowa Station in 2001.



Table 1. Absolute values of geomagnetic field at Syowa Station in February 2001 - January 2002.

DATE	TIME hh:mm	DECLINATION (deg:min)	DIP ANGLE (deg:min)	TOTAL (nT)	HORIZONTAL (nT)	VERTICAL (nT)
2001.2.21	13:11	-48:30.89	-63:45.45	43372.3	19178.0	-38901.8
2001.3.22	11:40	-48:37.54	-63:46.02	43351.9	19162.6	-38887.1
2001.4.21	11:44	-48:38.50	-63:45.87	43351.6	19164.0	-38885.5
2001.5.22	11:13	-48:36.03	-63:43.49	43344.1	19187.8	-38865.8
2001.6.28	10:42	-48:39.22	-63:43.40	43344.6	19188.9	-38865.7
2001.7.30	10:56	-48:39.75	-63:42.36	43339.0	19198.2	-38854.8
2001.8.24	11:02	-48:42.34	-63:43.60	43329.7	19180.2	-38853.7
2001.9.21	11:01	-48:42.83	-63:43.85	43315.1	19170.6	-38841.5
2001.10.31	11:06	-48:40.70	-63:44.76	43326.4	19165.4	-38856.9
2001.11.27	10:59	-48:40.96	-63:44.82	43317.2	19160.7	-38848.9
2001.12.27	09:31	-48:42.27	-63:41.74	43295.5	19186.3	-38813.3
2002.1.24	09:27	-48:45.95	-63:41.55	43307.8	19193.5	-38822.5

Table 2. K-indices at Syowa Station in February 2001 - January 2002.

	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY
1	3541 2122	4321 1111	4563 3346	0010 1000	0001 2122	6320 1114	5332 2223	2311 0210	5765 3355	6554 4342	3322 2312	3432 2333
2	5421 1212	2212 1334	5543 2354	0121 0001	6533 2335	5500 0012	2121 1112	0001 1333	4554 3476	2220 3111	2122 2222	3432 3433
3	1020 0110	3422 2234	4221 1213	2113 1123	3331 1114	2212 1124	5342 1224	3322 3335	5355 6546	3220 0100	2222 2344	2112 1101
4	1221 1110	5442 3376	4422 4442	2322 0133	5221 1104	3311 0113	3211 2234	4532 1324	6254 2333	1222 2321	4432 2233	2422 1212
5	1222 1125	5542 2222	4453 3433	0110 0012	4310 0012	3331 2235	5153 4333	5411 1220	3112 2331	2112 3445	4432 3233	3322 1111
6	4343 2334	3221 1233	3132 1144	0011 0003	3321 1114	3222 2131	3533 4334	4011 1034	2321 1021	7763 5556	3323 3443	1111 1112
7	4331 1223	4332 2311	4632 2444	6633 2252	4432 2101	1101 1103	5421 2212	0001 1104	1121 1012	5532 2233	3321 3323	1222 2442
8	2322 1225	1212 1133	5334 5476	3223 3356	1111 0004	4322 1136	4221 2101	5521 1121	4422 3325	4322 1112	3221 3212	4342 3221
9	3222 2133	4222 2211	3553 2444	6643 3465	2533 3256	6530 1104	1301 1123	1111 0100	6433 3311	2221 1233	3222 1022	1112 1321
10	2322 2220	1322 1120	6222 2324	6553 3264	6554 3335	2322 2454	3121 0135	0110 1013	3212 2333	2312 2225	2221 2213	4433 4545
11	3322 2112	3321 1111	5422 3776	4431 1245	5411 2114	5522 1110	6100 0005	2111 1334	4321 2444	3423 1112	3112 2324	4654 4444
12	2222 1223	1112 2344	7664 3212	5445 4456	4210 0024	4210 0024	3312 1335	4332 2145	6643 2334	3211 1111	2112 2213	5334 3433
13	4653 3455	3422 2223	2236 3456	5543 3466	4432 1133	4432 1134	6733 2235	3663 2122	5441 2211	2211 1323	3121 3212	4323 3323
14	5542 4245	5322 1123	5643 2325	5532 1021	4100 1015	5531 2211	3322 3224	2211 1112	4431 2254	2121 1111	3222 3323	3332 3324
15	3222 1111	1111 0012	4432 2235	3333 2245	5522 1110	1122 2443	4321 0133	5332 2365	2542 3314	2111 1452	4432 3112	2342 2334
16	2111 1102	1111 1123	6422 1235	5433 1204	3110 0111	5431 1225	1101 0102	5211 1323	5322 2223	4232 3322	4432 3223	3322 1100
17	3111 1211	0111 1133	4322 1234	3311 0114	0101 3224	6633 2222	2203 4464	2321 1113	4311 0101	4422 4333	3553 3452	4332 3323
18	2101 1113	5441 1214	7753 2235	4411 0104	4554 3225	3442 3211	3241 3233	2311 1242	2111 1121	3322 3335	4323 2312	3312 2200
19	2222 1121	3332 2475	5421 1004	6521 1121	4310 1233	3121 1122	3122 1011	2431 2022	1121 3352	3432 4343	4222 3232	0112 4435
20	2423 2124	6644 4456	5421 1103	1221 1112	4443 3313	2111 2102	2101 1002	2101 1013	3442 2333	4451 1111	2112 3223	5542 2223
21	3322 1122	5322 1111	3311 1222	1001 0100	3542 2253	1111 1113	3122 1233	3111 0114	3521 2657	3221 2311	1342 3454	4432 2222
22	1211 1133	1111 2344	5544 3654	0221 0113	4201 1111	4442 2235	2433 3357	3112 2210	6535 4775	3322 2244	4442 3232	2232 2223
23	4532 2133	6643 3364	5534 2112	2211 1123	1100 1110	5412 2212	5541 1122	1353 3666	5353 2222	3443 3434	3322 2323	3323 2443
24	3321 2111	2452 2331	1333 1101	4201 0001	3222 1133	4321 3233	1100 0100	5322 1221	2111 0100	4688 7633	3554 5443	3411 1212
25	0111 1123	2322 2122	1112 1222	1012 2210	3331 1110	4463 3344	1201 1235	2332 1156	1122 1234	3333 3312	3442 2325	3322 3443
26	5111 1444	0112 1121	-----	1311 0000	1112 2345	6522 3123	4243 1134	6563 2234	1222 1113	2222 1111	3422 1343	4432 2323
27	4542 1111	6413 1446	2111 1111	0001 2322	6532 1100	2222 1213	3521 1255	3322 2354	2411 2111	2110 0211	3322 2332	4432 2322
28	1222 3233	3345 4534	3543 4333	2323 3456	0000 0100	3100 0001	5441 1111	5442 3354	4764 4444	1110 1212	2122 2112	3222 3322
29		5563 2335	5432 2110	5311 1320	0000 0012	4431 1100	1322 1111	4534 2466	3452 3334	2221 1012	3332 2335	4422 1111
30		3422 2123	0010 0000	0000 0000	2312 2024	1010 0254	1332 2322	5431 4765	3322 2213	1211 1121	4553 2344	1211 2121
31		8775 4675		1000 0000		6542 2545	5543 2314		2211 2354		4432 3364	3412 1114

Table 3. Observation periods of a CCD all-sky imager at Syowa Station in 2001.

DATE	Hours (UT)									K-Index
	h	m	s	h	m	s	h	m	s	
Mar. 6				19	51	00	~22	55	00	3221 1233
Mar. 11				19	50	00	~23	46	00	3321 1111
Mar. 13							20	00	00	3422 2223
Mar. 14	~00	40	00							5322 1123
Mar. 16							18	30	00	1111 1123
Mar. 17	~00	32	50							0111 1133
Mar. 18							18	30	00	5441 1214
Mar. 19	~01	08	00				20	07	20	3332 2475
Mar. 20	~01	00	00							6644 4456
Mar. 21				18	20	00	~20	04	00	5322 1111
Mar. 26							18	00	20	0112 1121
Mar. 27	~00	16	20							6413 1446
Mar. 31							17	50	00	8775 4675
Apr. 1	~01	29	00	17	42	40	~22	44	00	4563 3346
Apr. 17							17	00	20	4322 1234
Apr. 18	~03	01	00				16	29	20	7753 2235
Apr. 19	~02	48	00							5421 1004
Apr. 23							19	05	40	5534 2112
Apr. 24	~02	24	40							1333 1101
Apr. 26				18	46	40	~21	42	00	---- ----
Apr. 28				18	12	40	~21	09	40	3543 4333
Apr. 29				16	45	20	~22	19	00	5432 2110
May 3							16	26	00	2113 1123
May 4	~01	04	20							2322 0133
May 5							22	57	20	0110 0012
May 6	~03	37	00							0011 0003
May 10							16	54	00	6553 3264
May 11	~04	05	00				16	48	00	4431 1245
May 12	~03	33	20							5445 4456
May 13				14	59	00	~23	47	40	5543 3466
May 14							14	57	20	5532 1021
May 15	~03	16	40	21	54	20	~23	47	10	3333 2245
May 16							14	43	00	5433 1204
May 17	~01	00	40				14	50	00	3311 0114
May 18	~04	00	20				15	01	00	4411 0104
May 19	~04	00	20				14	59	00	6521 1121
May 20	~04	00	20	16	28	00	~22	15	20	1221 1112
May 21							14	49	40	1001 0100
May 22	~03	01	40				14	50	20	0221 0113
May 23	~03	03	00							2211 1123
May 24							15	00	40	4201 0001
May 25	~02	46	40				21	28	00	1012 2210
May 26	~04	26	20							1311 0000
Jun. 2							14	23	00	6533 2335

DATE	Hour (UT)									K-Index
	h	m	s	h	m	s	h	m	s	
Jun. 3	~04	33	20	14	20	00	~19	26	40	3331 1114
Jun. 4				14	51	00	~21	26	00	5221 1104
Jun. 12							20	05	40	4210 0024
Jun. 13	~01	09	00				22	13	00	4432 1133
Jun. 14	~04	48	20				14	56	40	4100 1015
Jun. 15	~04	53	40	14	34	00	~17	36	00	5522 1110
Jun. 16							13	57	00	3110 0111
Jun. 17	~05	00	20				14	44	20	0101 3224
Jun. 18	~04	57	20							4554 3225
Jun. 21							13	51	00	3542 2253
Jun. 22	~04	55	00							4201 1111
Jun. 29							13	55	00	0000 0012
Jun. 30	~04	56	40				13	56	00	2312 2024
Jul. 1	~05	01	00							6320 1114
Jul. 13							16	34	00	4432 1134
Jul. 14	~05	02	40	14	05	00	~20	00	00	5531 2211
Jul. 15							14	30	00	1122 2443
Jul. 16	~04	30	20				14	30	00	5431 1225
Jul. 17	~04	43	00				14	30	00	6633 2222
Jul. 18	~04	40	00				14	30	00	3442 3211
Jul. 19	~04	30	00				14	53	00	3121 1122
Jul. 20	~04	00	00				15	46	00	2111 2102
Jul. 21	~00	07	00							1111 1113
Jul. 24							14	30	00	4321 3233
Jul. 25	~04	13	00							4463 3344
Jul. 27							18	50	20	2222 1213
Jul. 28	~04	10	20							3100 0001
Jul. 29				15	00	00	~20	52	40	4431 1100
Aug. 7							15	00	00	5421 2212
Aug. 8	~03	24	00				15	00	00	4221 2101
Aug. 9	~03	28	20							1301 1123
Aug. 17							16	00	00	2203 4464
Aug. 18	~01	32	00							3241 3233
Aug. 20				16	00	00	~23	38	00	2101 1002
Aug. 23				16	00	00	~22	02	20	5541 1122
Aug. 26							16	30	00	4243 1134
Aug. 27	~02	31	20				16	30	00	3521 1255
Aug. 28	~02	41	20				16	30	00	5441 1111
Aug. 29	~02	39	20				16	30	00	1322 1111
Aug. 30	~02	30	00							1332 2322
Sep. 6							16	45	00	4011 1034
Sep. 7	~02	46	00				16	45	00	0001 1104
Sep. 8	~02	00	20							5521 1121
Sep. 10							17	00	00	0110 1013

DATE	Hour (UT)									K-Index
Sep. 11	~02	02	00							2111 1334
Sep. 12				19	48	00	~22	43	00	4332 2145
Sep. 14				17	00	00	~22	42	00	2211 1112
Sep. 16							23	33	00	5211 1323
Sep. 17	~01	31	00							2321 1113
Sep. 20							21	47	00	2101 1013
Sep. 21	~00	01	00				17	30	00	3111 0114
Sep. 22	~01	11	00				17	30	00	3112 2210
Sep. 23	~01	08	00							1353 3666
Oct. 9				19	26	00	~23	34	00	6433 3311
Oct. 12				19	42	00	~21	49	40	6643 2334
Oct. 16				20	30	00	~22	20	00	5322 2223



## Appendix

### Summary plots of the Upper Atmosphere Physics Monitoring data in 2001

- Plotted data from top:

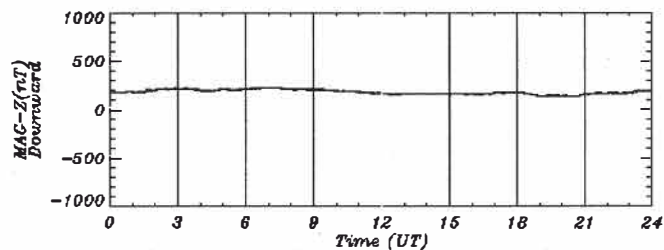
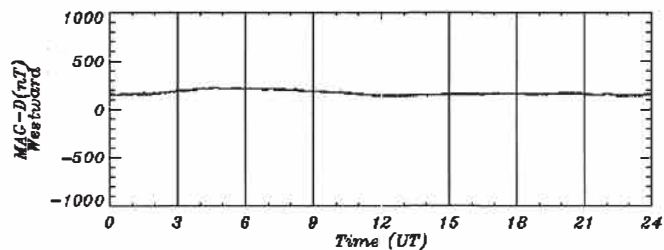
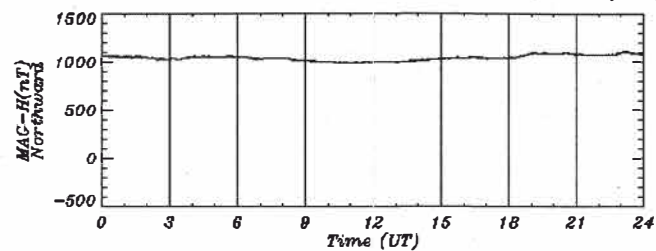
H	:	northward component of the magnetic variation
D	:	westward component of the magnetic variation
Z	:	downward component of the magnetic variation

- Plotting vertical scale:

H, D, Z : 100 nT/div

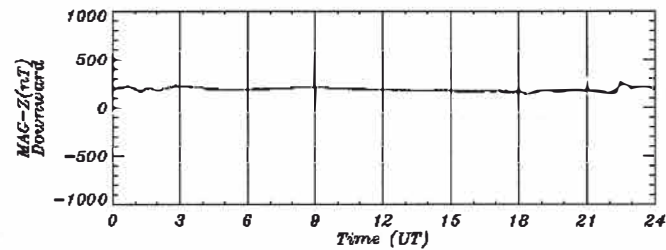
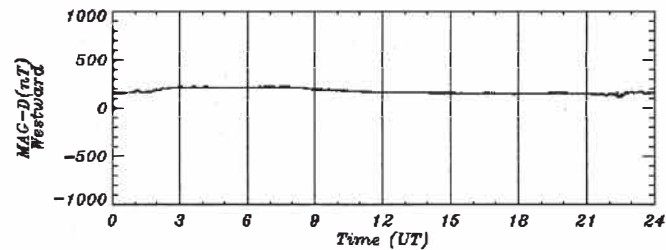
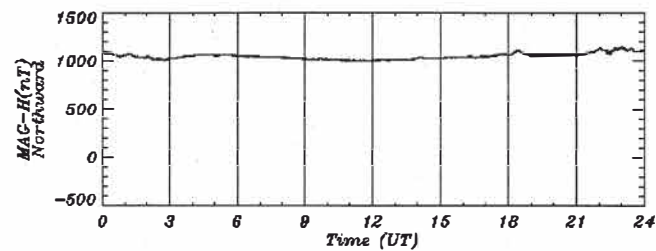
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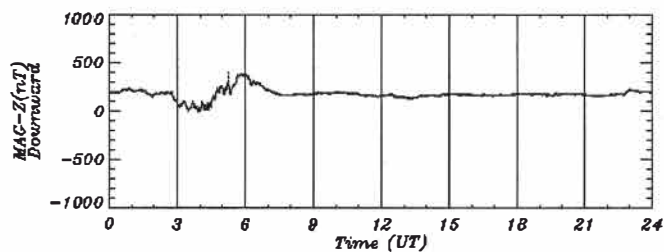
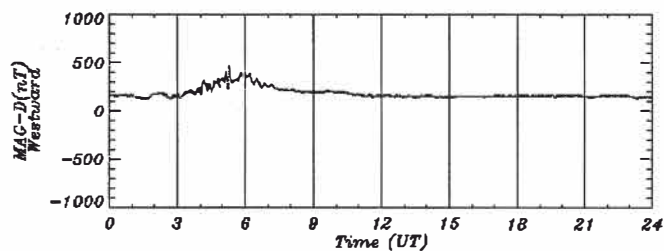
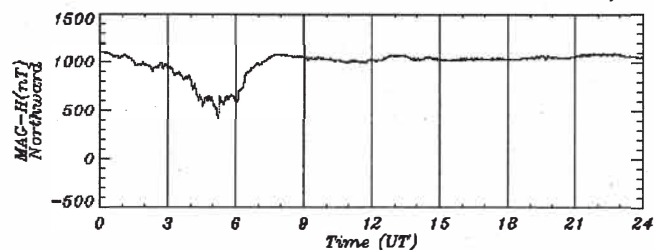
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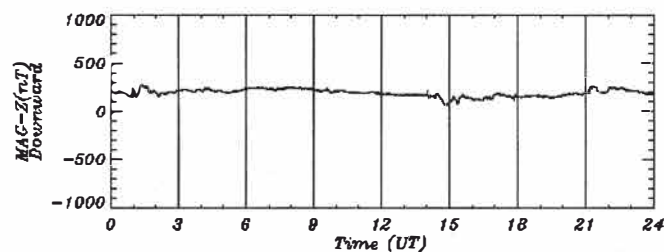
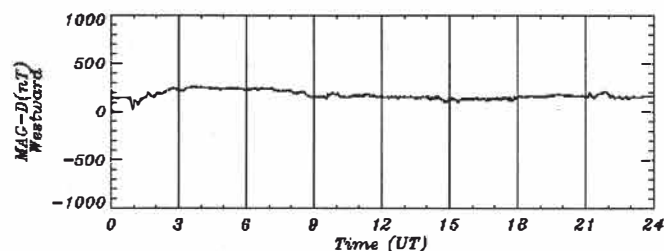
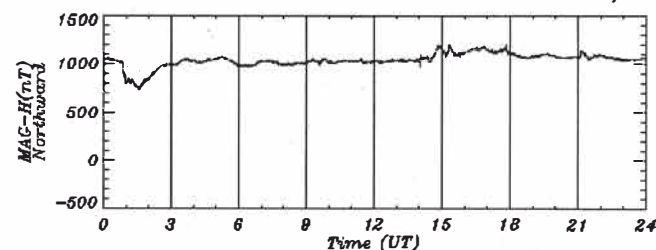
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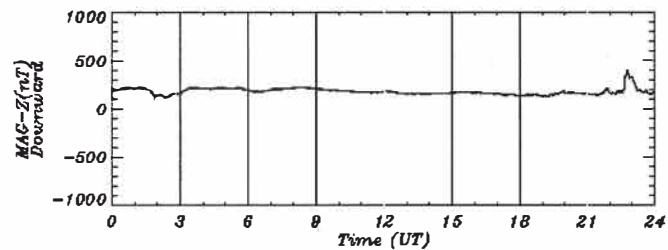
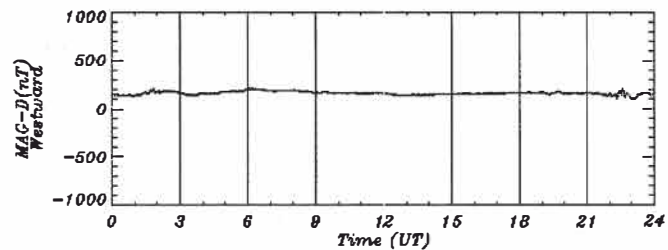
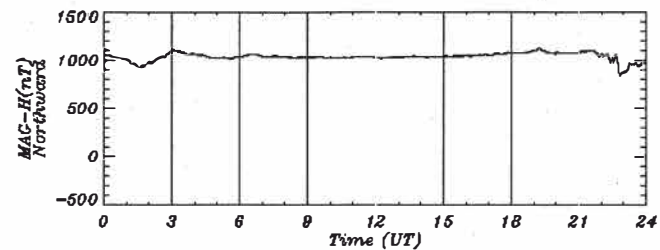
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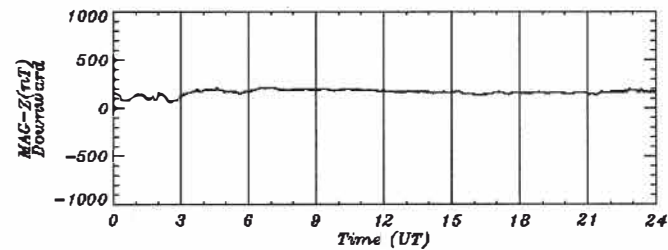
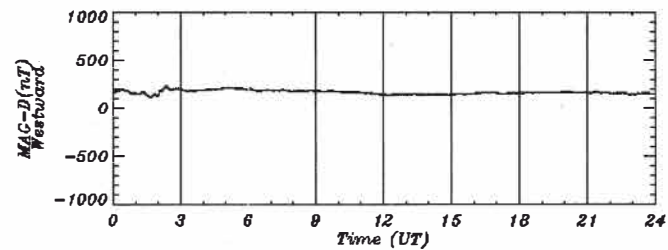
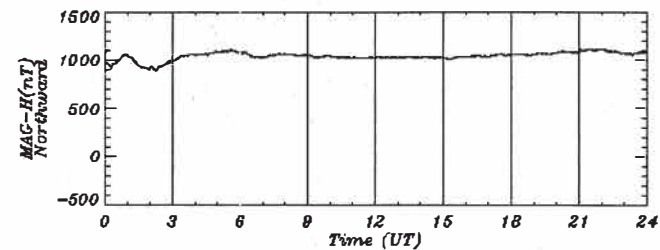
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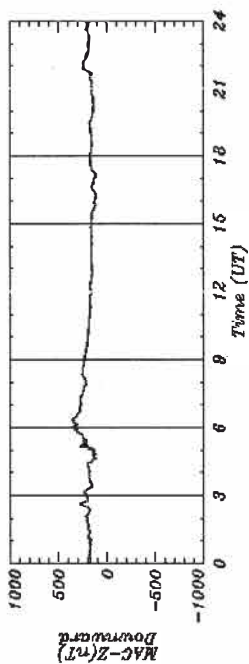
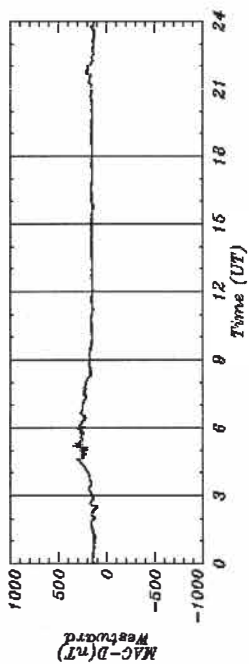
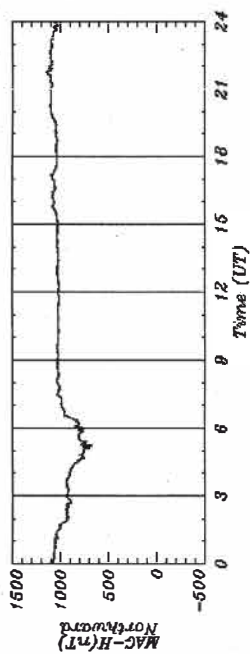
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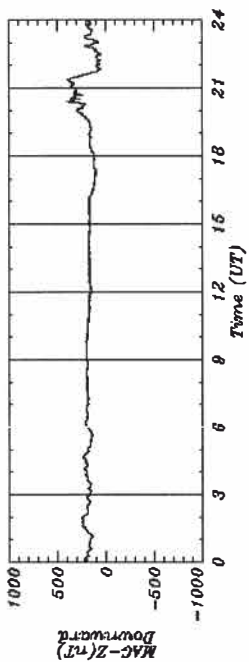
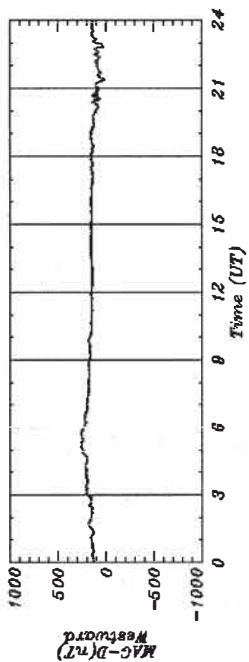
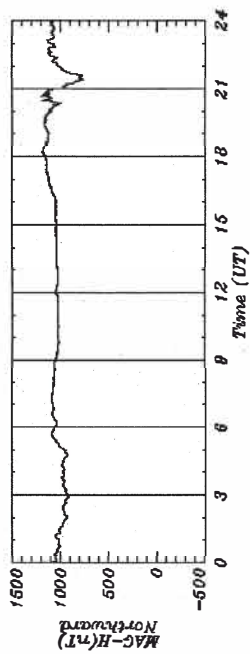
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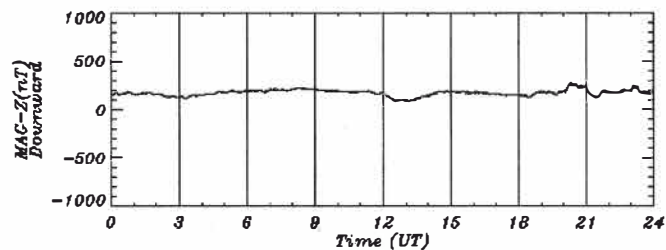
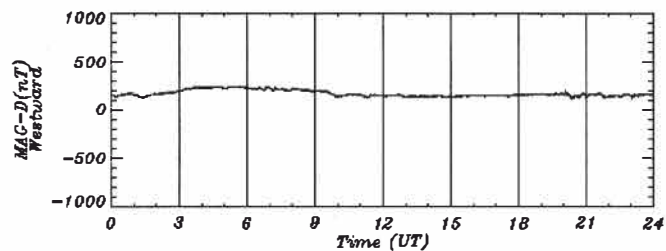
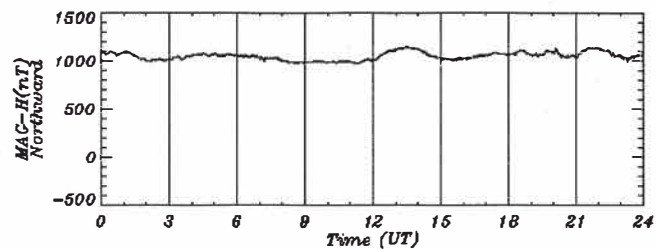
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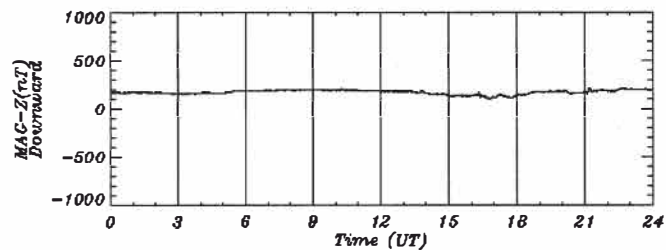
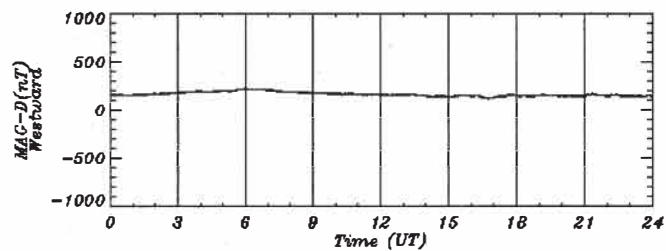
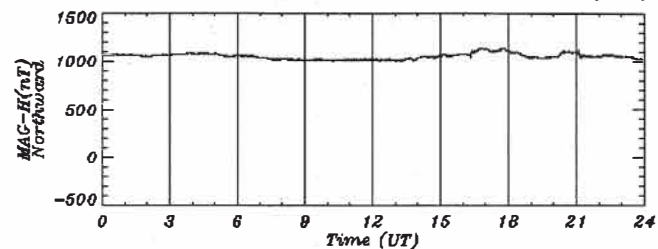
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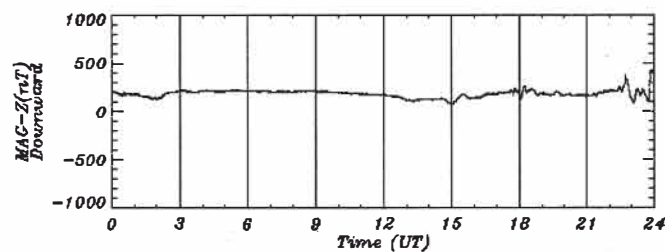
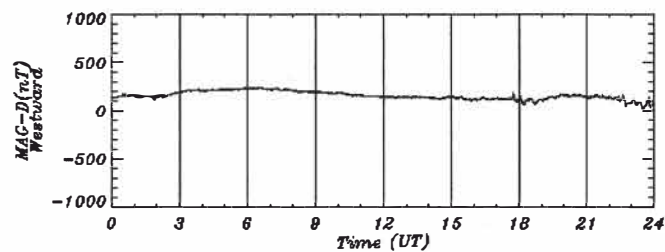
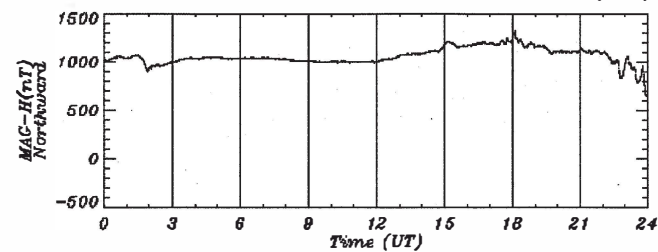
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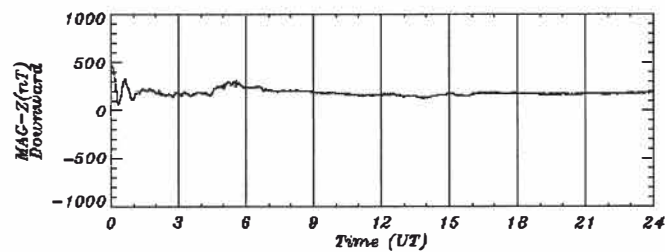
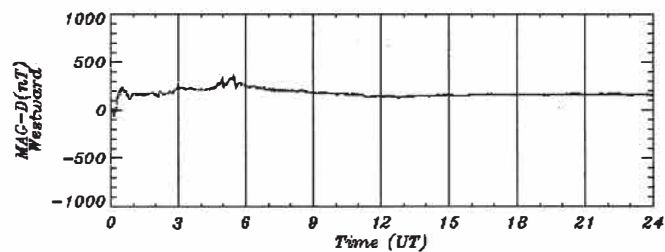
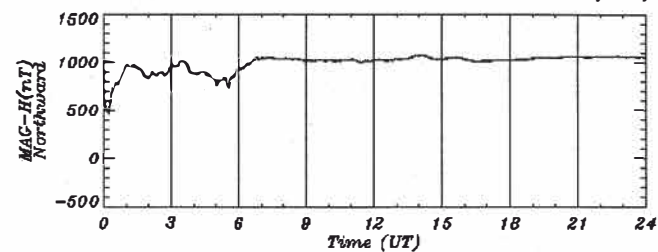
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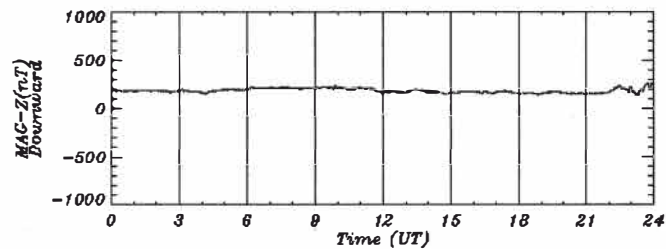
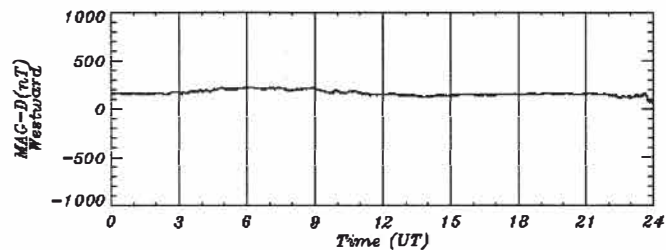
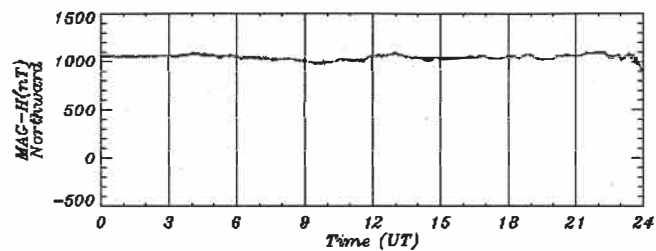
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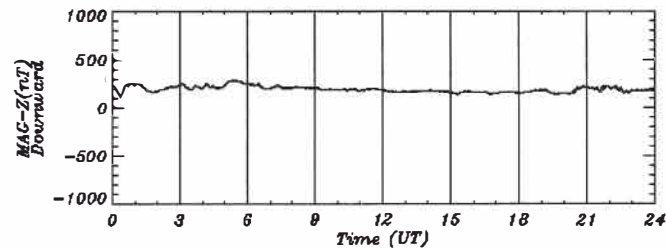
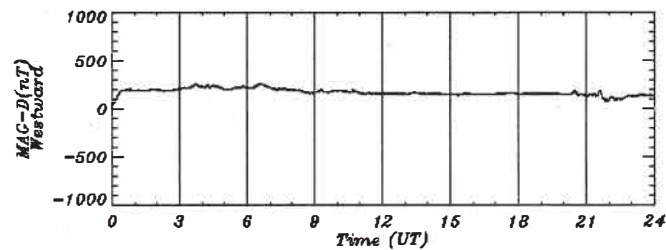
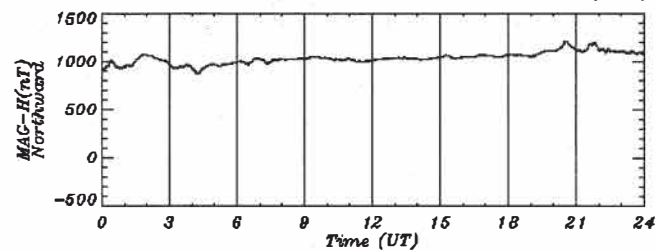
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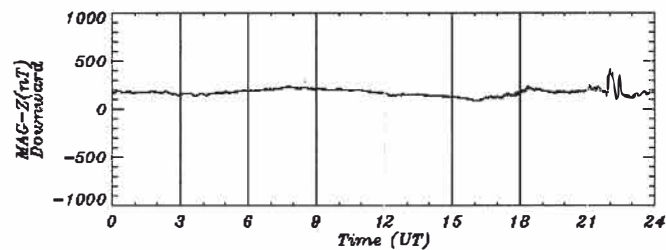
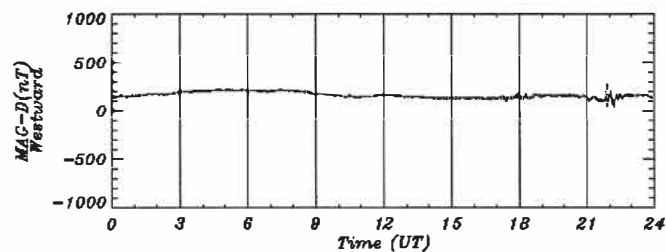
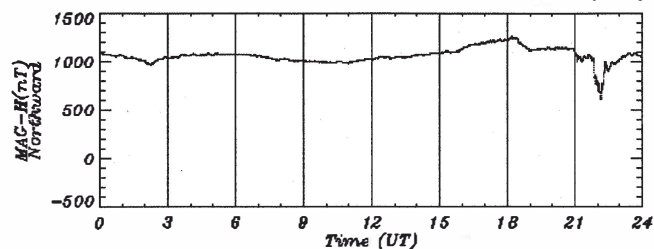
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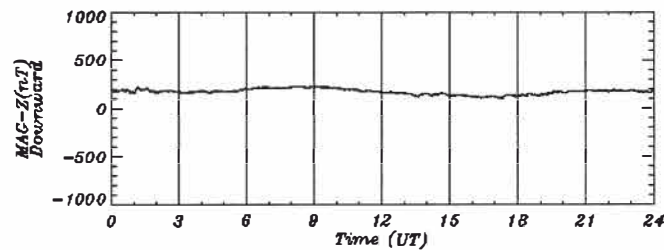
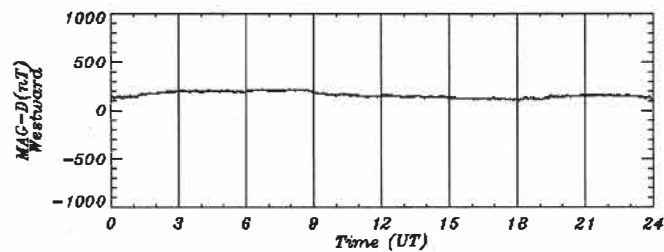
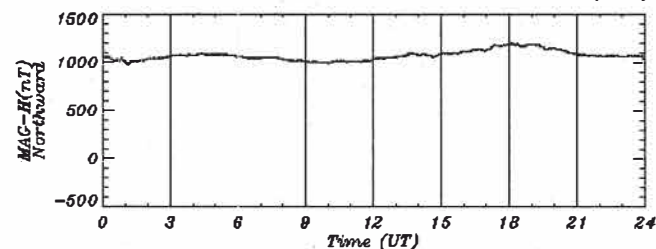
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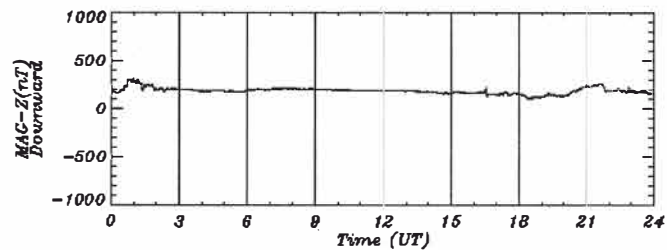
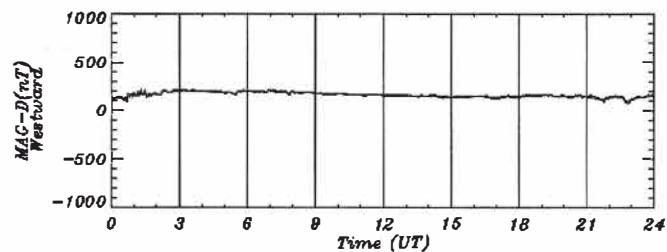
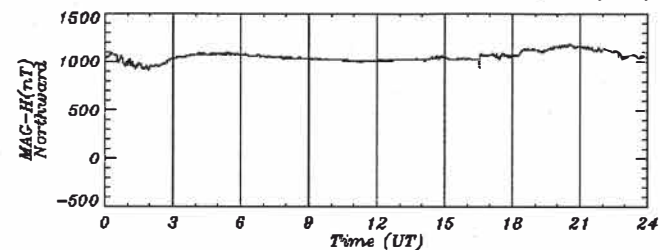
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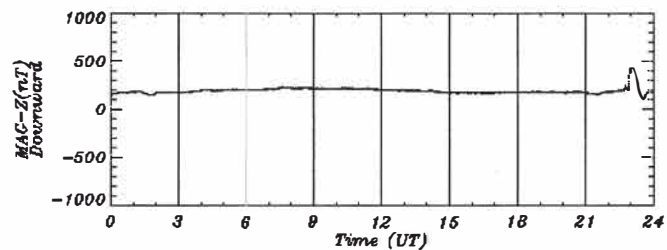
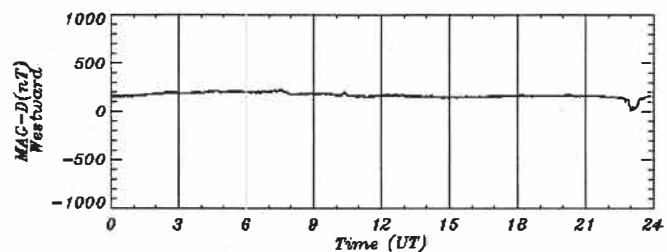
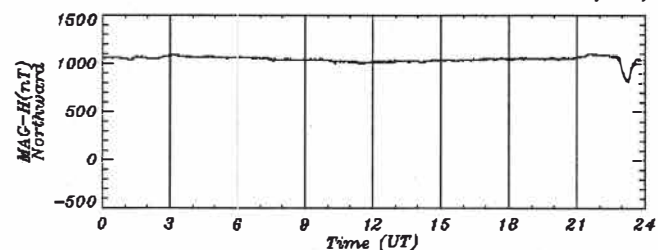
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NIPR Syowa Magnetometer

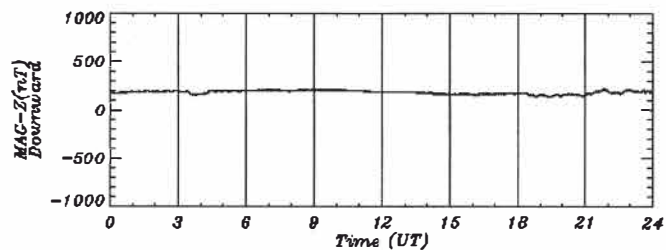
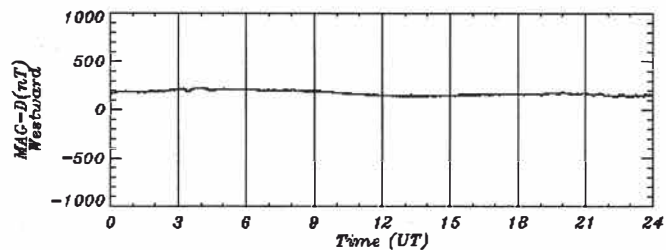
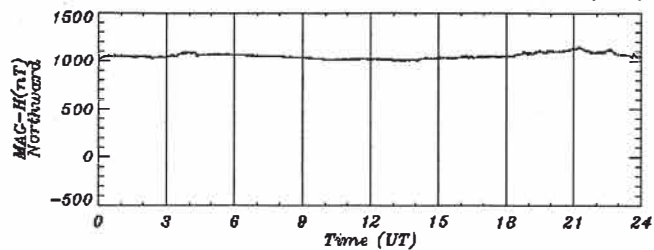
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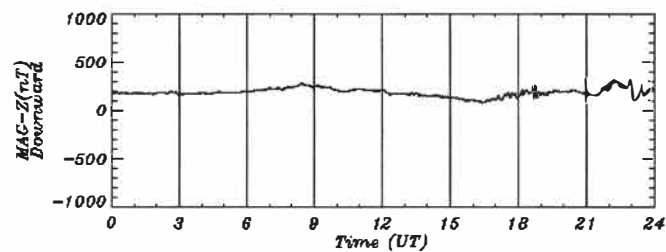
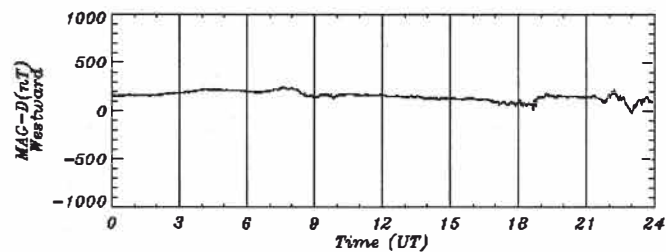
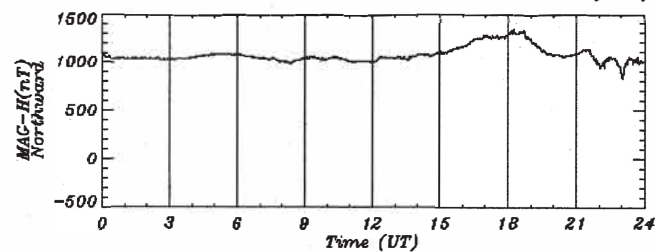
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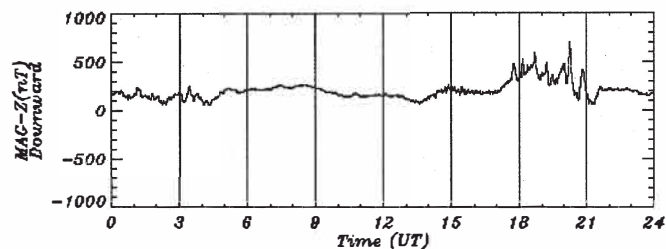
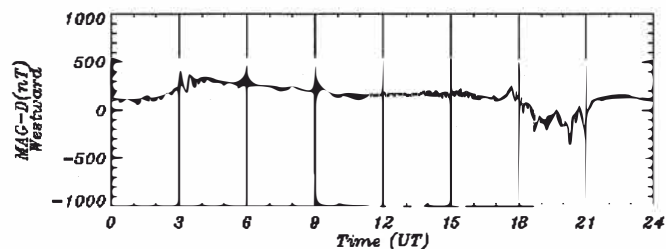
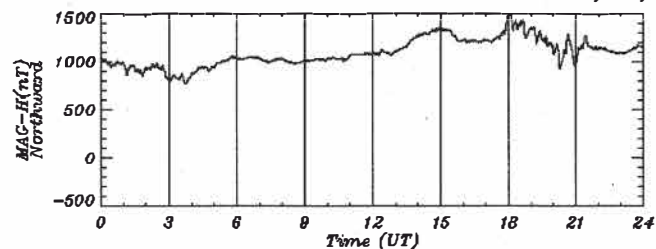
NIPR Syowa Magnetometer

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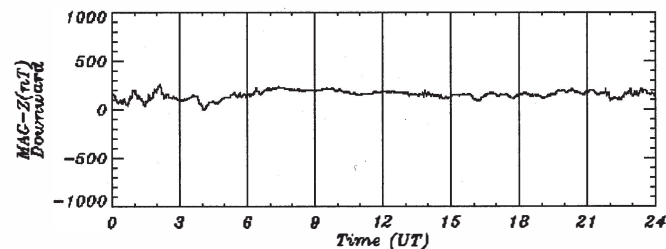
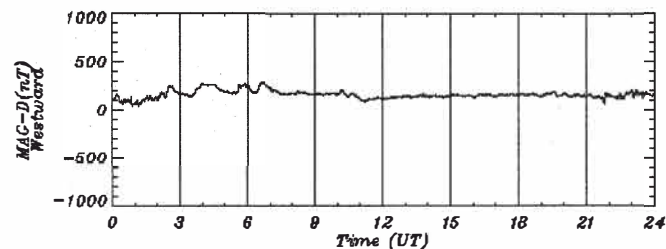
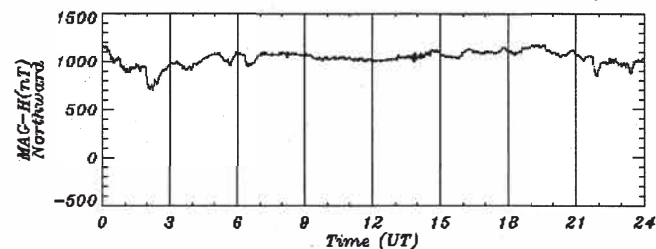
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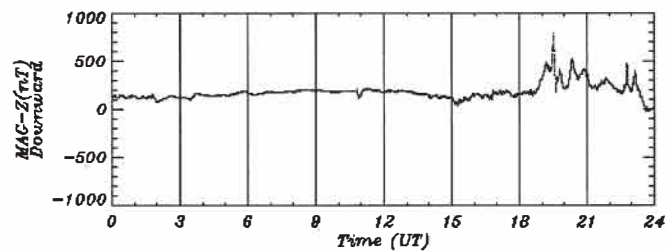
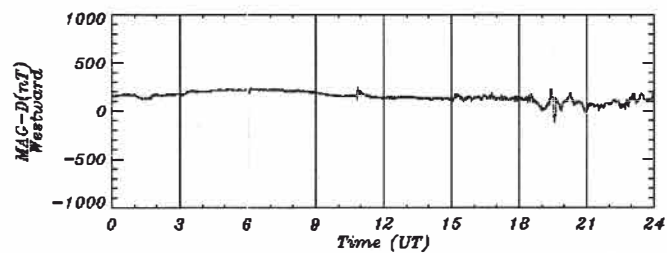
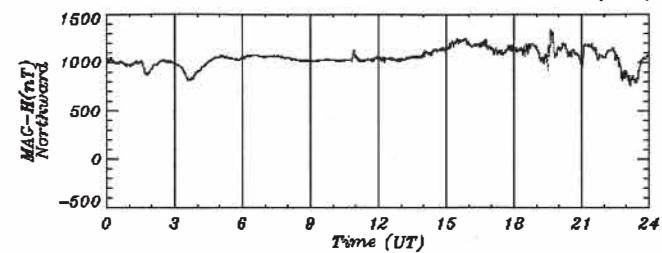
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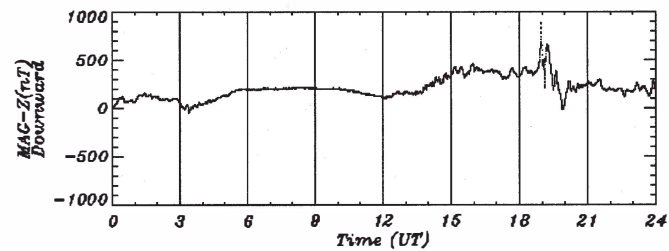
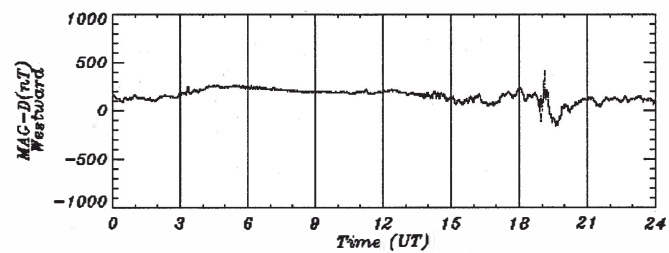
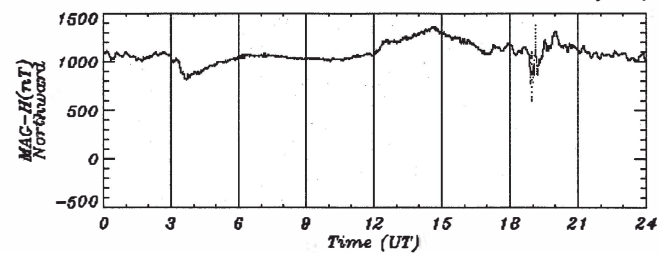
NIPR Syowa Magnetometer

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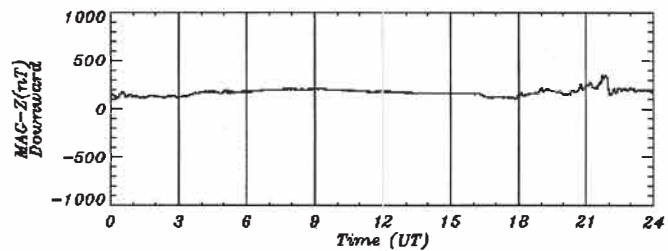
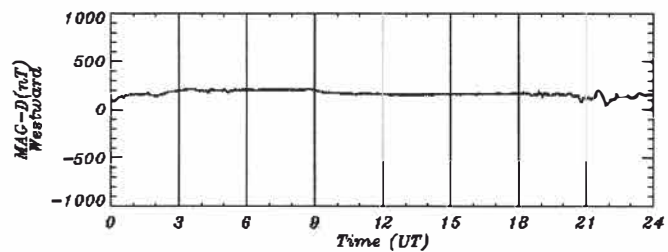
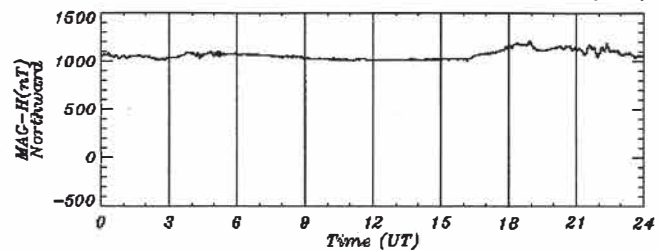
NIPR Syowa Magnetometer

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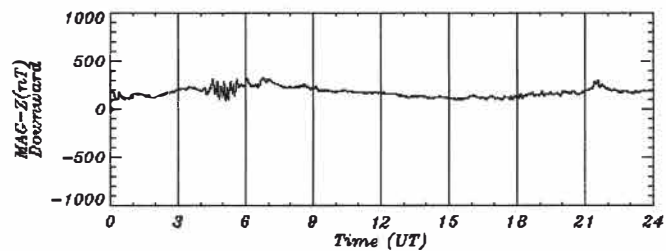
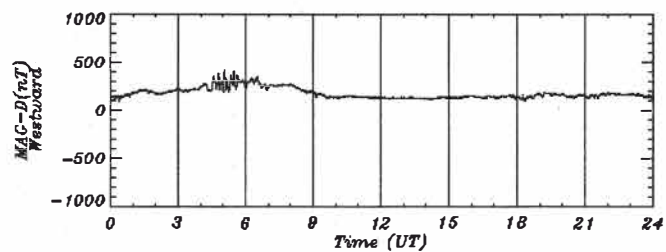
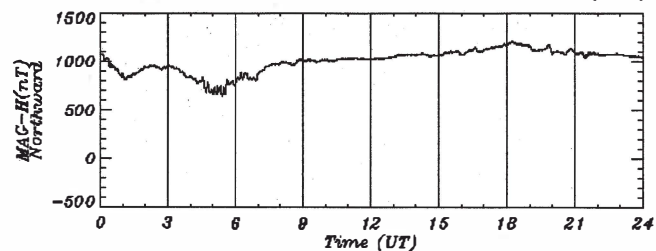
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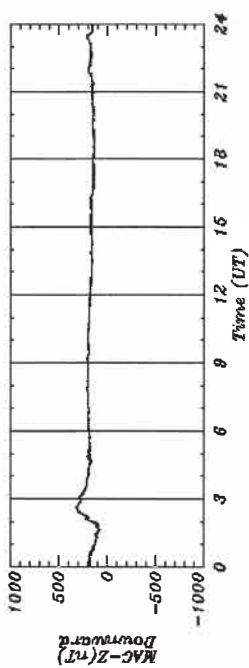
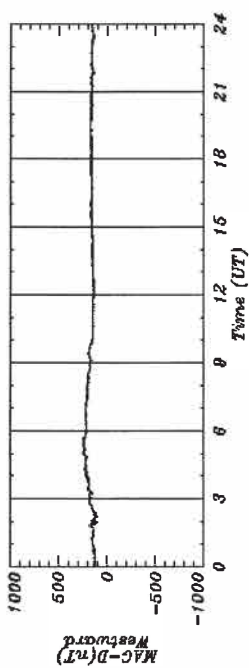
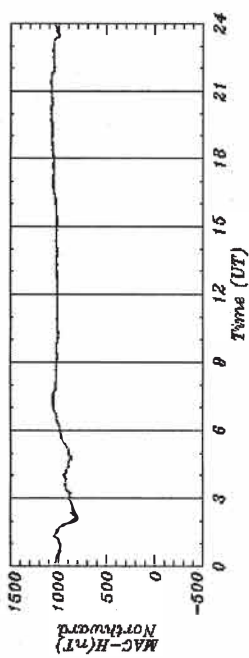
NIPR Syowa Magnetometer

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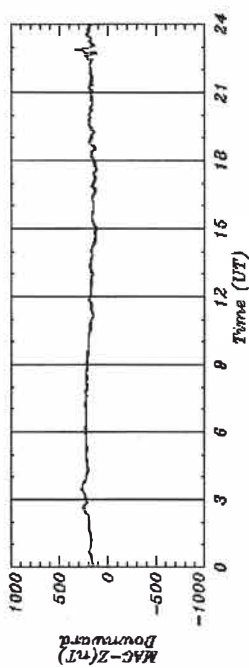
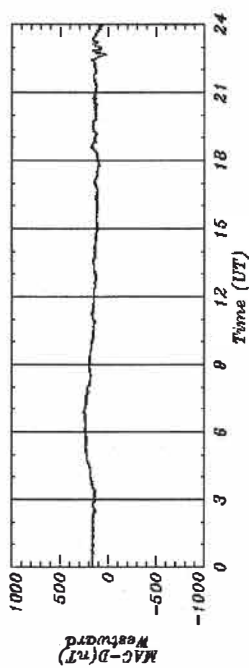
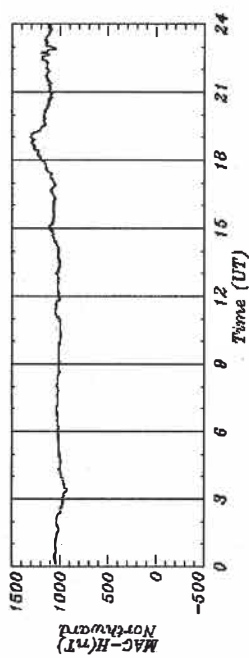
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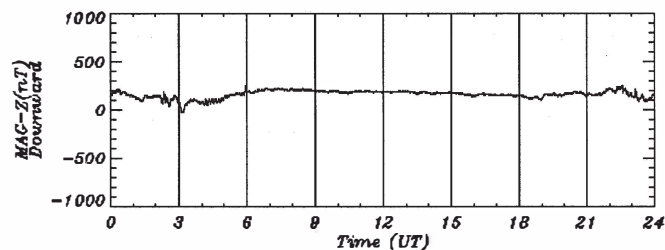
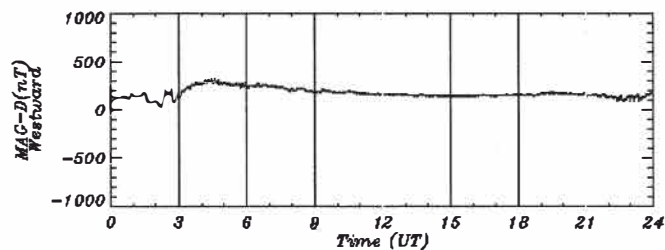
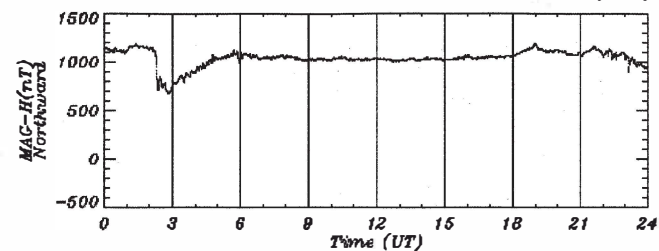
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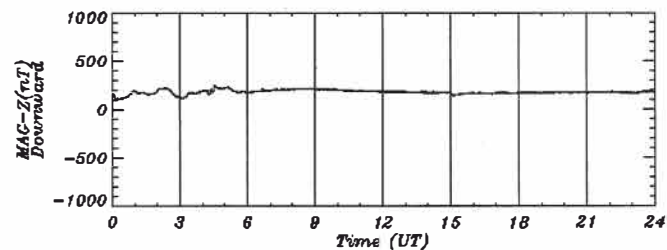
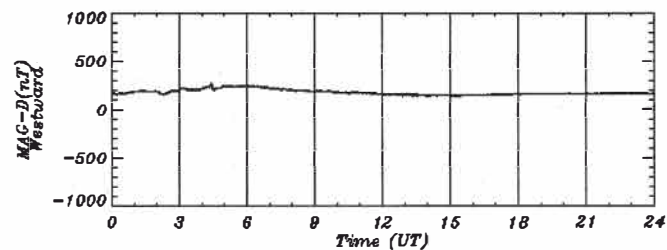
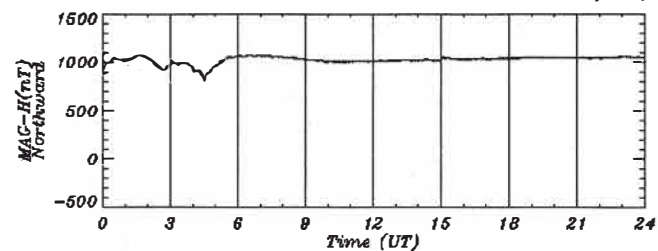
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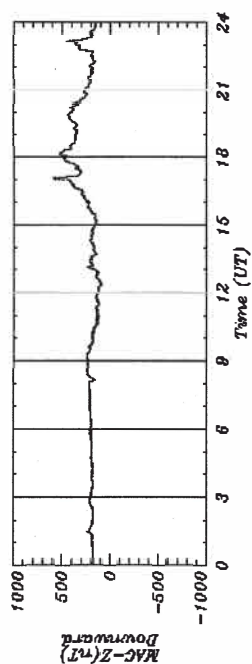
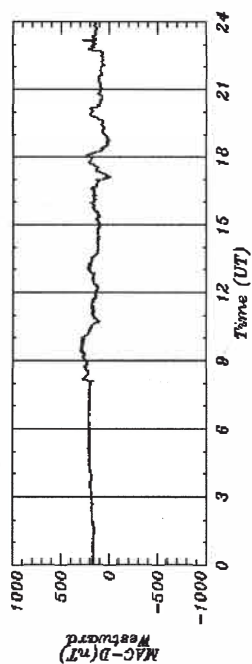
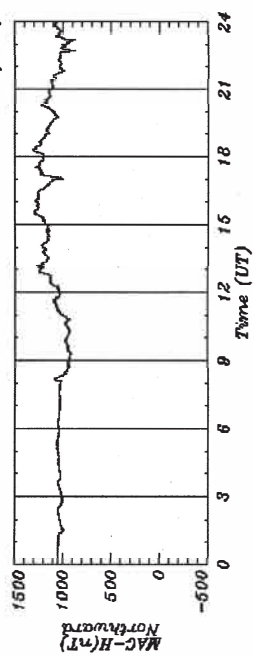


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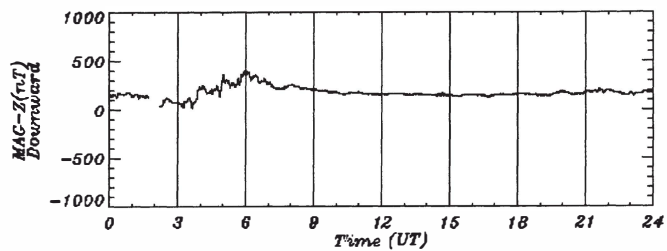
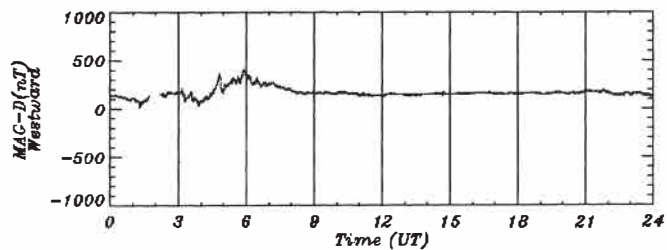
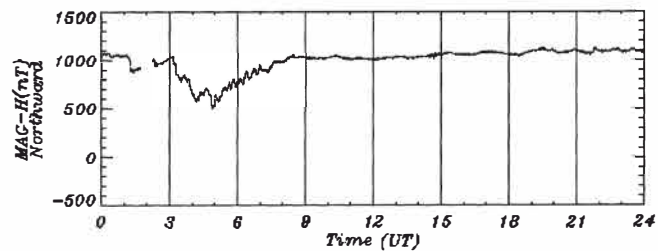


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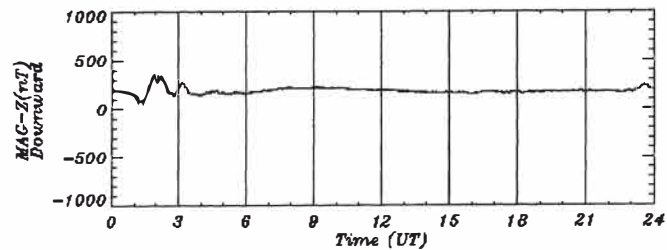
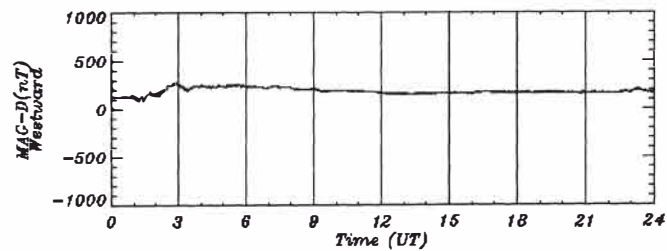
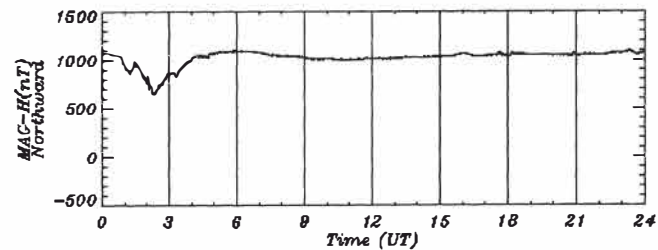
NIPR Syowa Magnetometer

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NIPR Syowa Magnetometer

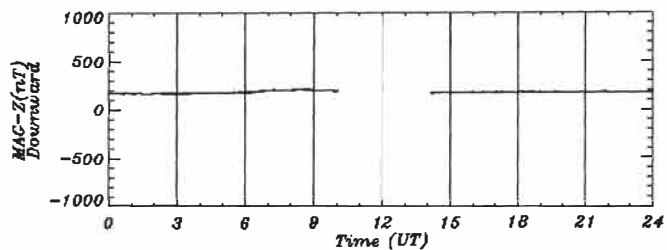
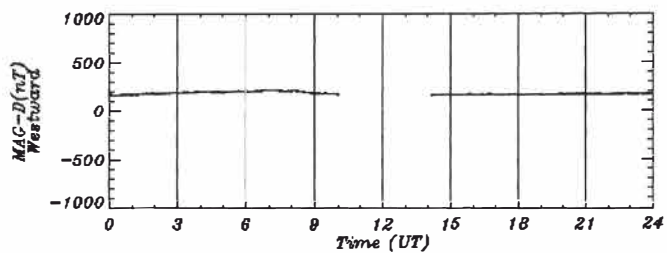
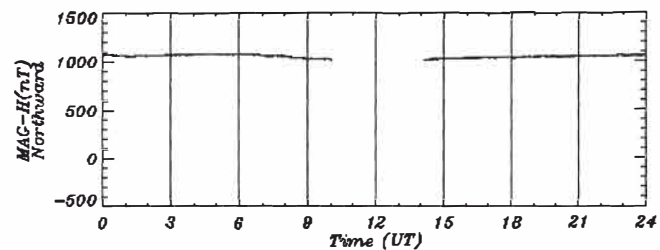
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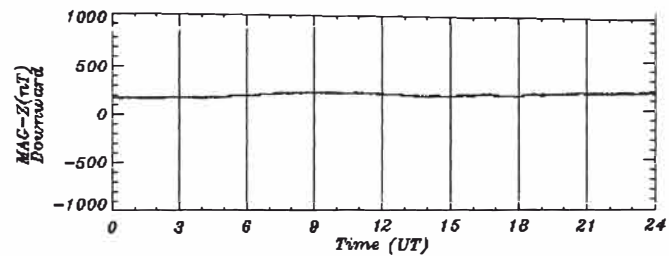
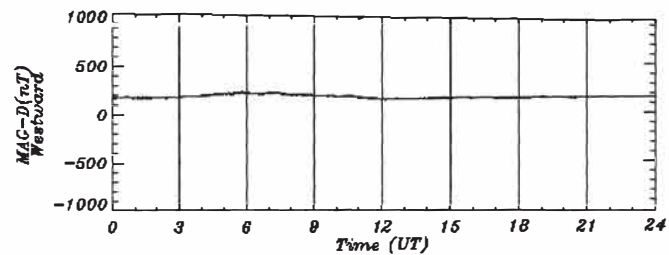
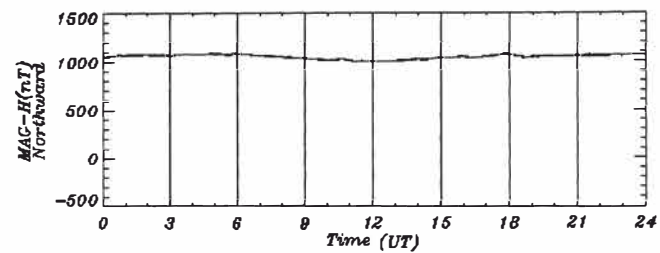
# NIPR Syowa Magnetometer

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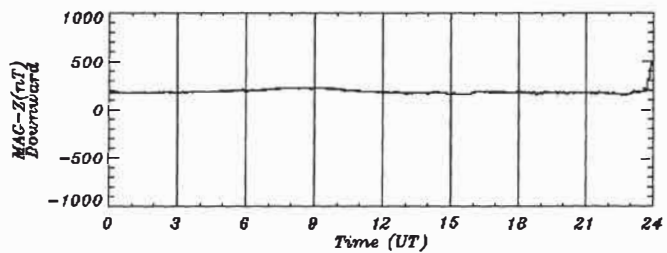
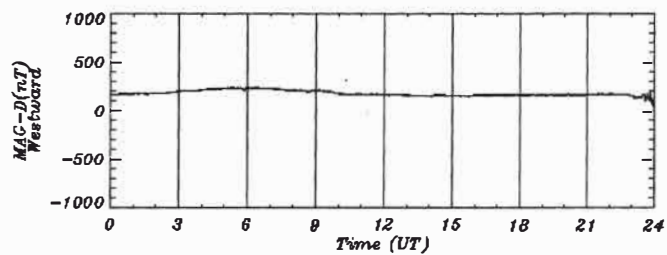
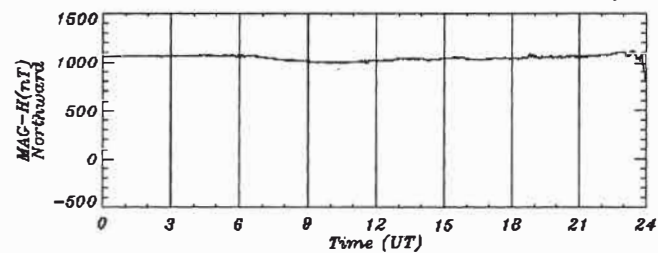
# NIPR Syowa Magnetometer

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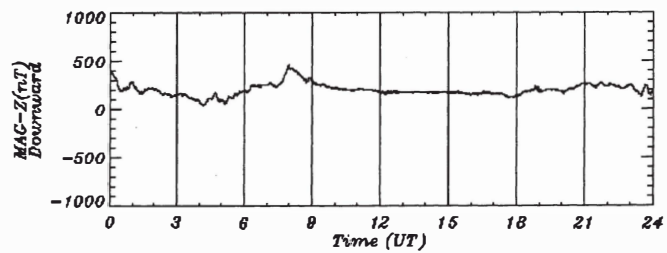
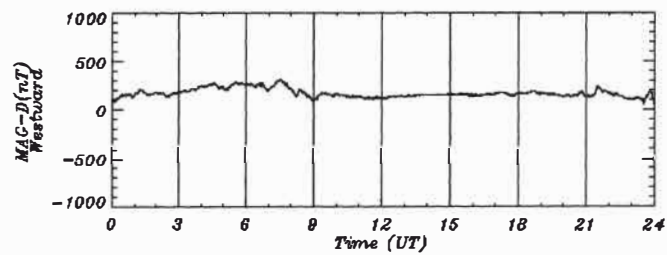
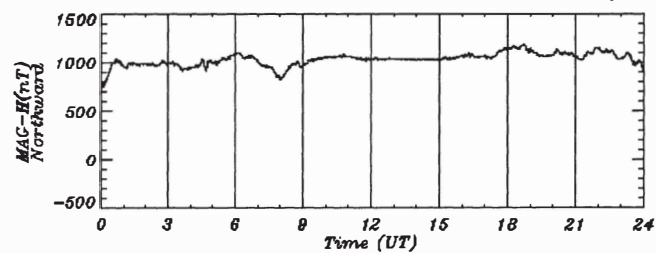
*NIPR Syowa Magnetometer*

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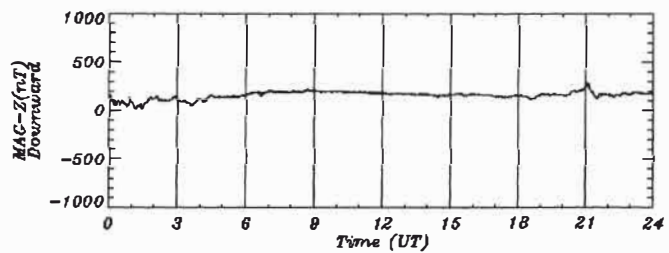
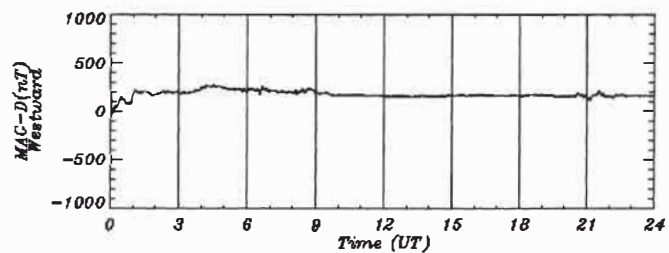
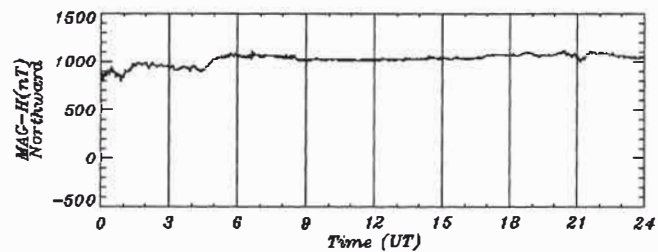
*NIPR Syowa Magnetometer*

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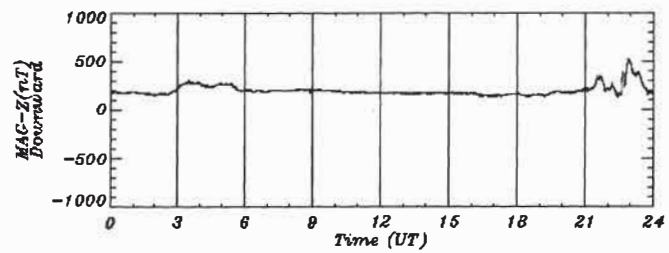
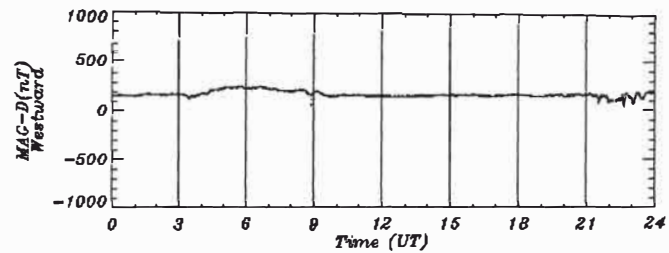
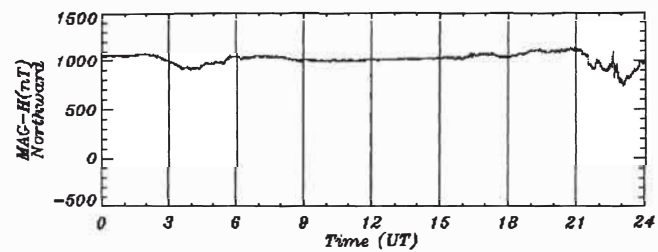
# NIPR Syowa Magnetometer

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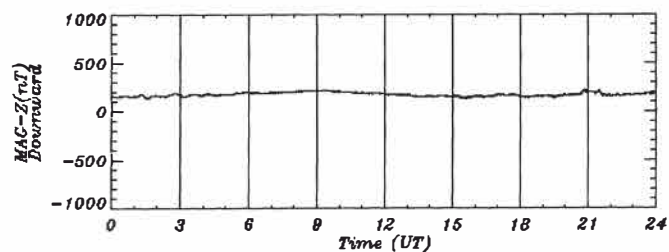
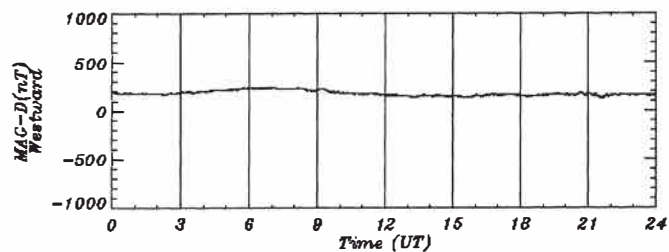
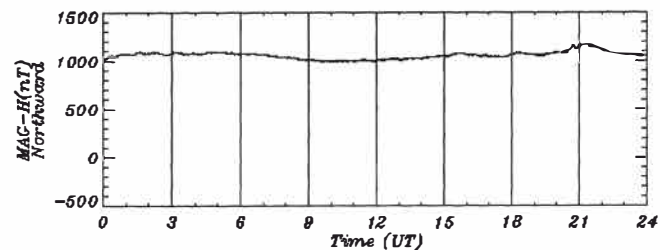
# NIPR Syowa Magnetometer

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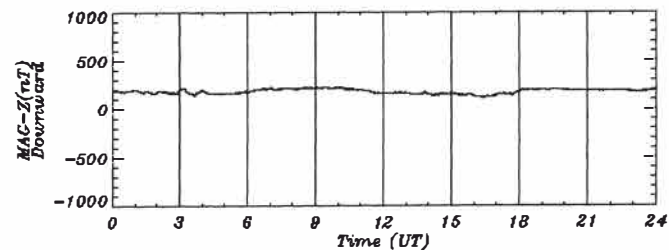
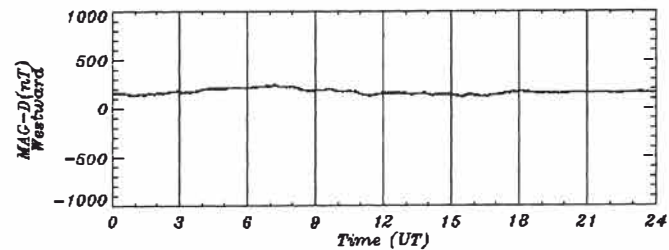
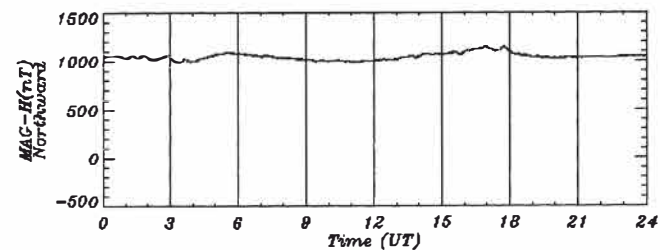
# NIPR Syowa Magnetometer

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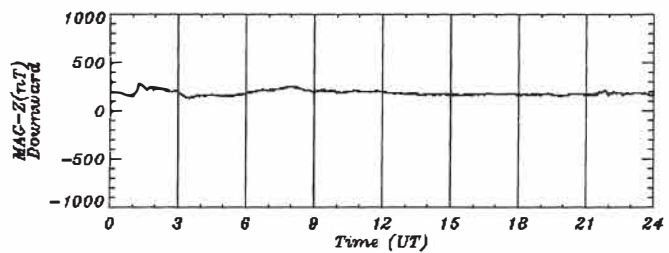
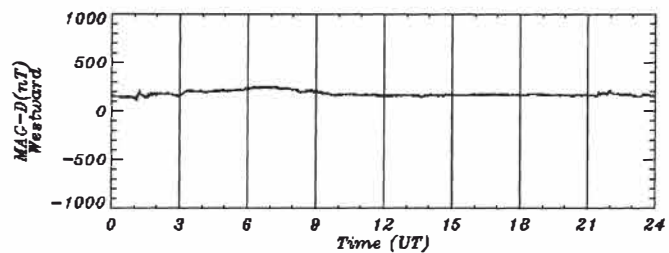
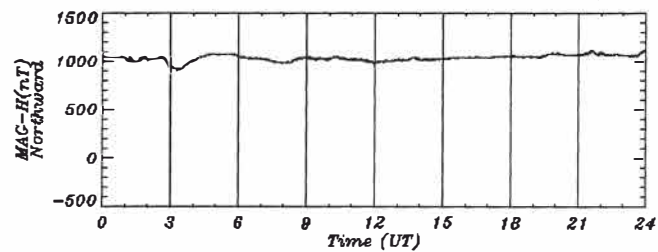
# NIPR Syowa Magnetometer

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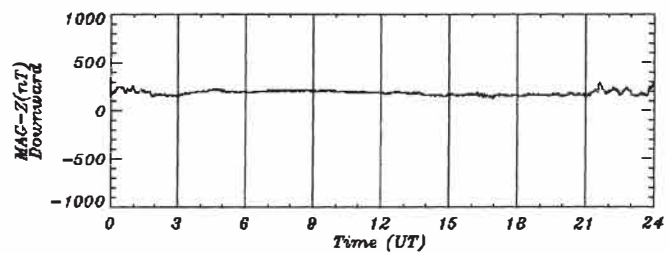
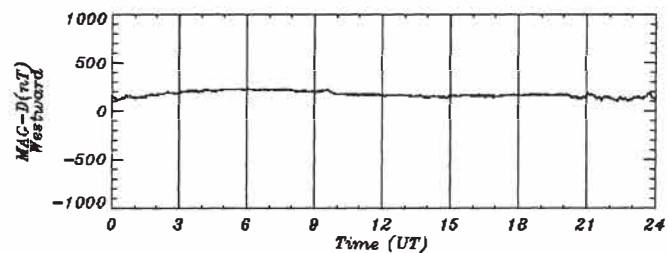
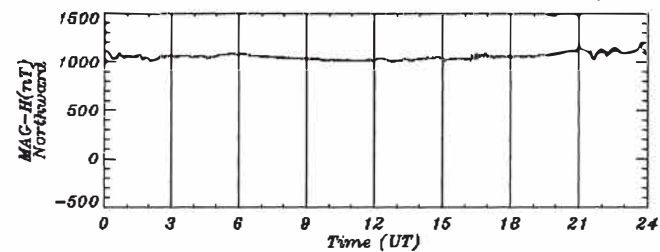
*NIPR Syowa Magnetometer*

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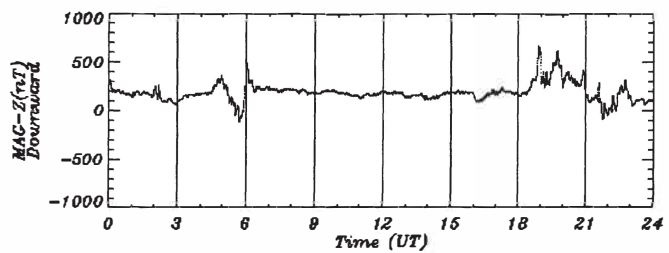
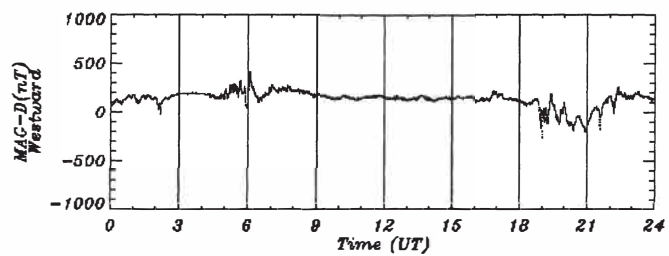
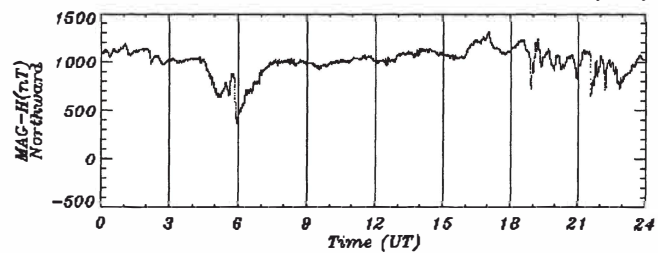
*NIPR Syowa Magnetometer*

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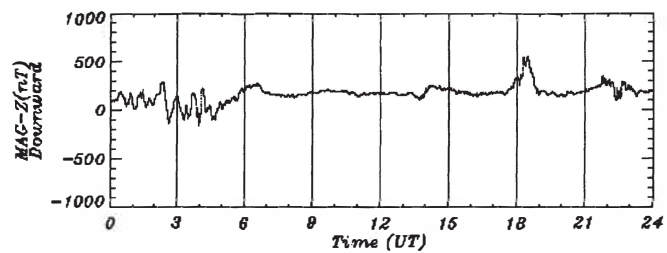
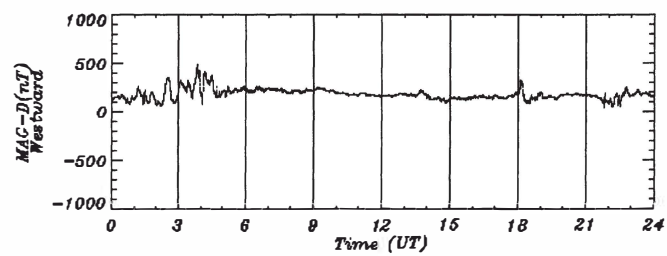
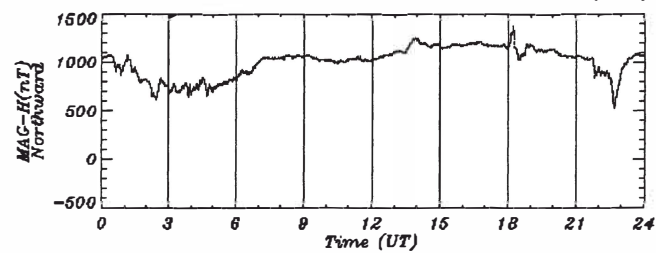
# NIPR Syowa Magnetometer

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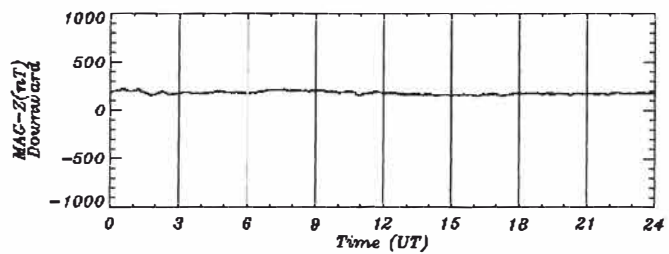
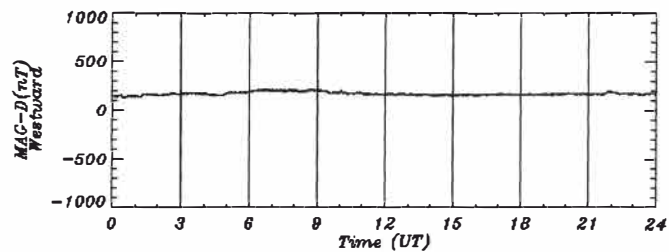
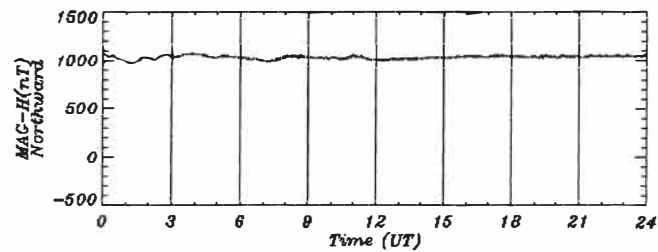
# NIPR Syowa Magnetometer

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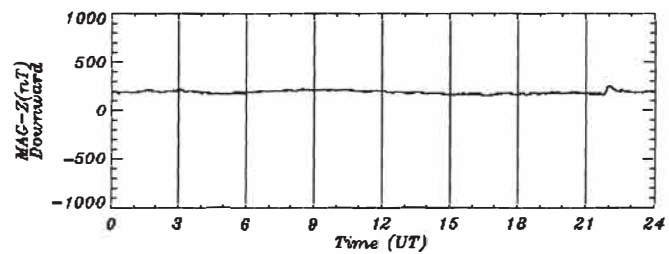
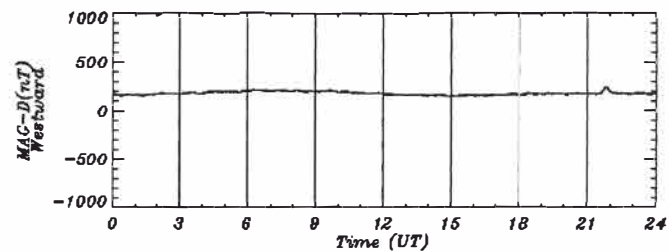
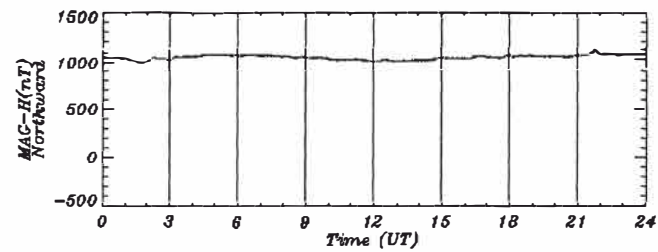
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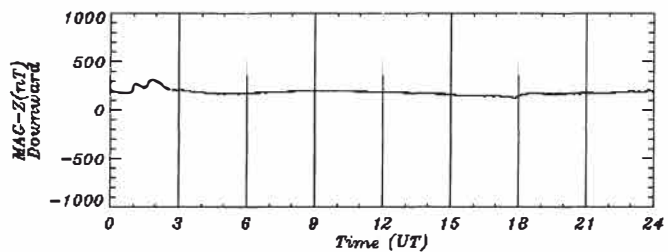
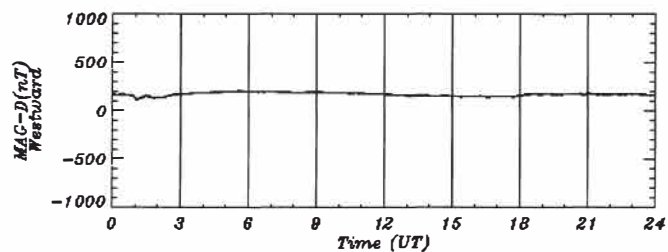
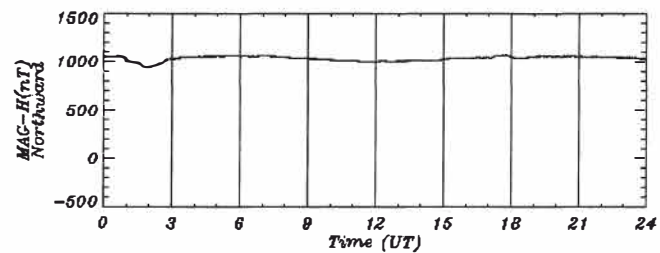
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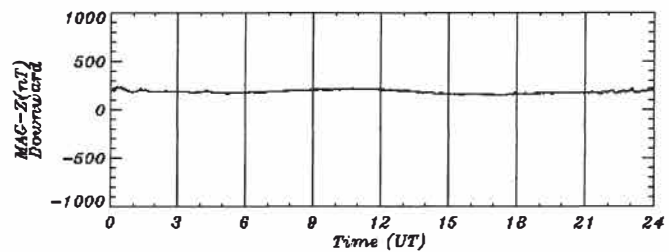
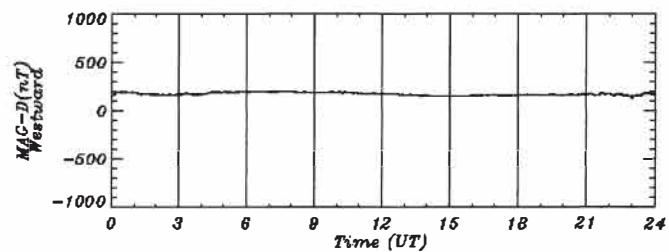
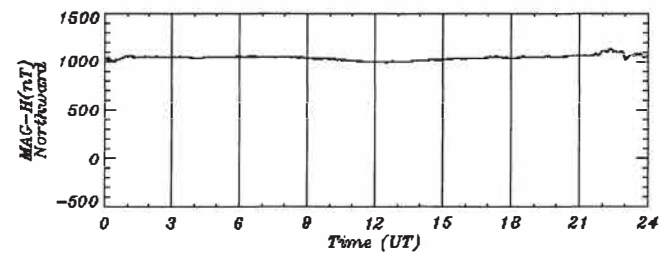
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NIPR Syowa Magnetometer

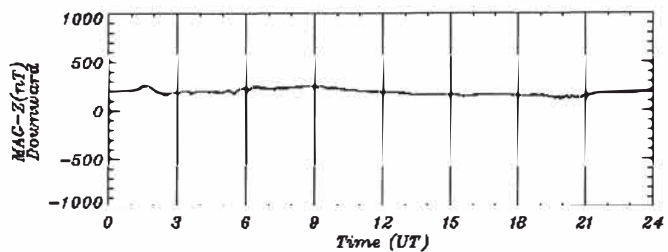
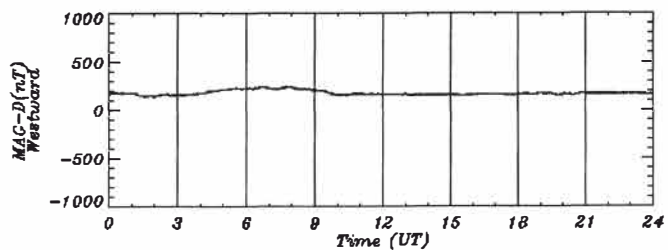
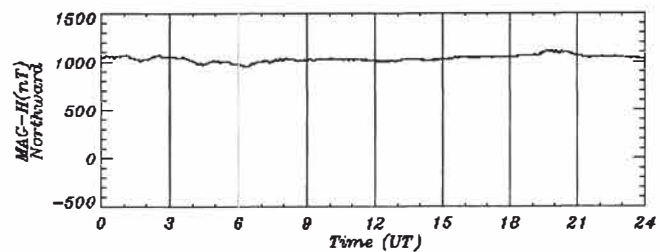
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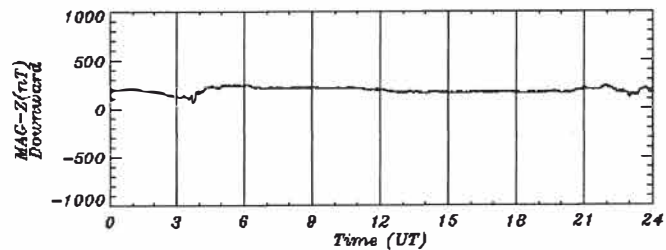
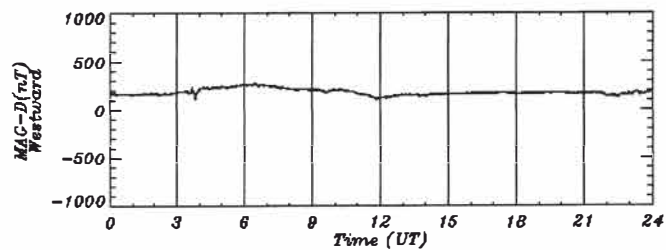
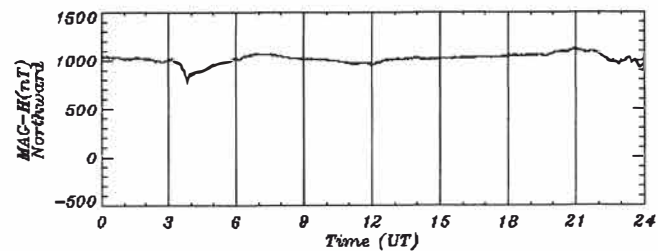
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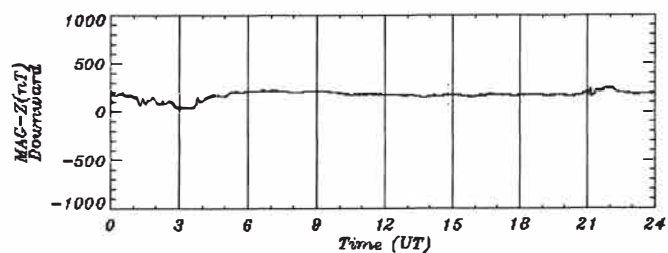
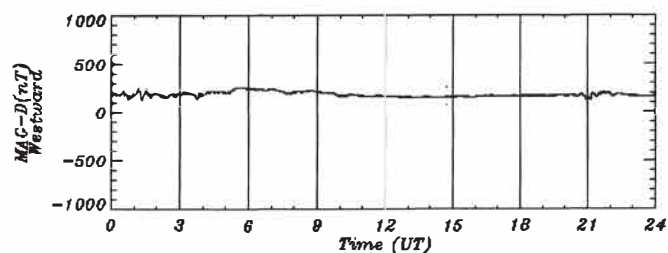
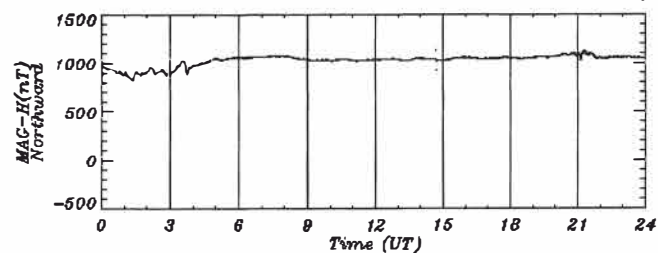
NIPR Syowa Magnetometer

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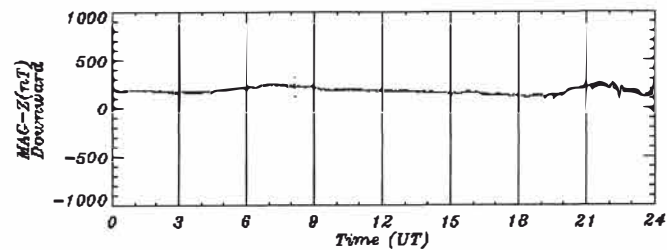
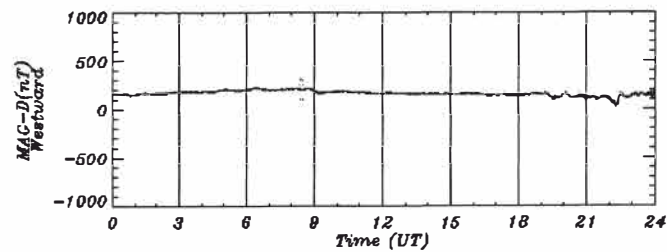
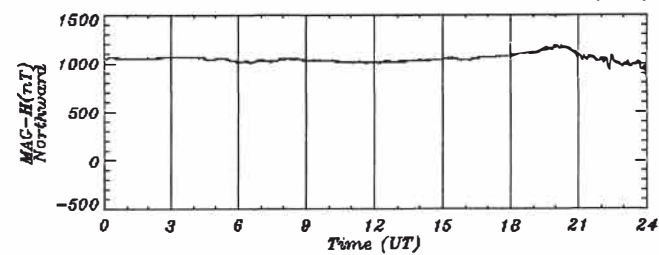
# NIPR Syowa Magnetometer

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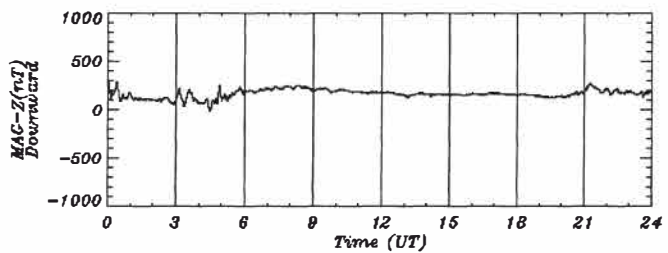
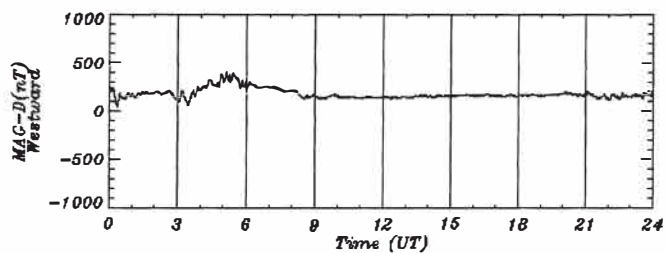
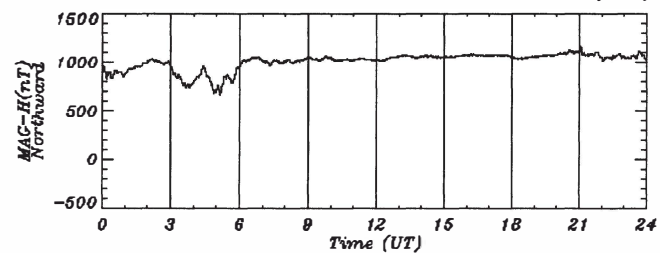
# NIPR Syowa Magnetometer

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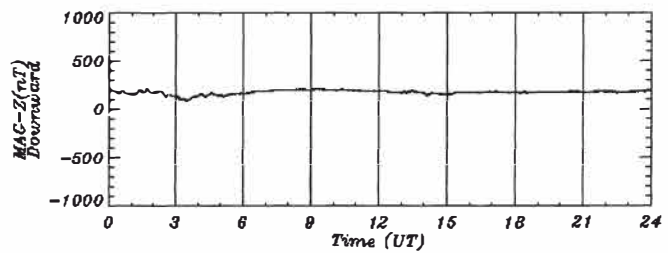
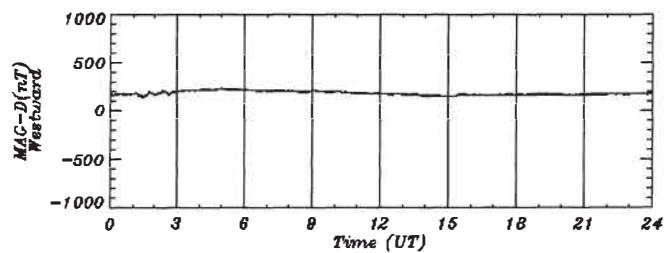
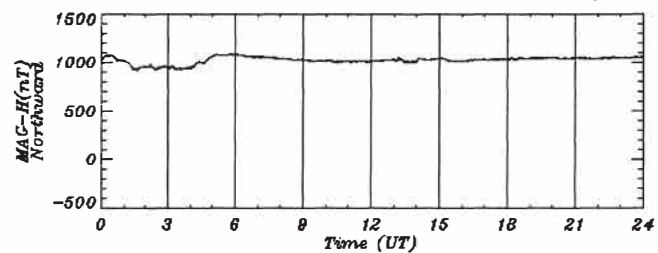
NIPR Syowa Magnetometer

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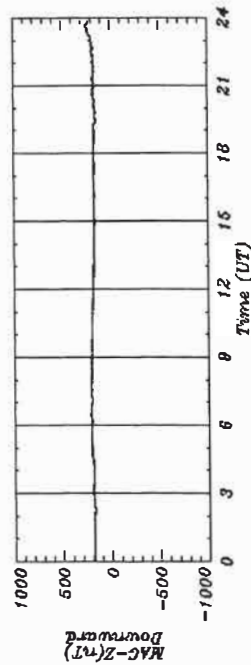
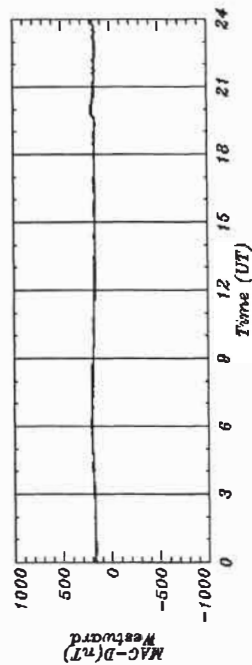
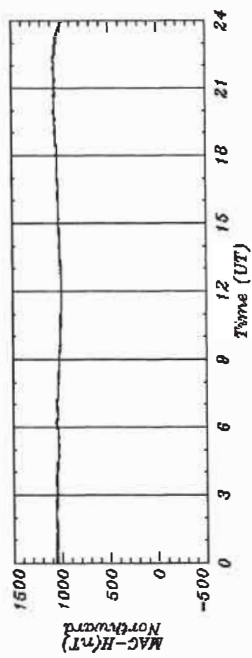
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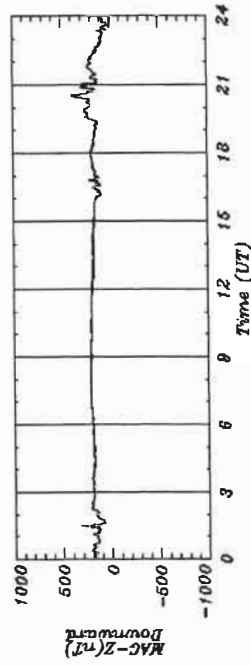
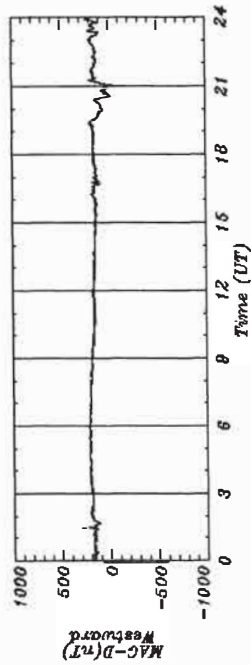
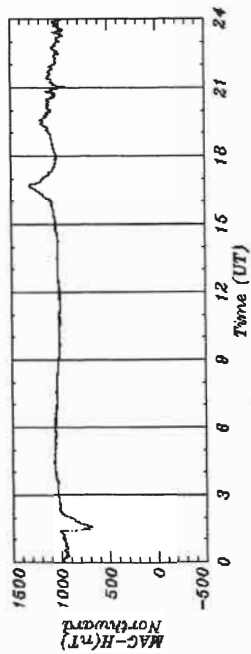
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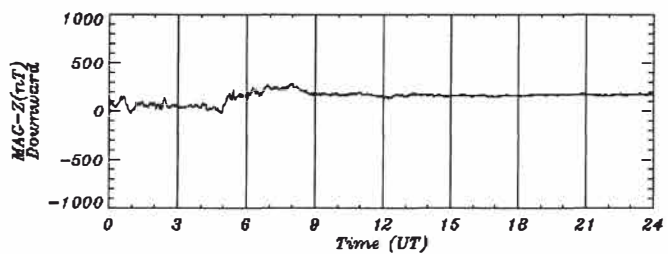
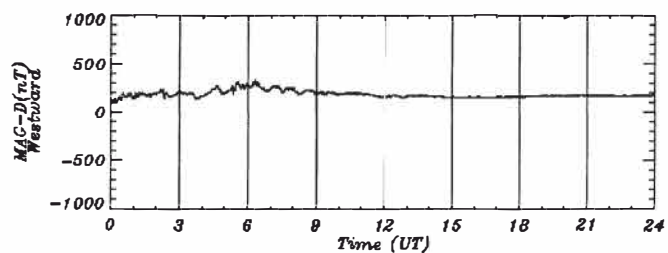
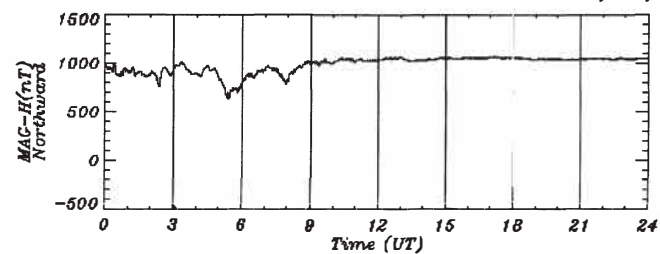
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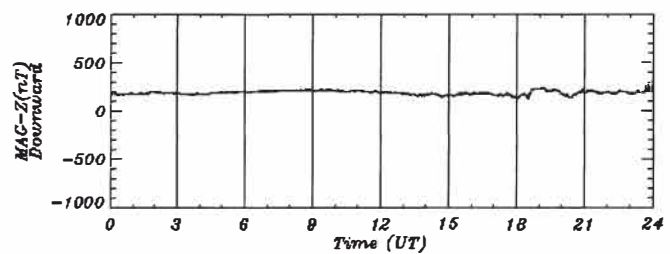
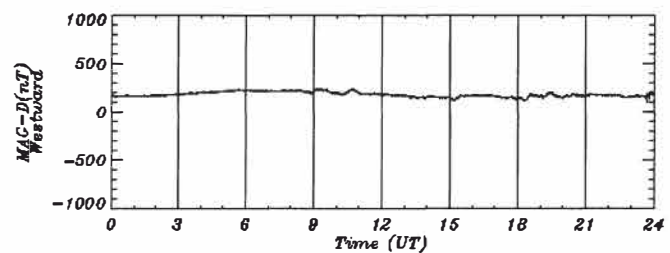
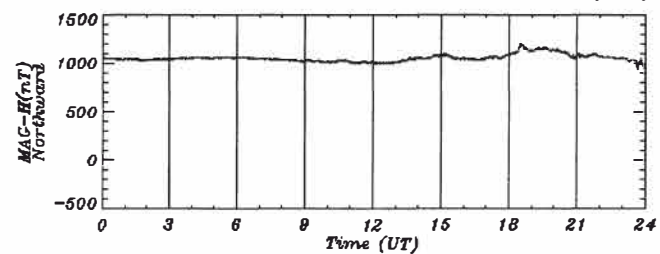
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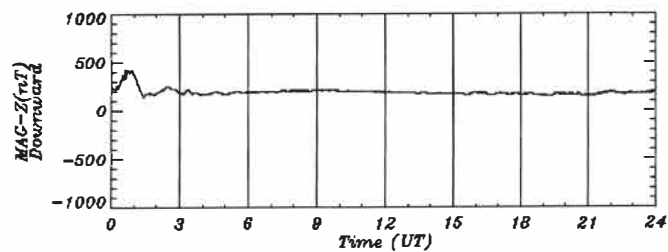
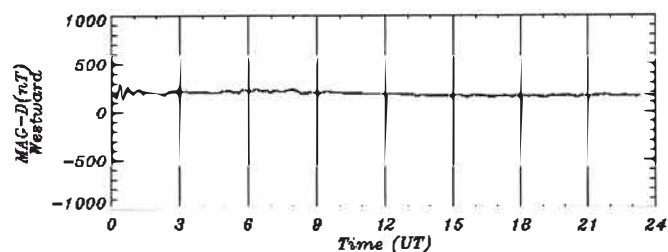
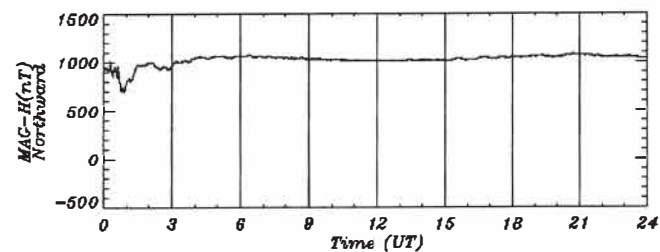
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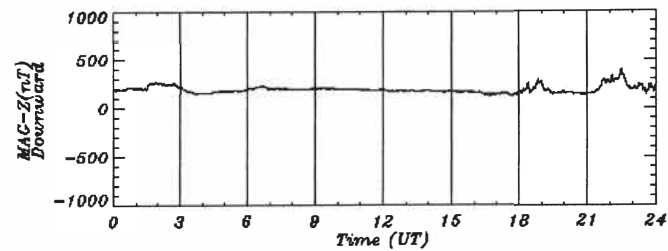
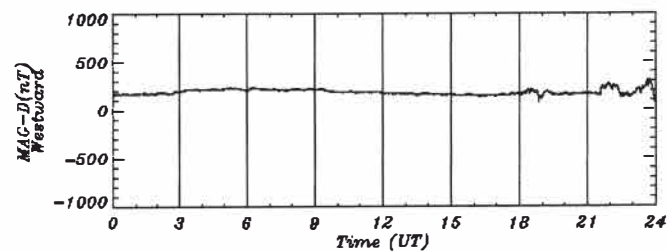
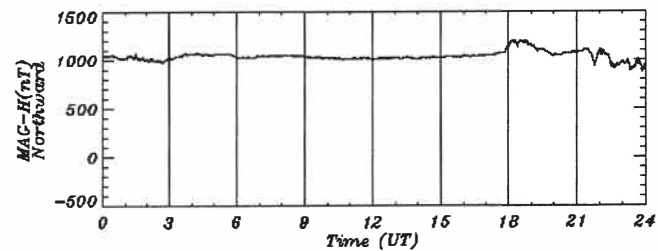
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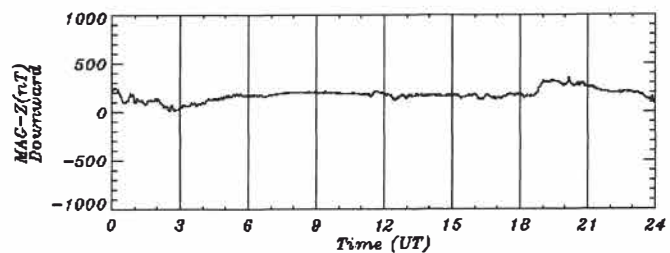
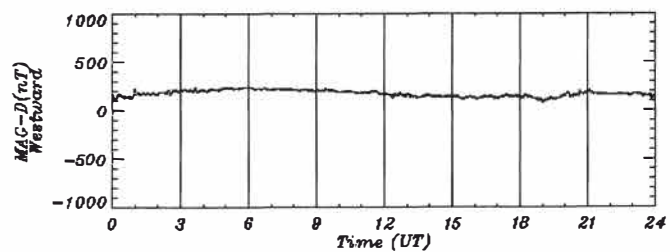
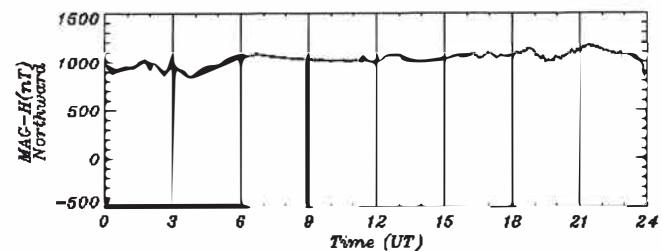
NIPR Syowa Magnetometer

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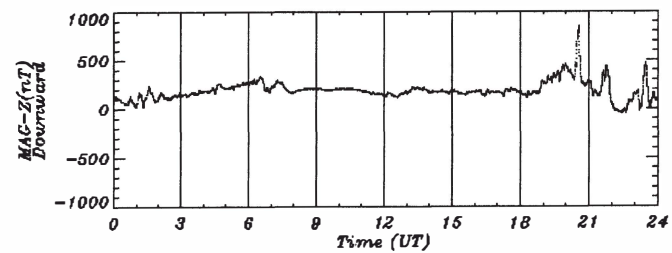
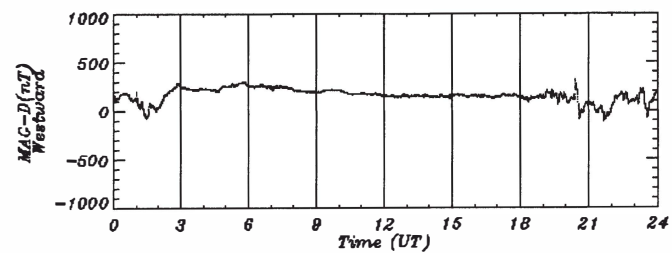
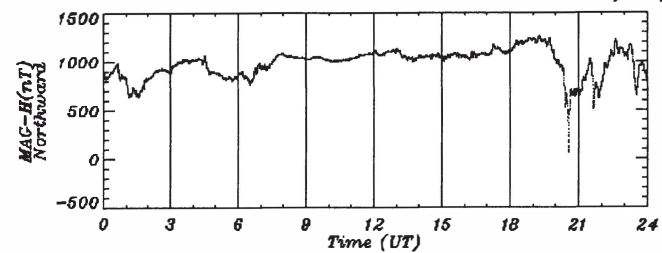
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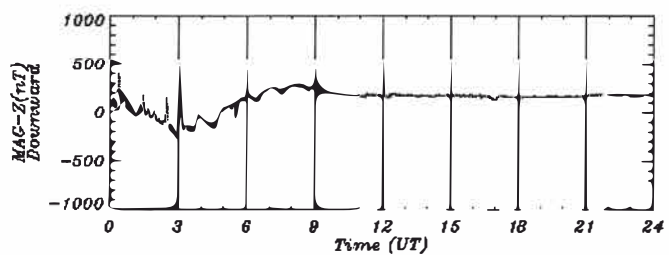
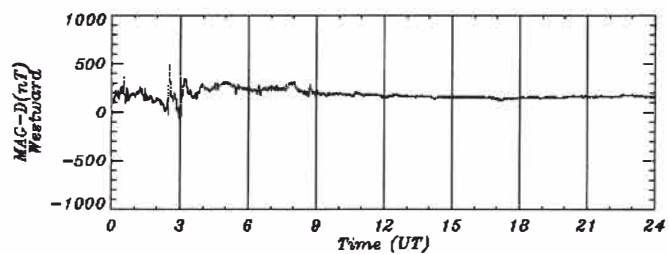
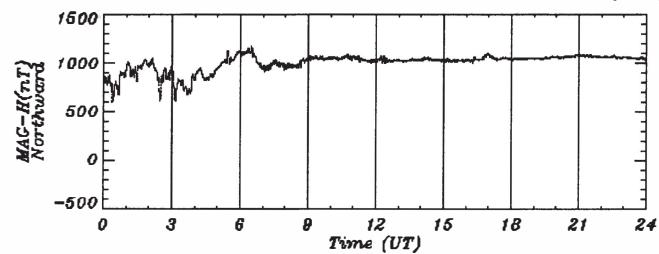
NIPR Syowa Magnetometer

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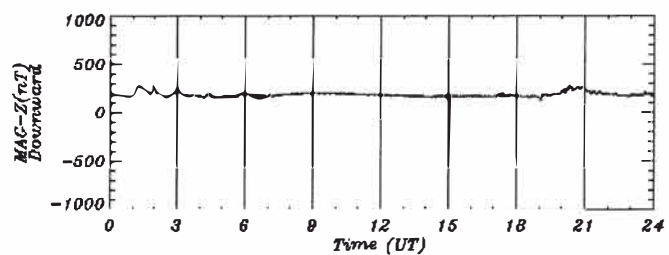
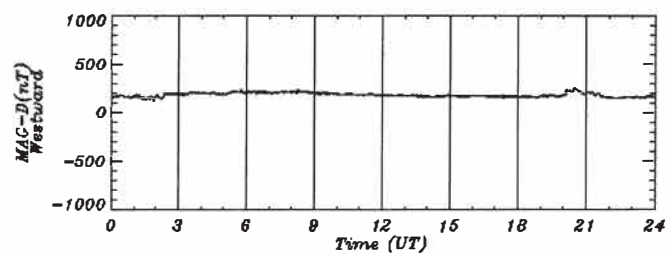
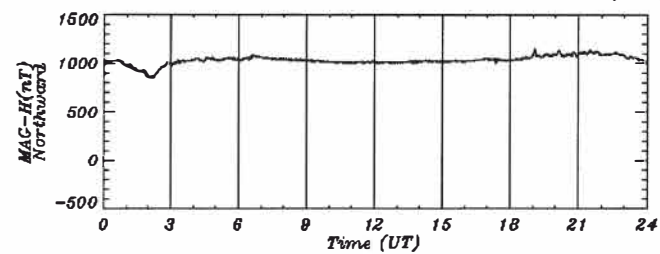
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NIPR Syowa Magnetometer

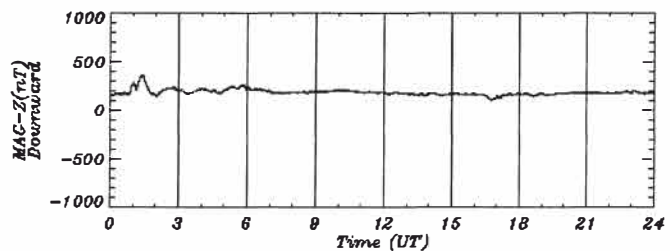
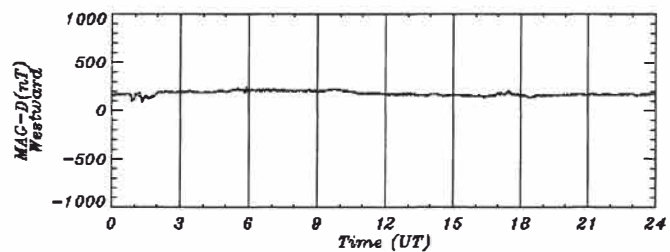
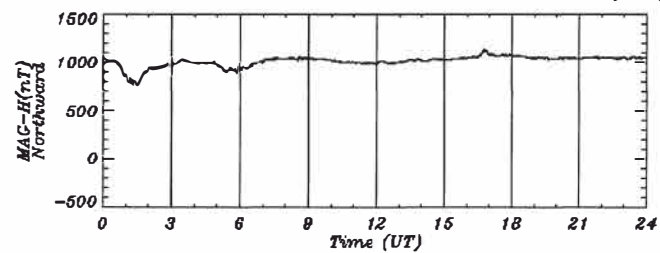
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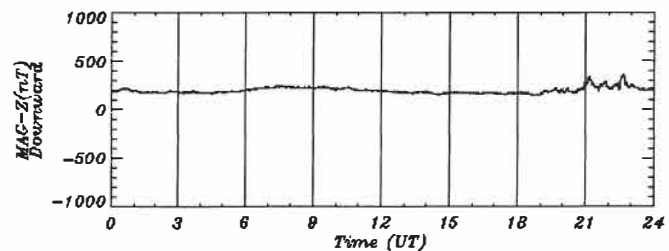
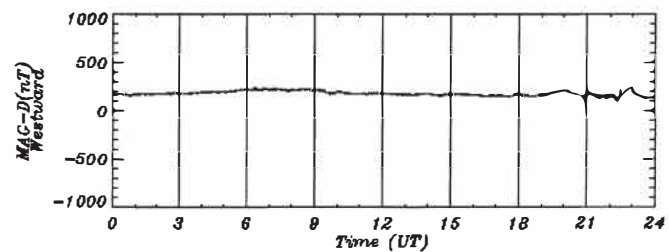
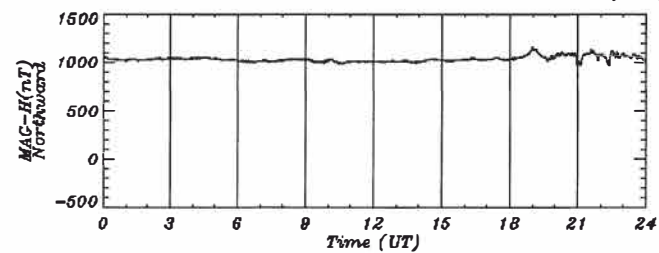
NIPR Syowa Magnetometer

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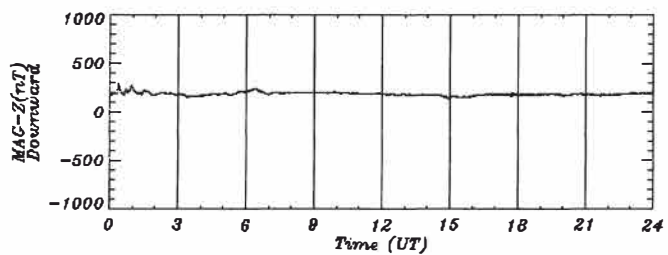
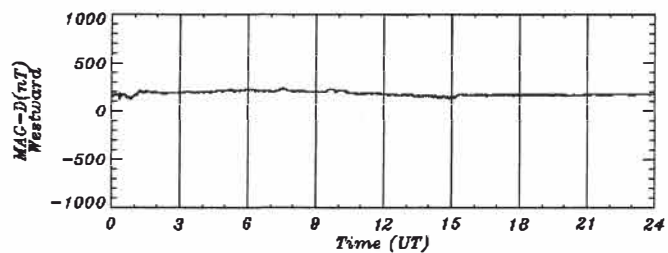
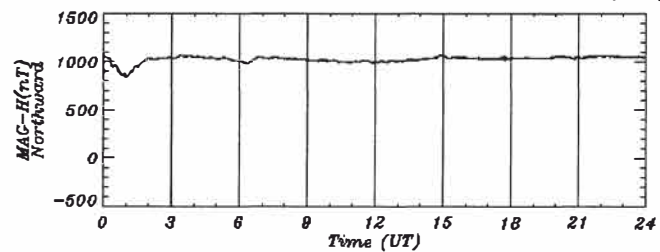
NIPR Syowa Magnetometer

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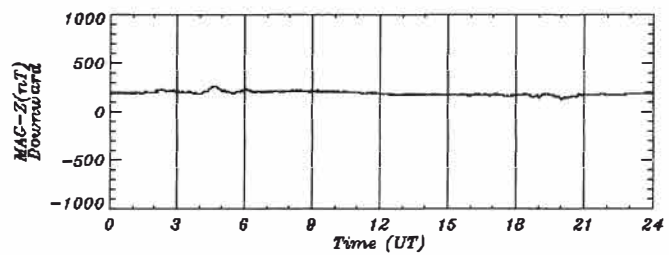
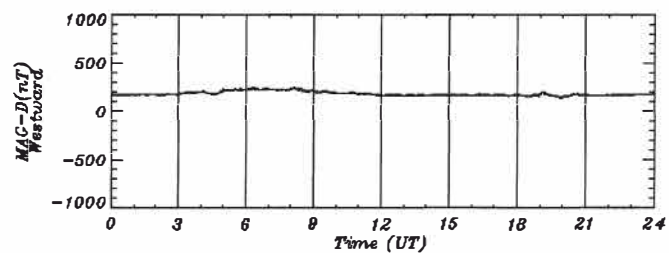
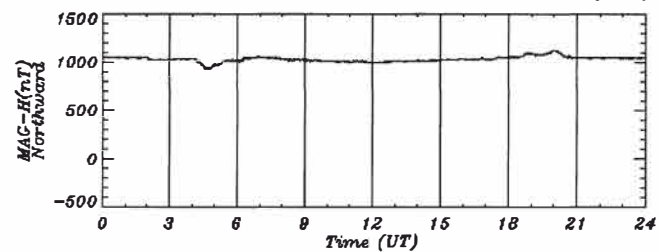
NIPR Syowa Magnetometer

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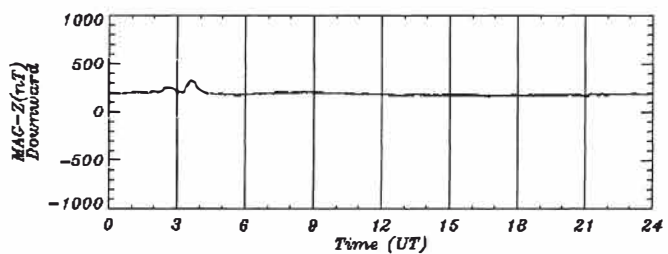
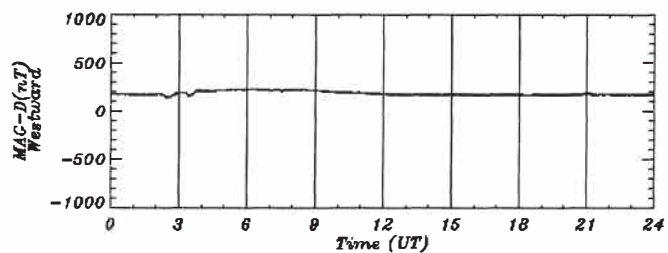
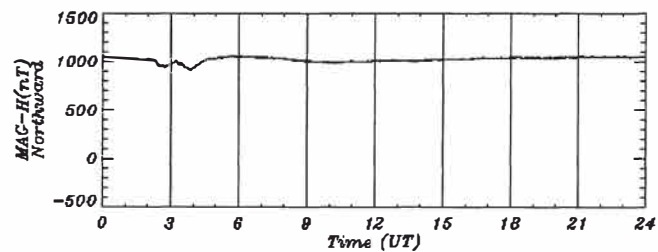
NIPR Syowa Magnetometer

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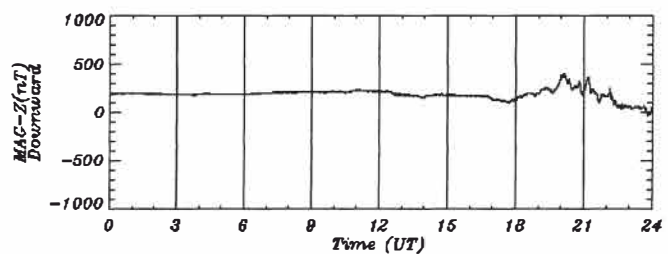
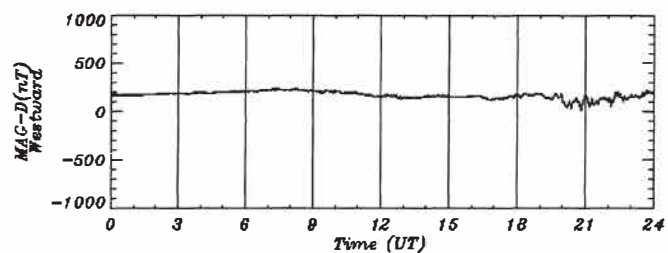
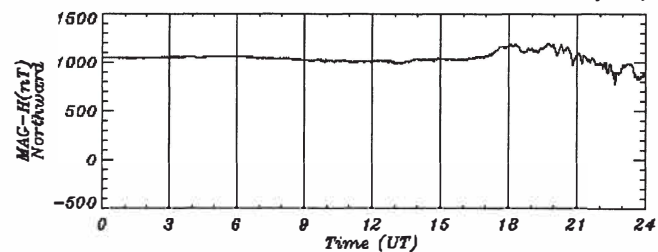
NIPR Syowa Magnetometer

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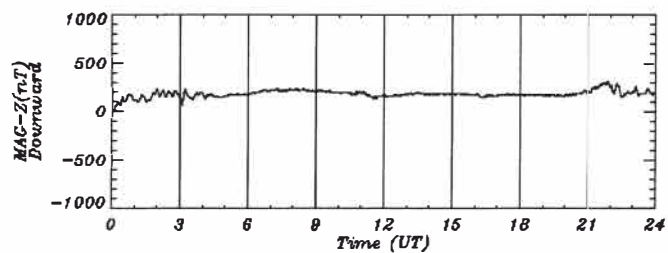
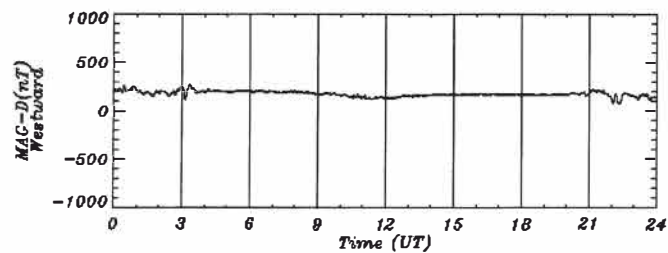
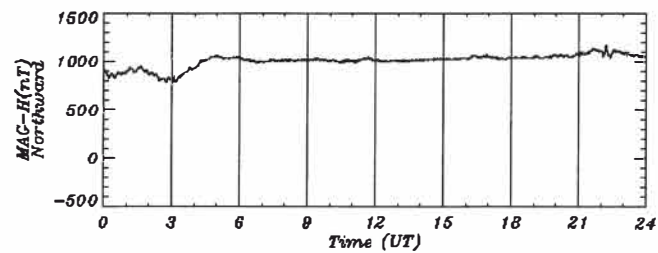
NIPR Syowa Magnetometer

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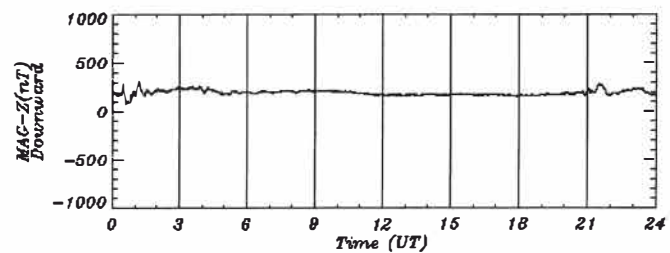
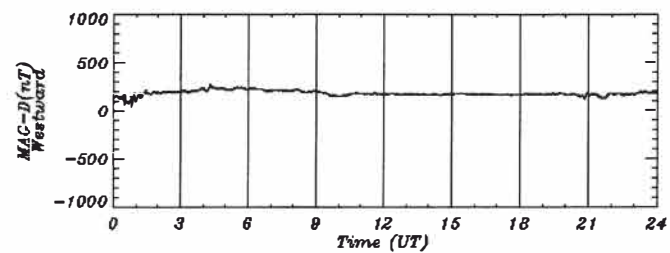
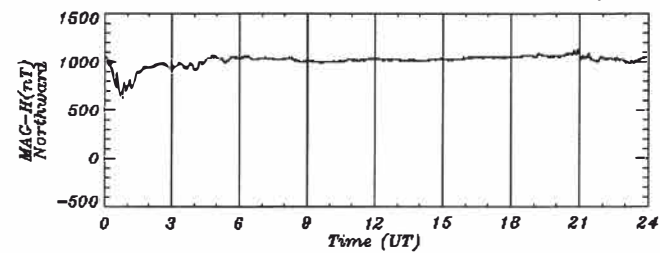
NIPR Syowa Magnetometer

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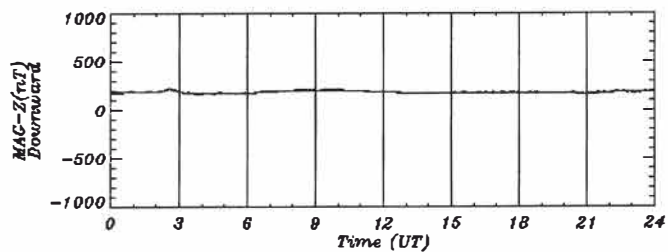
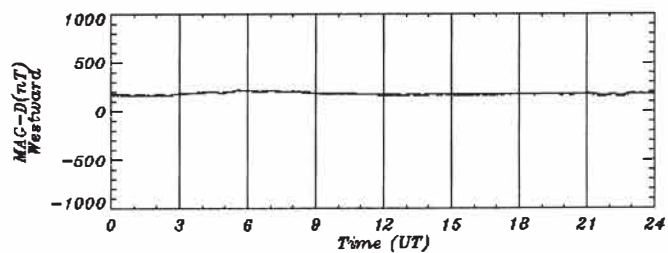
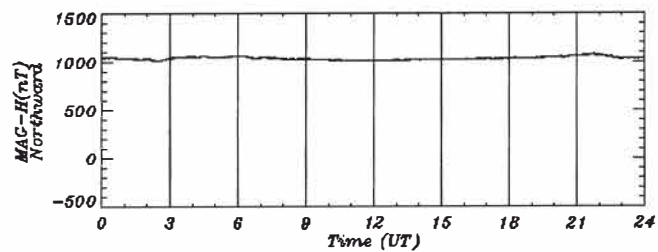
NIPR Syowa Magnetometer

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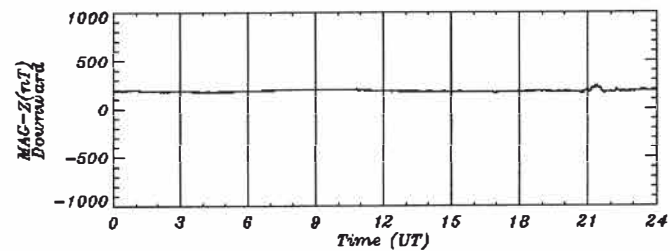
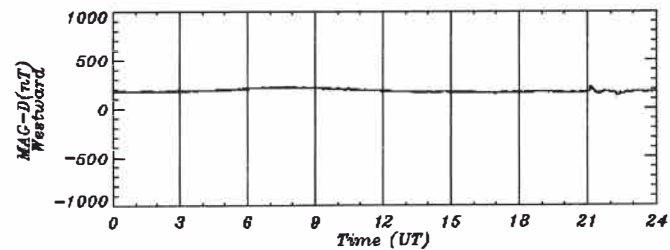
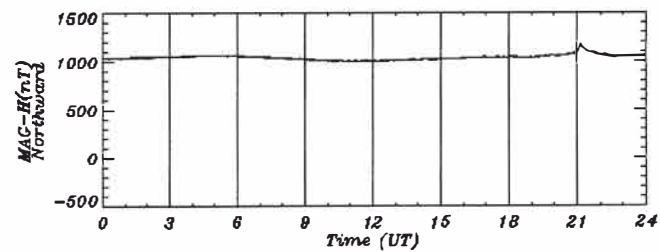
NIPR Syowa Magnetometer

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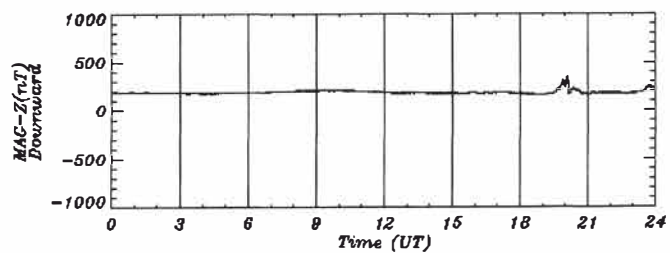
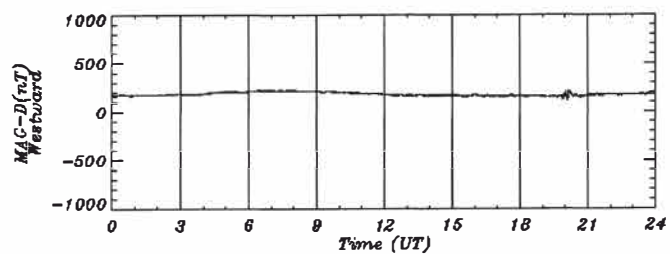
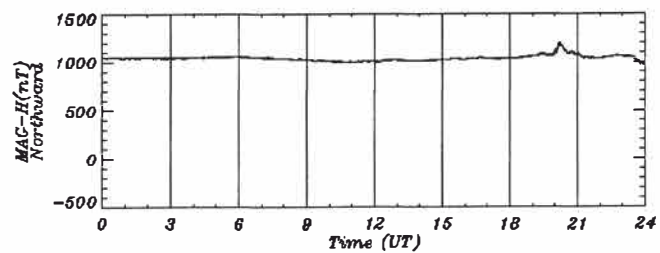
NIPR Syowa Magnetometer

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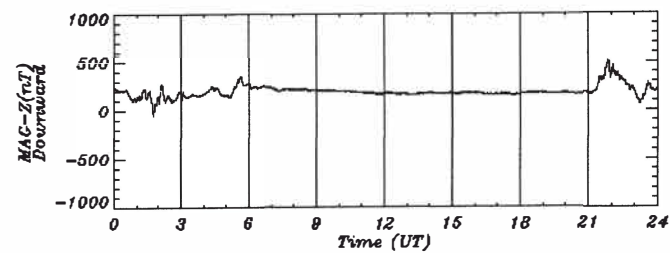
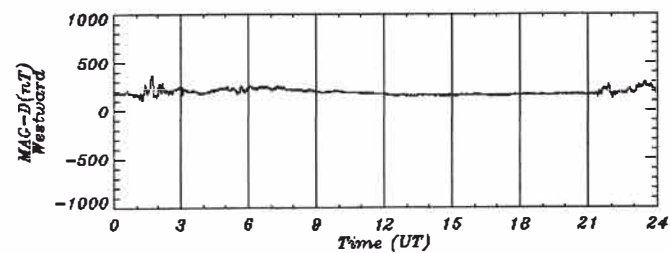
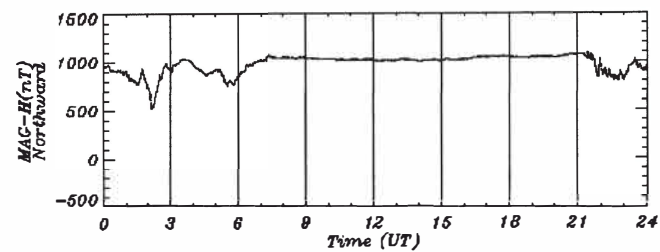
NIPR Syowa Magnetometer

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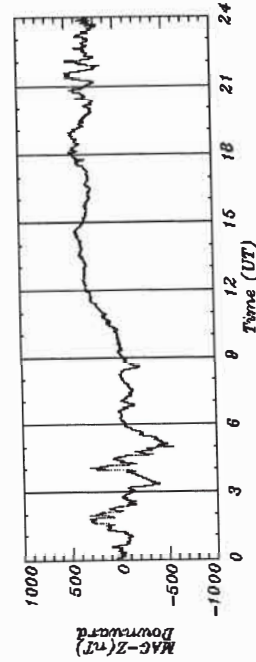
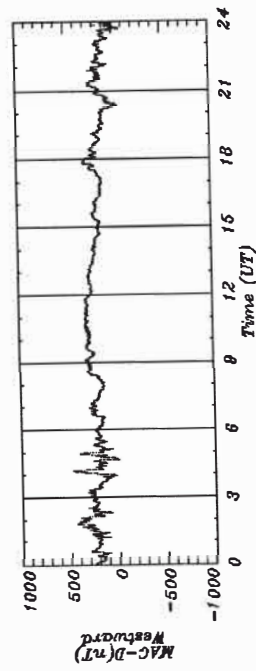
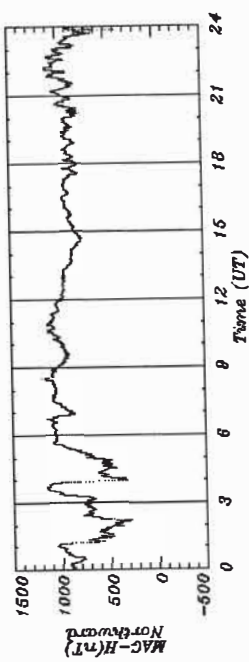


NIPR Syowa Magnetometer

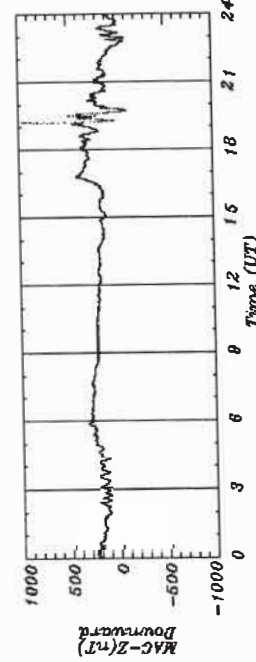
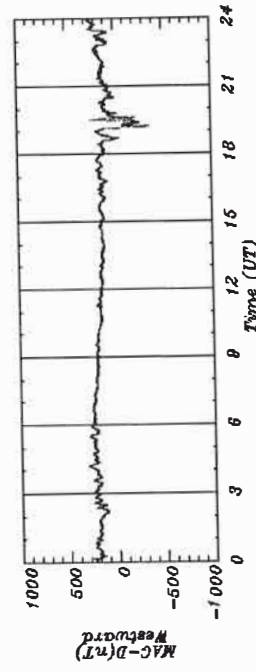
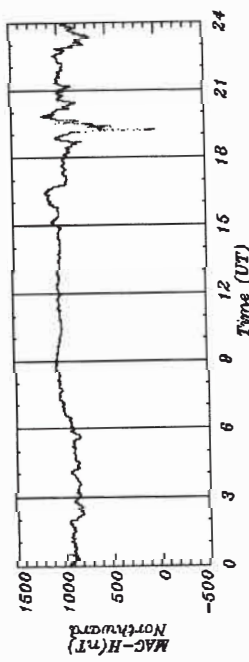
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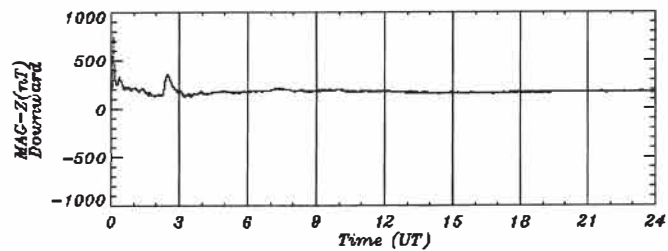
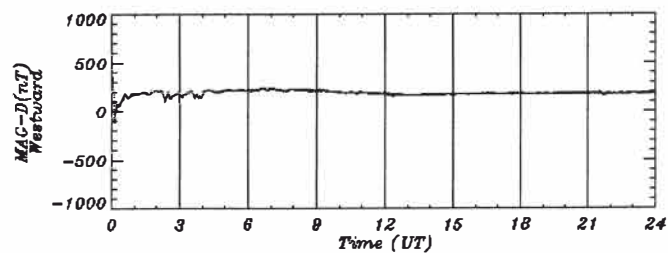
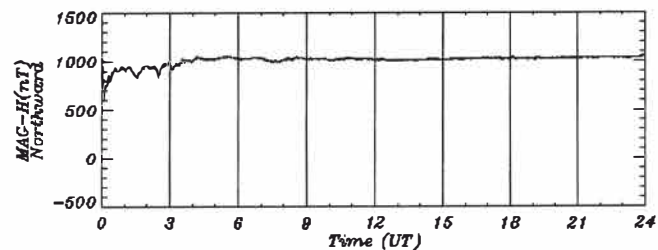


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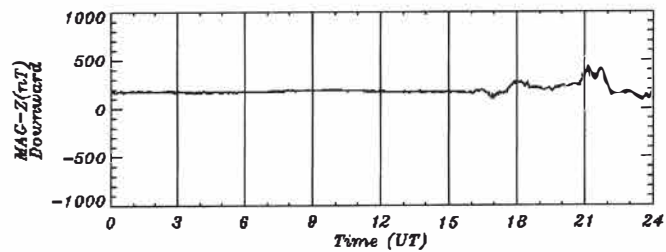
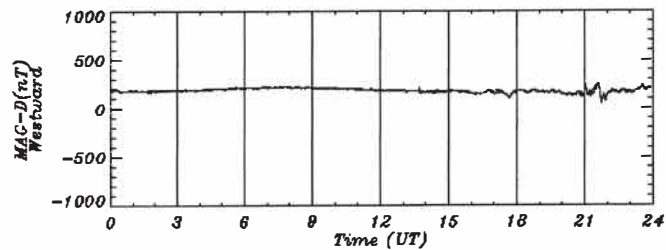
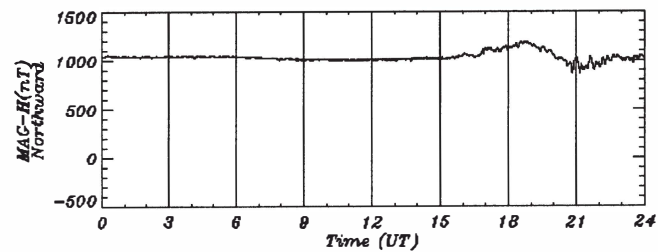
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# NIPR Syowa Magnetometer

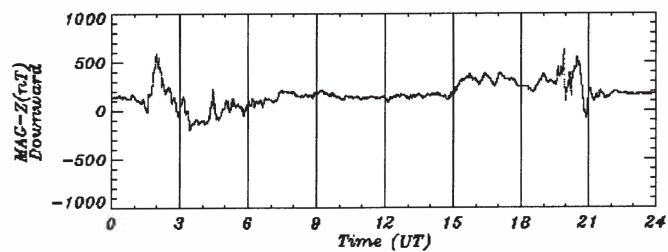
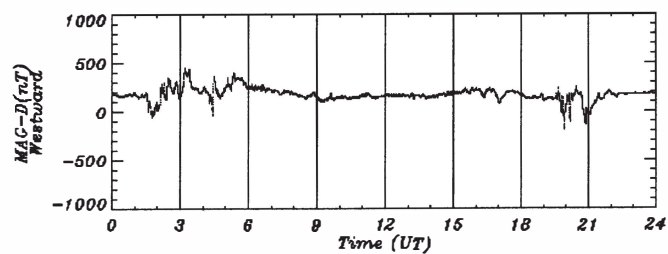
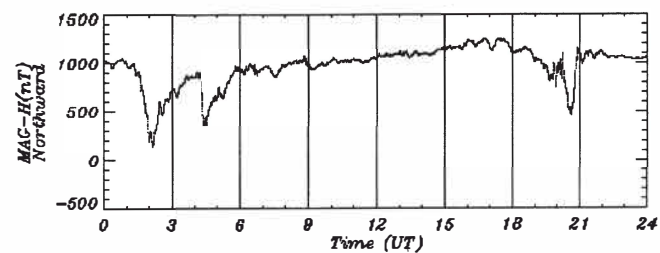
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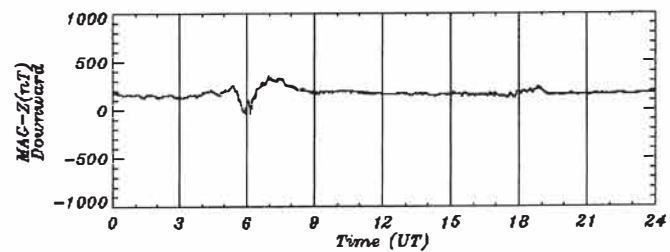
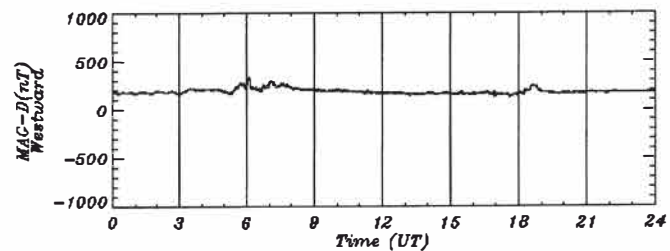
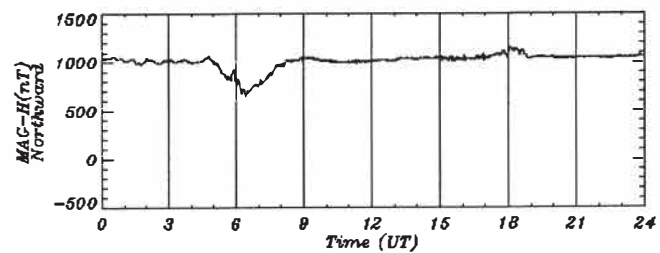
NIPR Syowa Magnetometer

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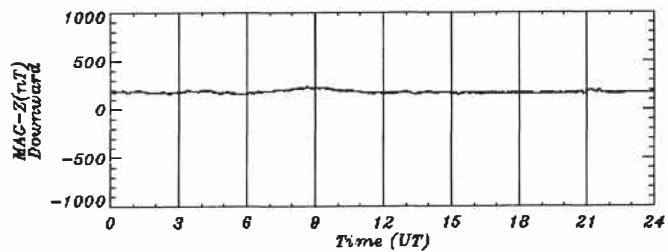
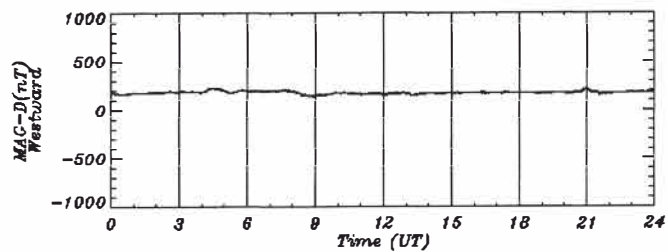
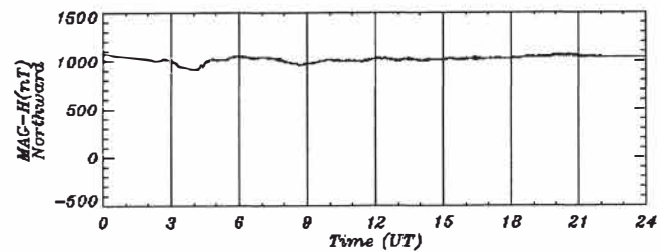
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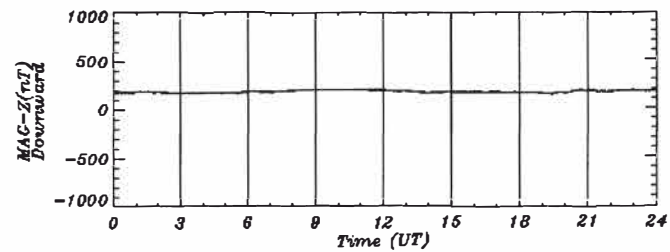
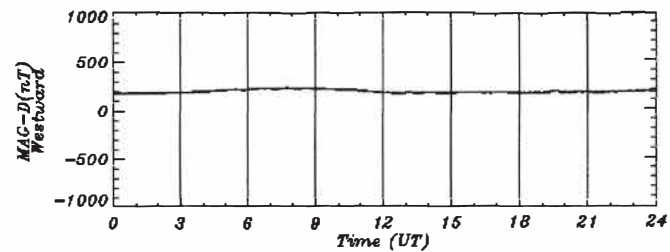
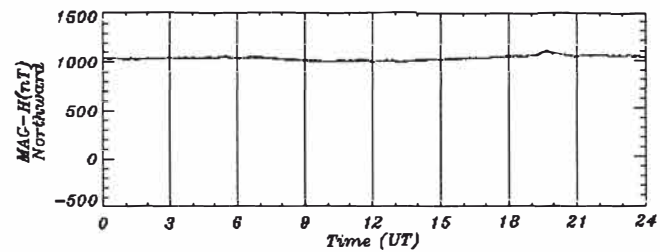
*NIPR Syowa Magnetometer*

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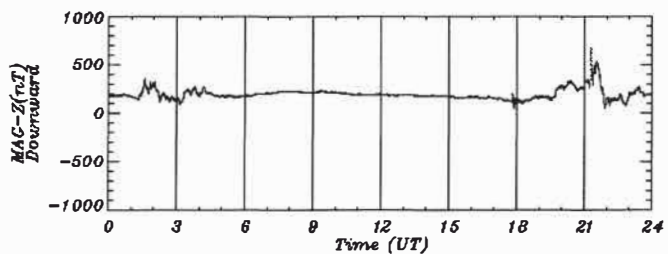
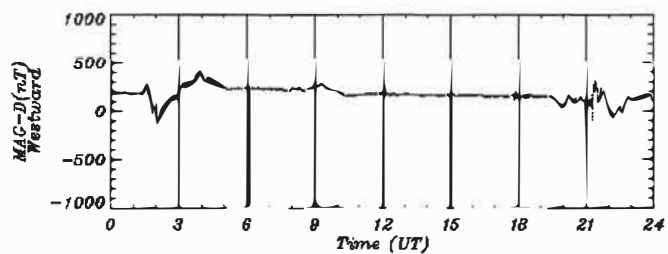
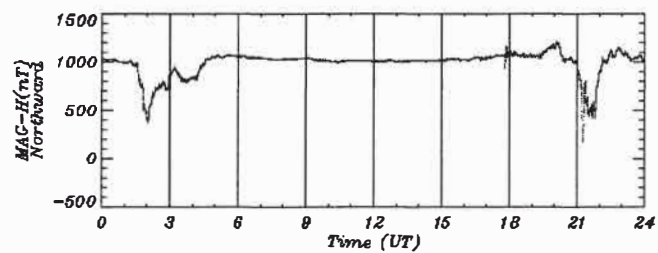
*NIPR Syowa Magnetometer*

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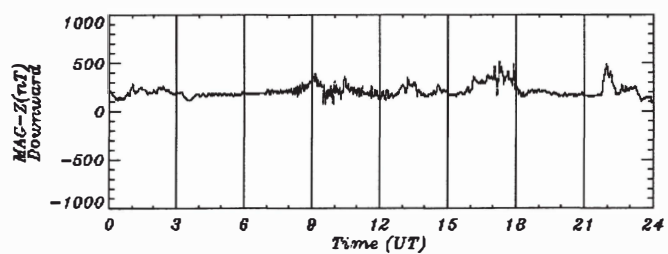
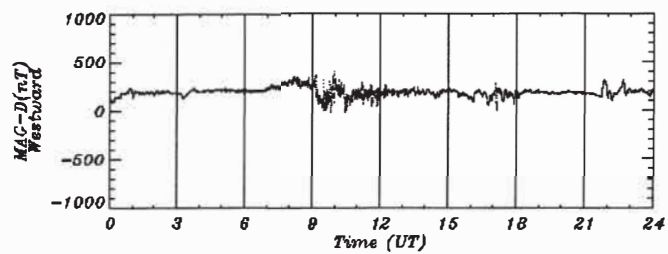
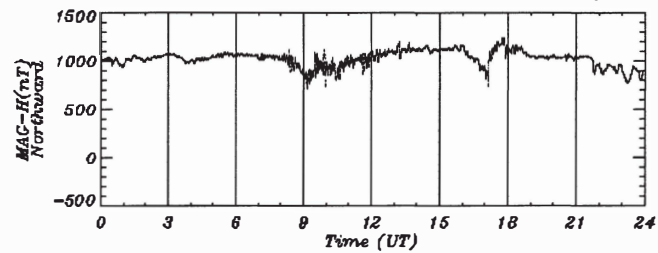
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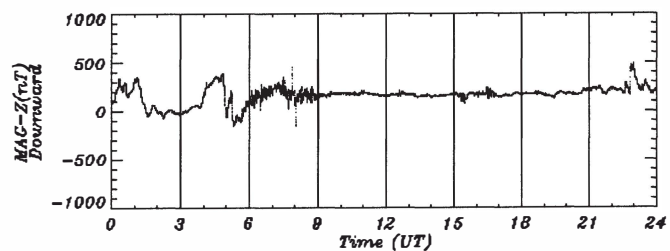
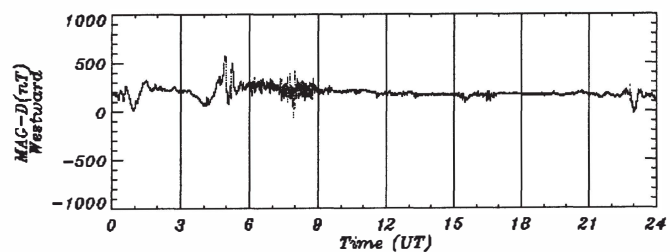
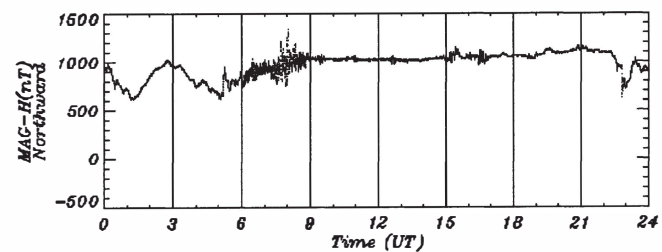
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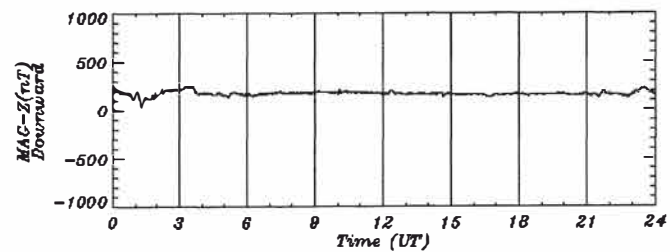
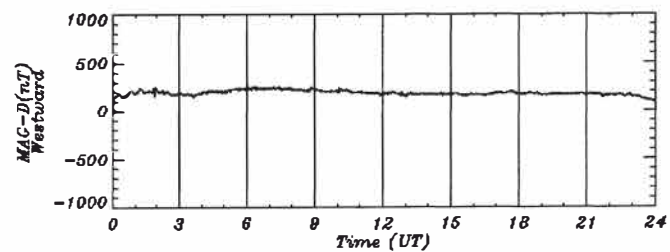
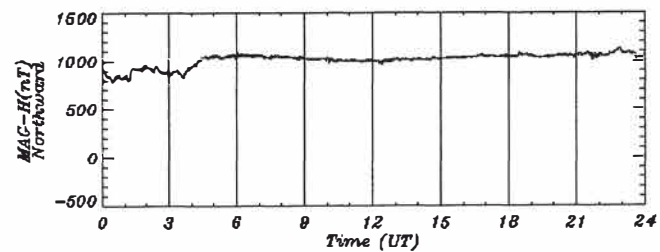
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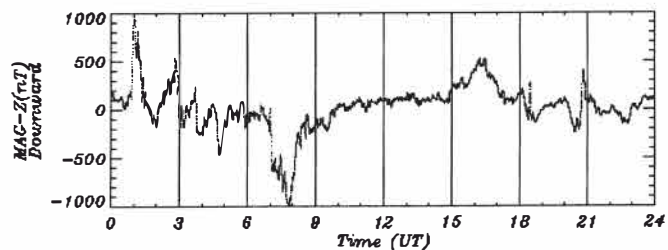
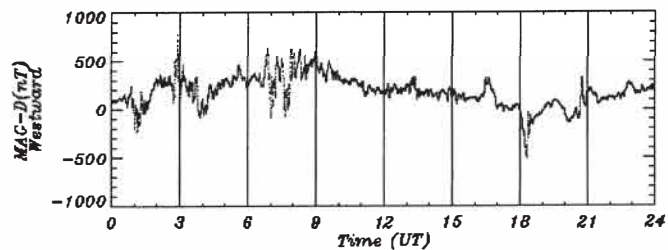
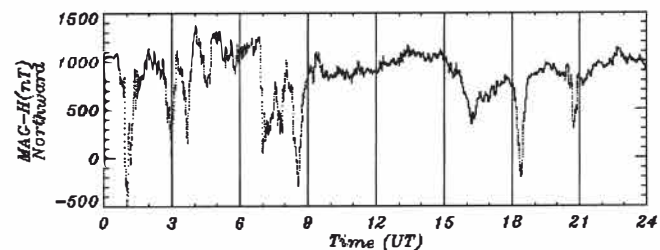
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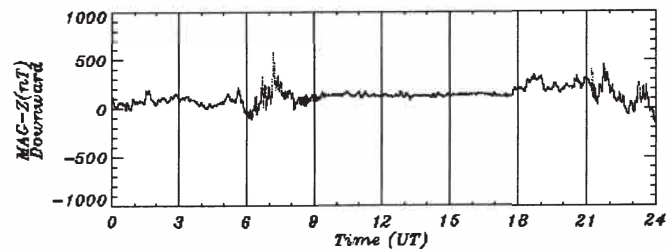
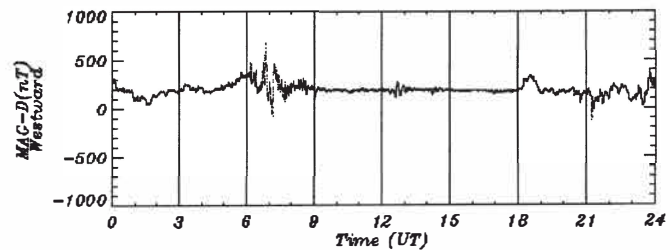
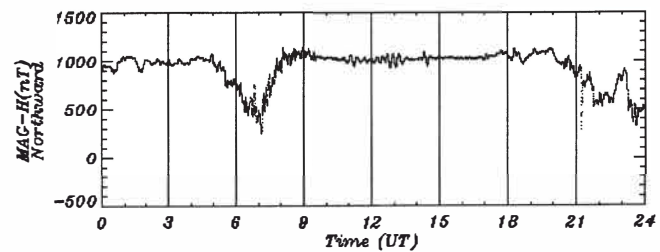
NIPR Syowa Magnetometer

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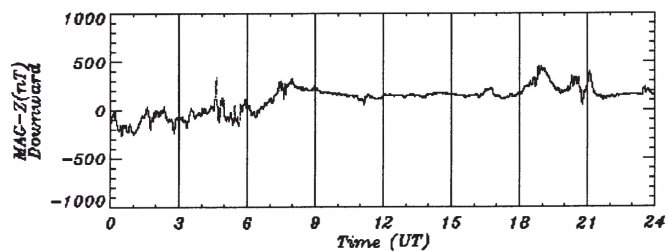
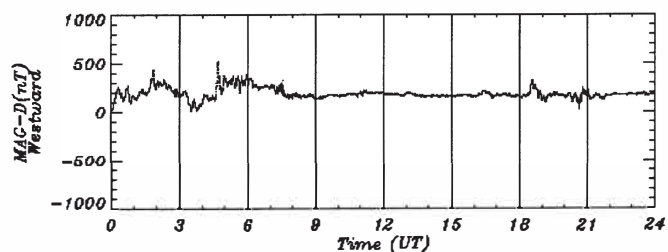
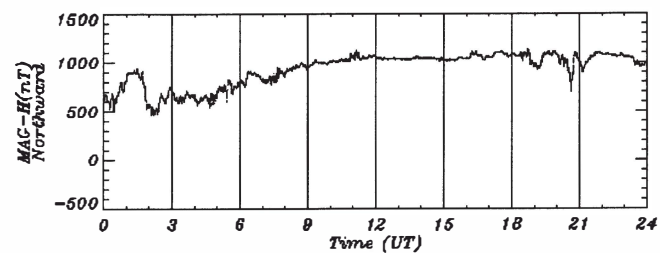
NIPR Syowa Magnetometer

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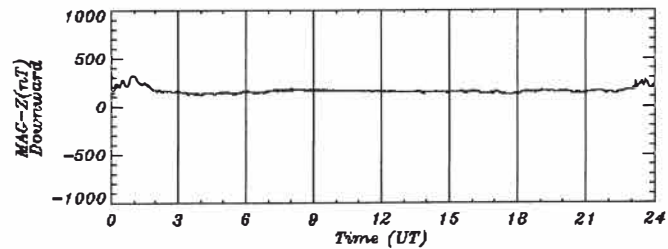
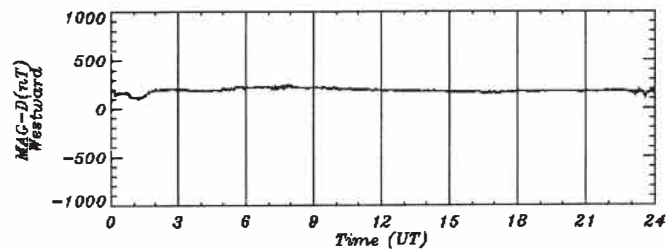
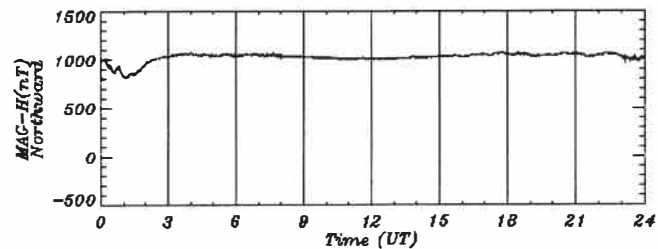
NIPR Syowa Magnetometer

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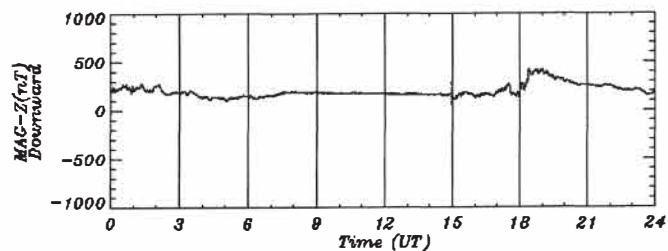
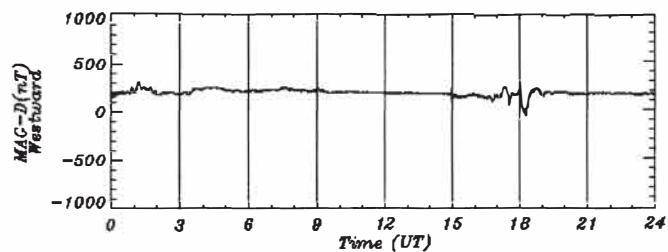
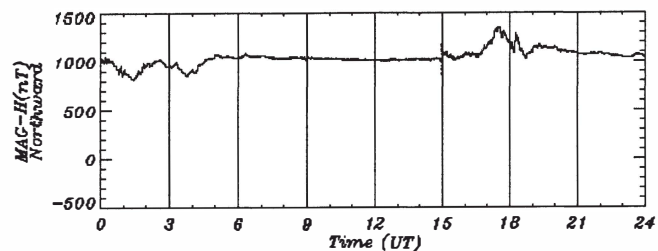
NIPR Syowa Magnetometer

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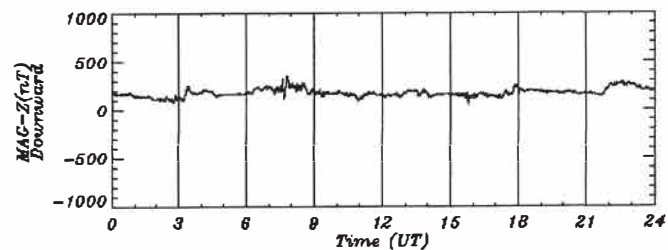
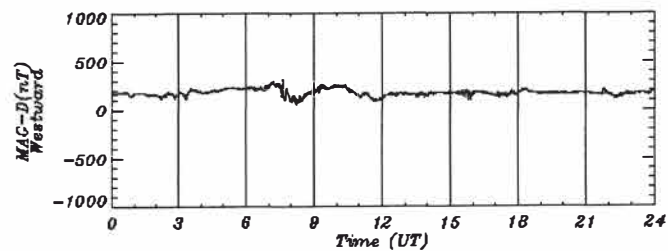
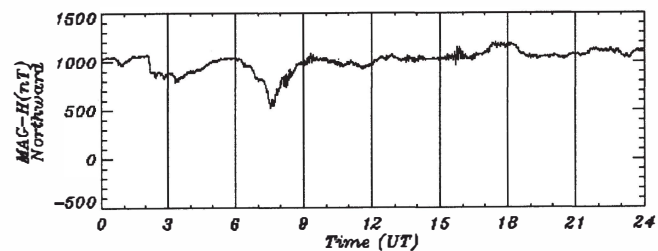
NIPR Syowa Magnetometer

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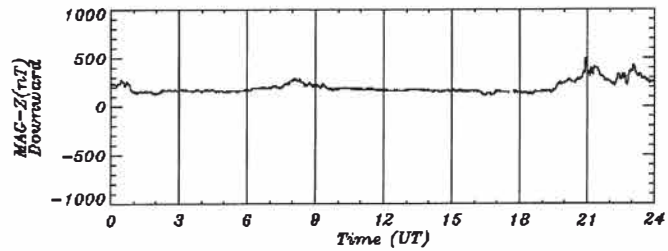
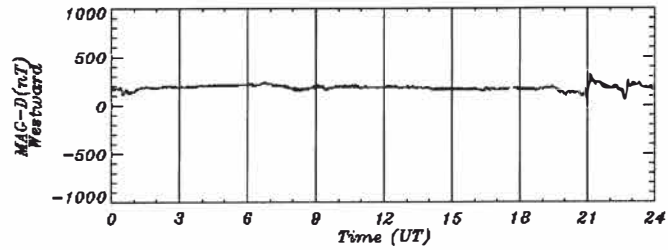
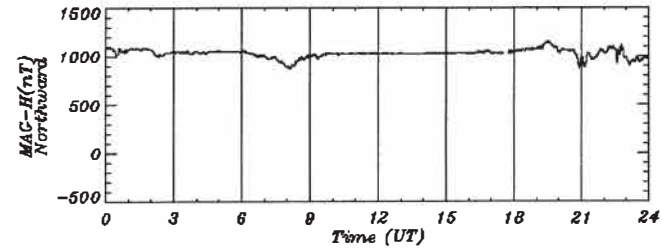
NIPR Syowa Magnetometer

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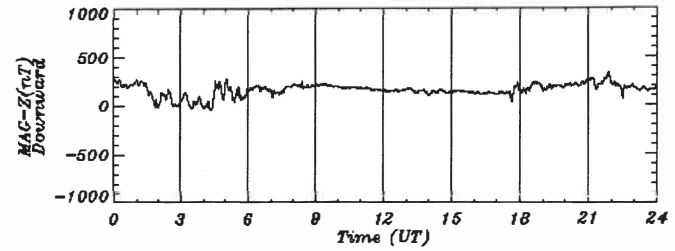
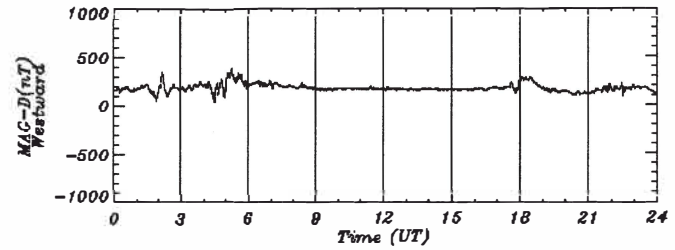
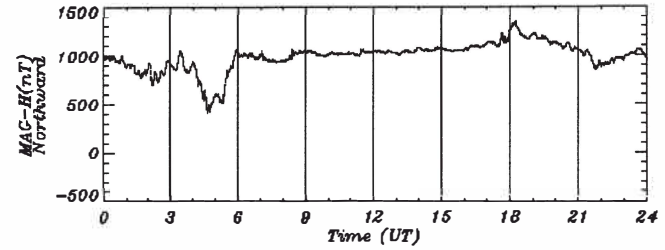
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*NIPR Syowa Magnetometer*

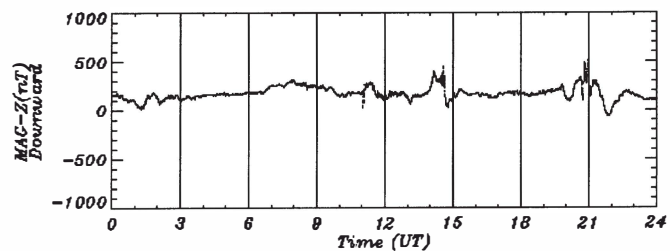
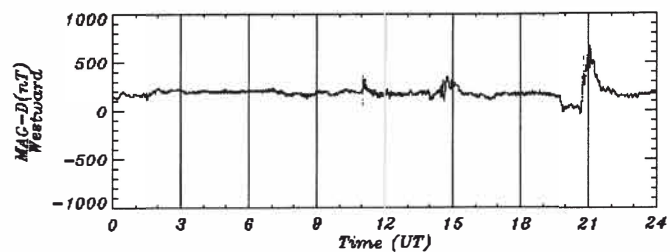
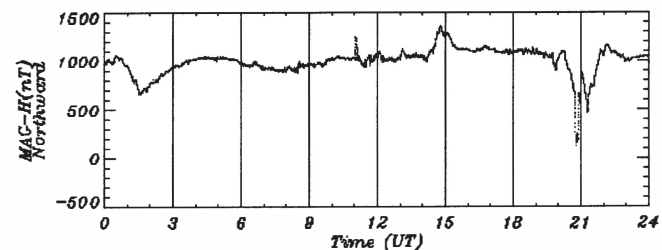
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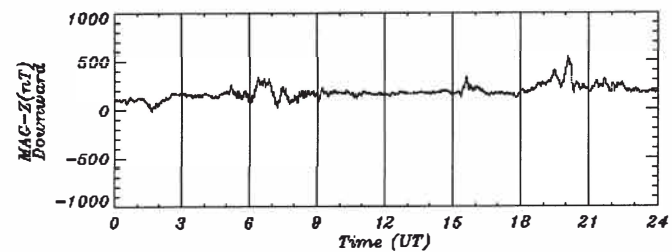
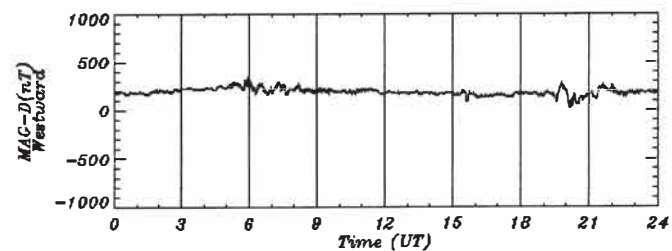
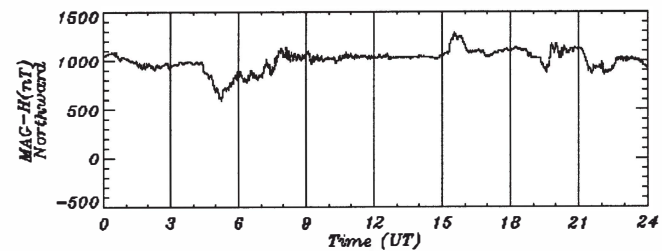
NIPR Syowa Magnetometer

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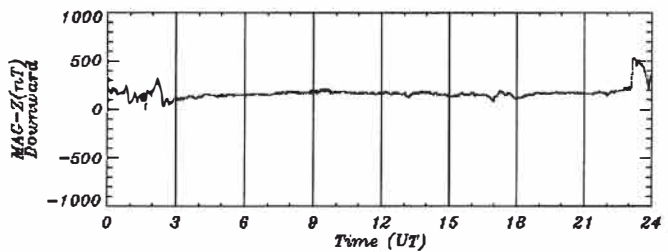
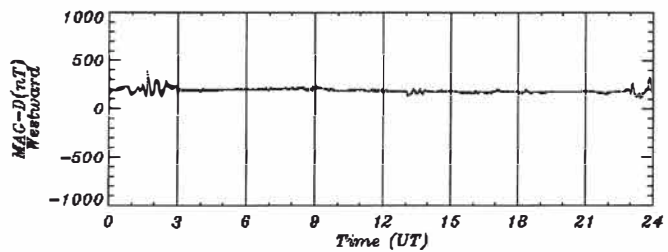
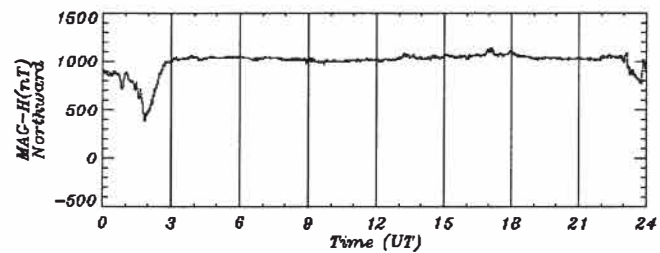
NIPR Syowa Magnetometer

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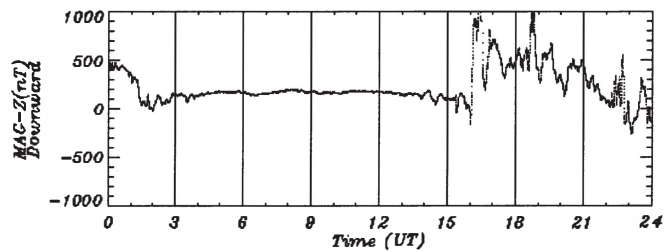
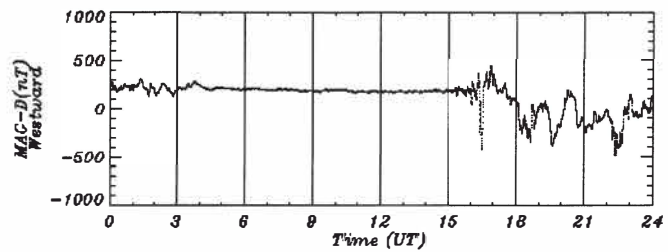
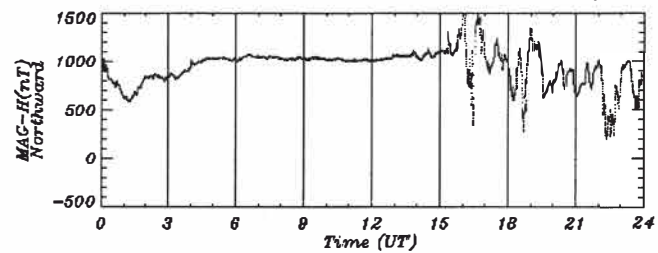
*NIPR Syowa Magnetometer*

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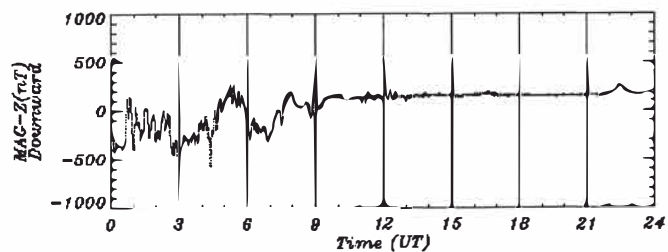
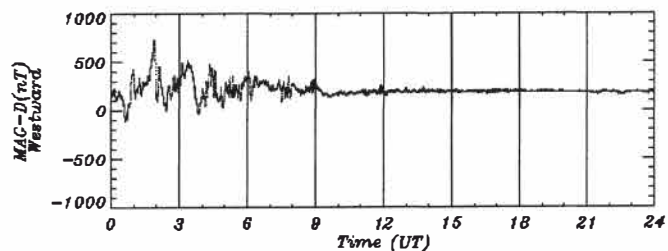
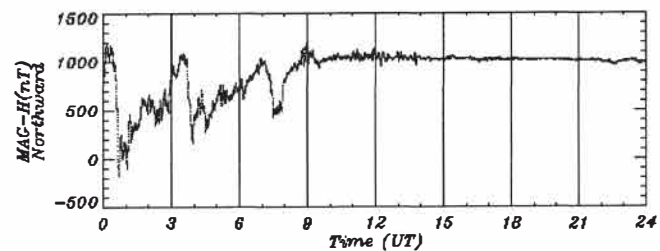
*NIPR Syowa Magnetometer*

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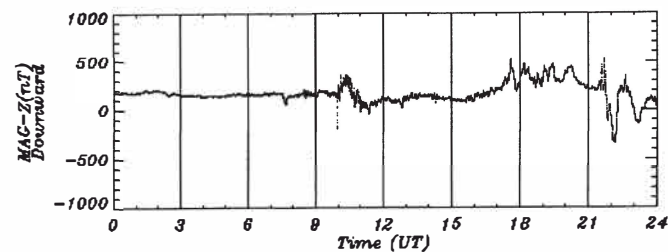
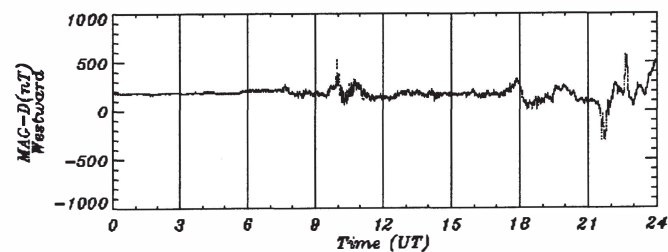
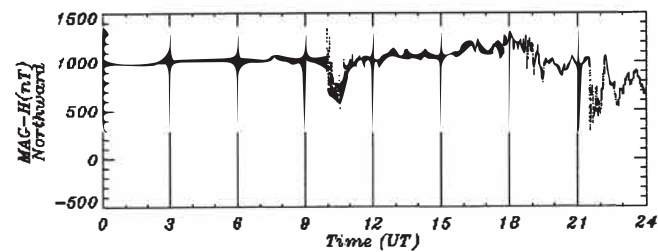
NIPR Syowa Magnetometer

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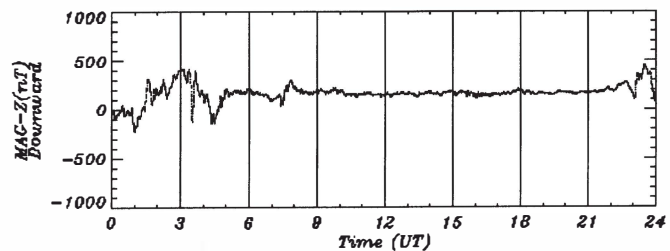
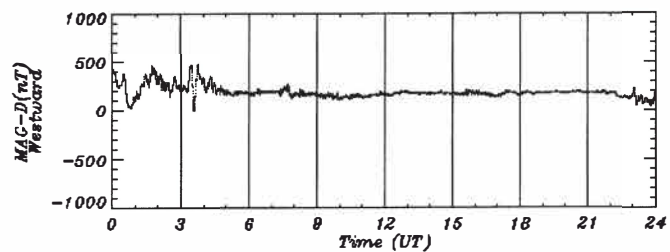
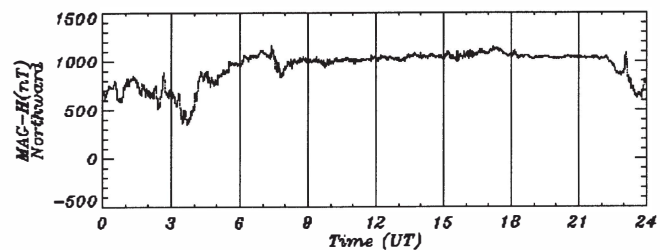
NIPR Syowa Magnetometer

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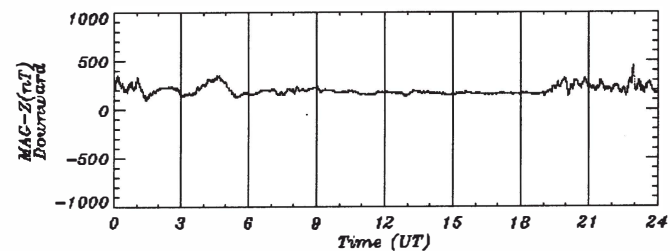
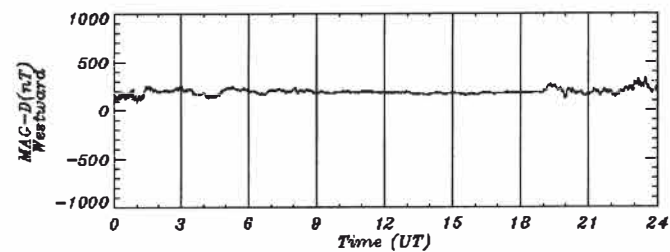
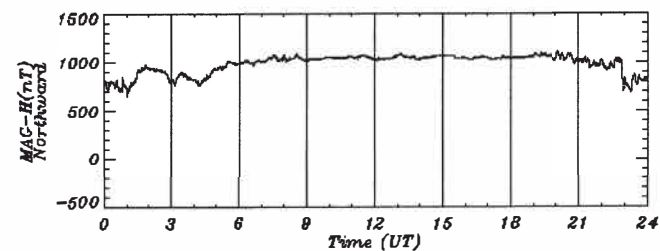
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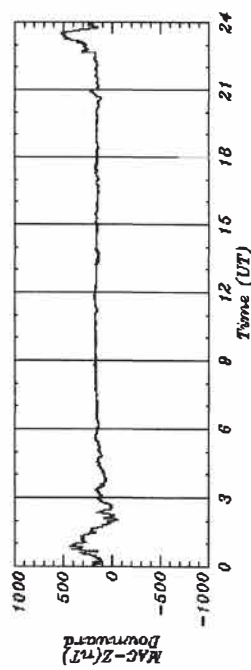
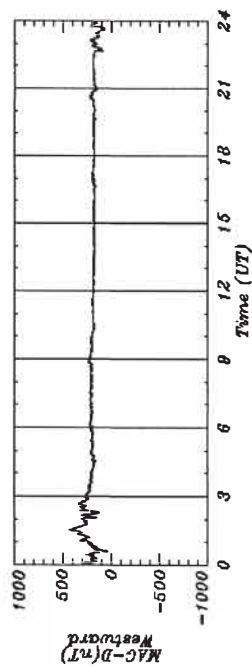
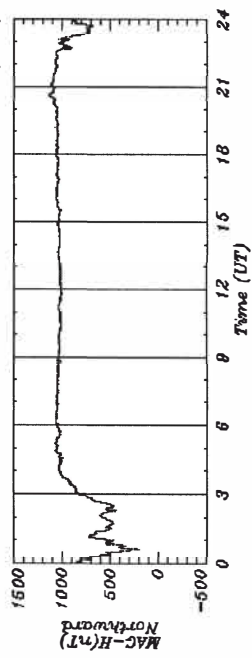
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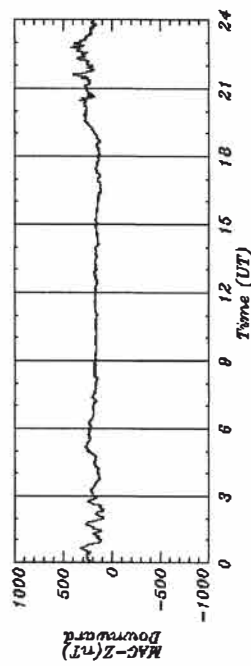
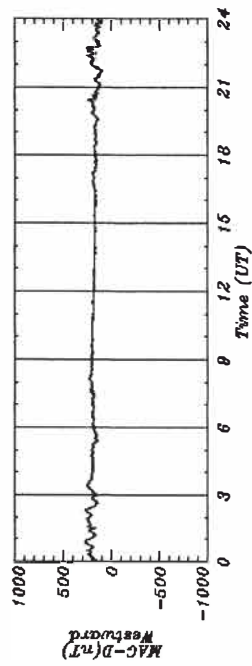
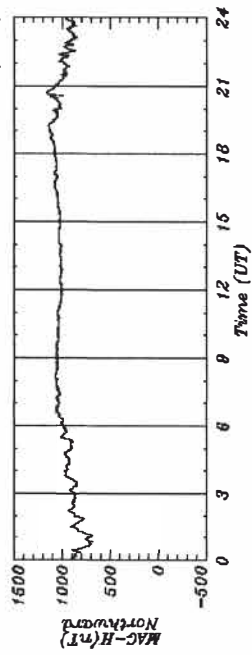
NIPR Syowa Magnetometer

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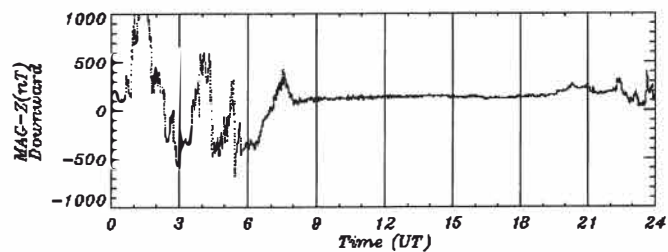
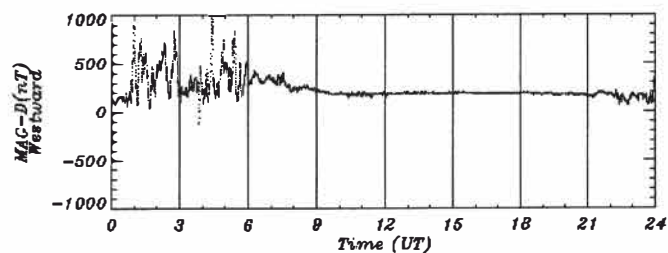
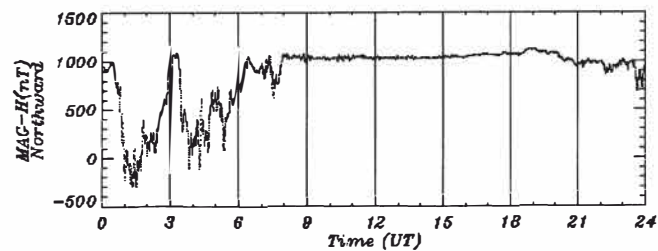
NIPR Syowa Magnetometer

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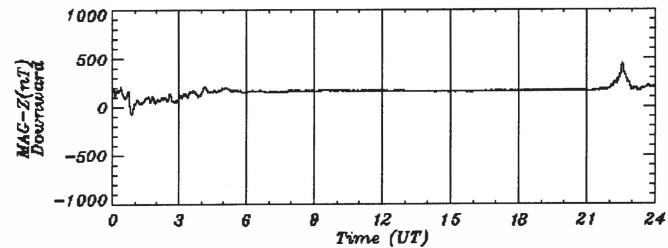
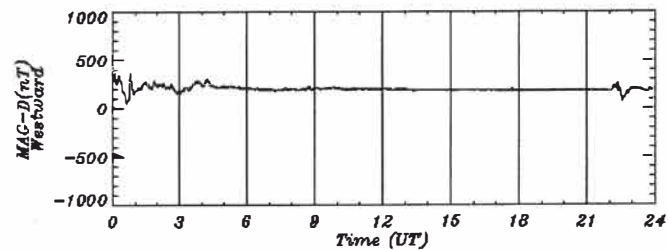
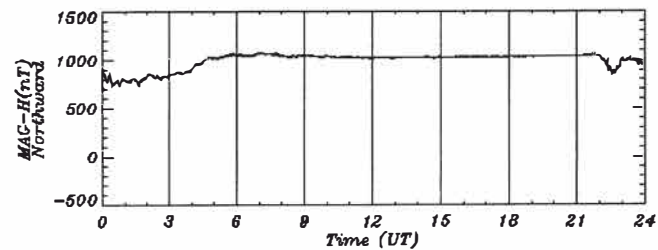
NIPR Syowa Magnetometer

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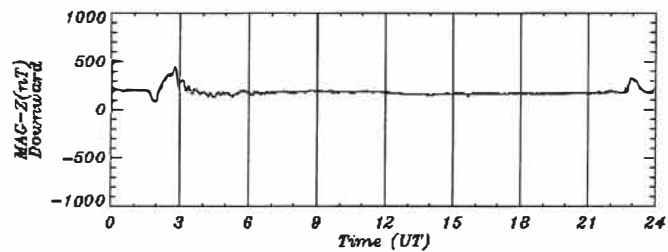
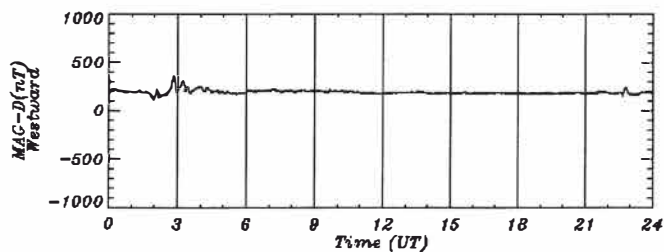
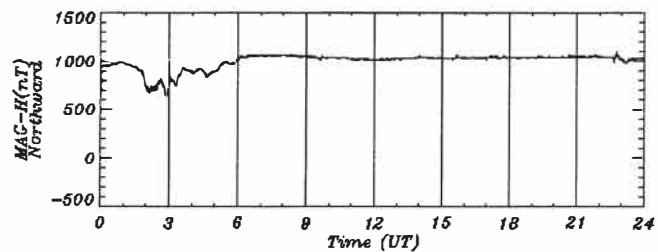
NIPR Syowa Magnetometer

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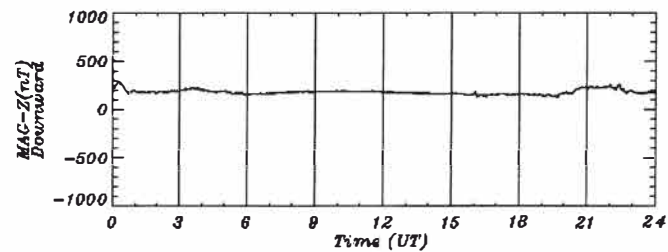
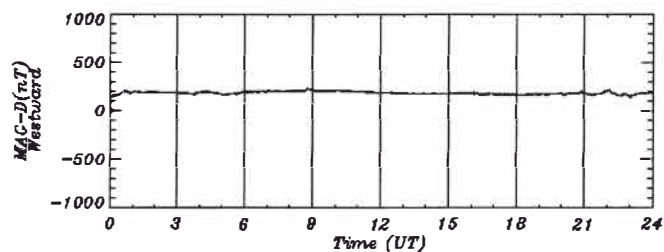
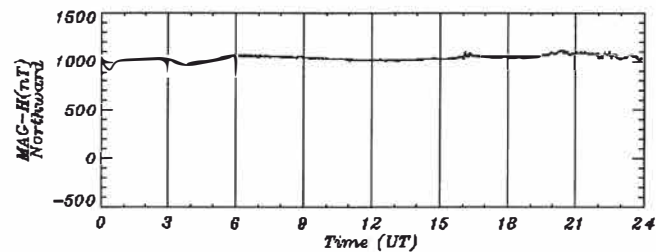
NIPR Syowa Magnetometer

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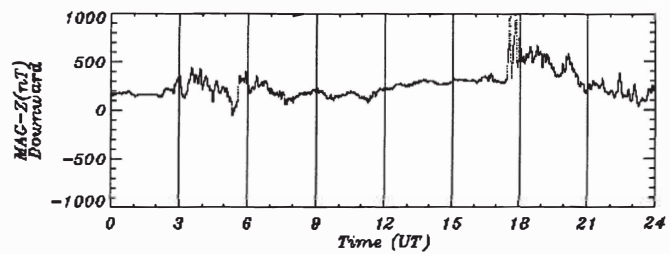
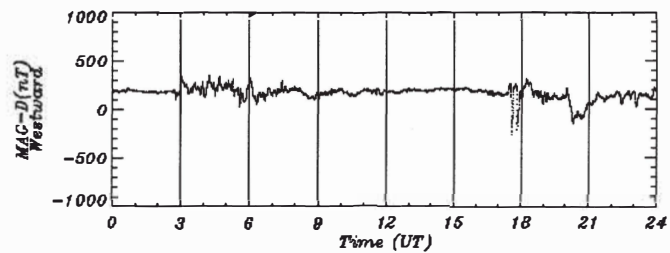
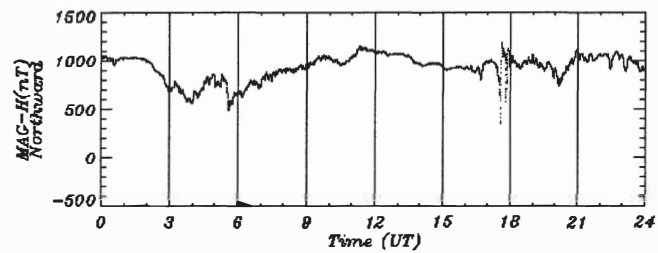
NIPR Syowa Magnetometer

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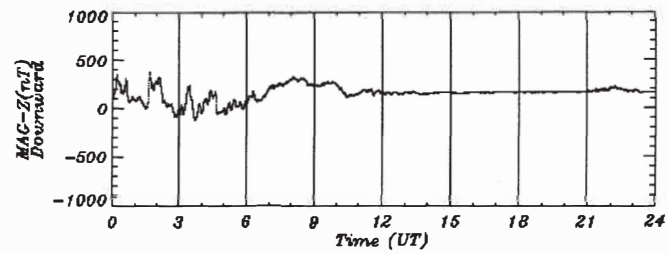
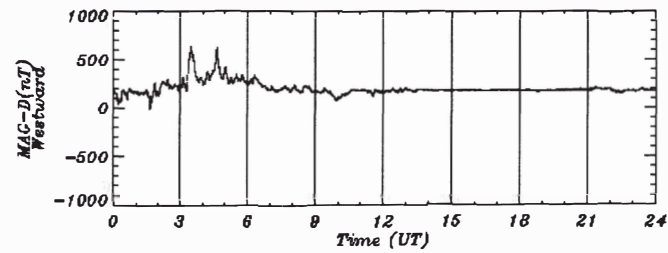
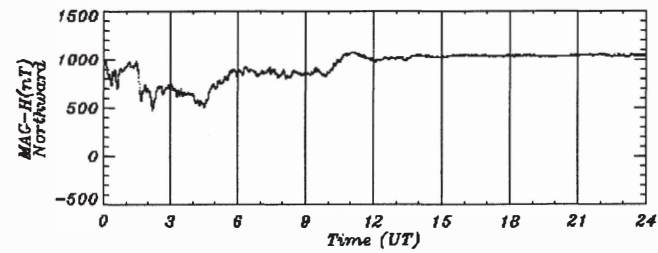
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NIPR Syowa Magnetometer

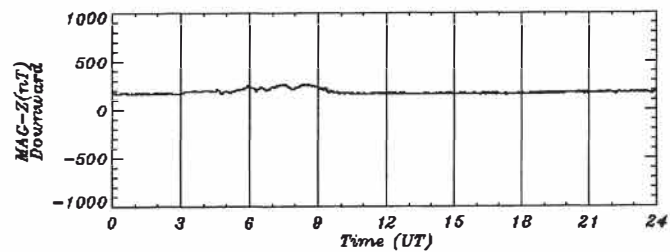
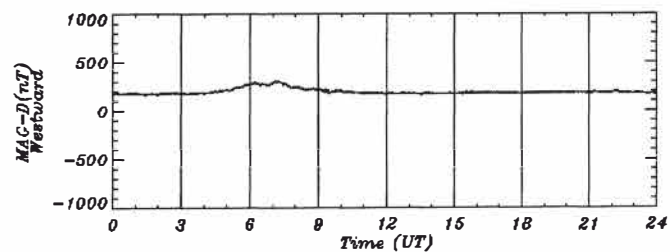
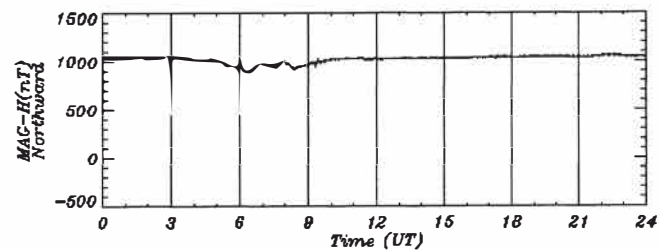
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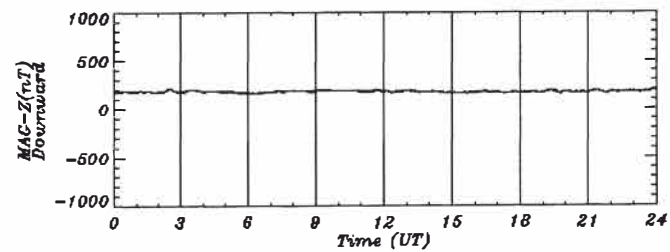
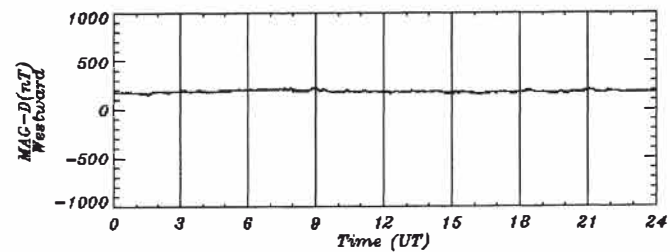
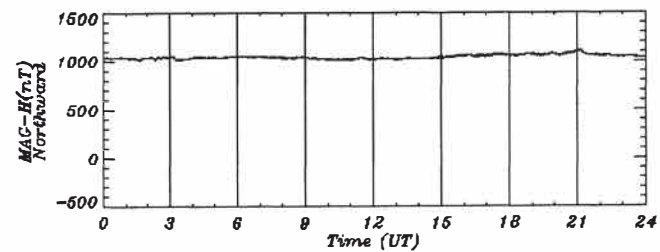
# NIPR Syowa Magnetometer

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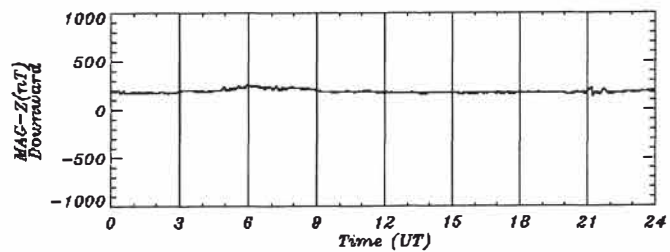
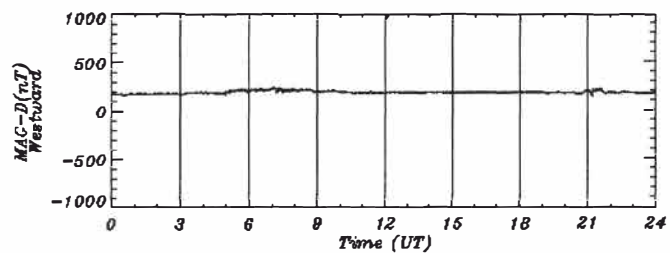
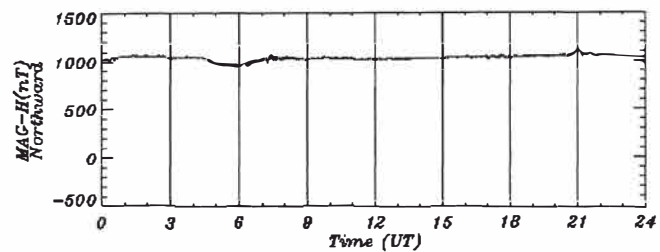
# NIPR Syowa Magnetometer

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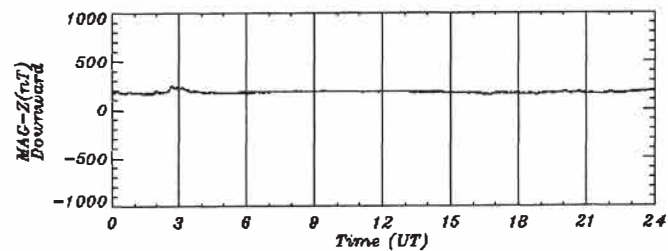
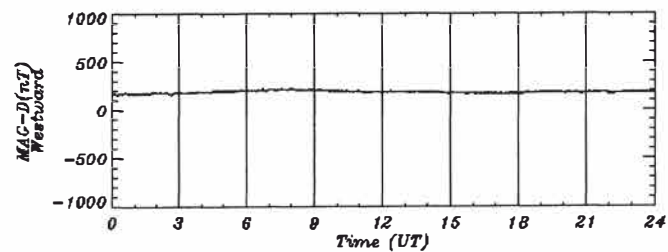
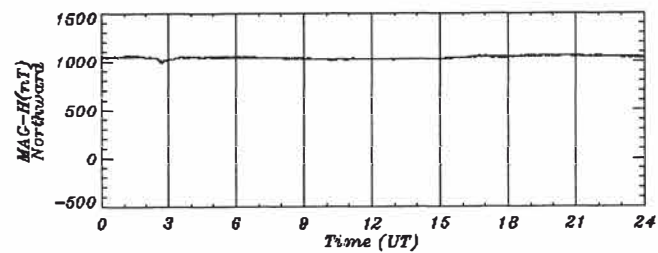
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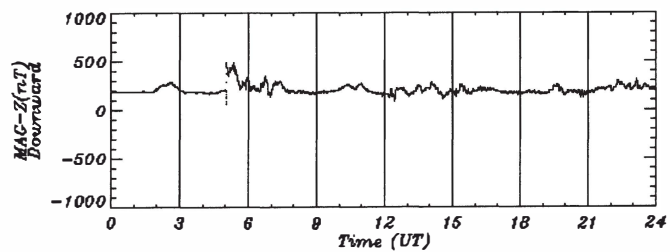
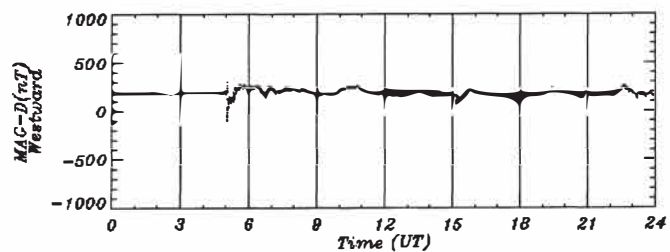
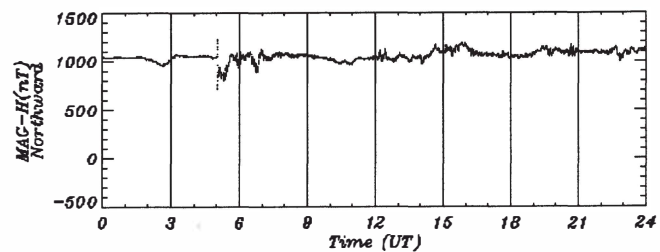
NIPR Syowa Magnetometer

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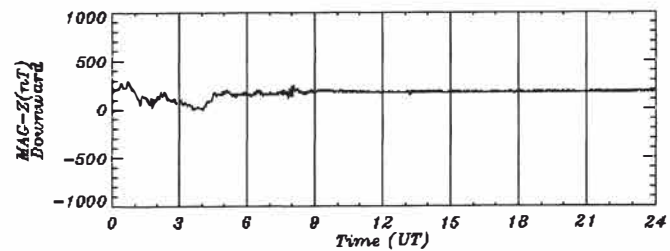
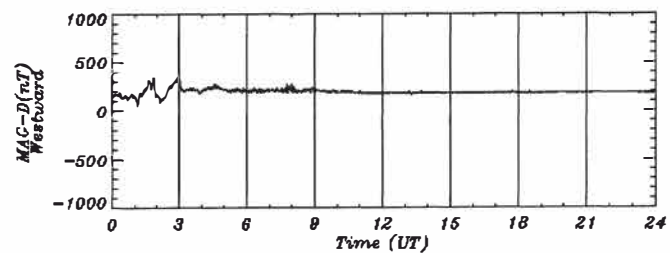
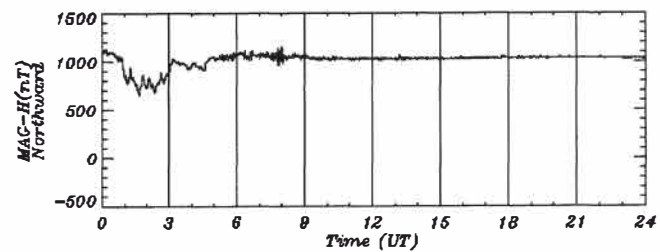
# NIPR Syowa Magnetometer

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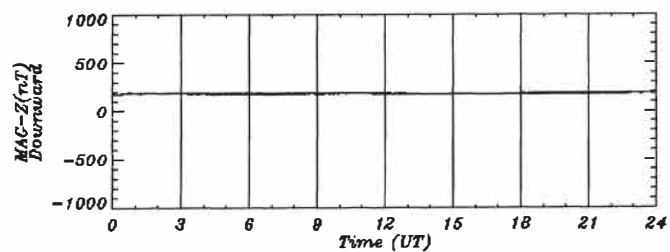
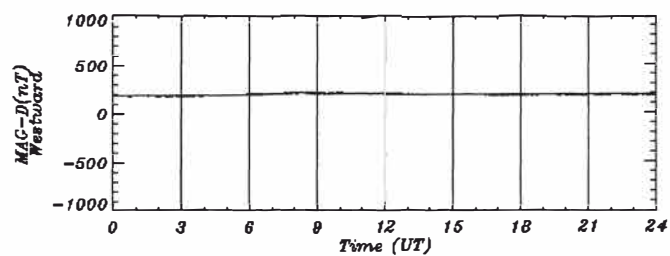
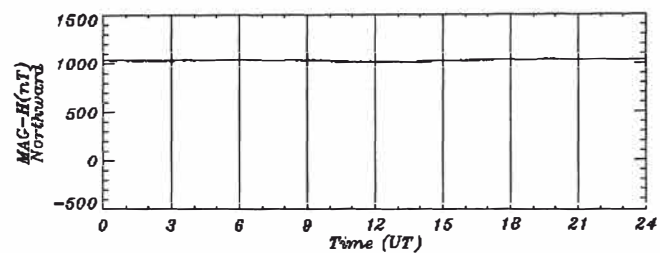
# NIPR Syowa Magnetometer

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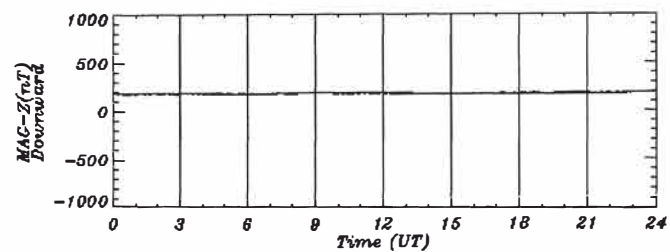
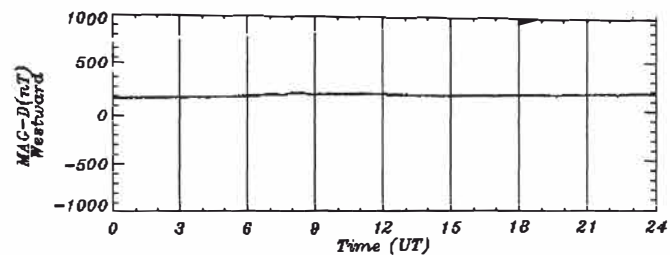
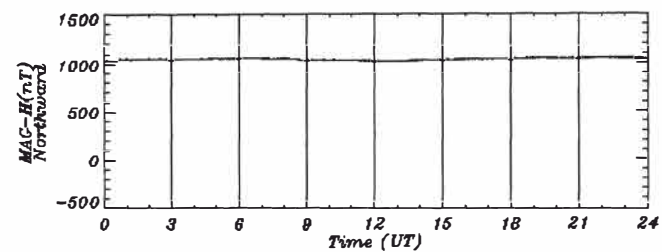
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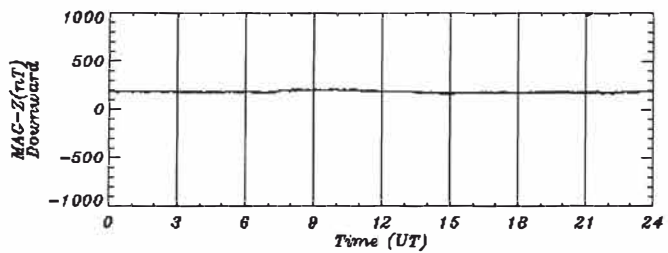
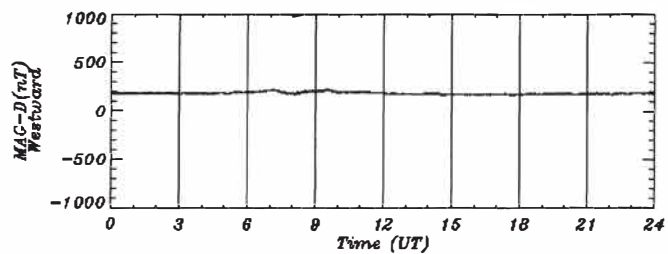
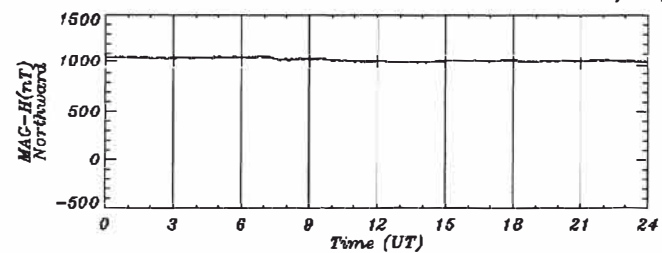
NIPR Syowa Magnetometer

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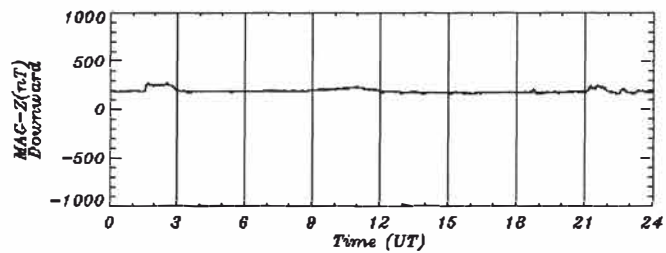
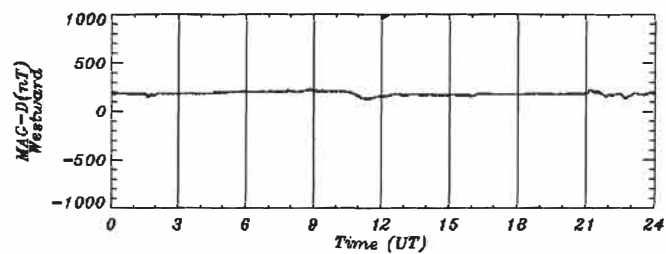
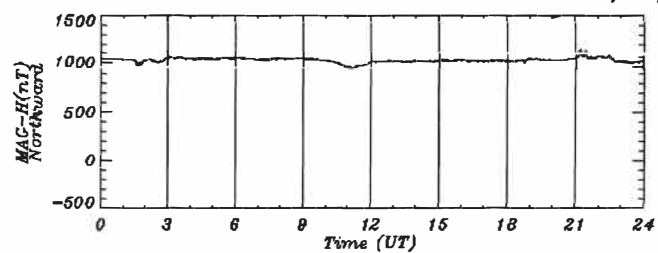
*NIPR Syowa Magnetometer*

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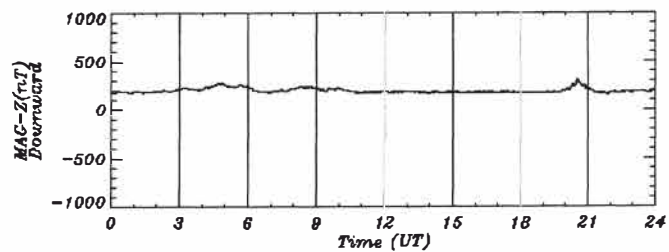
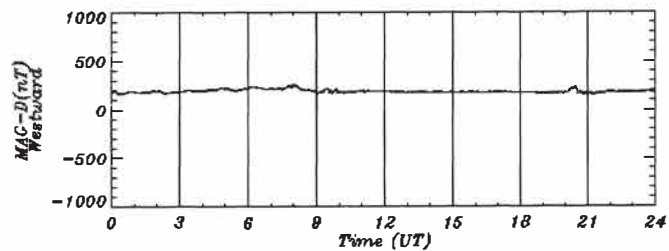
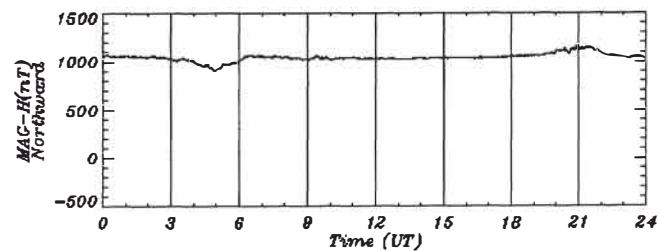
*NIPR Syowa Magnetometer*

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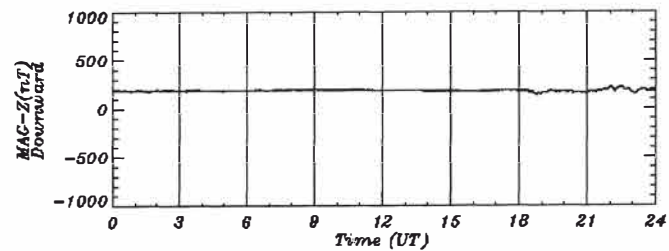
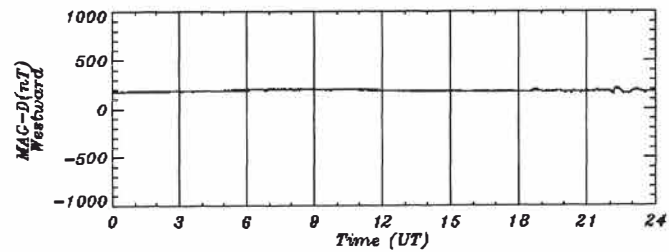
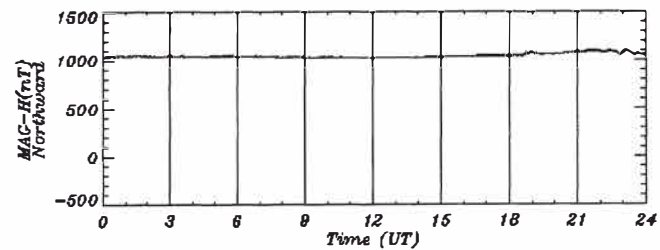
NIPR Syowa Magnetometer

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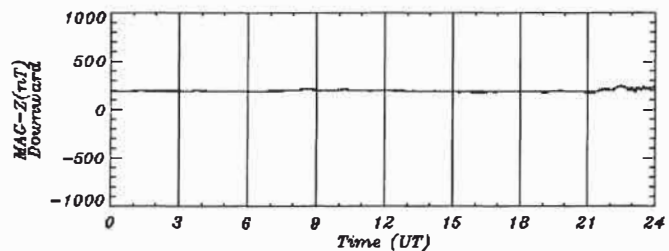
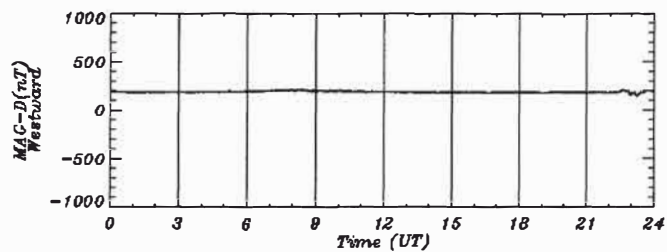
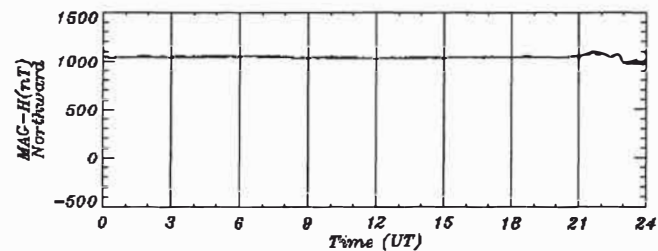
NIPR Syowa Magnetometer

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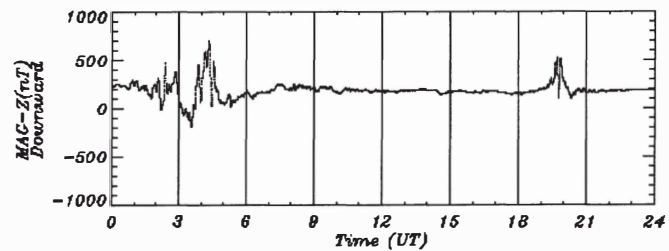
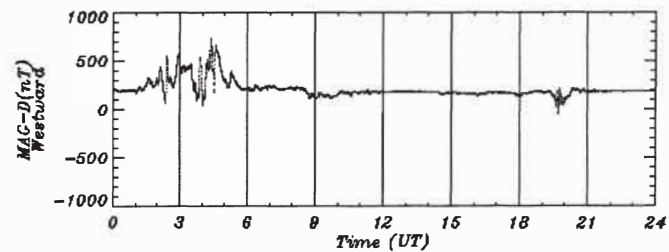
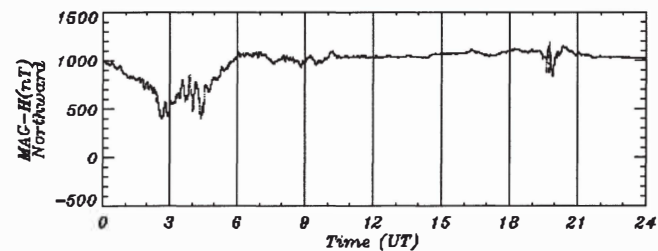
NIPR Syowa Magnetometer

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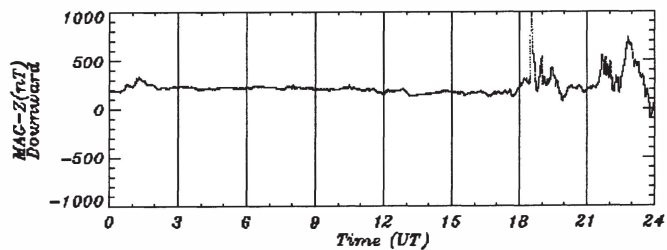
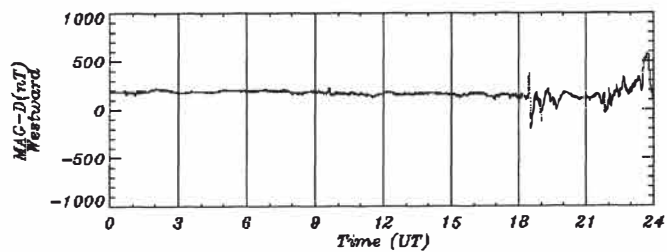
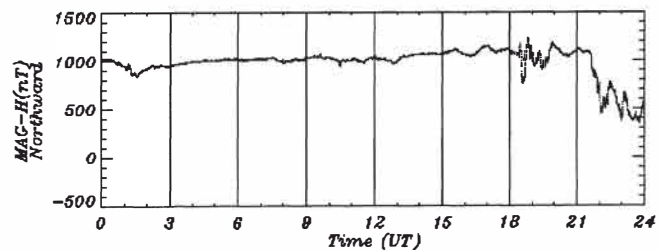
NIPR Syowa Magnetometer

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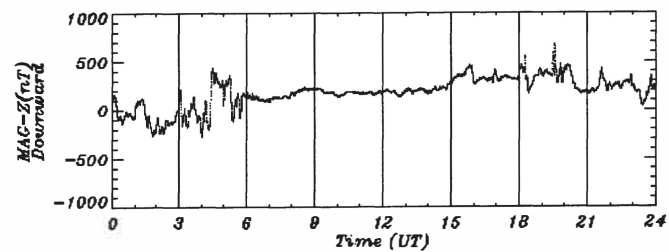
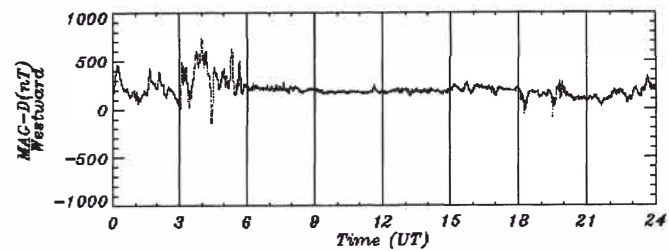
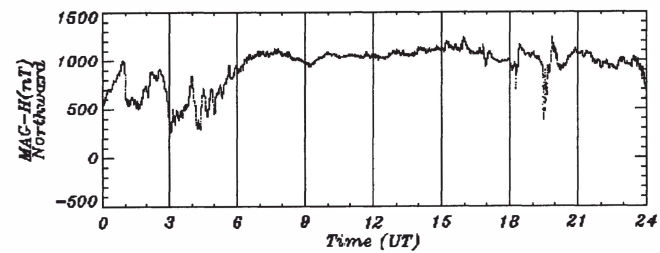
NIPR Syowa Magnetometer

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NIPR Syowa Magnetometer

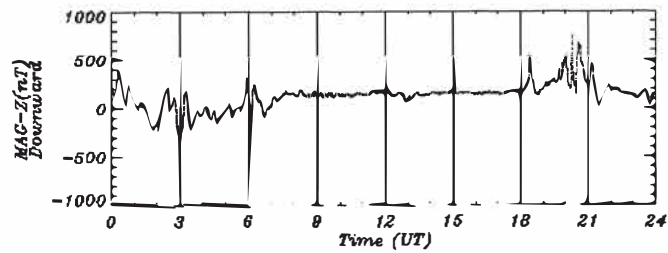
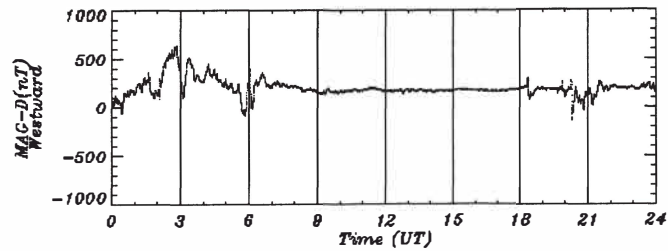
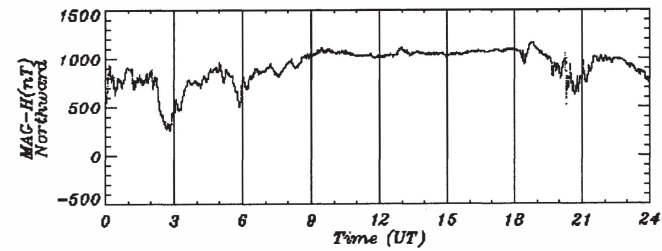
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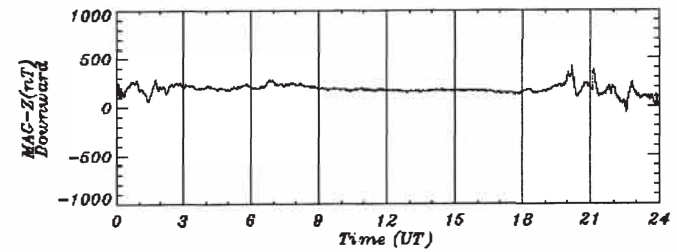
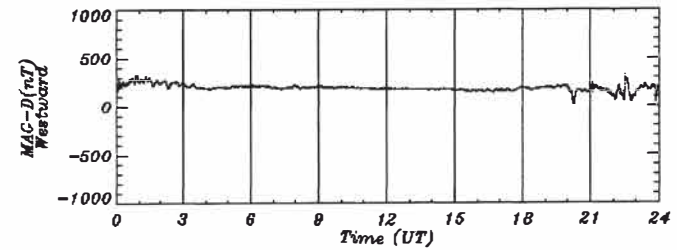
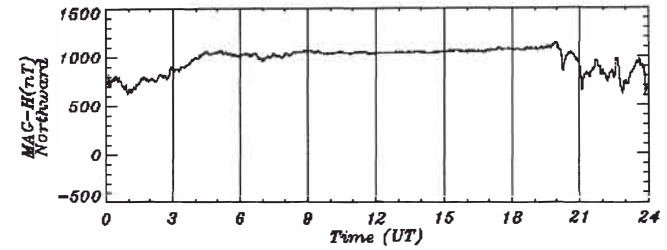
NIPR Syowa Magnetometer

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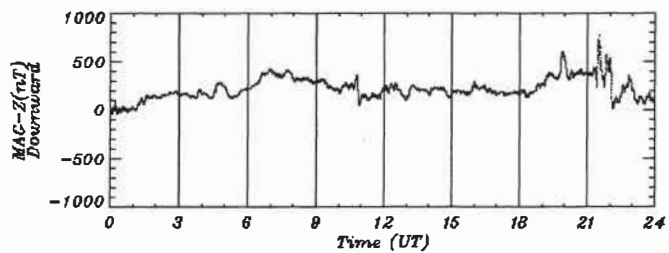
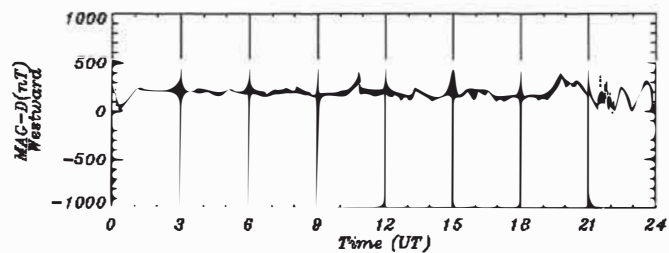
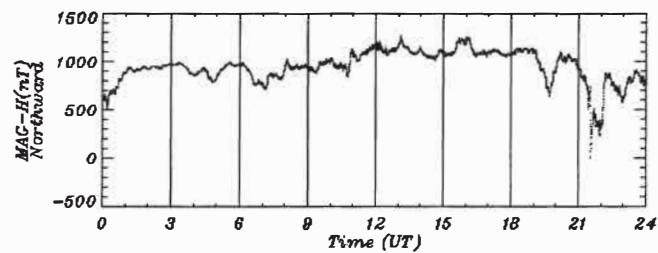
NIPR Syowa Magnetometer

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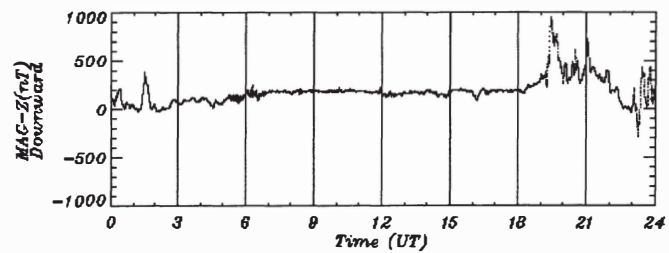
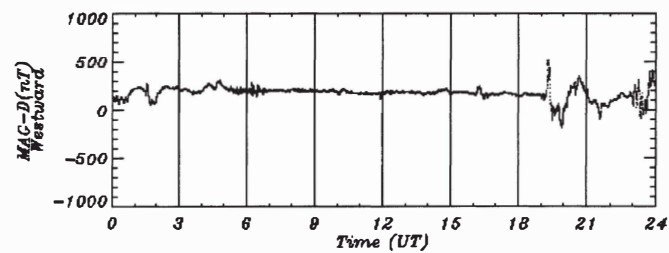
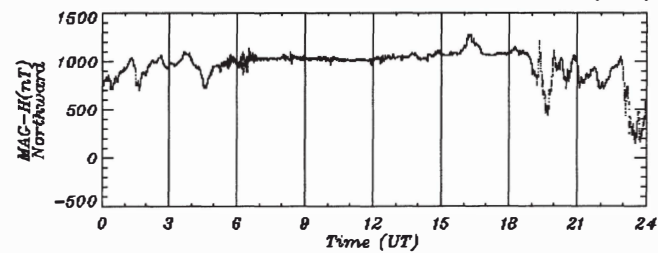
NIPR Syowa Magnetometer

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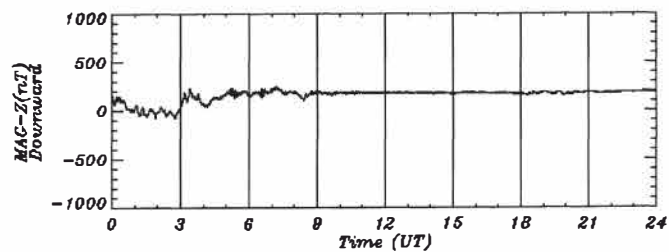
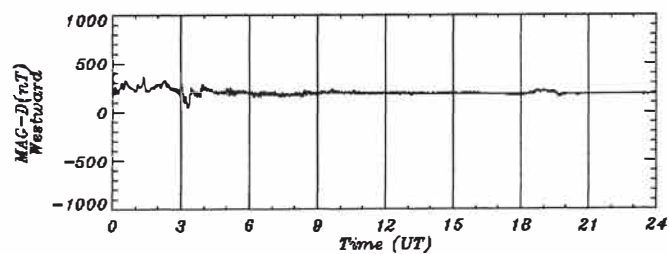
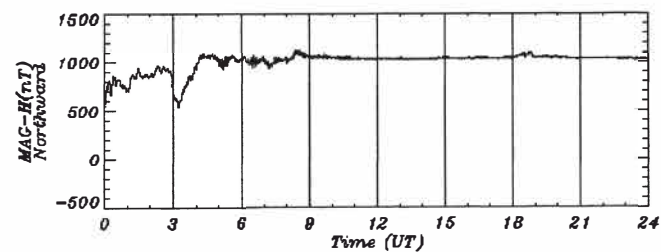
NIPR Syowa Magnetometer

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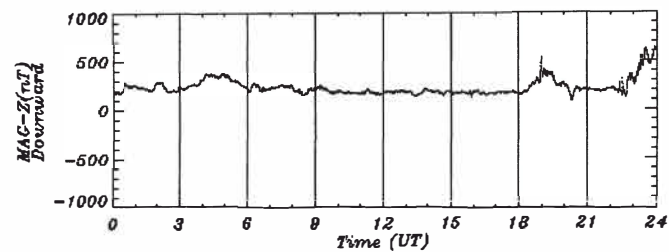
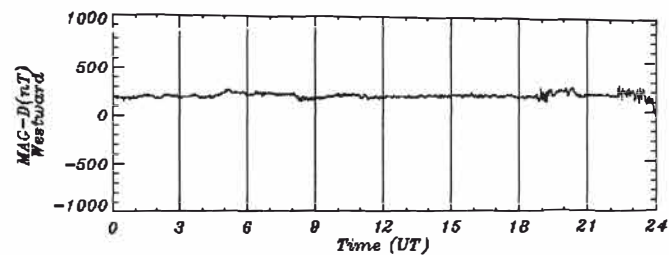
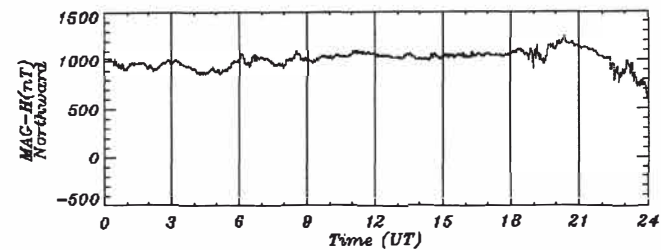
NIPR Syowa Magnetometer

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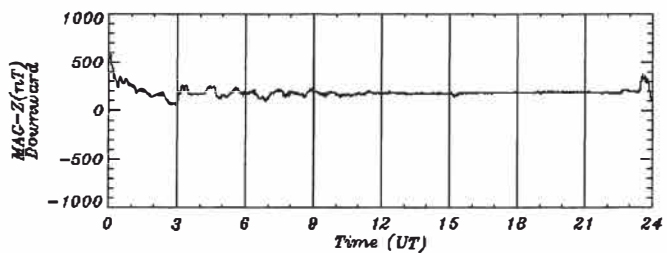
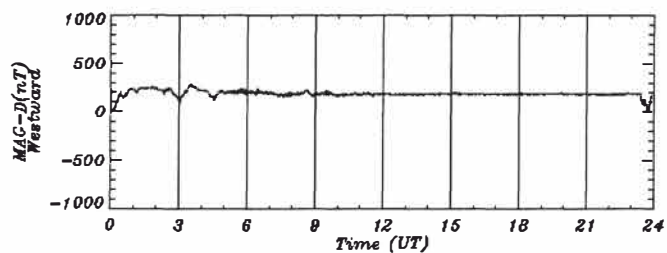
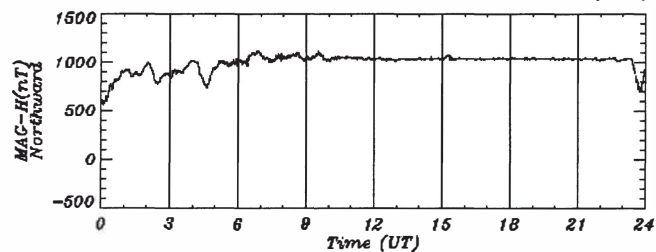
NIPR Syowa Magnetometer

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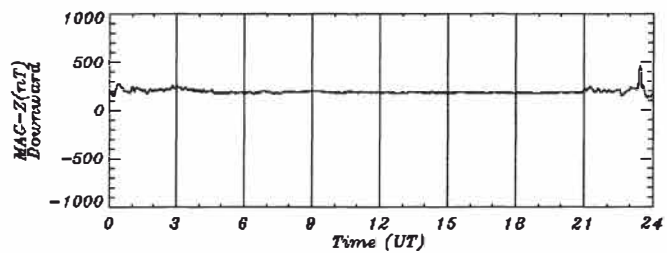
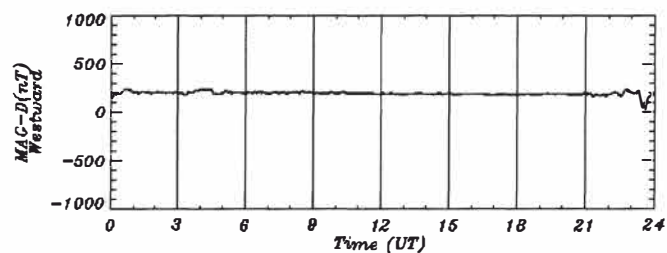
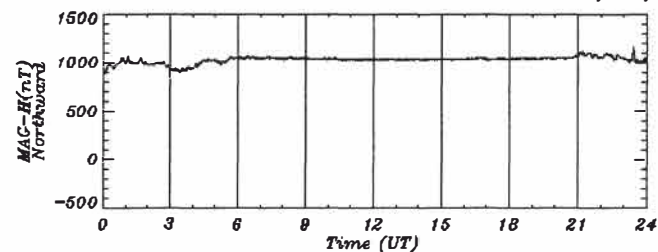
*NIPR Syowa Magnetometer*

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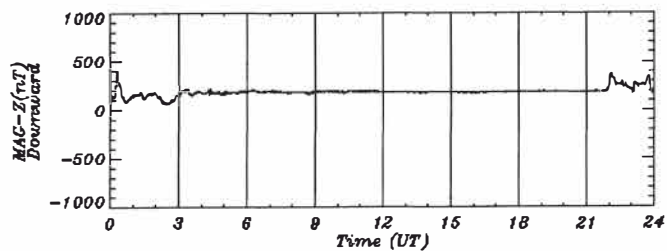
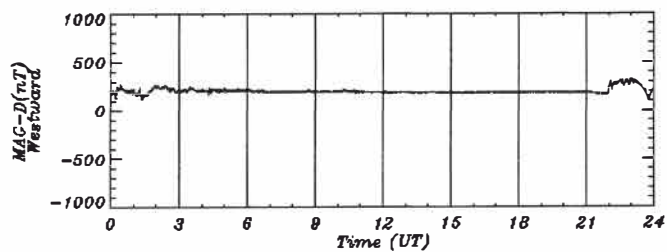
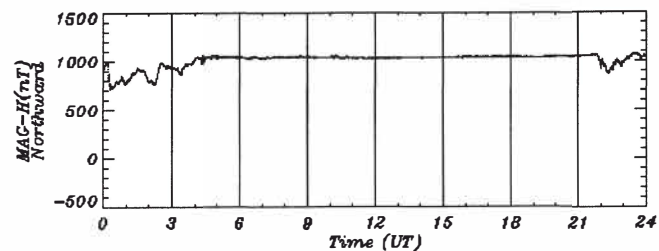
*NIPR Syowa Magnetometer*

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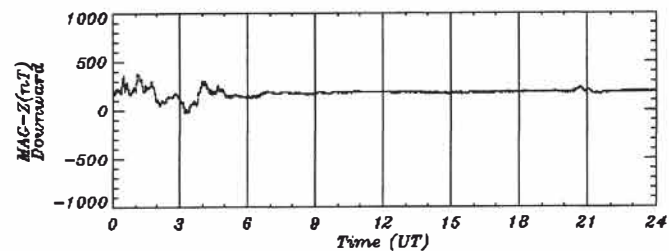
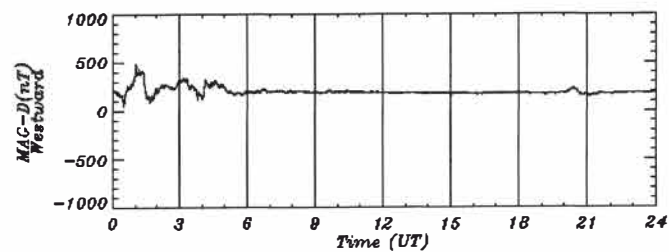
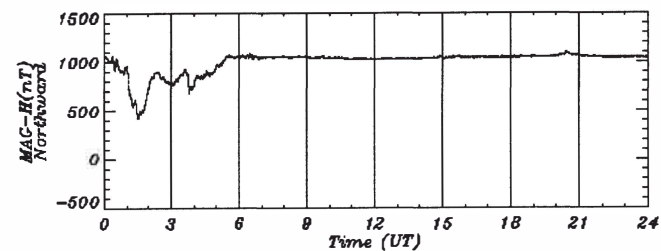
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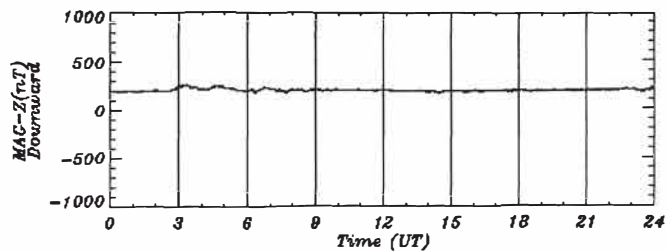
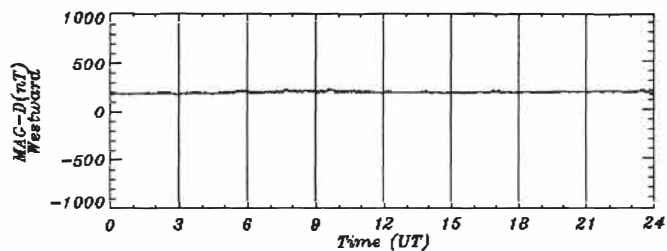
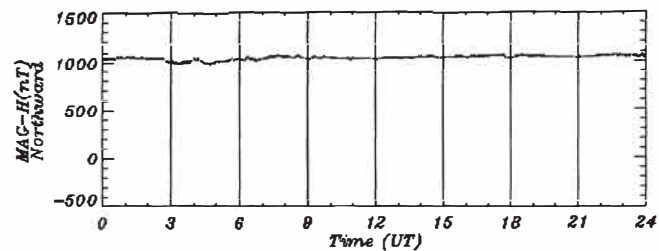
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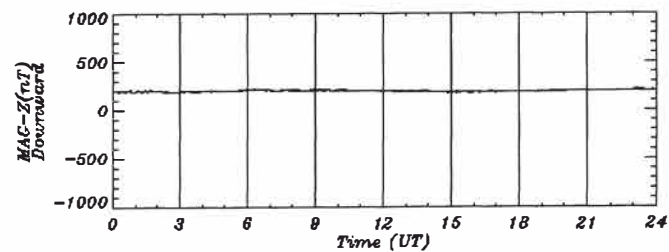
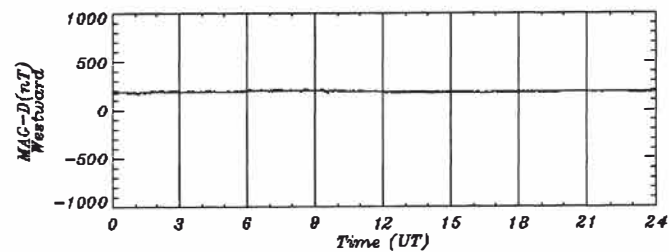
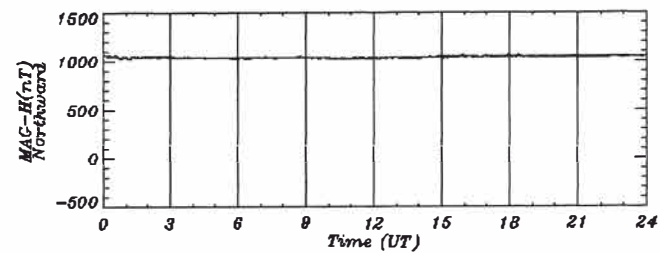
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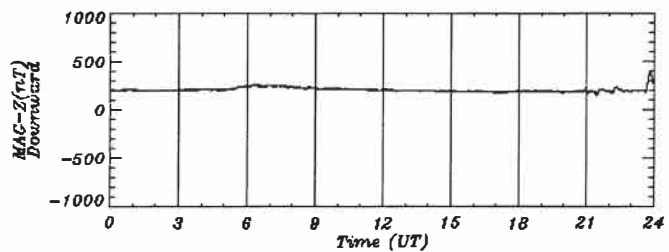
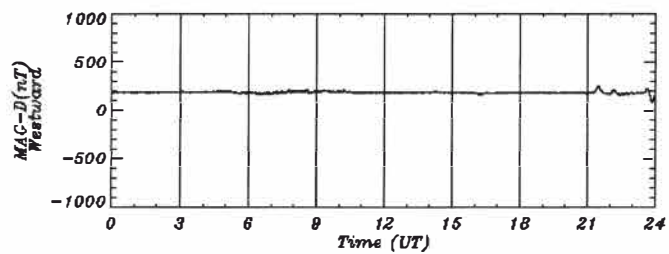
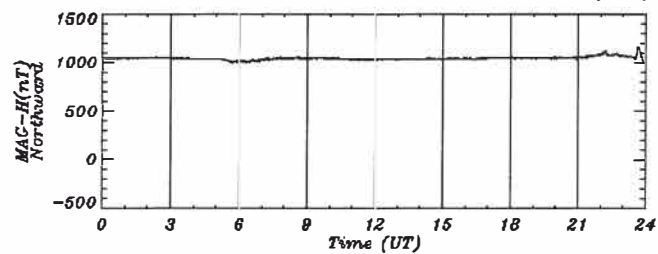
NIPR Syowa Magnetometer

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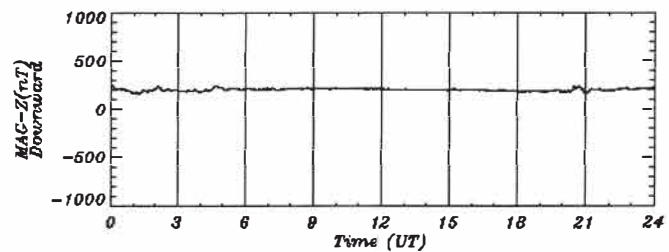
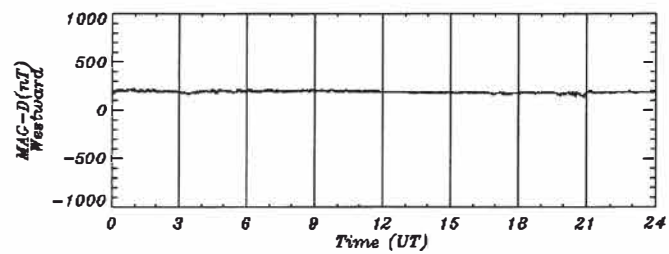
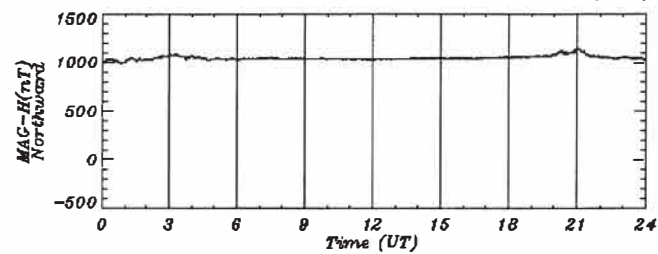
## NIPR Syowa Magnetometer

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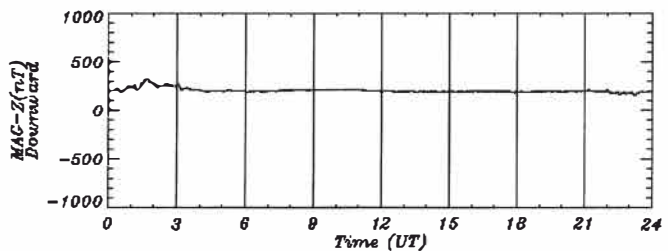
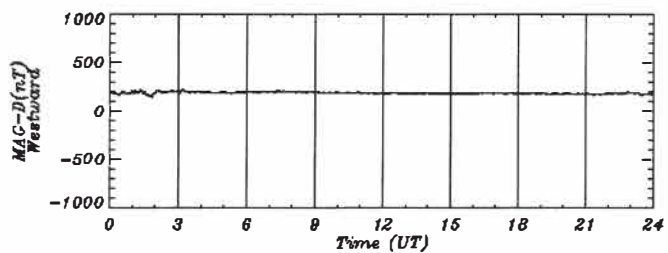
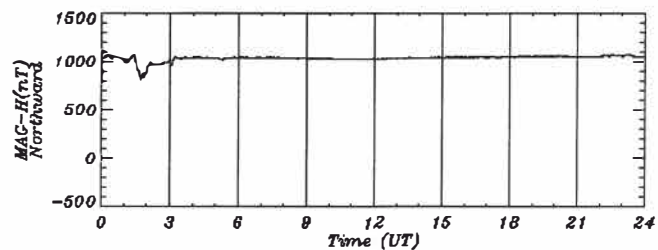
## NIPR Syowa Magnetometer

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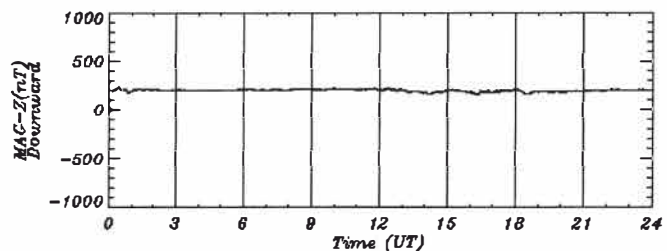
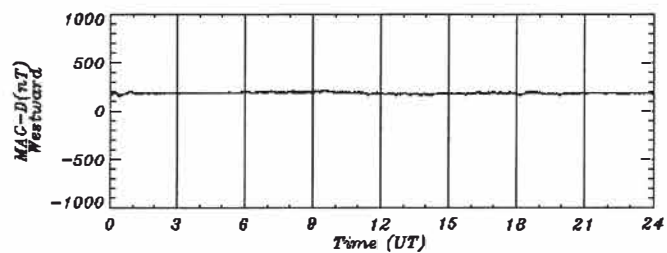
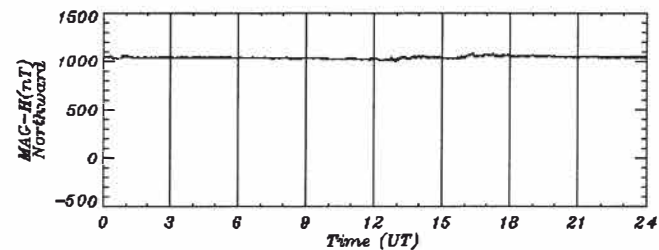
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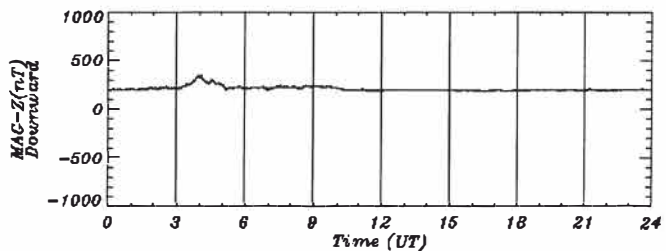
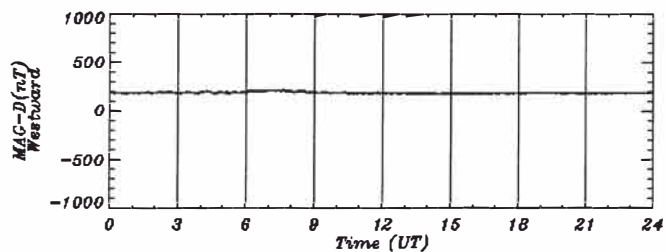
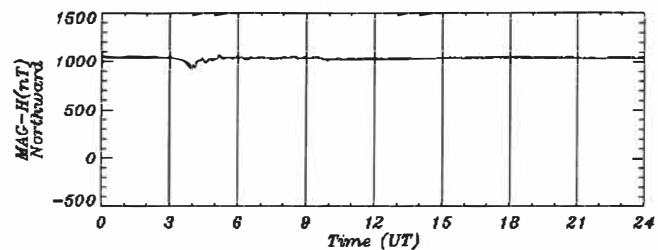
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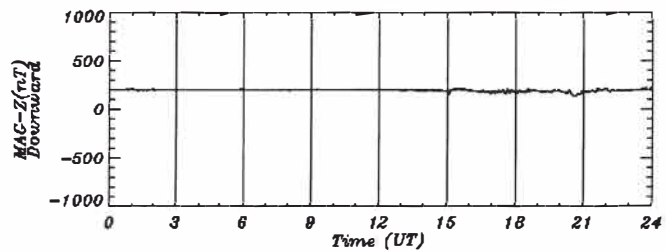
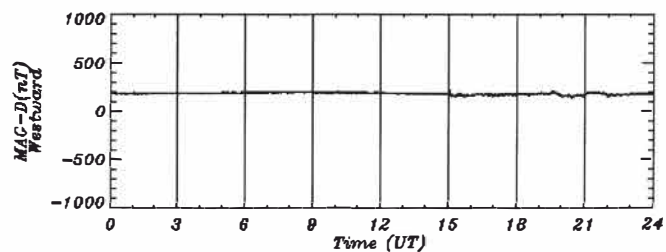
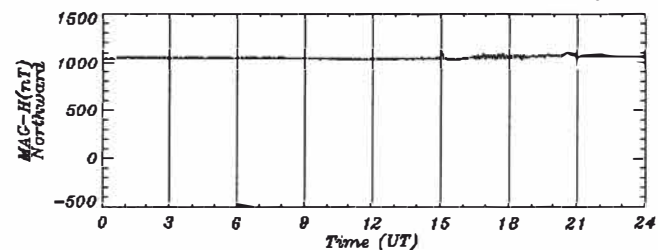
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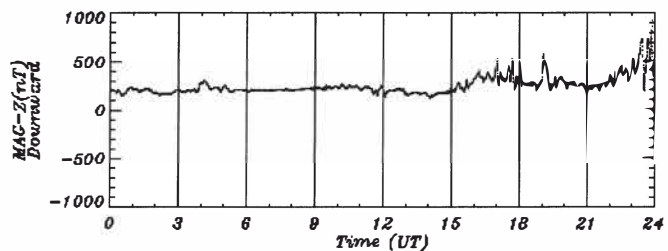
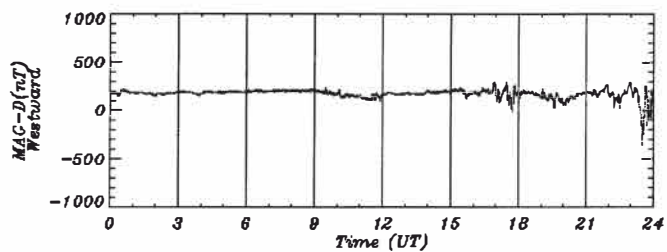
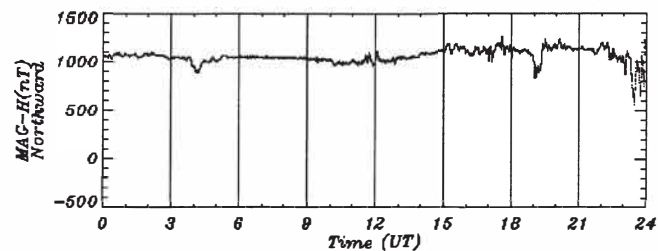
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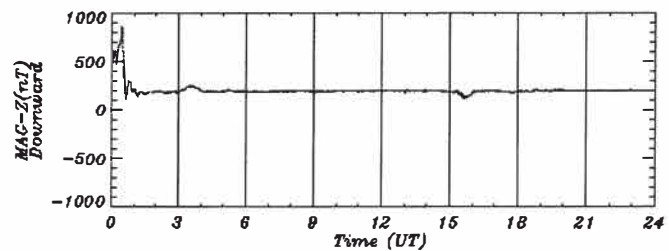
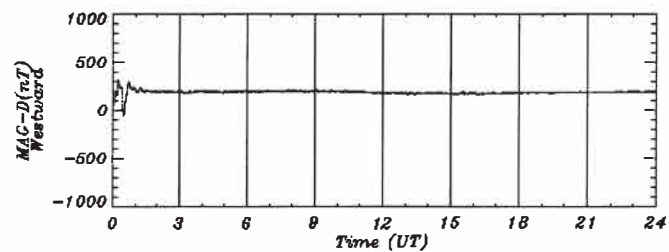
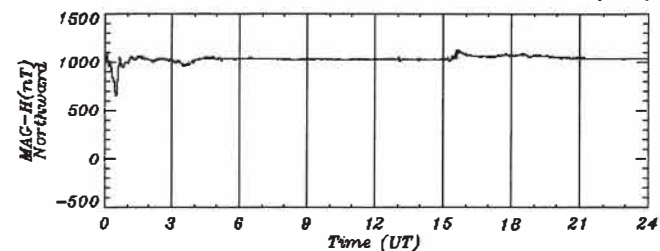
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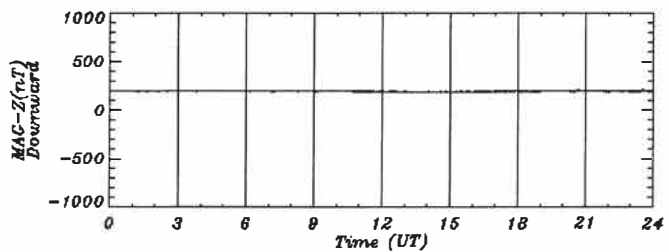
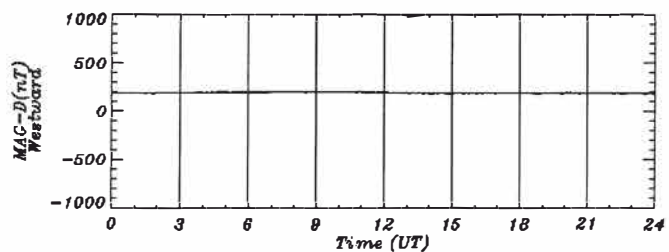
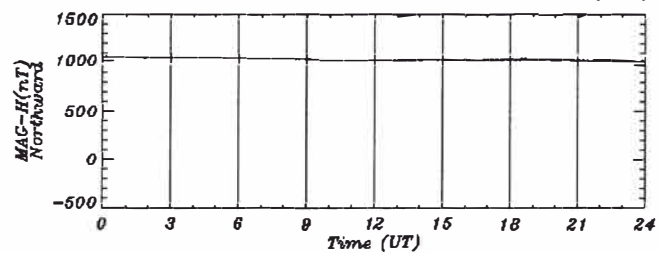
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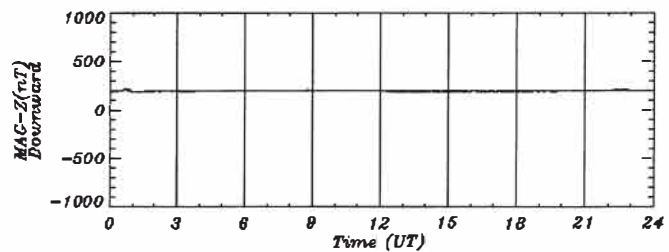
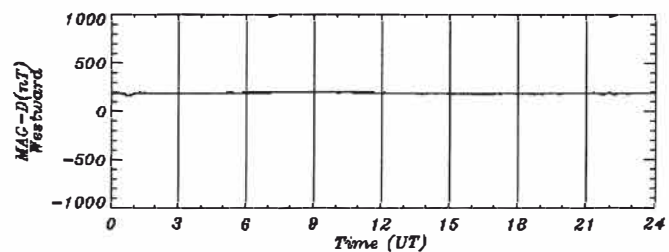
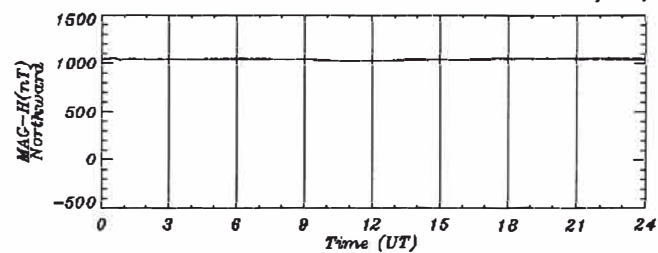
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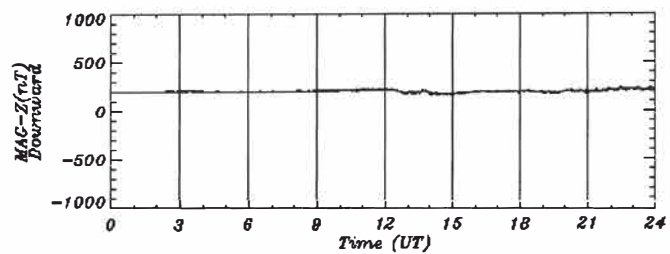
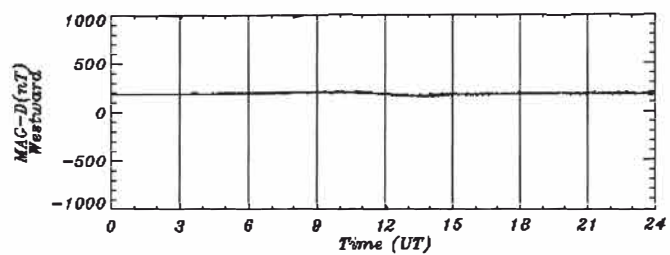
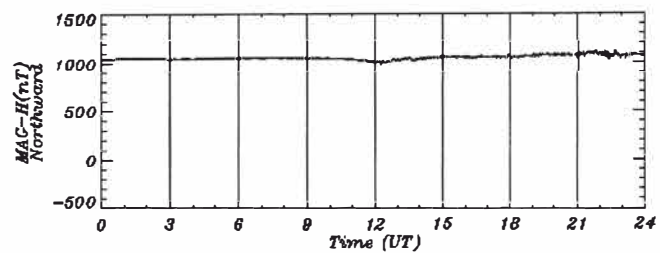
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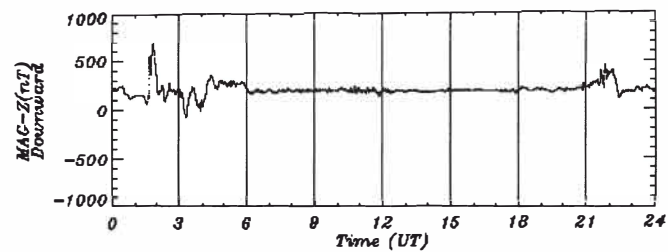
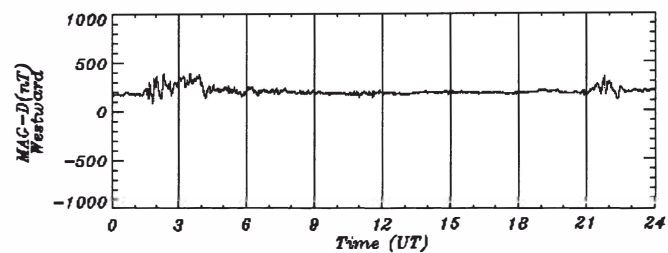
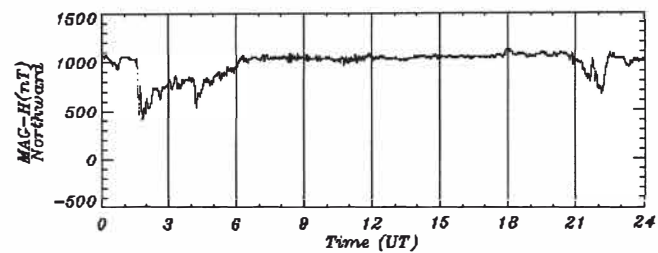
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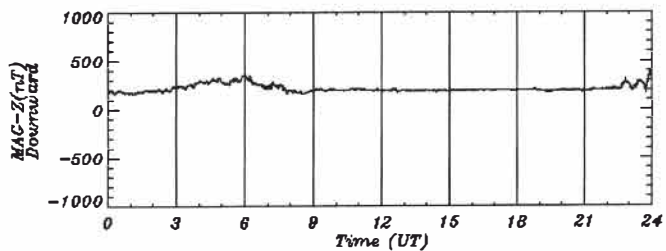
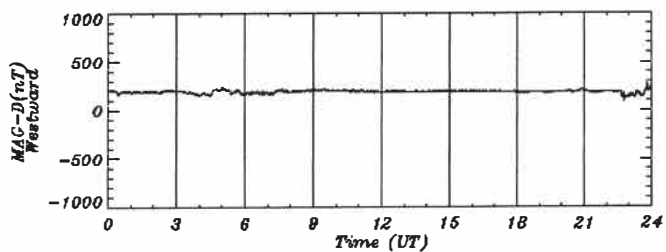
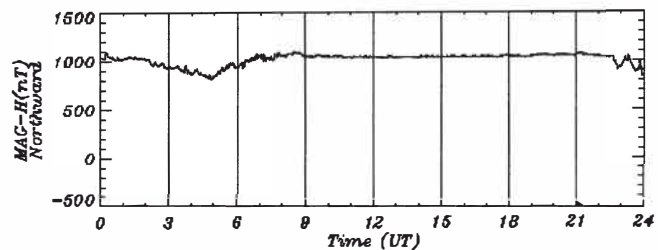
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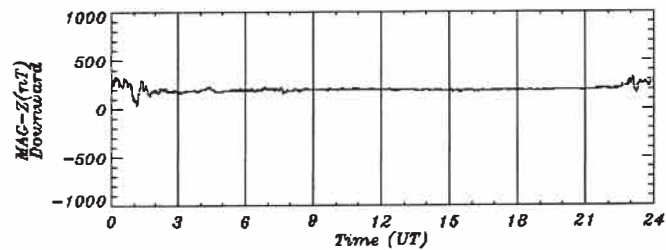
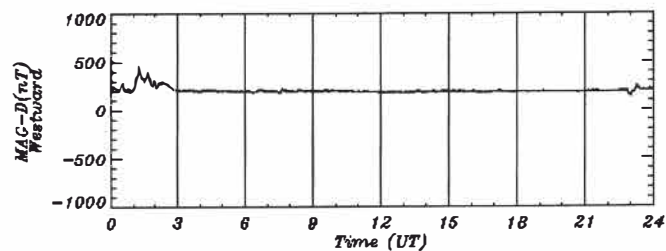
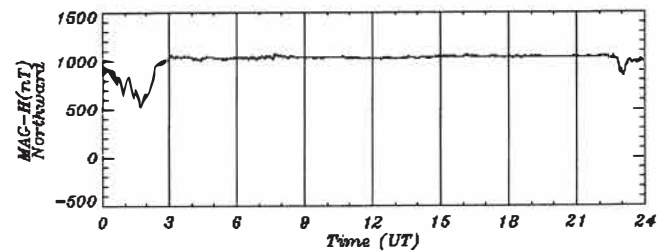
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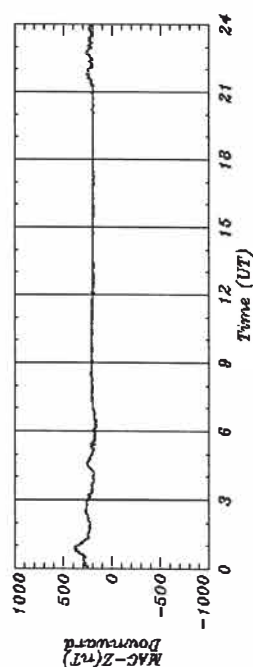
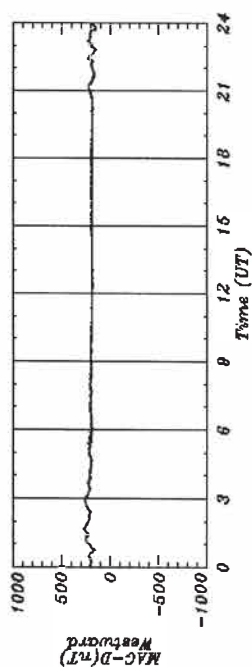
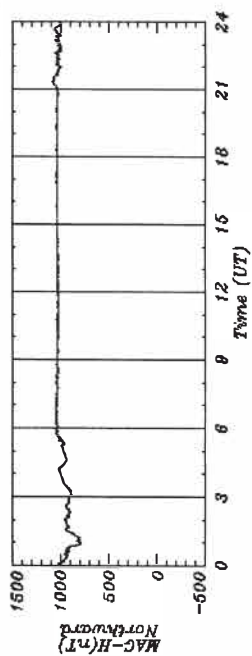
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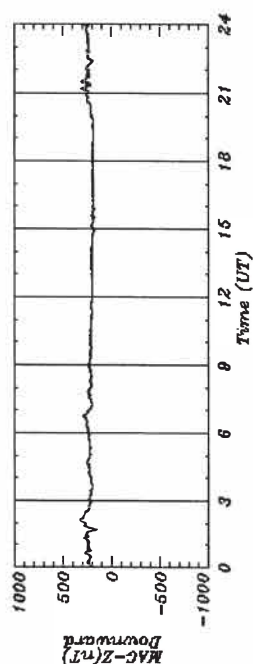
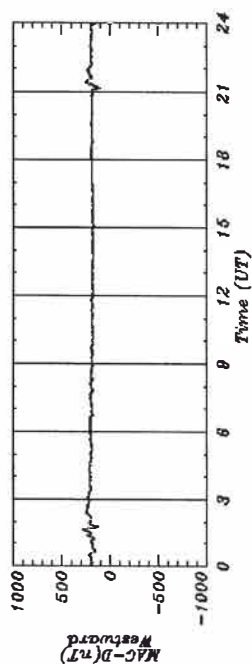
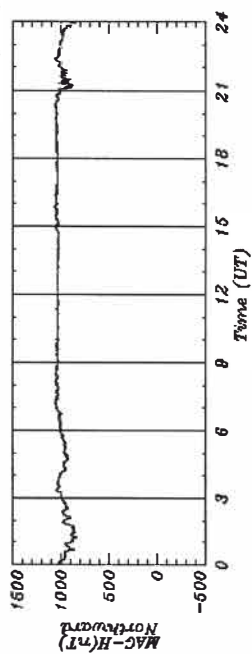
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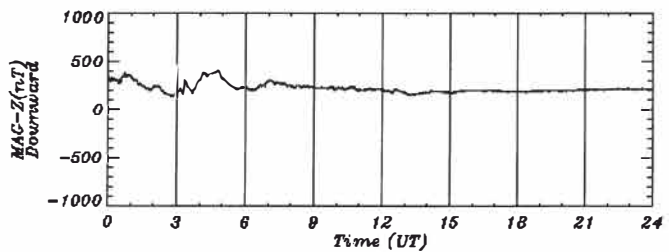
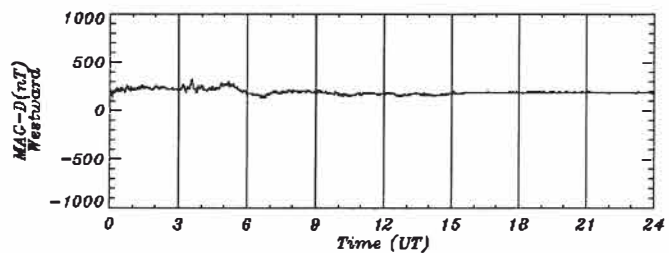
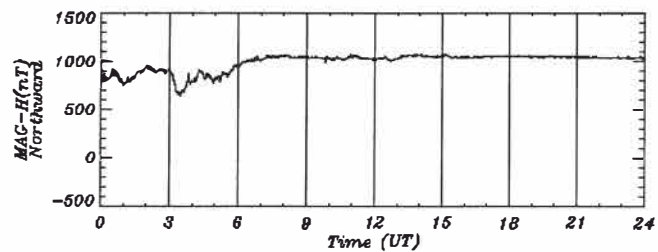
NIPR Syowa Magnetometer

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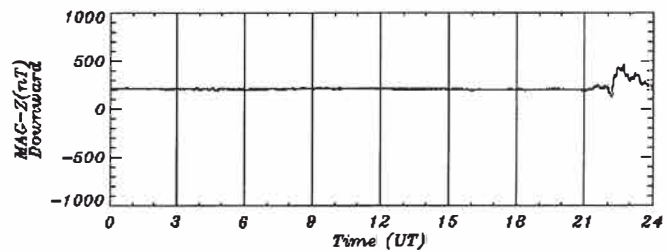
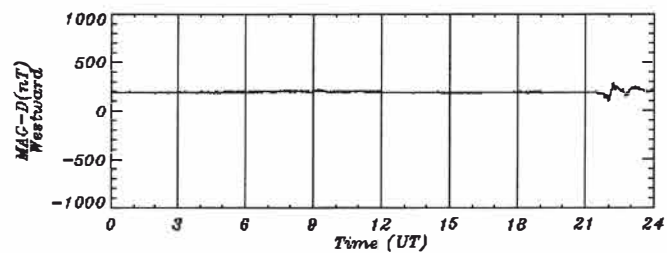
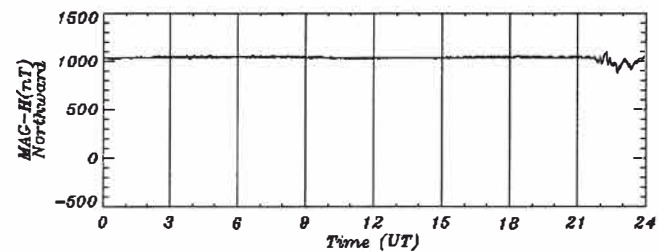
NIPR Syowa Magnetometer

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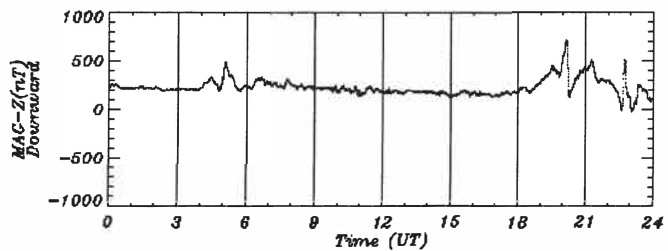
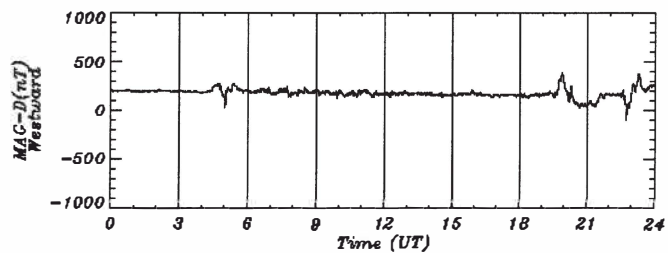
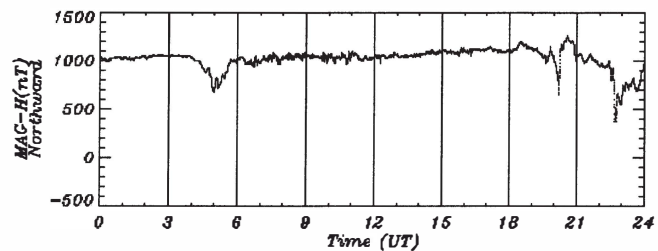
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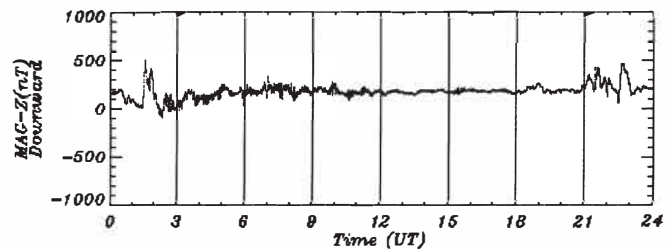
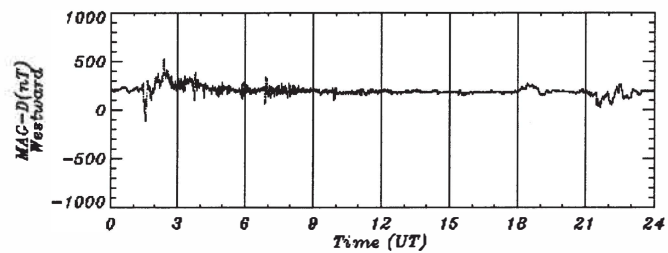
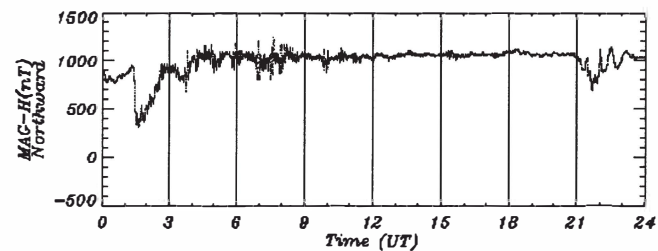
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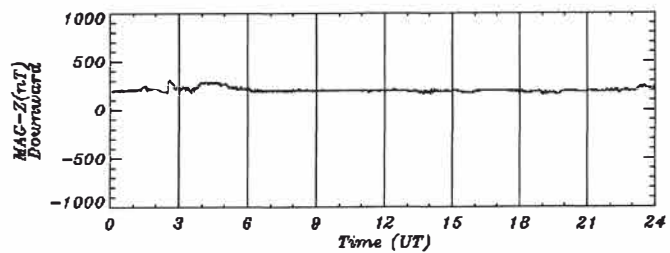
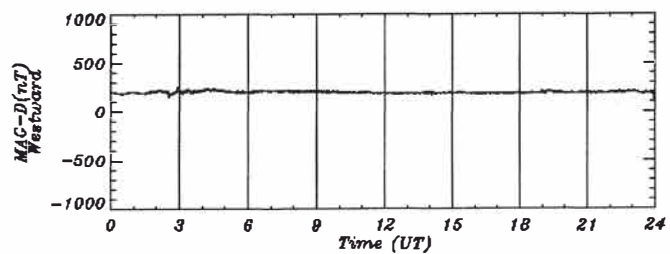
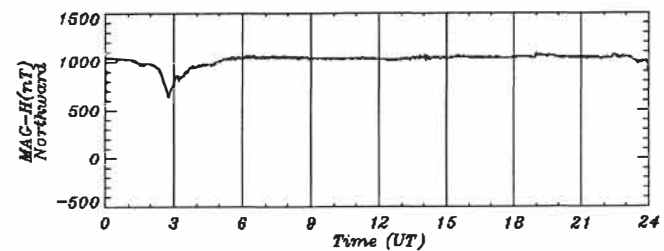
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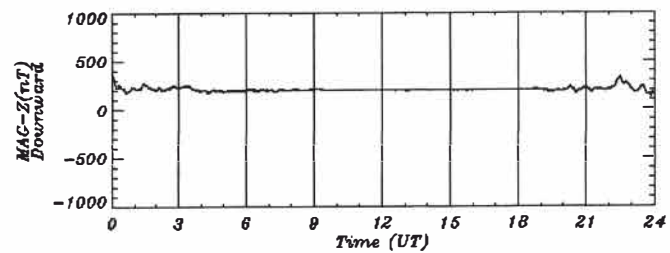
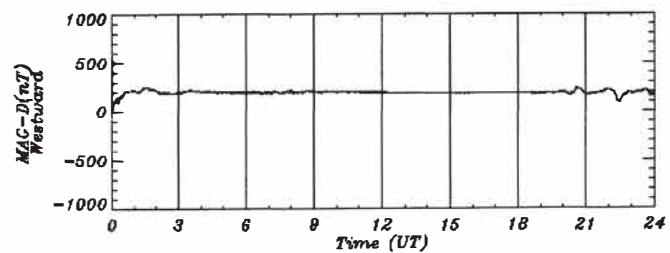
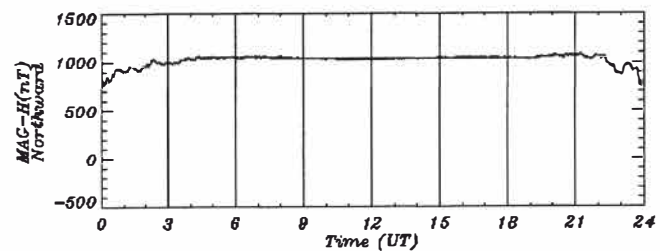
*NIPR Syowa Magnetometer*

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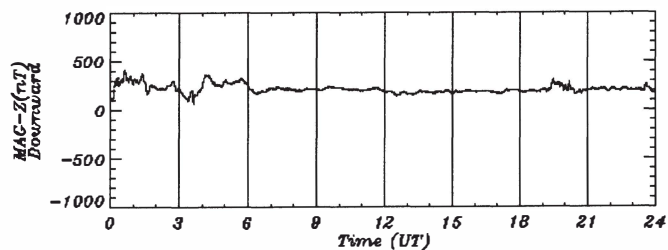
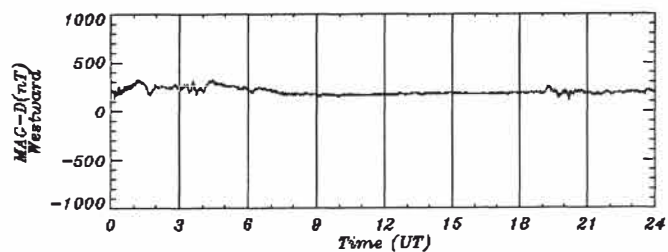
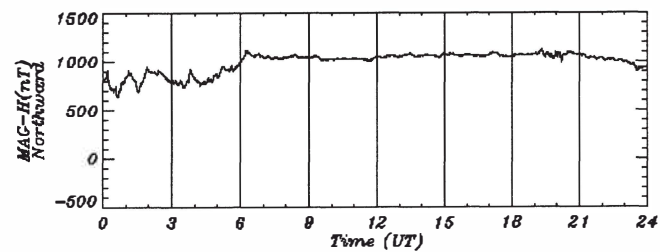
*NIPR Syowa Magnetometer*

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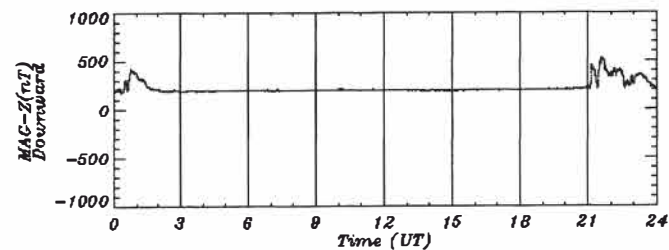
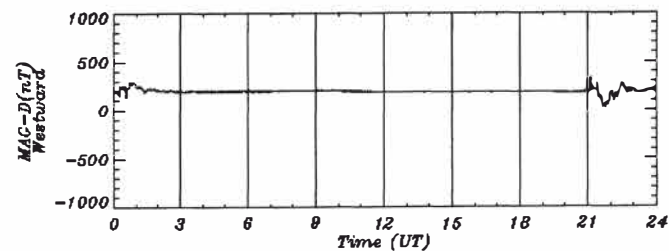
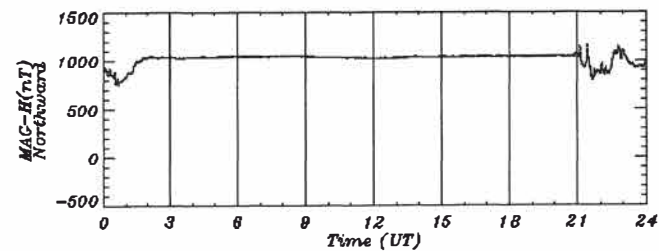
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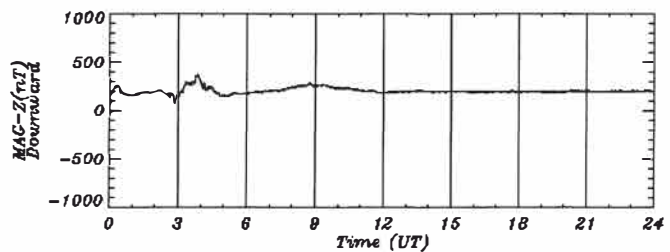
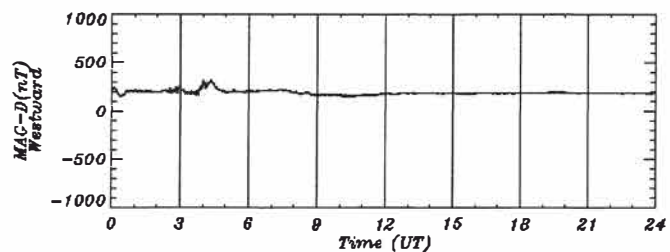
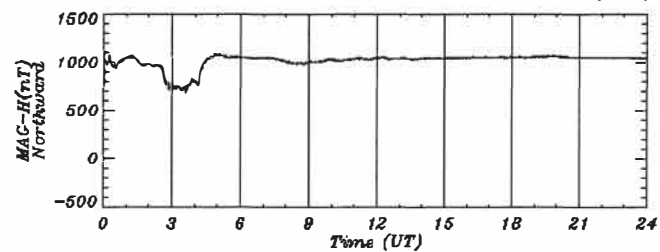
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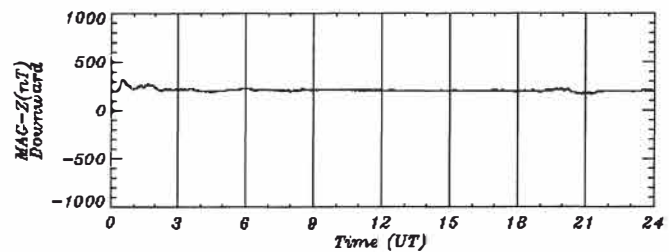
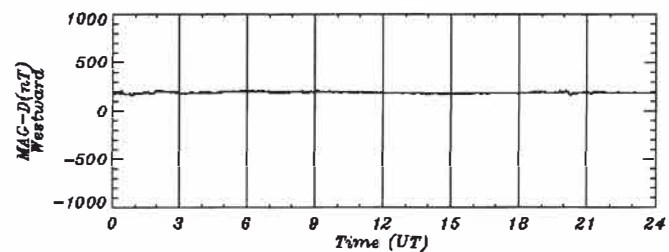
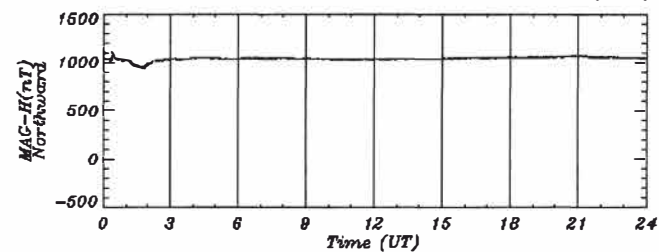
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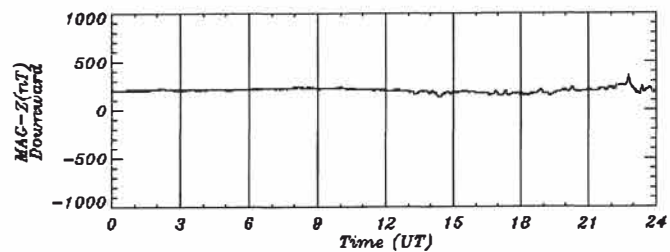
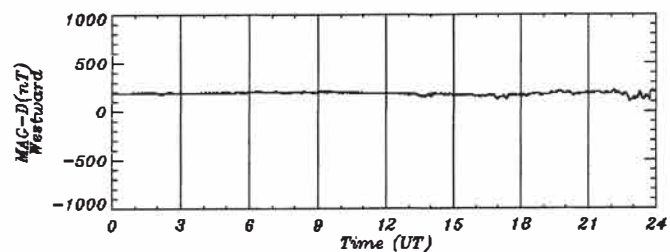
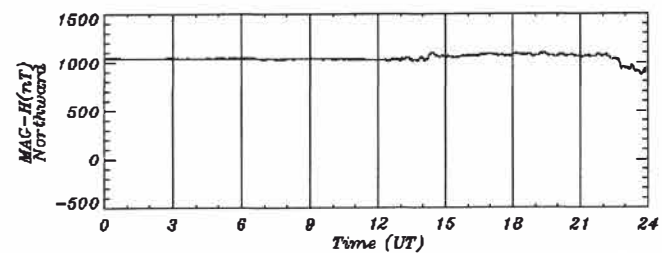
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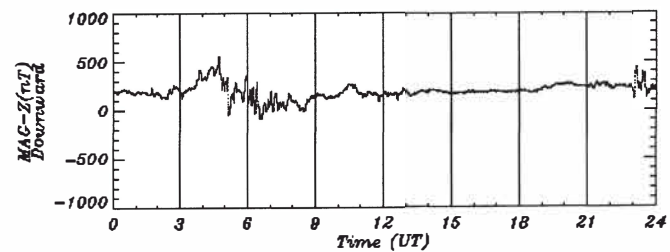
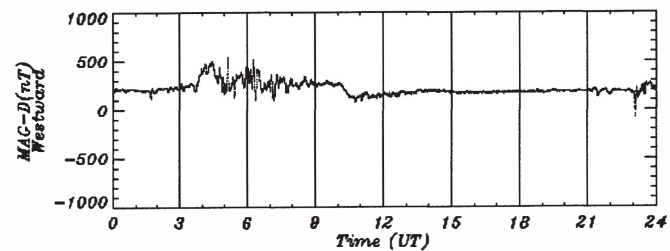
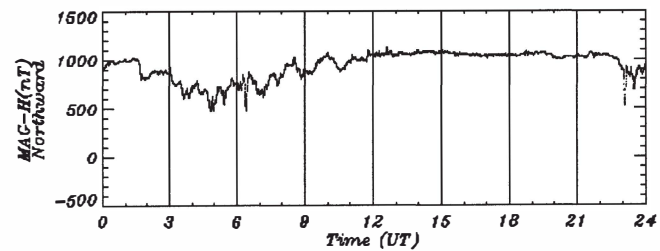
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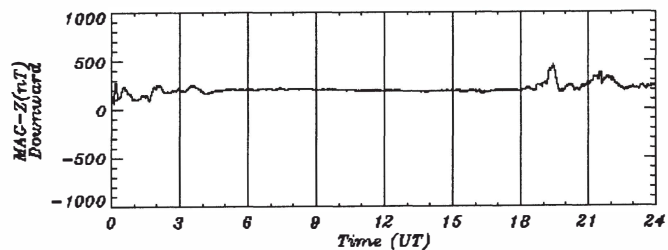
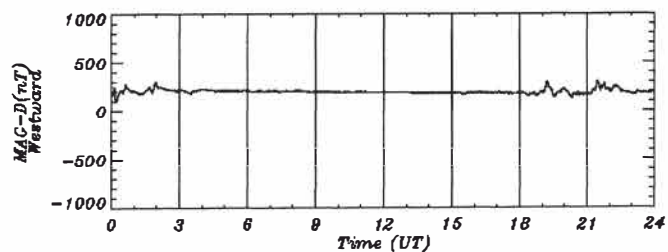
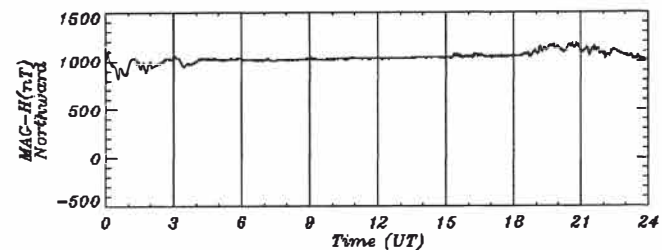
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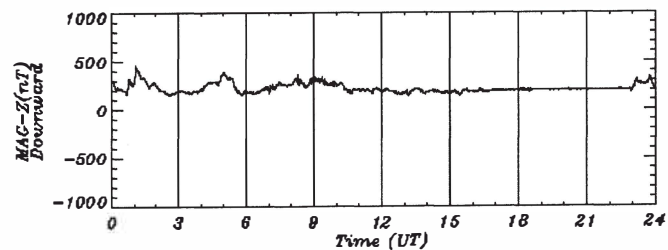
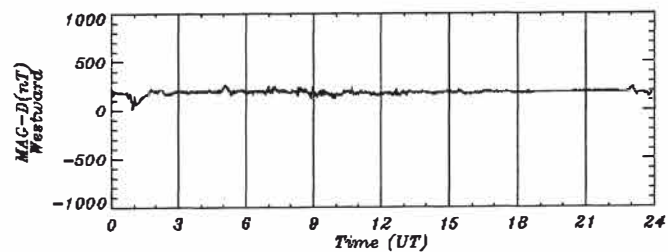
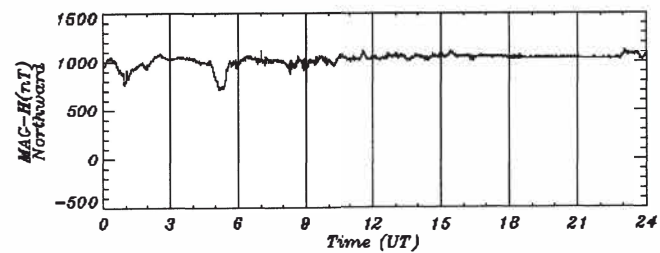
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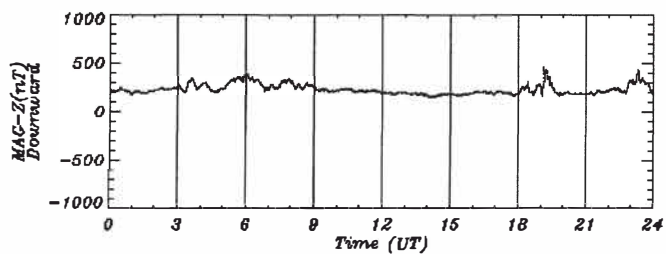
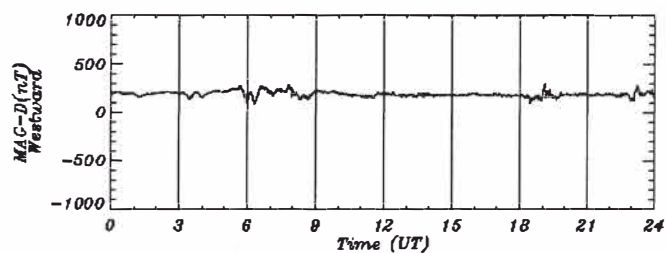
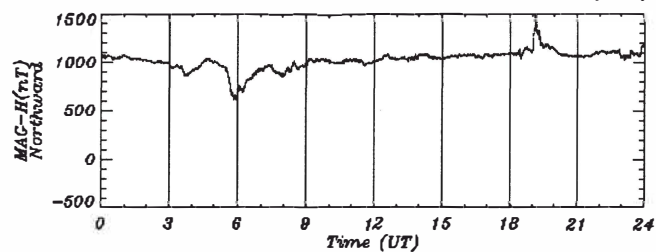
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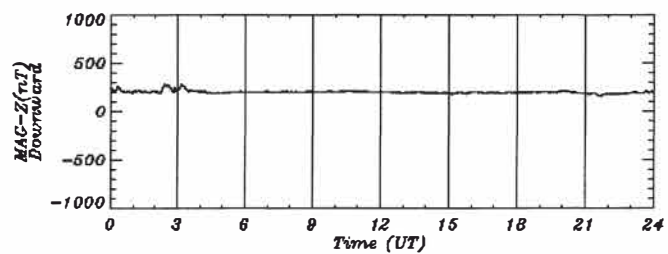
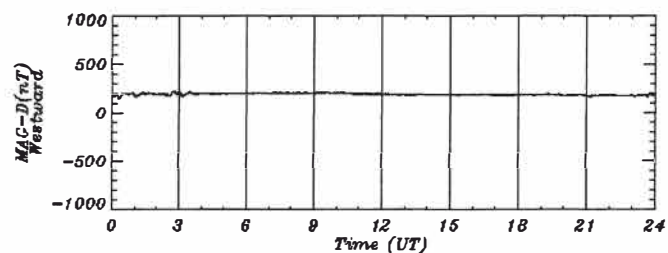
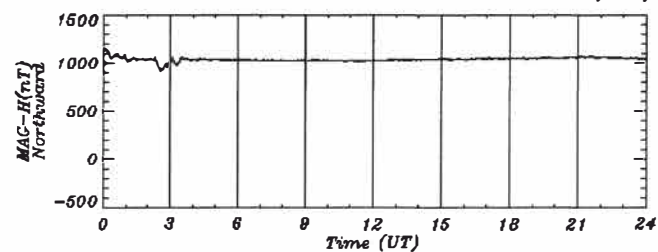
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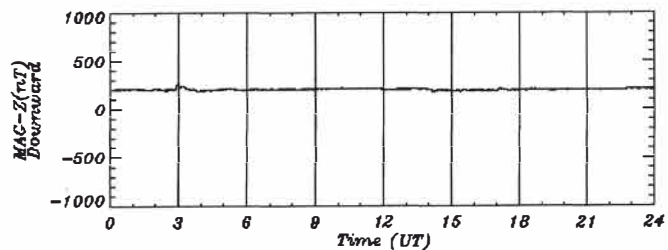
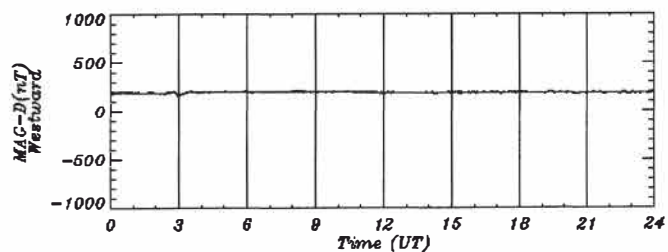
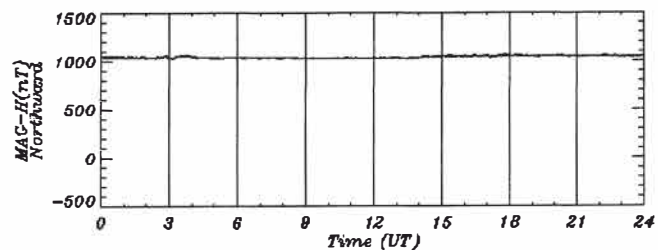
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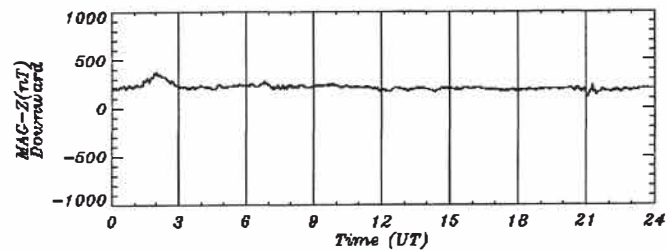
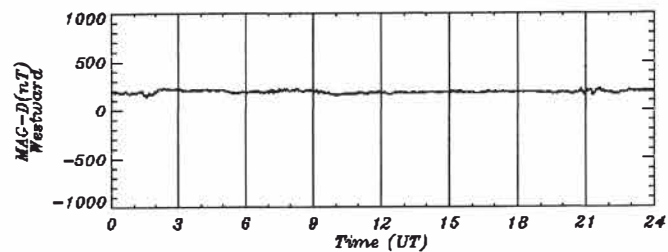
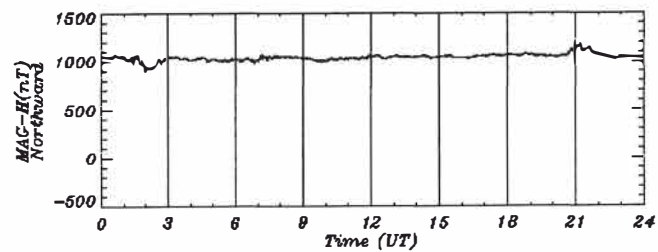
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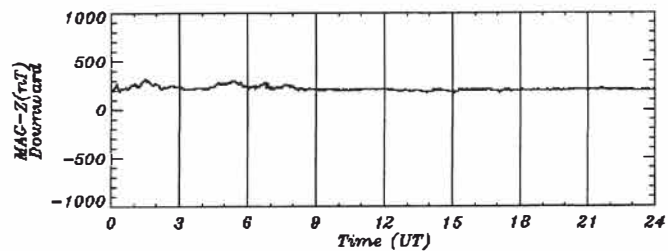
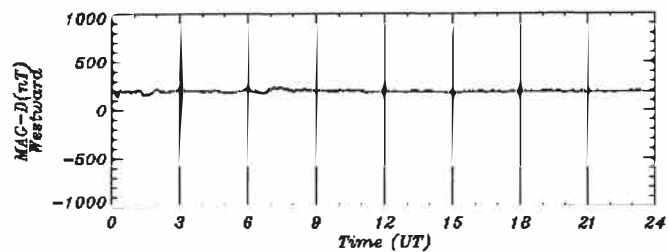
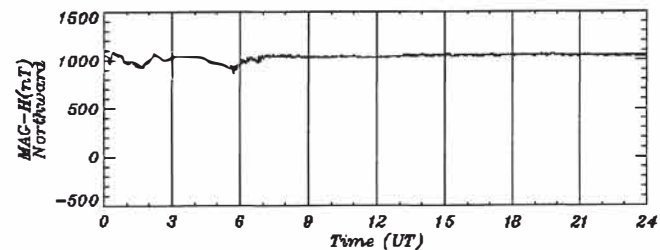
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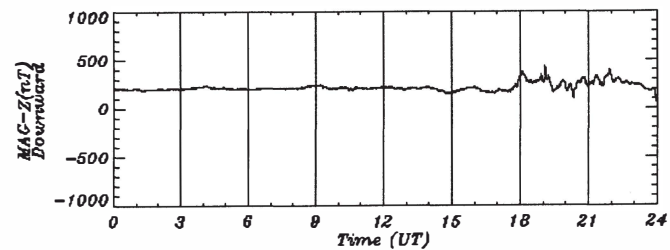
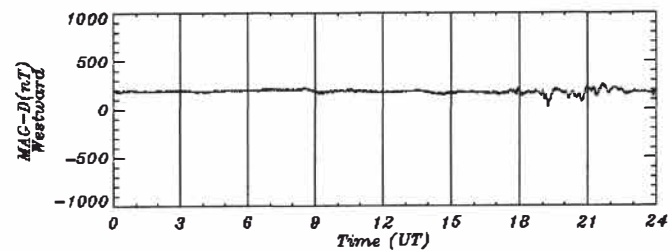
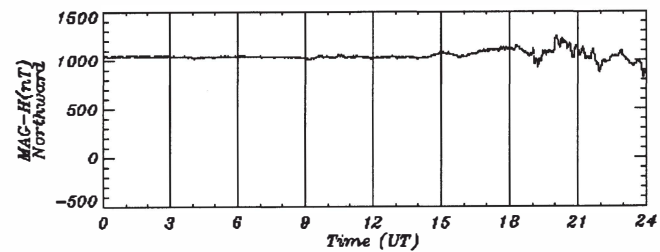
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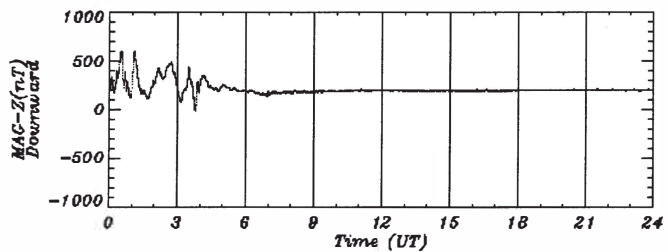
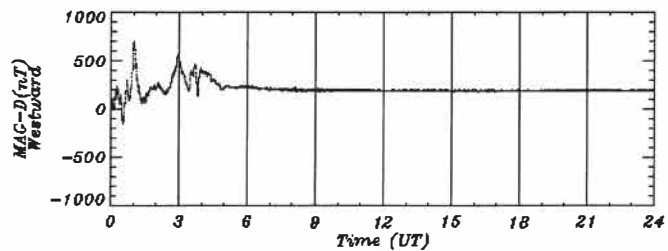
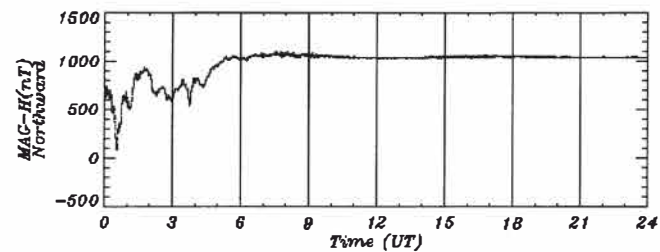
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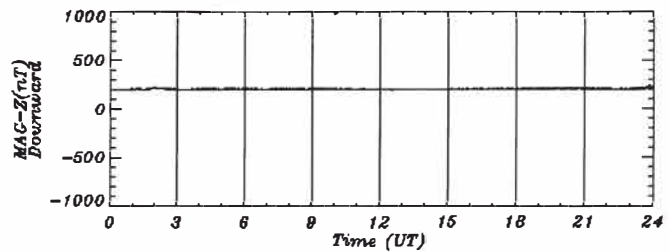
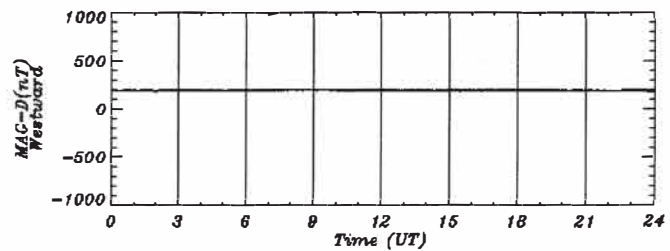
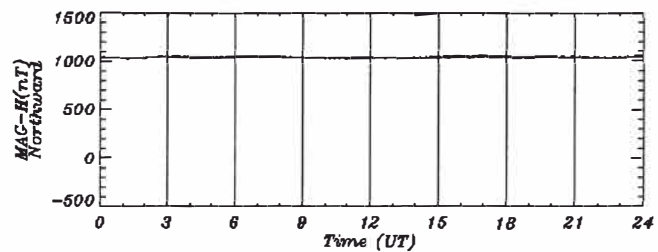
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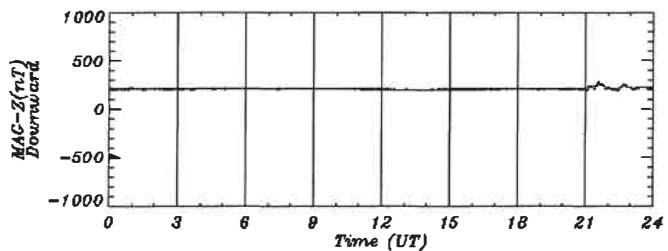
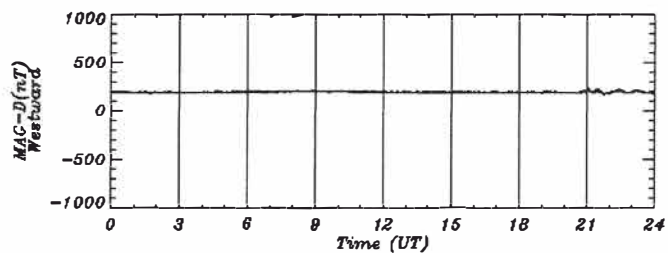
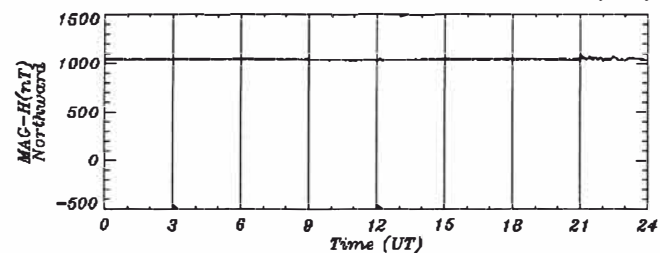
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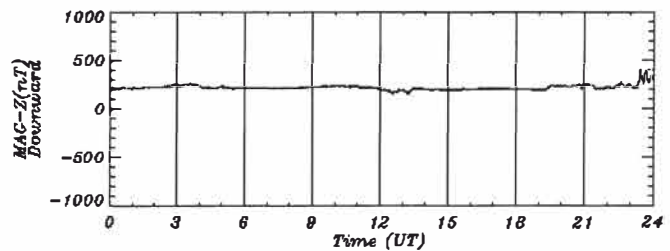
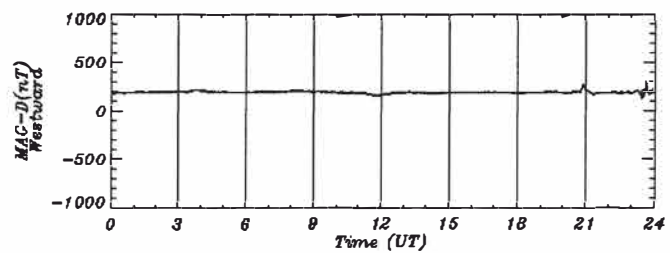
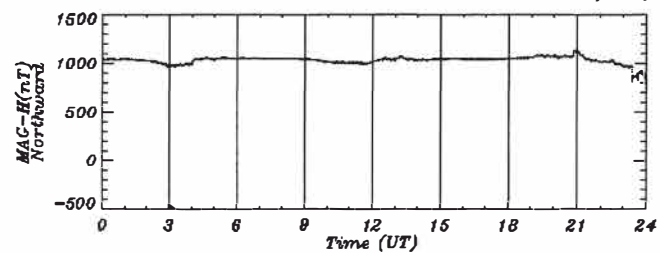
*NIPR Syowa Magnetometer*

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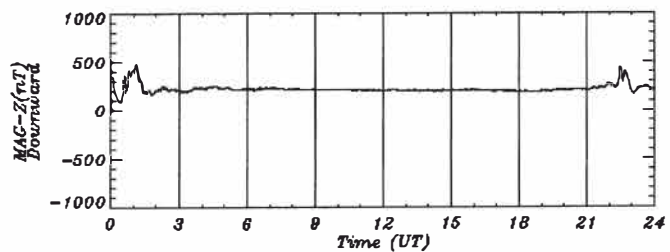
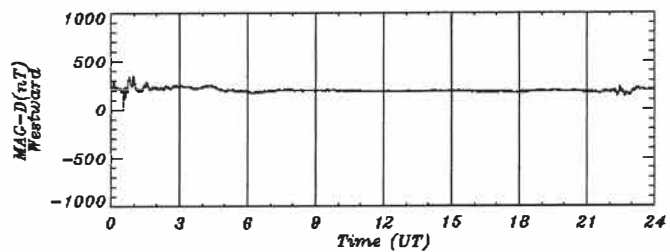
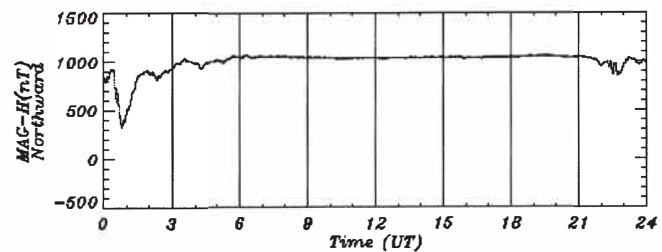
*NIPR Syowa Magnetometer*

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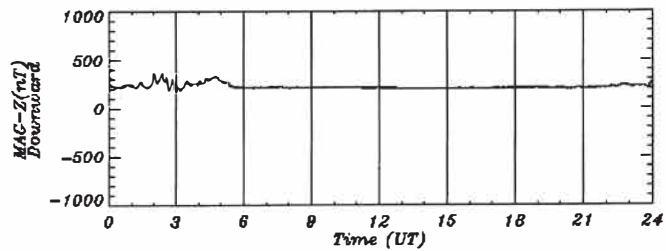
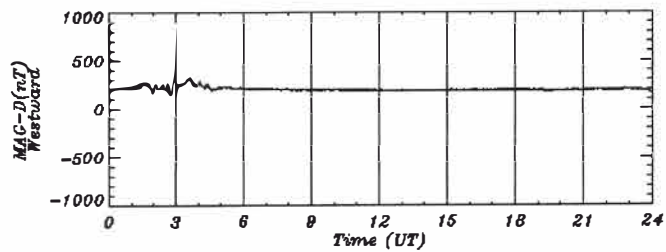
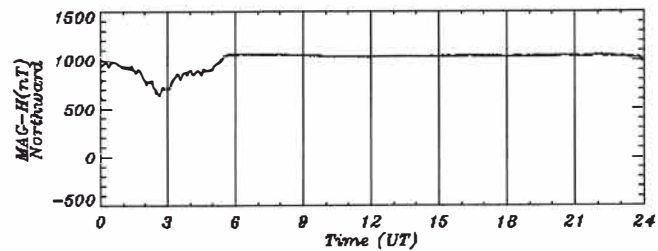
NIPR Syowa Magnetometer

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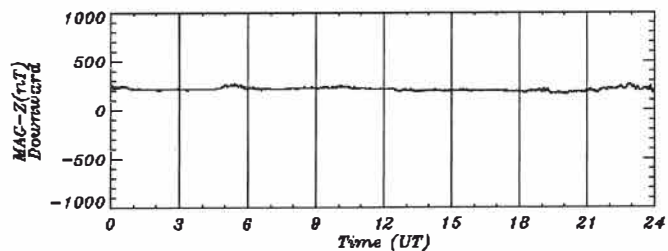
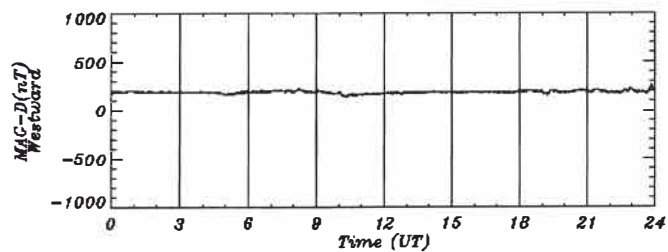
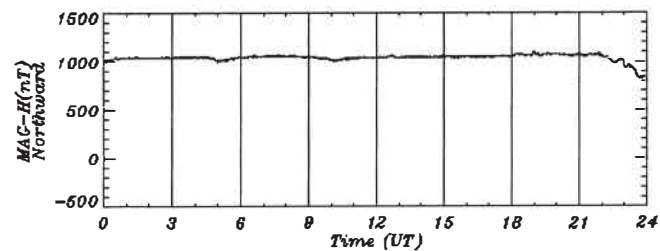
NIPR Syowa Magnetometer

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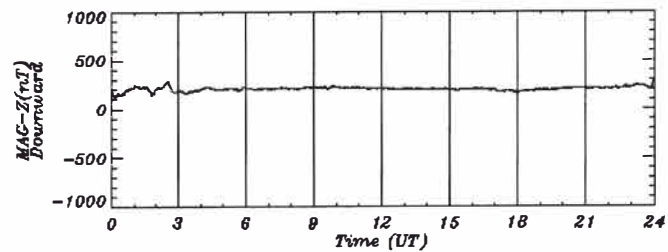
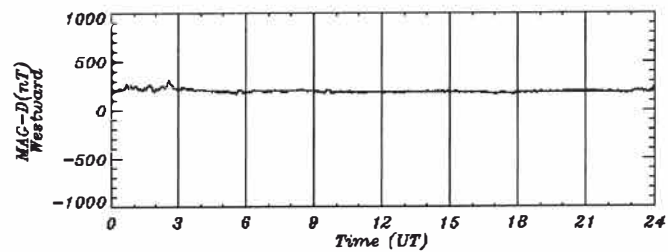
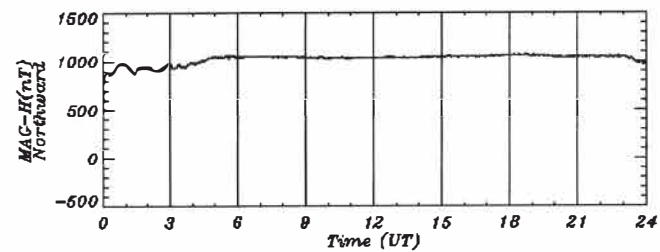
*NIPR Syowa Magnetometer*

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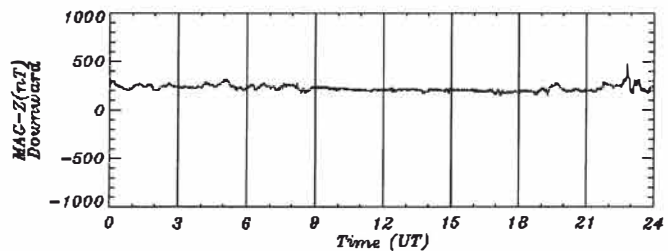
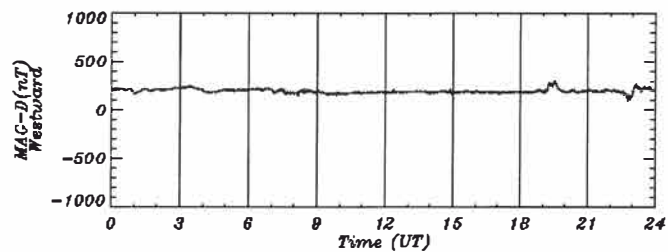
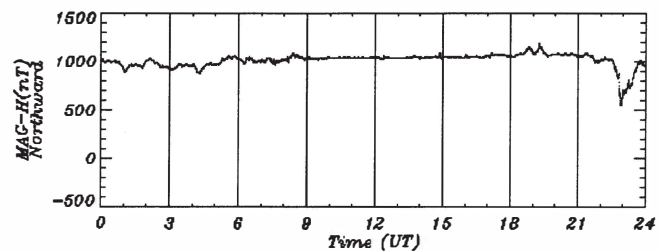
*NIPR Syowa Magnetometer*

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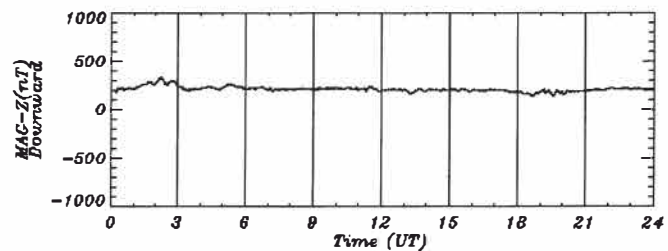
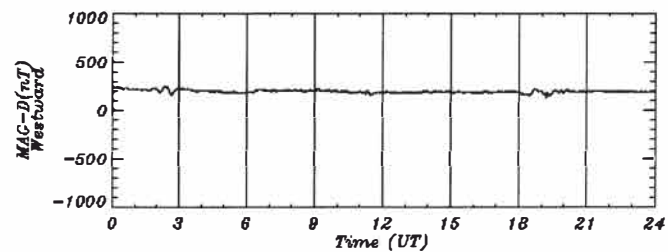
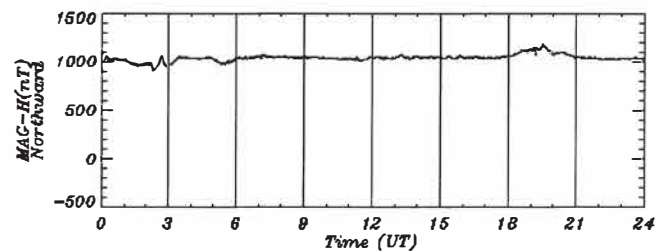
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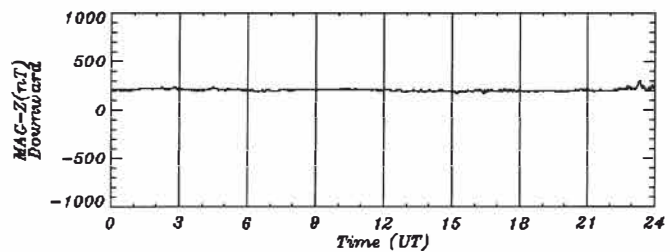
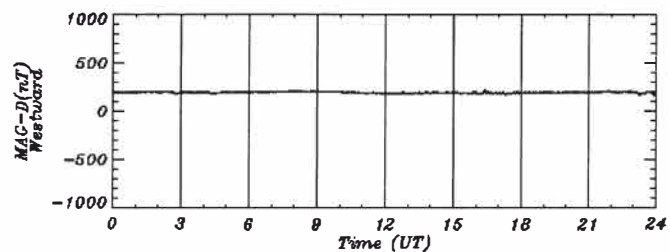
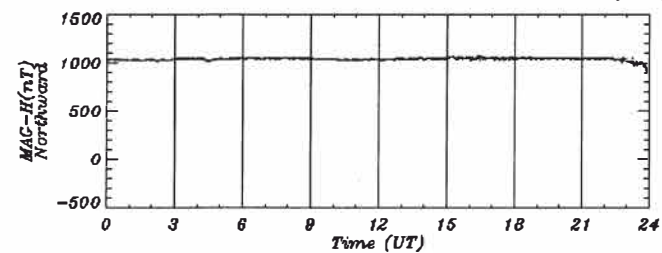
# NIPR Syowa Magnetometer

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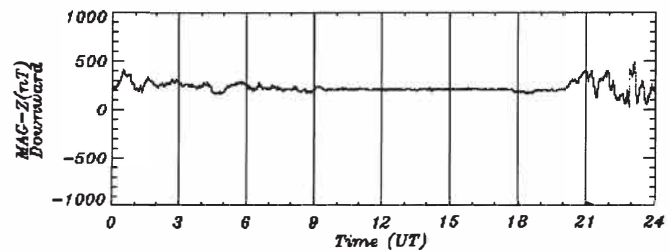
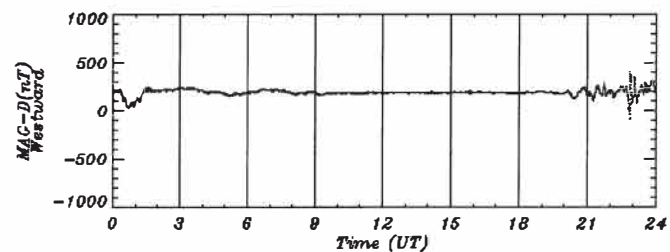
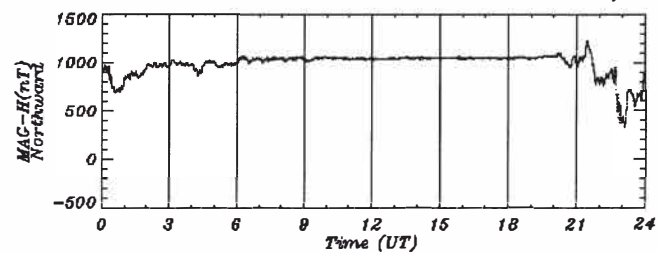
# NIPR Syowa Magnetometer

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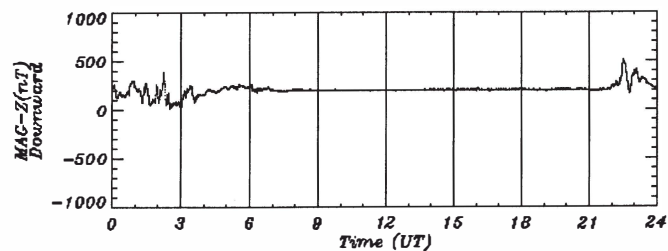
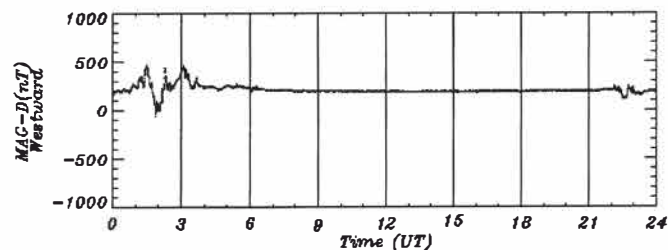
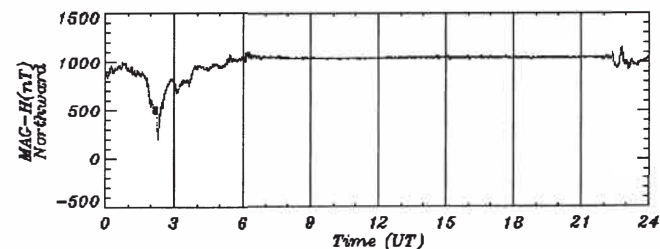
# NIPR Syowa Magnetometer

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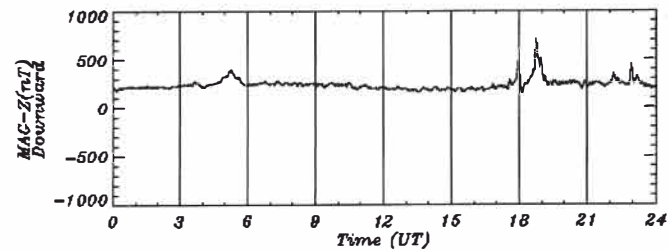
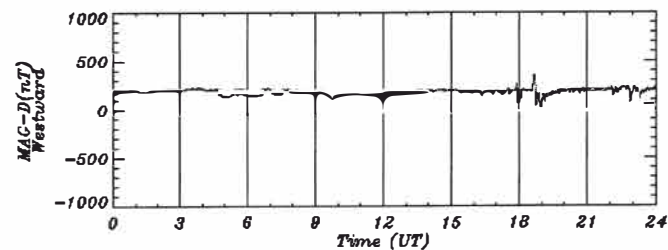
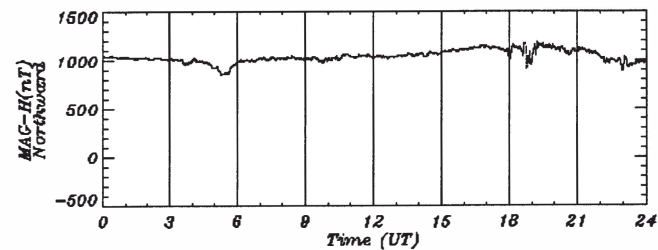
NIPR Syowa Magnetometer

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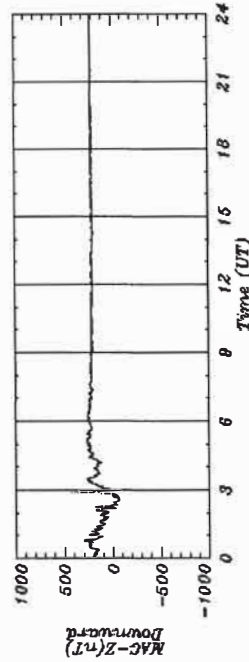
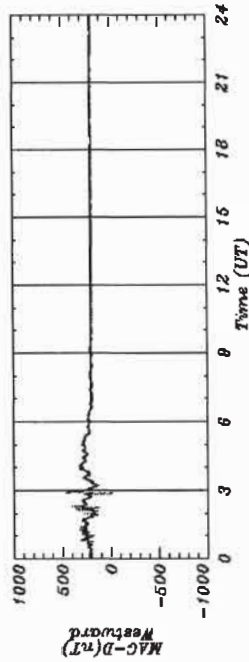
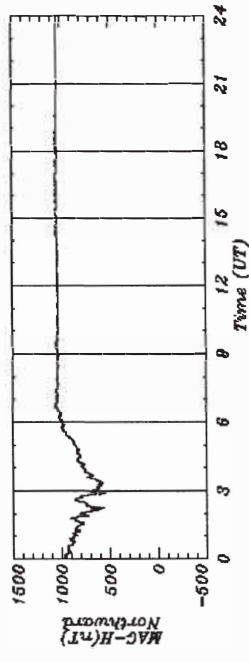
NIPR Syowa Magnetometer

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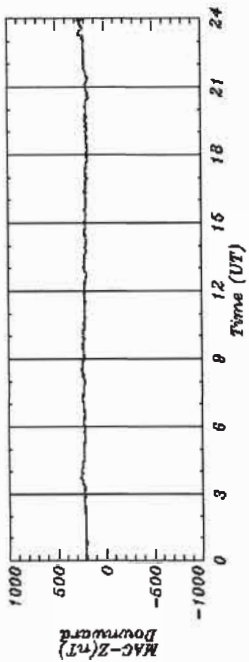
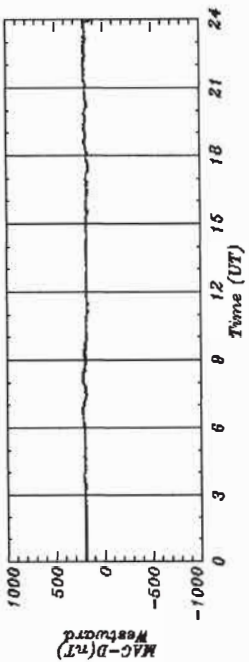
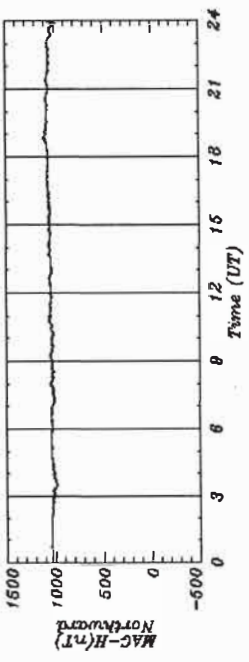
NIPR Syowa Magnetometer

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NIPR Syowa Magnetometer

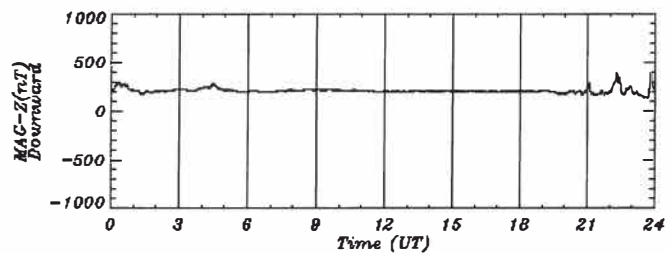
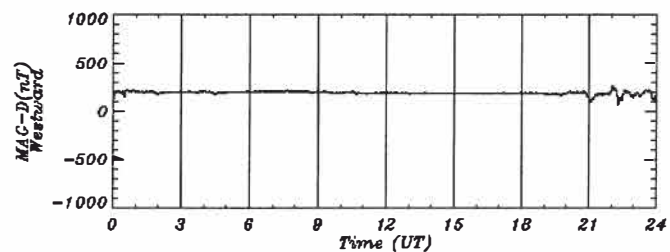
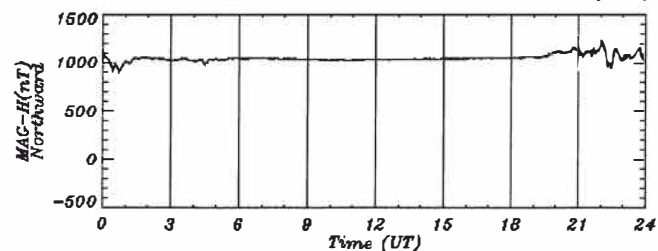
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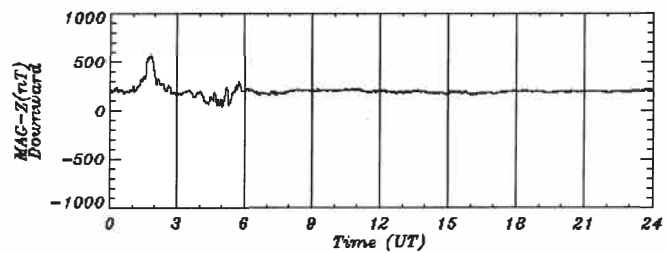
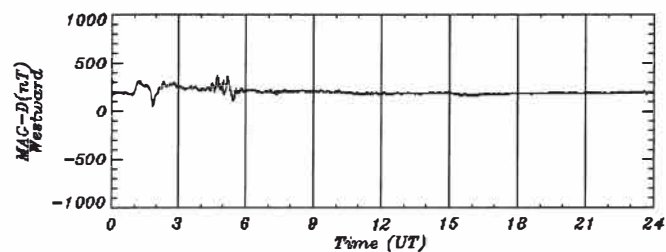
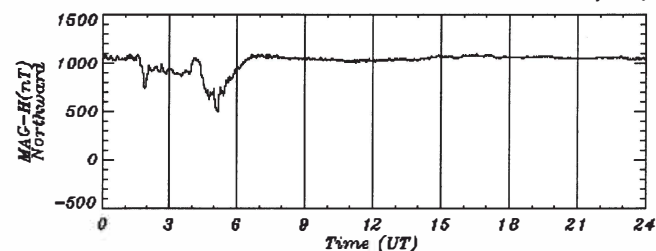
NIPR Syowa Magnetometer

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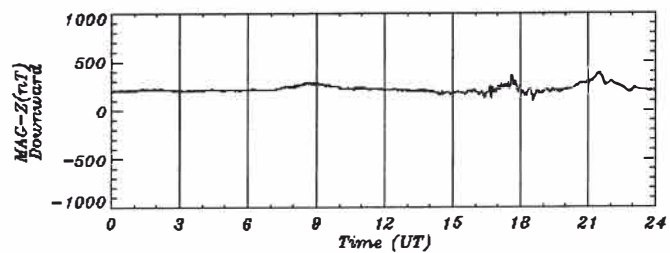
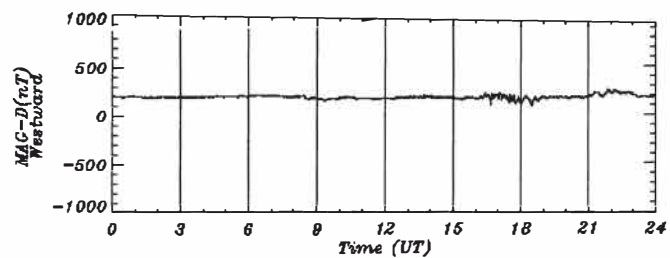
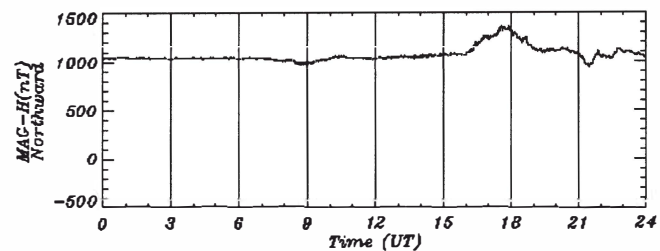
NIPR Syowa Magnetometer

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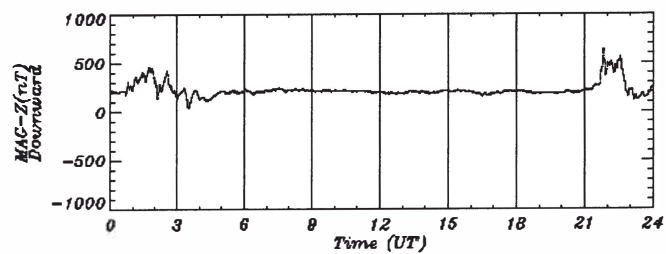
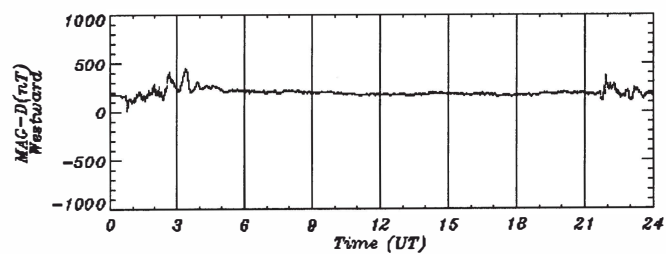
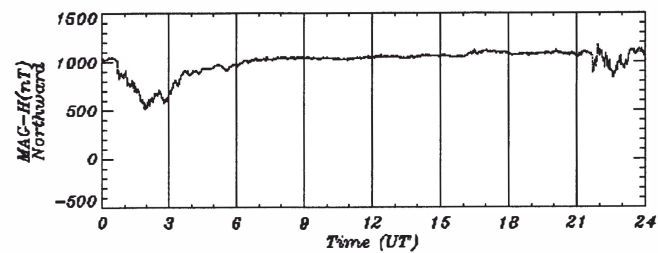
NIPR Syowa Magnetometer

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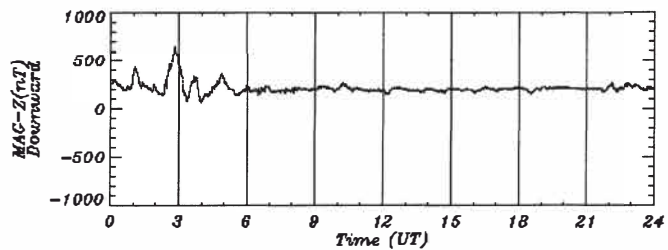
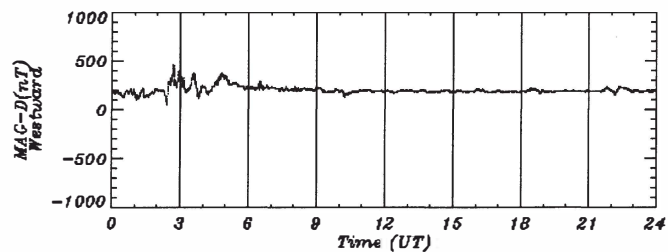
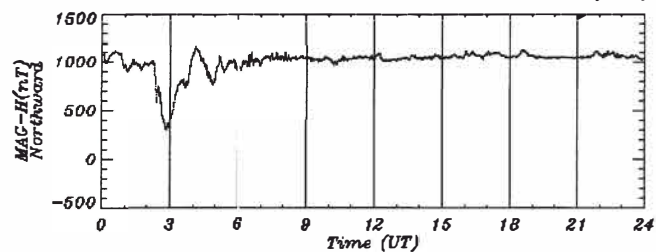
NIPR Syowa Magnetometer

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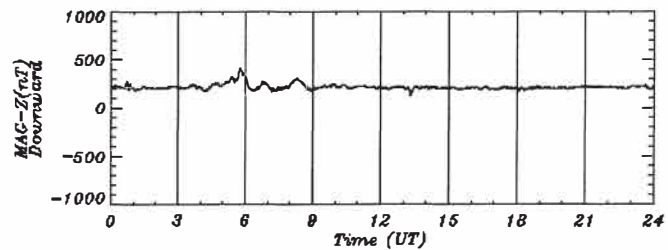
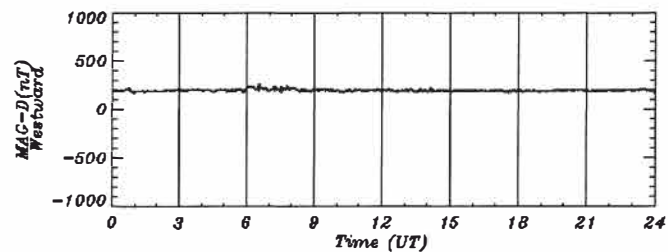
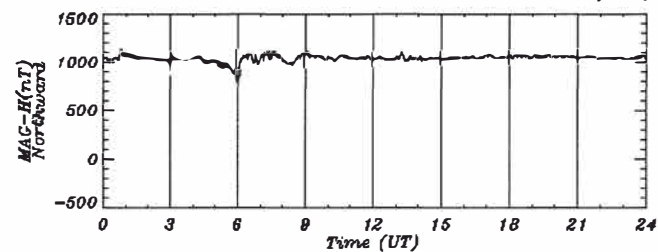
NIPR Syowa Magnetometer

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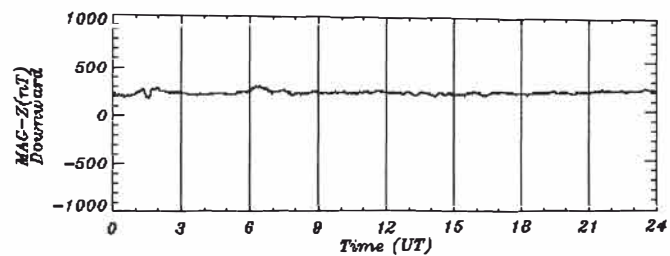
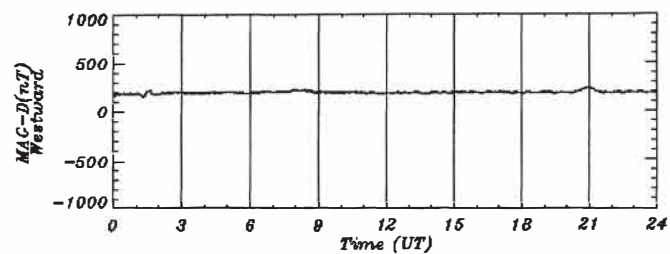
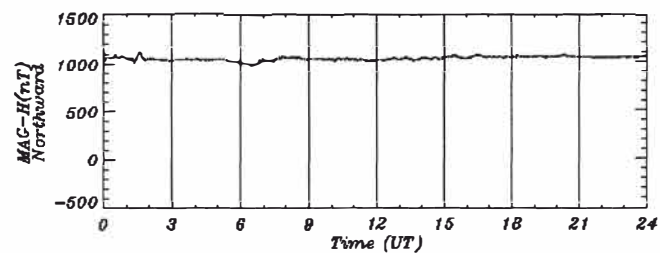
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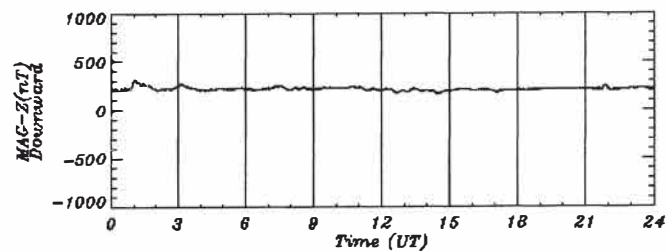
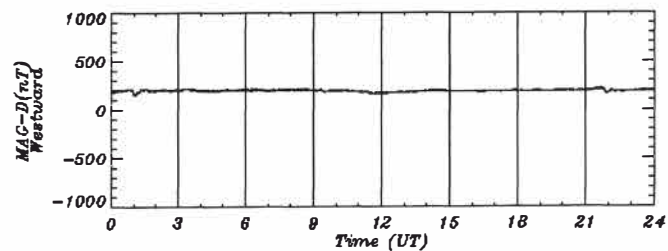
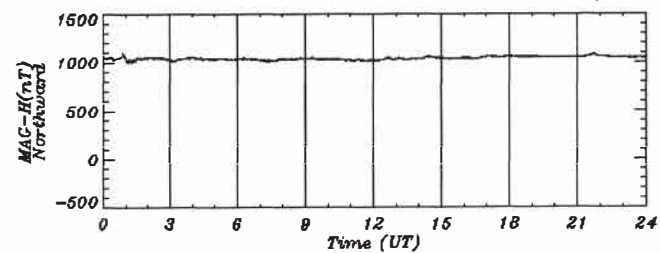
NIPR Syowa Magnetometer

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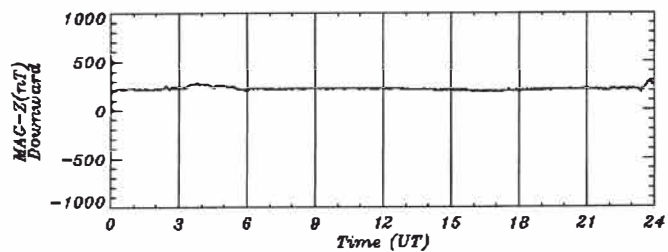
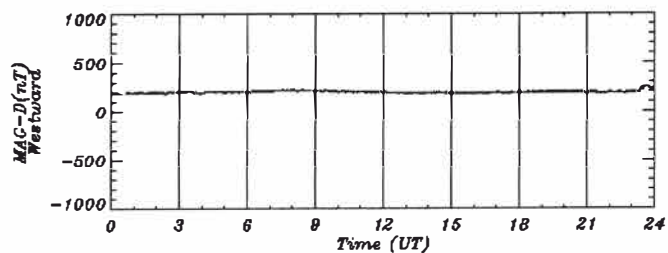
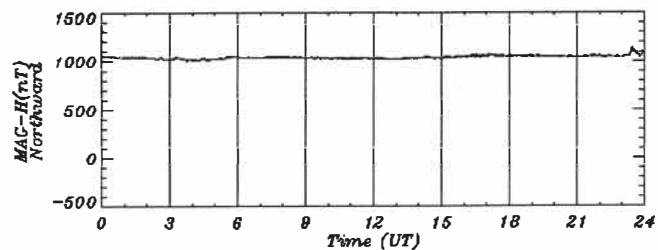
NIPR Syowa Magnetometer

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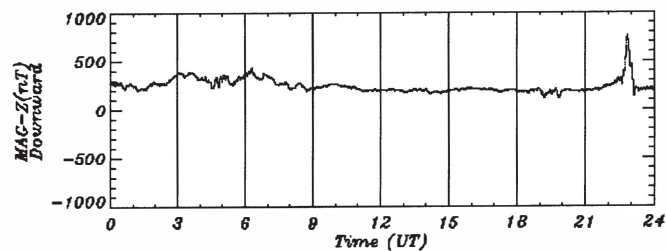
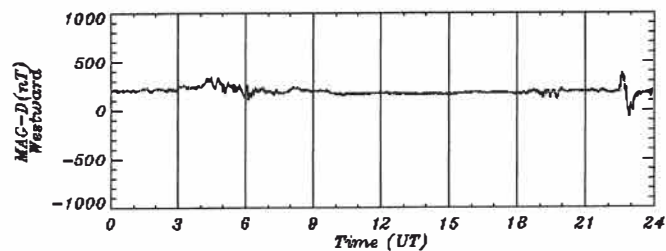
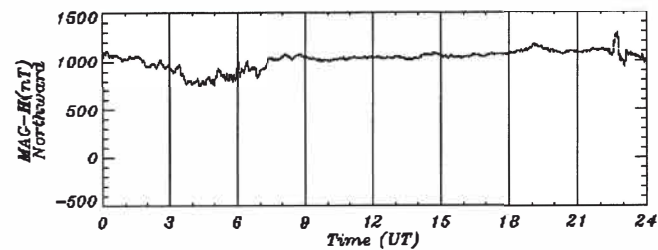
NIPR Syowa Magnetometer

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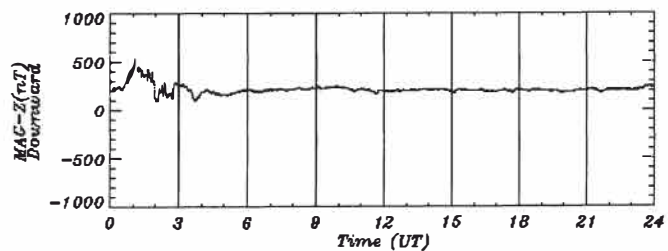
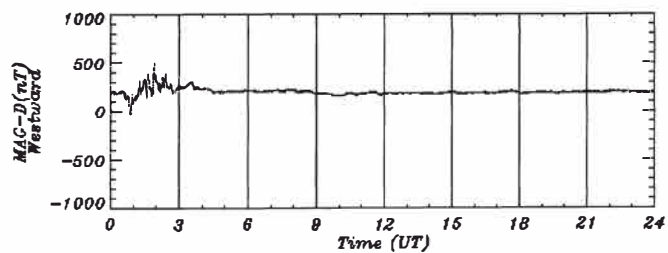
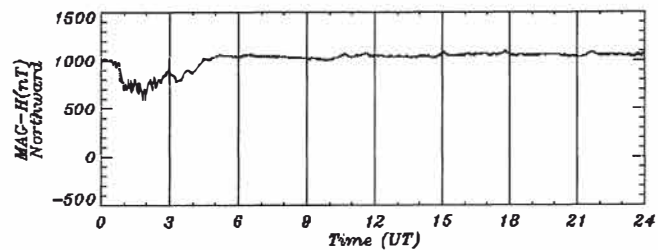
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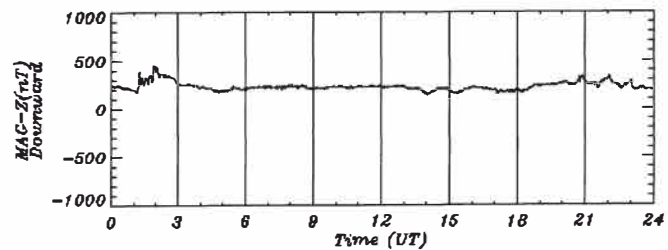
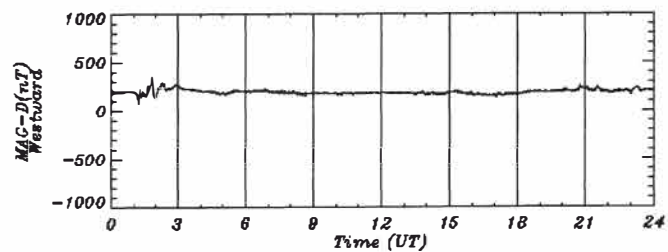
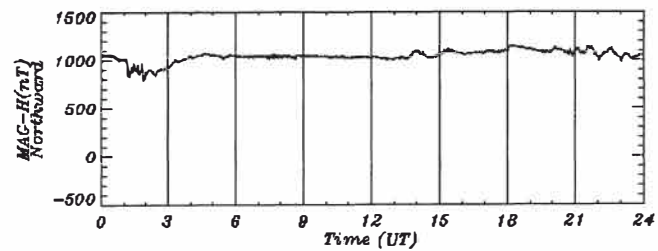
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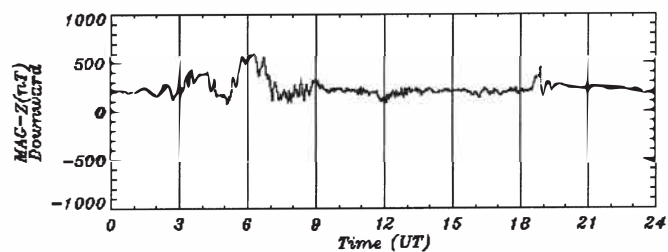
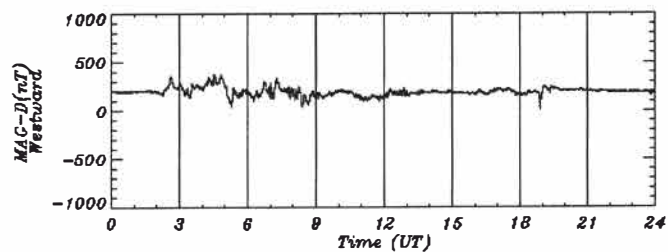
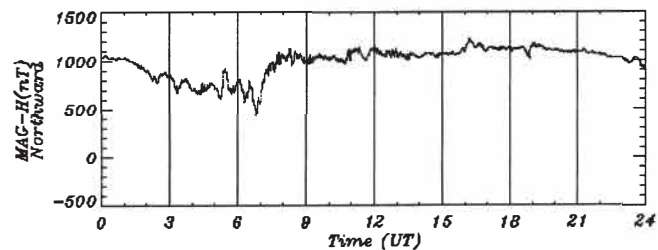
NIPR Syowa Magnetometer

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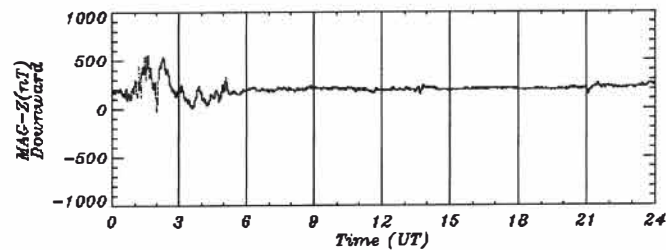
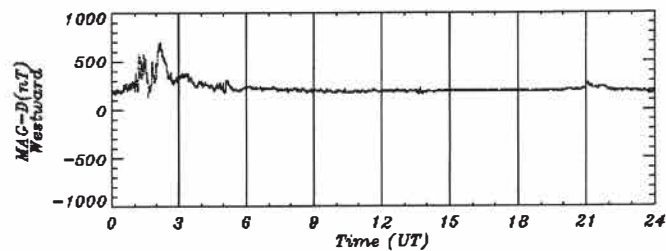
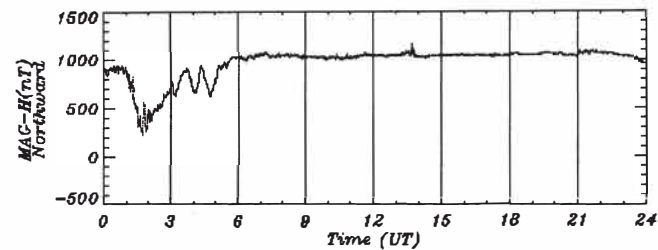
NIPR Syowa Magnetometer

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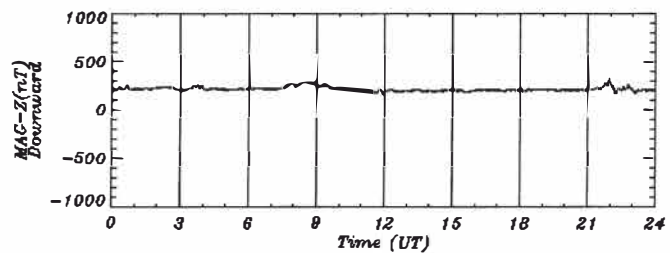
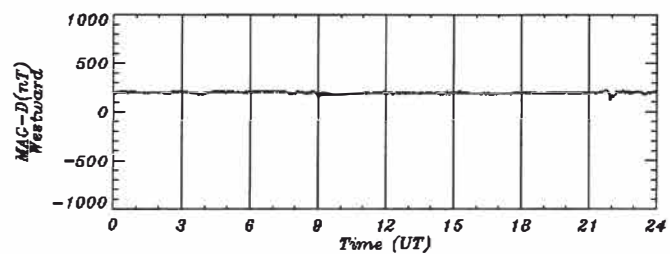
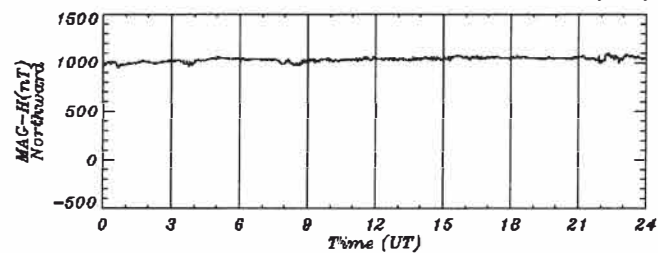
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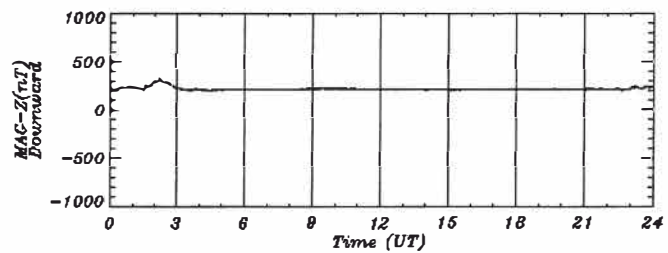
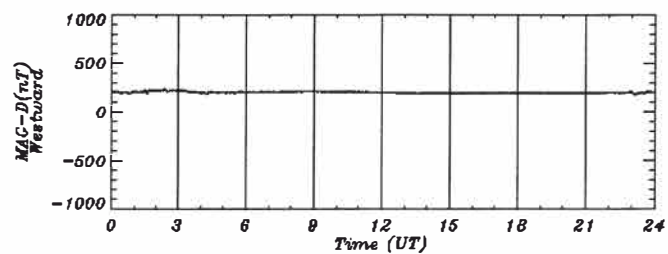
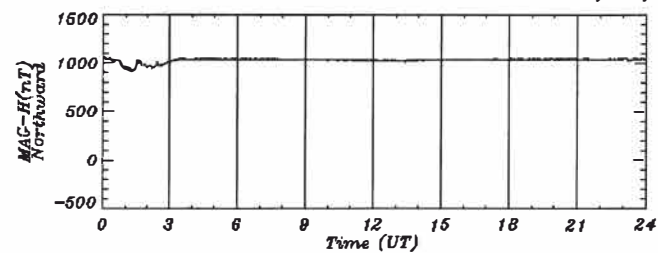
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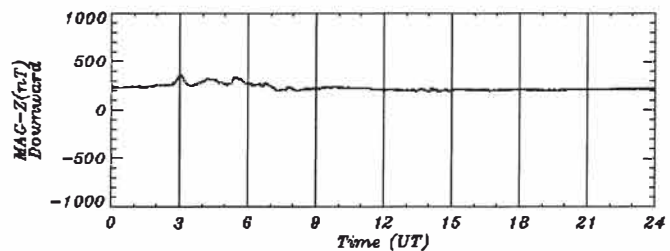
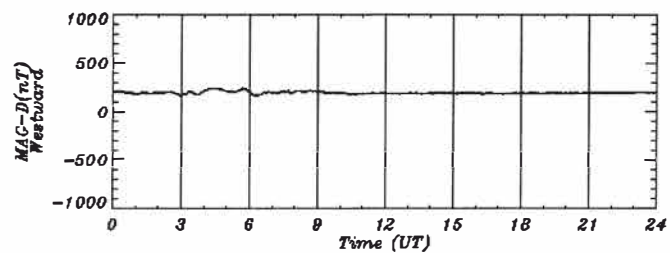
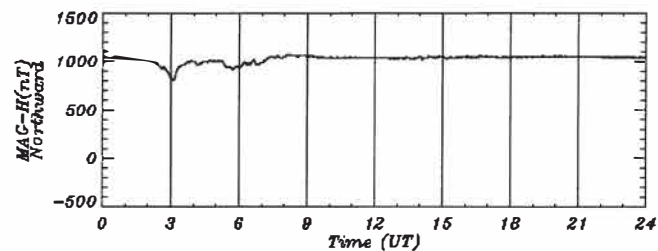
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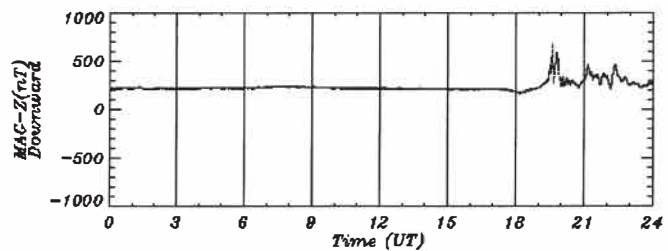
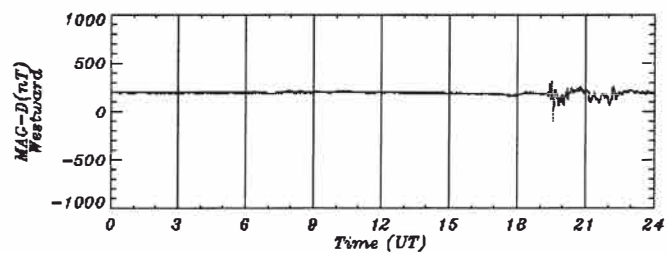
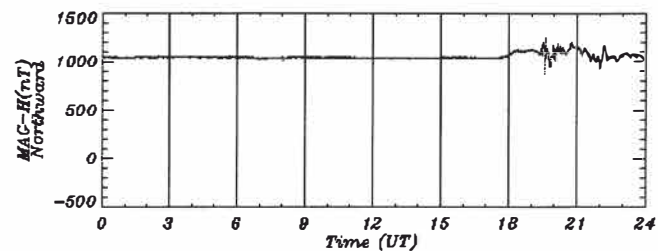
# NIPR Syowa Magnetometer

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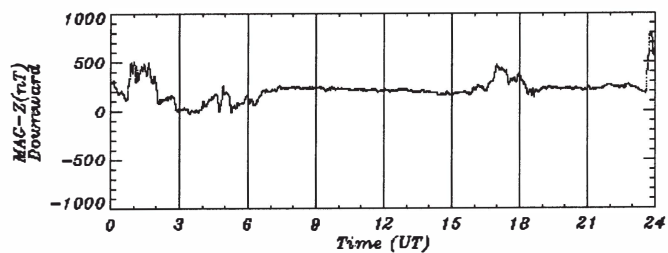
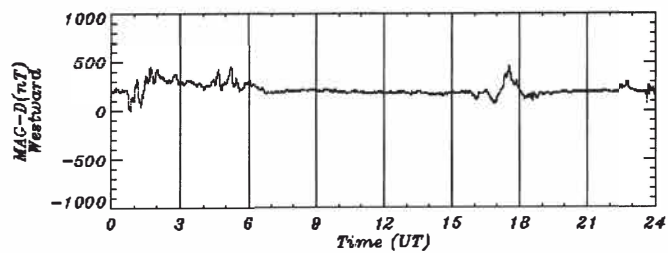
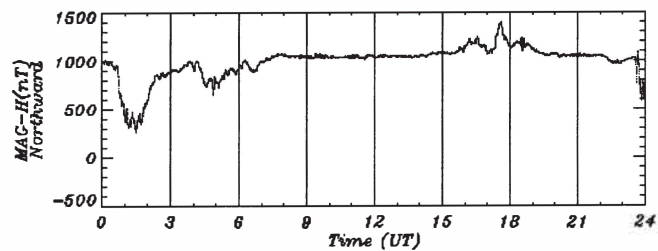
# NIPR Syowa Magnetometer

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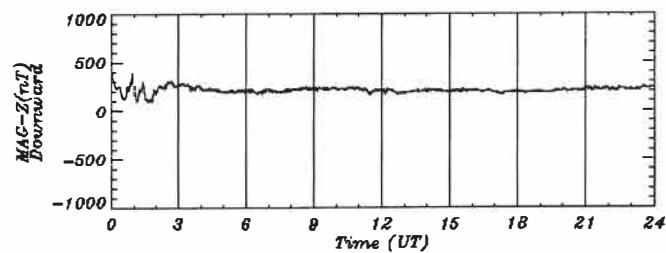
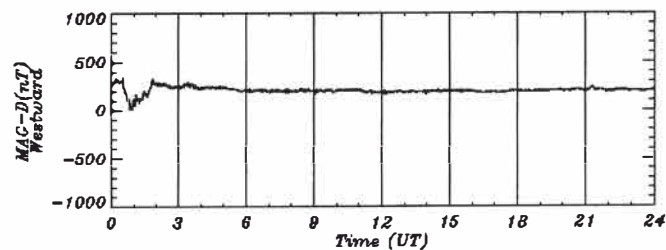
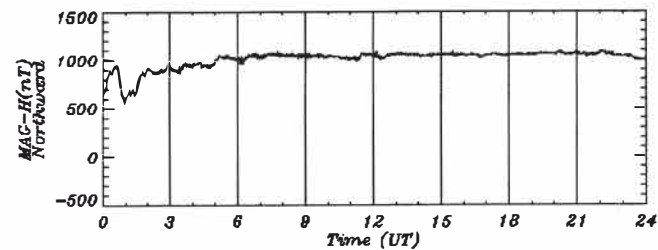
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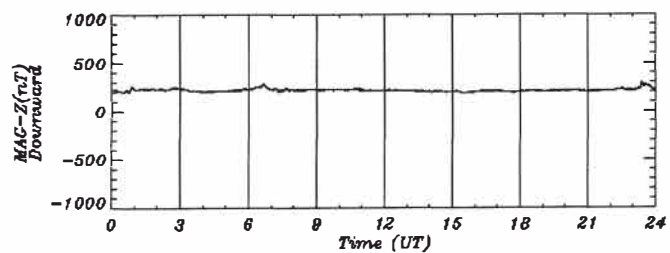
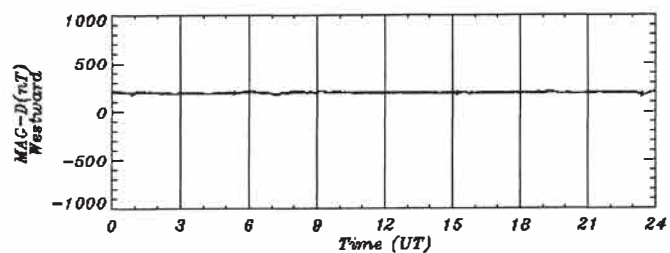
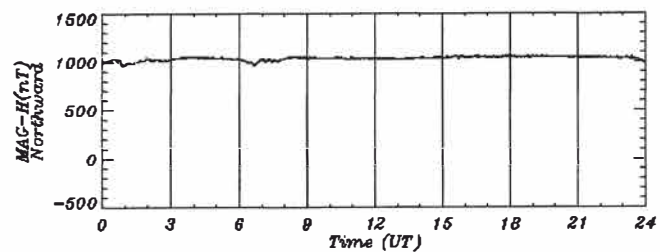
NIPR Syowa Magnetometer

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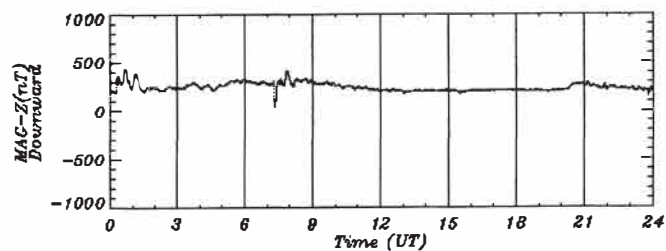
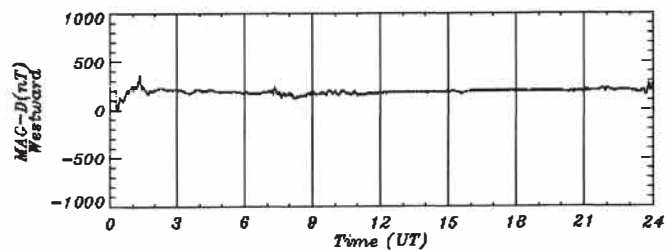
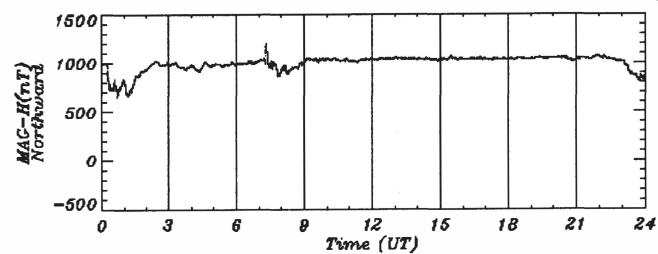
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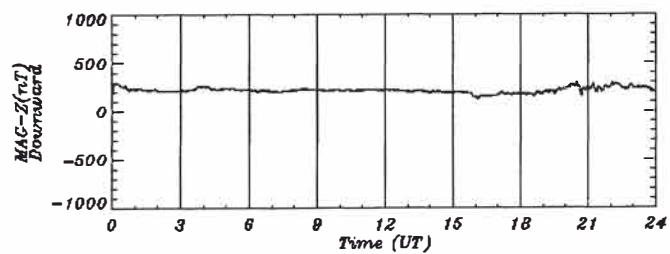
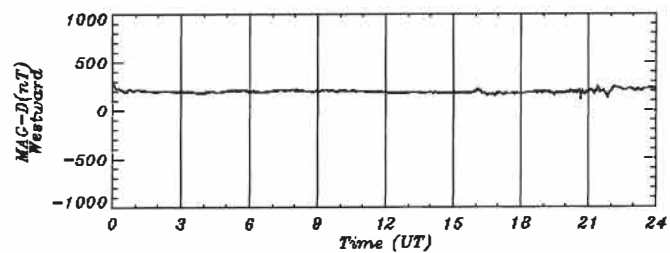
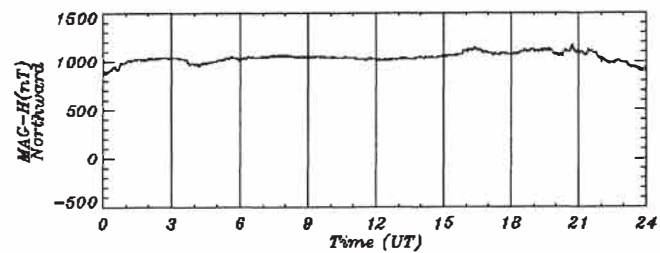
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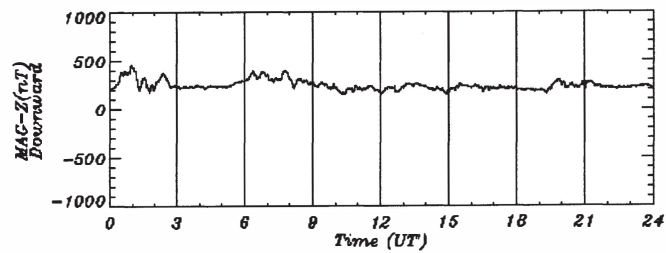
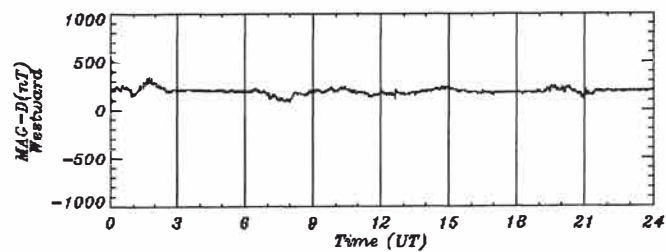
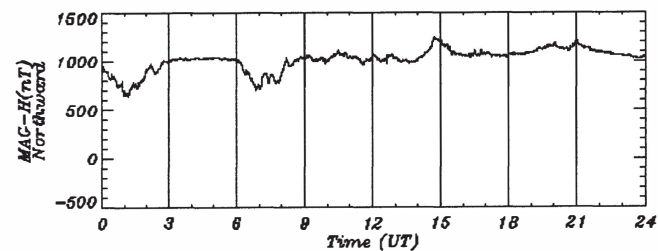
NIPR Syowa Magnetometer

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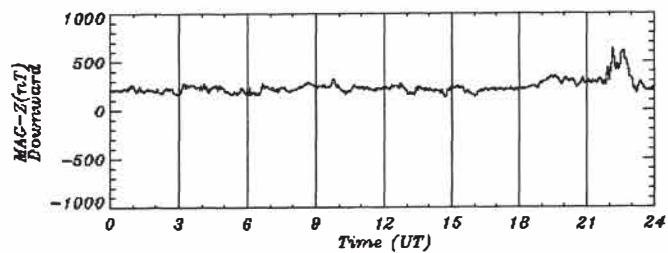
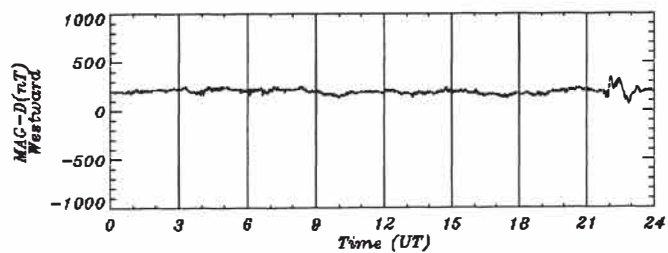
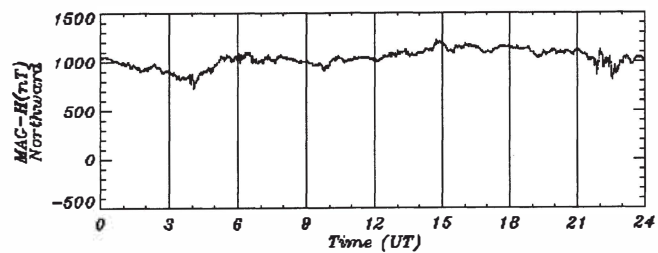
NIPR Syowa Magnetometer

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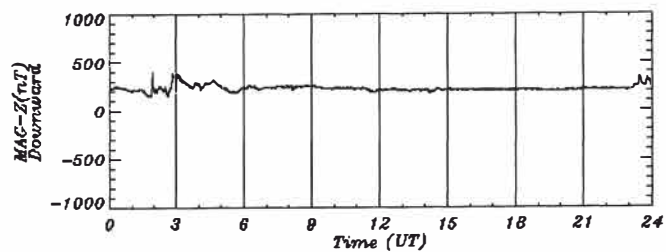
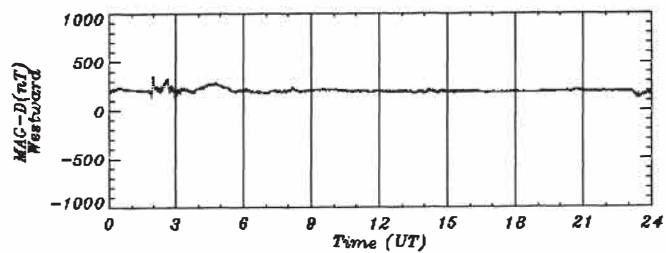
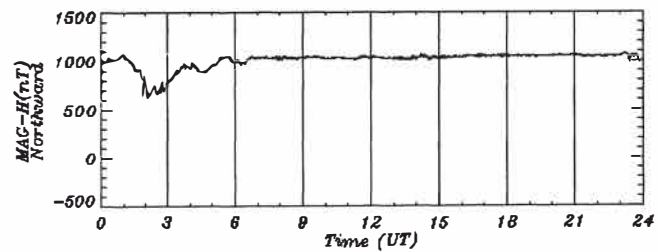
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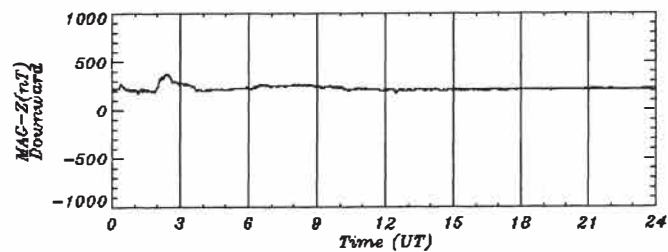
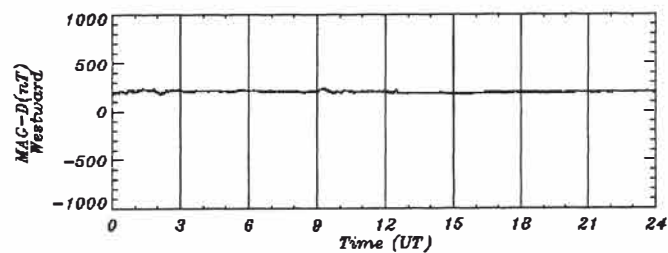
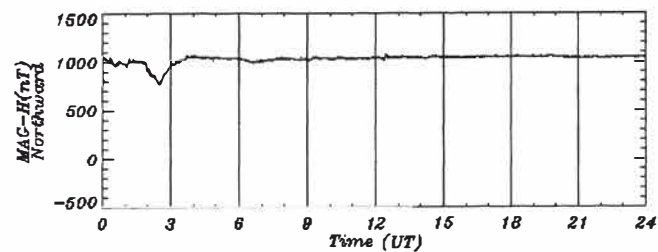
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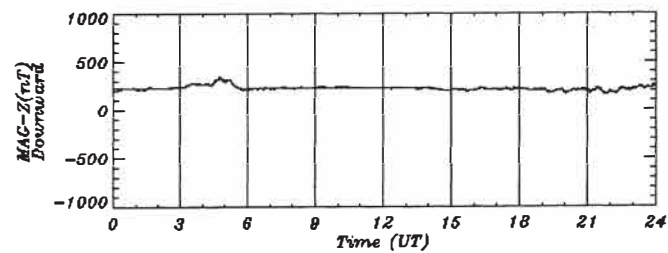
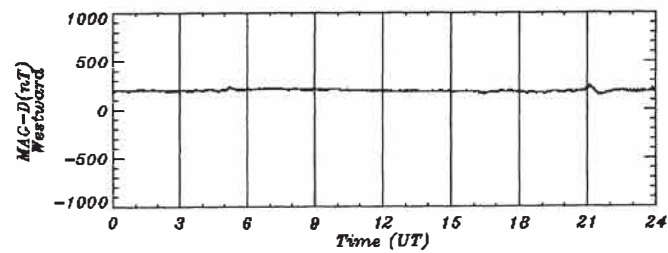
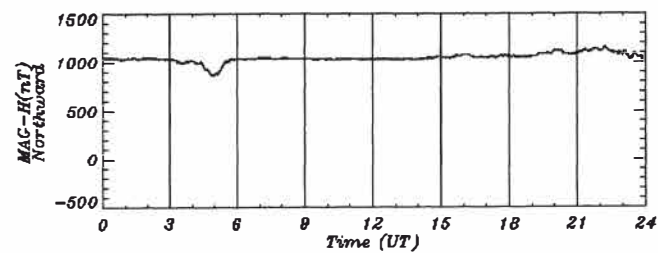
NIPR Syowa Magnetometer

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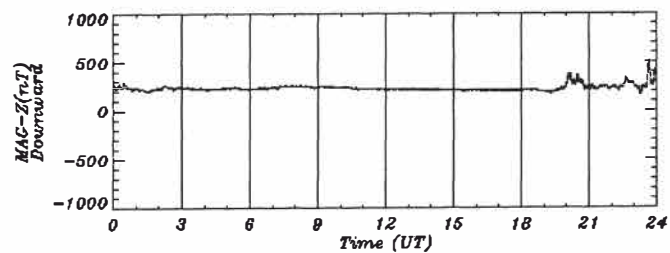
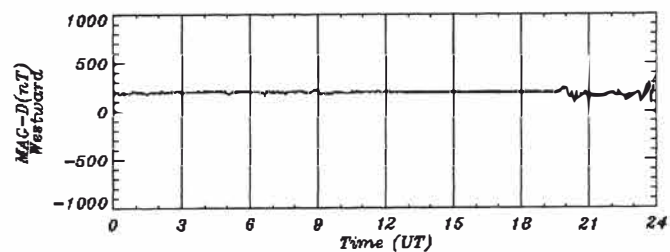
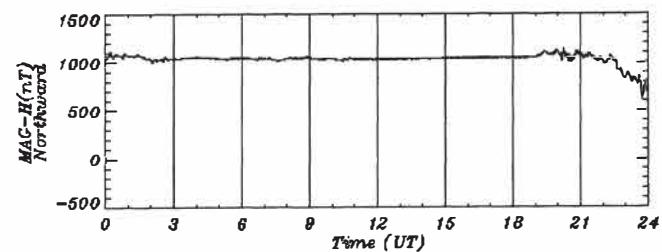
NIPR Syowa Magnetometer

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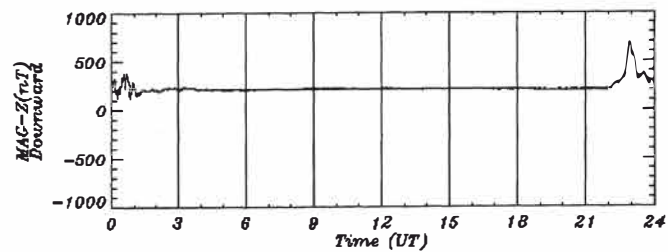
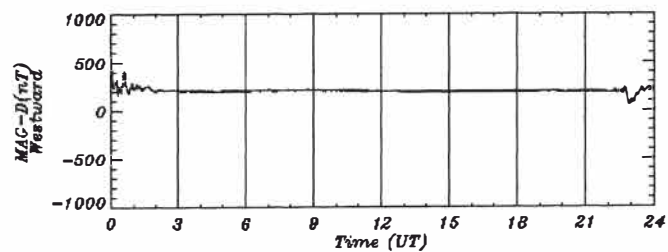
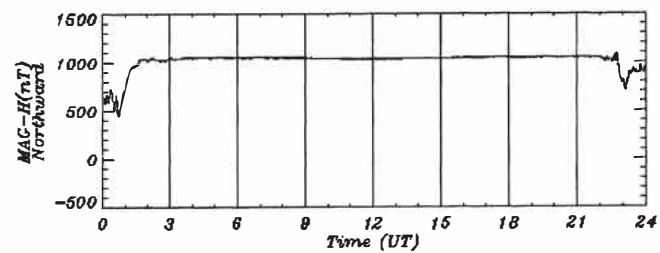
NIPR Syowa Magnetometer

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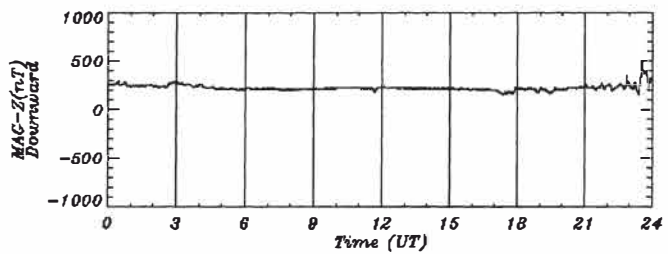
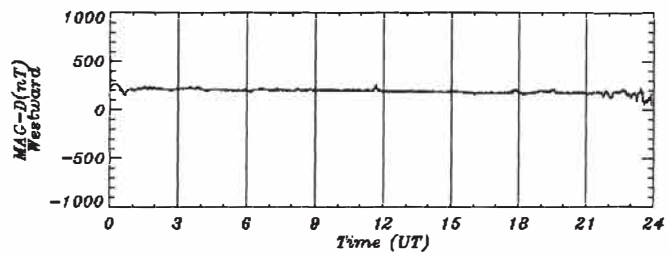
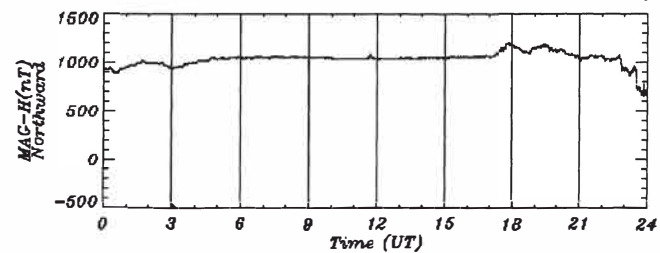
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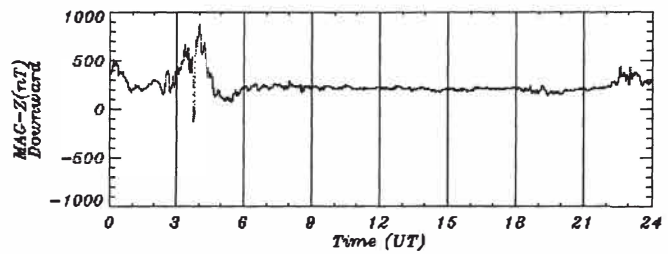
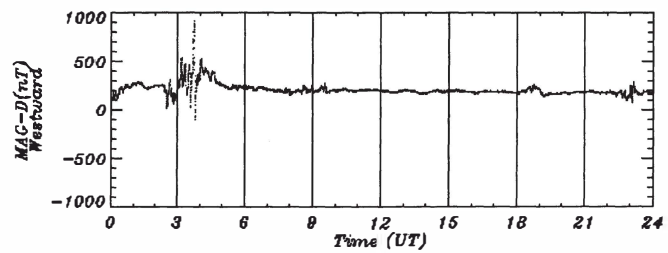
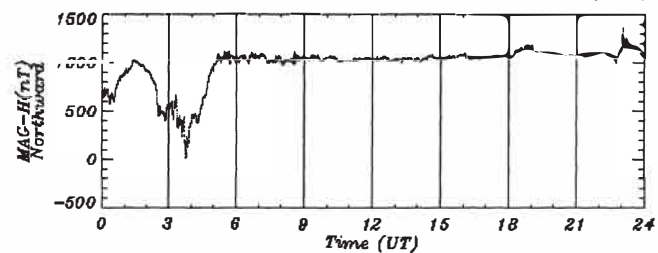
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*NIPR Syowa Magnetometer*

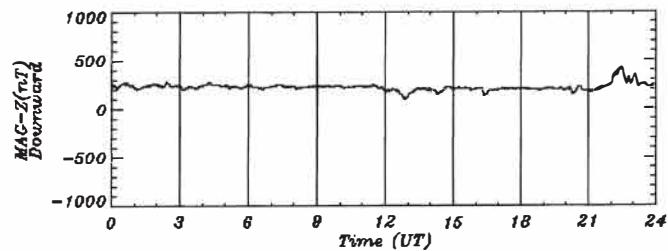
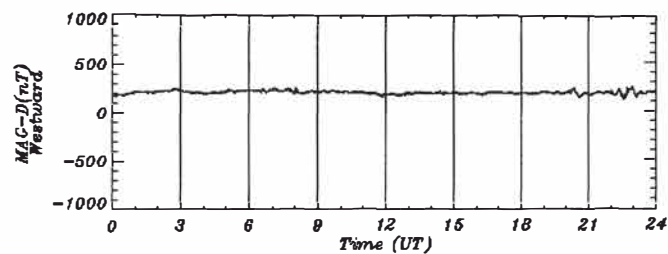
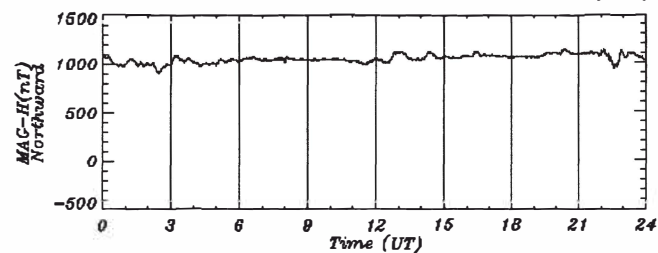
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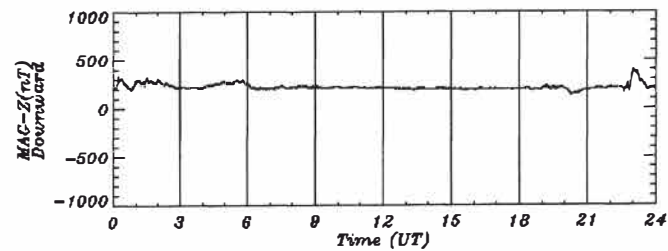
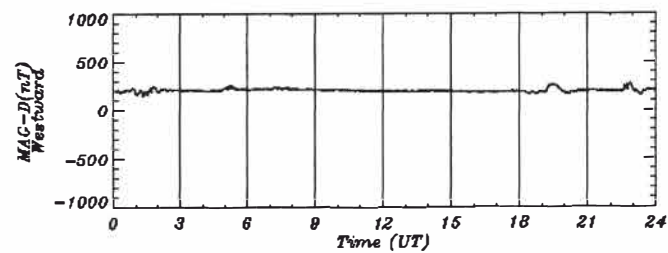
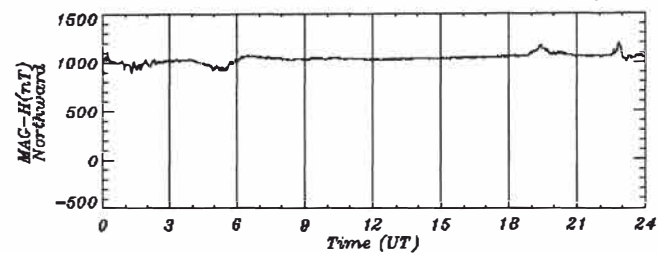
# NIPR Syowa Magnetometer

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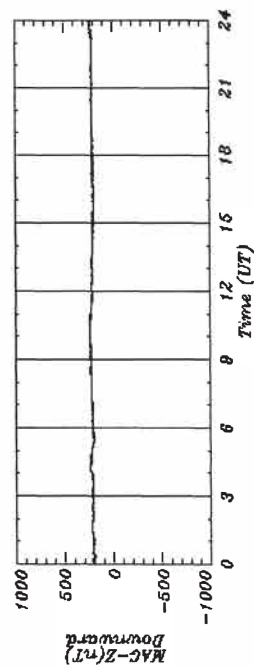
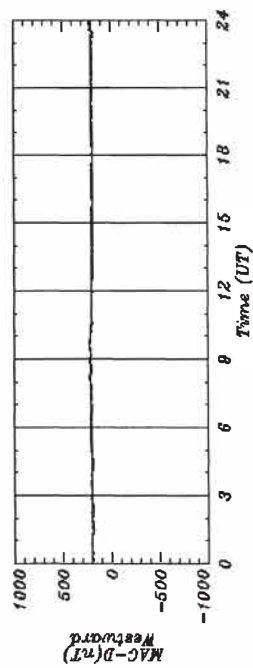
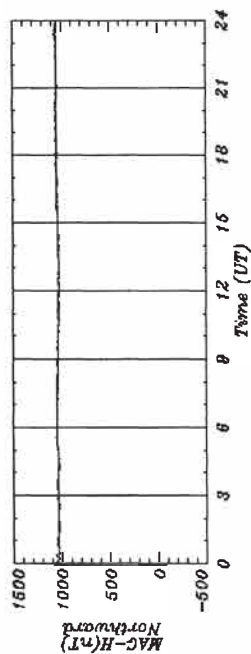
# NIPR Syowa Magnetometer

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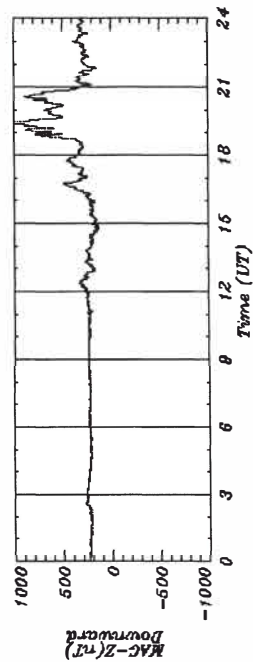
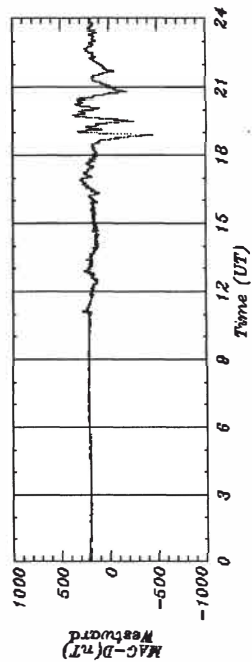
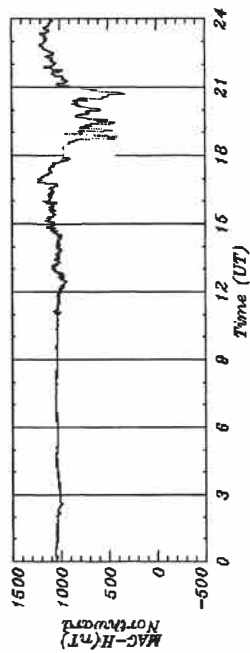
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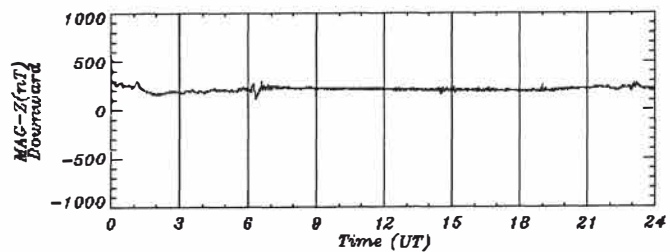
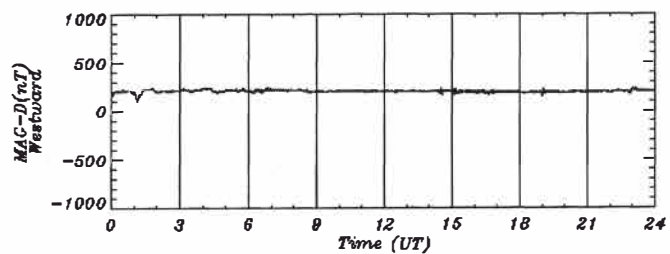
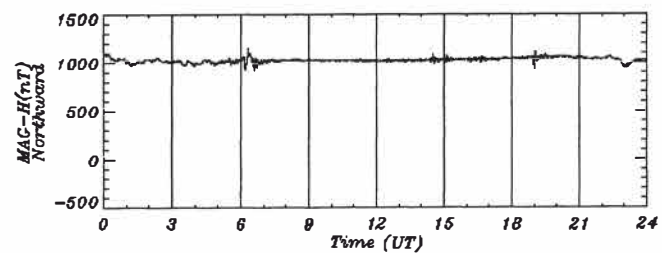
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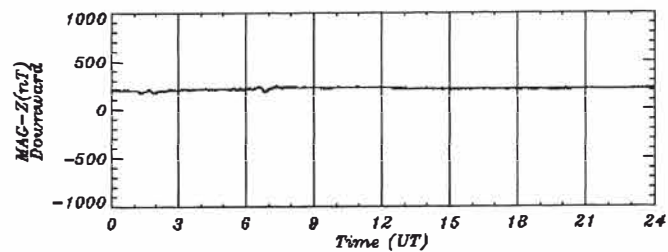
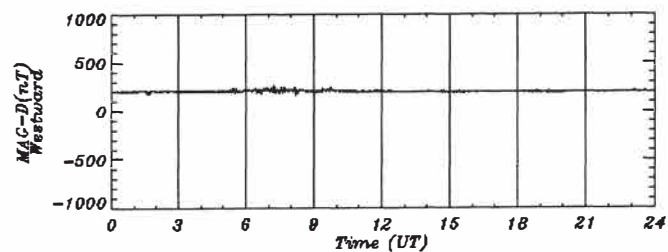
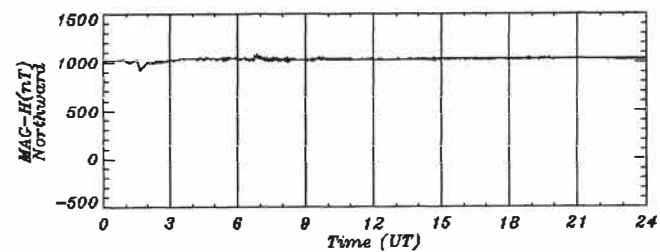
NIPR Syowa Magnetometer

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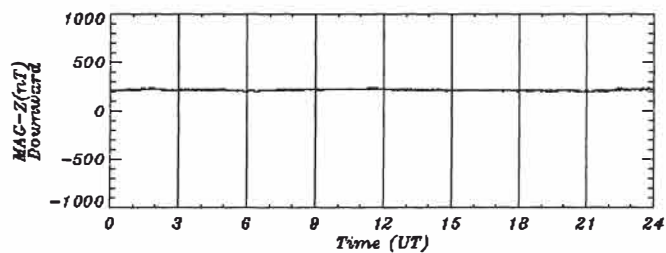
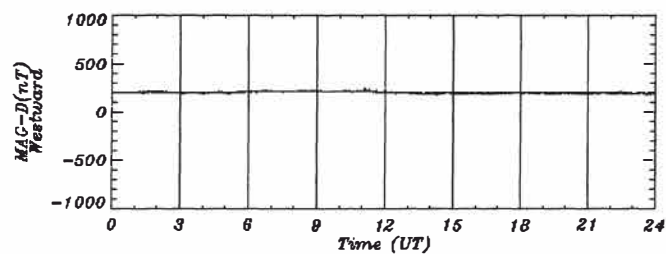
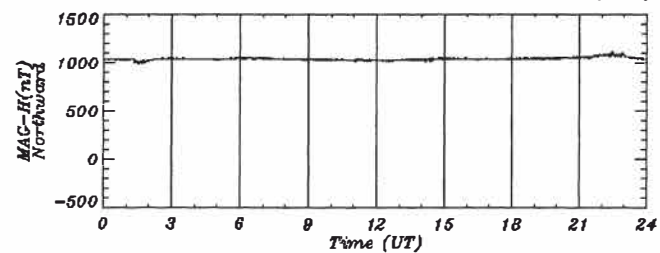
NIPR Syowa Magnetometer

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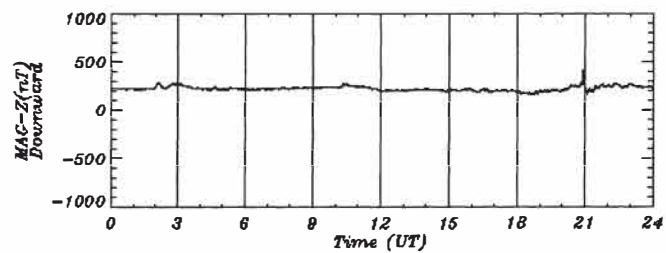
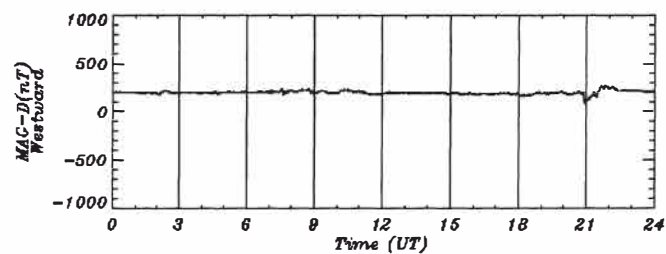
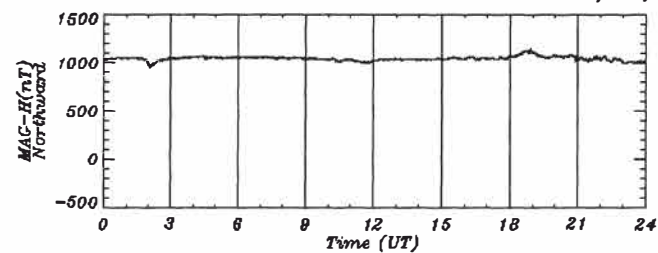
NIPR Syowa Magnetometer

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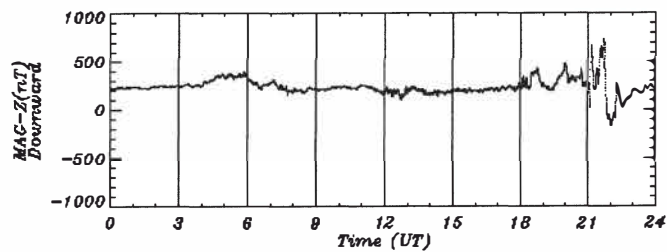
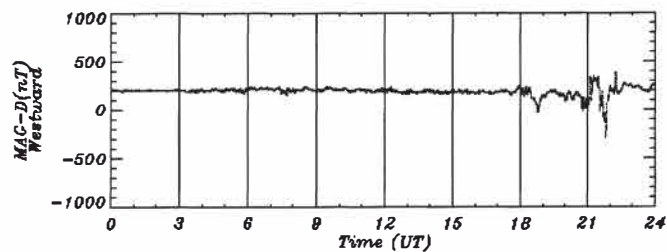
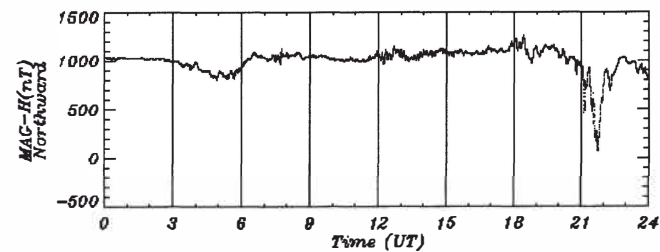
NIPR Syowa Magnetometer

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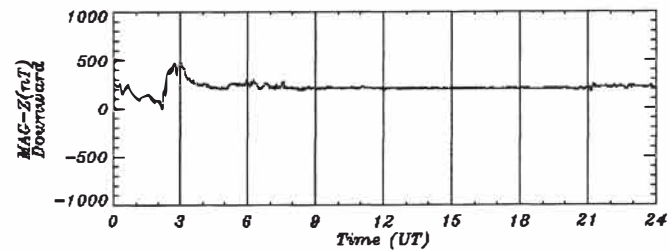
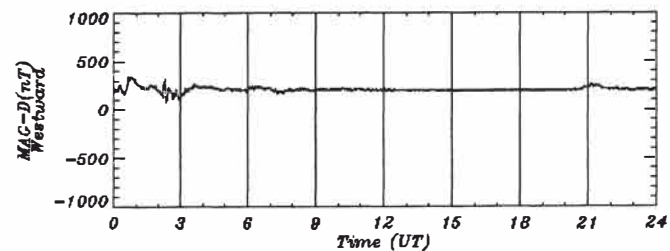
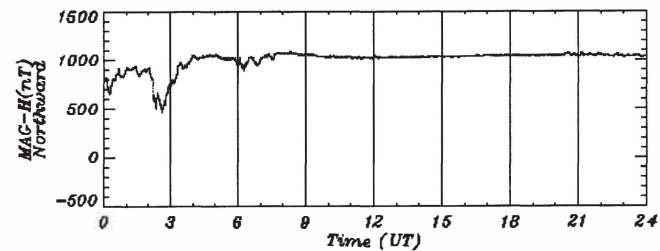
NIPR Syowa Magnetometer

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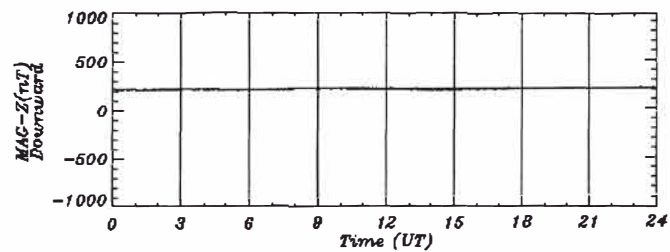
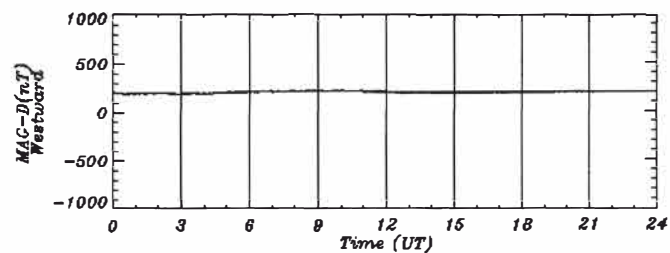
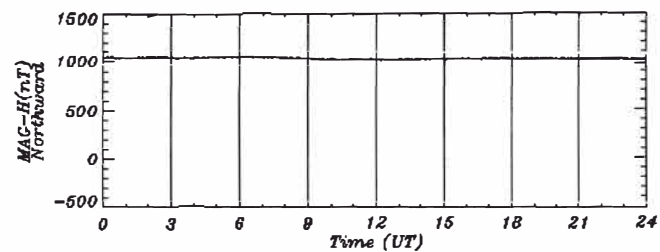
NIPR Syowa Magnetometer

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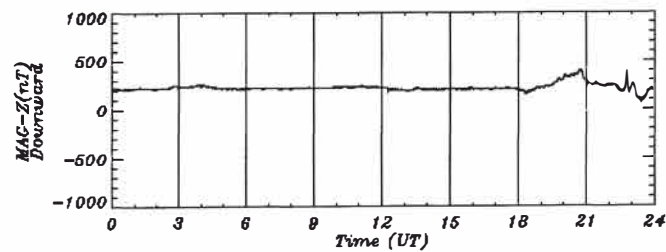
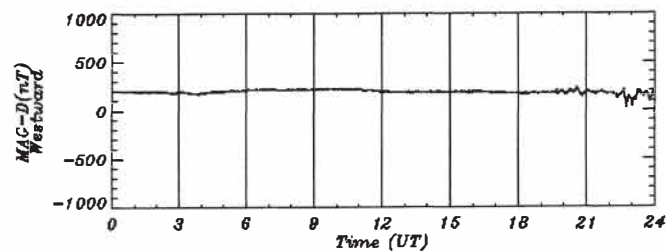
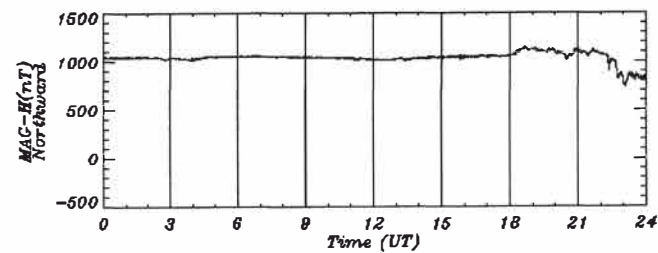
NIPR Syowa Magnetometer

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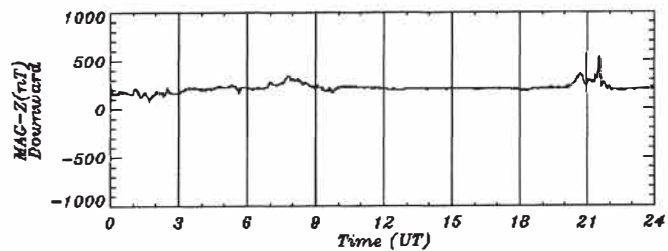
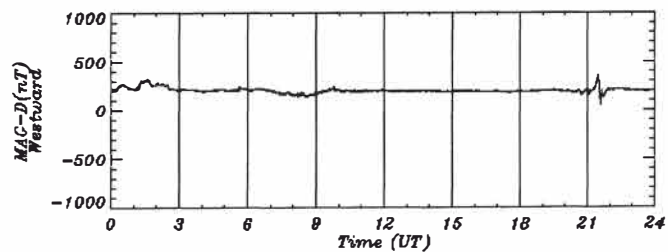
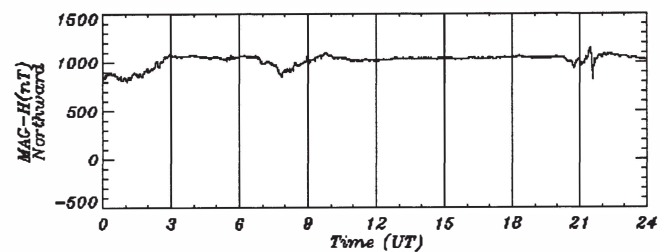
NIPR Syowa Magnetometer

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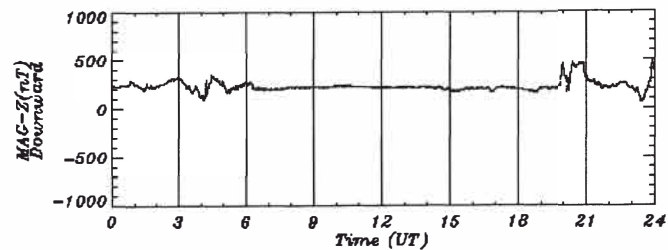
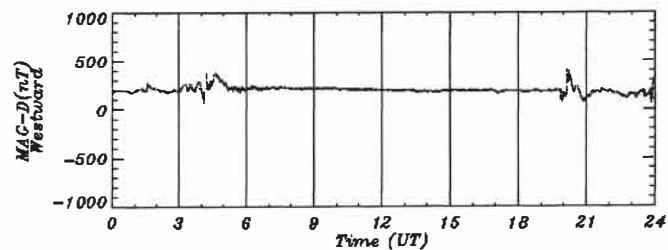
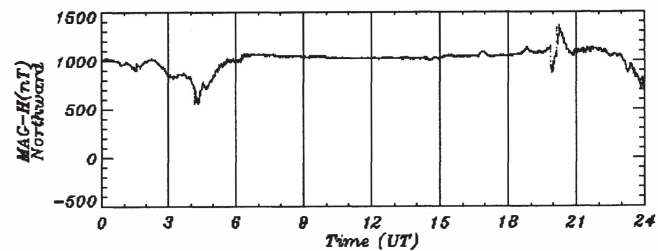
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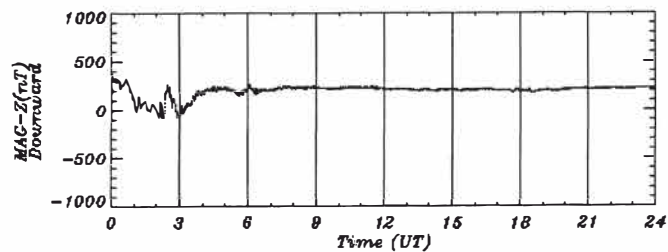
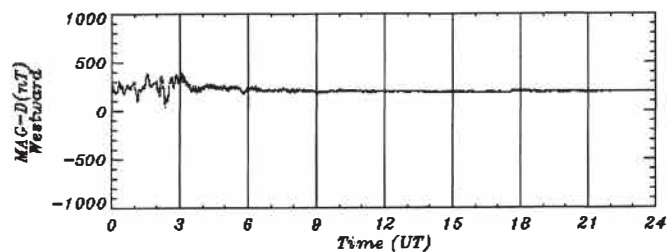
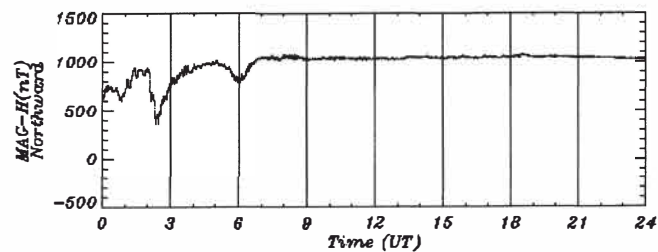
NIPR Syowa Magnetometer

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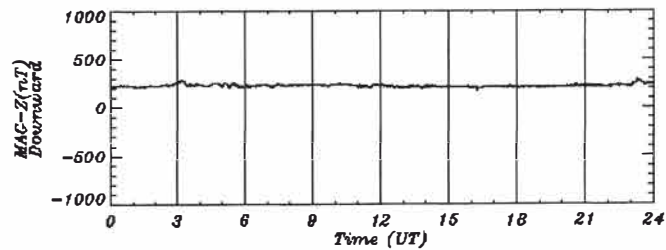
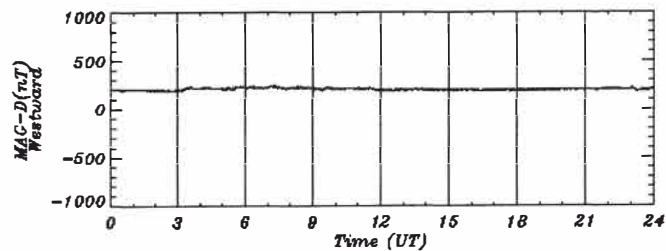
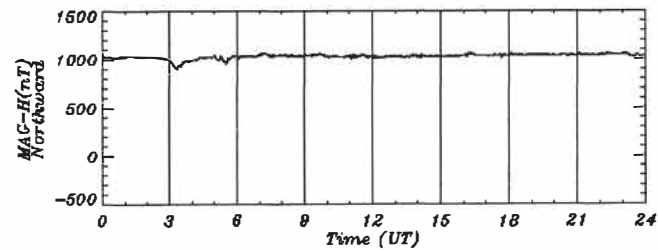
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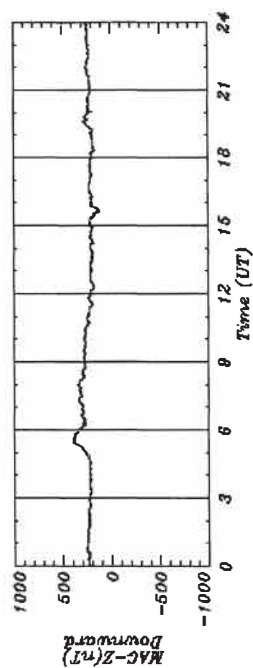
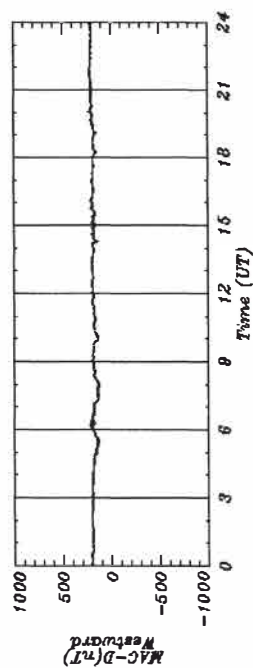
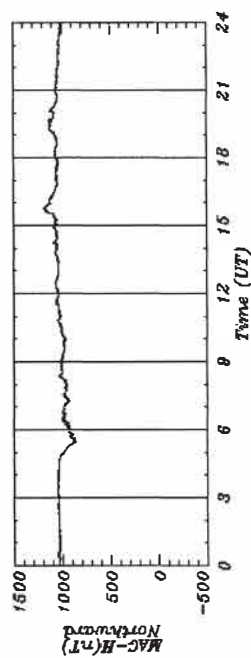
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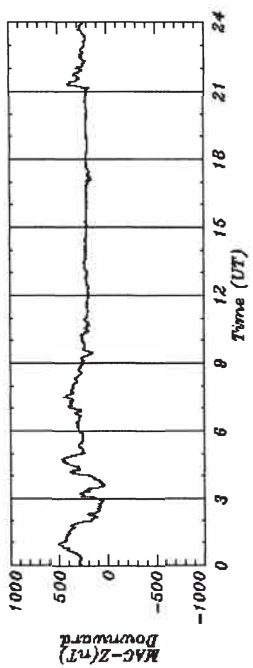
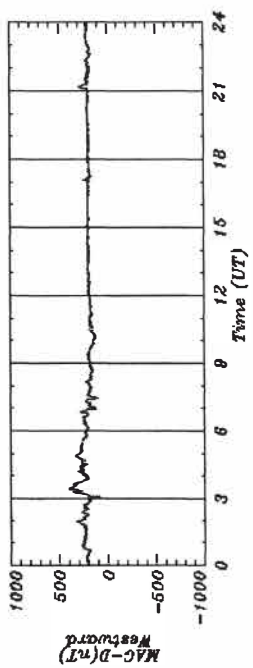
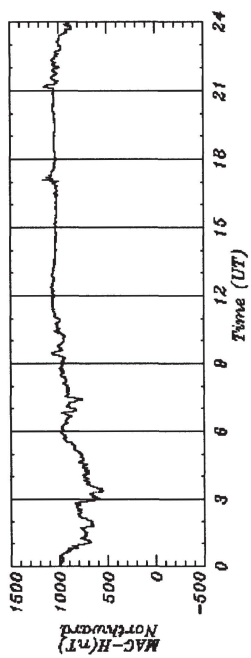
NIPR Syowa Magnetometer

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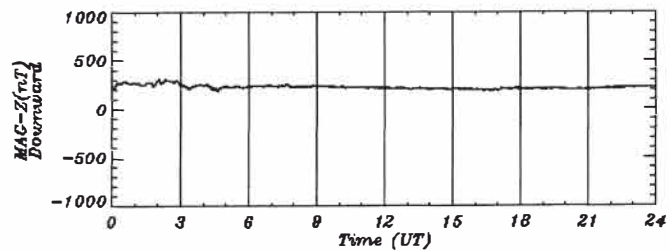
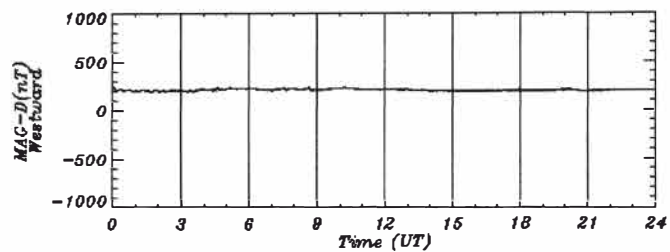
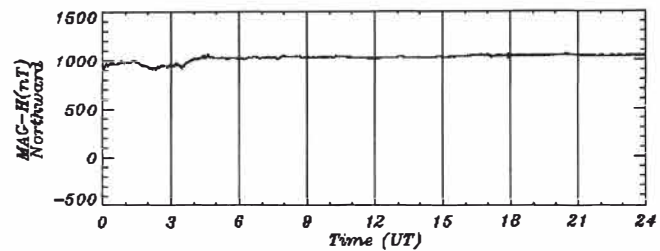
NIPR Syowa Magnetometer

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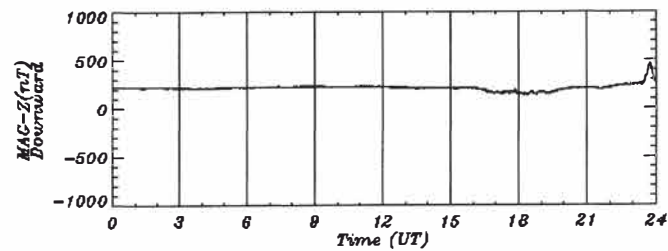
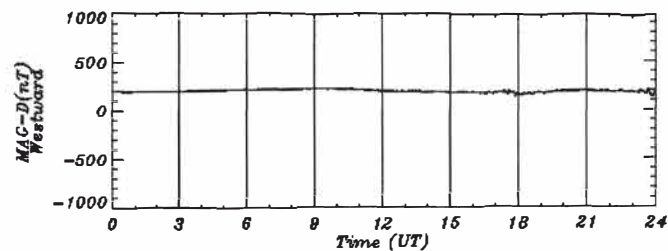
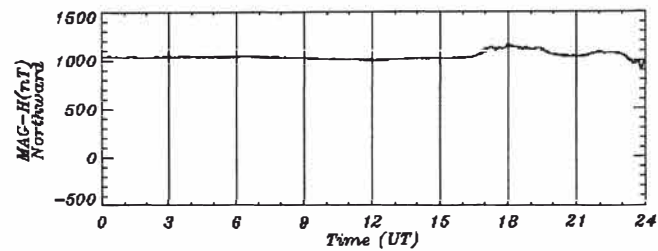
NIPR Syowa Magnetometer

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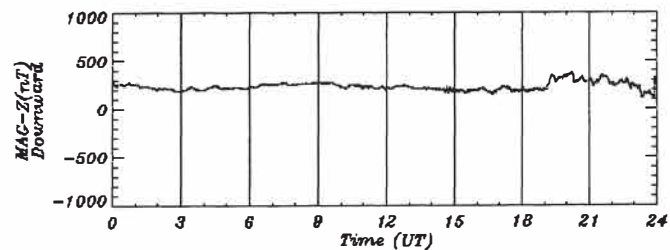
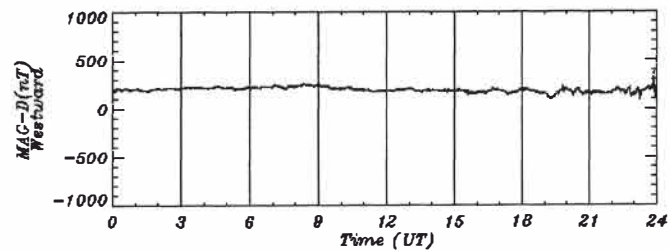
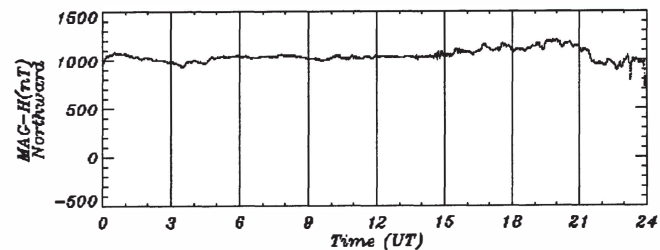
NIPR Syowa Magnetometer

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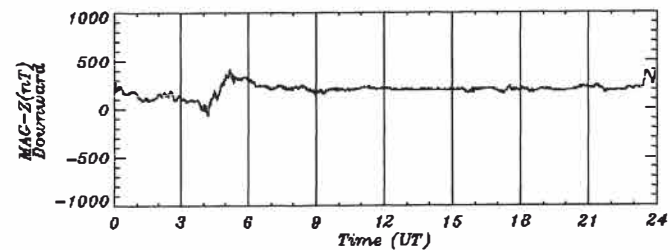
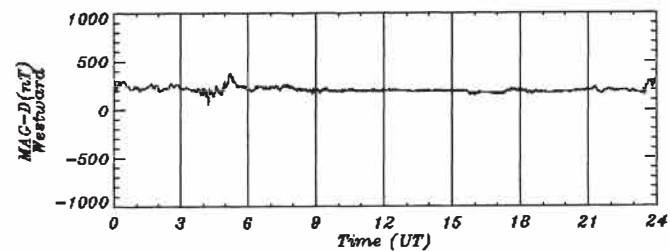
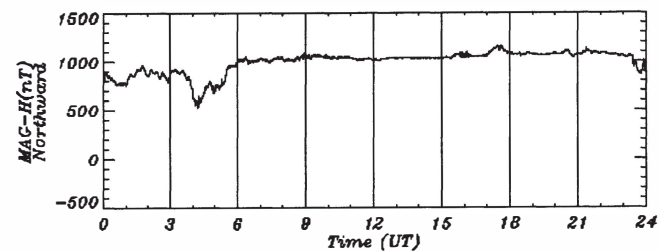
# NIPR Syowa Magnetometer

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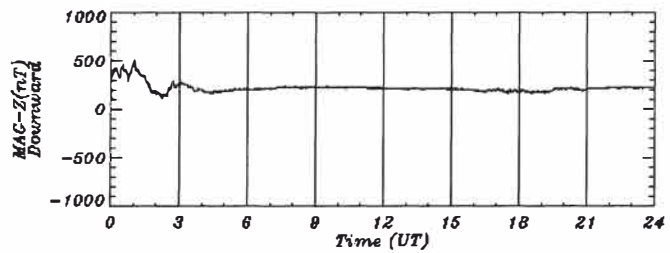
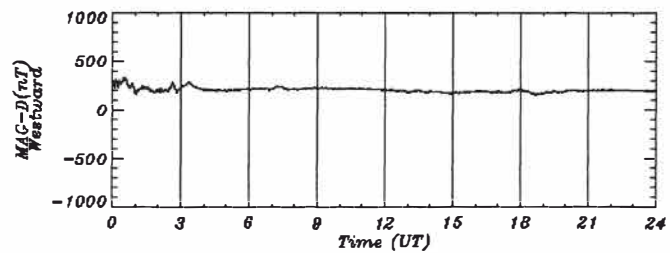
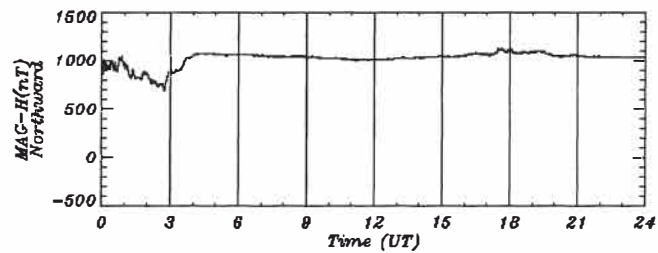
# NIPR Syowa Magnetometer

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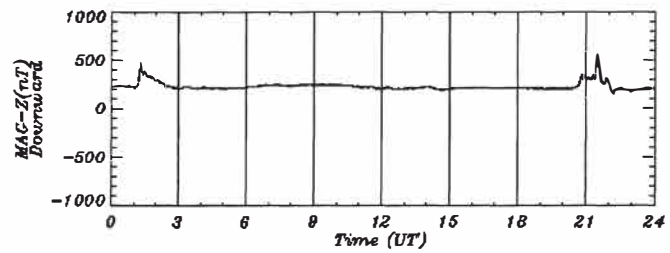
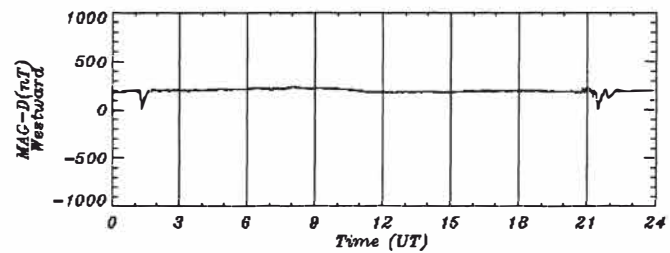
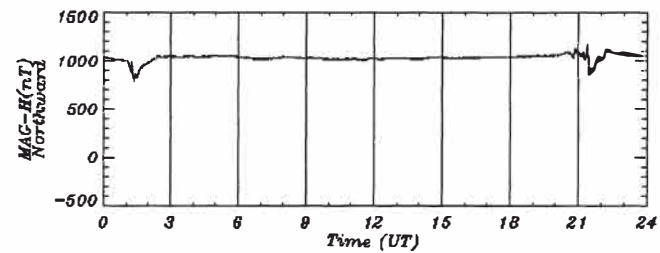
NIPR Syowa Magnetometer

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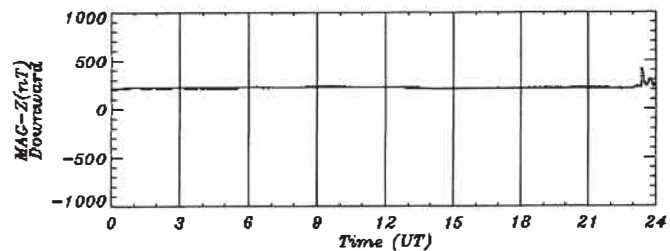
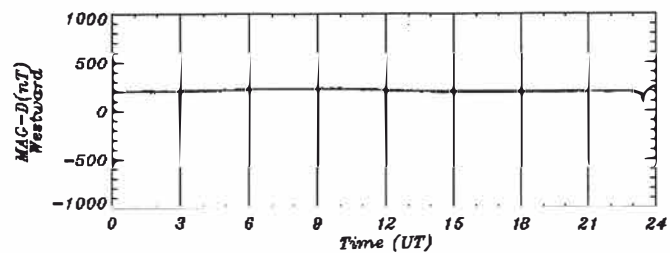
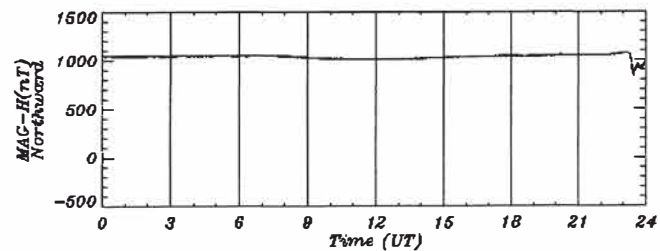
NIPR Syowa Magnetometer

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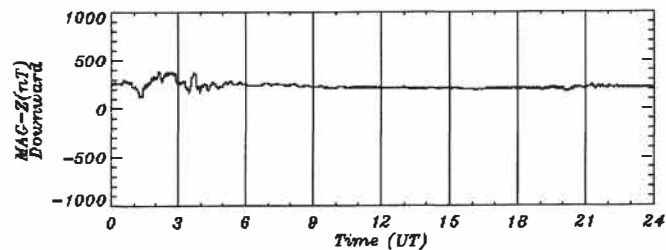
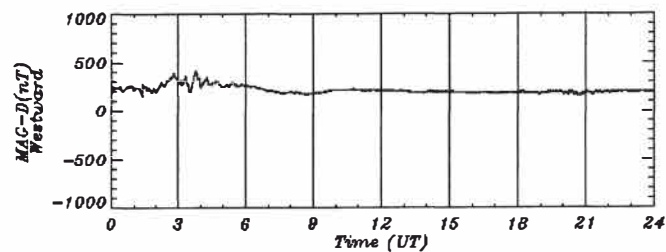
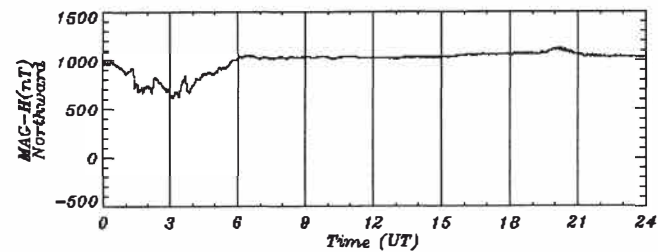
# NIPR Syowa Magnetometer

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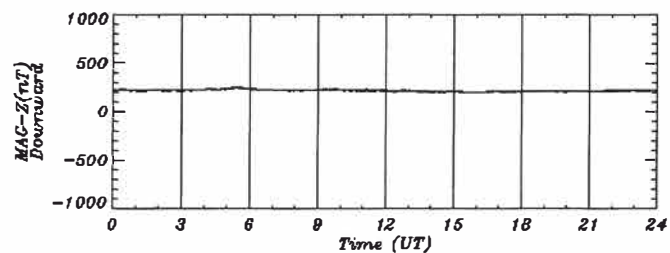
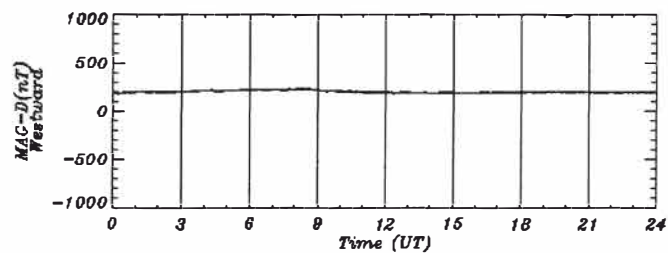
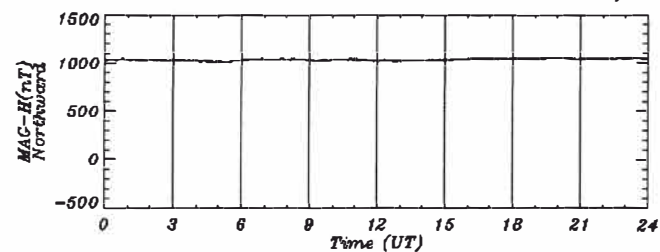
# NIPR Syowa Magnetometer

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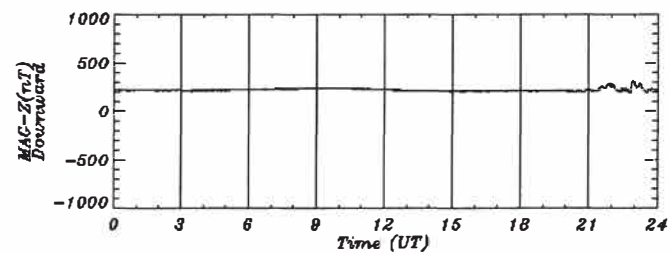
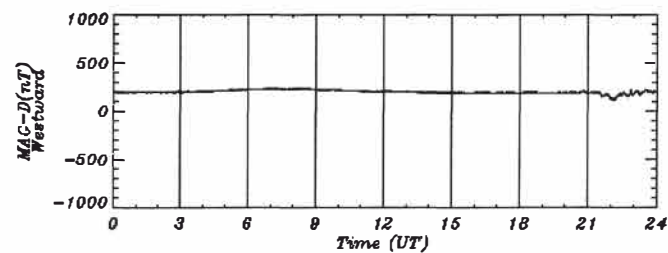
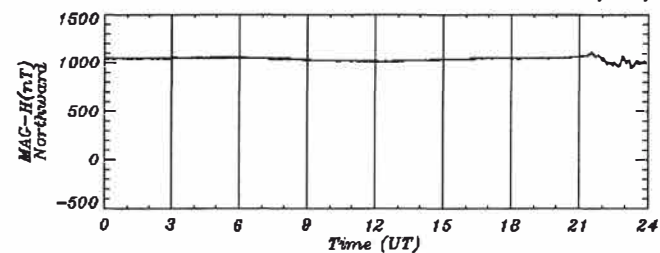
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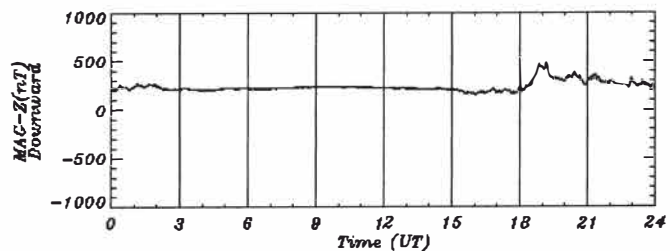
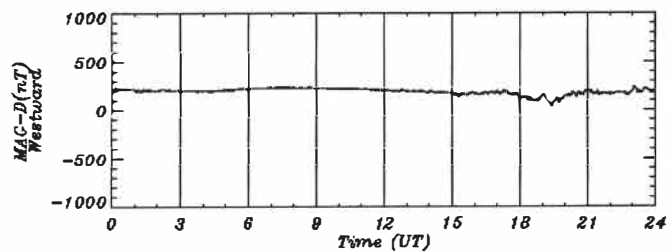
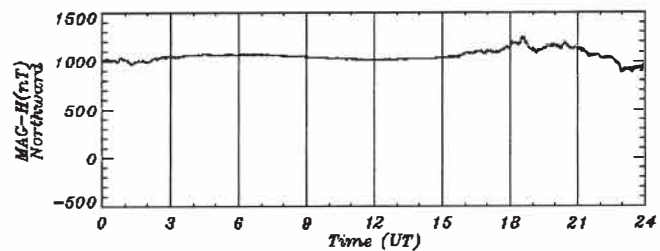
# NIPR Syowa Magnetometer

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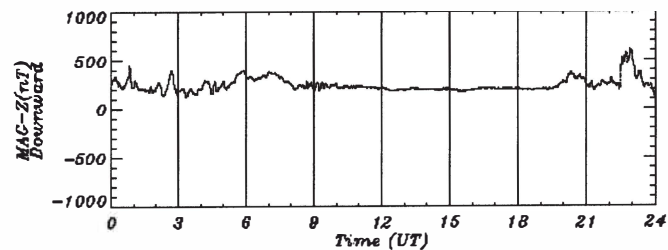
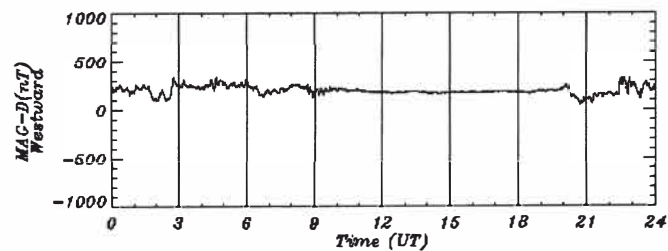
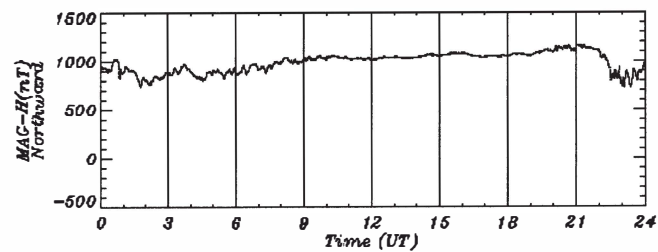
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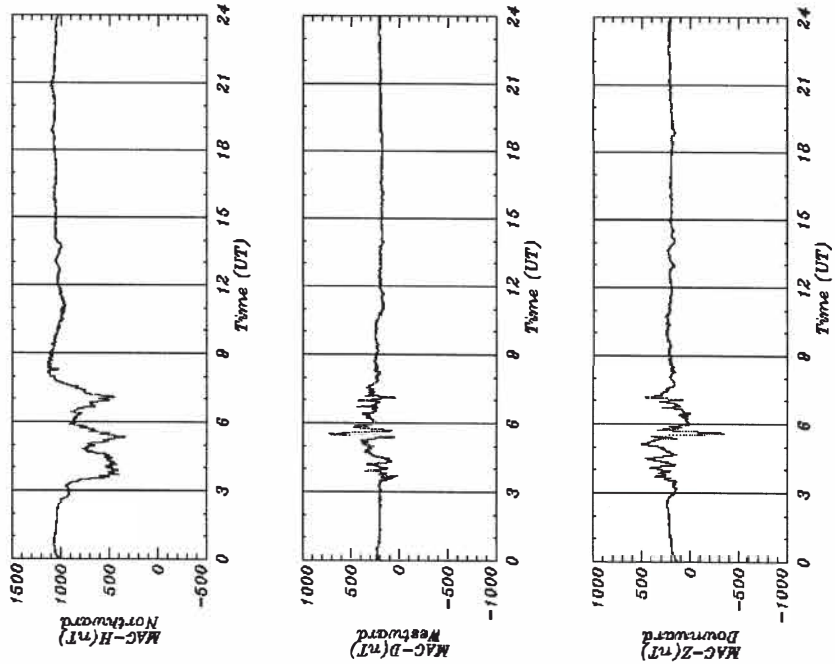
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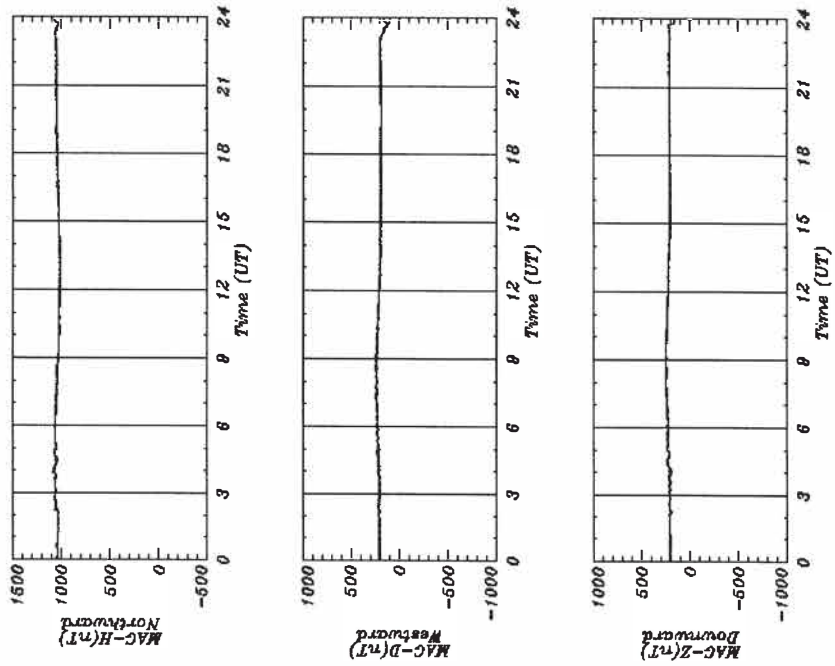
NIPR Syowa Magnetometer

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NIPR Syowa Magnetometer

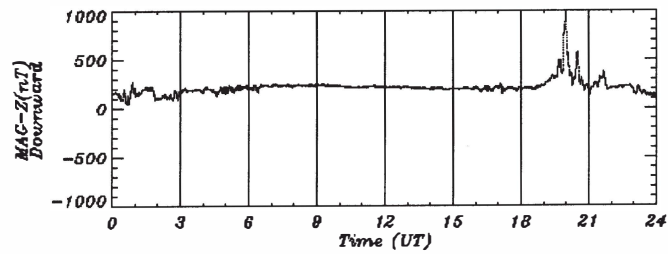
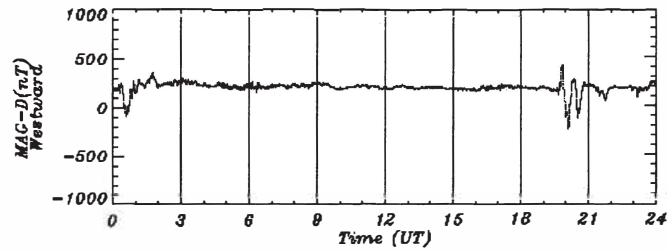
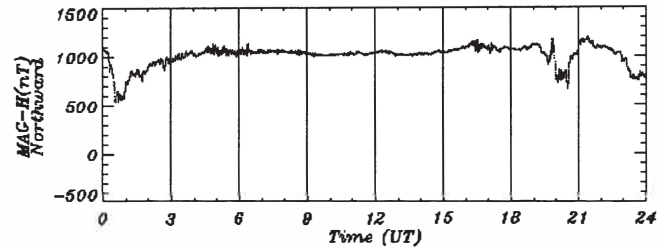
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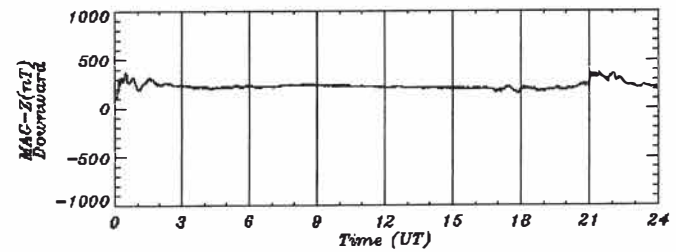
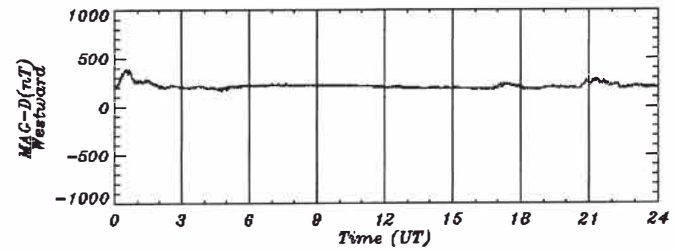
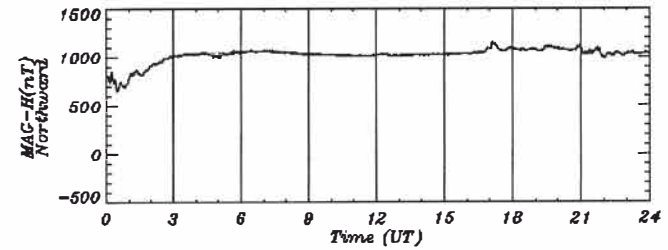
NIPR Syowa Magnetometer

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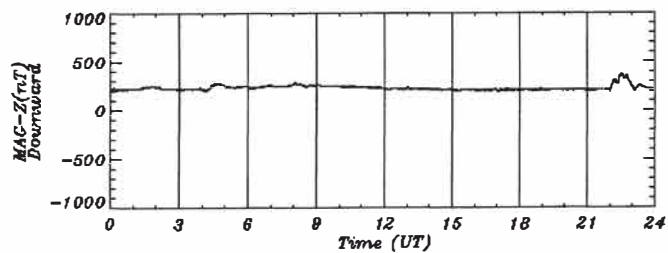
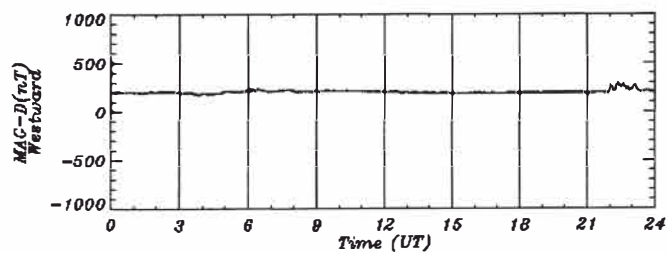
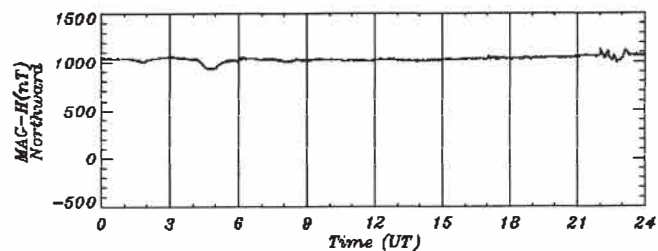
NIPR Syowa Magnetometer

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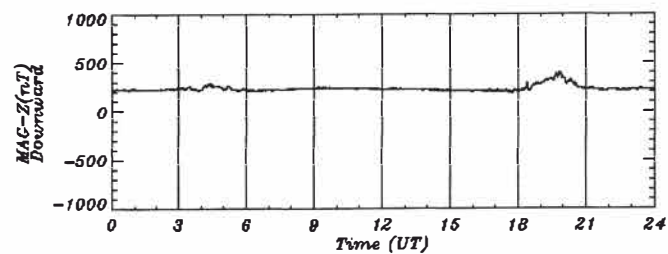
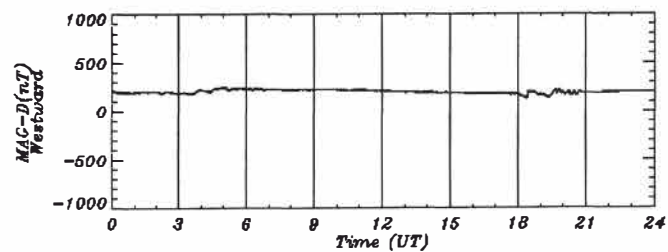
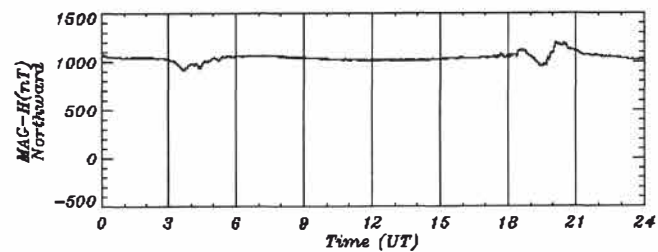
NIPR Syowa Magnetometer

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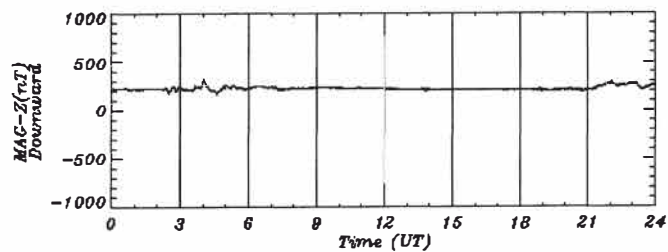
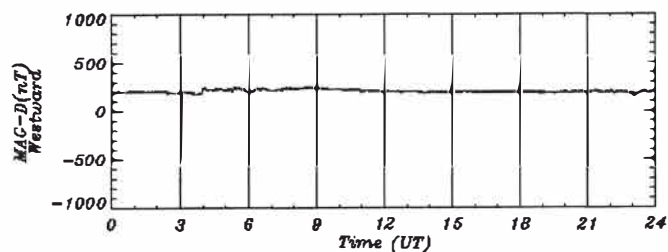
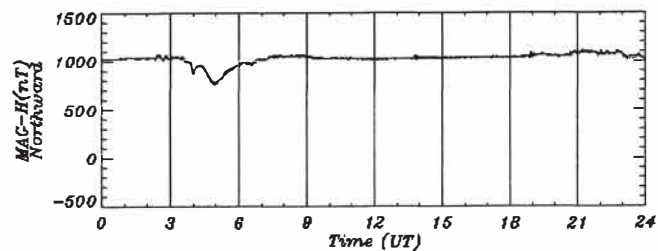
NIPR Syowa Magnetometer

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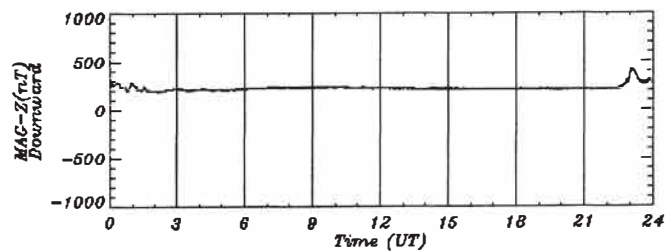
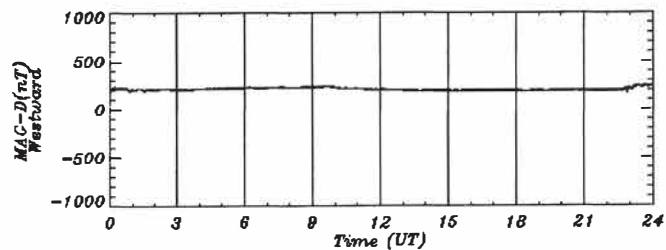
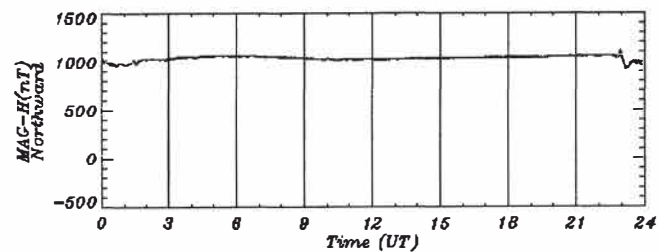
# NIPR Syowa Magnetometer

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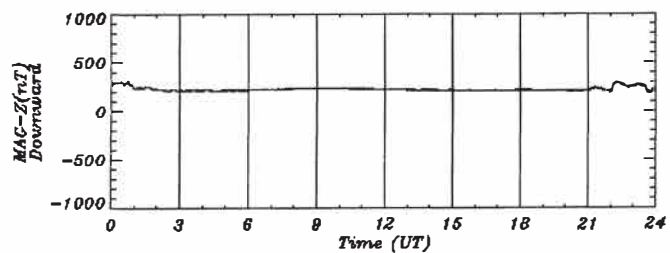
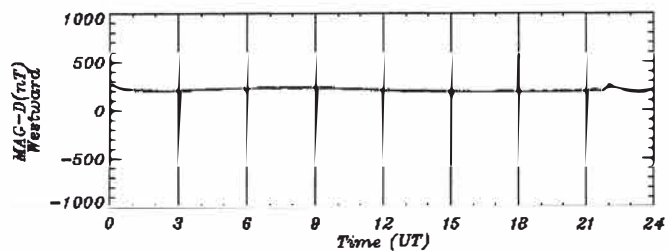
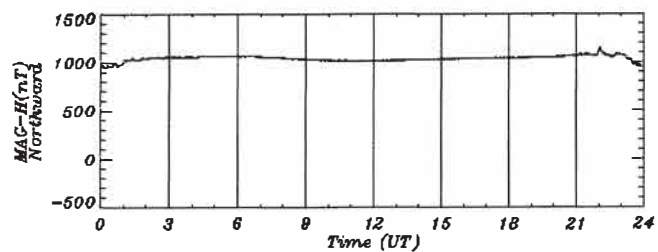
# NIPR Syowa Magnetometer

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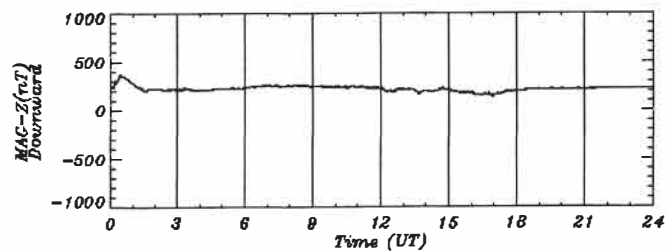
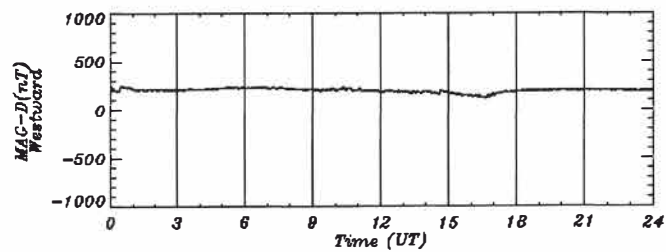
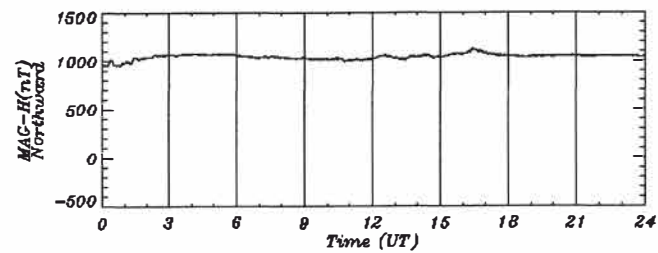
NIPR Syowa Magnetometer

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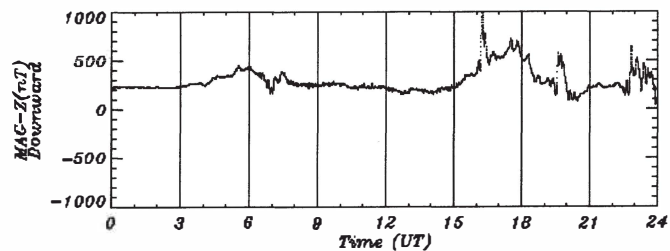
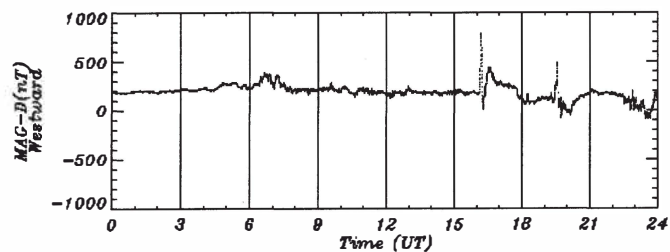
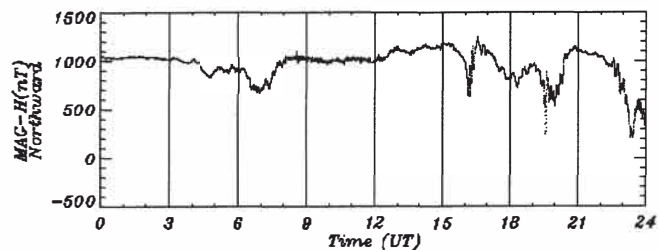
NIPR Syowa Magnetometer

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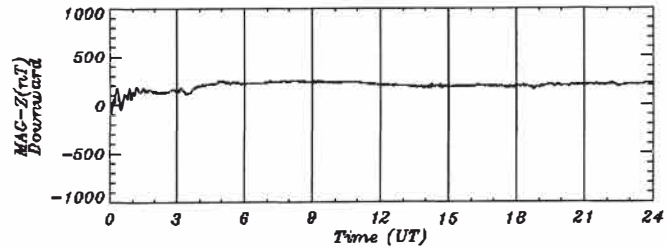
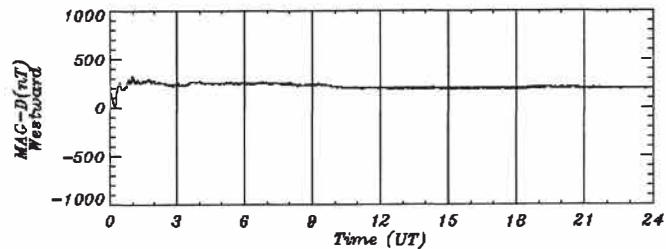
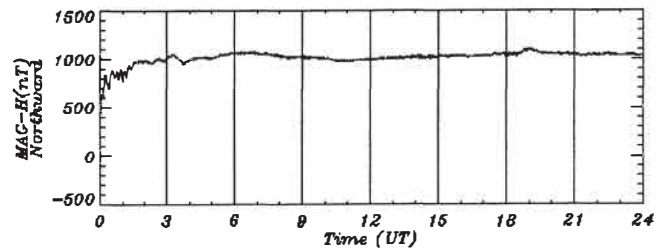
NIPR Syowa Magnetometer

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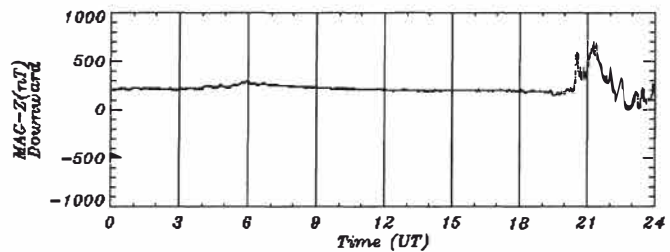
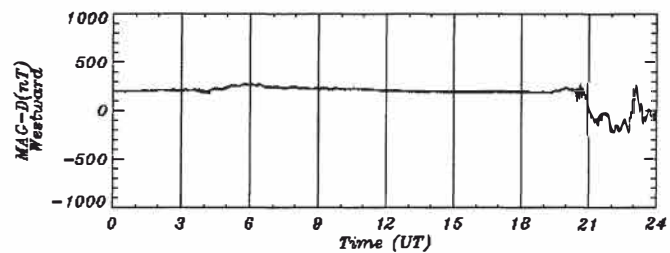
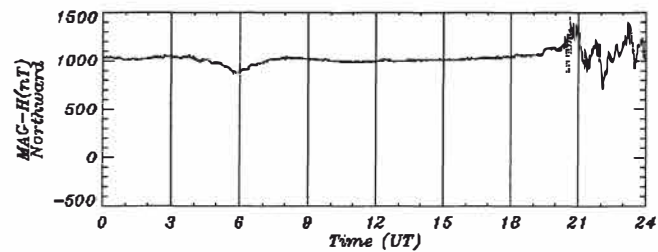
NIPR Syowa Magnetometer

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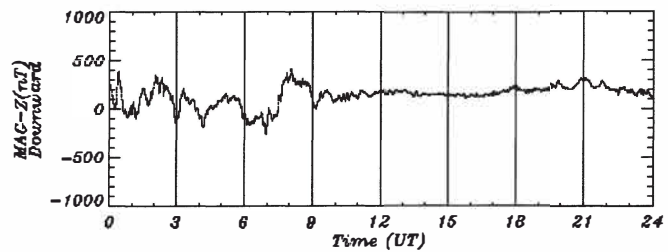
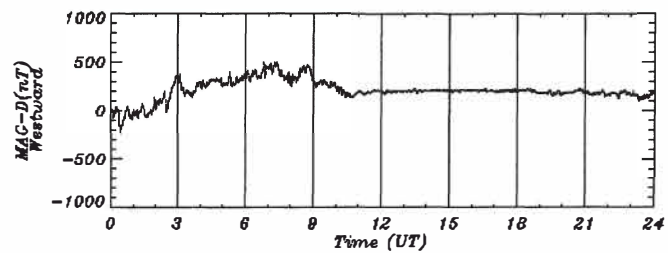
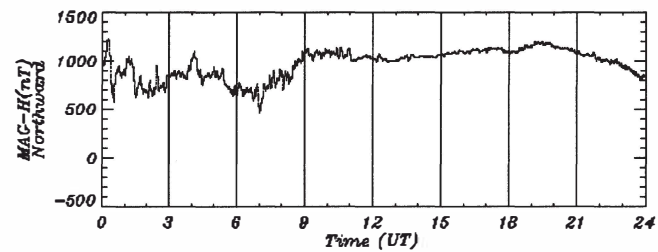
NIPR Syowa Magnetometer

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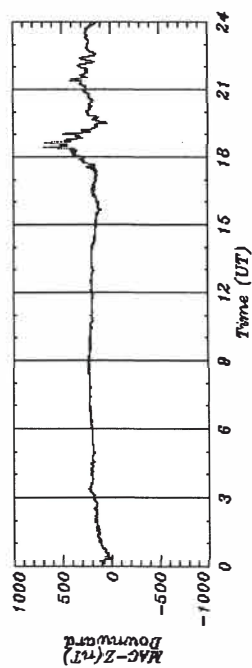
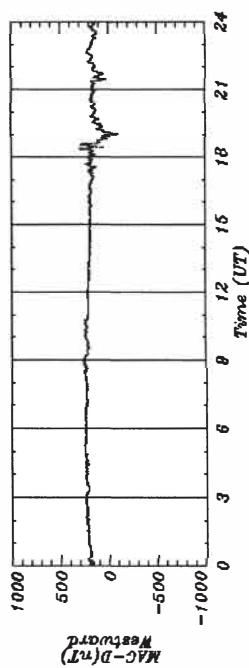
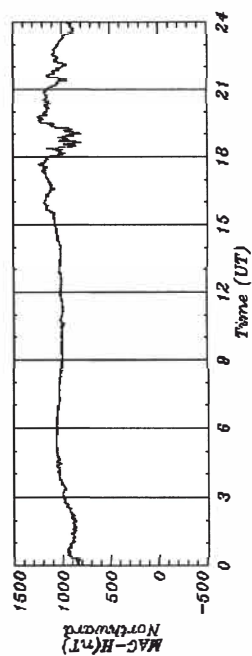
NIPR Syowa Magnetometer

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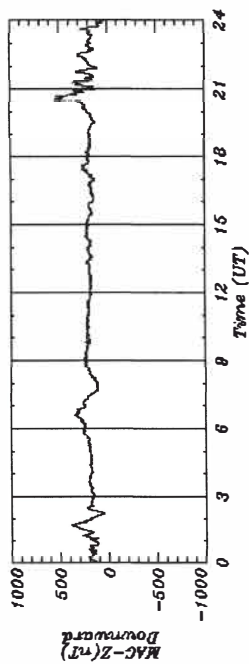
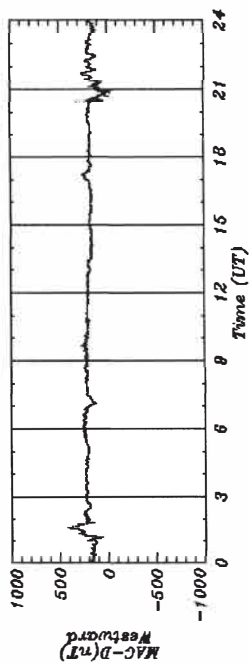
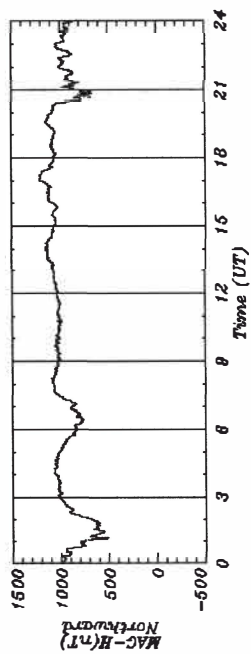
NIPR Syowa Magnetometer

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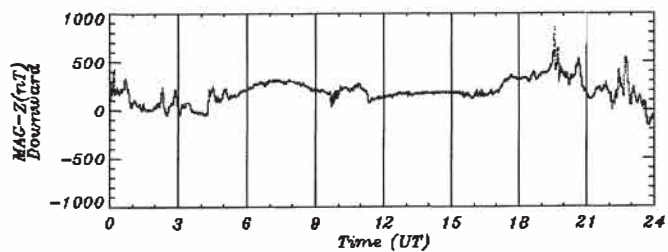
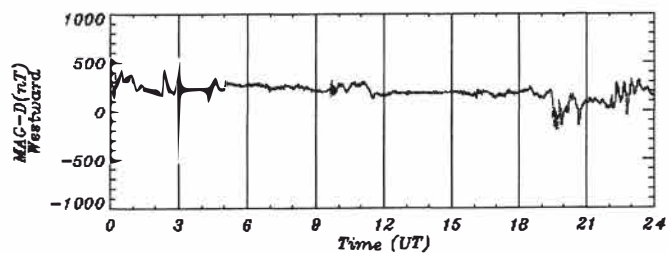
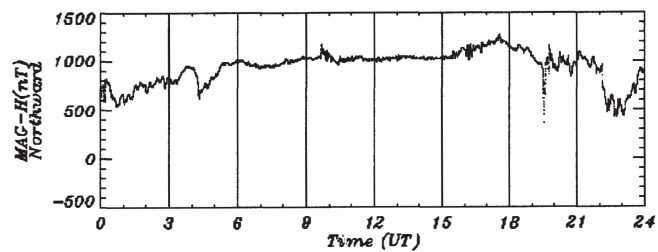
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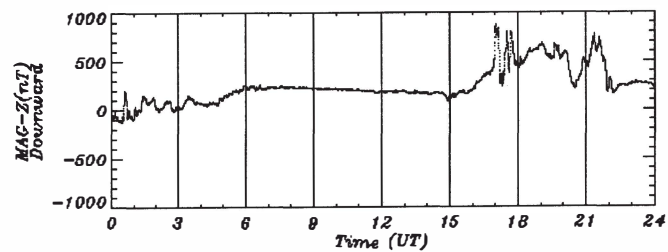
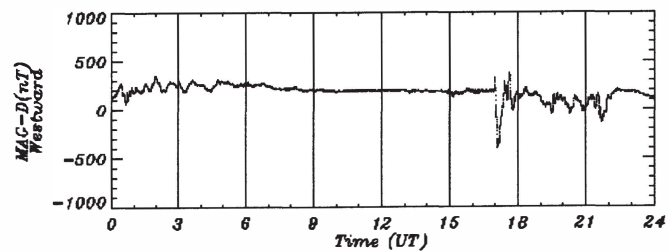
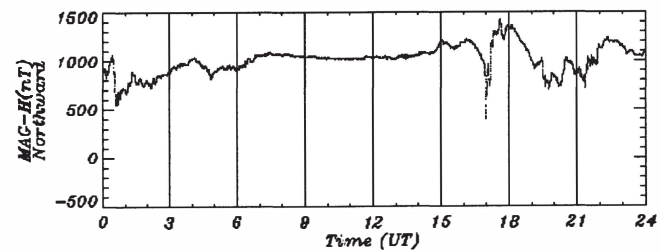
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NIPR Syowa Magnetometer

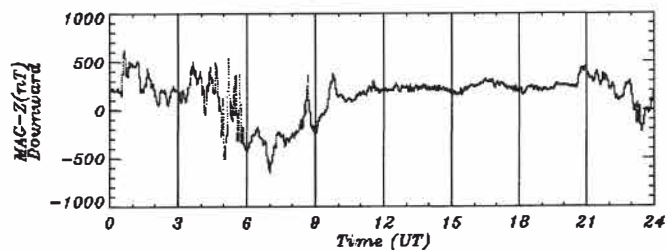
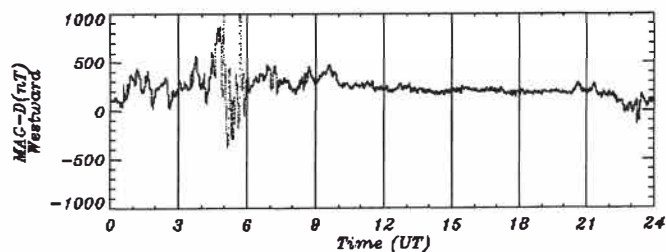
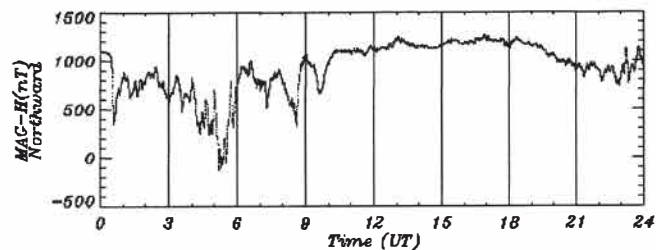
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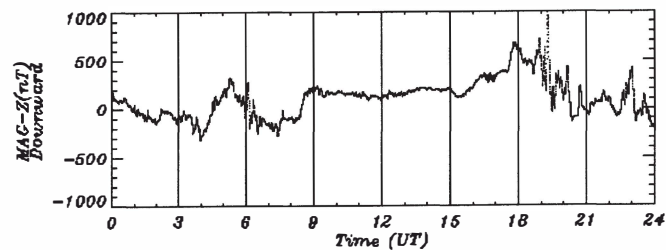
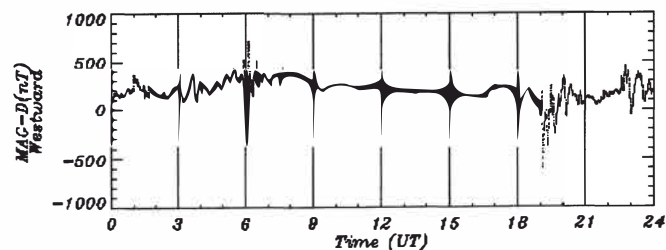
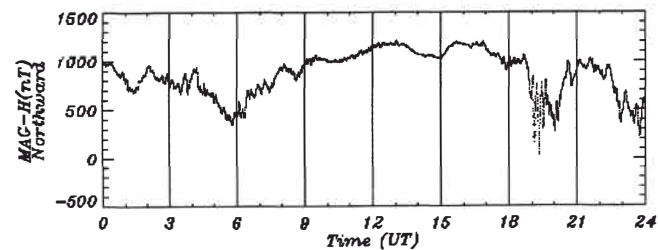
NIPR Syowa Magnetometer

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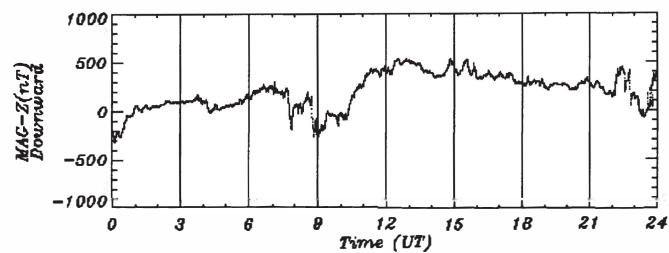
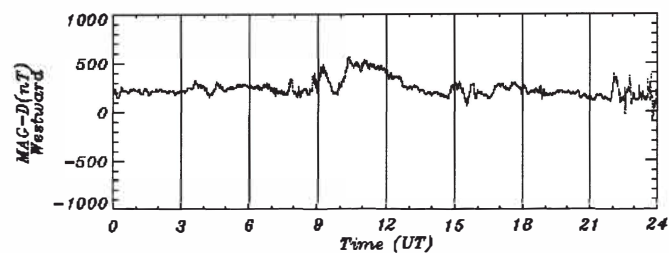
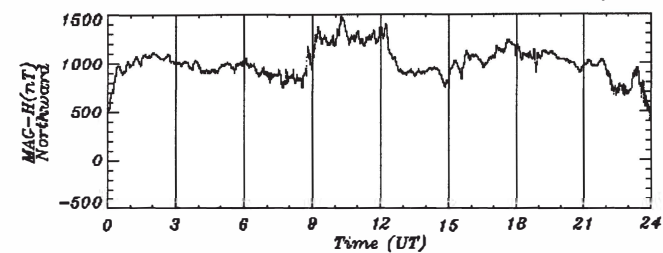
NIPR Syowa Magnetometer

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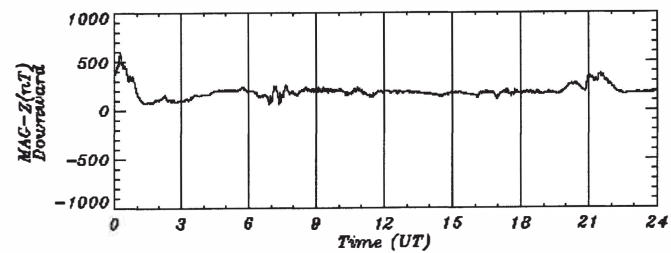
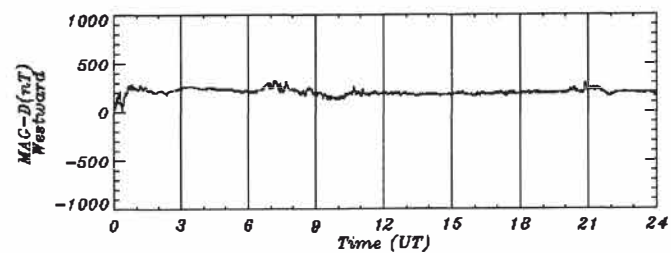
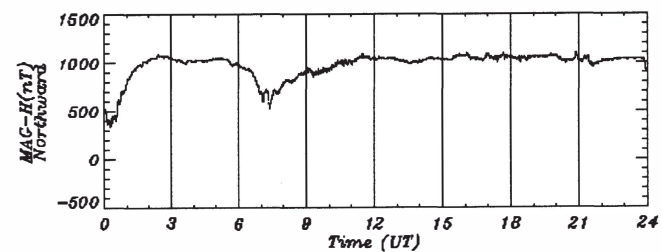
NIPR Syowa Magnetometer

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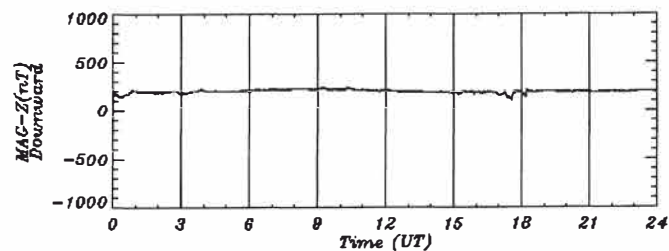
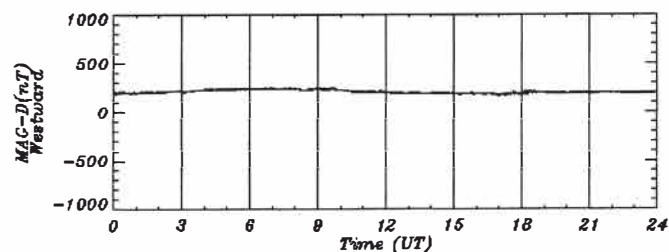
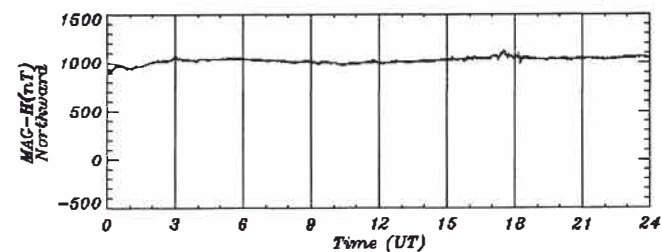
NIPR Syowa Magnetometer

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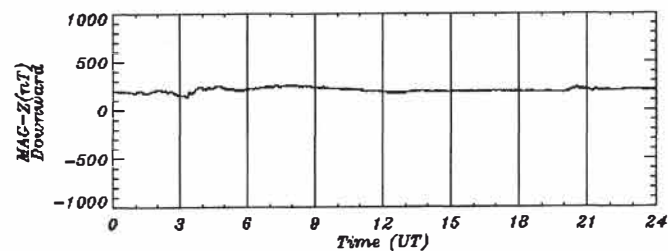
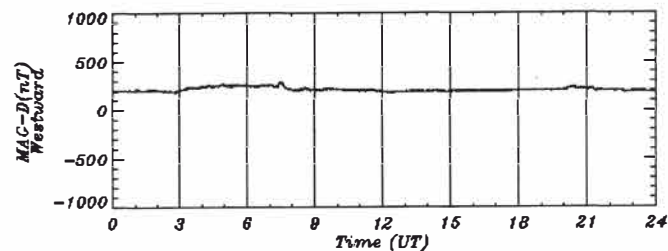
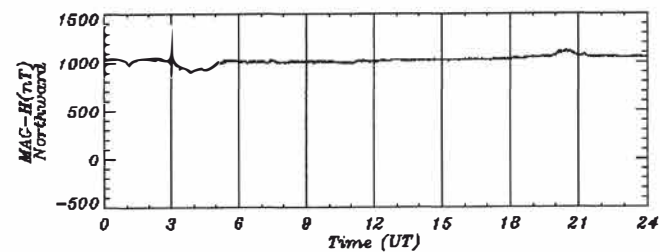
# NIPR Syowa Magnetometer

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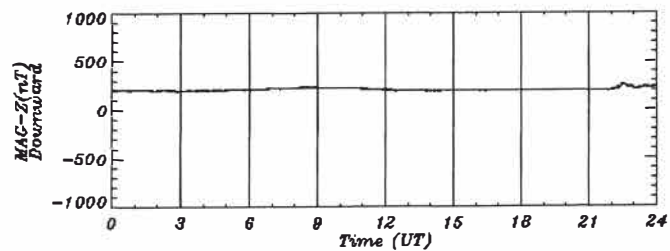
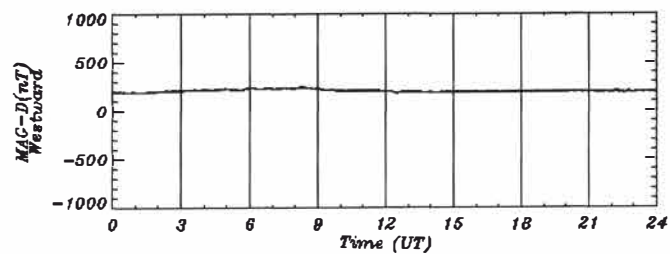
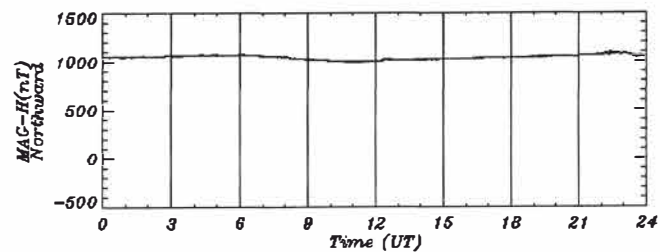
# NIPR Syowa Magnetometer

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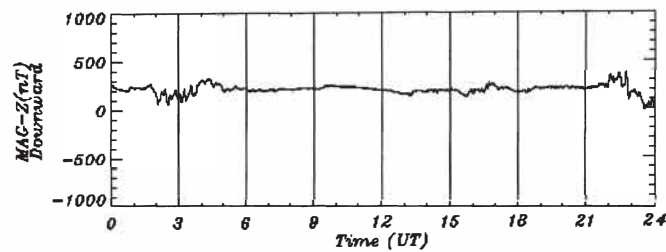
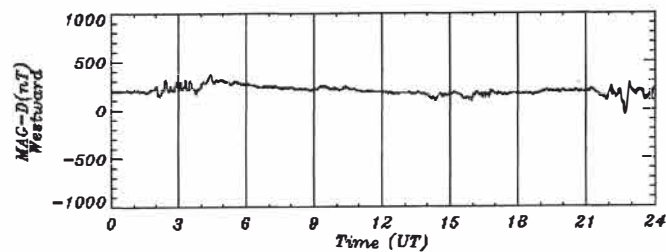
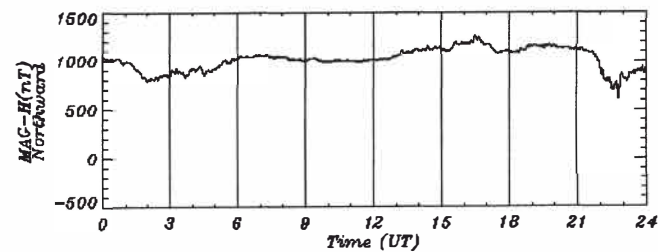
# NIPR Syowa Magnetometer

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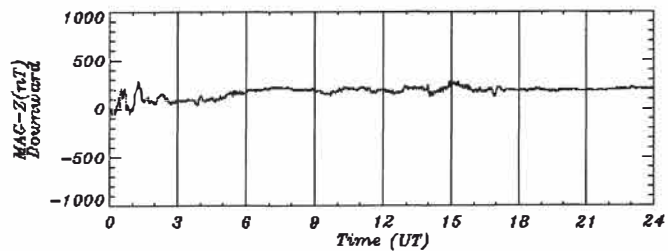
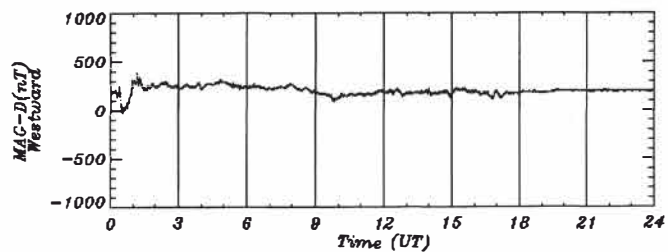
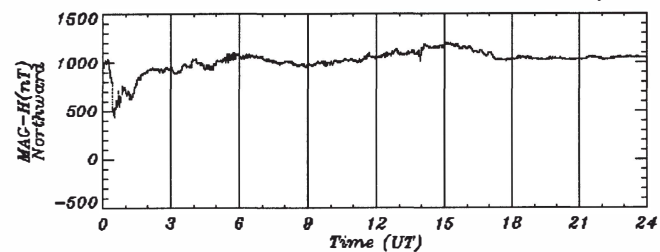
# NIPR Syowa Magnetometer

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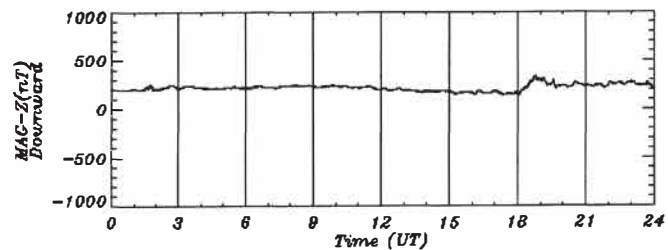
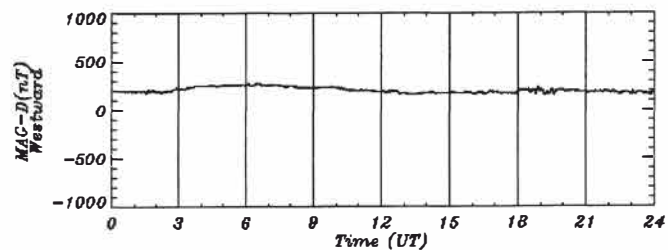
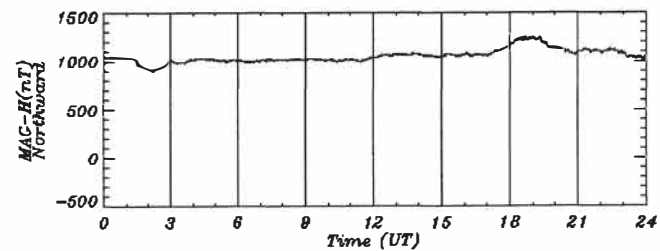
NIPR Syowa Magnetometer

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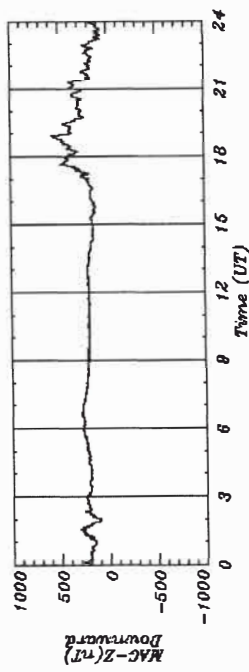
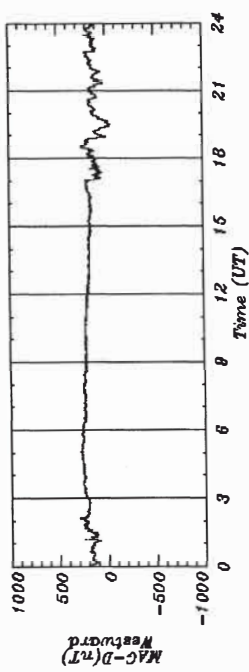
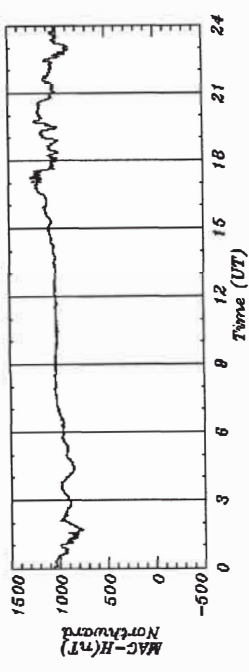
NIPR Syowa Magnetometer

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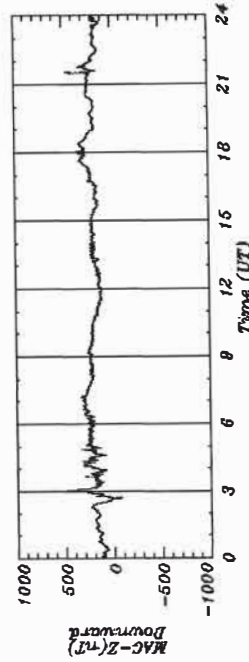
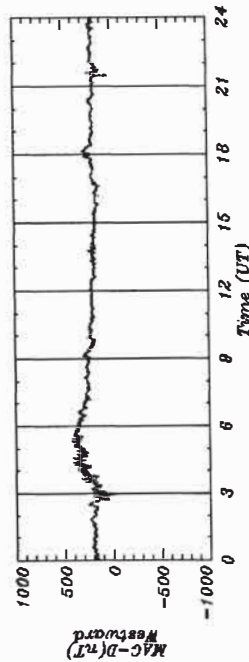
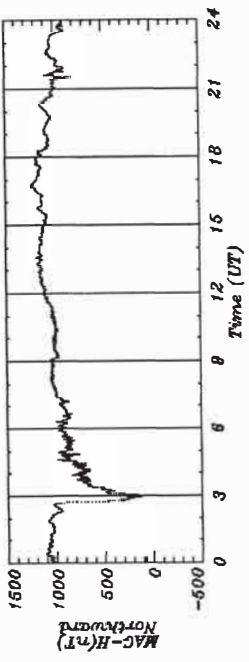
NIPR Syowa Magnetometer

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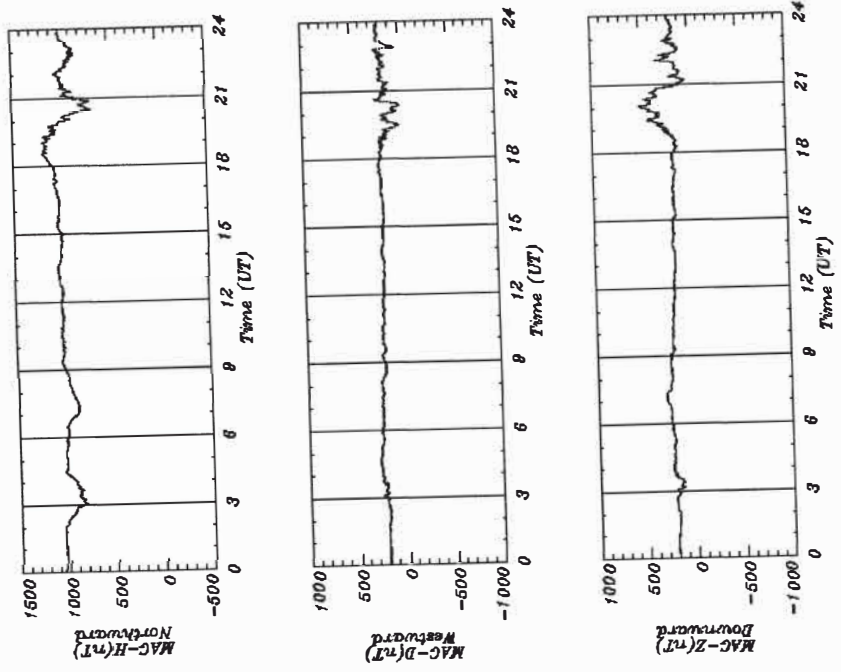


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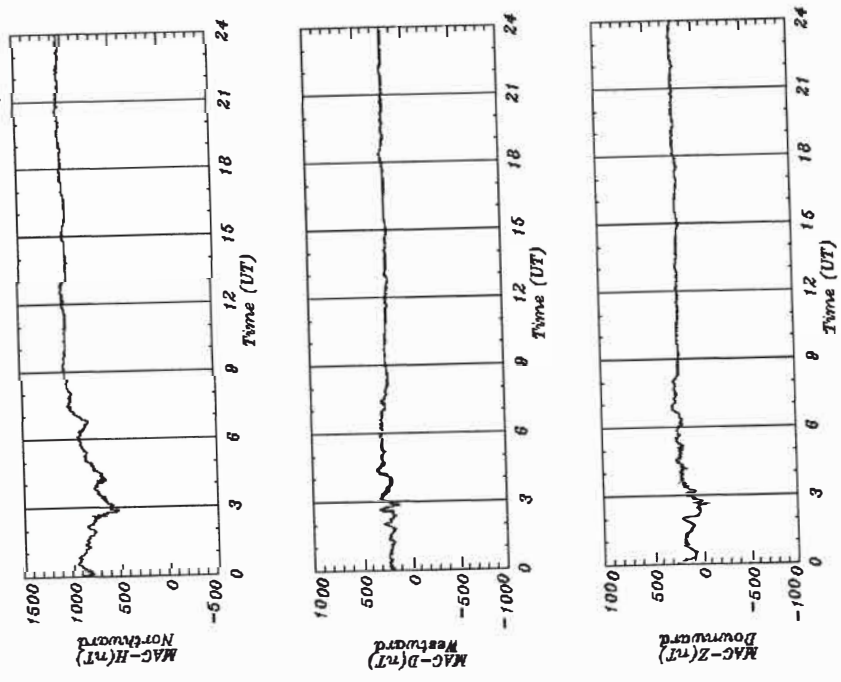
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NIPR Syowa Magnetometer 2001/ 10/ 14

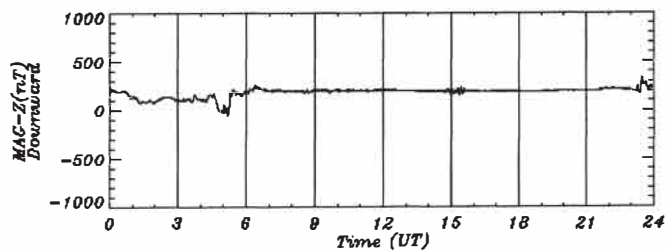
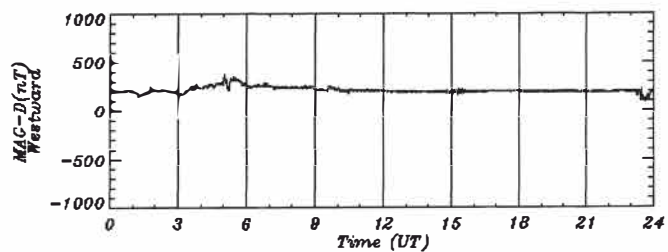
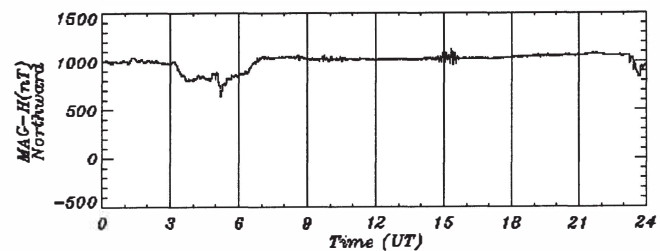


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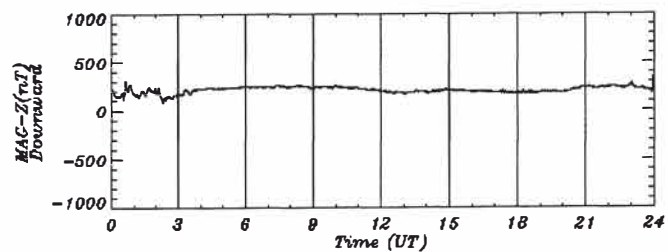
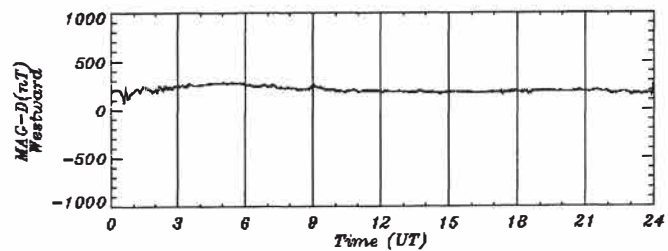
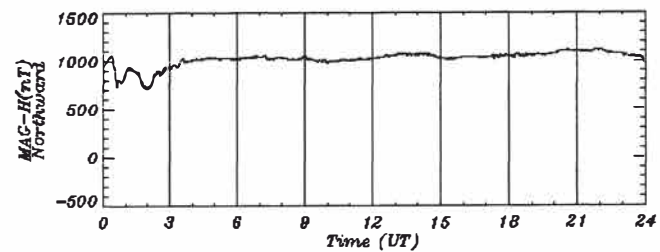
NIPR Syowa Magnetometer

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NIPR Syowa Magnetometer

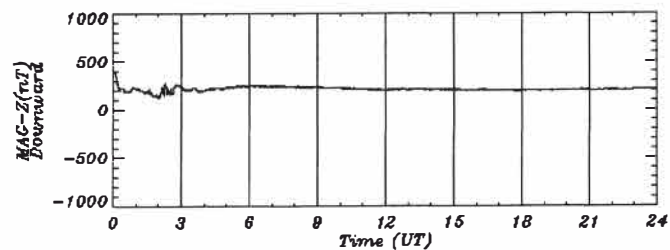
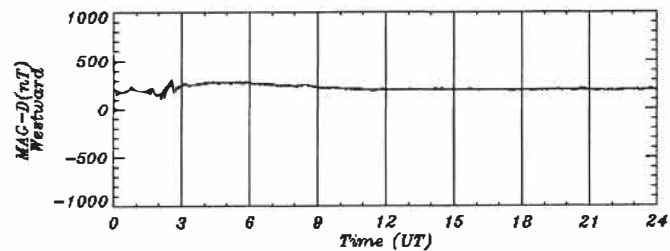
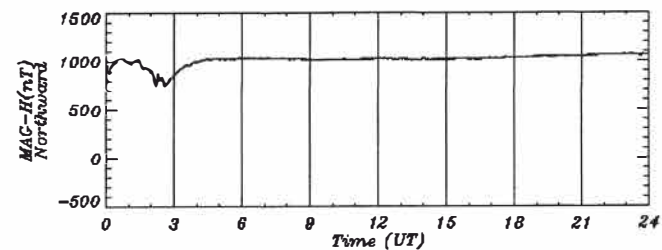
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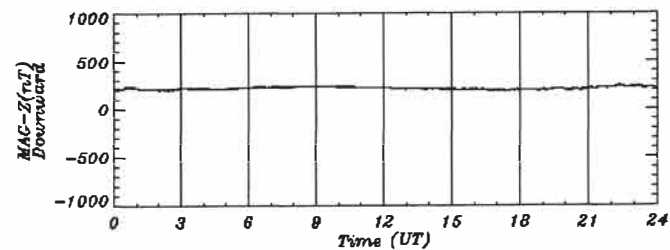
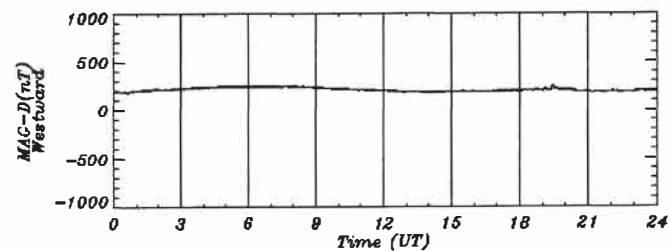
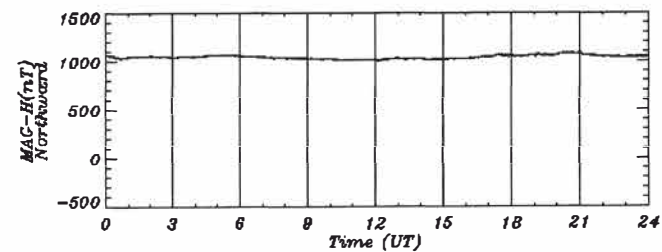
NIPR Syowa Magnetometer

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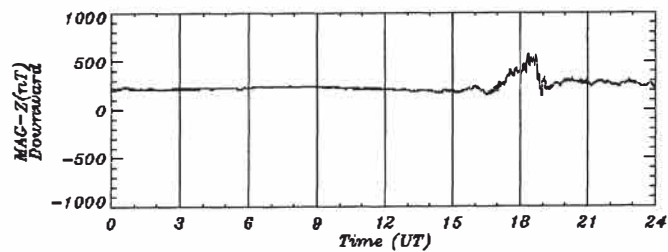
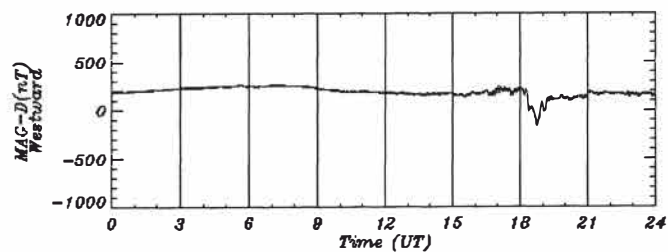
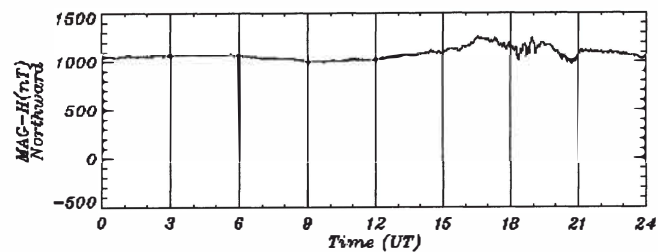
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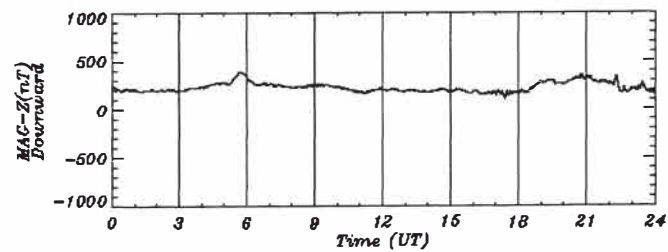
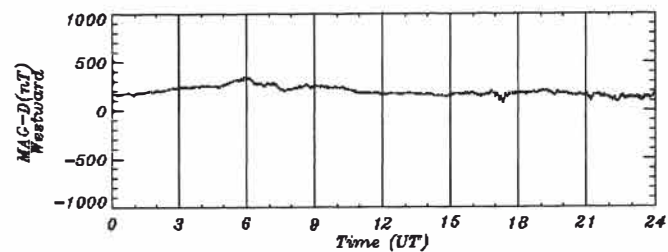
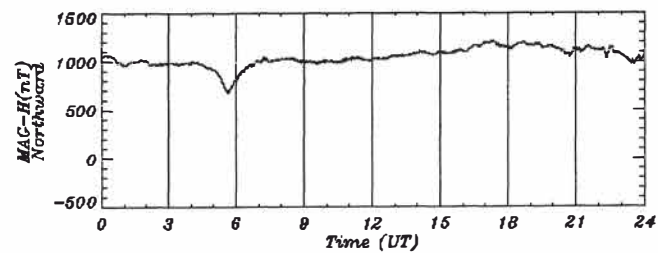
# NIPR Syowa Magnetometer

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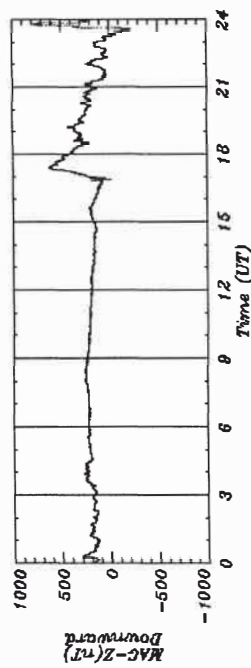
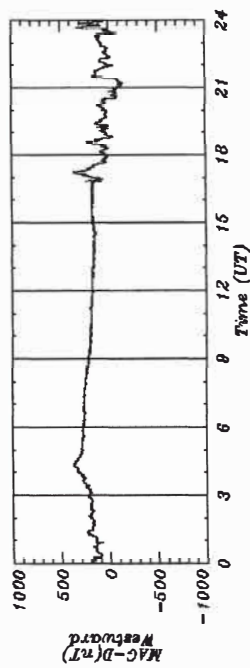
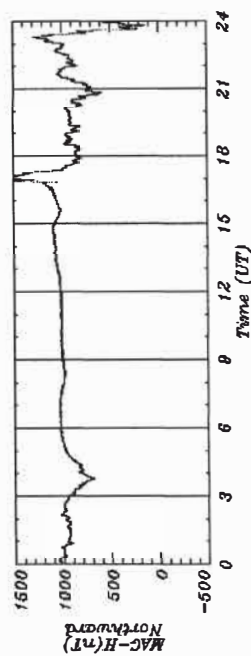
# NIPR Syowa Magnetometer

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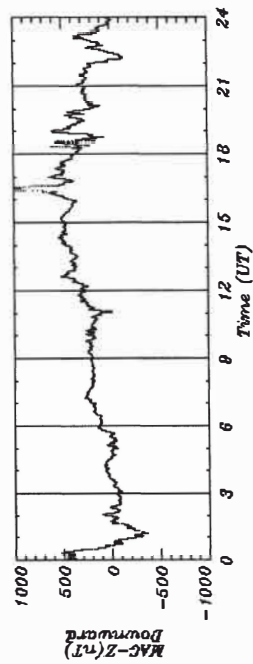
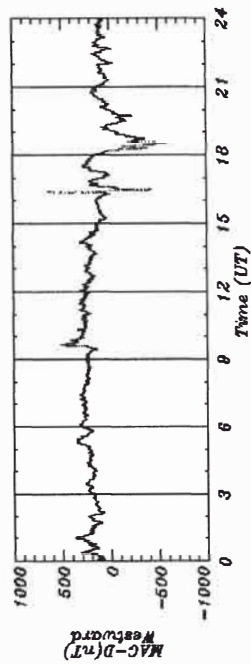
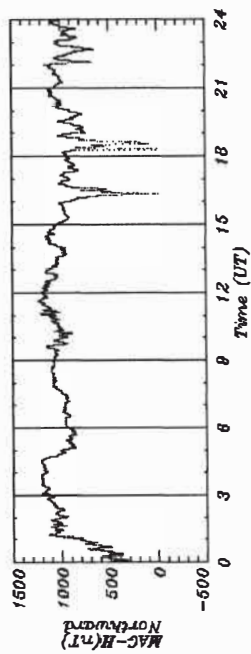
NIPR Syowa Magnetometer

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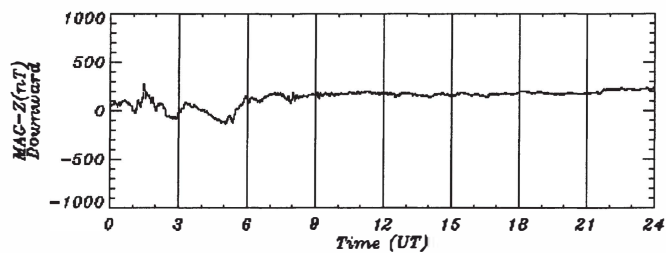
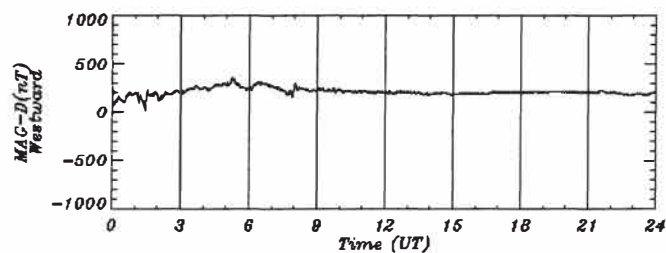
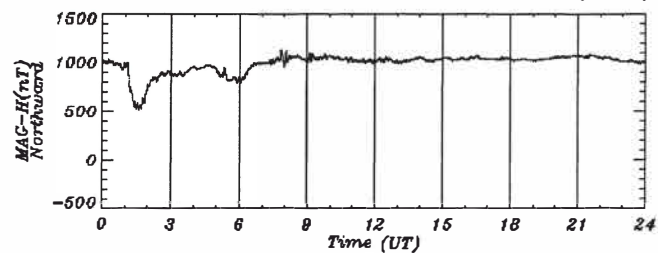
NIPR Syowa Magnetometer

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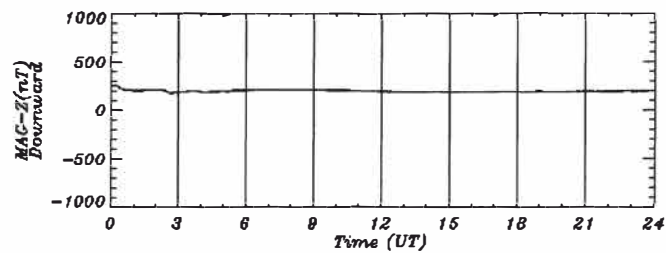
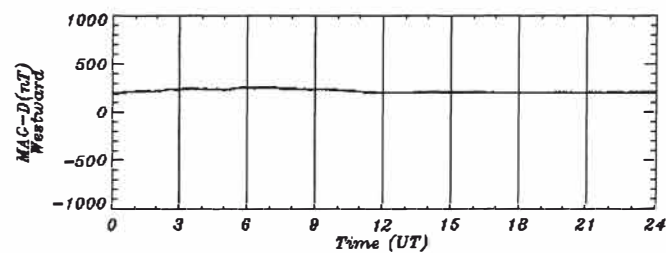
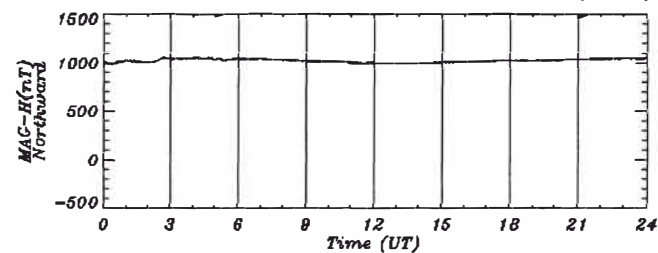
*NIPR Syowa Magnetometer*

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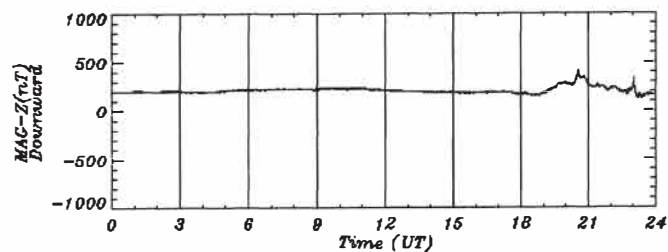
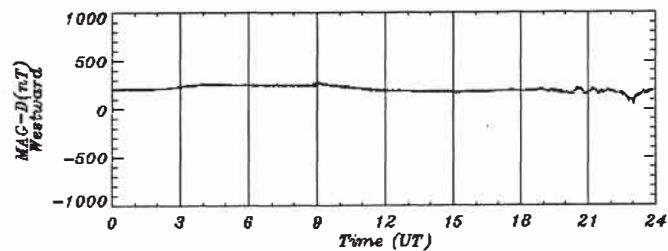
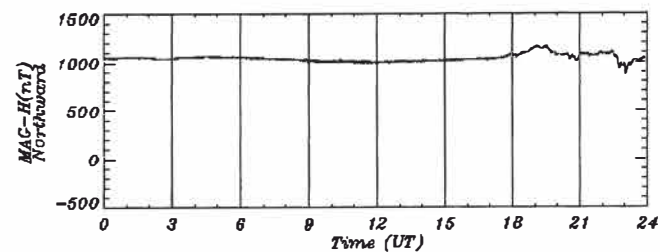
*NIPR Syowa Magnetometer*

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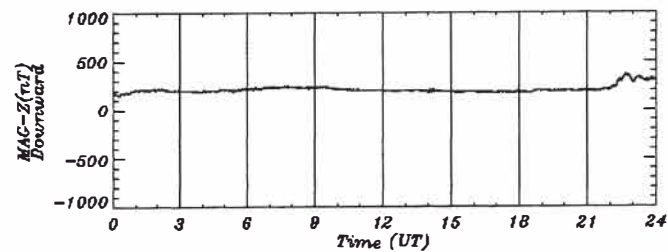
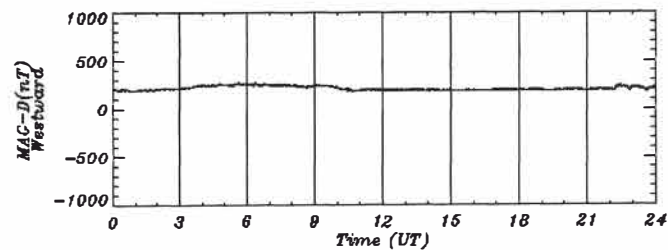
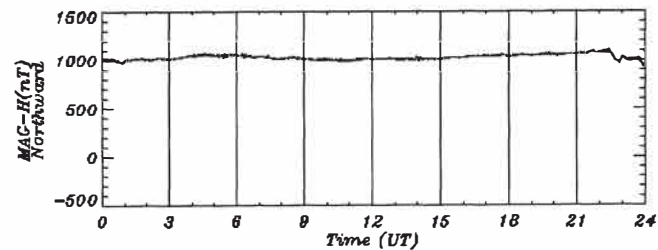
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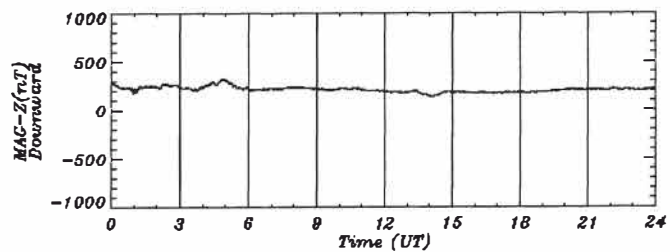
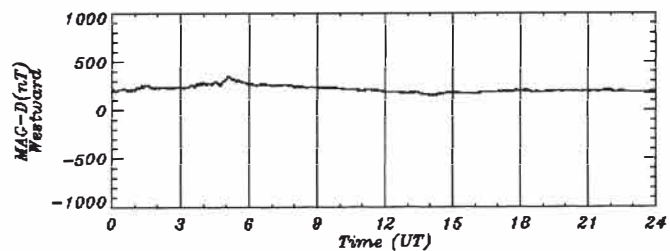
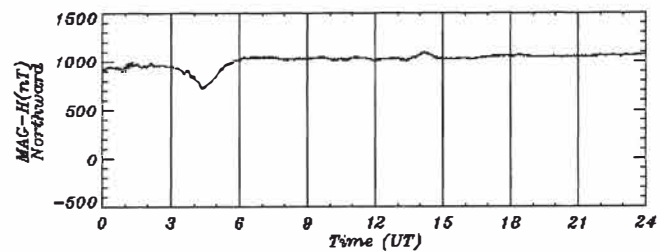
*NIPR Syowa Magnetometer*

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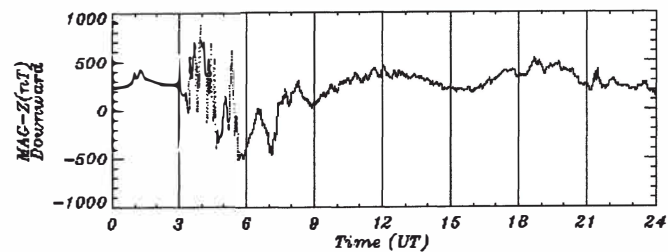
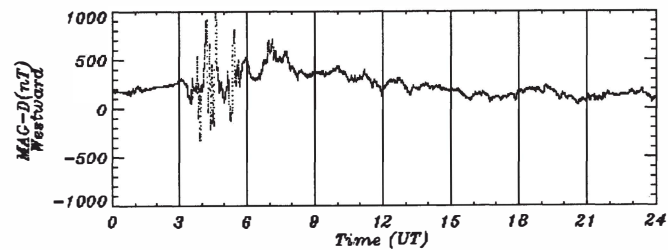
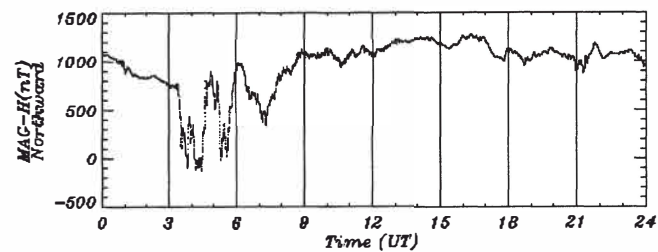
# NIPR Syowa Magnetometer

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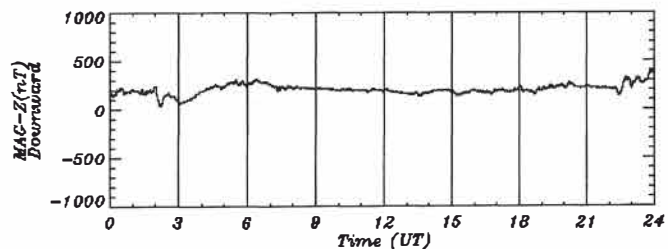
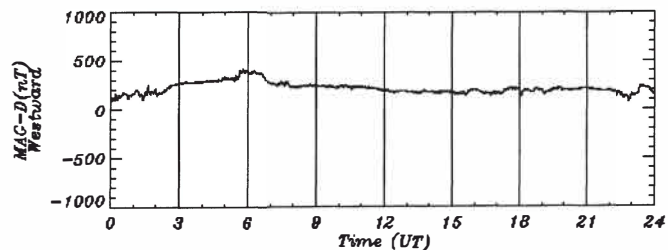
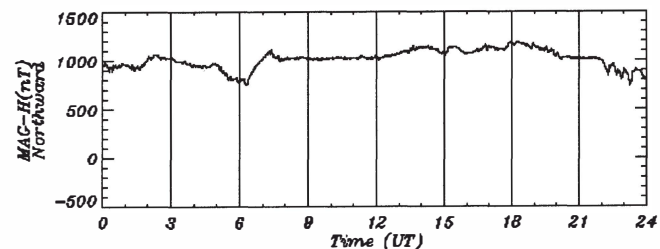
# NIPR Syowa Magnetometer

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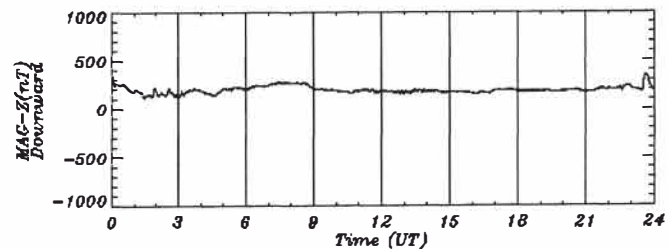
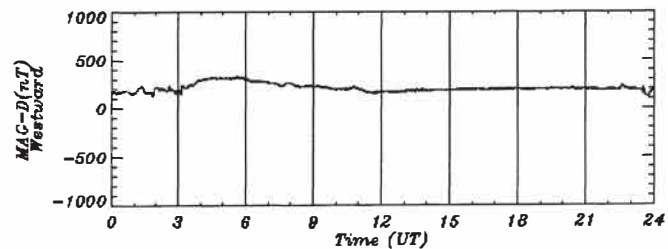
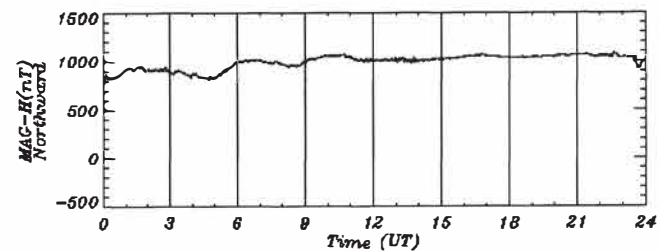
# NIPR Syowa Magnetometer

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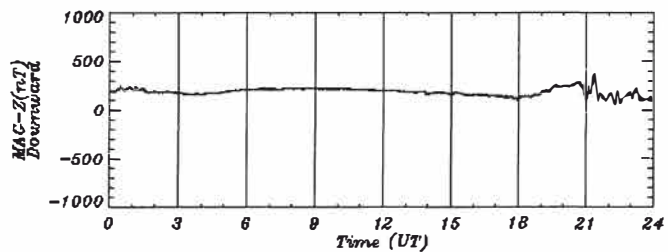
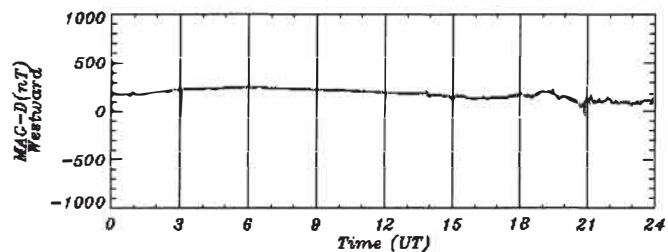
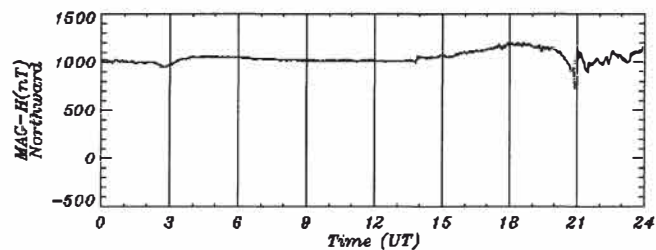
# NIPR Syowa Magnetometer

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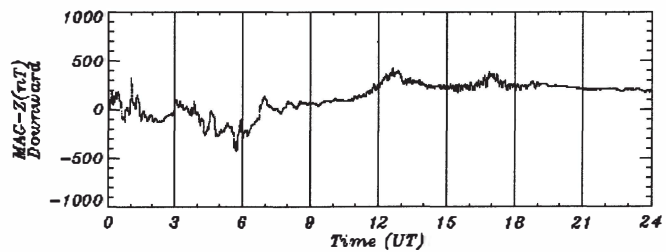
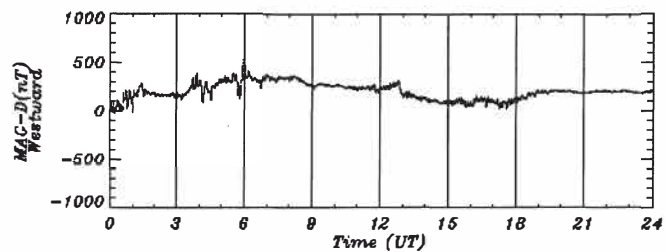
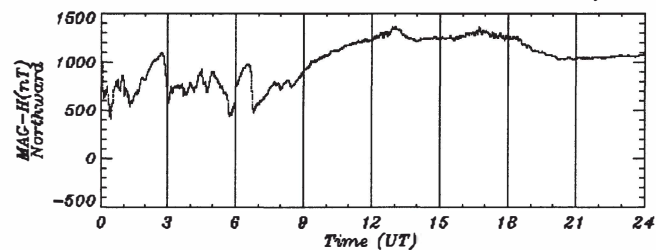
NIPR Syowa Magnetometer

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NIPR Syowa Magnetometer

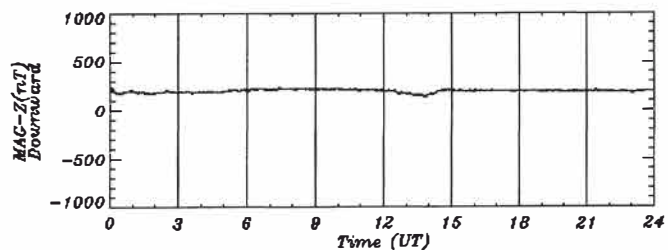
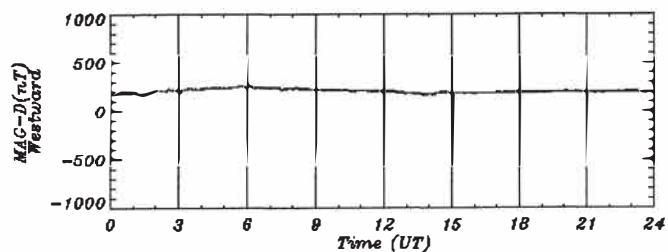
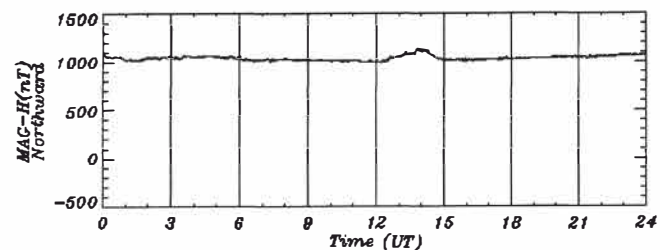
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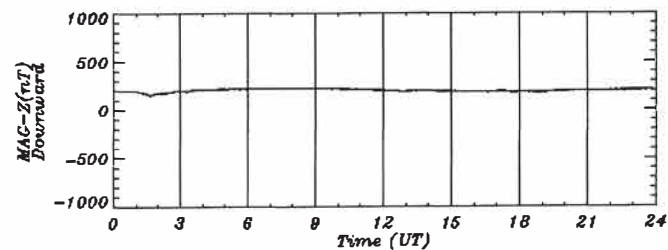
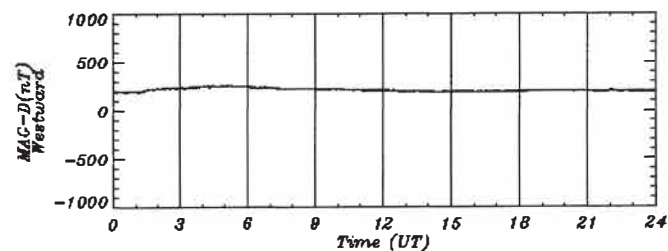
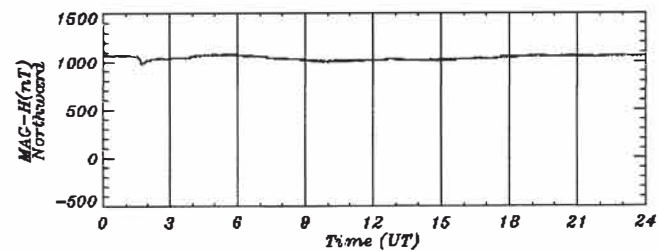
NIPR Syowa Magnetometer

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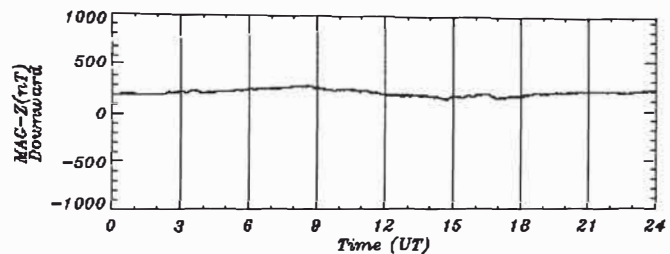
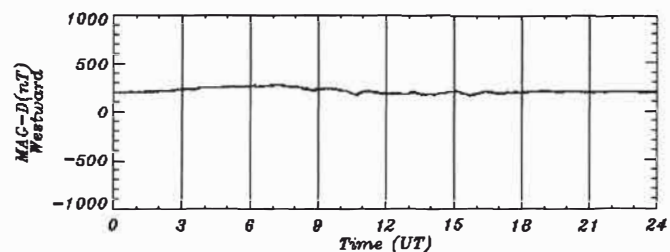
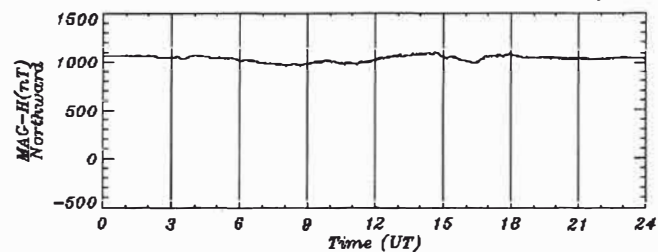
NIPR Syowa Magnetometer

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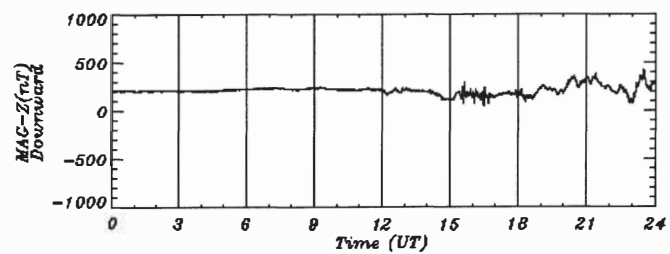
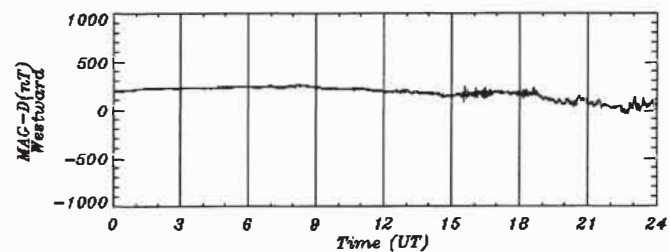
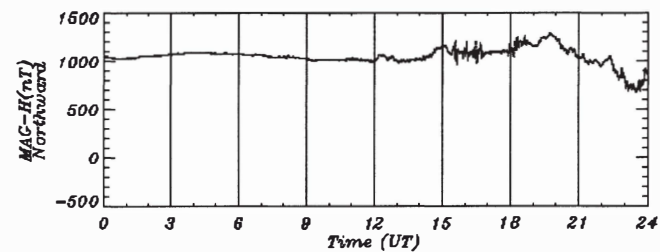
# NIPR Syowa Magnetometer

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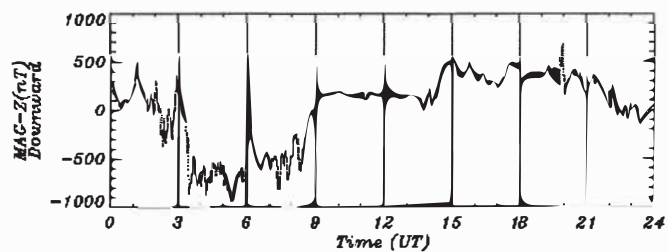
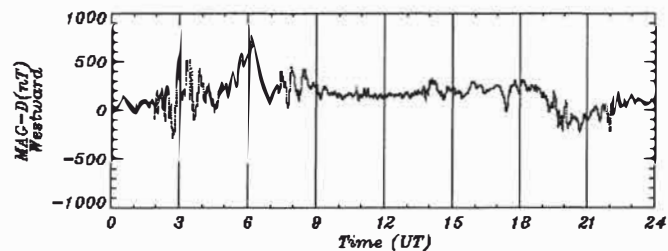
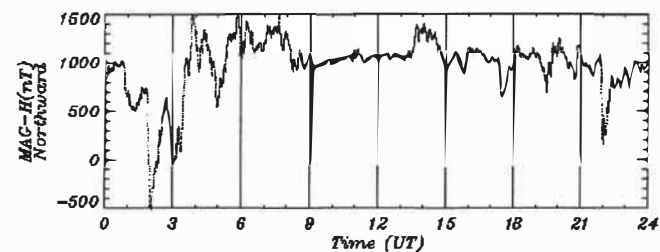
# NIPR Syowa Magnetometer

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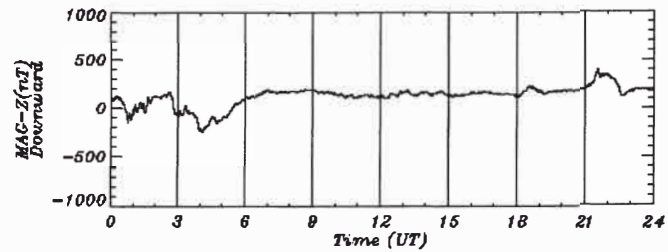
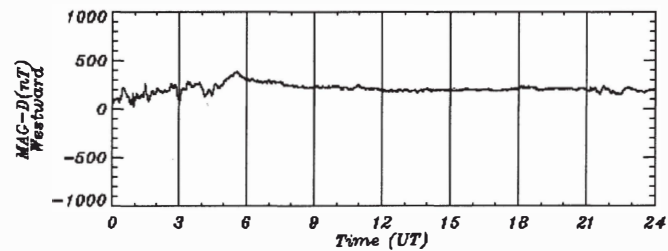
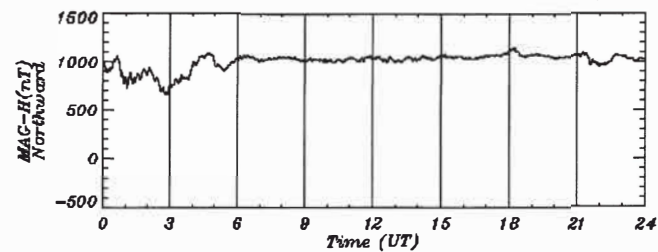
NIPR Syowa Magnetometer

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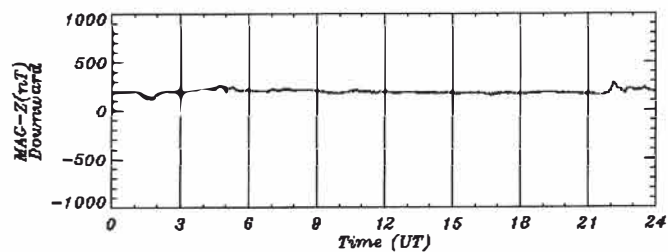
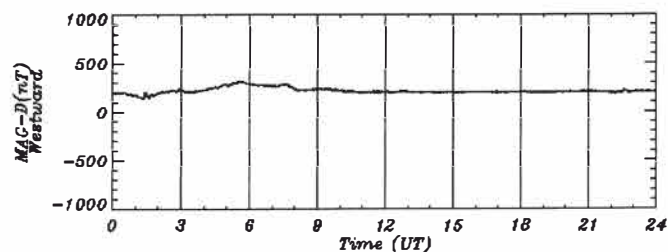
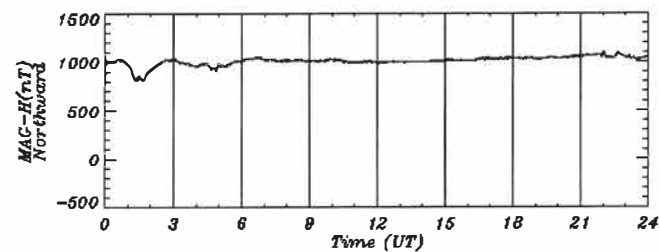
NIPR Syowa Magnetometer

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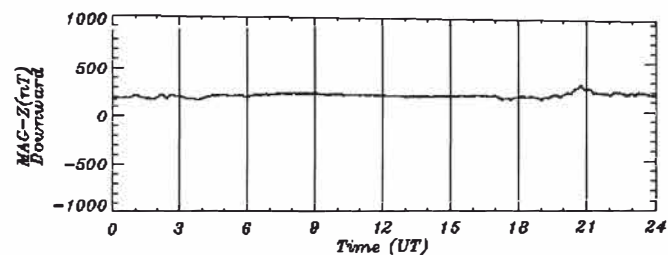
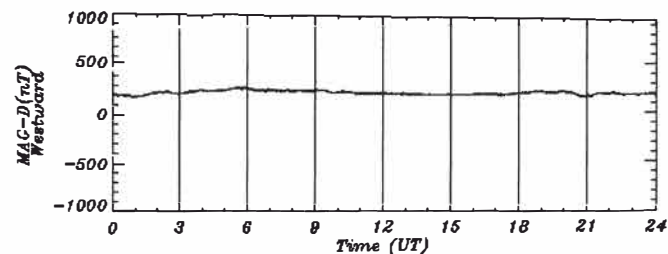
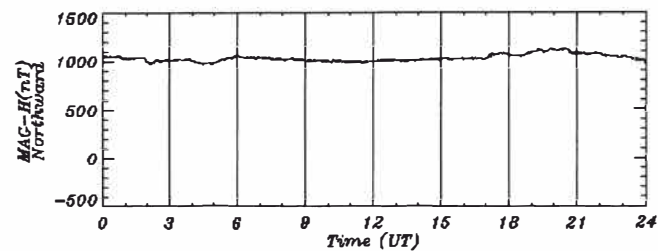
NIPR Syowa Magnetometer

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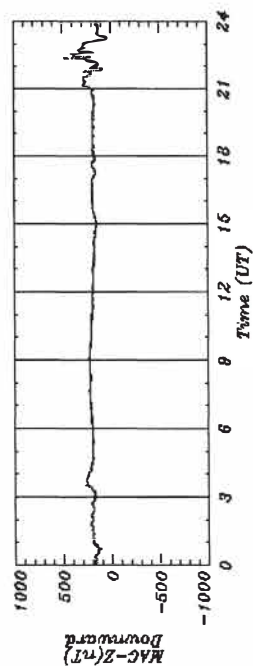
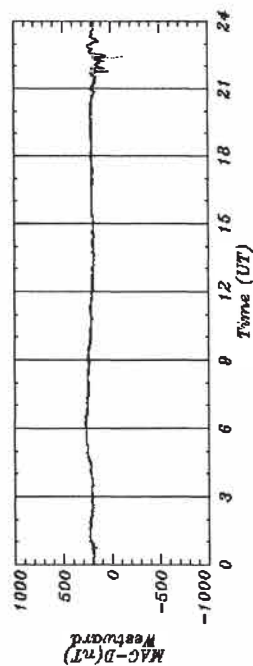
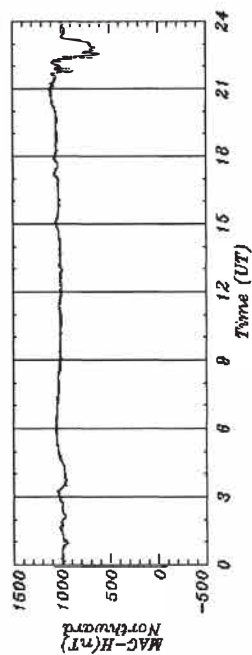
NIPR Syowa Magnetometer

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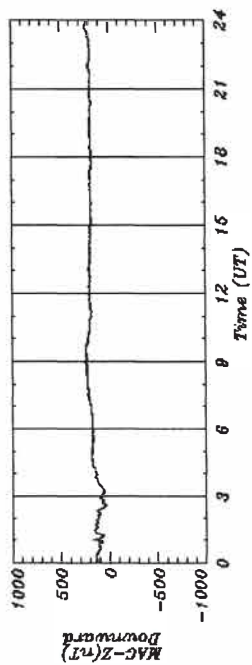
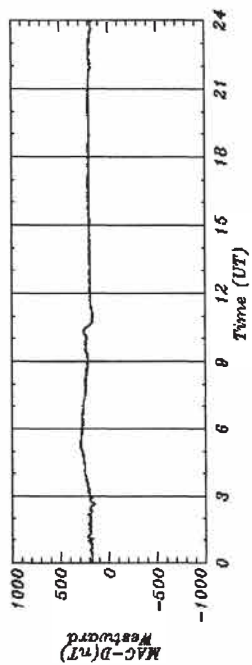
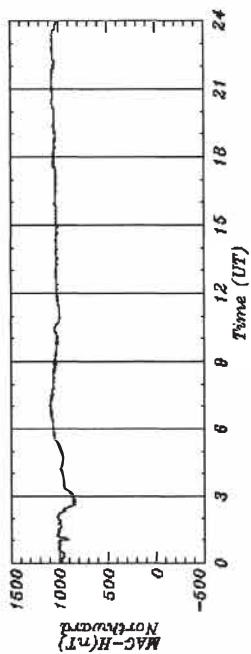
NIPR Syowa Magnetometer

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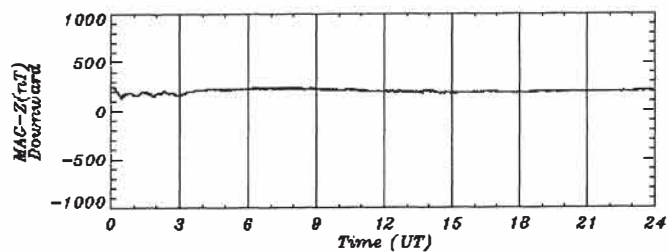
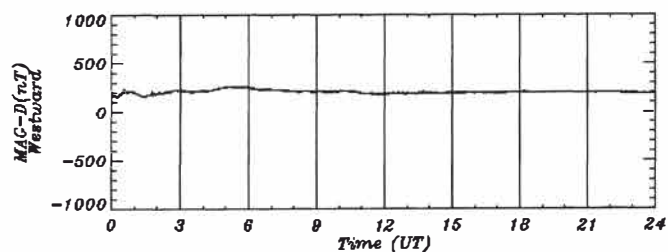
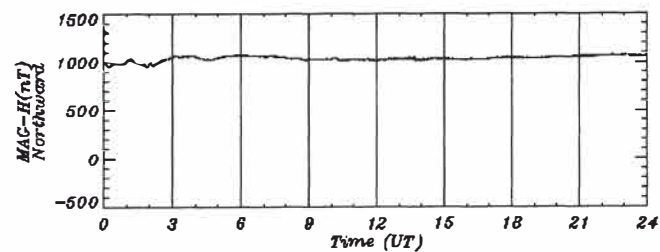
NIPR Syowa Magnetometer

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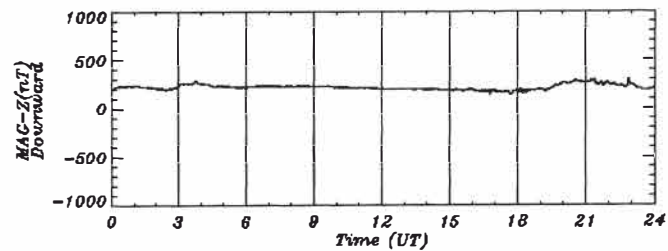
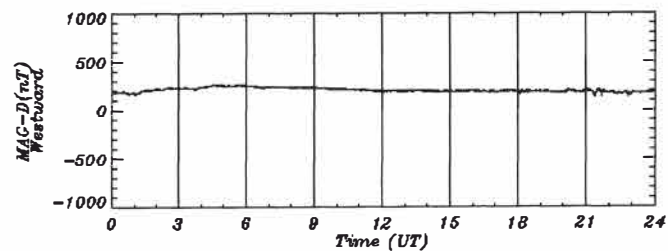
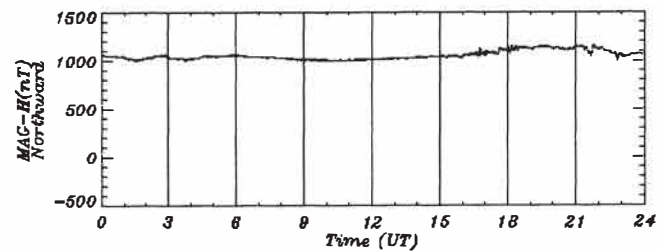
NIPR Syowa Magnetometer

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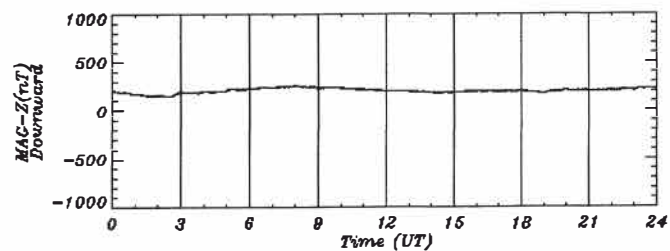
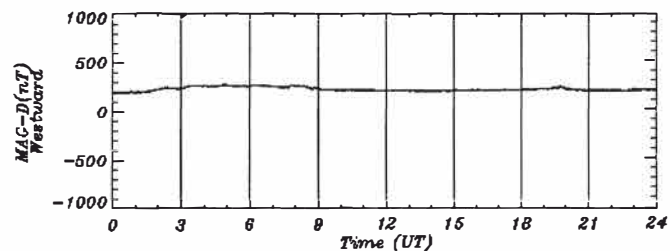
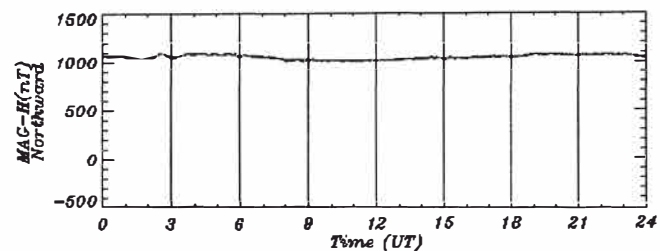
NIPR Syowa Magnetometer

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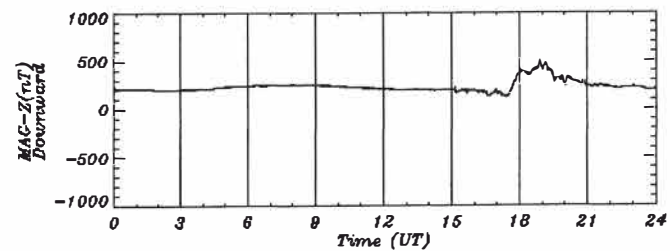
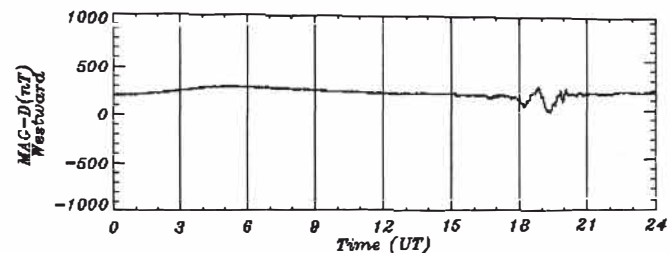
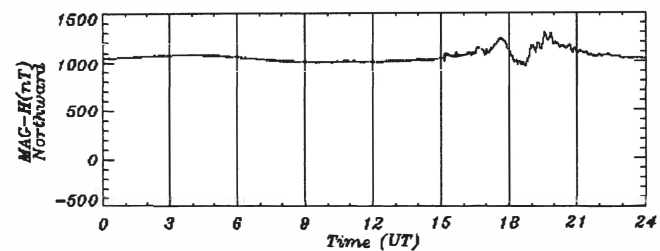
# NIPR Syowa Magnetometer

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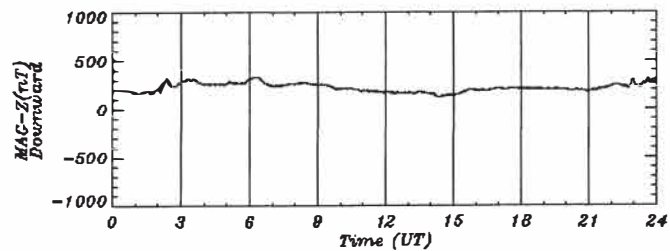
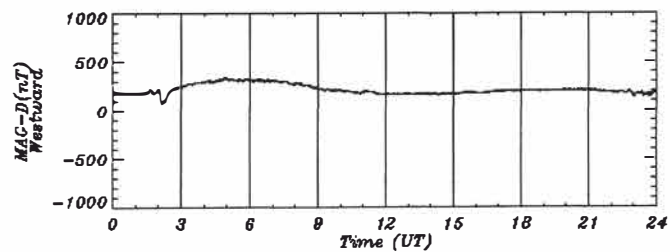
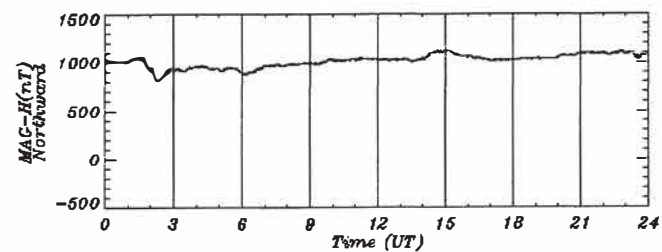
# NIPR Syowa Magnetometer

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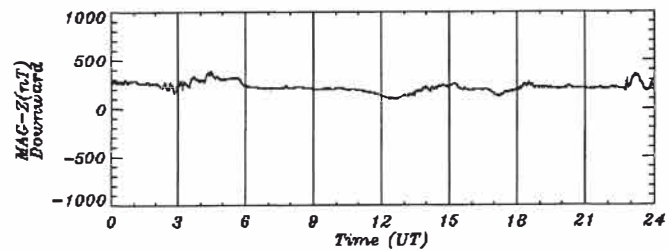
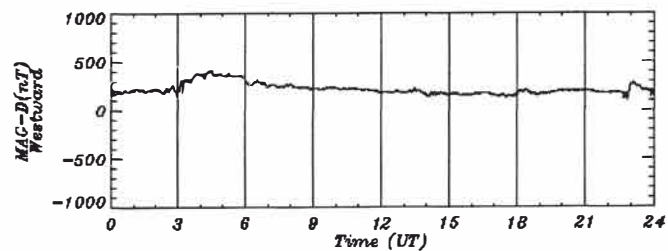
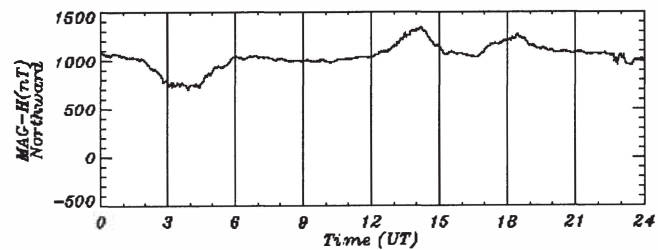
# NIPR Syowa Magnetometer

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# NIPR Syowa Magnetometer

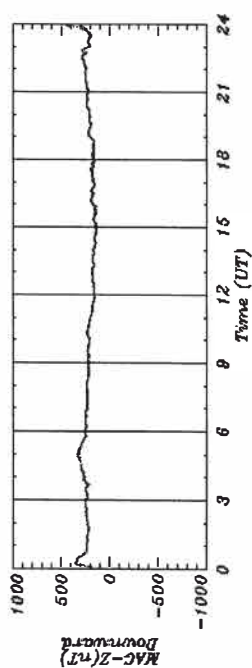
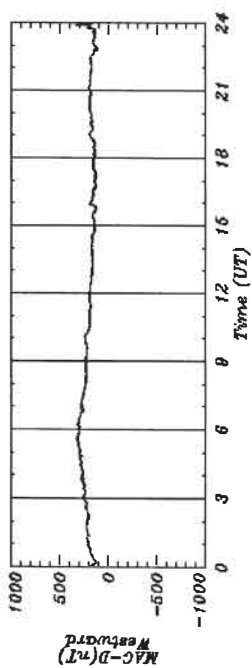
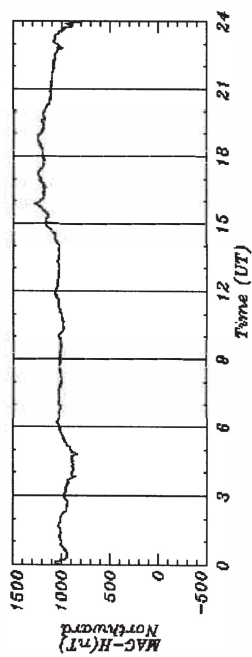
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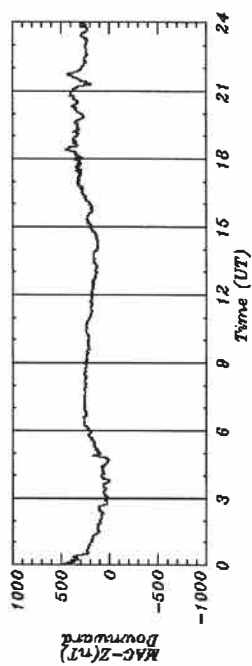
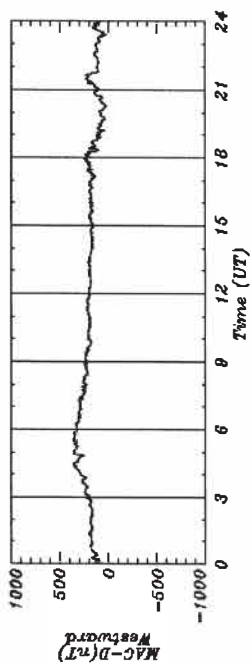
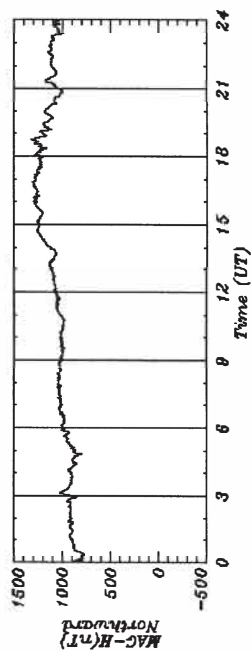
NIPR Syowa Magnetometer

2001/11/18



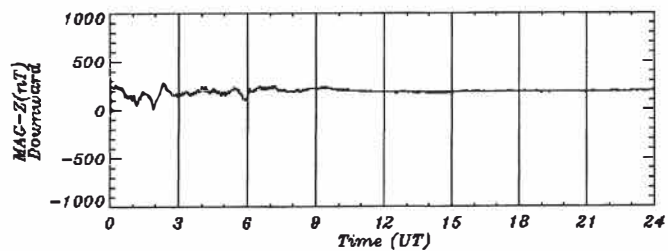
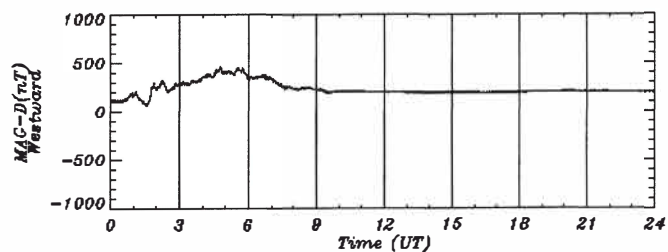
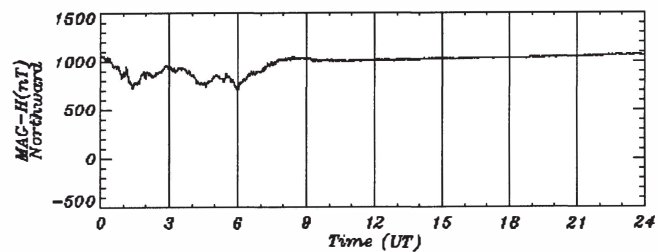
NIPR Syowa Magnetometer

2001/11/19



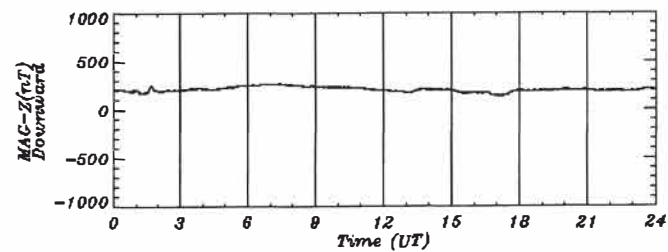
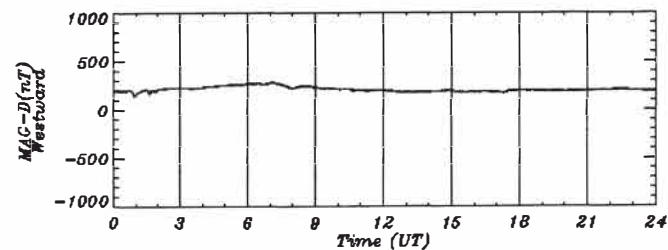
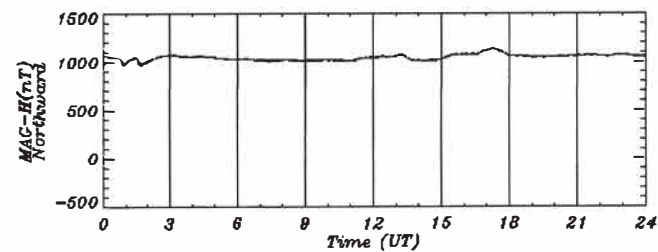
NIPR Syowa Magnetometer

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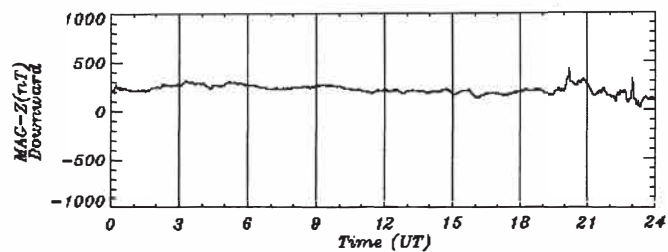
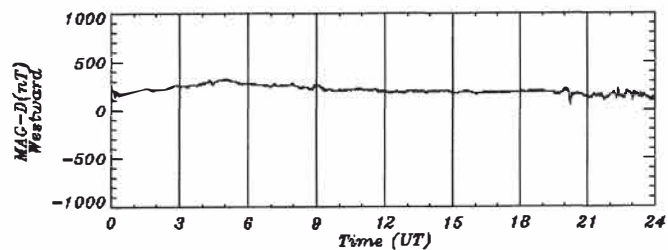
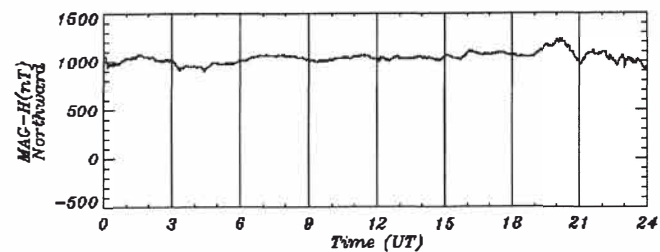
NIPR Syowa Magnetometer

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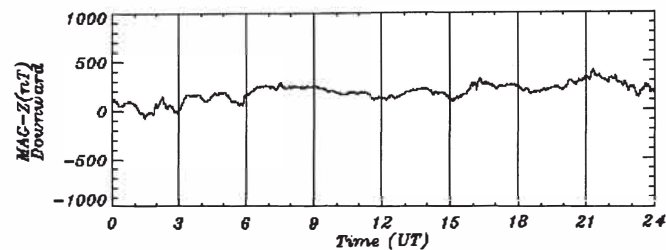
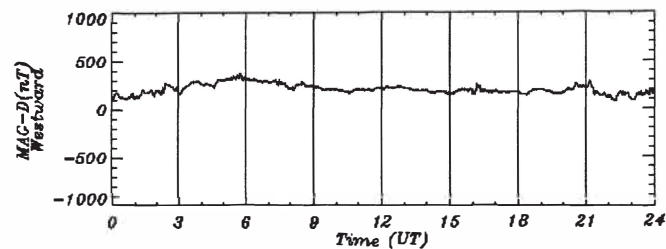
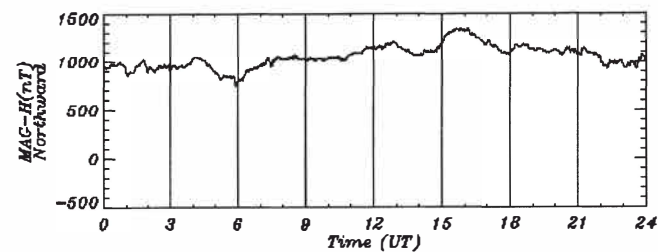
NIPR Syowa Magnetometer

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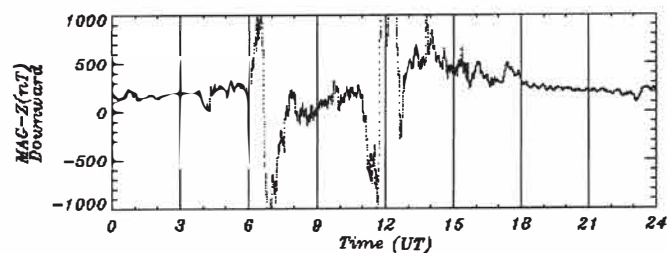
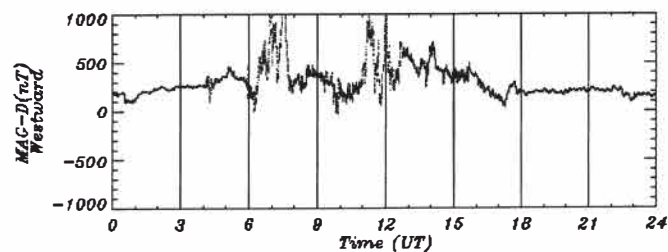
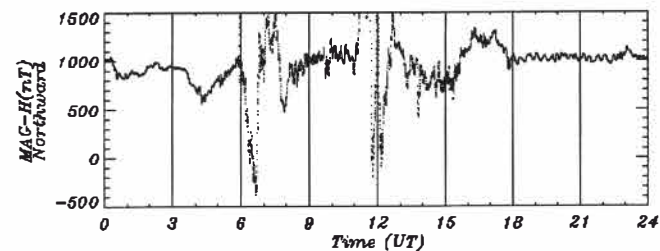
NIPR Syowa Magnetometer

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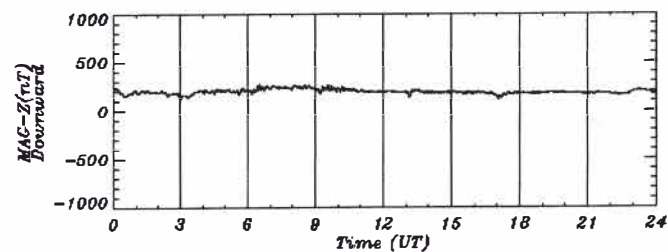
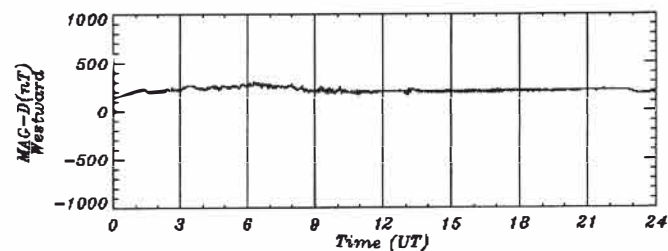
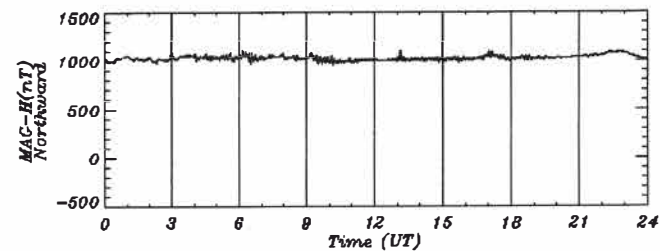
# NIPR Syowa Magnetometer

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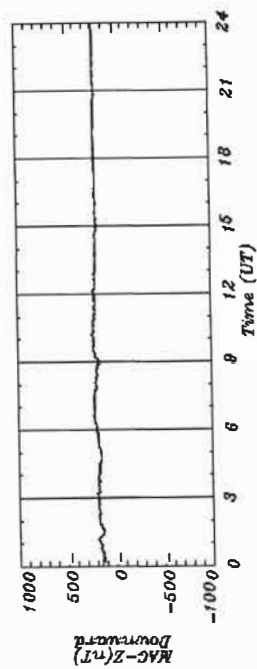
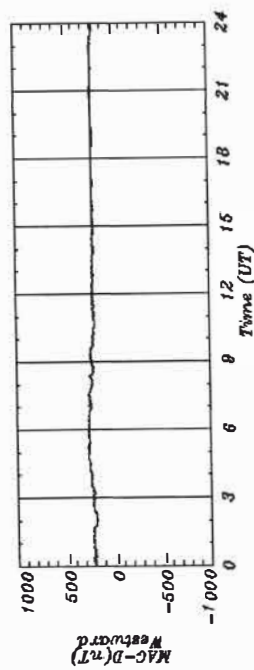
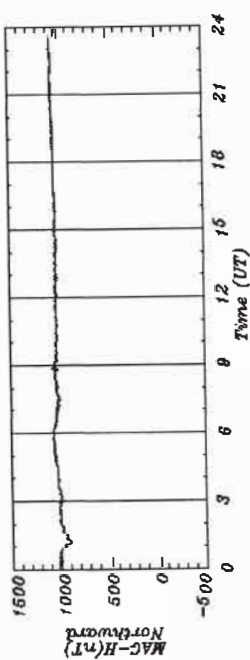
# NIPR Syowa Magnetometer

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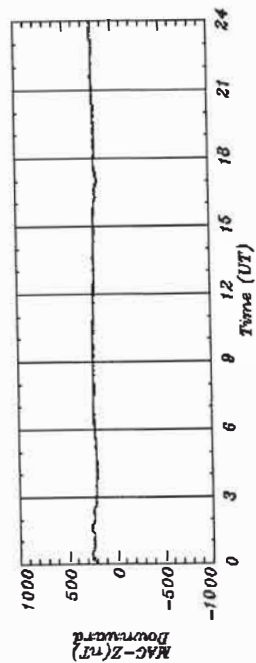
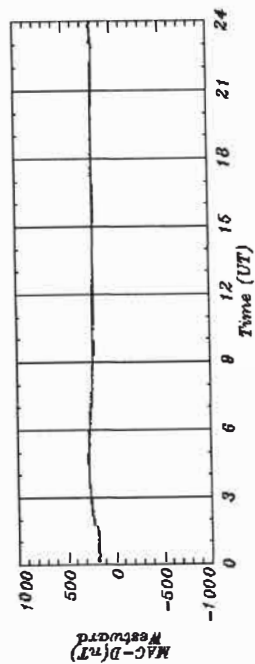
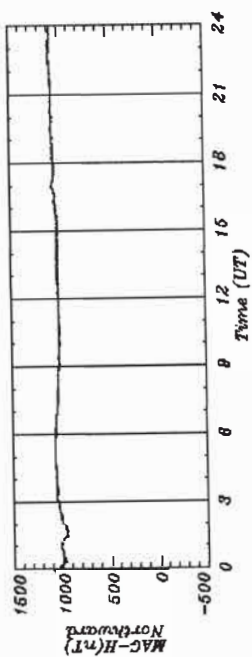
NIPR Syowa Magnetometer

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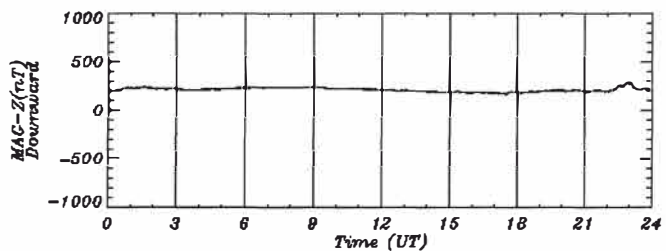
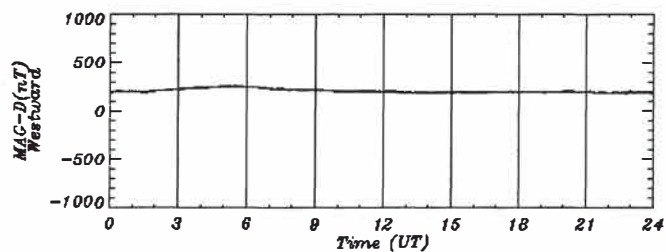
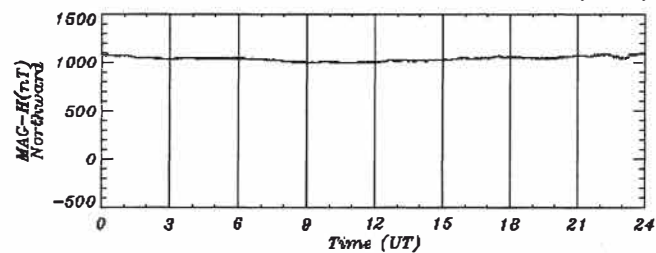
NIPR Syowa Magnetometer

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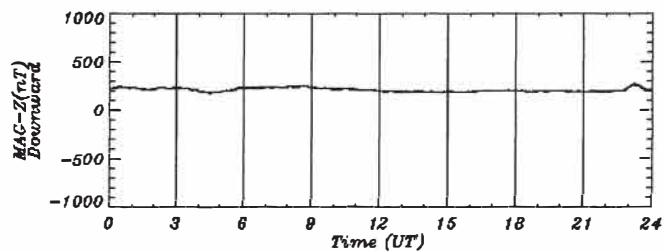
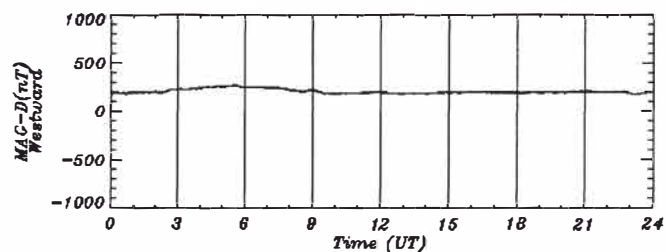
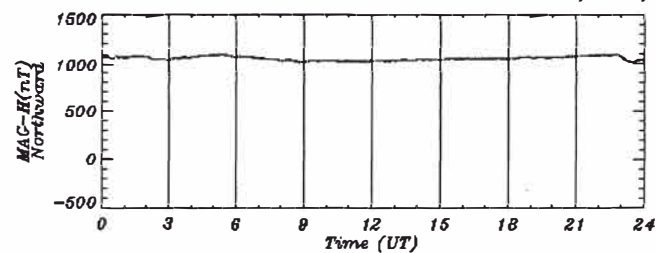
NIPR Syowa Magnetometer

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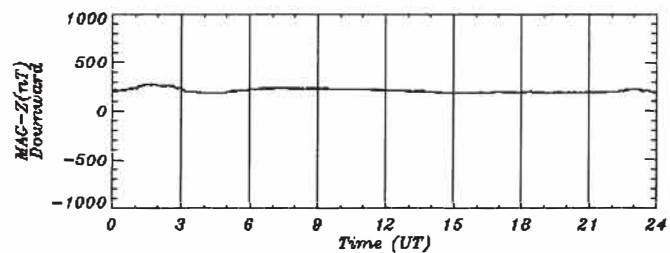
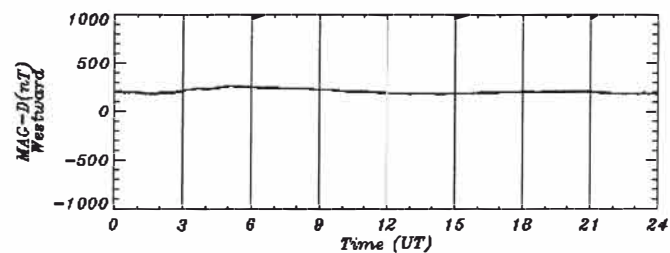
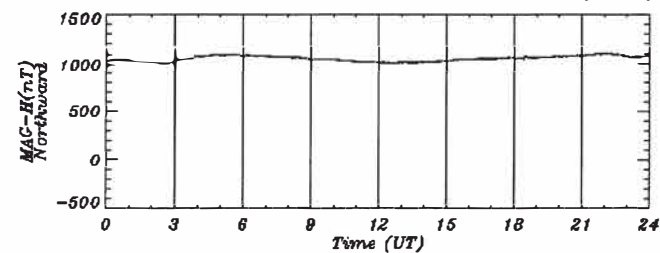
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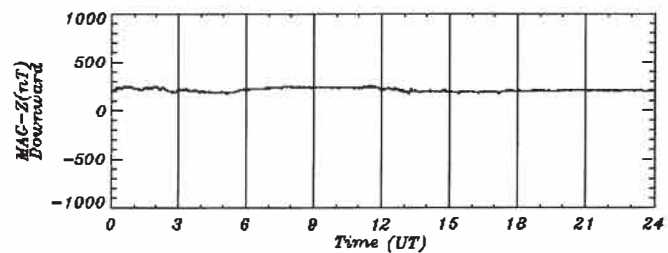
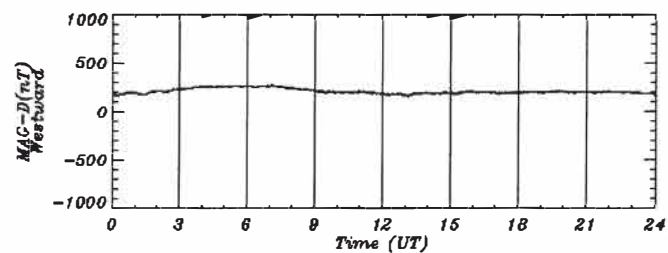
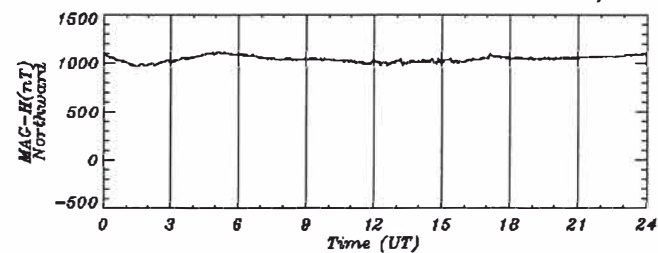
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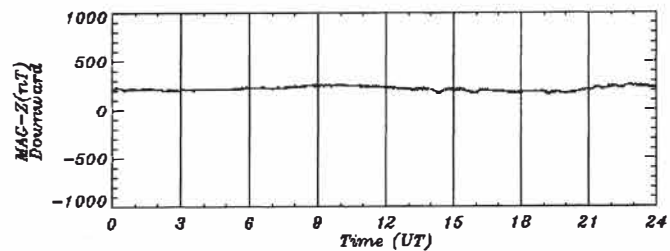
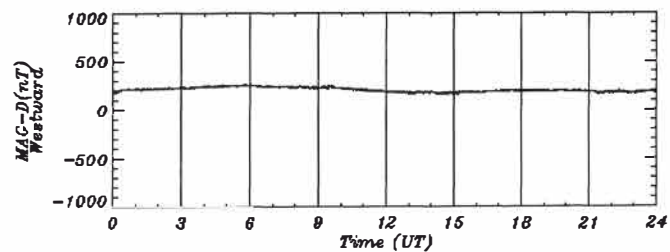
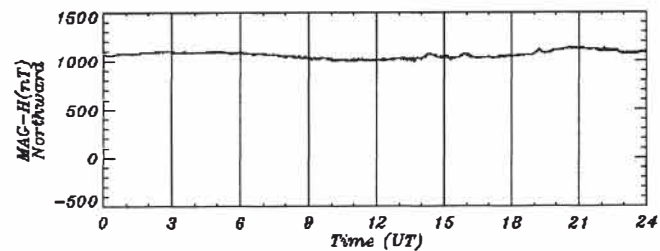
NIPR Syowa Magnetometer

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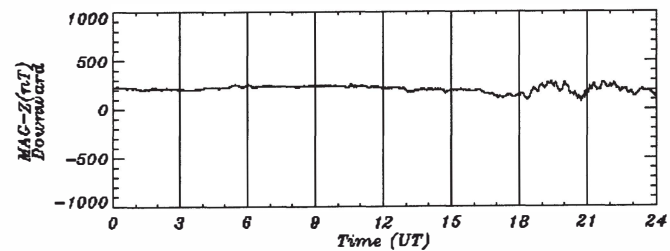
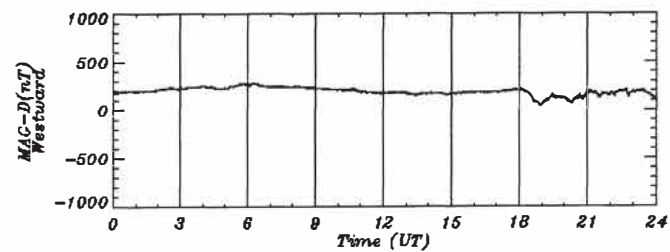
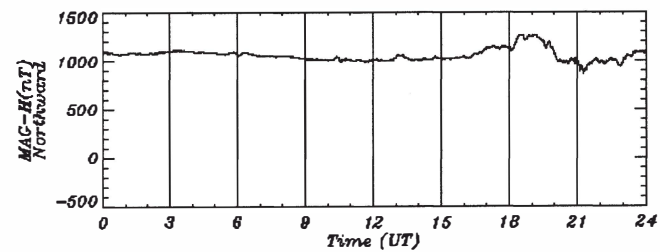
# NIPR Syowa Magnetometer

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# NIPR Syowa Magnetometer

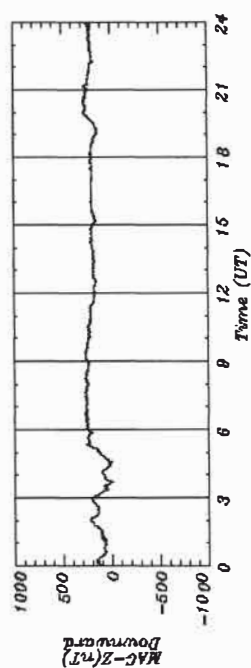
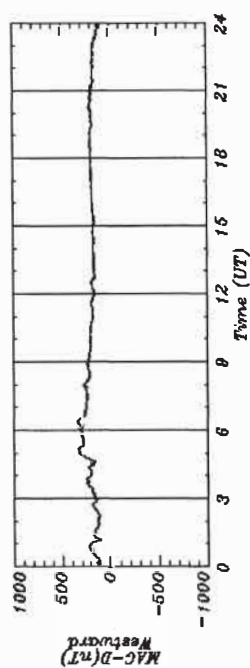
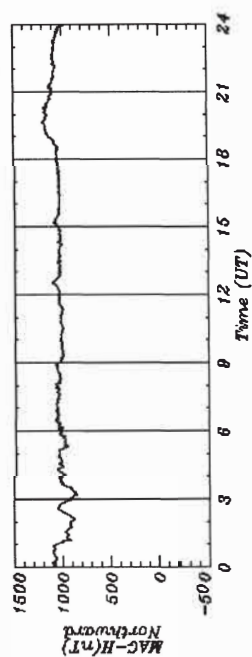
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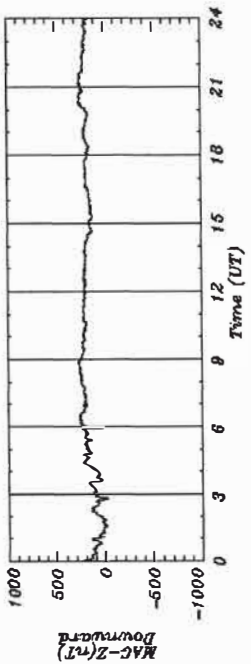
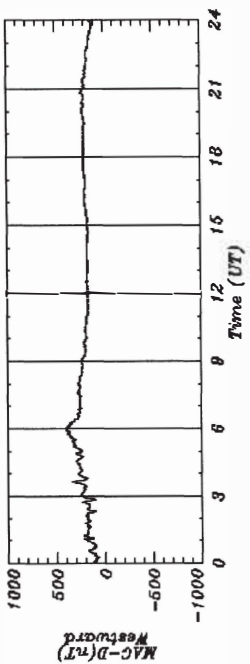
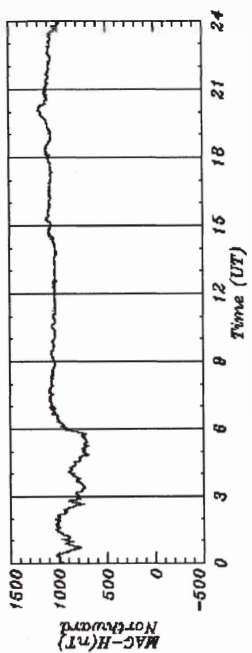
# NIPR Syowa Magnetometer

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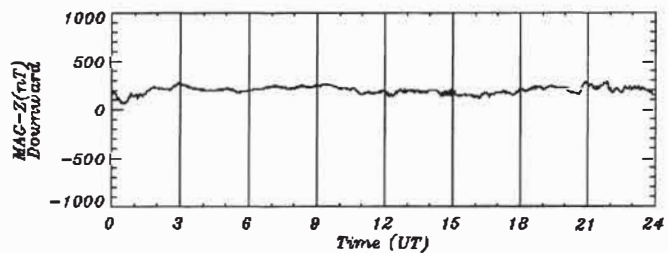
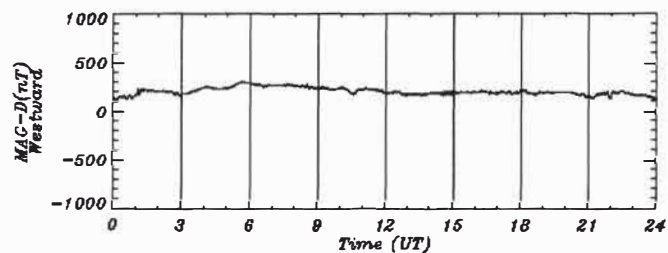
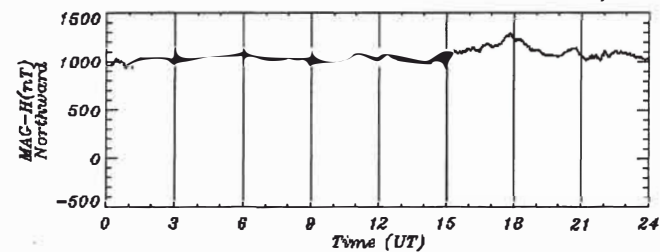
# NIPR Syowa Magnetometer

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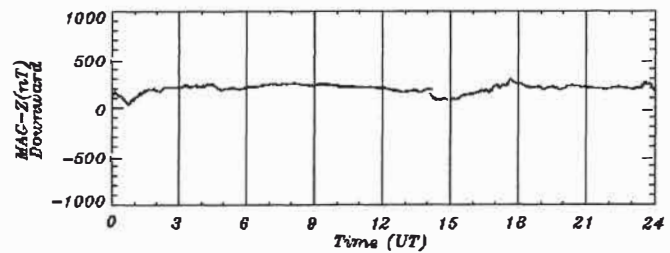
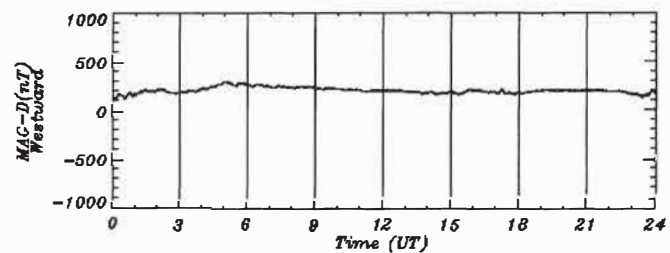
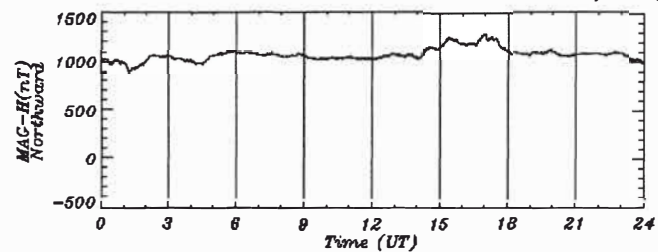
# NIPR Syowa Magnetometer

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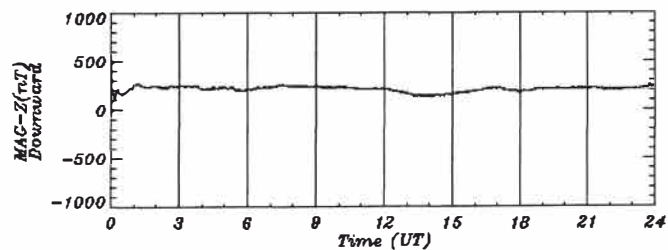
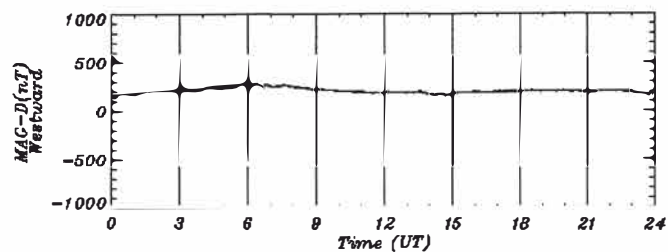
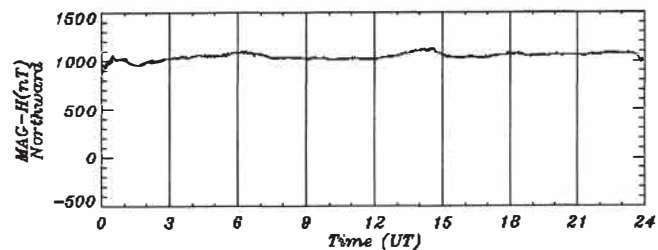
# NIPR Syowa Magnetometer

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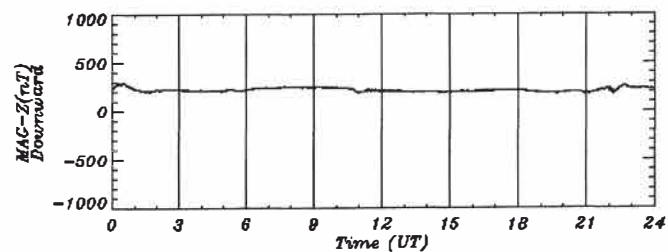
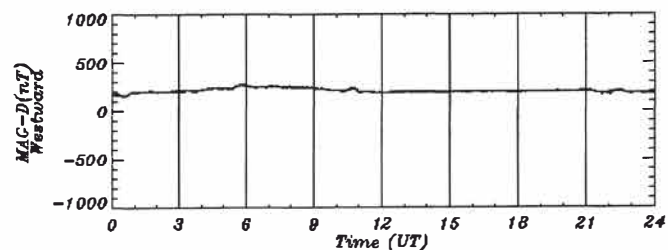
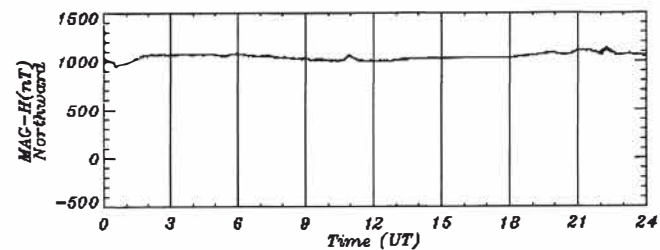
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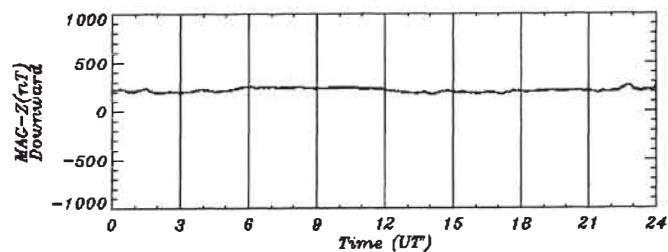
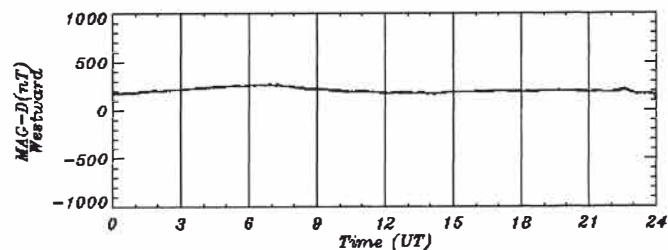
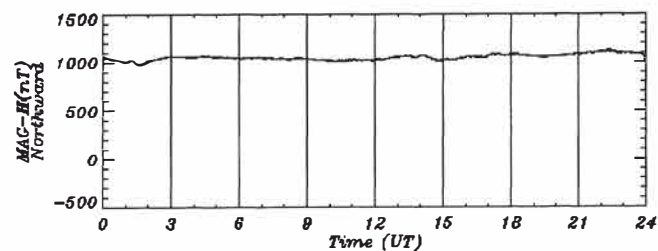
NIPR Syowa Magnetometer

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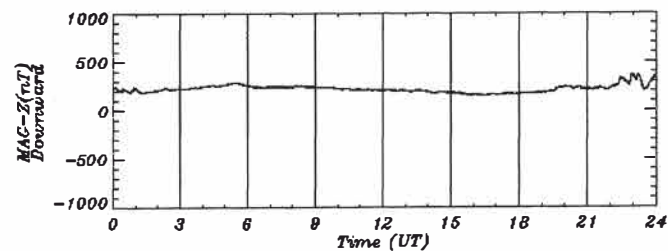
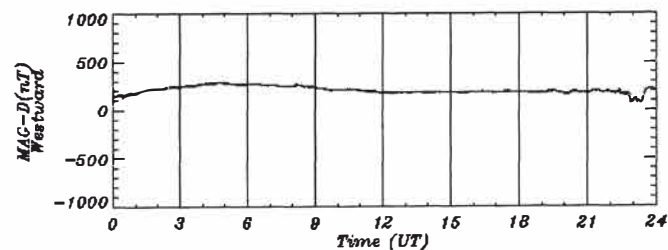
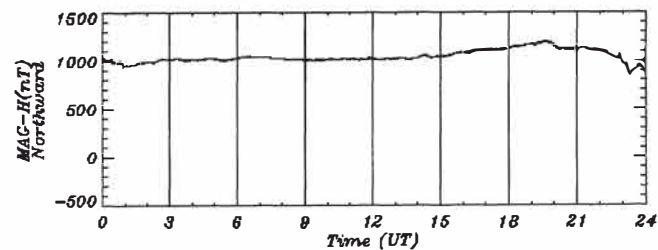
# NIPR Syowa Magnetometer

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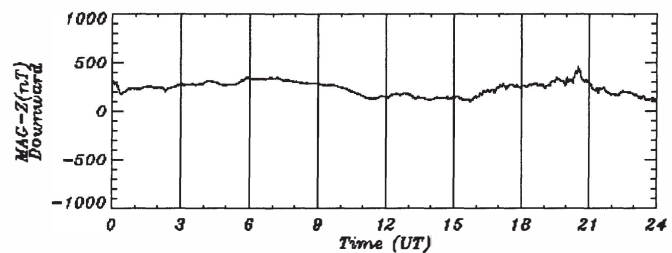
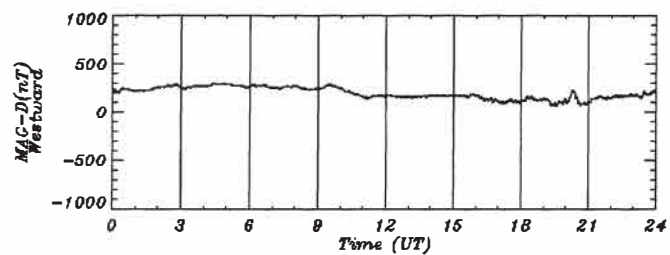
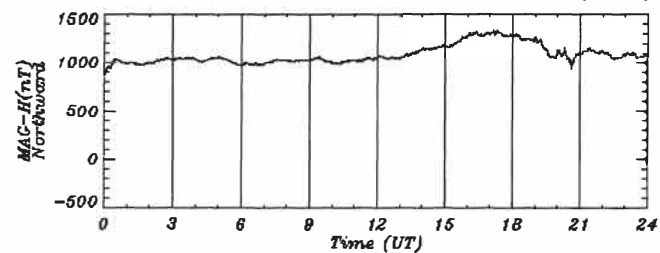
# NIPR Syowa Magnetometer

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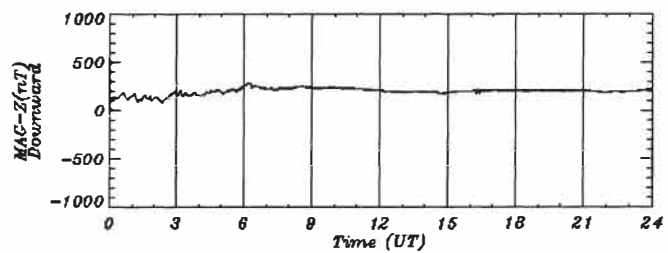
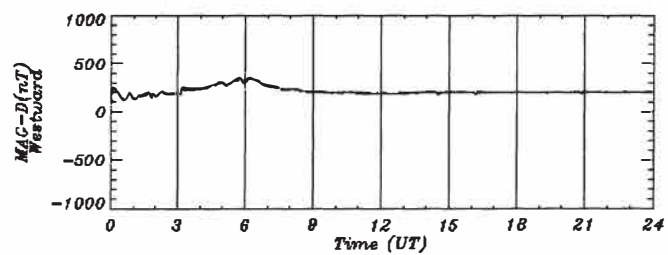
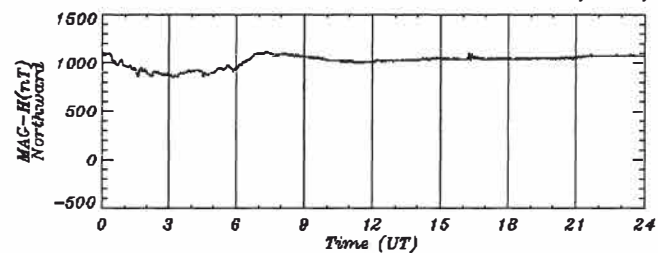
NIPR Syowa Magnetometer

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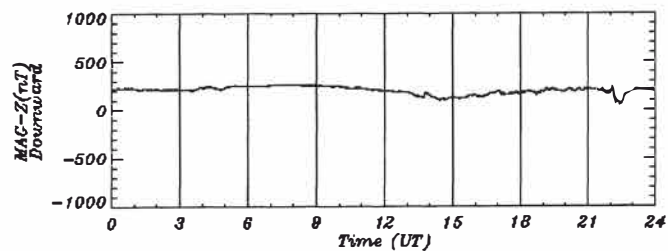
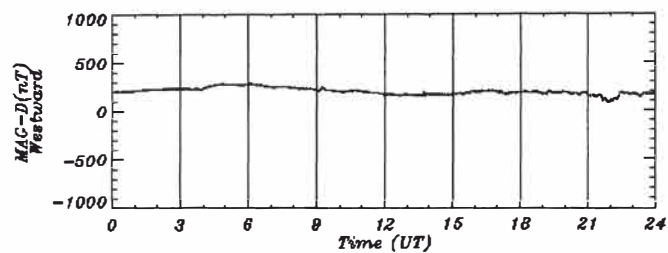
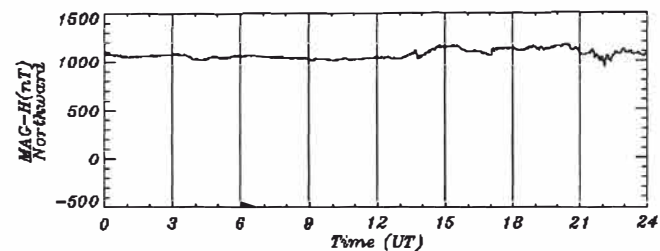
NIPR Syowa Magnetometer

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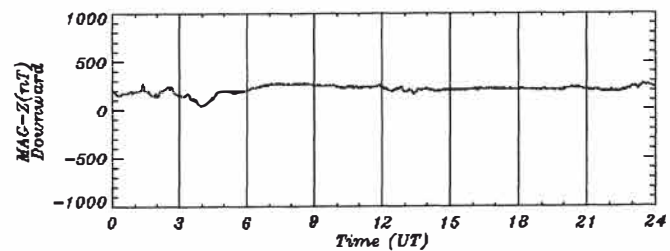
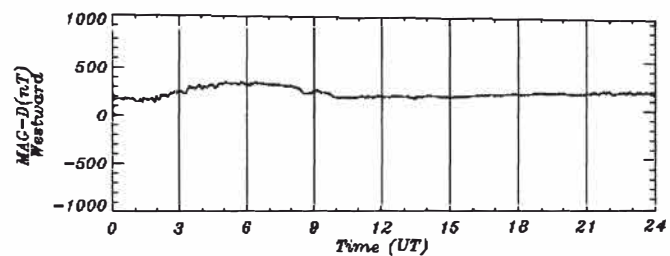
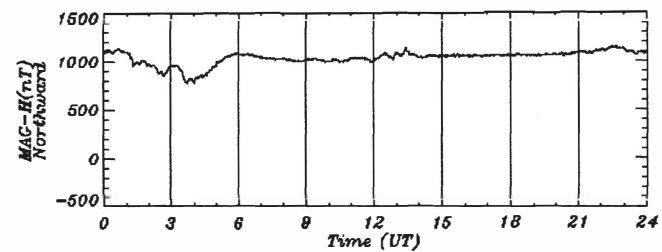
NIPR Syowa Magnetometer

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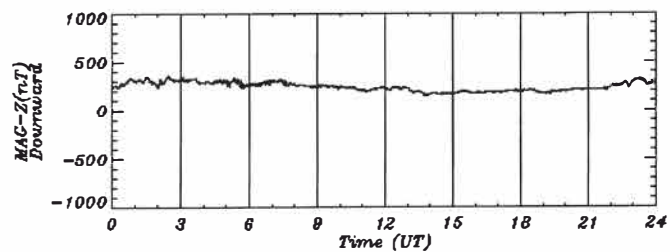
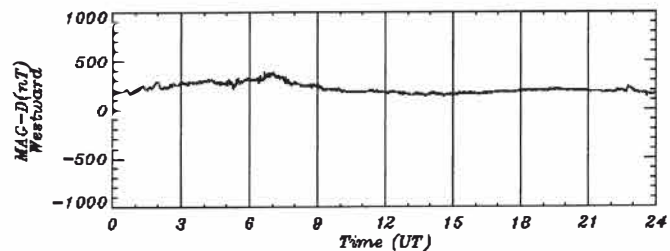
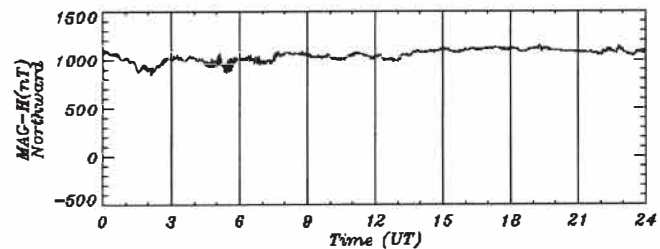
NIPR Syowa Magnetometer

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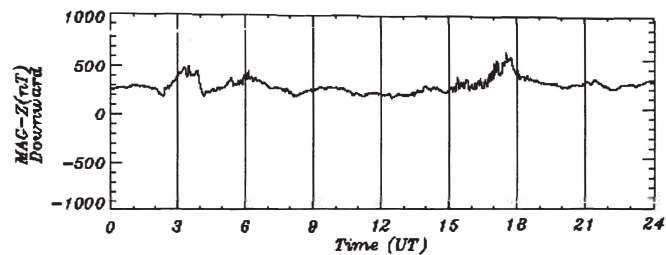
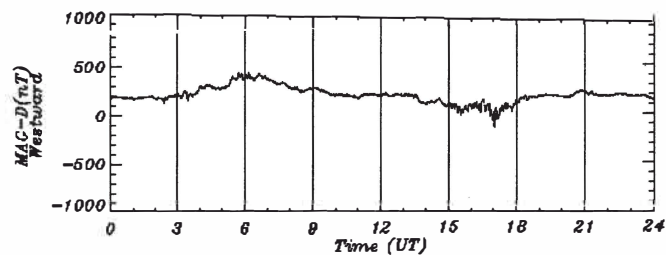
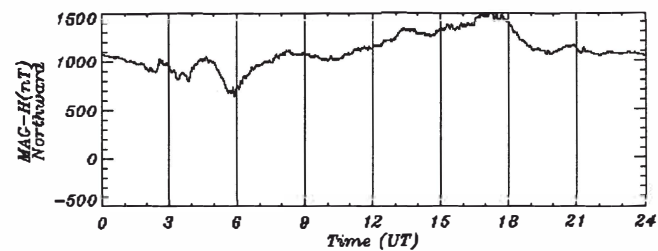
NIPR Syowa Magnetometer

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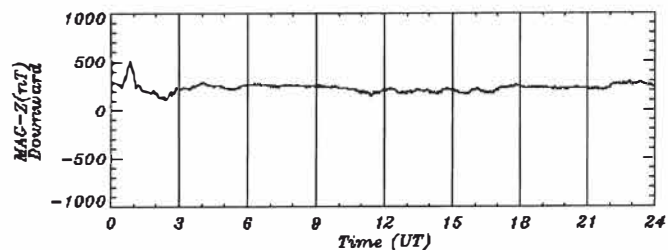
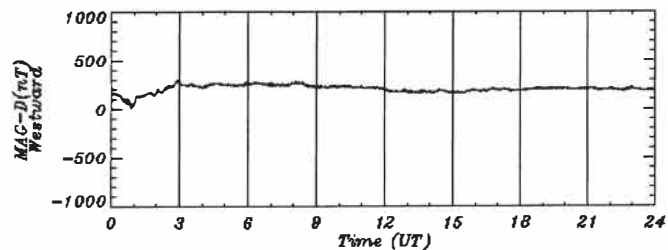
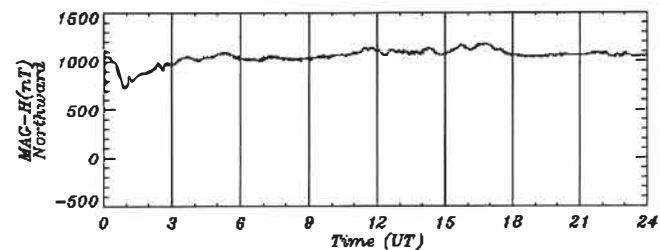
NIPR Syowa Magnetometer

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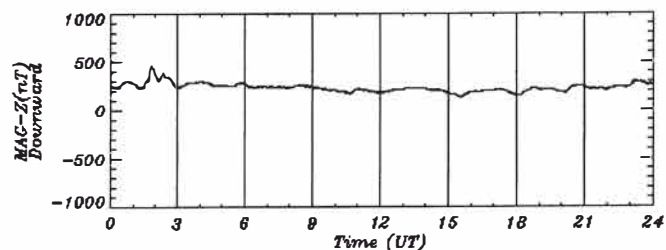
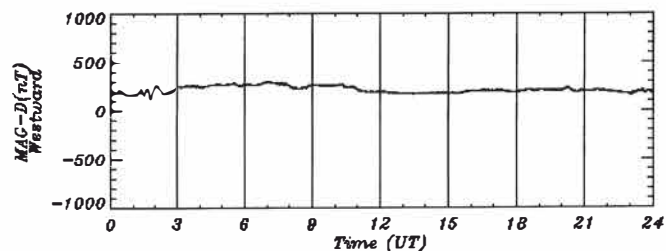
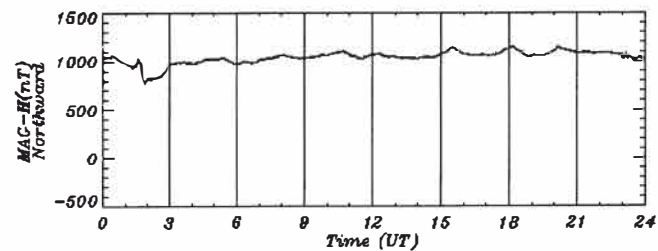
NIPR Syowa Magnetometer

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NIPR Syowa Magnetometer

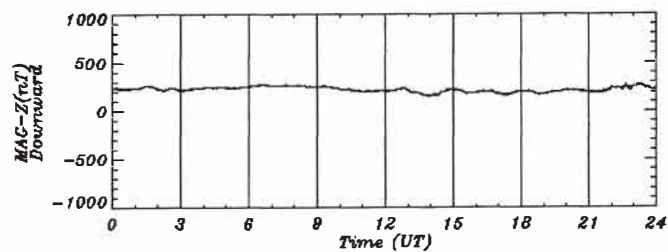
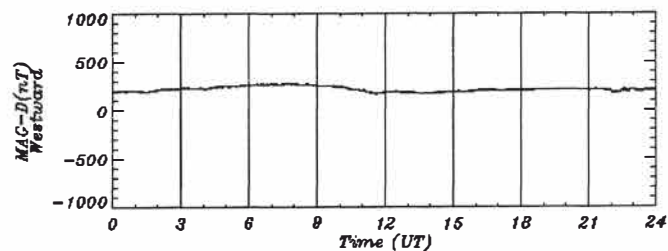
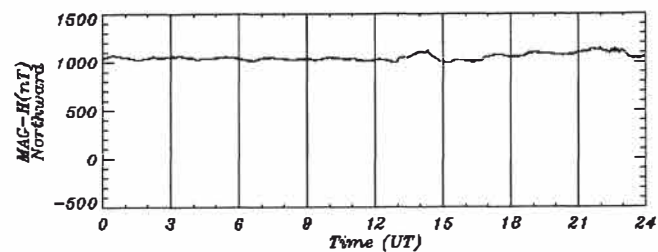
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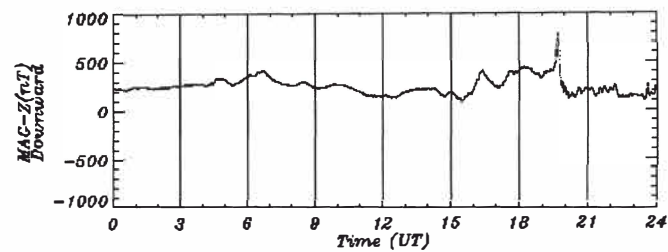
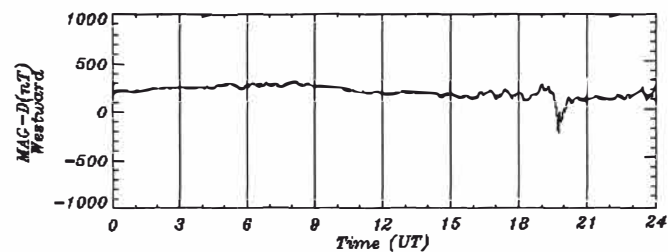
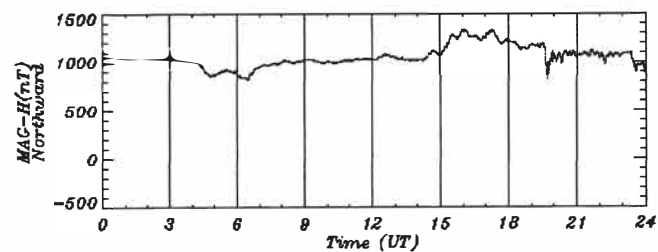
NIPR Syowa Magnetometer

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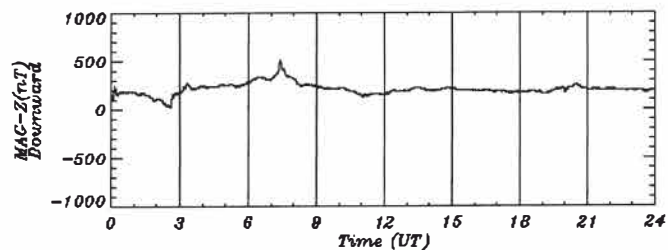
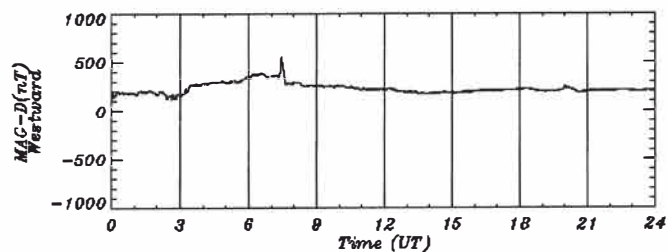
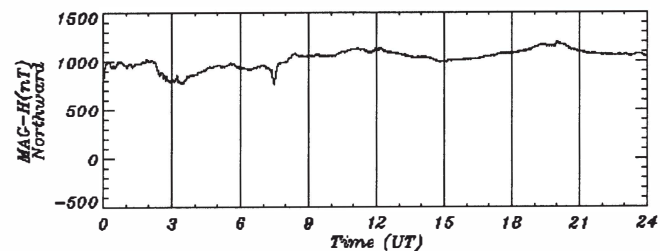
NIPR Syowa Magnetometer

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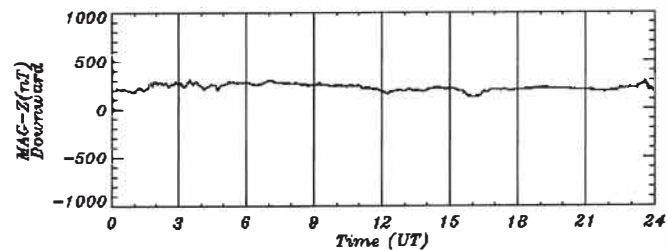
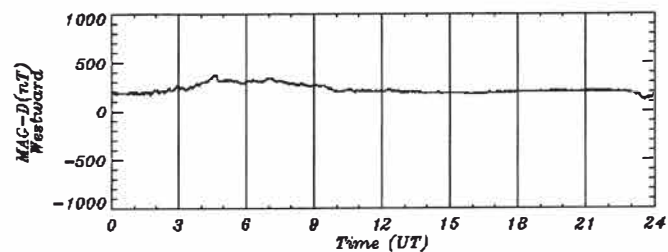
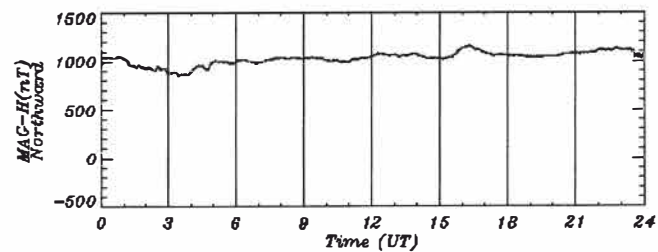
NIPR Syowa Magnetometer

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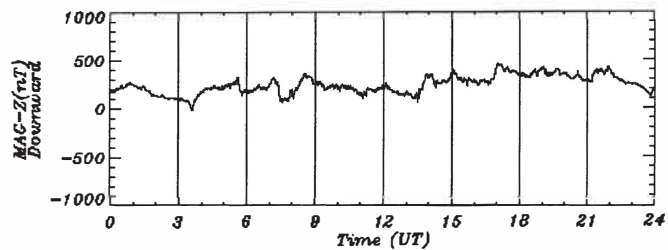
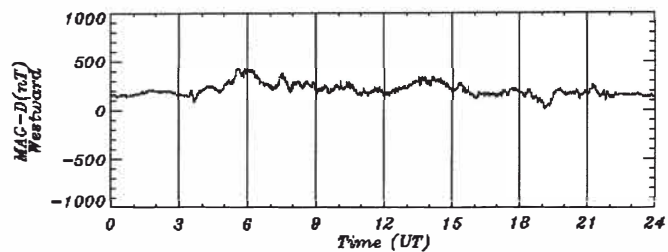
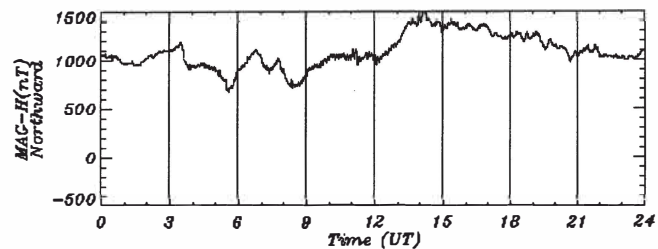
NIPR Syowa Magnetometer

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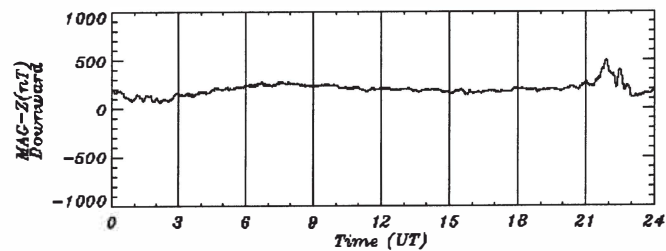
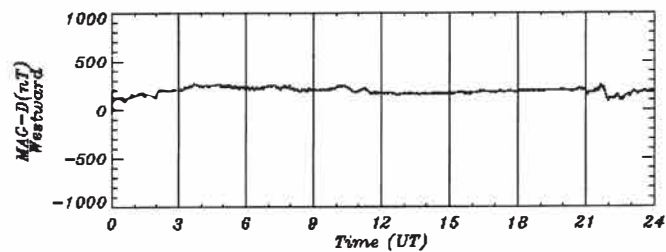
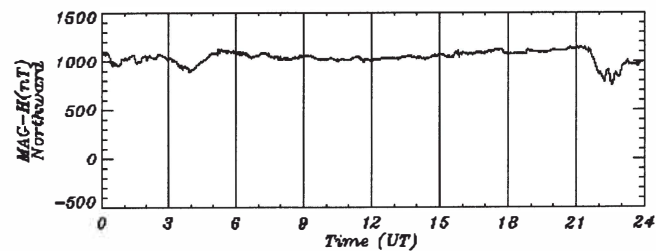
NIPR Syowa Magnetometer

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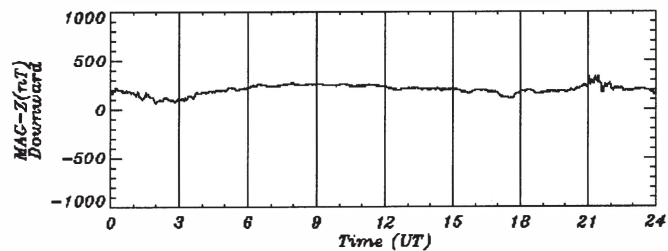
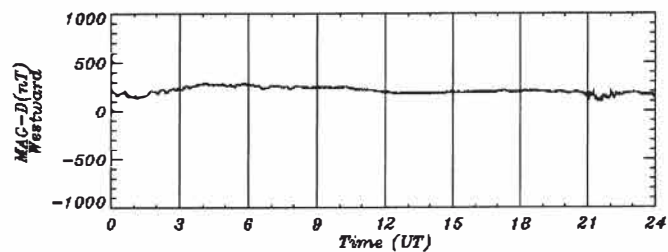
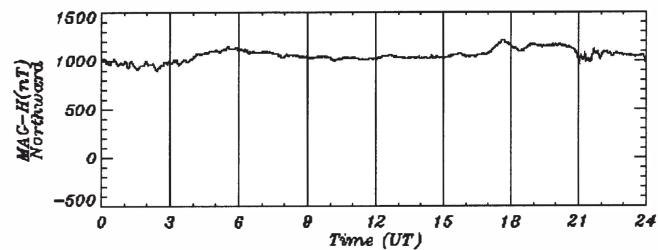
NIPR Syowa Magnetometer

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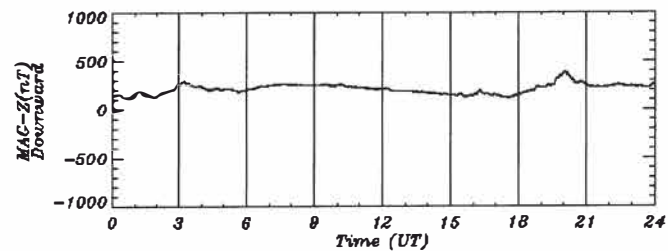
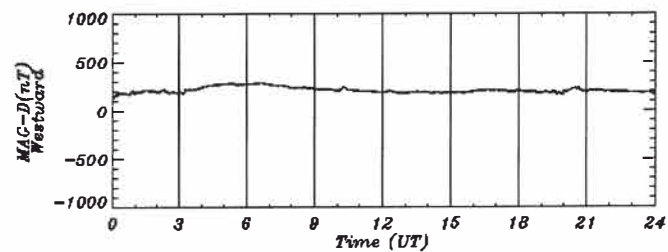
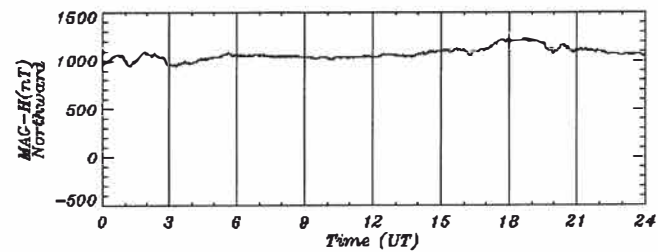
NIPR Syowa Magnetometer

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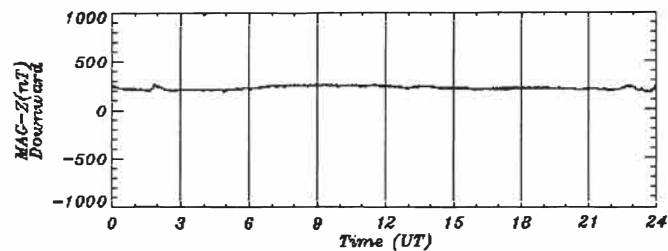
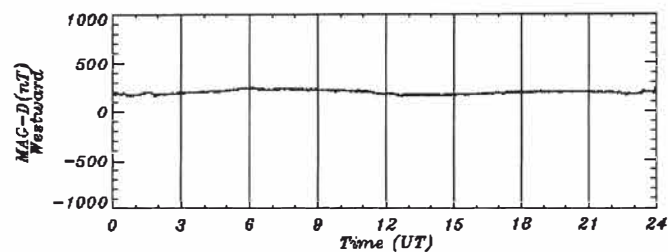
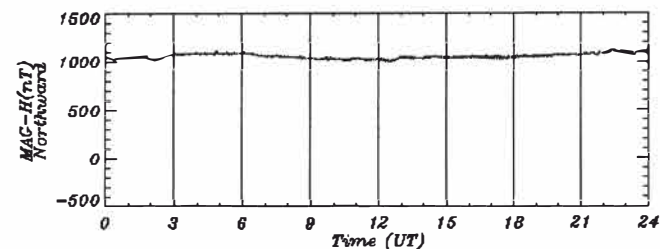
NIPR Syowa Magnetometer

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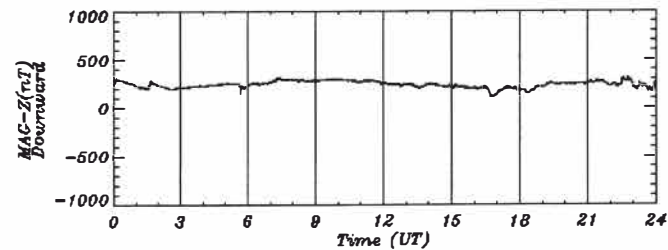
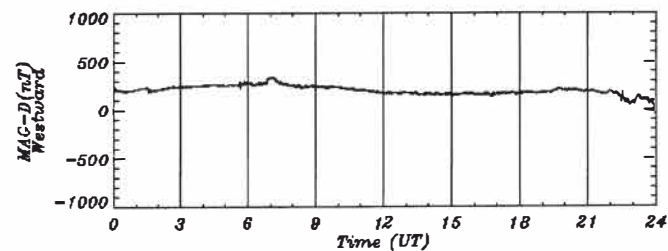
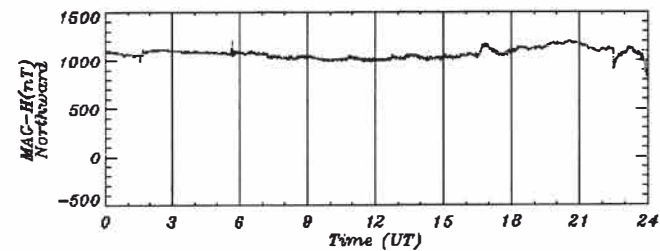
# NIPR Syowa Magnetometer

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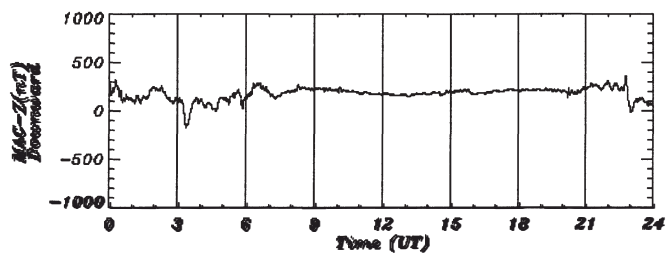
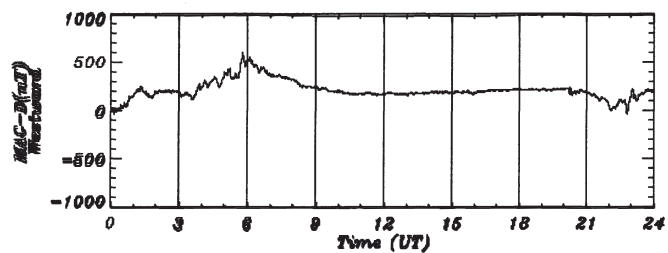
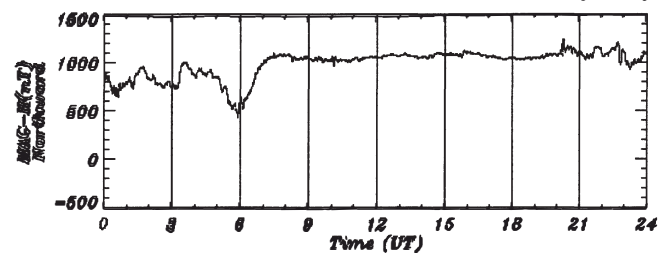
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