

RUSSIAN ACADEMY OF SCIENCES
KOLA SCIENCE CENTRE



PGI
GEOPHYSICAL DATA

2011
APRIL
MAY
JUNE

POLAR GEOPHYSICAL INSTITUTE
MURMANSK, APATITY, RUSSIA

PGI
GEOPHYSICAL DATA

V. VOROBJEV, editor

V. Brusentsova, N. Golubtsova and L. Kogay, make-up editors

This bulletin presents the preliminary ground-based optical, geomagnetic and cosmic ray data obtained by Polar Geophysical Institute in the second quarter of 2011. All-sky camera observations are published only for the quarters when observations were carried out. All data are available by request.

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DATA DESCRIPTION

Magnetic data

The magnetograms (H, D, and Z) are plotted as magnetic variations recorded in Loparskaya and Lovozero stations by the three component Bobrov type magnetometer with a sampling frequency of 10 samples per seconds. The instrument has a range ± 2620 nT and a resolution of 5 pT. Magnetic observations are gathered every second and registered in the digital form as the 10-sec averaged data. Digits in the plots at the left hand side denote the scale of the records in nT/div. Timing is provided by the GPS.

Magnetic quiet values for H, D and Z components are shown by dotted line as a daily averaged magnetic activity level for three magnetically quiet days of each month. Quiet days are brand by the symbol Q in tables of geomagnetic K-indices.

Geomagnetic K-indices

The hourly K-indices indicate the level of geomagnetic field disturbance. The maximum deflection of two components H and D from the magnetic quiet value during one hour interval have been recalculated to the value of the local hourly K-index. The following scale has been used:

K-indices	Deflection in nT
0	0-15
1	15-30
2	30-60
3	60-120
4	120-210
5	210-360
6	360-600
7	600-990
8	990-1500
9	1500 and more

Cosmic ray data

The 18-NM-64-neutron monitor has been operating in Apatity since 1969. A plot of pressure corrected hourly data (count accumulated during one hour interval) is presented in units of percent with respect to the monthly mean intensity. Mean values are:

April	457 240
May	462 520
June	449 987

The hourly data are sent to WDC-B2 (Moscow) and WDC-C (Japan).

Please visit also our Internet pages: <http://pgia.ru>

All-sky camera observations

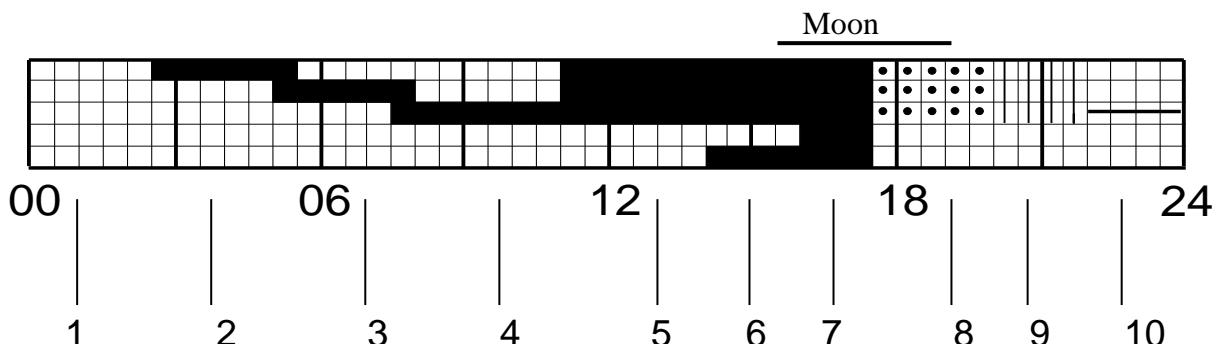
Calendar

Calendar shows the intervals of digital all-sky camera observations in Lovozero and Loparskaya, which are available during dark periods from 1400 to 0600 UT.

Ascaplots

All-sky camera observations are presented in this bulletin in the form of the standard five lines ascaplot. A detailed description of askaplots interpretation was published in: Annals of International Geophysical Year. V. XX. Part 1. P. 1-5. 1962.

Example of an ascaplot and the legend are given below. Top three lines give information on the existence of aurorae in north, zenith and south ranges of the sky, respectively. The fourth and fifth lines in the standard five lines ascaplot give the zenith range auroral intensity. We do not use all-sky camera observations to form a correct estimate of the auroral intensity.



- 1- no aurora
- 2- aurora present in north range
- 3- weak aurora present in zenith range
- 4- aurora present in south range
- 5- aurorae present in north, zenith and south ranges
- 6- medium aurora in zenith, aurorae present in north and south ranges
- 7- strong aurora in zenith, aurorae present in north and south ranges
- 8- partial cloudiness
- 9- total cloudiness
- 10- no operation

Keograms

Black white keograms show the auroral display along the geomagnetic meridian of station. Here we present a few selected auroral events observed at Lovozero and/or Loparskaya in night-time interval from 17 00 UT to 01 00 UT. Zenith angles are given along the vertical axis. Magnetic north is at the top of the figure.

Attention:

There are gaps in Loparskaya magnetometer data because some problems with electric power during the second quarter of 2011.

Magnetometer in Tumanny is not in operation from February 10, 2010

Coordinates of stations

Stations	Code	Geographic		Corr. Geomagnetic	
		Lat	Long	Lat	Long
Loparskaya	LOP	68.63° N	33.25° E	64.94° N	113.6° E
Lovozero	LOZ	67.97° N	35.02° E	64.17° N	115.3° E
Apatity	APT	67.58° N	33.31° E	63.86° N	113.6° E

Please visit

<http://pgia.ru>

Contact information:

	Phon	<i>e-mail</i>
Vyacheslav Vorobjev, Editor	+7-815-55-79-592	<i>vorobjev@pgia.ru</i>
Sergei Chernyakov, head of LOP	+7-815-53-48-339	<i>sergeich@pgi.ru</i>
Valentin Kosolapenko, head of LOZ	+7-815-238-31-382	<i>valkos@pgia.ru</i>

Polar Geophysical Institute
Academgorodok, 26a, APATITY
184209, RUSSIA

GEOMAGNETIC K-INDICES, LOVOZERO
 April, 2011
 Lower limit of K=9 is 1500 nT

Day	Time, UT								
	03	06	09	12	15	18	21	24	
1	200	000	011	222	221	123	424	466	
2	655	332	222	234	221	101	354	476	
3	455	322	121	122	233	321	344	643	
4	532	222	111	112	221	210	001	101	
5	122	221	111	211	110	000	114	543	
6	112	222	211	233	456	644	346	652	
7	233	222	221	111	100	000	021	100	
8	001	111	112	222	212	113	314	566	
9	555	311	222	222	222	211	000	001	
10	201	111	111	111	113	321	211	222	
11	321	112	111	122	223	334	321	111	
12	111	112	---	432	343	553	201	246	
13	---	--2	232	222	111	100	000	000	
14	001	211	212	122	110	000	000	113	
15	321	111	112	221	211	111	110	000	
16	000	112	212	222	221	111	112	100	
17	011	111	111	222	111	111	101	100	Q
18	000	111	211	233	333	323	100	110	
19	001	112	222	222	221	110	000	111	
20	212	134	322	222	221	000	010	100	
21	001	112	222	222	211	111	111	110	
22	012	112	222	322	211	111	100	110	
23	011	111	111	122	111	011	100	000	Q
24	110	001	111	112	222	331	101	255	
25	011	122	111	111	111	011	100	000	
26	011	122	221	211	110	000	001	000	Q
27	001	122	212	211	100	111	100	000	
28	000	112	212	111	111	022	211	111	
29	111	111	111	122	212	211	233	653	
30	464	322	322	245	454	312	446	665	

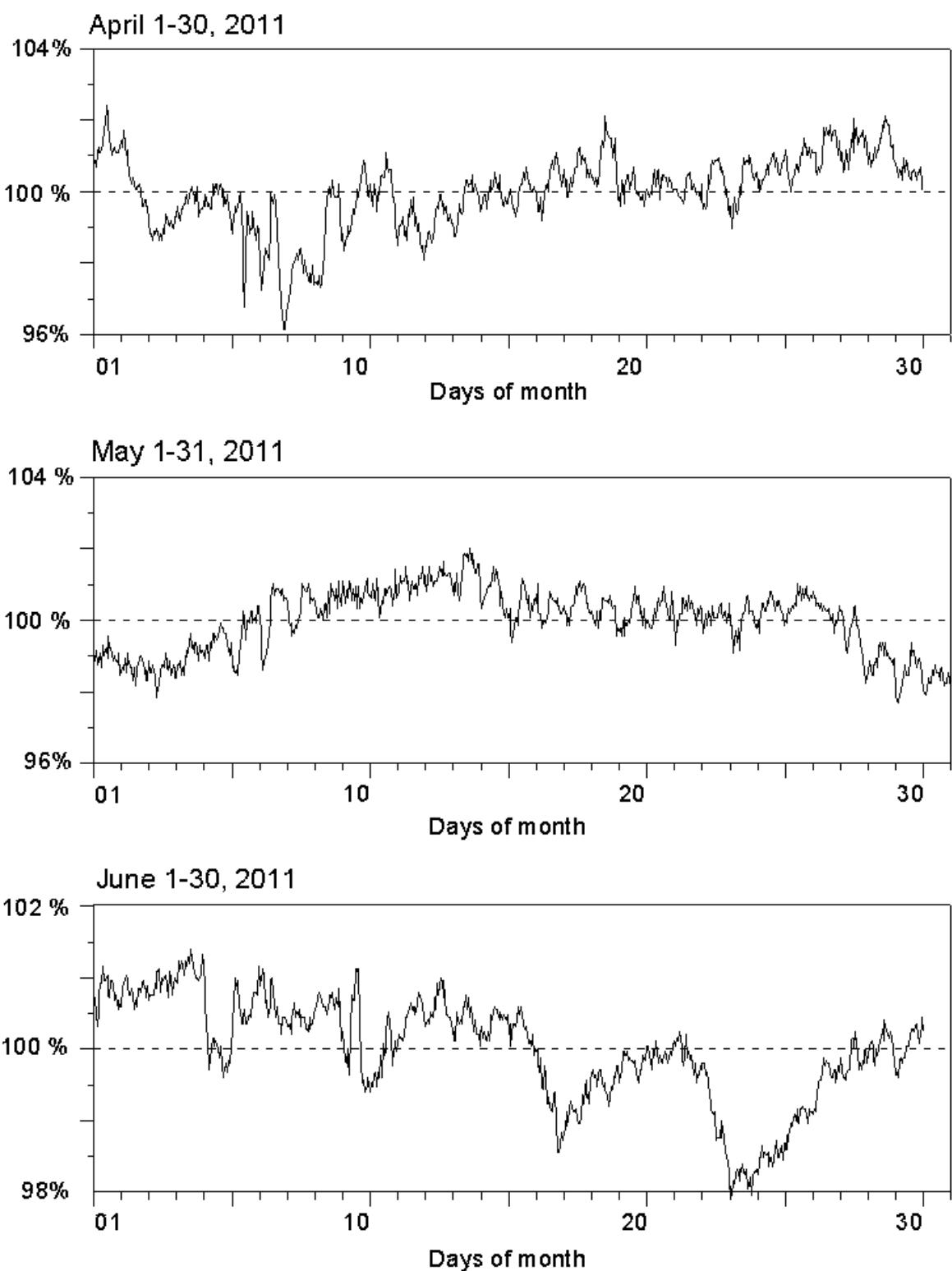
GEOMAGNETIC K-INDICES, LOVOZERO
 May, 2011
 Lower limit of K=9 is 1500 nT

Day	Time, UT								
	03	06	09	12	15	18	21	24	
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2	4 5 5	4 4 4	3 3 3	2 2 4	3 3 3	3 4 2	5 4 3	4 5 6	
3	5 5 3	4 4 2	1 2 2	1 3 3	2 2 3	3 3 2	3 3 3	4 4 3	
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6	0 0 1	2 2 2	2 1 1	1 2 2	1 2 1	1 1 1	1 1 1	0 1 1	Q
7	1 1 1	2 2 2	2 1 1	1 2 2	2 3 2	2 3 3	1 2 4	4 2 1	
8	1 2 2	2 2 1	1 1 1	1 1 2	2 2 1	0 0 1	1 1 2	2 0 0	
9	1 1 1	2 1 1	1 1 1	2 2 2	2 2 1	1 2 1	1 1 1	1 1 1	
10	1 1 1	2 1 1	1 1 1	2 2 2	2 2 3	4 4 4	3 2 5	5 3 3	
11	3 3 2	2 1 1	1 1 1	1 1 2	2 2 1	1 1 1	2 0 0	0 0 0	
12	1 1 1	1 1 1	1 1 1	1 1 1	1 1 1	0 0 1	1 1 1	1 1 0	Q
13	0 1 1	1 2 1	1 1 1	1 2 2	2 2 1	1 1 1	1 1 1	1 1 1	
14	1 1 0	1 1 1	1 1 1	1 1 1	2 2 1	1 1 1	1 1 1	1 1 2	
15	2 1 1	1 2 2	2 1 1	2 2 2	2 2 3	3 4 4	2 2 0	0 4 4	
16	5 4 2	2 2 2	2 1 2	3 2 3	3 2 2	3 3 3	2 3 3	1 1 2	
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18	1 2 2	2 2 1	1 2 2	1 1 2	2 2 2	2 3 2	2 1 0	0 0 0	
19	1 1 1	2 2 2	1 1 2	2 2 2	2 2 1	1 1 1	0 1 0	0 0 0	
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22	1 1 1	1 2 1	2 1 2	2 2 2	1 1 0	1 1 1	2 1 1	0 1 1	Q
23	1 1 1	2 2 2	2 2 1	1 1 1	1 1 2	2 2 2	1 1 1	0 2 2	
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31	2 4 3	2 2 2	2 2 2	2 3 3	3 2 1	3 3 3	2 1 5	5 5 5	

GEOMAGNETIC K-INDICES, LOVOZERO
 June 2011
 Lower limit of K=9 is 1500 nT

Day	Time, UT								
	03	06	09	12	15	18	21	24	
1	5 2 2	2 2 2	2 2 2	2 2 2	3 3 3	2 4 3	3 2 3	4 4 3	
2	2 2 2	2 2 1	3 3 2	2 2 3	3 3 2	3 3 2	2 2 4	3 2 2	
3	1 1 2	2 2 2	2 1 2	2 2 2	2 1 2	1 1 1	1 0 0	0 0 0	Q
4	1 1 2	2 2 1	1 2 1	1 1 2	2 1 1	1 0 1	1 1 3	3 5 5	
5	7 7 6	4 3 4	3 2 2	2 2 3	2 3 3	4 4 3	2 2 3	3 3 2	
6	2 1 2	2 2 2	2 1 1	1 1 1	1 1 2	2 2 2	2 1 3	4 2 1	
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9	3 4 4	5 3 2	2 1 1	1 2 3	2 3 3	3 3 2	1 3 4	3 5 5	
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11	3 2 2	3 3 2	2 2 2	1 2 2	3 4 2	2 2 1	2 2 1	1 1 2	
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17	1 0 2	2 2 2	1 1 2	2 2 2	2 3 3	5 4 3	2 2 2	0 0 0	
18	1 2 2	2 2 2	2 2 1	1 1 2	2 2 1	1 1 1	1 0 0	0 0 0	Q
19	1 1 1	1 1 2	1 2 2	2 2 2	2 2 2	1 1 1	1 1 2	1 0 1	
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28	1 1 2	2 1 2	2 1 1	1 1 2	1 1 2	1 1 1	1 1 0	0 0 0	
29	1 1 1	2 2 2	1 1 1	2 2 2	2 1 1	1 1 1	1 1 1	0 0 1	Q
30	1 1 2	2 2 2	2 2 2	2 2 1	1 1 1	1 1 2	2 2 1	0 1 2	

Apatity neutron monitor



TV OBSERVATIONS

April 2011

CALENDAR OF TV OBSERVATIONS

April 01 - 02

April 02 - 03

April 03 - 04

UT	14	15	16	17	18	19	20	21	22	23	24	01	02	03	04	05
LOZ					—	—	—	—	—	—	—					

April 04 - 05

UT	14	15	16	17	18	19	20	21	22	23	24	01	02	03	04	05
LOZ					—						—					

April 05 - 06

April 06 - 07

UT	14	15	16	17	18	19	20	21	22	23	24	01	02	03	04	05
LOZ					—						—					

April 07 - 08

UT	14	15	16	17	18	19	20	21	22	23	24	01	02	03	04	05
LOZ					—	—	—	—	—	—	—					

April 08 - 09

UT	14	15	16	17	18	19	20	21	22	23	24	01	02	03	04	05
LOZ					—						—					

April 09 - 10

April 10 - 11

UT	14	15	16	17	18	19	20	21	22	23	24	01	02	03	04	05
LOZ					—				—		—					

April 11 - 12

CALENDAR OF TV OBSERVATIONS

April 12 - 13

UT	14	15	16	17	18	19	20	21	22	23	24	01	02	03	04	05
LOZ						—					—					

April 13 - 14

April 14 - 15

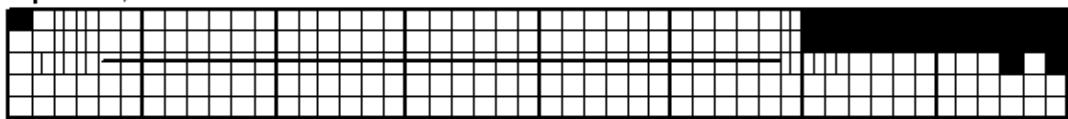
April 15 - 16

April 16 - 17

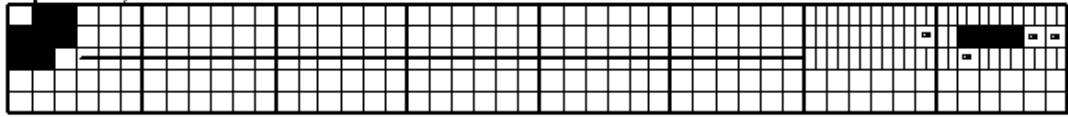
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LOZ						—				—	—					

Lovozero ascaplots

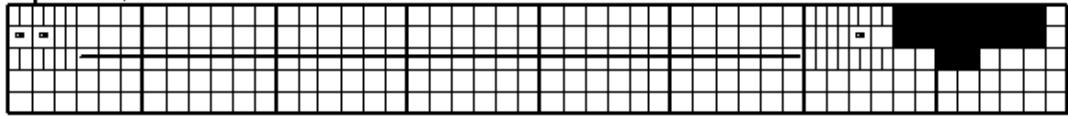
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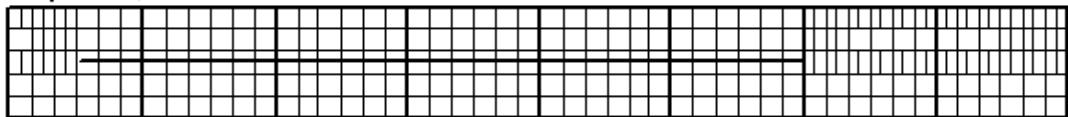
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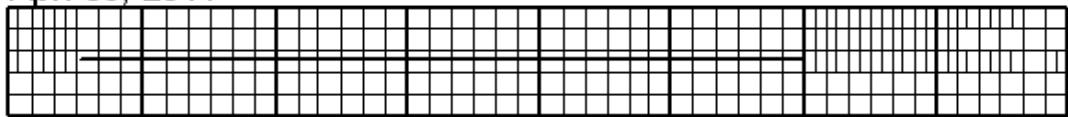
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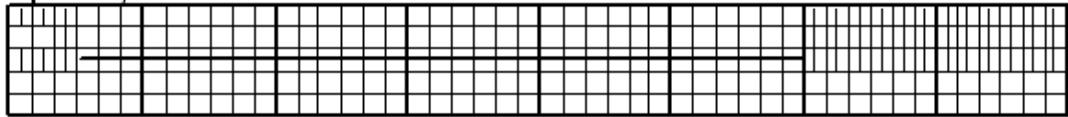
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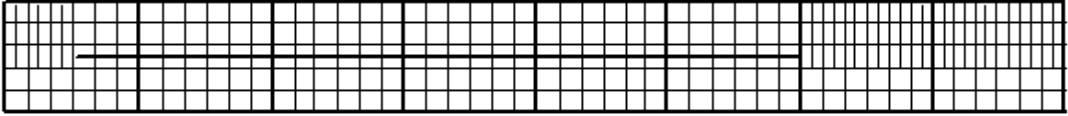
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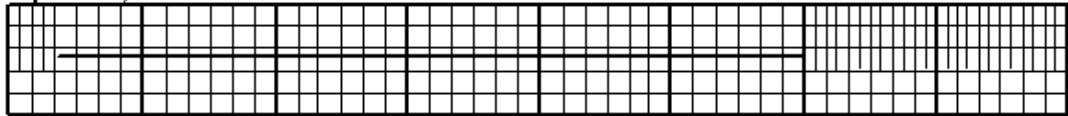
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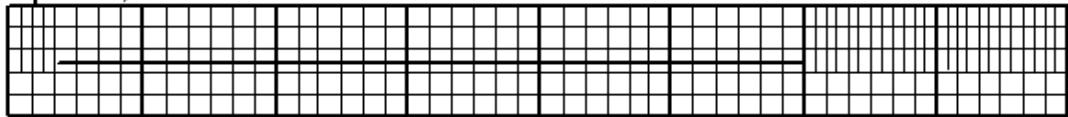
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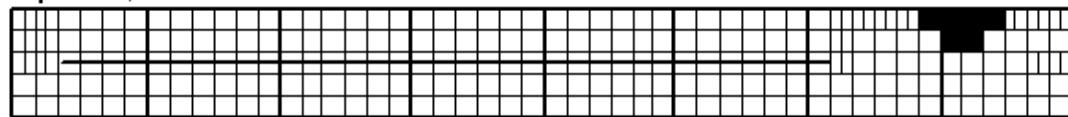
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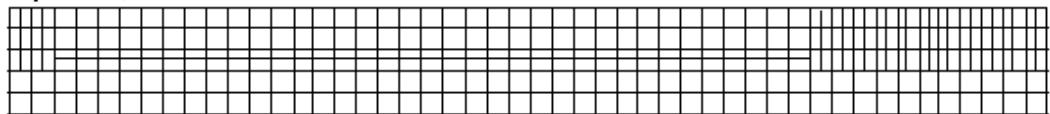
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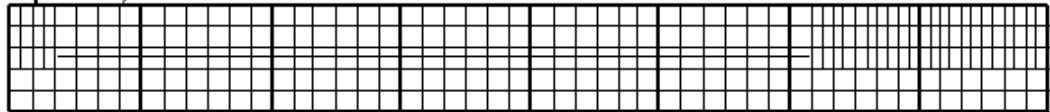
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Universal Time

Lovozero ascaplots

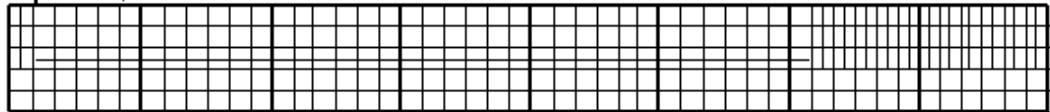
Apr. 11, 2011



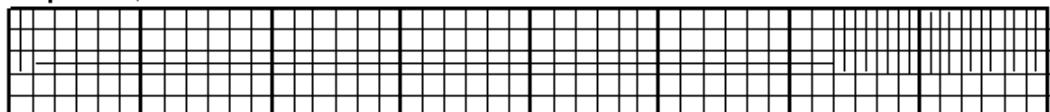
Apr. 12, 2011



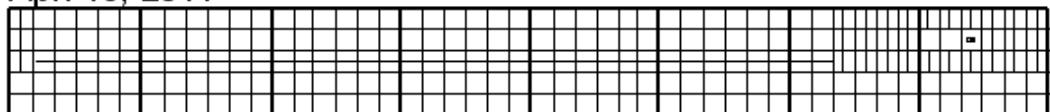
Apr. 13, 2011



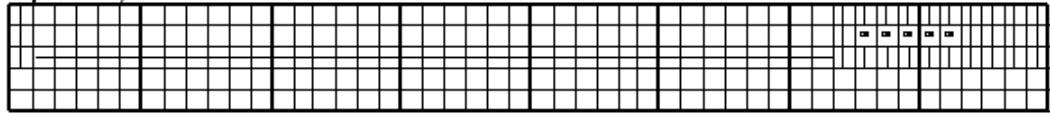
Apr. 14, 2011



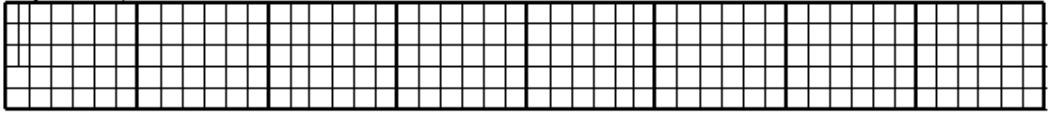
Apr. 15, 2011



Apr. 16, 2011



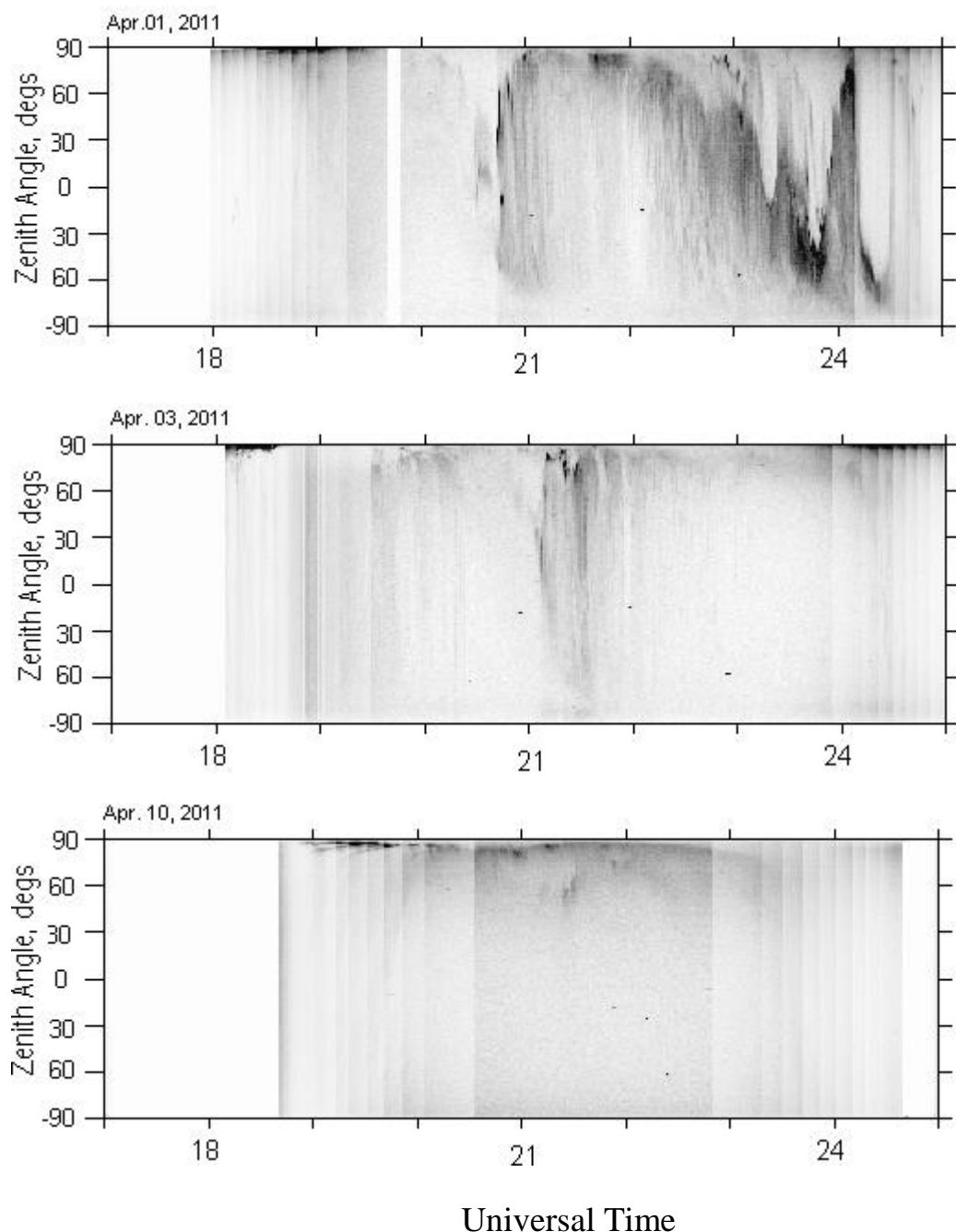
Apr. 17, 2011



00 06 12 18 24

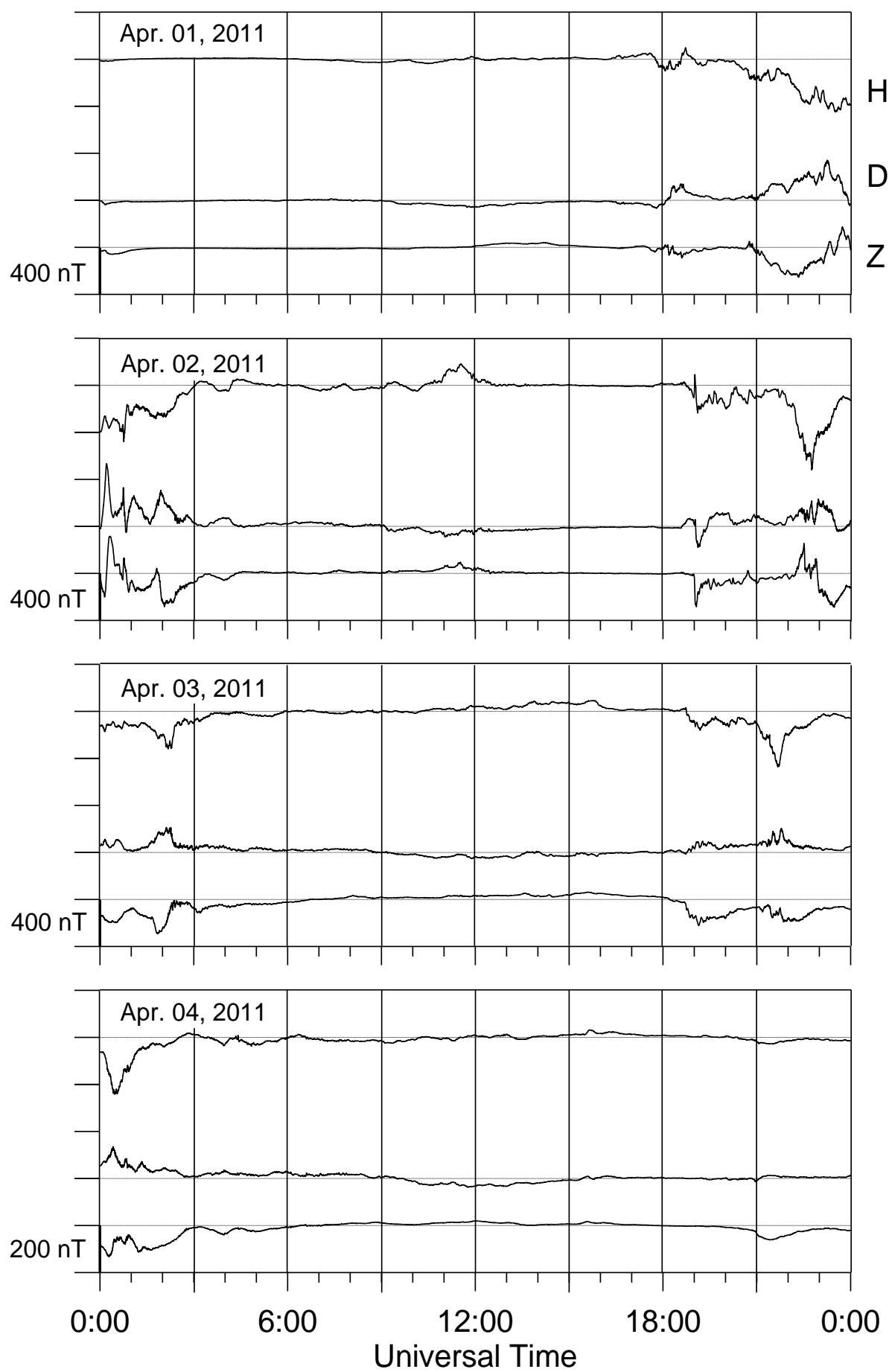
Universal Time

Lovozero TV keograms

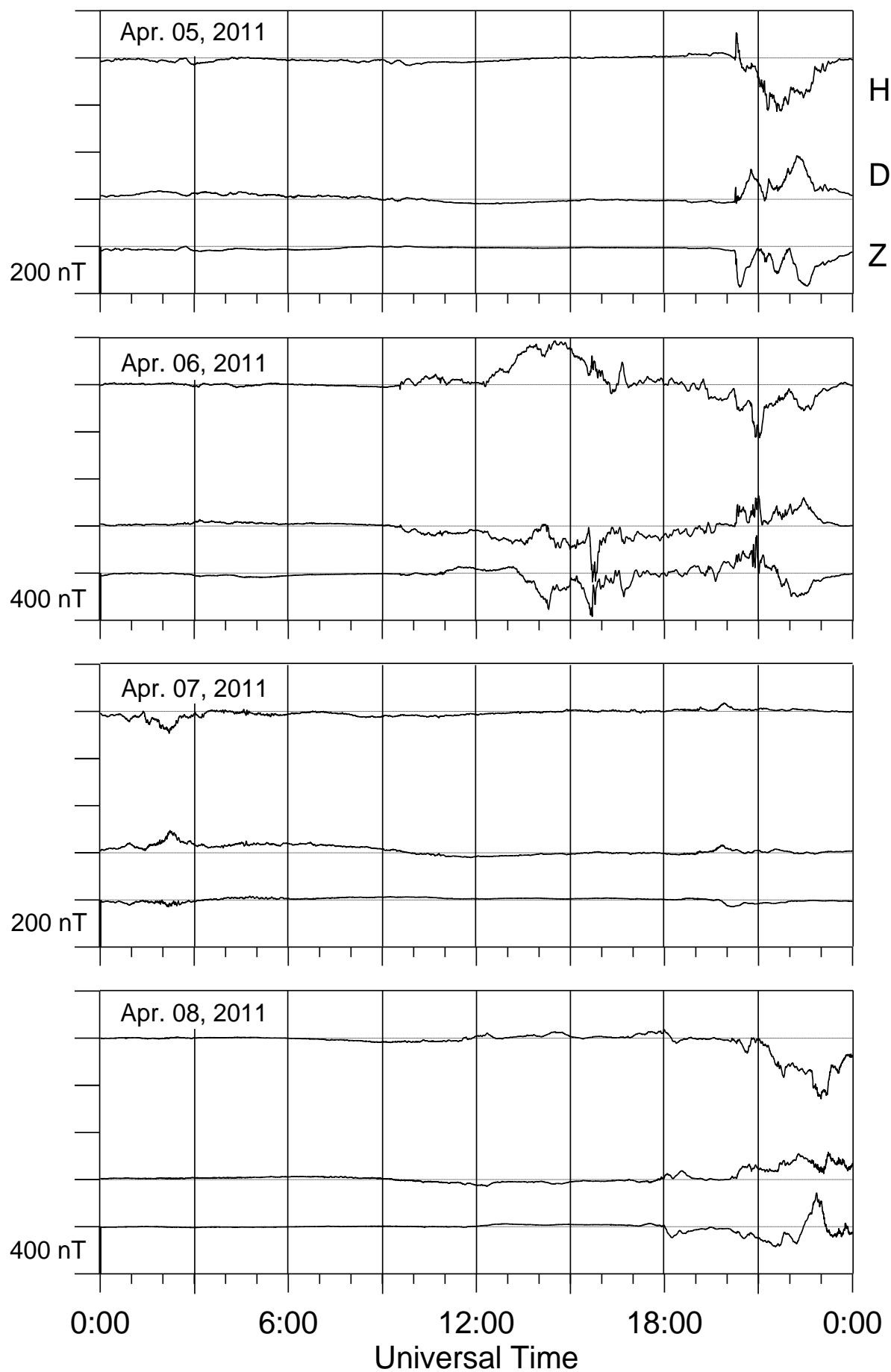


LOVOZERO MAGNETOGRAMS**April - June 2011**

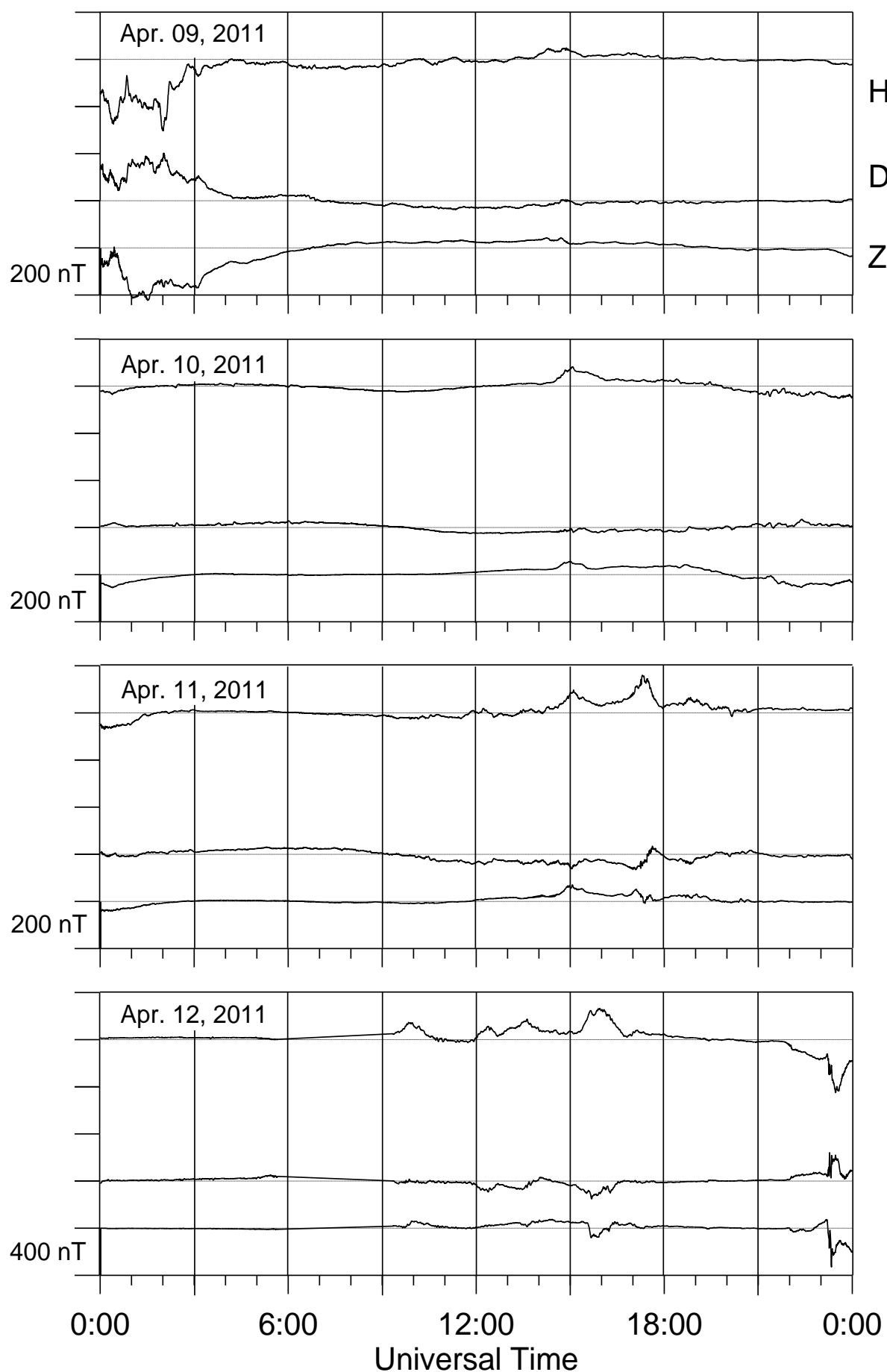
Lovozero magnetometer



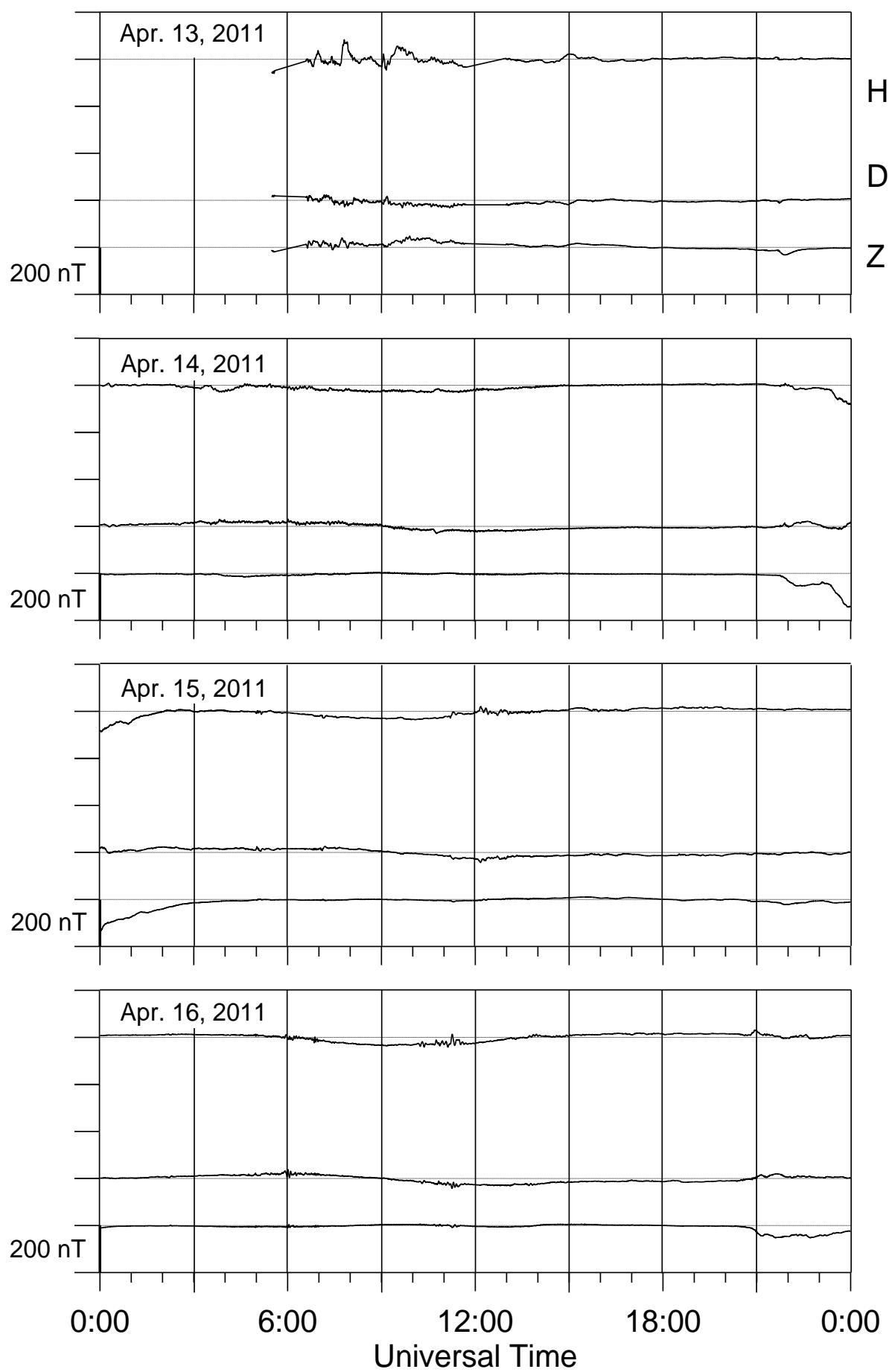
Lovozero magnetometer



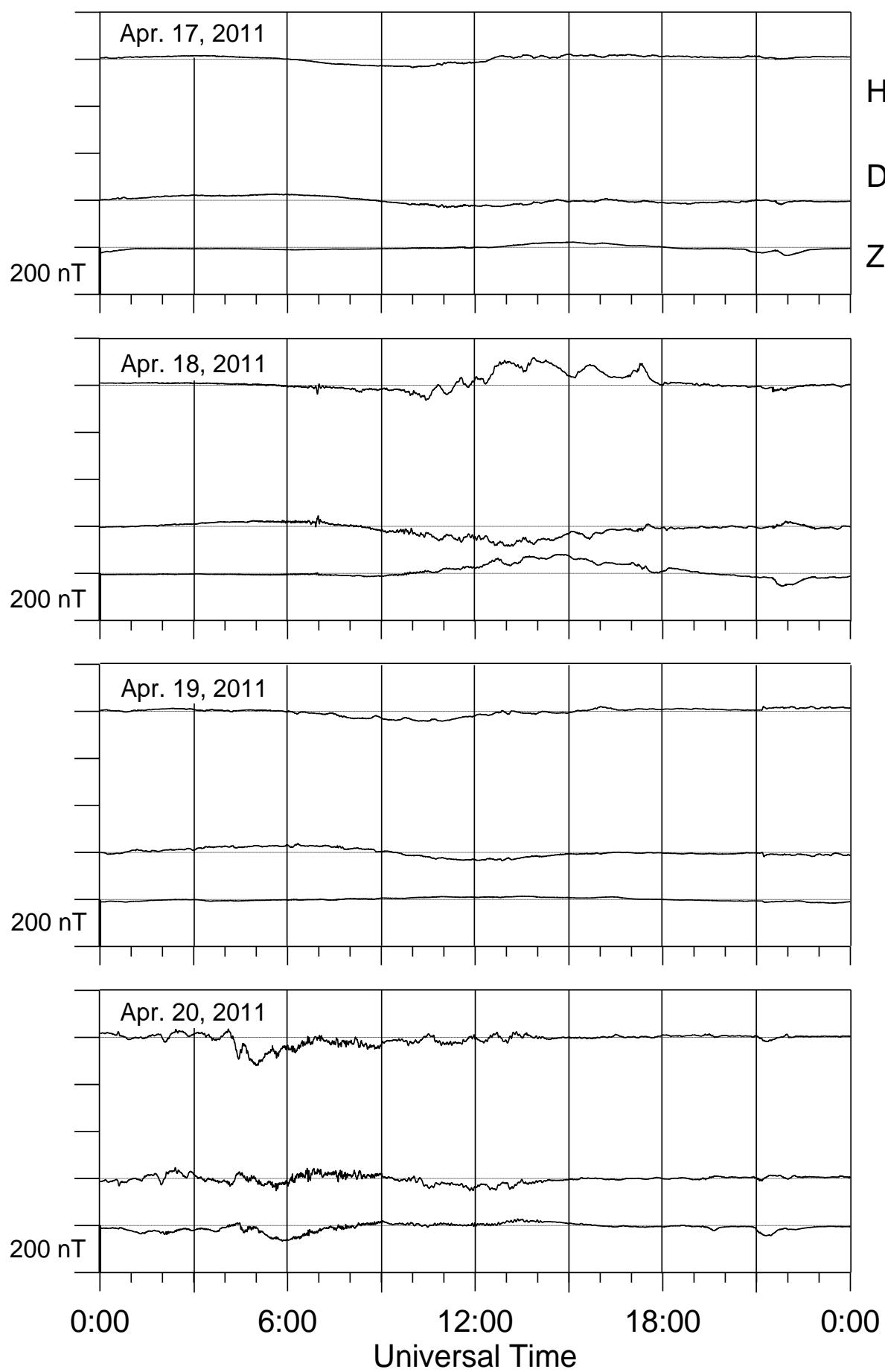
Lovozero magnetometer



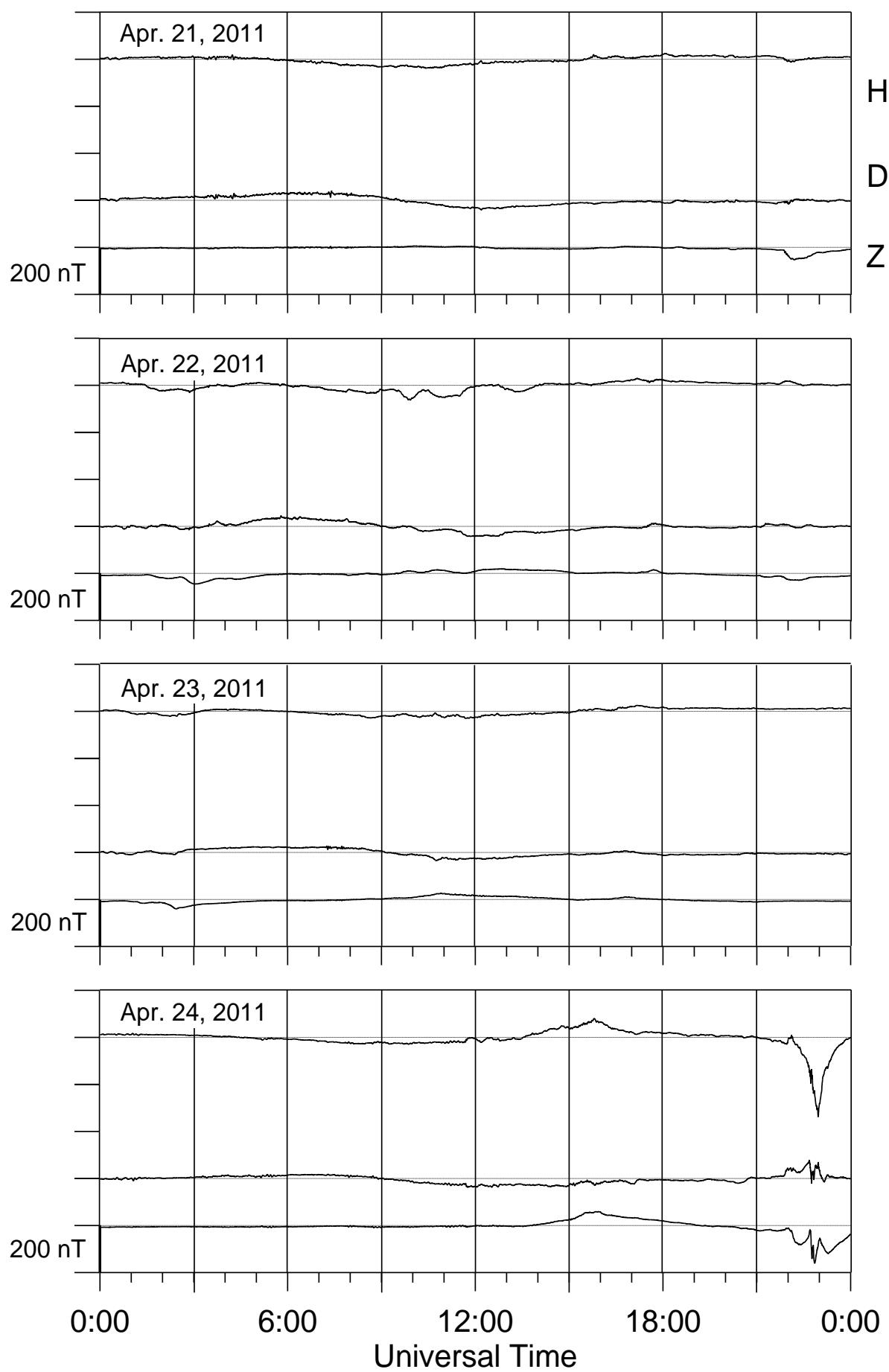
Lovozero magnetometer



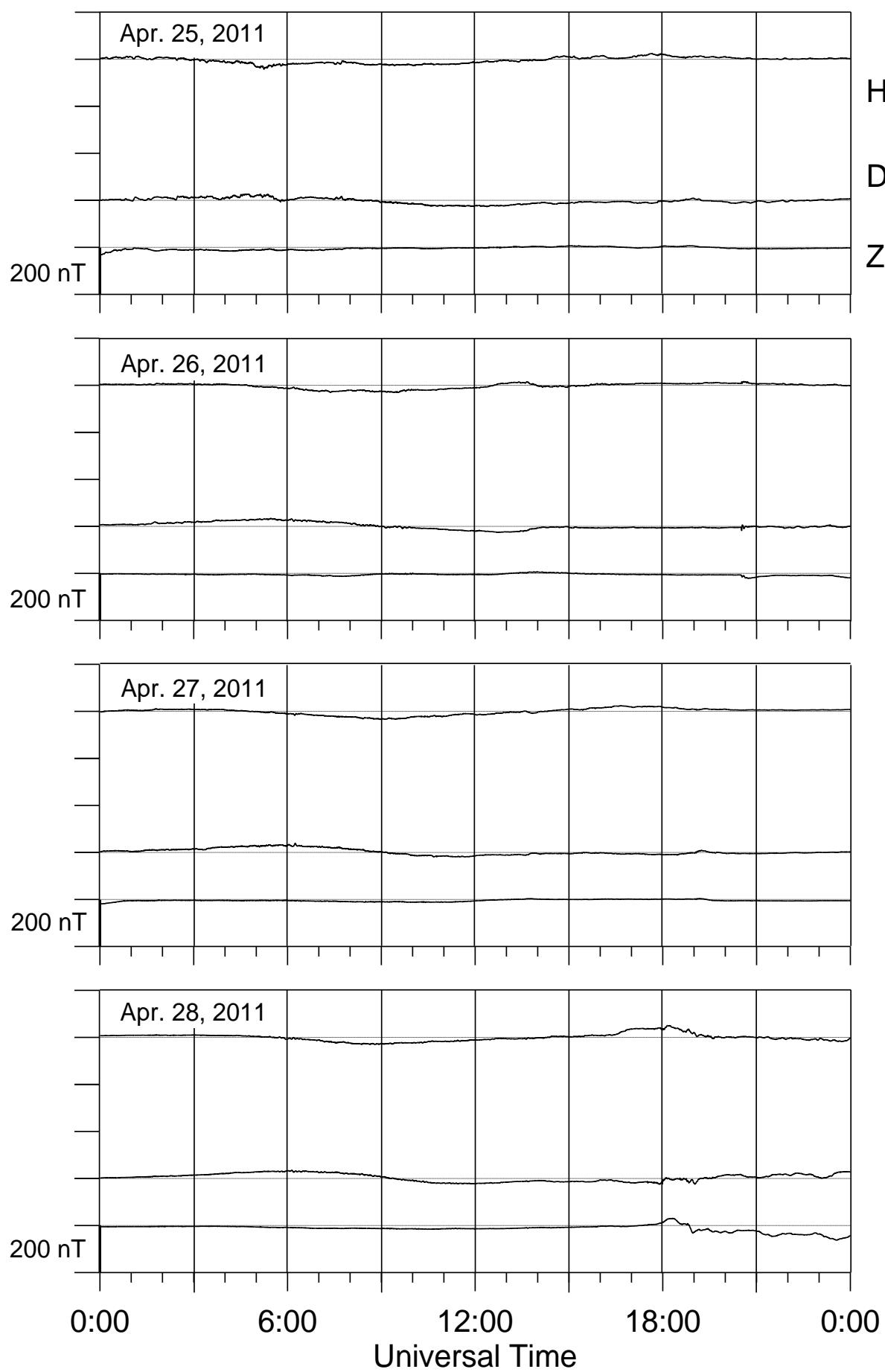
Lovozero magnetometer



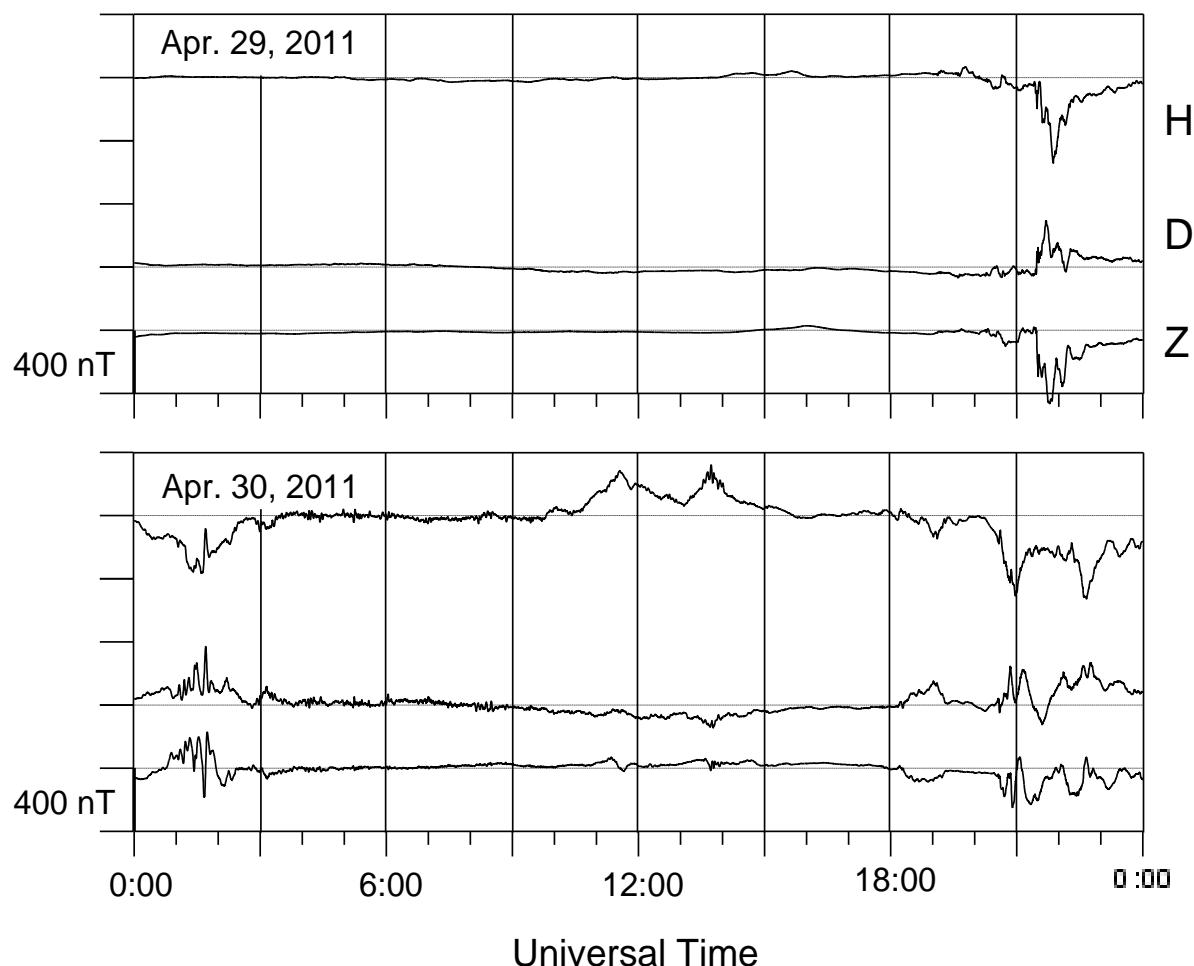
Lovozero magnetometer



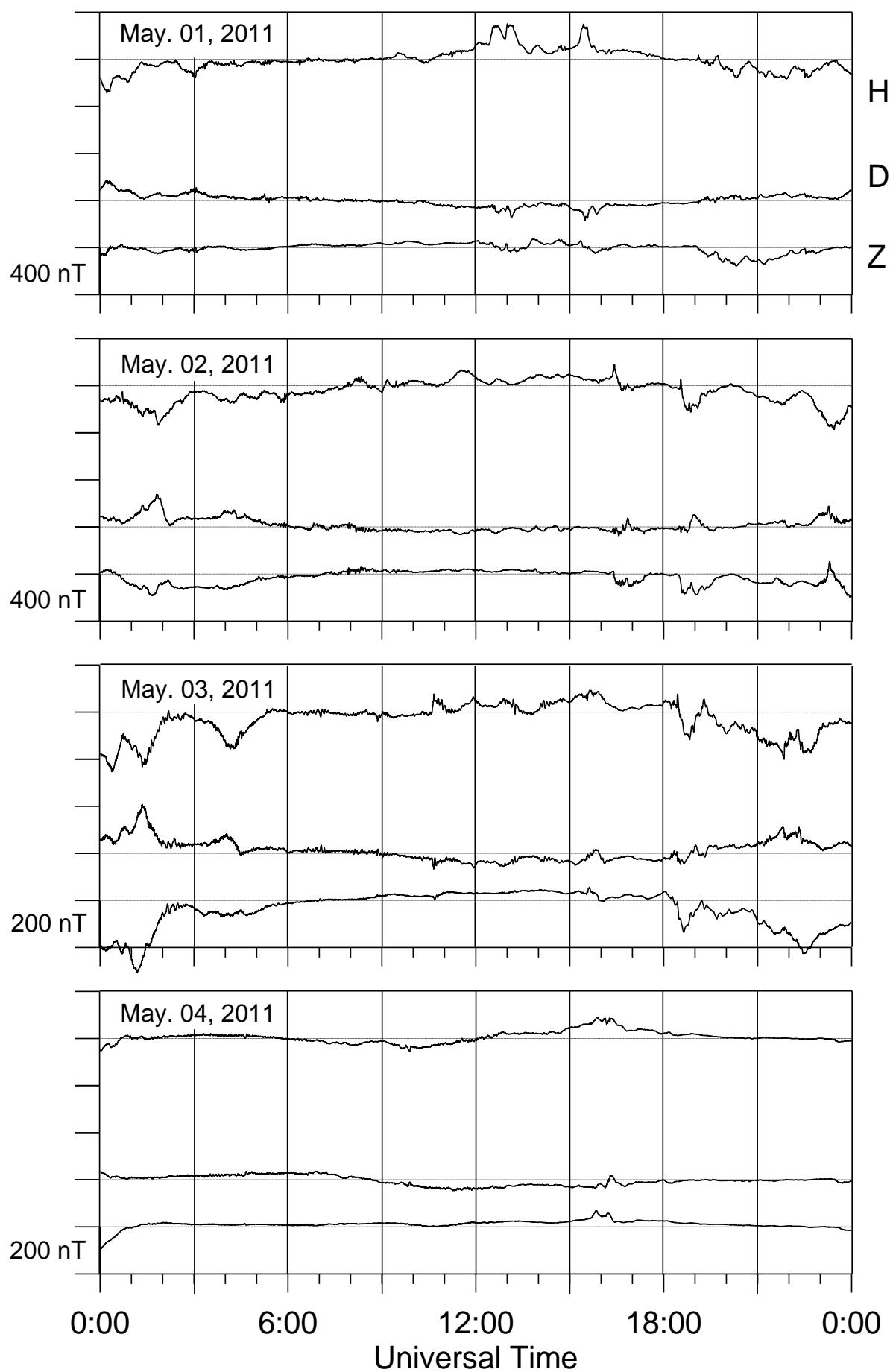
Lovozero magnetometer



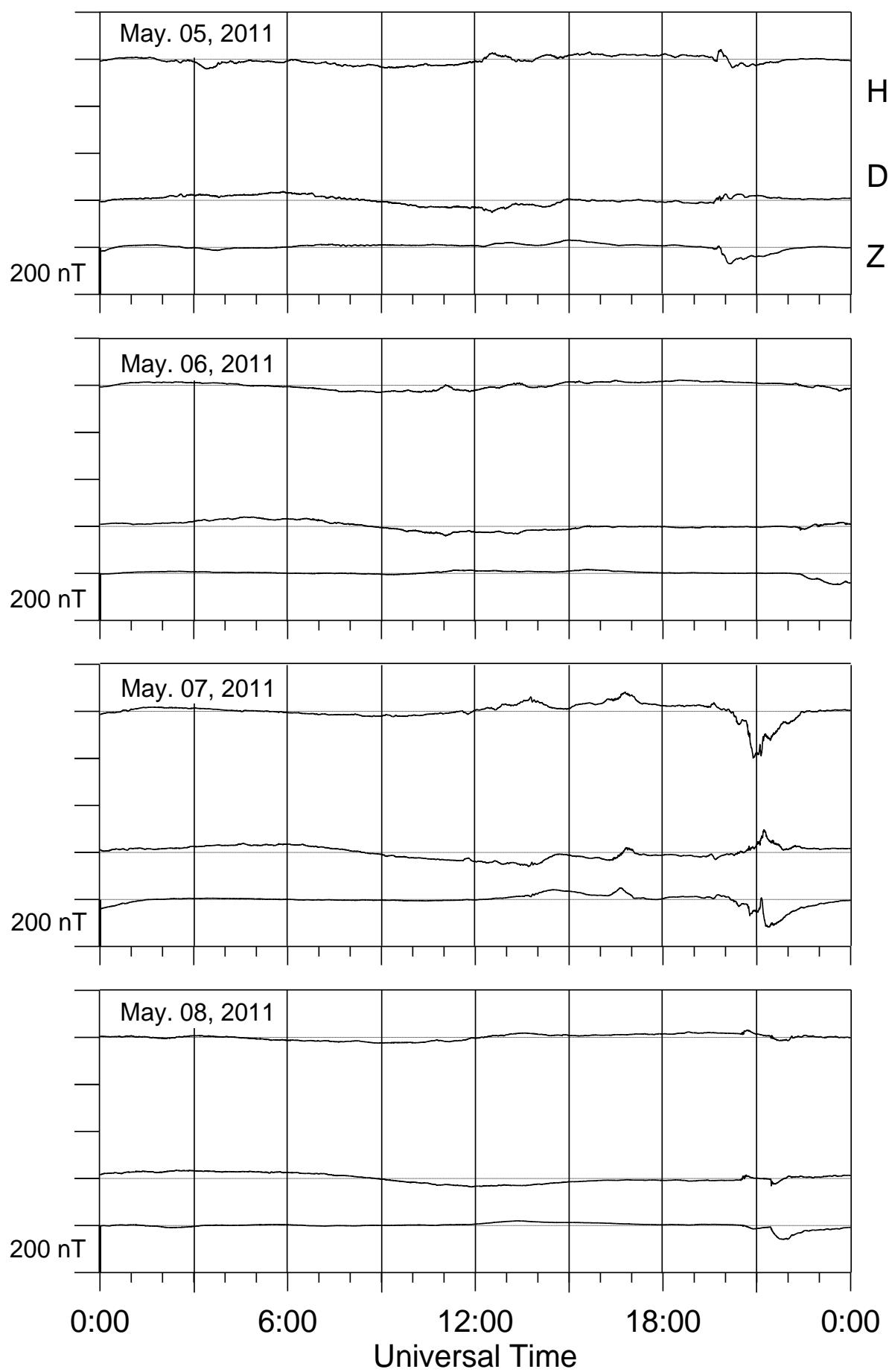
Lovozero magnetometer



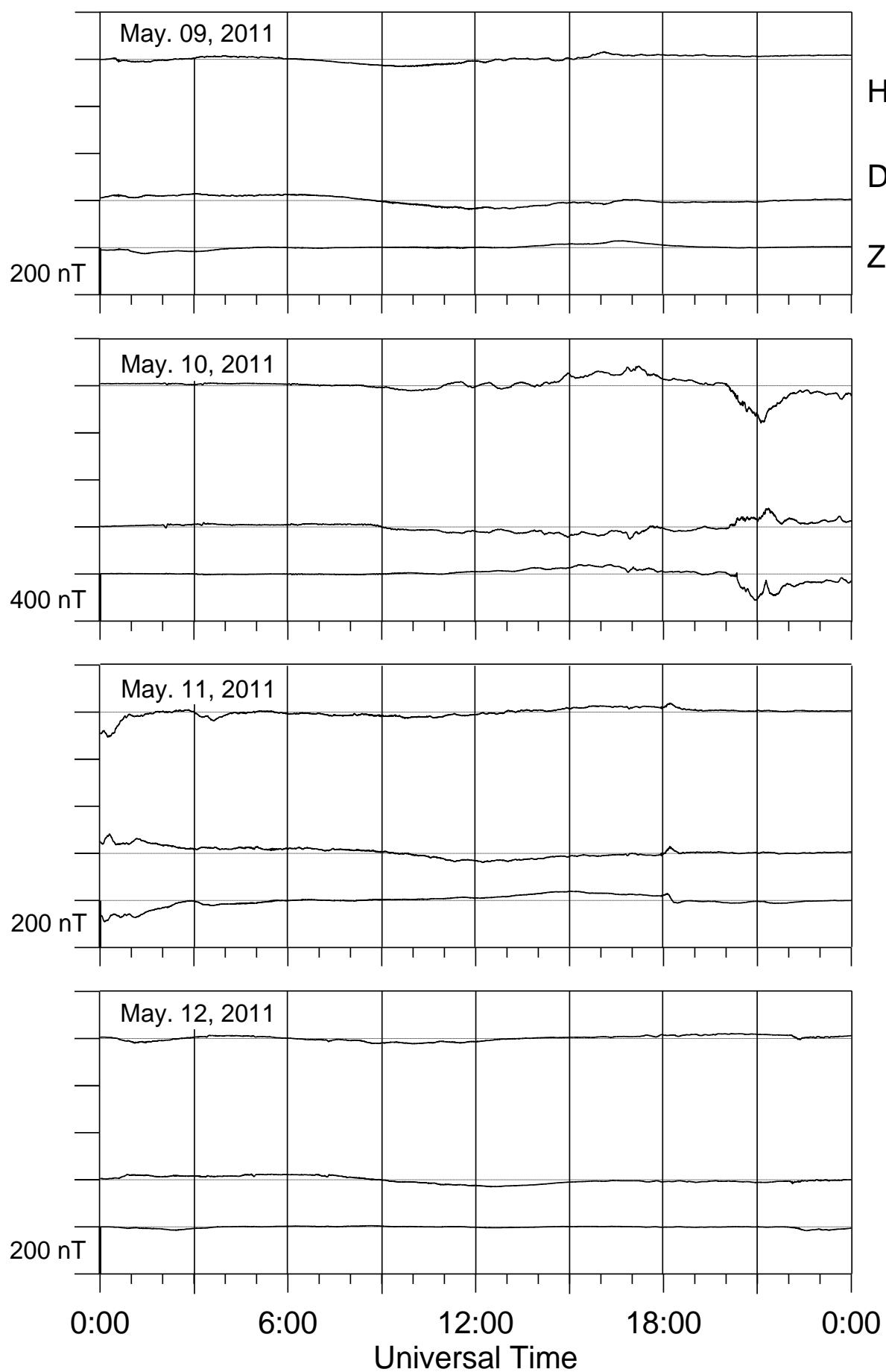
Lovozero magnetometer



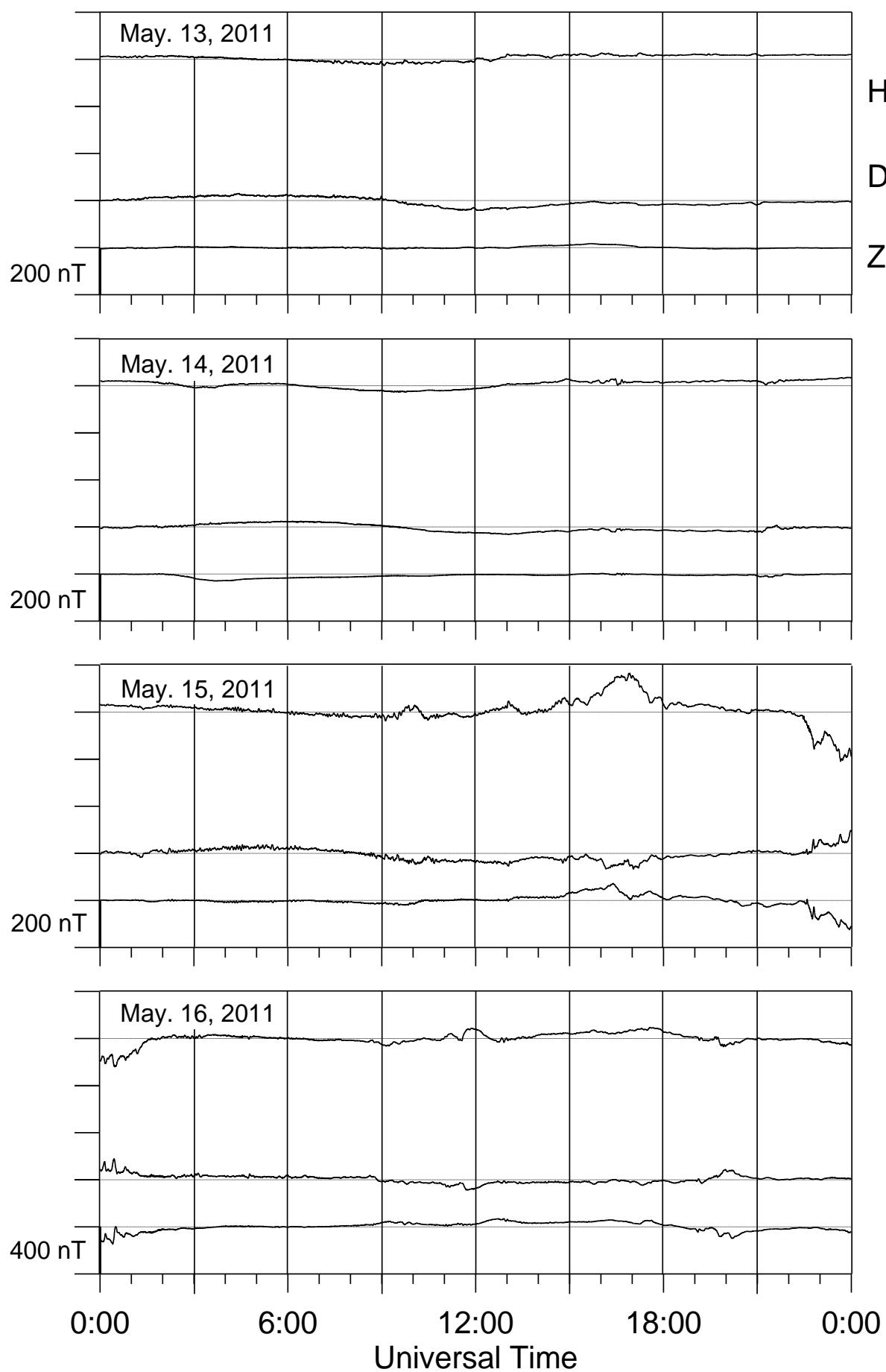
Lovozero magnetometer



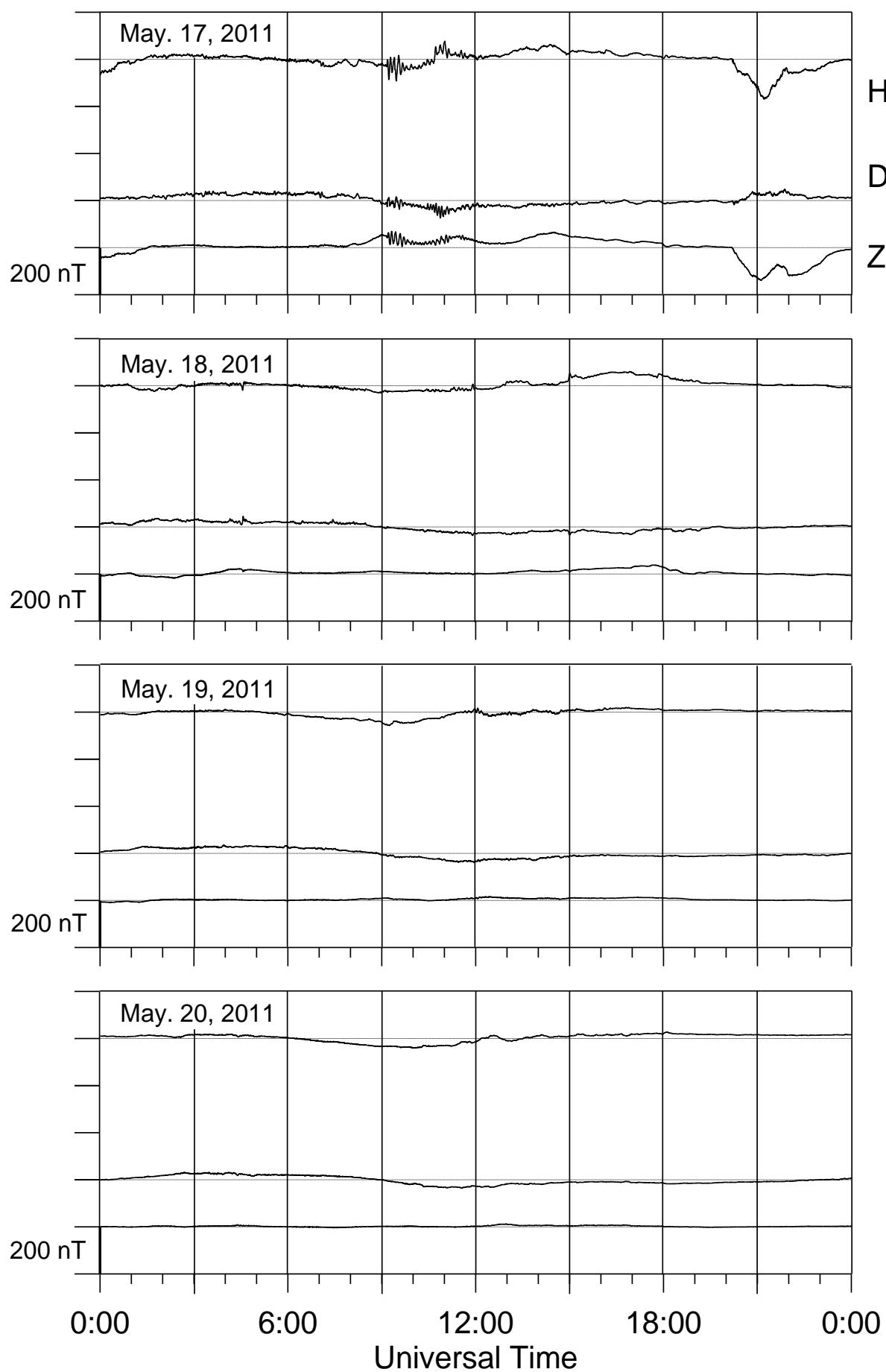
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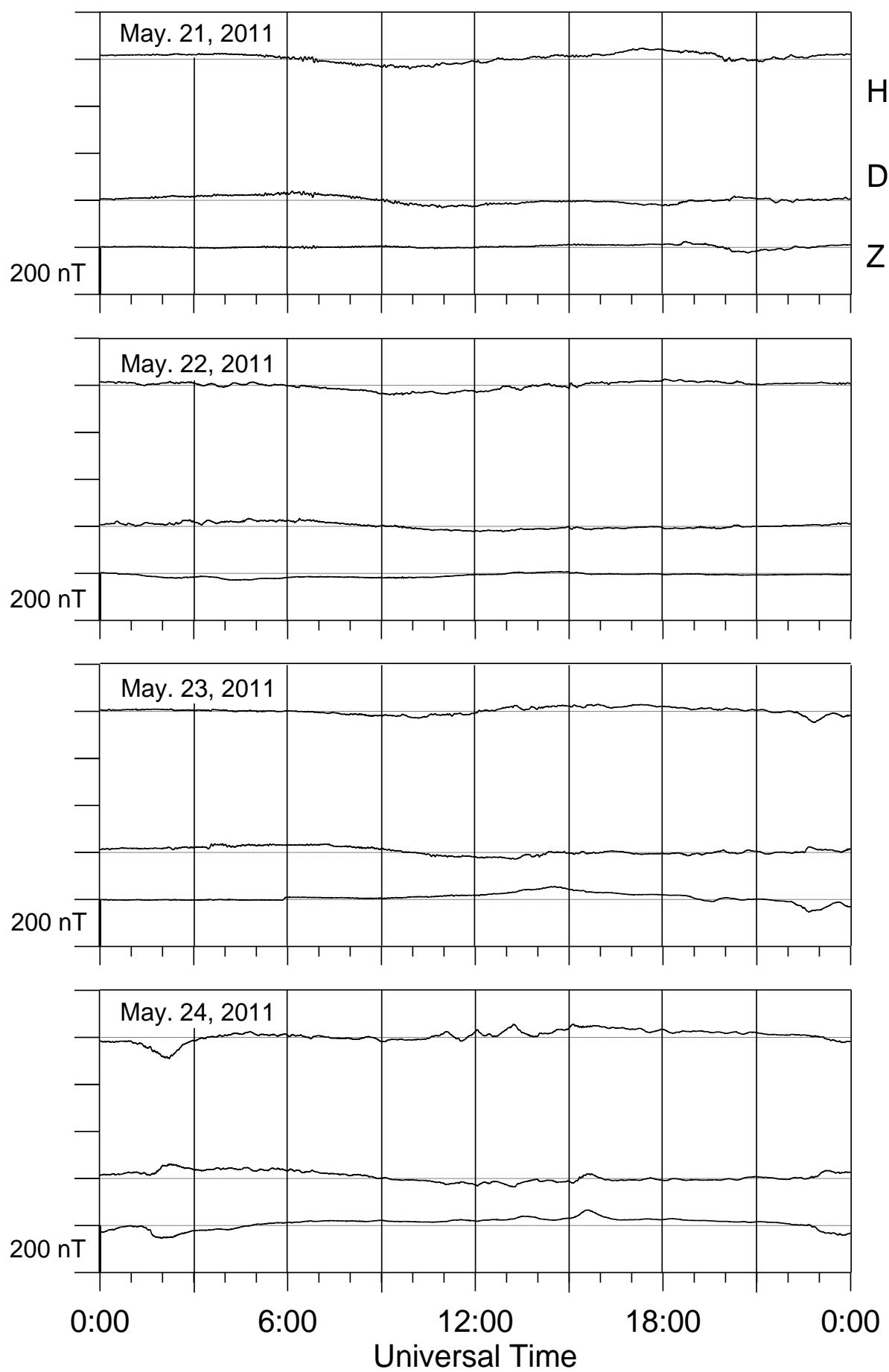
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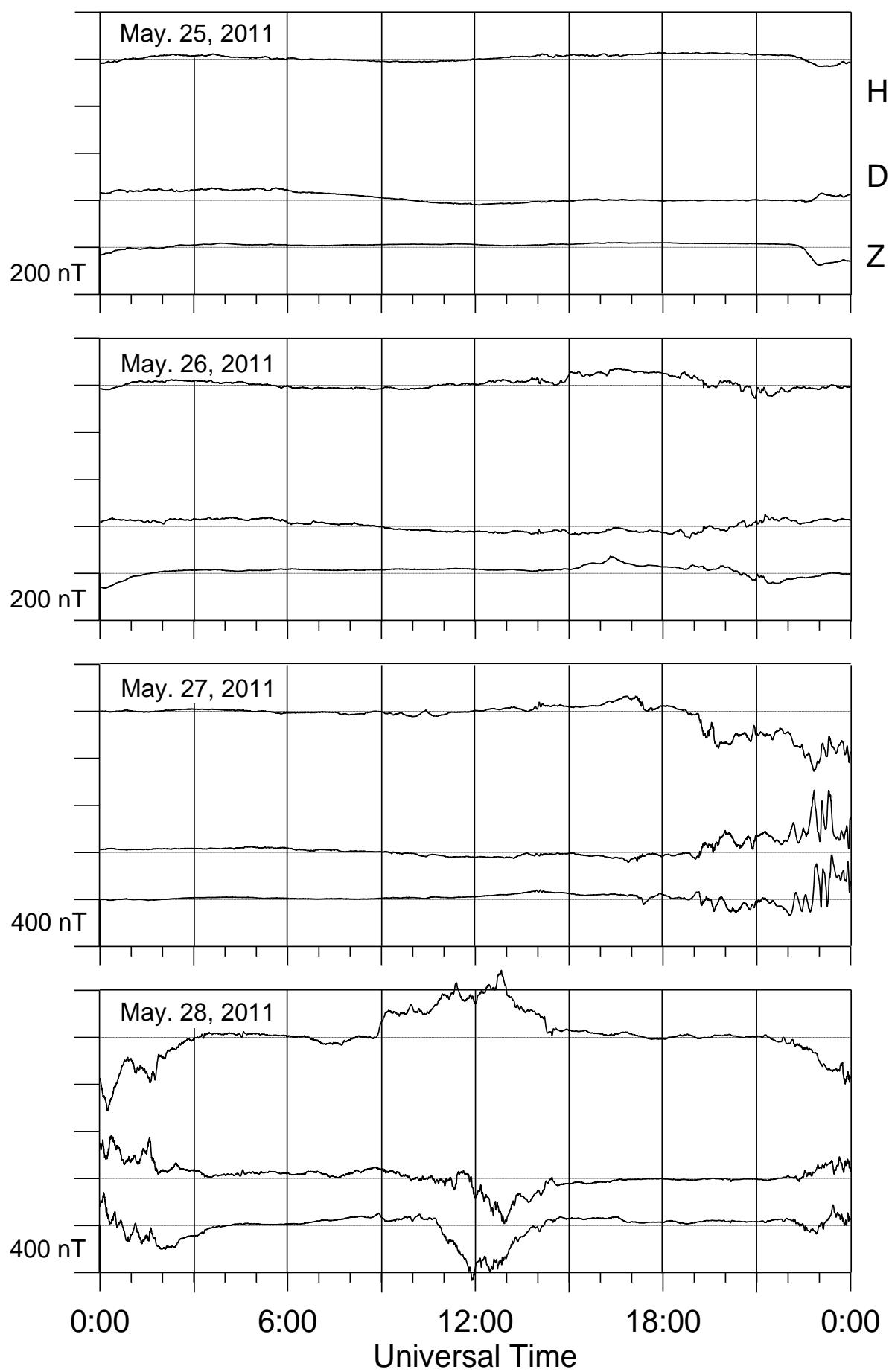
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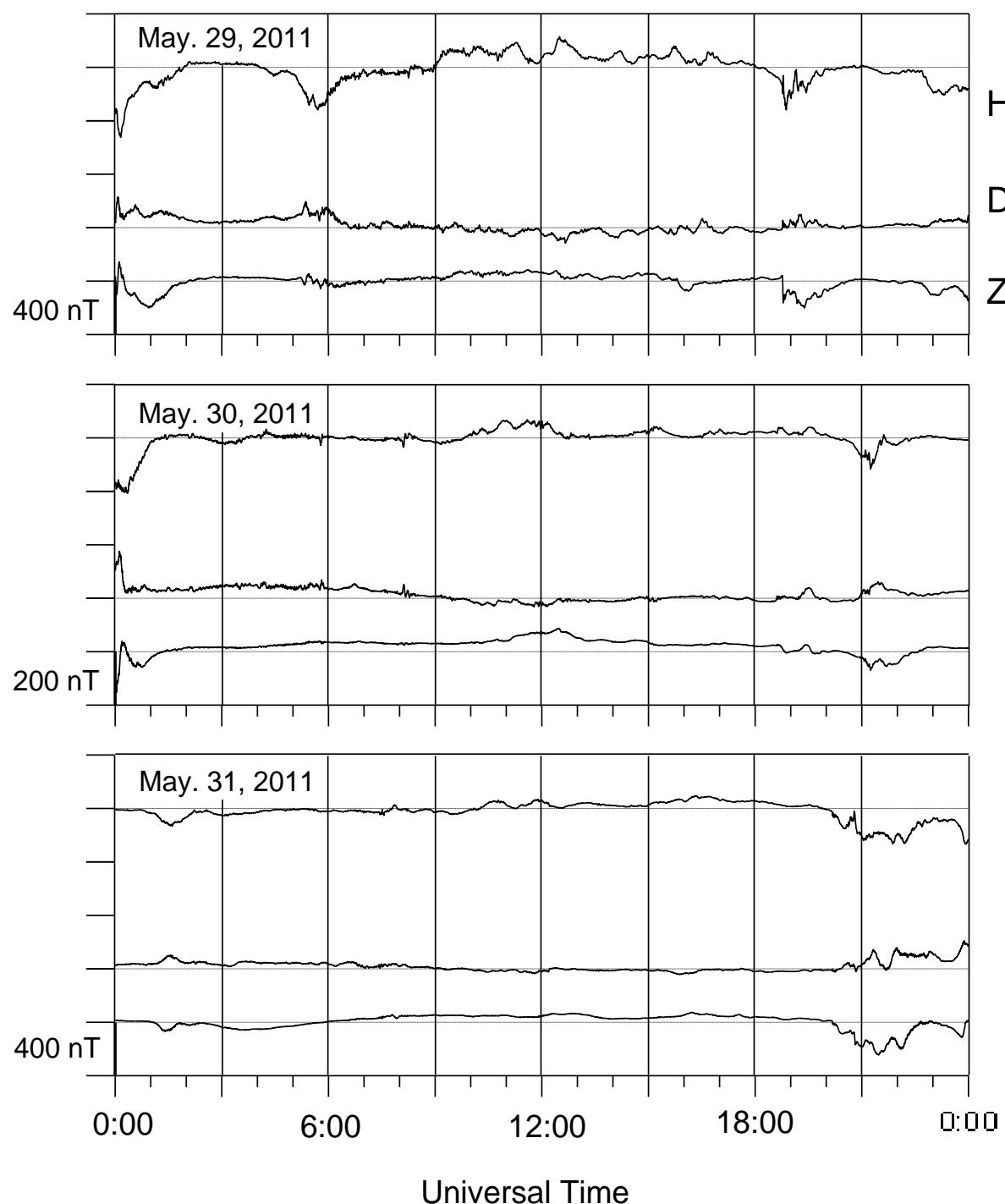
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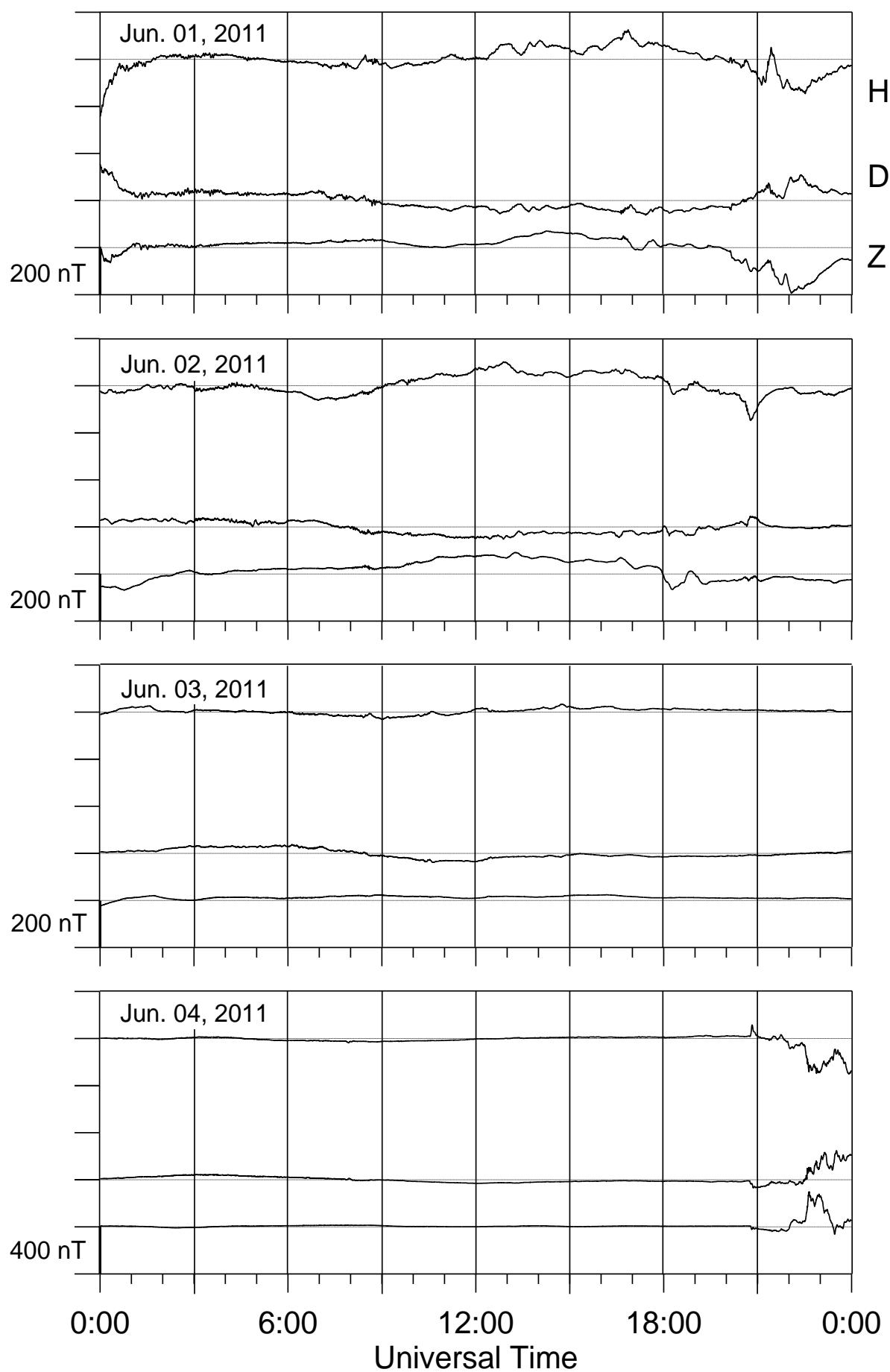
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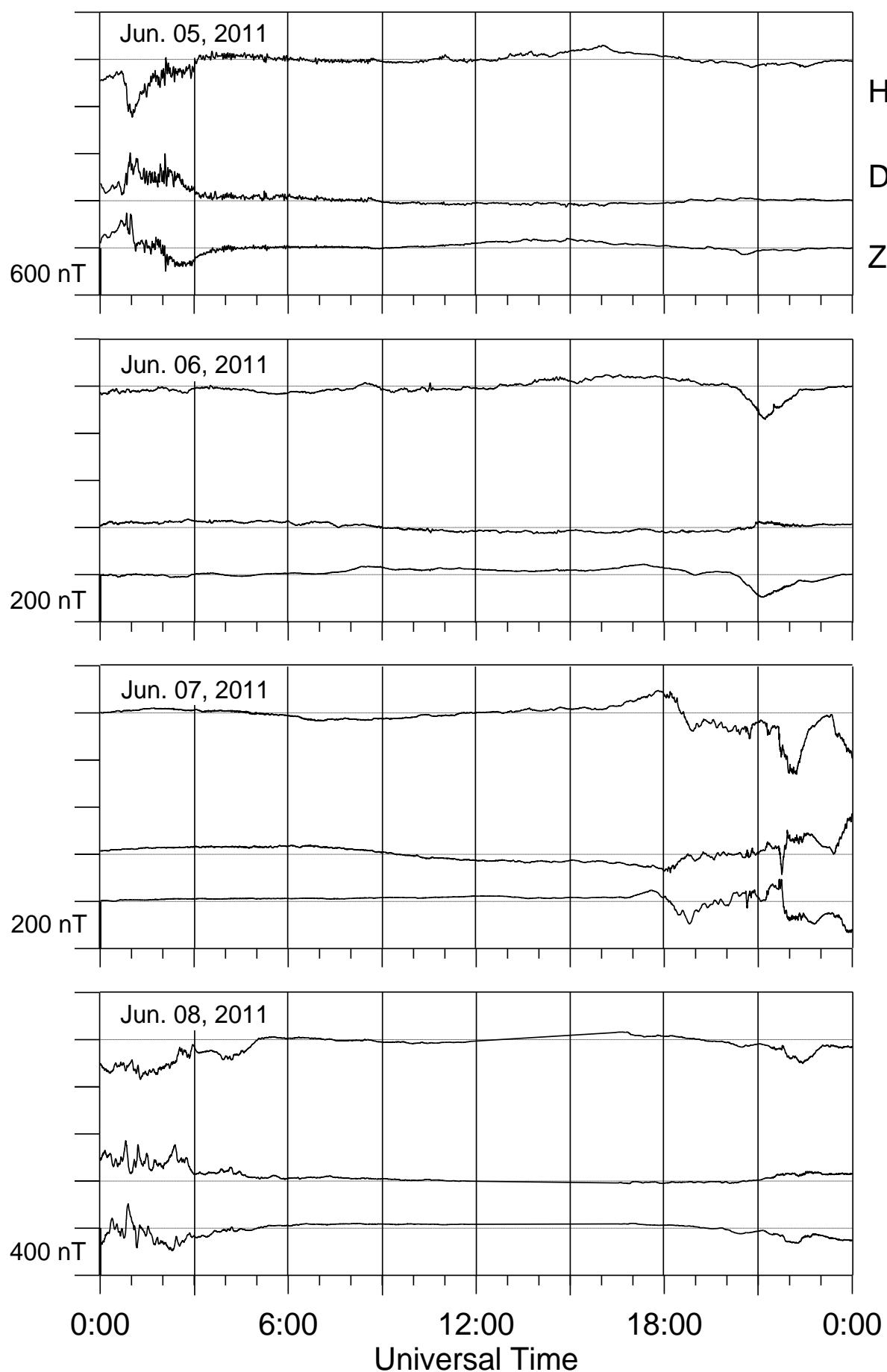
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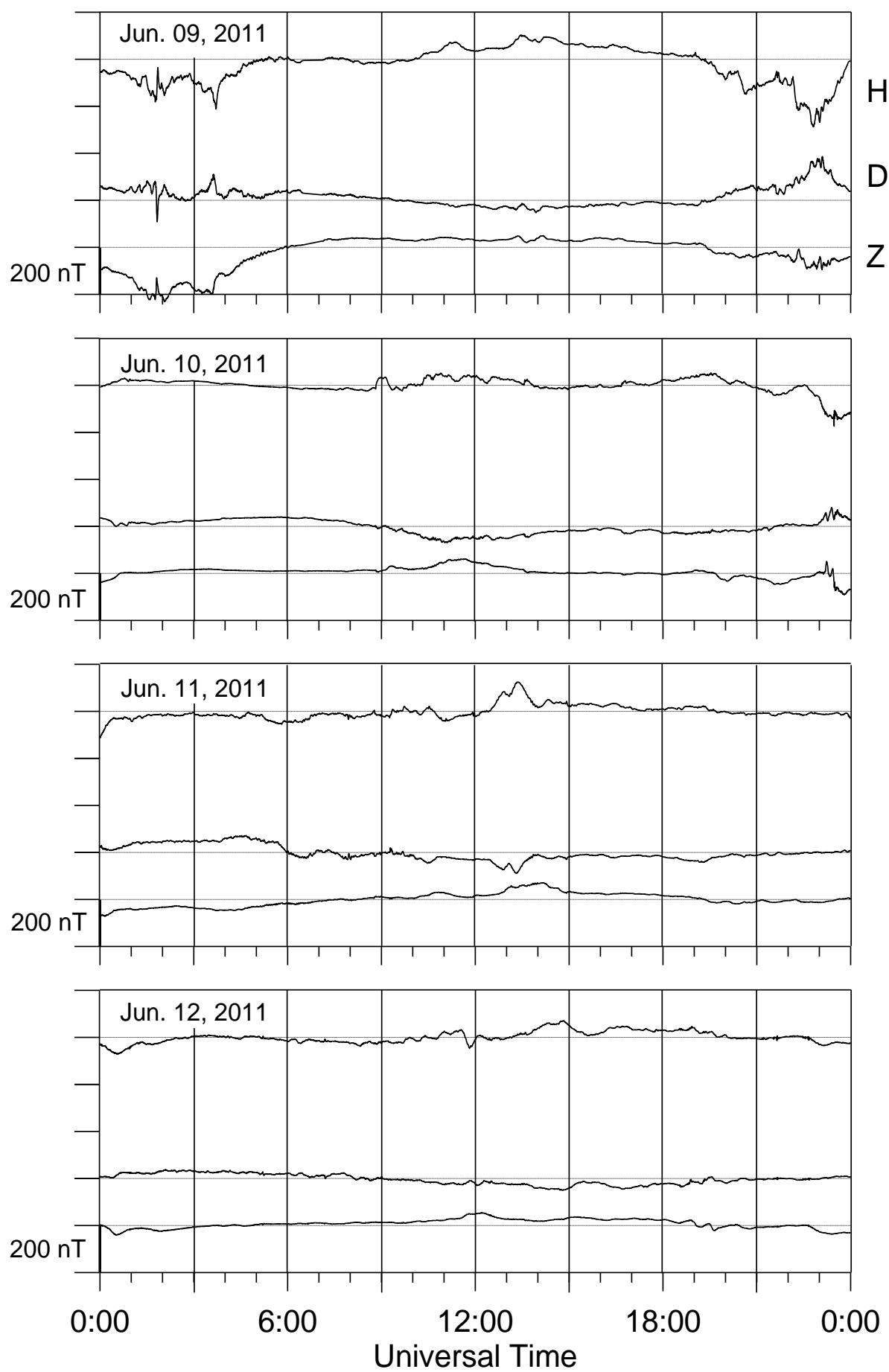
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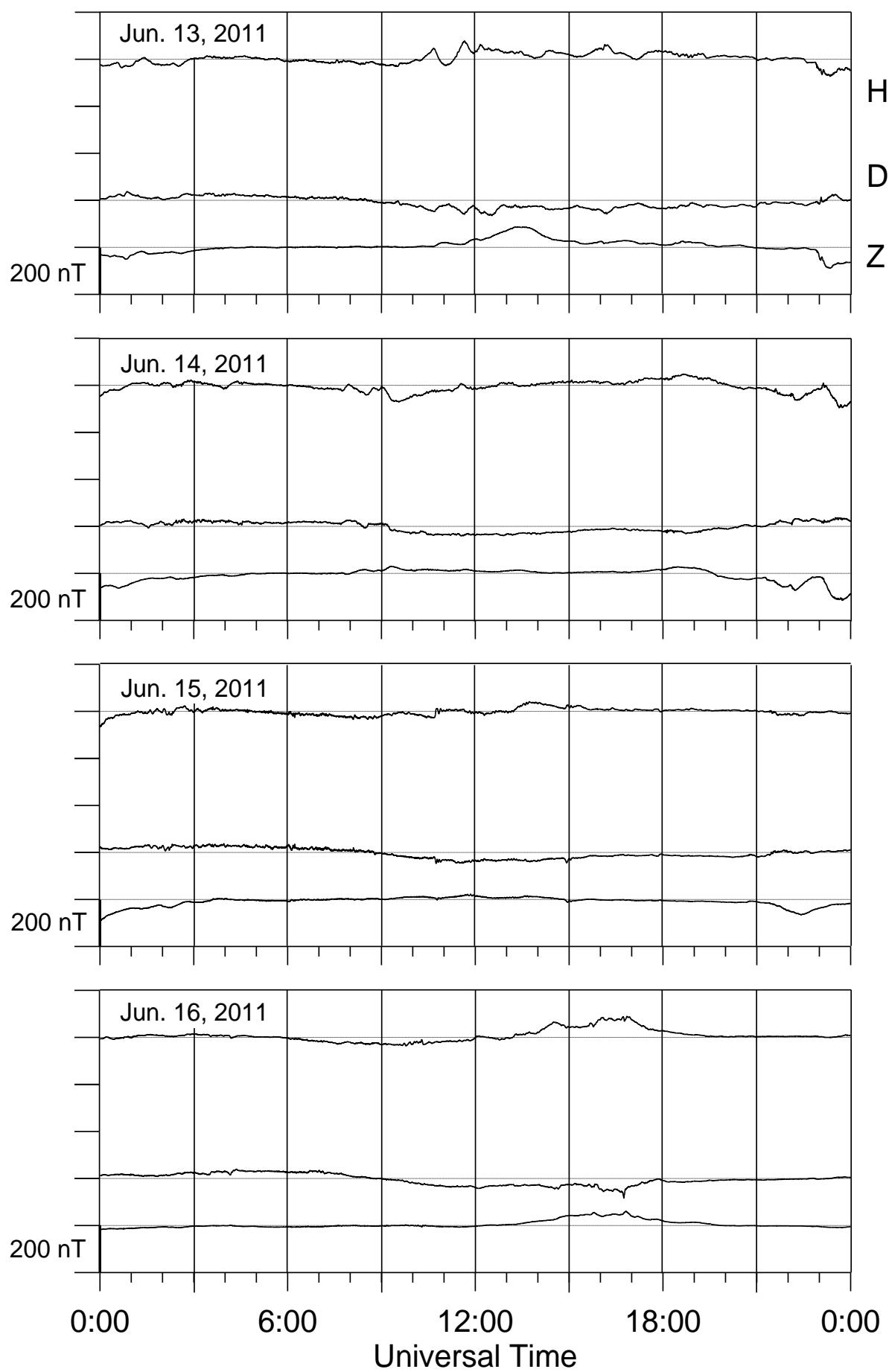
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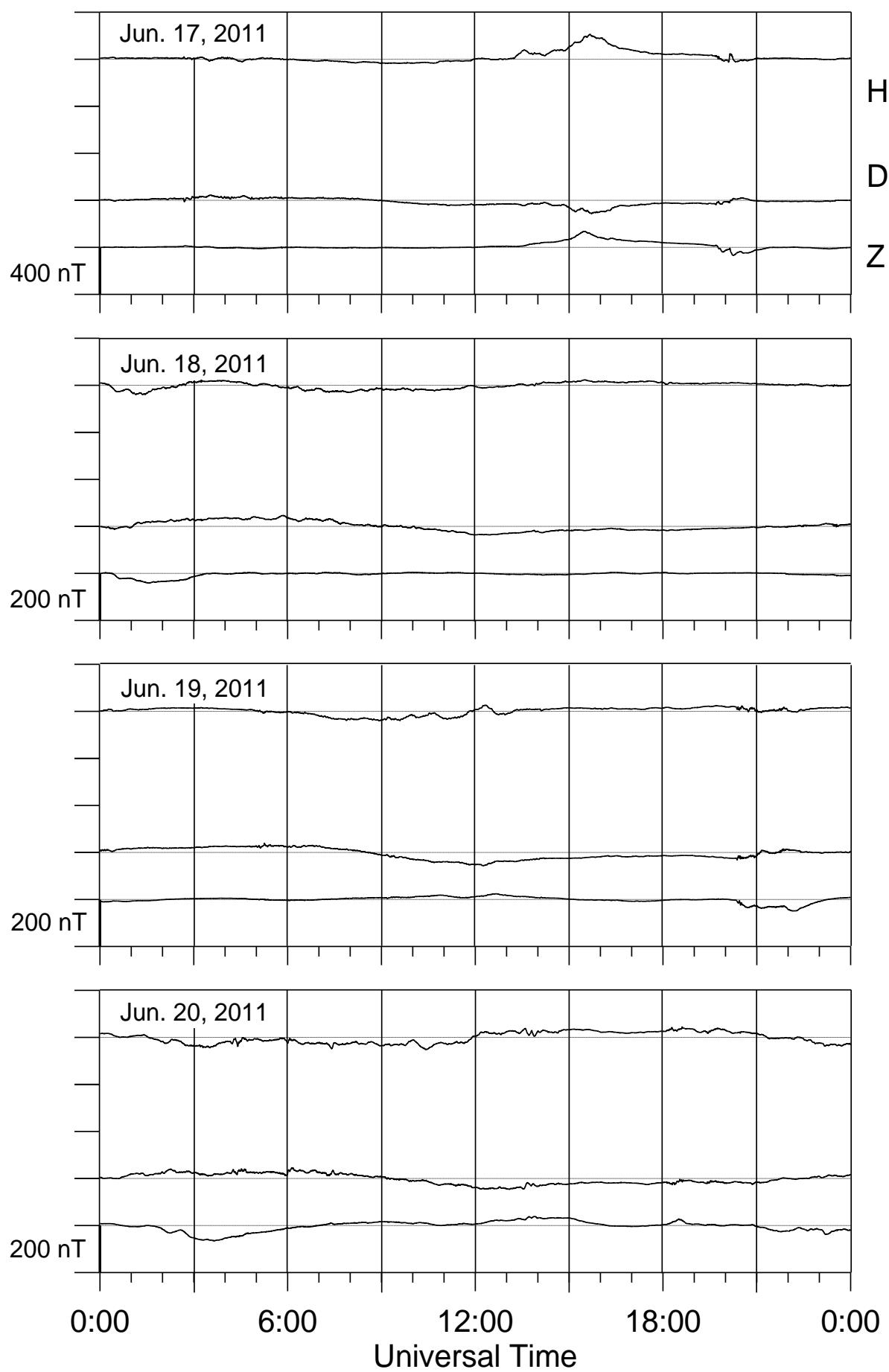
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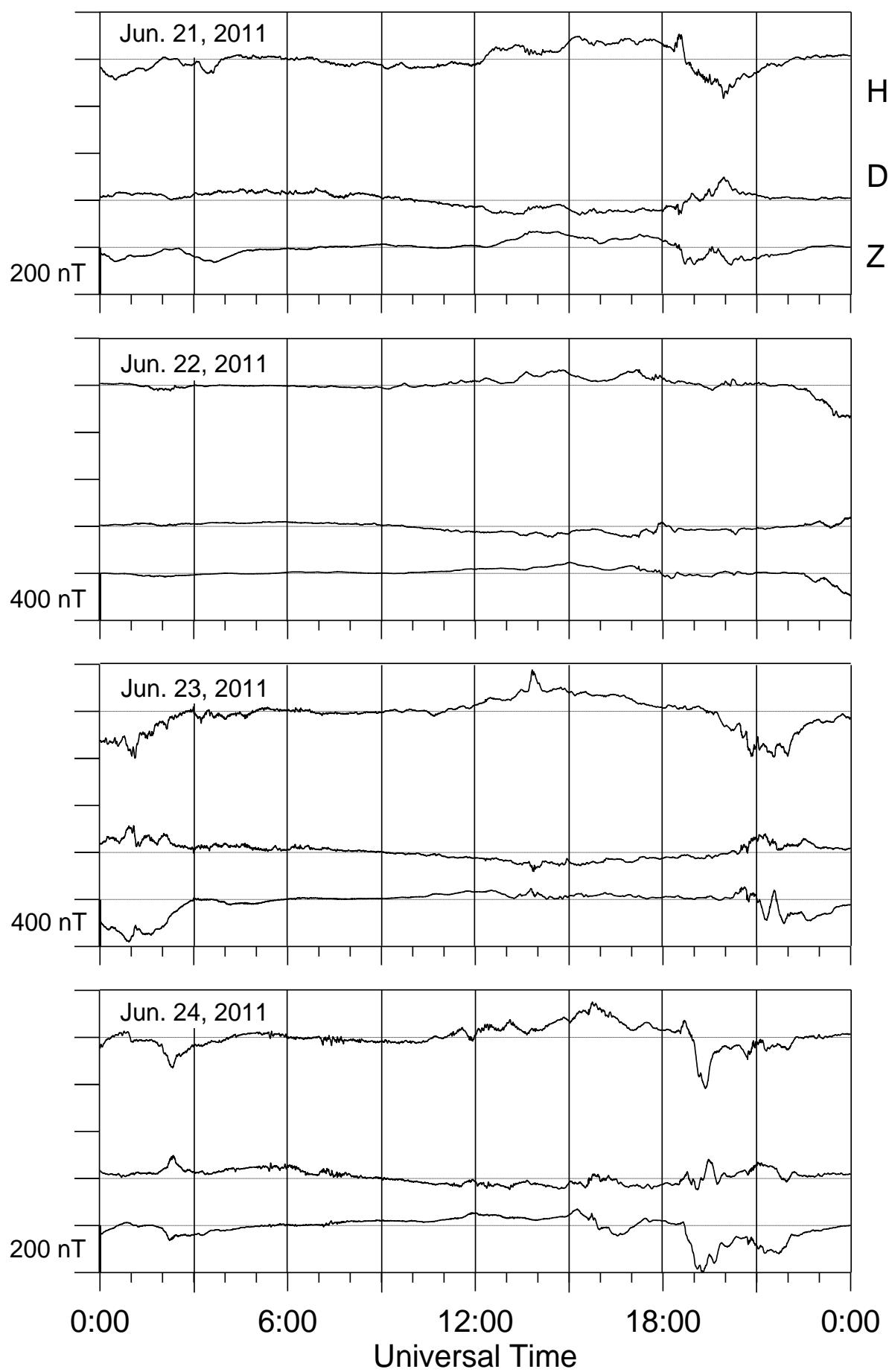
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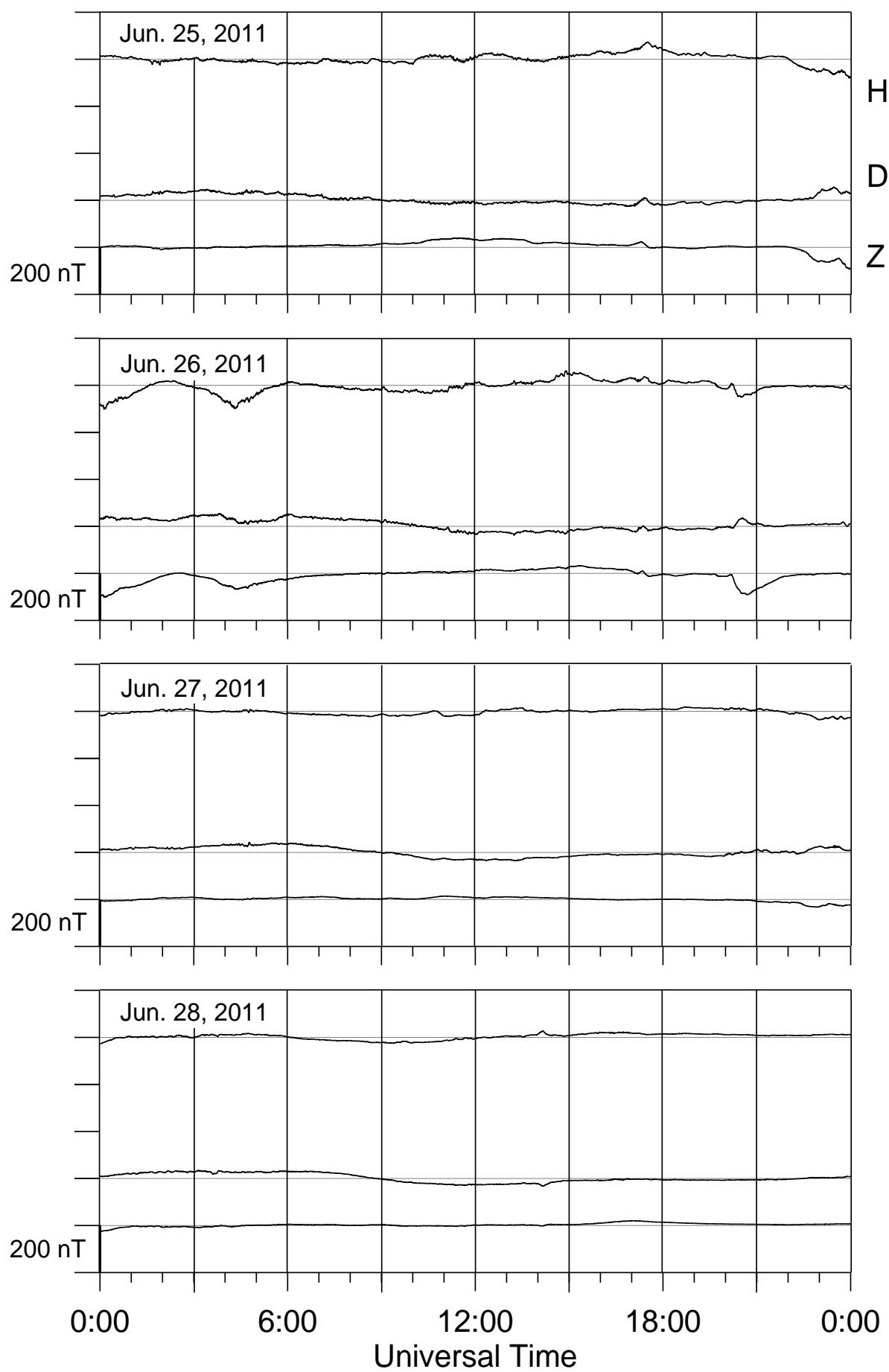
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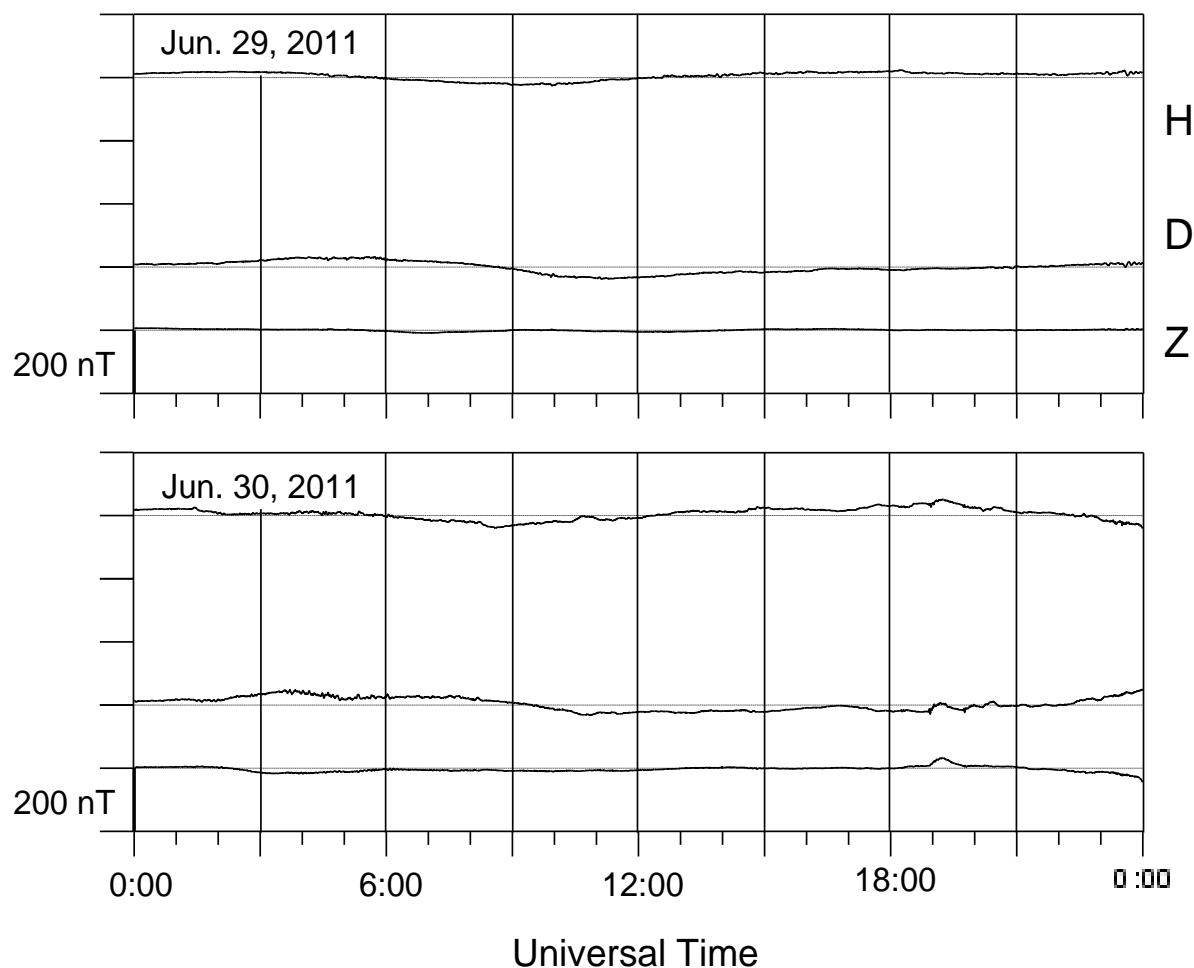
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Lovozero magnetometer



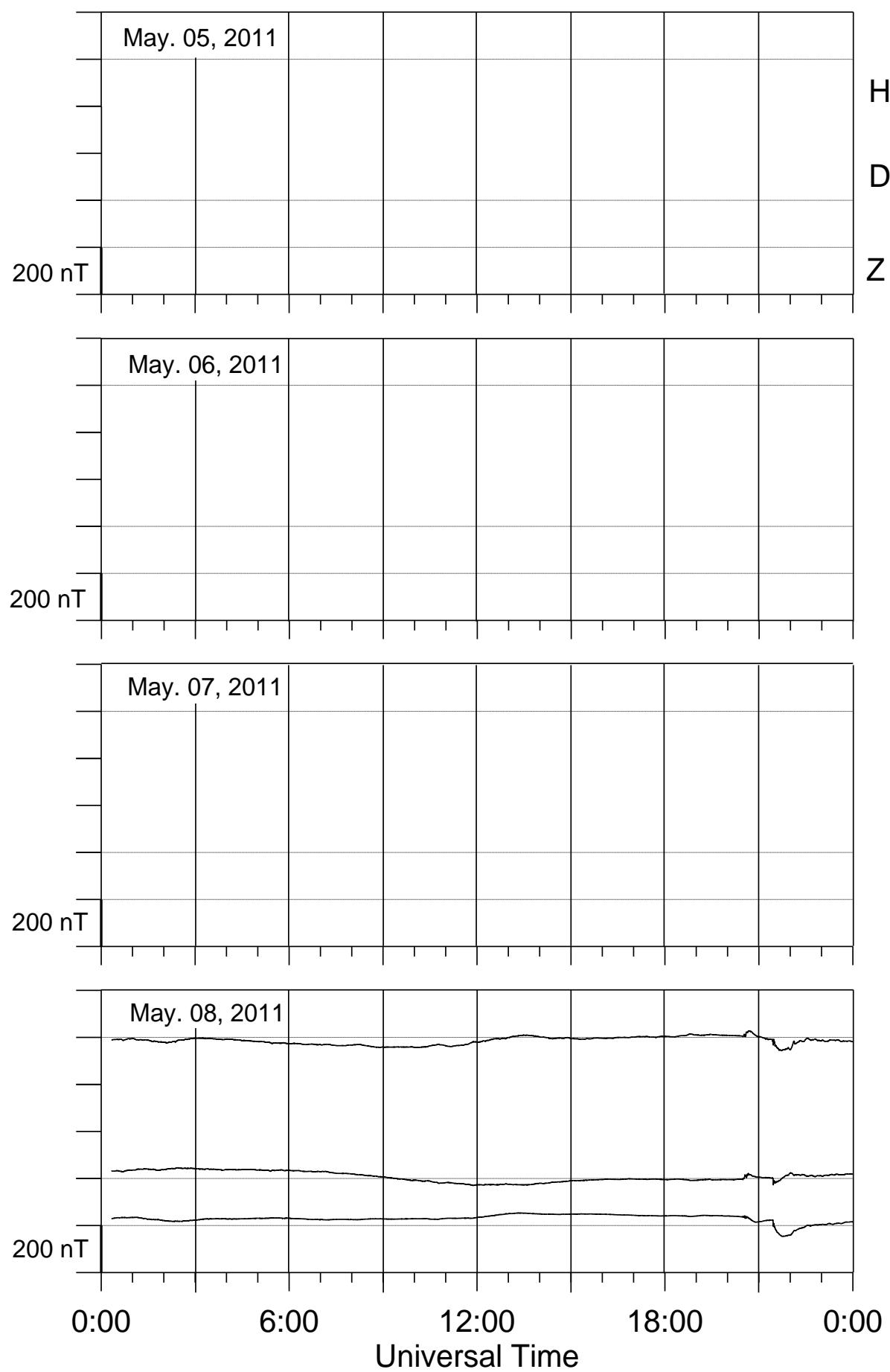
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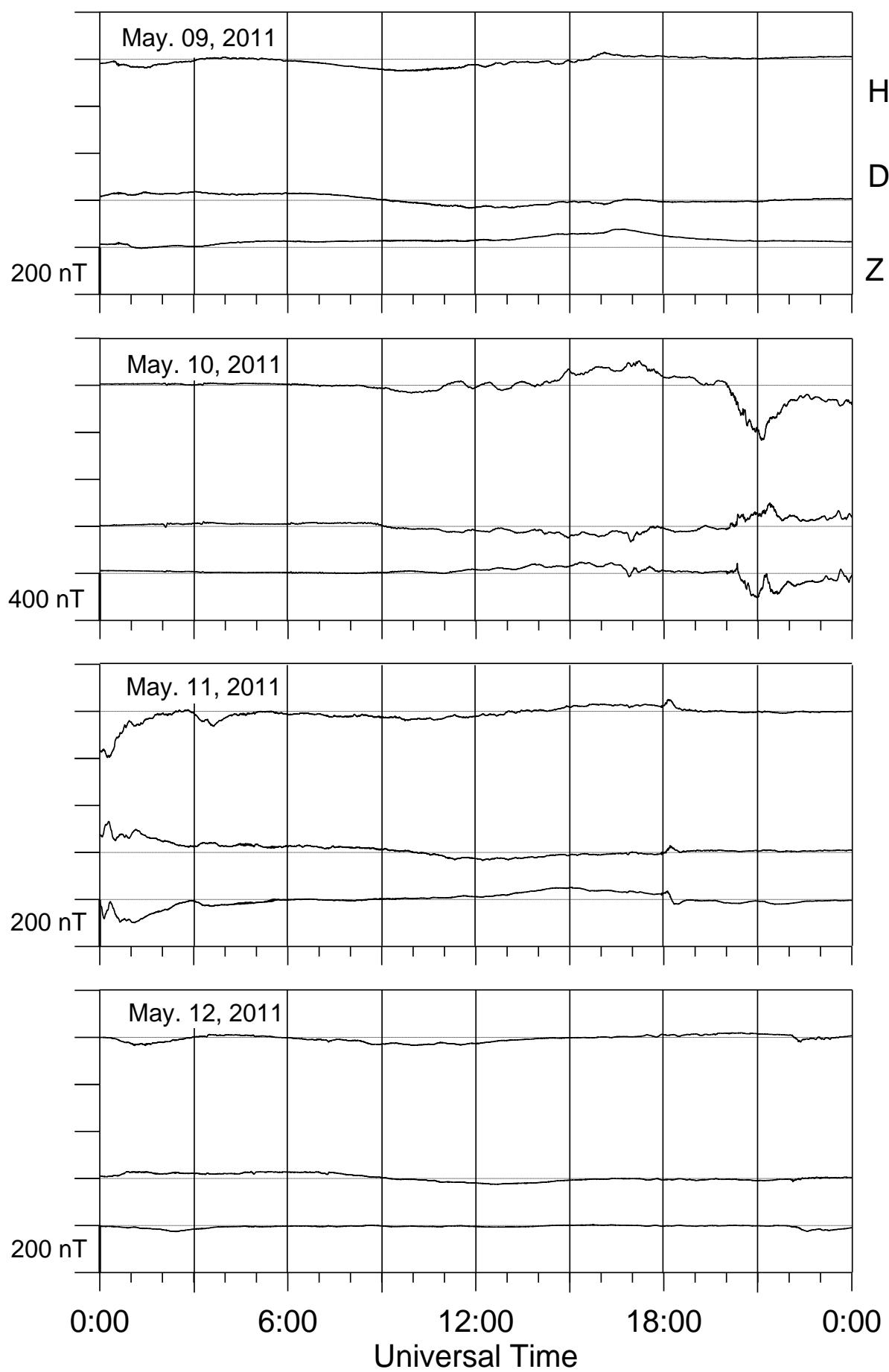
LOPARSKAYA MAGNETOGRAMS

April - June 2011

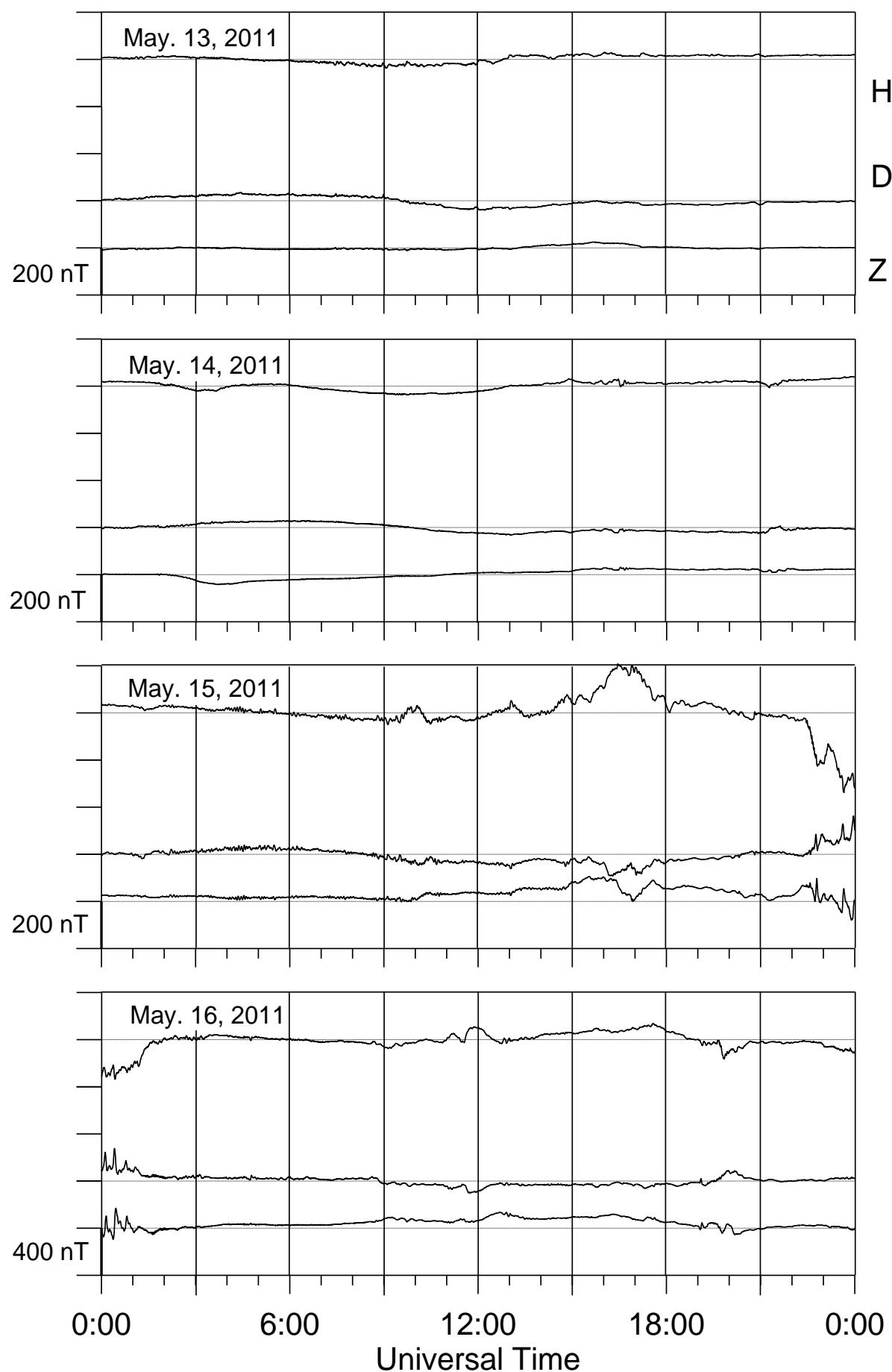
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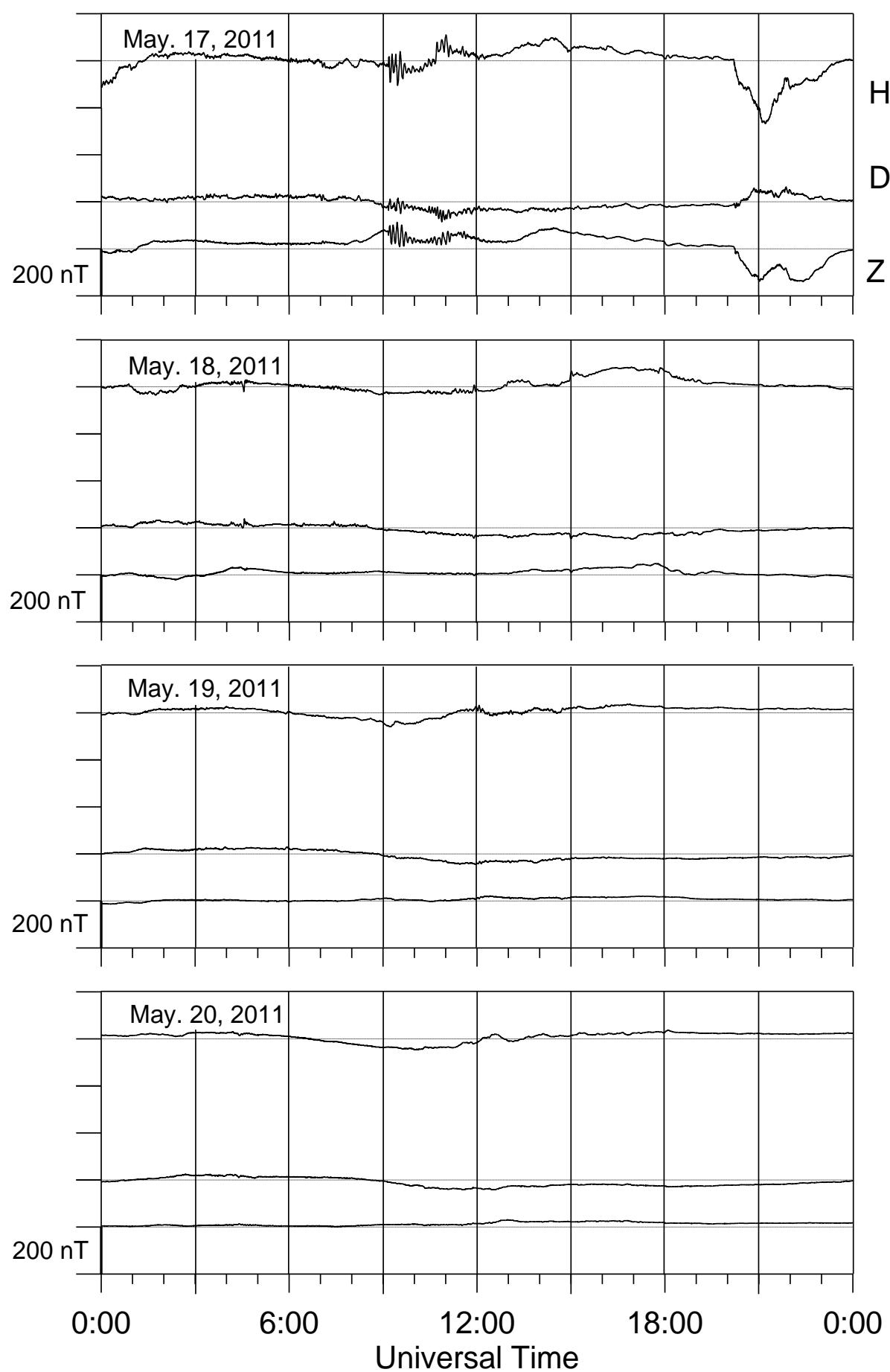
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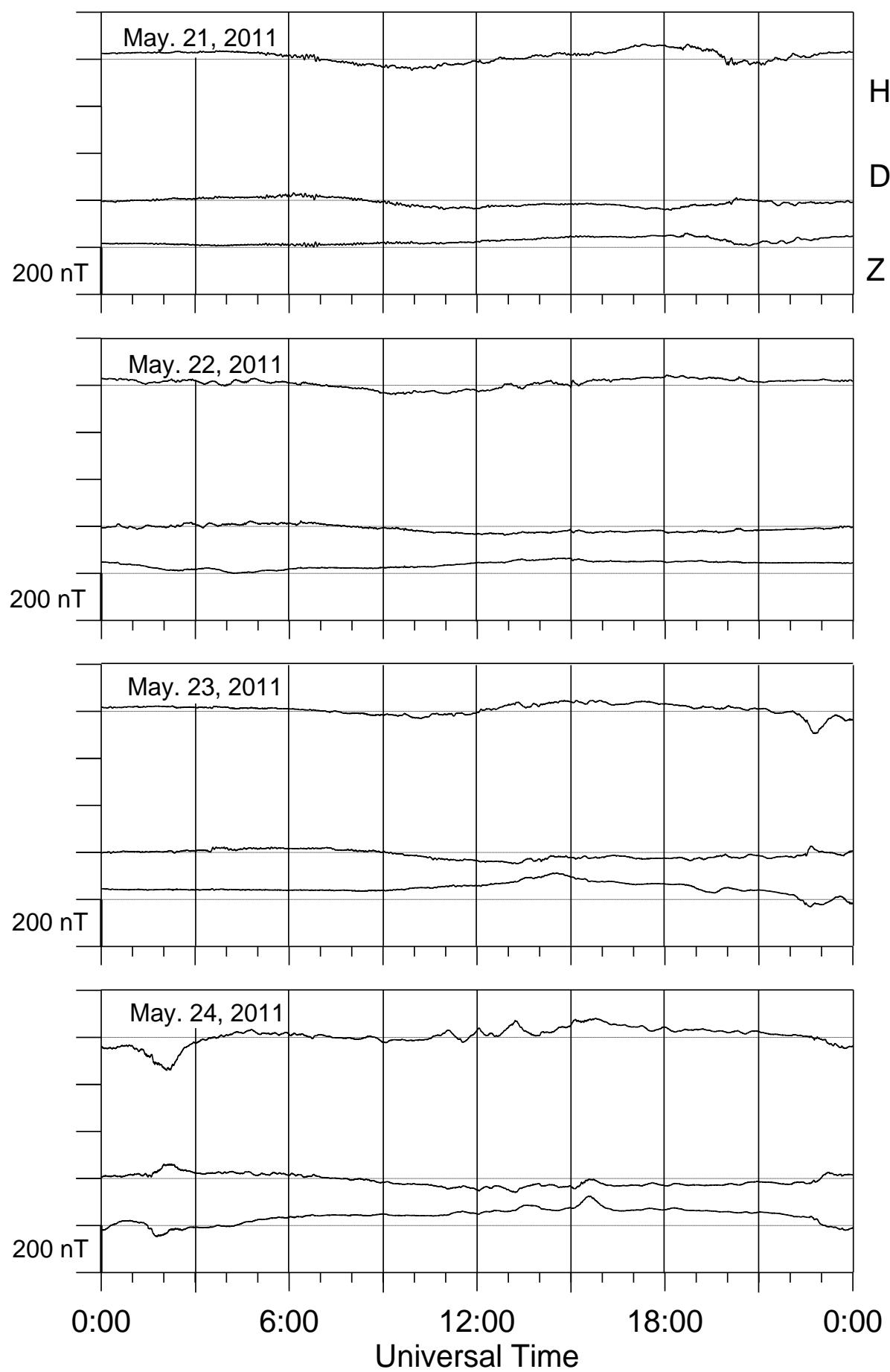
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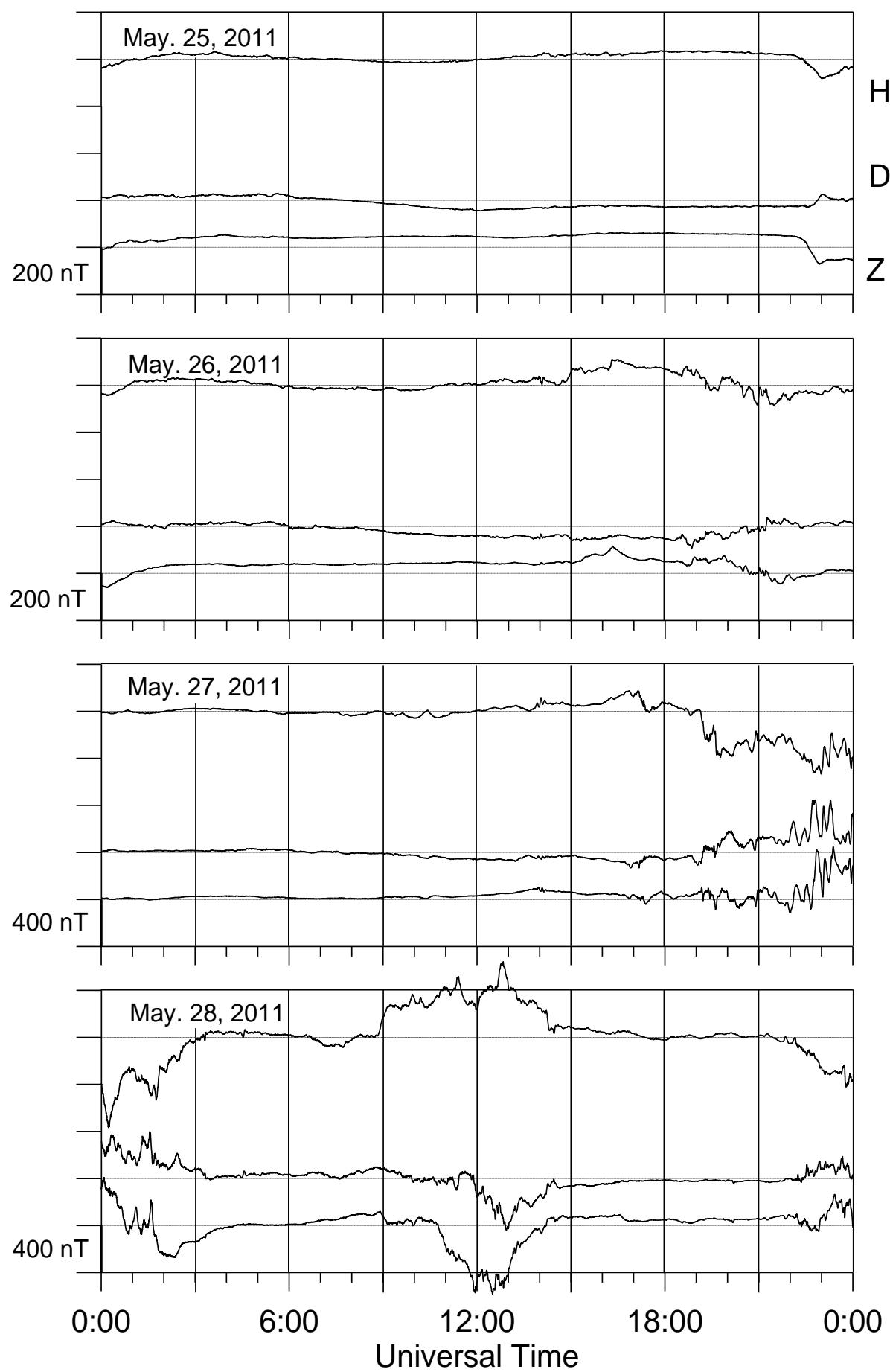
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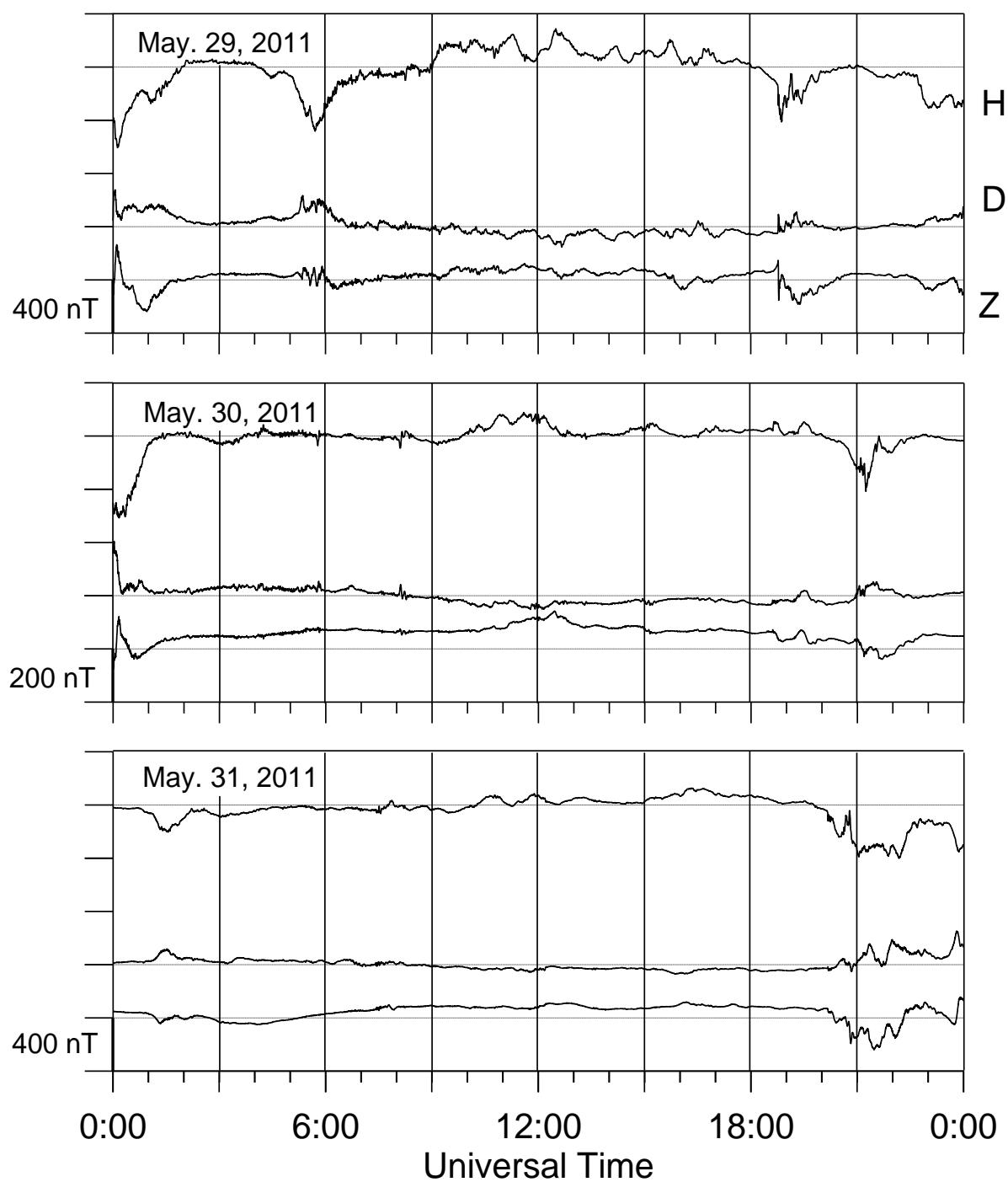
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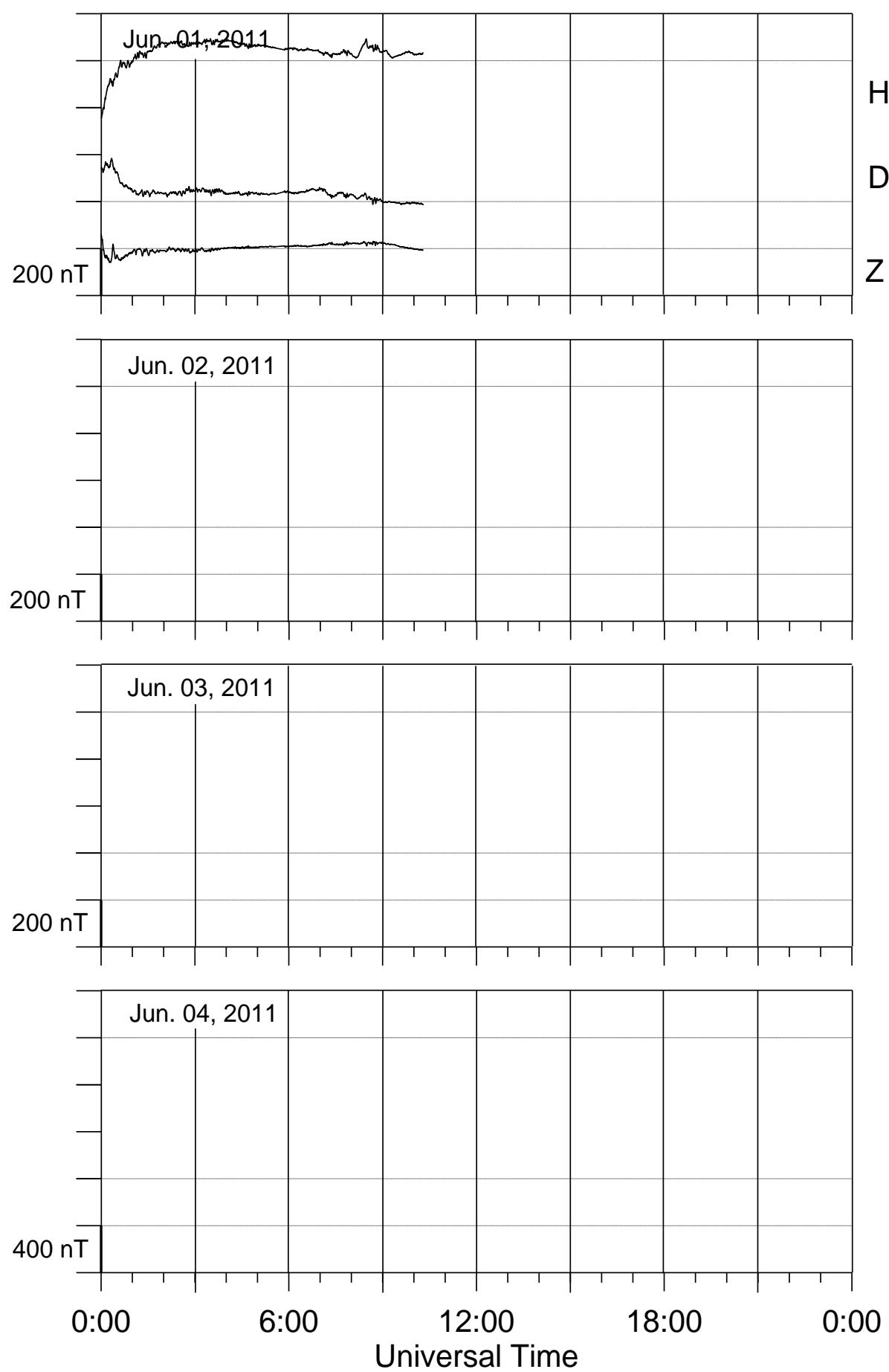
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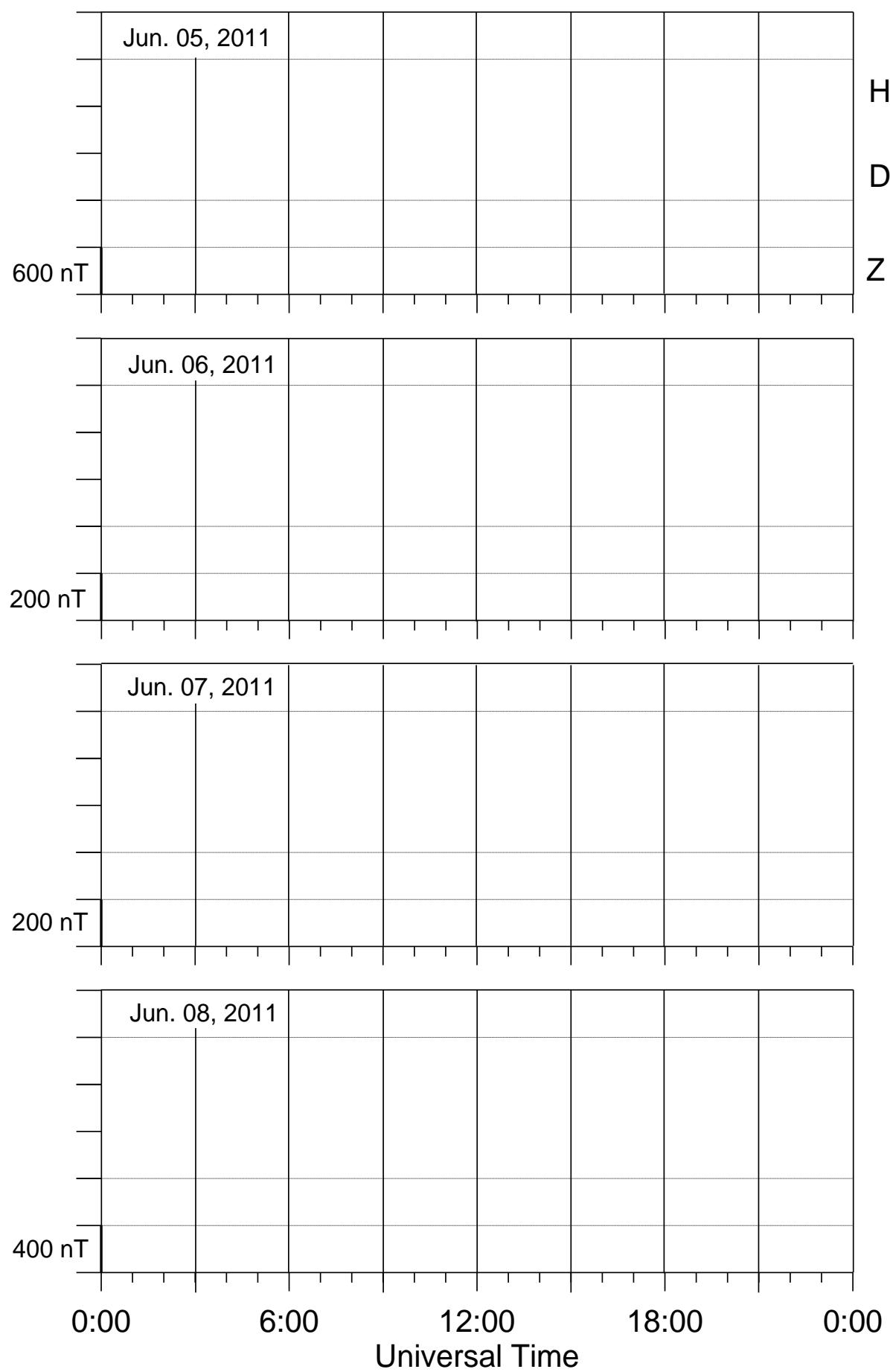
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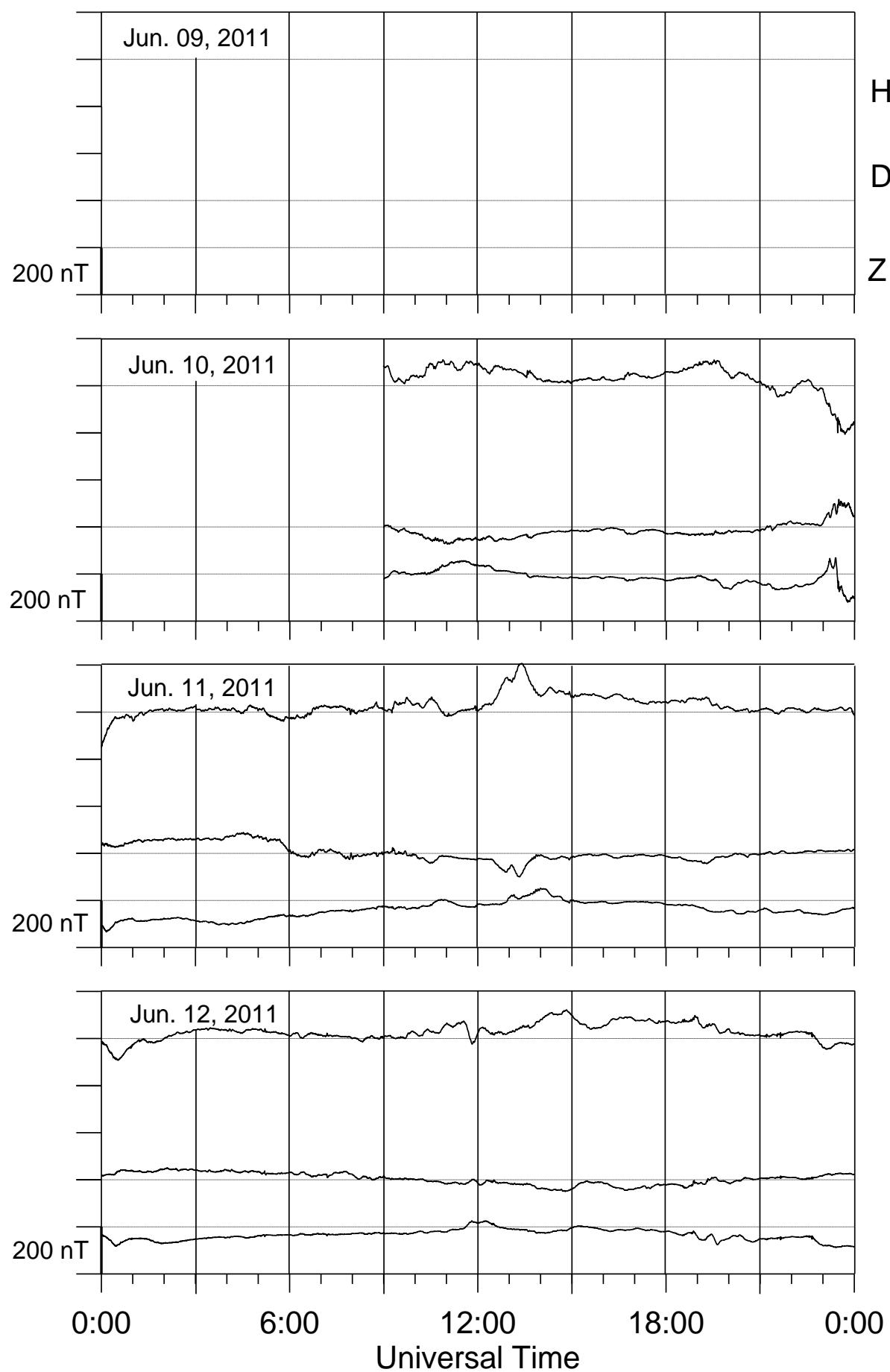
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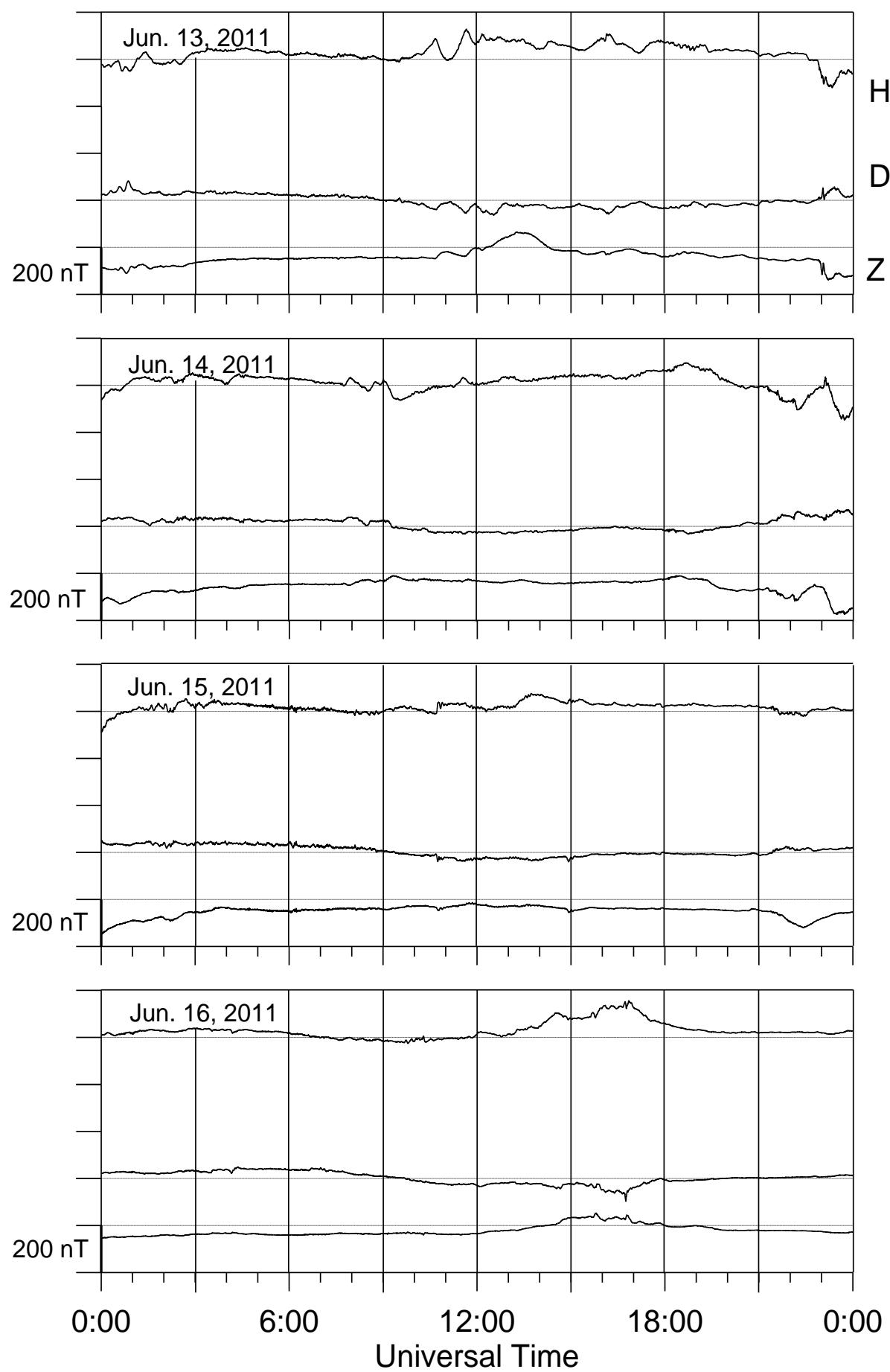
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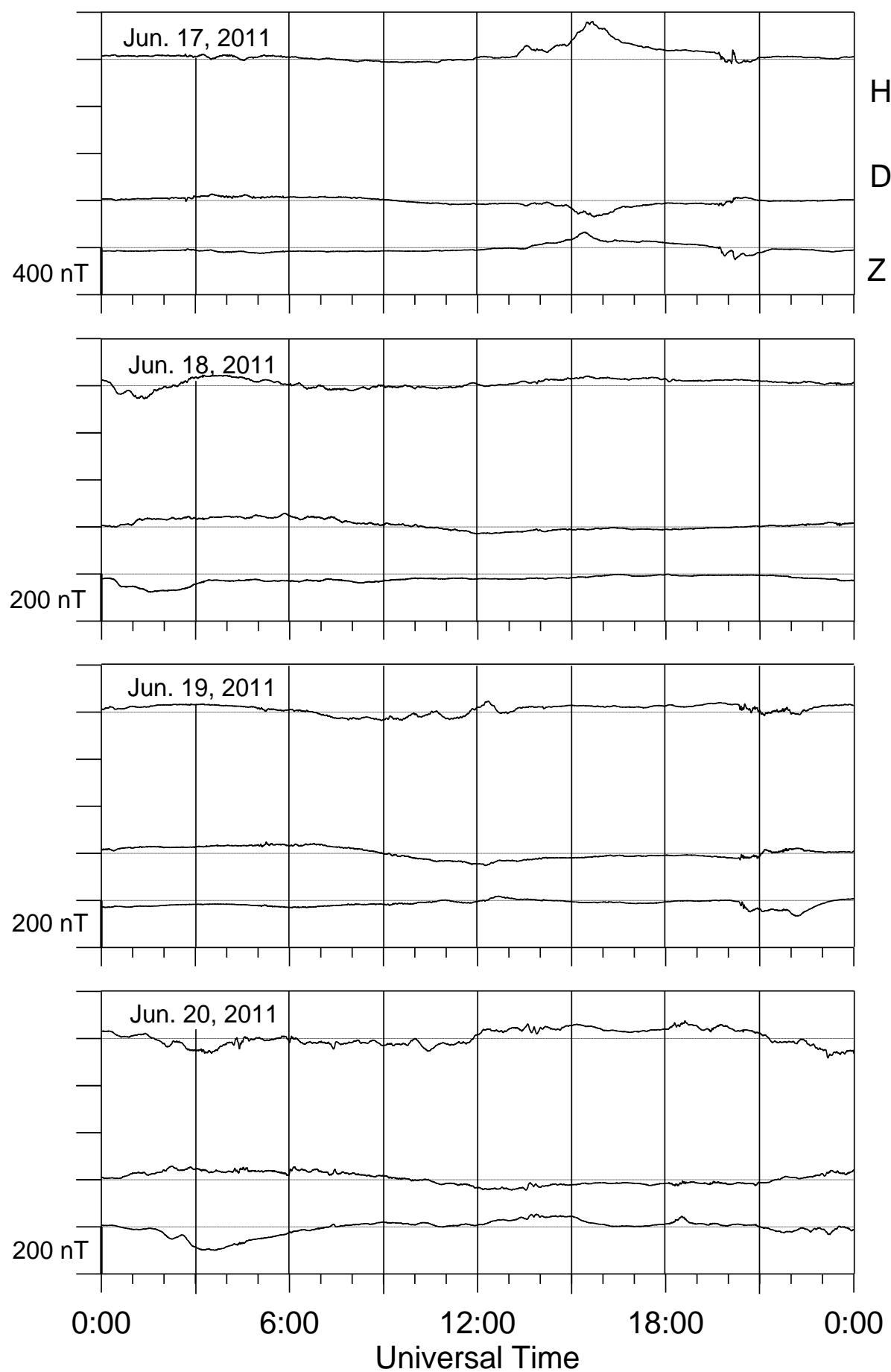
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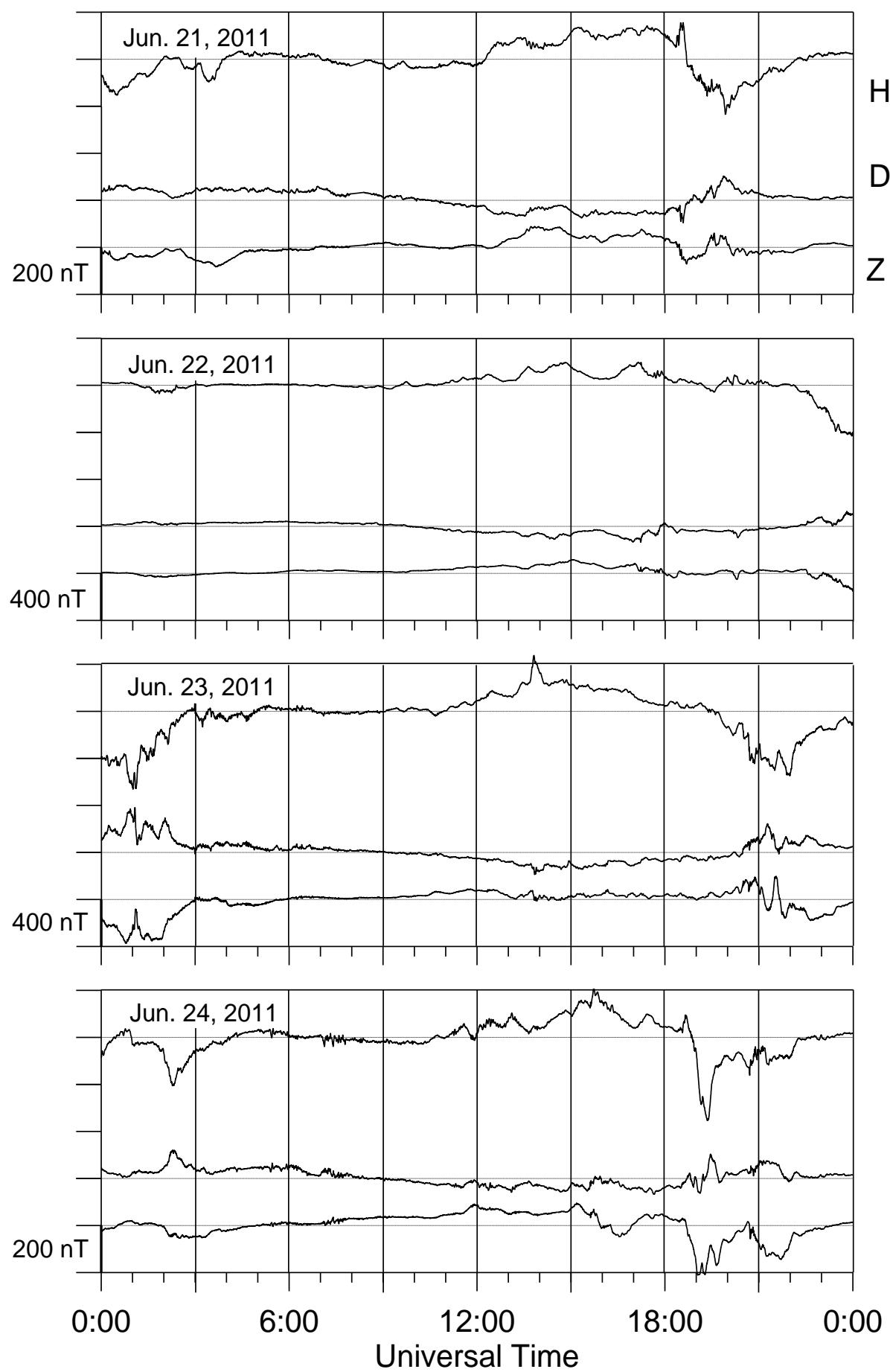
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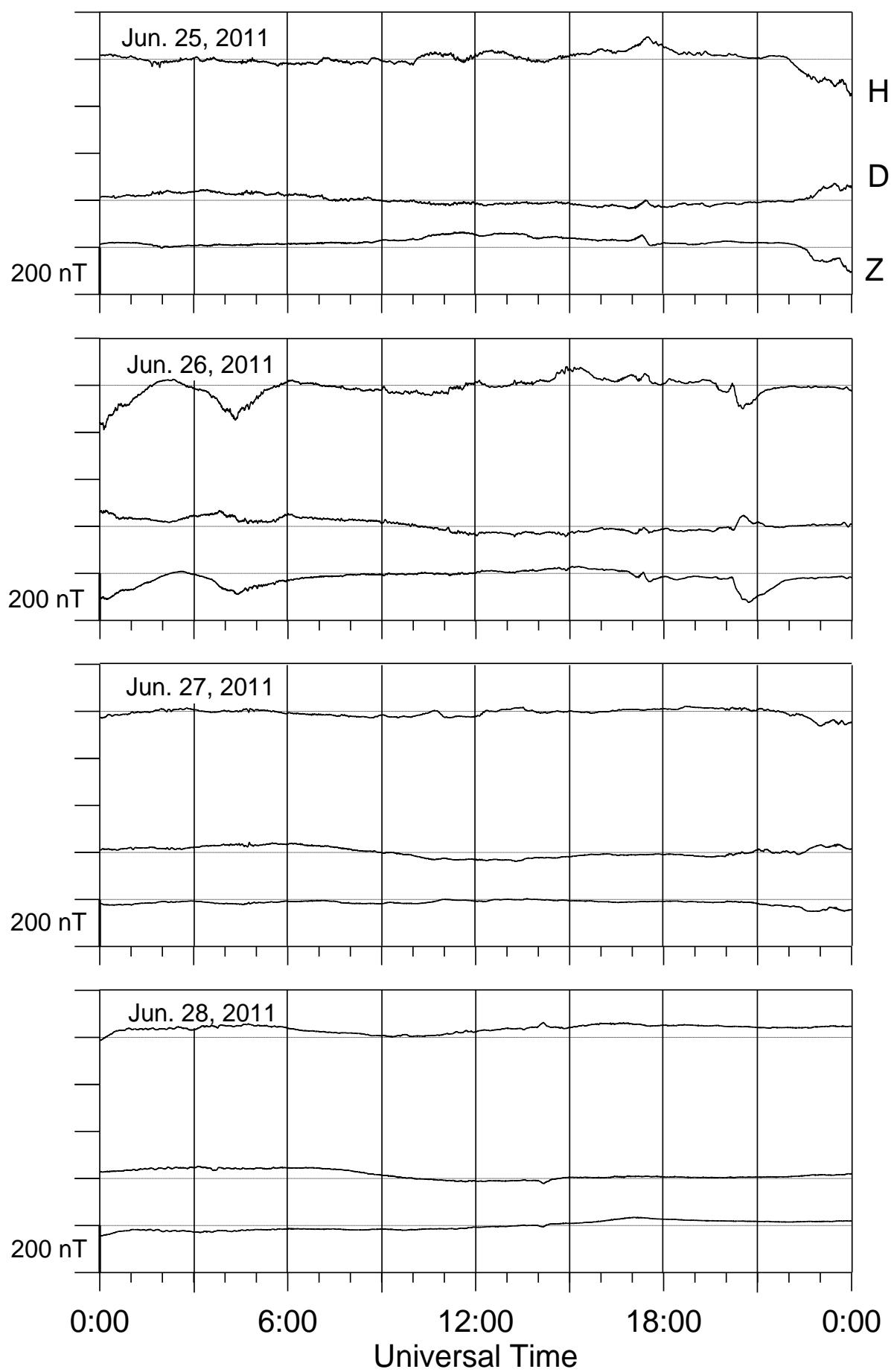
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