

POLAR GEOPHYSICAL INSTITUTE
RUSSIAN ACADEMY OF SCIENCES



PGI
GEOPHYSICAL DATA

2017

APRIL

MAY

JUNE

MURMANSK, APATITY, RUSSIA

PGI

GEOPHYSICAL DATA

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This bulletin presents the preliminary ground-based optical, geomagnetic and cosmic ray data obtained by Polar Geophysical Institute in the second quarter of 2017. All-sky camera observations are published only for the quarters when observations were carried out. All data are available by request.

Reviewer Orlov K.G.

Published since 1996

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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	416 577
May	416 723
June	417 362

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

Please visit <http://pgia.ru/lang/ru/data>

All-sky camera observations

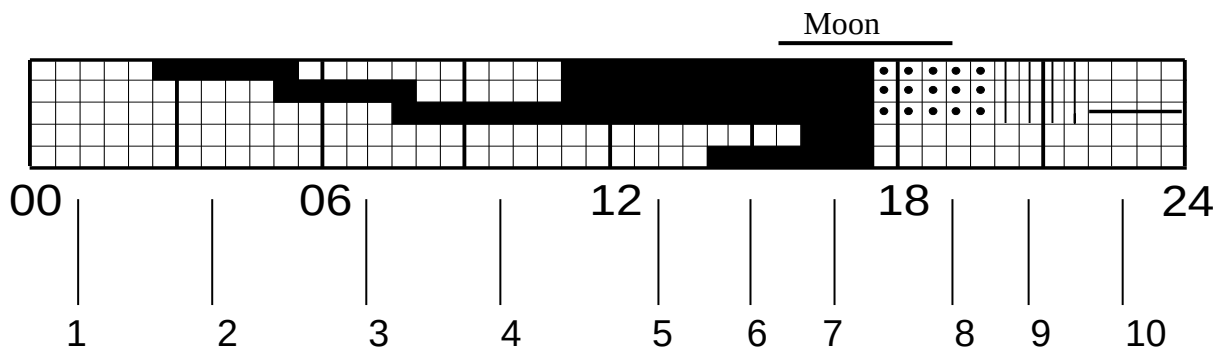
Calendar

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:

Coordinates of stations

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

Please visit also our Internet pages:

<http://pgia.ru/lang/ru/data/>

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GEOMAGNETIC K-INDICES, LOVOZERO

April, 2017

Lower limit of K=9 is 1500 nT

Day	Time, UT								
	03	06	09	12	15	18	21	24	
1	5 4 2	1 1 1	1 1 1	2 2 2	2 3 3	5 3 1	3 3 5	4 3 3	
2	3 2 1	1 1 1	1 1 1	1 1 2	2 2 3	3 2 3	1 0 2	1 0 0	
3	0 0 0	0 0 0	0 0 1	1 1 2	2 2 2	1 2 1	1 0 0	0 0 2	Q
4	2 1 2	2 2 3	3 3 2	4 4 3	2 1 1	1 0 1	0 0 0	0 1 1	
5	0 0 1	1 1 2	2 1 1	1 1 1	1 1 1	1 2 3	2 1 0	3 4 3	
6	1 0 1	1 1 1	1 1 1	1 1 2	2 5 5	5 3 0	0 2 1	1 0 1	
7	4 3 2	1 1 1	1 1 1	1 2 2	1 0 1	0 0 0	1 3 4	5 5 6	
8	4 3 3	3 2 2	1 2 2	3 3 1	2 2 2	2 3 3	3 3 5	6 6 7	
9	6 5 5	4 3 2	1 2 2	1 2 2	3 3 3	4 3 2	1 0 0	1 1 0	
10	0 1 0	0 1 1	1 1 1	1 1 1	1 1 2	1 1 1	1 2 2	2 0 0	Q
11	0 1 0	0 0 1	2 2 2	2 2 2	2 2 1	1 1 3	5 5 3	0 4 4	
12	3 3 3	2 1 1	1 1 1	1 1 2	1 1 0	0 0 0	0 0 0	0 0 0	
13	0 0 0	1 1 1	1 1 1	1 1 1	1 1 0	0 2 2	1 4 3	0 0 1	
14	4 4 4	2 1 2	2 1 1	1 2 2	3 3 4	4 5 3	6 6 5	5 5 5	
15	4 3 3	2 1 1	1 1 1	1 1 1	1 1 1	1 2 2	2 1 0	0 0 1	
16	1 0 1	1 1 1	1 1 1	1 2 1	1 1 0	0 0 0	1 1 2	2 1 0	
17	0 0 1	1 1 1	1 1 2	2 1 1	2 1 1	0 0 1	1 0 0	0 0 0	Q
18	2 2 0	1 1 1	1 0 1	1 1 1	2 1 0	0 1 1	1 2 3	1 1 4	
19	3 1 2	3 3 2	2 1 2	2 2 1	1 0 1	2 2 2	3 3 4	5 1 1	
20	6 6 5	6 5 2	2 2 2	2 3 3	5 4 2	0 1 4	4 3 4	5 3 0	
21	0 1 1	1 2 2	2 1 1	1 1 1	2 2 3	3 4 4	3 6 6	5 6 6	
22	5 4 5	5 5 3	4 3 3	4 5 4	4 5 6	5 5 3	6 6 3	5 7 7	
23	6 3 3	3 4 3	3 3 4	3 2 2	4 4 5	5 5 4	6 6 5	5 6 5	
24	6 5 4	5 5 3	2 2 2	3 4 4	2 2 3	4 5 5	5 6 5	5 5 5	
25	5 4 4	2 1 1	2 2 2	2 2 3	3 4 3	3 2 3	2 1 2	4 5 4	
26	4 4 3	1 2 1	1 2 2	1 1 2	2 2 2	1 2 3	3 4 4	3 1 3	
27	3 2 2	2 1 1	1 2 2	1 1 1	1 0 0	0 0 1	- - -	- - -	
28	1 1 1	2 2 2	1 0 1	2 1 1	1 1 2	2 2 3	1 0 2	3 4 5	
29	2 1 2	1 1 1	1 1 2	2 2 1	1 0 0	0 1 1	2 2 4	4 4 3	
30	2 2 1	1 1 1	1 1 1	1 1 1	1 0 0	0 1 2	2 2 2	1 3 4	

GEOMAGNETIC K-INDICES, LOVOZERO

May, 2017

Lower limit of K=9 is 1500 nT

Day	Time, UT								
	03	06	09	12	15	18	21	24	
1	3 1 1	1 1 0	0 0 1	1 1 1	1 1 1	1 1 1	1 1 1	2 1 0	
2	0 0 1	1 1 1	1 1 0	1 1 1	1 1 0	1 1 1	1 1 1	0 0 2	Q
3	1 1 1	1 1 1	1 1 1	1 1 1	1 0 1	1 0 1	1 1 0	0 0 0	
4	0 1 1	1 1 1	2 1 1	1 1 1	1 1 0	1 0 0	1 2 1	1 1 3	
5	3 2 1	2 2 1	1 1 1	1 1 1	1 0 0	0 0 0	0 0 1	0 0 1	
6	0 1 1	1 1 1	1 1 1	1 1 1	1 1 1	0 0 1	1 1 1	1 1 0	Q
7	1 1 1	1 1 0	0 1 2	2 2 2	2 1 1	2 3 2	2 5 4	1 2 3	
8	2 2 1	1 2 2	2 1 2	2 1 1	1 1 1	1 1 1	2 1 1	0 0 2	
9	2 1 1	2 2 2	1 1 1	1 1 1	2 1 2	1 1 1	1 1 1	0 0 0	
10	0 1 1	2 1 1	1 1 1	1 1 2	1 2 2	1 0 1	1 1 1	1 2 2	
11	1 1 1	1 1 1	1 1 2	2 1 1	1 1 1	1 1 1	1 1 1	1 1 1	
12	1 1 1	2 2 1	1 2 2	1 2 2	2 1 2	0 1 1	2 1 1	1 1 0	
13	0 1 1	1 1 1	1 1 2	2 2 2	2 1 1	1 1 1	1 0 1	0 0 1	
14	1 1 1	1 1 1	2 1 1	2 2 3	2 2 2	2 1 1	1 1 1	1 1 1	
15	1 1 1	1 1 2	2 1 2	3 3 2	2 2 1	2 2 3	2 3 5	4 2 1	
16	1 1 2	2 2 1	2 1 2	2 2 2	3 2 3	3 1 1	1 1 0	0 0 1	
17	1 1 2	2 1 2	2 2 3	2 1 3	2 1 1	1 2 2	2 1 0	1 4 5	
18	4 4 3	2 3 3	2 1 1	1 1 1	0 0 0	1 1 1	1 1 1	1 1 1	
19	1 1 1	2 2 2	2 2 1	1 1 2	2 3 4	5 4 3	4 6 5	3 3 3	
20	4 5 6	4 2 2	2 3 3	4 4 3	3 5 5	5 3 3	3 5 3	4 5 5	
21	4 3 3	3 2 2	2 1 1	2 2 2	2 2 2	1 1 2	0 3 4	3 3 3	
22	3 3 2	2 2 1	1 1 1	1 2 3	2 2 4	3 3 3	3 3 5	5 5 4	
23	1 1 2	2 2 2	1 1 1	1 1 1	2 2 2	1 3 2	2 3 2	4 3 2	
24	2 2 2	2 2 1	1 1 1	1 1 1	1 1 0	0 1 0	0 1 0	0 0 0	
25	0 1 1	1 1 1	1 1 1	1 1 1	1 1 1	1 1 0	0 0 0	0 0 1	Q
26	2 1 1	2 2 2	1 2 2	2 1 1	1 1 0	0 0 0	1 1 1	0 0 0	
27	1 1 2	1 1 1	1 1 1	1 1 2	2 1 1	3 3 3	3 2 2	2 7 7	
28	7 8 8	7 8 7	5 5 4	4 5 5	5 4 5	4 4 4	3 1 1	1 1 1	
29	1 1 1	2 2 2	- - -	- - -	- 5 5	5 2 1	3 2 0	0 0 0	
30	0 1 2	4 4 1	1 2 1	1 1 1	0 0 0	0 0 0	0 0 0	1 1 1	
31	1 1 1	2 2 2	2 1 1	1 1 0	1 1 0	0 1 2	1 1 1	0 0 0	

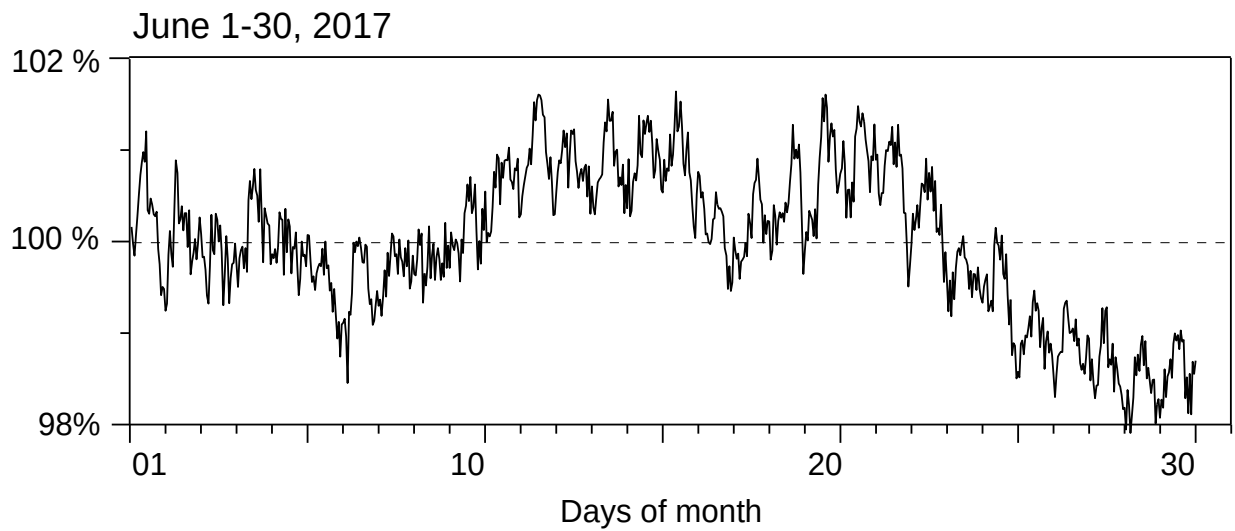
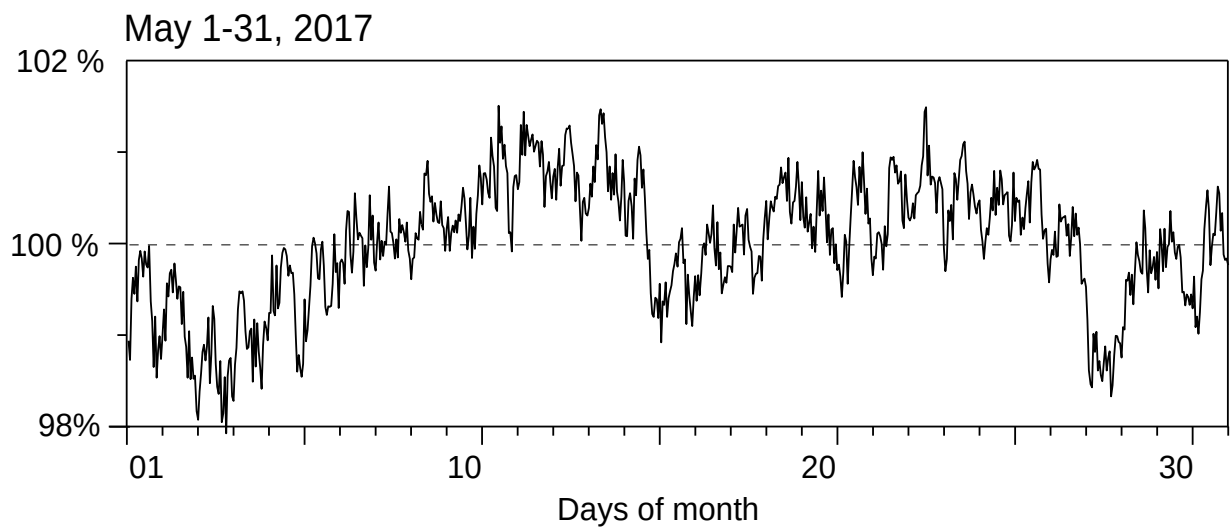
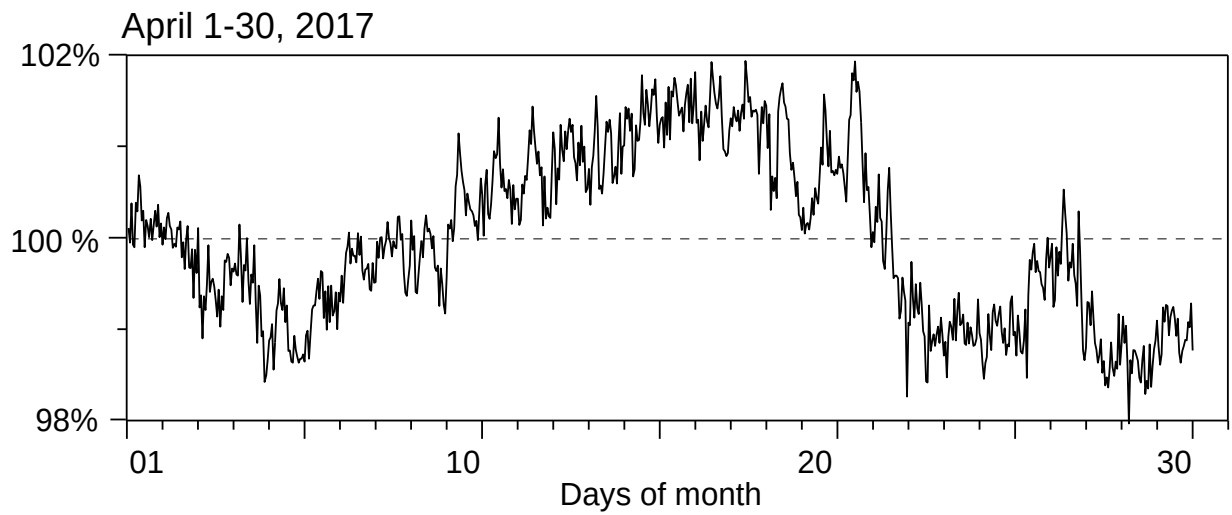
GEOMAGNETIC K-INDICES, LOVOZERO

June, 2017

Lower limit of K=9 is 1500 nT

Day	Time, UT								
	03	06	09	12	15	18	21	24	
1	0 1 1	1 1 1	1 1 2	1 2 2	2 2 1	1 1 -	2 2 -	- - -	
2	- - -	- - -	2 1 1	1 1 1	1 1 1	1 1 1	1 1 1	0 0 0	
3	0 0 1	1 1 1	1 1 2	1 2 2	3 4 4	5 5 1	1 1 1	- - -	
4	0 1 1	1 1 1	1 1 1	1 1 1	1 0 0	0 0 1	0 0 0	0 0 1	Q
5	1 1 1	1 1 1	1 1 2	2 1 1	2 2 3	1 1 1	1 1 1	0 1 1	
6	1 2 2	2 2 1	1 1 1	1 1 1	1 1 1	1 0 1	1 1 1	1 0 0	
7	1 1 2	1 2 3	2 1 1	0 1 1	1 1 1	1 1 1	1 1 1	0 1 1	
8	1 2 2	2 2 2	1 1 1	1 1 1	1 1 0	1 1 1	1 0 0	0 0 0	
9	1 2 1	1 2 1	1 1 1	1 1 1	1 1 1	1 1 1	1 1 1	0 0 0	Q
10	1 1 1	1 2 2	1 1 2	2 2 2	2 2 1	1 1 1	1 1 0	0 0 0	
11	0 0 1	2 2 2	2 1 2	2 2 2	2 2 2	3 5 4	3 2 6	4 3 1	
12	1 1 1	2 1 1	1 1 1	1 1 1	1 3 3	1 1 1	2 2 3	4 3 3	
13	3 3 2	2 1 1	1 2 2	1 2 2	2 1 1	1 2 2	1 1 0	0 0 0	
14	0 0 0	0 1 1	1 1 2	2 2 2	2 1 1	1 1 1	0 0 0	0 0 0	Q
15	0 1 1	1 1 1	2 2 2	2 1 2	2 2 1	1 1 0	0 1 0	0 0 1	
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17	6 5 3	3 2 2	2 2 2	1 2 2	2 3 2	3 3 3	1 2 5	4 3 4	
18	5 6 5	3 2 2	2 1 2	2 2 2	2 3 3	2 1 1	1 3 3	3 0 2	
19	1 1 1	1 2 2	1 0 1	2 1 2	2 2 1	0 0 0	0 0 0	1 1 0	
20	1 0 1	1 1 1	- - 2	2 1 1	1 1 2	2 1 0	0 0 0	0 0 0	
21	0 0 0	0 1 1	2 2 2	1 2 2	2 1 1	1 1 2	2 2 3	4 4 4	
22	4 3 2	1 0 0	0 0 1	1 1 1	1 1 1	1 1 1	0 0 1	1 1 1	
23	0 1 0	1 1 1	1 1 2	2 1 2	2 2 2	1 1 2	2 2 1	1 1 2	
24	1 0 1	1 1 2	2 2 1	1 2 2	2 2 2	3 3 3	2 4 3	2 5 5	
25	4 2 2	1 1 2	2 2 2	1 2 2	2 2 3	3 3 2	2 1 2	2 1 1	
26	2 3 3	1 1 1	1 1 2	2 2 2	2 2 2	1 2 2	3 1 0	0 0 1	
27	1 1 1	1 1 1	1 1 1	1 1 2	2 2 1	1 2 2	2 1 1	0 0 0	
28	0 1 1	0 0 1	1 1 1	1 1 1	2 2 2	1 1 1	1 0 0	0 0 0	
29	0 0 1	2 1 2	2 1 2	2 2 2	1 1 1	0 0 1	1 1 1	0 0 0	
30	0 0 1	1 1 1	1 2 1	2 1 2	2 1 1	1 1 1	1 1 1	1 2 2	

Apatity neutron monitor



ALL – SKY CAMERA OBSERVATIONS

April 2017

CALENDAR OF TV OBSERVATIONS

April 01 - 02

[illegible]

April 02 - 03

[illegible]

April 03 - 04

[illegible]

April 04 - 05

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

April 05- 06

[illegible]

April 06 - 07

[illegible]

April 07 - 08

[illegible]

April 08 - 09

[illegible]

CALENDAR OF TV OBSERVATIONS

April 09 - 10

[illegible]

April 10 - 11

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

April 11- 12

[illegible]

April 12 - 13

[illegible]

April 13 - 14

[illegible]

April 14 - 15

[illegible]

April 15 - 16

[illegible]

April 16 - 17

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

CALENDAR OF TV OBSERVATIONS

April 17 - 18

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

April 18 - 19

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

April 19 - 20

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

April 20 - 21

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

April 21 - 22

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

April 22 - 23

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

April 23 - 24

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

April 24 - 25

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

Apatity ascaplots

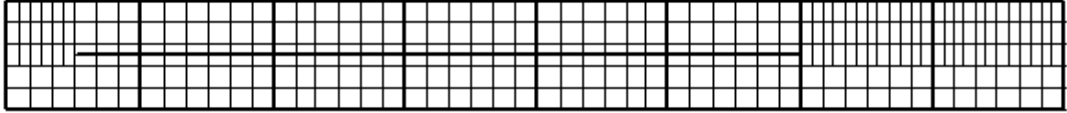
Apr. 01, 2017



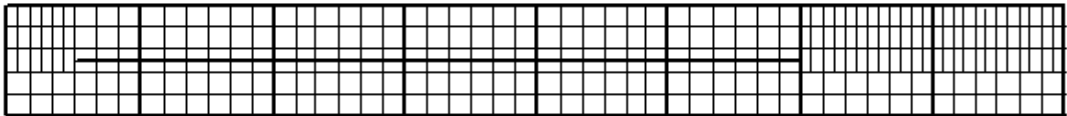
Apr. 02, 2017



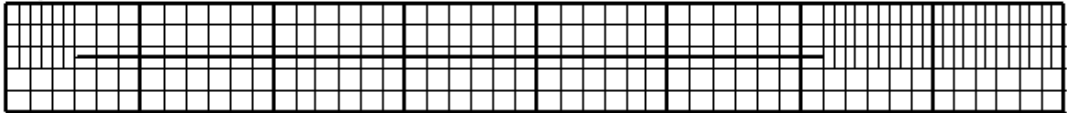
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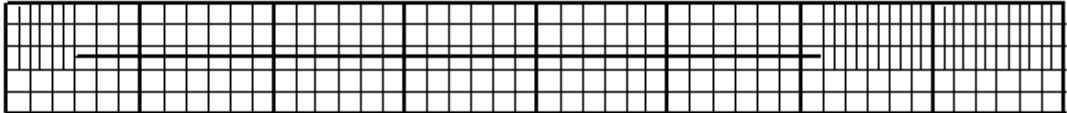
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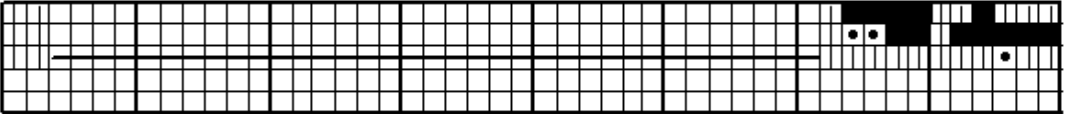
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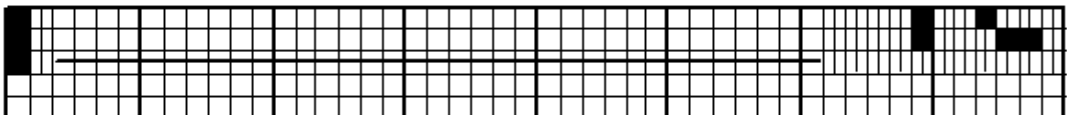
Apr. 06, 2017



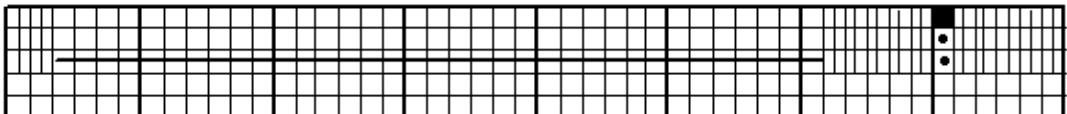
Apr. 07, 2017



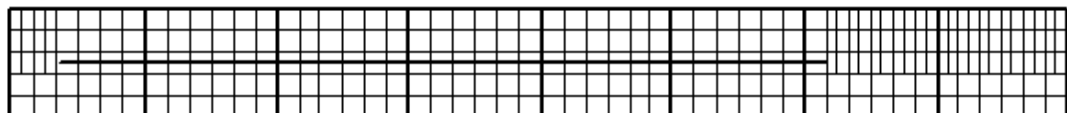
Apr. 08, 2017



Apr. 09, 2017



Apr. 10, 2017



00

06

12

18

24

Universal Time

Apatity ascaplots

Apr. 11, 2017



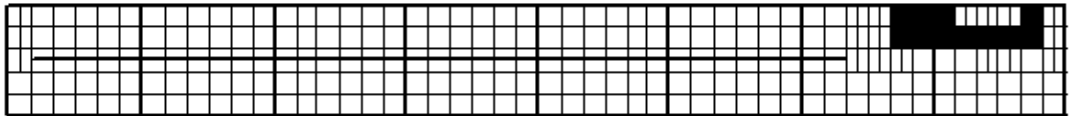
Apr. 12, 2017



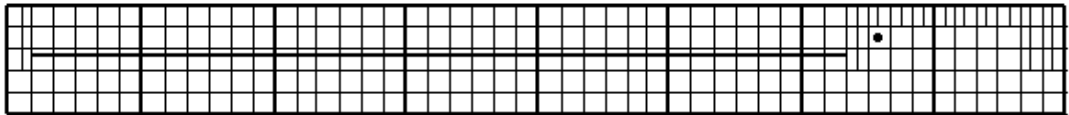
Apr. 13, 2017



Apr. 14, 2017



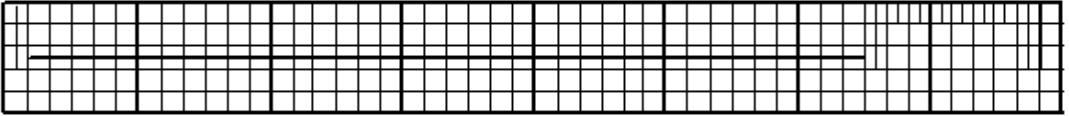
Apr. 15, 2017



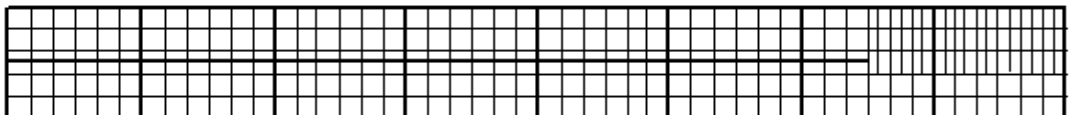
Apr. 16, 2017



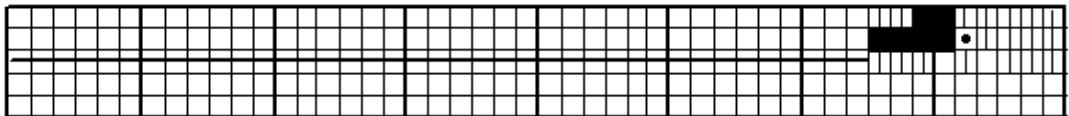
Apr. 17, 2017



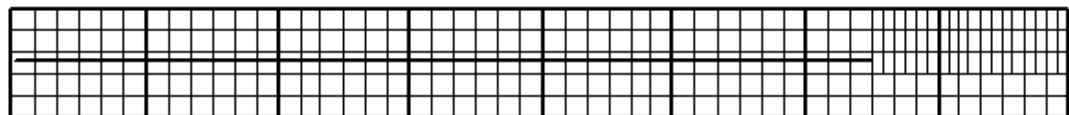
Apr. 18, 2017



Apr. 19, 2017



Apr. 20, 2017

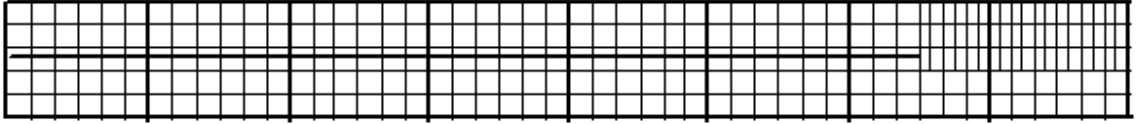


00 06 12 18 24

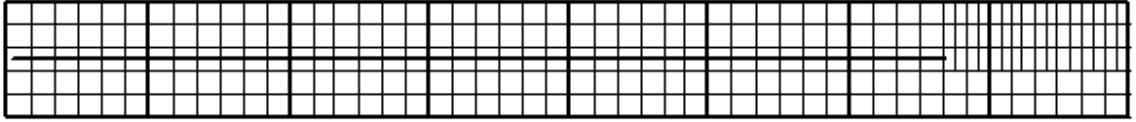
Universal Time

Apatity ascaplots

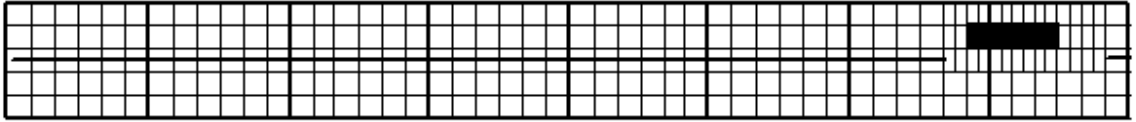
Apr. 21, 2017



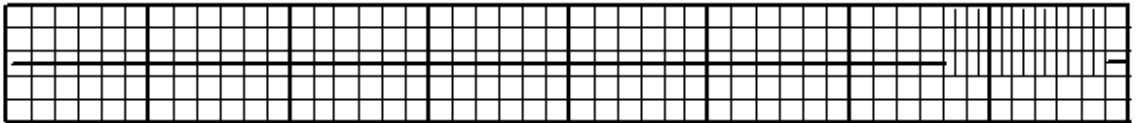
Apr. 22, 2017



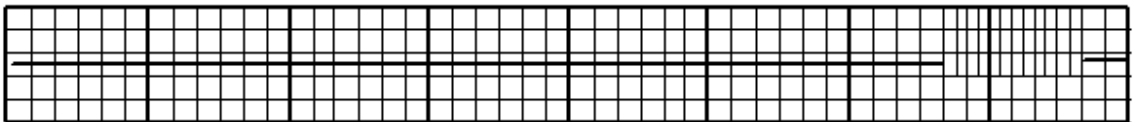
Apr. 23, 2017



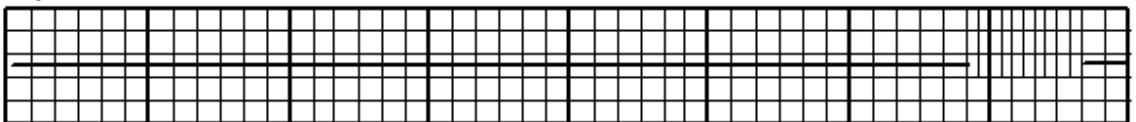
Apr. 24, 2017



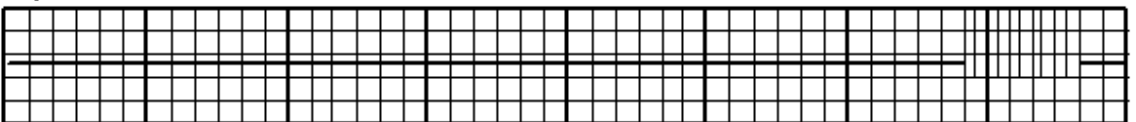
Apr. 25, 2017



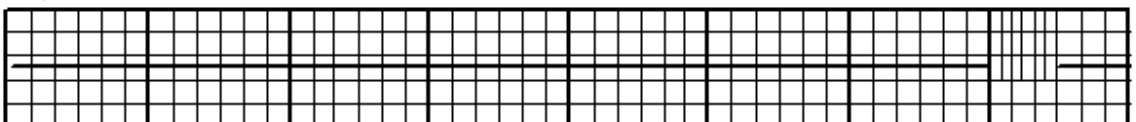
Apr. 26, 2017



Apr. 27, 2017



Apr. 28, 2017



00

06

12

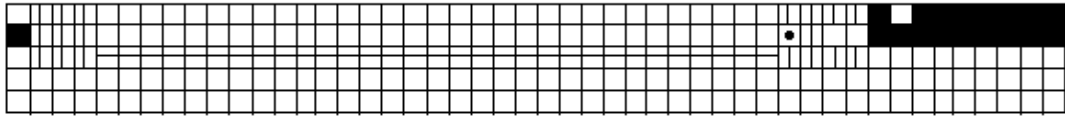
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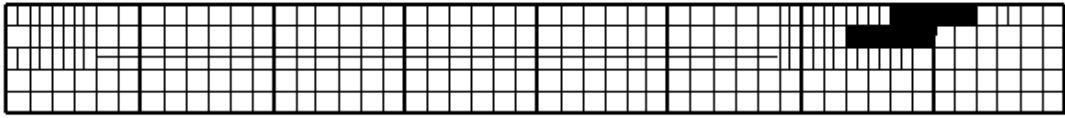
Universal Time

Lovozero ascaplots

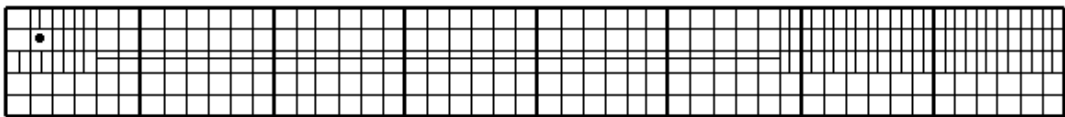
Apr. 01, 2017



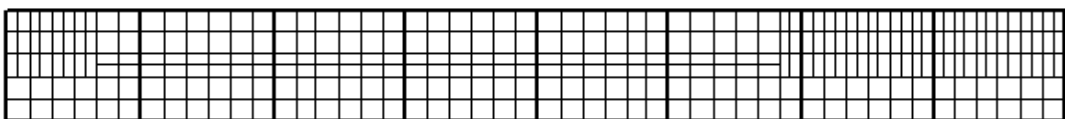
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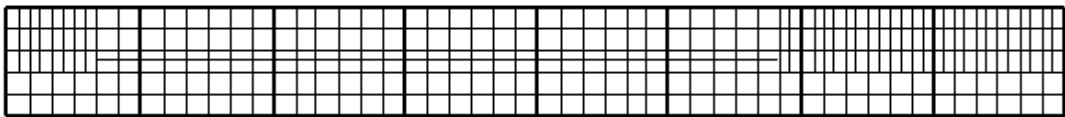
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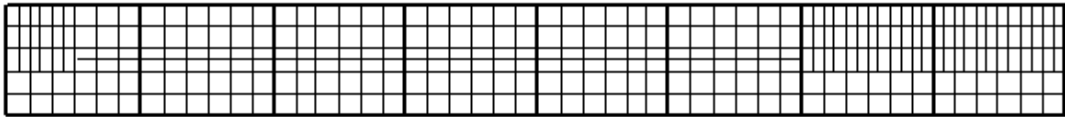
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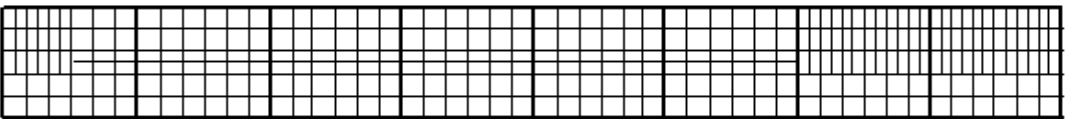
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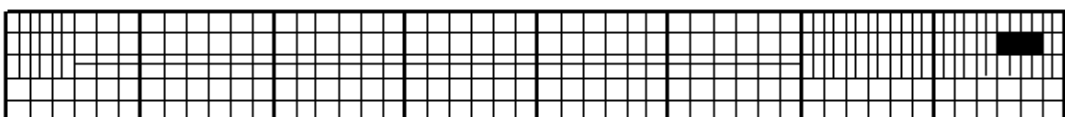
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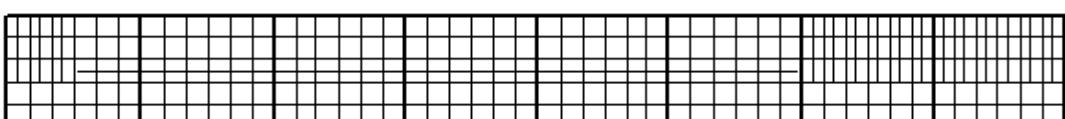
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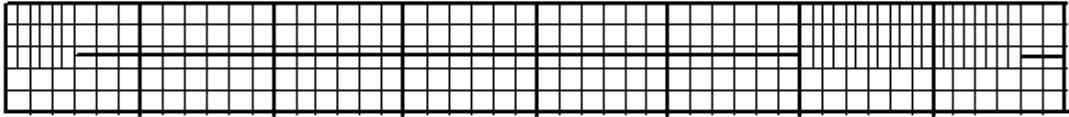


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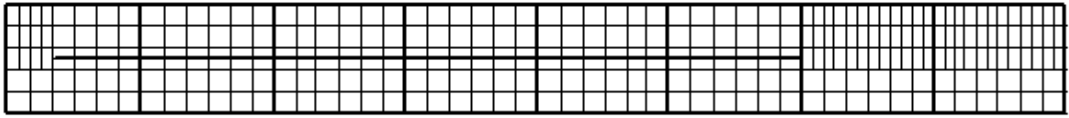
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Lovozero ascaplots

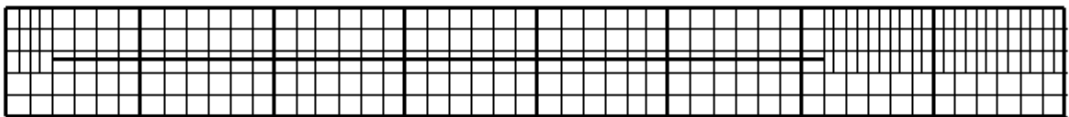
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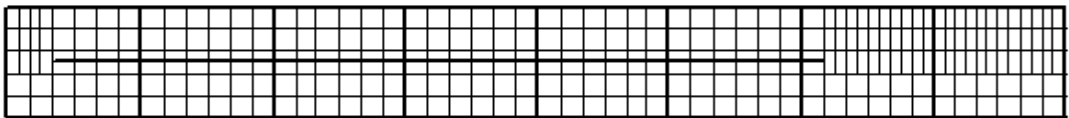
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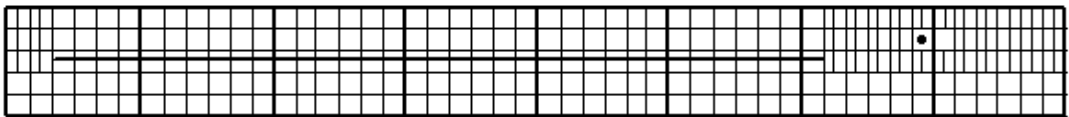
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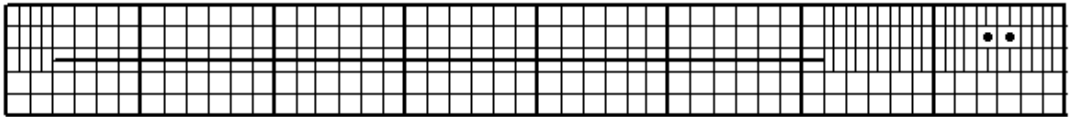
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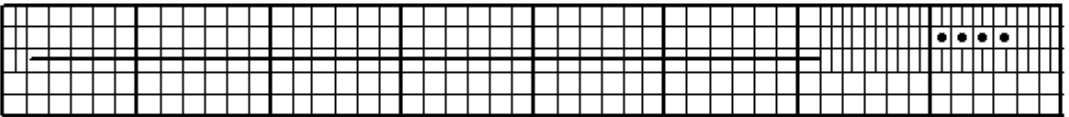
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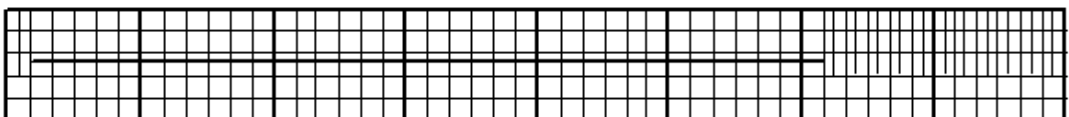
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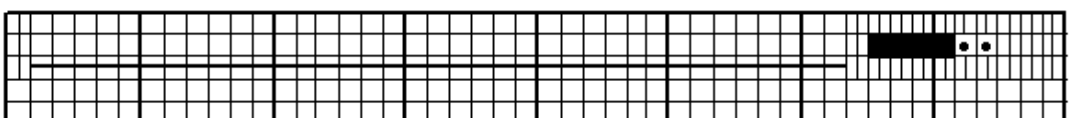
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Apr. 18, 2017



Apr. 19, 2017



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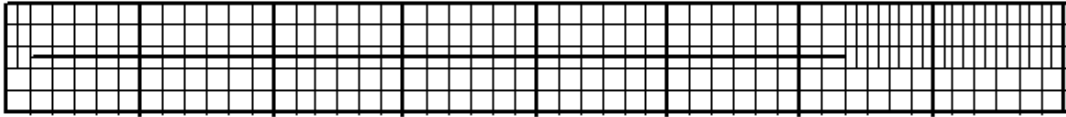


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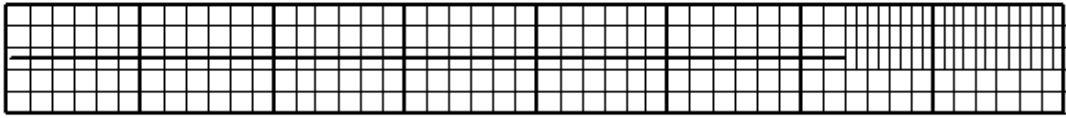
Universal Time

Lovozero ascaplots

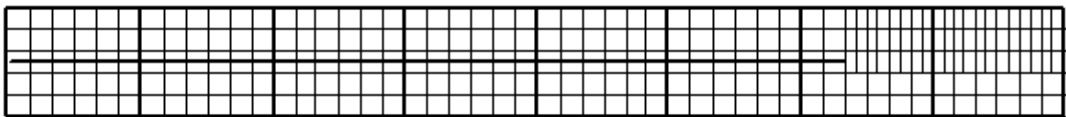
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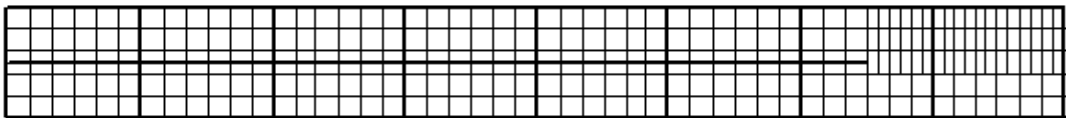
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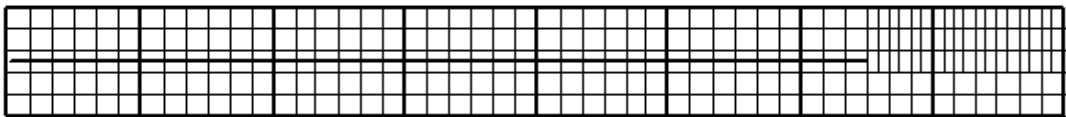
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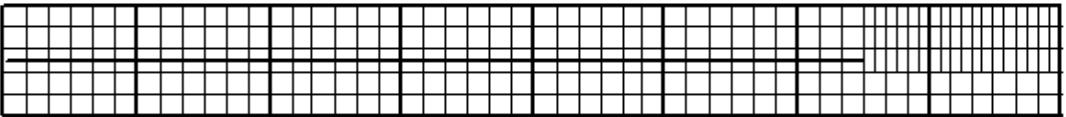
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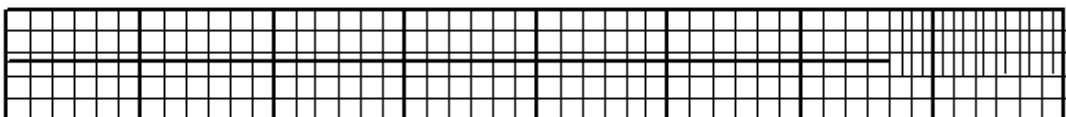
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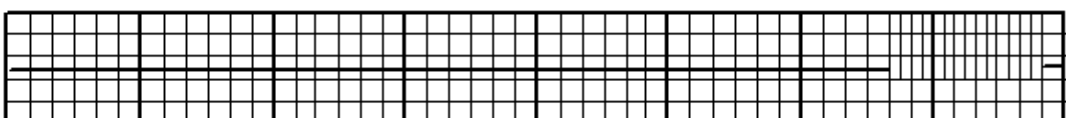
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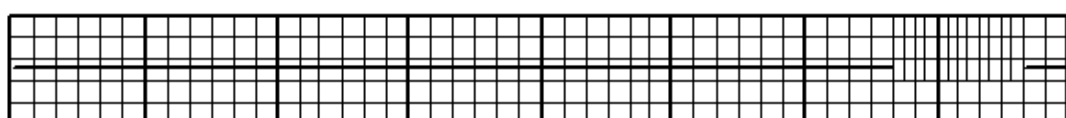
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Apr. 29, 2017



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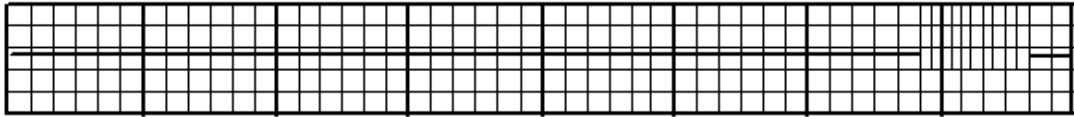


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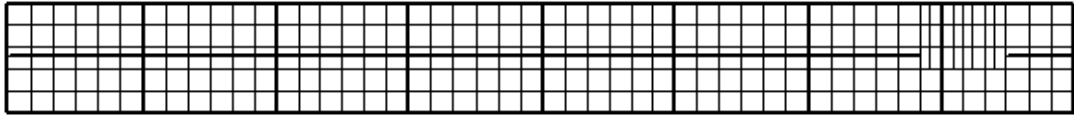
Universal Time

Lovozero ascaplots

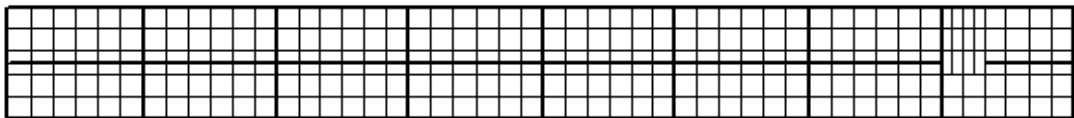
May. 01, 2017



May. 02, 2017



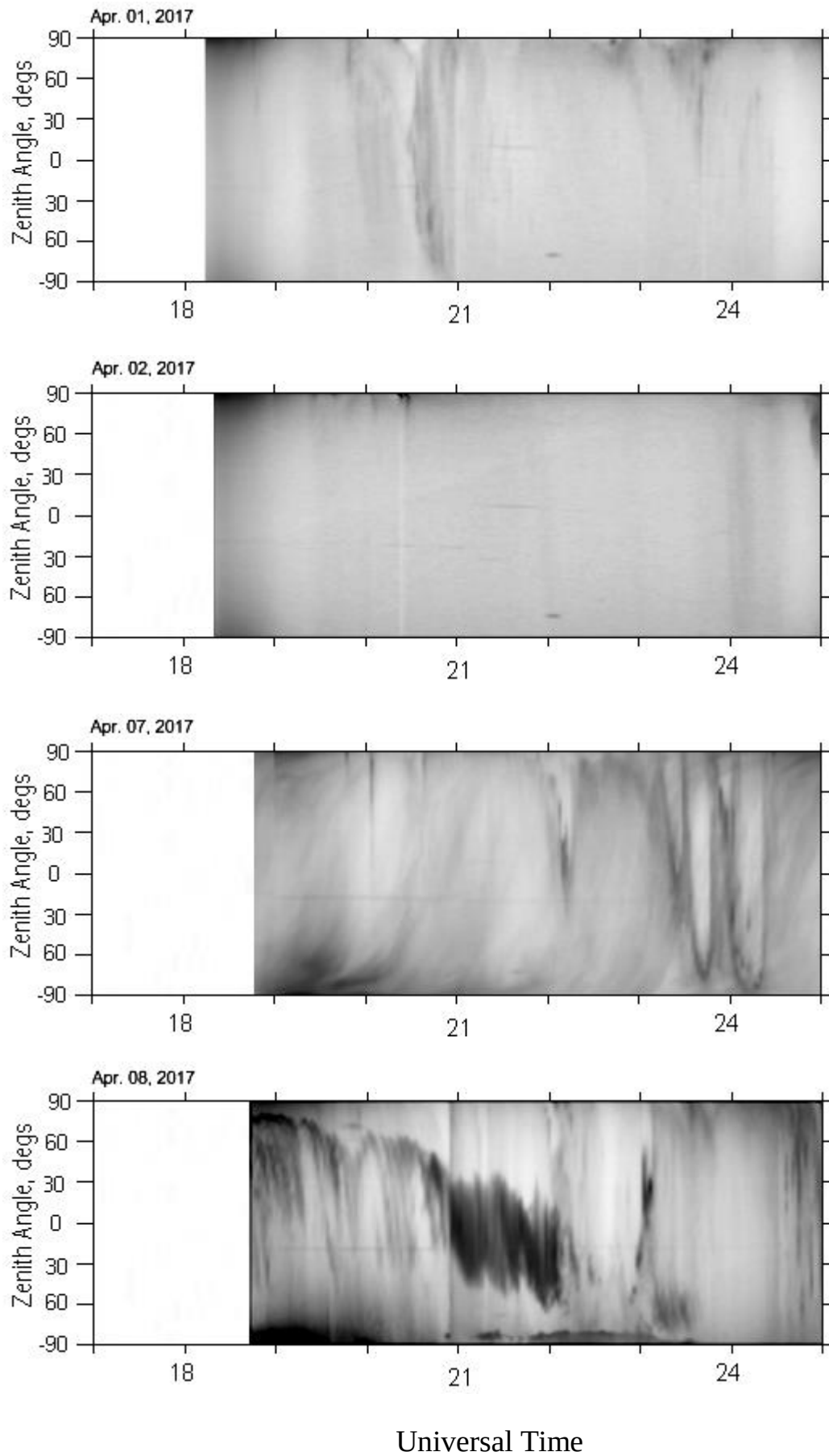
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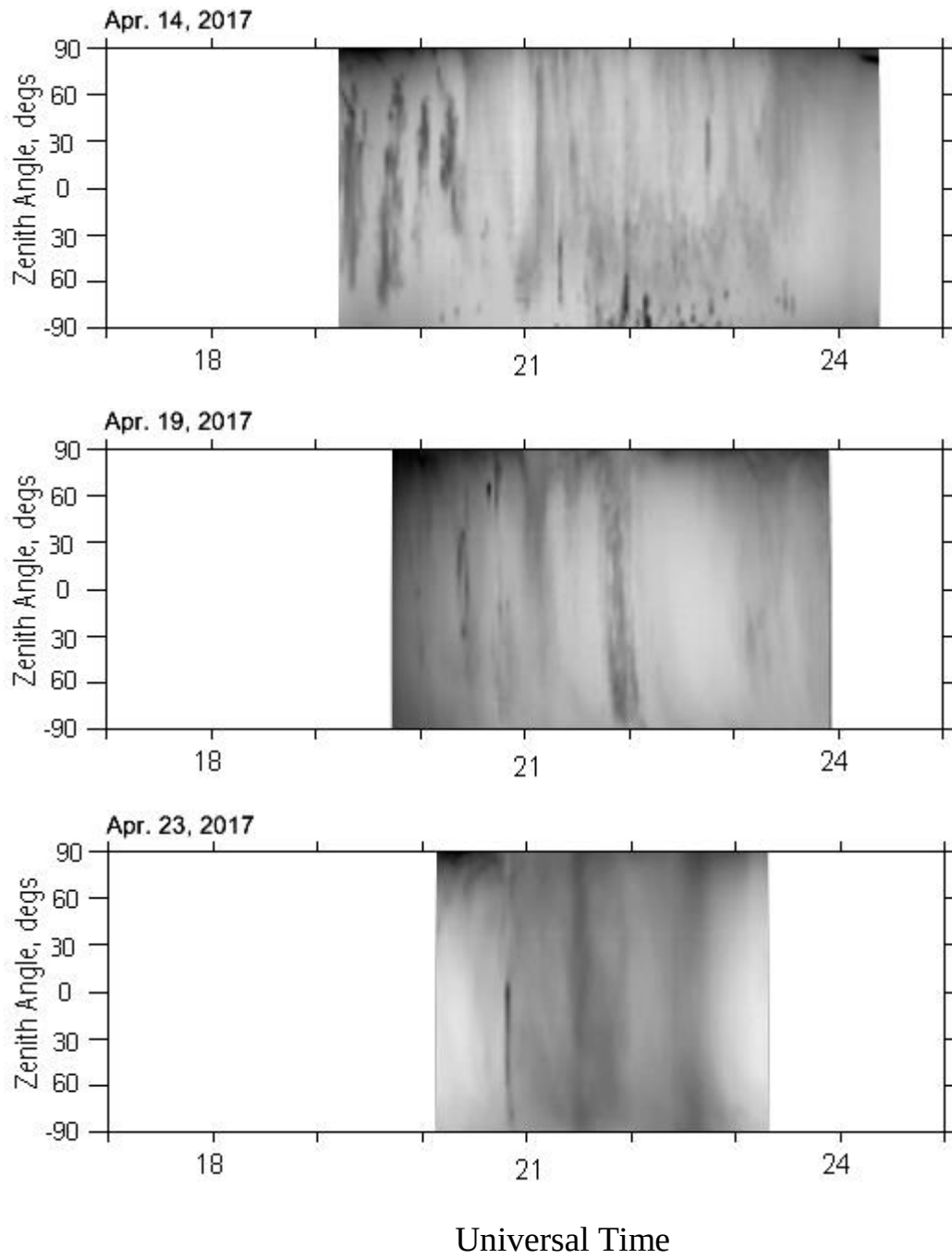
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Universal Time

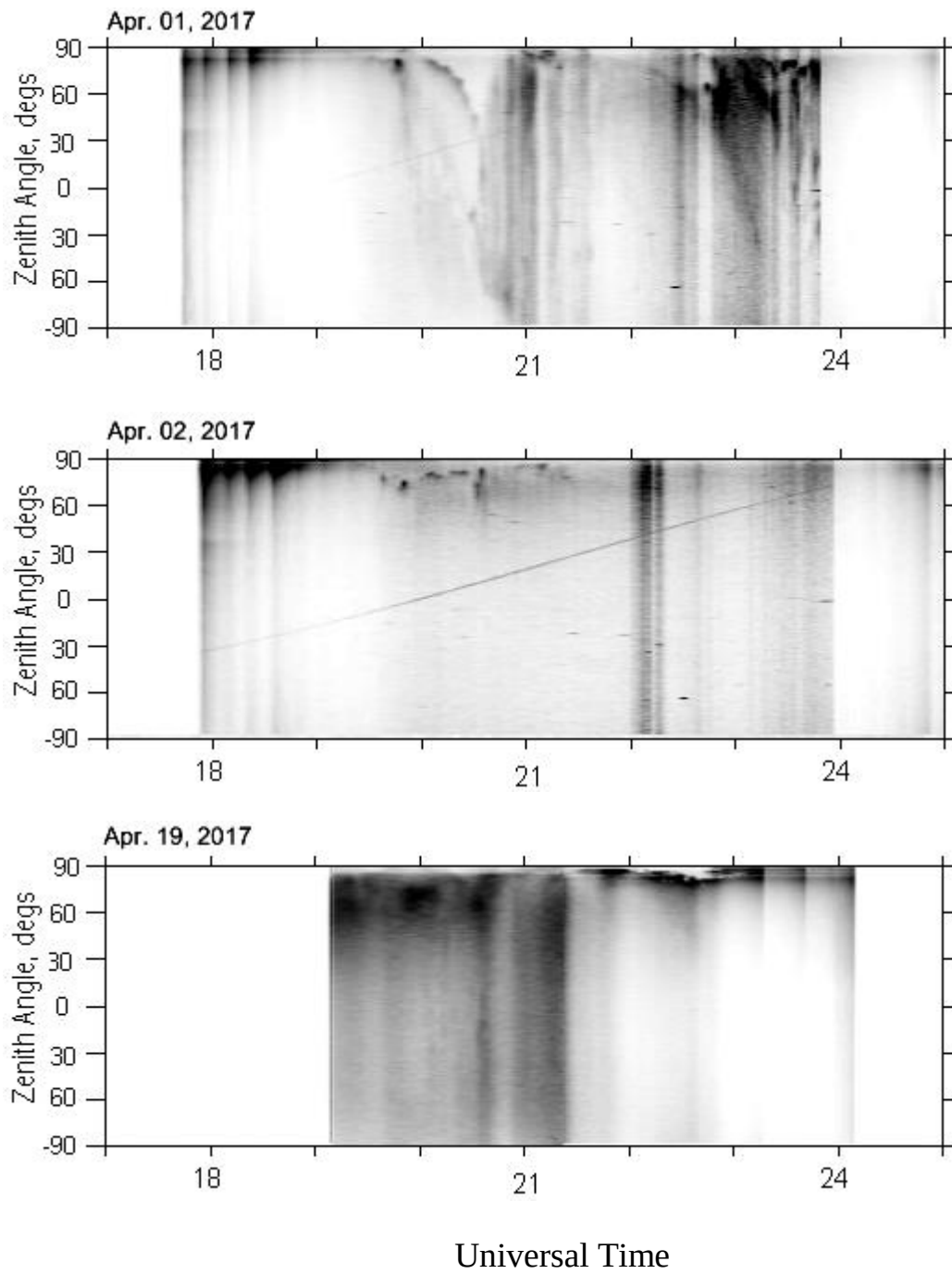
Apatity TV keograms



Apatity TV keograms



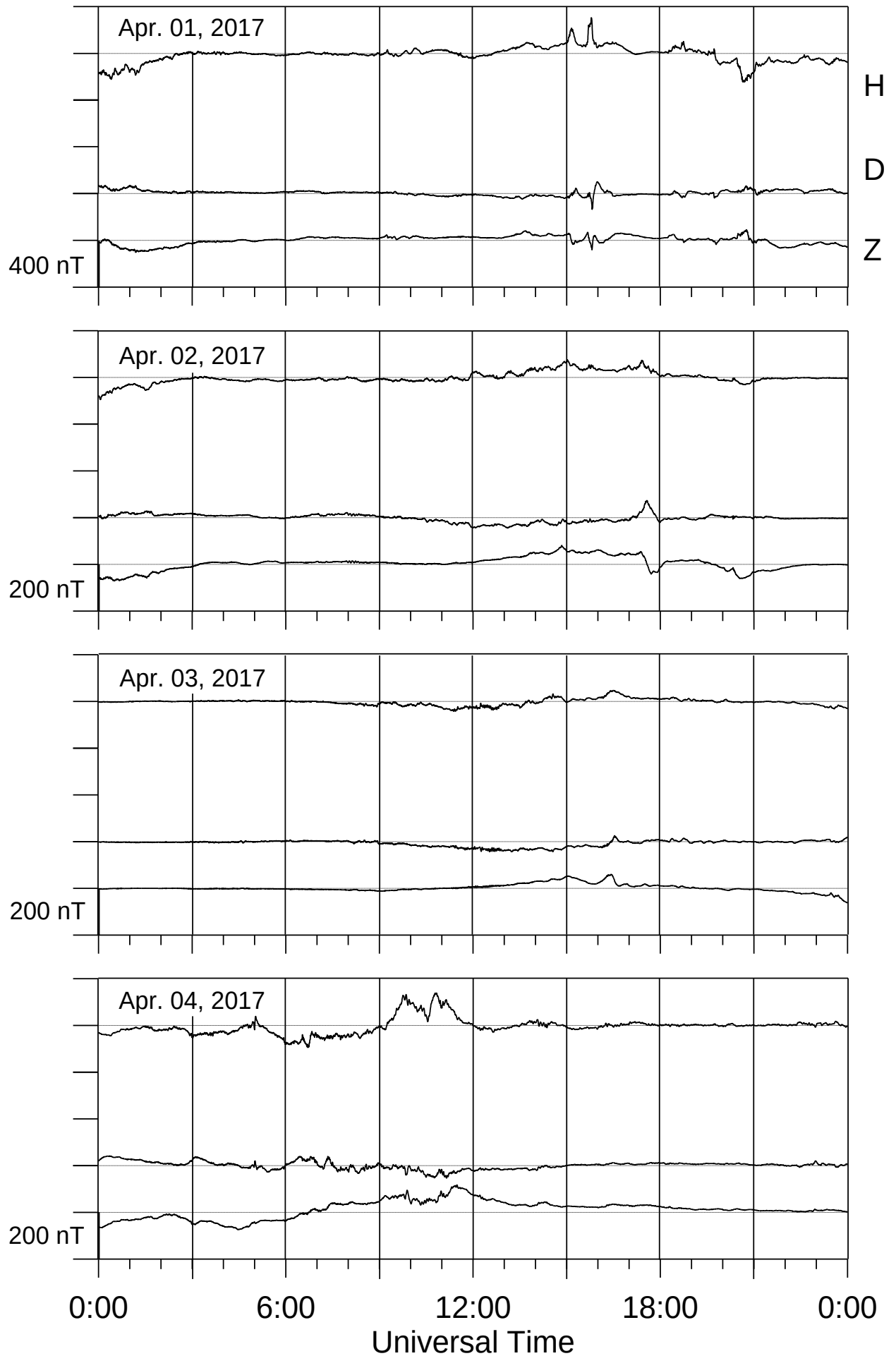
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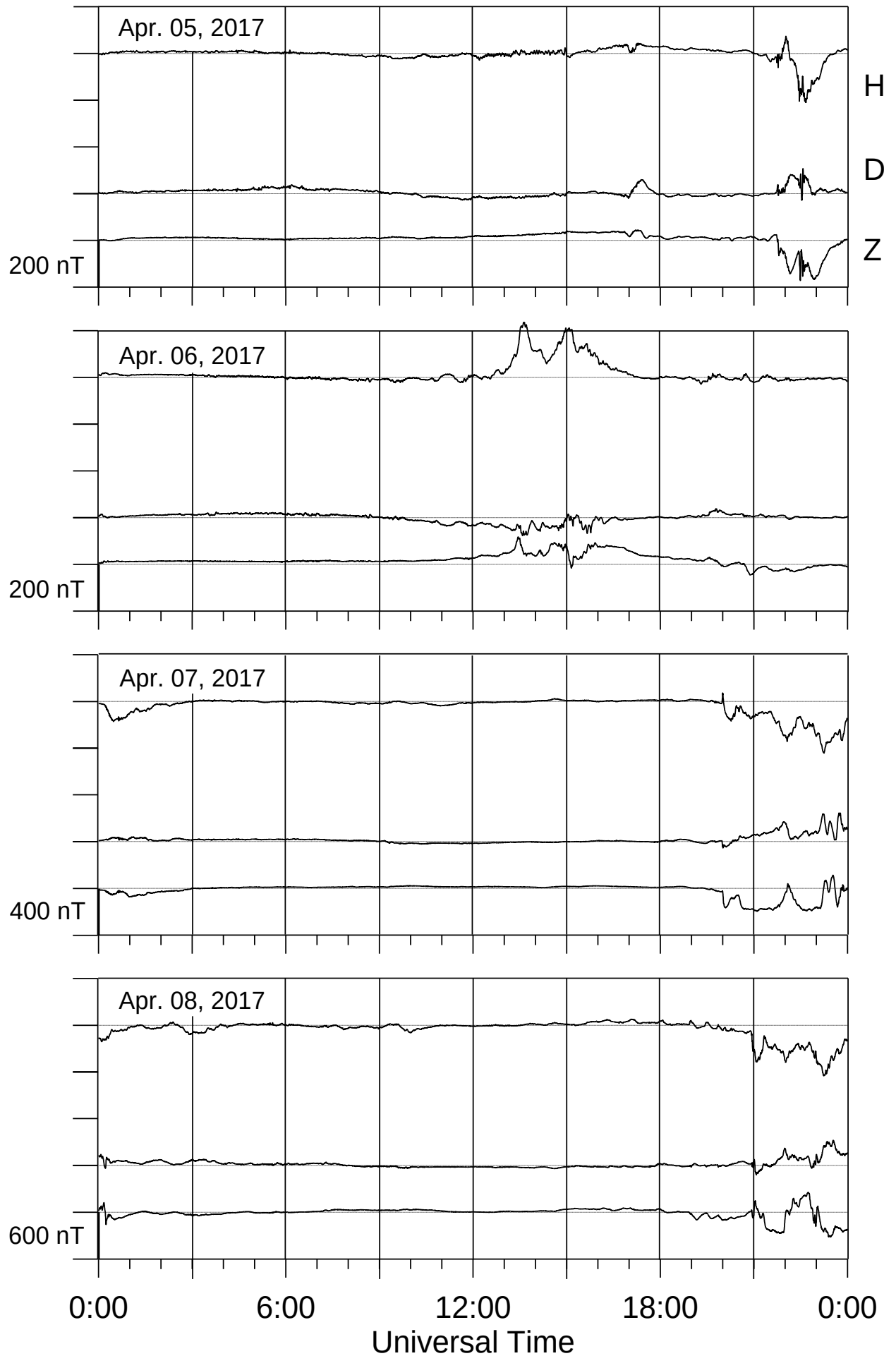
LOVOZERO MAGNETOGRAMS

April - June 2017

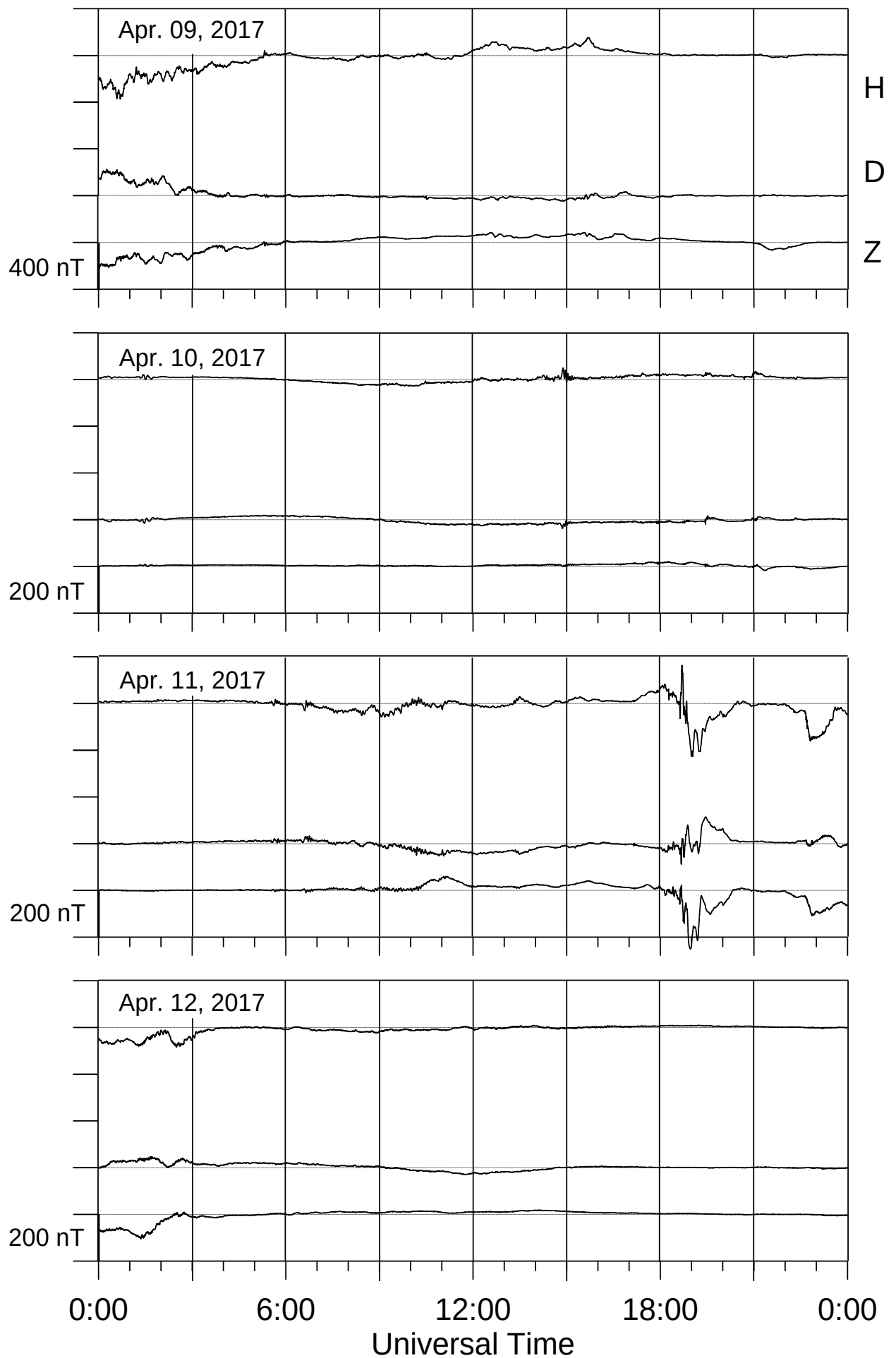
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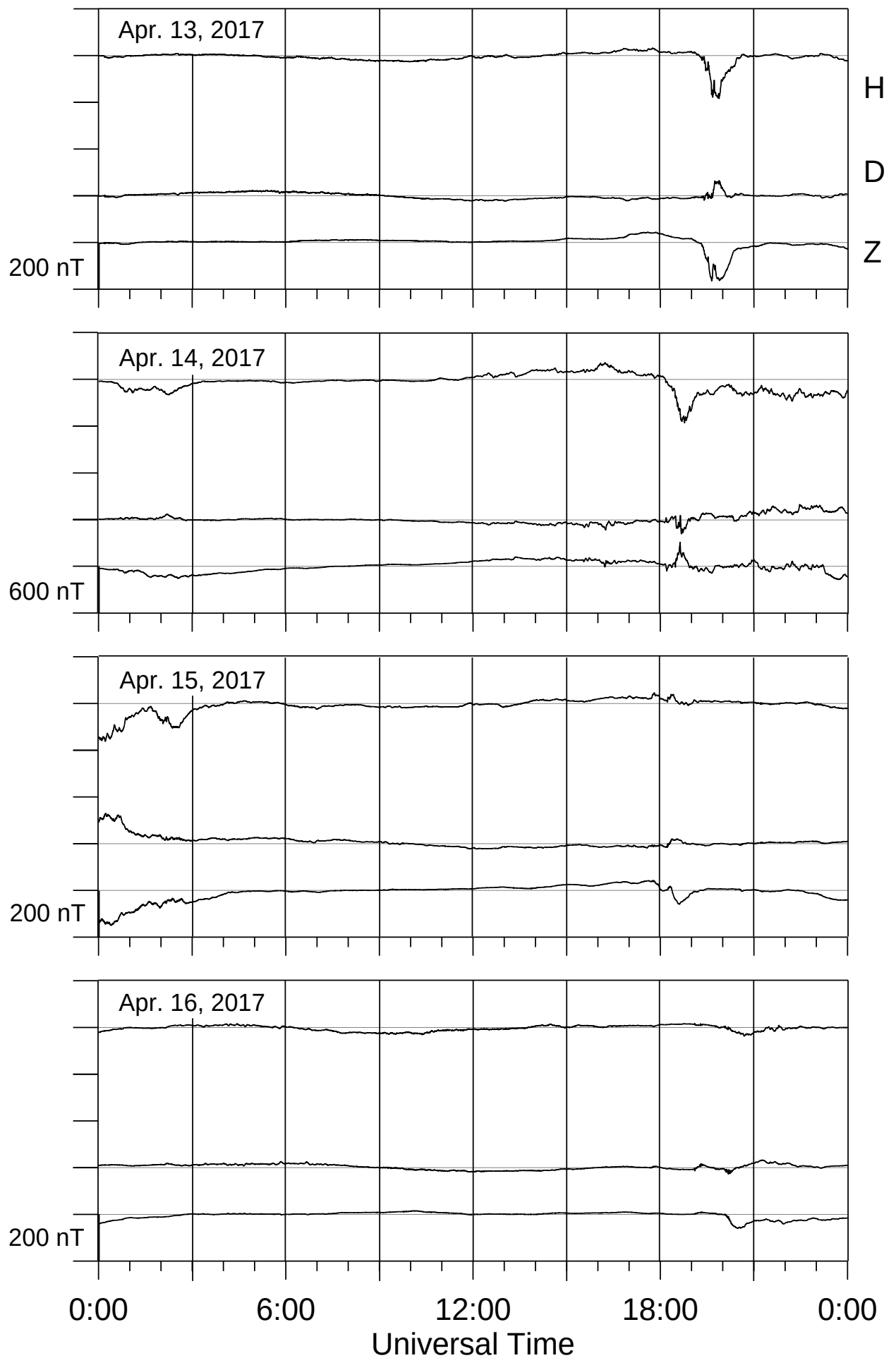
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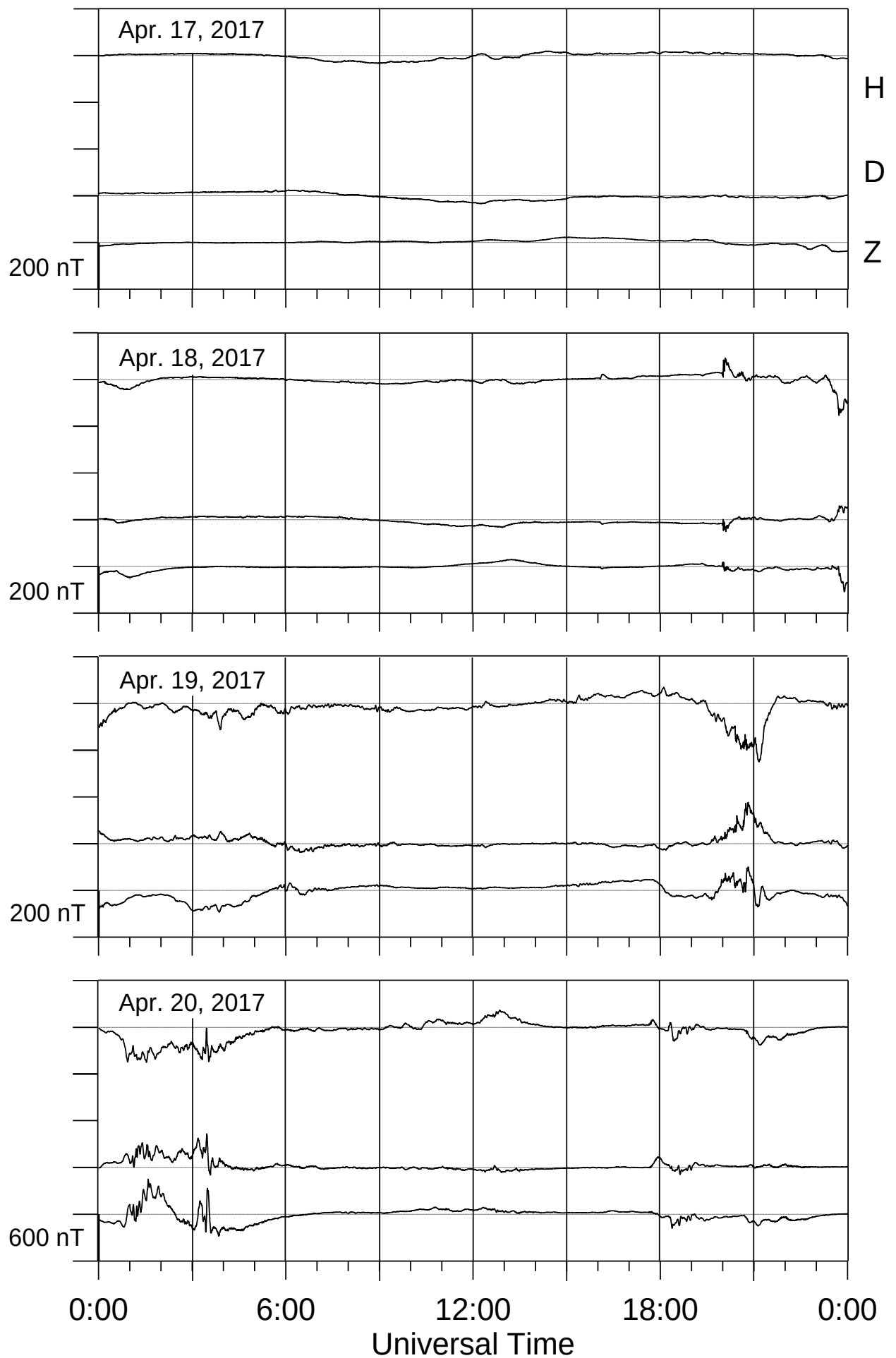
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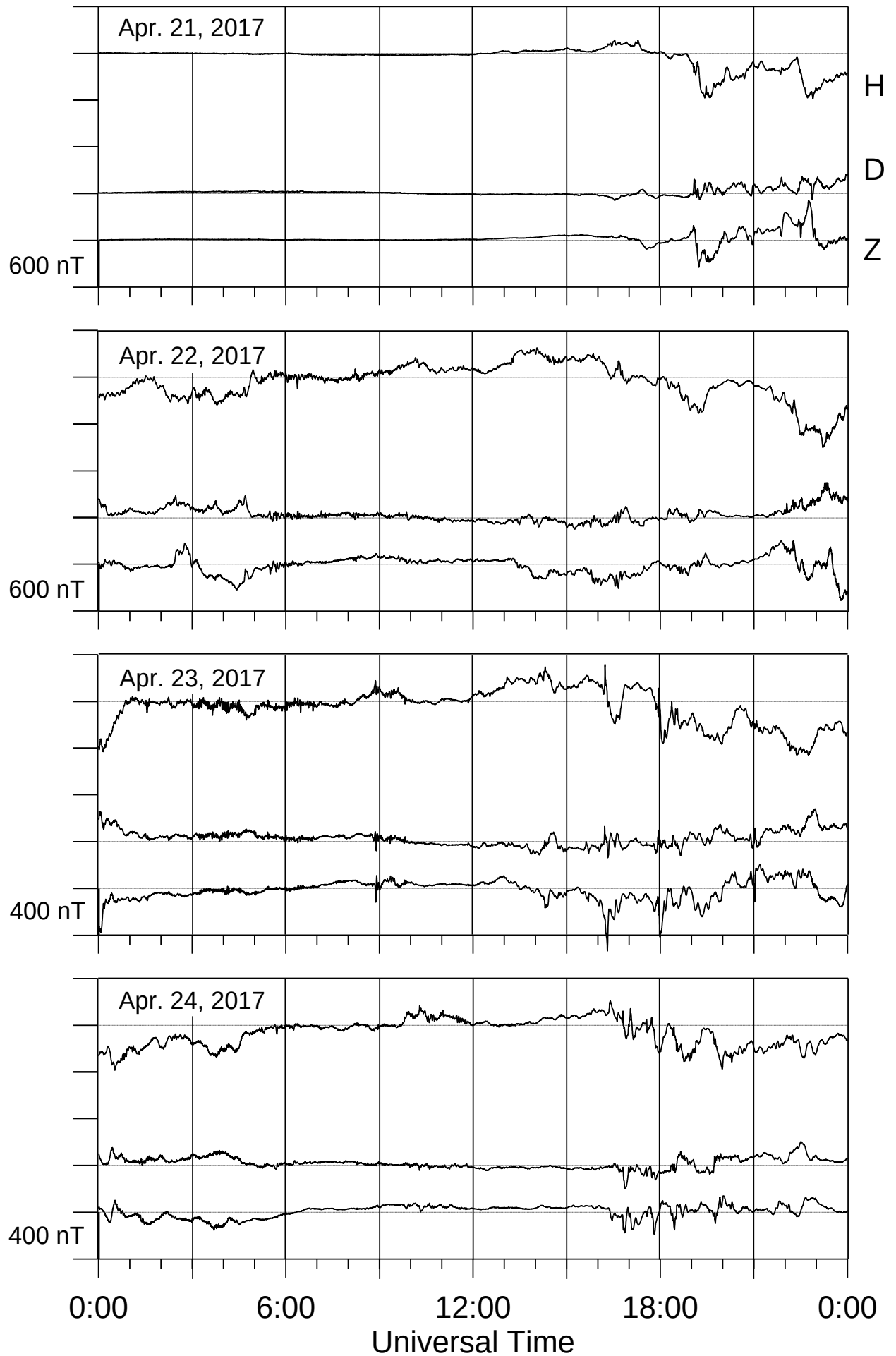
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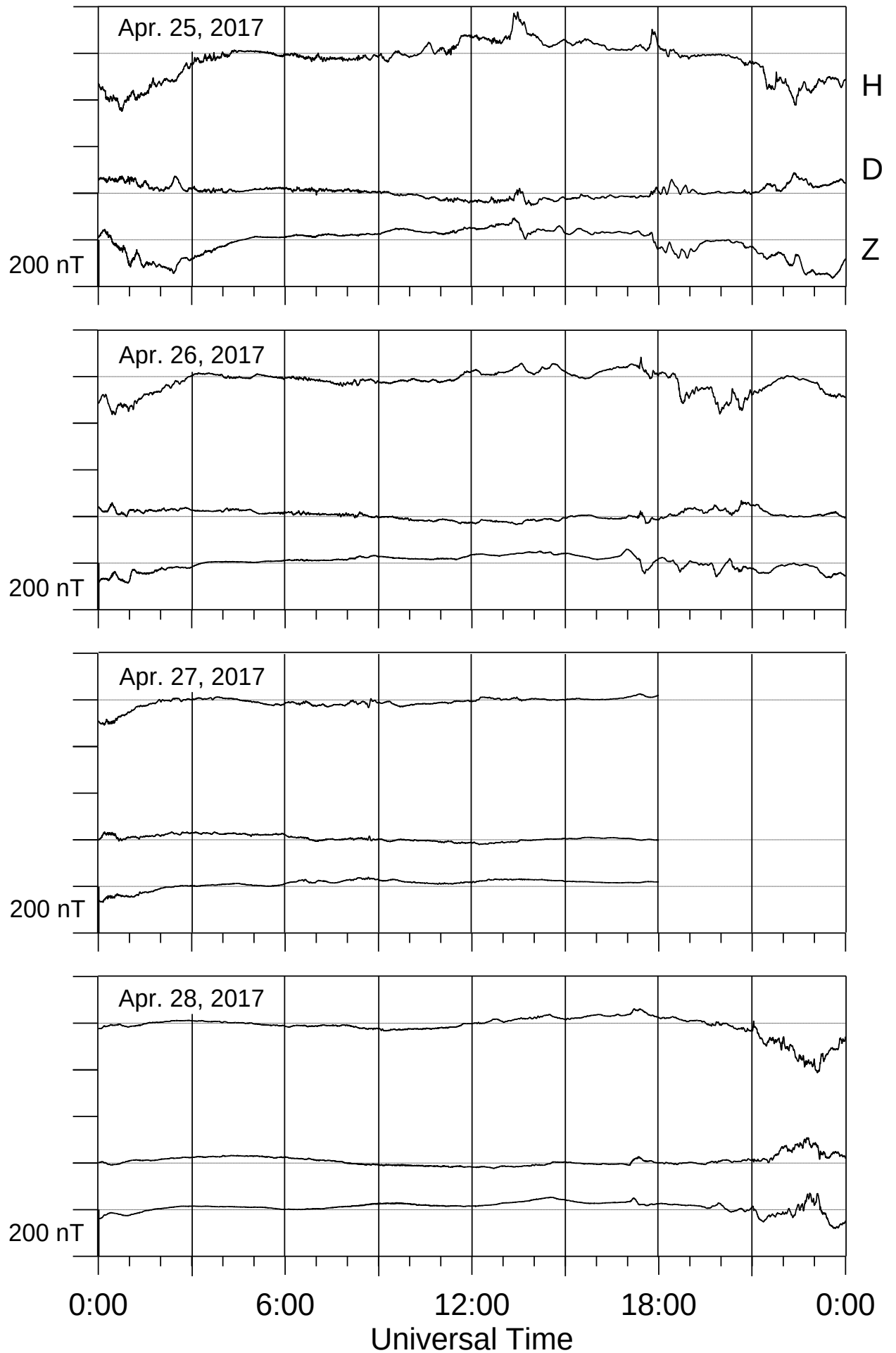
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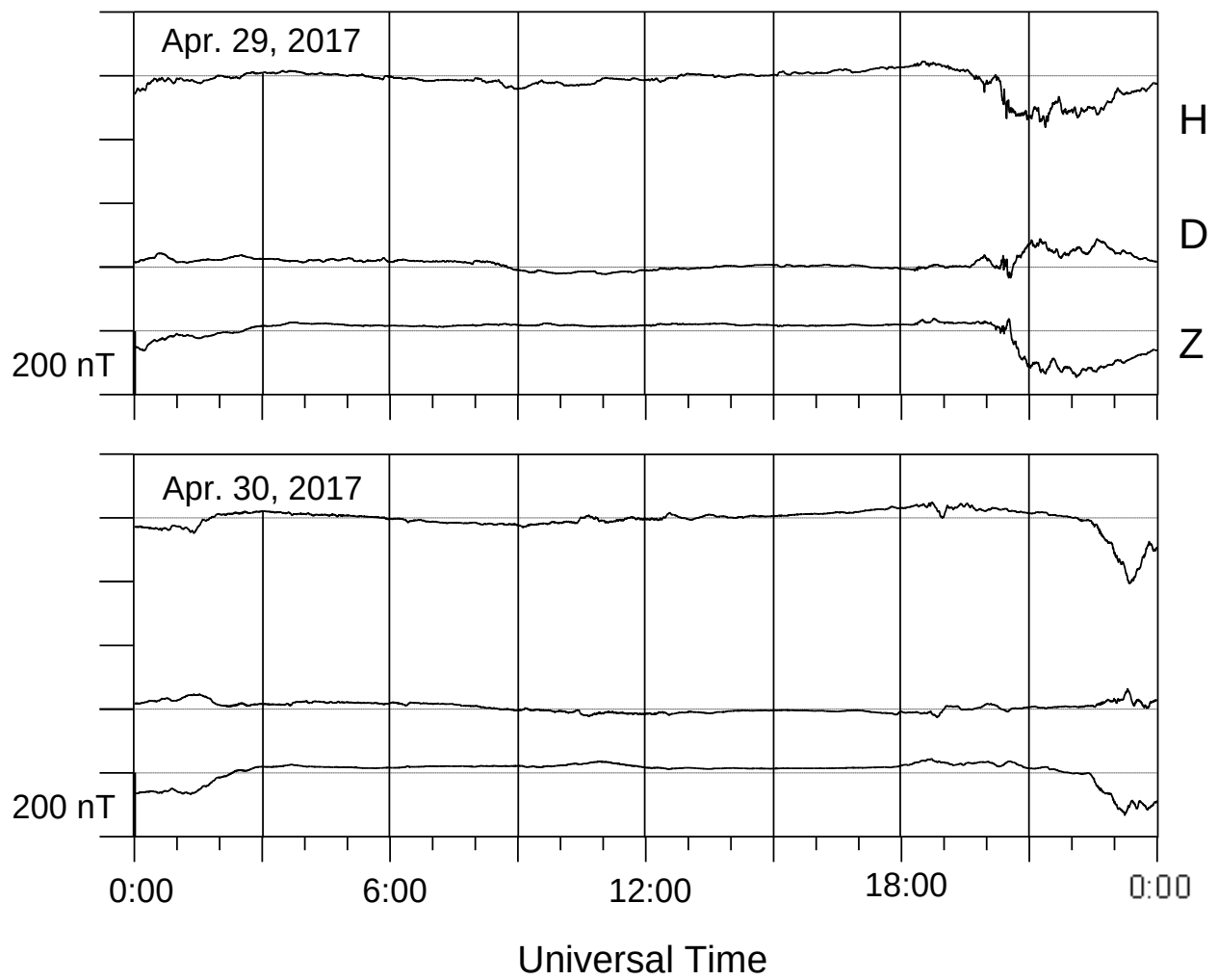
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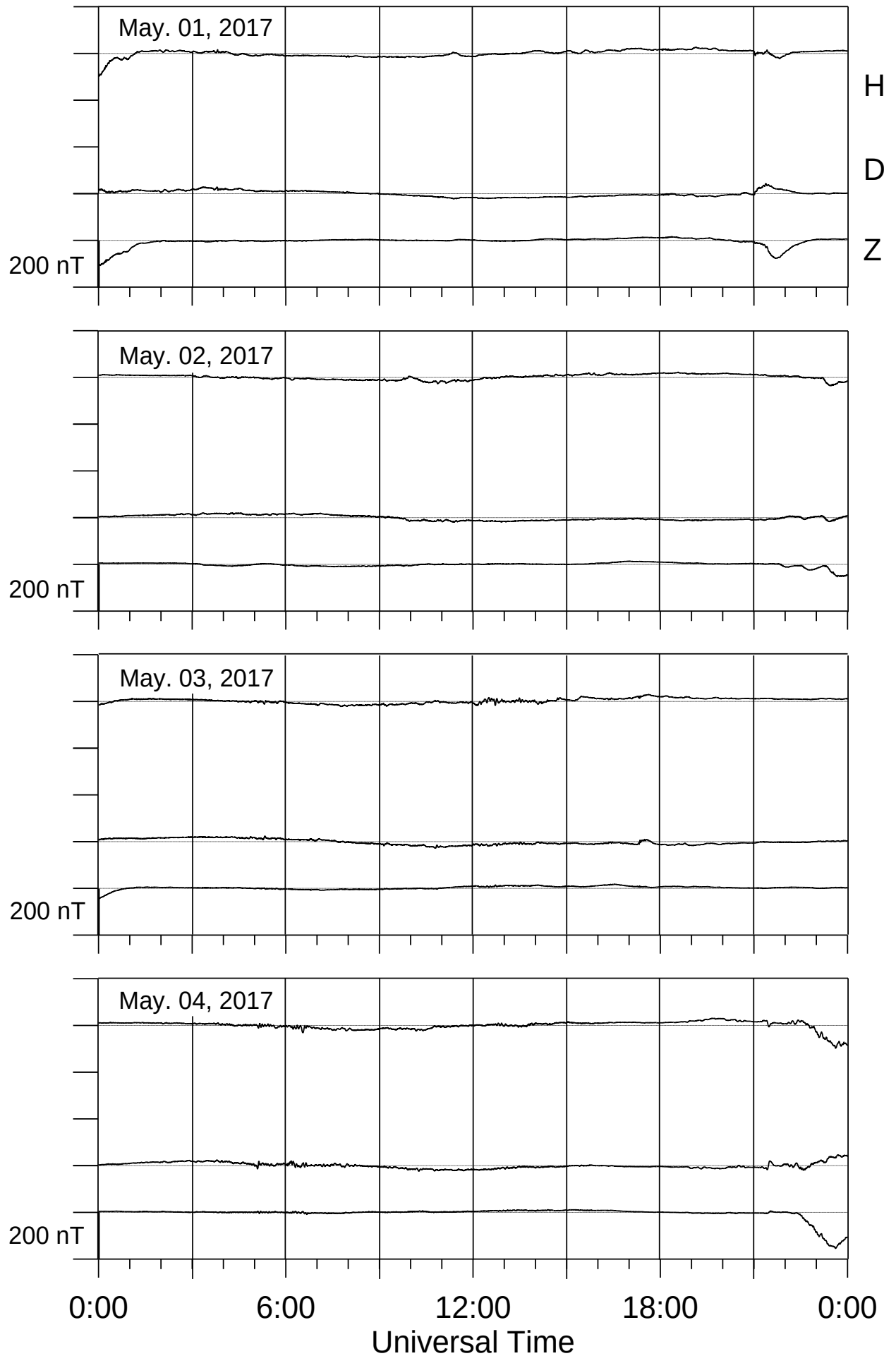
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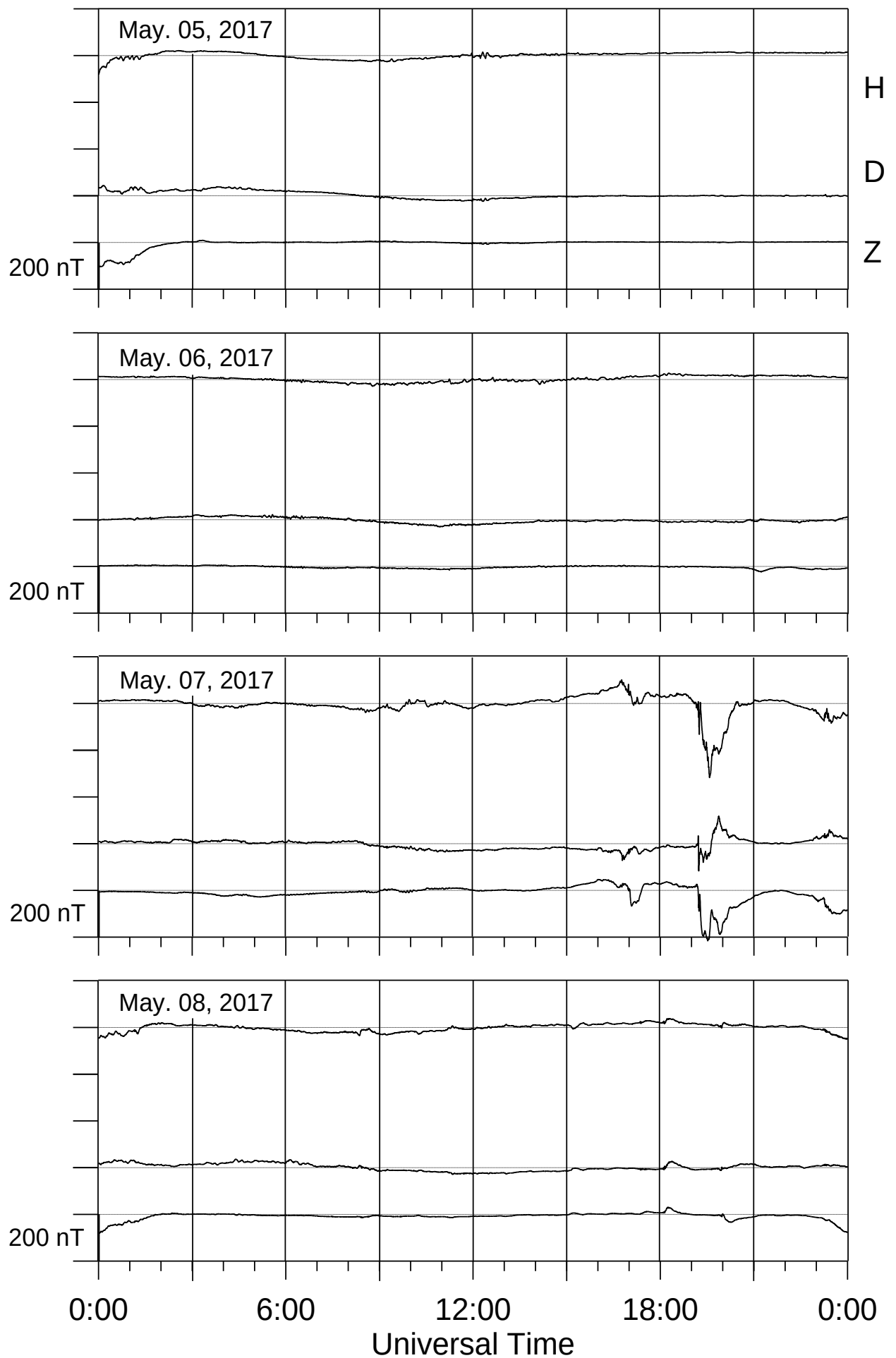
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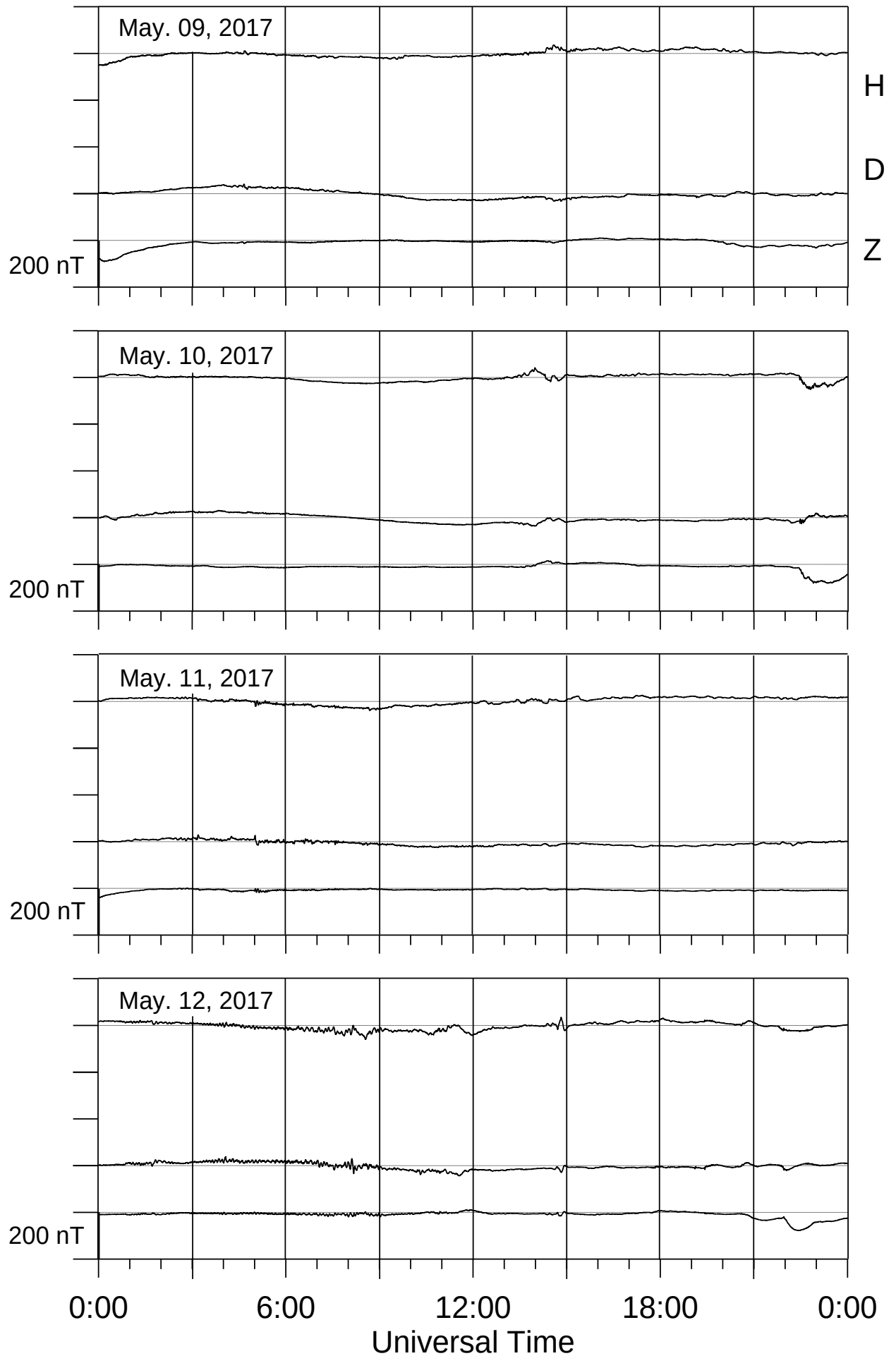
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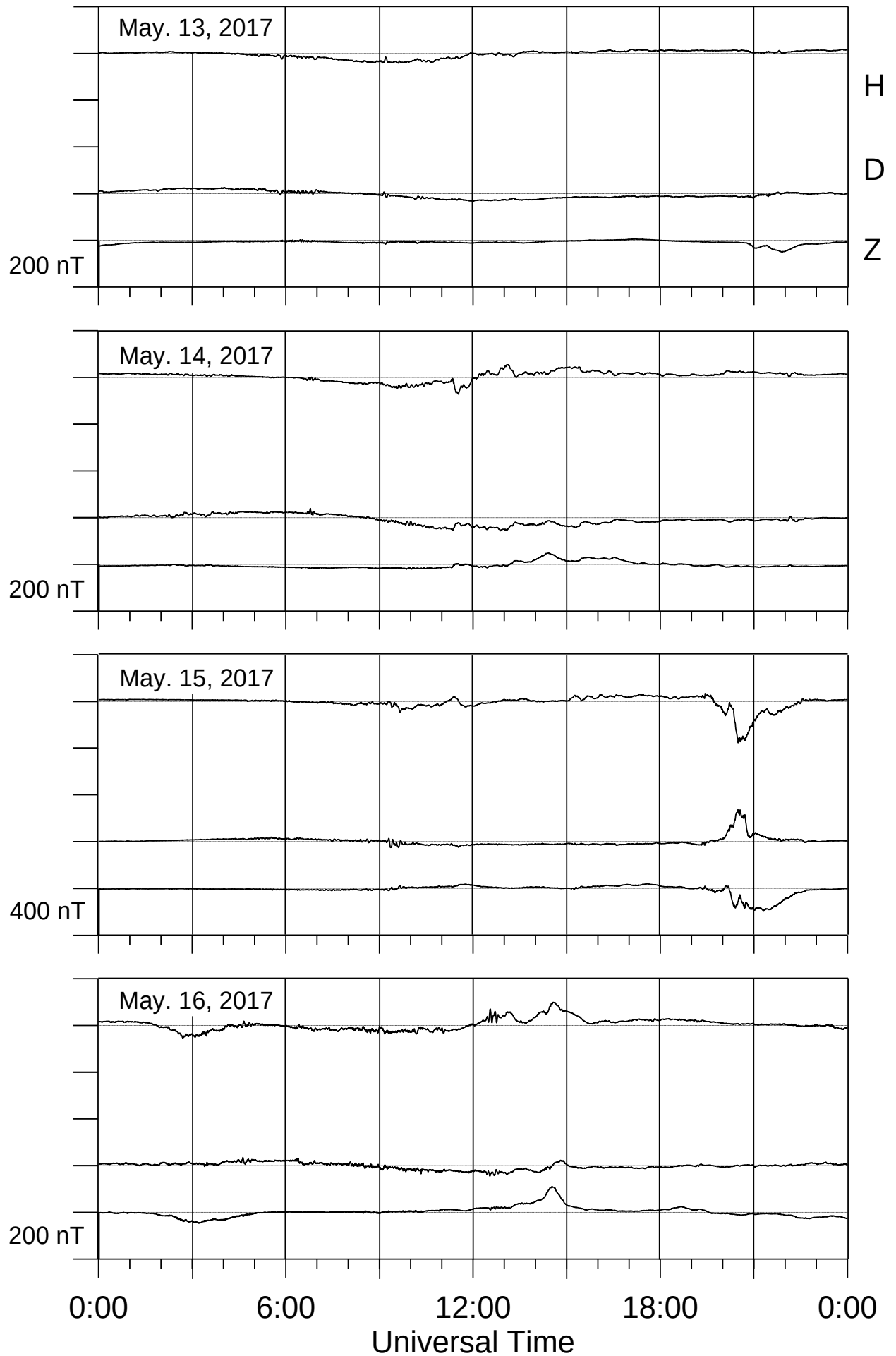
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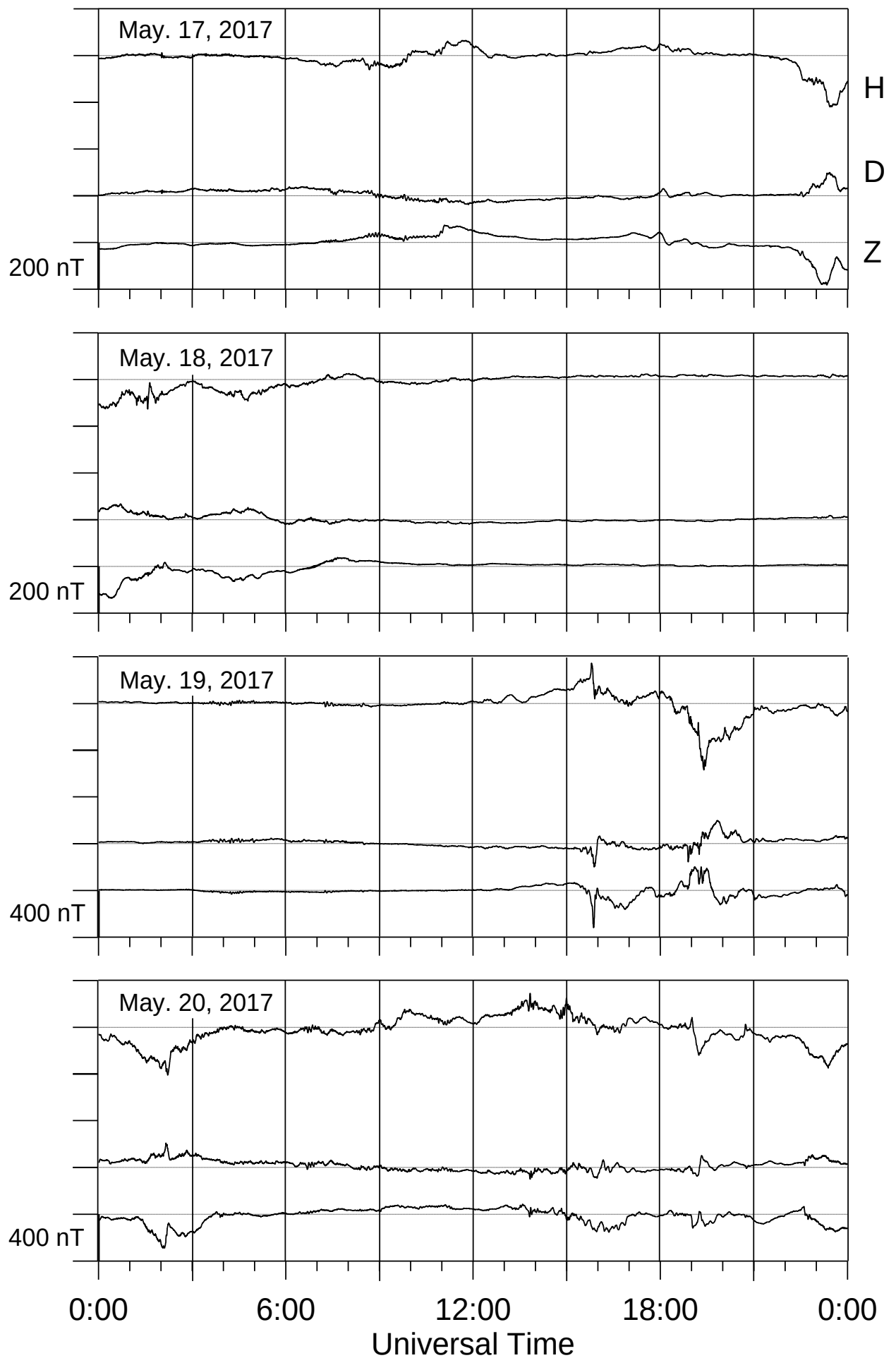
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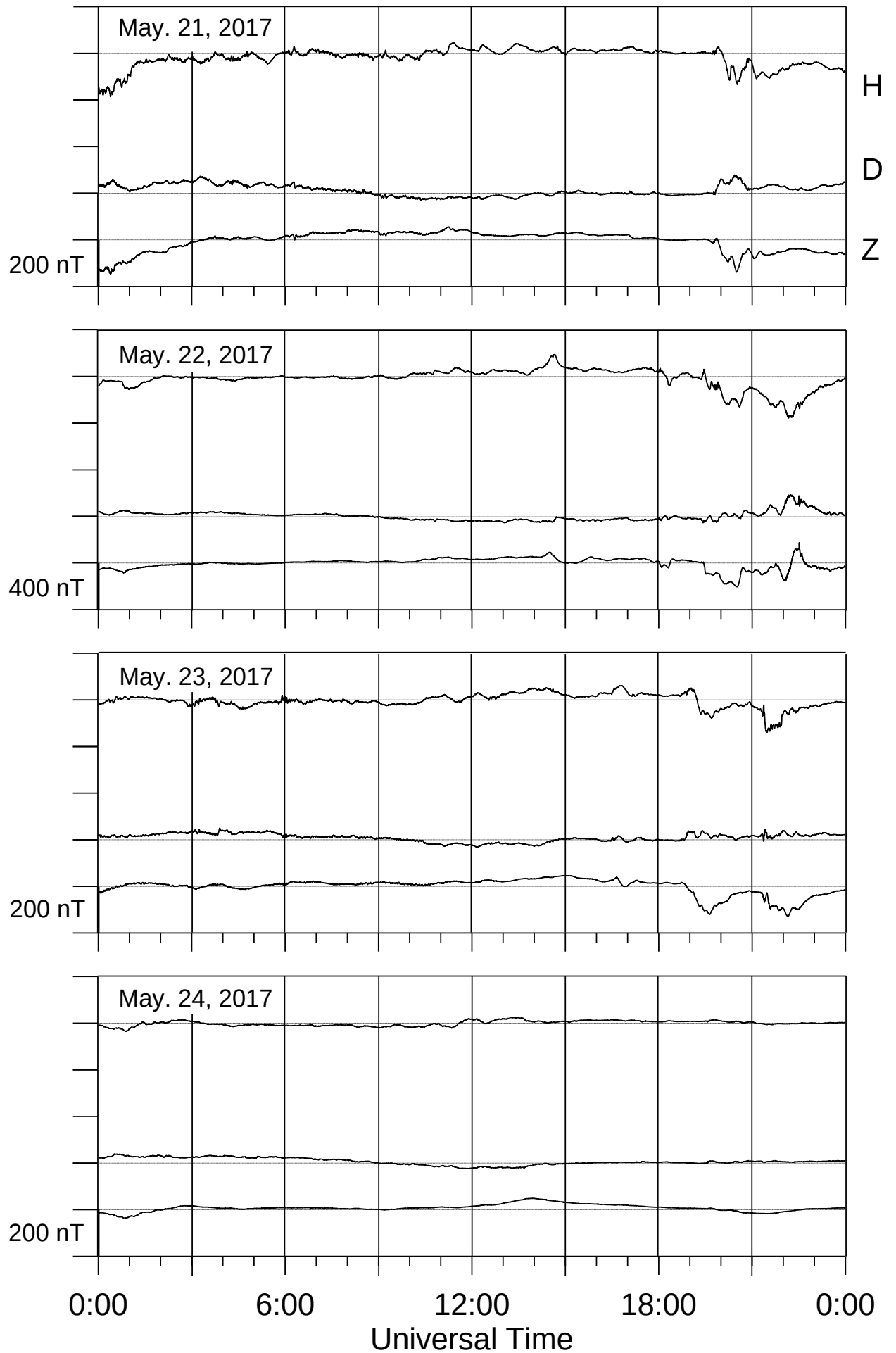
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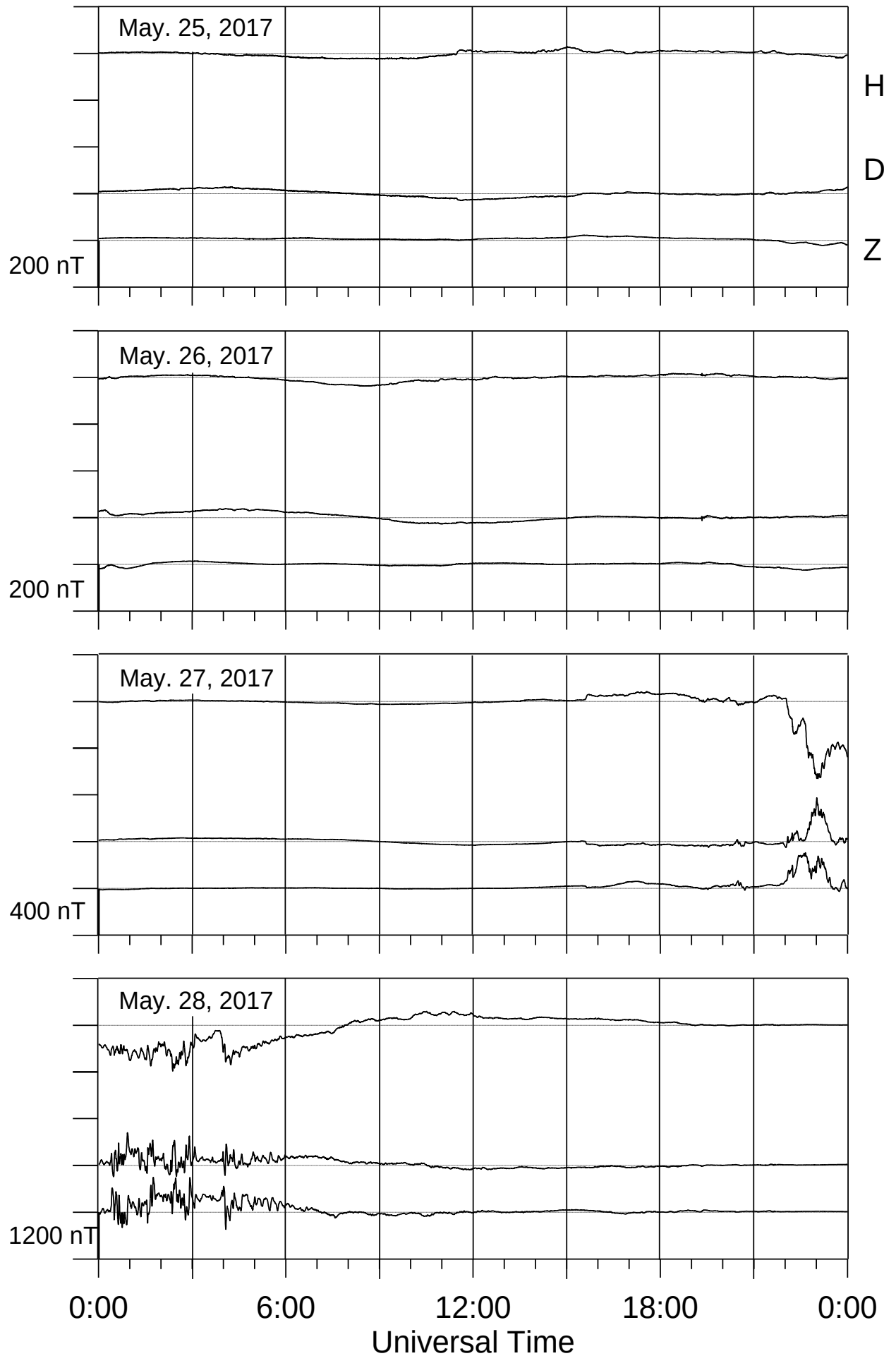
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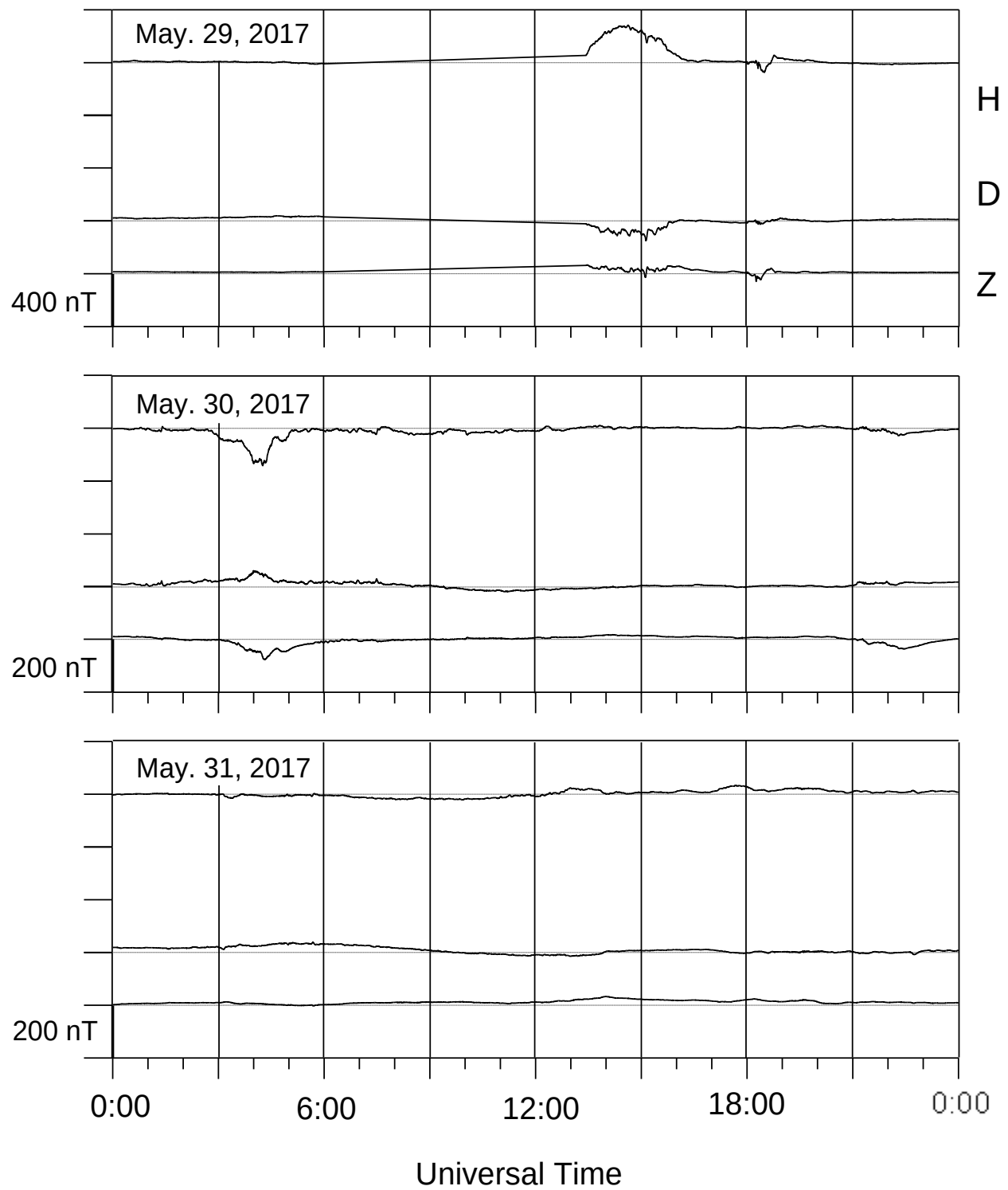
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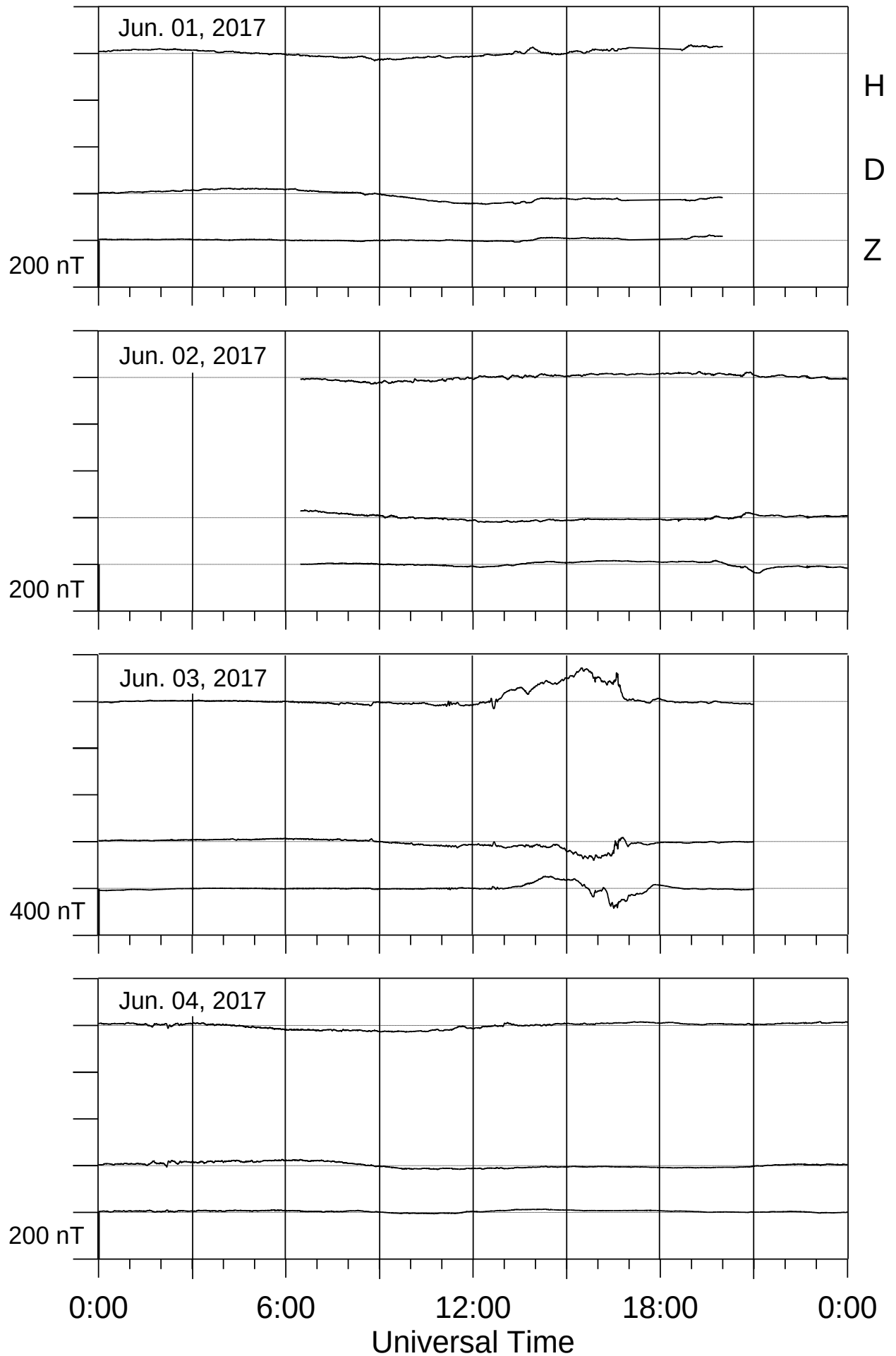
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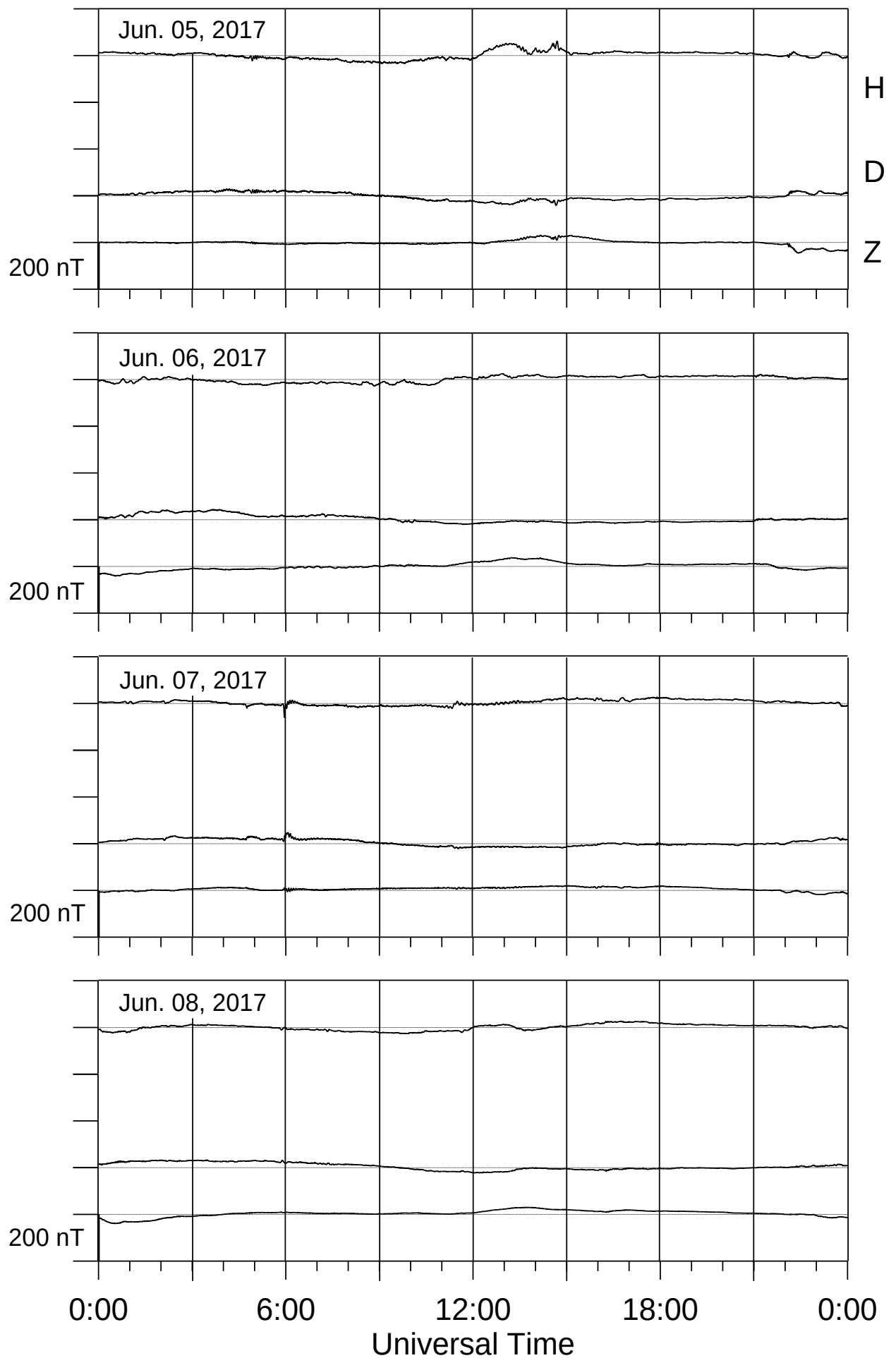
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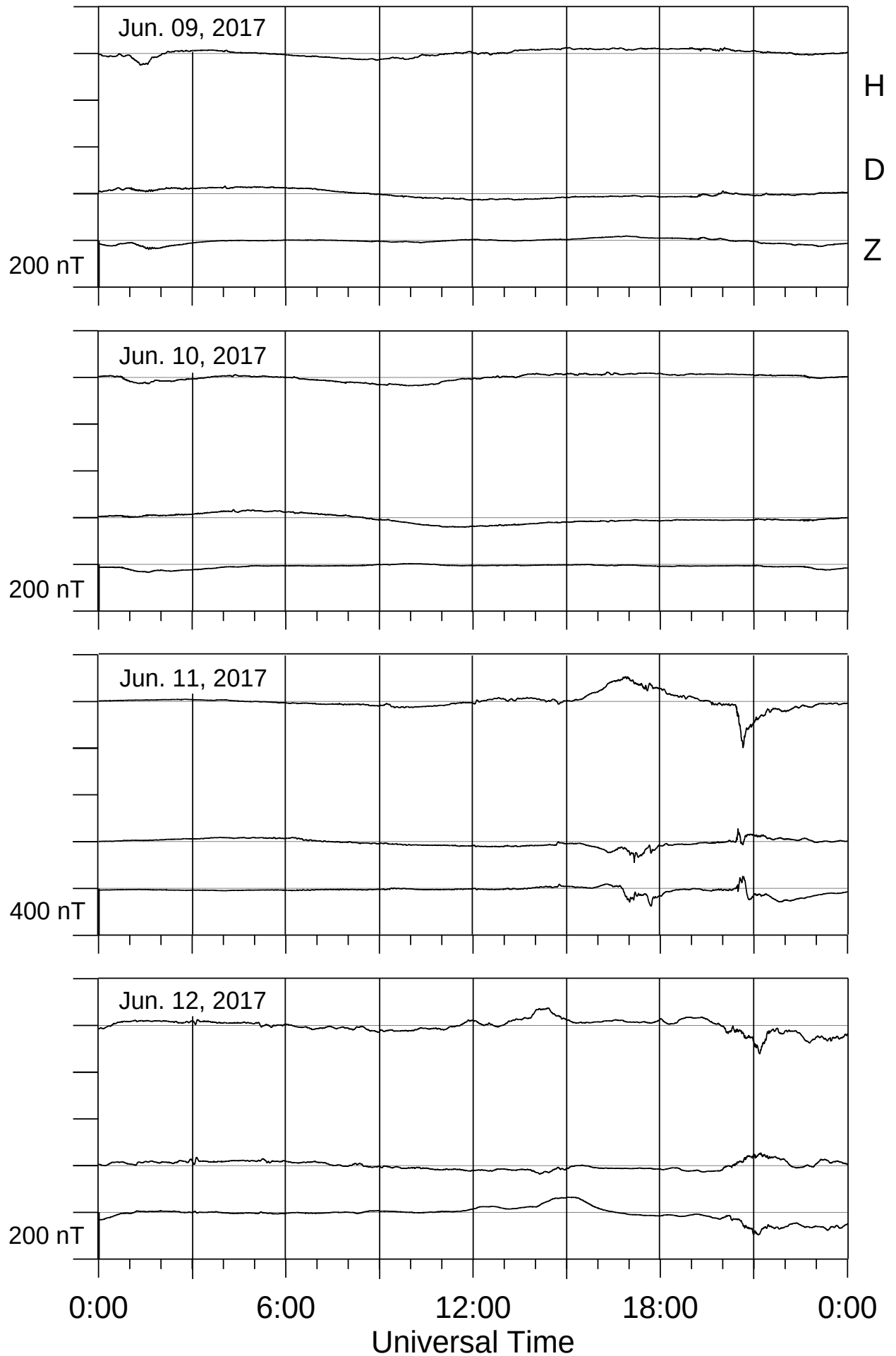
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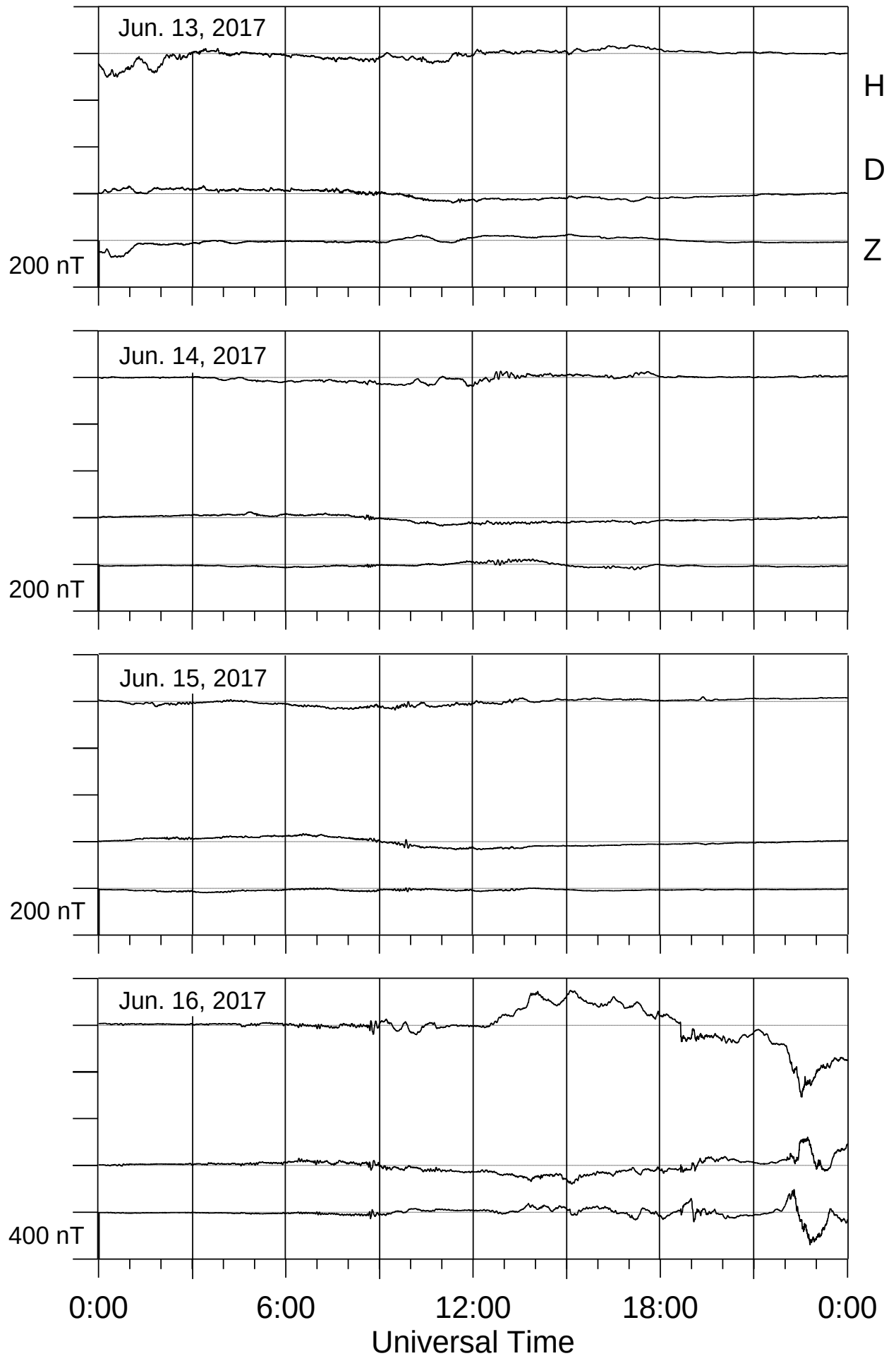
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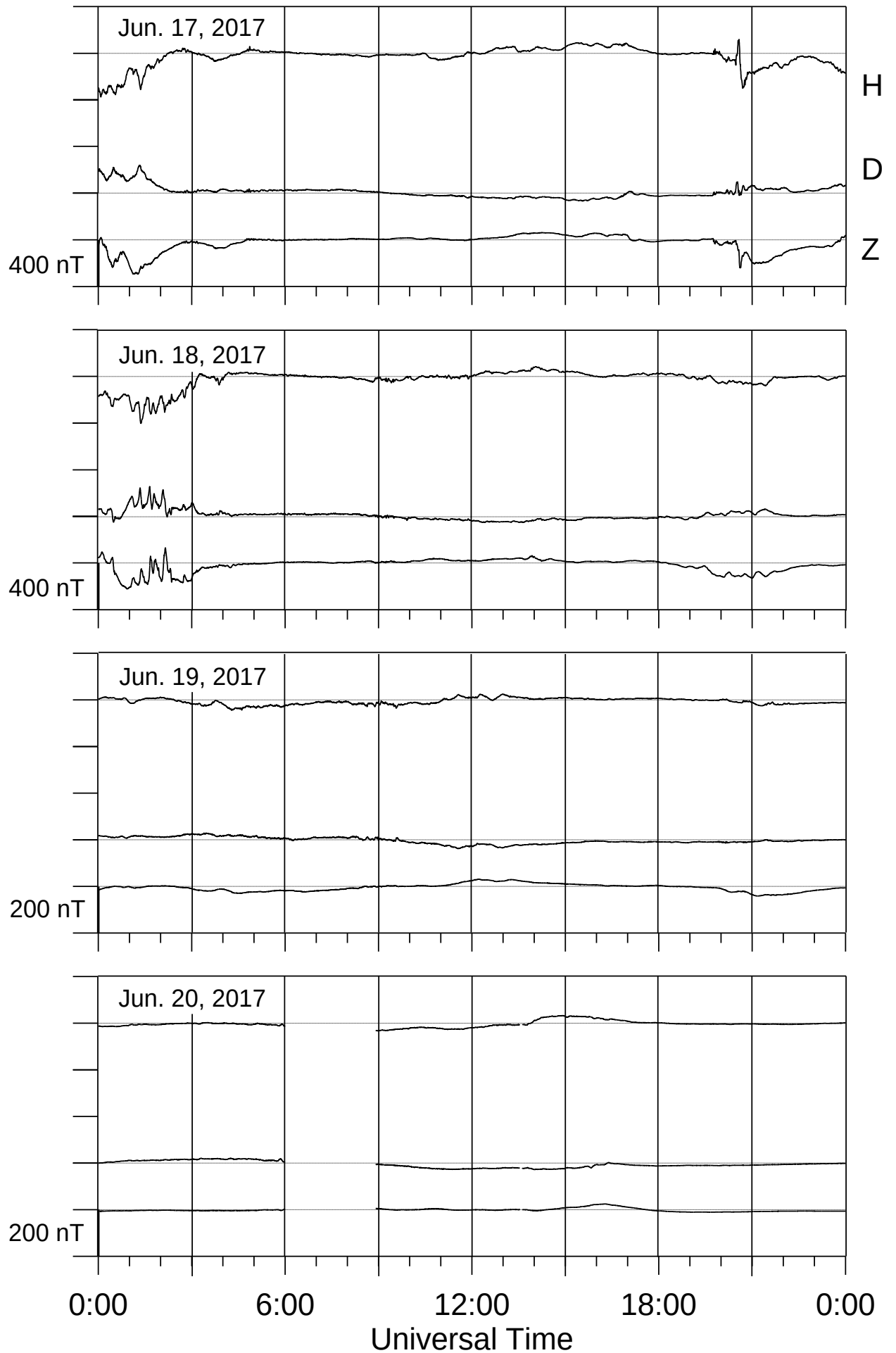
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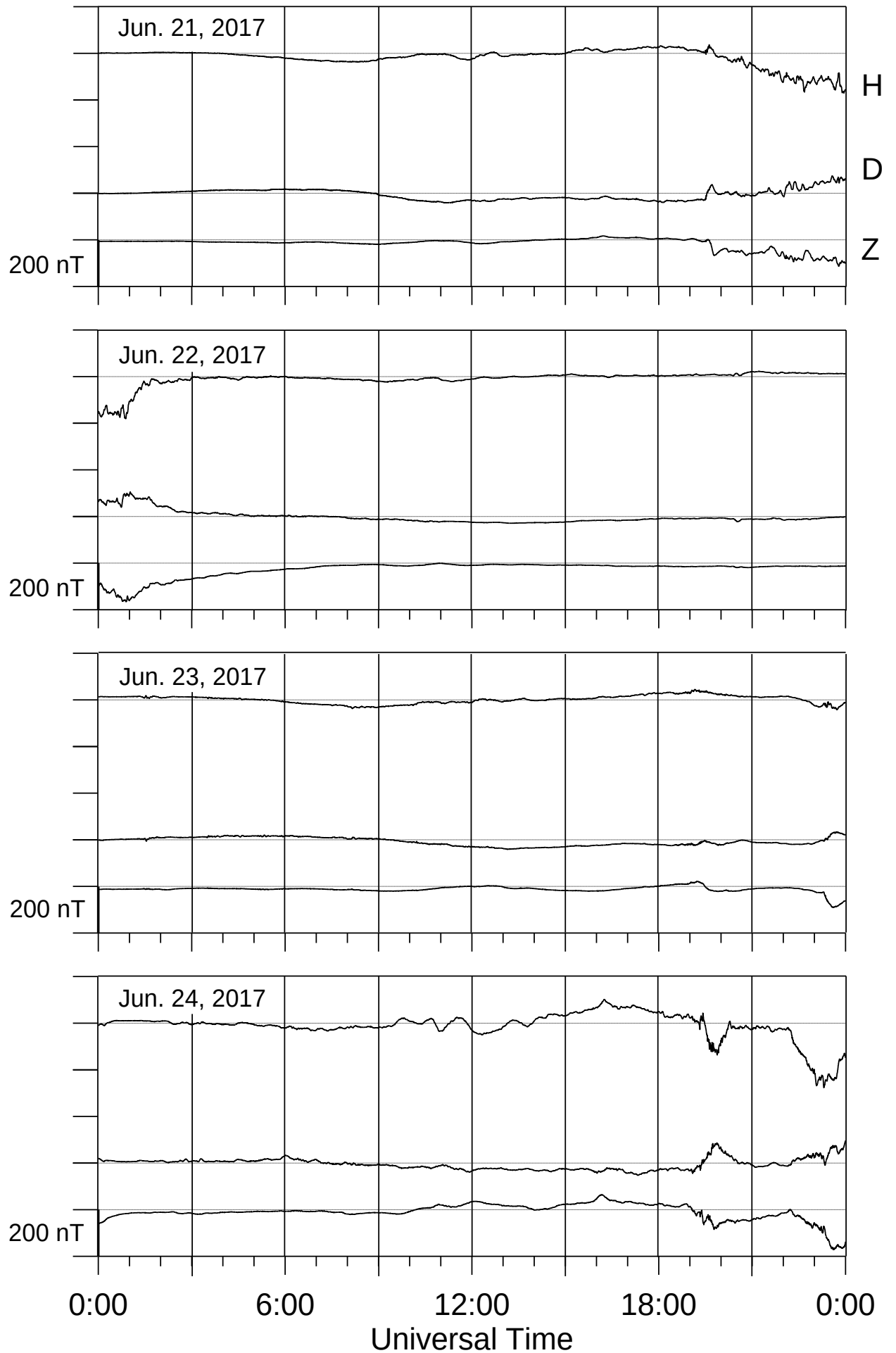
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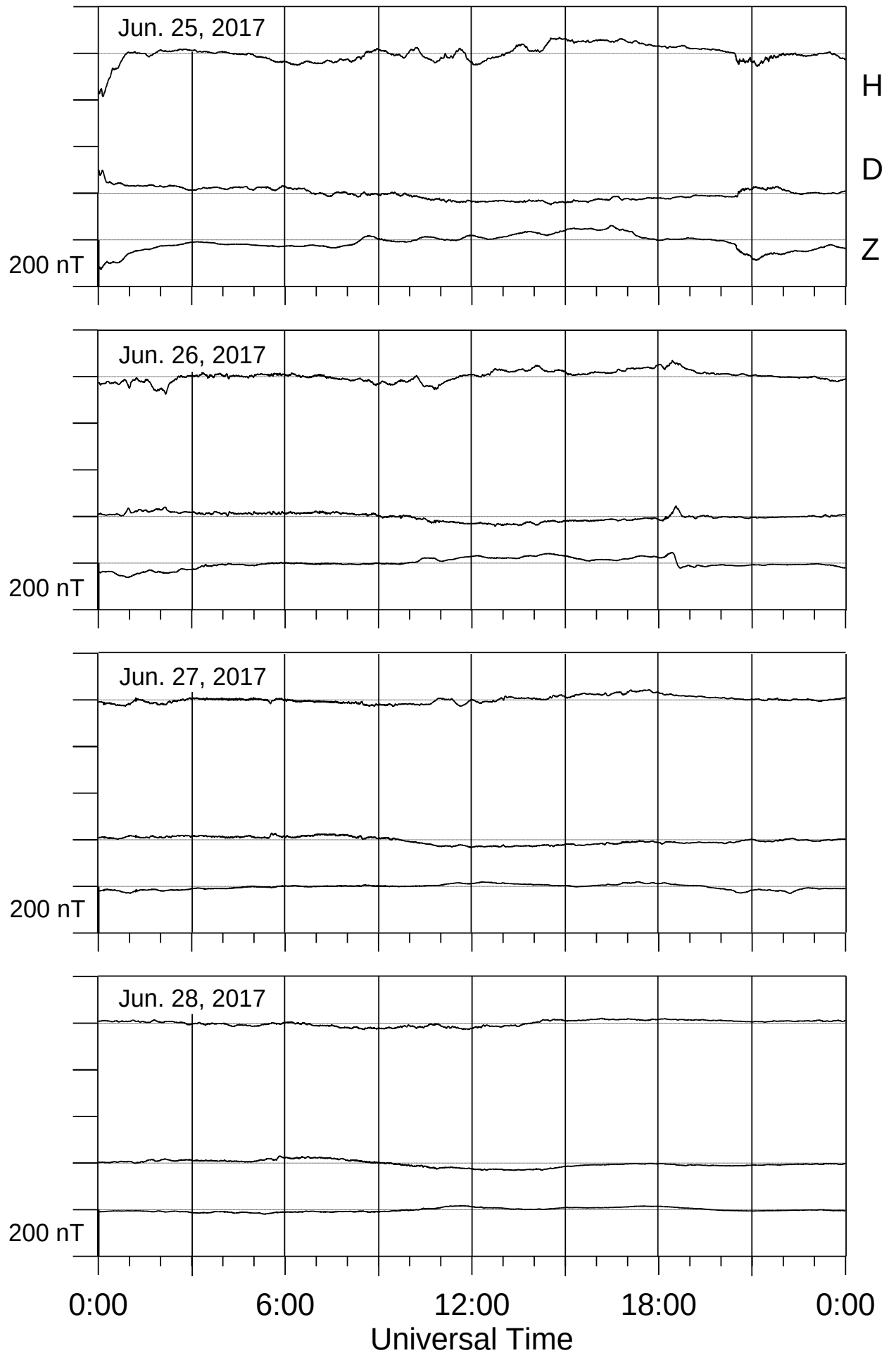
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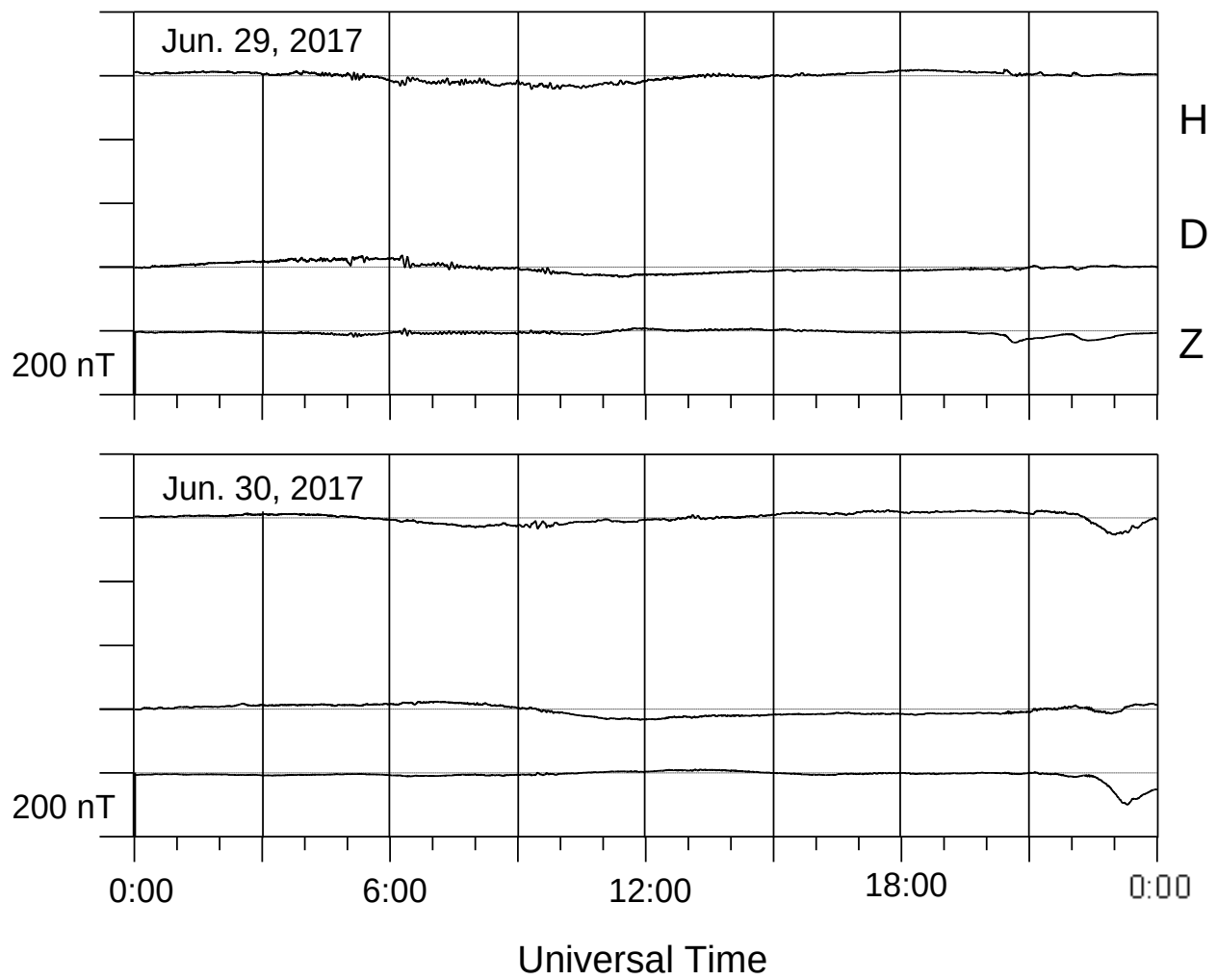
Lovozero magnetometer



Lovozero magnetometer

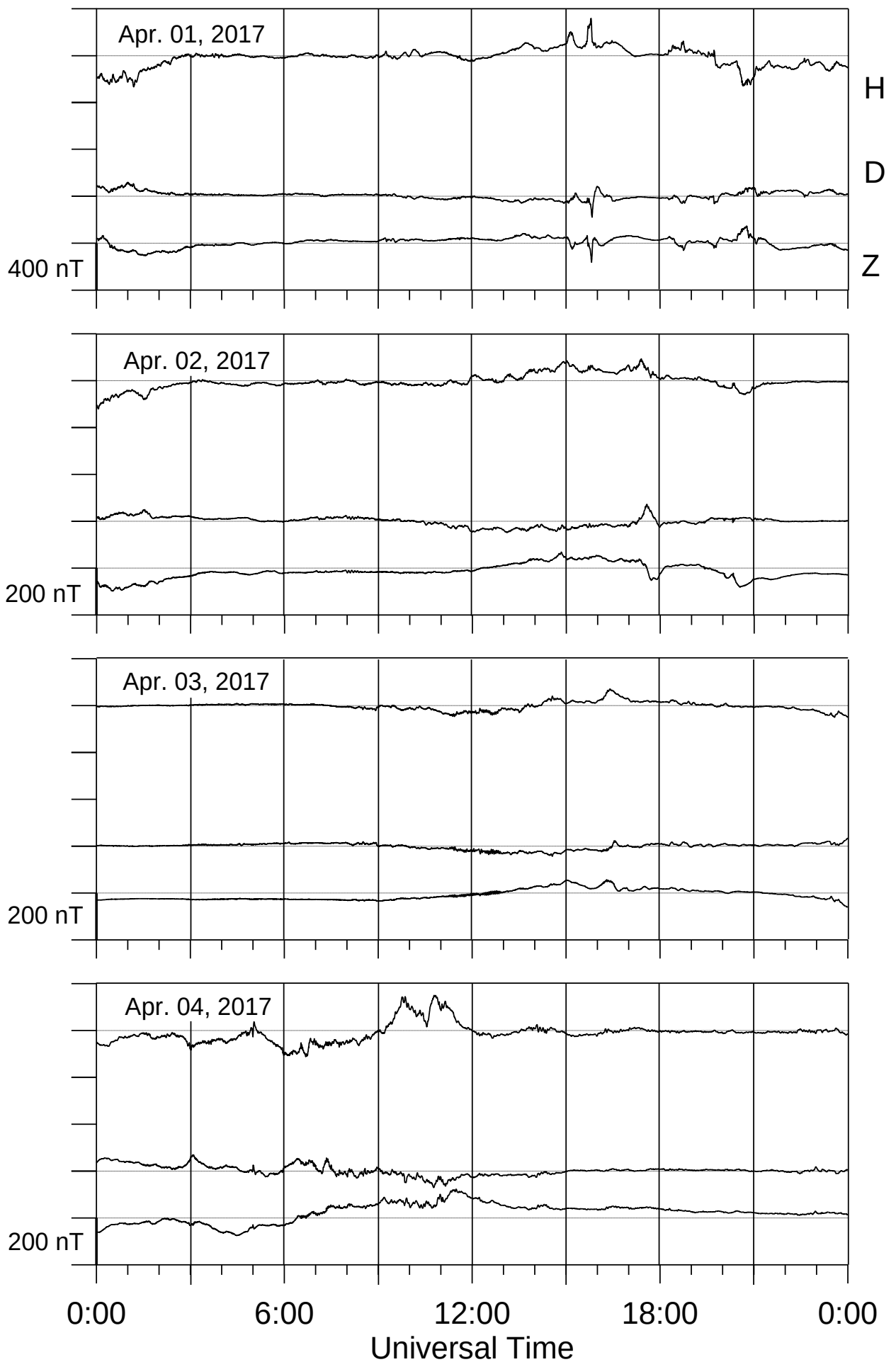


Lovozero magnetometer

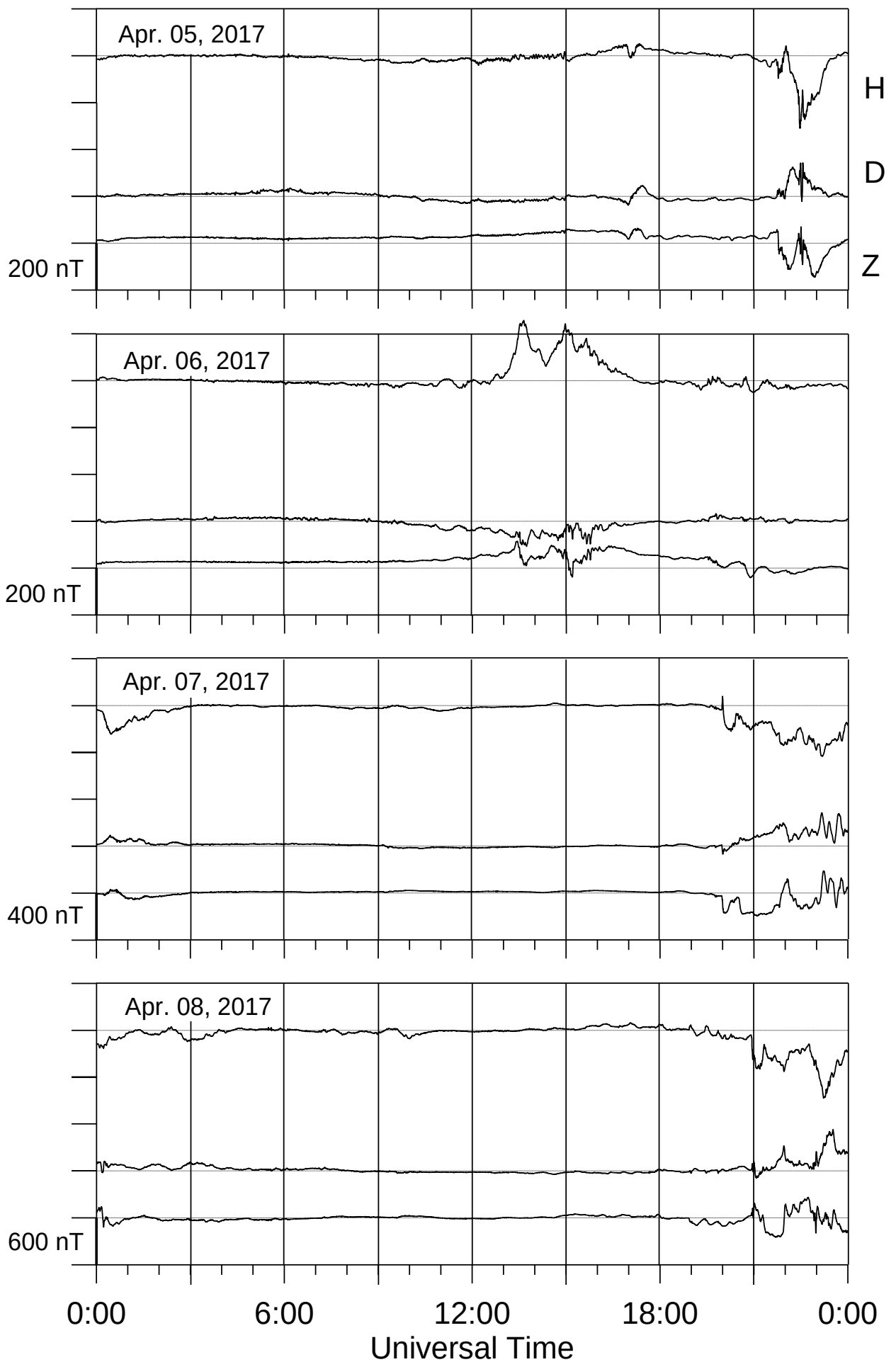


LOPARSKAYA MAGNETOGRAMS**April - June 2017**

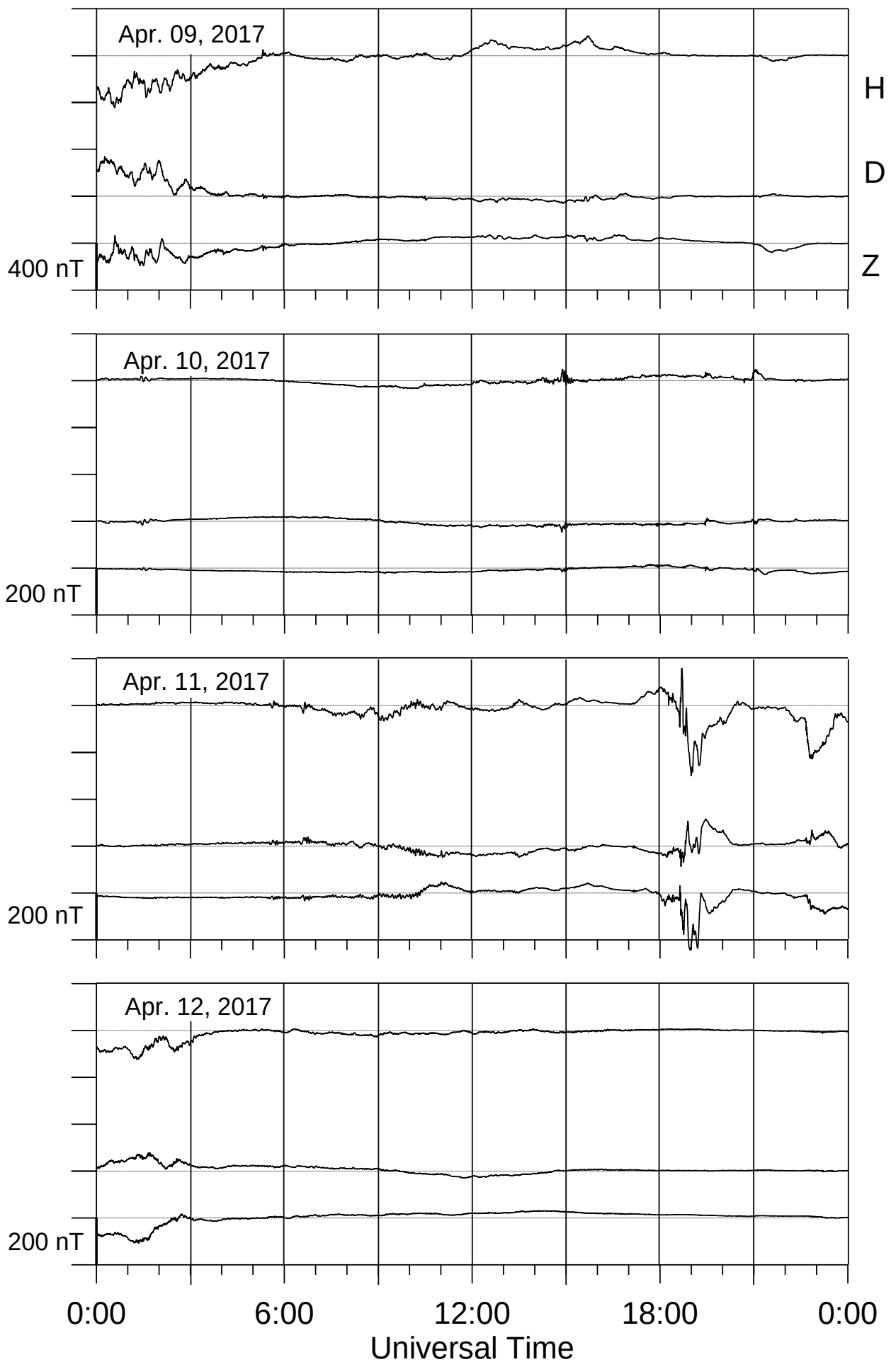
Loparskaya magnetometer



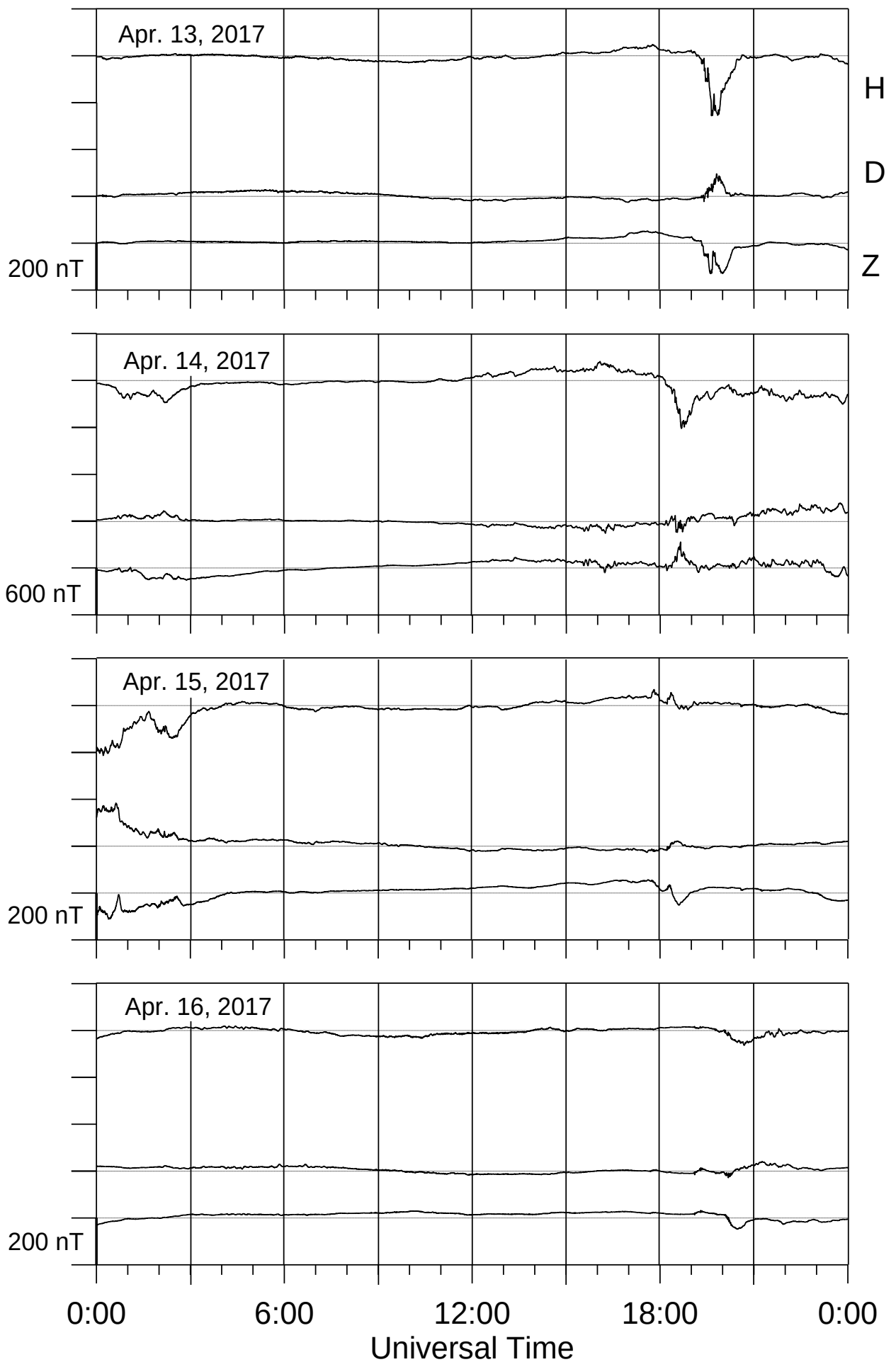
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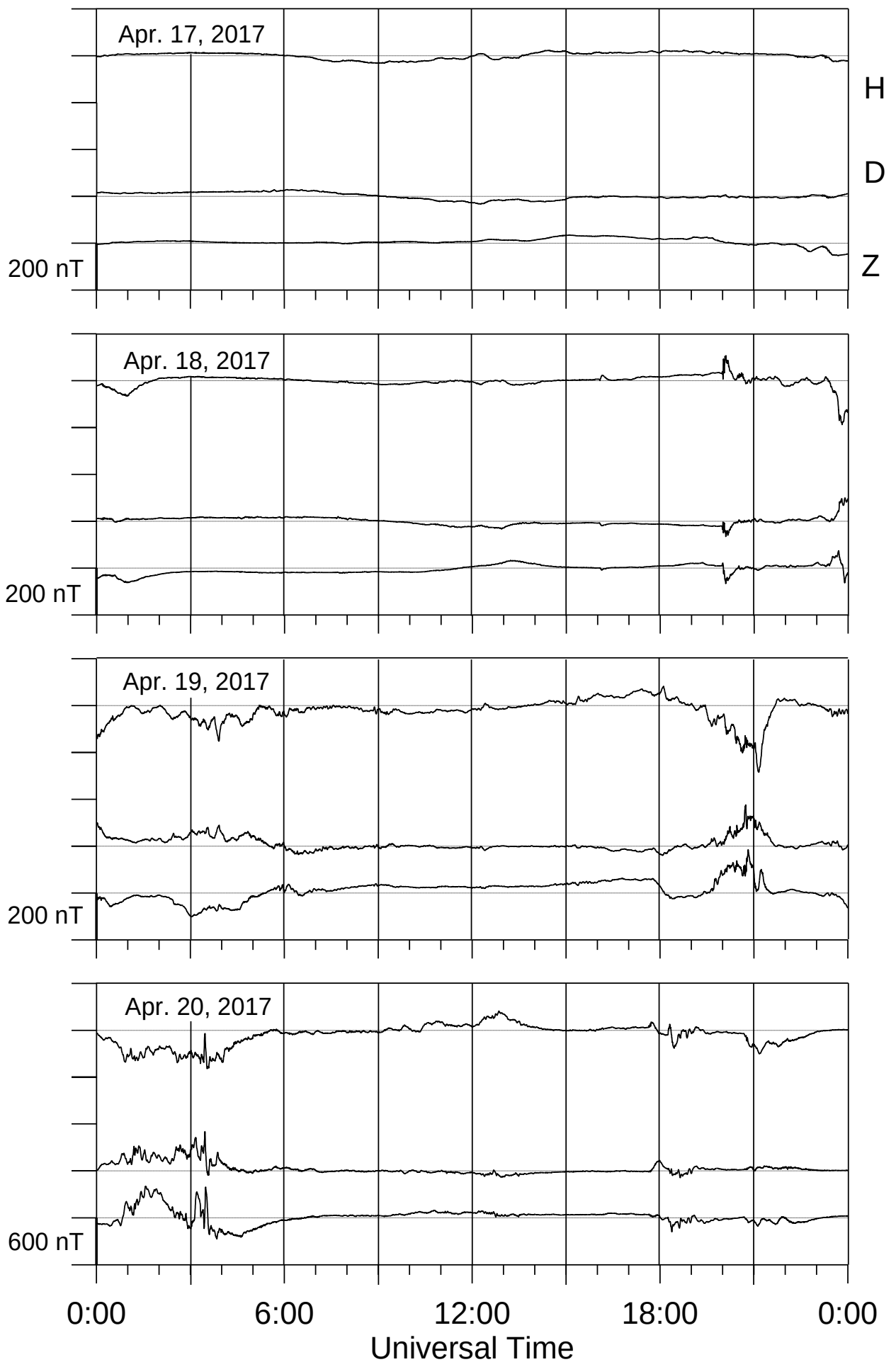
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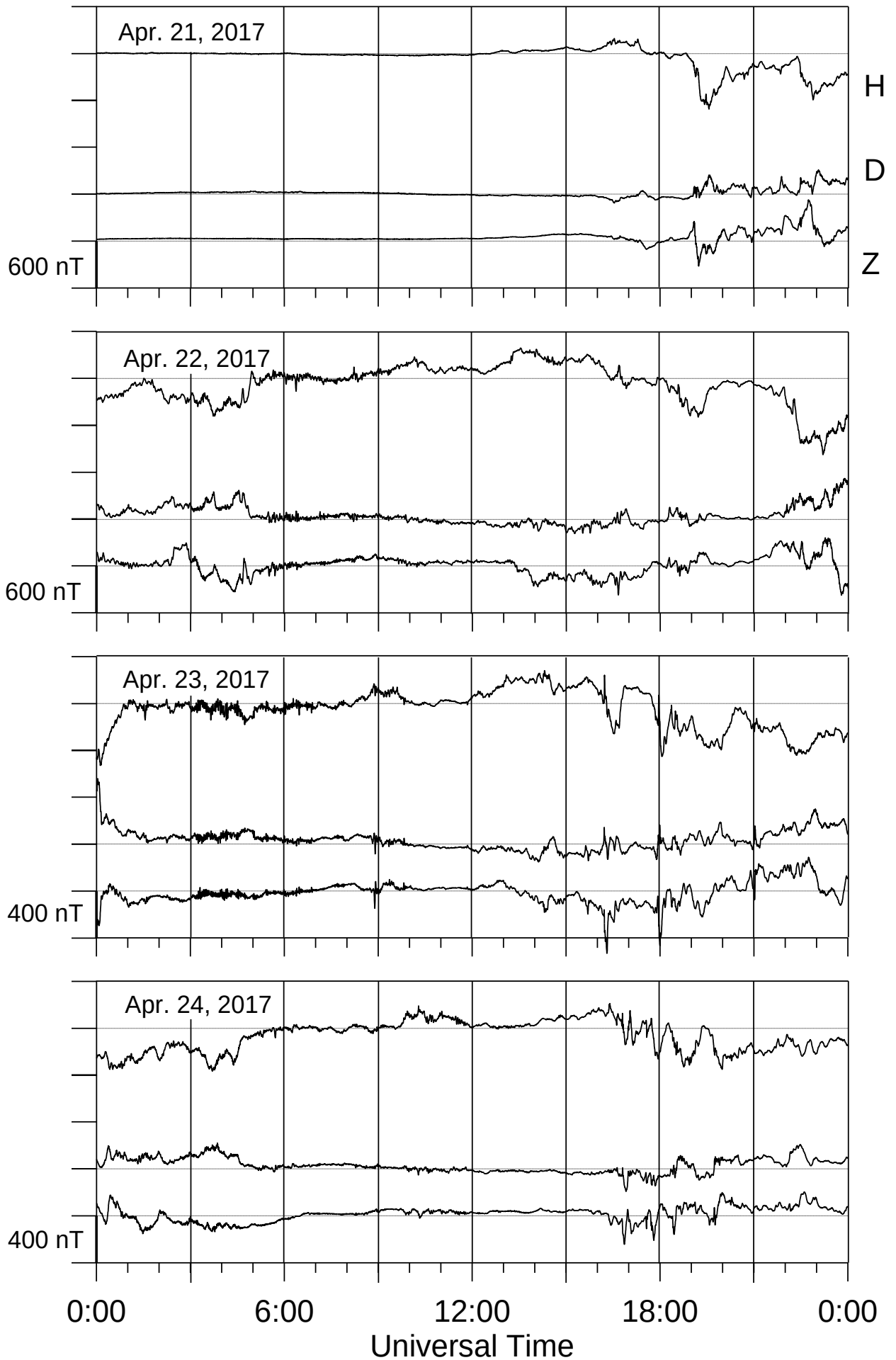
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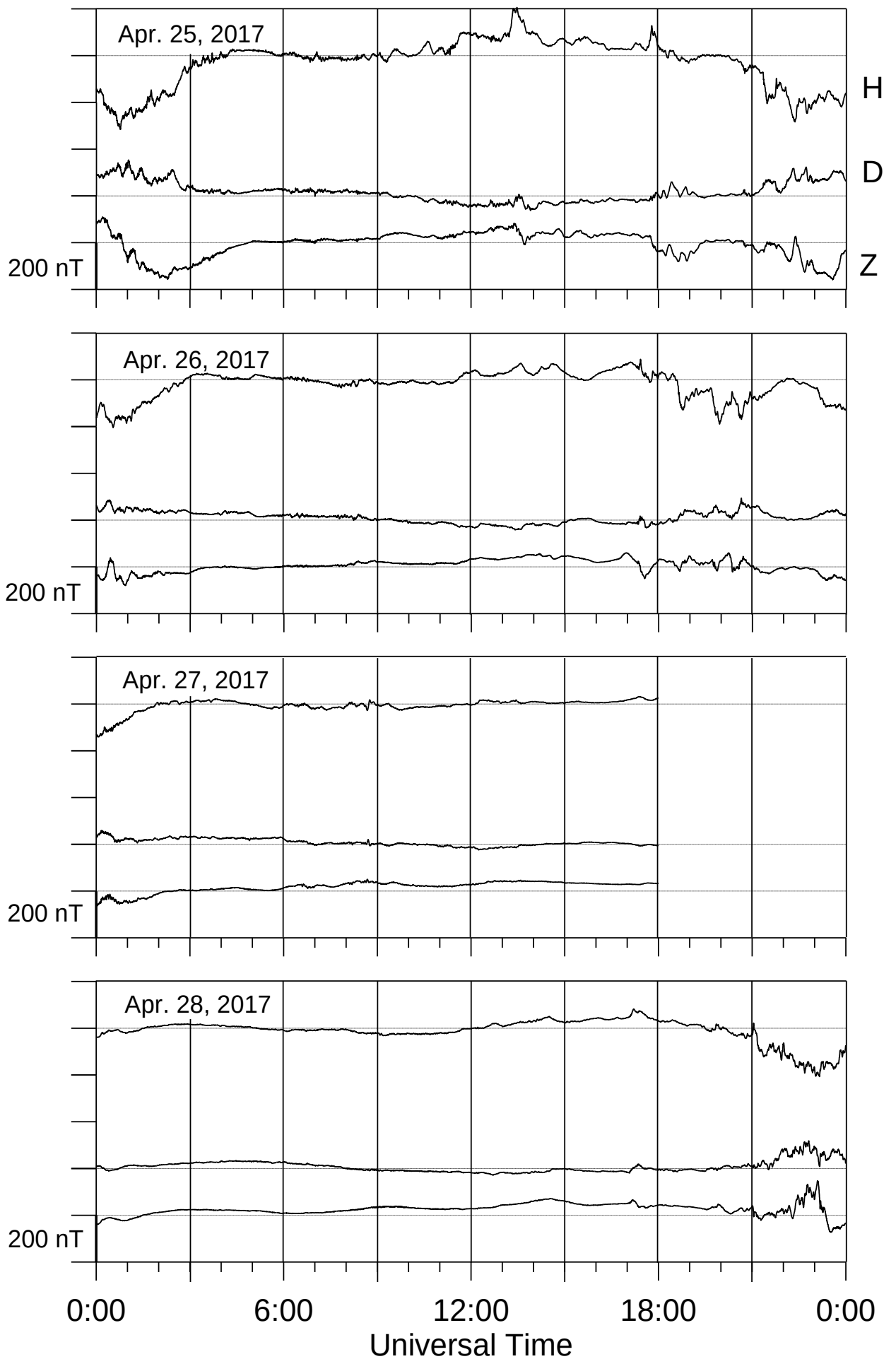
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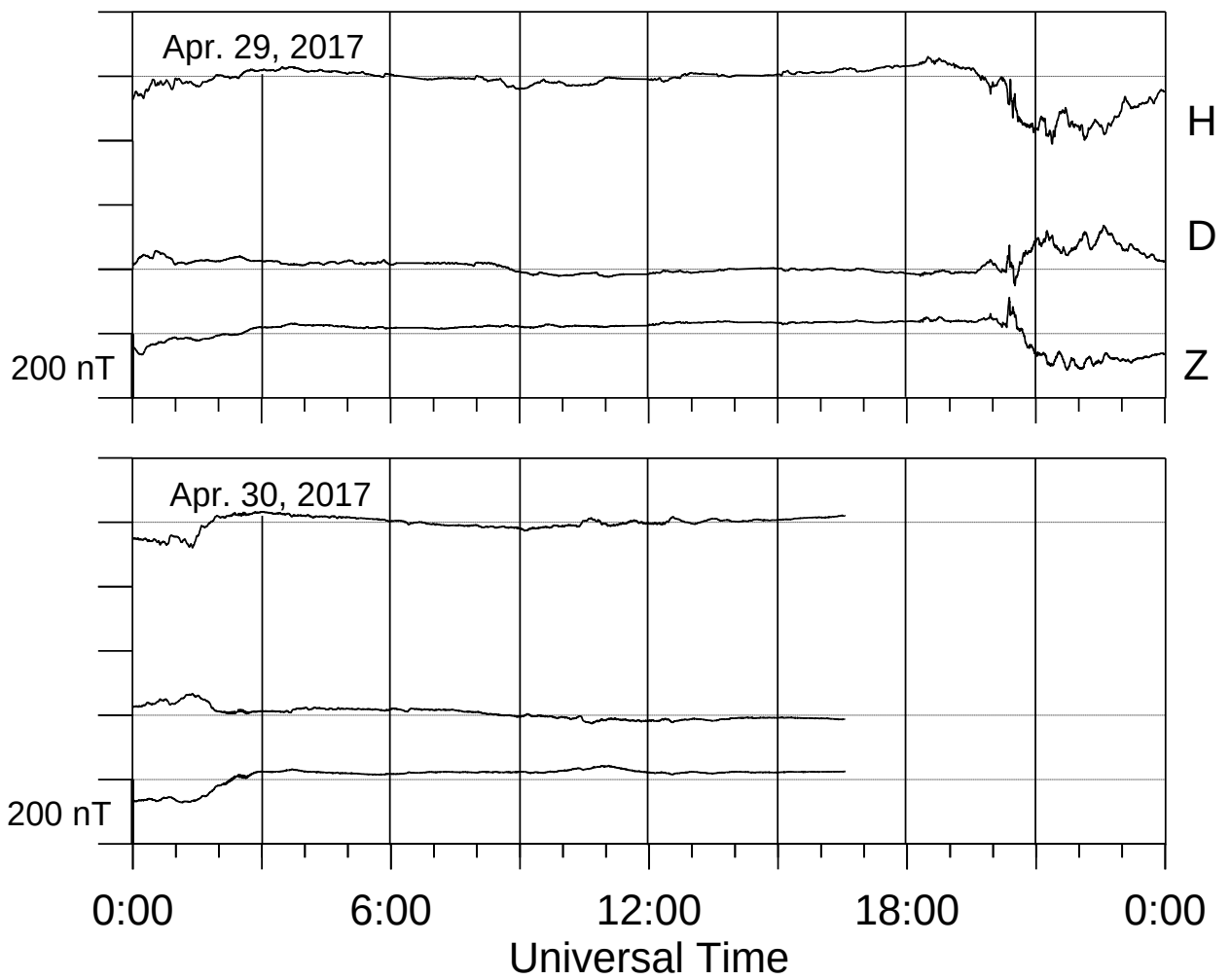
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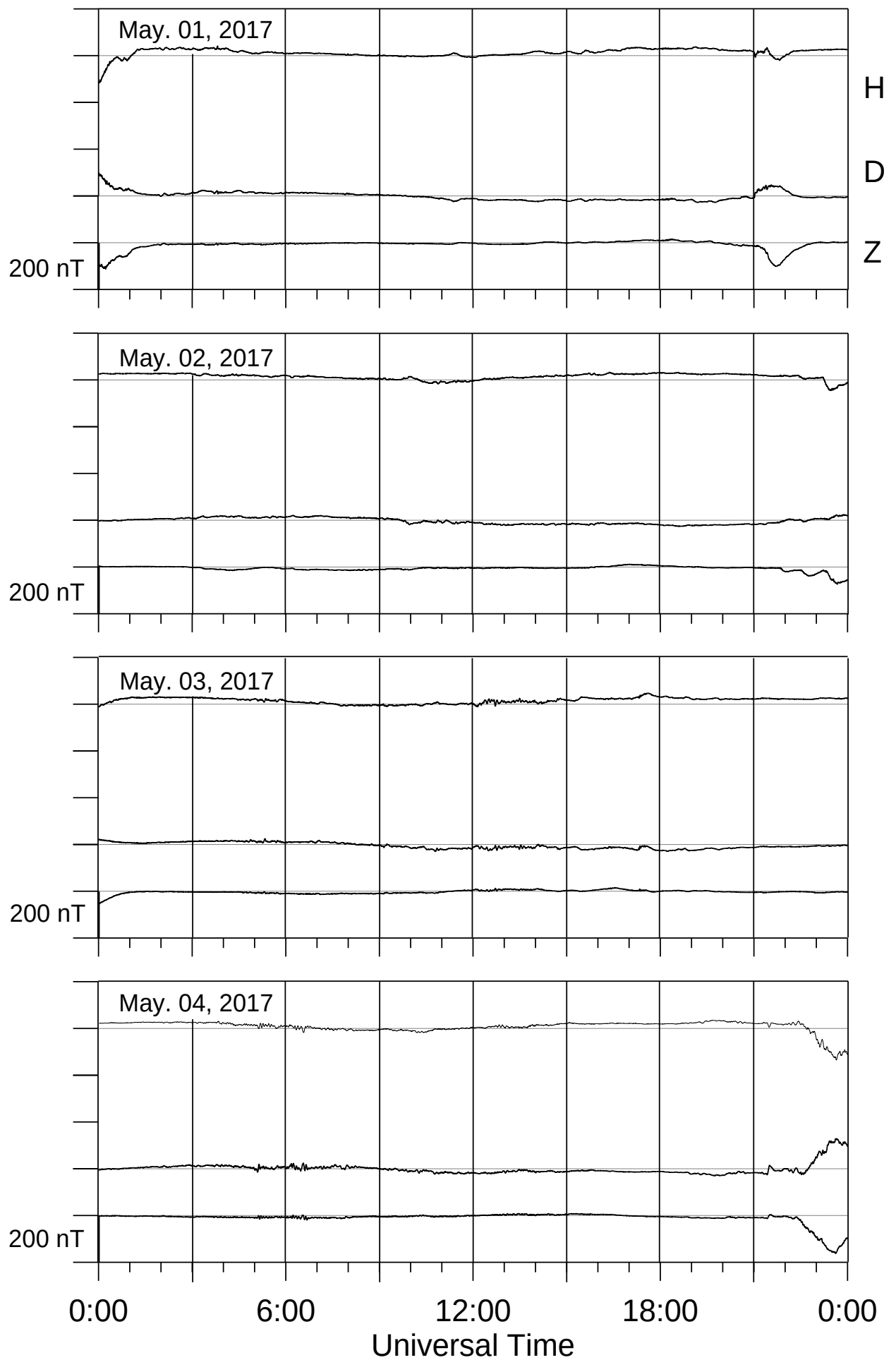
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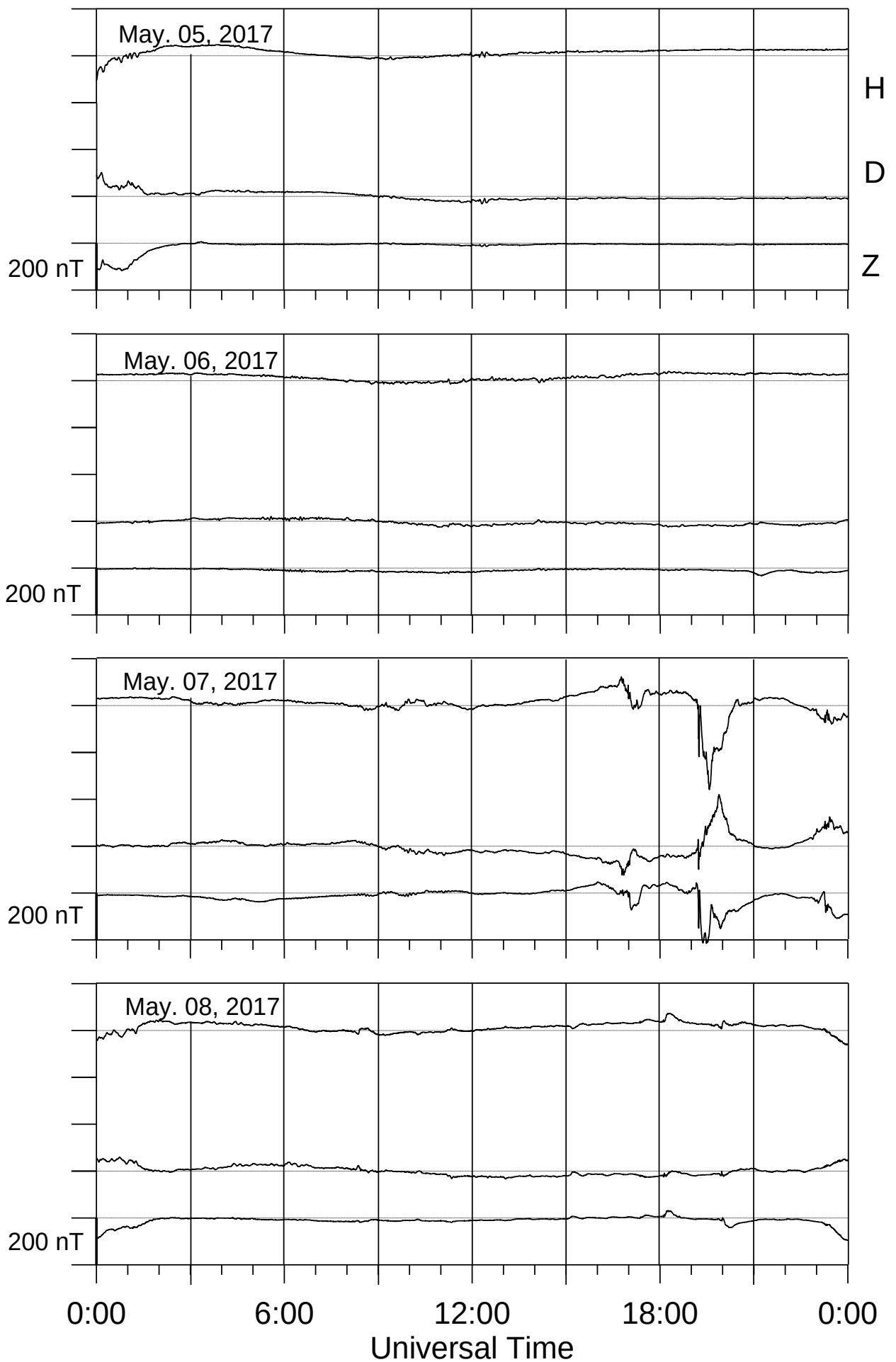
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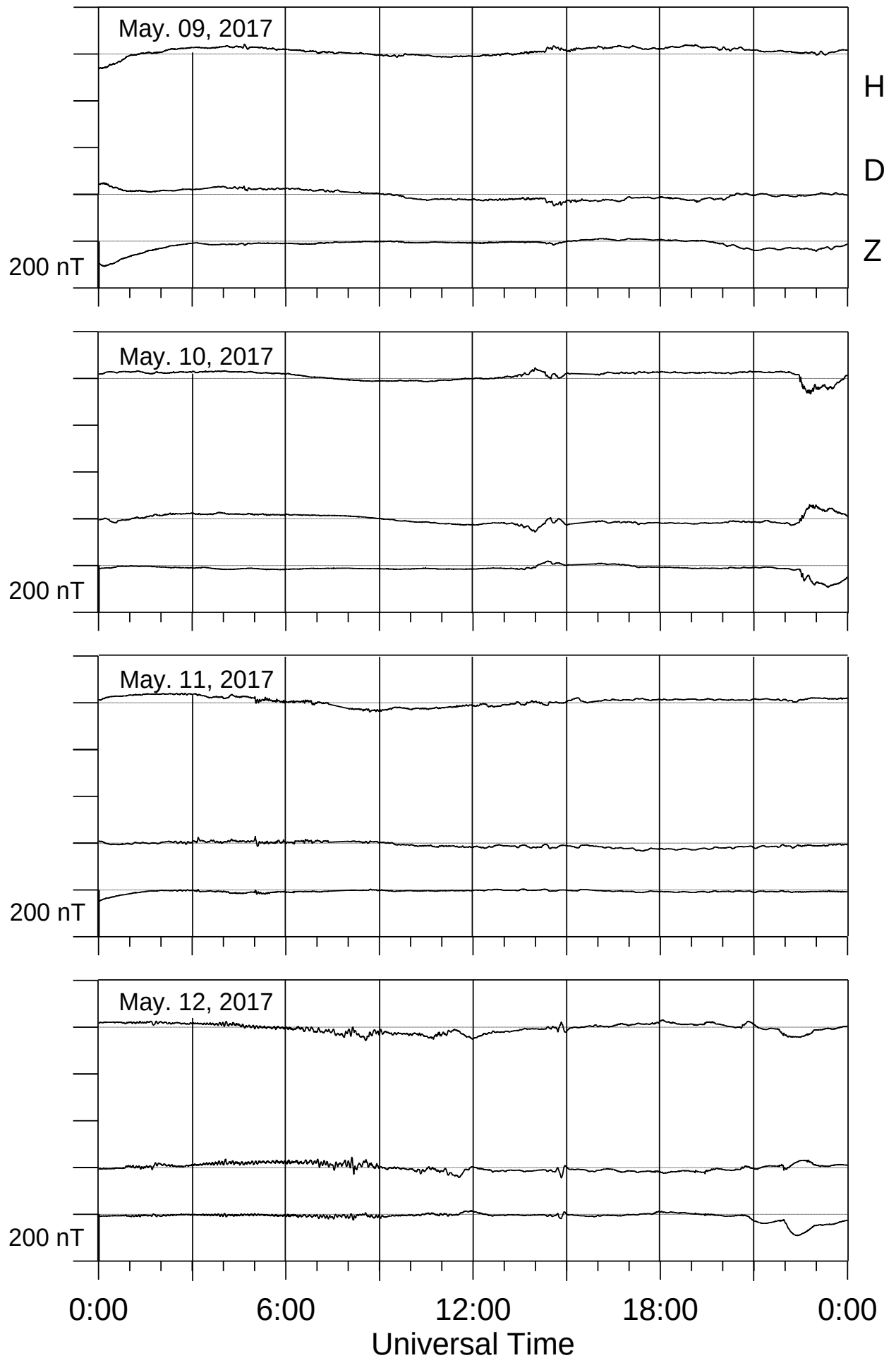
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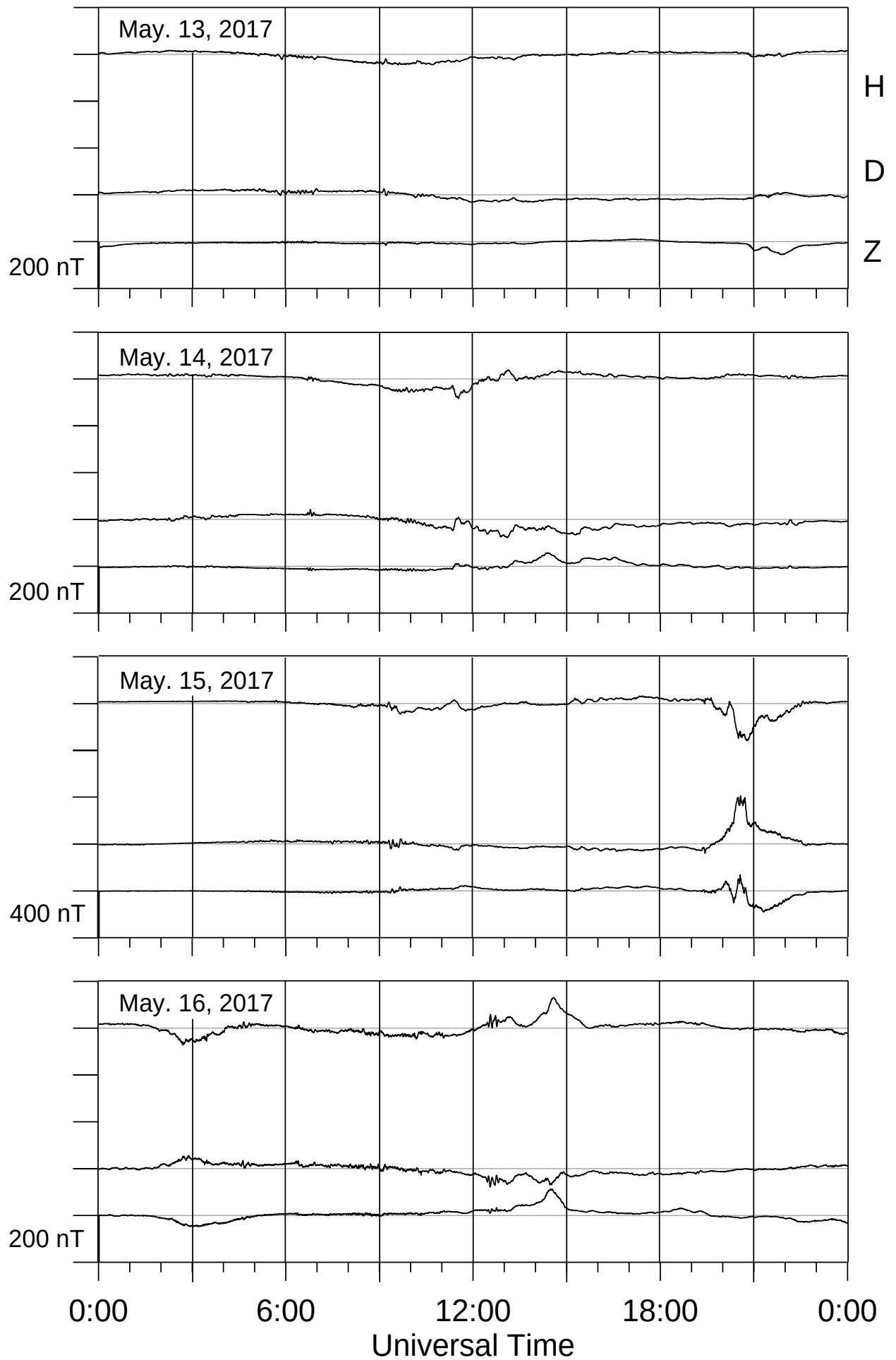
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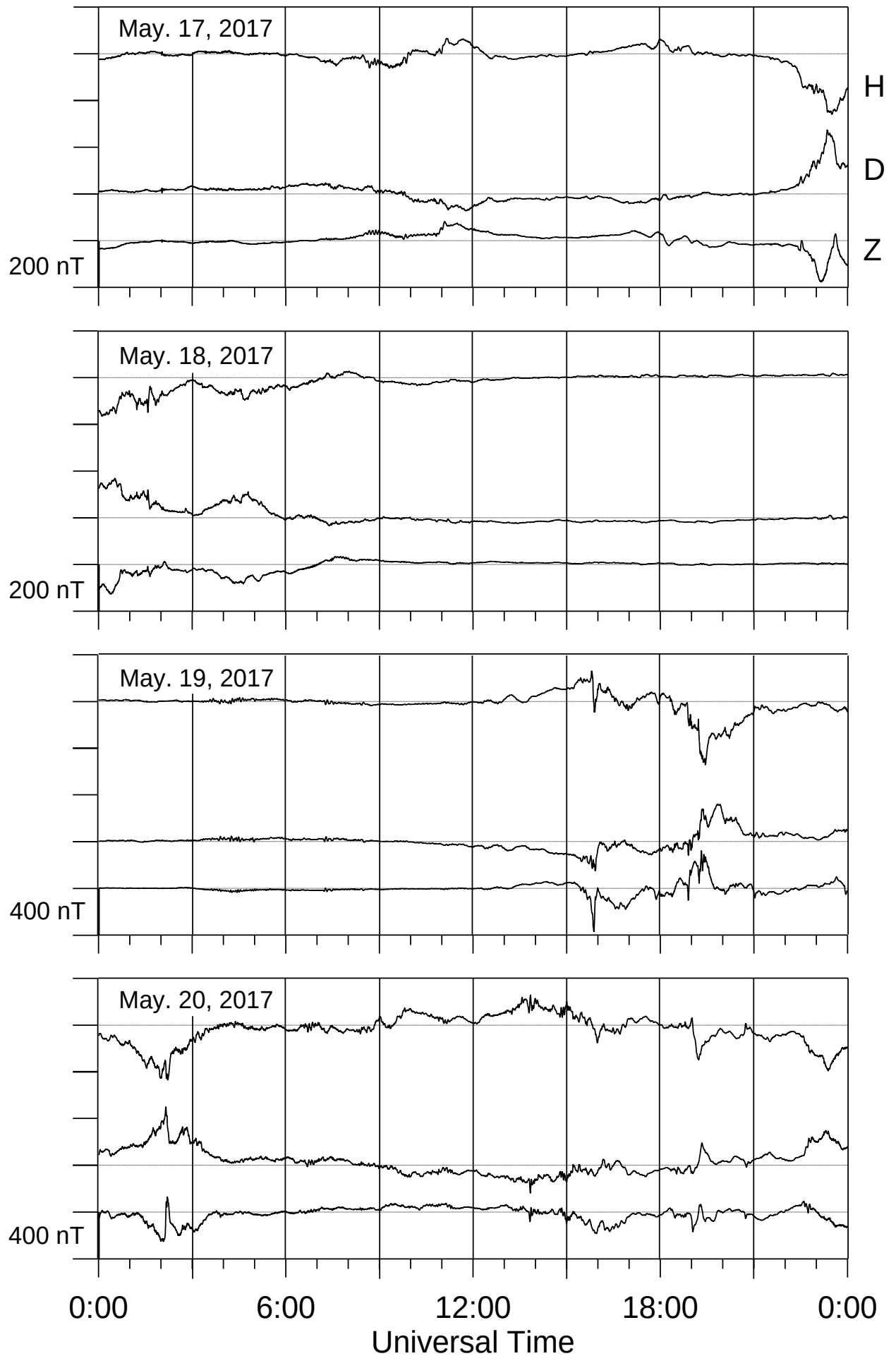
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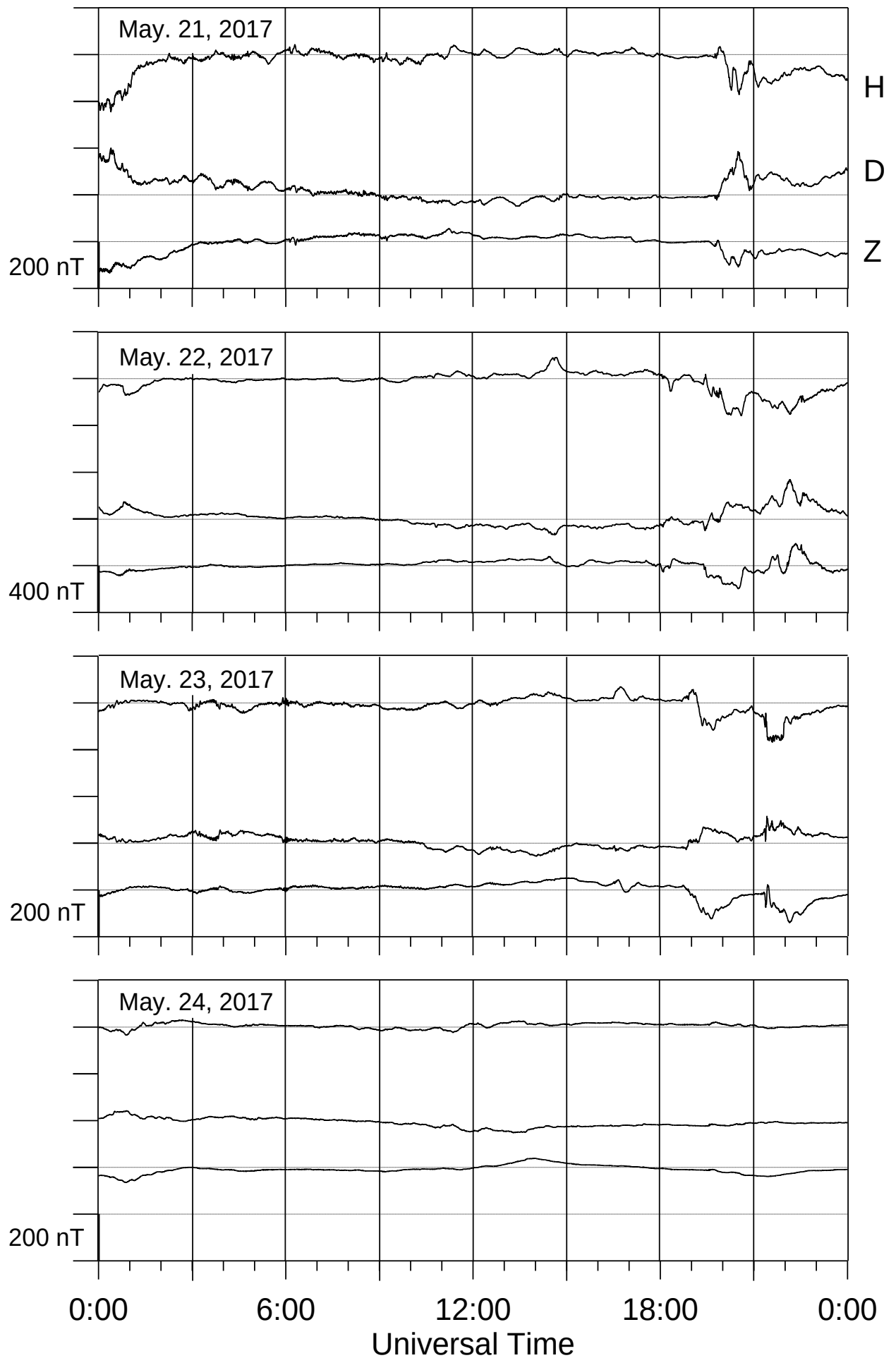
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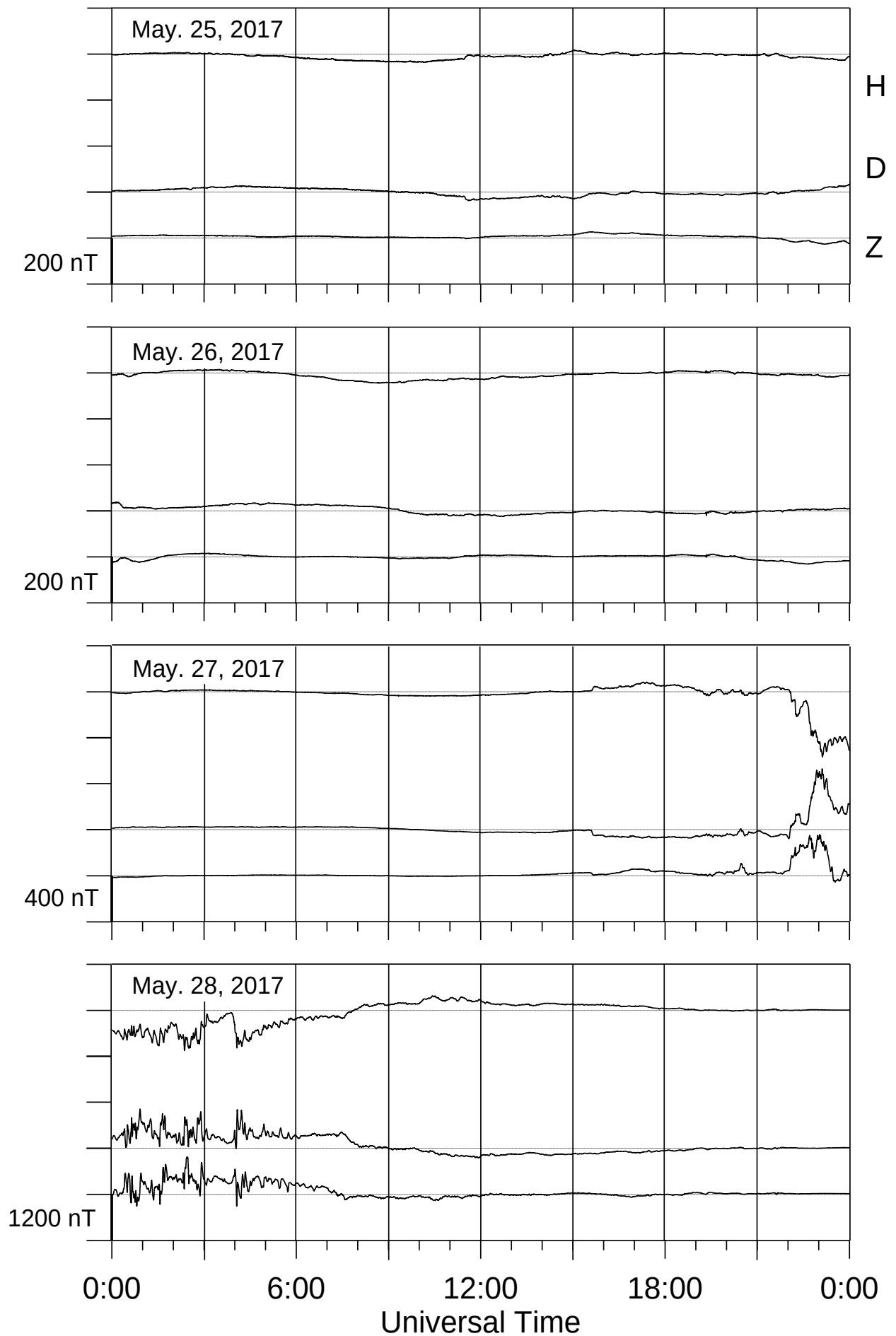
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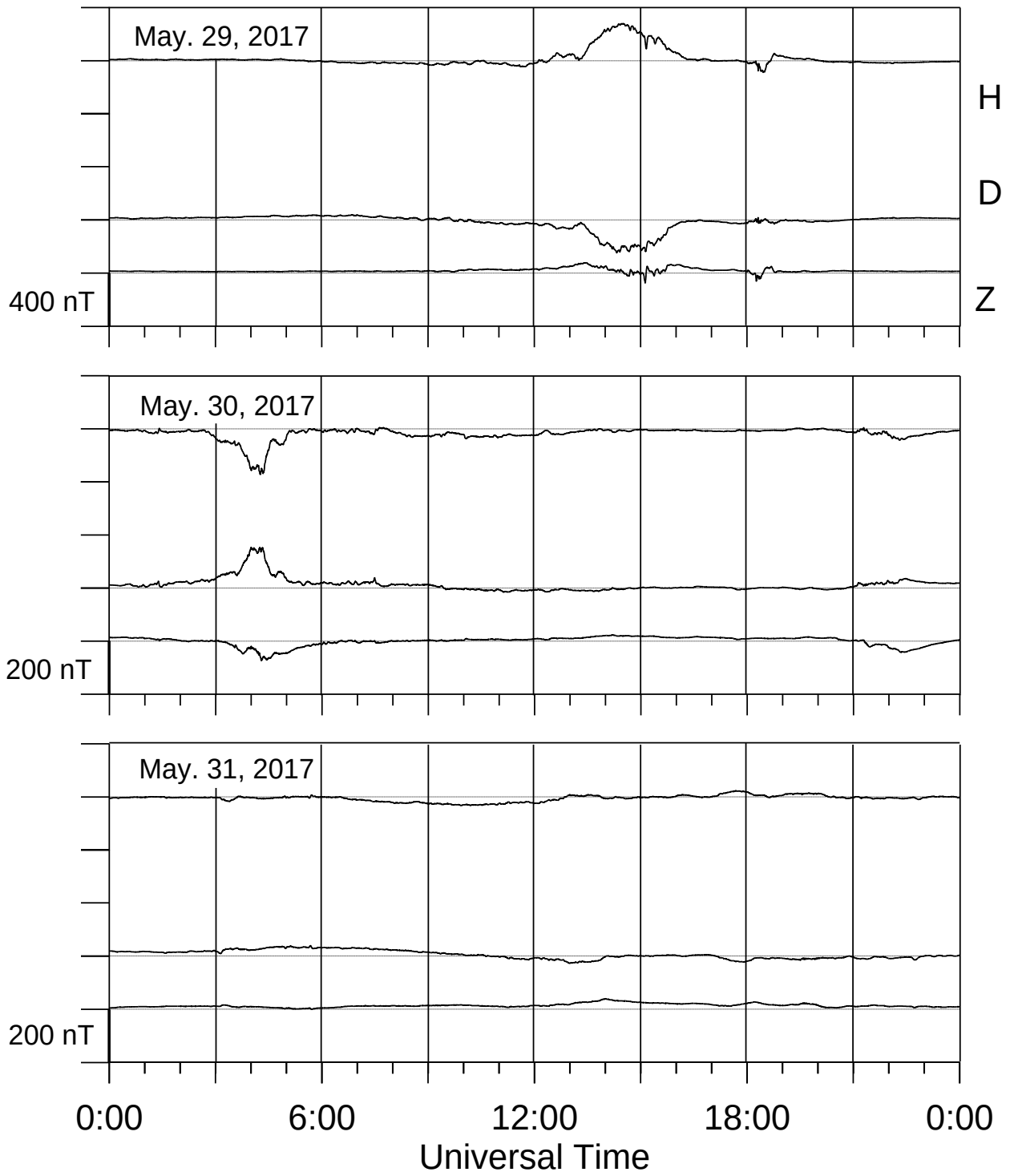
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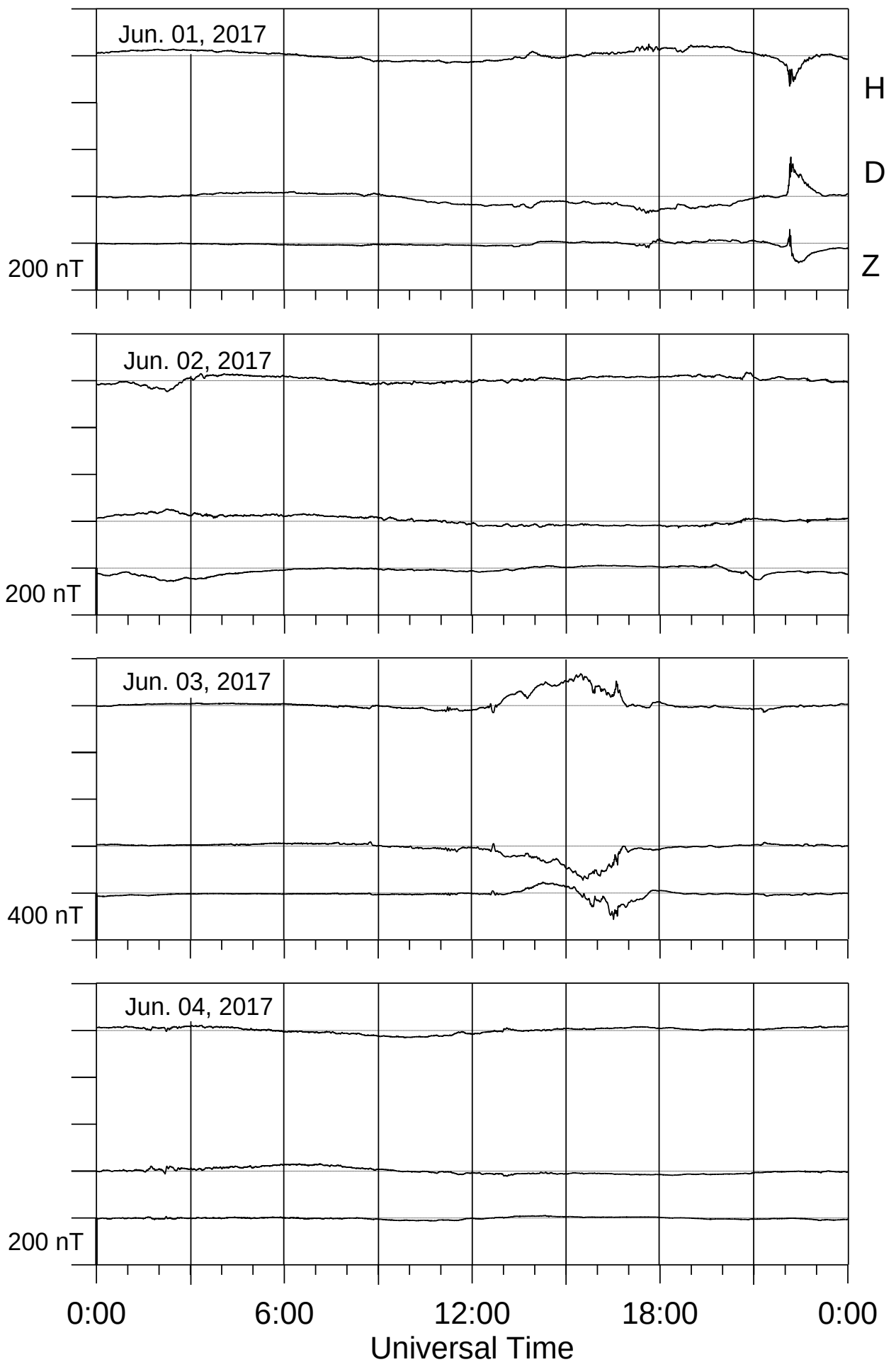
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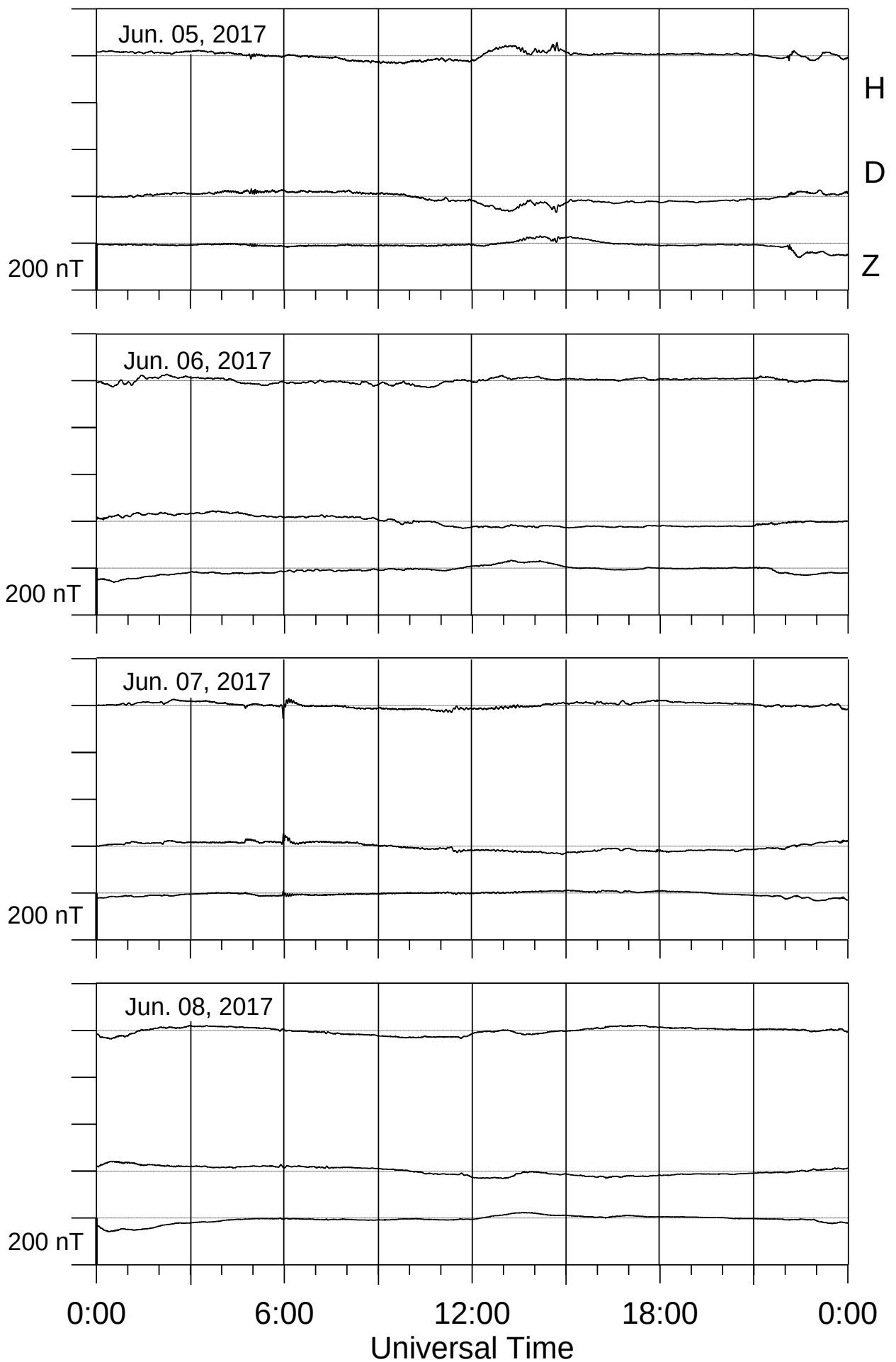
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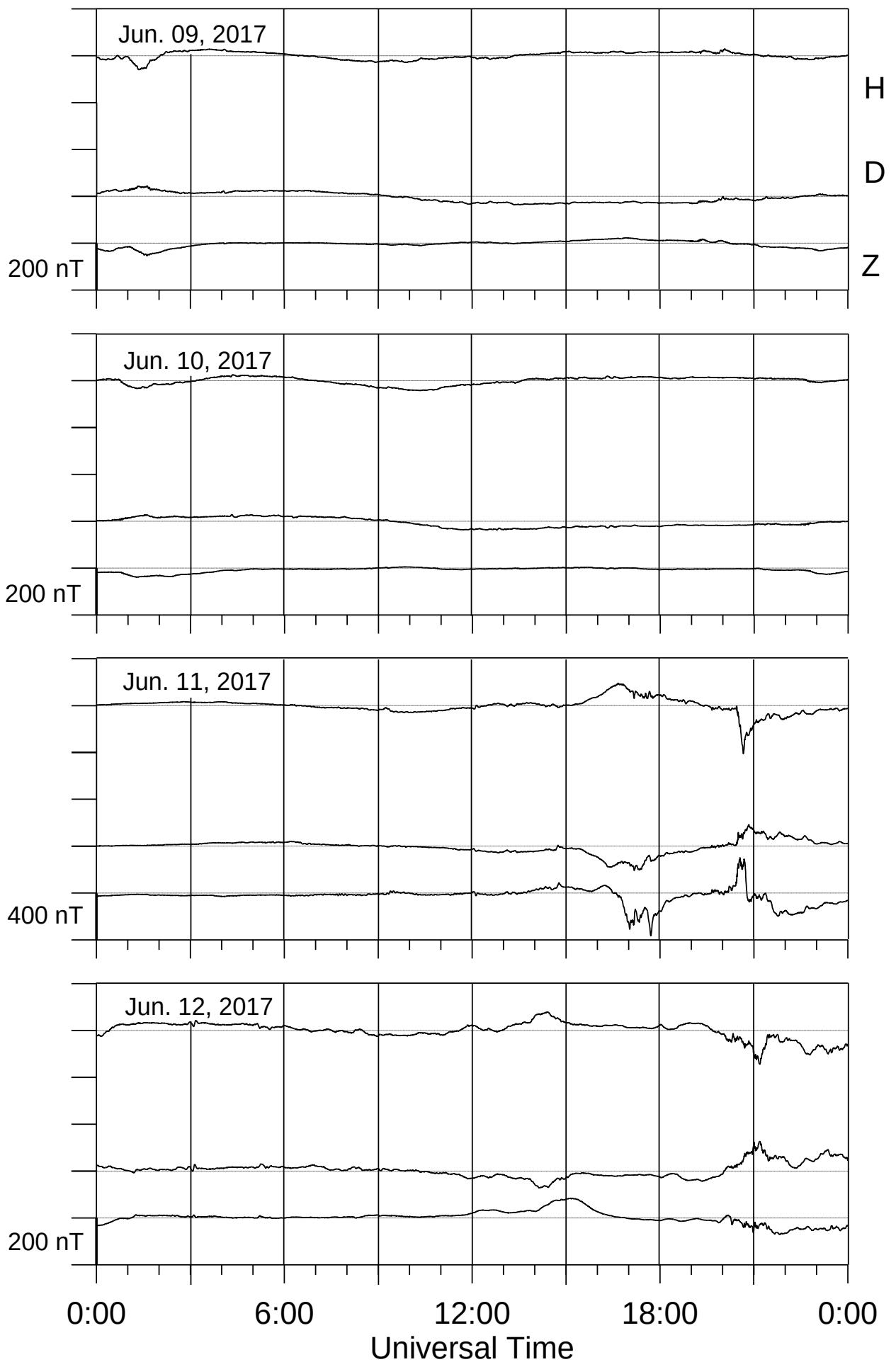
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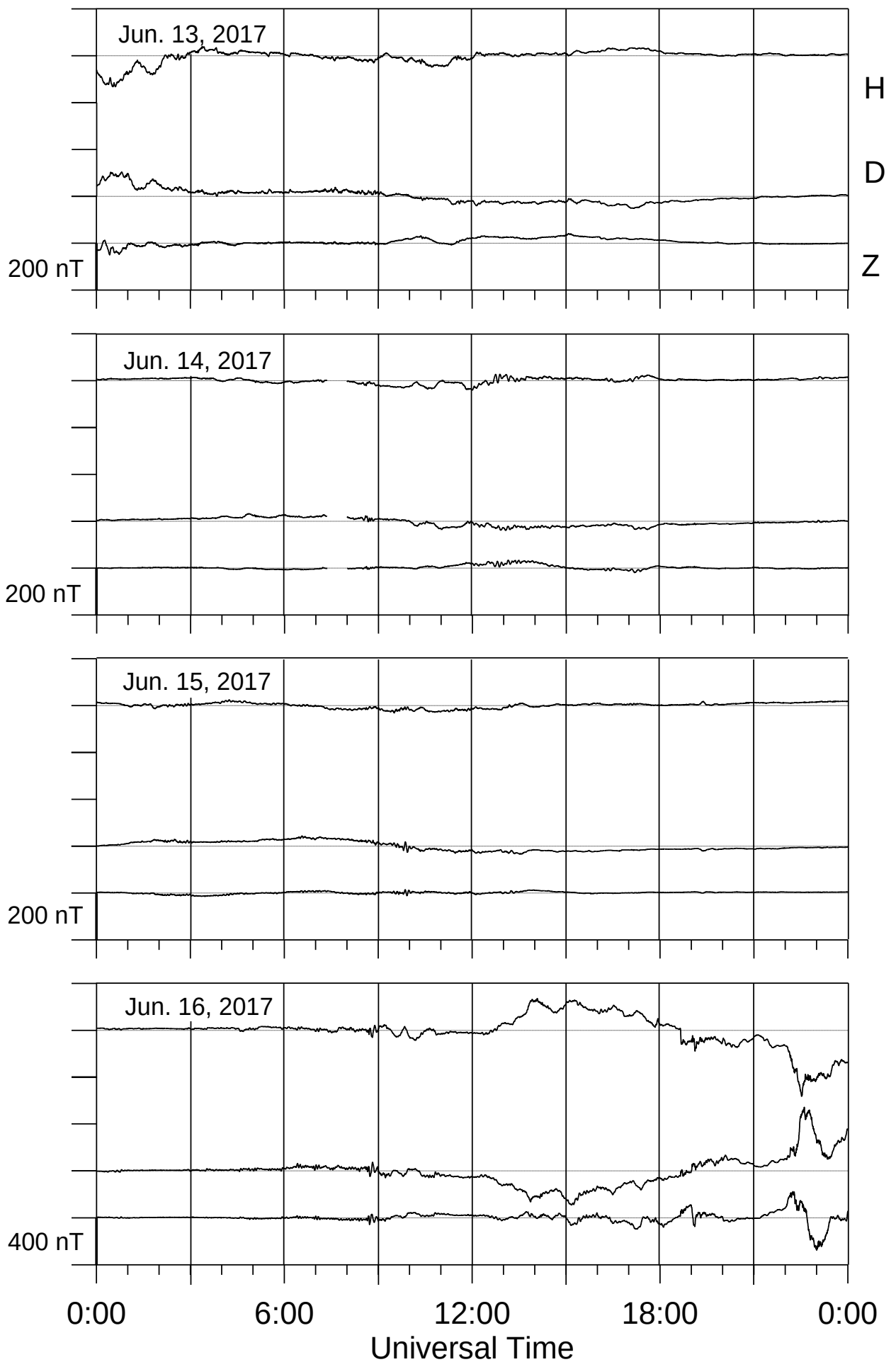
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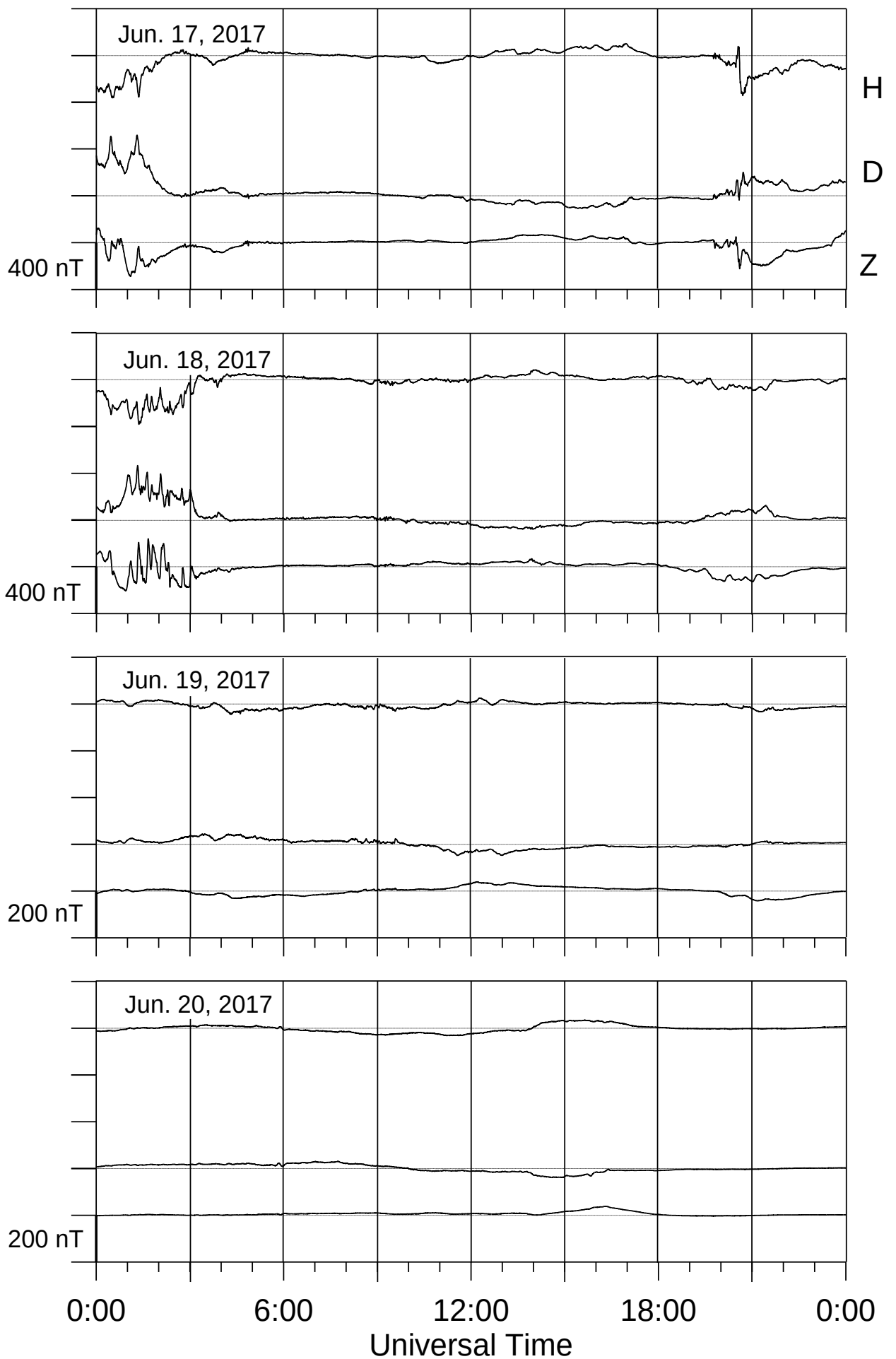
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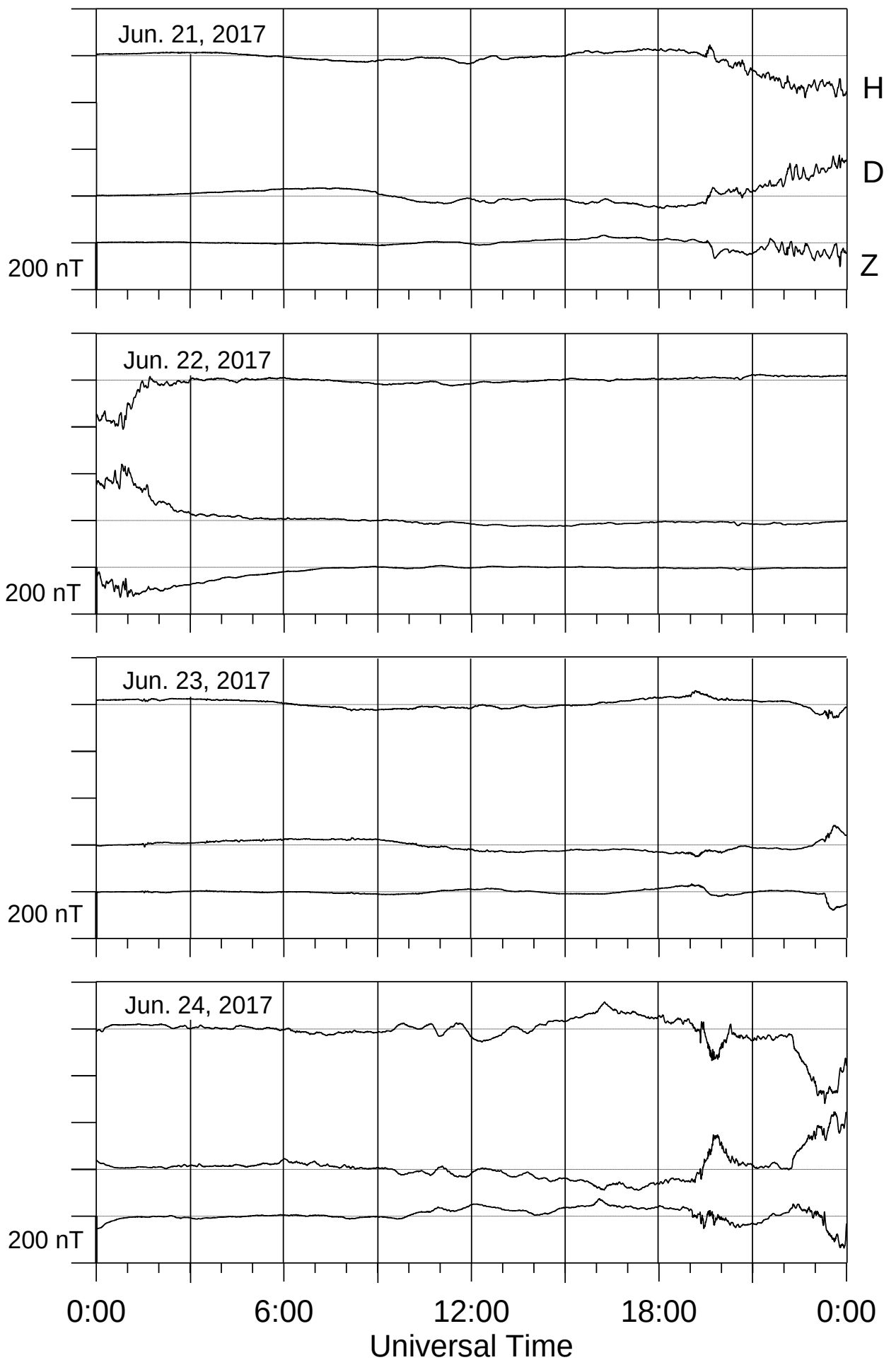
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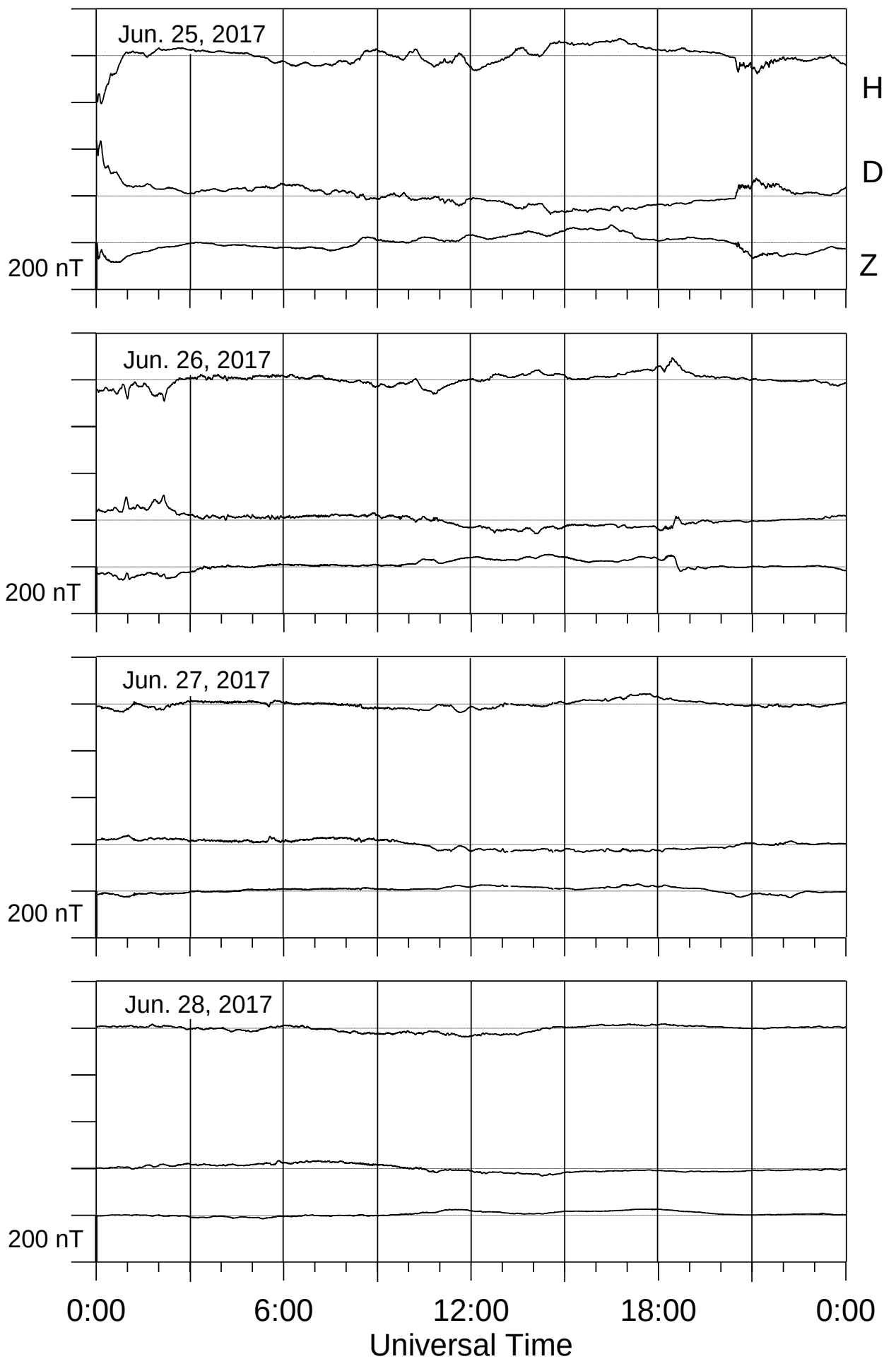
Loparskaya magnetometer



Loparskaya magnetometer



Loparskaya magnetometer



Loparskaya magnetometer

