POLAR GEOPHYSICAL INSTITUTE
RUSSIAN ACADEMY OF SCIENCES

PGI
GEOPHYSICAL DATA

2025
JULY
AUGUST
SEPTEMBER

MURMANSK, APATITY, **RUSSIA**
Novtmber, 2025

PGI
GEOPHYSICAL DATA

V. VOROBJEV, editor
V. Burnaeva and N. Kudriashova make-up editors

This bulletin presents the preliminary ground-based optical, geomagnetic and cosmic ray data obtained by Polar Geophysical Institute in the third quarter of 2025. All-sky camera observations are published only for the quarter 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:

July	5543.28
August	5612.14
September	5430.65

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

Please visit **http://pgia.ru/lang/ru/data**

PLEASE NOTE:

Magnetometer in Loparskaya was not in operation up to 29 July 2025 and from 07 September 2025 because of some technical problems.

All-sky camera observations

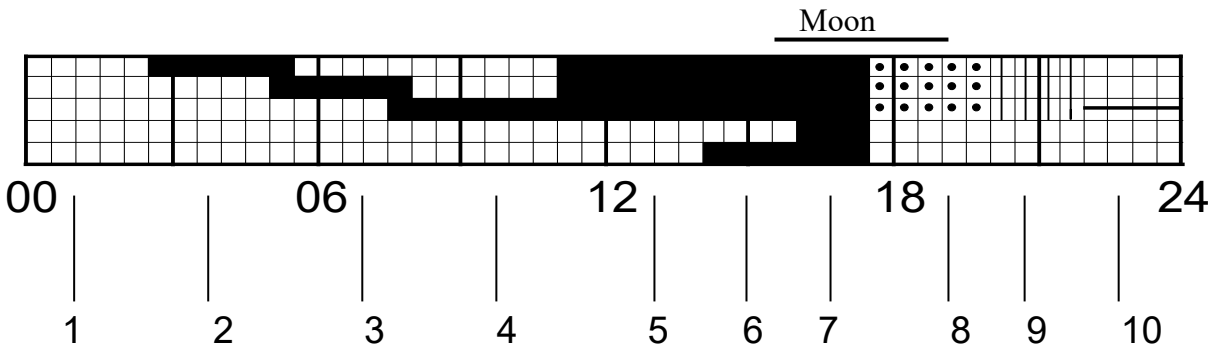
Calendar

Calendar shows the intervals of digital all-sky camera observations on the Kola Peninsula, 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 auroras
2- auroras present in north range
3- weak auroras present in zenith range
4- auroras present in south range
5- auroras present in north, zenith and south ranges
6- medium auroras in zenith, auroras present in north and south ranges
7- strong auroras in zenith, auroras 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 Apatity 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.

Coordinates of stations

Stations	Code	Geographic		Corr. Geomagnetic	
		Lat	Long	Lat	Long
Tumanny	TUM	69.14° N	35.82° E	65.24° N	116.7° E
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 also our Internet pages:

http://pgia.ru/lang/ru/archive_pgi

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184209, RUSSIA

GEOMAGNETIC K-INDICES, LOVOZERO
July, 2025
Lower limit of K=9 is 1500 nT

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

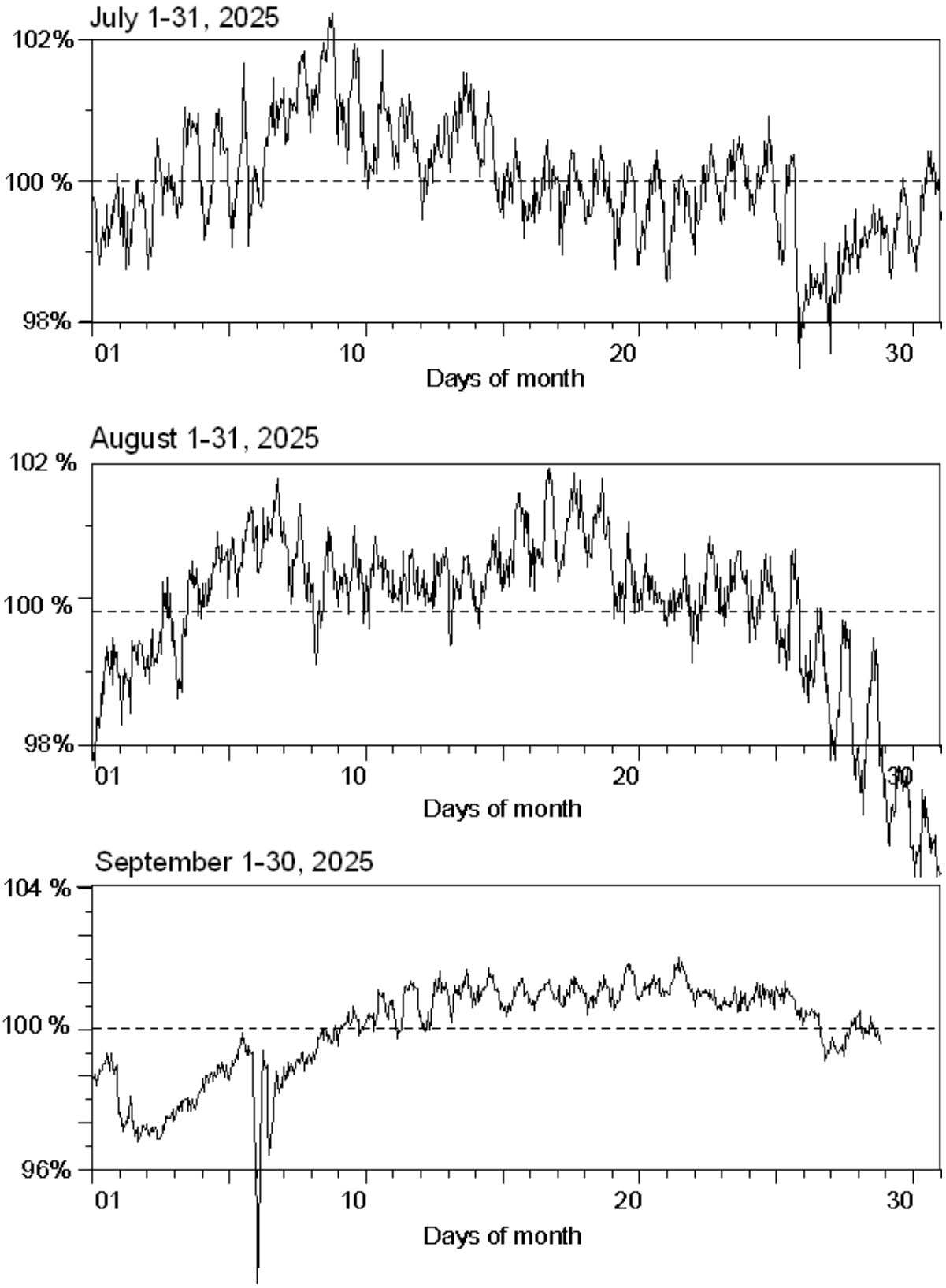
GEOMAGNETIC K-INDICES, LOVOZERO
August, 2025
Lower limit of K=9 is 1500 nT

	Time, UT								
	03	06	09	12	15	18	21	24	
Day									
1	1 1 3	2 2 2	2 2 2	2 2 2	3 4 3	2 1 1	1 1 4	5 4 3	
2	1 3 4	3 2 2	1 1 1	1 1 1	1 2 2	2 2 1	1 1 1	4 4 2	
3	1 2 1	1 1 1	1 1 1	1 1 2	2 2 2	3 2 2	3 3 2	0 0 0	
4	0 0 1	1 2 2	2 1 1	1 1 2	2 2 2	2 4 3	2 1 2	3 4 4	
5	6 5 2	3 2 1	1 1 1	1 1 1	2 2 3	2 2 1	2 2 1	4 4 3	
6	2 1 2	2 1 1	0 1 1	1 1 1	1 1 1	2 2 1	0 0 0	2 3 2	
7	0 0 0	1 1 1	1 1 1	1 1 1	1 1 1	0 0 0	0 1 0	1 1 0	Q
8	0 0 0	1 - -	- - -	- - -	- 5 5	6 4 3	5 5 4	4 3 3	
9	3 4 6	6 5 5	4 3 3	3 4 4	5 6 5	5 5 3	3 4 4	4 3 6	
10	6 4 1	1 3 3	3 3 3	2 4 4	3 5 4	4 3 3	4 4 5	6 5 6	
11	6 5 4	3 2 2	2 2 2	2 1 2	2 3 4	4 4 2	2 2 4	5 3 5	
12	5 5 5	4 3 2	1 1 2	2 2 2	3 3 3	3 3 2	1 1 3	5 4 2	
13	1 2 3	3 3 1	1 1 2	- - -	- 3 3	3 3 3	2 2 3	6 64	
14	3 5 5	3 3 2	2 2 1	2 2 3	3 3 2	2 2 2	2 1 2	2 2 3	
15	3 3 2	2 1 1	1 1 1	1 1 1	1 2 2	2 2 2	2 3 3	0 0 0	
16	0 0 0	1 0 1	1 1 2	2 1 1	2 1 1	2 2 2	1 0 0	2 3 3	
17	2 1 1	0 0 1	1 1 1	1 1 2	2 2 2	2 1 1	1 1 0	0 0 0	Q
18	0 0 0	- - -	- - -	- - -	- - 3	3 3 2	3 2 2	2 2 4	
19	4 2 2	- - -	- - -	- - -	- - 3	3 3 3	3 5 4	3 5 5	
20	6 6 5	4 - -	- - -	- - -	- 0 1	2 2 1	2 2 4	5 5 4	
21	3 3 3	3 - -	- - -	- - 1	1 0 1	0 1 3	3 3 2	3 3 2	
22	2 4 4	- - -	- - -	- - -	- - 0	1 1 2	1 3 3	2 3 4	
23	4 2 1	2 2 2	1 1 1	1 1 1	1 1 1	0 1 0	1 1 1	0 0 0	
24	1 0 1	1 2 1	1 1 1	1 0 1	2 2 0	0 1 2	1 1 1	0 1 0	
25	0 0 1	1 1 2	1 1 1	1 0 1	2 3 3	3 2 1	1 2 1	2 1 0	
26	0 1 1	2 3 2	1 1 1	2 2 2	2 2 1	0 0 1	1 1 0	1 1 2	
27	2 1 1	1 1 -	- - -	- - -	- 2 3	3 21	1 2 2	3 2 0	
28	1 1 2	1 2 -	- - -	- - -	- 1 2	1 1 1	1 1 2	2 0 0	
29	1 2 1	2 - -	- - -	- - -	- 1 1	1 1 1	2 2 5	3 1 1	
30	2 1 1	0 1 1	1 1 1	1 2 2	2 1 1	1 2 3	2 2 0	0 0 1	
31	0 0 0	1 1 1	1 1 1	2 1 2	1 1 0	1 1 1	1 1 0	0 0 0	Q

GEOMAGNETIC K-INDICES, LOVOZERO
September, 2025
Lower limit of K=9 is 1500 nT

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

Apatity neutron monitor



ALL – SKY CAMERA OBSERVATIONS

September 2025

CALENDAR OF ALL-SKY CAMERA OBSERVATIONS

September 01 - 02

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

September 02 - 03

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

September 03 - 04

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

September 04 - 05

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

September 05- 06

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

September 06 - 07

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

September 07 - 08

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

September 08 - 09

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

CALENDAR OF ALL-SKY CAMERA OBSERVATIONS

September 09 -10

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

September 10 -11

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

September 11 - 12

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

September 12 - 13

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

September 13 - 14

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

September 14- 15

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

September 15 - 16

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

September 16 - 17

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

CALENDAR OF ALL-SKY CAMERA OBSERVATIONS

September 17 - 18

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

September 18 - 19

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

September 19 - 20

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

September 20 - 21

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

September 21 - 22

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

September 22- 23

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

September 23 - 24

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

September 24 - 25

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

CALENDAR OF ALL-SKY CAMERA OBSERVATIONS

September 25 - 26

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

September 26 -27

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

September 27 - 28

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

September 28 - 29

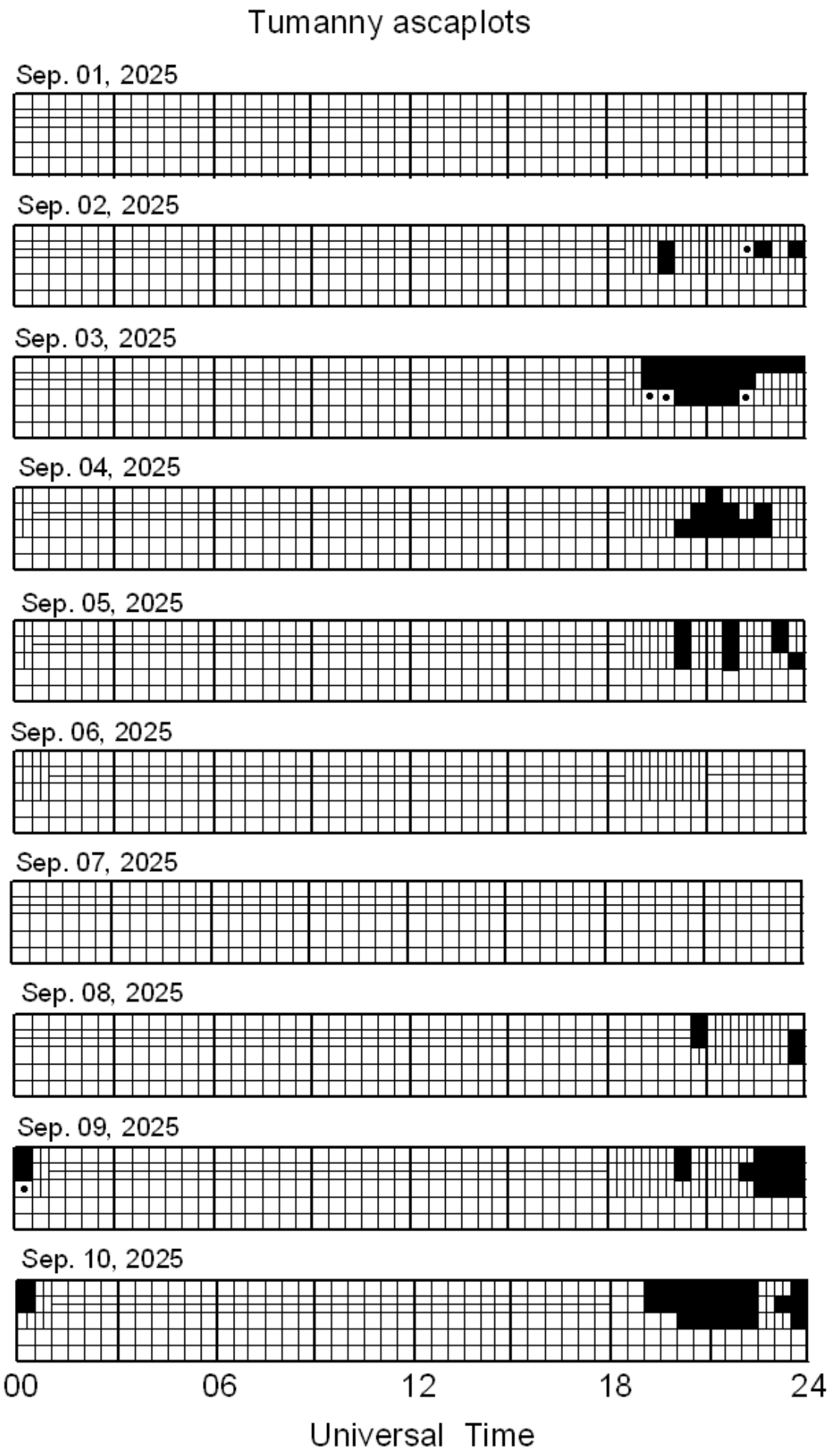
UT	14	15	16	17	18	19	20	21	22	23	24	01	02	03	04	05
LOZ																
TUM			—	—	—	—	—	—	—	—	—	—	—			

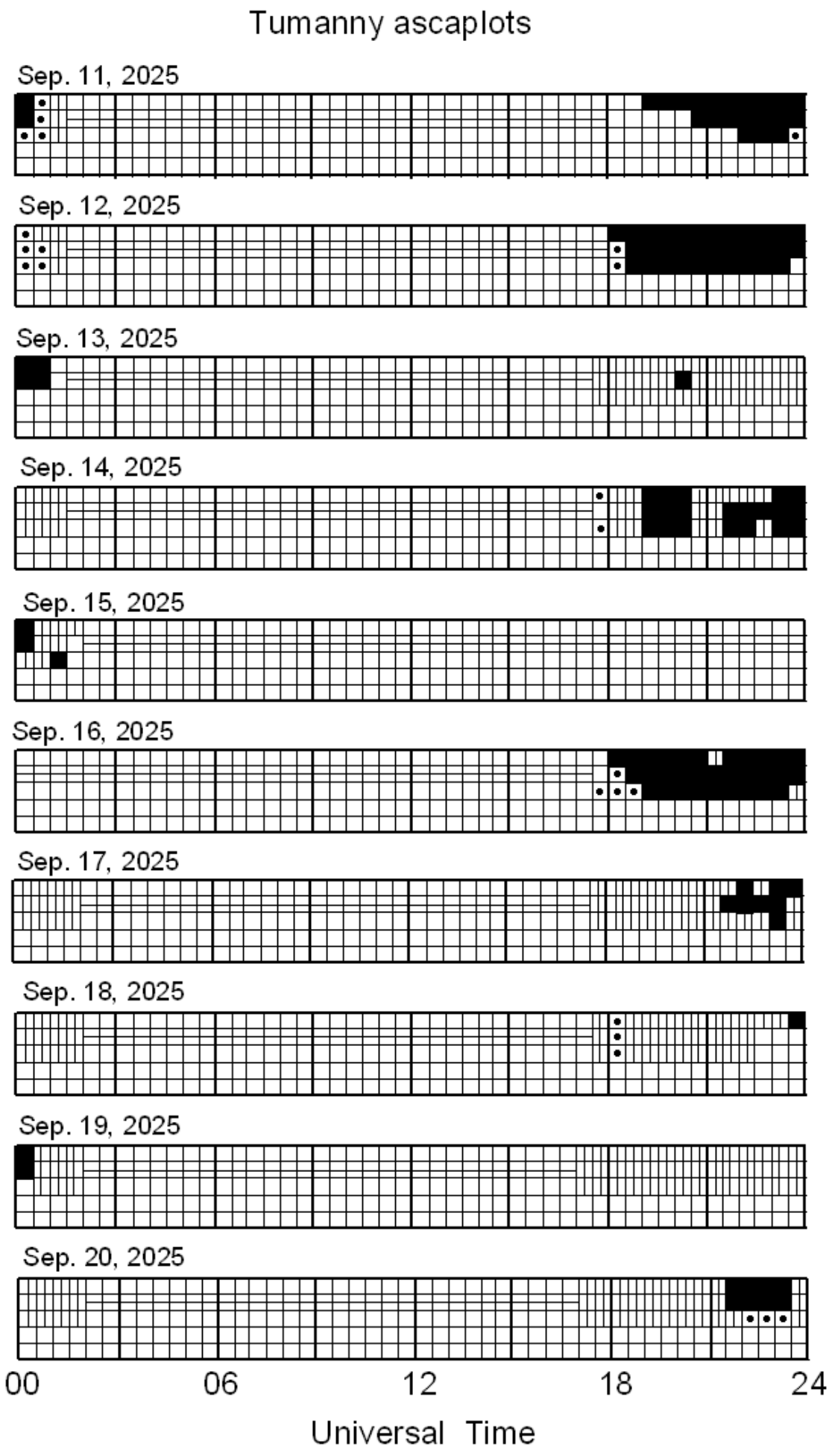
September 29 - 30

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

September 30

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


Tumanny ascaplots
Sep. 01, 2025
Sep. 02, 2025
Sep. 03, 2025
Sep. 04, 2025
Sep. 05, 2025
Sep. 06, 2025
Sep. 07, 2025
Sep. 08, 2025
Sep. 09, 2025
Sep. 10, 2025
00
06
12
18
24
Universal Time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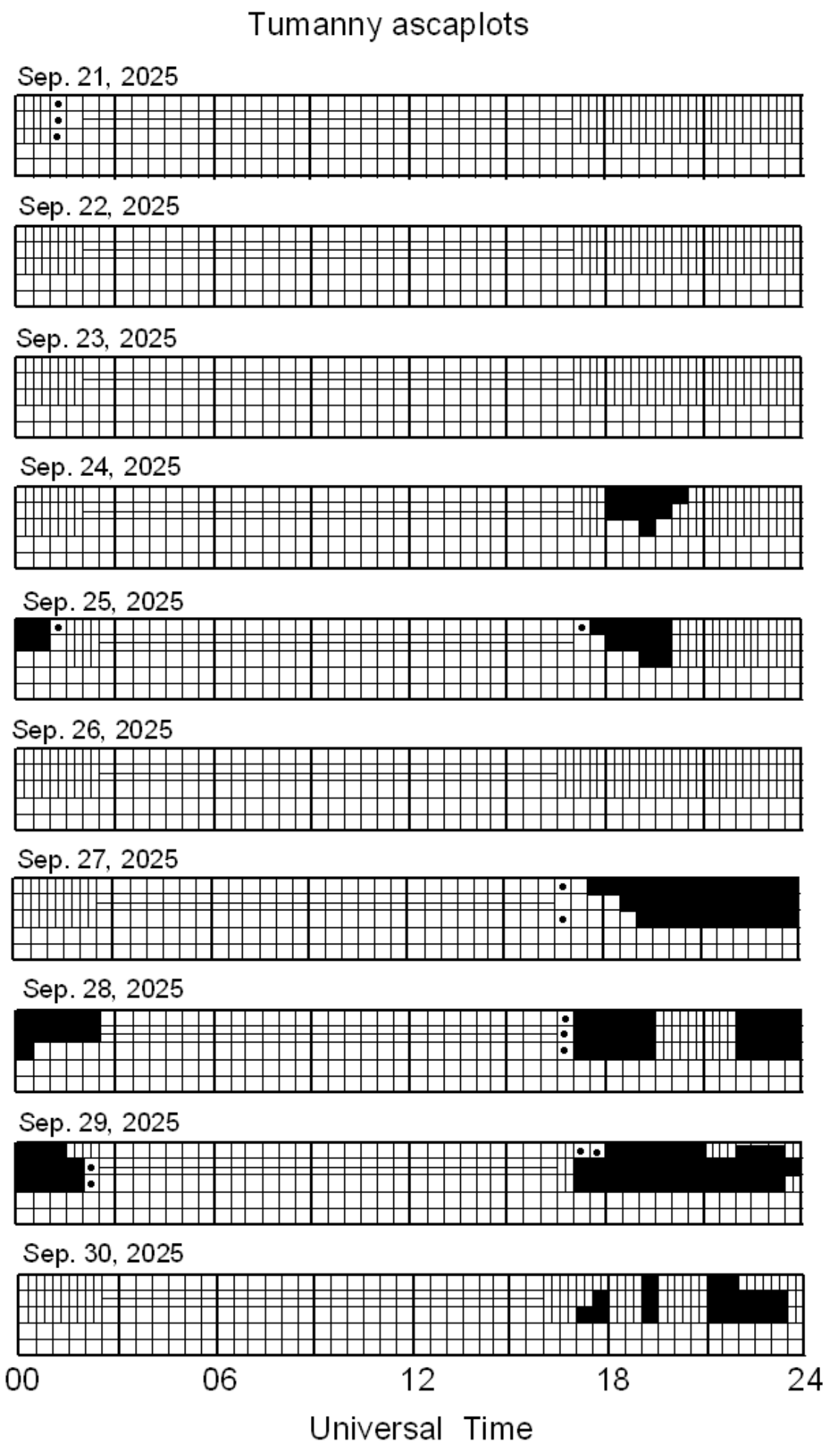
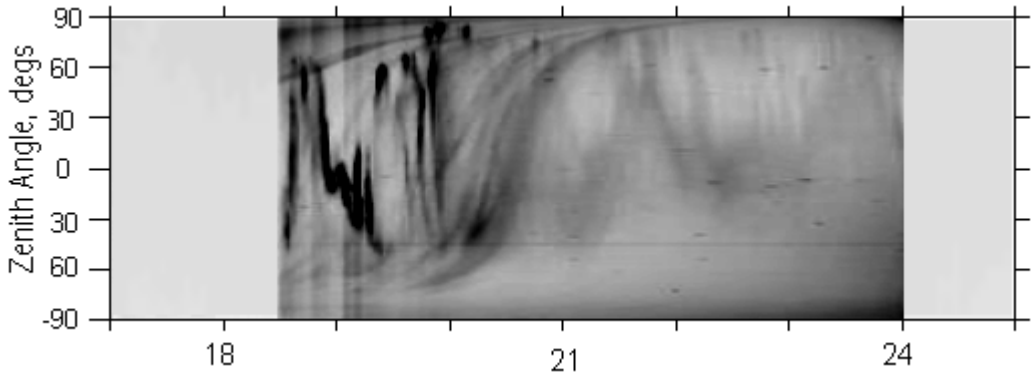
Sep. 11, 2025
Sep. 12, 2025
Sep. 13, 2025
Sep. 14, 2025
Sep. 15, 2025
Sep. 16, 2025
Sep. 17, 2025
Sep. 18, 2025
Sep. 19, 2025
Sep. 20, 2025
00
06
12
18
24
Universal Time

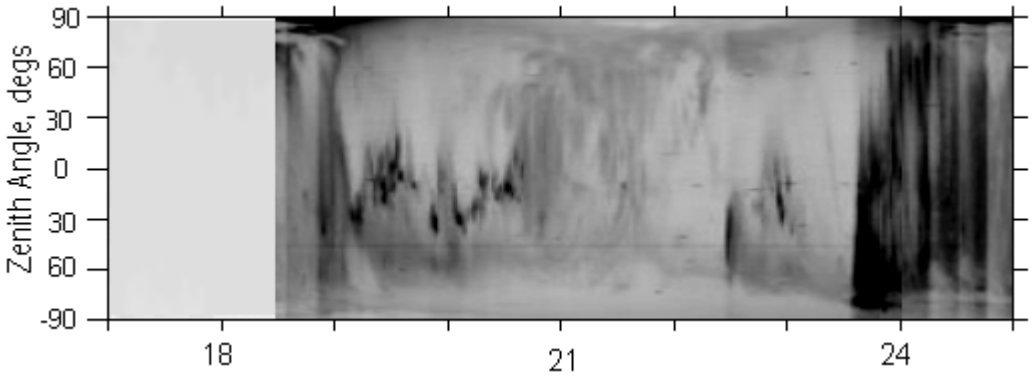

Tumanny ascaplots
Sep. 21, 2025
Sep. 22, 2025
Sep. 23, 2025
Sep. 24, 2025
Sep. 25, 2025
Sep. 26, 2025
Sep. 27, 2025
Sep. 28, 2025
Sep. 29, 2025
Sep. 30, 2025
00
06
12
18
24
Universal Time

Tumanny TV keograms

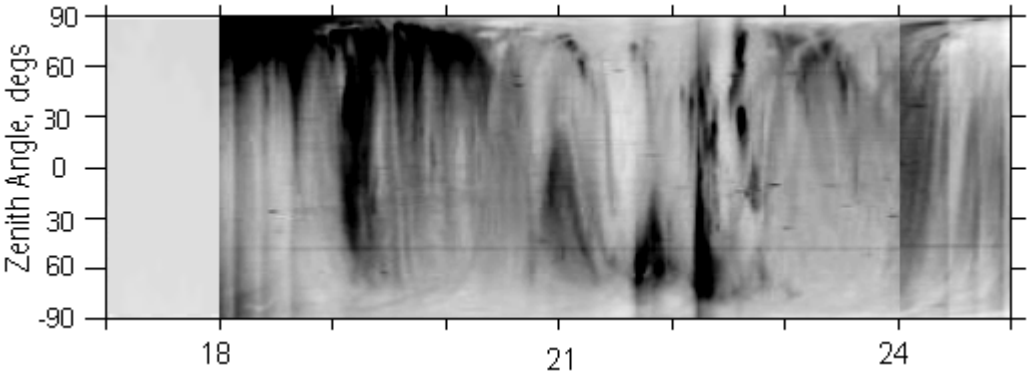
Sep.12, 2025



Sep. 14, 2025



Sep. 16, 2025



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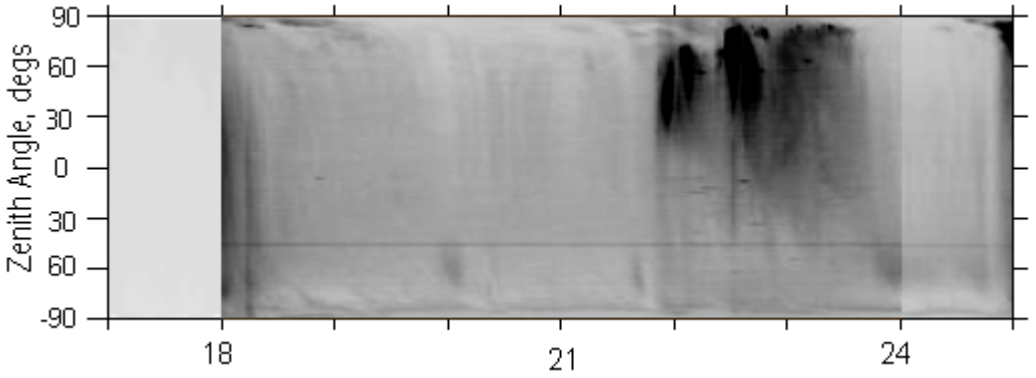

Universal Time

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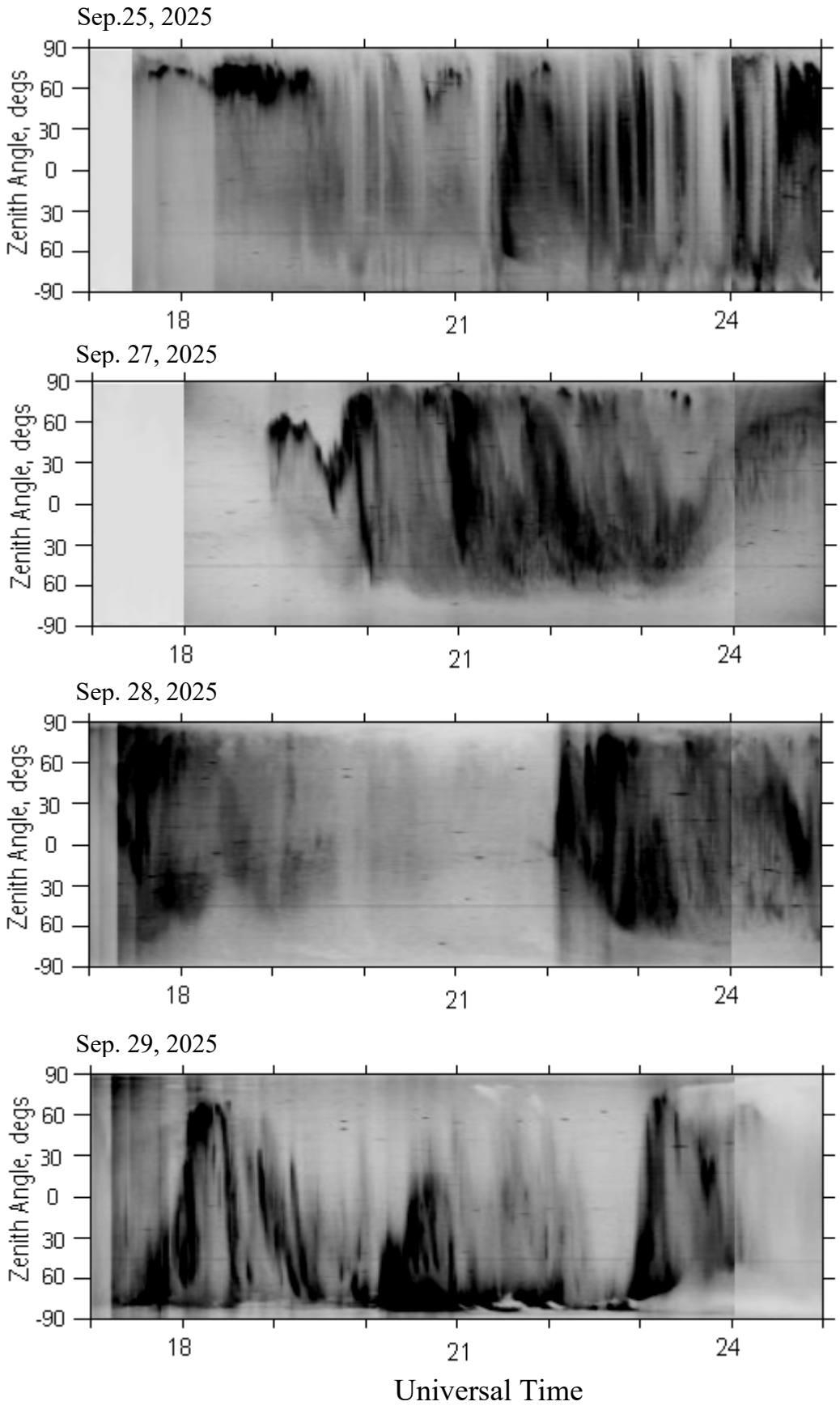
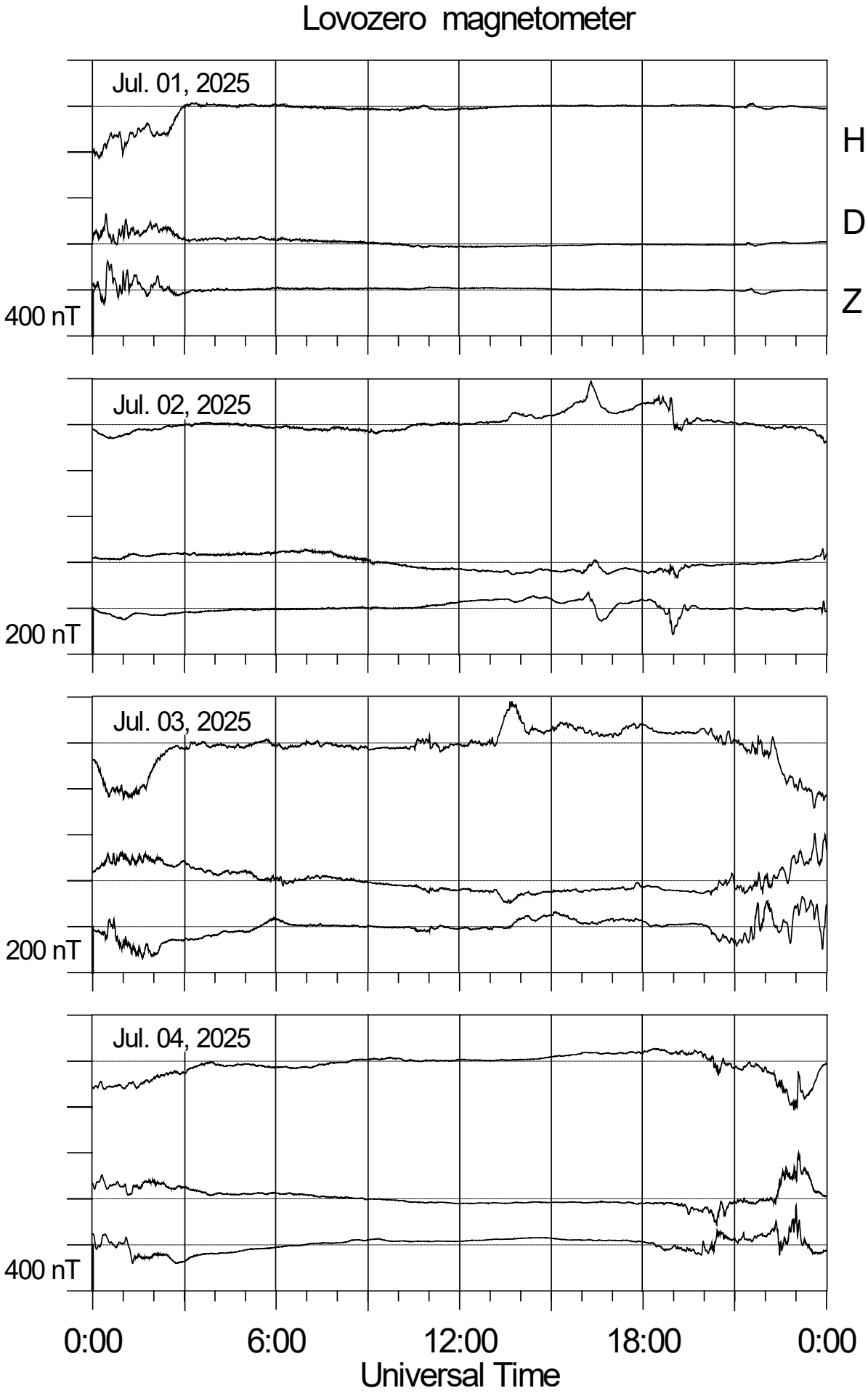


LOVOZERO MAGNETOGRAMS

July - September 2025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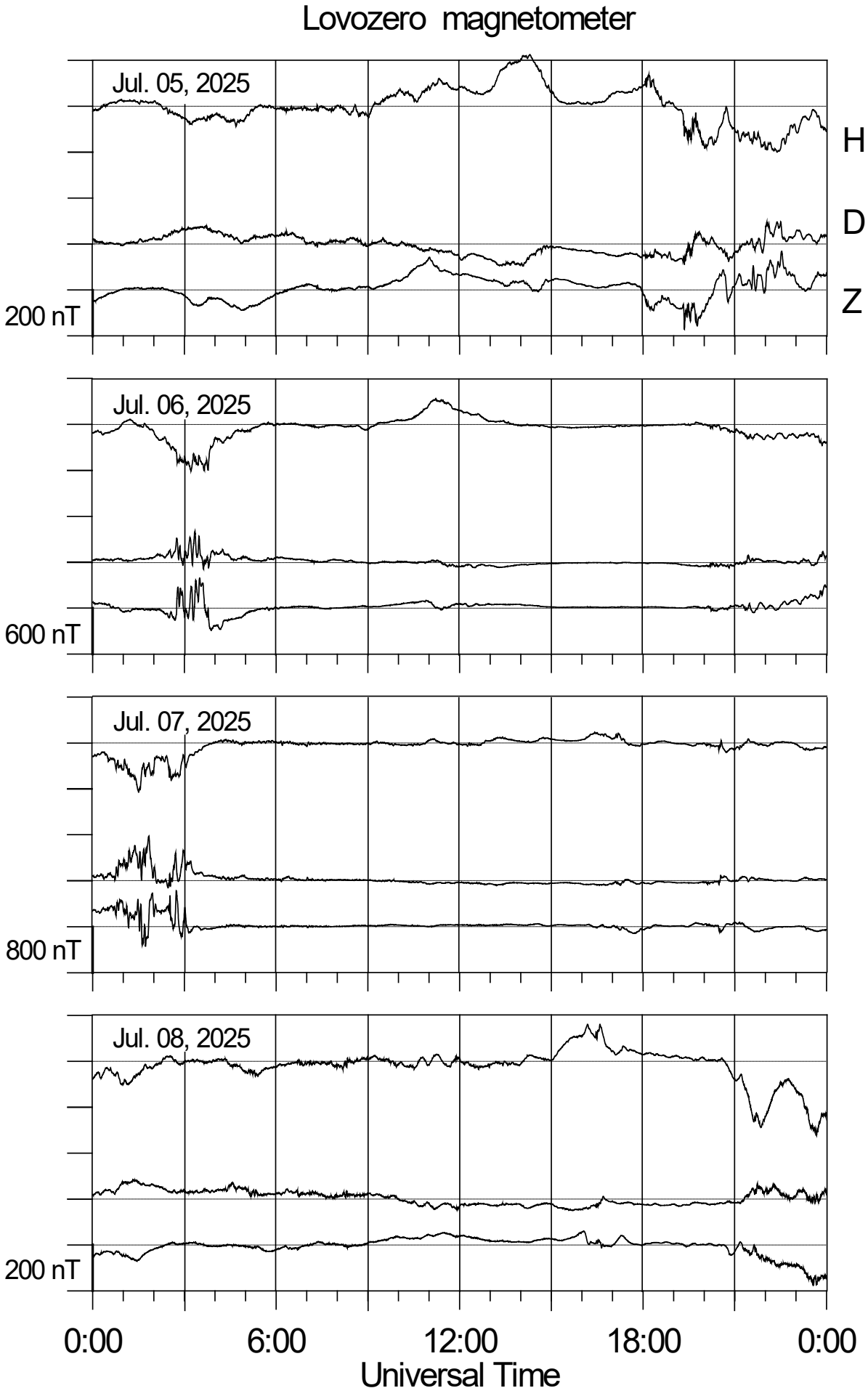
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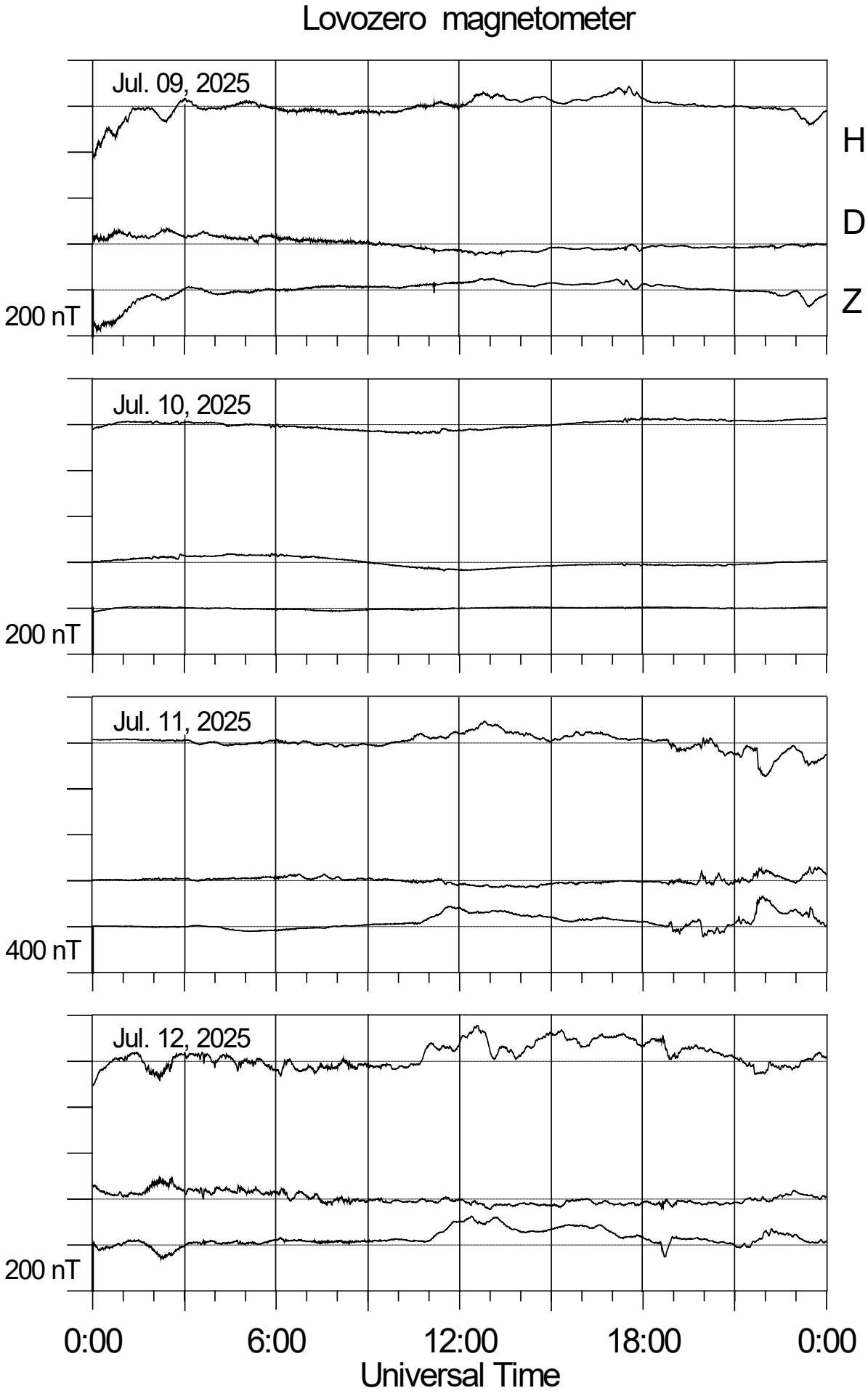
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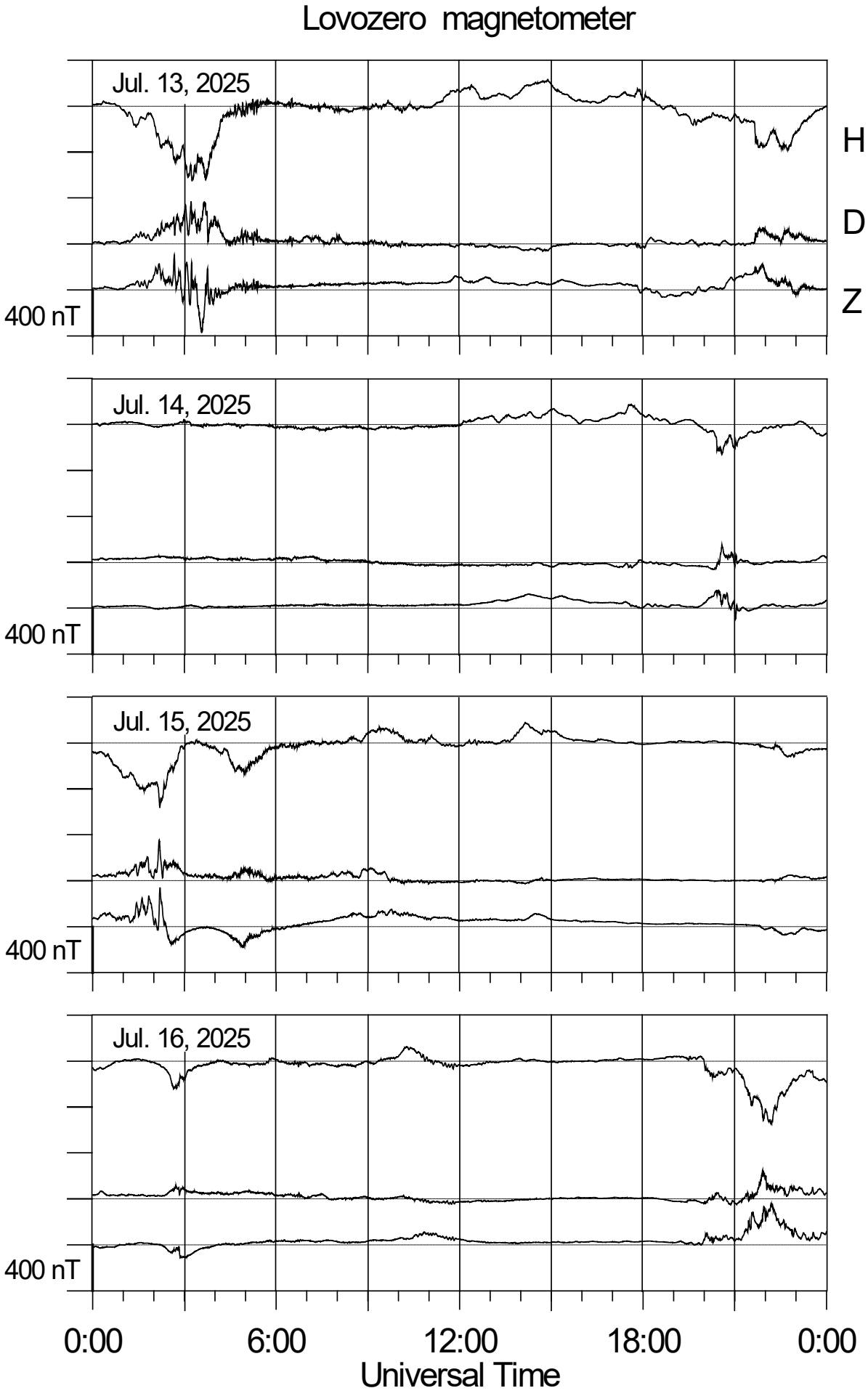
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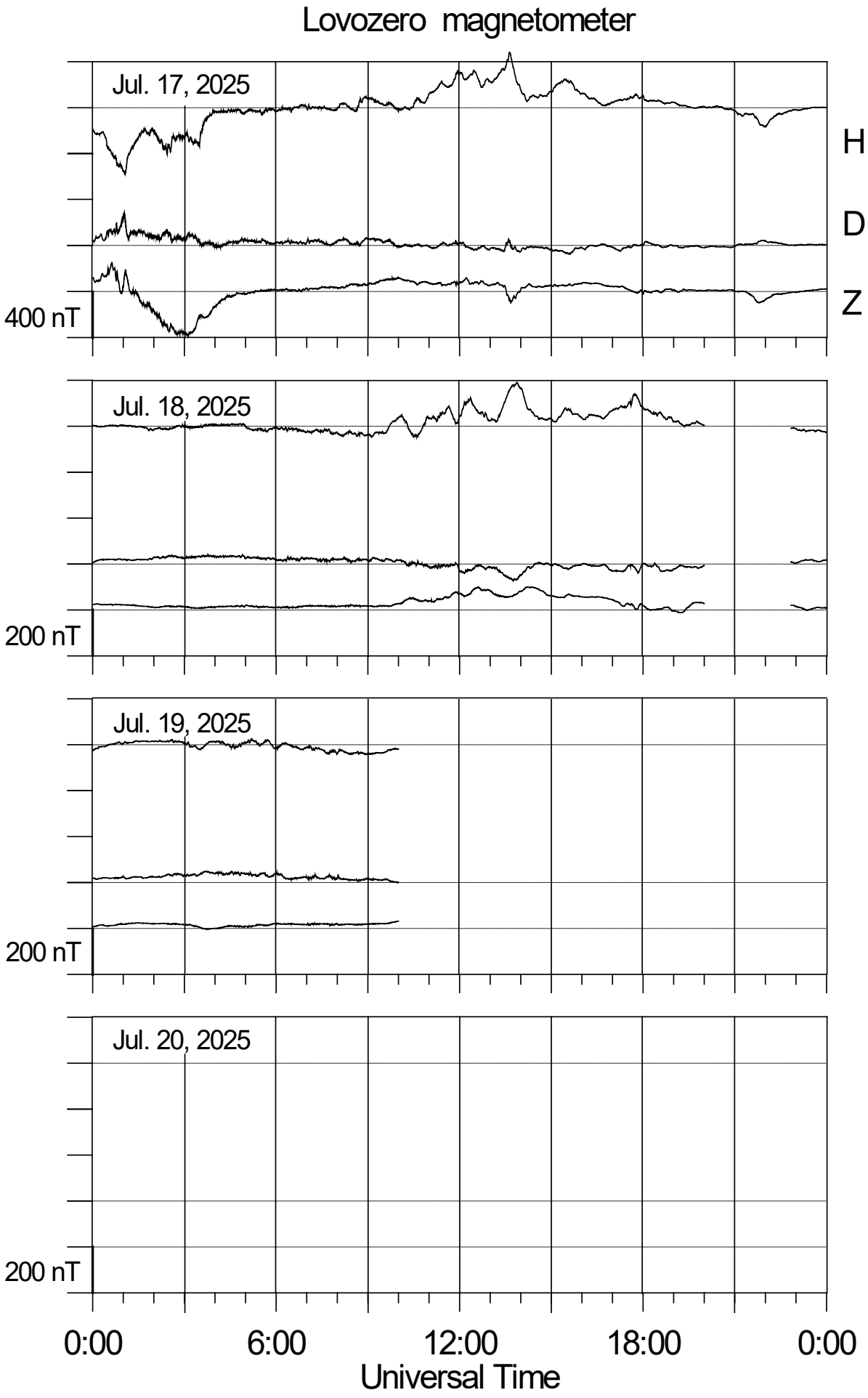
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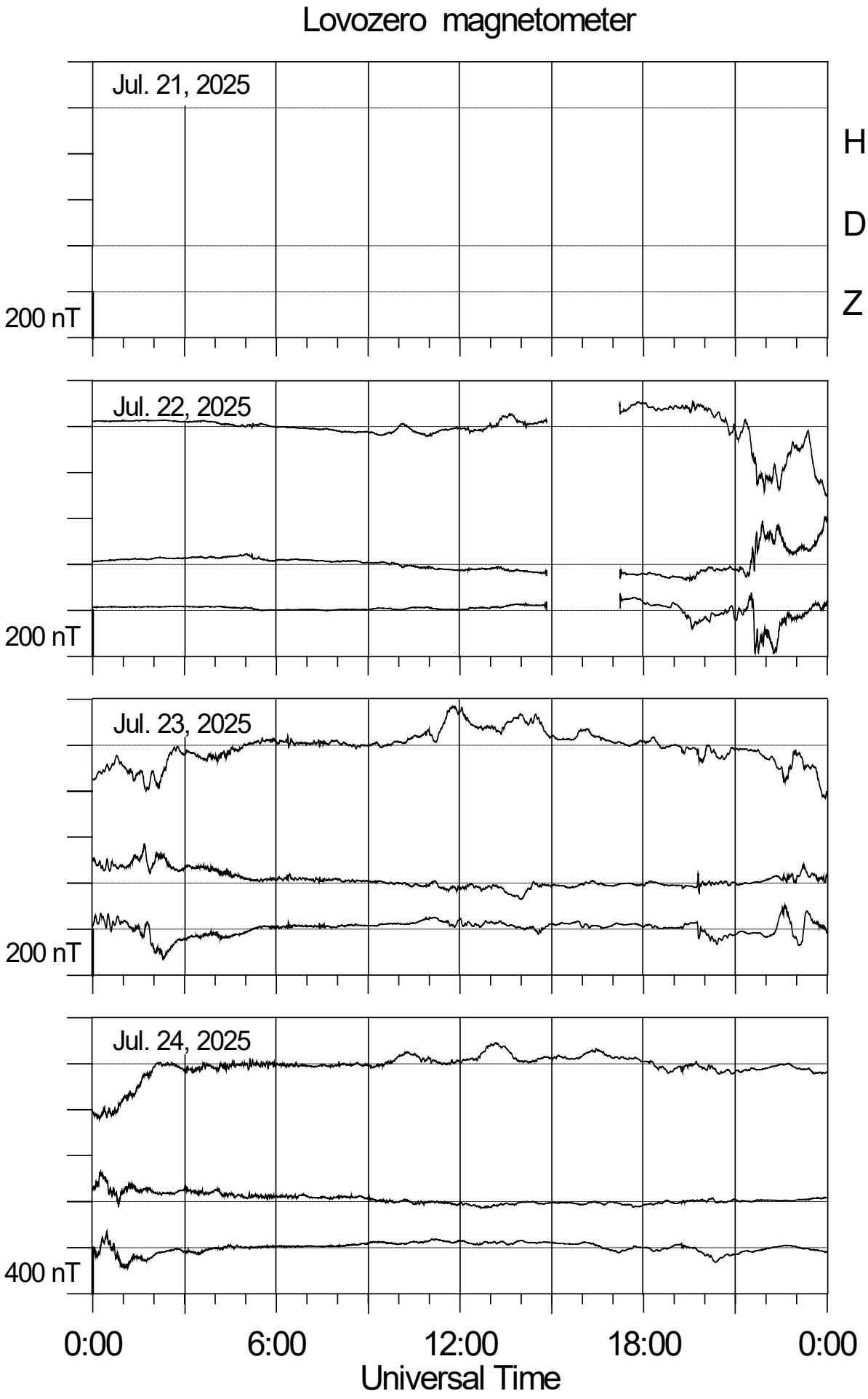
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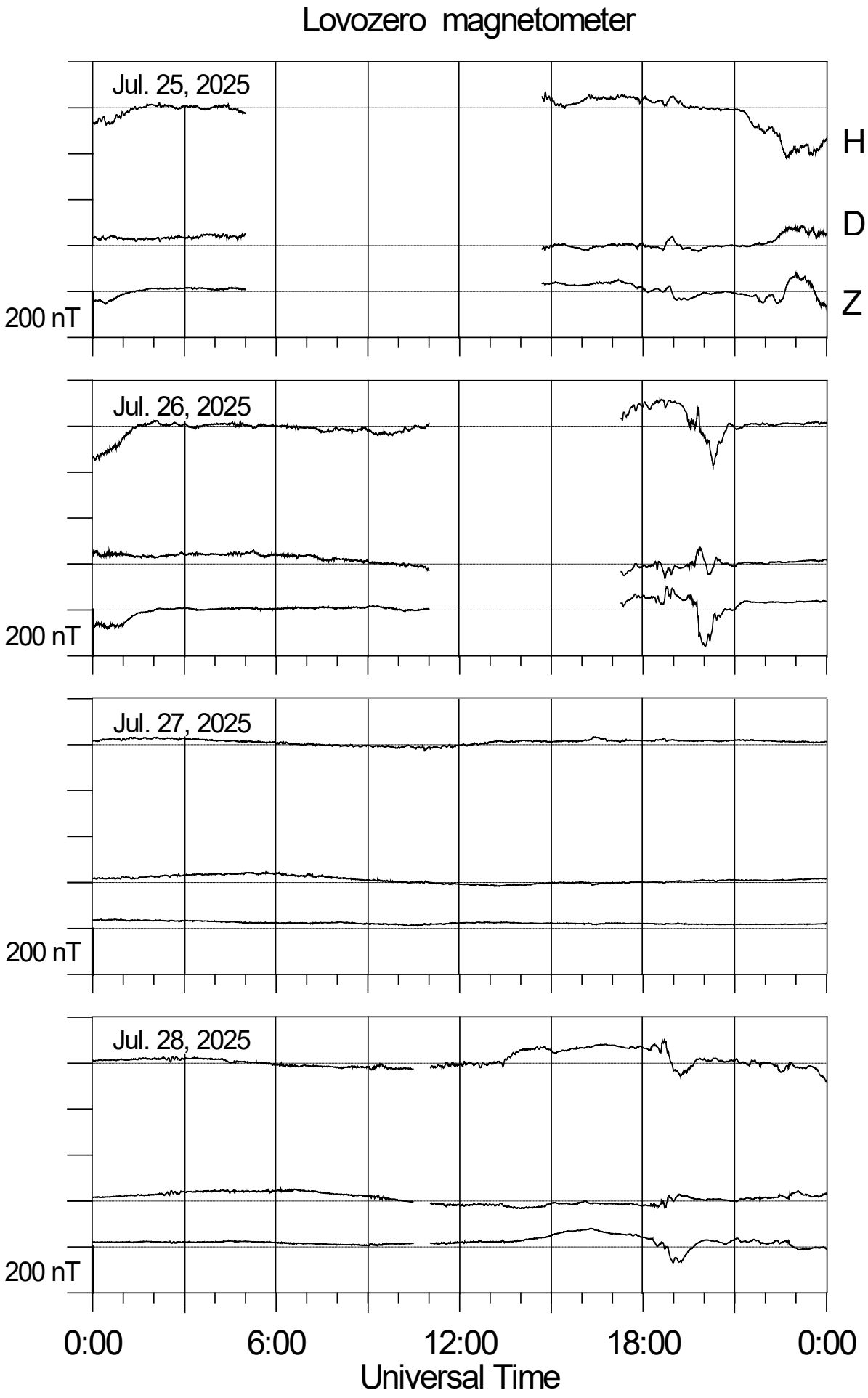
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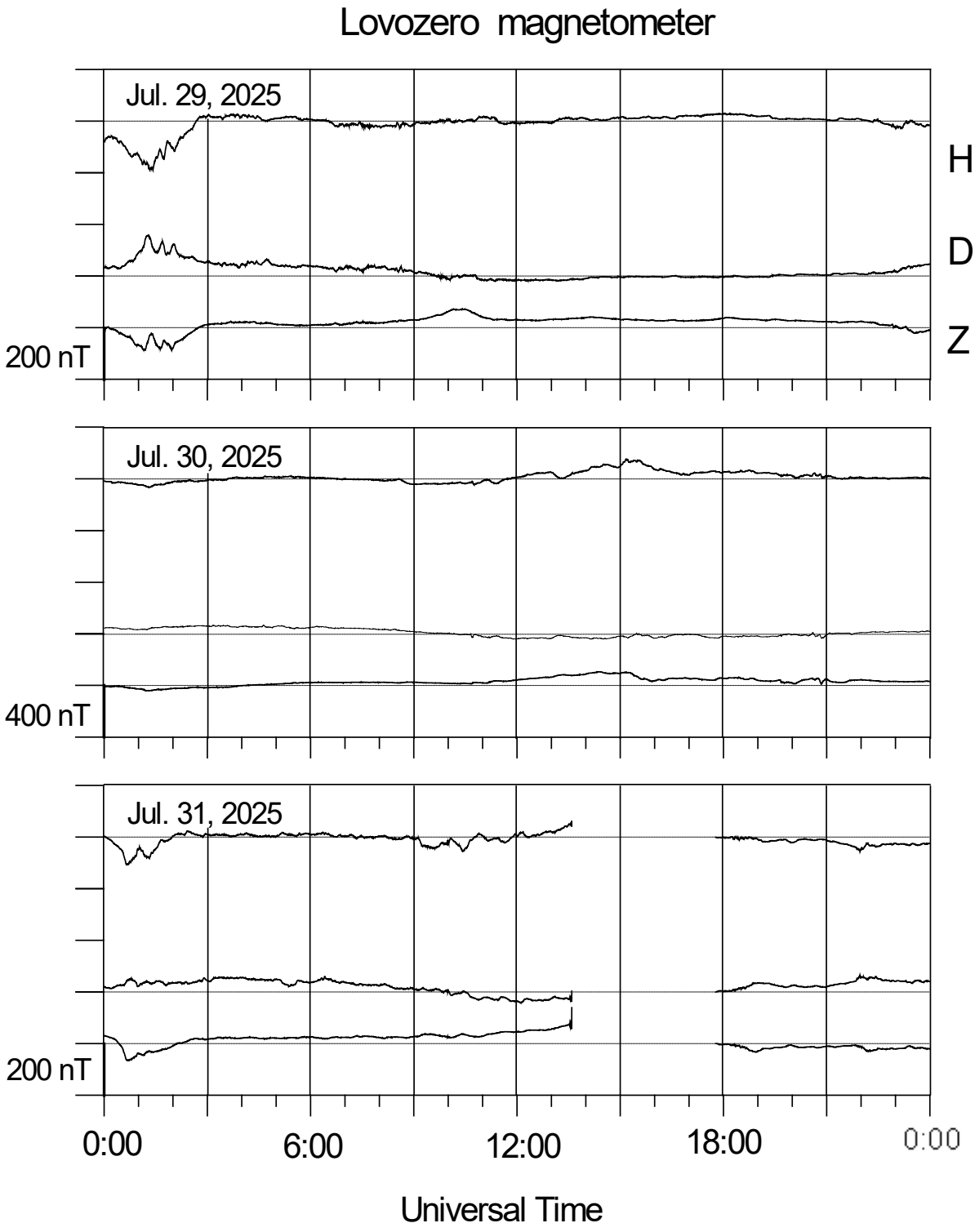
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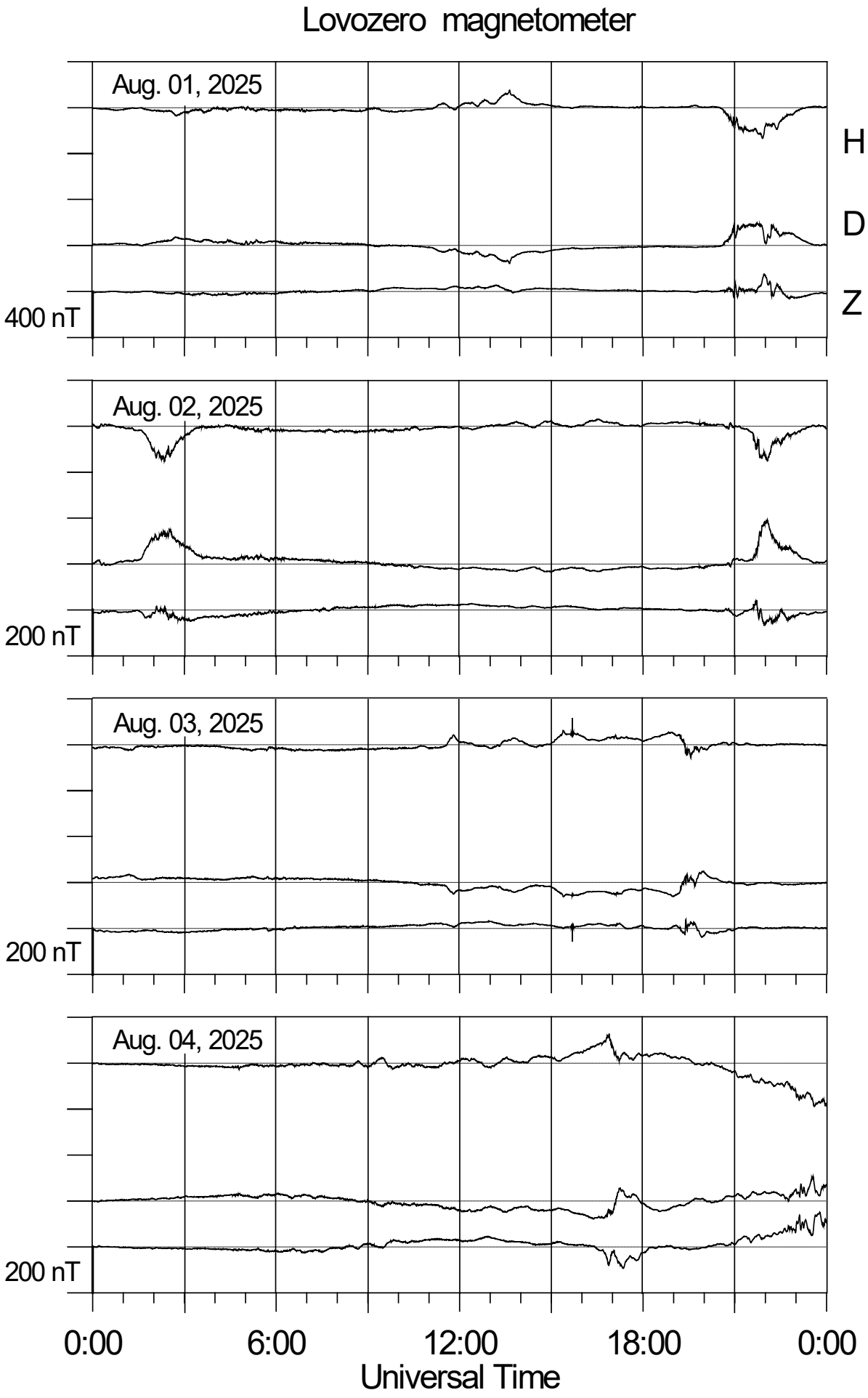
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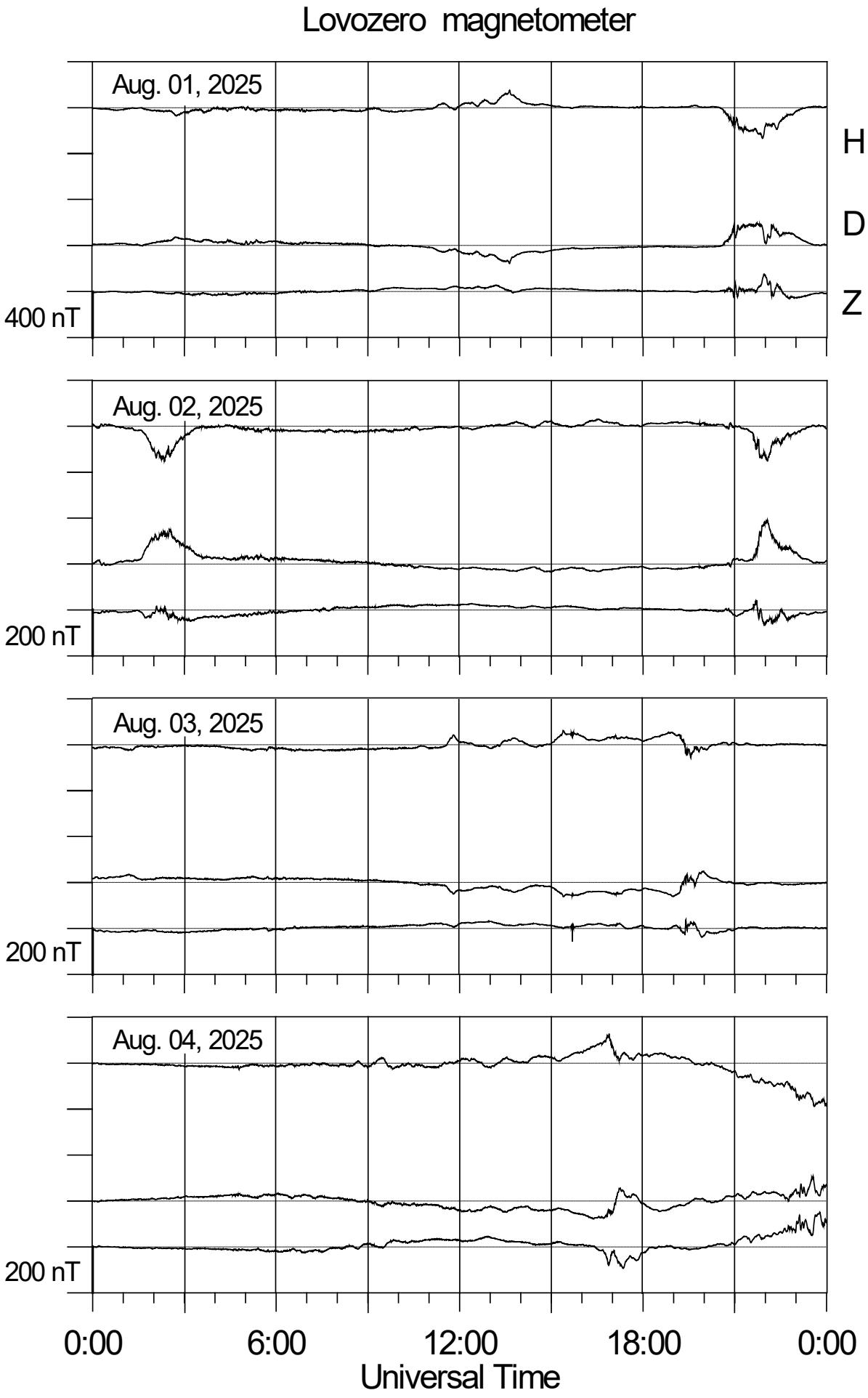
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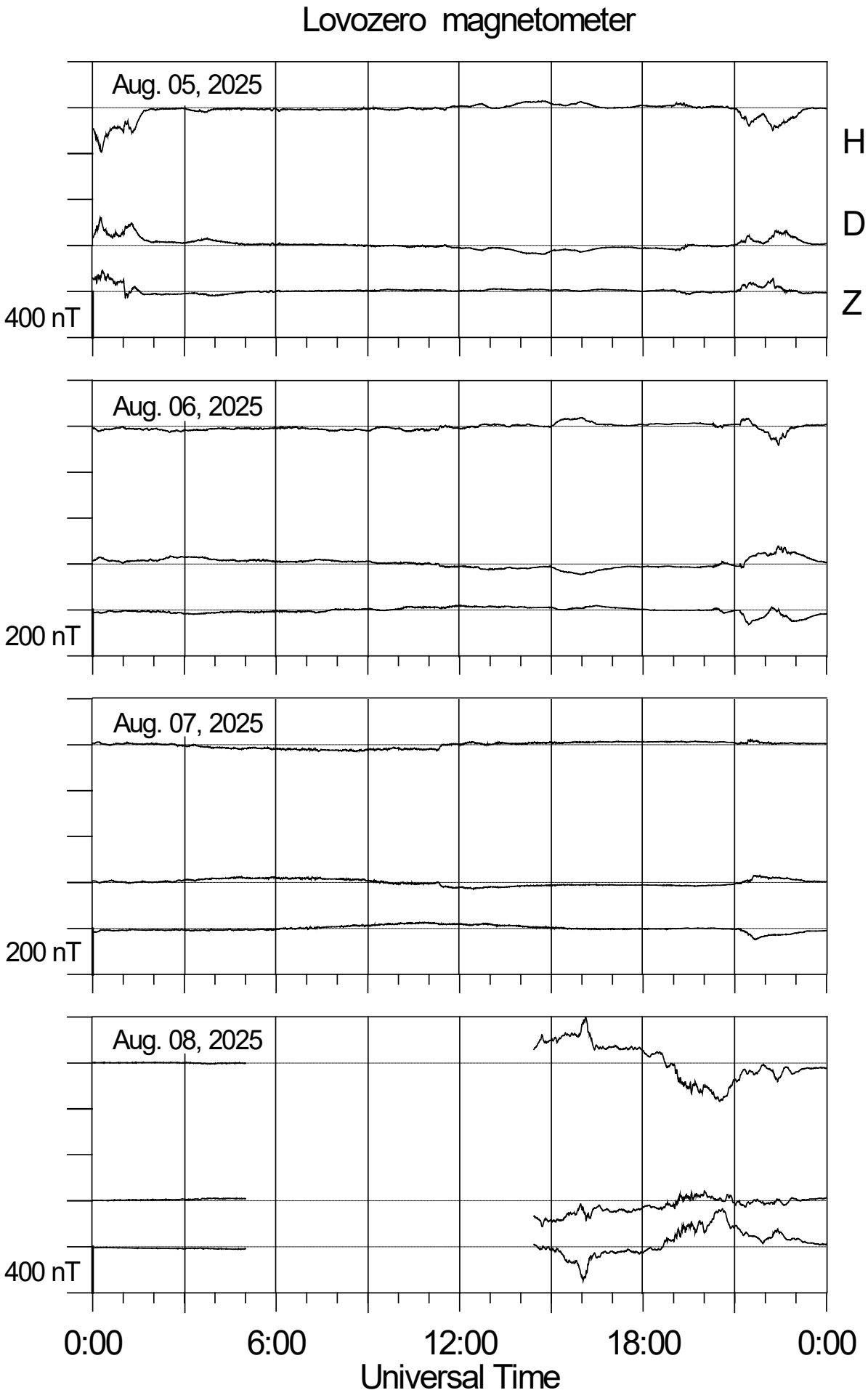
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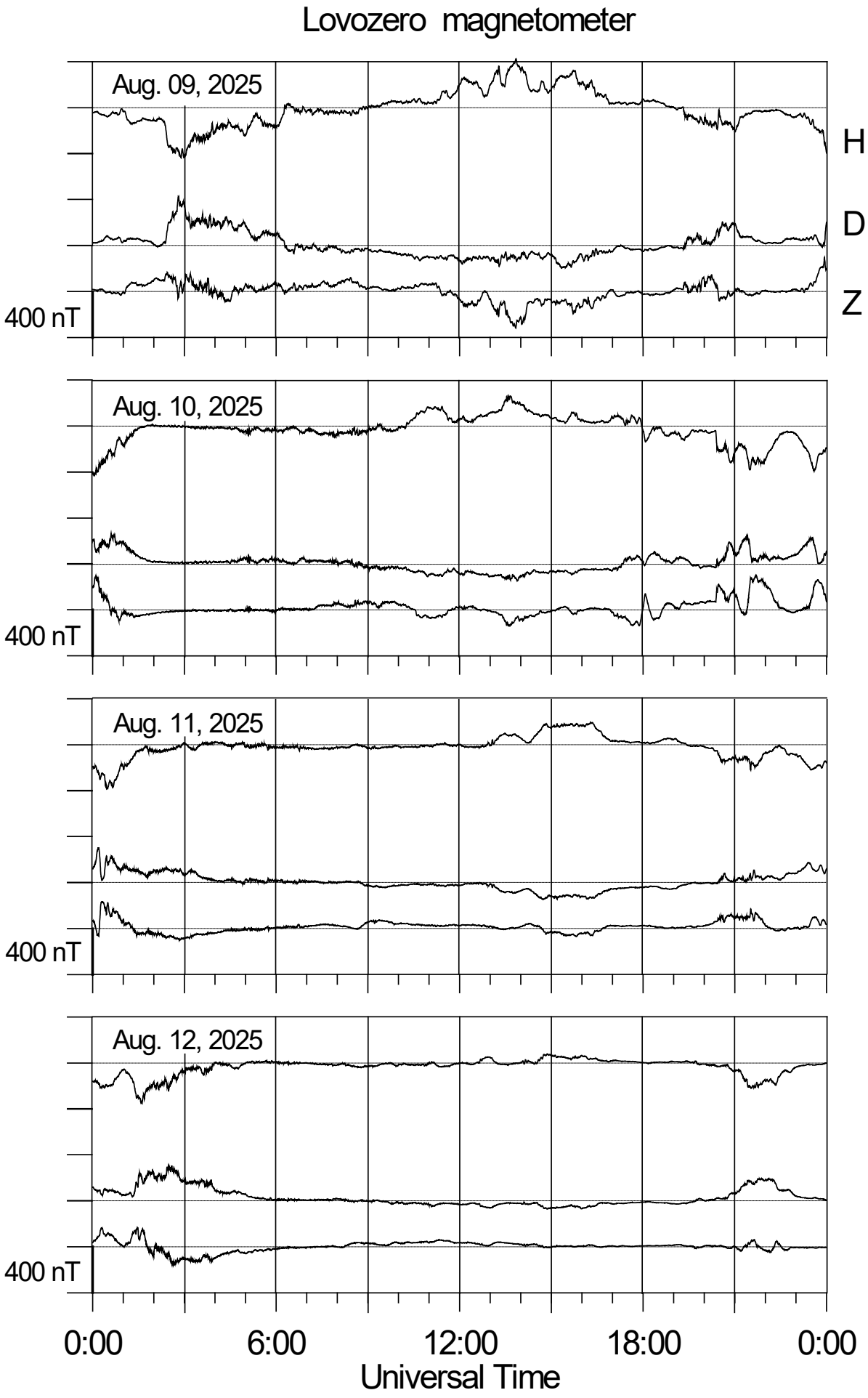
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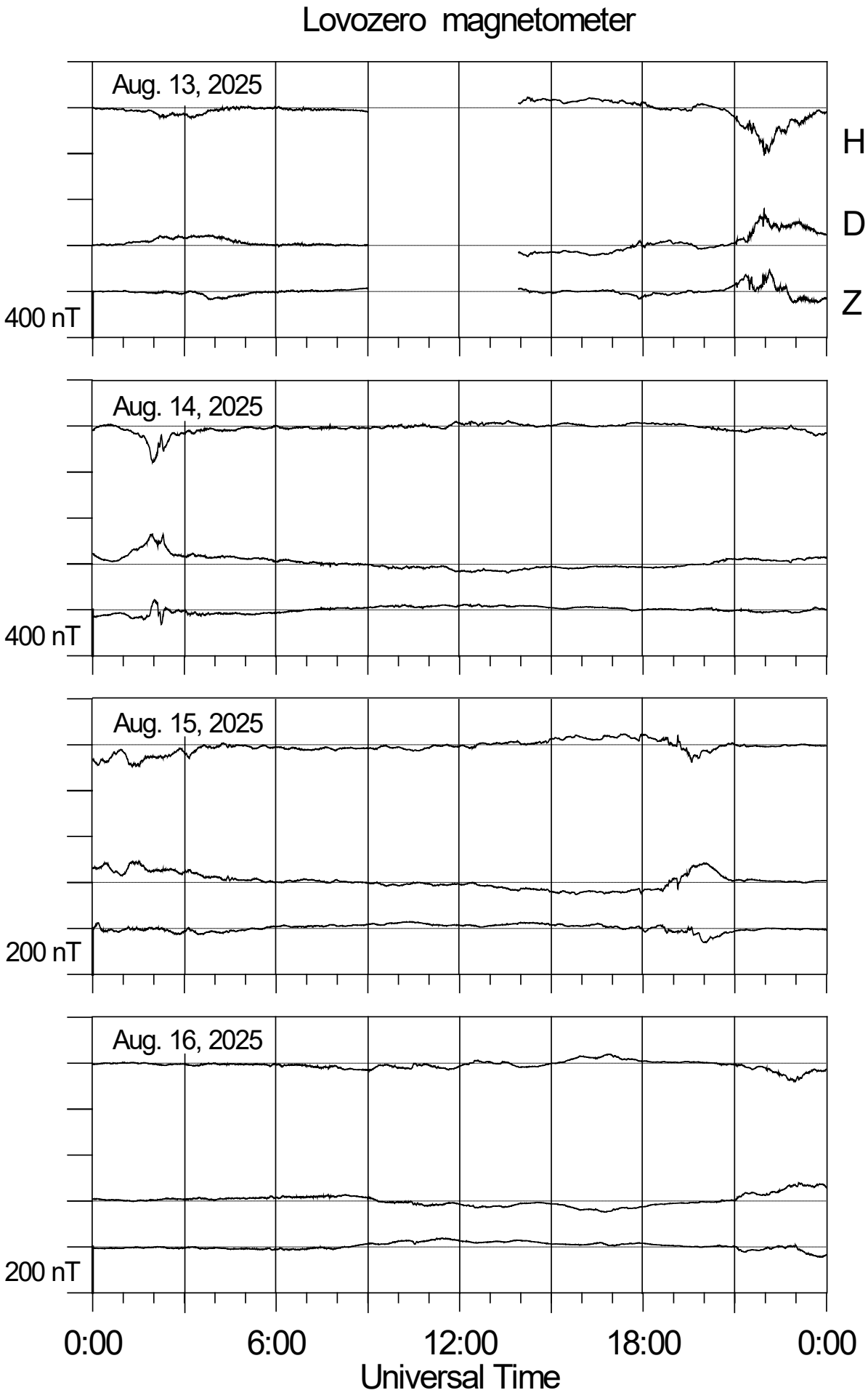
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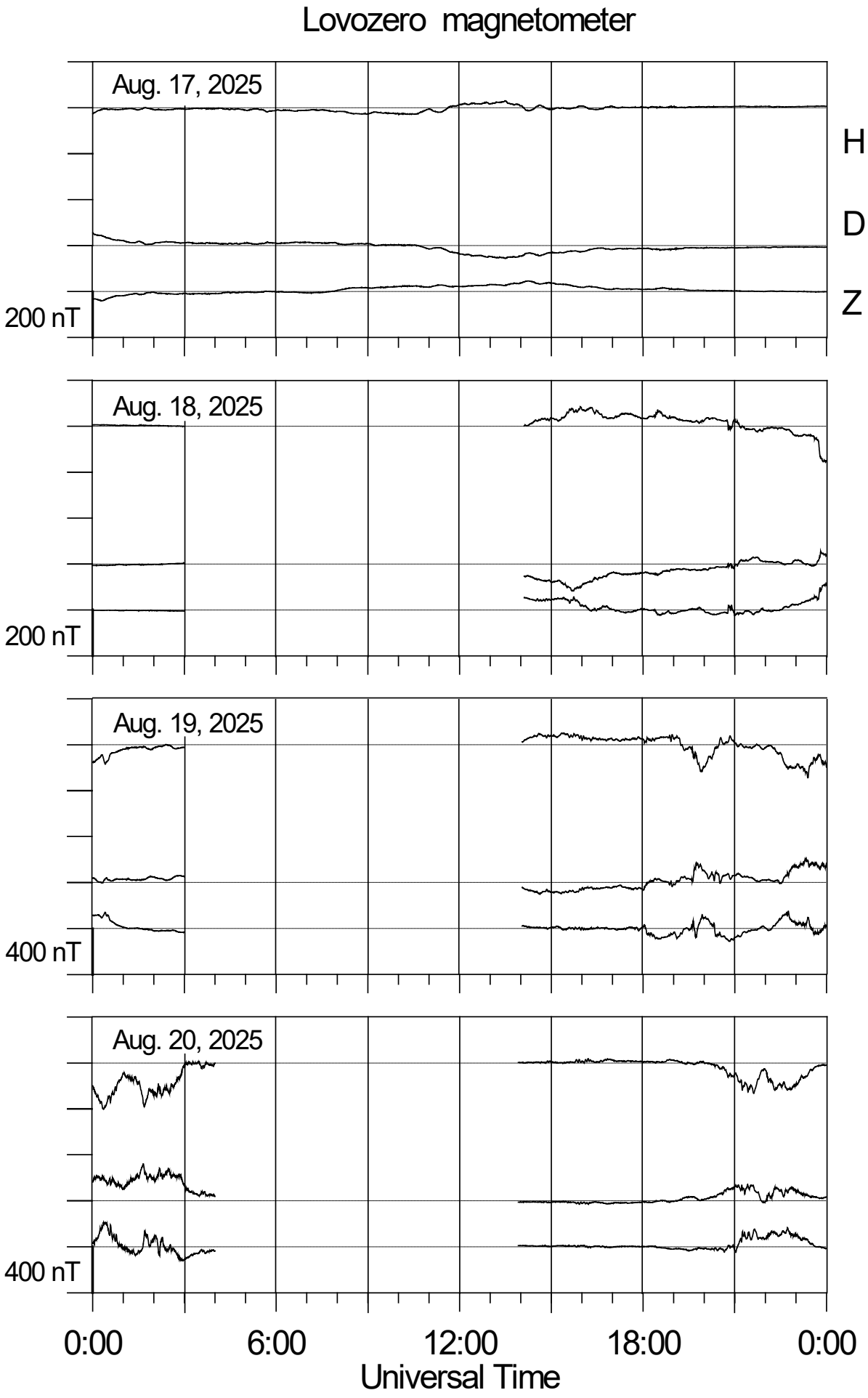
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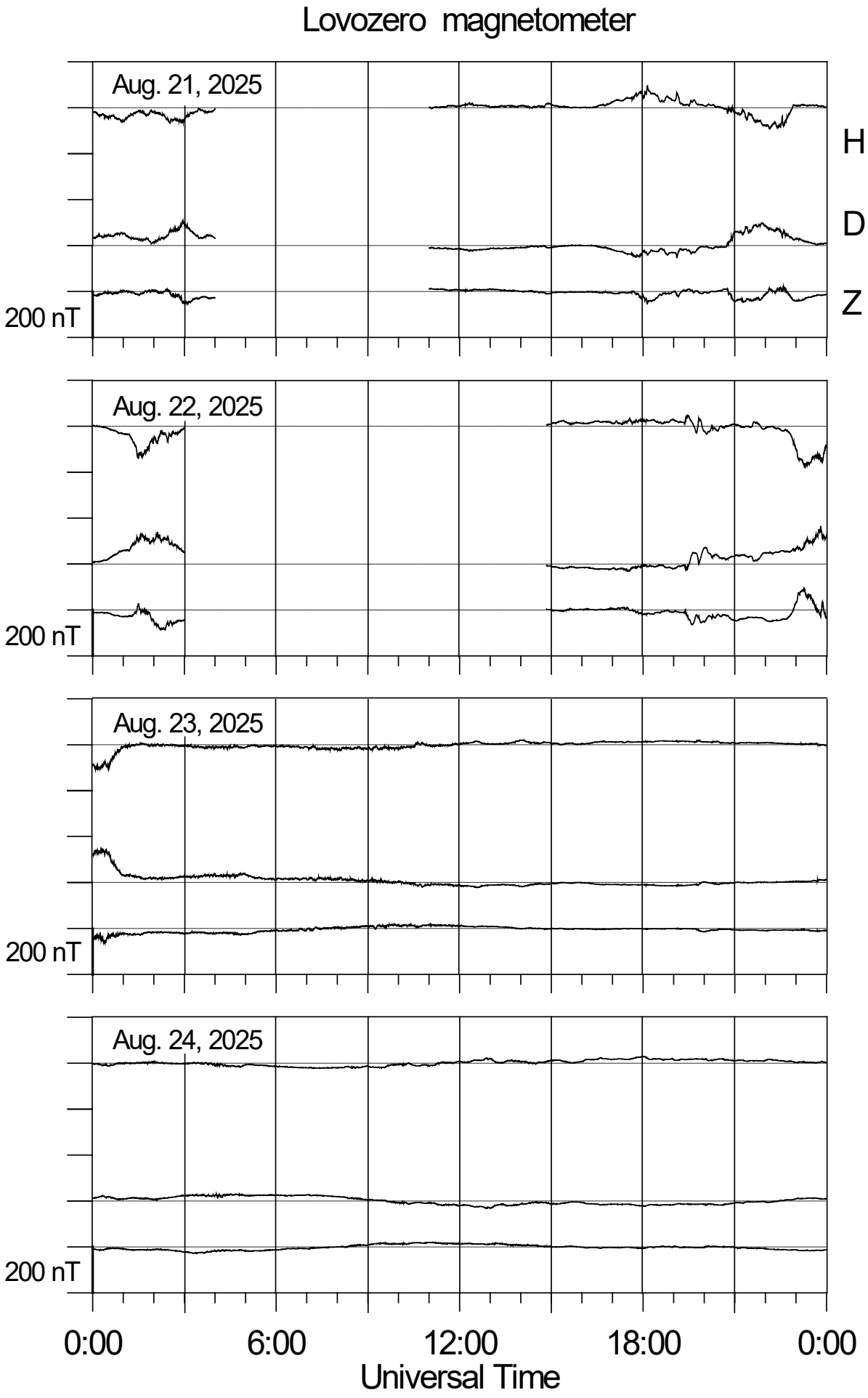
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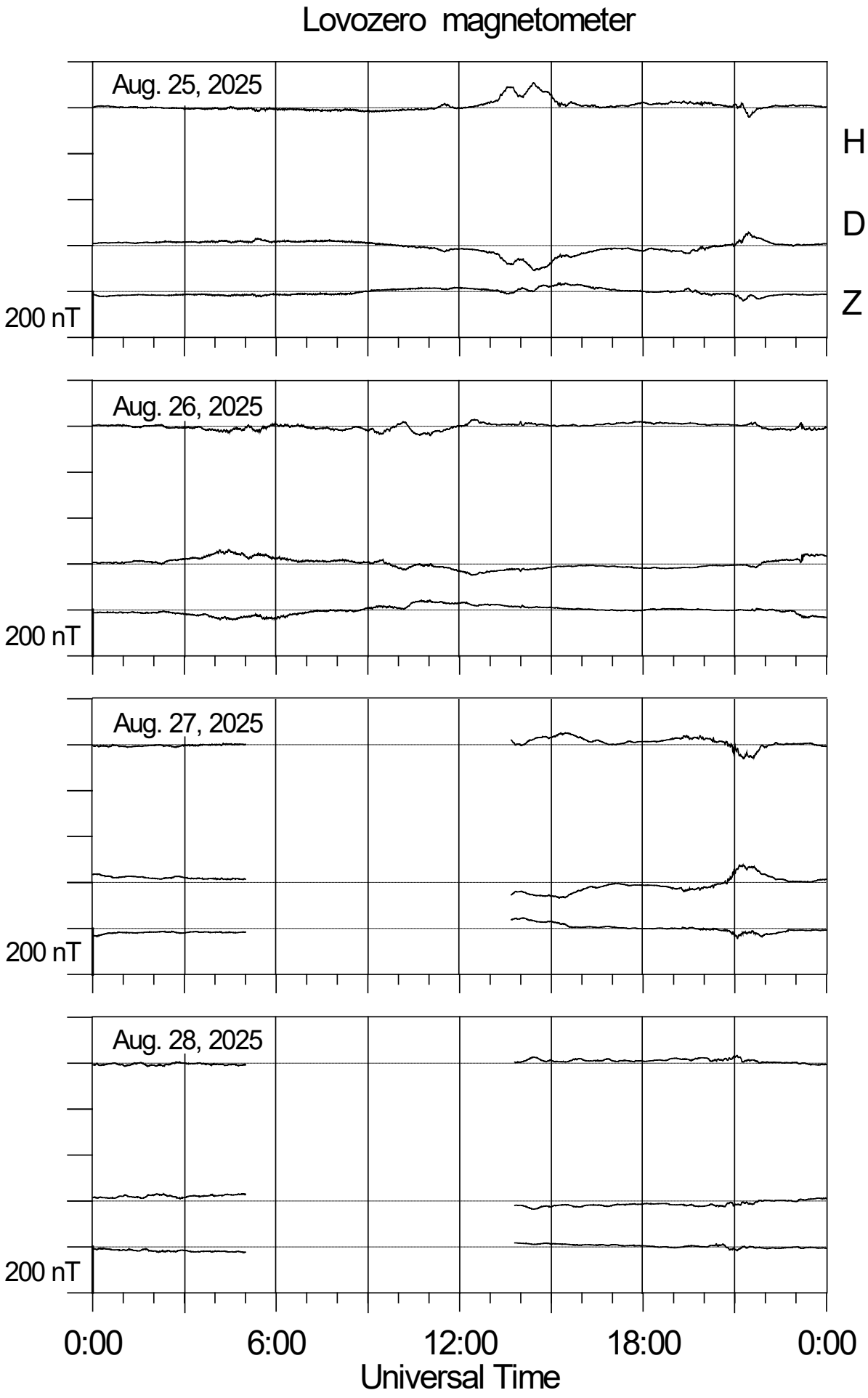
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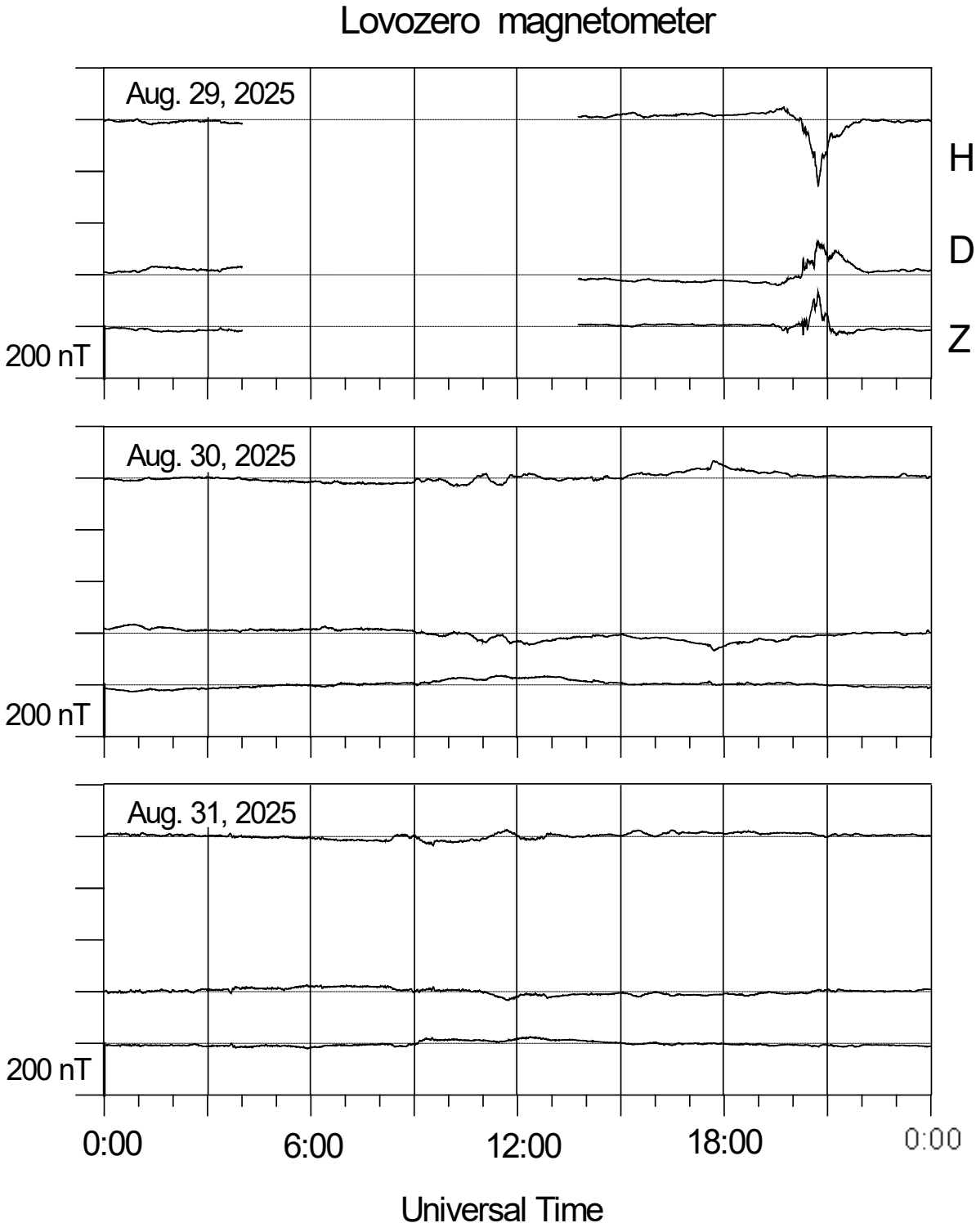
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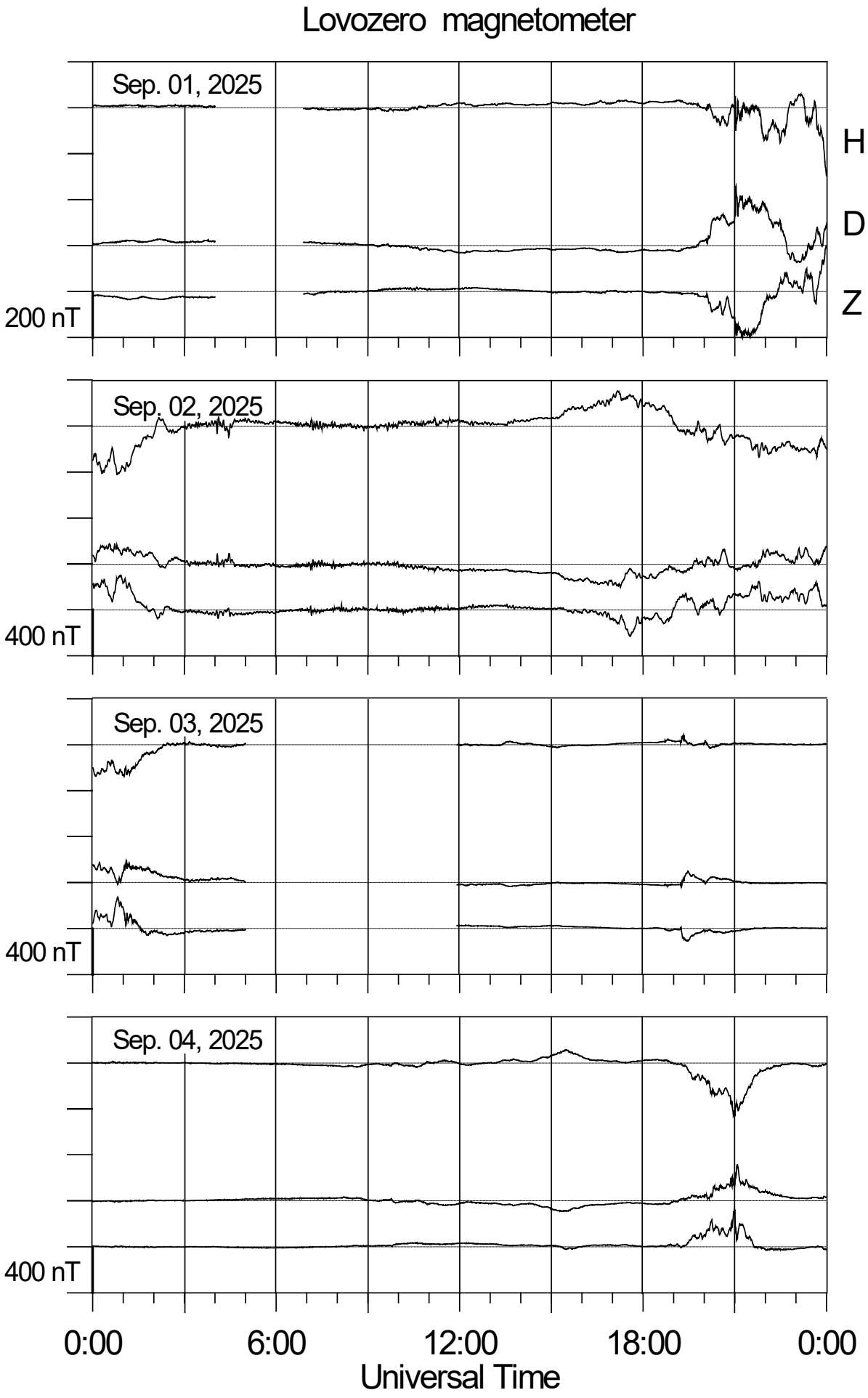
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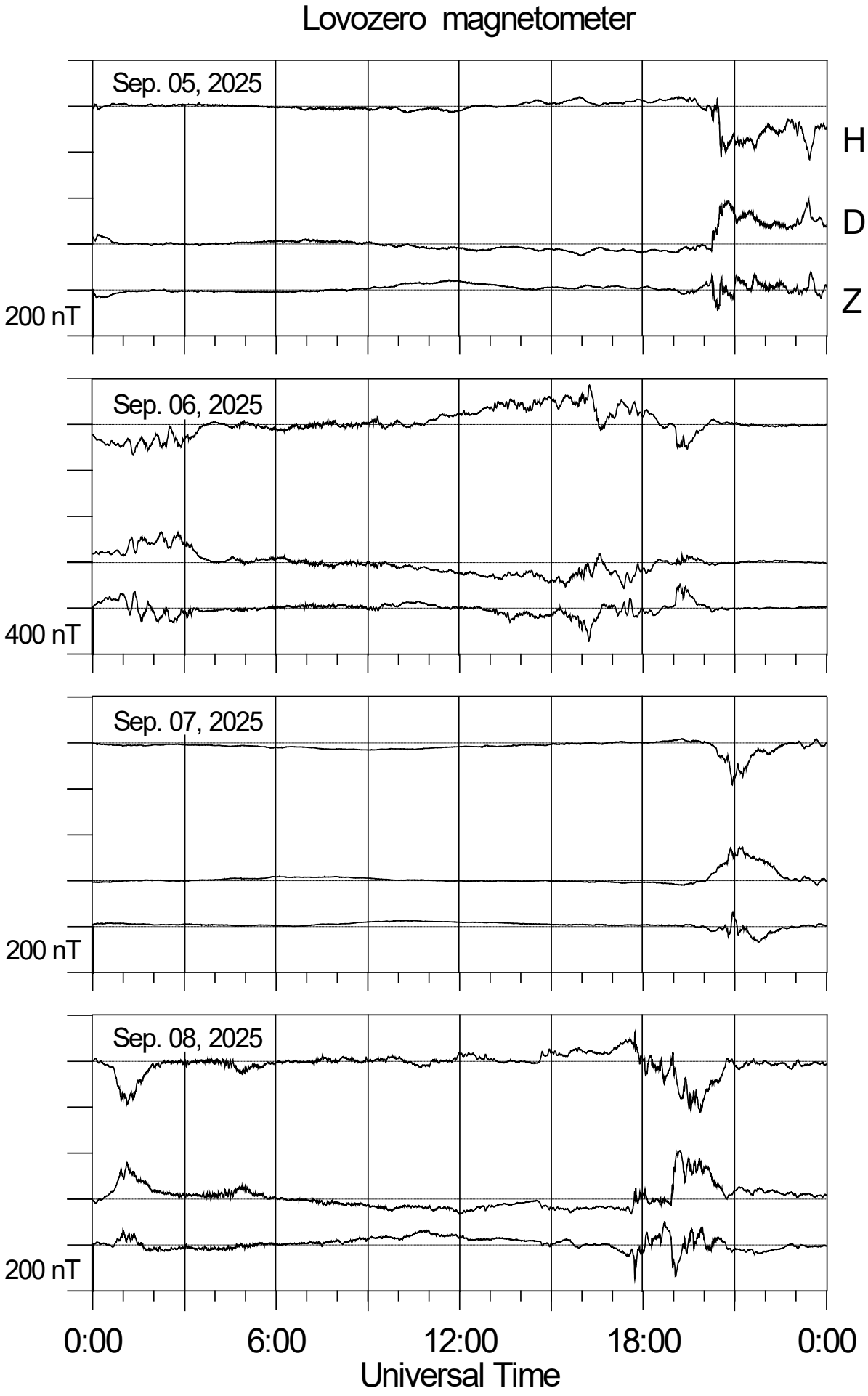
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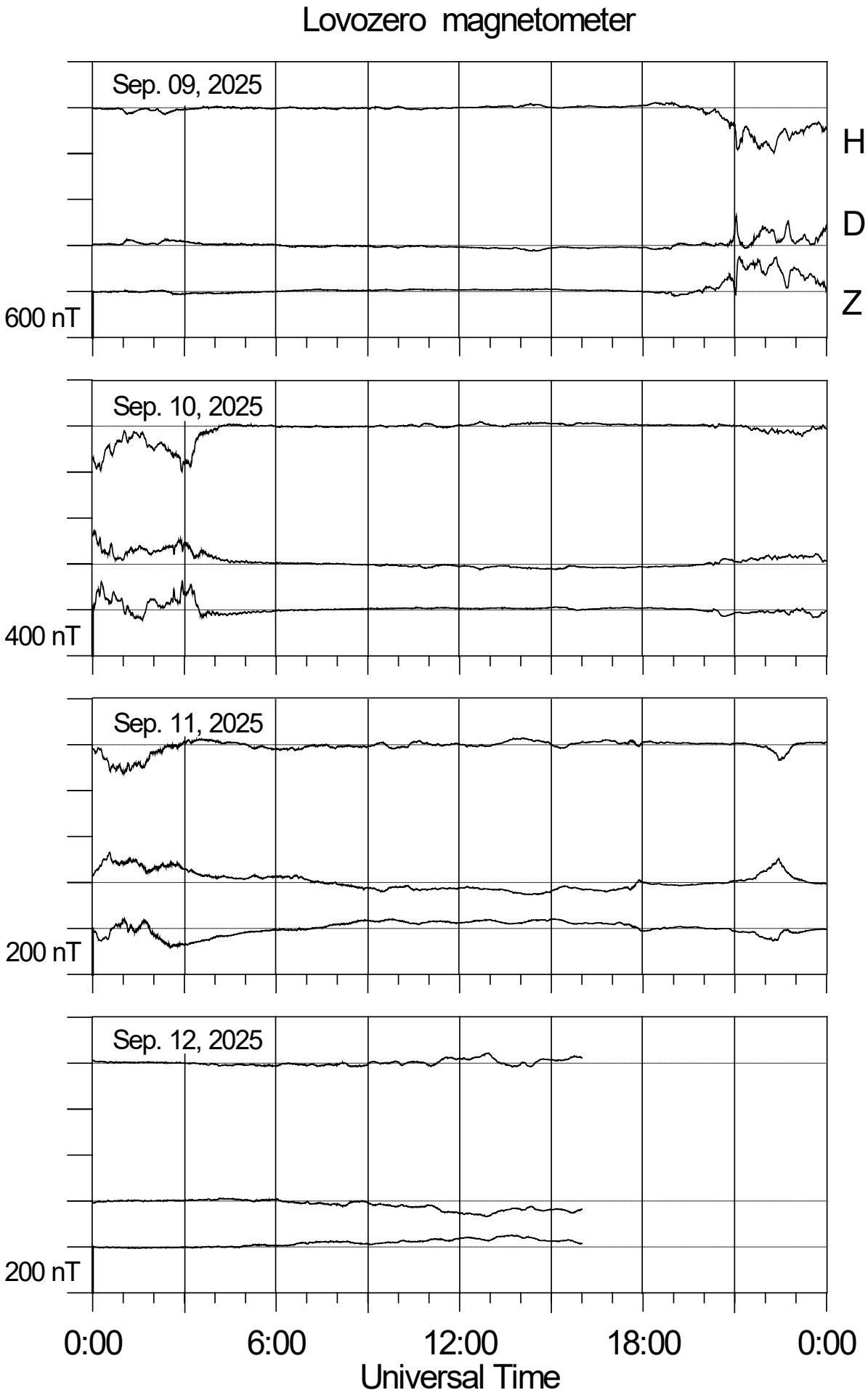
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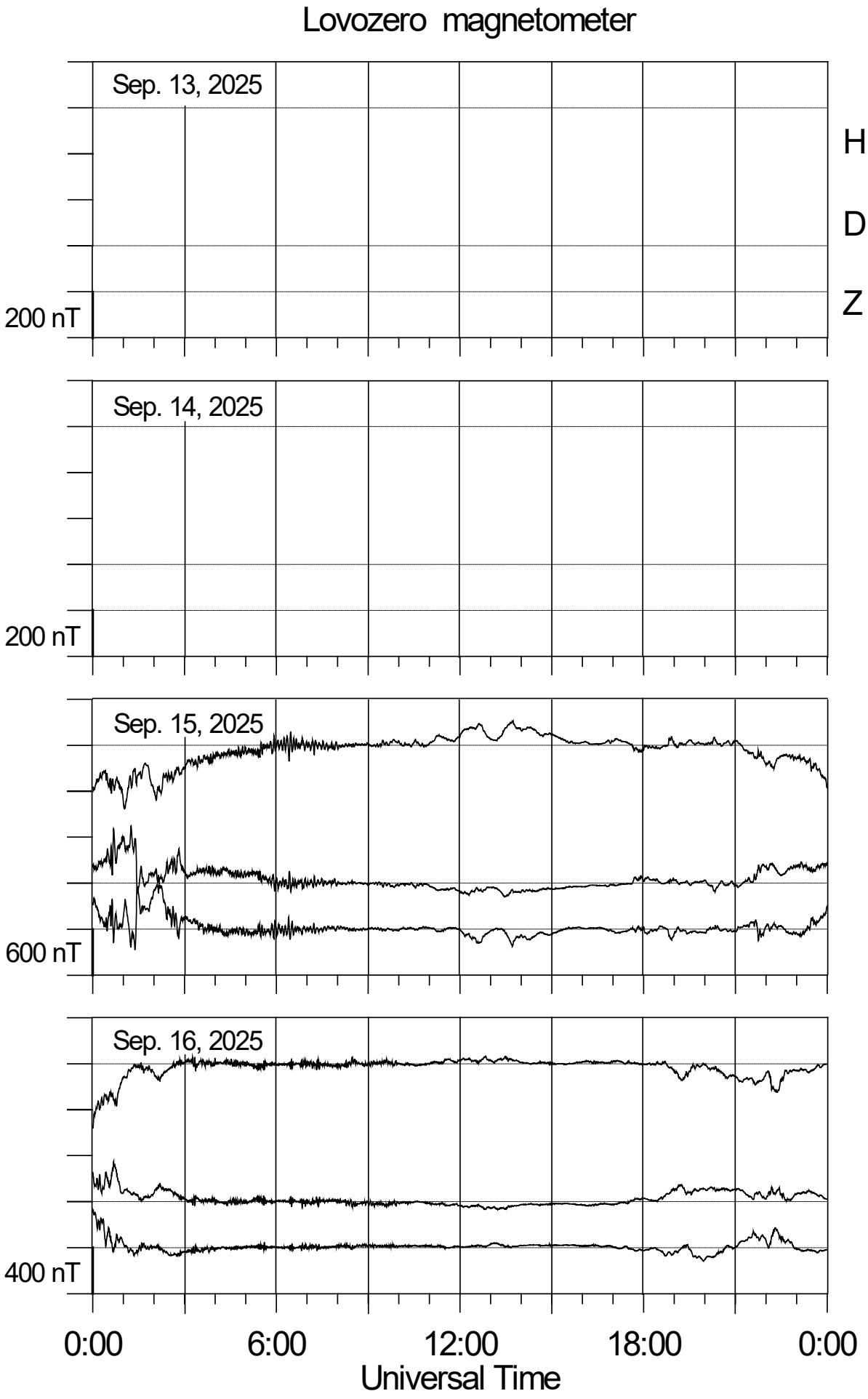
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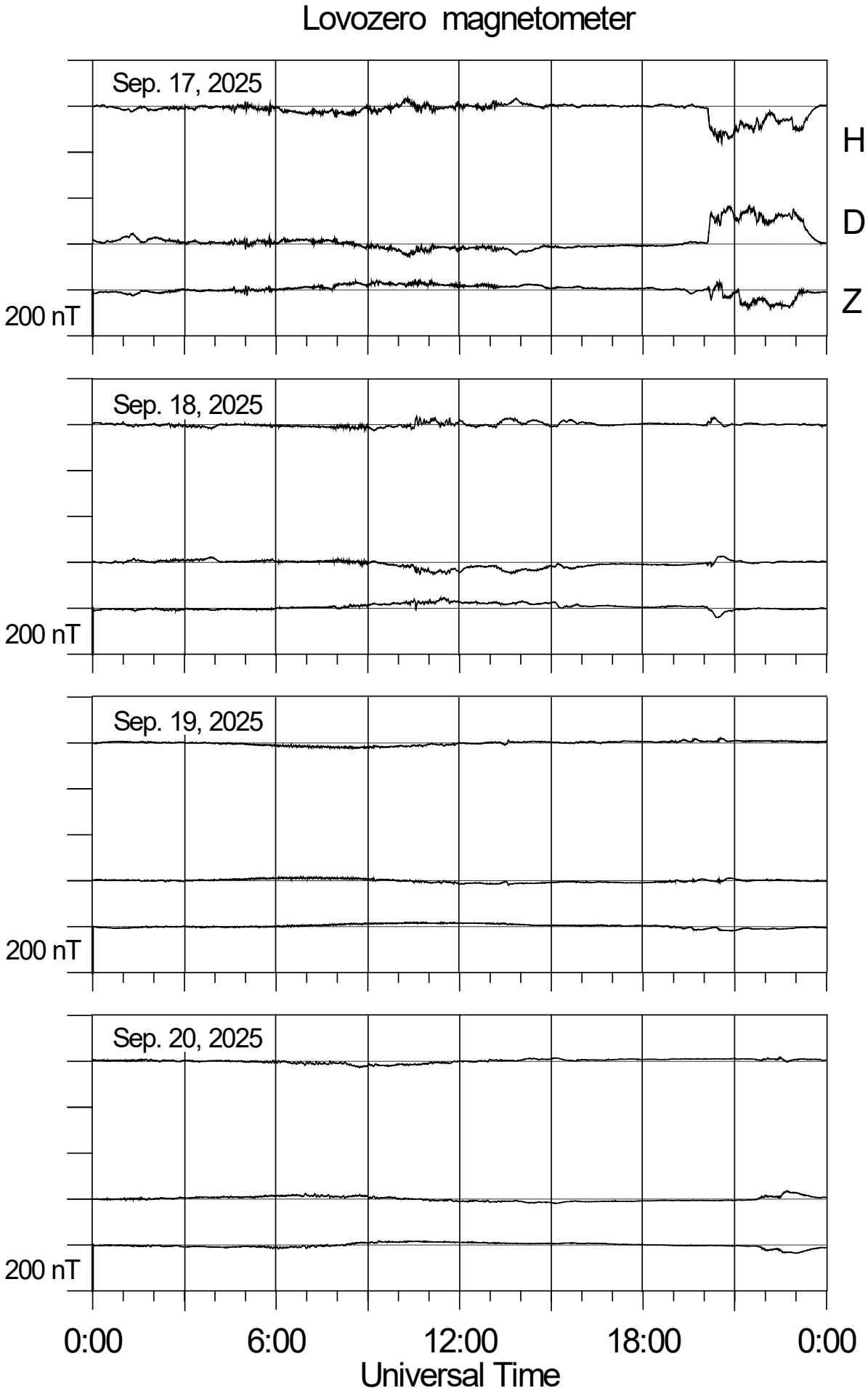
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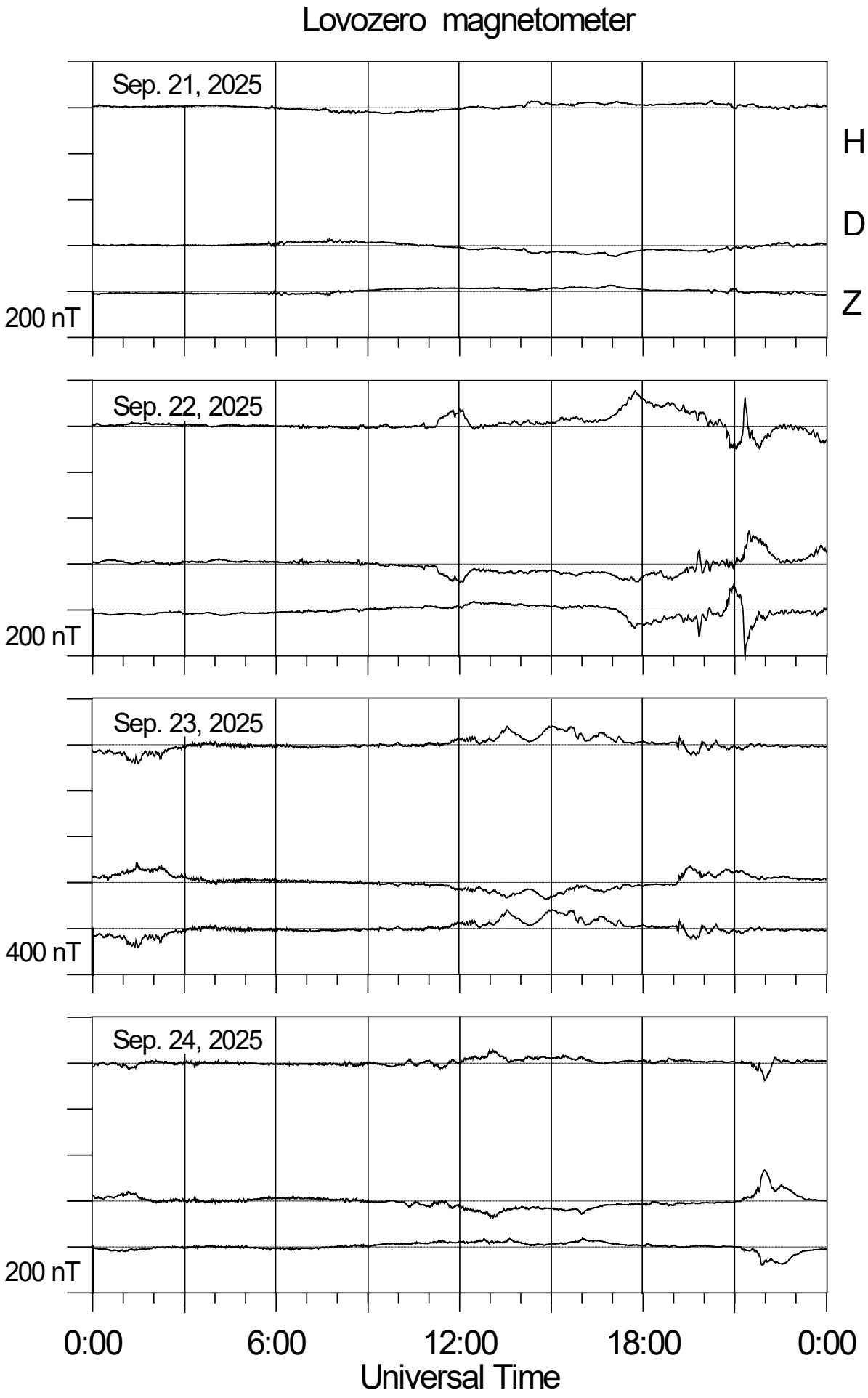
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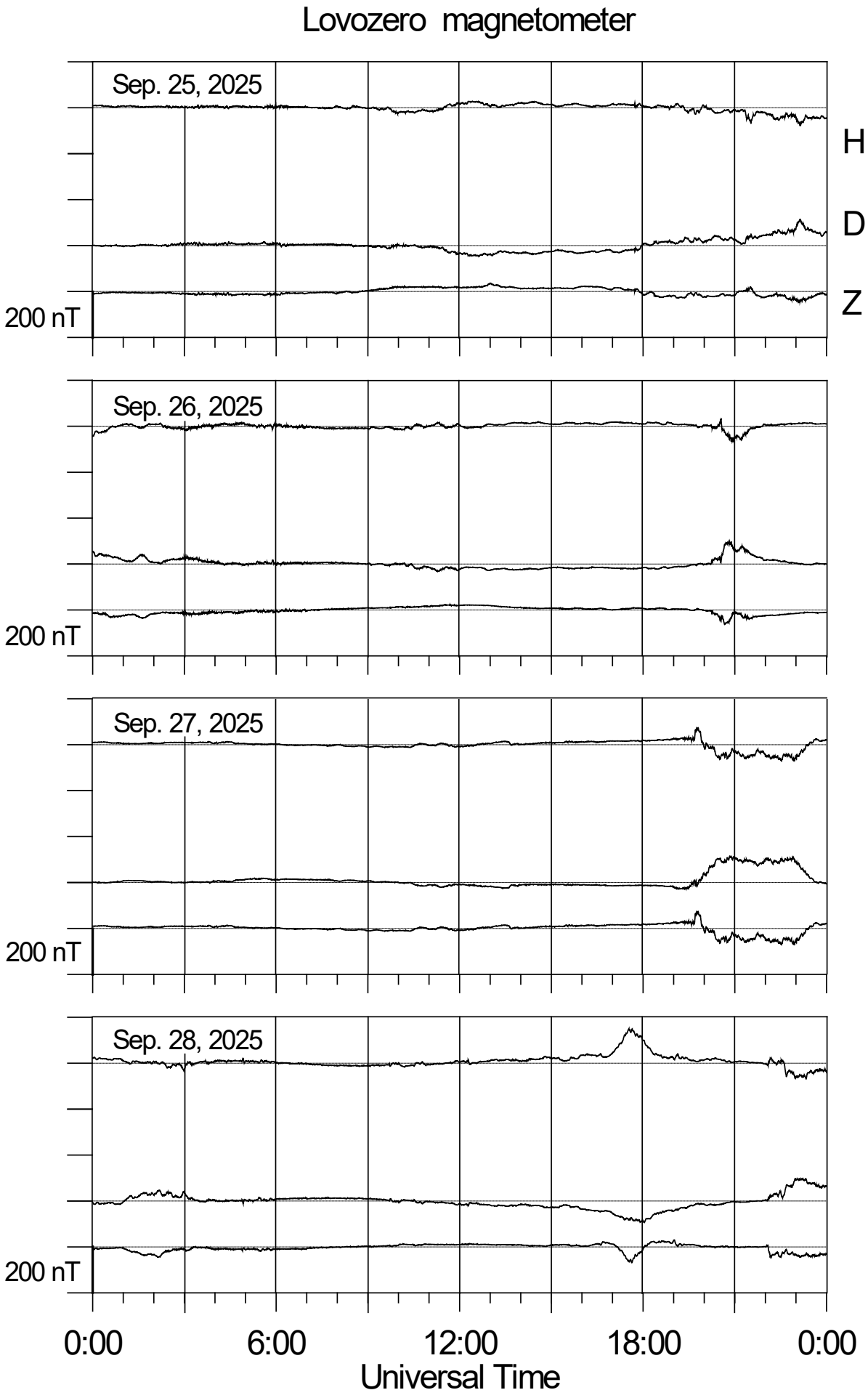
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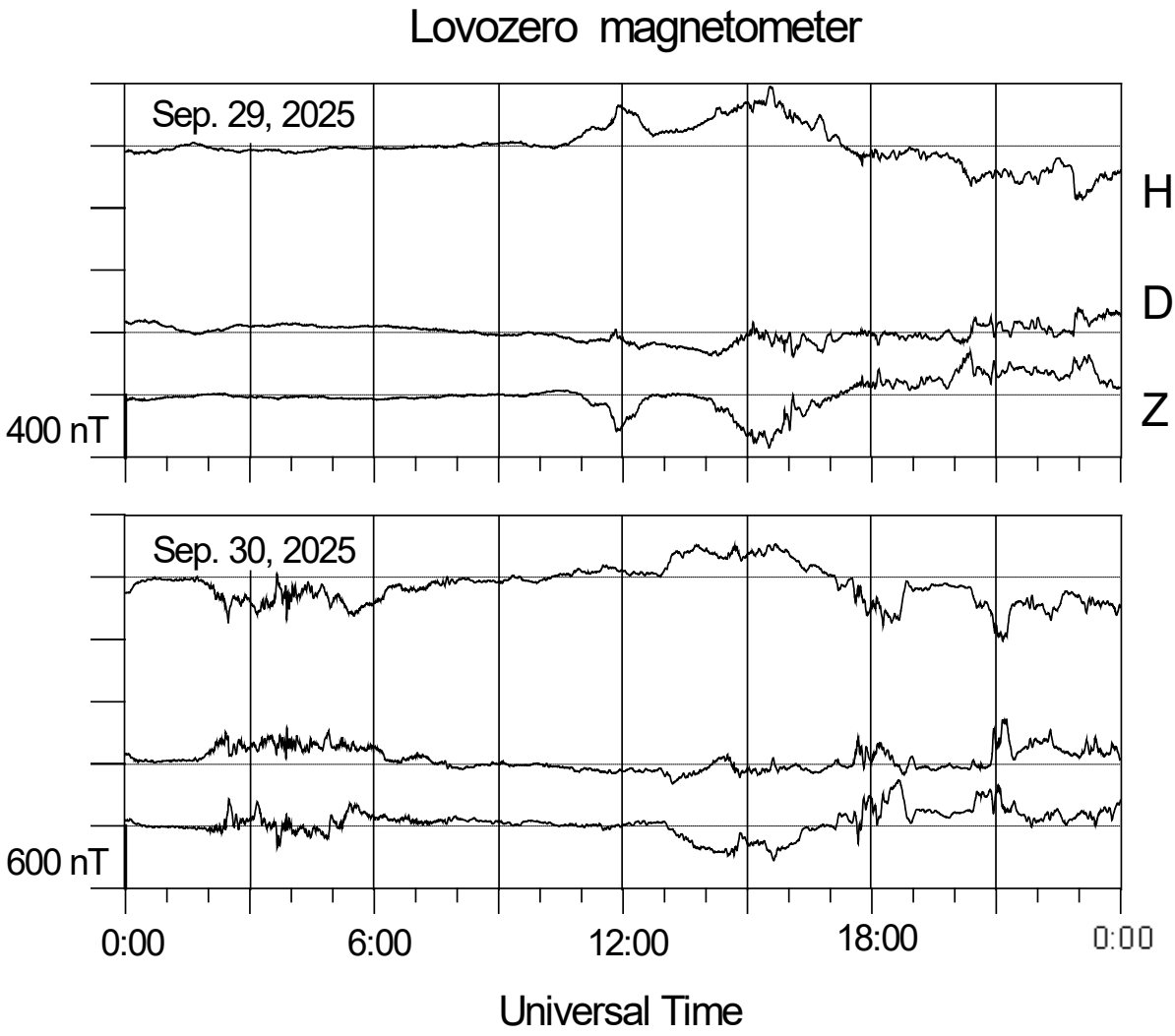
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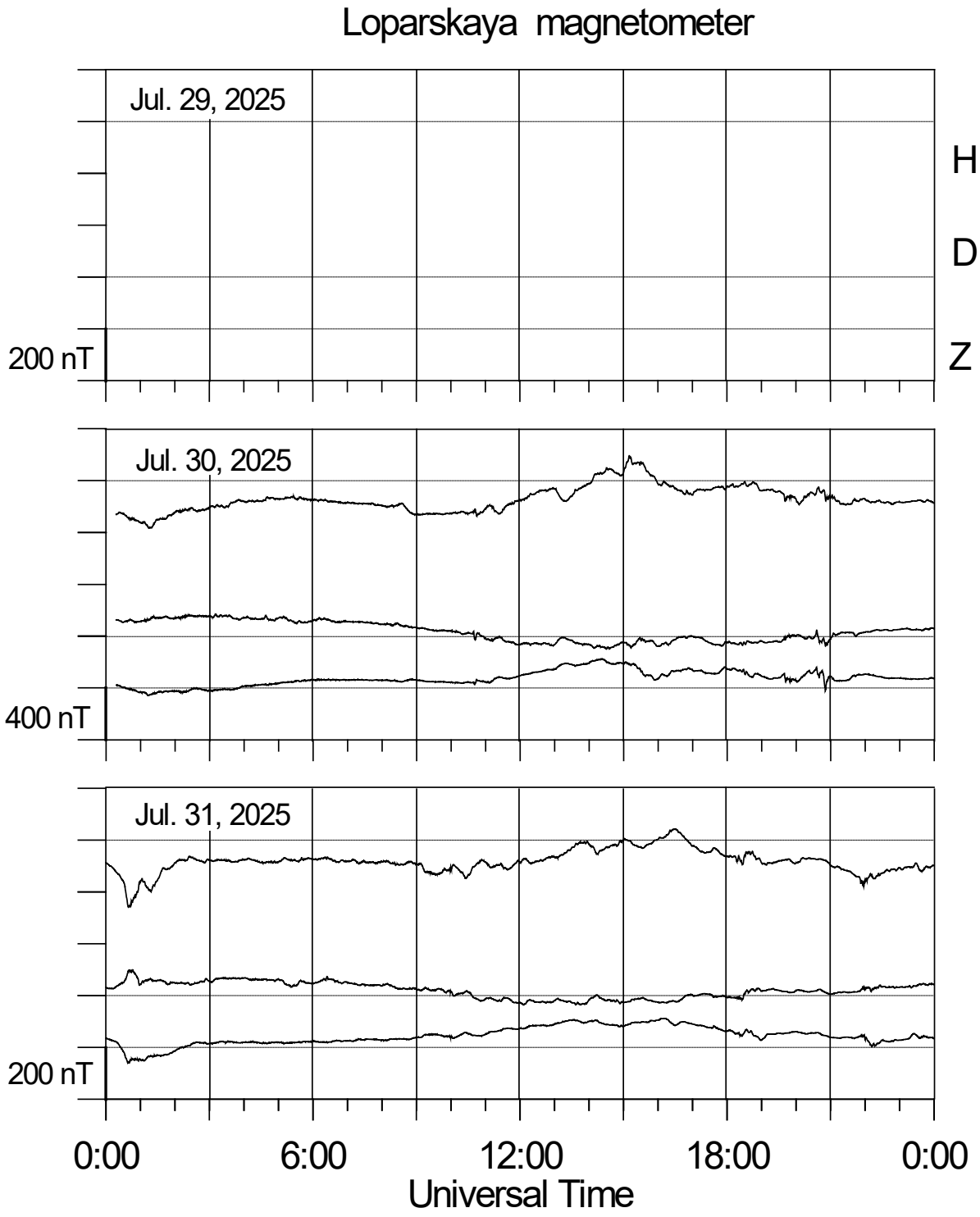
LOPARSKAYA MAGNETOGRAMS

July - September 2025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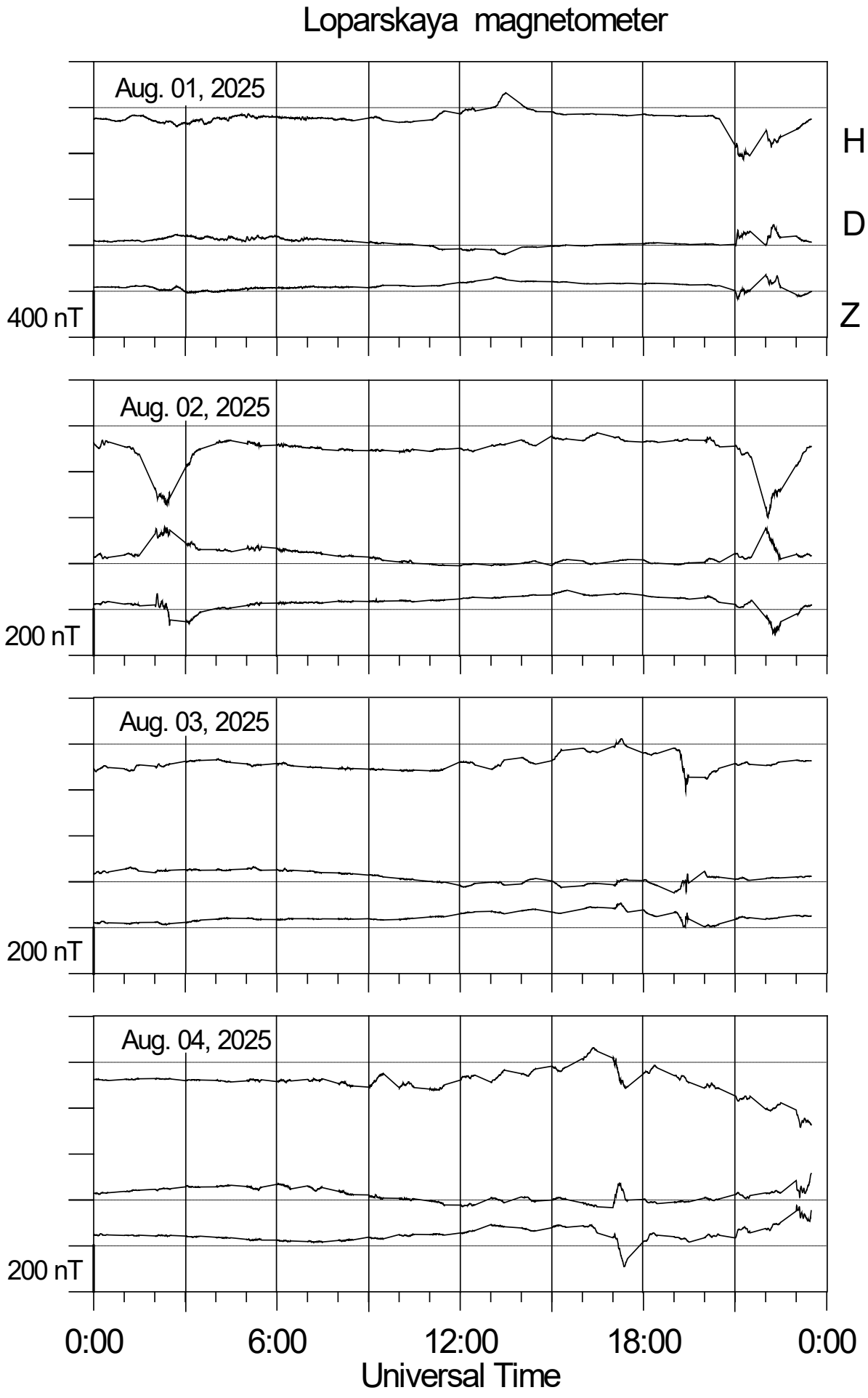
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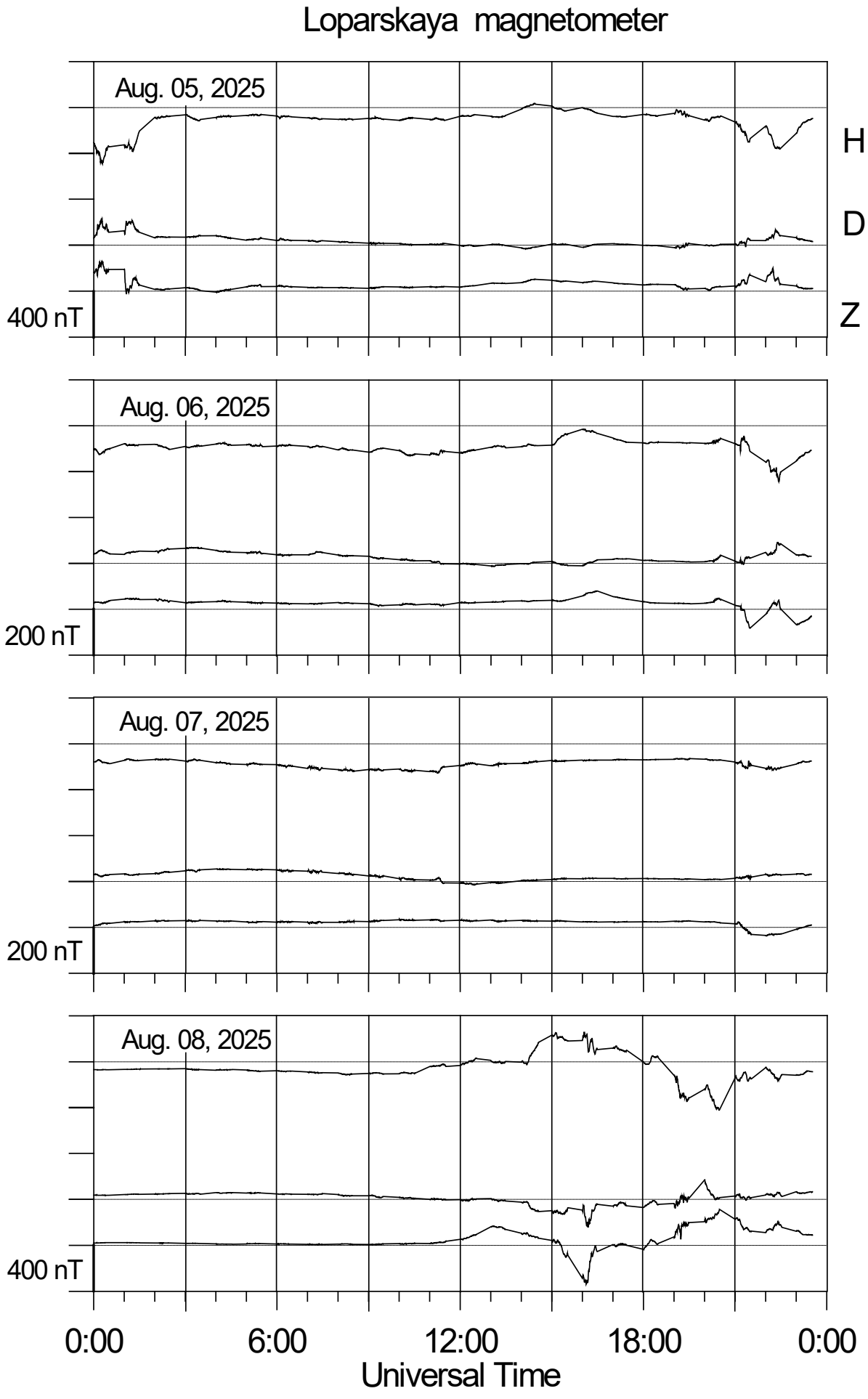
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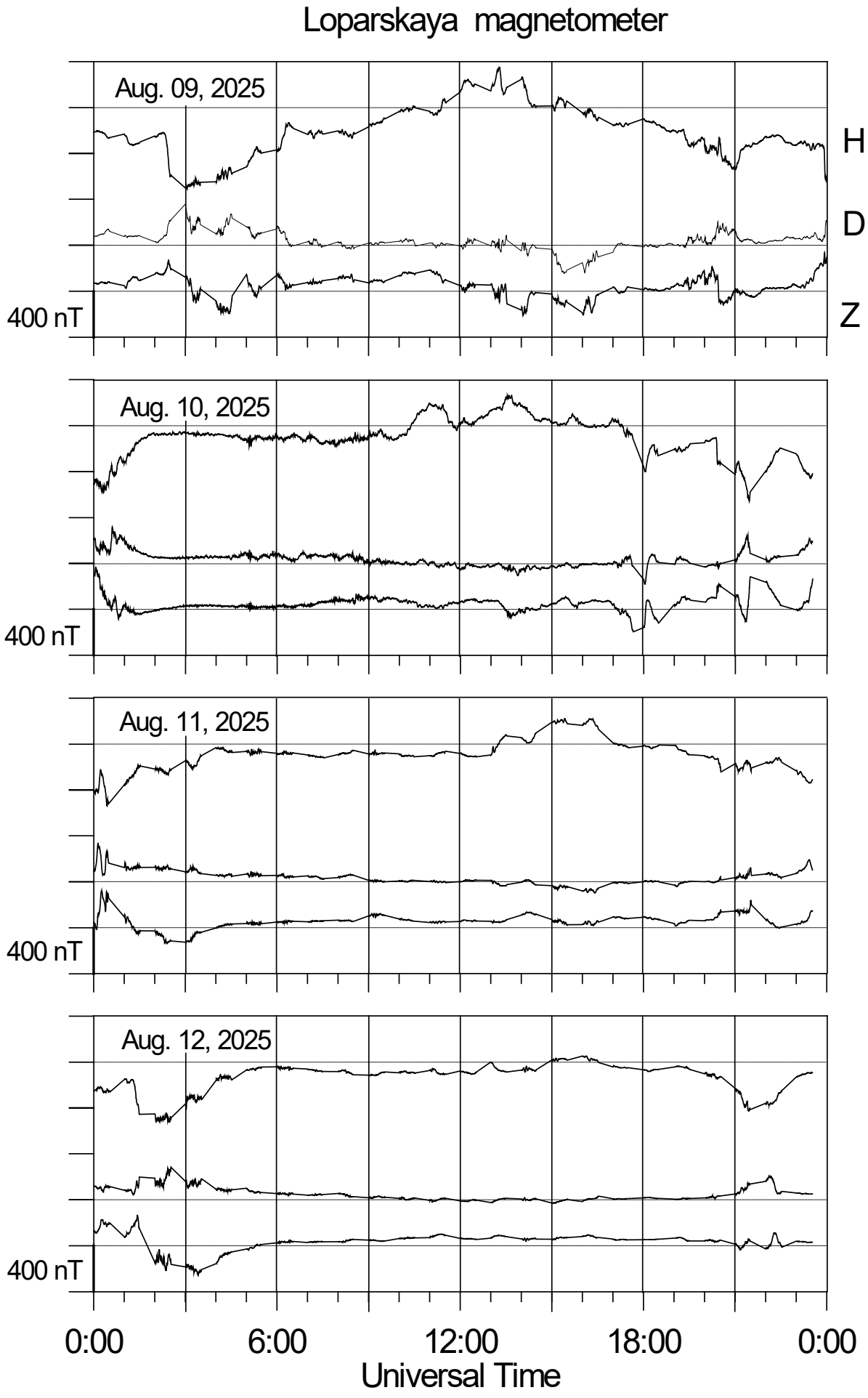
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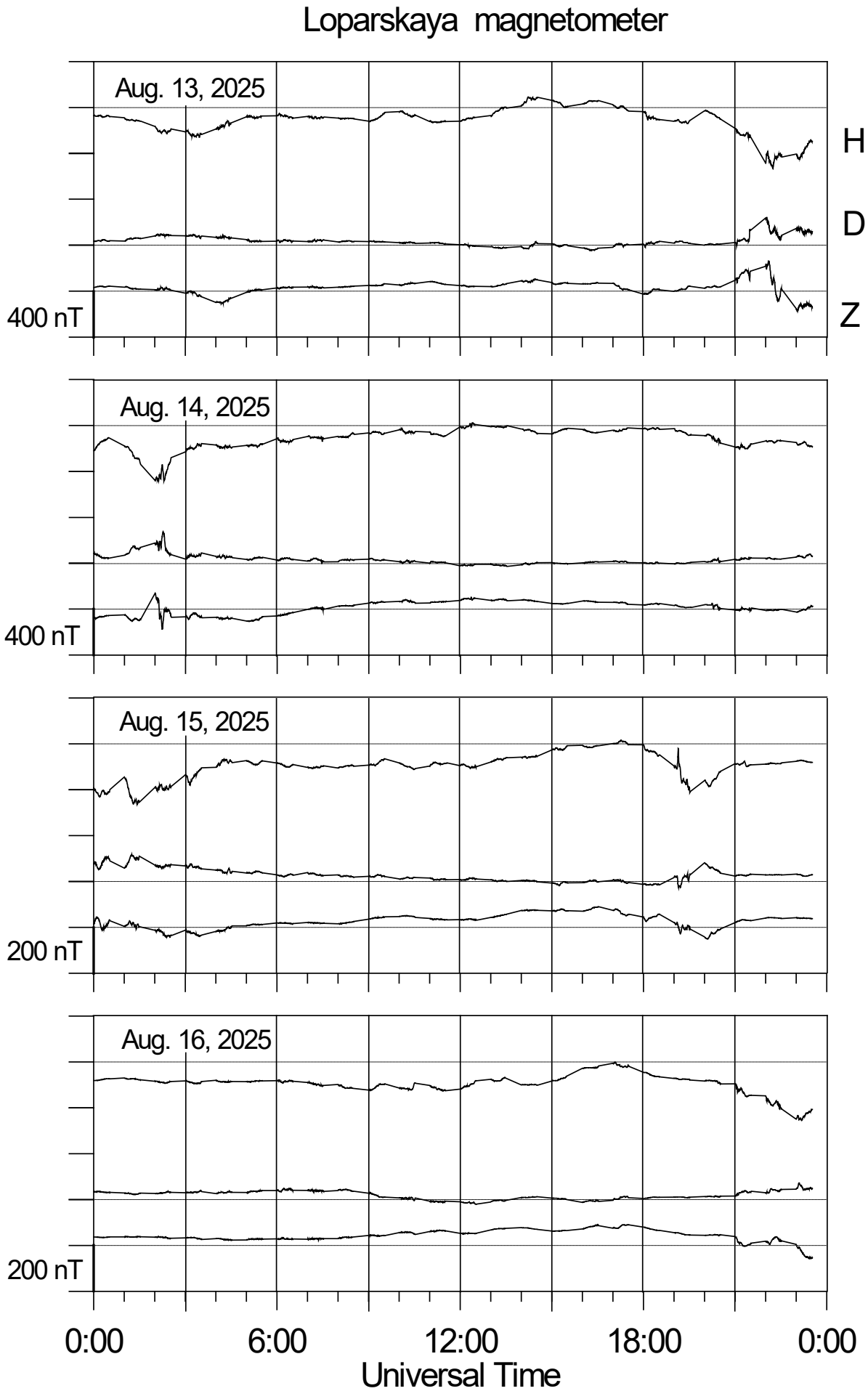
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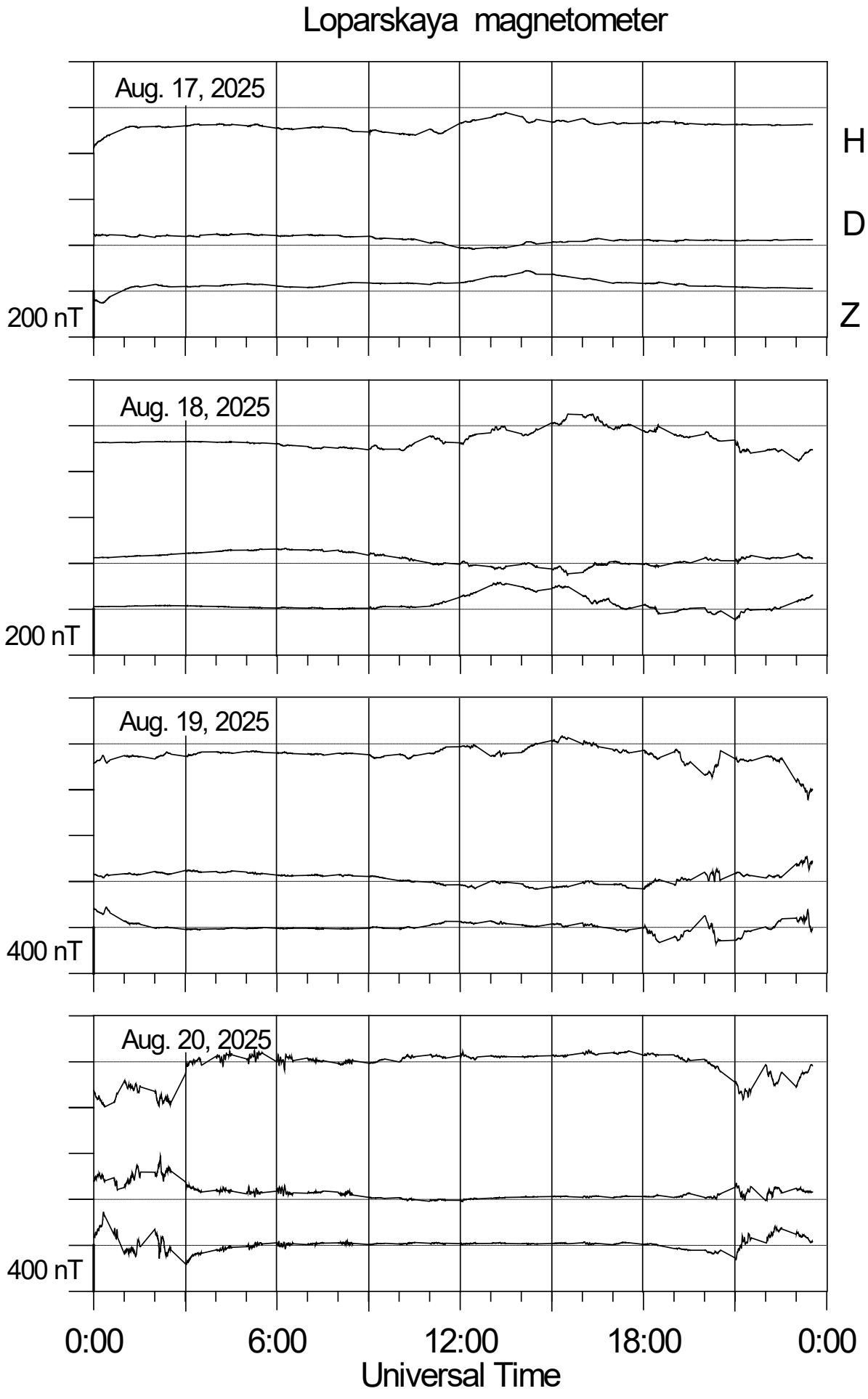
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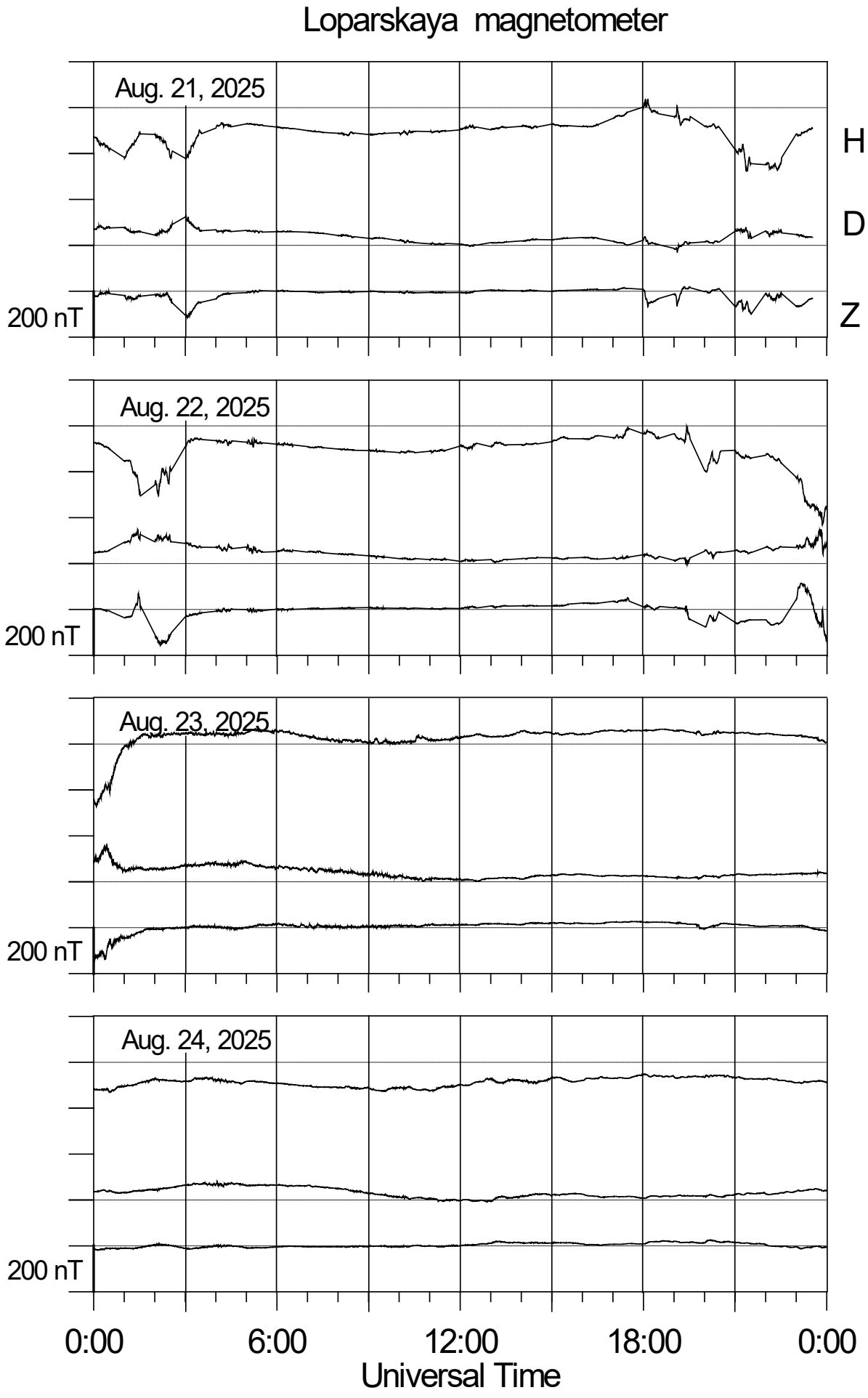
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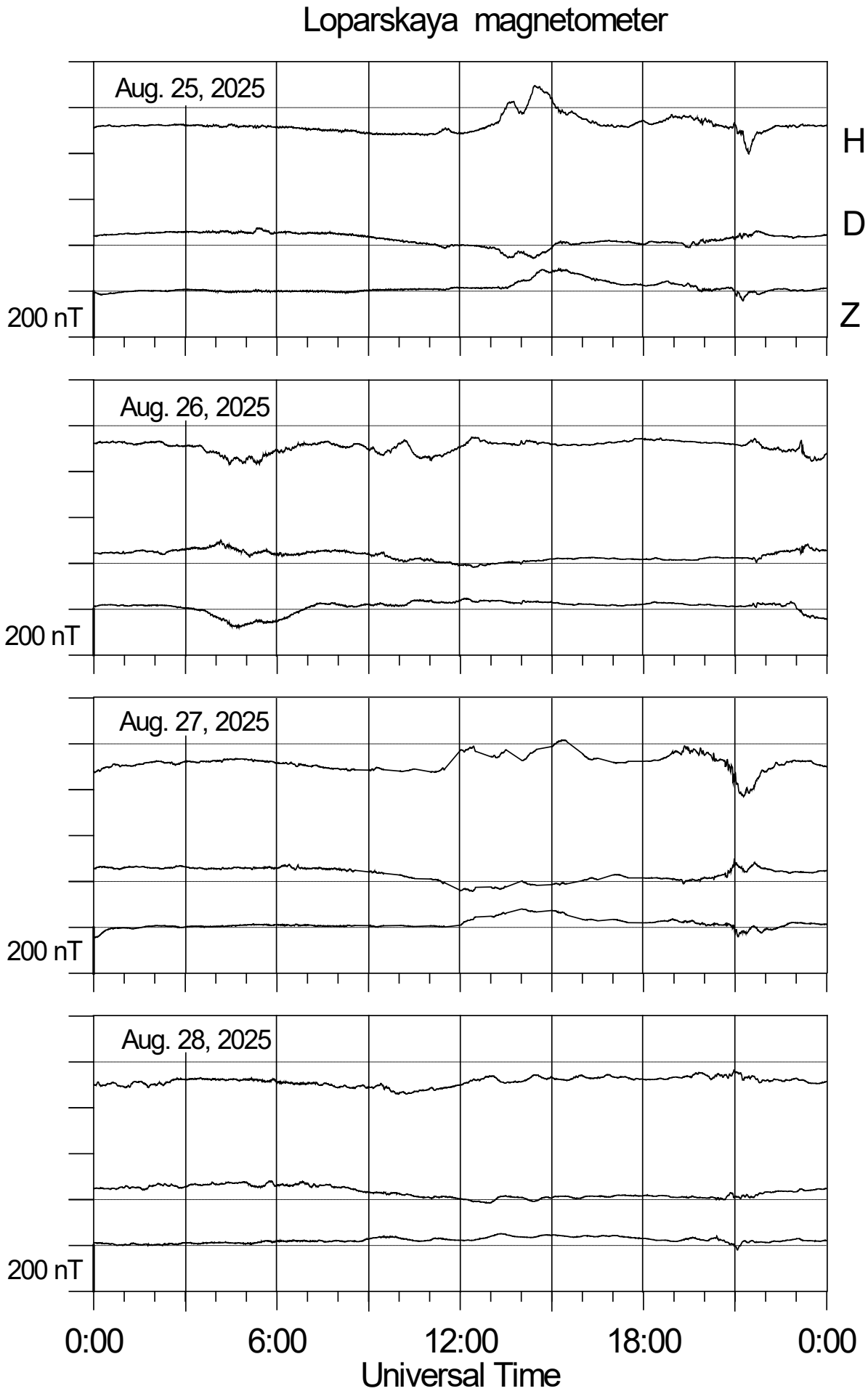
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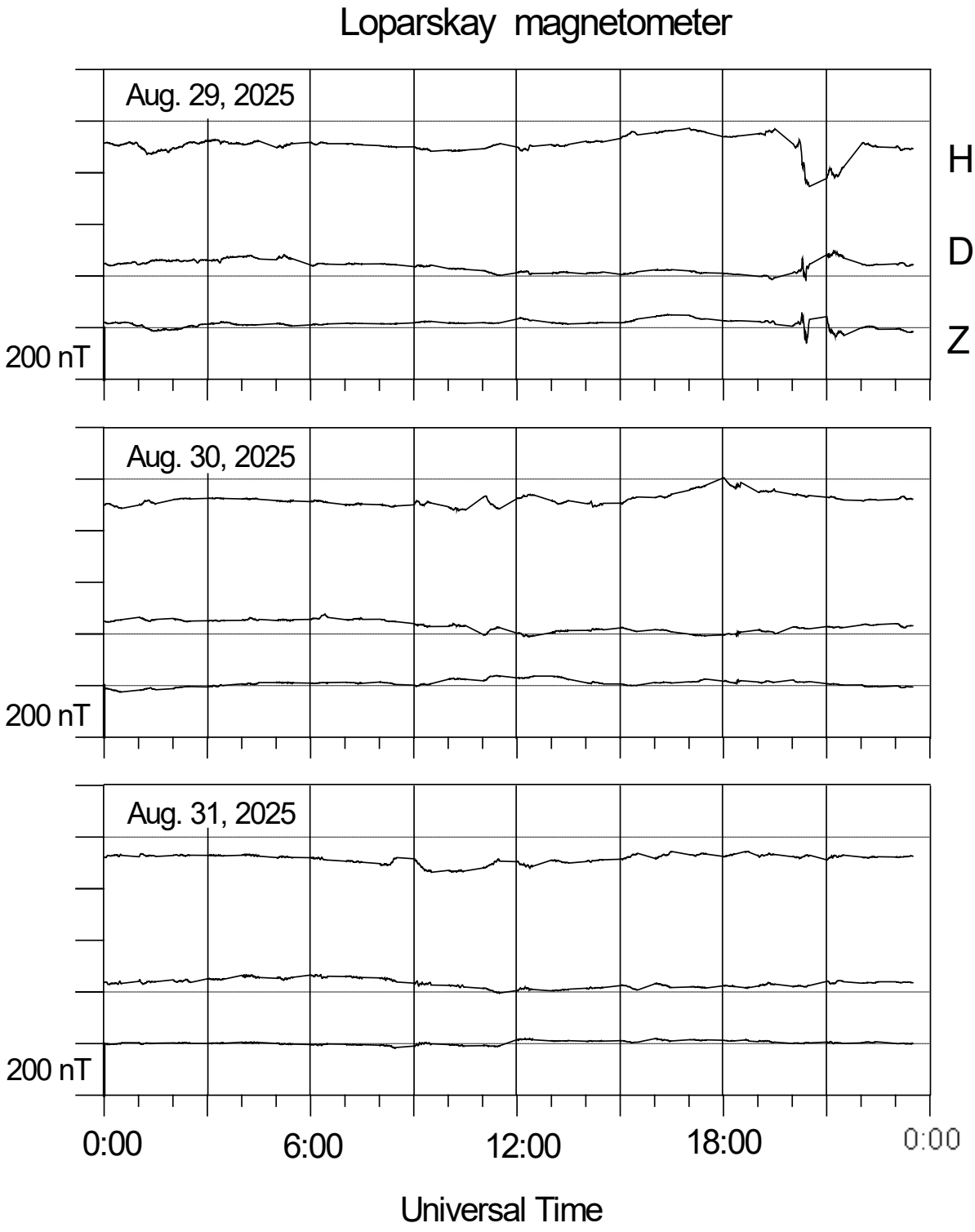
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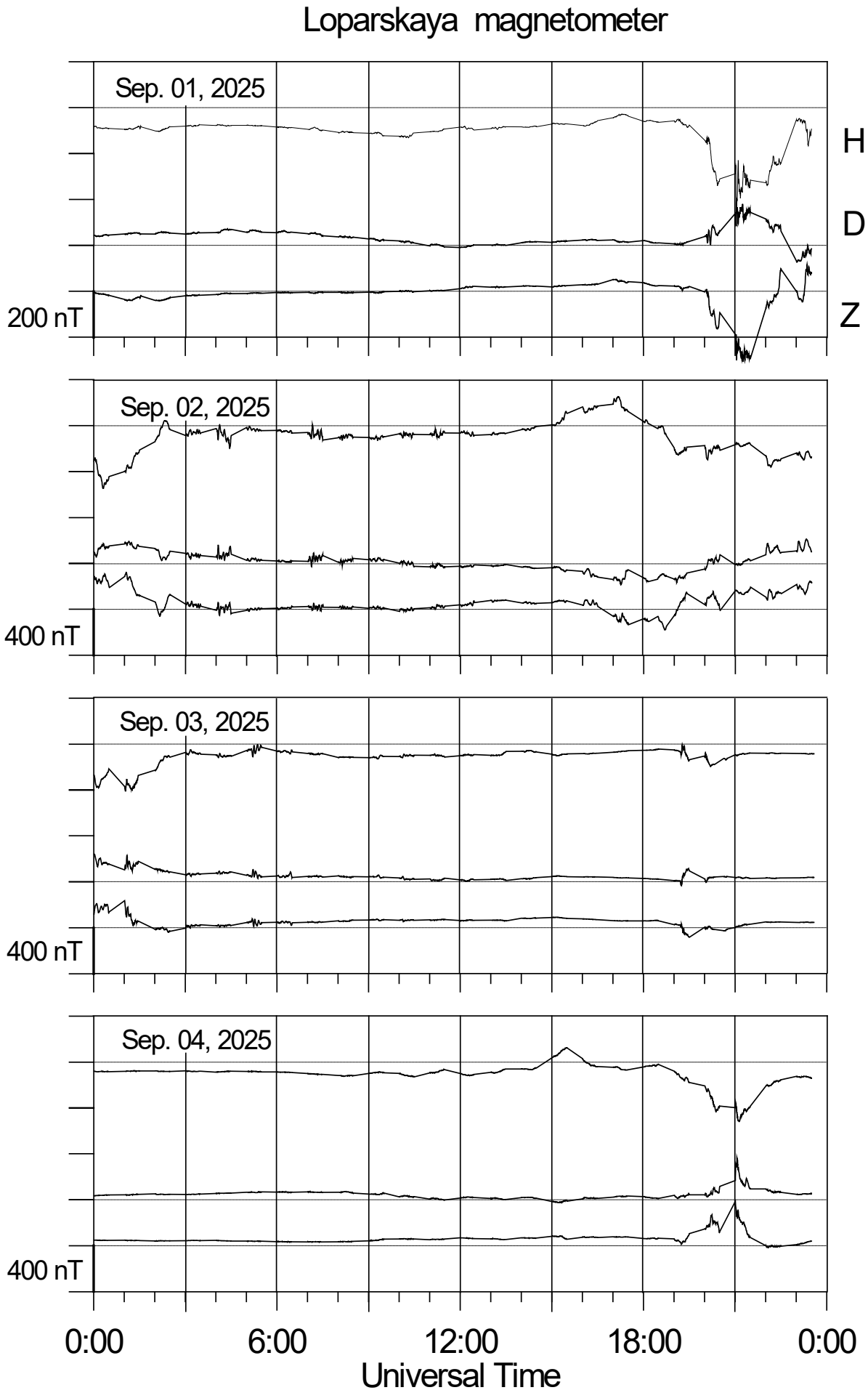
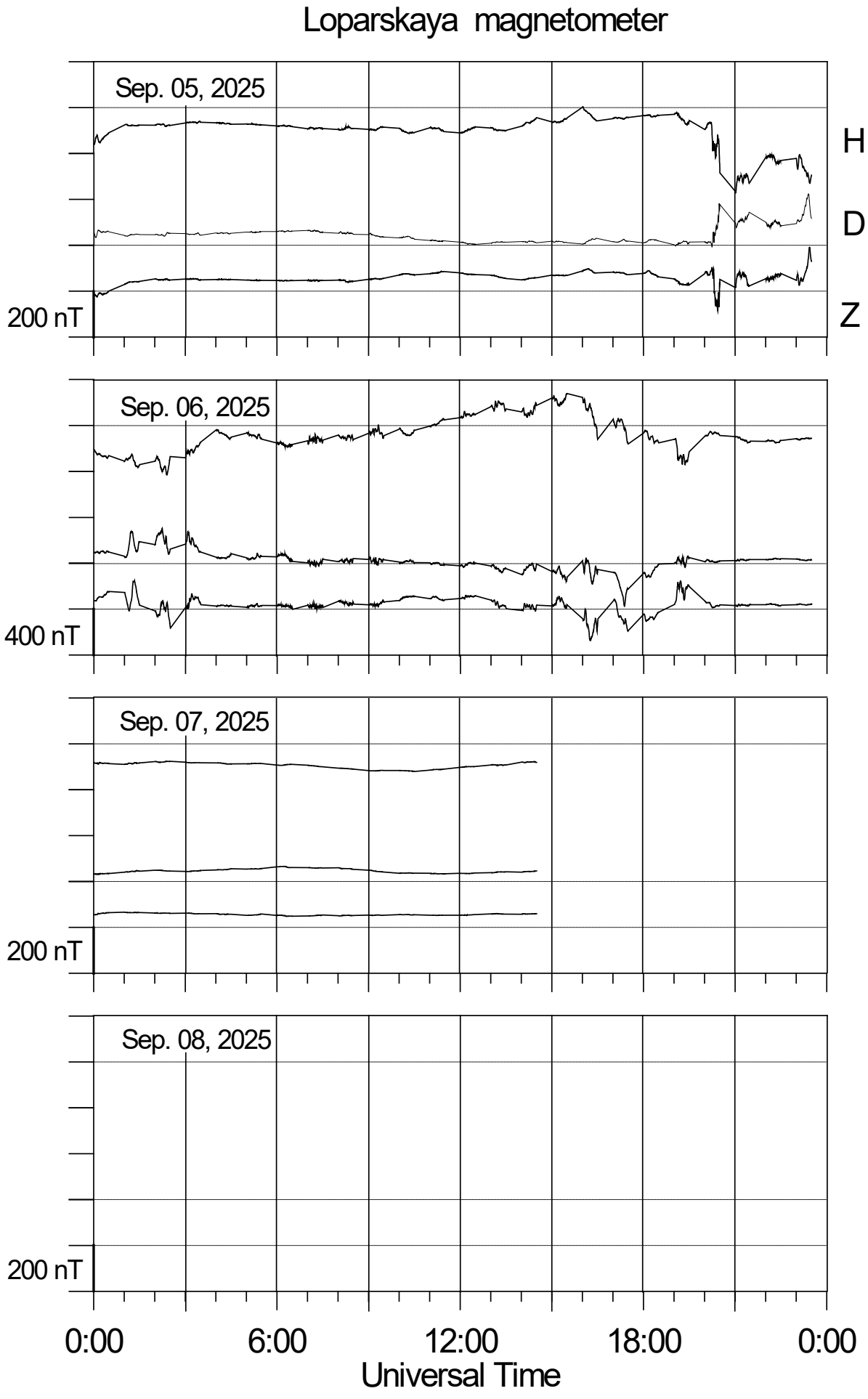
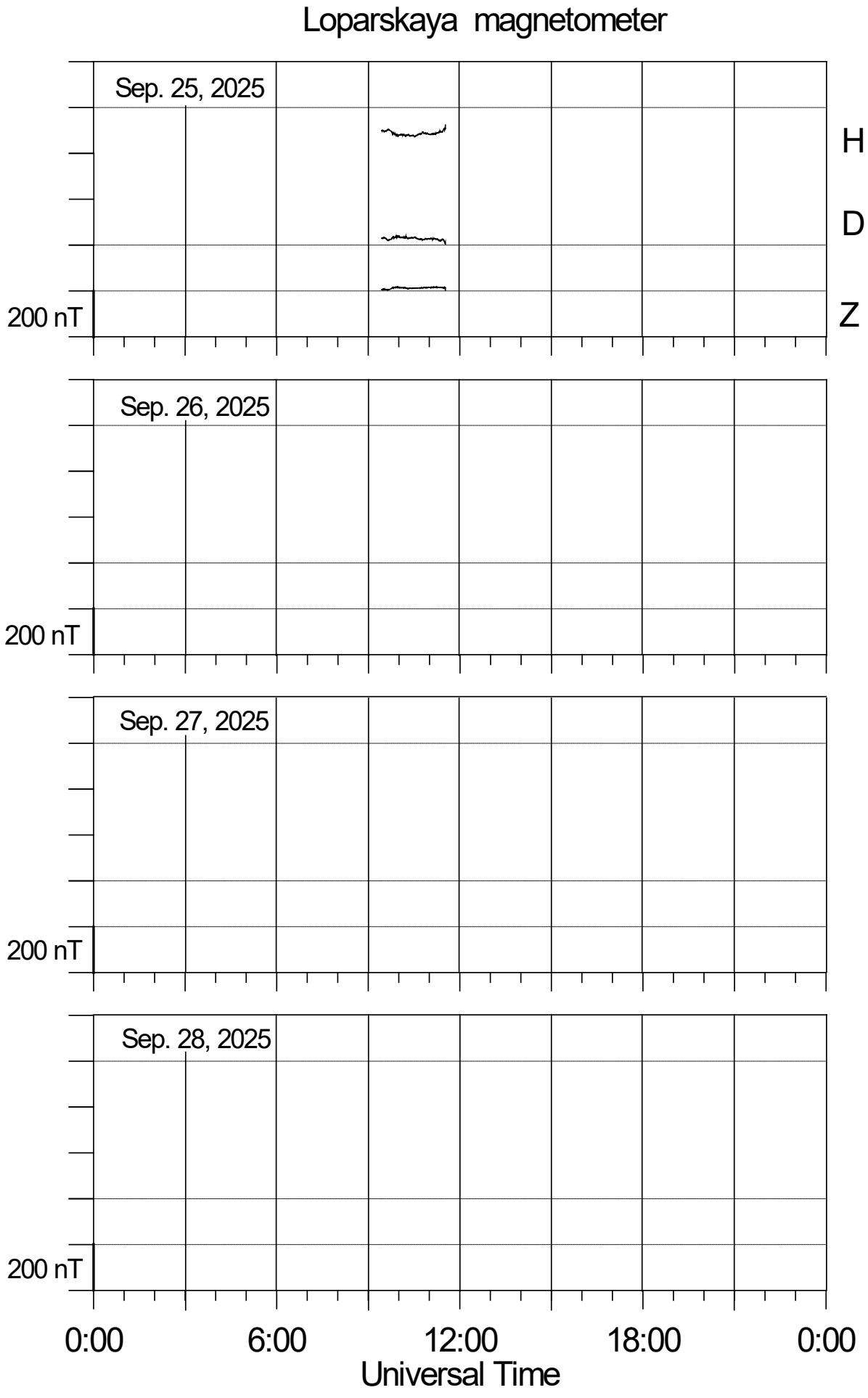
Aug. 31, 2025
200 nT
0:00
6:00
12:00
18:00
0:00
Universal Time


Loparskaya magnetometer
Sep. 01, 2025
H
D
Z
200 nT
Sep. 02, 2025
400 nT
Sep. 03, 2025
400 nT
Sep. 04, 2025
400 nT
0:00
6:00
12:00
18:00
0:00
Universal Time


Loparskaya magnetometer
Sep. 05, 2025
H
D
Z
200 nT
Sep. 06, 2025
400 nT
Sep. 07, 2025
200 nT
Sep. 08, 2025
200 nT
0:00
6:00
12:00
18:00
0:00
Universal Time


Loparskaya magnetometer
Sep. 25, 2025
H
D
Z
200 nT
Sep. 26, 2025
200 nT
Sep. 27, 2025
200 nT
Sep. 28, 2025
200 nT
0:00
6:00
12:00
18:00
0:00
Universal Time