

POLAR GEOPHYSICAL INSTITUTE  
RUSSIAN ACADEMY OF SCIENCES



**PGI**  
**GEOPHYSICAL DATA**

**2017**

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***JULY***

---

***AUGUST***

---

***SEPTEMBER***

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MURMANSK, APATITY, RUSSIA

January, 2018

# PGI

## GEOPHYSICAL DATA

V. VOROBJEV, editor

V. Burnaeva and N. Golubtsova, 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 2017. 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  $\pm 2620$  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      | 412 466 |
| August    | 408 089 |
| September | 404 557 |

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

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

### ***Attention:***

### ***Coordinates of stations***

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

Please visit also our Internet pages:

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



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184209, RUSSIA

GEOMAGNETIC K-INDICES, LOVOZERO  
 July, 2017  
 Lower limit of K=9 is 1500 nT

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

GEOMAGNETIC K-INDICES, LOPARSKAYA  
August, 2017  
Lower limit of K=9 is 1500 nT

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

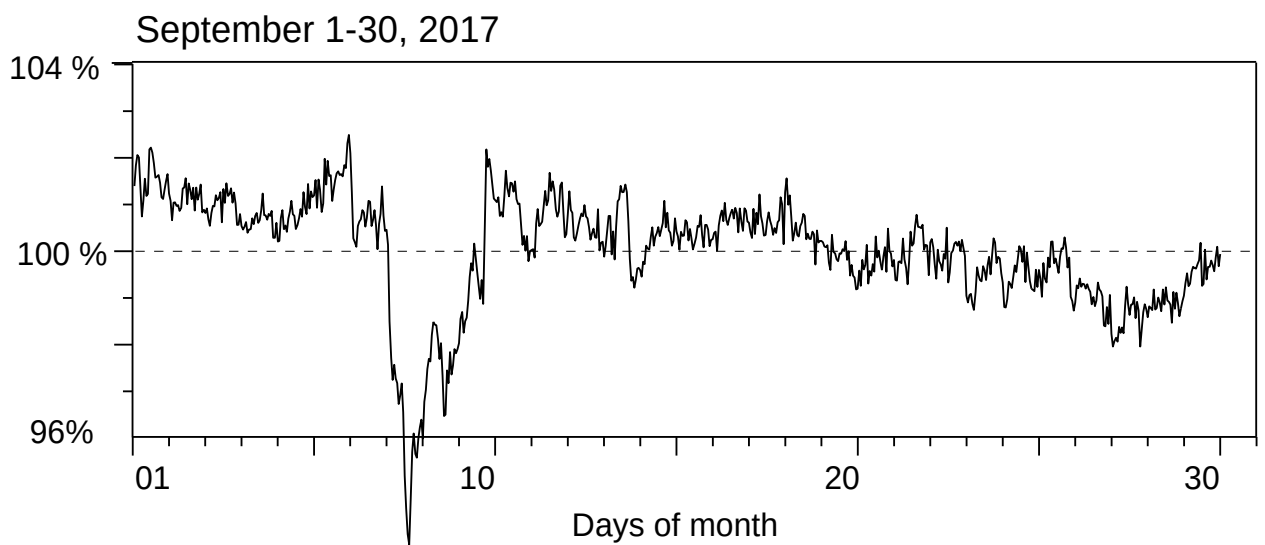
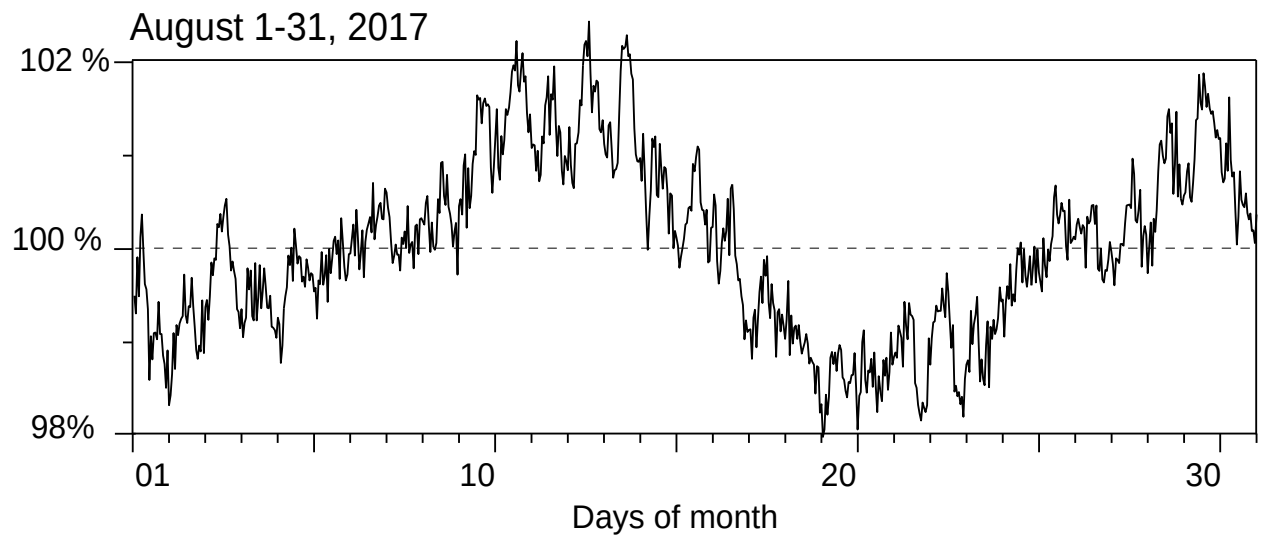
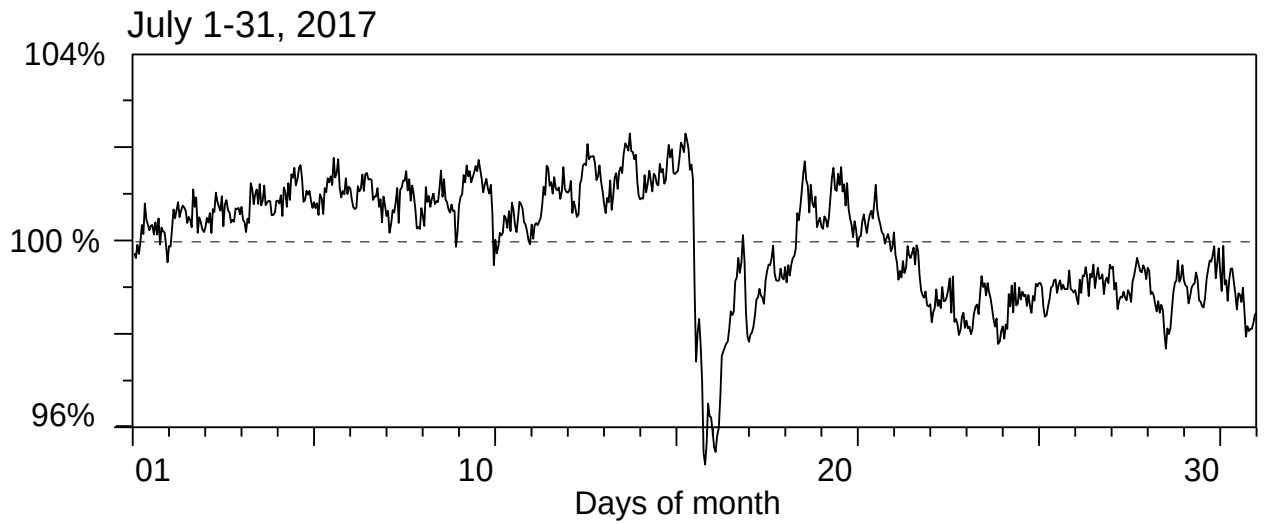
## GEOMAGNETIC K-INDICES, LOVOZERO(LOPARSKAYA)

September, 2017

Lower limit of K=9 is 1500 nT

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

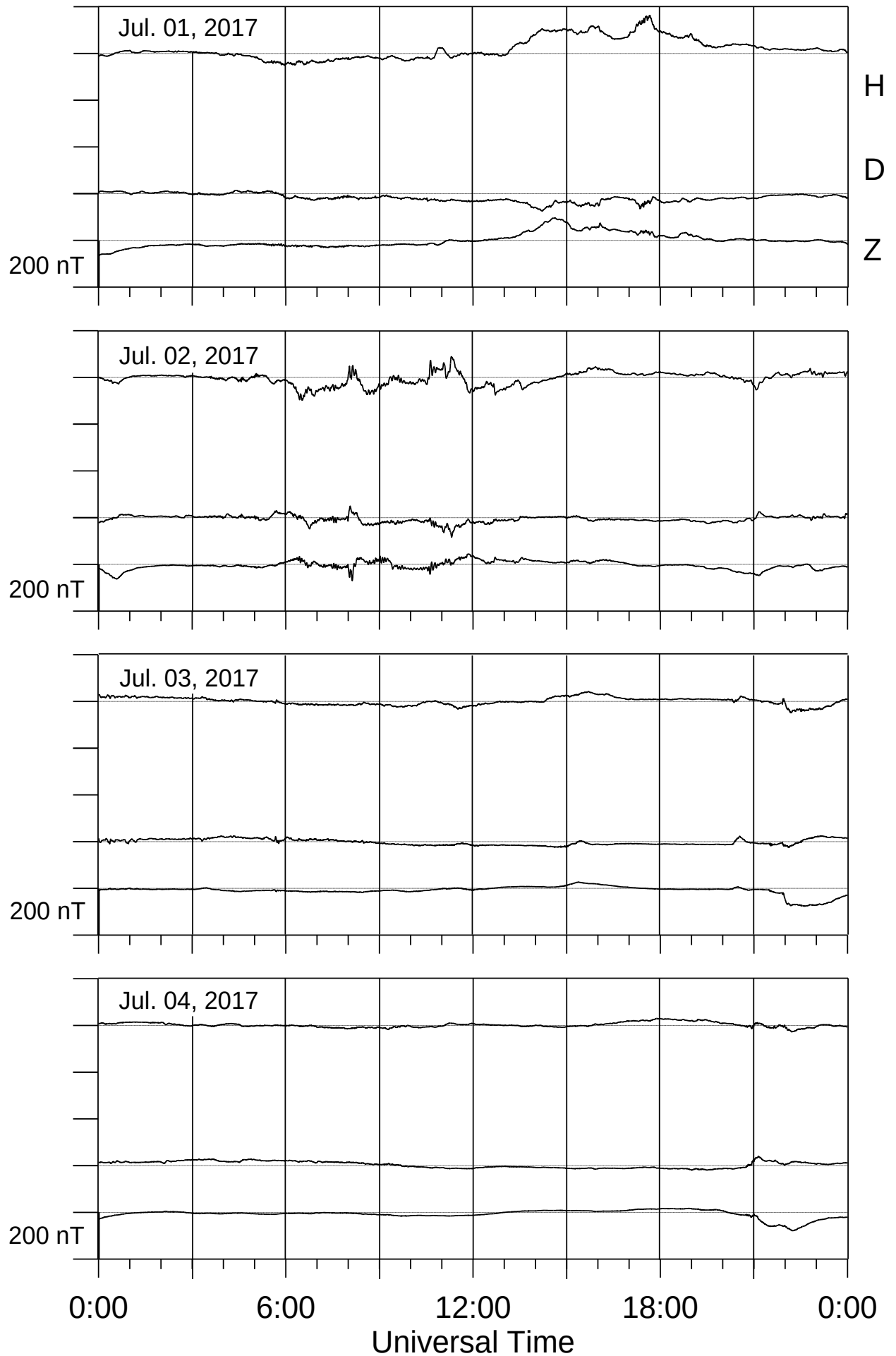
# Apatity neutron monitor



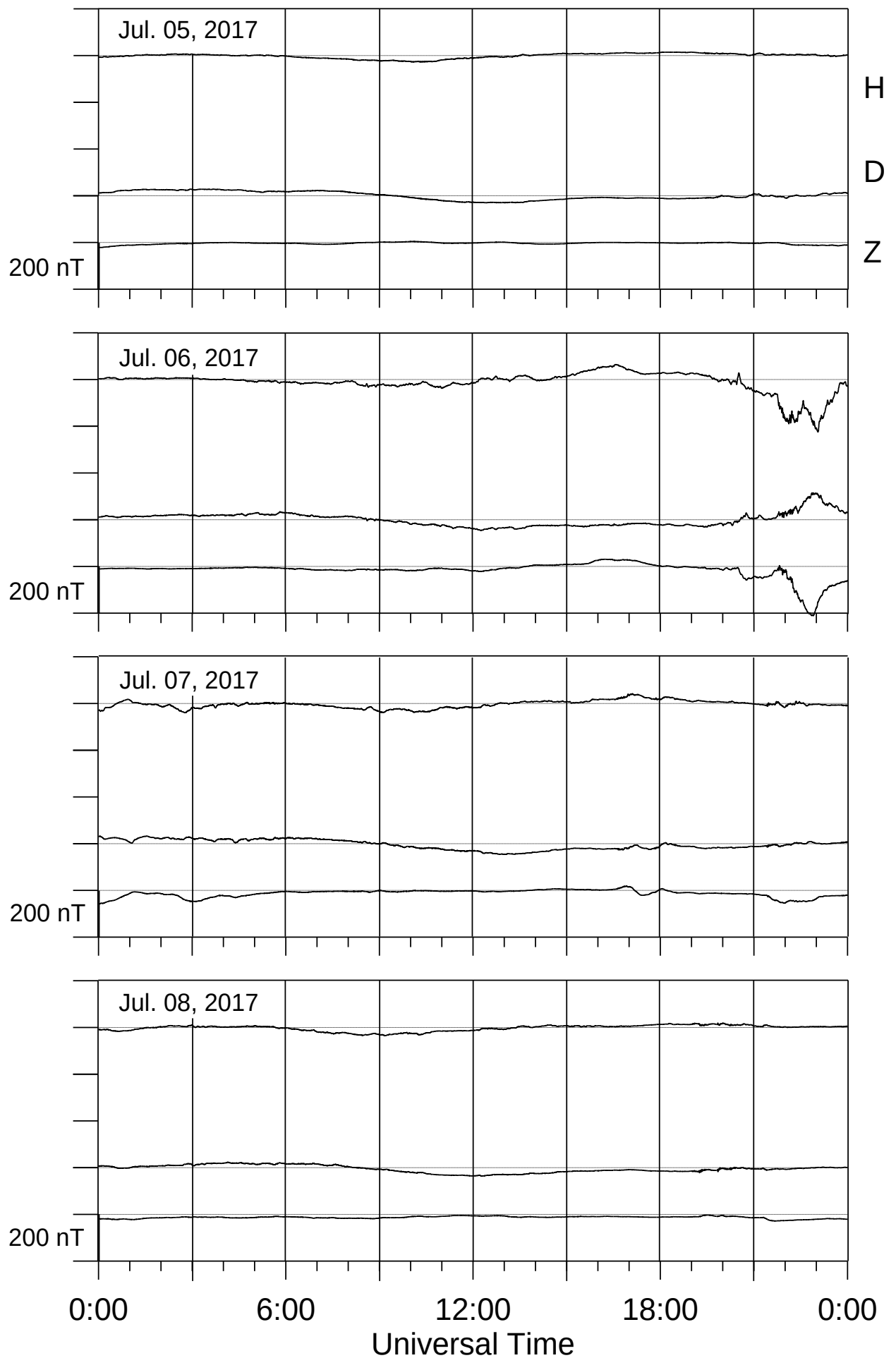
## **LOVOZERO MAGNETOGRAMS**

**July - September 2017**

## Lovozero magnetometer

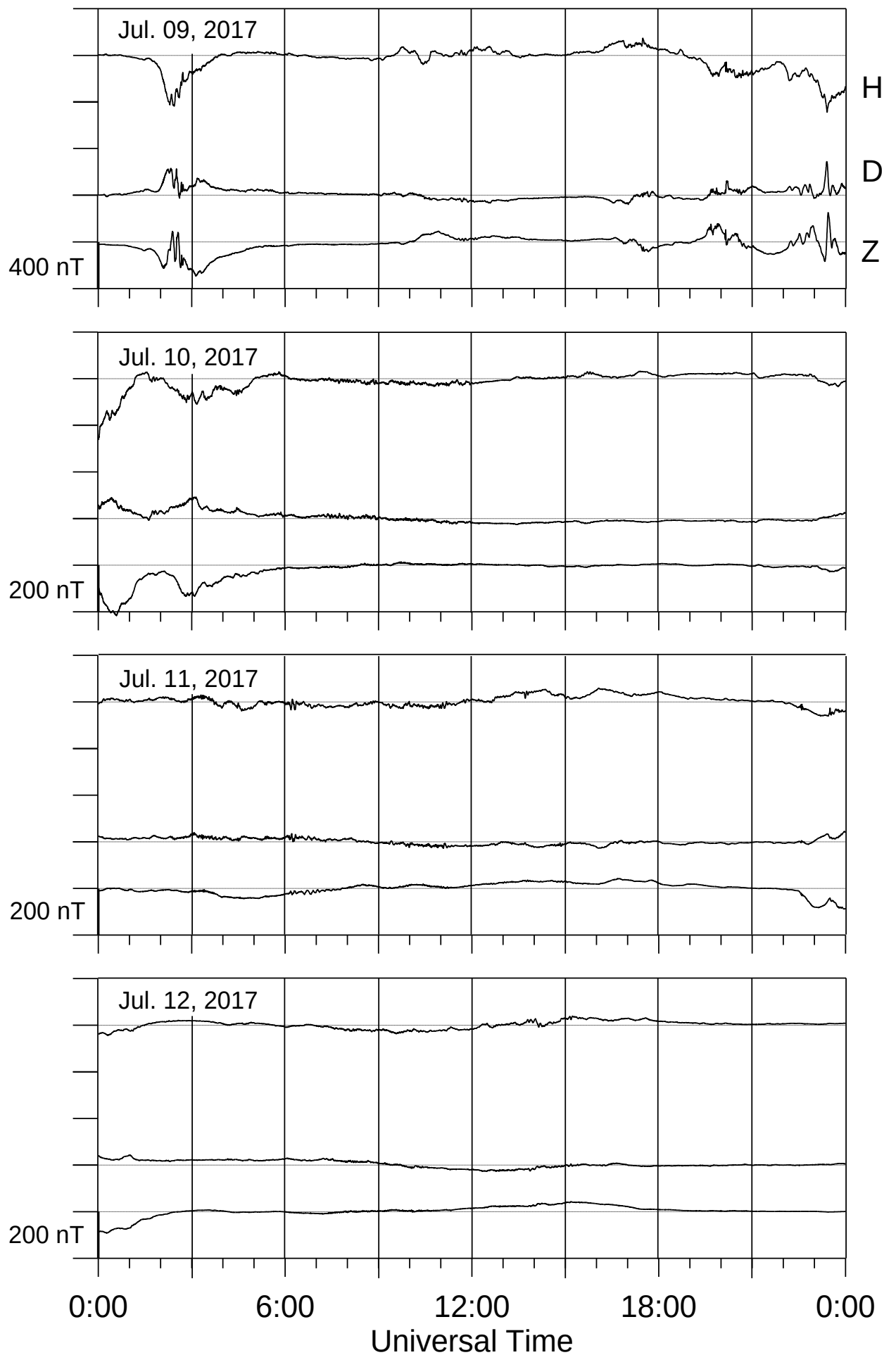


## Lovozero magnetometer

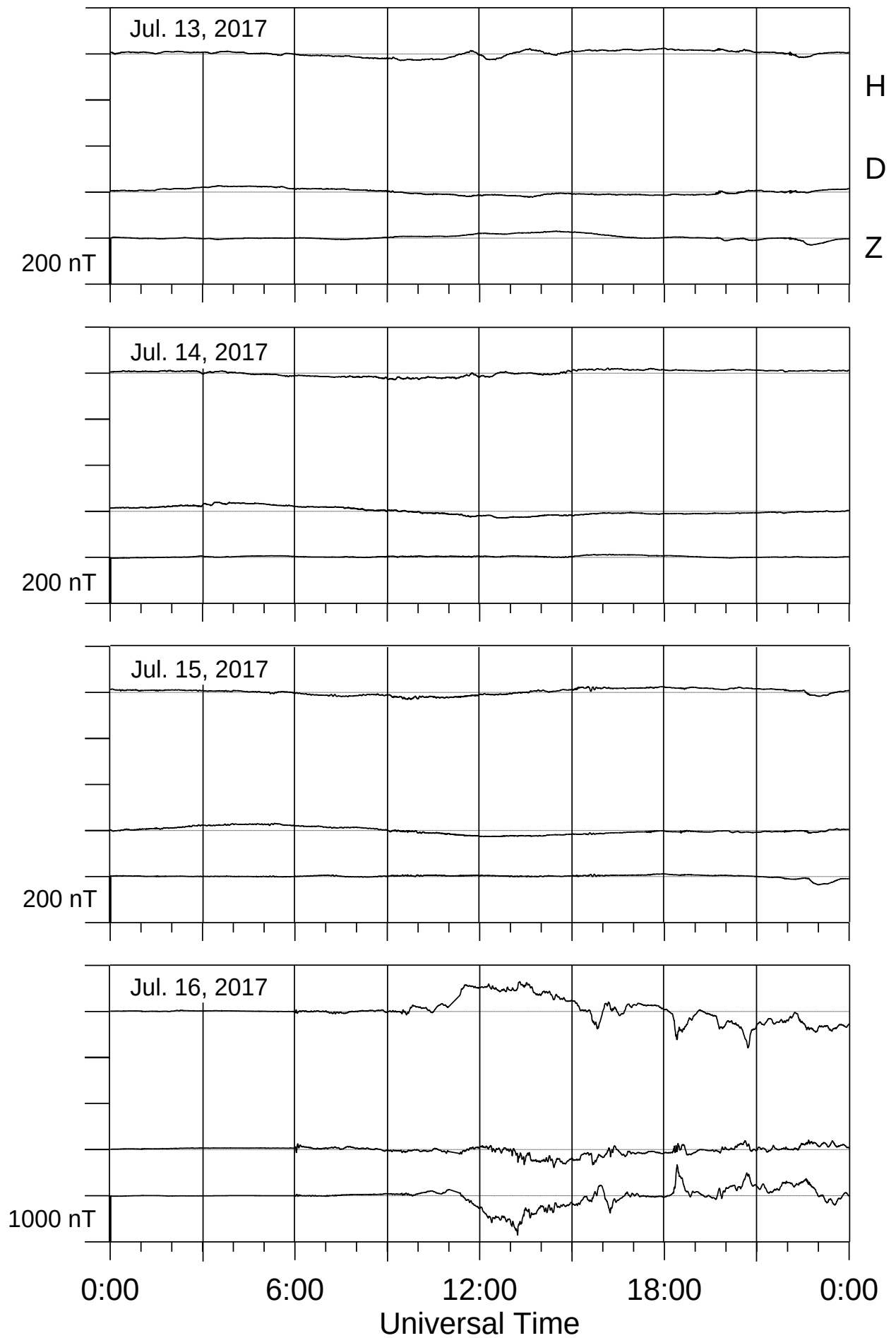




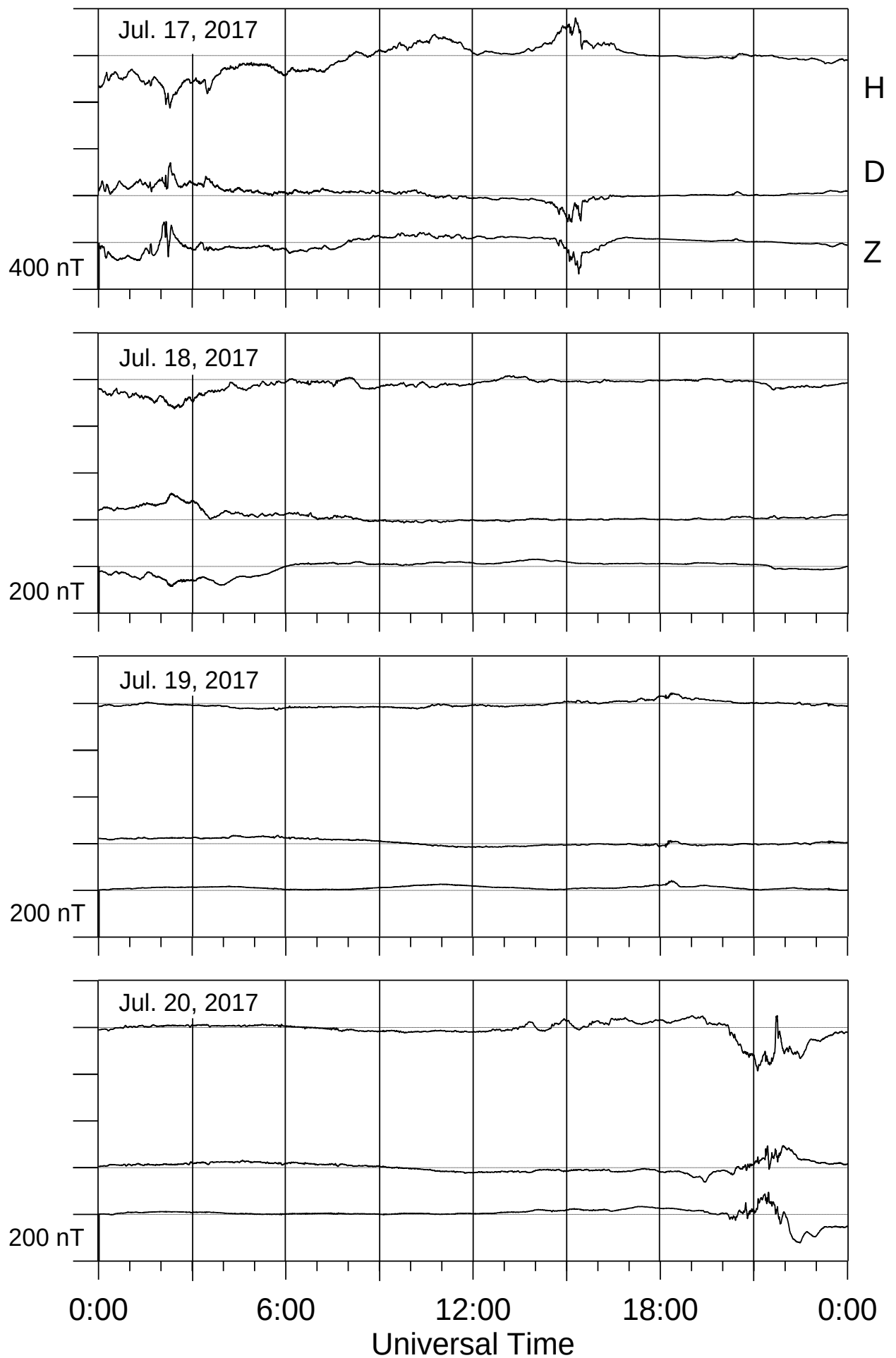
## Lovozero magnetometer



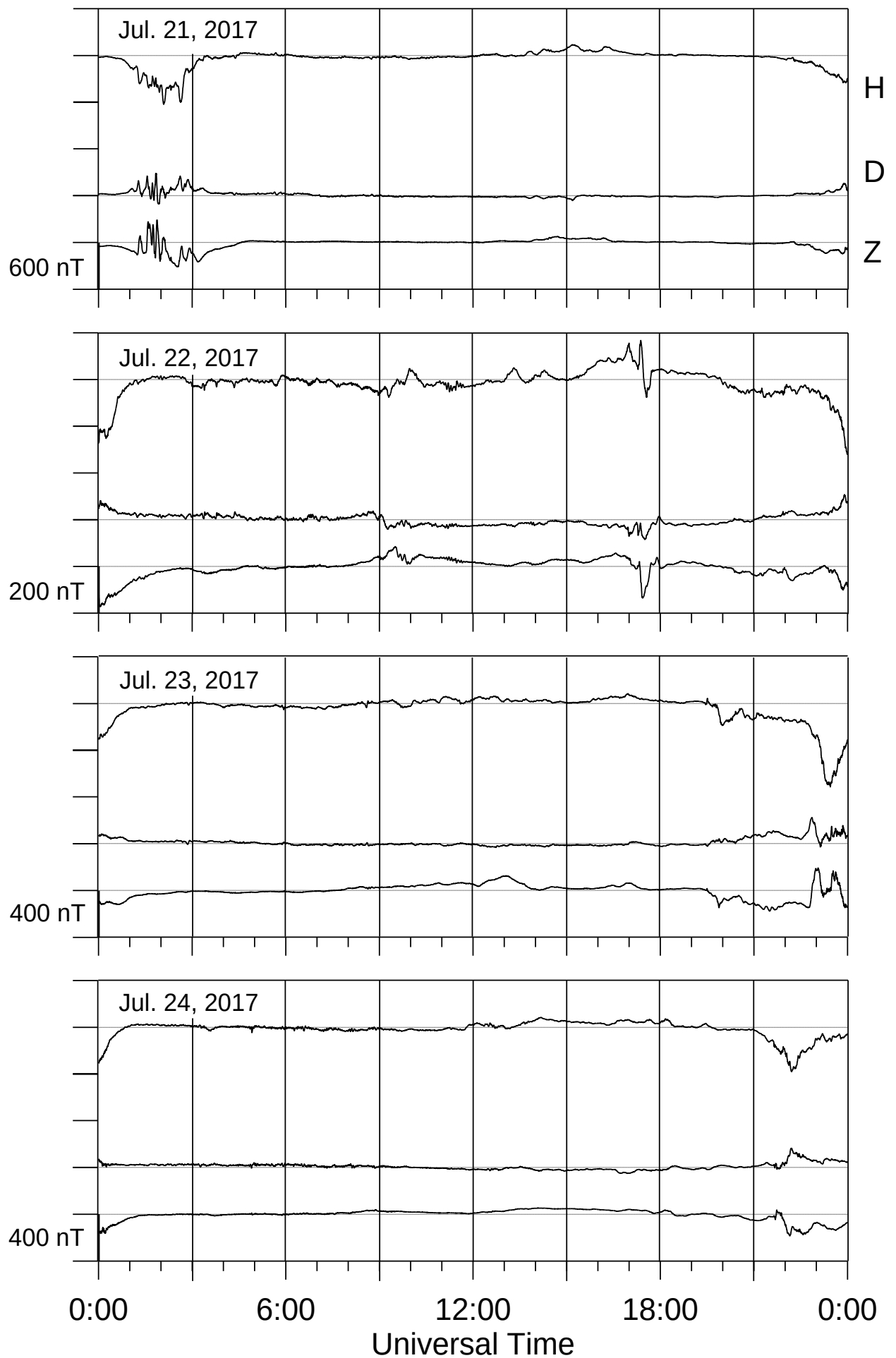
## Lovozero magnetometer



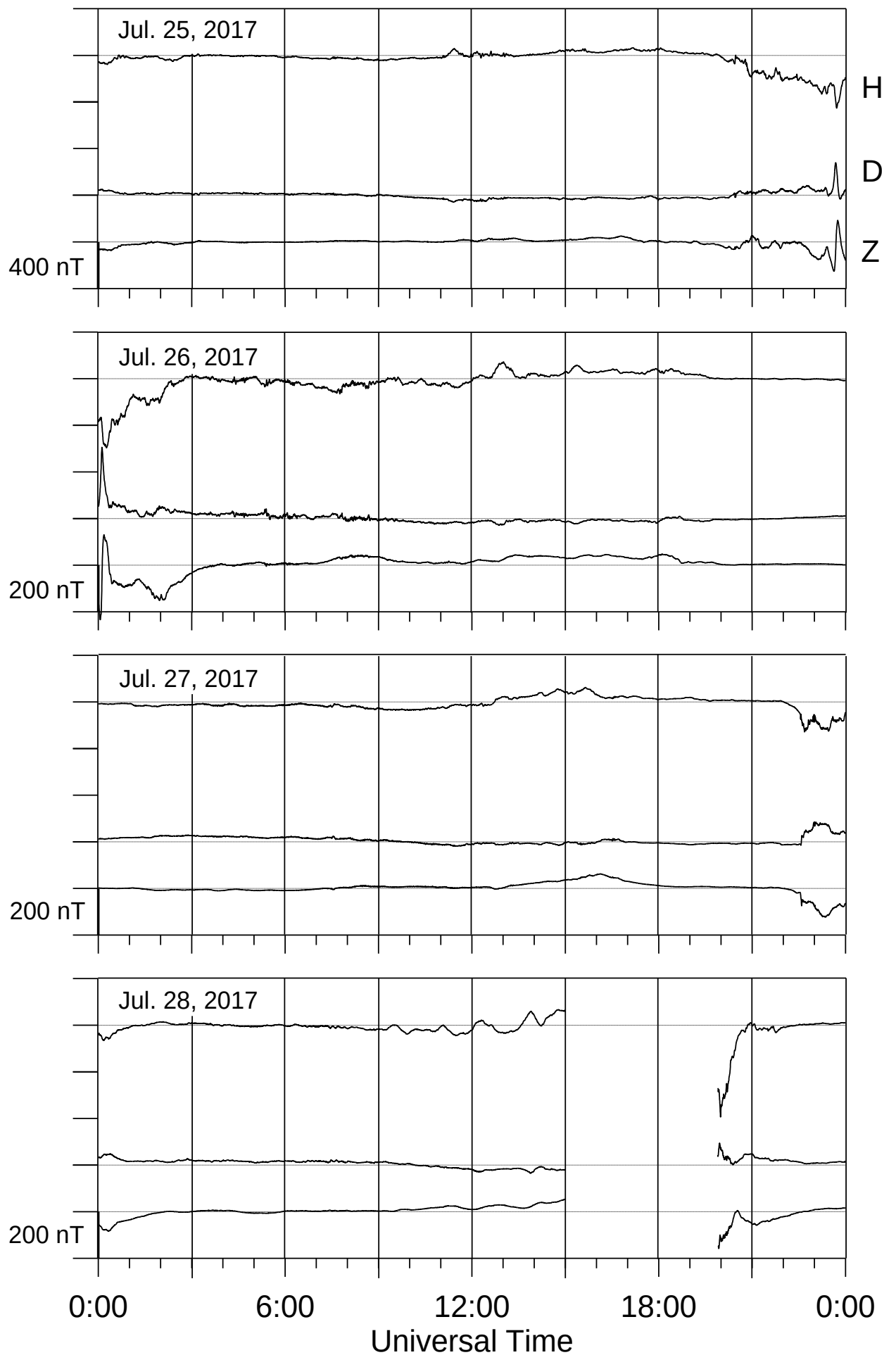
## Lovozero magnetometer



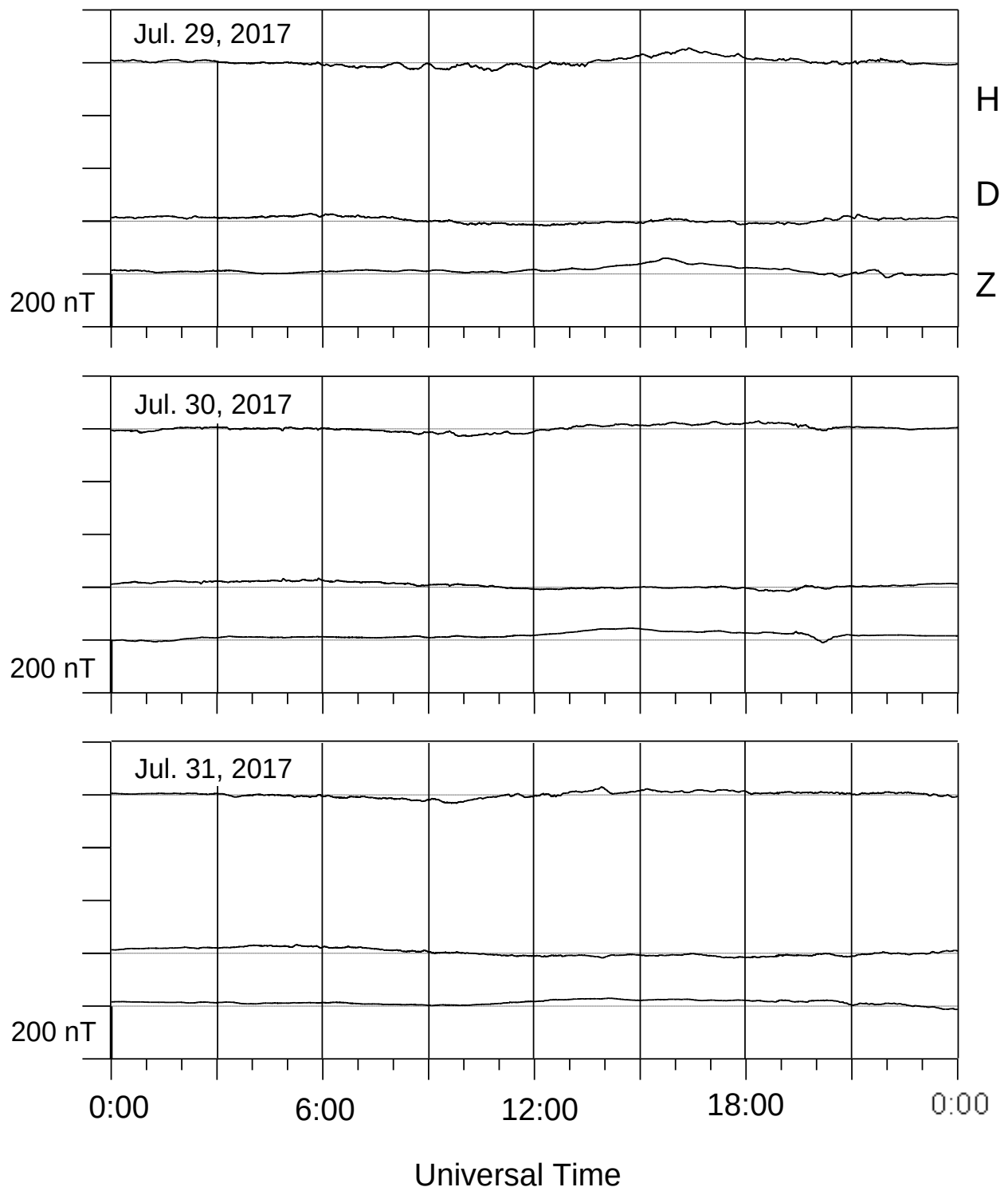
## Lovozero magnetometer



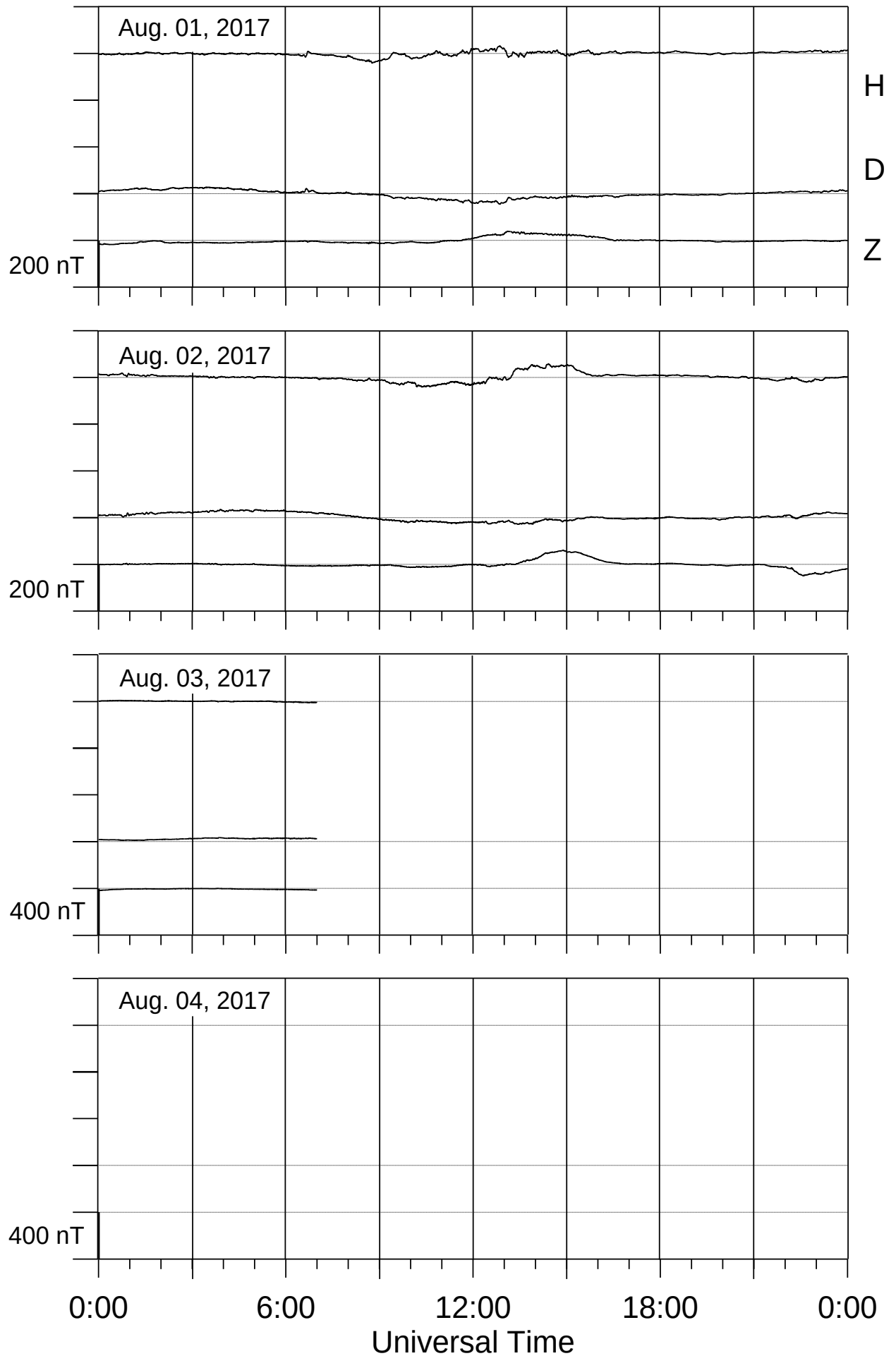
## Lovozero magnetometer



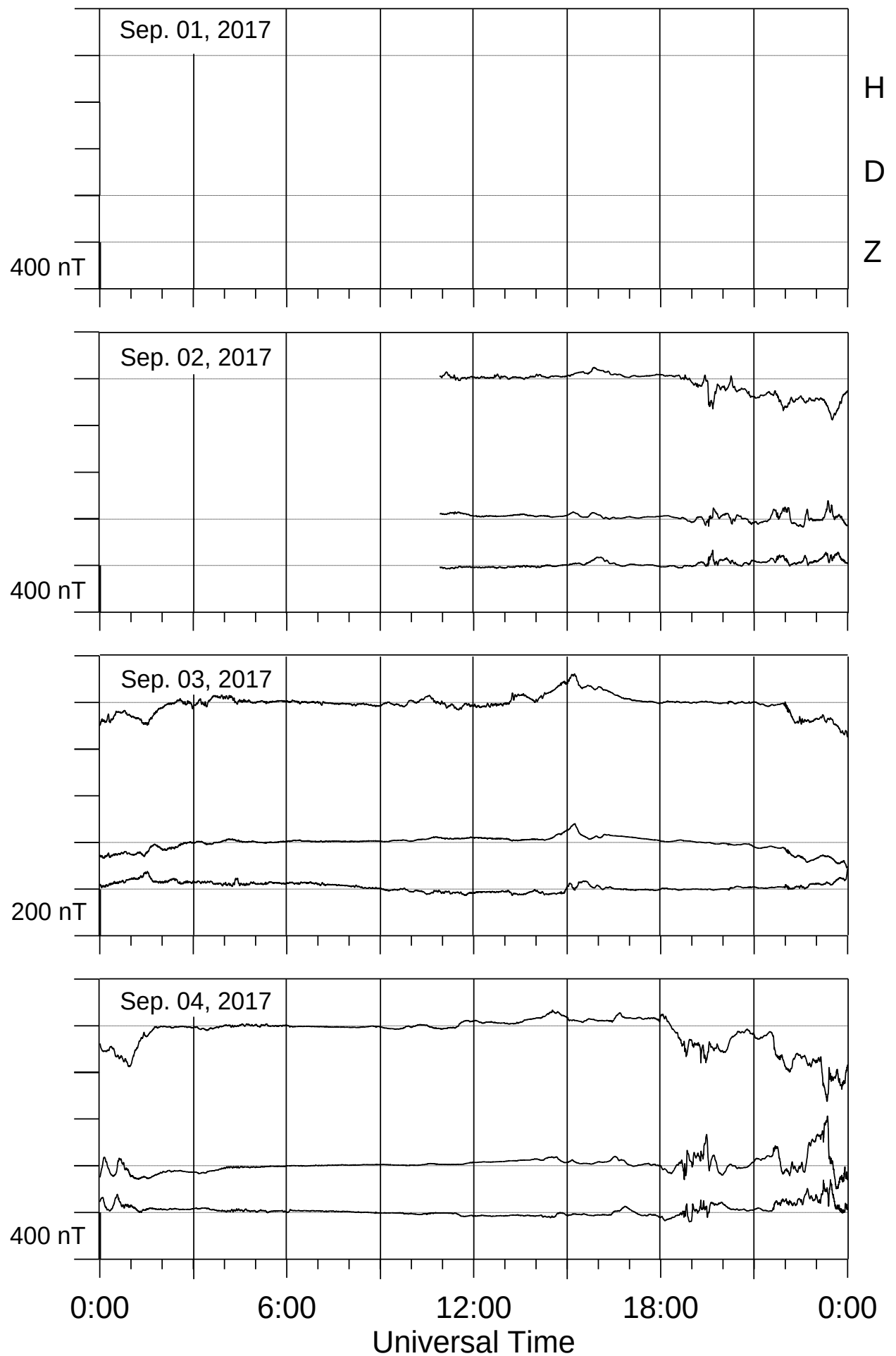
## Lovozero magnetometer



## Lovozero magnetometer

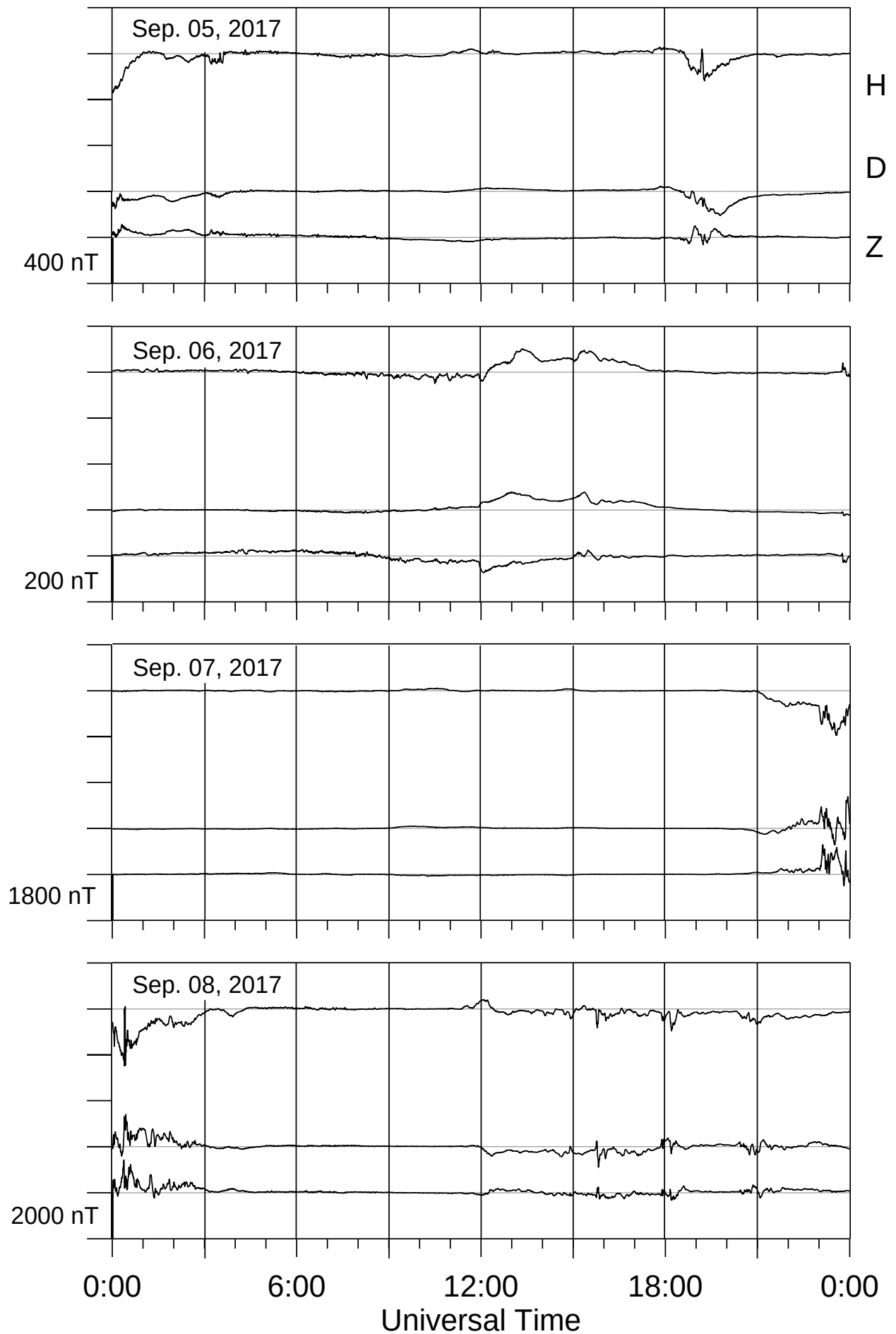


## Lovozero magnetometer

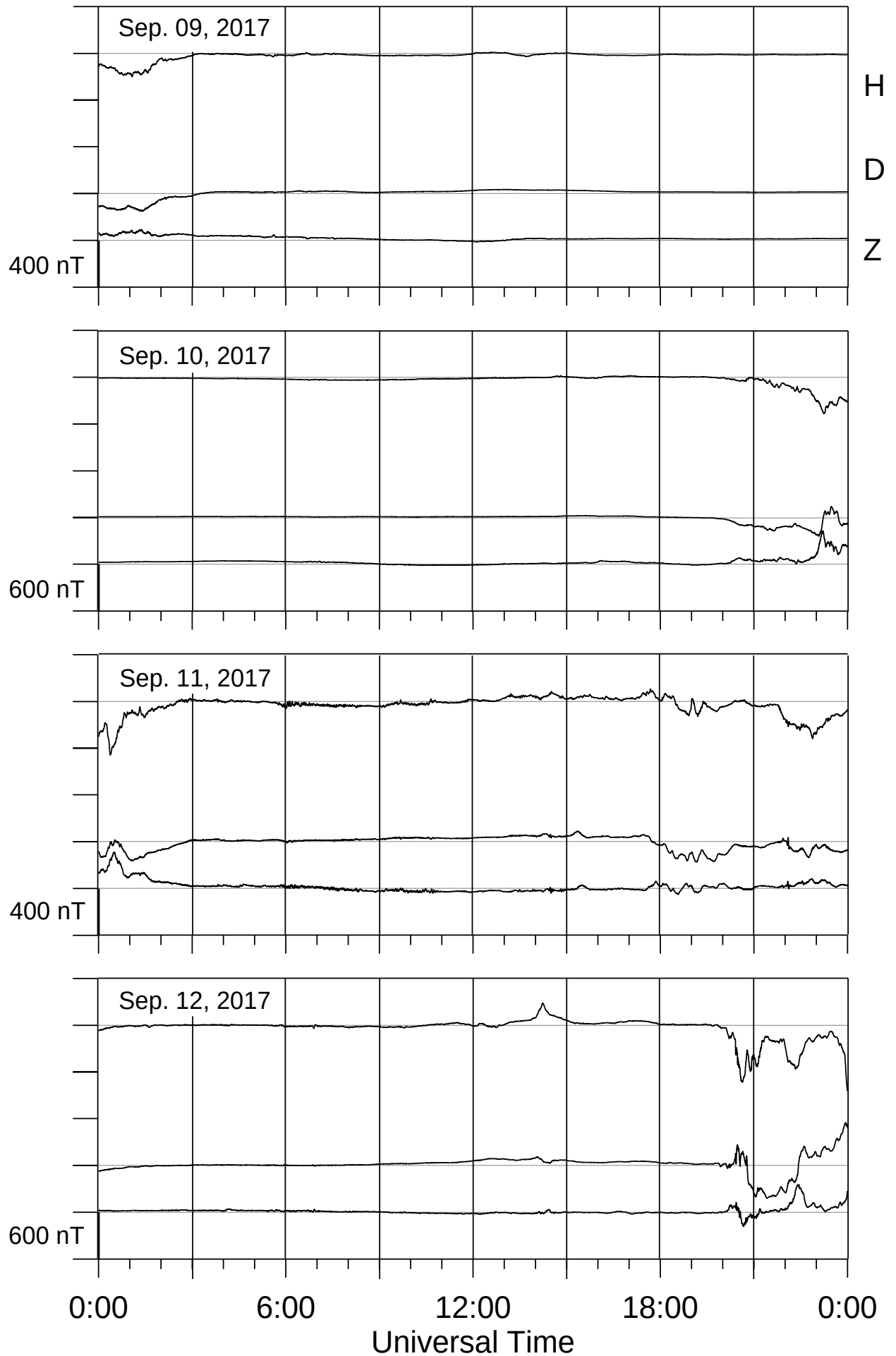




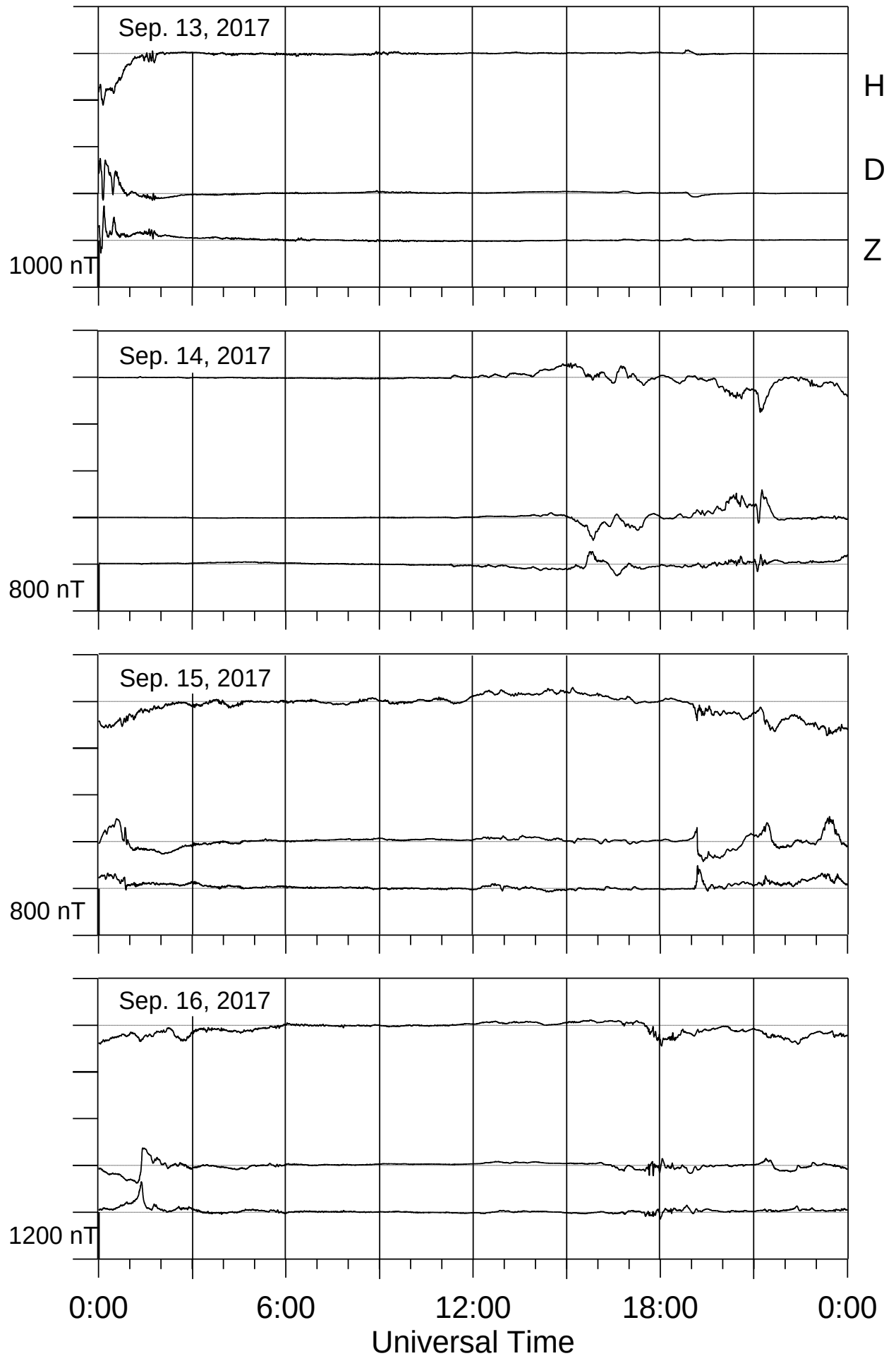
## Lovozero magnetometer



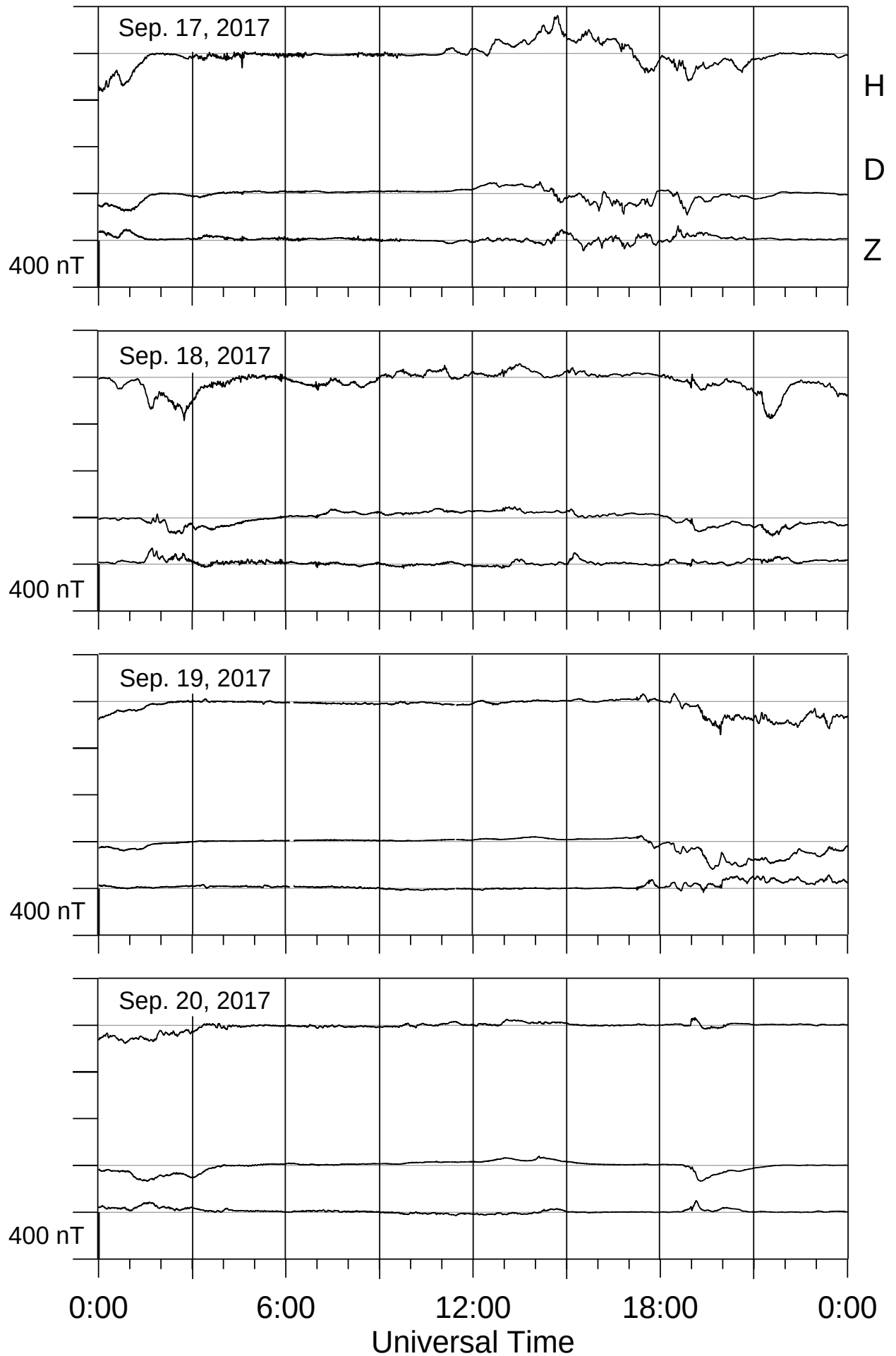
## Lovozero magnetometer



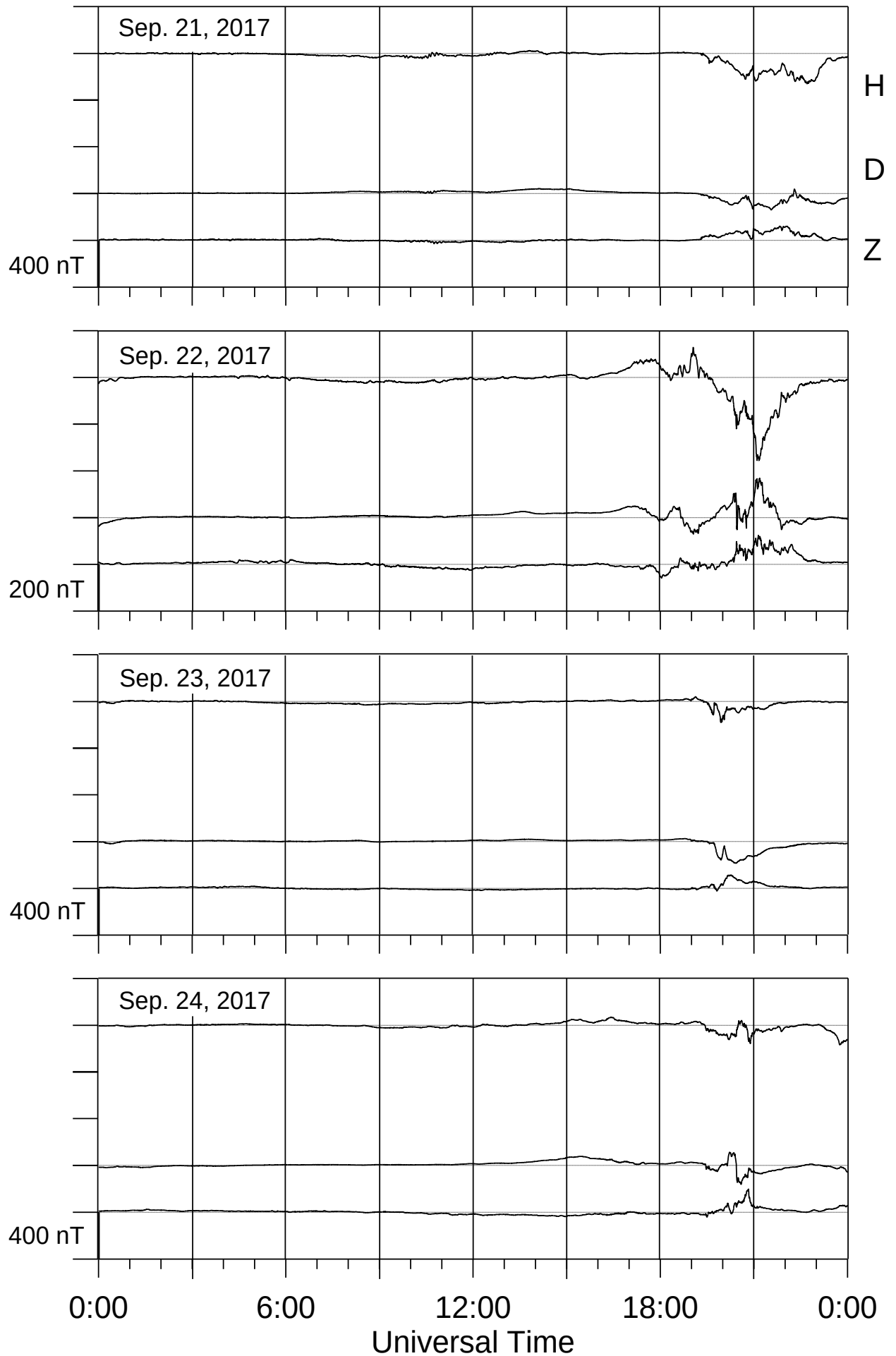
## Lovozero magnetometer



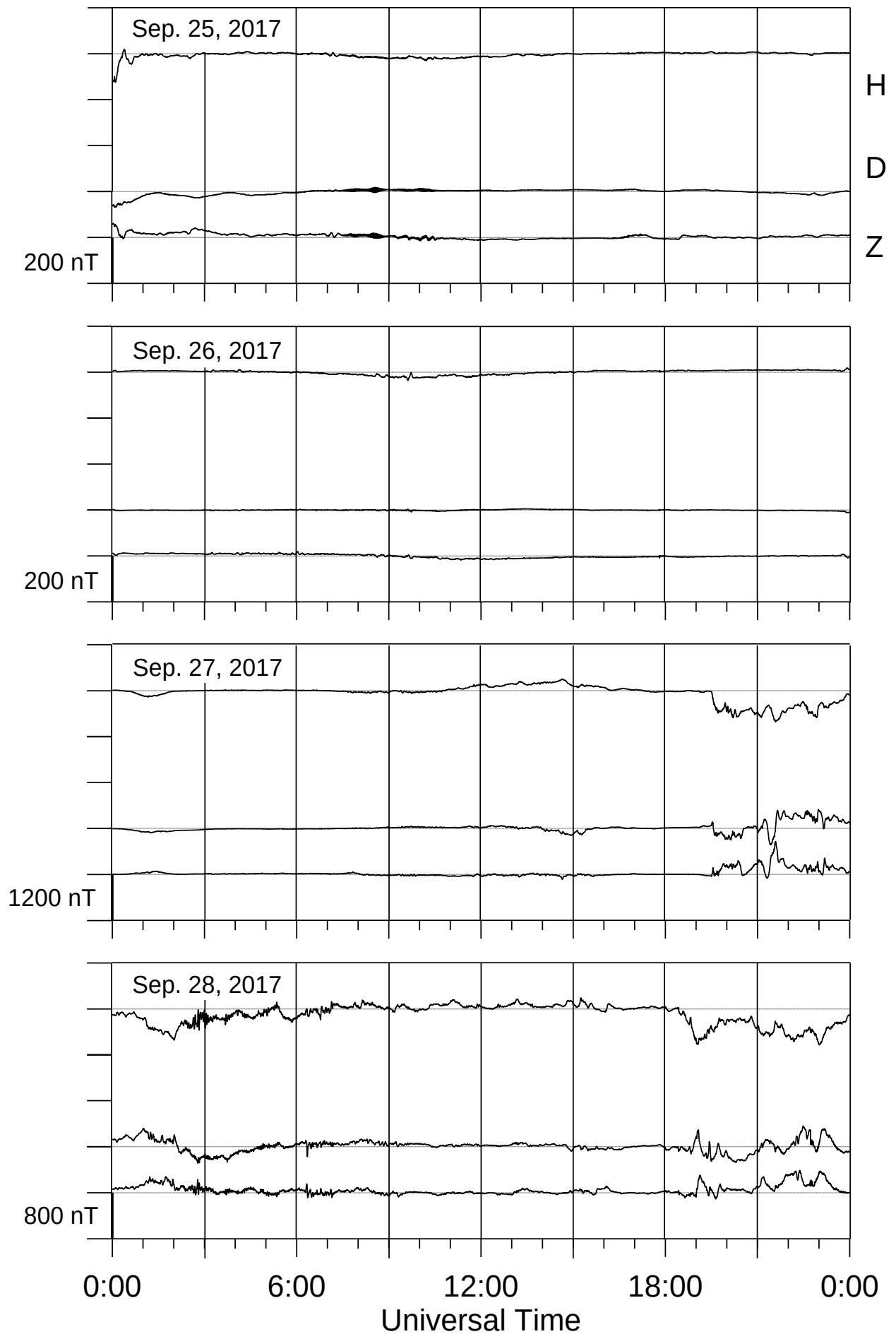
## Lovozero magnetometer



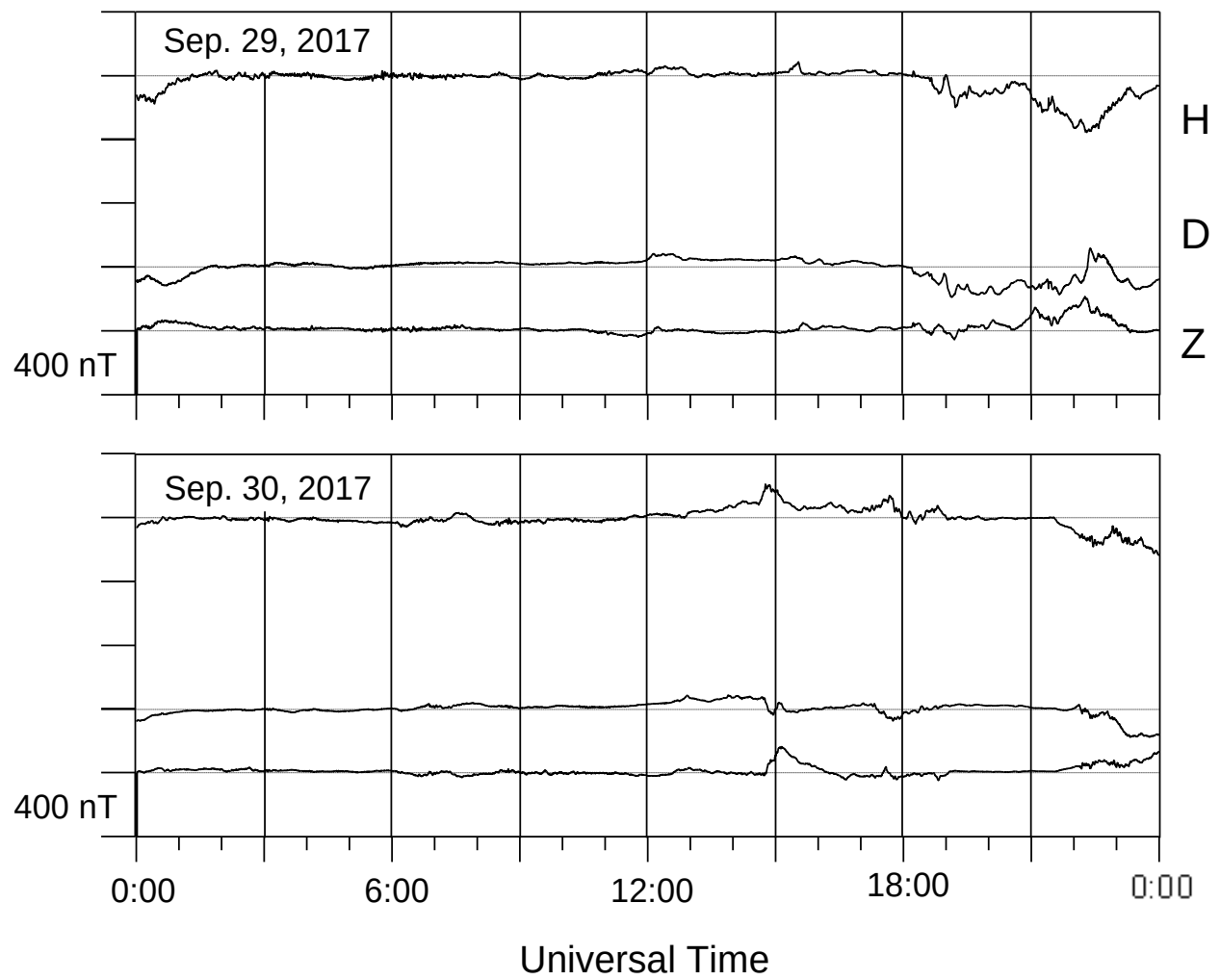
## Lovozero magnetometer



## Lovozero magnetometer



## Lovozero magnetometer

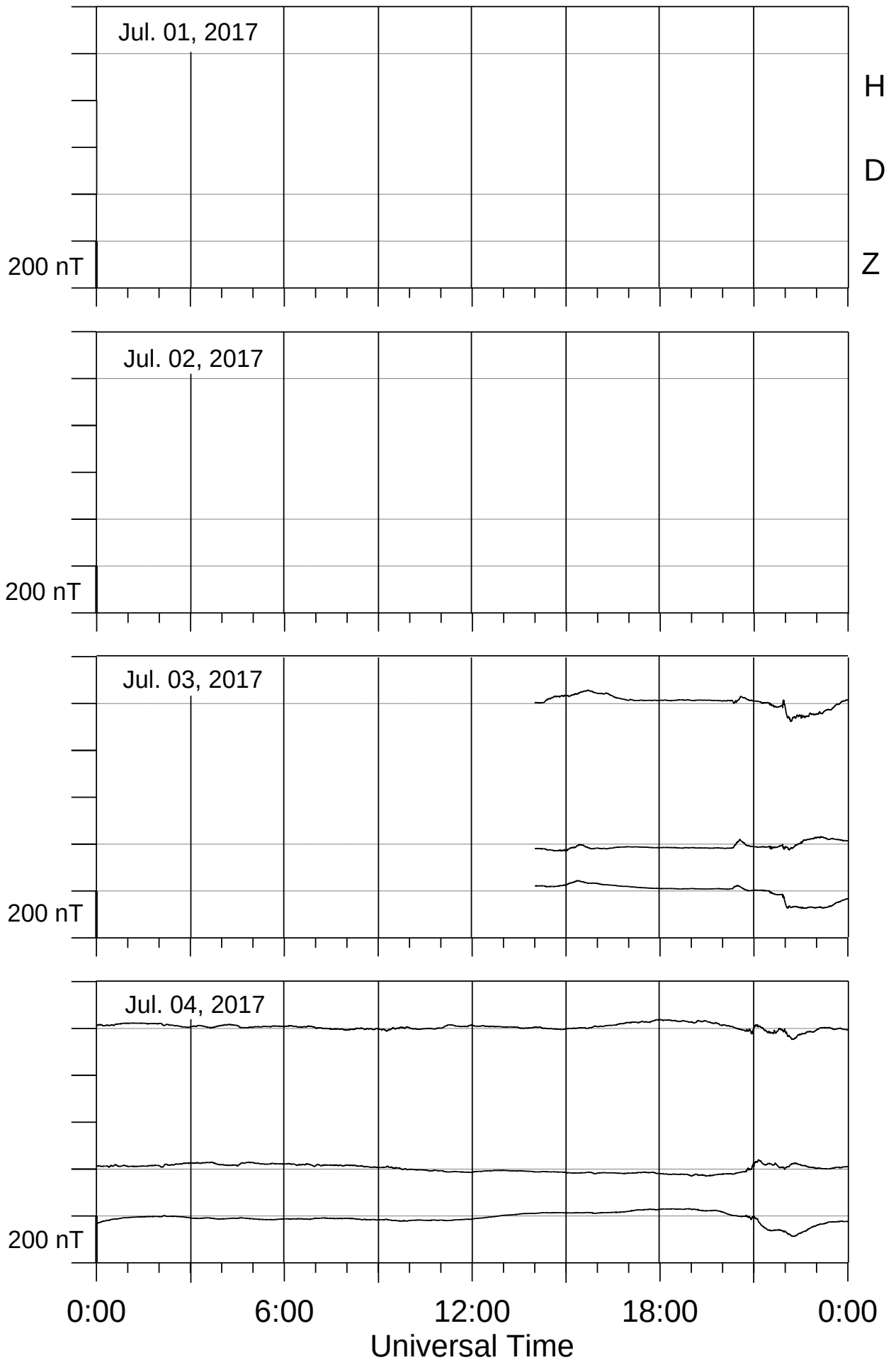


## **LOPARSKAYA MAGNETOGRAMS**

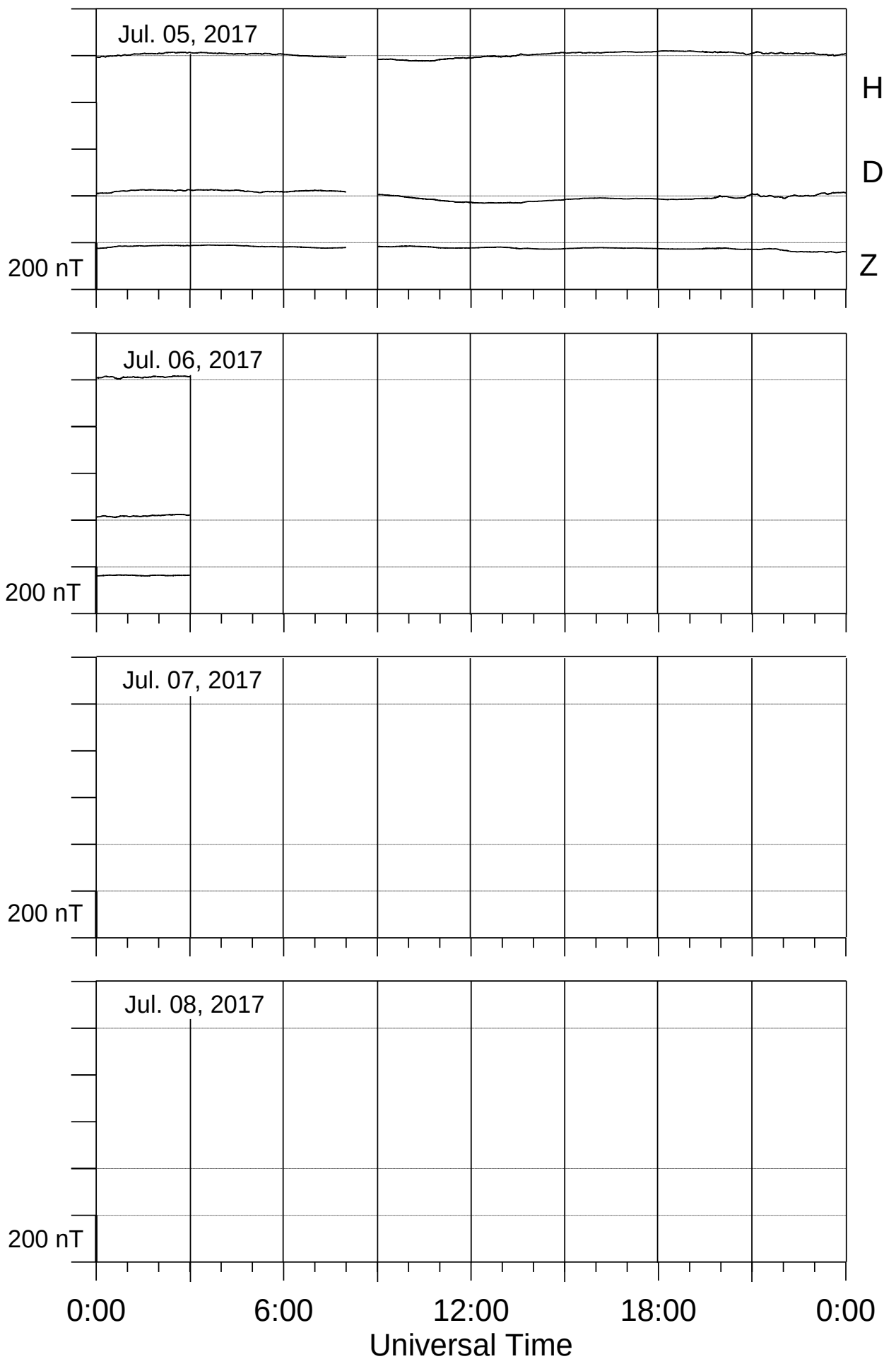
**July - September 2017**



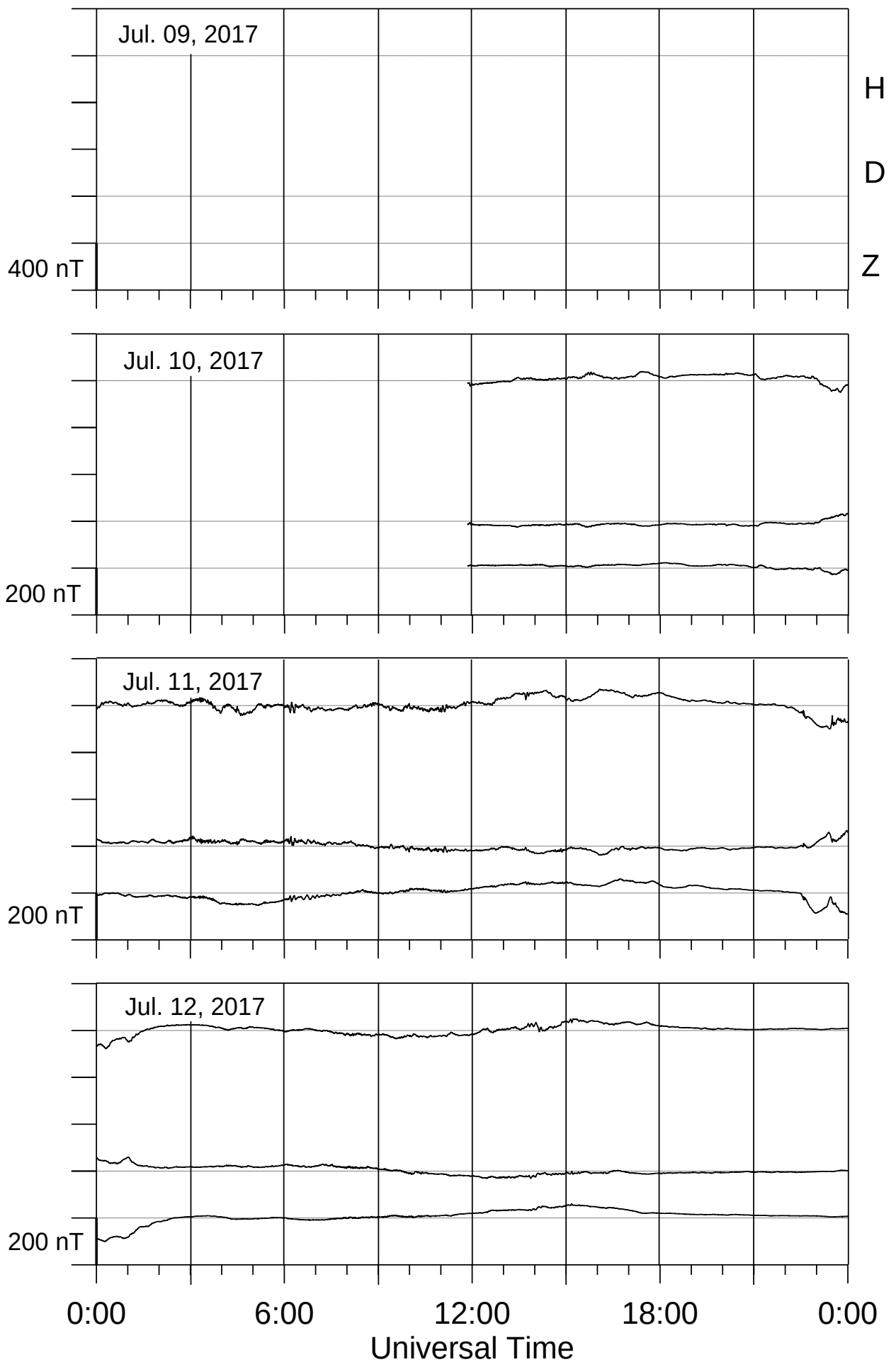
## Loparskaya magnetometer



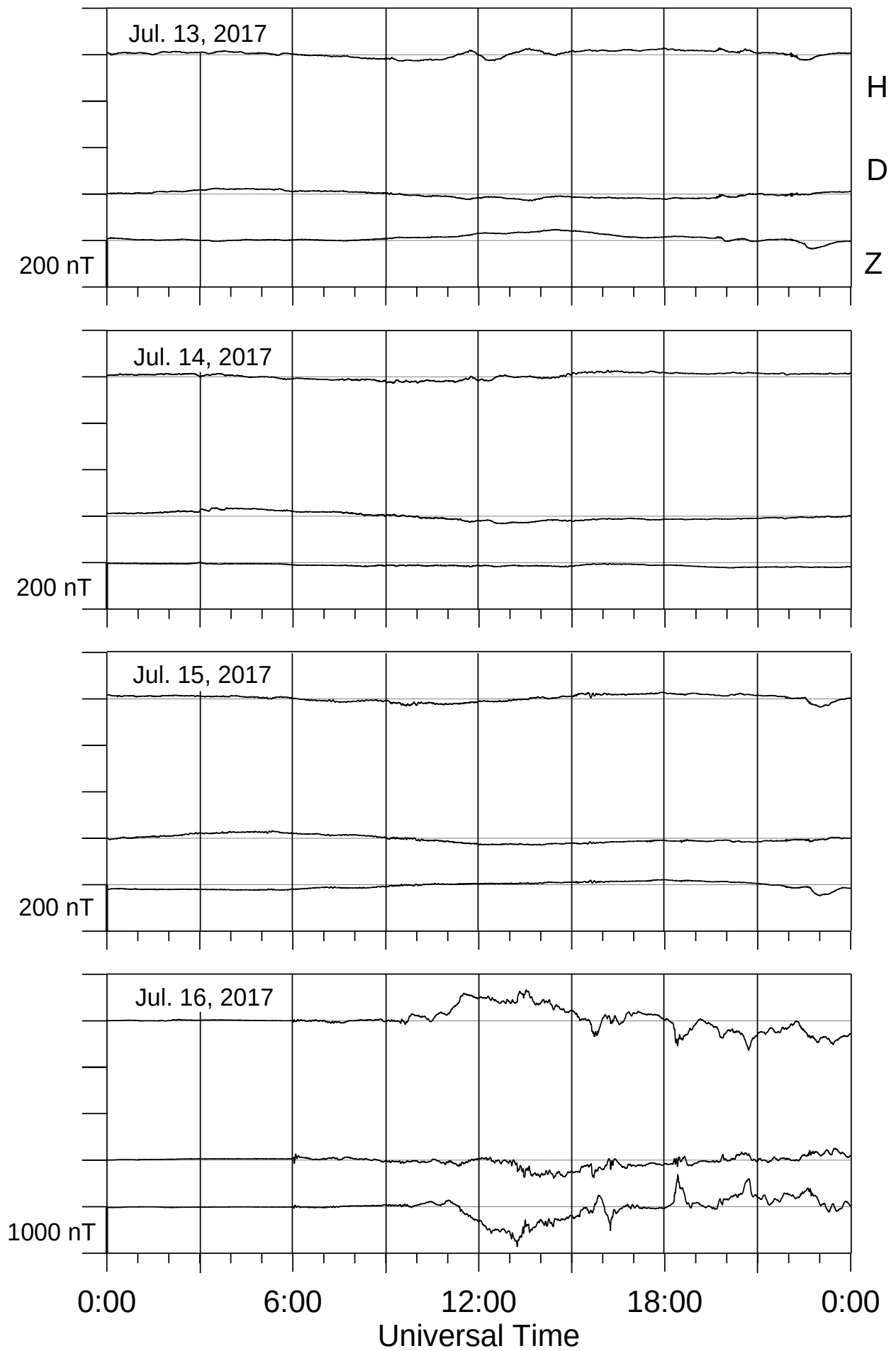
## Loparskaya magnetometer



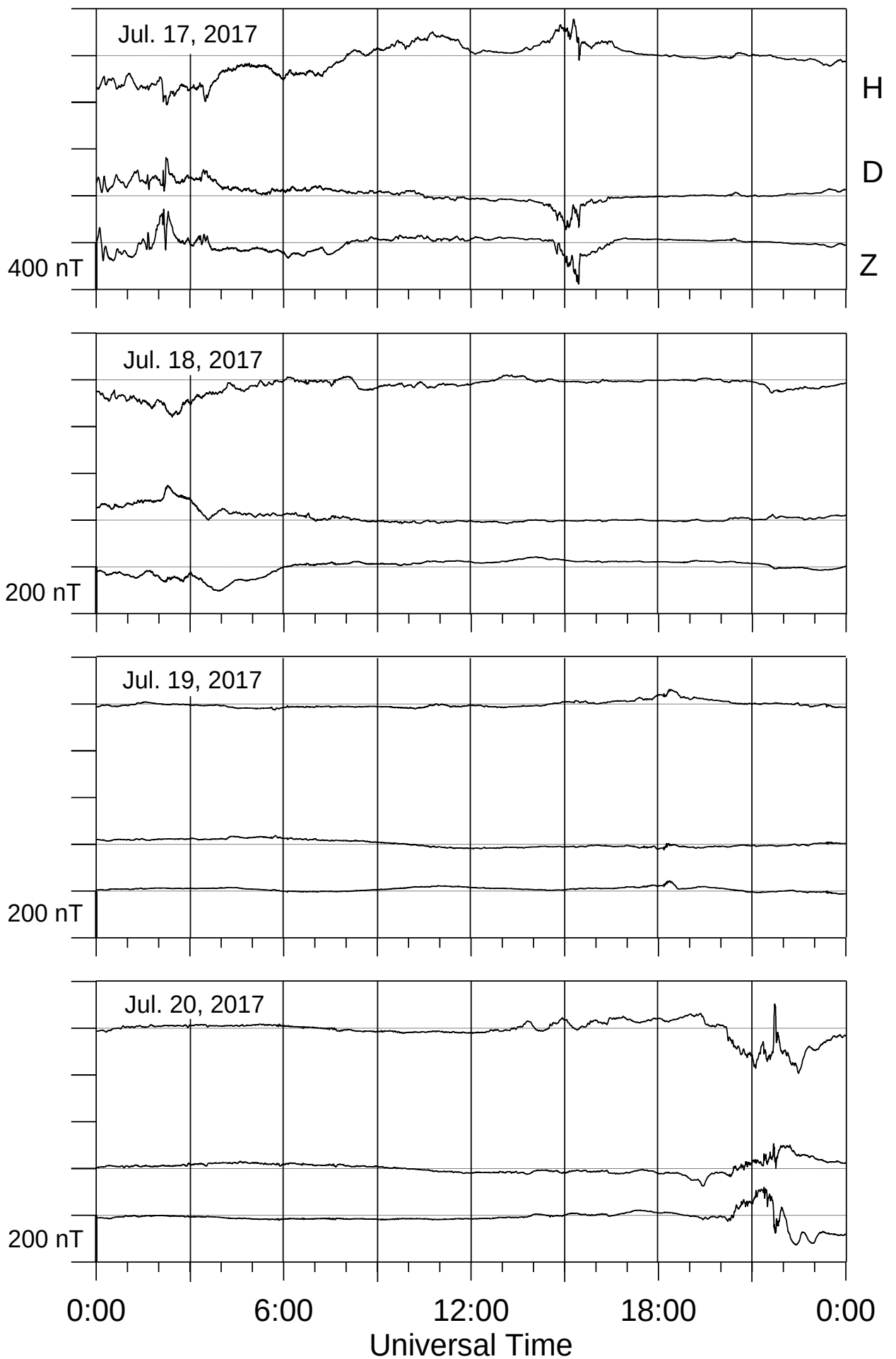
## Loparskaya magnetometer



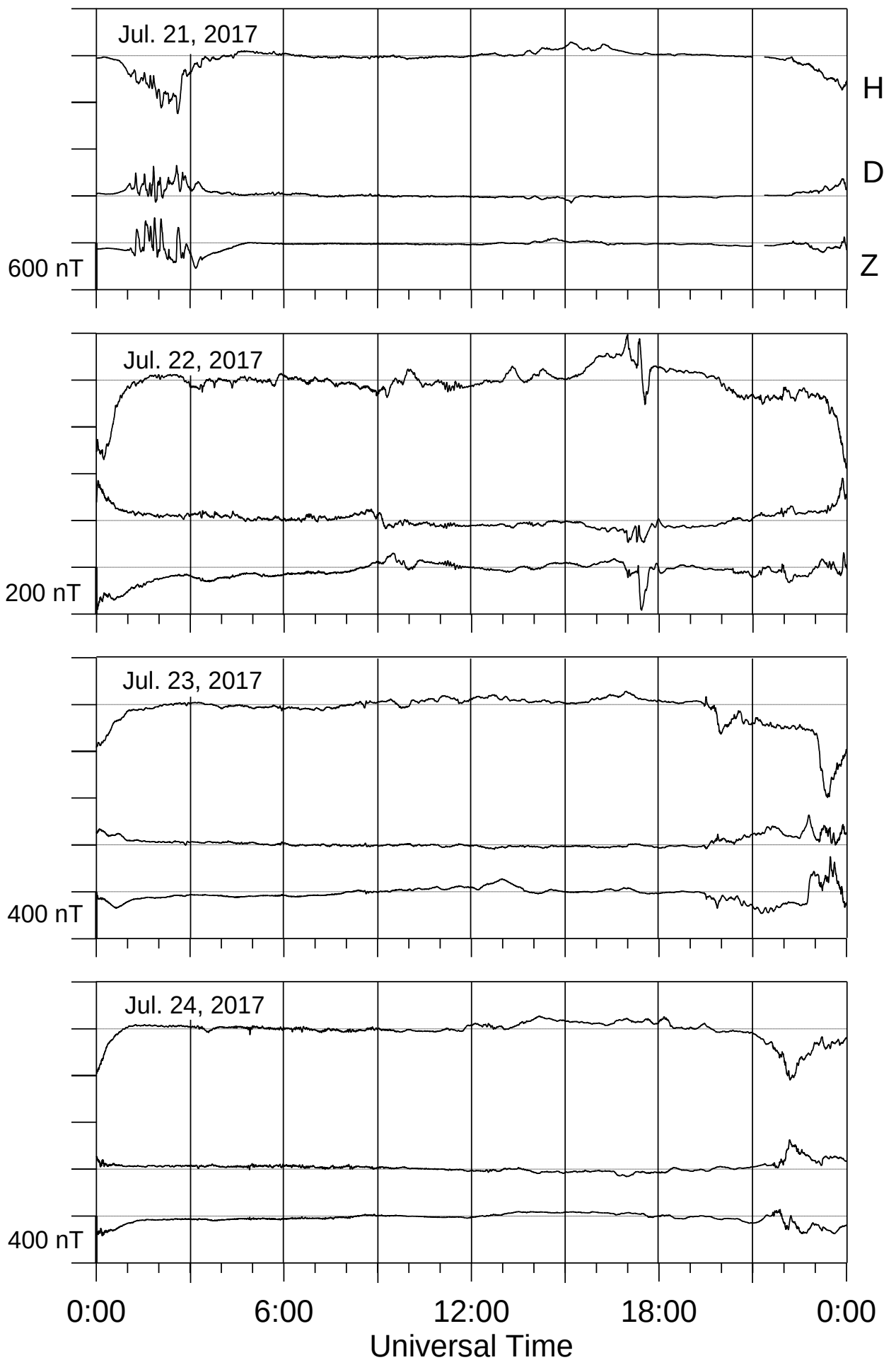
## Loparskaya magnetometer



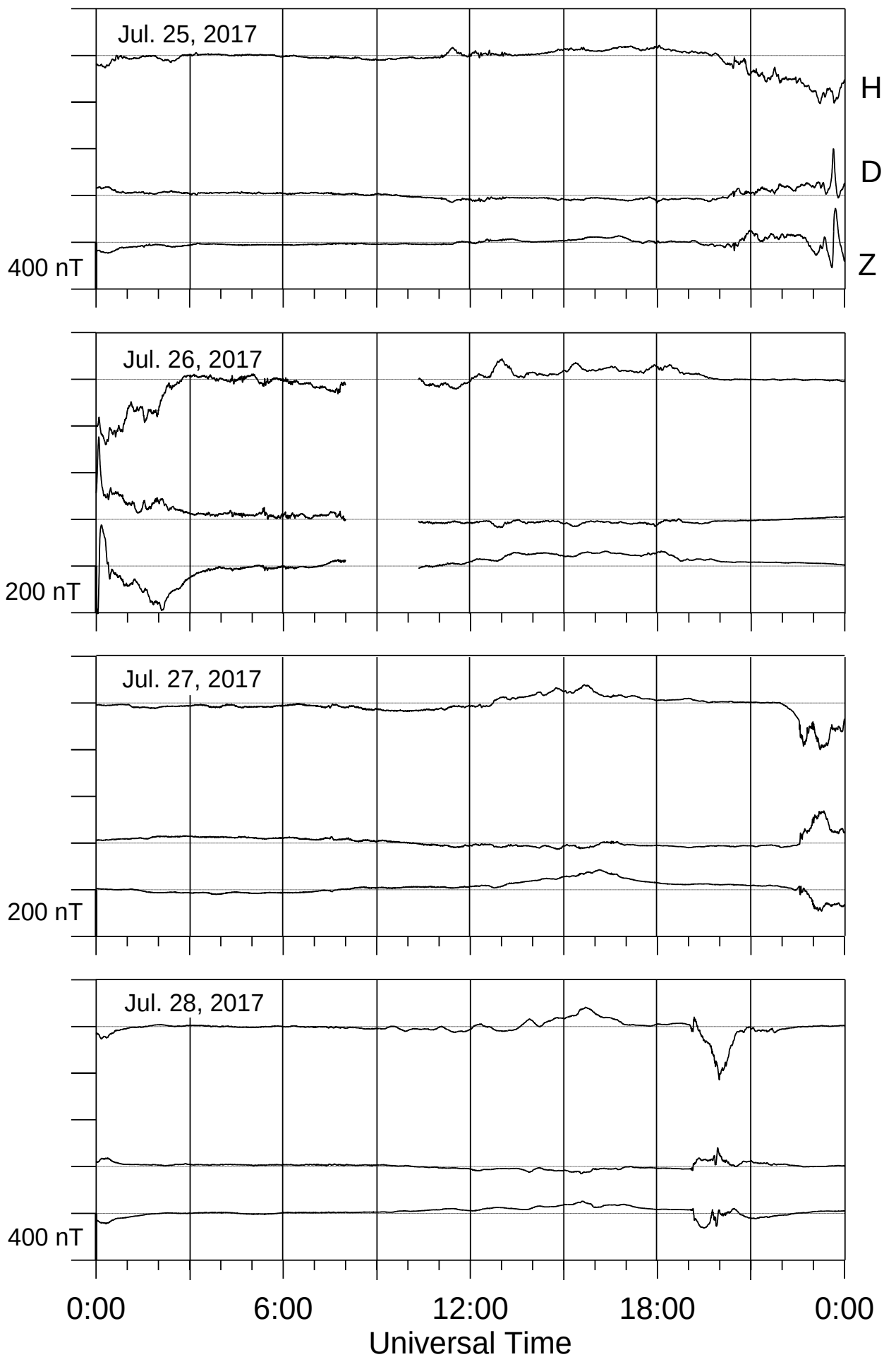
## Loparskaya magnetometer



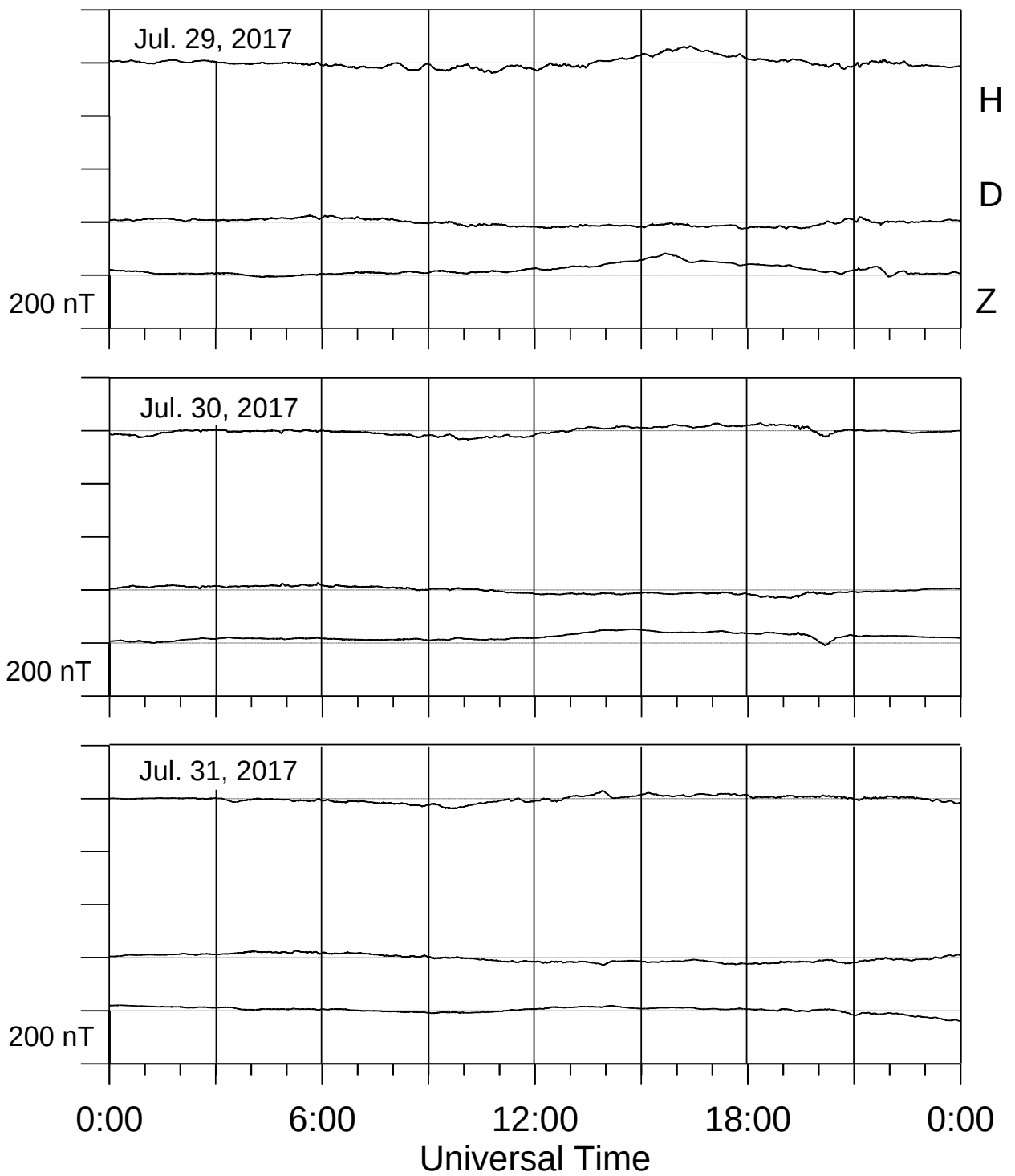
## Loparskaya magnetometer



## Loparskaya magnetometer

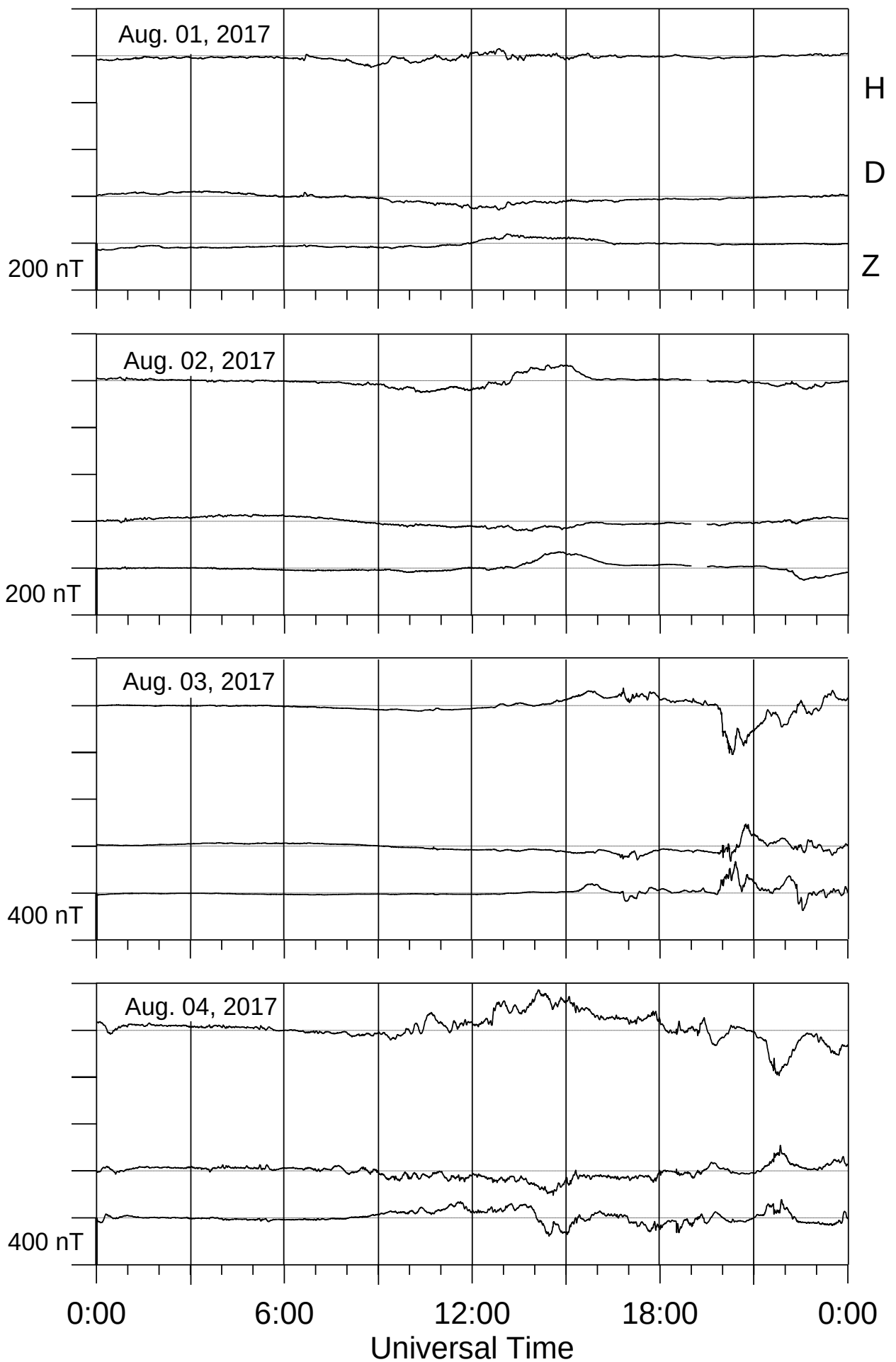


## Loparskaya magnetometer

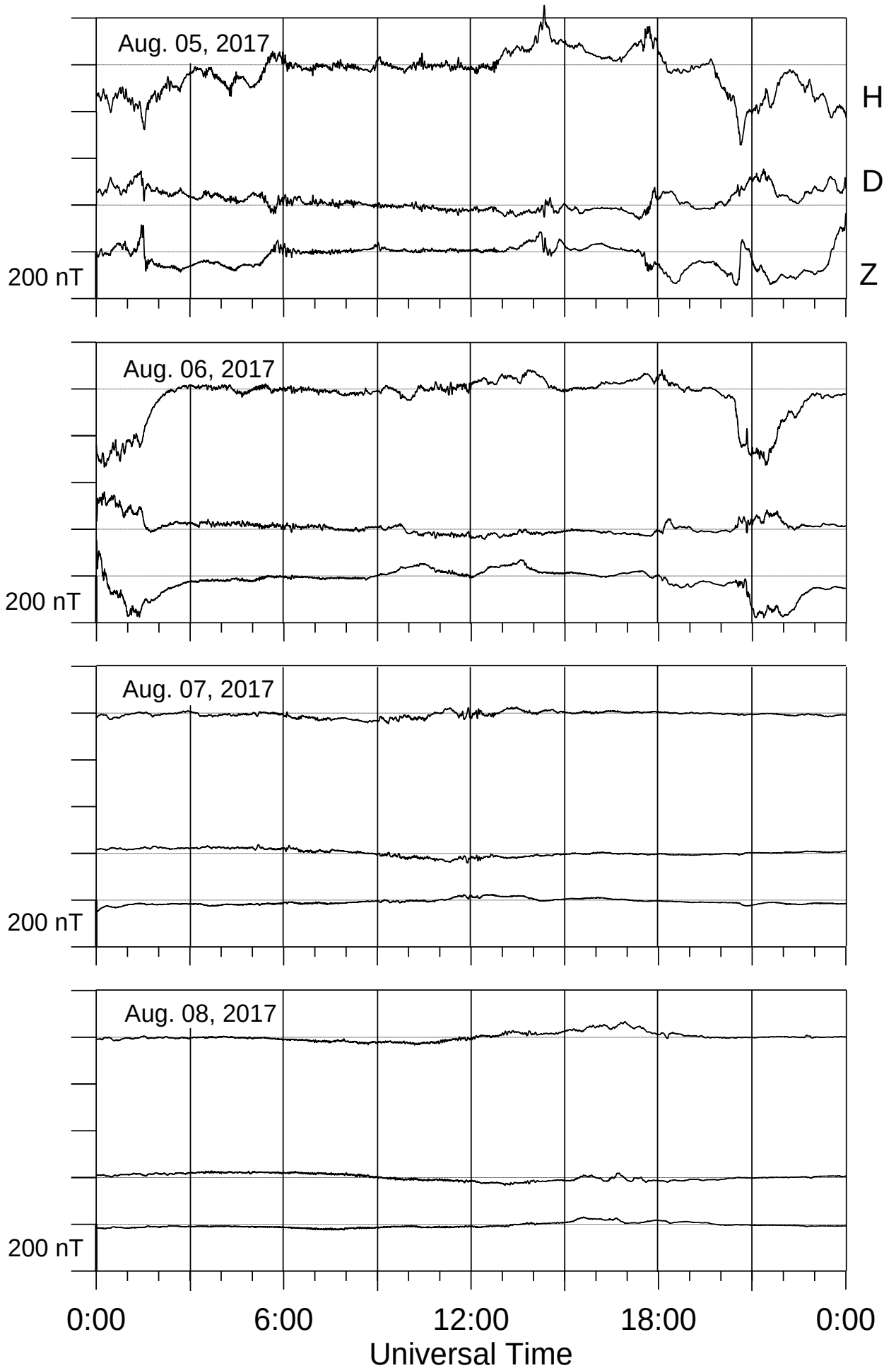




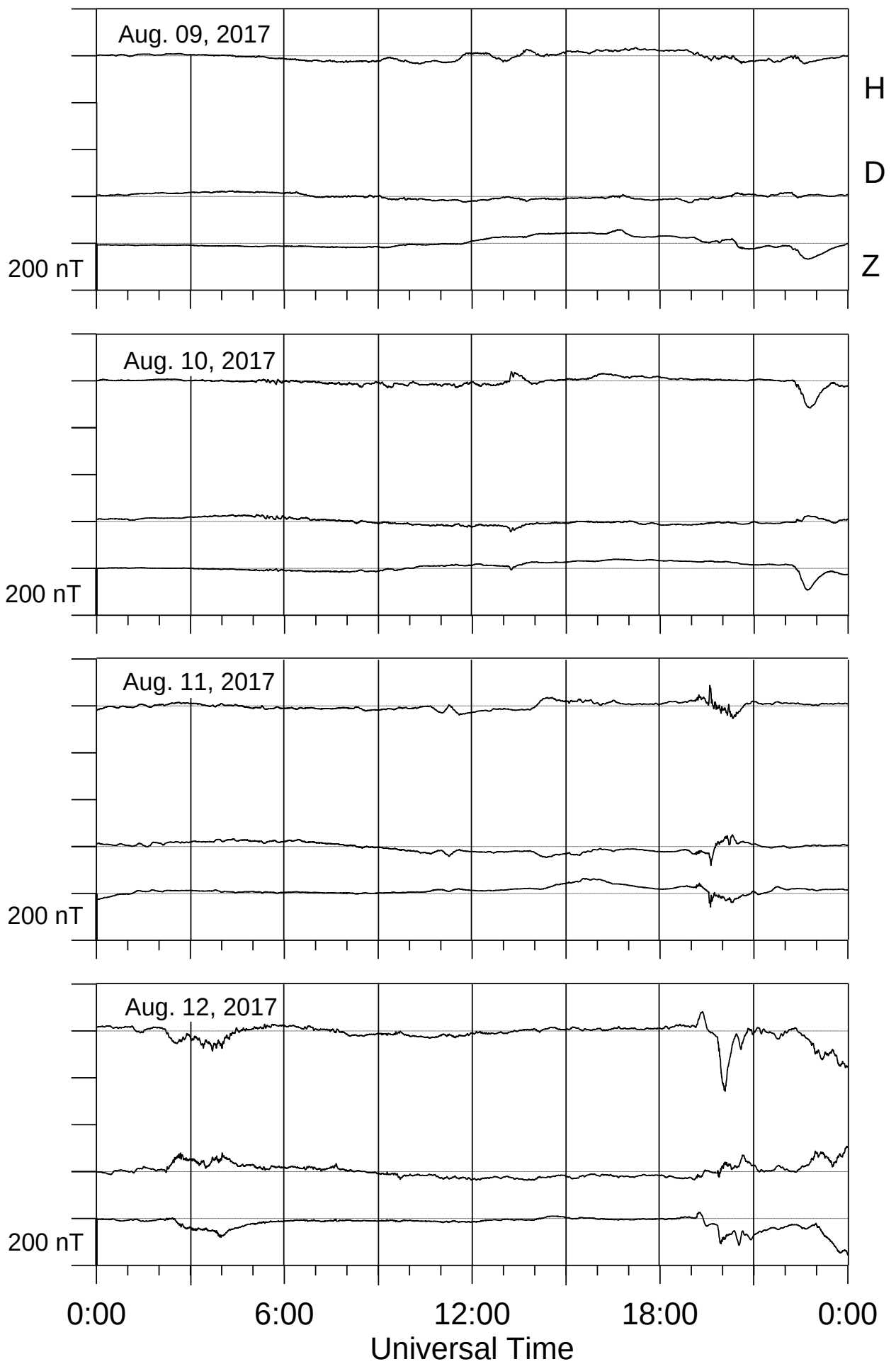
## Loparskaya magnetometer



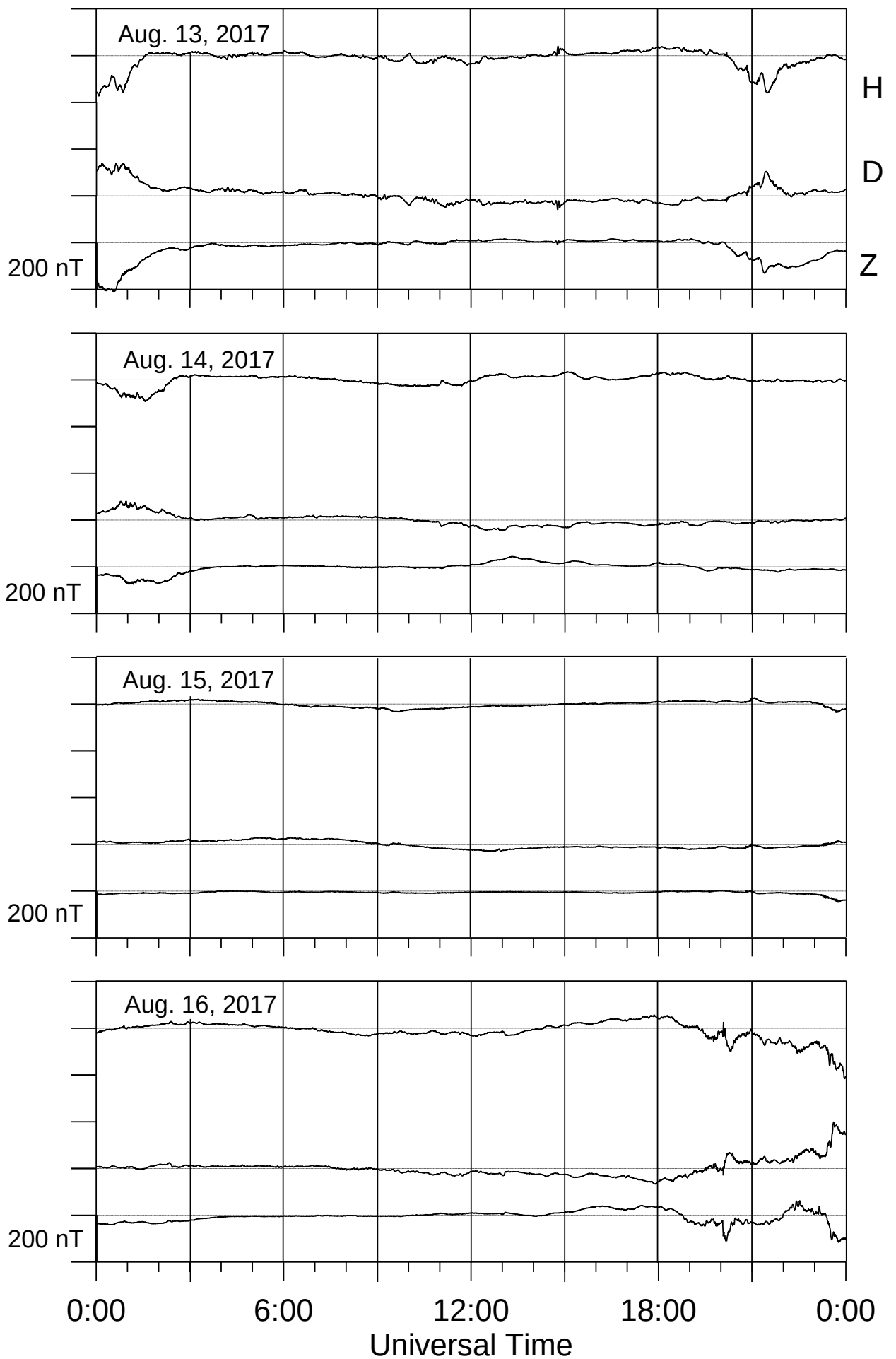
## Loparskaya magnetometer



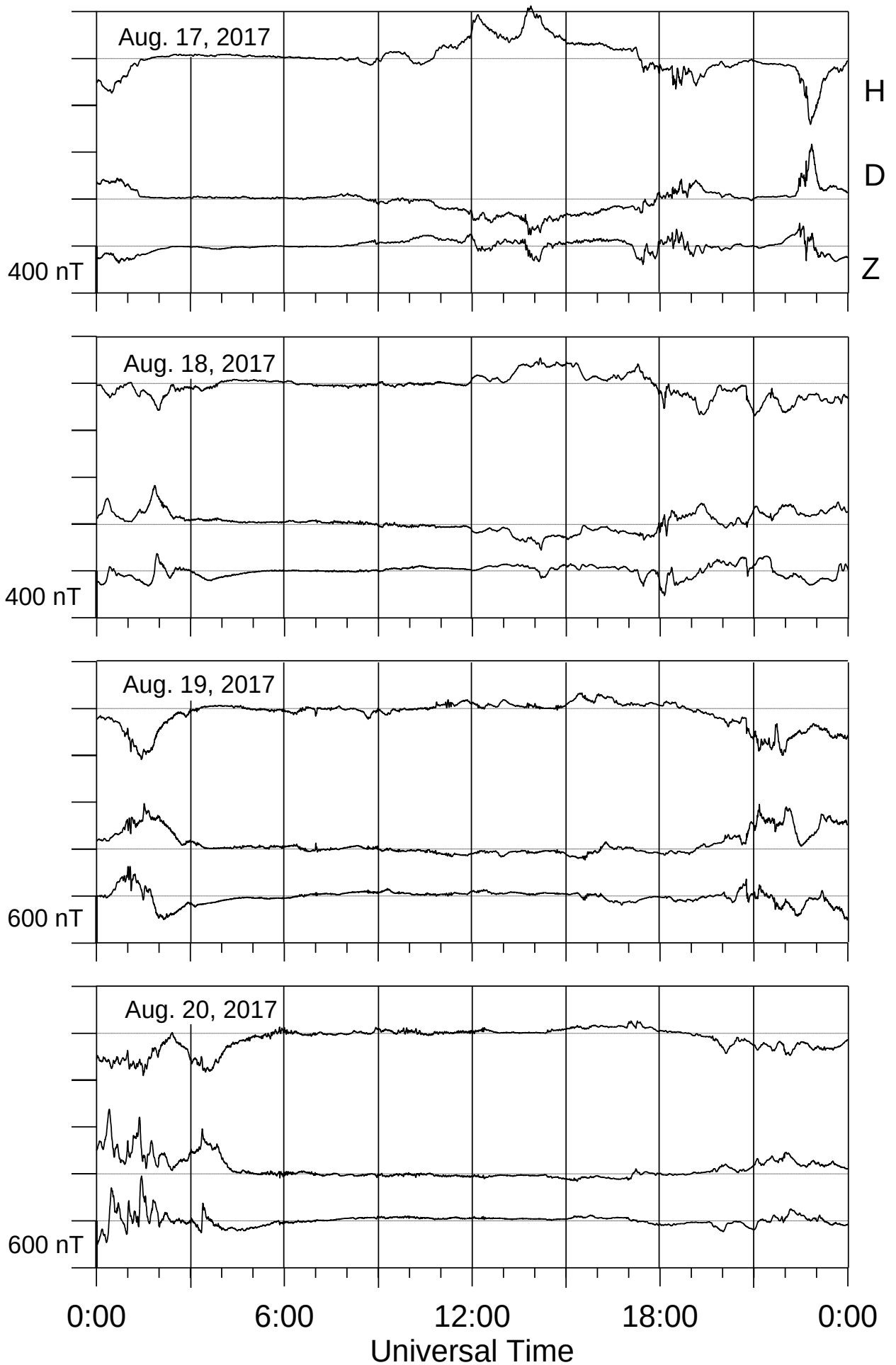
## Loparskaya magnetometer



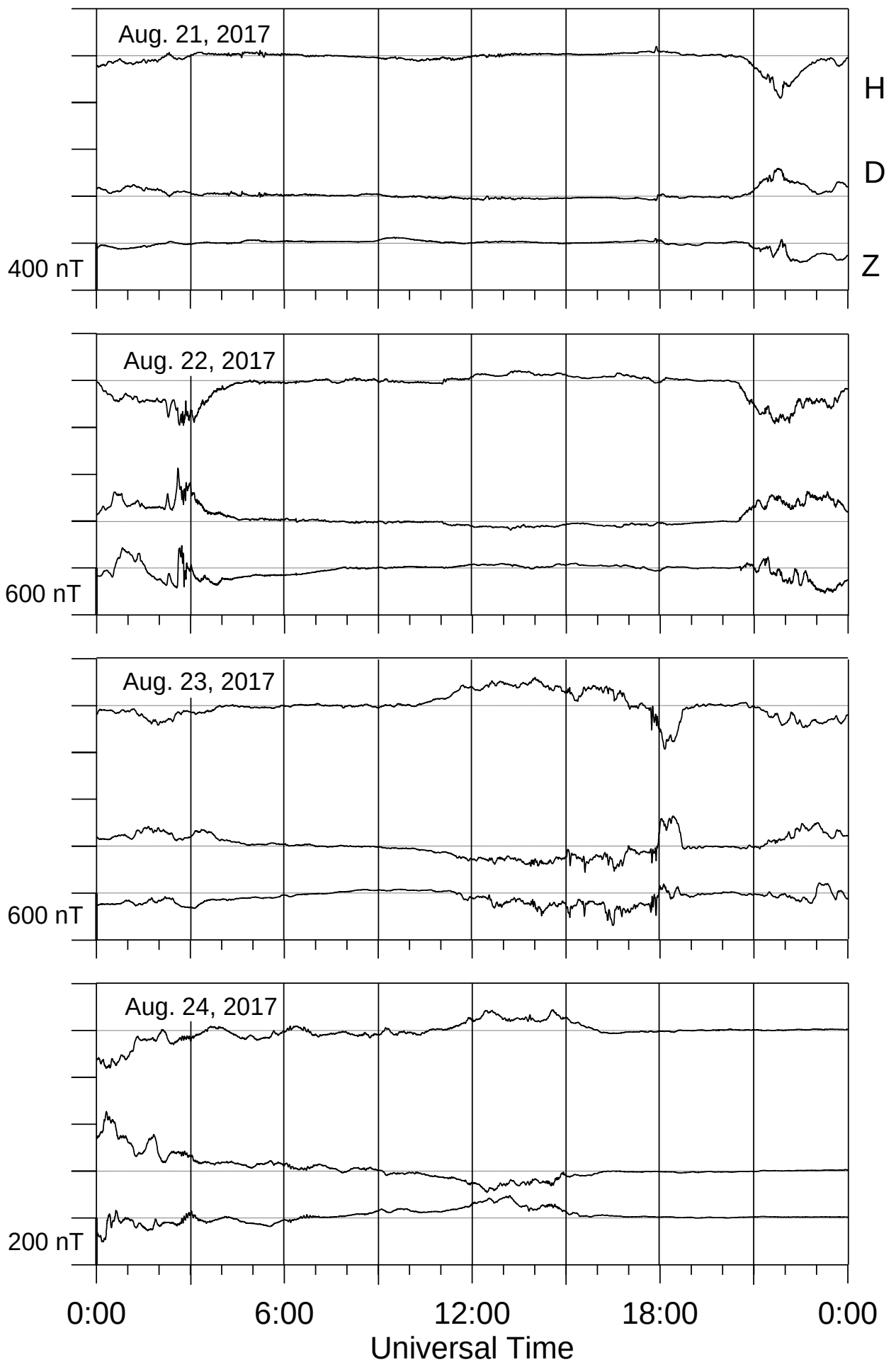
## Loparskaya magnetometer



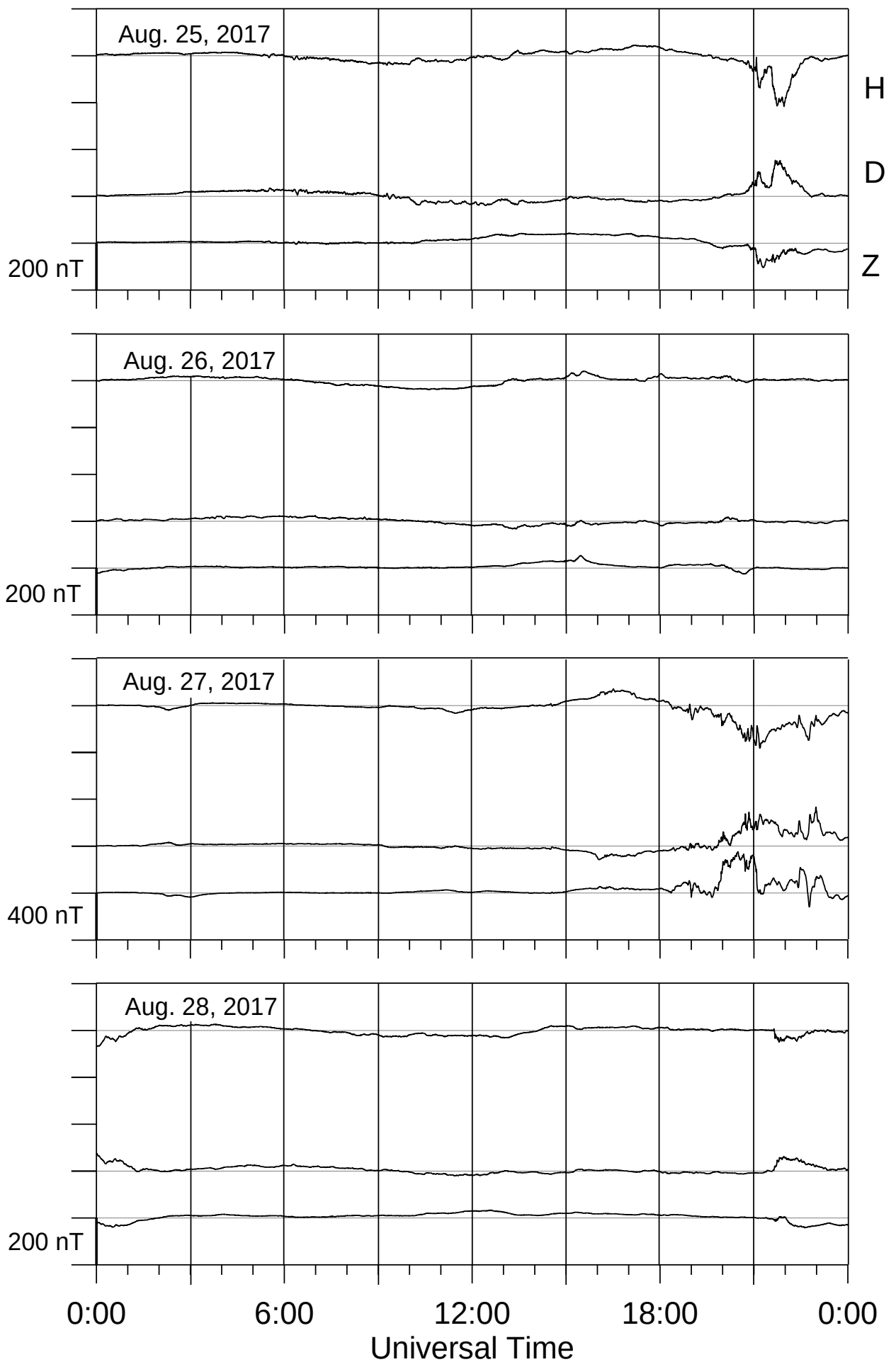
## Loparskaya magnetometer



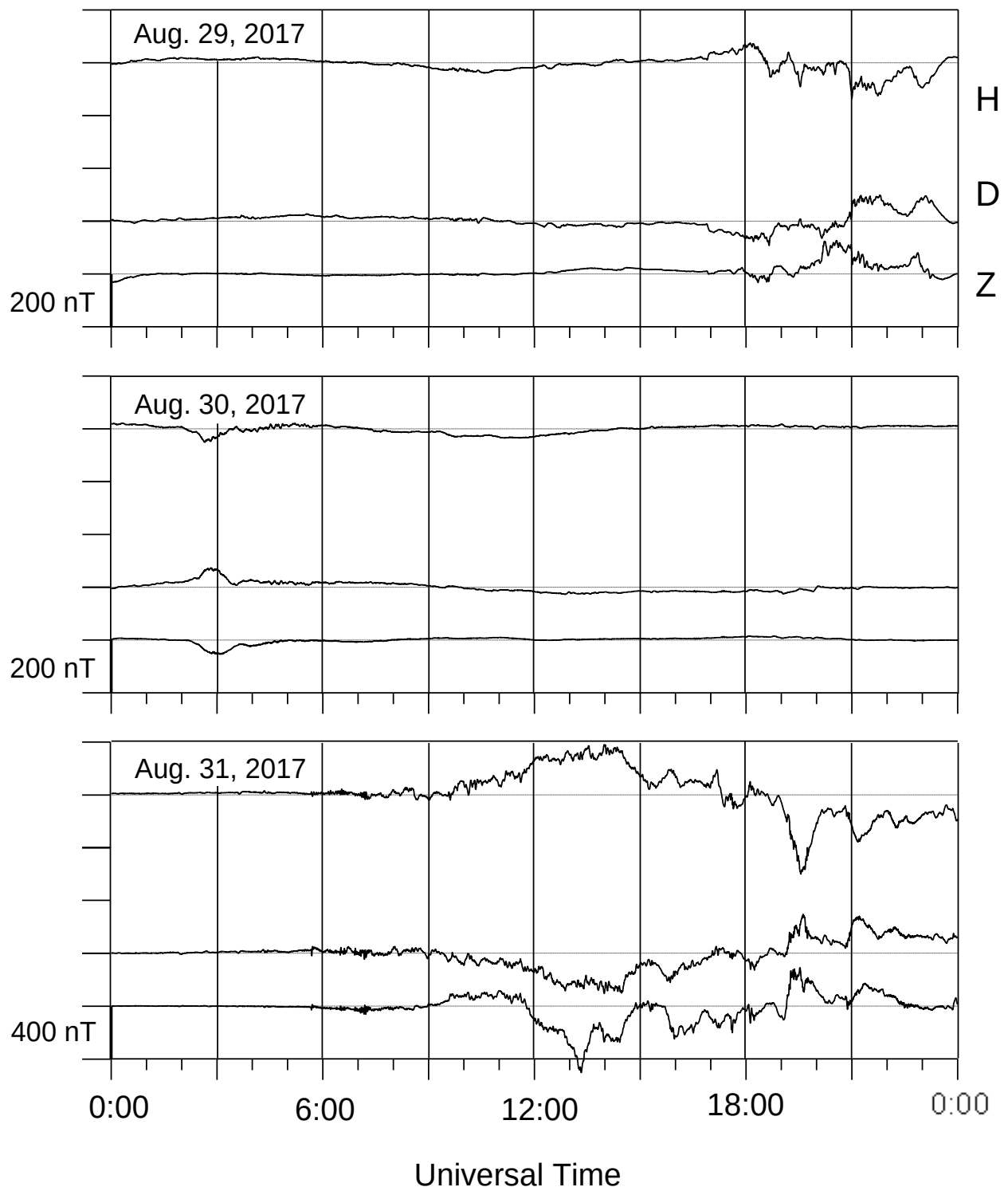
## Loparskaya magnetometer



## Loparskaya magnetometer

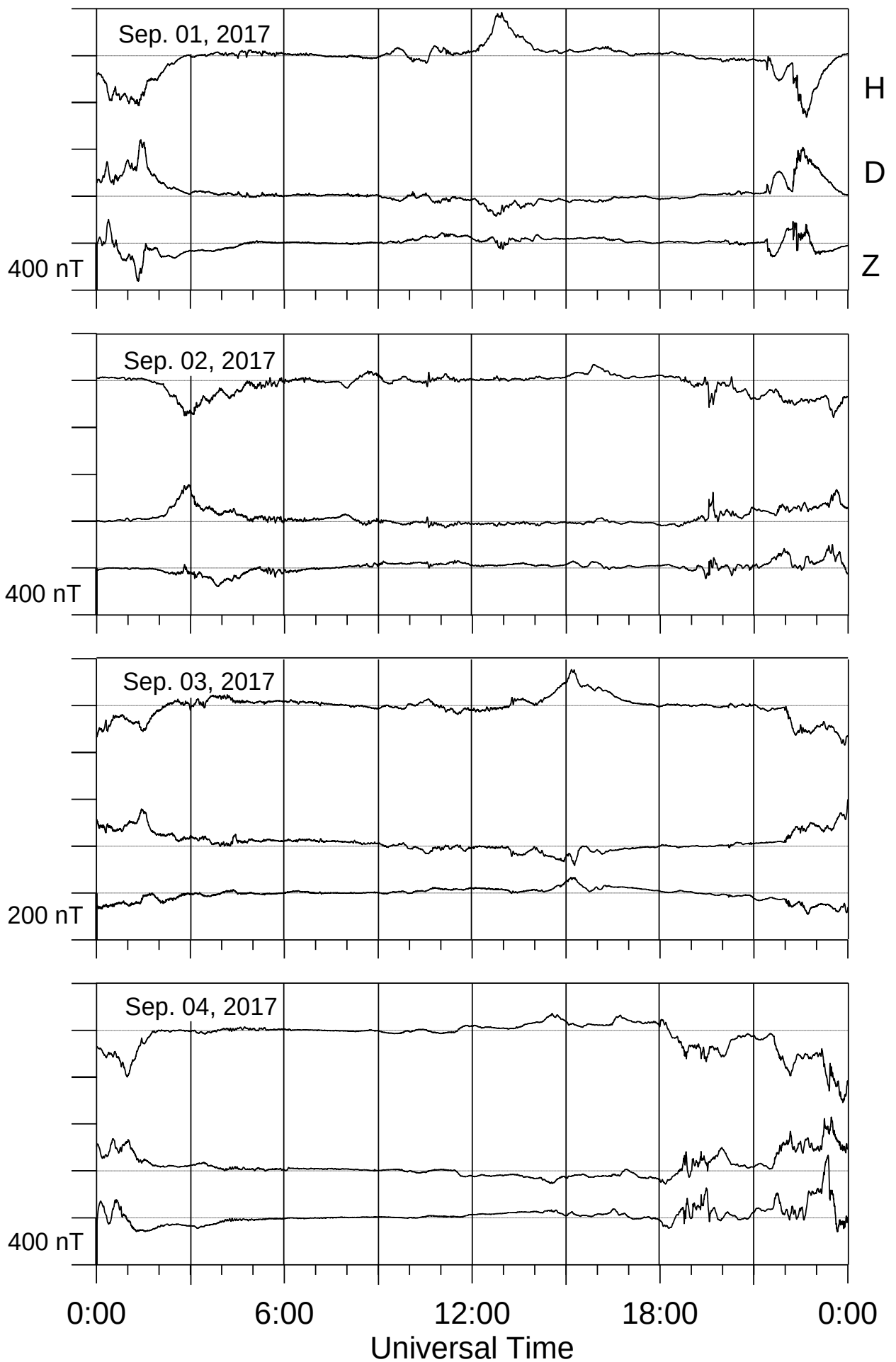


## Loparskay magnetometer

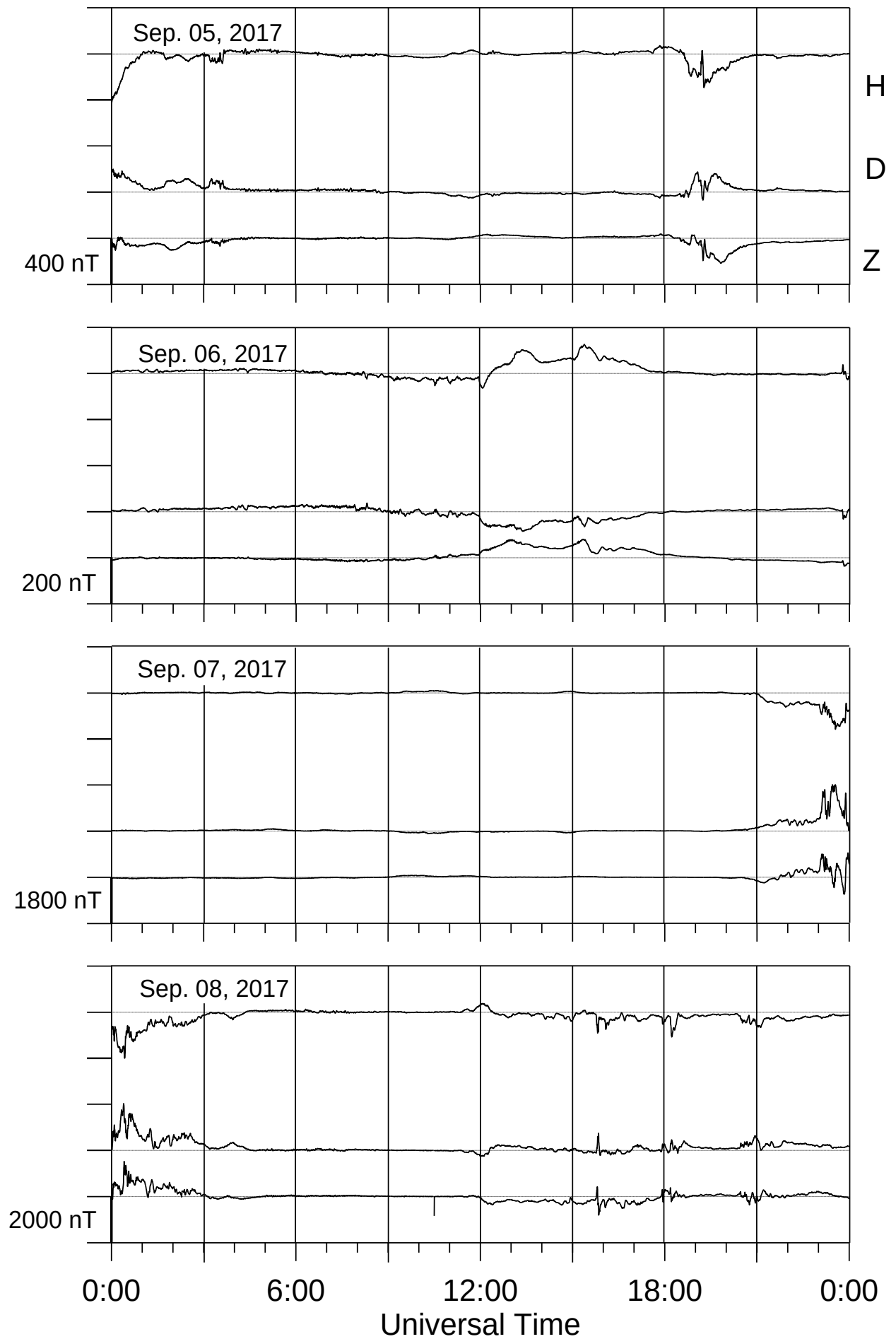




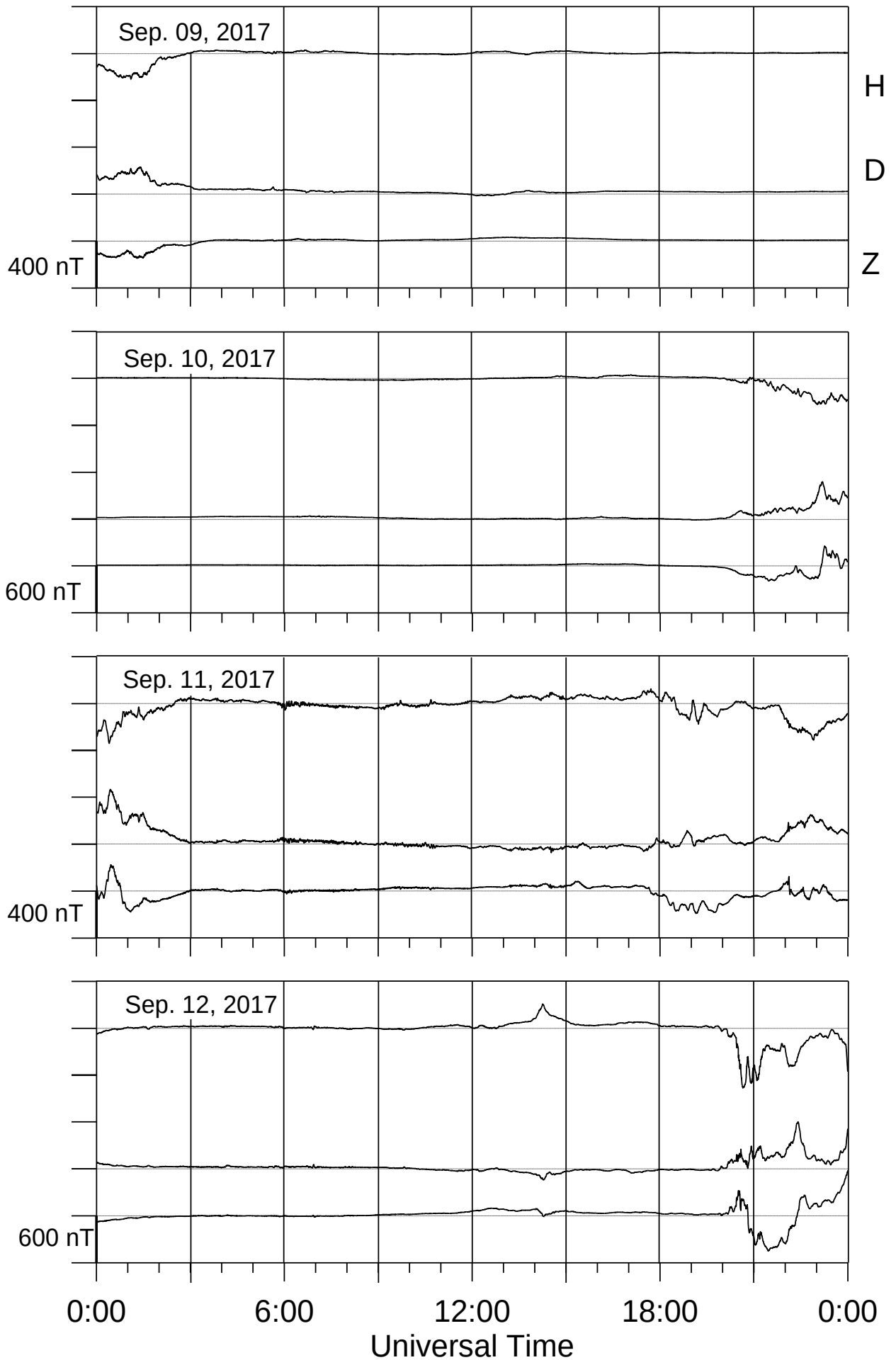
## Loparskaya magnetometer



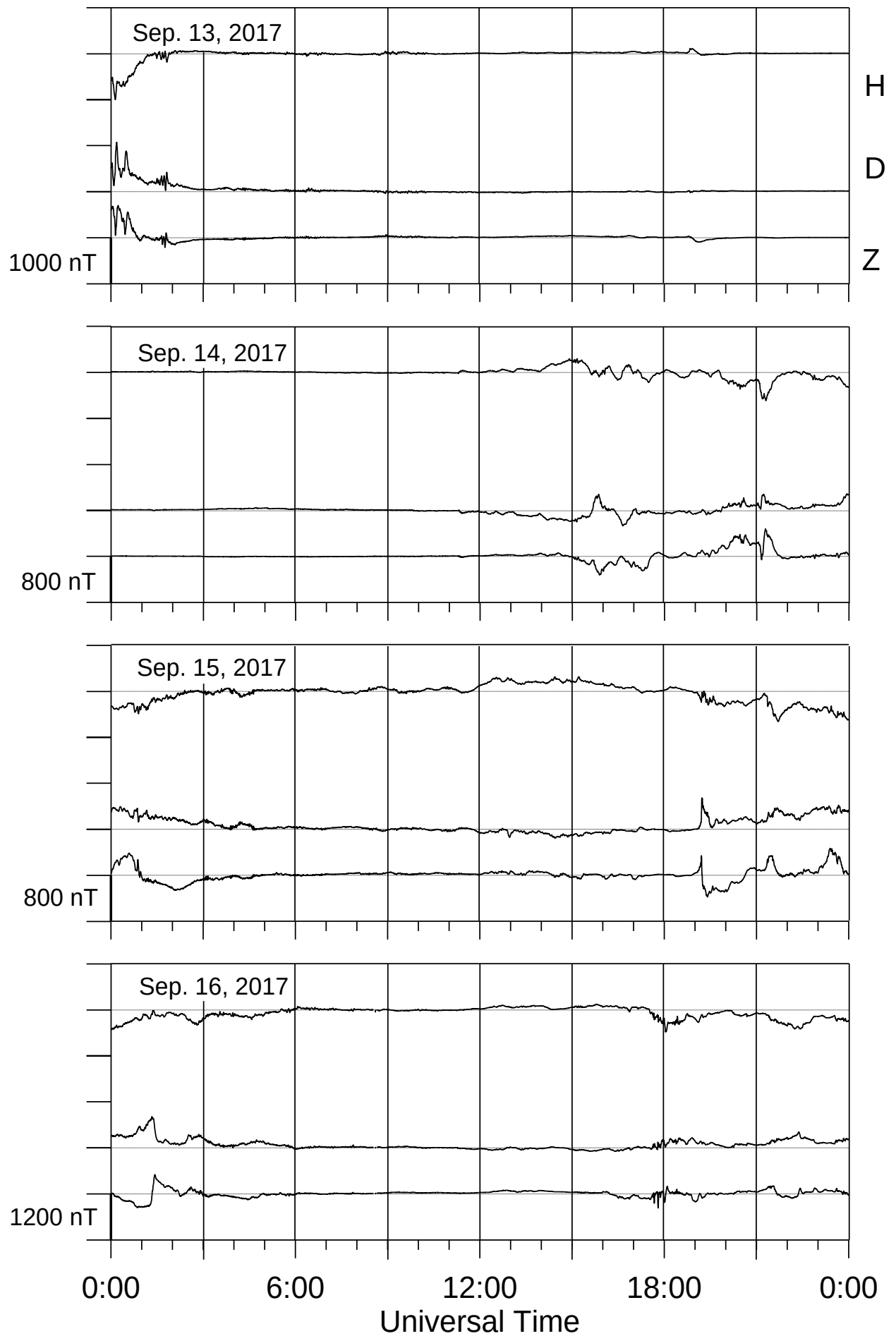
## Loparskaya magnetometer



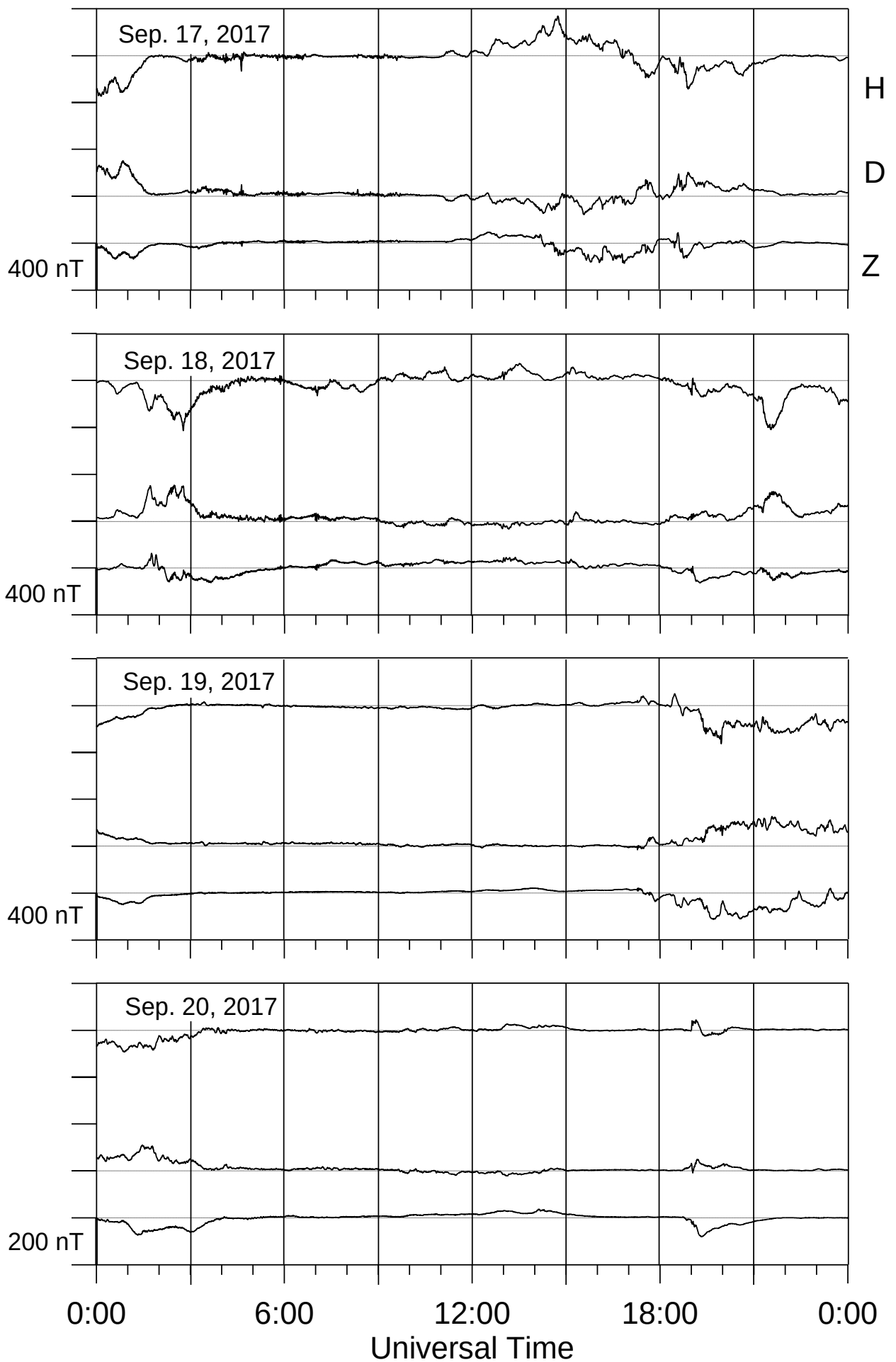
## Loparskaya magnetometer



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