

BRITISH GEOLOGICAL SURVEY

Port Stanley Observatory Monthly Magnetic Bulletin

September 2005

05/09/PS



**British
Geological Survey**

NATURAL ENVIRONMENT RESEARCH COUNCIL

PORT STANLEY OBSERVATORY MAGNETIC DATA

1.1 Introduction

Port Stanley Observatory was installed by BGS with financial support from a consortium of oil companies and became operational in February 1994.

This bulletin is published to meet the needs of users of geomagnetic data. Magnetic observatory data is presented as a series of plots of one-minute, hourly and daily values, followed by a tabulation of monthly values. The operation of the observatory and presentation of data are described in the rest of this section.

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1.2 Position

Port Stanley Observatory, one of the geomagnetic observatories maintained and operated by the British Geological Survey (BGS), is situated on a site at Sapper Hill near Port Stanley in the Falkland Islands.

The observatory co-ordinates are:

Geographic: 51°42.2'S 302°06.6'E
Geomagnetic: 41°39.9'S 10°48.7'E
Height above mean sea level: 135 m

The geomagnetic co-ordinates are calculated using the 10th generation International Geomagnetic Reference Field at epoch 2005.5.

1.3 The Observatory Operation

1.3.1 GDAS

The observatory operates under the control of the Geomagnetic Data Acquisition System (GDAS), developed by BGS, which was installed in August 2002. The system operates under the control of data acquisition software running on QNX computers, which control the data logging and communications.

There are two sets of sensors used for making magnetic measurements. A triaxial linear-core fluxgate magnetometer, manufactured by the Danish Meteorological Institute, is used to measure the variations in the horizontal (H) and vertical (Z) components of the field. The third sensor is oriented perpendicular to these, and measures variations, which

are proportional to the changes in declination (D). Measurements are made at a rate of 1 Hz.

In addition to the fluxgate sensors there is a proton precession magnetometer making measurements of the absolute total field intensity (F) at a rate of 0.1Hz.

The raw unfiltered data are retrieved automatically via Internet connections to the BGS office in Edinburgh in near real-time. The fluxgate data are filtered to produce one-minute values using a 61-point cosine filter whilst the total field intensity samples are filtered using a 7-point cosine filter.

1.4 Data Presentation

The data presented in the bulletin are in the form of plots and tabulations described in the following sections.

1.4.1 Summary magnetograms

Small-scale magnetograms are plotted which allow the month's data to be viewed at a glance. They are plotted 16 days a page and show the variations in D , H and Z . The scales are shown on the right-hand side of the page. On disturbed days the scales are multiplied by a factor, which is indicated above the panel for that day. The variations are centred on the monthly mean value, shown on the left side of the page.

1.4.2 Magnetograms

The daily magnetograms are plotted using one-minute values of D , H and Z from the fluxgate sensors, with any gaps filled using back-up data. The magnetograms are plotted to a variable scale; scale bars are shown to the right of each plot. The absolute level (the monthly mean value) is indicated on the left side of the plots.

1.4.3 Hourly Mean Value Plots

Hourly mean values of D , H and Z for the past 12 months are plotted in 27-day segments corresponding to the Bartels solar rotation number. Magnetic disturbances associated with active regions on the surface of the Sun may recur after 27 days: the same is true for geomagnetically quiet intervals. Plotting the data in this way highlights this recurrence, and also illustrates seasonal and diurnal variations throughout the year.

1.4.4 Daily and Monthly Mean Values

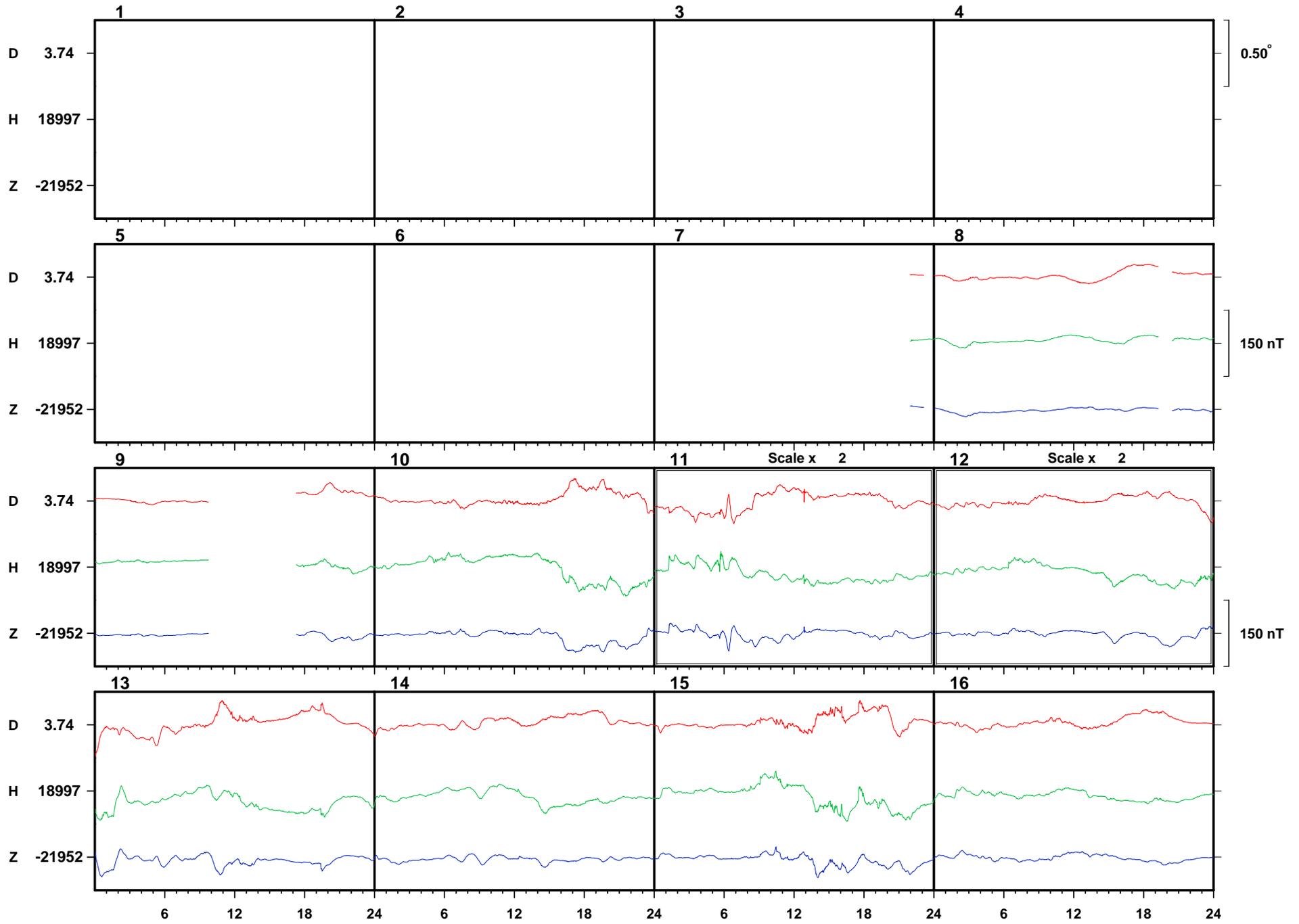
Daily mean values of D , H , Z and F are plotted throughout the year. In addition, a table of monthly mean values of all the geomagnetic elements is provided. These values depend on accurate specification of the fluxgate sensor baselines. This data is provisional. It is anticipated that provisional values will not be altered by more than a few nT or tenths of arcminutes before being made definitive.

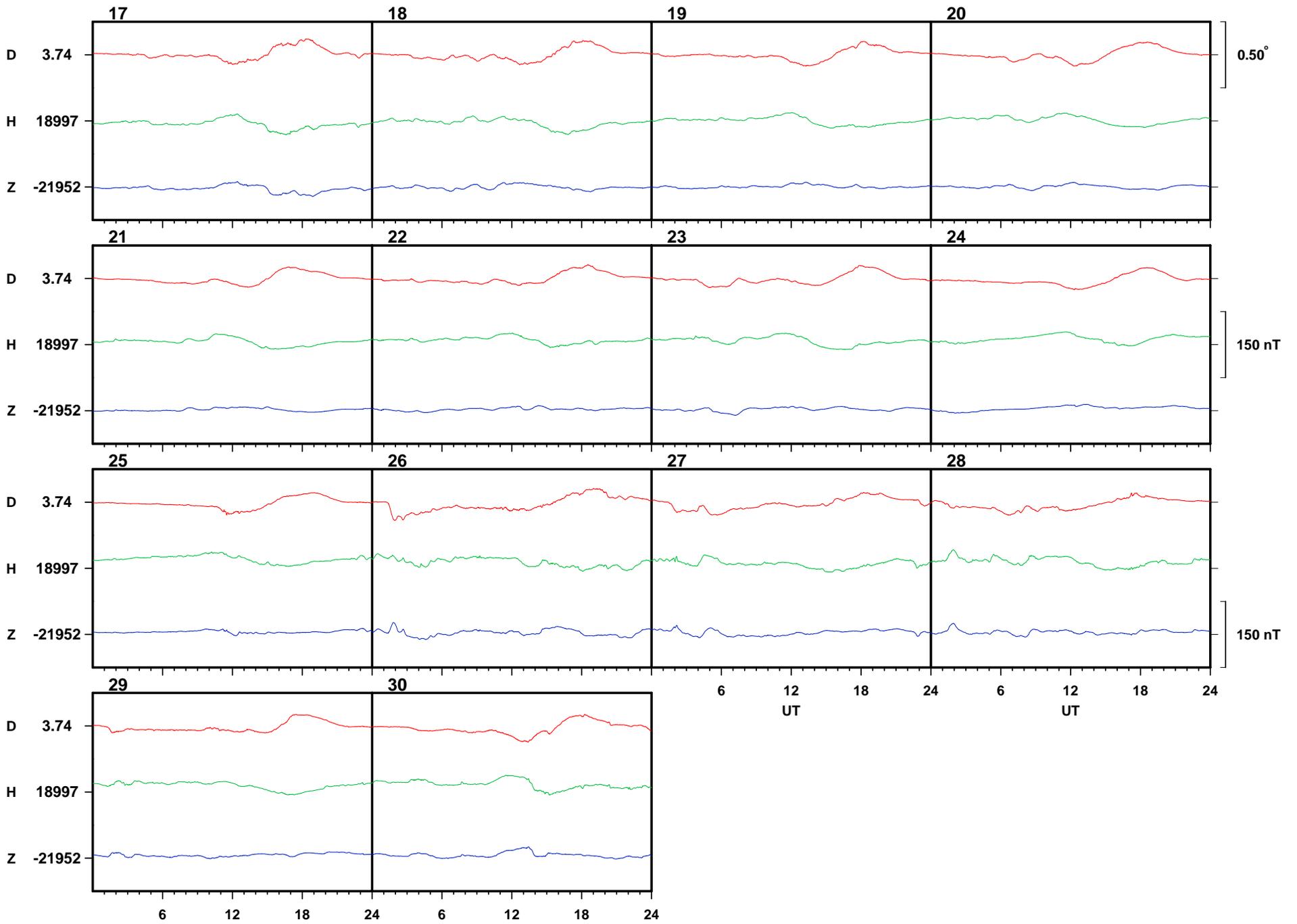
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Falkland Islands

September

2005





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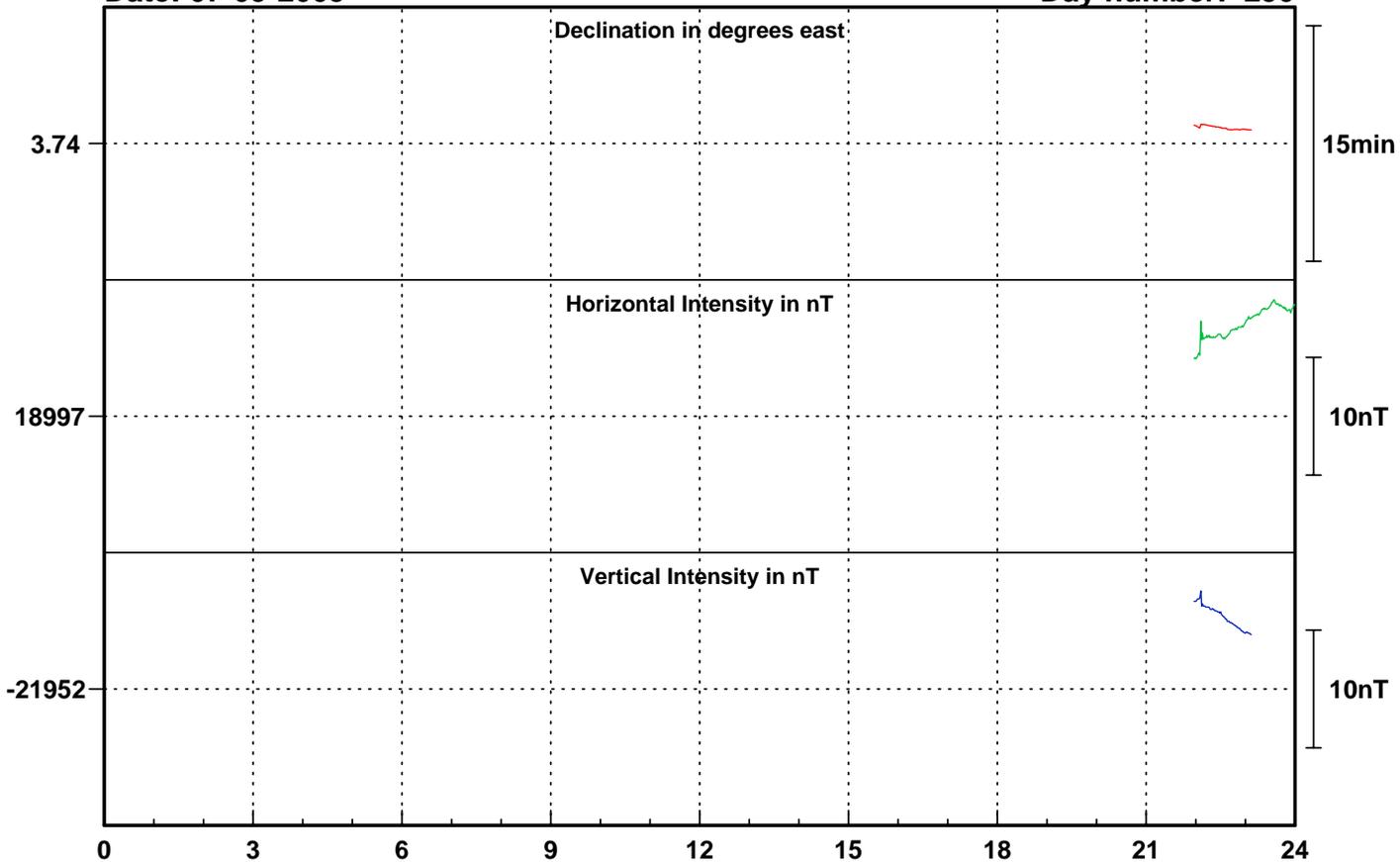
September

2005

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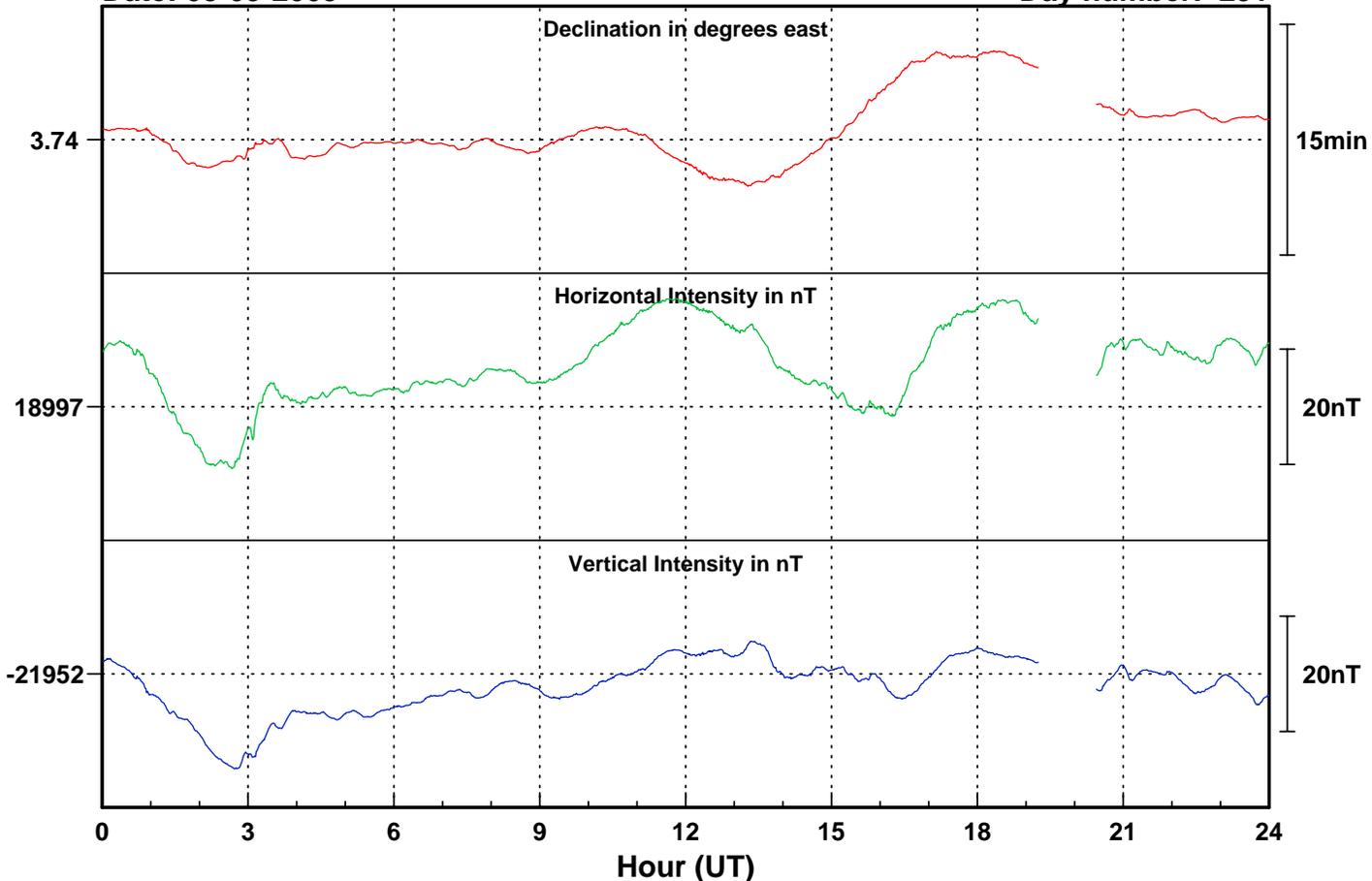
Falkland Islands

Day number: 250



Date: 08-09-2005

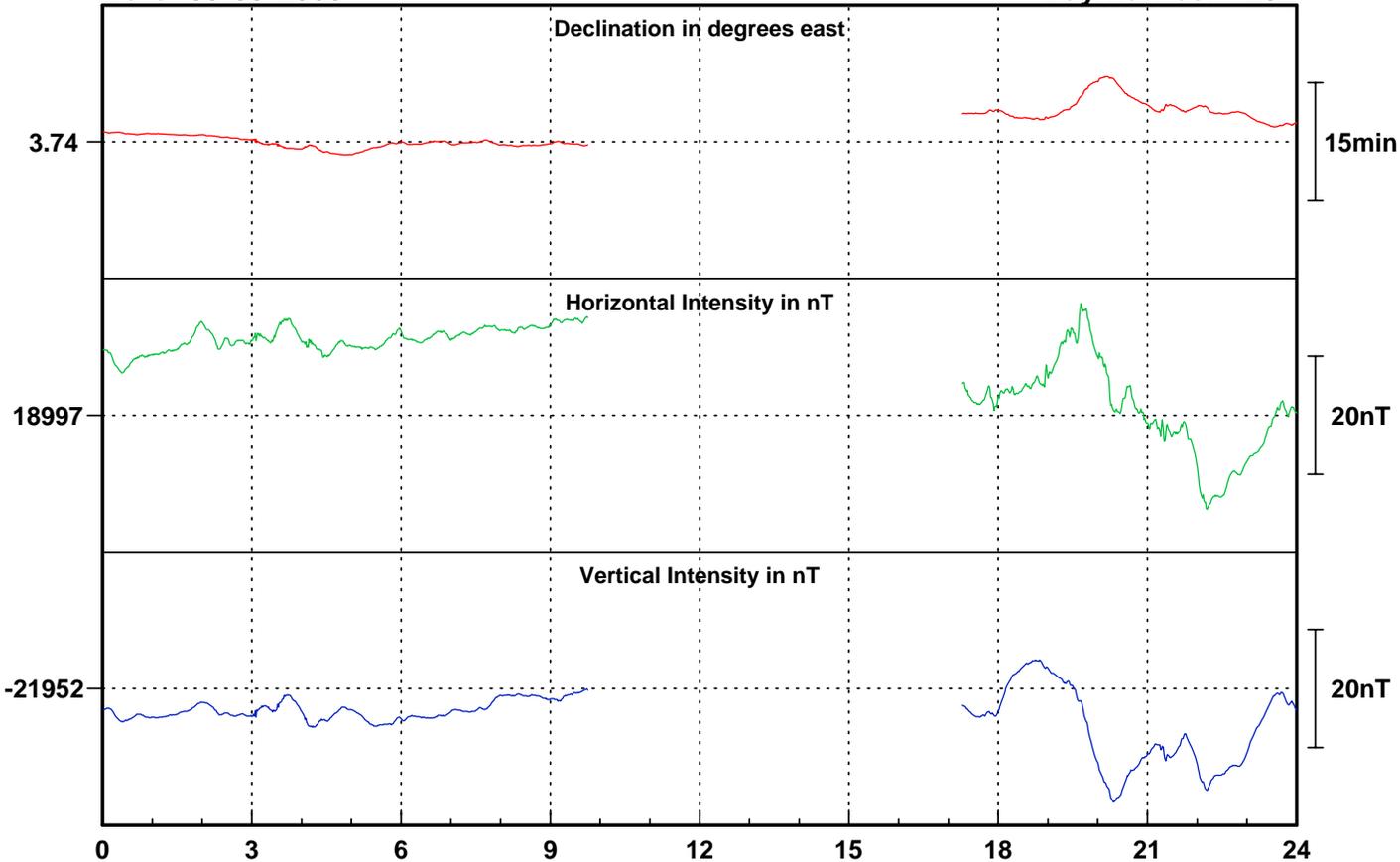
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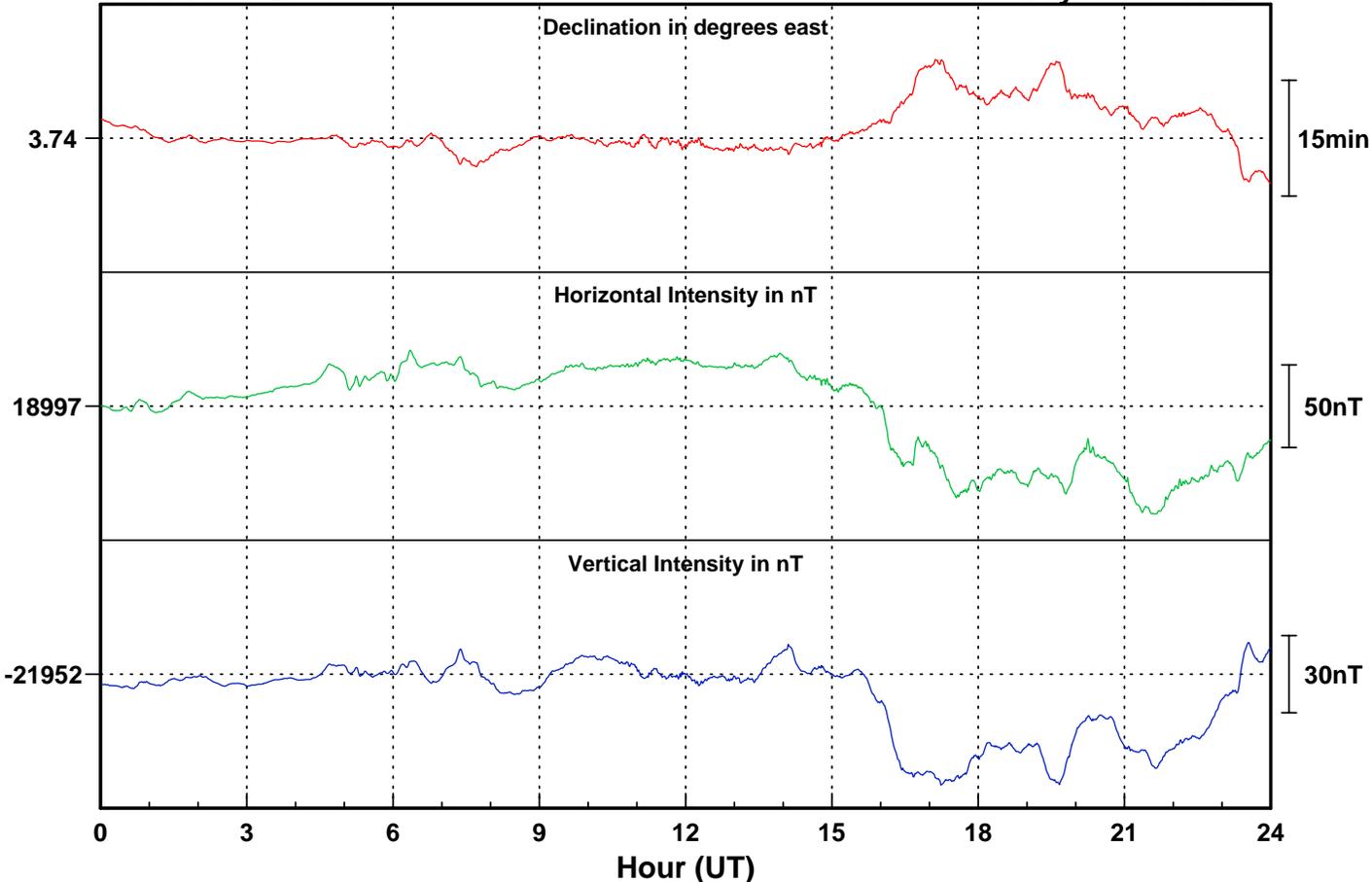
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Day number: 252



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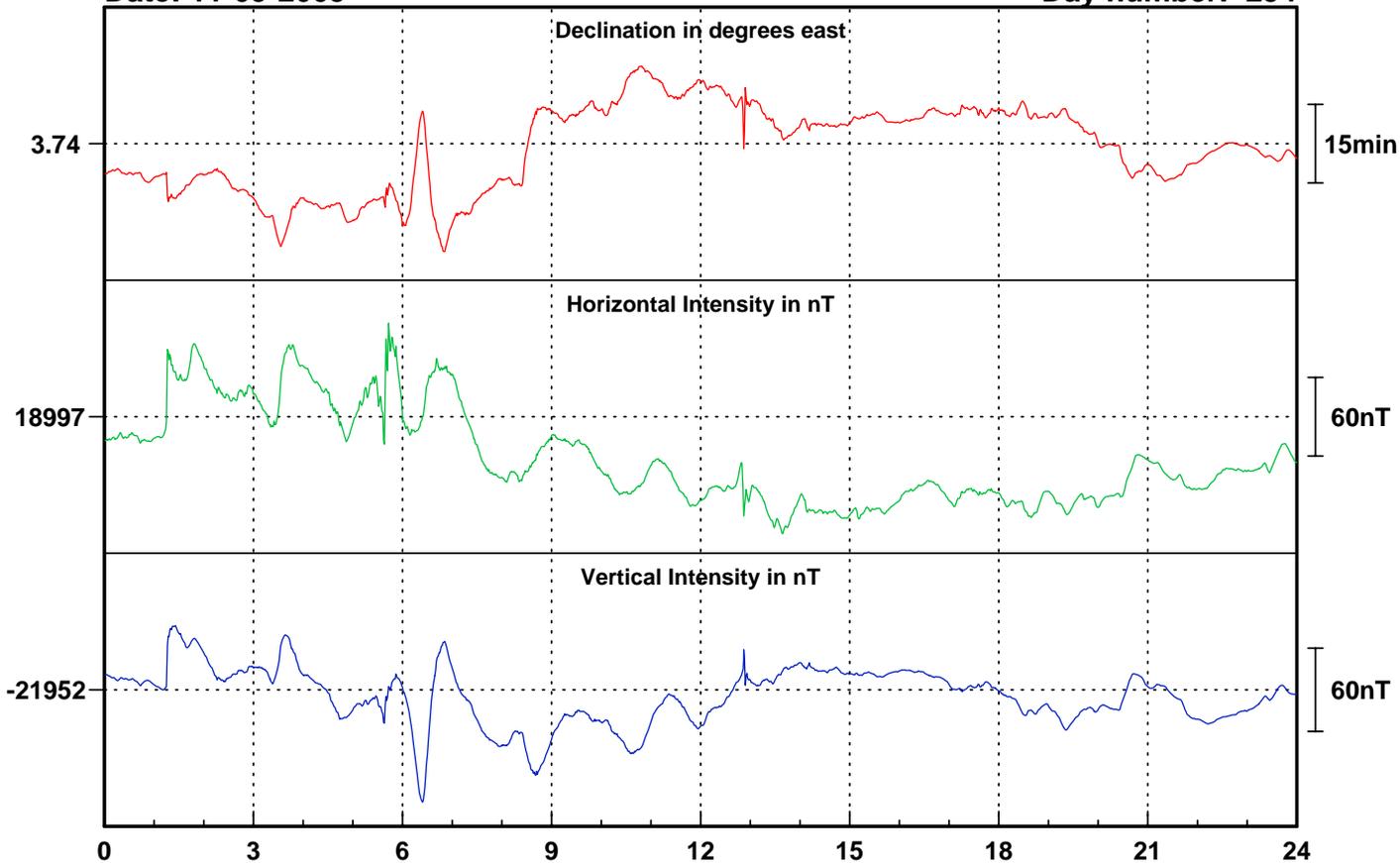
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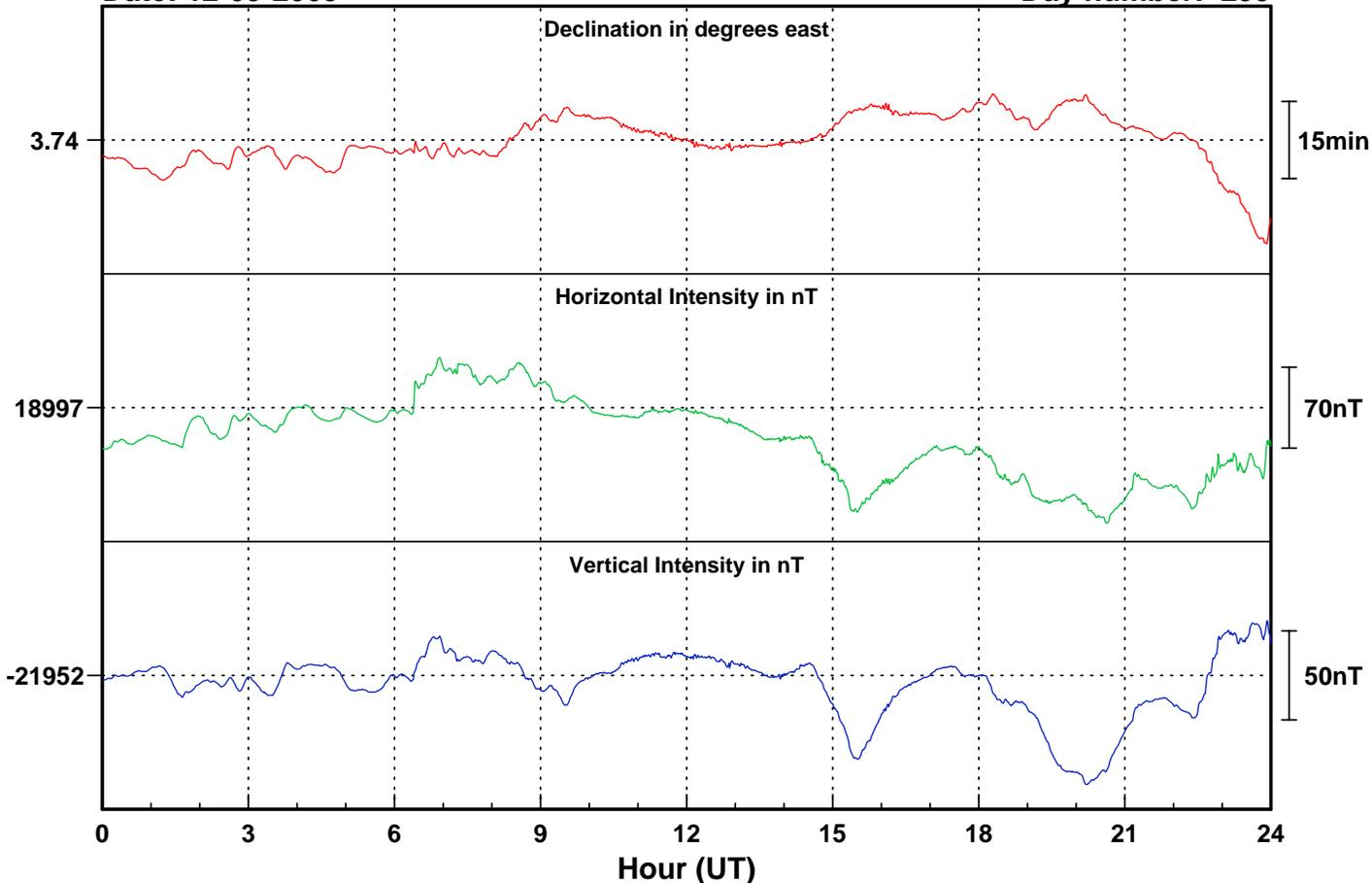
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Day number: 254



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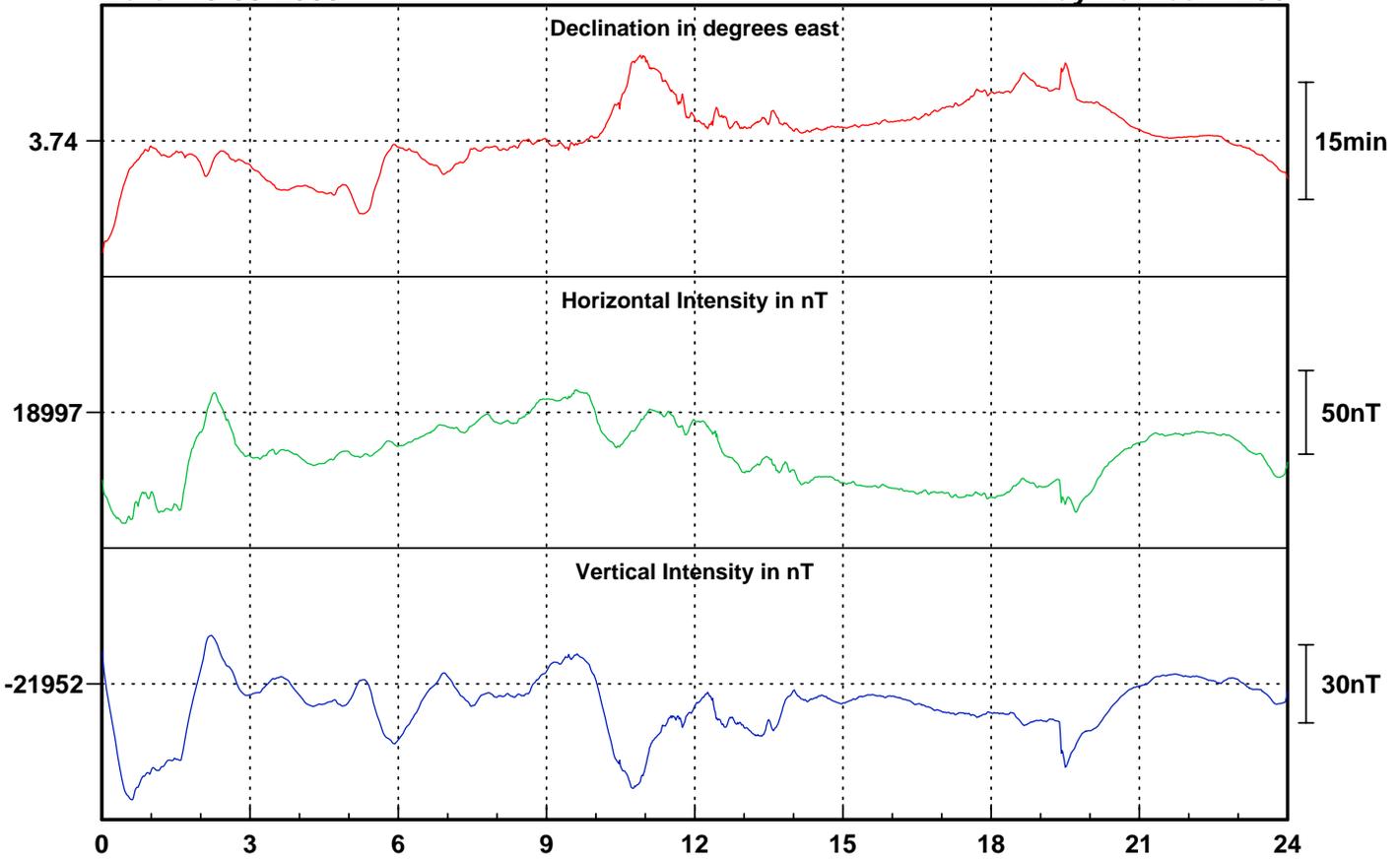
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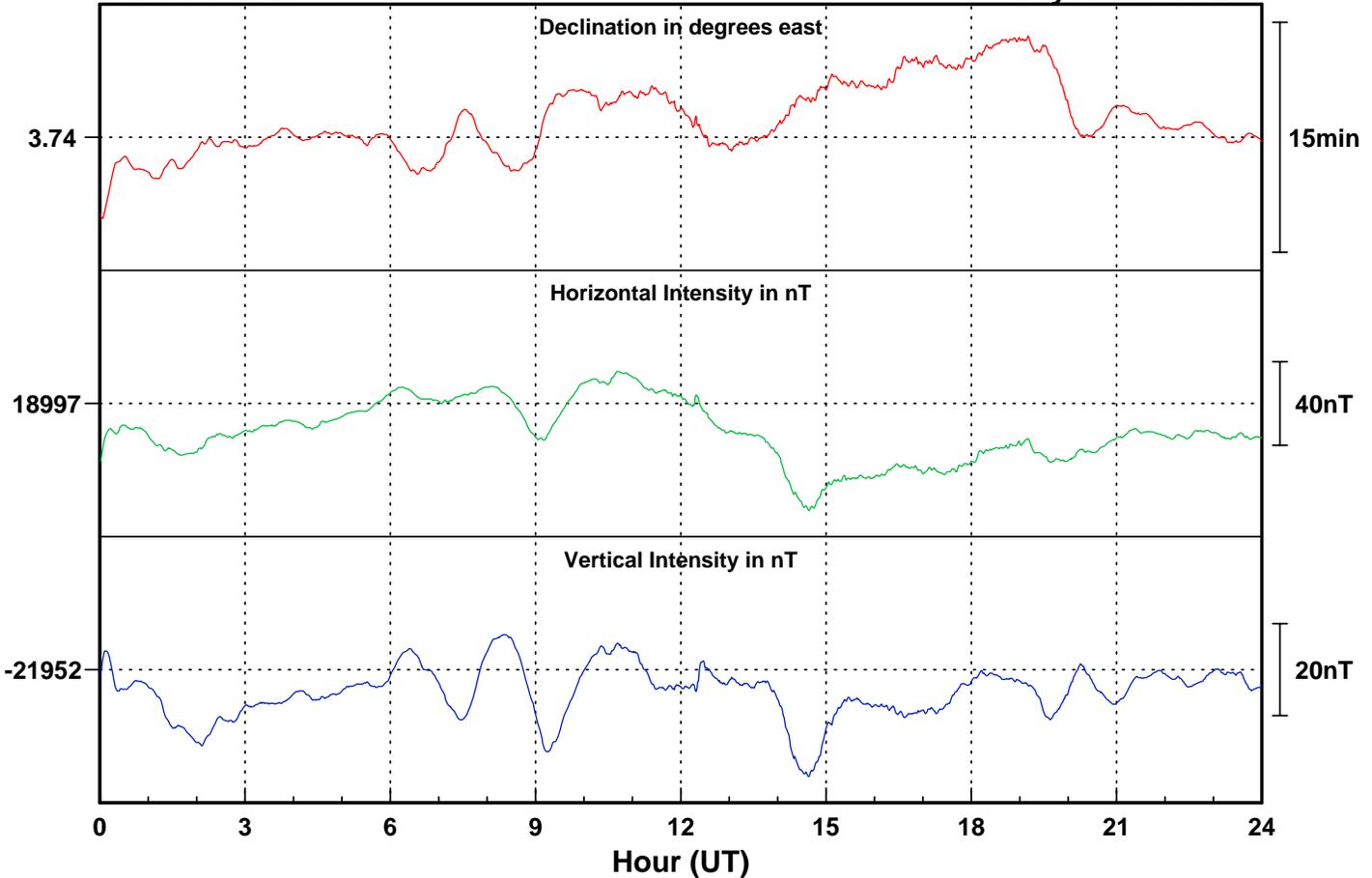
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Day number: 256



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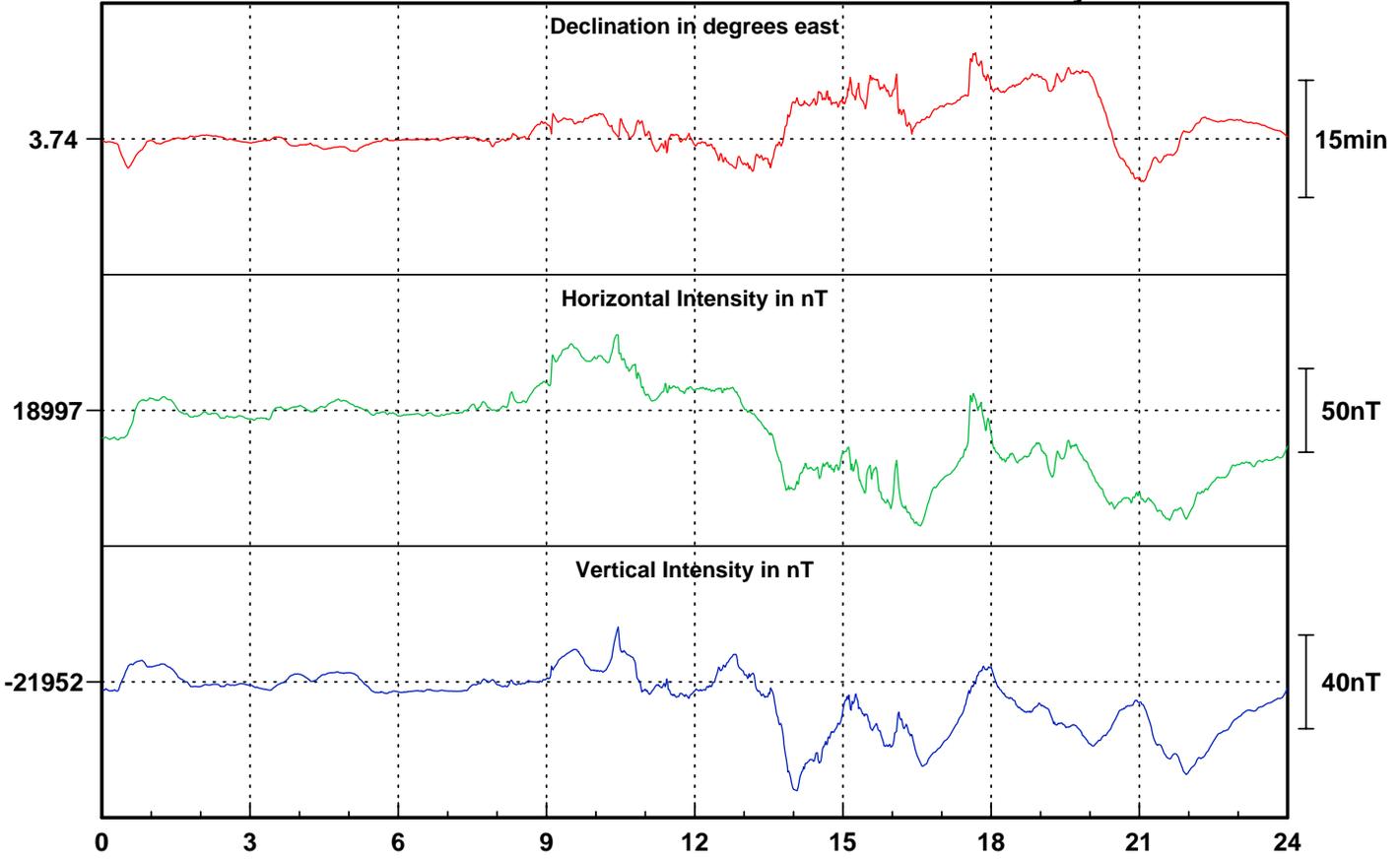
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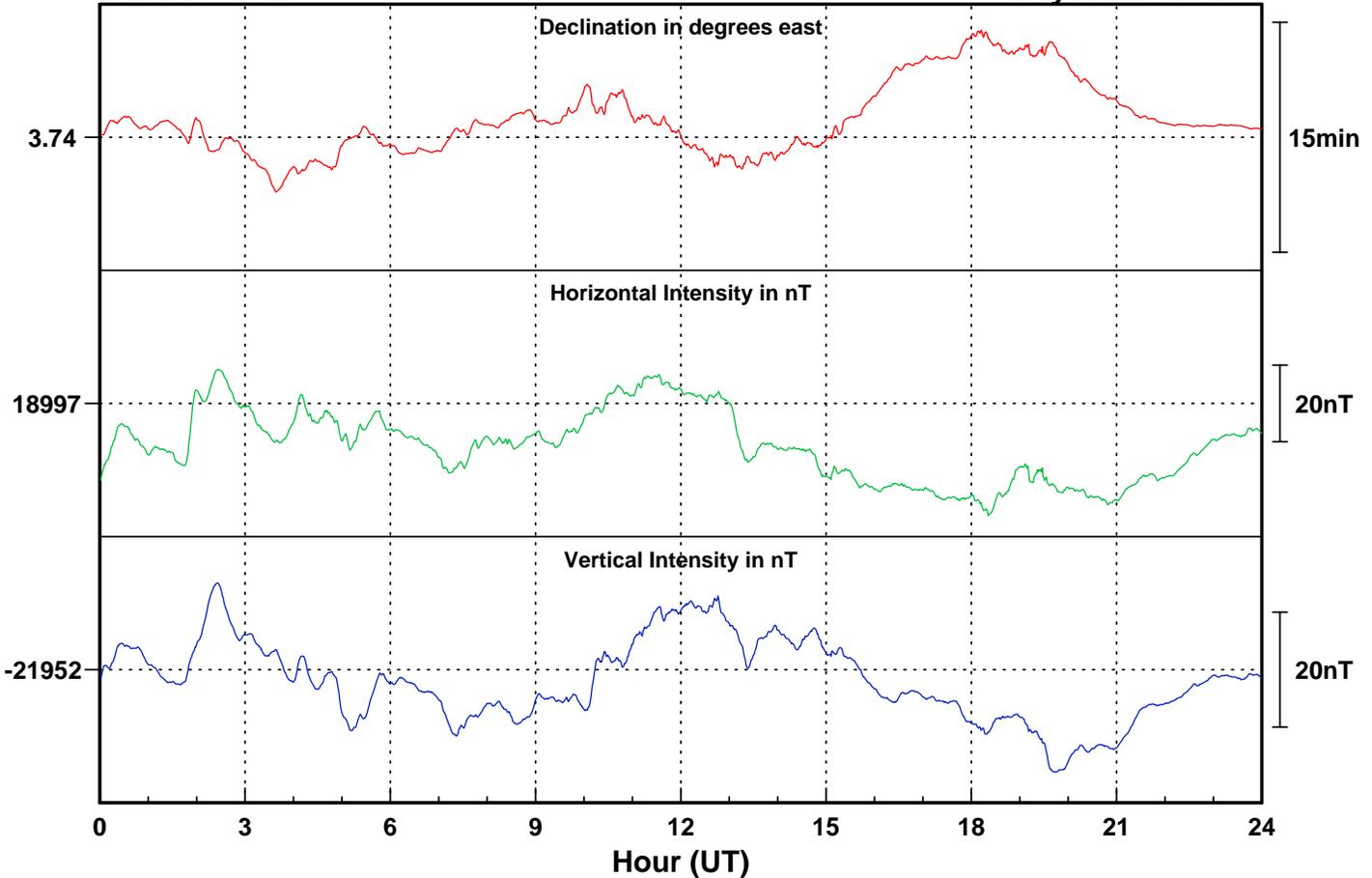
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Day number: 258



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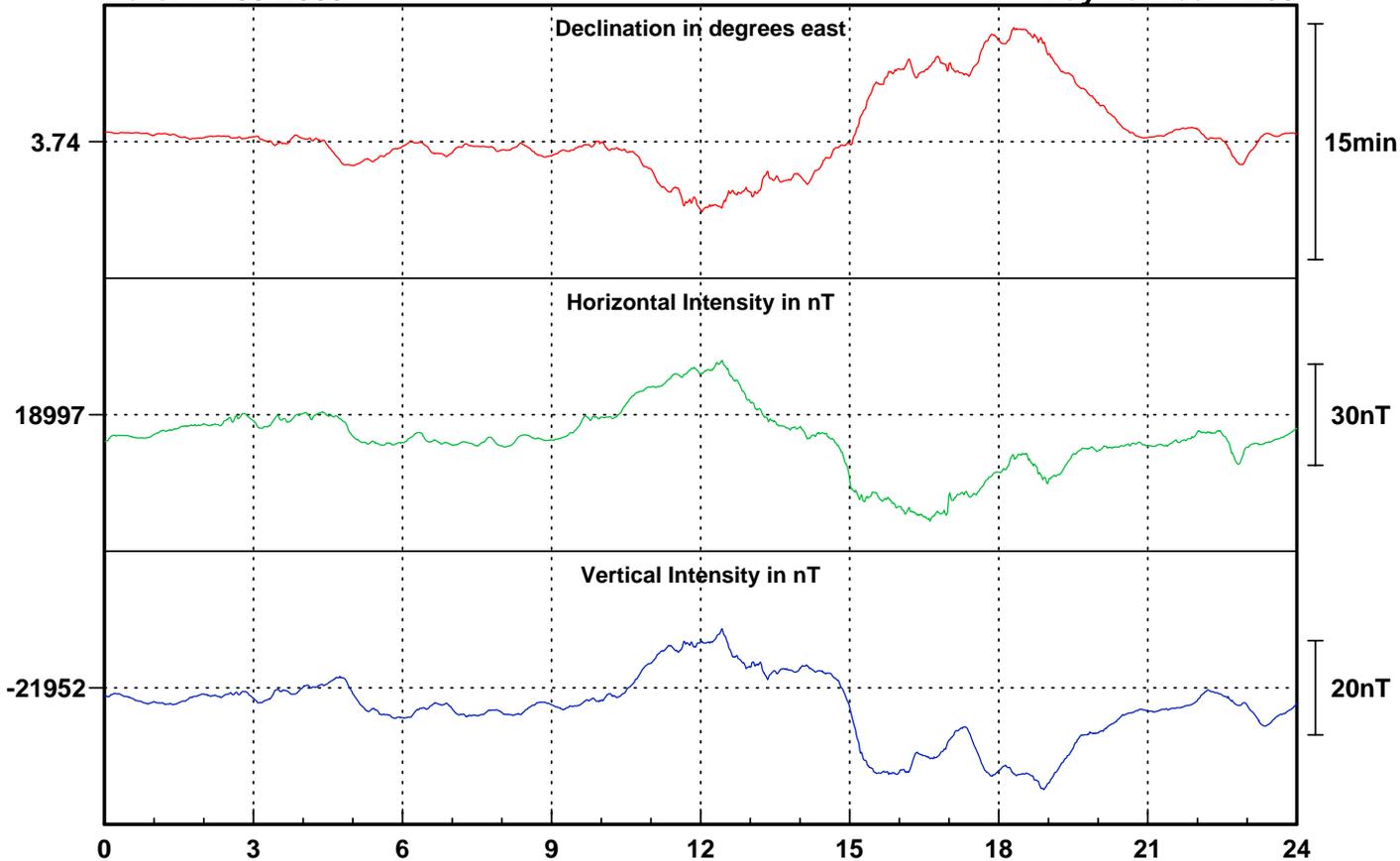
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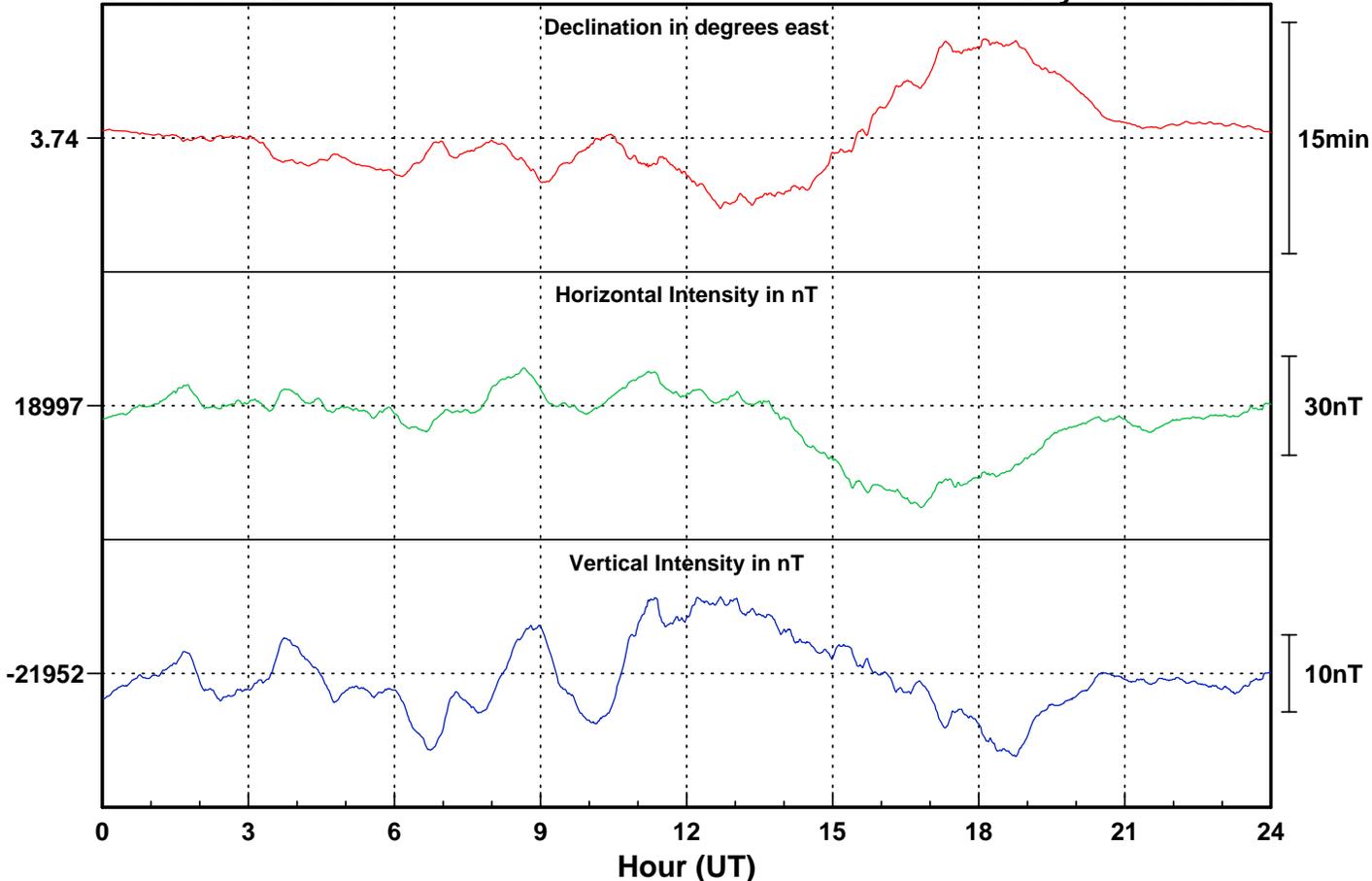
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Day number: 260



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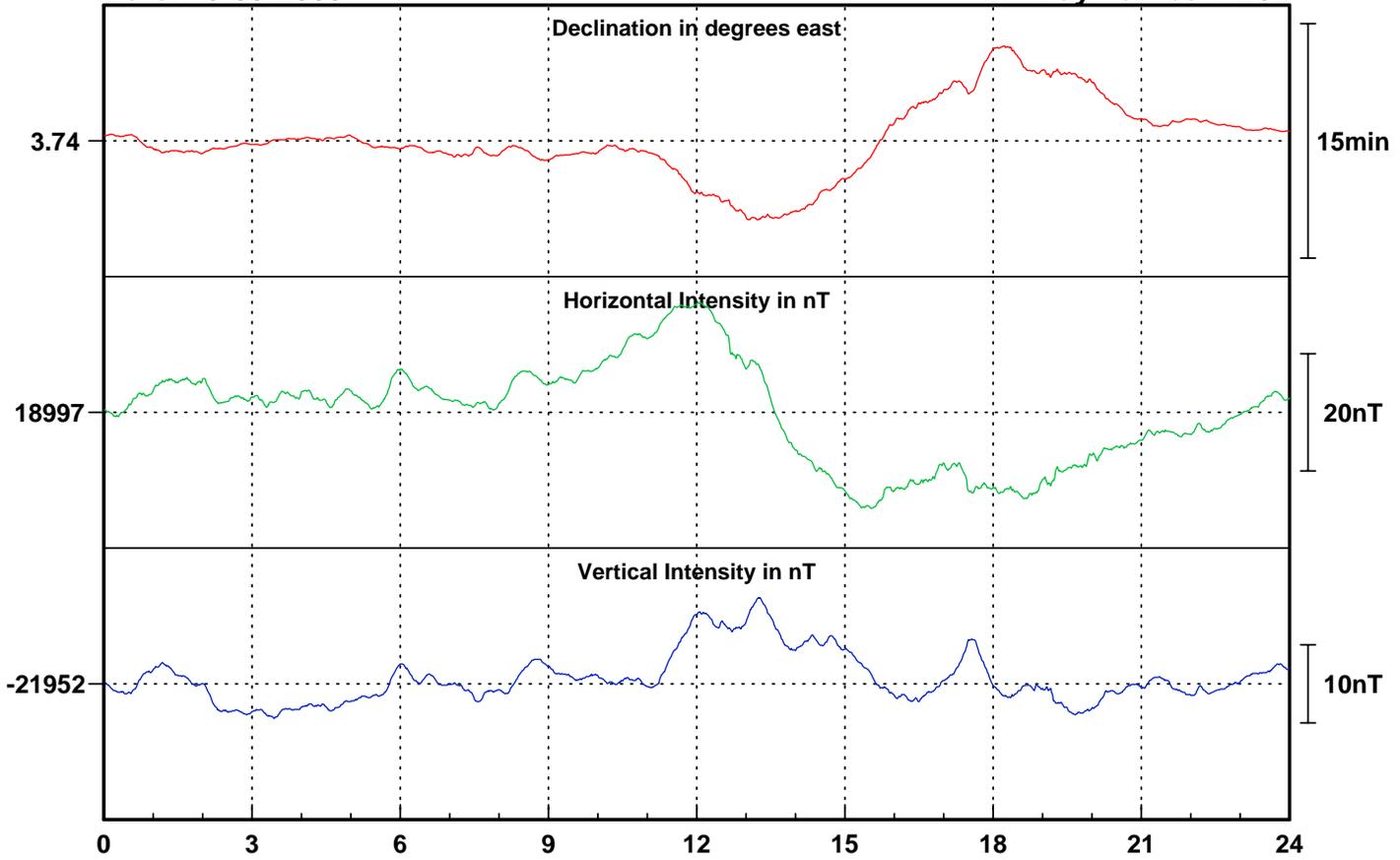
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Falkland Islands

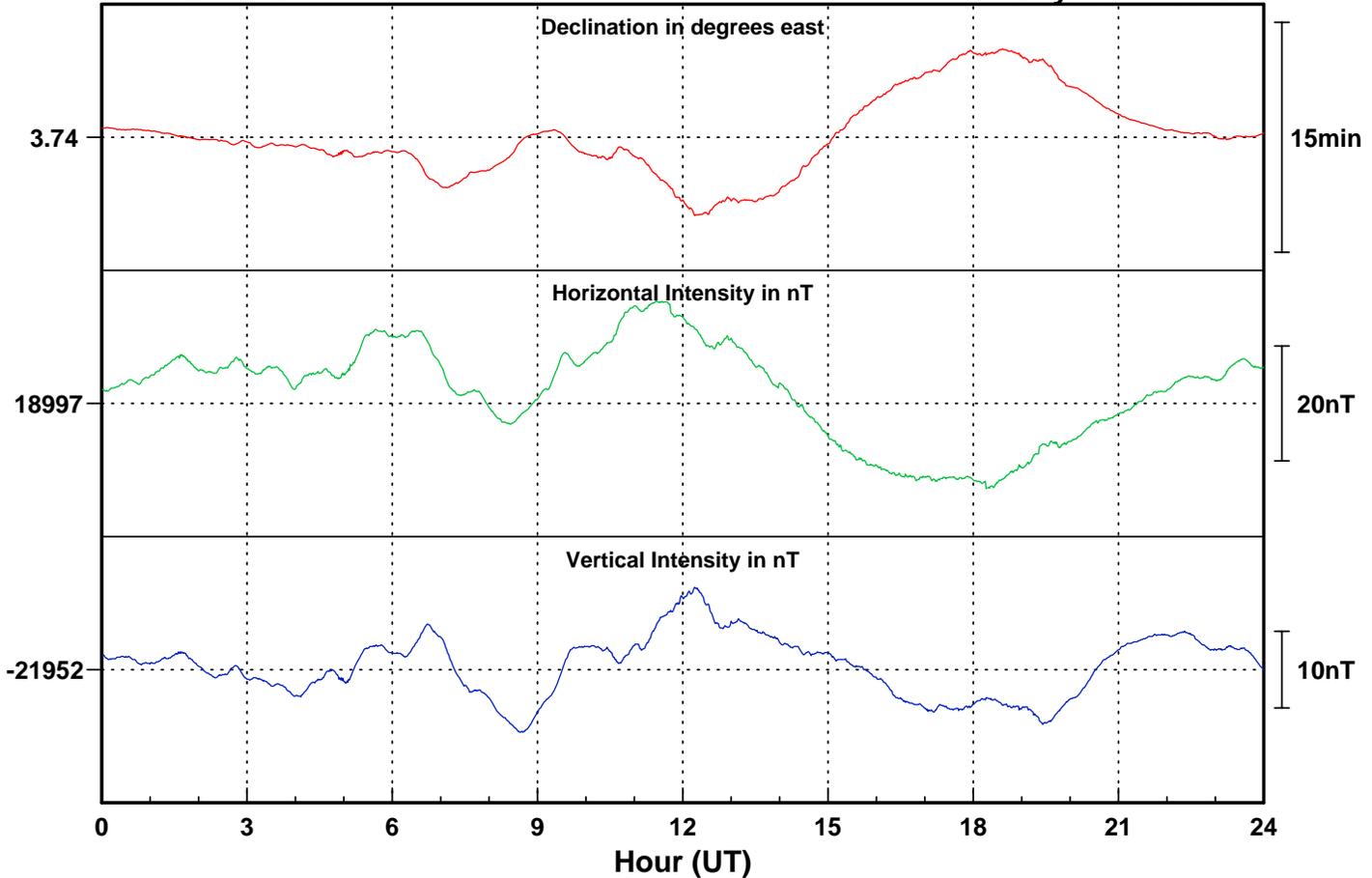
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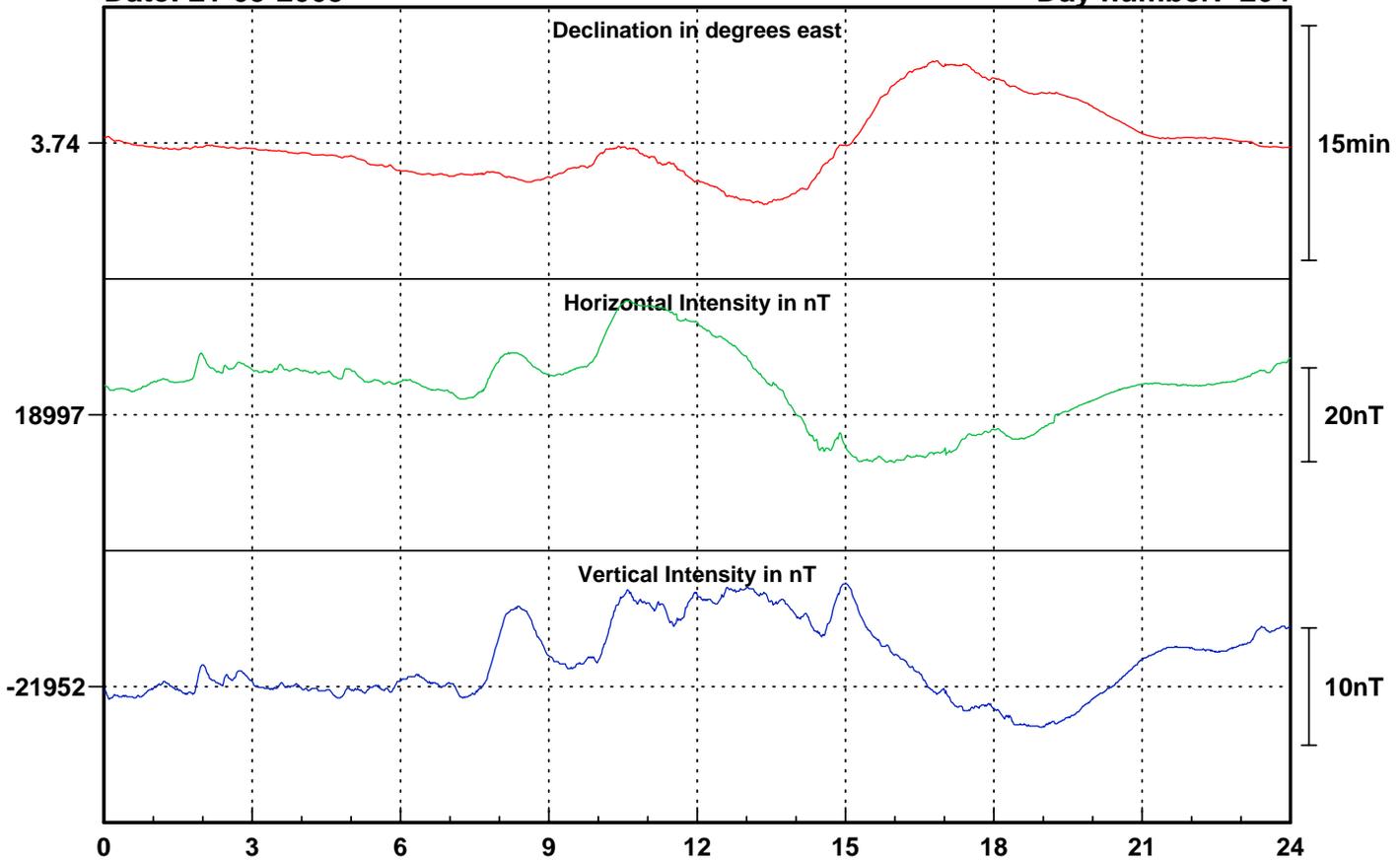
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Falkland Islands

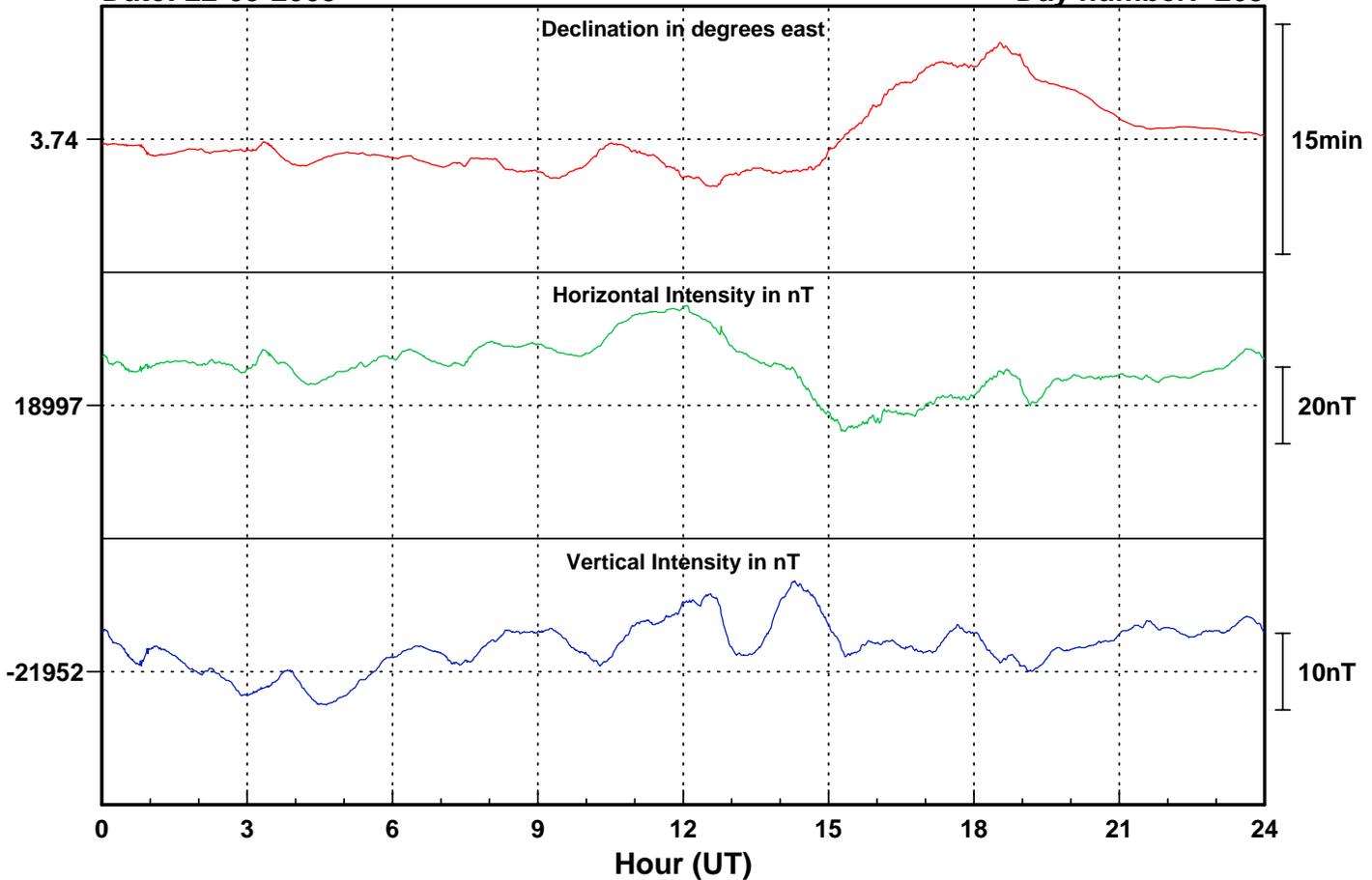
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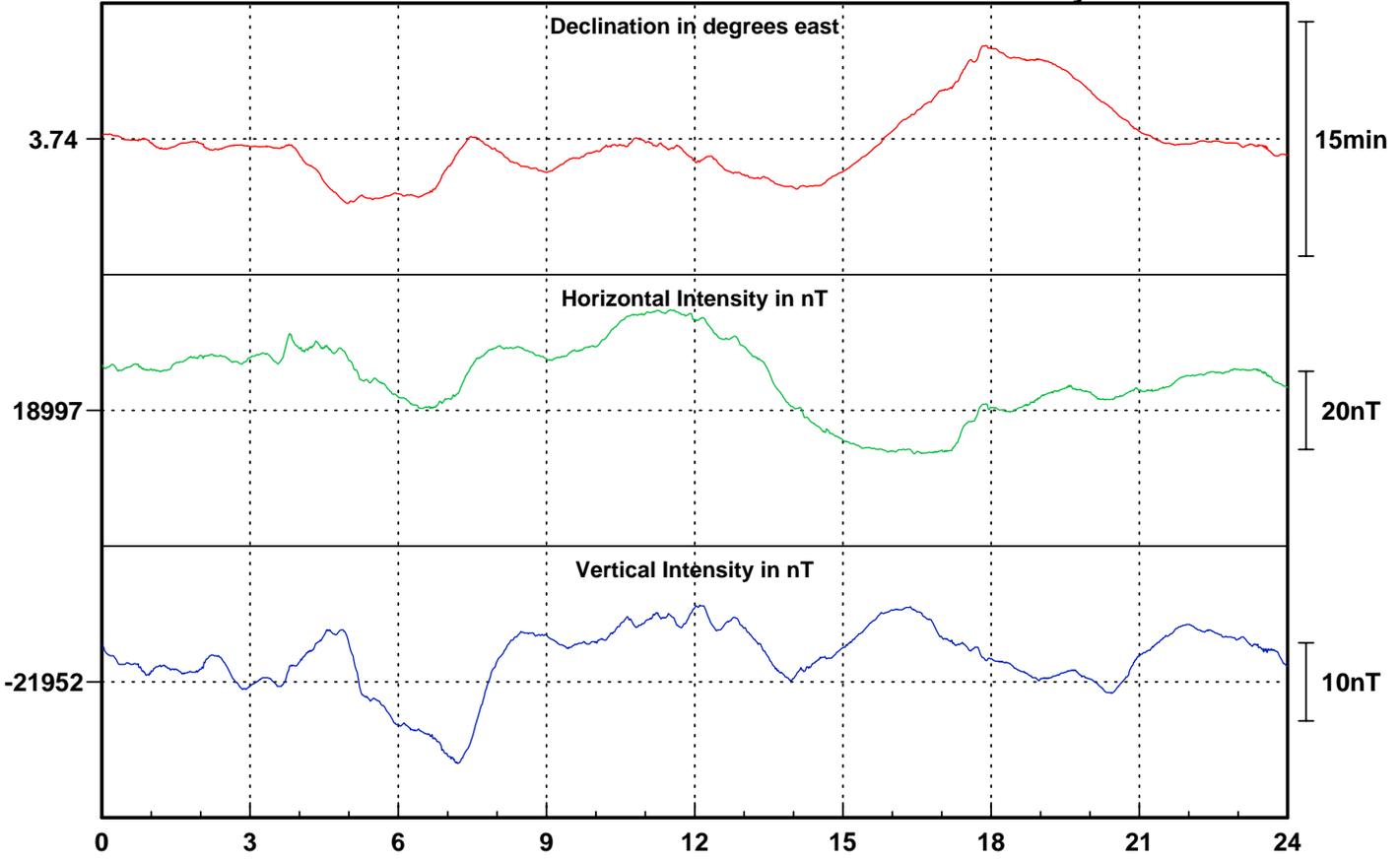
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Falkland Islands

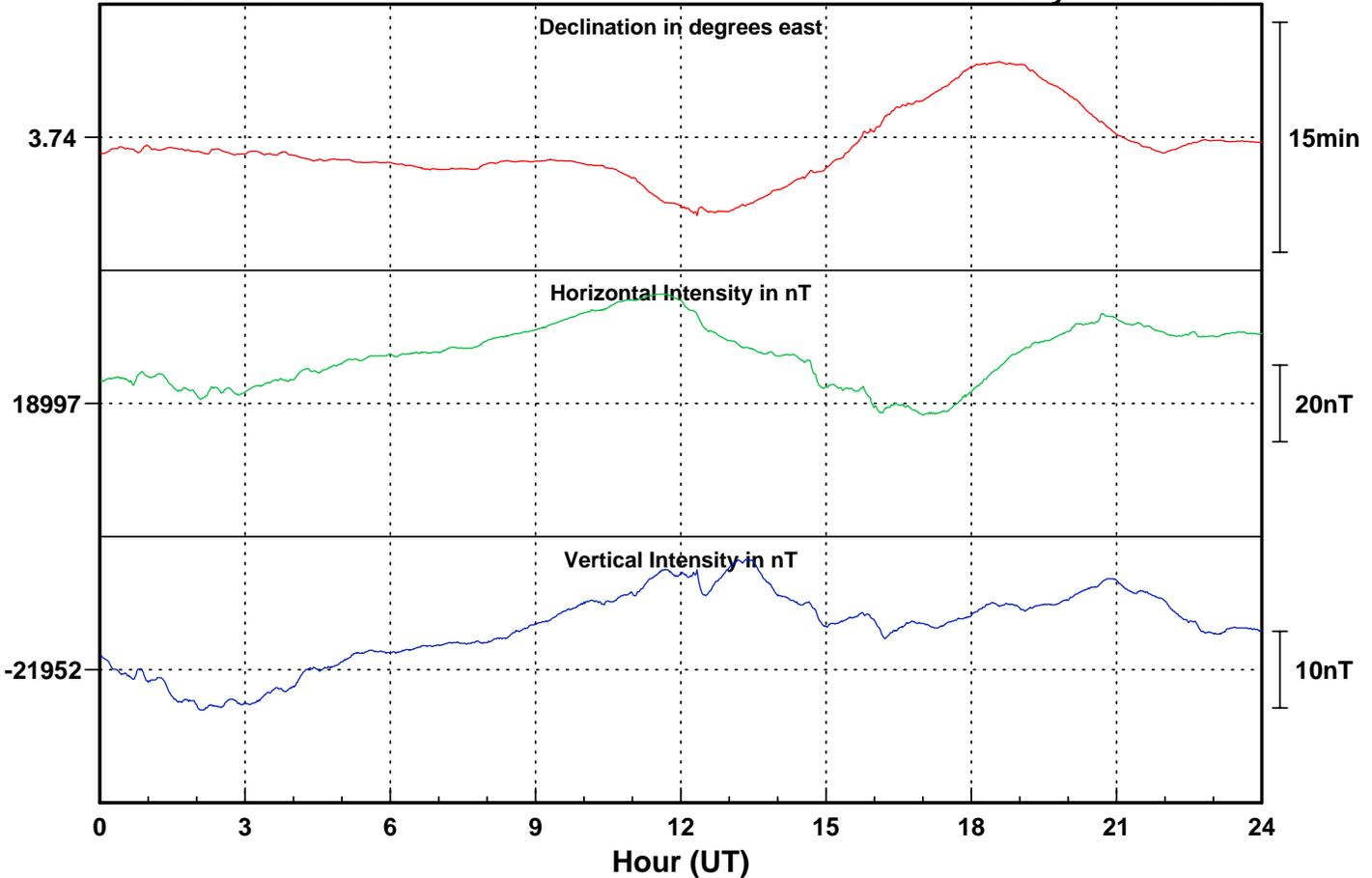
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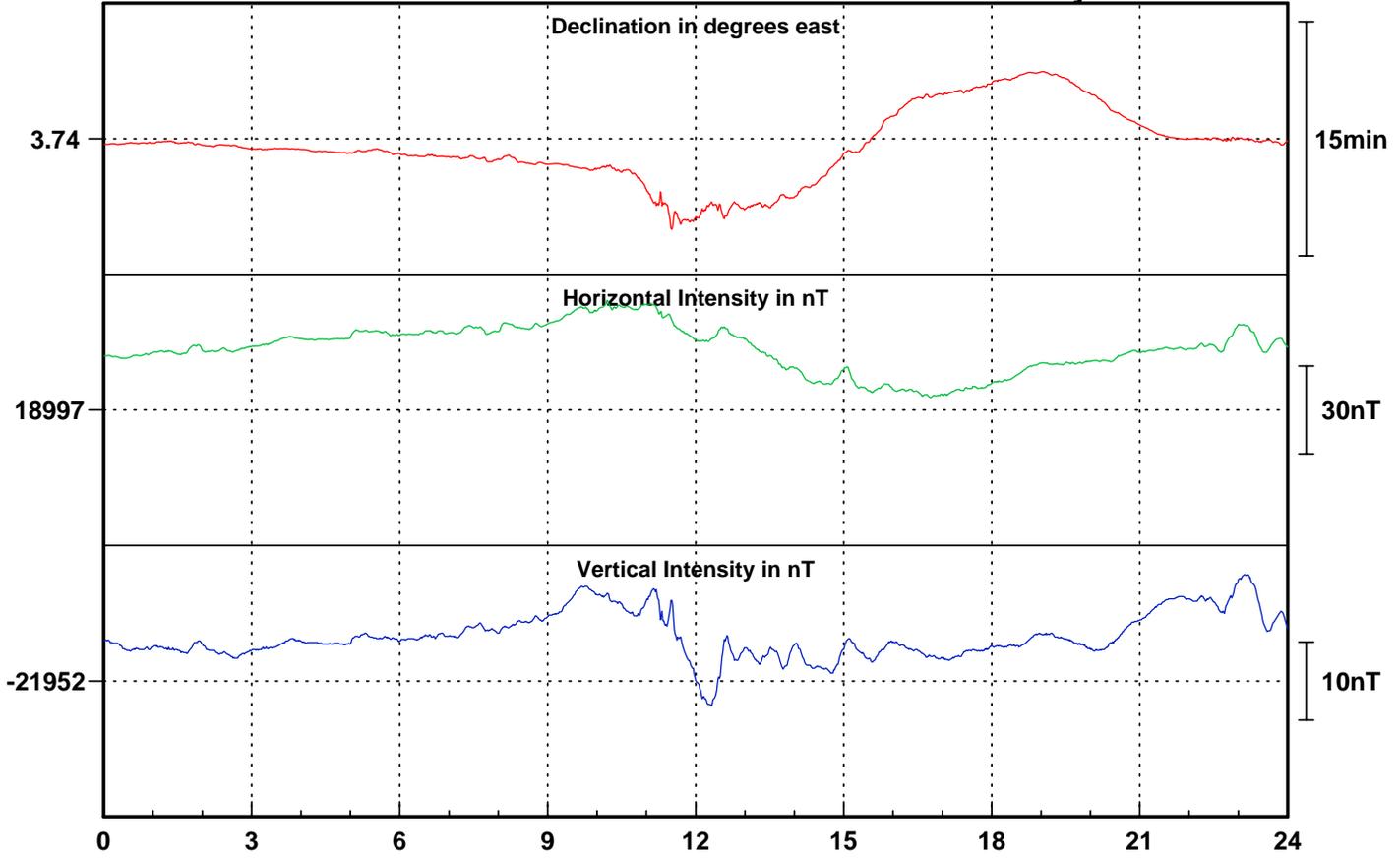
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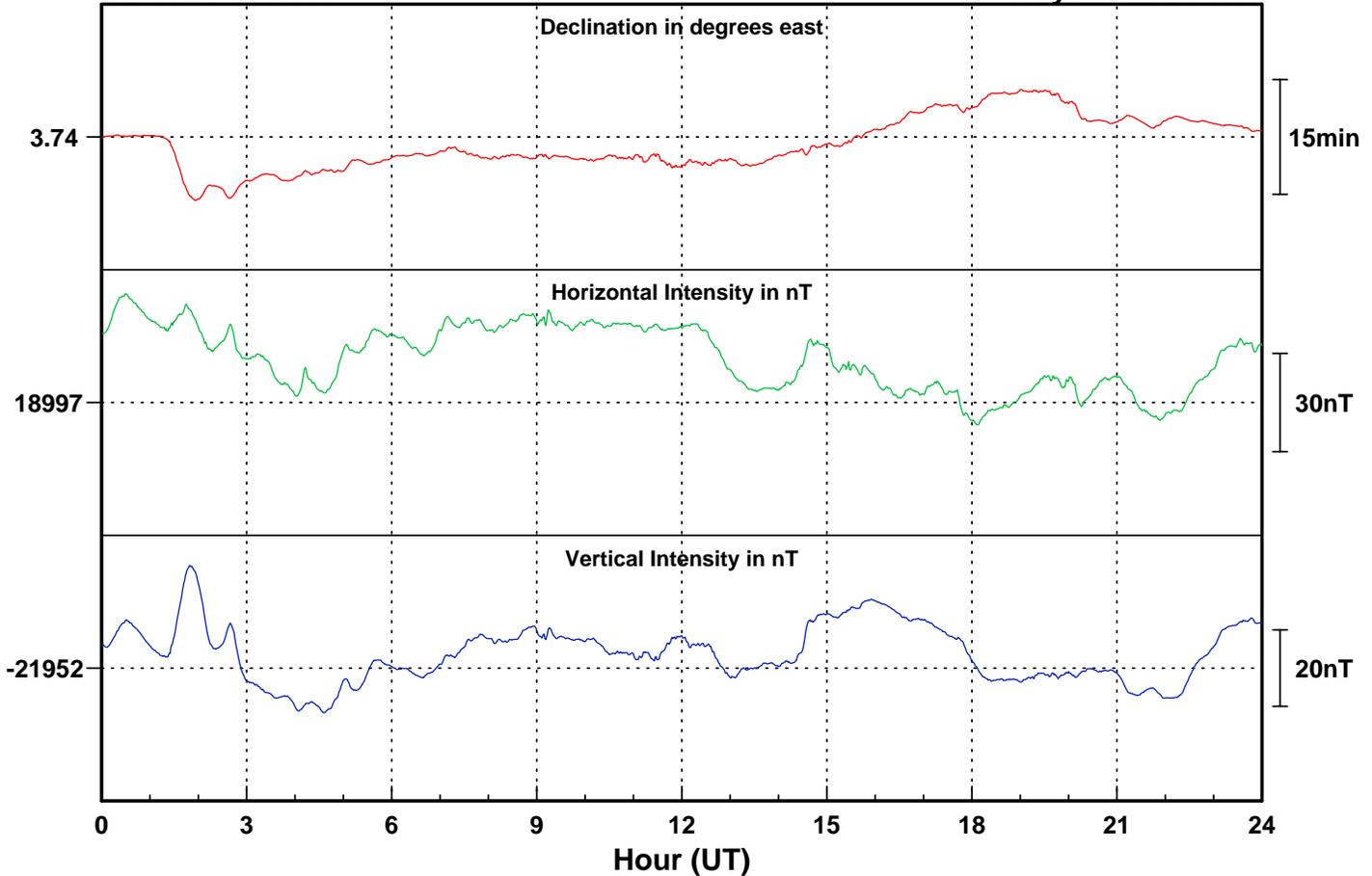
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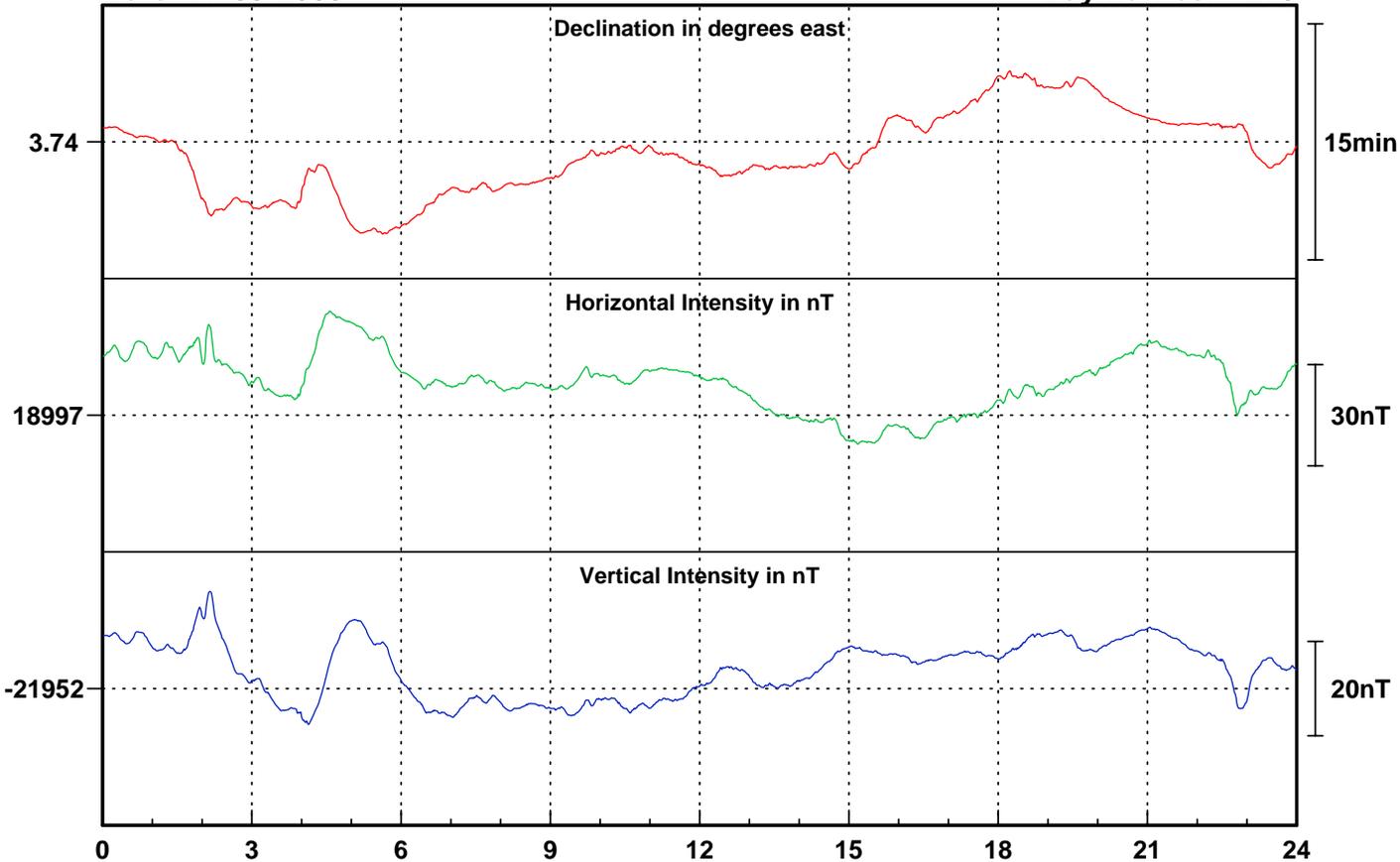
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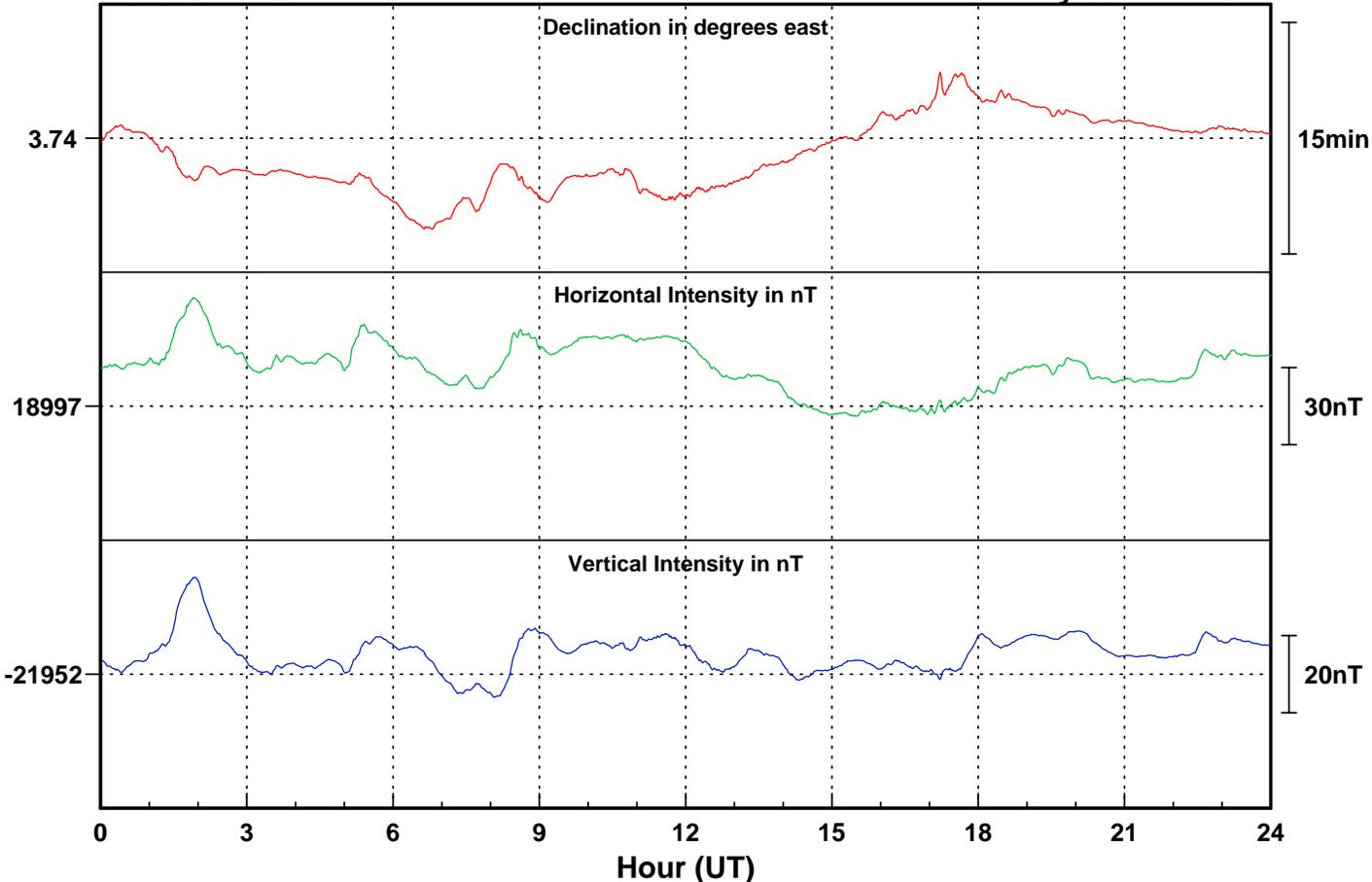
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Day number: 270



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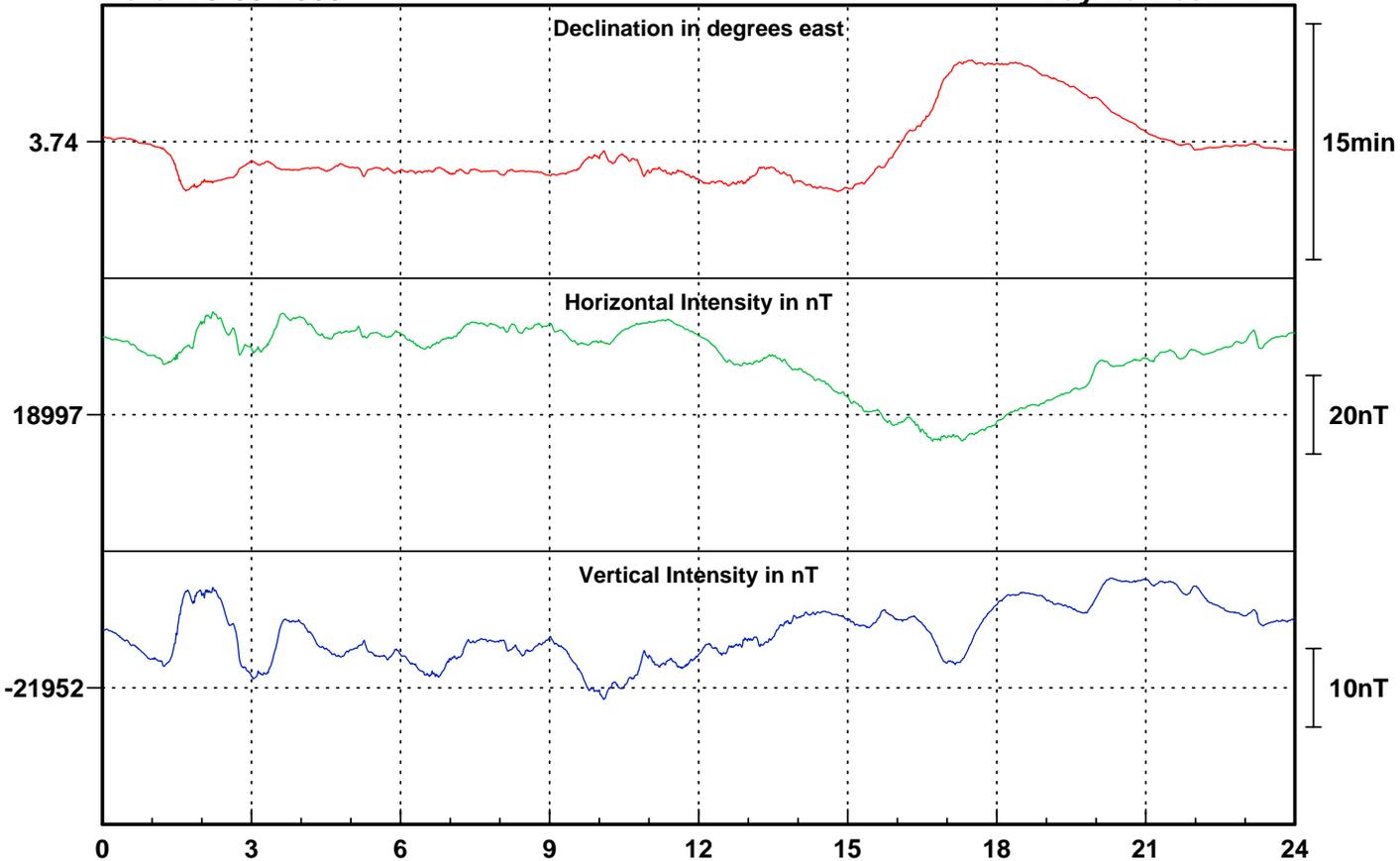
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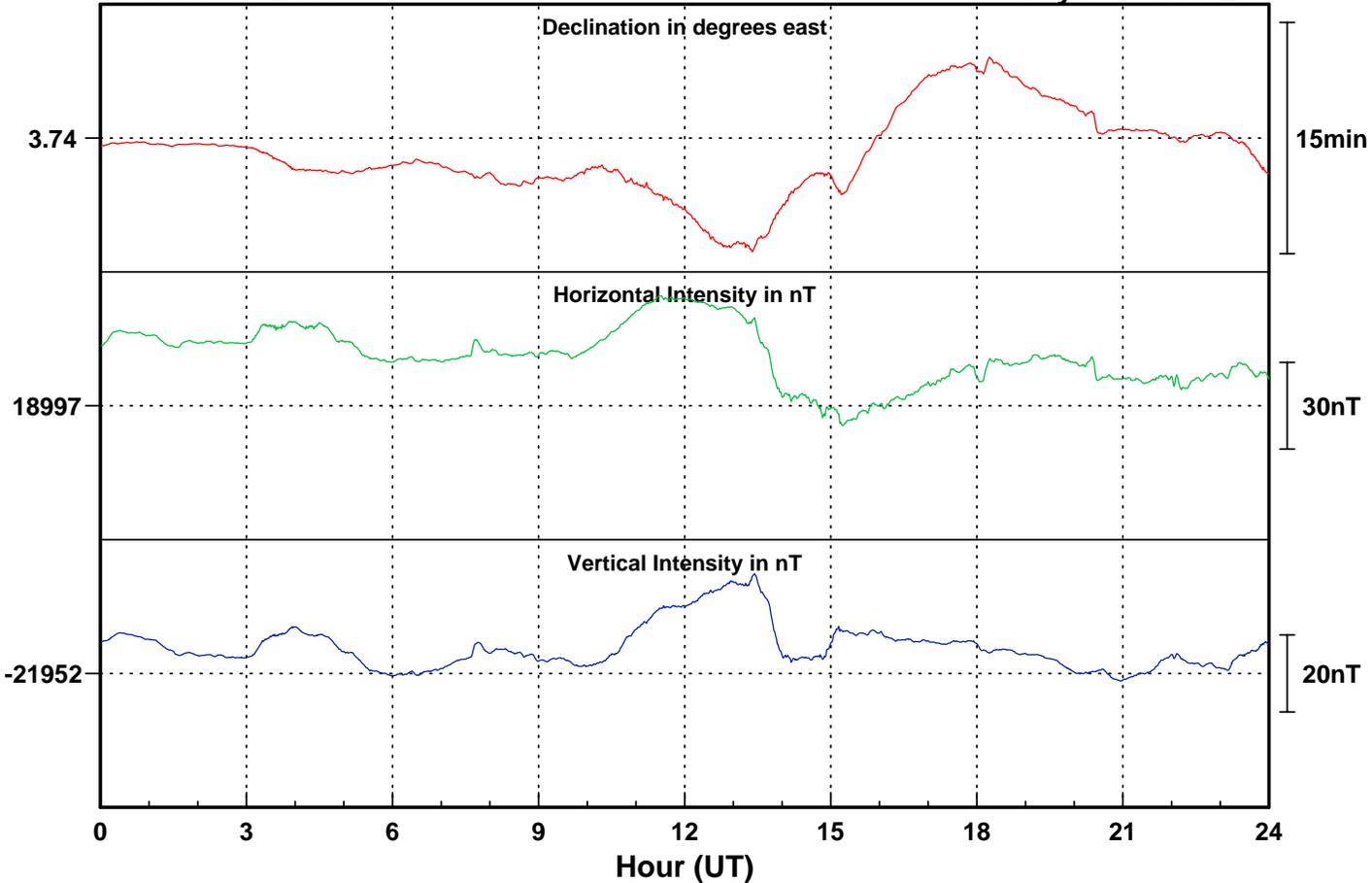
Falkland Islands

Day number: 272

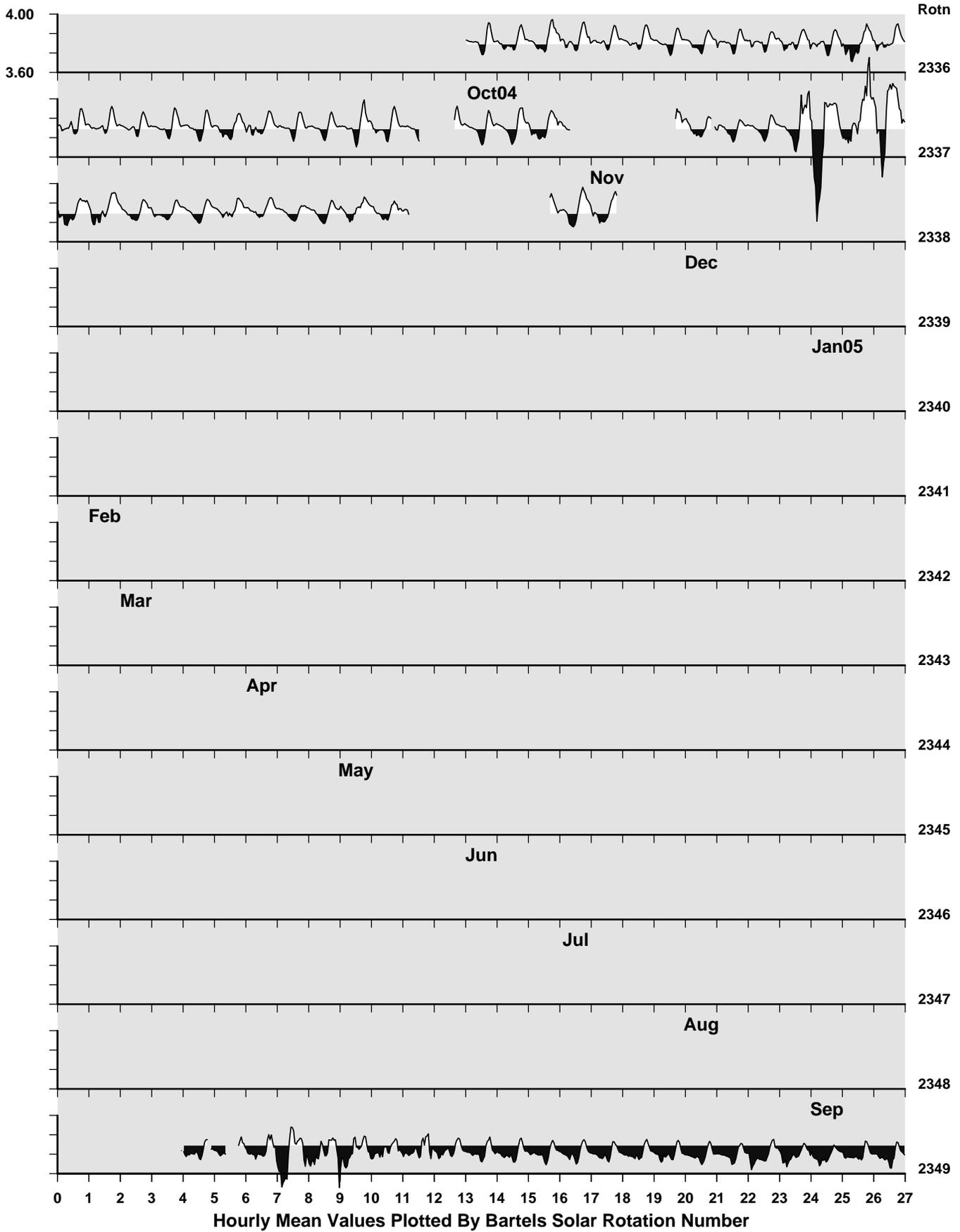


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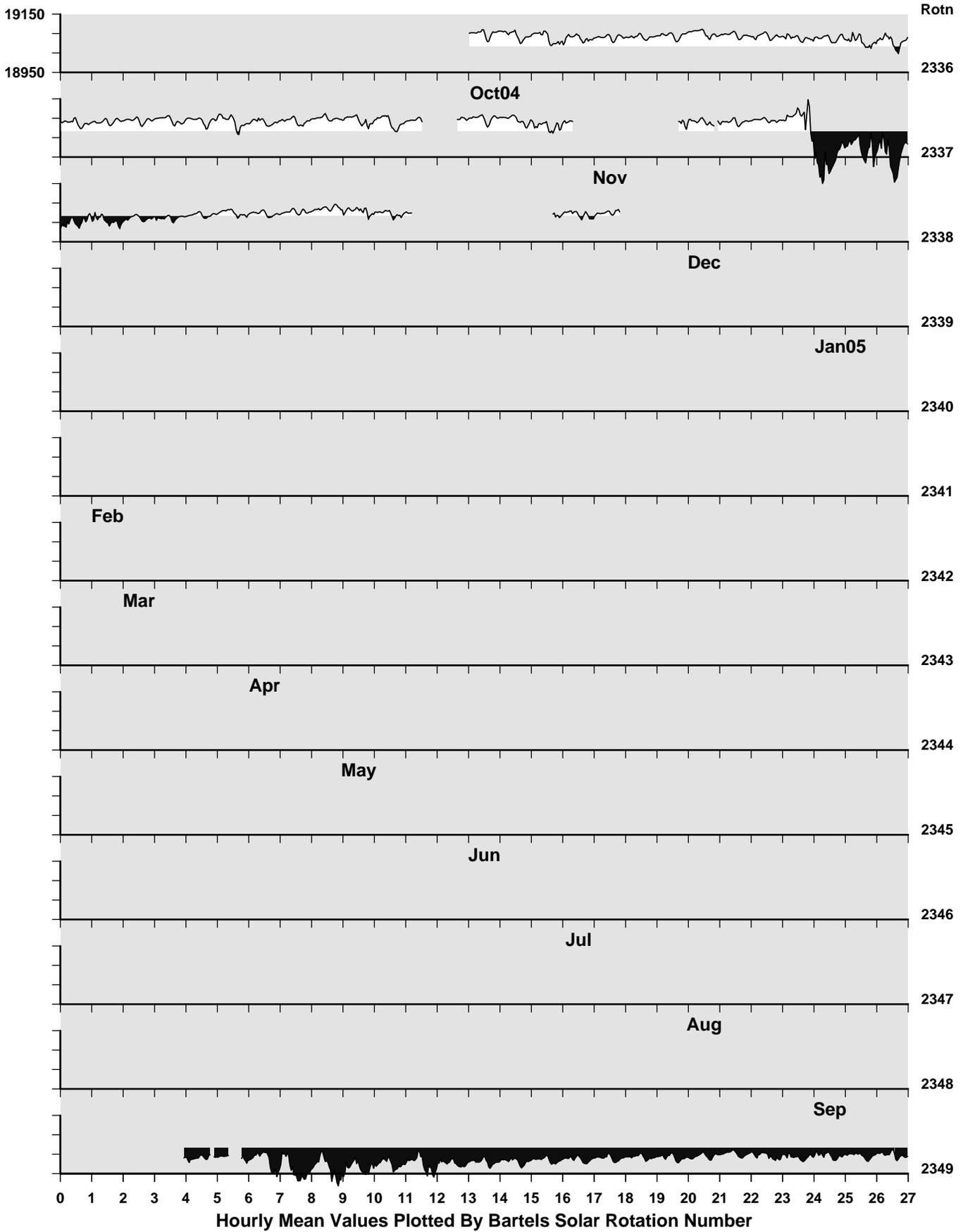
Day number: 273



Falkland Islands Observatory: Declination (degrees)

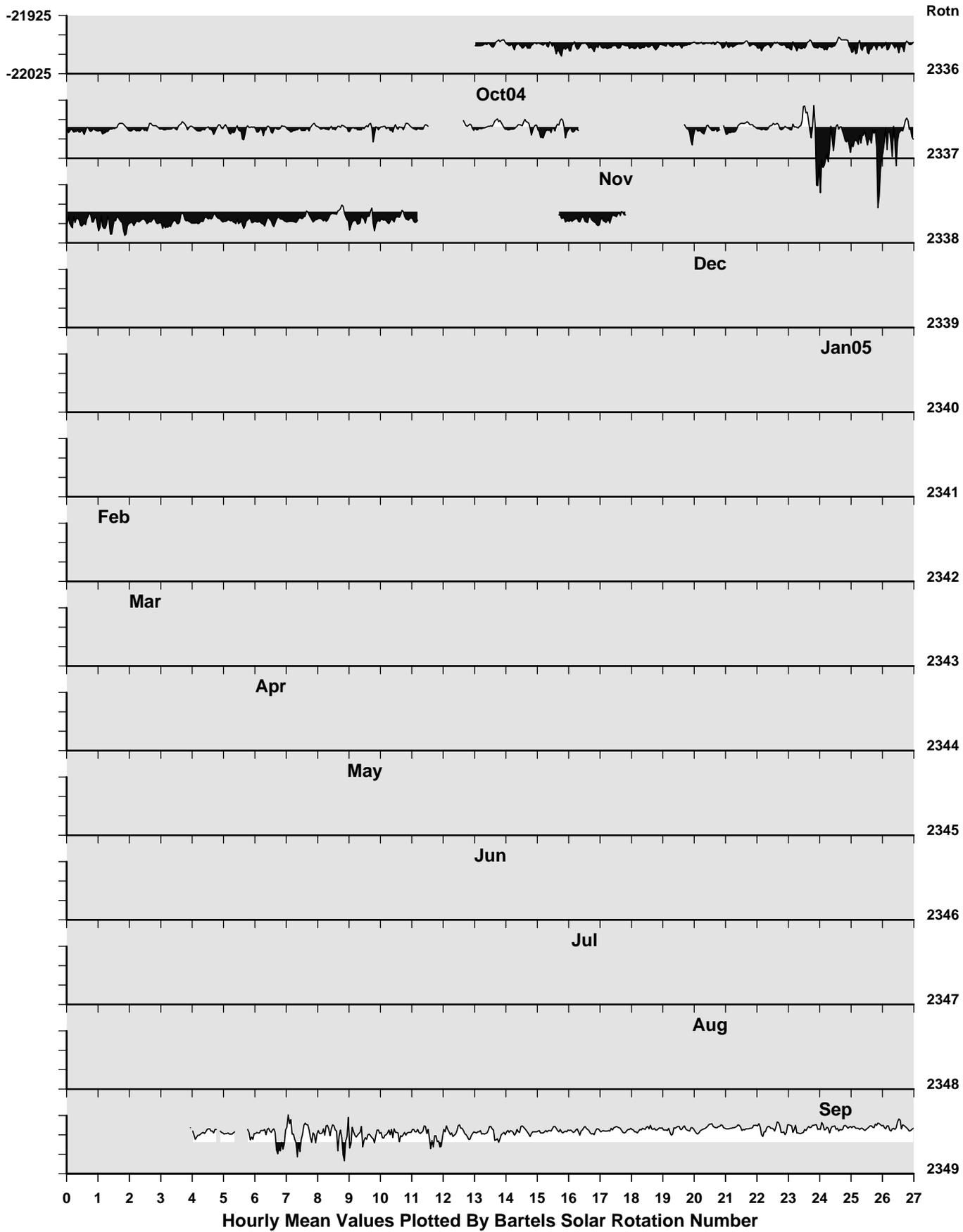


Falkland Islands Observatory: Horizontal Intensity (nT)



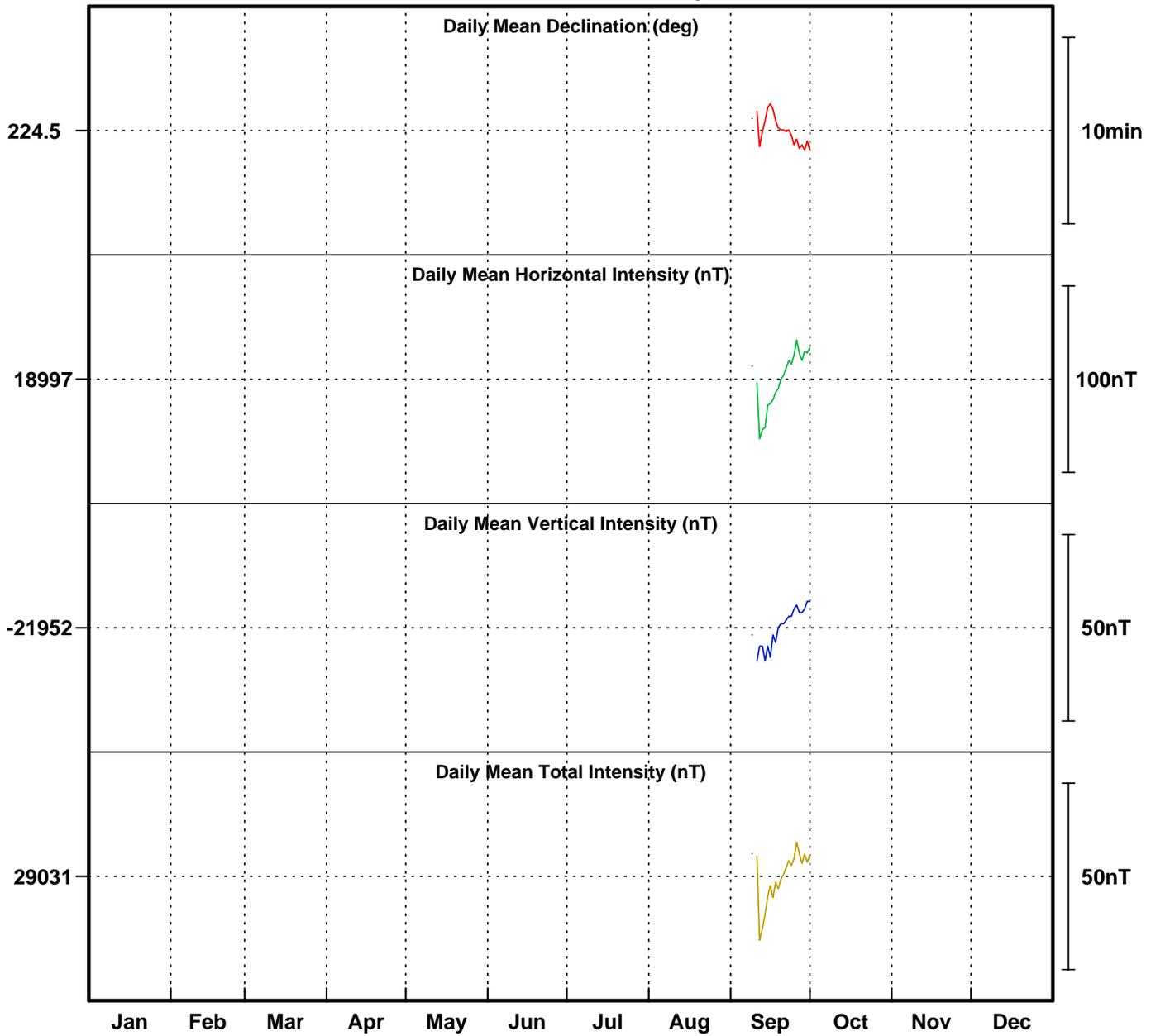
Hourly Mean Values Plotted By Bartels Solar Rotation Number

Falkland Islands Observatory: Vertical Intensity (nT)



Hourly Mean Values Plotted By Bartels Solar Rotation Number

Falklands Is Observatory 2005



Monthly Mean Values for Port Stanley Observatory 2005

| Month | <i>D</i> | <i>H</i> | <i>I</i> | <i>X</i> | <i>Y</i> | <i>Z</i> | <i>F</i> |
|-----------|----------|----------|----------|----------|----------|----------|----------|
| January | ***** | ***** | ***** | ***** | ***** | ***** | ***** |
| February | ***** | ***** | ***** | ***** | ***** | ***** | ***** |
| March | ***** | ***** | ***** | ***** | ***** | ***** | ***** |
| April | ***** | ***** | ***** | ***** | ***** | ***** | ***** |
| May | ***** | ***** | ***** | ***** | ***** | ***** | ***** |
| June | ***** | ***** | ***** | ***** | ***** | ***** | ***** |
| July | ***** | ***** | ***** | ***** | ***** | ***** | ***** |
| August | ***** | ***** | ***** | ***** | ***** | ***** | ***** |
| September | ***** | ***** | ***** | ***** | ***** | ***** | ***** |

Note

- i. There are no monthly mean values between Jan –Sep 2005. Observatory equipment was damaged during a lightning storm and was consequentially not operational during this time. Normal observatory operations were restored on 8th Sep 2005.