BRITISH GEOLOGICAL SURVEY

Ascension Island Observatory *Monthly Magnetic Bulletin*

September 2005

05/09/AS

British Geological Survey

NATURAL ENVIRONMENT RESEARCH COUNCIL

1. ASCENSION ISLAND OBSERVATORY MAGNETIC DATA

1.1 Introduction

Ascension Island Observatory was installed by the British Geological Survey (BGS) with financial support from a consortium of oil companies and became operational in September 1992.

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.

Enquiries about the data should be addressed to:

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British Geological Survey
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Scotland, UK

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Fax: +4 (0) 131 668 4368
E-mail: o.baillie@bgs.ac.uk
Internet: *www.geomag.bgs.ac.uk*

1.2 Position

Ascension Island Observatory, one of the geomagnetic observatories maintained and operated by BGS, is situated on a site adjacent to the Cable and Wireless Earth Station on Donkey Plain, Ascension Island.
The observatory co-ordinates are:

Geographic:	*7°57.0′S*	*345°37.4′E*
Geomagnetic:	*2° 07.3′S*	*55° 04.5′E*
Height above mean sea level:		*177 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.

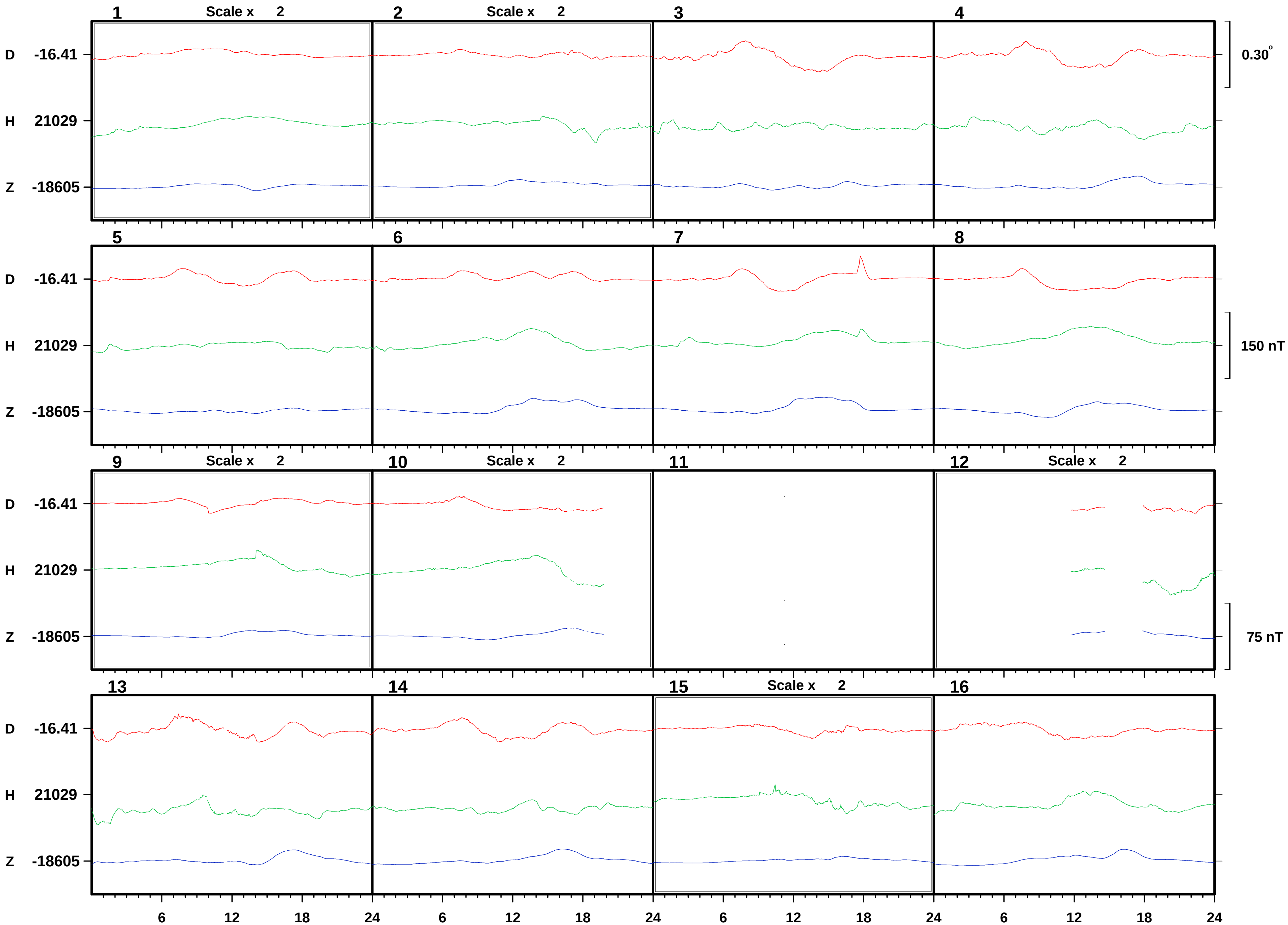
1.4.3 Hourly Mean Value Plots

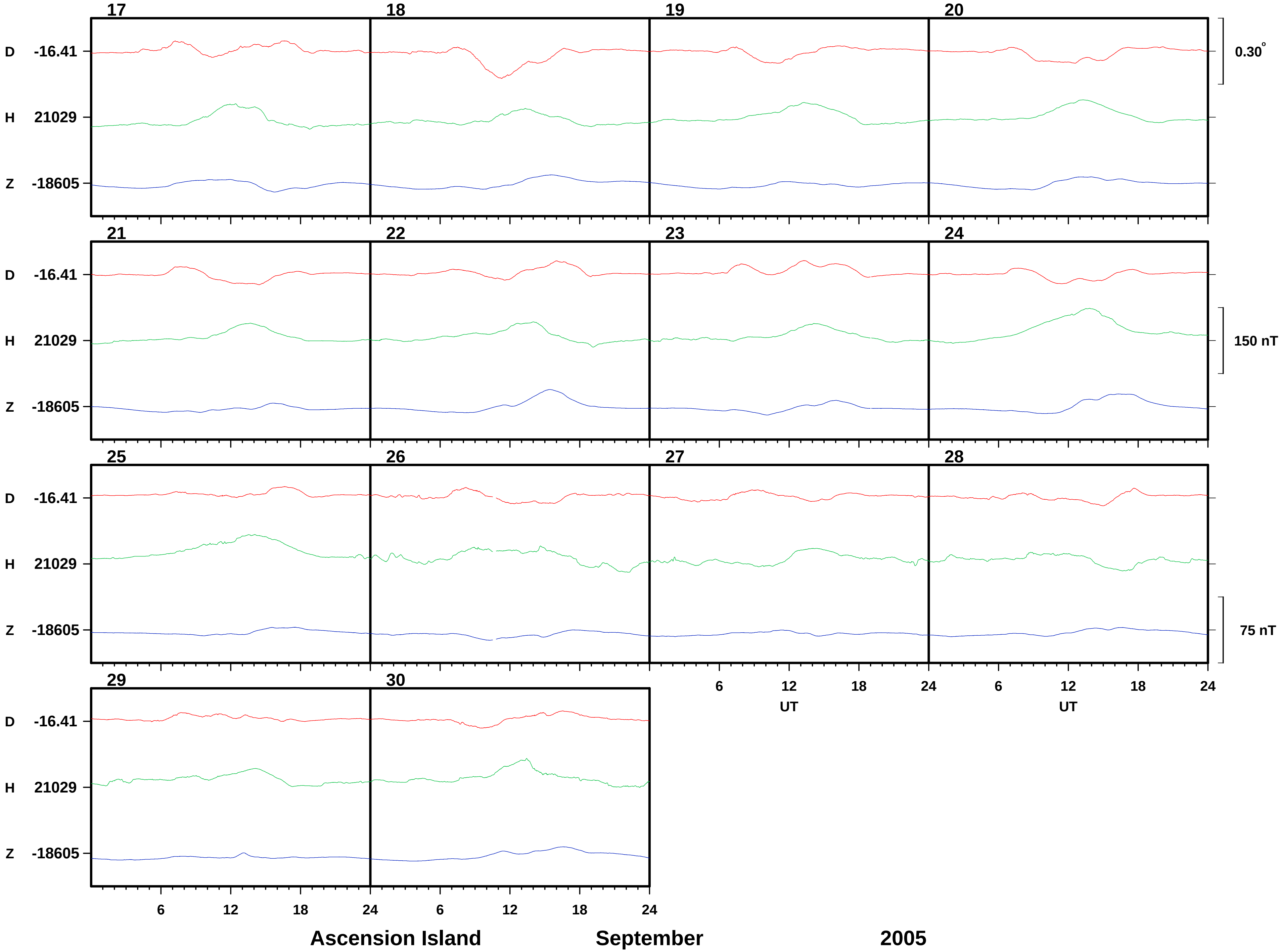
Hourly mean values of *D*, *H* and *Z* for the past 12 months are plotted in 27-day segments corresponding to the Bartels solar rotation number. Magnetic disturbances associated with active regions on the surface of the Sun may recur after 27 days: the same is true for geomagnetically quiet intervals. 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

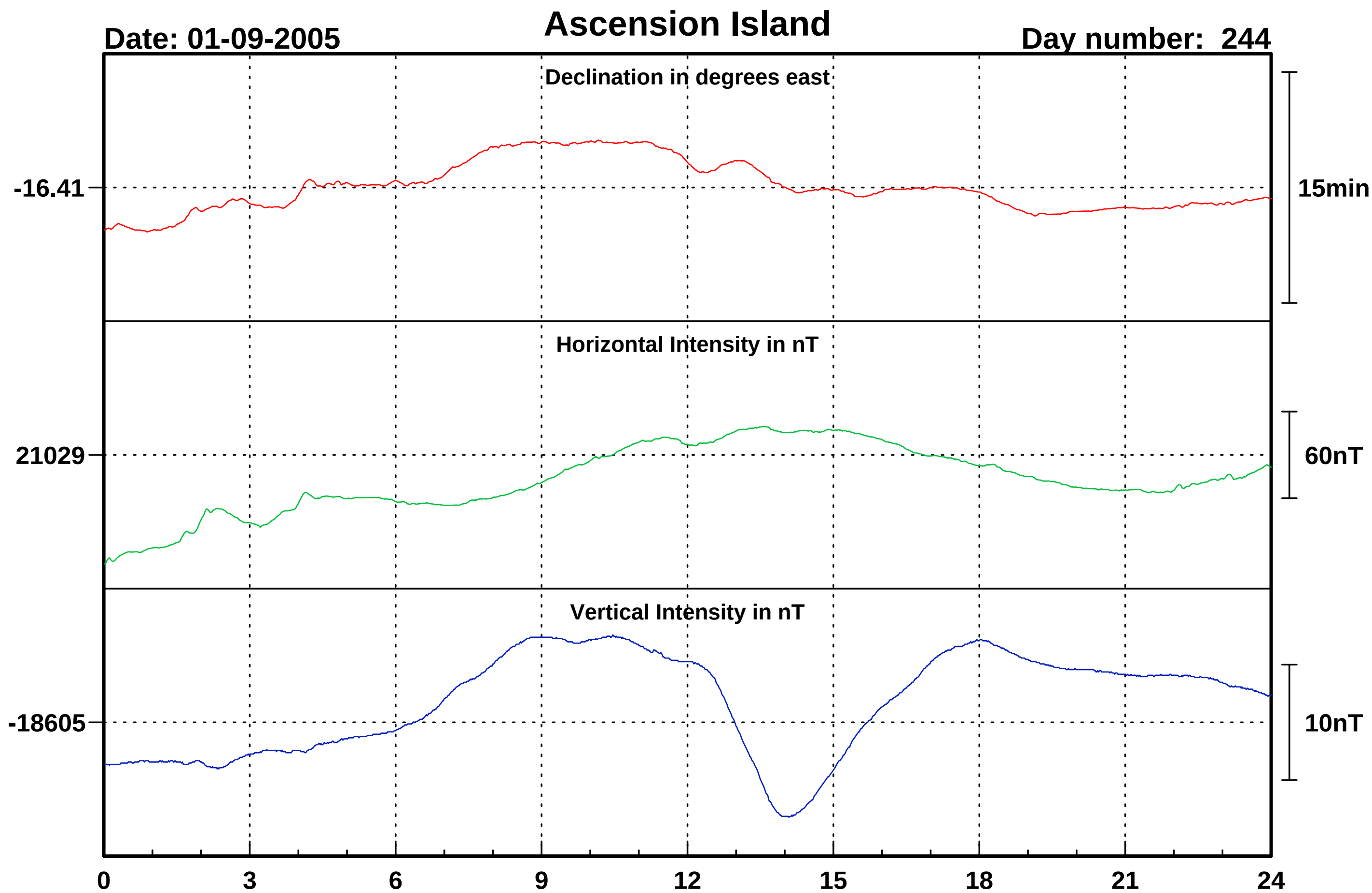
Daily mean values of *D*, *H*, *Z* and *F* are plotted throughout the year. In addition, a table of monthly mean values of all the geomagnetic elements is provided. These values depend on accurate specification of the fluxgate sensor baselines. This data is provisional. It is anticipated that provisional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

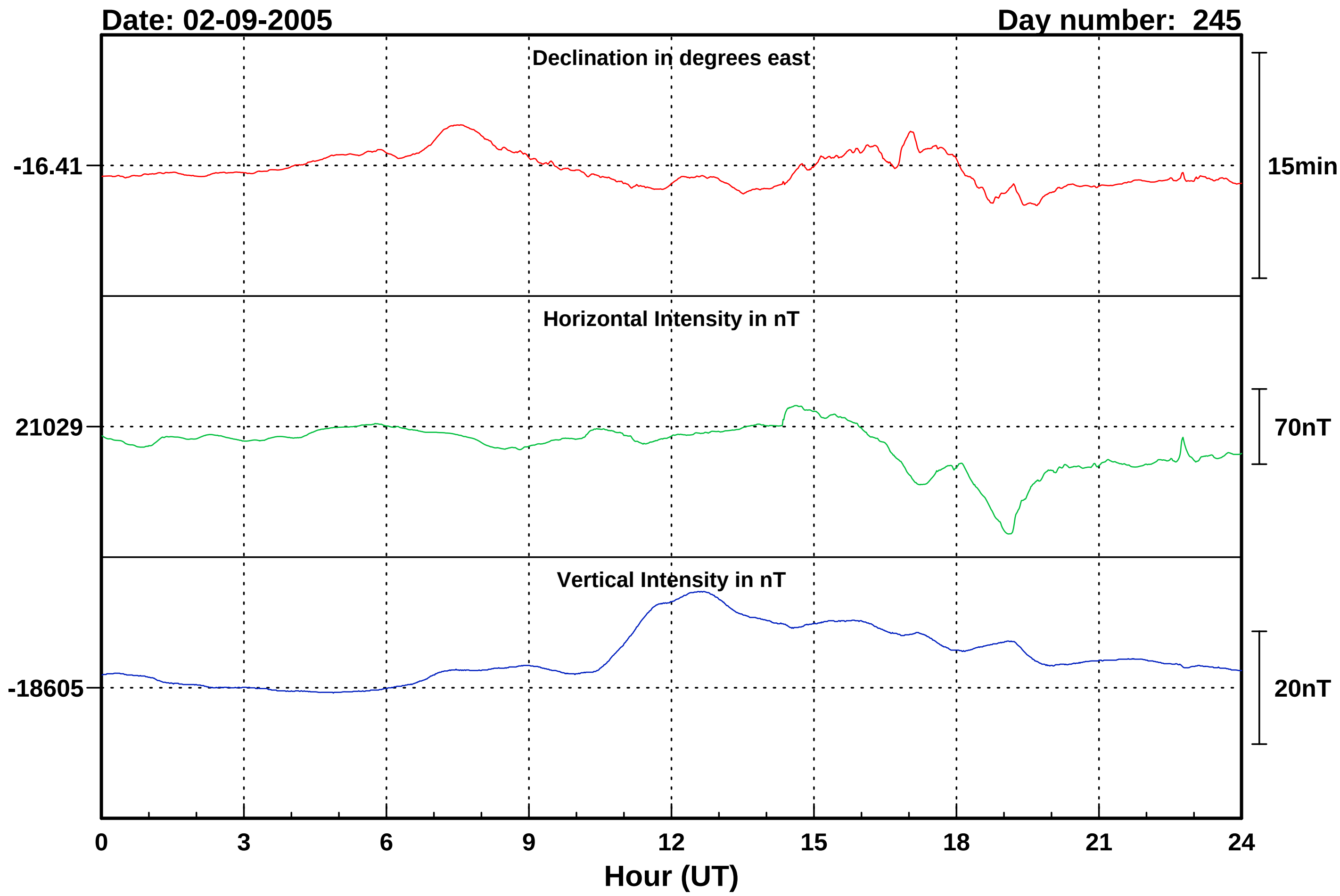
Ascension Island September 2005



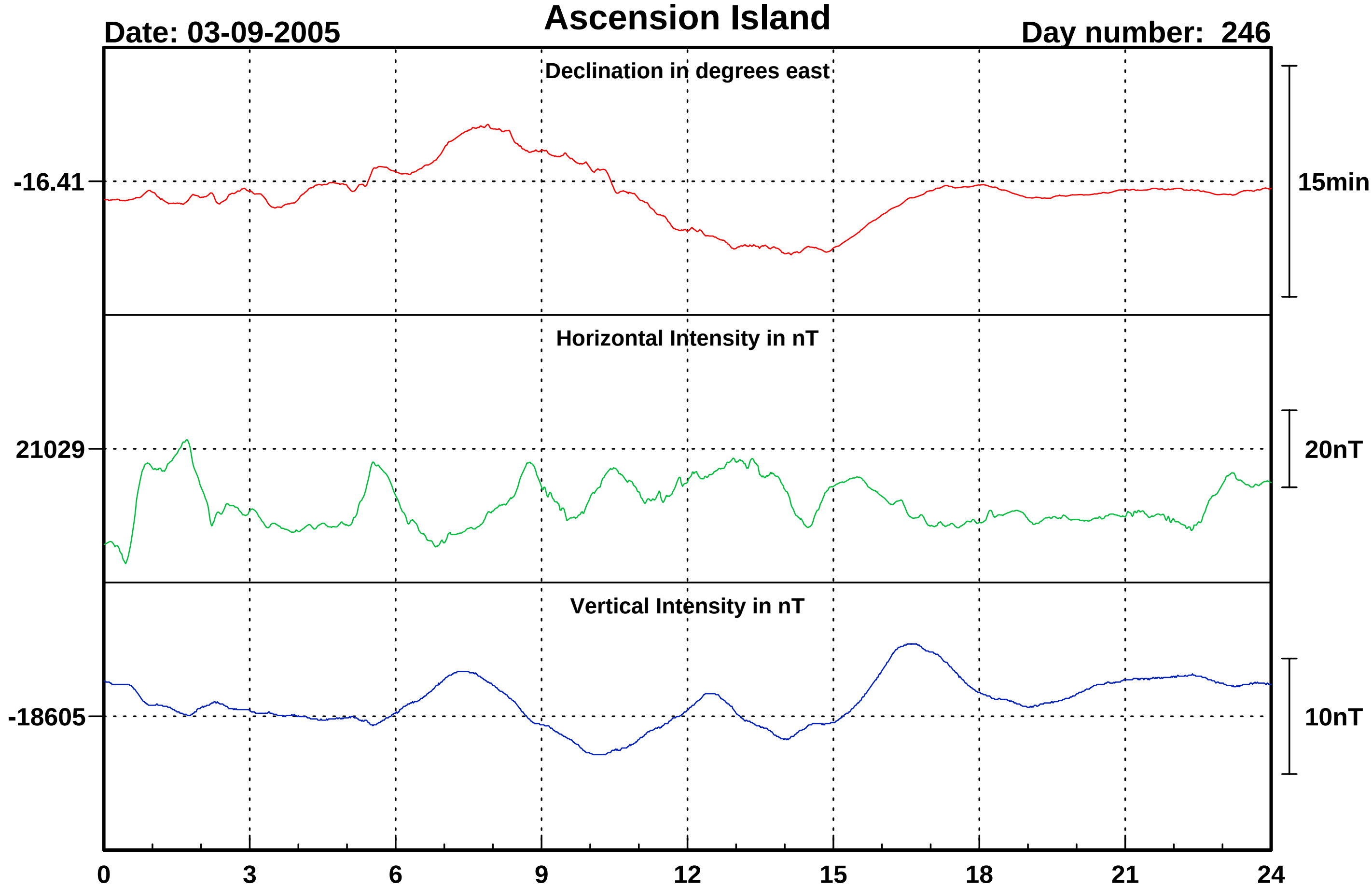


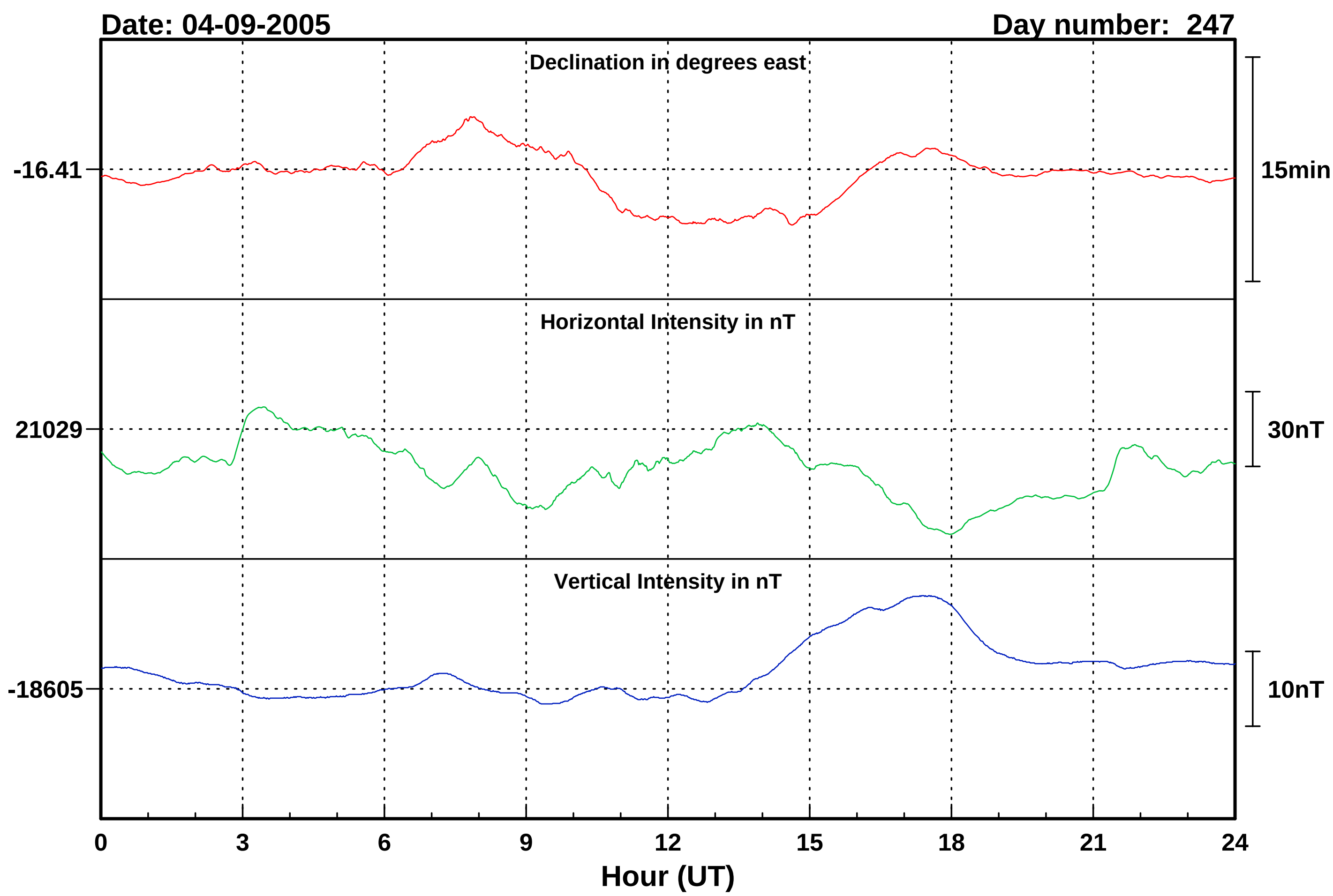
17
18
19
20
21
22
23
24
25
26
27
28
29
30
D -16.41
H 21029
Z -18605
0.30°
150 nT
75 nT
6
12
18
24
UT
Ascension Island
September
2005


Ascension Island
Date: 01-09-2005
Day number: 244
Declination in degrees east
-16.41
15min
Horizontal Intensity in nT
21029
60nT
Vertical Intensity in nT
-18605
10nT
0 3 6 9 12 15 18 21 24

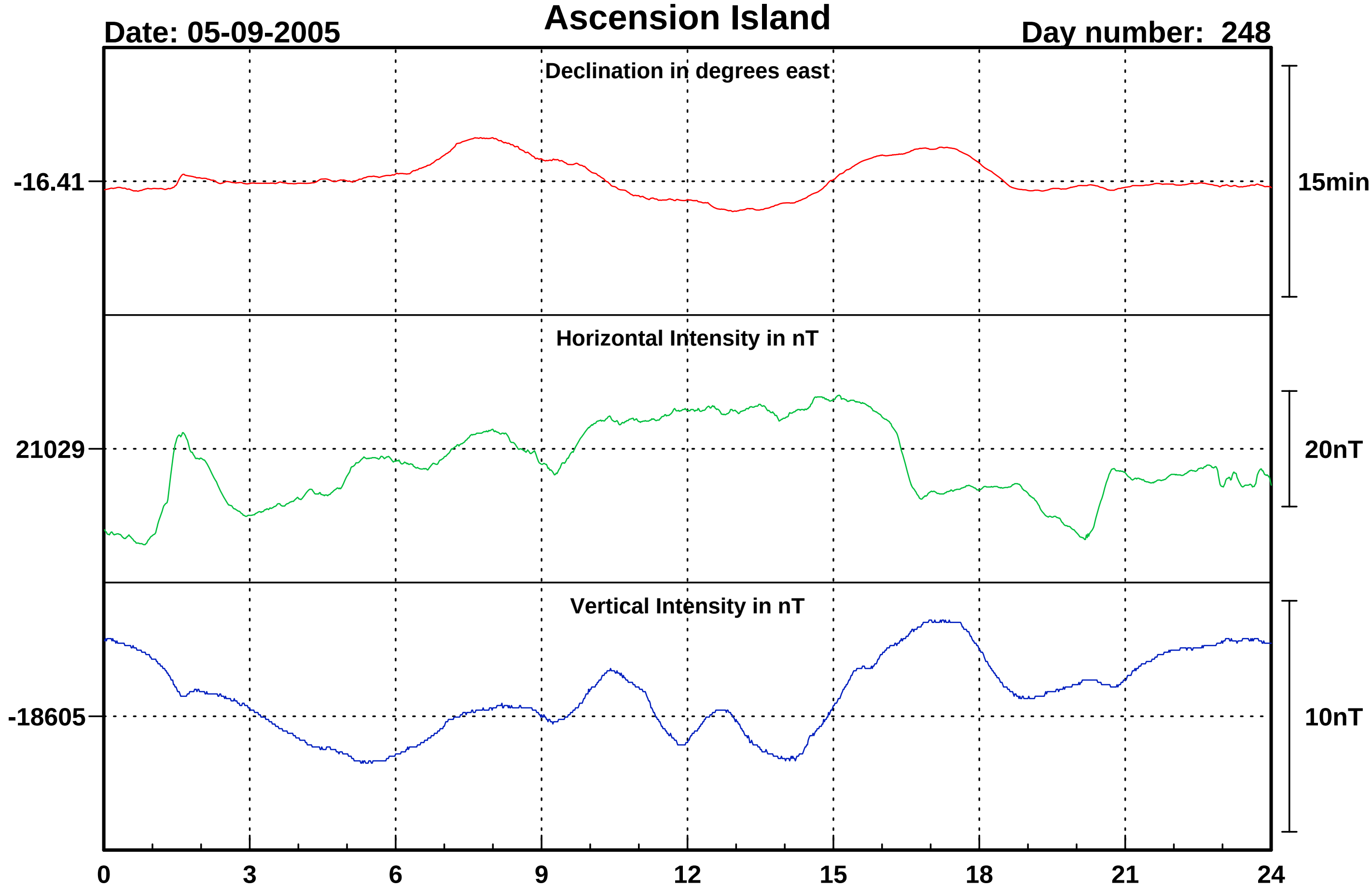

Date: 02-09-2005
Day number: 245
Declination in degrees east
-16.41
15min
Horizontal Intensity in nT
21029
70nT
Vertical Intensity in nT
-18605
20nT
0 3 6 9 12 15 18 21 24
Hour (UT)

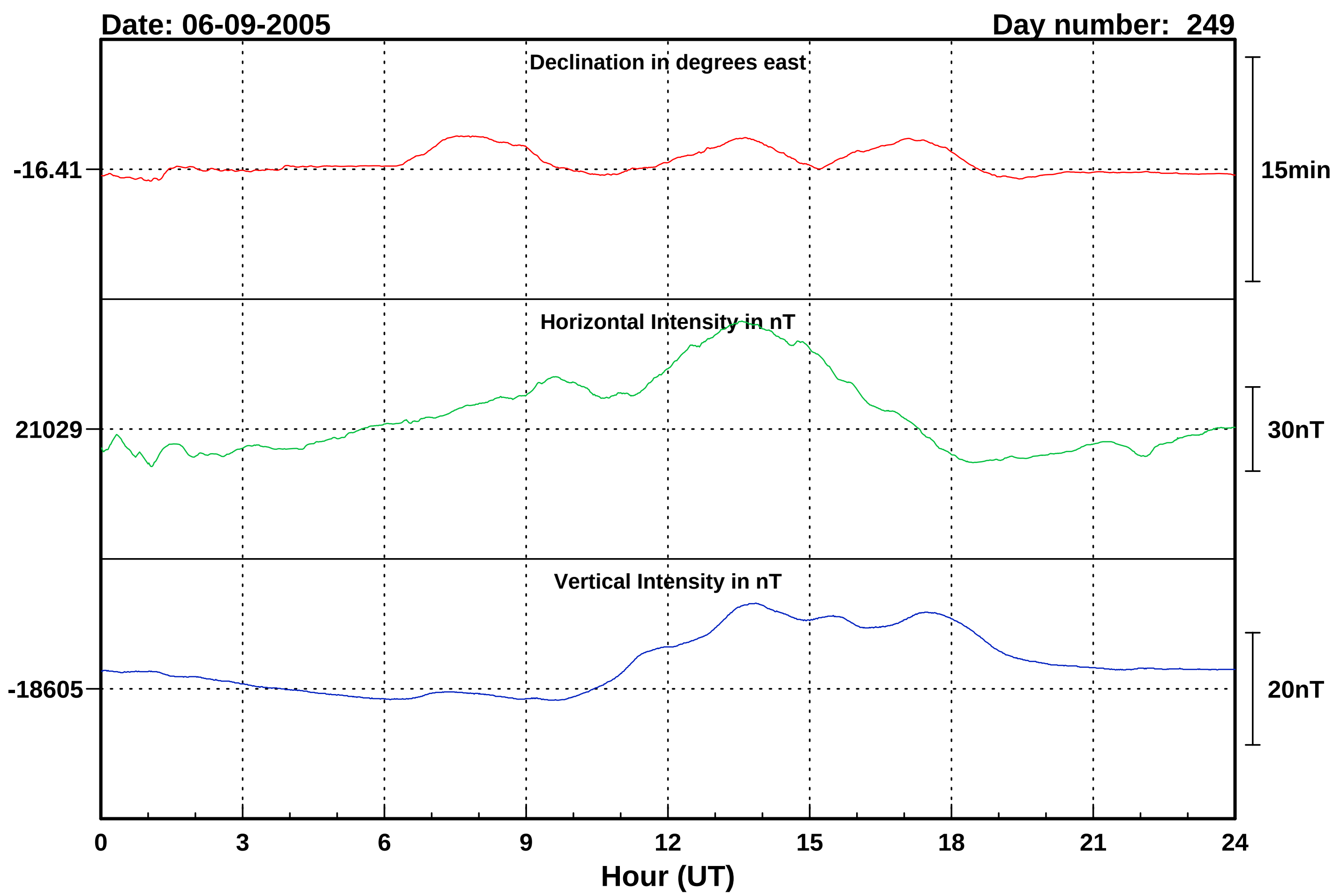
Ascension Island





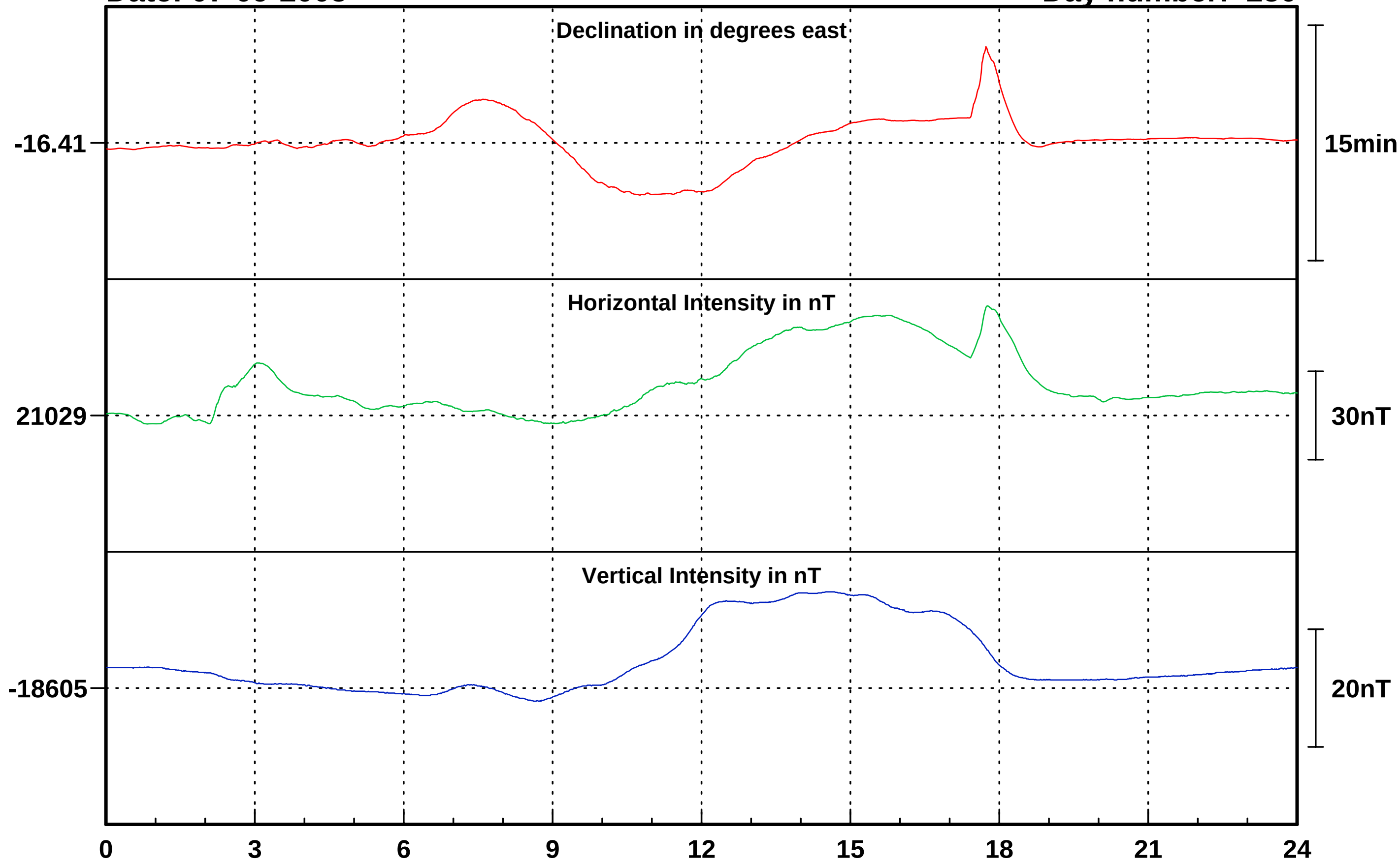
Ascension Island



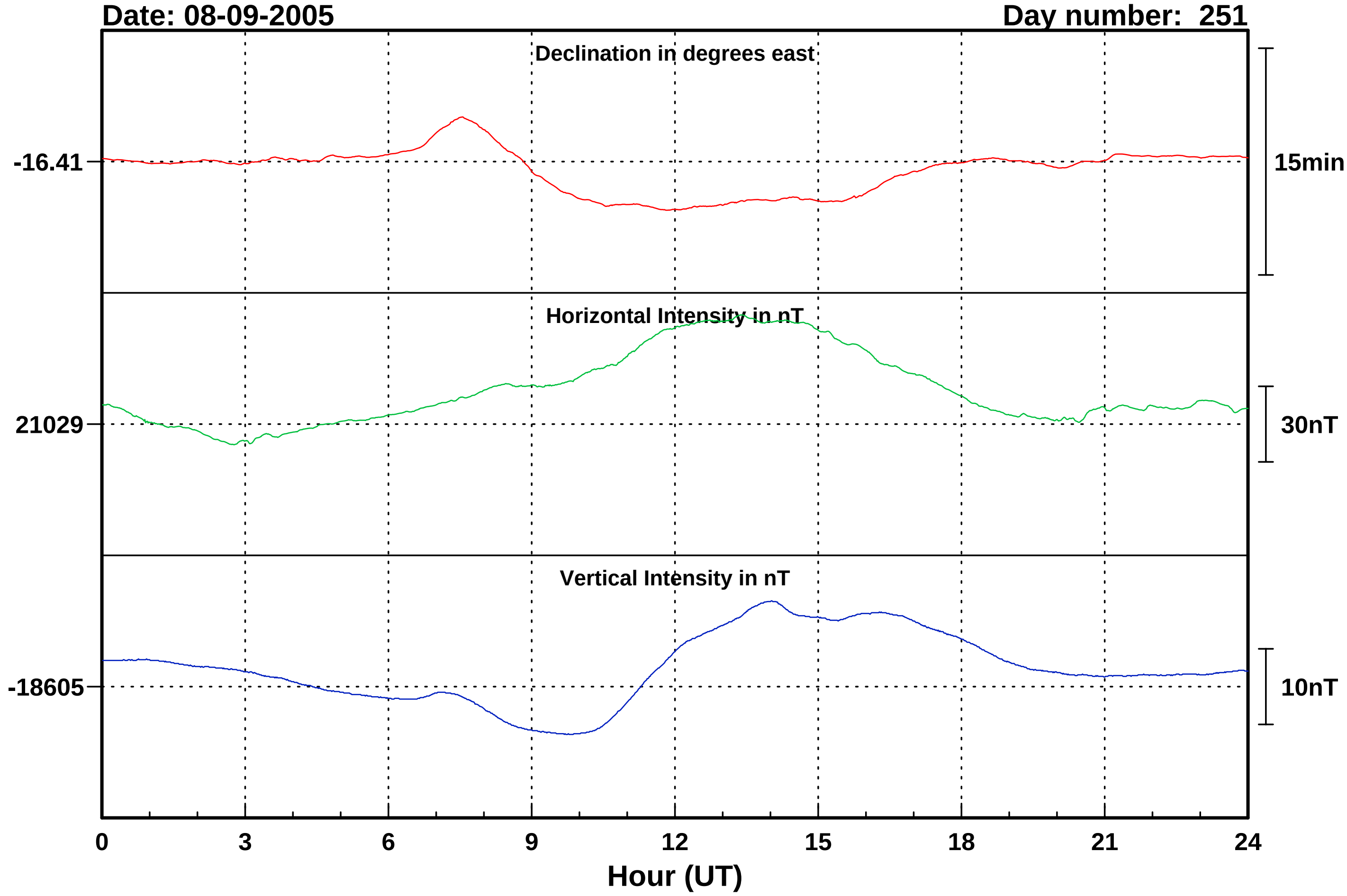


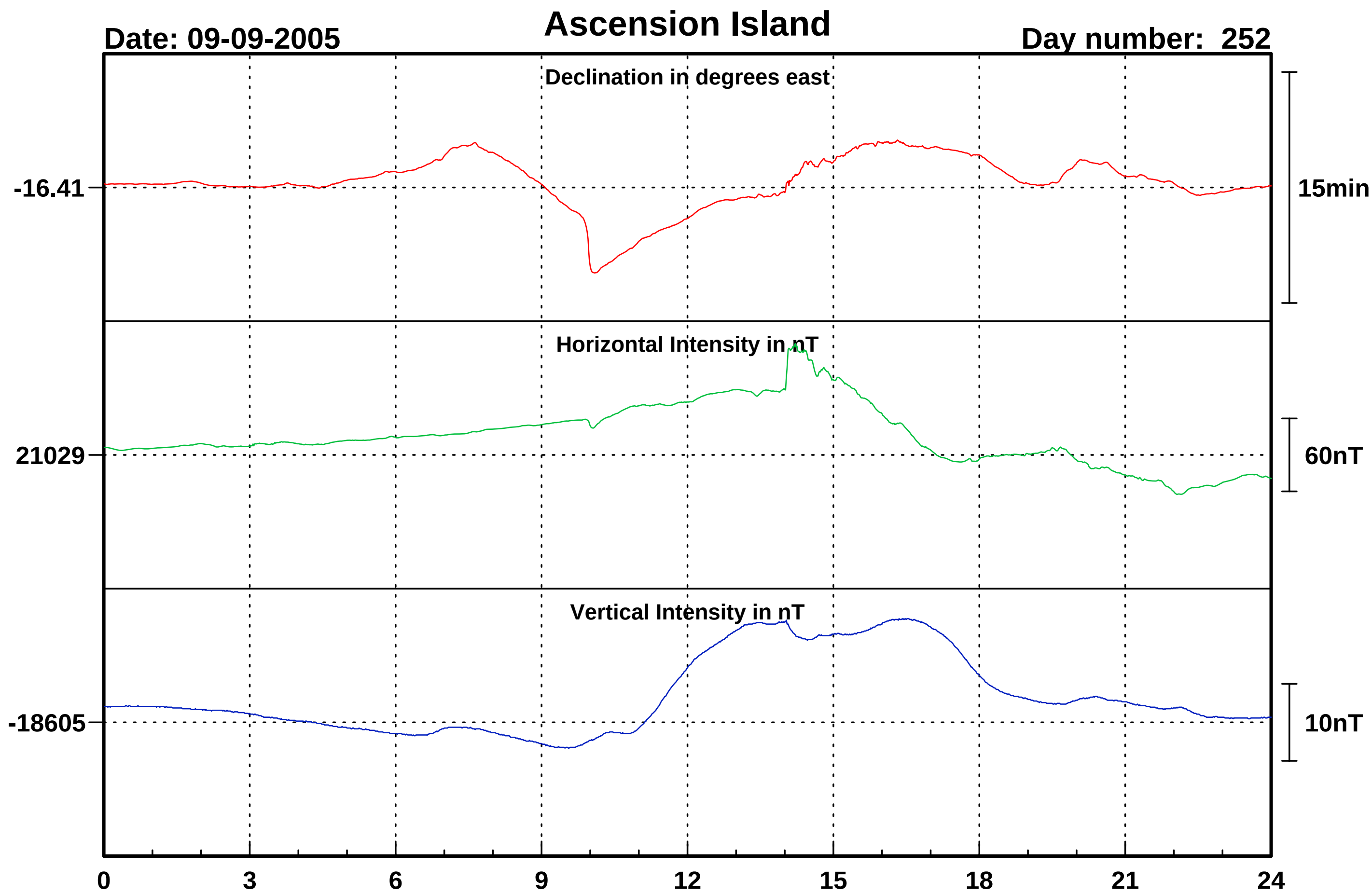
Ascension Island

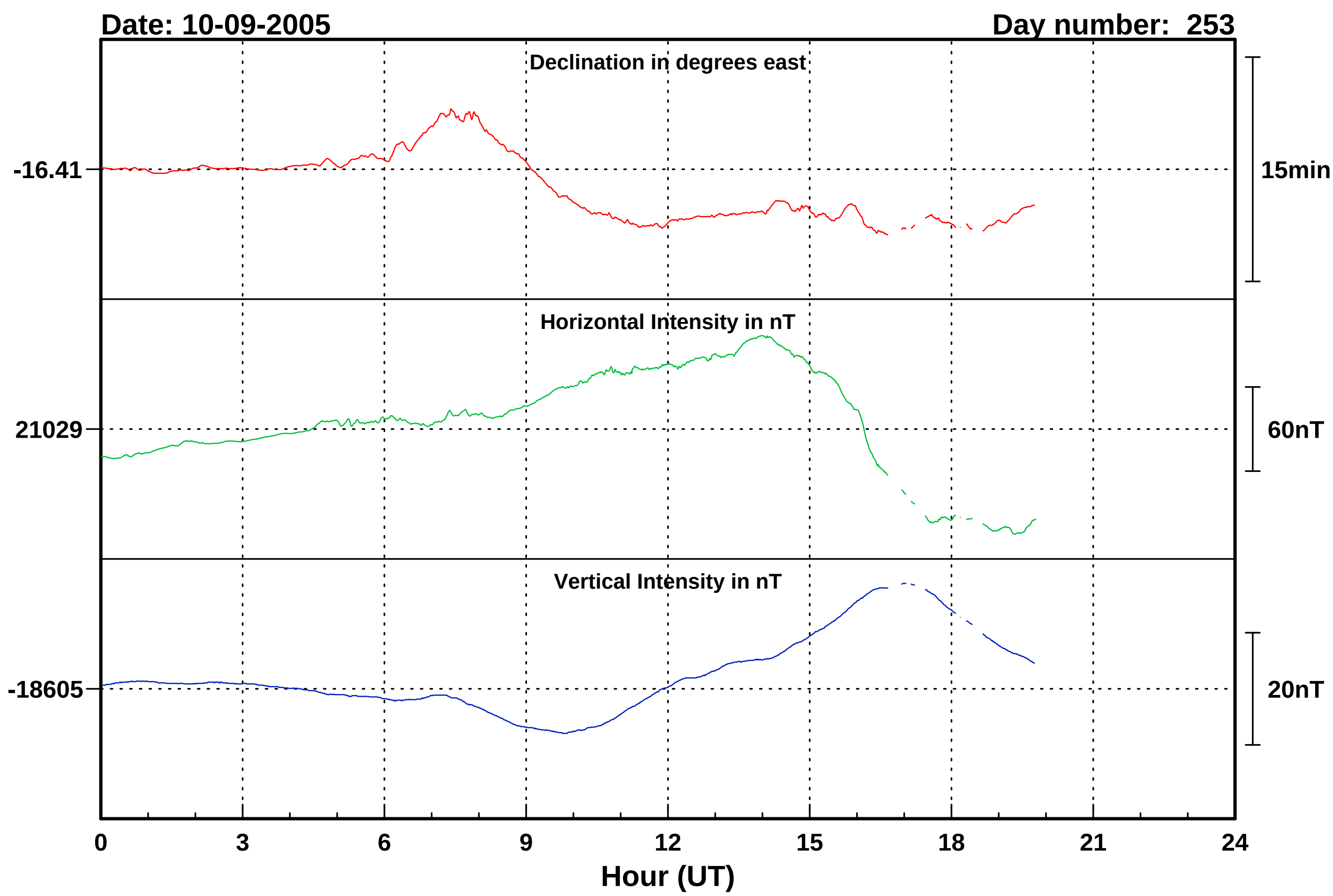
Date: 07-09-2005 Day number: 250



Date: 08-09-2005 Day number: 251

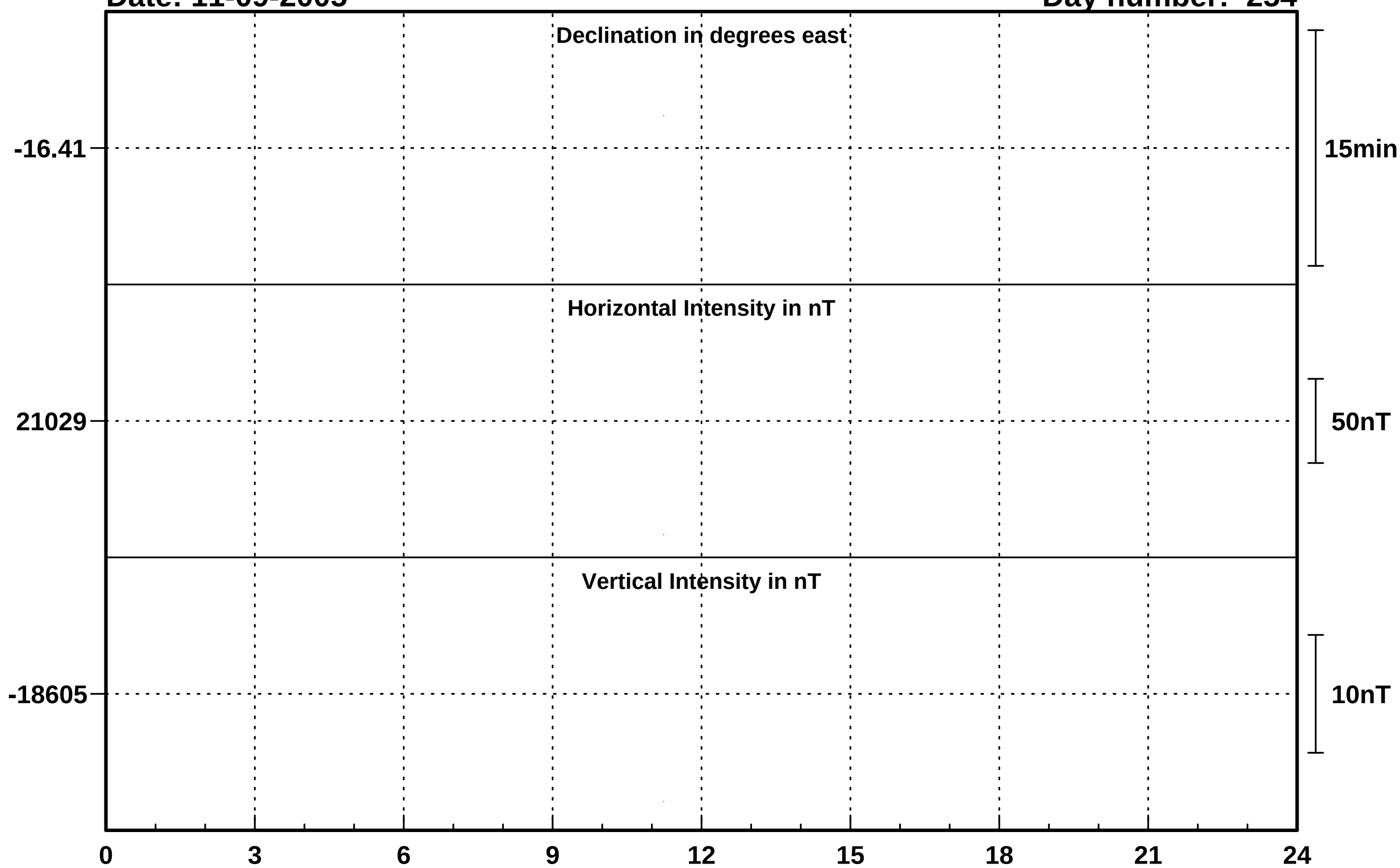



Ascension Island
Date: 09-09-2005
Day number: 252
Declination in degrees east
-16.41
15min
Horizontal Intensity in nT
21029
60nT
Vertical Intensity in nT
-18605
10nT
0
3
6
9
12
15
18
21
24

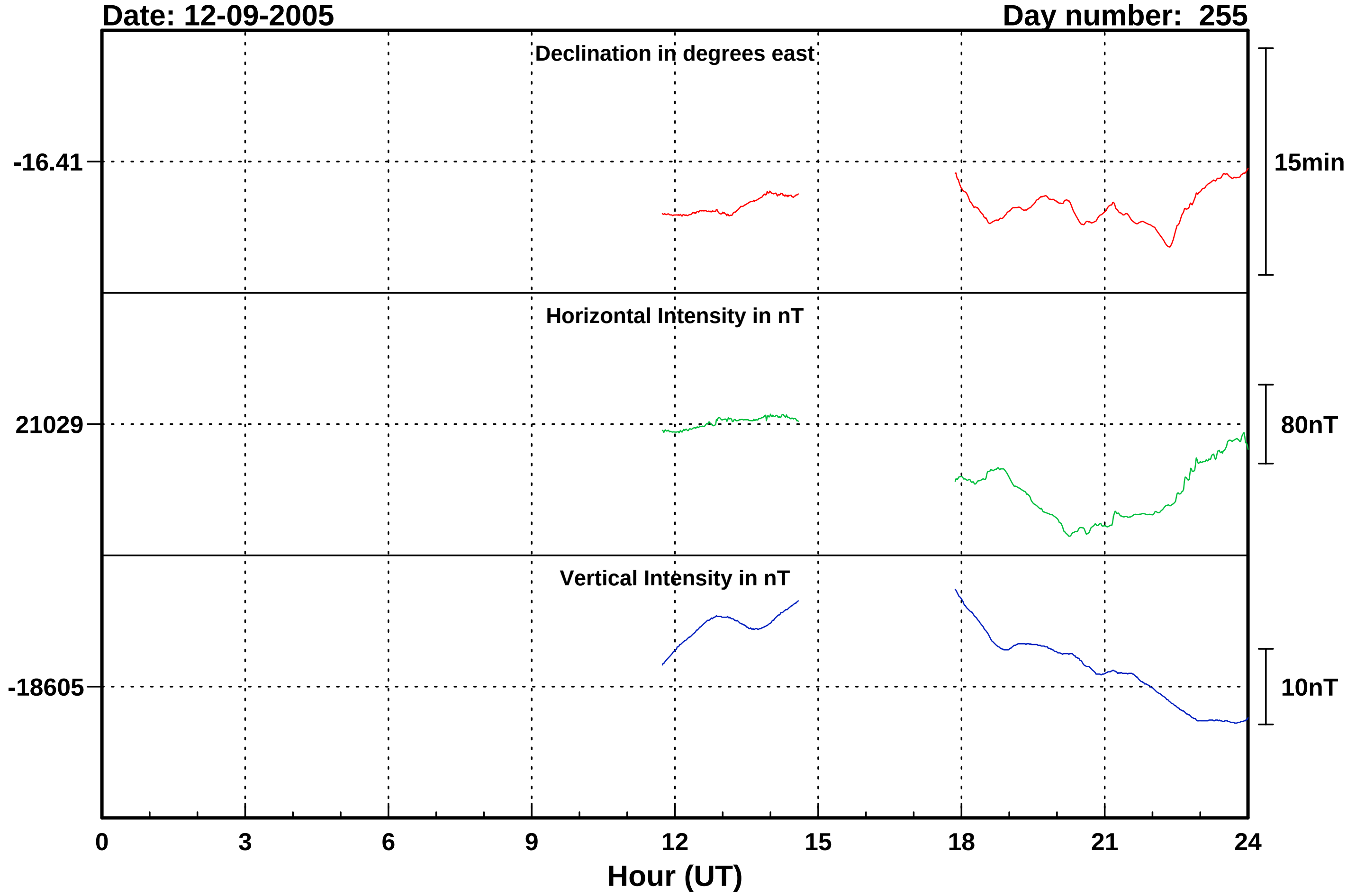

Date: 10-09-2005
Day number: 253
Declination in degrees east
-16.41
15min
Horizontal Intensity in nT
21029
60nT
Vertical Intensity in nT
-18605
20nT
0
3
6
9
12
15
18
21
24
Hour (UT)

Ascension Island

Date: 11-09-2005 Day number: 254

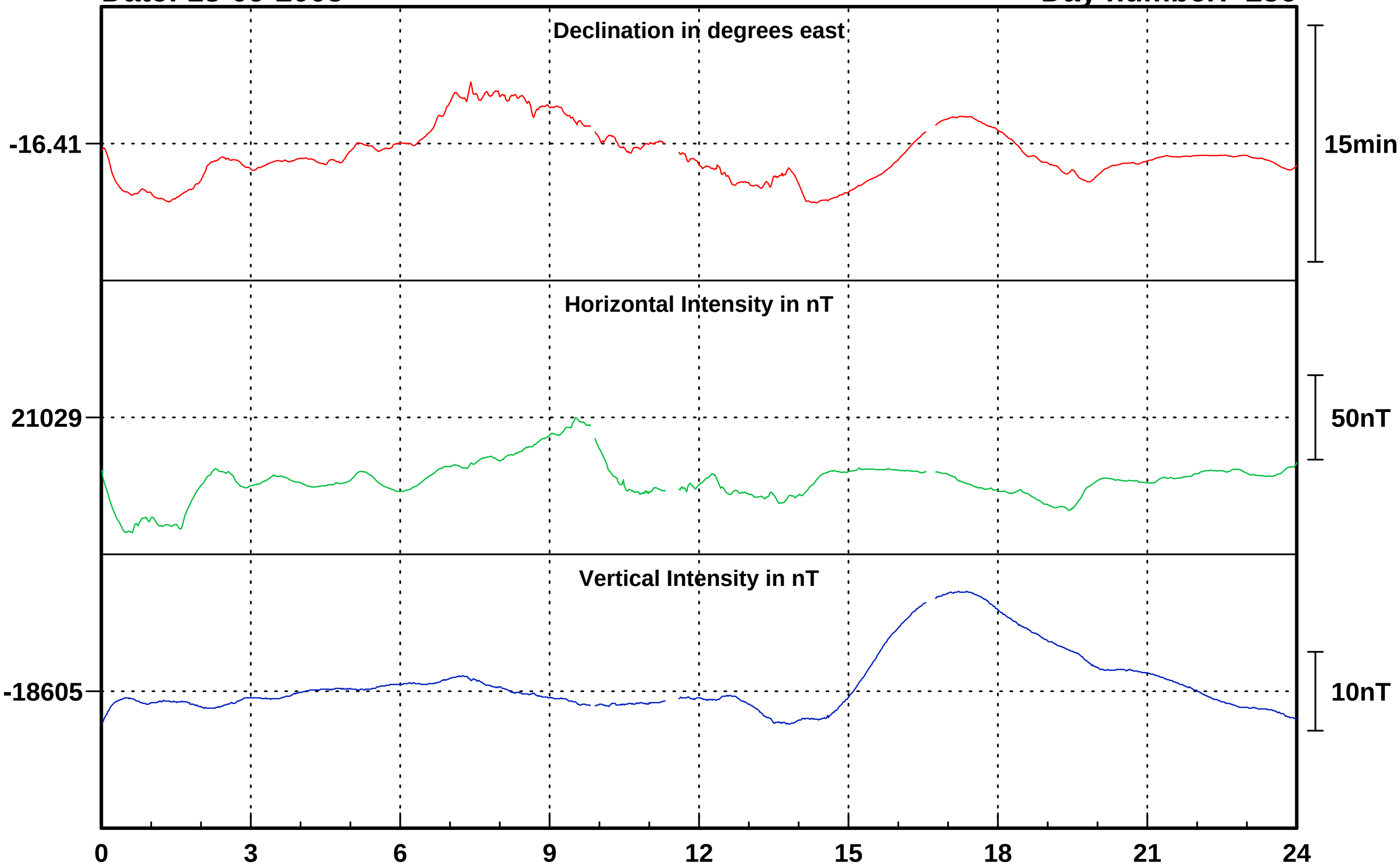


Date: 12-09-2005 Day number: 255

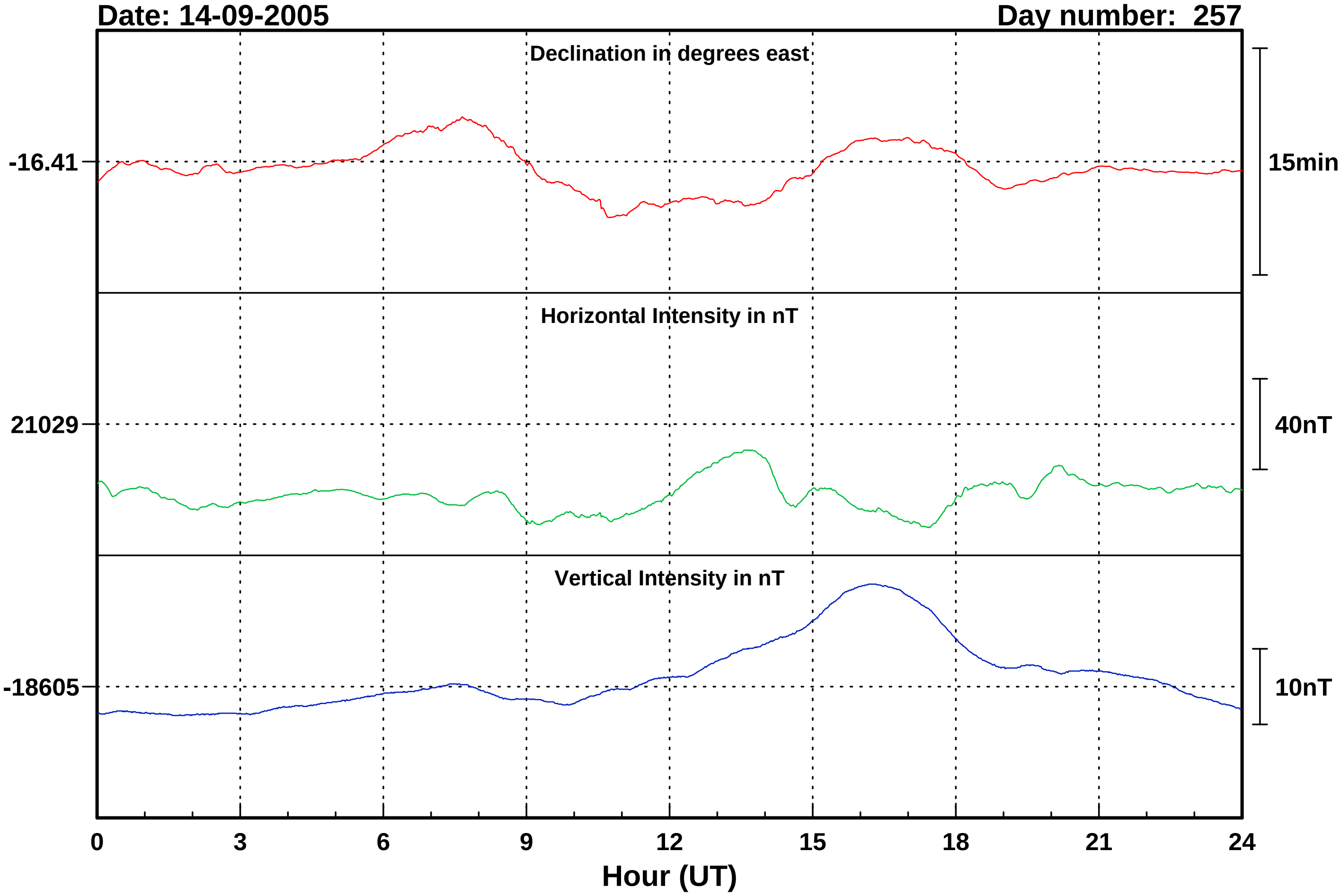


Ascension Island

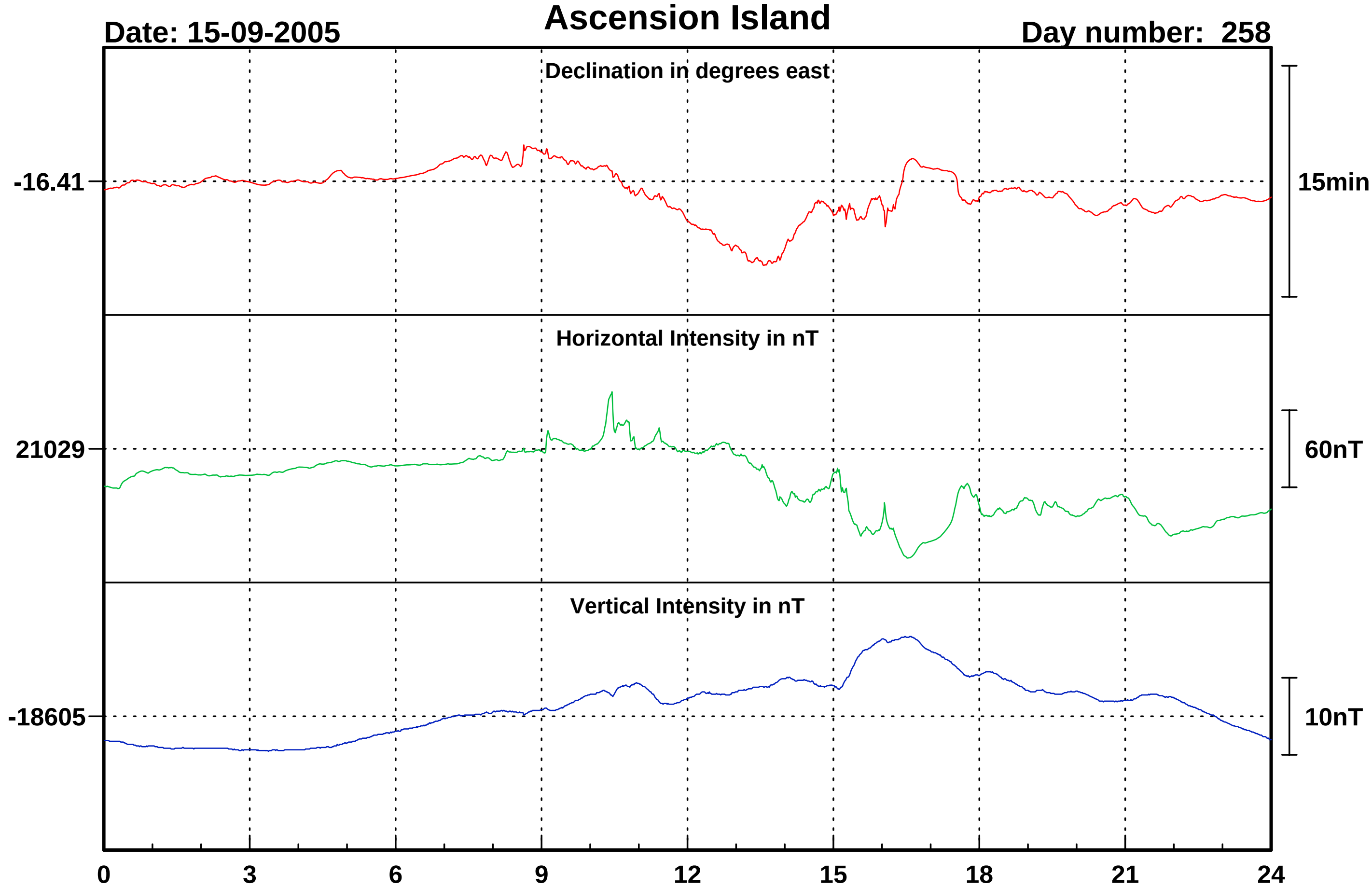
Date: 13-09-2005 Day number: 256

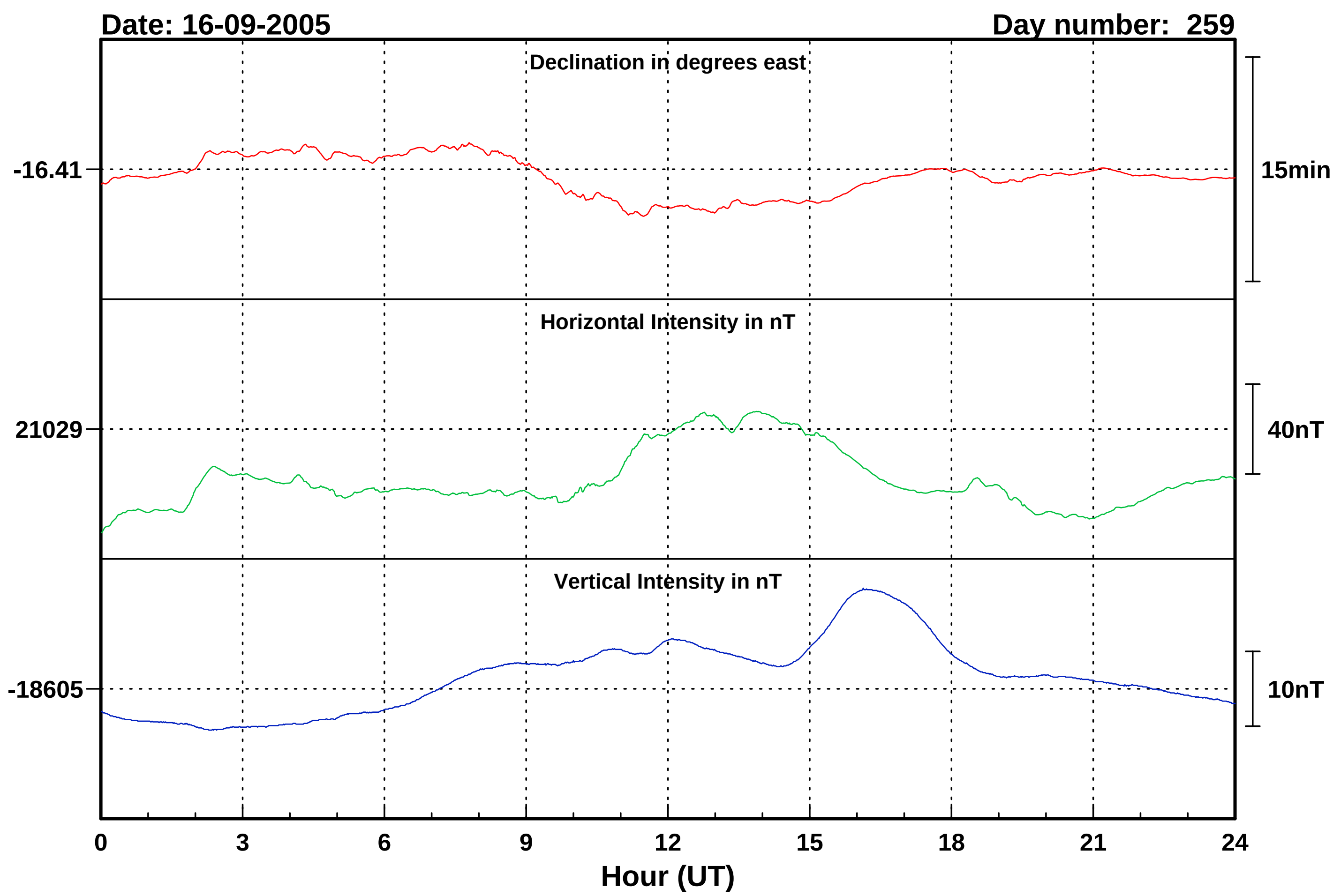


Date: 14-09-2005 Day number: 257



Ascension Island





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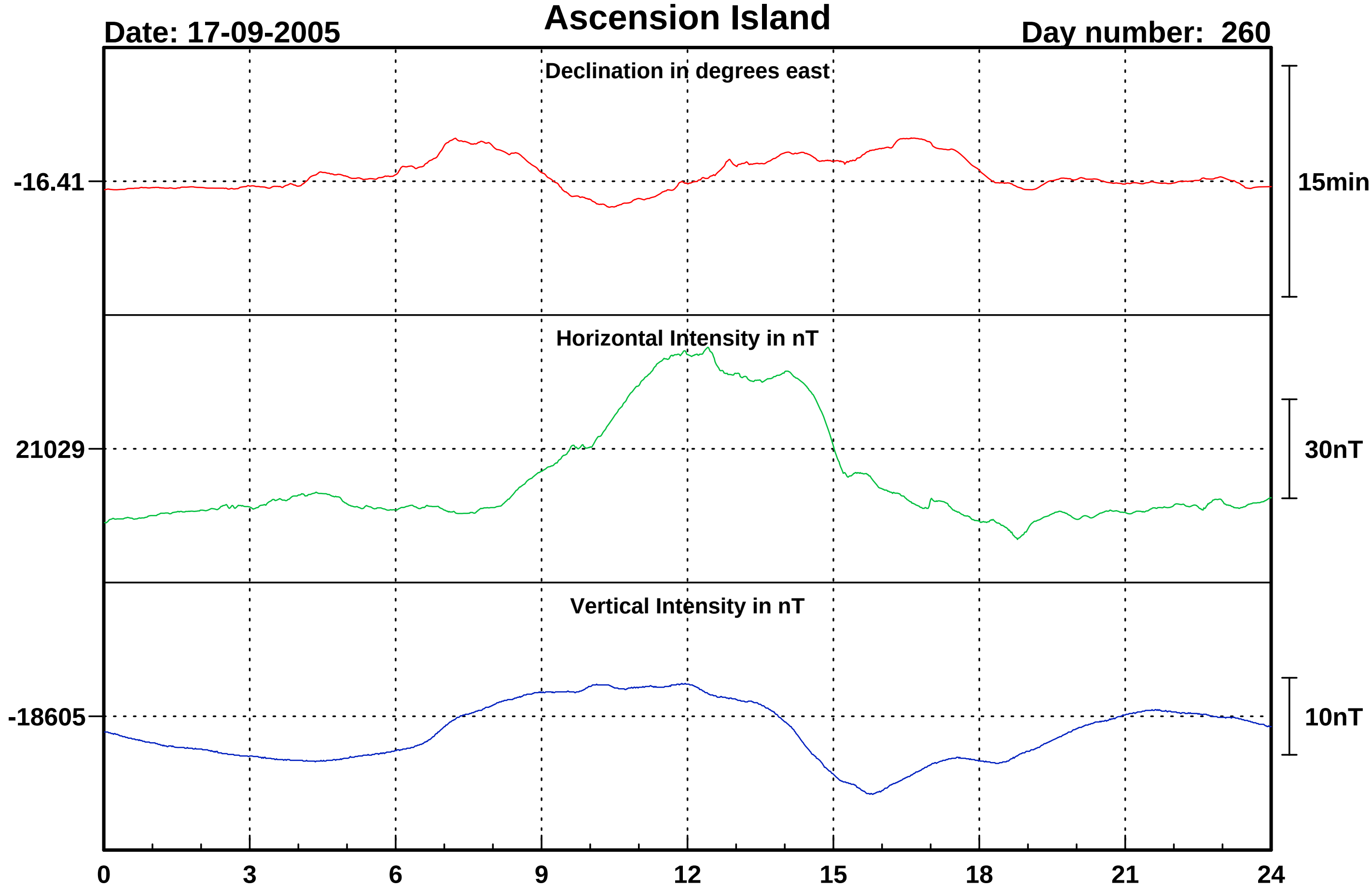
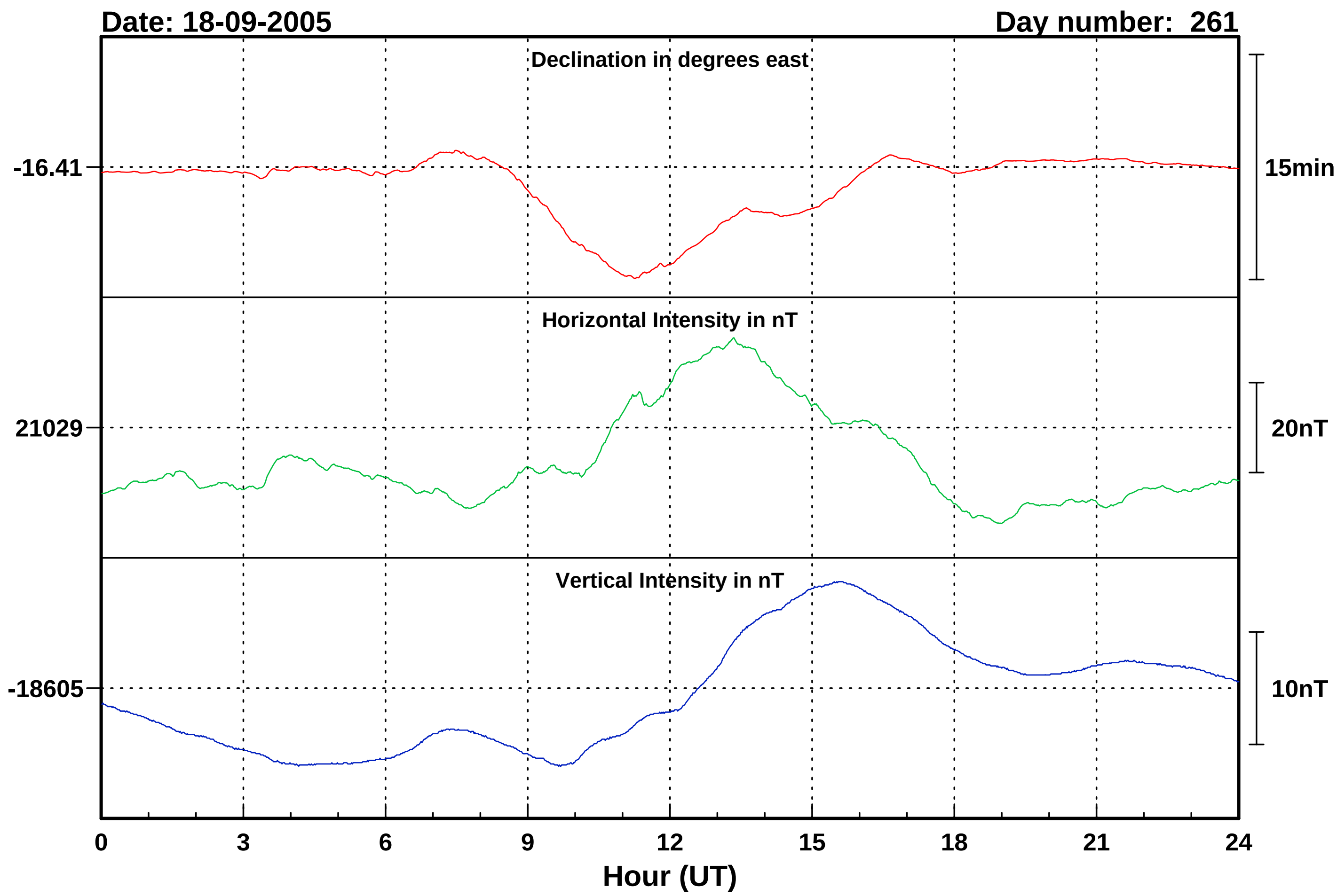
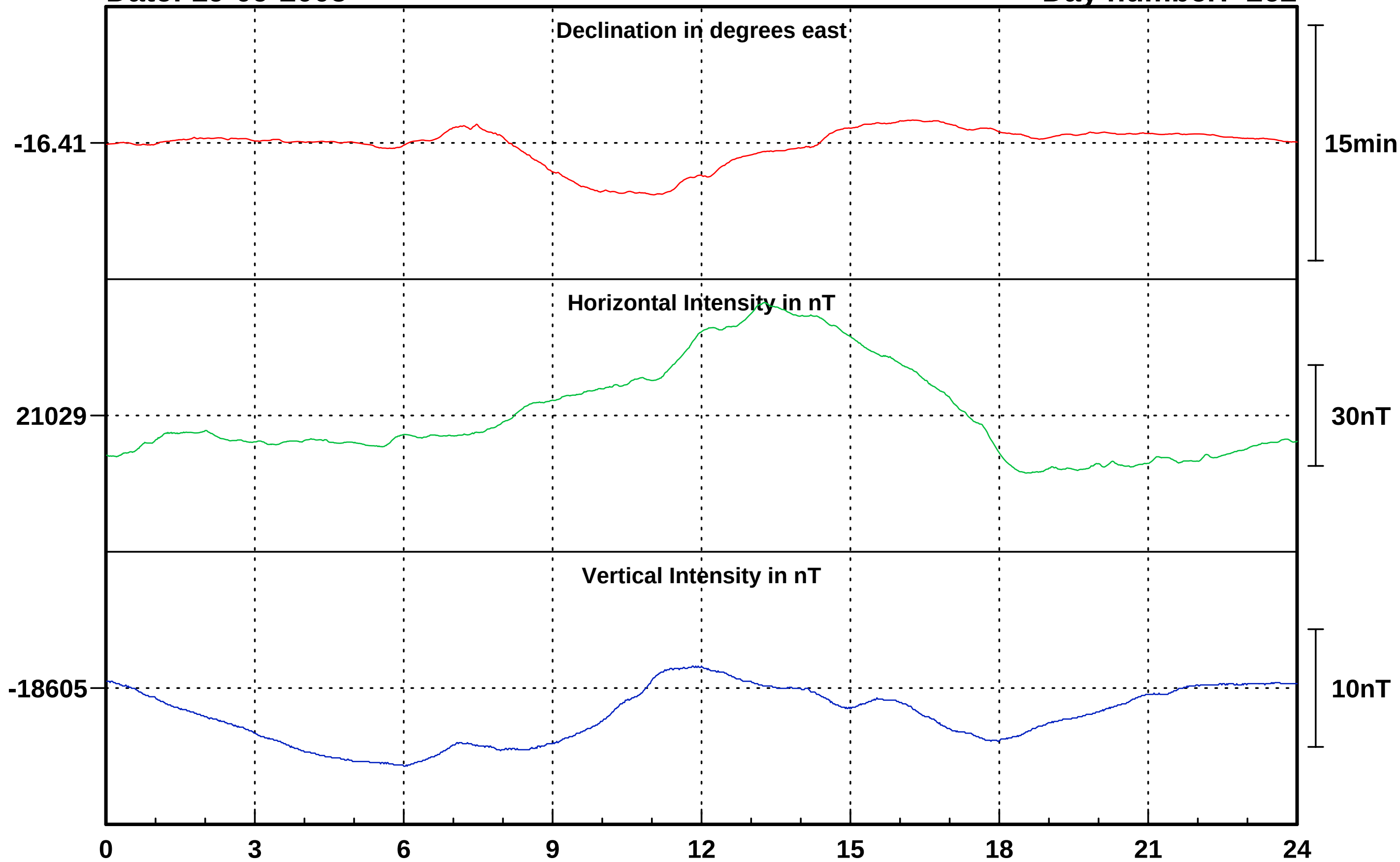


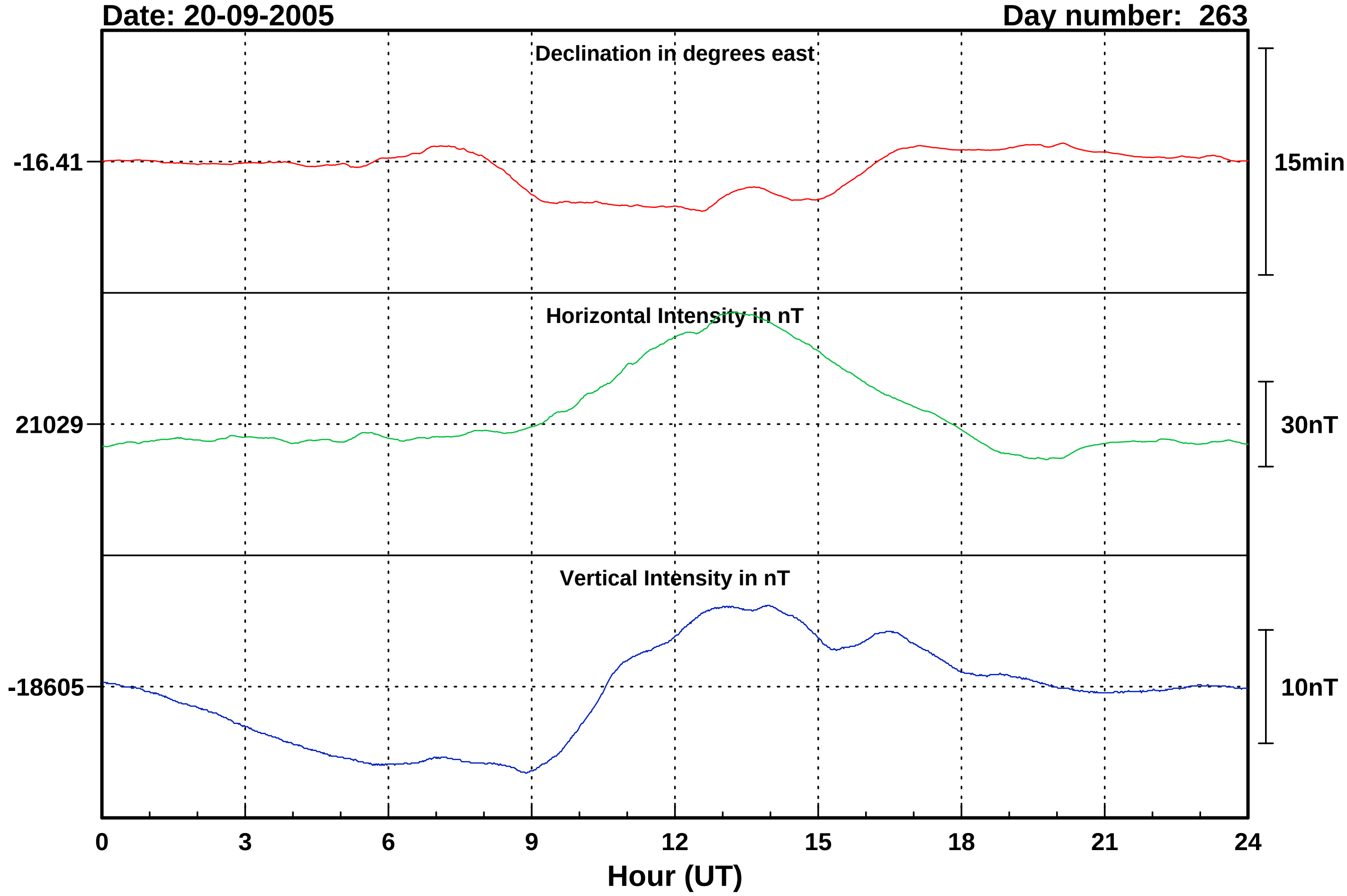


Ascension Island

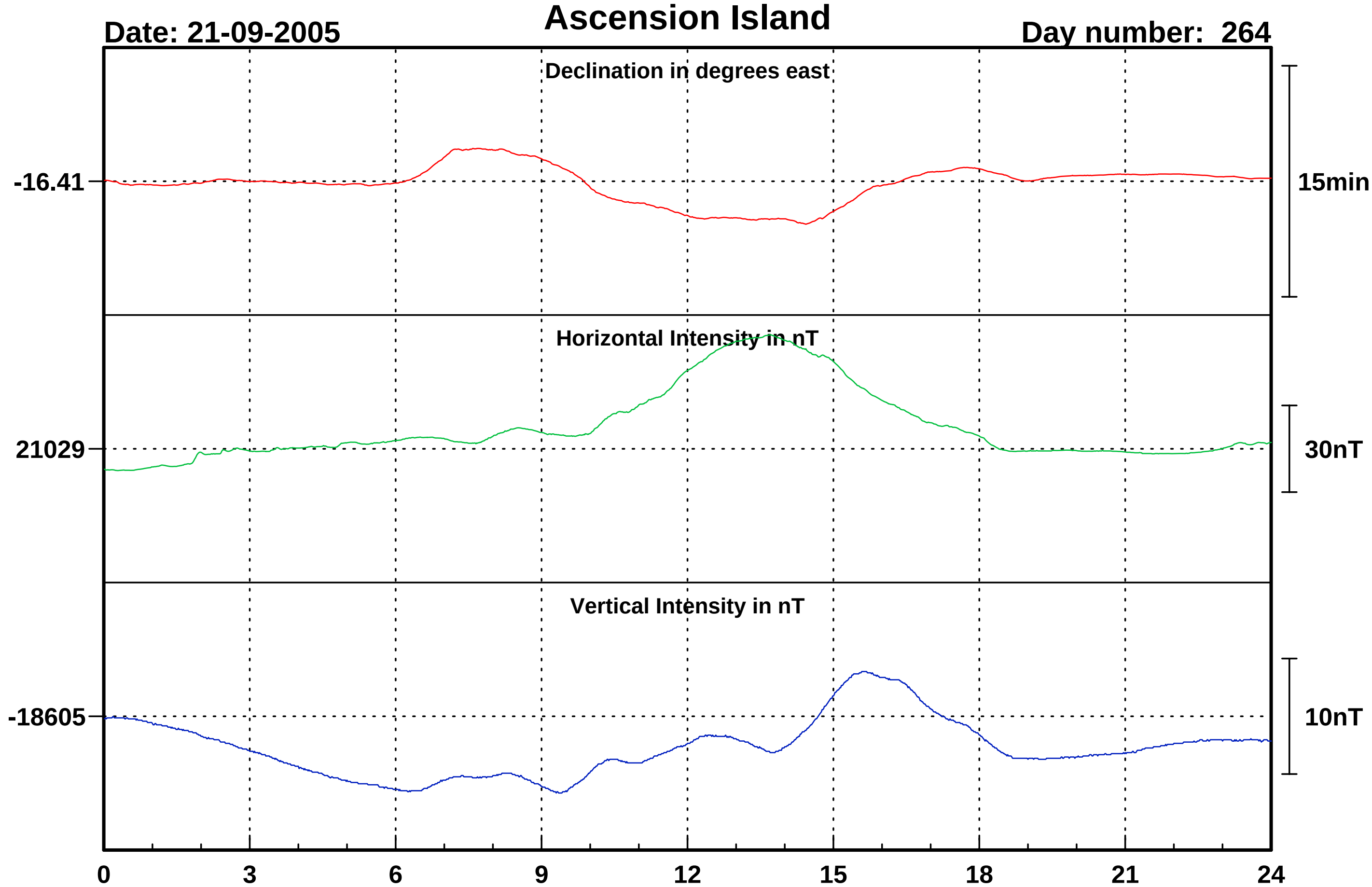
Date: 19-09-2005 Day number: 262

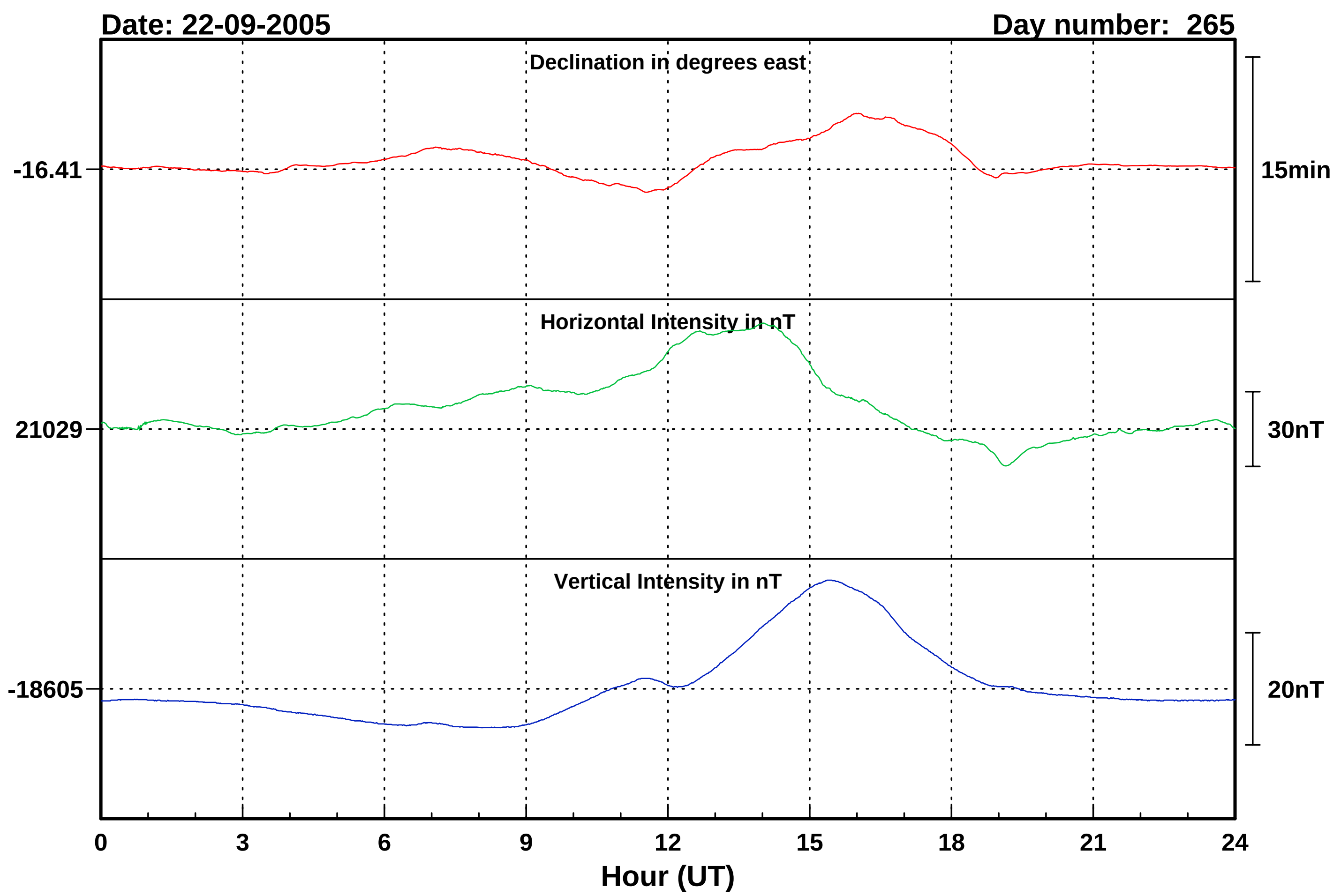


Date: 20-09-2005 Day number: 263



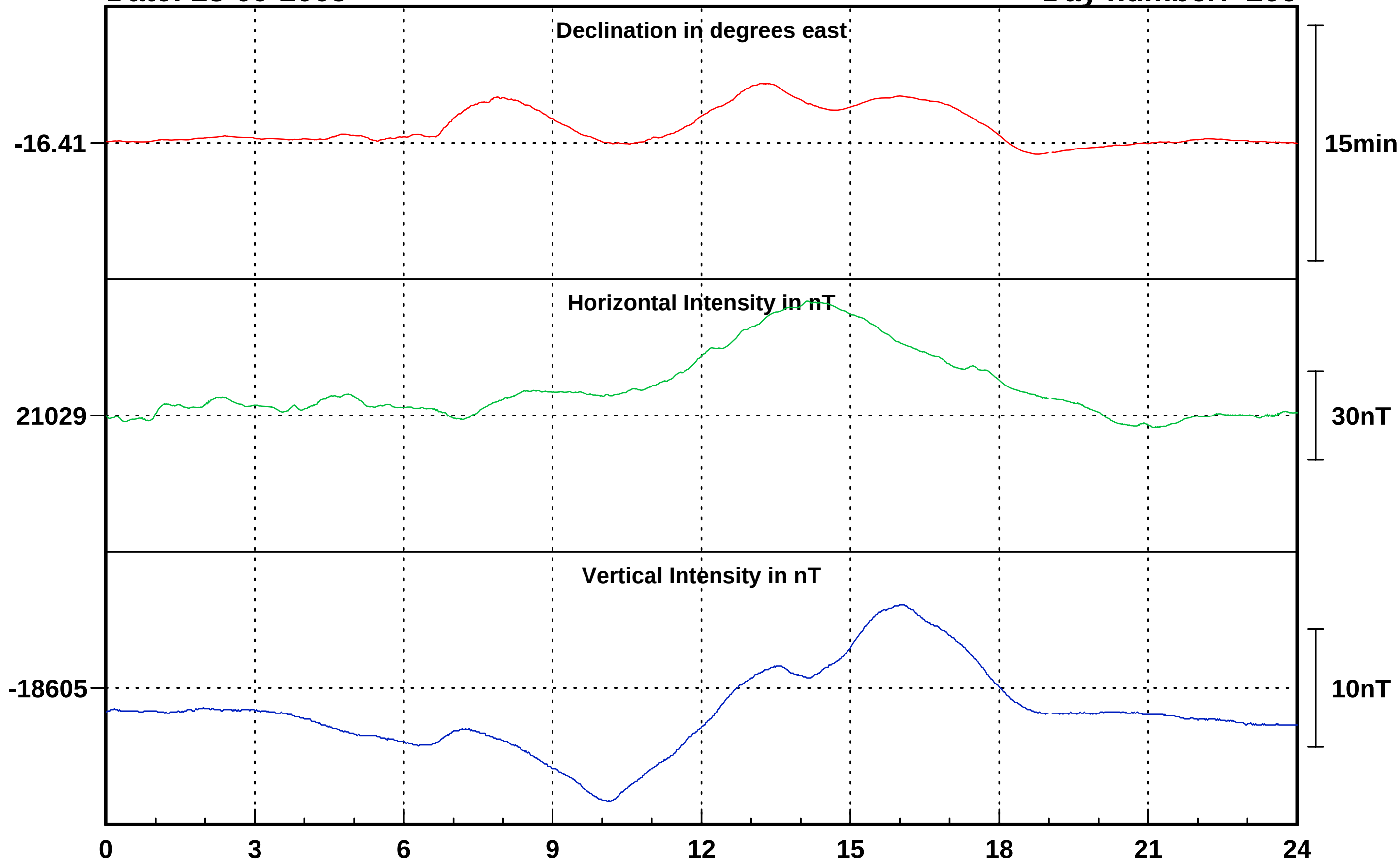
Ascension Island



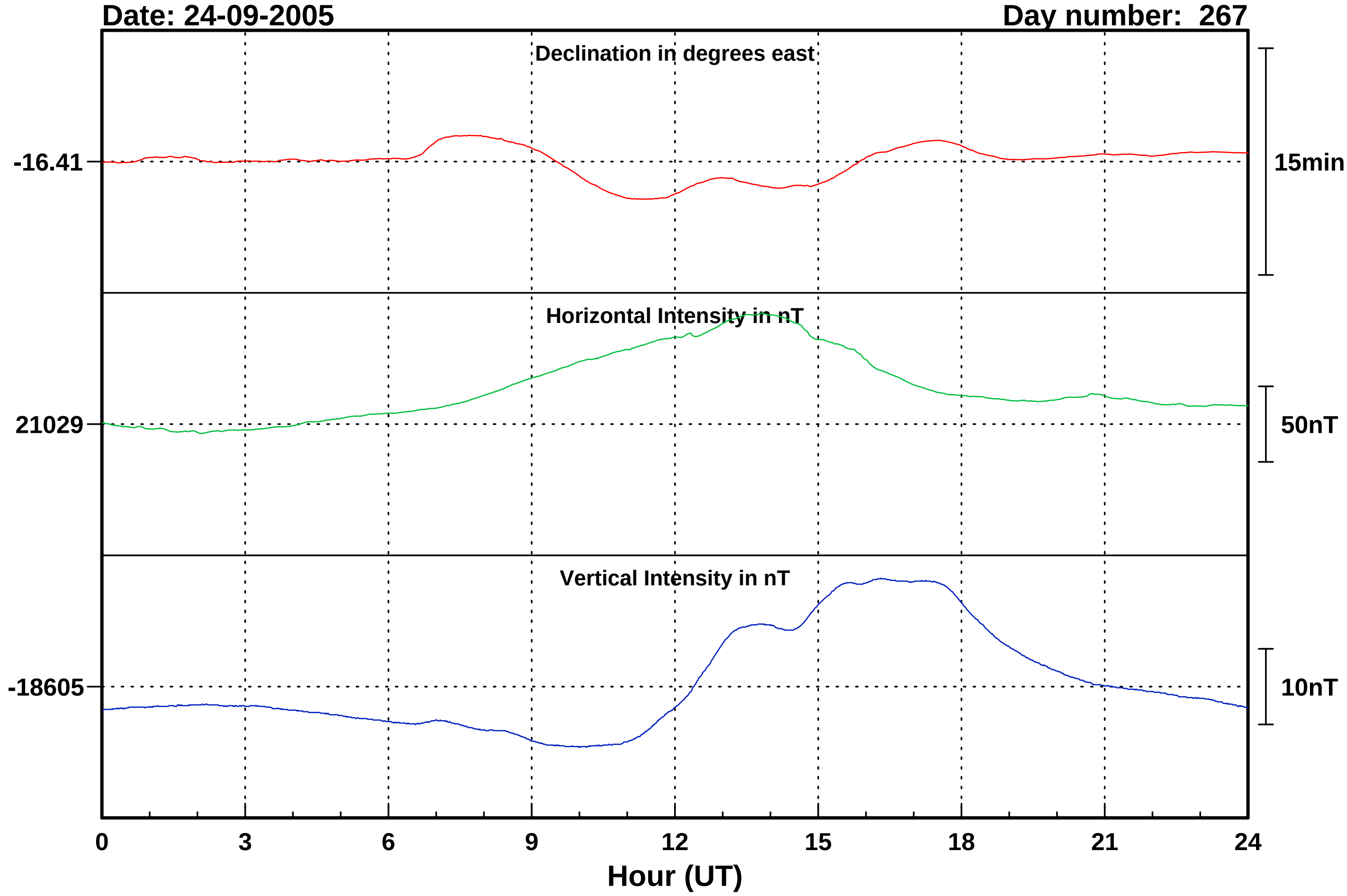


Ascension Island

Date: 23-09-2005 Day number: 266

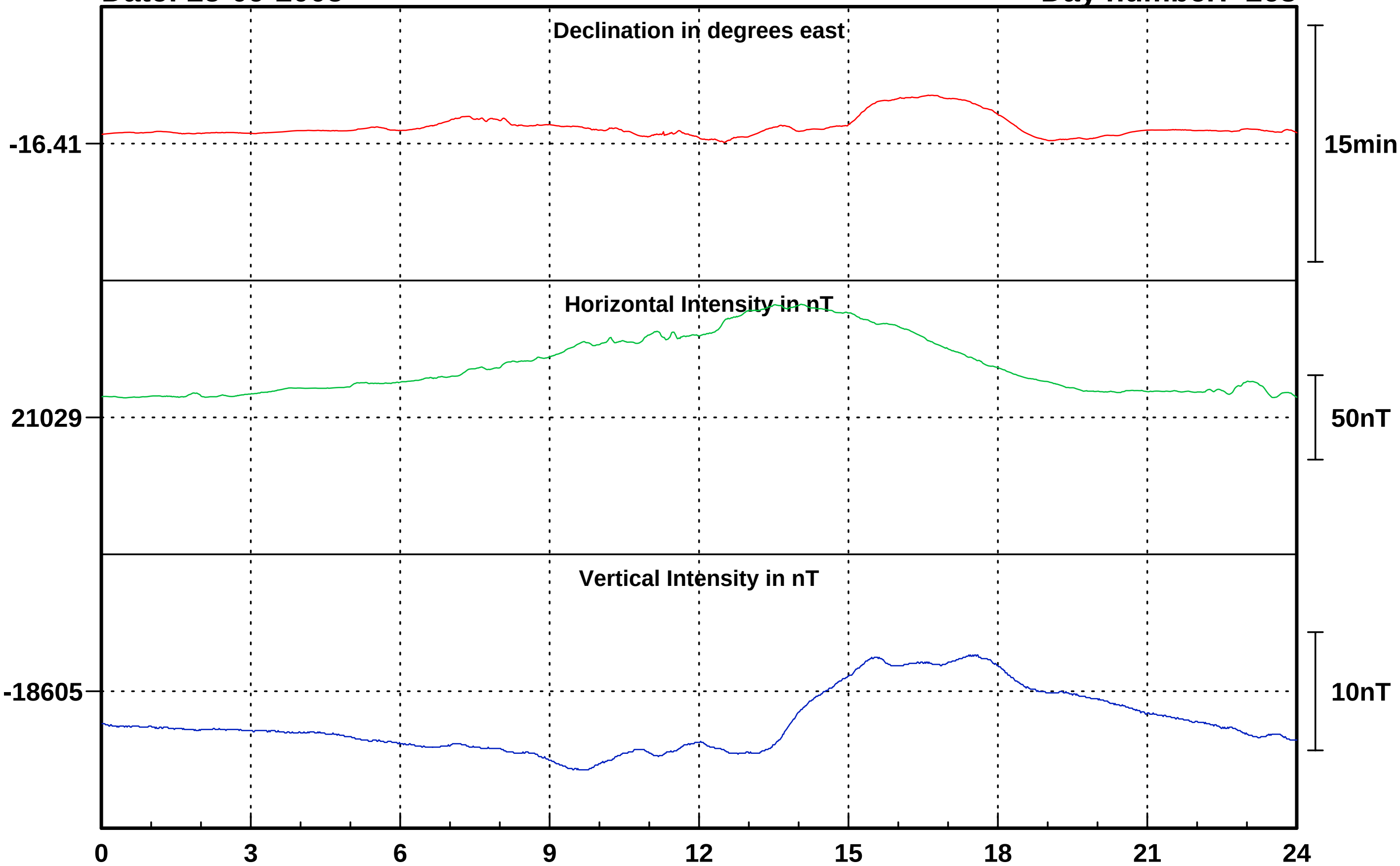


Date: 24-09-2005 Day number: 267

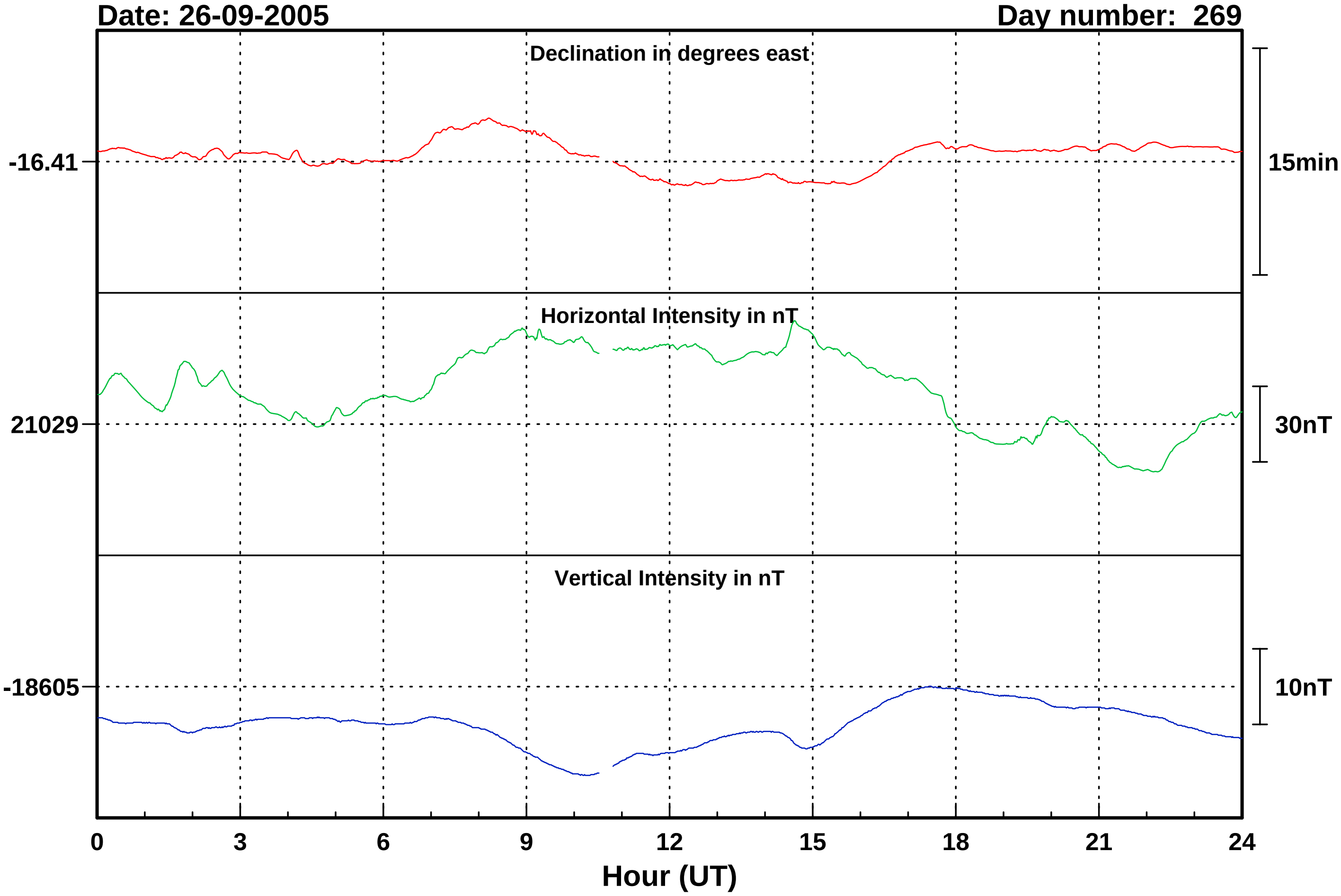


Ascension Island

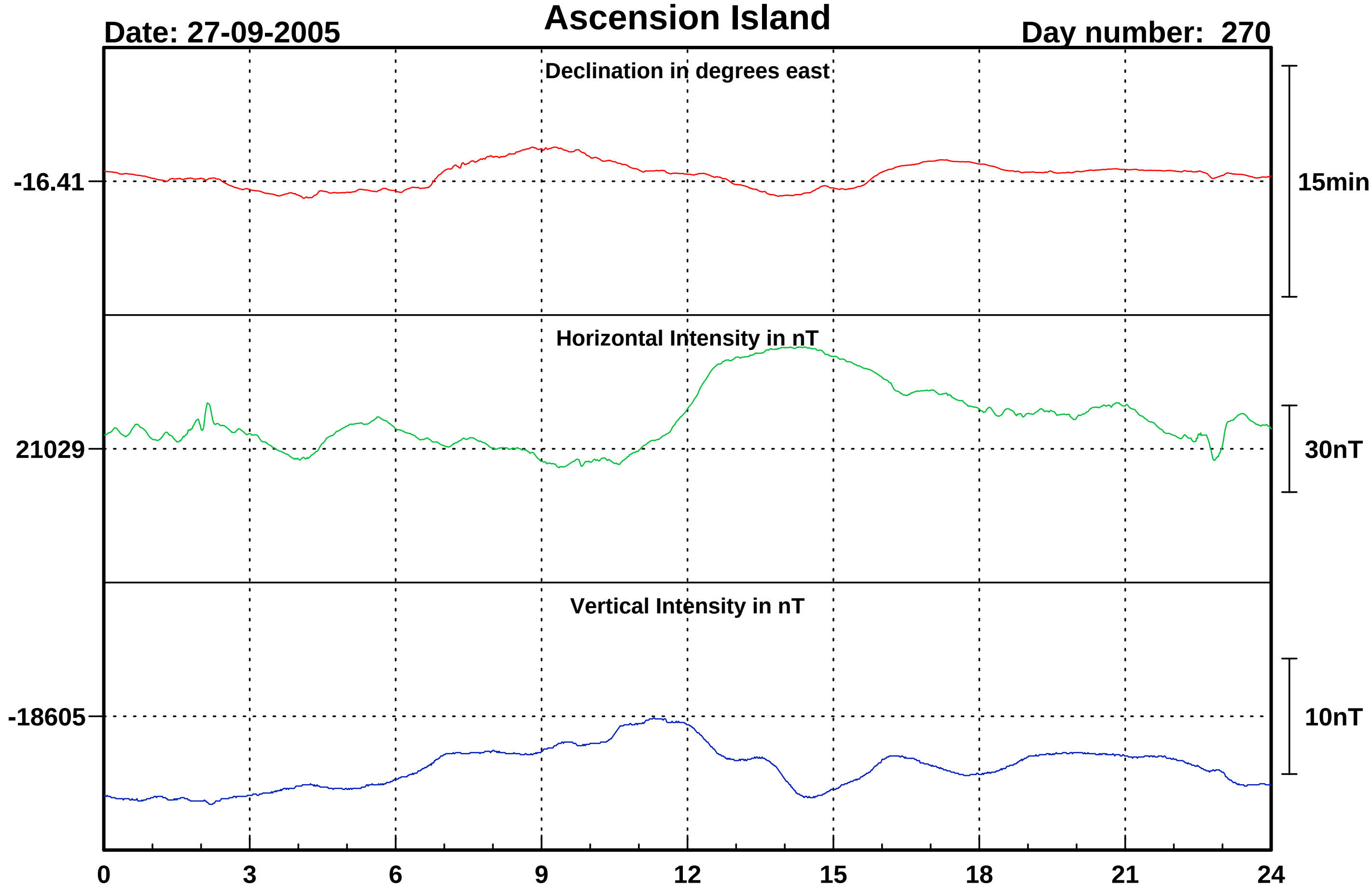
Date: 25-09-2005 Day number: 268

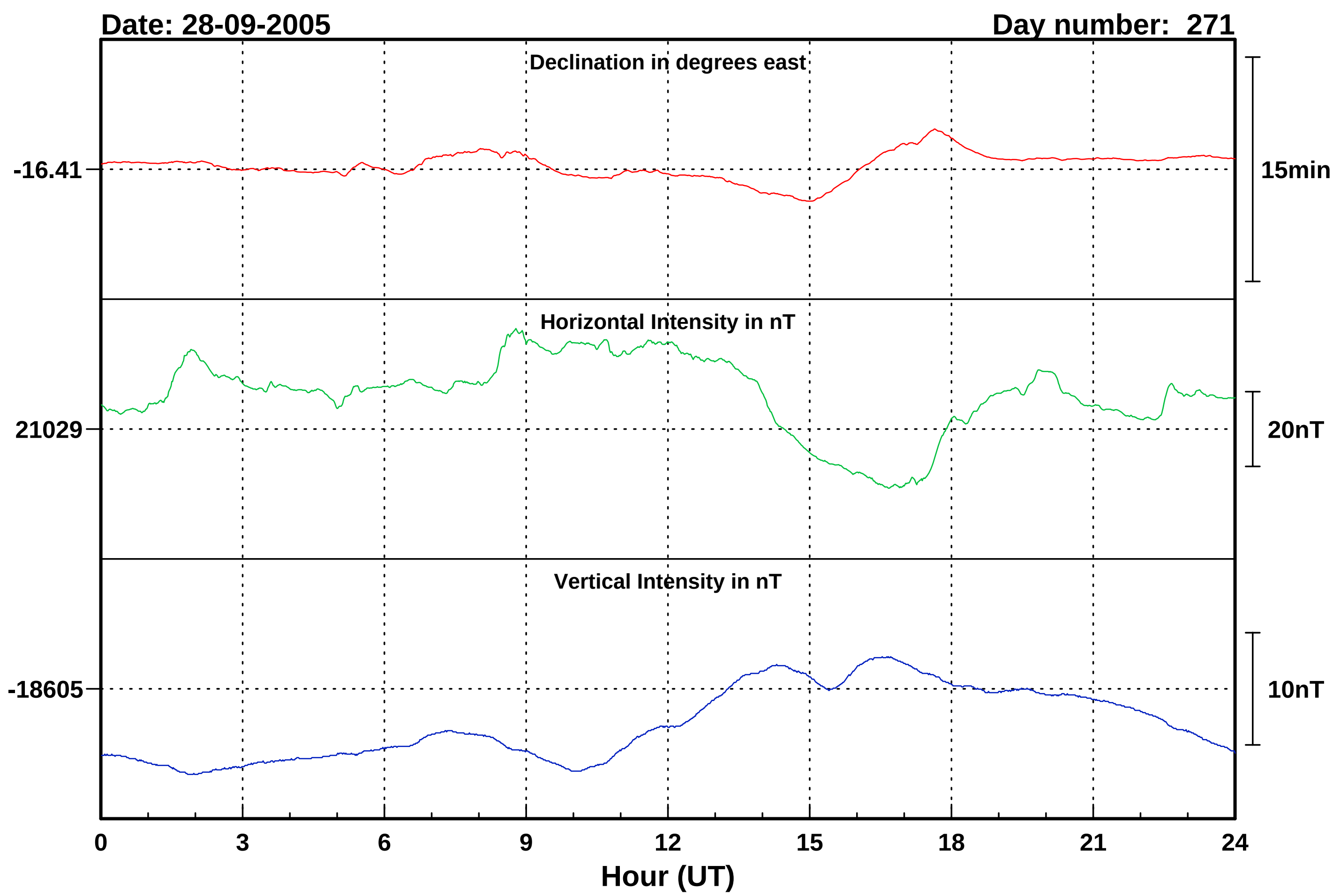


Date: 26-09-2005 Day number: 269



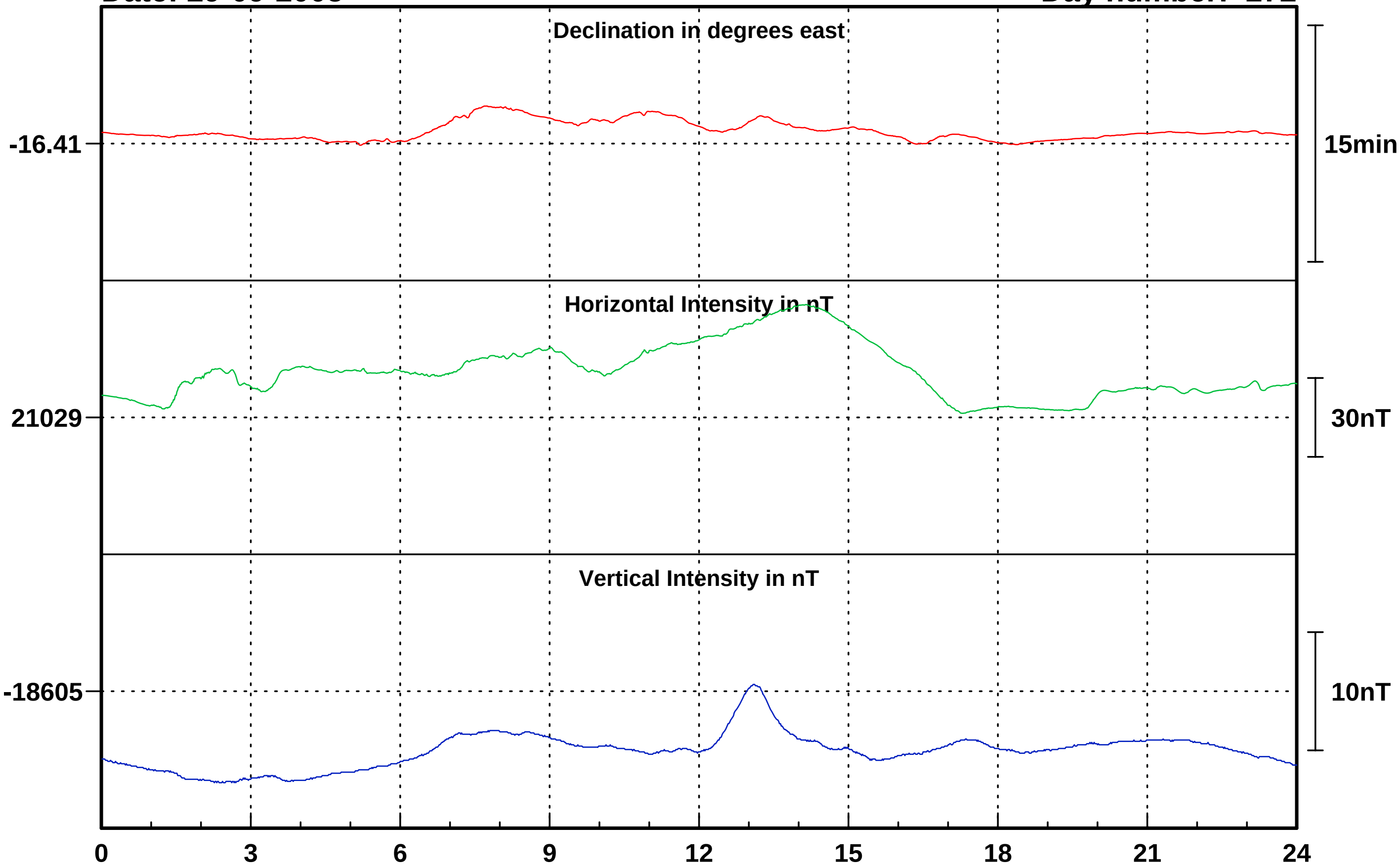
Ascension Island



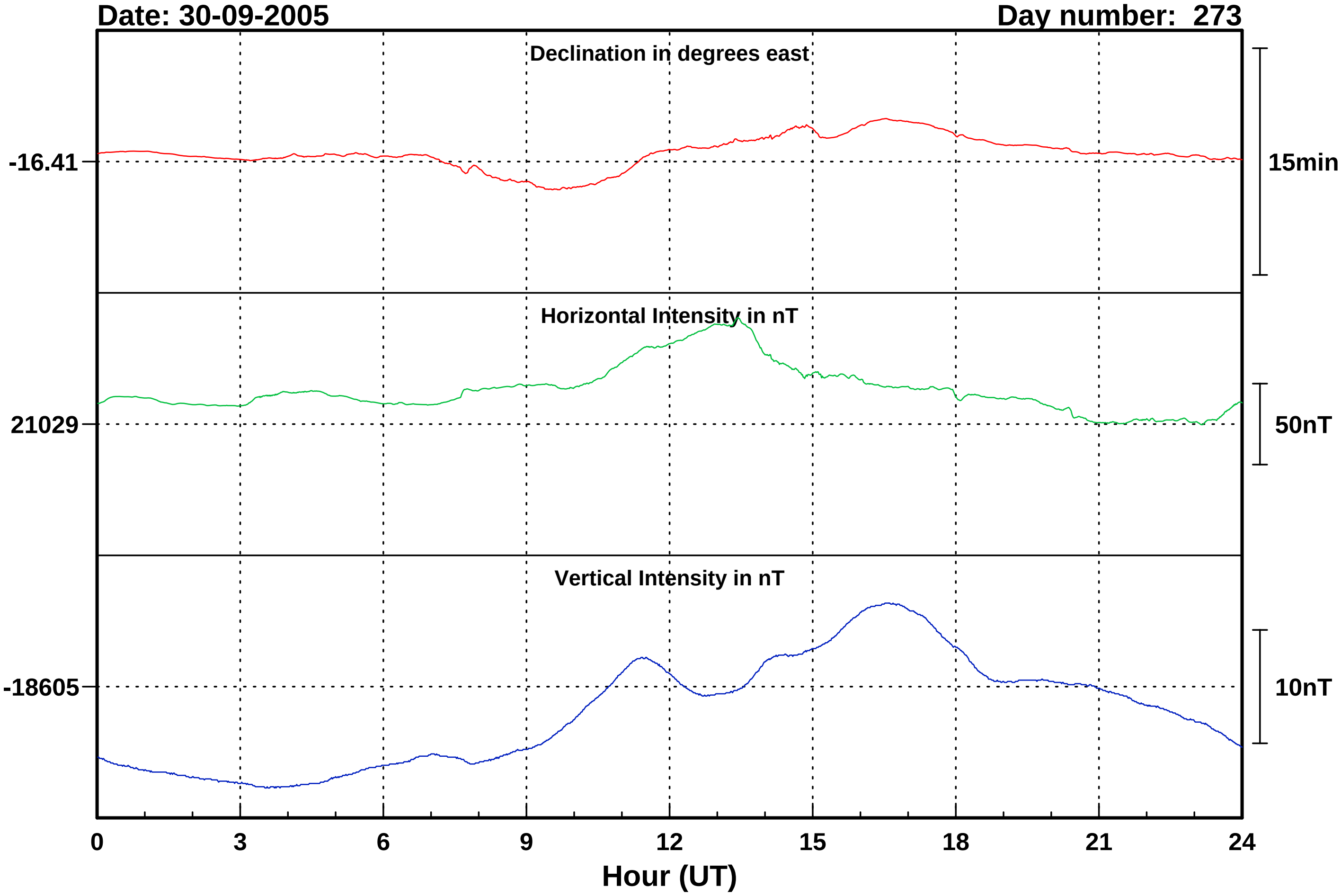


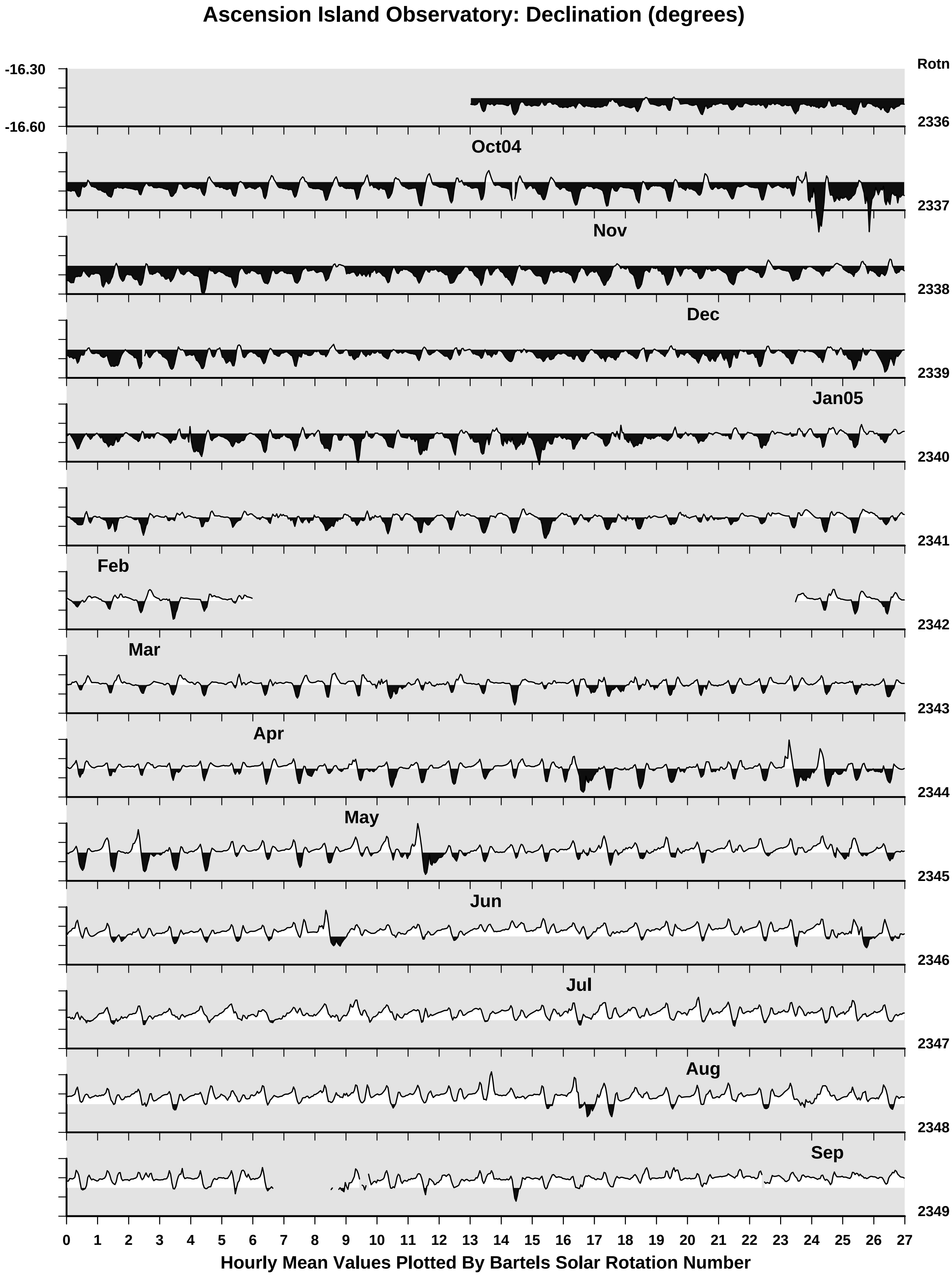
Ascension Island

Date: 29-09-2005 Day number: 272



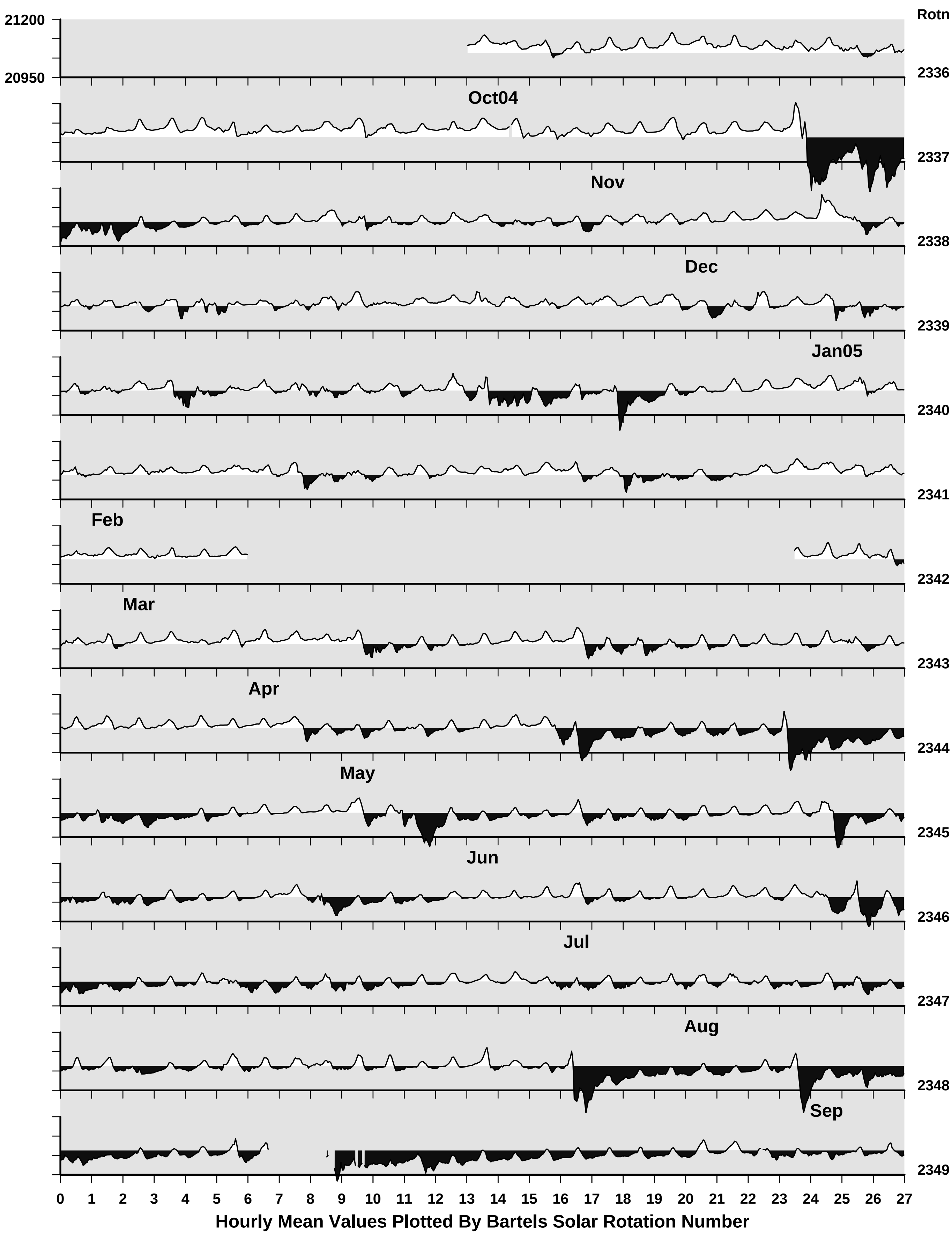
Date: 30-09-2005 Day number: 273



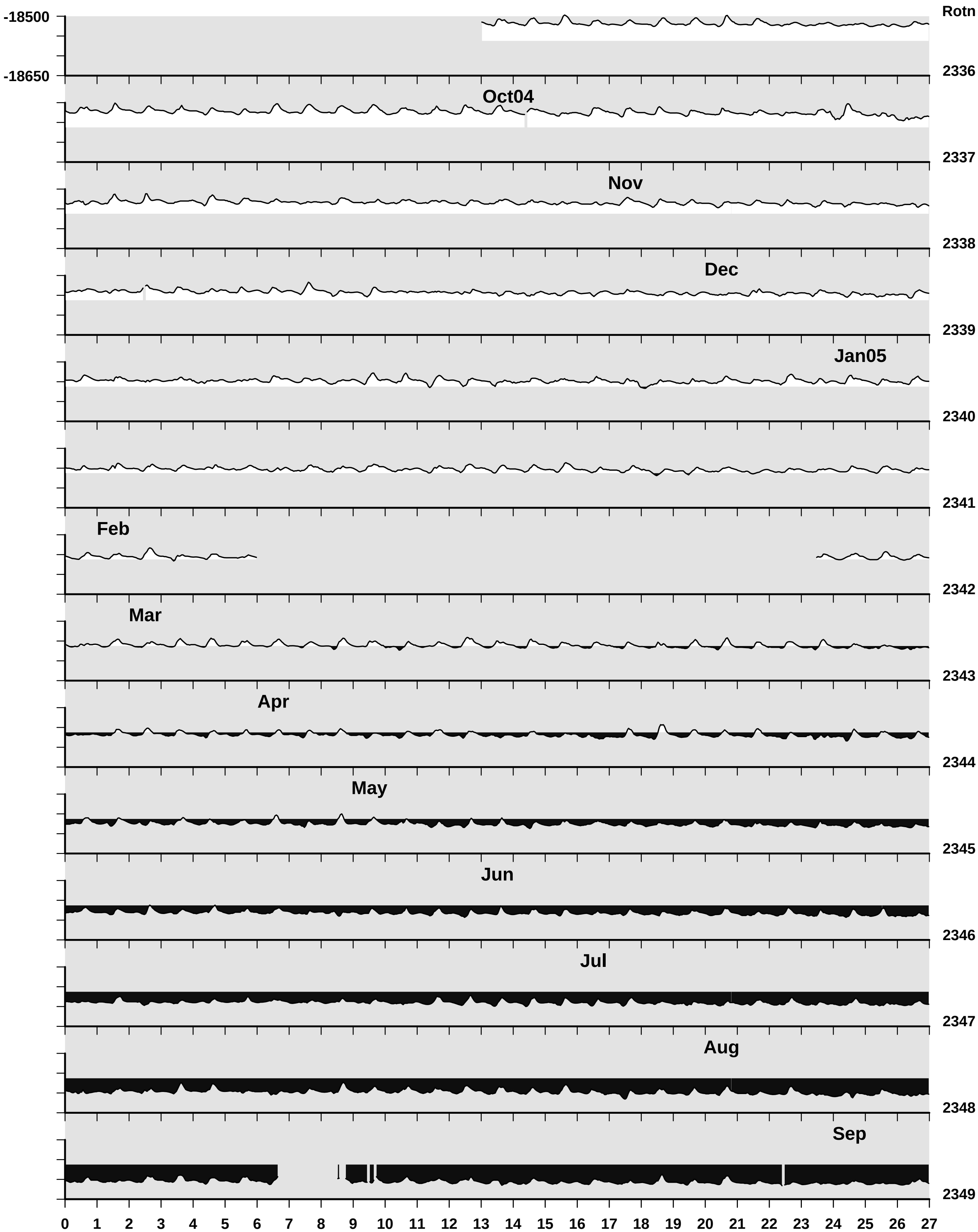


Ascension Island Observatory: Declination (degrees)
-16.30
-16.60
Rotn
2336
Oct04
2337
Nov
2338
Dec
2339
Jan05
2340
2341
Feb
2342
Mar
2343
Apr
2344
May
2345
Jun
2346
Jul
2347
Aug
2348
Sep
2349
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
Hourly Mean Values Plotted By Bartels Solar Rotation Number

Ascension Island Observatory: Horizontal Intensity (nT)

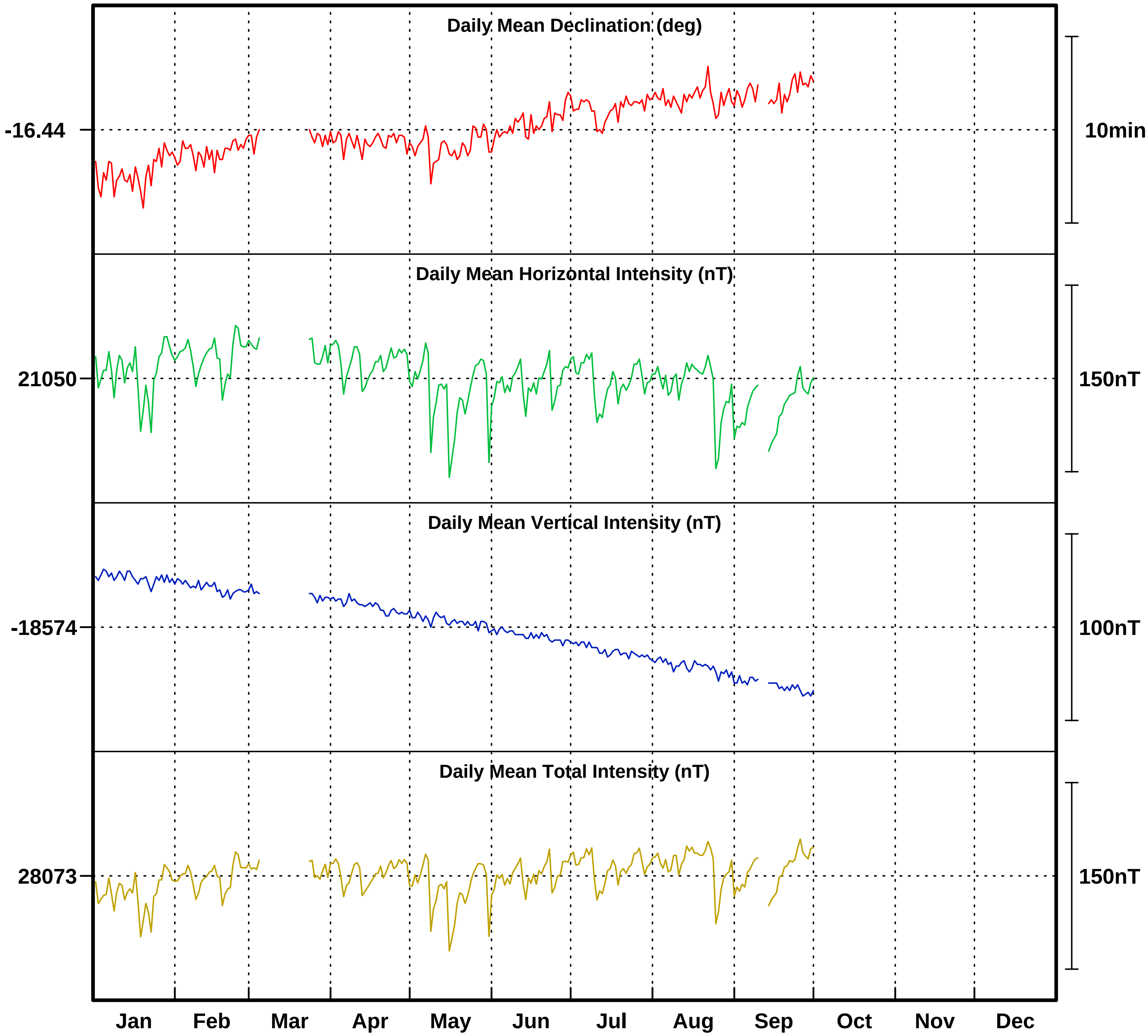


Ascension Island Observatory: Vertical Intensity (nT)



Hourly Mean Values Plotted By Bartels Solar Rotation Number

Ascension Is Observatory 2005



Monthly Mean Values for Ascension Island Observatory 2005

Month	*D*	*H*	*I*	*X*	*Y*	*Z*	*F*
January	-16° 28.7´	21055 nT	-41° 22.6´	20190 nT	-5972 nT	-18548 nT	28060 nT
February	-16° 27.6´	21069 nT	-41° 22.0´	20205 nT	-5970 nT	-18553 nT	28073 nT
March	********	********	********	********	********	********	********
April	-16° 27.0´	21064 nT	-41° 23.3´	20201 nT	-5965 nT	-18563 nT	28076 nT
May	-16° 27.3´	21037 nT	-41° 26.2´	20176 nT	-5959 nT	-18571 nT	28062 nT
June	-16° 26.0´	21048 nT	-41° 26.1´	20188 nT	-5954 nT	-18579 nT	28075 nT
July	-16° 25.3´	21049 nT	-41° 26.7´	20190 nT	-5950 nT	-18587 nT	28081 nT
August	-16° 24.7´	21043 nT	-41° 28.0´	20186 nT	-5945 nT	-18595 nT	28082 nT
September	-16° 24.3´	21029 nT	-41° 30.0´	20173 nT	-5939 nT	-18605 nT	28078 nT

Note

i. The values shown here are provisional.