BRITISH GEOLOGICAL SURVEY

Port Stanley Observatory Monthly Magnetic Bulletin

December 2005

05/12/PS

Falkland Islands

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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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Internet: *www.geomag.bgs.ac.uk*

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.
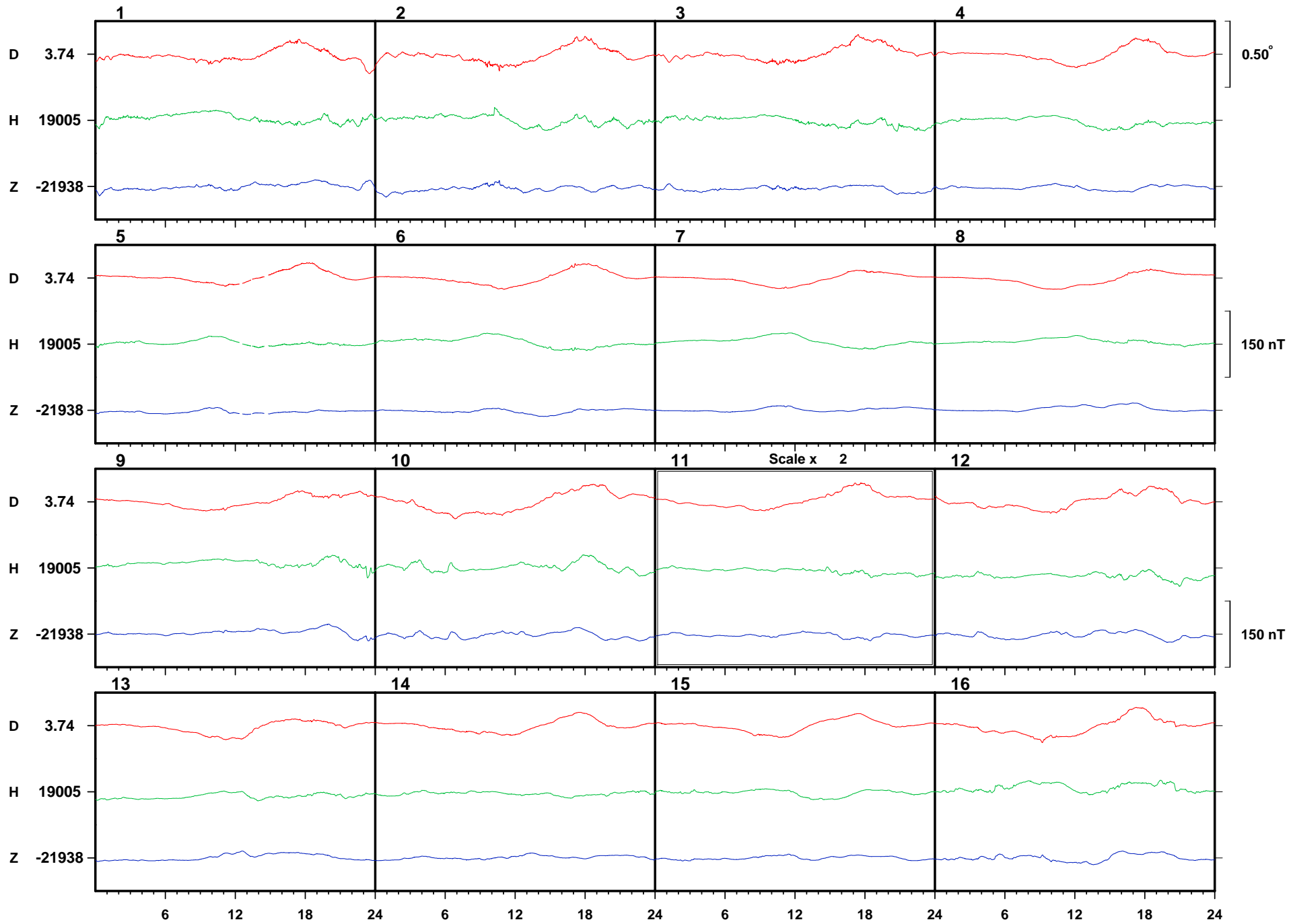
1.4.3 Hourly Mean Value Plots
Hourly mean values of D, H and Z for the past 12 months are plotted in 27-day segments corresponding to the Bartels solar rotation number. Magnetic disturbances associated with active regions on the surface of the Sun may recur after 27 days: the same is true for geomagnetically quiet intervals. Plotting the data in this way highlights this recurrence, and also illustrates seasonal and diurnal variations throughout the year.
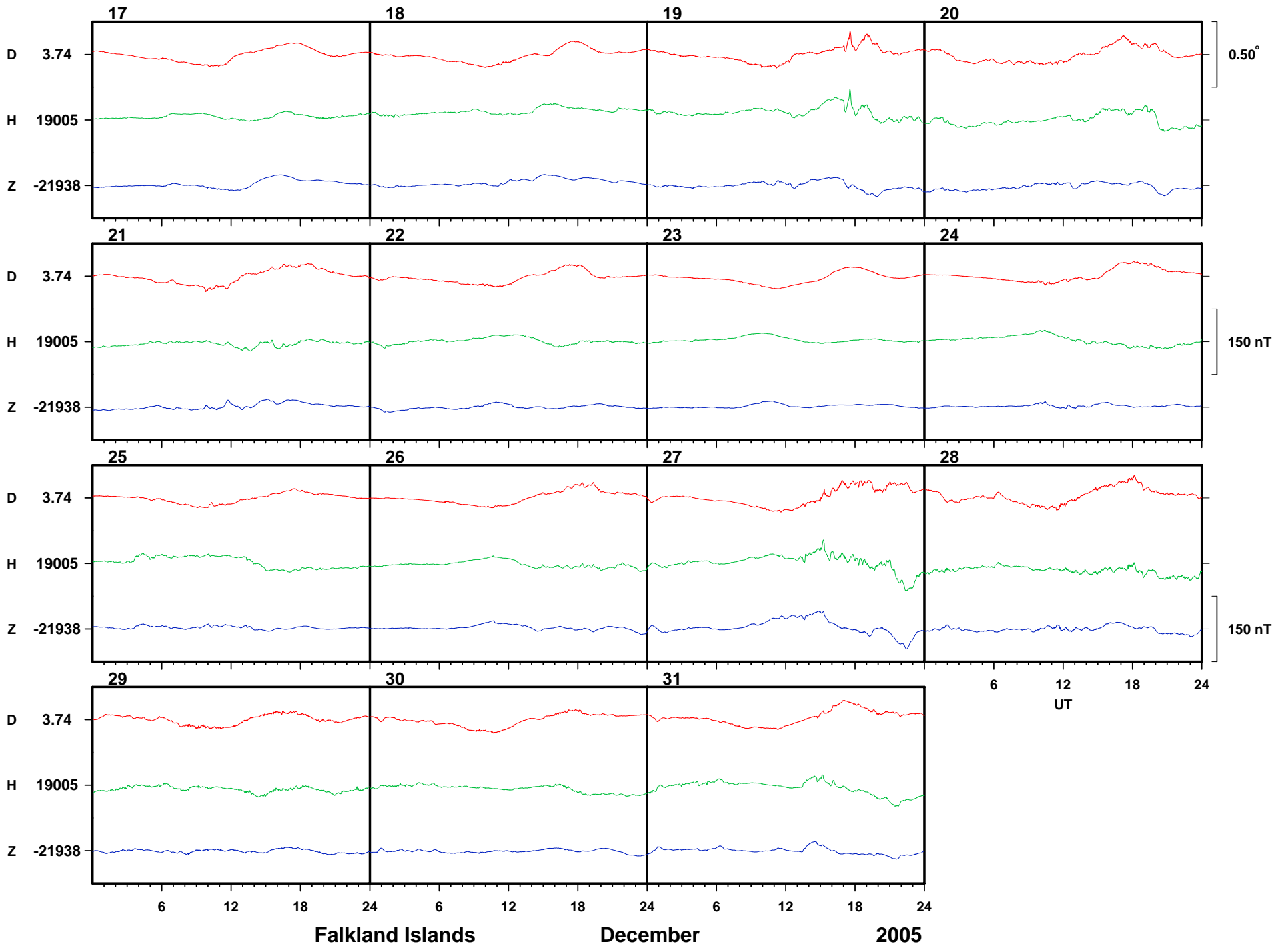
1.4.4 Daily and Monthly Mean Values
Daily mean values of D, H, Z and F are plotted throughout the year. In addition, a table of monthly mean values of all the geomagnetic elements is provided. These values depend on accurate specification of the fluxgate sensor baselines. This data is provisional. It is anticipated that provisional values will not be altered by more than a few nT or tenths of arcminutes before being made definitive.

Falkland Islands   December   2005

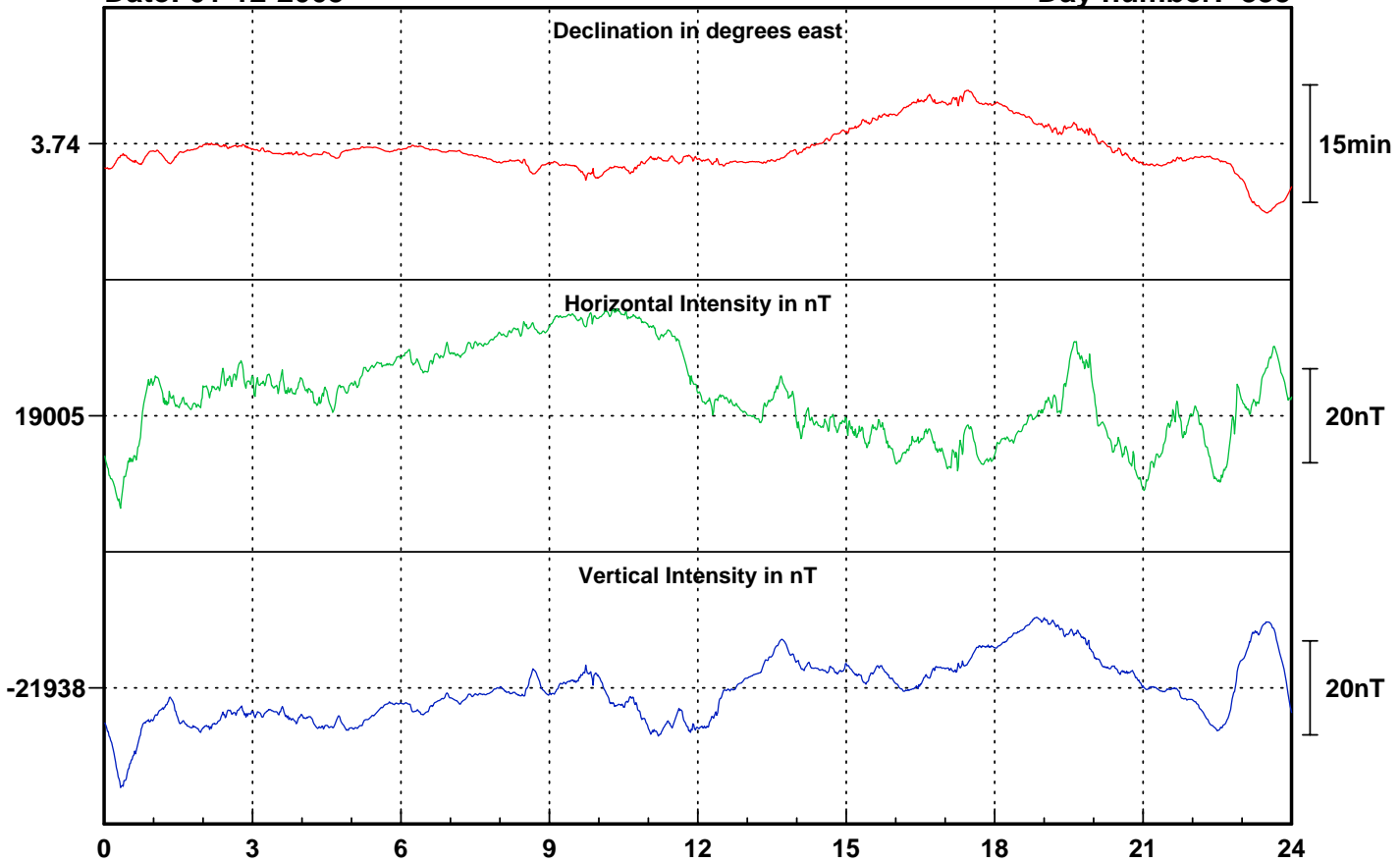Falkland Islands   December   2005

Falkland Islands

Declination in degrees east

3.74

15min

Horizontal Intensity in nT

19005

20nT

Vertical Intensity in nT

-21938

20nT

| 0 | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 |

Date: 02-12-2005

Day number: 336

Declination in degrees east

3.74

15min

Horizontal Intensity in nT

19005

20nT

Vertical Intensity in nT

-21938

20nT

| 0 | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 |

Hour (UT)

Falkland Islands

Date: 03-12-2005   Day number: 337

Declination in degrees east
3.74
15min

Horizontal Intensity in nT
19005
20nT

Vertical Intensity in nT
-21938
20nT

0   3   6   9   12   15   18   21   24
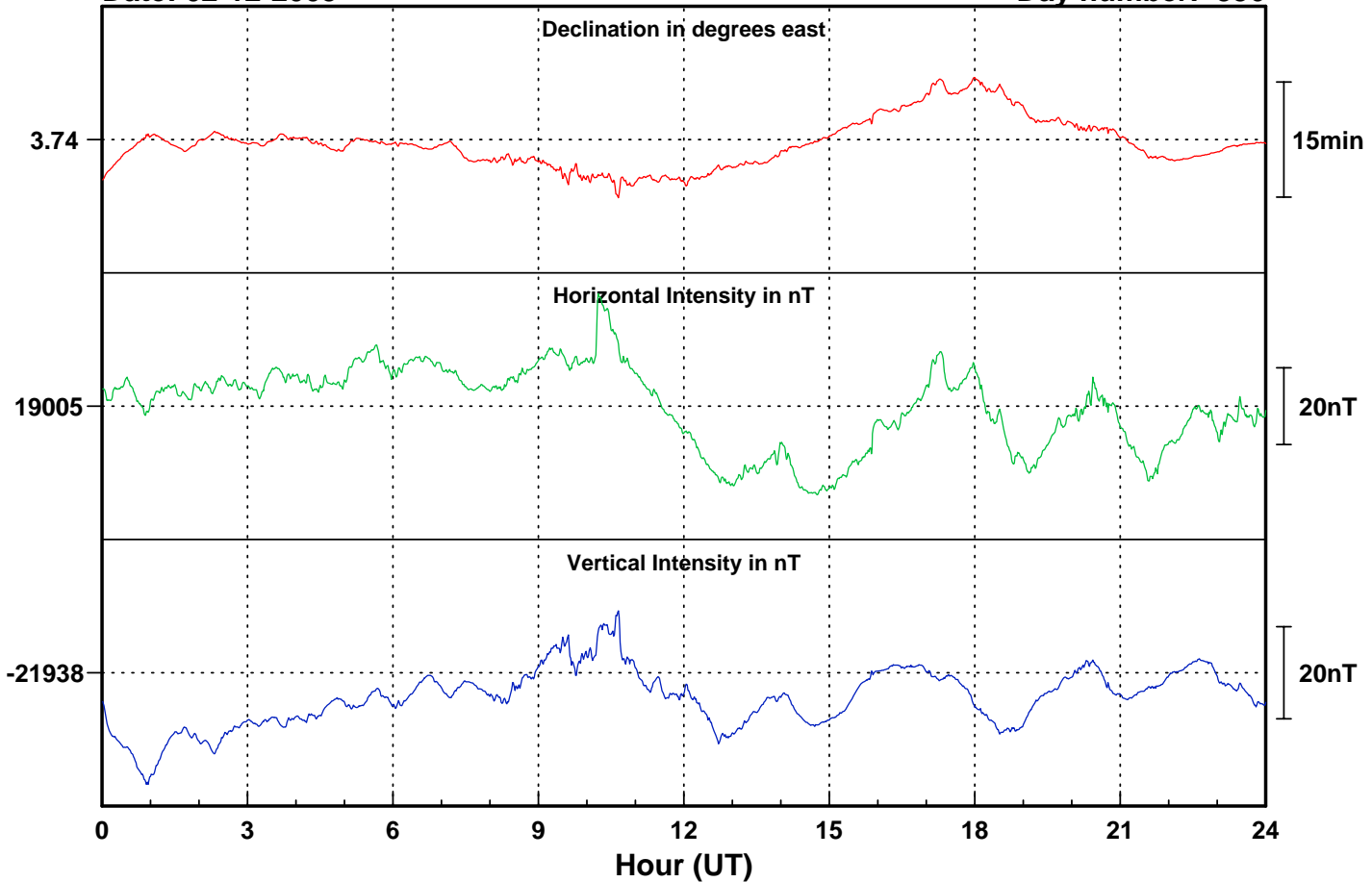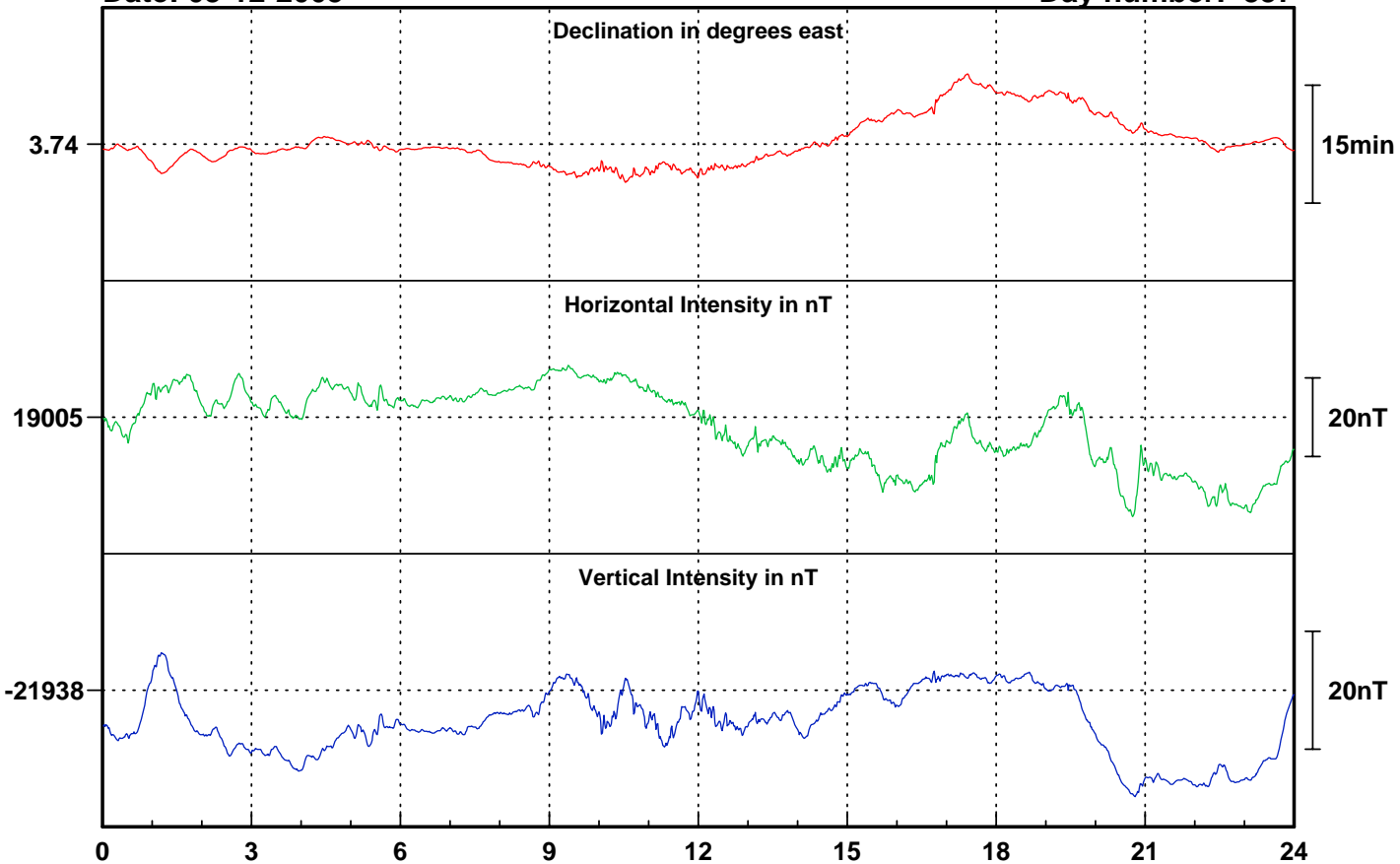
Date: 04-12-2005   Day number: 338

Declination in degrees east
3.74
15min

Horizontal Intensity in nT
19005
20nT

Vertical Intensity in nT
-21938
10nT

0   3   6   9   12   15   18   21   24
Hour (UT)
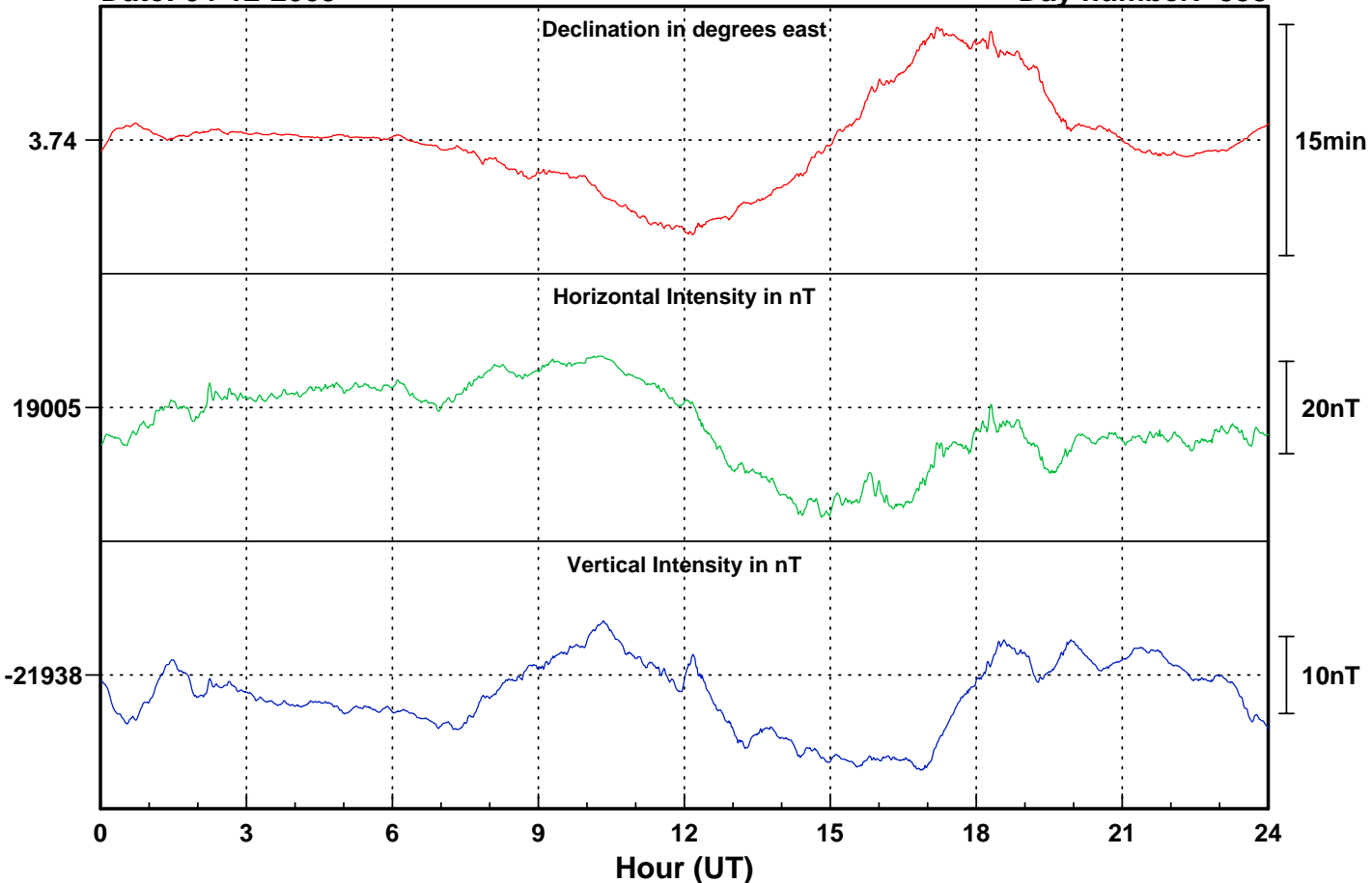
Falkland Islands

Date: 05-12-2005   Day number: 339

Declination in degrees east

3.74

15min

Horizontal Intensity in nT

19005

20nT

Vertical Intensity in nT

-21938

10nT

0   3   6   9   12   15   18   21   24
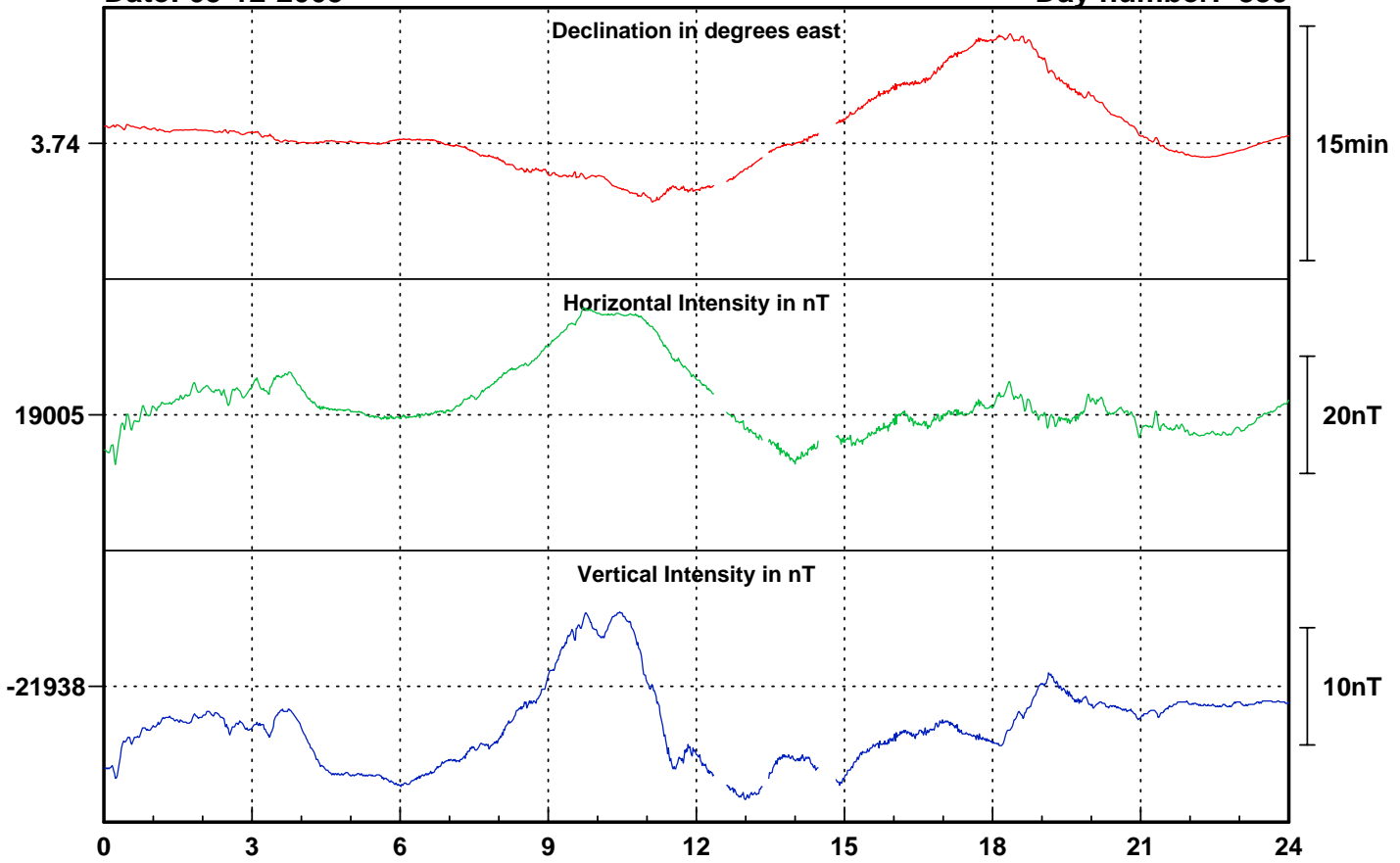
Date: 06-12-2005   Day number: 340
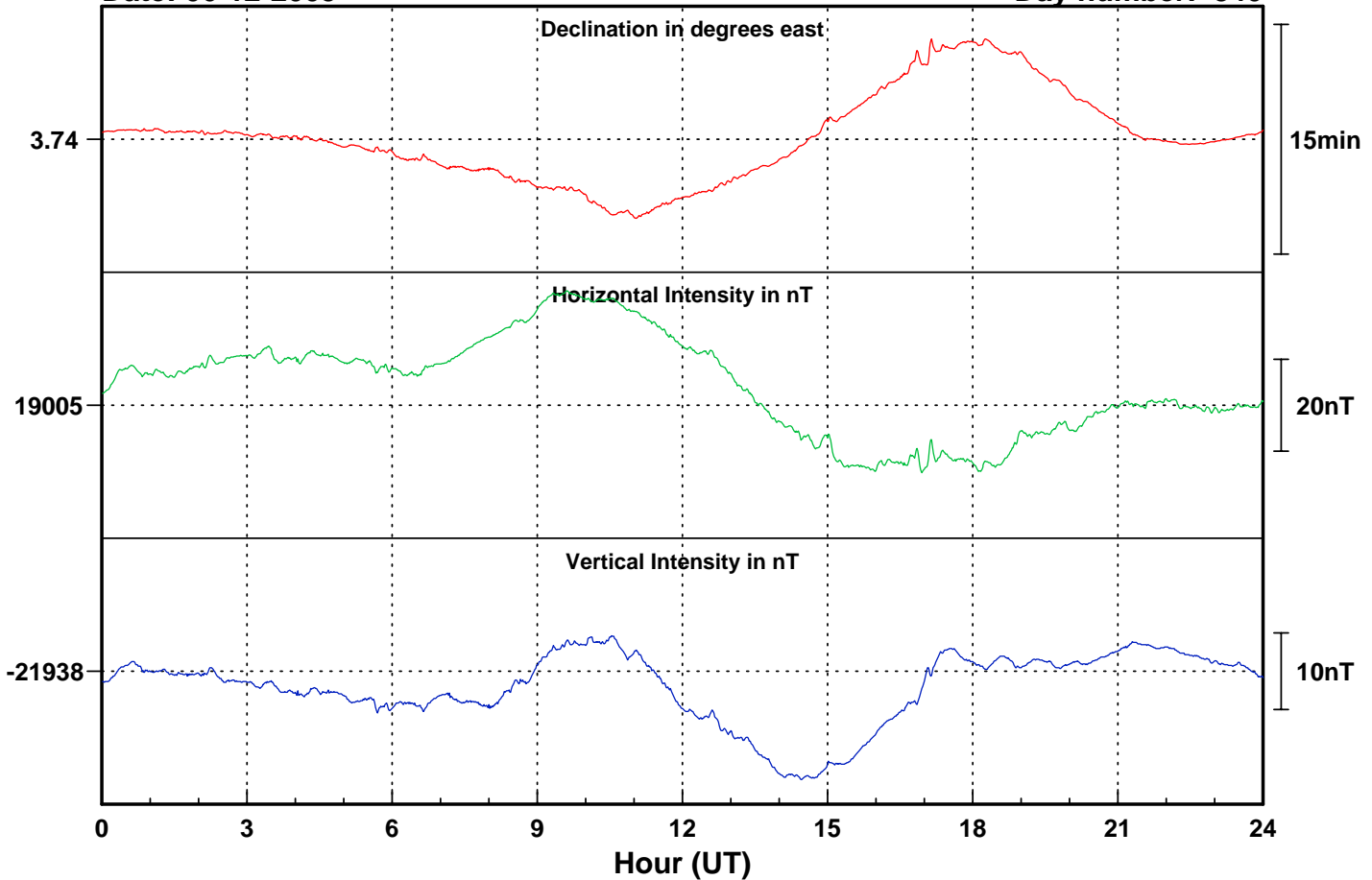
Declination in degrees east

3.74

15min

Horizontal Intensity in nT

19005

20nT

Vertical Intensity in nT

-21938

10nT

0   3   6   9   12   15   18   21   24

Hour (UT)

Falkland Islands

Declination in degrees east

3.74

15min

Horizontal Intensity in nT

19005

20nT

Vertical Intensity in nT

-21938

10nT

0   3   6   9   12   15   18   21   24

Declination in degrees east

3.74

15min

Horizontal Intensity in nT

19005

20nT

Vertical Intensity in nT

-21938

20nT

0   3   6   9   12   15   18   21   24

Hour (UT)
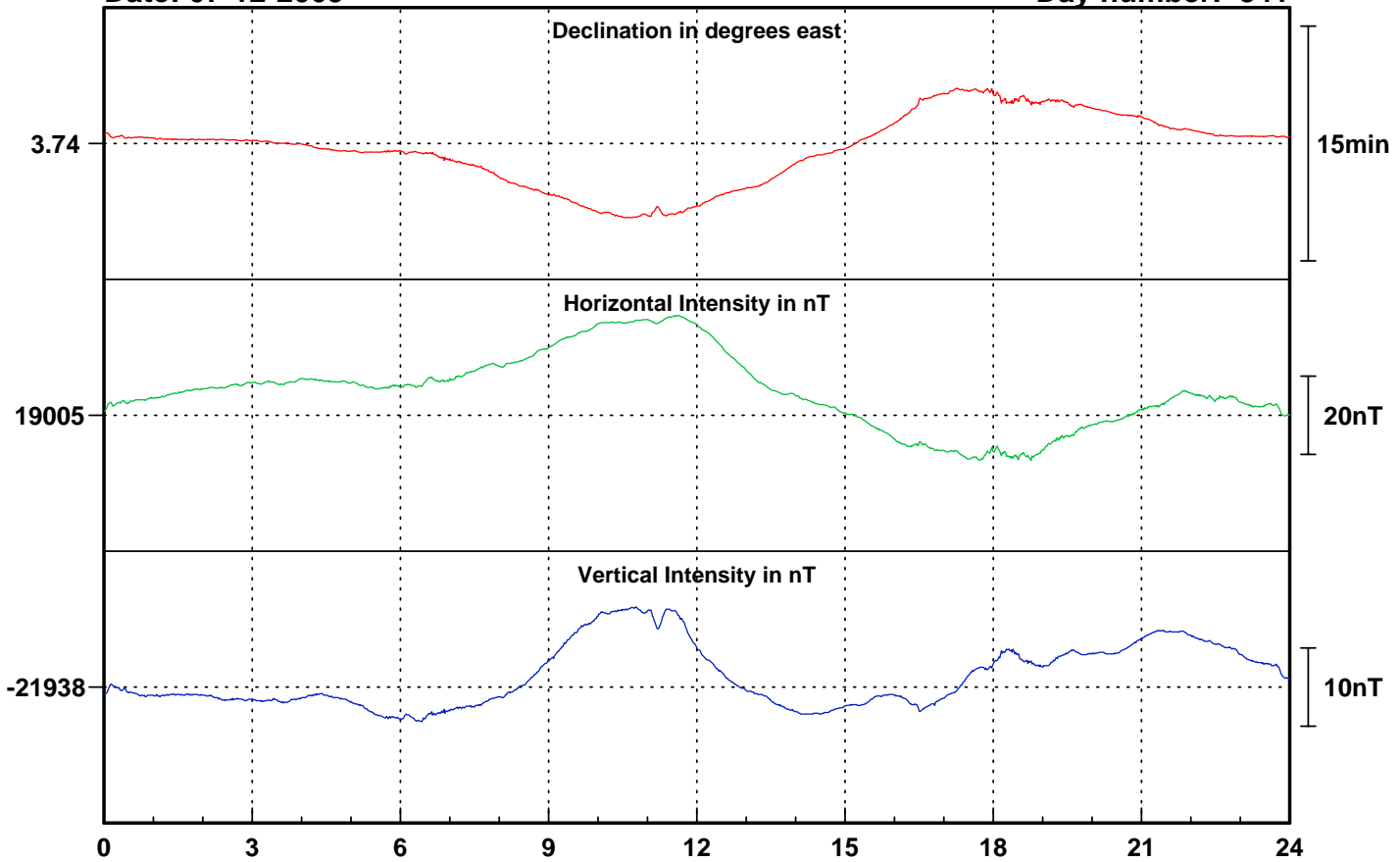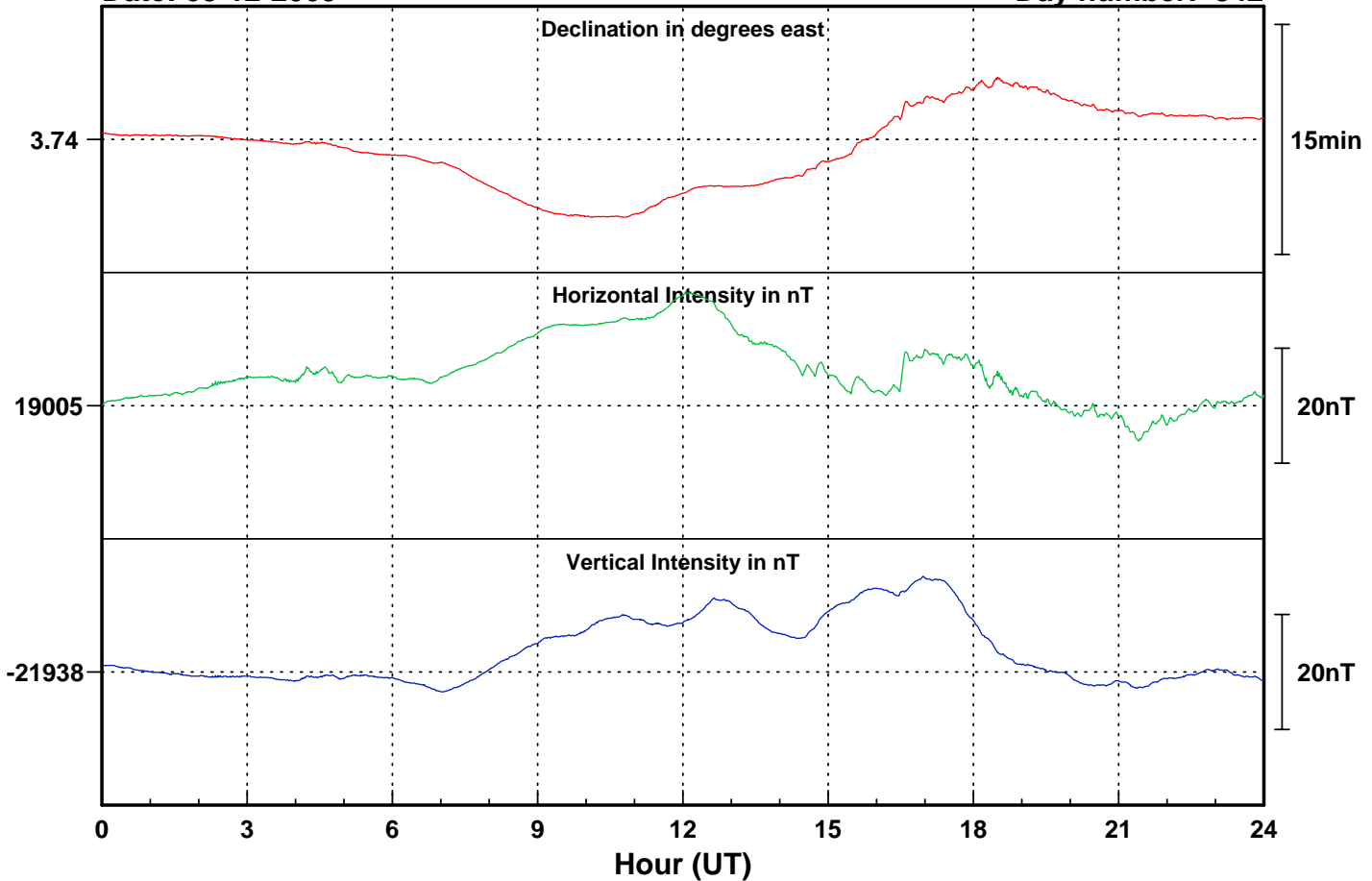
Falkland Islands

Date: 09-12-2005

Day number: 343

Declination in degrees east

3.74

15min

Horizontal Intensity in nT

19005

20nT

Vertical Intensity in nT

-21938

20nT

0   3   6   9   12   15   18   21   24
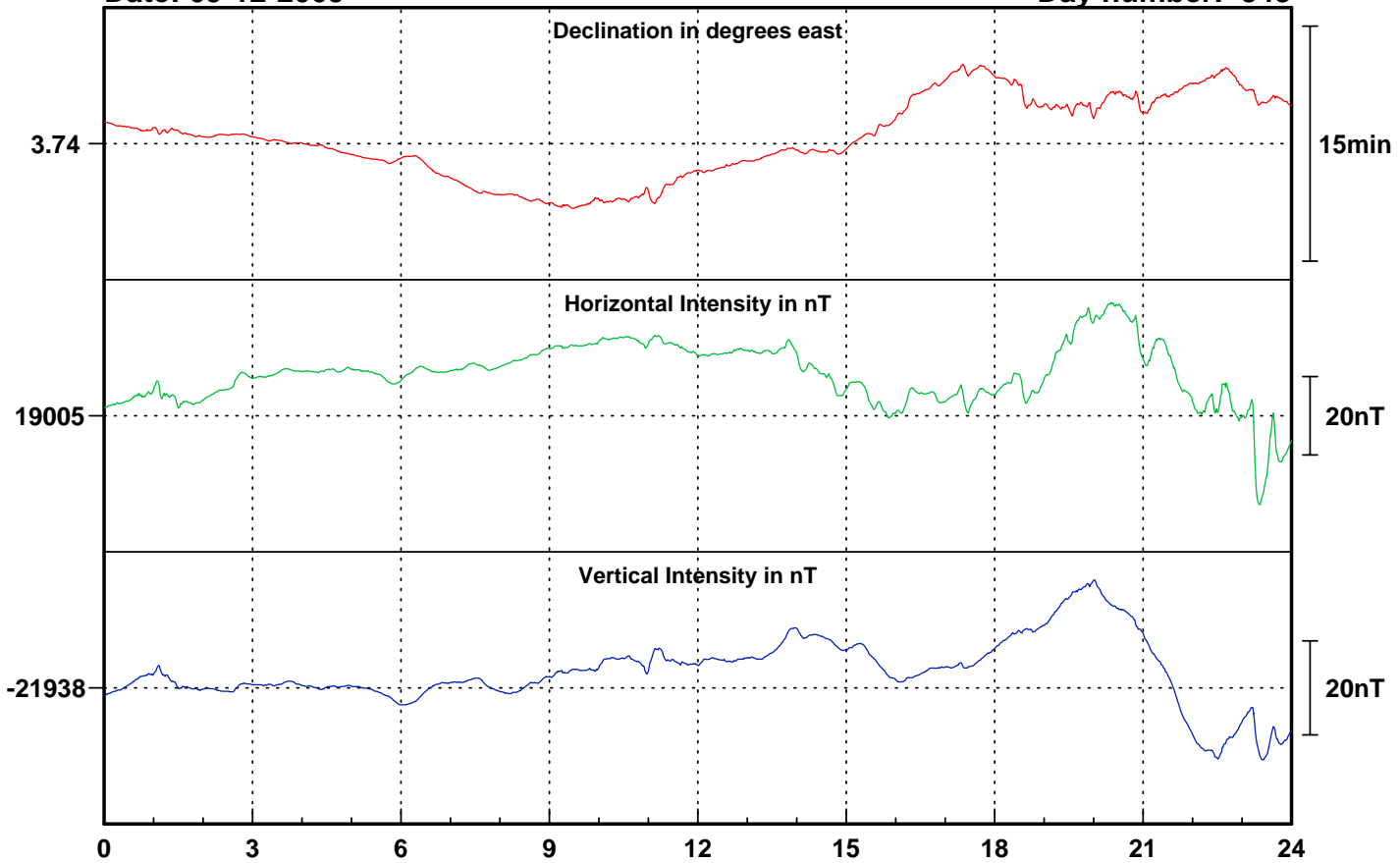
Date: 10-12-2005

Day number: 344

Declination in degrees east

3.74

15min

Horizontal Intensity in nT

19005

20nT

Vertical Intensity in nT

-21938

20nT

0   3   6   9   12   15   18   21   24

Hour (UT)

Falkland Islands

Declination in degrees east

3.74

15min

Horizontal Intensity in nT

19005

30nT

Vertical Intensity in nT

-21938

20nT

0 3 6 9 12 15 18 21 24
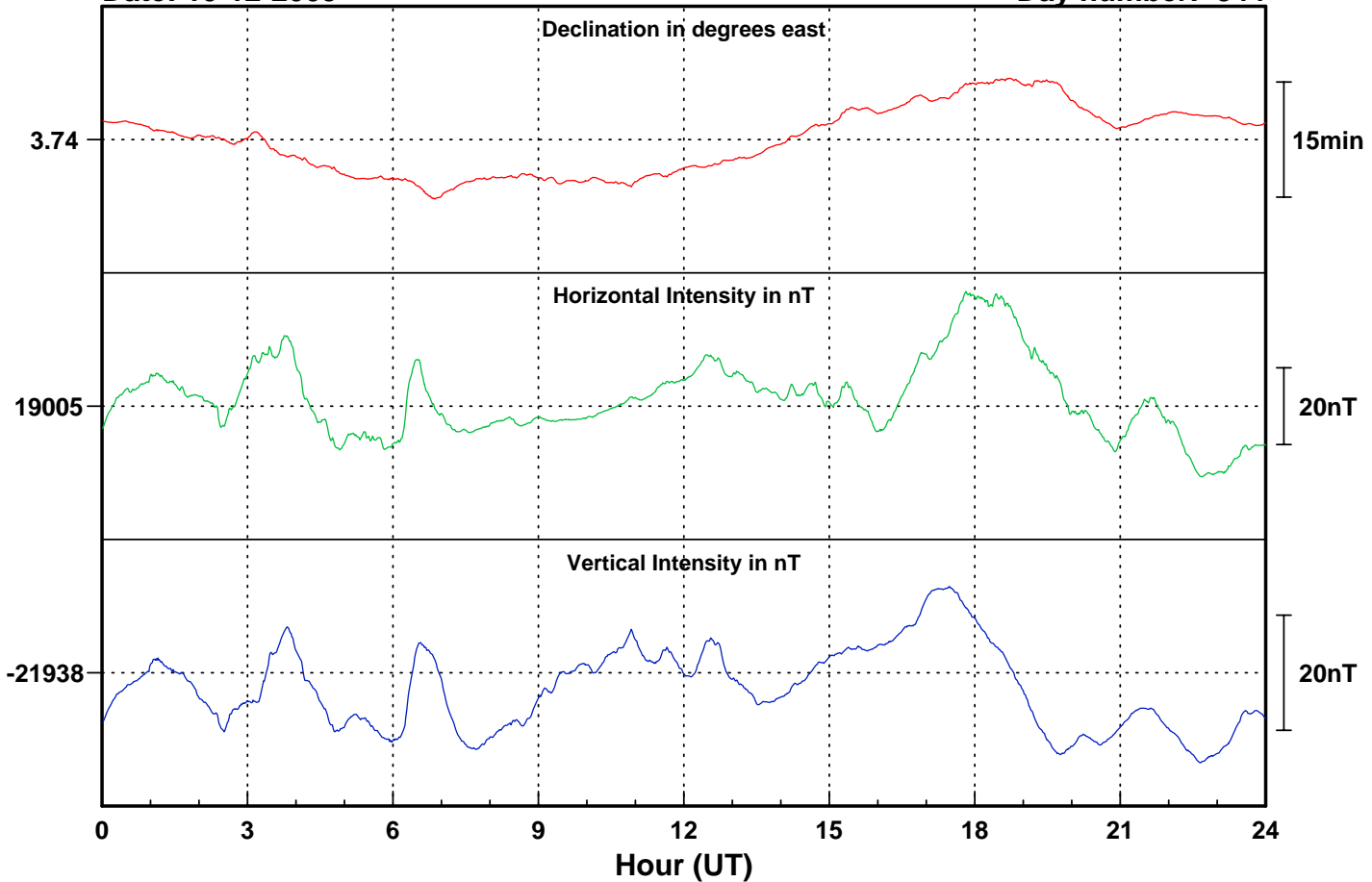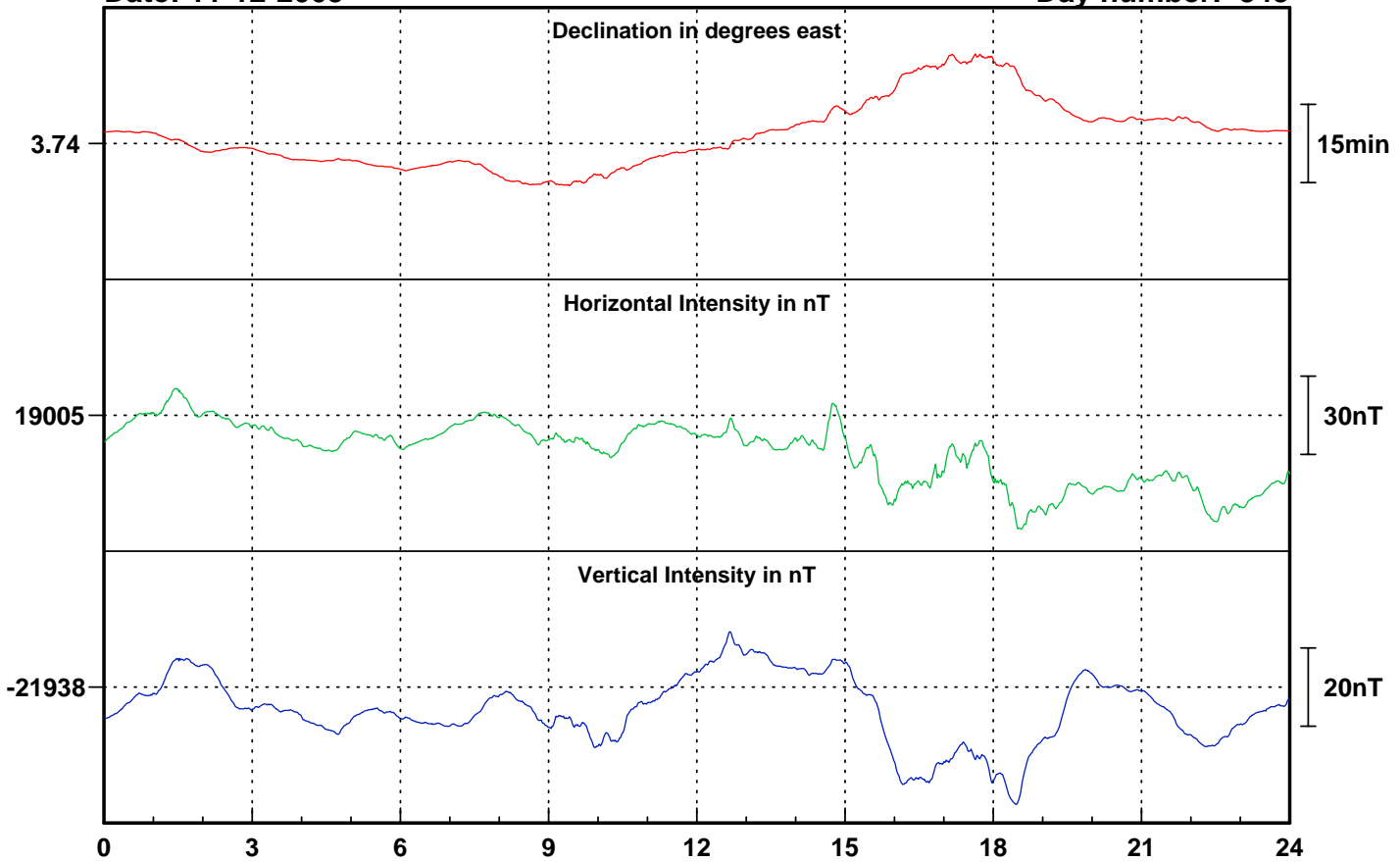
Date: 12-12-2005

Day number: 346

Declination in degrees east

3.74

15min

Horizontal Intensity in nT

19005

30nT

Vertical Intensity in nT

-21938

20nT

0 3 6 9 12 15 18 21 24

Hour (UT)

Falkland Islands

Declination in degrees east

3.74

15min

Horizontal Intensity in nT

19005

20nT

Vertical Intensity in nT

-21938

20nT

0 3 6 9 12 15 18 21 24
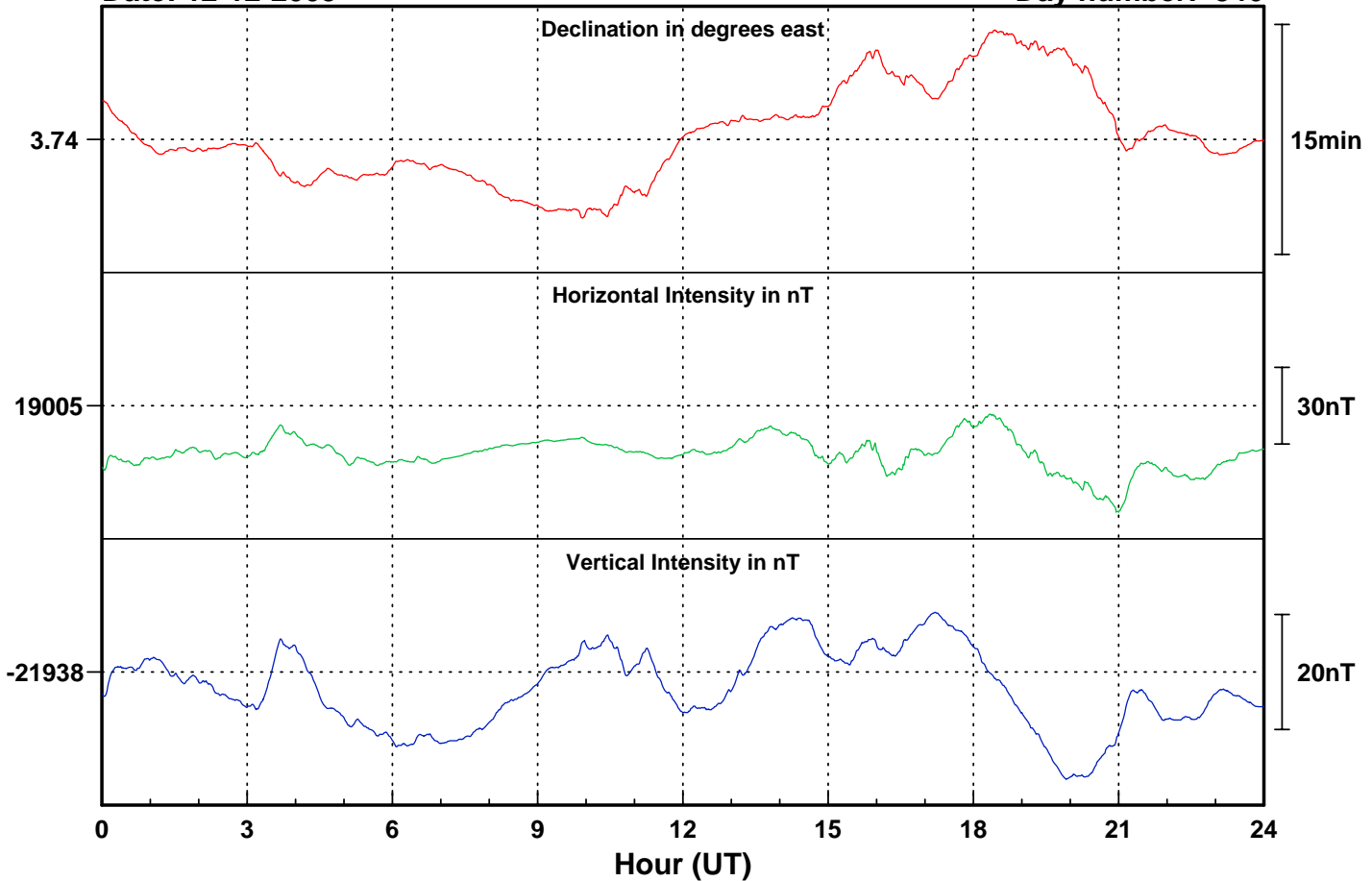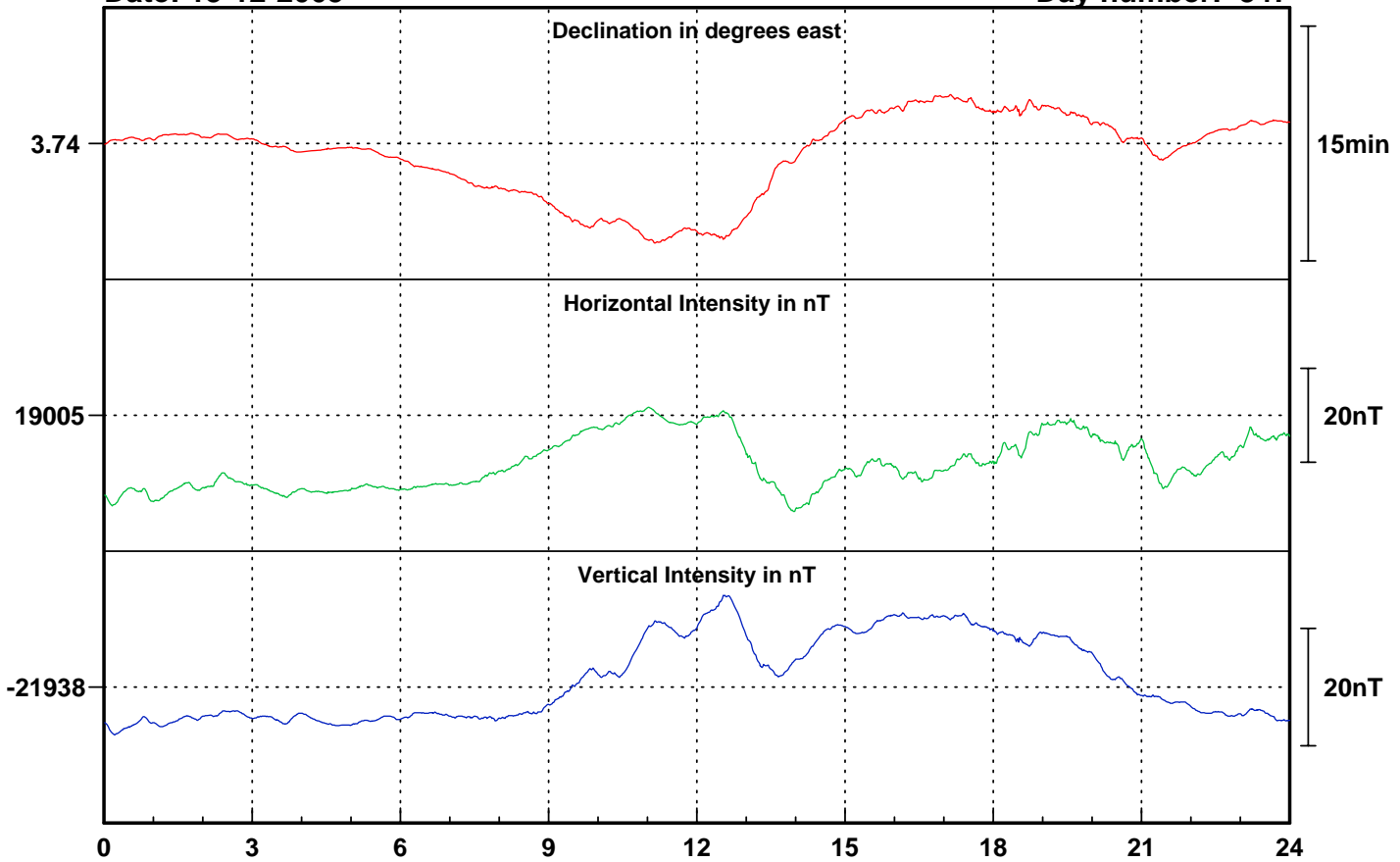
Date: 14-12-2005

Day number: 348

Declination in degrees east

3.74

15min

Horizontal Intensity in nT

19005

10nT

Vertical Intensity in nT

-21938

10nT

0 3 6 9 12 15 18 21 24

Hour (UT)
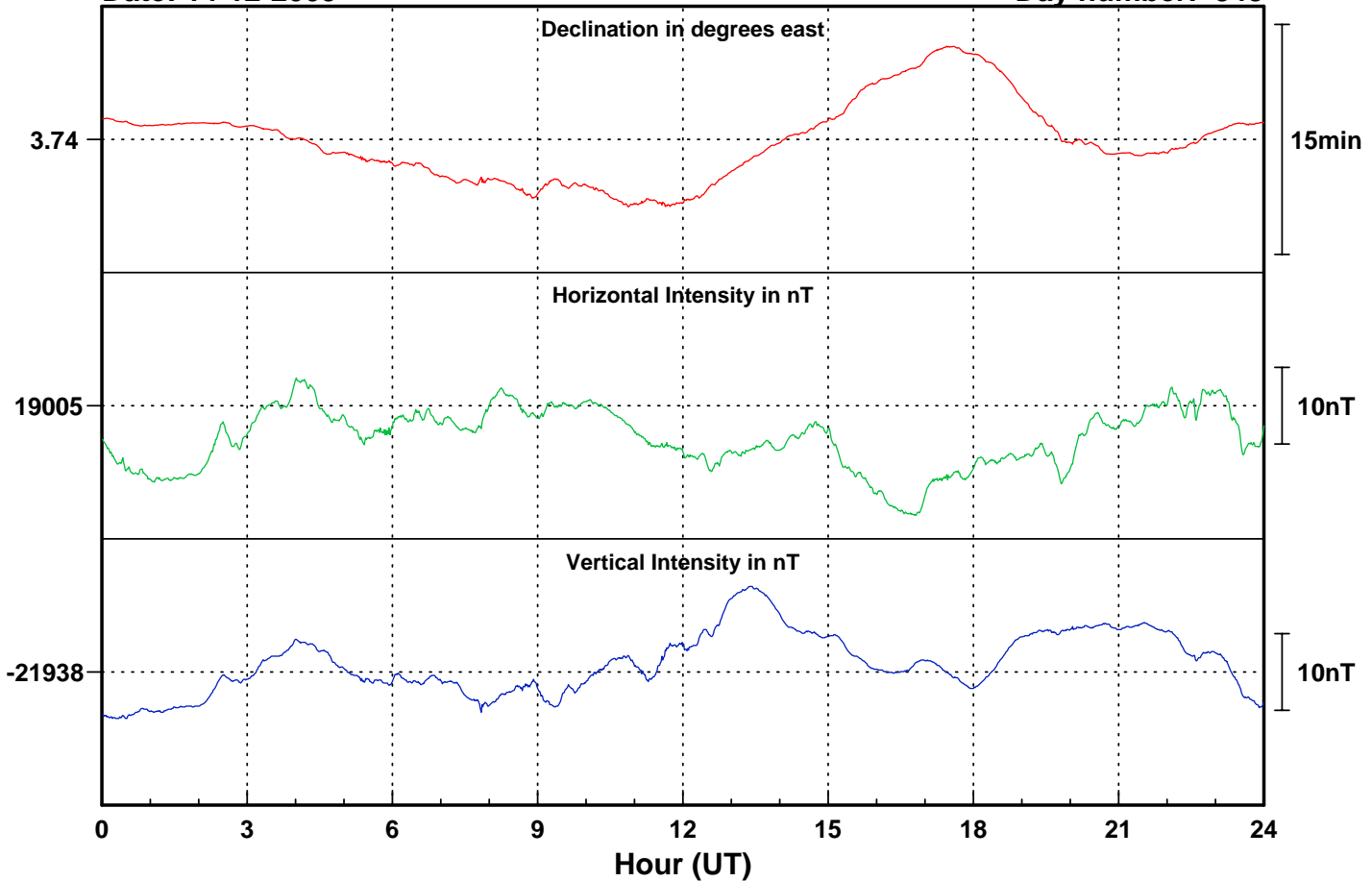
Falkland Islands

Date: 15-12-2005   Day number: 349

Declination in degrees east

3.74   15min

Horizontal Intensity in nT

19005   20nT

Vertical Intensity in nT

-21938   10nT

0   3   6   9   12   15   18   21   24
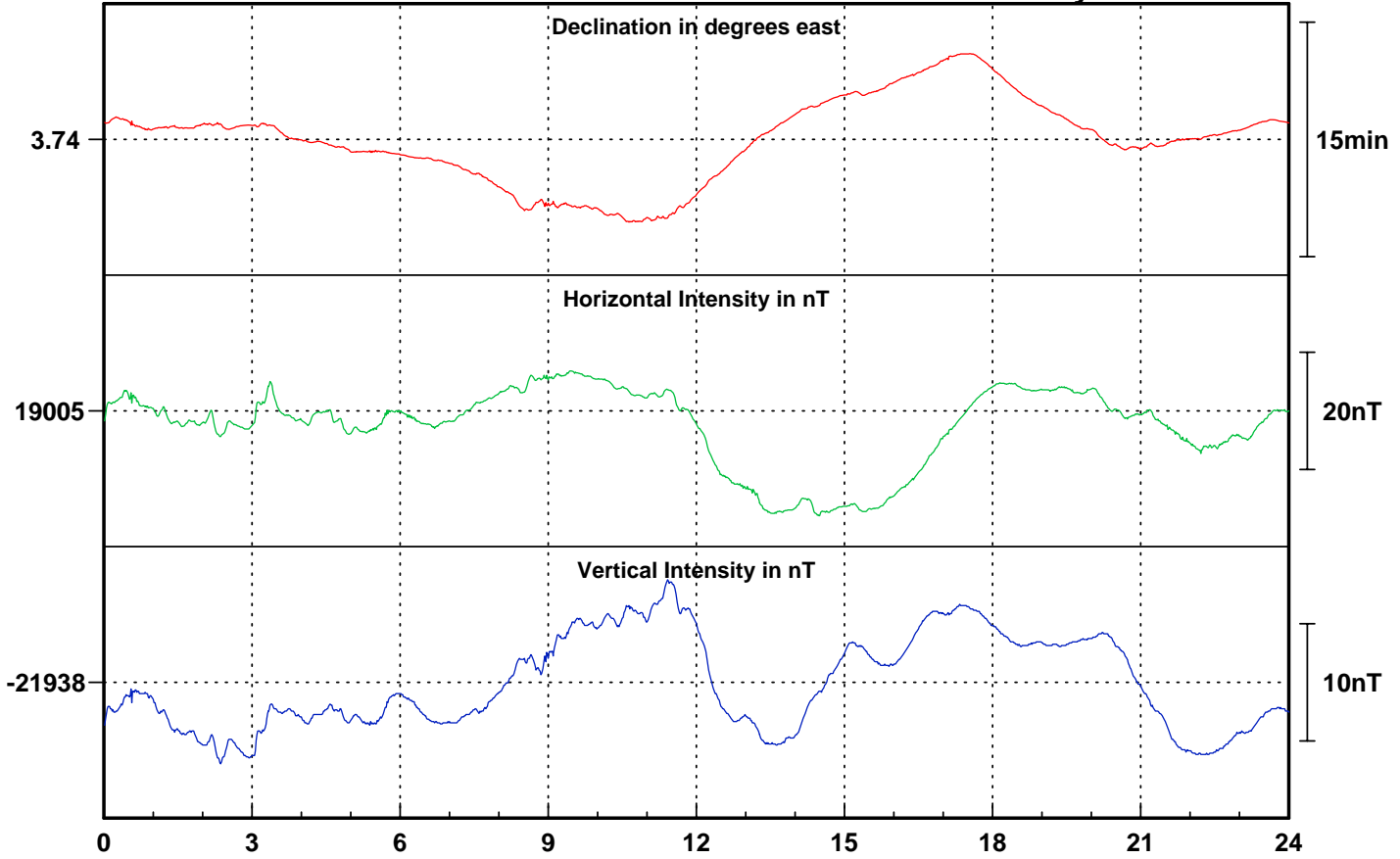
Date: 16-12-2005   Day number: 350

Declination in degrees east

3.74   15min

Horizontal Intensity in nT

19005   20nT

Vertical Intensity in nT

-21938   20nT

0   3   6   9   12   15   18   21   24

Hour (UT)
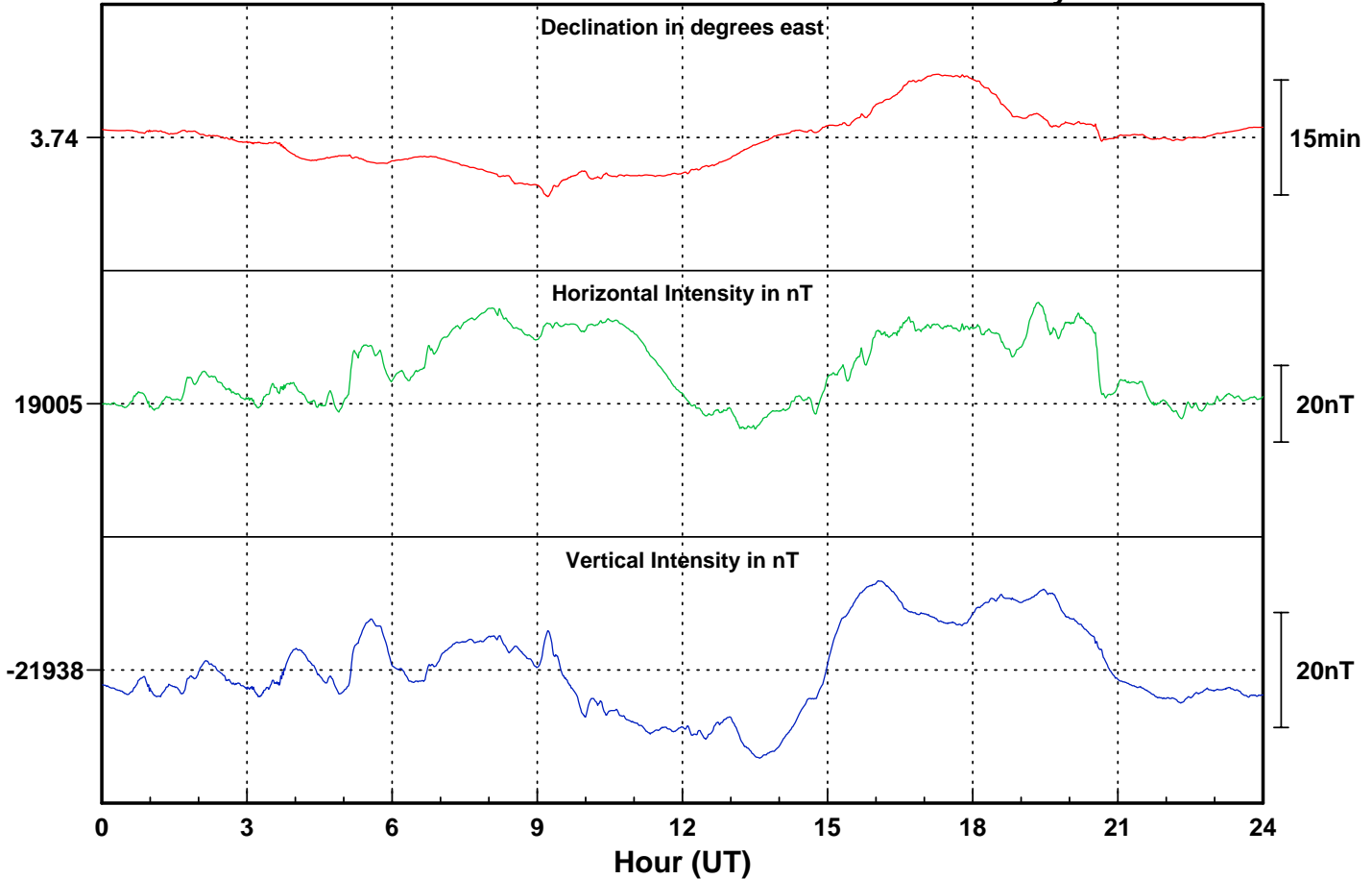
Falkland Islands

Date: 17-12-2005

Day number: 351

Declination in degrees east

15min

3.74

Horizontal Intensity in nT

20nT

19005

Vertical Intensity in nT

20nT

-21938

0   3   6   9   12   15   18   21   24
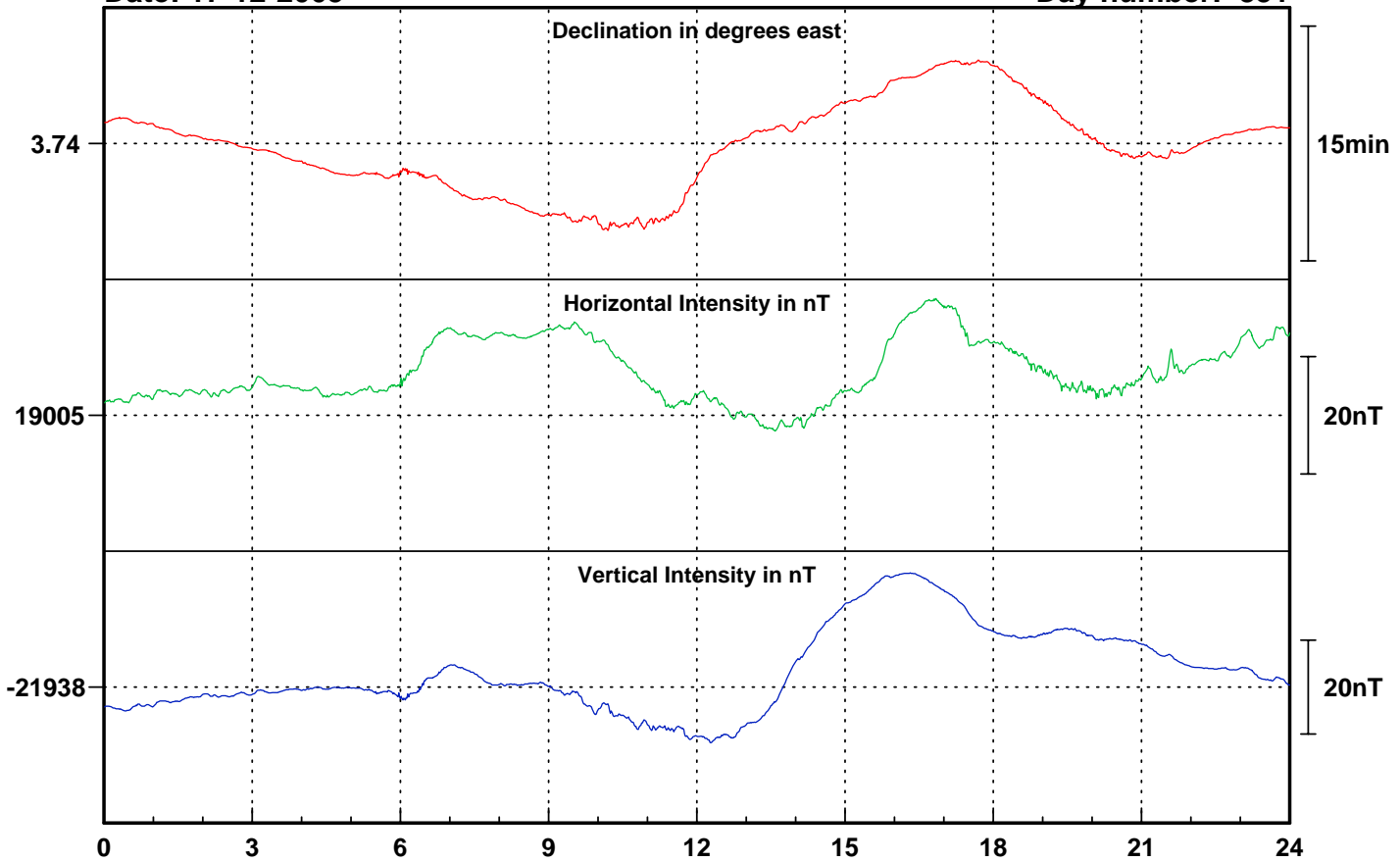
Date: 18-12-2005

Day number: 352

Declination in degrees east

15min

3.74

Horizontal Intensity in nT

30nT

19005

Vertical Intensity in nT

20nT

-21938

0   3   6   9   12   15   18   21   24

Hour (UT)
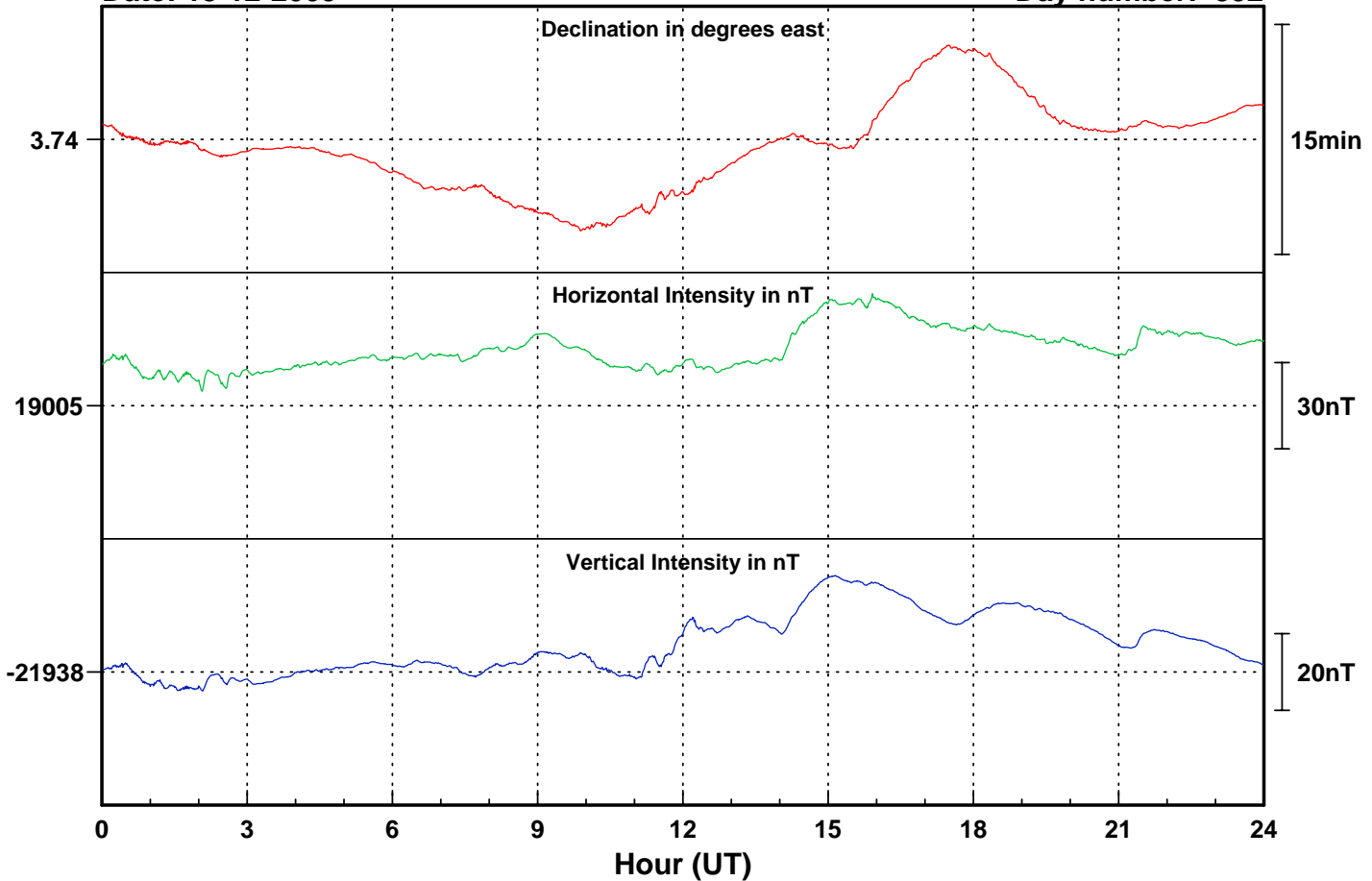
Falkland Islands

Date: 19-12-2005   Day number: 353

Declination in degrees east

3.74

15min

Horizontal Intensity in nT

19005

50nT

Vertical Intensity in nT

-21938

20nT

0   3   6   9   12   15   18   21   24
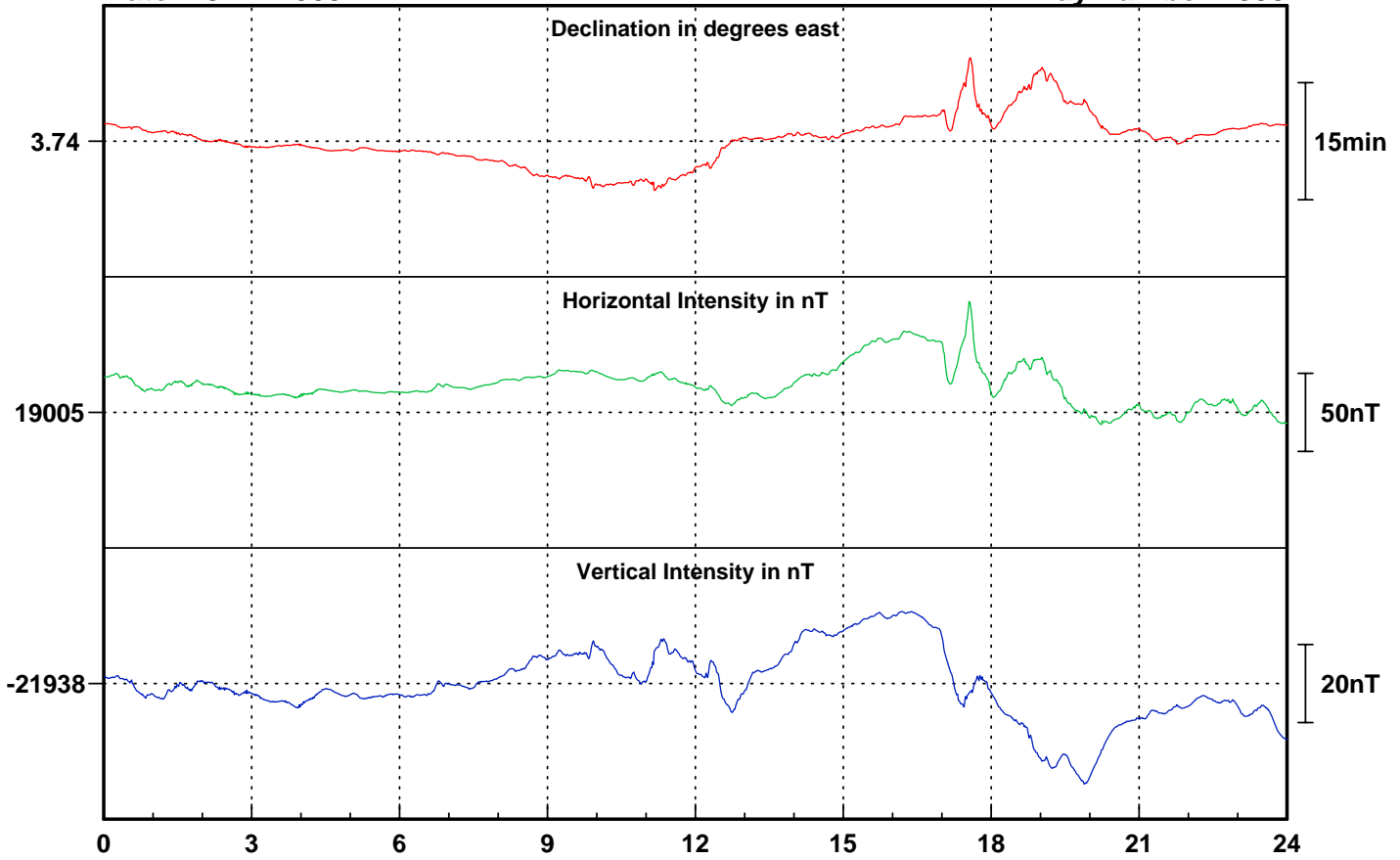
Date: 20-12-2005   Day number: 354

Declination in degrees east

3.74

15min

Horizontal Intensity in nT

19005

30nT

Vertical Intensity in nT

-21938

20nT

0   3   6   9   12   15   18   21   24

Hour (UT)
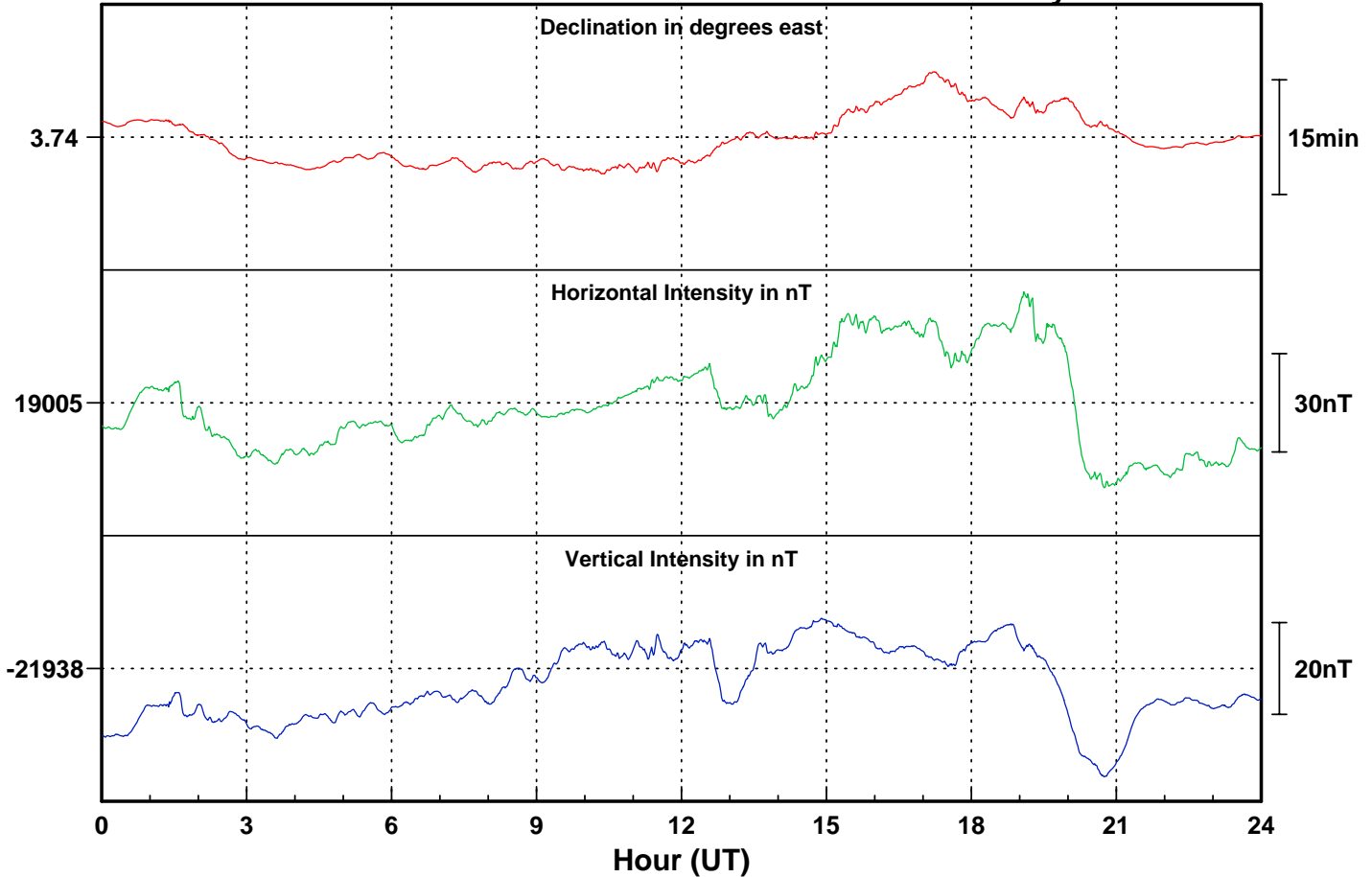
Falkland Islands

Date: 21-12-2005   Day number: 355

Declination in degrees east

Horizontal Intensity in nT

Vertical Intensity in nT
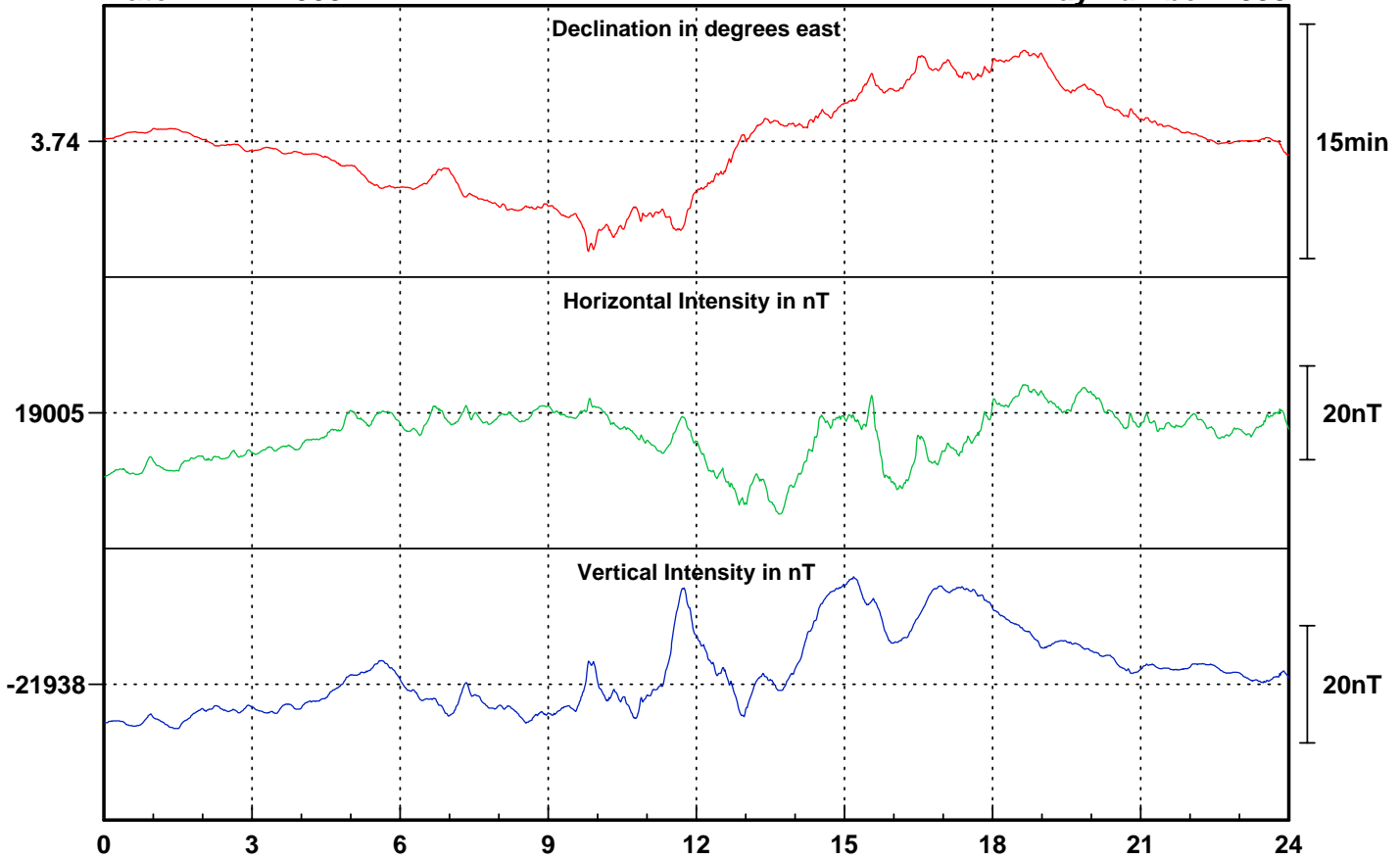
Date: 22-12-2005   Day number: 356

Declination in degrees east

Horizontal Intensity in nT

Vertical Intensity in nT

Hour (UT)

Falkland Islands

Declination in degrees east

3.74

15min

Horizontal Intensity in nT

19005

20nT

Vertical Intensity in nT

-21938

10nT

0   3   6   9   12   15   18   21   24
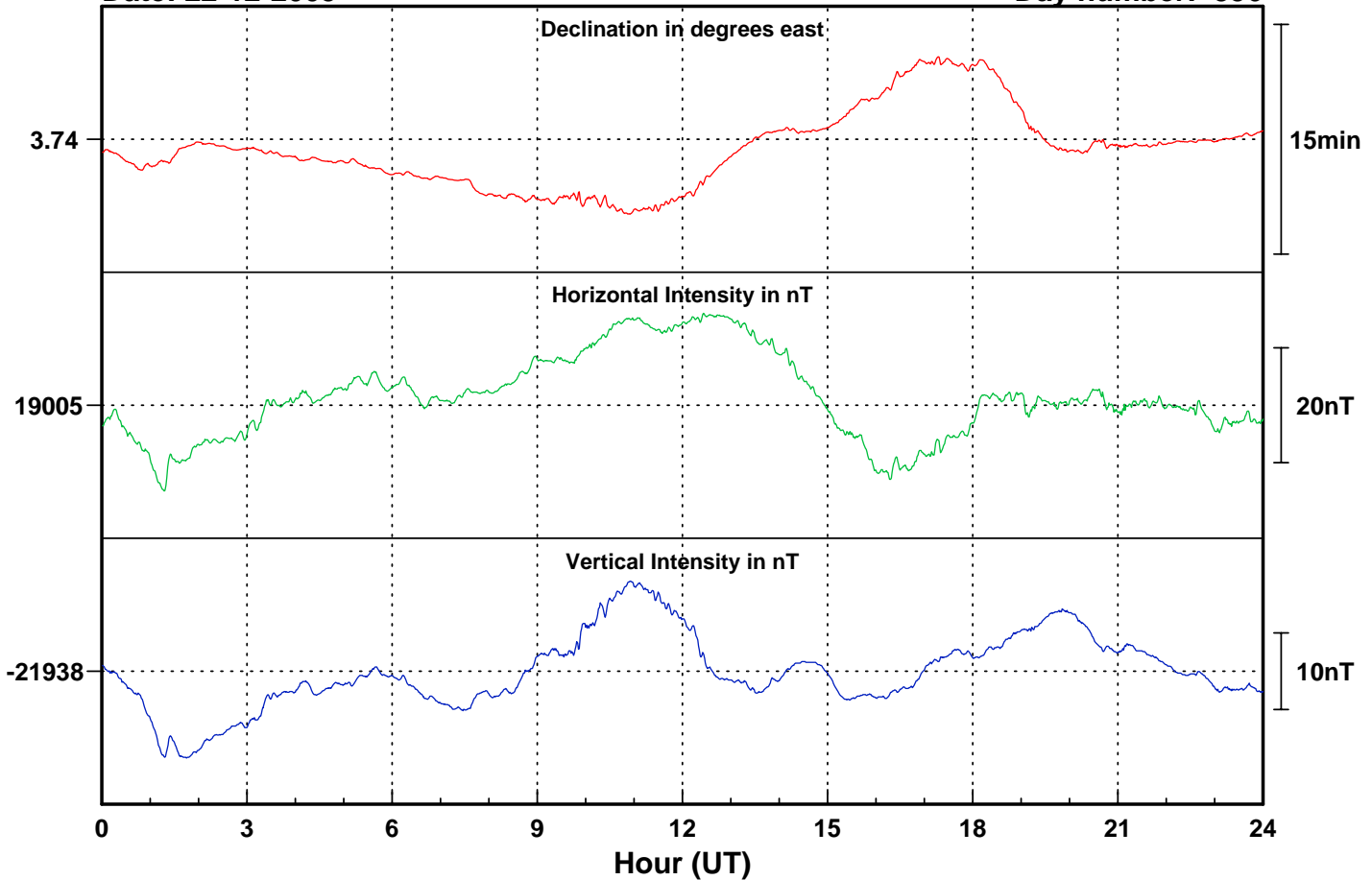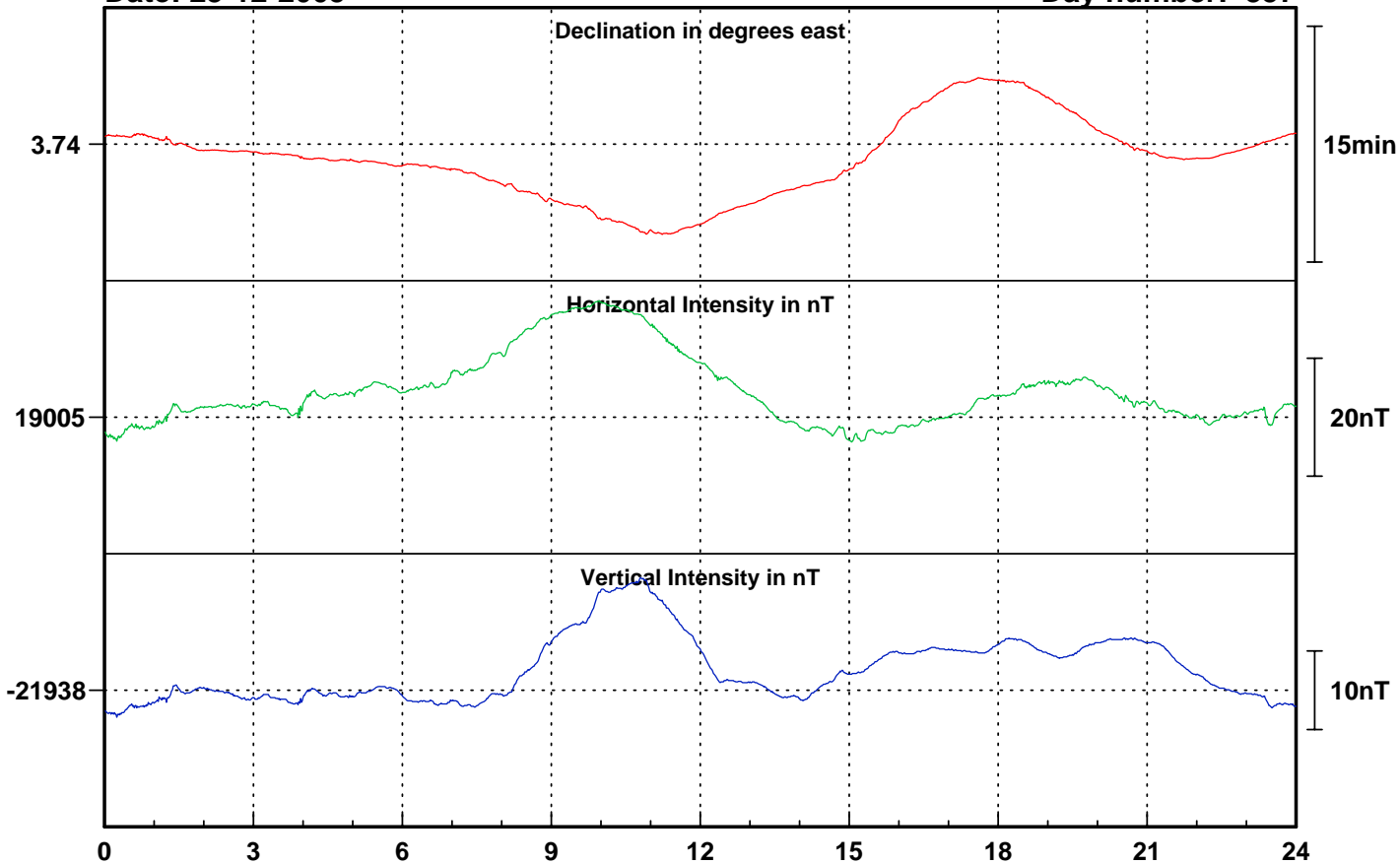
Date: 24-12-2005

Day number: 358

Declination in degrees east

3.74

15min

Horizontal Intensity in nT

19005

20nT

Vertical Intensity in nT

-21938

10nT

0   3   6   9   12   15   18   21   24

Hour (UT)
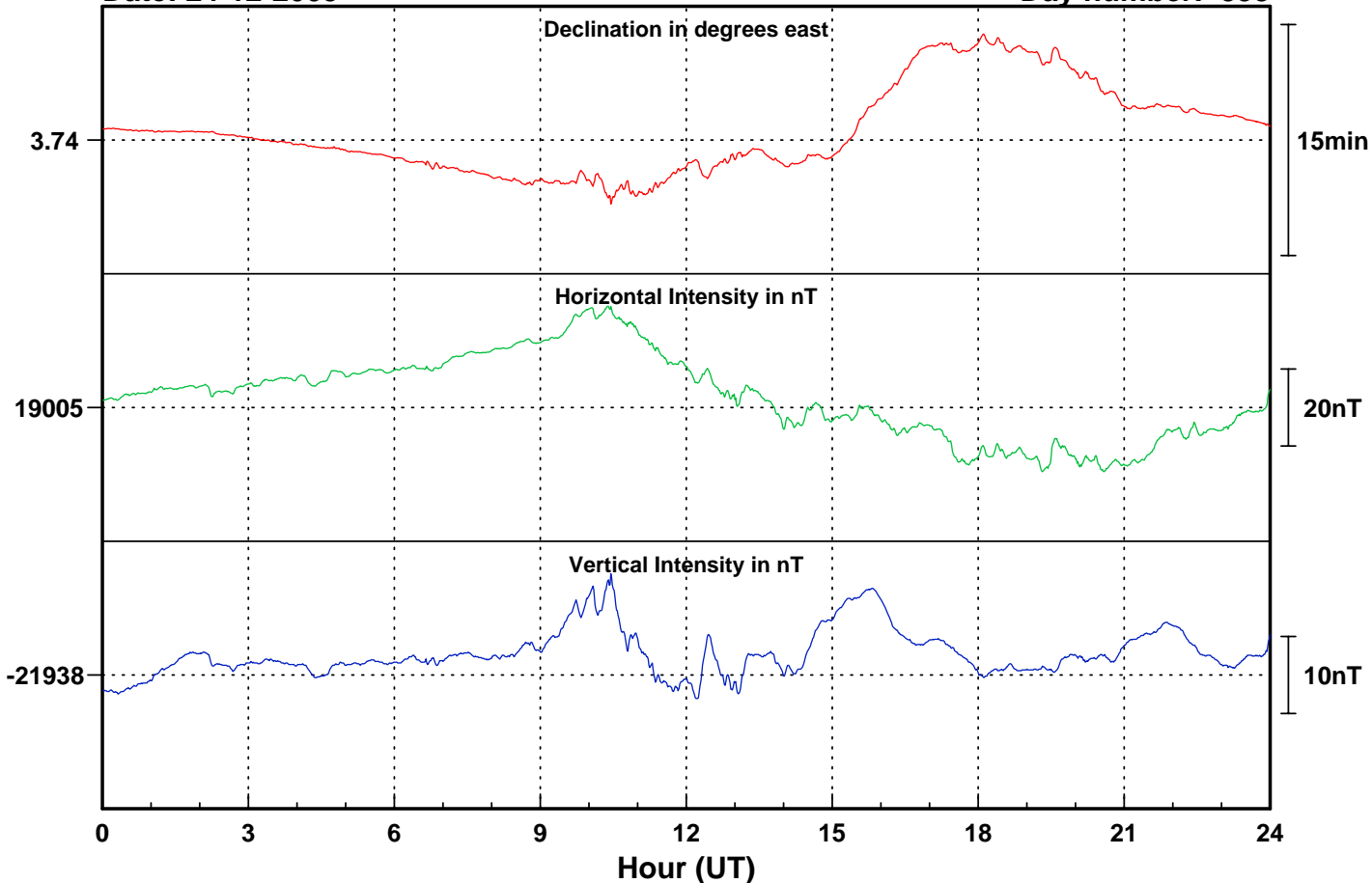
Falkland Islands

Date: 25-12-2005   Day number: 359

Declination in degrees east

3.74   15min

Horizontal Intensity in nT

19005   20nT

Vertical Intensity in nT

-21938   10nT

0   3   6   9   12   15   18   21   24
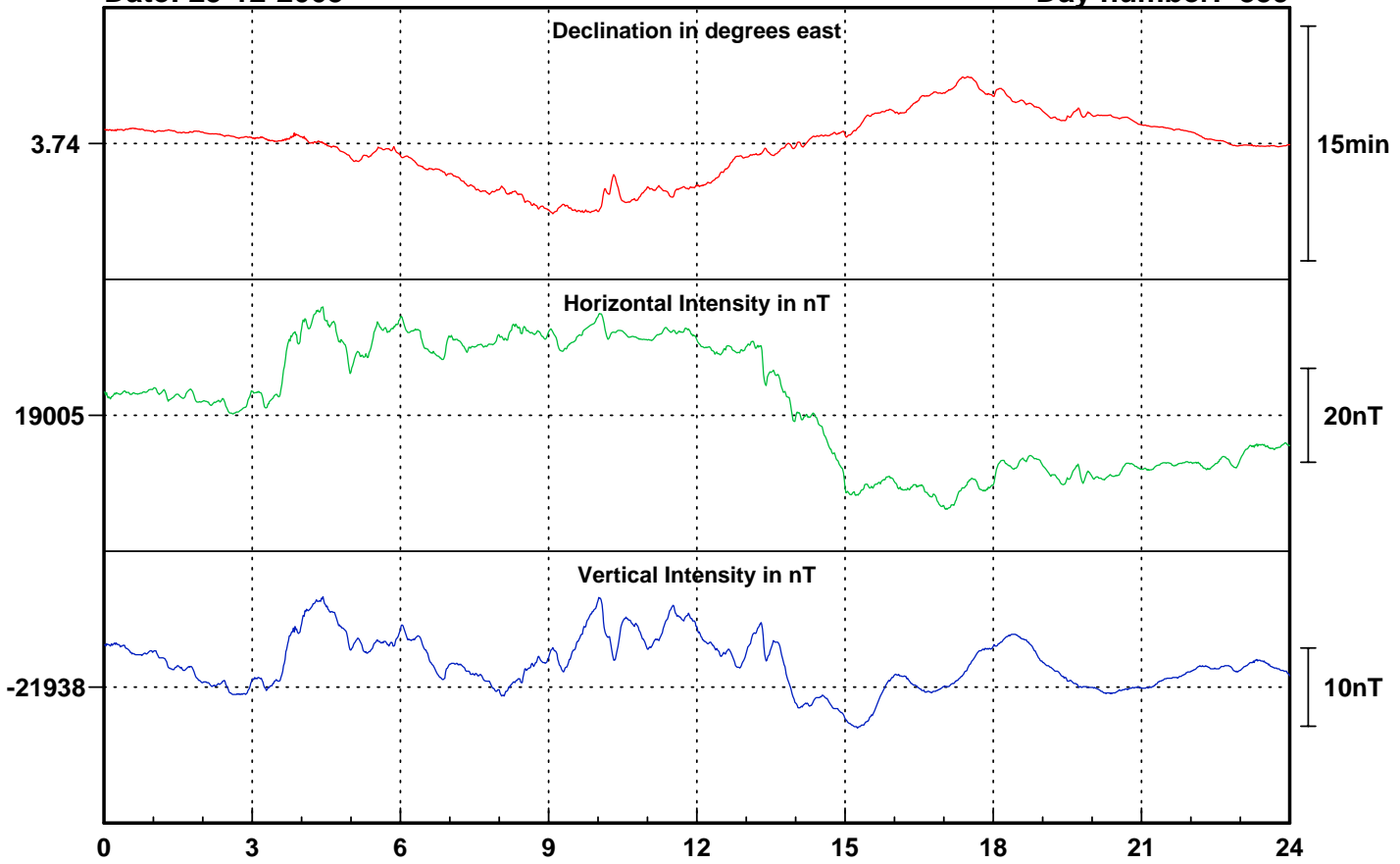
Date: 26-12-2005   Day number: 360

Declination in degrees east

3.74   15min

Horizontal Intensity in nT

19005   20nT

Vertical Intensity in nT

-21938   20nT

0   3   6   9   12   15   18   21   24

Hour (UT)

Falkland Islands

Date: 27-12-2005　　　　　　　　　　　　　　　　**Day number: 361**

Declination in degrees east

3.74

15min

Horizontal Intensity in nT

19005

50nT

Vertical Intensity in nT

-21938

40nT

0　　3　　6　　9　　12　　15　　18　　21　　24
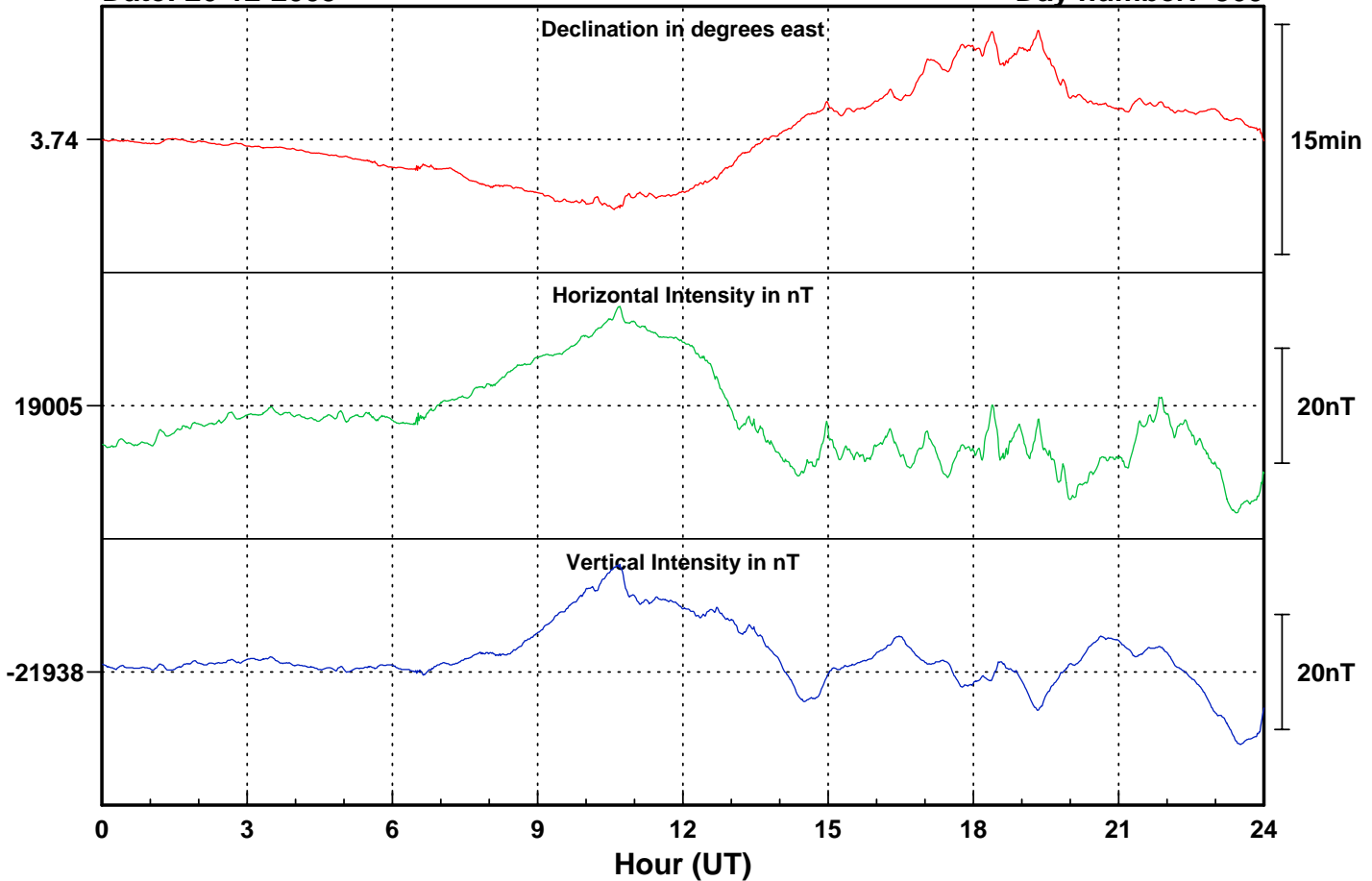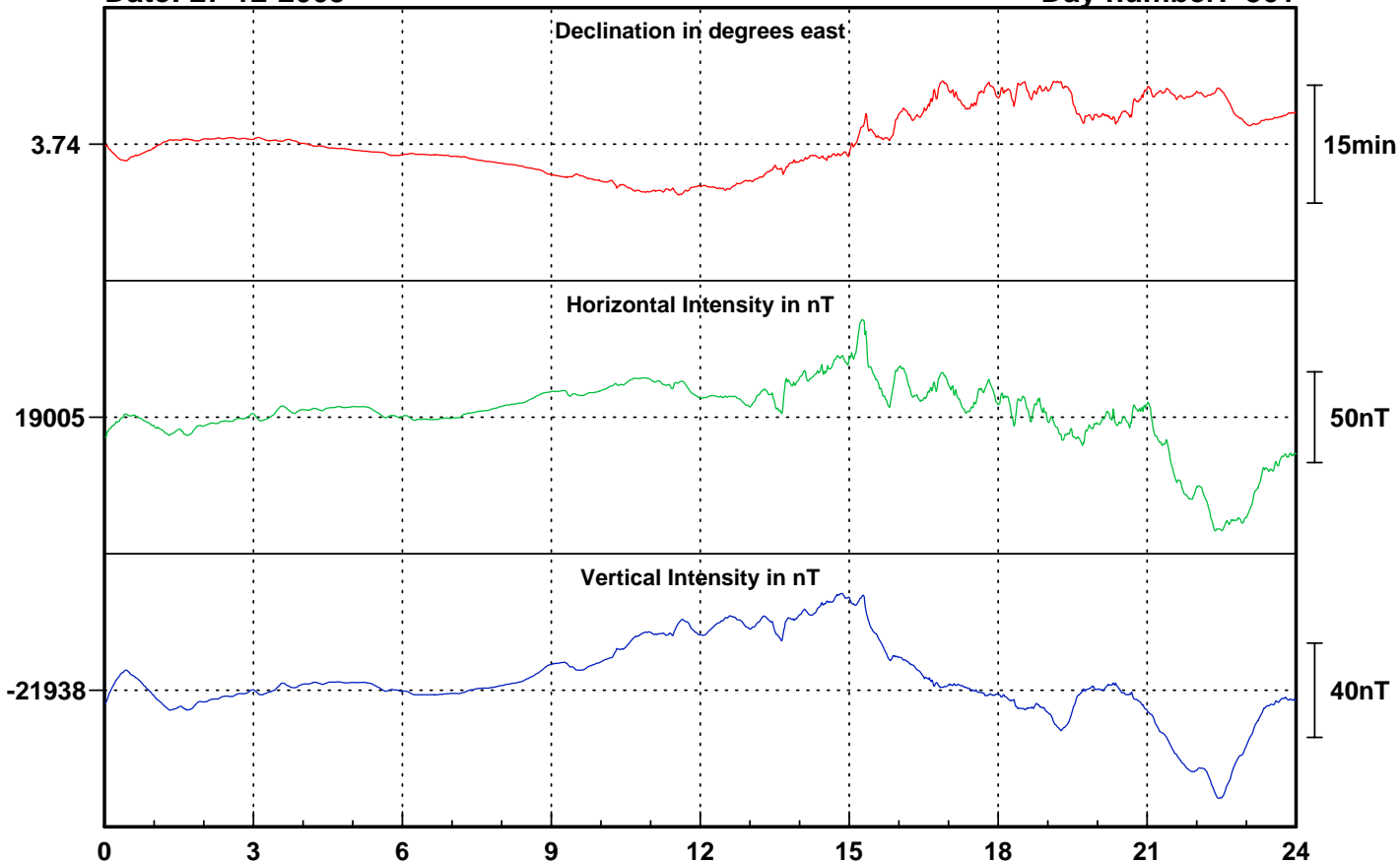
Date: 28-12-2005　　　　　　　　　　　　　　　　**Day number: 362**

Declination in degrees east

3.74

15min

Horizontal Intensity in nT

19005

30nT

Vertical Intensity in nT

-21938

20nT

0　　3　　6　　9　　12　　15　　18　　21　　24

Hour (UT)

Falkland Islands

Declination in degrees east

3.74

15min

Horizontal Intensity in nT

19005

20nT

Vertical Intensity in nT

-21938

10nT

0   3   6   9   12   15   18   21   24
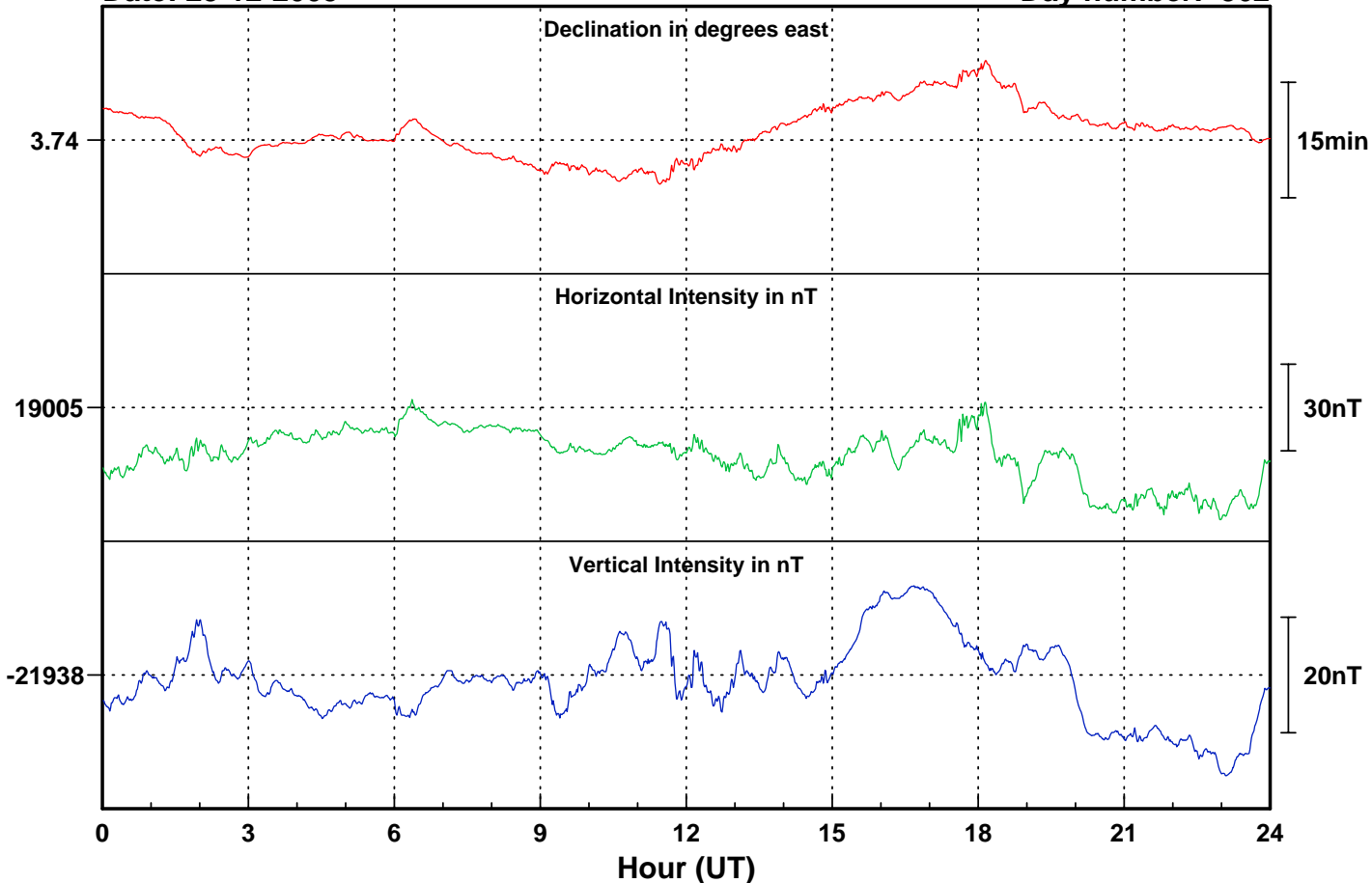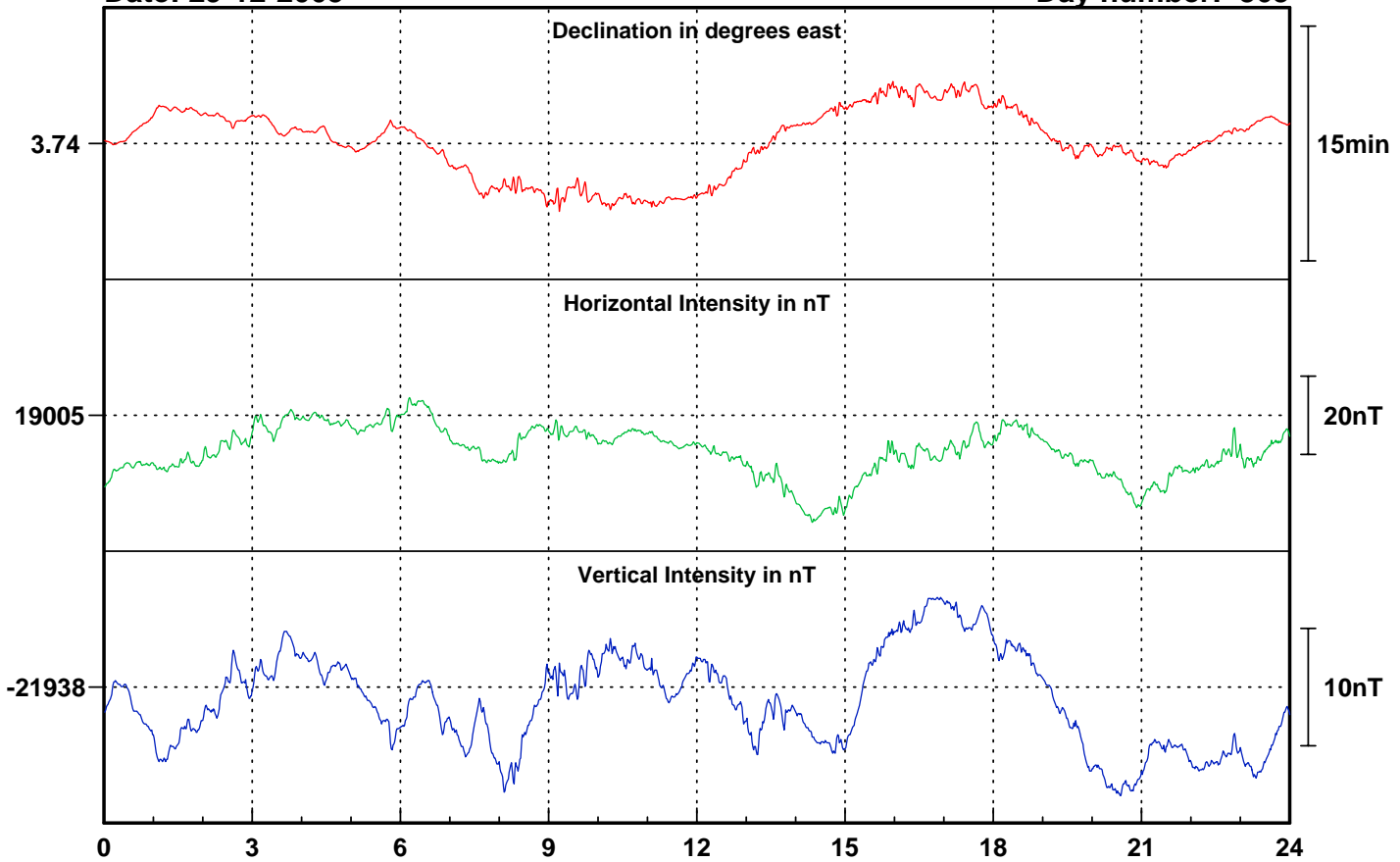
Date: 30-12-2005

Day number: 364

Declination in degrees east

3.74

15min

Horizontal Intensity in nT

19005

20nT

Vertical Intensity in nT

-21938

10nT

0   3   6   9   12   15   18   21   24

Hour (UT)

Falkland Islands

Date: 31-12-2005

Day number: 365

Declination in degrees east

3.74

15min

Horizontal Intensity in nT

19005

40nT

Vertical Intensity in nT

-21938

20nT

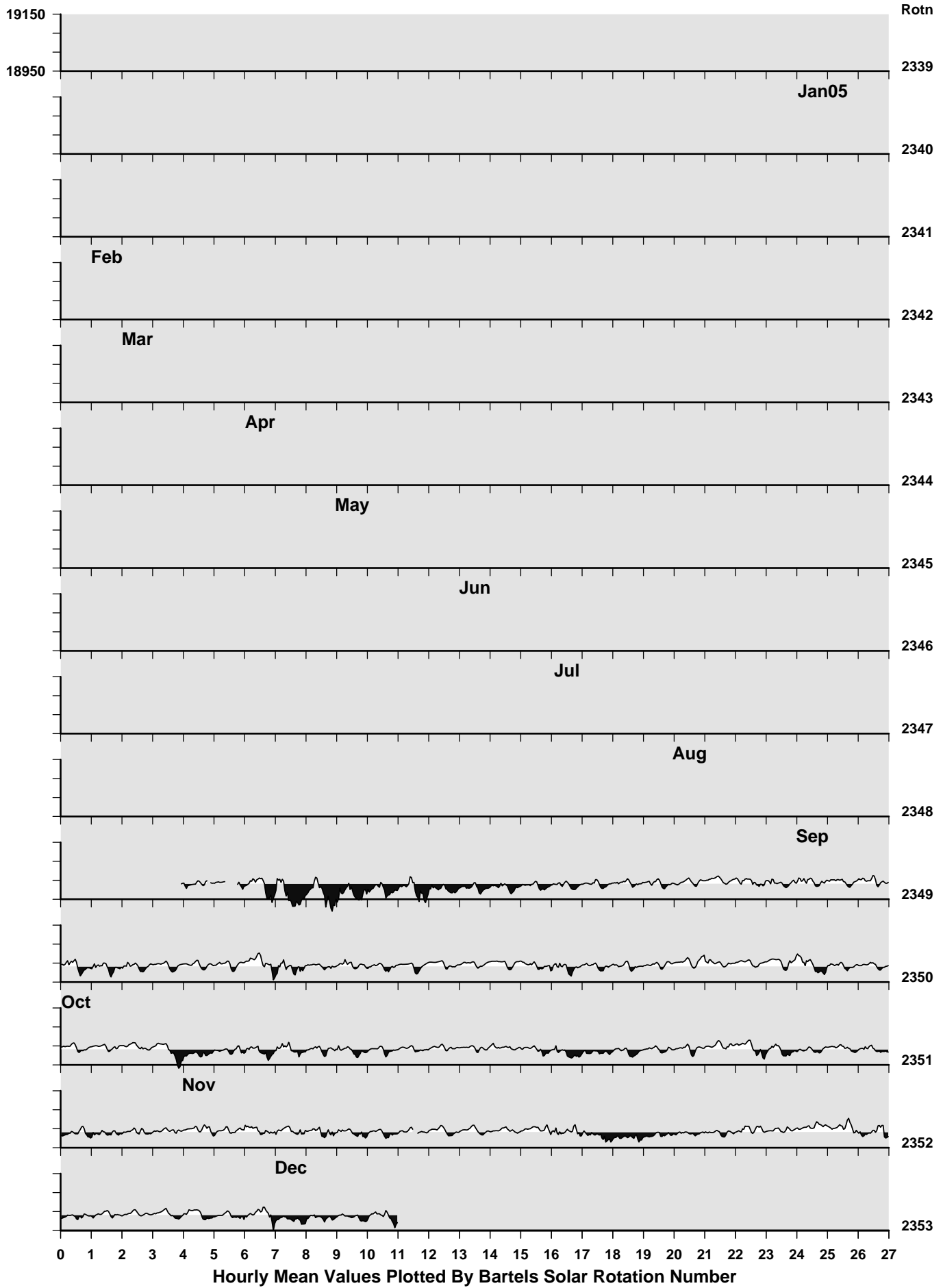0   3   6   9   12   15   18   21   24
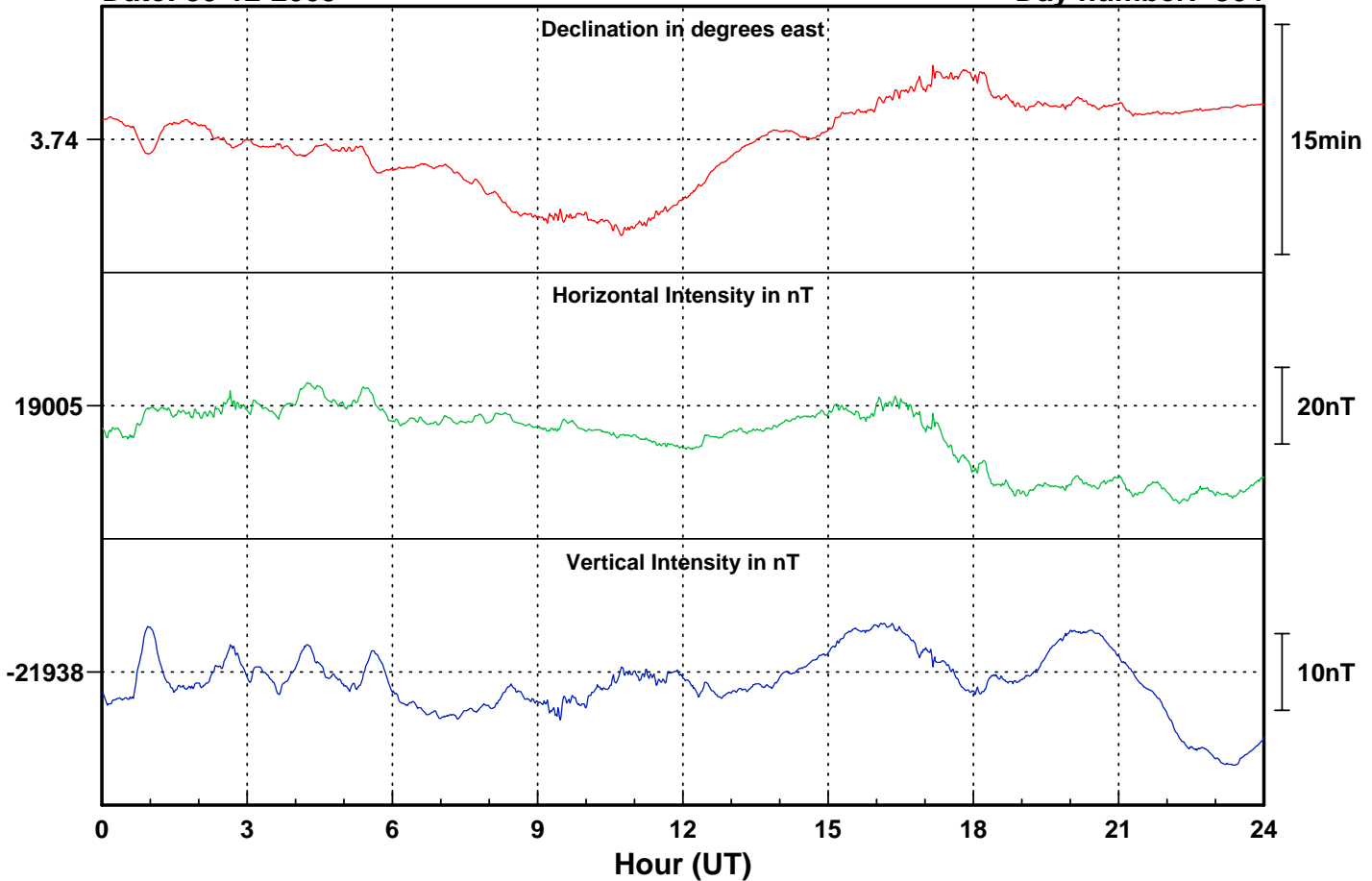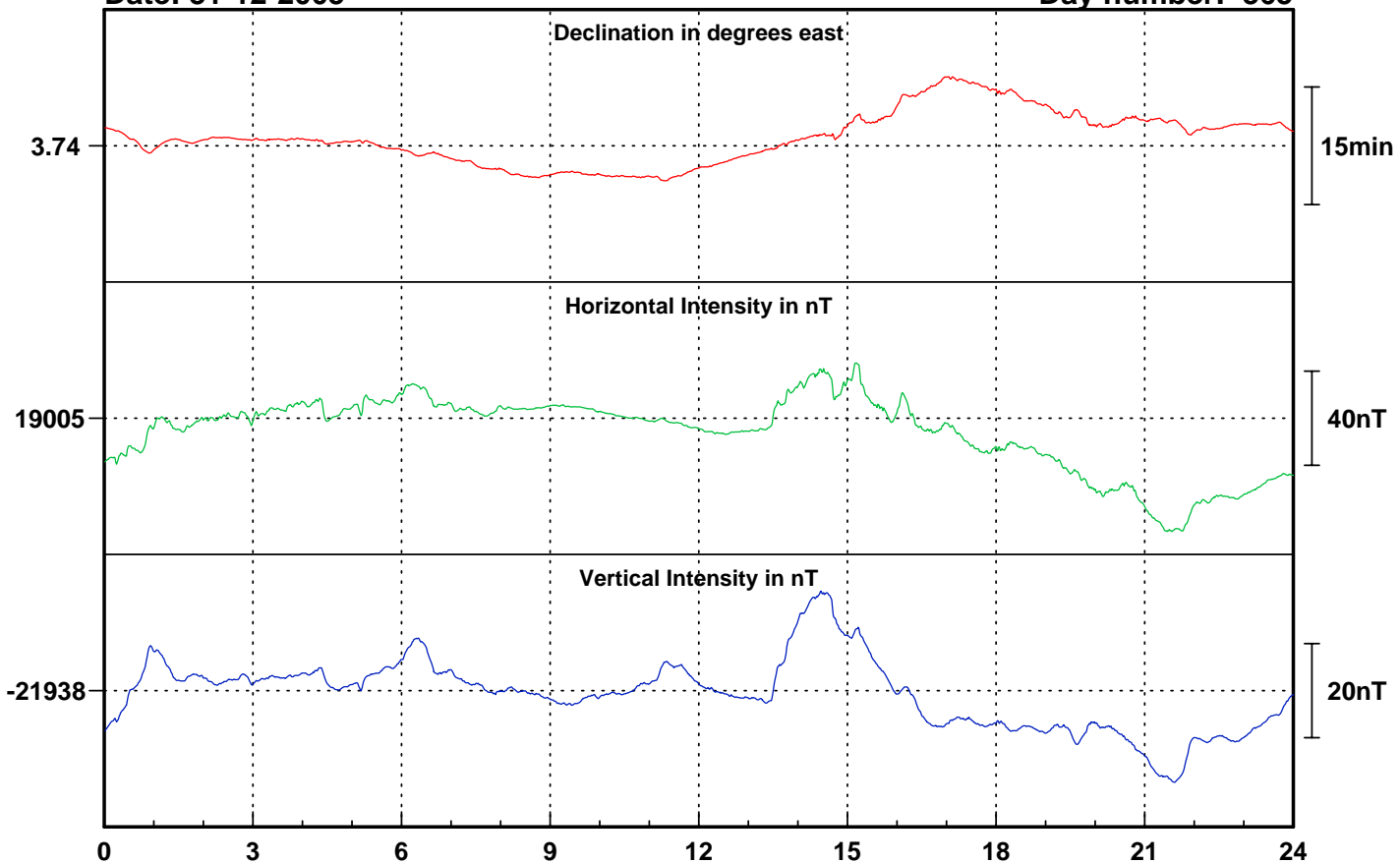
Falkland Islands Observatory: Declination (degrees)
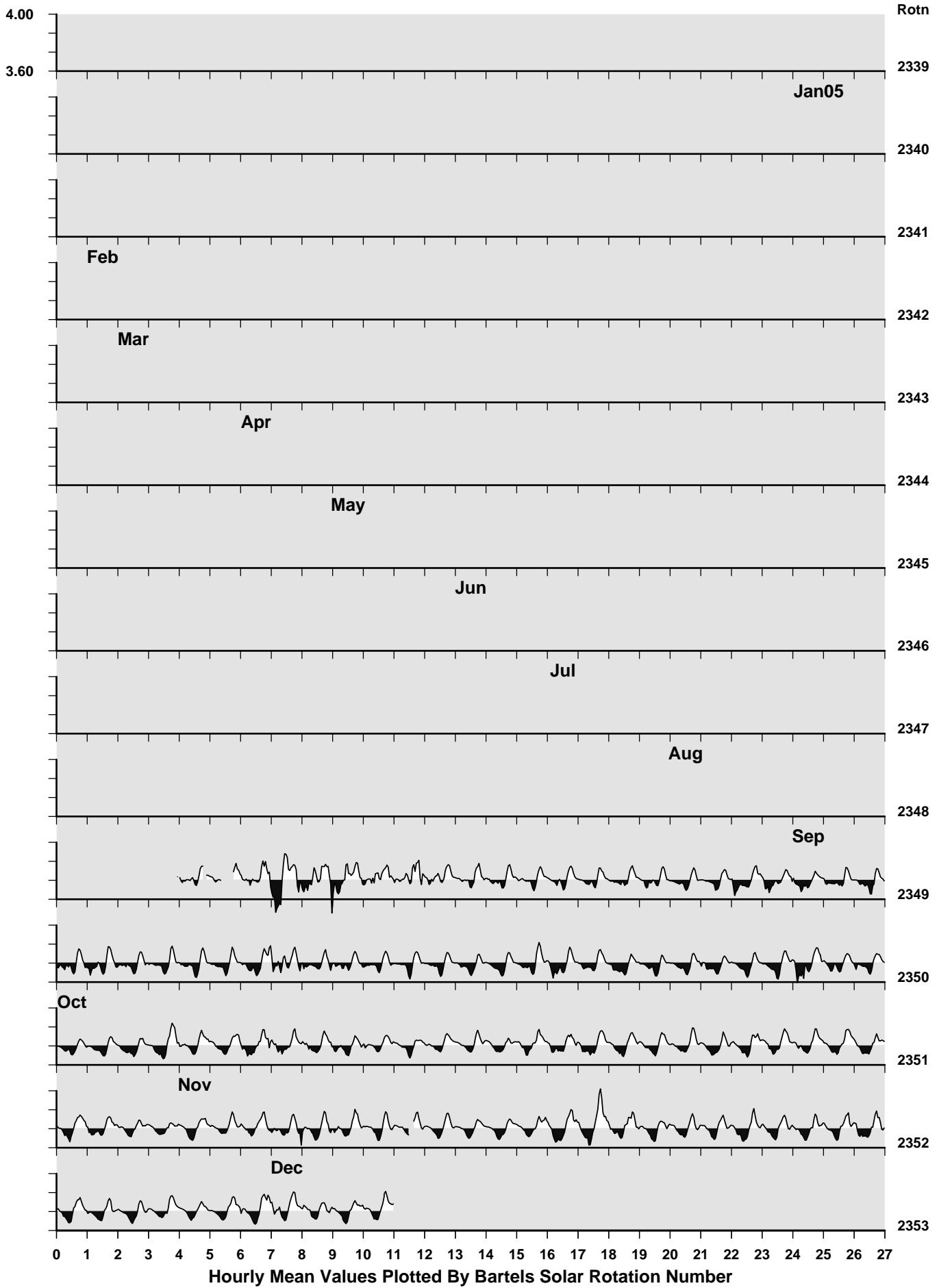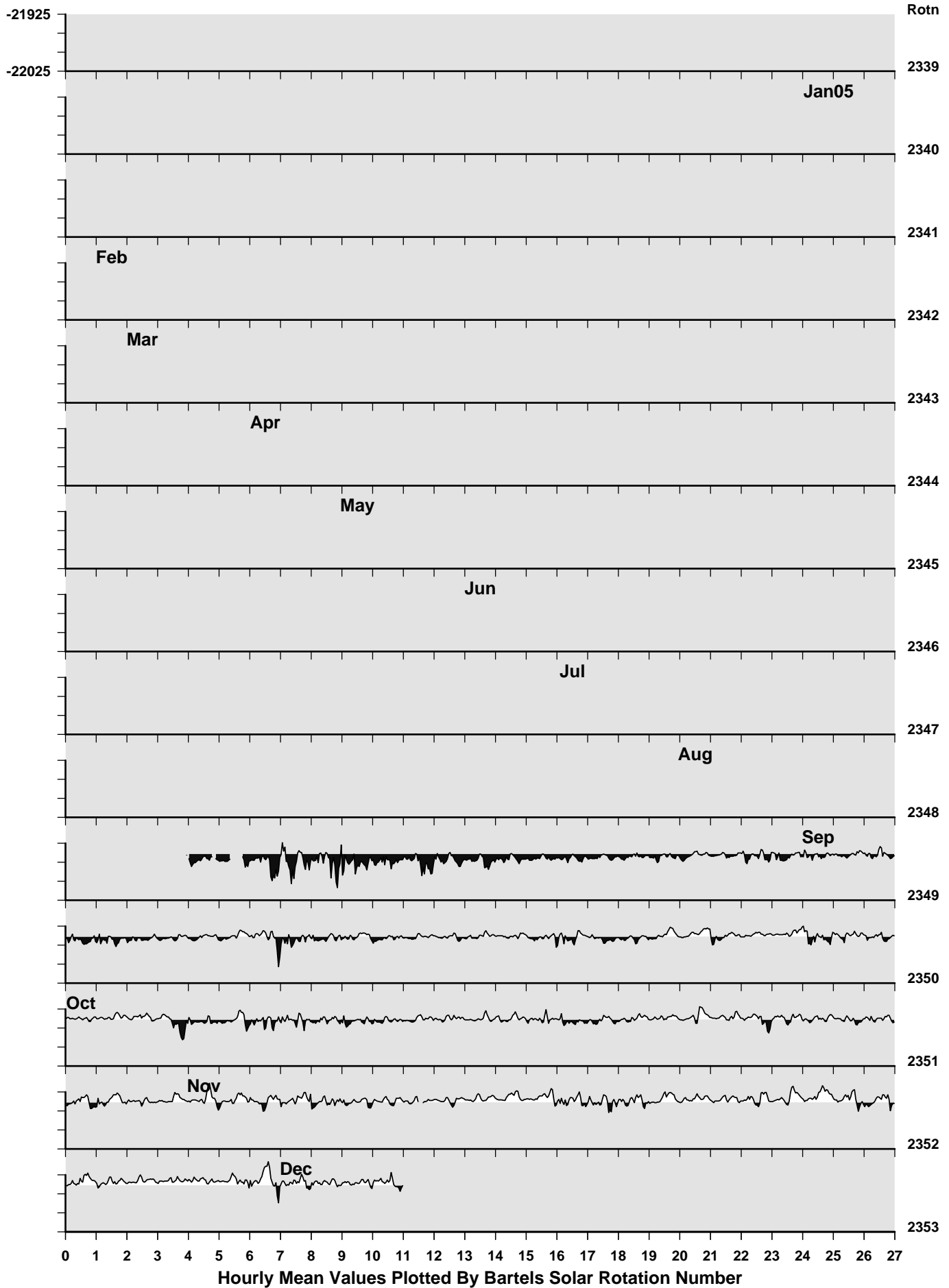

Hourly Mean Values Plotted By Bartels Solar Rotation Number

Falkland Islands Observatory: Horizontal Intensity (nT)

19150		Rotn
18950		2339

Jan05

Feb

Mar

Apr

May

Jun

Jul

Aug

Sep

Oct

Nov

Dec

Hourly Mean Values Plotted By Bartels Solar Rotation Number

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

Falkland Islands Observatory: Vertical Intensity (nT)

Hourly Mean Values Plotted By Bartels Solar Rotation Number

Falklands Is Observatory 2005

Daily Mean Declination (deg)

224.3 — 10min

Daily Mean Horizontal Intensity (nT)

19004 — 100nT

Daily Mean Vertical Intensity (nT)

-21944 — 50nT

Daily Mean Total Intensity (nT)

29029 — 50nT

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
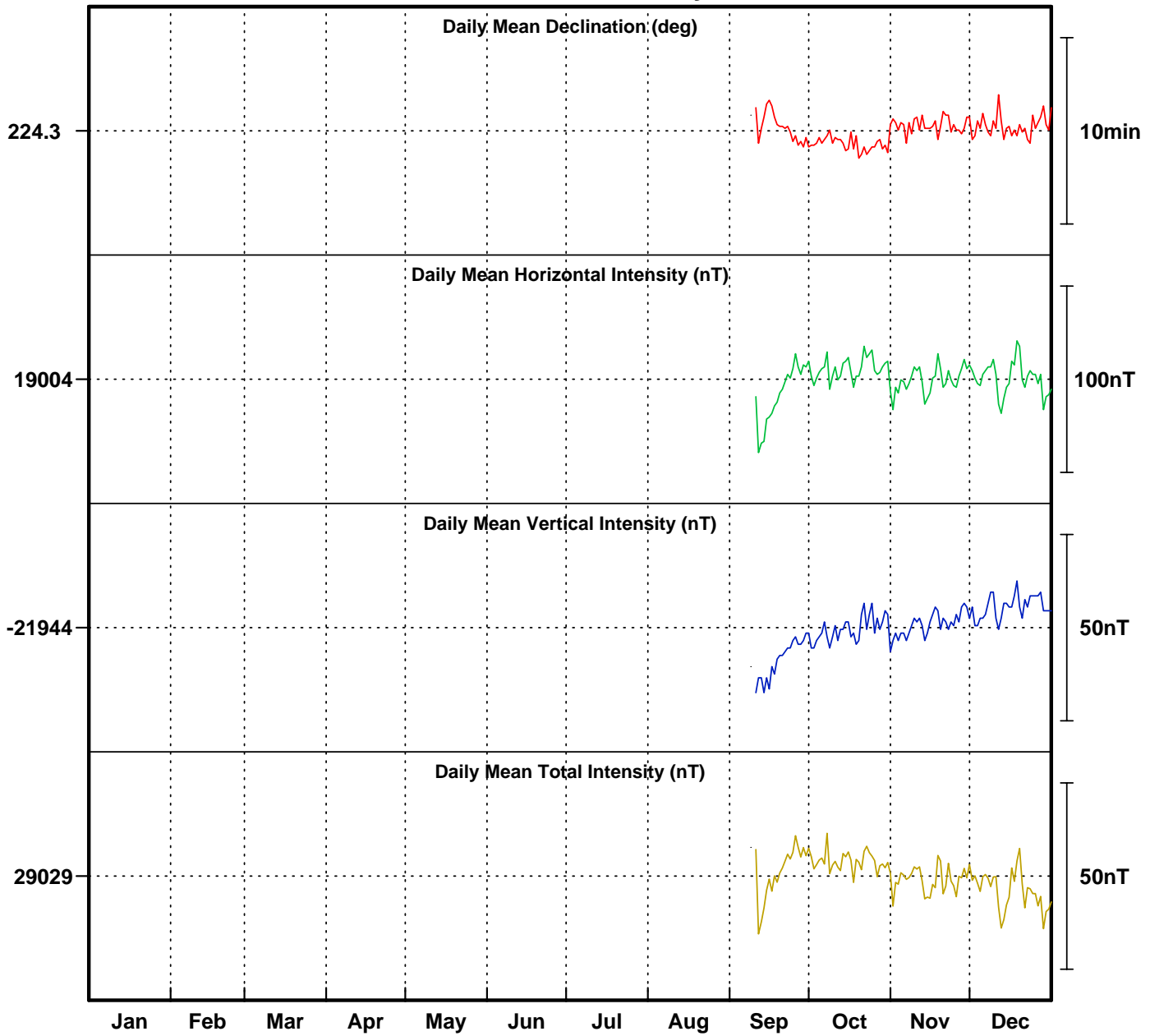
Monthly Mean Values for Port Stanley Observatory 2005

Month	D	H	I	X	Y	Z	F
January	********	********	********	********	********	********	********
February	********	********	********	********	********	********	********
March	********	********	********	********	********	********	********
April	********	********	********	********	********	********	********
May	********	********	********	********	********	********	********
June	********	********	********	********	********	********	********
July	********	********	********	********	********	********	********
August	********	********	********	********	********	********	********
September	********	********	********	********	********	********	********
October	3° 43.6´	19009 nT	-49° 5.9´	18969 nT	1235 nT	-21944 nT	29033 nT
November	3° 44.6´	19004 nT	-49° 6.3´	18963 nT	1241 nT	-21943 nT	29028 nT
December	3° 44.5´	19005 nT	-49° 5.9´	18964 nT	1240 nT	-21938 nT	29025 nT

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.

ii. The values shown here are provisional