


# KIRUNA GEOPHYSICAL DATA

DATA SUMMARY 07/07-09
JULY-SEPTEMBER 2007



Collected at
SWEDISH INSTITUTE OF SPACE PHYSICS
KIRUNA, SWEDEN

# Kiruna Geophysical Data

Data Summary 07/07-09
July – September 2007

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## INTRODUCTION

”Kiruna Geophysical Data” is a collection of results of ground-based more or less continuous measurements of upper atmosphere variables carried out at the Swedish Institute of Space Physics. Our objective with this data summary is to present current geophysical data, related to polar upper atmospheric conditions, to those who require it for their research work.

Coordinates of the Swedish Institute of Space Physics are:

| Geogr. | | Geomagn. Dipole | | Corr. Geomagn. | |
|---|---|---|---|---|---|
| Lat. | Long. | Lat. | Long. | Lat. | Long. |
| 67.8°N | 20.4°E | 65.2°N | 116.0°E | 64.8°N | 104.2°E |

The following ground-based measurements of upper atmospheric parameters have been conducted at the Swedish Institute of Space Physics in the period for which data is presented in this report.

| | Geomagnetism | | Optical aurora | | Ionospheric ionization |
|---|---|---|---|---|---|
| 1. | Geomagnetic digital recording | 1. | All-sky camera | 1. | Riometer 30.0 MHz |
| | | | | 2. | Riometer 38.2 MHz |

The Ionospheric Observatory at Lycksele (64.7°N, 18.8°E) is also operated by the Swedish Institute of Space Physics. Magnetometer, riometer, and ionosonde measurements are conducted there.

Universal time is used in all tables.

Ionosonde data obtained at the Swedish Institute of Space Physics in Kiruna have been published together with ionosonde data from Lycksele and Uppsala in a monthly report ”Ionospheric Data Sweden” between January 1990 and March 2000. Copies are available from the Swedish Institute of Space Physics.

Scaled ionosonde parameters from 1965 – 1998 are also available from
`http://www.wdc.rl.ac.uk/wdcc1/ionosondes/data_archive.html`

The most recent data from all instruments are accessible via internet at
`http://www.irf.se/Data`

For more information contact ingrid.sandahl@irf.se or urban.brandstrom@irf.se

# GEOMAGNETIC DATA

## Magnetograms

The magnetograms reproduced here are plots of data recorded by a three component digital fluxgate magnetometer with a sampling frequency of 1 sample/second.

The scaling is indicated by the tick mark values on the plots. Note that for large disturbances the normal scaling has been reduced. The positive direction of the components are: X north, Y east and Z down, in geographic coordinates.

## K-indices

The K-indices give a measure of the amount of disturbance of the geomagnetic field.

A reading of maximum deflection has been made during each 3-hour interval (starting from 00 to 03 UT) of two components X and Y. The Sq + L variation has been compensated for. A detailed description of the determination of K-indices has been given by J. Bartels: The technique of scaling indices K and Q geomagnetic activity. IGY Annals 4, London 1957.

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 | |

## ALL-SKY CAMERA DATA

Digital all-sky camera images are typically recorded in jpeg format at a rate of one frame per minute. The filename of each image contains information about UTC and exposure time. Longer exposure times are used at regular intervals (typically eight minutes). Data might be recorded at higher frame rates during selected periods. More information and image data are available from: `http://www.irf.se/allsky`

Information about available records of all-sky camera data is presented as colour keograms. Keograms are time sequences of poleward to equatorward slices through the centre of all-sky images. The top of the image points poleward, the bottom equatorward. Time is on the horizontal axis (0:00-24:00 UTC). Each page contains keograms for seven days. White areas indicate missing data (e.g. daylight conditions).

## IONOSPHERIC ABSORPTION DATA

Ionospheric absorption at 30.0 MHz and 38.2 MHz is recorded by two La Jolla riometers. The riometer records of cosmic noise power are reproduced in this report. The zero power level is at bottom of each panel.

The absorption (in decibels) can be computed from the formula

$$A(dB) = 10\log_{10}\frac{P_o}{P}$$

where $P$ is the received cosmic noise power, $P_o$ the cosmic noise power expected under ionospherically quiet conditions at the same sidereal time.

GEOMAGNETIC K-INDICES, KIRUNA

July 2007

Lower limit of K=9 is 1500 nT

Time in UT

| Day | 00 - 03 | 03 - 06 | 06 - 09 | 09 - 12 | 12 - 15 | 15 - 18 | 18 - 21 | 21 - 24 | Sum |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 1 | 1 | 2 | 2 | 2 | 0 | 2 | 11 |
| 2 | 1 | 1 | 2 | 2 | 2 | 2 | 0 | 1 | 11 |
| 3 | 1 | 1 | 1 | 2 | 3 | 4 | 3 | 5 | 20 |
| 4 | 5 | 3 | 3 | 4 | 4 | 3 | 3 | 2 | 27 |
| 5 | 1 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 14 |
| 6 | 2 | 1 | 1 | 2 | 3 | 2 | 3 | 2 | 16 |
| 7 | 3 | 2 | 1 | 2 | 1 | 2 | 3 | 3 | 17 |
| 8 | 3 | 2 | 1 | 2 | 1 | 3 | 2 | 1 | 15 |
| 9 | 0 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 8 |
| 10 | 0 | 0 | 2 | 2 | 1 | 2 | 1 | 5 | 13 |
| 11 | 6 | 4 | 4 | 4 | 3 | 4 | 2 | 3 | 30 |
| 12 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 1 | 18 |
| 13 | 1 | 1 | 1 | 2 | 0 | 2 | 1 | 1 | 9 |
| 14 | 1 | 1 | 2 | 3 | 5 | 6 | 6 | 6 | 30 |
| 15 | 6 | 5 | 3 | 3 | 2 | 2 | 3 | 2 | 26 |
| 16 | 3 | 2 | 1 | 2 | 2 | 2 | 2 | 1 | 15 |
| 17 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 10 |
| 18 | 1 | 1 | 1 | 2 | 1 | 2 | 0 | 1 | 9 |
| 19 | 0 | 1 | 2 | 1 | 1 | 2 | 0 | 1 | 8 |
| 20 | 0 | 2 | 3 | 3 | 4 | 3 | 2 | 6 | 23 |
| 21 | 4 | 5 | 2 | 2 | 3 | 2 | 5 | 3 | 26 |
| 22 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 10 |
| 23 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 2 | 11 |
| 24 | 1 | 1 | 1 | 2 | 2 | 1 | 0 | 2 | 10 |
| 25 | 1 | 1 | 0 | 2 | 1 | 2 | 0 | 0 | 7 |
| 26 | 0 | 0 | 0 | 2 | 2 | 4 | 5 | 5 | 18 |
| 27 | 5 | 2 | 2 | 1 | 2 | 3 | 0 | 1 | 16 |
| 28 | 1 | 1 | 1 | 2 | 1 | 1 | 0 | 4 | 11 |
| 29 | 4 | 3 | 2 | 3 | 2 | 3 | 3 | 5 | 25 |
| 30 | 5 | 4 | 2 | 3 | 2 | 2 | 2 | 2 | 22 |
| 31 | 1 | 1 | 2 | 2 | 3 | 2 | 1 | 2 | 14 |
| Sum | 65 | 54 | 50 | 67 | 61 | 73 | 56 | 74 | |

GEOMAGNETIC K-INDICES, KIRUNA

August 2007

Lower limit of K=9 is 1500 nT

Time in UT

| Day | 00 - 03 | 03 - 06 | 06 - 09 | 09 - 12 | 12 - 15 | 15 - 18 | 18 - 21 | 21 - 24 | Sum |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 6 | 3 | 3 | 3 | 3 | 3 | 3 | 5 | 29 |
| 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 1 | 16 |
| 3 | 2 | 2 | 2 | 1 | 2 | 1 | 0 | 1 | 11 |
| 4 | 1 | 1 | 2 | 2 | 1 | 1 | 0 | 1 | 9 |
| 5 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 2 | 11 |
| 6 | 2 | 1 | 2 | 2 | 2 | 4 | 3 | 7 | 23 |
| 7 | 6 | 6 | 3 | 3 | 4 | 4 | 6 | 5 | 37 |
| 8 | 4 | 3 | 2 | 1 | 2 | 1 | 2 | 2 | 17 |
| 9 | 3 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 11 |
| 10 | 1 | 1 | 1 | 2 | 6 | 5 | 4 | 4 | 24 |
| 11 | 6 | 3 | 2 | 2 | 3 | 4 | 5 | 4 | 29 |
| 12 | 4 | 2 | 2 | 2 | 3 | 2 | 2 | 1 | 18 |
| 13 | 1 | 2 | 2 | 1 | 1 | 2 | 1 | 1 | 11 |
| 14 | 2 | 1 | 2 | 2 | 2 | 2 | 1 | 2 | 14 |
| 15 | 5 | 2 | 2 | 2 | 3 | 3 | 4 | 3 | 24 |
| 16 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 19 |
| 17 | 3 | 1 | 2 | 1 | 1 | 1 | 2 | 2 | 13 |
| 18 | 3 | 1 | 2 | 1 | 0 | 1 | 0 | 1 | 9 |
| 19 | 1 | 1 | 1 | 2 | 3 | 2 | 1 | 0 | 11 |
| 20 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 2 | 10 |
| 21 | 3 | 1 | 2 | 2 | 2 | 1 | 0 | 1 | 12 |
| 22 | 1 | 1 | 2 | 2 | 3 | 2 | 1 | 0 | 12 |
| 23 | 0 | 1 | 2 | 1 | 1 | 1 | 0 | 0 | 6 |
| 24 | 0 | 1 | 2 | 1 | 0 | 1 | 1 | 0 | 6 |
| 25 | 3 | 1 | 1 | 2 | 3 | 2 | 4 | 2 | 18 |
| 26 | 2 | 2 | 2 | 2 | 3 | 4 | 5 | 4 | 24 |
| 27 | 3 | 2 | 3 | 2 | 2 | 2 | 6 | 6 | 26 |
| 28 | 6 | 2 | 2 | 3 | 3 | 2 | 4 | 4 | 26 |
| 29 | 4 | 1 | 2 | 1 | 2 | 2 | 2 | 3 | 17 |
| 30 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 10 |
| 31 | 2 | 1 | 2 | 2 | 1 | 2 | 2 | 5 | 17 |
| Sum | 82 | 53 | 61 | 54 | 64 | 64 | 67 | 75 | |

GEOMAGNETIC K-INDICES, KIRUNA

September 2007

Lower limit of K=9 is 1500 nT

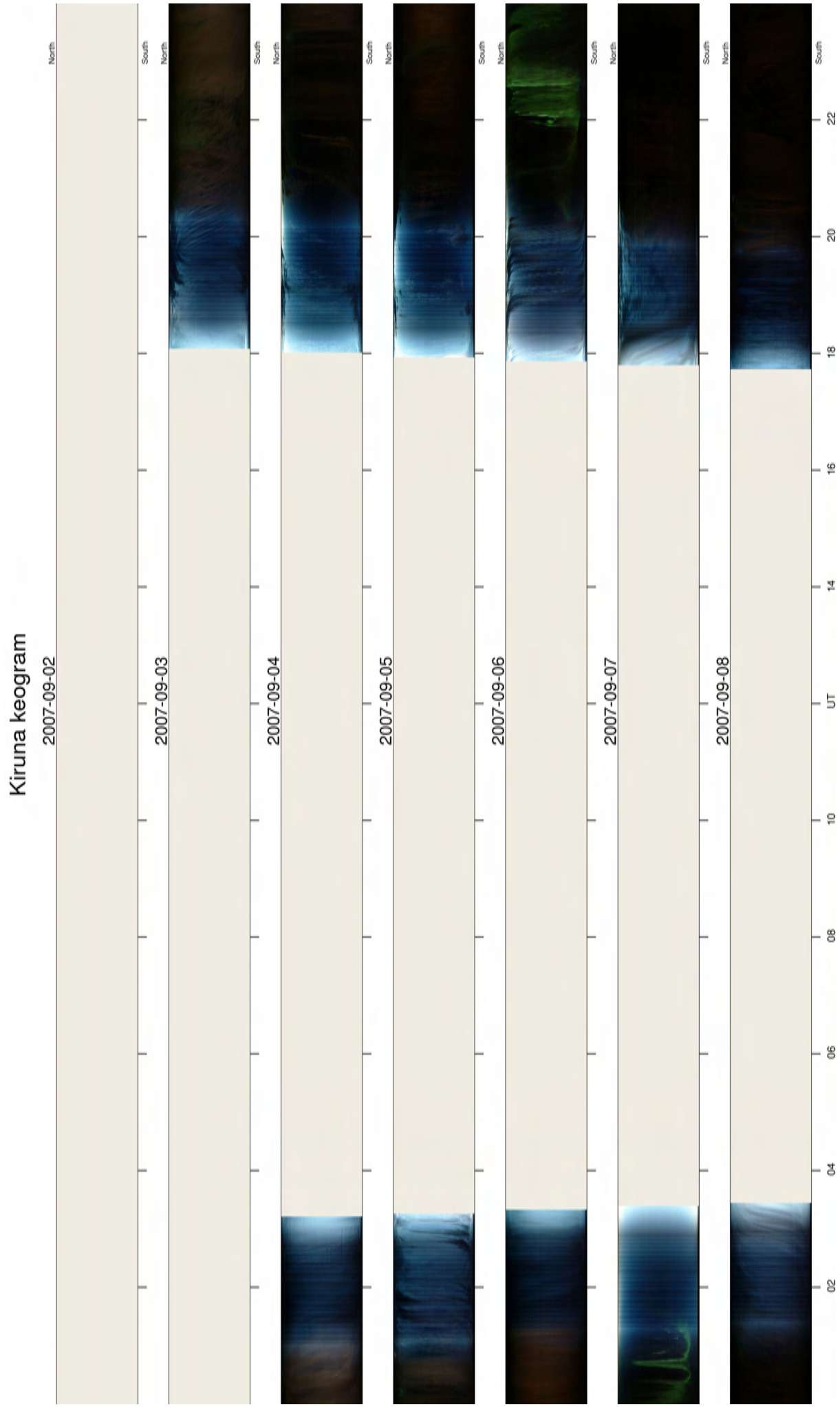
Time in UT

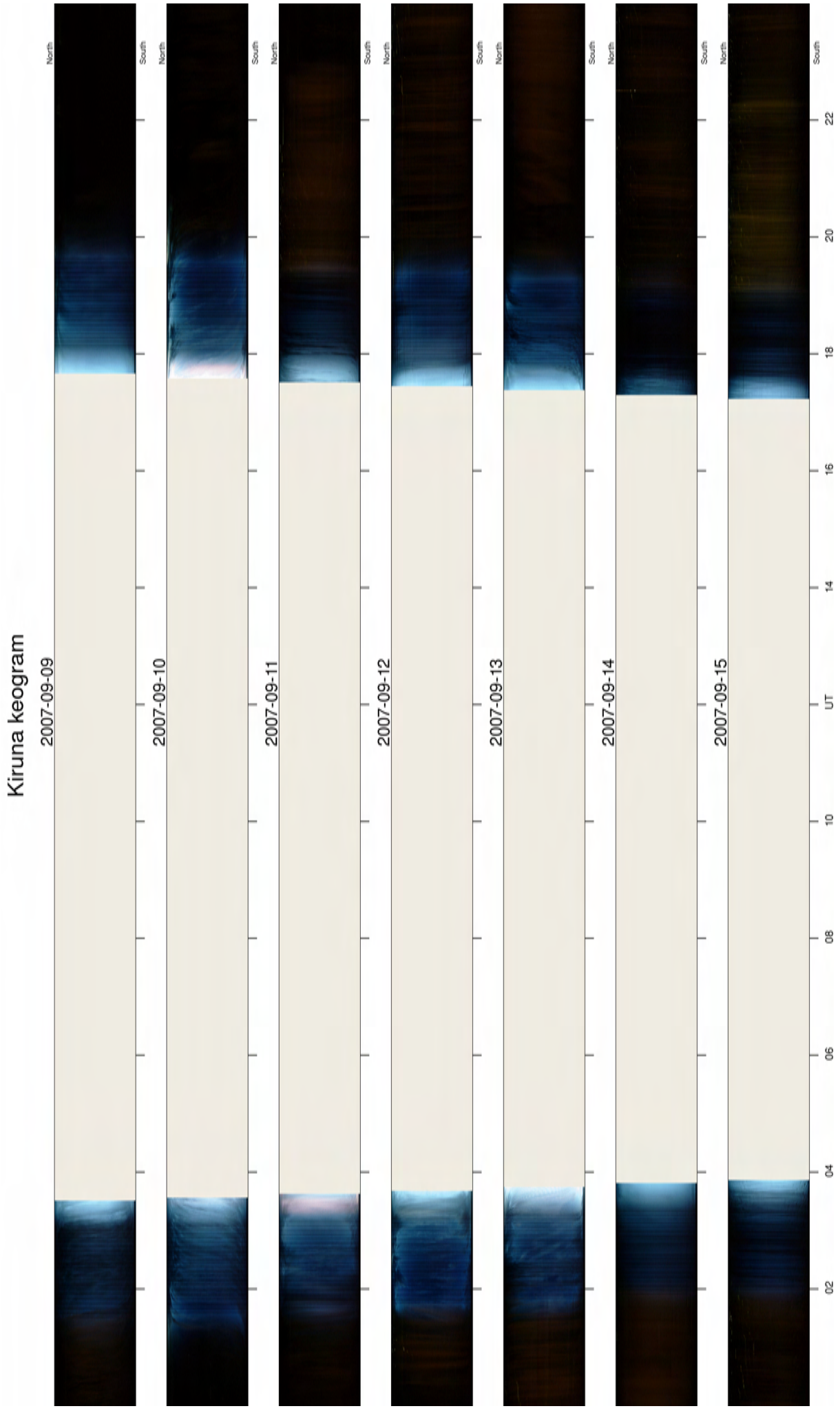
| Day | 00 - 03 | 03 - 06 | 06 - 09 | 09 - 12 | 12 - 15 | 15 - 18 | 18 - 21 | 21 - 24 | Sum |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 3 | 1 | 2 | 2 | 2 | 3 | 5 | 6 | 24 |
| 2 | 6 | 6 | 3 | 4 | 4 | 4 | 6 | 4 | 37 |
| 3 | 3 | 3 | 3 | 2 | 3 | 3 | 2 | 5 | 24 |
| 4 | 2 | 2 | 3 | 2 | 2 | 1 | 2 | 3 | 17 |
| 5 | 4 | 2 | 3 | 3 | 2 | 2 | 5 | 4 | 25 |
| 6 | 3 | 3 | 2 | 2 | 2 | 5 | 5 | 7 | 29 |
| 7 | 5 | 5 | 2 | 2 | 2 | 3 | 2 | 1 | 22 |
| 8 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 1 | 16 |
| 9 | 1 | 1 | 2 | 1 | 2 | 1 | 0 | 1 | 9 |
| 10 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 9 |
| 11 | 0 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 9 |
| 12 | 1 | 2 | 2 | 1 | 1 | 0 | 0 | 2 | 9 |
| 13 | 1 | 1 | 2 | 1 | 0 | 0 | 1 | 1 | 7 |
| 14 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 3 | 15 |
| 15 | 1 | 1 | 2 | 2 | 2 | 1 | 2 | 3 | 14 |
| 16 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 8 |
| 17 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 2 | 5 |
| 18 | 2 | 3 | 1 | 1 | 1 | 1 | 0 | 1 | 10 |
| 19 | 1 | 1 | 2 | 2 | 1 | 1 | 0 | 1 | 9 |
| 20 | 1 | 2 | 2 | 2 | 3 | 3 | 5 | 6 | 24 |
| 21 | 5 | 2 | 2 | 2 | 3 | 3 | 4 | 6 | 27 |
| 22 | 5 | 3 | 2 | 3 | 3 | 3 | 6 | 3 | 28 |
| 23 | 4 | 4 | 4 | 3 | 2 | 2 | 4 | 6 | 29 |
| 24 | 6 | 4 | 3 | 2 | 3 | 3 | 2 | 4 | 27 |
| 25 | 5 | 2 | 2 | 2 | 1 | 2 | 5 | 3 | 22 |
| 26 | 2 | 1 | 2 | 2 | 0 | 0 | 2 | 1 | 10 |
| 27 | 1 | 1 | 2 | 2 | 1 | 5 | 6 | 6 | 24 |
| 28 | 6 | 5 | 4 | 3 | 2 | 2 | 6 | 7 | 35 |
| 29 | 6 | 5 | 4 | 4 | 4 | 3 | 7 | 6 | 39 |
| 30 | 7 | 4 | 3 | 3 | 2 | 2 | 4 | 2 | 27 |
| Sum | 86 | 71 | 68 | 61 | 55 | 60 | 90 | 99 | |

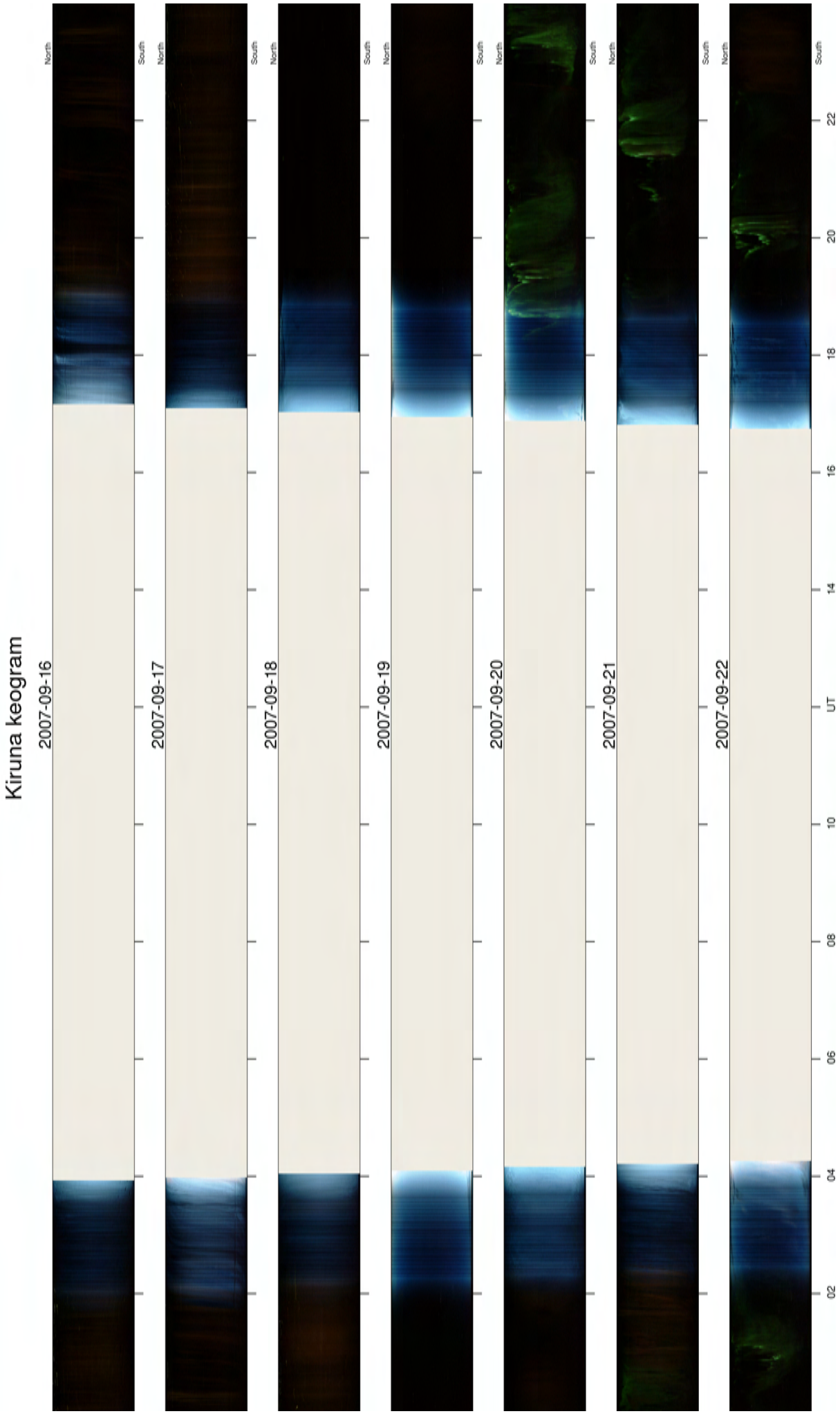
# ALL-SKY CAMERA KEOGRAMS

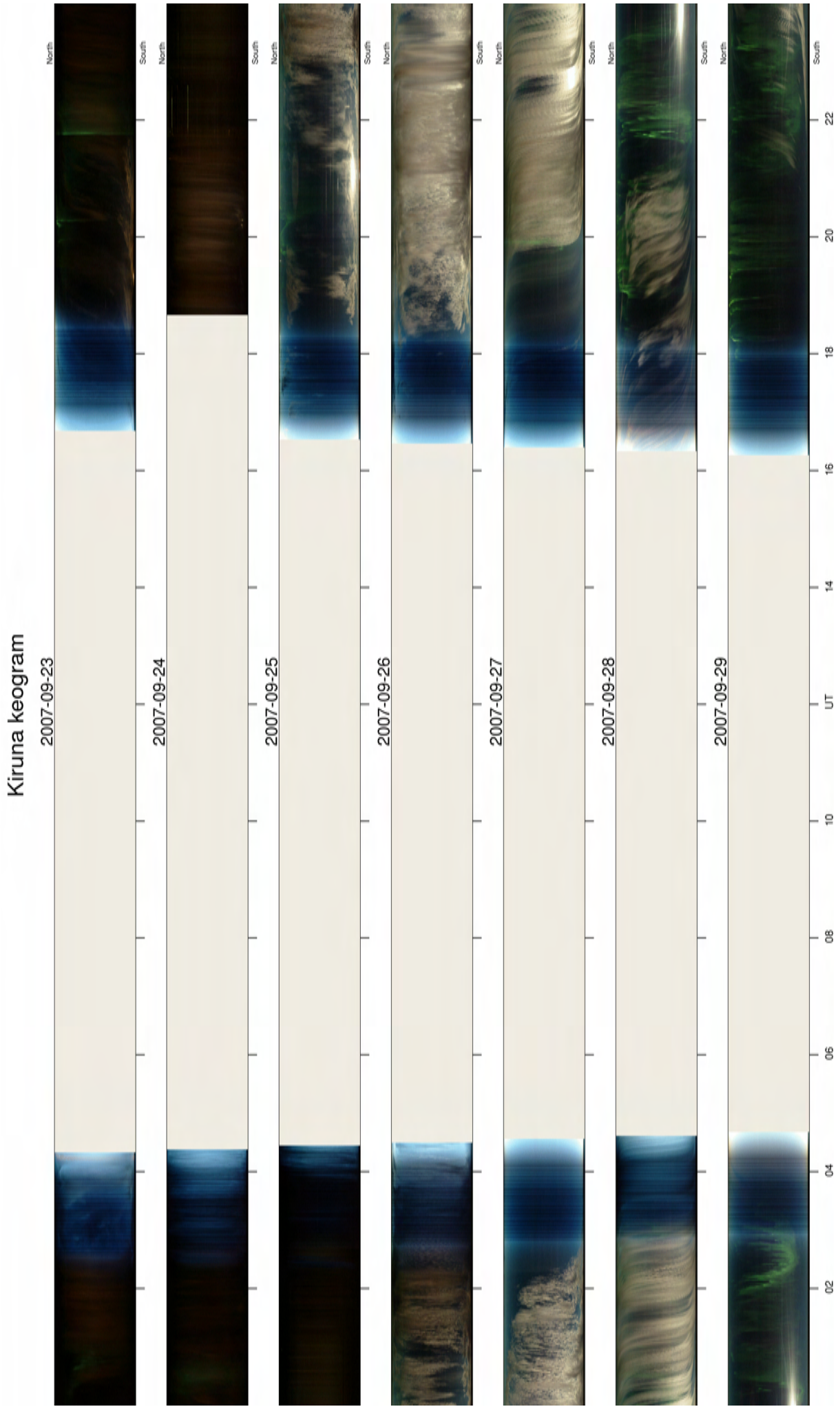
July - September 2007

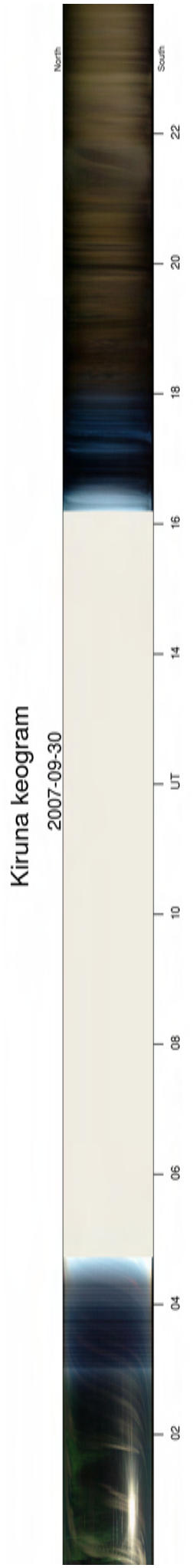
http://www.irf.se/allsky/kgd


Kiruna keogram
2007-09-02
2007-09-03
2007-09-04
2007-09-05
2007-09-06
2007-09-07
2007-09-08
North
South
02
04
06
08
10
UT
14
16
18
20
22


Kiruna keogram
2007-09-09
2007-09-10
2007-09-11
2007-09-12
2007-09-13
2007-09-14
2007-09-15
North
South
02
04
06
08
10
12
14
16
18
20
22
UT


Kiruna keogram
2007-09-16
2007-09-17
2007-09-18
2007-09-19
2007-09-20
2007-09-21
2007-09-22
North
South
02
04
06
08
10
12
14
16
18
20
22
UT

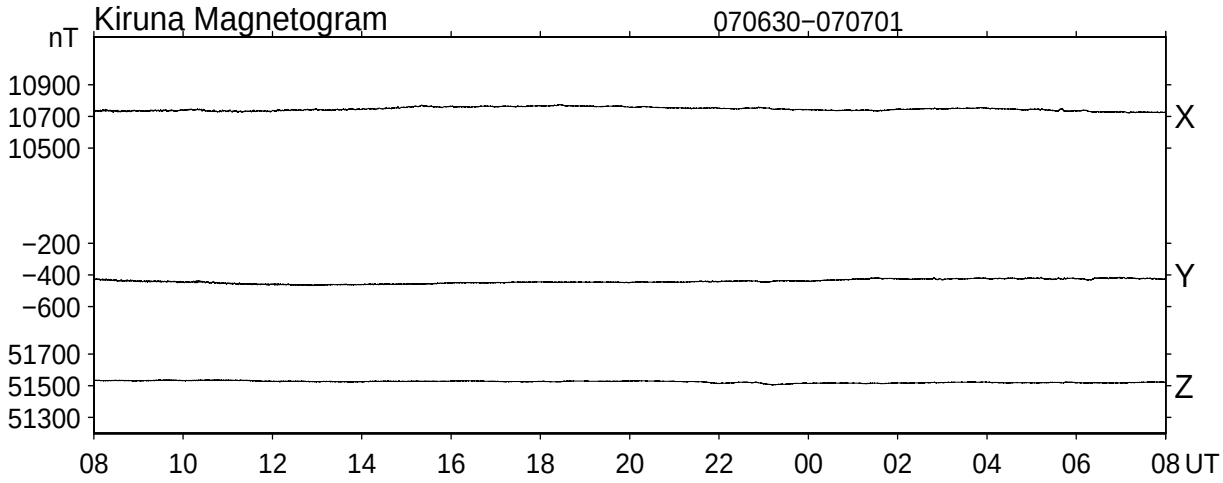

Kiruna keogram
2007-09-23
2007-09-24
2007-09-25
2007-09-26
2007-09-27
2007-09-28
2007-09-29
North
South
02
04
06
08
10
12
14
16
18
20
22
UT

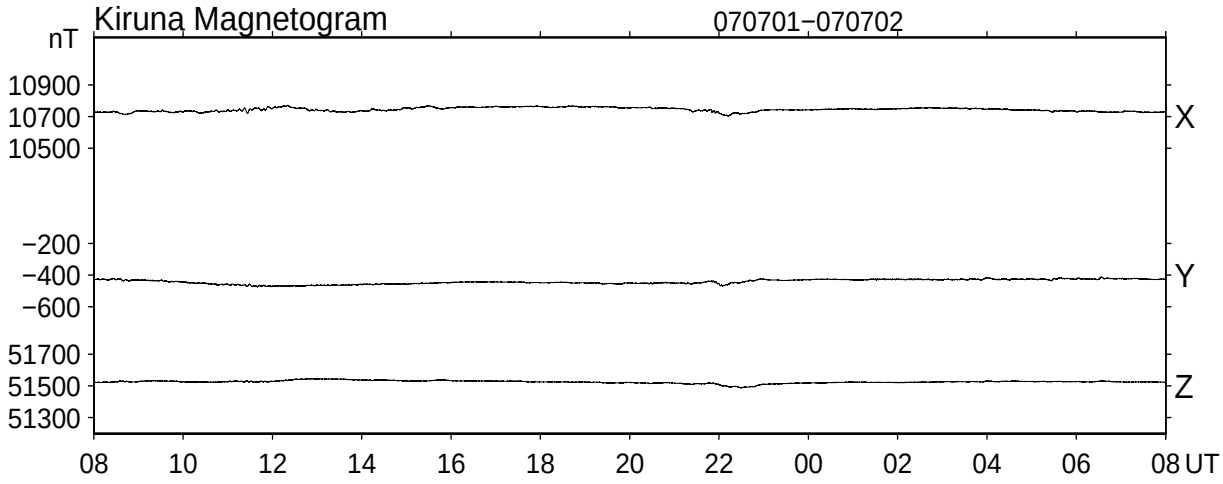

Kiruna keogram
2007-09-30
North
South
02
04
06
08
10
UT
14
16
18
20
22

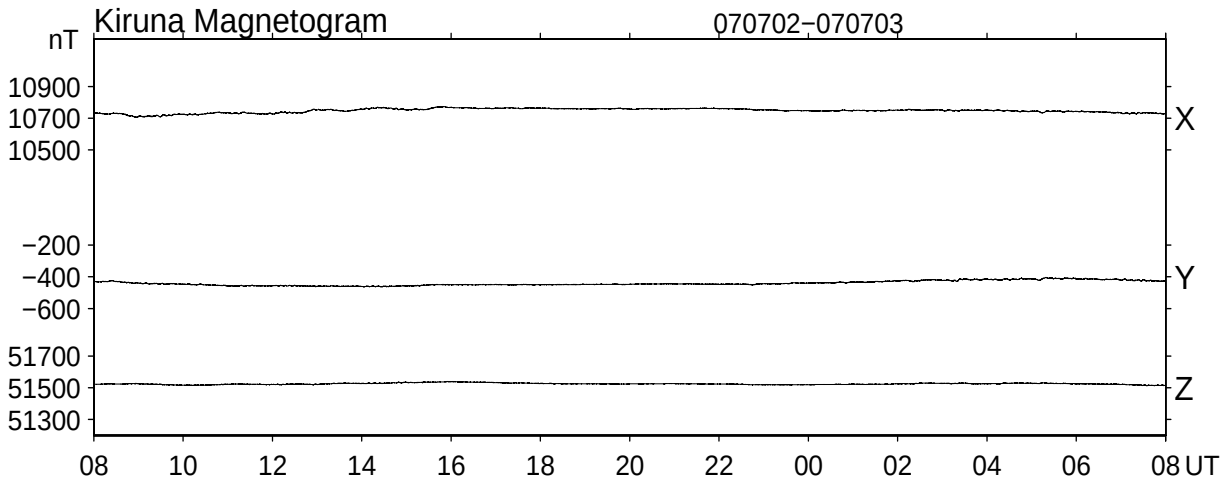
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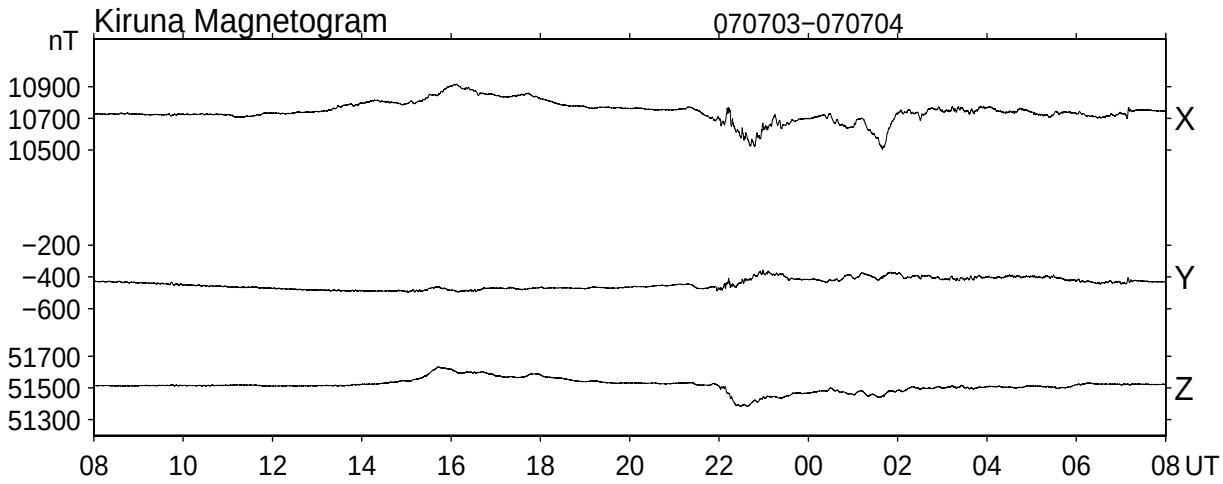
July - September 2007

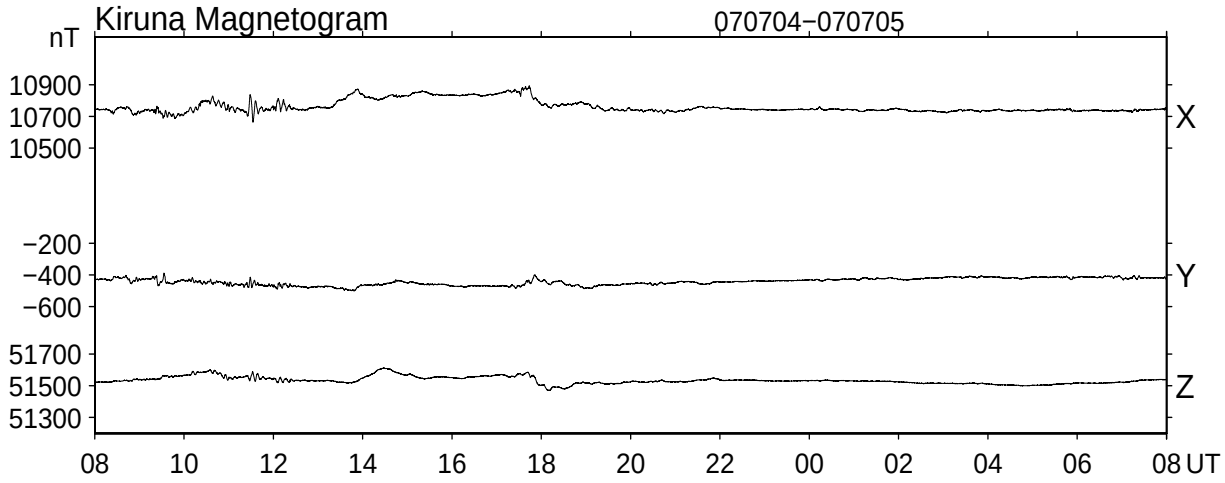
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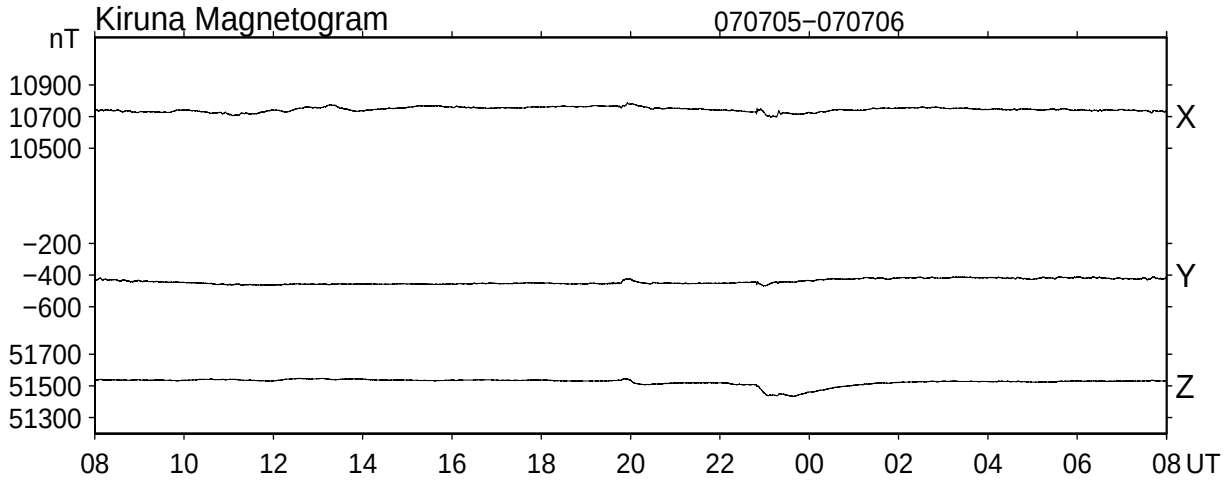

Kiruna Magnetogram
070630−070701
nT
10900
10700
10500
−200
−400
−600
51700
51500
51300
X
Y
Z
08 10 12 14 16 18 20 22 00 02 04 06 08 UT

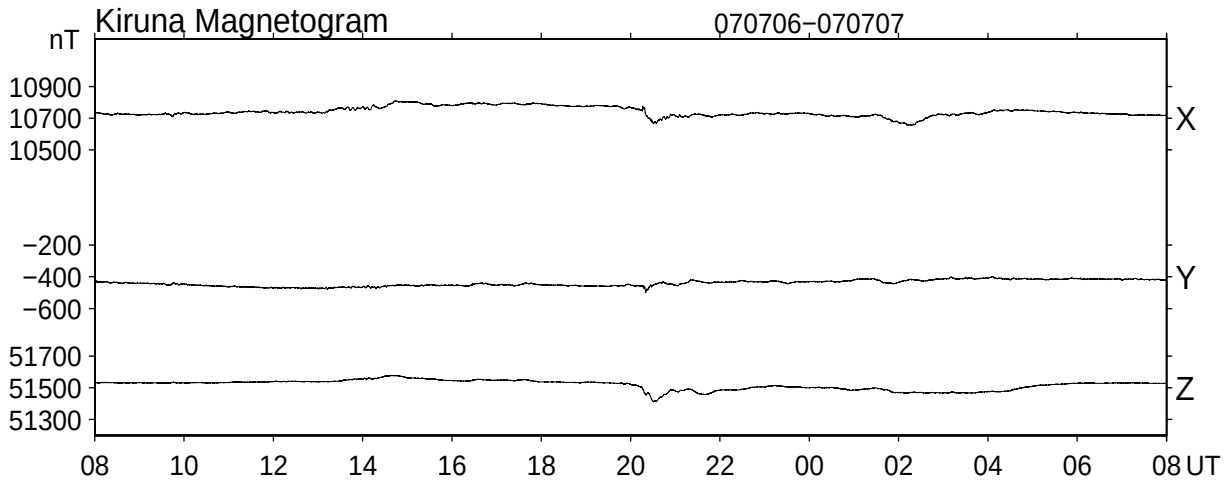

Kiruna Magnetogram
070701−070702
nT
10900
10700
10500
−200
−400
−600
51700
51500
51300
X
Y
Z
08 10 12 14 16 18 20 22 00 02 04 06 08 UT

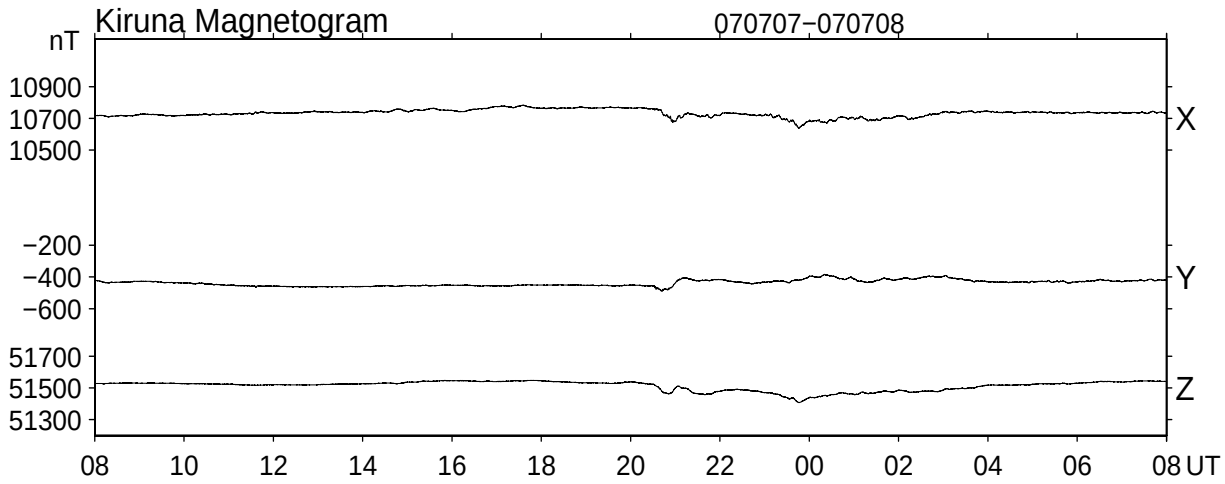

Kiruna Magnetogram
070702−070703
nT
10900
10700
10500
−200
−400
−600
51700
51500
51300
X
Y
Z
08 10 12 14 16 18 20 22 00 02 04 06 08 UT

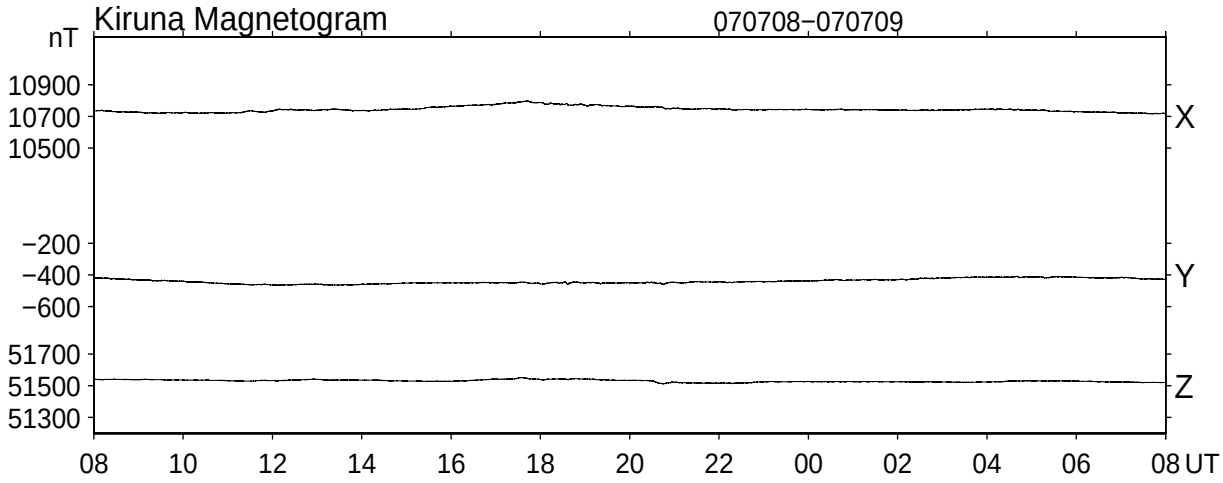

Kiruna Magnetogram
070703−070704
nT
10900
10700
10500
−200
−400
−600
51700
51500
51300
X
Y
Z
08 10 12 14 16 18 20 22 00 02 04 06 08 UT

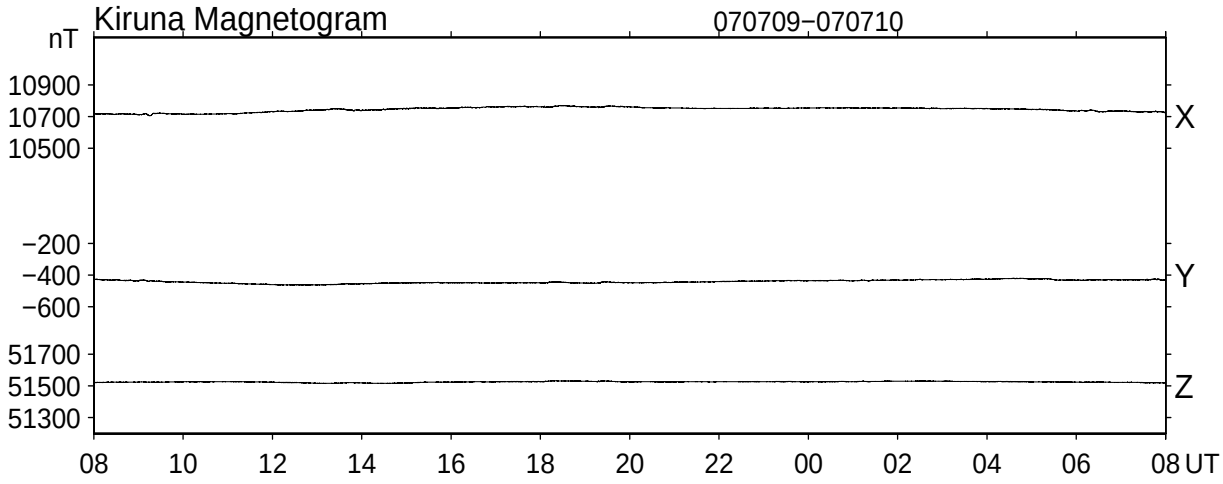

Kiruna Magnetogram
070704−070705
nT
10900
10700
10500
−200
−400
−600
51700
51500
51300
X
Y
Z
08 10 12 14 16 18 20 22 00 02 04 06 08 UT

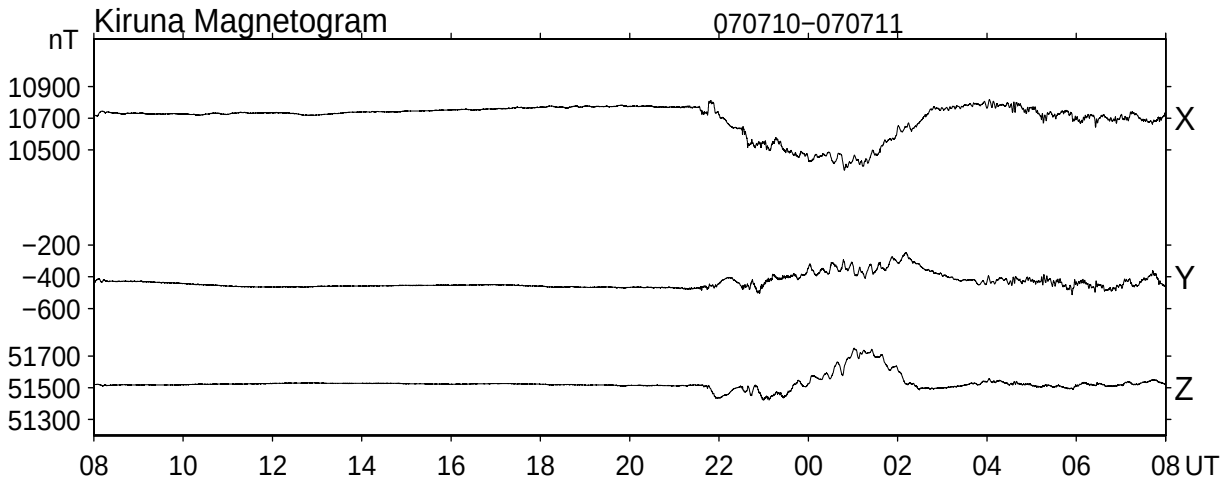

Kiruna Magnetogram
070705−070706
nT
10900
10700
10500
−200
−400
−600
51700
51500
51300
X
Y
Z
08 10 12 14 16 18 20 22 00 02 04 06 08 UT

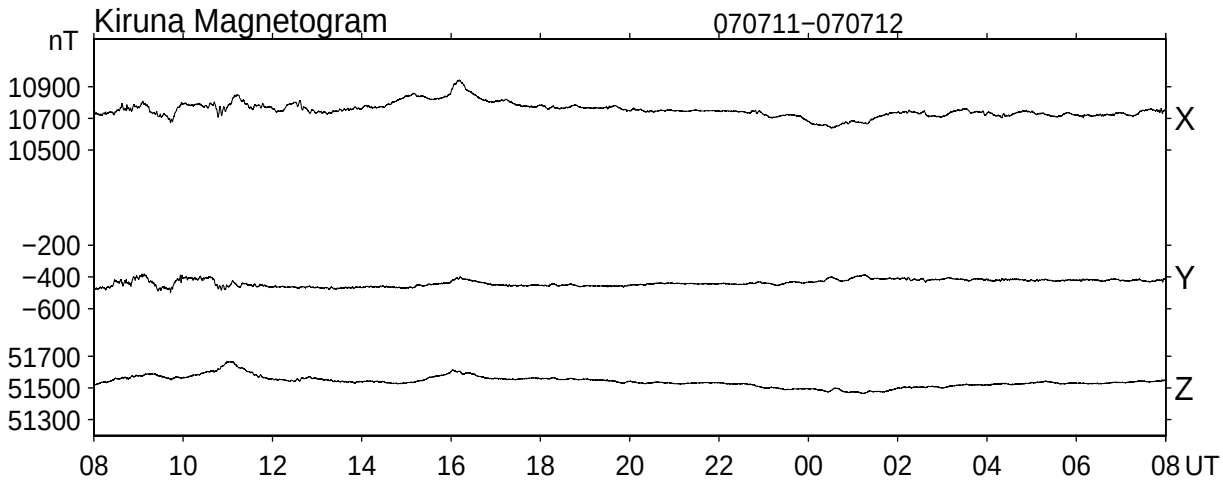

Kiruna Magnetogram
070706−070707
nT
10900
10700
10500
−200
−400
−600
51700
51500
51300
X
Y
Z
08 10 12 14 16 18 20 22 00 02 04 06 08 UT

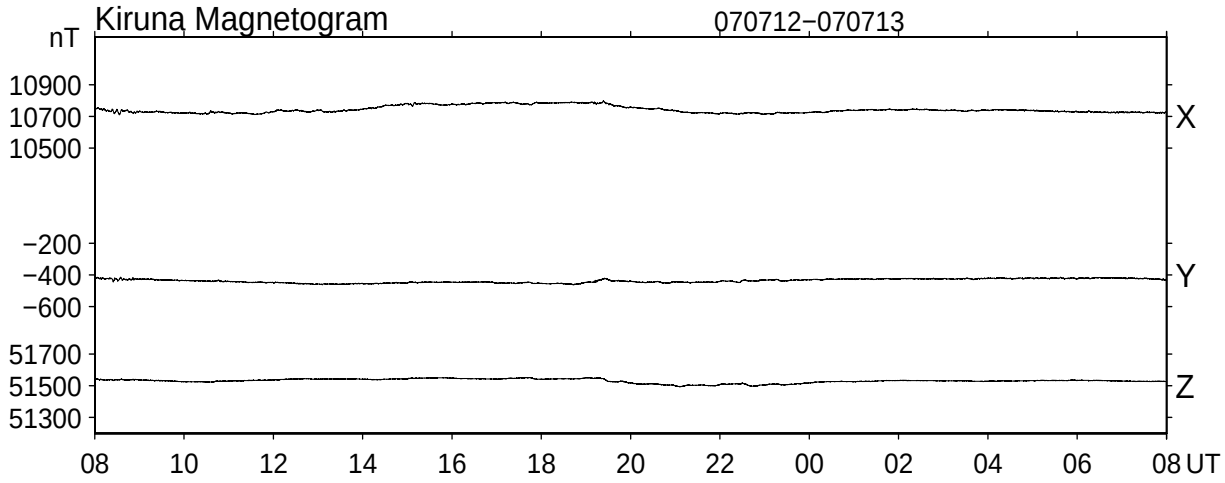

Kiruna Magnetogram
070707−070708
nT
10900
10700
10500
−200
−400
−600
51700
51500
51300
X
Y
Z
08 10 12 14 16 18 20 22 00 02 04 06 08 UT

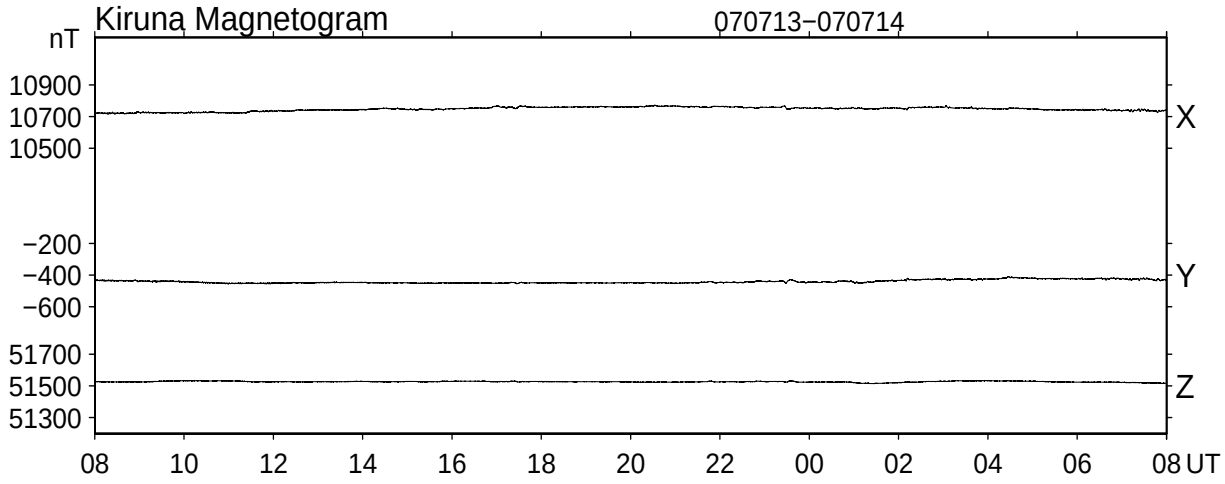

Kiruna Magnetogram
070708−070709
nT
10900
10700
10500
−200
−400
−600
51700
51500
51300
X
Y
Z
08 10 12 14 16 18 20 22 00 02 04 06 08 UT

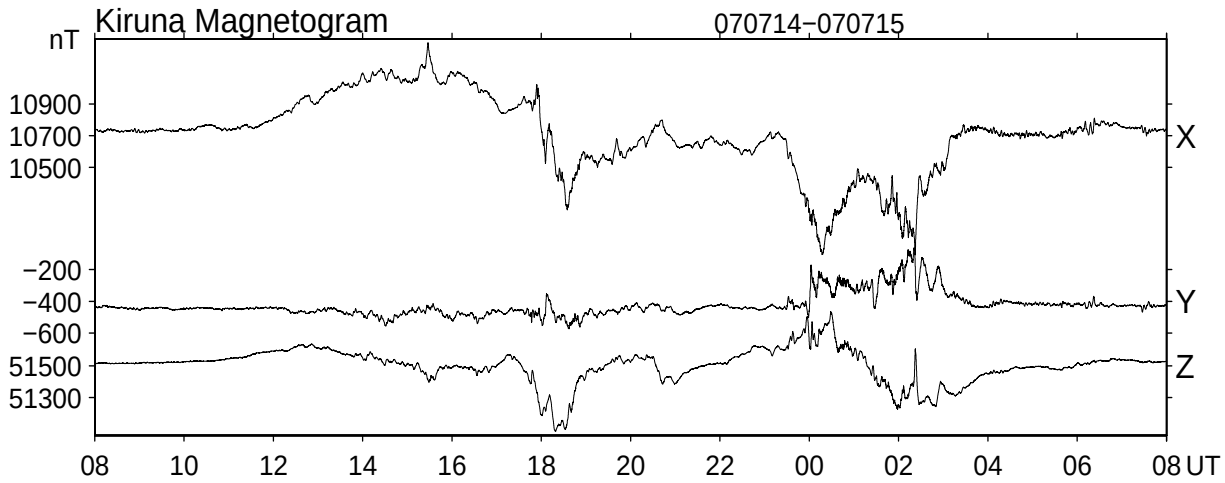

Kiruna Magnetogram
070709−070710
nT
10900
10700
10500
−200
−400
−600
51700
51500
51300
X
Y
Z
08 10 12 14 16 18 20 22 00 02 04 06 08 UT

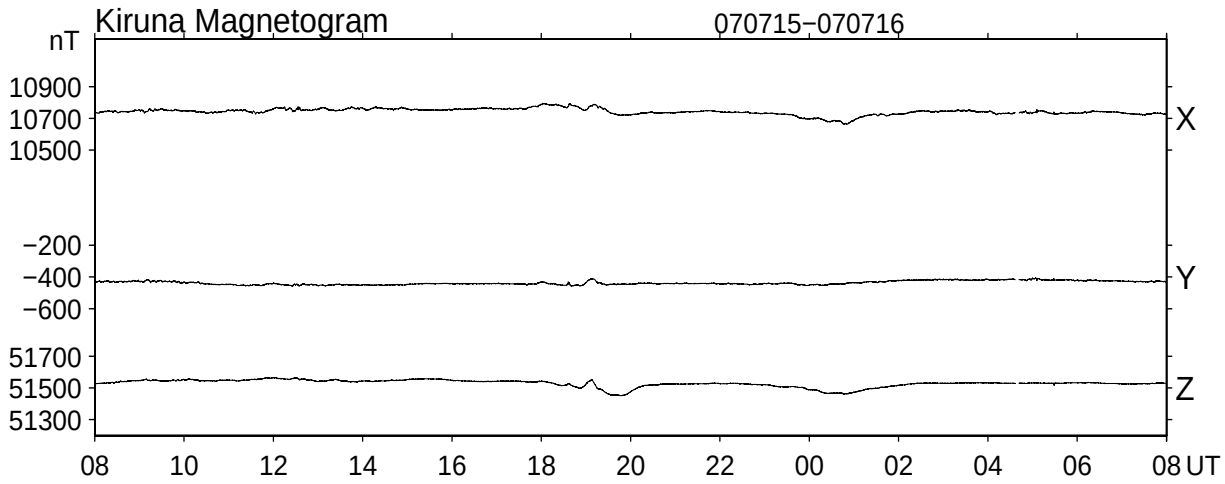

Kiruna Magnetogram
070710−070711
nT
10900
10700
10500
−200
−400
−600
51700
51500
51300
X
Y
Z
08 10 12 14 16 18 20 22 00 02 04 06 08 UT

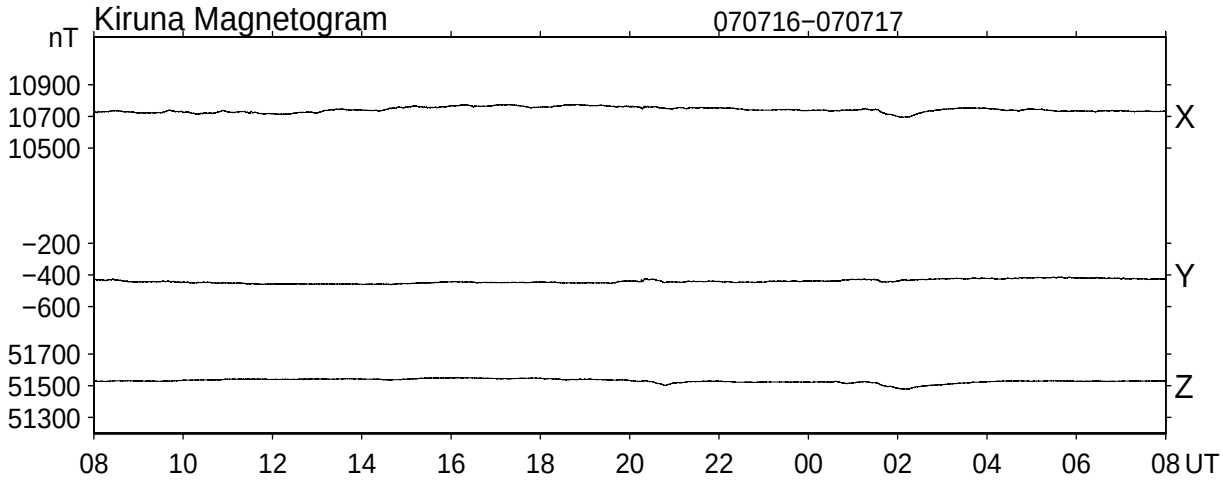

Kiruna Magnetogram
070711−070712
nT
10900
10700
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−200
−400
−600
51700
51500
51300
X
Y
Z
08 10 12 14 16 18 20 22 00 02 04 06 08 UT

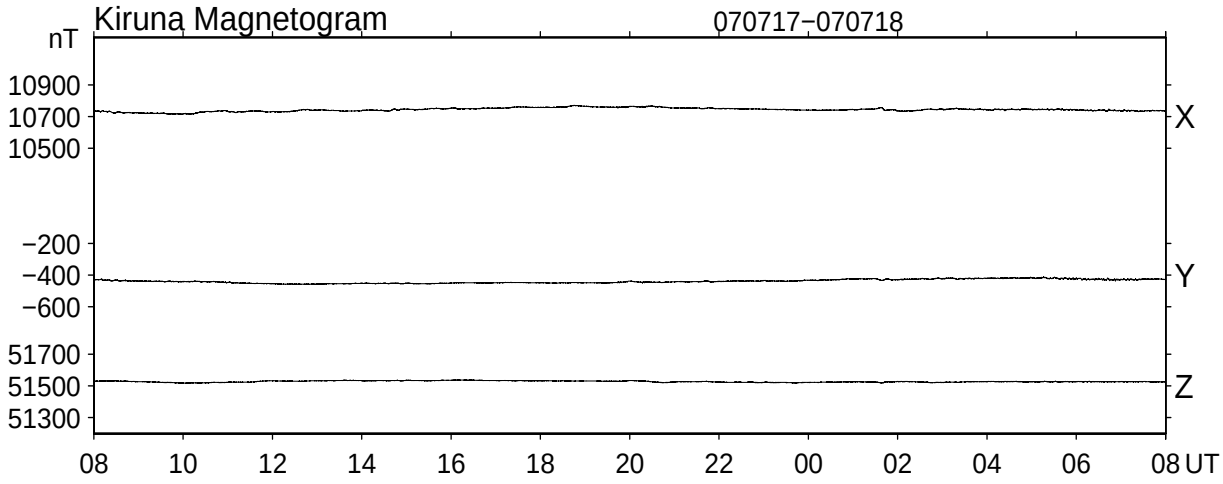

Kiruna Magnetogram
070712−070713
nT
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−200
−400
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51500
51300
X
Y
Z
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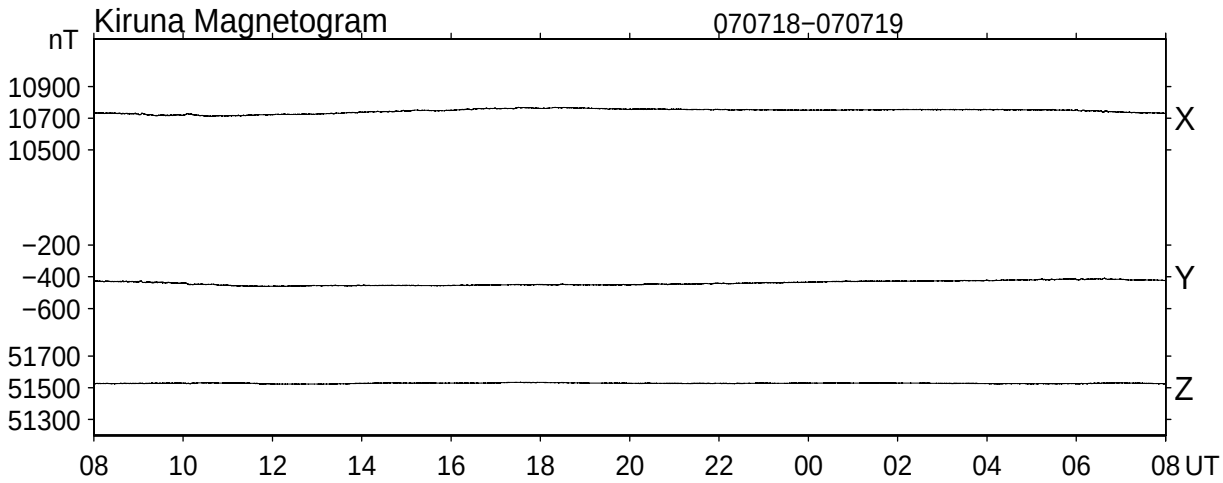

Kiruna Magnetogram
070713−070714
nT
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−200
−400
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51700
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X
Y
Z
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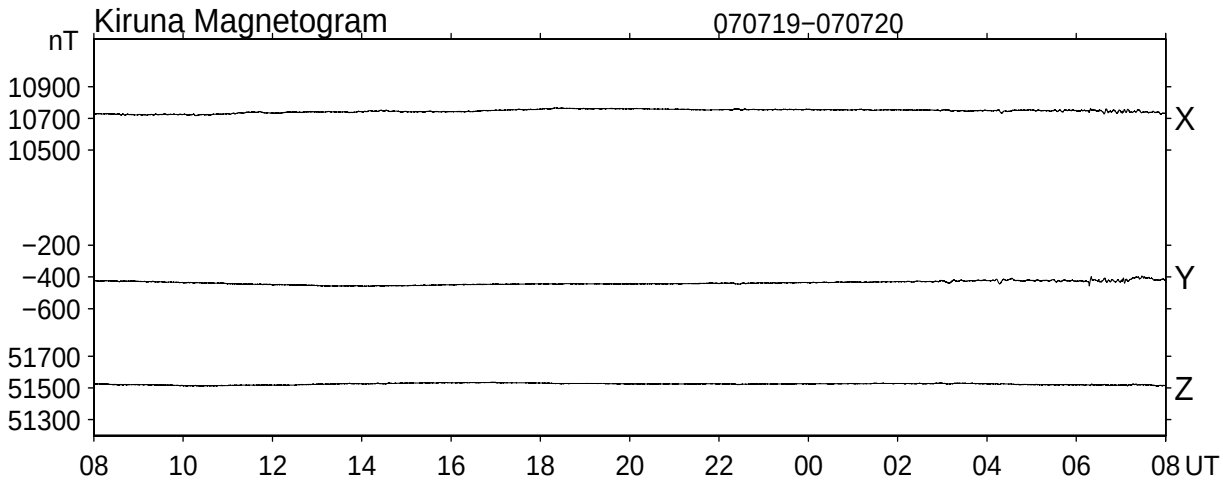

Kiruna Magnetogram
070714−070715
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−200
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X
Y
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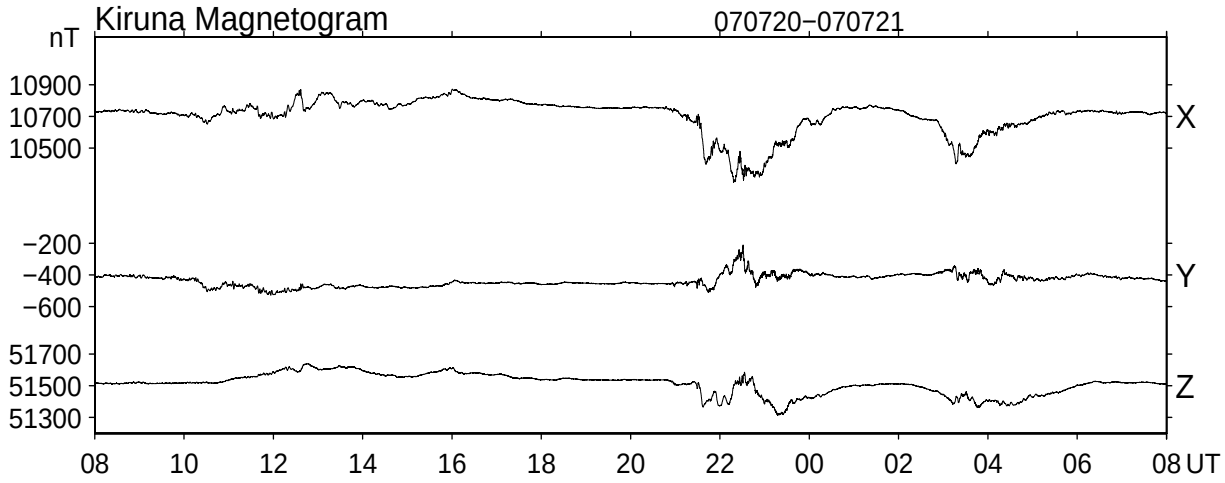

Kiruna Magnetogram
070715−070716
nT
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X
Y
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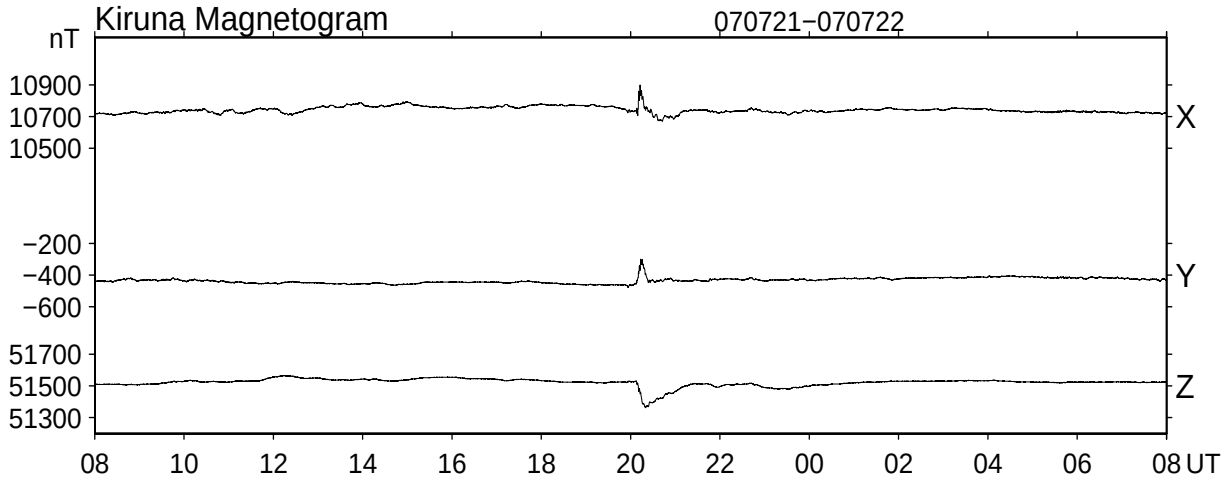

Kiruna Magnetogram
070716−070717
nT
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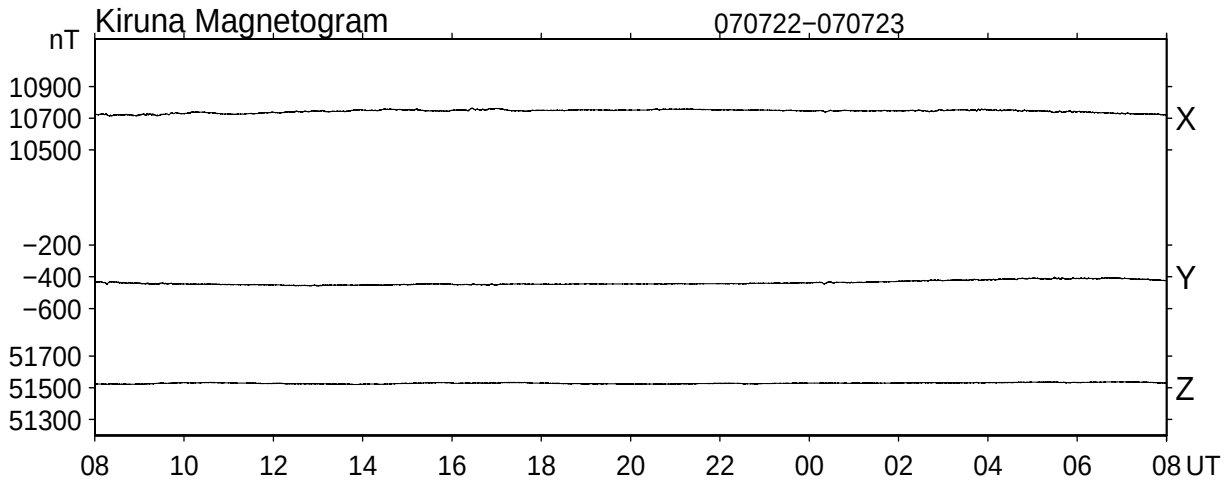

Kiruna Magnetogram
070717−070718
nT
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Y
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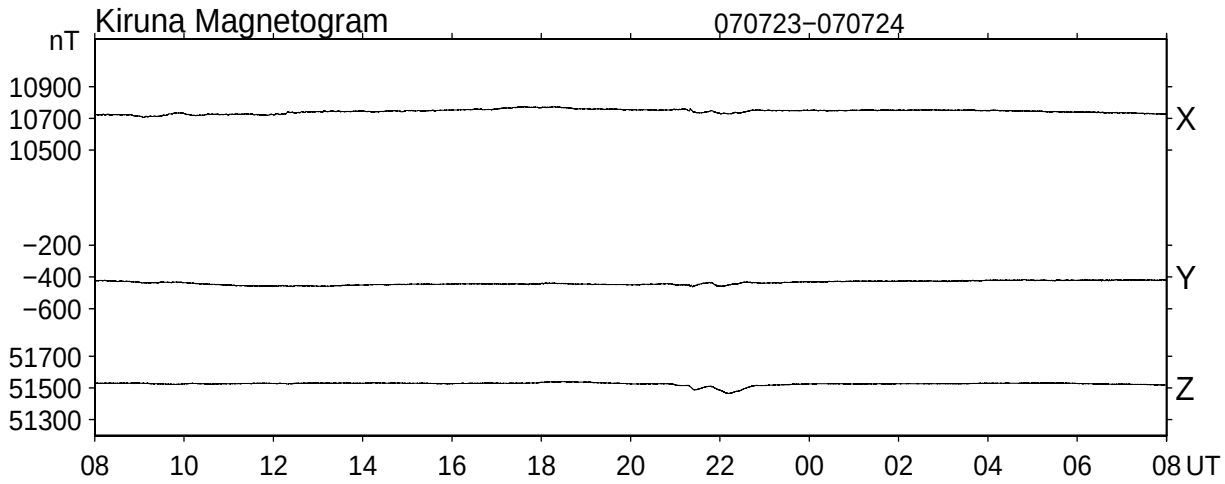

Kiruna Magnetogram
070718−070719
nT
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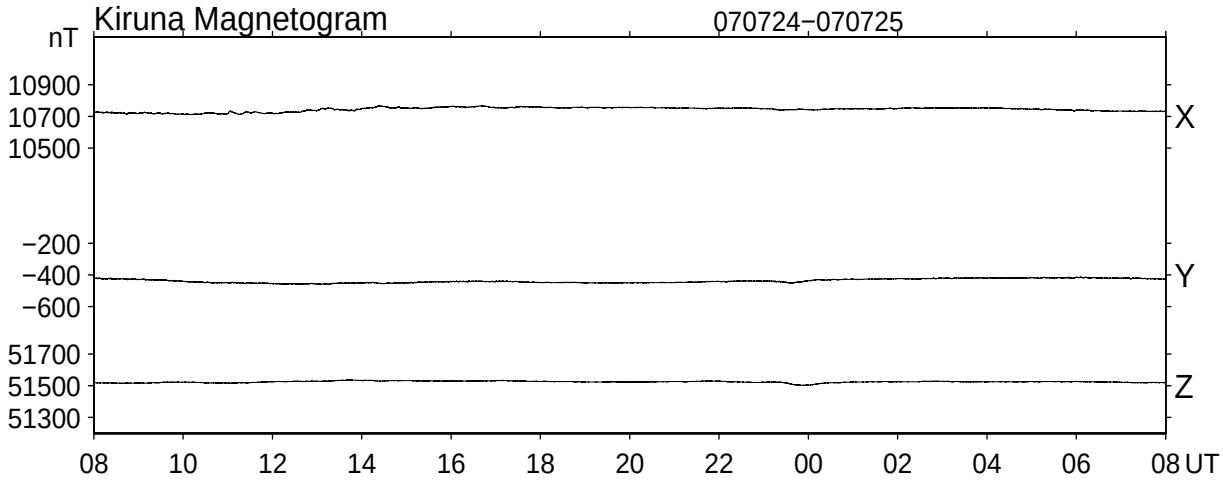

Kiruna Magnetogram
070719−070720
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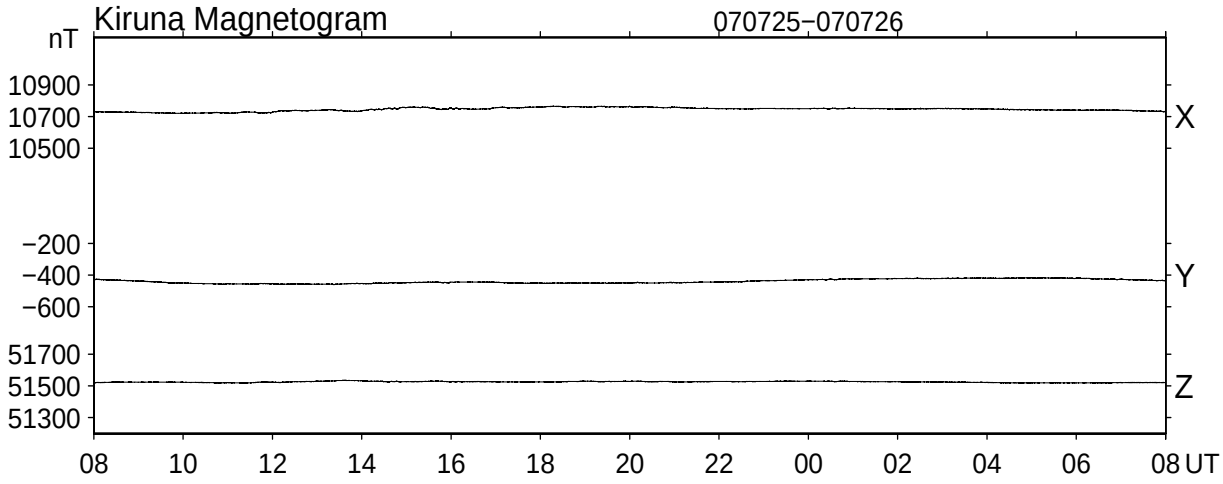

Kiruna Magnetogram
070720−070721
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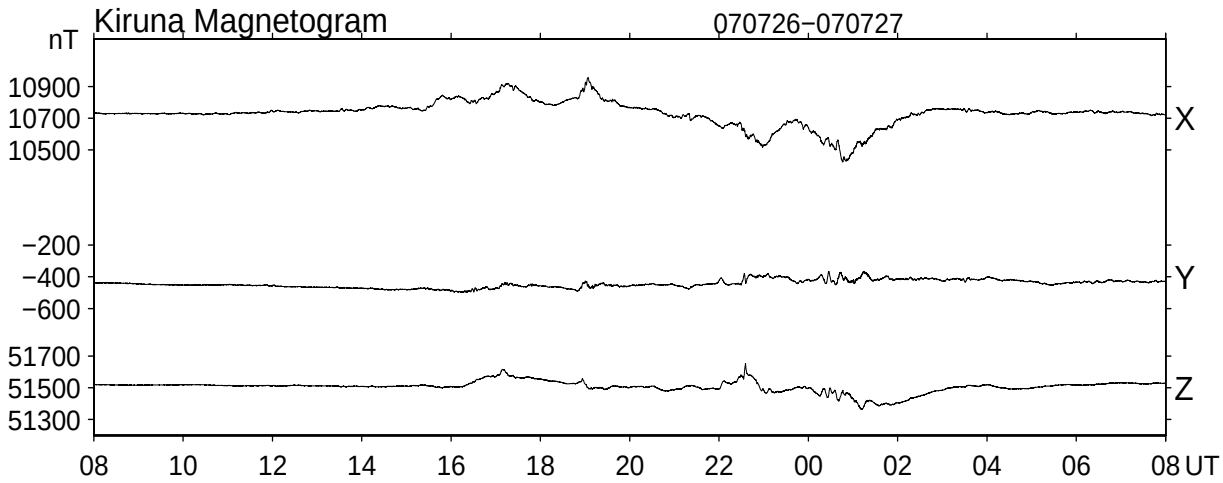

Kiruna Magnetogram
070721−070722
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10700
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−200
−400
−600
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X
Y
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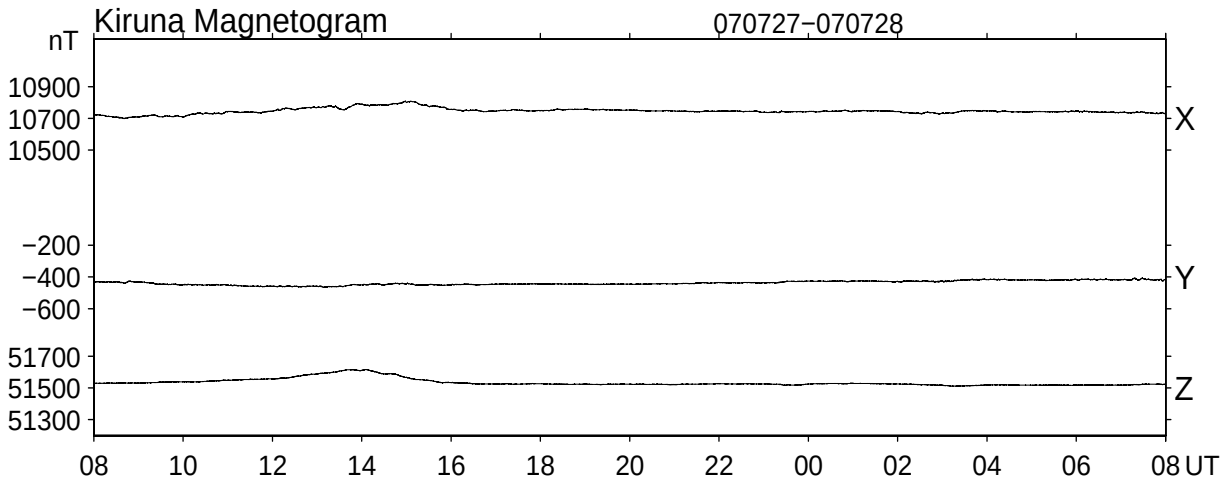

Kiruna Magnetogram
070722−070723
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X
Y
Z
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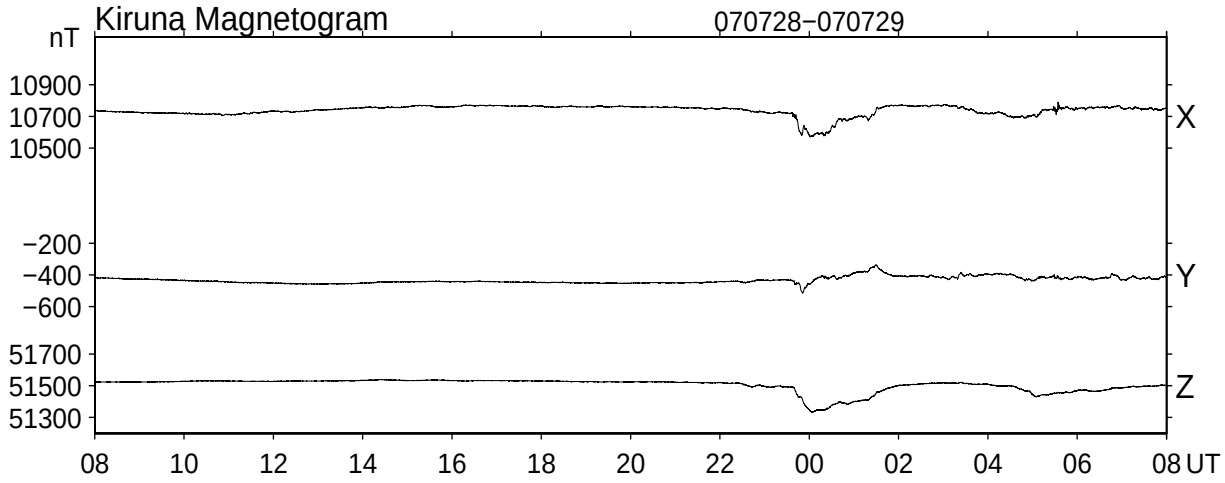

Kiruna Magnetogram
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Z
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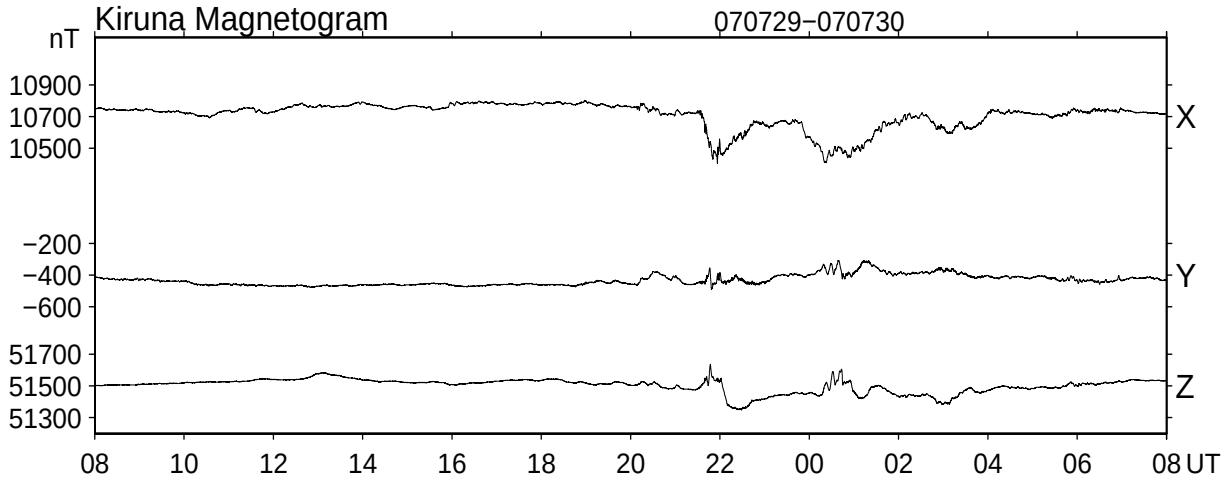

Kiruna Magnetogram
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Y
Z
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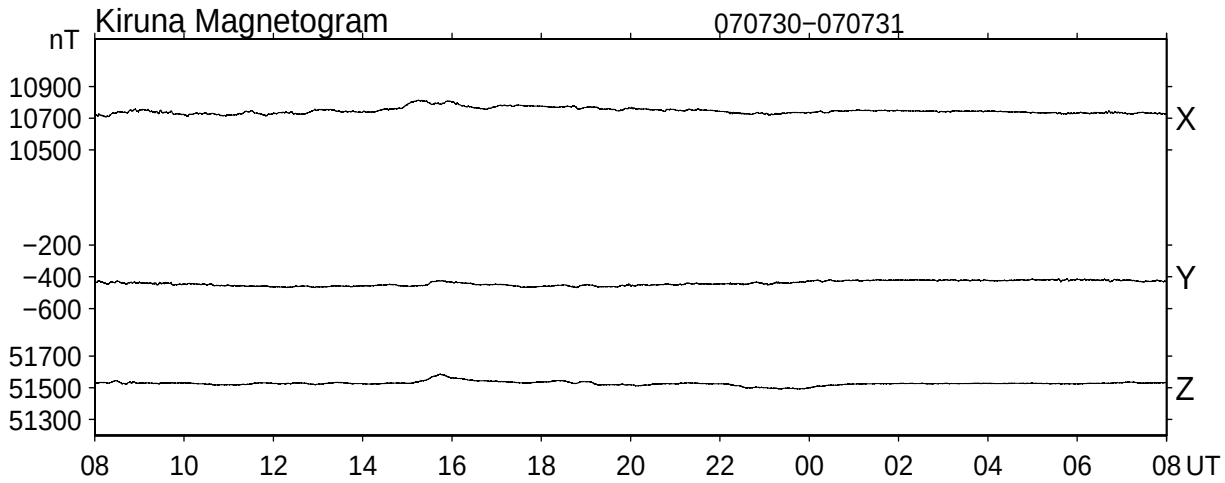

Kiruna Magnetogram
070725−070726
nT
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10700
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−200
−400
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51500
51300
X
Y
Z
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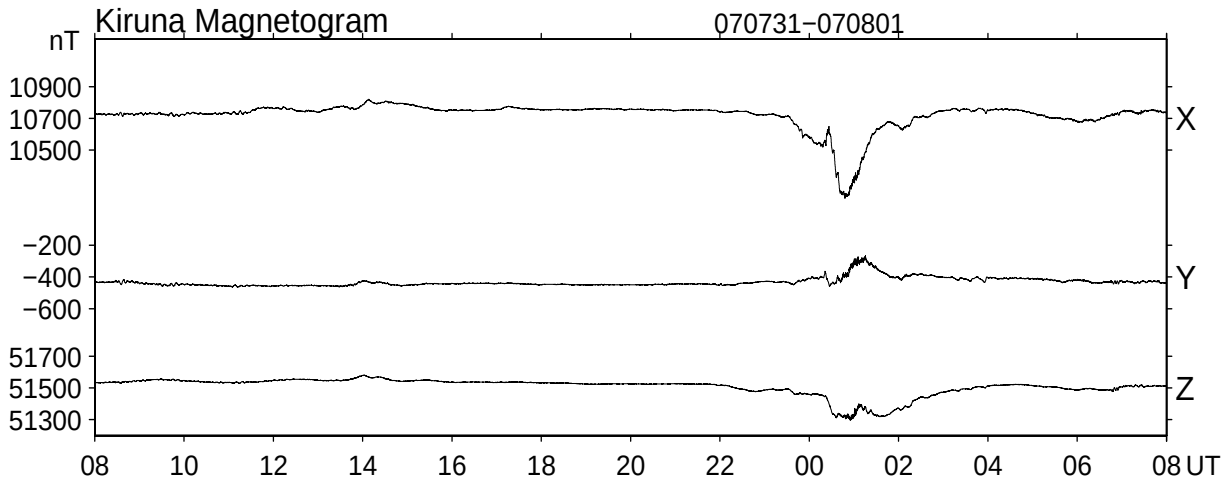

Kiruna Magnetogram
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nT
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10700
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−200
−400
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51500
51300
X
Y
Z
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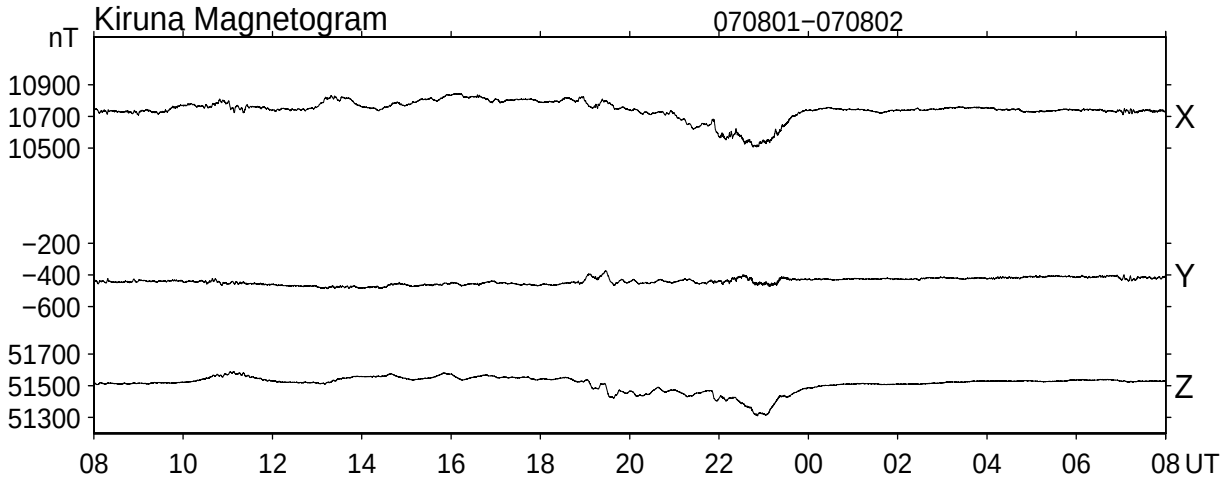

Kiruna Magnetogram
070727−070728
nT
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10700
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−200
−400
−600
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51500
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X
Y
Z
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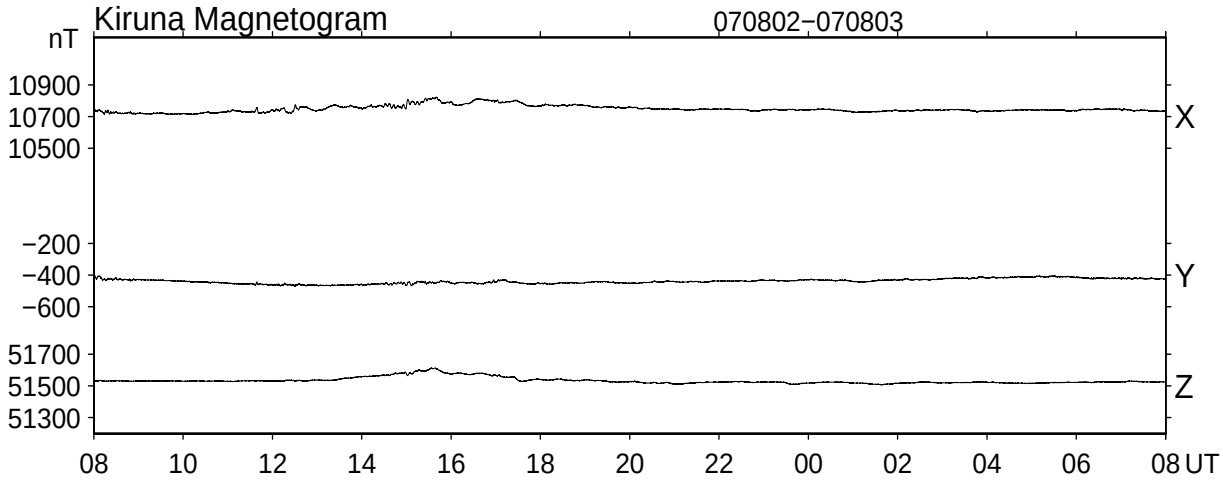

Kiruna Magnetogram
070728−070729
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10700
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−400
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X
Y
Z
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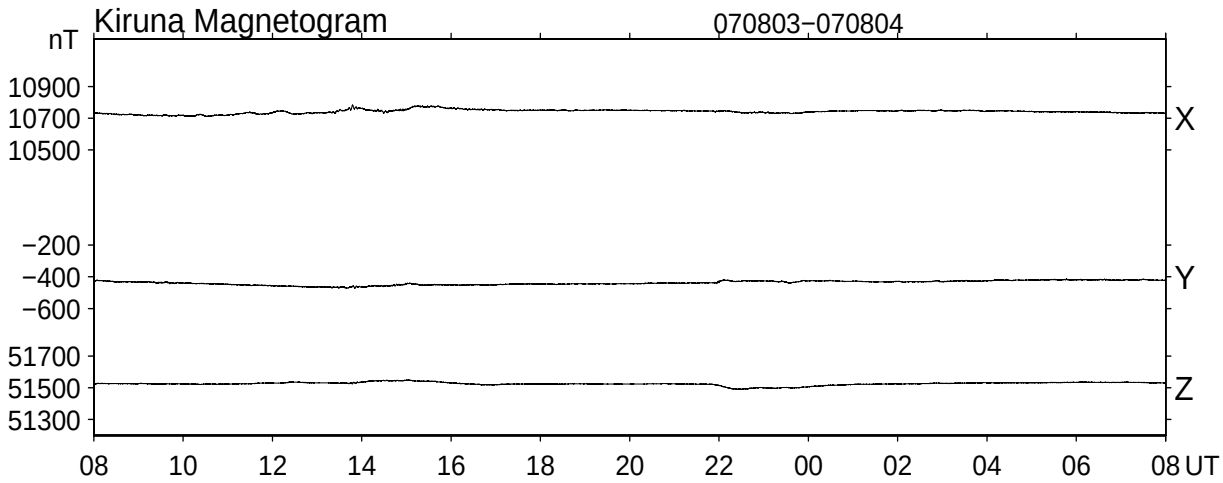

Kiruna Magnetogram
070729−070730
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Z
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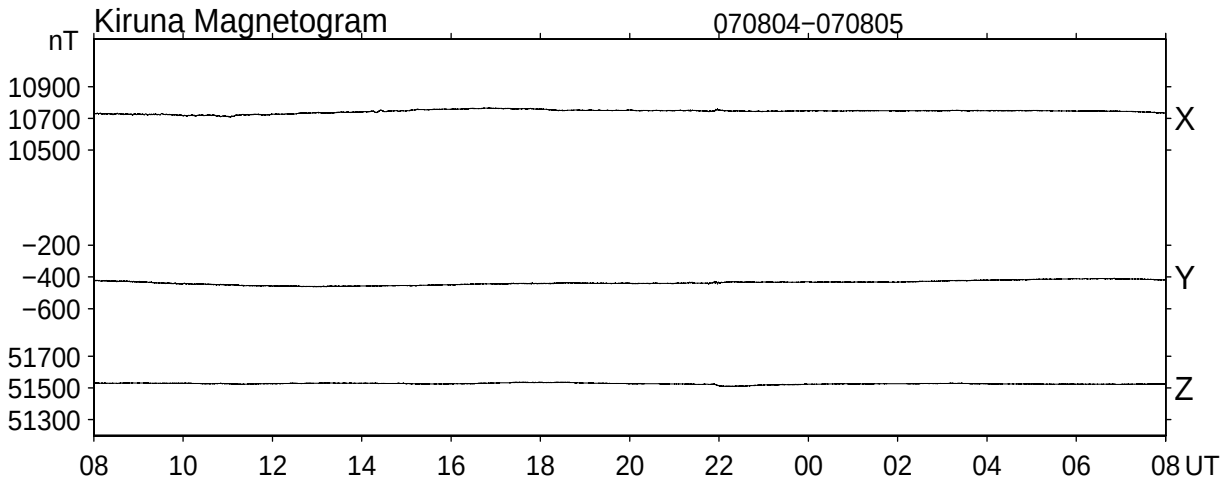

Kiruna Magnetogram
070730−070731
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−400
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Y
Z
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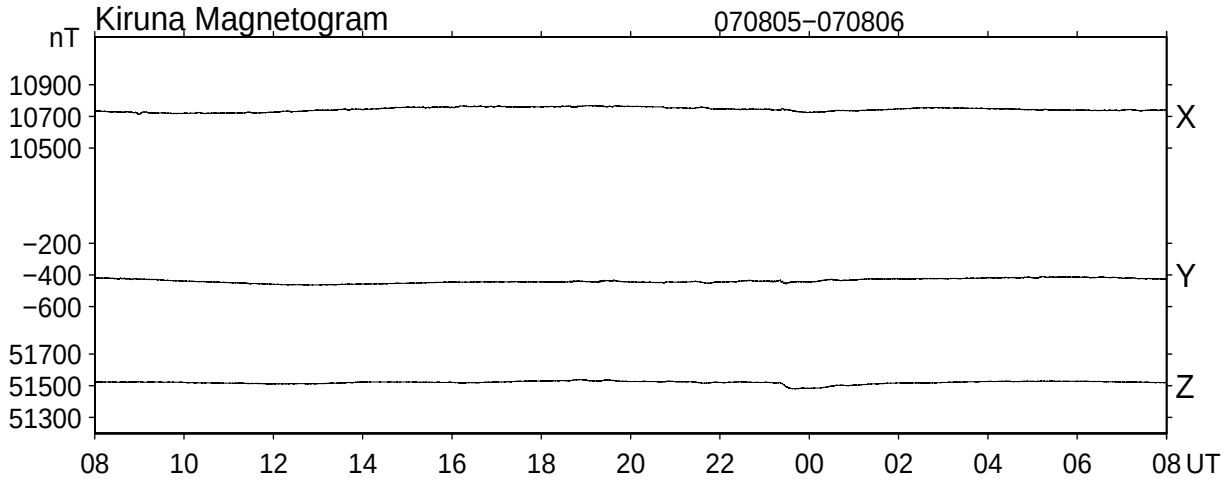

Kiruna Magnetogram
070731−070801
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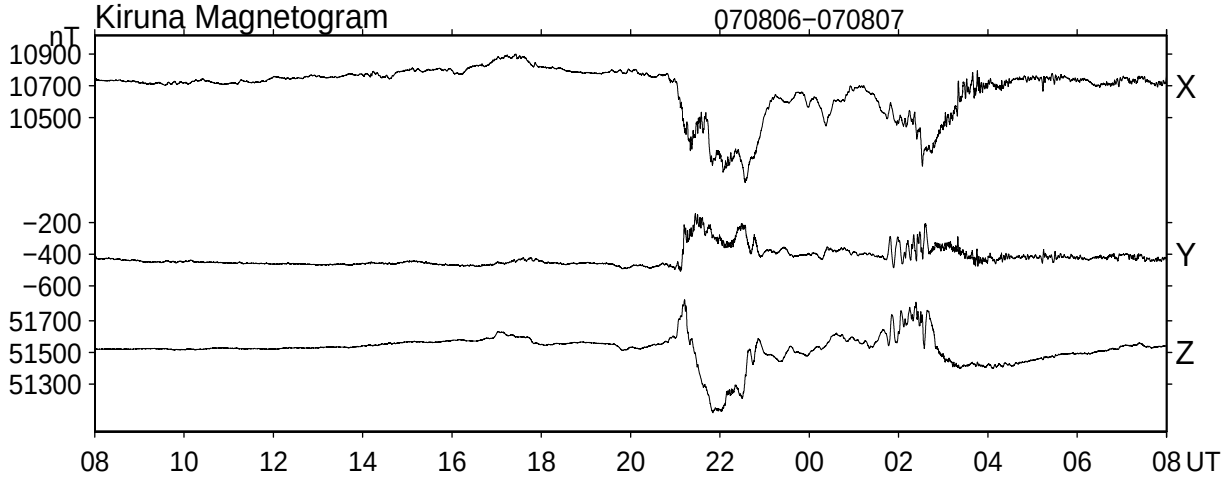

Kiruna Magnetogram
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Y
Z
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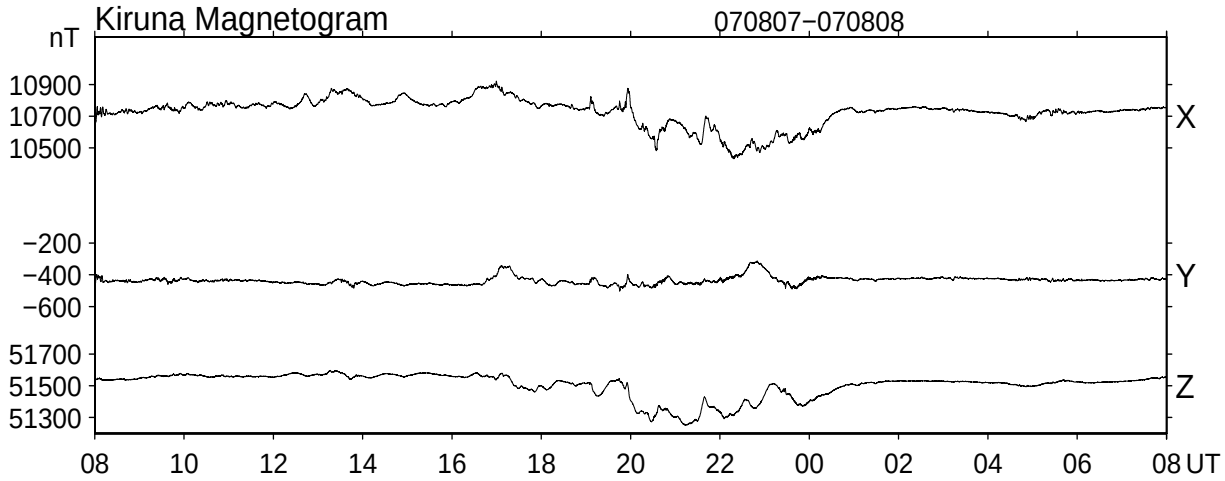

Kiruna Magnetogram
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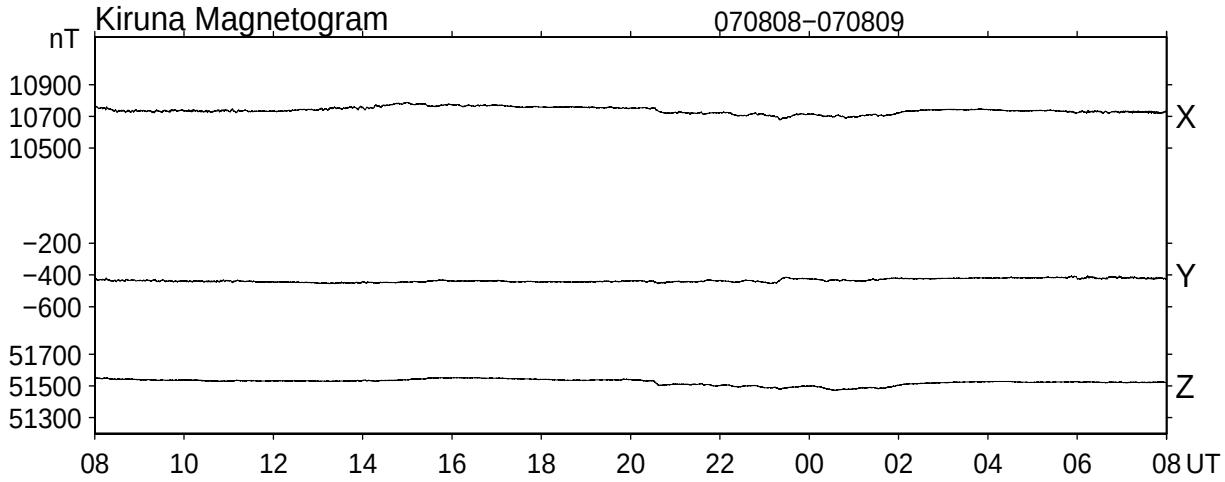

Kiruna Magnetogram
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X
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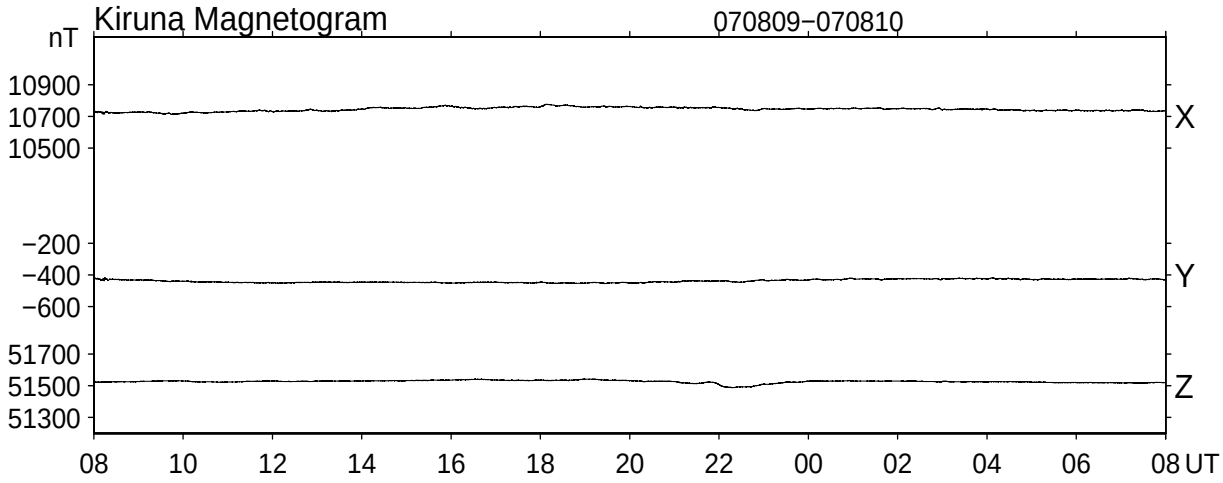

Kiruna Magnetogram
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X
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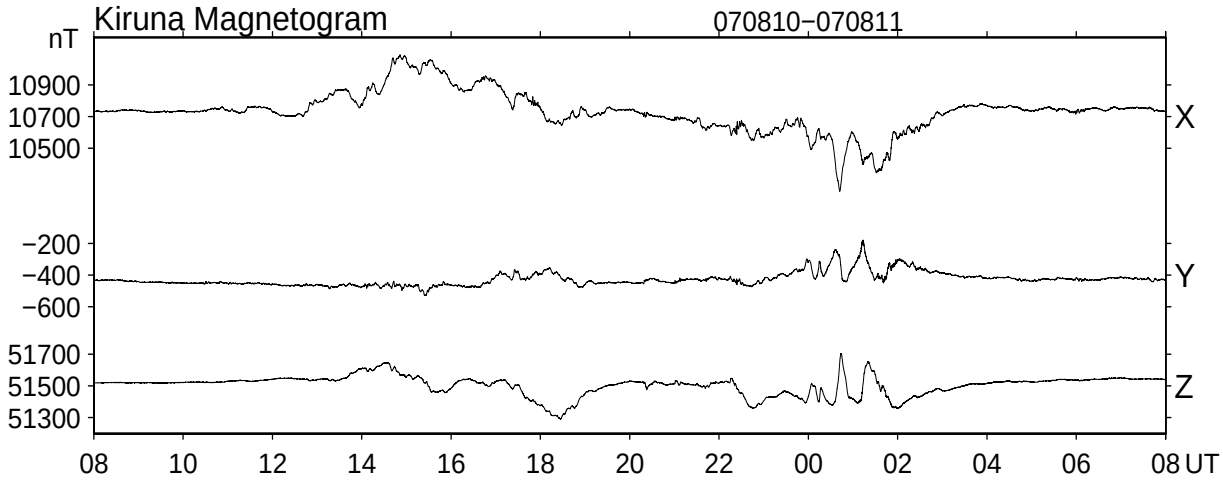

Kiruna Magnetogram
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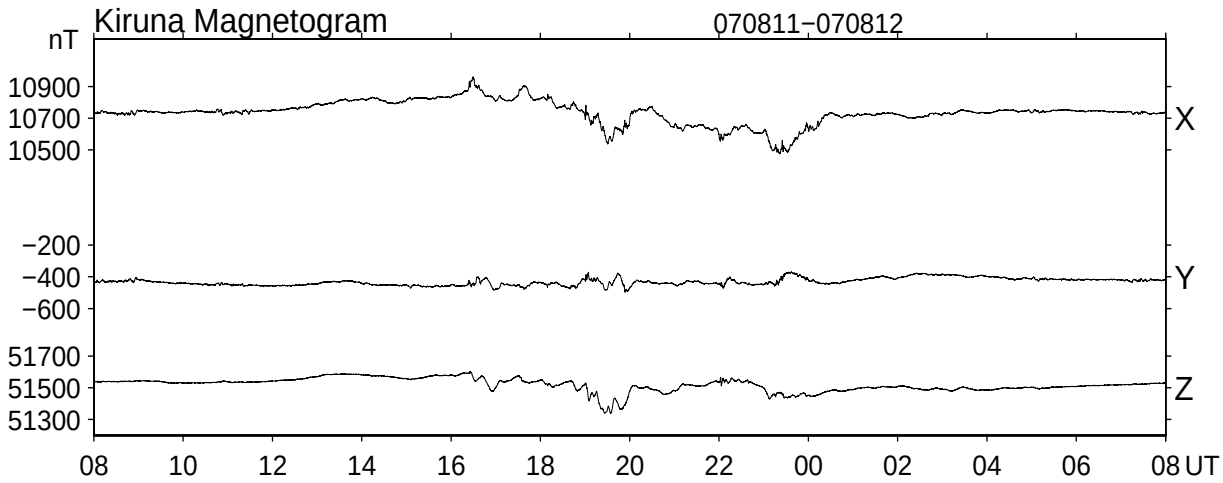

Kiruna Magnetogram
070806−070807
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Z
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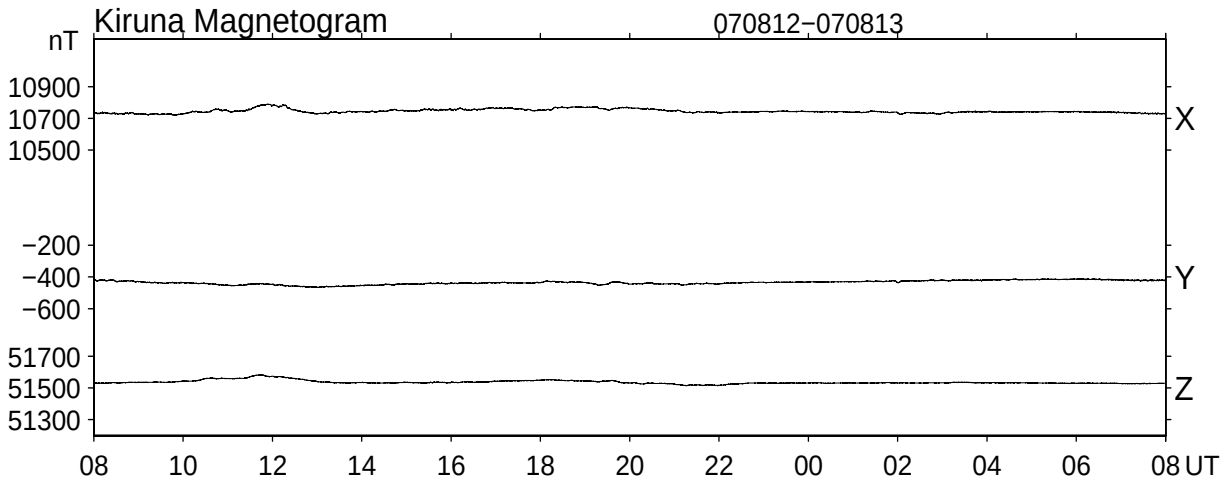

Kiruna Magnetogram
070807−070808
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Y
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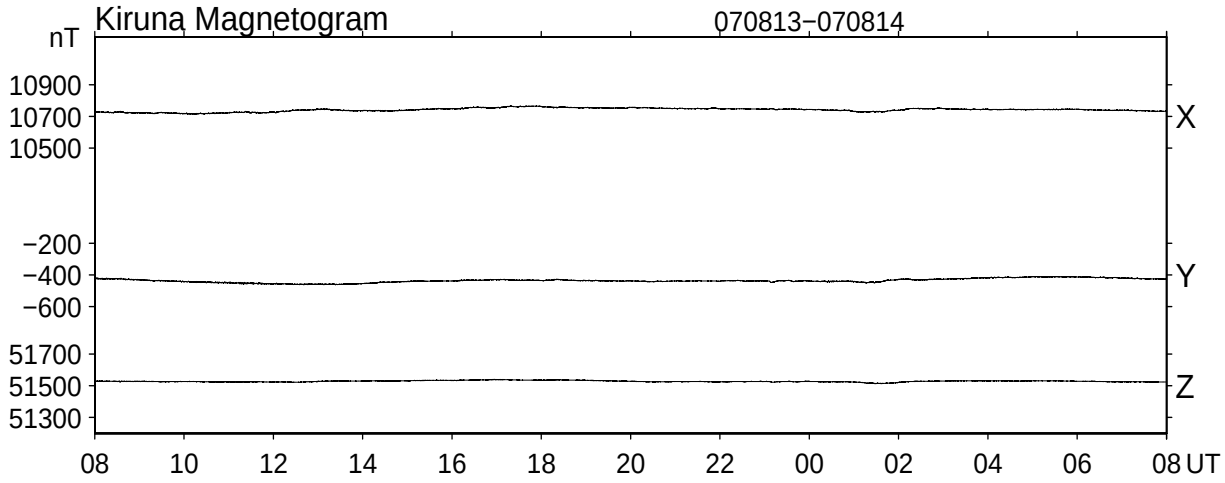

Kiruna Magnetogram
070808−070809
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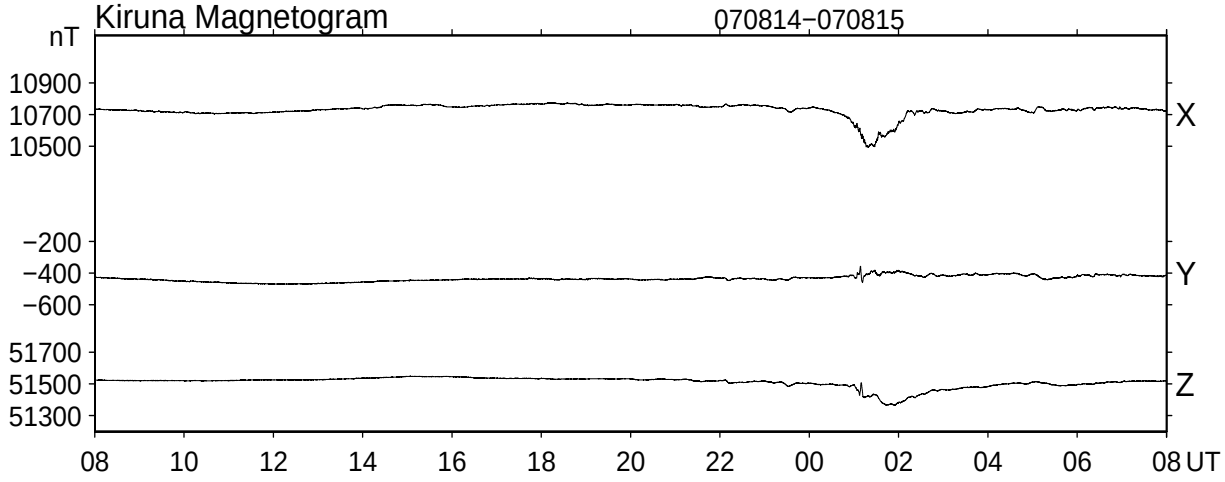

Kiruna Magnetogram
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Z
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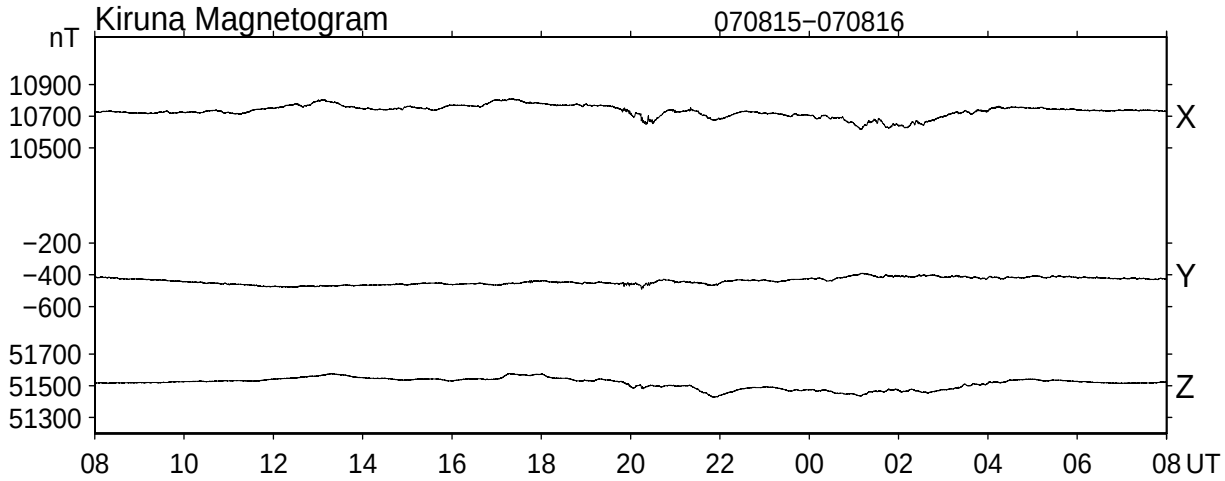

Kiruna Magnetogram
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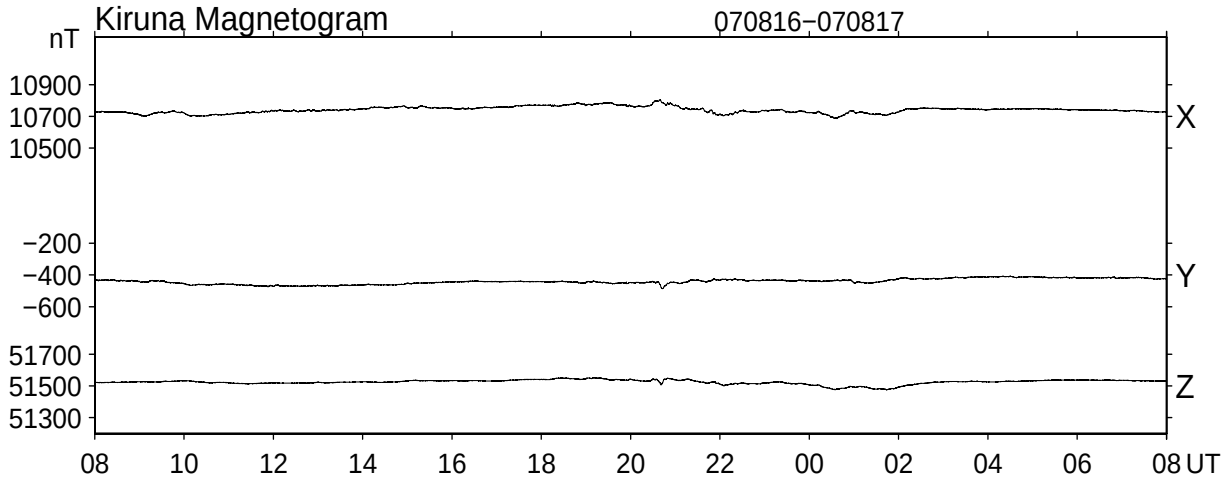

Kiruna Magnetogram
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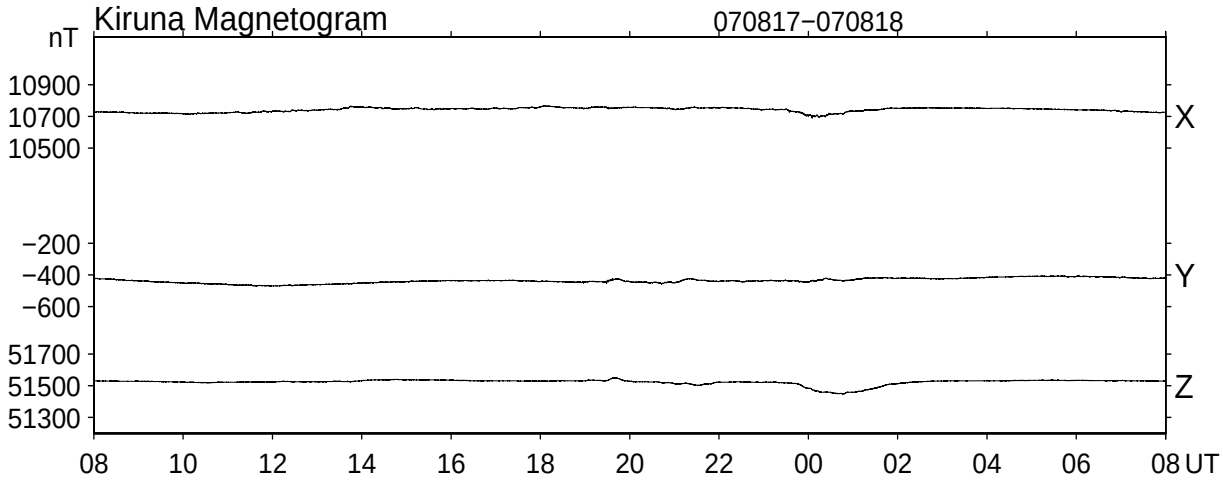

Kiruna Magnetogram
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Z
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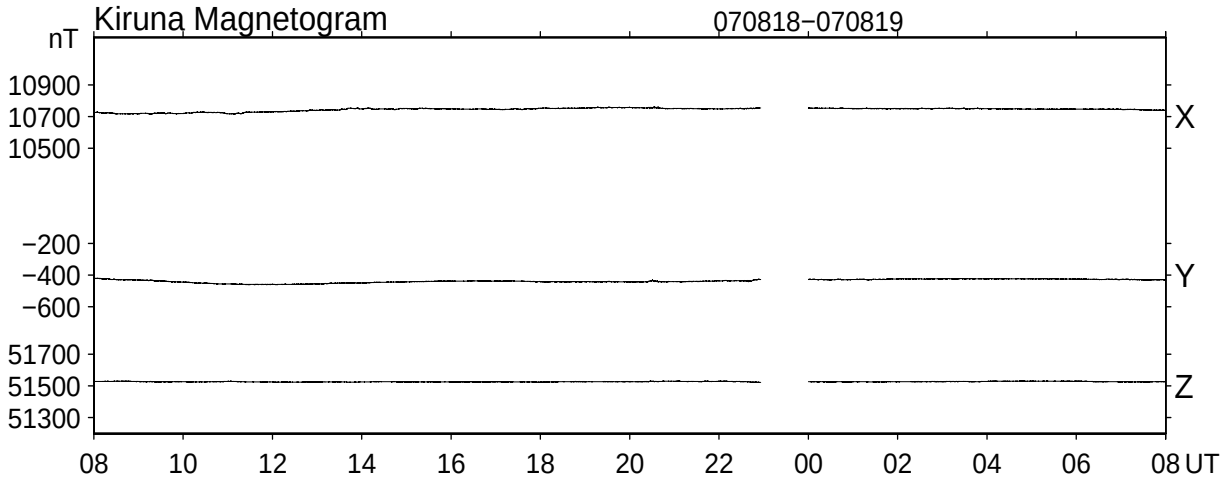

Kiruna Magnetogram
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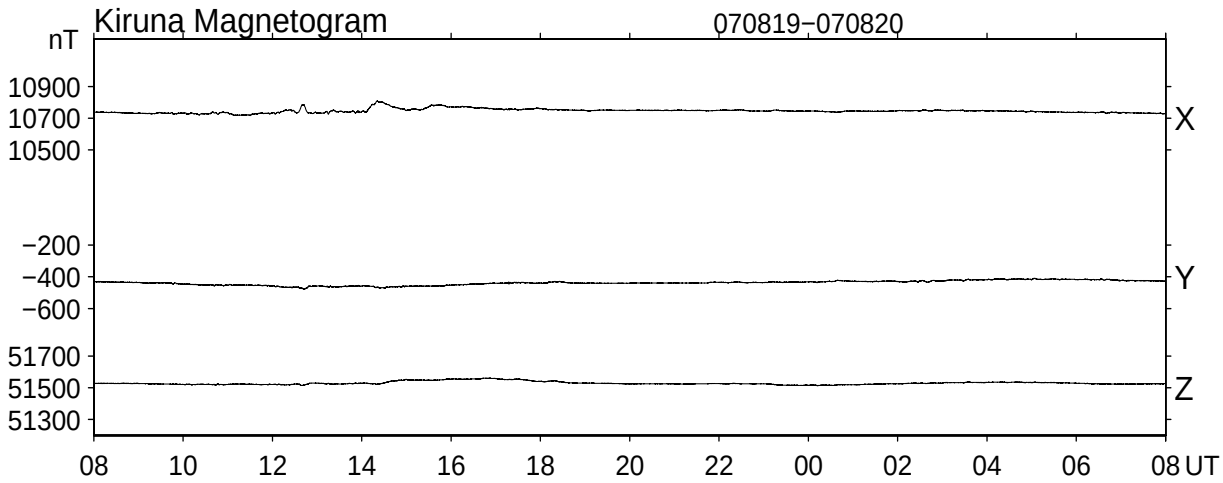

Kiruna Magnetogram
070814−070815
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Z
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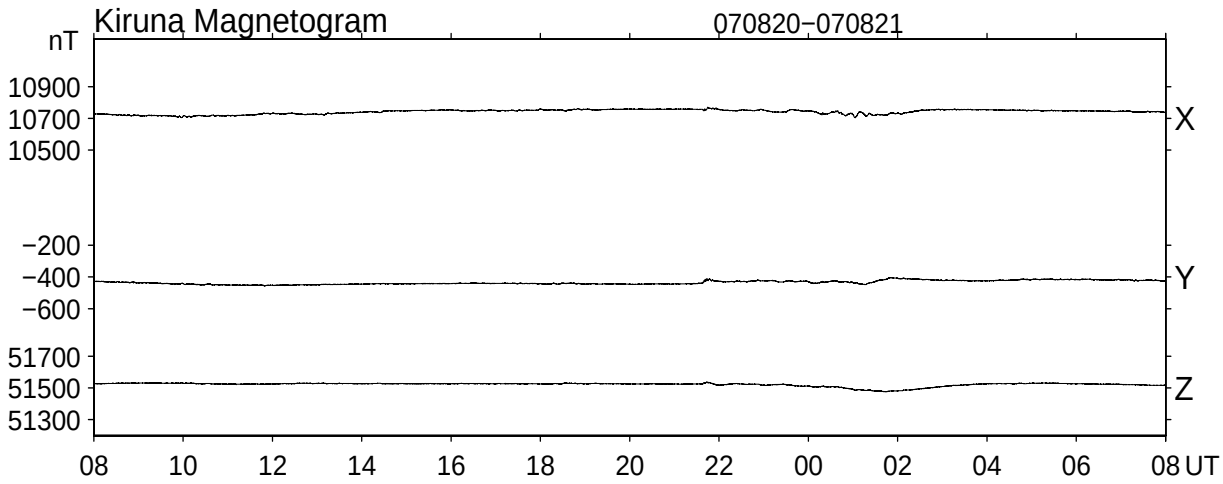

Kiruna Magnetogram
070815−070816
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X
Y
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08 10 12 14 16 18 20 22 00 02 04 06 08 UT

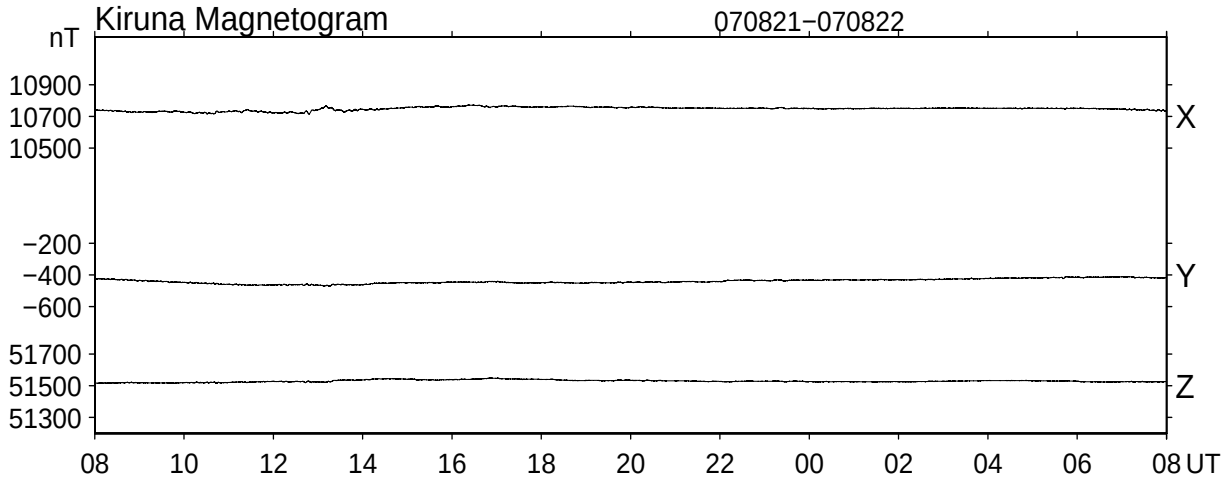

Kiruna Magnetogram
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X
Y
Z
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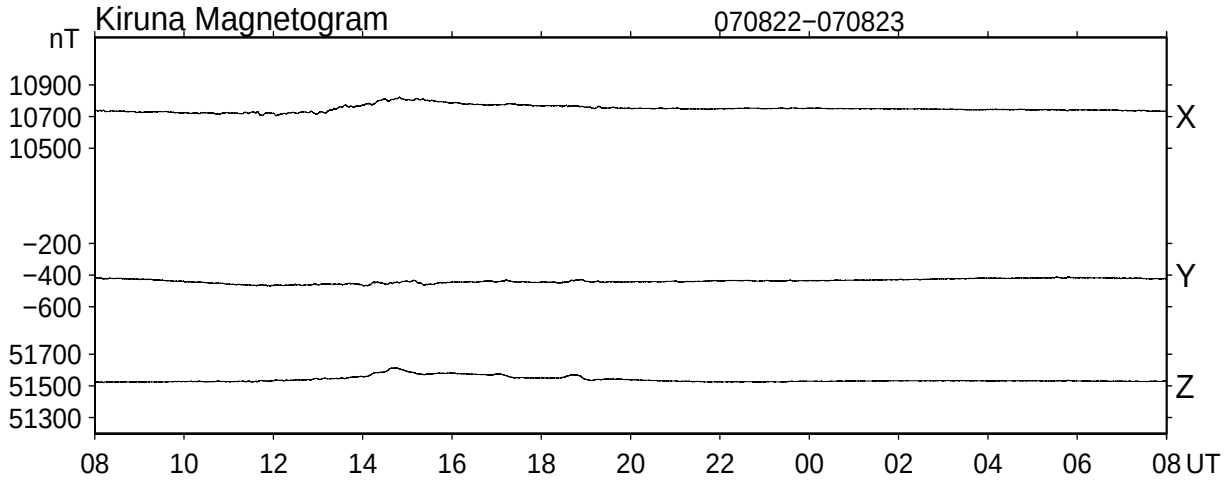

Kiruna Magnetogram
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Y
Z
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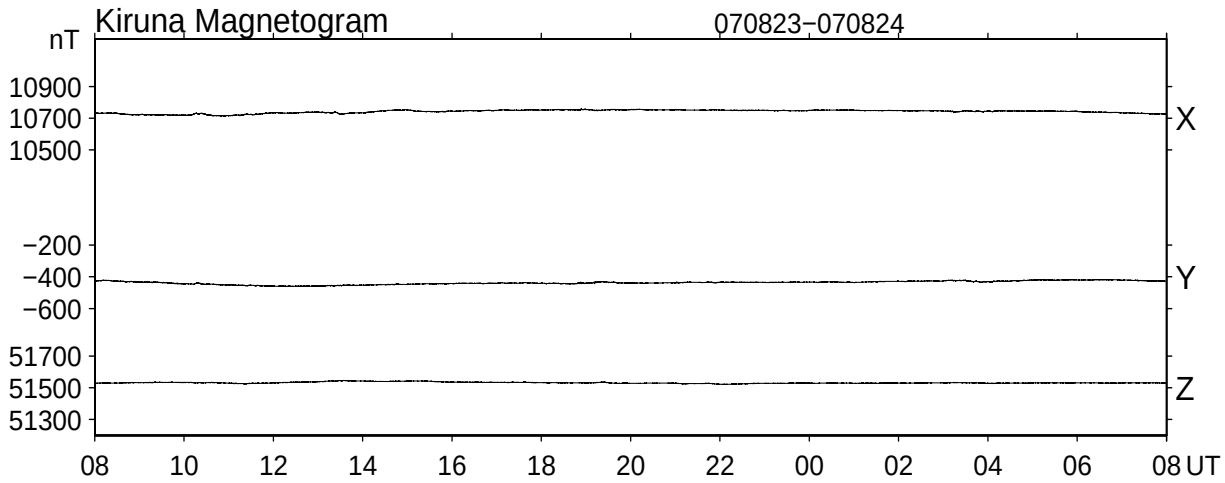

Kiruna Magnetogram
070818−070819
nT
10900
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−400
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51700
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51300
X
Y
Z
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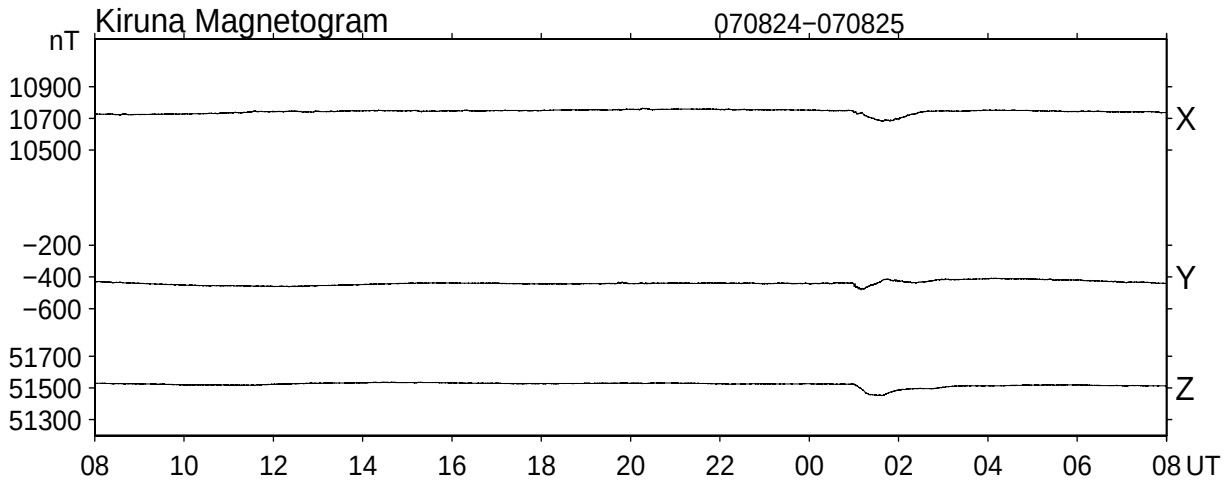

Kiruna Magnetogram
070819−070820
nT
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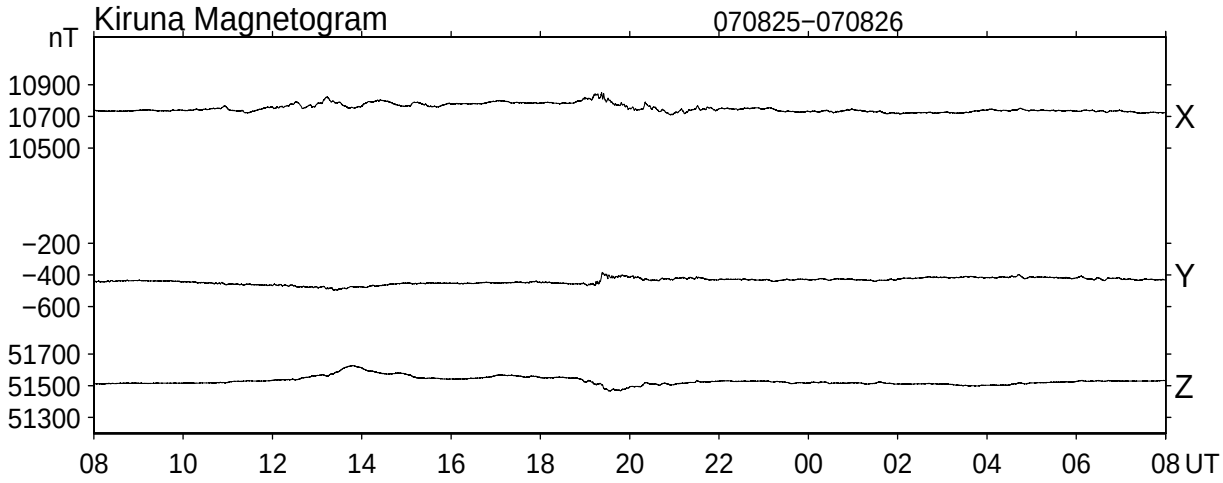

Kiruna Magnetogram
070820−070821
nT
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Y
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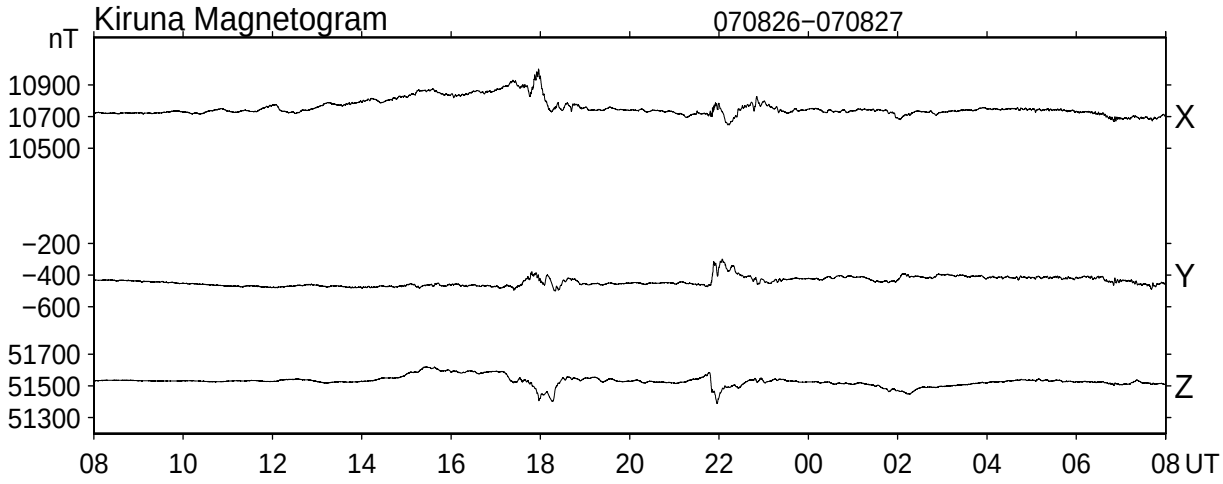

Kiruna Magnetogram
070821−070822
nT
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Y
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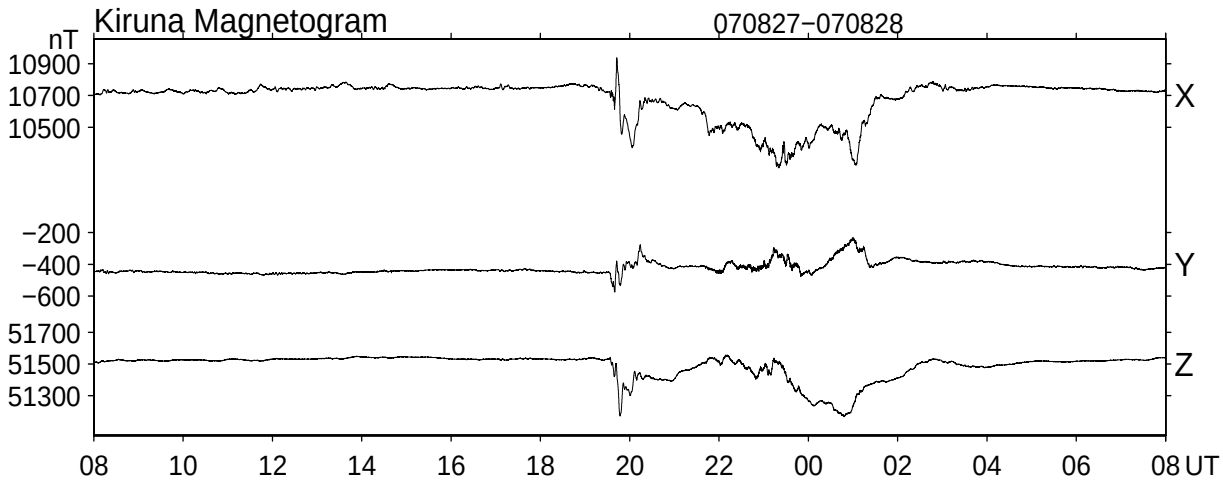

Kiruna Magnetogram
070822−070823
nT
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−400
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Y
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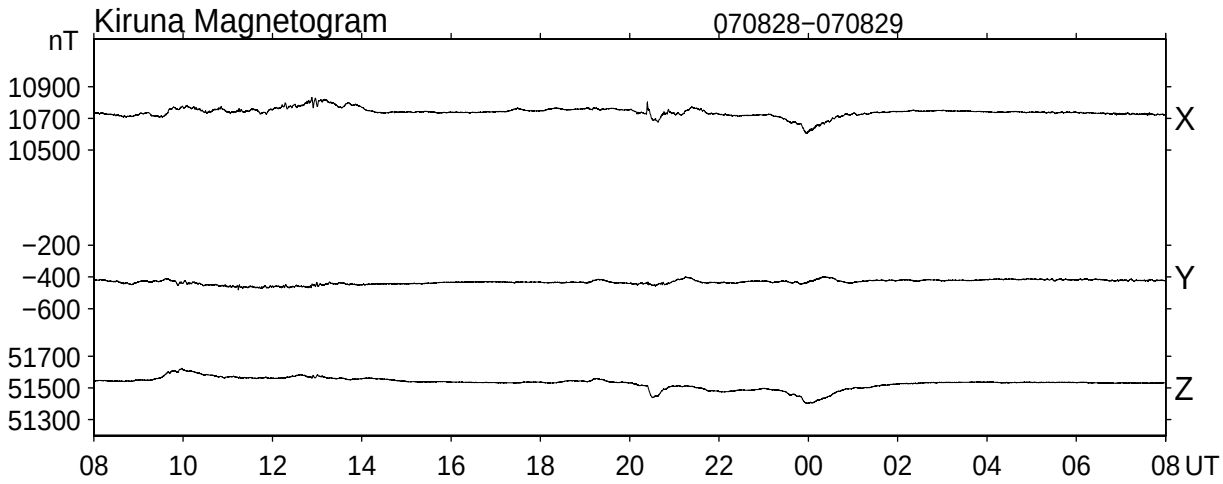

Kiruna Magnetogram
070823−070824
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−200
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Y
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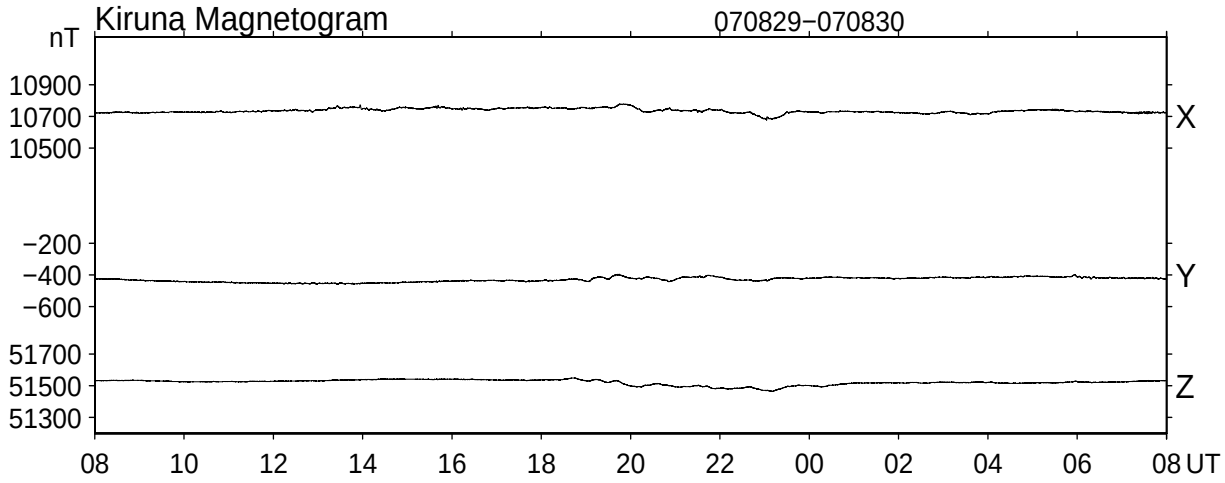

Kiruna Magnetogram
070824−070825
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51300
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Y
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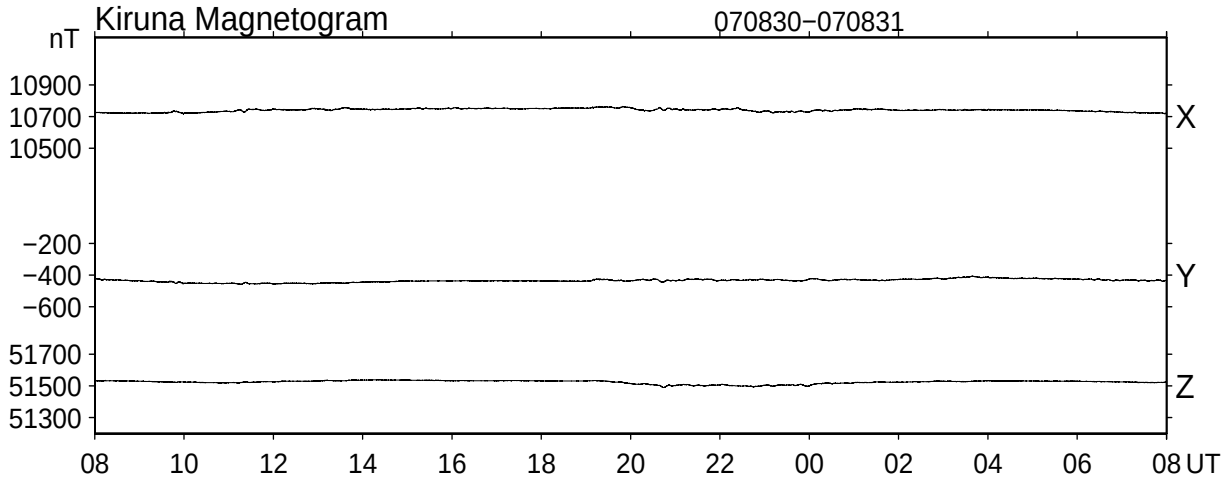

Kiruna Magnetogram
070825−070826
nT
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Y
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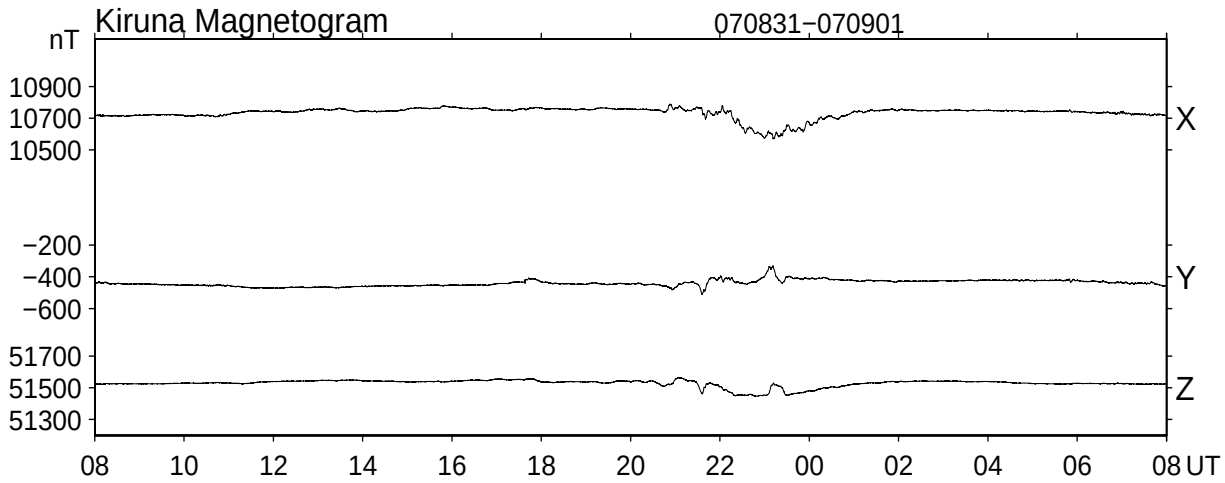

Kiruna Magnetogram
070826−070827
nT
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Y
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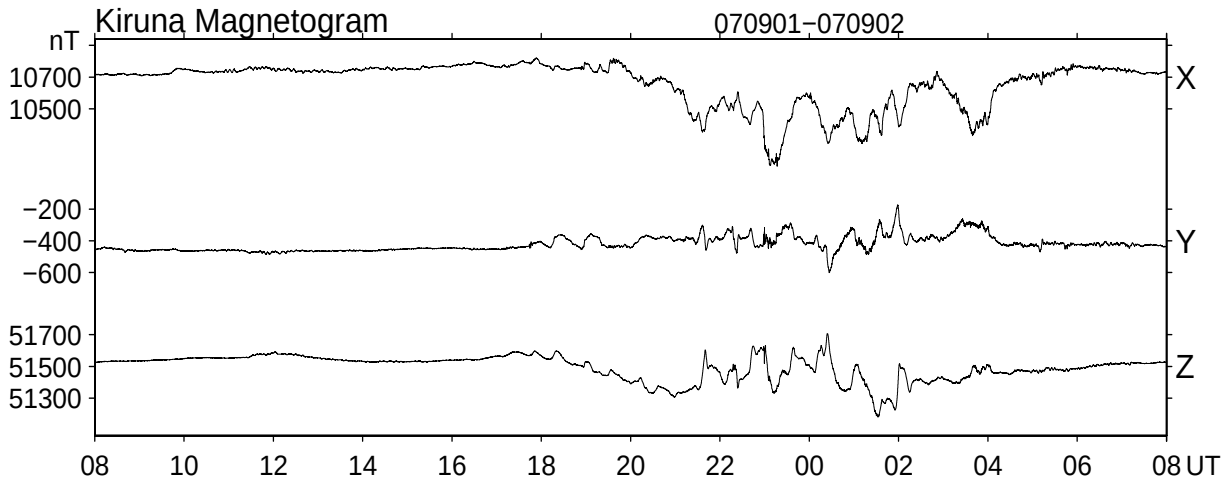

Kiruna Magnetogram
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Y
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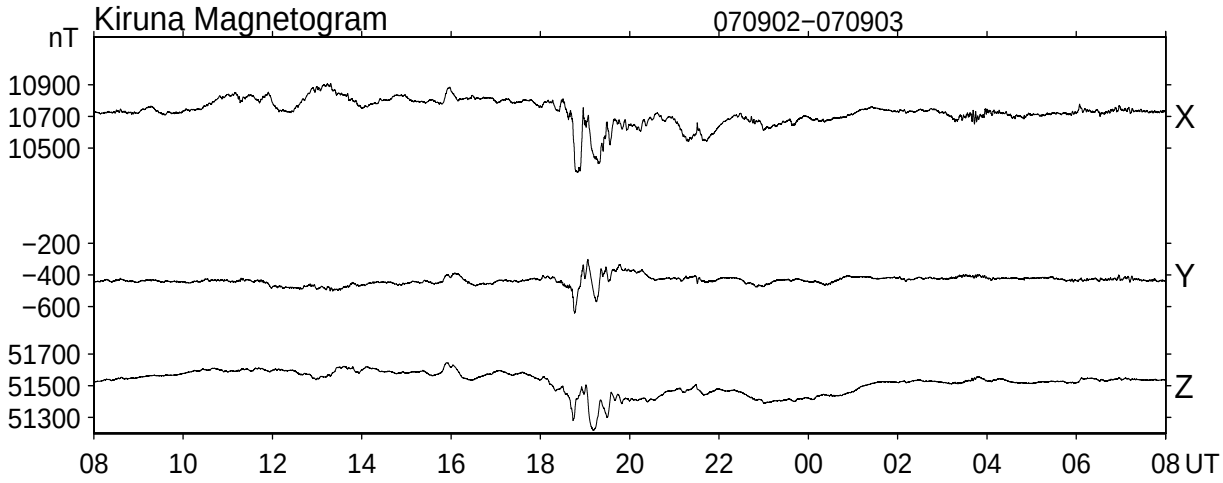

Kiruna Magnetogram
070828−070829
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−400
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Y
Z
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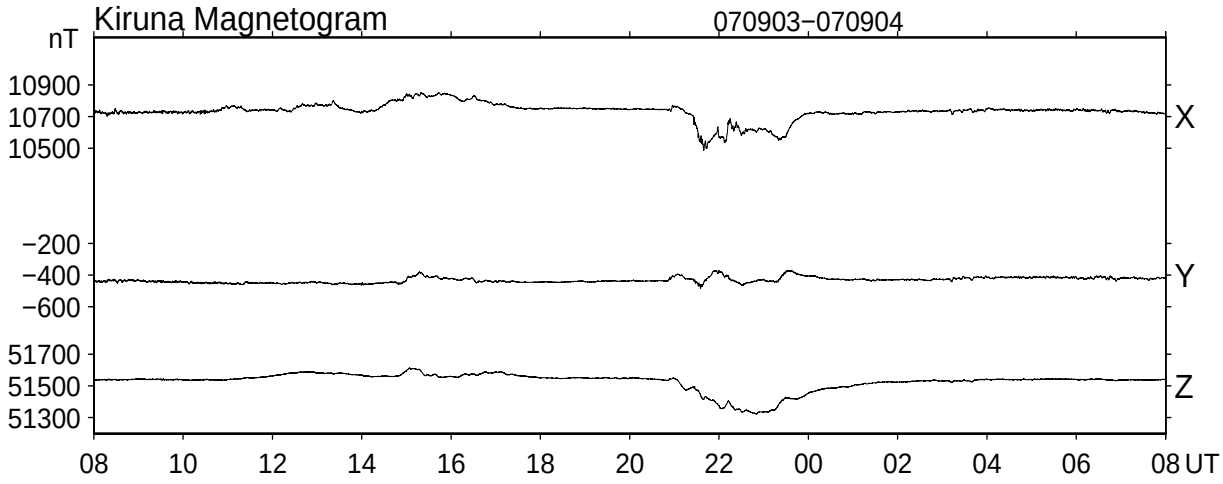

Kiruna Magnetogram
070829−070830
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X
Y
Z
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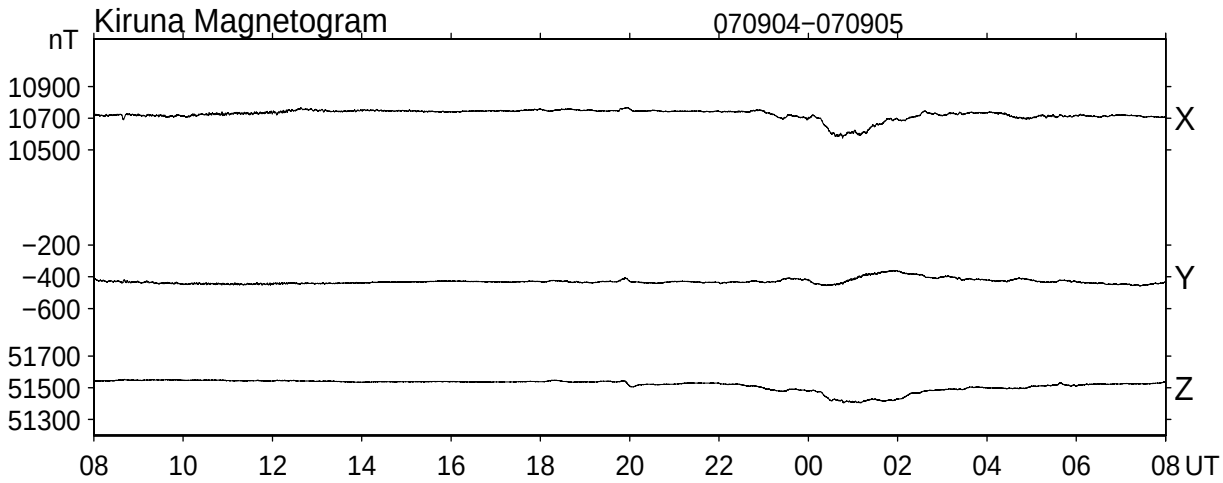

Kiruna Magnetogram
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Y
Z
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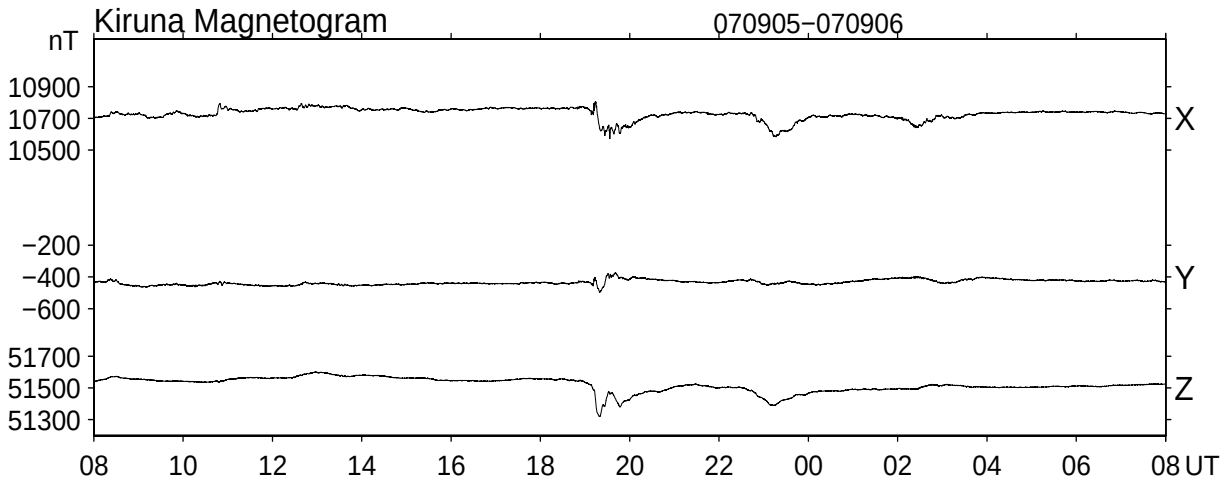

Kiruna Magnetogram
070831−070901
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−400
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X
Y
Z
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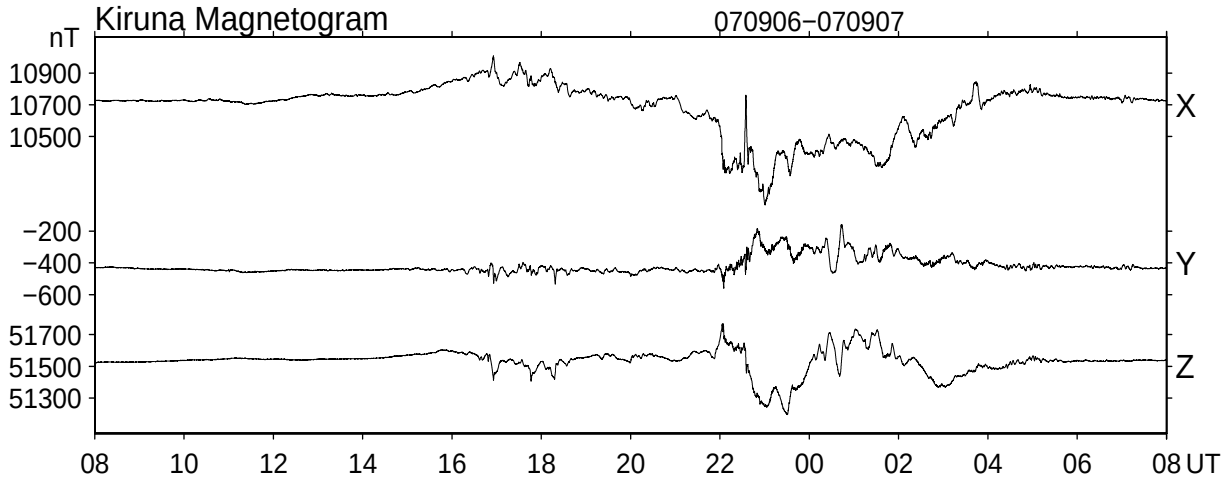

Kiruna Magnetogram
070901−070902
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−200
−400
−600
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51500
51300
X
Y
Z
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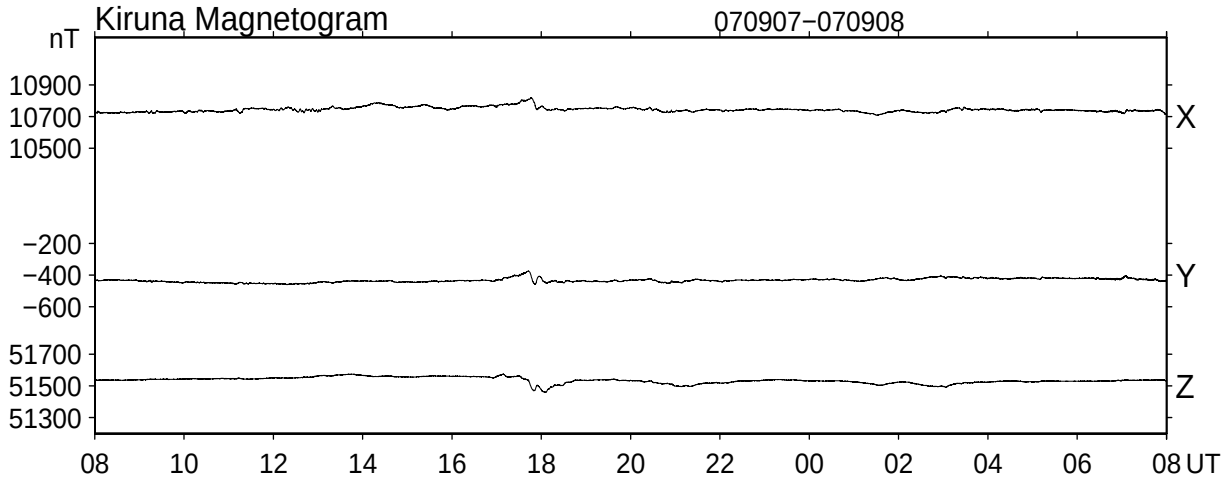

Kiruna Magnetogram
070902–070903
nT
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X
−200
−400
−600
Y
51700
51500
51300
Z
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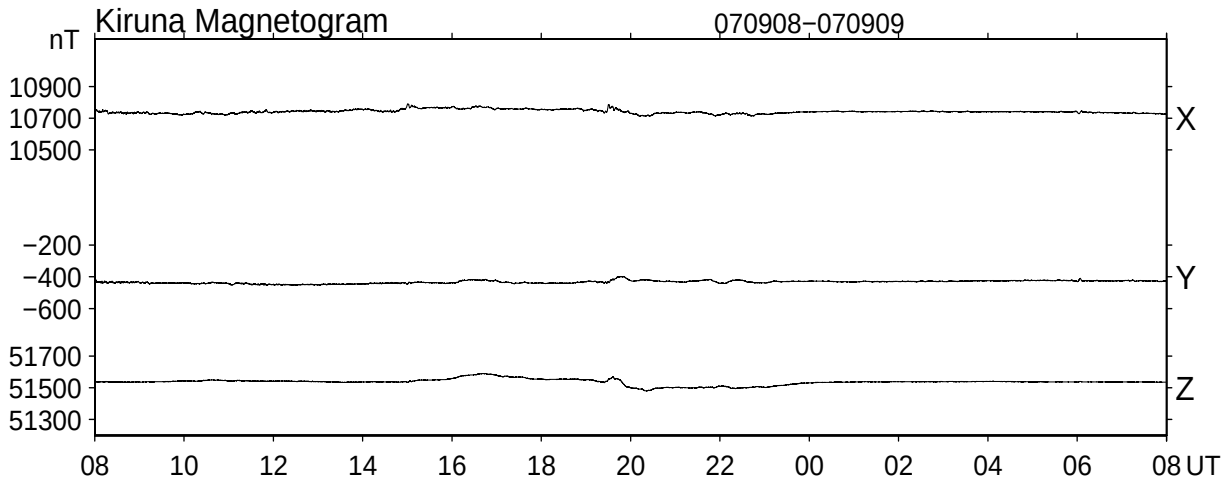

Kiruna Magnetogram
070903–070904
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−200
−400
−600
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Z
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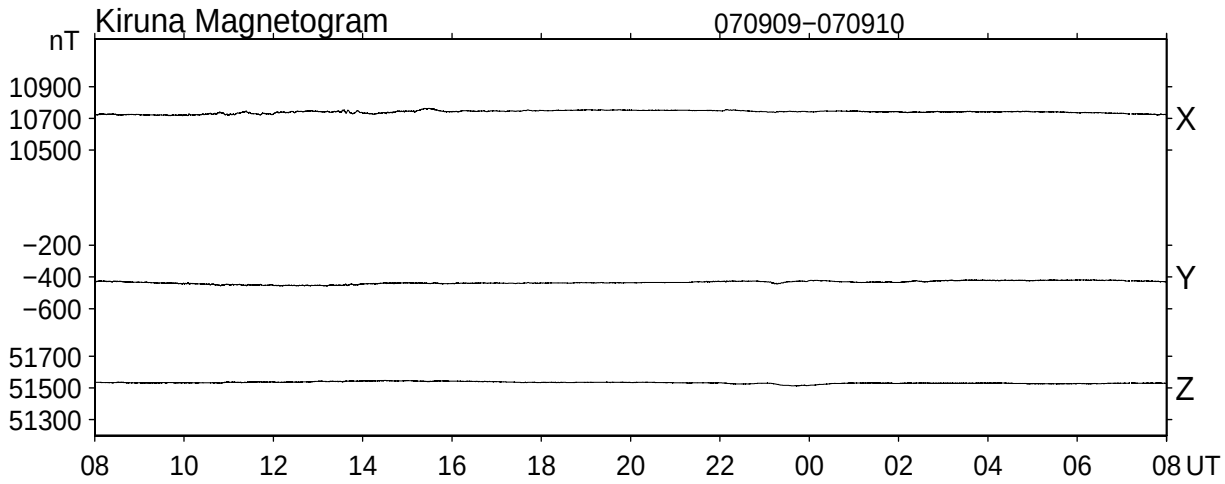

Kiruna Magnetogram
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−200
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Z
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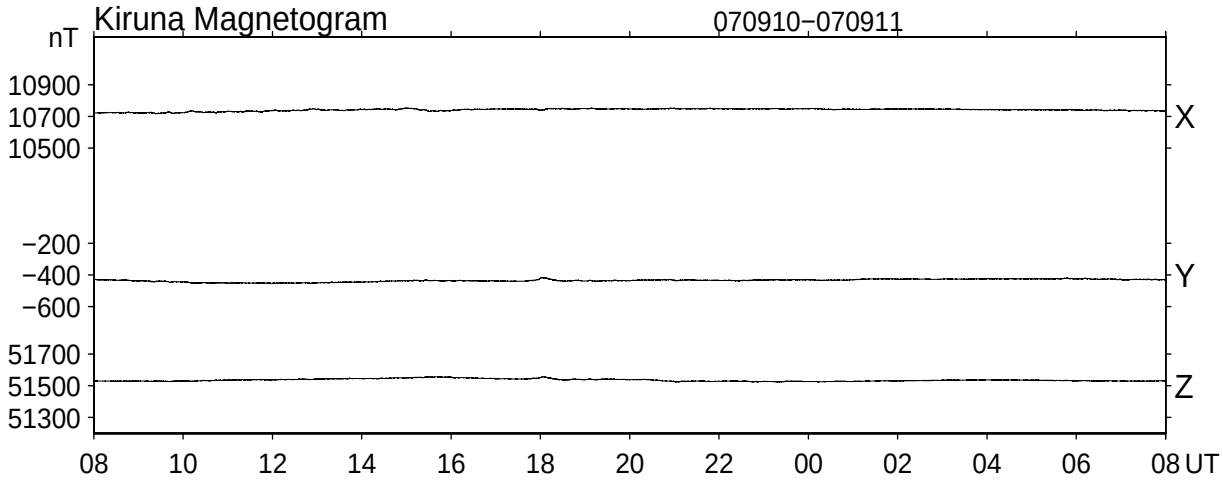

Kiruna Magnetogram
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X
−200
−400
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51300
Z
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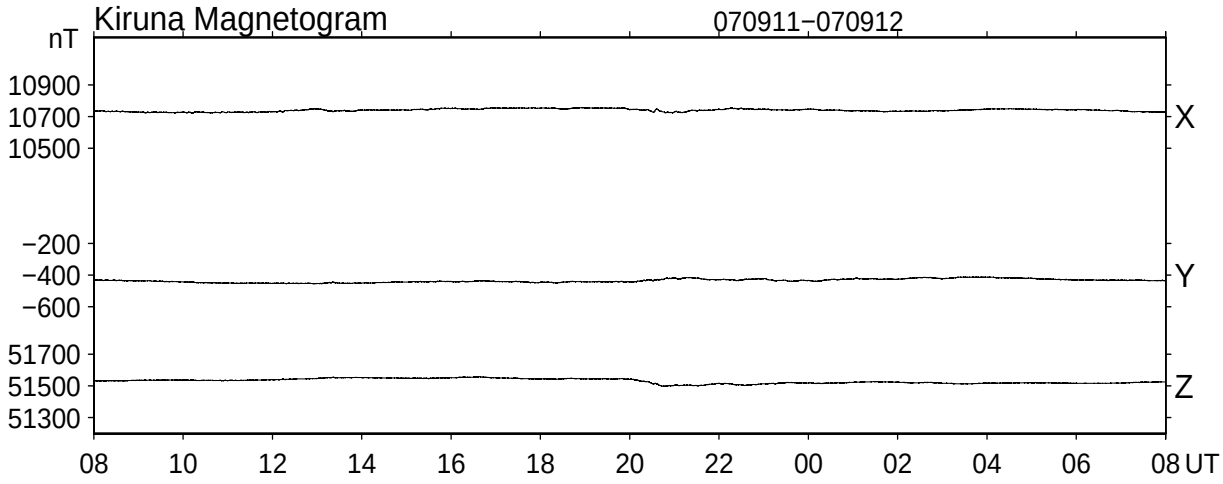

Kiruna Magnetogram
070906−070907
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X
Y
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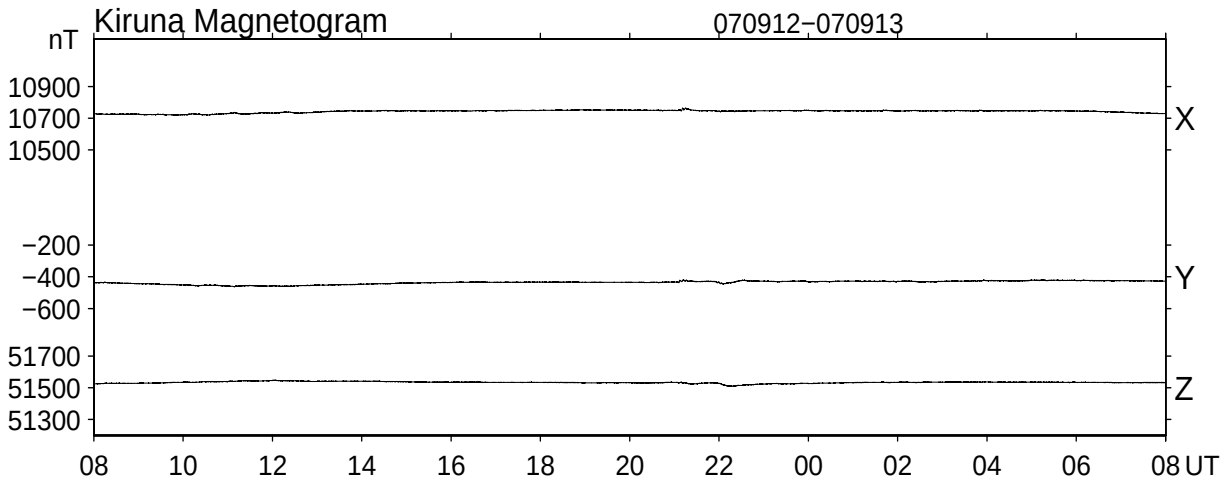

Kiruna Magnetogram
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X
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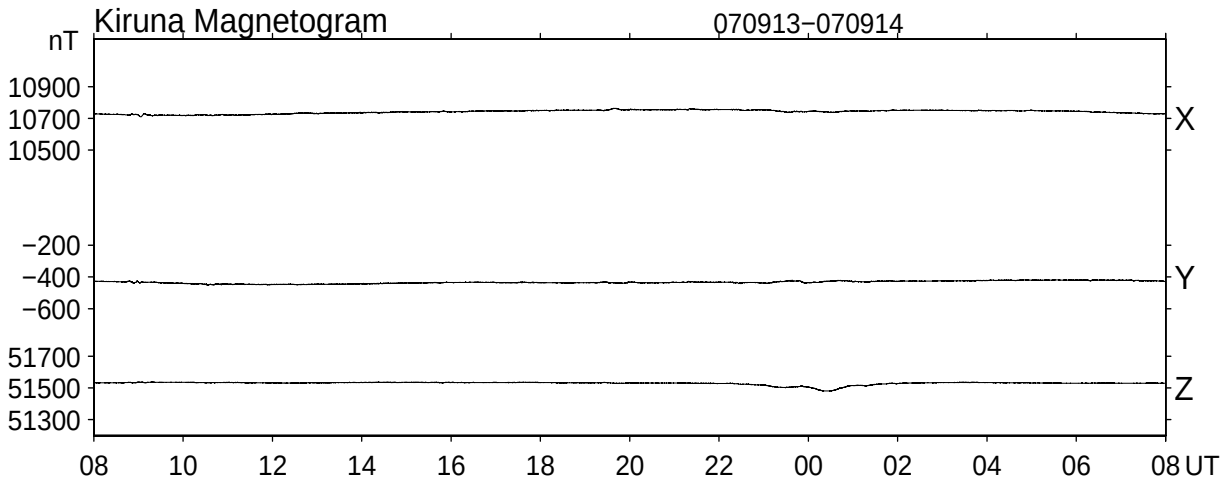

Kiruna Magnetogram
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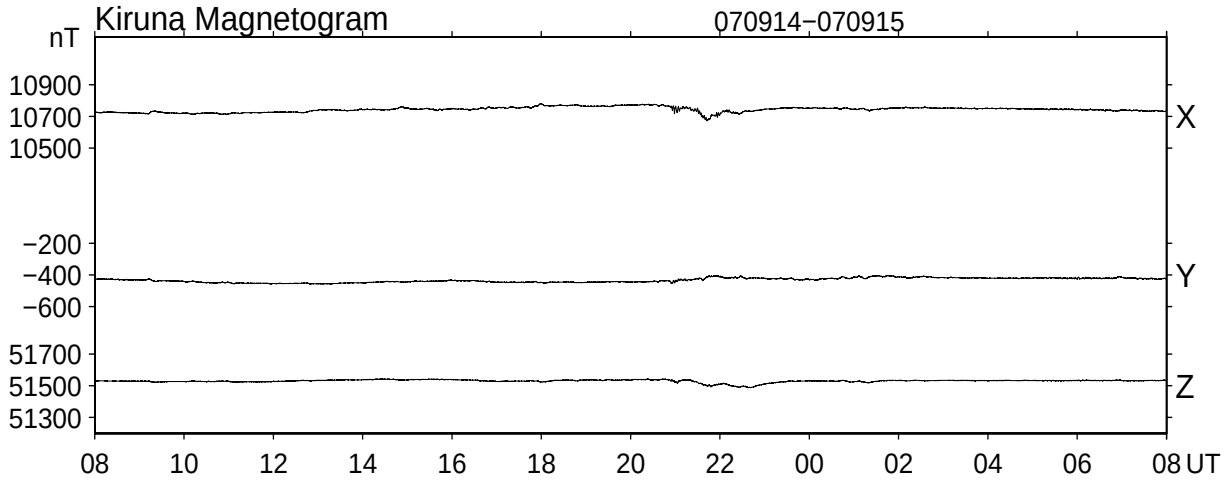

Kiruna Magnetogram
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Y
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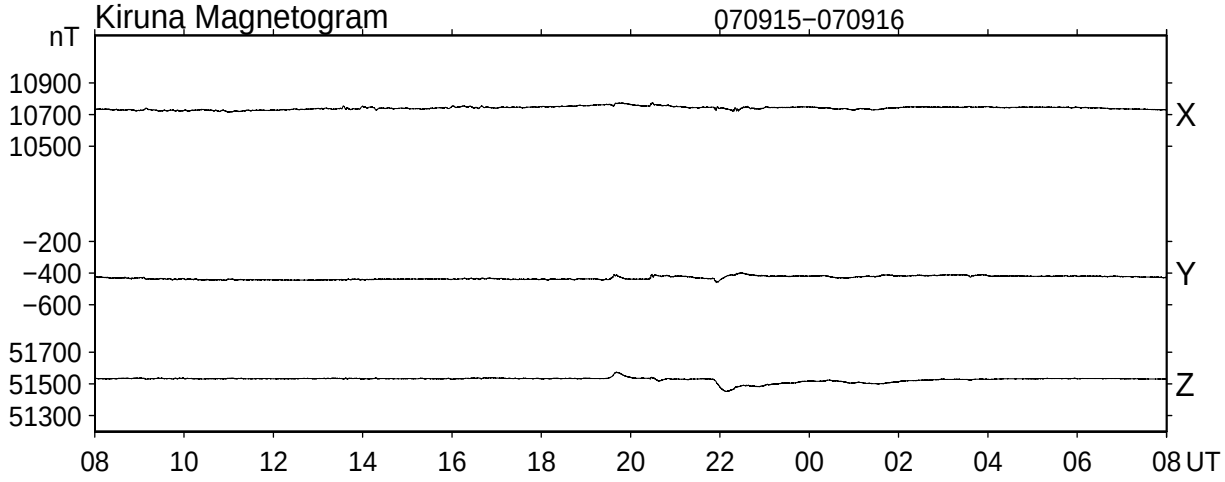

Kiruna Magnetogram
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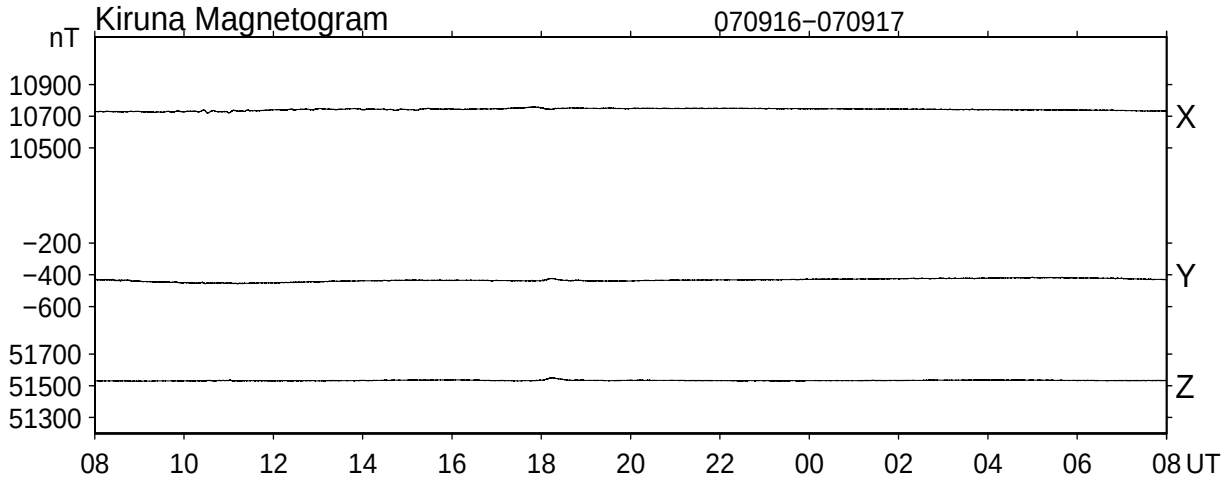

Kiruna Magnetogram
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Z
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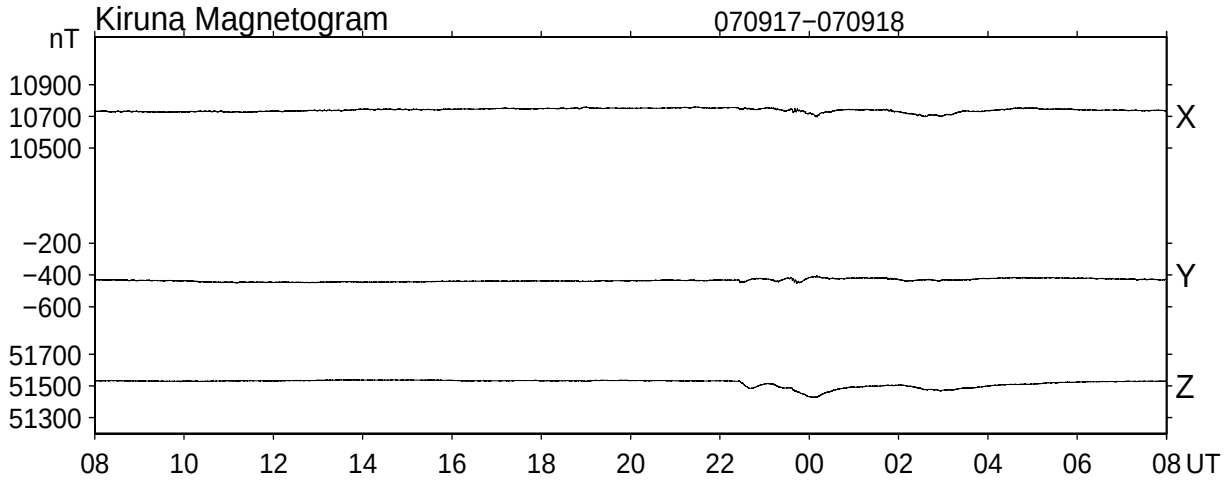

Kiruna Magnetogram
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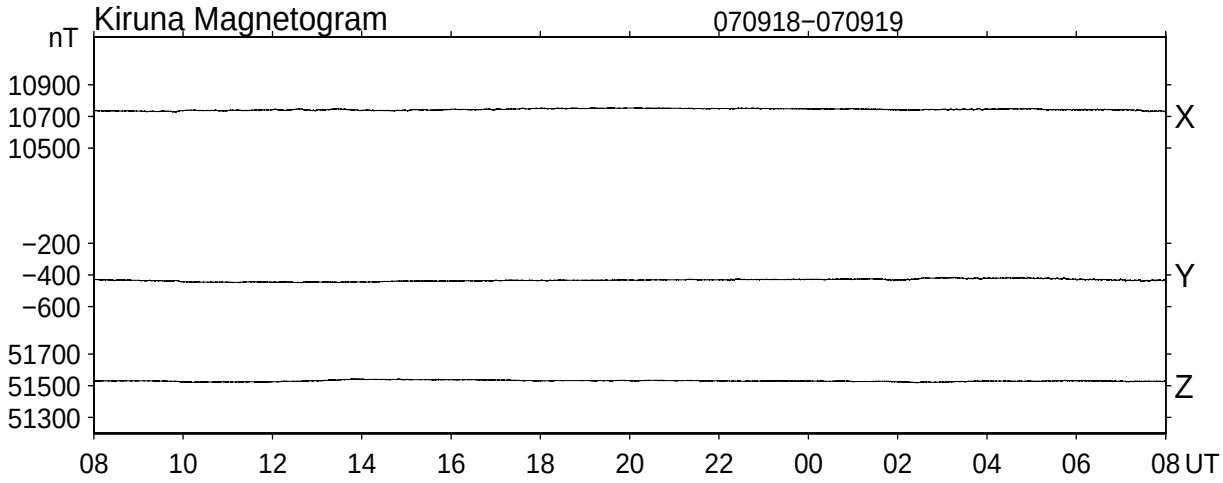

Kiruna Magnetogram
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Z
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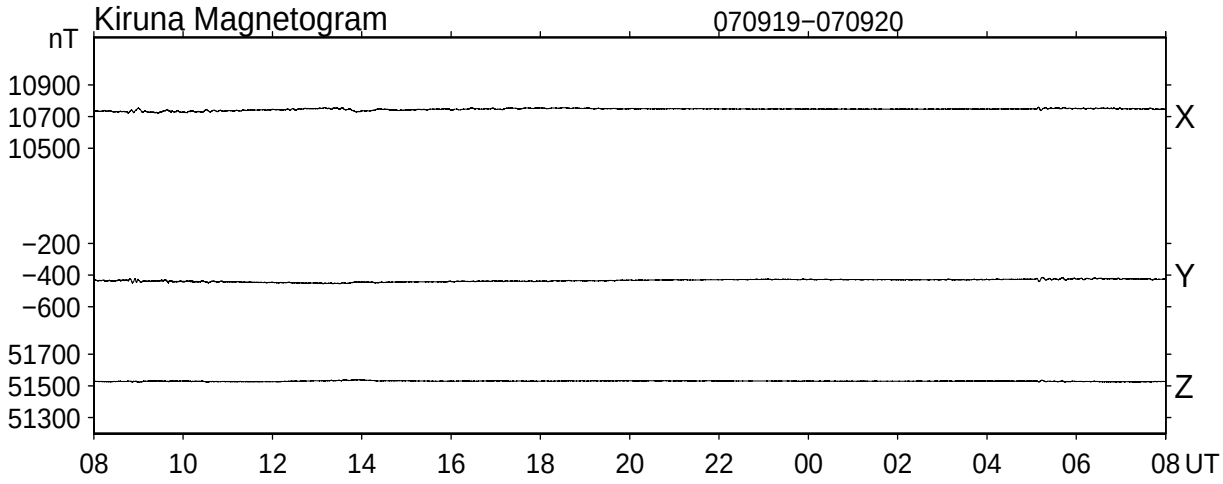

Kiruna Magnetogram
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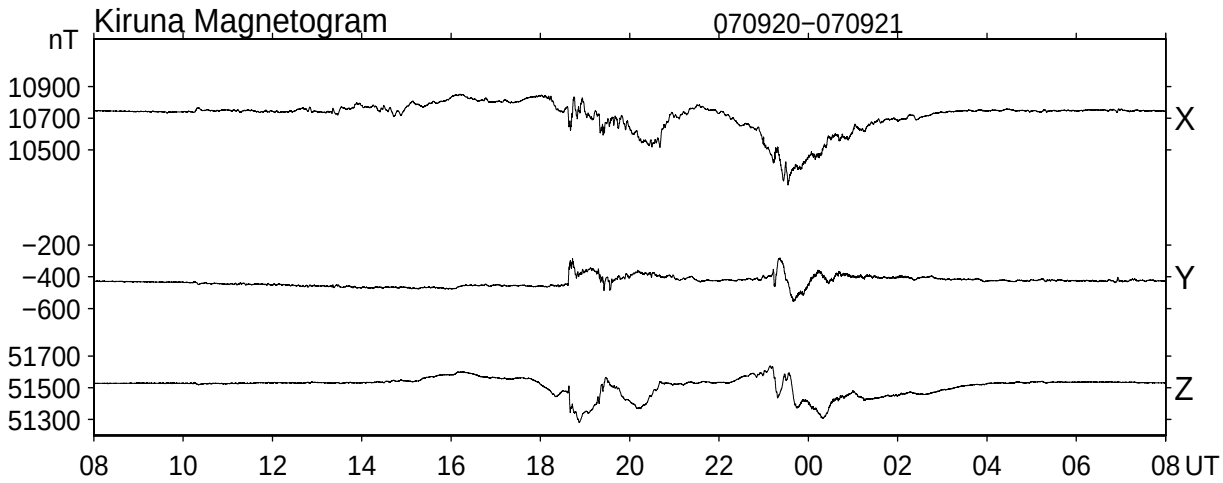

Kiruna Magnetogram
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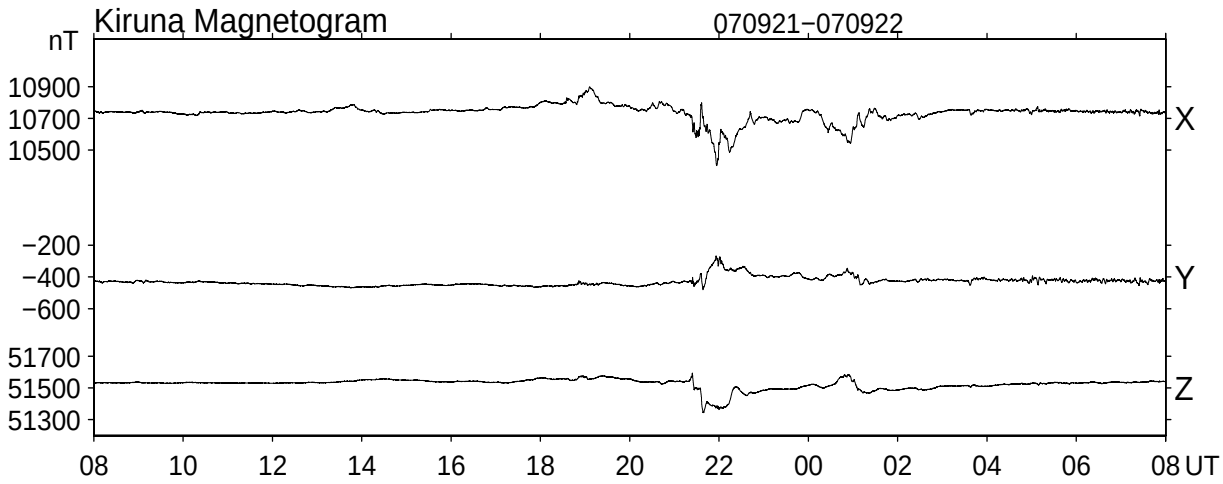

Kiruna Magnetogram
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Z
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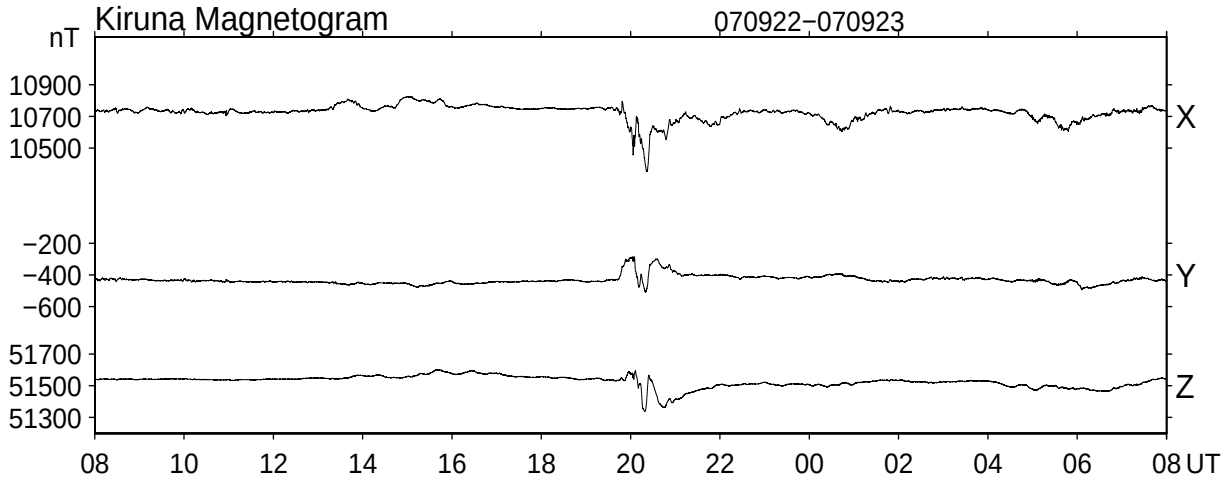

Kiruna Magnetogram
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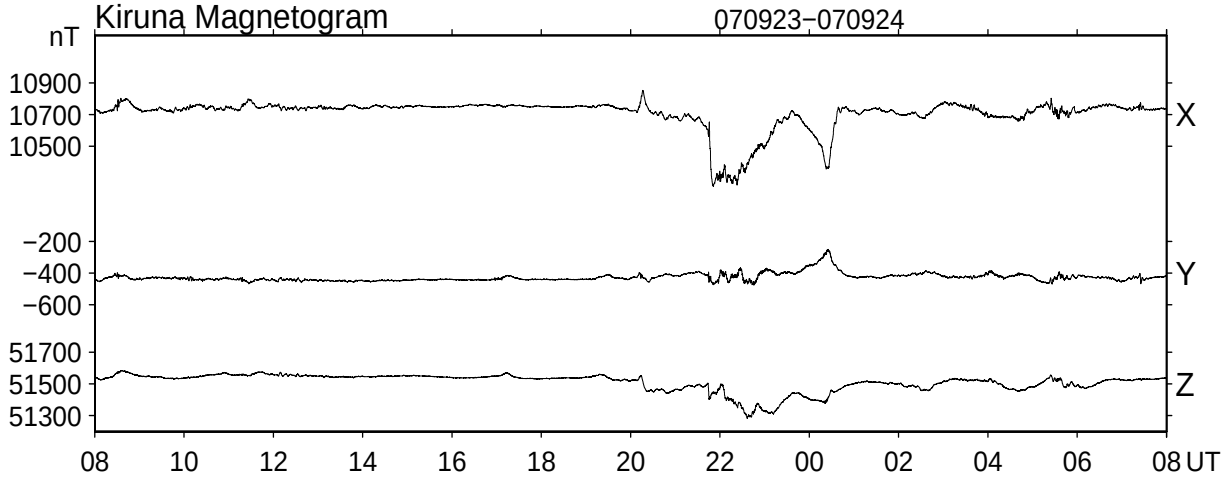

Kiruna Magnetogram
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Z
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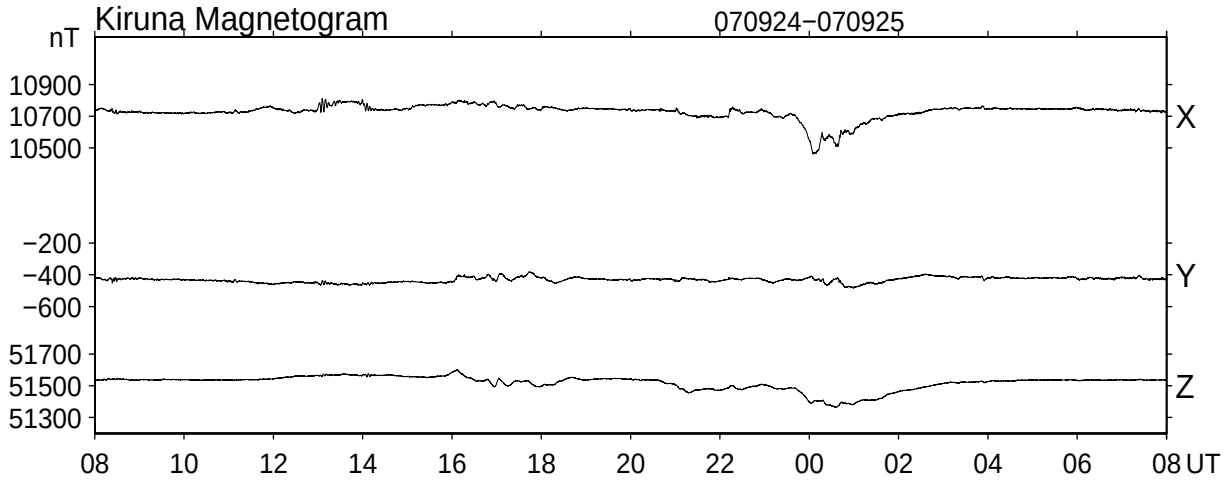

Kiruna Magnetogram
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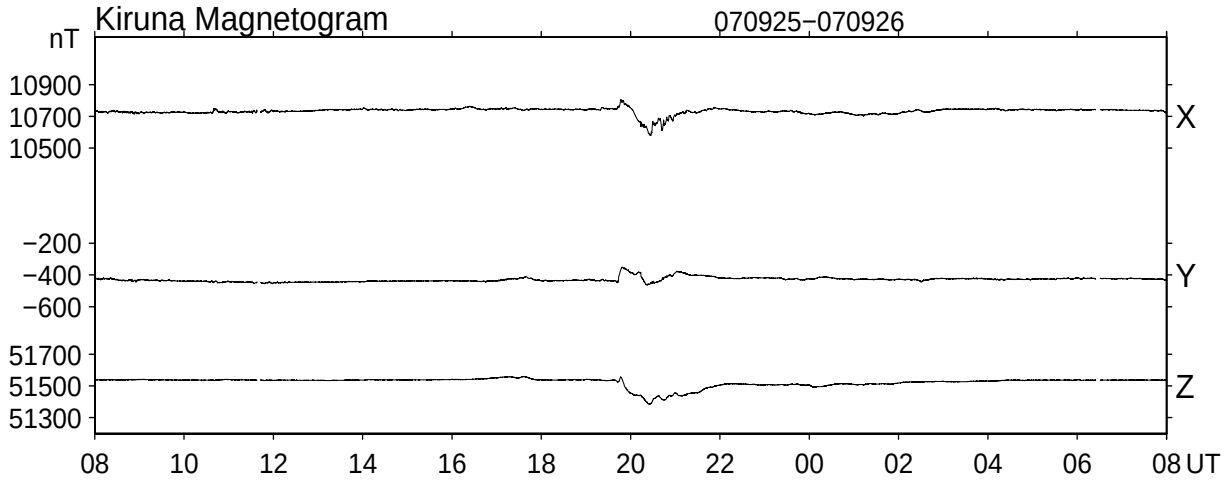

Kiruna Magnetogram
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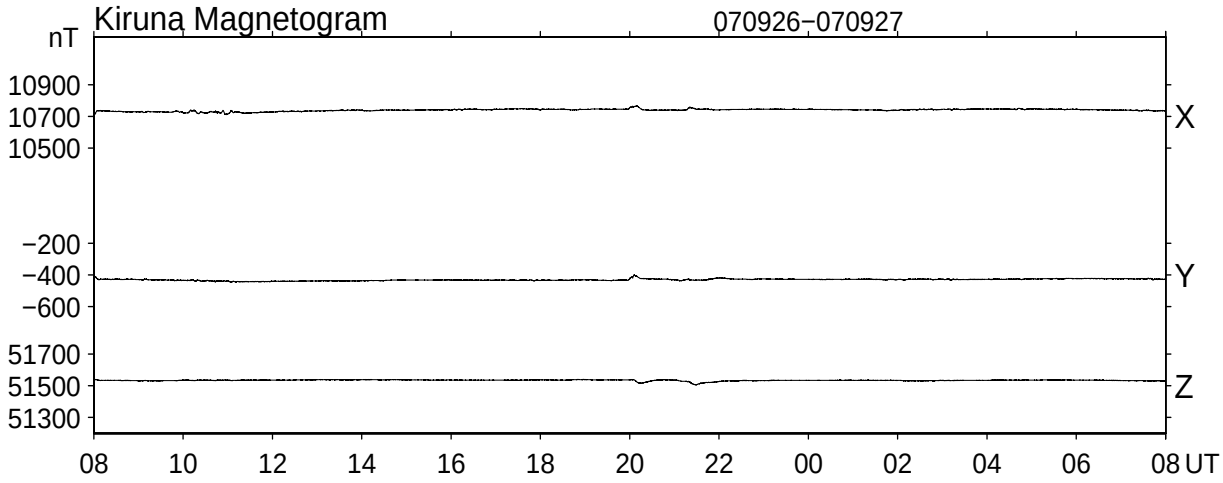

Kiruna Magnetogram
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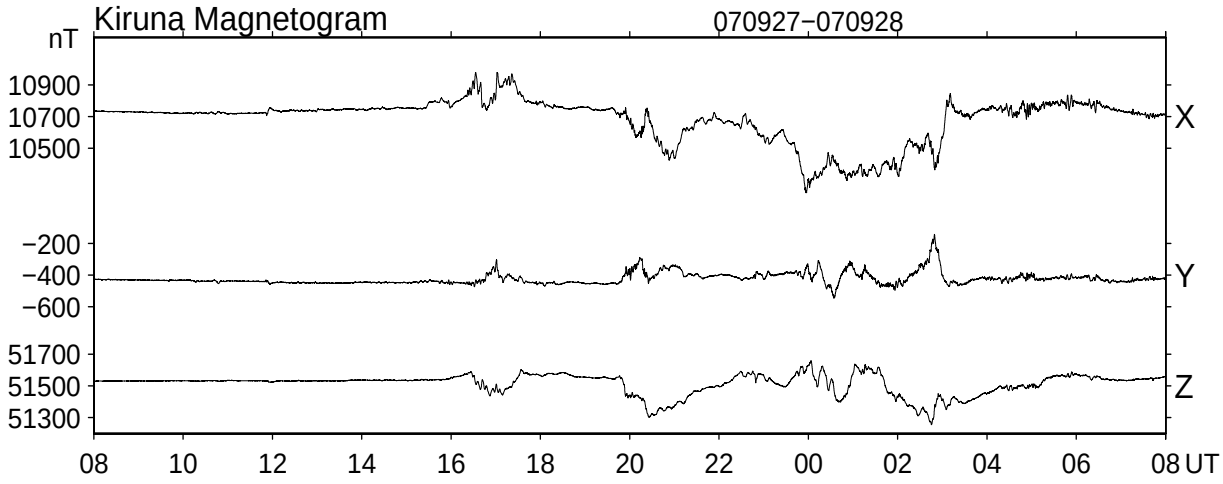

Kiruna Magnetogram
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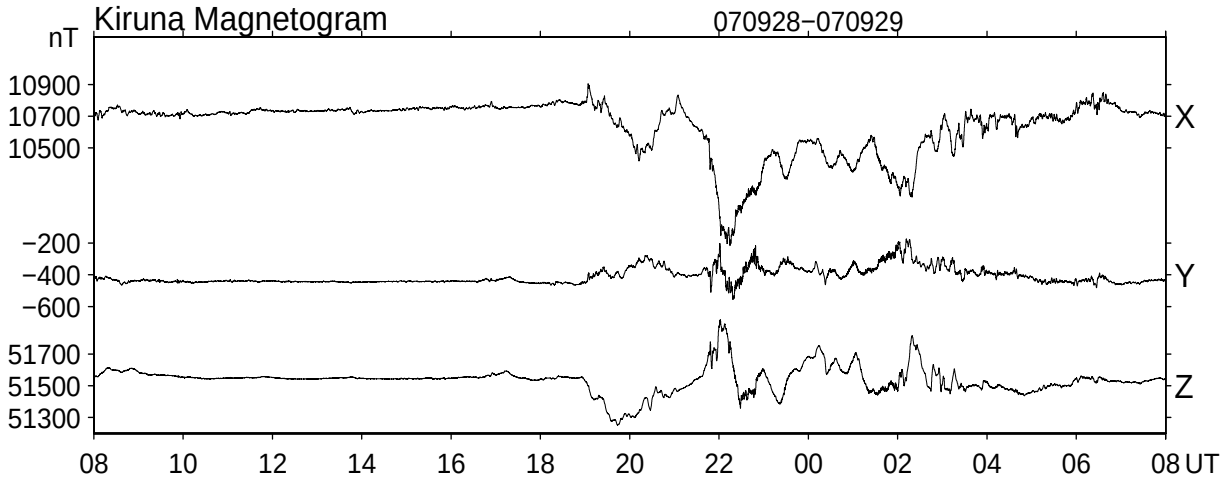

Kiruna Magnetogram
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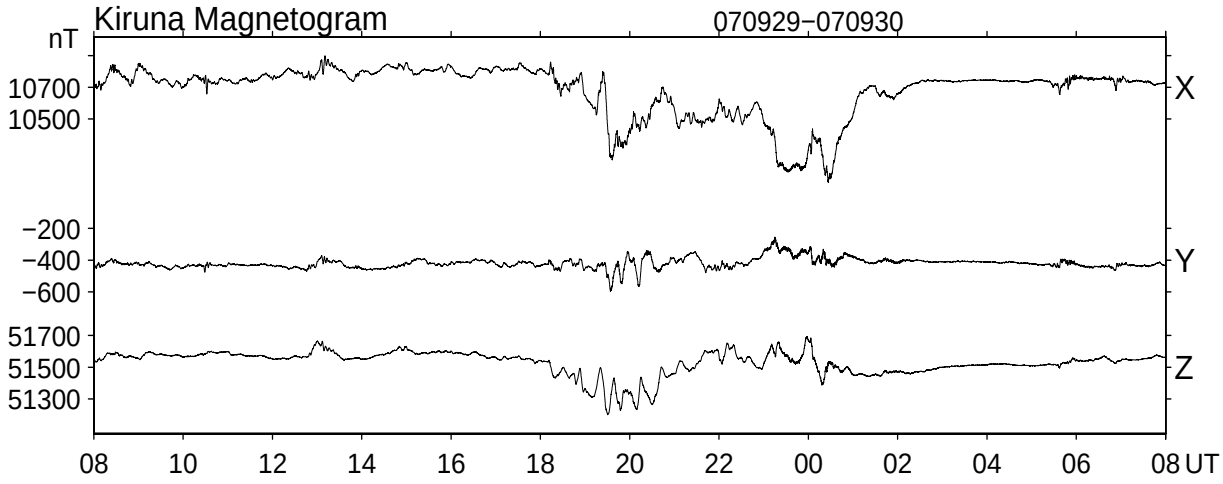

Kiruna Magnetogram
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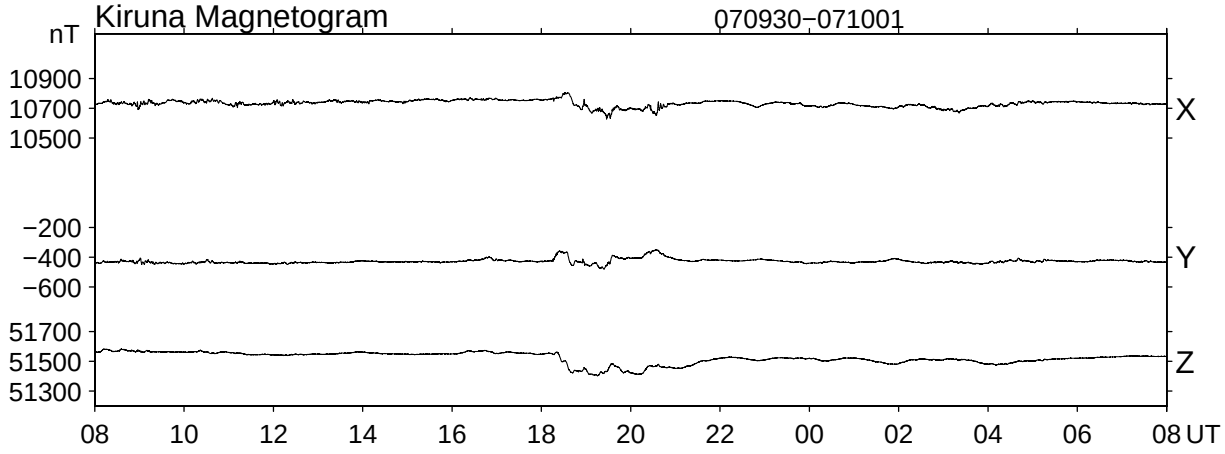

Kiruna Magnetogram
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X
Y
Z
08 10 12 14 16 18 20 22 00 02 04 06 08 UT


Kiruna Magnetogram
070926−070927
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51700
51500
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Kiruna Magnetogram
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Kiruna Magnetogram
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Kiruna Magnetogram
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# KIRUNA VERTICAL RIOMETER

July - September 2007

http://www.irf.se/~rio

Riometer plots are not available in this issue since the riometer had severe technical problems during the period it covers. Riometer plots will appear again from the 2010 January-March issue.




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