RAUNVÍSINDASTOFNUN HÁSKÓLANS
Science Institute, University of Iceland
RH-05-2015

LEIRVOGUR

MAGNETIC RESULTS

2014

REYKJAVÍK 2015

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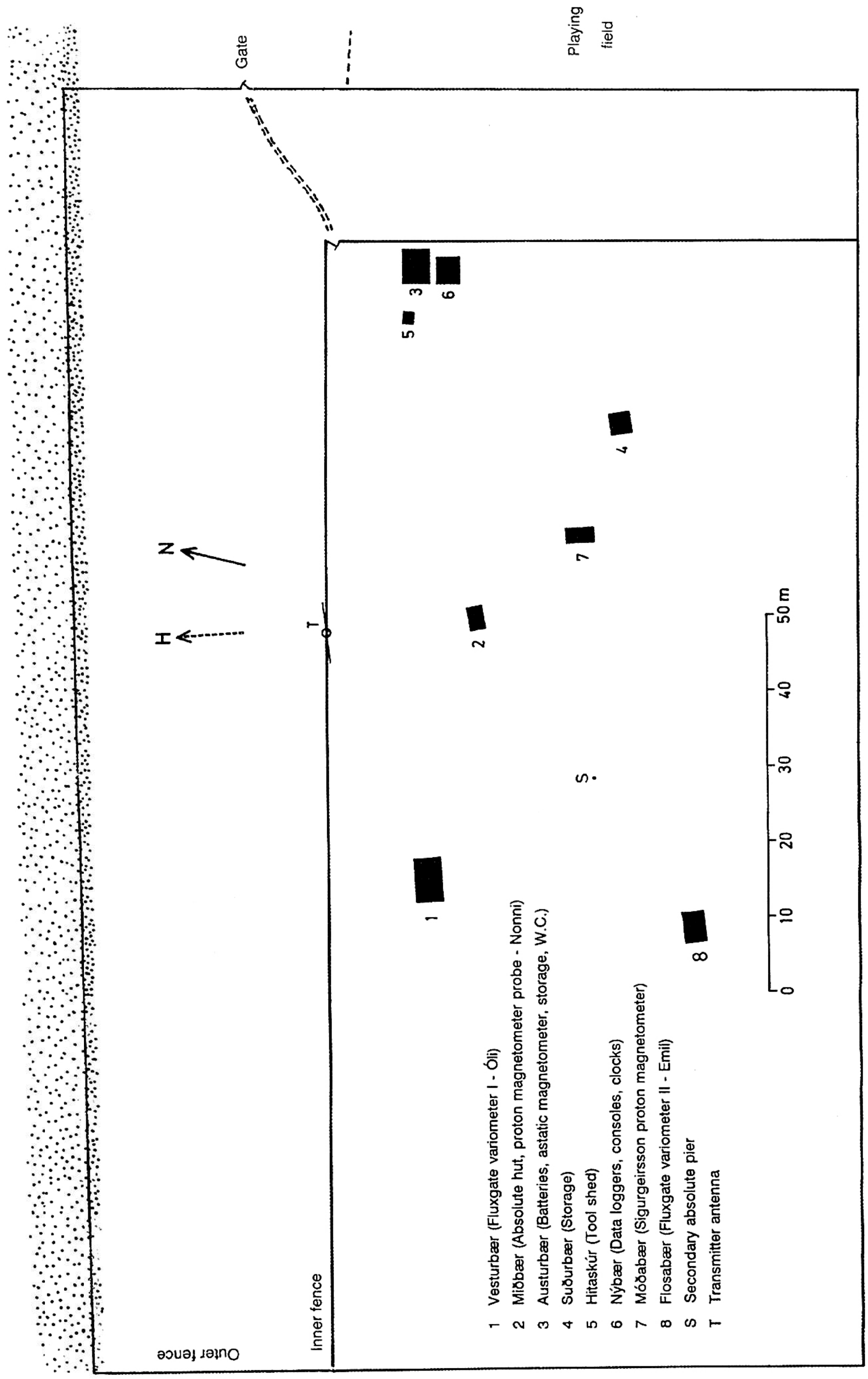
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Outer fence
Inner fence
H
N
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INTRODUCTION

This volume contains the results of geomagnetic measurements carried out at the Leirvogur Magnetic Observatory in Iceland during the year 2014. The observatory, which was established in 1957, is run by the Upper Atmosphere Section of the Science Institute, University of Iceland. A description of the observatory and its development up to 1968 may be found in a report published in 1969. More recent events are covered in the yearbooks.

The observatory is located on a river estuary, 5 m above mean sea level, 12 km ENE of Reykjavík (20 km by road). The geographic coordinates of the observatory's reference point are

$$64°10\rlap{.}'986 \text{ N}, \quad 21°41\rlap{.}'920 \text{ W} \quad (\text{WGS84}).$$

The geomagnetic coordinates relative to a pole position of $79\overset{\circ}{.}4$ N, $71\overset{\circ}{.}7$ W are $69\overset{\circ}{.}4$ N, $71\overset{\circ}{.}8$ E. The McIlwain L-parameter of the observatory in 2014 was approximately 5.4 earth-radii, the corresponding corrected geomagnetic latitude being $64\overset{\circ}{.}5$. The geomagnetic conjugate point at 100 km altitude was at $68\overset{\circ}{.}9$ S, $27\overset{\circ}{.}6$ E geographic, about 480 km from the Japanese Antarctic station Syowa.

PERSONNEL

In 2014, the Upper Atmosphere Section had a staff of two: Gunnlaugur Björnsson, director and Pálmi Ingólfsson, research assistant in a part-time position. Former director Þorsteinn Sæmundsson continued to serve in an advisory capacity. He and Margrét Eva Þórðardóttir, a 2nd year physics student, made absolute measurements on occasions when Gunnlaugur was away.

Kristján Jónsson, an electrical engineer from the Science Institute, helped diagnose and repair faulty cable in Stefnir and battery problems with Steinar, one of the DI-flux electronics. Runólfur Valdimarsson, a retired technician of the Science Institute, overhauled the pump of the proton magnetometer Móði.

Gauti Baldvinsson physics student, visited on September 4. Jón Þóroddur Jónsson visited on December 10.

DEVELOPMENTS

The staff made 74 trips to the observatory in 2014, somewhat more than in a regular year. Most of the additional trips were due to problems with Saxi in May and an extended loss of phone connection in December. A Skoda Fabia belonging to the Upper Atmosphere Section was used for transportation to and from Leirvogur.

The environment

Weather was mild most of the year with minimal snowfalls that did not cause any major problems. The lowest temperature was $-9°C$ in March and in November, and the highest was $+24°C$ in August.

Construction work at the nearby housing project continued at a modest pace. It is unclear when the project will be completed. So far, no major problems have been caused by the new neighbours that have already moved in.

The electrical supply was interrupted briefly on February 12, but no problems were caused.

On December 4, the phone and network connections were lost when a contractor at a nearby road work cut the phone line. The damage to the line was extensive and it was not fully operational again until January. A reserve connection using the mobile network was set up in the interim.

Digital fluxgate systems I and II

Both dataloggers ran perfectly and without a hitch during the entire year. They have now been running uninterrupted for almost three years (system I) and for over seven years (system II), without failure and without a need of a reboot.

On May 28, the thermostat in the variometer house Flosabær, where System II (Emil) is located, was adjusted from winter level (13°C) to summer level (21°C). Readjustment to winter level took place on November 12.

The thermostat in Vesturbær which houses System I (Óli) was adjusted from winter level (13°C) to summer level (20°C) on June 2. Readjustment took place on November 19.

Móði

The proton magnetometer Móði worked without problems during the entire year.

Saxi

The Overhauser magnetometer Saxi (GSM90) worked reliably most of the year. The time-stamp errors that had been noticed occasionally in the previous year started to accumulate and in May it stopped working as the GPS-unit never got a lock on satellites.

GemSys, the company that built the meter, was contacted and they suggested a software update. A couple of these were tested and in the end fixed the problem. The instrument has not lost a single measurement since.

Geó II

The conventional proton magnetometer Geó (G856-AX) was used in the absolute measurements. The setup has worked very well although on several occasions the signal from the probe in Miðbær was too weak to give reliable readings. In those cases Geó was moved to Miðbær and a shorter cable used.

Backup computers

The Linux-computer "Tesla", is solely used for handling the LRV data, for storage and final processing for both systems I and II. It is regularly backed up to an external hard disk. No problems were encountered. Data from both systems I and II are transferred regularly to the Institute.

The Linux-computer "Cygnus" is used at the Science Institute for receiving and storing data from Leirvogur and worked without problems throughout the year.

Real-time displays on the Web

The real-time display of the Leirvogur recordings on the World Wide Web were interrupted for most of December due to loss of phone and network connection. In addition, transmissions at hourly intervals for display at the World Data Centre in Kyoto were occasionally affected due to temporary loss of network connection to the WDC.

Time control

The Network Time Protocol service (*NTP*) is used for timing the data. It is checked regularly against GPS signals. A quartz clock of the type Omegaface that was used earlier for timing the data is kept operating as a reserve. Two clocks are maintained, a main clock and a backup unit. These are corrected by means of GPS signals once a week. This is generally sufficient for keeping the timings correct to within 1 second.

ADSL connection

The ADSL-connection worked without major problems most of the year, except for the period when the phone line was cut in

December. A wireless connection was then set up and used for data transfer until the line was repaired. Backup data are transferred to the Science Institute from systems I and II every 10 minutes.

Software development

Work continued on improving the various data handling routines and procedures. Most of the programs in use are now written in *Python*. The improved procedures for analysis and correction of the raw measurements to provide absolute data are now routinely applied. Both systems are on-line with one second time resolution and semi-automatic data handling.

General maintenance and modifications

Trees and hedges were pruned and fertilizer applied in the spring. Because of the warm weather, tree growth was almost as vigorous as in previous years. During the summer and autumn, the grass around the observatory was cut from time to time with a lawnmower and a brush cutter.

MAGNETOMETERS

The observatory possesses the following instruments:

1. A triaxial fluxgate variometer, "Óli" (Óli II, System I), of the type FGE, version E, from the Danish Meteorological Institute, with suspended sensors. The data logger is an industrial A/D converter connected to a laptop computer running Linux. This is the primary recording instrument at Leirvogur. The sensor elements are oriented in the approximate directions of Z (vertical), H (magnetic north) and D (magnetic east) and a measurement of each component is recorded at 1-second intervals. Data delivery from the logger to the Institute is automatic every 10 minutes and every morning at 02:05.

2. A triaxial fluxgate variometer "Emil" (Emil II, System II), of the type FGE, version K, from the Danish Meteorological Institute, with suspended sensors. The data logger is identical to System I. This system serves as a backup for Óli. All the 1-minute data from this instrument are fully processed. Data delivery to the Institute is automatic every 10 minutes and every morning at 02:05.

3. A triaxial fluxgate variometer, Emil I, of the type FG84C. This instrument was replaced by Emil II on December 18, 2006, but is kept in Flosabær as a reserve unit.

4. A triaxial fluxgate variometer, Óli I, of the same type as Emil I, superseded by Óli II in October 1998.

5. A Sigurgeirsson proton magnetometer (“Móði”) producing an uninterrupted record of the total force F. The precession cycles are counted and 1-minute averages recorded using the data logger serving the fluxgate variometer Emil. The 10-second averages are also recorded.

6. A Gemsys GSM90 Overhauser magnetometer (“Saxi”). This provides a recording of the total force F every three seconds. Data delivery to the Institute is automatic every 10 minutes and every morning at 02:05.

7. A Geometrics G856-AX proton magnetometer (“Geó II”).

8. A Declination-Inclination fluxgate magnetometer (DI-flux, “Stefnir”) based on a Zeiss Jena Theo 010 B theodolite, with electronics from the Auroral Observatory, Tromsø.

9. A second, identical DI-flux instrument, “Stefnir-II”, also with electronics from Tromsø.

10. A portable fluxgate magnetometer (“Ferðaflosi”) made by Fjarskiptatækni for diverse applications.

In addition, the observatory has an astatic magnetometer and access to two portable proton magnetometers, a Barringer GM-122 (“Barri”) and a second Geometrics G856-AX (“Geó I”). These three instruments belong to Dr. Leó Kristjánsson of the Geophysics Division of the Science Institute.

The above list includes only those instruments that are in active use or are kept in reserve.

TIME CONTROL

The *NTP* network service is used to correct the time on the laptop computers. It is typically accurate to within 10 milliseconds. It is checked regularly against a signal from the Global Positioning System (GPS). The older digital fluxgate loggers were controlled by a quartz crystal clock which is adjusted using GPS.

ABSOLUTE MEASUREMENTS

To determine the base-line values for the triaxial fluxgates Óli and Emil, absolute measurements were carried out by means of the proton magnetometers Geó and Saxi and the DI-fluxgate magnetometer Stefnir. Traditionally, these measurements have been made once a week, on Wednesday afternoons, irrespective of the magnetic conditions.

The magnetometer Geó was used for measuring the total intensity (F) on the absolute pier. The crystal oscillator correction for Geó was checked regularly in 2014 and found quite stable, about -0.3 nT.

While measurements with Stefnir are in progress, the proton magnetometer probe must be removed from the absolute pier. Simultaneous measurements of the total field can be made, using data from Saxi. As the probe of Saxi is situated some 15 meters from the absolute pier, a site correction must be applied. Its value is checked by comparison measurements once a week. In 2014, the correction varied between -9.9 nT and -10.6 nT. In June, Móði was back in use because of problems with the GPS on Saxi. It's site correction is also monitored every week and varied between -3.3 and -4.8 nT during the year.

Stefnir measures the declination (D) and the inclination (I) of the geomagnetic field. The theory of the DI-fluxgate has been treated by Kring Lauridsen (Danish Meteorological Institute Geophysical Papers, R-71, 1985). For measurements of declination, the standard measuring scheme at Leirvogur involves four readings with the telescope facing west and four readings with the telescope facing east. For every reading with the telescope in an upright position (with the fluxgate sensor on top) there is a corresponding reading in an inverted position. From such a set of measurements the declination can be derived, along with the collimation angles of the sensor and the zero correction of the sensor output.

For the measurements of inclination, the adopted measuring scheme consists of eight measurements with the telescope oriented in the magnetic meridian and tilted at right angles to the total field vector. Four measurements are made with the telescope pointing south and four with the telescope pointing north. All readings are made with the telescope in the same (upright) position. In each case the total field is measured simultaneously. By combining the values of inclination and total intensity, both the vertical and horizontal intensities can be calculated.

BASE LINES

Digital Fluxgate I (Óli)

The base-line values derived from the absolute measurements are shown in graphic form on page 21. Individual measurements are indicated by squares. The solid lines which shift in steps are the adopted base-line values Z_0, H_0 and D_0, the definition of which will be given below.

The method used to derive Z, H, and D from the observed fluxgate readings will now be described. The first step occurs in the logging program where the raw values are multiplied by 0.16 to make the output unit correspond to 1 nT. Fixed constants are then added to give suitable base levels. For the electronics installed in 2002, these constants are 47804 nT for Z, 10166 nT for H and 2199 nT for D (see yearbooks 2002, p. 14 and 2012, p. 12). The resulting outputs are the "observed" readings Z_1, H_1 and D_1. These readings are then corrected as follows (in units of nanotesla):

$$\begin{pmatrix} Z_2 \\ H_2 \\ D_2 \end{pmatrix} = \begin{pmatrix} 138 \\ 38 \\ -200 \end{pmatrix} + \begin{pmatrix} 1-3\epsilon & \epsilon & 0 \\ 0 & 1-3\epsilon & -\epsilon \\ 0 & 0 & 1-3\epsilon \end{pmatrix} \begin{pmatrix} Z_1 \\ H_1 \\ D_1 \end{pmatrix}$$

where $\epsilon = 0.001$. These corrections allow for the sensors' departure from orthogonality, found by rotating the instrument under controlled conditions. The fact that the scale values depart slightly from unity is also allowed for. The additive constants are adjusted to make the horizontal component similar to that in the absolute hut, Miðbær, both in size and direction.

The formulae giving the field in the absolute hut are then

$$\begin{aligned} Z &= Z_0 + Z_2 \\ H &= H_0 + \sqrt{H_2^2 + D_2^2} \\ D &= D_0 + \arctan\left(D_2/H_2\right) \end{aligned}$$

where Z_0, H_0, and D_0 are the base-line values. The adopted base-line values for 2014 were as follows:

Vertical intensity (Z_0):

		nT
Jan 1	– Jan 5	-2.0
Jan 6	– Jan 18	-1.5
Jan 19	– Feb 8	-2.0
Feb 9	– Feb 22	-1.5
Feb 23	– Mar 8	-2.0
Mar 9	– Apr 5	-1.5
Apr 6	– Jun 2 (11:30)	-2.0
Jun 2	– Jun 2 (14:00)	-1.5
Jun 2	– Jul 5	-1.0
Jul 6	– Aug 2	-1.5
Aug 3	– Oct 10	-1.0
Oct 11	– Nov 19 (18:20)	-0.5
Nov 19	– Nov 19 (21:40)	-1.0
Nov 19	– Nov 19 (24:00)	-1.5
Nov 20	– Dec 31	-2.0

Horizontal intensity (H_0):

		nT
Jan 1	– Jan 5	-7.5
Jan 6	– Jan 18	-8.0
Jan 19	– Feb 22	-7.5
Feb 23	– Jun 2 (11:30)	-8.0
Jun 2	– Jun 2 (12:20)	-7.5
Jun 2	– Jun 2 (14:00)	-7.0
Jun 2	– Jun 2 (15:00)	-6.5
Jun 2	– Jun 2 (16:00)	-6.0
Jun 2	– Jul 5	-5.5
Jul 6	– Sep 7	-5.0
Sep 8	– Nov 19 (15:00)	-5.5
Nov 19	– Nov 19 (18:20)	-6.0
Nov 19	– Nov 19 (21:40)	-6.5
Nov 19	– Nov 19 (24:00)	-7.0
Nov 20	– Dec 31	-7.5

Declination (D_0):

Jan 1	– Jan 5	$346° 24.'2$
Jan 6	– Jan 18	$346° 24.'1$
Jan 19	– Jan 31	$346° 24.'2$
Feb 1	– Mar 1	$346° 24.'1$
Mar 2	– Mar 8	$346° 24.'2$
Mar 9	– Apr 5	$346° 24.'1$
Apr 9	– Apr 28	$346° 24.'2$
Apr 29	– May 10	$346° 24.'3$
May 11	– Jun 2 (11:30)	$346° 24.'2$
Jun 2	– Jun 2 (14:00)	$346° 24.'1$
Jun 2	– Jun 21	$346° 24.'0$
Jun 22	– Jun 30	$346° 24.'1$
Jul 1	– Jul 27	$346° 24.'0$
Jul 28	– Sep 7	$346° 24.'1$
Sep 8	– Sep 20	$346° 24.'0$
Sep 21	– Oct 10	$346° 23.'9$
Oct 11	– Nov 19 (18:20)	$346° 24.'0$
Nov 19	– Nov 19 (21:40)	$346° 24.'1$
Nov 19	– Nov 19 (24:00)	$346° 24.'2$
Nov 20	– Dec 19	$346° 24.'3$
Dec 20	– Dec 31	$346° 24.'4$

The changes in base lines on June 2 and November 19 were caused by adjustments of the thermostat in the variometer building Vesturbær. The temperature coefficient is about 0.25 nT/°C for Z and 0.4 nT/°C for H and D.

Scale values. The scale values of Óli are close to unity (1 nT/unit). This was confirmed by indirect tests in 1998 (see yearbook p. 18). The tests have not been repeated since a new electronic unit was installed in October 2002. The intrinsic sensitivity of the instrument is actually higher by a factor of 6.25 but is reduced by inserting a suitable term in the program of the logging computer as explained above.

Digital fluxgate II (Emil)

The base-line values derived from the absolute measurements are shown graphically on page 22. The fluxgate being nearly identical to System I, the data are now handled in the same way as the data for that system. The constants added to the output values are determined in the same fashion as for System I. They are 50204 nT for Z, 12640 nT for H and 39 nT for D. The "observed" readings Z_1, H_1 and D_1, are corrected as follows (in units of nanotesla):

$$\begin{pmatrix} Z_2 \\ H_2 \\ D_2 \end{pmatrix} = \begin{pmatrix} 0 \\ 0 \\ -200 \end{pmatrix} + \begin{pmatrix} 1 & 0 & \epsilon \\ 0 & 1 & -\epsilon \\ 0 & 0 & 1 \end{pmatrix} \begin{pmatrix} Z_1 \\ H_1 \\ D_1 \end{pmatrix}$$

where $\epsilon = 0.001$. Note that due to better alignment of this instrument, most of the correction coefficients are zero. The adopted base-line values for 2014 were as follows:

Vertical intensity (Z_0):

		nT
Jan 1	– Jan 11	-0.5
Jan 12	– Feb 8	0.0
Feb 9	– Mar 8	-0.5
Mar 9	– Apr 5	0.0
Apr 6	– May 31	-0.5
Jun 1	– Aug 2	-2.0
Aug 3	– Sep 20	-2.5
Sep 21	– Nov 12 (12:00)	-2.0
Nov 12	– Nov 12 (16:00)	-1.5
Nov 12	– Nov 12 (24:00)	-1.0
Nov 13	– Dec 6	-0.5
Dec 7	– Dec 31	-1.0

Horizontal intensity (H_0):

		nT
Jan 1	– Jan 11	-9.5
Jan 12	– Jan 18	-10.0
Jan 19	– Mar 8	-9.5
Mar 9	– Apr 13	-10.0
Apr 14	– Apr 19	-9.5
Apr 20	– May 31	-10.0
Jun 1	– Jul 5	-12.5
Jul 6	– Aug 23	-12.0
Aug 24	– Sep 7	-11.5

		nT
Sep 8	– Oct 25	-12.0
Oct 26	– Nov 12 (12:00)	-12.5
Nov 12	– Nov 12 (14:00)	-12.0
Nov 12	– Nov 12 (16:00)	-11.5
Nov 12	– Nov 12 (18:00)	-11.0
Nov 12	– Nov 12 (20:00)	-10.5
Nov 12	– Nov 12 (24:00)	-10.0
Nov 13	– Dec 26	-9.5
Dec 27	– Dec 31	-9.0

Declination (D_0):

Jan 1	– Jan 11	$346°\ 20.'4$
Jan 12	– May 31	$346°\ 20.'3$
Jun 1	– Jul 5	$346°\ 20.'0$
Jul 6	– Aug 16	$346°\ 20.'1$
Aug 17	– Sep 7	$346°\ 20.'2$
Sep 8	– Oct 11	$346°\ 20.'1$
Oct 12	– Dec 6	$346°\ 20.'2$
Dec 7	– Dec 31	$346°\ 20.'3$

The steps in the base lines on June 1 and November 12 were caused by adjustments of the thermostat in the variometer house. The temperature coefficients are approximately 0.1 nT/°C for Z, 0.2 nT/°C for H and less than 0.2 nT/°C for D.

ONE-MINUTE MEANS

Calculations of 1-minute means of Z, H, and D are based on measurements with the triaxial fluxgate variometers, chiefly system I (Óli). The magnetometers measure at 1-second intervals.

The 1-minute means of F are calculated from the 3-second readings of Saxi, giving 20 measurements each minute. A site reduction is needed because the probe of Saxi is some distance away from the observatory reference pier as mentioned earlier. The value of δF is found by comparing the signal from Saxi with that from the proton magnetometer Geó, the probe of which is situated on the pier. This comparison is made once a week.

Due to problems with Saxi in June, Móði was back in use for the entire month. As Móði is now a backup instrument he corresponding δF is also monitored by weekly comparisons with Geó.

The adopted values of δF in 2014 were as follows:

		δF (nT)
Jan 1	– Jan 5	-10.4
Jan 6	– Jan 25	-10.2
Jan 26	– Feb 8	-10.3
Feb 9	– Mar 1	-10.1
Mar 1	– Mar 8	-10.3
Mar 9	– Apr 5	-10.2
Apr 6	– Apr 13	-10.3
Apr 14	– Apr 28	-10.2
Apr 29	– May 31	-10.3
Jun 1	– Jun 14	- 3.7
Jun 15	– Jun 30	- 3.9
Jul 1	– Jul 13	-10.3
Jul 14	– Jul 27	-10.4
Jul 28	– Aug 2	-10.3
Aug 3	– Aug 9	-10.2
Aug 10	– Aug 23	-10.0
Aug 24	– Sep 7	-10.2
Sep 8	– Sep 20	-10.4
Sep 21	– Oct 4	-10.2
Oct 5	– Nov 8	-10.3
Nov 9	– Dec 31	-10.2

All 1-minute data were checked visually in graphic form on a computer screen. The 1-minute values of Z and H were also checked by comparing them with the 1-minute values of F. The expression

$$M = \sqrt{Z^2 + H^2} - F,$$

was evaluated for this purpose. The mean value of M over the year was 0.096 nT. Most of the values (99.83%) were in the range -1 to $+1$ nT, 0.12% reached ± 2 nT, and there were 249 cases of a higher value.

Non-zero values of M may be explained by a combination of several factors. To begin with, the field values of Z and H are only recorded to the nearest nanotesla. The base-line values are rounded to the nearest 0.5 nT. Finally, the fluxgate sensors are sampled at discrete intervals. All these factors can cause M to depart from zero, especially during magnetic storms.

In 2014, the 1-minute data for Z, H and D were complete. The gaps in Saxi data were numerous as mentioned earlier, however as Móði now serves as a backup, there were only 17 gaps in the F data or 0.003%.

HOURLY MEANS

The hourly mean values of the magnetic elements Z, H, D and F were found by averaging the 1-minute means from the fluxgate variometers and the Overhauser magnetometer Saxi, and Móði in June.

The hourly means of Z and H were checked by comparing them with the hourly means of F and tabulating the difference M (see above). In 2014, individual rounded values of the difference rarely exceeded 1 nT.

K-INDICES

K-indices were derived from the digital 1-minute values by a straightforward measurement of the 3-hour ranges of H and D, as explained in the yearbook for 1993.

MAGNETIC ACTIVITY

As measured by Ak, the magnetic activity in 2014 was among the lowest on record at Leirvogur and there were no highly disturbed days. The most significant disturbances occurred on the following days:

Date	*K-sum*	*C9*	*L9*
Feb 19-20	(40,37)	(7,6)	(6,6)
Jun 8	(38)	(6)	(5)

These and other disturbances are displayed in the graphical records on pages 32–123. The index L9 was explained in the yearbook for 1998.

The index K reached the extreme value 9 only twice in 2014, and the value 8 six times. The year was among the more quiet ones at Leirvogur as is evident from the tables on pages 29 and 30.

COMPUTER PROGRAMS

Approximately 40 programs are used for data handling and processing. Most are in Python, one in C and ten in GNU-awk and Linux command scripts.

DATA DISTRIBUTION

Magnetic results from Leirvogur are sent to two data centres: WDC-C2 in Kyoto and WDC-A in Boulder. The data are transmitted over the Internet. Preliminary 10-second data are sent daily to Kyoto where they are displayed graphically on the World Wide Web. The address is:

http://wdc.kugi.kyoto-u.ac.jp/

Preliminary values of Z, H and D are sent every hour to Kyoto, to be displayed graphically on the World Wide Web, and also made available at the above address. The same preliminary data are also placed in graphical form on the Leirvogur website: *http://www.raunvis.hi.is/∼halo/leirvogur.html*. The data on this site cover the last 24 hours and are renewed every 10 minutes. Final 10-second values are sent to Kyoto after the end of each month along with the 1-minute means, hourly means, monthly means and K-indices. The 1-minute means and hourly means are converted from a special Leirvogur format to WDC format before transmission. Monthly transmissions to Boulder are restricted to 1-minute means and hourly means.

Both preliminary and final data are available over the Internet by ftp-transfer. The address is *ftp.raunvis.hi.is* logging in as "anonymous". The files are kept in the directory "pub/lrv". The annual means are sent to WDC-C2 in Kyoto, WDC-C1 in Edinburgh and the Analytical Centre on Secular Variations in Troitsk (IZMIRAN). The annual means are accessible by *ftp* at the above address under the file name ANNMEANS.LRV. Also kept in the same location is the file ADQMEANS.LRV which contains an extended list of annual means, including disturbed-day and quiet-day means.

FIELD STATION OBSERVATIONS

In 2014, observations were made at one field station, Húsey, at $65°38'\!.630$ N, $14°16'\!.554$ W. The above coordinates were measured with a GPS receiver and refer to WGS84. The observations were made on July 31 under magnetically quiet conditions. The DI-flux instrument Stefnir II and the proton magnetometer Geó-II were used to measure the magnetic field components. Three series of measurements were made with Stefnir II, and four with Geó. The result are as follows:

Húsey minus Leirvogur

	dF	dZ	dH	dD
2014	+397	+425	-19	$-10'\!.2$
2007	+345	+349	+39	$-0'\!.3$

The units of F, Z and H are nanoteslas. As can be seen from the graph on page 20, the results are in conformity with a previously established trend.

November 2015

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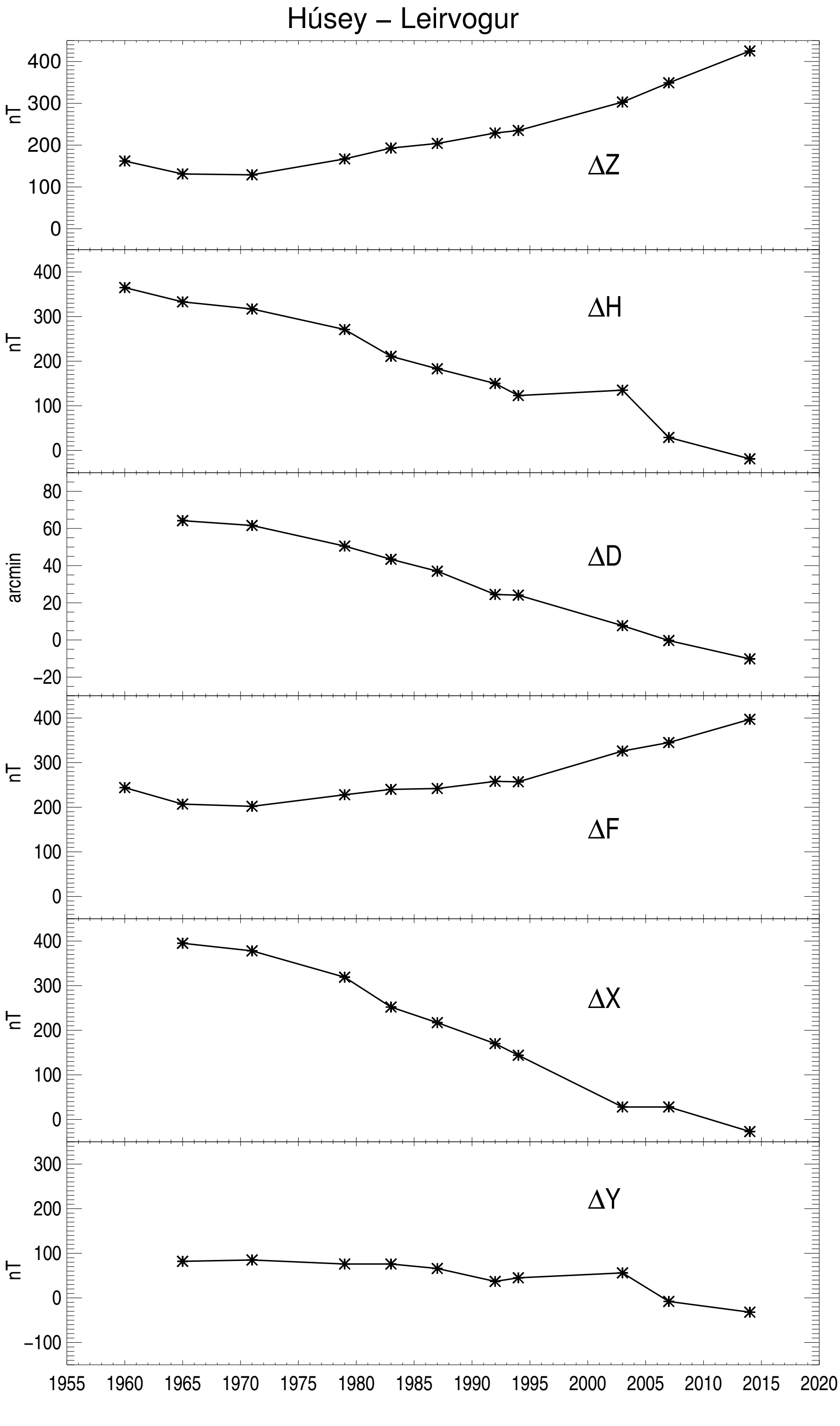
Húsey – Leirvogur
ΔZ
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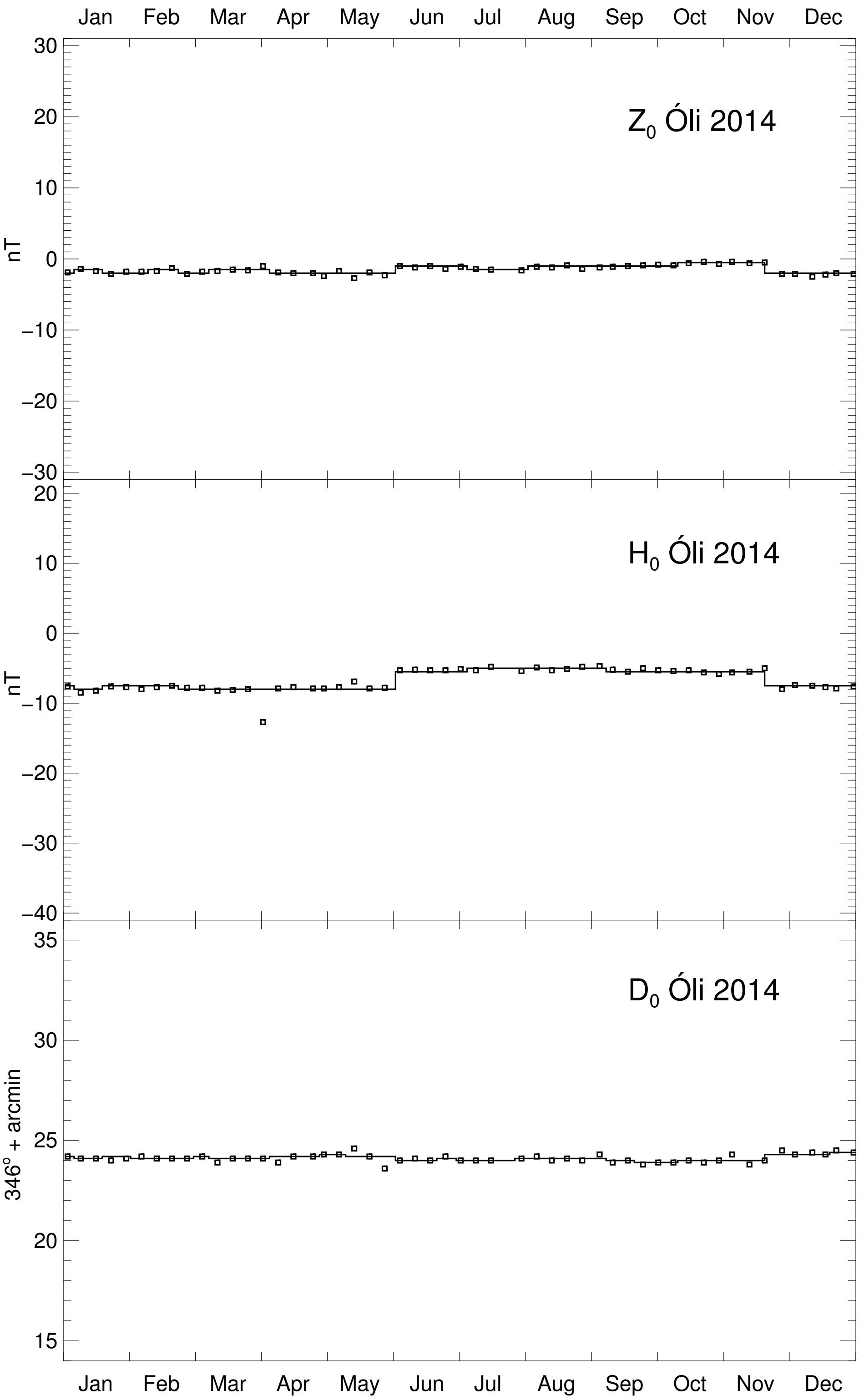

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Z0 Óli 2014
H0 Óli 2014
D0 Óli 2014
nT
nT
346° + arcmin
30
20
10
0
−10
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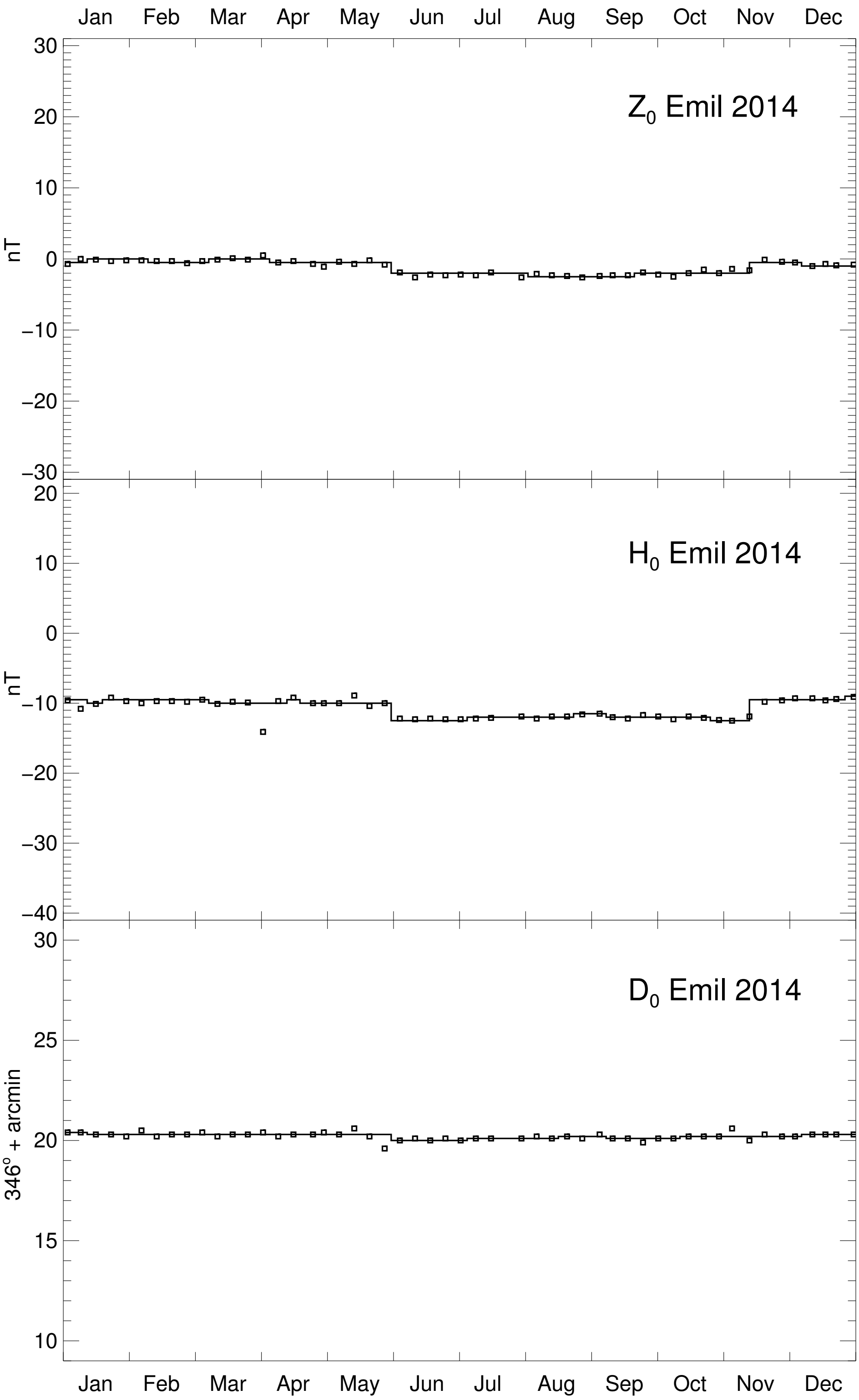
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30
20
10
0
−10
−20
−30
H_0 Emil 2014
nT
20
10
0
−10
−20
−30
−40
D_0 Emil 2014
346° + arcmin
30
25
20
15
10

EXPLANATION OF TABLES

Monthly and annual means

In the table of monthly means on the following page, the declination is reckoned towards the east from 0 to 360 degrees. Thus $347°$ corresponds to $13°$ W. The letters Q and D mark the international quiet and disturbed days, respectively. The days were selected according to circulars from the International Service of Geomagnetic Indices in Potsdam.

Annual means (all days) since 1958 are given on pages 124-126.

Diurnal variations

The tables on pages 25-26 show the mean diurnal inequalities of the magnetic elements Z, H, D and F at Leirvogur in 2014. The units are nanoteslas (for Z, H and F) or tenths of a minute (for D). The top row in each group of four gives the mean of all months of the year, while the other rows show the mean for the winter months (W = January, February, November, December), the equinoctial months (E = March, April, September, and October) and summer months (S = May, June, July and August).

The averages for the international quiet and disturbed days are shown separately and are identified by Q or D as a second letter.

The last three columns give the positions of the minimum and the maximum values in each row, and the range. In cases where there are two or more extreme values of equal size, the number 99 is printed.

K-indices

The three-hourly K-indices, based on the components H and D, are shown in tabular form on page 27. The daily K-sums are shown on page 28 in runs of 27 days. The table on page 29 shows the distribution of K-indices for each month of the year. The columns give the number of cases when $K = 0$, $K = 1$ etc. The column marked "–" shows how many indices are missing owing to breaks in the record. The final columns give the average values of K and the equivalent amplitudes Ak. A summary for all years since 1958 is given on page 30.

LEIRVOGUR 2014
MEAN VALUES OF THE MAGNETIC ELEMENTS

VERTICAL INTENSITY (Z) IS 50000 PLUS TABULAR VALUES IN NANOTESLAS
HORIZONTAL INTENSITY (H) IS 12000 PLUS TABULAR VALUES IN NANOTESLAS
DECLINATION (D) IS 347 DEGREES PLUS TABULAR VALUES IN TENTH-MINUTES
TOTAL INTENSITY (F) IS 51000 PLUS TABULAR VALUES IN NANOTESLAS
Q=QUIET DAYS, D=DISTURBED DAYS

	Z	ZQ	ZD	H	HQ	HD	D	DQ	DD	F	FQ	FD
JAN	210	210	211	669	674	665	338	338	337	784	785	784
FEB	216	215	211	661	672	621	349	351	367	787	789	773
MAR	213	212	208	668	671	656	364	362	379	786	786	778
APR	214	214	214	665	671	629	381	381	392	787	788	778
MAY	210	209	209	678	682	660	394	392	405	786	785	781
JUN	205	209	199	680	684	665	410	407	421	782	786	772
JUL	204	206	206	687	685	687	421	420	419	782	784	784
AUG	206	207	200	678	682	677	439	441	449	782	784	776
SEP	218	219	231	665	670	647	455	449	466	791	792	799
OCT	217	216	220	666	676	679	462	457	458	790	791	796
NOV	223	221	222	678	682	669	475	472	479	798	797	795
DEC	223	225	223	681	677	669	486	493	496	799	800	796
MEAN	213	214	213	673	677	660	414	414	422	788	789	784

LEIRVOGUR 2014

MEAN DIURNAL INEQUALITIES

UT 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	MIN	MAX	RANGE
Z	-19	-23	-24	-21	-18	-15	-17	-14	-10	-7	-4	0	5	10	16	24	30	31	28	22	15	6	-2	-12	3.	18.	54
ZW	-18	-24	-20	-15	-13	-10	-15	-11	-7	-3	-1	1	4	8	13	18	21	22	23	17	14	7	-3	-14	2.	19.	46
ZE	-24	-24	-28	-25	-22	-20	-18	-16	-14	-10	-5	0	6	13	21	32	36	37	33	26	18	5	-3	-14	3.	18.	65
ZS	-17	-22	-24	-22	-19	-16	-19	-15	-11	-9	-5	0	4	9	15	24	32	33	29	24	14	6	-2	-8	3.	18.	56
ZQ	-10	-12	-13	-11	-8	-3	-2	-3	-4	-4	-4	-3	-1	2	6	10	14	14	12	9	6	4	1	-3	3.	17.	26
ZQW	-9	-10	-12	-10	-7	0	0	-3	-3	-2	-2	-3	-2	1	4	7	8	8	8	6	6	5	4	1	3.	99.	20
ZQE	-12	-10	-10	-10	-8	-6	-5	-6	-5	-5	-4	-3	-2	2	8	14	18	17	13	8	6	4	1	-6	1.	17.	30
ZQS	-9	-17	-17	-12	-8	-4	-2	-2	-3	-5	-5	-3	0	2	7	11	15	16	15	12	7	3	-2	-5	3.	18.	33
ZD	-31	-22	-16	-13	-15	-22	-48	-33	-24	-15	-4	7	14	22	31	45	52	41	33	21	10	-3	-12	-19	7.	17.	100
ZDW	-36	-36	-12	-11	-11	-14	-49	-28	-15	-3	3	12	17	24	32	40	44	29	31	16	9	-5	-17	-23	7.	17.	92
ZDE	-42	-17	-23	-19	-22	-34	-40	-34	-33	-26	-9	3	14	26	39	59	62	50	39	23	15	2	-10	-21	1.	17.	103
ZDS	-14	-13	-12	-10	-13	-19	-56	-38	-26	-17	-5	6	12	17	22	35	50	44	31	23	6	-7	-8	-14	7.	17.	106
H	-31	-44	-41	-31	-28	-19	-9	-1	1	-4	-10	-14	-13	-7	3	18	31	41	46	49	42	28	9	-14	2.	20.	93
HW	-28	-40	-33	-23	-26	-23	-10	1	7	5	1	-4	-6	-3	3	12	20	26	34	40	36	28	8	-17	2.	20.	80
HE	-43	-59	-56	-42	-25	-12	0	4	5	-1	-8	-14	-15	-7	5	24	39	49	50	49	42	24	6	-17	2.	19.	108
HS	-23	-34	-35	-30	-31	-23	-17	-9	-10	-16	-22	-24	-20	-12	1	19	36	50	55	58	49	31	13	-7	3.	20.	93
HQ	-7	-3	-2	-3	-1	3	4	2	-1	-7	-14	-20	-23	-19	-12	-3	6	11	15	17	17	15	12	10	13.	21.	39
HQW	-8	-5	-6	-4	-5	3	4	5	6	3	-2	-7	-11	-11	-9	-3	1	4	7	8	8	8	8	9	13.	24.	19
HQE	-14	0	3	-2	4	7	7	6	3	-5	-15	-22	-27	-24	-17	-5	4	8	13	14	20	18	14	8	13.	21.	46
HQS	2	-4	-4	-3	-2	1	0	-4	-11	-19	-26	-29	-29	-23	-11	1	14	22	27	28	25	21	16	13	13.	20.	57
HD	-73	-113	-104	-84	-95	-84	-47	-14	3	4	3	2	7	18	36	66	97	110	100	99	78	41	-4	-47	2.	18.	223
HDW	-67	-99	-68	-70	-96	-101	-58	-11	15	18	14	9	16	21	32	52	66	77	73	83	72	56	1	-37	6.	20.	183
HDE	-97	-160	-154	-115	-103	-70	-19	-9	3	1	5	4	12	30	49	83	127	138	115	100	76	34	-4	-45	2.	18.	298
HDS	-57	-79	-90	-68	-86	-81	-65	-24	-9	-7	-10	-7	-5	3	27	63	99	116	113	113	87	32	-9	-61	3.	18.	205

LEIRVOGUR 2014

MEAN DIURNAL INEQUALITIES

UT	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	MIN	MAX	RANGE
D		20	30	33	37	51	56	57	53	48	41	26	2	-29	-56	-74	-76	-64	-51	-40	-30	-21	-16	-5	7	16.	7.	132
DW		33	39	26	32	38	36	34	22	16	13	11	1	-19	-37	-51	-56	-51	-44	-38	-28	-13	-6	14	24	16.	2.	95
DE		24	39	53	47	59	54	49	47	46	41	24	-3	-36	-66	-85	-86	-68	-48	-33	-22	-20	-19	-8	9	16.	5.	144
DS		2	13	22	32	56	77	87	88	84	69	44	8	-32	-66	-85	-85	-74	-62	-51	-41	-29	-24	-22	-11	99.	8.	173
DQ		12	9	11	16	23	31	41	46	49	47	36	13	-16	-44	-59	-60	-50	-37	-26	-18	-14	-9	-5	2	16.	9.	108
DQW		24	15	14	16	17	15	16	16	15	18	17	6	-12	-30	-39	-40	-34	-29	-21	-11	-6	3	9	18	16.	1.	63
DQE		19	13	13	19	23	29	37	44	50	51	40	17	-11	-41	-65	-67	-56	-35	-23	-17	-16	-14	-11	2	16.	10.	117
DQS		-7	-2	7	14	28	49	70	79	81	73	50	16	-25	-60	-75	-73	-61	-46	-34	-24	-19	-15	-14	-15	15.	9.	156
DD		32	57	70	79	120	106	87	58	43	31	12	-16	-48	-76	-94	-98	-80	-75	-72	-59	-39	-36	-14	8	16.	5.	217
DDW		47	80	35	66	94	84	60	23	2	-5	-1	-17	-42	-59	-80	-83	-69	-61	-51	-48	-16	-6	28	20	16.	5.	177
DDE		38	67	128	100	143	99	65	54	40	35	2	-23	-54	-85	-104	-113	-81	-76	-69	-44	-45	-52	-28	2	16.	5.	255
DDS		13	24	48	70	123	136	138	99	87	64	35	-7	-49	-84	-99	-97	-88	-90	-96	-85	-56	-51	-41	3	15.	7.	237
F		-26	-33	-33	-28	-24	-19	-19	-14	-10	-8	-6	-3	1	7	16	28	37	40	39	33	25	13	0	-15	3.	18.	73
FW		-24	-32	-27	-20	-19	-15	-17	-10	-5	-1	-1	0	3	7	13	20	26	28	31	26	22	14	-1	-18	2.	19.	63
FE		-34	-38	-41	-34	-28	-22	-18	-15	-13	-11	-8	-4	2	11	21	36	45	48	44	37	27	11	-1	-18	3.	18.	88
FS		-22	-29	-32	-29	-26	-22	-23	-17	-13	-12	-10	-6	-1	5	15	27	40	44	42	37	26	14	2	-10	3.	18.	75
FQ		-11	-12	-13	-11	-7	-2	-1	-3	-4	-5	-7	-8	-7	-3	3	10	15	16	15	13	10	7	4	-1	3.	18.	29
FQW		-10	-10	-13	-11	-8	1	1	-2	-2	-1	-2	-4	-5	-1	1	6	8	9	10	8	7	6	5	3	3.	19.	22
FQE		-15	-10	-9	-11	-6	-5	-4	-4	-4	-5	-8	-9	-9	-4	3	12	18	18	15	11	11	8	5	-3	1.	99.	33
FQS		-9	-17	-18	-12	-8	-3	-2	-2	-5	-9	-11	-10	-8	-3	4	10	18	21	21	19	13	8	2	-1	3.	19.	38
FD		-48	-48	-40	-33	-38	-42	-59	-36	-23	-13	-3	7	16	26	39	60	74	67	57	44	29	7	-12	-30	7.	17.	132
FDW		-52	-59	-28	-27	-34	-38	-62	-30	-10	2	7	14	21	28	39	52	59	47	48	36	26	9	-17	-31	7.	17.	120
FDE		-64	-55	-60	-47	-46	-50	-44	-35	-32	-25	-7	4	16	32	49	77	91	82	66	46	33	10	-11	-32	1.	17.	155
FDS		-27	-32	-34	-27	-34	-38	-71	-43	-27	-17	-8	4	11	17	28	50	73	71	58	50	27	2	-9	-29	7.	17.	143

LEIRVOGUR MAGNETIC OBSERVATORY 2014
K-INDICES FOR THREE HOUR INTERVALS IN U.T.
LOWER LIMIT FOR K-9 = 1500 NANOTESLAS IN H

DAYS	K-INDICES						
1- 7	22233334	66433355	52322240	01122121	01101000	00011012	12011226
8- 14	66121112	35221032	43011100	00010031	01111135	34211100	62113223
15- 21	21100101	10100000	10001102	10000000	00000000	00001010	40122231
22- 28	33332113	32211112	42011100	43112115	54211113	01011102	00011123
29- 35	22212212	24011100	00011100	00011134	22112101	22222113	41111100
36- 42	00002102	35322311	10100225	56522468	65423556	43222145	32110115
43- 49	52222212	00011000	00011100	00002226	84312453	32011125	30112246
50- 56	79844323	38844334	53333235	65432323	42323566	31122210	00011103
57- 63	40011111	12023575	54321321	42322224	61112100	54322112	32022215
64- 70	10122224	20112231	00112211	20012111	20022101	10122211	00012212
71- 77	21022214	66322220	12212210	41011111	01011000	00022124	21112320
78- 84	31022211	21232223	34332311	10122211	10222222	20222211	10122136
85- 91	52421220	00122320	00222234	54121202	30122210	01133430	00223323
92- 98	00122311	11122222	12122320	11233336	31121202	52123323	22122110
99-105	00122220	00122110	01223346	76554334	65533334	32321234	34122222
106-112	01132215	54123441	22122233	74323243	54234556	66333421	01122321
113-119	11223333	61222345	54223335	33322335	31121213	13122204	31122214
120-126	66644554	52222221	23121100	01121346	46523323	14323352	01121200
127-133	11122224	45553546	44322111	25221253	66331345	23222223	01222211
134-140	11122322	12121321	33122321	32122211	12123312	12222222	12122210
141-147	11111211	12223444	54222557	33223232	33222320	22222201	01122333
148-154	22223211	12232232	02022552	22121210	10222212	11122325	52121322
155-161	22222224	44122325	44221233	12212446	48943433	01422343	12222233
162-168	23333322	23122101	02222221	42222332	30222211	11223322	33222226
169-175	64223456	55322323	22323322	22221210	01112212	00111112	35222121
176-182	11212213	01232210	01222221	22122321	53122224	43112311	12122211
183-189	11112320	14432111	32221211	11022322	11122213	42123333	22222333
190-196	21222434	65323222	42222333	25323221	33221213	11122432	22232212
197-203	21212322	11112222	21121100	00121101	10112201	10022223	42022213
204-210	01012223	21122211	42222211	44312431	32222121	14323322	22112221
211-217	52122111	11122212	23131334	42333532	15232324	45433345	54534344
218-224	35322322	22112322	66422210	12222221	11222331	21122314	44223453
225-231	55223221	11222312	22122211	11122112	21122311	01212213	21232445
232-238	41122223	56423334	34221110	22121222	11121100	01122201	00121211
239-245	13336567	66633644	66533445	66223343	54333456	54323334	43323334
246-252	55322324	54323122	22223345	22322435	66222210	00222223	22223225
253-259	40122335	46221222	75322656	54522321	10012200	00121210	11222225
260-266	51111221	00112245	56433553	34123212	24222221	23223443	63122456
267-273	55334446	64322336	54234535	65433332	21123332	43122344	55323334
274-280	73223344	33111326	60022213	23221212	11122211	43121214	45122211
281-287	11132445	66533332	55222224	54423211	00122223	30012334	00123666
288-294	64223212	54122215	14122124	44423646	56222232	55534556	43334455
295-301	54333434	44122344	50122543	54222321	55423331	53223347	54333342
302-308	54222230	22111221	01111234	20212201	20013331	33121101	00334444
309-315	55443214	12222116	34121223	42122214	44111244	64235543	33121126
316-322	43211113	13122101	53212246	54333236	66543434	32212243	43334223
323-329	42112132	63333453	55222346	52322135	32122342	32211233	12111112
330-336	22111102	23111134	00011210	10101111	21111243	23211244	53423352
337-343	54022232	42112214	44322214	32222245	74335556	73323435	53333254
344-350	43221212	20011114	53344345	34122234	34222351	34333334	32112213
351-357	34211110	22011112	42312222	52221113	44422456	76531311	00031146
358-364	54333575	22213246	56432266	52121111	42111252	33222546	55632333
365-365	24112321						

LEIRVOGUR MAGNETIC OBSERVATORY 2014

K-SUMS IN 27-DAY RUNS

DAYS	K-SUMS																										
1- 27	22	35	20	10	3	5	15	20	18	10	5	13	12	20	6	2	5	1	0	2	15	19	13	9	18	18	6
28- 54	8	14	9	3	10	10	15	9	5	20	11	38	36	23	14	18	2	3	12	30	15	19	40	37	27	28	31
55- 81	12	6	9	25	21	21	12	20	17	14	12	8	8	8	10	8	14	23	11	10	3	11	12	12	17	20	10
82-108	13	12	16	18	10	15	17	11	15	15	10	13	13	22	12	21	11	9	7	21	37	32	20	18	15	24	17
109-135	28	34	28	12	18	25	27	24	14	15	16	40	18	10	18	28	23	7	15	37	18	22	31	18	11	14	13
136-162	17	14	15	15	11	9	22	32	20	17	13	15	15	17	18	11	12	17	18	18	23	21	22	38	19	17	21
163-189	12	13	20	13	16	22	32	25	19	12	10	7	18	13	11	12	15	21	16	12	11	17	14	13	13	21	19
190-216	20	25	21	20	17	16	16	15	12	8	6	8	12	16	11	12	16	22	15	20	13	15	12	20	25	22	31
217-243	32	22	15	23	14	15	16	27	22	14	13	11	13	12	23	17	30	14	14	7	9	8	34	38	36	29	33
244-270	27	25	26	22	23	23	21	13	20	20	21	36	24	6	7	17	14	15	34	18	17	23	29	34	29	31	29
271-297	17	23	28	28	20	16	15	11	18	18	21	31	24	22	12	16	24	22	22	17	33	24	38	31	29	24	22
298-324	21	26	29	27	20	12	13	10	13	12	22	28	17	18	18	21	32	19	16	11	25	29	35	19	24	16	30
325-351	29	23	19	17	10	10	16	5	6	15	19	27	20	17	22	22	38	30	28	17	10	31	21	22	26	15	13
352-365	10	18	17	31	27	15	35	22	34	14	18	27	30	16													

LEIRVOGUR MAGNETIC OBSERVATORY 2014

DISTRIBUTION OF K-INDICES AND AVERAGES OF K AND Ak

	K=0	K=1	K=2	K=3	K=4	K=5	K=6	K=7	K=8	K=9	-	$\overline{K}$	$\overline{Ak}$
JAN	76	79	44	26	10	7	6	0	0	0	0	1.4	8
FEB	40	50	48	32	18	19	9	2	5	1	0	2.3	22
MAR	45	70	93	20	12	4	4	0	0	0	0	1.6	8
APR	17	46	73	54	21	16	11	2	0	0	0	2.5	16
MAY	14	58	104	38	13	15	5	1	0	0	0	2.2	12
JUN	12	49	109	39	17	8	4	0	1	1	0	2.2	14
JUL	14	74	108	35	13	3	1	0	0	0	0	1.9	8
AUG	9	54	78	47	28	17	14	1	0	0	0	2.6	17
SEP	13	26	80	52	29	27	12	1	0	0	0	2.8	19
OCT	11	43	71	46	38	25	12	2	0	0	0	2.8	19
NOV	15	66	60	47	31	12	9	0	0	0	0	2.4	14
DEC	8	46	68	51	36	25	10	4	0	0	0	2.8	20
YEAR	274	661	936	487	266	178	97	13	6	2	0	2.3	15
%	9.4	22.6	32.1	16.7	9.1	6.1	3.3	0.4	0.2	0.1			

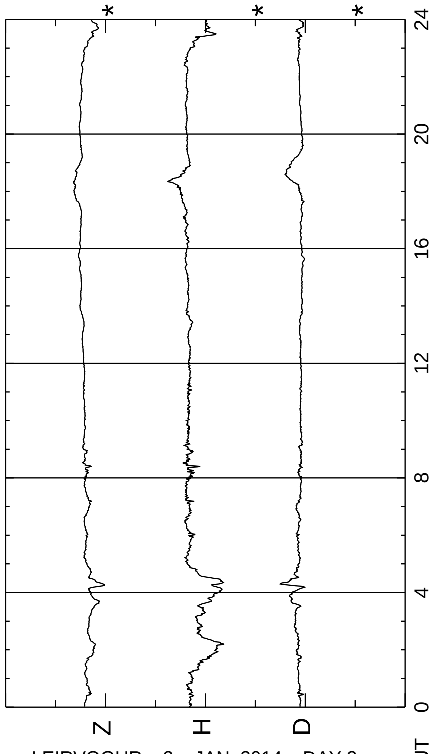
	K=0	K=1	K=2	K=3	K=4	K=5	K=6	K=7	K=8	K=9	-	$\bar{K}$	$\overline{Ak}$
1958	76	267	459	591	510	488	328	87	12	2	100	3.6	33
1959	46	260	360	567	562	547	388	138	33	8	11	3.9	39
1960	75	275	399	539	468	492	304	165	32	4	175	3.7	38
1961	224	477	475	518	482	351	222	87	19	1	64	3.1	27
1962	17	346	592	569	444	412	259	94	10	0	177	3.4	30
1963	181	494	543	550	371	353	259	99	10	0	60	3.1	27
1964	328	699	573	451	325	238	159	54	3	0	98	2.5	19
1965	416	799	567	455	247	199	111	35	0	0	91	2.2	15
1966	247	644	648	535	309	299	158	48	8	1	23	2.6	20
1967	178	561	685	523	386	294	189	58	7	3	36	2.8	23
1968	114	411	569	596	489	387	256	75	9	0	22	3.2	27
1969	174	469	619	610	418	351	195	52	4	2	26	3.0	23
1970	48	388	676	640	478	378	209	58	11	4	30	3.2	26
1971	13	316	768	684	448	367	215	81	8	0	20	3.3	26
1972	20	321	812	682	453	356	172	73	24	4	11	3.2	27
1973	55	213	603	586	484	459	326	171	17	0	6	3.7	35
1974	41	237	400	563	509	533	392	209	24	1	11	3.9	41
1975	81	364	621	603	432	425	260	111	19	3	1	3.4	30
1976	109	413	701	589	417	377	223	84	12	3	0	3.1	27
1977	131	460	757	547	396	337	189	91	10	2	0	3.0	25
1978	135	352	601	569	458	392	270	122	17	4	0	3.3	31
1979	87	270	644	680	492	441	227	70	9	0	0	3.3	27
1980	142	448	826	612	400	303	160	35	2	0	0	2.8	20
1981	33	301	573	663	585	440	241	67	15	2	0	3.4	29
1982	20	182	366	648	566	554	389	156	29	10	0	4.0	41
1983	10	150	494	595	596	585	330	137	17	6	0	3.9	37
1984	9	117	516	676	568	497	367	151	24	3	0	3.9	38
1985	2	231	806	695	454	386	237	85	23	1	0	3.4	29
1986	14	300	927	645	399	322	194	96	20	3	0	3.2	27
1987	17	371	931	687	385	314	143	55	5	1	11	3.0	22
1988	14	249	814	694	495	374	182	63	10	0	25	3.3	26
1989	3	122	601	711	520	475	346	111	19	4	8	3.8	35
1990	16	230	665	661	527	444	246	98	12	2	19	3.5	30
1991	10	186	531	620	505	497	375	134	37	5	20	3.8	38
1992	98	293	669	655	469	402	242	77	23	0	0	3.3	28
1993	92	372	712	598	437	361	234	95	19	0	0	3.2	28
1994	100	368	546	546	445	409	322	157	26	1	0	3.5	34
1995	200	547	638	493	389	339	212	82	12	1	7	2.9	25
1996	206	557	845	578	304	231	148	52	7	0	0	2.6	19
1997	398	659	737	482	265	214	124	33	8	0	0	2.3	17
1998	228	516	729	525	361	295	186	61	13	5	1	2.8	23
1999	163	440	687	583	397	355	213	71	7	0	4	3.0	24
2000	157	321	673	616	446	399	219	75	13	5	4	3.2	27
2001	182	479	747	591	408	275	165	59	9	5	0	2.8	22
2002	133	356	720	647	420	367	198	60	8	0	11	3.1	24
2003	43	197	406	588	530	519	414	186	30	7	0	4.0	41
2004	154	431	706	599	415	323	212	71	11	6	0	3.0	25
2005	218	463	676	557	366	305	232	75	20	8	0	3.0	26
2006	389	768	703	413	290	185	120	44	5	3	0	2.3	17
2007	469	722	724	454	240	158	112	40	1	0	0	2.1	15
2008	524	734	713	463	223	154	84	29	4	0	0	2.0	13
2009	836	1036	663	222	77	57	25	4	0	0	0	1.3	6
2010	576	856	763	341	184	100	75	23	2	0	0	1.8	11
2011	433	757	783	443	231	147	87	32	7	0	0	2.1	14
2012	376	640	771	458	264	203	168	39	7	2	0	2.4	18
2013	540	722	714	418	201	164	122	28	10	1	0	2.1	15
2014	274	661	936	487	266	178	97	13	6	2	0	2.3	15

EXPLANATION OF DAILY GRAPHS

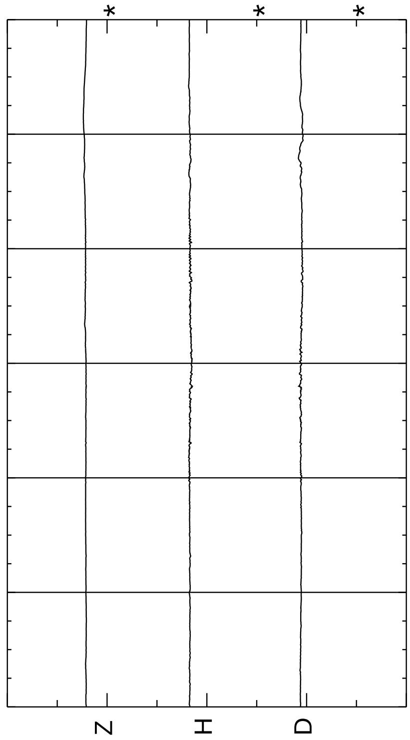
The graphs on pages 32–123 show the 1-minute means of the magnetic elements Z, H, and D at Leirvogur in 2014. Vertical divisions are spaced at intervals of 500 nT in Z and H and $2\overset{\circ}{.}31$ in D. The last figure is equivalent to 500 nT in the direction of magnetic east for average values of H at Leirvogur.

Levels marked with asterisk (*) are as follows:
Z: 50000 nT
H: 12000 nT
D: 345° E

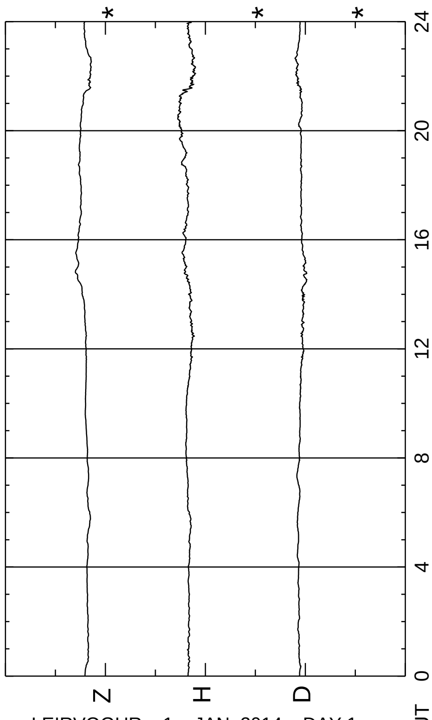
In several cases the H and D components had to be shifted upwards or downwards by one interval (500 nT) to disentangle the lines or prevent them from disappearing off scale.



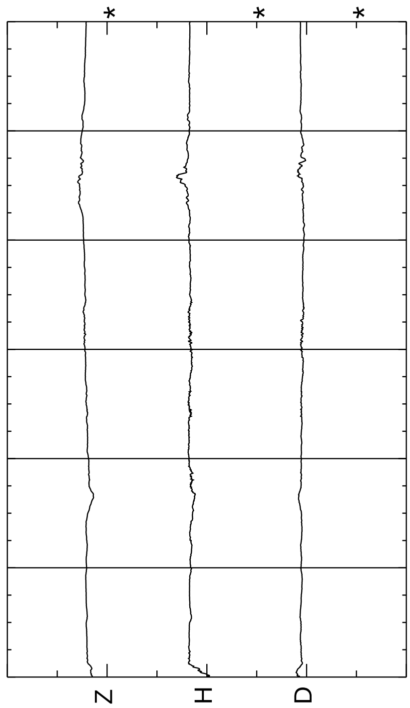
LEIRVOGUR 2. JAN 2014 DAY 2



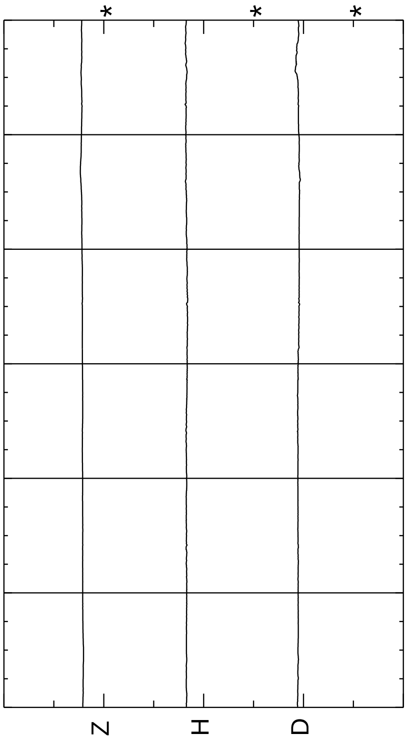
LEIRVOGUR 4. JAN 2014 DAY 4



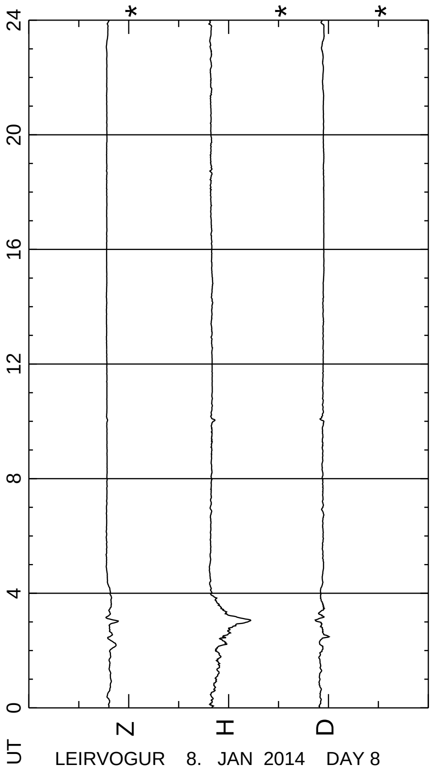
LEIRVOGUR 1. JAN 2014 DAY 1



LEIRVOGUR 3. JAN 2014 DAY 3



LEIRVOGUR 6. JAN 2014 DAY 6



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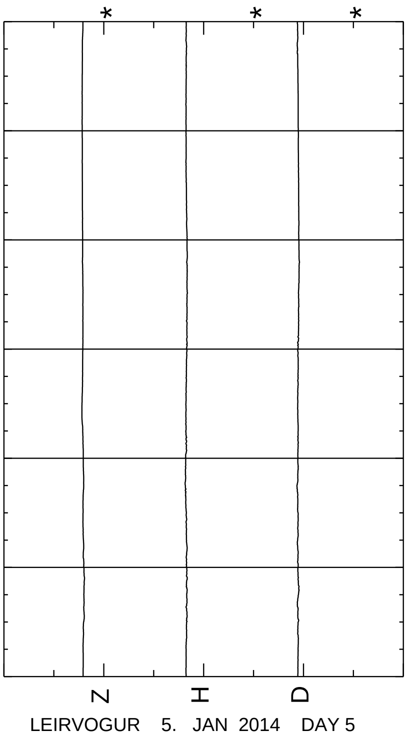

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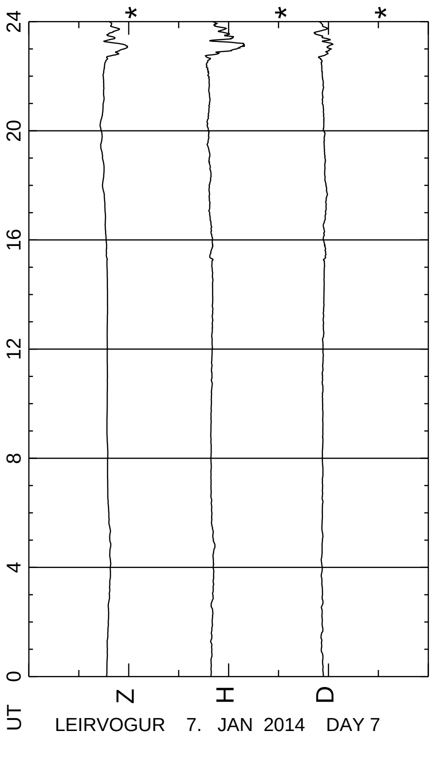
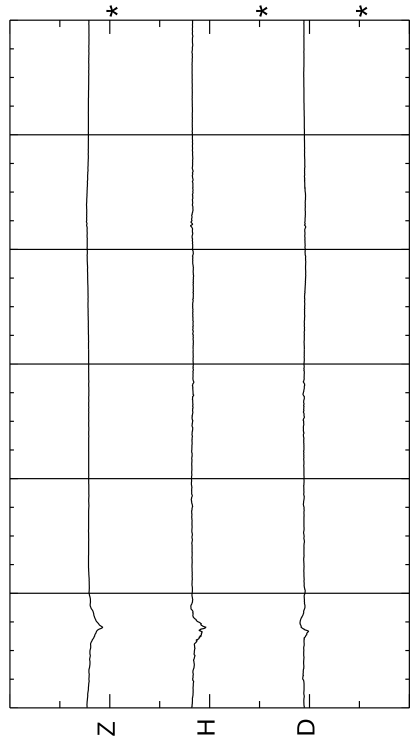
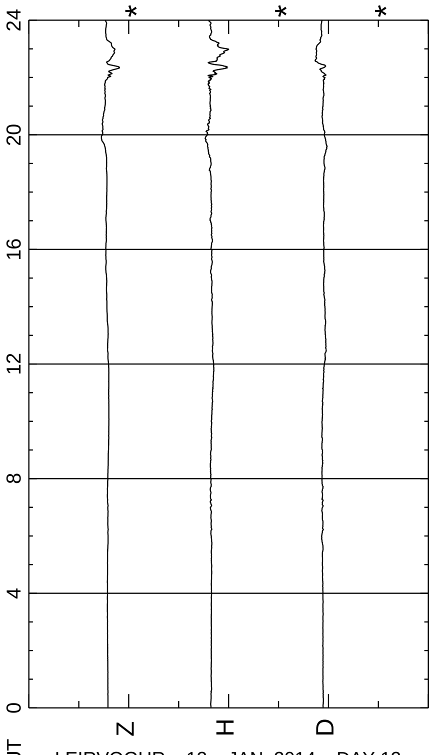


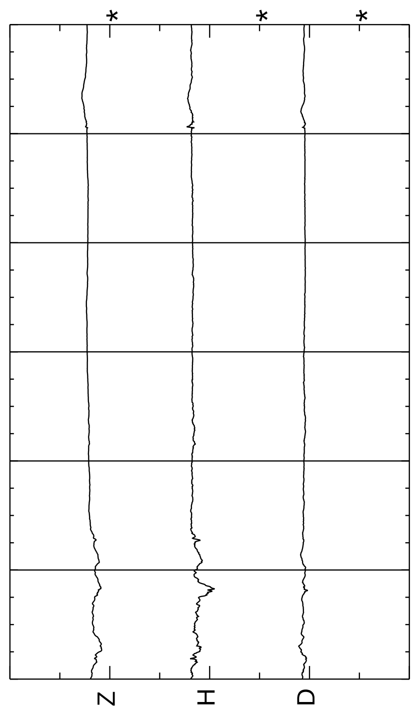
LEIRVOGUR 7. JAN 2014 DAY 7



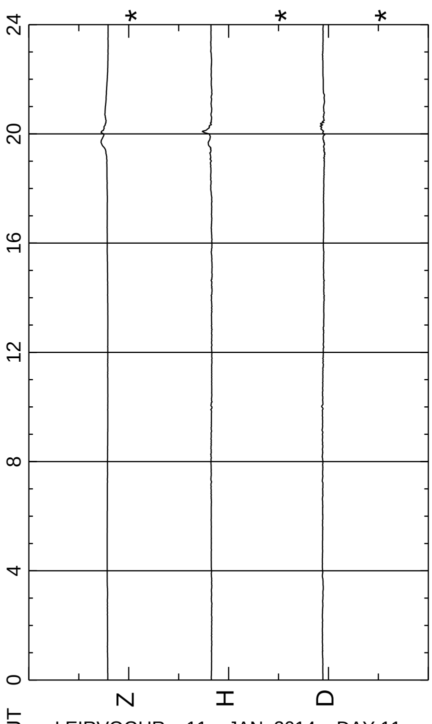
LEIRVOGUR 10. JAN 2014 DAY 10



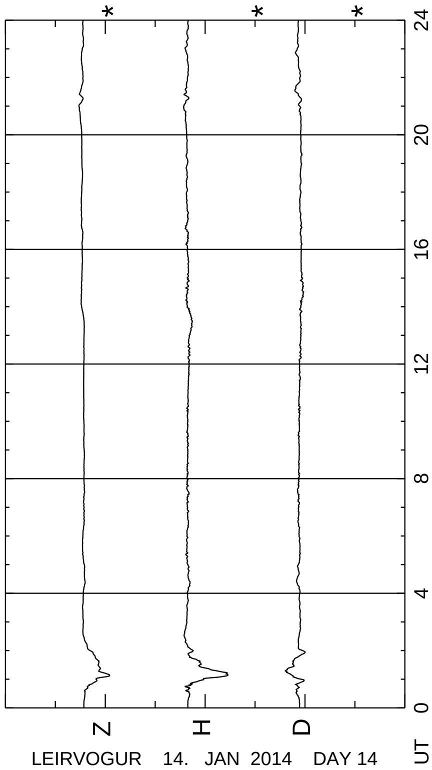
LEIRVOGUR 12. JAN 2014 DAY 12



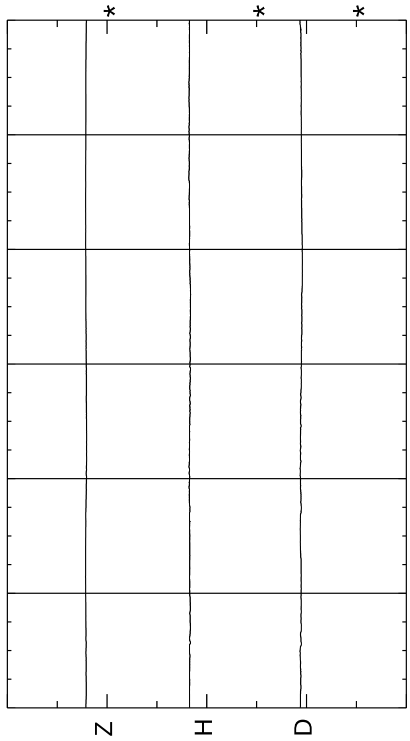
LEIRVOGUR 9. JAN 2014 DAY 9



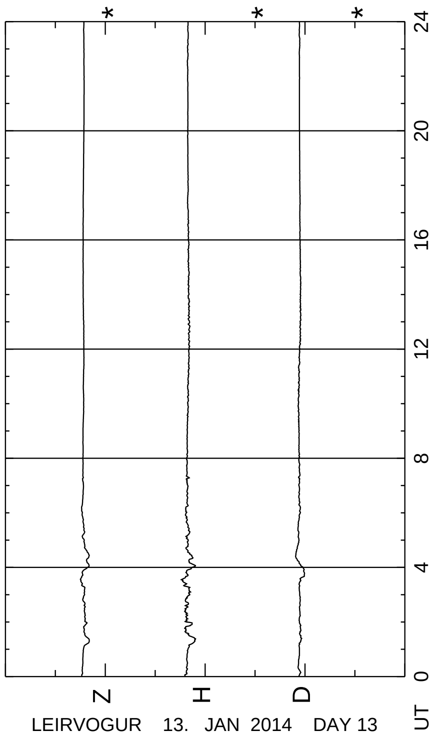
LEIRVOGUR 11. JAN 2014 DAY 11



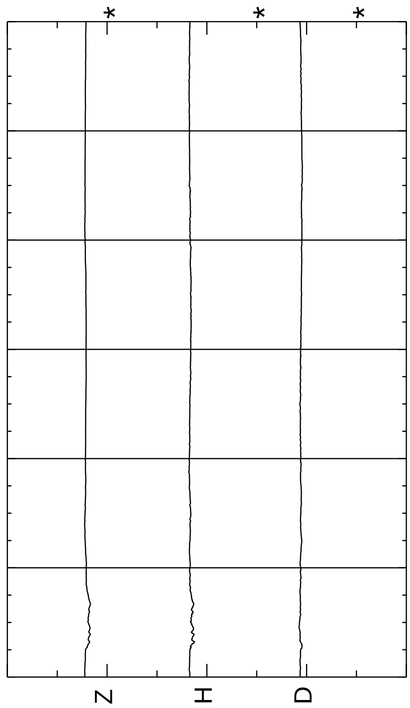
LEIRVOGUR 14. JAN 2014 DAY 14



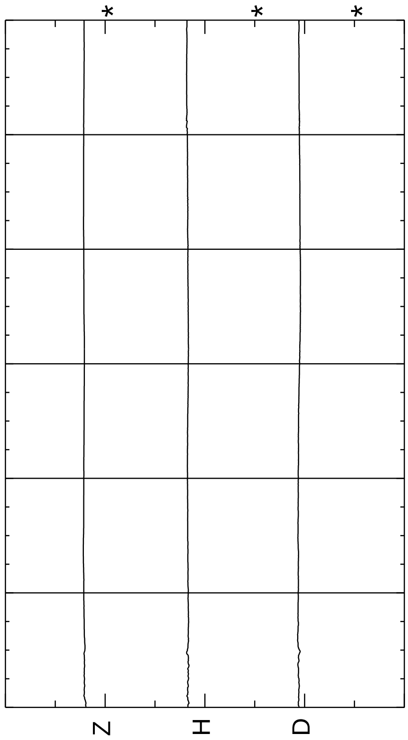
LEIRVOGUR 16. JAN 2014 DAY 16



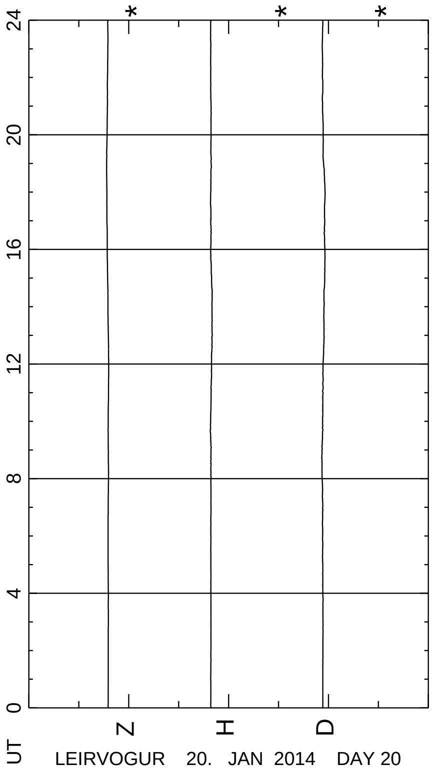
LEIRVOGUR 13. JAN 2014 DAY 13



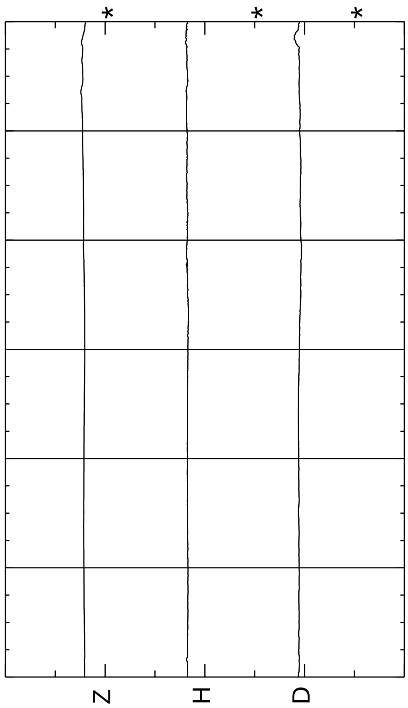
LEIRVOGUR 15. JAN 2014 DAY 15



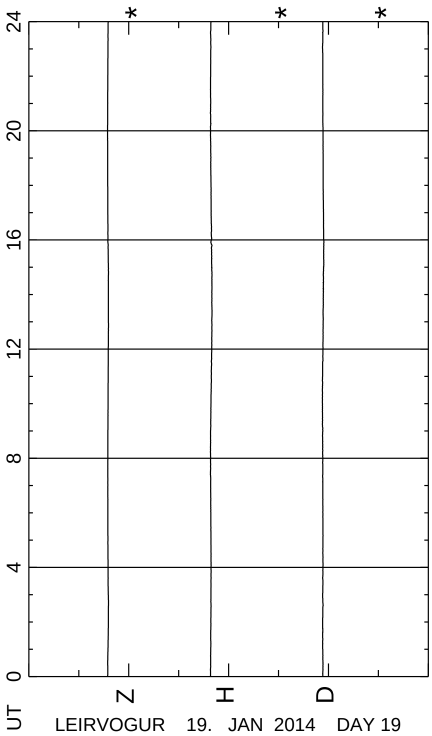
LEIRVOGUR 18. JAN 2014 DAY 18



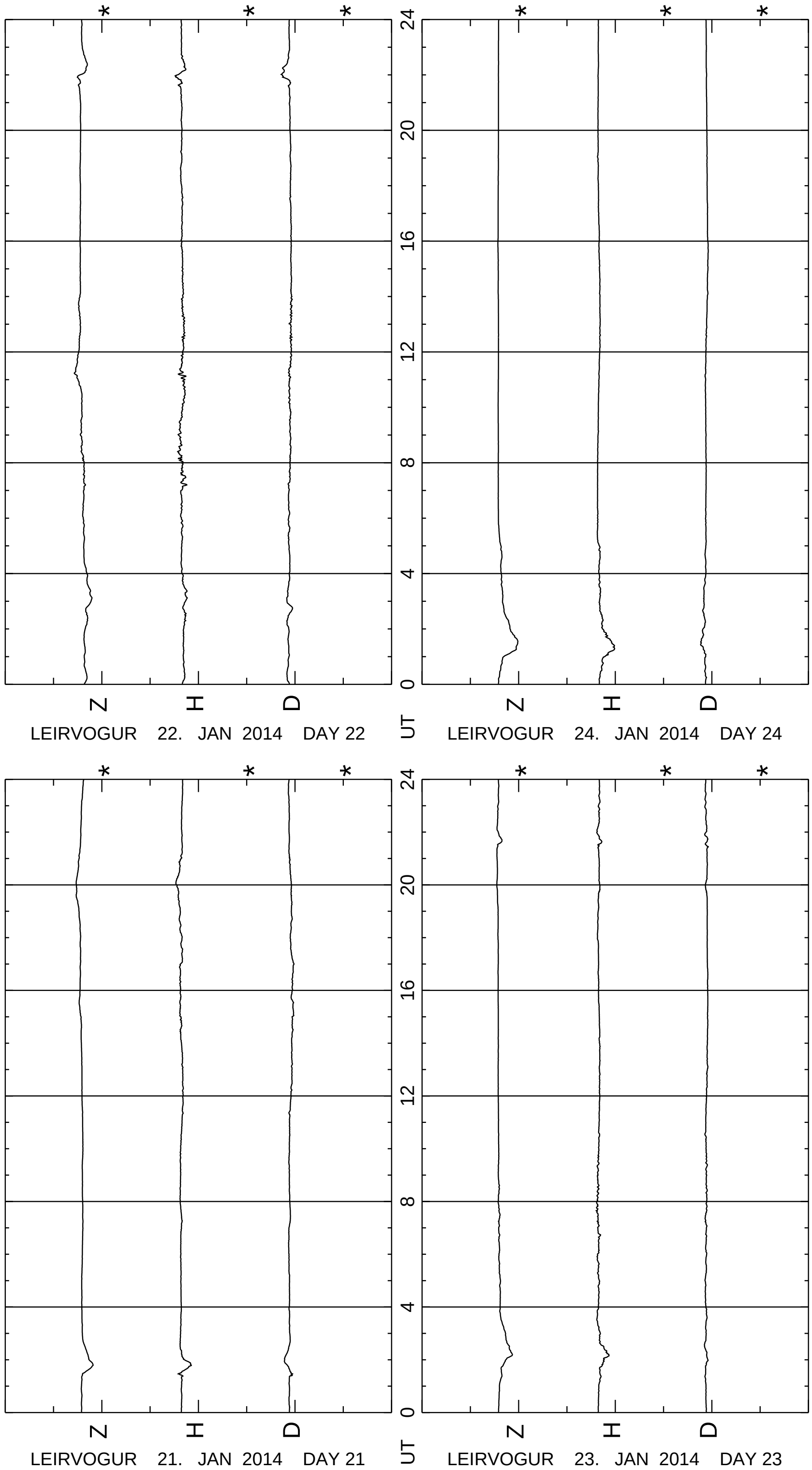
LEIRVOGUR 20. JAN 2014 DAY 20



LEIRVOGUR 17. JAN 2014 DAY 17



LEIRVOGUR 19. JAN 2014 DAY 19



LEIRVOGUR 22. JAN 2014 DAY 22
LEIRVOGUR 24. JAN 2014 DAY 24
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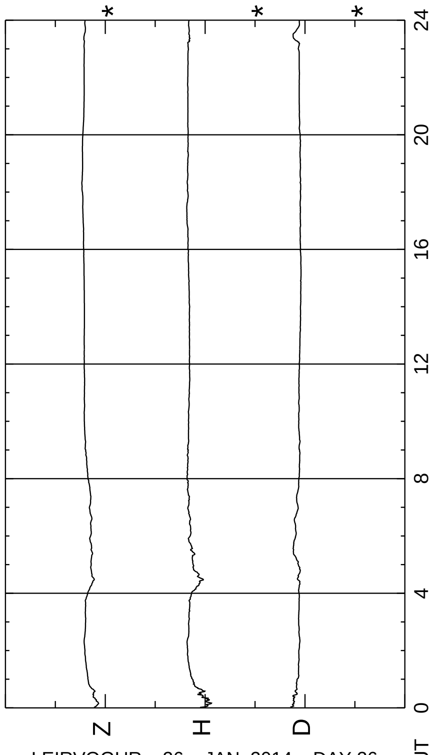
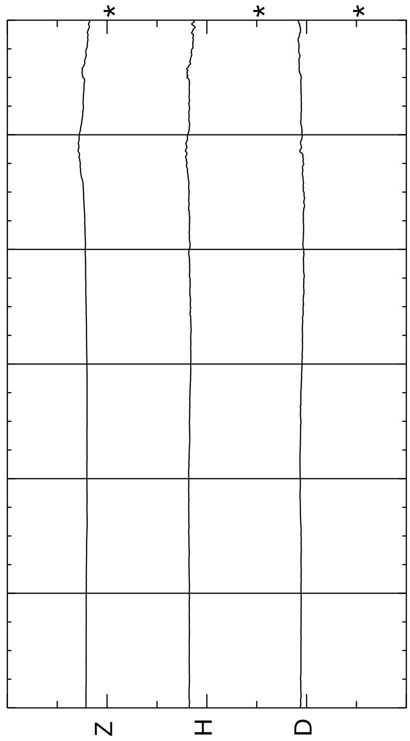
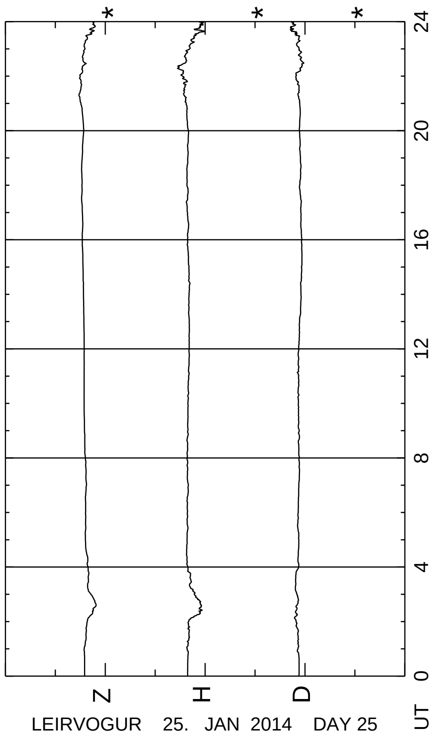


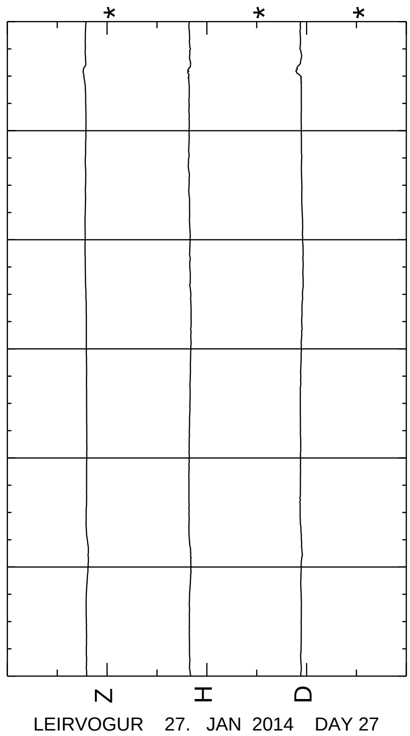
LEIRVOGUR 26. JAN 2014 DAY 26



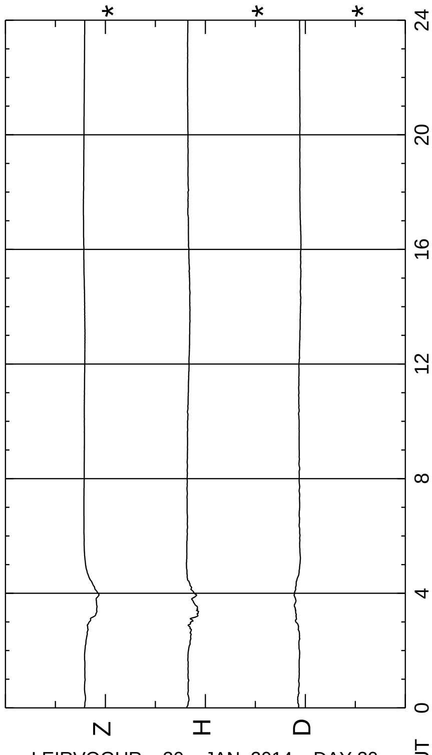
LEIRVOGUR 28. JAN 2014 DAY 28



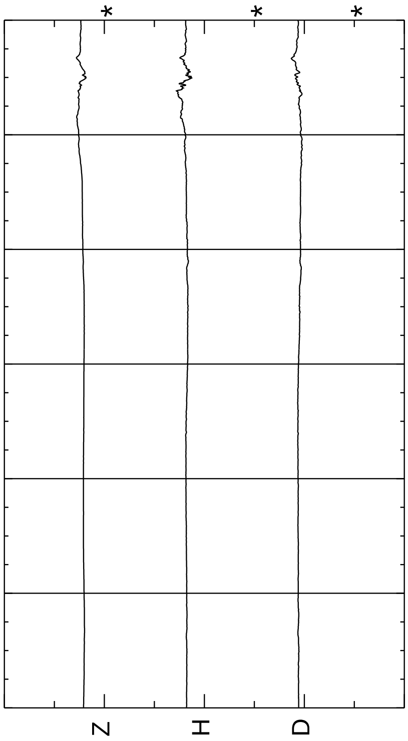
LEIRVOGUR 25. JAN 2014 DAY 25



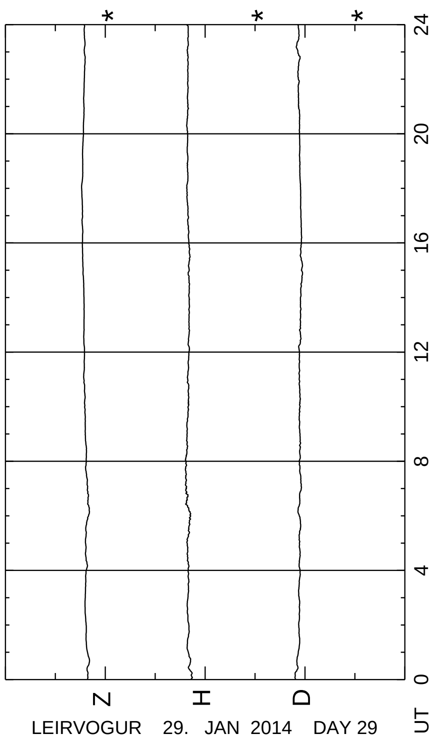
LEIRVOGUR 27. JAN 2014 DAY 27



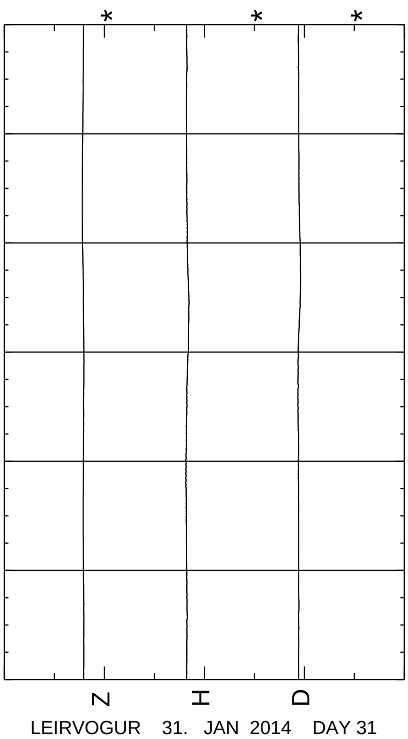
LEIRVOGUR 30. JAN 2014 DAY 30



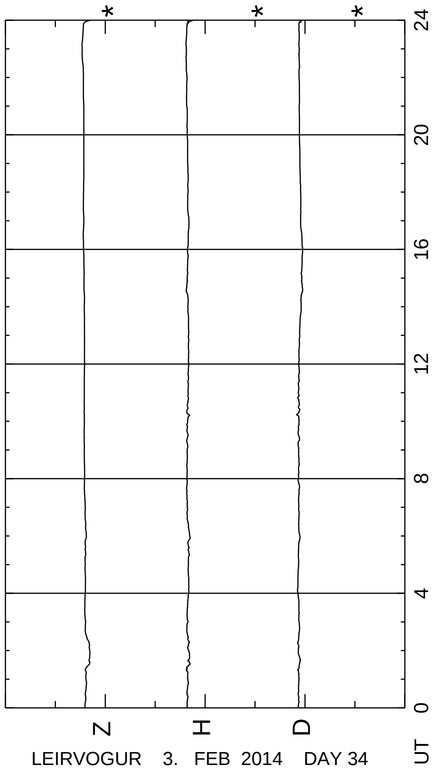
LEIRVOGUR 1. FEB 2014 DAY 32



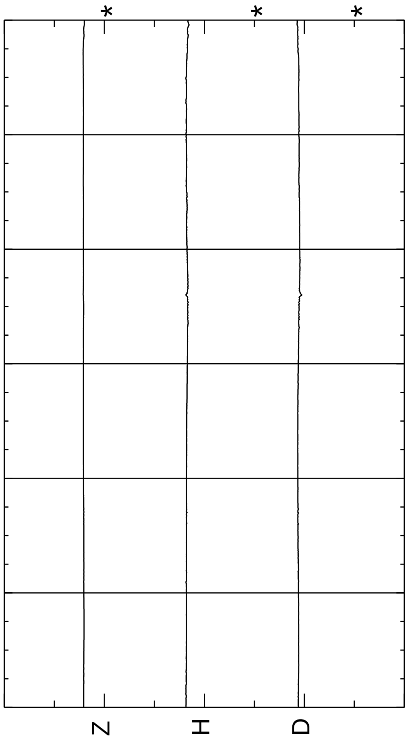
LEIRVOGUR 29. JAN 2014 DAY 29



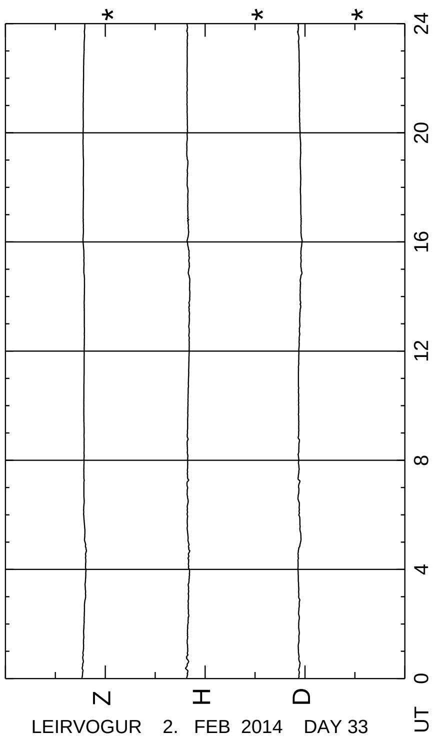
LEIRVOGUR 31. JAN 2014 DAY 31



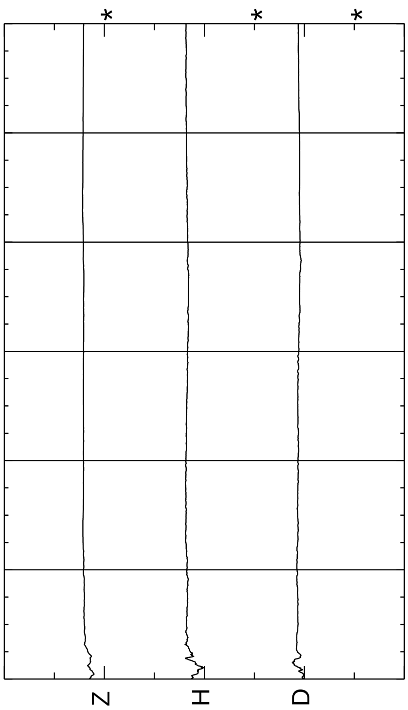
LEIRVOGUR 3. FEB 2014 DAY 34



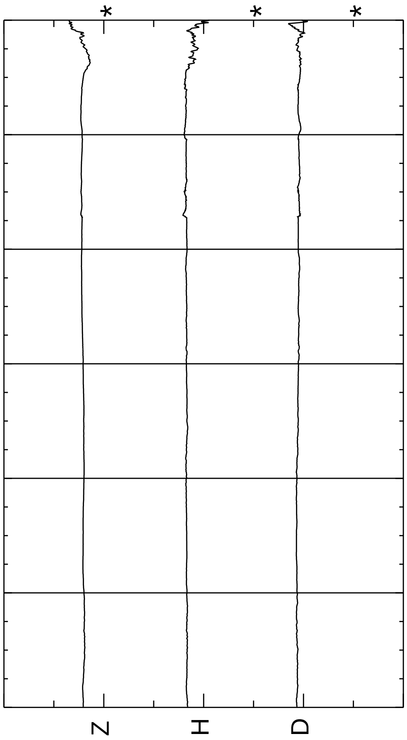
LEIRVOGUR 5. FEB 2014 DAY 36



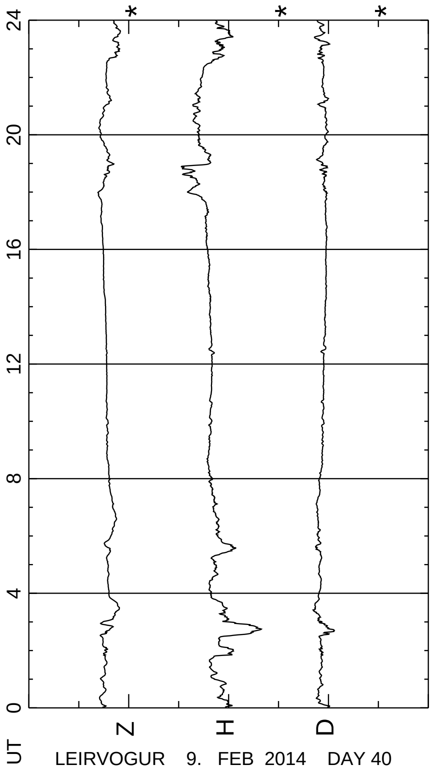
LEIRVOGUR 2. FEB 2014 DAY 33



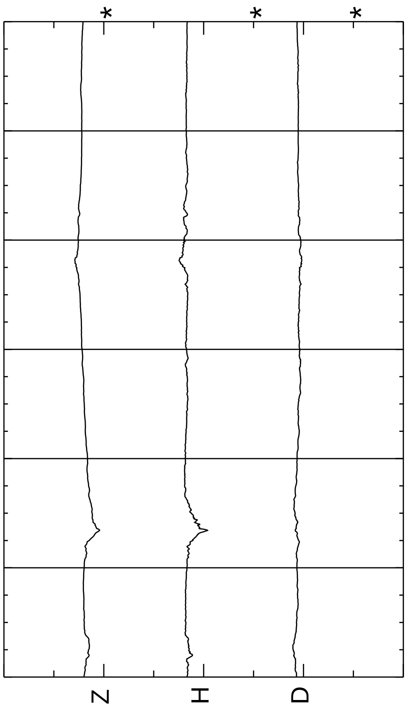
LEIRVOGUR 4. FEB 2014 DAY 35



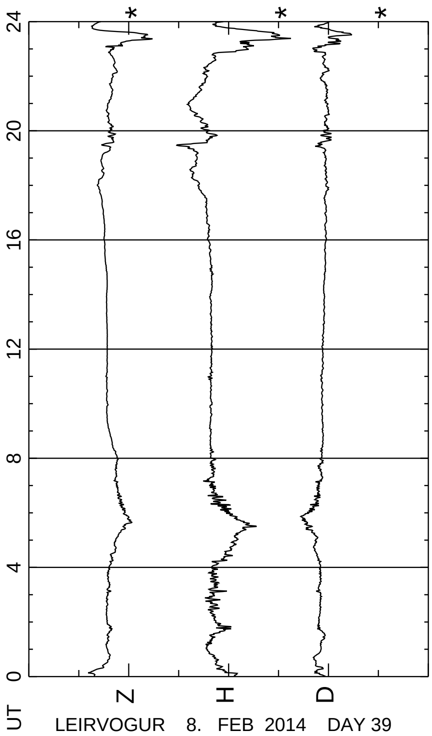
LEIRVOGUR 7. FEB 2014 DAY 38



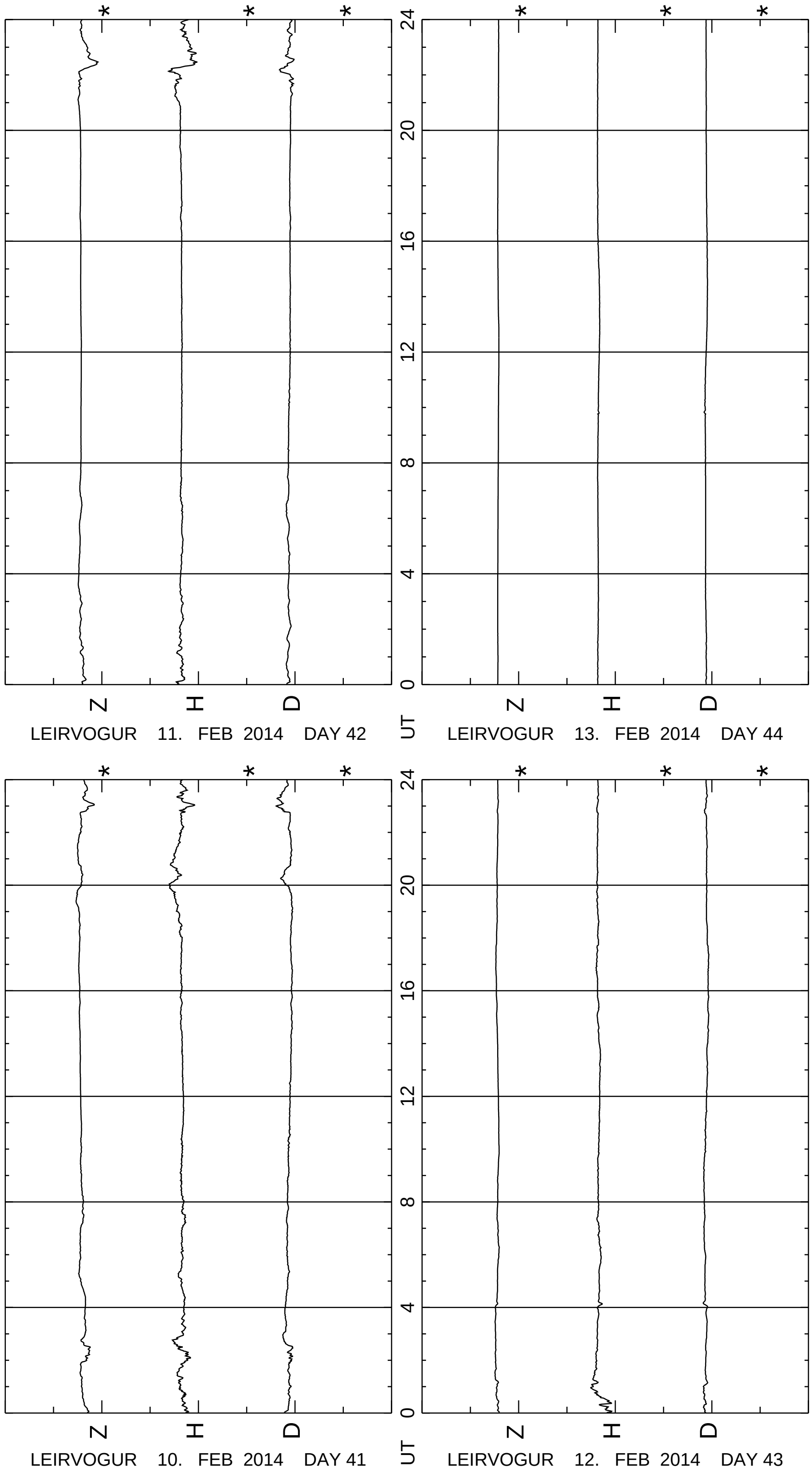
LEIRVOGUR 9. FEB 2014 DAY 40



LEIRVOGUR 6. FEB 2014 DAY 37



LEIRVOGUR 8. FEB 2014 DAY 39



LEIRVOGUR 11. FEB 2014 DAY 42
LEIRVOGUR 13. FEB 2014 DAY 44
LEIRVOGUR 10. FEB 2014 DAY 41
LEIRVOGUR 12. FEB 2014 DAY 43
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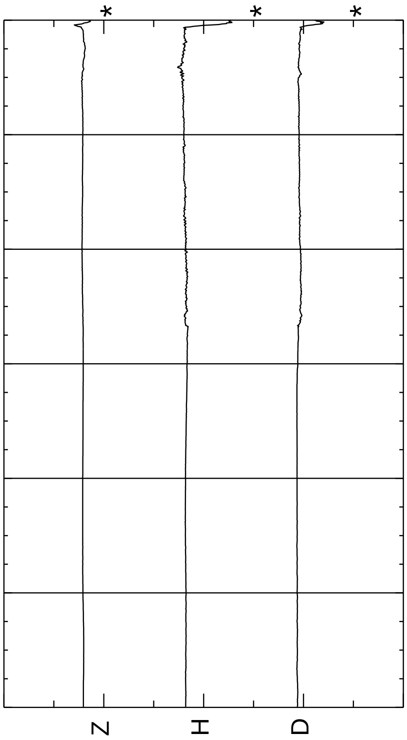
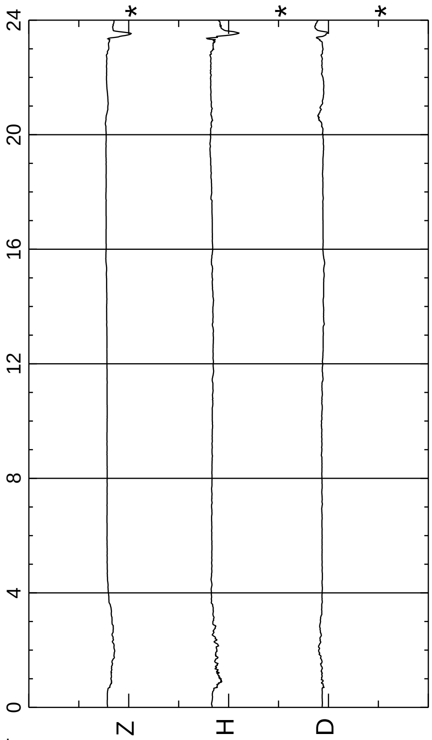
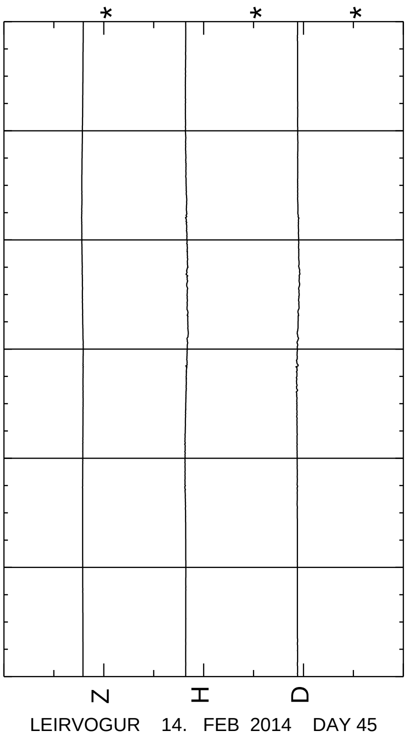


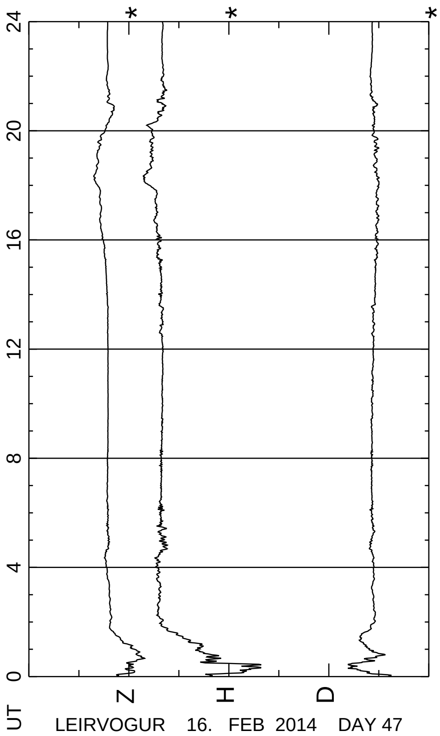
LEIRVOGUR 15. FEB 2014 DAY 46



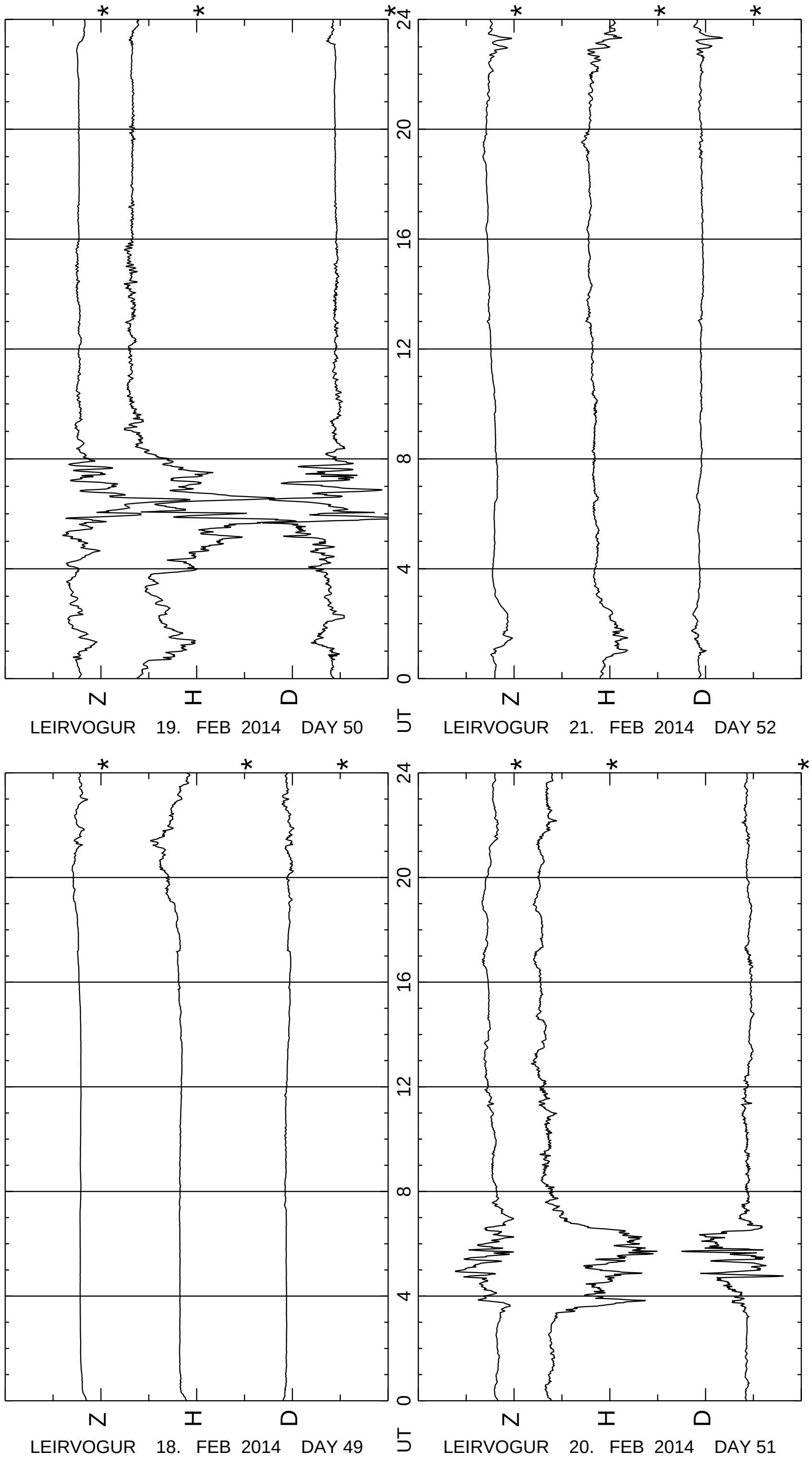
LEIRVOGUR 17. FEB 2014 DAY 48



LEIRVOGUR 14. FEB 2014 DAY 45



LEIRVOGUR 16. FEB 2014 DAY 47


Z H D
LEIRVOGUR 19. FEB 2014 DAY 50
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Z H D
LEIRVOGUR 21. FEB 2014 DAY 52
Z H D
LEIRVOGUR 18. FEB 2014 DAY 49
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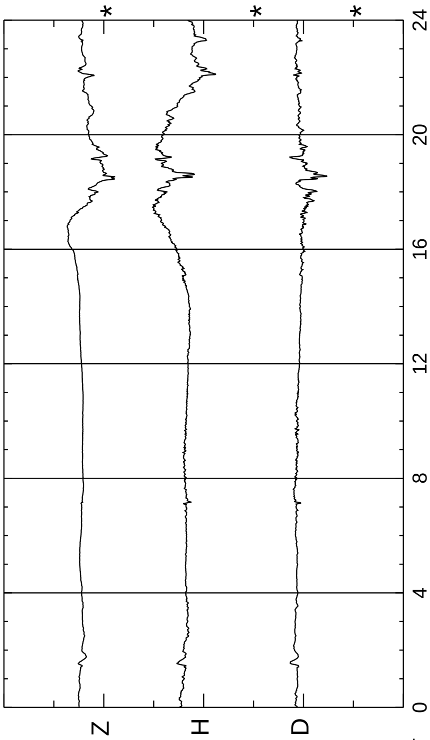
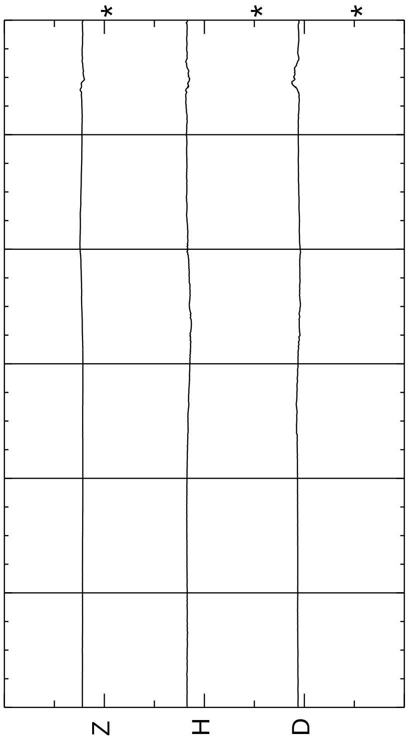
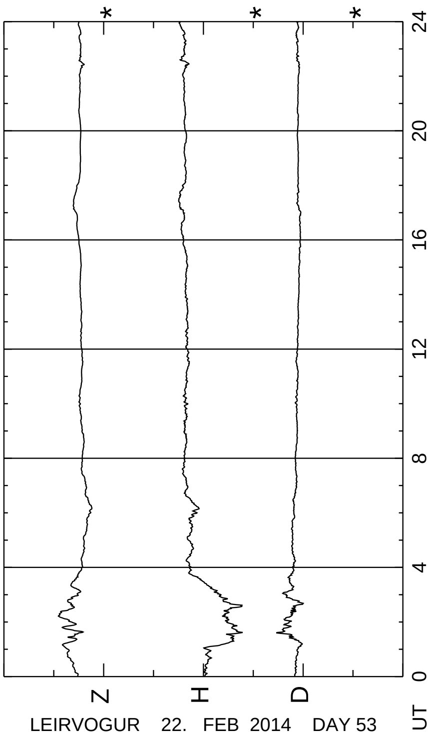


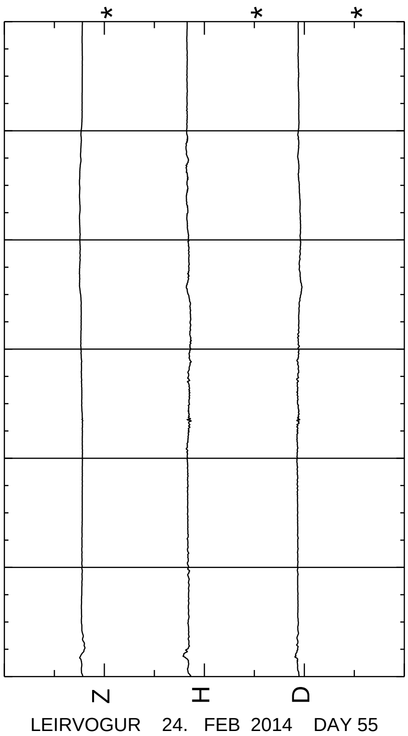
LEIRVOGUR 23. FEB 2014 DAY 54



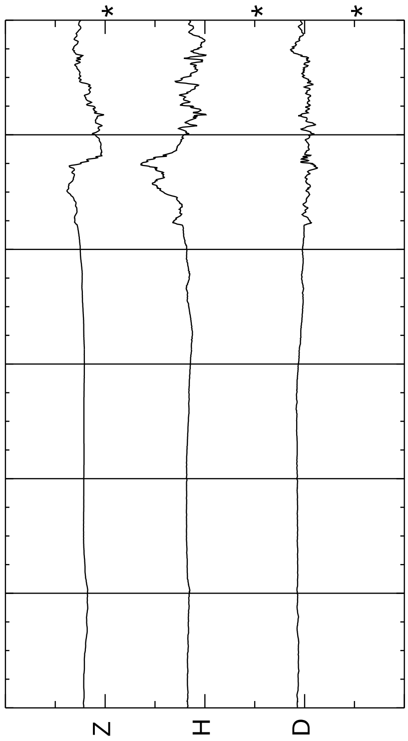
LEIRVOGUR 25. FEB 2014 DAY 56



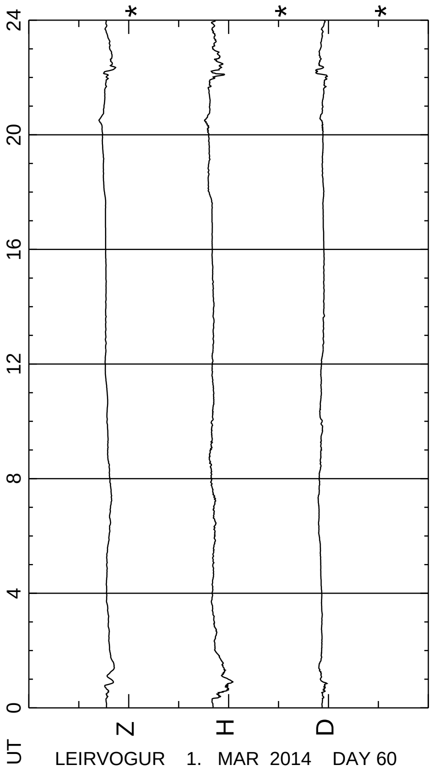
LEIRVOGUR 22. FEB 2014 DAY 53



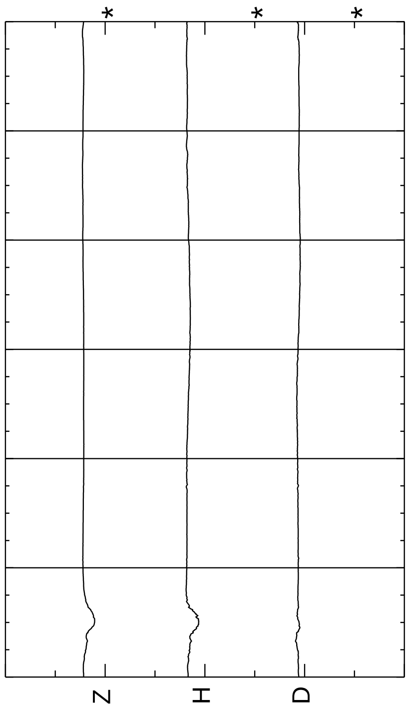
LEIRVOGUR 24. FEB 2014 DAY 55



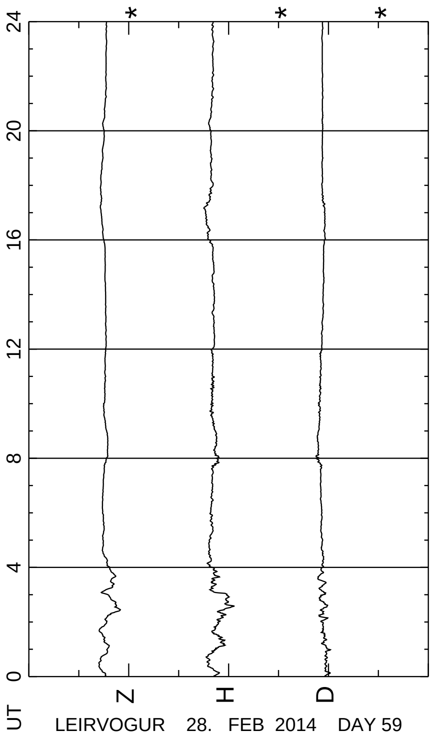
LEIRVOGUR 27. FEB 2014 DAY 58



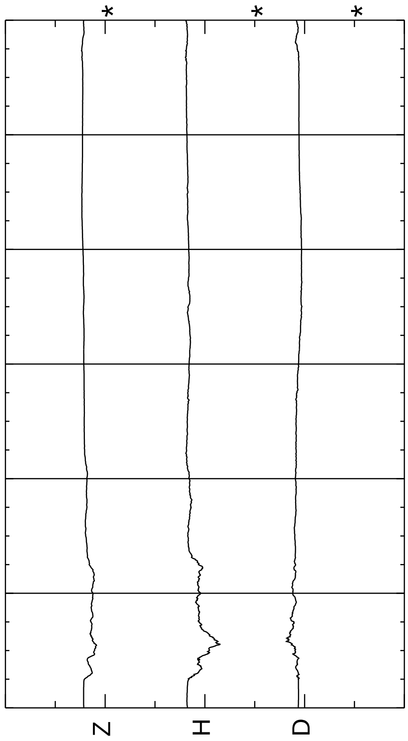
LEIRVOGUR 1. MAR 2014 DAY 60



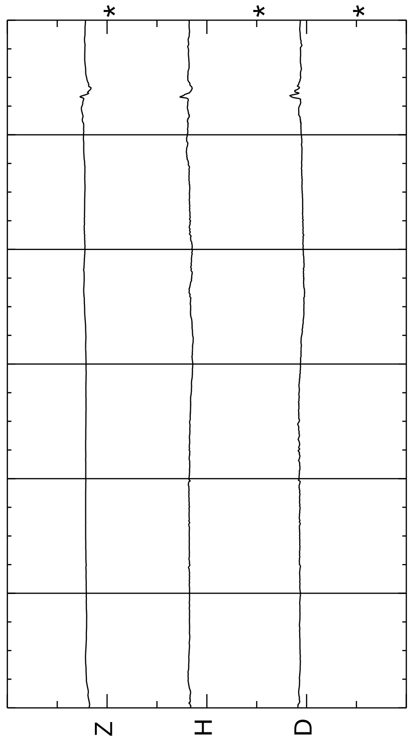
LEIRVOGUR 26. FEB 2014 DAY 57



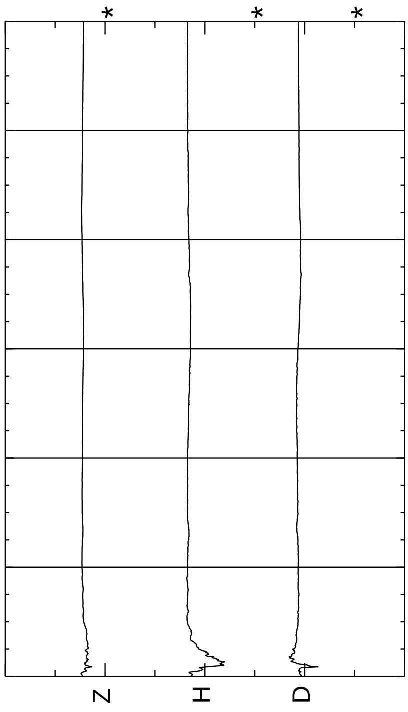
LEIRVOGUR 28. FEB 2014 DAY 59



LEIRVOGUR 3. MAR 2014 DAY 62



LEIRVOGUR 5. MAR 2014 DAY 64



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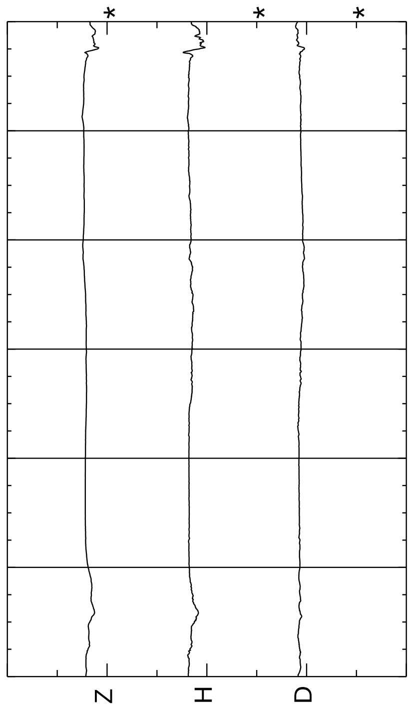
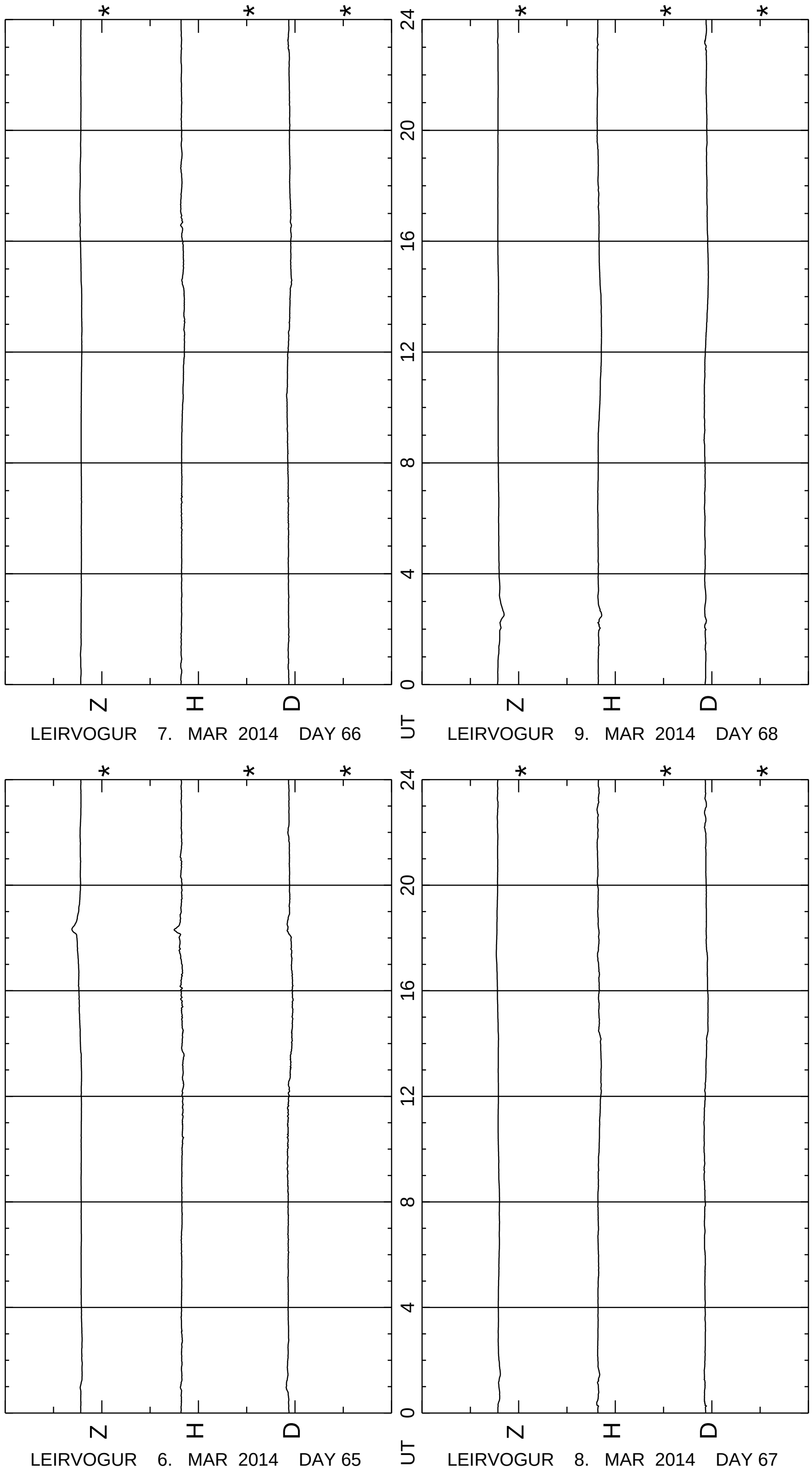


LEIRVOGUR 4. MAR 2014 DAY 63


LEIRVOGUR 7. MAR 2014 DAY 66
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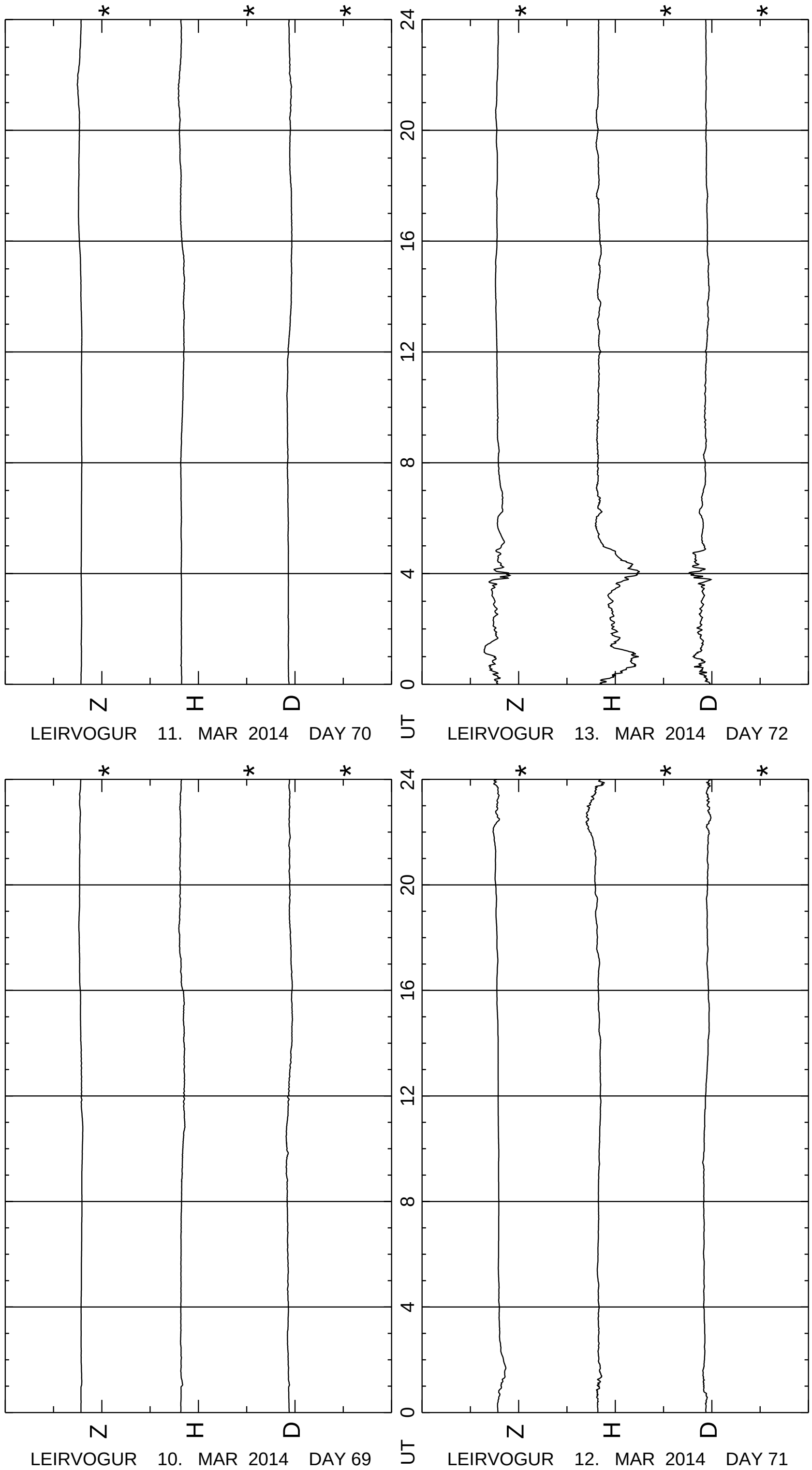
LEIRVOGUR 11. MAR 2014 DAY 70
LEIRVOGUR 13. MAR 2014 DAY 72
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LEIRVOGUR 12. MAR 2014 DAY 71
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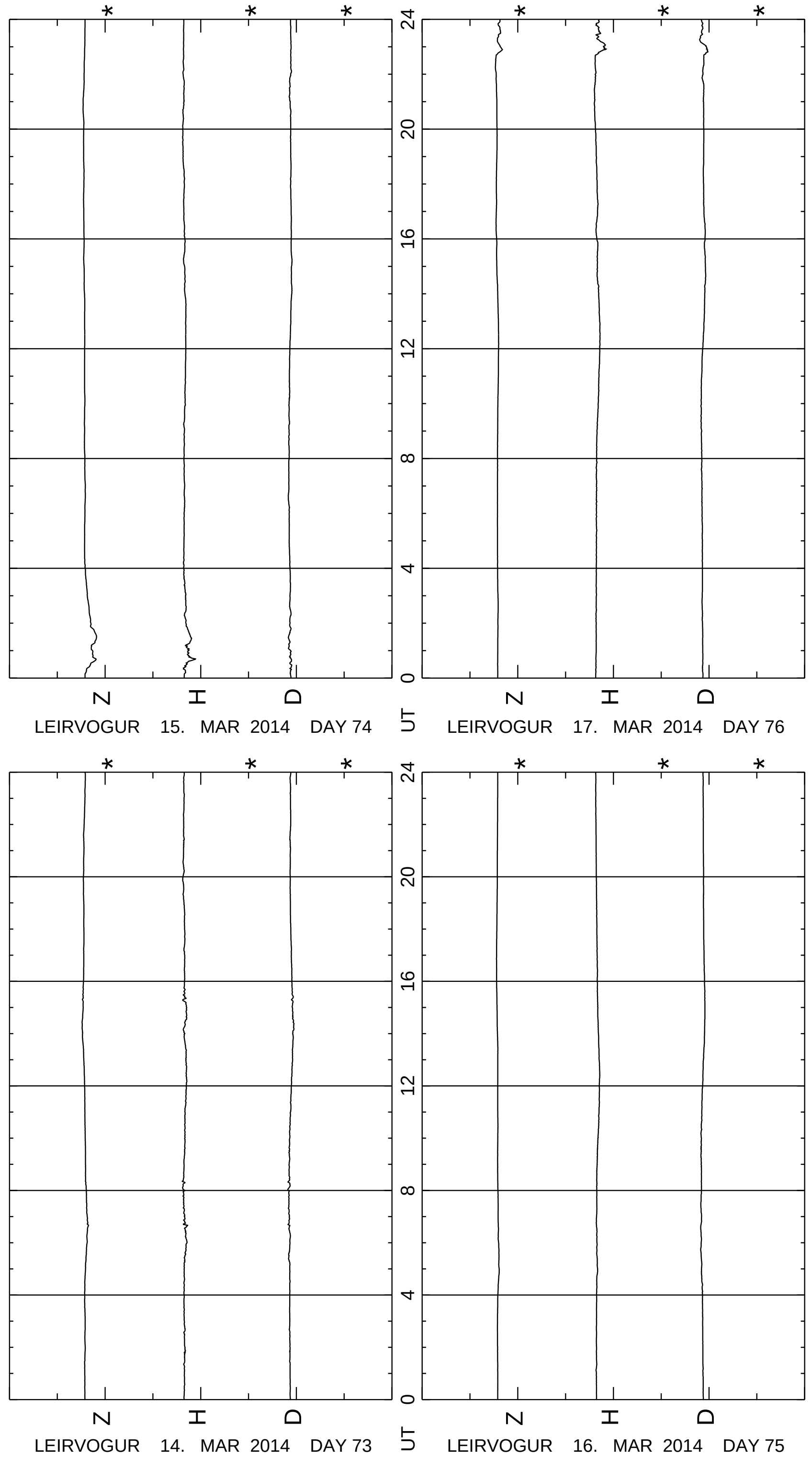
LEIRVOGUR 15. MAR 2014 DAY 74
LEIRVOGUR 17. MAR 2014 DAY 76
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LEIRVOGUR 16. MAR 2014 DAY 75
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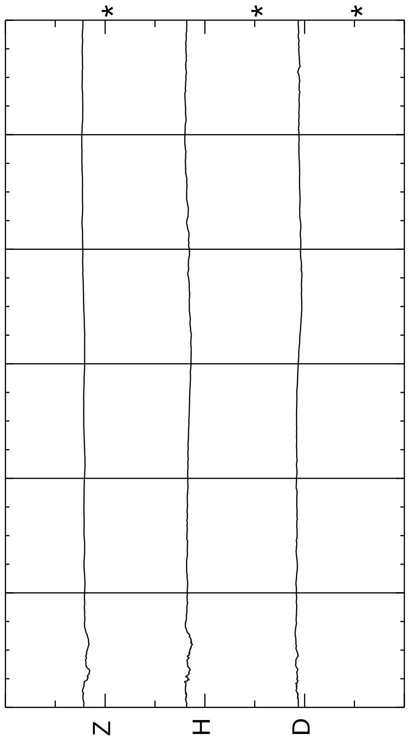
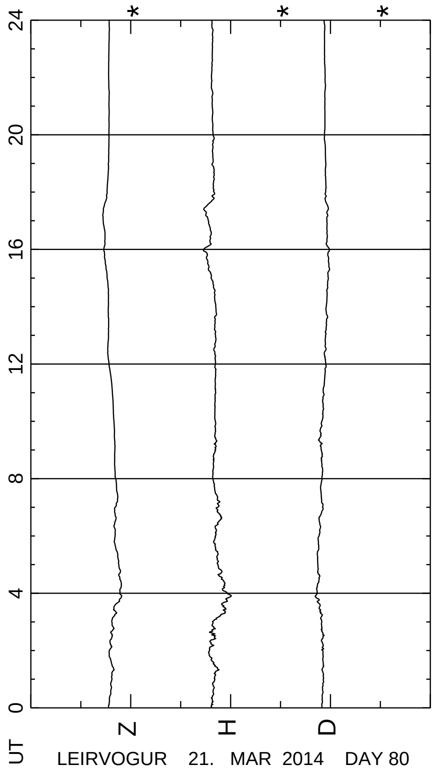
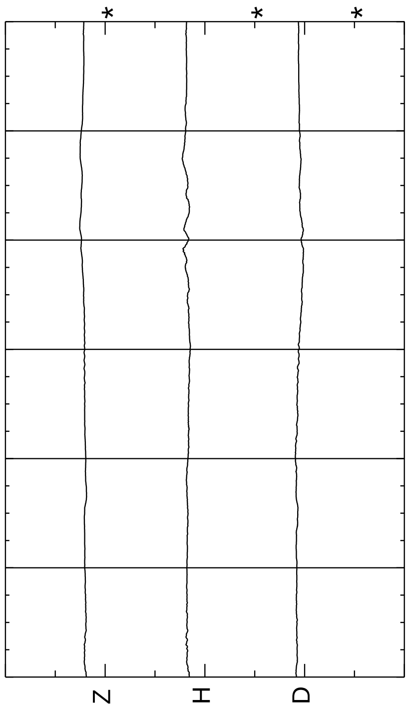


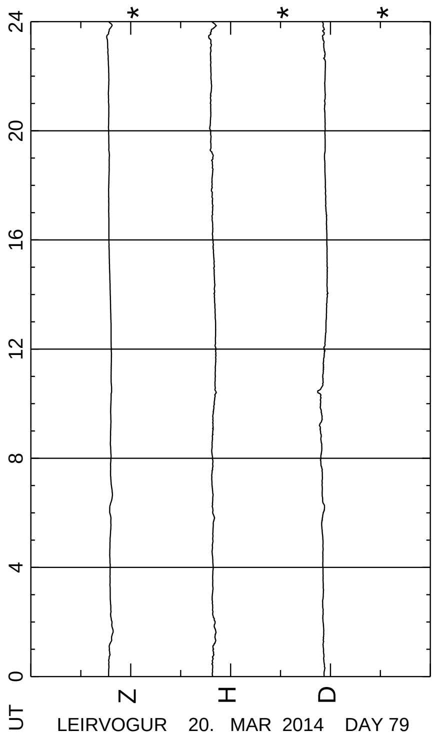
LEIRVOGUR 19. MAR 2014 DAY 78



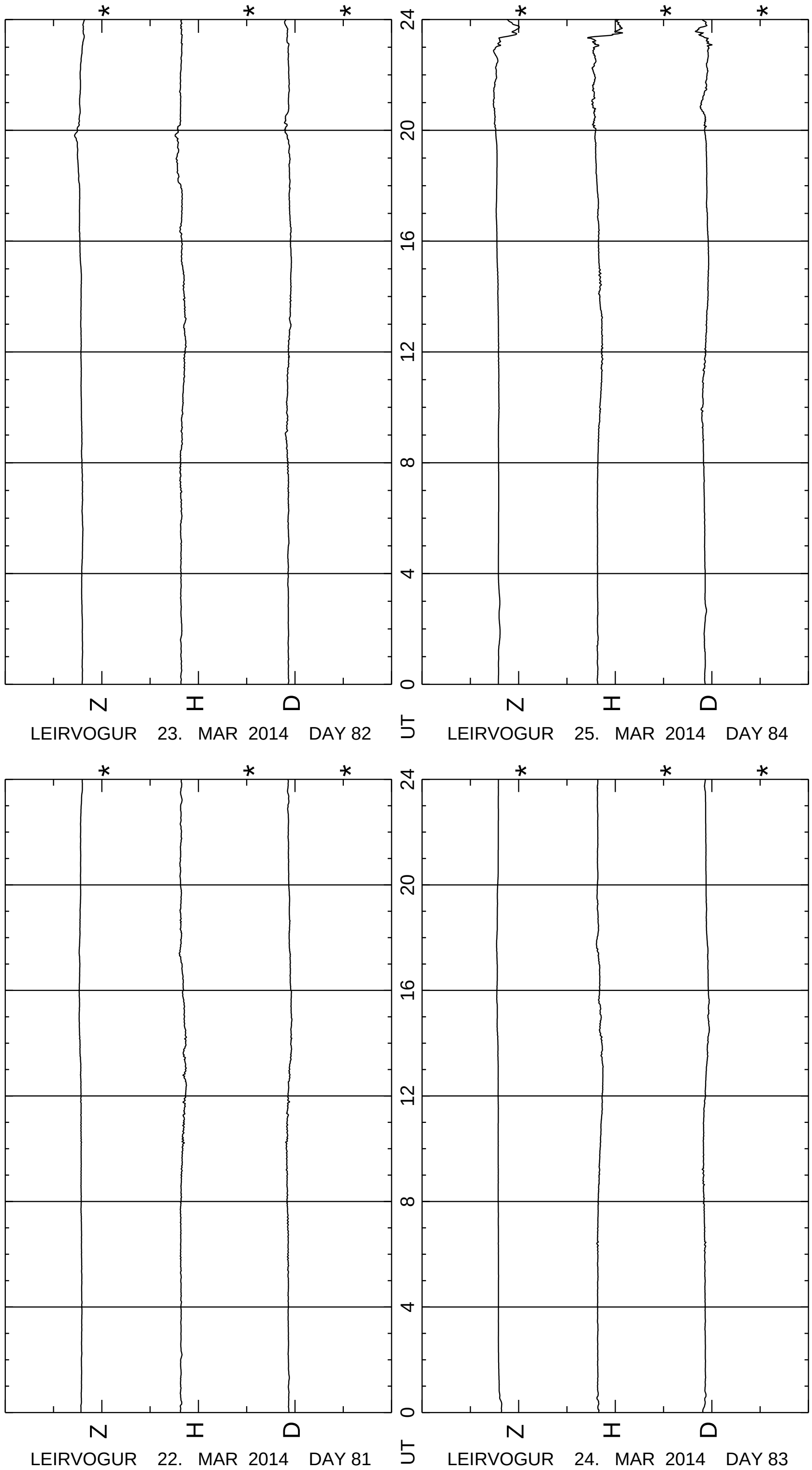
LEIRVOGUR 21. MAR 2014 DAY 80



LEIRVOGUR 18. MAR 2014 DAY 77



LEIRVOGUR 20. MAR 2014 DAY 79


LEIRVOGUR 23. MAR 2014 DAY 82
LEIRVOGUR 25. MAR 2014 DAY 84
LEIRVOGUR 22. MAR 2014 DAY 81
LEIRVOGUR 24. MAR 2014 DAY 83
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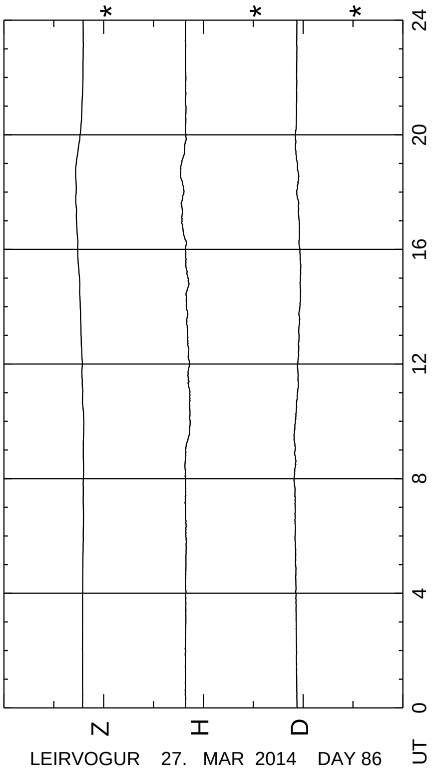
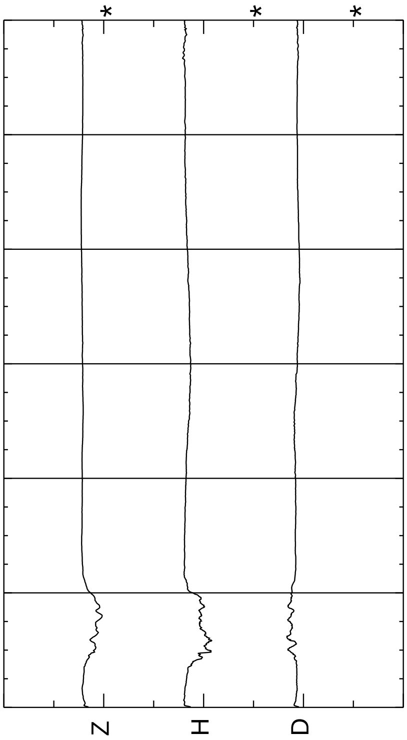


LEIRVOGUR 27. MAR 2014 DAY 86



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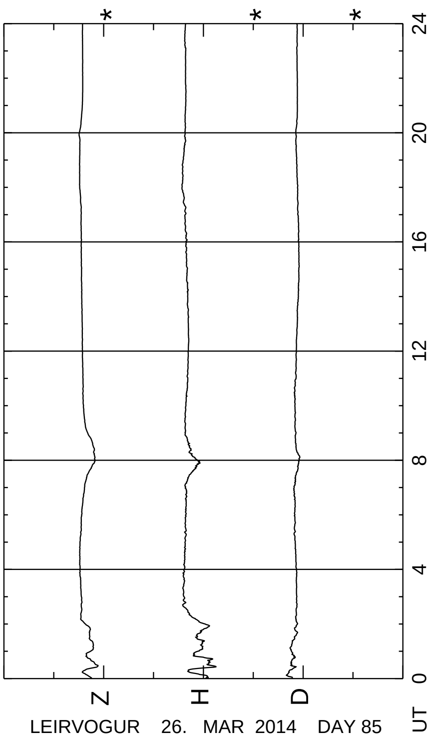
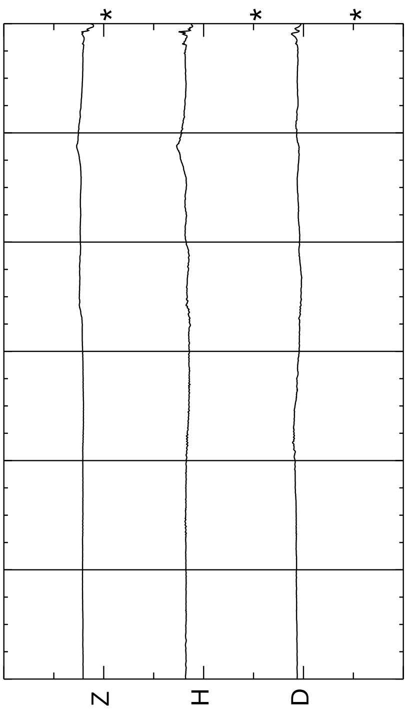
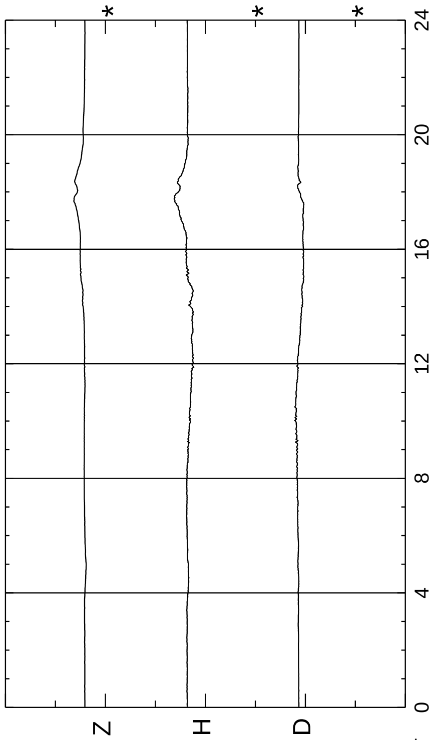


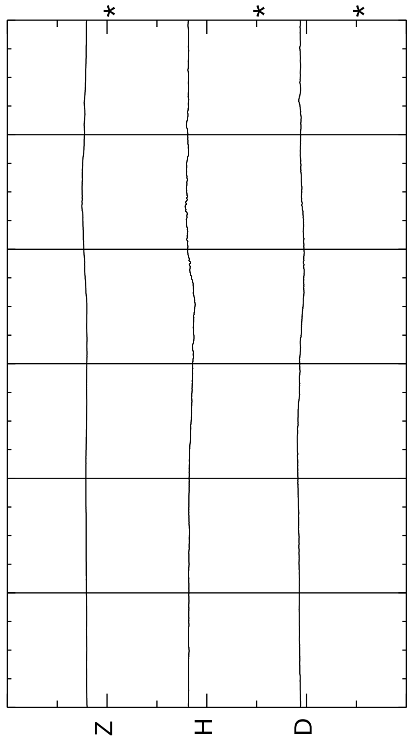
LEIRVOGUR 26. MAR 2014 DAY 85



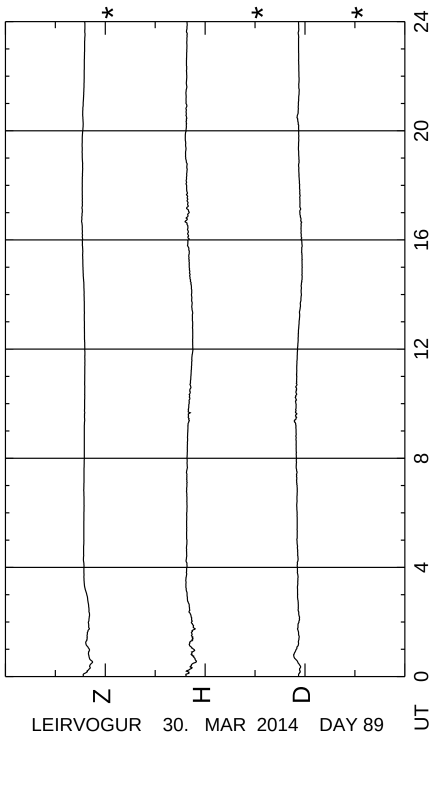
LEIRVOGUR 28. MAR 2014 DAY 87



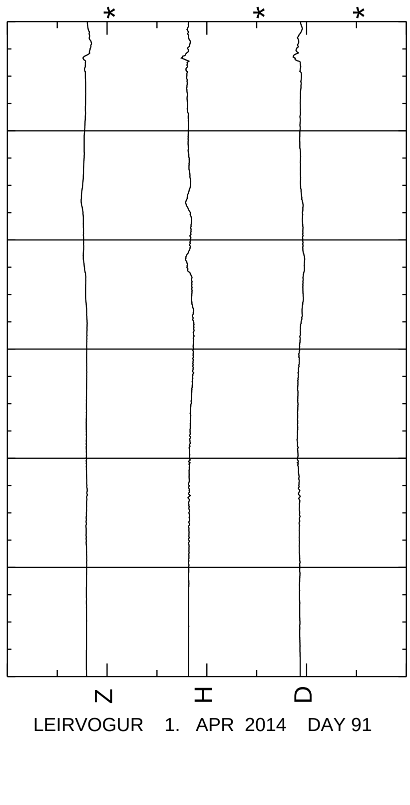
LEIRVOGUR 31. MAR 2014 DAY 90



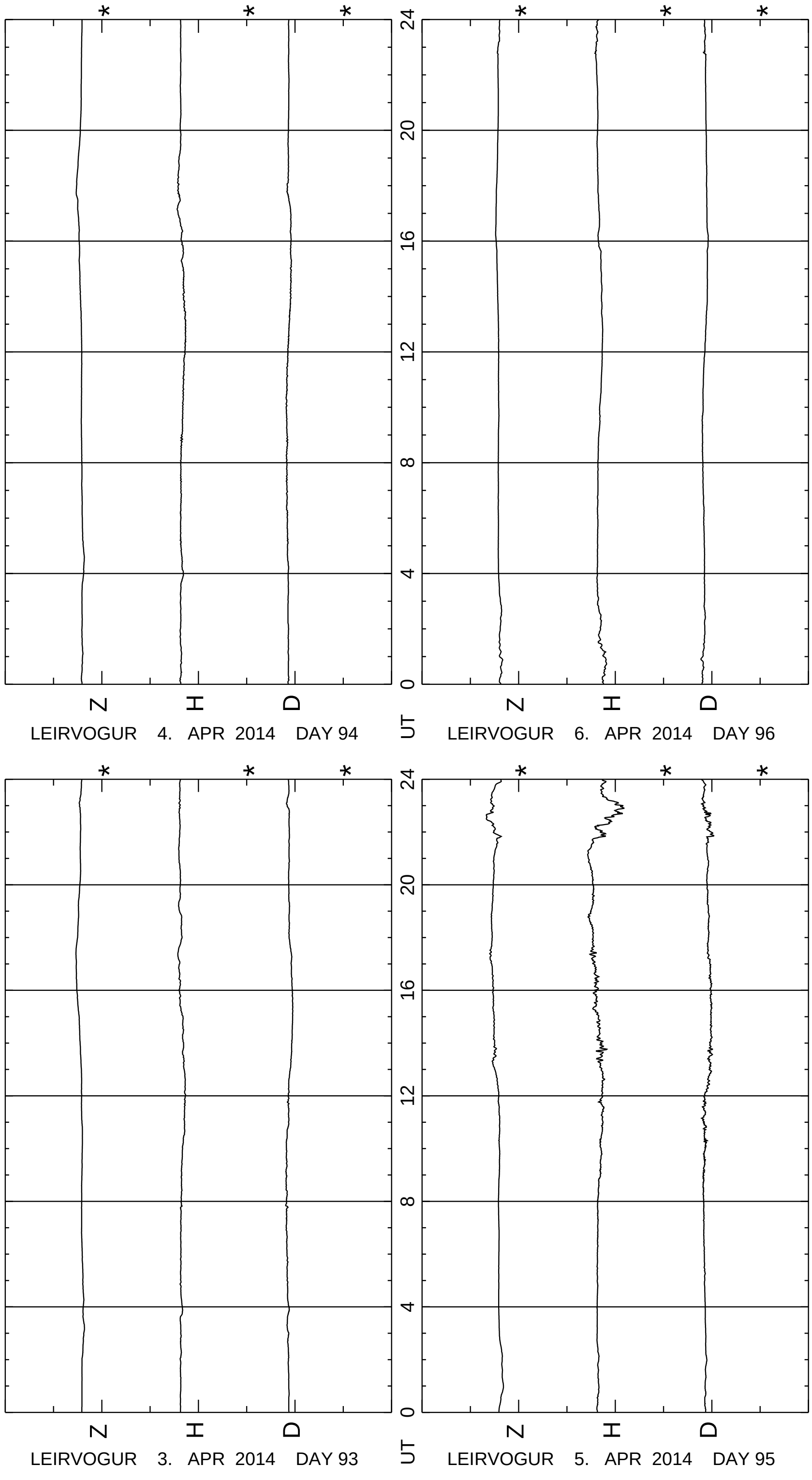
LEIRVOGUR 2. APR 2014 DAY 92



LEIRVOGUR 30. MAR 2014 DAY 89



LEIRVOGUR 1. APR 2014 DAY 91


LEIRVOGUR 4. APR 2014 DAY 94
LEIRVOGUR 6. APR 2014 DAY 96
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LEIRVOGUR 5. APR 2014 DAY 95
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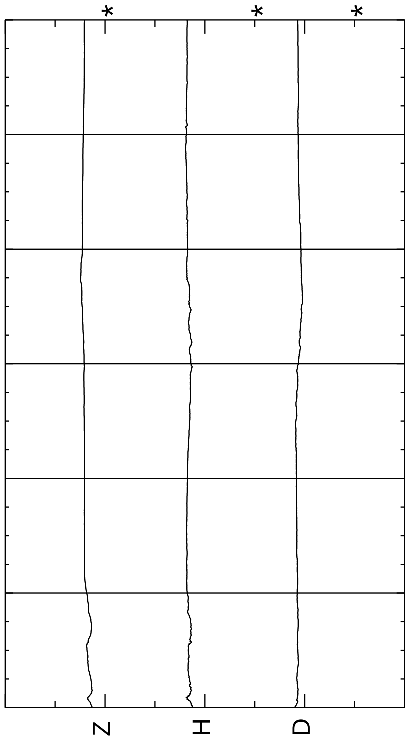

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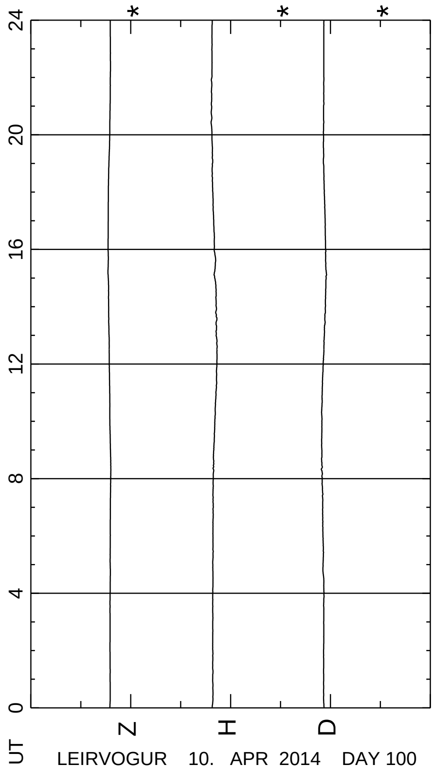
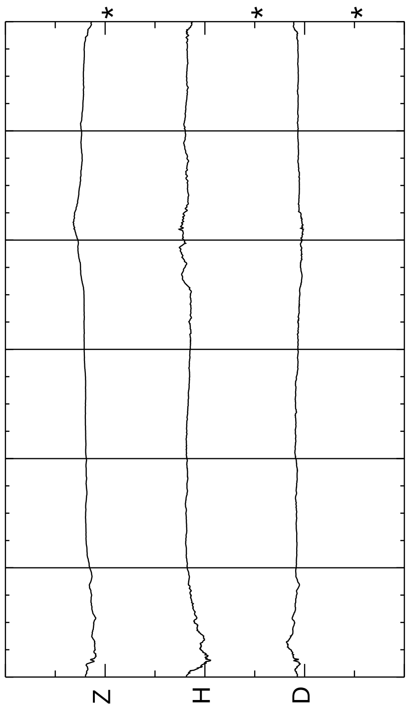
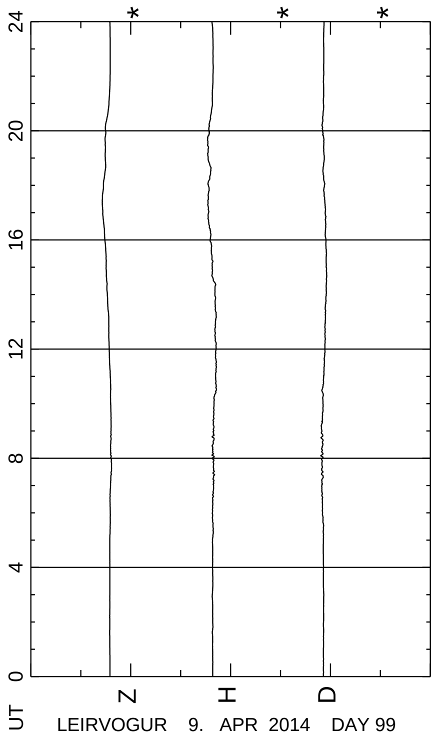


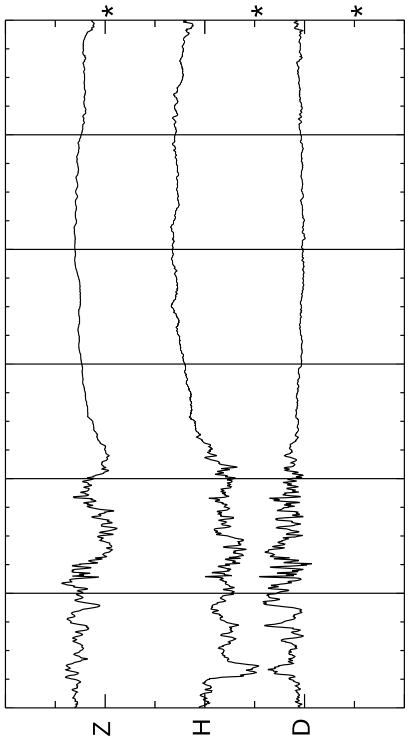
LEIRVOGUR 10. APR 2014 DAY 100



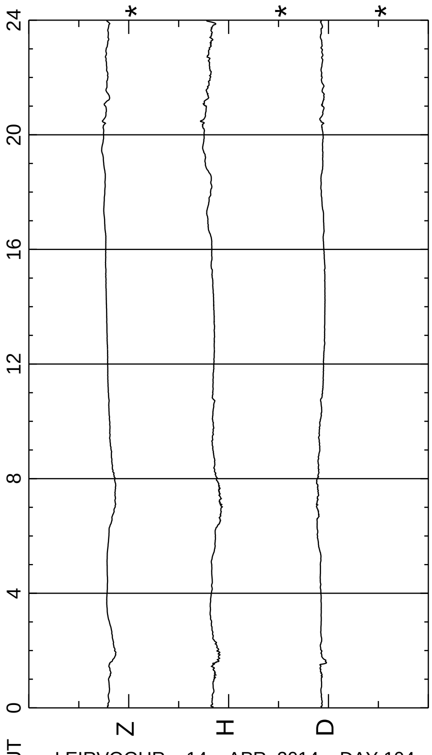
LEIRVOGUR 7. APR 2014 DAY 97



LEIRVOGUR 9. APR 2014 DAY 99



LEIRVOGUR 12. APR 2014 DAY 102



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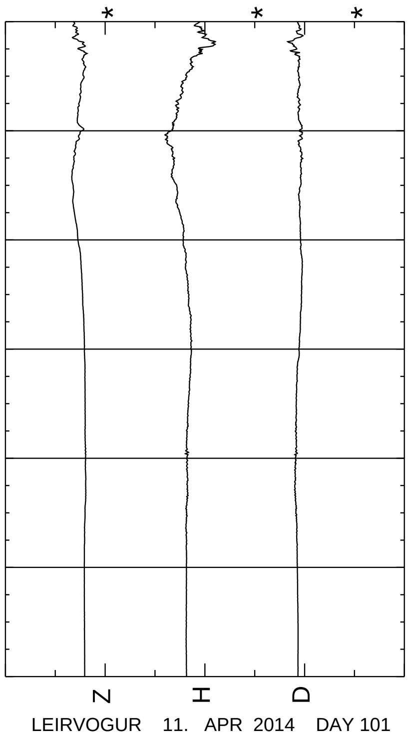
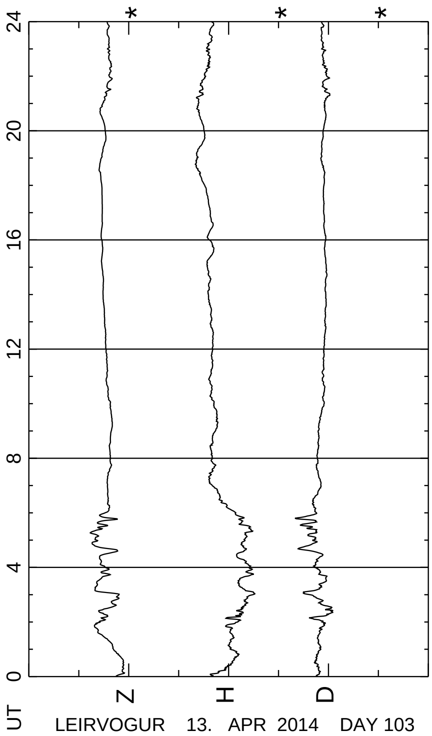
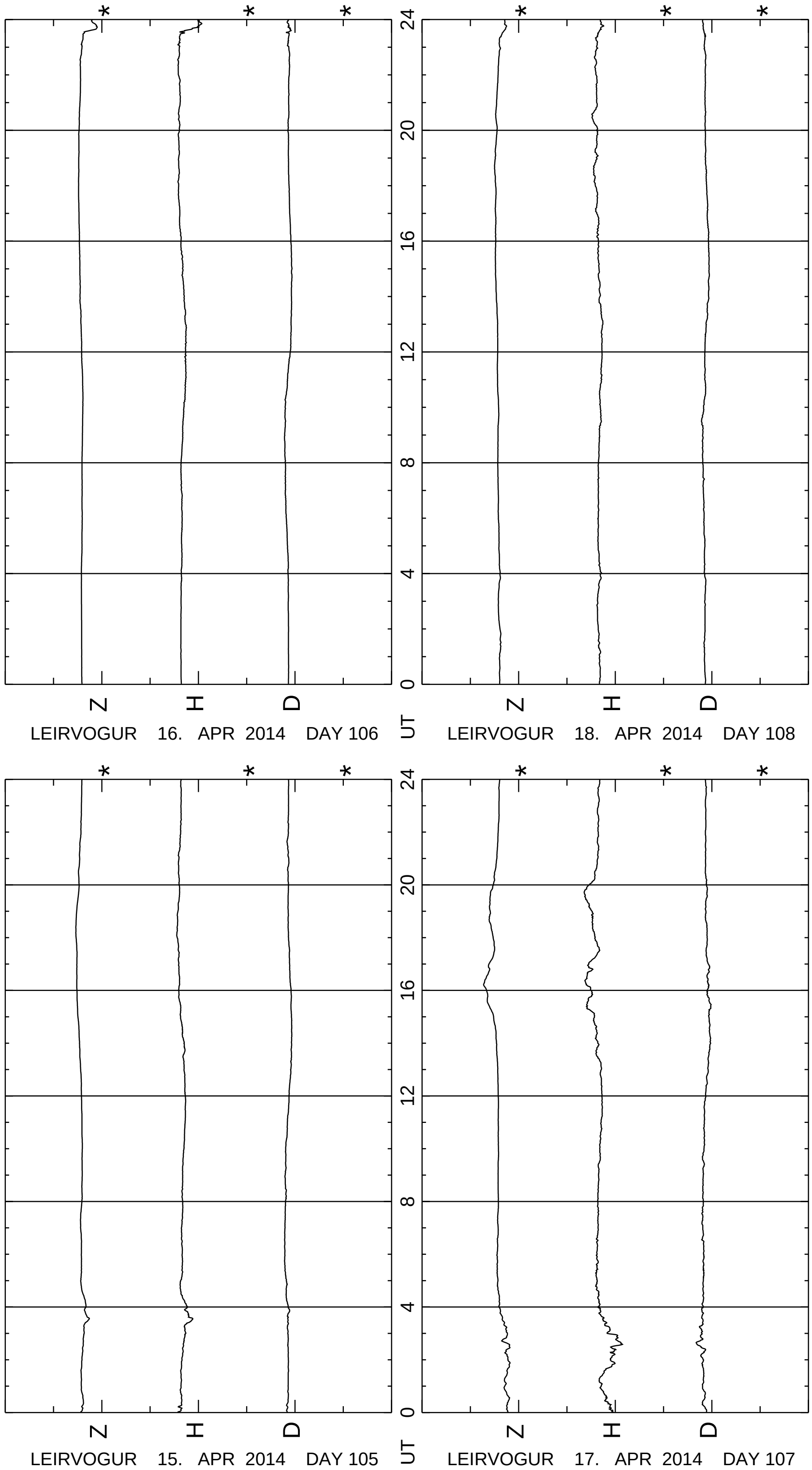


LEIRVOGUR 11. APR 2014 DAY 101



LEIRVOGUR 13. APR 2014 DAY 103


LEIRVOGUR 16. APR 2014 DAY 106
LEIRVOGUR 18. APR 2014 DAY 108
LEIRVOGUR 15. APR 2014 DAY 105
LEIRVOGUR 17. APR 2014 DAY 107
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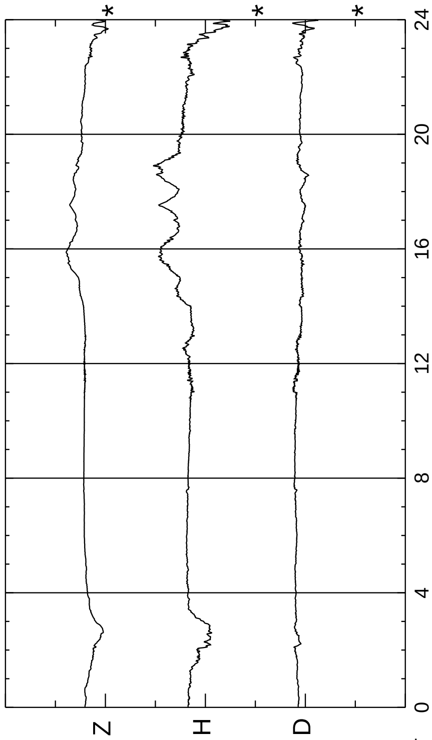

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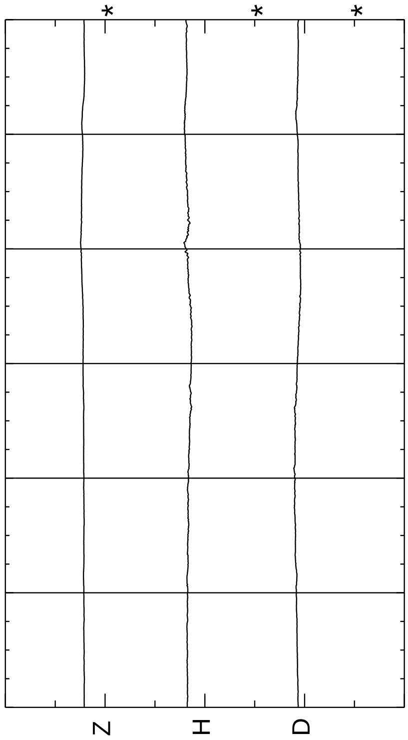

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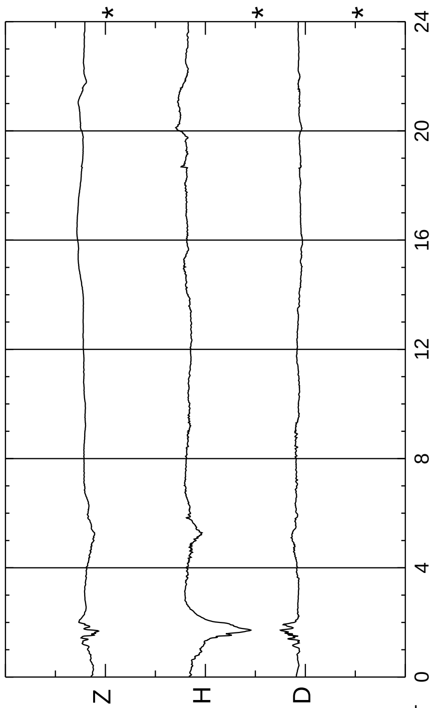

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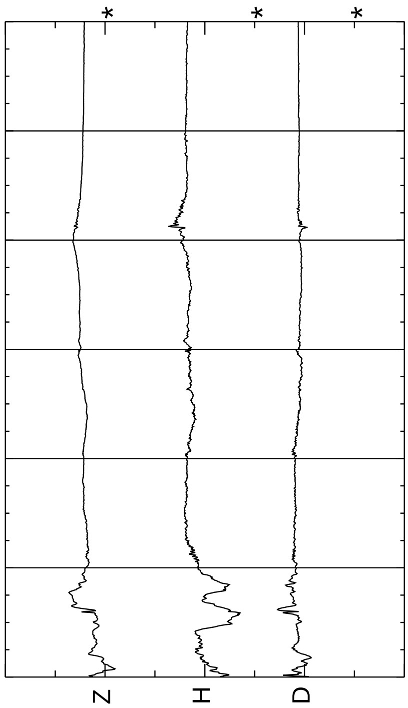

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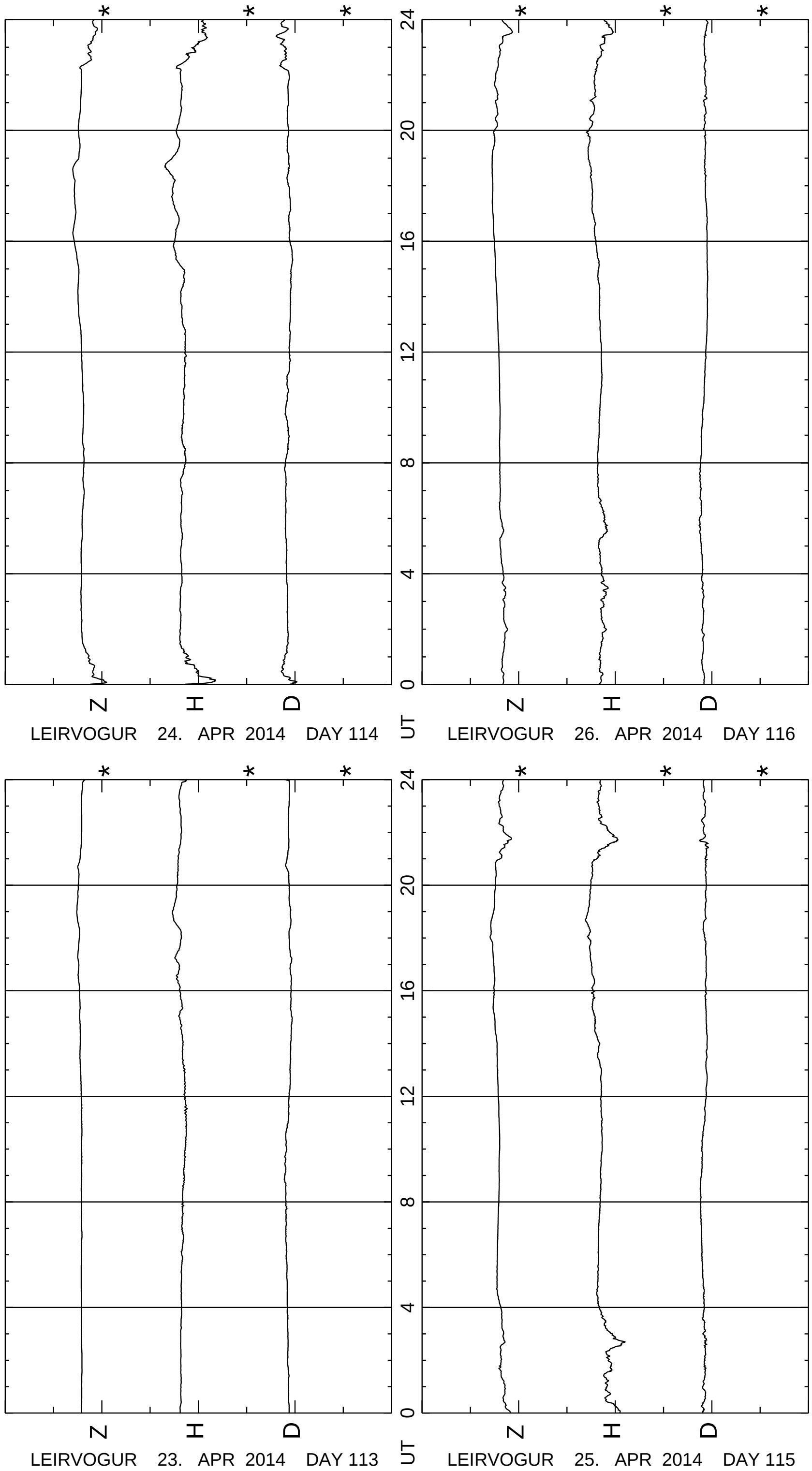
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LEIRVOGUR 26. APR 2014 DAY 116
LEIRVOGUR 23. APR 2014 DAY 113
LEIRVOGUR 25. APR 2014 DAY 115
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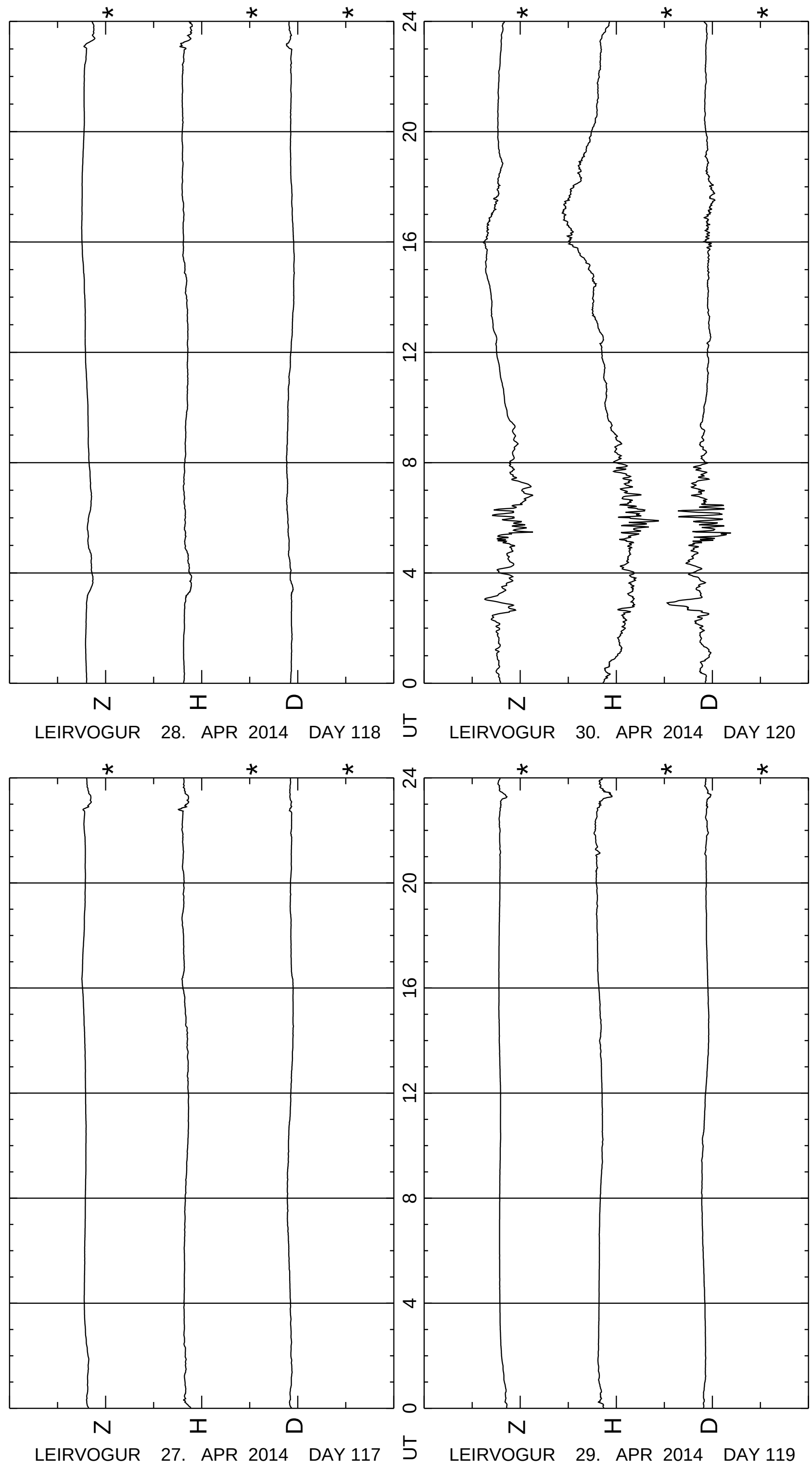
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LEIRVOGUR 29. APR 2014 DAY 119
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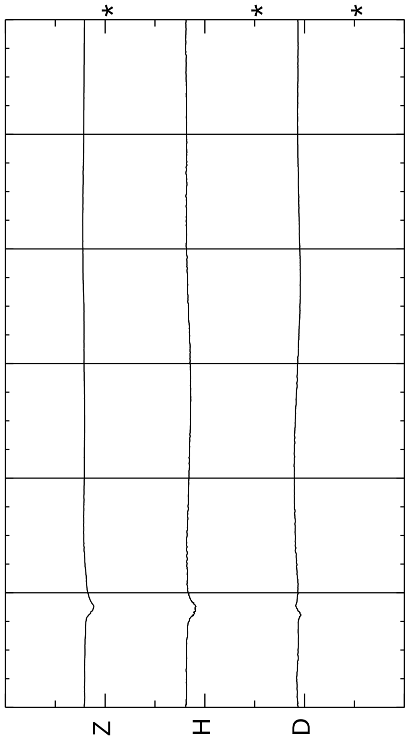

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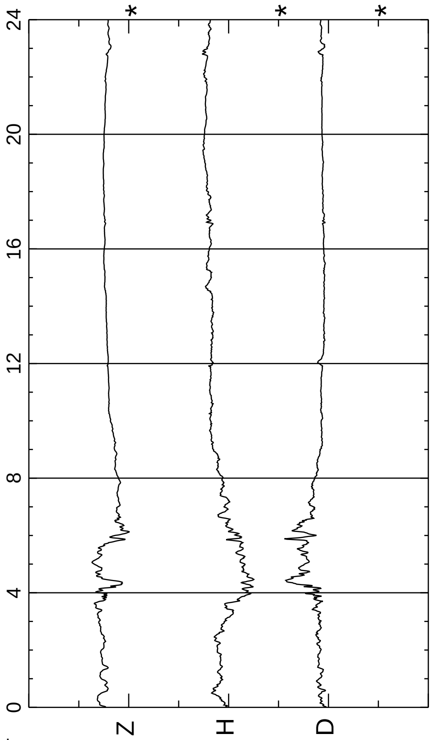
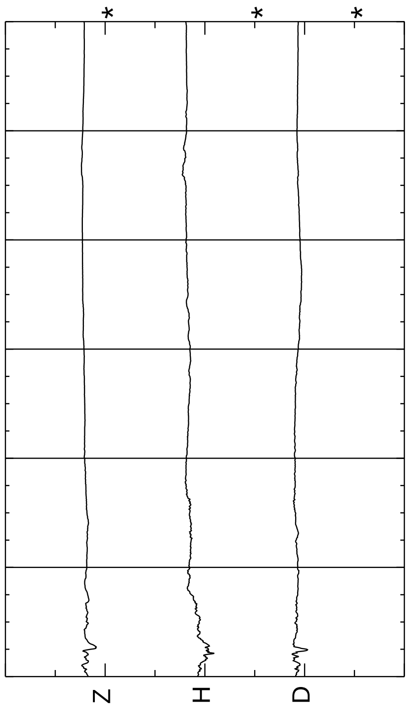


LEIRVOGUR 4. MAY 2014 DAY 124



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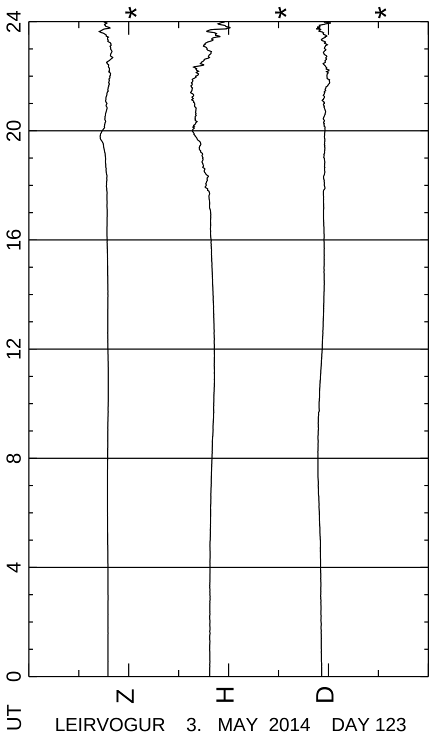
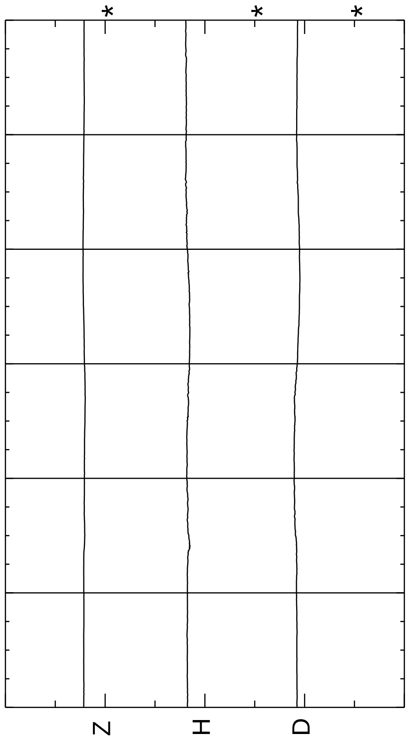
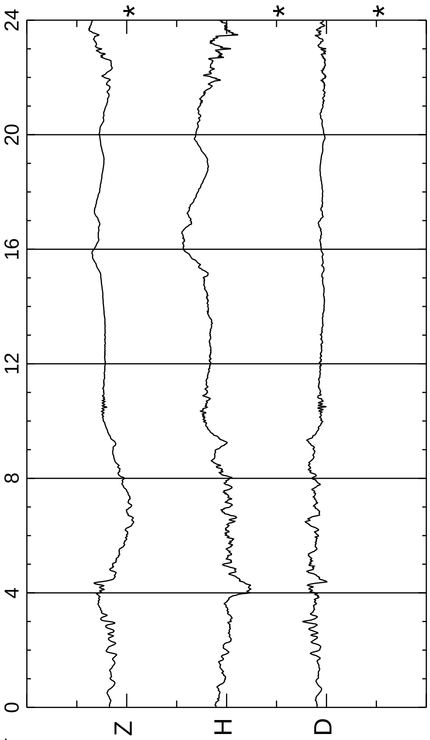


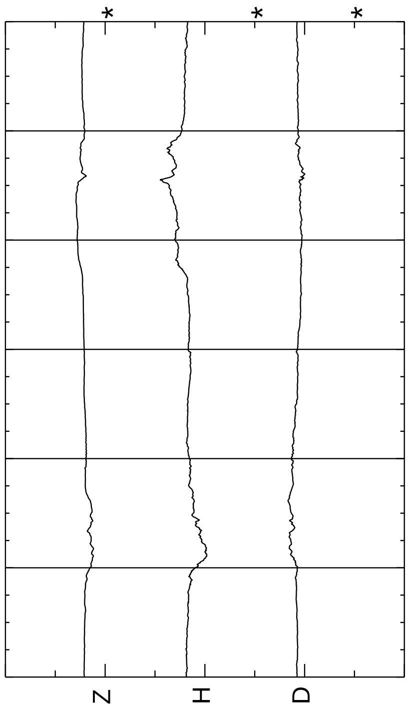
LEIRVOGUR 3. MAY 2014 DAY 123



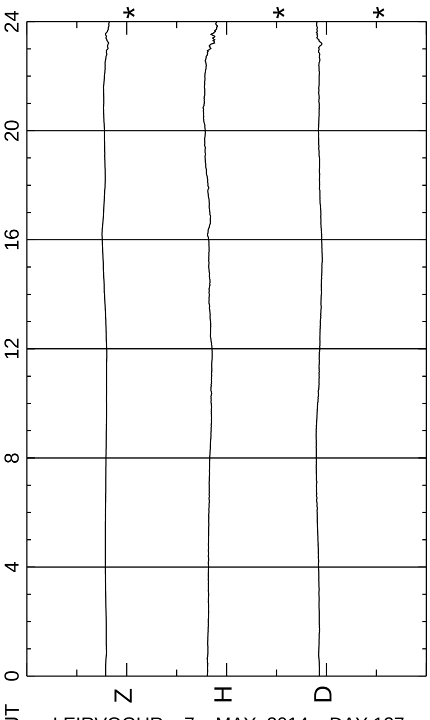
LEIRVOGUR 6. MAY 2014 DAY 126



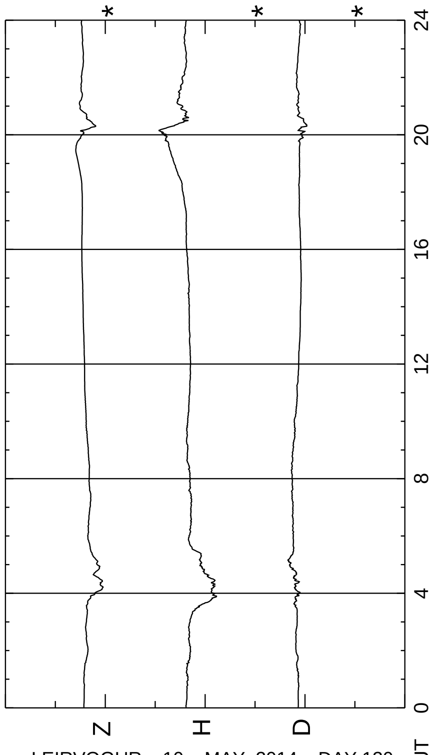
LEIRVOGUR 8. MAY 2014 DAY 128



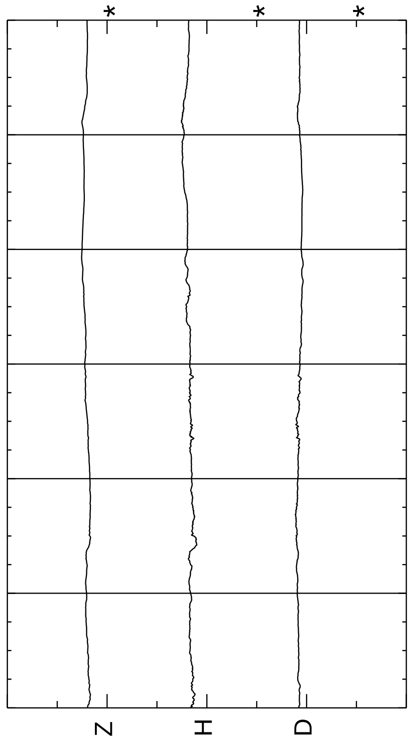
LEIRVOGUR 5. MAY 2014 DAY 125



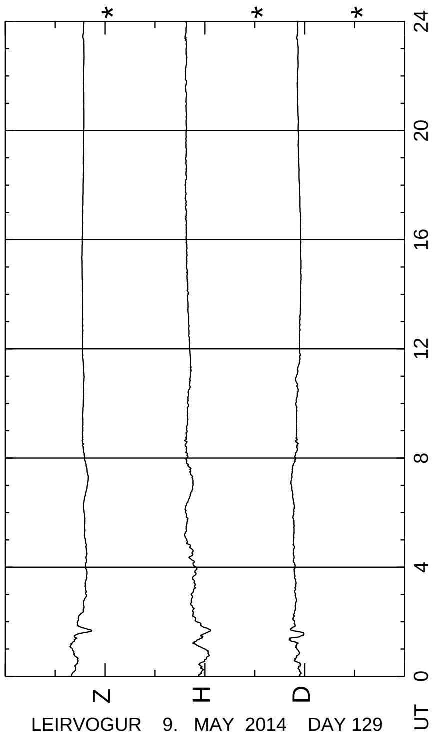
LEIRVOGUR 7. MAY 2014 DAY 127



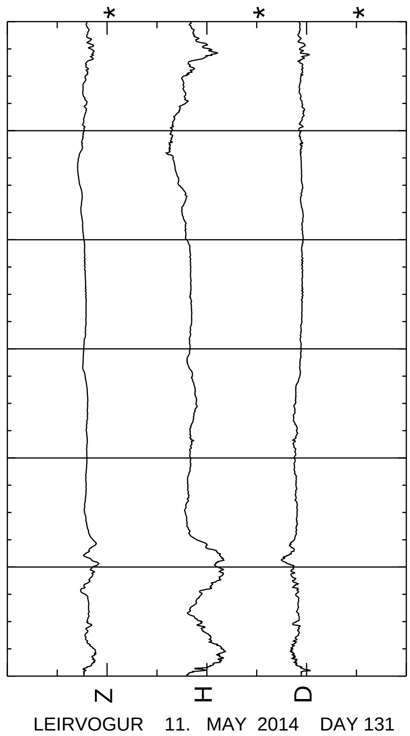
LEIRVOGUR 10. MAY 2014 DAY 130



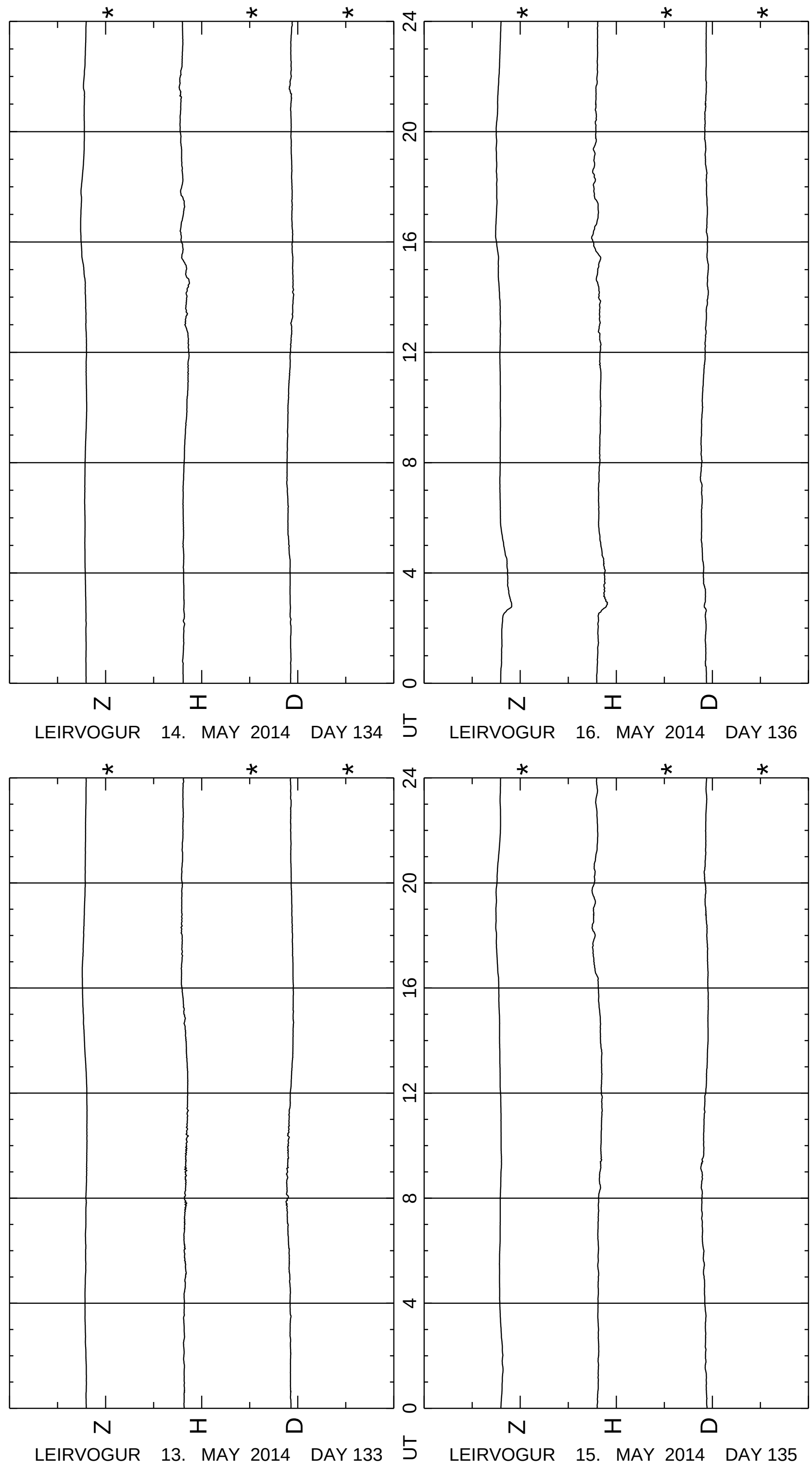
LEIRVOGUR 12. MAY 2014 DAY 132



LEIRVOGUR 9. MAY 2014 DAY 129



LEIRVOGUR 11. MAY 2014 DAY 131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LEIRVOGUR 16. MAY 2014 DAY 136
LEIRVOGUR 13. MAY 2014 DAY 133
LEIRVOGUR 15. MAY 2014 DAY 135
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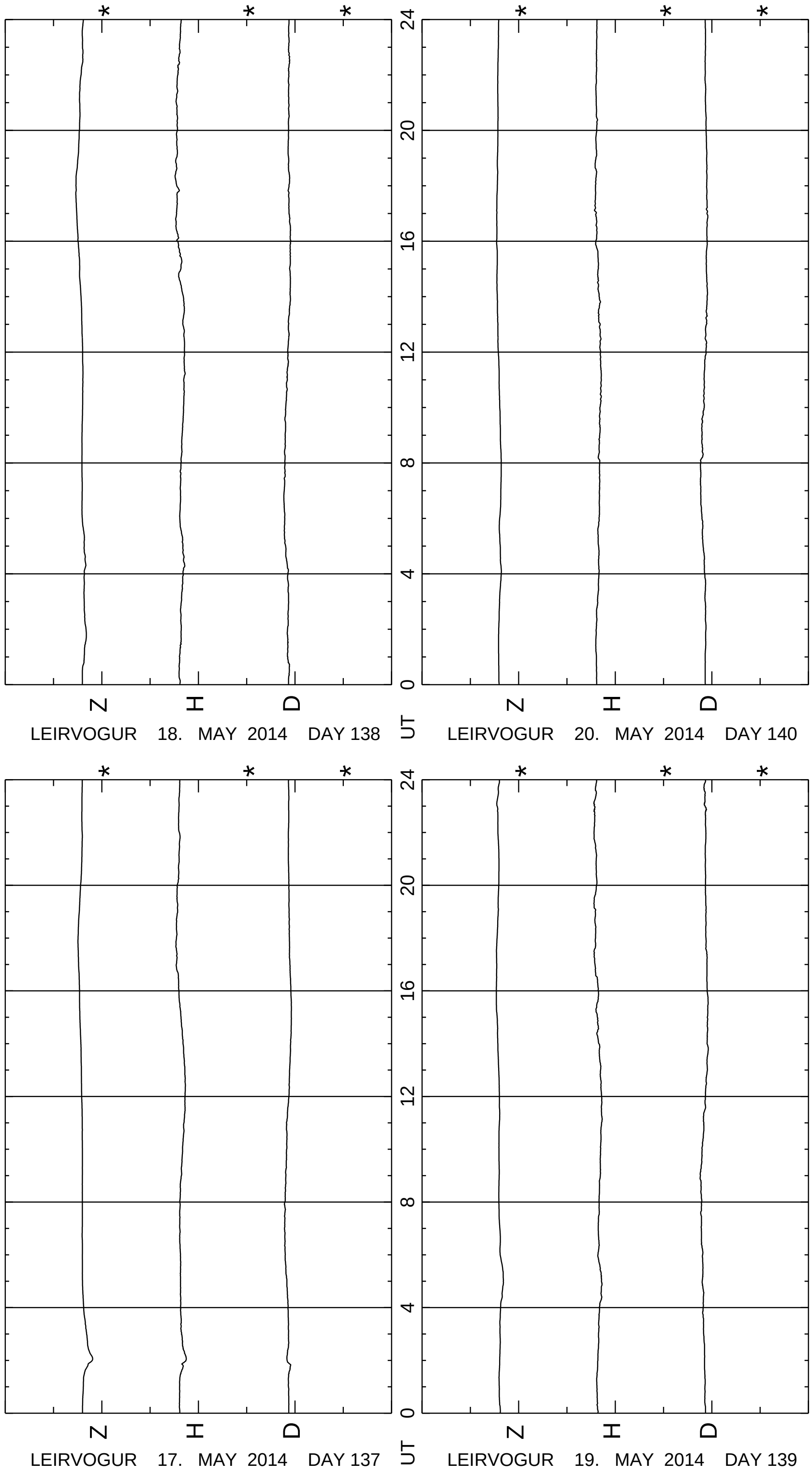
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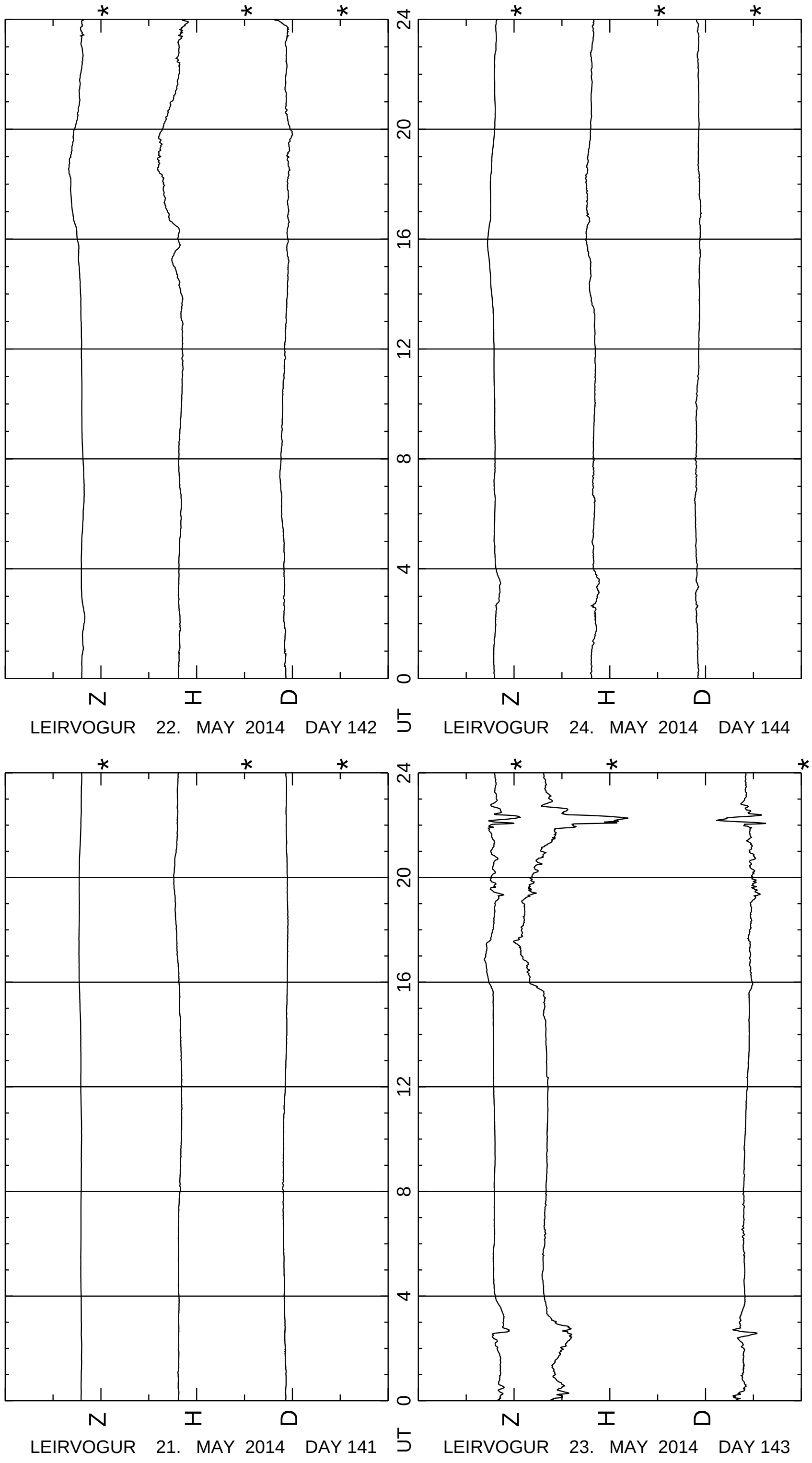

LEIRVOGUR 22. MAY 2014 DAY 142
LEIRVOGUR 24. MAY 2014 DAY 144
LEIRVOGUR 21. MAY 2014 DAY 141
LEIRVOGUR 23. MAY 2014 DAY 143
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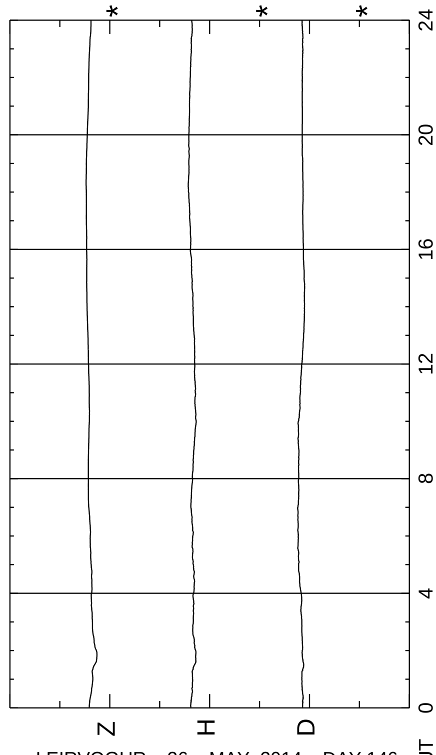

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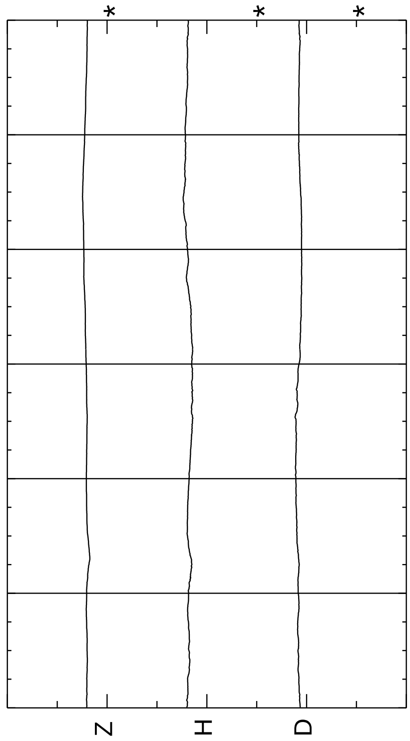

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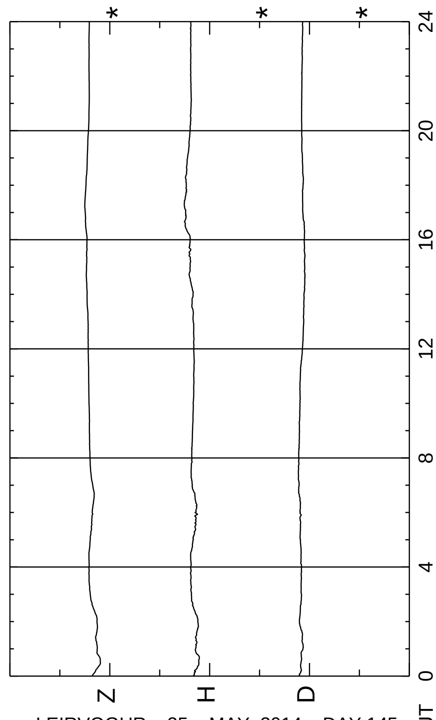

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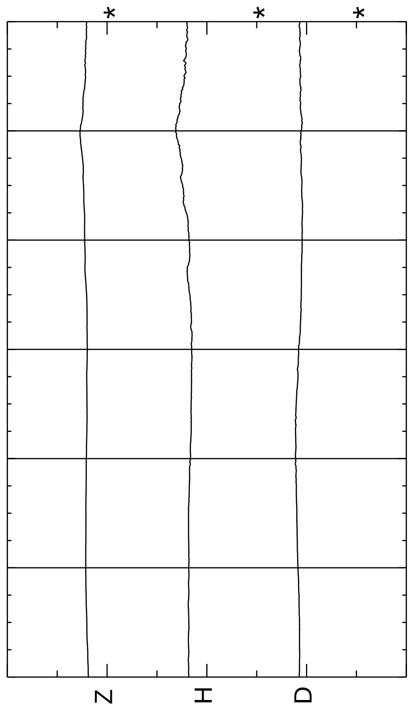
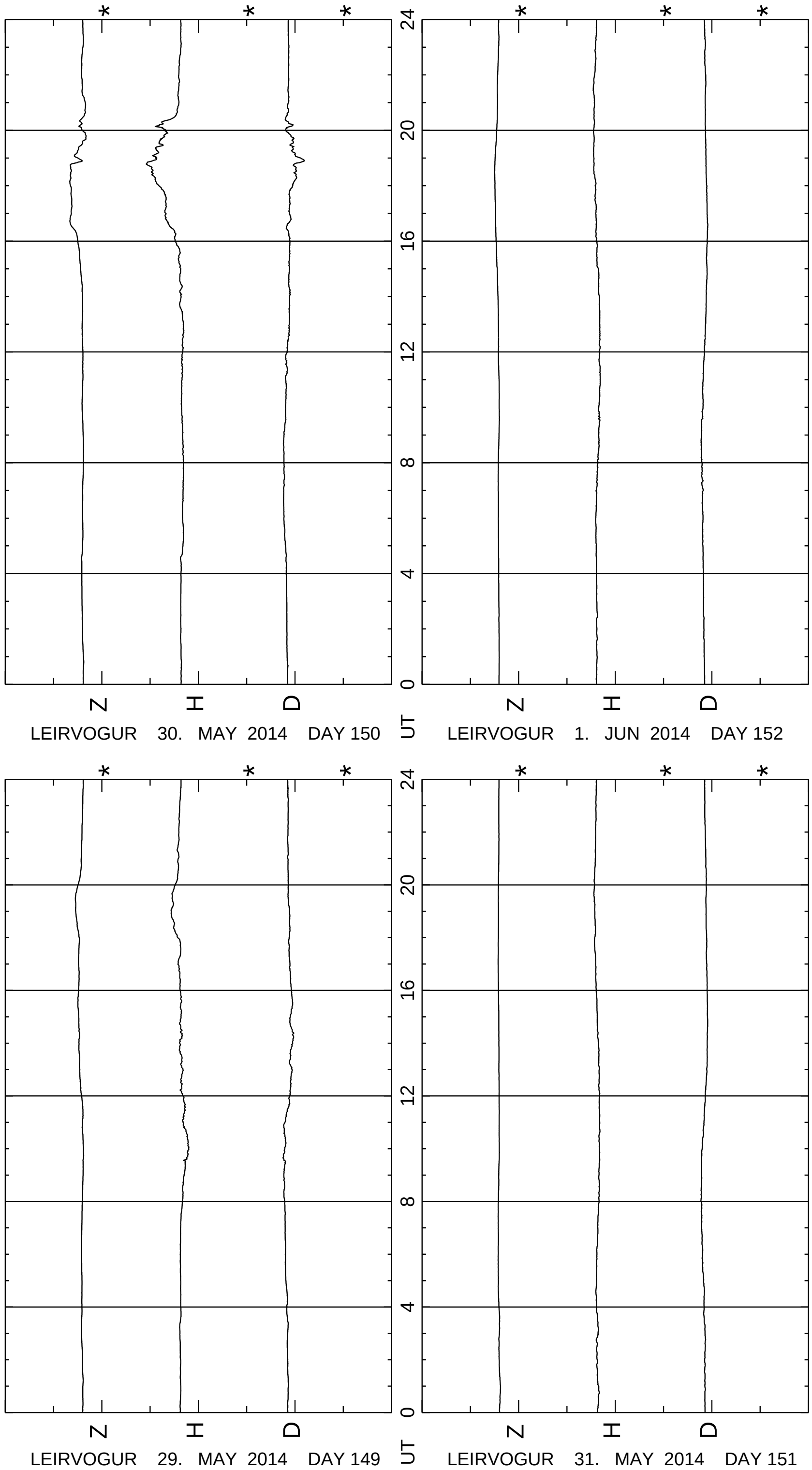


LEIRVOGUR 27. MAY 2014 DAY 147


LEIRVOGUR 30. MAY 2014 DAY 150
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LEIRVOGUR 29. MAY 2014 DAY 149
LEIRVOGUR 31. MAY 2014 DAY 151
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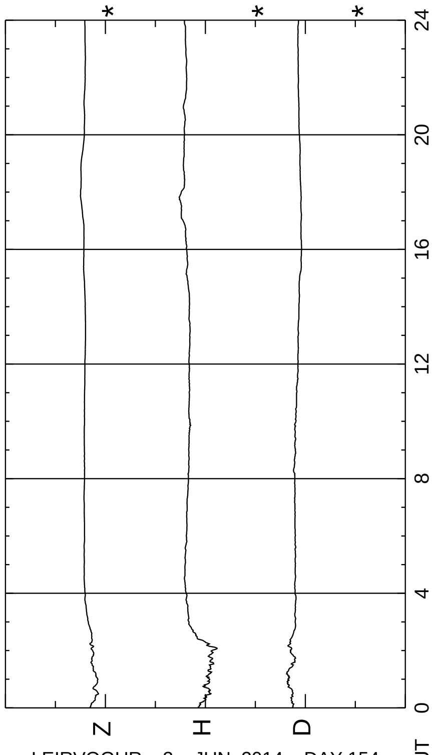
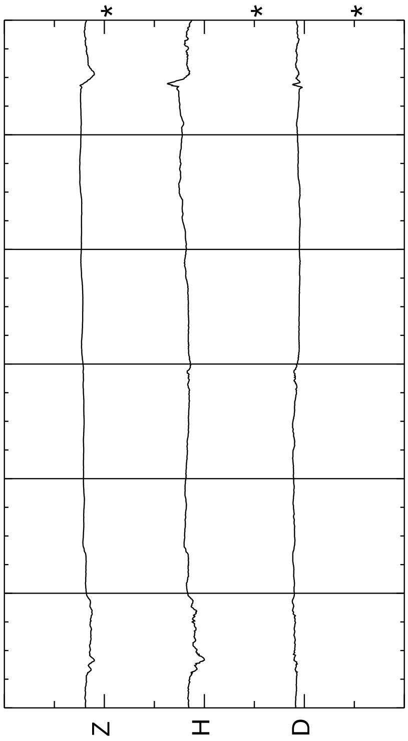
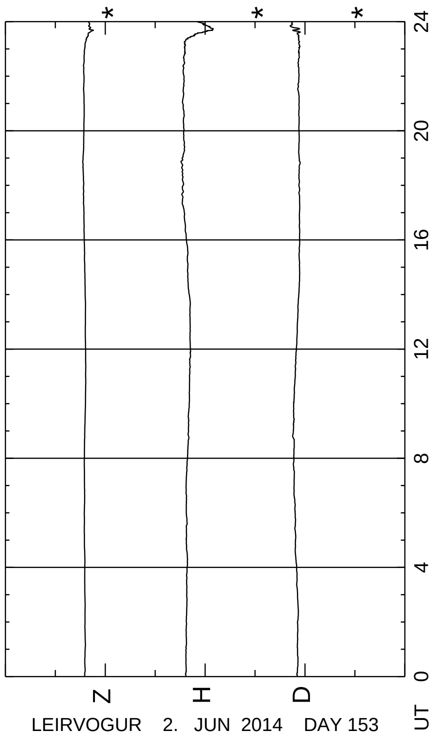


LEIRVOGUR 3. JUN 2014 DAY 154



LEIRVOGUR 5. JUN 2014 DAY 156



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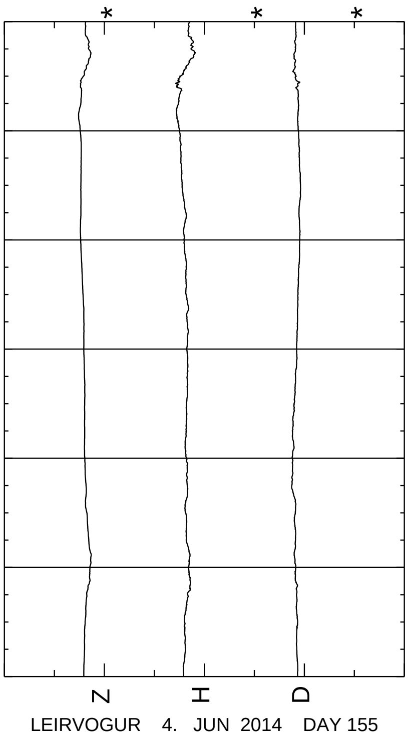
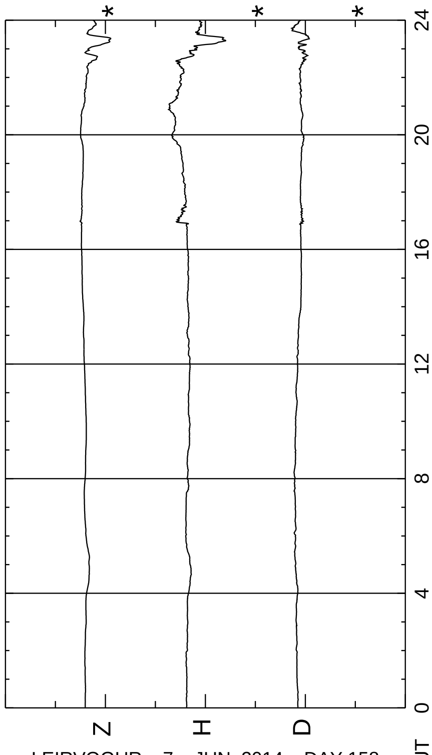
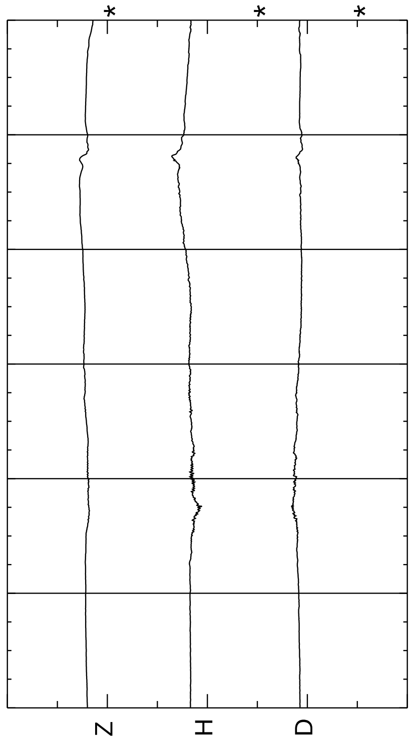


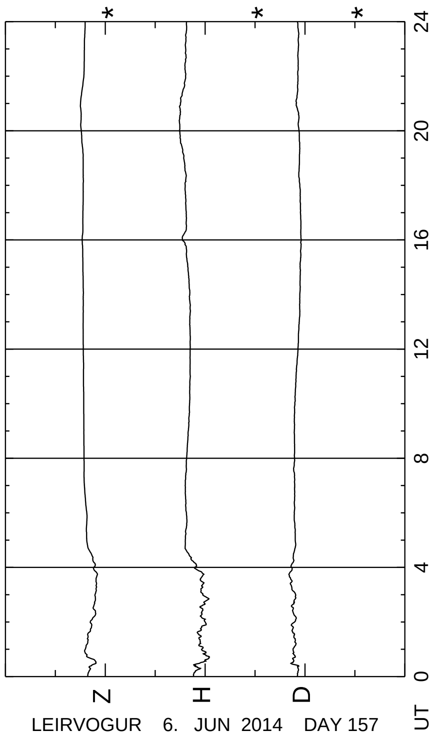
LEIRVOGUR 4. JUN 2014 DAY 155



LEIRVOGUR 7. JUN 2014 DAY 158



LEIRVOGUR 9. JUN 2014 DAY 160



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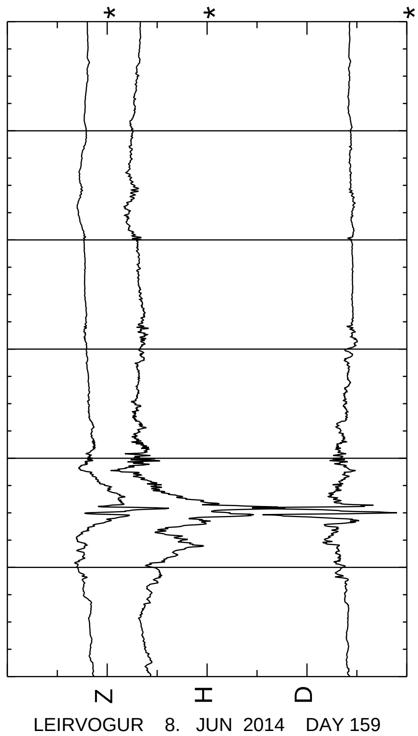
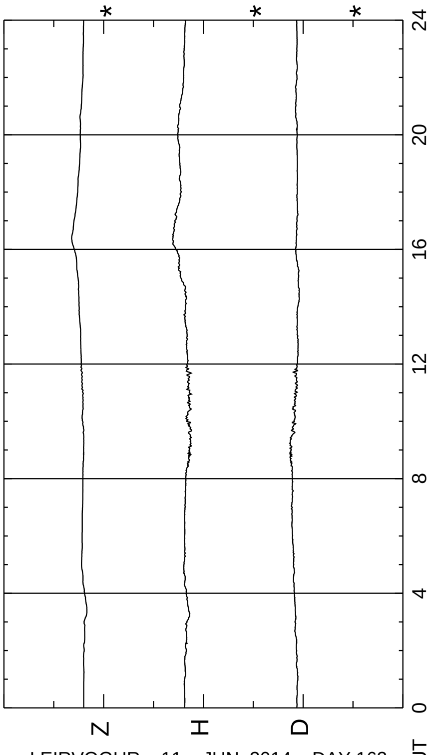
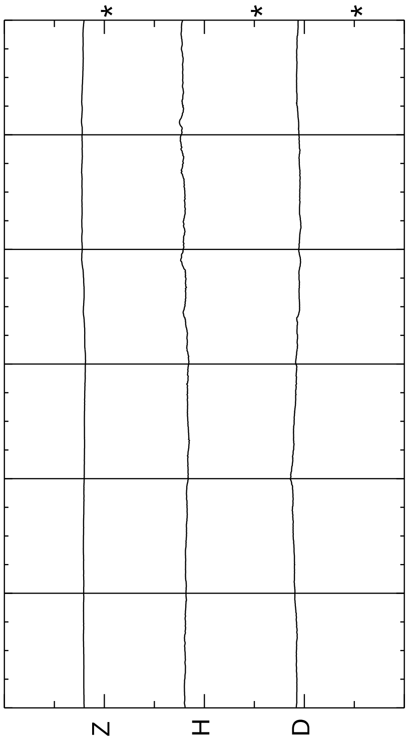


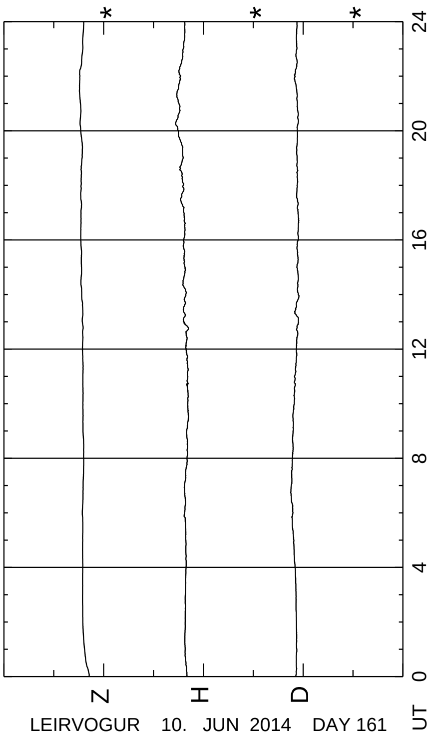
LEIRVOGUR 8. JUN 2014 DAY 159



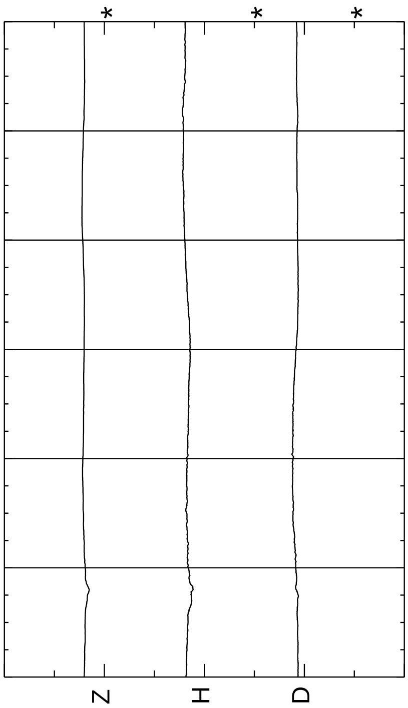
LEIRVOGUR 11. JUN 2014 DAY 162



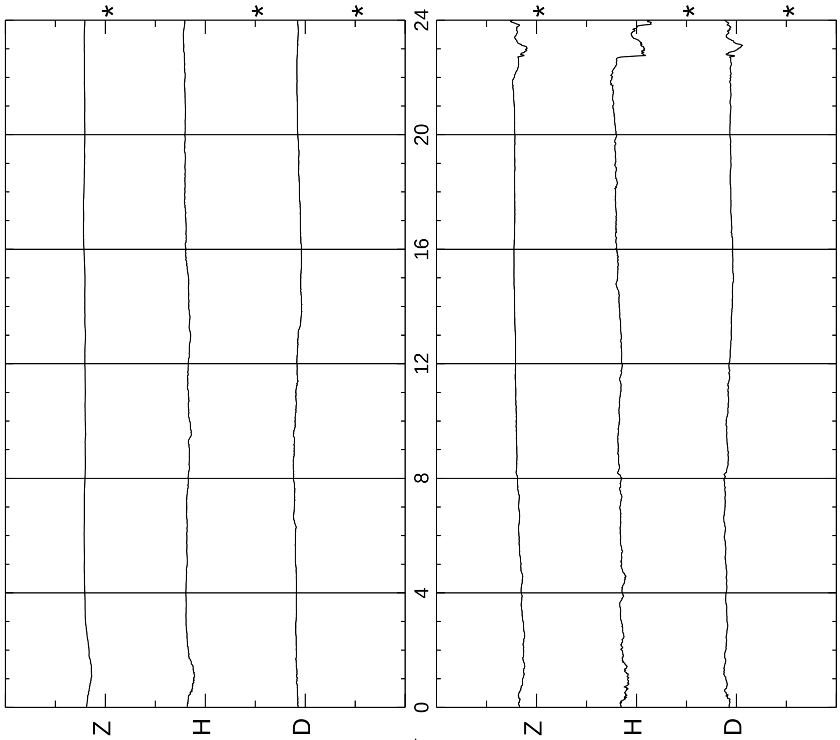
LEIRVOGUR 13. JUN 2014 DAY 164



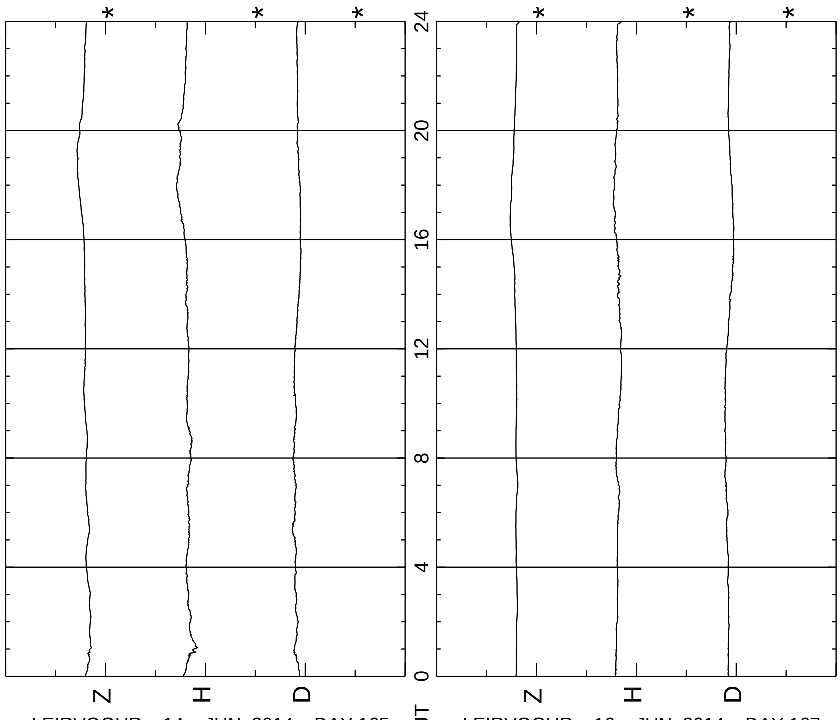
LEIRVOGUR 10. JUN 2014 DAY 161



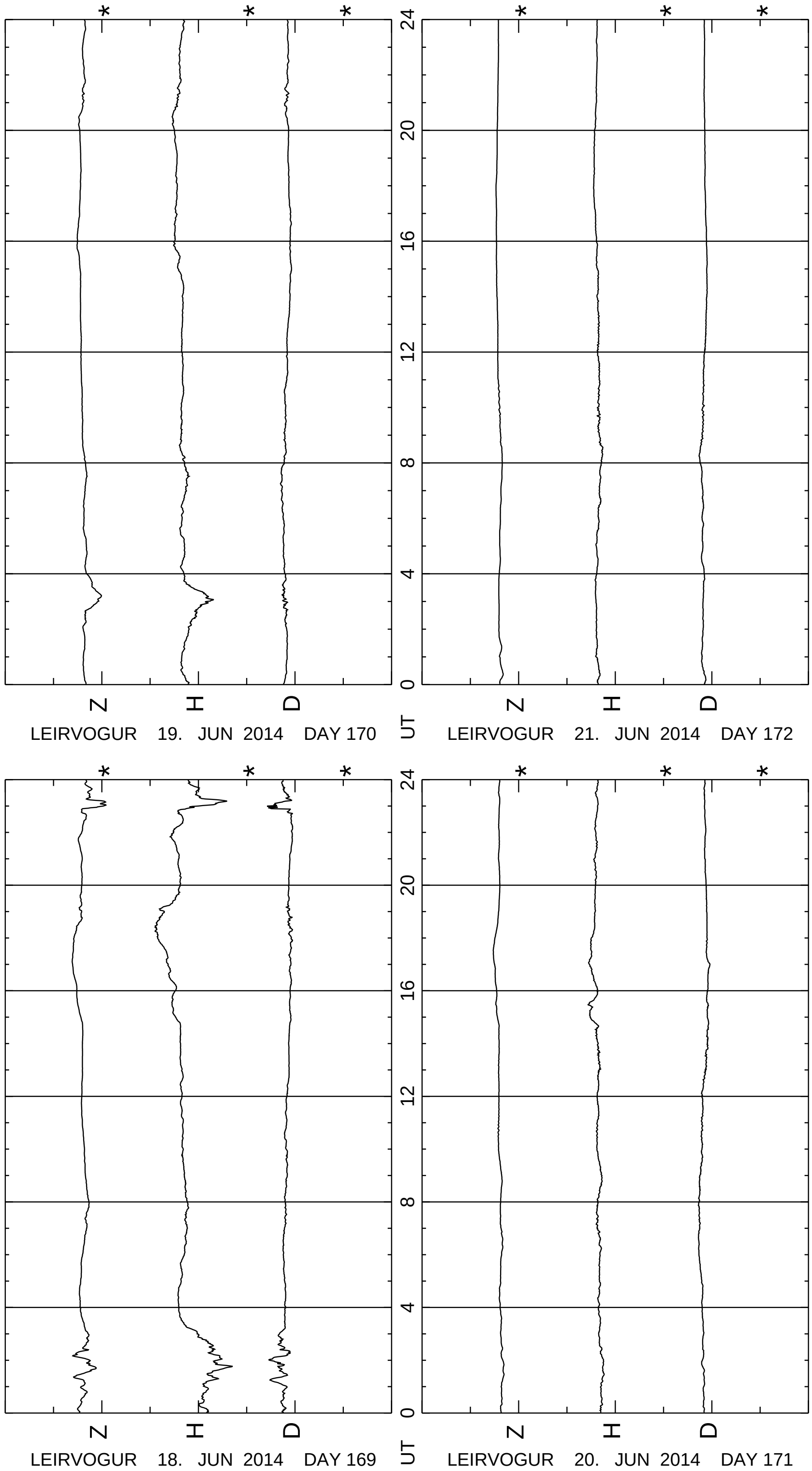
LEIRVOGUR 12. JUN 2014 DAY 163



LEIRVOGUR 15. JUN 2014 DAY 166 UT LEIRVOGUR 17. JUN 2014 DAY 168



LEIRVOGUR 14. JUN 2014 DAY 165 UT LEIRVOGUR 16. JUN 2014 DAY 167


LEIRVOGUR 19. JUN 2014 DAY 170
LEIRVOGUR 21. JUN 2014 DAY 172
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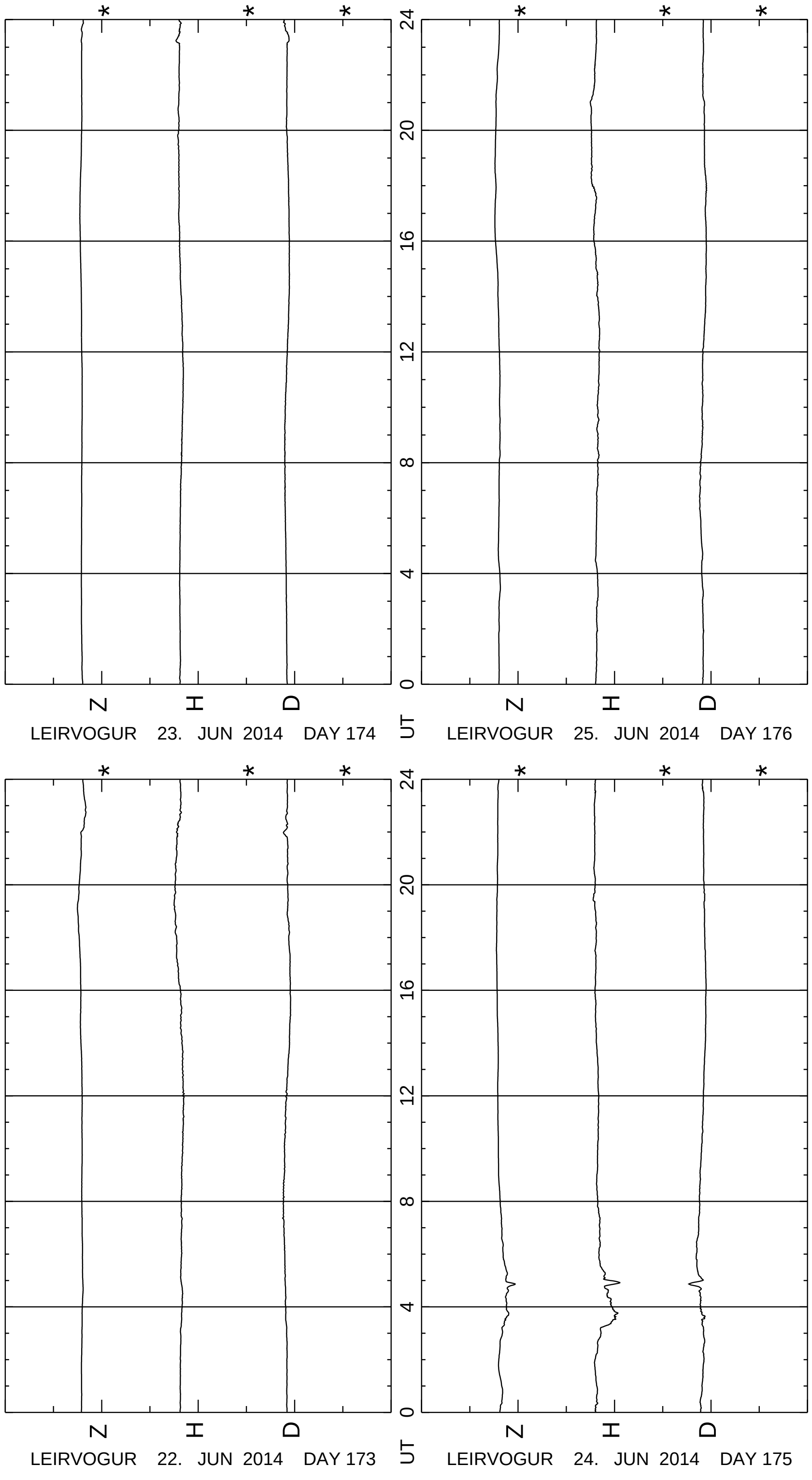
LEIRVOGUR 23. JUN 2014 DAY 174
LEIRVOGUR 25. JUN 2014 DAY 176
LEIRVOGUR 22. JUN 2014 DAY 173
LEIRVOGUR 24. JUN 2014 DAY 175
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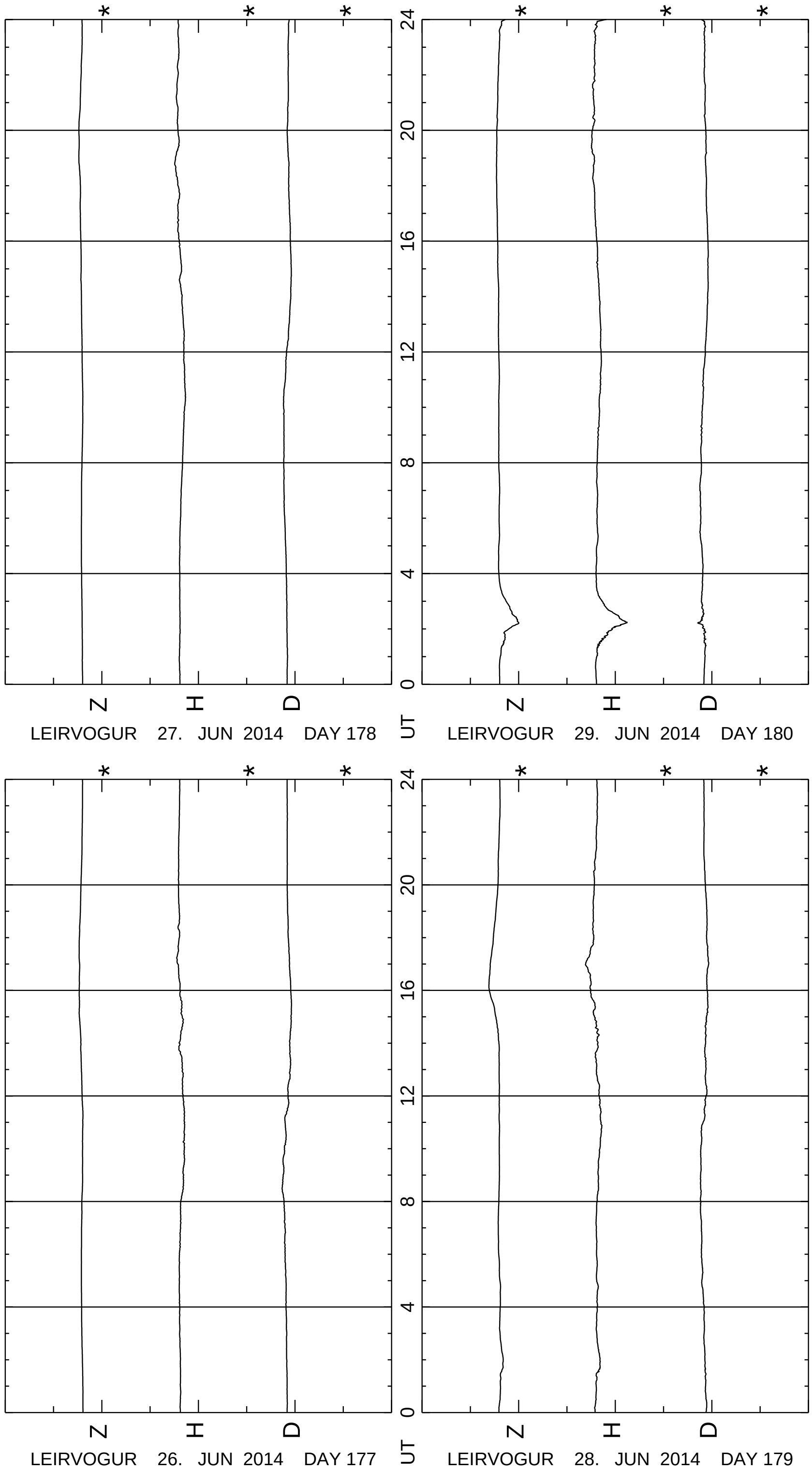
LEIRVOGUR 27. JUN 2014 DAY 178
LEIRVOGUR 29. JUN 2014 DAY 180
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LEIRVOGUR 28. JUN 2014 DAY 179
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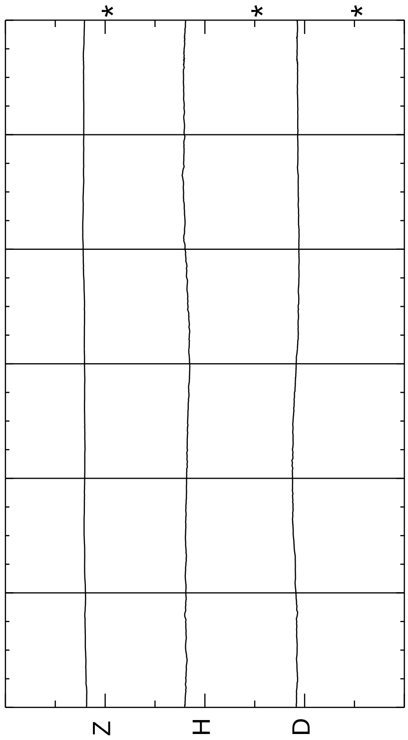
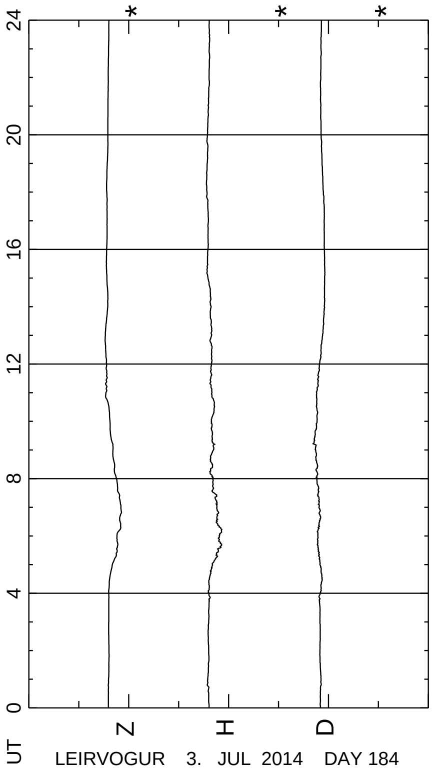
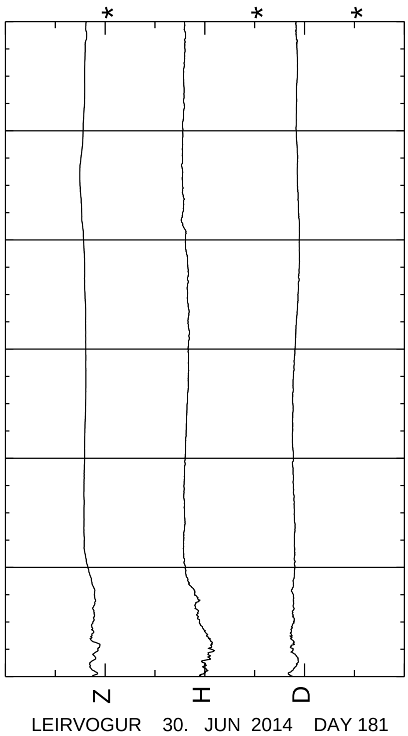


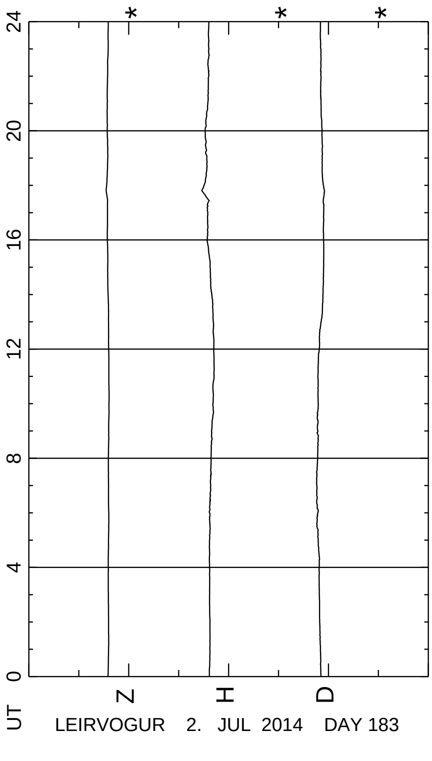
LEIRVOGUR 1. JUL 2014 DAY 182



LEIRVOGUR 3. JUL 2014 DAY 184



LEIRVOGUR 30. JUN 2014 DAY 181



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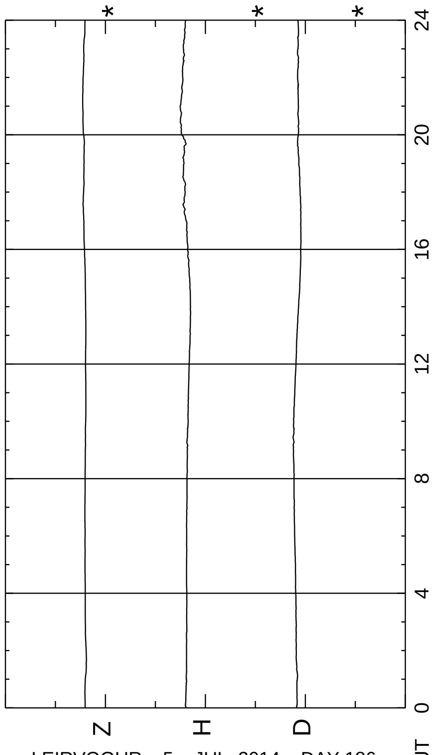
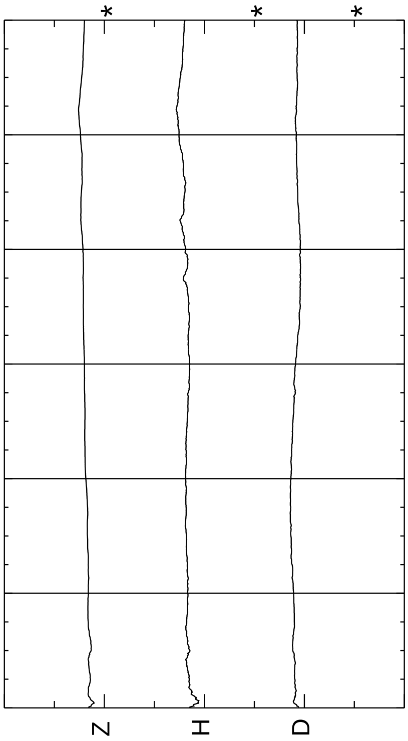
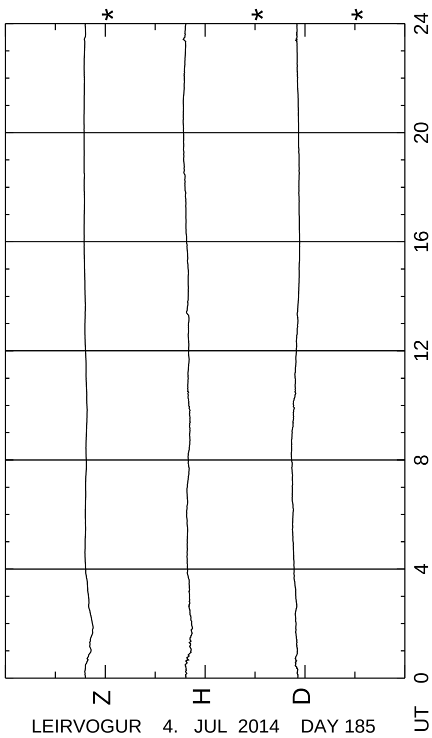


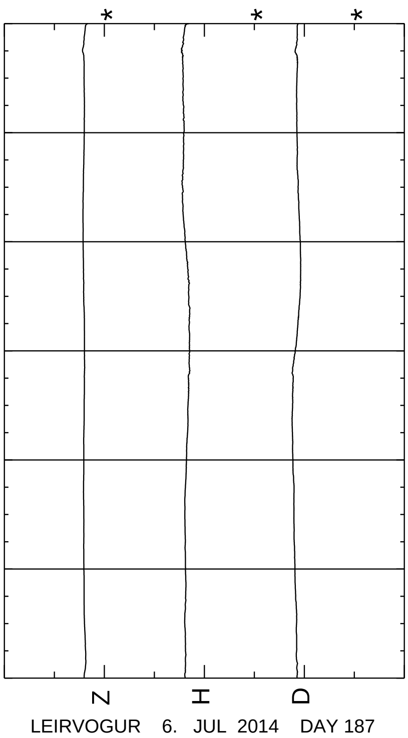
LEIRVOGUR 5. JUL 2014 DAY 186



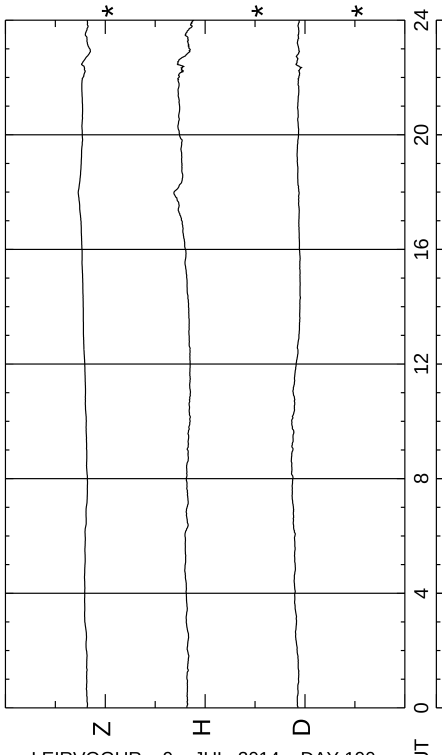
LEIRVOGUR 7. JUL 2014 DAY 188



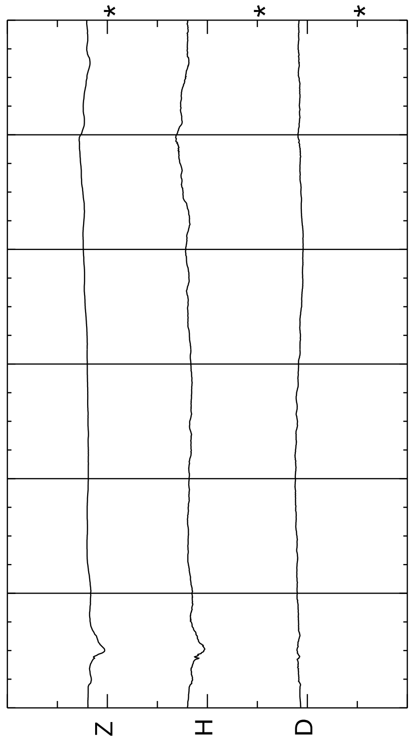
LEIRVOGUR 4. JUL 2014 DAY 185



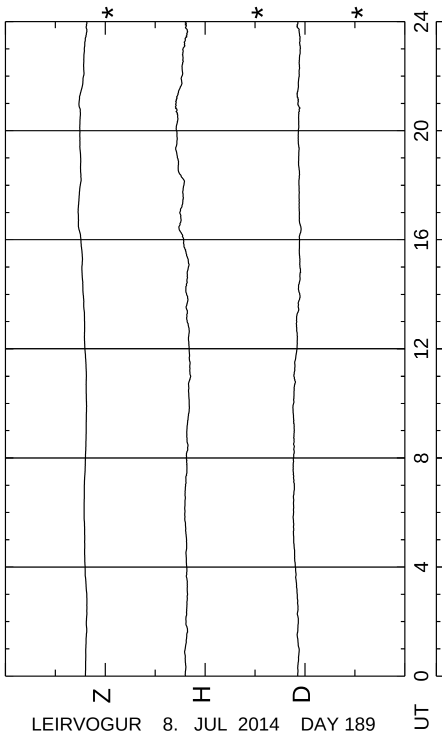
LEIRVOGUR 6. JUL 2014 DAY 187



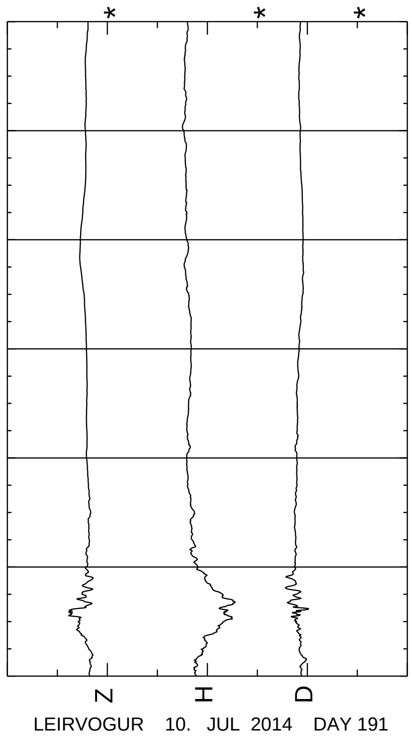
LEIRVOGUR 9. JUL 2014 DAY 190



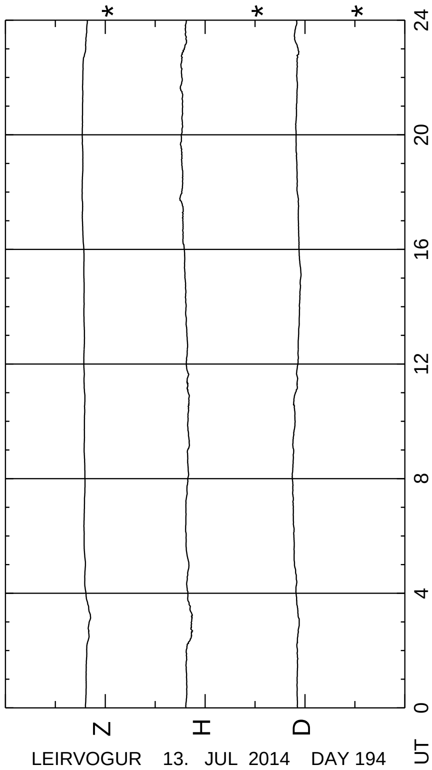
LEIRVOGUR 11. JUL 2014 DAY 192



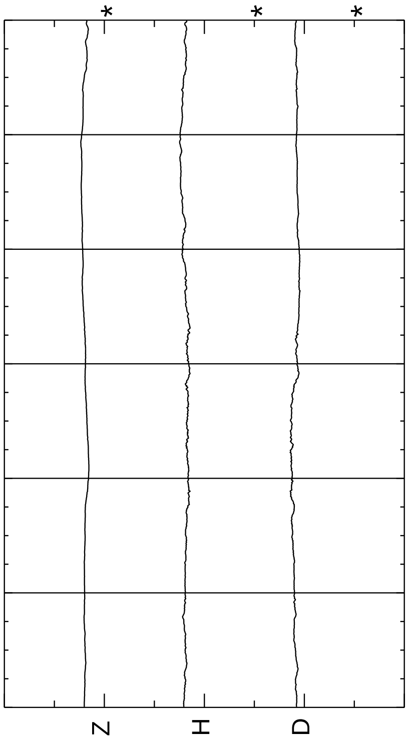
LEIRVOGUR 8. JUL 2014 DAY 189



LEIRVOGUR 10. JUL 2014 DAY 191



LEIRVOGUR 13. JUL 2014 DAY 194



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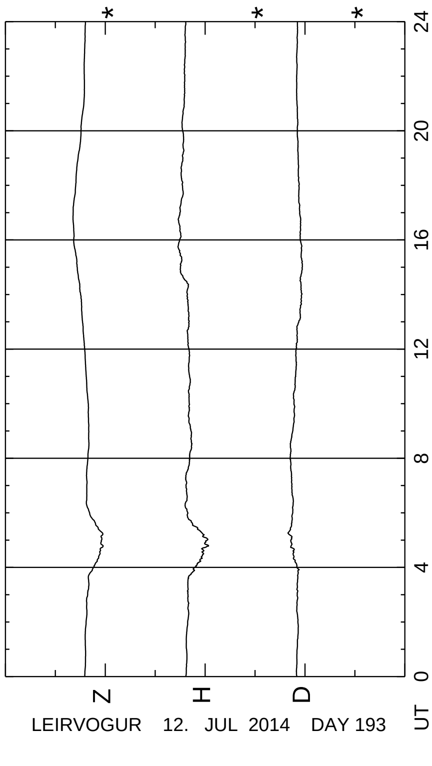
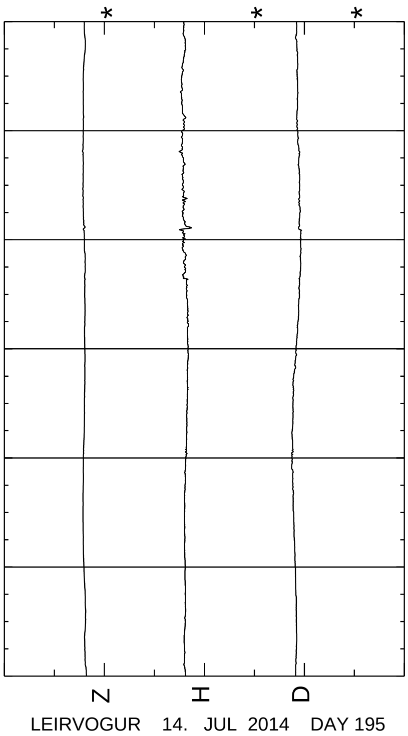


LEIRVOGUR 12. JUL 2014 DAY 193



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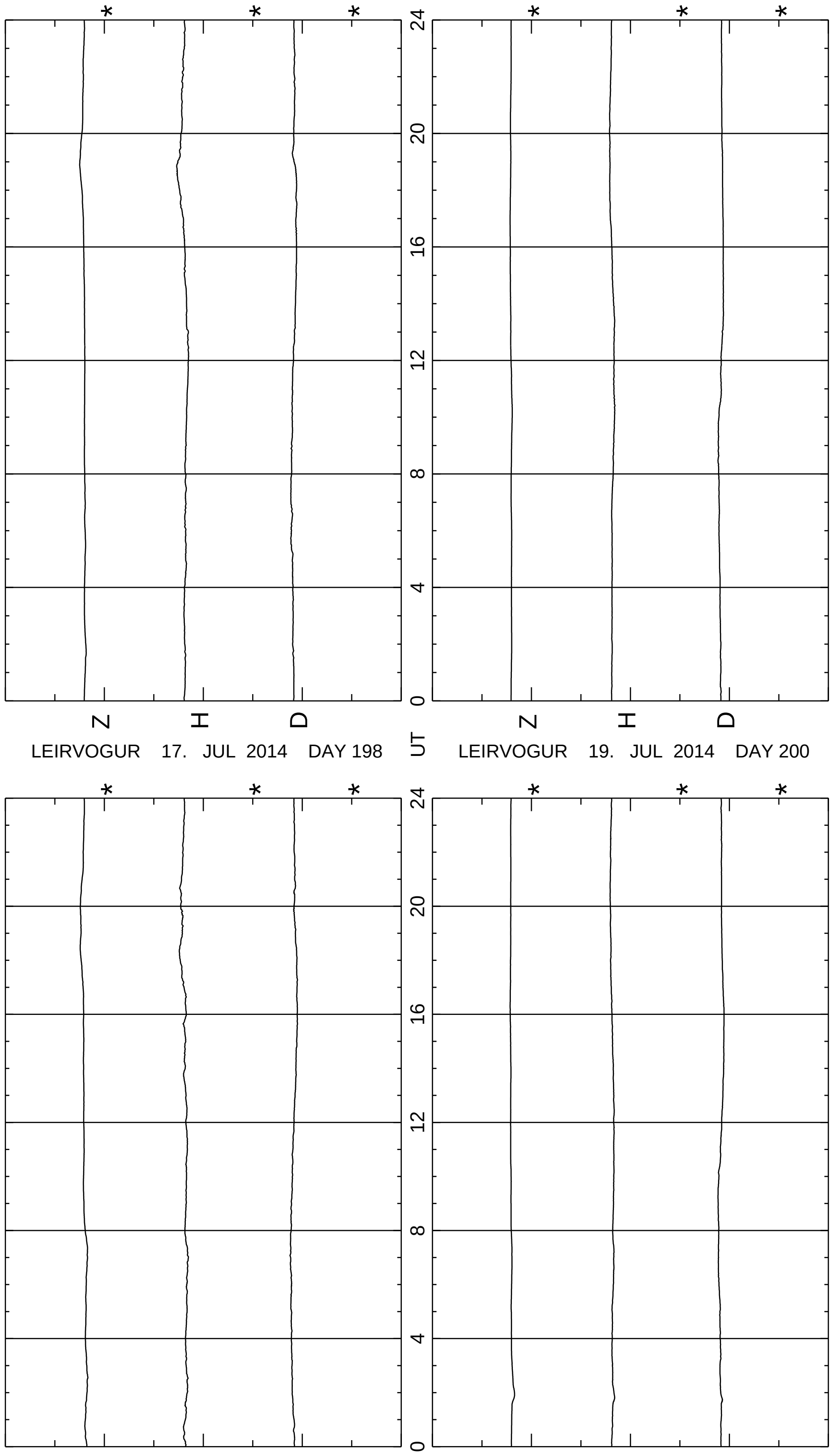

LEIRVOGUR 17. JUL 2014 DAY 198
LEIRVOGUR 19. JUL 2014 DAY 200
LEIRVOGUR 16. JUL 2014 DAY 197
LEIRVOGUR 18. JUL 2014 DAY 199
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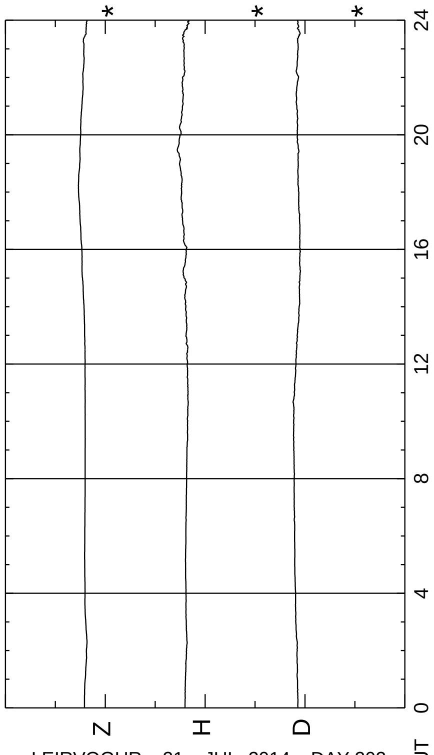
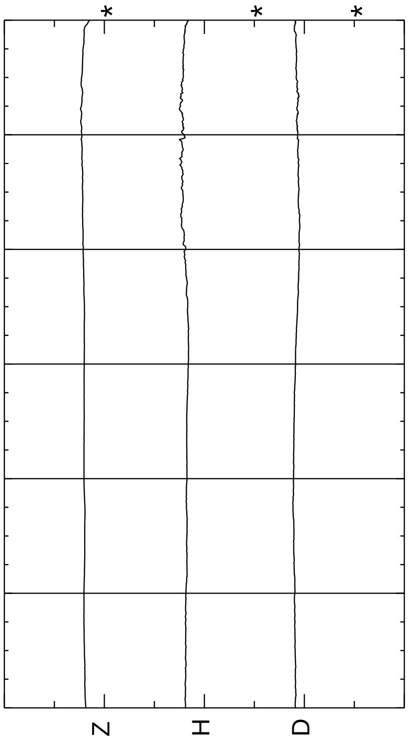


LEIRVOGUR 21. JUL 2014 DAY 202



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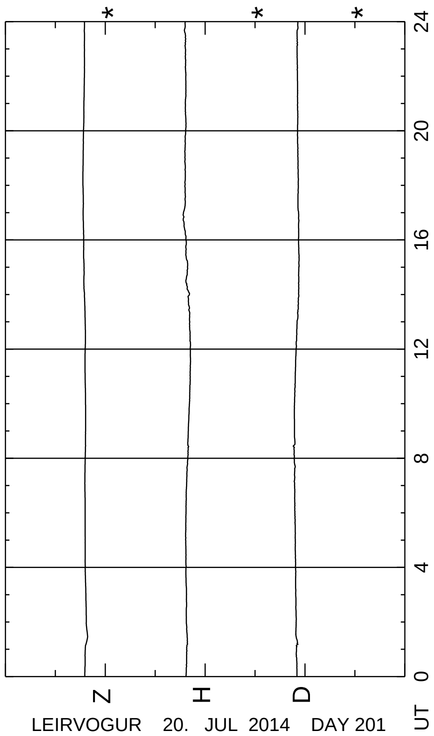
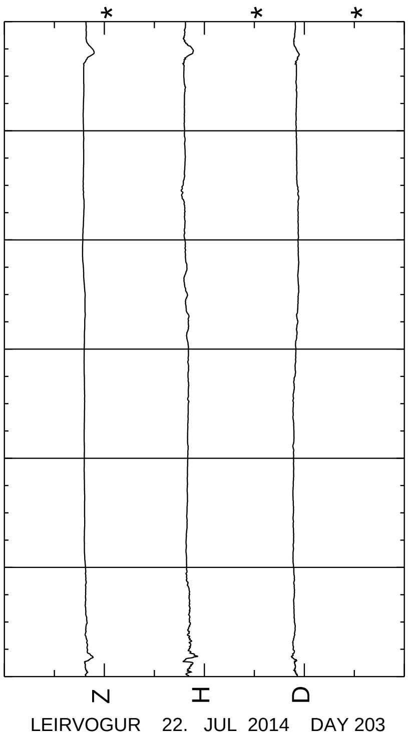


LEIRVOGUR 20. JUL 2014 DAY 201



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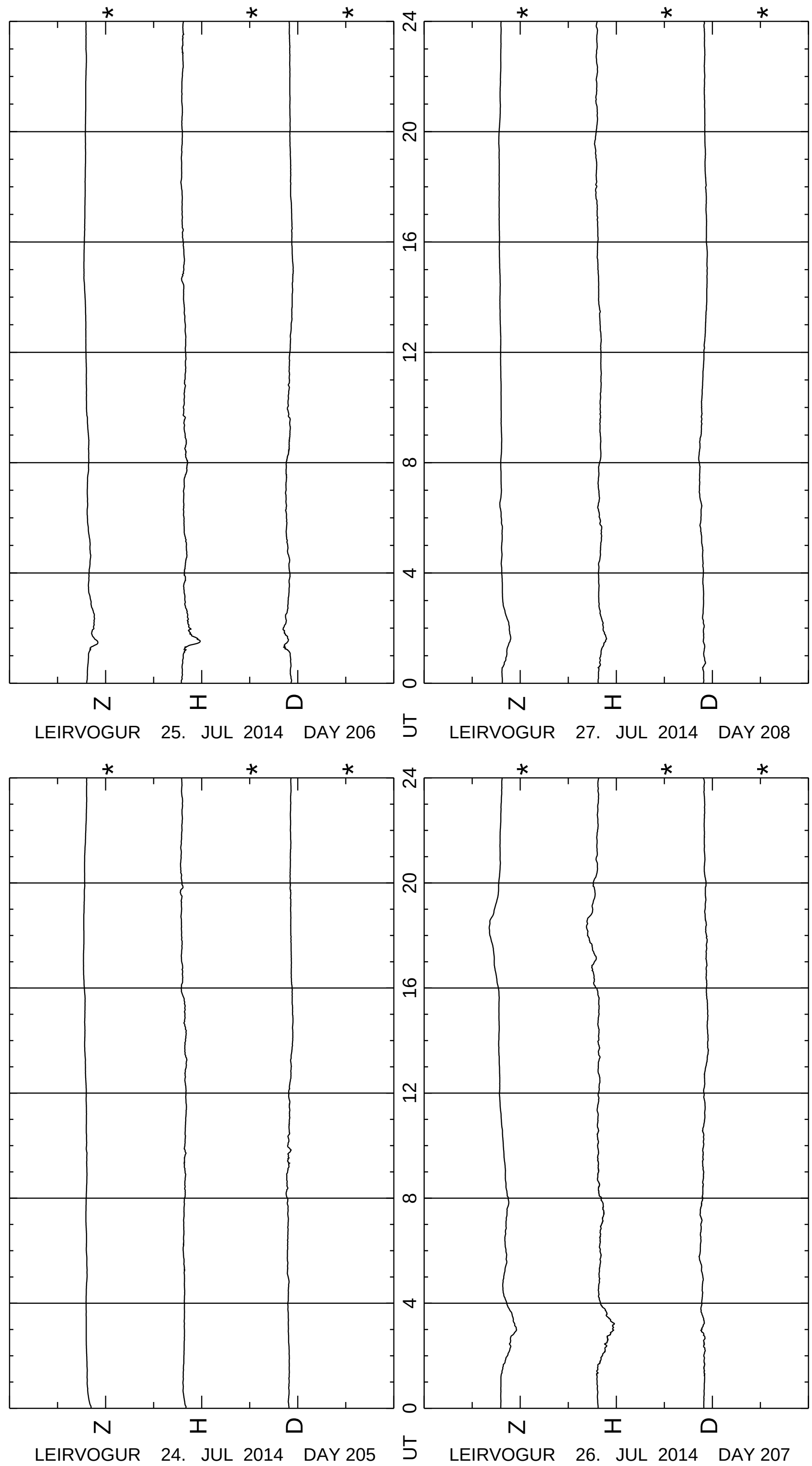
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LEIRVOGUR 27. JUL 2014 DAY 208
LEIRVOGUR 24. JUL 2014 DAY 205
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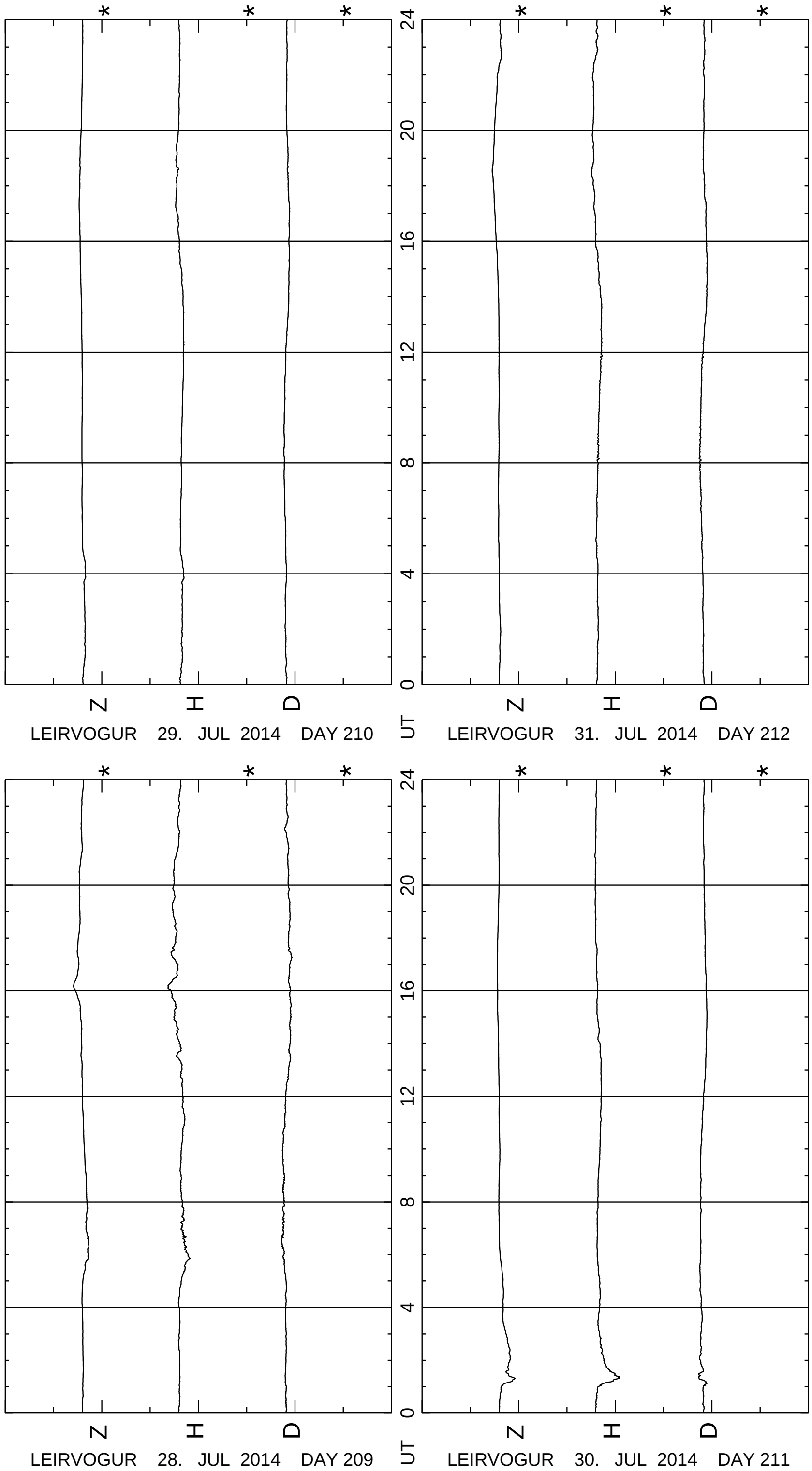
LEIRVOGUR 29. JUL 2014 DAY 210
LEIRVOGUR 31. JUL 2014 DAY 212
LEIRVOGUR 28. JUL 2014 DAY 209
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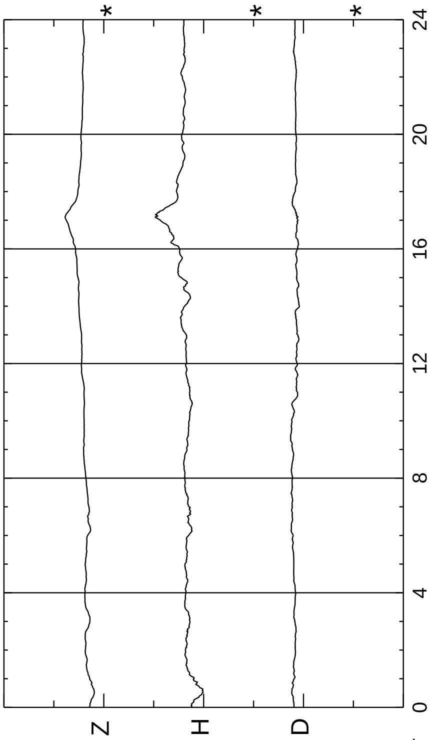
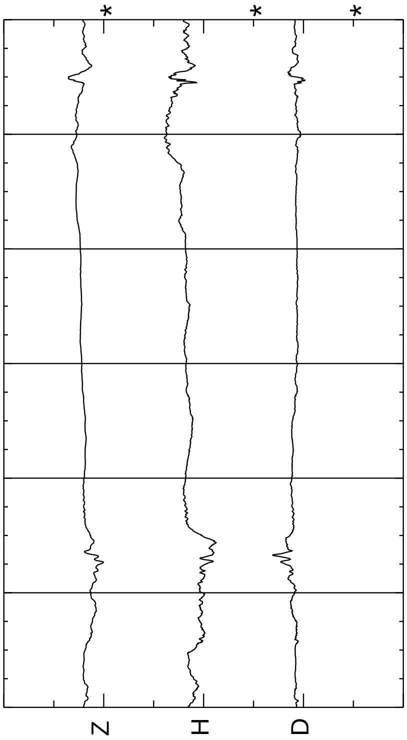
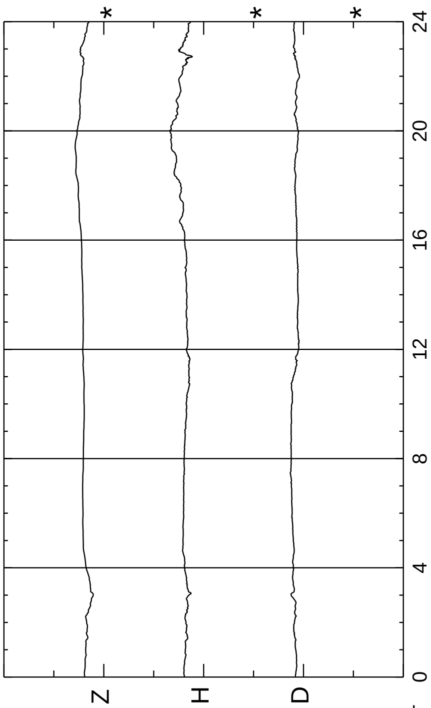


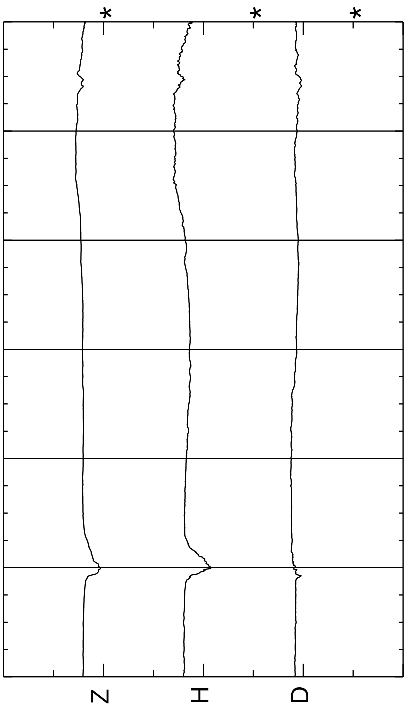
LEIRVOGUR 2. AUG 2014 DAY 214



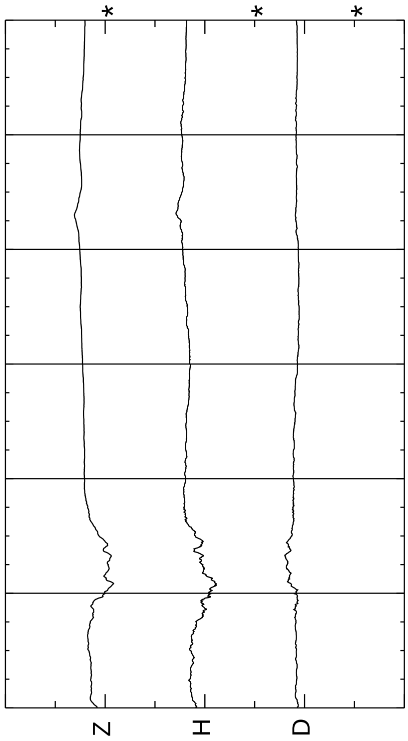
LEIRVOGUR 4. AUG 2014 DAY 216



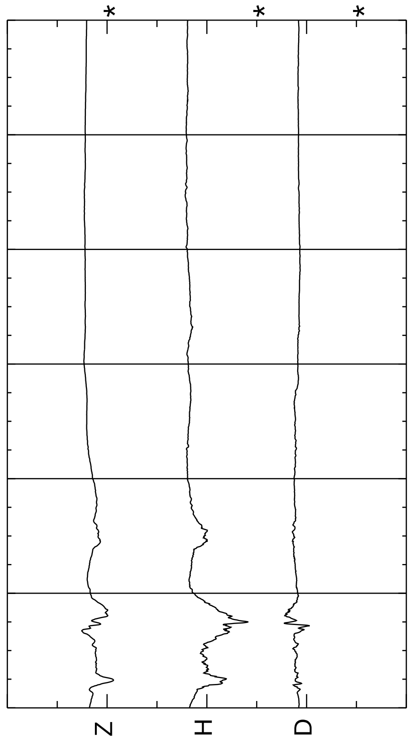
LEIRVOGUR 1. AUG 2014 DAY 213



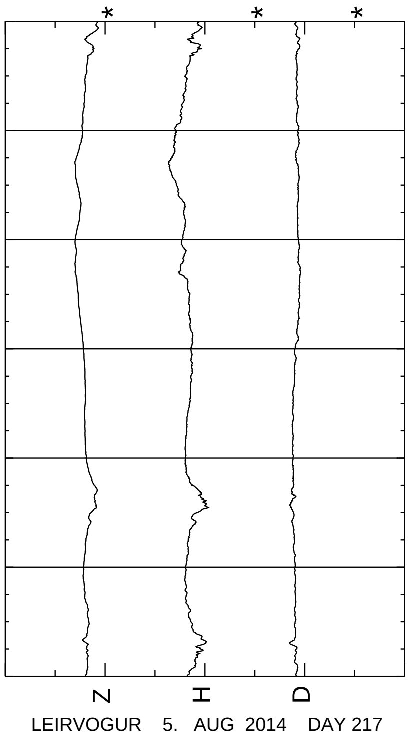
LEIRVOGUR 3. AUG 2014 DAY 215



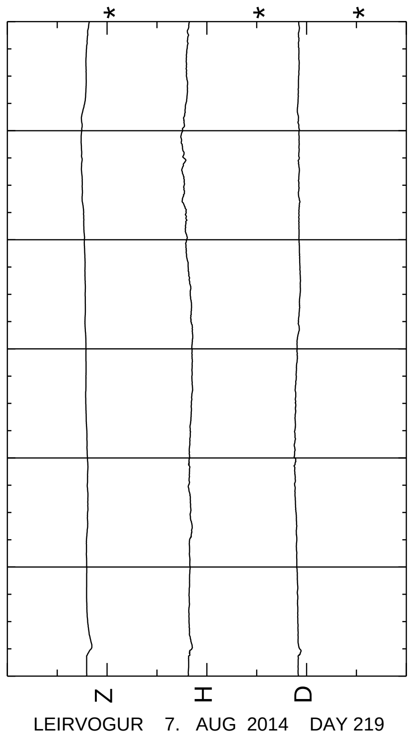
LEIRVOGUR 6. AUG 2014 DAY 218



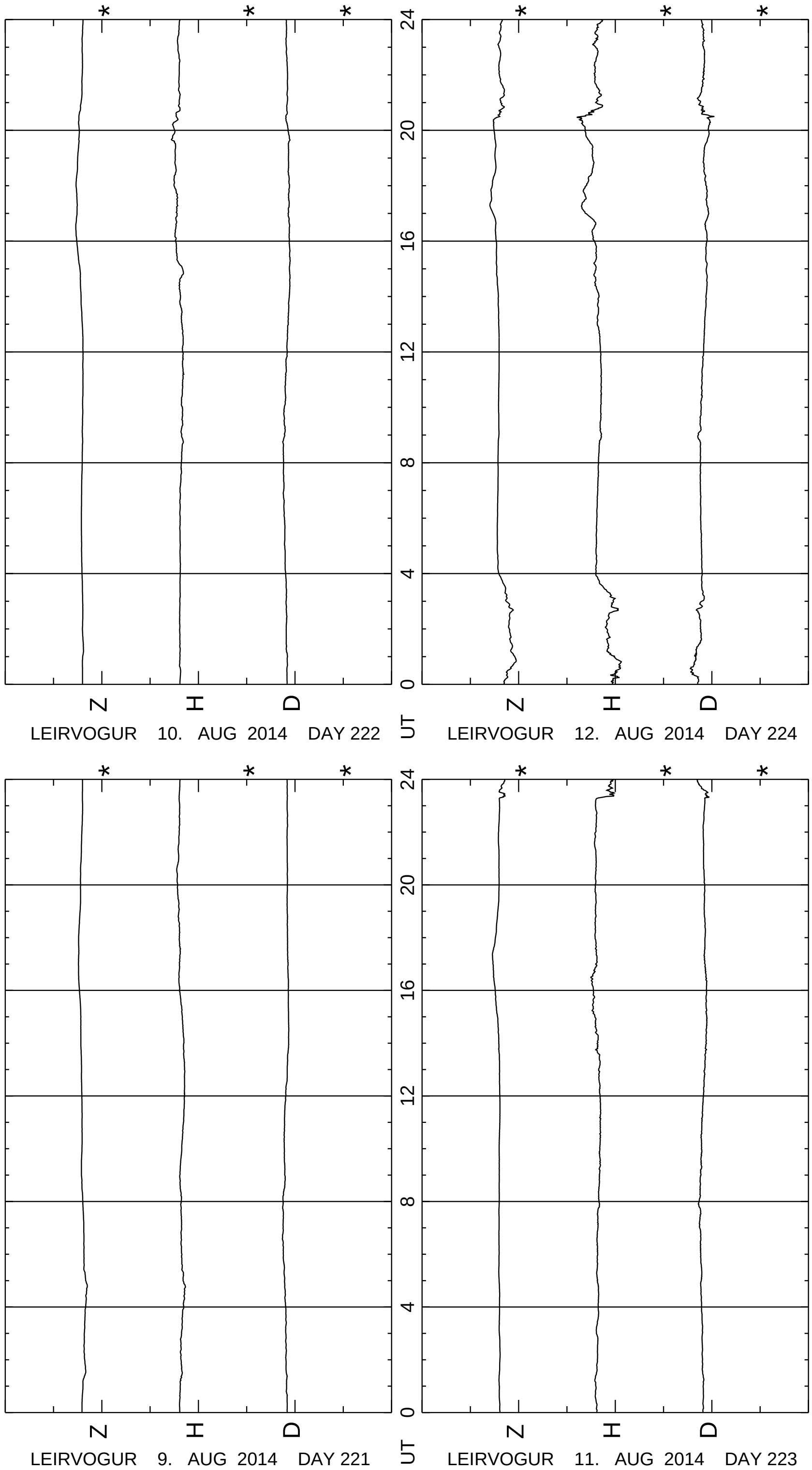
LEIRVOGUR 8. AUG 2014 DAY 220



LEIRVOGUR 5. AUG 2014 DAY 217



LEIRVOGUR 7. AUG 2014 DAY 219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LEIRVOGUR 12. AUG 2014 DAY 224
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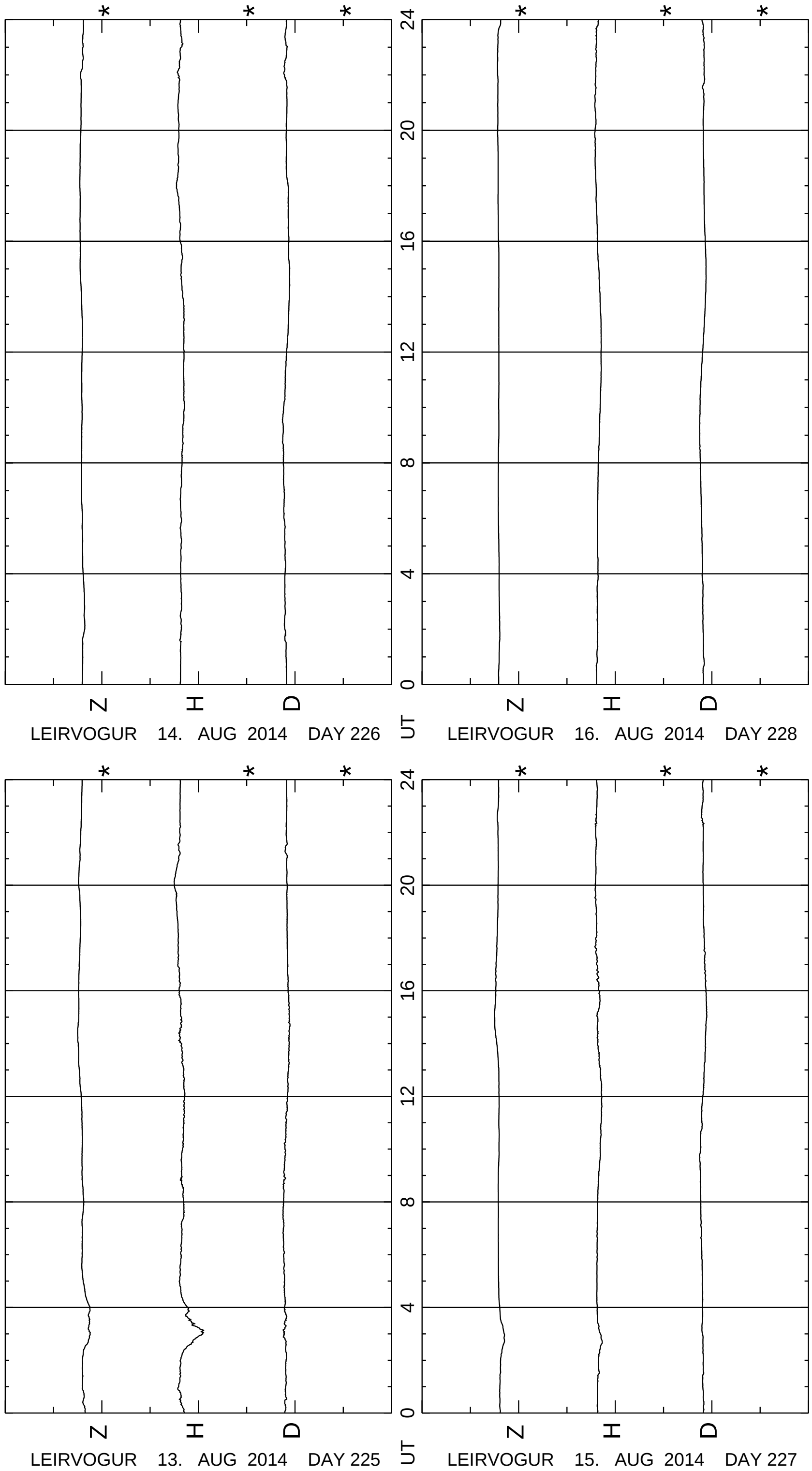
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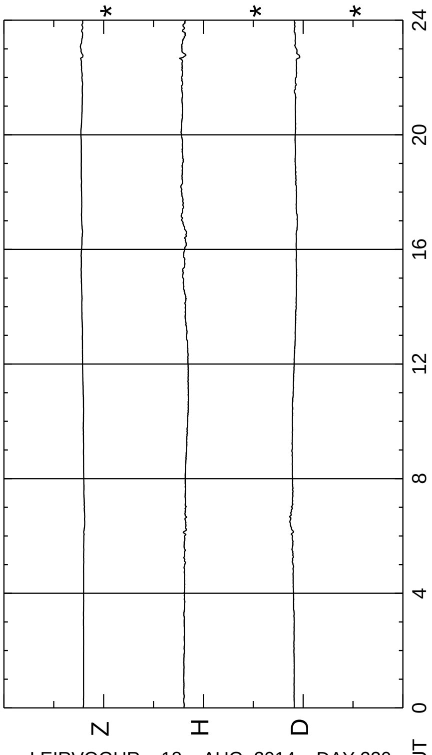
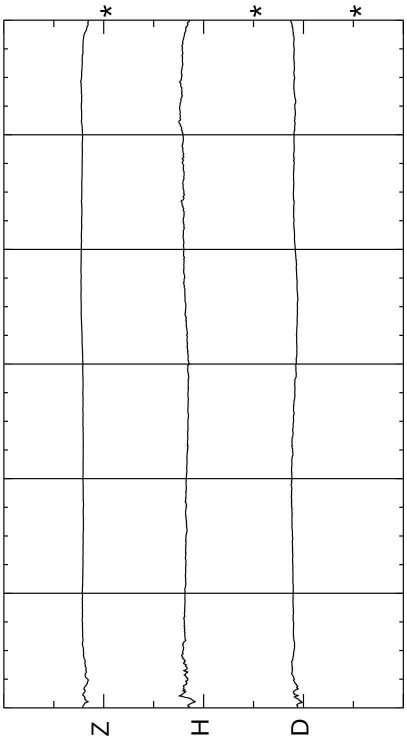
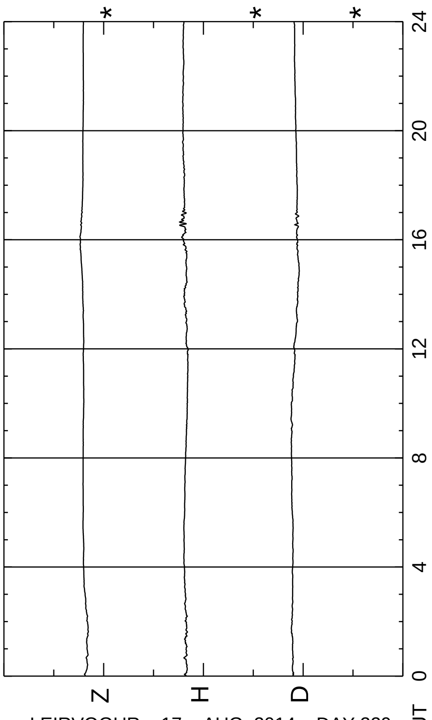


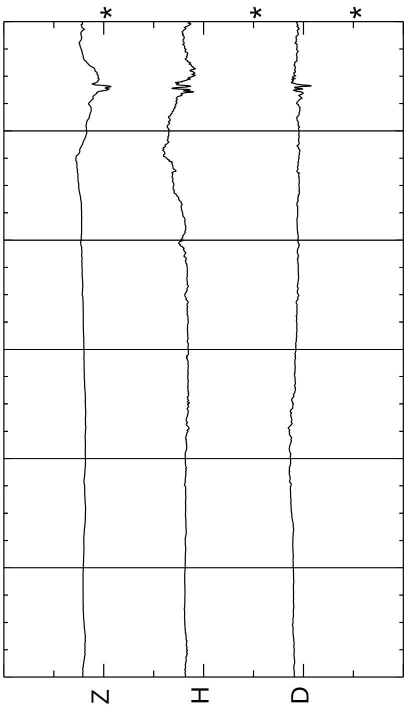
LEIRVOGUR 18. AUG 2014 DAY 230



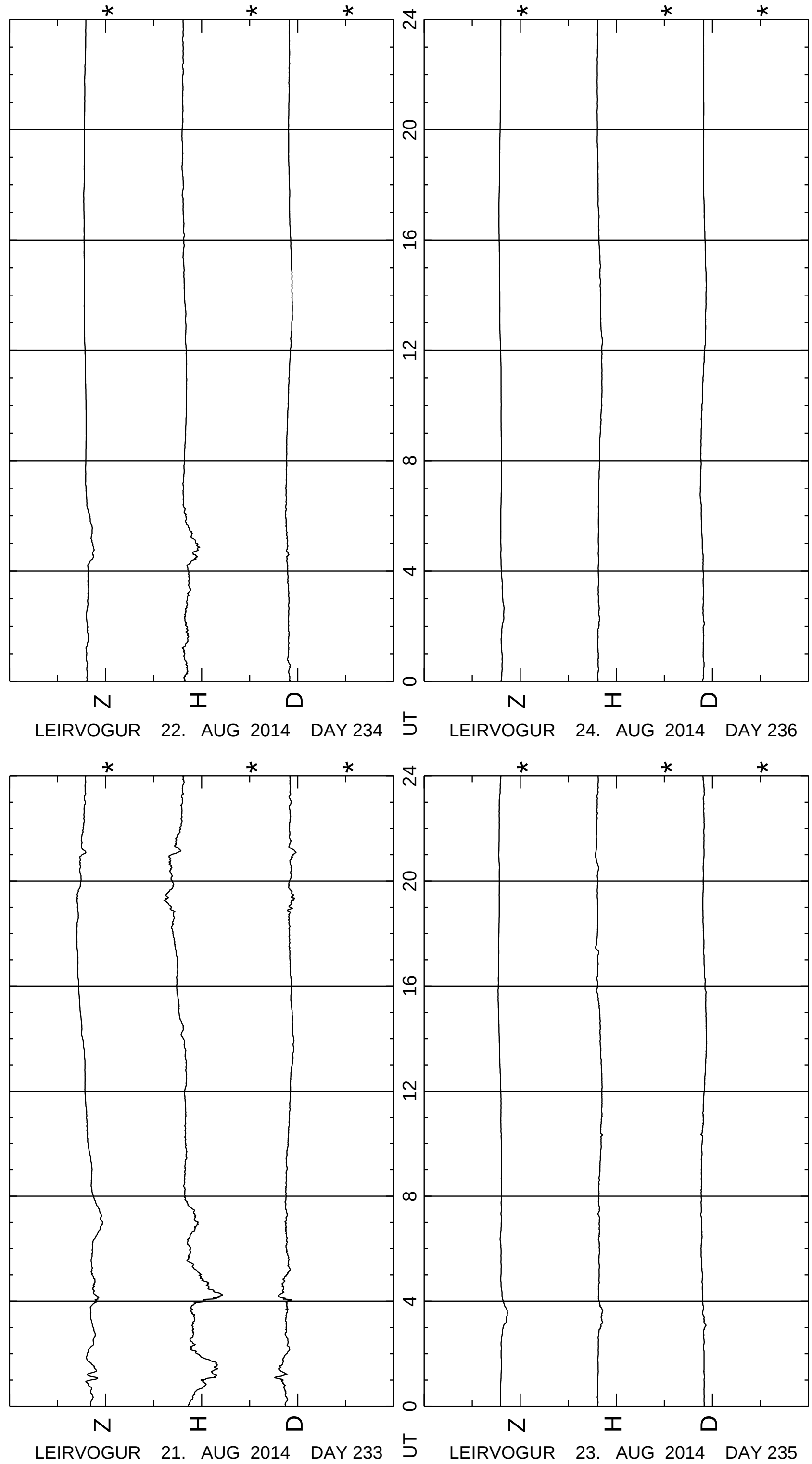
LEIRVOGUR 20. AUG 2014 DAY 232



LEIRVOGUR 17. AUG 2014 DAY 229



LEIRVOGUR 19. AUG 2014 DAY 231


LEIRVOGUR 22. AUG 2014 DAY 234
LEIRVOGUR 24. AUG 2014 DAY 236
LEIRVOGUR 21. AUG 2014 DAY 233
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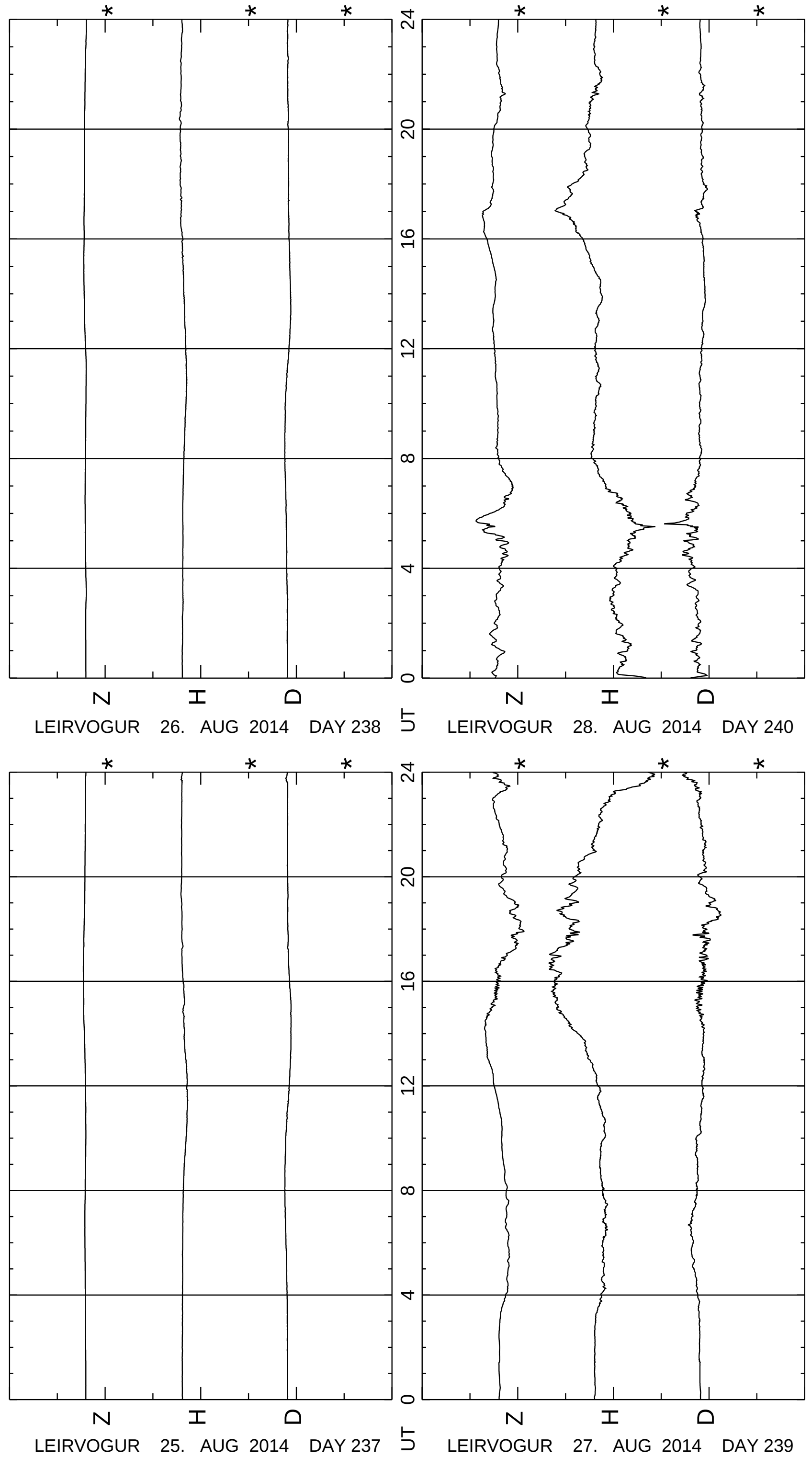
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LEIRVOGUR 28. AUG 2014 DAY 240
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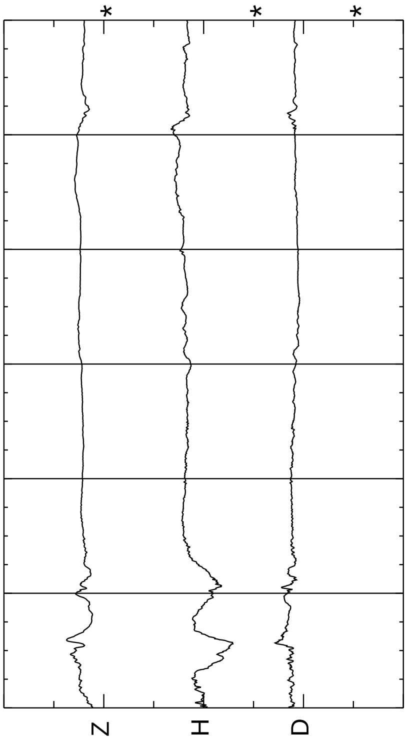
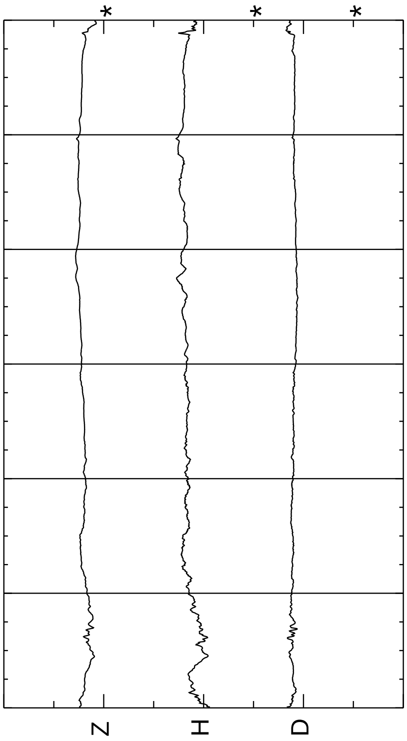
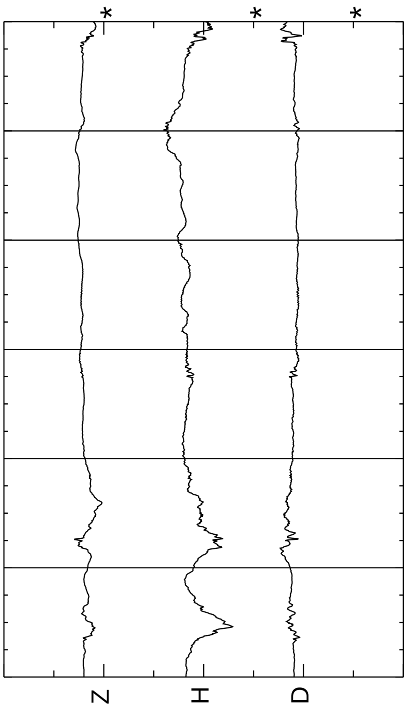


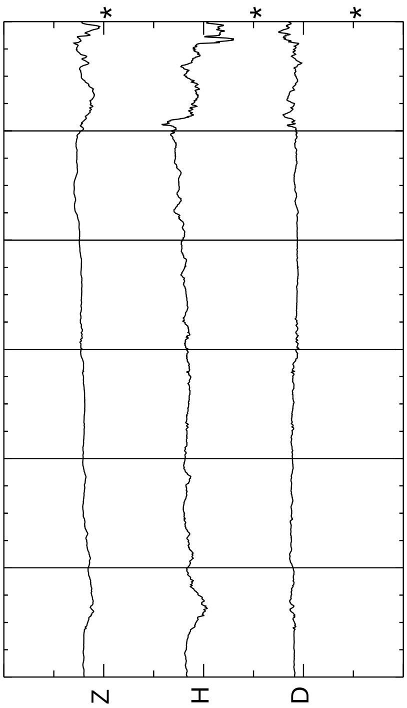
LEIRVOGUR 30. AUG 2014 DAY 242



LEIRVOGUR 1. SEP 2014 DAY 244



LEIRVOGUR 29. AUG 2014 DAY 241



LEIRVOGUR 31. AUG 2014 DAY 243

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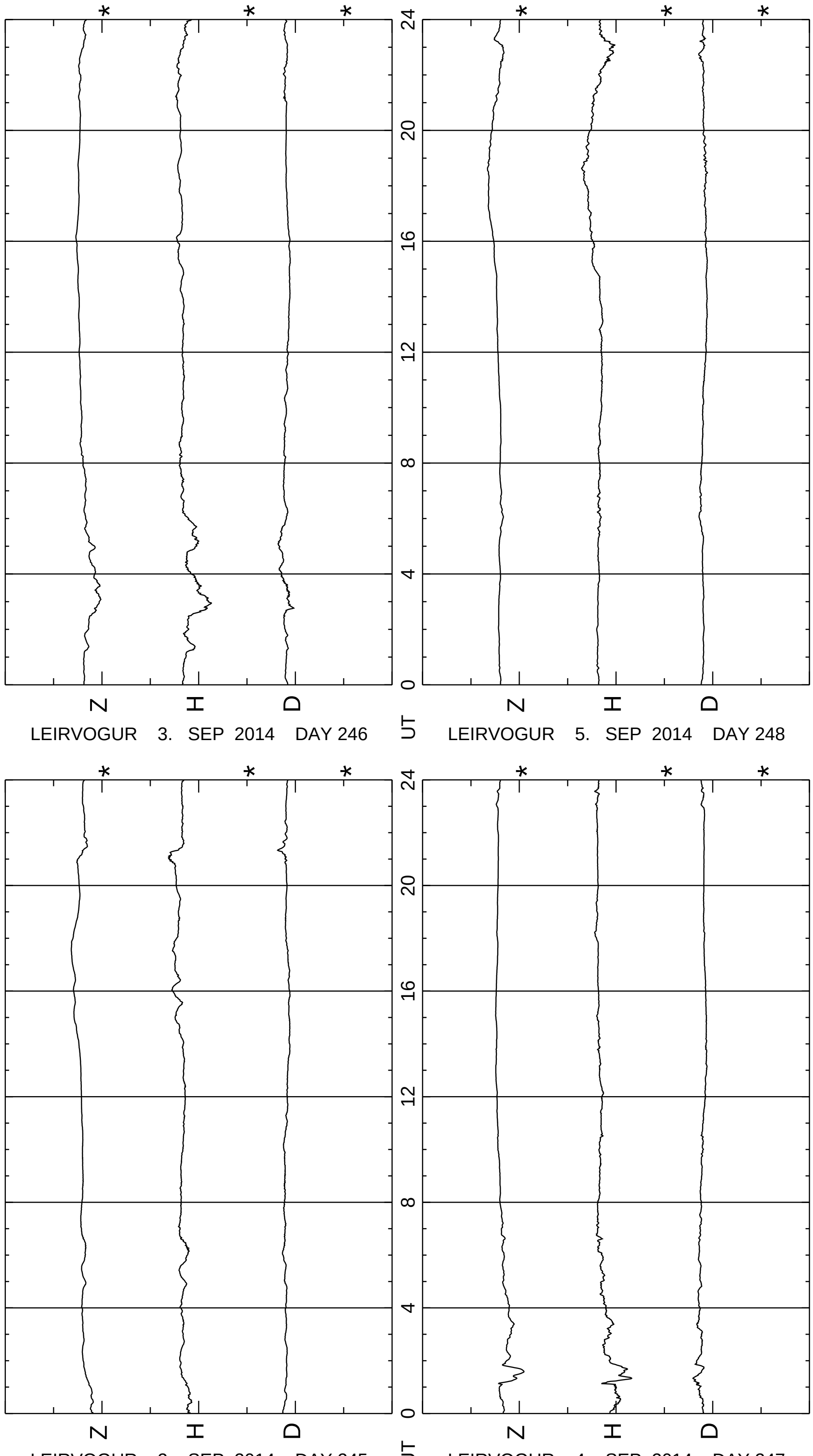
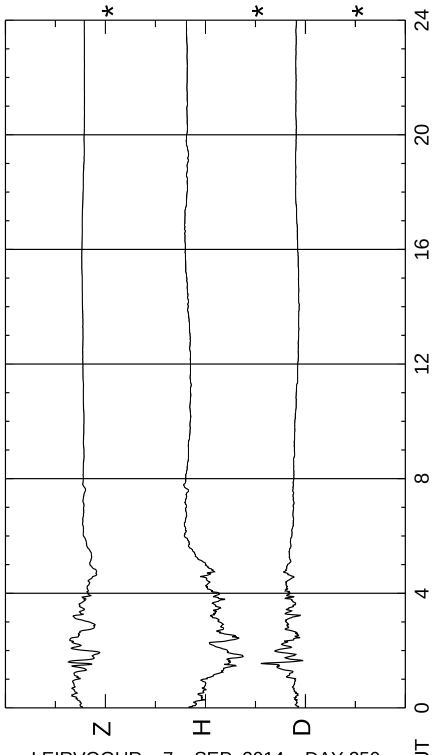


LEIRVOGUR 3. SEP 2014 DAY 246

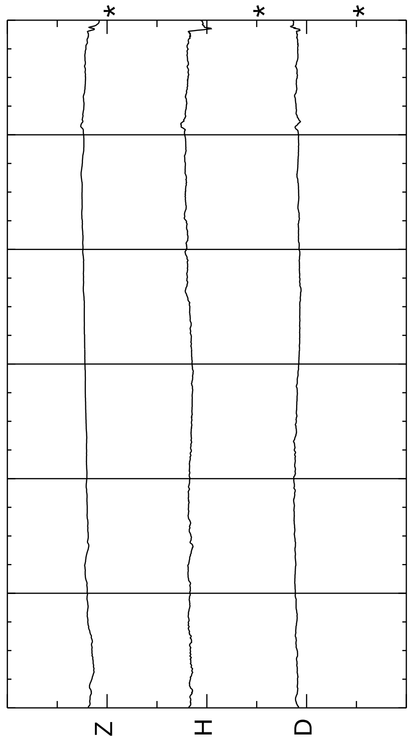
LEIRVOGUR 5. SEP 2014 DAY 248

LEIRVOGUR 2. SEP 2014 DAY 245

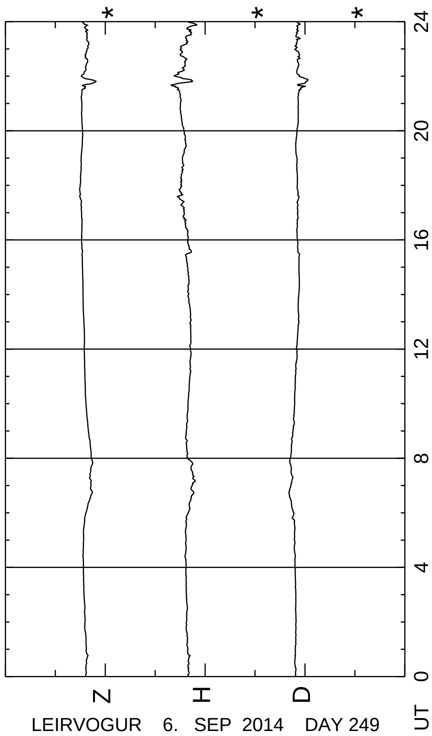
LEIRVOGUR 4. SEP 2014 DAY 247



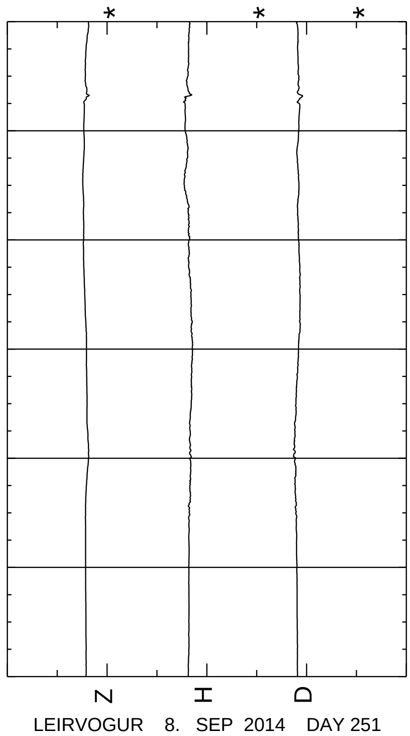
LEIRVOGUR 7. SEP 2014 DAY 250



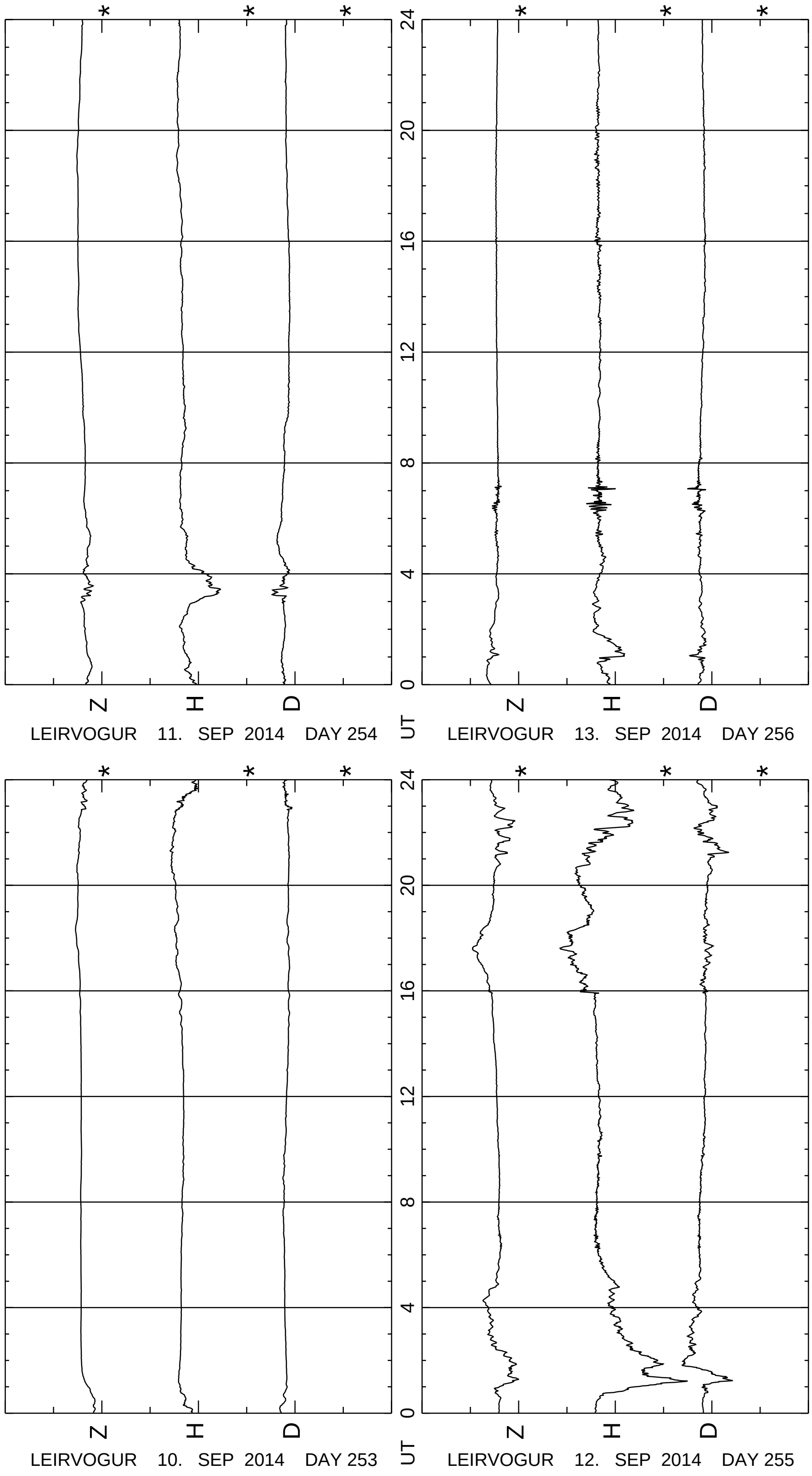
LEIRVOGUR 9. SEP 2014 DAY 252



LEIRVOGUR 6. SEP 2014 DAY 249



LEIRVOGUR 8. SEP 2014 DAY 251


LEIRVOGUR 11. SEP 2014 DAY 254
LEIRVOGUR 13. SEP 2014 DAY 256
LEIRVOGUR 10. SEP 2014 DAY 253
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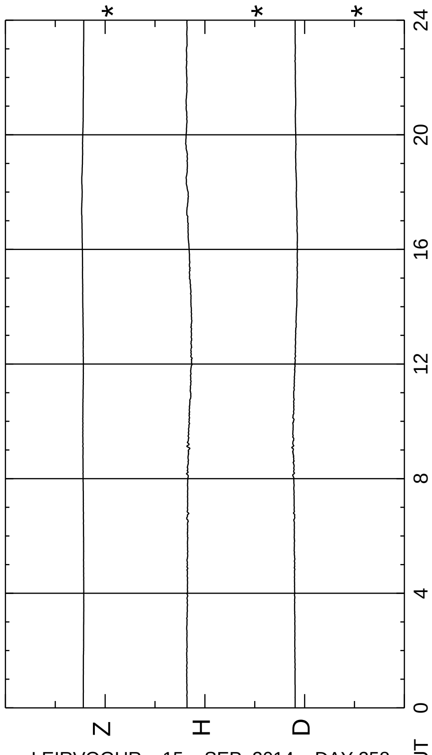
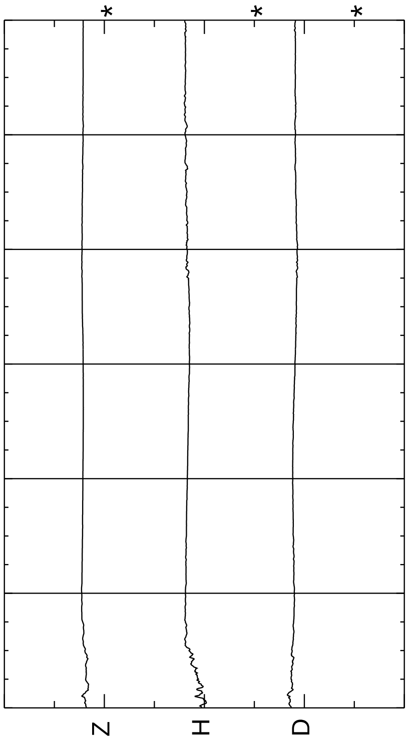
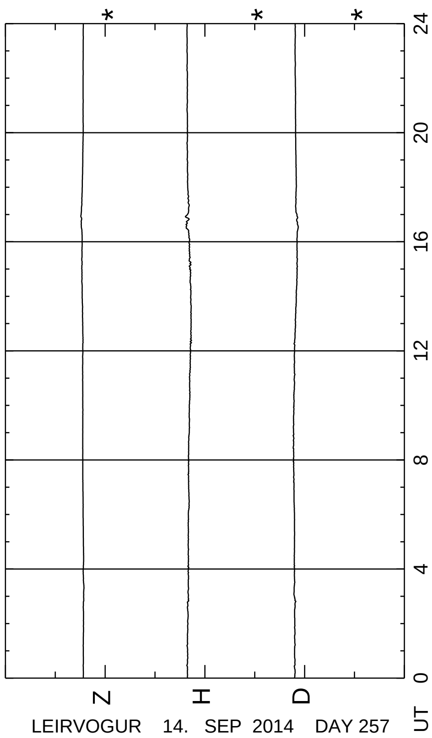


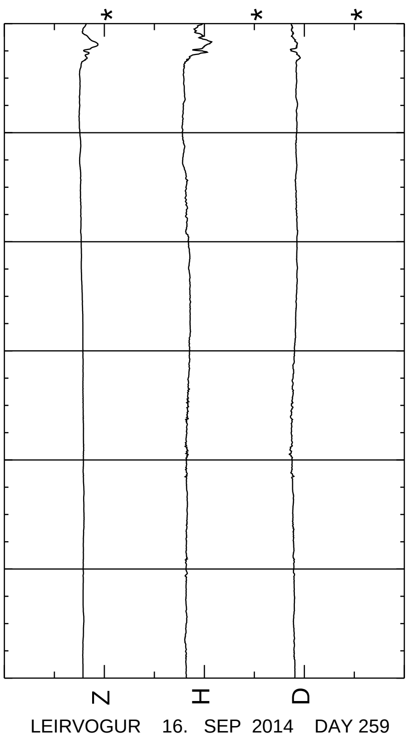
LEIRVOGUR 15. SEP 2014 DAY 258



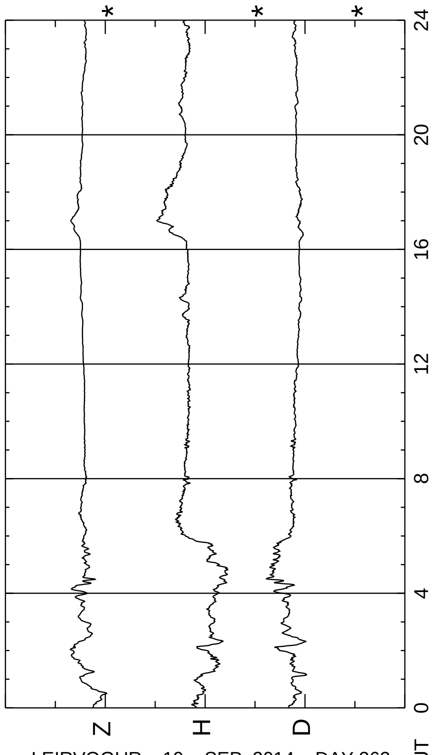
LEIRVOGUR 17. SEP 2014 DAY 260



LEIRVOGUR 14. SEP 2014 DAY 257



LEIRVOGUR 16. SEP 2014 DAY 259



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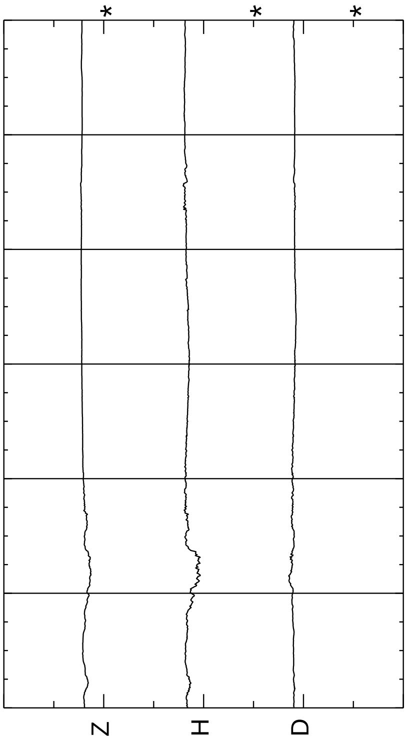
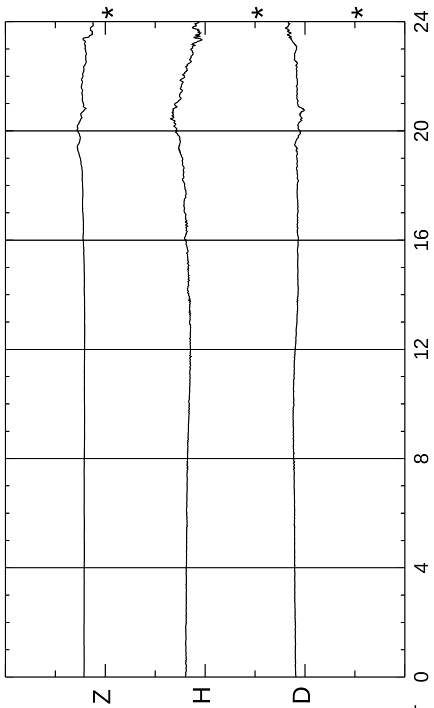


LEIRVOGUR 21. SEP 2014 DAY 264



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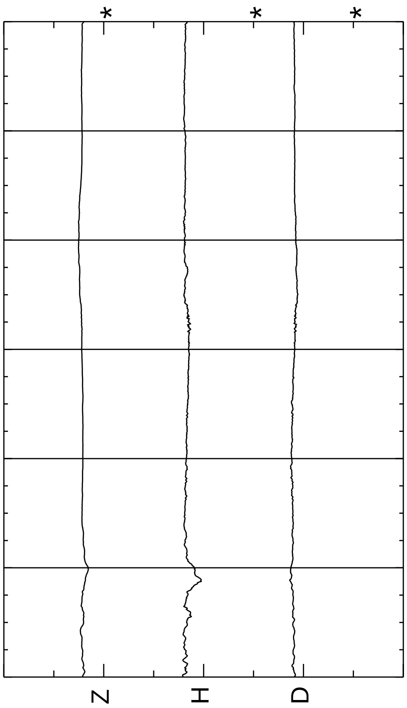

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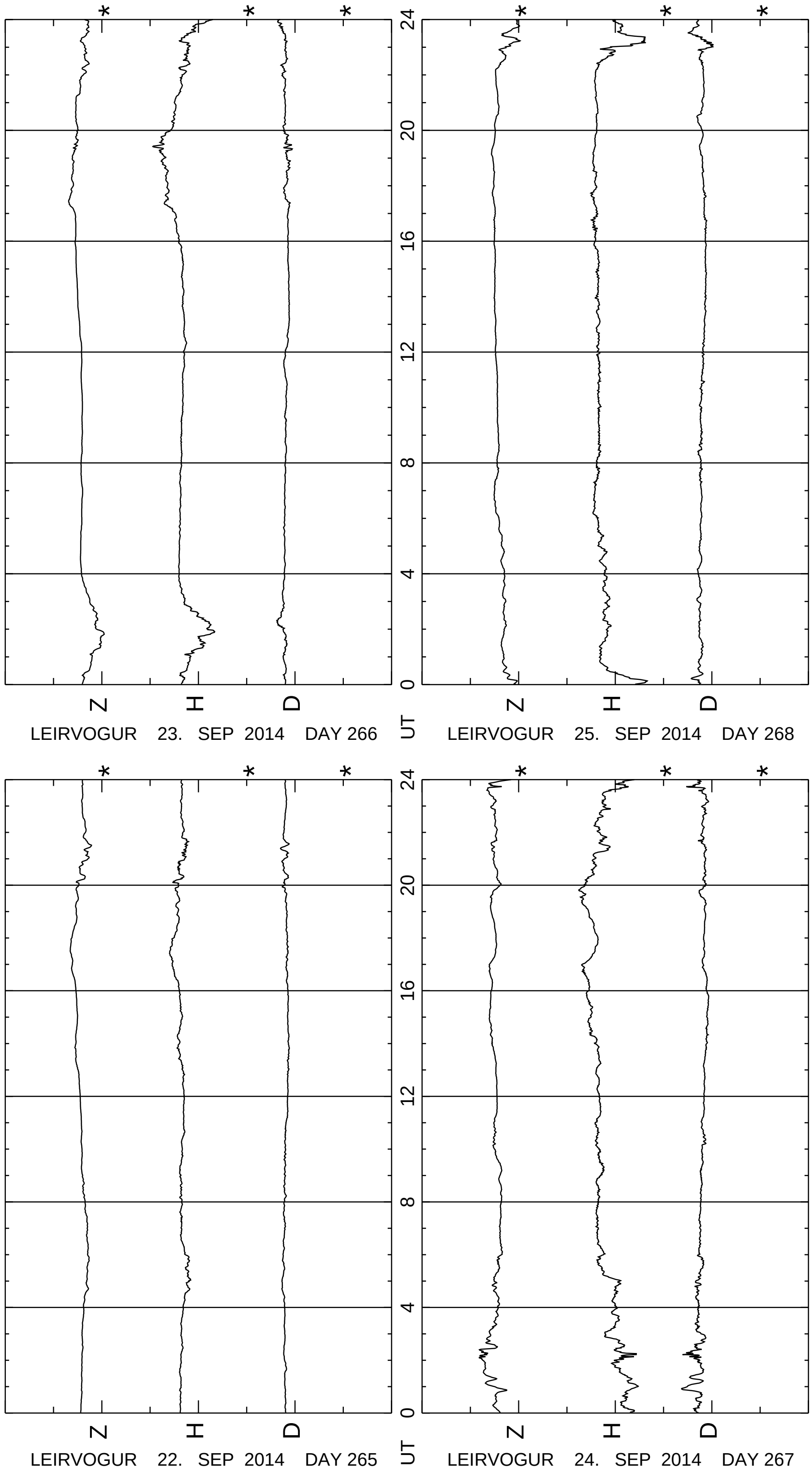
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LEIRVOGUR 25. SEP 2014 DAY 268
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LEIRVOGUR 24. SEP 2014 DAY 267
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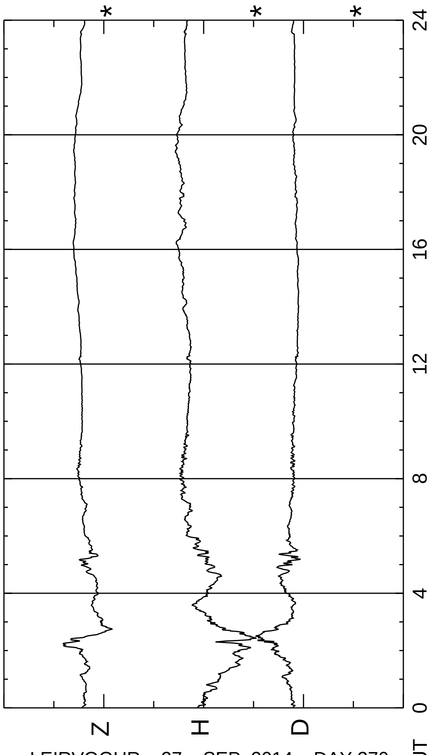

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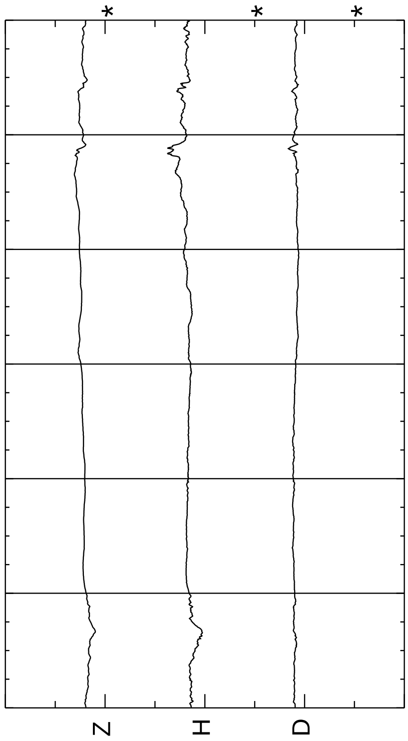

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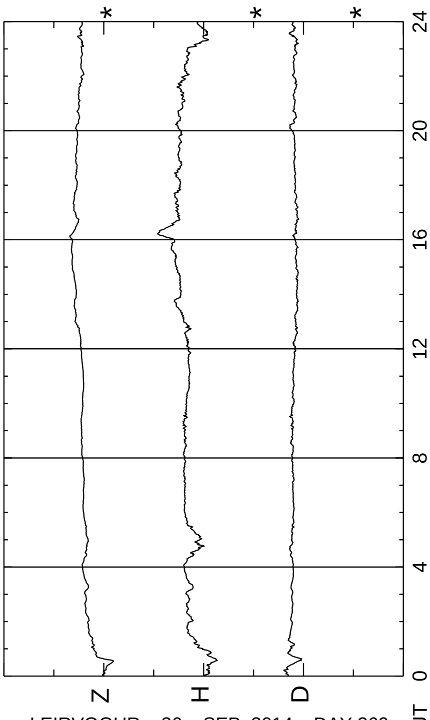

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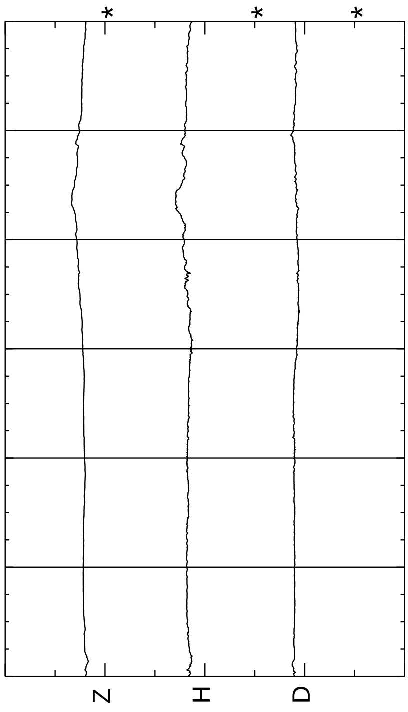

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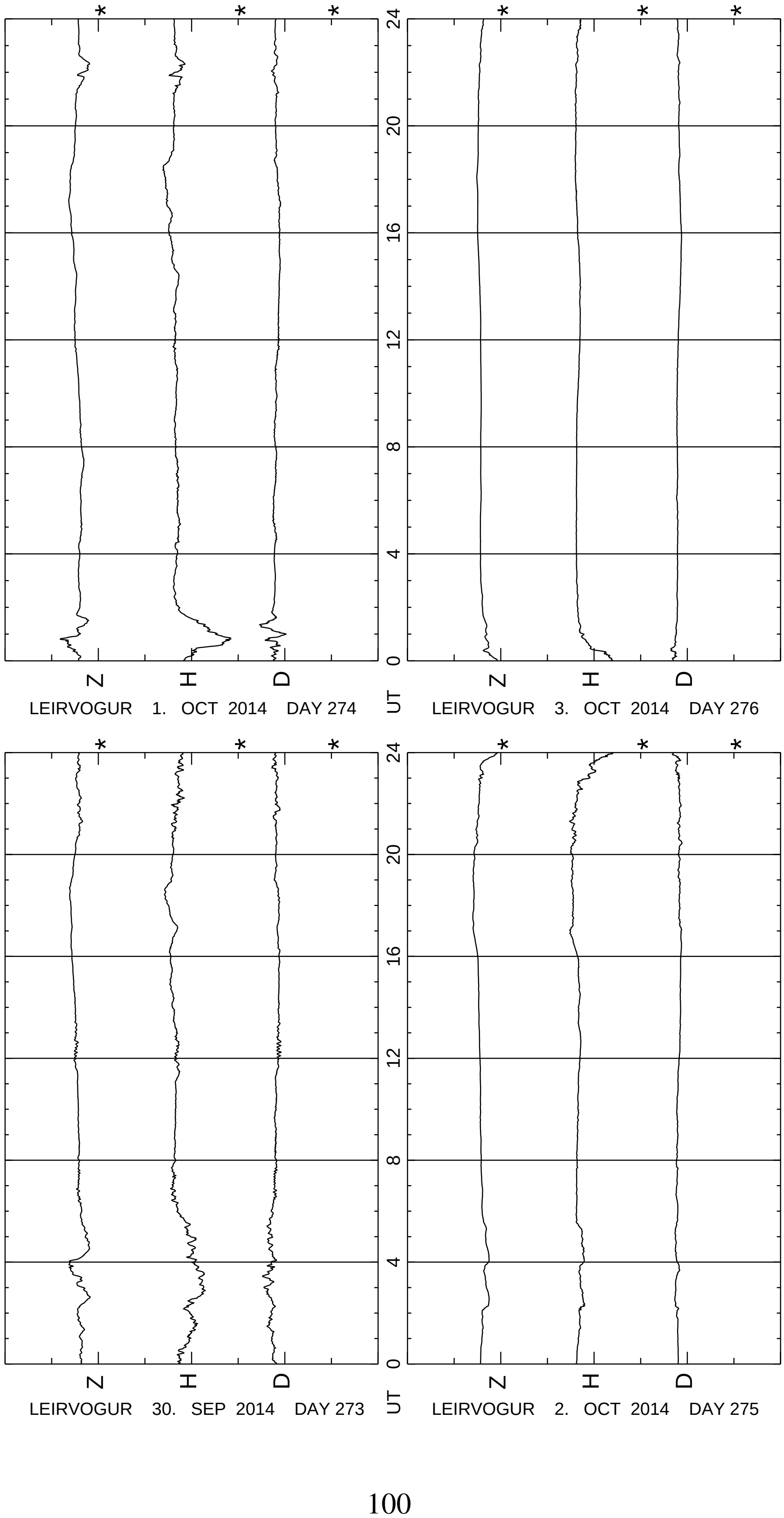
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LEIRVOGUR 3. OCT 2014 DAY 276
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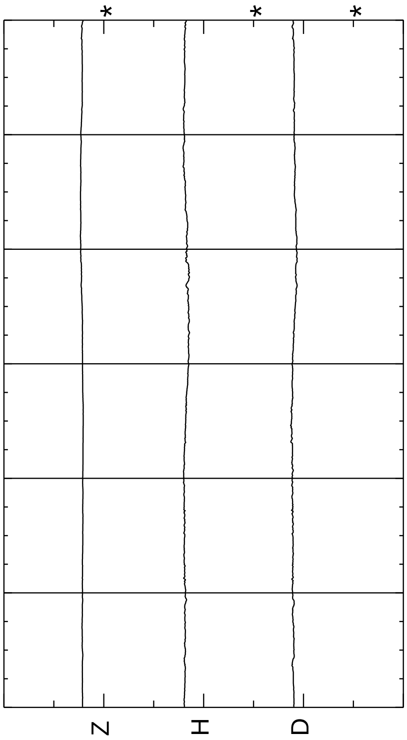

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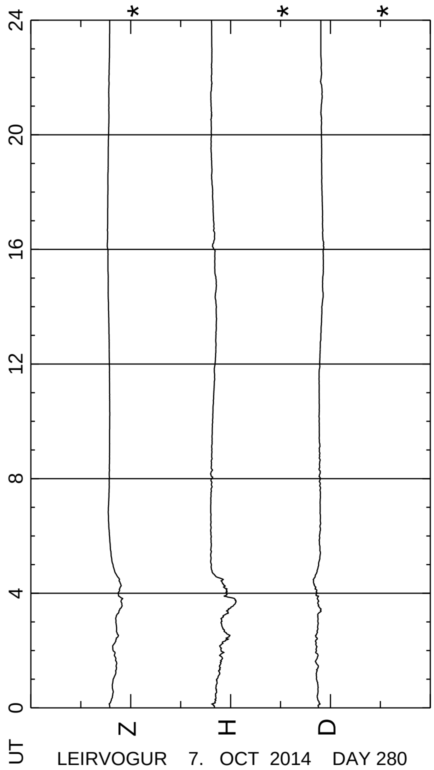

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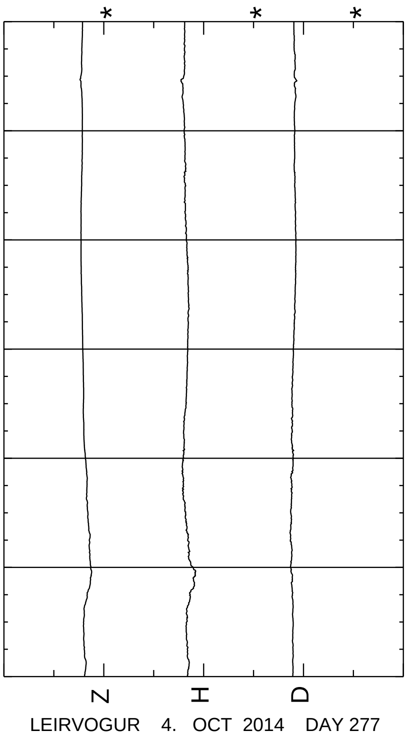

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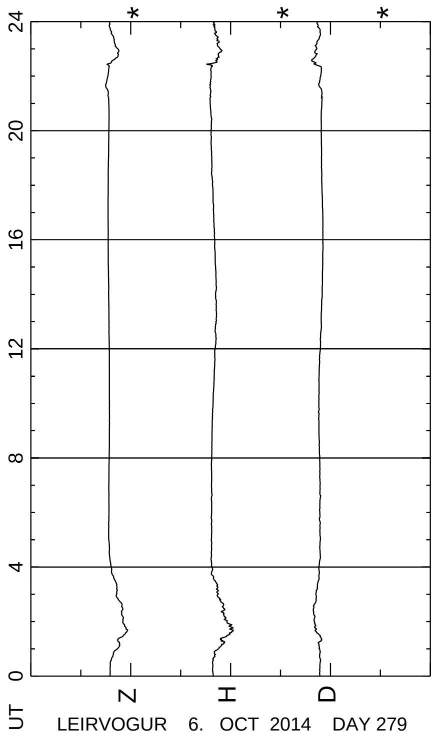

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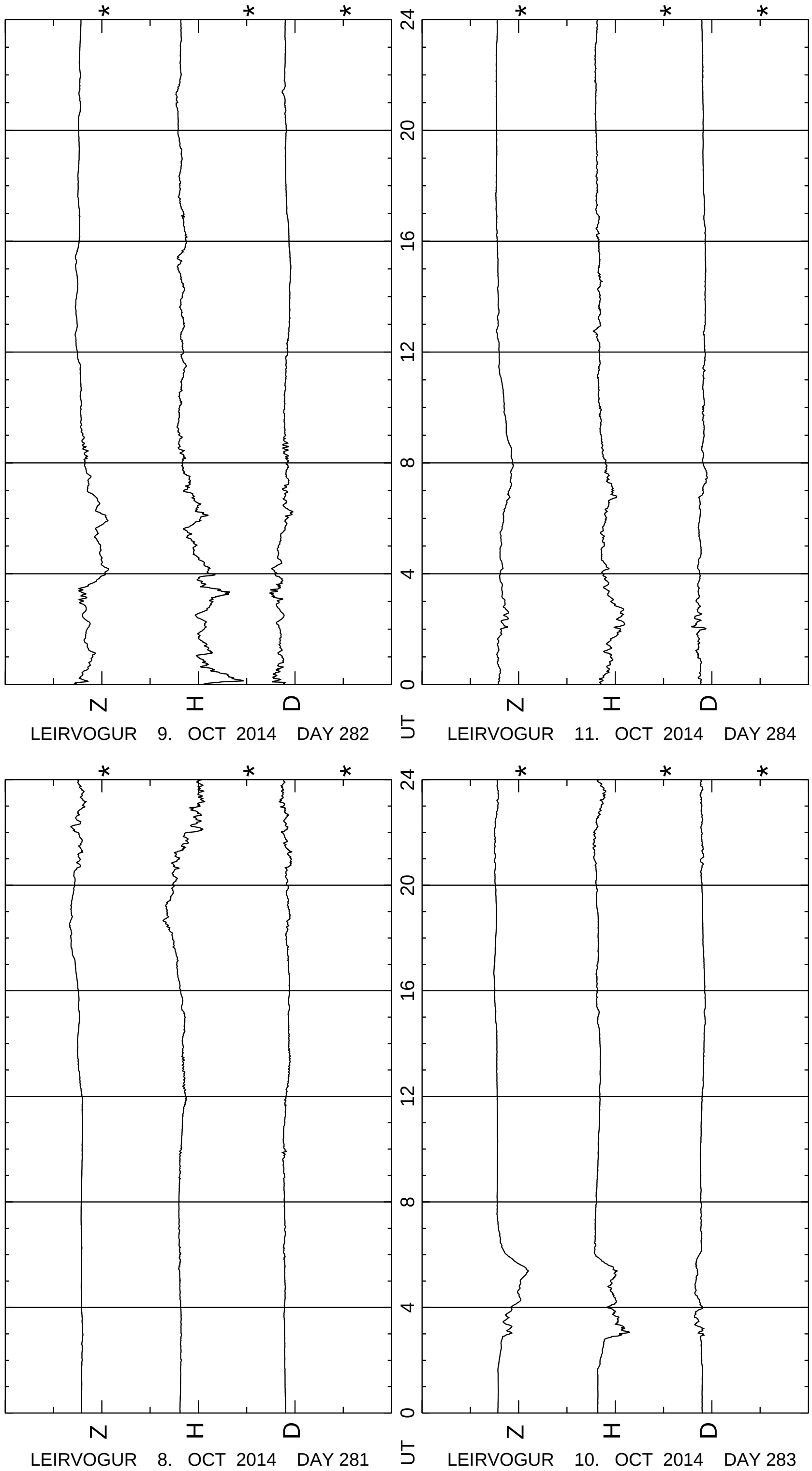
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LEIRVOGUR 11. OCT 2014 DAY 284
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LEIRVOGUR 10. OCT 2014 DAY 283
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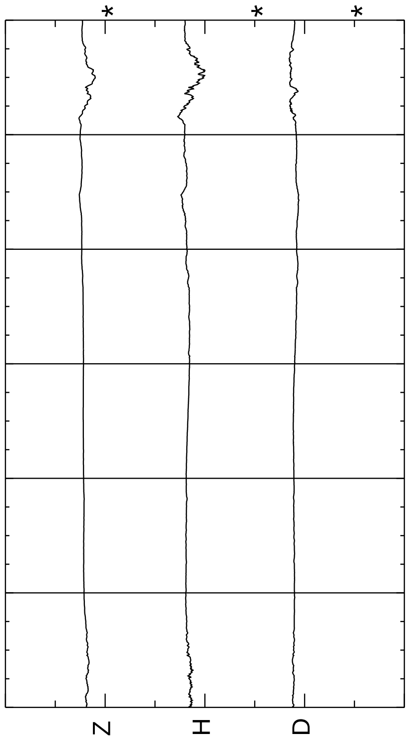
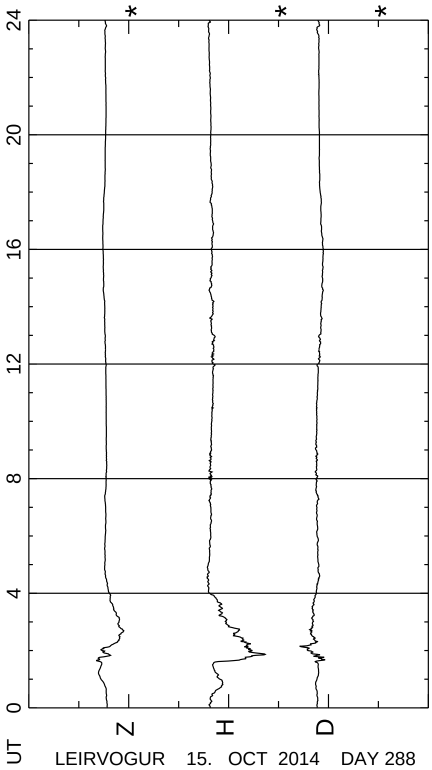


LEIRVOGUR 13. OCT 2014 DAY 286



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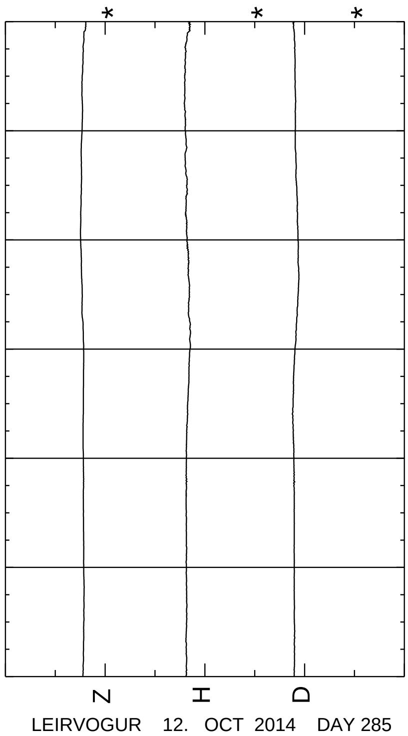

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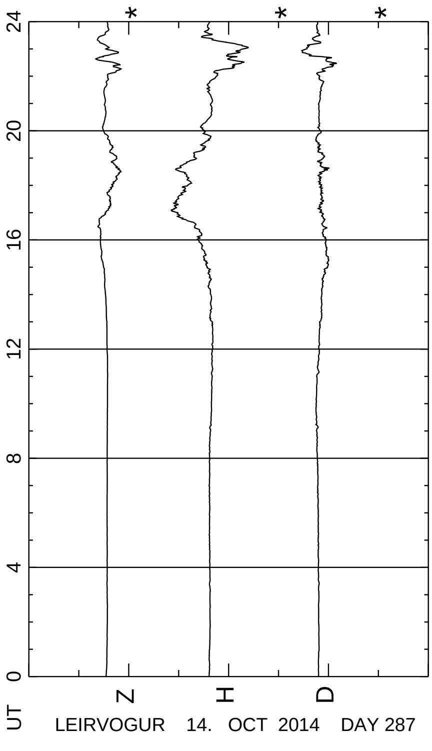

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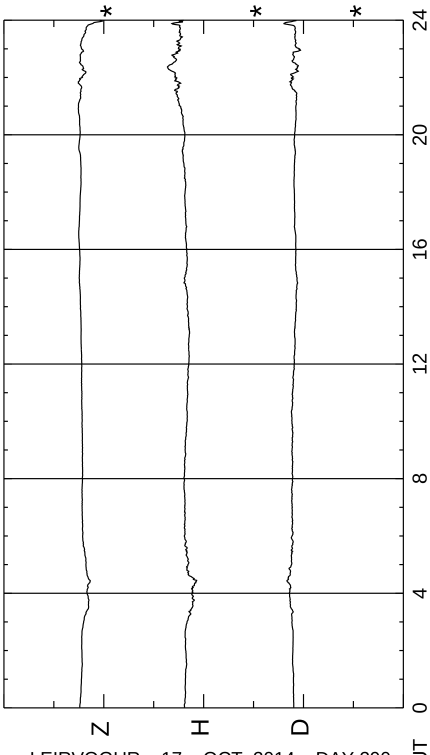

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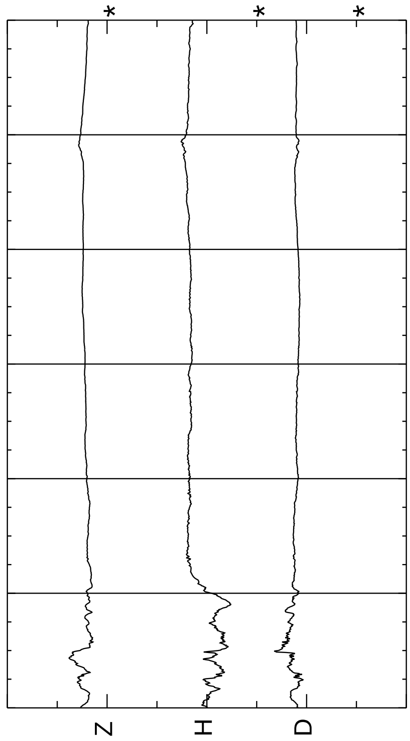

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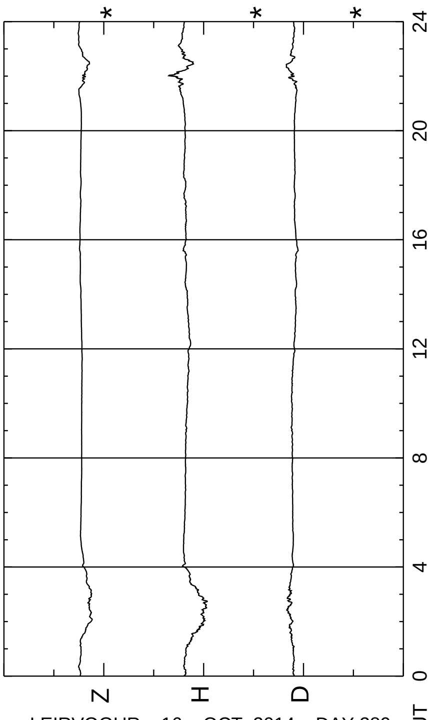

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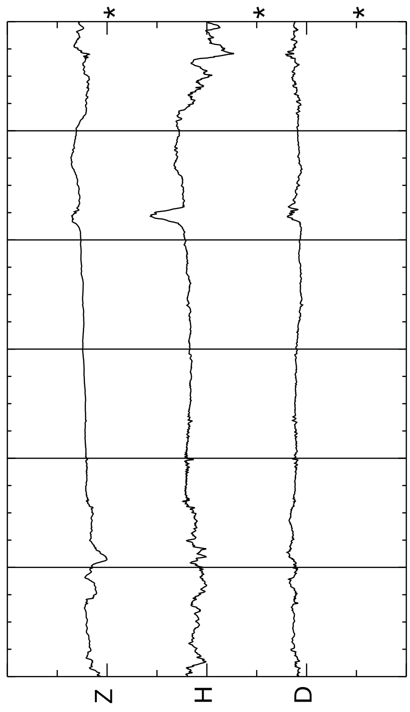

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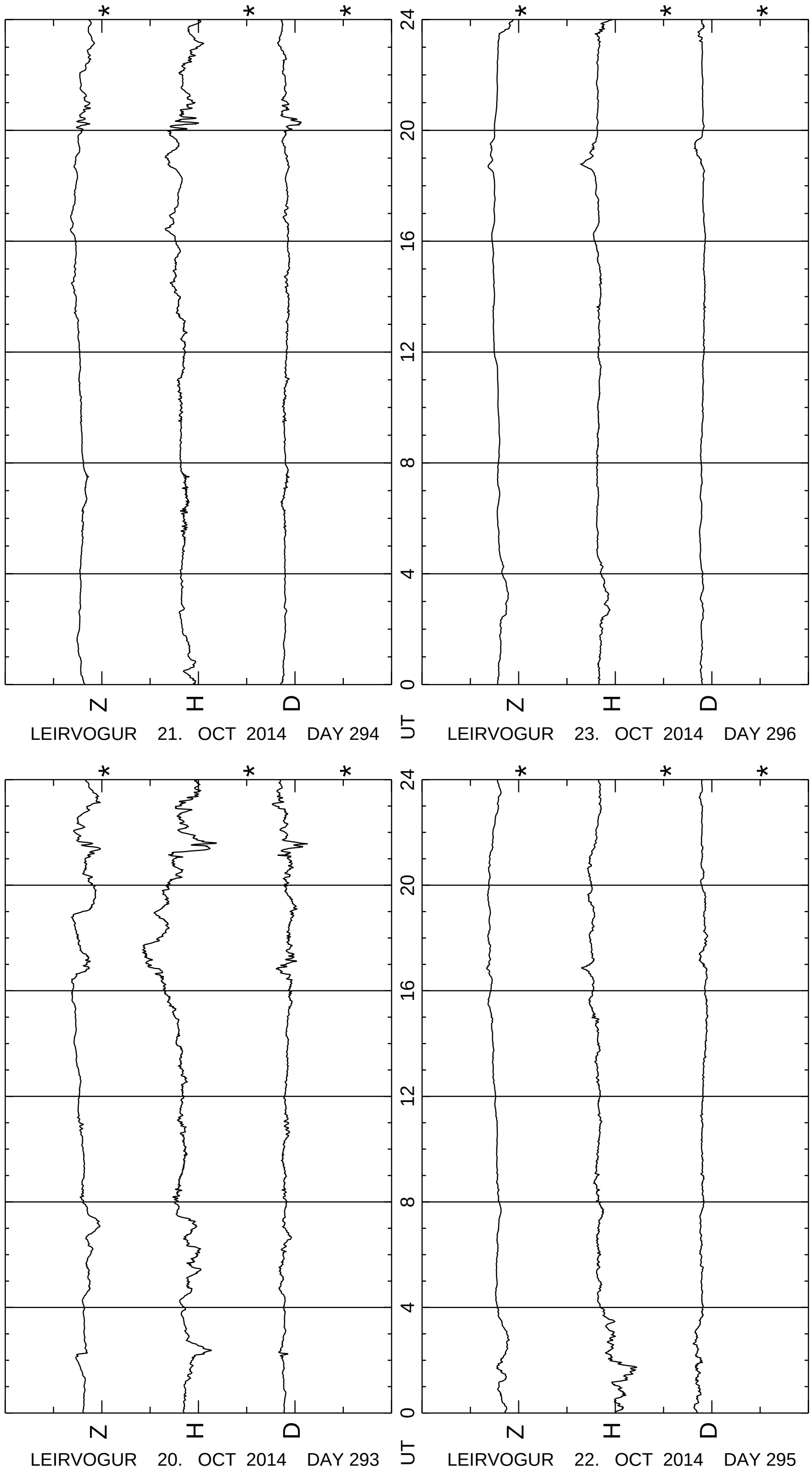
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LEIRVOGUR 23. OCT 2014 DAY 296
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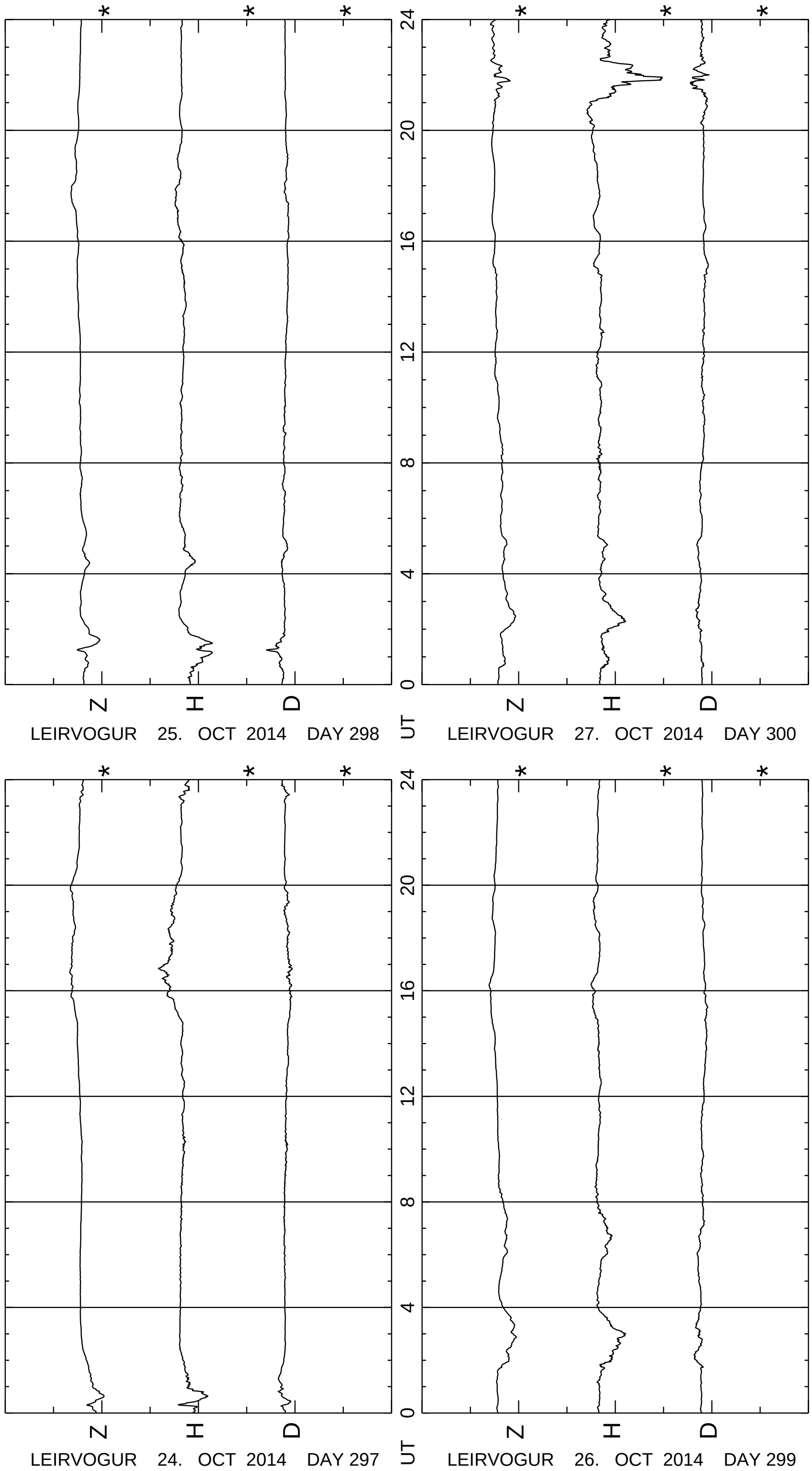
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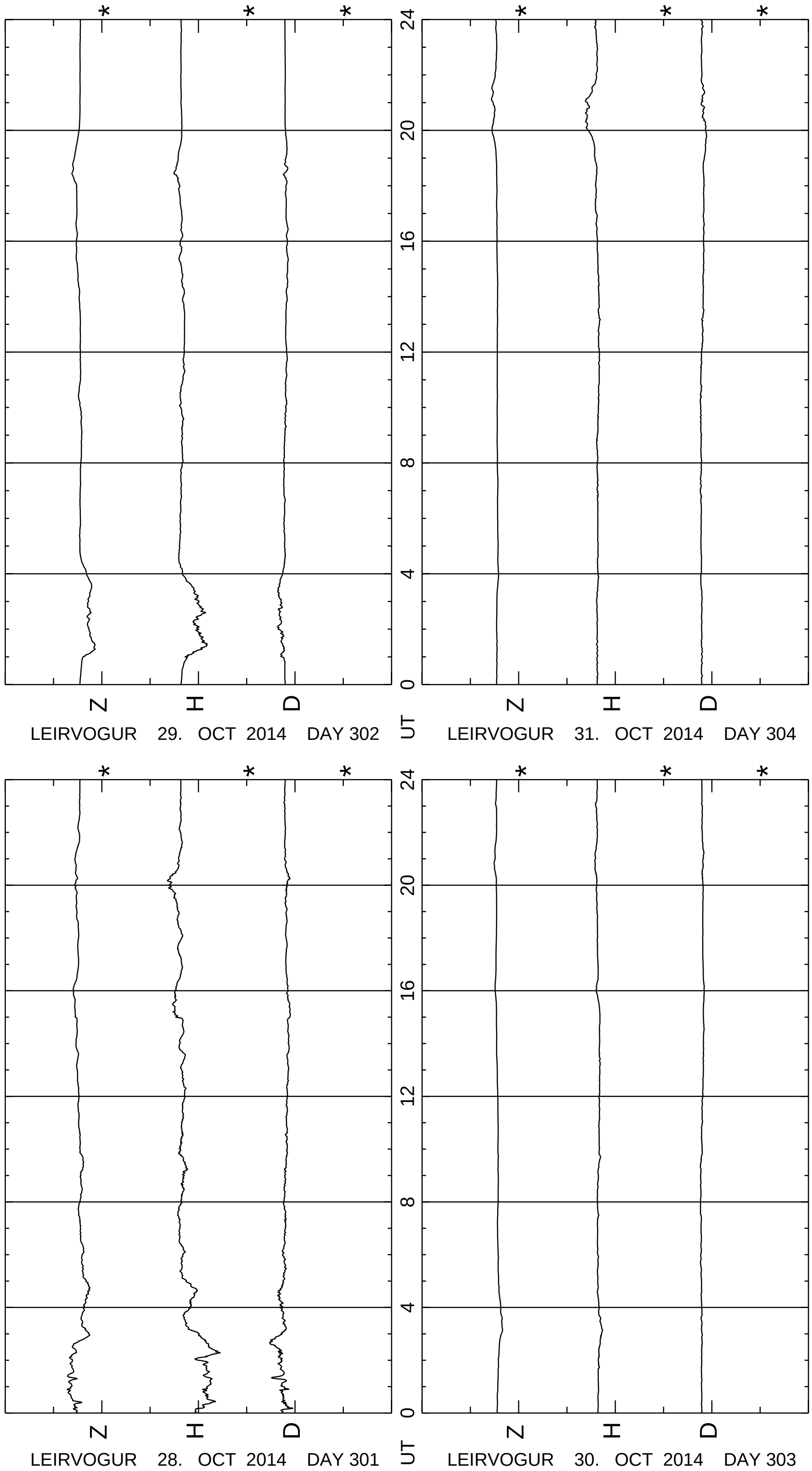

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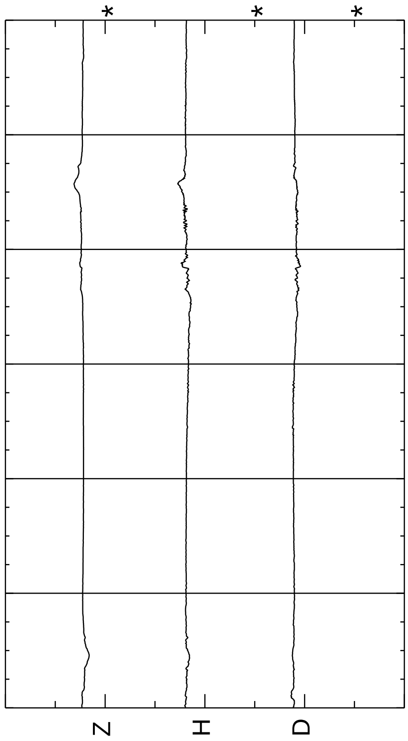

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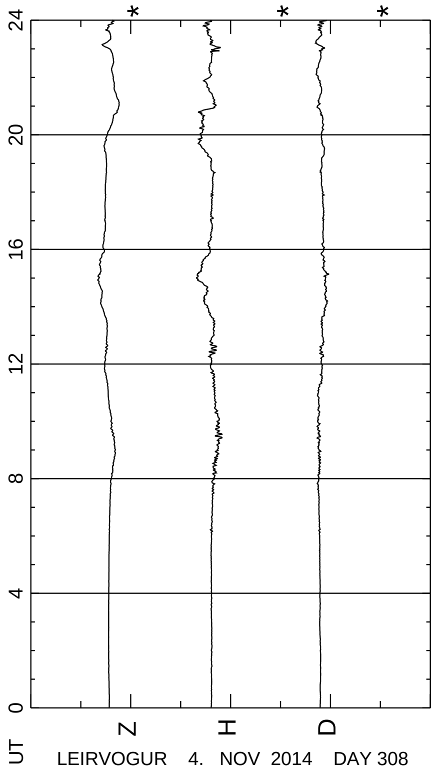

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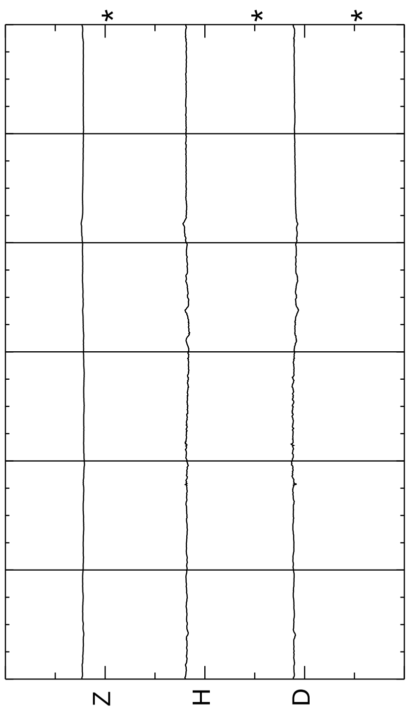

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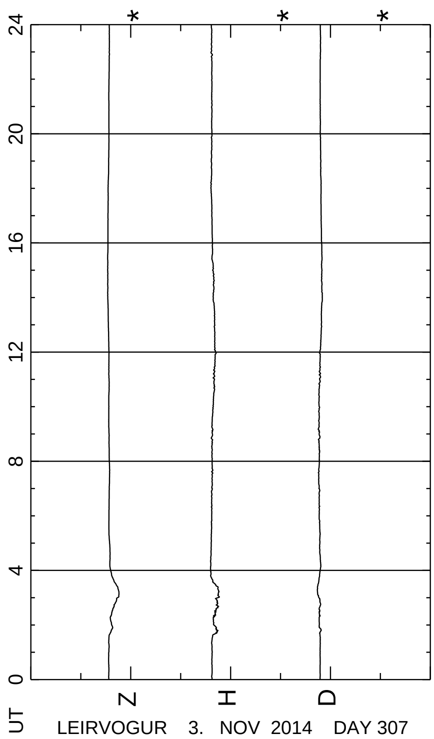

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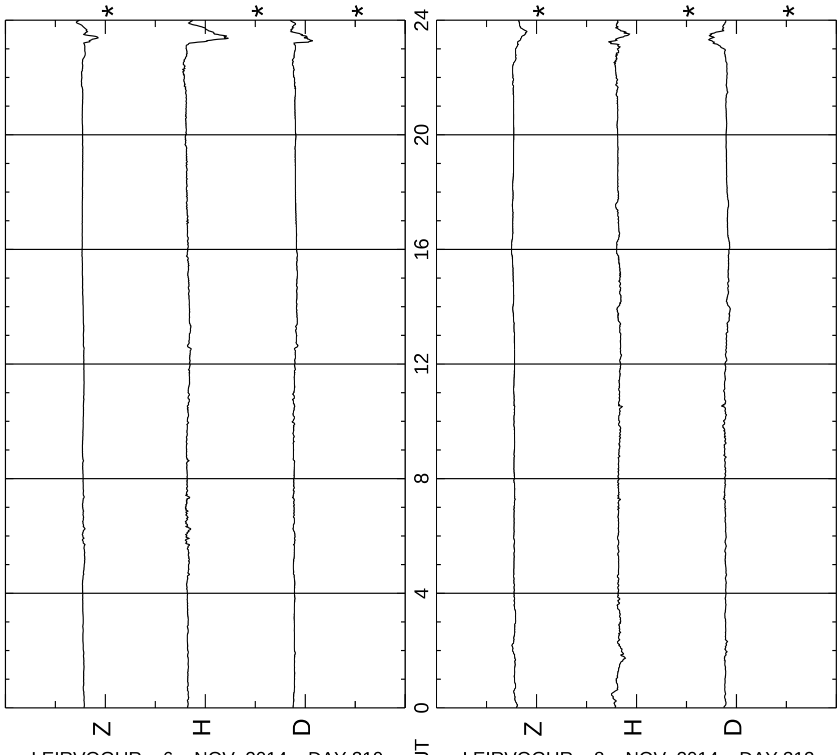

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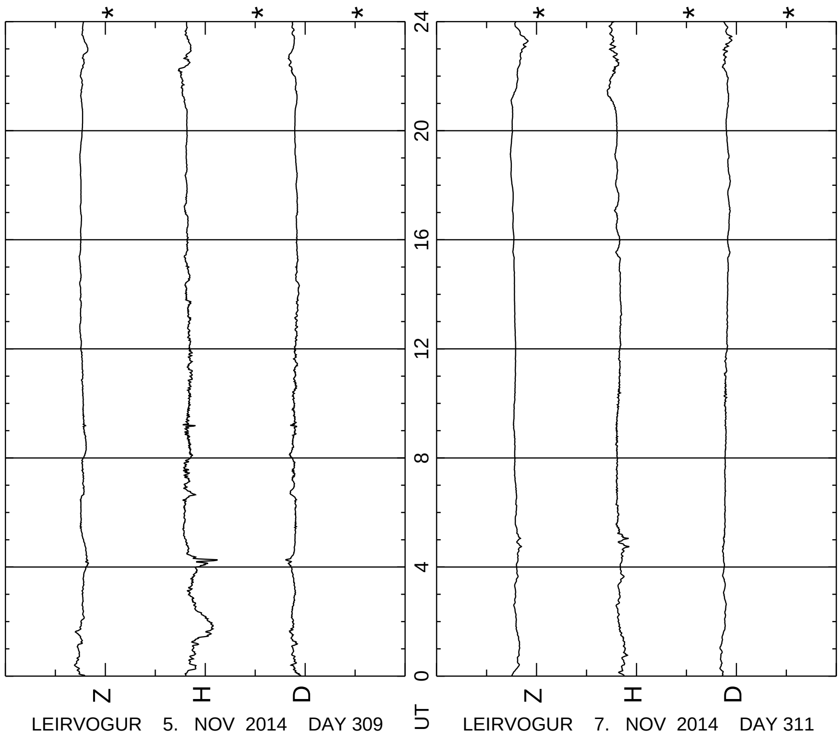
LEIRVOGUR 8. NOV 2014 DAY 312



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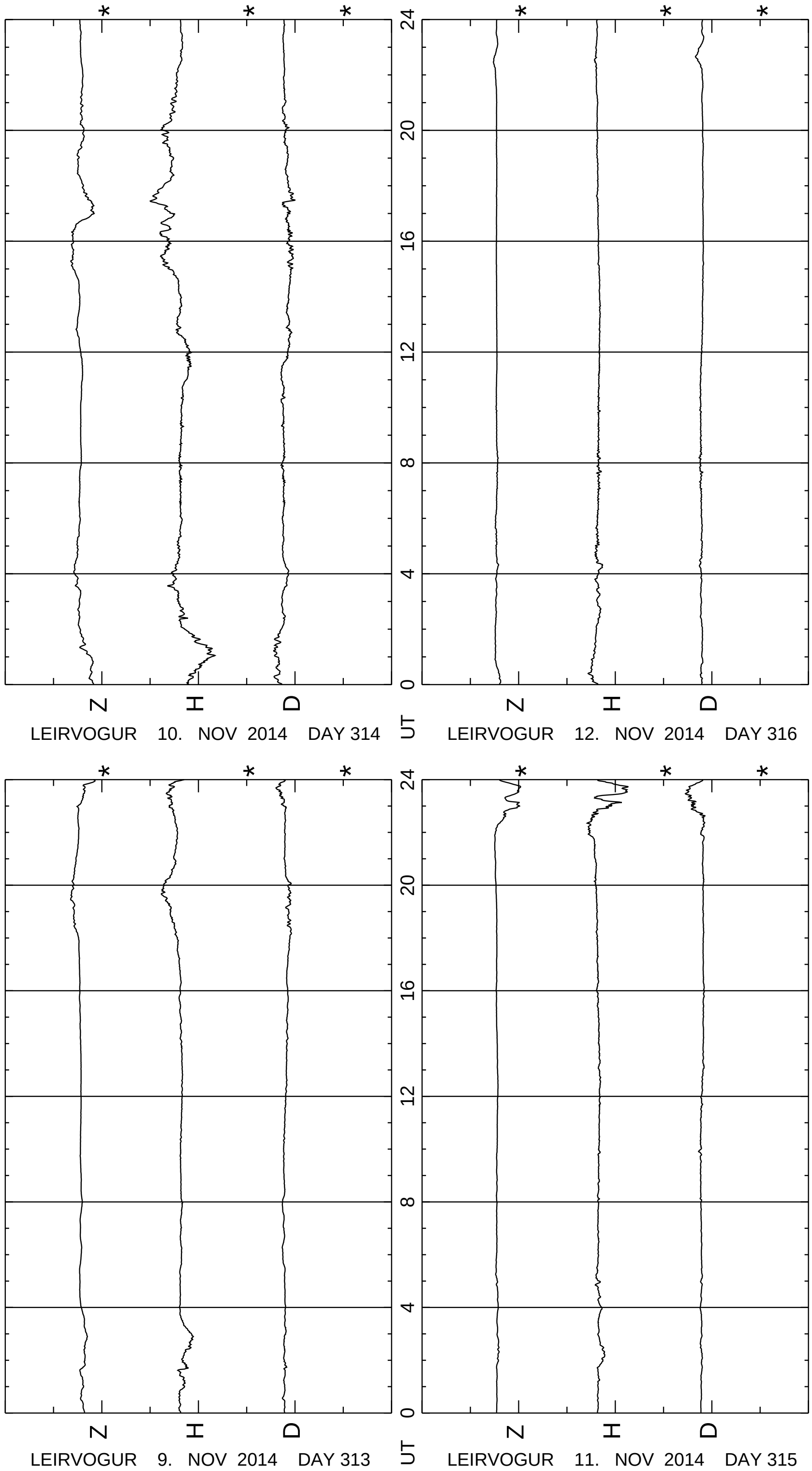
LEIRVOGUR 7. NOV 2014 DAY 311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LEIRVOGUR 12. NOV 2014 DAY 316
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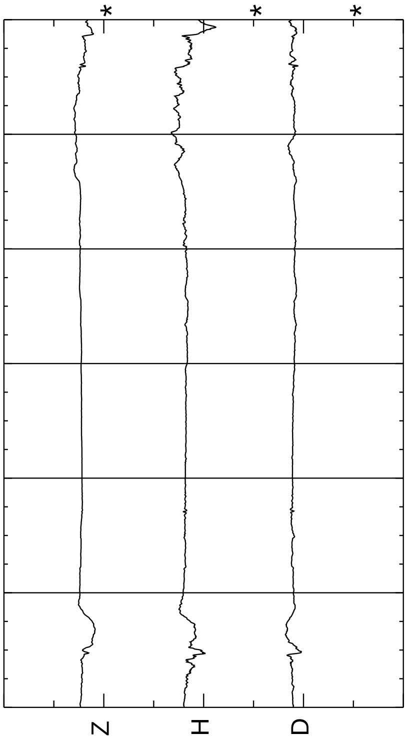

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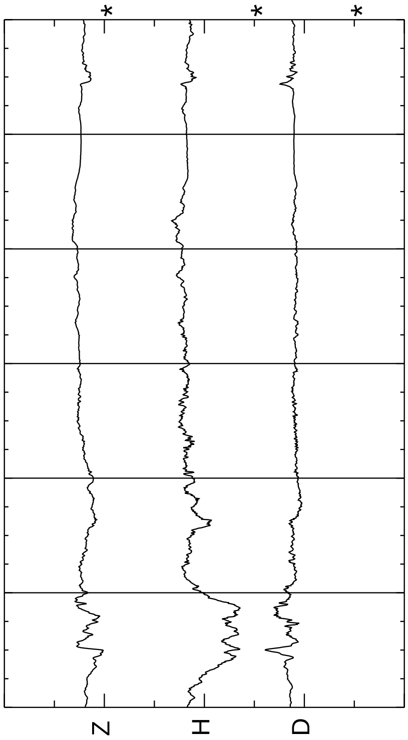

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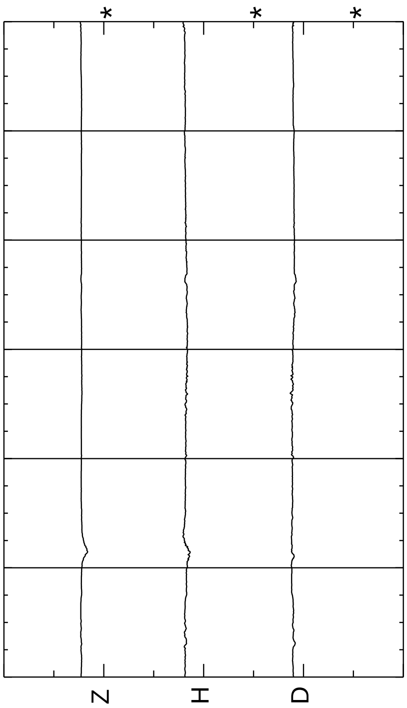

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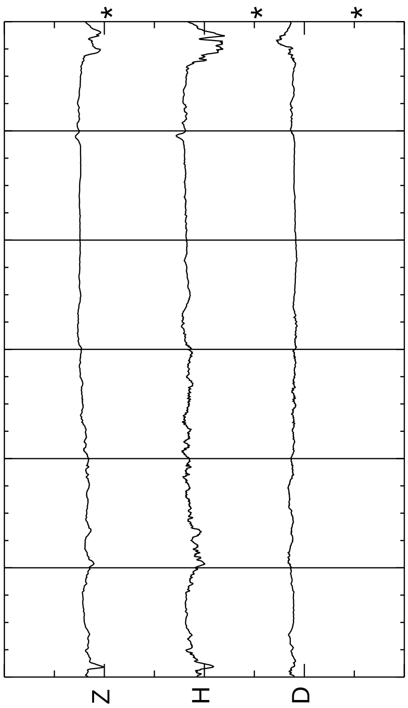

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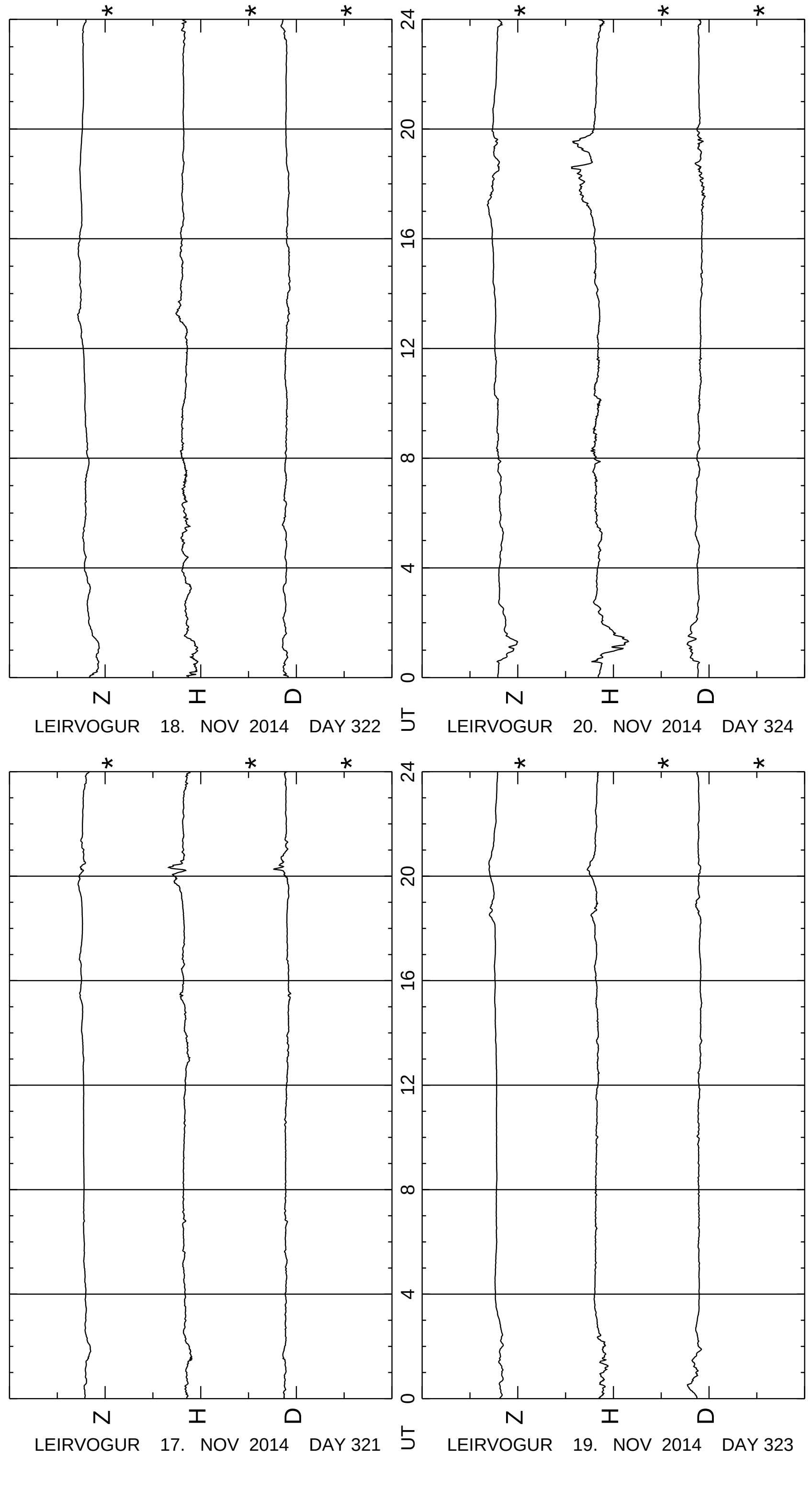
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LEIRVOGUR 19. NOV 2014 DAY 323
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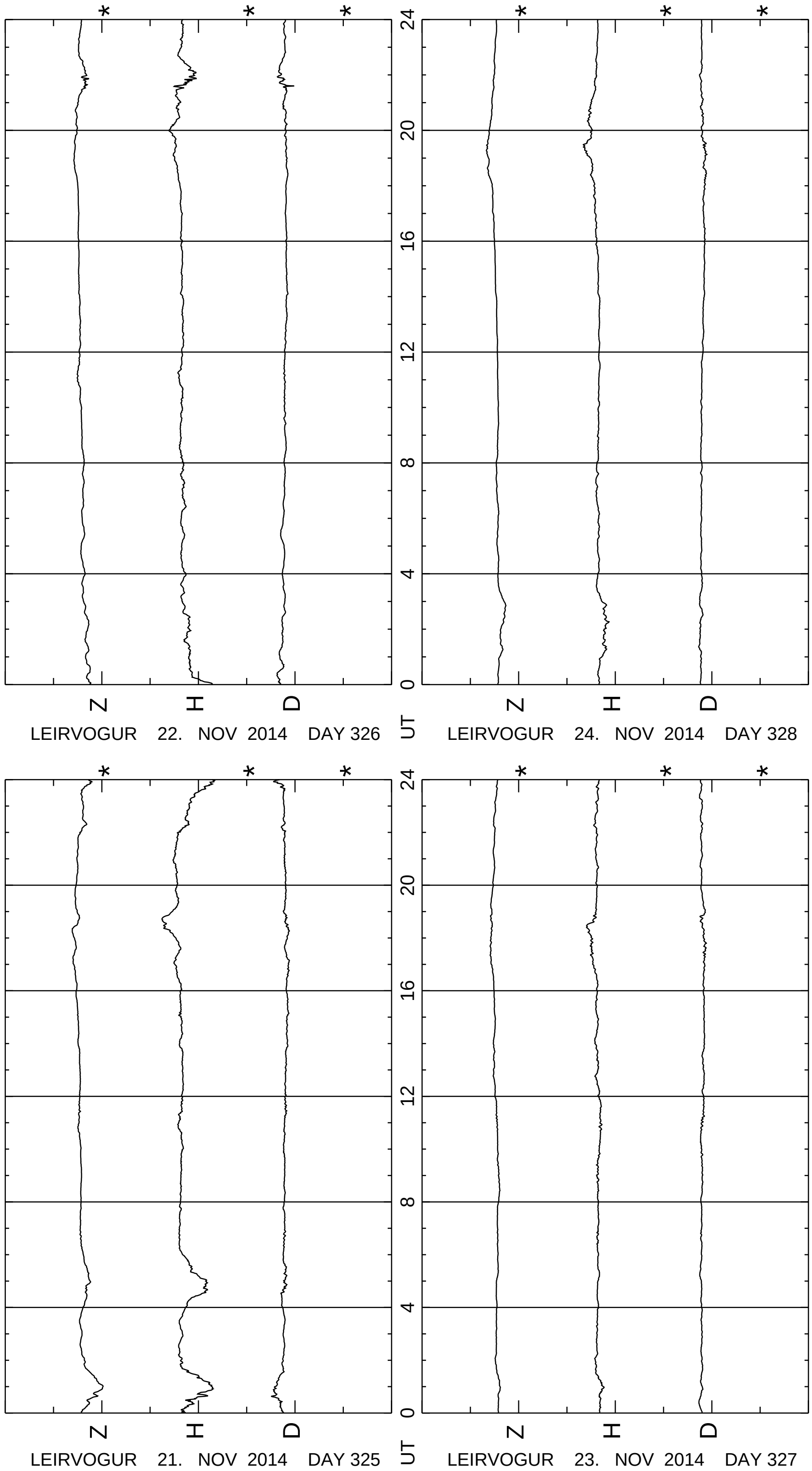

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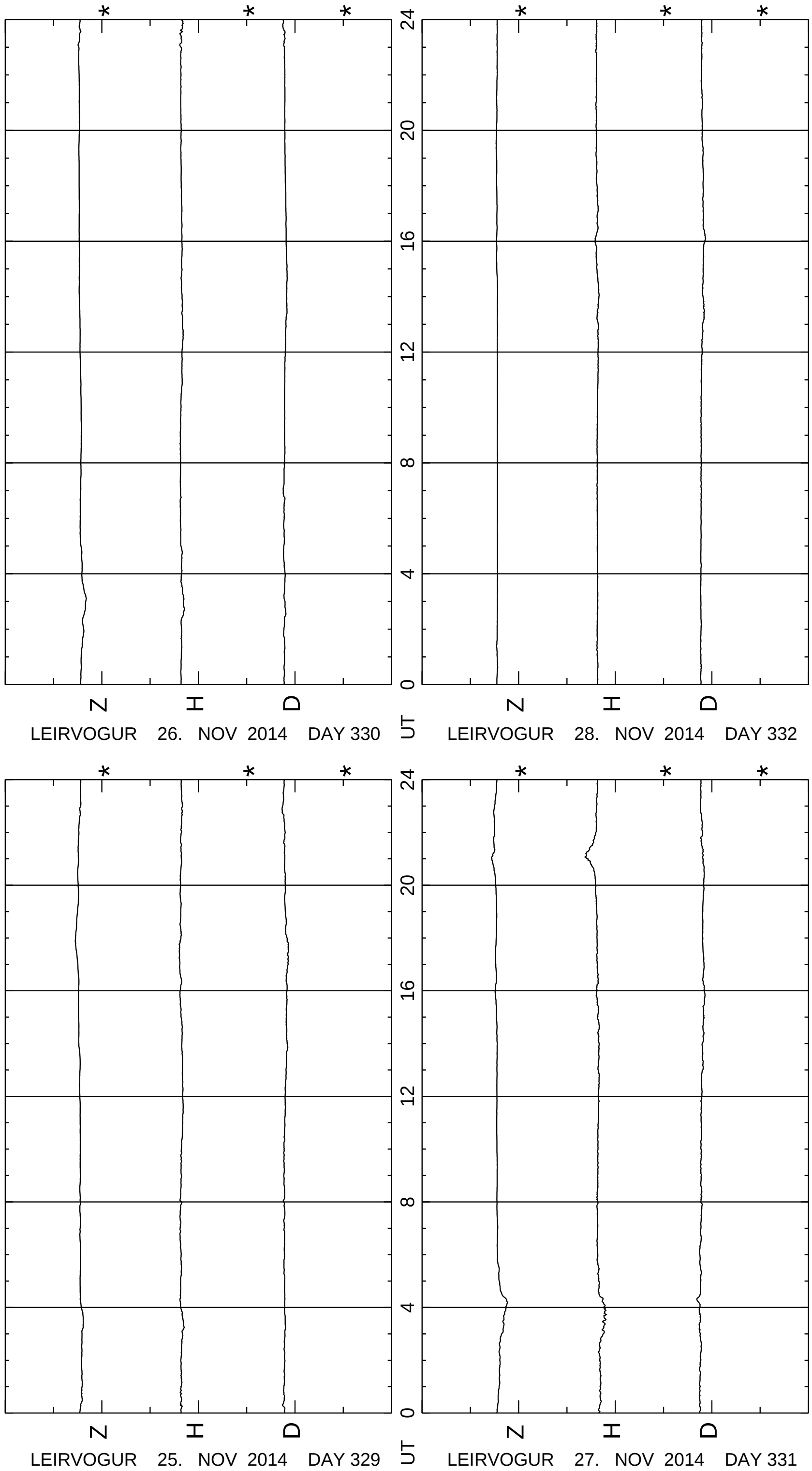
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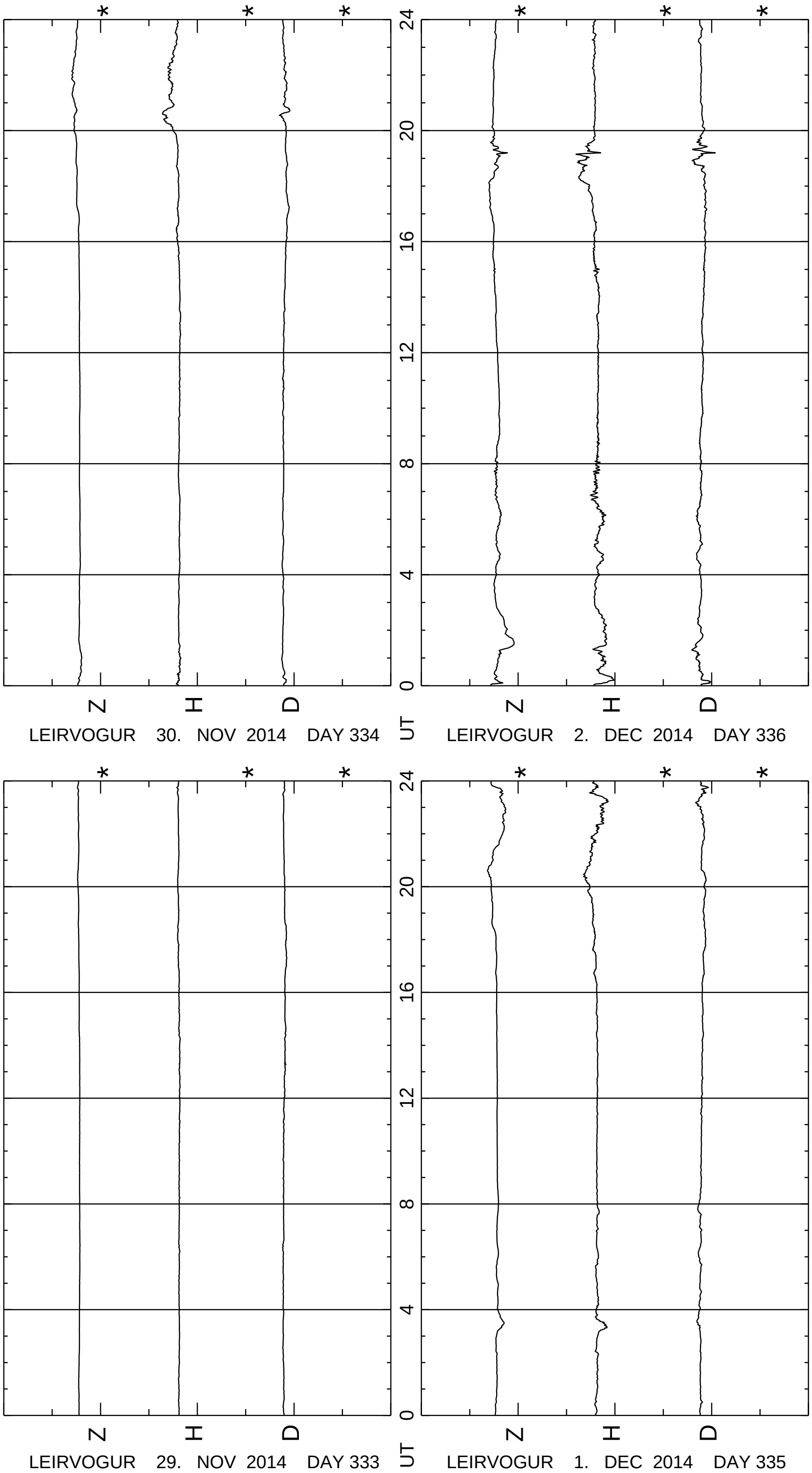
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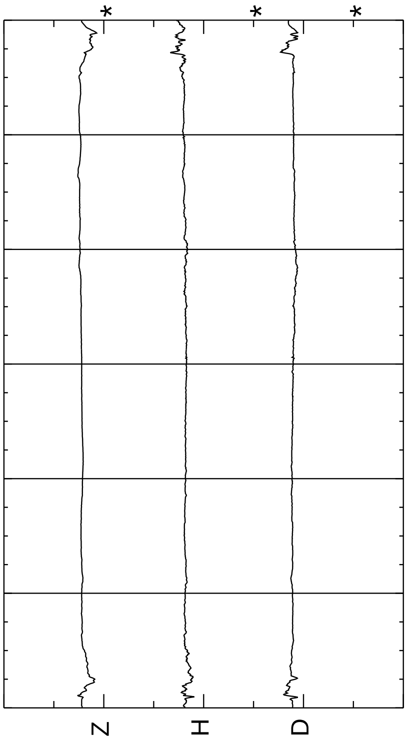

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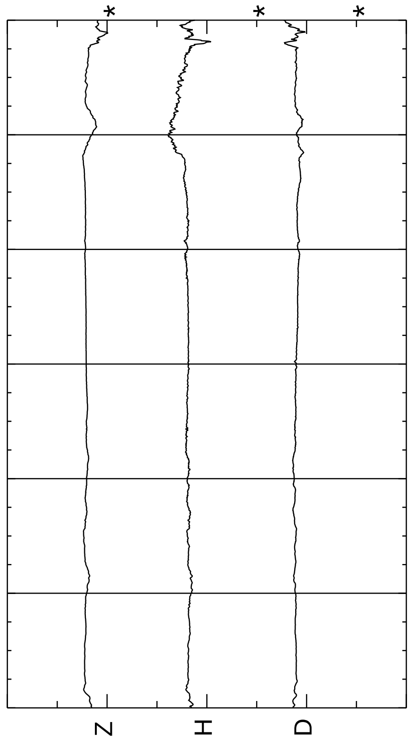

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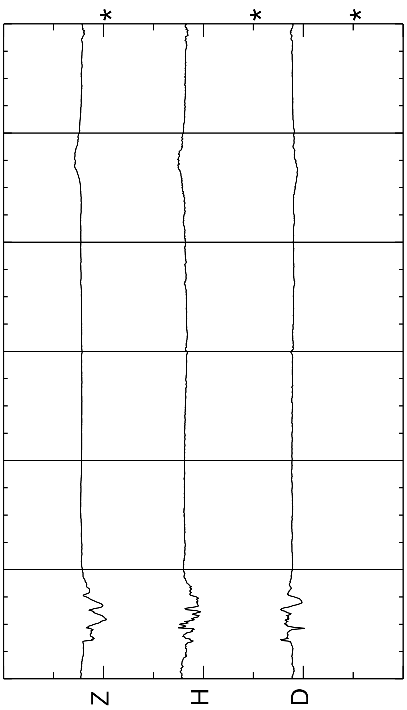

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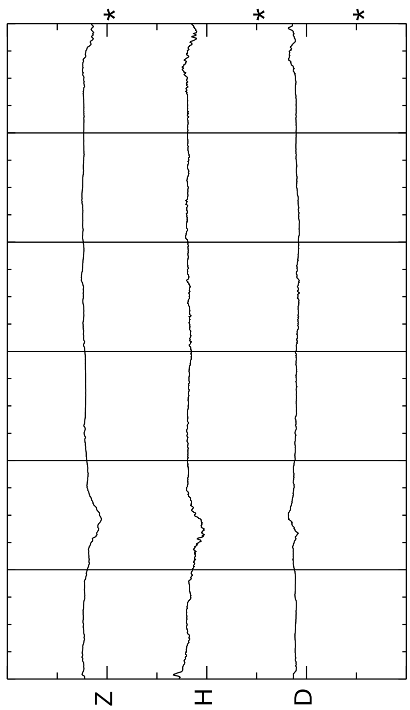

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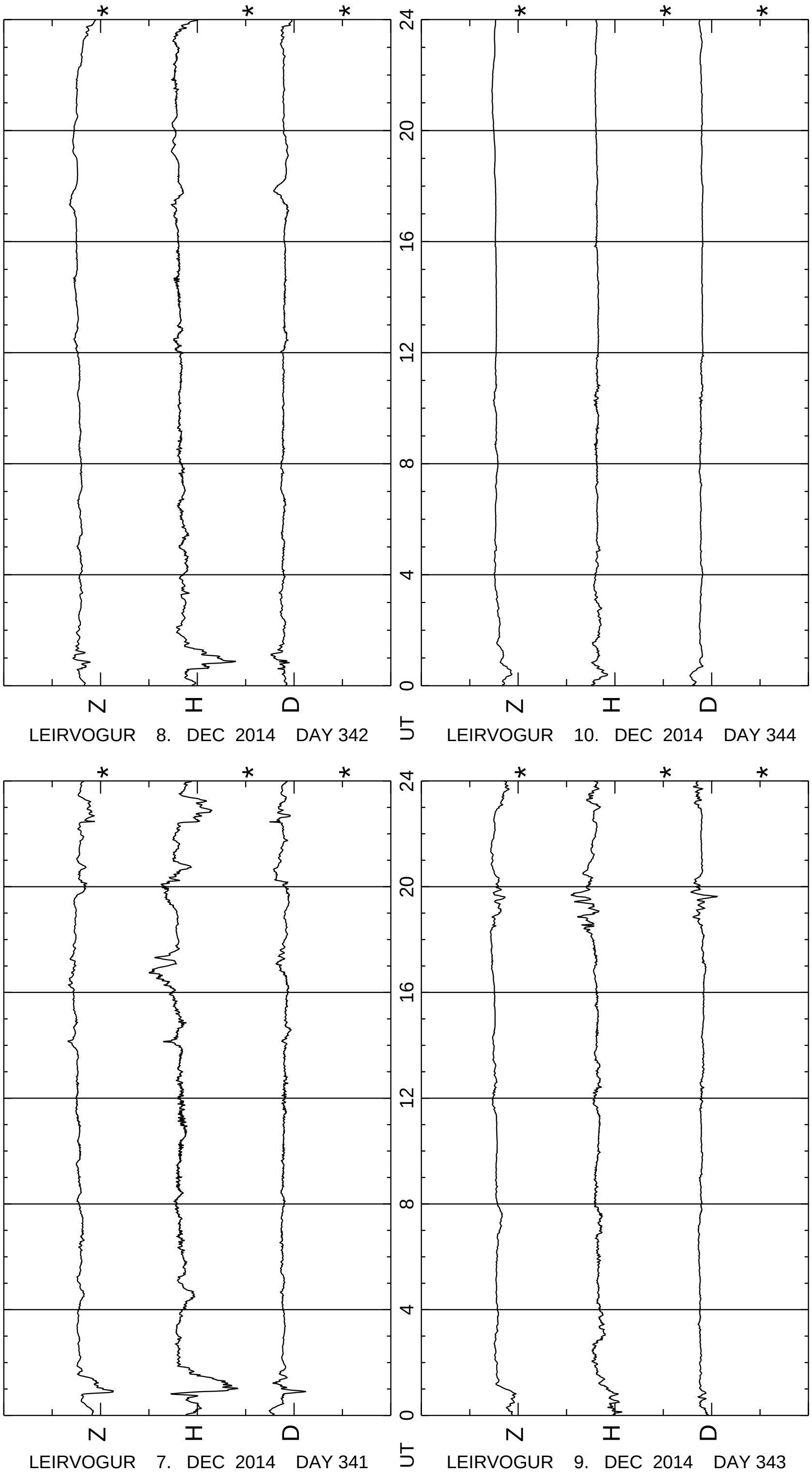
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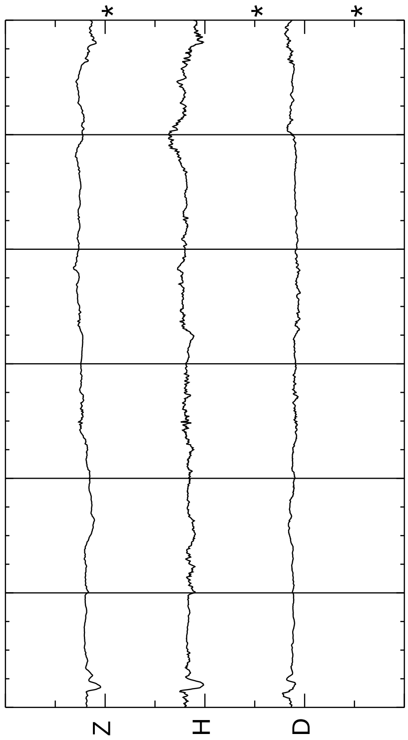

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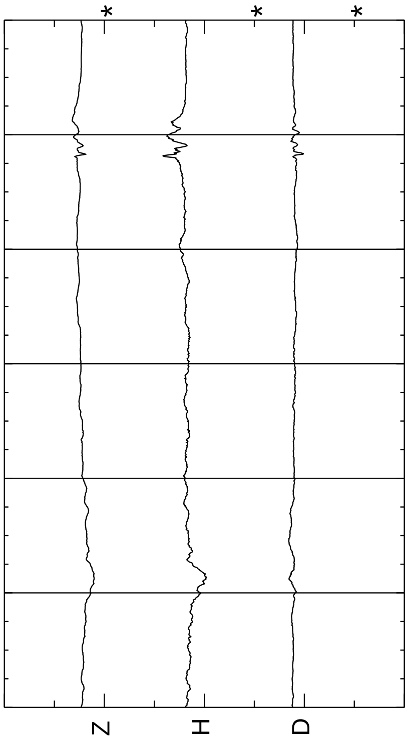

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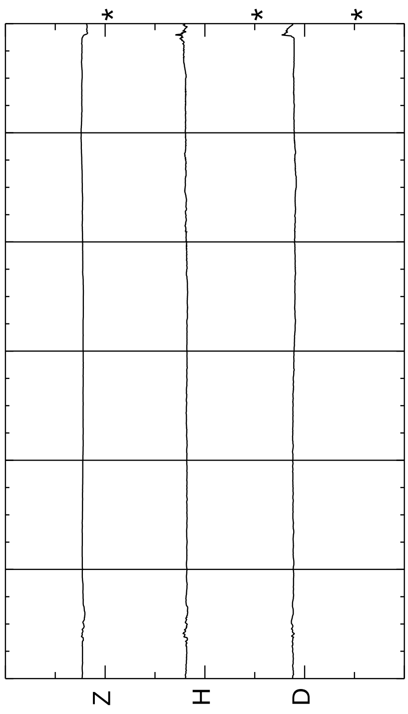

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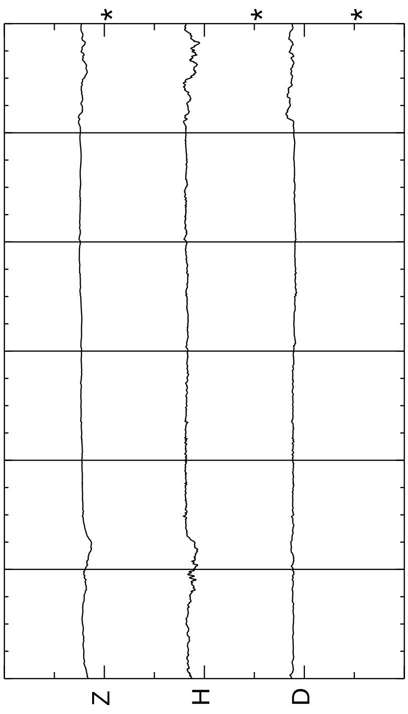

LEIRVOGUR 13. DEC 2014 DAY 347

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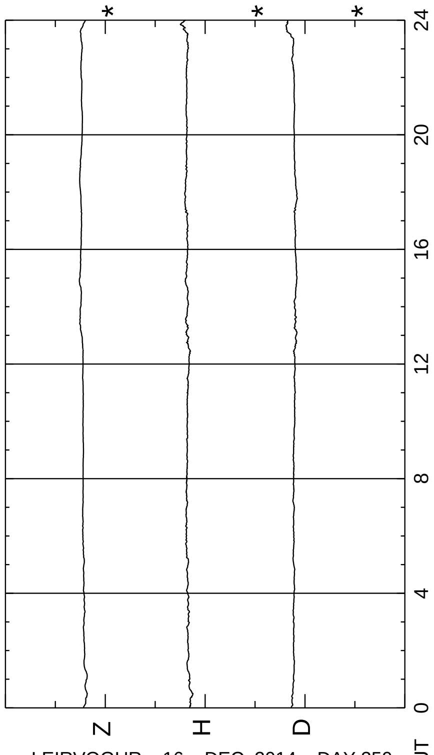

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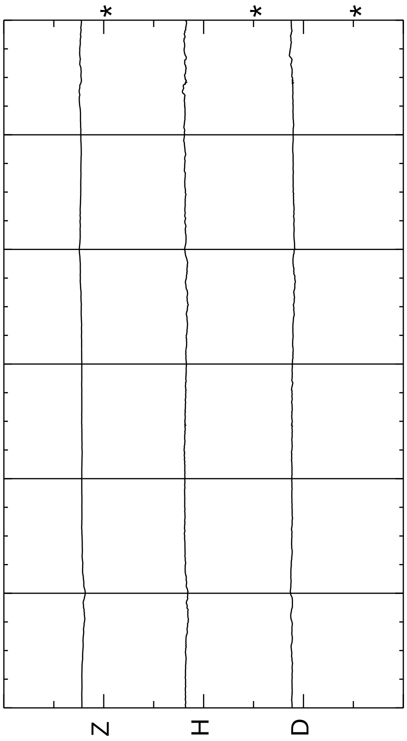

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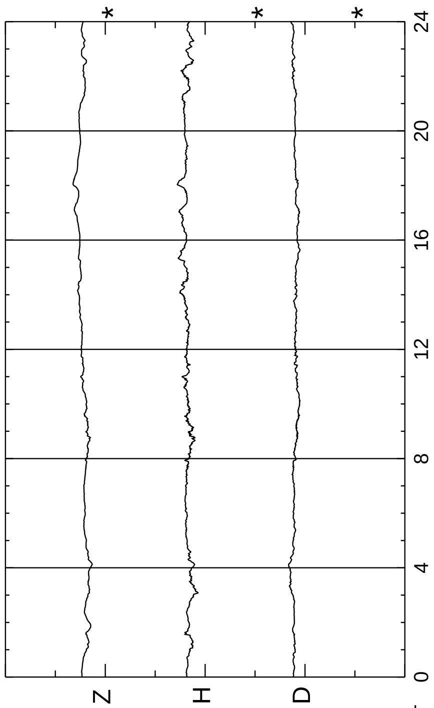

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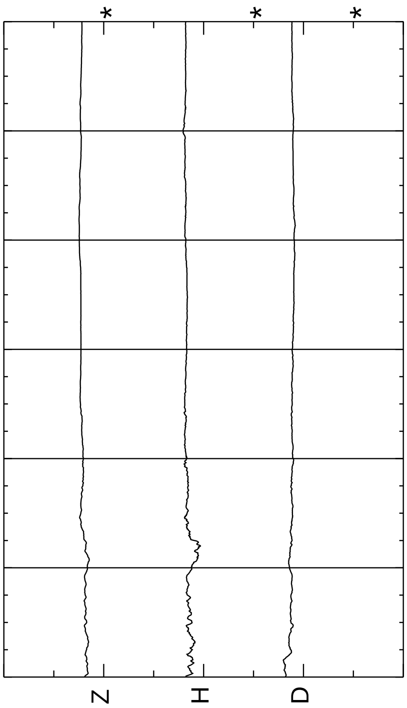

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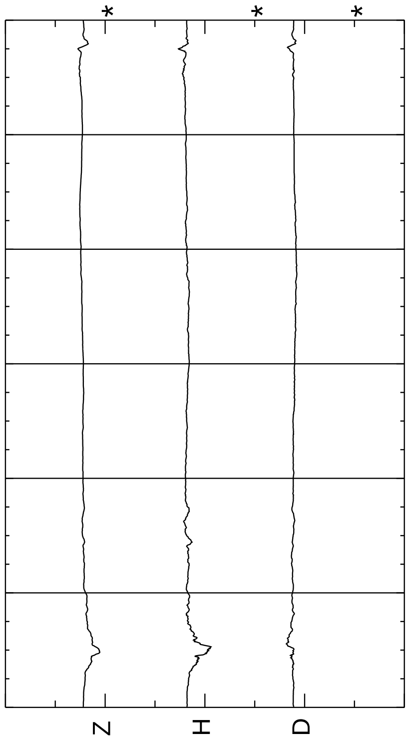

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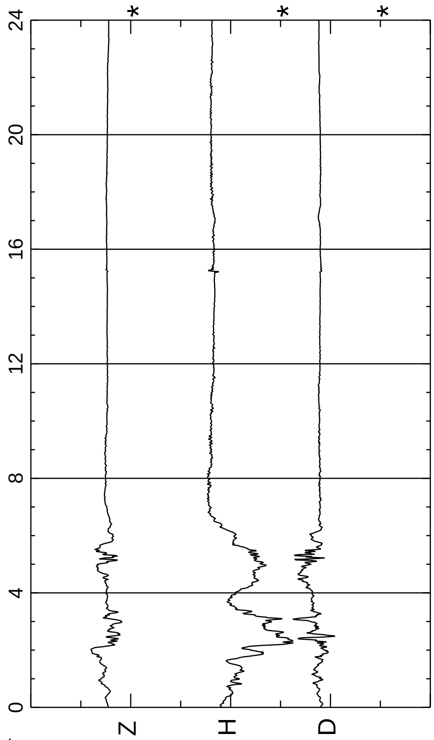

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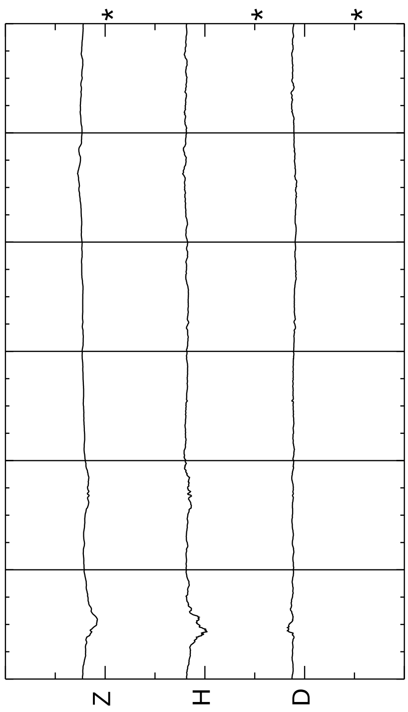

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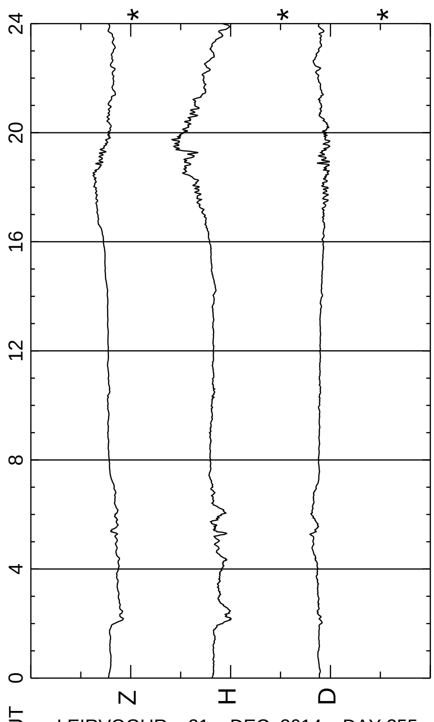
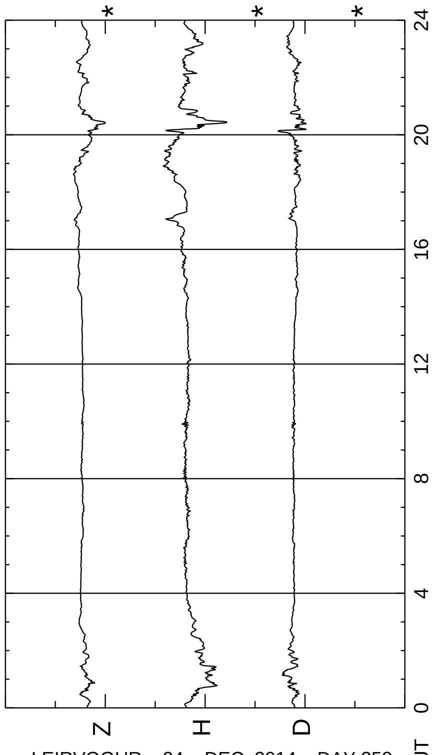
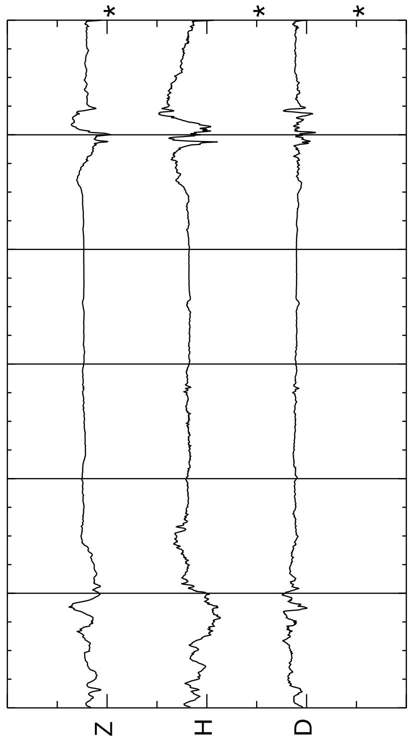


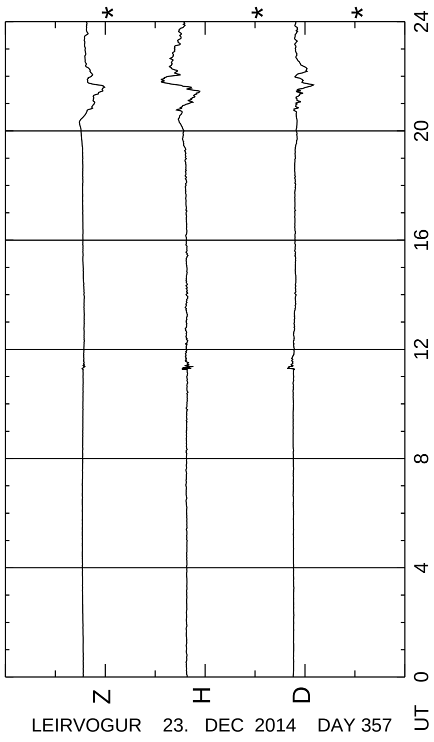
LEIRVOGUR 21. DEC 2014 DAY 355



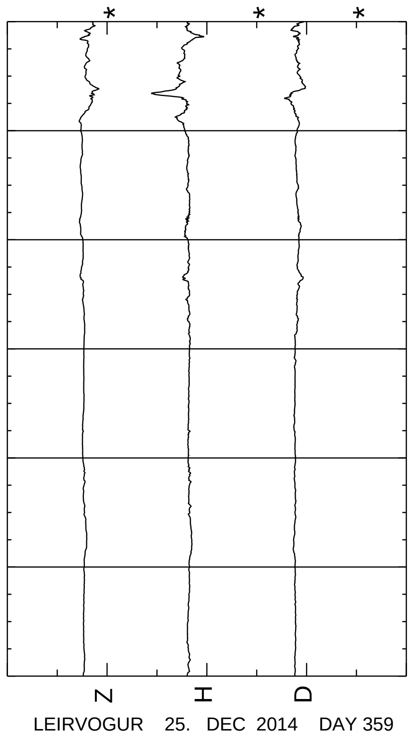
LEIRVOGUR 24. DEC 2014 DAY 358



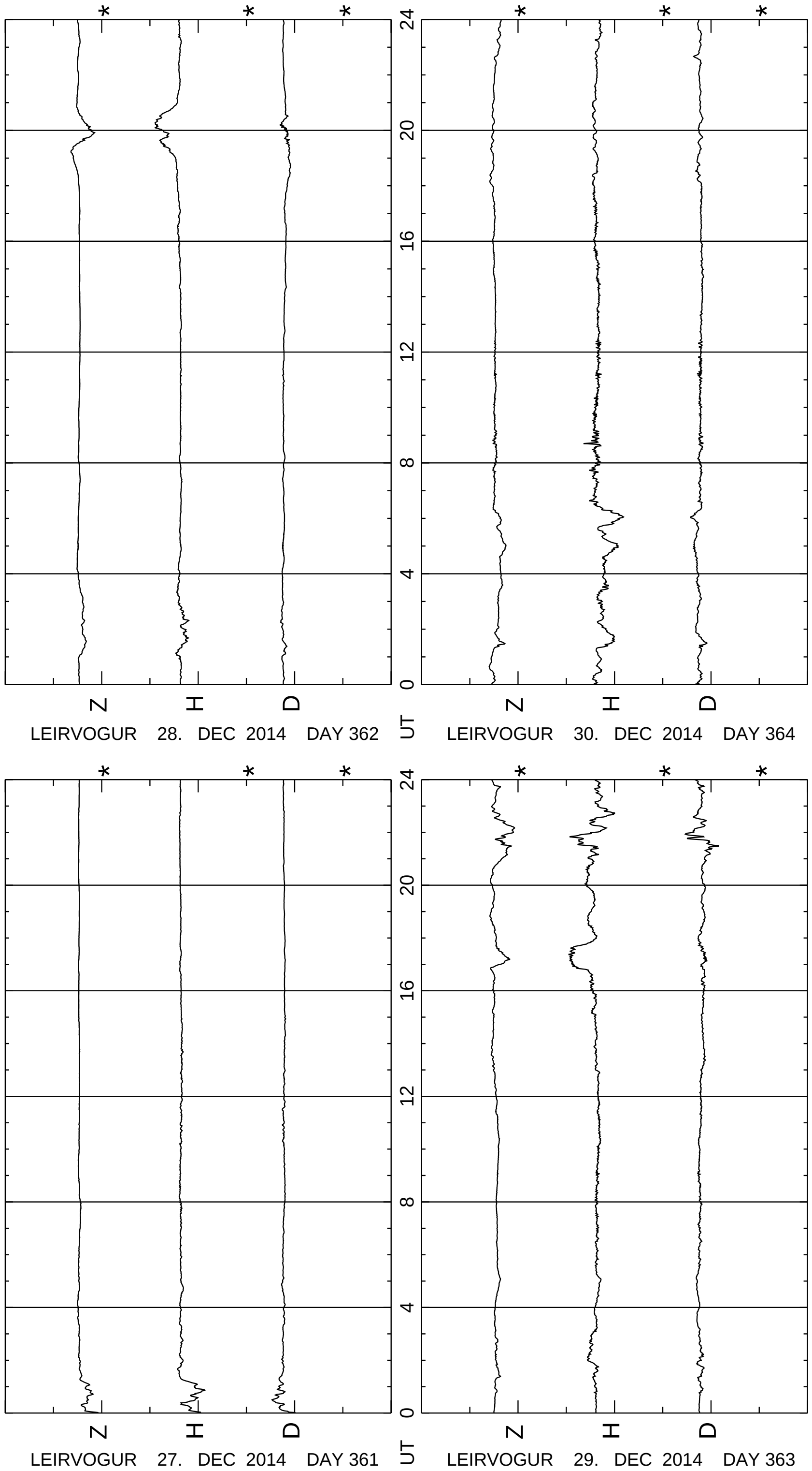
LEIRVOGUR 26. DEC 2014 DAY 360

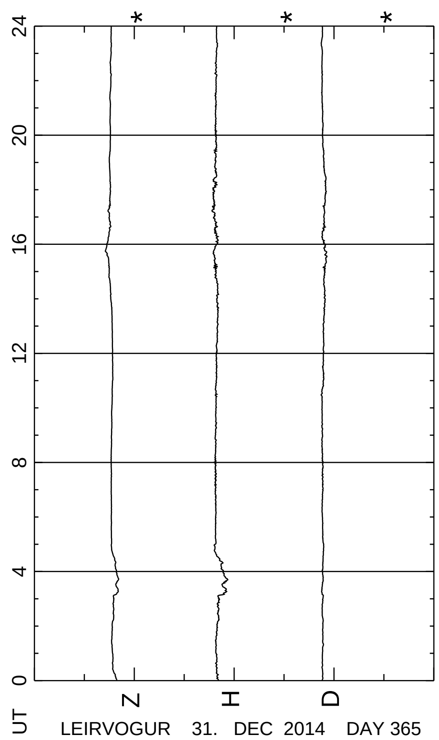


LEIRVOGUR 23. DEC 2014 DAY 357



LEIRVOGUR 25. DEC 2014 DAY 359


LEIRVOGUR 28. DEC 2014 DAY 362
LEIRVOGUR 30. DEC 2014 DAY 364
LEIRVOGUR 27. DEC 2014 DAY 361
LEIRVOGUR 29. DEC 2014 DAY 363
Z
H
D
UT
0
4
8
12
16
20
24


UT
LEIRVOGUR 31. DEC 2014 DAY 365
0
4
8
12
16
20
24
Z
H
D

ANNUAL MEANS AT LEIRVOGUR

In the table below, D and I are given in degrees and minutes of arc. Other values are in nanoteslas. Z, H and D are measured values, as are the values of F since 1963.

	Z	H	D		F	X	Y	I	
1958	49322	11872	336	15.3	50731	10867	-4780	76	28.0
	30	14		5.5	32	20	11		-0.5
1959	49352	11886	336	20.8	50763	10887	-4769	76	27.5
	51	11		5.3	52	18	13		0.1
1960	49403	11897	336	26.1	50815	10905	-4756	76	27.6
	26	32		6.9	33	39	9		-1.7
1961	49429	11929	336	33.0	50848	10944	-4747	76	25.9
	20	33		5.6	27	38	5		-1.8
1962	49449	11962	336	38.6	50875	10982	-4742	76	24.1
	31	18		5.0	37	23	8		-0.7
1963	49480	11980	336	43.6	50912	11005	-4734	76	23.4
	24	35		5.0	31	39	3		-1.9
1964	49504	12015	336	48.6	50943	11044	-4731	76	21.5
	26	27		3.7	33	30	1		-1.3
1965	49530	12042	336	52.3	50976	11074	-4730	76	20.2
	33	22		3.3	36	25	2		-1.0
1966	49563	12064	336	55.6	51012	11099	-4728	76	19.2
	50	21		3.6	51	24	3		-0.6
1967	49613	12085	336	59.2	51063	11123	-4725	76	18.6
	44	27		4.3	47	31	4		-1.1
1968	49657	12112	337	3.5	51110	11154	-4721	76	17.5
	44	28		2.6	53	29	-3		-1.1
1969	49701	12140	337	6.1	51163	11183	-4724	76	16.4
	53	29		3.6	58	32	1		-1.0
1970	49754	12169	337	9.7	51221	11215	-4723	76	15.4
	41	29		5.1	47	34	5		-1.3
1971	49795	12198	337	14.8	51268	11249	-4718	76	14.1
	46	31		6.8	51	38	11		-1.3
1972	49841	12229	337	21.6	51319	11287	-4707	76	12.8
	40	18		8.9	43	28	22		-0.5
1973	49881	12247	337	30.5	51362	11315	-4685	76	12.3
	41	24		10.5	45	37	25		-0.9
1974	49922	12271	337	41.0	51407	11352	-4660	76	11.4
	22	33		11.4	30	46	26		-1.8
1975	49944	12304	337	52.4	51437	11398	-4634	76	9.6
	23	28		13.3	29	44	33		-1.4
1976	49967	12332	338	5.7	51466	11442	-4601	76	8.2
	13	23		13.7	18	39	37		-1.3
1977	49980	12355	338	19.4	51484	11481	-4564	76	6.9
	23	11		14.7	25	30	46		-0.4
1978	50003	12366	338	34.1	51509	11511	-4518	76	6.5
	1	22		14.0	7	39	39		-1.4
1979	50004	12388	338	48.1	51516	11550	-4479	76	5.1
	-11	13		13.1	-7	29	39		-1.0
1980	49993	12401	339	1.2	51509	11579	-4440	76	4.1
	9	4		12.6	9	20	41		-0.1
1981	50002	12405	339	13.8	51518	11599	-4399	76	4.0
	2	-6		11.8	1	9	42		0.4
1982	50004	12399	339	25.6	51519	11608	-4357	76	4.4
	-10	8		12.7	-8	24	40		-0.6
1983	49994	12407	339	38.3	51511	11632	-4317	76	3.8

ANNUAL MEANS AT LEIRVOGUR
(Continued)

	Z	H	D		F	X	Y	I	
1983	49994	12407	339	38.3	51511	11632	-4317	76	3.8
	-3	-1		12.1	-3	14	41		0.0
1984	49991	12406	339	50.4	51508	11646	-4276	76	3.8
	-9	4		11.1	-8	17	37		-0.4
1985	49982	12410	340	1.5	51500	11663	-4239	76	3.4
	0	-4		12.0	0	11	42		0.2
1986	49982	12406	340	13.5	51500	11674	-4197	76	3.6
	-2	7		11.9	-2	21	38		-0.5
1987	49980	12413	340	25.4	51498	11695	-4159	76	3.1
	12	-5		11.7	10	10	41		0.5
1988	49992	12408	340	37.1	51508	11705	-4118	76	3.6
	20	-3		11.6	20	11	41		0.6
1989	50012	12405	340	48.7	51528	11716	-4077	76	4.2
	5	1		11.3	5	14	38		0.0
1990	50017	12406	341	0.0	51533	11730	-4039	76	4.2
	11	-1		11.4	11	12	39		0.2
1991	50028	12405	341	11.4	51544	11742	-4000	76	4.4
	-3	6		12.0	-3	20	39		-0.4
1992	50025	12411	341	23.4	51541	11762	-3961	76	4.0
	-2	6		13.0	0	21	43		-0.4
1993	50023	12417	341	36.4	51541	11783	-3918	76	3.6
	7	-4		14.4	6	12	51		0.3
1994	50030	12413	341	50.8	51547	11795	-3867	76	3.9
	0	18		14.8	4	34	45		-1.1
1995	50030	12431	342	5.6	51551	11829	-3822	76	2.8
	-1	14		16.2	3	31	51		-0.9
1996	50029	12445	342	21.8	51554	11860	-3771	76	1.9
	9	12		16.9	12	30	55		-0.7
1997	50038	12457	342	38.7	51566	11890	-3716	76	1.2
	19	5		17.8	19	24	60		0.0
1998	50057	12462	342	56.5	51585	11914	-3656	76	1.2
	12	11		17.6	14	29	58		-0.5
1999	50069	12473	343	14.1	51599	11943	-3598	76	0.7
	20	8		17.8	22	26	60		-0.2
2000	50089	12481	343	31.9	51621	11969	-3538	76	0.5
	10	16		17.8	13	34	57		-0.9
2001	50099	12497	343	49.7	51634	12003	-3481	75	59.6
	18	11		18.3	20	28	61		-0.4
2002	50117	12508	344	8.0	51654	12031	-3420	75	59.2
	23	-4		18.7	22	15	67		0.6
2003	50140	12504	344	26.7	51676	12046	-3353	75	59.8
	6	23		17.7	12	39	56		-1.3
2004	50146	12527	344	44.4	51688	12085	-3297	75	58.5
	12	10		17.4	13	27	59		-0.5
2005	50158	12537	345	1.8	51701	12112	-3238	75	58.0
	6	21		16.4	11	35	52		-1.3
2006	50164	12558	345	18.2	51712	12147	-3186	75	56.7
	14	17		16.8	17	32	55		-0.9
2007	50178	12575	345	35.0	51729	12179	-3131	75	55.8
	7	15		17.1	11	30	57		-0.8
2008	50185	12590	345	52.1	51740	12209	-3074	75	55.0

ANNUAL MEANS AT LEIRVOGUR
(Continued)

	Z	H	D		F	X	Y	I	
2008	50185	12590	345	52.1	51740	12209	-3074	75	55.0
	3	22		17.6	8	37	57		-1.4
2009	50188	12612	346	9.7	51748	12246	-3017	75	53.6
	7	9		18.8	9	25	65		-0.4
2010	50195	12621	346	28.5	51757	12271	-2952	75	53.2
	7	11		18.8	10	27	65		-0.6
2011	50202	12632	346	47.3	51767	12298	-2887	75	52.6
	7	8		19.3	9	23	67		-0.4
2012	50209	12640	347	6.6	51776	12321	-2820	75	52.2
	0	17		18.0	4	31	61		-1.0
2013	50209	12657	347	24.6	51780	12353	-2758	75	51.1
	4	16		16.8	8	29	57		-0.9
2014	50213	12673	347	41.4	51788	12382	-2701	75	50.1