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S. Marsal
J. J. Curto
J. G. Solé
J. M. Torta
L.F. Alberca
M. Ibañez
O. Cid
M. Calonge
M. A. Barroso

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1. INTRODUCTION

In this Bulletin we present the geomagnetic observations recorded by the *Observatori de l'Ebre* in Horta de Sant Joan during 2013. The IAGA code for this station is EBR.

The *Observatori de l'Ebre* institution was founded in Roquetes (Tarragona) in 1904 by the Society of Jesus. Since that date, and except for the Civil War period, the Earth magnetic field has been continuously recorded until our days. Artificial disturbances, mainly due to railway electrification, forced us to look for an alternative remote site and, at the end of the year 2001, in collaboration with the *Instituto Geográfico Nacional*, a new variometric station was installed in Horta de Sant Joan (20.3 km far from the main Observatory). With the settlement of a new pillar in the hermitage of this town, this station became fully operational in January 1, 2012, and since then the variations are referred to that pillar. The discontinuities in the components of the magnetic field vector reported between December 31, 2011 and January 1, 2012, associated with the change of the location of the reference measurements, can be found originally at the bulletin MARSAL ET AL., (2013), and are reproduced in Table 1.

	D	H	Z	X	Y	I	F
Horta – Roquetes values	-0° 3.1'	-93	113	-93	-23	0° 10.7'	42

Table 1. Differences between magnetic elements at Horta de Sant Joan and Roquetes locations. H, Z, X, Y and F are given in nT.

Previous bulletins (e.g., MARSAL et al., 2013) have outlined both the data process and the definitive values until December 31, 2012. It should be pointed out, however, that the variometers and the absolute pillar of the original facilities remain active. The first will be used in case of a prolonged lack of data from the remote variometric station, once the artificial noise is removed from the data. Absolute measurements, for the comfort that it entails, have been made almost daily in the absolute pillar of Ebre observatory. The difference between the values in both pillars (Horta and Roquetes) has been established during 2013 performing repeated series of measurements. In order to detect and correct possible drifts, such difference is properly updated once a month through a series of absolute determinations in the absolute pillar of Horta de Sant Joan.

The field values recorded in Horta de Sant Joan are transmitted via internet to Ebre observatory, and transmitted with a cadence of twelve minutes to the Paris Geomagnetic Information Node (GIN). They can be plotted in near real time at <http://www.intermagnet.org/data-donnee/dataplot-eng.php>, or downloaded at <http://www.intermagnet.org/data-donnee/download-eng.php>. In addition, data are reflected in our web site: www.obsebre.es/php/geomagnetisme.php.

It is possible to obtain more information applying to:

**Observatori de l'Ebre
Horta Alta, 38
43520 Roquetes (Spain)**

**Tel.: 977 50 05 11
Fax: 977 50 46 60
e_mail: smarsal@obsebre.es
jjcurto@obsebre.es
gsole@obsebre.es**

2. POSITION

The Horta de Sant Joan variometric station is placed inside of a cave within the grounds of Sant Pau's chapel, at the side of Santa Bàrbara Mountain, approximately 1.5 km East of the town. The main pillar is located in the nearby Sant Onofre's chapel, 110 m East of the convent of Sant Salvador, and at an altitude about 20 m above this. Indeed, that pillar was already built in 2001, although absolute measurements on it (made sporadically) had never been used. Its coordinates are:

Geographic Latitude*	40°	57'	25" N
Geographic Longitude	0°	19'	59" E
Altitude a.s.l.	531,5 m		
Geomagnetic Latitude	43°	13'	19" N
Geomagnetic Longitude	81°	22'	10" E

*Coordinates given in the ETRS89/00 reference system, based on the GRS80 reference ellipsoid. Orthometric height. Geomagnetic coordinates are calculated from the 11th generation of the IGRF at epoch 2010.0.

The reference mark used for the determination of the declination absolute measurements is the cross at the upper part of the façade of the Horta de Sant Joan church, approximately 1.4 km West from the absolute pillar. Specifically, the geodetic azimuth determined between the pillar-cross line and the geographic North is 256° 48' 05".

3. INSTRUMENTS AND OPERATION

3.1. VARIOMETERS

The main instrument of the automatic magnetic station is the suspended tri-axial fluxgate (FGE model). This magnetometer is located in the cave of Sant Pau's chapel, where the annual thermal oscillation is around 2 °C. Manufactured by the Danish Meteorological Institute (DMI) (see details in DANISH METEOROLOGICAL INSTITUTE, 2006), it includes three suspended fluxgate sensors arranged orthogonally on a stable support made of marble. In our case, the set is oriented approximately in agreement with the three local magnetic axes, H (North), E (East) and Z (Nadir), although in practice, due to the current low Declination of the site, the orientation almost coincides with the one given by the geographical axes X, Y, Z. The analog output of this magnetometer is digitized by means of two 16-bit A/D converters, which sample at both 1 and 0.1 Hz frequencies. The first one is set to a dynamic range of 2000 nT and a theoretical resolution of 0.03 nT, while the second one has a dynamic range of 4000 nT and a resolution of 0.1 nT.

A scalar Overhauser magnetometer (Gem Systems GSM19) is used to measure the total field intensity F. This magnetometer is sampled every 10 s (0.1 Hz) and is located far enough from the fluxgate to avoid interferences among them.

All sampling and timing are carried out under the control of hardware based on a PIC 18F4550 microcontroller and a GPS receiver. The data acquisition, storage, monitoring and transmission processes are supervised using control software developed in C-language, which runs on a low power LINUX-based embedded PC.

Below we describe the back-up variometers sited in Roquetes. These are: a joint tri-axial fluxgate – Proton Vector Magnetometer (PVM) called ARGO (Automatic Remote Geomagnetic Observatory), and a second tri-axial fluxgate brand Geomag, model M390. Both are located in the interior of a cave to get the maximum thermal stability.

The ARGO instrument was originally developed by the Geomagnetism Group of the *British Geological Survey* (BGS) in Edinburgh. The technical details can be found in RIDDICK et al., (1995), although some technical aspects have been subsequently adapted to the changing needs of observation by the staff of *Observatori de l'Ebre*. The equipment consists of a non-suspended tri-axial fluxgate sensor and a PVM. Although the fluxgate sensor was originally sampled at 0.1 Hz, its electronics was modified in 2012 to allow an additional sampling at 1 Hz, based on the same microcontroller PIC 18F4550 used in the fluxgate of Horta. The sensor of the PVM is made up of a Geomag SM90R Overhauser magnetometer used to measure the total field intensity (F). This magnetometer is deployed at the centre of a pair of dual axis Helmholtz coils which are deployed parallel to the directions given by the local declination and inclination. By applying bias currents through these coils and measuring the resultant vectors, changes in declination, D, and inclination, I, may be obtained, reason by which the configuration is known as $\delta D/\delta I$. A complete cycle of coil polarizations is needed for the measurement process, which is done once per minute in our case. A summarized description of its principles and operation can be found in TORTA et al. (1997) and MARSAL et al. (2007).

The tri-axial fluxgate Geomag M390 has a tilt compensation system and provides integrated values at a rate of once per minute. However, the individual measurements from which the integration is calculated are not accessible, which is a handicap for this instrument, given the increasingly restrictive standards of observation.

3.2. ABSOLUTE OBSERVATIONS

The type of instrument used for the absolute observations of declination and inclination is the D/I fluxgate magnetometer, or DI-flux, which consists of a single axis fluxgate magnetometer sensor ELSEC 810A mounted on a nonmagnetic Zeiss theodolite, high-precision 010B model. The observation procedure is based on the zero-field method to measure D and I. To remove the errors due to misalignment of the magnetic axis of the fluxgate and the optical axis of the theodolite, as well as those due to zero-field offset generated by the control electronics, the observations are made in the four possible positions for each element (see, e.g., JANKOWSKI AND SUCKSDORFF, 1996, TORTA et al., 1997, or MARSAL AND TORTA , 2007). The observers for 2013 have been mainly Miquel Ibañez, Miguel Calonge and Miguel Ángel Barroso.

The absolute determination of the total field intensity (F) is made using an ELSEC 820 proton magnetometer.

As mentioned previously, absolute measurements in Roquetes are made almost every day, and a series of measurements are conducted at least once a month in the absolute pillar of Horta de Sant Joan. In the latter case, the abovementioned absolute instruments and their control electronics, are moved to this remote location.

4. DATA PROCESSING

The preliminary data processing includes the detection and elimination of any spikes in the tri-axial fluxgate data from Horta by comparing the values at 1 and 0.1 Hz, using the time derivative of the differences between these two datasets to highlight potential incidences in the records. A comparison between the total intensity F directly recorded by the scalar magnetometer and that deduced from the fluxgate vector data is also performed. Likewise, in some occasions the data recorded by the variometers located in Roquetes have been used in order to clarify remaining doubts.

In case of a prolonged lack of data from the variometric station of Horta, data from the ARGO magnetometer placed in Roquetes have been used, once their records have been cleaned. This process has not taken place on any occasion during 2013.

After the compilation of the two series of absolute measurements (Roquetes and Horta), the definitive baselines are determined. The procedure is detailed below.

For each observed element F , D and I (or its equivalent in Cartesian coordinates), the values of the DMI FGE located in Horta were subtracted from the corresponding absolute measurements, thus giving rise to two series of differences or observed baselines: one for the absolute observations in Roquetes and the other for the observations in Horta. The first series is much denser, because it contains (almost) daily absolute observations; the second is more dispersed, as it consists of one (in some cases two) series of absolute observations per month, which in turn consists of six individual measurements in a single day. To these two observed baselines in Roquetes and Horta a sequential analysis was applied towards the determination of the adopted differences or adopted baselines for each day. This process includes an analysis of a series of observable quantities that determine the validity of the individual absolute measurements, the rejection of the observed baseline values with excessive differences, and the most suitable interpolation of the accepted data according to a 7.5 days wide (sigma) Gaussian filter.

After that, the adopted baselines for Roquetes are subtracted from those of Horta, but only for those days in which absolute observations were made in this latter site. The time evolution of the abovementioned differences can serve to validate the method, since these should be constant, or at least slowly variable with time. In our case, the maximum range of variation for 2013 has been 0.8 nT for the magnetic element F , 2.7 nT for X , 2.2 nT for Y , and 1.6 nT for Z . From this point, the process continues with the interpolation of the differences (Horta minus Roquetes) for every day of the period, to which the daily adopted baseline of Roquetes is added. This will give as a result a daily virtual baseline for Horta, which we will simply call "baseline". The observed differences and the corresponding baselines adopted for the DMI FGE for the year 2013 are plotted in figure 1.

After adding the baselines to the variometer measurements (thus transferring them to the absolute references) the 1 and 10 s final values have been generated. From them, and using a 19-point Gaussian filter, the minute mean values are calculated. Hourly, daily and monthly mean values, as well as the magnetograms and the mean tables presented in the final sections of this bulletin are derived from minute mean values.

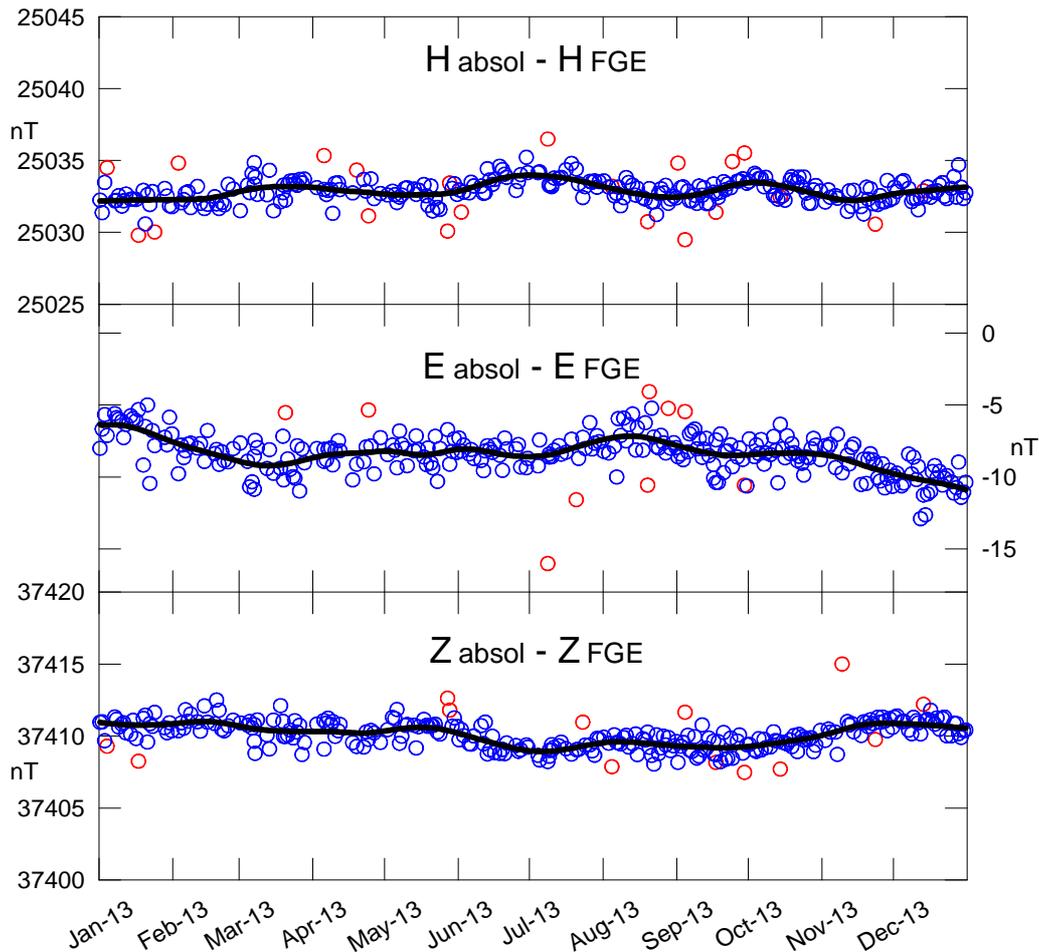


Fig. 1. Observed differences between DI-flux and FGE DMI (blue circles) and adopted baselines (solid lines) for H, E (local magnetic East) and Z elements. Red circles represent rejected differences before baseline adoption. The time period corresponds to the year 2013.

The baselines of the different magnetic elements during 2013 present a remarkable stability, not surpassing 5 nT of total variation in any case.

5. INCIDENTS AND ACTIONS

In this section we list the most important incidences and actions that in some way affect the data presented in this bulletin:

- A time lag between data recorded by the scalar magnetometer and the FGE-DMI is observed during strong magnetic variations. The former arrived between 3 and 4 seconds later. On January 28, this incidence was successfully corrected by modifying the acquisition program.
- In order to improve the time resolution of the 1 Hz data acquisition, on January 28, the PIC (which is connected to the GPS receiver) software is modified, so that the GPS data stream is sent from the PIC to the embedded PC with the possible minimum delay. Consequently the computer programs are also modified to receive the stream coming from the GPS and to increase the frequency the PC internal time is updated.

- Measures around the fundamental pillar of Horta de Sant Joan were conducted in March 2013 in order to determine the geodetic azimuth of the reference mark used in the absolute determinations of declination from the fundamental pillar. These measures involved the disinterested collaboration of the staff of the Institut Cartogàfic de Catalunya (ICC). The procedure, described in an internal report (MARSAL, 2013), is summarized below: it starts from a geodetic vertex inside the town, visible from the area of the chapel. Given the exact position of the geodetic vertex, the process consists of georeferencing the fundamental pillar by determining the pillar-vertex azimuth, and then adding to this value the horizontal angle, measured from the fundamental pillar with a theodolite, between the vertex and the reference mark used for measurements of D. The result obtained for the azimuth of the cross located at the top of the facade of the bell tower is $256^{\circ} 48' 05'' \pm 11''$ (see section 2), although also other alternative points have been determined as well. The geodetic latitude of the fundamental pillar is $\varphi = \text{ph } 57^{\circ} 24.5284'' \text{N} \pm 0.0010''$, its geodetic longitude is $\lambda = 0^{\circ} 19' 59.0102'' \text{E} \pm 0.0013''$, and its orthometric altitude is $H = 531.52 \pm 0.07 \text{ m}$ (see section 2)
- Control and maintenance works of a nearby seismic station caused contaminated magnetic data which, once purged, produced some cuts in the registry. This happened on 17 June, 2 and 15 July, and 10 and 12 September 2013.

6. PRESENTATION OF DATA

The annual mean values for all the magnetic elements during the last ten years are shown in table 2.

Year	D	H	Z	X	Y	I	F
2004.5	358° 47.8'	25051	37232	25045	-526	56° 04.0'	44875
2005.5	358° 54.0'	25071	37255	25066	-481	56° 03.6'	44905
2006.5	358° 59.9'	25104	37264	25100	-439	56° 02.0'	44932
2007.5	359° 06.0'	25135	37275	25132	-394	56° 00.5'	44958
2008.5	359° 13.7'	25160	37289	25158	-338	55° 59.5'	44983
2009.5	359° 20.9'	25189	37297	25187	-286	55° 58.0'	45006
2010.5	359° 29.2'	25203	37314	25202	-225	55° 57.8'	45028
2011.5	359° 37.3'	25216	37332	25215	-166	55° 57.8'	45050
2012.5	359° 43.8'	25136	37461	25136	-118	56° 08.3'	45113
2013.5	359° 51.4'	25164	37471	25163	-63	56° 07.0'	45136

Table 2. Annual mean values for all the magnetic elements. H, Z, X, Y and F are given in nT.

The data presented below in this bulletin are:

i) Three-hourly activity indices K , and daily indices SK (sum of K) and Ak . The former have been automatically calculated by the adaptive smoothing method recommended by INTERMAGNET (NOVOZYŃSKI et al. , 1991) on the basis of a K_9 value of 350 nT (lower limit for $K = 9$). ak indices are calculated in accordance with a recommendation of the IAGA WG V-5, in 1993 (see, e.g., BERTHELIER AND MENVIELLE, 1993), according to which each three-hourly K -index from 0 to 9 corresponds to a linear variation of 2.5, 7.5, 15, 30, 55, 95, 160, 265, 415 and 666 nT, respectively. The ak index for each observatory is calculated by multiplying the previous values by the factor $K_9/500$ ($= 0.7$ for EBR). Finally, Ak corresponds to the daily average of the different ak 's. (Note: K indices should only be sensitive to magnetic perturbations proceeding from particle injection at high latitudes. However, this automatic index proves to be sensitive to radiative solar phenomena such as SFE's). Q and D stand for the five international Quiet and Disturbed days of each month, respectively.

ii) Plot of the secular variation (i.e., evolution of annual mean values of the different elements of the magnetic field) at the EBR magnetic station since 1910. The 2012 and 2013 values, which are referred to the fundamental pillar of Horta de Sant Joan, have been moved to Roquetes levels using the differences given in Table 1.

iii) Typical daily variation of D, H, Z elements for the different Lloyd seasons and for the whole year. Values have been detrended and referred to their mean values.

iv) Hodographs of the daily variation for Quiet, Disturbed and All days. Values have been detrended and referred to their mean values. The 24 points represent the hourly mean values. Initial hours of the day are represented with dark colours, becoming progressively lighter as the day progresses.

v) Table of rapid magnetic variations (SC, SI and SFE).

vi) Month-at-a-glance daily magnetograms of declination (D), horizontal intensity (H) and vertical intensity, (Z).

vii) Month-at-a-glance daily magnetograms of total intensity (F).

viii) Monthly tables of hourly mean values of D, H, Z and F. All means have been calculated from minute values.

Throughout the year 2013, a total of 333 minutes (which is about 5.6 h or 0.06 % of the whole dataset) corresponding to the X, Y and Z elements were lost, while 317 minutes (5.3 h) were lost in the case of F. The longest gap (one hour and some minutes) took place on 18 July.

Definitive minute and hourly mean values are available in the World Data Centres (WDC), INTERMAGNET (www.intermagnet.org), and *Observatori de l'Ebre* websites: www.obsebre.es/php/geomagnetisme.php, where definitive 1-second data, as well as daily and monthly mean values can also be found.

Acknowledgments. We want to thank all the facilities and aid received by the City Council of Horta de Sant Joan to ensure the normal operation of the station. We are also indebted to the ICC for their assistance in the determination of the azimuth mark used for the determinations of the magnetic declination. The original design and development of the electronics governing the station was carried out by John C. Riddick, ex-member of the British Geological Survey, to whom we are particularly grateful for the time he has unselfishly spent with us.

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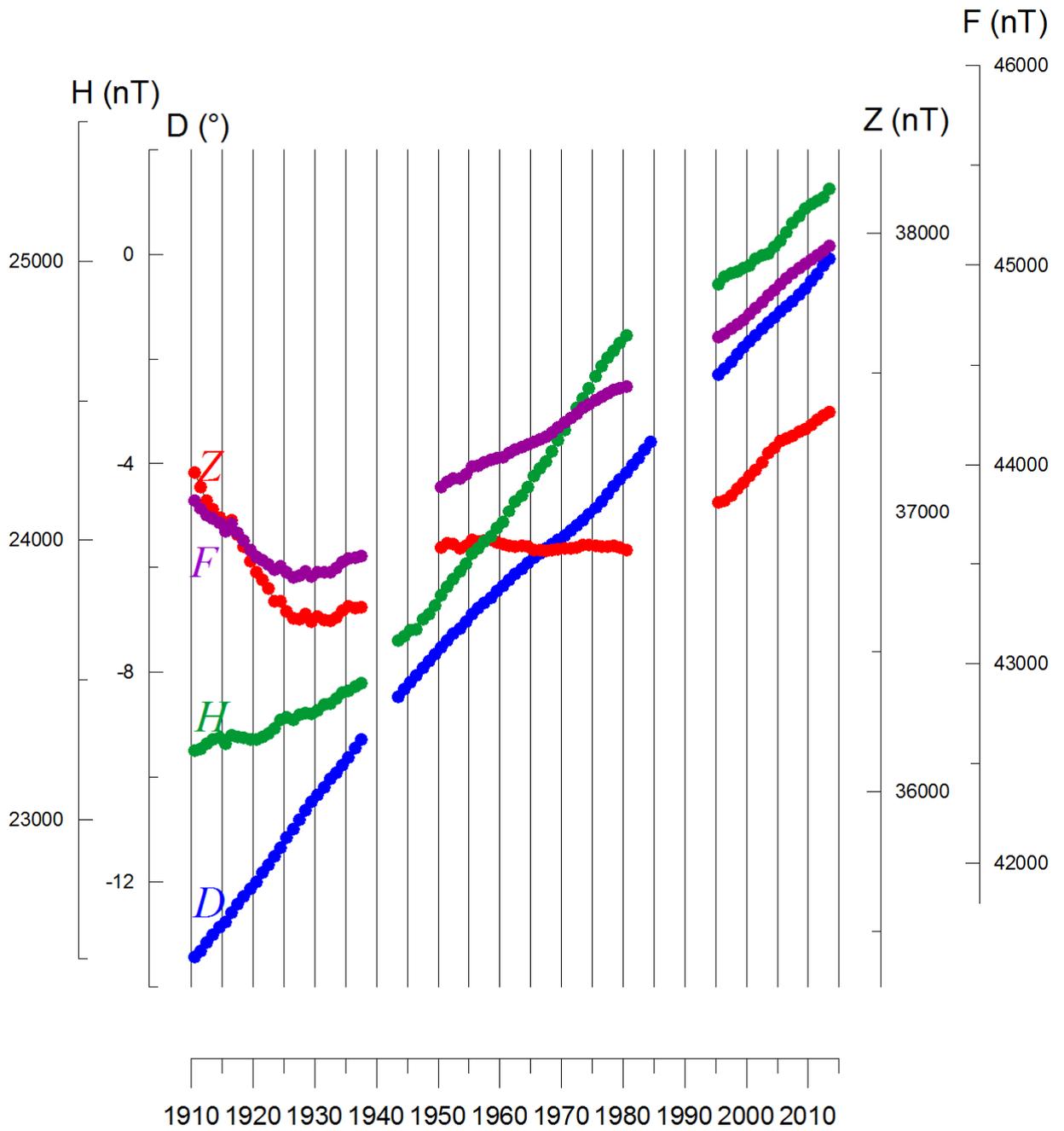
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K, Ak INDICES & DAILY K SUMS AT EBRE (K=9 LIMIT: 350 nT) FOR 2013

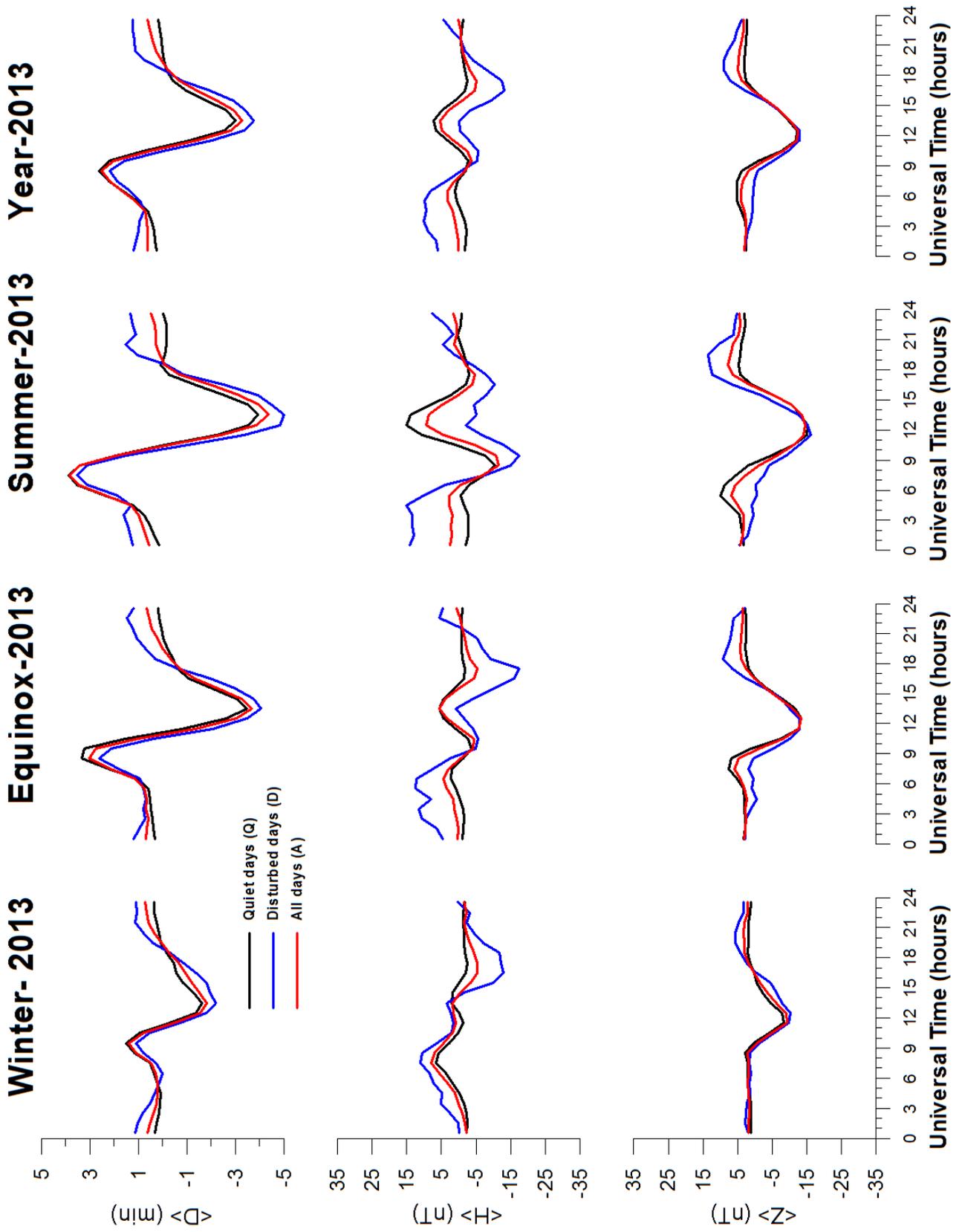
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17	D3322	3333	22	18	D1112	3332	16	12	D2154	4556	32	51	Q1111	1000	5	4	3221	2231	16	12	Q111-	1011	-	-
18	D2322	4223	20	17	0001	1013	6	5	2222	2122	15	10	Q1000	0000	1	2	D4432	2132	21	19	0111	1111	7	5
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30	Q0000	0010	1	2					D4421	2143	21	21	1012	2212	11	7	Q0101	1110	5	4	3223	2332	20	16
31	0010	0002	3	3					0110	0123	8	7					0111	1334	14	13				
Mean Ak				7.3				8.7				12.7				6.8				11.8				14.1

Day	JUL2013				AUG2013				SEP2013				OCT2013				NOV2013				DEC2013			
	T	K	SK	Ak																				
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4	1110	1122	9	6	1133	1534	21	23	1012	2121	10	7	Q0000	0000	0	2	0122	1221	11	7	2110	1121	9	6
5	2212	2242	17	13	D4422	2222	20	18	0002	0011	4	4	Q0000	0000	0	2	2122	0101	9	6	0112	1110	7	5
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ANNUAL MEAN VALUES (EBR)

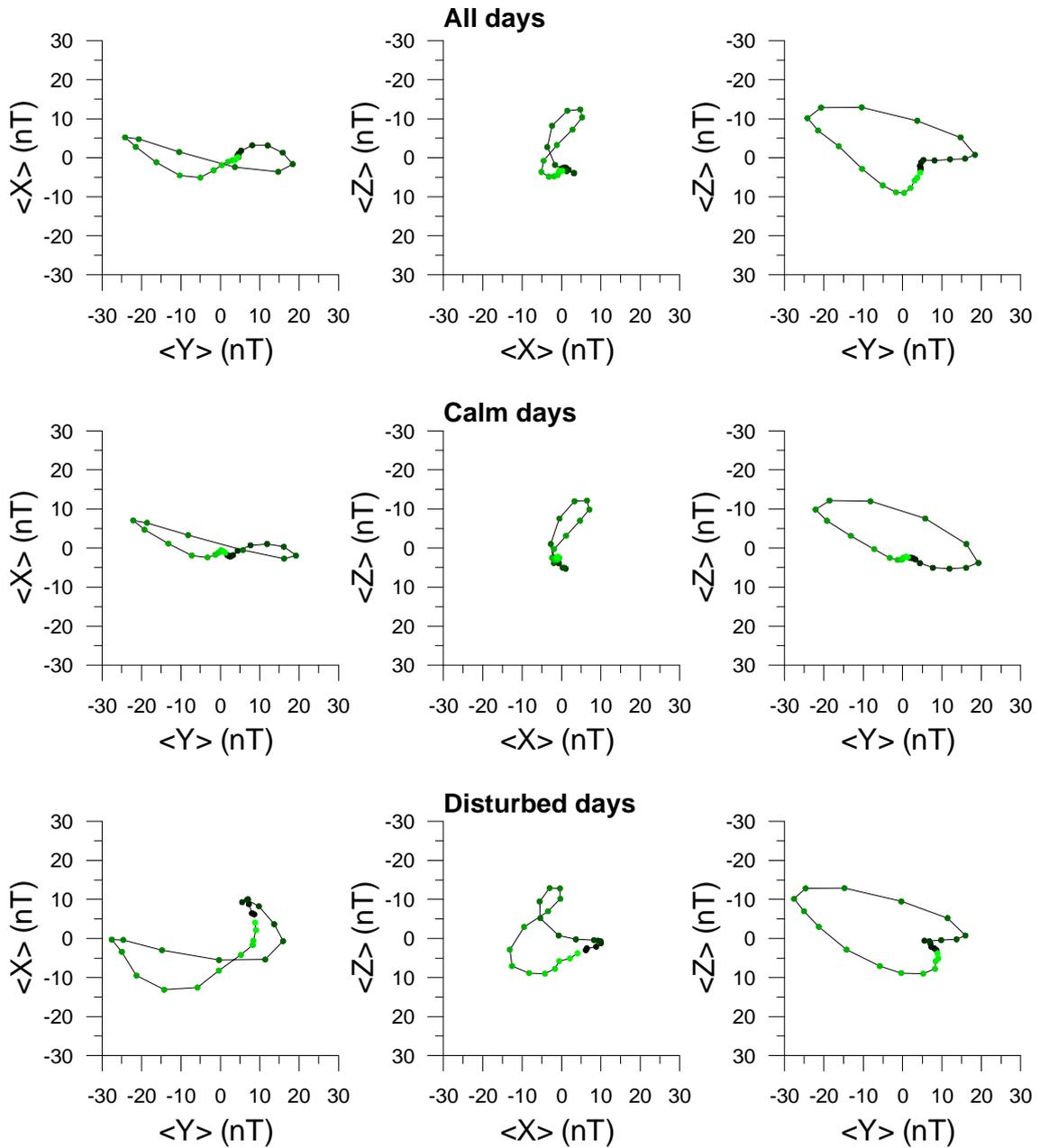


TYPICAL DIURNAL VARIATION



HODOGRAPHS

2013



RAPID MAGNETIC VARIATIONS

DATE	TIME (UT)	TYPE	QUALITY
19-01-13	17:32	SC *	C
16-02-13	12:09	SC	C
15-03-13	05:26	SC *	C
17-03-13	05:59	SC *	B
13-04-13	22:55	SC	B
18-05-13	01:10	SC *	C
19-05-13	23:08	SC *	B
24-05-13	18:09	SC	B
31-05-13	16:18	SC	B
27-06-13	14:37	SC *	B
30-06-13	11:19	SC	C
09-07-13	20:52	SC *	B
12-07-13	17:14	SC	C
20-08-13	22:28	SC	C
22-08-13	19:25	SC	C
02-10-13	01:54	SC *	A
08-10-13	20:21	SC *	A
13-12-13	13:22	SC	C

Notes:

An asterisk (*) indicates that the principal impulse was preceded by a smaller reversed impulse.

The quality of the event is classified as follows:

A = very distinct

B = fair, ordinary, but unmistakable

C = doubtful

SFE

DATE	HOUR (UT)			AMPLITUDE (nT)			QUALITY
	START	MAXIMUM	END	X	Y	Z	
13-05-13	15:58	16:08	16:29	6.9	-6.8	0	3
25-10-13	07:58	08:03	08:38	5.1	0.0	6.2	2
25-10-13	14:55	15:03	15:36	0	-13.8	0	3
28-10-13	14:02	14:06	14:16	0	-7.2	0	2
28-10-13	14:58	15:02	15:08	0	-2.4	0	1
06-11-13	13:42	13:47	14:03	-2.3	-6.2	-3.0	2
19-11-13	10:19	10:28	10:58	3.0	6.6	0	2

Notes:

The quality of the event is classified as follows:

3 = very distinct

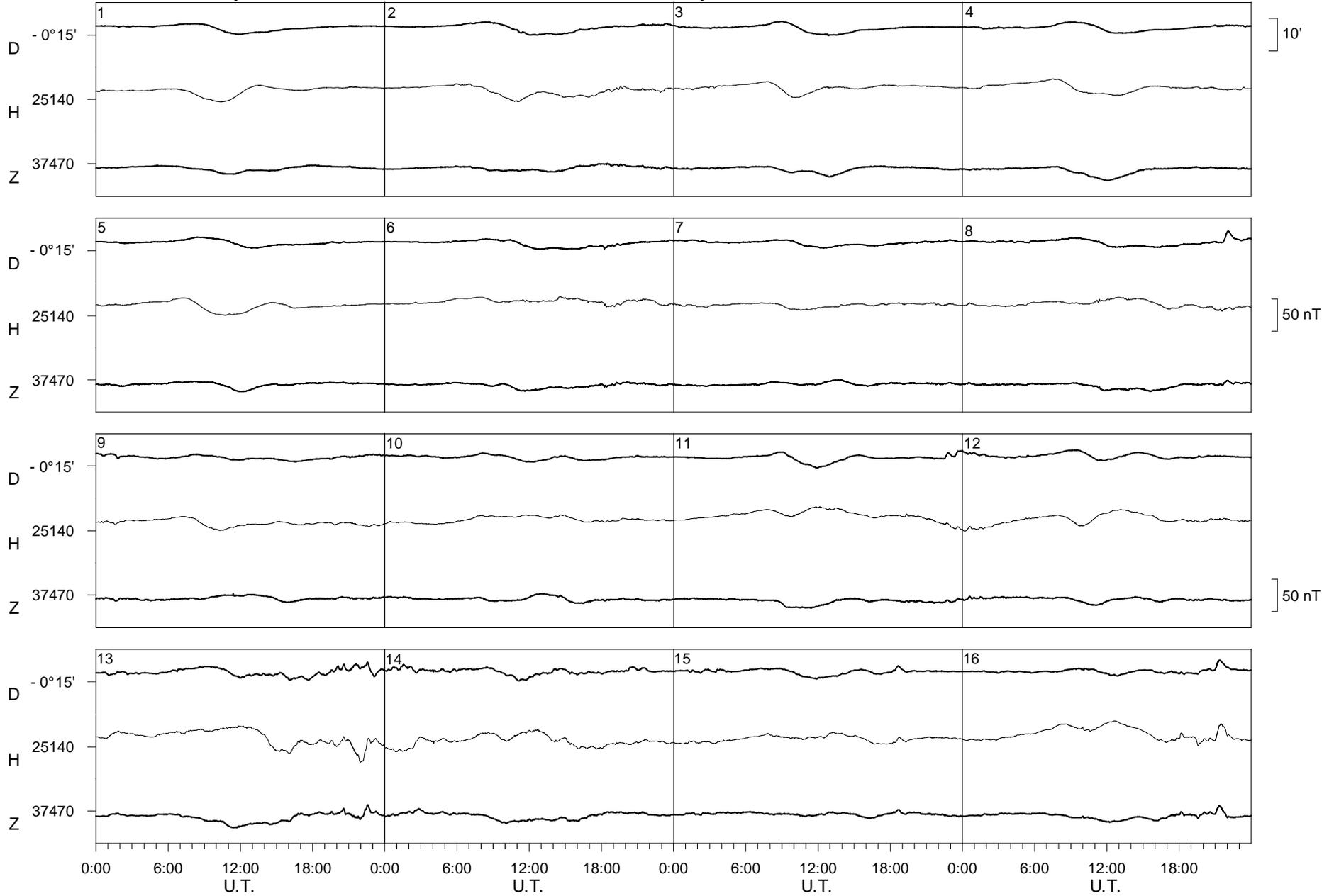
2 = fair, ordinary but unmistakable

1 = doubtful

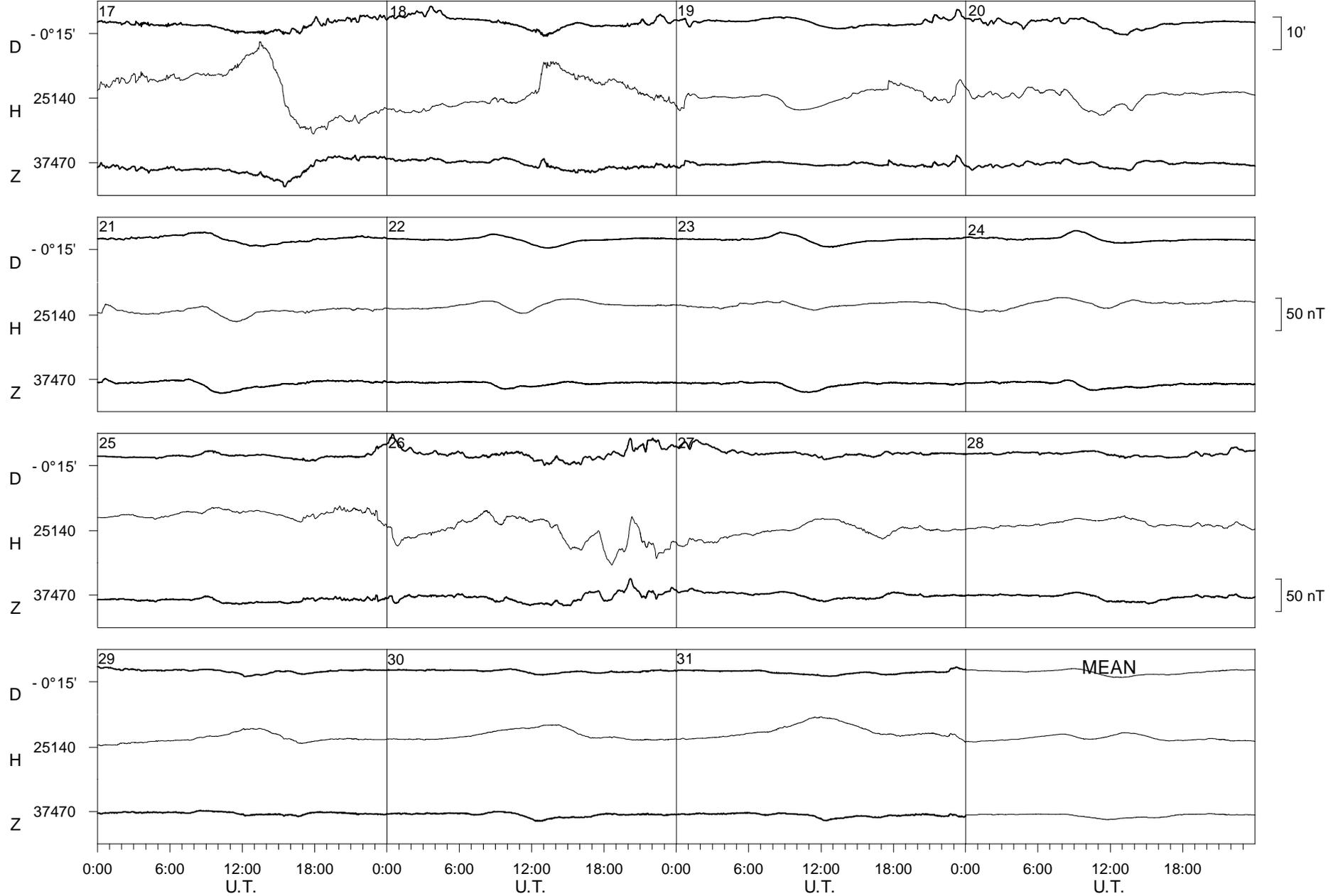
Ebre Observatory

January

2013



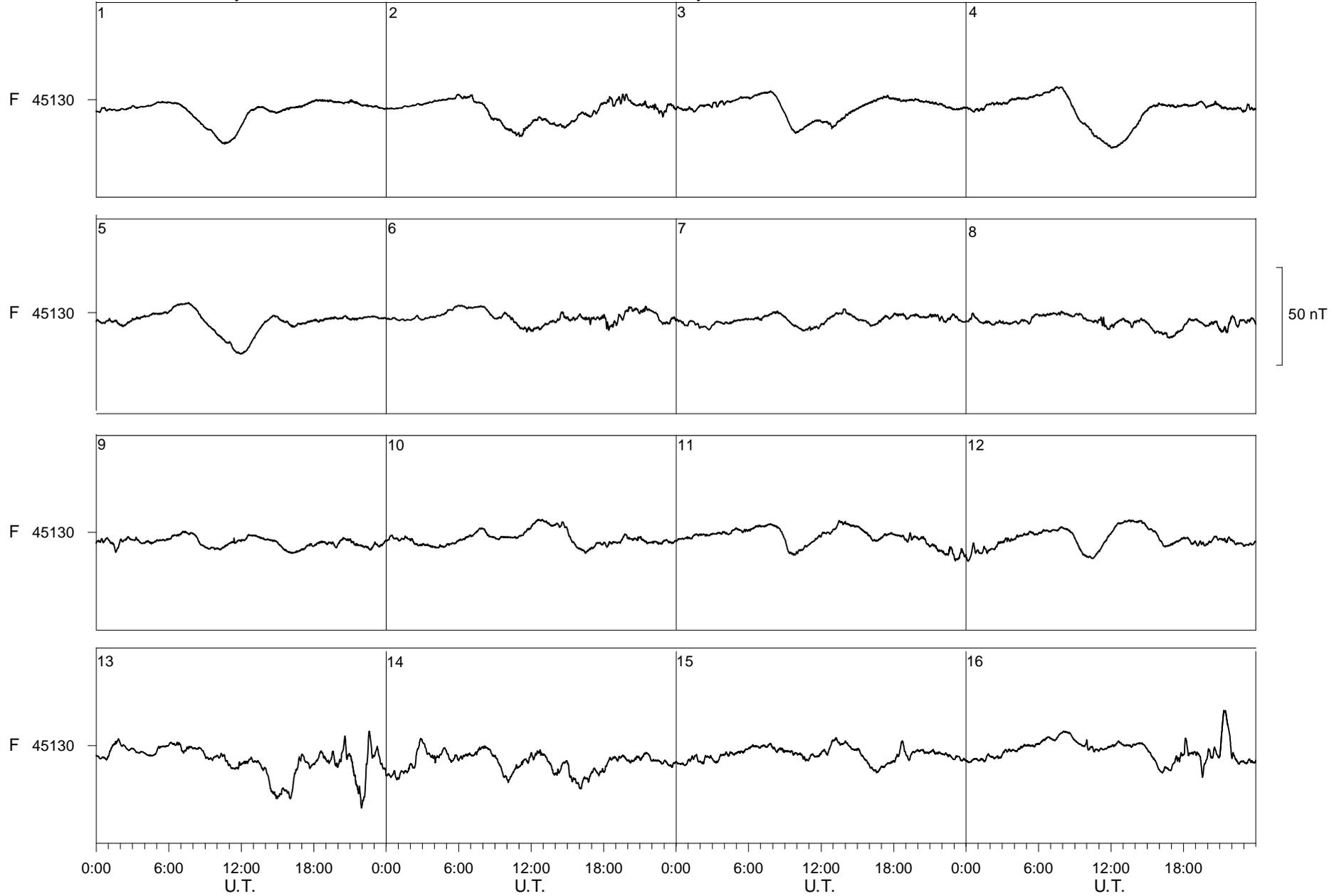
Ebre Observatory January 2013



Ebre Observatory

January

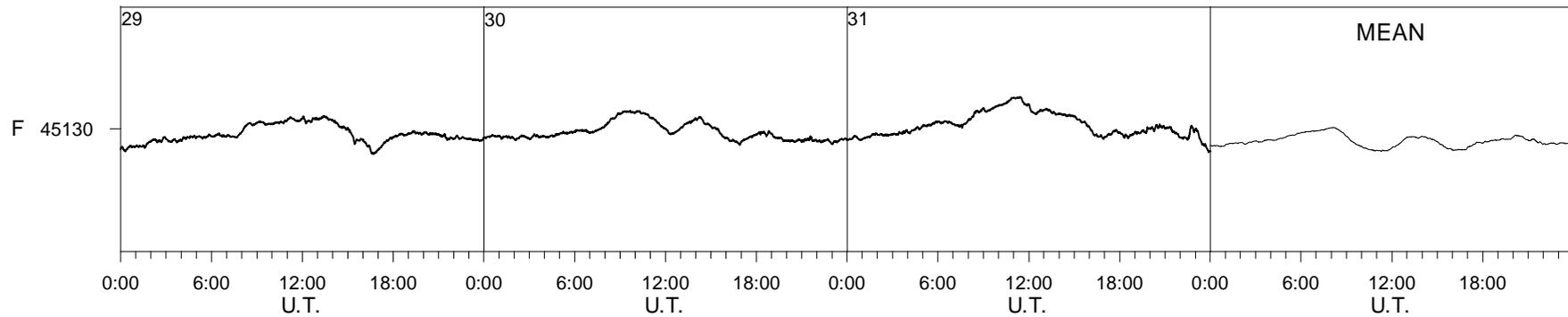
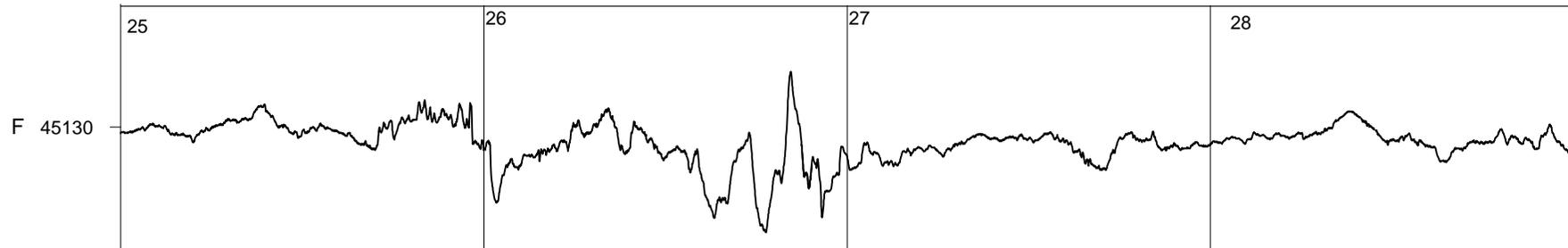
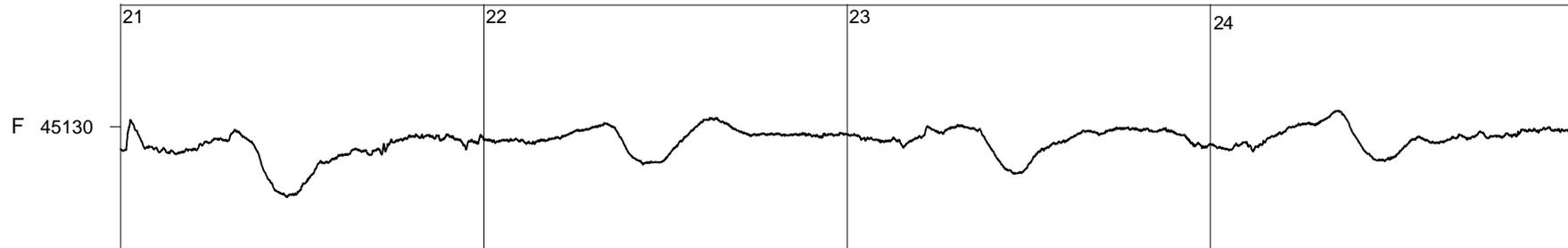
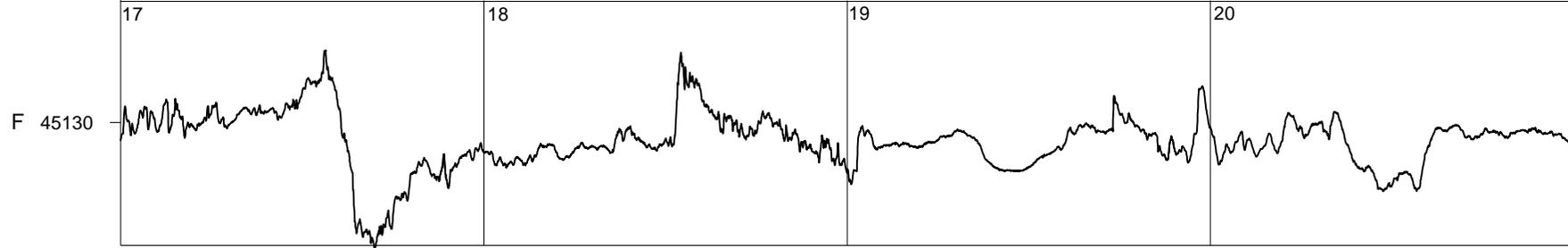
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Ebre Observatory

January

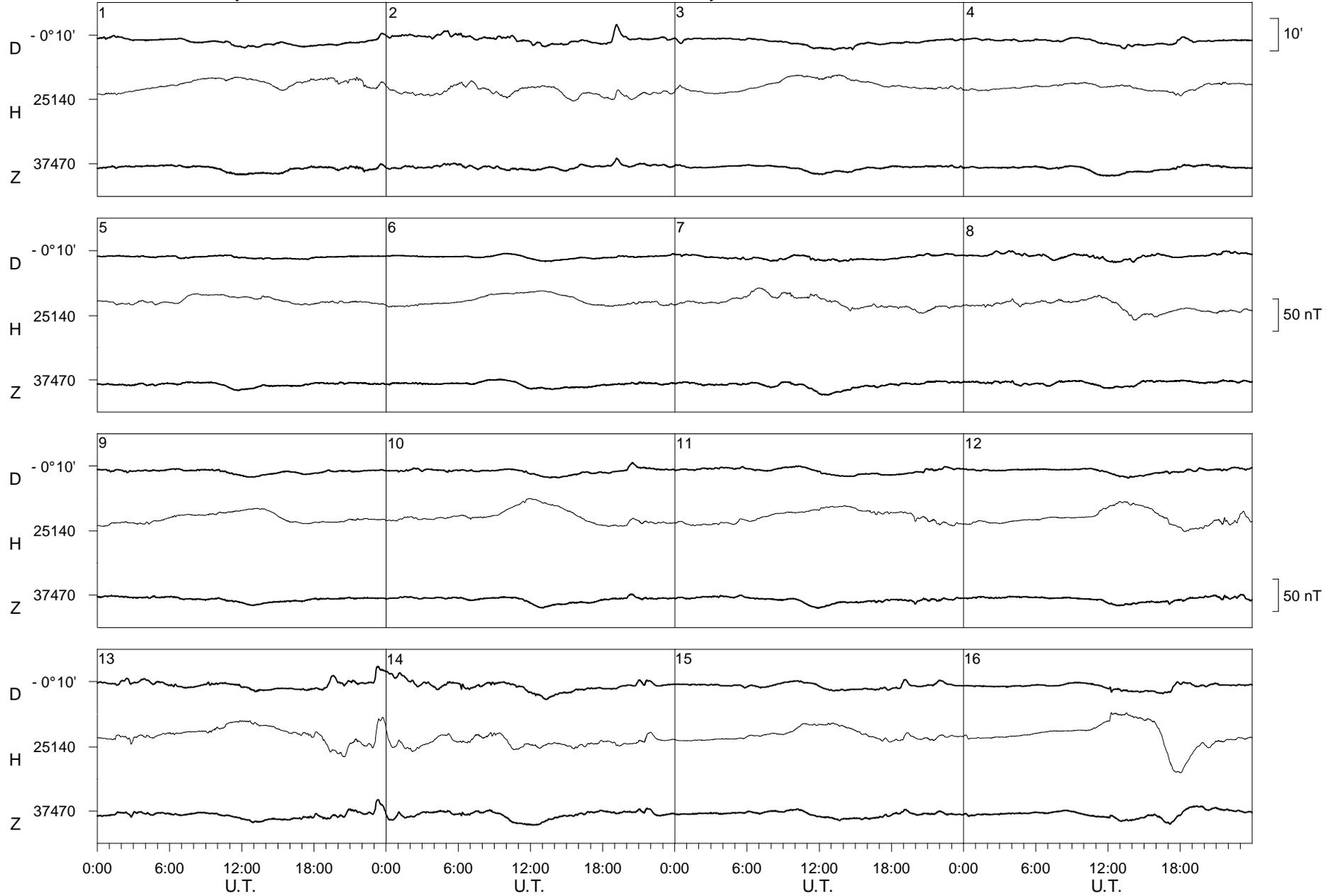
2013



Ebre Observatory

February

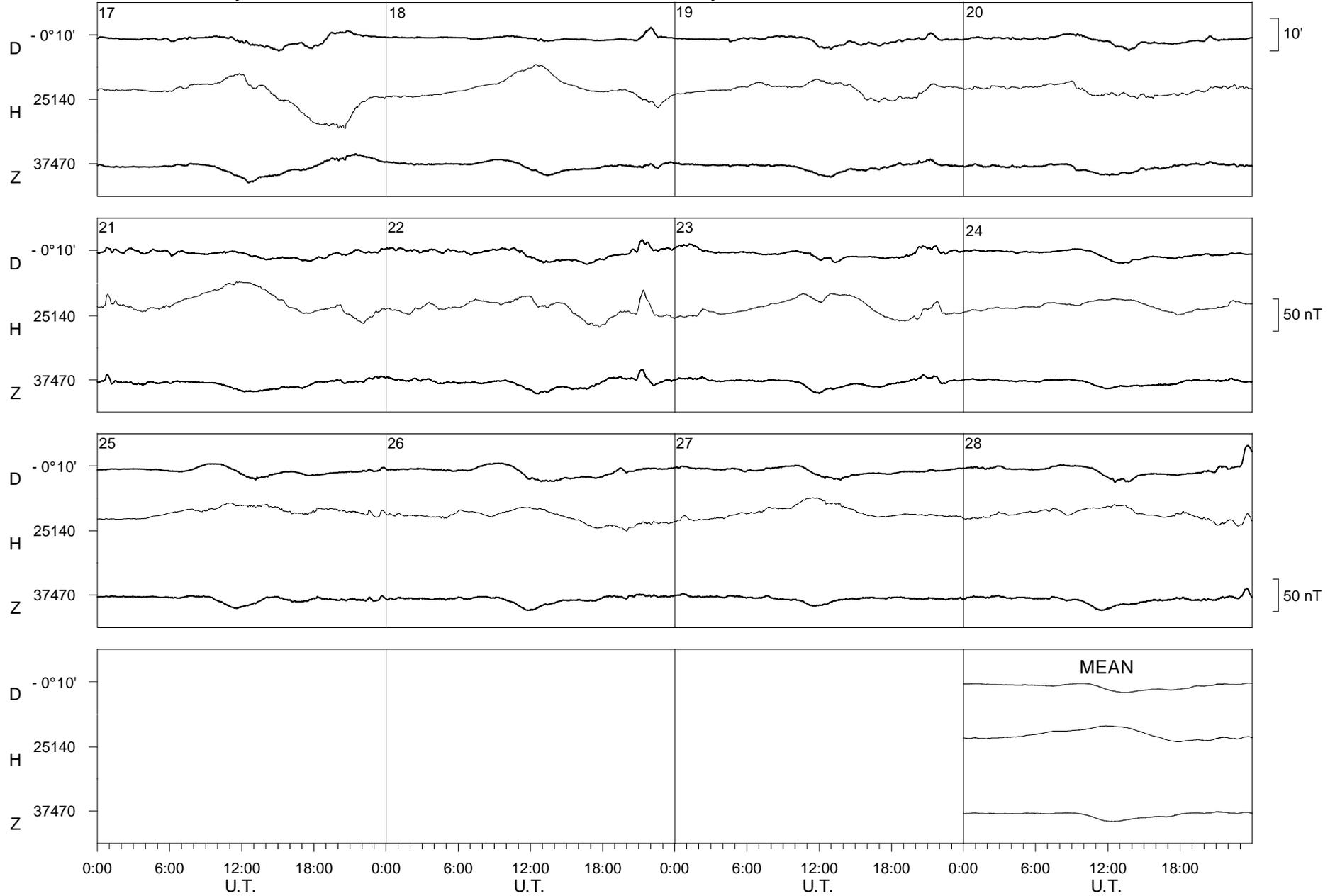
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Ebre Observatory

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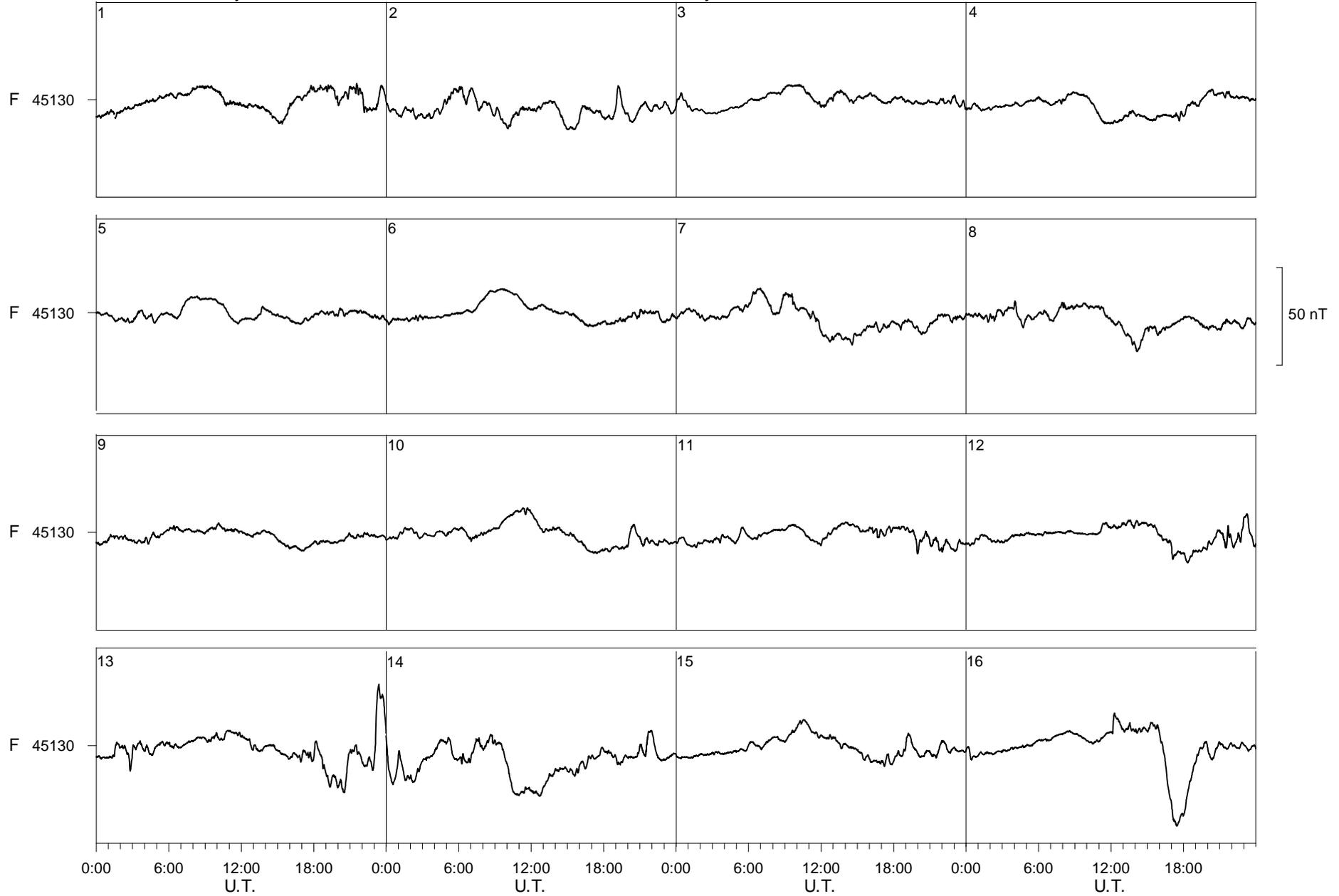
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Ebre Observatory

February

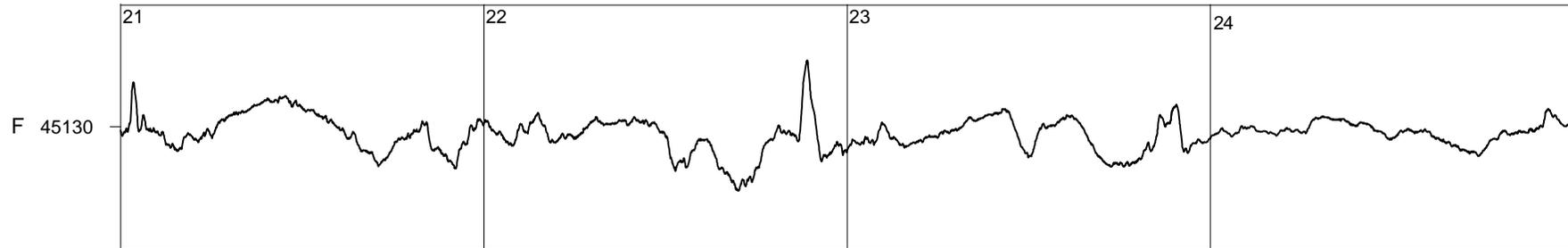
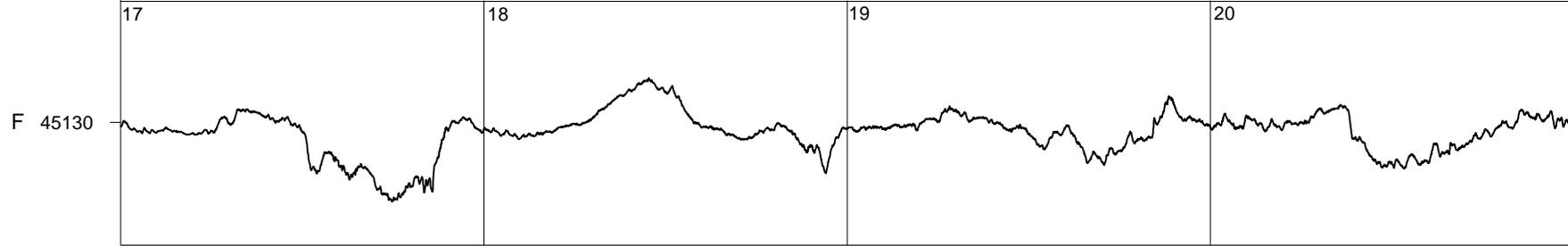
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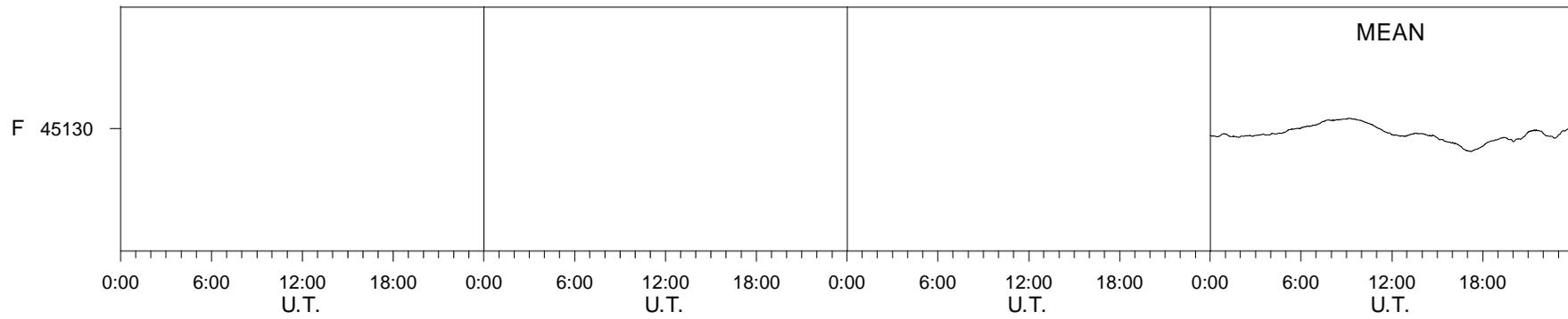
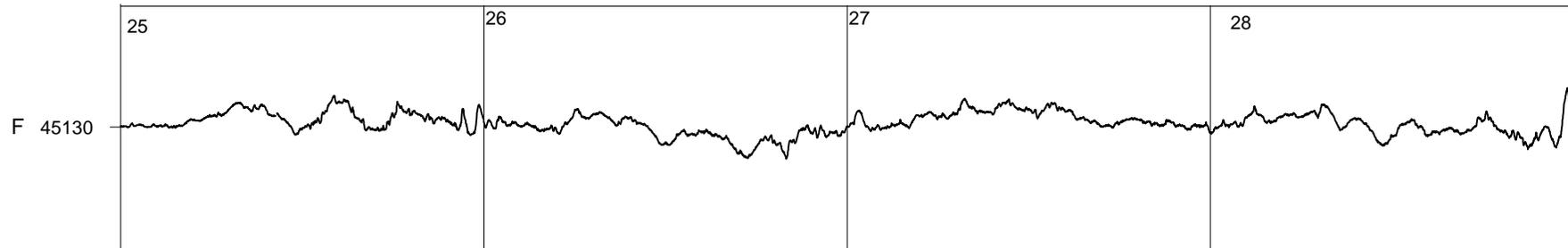
Ebre Observatory

February

2013



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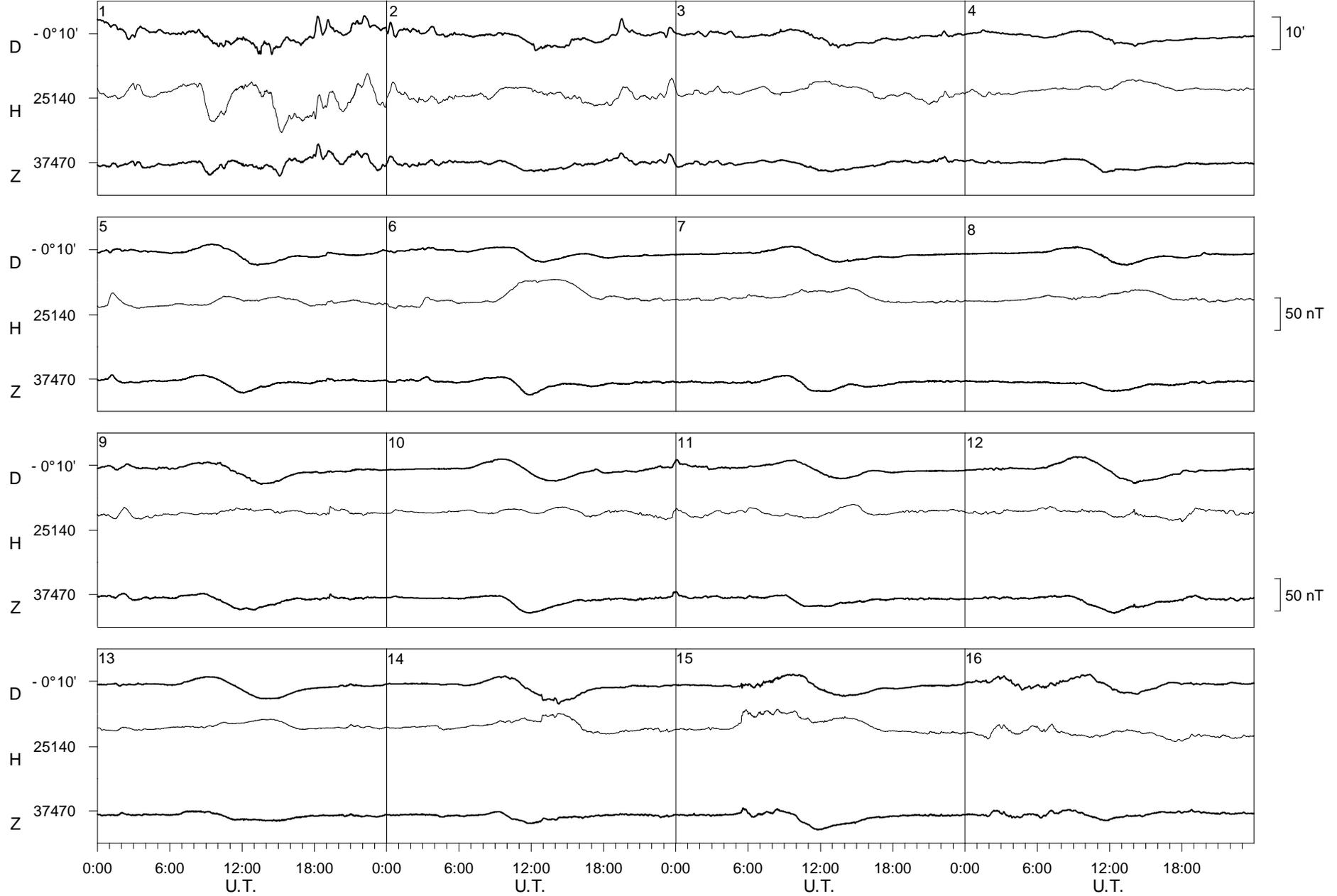


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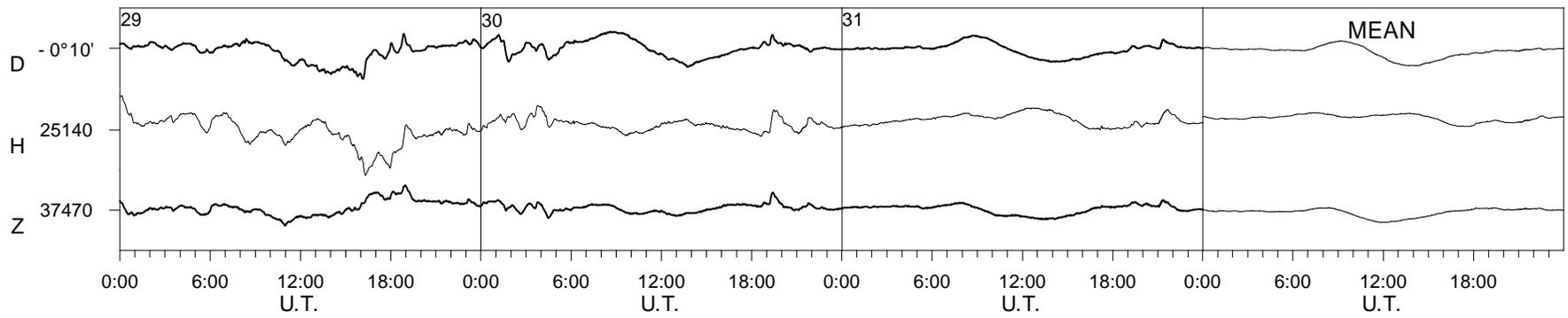
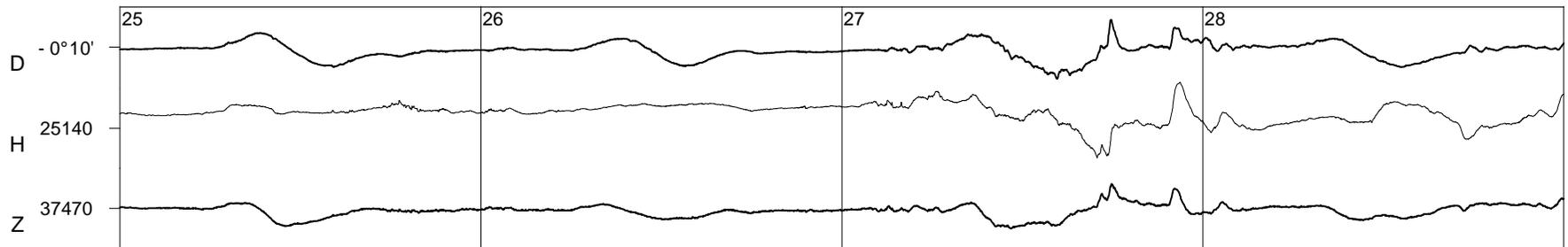
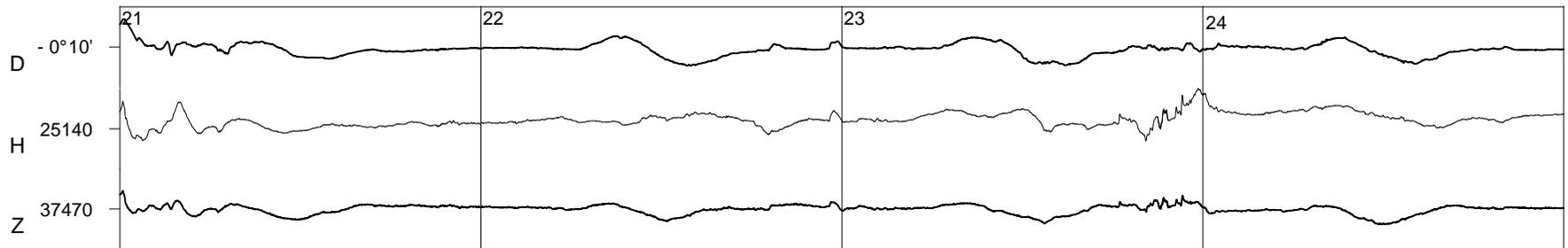
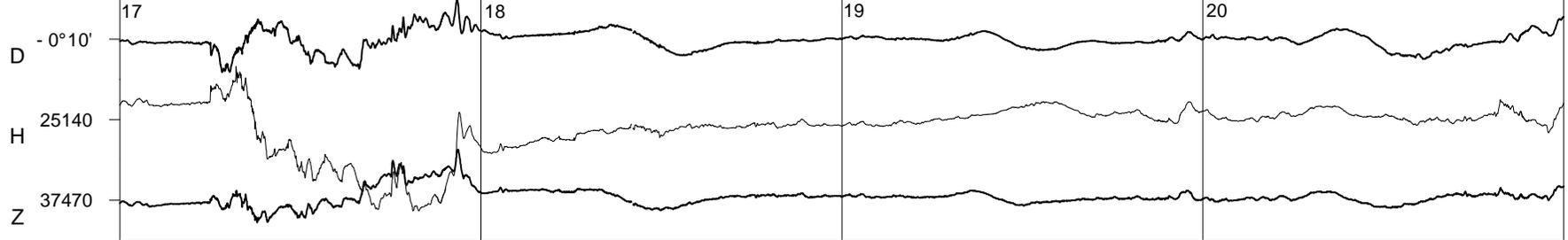
Ebre Observatory

March

2013



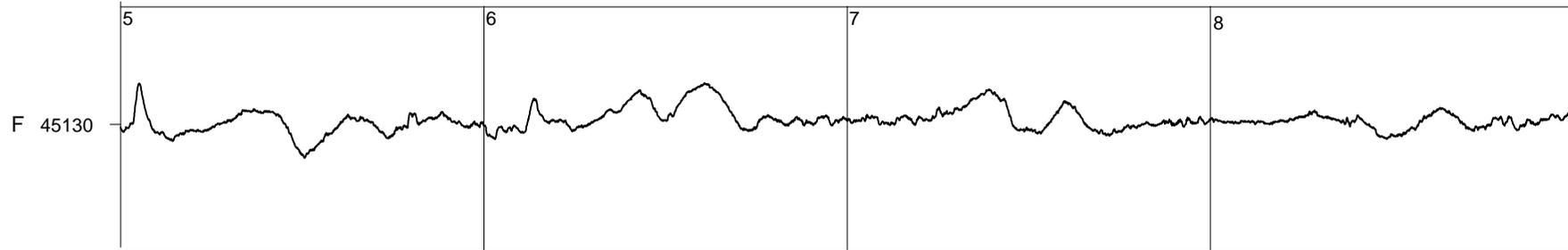
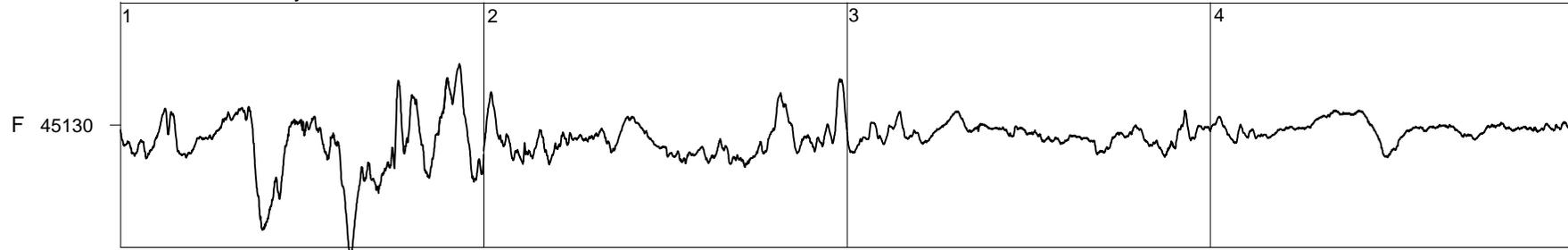
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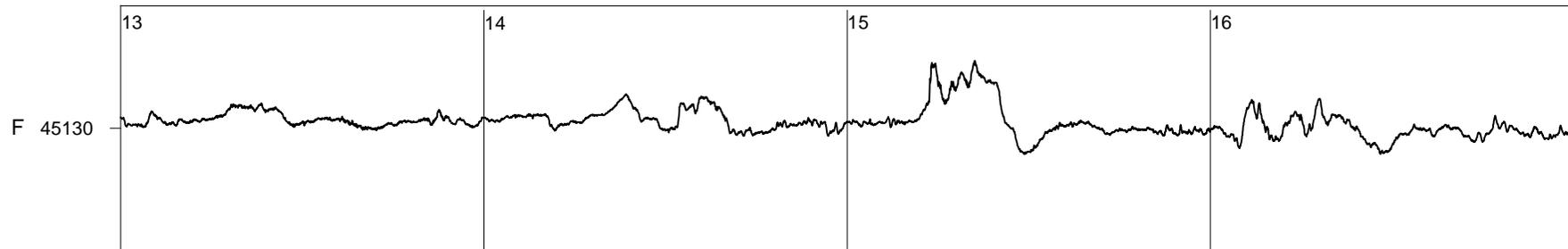
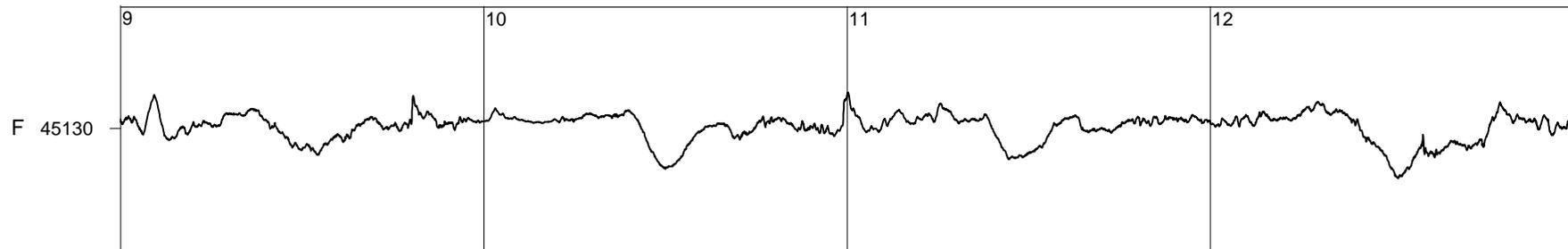
Ebre Observatory

March

2013



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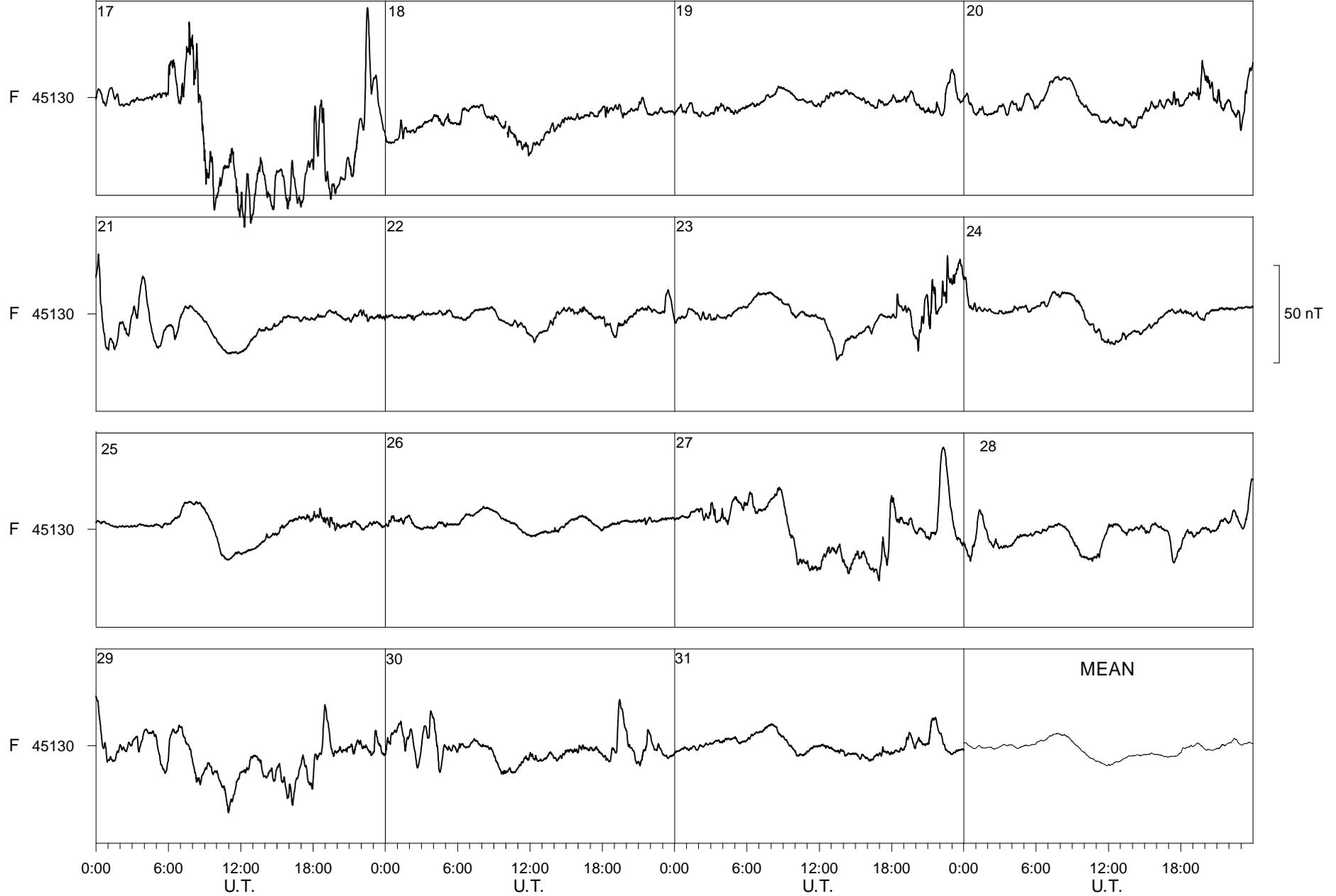


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Ebre Observatory

March

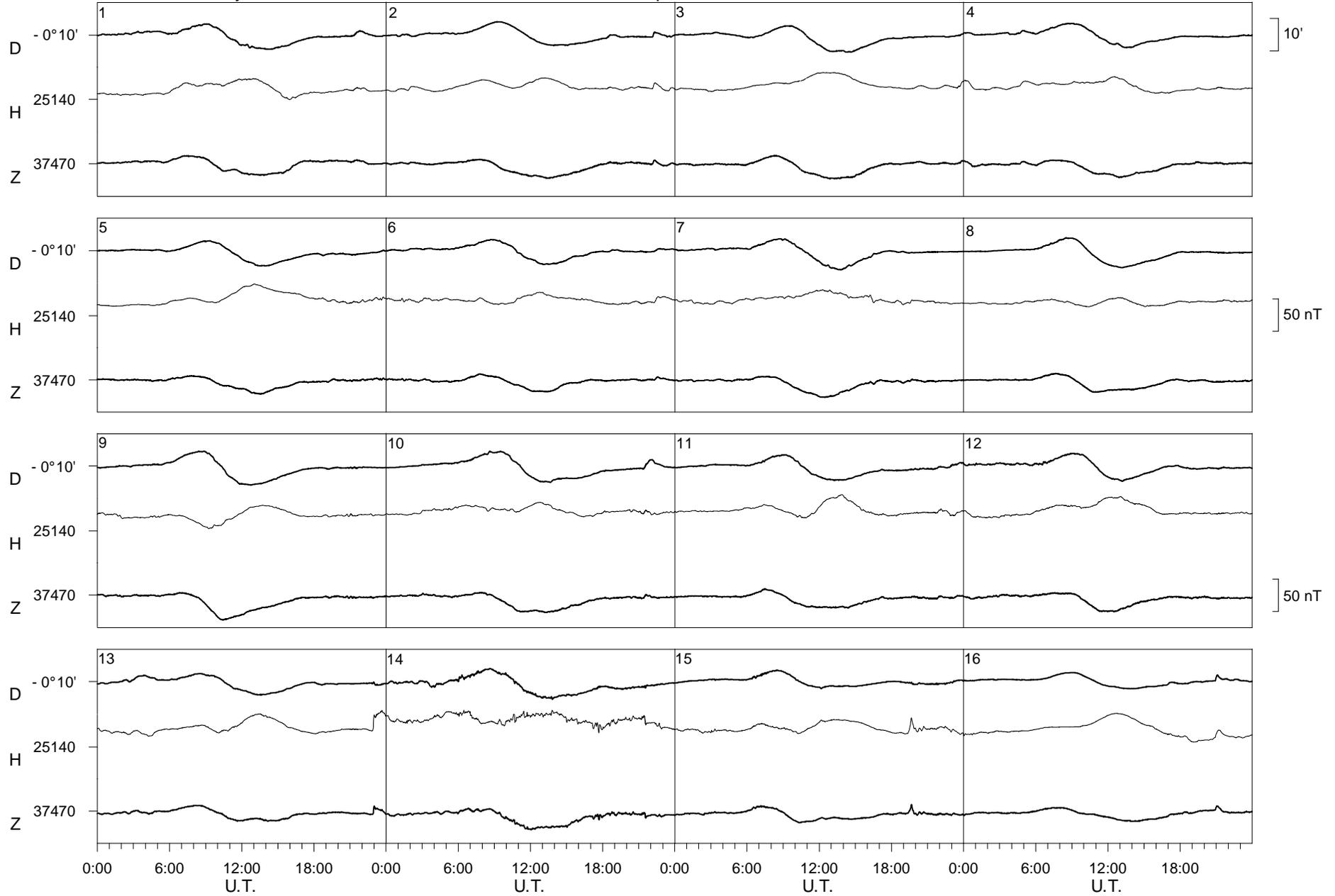
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Ebre Observatory

April

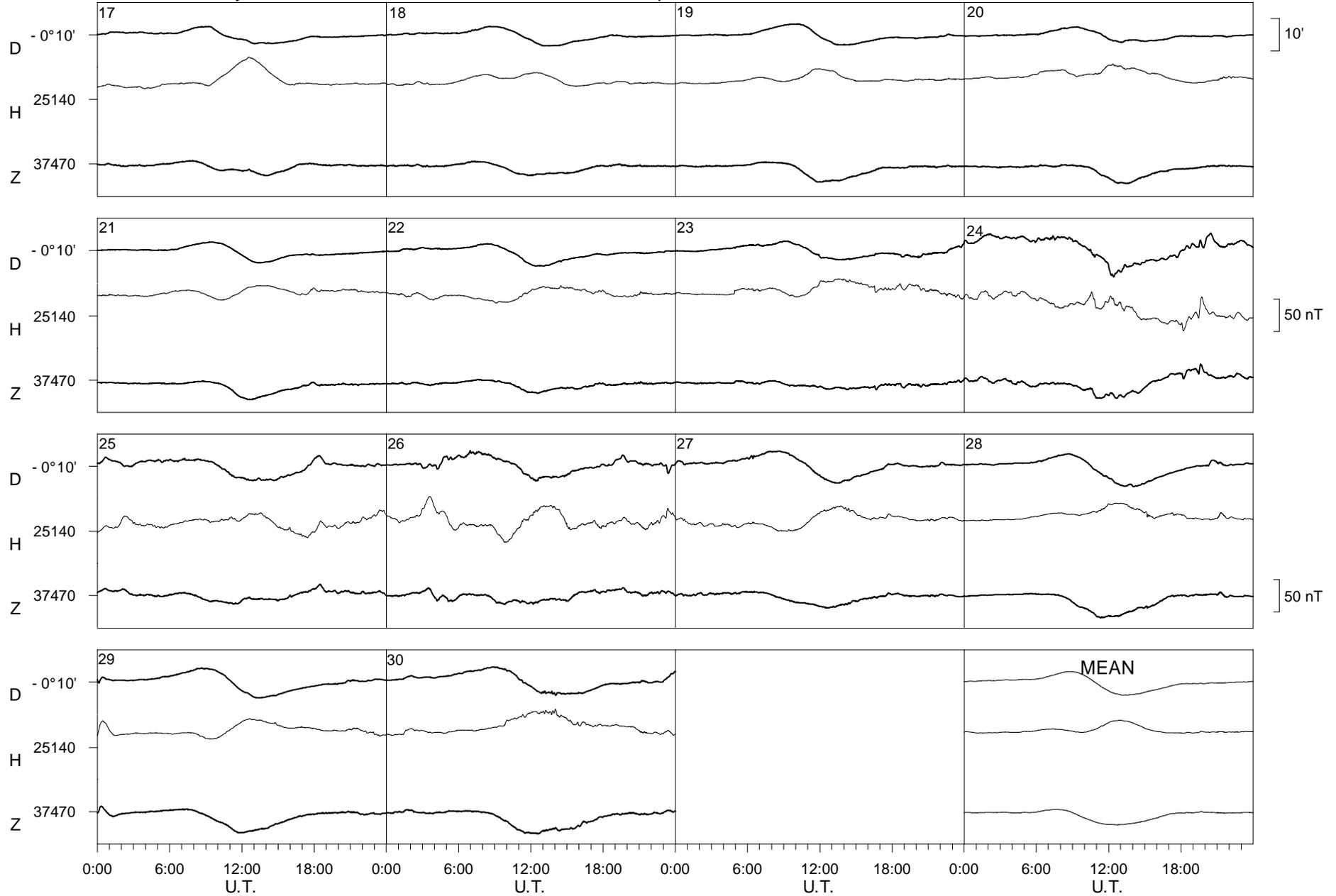
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Ebre Observatory

April

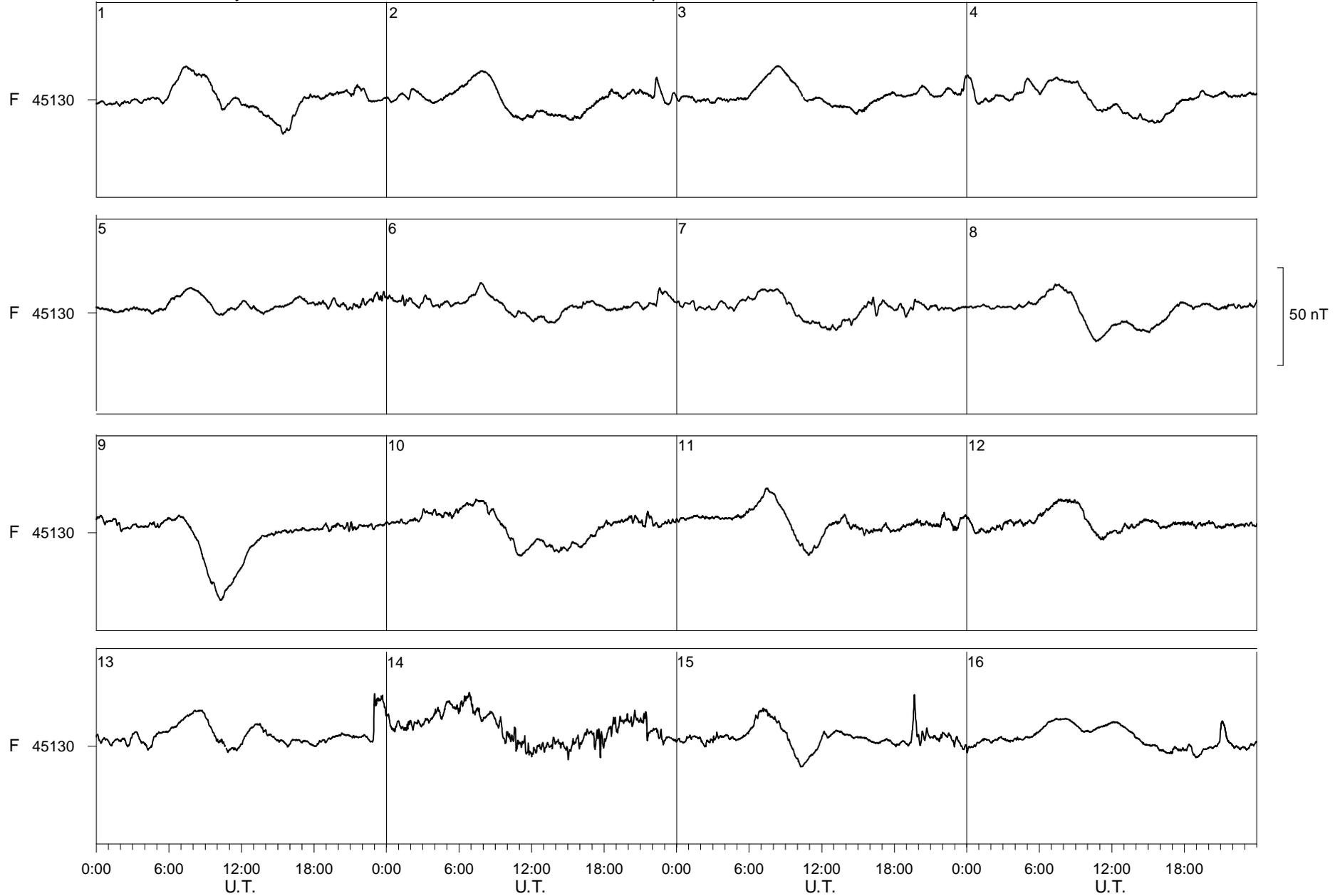
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Ebre Observatory

April

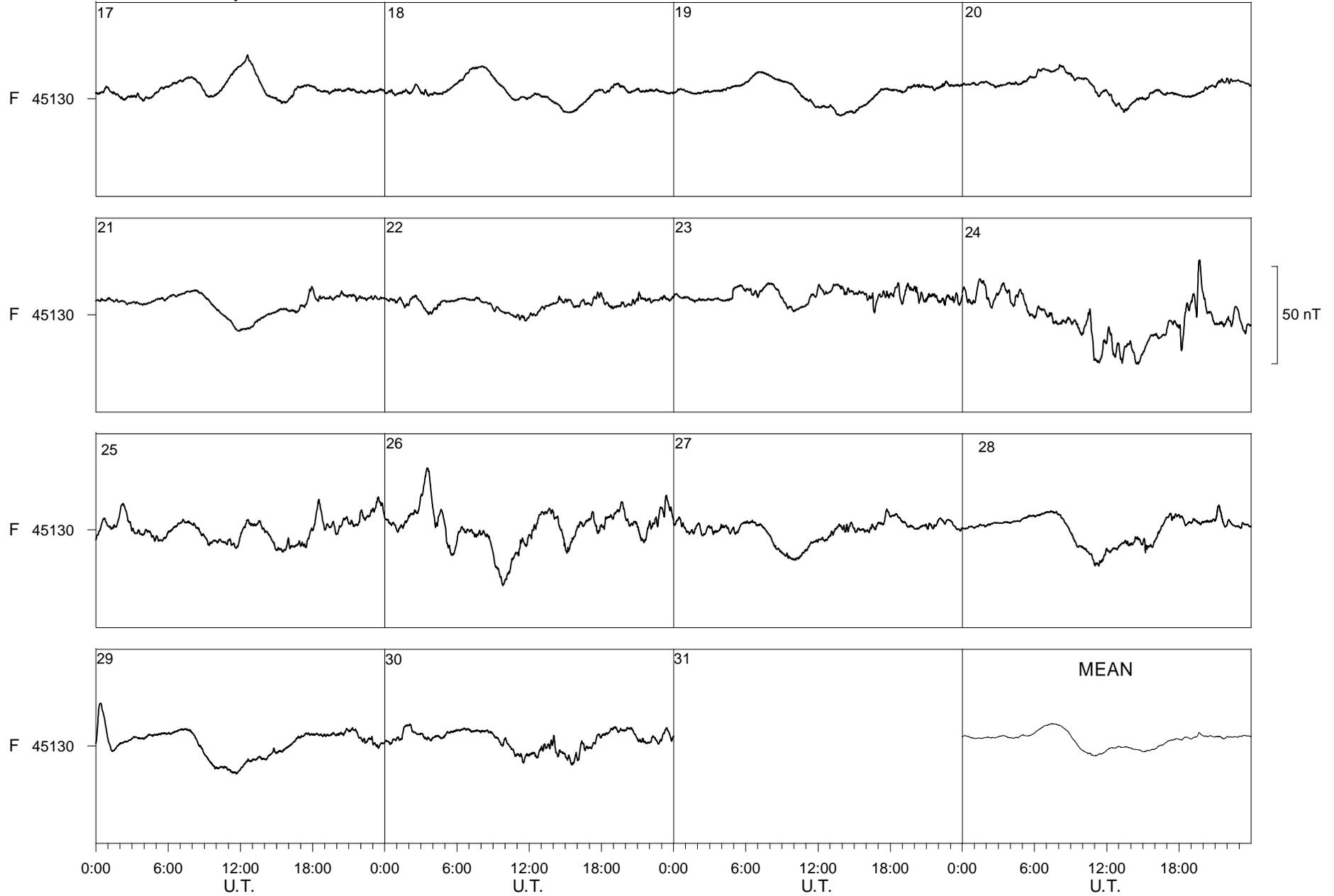
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Ebre Observatory

April

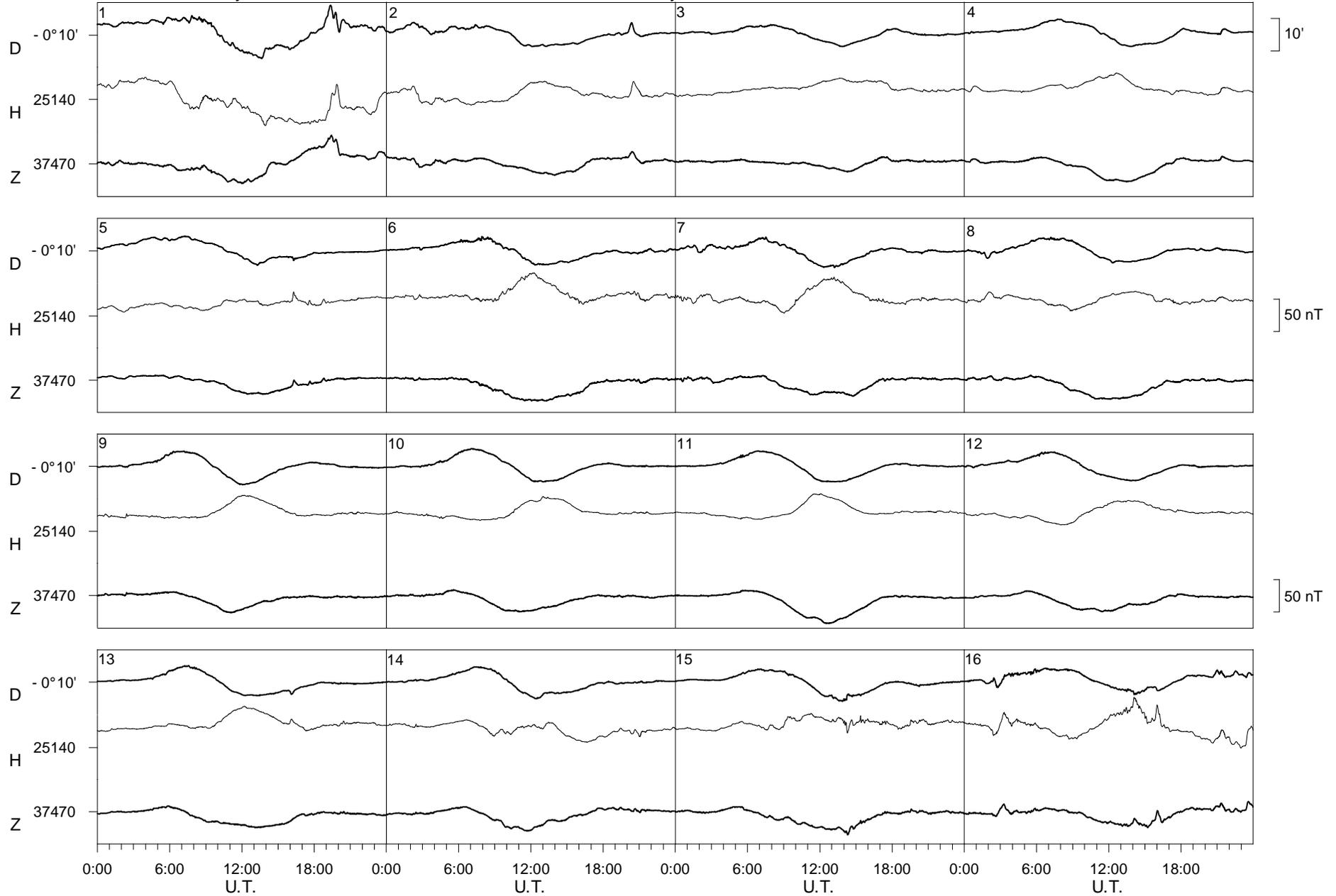
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Ebre Observatory

May

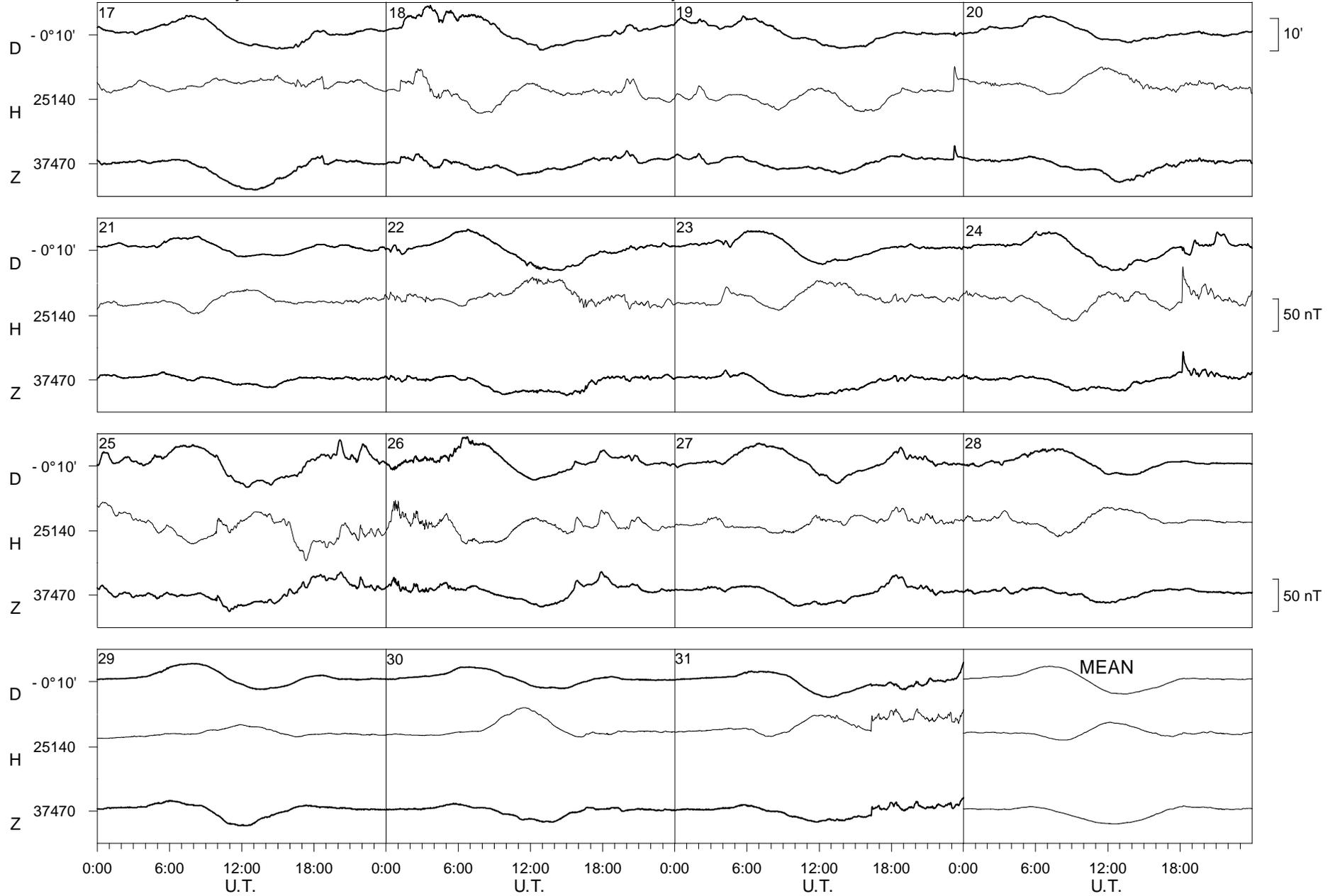
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Ebre Observatory

May

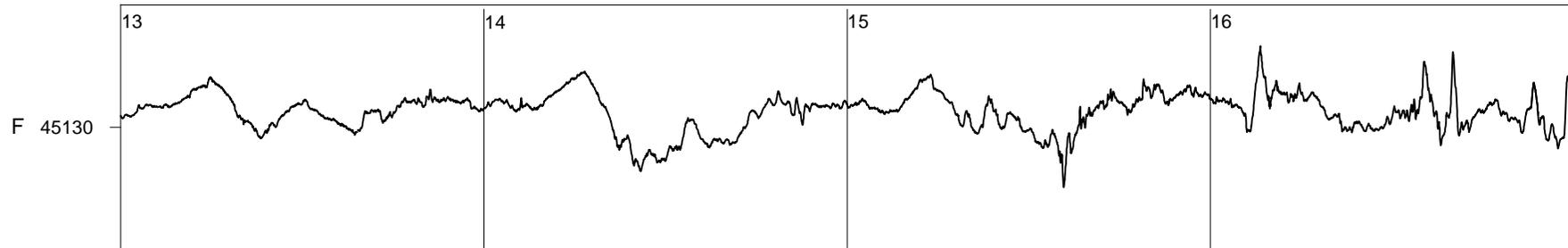
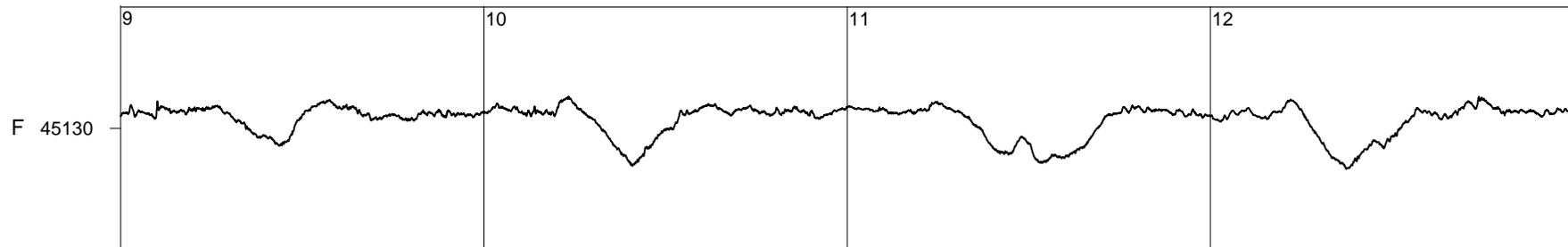
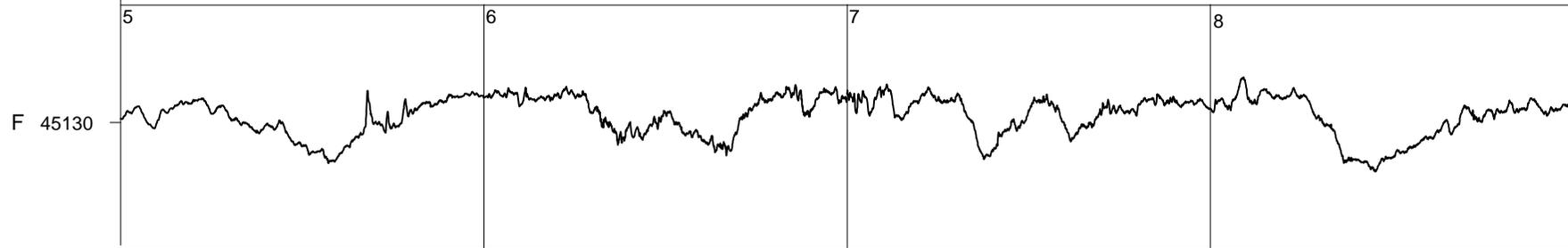
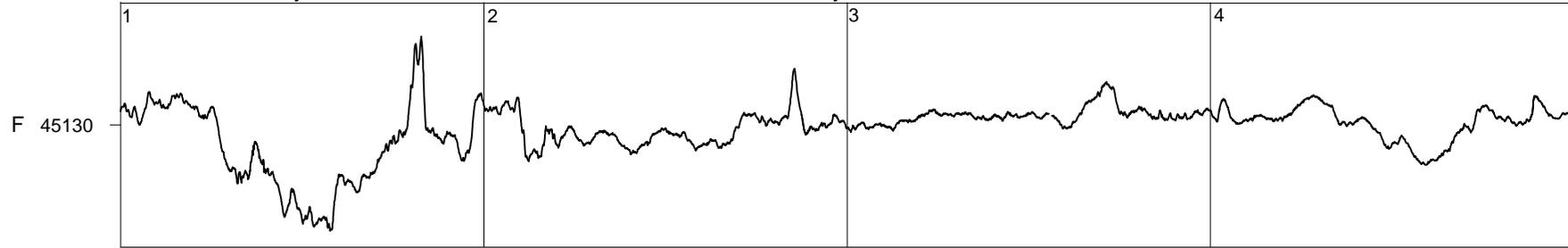
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Ebre Observatory

May

2013



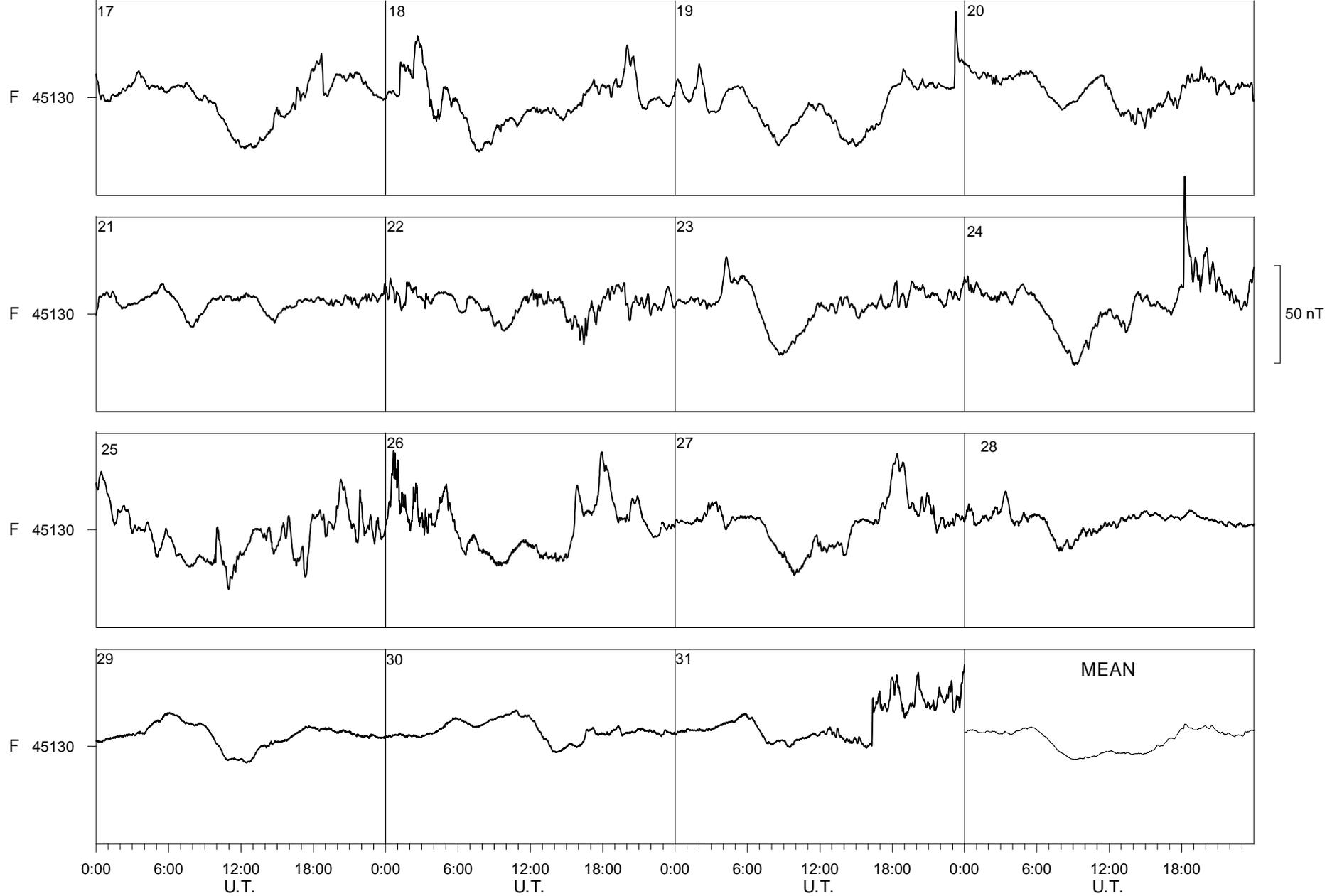
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Ebre Observatory

May

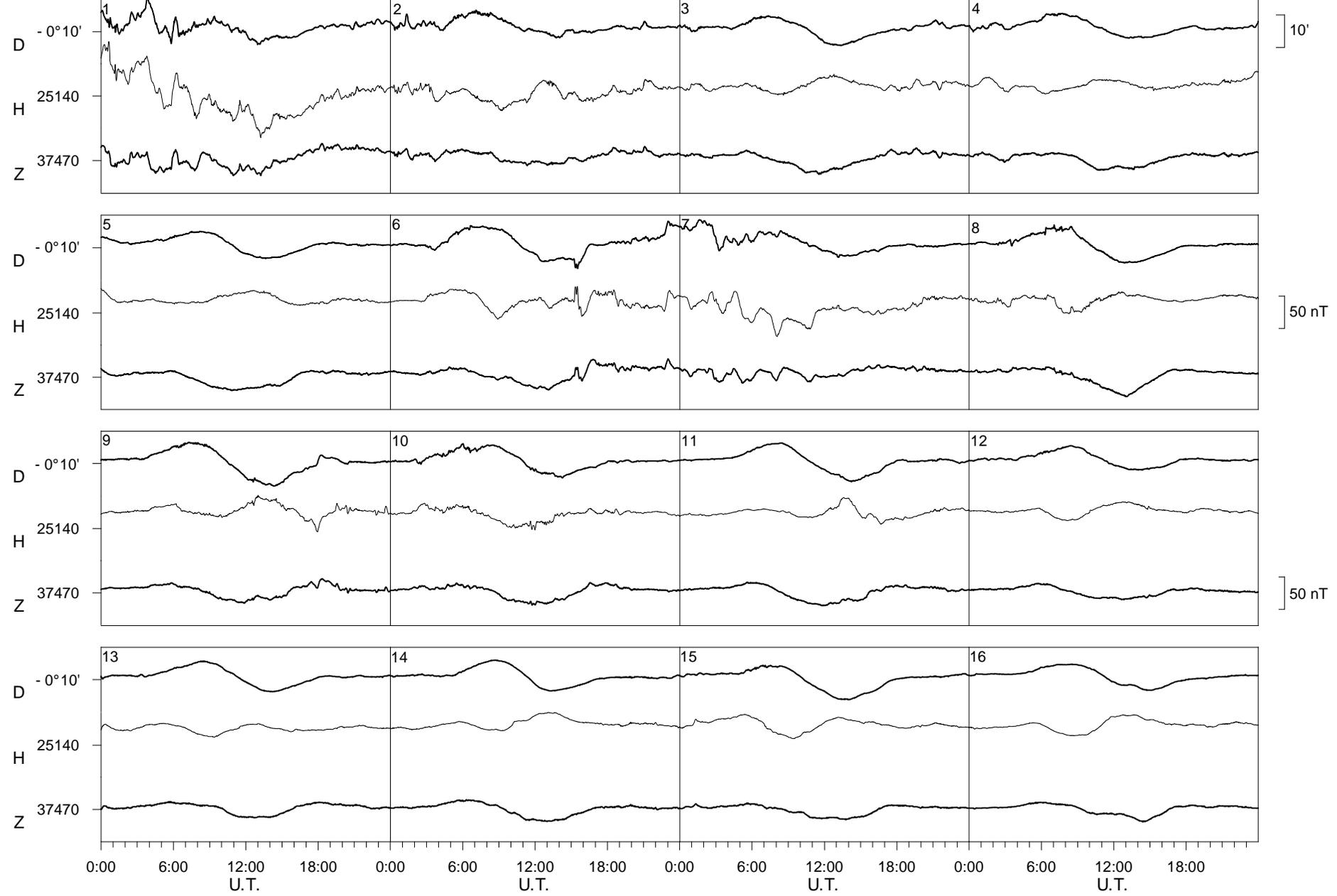
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Ebre Observatory

June

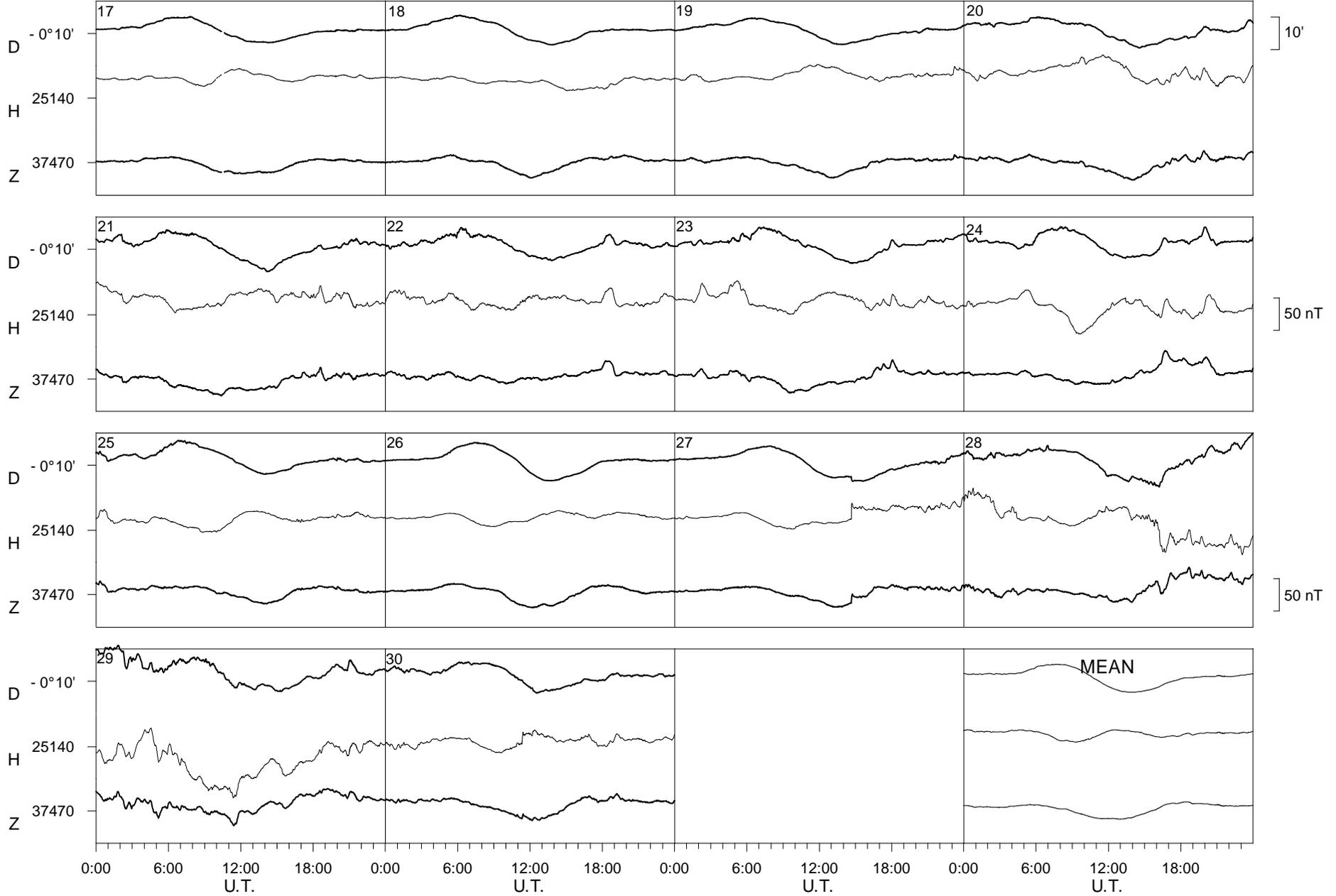
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June

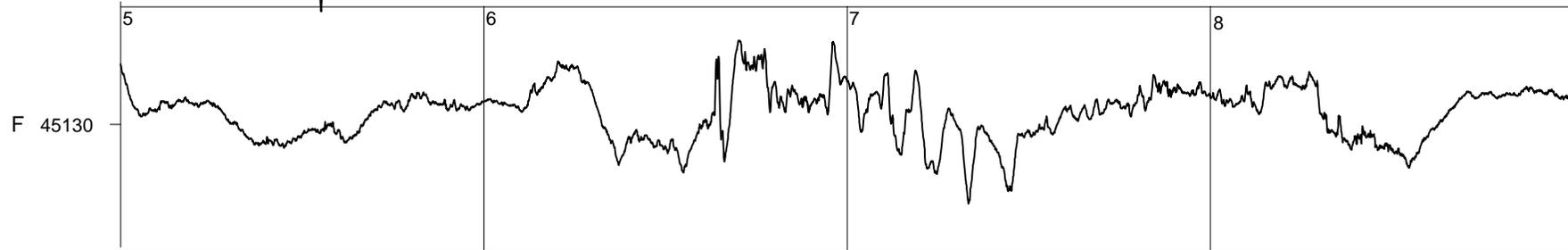
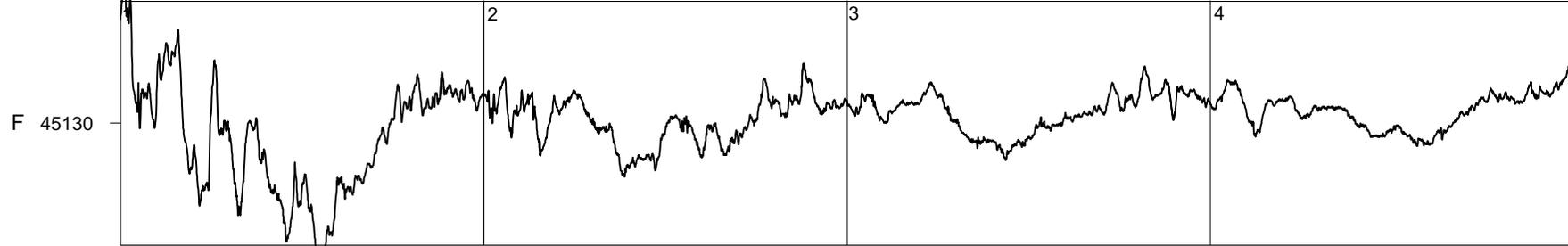
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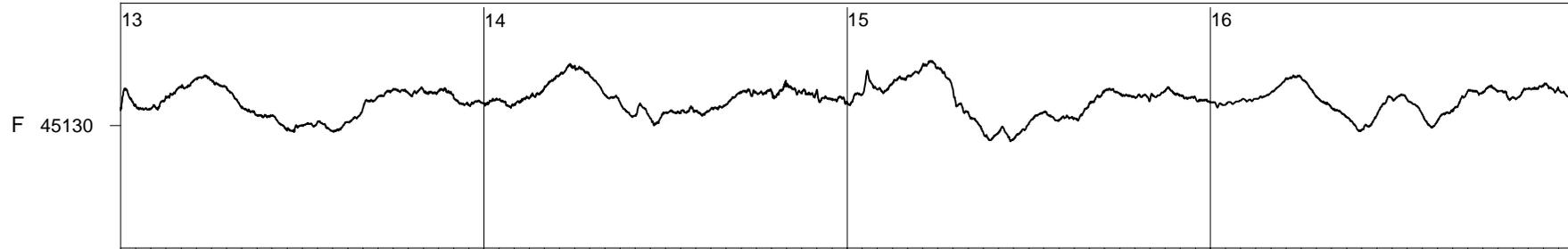
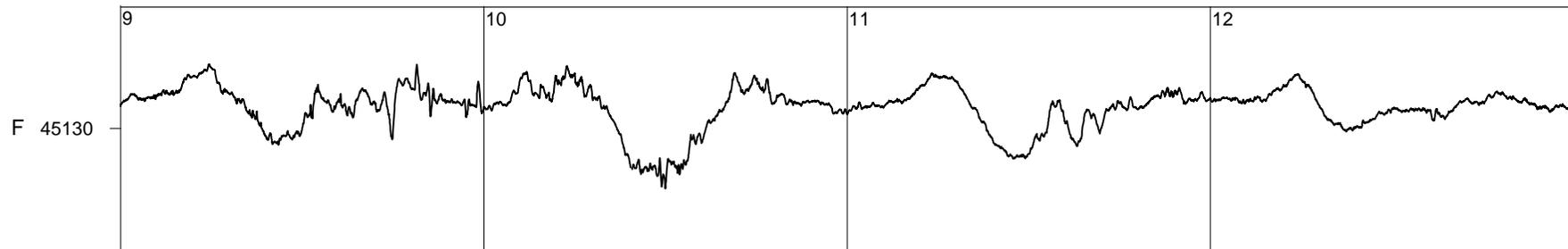
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June

2013



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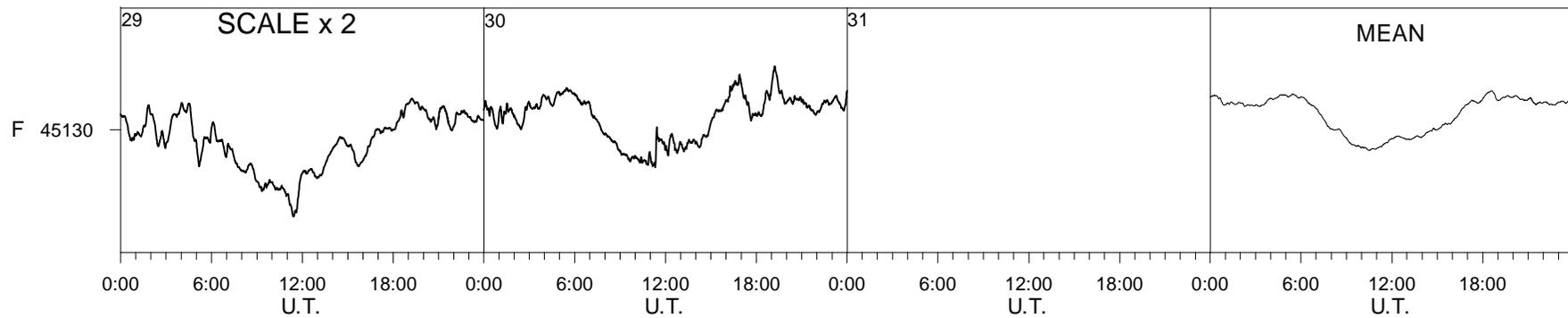
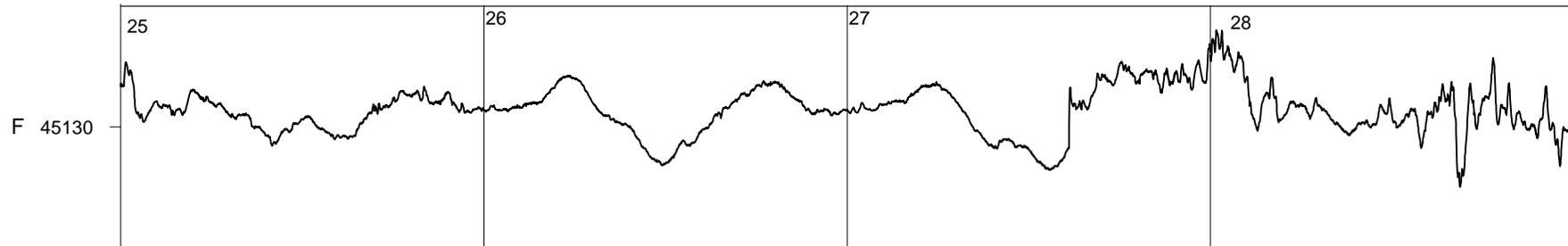
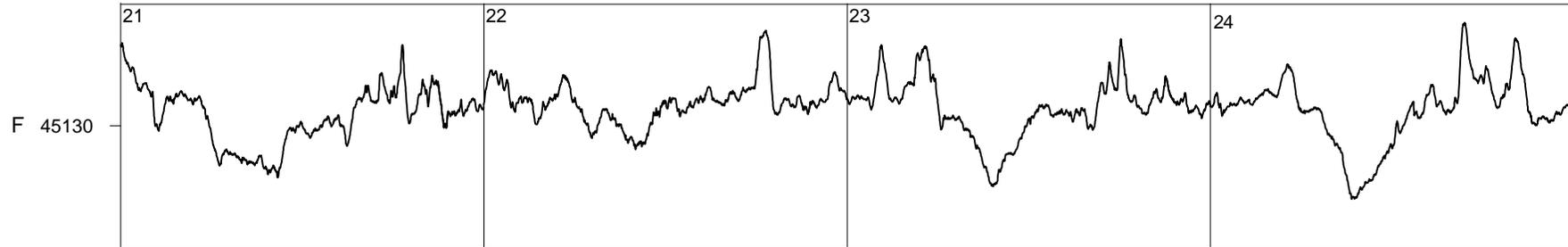
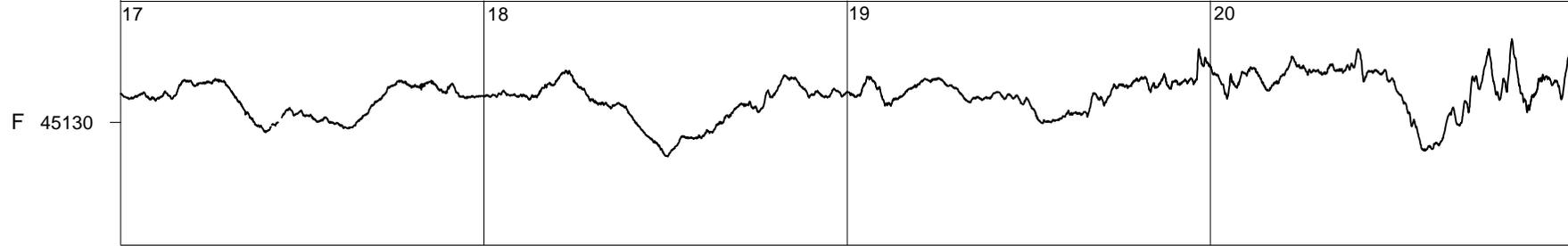


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Ebre Observatory

June

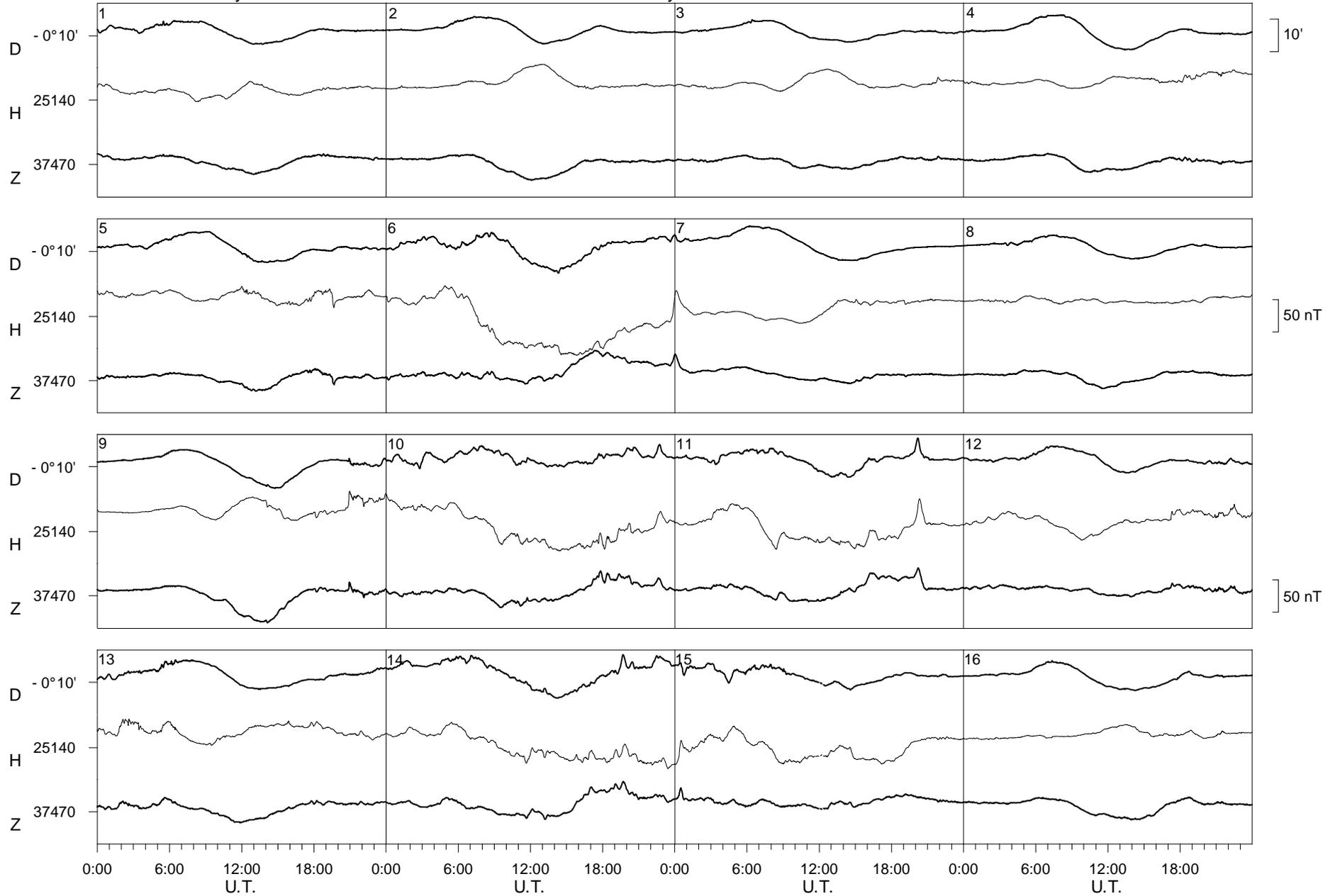
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Ebre Observatory

July

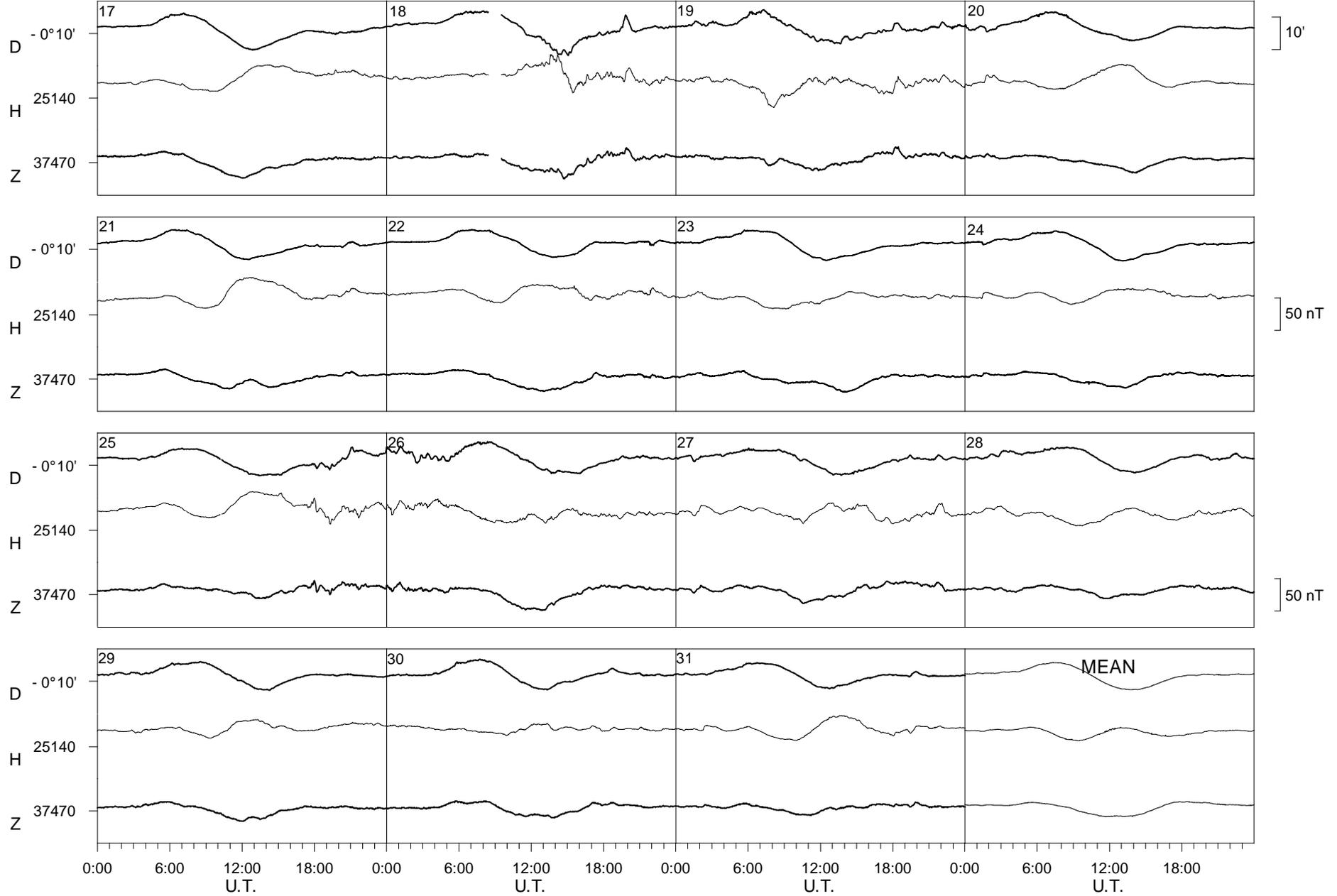
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Ebre Observatory

July

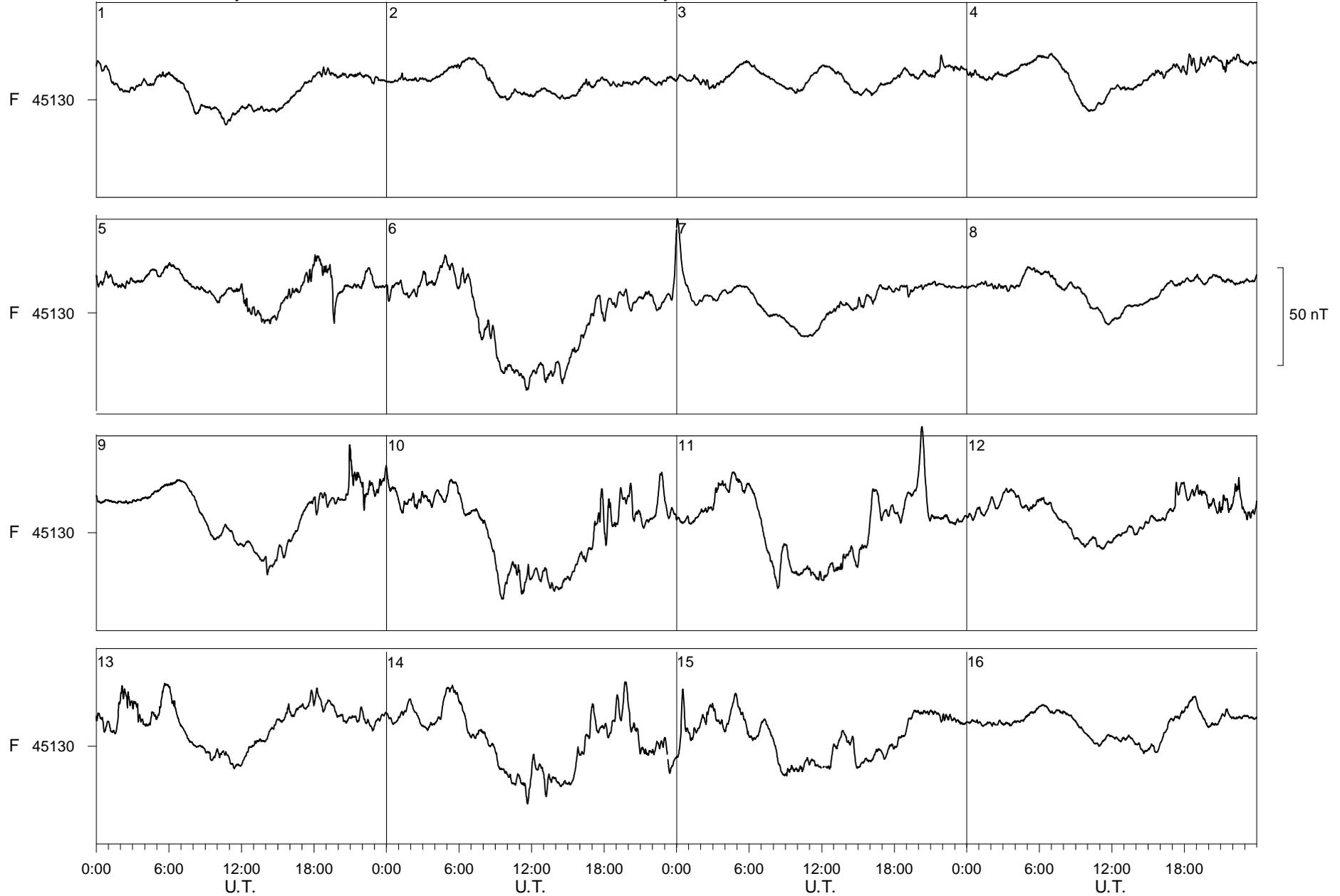
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July

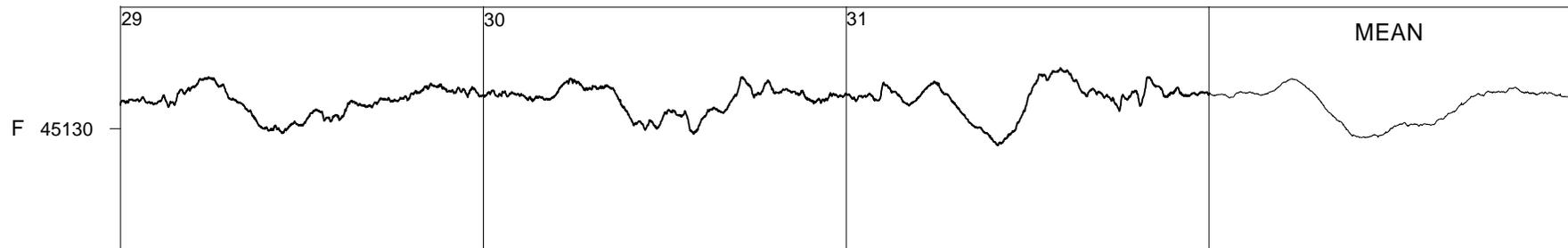
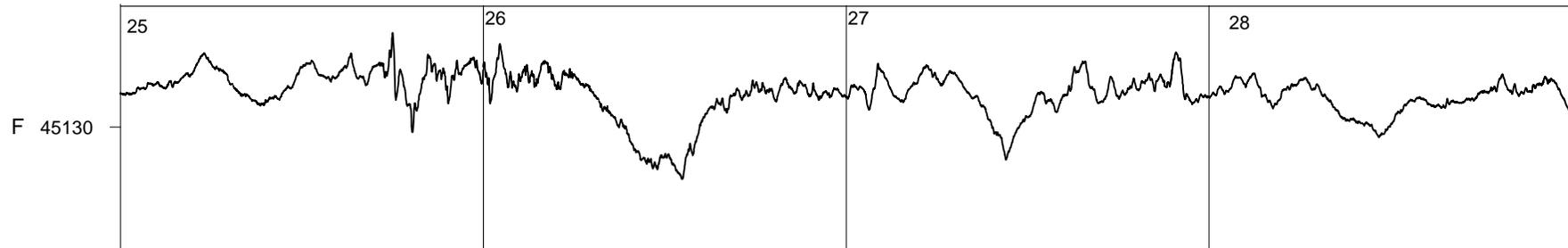
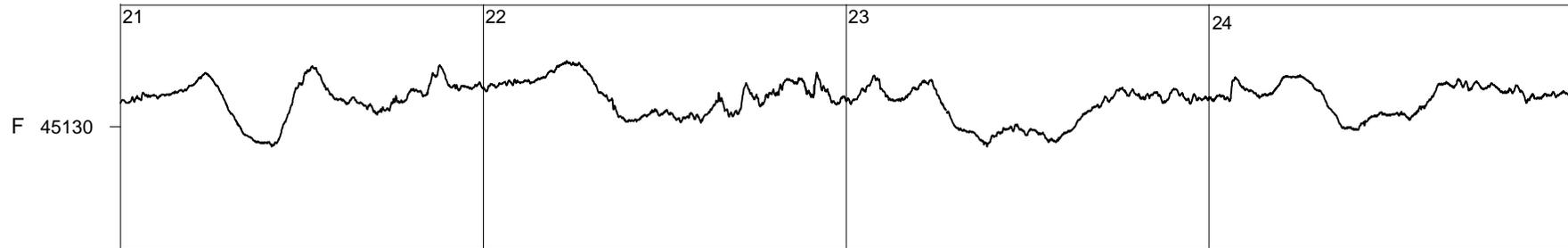
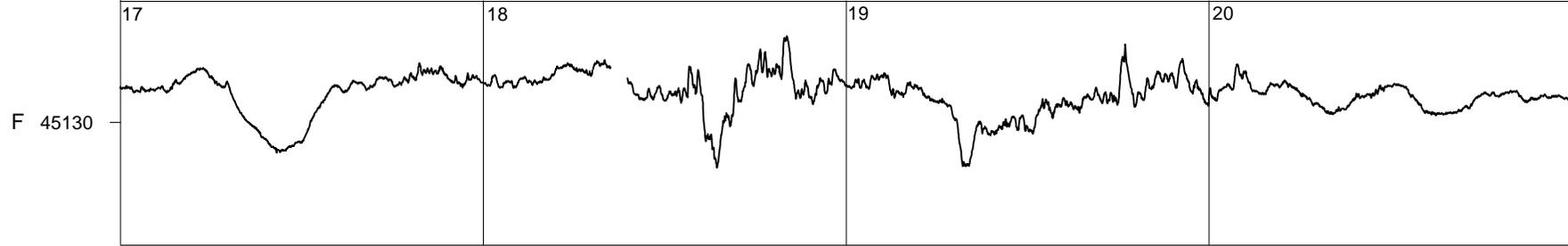
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Ebre Observatory

July

2013

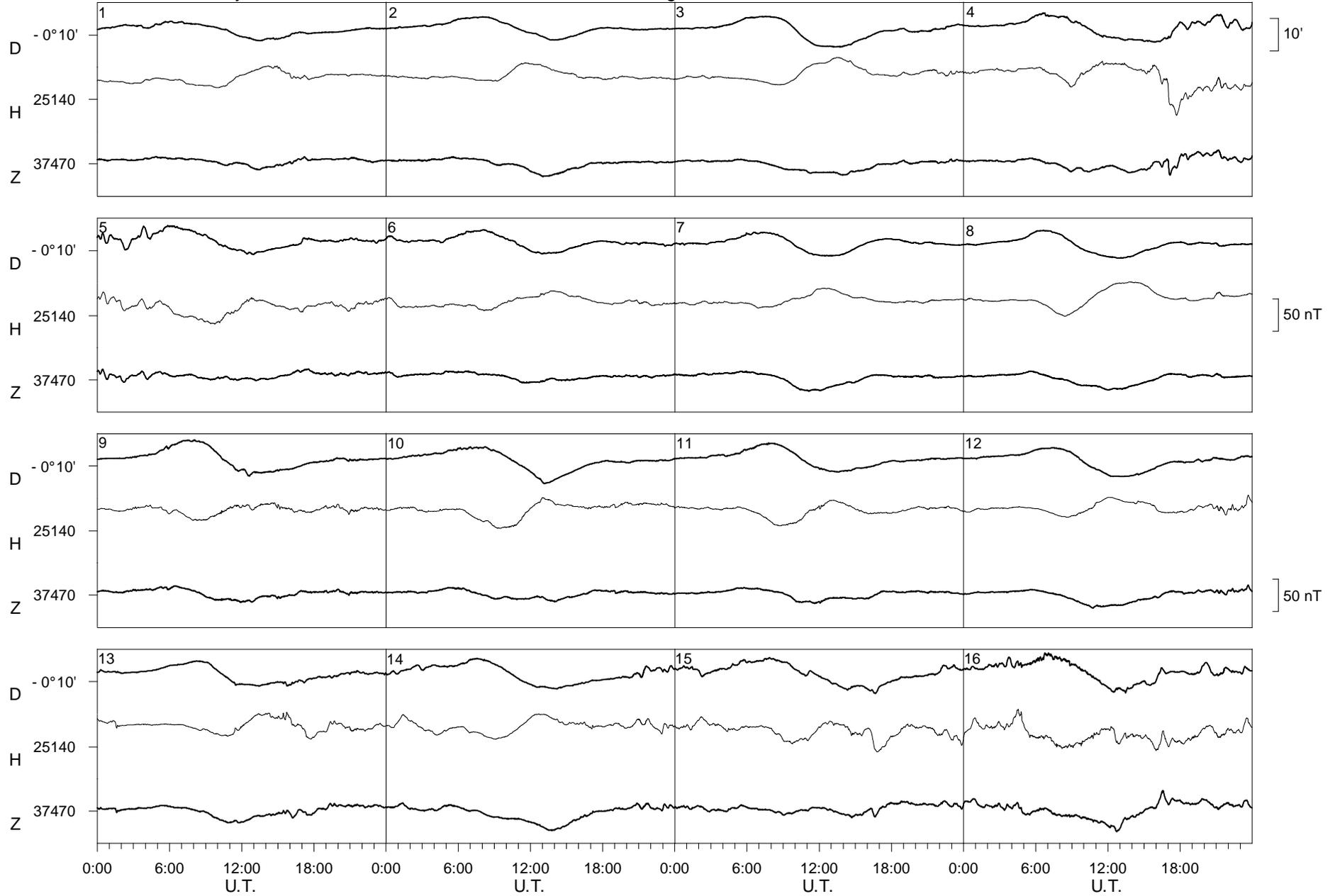


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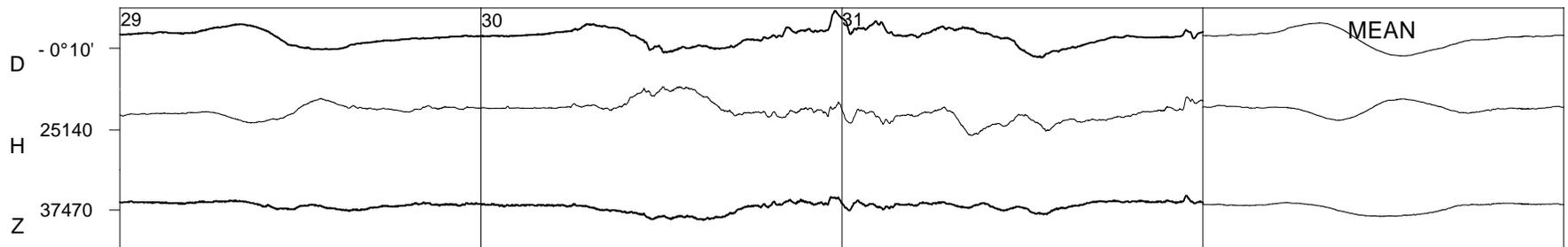
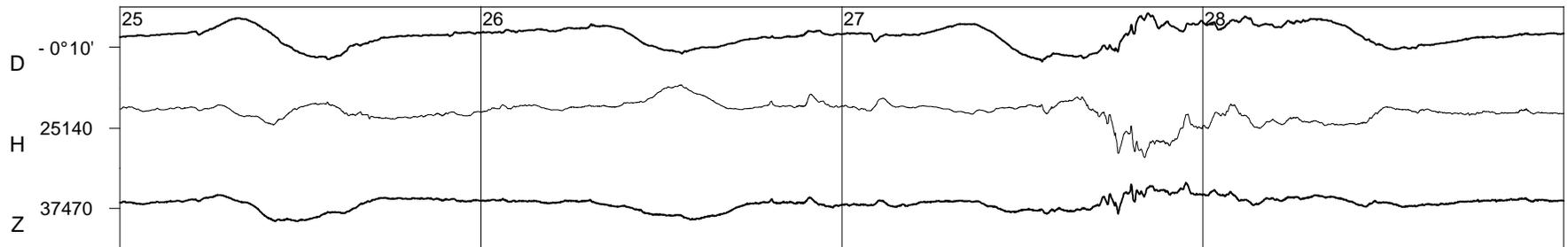
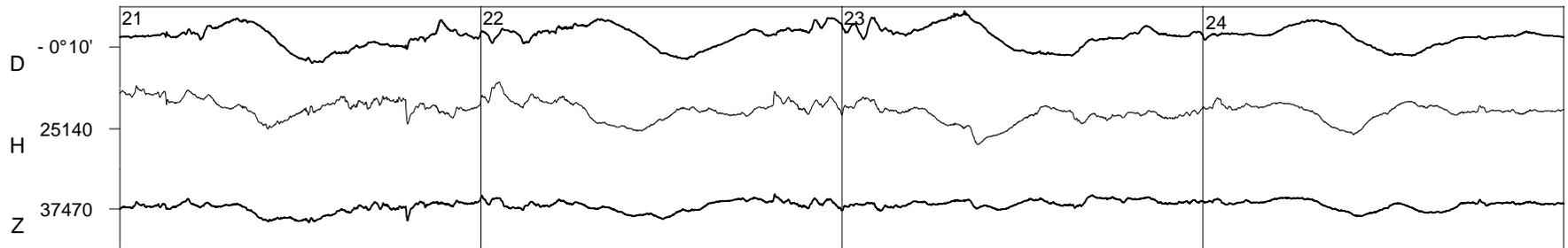
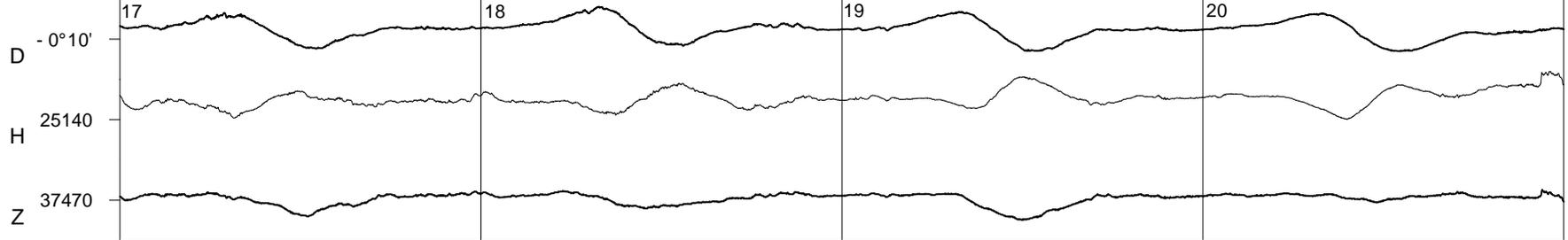
Ebre Observatory

August

2013



Ebre Observatory August 2013

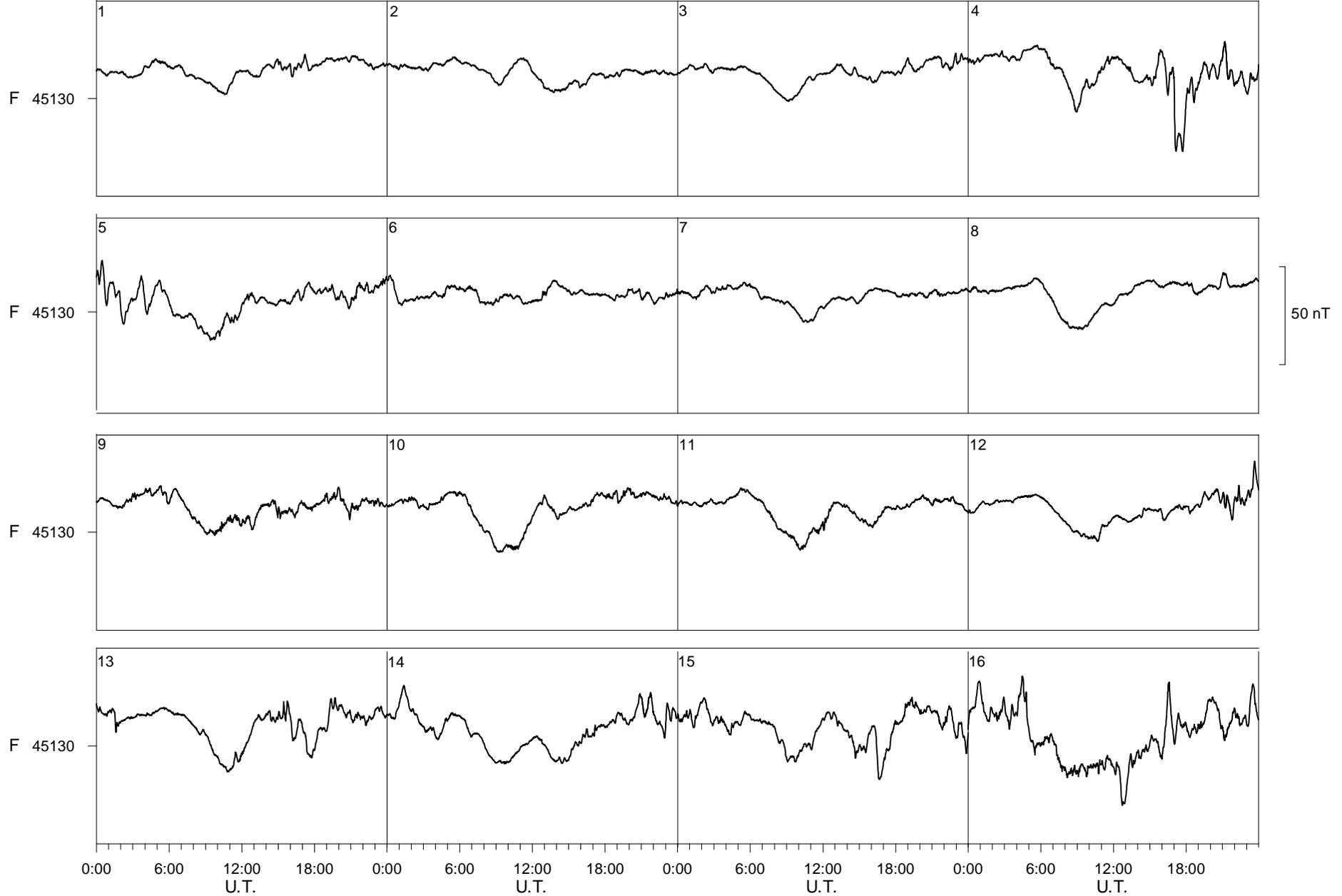


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U.T. U.T. U.T. U.T.

Ebre Observatory

August

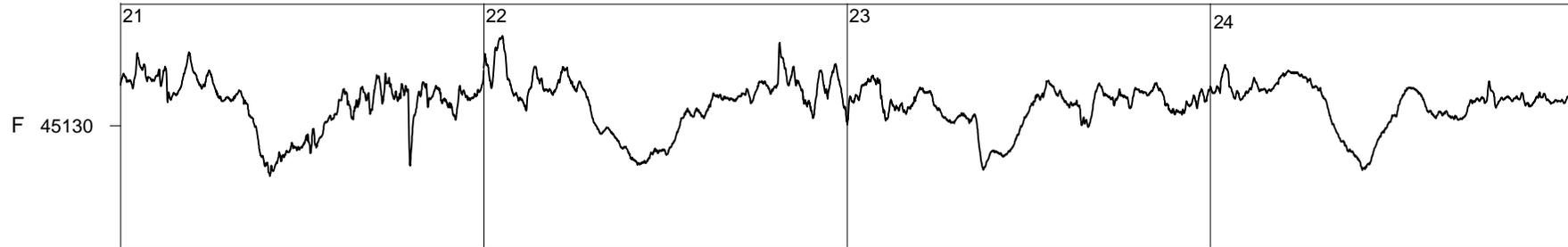
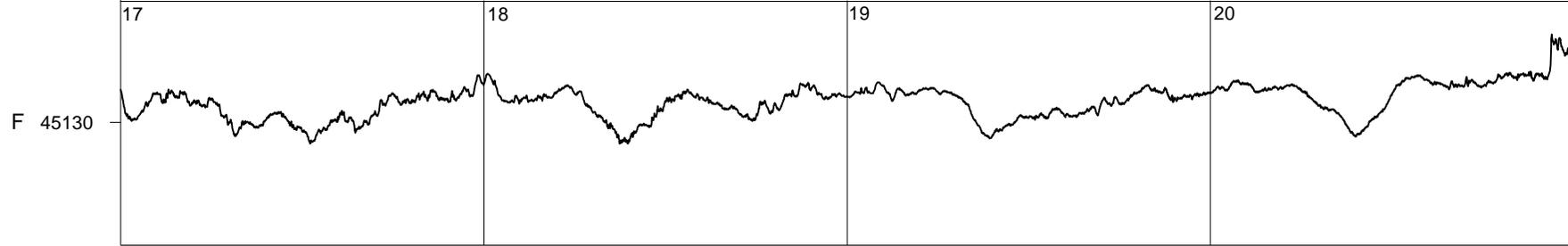
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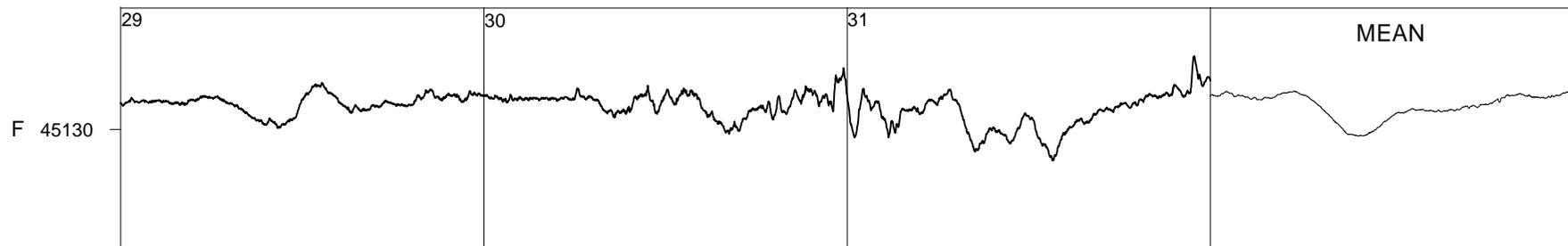
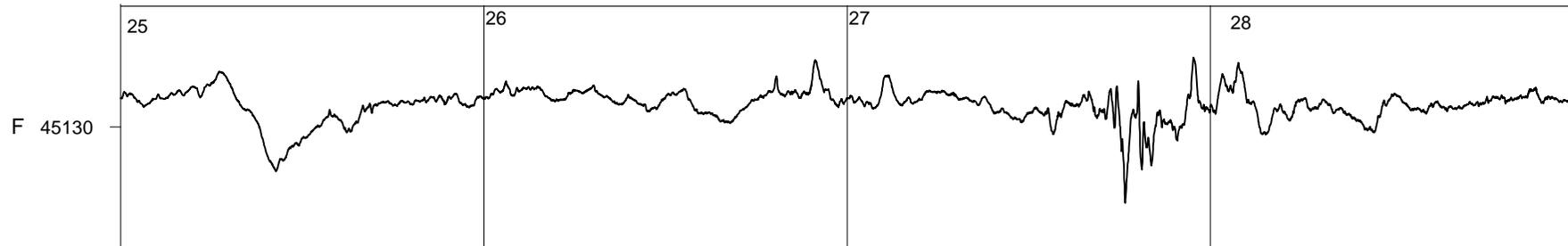
Ebre Observatory

August

2013



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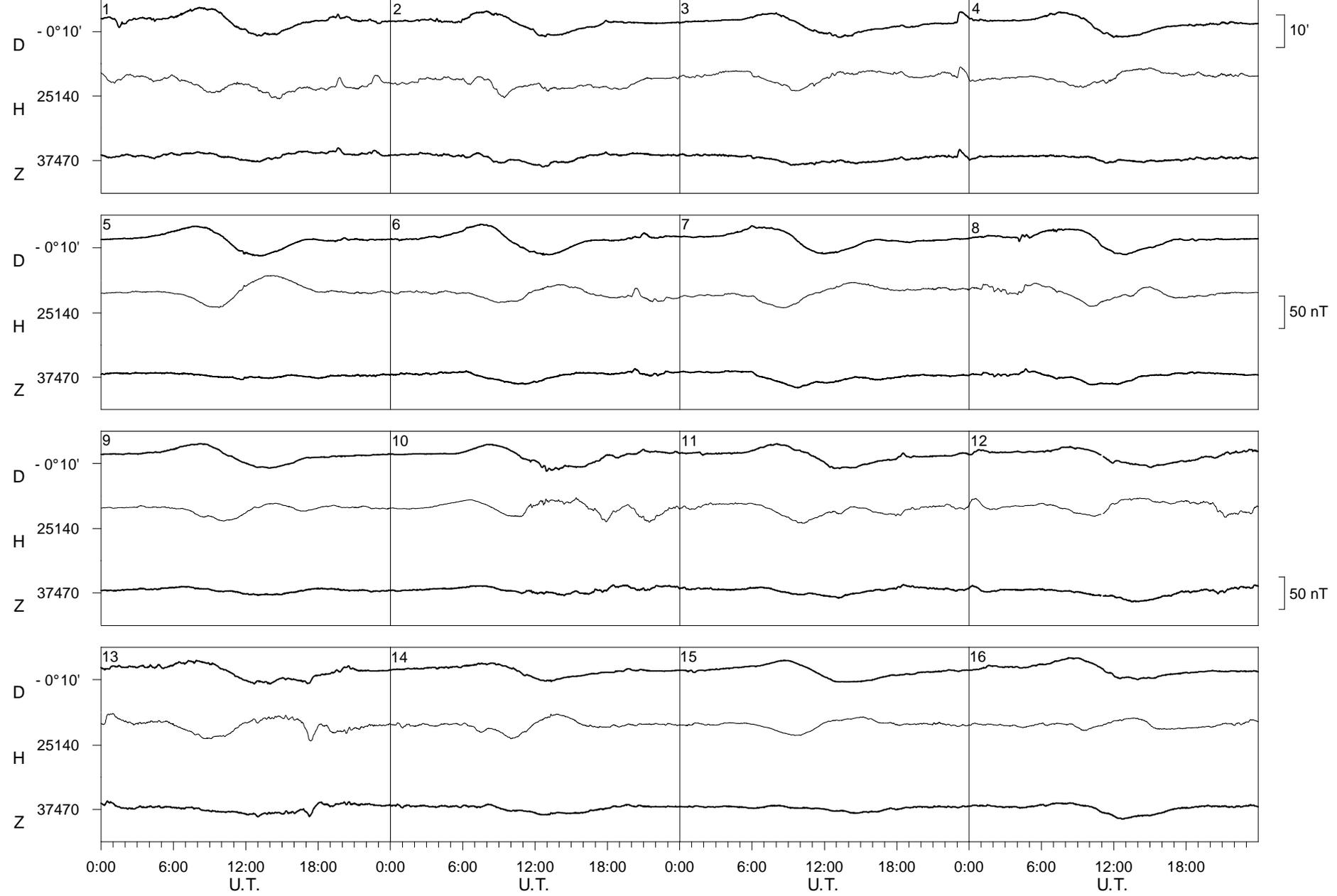
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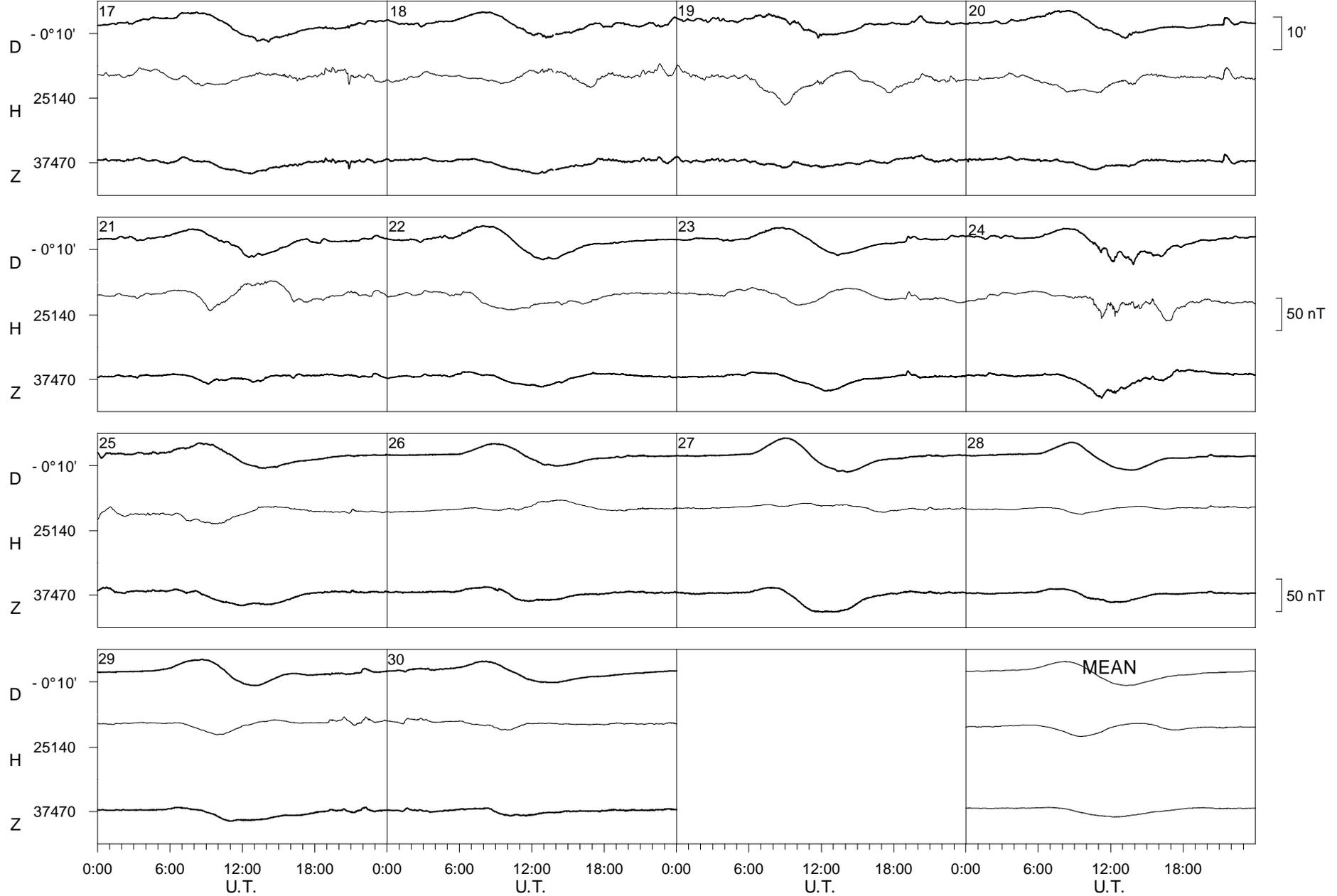
Ebre Observatory

September

2013



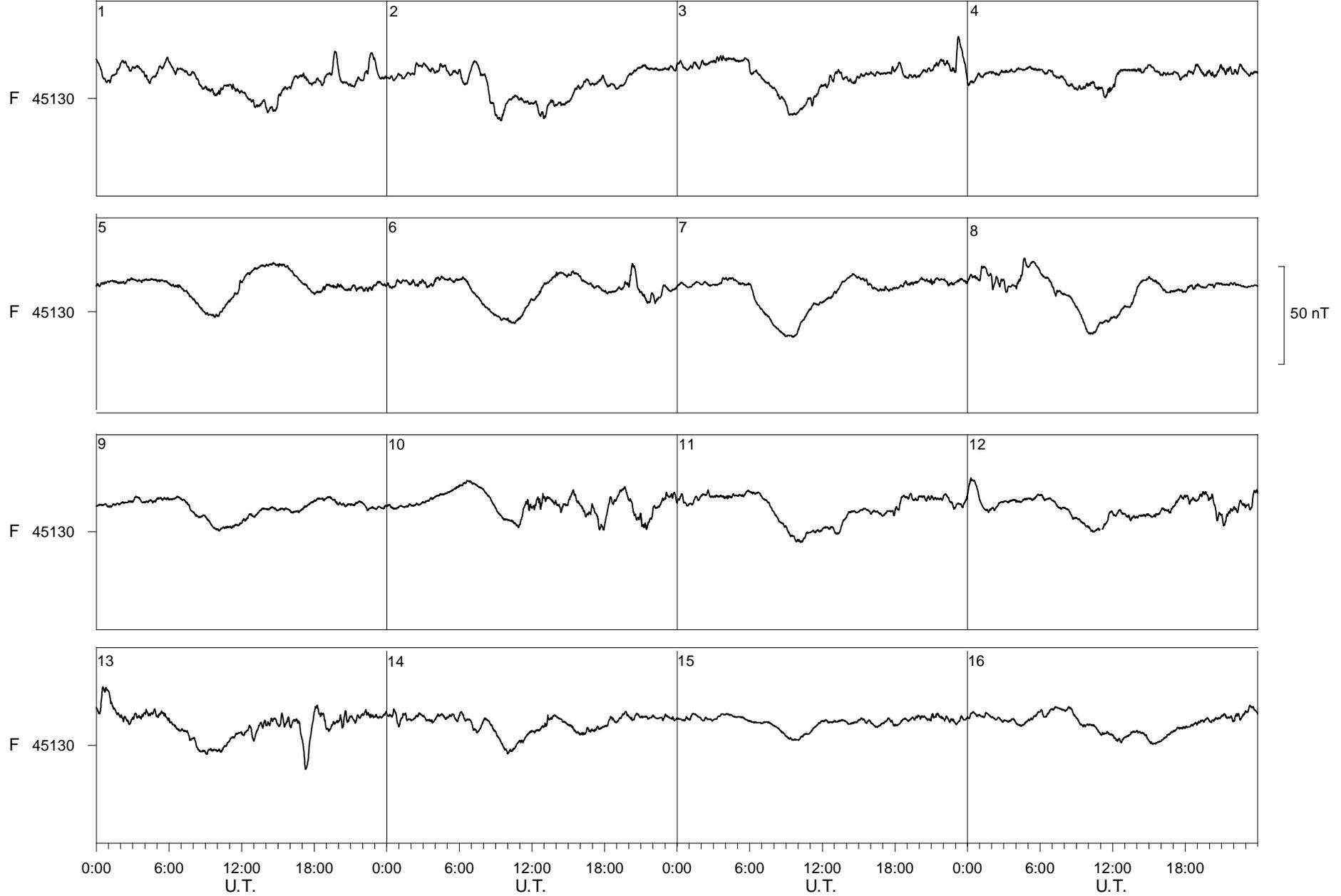
Ebre Observatory September 2013



Ebre Observatory

September

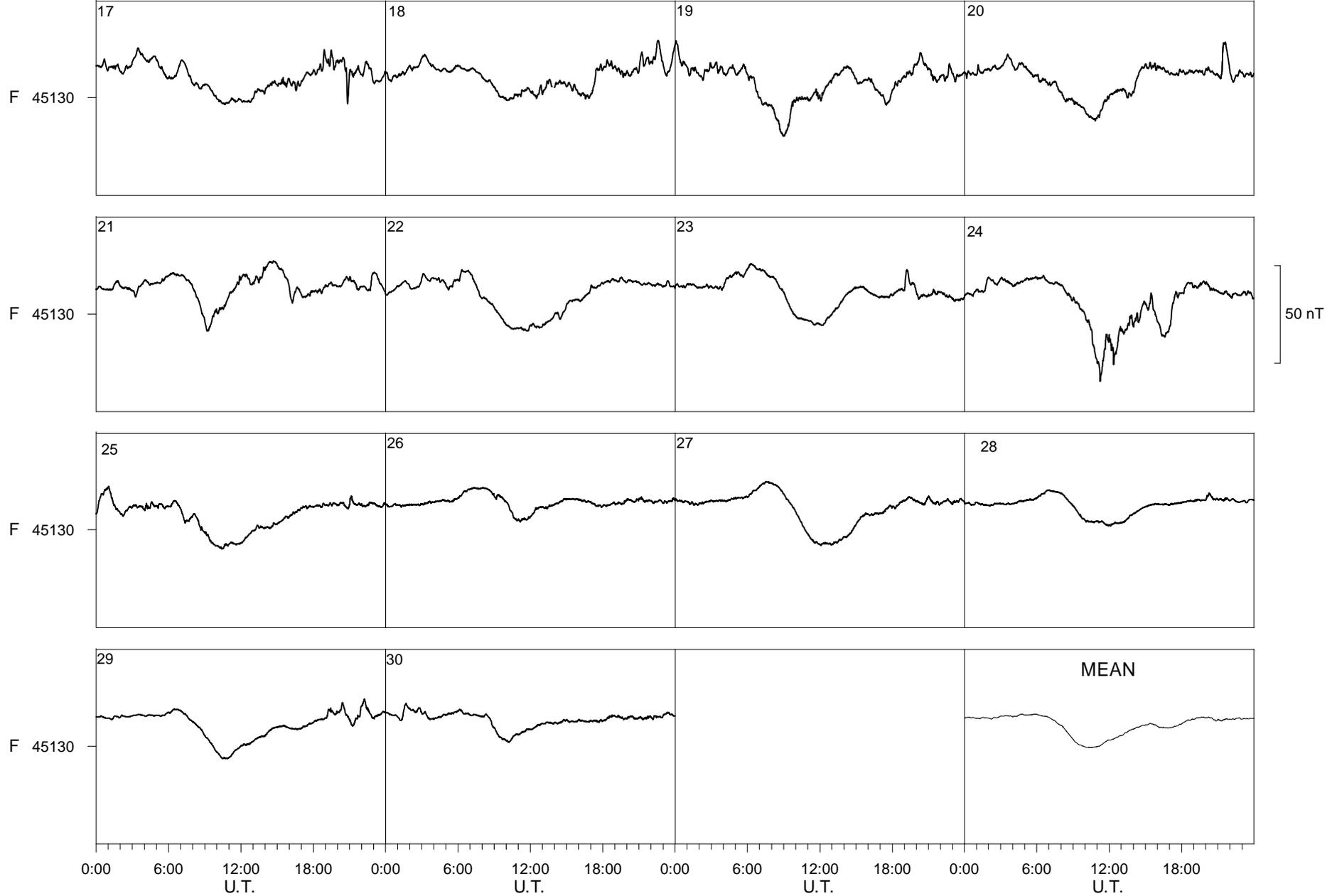
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Ebre Observatory

September

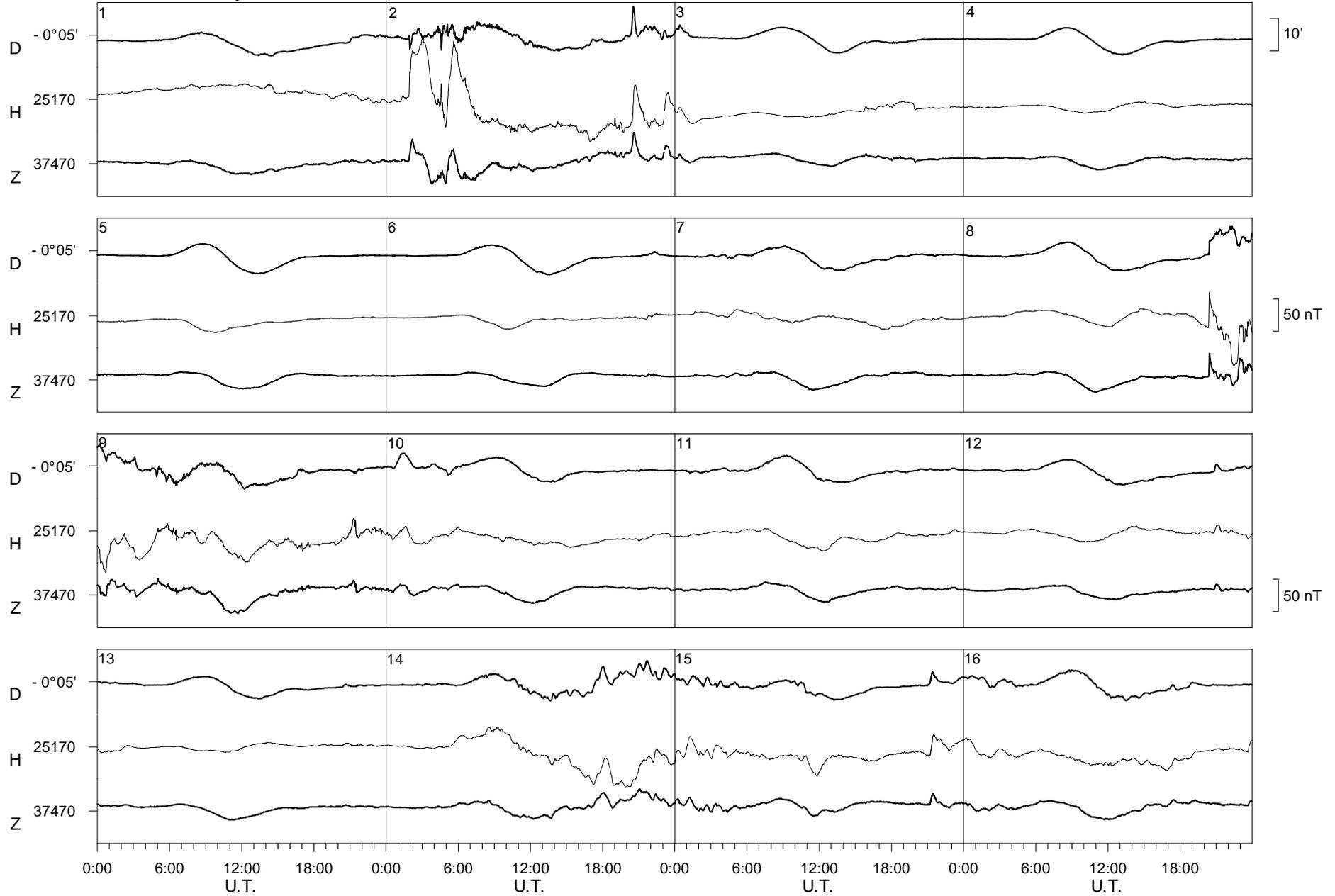
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Ebre Observatory

October

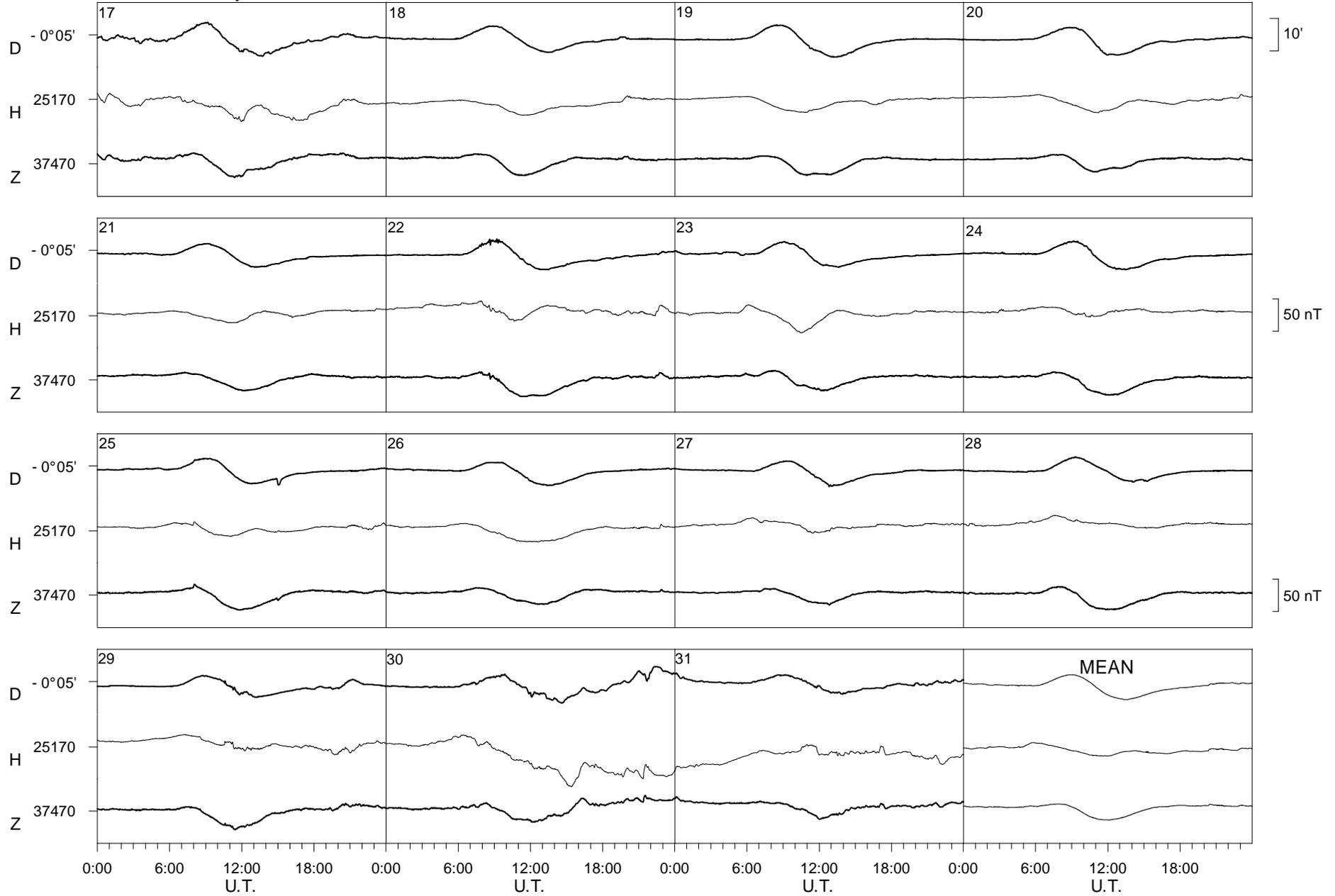
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Ebre Observatory

October

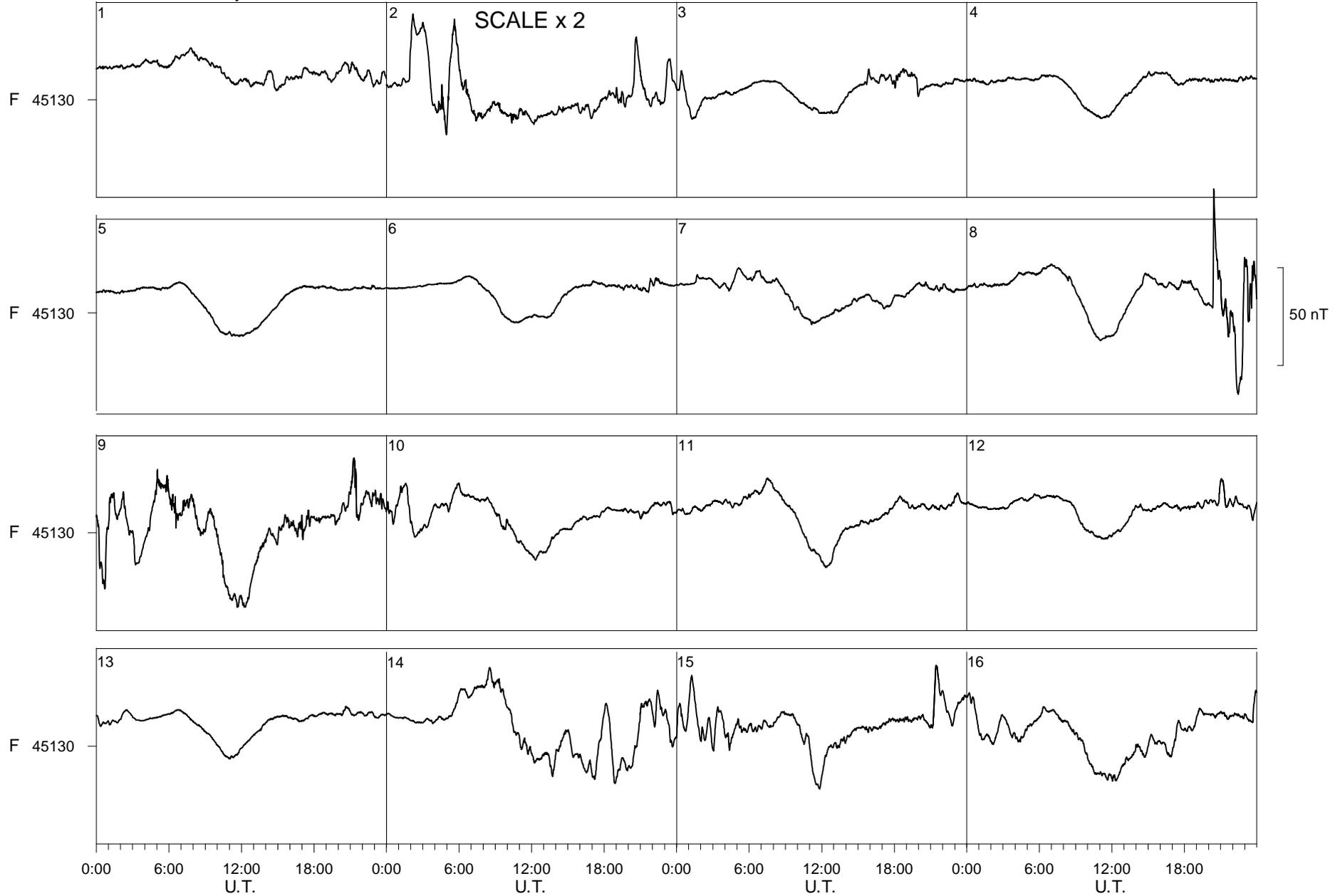
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Ebre Observatory

October

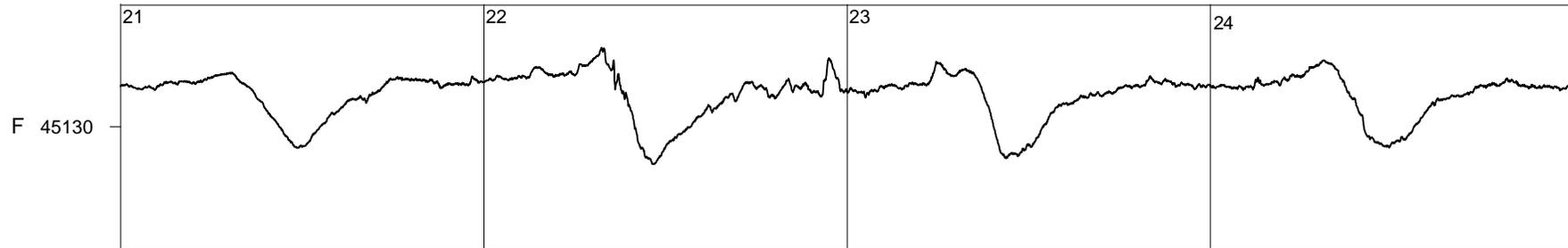
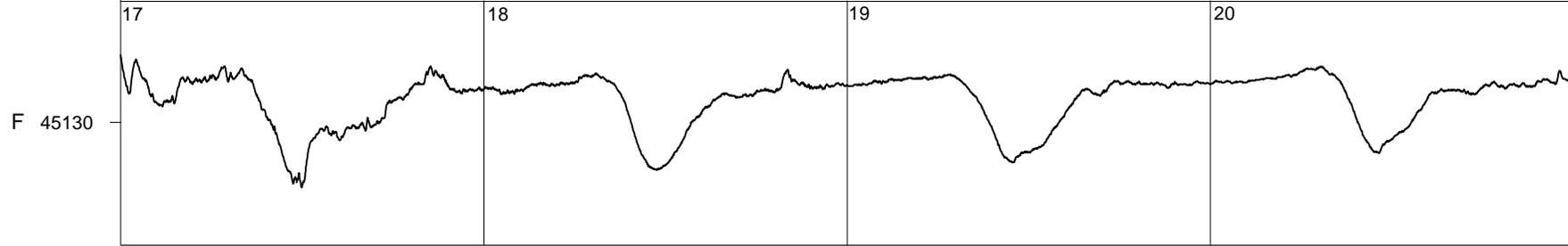
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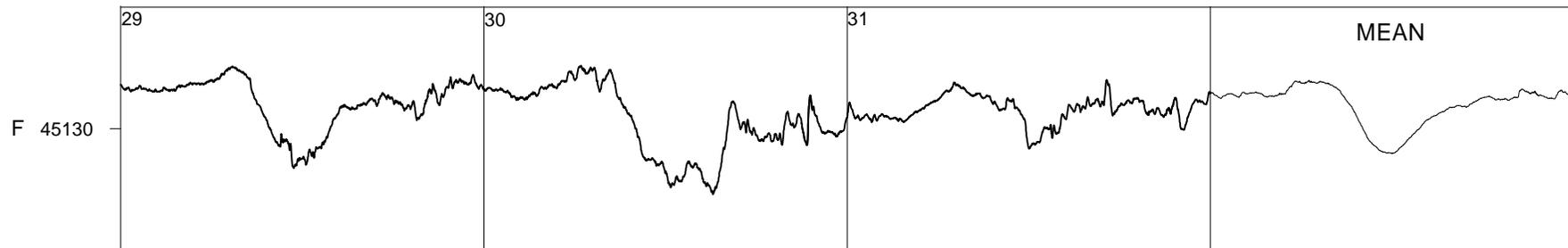
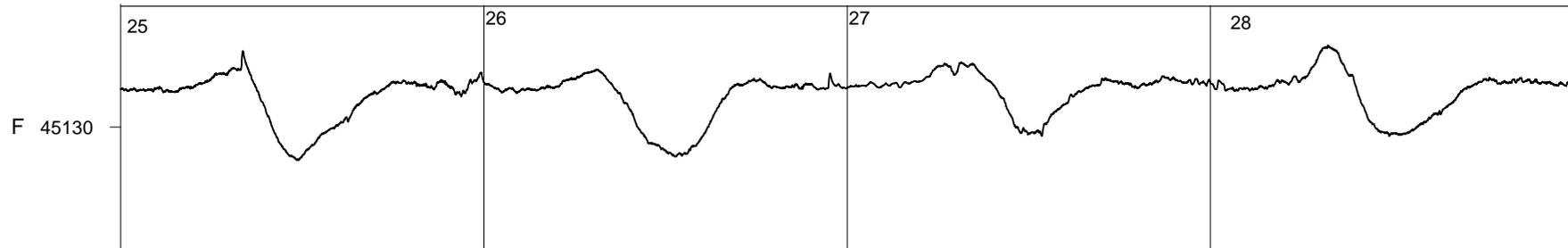
Ebre Observatory

October

2013



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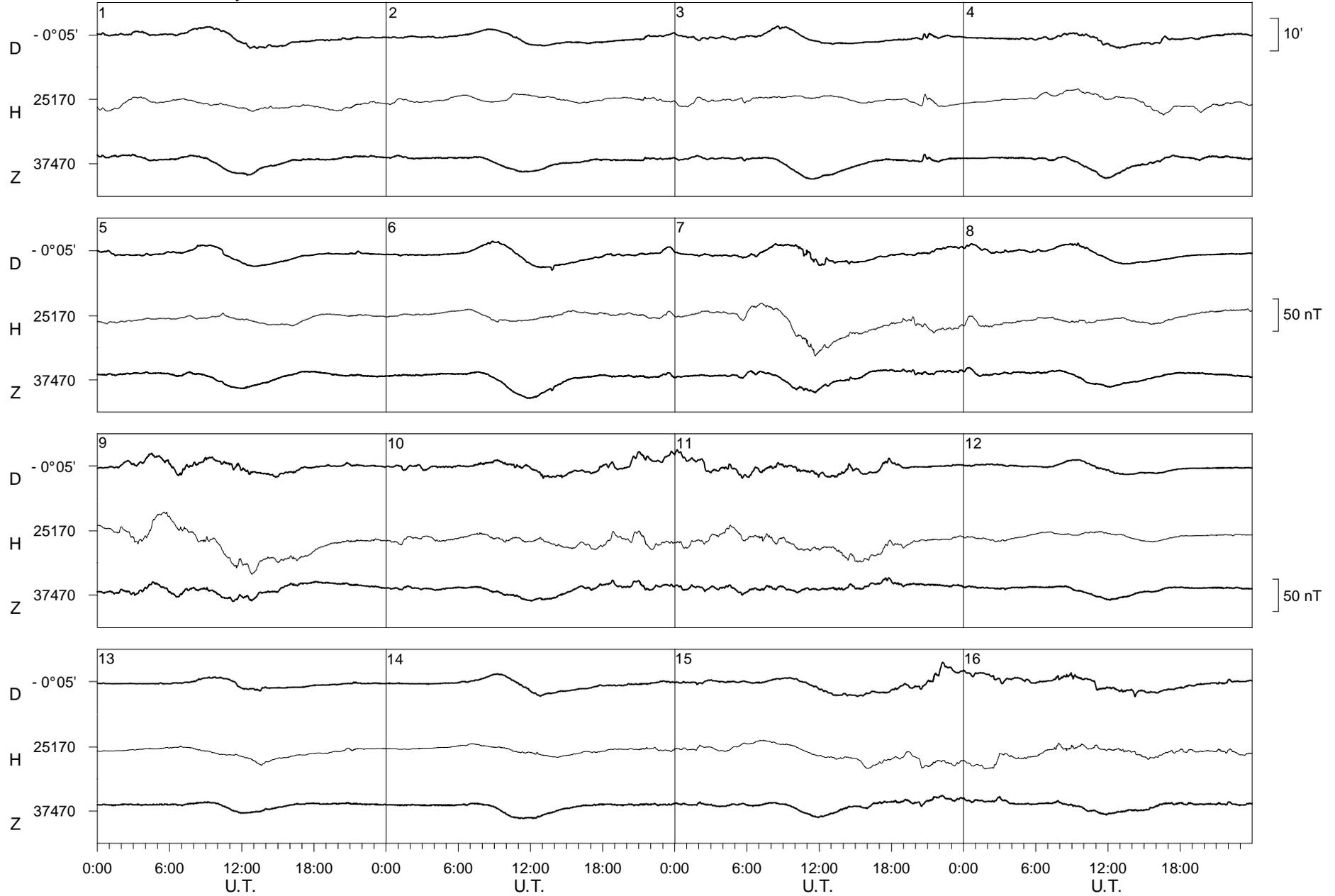
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U.T. U.T. U.T. U.T.

Ebre Observatory

November

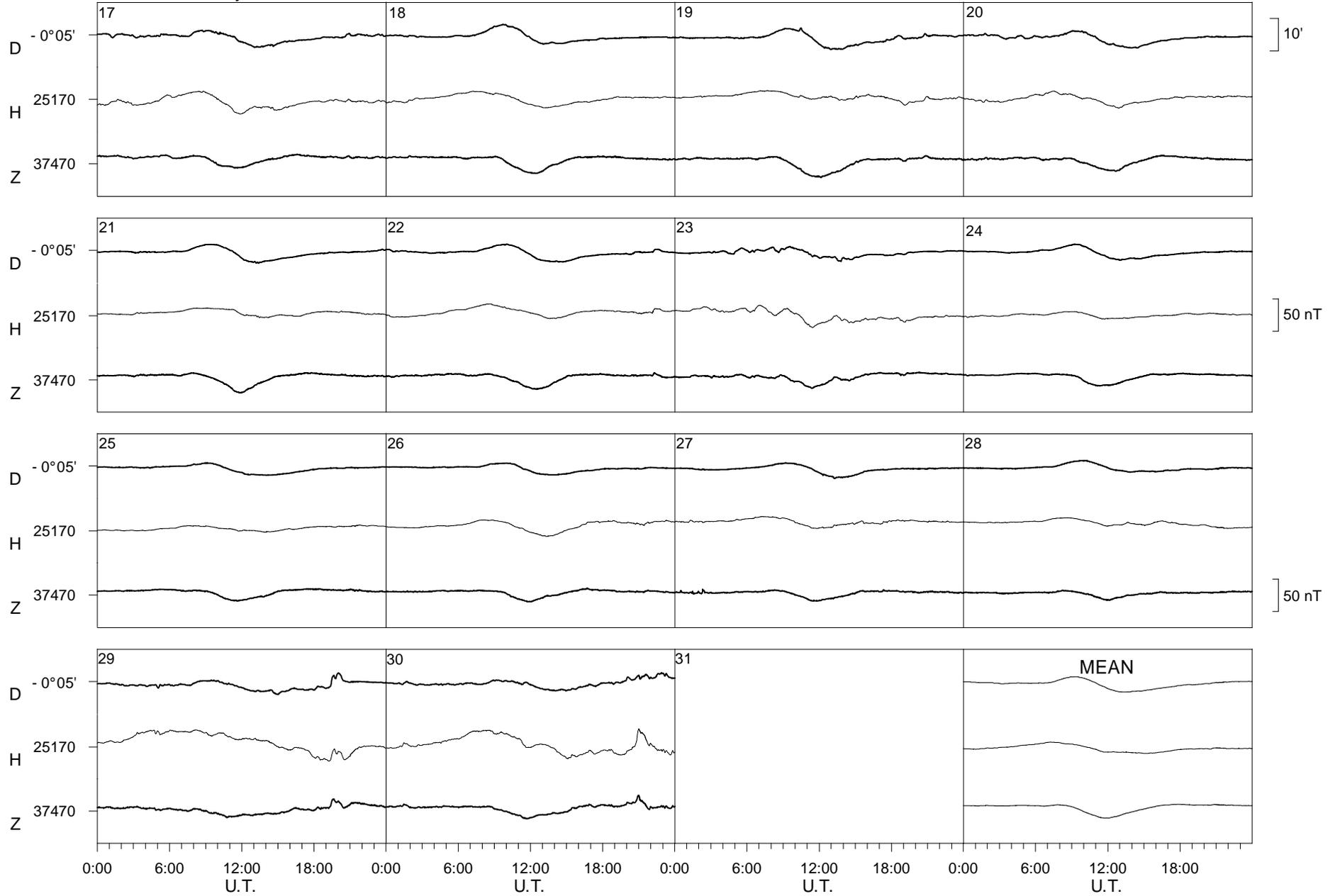
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Ebre Observatory

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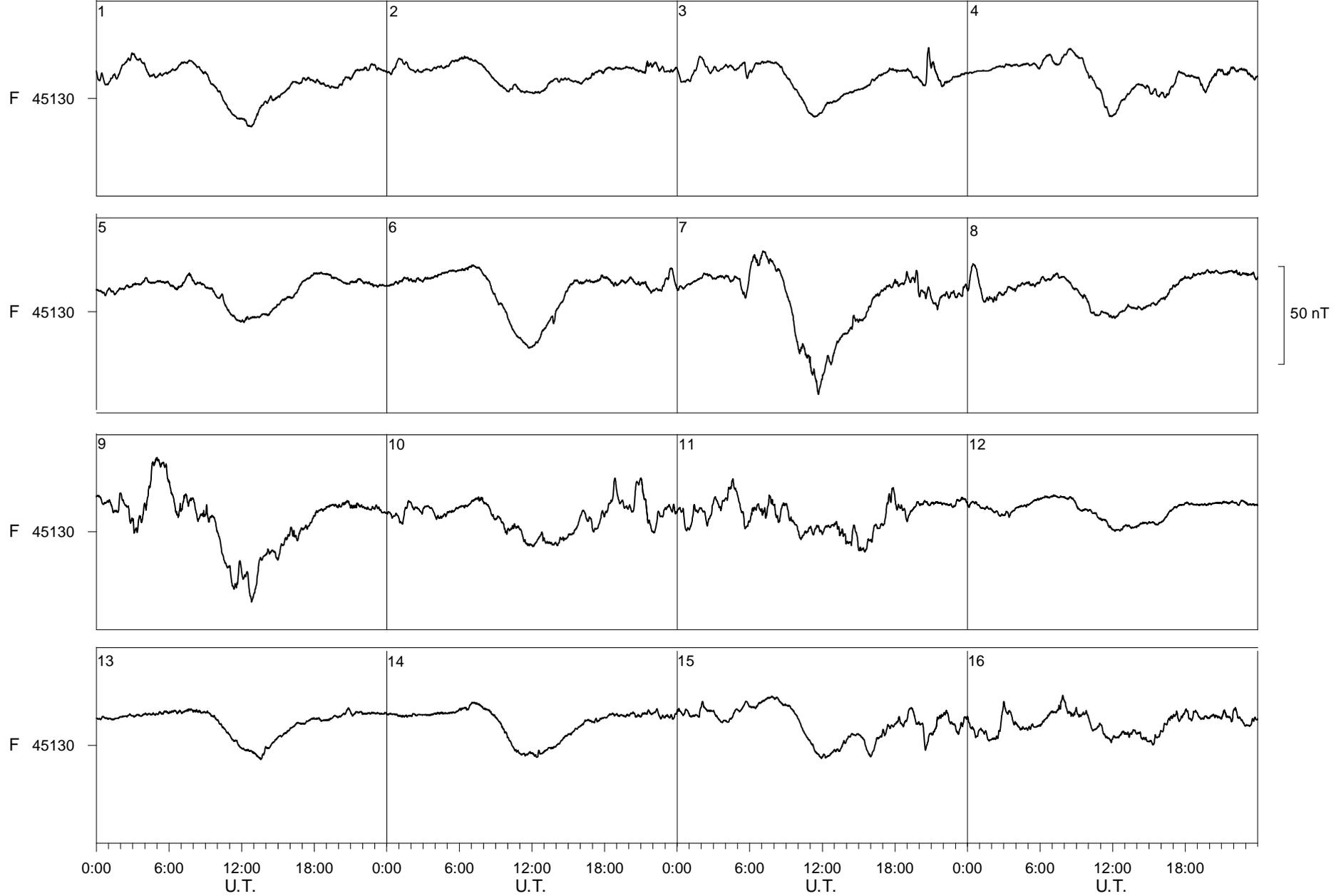
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Ebre Observatory

November

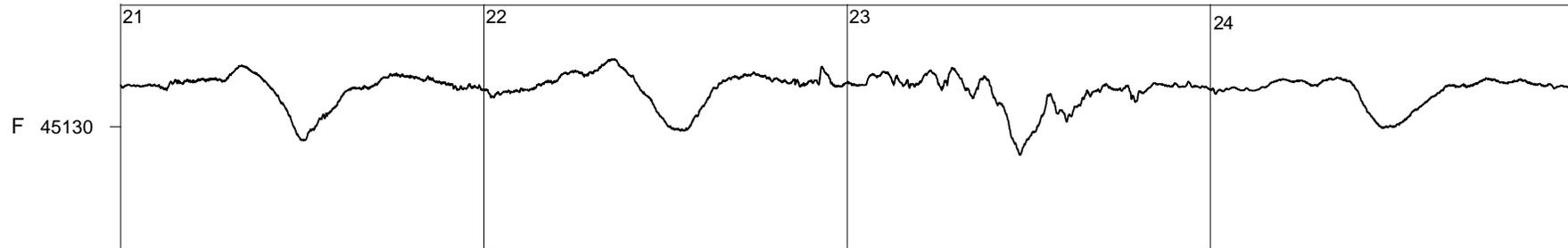
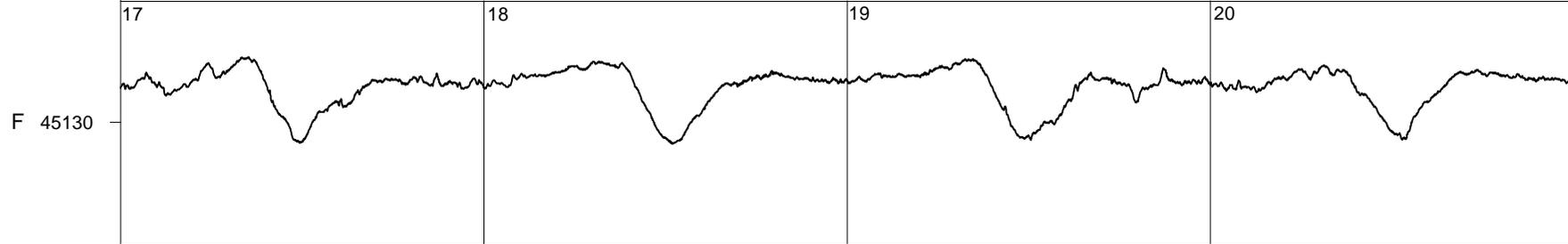
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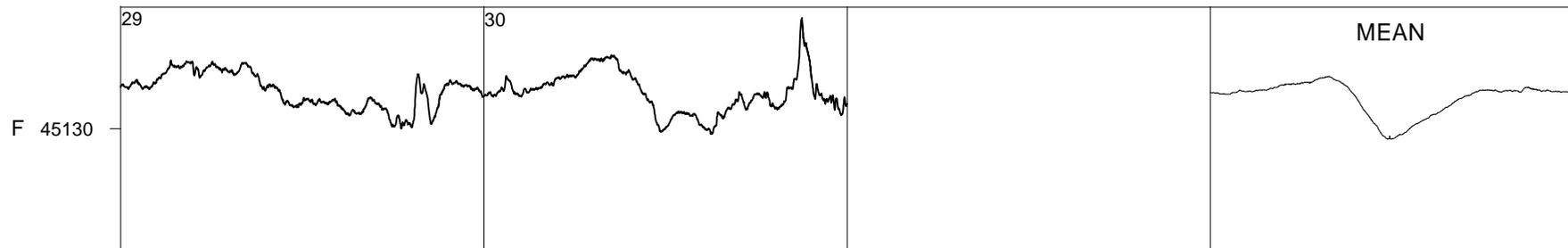
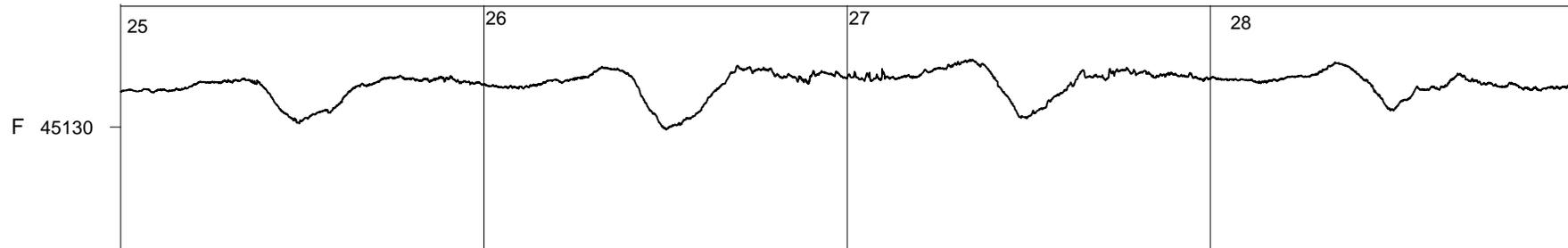
Ebre Observatory

November

2013



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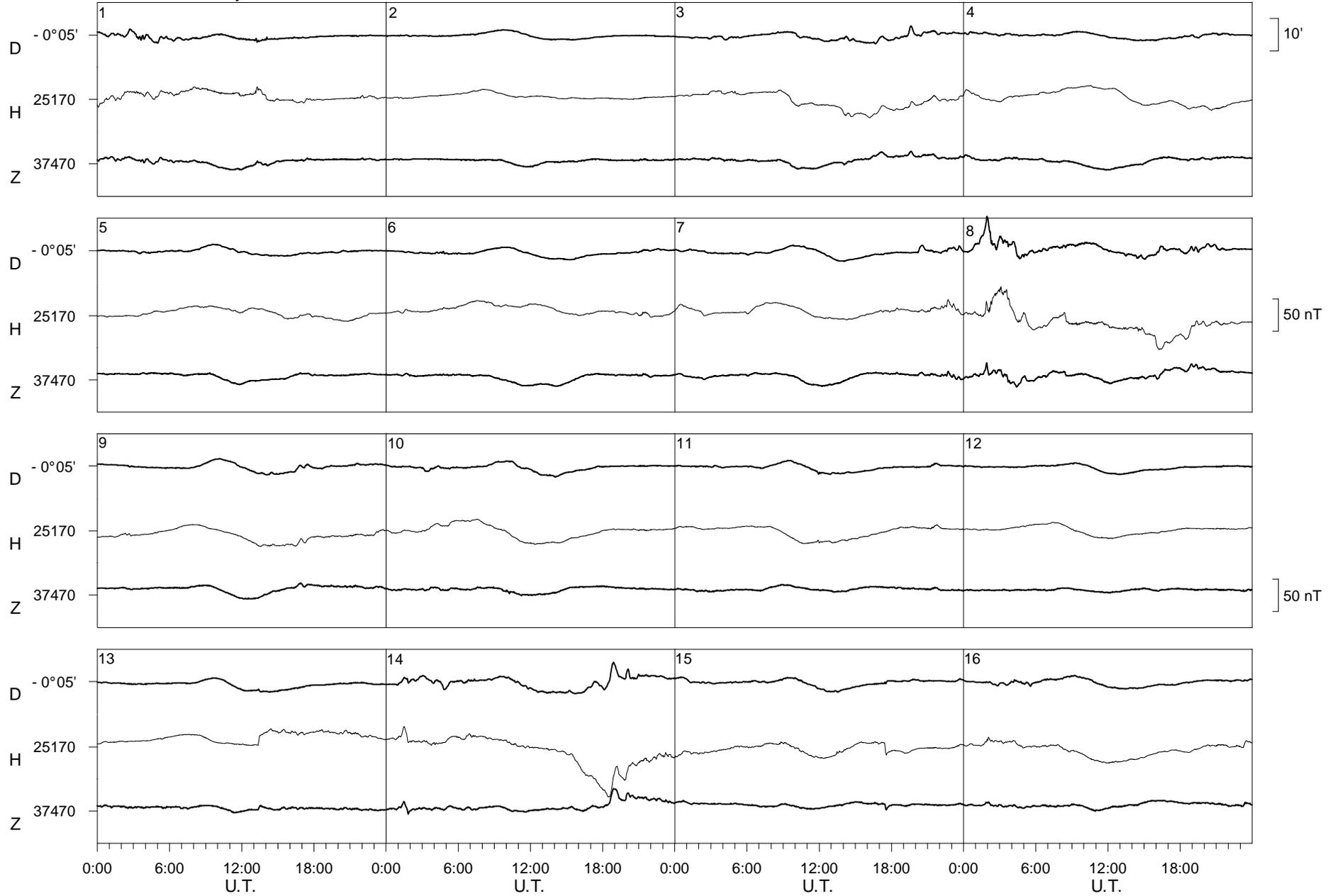


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Ebre Observatory

December

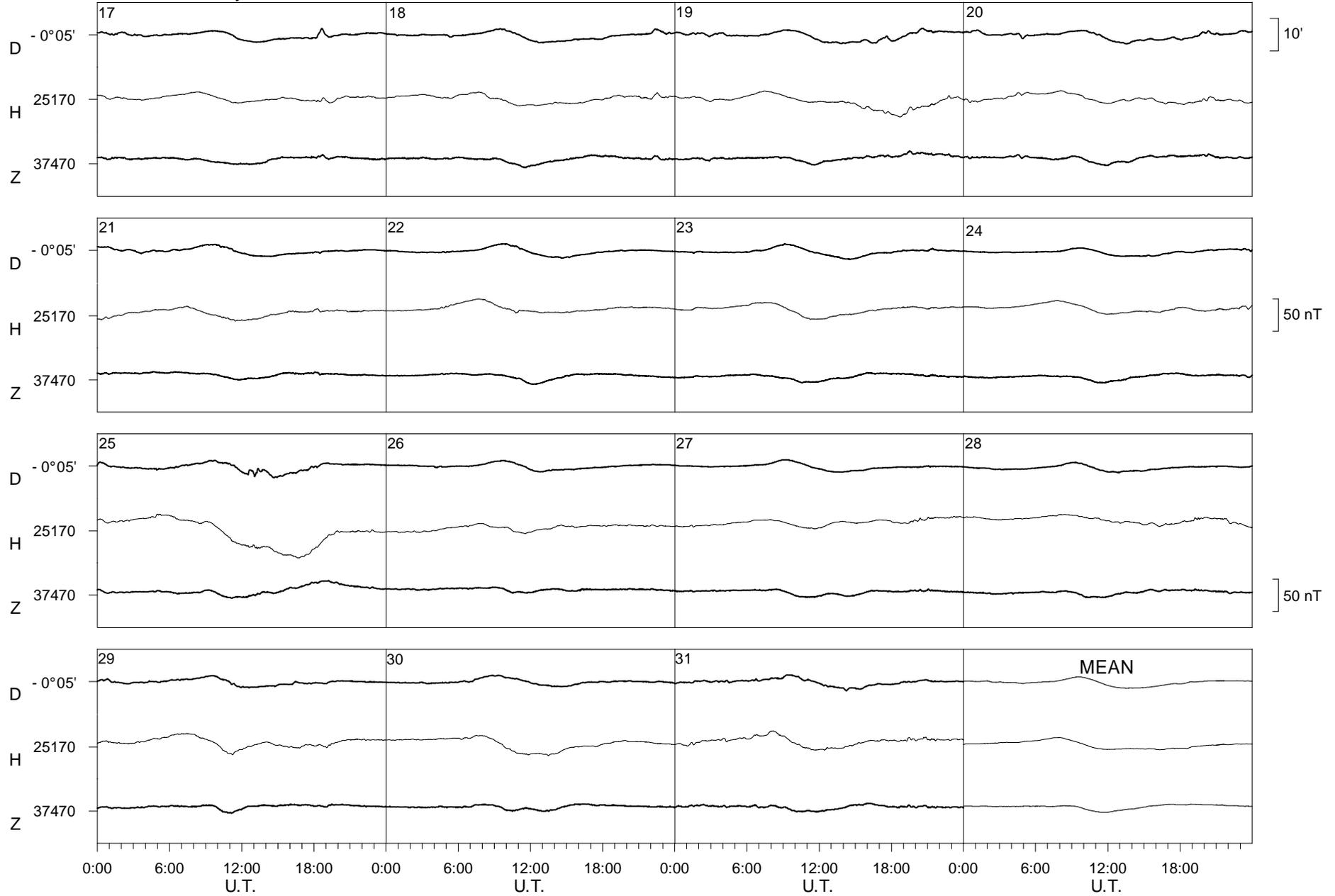
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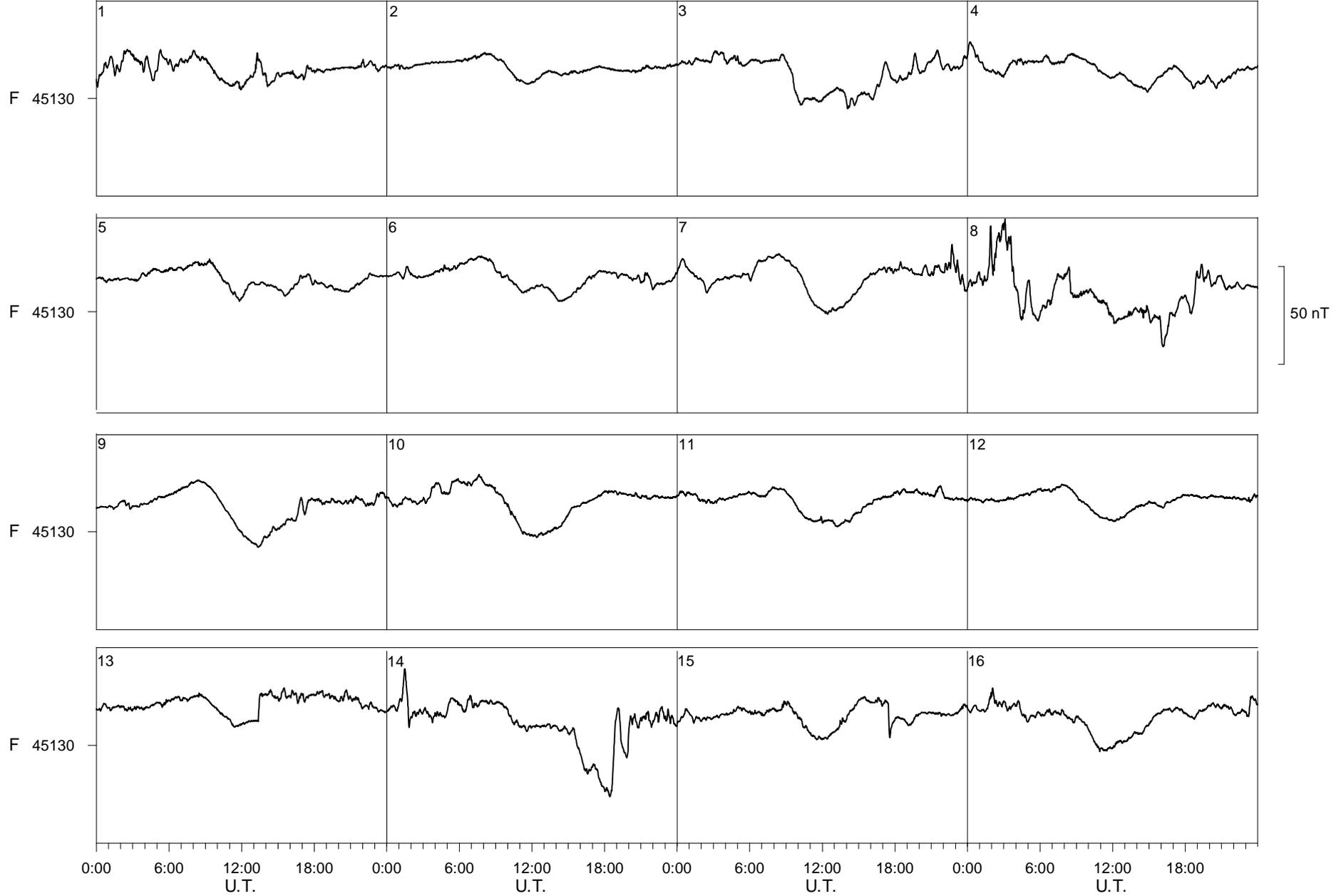
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Ebre Observatory

December

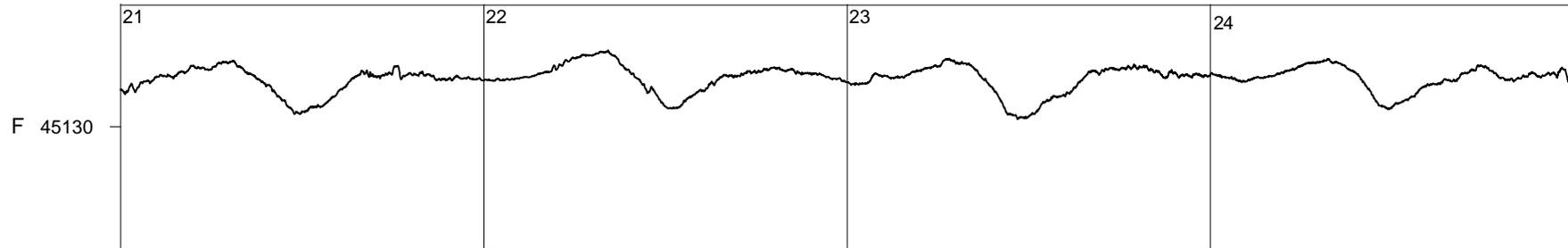
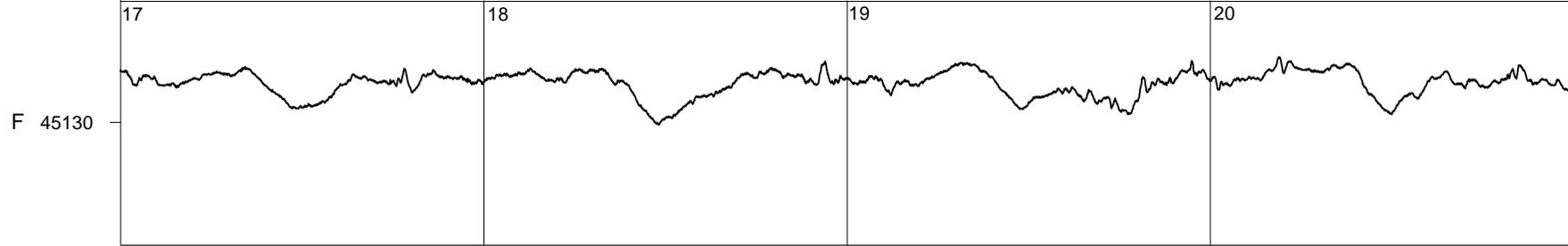
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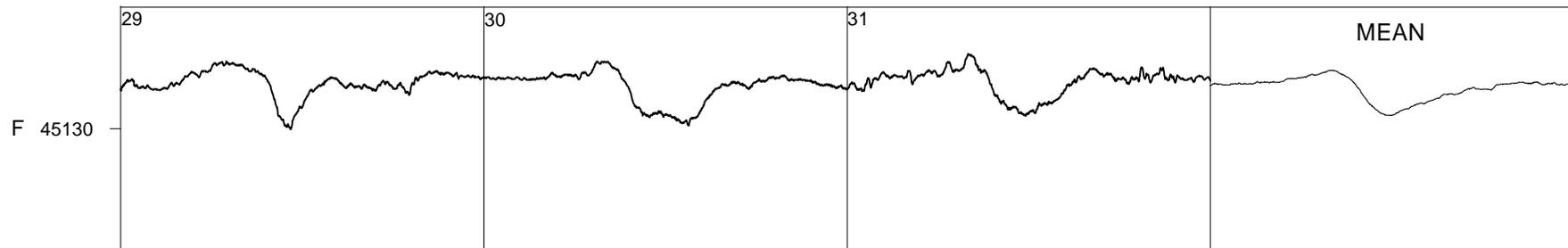
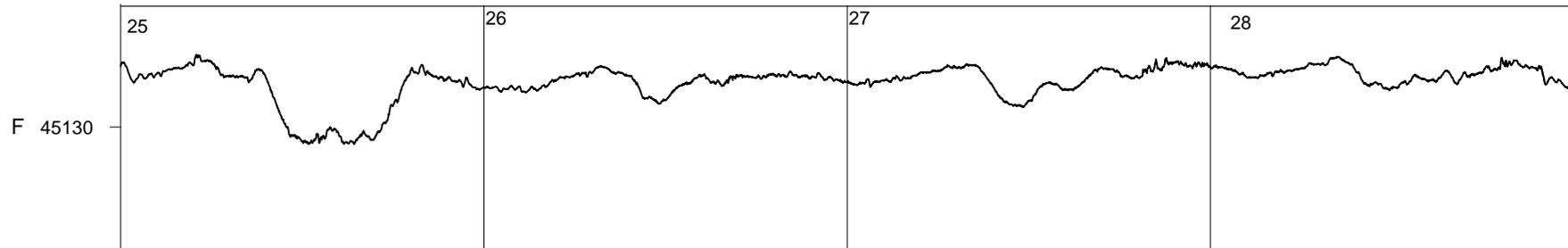
Ebre Observatory

December

2013



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U.T. U.T. U.T. U.T.

EBRE MAGNETIC OBSERVATORY
 JANUARY 2013

DECLINATION EAST

D = 0 DEGREES PLUS TABULAR QUANTITIES (UNITS 0.1 MINUTES)

HOUR(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	MEAN	
DAY																										
1 Q	-122	-123	-123	-123	-123	-121	-119	-116	-115	-122	-136	-146	-145	-142	-139	-134	-130	-129	-126	-124	-123	-122	-122	-122	-122	-127
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EBRE MAGNETIC OBSERVATORY
JANUARY 2013

HORIZONTAL INTENSITY

H = 25000 nT PLUS TABULAR QUANTITIES (UNITS nT)

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DAY																									
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4	157	158	162	163	165	166	168	171	166	155	150	149	147	148	154	160	160	158	158	158	158	156	155	156	158
5 Q	156	158	157	159	161	162	165	167	158	146	142	143	147	155	160	158	153	153	155	155	156	157	158	159	156
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28	143	145	145	147	148	148	150	153	156	159	156	157	160	160	156	148	149	149	147	150	148	146	151	145	151
29	143	144	147	147	149	150	151	151	155	157	159	164	168	168	163	155	149	148	151	153	153	153	152	152	153
30 Q	153	152	153	152	153	155	157	160	163	166	169	170	172	174	173	165	157	155	156	154	152	152	152	152	159
31	153	154	154	156	158	160	163	164	169	174	180	186	185	182	176	169	162	160	158	159	161	161	159	154	165
MEAN	149	150	151	152	153	155	157	160	159	155	153	156	160	162	160	155	151	151	151	152	153	152	150	150	154
MEAN Q	152	152	152	153	155	157	159	161	159	154	150	150	156	162	163	161	157	156	156	156	156	157	157	157	156
MEAN D	143	143	145	147	148	152	155	156	159	152	152	155	164	170	160	142	137	136	130	134	141	131	130	133	146

EBRE MAGNETIC OBSERVATORY
 JANUARY 2013

VERTICAL INTENSITY

Z = 37000 nT PLUS TABULAR QUANTITIES (UNITS nT)

HOUR(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	MEAN	
DAY																										
1 Q	464	464	465	466	466	467	466	464	462	460	456	455	459	460	460	462	465	467	467	466	466	465	463	462	463	464
2	462	462	464	464	465	465	466	464	461	460	460	460	461	459	459	464	467	469	469	468	466	466	464	464	464	464
3	463	463	463	464	464	465	465	466	463	458	459	458	453	453	460	464	466	466	465	465	464	463	462	462	462	462
4	462	462	462	463	463	464	464	465	462	457	452	447	446	452	458	462	462	463	464	464	464	464	463	463	463	460
5 Q	463	462	461	463	464	464	466	466	467	466	462	455	453	459	463	462	463	465	465	466	465	465	465	464	463	463
6	463	462	463	463	464	465	465	464	462	462	459	454	454	457	458	458	459	461	461	464	465	464	462	463	461	461
7	462	462	461	462	462	462	463	464	466	465	463	463	466	469	466	462	462	464	465	464	464	464	464	464	464	464
8	464	463	462	463	463	463	464	464	464	464	461	456	455	455	456	454	455	459	463	463	464	464	466	465	461	461
9	465	463	464	463	462	462	463	464	464	466	469	469	470	469	467	460	460	464	464	464	466	465	465	466	465	465
10	467	466	464	464	463	464	465	465	463	461	461	463	470	471	468	460	458	462	462	463	463	462	462	463	464	464
11	464	464	464	464	463	463	463	462	461	452	451	451	455	461	464	463	461	462	461	460	460	459	460	462	460	460
12	464	465	466	466	466	466	466	465	466	462	456	456	463	465	466	464	460	463	463	462	463	463	461	462	463	463
13 D	462	465	464	463	463	465	465	462	459	455	453	445	449	451	451	454	461	465	467	466	468	462	470	466	460	460
14	463	467	470	468	467	466	466	465	462	455	453	455	457	457	458	456	459	464	468	468	467	467	464	464	463	463
15	464	466	466	467	468	468	468	467	465	466	464	463	466	467	466	462	460	465	469	467	467	465	464	462	465	465
16	463	464	465	466	466	466	467	465	463	460	460	456	454	456	461	458	457	463	465	463	467	471	461	462	462	462
17 D	465	465	462	461	458	461	461	459	460	461	459	456	454	451	445	439	448	462	474	479	478	477	479	478	462	462
18 D	475	474	475	476	474	471	472	471	472	477	474	467	466	466	460	457	458	458	463	462	463	464	466	464	468	468
19	467	470	468	468	467	469	470	472	471	470	468	466	466	467	469	470	467	469	467	465	466	467	468	474	468	468
20 D	462	465	465	466	467	470	469	470	474	469	470	464	461	460	471	473	471	469	470	469	470	469	468	467	468	468
21	468	465	465	465	466	468	469	469	464	453	449	453	457	459	460	463	463	466	467	468	468	468	466	466	464	464
22 Q	466	466	465	465	465	466	466	466	464	457	457	459	460	462	465	466	463	463	465	465	465	465	465	465	464	464
23	465	464	464	464	464	466	465	466	464	457	451	452	457	461	463	465	464	465	465	464	464	464	463	463	462	462
24 Q	464	465	465	466	466	466	466	465	468	461	454	455	457	458	458	459	461	463	463	463	463	463	463	463	462	462
25	463	463	463	462	461	463	463	463	465	465	458	457	458	459	459	458	459	464	464	465	463	463	463	464	462	462
26 D	463	467	468	469	468	469	468	467	465	462	462	456	456	457	456	459	471	472	464	477	484	471	471	477	467	467
27	475	478	474	474	474	472	471	472	474	473	468	463	461	465	465	464	465	471	473	470	469	469	469	469	470	470
28	469	470	470	470	470	469	468	469	472	473	469	462	460	460	459	458	463	466	467	468	468	467	469	466	467	467
29	468	468	469	469	469	469	469	468	471	471	470	468	465	466	466	465	464	467	469	469	468	467	467	466	468	468
30 Q	467	467	467	467	467	468	467	465	468	470	468	462	456	459	461	461	462	465	467	465	466	466	465	465	465	465
31	466	467	467	467	467	468	467	465	467	467	465	462	457	460	462	463	461	463	464	465	466	464	464	463	464	464
MEAN	465	466	465	466	466	466	466	466	465	463	461	458	459	460	461	461	462	465	466	466	466	466	465	465	464	464
MEAN Q	465	465	465	465	466	466	466	465	466	463	459	457	457	460	461	462	463	464	465	465	465	465	464	464	463	463
MEAN D	466	467	467	467	466	467	467	466	466	465	464	458	457	457	457	457	462	465	468	471	473	469	471	470	465	465

EBRE MAGNETIC OBSERVATORY
JANUARY 2013

TOTAL INTENSITY
F = 45000 nT PLUS TABULAR QUANTITIES (UNITS nT)

HOUR(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	MEAN	
DAY																										
1 Q	125	125	125	126	127	129	128	125	119	114	108	112	122	126	124	125	126	128	130	129	129	128	127	126	124	
2	125	126	127	128	130	131	131	129	123	118	114	114	120	119	117	119	122	125	129	131	128	127	125	126	124	
3	125	125	127	128	129	131	132	134	129	117	115	119	118	119	124	127	130	131	130	130	129	128	126	125	126	
4	125	126	128	129	130	131	133	136	130	119	113	108	106	112	120	126	127	127	127	128	127	126	125	125	124	
5 Q	125	125	124	127	129	130	133	134	130	122	117	111	112	121	127	126	124	125	126	127	127	127	128	127	125	
6	127	126	127	127	129	132	133	133	130	128	126	122	122	125	128	127	127	127	125	128	132	131	128	126	128	
7	125	125	122	125	125	126	127	128	130	125	122	122	126	130	129	126	124	128	129	128	128	128	127	126	126	
8	127	125	125	125	126	127	129	130	129	128	126	124	125	125	126	122	119	120	126	125	124	122	126	126	125	
9	126	124	126	126	125	126	128	130	126	122	122	125	127	128	126	122	120	123	125	124	126	124	122	124	125	
10	127	127	124	123	123	124	127	130	129	127	127	130	135	134	134	125	121	124	124	126	127	126	125	125	127	
11	127	128	129	130	130	131	132	134	131	120	122	126	130	134	134	131	126	129	128	127	126	122	120	118	128	
12	119	120	123	126	128	129	131	131	131	121	118	125	133	136	135	130	124	125	126	124	126	126	124	124	127	
13 D	124	130	129	127	125	129	131	128	128	124	124	119	122	120	109	106	115	122	124	122	126	112	120	123	122	
14	115	116	125	127	126	124	125	127	128	119	116	122	126	121	119	113	112	117	122	124	123	125	122	121	121	
15	121	123	123	123	126	127	129	130	128	127	124	125	128	132	129	124	118	120	127	126	127	127	125	123	125	
16	122	123	124	127	129	130	133	134	136	131	128	129	131	130	131	123	118	123	127	122	126	138	123	122	128	
17 D	129	132	131	133	128	131	133	131	135	135	134	138	146	151	133	98	83	88	99	110	111	109	115	118	123	
18 D	116	113	114	118	120	116	120	120	121	126	122	120	130	149	140	131	130	126	132	128	124	120	120	114	124	
19	114	124	120	121	120	122	124	126	122	113	110	111	114	118	123	128	127	131	131	127	122	119	119	136	122	
20 D	119	121	122	120	122	131	127	128	130	115	110	103	108	106	121	127	127	124	126	125	126	127	125	123	121	
21	126	124	121	119	120	123	125	127	124	113	103	103	110	116	118	120	120	122	125	126	126	126	124	124	120	
22 Q	124	124	124	124	125	127	129	130	130	121	116	116	121	127	132	133	129	127	127	127	127	127	126	127	126	
23	126	125	124	124	125	129	128	130	129	121	113	112	118	122	125	128	128	129	129	129	128	128	125	122	125	
24 Q	122	122	122	124	127	130	131	133	136	127	119	117	120	125	124	124	126	126	126	126	126	128	129	129	128	126
25	128	129	130	127	126	128	131	133	134	137	131	127	129	130	128	125	122	130	131	135	135	134	133	126	130	
26 D	112	112	116	119	121	125	129	132	132	123	128	121	120	117	107	98	112	119	92	112	139	112	104	115	117	
27	114	121	116	117	121	121	120	123	126	126	125	126	125	127	123	118	114	119	127	125	123	122	122	123	122	
28	124	125	125	126	127	126	127	128	133	135	131	125	125	125	122	117	121	124	124	126	125	123	127	121	126	
29	122	123	125	125	126	127	127	127	131	132	133	134	134	134	131	127	122	124	127	128	128	127	126	126	128	
30 Q	127	127	126	127	127	128	129	129	134	137	136	132	129	132	133	129	125	126	128	126	125	126	125	125	129	
31	126	127	128	128	130	132	133	132	136	138	141	142	137	137	136	133	128	128	127	129	131	129	128	125	132	
MEAN	123	124	124	125	126	128	129	130	129	125	122	121	124	127	126	123	121	124	125	126	127	125	124	124	125	
MEAN Q	125	125	125	126	127	129	130	130	129	124	119	117	121	126	128	127	126	127	127	127	127	127	127	127	126	
MEAN D	120	122	122	123	123	127	128	128	129	125	123	120	125	128	122	112	113	116	115	119	125	116	117	119	122	

EBRE MAGNETIC OBSERVATORY
FEBRUARY 2013

DECLINATION EAST

D = 0 DEGREES PLUS TABULAR QUANTITIES (UNITS 0.1 MINUTES)

HOUR(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	MEAN
DAY																									
1	-109	-105	-112	-115	-115	-113	-112	-117	-123	-120	-121	-133	-136	-134	-128	-124	-132	-135	-131	-130	-126	-123	-118	-104	-121
2 D	-104	-101	-102	-106	-97	-97	-102	-111	-109	-108	-108	-118	-127	-131	-128	-122	-118	-125	-120	-90	-112	-113	-110	-112	-111
3	-118	-111	-111	-111	-111	-114	-112	-116	-120	-124	-128	-138	-141	-143	-140	-128	-126	-127	-124	-123	-122	-116	-114	-114	-122
4	-112	-113	-116	-116	-117	-117	-115	-118	-115	-109	-114	-125	-131	-136	-131	-130	-127	-125	-111	-120	-118	-117	-116	-116	-119
5 Q	-117	-116	-117	-117	-120	-117	-119	-121	-119	-116	-115	-119	-122	-124	-124	-124	-125	-124	-120	-119	-118	-117	-117	-117	-119
6 Q	-115	-115	-117	-118	-118	-118	-117	-120	-118	-111	-111	-119	-128	-132	-128	-124	-122	-124	-121	-117	-119	-118	-117	-113	-119
7	-113	-113	-118	-121	-123	-124	-123	-126	-128	-120	-115	-125	-129	-129	-129	-126	-127	-127	-123	-119	-113	-113	-111	-114	-121
8	-115	-116	-107	-106	-109	-114	-114	-126	-118	-112	-117	-124	-134	-129	-124	-115	-112	-119	-118	-116	-112	-107	-106	-109	-116
9 Q	-112	-114	-117	-115	-114	-114	-110	-114	-113	-113	-117	-126	-133	-131	-125	-118	-121	-125	-121	-116	-115	-117	-114	-113	-118
10	-115	-115	-110	-112	-113	-115	-114	-116	-115	-112	-111	-118	-128	-135	-134	-128	-120	-121	-120	-116	-99	-106	-110	-111	-116
11	-111	-112	-108	-107	-107	-107	-111	-114	-109	-104	-103	-112	-123	-129	-132	-126	-124	-128	-127	-122	-117	-112	-106	-109	-115
12	-111	-113	-114	-113	-112	-111	-110	-112	-111	-110	-109	-116	-126	-134	-132	-126	-120	-120	-115	-112	-112	-112	-106	-109	-115
13 D	-104	-107	-99	-99	-102	-105	-113	-118	-113	-107	-106	-110	-120	-128	-124	-121	-123	-124	-122	-96	-105	-103	-104	-67	-109
14 D	-79	-86	-107	-107	-117	-104	-117	-116	-106	-104	-110	-122	-139	-150	-137	-130	-124	-120	-122	-116	-110	-101	-110	-110	-114
15	-108	-110	-110	-111	-113	-114	-114	-117	-109	-101	-101	-107	-122	-127	-125	-123	-124	-122	-118	-106	-114	-108	-104	-112	-113
16	-113	-114	-115	-115	-114	-113	-111	-113	-108	-104	-107	-115	-124	-128	-131	-130	-135	-116	-105	-113	-110	-110	-111	-111	-115
17 D	-108	-111	-113	-113	-112	-113	-116	-110	-109	-106	-108	-115	-125	-133	-140	-140	-127	-136	-128	-98	-92	-98	-104	-106	-115
18	-108	-108	-108	-109	-108	-108	-109	-113	-110	-106	-104	-109	-113	-118	-114	-113	-114	-117	-116	-113	-116	-96	-97	-108	-110
19	-112	-113	-113	-114	-116	-112	-111	-111	-105	-106	-109	-121	-139	-135	-123	-129	-128	-127	-120	-115	-111	-102	-115	-114	-117
20	-111	-109	-110	-110	-112	-112	-111	-107	-99	-100	-111	-118	-129	-142	-131	-124	-126	-127	-122	-118	-111	-115	-114	-112	-116
21	-102	-101	-100	-105	-103	-102	-109	-107	-111	-110	-106	-105	-113	-123	-126	-124	-125	-131	-124	-113	-112	-102	-106	-101	-111
22 D	-95	-97	-102	-100	-104	-100	-106	-109	-101	-96	-97	-111	-127	-135	-130	-130	-139	-132	-121	-113	-103	-77	-98	-95	-109
23	-87	-85	-101	-106	-107	-106	-108	-112	-111	-105	-105	-116	-126	-132	-120	-120	-121	-124	-122	-115	-92	-93	-107	-102	-109
24 Q	-101	-102	-101	-103	-106	-105	-106	-104	-100	-96	-103	-118	-134	-137	-128	-121	-121	-123	-119	-115	-113	-114	-110	-111	-112
25 Q	-112	-110	-110	-110	-111	-114	-117	-114	-102	-94	-99	-115	-133	-137	-128	-120	-120	-128	-127	-122	-119	-118	-114	-111	-116
26	-112	-110	-109	-110	-113	-115	-114	-106	-95	-93	-103	-128	-142	-146	-141	-138	-134	-136	-126	-113	-116	-109	-109	-108	-118
27	-103	-107	-108	-111	-109	-113	-114	-110	-105	-101	-103	-121	-134	-140	-132	-126	-123	-124	-121	-117	-118	-114	-113	-109	-116
28	-106	-107	-104	-106	-110	-111	-110	-102	-99	-101	-106	-124	-143	-145	-133	-125	-125	-128	-125	-121	-117	-104	-105	-59	-113
MEAN	-108	-108	-109	-110	-111	-111	-112	-114	-110	-107	-109	-119	-129	-134	-129	-125	-124	-126	-121	-114	-112	-108	-110	-106	-115
MEAN Q	-111	-111	-112	-113	-114	-114	-114	-115	-110	-106	-109	-119	-130	-132	-126	-121	-122	-125	-122	-118	-117	-117	-114	-113	-117
MEAN D	-98	-100	-105	-105	-106	-104	-111	-113	-108	-104	-106	-115	-128	-135	-132	-129	-126	-127	-123	-103	-104	-98	-105	-98	-112

EBRE MAGNETIC OBSERVATORY
FEBRUARY 2013

HORIZONTAL INTENSITY
H = 25000 nT PLUS TABULAR QUANTITIES (UNITS nT)

HOUR(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	MEAN	
DAY																										
1	148	149	151	154	157	160	162	166	171	173	171	173	172	168	162	156	164	169	171	171	167	171	160	162	162	164
2 D	155	150	148	147	149	159	163	162	154	147	148	157	159	160	151	139	149	147	141	149	142	149	150	151	151	
3	158	153	151	149	151	153	157	162	166	175	176	174	173	177	172	168	165	160	161	159	157	157	158	157	162	
4	155	154	155	157	158	160	160	161	164	165	164	160	160	161	157	153	153	149	151	157	164	165	164	163	159	
5 Q	163	160	159	162	160	161	160	170	173	173	172	169	169	168	168	163	159	158	161	161	161	162	161	159	164	
6 Q	155	155	157	159	160	161	163	167	172	174	175	176	178	178	173	169	161	157	156	157	160	162	160	157	164	
7	160	162	160	161	164	168	178	179	170	174	168	171	165	161	152	153	156	155	154	153	146	152	154	155	161	
8	156	156	158	161	159	160	162	162	162	163	167	169	161	147	137	142	142	148	152	149	146	147	148	149	154	
9 Q	148	152	153	151	154	158	163	165	165	166	169	171	173	174	169	158	154	152	154	154	155	158	158	158	160	
10	156	160	160	158	160	162	163	161	162	167	177	186	188	182	177	168	158	151	148	148	156	154	153	152	163	
11	153	149	150	151	152	156	156	162	167	169	169	172	176	178	178	172	169	168	169	166	160	155	151	150	162	
12	151	155	152	153	156	157	159	161	161	161	162	172	181	184	181	174	163	149	142	144	151	155	154	163	160	
13 D	153	155	153	157	156	160	161	163	164	166	172	179	179	175	172	165	161	159	157	136	131	148	142	175	160	
14 D	147	142	137	146	157	154	148	156	158	159	141	142	141	144	145	140	143	146	148	144	146	154	154	151	148	
15	150	150	151	152	153	154	158	159	160	163	173	175	175	175	169	162	155	151	151	158	153	153	157	157	159	
16	155	154	155	156	157	160	163	165	165	166	167	176	189	190	185	181	154	107	114	140	143	149	152	154	158	
17 D	155	154	154	154	152	152	156	159	163	164	170	178	167	160	149	138	129	112	101	100	100	125	140	143	145	
18	144	144	144	146	148	151	154	159	162	166	178	186	192	184	169	161	155	152	152	154	150	139	132	142	157	
19	149	151	153	154	155	159	163	164	160	159	160	169	167	165	161	148	139	139	141	142	150	162	159	158	155	
20	157	157	159	158	158	159	161	163	166	160	149	147	148	148	145	144	146	147	149	152	156	159	159	158	154	
21	159	160	155	148	151	153	159	167	172	179	186	191	191	185	173	161	150	145	149	153	149	135	135	148	161	
22 D	150	145	150	158	152	153	157	164	162	160	163	170	160	156	160	147	132	126	134	145	146	168	143	139	152	
23	139	140	148	144	144	147	152	156	160	165	172	167	167	173	172	164	150	139	134	135	144	157	145	144	152	
24 Q	148	149	153	152	153	154	156	160	158	157	162	165	166	165	162	156	149	144	145	150	151	154	162	159	155	
25 Q	159	158	159	159	162	165	169	173	171	174	180	181	179	179	178	172	168	168	174	174	171	169	167	166	170	
26	165	165	164	162	161	165	171	169	164	167	172	176	175	170	164	159	152	145	148	145	146	152	153	153	161	
27	159	158	158	160	163	167	168	173	175	176	185	191	185	182	175	168	163	162	165	166	165	165	163	162	169	
28	159	160	165	166	166	169	171	173	167	170	175	176	179	178	168	165	162	164	167	161	156	152	153	159	166	
MEAN	154	154	154	155	156	158	161	164	165	166	169	172	172	170	165	159	154	149	149	151	151	154	153	155	159	
MEAN Q	154	155	156	157	158	160	162	167	168	169	172	172	173	173	170	164	158	156	158	159	160	161	162	160	163	
MEAN D	152	149	148	152	153	156	157	161	160	159	159	165	161	159	155	146	143	138	136	135	133	149	146	152	151	

EBRE MAGNETIC OBSERVATORY
FEBRUARY 2013

VERTICAL INTENSITY
Z = 37000 nT PLUS TABULAR QUANTITIES (UNITS nT)

HOUR(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	MEAN	
DAY																										
1	464	465	466	466	467	468	467	466	466	465	459	455	454	456	455	457	463	464	465	464	463	465	461	466	466	463
2 D	463	465	465	465	468	470	467	464	466	464	462	462	461	464	461	463	468	466	468	472	467	469	468	467	467	466
3	467	464	464	465	467	467	468	467	466	464	462	456	455	459	458	462	464	464	466	465	466	466	466	466	465	464
4	465	464	464	464	465	466	465	463	466	466	460	453	452	456	458	458	461	463	468	467	468	466	464	464	464	463
5 Q	463	463	462	463	462	464	464	466	466	466	461	455	456	460	461	461	461	463	465	464	465	465	464	464	464	463
6 Q	464	465	465	464	464	465	464	465	469	470	468	460	457	456	457	458	459	461	462	463	464	465	464	464	464	463
7	466	465	463	462	463	463	465	461	462	465	462	454	447	451	455	459	460	462	463	464	464	467	467	466	466	462
8	467	466	466	467	463	463	463	464	468	468	465	459	458	459	464	468	468	468	468	466	466	468	467	468	465	465
9 Q	467	468	467	466	467	467	466	464	463	464	463	460	456	456	459	460	461	462	464	464	465	465	465	465	465	463
10	465	467	465	465	466	466	464	463	465	466	466	462	453	453	456	458	458	460	464	465	468	465	465	465	465	463
11	466	465	467	468	467	468	465	464	463	464	460	452	452	458	459	459	460	461	463	461	462	462	463	464	464	462
12	465	467	466	466	467	467	466	465	466	465	463	461	455	455	458	459	460	460	463	466	468	466	466	466	466	464
13 D	463	466	466	468	466	467	465	465	467	466	464	461	456	454	457	457	459	461	462	461	465	470	466	479	464	464
14 D	459	463	464	468	469	467	465	468	470	465	454	450	450	456	462	463	467	469	469	468	469	472	465	465	464	464
15	465	466	467	467	467	468	468	468	470	471	471	464	461	458	458	459	459	462	467	469	465	467	467	465	465	465
16	464	465	465	466	467	467	467	469	470	467	463	461	460	456	458	463	457	456	472	477	473	473	471	469	466	466
17 D	467	465	466	466	465	466	468	469	469	467	460	453	444	448	452	456	461	463	470	477	479	484	480	475	465	465
18	472	471	470	469	470	470	469	471	475	476	473	466	459	453	458	461	462	463	467	468	466	467	467	467	467	467
19	470	469	468	468	468	468	469	468	468	467	463	457	452	455	461	461	462	465	469	469	473	473	468	467	466	466
20	467	467	467	465	466	466	467	469	469	462	459	454	454	456	460	463	464	467	469	470	472	469	468	467	465	465
21	471	467	466	464	466	466	467	467	466	465	462	456	453	453	456	458	459	461	467	469	467	468	471	475	464	464
22 D	472	469	470	470	466	466	466	466	466	469	466	458	451	453	459	457	457	463	472	473	472	478	464	469	466	466
23	472	472	472	468	469	469	469	469	470	469	464	453	454	458	462	463	460	461	465	469	474	474	466	469	466	466
24 Q	471	470	471	469	468	468	468	470	471	469	465	459	458	460	461	462	463	464	468	470	469	469	470	467	467	467
25 Q	467	468	467	467	467	466	466	468	468	465	457	451	454	461	467	464	460	462	465	463	462	463	463	464	464	464
26	464	465	464	464	464	464	465	466	466	465	459	449	449	456	460	462	462	462	468	466	468	470	468	468	463	463
27	470	468	467	467	468	467	466	467	464	463	460	454	456	462	464	465	465	465	466	465	464	465	464	464	464	464
28	466	467	468	466	466	465	465	466	463	462	455	447	452	455	457	461	462	464	464	462	463	465	466	473	463	463
MEAN	467	466	466	466	466	467	466	466	467	466	462	456	454	456	459	461	461	463	466	467	467	468	467	468	468	464
MEAN Q	467	467	466	466	466	466	466	466	467	467	463	457	456	459	461	461	461	462	465	465	465	465	465	465	465	464
MEAN D	465	466	466	467	467	467	466	466	468	466	461	457	452	455	458	459	462	464	468	470	471	475	469	471	465	465

EBRE MAGNETIC OBSERVATORY
FEBRUARY 2013

TOTAL INTENSITY
F = 45000 nT PLUS TABULAR QUANTITIES (UNITS nT)

HOUR(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	MEAN
DAY																									
1	122	123	125	127	129	131	132	133	136	136	131	128	127	126	122	120	130	133	135	135	131	135	126	131	129
2 D	125	124	122	121	126	133	133	130	126	121	120	125	125	129	121	116	125	123	121	129	121	126	126	126	125
3	130	125	124	124	125	127	130	132	134	137	136	130	129	133	130	131	131	129	131	129	128	129	129	128	130
4	126	125	126	127	128	130	129	128	132	133	127	119	119	123	122	120	122	122	126	130	134	133	131	130	127
5 Q	130	127	126	129	127	129	128	136	137	137	133	126	127	129	130	128	125	127	130	130	130	131	129	128	130
6 Q	126	126	127	128	128	129	130	133	140	142	140	134	133	132	130	129	125	124	125	126	129	130	129	127	130
7	130	130	127	128	130	132	139	137	132	137	132	127	117	118	117	121	123	124	124	124	121	127	128	128	127
8	129	128	129	131	128	128	129	129	133	134	133	130	124	117	116	122	122	125	128	124	122	124	124	125	126
9 Q	125	128	127	125	127	129	132	131	130	132	132	131	129	130	129	124	122	122	125	125	125	127	128	129	128
10	127	131	129	129	130	131	130	128	131	134	140	141	135	131	131	128	123	120	121	122	130	125	125	125	129
11	126	123	125	127	126	129	127	130	131	133	130	125	128	133	134	131	131	131	132	129	127	124	123	123	128
12	125	128	125	127	129	129	129	130	130	129	129	133	133	134	135	133	126	119	118	121	127	128	127	131	128
13 D	124	127	126	130	127	131	130	131	134	134	135	136	132	128	130	126	124	125	125	112	113	127	121	149	128
14 D	117	118	116	124	131	127	123	130	132	129	110	107	106	113	118	117	121	125	126	123	125	131	126	124	122
15	124	124	126	126	127	128	131	131	133	136	142	136	134	131	129	125	122	122	125	131	126	127	129	127	129
16	126	126	126	128	129	131	133	135	137	135	132	135	142	139	138	140	120	93	109	128	127	130	130	129	129
17 D	128	126	127	127	125	126	129	132	135	133	131	129	116	115	112	110	108	100	101	106	107	125	131	128	121
18	127	125	124	125	127	129	130	134	139	142	146	145	142	133	129	127	124	124	127	128	125	119	115	125	130
19	127	128	128	129	129	131	134	134	131	131	128	128	122	123	127	119	116	117	122	123	130	137	131	130	127
20	129	129	131	128	129	130	131	135	136	126	118	113	113	115	117	118	120	123	126	129	132	132	131	130	126
21	134	131	127	122	125	126	131	135	137	140	141	139	136	133	129	124	119	117	125	128	125	118	120	131	129
22 D	130	125	128	133	125	126	128	132	131	132	132	129	118	117	124	115	107	109	120	128	127	145	119	121	125
23	123	124	128	123	124	126	128	130	133	135	136	123	124	131	134	130	119	115	115	119	128	135	122	124	126
24 Q	128	127	130	128	128	129	130	134	133	131	130	127	127	128	127	124	121	119	123	127	128	129	135	131	128
25 Q	130	130	130	130	132	133	135	139	138	137	134	129	131	136	141	135	129	131	137	135	133	133	131	132	133
26	131	132	131	129	129	132	135	135	133	133	131	125	125	127	128	126	122	119	125	122	125	129	128	128	128
27	133	130	130	131	133	135	134	138	137	136	140	137	136	139	137	133	131	131	133	133	131	132	130	130	134
28	130	131	134	134	133	135	135	137	131	133	129	124	129	131	128	129	128	131	133	128	125	125	126	135	131
MEAN	127	127	127	127	128	130	131	133	134	134	132	129	127	128	127	125	123	121	125	126	126	129	127	129	128
MEAN Q	128	128	128	128	128	130	131	134	136	136	134	129	129	131	131	128	124	125	128	129	129	130	131	129	130
MEAN D	125	124	124	127	127	129	128	131	132	130	125	125	120	121	121	117	117	117	119	119	119	131	125	130	124

EBRE MAGNETIC OBSERVATORY
MARCH 2013

DECLINATION EAST

D = 0 DEGREES PLUS TABULAR QUANTITIES (UNITS 0.1 MINUTES)

HOUR(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	MEAN
DAY																										
1	D	-62	-79	-103	-89	-94	-94	-100	-95	-98	-122	-131	-122	-122	-143	-143	-124	-126	-116	-80	-80	-100	-69	-64	-82	-102
2		-91	-88	-92	-89	-103	-102	-104	-107	-104	-100	-103	-120	-143	-139	-140	-122	-117	-126	-111	-79	-95	-105	-98	-94	-107
3		-102	-99	-101	-96	-99	-111	-107	-104	-97	-89	-93	-109	-123	-136	-134	-128	-125	-116	-118	-113	-108	-107	-103	-102	-109
4		-99	-93	-96	-101	-102	-106	-111	-108	-98	-93	-96	-112	-126	-131	-133	-124	-122	-120	-117	-115	-114	-113	-111	-108	-110
5		-105	-101	-102	-104	-106	-108	-109	-104	-92	-84	-93	-111	-137	-145	-140	-128	-120	-122	-121	-111	-115	-117	-113	-105	-112
6		-106	-103	-99	-95	-100	-102	-105	-101	-95	-93	-95	-115	-134	-134	-126	-116	-113	-120	-125	-121	-120	-118	-117	-115	-111
7	Q	-114	-114	-113	-113	-111	-110	-110	-104	-96	-91	-96	-113	-128	-137	-133	-129	-123	-123	-122	-117	-116	-115	-114	-113	-115
8	Q	-113	-112	-111	-111	-110	-109	-107	-100	-95	-94	-102	-120	-140	-145	-136	-125	-120	-123	-123	-116	-113	-114	-115	-113	-115
9		-105	-109	-101	-108	-110	-108	-109	-100	-93	-93	-101	-122	-139	-155	-153	-140	-126	-122	-122	-120	-119	-114	-113	-115	-117
10		-114	-113	-112	-111	-111	-110	-110	-101	-90	-82	-90	-112	-135	-147	-144	-132	-121	-117	-123	-120	-119	-114	-106	-103	-114
11		-93	-103	-107	-109	-108	-108	-103	-99	-94	-86	-95	-112	-131	-140	-137	-125	-117	-121	-121	-119	-118	-118	-118	-117	-112
12		-115	-112	-111	-110	-110	-111	-108	-97	-83	-75	-85	-106	-130	-146	-150	-145	-137	-127	-118	-117	-117	-116	-112	-112	-115
13	Q	-110	-110	-111	-109	-108	-110	-110	-101	-90	-88	-97	-117	-137	-152	-153	-146	-132	-124	-120	-118	-114	-113	-115	-112	-117
14		-108	-108	-108	-108	-110	-109	-112	-108	-96	-87	-93	-118	-140	-156	-161	-151	-133	-122	-120	-119	-114	-115	-116	-113	-118
15		-112	-112	-113	-115	-115	-114	-114	-104	-91	-81	-86	-113	-132	-143	-143	-138	-127	-122	-122	-118	-114	-114	-114	-111	-115
16		-103	-101	-94	-94	-117	-118	-116	-107	-97	-86	-87	-108	-127	-136	-135	-124	-111	-106	-107	-109	-109	-109	-106	-108	-109
17	D	-106	-108	-109	-108	-109	-110	-143	-151	-96	-70	-70	-97	-135	-142	-148	-158	-116	-108	-84	-60	-61	-54	-52	-67	-102
18		-84	-94	-93	-91	-89	-87	-83	-76	-69	-72	-90	-110	-129	-139	-130	-121	-110	-108	-109	-105	-104	-103	-102	-99	-100
19		-97	-95	-96	-99	-99	-100	-103	-99	-89	-82	-94	-112	-123	-126	-121	-110	-105	-108	-110	-108	-108	-102	-97	-92	-103
20		-96	-97	-99	-98	-99	-100	-110	-97	-80	-77	-89	-111	-134	-140	-144	-134	-121	-116	-111	-107	-97	-81	-78	-69	-104
21		-46	-87	-101	-100	-93	-94	-103	-100	-89	-89	-100	-119	-125	-127	-124	-114	-107	-109	-111	-109	-107	-105	-104	-103	-103
22		-102	-102	-102	-102	-103	-105	-105	-93	-79	-76	-88	-112	-133	-143	-141	-132	-119	-113	-109	-98	-103	-105	-106	-92	-107
23		-102	-103	-102	-101	-103	-103	-100	-89	-78	-80	-86	-105	-135	-138	-140	-140	-121	-114	-110	-99	-100	-105	-102	-101	-107
24		-104	-97	-99	-99	-101	-104	-104	-95	-81	-80	-96	-113	-125	-136	-136	-126	-113	-108	-106	-104	-103	-107	-107	-106	-106
25	Q	-105	-105	-104	-103	-102	-103	-100	-88	-74	-67	-84	-110	-131	-144	-145	-132	-121	-118	-121	-116	-109	-110	-109	-108	-109
26	Q	-108	-103	-105	-106	-106	-108	-105	-95	-84	-81	-90	-112	-134	-145	-140	-125	-113	-110	-115	-114	-111	-112	-112	-111	-110
27	D	-109	-107	-108	-106	-107	-100	-102	-88	-73	-73	-95	-123	-140	-159	-163	-160	-137	-86	-89	-106	-98	-97	-66	-85	-107
28		-90	-99	-100	-98	-99	-98	-96	-88	-81	-87	-110	-128	-142	-146	-138	-127	-118	-107	-106	-106	-100	-98	-101	-103	-107
29	D	-95	-95	-92	-98	-90	-107	-102	-93	-85	-89	-112	-136	-138	-155	-154	-156	-133	-115	-94	-101	-99	-95	-89	-86	-109
30	D	-88	-95	-109	-94	-113	-96	-84	-75	-62	-66	-85	-109	-124	-139	-134	-123	-112	-102	-95	-83	-91	-100	-101	-102	-99
31		-102	-100	-101	-100	-98	-99	-98	-86	-72	-75	-91	-108	-122	-130	-132	-127	-119	-112	-110	-99	-97	-88	-96	-99	-103
MEAN		-100	-101	-103	-102	-104	-105	-106	-99	-87	-84	-94	-114	-132	-142	-140	-132	-120	-115	-111	-107	-106	-104	-102	-102	-109
MEAN Q		-110	-109	-109	-108	-108	-108	-107	-98	-88	-84	-94	-114	-134	-144	-141	-131	-122	-119	-120	-116	-113	-113	-113	-112	-113
MEAN D		-92	-97	-104	-99	-103	-101	-106	-100	-83	-84	-99	-117	-132	-147	-148	-144	-125	-105	-88	-86	-90	-83	-74	-84	-104

EBRE MAGNETIC OBSERVATORY
MARCH 2013

HORIZONTAL INTENSITY
H = 25000 nT PLUS TABULAR QUANTITIES (UNITS nT)

HOUR(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	MEAN
DAY																									
1 D	146	142	151	154	142	148	154	160	155	109	121	152	160	151	134	97	110	111	129	142	125	152	166	133	139
2	154	145	137	138	135	141	143	145	141	153	156	156	150	147	145	141	134	129	132	150	145	141	142	158	144
3	145	149	148	153	148	148	153	155	147	149	154	163	165	160	157	154	144	142	145	144	136	135	144	146	149
4	150	145	147	146	148	151	152	155	154	155	158	154	159	167	167	163	158	153	154	154	153	152	153	154	154
5	154	169	156	151	153	154	157	156	156	159	168	166	162	163	167	166	163	156	156	160	161	162	159	157	160
6	153	153	153	165	162	161	159	160	161	166	181	192	193	195	194	187	174	166	169	167	165	163	165	163	169
7 Q	164	165	163	166	166	167	170	167	168	172	177	177	177	178	181	175	166	161	160	160	160	160	161	161	167
8 Q	162	161	161	162	163	166	169	169	166	166	168	170	173	177	179	176	170	164	164	165	161	162	164	164	167
9	164	162	170	159	161	164	165	166	165	166	170	173	172	171	171	169	170	166	165	171	171	166	166	167	167
10	169	170	168	167	168	169	171	169	167	170	173	170	167	172	176	172	164	164	169	170	167	164	161	161	168
11	169	161	163	169	167	170	174	166	163	164	161	160	166	173	179	172	165	165	168	170	169	171	171	170	168
12	168	166	167	170	170	170	174	173	170	170	170	168	161	164	165	161	159	157	162	173	171	169	167	166	167
13 Q	167	166	169	166	167	169	171	171	170	172	177	176	178	182	182	177	169	168	169	169	170	172	170	169	172
14	169	170	171	172	169	168	171	173	174	179	180	183	181	188	190	182	166	162	160	164	165	168	166	165	172
15	167	167	168	168	168	185	189	193	194	193	185	179	180	184	184	178	169	164	164	163	161	162	162	161	175
16	162	156	167	168	161	170	166	168	161	158	156	158	163	165	162	161	154	150	154	158	156	156	154	157	160
17 D	160	163	157	159	160	161	176	183	170	112	99	99	77	83	74	75	46	40	70	36	36	51	110	119	109
18	100	104	106	112	116	116	120	126	125	129	130	125	125	131	131	132	130	132	134	133	133	137	133	133	125
19	134	135	132	135	136	137	140	142	144	146	150	155	158	161	160	152	145	146	148	150	142	138	145	154	145
20	147	141	139	141	143	147	147	155	156	150	144	144	144	139	136	140	138	140	142	151	154	142	134	143	144
21	149	130	139	158	155	138	141	150	151	143	137	137	139	144	145	144	143	143	146	148	145	146	147	147	144
22	148	148	149	151	153	154	149	150	149	146	150	155	153	156	159	158	155	151	143	137	144	151	152	157	151
23	149	152	151	150	151	157	161	163	159	156	158	163	161	142	145	146	143	145	151	146	140	153	165	182	154
24	172	162	159	158	160	162	163	166	168	168	162	158	154	152	146	143	146	152	153	150	153	156	157	158	157
25 Q	159	157	156	157	157	159	161	168	169	167	160	160	160	159	160	161	164	166	170	165	162	163	160	160	162
26 Q	161	163	161	158	161	162	163	164	167	169	170	169	168	169	170	170	168	164	163	164	165	166	166	168	165
27 D	167	170	170	169	170	179	180	173	178	169	157	152	157	161	148	139	117	114	144	147	144	146	187	157	158
28	141	155	144	139	142	146	149	153	154	150	148	156	172	170	168	160	151	132	140	143	146	153	160	165	151
29 D	166	147	150	154	160	145	156	151	128	136	133	130	146	148	133	121	95	104	117	136	133	138	138	141	138
30 D	147	155	150	161	154	151	149	147	143	136	137	142	149	152	147	146	142	140	135	154	145	145	149	143	147
31	145	146	148	151	153	153	156	158	159	156	156	162	167	165	160	152	143	142	142	147	148	159	153	148	153
MEAN	155	154	154	156	156	157	160	161	159	156	156	158	159	160	159	154	147	145	149	151	149	152	156	156	155
MEAN Q	162	162	162	162	163	164	167	168	168	169	170	170	171	173	175	172	167	165	165	165	164	164	164	164	167
MEAN D	157	155	156	159	157	157	163	163	155	133	129	135	138	139	127	116	102	102	119	123	117	126	150	139	138

EBRE MAGNETIC OBSERVATORY
MARCH 2013

VERTICAL INTENSITY

Z = 37000 nT PLUS TABULAR QUANTITIES (UNITS nT)

HOUR(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	MEAN
DAY																										
1	D	465	466	469	467	464	467	468	471	468	455	466	471	466	463	462	463	474	477	485	482	473	483	476	463	469
2		474	467	467	471	469	472	471	471	469	472	466	459	458	459	461	466	467	469	475	480	471	470	472	476	469
3		465	470	469	471	468	468	471	473	473	472	467	461	458	459	461	463	466	470	472	472	471	473	475	474	468
4		473	470	471	470	471	470	470	474	476	475	468	457	459	459	460	463	464	465	469	469	469	469	469	469	468
5		469	471	465	465	467	467	468	472	476	473	464	453	451	457	461	465	465	464	467	469	468	468	467	468	466
6		466	468	468	470	466	465	465	469	472	473	466	450	450	458	462	462	460	460	463	463	464	465	466	465	464
7	Q	465	466	464	465	464	464	465	469	474	474	463	452	451	456	461	459	459	461	464	466	466	467	466	467	464
8	Q	467	466	467	465	465	465	465	464	463	464	460	453	452	453	458	462	461	461	464	465	464	466	467	466	463
9		468	467	467	463	465	465	465	469	471	467	458	449	448	450	454	460	464	462	464	466	464	464	465	465	462
10		466	465	465	464	464	464	464	466	468	467	456	443	444	450	455	460	461	461	463	464	462	464	465	468	461
11		469	465	466	467	465	465	466	466	468	465	454	452	452	456	458	459	462	462	464	463	463	464	463	463	462
12		463	464	465	465	464	464	466	467	467	463	454	447	443	449	452	456	459	460	465	466	463	463	463	463	460
13	Q	464	464	465	464	464	464	465	469	469	467	462	457	457	456	455	456	460	462	463	463	463	463	462	462	462
14		464	464	465	464	462	463	463	464	466	467	458	453	453	457	459	461	461	463	464	465	464	464	462	463	462
15		464	464	464	464	465	469	463	467	470	466	454	444	444	449	451	456	460	461	462	463	463	463	463	464	461
16		465	463	468	464	461	465	463	468	471	468	462	456	459	462	463	466	468	468	469	468	467	466	466	466	465
17	D	466	466	464	465	466	467	468	471	463	450	458	458	456	468	465	471	487	498	509	495	502	507	512	489	476
18		480	483	482	483	482	481	483	483	479	472	463	459	460	464	469	472	475	475	476	476	476	476	475	475	475
19		476	476	474	475	474	474	475	477	481	479	471	466	466	468	469	470	472	472	473	473	471	473	477	474	473
20		471	470	471	472	472	473	473	480	480	473	468	463	462	464	468	473	477	477	477	479	476	475	475	482	473
21		477	469	472	476	467	466	470	475	472	467	461	458	460	465	467	473	475	474	474	475	473	474	473	473	470
22		473	472	472	472	471	470	470	474	477	473	467	460	457	460	467	469	471	470	470	473	476	475	473	475	470
23		470	473	470	470	471	471	474	476	477	472	467	463	459	455	460	464	471	474	474	473	475	476	479	477	470
24		467	467	468	468	469	468	469	473	473	467	459	453	452	458	464	470	474	473	471	471	472	471	471	471	468
25	Q	471	470	470	470	470	469	471	476	476	466	452	450	452	457	462	466	469	468	467	466	467	467	468	469	466
26	Q	470	470	468	468	468	468	470	473	474	468	463	458	457	458	459	464	468	465	466	467	467	467	467	467	466
27	D	468	469	468	469	469	469	468	470	476	462	449	447	451	452	452	464	470	486	486	478	475	476	483	464	468
28		466	473	468	470	472	472	472	473	470	460	456	459	460	458	461	467	472	471	476	475	475	475	473	475	469
29	D	470	468	472	473	474	466	476	474	469	468	458	458	462	463	466	471	486	487	493	487	481	480	479	479	473
30	D	480	477	471	477	468	470	473	476	476	469	466	468	466	465	468	472	476	477	476	483	473	474	473	471	473
31		473	474	474	475	475	473	475	478	476	469	464	463	461	459	461	465	470	474	475	478	476	478	471	471	471
MEAN		469	469	469	469	468	468	469	472	472	468	461	456	456	458	461	465	468	470	472	472	471	472	471	470	467
MEAN Q		467	467	467	466	466	466	467	470	471	468	460	454	454	456	459	462	463	464	465	465	465	466	466	466	464
MEAN D		470	469	469	470	468	468	471	473	471	461	459	461	460	462	462	468	478	485	490	485	481	484	485	473	472

EBRE MAGNETIC OBSERVATORY
MARCH 2013

TOTAL INTENSITY
F = 45000 nT PLUS TABULAR QUANTITIES (UNITS nT)

HOUR(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	MEAN
DAY																									
1 D	121	120	128	128	119	125	129	134	129	93	108	130	130	123	112	93	108	111	129	133	116	140	142	112	121
2	133	122	118	122	119	124	125	126	122	131	128	122	118	117	118	120	117	116	121	136	125	123	125	137	124
3	121	127	126	130	125	125	131	133	129	129	127	128	126	124	124	125	121	123	126	126	121	122	128	129	126
4	131	125	127	125	127	129	130	133	135	135	131	120	123	129	129	130	127	125	129	129	129	128	129	130	128
5	130	139	127	125	127	128	130	133	136	135	133	123	119	125	130	132	131	126	128	132	132	133	130	130	130
6	126	128	128	136	131	130	129	132	135	139	142	134	135	143	146	142	133	128	132	131	131	131	132	132	134
7 Q	131	133	131	132	132	133	135	137	141	143	137	128	127	132	138	133	127	127	129	130	130	131	131	131	132
8 Q	132	131	131	131	131	132	134	133	132	132	130	125	126	129	134	136	132	128	131	132	129	131	133	133	131
9	134	132	136	127	130	132	133	136	137	134	129	123	122	123	126	130	134	131	131	137	135	132	133	133	131
10	135	135	134	133	133	134	135	135	135	136	129	117	115	123	130	132	128	129	133	134	131	131	129	132	131
11	137	130	132	136	133	135	138	133	134	131	120	119	122	129	134	131	130	130	133	133	133	134	134	133	131
12	132	132	133	135	134	134	138	138	137	133	125	119	112	118	121	122	124	124	131	137	134	132	131	131	129
13 Q	132	132	134	132	133	133	135	139	138	138	136	132	133	134	133	131	130	131	132	133	133	134	133	132	133
14	133	134	135	135	132	132	133	135	138	141	135	132	131	139	141	138	129	128	128	131	131	133	130	130	134
15	132	132	132	133	134	147	144	149	152	149	134	122	123	129	131	132	130	128	129	130	128	129	129	129	134
16	130	126	136	133	127	134	131	136	134	130	124	121	126	129	129	130	129	126	129	131	128	128	126	128	129
17 D	130	132	127	129	130	132	141	147	133	89	89	89	76	88	81	86	83	90	115	85	90	103	141	127	110
18	108	113	114	117	119	118	121	125	121	117	111	105	106	112	116	119	120	122	124	124	123	125	122	123	118
19	124	124	121	124	124	124	126	129	133	133	129	127	129	132	132	129	126	127	129	130	124	124	131	133	128
20	127	123	123	125	125	129	129	139	140	131	123	118	117	117	118	125	127	128	129	136	135	127	123	133	127
21	133	116	123	137	128	118	122	132	130	122	113	110	113	120	123	127	128	127	128	131	128	129	129	128	125
22	129	128	129	130	130	130	128	131	133	128	125	123	119	123	131	132	132	128	124	123	129	133	131	136	128
23	128	131	129	128	129	133	137	140	138	133	130	129	125	111	117	120	124	129	132	128	126	134	143	152	130
24	138	132	131	131	133	133	135	139	140	136	125	118	115	119	121	124	129	131	131	129	131	133	133	133	130
25 Q	134	132	131	132	132	132	135	143	143	134	118	117	119	122	127	131	135	136	137	133	132	133	132	133	131
26 Q	134	135	132	131	132	132	136	138	140	137	133	129	127	129	130	135	136	132	132	133	134	134	134	135	133
27 D	136	138	138	137	138	143	143	141	148	132	114	110	116	119	112	117	109	121	138	133	129	130	160	127	130
28	119	134	123	121	125	127	129	132	130	120	115	122	132	129	131	130	130	118	127	128	130	134	136	140	128
29 D	137	124	129	132	137	122	136	132	115	118	108	107	119	121	115	112	110	116	128	134	128	130	128	130	124
30 D	134	136	128	139	128	129	130	132	129	119	117	122	124	124	124	127	129	128	125	141	127	128	129	125	128
31	128	129	130	132	133	132	135	139	138	131	126	129	130	128	126	125	124	127	127	132	132	140	130	127	130
MEAN	130	129	129	130	129	130	133	136	135	129	124	121	121	124	125	126	125	125	129	130	128	130	132	131	128
MEAN Q	133	132	132	132	132	133	135	138	139	137	131	126	126	129	132	133	132	131	132	132	132	133	132	133	132
MEAN D	132	130	130	133	130	130	136	137	131	110	107	112	113	115	109	107	108	113	127	125	118	126	140	124	123

EBRE MAGNETIC OBSERVATORY
APRIL 2013

DECLINATION EAST

D = 0 DEGREES PLUS TABULAR QUANTITIES (UNITS 0.1 MINUTES)

HOUR(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	MEAN
DAY																									
1	-99	-98	-96	-92	-89	-92	-93	-80	-70	-71	-93	-120	-133	-141	-142	-135	-122	-111	-106	-105	-104	-95	-96	-103	-104
2	-101	-100	-101	-95	-95	-95	-93	-83	-67	-60	-73	-96	-118	-130	-131	-128	-123	-115	-105	-104	-105	-106	-97	-103	-101
3	-99	-99	-96	-94	-98	-104	-106	-96	-80	-73	---	-119	-142	-150	-151	-140	-126	-113	-110	-107	-106	-104	-105	-101	-109
4	-95	-99	-97	-95	-94	-92	-90	-76	-66	-67	-86	-110	-127	-137	-130	-120	-115	-108	-104	-104	-104	-106	-104	-101	-101
5	-99	-99	-97	-97	-98	-100	-98	-87	-74	-72	-87	-112	-133	-145	-142	-131	-122	-112	-111	-110	-110	-111	-107	-103	-107
6	-98	-98	-94	-94	-95	-94	-87	-79	-68	-72	-90	-117	-133	-141	-135	-120	-113	-104	-101	-100	-102	-103	-98	-95	-101
7	-98	-97	-95	-95	-93	-93	-89	-76	-65	-71	-95	-120	-144	-156	-147	-129	-114	-102	-103	-106	-105	-104	-103	-103	-104
8 Q	-102	-102	-100	-98	-97	-96	-89	-75	-63	-70	-104	-132	-147	-149	-141	-131	-121	-109	-104	-104	-104	-106	-106	-105	-106
9	-105	-102	-101	-98	-96	-94	-82	-65	-56	-71	-111	-145	-157	-154	-144	-130	-118	-109	-106	-107	-106	-105	-104	-105	-107
10	-105	-102	-100	-96	-94	-92	-86	-74	-61	-58	-79	-115	-142	-148	-140	-138	-134	-122	-114	-112	-109	-99	-91	-103	-105
11	-104	-101	-99	-96	-97	-98	-95	-83	-69	-71	-97	-125	-139	-143	-139	-128	-118	-113	-114	-112	-109	-108	-104	-94	-107
12	-97	-95	-94	-94	-94	-95	-92	-81	-67	-64	-84	-120	-140	-142	-132	-119	-106	-100	-106	-109	-107	-106	-106	-106	-102
13	-106	-102	-98	-85	-88	-95	-92	-84	-77	-83	-99	-121	-132	-140	-136	-127	-114	-104	-108	-107	-107	-107	-105	-109	-105
14 D	-103	-103	-103	-107	-108	-97	-87	-75	-63	-74	-93	-125	-143	-150	-145	-141	-133	-121	-117	-122	-119	-115	-110	-106	-111
15	-102	-98	-95	-94	-94	-95	-89	-75	-67	-79	-102	-115	-117	-114	-114	-112	-107	-102	-100	-105	-107	-108	-106	-98	-100
16	-97	-95	-94	-94	-95	-95	-92	-83	-74	-76	-91	-108	-116	-121	-120	-116	-112	-104	-105	-101	-99	-90	-95	-99	-99
17 Q	-97	-92	-93	-92	-95	-95	-94	-85	-76	-79	-100	-111	-119	-125	-126	-122	-117	-107	-106	-107	-106	-105	-103	-101	-102
18 Q	-100	-97	-96	-95	-95	-95	-92	-84	-75	-77	-89	-107	-125	-133	-131	-121	-116	-110	-103	-103	-105	-105	-104	-103	-103
19 Q	-101	-101	-100	-100	-101	-99	-95	-84	-75	-68	-70	-91	-115	-129	-130	-123	-116	-110	-108	-109	-109	-107	-102	-103	-102
20	-103	-103	-102	-101	-101	-99	-95	-86	-79	-77	-87	-101	-118	-118	-117	-118	-114	-106	-104	-104	-104	-104	-103	-101	-102
21 Q	-98	-97	-98	-98	-99	-99	-96	-86	-79	-75	-82	-102	-125	-137	-132	-120	-114	-112	-114	-112	-110	-108	-106	-104	-104
22	-102	-97	-94	-93	-95	-94	-91	-85	-80	-90	-107	-131	-146	-144	-132	-124	-118	-111	-112	-108	-107	-108	-105	-102	-107
23 D	-101	-102	-100	-96	-93	-87	-83	-84	-77	-74	-87	-107	-122	-127	-126	-120	-113	-109	-113	-117	-115	-108	-102	-88	-102
24 D	-75	-60	-55	-61	-59	-68	-65	-61	-61	-77	-103	-125	-169	-151	-140	-130	-127	-115	-91	-84	-61	-85	-77	-79	-91
25 D	-82	-85	-99	-88	-83	-83	-83	-80	-80	-88	-109	-132	-141	-141	-142	-132	-121	-99	-76	-93	-96	-98	-98	-96	-101
26 D	-95	-94	-93	-100	-90	-74	-67	-59	-66	-80	-92	-121	-139	-133	-131	-117	-106	-101	-95	-75	-86	-93	-95	-103	-96
27	-89	-91	-91	-90	-85	-79	-71	-59	-55	-64	-86	-114	-140	-150	-140	-127	-115	-101	-94	-99	-101	-99	-93	-96	-97
28	-95	-94	-95	-92	-90	-89	-82	-71	-63	-72	-98	-125	-147	-159	-159	-144	-129	-117	-107	-99	-89	-94	-95	-92	-104
29	-91	-94	-95	-93	-91	-85	-78	-68	-59	-61	-79	-111	-136	-148	-142	-133	-123	-115	-109	-106	-101	-96	-96	-92	-100
30	-94	-88	-85	-86	-84	-78	-70	-64	-56	-58	-73	-102	-125	-133	-136	-135	-131	-117	-106	-105	-102	-100	-100	-82	-96
MEAN	-98	-96	-95	-94	-93	-92	-87	-78	-69	-72	-91	-116	-134	-140	-136	-127	-119	-109	-105	-105	-103	-103	-101	-99	-103
MEAN Q	-100	-98	-98	-97	-97	-97	-93	-83	-74	-74	-89	-109	-126	-135	-132	-124	-117	-109	-107	-107	-107	-106	-104	-103	-104
MEAN D	-91	-89	-90	-90	-87	-82	-77	-72	-69	-79	-97	-122	-143	-140	-137	-128	-120	-109	-99	-98	-95	-100	-96	-94	-100

EBRE MAGNETIC OBSERVATORY
APRIL 2013

HORIZONTAL INTENSITY
H = 25000 nT PLUS TABULAR QUANTITIES (UNITS nT)

HOUR(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	MEAN	
DAY																										
1	149	148	147	147	149	149	157	164	162	164	163	169	171	169	158	145	144	149	150	152	154	156	154	153	155	155
2	153	156	159	154	153	157	162	168	169	163	158	162	170	172	166	158	156	157	157	156	158	158	161	155	160	160
3	156	156	154	154	155	157	161	163	165	165	---	178	181	180	175	166	161	159	158	157	160	157	160	161	163	163
4	164	155	157	156	161	166	164	164	164	166	166	168	174	168	158	151	150	152	154	156	156	157	156	157	160	160
5	157	155	157	158	157	159	164	167	165	161	166	177	186	187	181	177	175	169	167	164	161	162	164	167	167	167
6	166	165	163	166	165	166	164	165	162	159	162	170	175	172	168	167	165	162	159	159	161	161	166	168	165	165
7	163	162	159	161	161	165	166	168	169	169	172	177	179	176	170	170	166	163	162	161	163	162	160	160	166	166
8 Q	160	160	159	159	160	162	164	165	162	157	155	162	167	166	158	156	157	161	162	162	162	164	163	163	161	161
9	167	165	160	161	162	164	164	160	151	146	153	163	174	179	178	172	165	163	163	163	164	165	165	165	164	164
10	166	165	167	172	173	175	179	178	174	174	172	175	183	180	172	168	163	166	170	171	172	169	167	169	172	172
11	170	171	171	171	171	174	176	180	175	168	162	168	186	193	188	175	167	165	165	167	168	169	170	168	172	172
12	166	161	161	164	165	167	173	178	179	178	178	187	192	188	182	176	167	167	168	167	167	167	168	168	172	172
13	166	163	162	163	160	167	168	171	173	167	165	172	185	190	185	175	168	163	162	164	167	168	168	192	170	170
14 D	183	180	180	182	189	193	193	183	178	177	183	189	190	191	190	182	179	173	176	181	184	182	175	169	183	183
15	166	167	163	165	166	165	171	174	170	167	163	172	181	182	181	177	170	165	162	168	168	169	169	163	169	169
16	160	162	164	164	165	166	169	171	171	172	175	184	191	189	180	172	163	158	154	149	152	161	156	156	167	167
17 Q	161	161	159	159	158	163	164	165	165	165	177	192	203	195	179	166	164	165	163	163	164	164	164	165	168	168
18 Q	163	163	165	164	163	166	171	176	178	173	173	178	181	176	167	161	162	165	165	168	165	165	166	164	168	168
19 Q	165	165	165	165	167	169	173	173	169	169	175	185	186	179	171	168	169	170	170	169	171	170	171	171	171	171
20	172	174	173	173	174	177	182	185	183	177	179	185	193	188	186	180	177	170	167	166	169	173	175	173	177	177
21 Q	172	173	172	172	172	175	179	180	177	170	166	174	184	187	186	181	175	177	180	179	181	180	178	177	177	177
22	175	172	175	168	170	172	171	167	165	162	164	174	183	184	184	183	180	178	174	171	172	176	174	175	174	174
23 D	176	174	174	174	174	182	181	182	181	173	172	183	194	197	194	190	183	182	185	187	183	180	175	170	181	181
24 D	169	175	170	177	175	171	166	157	156	160	166	156	163	154	141	136	131	131	130	151	146	139	141	137	154	154
25 D	144	147	160	150	149	147	152	156	158	156	158	158	165	166	155	144	137	134	149	147	150	154	161	169	153	153
26 D	161	157	164	186	170	148	151	149	149	132	134	156	172	179	167	145	151	151	152	158	153	147	156	167	156	156
27	159	152	150	150	150	149	152	150	142	141	147	162	172	178	173	163	160	163	163	159	157	158	161	158	157	157
28	157	157	158	158	159	162	165	168	167	166	169	175	183	181	173	164	165	167	162	160	159	164	160	159	165	165
29	174	161	161	162	163	162	162	163	159	154	161	174	183	182	178	172	171	171	168	166	167	169	164	159	167	167
30	160	164	167	164	163	165	167	167	170	174	184	190	195	195	190	179	176	174	174	174	171	163	162	163	173	173
MEAN	164	163	163	164	164	165	168	169	167	164	166	174	181	181	174	167	164	163	163	164	164	164	164	165	167	167
MEAN Q	164	164	164	164	164	167	170	172	170	167	169	178	184	181	172	167	165	168	168	168	168	169	168	168	169	169
MEAN D	167	167	170	174	171	168	169	166	165	159	163	168	177	177	169	159	156	154	158	165	163	160	161	163	165	165

EBRE MAGNETIC OBSERVATORY
APRIL 2013

VERTICAL INTENSITY

Z = 37000 nT PLUS TABULAR QUANTITIES (UNITS nT)

HOUR(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	MEAN
DAY																									
1	472	472	473	474	474	473	478	482	480	472	461	460	455	453	455	458	469	474	474	475	474	475	471	470	470
2	470	471	472	469	471	472	474	476	474	464	458	453	451	449	452	456	461	467	471	471	472	471	471	469	466
3	470	469	469	470	469	469	472	479	482	474	---	455	449	448	450	456	465	470	470	471	472	470	471	472	467
4	470	468	470	469	471	471	472	475	474	469	459	455	452	451	456	458	463	469	470	472	471	471	471	471	467
5	471	470	470	470	469	470	473	475	475	469	462	458	453	449	454	459	464	467	467	469	469	469	471	471	466
6	471	470	469	469	468	468	471	477	476	472	464	458	452	452	460	465	468	470	469	470	471	470	472	471	468
7	469	469	469	470	469	470	472	475	473	463	454	448	444	448	455	462	466	468	467	468	468	468	468	469	465
8 Q	470	470	470	470	470	470	474	479	477	467	454	452	454	455	456	460	465	470	469	469	468	467	468	468	466
9	470	469	468	469	469	470	472	472	464	446	433	437	443	449	453	458	464	466	467	467	467	466	466	467	461
10	468	469	469	470	468	468	470	472	471	462	451	444	445	444	447	453	458	463	465	466	467	467	466	466	462
11	467	468	468	468	467	468	472	478	473	464	455	452	451	451	452	457	462	465	465	467	466	465	467	468	464
12	466	466	468	470	469	469	470	473	472	468	455	445	445	451	458	462	465	467	466	466	466	465	465	466	464
13	466	467	468	469	468	470	472	477	478	472	464	456	457	458	455	458	464	466	466	468	468	466	466	472	466
14 D	464	465	466	467	468	468	472	471	472	464	455	446	444	445	446	452	460	462	465	466	466	464	463	464	461
15	465	466	466	468	467	468	474	476	472	461	453	455	459	459	458	459	461	465	466	469	467	465	465	465	465
16	466	468	467	467	467	469	472	475	474	468	465	462	459	455	455	457	460	465	467	469	471	472	468	468	466
17 Q	469	468	467	468	468	470	472	474	473	465	461	461	460	455	455	460	467	471	469	468	469	468	467	468	466
18 Q	467	468	468	466	467	469	471	474	472	466	458	454	454	455	456	457	462	467	467	469	467	467	467	467	465
19 Q	467	466	467	467	467	468	470	473	472	469	459	446	443	445	449	454	460	465	464	466	467	466	467	466	463
20	467	466	465	466	465	467	468	467	468	467	464	453	443	441	447	454	459	462	463	465	467	467	467	466	462
21 Q	466	466	465	465	465	465	465	466	468	467	462	450	441	444	449	455	458	464	463	463	464	463	464	465	461
22	465	465	466	463	465	466	468	470	470	467	463	454	451	455	458	458	459	464	463	464	465	465	465	466	463
23 D	467	466	466	466	466	468	466	467	468	463	462	461	458	458	457	459	459	463	463	463	462	464	465	468	463
24 D	470	473	468	470	466	462	464	465	464	459	453	444	446	448	453	466	472	480	482	487	478	474	478	475	467
25 D	478	477	476	471	470	469	473	473	467	462	460	458	465	464	464	465	471	477	482	476	476	474	474	475	471
26 D	469	471	474	477	467	463	471	471	468	458	461	459	460	464	463	468	476	476	477	480	475	471	475	474	470
27	471	471	472	473	474	475	475	474	468	462	459	456	452	454	459	464	467	471	472	469	469	470	471	469	467
28	469	470	471	471	472	473	472	471	466	454	445	437	438	443	450	454	463	469	470	471	472	471	469	469	463
29	473	465	468	469	470	472	473	474	469	460	451	440	439	443	448	455	461	465	468	468	469	468	467	467	463
30	469	471	470	468	469	471	471	470	468	460	448	439	437	442	443	445	453	459	464	467	468	466	468	471	461
MEAN	469	469	469	469	469	469	471	473	472	465	457	452	450	451	454	458	463	468	468	469	469	468	468	469	465
MEAN Q	468	468	467	467	467	468	471	473	472	467	459	453	451	451	453	457	462	467	467	467	467	466	467	467	464
MEAN D	470	470	470	470	467	466	469	469	468	461	458	454	455	456	457	462	468	472	474	474	471	469	471	471	466

EBRE MAGNETIC OBSERVATORY
APRIL 2013

TOTAL INTENSITY
F = 45000 nT PLUS TABULAR QUANTITIES (UNITS nT)

HOUR(UT) DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	MEAN
1	128	128	129	129	131	130	138	146	143	137	127	130	127	124	120	115	123	131	131	133	134	135	131	130	130
2	130	132	134	130	130	134	138	143	142	130	122	121	123	123	122	120	124	129	133	132	134	133	135	130	130
3	131	130	130	130	130	131	135	142	146	140	---	131	128	127	125	125	130	133	132	133	135	132	135	135	132
4	136	129	131	131	135	137	137	140	139	136	127	125	126	122	121	119	122	128	130	133	132	133	132	133	131
5	132	131	132	132	131	132	138	142	140	134	130	133	134	131	132	134	137	136	135	135	133	134	136	139	134
6	137	136	135	136	134	135	136	142	140	135	130	129	127	126	130	133	135	134	132	132	134	134	138	138	134
7	135	134	132	134	133	136	139	142	141	133	127	125	122	124	126	133	134	134	132	133	134	133	132	133	132
8 Q	133	133	133	133	133	135	139	143	140	129	118	120	124	124	121	123	128	134	134	134	133	133	133	134	131
9	137	136	132	134	134	135	137	135	123	106	99	107	119	127	129	131	131	132	132	133	133	133	133	134	128
10	135	136	137	141	140	140	144	146	142	135	124	121	126	123	121	124	125	131	135	136	137	137	134	136	133
11	137	138	138	138	138	139	144	151	145	133	122	123	132	137	134	131	131	132	132	135	135	134	136	136	135
12	133	131	133	135	135	136	141	146	146	142	131	128	131	133	136	135	133	135	134	134	134	134	134	134	135
13	134	132	133	135	131	137	140	145	148	139	131	129	136	140	135	132	133	132	132	134	136	135	135	153	136
14 D	141	140	141	144	148	151	153	147	146	138	134	130	129	131	131	131	135	134	138	142	143	141	136	134	139
15	133	135	132	135	134	135	143	147	141	130	122	128	136	137	135	134	132	133	131	138	135	134	135	131	134
16	130	133	133	133	134	136	140	144	143	139	138	141	142	138	132	130	127	128	128	127	130	136	129	130	134
17 Q	134	133	131	131	131	135	138	140	138	132	136	144	149	140	131	129	133	137	135	134	134	134	134	134	135
18 Q	133	133	135	133	133	136	141	146	145	138	131	130	132	130	126	123	128	133	134	137	134	134	134	133	134
19 Q	134	133	133	134	135	137	141	143	140	138	133	128	126	123	123	125	130	135	134	135	137	136	137	137	134
20	138	138	137	137	138	140	144	144	145	141	139	133	130	125	129	132	133	133	131	132	136	138	139	138	136
21 Q	137	137	136	136	136	138	140	141	142	136	130	124	123	127	130	133	132	138	139	139	140	139	139	139	136
22	138	136	138	132	135	137	138	138	136	132	130	129	131	135	137	136	136	138	136	135	136	138	138	138	136
23 D	139	138	138	138	138	144	142	144	143	135	133	139	142	144	142	141	137	140	141	142	140	139	138	138	140
24 D	139	144	138	143	139	133	132	128	127	124	123	110	116	112	108	116	119	126	127	143	132	125	130	124	127
25 D	132	132	138	129	128	126	131	134	130	124	124	123	132	132	126	120	122	125	137	131	133	133	138	142	130
26 D	134	132	139	154	136	121	129	128	126	108	112	123	132	139	132	123	133	133	135	140	134	127	135	141	131
27	134	129	130	130	131	131	134	131	122	116	117	123	125	130	131	130	131	136	137	132	131	132	135	131	129
28	131	132	133	134	134	137	138	139	134	124	118	114	120	123	124	122	130	137	135	134	134	136	133	132	130
29	144	129	132	134	135	136	137	138	132	122	119	117	121	123	125	128	132	136	136	136	137	137	133	131	131
30	132	137	138	134	135	137	138	138	137	133	129	125	126	130	128	123	128	132	137	138	138	132	133	136	133
MEAN	135	134	134	135	134	136	139	141	139	131	126	126	129	129	128	128	130	133	134	135	135	134	135	135	133
MEAN Q	134	134	134	133	134	136	140	143	141	135	130	129	131	129	126	127	130	135	135	136	136	135	135	135	134
MEAN D	137	137	139	141	138	135	138	136	134	126	125	125	130	132	128	126	129	131	136	140	136	133	135	136	134

EBRE MAGNETIC OBSERVATORY
MAY 2013

DECLINATION EAST

D = 0 DEGREES PLUS TABULAR QUANTITIES (UNITS 0.1 MINUTES)

HOUR(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	MEAN
DAY																									
1 D	-66	-70	-62	-62	-57	-56	-52	-50	-51	-71	-114	-138	-155	-163	-138	-136	-132	-105	-80	-35	-66	-73	-76	-79	-87
2	-88	-76	-68	-88	-90	-76	-80	-75	-75	-85	-102	-130	-133	-132	-129	-126	-118	-106	-99	-96	-85	-101	-95	-94	-98
3	-94	-91	-92	-95	-90	-80	-73	-72	-72	-81	-96	-110	-120	-131	-128	-117	-105	-88	-84	-93	-99	-100	-98	-97	-96
4	-92	-90	-89	-86	-83	-78	-64	-54	-58	-64	-73	-95	-116	-133	-130	-127	-118	-98	-83	-90	-95	-88	-91	-90	-91
5	-91	-82	-80	-71	-61	-64	-63	-58	-69	-78	-94	-109	-128	-138	-123	-118	-122	-113	-106	-105	-104	-103	-103	-99	-95
6	-97	-95	-91	-89	-84	-75	-70	-67	-64	-83	-97	-122	-140	-141	-134	-131	-118	-108	-101	-103	-106	-100	-101	-97	-101
7	-93	-89	-92	-87	-90	-85	-70	-65	-77	-90	-111	-136	-147	-145	-131	-117	-101	-94	-93	-102	-103	-99	-102	-101	-101
8	-100	-109	-107	-95	-86	-73	-62	-63	-65	-80	-101	-121	-132	-133	-129	-121	-105	-96	-94	-96	-96	-95	-99	-103	-98
9 Q	-101	-99	-99	-93	-87	-73	-57	-57	-68	-95	-122	-147	-154	-142	-123	-106	-97	-90	-91	-94	-101	-102	-104	-104	-100
10	-103	-100	-101	-97	-87	-71	-52	-48	-60	-80	-101	-129	-146	-145	-138	-121	-106	-96	-92	-97	-99	-100	-100	-100	-99
11 Q	-99	-99	-98	-93	-84	-70	-57	-56	-64	-82	-107	-133	-146	-147	-140	-126	-111	-98	-93	-95	-97	-99	-100	-100	-100
12 Q	-100	-97	-91	-86	-84	-73	-61	-59	-71	-91	-113	-127	-135	-142	-141	-128	-114	-101	-97	-101	-100	-100	-99	-98	-100
13	-97	-96	-94	-93	-88	-76	-60	-53	-63	-84	-109	-131	-140	-140	-136	-128	-125	-111	-103	-103	-104	-105	-104	-101	-102
14	-99	-98	-95	-94	-87	-77	-66	-55	-60	-80	-108	-134	-147	-133	-133	-129	-118	-105	-101	-104	-102	-101	-98	-98	-101
15	-95	-93	-94	-94	-88	-75	-64	-63	-66	-76	-92	-118	-141	-153	-145	-137	-122	-104	-100	-105	-110	-106	-102	-99	-102
16	-96	-97	-103	-84	-75	-70	-62	-62	-62	-71	-92	-105	-118	-125	-132	-117	-120	-100	-84	-80	-80	-76	-75	-78	-90
17	-82	-91	-92	-92	-81	-70	-58	-44	-48	-64	-95	-118	-130	-132	-139	-141	-134	-111	-89	-98	-99	-92	-84	-87	-95
18 D	-82	-61	-43	-19	-44	-37	-43	-42	-59	-86	-108	-121	-136	-140	-131	-122	-116	-107	-100	-91	-76	-84	-77	-72	-83
19	-54	-62	-61	-76	-74	-55	-52	-65	-83	-105	-110	-116	-131	-138	-138	-135	-119	-105	-95	-94	-96	-97	-96	-98	-94
20	-94	-85	-77	-79	-75	-53	-43	-48	-62	-79	-94	-112	-115	-121	-117	-111	-106	-100	-96	-92	-98	-101	-98	-92	-90
21	-88	-81	-85	-88	-89	-78	-63	-63	-62	-79	-97	-113	-118	-113	-114	-114	-105	-93	-83	-88	-84	-92	-100	-95	-91
22	-94	-103	-90	-83	-71	-52	-40	-47	-65	-88	-110	-134	-150	-157	-159	-148	-130	-111	-107	-103	-93	-88	-86	-85	-100
23	-87	-81	-80	-73	-79	-55	-41	-45	-57	-84	-115	-135	-139	-130	-127	-117	-106	-94	-89	-86	-92	-93	-92	-92	-91
24 D	-89	-83	-82	-84	-81	-63	-49	-47	-65	-98	-121	-148	-160	-153	-132	-130	-115	-93	-104	-81	-81	-54	-83	-85	-95
25 D	-71	-88	-78	-92	-83	-71	-46	-39	-43	-63	-107	-144	-159	-147	-151	-135	-127	-91	-72	-67	-55	-70	-54	-87	-89
26 D	-103	-90	-81	-79	-79	-63	-23	-32	-41	-71	-104	-129	-140	-132	-120	-101	-93	-76	-65	-74	-73	-92	-92	-94	-85
27	-99	-92	-89	-89	-81	-55	-39	-36	-44	-61	-82	-109	-132	-149	-128	-115	-103	-86	-55	-71	-75	-91	-93	-94	-86
28	-96	-97	-88	-88	-75	-63	-53	-50	-54	-71	-92	-114	-123	-126	-124	-108	-95	-88	-87	-92	-93	-92	-92	-93	-90
29 Q	-93	-92	-90	-87	-79	-66	-51	-46	-47	-59	-81	-102	-116	-123	-120	-114	-101	-87	-82	-88	-93	-94	-92	-92	-87
30 Q	-93	-89	-86	-83	-79	-67	-56	-57	-62	-76	-89	-103	-116	-119	-120	-114	-101	-91	-87	-91	-94	-95	-95	-95	-90
31	-93	-92	-89	-88	-86	-78	-70	-70	-75	-85	-111	-134	-146	-142	-131	-118	-111	-109	-114	-117	-108	-96	-97	-79	-102
MEAN	-91	-89	-86	-84	-80	-68	-56	-54	-62	-79	-102	-123	-136	-138	-132	-123	-113	-98	-91	-91	-92	-93	-93	-93	-94
MEAN Q	-97	-95	-93	-89	-83	-70	-56	-55	-62	-81	-102	-122	-133	-135	-129	-118	-105	-93	-90	-94	-97	-98	-98	-98	-96
MEAN D	-82	-78	-69	-67	-69	-58	-43	-42	-52	-78	-111	-136	-150	-147	-134	-125	-117	-94	-84	-69	-70	-75	-77	-83	-88

EBRE MAGNETIC OBSERVATORY
MAY 2013

HORIZONTAL INTENSITY
H = 25000 nT PLUS TABULAR QUANTITIES (UNITS nT)

HOUR(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	MEAN
DAY																									
1 D	162	162	167	171	170	165	157	131	133	141	134	136	124	112	111	109	105	104	107	140	130	126	121	140	136
2	151	155	149	135	140	140	134	134	136	137	144	159	166	165	160	156	147	149	144	143	156	146	145	149	147
3	146	146	147	149	151	154	156	158	158	158	158	162	168	172	168	168	168	164	155	156	153	153	153	155	157
4	156	155	153	154	152	153	158	162	159	161	169	174	179	171	159	155	153	151	153	150	147	155	154	153	158
5	153	153	150	155	159	159	156	153	151	153	161	164	164	160	159	162	167	161	160	162	164	166	169	169	160
6	169	171	170	169	169	172	171	166	165	172	185	200	202	191	179	169	162	167	172	175	176	166	172	171	174
7	168	165	173	163	166	167	162	162	152	152	172	186	196	195	183	173	166	163	160	164	166	166	166	165	169
8	164	167	172	171	169	166	163	157	154	152	159	169	174	177	177	171	165	162	161	163	164	168	164	165	166
9 Q	165	163	164	164	163	162	162	162	162	168	178	191	195	189	182	173	166	165	166	166	168	169	168	167	170
10	169	168	166	165	162	163	160	158	158	161	170	184	188	192	189	179	171	169	167	168	169	169	167	169	170
11 Q	169	168	168	165	163	161	160	161	164	168	181	196	195	189	179	170	167	168	170	170	170	171	170	169	171
12 Q	166	166	167	163	162	163	157	152	151	161	172	179	186	187	186	180	174	172	171	168	169	169	169	169	169
13	166	169	169	169	172	174	176	172	172	173	186	198	202	196	188	179	177	168	172	175	177	178	178	175	178
14	176	176	173	172	175	179	182	177	165	164	165	173	172	176	166	155	150	155	161	167	164	165	166	169	168
15	169	169	167	168	174	178	176	171	171	184	186	190	184	183	175	181	180	178	172	177	181	177	181	180	177
16	177	175	166	184	180	176	171	162	157	158	167	179	191	198	205	184	180	167	165	157	151	160	146	157	171
17	156	153	158	167	161	155	154	159	160	169	170	166	167	170	172	169	164	163	168	161	166	169	163	154	163
18 D	154	165	177	165	147	149	138	121	121	134	151	161	162	154	148	148	151	153	150	155	166	143	141	137	150
19	145	145	150	139	146	147	141	133	126	135	146	155	154	145	130	122	123	136	150	154	152	154	152	171	144
20	169	166	163	163	164	160	153	148	153	167	180	188	184	177	165	159	157	155	163	164	163	160	156	157	164
21	159	160	156	158	161	162	159	149	146	161	172	178	180	177	167	162	160	162	162	161	162	163	167	167	163
22	170	167	171	166	166	161	158	168	173	173	178	191	196	192	193	177	162	161	167	170	158	159	155	161	171
23	159	160	158	159	179	173	168	156	151	160	176	189	192	189	185	173	168	163	168	168	171	168	165	168	169
24 D	174	172	167	167	168	166	156	144	135	137	153	171	174	166	175	167	156	154	184	176	178	167	162	163	164
25 D	182	170	166	156	150	142	138	124	125	134	150	147	161	168	159	154	123	108	123	121	144	135	137	137	144
26 D	164	164	158	150	155	151	126	124	123	124	139	154	158	152	143	144	150	153	163	145	154	152	142	146	147
27	150	149	154	159	147	146	146	142	137	139	144	157	157	154	157	163	156	158	173	160	158	158	153	156	153
28	159	156	159	166	154	151	148	136	136	146	161	173	175	173	169	161	154	153	155	157	156	154	154	153	157
29 Q	154	154	156	156	158	160	161	160	162	166	168	173	173	171	166	160	157	159	160	161	161	160	159	159	161
30 Q	160	159	158	158	159	162	163	164	170	184	194	200	193	181	167	159	158	162	160	164	164	165	164	164	168
31	164	165	165	167	168	168	166	158	159	166	177	187	188	185	177	169	179	186	192	183	190	183	187	184	176
MEAN	163	162	162	162	162	161	157	152	151	157	166	175	177	174	169	163	159	158	161	161	163	161	160	161	162
MEAN Q	163	162	162	161	161	161	161	160	162	169	178	188	188	183	176	168	164	165	165	166	166	167	166	165	168
MEAN D	167	166	167	162	158	155	143	129	127	134	146	154	156	150	147	145	137	134	146	147	154	145	141	145	148

EBRE MAGNETIC OBSERVATORY
MAY 2013

VERTICAL INTENSITY
Z = 37000 nT PLUS TABULAR QUANTITIES (UNITS nT)

HOUR(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	MEAN
DAY																										
1	D	472	471	471	471	469	468	464	462	464	459	449	444	443	451	469	471	479	491	497	508	485	482	479	486	471
2		480	478	472	469	474	476	475	478	476	469	466	463	457	455	456	459	470	478	479	479	483	473	476	476	472
3		474	474	474	474	475	476	474	473	471	471	472	469	465	462	459	467	475	479	475	476	474	474	474	475	472
4		476	473	473	474	474	477	480	476	469	466	460	448	445	444	448	456	467	475	478	476	475	479	475	475	468
5		475	474	474	476	477	476	475	472	470	468	463	454	450	449	451	456	464	464	468	471	472	473	473	473	468
6		473	473	472	472	472	473	471	466	459	453	444	440	439	440	445	448	457	466	469	469	470	468	472	471	462
7		472	472	473	467	472	475	475	474	465	457	454	448	451	451	447	454	465	471	472	473	473	472	472	472	466
8		472	472	473	472	472	475	473	468	459	453	445	441	441	443	447	456	465	468	470	471	470	470	469	470	463
9	Q	471	472	472	472	472	474	474	470	464	456	447	446	452	459	462	466	467	469	467	468	468	467	467	468	465
10		470	470	470	471	473	477	474	469	460	450	446	446	449	452	457	463	467	470	469	469	469	467	467	469	464
11	Q	470	469	470	470	473	476	477	473	465	453	440	435	428	432	440	450	461	468	469	468	468	467	466	466	461
12	Q	467	469	470	470	473	476	471	463	455	449	449	446	448	455	456	458	466	470	471	469	468	467	468	468	463
13		468	470	470	471	474	477	475	468	460	455	453	450	448	446	449	452	462	466	468	468	468	467	466	465	463
14		467	467	467	467	471	475	477	471	462	454	446	442	446	455	456	463	466	473	475	474	472	472	472	471	465
15		471	470	469	471	476	476	470	463	459	459	452	447	444	444	442	454	462	468	468	471	470	468	470	469	463
16		468	467	467	474	470	471	474	473	471	468	460	454	452	450	453	453	460	466	474	474	475	477	472	478	467
17		471	472	473	474	472	475	476	474	466	458	446	437	431	432	440	449	461	471	478	473	474	474	471	470	463
18	D	472	478	481	471	469	473	469	462	465	466	458	454	457	462	462	466	473	478	478	482	482	473	478	478	470
19		482	480	475	473	480	480	474	468	463	463	464	464	461	457	459	466	473	479	482	481	479	478	477	483	472
20		478	476	475	476	477	481	478	471	466	461	462	458	446	444	450	458	466	468	474	476	474	474	473	475	468
21		477	476	474	475	477	480	476	471	473	473	468	463	464	461	459	467	472	473	474	472	473	472	472	473	471
22		473	472	472	470	475	476	471	468	459	450	450	453	453	452	450	450	457	468	474	474	472	474	473	476	465
23		474	475	474	475	479	479	473	460	450	446	444	447	449	452	456	458	467	470	473	474	473	472	472	474	465
24	D	474	472	471	472	475	474	472	468	460	455	457	458	455	456	466	469	473	477	489	482	480	477	473	477	470
25	D	480	470	472	469	470	470	470	470	471	465	455	451	455	460	460	468	477	489	499	495	498	486	484	480	473
26	D	488	480	480	478	484	482	479	482	475	469	465	462	455	454	460	478	486	494	494	483	485	477	476	477	477
27		478	478	480	481	479	483	483	479	469	458	454	458	456	460	463	469	474	486	498	484	482	475	475	476	474
28		476	474	477	477	475	480	481	475	472	471	464	459	459	464	469	475	478	479	479	476	475	474	473	473	473
29	Q	474	475	476	476	480	484	485	481	478	470	456	449	448	457	463	469	476	478	477	476	475	473	473	472	472
30	Q	473	473	473	474	477	481	479	475	474	468	464	458	456	454	459	467	473	474	474	473	472	473	472	472	470
31		472	473	472	473	475	479	477	472	469	464	459	454	456	456	458	461	471	475	478	475	478	477	479	481	470
MEAN		474	473	473	473	475	477	475	471	466	460	455	452	450	452	455	461	469	474	477	476	475	473	473	474	468
MEAN Q		471	472	472	472	475	478	477	472	467	459	451	447	447	451	456	462	468	472	472	471	470	469	469	469	466
MEAN D		477	474	475	472	473	473	471	469	467	463	457	454	453	457	463	470	478	486	491	490	486	479	478	480	472

EBRE MAGNETIC OBSERVATORY
MAY 2013

TOTAL INTENSITY
F = 45000 nT PLUS TABULAR QUANTITIES (UNITS nT)

HOUR(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	MEAN	
DAY																										
1 D	136	136	139	140	139	134	127	111	114	114	102	98	92	90	105	105	110	120	126	154	129	125	119	135	135	121
2	136	137	129	119	125	127	123	126	126	120	121	127	126	124	122	122	126	134	132	132	142	128	130	132	132	128
3	129	129	129	131	132	135	134	134	133	133	134	134	134	---	129	136	142	143	135	136	133	133	133	135	135	134
4	136	133	132	133	132	136	141	139	132	131	131	123	123	118	115	119	127	132	136	132	131	138	134	134	134	131
5	134	133	131	136	138	138	136	131	128	128	128	122	119	116	117	123	132	129	132	135	138	140	141	141	141	131
6	141	142	140	140	140	142	140	133	127	126	126	131	132	126	123	121	124	134	139	141	142	135	142	141	141	135
7	139	138	143	133	138	142	139	138	125	118	127	130	138	138	127	128	132	136	135	138	139	139	138	138	138	135
8	138	139	142	142	140	141	138	130	121	115	112	115	118	121	124	128	132	132	134	136	135	138	135	136	136	131
9 Q	137	136	137	137	137	138	138	134	130	127	124	130	138	141	139	138	135	135	134	135	136	136	136	136	136	135
10	138	138	137	137	137	142	137	132	124	117	119	127	131	136	139	138	137	138	136	137	138	136	135	138	138	134
11 Q	138	138	137	136	137	139	139	136	131	124	120	125	119	118	119	122	130	136	138	138	137	137	136	135	135	132
12 Q	134	136	137	135	137	140	132	123	116	116	123	124	130	136	136	135	138	140	140	137	137	136	137	137	137	133
13	135	138	139	139	143	147	147	138	131	128	133	139	139	134	131	129	136	134	139	140	142	141	141	138	138	138
14	140	140	138	138	143	148	151	143	130	122	117	117	121	130	125	124	125	133	138	141	138	138	139	139	139	134
15	139	139	136	138	146	149	142	134	130	138	133	131	125	125	119	132	138	142	138	144	145	142	145	143	143	137
16	141	139	134	150	145	143	143	137	133	130	130	131	136	137	144	132	137	134	139	135	132	139	127	138	138	137
17	132	131	135	141	136	134	135	136	130	128	119	109	105	107	115	121	128	136	144	136	140	142	136	130	130	129
18 D	132	143	152	137	125	130	120	105	107	115	118	121	124	123	120	124	131	136	135	140	146	126	129	128	128	128
19	135	133	132	124	134	134	126	116	108	113	121	126	123	114	107	109	115	127	138	139	136	137	135	150	150	126
20	145	141	139	140	142	142	135	128	126	130	137	139	127	122	120	123	128	128	138	141	138	136	134	136	136	134
21	138	138	134	136	140	143	138	128	128	136	138	138	139	136	128	132	135	137	137	136	137	136	138	139	139	136
22	142	139	141	137	141	139	133	136	131	124	127	136	139	137	135	126	123	132	141	143	134	136	133	139	139	135
23	136	137	135	137	151	148	141	123	112	113	121	130	134	135	136	131	135	135	140	141	142	139	138	141	141	135
24 D	145	142	138	139	142	140	133	123	111	108	119	129	129	125	139	136	133	136	163	152	152	143	137	141	141	136
25 D	154	139	138	130	128	123	121	113	115	114	116	110	121	129	124	128	118	120	137	133	147	133	132	129	129	127
26 D	150	143	140	134	142	138	122	123	117	113	118	123	120	116	115	131	141	149	155	136	142	134	128	132	132	132
27	134	134	138	142	133	136	136	130	120	112	111	122	121	121	126	135	134	146	164	145	142	136	133	136	136	133
28	138	135	138	143	135	137	135	124	122	127	129	131	133	136	137	138	136	136	138	137	135	133	133	132	132	134
29 Q	133	134	136	137	140	145	146	142	141	136	127	123	123	128	131	133	136	139	139	138	138	136	135	135	135	135
30 Q	135	136	135	136	139	143	143	140	143	145	147	146	140	131	128	130	135	137	137	138	137	138	137	137	137	138
31	137	138	138	140	142	145	143	134	132	131	134	136	138	136	133	131	145	153	158	150	157	152	156	156	156	142
MEAN	138	137	137	137	138	139	136	130	125	124	125	127	127	126	126	128	131	136	140	139	139	137	136	137	137	133
MEAN Q	135	136	136	136	138	141	140	135	132	130	128	130	130	131	131	132	135	138	138	137	137	137	136	136	136	135
MEAN D	143	140	141	136	135	133	125	115	113	113	114	116	117	117	121	125	127	132	143	143	143	132	129	133	133	129

EBRE MAGNETIC OBSERVATORY
JUNE 2013

DECLINATION EAST

D = 0 DEGREES PLUS TABULAR QUANTITIES (UNITS 0.1 MINUTES)

HOUR(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	MEAN
DAY																									
1 D	-62	-92	-63	-32	-64	-104	-92	-89	-76	-68	-85	-96	-123	-128	-116	-118	-109	-92	-85	-81	-84	-79	-71	-70	-87
2	-81	-76	-78	-78	-86	-56	-47	-44	-51	-67	-86	-95	-100	-113	-104	-100	-101	-96	-87	-87	-88	-82	-87	-85	-82
3	-87	-93	-86	-86	-88	-74	-58	-54	-62	-74	-90	-117	-138	-140	-130	-115	-105	-97	-93	-87	-80	-72	-86	-81	-91
4	-91	-84	-79	-88	-76	-68	-50	-46	-51	-63	-83	-99	-113	-118	-117	-113	-104	-92	-84	-92	-92	-90	-89	-83	-86
5	-71	-82	-86	-83	-77	-73	-62	-53	-52	-60	-83	-109	-123	-131	-129	-120	-108	-94	-87	-85	-90	-92	-90	-91	-89
6 D	-90	-89	-93	-100	-83	-55	-39	-36	-41	-51	-83	-110	-134	-137	-133	-144	-99	-91	-84	-83	-74	-72	-60	-29	-84
7 D	-39	-26	-35	-88	-81	-73	-61	-57	-57	-70	-87	-101	-113	-124	-122	-111	-106	-95	-92	-92	-95	-95	-90	-89	-83
8	-86	-85	-87	-81	-70	-57	-46	-42	-45	-74	-102	-123	-142	-144	-138	-125	-112	-98	-93	-94	-92	-88	-89	-89	-92
9	-88	-87	-86	-85	-71	-58	-46	-38	-43	-63	-95	-125	-150	-161	-165	-142	-125	-109	-81	-87	-97	-95	-97	-94	-95
10	-93	-93	-93	-77	-72	-55	-55	-53	-45	-59	-80	-110	-127	-134	-137	-123	-113	-103	-94	-92	-94	-93	-92	-92	-91
11	-90	-89	-87	-85	-81	-68	-52	-41	-40	-59	-86	-109	-128	-143	-153	-139	-124	-101	-91	-93	-91	-89	-91	-96	-93
12	-90	-87	-86	-88	-80	-74	-64	-55	-48	-58	-78	-95	-109	-118	-118	-113	-104	-90	-86	-87	-90	-91	-90	-90	-87
13 Q	-91	-87	-88	-88	-83	-73	-62	-53	-45	-53	-74	-96	-117	-133	-135	-125	-113	-101	-90	-91	-93	-89	-92	-90	-90
14 Q	-89	-87	-86	-88	-89	-83	-66	-51	-42	-47	-67	-97	-125	-134	-128	-119	-107	-97	-93	-93	-92	-95	-95	-92	-90
15	-87	-83	-84	-82	-82	-75	-63	-59	-61	-77	-105	-127	-148	-160	-156	-142	-127	-104	-96	-93	-92	-91	-88	-84	-98
16 Q	-85	-83	-83	-84	-80	-71	-60	-55	-54	-59	-74	-97	-114	-118	-129	-129	-117	-104	-98	-96	-93	-90	-87	-87	-89
17 Q	-87	-86	-82	-81	-70	-58	-52	-51	-60	-75	---	-110	-122	-126	-127	-120	-110	-101	-95	-93	-90	-91	-89	-90	-90
18	-89	-88	-80	-71	-60	-51	-47	-55	-64	-74	-95	-114	-123	-132	-129	-120	-103	-93	-89	-88	-89	-90	-91	-89	-88
19	-89	-82	-77	-73	-72	-60	-54	-57	-65	-71	-85	-102	-119	-132	-130	-122	-113	-104	-99	-96	-92	-87	-88	-84	-90
20	-71	-71	-72	-70	-69	-57	-52	-58	-69	-70	-76	-96	-114	-126	-141	-135	-124	-117	-112	-98	-86	-92	-92	-70	-89
21	-74	-66	-75	-86	-71	-49	-49	-54	-59	-78	-100	-122	-137	-154	-162	-136	-119	-108	-95	-96	-88	-74	-80	-84	-92
22	-91	-84	-85	-76	-68	-56	-42	-58	-61	-72	-94	-111	-123	-130	-126	-115	-103	-89	-64	-80	-80	-86	-93	-86	-86
23	-84	-81	-79	-78	-74	-64	-53	-35	-46	-66	-82	-92	-107	-128	-139	-137	-121	-99	-84	-86	-84	-74	-70	-60	-84
24	-67	-74	-78	-80	-93	-83	-49	-39	-37	-48	-68	-97	-117	-124	-120	-116	-82	-76	-76	-60	-62	-79	-76	-75	-78
25	-68	-80	-69	-72	-73	-53	-32	-29	-40	-52	-66	-86	-106	-122	-125	-117	-102	-93	-87	-82	-84	-82	-89	-87	-79
26 Q	-85	-83	-83	-80	-75	-56	-39	-32	-36	-53	-74	-105	-133	-147	-142	-131	-117	-96	-87	-84	-82	-85	-86	-84	-86
27	-81	-81	-78	-76	-72	-62	-49	-43	-48	-61	-81	-110	-131	-137	-139	-148	-137	-120	-111	-101	-94	-92	-85	-70	-92
28 D	-67	-79	-67	-69	-67	-55	-51	-53	-56	-63	-84	-114	-132	-144	-142	-155	-141	-107	-91	-77	-51	-59	-40	-23	-83
29 D	-7	2	-31	-34	-60	-66	-44	-37	-32	-47	-81	-111	-114	-116	-119	-126	-113	-90	-88	-63	-58	-58	-79	-67	-68
30	-62	-67	-66	-75	-71	-56	-43	-46	-47	-57	-79	-105	-130	-128	-122	-111	-98	-98	-88	-81	-83	-83	-82	-83	-82
MEAN	-78	-78	-77	-78	-75	-65	-53	-49	-51	-63	-84	-106	-124	-133	-132	-126	-112	-99	-90	-87	-85	-84	-84	-80	-87
MEAN Q	-87	-85	-84	-84	-79	-68	-56	-48	-47	-57	-76	-101	-122	-131	-132	-125	-113	-100	-93	-91	-90	-90	-90	-89	-89
MEAN D	-53	-57	-58	-64	-71	-70	-57	-54	-52	-60	-84	-106	-123	-130	-126	-131	-113	-95	-88	-79	-72	-72	-68	-56	-81

EBRE MAGNETIC OBSERVATORY
JUNE 2013

HORIZONTAL INTENSITY
H = 25000 nT PLUS TABULAR QUANTITIES (UNITS nT)

HOUR(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	MEAN
DAY																									
1 D	207	177	175	194	155	129	160	131	130	126	113	116	111	86	106	108	111	124	137	142	140	149	150	151	139
2	150	153	152	144	141	147	146	134	129	122	131	138	160	157	141	139	135	139	149	145	149	161	152	153	145
3	152	157	149	153	155	157	153	146	143	150	157	166	170	167	161	157	153	153	151	159	158	158	161	158	156
4	157	167	156	151	155	152	145	149	152	157	164	164	163	158	153	151	153	155	158	158	158	163	164	172	157
5	169	158	158	159	160	157	156	156	157	164	167	171	174	172	165	156	153	155	156	161	162	160	158	157	161
6 D	159	160	159	168	172	176	173	161	140	140	154	159	160	152	161	158	158	170	167	154	152	150	150	168	159
7 D	161	155	164	148	165	134	140	132	121	128	120	141	147	146	147	141	140	146	146	153	162	164	163	164	147
8	160	157	158	156	165	164	164	149	143	146	160	165	171	167	166	162	159	158	160	162	165	167	167	164	161
9	165	165	167	168	173	176	172	165	163	160	161	170	181	186	182	172	161	148	157	169	170	169	166	166	168
10	163	164	174	172	169	174	171	164	156	147	143	145	149	155	163	164	168	165	166	165	165	165	166	161	162
11	162	161	161	163	166	169	169	169	167	161	158	160	170	183	174	160	153	155	156	159	164	169	170	170	164
12	168	167	165	166	168	171	165	155	154	160	171	176	180	180	174	170	168	166	167	171	169	167	166	166	168
13 Q	169	164	164	169	172	173	169	162	155	154	162	168	172	170	166	163	163	163	164	167	168	170	167	166	166
14 Q	167	166	166	169	173	175	173	167	164	164	176	181	189	190	184	177	175	173	172	171	174	174	171	169	173
15	169	176	176	181	183	186	179	164	156	152	160	169	179	182	178	175	173	170	167	169	171	173	170	168	172
16 Q	167	167	168	169	172	174	168	159	155	156	164	179	186	186	182	178	173	172	172	170	170	174	175	173	171
17 Q	170	170	169	170	173	171	172	167	160	162	---	184	181	177	173	167	166	171	175	174	175	173	172	171	172
18	172	172	169	168	170	173	169	164	163	166	166	165	165	165	156	152	154	156	158	166	172	169	169	170	165
19	169	175	168	167	170	173	172	169	172	179	184	190	188	186	178	172	170	170	173	176	175	176	176	184	176
20	177	171	180	179	176	181	183	189	190	197	198	204	198	185	169	165	165	174	180	174	170	166	173	174	180
21	186	176	163	169	170	165	149	149	151	155	160	173	173	178	172	168	171	171	173	164	172	157	155	159	166
22	173	173	167	161	162	171	160	151	156	152	150	162	168	166	168	164	161	160	176	156	157	156	161	170	163
23	164	163	179	170	180	184	157	153	149	143	155	164	173	173	168	161	153	158	161	153	161	162	156	153	162
24	156	158	160	163	168	172	156	152	138	114	122	141	156	162	161	148	149	148	143	142	165	147	145	149	151
25	167	154	156	154	156	158	152	146	141	138	143	158	168	169	165	158	155	155	159	161	162	165	162	160	157
26 Q	159	158	159	161	164	166	162	152	147	148	153	154	161	166	170	167	162	160	165	167	166	162	160	158	160
27	159	159	160	162	164	167	163	154	146	143	148	152	151	152	162	174	173	172	177	176	173	175	178	182	164
28 D	196	194	179	166	163	159	157	156	149	150	159	170	172	171	161	157	122	125	129	122	117	117	121	115	151
29 D	125	128	132	144	159	128	130	107	89	77	76	72	93	99	117	103	107	117	130	144	133	138	145	143	118
30	141	143	140	147	151	153	153	146	137	132	139	154	161	156	149	150	155	146	145	155	152	149	150	153	148
MEAN	165	164	163	164	166	164	161	154	149	148	153	160	166	165	162	158	155	157	160	160	162	162	161	162	160
MEAN Q	166	165	165	168	171	172	169	161	156	157	166	173	178	178	175	170	168	168	169	170	171	171	169	168	168
MEAN D	170	163	162	164	163	145	152	137	126	124	124	132	137	131	139	133	127	136	142	143	141	144	146	148	143

EBRE MAGNETIC OBSERVATORY
JUNE 2013

VERTICAL INTENSITY
Z = 37000 nT PLUS TABULAR QUANTITIES (UNITS nT)

HOUR(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	MEAN
DAY																									
1 D	482	467	474	478	457	459	473	462	478	469	457	455	457	455	467	471	479	486	491	492	489	490	488	484	473
2	481	480	479	475	482	485	485	481	479	470	468	466	467	466	469	472	474	479	486	483	484	485	478	480	477
3	479	479	476	479	479	484	479	473	468	464	454	452	456	459	467	472	477	484	482	485	482	480	480	479	474
4	479	480	472	475	480	481	481	481	478	469	459	457	461	459	462	468	474	478	480	479	478	479	479	482	474
5	477	473	476	476	477	479	476	468	461	454	451	451	453	456	457	464	475	479	478	479	476	475	476	477	469
6 D	478	476	475	478	482	483	481	473	469	469	463	456	454	456	465	473	488	490	487	483	486	484	486	488	476
7 D	479	480	478	468	477	465	477	475	479	479	468	471	471	474	481	484	486	486	483	483	483	481	479	480	478
8	479	478	480	481	483	483	484	478	473	467	461	452	444	445	457	468	479	481	481	479	478	478	476	476	473
9	477	477	478	478	482	484	480	478	473	465	459	456	461	462	462	471	479	482	489	480	474	474	473	474	474
10	475	476	479	477	478	482	479	478	473	462	458	454	455	457	462	471	481	483	482	477	475	475	474	473	472
11	475	476	477	478	480	484	485	480	470	461	456	452	453	458	459	466	474	480	480	478	479	477	474	474	472
12	475	476	476	476	480	483	483	477	472	466	462	463	461	462	464	466	473	475	477	475	474	473	472	472	472
13 Q	473	472	473	476	478	481	480	478	476	474	466	459	458	459	461	468	476	479	480	478	477	476	472	473	473
14 Q	473	473	474	475	479	483	484	482	477	470	462	455	453	453	456	463	469	473	474	475	474	472	472	472	471
15	473	475	473	475	476	478	477	473	470	466	462	457	457	456	458	461	470	476	476	474	473	474	473	473	470
16 Q	472	473	473	474	477	480	480	478	476	469	464	464	463	458	453	459	469	475	476	474	475	475	474	473	471
17 Q	472	473	472	473	477	478	478	475	469	461	---	455	454	456	455	460	468	473	475	474	475	473	471	471	469
18	471	472	472	474	478	481	476	473	472	467	458	451	449	455	462	470	476	477	477	480	479	474	473	474	470
19	474	476	472	474	477	478	477	474	469	466	463	457	451	449	457	462	471	474	475	476	474	474	475	479	470
20	476	476	478	473	476	480	476	471	472	471	464	459	454	447	447	459	466	474	478	478	477	477	478	482	470
21	479	474	469	473	473	470	460	459	454	450	448	456	454	455	458	467	473	476	479	473	477	474	477	477	467
22	480	475	473	472	477	478	471	472	472	466	465	471	471	470	475	475	480	484	495	478	480	478	479	479	476
23	476	477	479	474	480	478	471	472	464	451	453	457	463	464	466	471	480	489	488	479	480	479	479	479	473
24	479	477	478	479	479	479	476	473	468	464	464	463	466	472	479	482	502	500	497	496	493	478	480	482	479
25	485	476	479	478	481	481	482	481	482	477	472	468	464	458	458	465	476	479	482	481	478	476	473	474	475
26 Q	475	475	477	478	482	486	485	480	478	474	461	453	451	454	458	468	476	483	484	481	476	472	474	474	473
27	475	475	477	477	480	481	482	479	474	469	467	462	456	451	459	467	477	481	483	481	480	480	478	480	474
28 D	482	477	471	472	474	477	476	477	474	471	468	467	460	462	470	483	481	498	504	500	498	495	495	494	480
29 D	492	492	482	485	479	471	477	474	474	468	465	456	469	472	483	478	488	495	499	502	495	493	491	487	482
30	486	486	485	486	487	489	485	479	476	472	465	460	457	462	469	481	490	487	488	491	486	484	485	484	480
MEAN	478	476	476	476	478	479	479	475	472	467	461	459	458	459	463	470	478	482	483	482	480	479	478	478	474
MEAN Q	473	473	474	475	478	482	481	479	475	470	462	457	456	456	457	464	472	477	478	477	475	474	473	473	471
MEAN D	482	478	476	476	474	471	477	472	475	471	464	461	462	464	473	478	484	491	493	492	490	488	488	487	478

EBRE MAGNETIC OBSERVATORY
JUNE 2013

TOTAL INTENSITY
F = 45000 nT PLUS TABULAR QUANTITIES (UNITS nT)

HOUR(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	MEAN
DAY																									
1 D	170	140	145	159	120	106	136	110	123	113	96	96	95	80	101	105	113	126	138	142	138	144	143	140	124
2	137	138	137	129	132	139	138	128	123	112	116	118	131	128	122	124	122	129	141	136	139	146	136	138	131
3	136	140	132	137	138	144	137	128	122	122	118	122	127	129	131	133	135	141	138	146	142	141	143	139	134
4	139	146	133	133	139	137	134	136	136	131	126	125	127	123	123	127	133	137	141	140	139	143	143	150	135
5	144	135	137	138	139	139	136	130	124	123	122	124	127	129	126	126	134	138	137	142	140	138	137	138	133
6 D	140	138	137	144	150	153	149	137	121	122	125	122	120	117	129	135	147	155	152	141	142	139	141	153	138
7 D	141	139	142	125	142	114	128	122	118	123	109	124	127	129	135	134	136	139	137	140	146	144	143	144	133
8	141	139	141	141	147	147	147	134	127	123	125	121	118	117	126	133	140	142	142	142	143	144	143	141	136
9	142	142	144	145	151	153	149	143	137	129	126	127	138	142	139	140	142	137	147	147	143	142	140	141	141
10	139	141	149	146	145	152	147	142	134	119	114	112	115	120	128	136	147	147	147	142	140	141	140	137	137
11	138	139	140	141	145	150	151	146	137	127	120	119	125	136	132	130	133	139	140	139	143	145	142	143	137
12	142	142	141	142	146	150	147	137	131	130	133	137	138	138	137	136	140	141	143	143	141	139	138	138	140
13 Q	141	137	138	143	147	150	147	142	136	134	131	129	130	130	129	133	140	143	144	144	143	144	139	139	139
14 Q	140	139	140	143	148	153	153	147	141	136	136	132	135	136	135	137	141	144	144	144	145	143	141	141	141
15	141	147	145	149	151	155	150	138	132	125	127	127	134	134	133	135	141	144	142	142	142	144	142	140	140
16 Q	139	139	140	142	146	150	146	140	136	130	131	139	142	138	131	135	140	144	145	143	143	145	145	143	140
17 Q	140	141	140	142	146	146	147	141	133	127	---	134	132	131	129	129	136	142	146	145	146	144	141	141	139
18	141	142	141	142	146	150	143	138	137	134	127	120	119	124	125	129	135	137	138	145	147	142	141	142	137
19	141	147	139	141	145	147	146	142	139	141	141	139	133	131	133	134	140	142	145	147	146	146	147	154	142
20	148	145	151	146	147	154	151	151	152	155	150	149	142	128	120	127	133	144	151	148	145	143	147	151	145
21	156	146	134	142	141	136	119	118	115	114	116	129	127	131	130	135	142	145	148	138	146	135	136	138	134
22	149	145	140	135	141	146	135	130	133	126	124	136	139	137	142	140	142	145	163	138	140	138	142	147	140
23	141	141	151	142	153	154	133	131	122	109	116	125	135	136	135	135	137	148	149	137	142	142	138	137	137
24	138	139	140	143	146	147	136	132	120	103	107	117	128	136	142	137	154	152	146	144	155	133	133	138	136
25	150	135	139	137	141	142	139	135	133	127	126	131	133	128	126	128	136	138	143	143	141	142	137	137	136
26 Q	137	137	138	140	145	150	147	138	133	130	122	116	118	123	128	135	140	144	147	147	142	137	136	136	136
27	137	137	139	140	144	147	145	138	129	123	124	122	117	113	126	139	147	149	154	151	149	150	150	154	139
28 D	163	158	145	138	138	139	137	137	130	129	131	137	132	133	134	142	121	138	145	138	132	130	133	129	137
29 D	132	134	127	137	141	116	122	107	97	85	82	73	95	101	120	108	119	130	141	151	139	141	142	138	120
30	136	137	135	140	143	145	142	133	125	119	118	122	124	124	127	138	147	140	140	148	142	139	140	141	135
MEAN	143	141	140	141	143	144	141	134	129	124	122	124	127	127	129	132	137	141	144	143	143	141	141	142	136
MEAN Q	140	139	140	142	147	150	148	141	136	132	130	130	132	132	131	134	139	143	145	144	144	143	141	140	139
MEAN D	149	142	139	141	138	126	135	123	118	114	109	110	114	112	124	125	127	138	142	142	140	140	140	141	130

EBRE MAGNETIC OBSERVATORY
JULY 2013

DECLINATION EAST

D = 0 DEGREES PLUS TABULAR QUANTITIES (UNITS 0.1 MINUTES)

HOUR(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	MEAN
DAY																									
1	-82	-73	-79	-86	-73	-65	-57	-57	-57	-69	-87	-105	-119	-125	-120	-114	-102	-87	-80	-83	-83	-85	-84	-83	-86
2 Q	-82	-82	-83	-79	-75	-62	-51	-42	-44	-50	-67	-93	-117	-122	-114	-104	-87	-72	-75	-85	-89	-90	-90	-88	-81
3 Q	-89	-85	-84	-78	-74	-65	-55	-54	-58	-76	-93	-107	-111	-114	-118	-113	-103	-96	-89	-86	-86	-87	-91	-90	-88
4	-85	-86	-84	-82	-71	-58	-42	-37	-40	-58	-91	-118	-135	-142	-136	-117	-100	-85	-80	-89	-93	-93	-94	-93	-88
5	-86	-83	-81	-85	-82	-66	-54	-44	-41	-45	-68	-92	-115	-131	-131	-128	-114	-97	-95	-95	-86	-91	-90	-92	-87
6 D	-91	-74	-69	-57	-72	-87	-79	-61	-47	-62	-85	-122	-141	-152	-156	-140	-117	-91	-76	-71	-71	-66	-58	-59	-88
7	-64	-65	-61	-58	-50	-33	-23	-27	-33	-51	-71	-93	-111	-123	-127	-123	-112	-102	-95	-90	-87	-85	-85	-83	-77
8 Q	-81	-79	-77	-76	-76	-67	-56	-51	-56	-63	-81	-102	-112	-120	-121	-115	-103	-92	-82	-81	-82	-87	-88	-86	-85
9	-85	-82	-81	-77	-73	-65	-50	-49	-56	-73	-91	-114	-134	-151	-163	-155	-128	-103	-85	-79	-81	-92	-94	-90	-94
10 D	-76	-80	-94	-63	-78	-71	-57	-44	-48	-58	-77	-83	-86	-96	-97	-87	-88	-75	-65	-63	-46	-68	-56	-69	-72
11 D	-71	-73	-78	-81	-61	-56	-50	-52	-53	-69	-81	-100	-121	-126	-128	-103	-80	-72	-73	-64	-50	-78	-78	-77	-78
12	-77	-80	-82	-75	-76	-68	-51	-38	-42	-51	-62	-83	-108	-117	-111	-97	-85	-80	-82	-87	-87	-89	-82	-90	-79
13	-85	-85	-72	-68	-64	-49	-39	-33	-37	-48	-70	-97	-115	-120	-118	-113	-102	-93	-92	-80	-76	-76	-71	-59	-78
14 D	-56	-40	-49	-49	-39	-29	-30	-25	-49	-66	-86	-101	-124	-134	-145	-130	-112	-92	-74	-48	-51	-54	-30	-39	-69
15 D	-55	-55	-50	-59	-84	-67	-57	-51	-57	-72	-83	---	---	-102	-118	-108	-99	-88	-78	-72	-80	-81	-79	-82	-78
16	-81	-79	-77	-74	-74	-65	-46	-38	-44	-61	-86	-106	-116	-121	-122	-116	-107	-92	-72	-78	-83	-81	-81	-79	-83
17 Q	-79	-79	-78	-77	-72	-54	-43	-43	-54	-77	-102	-127	-146	-145	-130	-115	-101	-92	-95	-99	-97	-94	-87	-82	-90
18	-76	-71	-70	-68	-65	-49	-36	-34	---	---	-66	-95	-111	-136	-158	-143	-114	-104	-97	-75	-85	-85	-80	-80	-85
19	-78	-69	-72	-69	-74	-57	-37	-36	-58	-77	-95	-116	-121	-126	-115	-107	-97	-92	-77	-89	-89	-80	-75	-77	-83
20	-85	-83	-84	-71	-63	-51	-39	-36	-49	-71	-88	-99	-107	-119	-118	-109	-94	-81	-80	-82	-83	-82	-84	-83	-81
21 Q	-80	-77	-74	-74	-66	-51	-41	-44	-57	-76	-100	-123	-129	-122	-115	-105	-95	-89	-90	-91	-87	-83	-87	-82	-85
22	-77	-77	-77	-76	-71	-54	-42	-42	-45	-58	-71	-92	-111	-121	-122	-115	-94	-79	-79	-81	-79	-78	-78	-79	-79
23	-79	-80	-73	-64	-60	-48	-43	-45	-54	-78	-105	-123	-131	-125	-119	-109	-99	-91	-89	-87	-81	-81	-80	-81	-84
24	-78	-80	-72	-69	-67	-54	-50	-46	-52	-67	-86	-107	-130	-133	-122	-113	-104	-91	-84	-84	-84	-83	-82	-80	-84
25	-77	-77	-80	-81	-75	-64	-51	---	---	-67	---	-107	-122	-130	-129	-122	-105	-99	-100	-102	-78	-54	-64	-66	-85
26	-56	-54	-77	-74	-79	-74	-47	-33	-31	-45	-63	-84	-105	-118	-119	-123	-114	-99	-88	-77	-76	-75	-78	-79	-78
27	-75	-79	-72	-69	-64	-56	-53	-55	-55	-65	-83	-98	-116	-128	-125	-115	-105	-91	-84	-76	-80	-77	-79	-79	-83
28	-78	-77	-69	-57	-64	-61	-55	-48	-46	-50	-68	-90	-110	-118	-120	-109	-93	-79	-74	-70	-80	-80	-69	-78	-77
29	-80	-76	-76	-76	-73	-58	-47	-46	-42	-52	-73	-92	-109	-125	-122	-104	-91	-82	-80	-82	-80	-82	-84	-86	-80
30	-82	-81	-82	-80	-73	-55	-42	-35	-40	-58	-85	-107	-122	-122	-105	-99	-87	-78	-67	-73	-77	-81	-81	-82	-79
31	-78	-80	-78	-69	-64	-53	-45	-46	-53	-70	-90	-111	-120	-115	-106	-94	-86	-81	-82	-79	-80	-84	-84	-83	-81
MEAN	-78	-75	-75	-72	-69	-58	-47	-43	-48	-63	-82	-103	-118	-125	-124	-114	-101	-88	-83	-81	-80	-81	-79	-79	-82
MEAN Q	-82	-80	-79	-77	-72	-60	-49	-47	-54	-68	-88	-110	-123	-124	-120	-111	-98	-88	-86	-88	-88	-88	-88	-85	-86
MEAN D	-70	-64	-68	-62	-67	-62	-55	-47	-51	-65	-82	-101	-116	-122	-129	-114	-99	-83	-73	-64	-60	-70	-60	-65	-77

EBRE MAGNETIC OBSERVATORY
JULY 2013

HORIZONTAL INTENSITY
H = 25000 nT PLUS TABULAR QUANTITIES (UNITS nT)

HOUR(UT) DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	MEAN	
1	163	156	150	152	152	156	155	148	140	145	145	152	165	163	156	150	148	151	156	158	158	160	160	158	154	
2 Q	158	160	159	159	160	163	167	169	166	166	177	189	194	191	176	165	160	160	160	160	161	162	164	162	163	167
3 Q	163	162	160	159	162	167	166	162	155	159	173	182	187	184	173	164	160	160	162	162	163	167	170	170	166	
4	167	165	165	165	166	169	171	167	160	158	162	168	175	175	174	173	168	169	174	177	183	181	184	181	171	
5	177	174	172	174	178	178	179	169	165	167	173	180	179	173	163	161	159	166	178	171	168	171	177	172	172	
6 D	168	163	162	170	179	181	171	143	122	102	100	95	97	94	87	82	85	95	101	118	120	128	125	137	126	
7	165	146	146	145	147	147	141	136	137	135	131	136	148	162	164	162	161	162	163	162	164	166	165	165	152	
8 Q	164	165	165	164	166	171	168	163	162	166	166	163	163	164	162	162	162	161	164	164	169	171	170	171	165	
9	171	170	169	170	172	175	178	178	168	160	167	182	192	190	178	166	159	166	169	170	177	194	188	190	175	
10 D	188	177	178	176	178	183	166	161	153	128	135	125	127	119	112	116	117	126	124	139	144	141	157	157	147	
11 D	152	151	157	171	178	178	169	139	124	132	129	127	127	124	121	119	137	130	134	149	170	152	151	150	145	
12	153	155	161	169	165	161	162	151	144	132	133	139	150	156	155	158	158	167	169	171	165	166	173	164	157	
13	166	163	181	173	164	173	169	154	147	147	156	159	168	174	175	177	173	174	175	168	161	162	157	158	166	
14 D	159	164	167	160	164	176	166	155	152	140	130	124	136	132	127	122	123	126	122	135	129	117	118	114	140	
15 D	133	139	153	155	163	163	146	145	124	119	120	---	---	139	135	122	121	118	124	143	152	155	155	153	139	
16	154	154	154	155	156	158	158	157	157	159	162	166	172	175	168	161	160	159	163	159	156	162	163	163	160	
17 Q	163	163	163	163	168	167	162	157	153	151	156	169	182	190	190	189	182	178	175	178	180	180	174	174	171	
18	171	170	171	171	173	176	177	176	---	---	177	188	191	198	190	158	167	173	175	173	175	164	166	170	175	
19	167	168	171	166	168	161	156	139	136	146	160	169	165	168	167	161	154	149	163	159	166	167	170	162	161	
20	161	167	172	165	166	163	157	154	157	166	174	183	190	191	180	166	159	159	163	166	165	163	163	162	167	
21 Q	162	164	165	166	166	169	168	159	152	153	167	190	197	195	191	184	173	165	166	171	173	179	174	173	172	
22	172	173	175	176	178	180	177	169	162	160	172	184	187	185	182	181	168	168	167	173	177	174	176	169	174	
23	168	173	170	165	167	168	162	152	150	153	159	159	163	169	175	174	169	169	171	169	168	169	169	169	166	
24	168	171	171	167	169	174	174	166	159	159	166	175	179	180	179	179	175	170	169	169	170	167	169	170	171	
25	170	171	174	175	177	181	178	---	---	161	---	185	197	198	195	190	179	180	172	158	173	168	176	180	177	
26	174	180	178	181	183	178	172	163	155	154	153	160	161	156	167	171	165	163	163	162	166	166	165	167	167	
27	168	167	177	167	170	175	172	172	165	161	156	167	178	176	173	178	162	156	153	158	165	172	169	164	168	
28	166	170	175	171	164	167	166	160	152	148	152	157	167	173	172	165	160	157	161	168	166	169	173	167	164	
29	166	165	164	163	167	169	170	164	159	155	163	177	180	180	172	171	166	165	168	172	174	176	175	174	169	
30	172	172	171	169	166	167	167	164	162	160	162	168	175	172	169	169	168	169	167	167	168	167	165	167	168	
31	167	167	170	169	165	169	168	160	153	151	154	168	182	187	185	175	166	161	162	166	172	170	169	169	168	
MEAN	165	165	167	166	168	170	166	159	152	150	155	162	168	169	165	160	157	157	159	162	165	165	165	165	163	
MEAN Q	162	163	162	162	164	167	166	162	157	159	168	179	184	185	178	173	167	165	166	167	170	172	170	170	168	
MEAN D	160	159	163	166	172	176	164	149	135	124	123	119	123	121	116	112	117	119	121	137	143	139	141	142	139	

EBRE MAGNETIC OBSERVATORY
JULY 2013

VERTICAL INTENSITY

Z = 37000 nT PLUS TABULAR QUANTITIES (UNITS nT)

HOUR(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	MEAN
DAY																									
1	484	479	478	480	481	484	483	478	473	471	465	463	458	458	462	469	478	483	485	484	482	481	479	479	476
2 Q	479	479	479	479	481	484	485	483	475	464	458	450	448	450	456	465	475	477	476	475	475	476	475	477	472
3 Q	477	477	476	477	480	484	481	479	479	472	465	468	468	465	464	468	472	476	480	480	479	479	479	478	475
4	477	476	478	479	482	484	485	485	479	466	459	461	463	463	467	473	477	480	478	476	476	473	474	474	474
5	475	476	476	476	478	479	481	479	478	473	468	467	458	455	460	473	480	485	484	474	475	475	477	474	474
6 D	476	478	479	479	480	477	480	475	481	473	472	468	474	473	479	494	507	514	510	505	499	499	495	497	486
7	495	483	485	486	488	491	487	482	480	475	472	471	473	469	467	472	477	479	479	479	480	480	479	479	479
8 Q	479	480	479	479	482	485	485	482	481	475	465	459	461	467	470	474	481	483	484	483	482	479	478	478	477
9	478	478	478	479	481	484	485	482	475	466	462	447	437	431	434	452	468	478	480	479	479	478	473	476	469
10 D	475	472	474	475	477	480	477	477	467	455	460	460	463	464	467	473	482	498	497	499	493	486	490	481	477
11 D	479	480	482	485	485	483	480	471	469	465	463	462	464	470	478	486	502	500	496	499	496	481	480	481	481
12	482	483	484	486	482	482	484	482	480	479	479	472	470	470	473	476	478	485	484	483	479	479	480	475	479
13	477	477	483	477	479	488	484	476	475	470	464	455	456	460	466	473	478	483	484	485	482	483	482	485	476
14 D	483	485	481	478	485	489	479	477	474	467	466	465	470	463	466	476	495	503	504	511	498	492	495	489	483
15 D	495	489	491	485	485	481	482	488	480	479	481	---	---	484	482	481	487	491	494	496	492	489	487	485	486
16	485	484	484	483	485	488	491	489	486	477	468	466	462	460	459	464	476	485	491	485	482	484	482	481	479
17 Q	480	480	480	482	484	487	484	480	471	464	455	449	449	457	462	465	469	475	475	477	477	476	476	478	472
18	478	478	479	478	480	483	480	483	---	---	467	461	459	458	453	456	469	477	484	485	480	477	480	481	474
19	479	480	480	476	478	477	478	471	473	471	465	460	463	468	471	475	483	485	488	480	482	483	482	479	476
20	479	481	479	477	480	481	480	477	474	472	470	467	464	458	458	466	473	477	478	476	476	475	477	477	474
21 Q	477	478	477	478	481	484	479	471	466	463	457	460	468	463	458	462	466	471	474	476	478	478	476	477	472
22	478	479	478	478	481	484	483	479	476	469	462	457	454	453	456	463	468	477	475	475	477	475	474	473	472
23	474	478	477	476	479	482	474	470	468	464	465	465	461	454	452	460	469	475	476	475	476	475	474	474	471
24	475	477	477	477	479	481	479	477	471	466	465	462	459	458	465	474	477	479	480	478	477	475	476	475	473
25	476	478	477	477	480	485	482	---	---	477	---	472	471	465	469	474	479	484	481	478	486	483	483	482	478
26	481	481	478	477	476	478	480	478	475	467	456	448	447	452	463	469	477	481	483	482	482	480	478	478	473
27	479	477	480	475	480	483	481	481	477	469	459	462	465	467	473	483	481	487	488	488	485	485	478	478	477
28	479	479	479	476	476	481	484	483	479	477	473	465	467	470	470	473	478	482	483	482	479	479	480	475	477
29	476	476	477	477	481	484	481	477	475	470	463	457	458	459	465	471	474	477	475	476	477	475	474	474	473
30	475	475	474	475	477	483	483	484	483	474	466	463	464	461	464	469	476	481	481	479	479	476	477	477	475
31	477	477	478	476	476	481	478	475	472	468	464	466	473	474	477	475	480	480	479	480	479	477	476	477	476
MEAN	479	479	479	479	481	483	482	479	476	470	465	462	462	462	465	471	478	483	484	483	482	480	480	479	476
MEAN Q	479	479	478	479	482	485	483	479	474	468	460	457	459	461	462	467	473	476	478	478	478	477	477	478	474
MEAN D	481	481	481	481	483	482	480	478	474	468	468	466	469	471	474	482	494	501	500	502	495	489	489	487	482

EBRE MAGNETIC OBSERVATORY
JULY 2013

TOTAL INTENSITY
F = 45000 nT PLUS TABULAR QUANTITIES (UNITS nT)

HOUR(UT) DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	MEAN
1	147	139	135	137	138	143	141	134	125	126	121	123	126	125	125	127	133	139	143	143	142	143	141	140	135
2 Q	139	141	140	140	143	147	150	149	141	132	133	133	134	134	131	132	138	139	139	138	139	140	138	141	139
3 Q	141	140	138	138	143	148	146	142	138	135	137	144	147	143	136	134	135	139	143	143	143	145	147	146	141
4	143	141	143	143	147	150	152	150	141	129	126	131	136	136	139	143	144	147	148	148	151	148	151	149	143
5	147	146	145	146	151	151	153	146	143	139	139	142	134	129	127	136	141	149	155	143	142	144	149	143	143
6 D	142	141	142	147	153	151	148	128	121	103	101	95	102	98	100	110	122	134	134	139	135	139	134	143	128
7	157	136	138	139	142	143	137	130	128	124	119	121	129	134	133	136	140	142	143	142	144	145	144	143	137
8 Q	144	145	144	143	147	152	150	145	144	141	133	127	128	133	135	138	144	145	147	146	149	147	145	147	142
9	146	146	146	147	149	153	156	154	142	130	131	127	124	118	114	122	131	144	147	146	150	159	152	155	141
10 D	153	144	147	147	149	154	142	140	128	103	111	105	109	105	104	111	119	137	135	145	143	136	149	141	132
11 D	137	137	142	152	156	154	147	123	112	114	110	108	110	113	118	123	147	141	140	151	160	138	137	137	134
12	139	141	145	151	146	144	146	139	132	125	126	124	128	131	133	137	139	150	150	150	144	144	149	140	140
13	143	141	155	147	143	155	150	135	130	126	126	120	127	132	138	145	148	152	153	150	144	145	142	145	141
14 D	144	149	146	140	148	158	144	136	132	120	113	109	120	112	111	117	133	142	140	153	139	127	130	123	133
15 D	139	137	147	143	148	145	135	140	122	118	120	---	---	133	129	122	126	128	133	145	147	146	145	142	135
16	143	141	142	142	143	148	150	148	146	139	133	134	134	134	129	129	138	145	152	146	141	146	145	145	141
17 Q	144	143	144	145	149	151	146	140	130	124	119	121	129	140	144	146	145	148	146	149	151	149	146	148	141
18	147	146	147	146	149	153	151	153	---	---	141	142	141	145	136	121	136	147	153	153	150	142	145	148	145
19	145	146	148	142	145	140	138	122	122	126	129	130	131	136	138	138	140	140	150	141	147	148	149	142	139
20	142	147	147	142	145	145	140	136	135	139	141	144	145	141	134	134	135	138	142	142	141	140	141	140	141
21 Q	140	142	143	144	146	150	145	134	126	123	127	142	153	147	141	140	138	137	141	144	147	150	146	146	141
22	146	148	148	149	152	156	154	146	139	133	134	136	135	134	134	139	136	144	141	145	149	145	146	141	143
23	141	147	145	141	145	148	138	129	127	125	129	129	128	125	127	133	138	142	144	143	143	143	142	142	137
24	142	145	145	143	146	150	149	143	133	129	133	135	135	135	140	147	147	147	146	145	144	142	143	143	142
25	144	146	147	148	152	158	154	---	142	140	143	149	155	151	152	154	152	156	149	139	154	149	153	154	149
26	150	154	150	151	152	150	148	142	135	128	118	116	115	117	132	139	142	144	146	145	146	145	143	144	140
27	145	143	151	142	148	153	150	149	142	133	122	130	140	140	143	154	143	145	145	148	149	152	145	142	144
28	144	147	149	145	141	147	148	144	137	133	131	128	135	141	140	139	140	142	145	148	144	146	149	141	142
29	141	142	141	142	146	150	148	142	137	130	130	132	135	135	135	140	140	142	142	144	147	146	145	145	141
30	144	144	143	142	143	149	148	147	146	137	132	132	137	133	134	137	142	148	146	145	145	143	142	144	142
31	143	143	145	143	141	147	145	138	131	127	126	134	148	152	153	147	145	142	142	145	148	145	144	144	142
MEAN	144	144	145	144	147	150	147	140	134	128	127	128	131	132	132	135	139	143	145	145	146	144	144	143	140
MEAN Q	142	142	142	142	146	150	147	142	136	131	130	133	138	139	137	138	140	142	143	144	146	146	145	145	141
MEAN D	143	142	145	146	151	152	143	133	123	112	111	107	112	112	113	117	129	136	137	147	145	137	139	137	132

EBRE MAGNETIC OBSERVATORY
AUGUST 2013

DECLINATION EAST

D = 0 DEGREES PLUS TABULAR QUANTITIES (UNITS 0.1 MINUTES)

HOUR(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	MEAN
DAY																									
1	-79	-74	-70	-73	-73	-63	-60	-63	-67	-74	-82	-98	-109	-116	-111	-107	-94	-94	-92	-91	-88	-83	-79	-80	-84
2 Q	-79	-76	-73	-71	-66	-58	-48	-45	-46	-58	-72	-88	-98	-111	-113	-104	-91	-81	-78	-79	-82	-83	-81	-81	-77
3	-79	-79	-77	-75	-67	-54	-45	-43	-47	-65	-100	-126	-135	-136	-129	-114	-98	-87	-83	-87	-88	-84	-77	-69	-85
4	-72	-72	-70	-68	-63	-51	-36	-42	-47	-63	-82	-102	-108	-114	-115	-119	-115	-85	-70	-62	-55	-52	-61	-79	-75
5 D	-61	-60	-82	-49	-51	-33	-27	-35	-48	-64	-85	-96	-106	-104	-95	-89	-81	-64	-69	-70	-67	-64	-70	-70	-68
6	-60	-70	-69	-69	-71	-59	-46	-39	-40	-56	-70	-90	-105	-107	-103	-91	-80	-72	-72	-77	-77	-76	-79	-82	-73
7 Q	-78	-77	-78	-73	-67	-57	-47	-44	-51	-70	-94	-110	-115	-114	-102	-83	-70	-64	-66	-73	-76	-76	-80	-82	-77
8 Q	-81	-79	-74	-71	-66	-51	-38	-43	-60	-86	-103	-114	-120	-120	-108	-96	-84	-75	-77	-76	-77	-83	-81	-80	-81
9	-78	-77	-75	-70	-65	-49	-33	-23	-25	-45	-79	-107	-120	-120	-117	-112	-105	-93	-87	-82	-79	-82	-81	-78	-78
10	-78	-73	-69	-65	-61	-51	-46	-44	-47	-61	-83	-105	-133	-150	-134	-118	-101	-90	-85	-88	-87	-84	-84	-82	-84
11	-76	-75	-74	-67	-67	-57	-44	-33	-34	-51	-77	-100	-112	-117	-113	-106	-100	-89	-85	-84	-81	-78	-78	-76	-78
12	-77	-74	-71	-68	-66	-58	-47	-45	-52	-73	-100	-118	-131	-132	-126	-113	-97	-87	-88	-84	-80	-78	-79	-71	-84
13	-69	-71	-73	-70	-66	-57	-49	-43	-38	-51	-80	-105	-109	-112	-105	-105	-102	-95	-87	-85	-76	-71	-75	-74	-78
14	-74	-66	-55	-56	-53	-52	-43	-31	-38	-55	-79	-101	-115	-119	-119	-111	-104	-96	-93	-87	-82	-68	-62	-62	-76
15	-59	-60	-77	-65	-56	-41	-39	-32	-35	-48	-73	-75	-93	-111	-120	-115	-128	-107	-93	-86	-83	-77	-57	-59	-75
16 D	-59	-60	-51	-42	-49	-44	-27	-23	-36	-56	-79	-105	-125	-124	-107	-106	-73	-70	-73	-69	-62	-70	-69	-65	-68
17	-71	-69	-73	-67	-61	-50	-44	-44	-48	-69	-90	-108	-120	-119	-103	-92	-86	-75	-72	-73	-72	-74	-75	-73	-76
18	-72	-72	-67	-63	-57	-47	-35	-28	-27	-49	-79	-103	-112	-113	-99	-84	-79	-71	-65	-68	-65	-69	-76	-77	-70
19	-76	-76	-73	-71	-63	-52	-43	-35	-39	-61	-87	-112	-128	-125	-113	-97	-83	-77	-78	-77	-74	-75	-78	-77	-78
20 Q	-75	-72	-69	-66	-62	-54	-44	-39	-42	-61	-90	-113	-127	-128	-122	-108	-94	-84	-85	-87	-83	-82	-78	-74	-81
21 D	-75	-73	-70	-73	-64	-65	-49	-35	-36	-53	-86	-118	-132	-131	-114	-105	-92	-93	-98	-84	-74	-48	-65	-74	-79
22	-73	-62	-72	-74	-62	-52	-47	-38	-36	-52	-72	-100	-119	-127	-115	-100	-84	-67	-61	-67	-57	-59	-43	-33	-70
23 D	-52	-60	-46	-64	-64	-52	-36	-23	-27	-53	-83	-105	-113	-115	-119	-113	-86	-80	-77	-64	-54	-69	-73	-65	-71
24	-73	-67	-68	-69	-68	-52	-40	-35	-41	-59	-86	-103	-117	-119	-111	-95	-86	-76	-77	-75	-72	-65	-69	-73	-75
25	-73	-72	-70	-67	-64	-63	-48	-32	-34	-52	-80	-104	-120	-126	-121	-98	-89	-78	-74	-72	-71	-70	-65	-64	-75
26	-64	-61	-61	-57	-59	-56	-53	-48	-49	-59	-82	-99	-108	-111	-103	-100	-92	-83	-77	-76	-74	-67	-63	-69	-74
27 D	-66	-66	-76	-71	-69	-66	-56	-46	-43	-54	-78	-106	-124	-127	-118	-122	-120	-102	-90	-46	-28	-45	-54	-41	-76
28	-43	-47	-32	-41	-46	-43	-37	-31	-36	-49	-72	-90	-103	-102	-97	-92	-87	-81	-76	-75	-73	-68	-68	-66	-65
29 Q	-66	-63	-62	-62	-63	-57	-49	-43	-43	-54	-74	-93	-100	-102	-101	-92	-86	-82	-80	-77	-75	-73	-71	-70	-72
30	-70	-70	-69	-67	-64	-59	-51	-43	-48	-58	-75	-98	-108	-100	-95	-100	-98	-83	-78	-72	-57	-56	-58	-26	-71
31	-47	-50	-41	-66	-69	-65	-51	-52	-52	-64	-74	-88	-114	-117	-105	-97	-87	-78	-72	-71	-73	-73	-67	-65	-73
MEAN	-70	-69	-67	-65	-63	-54	-44	-39	-42	-59	-82	-103	-115	-118	-111	-103	-93	-83	-79	-76	-72	-71	-71	-69	-76
MEAN Q	-76	-73	-71	-69	-65	-55	-45	-43	-49	-66	-87	-104	-112	-115	-109	-96	-85	-77	-77	-78	-79	-80	-78	-77	-78
MEAN D	-63	-64	-65	-60	-59	-52	-39	-33	-38	-56	-82	-106	-120	-120	-111	-107	-90	-82	-81	-67	-57	-59	-66	-63	-73

EBRE MAGNETIC OBSERVATORY
AUGUST 2013

HORIZONTAL INTENSITY
H = 25000 nT PLUS TABULAR QUANTITIES (UNITS nT)

HOUR(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	MEAN	
DAY																										
1	168	168	166	166	171	172	170	165	162	160	161	173	181	188	191	184	174	173	175	178	178	178	178	177	177	173
2 Q	176	175	173	173	174	175	173	170	169	172	185	195	194	189	182	179	174	173	172	175	174	173	174	174	172	177
3	173	175	175	175	173	172	170	167	163	167	181	194	197	204	198	188	179	177	177	179	182	184	180	182	180	175
4	181	184	186	185	186	188	187	179	168	171	186	195	195	193	186	186	175	128	143	155	158	164	158	160	175	
5 D	168	165	152	160	155	159	144	139	135	129	138	148	164	164	159	154	150	153	158	159	153	155	160	164	154	
6	164	154	154	155	155	158	156	154	150	157	165	168	170	177	177	171	167	162	159	161	164	160	157	159	161	
7 Q	160	158	161	161	161	160	157	154	157	164	168	176	183	178	171	168	164	162	161	162	161	164	165	165	164	
8 Q	166	164	163	164	165	164	160	148	142	150	165	179	189	192	191	182	171	166	166	165	168	173	171	173	168	
9	174	172	173	176	177	173	170	162	157	162	171	178	177	179	182	176	172	170	174	178	173	172	175	174	173	
10	173	176	174	170	172	174	171	160	153	145	148	165	182	188	181	179	176	177	178	181	182	183	181	180	173	
11	177	175	176	174	175	176	170	161	150	151	159	173	182	186	179	171	167	168	170	174	177	175	177	174	171	
12	171	174	175	175	177	176	173	167	162	166	175	187	191	186	185	181	170	169	171	176	179	173	174	184	176	
13	179	176	174	175	175	175	175	172	168	163	158	165	179	190	188	187	175	159	162	175	173	167	168	174	173	
14	173	185	175	166	161	169	169	162	155	154	163	177	190	188	179	177	175	172	173	174	175	179	168	173	172	
15	171	174	181	174	167	169	171	171	161	148	151	160	176	176	167	162	150	145	161	173	171	165	161	152	165	
16 D	170	173	172	173	187	161	155	148	141	145	154	165	160	156	157	149	149	148	149	160	170	160	165	174	160	
17	159	155	162	164	161	156	153	145	150	159	169	173	170	166	165	161	158	160	162	163	164	162	163	167	161	
18	172	164	162	162	162	163	159	152	148	151	163	173	181	182	175	169	161	153	156	156	162	168	165	165	164	
19	165	167	168	166	166	167	164	160	155	159	175	189	191	184	175	167	162	160	163	168	168	167	166	167	168	
20 Q	169	170	171	169	169	168	163	156	149	142	151	167	179	182	177	172	169	170	176	182	182	183	189	195	171	
21 D	184	188	184	174	183	180	172	167	164	147	147	156	163	168	176	170	171	176	176	161	168	161	162	166	169	
22	182	188	171	179	173	177	170	152	146	142	139	147	156	165	164	163	158	158	166	175	174	164	172	172	165	
23 D	167	177	167	162	164	163	150	145	137	127	134	145	156	167	164	155	155	154	157	160	161	155	157	161	156	
24	169	170	167	168	170	172	167	159	145	137	140	155	163	173	169	168	160	161	164	163	162	161	162	163	162	
25	166	162	163	165	166	164	168	161	155	150	149	162	169	171	165	158	156	153	153	154	156	158	158	159	160	
26	163	166	168	168	164	164	166	168	167	170	173	181	191	191	183	173	165	164	167	169	167	172	175	167	171	
27 D	167	163	173	168	166	168	165	162	159	161	165	166	168	164	171	176	166	154	127	122	117	122	139	144	156	
28	148	161	160	144	148	148	151	148	145	145	146	158	166	163	162	161	159	158	160	159	159	162	159	159	155	
29 Q	159	160	161	160	161	162	160	155	150	151	154	161	173	177	172	168	167	166	164	164	168	168	167	168	163	
30	167	167	167	167	167	168	170	170	166	172	185	186	190	192	186	173	162	160	162	158	160	166	163	167	171	
31	155	163	155	154	158	161	165	157	137	141	146	154	154	143	149	152	152	153	156	159	163	166	168	176	156	
MEAN	169	170	169	168	168	168	165	159	154	154	160	170	177	178	175	170	165	161	163	166	167	166	167	169	167	
MEAN Q	166	165	166	165	166	166	162	157	153	156	165	176	183	184	179	174	169	168	168	170	171	172	173	175	169	
MEAN D	171	173	170	168	171	166	157	152	147	142	148	156	162	164	165	161	158	157	153	152	154	151	156	162	159	

EBRE MAGNETIC OBSERVATORY
AUGUST 2013

VERTICAL INTENSITY

Z = 37000 nT PLUS TABULAR QUANTITIES (UNITS nT)

HOUR(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	MEAN	
DAY																										
1	476	477	476	477	480	480	478	478	477	474	469	471	468	463	466	470	475	478	477	477	478	478	475	475	475	475
2 Q	475	476	476	476	477	480	478	478	474	469	469	464	455	452	456	463	467	472	472	472	473	473	473	473	473	471
3	475	475	475	474	475	477	474	471	466	461	461	457	457	455	456	460	466	470	472	472	473	473	474	474	475	468
4	474	475	475	474	476	478	474	471	463	462	459	464	466	459	460	466	472	465	483	486	486	483	478	477	472	472
5 D	479	476	472	479	477	480	476	478	474	471	474	471	472	471	472	477	482	485	480	479	479	481	480	481	477	477
6	479	476	478	479	480	483	483	480	478	477	472	466	467	471	470	470	473	475	476	476	476	475	476	477	476	476
7 Q	478	477	479	479	480	482	481	479	475	466	456	454	456	462	466	471	477	477	475	475	476	475	474	475	473	473
8 Q	476	476	477	478	479	482	479	473	470	463	461	458	456	458	463	468	476	479	477	477	477	476	475	476	472	472
9	476	474	476	478	479	481	482	479	473	465	463	462	460	466	468	468	472	475	475	476	474	474	475	474	473	473
10	474	475	474	475	478	481	479	473	468	465	465	464	467	463	463	467	472	477	476	475	474	474	473	472	472	472
11	473	473	474	475	477	481	480	478	475	468	460	459	462	466	465	465	469	475	475	475	475	475	475	472	472	472
12	472	474	474	475	476	478	476	472	467	460	453	453	454	456	462	465	470	475	473	475	476	474	477	479	469	469
13	474	472	473	474	476	478	476	474	470	463	455	453	457	463	465	468	466	466	472	479	479	479	477	478	470	470
14	476	479	473	472	474	478	473	470	463	460	458	456	450	442	444	454	462	469	471	474	477	478	474	477	467	467
15	476	476	473	472	472	477	474	472	468	466	471	474	474	468	463	466	469	478	483	483	480	480	482	478	474	474
16 D	486	479	478	476	476	467	473	467	463	462	457	452	444	456	465	474	489	486	482	484	482	478	479	481	472	472
17	472	476	477	477	476	478	477	473	472	467	464	455	452	459	465	464	469	476	475	475	477	476	478	479	471	471
18	478	474	476	476	478	481	478	475	470	464	462	462	464	465	467	468	472	473	476	477	479	478	475	476	473	473
19	477	477	477	476	477	478	478	478	470	461	453	448	448	454	460	466	472	476	475	477	476	474	474	475	470	470
20 Q	476	478	477	476	477	478	477	476	477	473	472	469	471	474	475	476	478	478	474	474	474	473	477	476	475	475
21 D	472	475	474	472	478	475	474	476	470	458	458	458	456	460	466	469	473	474	471	471	477	477	477	478	470	470
22	481	477	471	476	475	479	477	471	471	465	462	462	461	468	470	478	481	482	482	482	479	474	479	477	474	474
23 D	474	476	472	473	477	478	476	480	478	473	470	475	481	480	476	474	483	484	482	483	483	477	478	479	478	478
24	480	478	478	478	481	484	483	480	472	467	462	467	474	475	467	466	470	477	478	477	478	478	477	477	475	475
25	477	476	478	479	480	482	486	481	476	464	455	455	457	462	465	470	478	483	482	482	482	481	480	480	475	475
26	480	480	479	479	477	479	479	478	474	472	468	463	461	459	458	461	466	474	477	478	477	479	476	473	473	473
27 D	475	474	477	473	474	478	479	479	479	475	469	466	468	466	468	468	470	480	479	489	493	491	494	489	477	477
28	489	487	482	476	482	482	483	485	484	480	474	477	476	473	474	475	476	478	479	480	481	481	480	479	480	480
29 Q	480	480	479	479	479	480	481	481	480	476	472	472	476	474	471	470	472	475	475	477	478	477	476	478	477	477
30	477	476	476	476	476	476	476	473	470	468	465	460	461	462	459	460	465	473	475	477	480	480	478	483	472	472
31	475	478	474	475	476	478	479	476	474	477	471	473	469	466	472	475	479	481	481	481	480	481	482	480	476	476
MEAN	477	477	476	476	477	479	478	476	472	468	464	463	463	463	465	468	473	476	477	478	478	478	477	477	473	473
MEAN Q	477	477	478	478	478	481	479	477	475	469	466	463	463	464	466	470	474	476	475	475	476	475	475	476	473	473
MEAN D	477	476	475	475	477	476	476	476	473	468	466	464	464	467	469	472	480	482	479	481	483	481	482	482	475	475

EBRE MAGNETIC OBSERVATORY
AUGUST 2013

TOTAL INTENSITY
F = 45000 nT PLUS TABULAR QUANTITIES (UNITS nT)

HOUR(UT) DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	MEAN
1	143	143	142	142	148	148	146	143	140	137	133	141	143	143	147	146	145	147	148	150	150	151	147	147	145
2 Q	146	146	145	146	148	150	148	145	142	139	147	148	140	134	135	138	139	142	141	144	144	143	143	142	143
3	144	146	145	145	145	146	143	138	132	130	138	141	143	146	143	141	140	143	145	146	148	150	147	150	143
4	149	151	152	151	152	156	152	145	132	133	139	148	150	142	139	145	144	111	134	144	145	146	139	139	143
5 D	146	142	131	141	136	141	130	128	123	118	124	127	137	136	134	135	138	142	141	140	136	140	142	145	136
6	143	135	137	138	139	143	142	138	135	138	138	135	137	143	143	140	140	139	138	139	140	138	136	139	139
7 Q	140	138	142	142	143	144	141	137	135	133	126	129	135	137	136	139	142	140	138	139	139	140	140	141	138
8 Q	141	140	141	142	143	146	141	130	123	122	129	134	138	141	145	145	144	144	142	142	143	146	143	146	140
9	147	144	145	149	151	150	150	142	134	130	134	136	135	141	144	140	142	143	145	148	144	143	146	145	143
10	144	146	145	143	147	150	147	136	128	121	122	131	143	143	139	142	144	149	149	149	149	149	148	146	142
11	145	144	145	145	148	151	147	141	132	127	124	131	139	144	140	135	136	142	143	145	147	146	147	143	141
12	141	145	146	146	148	149	145	139	132	129	127	134	138	136	140	141	139	143	142	147	149	144	147	154	142
13	147	145	144	146	146	149	147	144	138	130	120	122	133	144	145	147	139	130	137	149	148	145	144	148	141
14	146	155	144	138	138	145	141	135	125	122	125	131	133	126	123	129	135	139	142	144	148	151	141	147	138
15	145	146	148	143	140	144	143	142	133	124	129	137	146	141	131	131	127	132	144	151	148	144	144	136	139
16 D	152	148	147	146	154	132	133	124	117	118	120	121	112	120	127	131	143	140	138	145	149	140	144	150	135
17	134	135	140	141	139	138	136	128	129	130	133	128	124	128	132	129	132	139	139	140	141	140	142	145	135
18	147	139	140	140	141	144	140	133	127	123	128	134	140	142	140	137	135	132	136	137	142	145	141	141	138
19	142	143	144	142	142	144	142	140	131	125	128	132	132	134	133	134	136	138	139	144	143	140	141	142	138
20 Q	144	145	145	143	144	145	141	136	133	126	130	136	145	149	147	145	145	146	146	149	149	149	156	158	144
21 D	149	153	150	143	153	149	143	142	136	116	116	121	124	129	139	139	142	146	143	135	144	140	141	144	139
22	155	155	141	149	145	150	144	130	127	119	115	120	124	135	136	142	141	142	146	152	149	139	148	146	140
23 D	141	148	139	137	141	142	133	133	127	117	119	129	141	145	140	134	142	141	141	144	145	137	138	142	137
24	147	146	144	145	148	152	148	141	126	118	116	128	139	145	136	135	133	140	142	141	141	140	140	141	139
25	143	140	142	143	145	145	151	144	136	123	115	122	127	133	132	132	138	140	140	140	141	141	140	141	137
26	143	145	145	145	141	143	145	144	141	141	139	139	143	142	136	134	133	139	143	145	144	148	147	140	142
27 D	141	139	147	141	141	144	144	142	140	139	136	133	136	133	138	141	137	139	122	128	129	130	141	140	137
28	143	148	143	130	136	137	139	139	137	134	129	138	142	137	138	138	138	139	141	141	142	143	142	141	139
29 Q	141	141	142	141	141	143	143	140	136	133	132	136	146	147	141	138	139	141	140	142	145	143	143	144	141
30	143	142	143	143	143	143	144	141	137	139	144	140	143	145	139	133	130	136	139	138	142	145	142	149	141
31	134	142	134	135	138	141	144	137	124	129	127	132	130	121	129	133	136	138	140	142	144	146	148	151	136
MEAN	144	144	143	143	144	145	143	138	132	128	129	133	137	138	138	138	139	139	141	143	144	143	143	145	140
MEAN Q	142	142	143	143	144	146	142	138	134	131	133	137	141	142	141	141	142	143	142	143	144	144	145	146	141
MEAN D	146	146	143	142	145	141	137	134	129	122	123	126	130	133	136	136	140	142	137	138	141	137	141	144	137

EBRE MAGNETIC OBSERVATORY
SEPTEMBER 2013

DECLINATION EAST

D = 0 DEGREES PLUS TABULAR QUANTITIES (UNITS 0.1 MINUTES)

HOUR(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	MEAN
DAY																										
1	D	-58	-74	-65	-59	-62	-58	-49	-34	-29	-35	-63	-89	-105	-109	-106	-91	-76	-69	-65	-54	-58	-66	-67	-70	-67
2	D	-68	-67	-64	-64	-69	-70	-54	-40	-44	-53	-74	-90	-111	-110	-105	-93	-86	-76	-70	-71	-72	-74	-74	-72	-74
3		-70	-68	-67	-65	-64	-59	-50	-45	---	-68	-88	-101	-108	-115	-107	-97	-92	-87	-84	-84	-77	-75	-74	-48	-77
4		-63	-66	-66	-66	-65	-60	-50	-42	-47	-61	-88	-108	-115	-113	-105	-93	-85	-81	-80	-79	-76	-72	-74	-76	-76
5		-74	-72	-71	-68	-63	-54	-44	-36	-37	-53	-79	-108	-120	-122	-111	-95	-80	-74	-77	-77	-73	-74	-75	-74	-75
6		-74	-74	-71	-66	-64	-53	-38	-30	-37	-64	-90	-108	-118	-119	-106	-89	-78	-76	-77	-73	-66	-64	-67	-65	-74
7		-66	-66	-65	-62	-54	-43	-37	-40	-48	-70	-99	-115	-115	-108	-96	-81	-75	-78	-81	-81	-78	-76	-74	-72	-74
8		-68	-64	-65	-68	-67	-61	-48	-45	-43	-49	-73	-104	-118	-115	-103	-95	-81	-74	-76	-74	-73	-74	-73	-73	-74
9		-71	-71	-70	-69	-66	-60	-50	-43	-41	-54	-74	-91	-106	-112	-111	-102	-89	-82	-81	-78	-77	-75	-74	-72	-76
10		-72	-71	-70	-70	-70	-69	-60	-48	-43	-52	-72	-89	-105	-117	-110	-110	-102	-85	-78	-74	-67	-63	-65	-67	-76
11		-68	-68	-70	-69	-68	-65	-55	-44	-43	-56	-68	-86	-109	-113	-111	-102	-93	-89	-76	-79	-79	-77	-76	-69	-76
12		-65	-63	-66	-65	-65	-64	-62	-54	-51	-55	-66	---	-94	-101	-106	-107	-101	-94	-90	-81	-79	-68	-64	-60	-75
13	D	-65	-60	-61	-60	-59	-61	-50	-45	-47	-57	-74	-95	-107	-108	-104	-98	-103	-99	-84	-75	-63	-72	-73	-72	-75
14		-69	-67	-66	-64	-63	-61	-57	-52	-51	-59	-72	-89	-101	-102	-94	-89	-84	-79	-76	-71	-71	-73	-74	-72	-73
15	Q	-72	-73	-70	-67	-64	-60	-58	-50	-42	-48	-62	-81	-99	-107	-106	-103	-96	-88	-85	-81	-77	-75	-72	-72	-75
16		-69	-61	-60	-61	-63	-56	-51	-41	-35	-40	-55	-77	-94	-95	-96	-93	-85	-81	-78	-75	-74	-74	-74	-74	-70
17		-74	-69	-68	-60	-53	-53	-48	-37	-37	-47	-66	-92	-108	-119	-116	-107	-96	-86	-82	-84	-82	-71	-64	-62	-74
18		-64	-70	-72	-69	-63	-60	-49	-37	-36	-50	-73	-92	-103	---	-99	-93	-79	-71	-76	-69	-76	-72	-75	-62	-71
19	D	-58	-57	-60	-55	-62	-58	-49	-45	-50	-65	-81	-99	-103	-100	-92	-77	-71	-70	-70	-65	-56	-67	-68	-69	-69
20		-68	-67	-65	-64	-60	-52	-44	-34	-31	-45	-70	-87	-101	-106	-95	-88	-81	-80	-82	-79	-74	-63	-69	-67	-70
21		-67	-65	-62	-70	-65	-60	-50	-40	-42	-60	-75	-91	-119	-115	-107	-92	-75	-72	-75	-74	-75	-72	-65	-62	-73
22		-70	-71	-72	-67	-61	-63	-48	-32	-30	-44	-74	-104	-126	-127	-119	-103	-88	-82	-81	-77	-74	-72	-70	-69	-76
23		-70	-67	-66	-68	-71	-68	-57	-43	-34	-39	-58	-82	-105	-114	-108	-97	-86	-81	-78	-63	-68	-69	-64	-59	-72
24	D	-60	-64	-60	-59	-65	-64	-56	-43	-36	-48	-78	-104	-120	-129	-112	-114	-110	-90	-83	-72	-71	-66	-62	-62	-76
25		-67	-63	-65	-62	-62	-60	-51	-44	-33	-38	-56	-78	-97	-106	-104	-96	-88	-84	-79	-74	-70	-70	-68	-68	-70
26	Q	-68	-68	-67	-67	-66	-65	-60	-47	-35	-36	-49	-70	-88	-98	-100	-93	-84	-78	-76	-73	-70	-70	-71	-71	-70
27	Q	-70	-71	-69	-69	-67	-65	-60	-40	-21	-20	-45	-81	-103	-115	-117	-103	-87	-81	-78	-73	-70	-70	-70	-68	-71
28	Q	-69	-68	-67	-65	-65	-64	-59	-44	-31	-39	-66	-90	-106	-113	-108	-92	-79	-77	-76	-73	-70	-71	-72	-71	-72
29	Q	-70	-70	-69	-68	-66	-62	-51	-37	-33	-40	-65	-94	-109	-108	-93	-79	-75	-79	-78	-76	-76	-73	-65	-69	-71
30		-67	-66	-61	-62	-61	-58	-52	-41	-40	-53	-71	-88	-99	-102	-99	-92	-86	-84	-81	-77	-74	-72	-69	-67	-72
MEAN		-68	-67	-66	-65	-64	-60	-51	-42	-39	-50	-71	-92	-107	-111	-105	-95	-86	-81	-78	-75	-72	-71	-70	-68	-73
MEAN Q		-70	-70	-69	-67	-66	-63	-57	-44	-32	-36	-57	-83	-101	-108	-105	-94	-84	-80	-78	-75	-73	-72	-70	-70	-72
MEAN D		-62	-64	-62	-59	-63	-62	-52	-41	-41	-52	-74	-95	-109	-111	-104	-95	-89	-81	-74	-68	-64	-69	-69	-69	-72

EBRE MAGNETIC OBSERVATORY
SEPTEMBER 2013

HORIZONTAL INTENSITY
H = 25000 nT PLUS TABULAR QUANTITIES (UNITS nT)

HOUR(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	MEAN
DAY																										
1	D	167	165	172	170	164	169	166	160	151	146	155	159	155	146	138	145	151	151	151	159	154	153	164	163	157
2	D	159	160	165	167	168	166	161	168	157	142	153	156	155	151	152	154	156	154	152	153	162	167	167	168	159
3		170	170	172	177	178	178	169	163	---	149	154	161	171	176	175	178	178	175	174	169	170	174	173	178	170
4		164	166	167	168	170	170	167	163	157	155	161	163	174	180	182	180	175	173	173	173	171	172	173	171	169
5		171	172	173	173	173	172	169	164	154	150	157	174	187	196	197	192	183	176	173	174	172	172	171	173	174
6		172	173	173	171	173	171	171	165	159	158	159	170	177	182	183	179	171	167	164	166	172	161	160	163	169
7		166	167	168	168	170	167	161	153	149	154	165	172	178	184	187	184	180	176	176	176	178	179	177	178	171
8		179	182	176	171	177	185	181	174	167	157	153	160	166	168	179	177	167	164	166	167	170	171	172	172	171
9		172	172	173	174	173	173	171	166	159	156	153	159	170	176	179	175	168	170	174	175	173	174	172	171	170
10		171	171	172	174	178	181	184	180	172	163	159	172	180	183	181	183	173	159	164	174	164	153	163	172	172
11		172	173	178	178	179	179	177	170	161	153	151	158	165	166	173	170	165	162	165	171	174	175	175	172	169
12		184	172	172	175	175	177	177	173	167	163	160	---	182	186	187	182	180	182	181	180	173	161	165	168	175
13	D	182	182	174	175	177	175	168	160	152	153	157	170	177	180	183	182	176	156	170	161	163	167	171	171	170
14		172	170	172	171	173	173	171	162	165	156	154	166	179	186	185	176	170	168	170	171	172	173	173	172	171
15	Q	171	173	172	173	174	174	171	166	160	156	159	169	177	179	182	182	176	174	172	173	173	174	171	170	172
16		173	172	171	170	168	172	172	173	172	165	168	174	179	182	178	167	165	166	167	169	170	173	173	178	172
17		176	175	174	184	183	178	170	170	161	162	162	169	174	177	177	175	170	173	177	183	179	174	174	166	173
18		166	170	174	179	175	174	172	171	167	164	168	179	181	---	179	170	160	167	176	174	173	180	186	178	174
19	D	184	174	172	174	173	173	165	151	139	139	156	162	170	179	180	168	162	151	158	165	174	168	169	168	166
20		168	170	171	176	174	170	164	159	151	152	150	154	164	164	171	176	174	172	173	172	173	178	172	171	168
21		171	171	170	169	173	175	178	177	166	152	161	176	188	189	192	182	164	162	165	170	173	174	172	175	173
22		170	174	172	177	175	172	175	167	156	151	149	152	157	159	159	161	159	166	171	173	174	174	174	174	166
23		174	173	172	171	176	179	181	177	170	160	157	162	173	180	181	177	169	165	166	171	165	166	164	160	170
24	D	163	167	172	175	174	177	175	170	169	168	162	148	151	158	155	158	137	147	158	162	163	160	159	160	162
25		169	170	164	166	166	166	166	157	156	152	154	163	168	176	177	176	173	171	170	169	169	171	170	169	167
26	Q	169	170	170	171	172	173	175	175	173	173	174	176	183	186	187	183	178	174	172	172	173	175	174	174	175
27	Q	175	175	175	176	176	177	179	180	178	179	182	181	179	180	179	176	171	170	172	174	173	174	174	174	176
28	Q	173	173	173	173	174	175	176	175	170	166	169	173	175	177	178	176	174	175	176	175	177	177	176	176	174
29	Q	176	176	177	178	178	177	178	174	168	162	162	169	175	179	182	181	178	178	178	181	183	177	183	180	176
30		180	181	184	181	179	180	179	175	173	168	169	176	177	177	176	176	176	176	176	177	177	176	176	177	177
MEAN		172	172	172	173	174	174	172	168	162	157	160	166	173	176	177	175	169	167	169	171	171	171	171	171	170
MEAN Q		173	174	173	174	175	175	176	174	170	167	169	173	178	180	181	180	175	174	174	175	176	175	176	175	175
MEAN D		171	170	171	172	171	172	167	162	154	150	156	159	162	163	161	162	156	152	158	160	163	163	166	166	163

EBRE MAGNETIC OBSERVATORY
SEPTEMBER 2013

VERTICAL INTENSITY

Z = 37000 nT PLUS TABULAR QUANTITIES (UNITS nT)

HOUR(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	MEAN	
DAY																											
1	D	476	477	478	477	475	480	480	482	482	479	476	472	470	471	474	481	484	483	483	486	480	480	483	479	479	479
2	D	479	480	481	480	479	478	477	480	471	469	471	466	463	467	468	473	478	480	480	479	481	480	479	479	479	476
3		479	479	479	479	477	477	475	473	---	464	465	467	469	470	467	468	469	472	473	473	476	477	476	480	473	
4		474	477	477	477	477	477	478	477	476	476	473	468	471	470	469	470	471	471	473	474	474	475	475	474	474	
5		475	476	476	476	477	476	476	475	473	471	470	468	470	469	470	473	472	470	470	472	472	473	472	474	473	
6		474	475	475	475	477	478	477	471	467	464	460	461	465	470	474	476	477	476	475	477	479	474	476	478	473	
7		478	478	478	478	479	479	473	467	461	455	458	462	462	466	469	469	467	469	471	473	473	473	472	473	470	
8		474	476	473	474	478	478	473	469	469	463	459	460	461	466	472	473	474	476	477	477	476	475	474	474	472	
9		474	474	475	476	476	478	479	478	476	473	473	470	468	467	467	470	473	476	476	476	474	474	473	473	474	
10		473	474	475	476	477	477	480	481	478	474	472	472	470	470	468	471	470	474	479	481	476	476	480	480	475	
11		477	476	476	475	475	476	478	476	472	468	468	467	465	464	469	472	474	476	481	479	478	476	475	475	474	
12		479	472	474	475	475	475	475	473	472	470	467	---	462	458	458	461	466	471	472	474	472	475	478	480	471	
13	D	480	474	472	474	474	474	472	473	469	467	466	465	462	463	465	465	468	468	479	477	480	478	478	476	472	
14		476	475	476	474	475	475	475	475	476	470	468	467	463	464	464	465	467	471	474	476	475	475	474	475	472	
15	Q	474	475	474	475	474	473	473	475	475	473	472	471	469	468	465	466	467	471	472	474	474	475	474	474	472	
16		476	476	474	474	473	476	477	479	479	476	471	464	457	458	461	463	468	472	473	475	475	474	475	476	472	
17		475	474	474	476	474	471	473	476	472	469	461	458	454	458	462	465	467	471	473	473	471	473	474	473	470	
18		474	475	476	476	473	474	475	475	471	465	460	457	454	---	462	465	467	474	475	472	473	475	475	473	470	
19	D	475	473	473	475	474	474	471	468	465	467	468	465	465	467	469	471	472	471	476	478	479	473	475	474	472	
20		475	475	476	478	476	475	474	474	471	466	461	464	466	466	472	474	474	473	473	474	473	476	471	473	472	
21		474	476	475	475	476	477	478	476	469	467	469	472	469	469	475	476	476	476	477	477	476	475	475	475	474	
22		473	475	474	477	476	476	481	479	477	471	465	462	460	462	467	473	477	479	479	478	476	475	474	474	473	
23		474	474	474	475	477	478	481	480	478	471	465	459	453	457	465	470	471	473	476	478	474	475	475	475	472	
24	D	476	477	478	476	475	476	477	478	473	465	452	448	453	460	469	471	471	482	484	482	480	479	478	478	473	
25		480	476	474	476	476	476	478	475	473	465	459	455	456	456	456	461	467	472	474	475	475	475	474	475	470	
26	Q	475	474	474	475	475	475	478	481	482	477	467	461	462	463	465	469	471	471	473	474	475	474	473	474	472	
27	Q	473	472	473	473	473	474	477	481	480	469	455	445	444	445	451	462	468	471	473	475	474	473	474	474	468	
28	Q	473	472	472	473	474	474	477	479	478	471	465	461	459	461	466	470	472	472	473	474	474	473	472	473	471	
29	Q	473	472	473	473	473	473	476	475	472	466	458	457	457	458	461	464	464	467	470	472	472	471	473	472	468	
30		472	473	472	470	471	473	474	475	474	467	465	464	467	469	470	471	471	471	472	472	472	472	473	474	471	
MEAN		475	475	475	475	475	476	476	476	473	469	465	463	462	464	466	469	471	473	475	476	475	475	475	475	472	
MEAN Q		474	473	473	474	474	474	476	478	477	471	463	459	458	459	462	466	469	470	472	474	474	473	473	473	470	
MEAN D		477	476	476	476	476	476	476	476	472	470	467	463	462	466	469	472	474	477	480	481	480	478	478	477	474	

EBRE MAGNETIC OBSERVATORY
SEPTEMBER 2013

TOTAL INTENSITY
F = 45000 nT PLUS TABULAR QUANTITIES (UNITS nT)

HOUR(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	MEAN
DAY																										
1	D	143	142	147	145	140	147	145	143	138	134	135	135	131	127	124	134	140	139	139	146	139	138	147	142	139
2	D	141	142	145	145	145	143	140	146	133	122	130	128	125	126	127	133	138	139	137	137	144	146	145	145	138
3		147	147	148	150	150	149	143	138	---	123	126	132	138	142	139	142	143	143	144	141	144	147	146	152	142
4		139	142	143	144	145	145	144	141	137	136	137	133	142	144	145	145	142	142	144	144	143	144	145	143	142
5		144	145	146	146	146	146	143	140	133	128	132	140	149	153	154	153	148	142	141	143	142	142	142	144	143
6		144	145	145	144	147	146	145	138	131	127	125	132	139	146	149	149	145	142	140	143	147	137	138	142	141
7		144	144	144	145	147	144	137	127	120	118	127	134	137	143	148	146	142	142	143	145	146	146	145	146	140
8		147	150	145	143	150	154	147	140	137	126	121	125	129	135	145	146	141	141	142	143	144	144	144	143	141
9		144	144	145	146	146	147	147	144	138	134	132	133	137	140	142	142	140	144	147	146	144	145	142	142	142
10		143	143	144	146	149	152	155	154	147	138	135	142	145	146	143	147	141	136	143	150	141	135	144	148	144
11		146	146	149	148	148	149	150	145	136	128	127	130	132	132	140	141	140	140	145	147	147	147	146	144	142
12		154	142	143	146	146	148	147	143	139	135	131	---	139	138	138	139	141	146	147	148	142	138	143	146	142
13	D	154	149	143	145	147	145	140	136	129	127	129	135	137	139	142	142	141	130	146	140	143	144	146	145	141
14		145	144	145	143	145	144	144	139	141	131	129	134	138	143	143	138	137	139	142	145	145	144	144	144	141
15	Q	143	145	143	145	145	144	142	141	138	133	135	140	142	142	142	143	140	142	142	144	144	145	143	143	142
16		146	145	143	143	141	145	146	149	148	141	139	136	133	136	136	131	135	139	140	143	143	145	145	148	141
17		146	146	145	152	150	144	142	144	136	134	128	129	128	133	137	138	137	141	145	149	145	143	144	139	141
18		141	143	146	149	144	144	145	143	138	131	130	133	132	---	137	135	131	141	146	143	143	149	152	146	141
19	D	151	144	143	145	144	144	137	127	118	120	129	131	135	142	144	138	136	129	138	143	148	141	142	141	138
20		142	144	145	149	146	143	139	136	130	126	120	125	133	132	142	146	144	142	143	143	143	149	141	142	139
21		143	144	143	143	146	147	150	148	136	126	134	144	148	149	156	151	141	140	142	145	146	145	145	147	144
22		142	146	144	149	147	145	151	145	137	129	123	122	124	126	130	137	139	144	147	147	147	145	145	145	140
23		144	145	144	144	148	151	154	151	146	134	128	126	127	134	141	143	140	139	142	147	139	141	140	137	141
24	D	140	143	147	147	146	148	148	146	141	134	120	108	115	124	130	134	121	136	144	145	143	141	140	140	137
25		147	144	140	142	142	142	143	136	134	125	121	123	126	131	132	135	139	142	142	143	143	144	143	142	137
26	Q	142	142	143	144	145	145	149	151	150	146	139	135	140	142	144	146	145	143	143	144	145	145	144	145	144
27	Q	145	143	144	145	145	146	149	154	152	144	133	124	123	124	128	136	138	140	143	146	144	144	144	145	141
28	Q	143	143	143	143	144	145	148	149	146	138	134	133	133	136	140	143	143	143	144	145	146	145	145	145	142
29	Q	145	145	145	146	146	146	148	146	140	132	125	127	131	134	138	140	139	141	144	147	148	144	149	146	141
30		146	147	149	145	145	147	147	146	144	135	134	138	140	142	142	143	143	143	145	145	145	145	145	146	144
MEAN		145	144	145	146	146	146	146	143	137	131	130	131	134	137	140	141	140	140	143	145	144	144	144	144	141
MEAN Q		144	144	144	144	145	145	147	148	145	139	133	132	134	136	138	141	141	142	143	145	145	145	145	145	142
MEAN D		146	144	145	146	144	145	142	140	132	127	129	128	128	132	134	136	135	135	141	142	144	142	144	143	138

EBRE MAGNETIC OBSERVATORY
OCTOBER 2013

DECLINATION EAST

D = 0 DEGREES PLUS TABULAR QUANTITIES (UNITS 0.1 MINUTES)

HOUR(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	MEAN
DAY																									
1	-67	-67	-68	-69	-67	-65	-61	-51	-44	-49	-65	-83	-100	-111	-111	-102	-97	-91	-84	-78	-74	-57	-51	-53	-73
2 D	-56	-61	-49	-53	-41	-40	-46	-22	-22	-31	-48	-69	-82	-92	-94	-91	-86	-66	-70	-65	-30	-33	-39	-50	-56
3	-33	-54	-58	-59	-60	-60	-52	-39	-28	-29	-42	-64	-91	-105	-95	-77	-70	-72	-73	-70	-65	-63	-63	-62	-62
4 Q	-62	-63	-63	-63	-63	-63	-55	-39	-29	-37	-61	-88	-106	-109	-97	-81	-71	-70	-69	-66	-64	-64	-64	-63	-67
5 Q	-63	-64	-65	-65	-66	-65	-59	-43	-30	-35	-60	-94	-114	-119	-109	-92	-76	-69	-67	-66	-66	-65	-64	-64	-70
6	-65	-65	-66	-65	-65	-64	-57	-43	-34	-37	-56	-87	-112	-122	-114	-96	-80	-72	-70	-68	-67	-64	-59	-65	-71
7	-67	-68	-67	-66	-69	-63	-61	-47	-41	-41	-56	-84	-103	-109	-103	-89	-80	-77	-67	-65	-61	-64	-63	-62	-70
8	-65	-66	-67	-68	-65	-61	-52	-35	-25	-35	-61	-90	-108	-110	-103	-91	-81	-79	-76	-73	-32	6	0	-15	-61
9 D	-6	-17	-37	-54	-63	-73	-96	-77	-50	-45	-58	-89	-114	-108	-102	-91	-76	-68	-65	-63	-63	-65	-58	-55	-66
10	-52	-20	-52	-52	-55	-65	-48	-38	-28	-26	-42	-70	-90	-98	-91	-74	-68	-69	-67	-66	-65	-64	-64	-64	-59
11	-65	-68	-68	-61	-62	-65	-60	-44	-26	-22	-42	-75	-94	-99	-98	-86	-76	-70	-67	-67	-62	-61	-62	-60	-65
12	-64	-64	-63	-65	-63	-62	-55	-41	-32	-38	-58	-82	-102	-106	-98	-93	-84	-81	-75	-71	-68	-60	-59	-54	-68
13	-52	-55	-56	-59	-61	-61	-55	-43	-36	-38	-56	-81	-96	-101	-91	-77	-73	-75	-72	-69	-64	-64	-62	-62	-65
14 D	-61	-61	-61	-60	-58	-60	-58	-42	-31	-34	-47	-72	-87	-100	-88	-83	-89	-49	-40	-28	-24	-1	-32	-23	-54
15 D	-44	-43	-51	-58	-62	-64	-69	-63	-51	-49	-61	-88	-94	-105	-97	-85	-72	-68	-67	-64	-62	-42	-52	-46	-65
16	-36	-42	-61	-48	-62	-61	-53	-36	-21	-19	-42	-76	-96	-101	-96	-85	-78	-70	-67	-57	-62	-61	-61	-60	-60
17	-62	-57	-60	-69	-65	-68	-58	-39	-19	-22	-57	-88	-99	-112	-103	-90	-77	-70	-66	-57	-50	-54	-58	-58	-65
18	-61	-62	-63	-63	-63	-63	-56	-39	-25	-28	-50	-75	-94	-103	-94	-81	-73	-71	-65	-60	-62	-62	-63	-63	-64
19 Q	-65	-64	-64	-65	-64	-62	-54	-33	-21	-30	-63	-93	-110	-117	-106	-89	-77	-71	-66	-63	-63	-63	-63	-64	-68
20	-65	-66	-66	-66	-65	-63	-56	-42	-29	-31	-58	-98	-111	-107	-93	-78	-70	-71	-67	-64	-64	-61	-59	-57	-67
21 Q	-60	-61	-61	-60	-61	-64	-60	-46	-33	-33	-48	-74	-95	-100	-94	-86	-78	-73	-70	-68	-67	-66	-65	-65	-66
22	-65	-64	-64	-65	-65	-64	-61	-44	-26	-24	-51	-83	-104	-107	-100	-89	-83	-81	-75	-70	-67	-64	-60	-55	-68
23	-58	-61	-61	-59	-56	-61	-61	-48	-30	-28	-44	-76	-95	-99	-92	-82	-76	-74	-70	-67	-65	-64	-63	-61	-65
24	-60	-58	-59	-60	-61	-61	-58	-43	-28	-26	-50	-84	-104	-107	-101	-87	-78	-76	-70	-68	-67	-65	-64	-63	-67
25	-62	-62	-60	-60	-59	-60	-59	-47	-30	-30	-51	-83	-102	-101	-93	-90	-75	-71	-68	-66	-66	-65	-62	-59	-66
26	-60	-61	-62	-63	-64	-65	-64	-53	-41	-41	-58	-82	-103	-109	-103	-91	-78	-70	-67	-65	-63	-61	-60	-59	-68
27	-60	-62	-63	-63	-64	-65	-65	-55	-41	-36	-52	-77	-101	-109	-99	-86	-77	-74	-70	-65	-63	-65	-64	-63	-68
28 Q	-65	-66	-66	-67	-68	-67	-65	-52	-33	-25	-40	-59	-79	-94	-95	-92	-81	-73	-68	-66	-66	-65	-64	-64	-66
29	-65	-63	-63	-65	-65	-65	-63	-51	-35	-37	-51	-77	-88	-96	-90	-82	-75	-72	-68	-70	-60	-49	-59	-62	-66
30 D	-64	-66	-67	-67	-67	-67	-61	-54	-39	-33	-48	---	-88	-99	-110	-94	-77	-81	-70	-54	-40	-30	-9	-22	-61
31	-35	-47	-50	-53	-54	-55	-52	-43	-33	-33	-45	-61	-76	-85	-83	-75	-71	-67	-58	-61	-59	-54	-53	-48	-56
MEAN	-57	-58	-61	-62	-62	-63	-59	-45	-32	-33	-52	-80	-98	-105	-98	-87	-78	-72	-68	-65	-60	-55	-55	-56	-65
MEAN Q	-63	-64	-64	-64	-64	-64	-59	-43	-29	-32	-55	-82	-101	-108	-101	-88	-77	-71	-68	-66	-65	-65	-64	-64	-67
MEAN D	-46	-49	-53	-58	-58	-61	-66	-52	-39	-38	-52	-78	-93	-101	-98	-89	-80	-66	-62	-55	-44	-34	-38	-39	-60

EBRE MAGNETIC OBSERVATORY
OCTOBER 2013

HORIZONTAL INTENSITY
H = 25000 nT PLUS TABULAR QUANTITIES (UNITS nT)

HOUR(UT) DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	MEAN
1	178	179	180	183	186	184	186	190	189	190	192	191	192	188	187	180	181	181	178	174	178	174	169	167	182
2 D	166	173	243	226	159	218	197	148	136	132	124	127	123	128	130	128	117	113	129	127	155	143	133	163	152
3	151	134	139	142	144	147	149	148	145	143	143	143	145	148	152	152	155	160	163	163	155	156	156	158	150
4 Q	158	157	157	159	160	160	160	158	153	150	149	151	156	162	165	164	162	158	159	161	161	162	162	162	159
5 Q	161	161	162	163	165	165	164	160	150	145	147	152	155	159	160	160	162	165	166	166	166	167	168	167	161
6	167	167	167	168	169	170	171	167	160	153	151	158	164	164	166	164	164	167	166	167	168	167	172	172	165
7	172	174	175	171	171	178	174	167	165	161	162	168	169	168	165	161	155	150	154	159	164	165	166	165	166
8	167	169	169	170	176	177	178	177	173	168	161	155	157	169	178	178	173	172	172	162	170	145	113	149	166
9 D	125	151	153	130	147	174	165	166	156	164	148	133	126	143	152	153	149	147	149	151	158	171	170	169	152
10	162	171	153	154	162	168	170	165	162	157	158	154	150	151	150	146	149	152	156	157	157	158	164	164	158
11	161	164	166	168	168	170	171	172	164	155	148	144	141	155	159	156	154	158	165	163	163	164	165	170	161
12	168	167	166	167	171	172	169	165	160	155	154	157	165	172	175	172	172	169	166	167	169	172	168	163	167
13	163	164	170	169	169	170	171	168	164	164	163	165	171	175	176	173	171	171	173	173	174	173	172	172	170
14 D	172	171	169	168	170	175	186	186	195	196	181	166	157	151	153	144	127	124	137	112	116	148	158	149	159
15 D	159	174	160	166	159	162	158	154	154	157	153	134	145	156	154	151	149	155	159	162	161	175	172	177	159
16	179	159	159	162	155	161	164	160	155	150	143	144	144	150	148	145	138	146	151	162	165	166	167	168	156
17	172	173	161	162	170	172	173	166	163	159	155	142	149	159	150	144	139	142	151	158	167	168	163	163	159
18	164	163	164	166	167	168	168	165	162	159	150	146	148	154	158	159	159	161	165	167	173	171	170	171	162
19 Q	170	170	171	172	173	174	173	166	157	153	150	153	158	165	167	167	163	167	170	170	171	171	171	172	166
20	172	173	173	173	174	176	176	171	165	159	152	151	155	164	168	167	164	163	167	168	169	170	172	175	167
21 Q	174	173	173	174	175	176	177	175	170	166	162	160	168	176	176	172	170	173	177	178	179	178	178	180	173
22	181	182	183	187	186	187	189	191	184	175	165	168	180	185	183	178	177	179	176	173	175	175	178	179	180
23	175	173	175	175	175	179	184	177	169	158	146	155	168	177	176	172	170	170	173	175	177	177	177	176	172
24	176	175	176	178	178	181	183	183	179	173	170	171	177	179	180	178	176	176	178	178	178	177	177	176	177
25	176	176	176	174	175	178	182	181	178	167	163	163	170	173	169	169	170	173	176	176	176	178	174	179	174
26	178	176	176	176	177	179	181	178	170	165	157	154	154	155	158	165	171	174	176	174	175	175	175	176	171
27	177	179	179	180	180	185	189	185	184	182	177	168	169	175	175	176	177	180	179	178	179	181	180	181	179
28 Q	180	178	178	179	182	184	186	193	190	185	183	181	181	178	175	175	176	179	181	181	182	181	180	181	181
29	179	178	178	180	182	184	187	188	184	177	175	170	167	168	173	172	170	171	167	162	165	168	175	177	175
30 D	175	174	172	174	178	183	187	178	174	164	153	---	138	137	127	114	140	139	131	128	133	132	127	126	151
31	138	140	143	143	147	154	160	164	160	161	167	170	159	160	161	161	162	163	161	160	154	153	147	155	156
MEAN	168	168	170	170	169	175	175	171	167	163	158	156	158	163	163	161	160	161	164	163	166	166	165	168	165
MEAN Q	169	168	168	169	171	172	172	170	164	160	158	160	163	168	169	168	166	168	171	171	172	172	172	172	168
MEAN D	159	169	179	173	162	182	179	166	163	163	152	141	138	143	143	138	136	135	141	136	145	154	152	157	154

EBRE MAGNETIC OBSERVATORY
OCTOBER 2013

VERTICAL INTENSITY

Z = 37000 nT PLUS TABULAR QUANTITIES (UNITS nT)

HOUR(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	MEAN
DAY																									
1	474	473	472	472	472	470	472	475	472	468	461	455	455	457	460	463	465	469	470	470	474	474	473	474	468
2 D	474	475	492	460	448	476	451	450	465	467	464	466	462	464	468	474	477	484	487	484	498	479	479	488	472
3	479	475	480	481	481	481	483	485	486	481	475	471	468	469	477	482	482	479	479	477	476	477	478	479	478
4 Q	479	478	479	480	479	478	480	481	478	471	465	462	466	469	475	479	480	477	478	478	477	477	477	478	476
5 Q	478	478	478	479	478	478	480	481	480	473	463	458	457	459	466	475	479	479	478	477	476	476	476	476	474
6	476	477	477	478	478	478	480	481	478	472	467	464	461	462	471	478	480	480	479	477	477	477	477	475	475
7	475	476	477	476	476	478	479	481	480	472	463	456	458	463	469	475	477	478	481	481	480	478	477	477	474
8	477	477	477	478	479	479	481	482	478	467	455	454	460	466	473	474	475	474	475	473	484	475	473	491	474
9 D	477	488	480	473	484	487	477	480	474	471	452	444	450	465	470	475	477	482	482	481	483	482	481	479	475
10	478	483	472	478	481	483	483	483	483	475	467	460	459	465	474	480	483	482	483	481	481	480	481	479	477
11	478	478	478	479	478	479	483	488	487	484	474	465	460	466	470	475	478	481	483	480	480	479	479	480	478
12	478	476	477	478	479	480	482	484	484	476	469	465	464	467	471	473	475	475	478	479	480	480	479	478	476
13	479	478	479	476	477	478	480	479	475	468	460	457	461	466	472	475	475	476	477	477	478	477	477	476	474
14 D	476	476	475	476	476	478	482	484	483	476	465	462	460	463	474	475	476	487	487	485	492	499	490	482	478
15 D	483	482	474	476	473	476	479	483	488	486	477	465	471	471	478	483	484	484	482	481	481	487	479	482	479
16	479	472	476	476	475	479	484	485	481	475	463	459	459	466	471	479	479	484	483	485	482	480	480	481	476
17	480	479	475	477	480	478	481	484	484	472	458	451	459	462	467	475	479	483	484	485	485	480	479	480	476
18	479	479	479	481	480	479	482	485	483	472	457	453	457	466	473	479	479	478	478	479	478	476	476	477	475
19 Q	477	478	478	478	478	478	480	482	479	469	455	454	454	457	466	476	478	480	479	478	477	477	477	477	473
20	477	477	477	478	478	479	481	484	483	472	460	460	464	465	473	477	478	479	480	478	478	478	478	477	475
21 Q	476	476	477	478	477	478	479	481	478	472	464	457	454	458	464	471	474	478	478	476	475	474	474	475	473
22	475	474	474	475	473	474	475	480	477	467	452	445	446	448	457	464	469	474	473	474	475	475	477	475	469
23	473	474	475	475	476	478	477	481	483	472	462	457	454	460	466	472	475	476	476	477	477	476	475	475	473
24	475	475	474	475	475	476	478	481	479	469	455	449	447	453	461	468	470	473	474	475	474	474	474	474	470
25	473	473	474	474	475	475	477	480	481	471	457	449	449	454	461	468	475	477	477	476	475	475	474	476	471
26	474	473	473	473	474	475	477	480	479	472	464	460	457	457	463	472	477	478	477	476	476	476	476	475	472
27	474	474	473	474	474	475	476	478	478	472	465	459	457	461	468	473	475	475	474	474	476	475	474	474	472
28 Q	473	472	472	472	473	473	475	481	480	470	455	449	448	453	460	465	471	474	474	473	474	474	473	473	469
29	473	473	472	472	473	472	473	476	472	460	450	444	448	455	465	468	472	474	473	473	479	479	478	477	469
30 D	475	474	473	474	474	475	476	478	480	471	460	---	455	461	464	475	486	480	481	484	488	489	487	487	475
31	488	484	483	482	483	482	483	484	482	479	473	464	460	465	472	476	477	477	478	477	478	480	480	483	478
MEAN	477	477	477	476	476	478	478	481	480	472	462	457	457	462	468	474	477	478	479	478	479	479	478	478	474
MEAN Q	477	476	477	477	477	477	479	481	479	471	460	456	456	459	466	473	477	478	477	476	476	475	475	476	473
MEAN D	477	479	479	472	471	478	473	475	478	474	464	459	459	465	471	476	480	483	484	483	488	487	483	484	476

EBRE MAGNETIC OBSERVATORY
OCTOBER 2013

TOTAL INTENSITY
F = 45000 nT PLUS TABULAR QUANTITIES (UNITS nT)

HOUR(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	MEAN
DAY																									
1	146	147	147	148	149	147	150	154	152	148	144	139	139	138	141	139	141	145	144	141	146	145	141	141	145
2 D	141	145	198	162	114	171	138	110	116	116	109	111	106	111	115	119	115	119	130	127	154	131	126	150	131
3	136	123	130	132	133	135	138	139	138	133	128	125	123	126	134	139	140	141	143	142	136	137	138	140	135
4 Q	140	139	139	141	141	140	142	141	136	128	123	121	127	134	140	143	143	138	140	140	140	140	140	141	137
5 Q	141	141	141	142	143	143	145	143	136	128	120	119	120	124	131	138	142	143	143	143	142	143	143	143	137
6	143	143	143	144	145	146	148	146	140	131	126	127	128	129	137	142	144	145	144	143	143	143	146	144	141
7	145	146	148	144	145	150	149	147	145	136	129	126	129	132	135	138	136	134	139	142	144	142	142	142	140
8	144	144	144	146	150	150	153	153	147	135	121	117	123	135	146	147	144	144	145	137	151	130	110	145	140
9 D	120	143	138	119	138	155	142	145	135	137	112	96	98	120	128	134	133	135	137	138	143	150	148	146	133
10	141	150	131	137	144	148	150	147	145	136	130	122	119	124	131	134	138	139	142	141	141	141	145	143	138
11	141	142	143	146	145	147	150	155	150	142	130	120	115	127	133	135	137	141	147	143	143	143	144	147	140
12	144	143	142	144	147	148	148	148	145	135	129	128	131	138	143	142	144	143	143	145	147	149	145	142	142
13	142	142	147	143	144	146	148	146	140	135	127	126	132	138	144	145	144	145	146	146	148	147	147	145	142
14 D	146	144	142	143	144	148	157	159	164	159	142	130	124	122	133	128	120	127	135	120	128	151	149	138	140
15 D	144	152	137	142	135	139	139	141	145	145	136	115	126	132	137	139	139	143	143	144	143	156	147	153	141
16	151	135	137	140	135	142	148	146	140	132	119	115	116	124	128	133	129	137	139	147	146	146	146	147	137
17	149	148	138	141	147	147	150	149	147	135	121	107	118	127	125	128	129	135	140	145	150	146	143	143	138
18	144	142	143	146	145	146	148	149	146	134	117	111	116	127	135	140	141	141	143	145	147	145	145	145	139
19 Q	145	146	147	147	148	148	149	147	140	128	116	117	119	126	134	142	142	145	146	146	146	145	146	146	140
20	146	146	147	148	148	149	152	152	147	134	121	121	126	132	140	143	143	142	145	145	145	146	147	148	142
21 Q	147	146	147	148	148	149	151	151	146	138	130	123	125	132	137	141	142	147	150	149	149	147	147	149	143
22	149	150	150	153	151	152	154	159	153	140	121	117	125	130	136	139	142	147	145	144	147	146	149	148	144
23	145	144	146	146	147	150	153	152	150	134	119	120	125	135	139	142	143	144	146	147	149	148	147	147	142
24	146	146	146	148	148	150	153	156	151	140	127	123	124	130	138	141	143	145	147	148	147	146	146	146	143
25	145	145	145	145	146	148	151	153	153	138	124	118	121	128	132	137	143	146	148	148	147	148	144	150	142
26	147	145	145	145	146	149	151	153	147	138	127	122	119	120	127	138	146	148	148	146	146	147	147	147	141
27	147	147	147	148	148	152	155	154	154	148	139	129	128	134	140	145	147	149	148	147	149	150	148	148	146
28 Q	147	145	146	146	148	149	152	161	159	148	134	128	127	129	134	138	143	147	149	148	149	148	148	148	145
29	146	146	146	146	148	149	151	154	148	135	125	118	119	126	137	139	141	143	140	137	144	145	149	148	141
30 D	146	145	142	145	147	151	153	151	149	137	122	116	109	113	110	112	136	130	126	127	134	133	130	129	133
31	136	135	135	134	136	140	145	147	144	142	140	135	125	129	136	139	140	141	141	140	137	138	135	142	138
MEAN	144	144	145	144	144	148	149	149	145	137	126	121	122	128	134	137	139	141	143	142	144	144	143	145	140
MEAN Q	144	143	144	145	146	146	148	149	143	134	125	121	124	129	135	140	143	144	146	145	145	145	145	145	141
MEAN D	139	146	152	142	136	153	146	141	142	139	124	114	112	120	125	126	129	131	134	131	140	144	140	143	135

EBRE MAGNETIC OBSERVATORY
NOVEMBER 2013

DECLINATION EAST

D = 0 DEGREES PLUS TABULAR QUANTITIES (UNITS 0.1 MINUTES)

HOUR(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	MEAN
DAY																									
1	-48	-49	-48	-40	-49	-48	-48	-40	-29	-27	-39	-62	-82	-88	-84	-82	-72	-69	-66	-65	-62	-59	-58	-58	-57
2	-57	-57	-55	-56	-57	-54	-49	-42	-33	-39	-53	-71	-81	-81	-75	-72	-74	-73	-70	-67	-64	-58	-53	-48	-60
3	-52	-59	-61	-58	-59	-58	-53	-45	-27	-30	-51	-67	-74	-76	-76	-73	-71	-68	-65	-62	-58	-53	-54	-55	-59
4	-58	-59	-60	-61	-61	-62	-59	-59	-48	-47	-53	-71	-85	-85	-78	-75	-65	-63	-61	-60	-53	-50	-47	-49	-61
5	-52	-61	-63	-64	-61	-58	-55	-52	-36	-35	-55	-78	-93	-96	-90	-82	-72	-65	-60	-59	-60	-56	-59	-61	-63
6	-61	-63	-63	-63	-62	-60	-56	-43	-27	-27	-49	-77	-98	-101	-93	-86	-78	-71	-63	-63	-63	-60	-57	-43	-64
7 D	-58	-62	-63	-65	-65	-68	-64	-49	-33	-33	-46	-73	-86	-84	-85	-84	-75	-67	-61	-62	-58	-51	-41	-39	-61
8	-34	-43	-54	-53	-49	-52	-50	-43	-31	-33	-47	-66	-83	-90	-86	-83	-77	-72	-66	-63	-62	-61	-60	-59	-59
9 D	-56	-53	-40	-43	-19	-30	-64	-54	-39	-28	-40	-52	-66	-72	-79	-73	-65	-55	-52	-50	-47	-48	-50	-51	-51
10 D	-51	-56	-50	-58	-53	-52	-51	-46	-40	-37	-47	-52	-66	-83	-81	-69	-67	-64	-46	-58	-33	-20	-36	-17	-51
11 D	-15	-32	-49	-62	-55	-76	-68	-61	-49	-51	-63	-71	-78	-78	-59	-69	-70	-41	-46	-55	-53	-52	-50	-47	-56
12	-49	-46	-46	-49	-50	-51	-53	-50	-38	-33	-45	-59	-70	-76	-73	-72	-70	-62	-58	-57	-57	-56	-56	-56	-55
13	-56	-57	-56	-57	-57	-56	-55	-53	-44	-38	-40	-57	-72	-74	-70	-69	-68	-65	-61	-60	-57	-55	-56	-56	-58
14	-56	-56	-57	-57	-56	-55	-51	-46	-35	-29	-45	-67	-89	-87	-81	-76	-72	-65	-62	-62	-58	-57	-53	-51	-59
15	-53	-54	-51	-49	-51	-51	-54	-51	-42	-40	-49	-64	-80	-91	-91	-92	-83	-83	-70	-64	-64	-39	-3	-19	-58
16 D	-25	-25	-36	-46	-41	-50	-51	-43	-34	-38	-46	-72	-73	-78	-82	-83	-79	-72	-65	-60	-56	-55	-49	-49	-54
17	-47	-52	-50	-56	-54	-50	-51	-52	-39	-40	-48	-62	-78	-87	-81	-72	-68	-65	-60	-57	-54	-50	-52	-51	-57
18	-52	-53	-54	-56	-57	-55	-53	-49	-35	-21	-26	-46	-70	-76	-76	-70	-67	-64	-61	-60	-59	-58	-57	-58	-55
19	-58	-60	-59	-59	-58	-60	-58	-54	-40	-32	-38	-63	-88	-93	-86	-77	-73	-68	-57	-61	-55	-52	-53	-54	-61
20	-51	-50	-51	-60	-56	-59	-56	-54	-46	-39	-49	-69	-81	-88	-87	-77	-69	-64	-60	-58	-56	-56	-56	-55	-60
21 Q	-55	-54	-54	-56	-55	-55	-53	-50	-37	-32	-41	-60	-82	-86	-81	-74	-69	-63	-60	-57	-56	-55	-53	-50	-58
22	-51	-53	-55	-58	-57	-55	-54	-52	-43	-34	-36	-52	-74	-83	-85	-79	-69	-65	-62	-61	-59	-56	-50	-55	-58
23	-58	-58	-57	-55	-57	-48	-52	-48	-48	-42	-50	-65	-71	-76	-76	-68	-63	-64	-62	-58	-54	-54	-53	-52	-58
24 Q	-53	-54	-54	-57	-56	-54	-50	-47	-38	-33	-46	-63	-76	-77	-75	-70	-65	-62	-59	-57	-56	-55	-53	-53	-57
25 Q	-54	-55	-54	-55	-54	-53	-51	-49	-44	-43	-54	-67	-75	-78	-78	-74	-69	-64	-59	-57	-56	-56	-55	-54	-59
26	-53	-54	-54	-55	-54	-54	-53	-53	-46	-42	-44	-59	-72	-77	-76	-71	-65	-62	-59	-58	-58	-57	-56	-57	-58
27 Q	-57	-59	-61	-62	-60	-58	-55	-51	-45	-42	-48	-62	-78	-85	-82	-71	-64	-61	-59	-59	-59	-58	-57	-57	-60
28 Q	-57	-57	-58	-58	-58	-56	-54	-52	-42	-35	-37	-49	-61	-67	-67	-67	-66	-64	-60	-59	-60	-57	-56	-56	-56
29	-56	-58	-61	-61	-62	-62	-61	-60	-50	-48	-54	-63	-75	-80	-82	-81	-73	-75	-69	-50	-42	-51	-52	-53	-62
30	-55	-55	-58	-60	-59	-59	-56	-57	-53	-48	-51	-56	-67	-76	-77	-74	-64	-61	-55	-52	-40	-35	-32	-34	-55
MEAN	-51	-53	-54	-56	-55	-55	-55	-50	-40	-37	-46	-63	-77	-82	-80	-76	-70	-65	-60	-59	-56	-53	-51	-50	-58
MEAN Q	-55	-55	-56	-58	-57	-55	-53	-50	-41	-37	-45	-60	-75	-79	-77	-71	-67	-63	-59	-58	-57	-56	-55	-54	-58
MEAN D	-41	-46	-48	-55	-46	-55	-60	-51	-39	-37	-49	-64	-74	-79	-77	-75	-71	-60	-54	-57	-49	-45	-45	-41	-55

EBRE MAGNETIC OBSERVATORY
NOVEMBER 2013

HORIZONTAL INTENSITY
H = 25000 nT PLUS TABULAR QUANTITIES (UNITS nT)

HOUR(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	MEAN
DAY																									
1	154	155	167	173	167	166	169	169	165	162	162	158	154	155	157	157	159	160	157	153	155	160	164	164	161
2	164	169	166	166	168	173	176	171	166	167	175	177	174	173	170	166	165	168	171	172	171	170	170	167	170
3	161	165	169	168	169	169	170	173	173	174	174	172	175	174	169	165	166	169	170	168	166	166	160	162	169
4	165	166	167	170	170	171	177	176	182	184	179	173	172	172	168	157	149	157	159	154	159	162	165	163	167
5	160	160	162	164	166	166	166	169	166	168	171	166	164	159	157	157	157	165	172	172	171	171	171	170	165
6	169	172	172	172	174	177	179	176	168	163	162	163	166	169	173	177	175	174	172	172	173	170	167	173	171
7 D	169	172	177	176	174	168	183	187	179	160	137	117	121	132	141	144	149	155	160	164	156	148	150	152	157
8	165	156	155	159	161	163	167	166	162	162	160	163	166	165	161	158	160	166	170	174	176	178	179	179	166
9 D	176	170	168	156	177	196	180	171	157	156	138	120	113	118	127	125	128	133	144	150	153	154	155	156	151
10 D	154	155	159	161	155	157	161	165	162	157	158	155	156	152	146	144	150	144	156	160	161	156	147	152	155
11 D	149	151	154	164	173	162	161	160	155	153	142	142	144	140	130	124	131	145	149	150	155	156	157	161	150
12	160	158	155	156	159	163	167	167	165	164	167	168	165	162	156	154	156	160	162	163	163	164	164	164	162
13	164	164	165	166	167	168	169	169	165	162	158	157	152	145	149	153	157	159	160	162	165	166	167	168	162
14	167	166	167	168	169	170	173	174	171	169	165	161	160	156	155	158	162	162	165	167	167	167	166	165	165
15	167	166	170	166	166	173	177	179	176	173	166	159	155	153	153	145	140	149	153	159	145	145	147	145	159
16 D	144	140	142	158	153	154	160	168	168	171	169	167	166	164	159	153	158	163	164	163	164	164	162	159	160
17	162	167	165	162	165	173	175	179	182	176	164	151	153	158	156	156	161	165	167	168	168	167	166	167	165
18	166	166	170	172	173	177	180	182	179	178	173	165	160	157	160	164	166	168	171	173	173	173	173	173	170
19	173	173	174	175	175	178	181	183	182	177	174	171	173	171	170	175	175	173	168	164	169	171	171	172	174
20	170	168	167	167	171	174	177	181	178	174	171	165	159	161	165	167	170	173	173	174	174	174	175	174	171
21 Q	173	173	172	174	175	175	177	180	182	182	181	177	171	169	169	171	170	173	176	177	176	175	173	173	175
22	169	169	170	172	174	178	180	184	188	185	180	177	173	167	168	173	177	178	178	177	176	175	179	177	176
23	178	180	183	179	177	181	179	182	174	178	167	155	161	167	162	163	165	166	165	163	168	169	169	170	171
24 Q	169	170	170	170	173	172	172	174	176	176	172	166	166	167	168	169	171	171	174	173	174	173	172	172	171
25 Q	171	171	171	170	171	174	175	178	177	176	174	171	171	169	169	172	173	175	177	177	177	178	178	178	174
26	176	175	175	177	178	178	180	185	187	185	179	172	165	162	167	174	181	184	185	183	182	181	184	185	178
27 Q	184	185	184	185	185	188	190	192	191	188	181	175	175	179	181	183	182	183	186	186	185	185	184	184	184
28 Q	184	183	183	183	184	185	185	189	190	188	185	180	179	181	180	181	185	182	180	179	177	175	175	175	182
29	177	178	182	191	194	192	195	194	195	189	190	183	183	181	176	168	168	163	152	156	156	165	171	170	178
30	169	173	172	174	178	182	187	194	195	191	186	174	173	171	160	155	160	162	164	159	172	185	168	162	174
MEAN	167	167	168	170	171	173	176	177	175	173	169	163	162	162	161	160	162	165	167	167	167	168	168	168	168
MEAN Q	176	176	176	177	178	179	180	182	183	182	178	174	172	173	174	175	176	177	178	178	178	177	176	176	177
MEAN D	158	158	160	163	166	168	169	170	164	159	149	140	140	141	140	138	143	148	155	157	158	156	154	156	155

EBRE MAGNETIC OBSERVATORY
NOVEMBER 2013

VERTICAL INTENSITY
Z = 37000 nT PLUS TABULAR QUANTITIES (UNITS nT)

HOUR(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	MEAN
DAY																									
1	481	482	484	481	476	477	478	482	481	475	464	456	454	462	467	472	476	477	477	477	480	482	482	481	475
2	481	481	479	479	479	480	480	480	477	468	462	458	460	466	471	472	474	477	477	476	476	477	478	478	474
3	477	480	479	479	479	478	479	480	476	465	453	447	452	457	463	469	474	477	476	475	477	476	477	479	472
4	479	479	480	480	479	479	479	477	480	472	463	451	452	462	468	471	477	482	480	478	481	481	480	478	474
5	478	478	479	481	481	480	477	480	479	473	465	458	459	464	469	475	480	483	482	479	477	477	476	476	475
6	476	477	477	478	479	479	479	482	478	467	453	444	445	454	464	472	474	476	476	476	476	475	475	478	471
7 D	475	476	477	476	477	475	481	481	475	464	457	453	461	468	471	475	483	485	484	484	480	481	483	483	475
8	486	477	479	480	482	481	481	484	482	475	465	462	461	465	468	472	476	480	481	480	479	478	477	475	476
9 D	475	474	475	475	486	482	470	478	479	477	467	465	465	471	475	482	487	489	490	488	488	485	484	482	479
10 D	481	481	481	480	479	481	481	482	478	473	470	464	463	464	470	478	482	482	488	483	487	483	482	485	478
11 D	482	482	480	481	483	474	479	481	482	479	477	479	479	480	483	481	487	493	488	486	486	486	484	485	482
12	483	481	481	480	482	482	482	483	483	477	472	466	464	468	473	475	479	482	481	481	481	481	481	480	478
13	480	480	480	480	480	480	480	481	483	483	478	470	468	470	474	477	481	482	481	481	482	481	481	480	479
14	480	479	480	479	479	479	480	482	479	471	462	459	461	467	472	476	479	480	481	480	480	481	480	481	476
15	481	480	481	478	479	481	479	481	482	479	470	463	463	469	476	476	480	484	485	485	482	489	491	488	479
16 D	486	486	487	486	481	481	482	483	481	477	471	467	467	470	471	474	481	482	482	481	481	481	481	481	479
17	482	482	480	480	481	483	479	481	482	475	467	465	467	473	478	481	484	483	481	481	480	480	480	481	479
18	480	480	481	481	480	481	479	480	480	479	468	459	456	465	472	479	480	481	481	480	479	478	477	477	476
19	478	478	479	478	478	478	478	480	480	472	460	452	452	458	467	475	477	477	478	477	480	479	478	478	474
20	477	478	478	478	480	479	478	478	478	475	469	463	460	467	473	479	482	482	480	479	478	477	477	476	476
21 Q	477	477	477	477	478	478	477	479	479	473	465	453	455	465	473	477	479	481	480	478	478	477	476	476	474
22	476	477	477	477	478	479	478	477	479	475	469	461	457	461	471	477	478	479	478	477	477	477	478	474	475
23	474	476	476	475	475	478	475	474	475	472	465	459	465	472	471	476	480	480	480	480	481	480	480	479	475
24 Q	477	478	477	478	480	480	479	479	478	474	465	462	463	469	474	478	479	479	480	479	479	478	478	477	476
25 Q	476	476	476	477	478	479	478	476	477	474	466	462	464	467	472	477	478	479	479	478	478	478	476	475	475
26	475	475	475	475	477	476	476	477	476	475	468	461	463	468	471	476	479	478	477	475	475	476	476	474	474
27 Q	474	473	474	473	474	475	475	476	477	474	468	462	463	466	471	475	476	476	476	475	474	475	475	474	473
28 Q	474	474	473	473	473	474	474	475	476	474	470	464	464	469	471	472	474	473	474	473	474	474	475	475	473
29	476	475	475	476	474	473	473	471	472	468	463	462	464	465	466	468	474	472	474	482	479	482	480	478	473
30	477	478	476	476	477	477	477	477	477	472	466	460	463	465	467	473	478	478	479	478	485	481	476	476	475
MEAN	478	478	478	478	479	479	478	479	479	474	466	460	461	466	471	475	479	480	480	479	480	480	479	479	476
MEAN Q	476	476	476	476	476	477	477	477	477	474	467	460	462	467	472	476	477	478	478	477	476	476	476	476	474
MEAN D	480	480	480	480	481	479	479	481	479	474	468	465	467	471	474	478	484	486	486	485	484	483	483	483	479

EBRE MAGNETIC OBSERVATORY
NOVEMBER 2013

TOTAL INTENSITY
F = 45000 nT PLUS TABULAR QUANTITIES (UNITS nT)

HOUR(UT) DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	MEAN
1	140	141	149	150	142	142	145	149	145	138	129	121	117	124	129	133	138	140	138	136	139	143	146	145	138
2	145	148	144	145	146	148	150	148	143	136	135	133	133	138	140	139	140	143	145	145	145	146	146	144	143
3	140	145	146	145	146	145	146	148	146	137	128	122	127	130	133	136	140	144	144	142	143	142	139	142	140
4	143	144	146	147	147	147	150	149	154	148	138	125	125	133	136	133	133	141	141	136	142	144	145	142	141
5	140	141	142	144	146	145	143	147	144	141	135	127	126	128	131	136	140	147	150	148	145	146	144	143	141
6	144	146	146	147	149	151	152	152	144	133	121	114	116	125	136	145	145	146	146	145	145	143	142	148	141
7 D	143	146	148	148	147	142	156	158	149	128	110	95	104	116	123	128	138	143	145	147	140	135	139	140	136
8	149	137	138	141	144	144	147	148	144	138	130	129	129	132	132	134	139	145	148	150	150	150	150	149	142
9 D	146	143	142	135	156	164	145	146	140	137	119	107	103	111	119	124	129	134	141	143	144	143	142	141	136
10 D	139	140	142	142	138	141	143	147	141	134	132	126	126	124	126	131	138	134	146	145	148	142	136	142	138
11 D	137	139	139	145	152	138	141	143	140	137	129	131	132	131	127	122	131	144	142	141	144	145	144	146	138
12	144	142	140	140	143	146	148	148	147	141	139	135	131	133	134	134	138	143	144	144	145	145	145	144	141
13	144	144	145	145	146	147	147	148	147	145	139	132	127	125	131	136	140	142	143	144	146	147	146	146	142
14	146	145	146	146	146	147	149	151	147	140	129	126	126	128	133	138	142	143	145	145	146	146	146	145	142
15	147	146	149	144	145	150	150	154	152	148	137	127	125	129	135	131	131	139	142	145	136	141	144	140	141
16 D	138	136	137	146	139	140	144	149	148	146	140	135	135	136	134	133	141	145	146	144	145	145	144	142	141
17	145	148	145	143	146	151	150	153	156	147	134	124	127	135	138	141	146	147	147	148	147	146	145	146	144
18	146	146	149	149	150	152	152	154	153	151	139	127	122	128	135	143	146	147	149	150	148	148	147	147	145
19	147	148	149	149	149	151	152	155	154	145	133	125	126	130	137	146	148	147	144	142	147	147	146	147	144
20	145	145	144	144	148	150	150	152	151	145	139	131	125	131	139	145	150	151	150	149	148	148	148	147	145
21 Q	147	147	146	148	148	149	149	153	153	149	141	130	128	135	141	146	146	150	151	150	149	148	146	146	146
22	144	144	145	146	149	152	152	153	157	152	144	136	130	130	139	147	150	151	150	149	148	148	151	147	146
23	147	150	151	148	147	151	149	149	145	145	134	122	130	140	135	141	145	146	145	144	147	147	147	146	144
24 Q	145	146	145	146	149	149	148	148	149	146	136	130	131	136	141	146	147	147	149	148	149	147	147	146	145
25 Q	145	145	145	145	146	148	148	149	149	146	138	133	134	136	140	146	147	150	150	149	149	150	149	148	145
26	147	146	146	147	149	149	150	153	154	151	142	133	130	133	139	146	152	153	153	151	150	150	152	151	147
27 Q	150	150	150	150	151	153	154	156	156	152	143	135	136	141	146	151	151	152	153	152	151	151	151	150	149
28 Q	150	149	149	148	149	151	151	153	156	153	148	140	139	144	146	147	151	149	147	147	146	145	146	146	148
29	148	147	150	155	156	154	155	153	155	148	144	140	141	141	139	136	141	137	133	141	138	147	148	146	146
30	144	148	145	147	149	151	154	158	159	152	145	133	134	136	131	133	140	141	143	140	152	157	143	139	145
MEAN	144	145	145	146	147	148	149	151	149	144	135	127	127	131	135	138	142	145	146	145	146	146	145	145	143
MEAN Q	147	147	147	147	149	150	150	152	153	149	141	134	134	138	143	147	148	150	150	149	149	148	148	147	147
MEAN D	141	141	142	143	146	145	146	148	144	136	126	119	120	124	126	128	136	140	144	144	144	142	141	142	138

EBRE MAGNETIC OBSERVATORY
DECEMBER 2013

DECLINATION EAST
D = 0 DEGREES PLUS TABULAR QUANTITIES (UNITS 0.1 MINUTES)

HOUR(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	MEAN
DAY																										
1	D	-47	-48	-45	-55	-63	-60	-62	-63	-59	-52	-50	-59	-64	-66	-62	-60	-59	-57	-55	-53	-52	-53	-52	-52	-56
2	Q	-52	-51	-52	-53	-53	-52	-49	-47	-41	-35	-37	-47	-58	-63	-63	-64	-61	-57	-54	-52	-52	-51	-53	-54	-52
3	D	-56	-58	-59	-55	-60	-56	-51	-48	-43	-41	-54	-60	-67	-64	-62	-71	-73	-61	-60	-42	-47	-41	-44	-44	-55
4		-44	-44	-48	-48	-50	-51	-49	-50	-46	-40	-44	-52	-59	-62	-66	-66	-62	-59	-54	-54	-47	-47	-49	-50	-52
5		-49	-50	-51	-55	-55	-52	-50	-51	-43	-32	-38	-49	-57	-62	-64	-65	-62	-57	-57	-55	-52	-51	-49	-50	-52
6		-51	-53	-56	-58	-56	-59	-59	-56	-47	-41	-42	-54	-65	-73	-75	-76	-67	-62	-60	-57	-55	-50	-46	-48	-57
7		-50	-48	-53	-57	-58	-58	-58	-56	-49	-37	-37	-46	-61	-78	-78	-71	-63	-59	-55	-56	-45	-52	-49	-43	-55
8	D	-48	-3	-15	-22	-52	-57	-49	-40	-35	-31	-27	-40	-53	-60	-67	-67	-46	-45	-51	-45	-33	-45	-45	-45	-43
9		-45	-47	-50	-53	-55	-56	-56	-56	-49	-34	-31	-44	-60	-72	-75	-72	-61	-51	-57	-51	-50	-46	-46	-45	-53
10		-51	-52	-55	-62	-55	-56	-55	-53	-48	-37	-40	-57	-70	-79	-77	-67	-62	-54	-52	-51	-50	-50	-49	-50	-56
11		-50	-51	-51	-52	-53	-52	-53	-54	-44	-36	-46	-62	-73	-73	-71	-67	-62	-56	-54	-53	-53	-47	-49	-50	-55
12	Q	-51	-53	-53	-53	-54	-51	-50	-49	-45	-43	-52	-67	-74	-74	-67	-62	-61	-58	-54	-53	-52	-51	-50	-52	-55
13		-53	-55	-57	-58	-57	-56	-55	-55	-50	-41	-47	-67	-78	-79	-81	-76	-70	-64	-61	-59	-56	-54	-56	-59	-60
14	D	-59	-48	-43	-43	-57	-54	-50	-47	-44	-37	-45	-64	-78	-83	-83	-84	-78	-58	-42	-30	-34	-32	-33	-40	-53
15		-39	-51	-53	-55	-53	-52	-50	-52	-48	-39	-48	-64	-77	-80	-71	-63	-58	-53	-49	-47	-47	-48	-49	-47	-54
16		-50	-53	-57	-56	-51	-57	-48	-44	-37	-35	-45	-60	-69	-72	-70	-65	-60	-60	-54	-49	-46	-47	-47	-46	-53
17		-44	-47	-47	-51	-53	-51	-48	-47	-43	-38	-42	-57	-69	-72	-66	-62	-60	-60	-46	-54	-49	-49	-45	-45	-52
18		-49	-51	-51	-50	-50	-53	-51	-46	-40	-33	-42	-58	-71	-72	-69	-66	-63	-63	-56	-51	-49	-48	-37	-45	-53
19		-45	-47	-49	-47	-51	-52	-53	-49	-41	-36	-43	-58	-72	-74	-73	-69	-72	-61	-64	-47	-36	-40	-40	-42	-52
20		-40	-42	-50	-49	-50	-53	-49	-48	-43	-38	-41	-54	-69	-75	-67	-64	-65	-60	-61	-51	-44	-48	-45	-39	-52
21		-40	-47	-49	-56	-52	-53	-49	-46	-37	-33	-39	-52	-63	-67	-68	-63	-60	-58	-55	-52	-52	-50	-48	-50	-52
22	Q	-51	-54	-56	-56	-56	-54	-52	-49	-40	-31	-35	-49	-62	-69	-72	-68	-62	-57	-54	-51	-50	-50	-51	-53	-53
23		-54	-56	-55	-56	-56	-56	-52	-48	-37	-33	-43	-55	-63	-71	-76	-70	-60	-57	-54	-50	-50	-48	-51	-52	-54
24		-53	-55	-56	-56	-56	-56	-54	-54	-49	-44	-47	-57	-66	-68	-67	-67	-63	-56	-55	-54	-49	-47	-46	-48	-55
25	D	-44	-53	-56	-57	-59	-59	-54	-47	-42	-35	-41	-54	-69	-67	-79	-78	-69	-60	-48	-43	-45	-46	-45	-47	-54
26	Q	-48	-48	-49	-51	-53	-51	-51	-48	-41	-35	-39	-52	-66	-65	-62	-60	-58	-55	-53	-50	-48	-47	-46	-47	-51
27	Q	-50	-51	-52	-52	-51	-50	-48	-45	-36	-33	-42	-55	-63	-69	-66	-64	-58	-56	-54	-54	-53	-51	-51	-52	-52
28		-55	-57	-59	-61	-60	-58	-55	-51	-44	-41	-51	-64	-69	-67	-65	-62	-59	-55	-53	-53	-52	-51	-53	-53	-56
29		-45	-52	-56	-53	-51	-50	-45	-43	-39	-33	-44	-61	-67	-66	-64	-59	-54	-56	-55	-51	-49	-50	-51	-52	-52
30		-53	-54	-54	-55	-54	-53	-50	-44	-34	-34	-40	-48	-58	-63	-65	-61	-53	-51	-51	-49	-49	-51	-51	-53	-51
31		-53	-51	-49	-50	-50	-48	-47	-44	-40	-32	-41	-49	-62	-68	-72	-70	-60	-59	-56	-51	-47	-49	-50	-50	-52
MEAN		-49	-49	-51	-53	-54	-54	-52	-49	-43	-37	-42	-55	-66	-70	-70	-67	-62	-57	-54	-51	-48	-48	-48	-48	-53
MEAN Q		-50	-52	-53	-53	-53	-52	-50	-48	-41	-35	-41	-54	-65	-68	-66	-64	-60	-56	-54	-52	-51	-50	-50	-51	-53
MEAN D		-51	-42	-43	-46	-58	-57	-53	-49	-45	-39	-43	-55	-66	-68	-71	-72	-65	-56	-51	-43	-42	-43	-44	-46	-52

EBRE MAGNETIC OBSERVATORY
DECEMBER 2013

HORIZONTAL INTENSITY
H = 25000 nT PLUS TABULAR QUANTITIES (UNITS nT)

HOUR(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	MEAN
DAY																										
1	D	165	172	180	179	175	180	179	184	187	183	179	178	177	182	169	169	167	168	169	170	171	172	174	172	175
2	Q	172	172	173	175	176	177	179	183	184	179	174	174	175	174	171	172	171	171	171	171	170	172	173	174	174
3	D	176	177	178	182	180	178	180	181	182	173	161	163	161	158	146	147	146	157	154	160	163	171	169	172	167
4		181	173	168	171	175	177	179	181	186	189	190	187	186	175	164	162	165	166	158	158	156	158	164	167	172
5		170	170	170	171	175	177	180	183	184	185	182	177	180	181	176	168	168	171	169	165	163	165	172	174	174
6		176	177	177	177	180	182	188	193	191	186	185	186	188	184	177	173	172	176	177	176	173	173	169	173	180
7		185	181	173	174	175	175	180	189	190	186	180	171	167	166	165	170	175	178	180	179	178	181	186	179	178
8	D	174	174	196	202	169	157	153	165	166	158	159	159	152	151	150	141	123	135	140	158	158	158	159	160	159
9		161	162	164	164	166	170	174	179	179	173	169	164	156	148	148	148	150	157	161	162	162	164	163	169	163
10		168	170	169	173	179	183	186	187	179	172	162	152	150	152	153	159	162	167	172	172	172	171	172	173	169
11		176	176	173	174	174	176	177	176	172	162	152	152	153	153	157	160	164	169	174	176	175	176	174	173	169
12	Q	173	172	172	173	176	179	181	182	178	169	163	159	159	163	165	167	168	171	174	174	174	173	173	174	171
13		177	178	179	179	181	184	187	189	188	180	176	175	173	183	195	194	192	192	194	193	193	190	187	183	185
14	D	183	189	178	177	176	185	185	187	184	181	175	171	169	167	163	154	131	116	103	127	141	149	155	156	163
15		159	161	161	164	168	171	170	174	175	173	164	156	153	160	169	176	176	169	164	163	168	169	168	171	167
16		173	174	180	178	175	171	171	172	166	162	153	147	146	149	152	157	162	165	162	167	172	173	171	175	166
17		174	172	171	169	171	174	176	179	181	176	170	165	166	168	170	172	170	168	169	167	173	173	174	172	172
18		173	175	177	176	173	173	178	180	174	170	163	161	161	163	164	163	166	169	172	175	175	172	175	174	171
19		173	173	170	169	169	173	178	182	179	173	168	166	166	166	165	158	154	150	145	153	158	162	171	172	166
20		168	168	171	172	177	179	178	181	181	177	170	165	165	168	171	171	165	164	163	167	171	169	169	165	171
21		166	170	174	176	178	180	182	184	178	172	168	164	164	167	171	175	177	176	178	178	178	177	178	178	175
22	Q	178	178	179	180	182	187	192	195	193	184	178	178	176	176	175	177	178	179	181	183	183	183	183	182	182
23		180	181	183	182	183	186	189	190	188	180	171	165	166	171	172	175	179	181	182	184	183	182	183	184	180
24		184	183	182	183	184	187	190	193	192	187	181	174	173	175	177	177	177	181	183	179	178	180	181	184	182
25	D	186	185	186	189	191	195	190	186	183	181	167	153	147	145	142	133	130	135	150	165	169	169	170	168	167
26	Q	169	168	168	170	172	175	177	180	178	176	171	167	171	173	178	177	177	178	178	179	179	178	178	177	175
27	Q	177	178	178	180	181	183	186	187	186	181	176	174	178	184	184	183	186	186	183	184	187	190	190	192	183
28		191	190	188	188	189	190	192	194	195	193	190	188	184	184	182	181	179	181	185	189	190	189	182	178	187
29		178	177	176	177	182	184	189	190	186	179	165	162	170	175	175	171	169	173	172	174	180	182	181	181	177
30		181	181	182	181	183	183	183	187	185	175	164	159	159	158	163	169	171	172	176	179	178	178	176	174	175
31		174	175	179	181	181	183	186	189	191	181	172	166	167	168	171	177	180	180	180	182	182	182	181	182	179
MEAN		175	175	176	177	177	179	181	184	183	177	171	167	166	167	167	167	166	168	168	171	173	174	174	175	173
MEAN Q		174	174	174	175	177	180	183	186	184	178	173	170	172	174	175	175	176	177	178	178	179	179	180	180	177
MEAN D		177	179	184	186	178	179	177	180	180	175	168	165	161	160	154	149	139	142	143	156	160	164	165	166	166

EBRE MAGNETIC OBSERVATORY
DECEMBER 2013

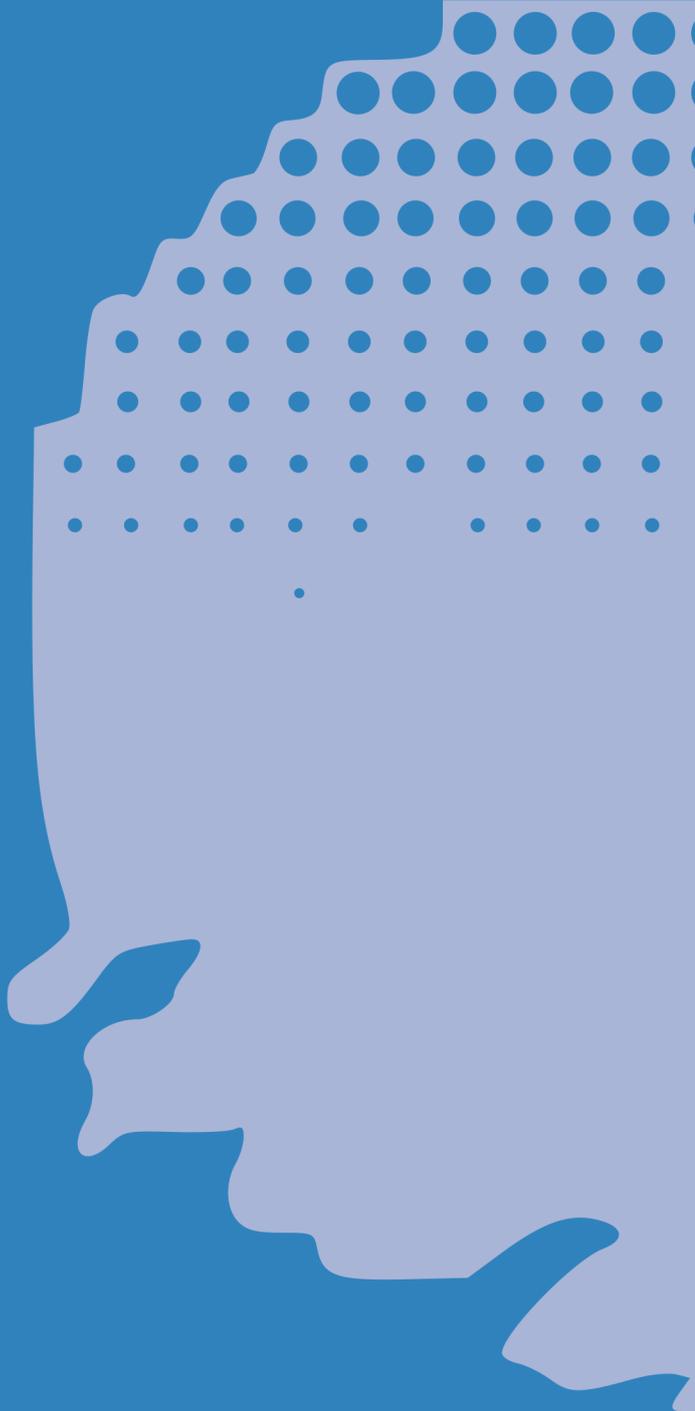
VERTICAL INTENSITY
Z = 37000 nT PLUS TABULAR QUANTITIES (UNITS nT)

HOUR(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	MEAN
DAY																										
1	D	478	478	479	475	473	477	474	474	473	469	464	462	465	471	471	475	476	477	477	477	477	478	477	477	474
2	Q	477	477	478	478	477	477	477	476	476	476	471	466	468	473	473	474	476	477	476	476	476	476	476	476	475
3	D	477	478	477	478	476	475	476	475	476	470	463	463	468	472	473	477	481	484	482	485	482	483	479	480	476
4		481	476	476	478	478	477	477	474	474	471	465	462	463	466	469	475	479	479	477	478	478	480	480	480	475
5		479	479	479	479	480	480	479	477	479	478	471	465	467	469	471	472	478	479	477	477	477	478	479	478	476
6		478	478	476	477	478	478	478	477	476	471	466	461	463	463	462	469	476	479	478	478	477	477	476	477	474
7		478	474	473	476	477	478	479	479	480	477	470	463	461	465	472	478	481	480	480	478	479	478	478	473	475
8	D	475	481	482	475	466	470	475	482	479	478	476	470	467	471	473	475	480	488	487	490	487	483	482	482	478
9		481	481	480	480	481	481	481	482	484	483	476	468	464	467	474	479	484	485	484	484	483	483	481	482	480
10		478	479	478	479	479	480	479	480	481	479	474	470	471	472	476	482	483	483	483	481	480	480	480	479	479
11		479	477	476	476	478	478	478	479	484	485	481	478	477	475	477	481	483	482	481	480	479	480	477	478	479
12	Q	478	477	477	478	478	478	478	478	481	478	476	475	474	477	479	479	478	480	479	478	479	478	478	477	478
13		478	477	476	476	476	476	476	475	478	478	474	469	471	475	473	474	475	475	474	474	474	473	472	472	475
14	D	473	476	473	474	474	476	474	474	476	477	471	470	472	473	474	474	472	477	486	493	493	490	488	484	478
15		485	482	482	481	481	481	479	477	479	480	476	474	476	479	482	483	482	479	480	479	481	480	479	481	480
16		480	480	480	478	477	477	478	478	478	479	474	473	477	479	481	485	486	485	482	483	482	480	479	481	480
17		479	479	478	478	479	479	479	477	477	474	472	470	470	471	477	480	480	480	482	479	481	479	478	477	477
18		479	479	479	479	478	479	479	478	477	477	471	466	469	473	476	478	481	483	482	480	479	478	480	477	477
19		477	478	477	479	478	479	479	480	480	479	474	470	474	476	479	480	481	483	482	487	487	485	484	481	480
20		480	480	480	481	482	481	479	477	479	481	474	469	472	473	478	482	481	483	482	483	483	480	480	480	479
21		480	481	481	480	482	481	482	481	480	479	475	471	472	473	476	480	480	480	480	480	479	478	478	477	479
22	Q	477	477	477	478	479	480	479	478	479	478	474	468	464	469	474	478	479	480	479	479	477	476	475	474	476
23		474	475	475	476	477	478	478	477	475	472	467	467	470	473	474	479	480	480	480	479	477	477	476	475	475
24		475	474	474	475	475	476	477	476	476	474	470	466	469	471	475	477	479	480	479	477	477	478	477	476	475
25	D	476	474	474	475	475	475	473	473	475	476	468	466	468	472	474	477	481	486	490	490	486	483	482	480	477
26	Q	479	479	478	479	480	480	480	481	481	481	475	474	476	479	479	476	479	479	479	479	479	479	478	477	479
27	Q	476	476	476	477	477	477	478	478	478	473	468	467	471	471	469	472	476	476	475	476	477	477	476	475	475
28		474	473	472	472	473	474	475	474	476	472	467	467	470	474	474	477	477	478	478	477	476	475	474	474	474
29		476	475	475	476	477	477	478	477	478	478	470	470	476	479	478	479	480	479	478	479	480	478	478	477	477
30		477	476	476	476	477	476	476	479	480	476	471	474	472	471	475	480	481	479	479	479	478	477	477	477	477
31		477	478	479	478	477	478	478	477	477	474	470	470	471	474	478	480	481	478	477	477	477	476	476	476	476
MEAN		478	478	477	477	477	478	478	477	478	477	471	469	470	472	475	478	480	480	480	480	479	478	478	478	477
MEAN Q		477	477	477	478	478	478	478	478	479	477	473	470	471	474	475	476	477	478	478	478	478	477	477	476	476
MEAN D		476	477	477	475	473	475	474	475	476	474	469	466	468	472	473	476	478	482	484	487	485	483	482	480	477

EBRE MAGNETIC OBSERVATORY
DECEMBER 2013

TOTAL INTENSITY
F = 45000 nT PLUS TABULAR QUANTITIES (UNITS nT)

HOUR(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	MEAN
DAY																										
1	D	143	147	152	149	145	150	147	150	151	146	139	137	139	146	139	142	142	144	144	145	146	146	148	146	145
2	Q	146	146	147	148	148	149	150	151	152	149	142	138	140	143	142	143	144	146	145	144	144	146	146	147	146
3	D	148	149	149	153	150	148	149	149	150	141	129	129	132	134	128	132	135	144	140	146	146	150	146	148	143
4		154	146	143	146	149	149	150	148	152	150	146	142	142	139	135	138	144	144	138	139	138	140	144	145	144
5		147	147	147	147	150	151	152	153	155	154	147	139	142	144	143	140	144	147	144	142	141	143	148	148	146
6		149	150	148	149	151	152	155	157	156	149	145	141	143	141	136	140	146	150	150	149	147	147	144	147	148
7		154	149	143	146	148	149	152	157	158	154	144	133	130	132	138	146	150	152	152	150	150	152	155	147	148
8	D	146	151	164	161	134	132	133	146	144	139	138	132	126	129	130	127	121	134	136	149	146	143	143	143	140
9		143	143	144	144	145	148	150	154	156	152	143	134	127	124	130	134	139	144	146	146	145	147	144	149	143
10		145	146	145	149	152	154	155	157	153	148	138	129	128	130	134	142	145	148	151	149	149	148	148	148	145
11		150	148	146	146	148	149	149	150	152	147	138	136	136	134	138	142	146	148	151	151	149	151	147	147	146
12	Q	147	146	146	147	149	150	151	153	152	146	140	137	137	141	144	144	144	148	149	148	148	147	147	147	146
13		149	149	149	149	150	152	154	154	155	151	146	141	142	150	156	156	155	155	156	155	155	153	150	148	151
14	D	149	155	146	146	146	152	151	151	152	151	143	139	140	140	138	134	119	114	115	134	142	144	146	143	141
15		145	144	144	145	147	148	147	147	149	149	140	134	135	140	148	153	152	146	144	143	147	146	146	149	145
16		149	150	153	150	147	145	146	147	144	142	132	128	131	134	138	145	148	148	145	148	150	149	147	151	144
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19		147	148	145	146	146	148	151	154	153	148	142	136	140	142	143	141	140	138	135	143	146	147	152	150	145
20		146	146	148	149	153	153	151	151	153	152	142	136	138	141	146	149	145	146	145	148	151	147	146	144	147
21		145	148	150	151	153	154	155	156	152	148	142	136	137	140	145	150	151	151	152	152	151	149	150	149	149
22	Q	149	149	150	151	153	157	159	160	159	153	147	142	138	141	145	149	151	152	153	154	153	152	151	149	151
23		148	149	151	150	152	154	157	156	153	146	137	134	137	141	143	149	152	154	154	154	152	151	151	151	149
24		151	150	149	150	152	154	156	157	156	152	145	138	140	143	147	149	150	154	153	150	150	151	151	152	150
25	D	152	151	152	154	156	158	153	151	150	150	136	126	124	127	126	125	126	133	145	153	151	150	149	146	143
26	Q	146	146	145	146	148	150	152	154	153	151	144	141	144	148	150	148	150	151	151	151	151	151	150	149	149
27	Q	148	148	149	150	151	153	154	155	155	148	140	139	144	148	145	148	153	153	151	152	154	156	155	155	150
28		154	153	151	151	152	153	155	156	158	154	148	146	147	150	149	151	150	151	154	156	156	154	149	147	152
29		149	147	146	148	152	153	156	156	154	151	136	135	144	149	149	147	147	148	147	149	153	152	152	151	149
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31		147	149	152	151	151	153	154	155	157	148	140	137	138	141	146	151	153	151	150	152	152	151	150	151	149
MEAN		148	148	148	149	149	151	152	153	153	149	141	136	137	139	141	144	145	146	147	148	149	149	148	148	147
MEAN Q		147	147	147	148	150	152	153	154	154	149	143	139	141	144	145	147	149	150	150	150	150	150	150	149	148
MEAN D		148	150	153	152	146	148	147	149	150	145	137	133	132	135	132	132	129	134	136	145	146	147	146	145	142



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