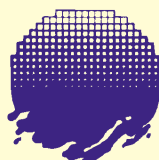


2004

**Boletín del
Observatorio del Ebro
Observaciones
geomagnéticas en la
isla Livingston - Antártida**

OBSERVATORI DE L'EBRE



Consejo Superior de Investigaciones Científicas - Universitat Ramon Llull

BOLETÍN DEL OBSERVATORIO DEL EBRO



**OBSERVACIONES GEOMAGNÉTICAS DE LA ISLA LIVINGSTON, ANTÁRTIDA
2004 Y CAMPAÑA 2004-2005**

**LIVINGSTON ISLAND GEOMAGNETIC OBSERVATIONS, ANTARCTICA
2004 AND 2004-2005 SURVEY**

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2004, AND 2004-2005 SURVEY**

Por - by

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**OBSERVATORI DE L'EBRE
Roquetes
2005**

1. INTRODUCCIÓN

En este Boletín se presentan las observaciones magnéticas registradas en el Observatorio Geomagnético de la Isla Livingston durante el año 2004, incluyendo la Campaña Antártica 2004-2005. La instalación y operación del Observatorio se enmarcaron en el Proyecto ANT95-0994-C03 del Programa Nacional de Investigación en la Antártida, continuado por los Proyectos ANT98-0886, REN2000-0833 y REN2003-08376-C02-02. Con este propósito, durante la campaña 1995-1996 se procedió al montaje de las casetas que en la actualidad albergan la estación magnética, en la Base Antártica Española (BAE) Juan Carlos I de la Isla Livingston (Islas Shetland del Sur) y, paralelamente, a la verificación de la estación magnética así como de los equipos de medida absoluta del campo geomagnético, en el *Observatori de l'Ebre*. Una evaluación de la homogeneidad espacial de las variaciones registradas, así como de la particular anomalía magnética cortical en el Observatorio pueden encontrarse en TORTA et al. (1999a).

Durante la campaña 1996-1997 se instaló el variómetro, del que se tienen registros desde el 7 de Diciembre de 1996, y se procedió a la realización de medidas absolutas. En los anteriores Boletines (TORTA et al., 1997a, 1998, 1999b; GAYA-PIQUÉ et al., 2000, 2002; MARSAL et al., 2003, 2004) se han ido resumiendo sucesivamente las medidas realizadas desde esa fecha hasta el 24 de Febrero de 2004, cuando el personal científico y técnico abandonó la BAE al final de la Campaña 2003-2004 (la Base sólo permanece ocupada durante el verano Austral). El Observatorio, sin embargo, se ha dejado en registro continuo automático durante los meses de Marzo a Noviembre de 1997 a 2004, habiéndose podido recuperar los datos de cada uno de esos períodos al inicio de la campaña siguiente (en concreto, el 4 de Diciembre de 2004 para el último).

La invernada correspondiente a este Boletín presenta períodos considerables sin valores (especialmente durante los meses de octubre y noviembre) para los elementos magnéticos H y Z, debidos a una escisión en el cable del par de bobinas de Helmholtz responsable de la adquisición de las medidas de Inclinación magnéticas (ver apartado 3.1), con lo que sólo se dispone de datos de la Declinación (D) y campo total (F) para dicho periodo. Otros intervalos (más cortos y para todos los elementos) sin datos corresponden a cortes en el suministro eléctrico desde la BAE.

Se puede obtener más información dirigiéndose a:

Observatori de l'Ebre	Tel.: 977 50 05 11
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	smarsal@obsebre.es

Desde la Campaña 1999-2000 los valores del campo registrados por el Observatorio se transmiten vía satélite, bien utilizando el Meteosat hasta el Geomagnetic Information Node (GIN) de la red INTERMAGNET de Edimburgo, bien utilizando el GOES hasta el GIN de Ottawa, donde son recuperados por el *Observatori de l'Ebre*. Sin embargo, la calidad de las transmisiones fue deteriorándose progresivamente, y si bien los datos son actualmente enviados, se ha decidido no difundirlos a través de Internet debido a que la información recibida es incompleta.

2. SITUACIÓN GEOGRÁFICA

La instalación del observatorio requirió la edificación de tres casetas térmicamente aisladas y construidas con materiales amagnéticos. La zona de emplazamiento de la estación magnética fue definida después de un estudio realizado por el *Instituto Geográfico Nacional* (CASAS et al., 1992) durante la campaña 1990-1991. Los resultados del levantamiento magnético efectuado mostraron que el lugar más apropiado es la zona de Punta Polaca, situada al Oeste de las instalaciones de la BAE y a unos 350 m de distancia de ellas aproximadamente. Asimismo, el lugar se encuentra suficientemente alejado del conjunto de instalaciones de la BAE para que no existan riesgos de contaminación de los registros magnéticos debido a la influencia

de la Base o a efectos antropogénicos. De las tres casetas, una aloja los sensores de un magnetómetro vector; otra contiene la electrónica, el sistema de control y adquisición de datos; y la tercera alberga el magnetómetro para la realización de medidas absolutas.

Las coordenadas del pilar fundamental son las siguientes:

Latitud Geográfica	62°	39'	44"	S
Longitud Geográfica	60°	23'	41"	W
Latitud Geomagnética*	52°	30'	59"	S
Longitud Geomagnética*	8°	32'	52"	E
Altitud s.n.m.				19.4 m

*Calculado a partir de la 9ª generación del IGRF para la época 2004.0.

A 460 m en dirección Este del pilar fundamental se clavó un jalón como marca de referencia para la determinación de la Declinación. El acimut determinado entre la línea pilar-jalón y el Norte Geográfico es 90° 52' 3.66".

3. INSTRUMENTOS Y OPERACIÓN

3.1. MAGNETÓMETRO VECTOR

El instrumento principal de la estación magnética automática está constituido por un magnetómetro de protones que mide la intensidad total del campo (F). El sensor de este magnetómetro está montado en el centro de dos conjuntos de bobinas de Helmholtz mutuamente perpendiculares orientados respectivamente según las direcciones dadas por la Declinación e Inclinación locales. Al aplicar corriente a esas bobinas y medir la magnitud de los vectores resultantes, pueden obtenerse los cambios en la Declinación, D, y la Inclinación, I; el sistema se conoce como configuración $\delta D/\delta I$. La estación fue desarrollada por el Geomagnetism Group del *British Geological Survey* (BGS) en Edimburgo. Los detalles técnicos de la misma pueden encontrarse en RIDDICK et al. (1995), y una descripción resumida de su fundamento y operación en TORTA et al. (1997b).

Un PC compatible en la caseta central comunica con el magnetómetro para controlar la adquisición de datos y la conmutación de corriente en las bobinas a través de las interfases serie y paralelo estándares. Dicha caseta aloja asimismo la electrónica que permite suministrar corriente estable a las bobinas $\delta D/\delta I$. La sincronización de tiempo viene efectuada por un receptor GPS.

3.2. MEDIDAS ABSOLUTAS

Para la realización de medidas absolutas se ha utilizado un DI-flux ELSEC 810A, que consta de un magnetómetro de núcleo saturado o fluxgate cuyo sensor viene montado en un teodolito amagnético Zeiss 015B. La electrónica se encuentra en la misma caseta.

El procedimiento de observación está basado en la determinación de campo nulo para la obtención de D e I. Para eliminar los errores de colimación entre el sensor y el eje óptico del teodolito, así como los debidos al "offset" de campo nulo generados por la electrónica, se realizan observaciones en las cuatro posiciones posibles para cada elemento (ver, p.e., JANKOWSKI Y SUCKSDORFF, 1996, o TORTA et al., 1997b).

Para la determinación contemporánea de la intensidad total (F), que se usa en conjunción con la inclinación (I) medida para calcular las intensidades horizontal (H) y vertical (Z), se extraen los valores correspondientes de la secuencia de medidas del magnetómetro vector cuando éste mide con las bobinas sin polarizar. Para su reducción a la posición del pilar fundamental se han efectuado medidas en el mismo con el magnetómetro de precesión de protones Gem Systems GSM19 de efecto Overhauser. La F en la estación automática

se obtiene con el magnetómetro GEOMAG SM90R, también de efecto Overhauser. Esas medidas han proporcionado una diferencia promedio de -2.2 nT ($F_{\text{pilar fundamental}} - F_{\text{magnetómetro vector}}$).

4. PROCESO DE LOS DATOS

El proceso de datos preliminar, realizado en las instalaciones de la BAE, incluye la detección y eventual eliminación de valores espúreos, la visualización de los valores de polarización en D y en I del magnetómetro vector para la detección de posibles derivas en la fuente de corriente, y la visualización de los magnetogramas, con la adopción de líneas de base preliminares. Tras la compilación de la serie de medidas absolutas, se ha procedido a la determinación de las líneas de base definitivas según el siguiente procedimiento:

Para cada elemento observado D e I se han abstraído de los valores de las medidas absolutas los valores correspondientes del magnetómetro vector (diferencias o líneas de base observadas). Sobre esta serie de diferencias se ha realizado un análisis que finaliza con la obtención de las líneas de base (diferencias adoptadas). Este proceso incluye un análisis de la dispersión local y global de la serie, el descarte de los valores con diferencias superiores a un umbral, y una interpolación de los datos no rechazados del tipo que se decida más oportuno según el caso, ya sea una media móvil, un ajuste lineal, cuadrático, etc. Las diferencias observadas y las correspondientes líneas de base adoptadas se ilustran en la fig. 1. Tras añadir estas últimas a las medidas del magnetómetro vector (y así trasladarlas a las referencias absolutas) se han producido los valores minuto definitivos para cada elemento. De estos valores se obtienen fácilmente los magnetogramas y las tablas de medias que se presentan a continuación.

Teniendo en cuenta la conducta manifestada durante las últimas campañas en las que se han realizado medidas absolutas, las líneas de base que se han adoptado en el caso de D para el período entre ellas obedecen a funciones lineales con las pendientes necesarias para pasar de las diferencias adoptadas al final de una campaña a las del principio de la siguiente (fig. 2). Sin embargo, debido a la avería que se ha producido en el magnetómetro vector en relación a la Inclinación magnética, no ha sido posible determinar la línea de base para este elemento durante la última invernada, pues en el momento de repararlo se varió inevitablemente su orientación espacial. Así pues, se ha adoptado arbitrariamente como línea de base durante el período Febrero - Octubre de 2005 el valor que ésta alcanzaba durante el último mes en que se realizaron medidas absolutas en el observatorio, es decir, se ha mantenido para toda la invernada el valor que tomaba la línea de base de I a finales de Febrero de 2005. Es por esta razón que se han omitido las medias anuales de los elementos derivados de I en la tabla 1 (ver sección 5).

A diferencia de lo mostrado en boletines anteriores, cabe observar que las líneas de base se presentan para los elementos D e I, pues son estos dos elementos los que se determinan tanto en el caso del magnetómetro vector como en el del DI-flux, siendo por tanto más natural la comparación directa entre ellos.

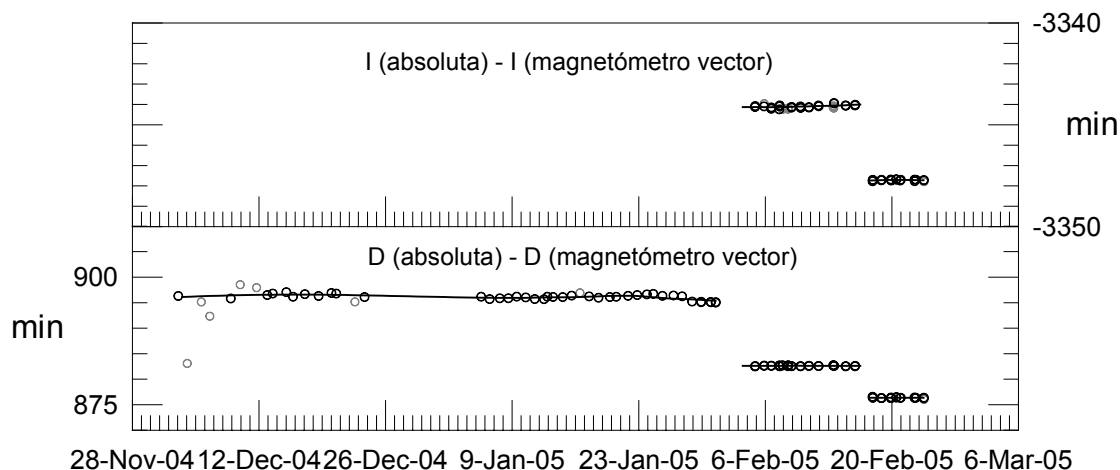


Fig. 1. Diferencias observadas (círculos) y líneas de base adoptadas (líneas continuas) para los dos elementos D e I. Los círculos en trazo fino corresponden a las diferencias descartadas antes de la adopción de la línea de base. Las discontinuidades que se observan son debidas al cambio de orientación inevitable que se produjo en dos reparaciones sucesivas del magnetómetro vector.

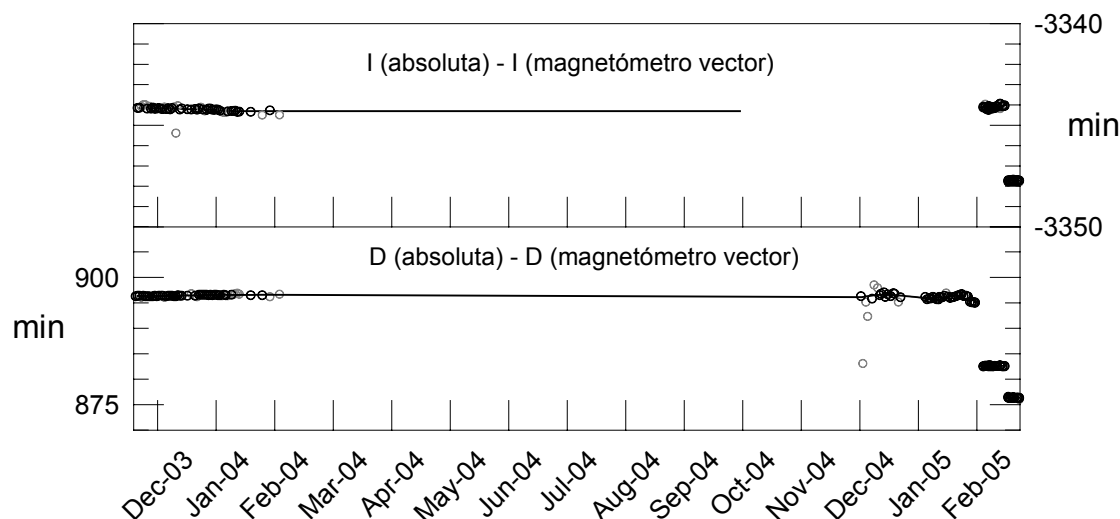


Fig. 2. Equivalente a la fig. 1 para el período completo de registro desde Noviembre de 2003. El período sin línea de base para I corresponde al tiempo durante el cual permaneció averiado el magnetómetro vector, desde Octubre de 2004 hasta Febrero de 2005.

5. PRESENTACIÓN DE LOS DATOS

Los valores medios anuales para todos los elementos del campo obtenidos hasta la publicación de este Boletín se presentan en la tabla 1. Puesto que las líneas de base adoptadas en la fig. 2 para el período sin medidas absolutas podrían diferir de las reales, damos en la tabla 2 las medias correspondientes únicamente a los períodos con referencias absolutas. Corresponden básicamente a las medias sobre los meses de Diciembre, Enero y Febrero de cada campaña. Una vez más, a causa de la avería que se presentó en el magnetómetro vector durante la última invernada, no fue posible reparar el instrumento hasta principios de Febrero de 2005, con lo que sólo se dispone de unos veinte días de datos para la Inclinación y sus elementos derivados (H, Z, X e Y). La media para ese período y para los citados elementos estaría centrada en la época 2005.1; no así para los elementos D y F, que lo están en la época 2005.0. Así pues, para unificar la tabla 2 se ha decidido desplazar la media de los elementos derivados de I hasta la época 2005.0 teniendo en cuenta la variación secular manifestada a lo largo de las 3 últimas campañas. Asimismo, añadir que dichas medias deben tomarse con precaución, pues corresponden a un período muy reducido y por lo tanto poco significativo.

Año	D	H	Z	X	Y	I	F
1997.5	14° 55.5'	20522	-30040	19830	5286	-55° 39.7'	36380
1998.5	14° 54.7'	20465	-29976	19776	5266	-55° 40.7'	36295
1999.5	14° 53.5'	20415	-29910	19729	5246	-55° 41.1'	36213
2000.5	14° 52.4'	20369	-29855	19686	5228	-55° 41.8'	36141
2001.5	14° 49.8'	20319	-29786	19642	5201	-55° 42.0'	36057
2002.5	14° 47.1'	20262	-29717	19591	5171	-55° 42.7'	35967
2003.5	14° 45.0'	20210	-29665	19544	5146	-55° 44.1'	35895
2004.5	14° 42.0'	-	-	-	-	-	35813

Tabla 1. Valores medios anuales para todos los elementos del campo magnético. H, Z, X, Y y F vienen dados en unidades de nT.

Año	D	H	Z	X	Y	I	F
1997.0	14° 55.7'	20554	-30065	19860	5295	-55° 38.5'	36419
1998.0	14° 54.8'	20504	-29995	19814	5277	-55° 38.6'	36334
1999.0	14° 53.9'	20447	-29934	19759	5257	-55° 39.9'	36250
2000.0	14° 52.7'	20399	-29868	19715	5238	-55° 40.1'	36169
2001.1	14° 50.5'	20345	-29799	19666	5211	-55° 40.6'	36082
2002.0	14° 48.6'	20298	-29738	19624	5188	-55° 41.0'	36005
2003.0	14° 45.9'	20246	-29679	19578	5160	-55° 42.0'	35927
2004.0	14° 43.8'	20194	-29630	19530	5135	-55° 43.4'	35857
2005.0	14° 41.4'	20144	-29564	19486	5109	-55° 43.8'	35775

Tabla 2. Valores medios para los periodos con referencias absolutas.

Los datos que se presentan a continuación son:

- i) Índices K, calculados automáticamente mediante el método FMI, según una modificación del programa original (en lenguaje C) creado por P. McFadden (AGSO). Q y D indican los cinco días Internacionales de Calma y Perturbados de cada mes, respectivamente.
- ii) Magnetogramas diarios de la declinación (D), intensidad horizontal (H) e intensidad vertical (Z), mostrados secuencialmente y por meses.
- iii) Magnetogramas diarios de la intensidad total (F), mostrados secuencialmente y por meses.
- iv) Tablas mensuales de los valores medios horarios de D, H, Z y F. Todas las medias han sido calculadas a partir de valores minuto siempre y cuando el porcentaje de valores perdidos en el intervalo en cuestión no exceda el 10%.

Agradecimientos. Estos resultados forman parte de los Proyectos ANT95-0994-C03, ANT98-0886, REN2000-0833 y REN2003-08376-C02-02 de los sucesivos Planes Nacionales de I+D+I. Los autores desean expresar su más sincero agradecimiento a David Badia, de l'Escola Superior d'Enginyeria de Telecomunicacions La Salle por la realización de medidas absolutas en ausencia del personal del Observatori de l'Ebre, así como al personal técnico y científico de la BAE en las distintas campañas desde que se instaló el Observatorio, en concreto durante el período que comprende este Boletín a Joël Sans y Juan Luis Ruiz, así como al Servicio Geográfico del Ejército por la determinación de posiciones y acimuts. El apoyo técnico recibido por parte del Global Seismology and Geomagnetism Group del *British Geological Survey*, especialmente por parte de John C. Riddick, Christopher W. Turbitt y Simon Flower, han resultado ser también fundamentales. Durante esta última campaña se ha contado asimismo con la colaboración de Leroy W. Pankratz, del *United States Geological Survey*, y de Jennifer Parmelee, del *Geological Survey of Canada*, quienes nos han ayudado en la ardua tarea de mejorar las transmisiones de datos vía satélite.

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1. INTRODUCTION

In this Bulletin we give details of the magnetic observations recorded at the Livingston Island Geomagnetic Observatory during 2004, including the 2004-2005 austral summer survey. Both its installation and operation were on behalf of the National Program for Antarctic Research Project ANT95-0994-C03, followed by the ANT98-0886, REN2000-0833 and REN2003-08376-C02-02 projects. In order that this objective could be achieved, during the 1995-1996 survey, the magnetic observatory instrument accommodation was deployed at the Spanish Antarctic Station Juan Carlos I (Livingston Island in the South Shetland Island group). In parallel with this work both the variometer station and the absolute observing instruments were tested and calibrated at Ebre Geomagnetic Observatory, Roquetes, Tarragona, Spain. An assessment of the spatial homogeneity of the recorded variations, as well as of the particular observatory crustal anomaly biases are given in TORTA et al. (1999a).

Both the variometer, deployed in a set of $\delta D/\delta I$ coils and the absolute instruments were installed during December 1996, with continuous recording and the absolute observing program beginning on December 7, 1996. In the previous Bulletins (TORTA et al., 1997a, 1998, 1999b; GAYA-PIQUÉ et al., 2000, 2002; MARSAL et al., 2003, 2004) the measurements made between that date and February 24, 2004 were summarized. As this site is only manned during the Austral summer all scientific staff departs at the end of February each survey, but the magnetometers are left recording and we retrieve the data recorded throughout the winter at the beginning of the next survey season (in December 4, 2004 for the latest).

The winter epoch corresponding to this Bulletin presents considerable periods without data (specially during October and November) for the magnetic elements H and Z, due to a scission in the cable of the Helmholtz coil responsible of the acquisition of magnetic Inclination (see section 3.1), hence we only have Declination (D) and total Field (F) data for this period. Other intervals (shorter and for all the elements) without data correspond to current breaks from the station.

It is possible to obtain more information applying to:

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Since the 1999-2000 Survey, data recorded at the Observatory are transmitted either via Meteosat satellite to the INTERMAGNET Geomagnetic Information Node (GIN) at Edinburgh, or via GOES satellite to the GIN at Ottawa, being them afterwards retrieved by Ebre Observatory. Nevertheless, the quality of the transmissions has deteriorated progressively and although the data are now sent, it has been decided not to show them through Internet because the received information is incomplete.

2. POSITION

The installation of the observatory required the erection of three thermally isolated huts which had been prefabricated using non-magnetic materials. The location of the observatory was determined using the results of a study made by the Instituto Geográfico Nacional (CASAS et al., 1992) during the 1990-1991 field season. The results of this magnetic survey showed the most appropriate site to be around the area named as Punta Polaca, located to the west of the Station settlement and at approximately 350 m from the main base. Located at this position, the site is far enough from the settlement to avoid man-made disturbances. One hut houses the proton magnetometer and $\delta D/\delta I$ coils; the second contains the control electronics and the data acquisition system; and the third accommodates the D/I fluxgate theodolite for the absolute observations.

The coordinates of the absolute pillar are:

Geographic latitude	62°	39'	44"	S
Geographic longitude	60°	23'	41"	W
Geomagnetic latitude*	52°	30'	59"	S
Geomagnetic longitude*	8°	32'	52"	E
Height above msl				19.4 m

* Computed from the 9th Generation of IGRF evaluated at 2004.0.

At a position 460 m to the west of the absolute pillar a fixed mark was constructed which is used as the reference mark in the determination of declination. The angle viewed from the D/I pillar between the azimuth mark and the geographic north (the azimuth of the mark) is 90° 52' 3.66".

3. INSTRUMENTS AND OPERATION

3.1. VECTOR MAGNETOMETER

The main instrument in the automatic magnetic observatory is a proton magnetometer used to measure 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; this is known as the $\delta D/\delta I$ configuration. The equipment was developed by the Geomagnetism Group of the British Geological Survey (BGS) in Edinburgh. Its technical details are described by RIDDICK *et al.* (1995), and a summarized description of its principles and operation by TORTA *et al.* (1997b).

An IBM compatible PC in the central hut communicates with the magnetometer to control the data acquisition and bias coil switching using the standard PC serial and parallel interfaces. This hut also accommodates the electronics which generates stable currents to the $\delta D/\delta I$ bias coils. Time synchronisation is provided by a GPS receiver.

3.2. ABSOLUTE OBSERVATIONS

For the absolute measurements of declination and inclination an ELSEC 810A D/I-fluxgate theodolite is used. It comprises a single axis fluxgate magnetometer sensor element mounted on a Zeiss 015B non-magnetic theodolite with the electronics package placed in the same hut.

The D/I observation procedure is based on the null-field technique to measure D and I . To remove the errors due to the misalignment of the magnetic axis of the fluxgate and the optical axis of the theodolite, as well as those due to the zero-field offset generated by the control electronics, the observations are made in four positions for each element (see, e.g., JANKOWSKI & SUCKSDORFF, 1996, or TORTA *et al.*, 1997b).

The total field intensity (F) values, used in conjunction with the measured inclination (I) to calculate the horizontal (H) and vertical (Z) intensities, is obtained from the vector magnetometer, when it measures without polarizing the coils. F measured at the $\delta D/\delta I$ site is corrected for the site difference between the two positions before using it in the reduction of the observations. This correction was obtained by making simultaneous measurements of F on the one hand at the D/I pillar using a Gem Systems GSM19 Overhauser proton precession magnetometer and, on the other hand, F was measured at the automatic observatory using the GEOMAG SM90R Overhauser magnetometer. These measurements gave a mean difference of -2.2 nT ($F_{\text{absolute pillar}} - F_{\text{vector magnetometer}}$).

4. DATA PROCESSING

The preliminary data processing, done at the Antarctic Station, included the detection and eventual elimination of any spikes in the data, the graphical inspection of the D and I polarization values in the vector magnetometer daily records to detect any drift in the current supply unit, the examination of the magnetograms, and the adoption of preliminary baselines. After the absolute measurements had been reduced, the following procedure was adopted to allocate definitive baselines:

For each observed element D and I , the corresponding vector magnetometer values were subtracted from the absolute measurements (observed differences or observed baselines). To this series of differences a sequential analysis was applied towards the determination of the adopted differences or adopted baselines. This process included an analysis of both the local and global dispersion of the series, the removal of the values with differences higher than a given threshold, and the most suitable interpolation of the not rejected data, regarding the given case: a running average, a linear or square fitting, etc. The observed differences and the corresponding adopted baselines are plotted in Figure 1. By adding the latter to the vector magnetometer values (and thus translating the vector data to the absolute references) the definitive minute values for each element were produced. From these values the magnetograms and the tables of means which are presented following were obtained.

Taking into account the behaviour exhibited during the last surveys in which absolute measurements were made, the baselines adopted in the case of D for the period in between are lineal functions with the necessary slopes to pass from the adopted differences at the end of the penultimate survey to those of the beginning of the last one (Figure 2). Nevertheless, due to the failure produced in the vector magnetometer in relation to the magnetic inclination, it has not been possible to determine the baseline for this element during the last winter, since the spatial orientation was unavoidably changed at the moment of reparation. Thus, the baseline adopted arbitrarily for the period February - October 2005 is the constant value reached during the last month that absolute measurements were taken; in other words, the value of the I baseline at the end of February 2005 has been kept for the whole winter. This is the reason why the annual means of the elements derived from I in table I have been omitted (see section 5).

Unlike former bulletins, note that baselines are presented for the elements D and I , given that these are the two elements actually determined both by the vector magnetometer and the D/I -fluxgate, hence being more natural their direct comparison.

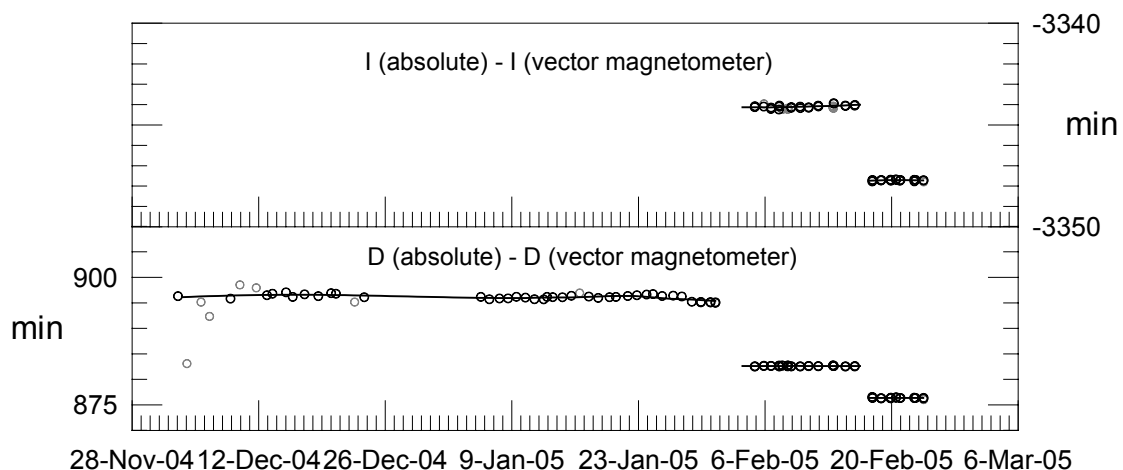


Fig. 1. Observed differences (circles) and adopted base-lines (lines) for the two elements I and D . Thin circles correspond to differences removed before the adoption of the baseline. The observed discontinuities are due to the inevitable change in spatial orientation in two successive reparations of the vector magnetometer.

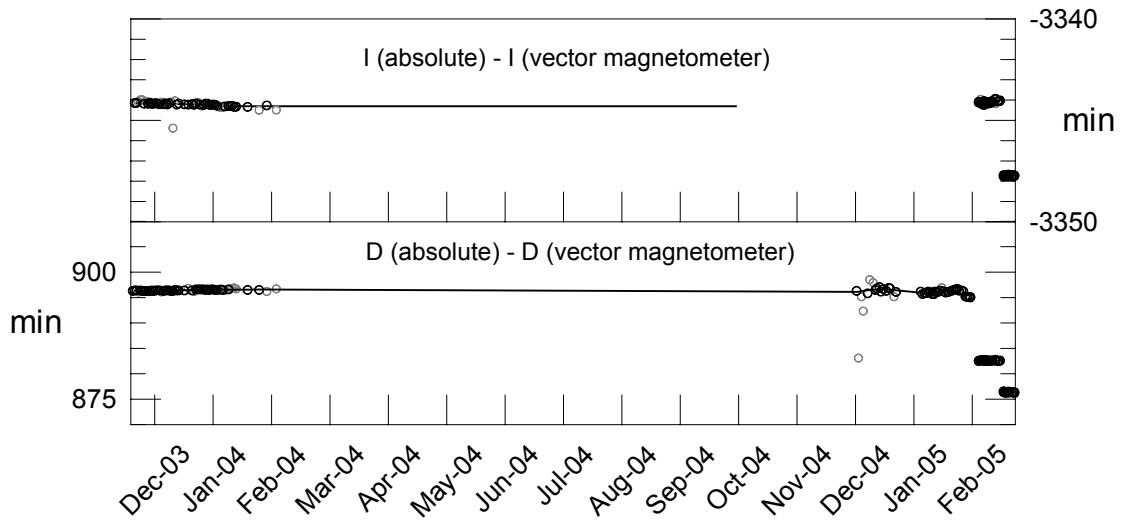


Fig. 2. As figure 1 but for the complete recording period from November 2003. The period without baseline for I corresponds to the time that the failure lasted in the vector magnetometer, from October 2004 to February 2005.

5. PRESENTATION OF DATA

The annual mean values for all magnetic elements obtained until the publication of this Bulletin are presented in table 1. Since the adopted baselines of figure 2 for the period without absolute measurements might differ from the actual ones, we give in table 2 the means corresponding to only the periods with absolute references, basically corresponding to the means over December, January and February of each Survey. Once again, because of the failure occurred in the vector magnetometer during the last winter, it was not possible to repair the instrument until the beginning of February 2005, therefore, we only have about 20 days of data for the magnetic Inclination and its derived elements (H , Z , X and Y). The mean for this period and for the abovementioned elements would be centered at the epoch 2005.1; but not for the elements D and F , which are centered at the epoch 2005.0. Hence, in order to unify table 2 it has been decided to move the mean of the elements derived from I down to the epoch 2005.0, taking into account the secular variation exhibited during the last 3 surveys. Likewise, it must be pointed out that the mentioned means should be taken with caution, since the corresponding period is short, and hence little significant.

Year	D	H	Z	X	Y	I	F
1997.5	14° 55.5'	20522	-30040	19830	5286	-55° 39.7'	36380
1998.5	14° 54.7'	20465	-29976	19776	5266	-55° 40.7'	36295
1999.5	14° 53.5'	20415	-29910	19729	5246	-55° 41.1'	36213
2000.5	14° 52.4'	20369	-29855	19686	5228	-55° 41.8'	36141
2001.5	14° 49.8'	20319	-29786	19642	5201	-55° 42.0'	36057
2002.5	14° 47.1'	20262	-29717	19591	5171	-55° 42.7'	35967
2003.5	14° 45.0'	20210	-29665	19544	5146	-55° 44.1'	35895
2004.5	14° 42.0'	-	-	-	-	-	35813

Table 1. Annual mean values for all magnetic elements. H, Z, X, Y and F are given in nT units.

Year	D	H	Z	X	Y	I	F
1997.0	14° 55.7'	20554	-30065	19860	5295	-55° 38.5'	36419
1998.0	14° 54.8'	20504	-29995	19814	5277	-55° 38.6'	36334
1999.0	14° 53.9'	20447	-29934	19759	5257	-55° 39.9'	36250
2000.0	14° 52.7'	20399	-29868	19715	5238	-55° 40.1'	36169
2001.1	14° 50.5'	20345	-29799	19666	5211	-55° 40.6'	36082
2002.0	14° 48.6'	20298	-29738	19624	5188	-55° 41.0'	36005
2003.0	14° 45.9'	20246	-29679	19578	5160	-55° 42.0'	35927
2004.0	14° 43.8'	20194	-29630	19530	5135	-55° 43.4'	35857
2005.0	14° 41.4'	20144	-29564	19486	5109	-55° 43.8'	35775

Table 2. Mean values for periods with absolute references.

The data presented next in this bulletin are:

- i) Computer-produced K indices by means of the FMI method, according to a modification of the original C-language program created by P. McFadden (AGSO). Q and D refer to the five International Quiet and Disturbed days in each month, respectively.
- ii) Month-at-a-glance daily magnetograms of declination (D), horizontal intensity (H) and vertical intensity, (Z).
- iii) Month-at-a-glance daily magnetograms of total intensity (F).
- iv) Monthly tables of hourly mean values of D, H, Z and F. All means have been calculated from minute values and only whenever the percentage of missing values in the corresponding interval does not exceed 10%.

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K INDICES & DAILY K SUMS AT LIVINGSTON ISLAND (K=9 LIMIT: 450 nT) FOR 2004 & JANUARY-FEBRUARY 2005

Date	JAN2004	FEB2004	MAR2004	APR2004	MAY2004	JUN2004	JUL2004
1	4333 4333 26	2222 2223 17	4222 3334 23	Q---- - - -	4432 2115 22	D5443 3113 24	3232 1--- -
2	3312 3343 22	2234 - - -	D4332 2233 22	Q---- - - 0	4101 0021 9	3322 2223 19	---1 1223 -
3	3333 3242 23	4333 3333 25	2223 223- -	D3432 3455 29	2323 1123 17	3331 1013 15	3111 1111 10
4	3333 3442 25	3133 222- -	- - - - -	6311 2212 18	2332 2--- -	4-22 2213 -	3-21 1012 -
5	4333 3334 26	3323 2232 20	- - - - -	D1111 2344 17	D---- - - 3	3211 1113 13	3310 1113 13
6	3332 22-- -	2334 3332 23	Q---- - - -	D5444 3134 28	323- 1124 -	4332 2131 19	Q2322 1000 10
7	D4444 3342 28	1132 1121 12	Q---- - - -	3332 2244 23	D3442 222- -	3222 2114 17	Q0210 0000 3
8	Q1113 2233 16	Q1112 -223 -	Q---- - - -	34-- -213 -	-3-- - - -	4323 2222 20	Q0000 00-- -
9	2343 3453 27	2012 322- -	D---- - - -	D3543 ---2 -	2320 2211 13	D4332 2332 22	Q---- - - -
10	2355 4333 28	Q---- - - -	D---- - - -	3332 1123 18	2220 0012 9	4330 1032 16	- - - - -
11	2223 3331 19	D---- - - -	D---- - - -	323- 2--- -	4--1 01-4 -	4322 0000 11	---- -24 -
12	Q2212 -234 -	D---- - - -	D---- - - -	- - - - -	4521 - - - -	0120 1000 4	4220 1113 14
13	3323 4344 26	D4323 3334 25	- - - - -	- - - - -	-42 1133 -	011- - - 2	5232 1123 19
14	Q4222 2133 19	2223 3333 21	- - - - -	3310 0001 8	2210 0002 7	1-- - - - -	1321 0011 9
15	2322 3334 22	D4334 2332 24	- - - - -	1111 1024 11	4232 0002 13	D--5- - - 2	2010 002- -
16	D4234 4444 29	3112 21-- -	- - - - -	3443 2234 25	Q2221 0011 9	--3- -101 -	-1-1 1104 -
17	2223 2333 20	Q1100 1012 6	- - - - -	3321 1112 14	Q1200 0002 5	1222 112- -	6342 1111 19
18	2323 3244 23	2111 1233 14	---2 2123 -	2342 2122 18	Q1211 0000 5	-212 2112 -	1331 01-- -
19	3222 3433 22	2211 1222 13	4212 2112 15	4321 1011 13	1201 1221 10	2222 1000 9	1322 1--- -
20	3323 2223 20	Q1111 14-- -	3422 2222 19	Q2112 0011 8	D1134 1123 16	Q0010 0100 2	---- - - 2 -
21	2223 2232 18	2-12 2222 -	4333 2221 20	1311 0121 10	3221 1110 11	0000 0000 0	Q1120 0101 6
22	D5446 5344 35	2112 31-- -	4331 2223 20	Q0101 1011 5	0233 1101 11	Q0000 0000 0	0--3 --46 -
23	D3344 -554 -	3222 2222 17	---- 11-- -	D2333 3223 21	33-- 2122 -	Q0010 0000 1	D---- - - -
24	5233 2232 22	4233 1223 20	Q---- 0101 -	2223 2211 15	31-- - - -	0120 0000 3	D--43 332- -
25	D5434 3333 28	2212 1111 11	Q12-- - - -	2343 2212 19	2122 1--- -	Q0000 1000 1	D668- - - -
26	3222 223- -	Q1111 1011 7	- - - - -	2220 0-1- -	Q---- - - 1	0100 1112 6	D---2 1226 -
27	4333 3323 24	2322 2333 20	- - - - -	- - - - -	Q112- - - 10	Q2101 0001 5	D7--- - - -
28	5333 3332 25	1334 3333 23	- - - - -	- - - - -	2021 1123 12	D3322 1113 16	- - - - -
29	Q2223 2123 17	D1324 4344 25	- - - - -	Q---- - - -	D4433 2225 25	D4343 2233 24	--2 1--- -
30	2234 3233 22	- - - - -	--33 3211 -	--31 1254 -	3223 2123 18	4332 2111 17	-1- - --3 -
31	Q1224 3232 19	- - - - -	22-- - - -	- - - - -	D5442 2021 20	- - - - -	2--- 2111 -
Mean K sum	23.4	17.9	19.8	16.7	12.9	11.5	11.4
Date	AUG2004	SEP2004	OCT2004	NOV2004	DEC2004	JAN2005	FEB2005
1	5310 0-1- -	3--- - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
2	---- 0014 -	-2-- - - -	- - - - -	Q---- - - -	Q---- - - -	D---- - - -	- - - - -
3	Q2210 0--0 -	Q---- -110 -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
4	Q000- - - -	Q11-- - - 0	D---- - - -	- - - - -	Q---- - - -	- - - - -	Q---- - - -
5	--1- - - -	-1-- 4--2 -	- - - - -	Q---- - - -	- - - - -	- - - - -	Q1111 11-1 -
6	-200 - - - -	D2233 1324 20	- - - - -	Q---- - - -	D---- - - -	Q---- - - -	1232 123- 31
7	---- - - - -	33-- - - -	Q---- - - -	D---- - - -	- - - - -	- - - - -	D3333 4456 31
8	Q---- 0000 -	333- - - 0	- - - - -	D---- - - -	- - - - -	- - - - -	D4534 3444 31
9	1--- -2- -	- - - - -	- - - - -	D---- - - -	- - - - -	Q---- - - -	D3443 3333 26
10	D-211 2--- -	Q--11 12-- -	- - - - -	D---- - - -	- - - - -	- - - - -	D4333 3342 25
11	- - - - -	Q-000 12-- -	- - - - -	- - - - -	- - - - -	- - - - -	3322 21-3 -
12	421- -112 -	Q---- 1100 -	- - - - -	D---- - - -	D---- - - -	- - - - -	22-- --11 -
13	2100 112- -	0000 0034 7	D---- - - -	- - - - -	- - - - -	- - - - -	Q1111 1--- -
14	322- --11 -	D3343 3344 27	D---- - - -	- - - - -	- - - - -	- - - - -	1221 1221 12
15	0001 ---0 -	5412 33-- -	- - - - -	Q---- - - -	- - - - -	- - - - -	Q1221 11-- -
16	0110 11-- -	D--42 3--- -	- - - - -	- - - - -	- - - - -	- - - - -	3212 3323 19
17	---- - - - -	D---- - - -	Q---- - - -	- - - - -	- - - - -	D---- - - -	2202 --- - -
18	---1 1112 -	- - - - -	- - - - -	Q---- - - -	- - - - -	- - - - -	D---- --3 - -
19	2--- - - - -	--11 - - - -	- - - - -	- - - - -	Q---- - - -	D---- - - -	2244 2323 22
20	D-322 31-- -	- - - - -101 -	- - - - -	- - - - -	- - - - -	- - - - -	4331 1222 18
21	D44-- --34 -	3--- --22 -	- - - - -	- - - - -	- - - - -	D---- - - -	3221 1112 13
22	3343 2222 21	D1133 ---4 -	- - - - -	- - - - -	D---- - - -	- - - - -	121- --- - -
23	---- - - - -	4531 1112 18	Q---- - - -	- - - - -	- - - - -	- - - - -	Q--11 1122 -
24	Q---- 0-1- -	3312 0212 14	- - - - -	- - - - -	- - - - -	- - - - -	011- --- - -
25	Q0211 001- -	- - - - -	- - - - -	- - - - -	Q---- - - -	Q---- - - -	- - - - -
26	---- 1112 -	-1-0 00-- -	Q---- - - -	- - - - -	- - - - -	Q---- - - -	- - - - -
27	3120 1122 12	1001 2--- -	- - - - -	- - - - -	- - - - -	Q---- - - -	- - - - -
28	1332 0111 12	-232 0112 -	Q---- - - -	- - - - -	D---- - - -	- - - - -	- - - - -
29	3301 1111 11	1011 1123 10	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
30	D3234 - - - -	1--- 001- -	D---- - - -	- - - - -	D---- - - -	- - - - -	- - - - -
31	D---- ---3 -	- - - - -	D---- - - -	- - - - -	- - - - -	- - - - -	- - - - -
Mean K sum	14.0	16.0	-	-	-	-	21.9

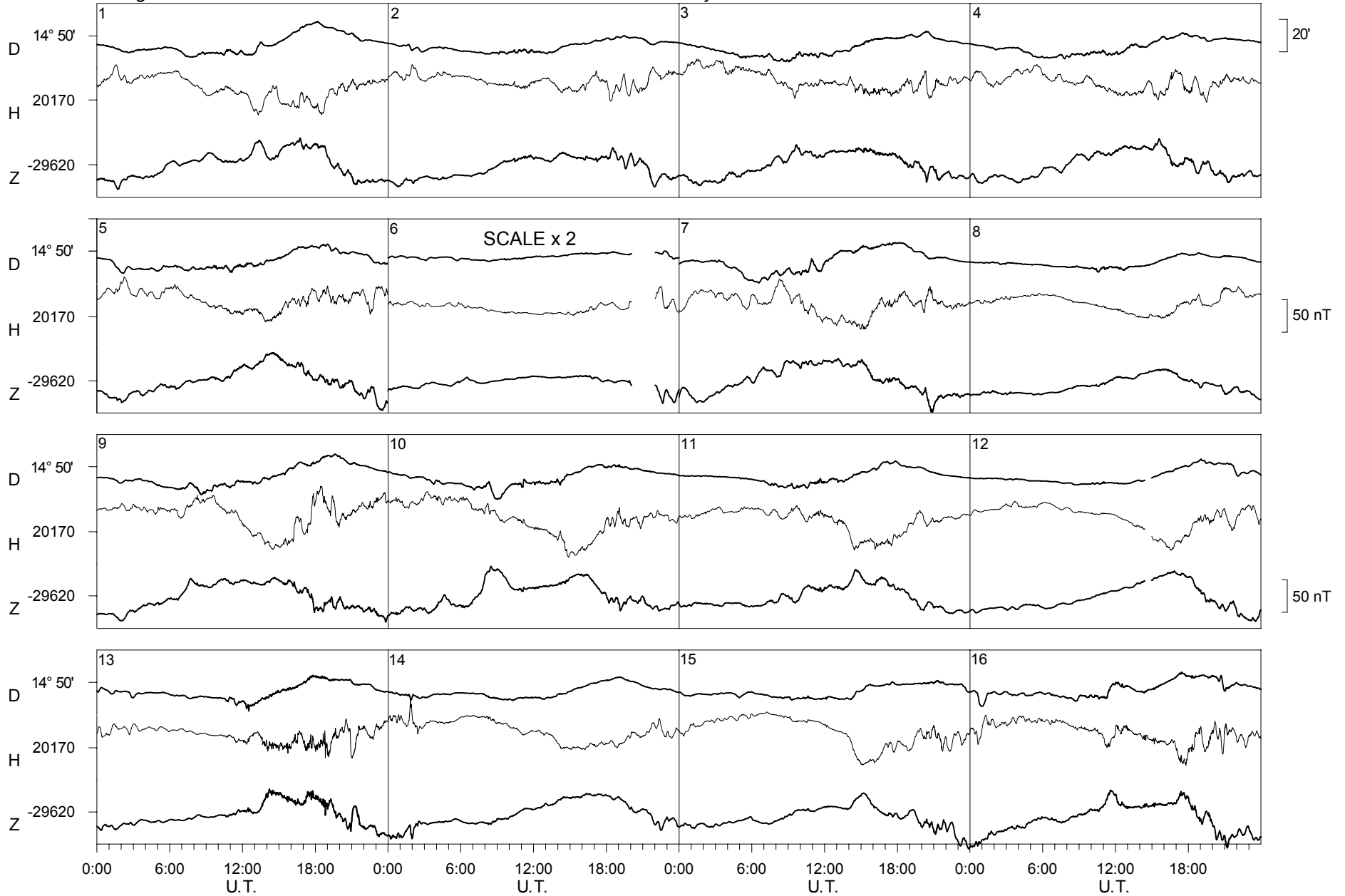
OCURRENCE DISTRIBUTION OF K INDICES

K index:	0	1	2	3	4	5	6	7	8	9	-
JAN2004	0	9	71	109	43	10	1	0	0	0	5
FEB2004	5	48	69	58	14	0	0	0	0	0	38
MAR2004	2	13	34	20	7	0	0	0	0	0	172
APR2004	15	49	45	39	20	5	1	0	0	0	66
MAY2004	34	53	64	29	16	4	0	0	0	0	48
JUN2004	66	48	52	37	12	2	0	0	0	0	23
JUL2004	30	52	31	22	6	1	5	1	1	0	99
AUG2004	31	45	27	16	7	1	0	0	0	0	121
SEP2004	25	37	20	26	10	2	0	0	0	0	120
OCT2004	0	0	0	0	0	0	0	0	0	0	248
NOV2004	0	0	0	0	0	0	0	0	0	0	240
DEC2004	0	0	0	0	0	0	0	0	0	0	248
2004 TOTAL	208	354	413	356	135	25	7	1	1	0	1428
JAN2005	0	0	0	0	0	0	0	0	0	0	248
FEB2005	2	40	34	32	14	2	1	0	0	0	67

Livingston Island

January

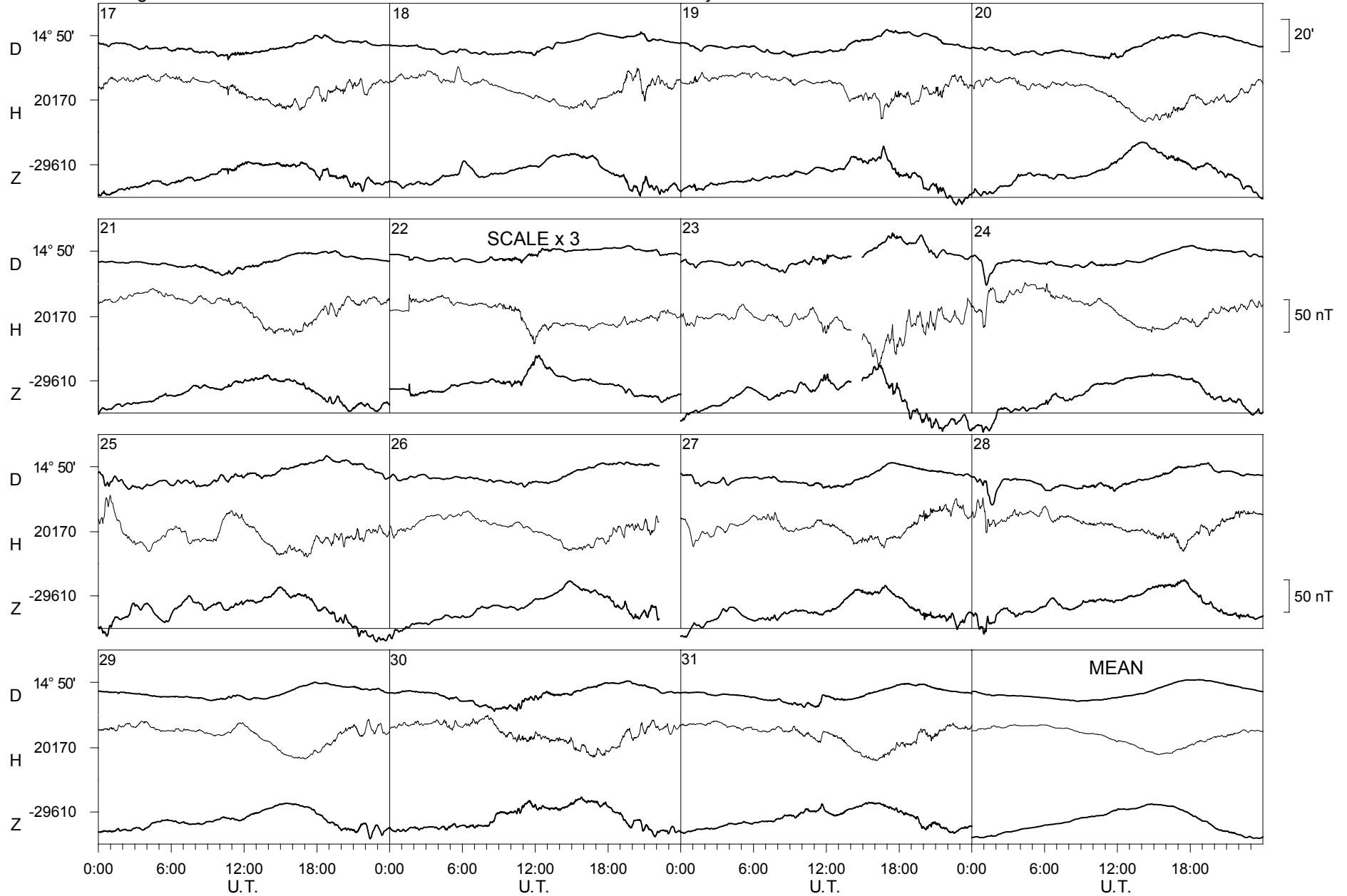
2004



Livingston Island

January

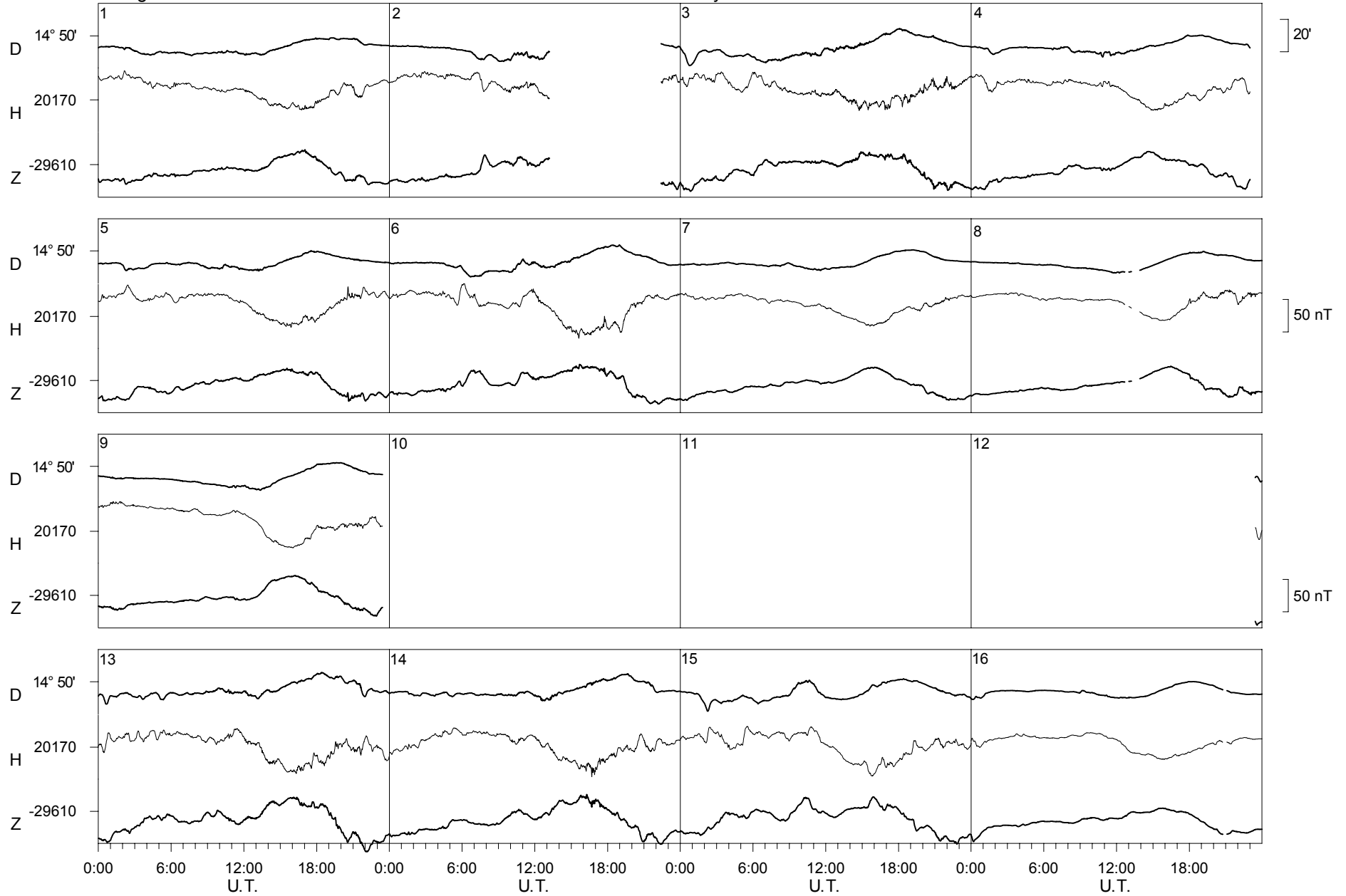
2004



Livingston Island

February

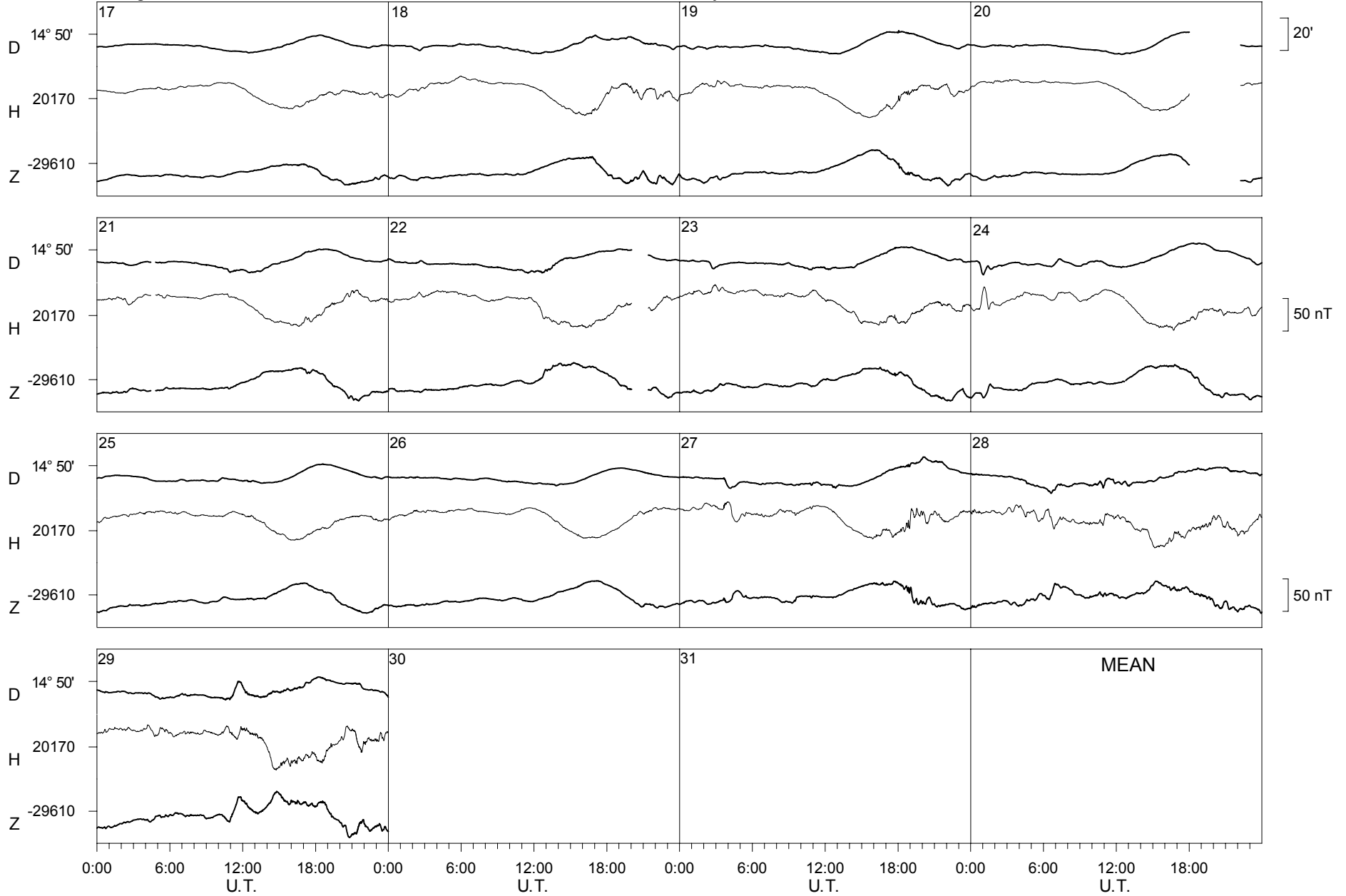
2004



Livingston Island

February

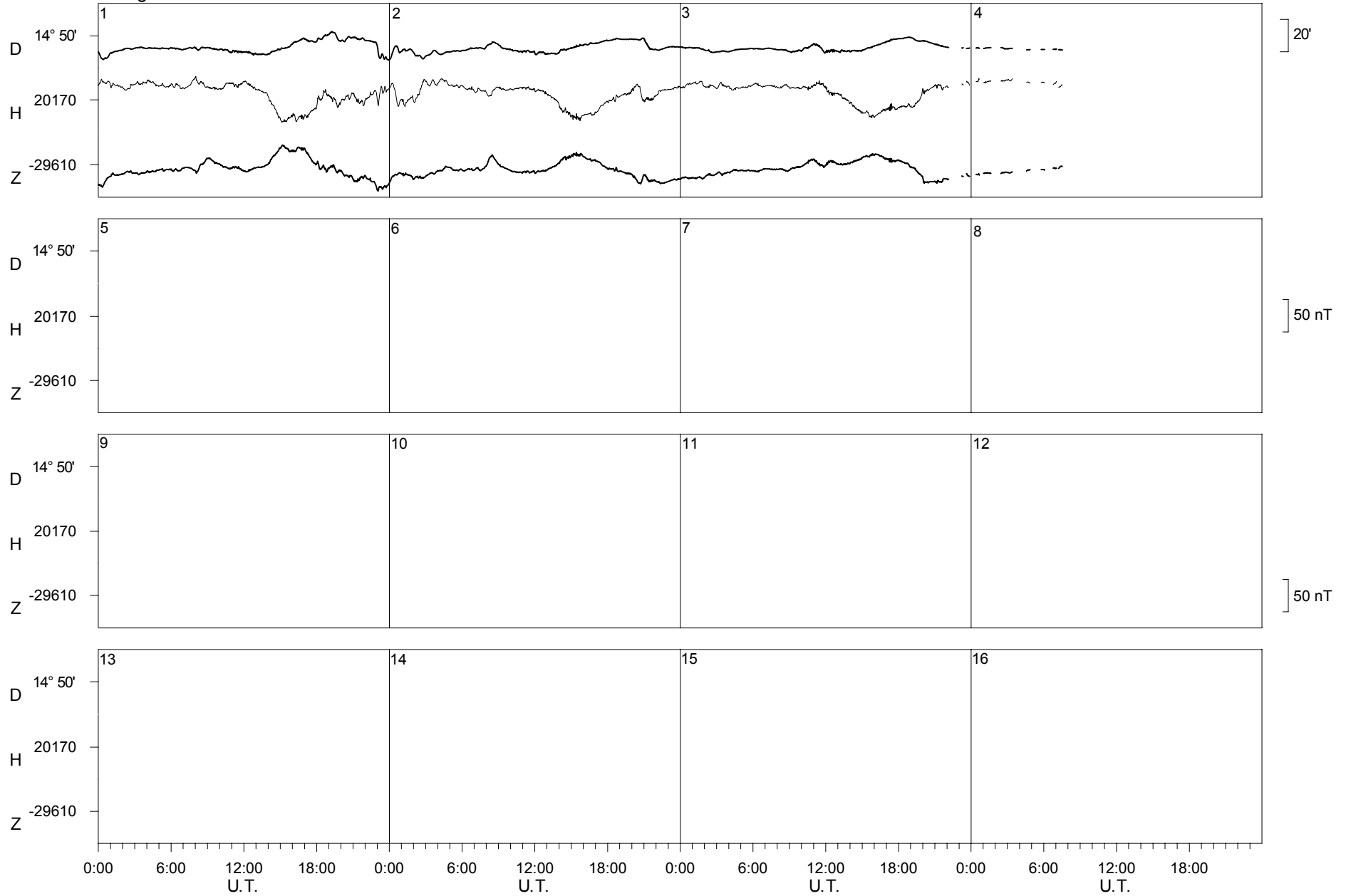
2004



Livingston Island

March

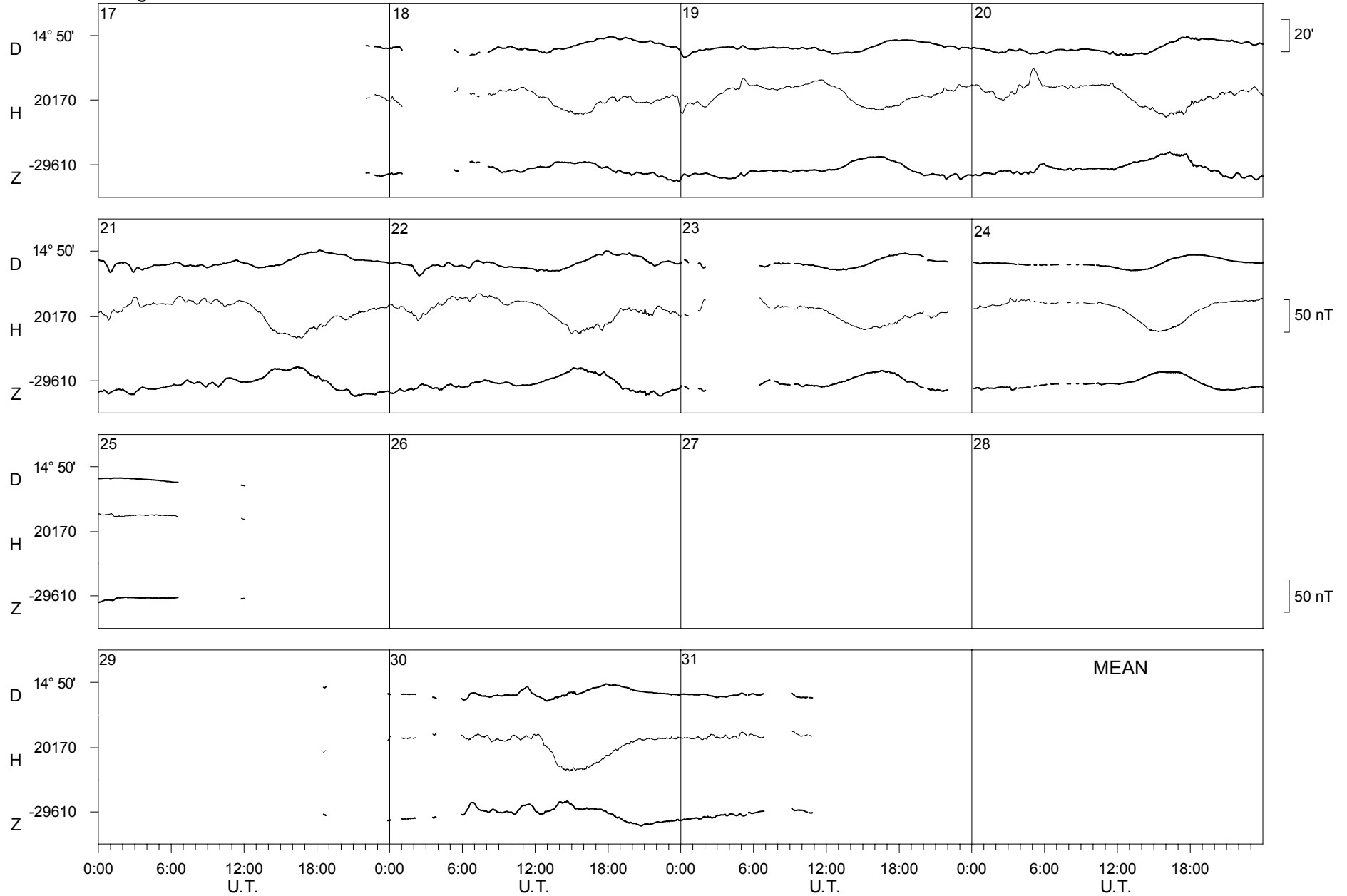
2004



Livingston Island

March

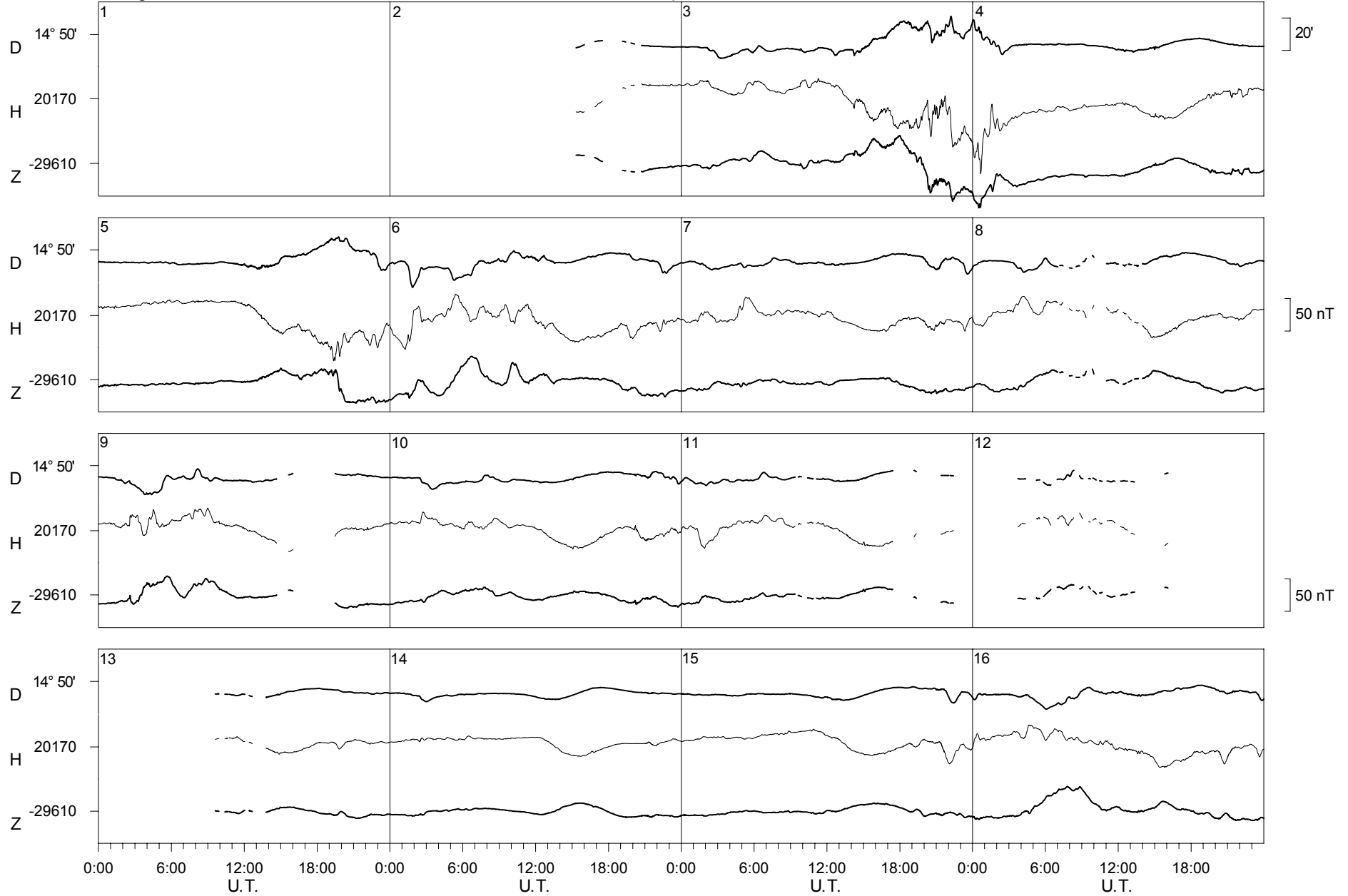
2004



Livingston Island

April

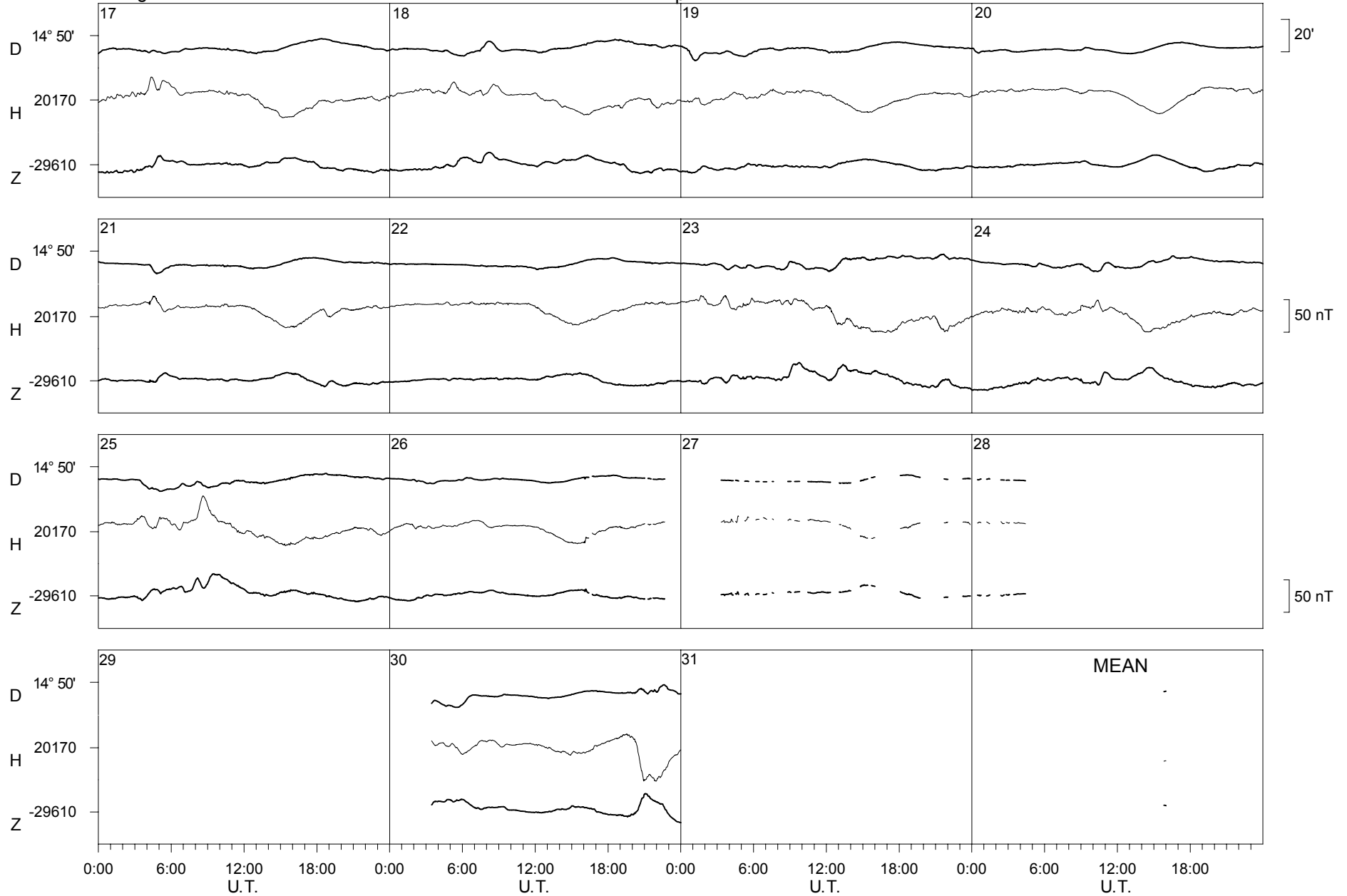
2004



Livingston Island

April

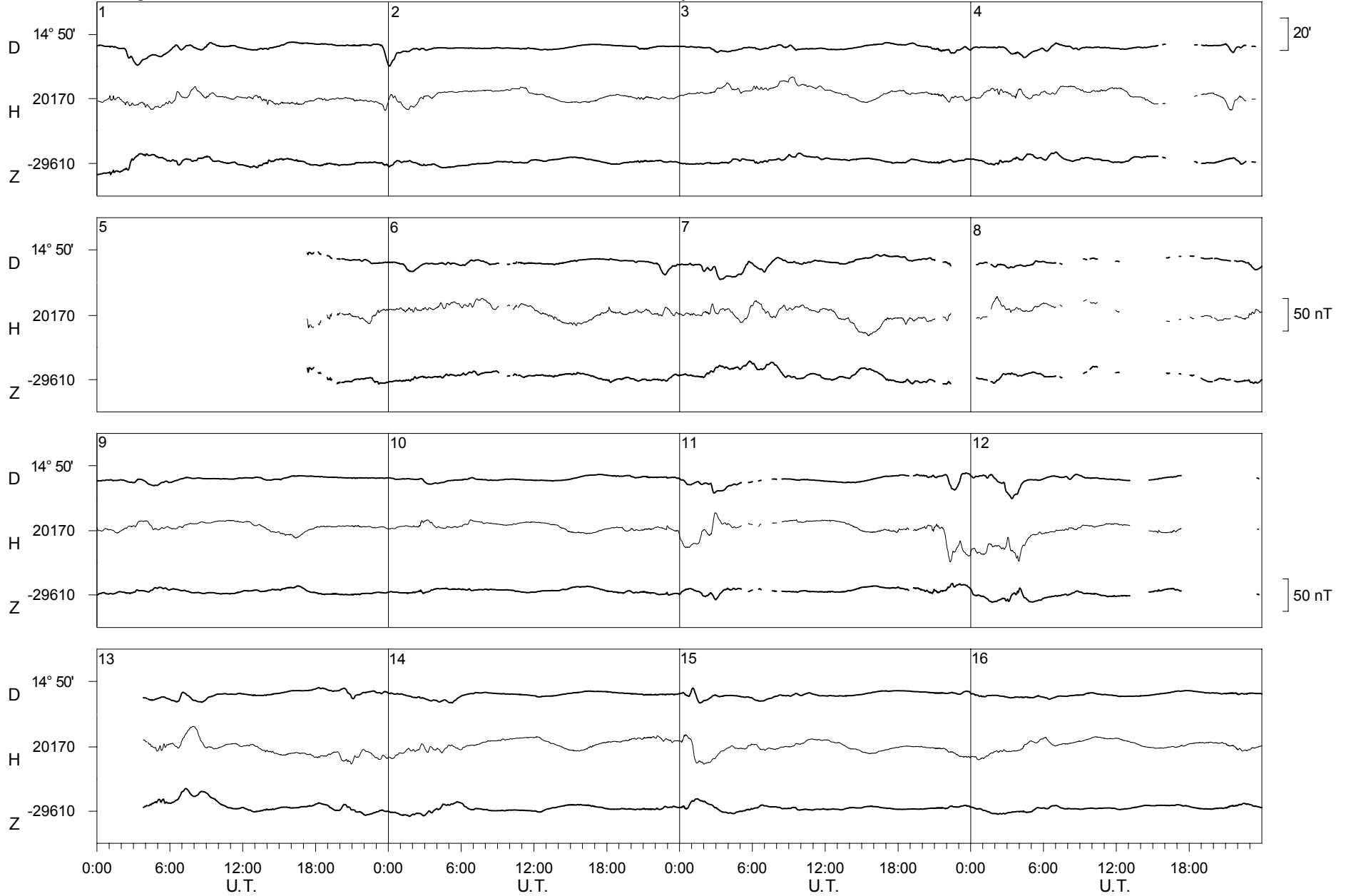
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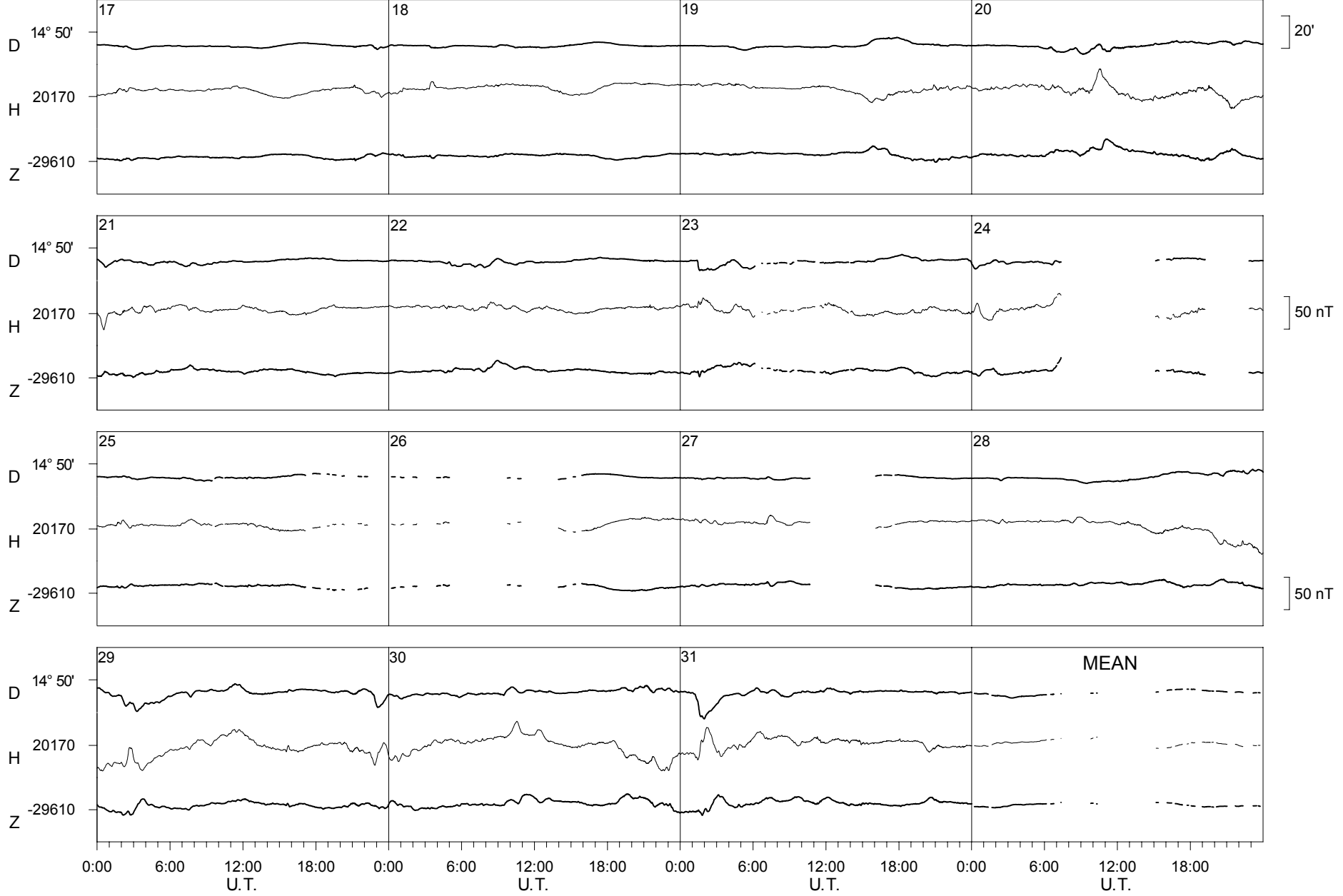
Livingston Island

May

2004



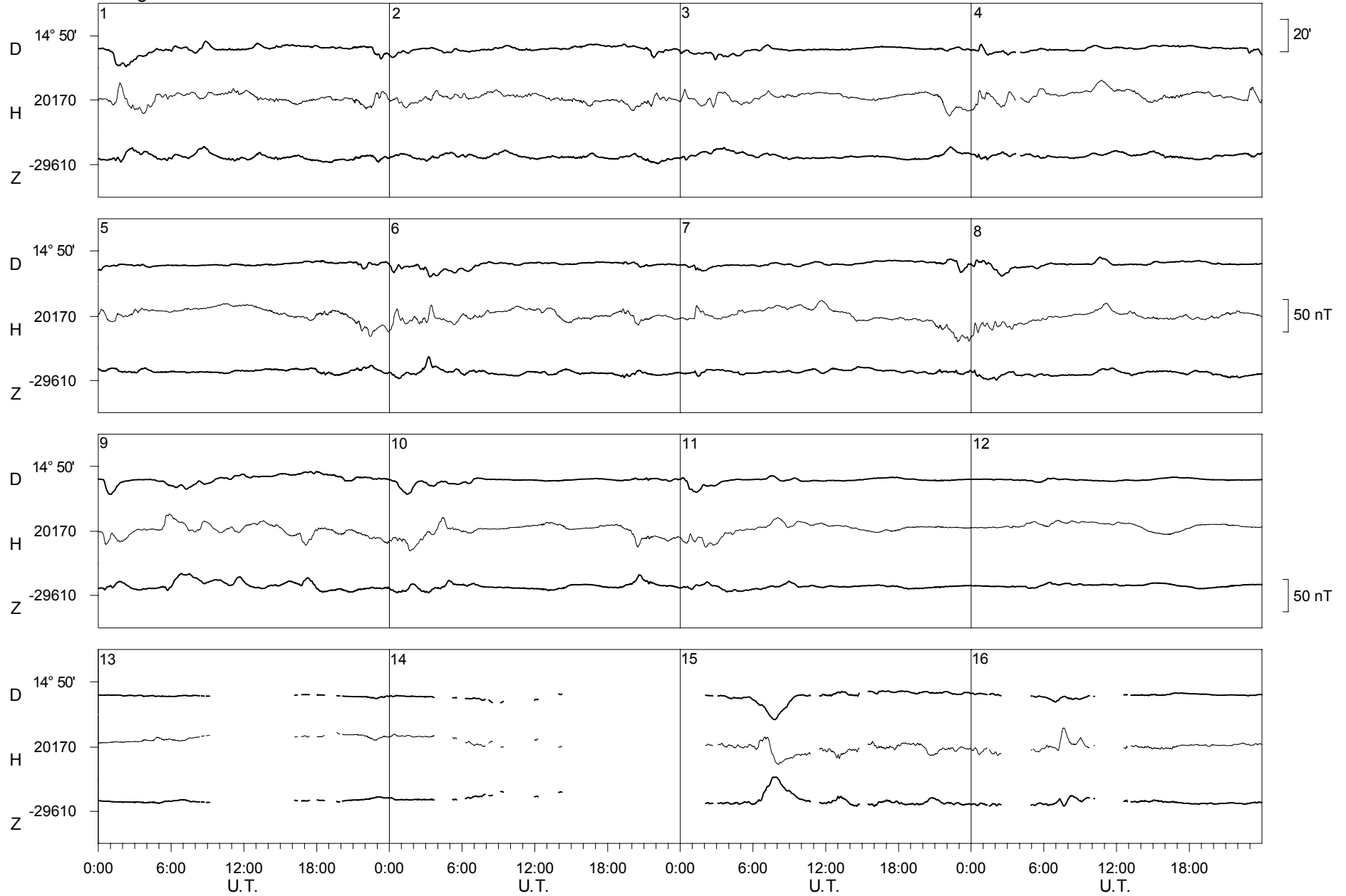
Livingston Island May 2004



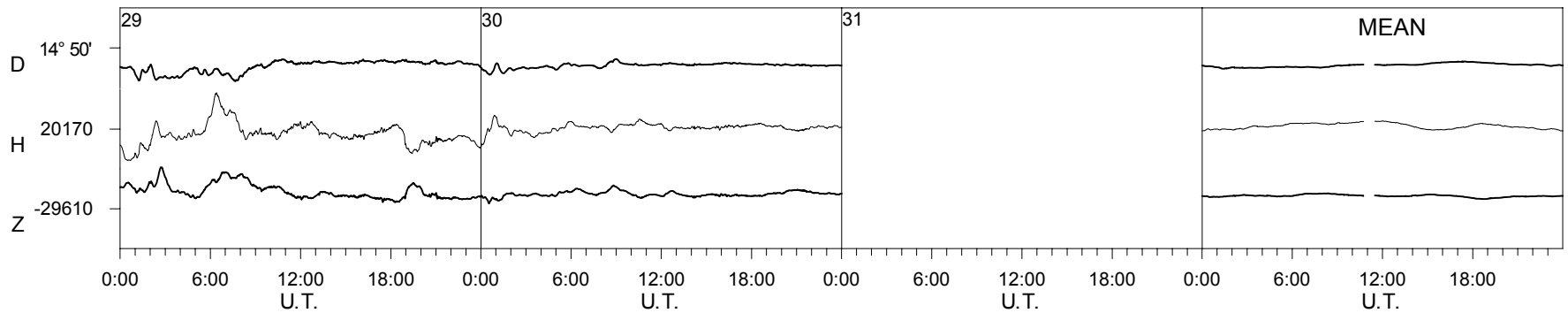
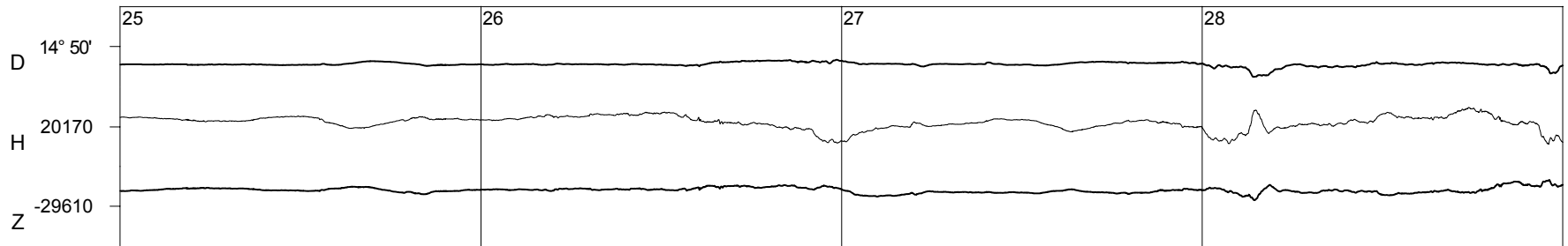
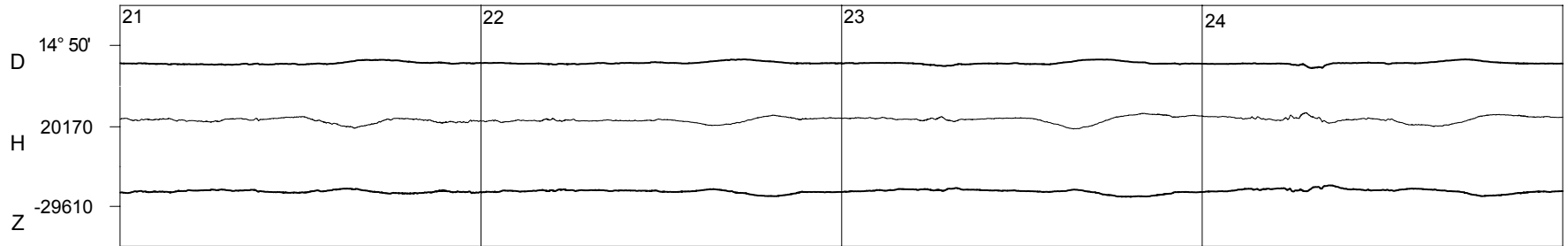
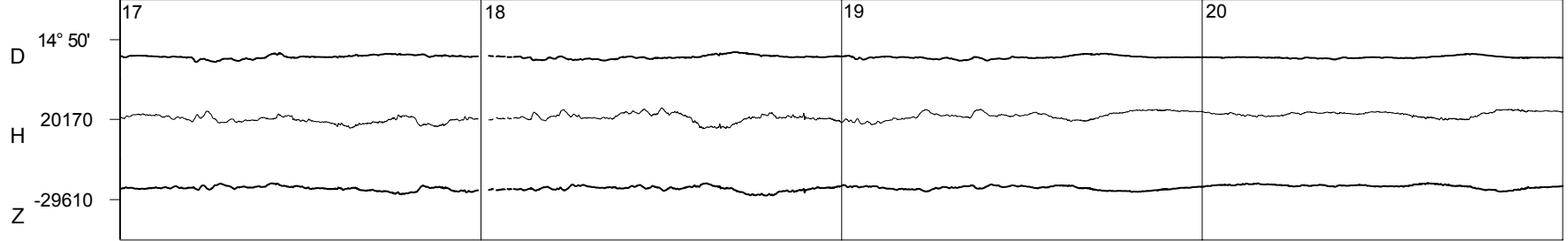
Livingston Island

June

2004



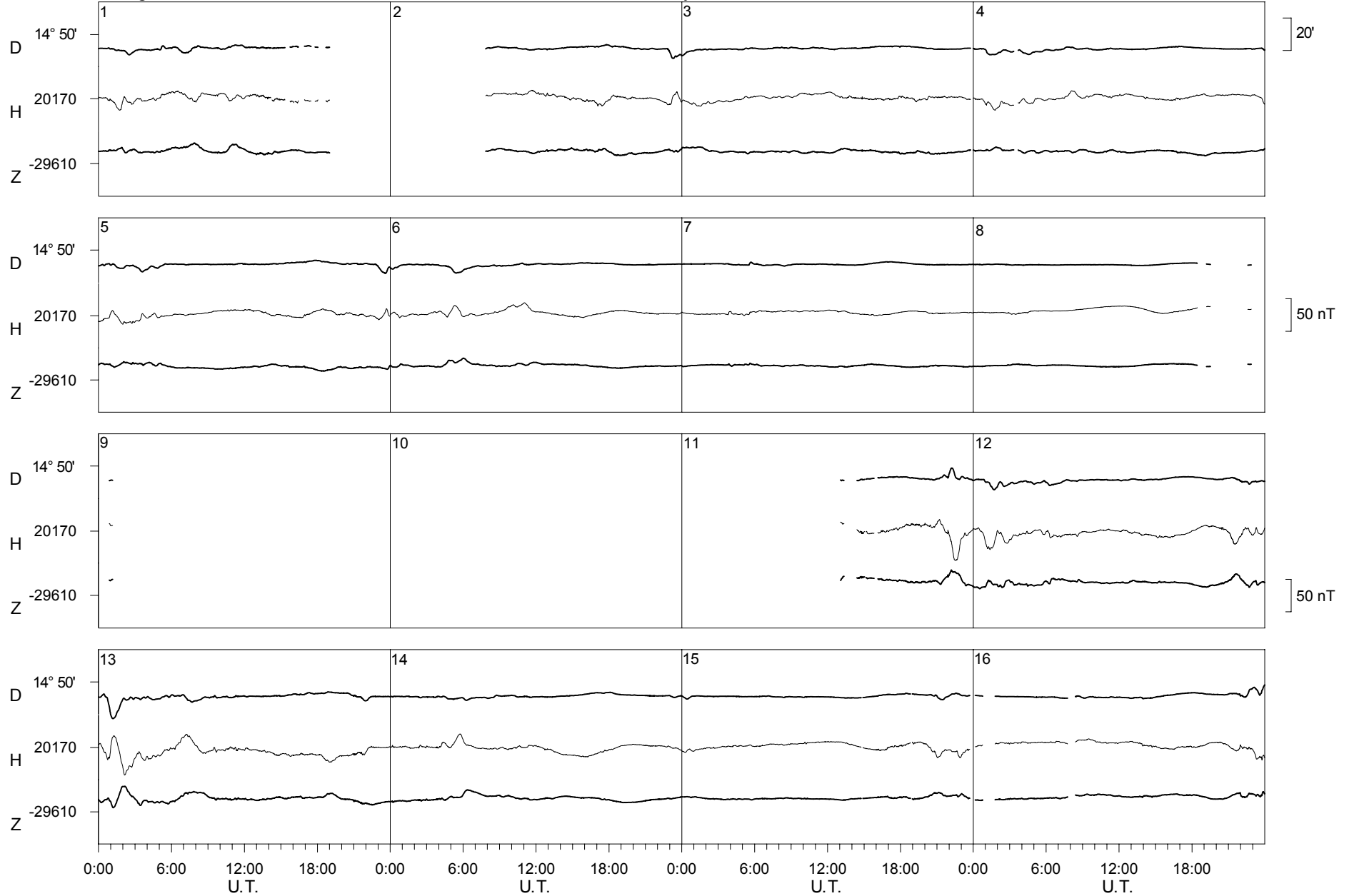
Livingston Island June 2004



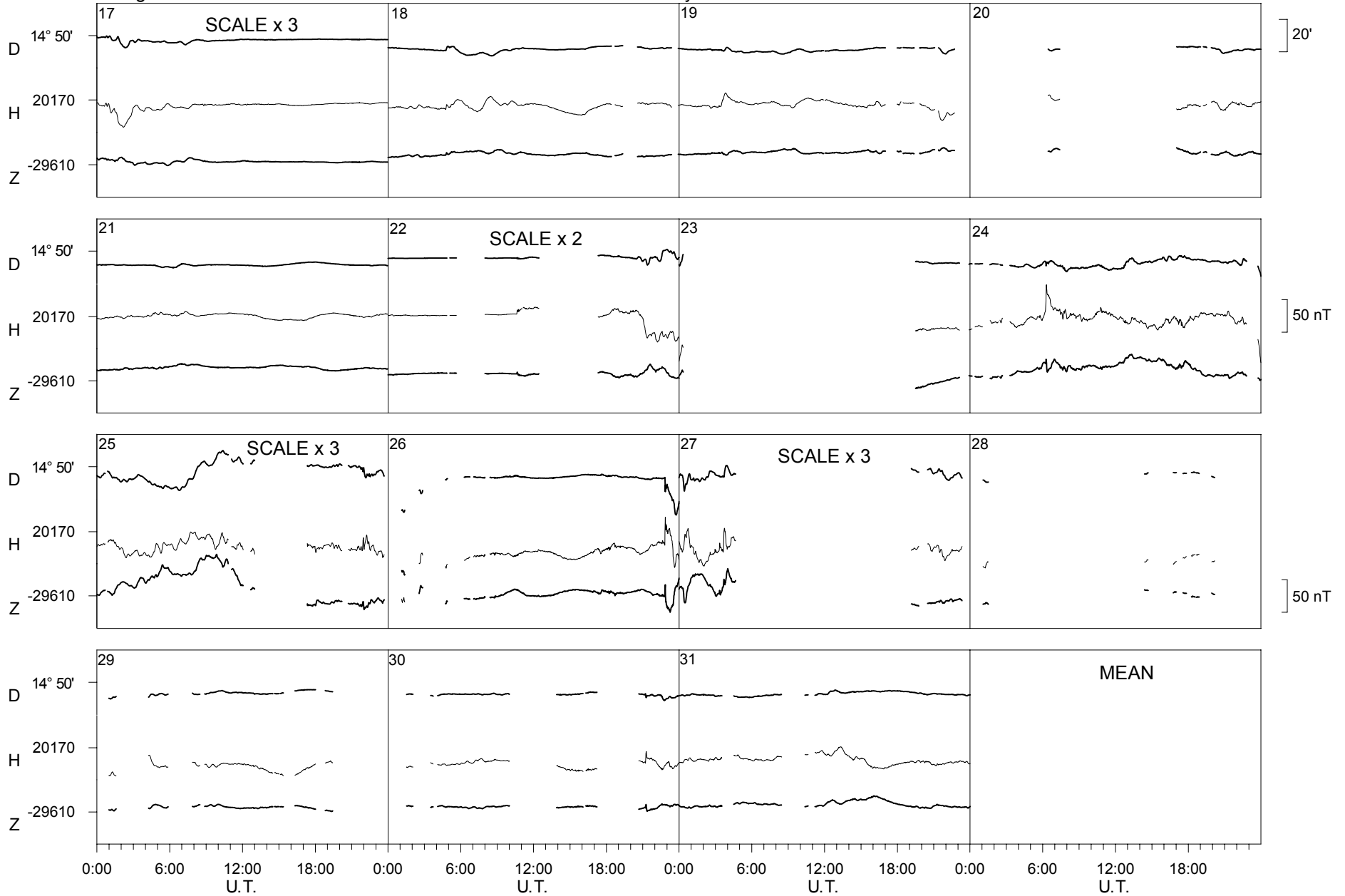
Livingston Island

July

2004



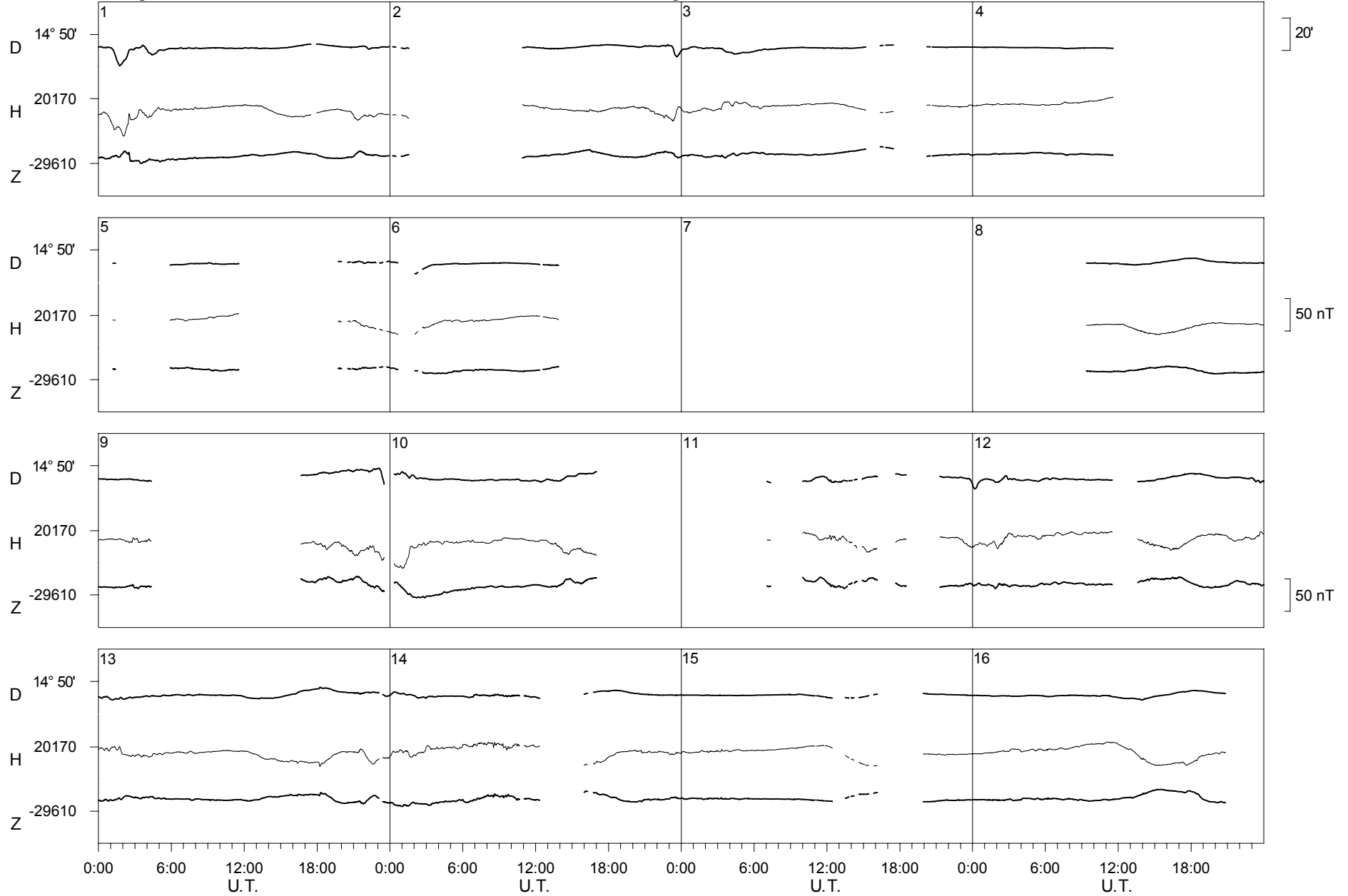
Livingston Island July 2004



Livingston Island

August

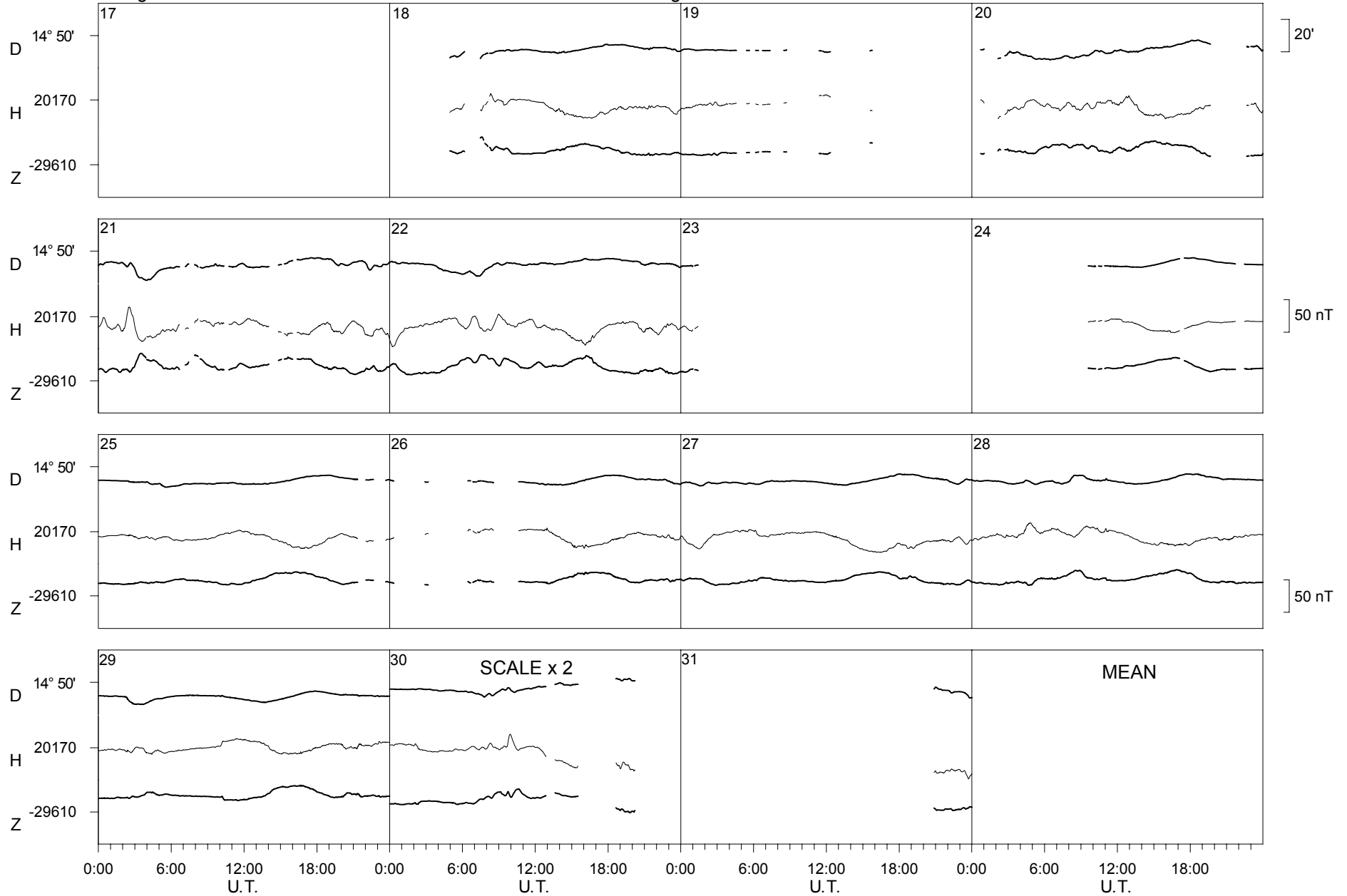
2004



Livingston Island

August

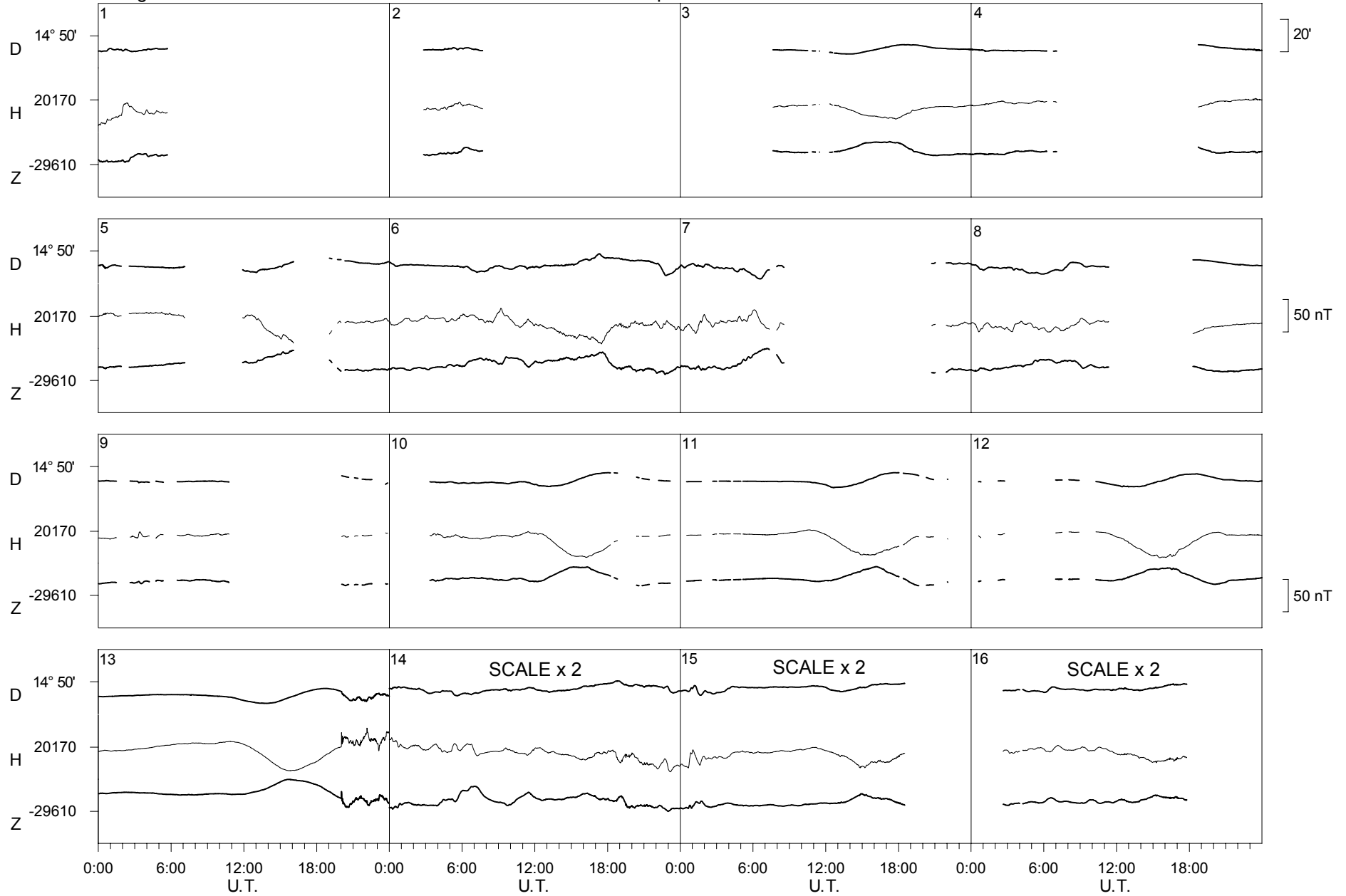
2004



Livingston Island

September

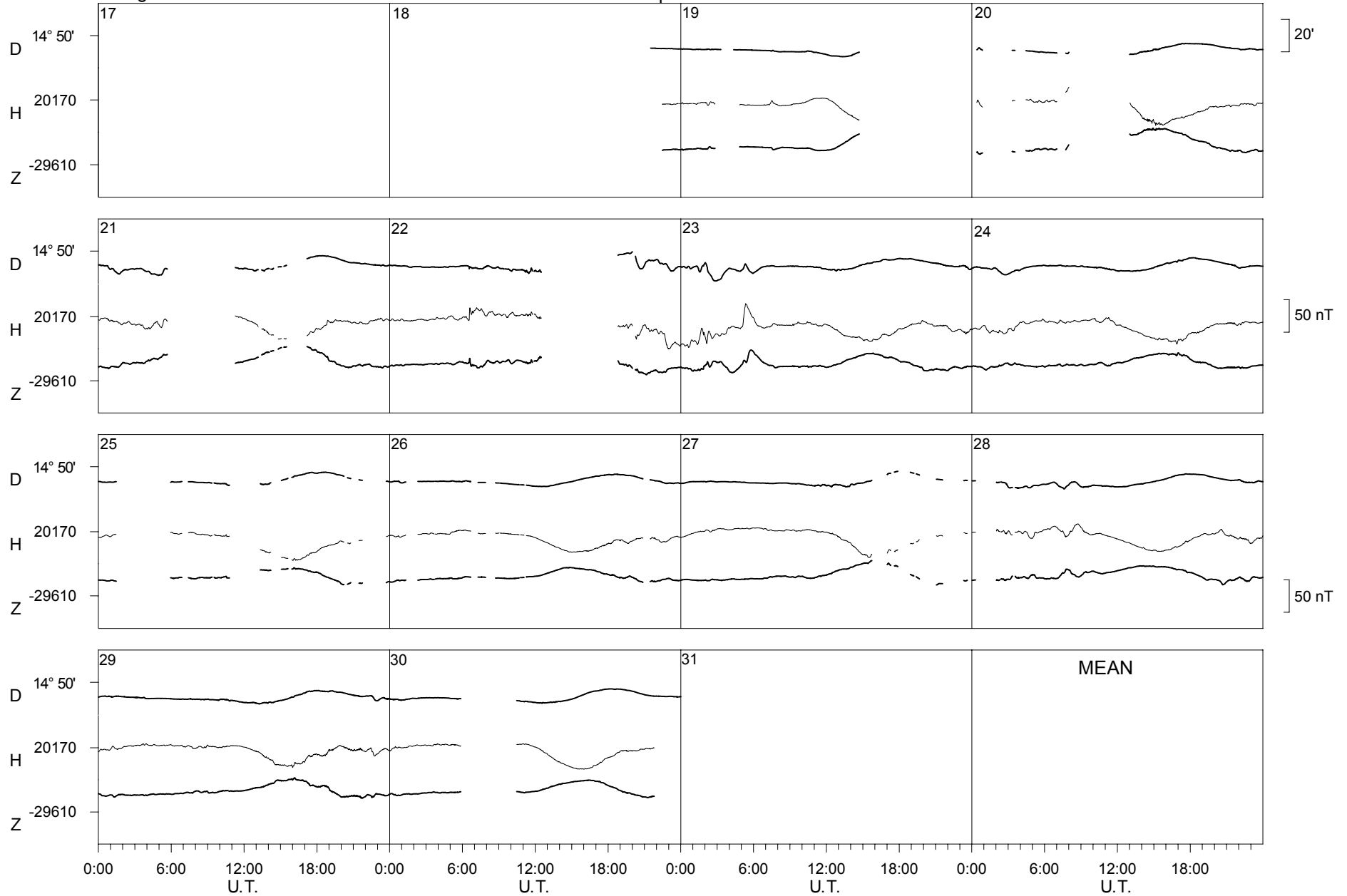
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Livingston Island

September

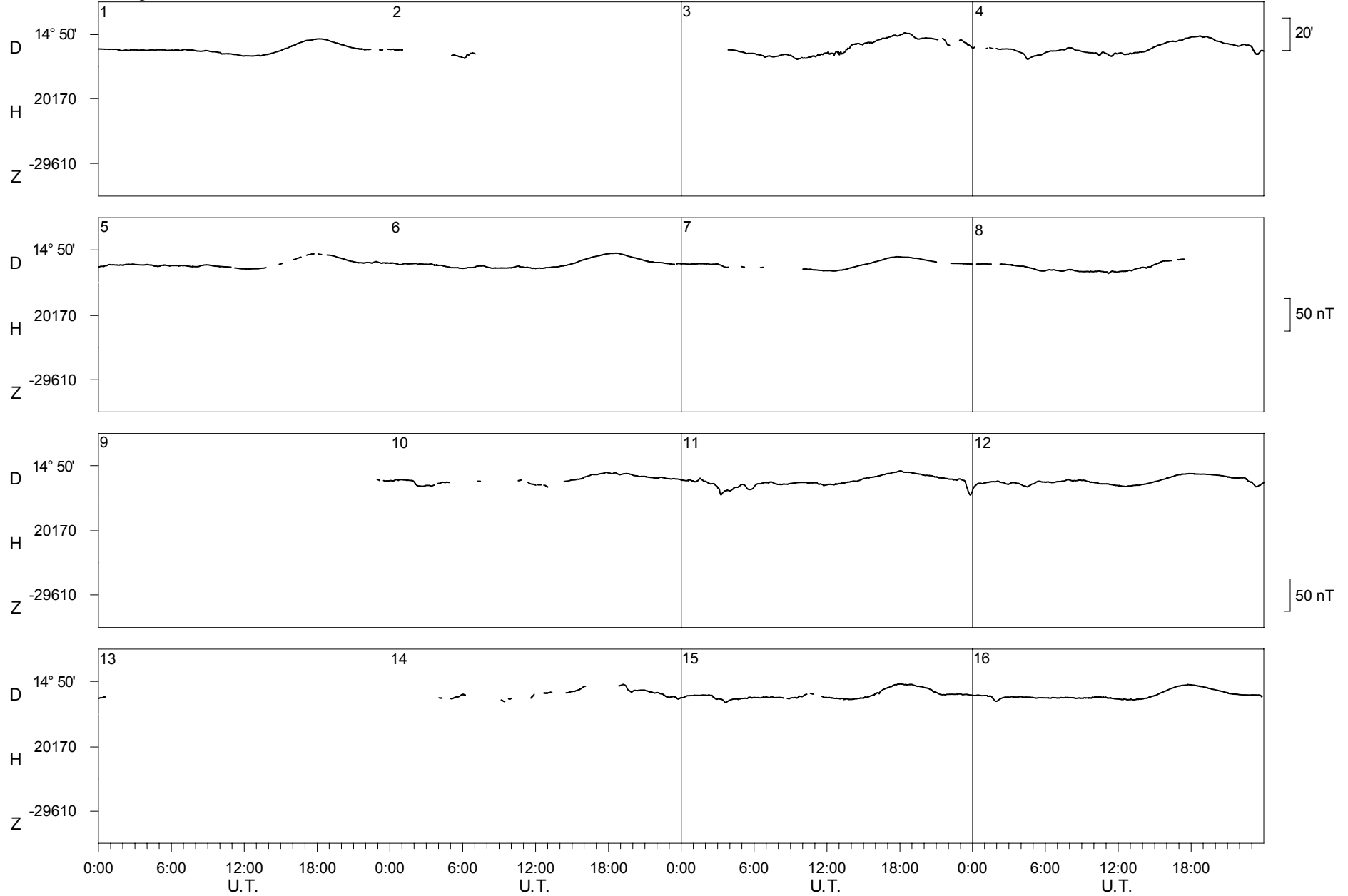
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Livingston Island

October

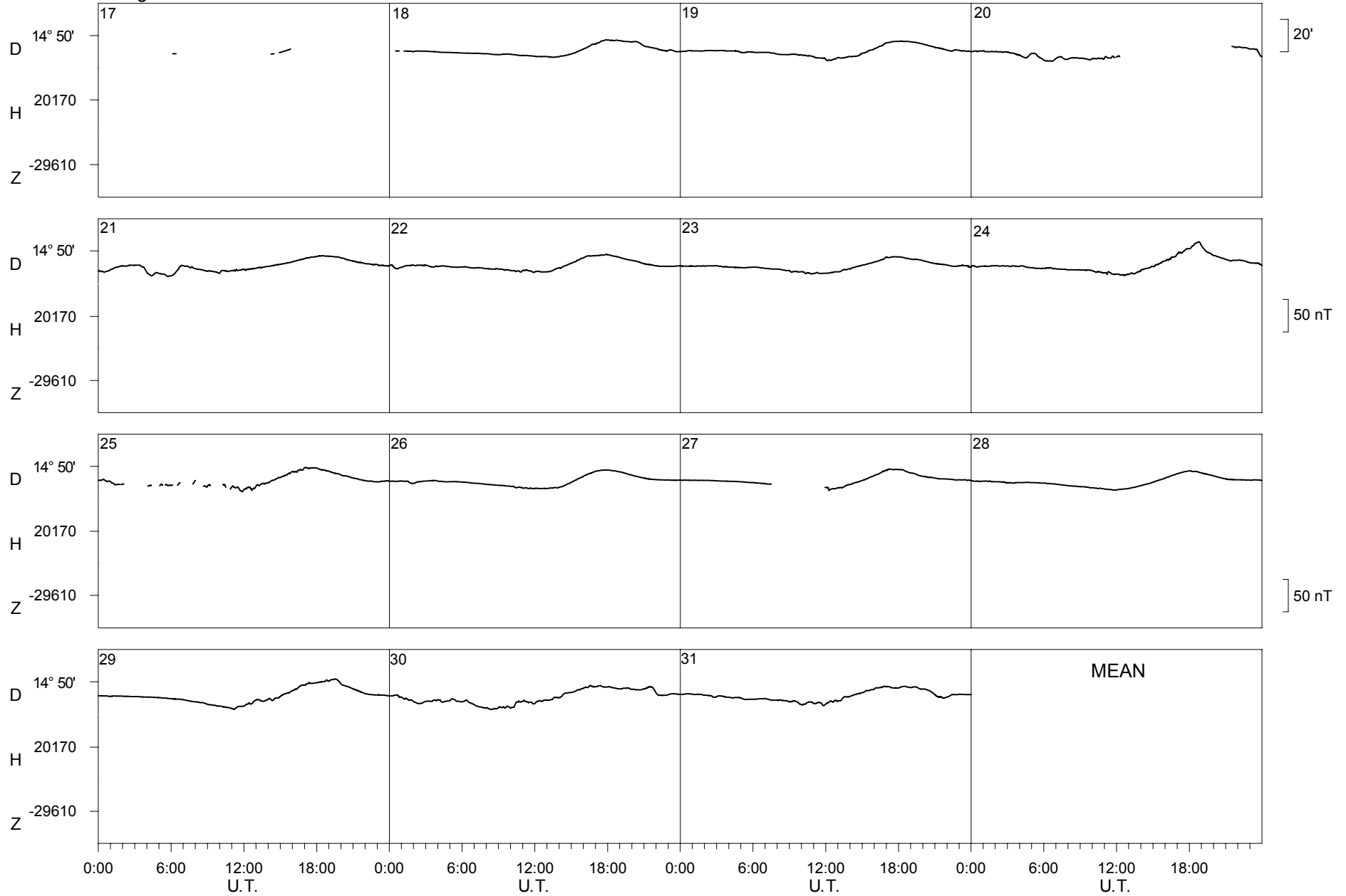
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Livingston Island

October

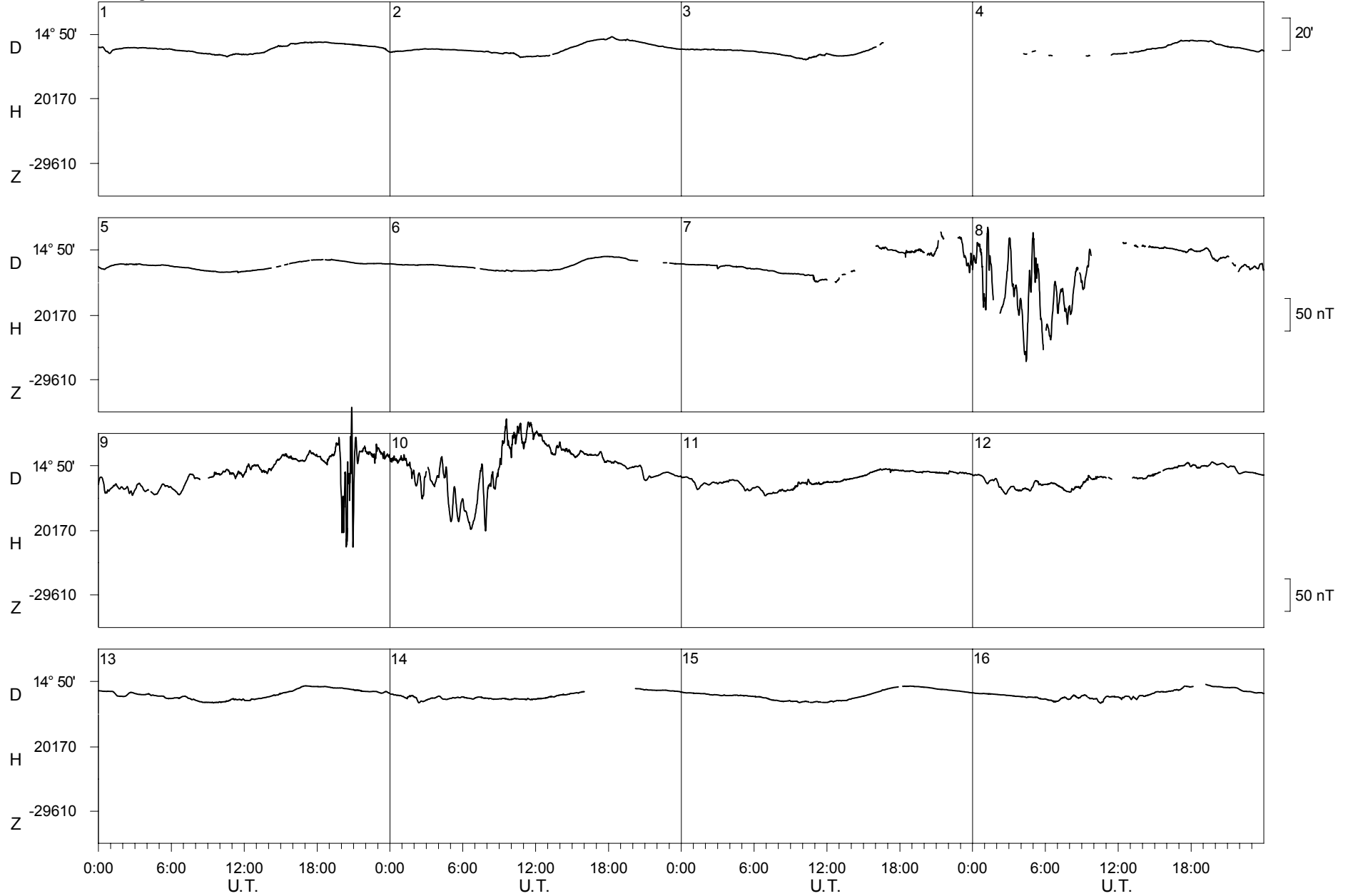
2004



Livingston Island

November

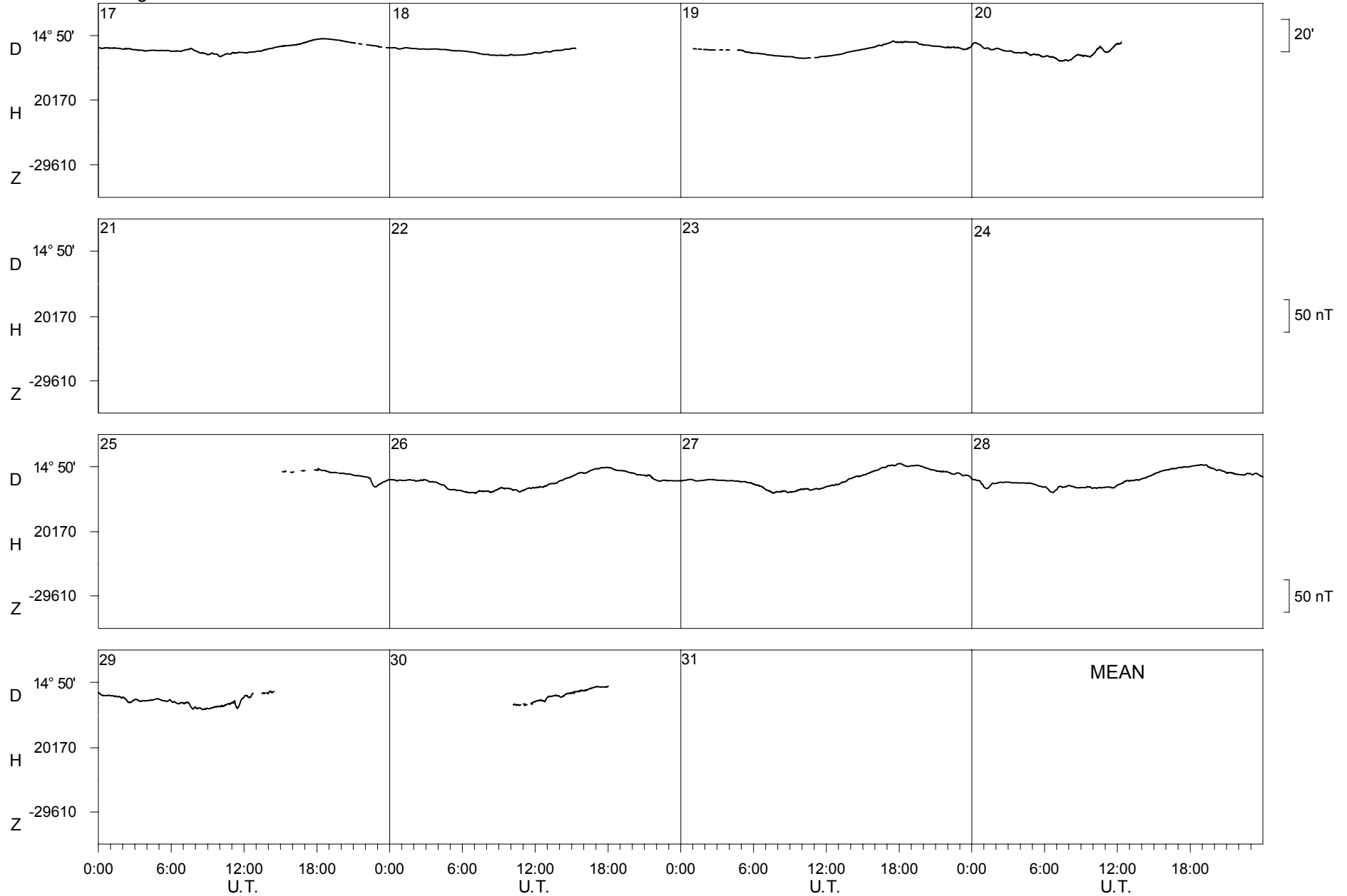
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Livingston Island

November

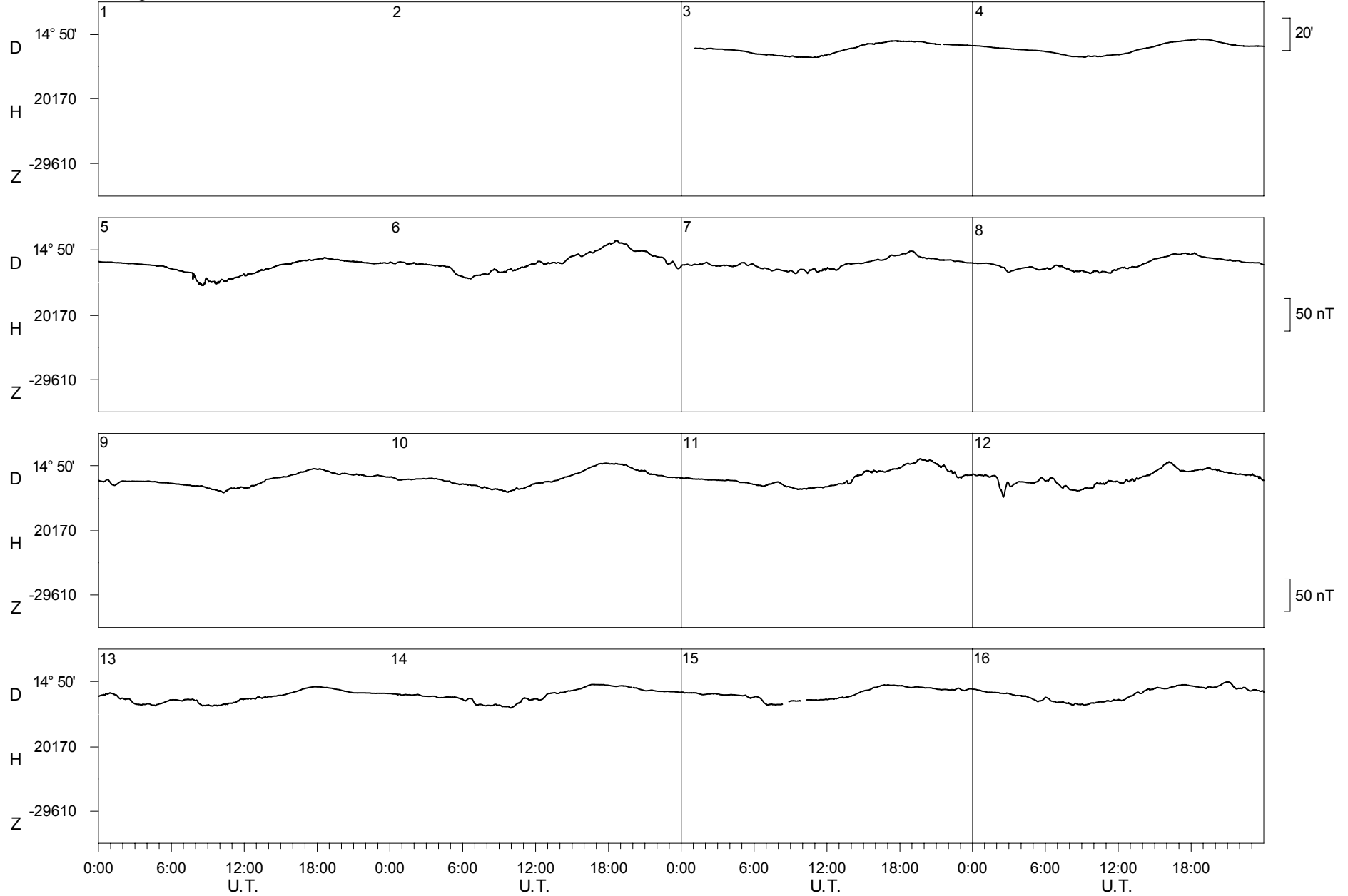
2004



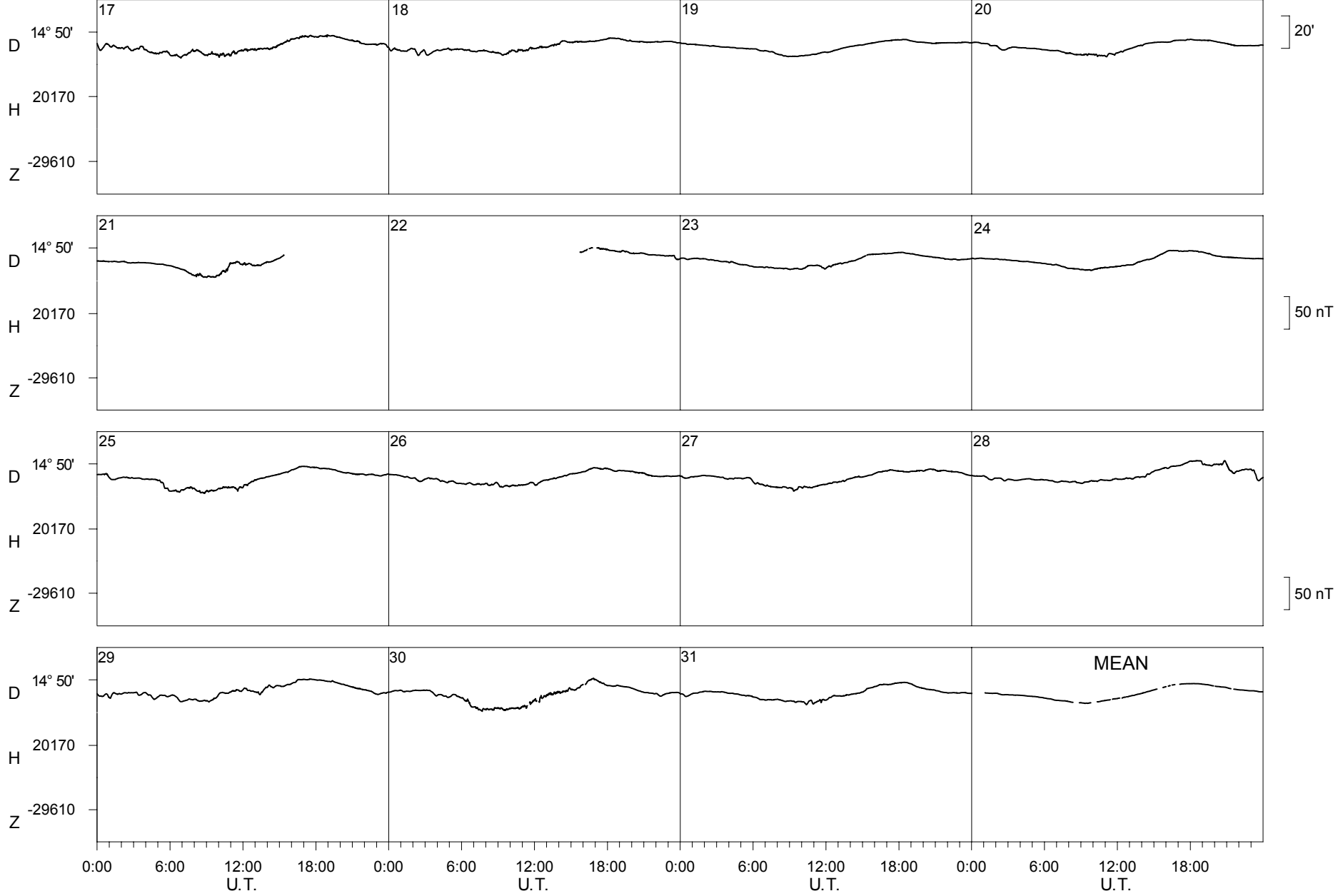
Livingston Island

December

2004



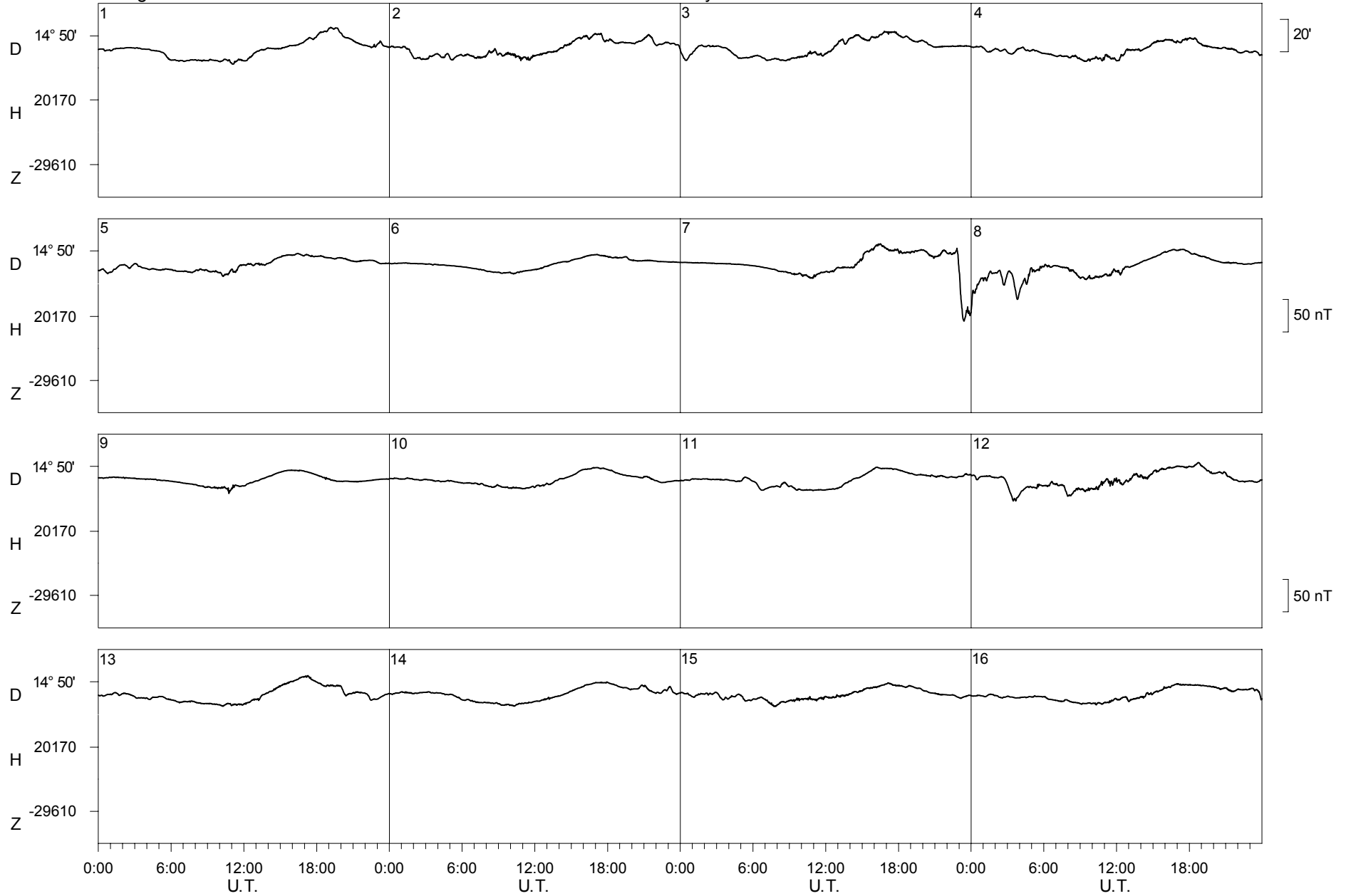
Livingston Island December 2004



Livingston Island

January

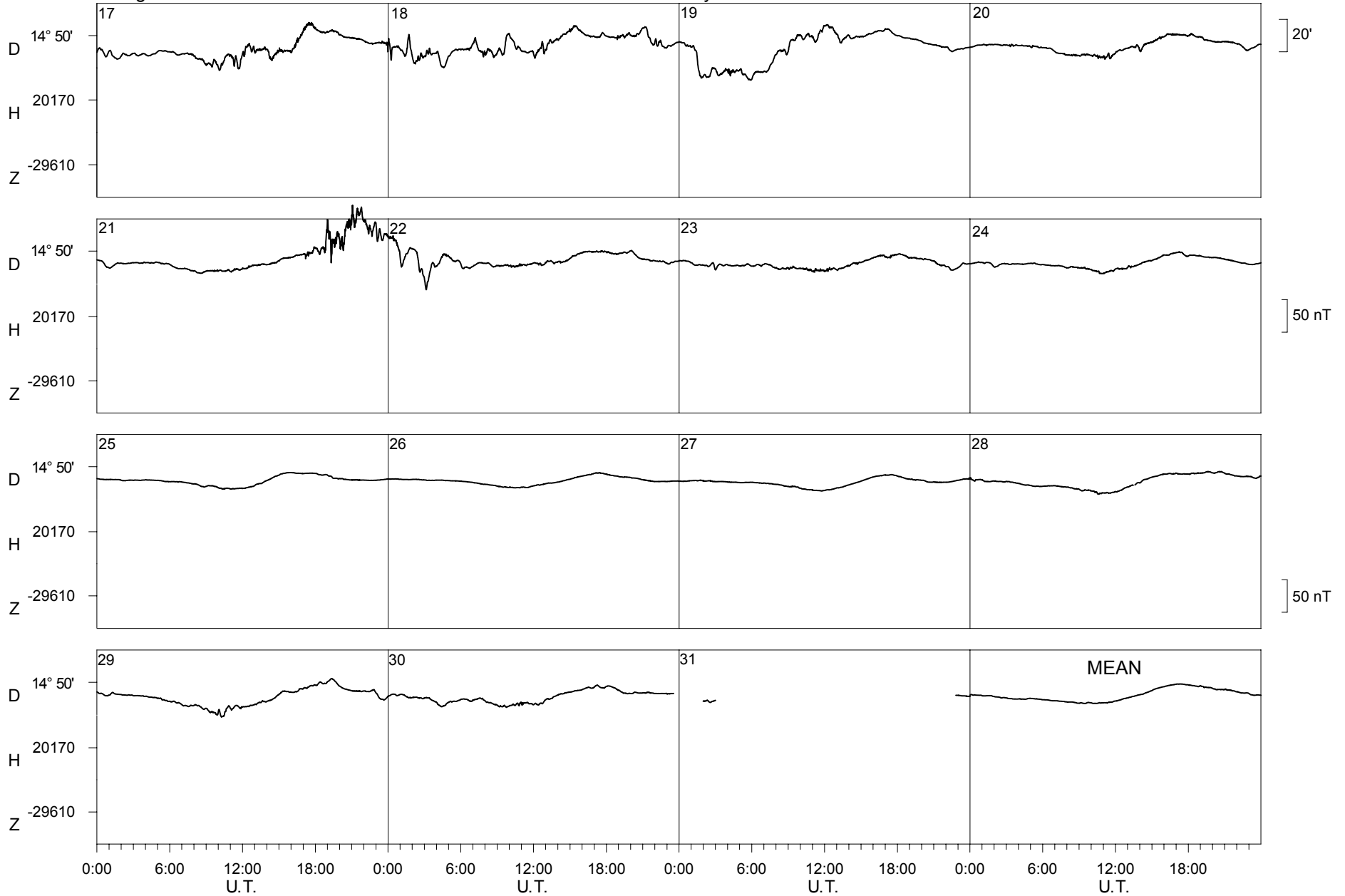
2005



Livingston Island

January

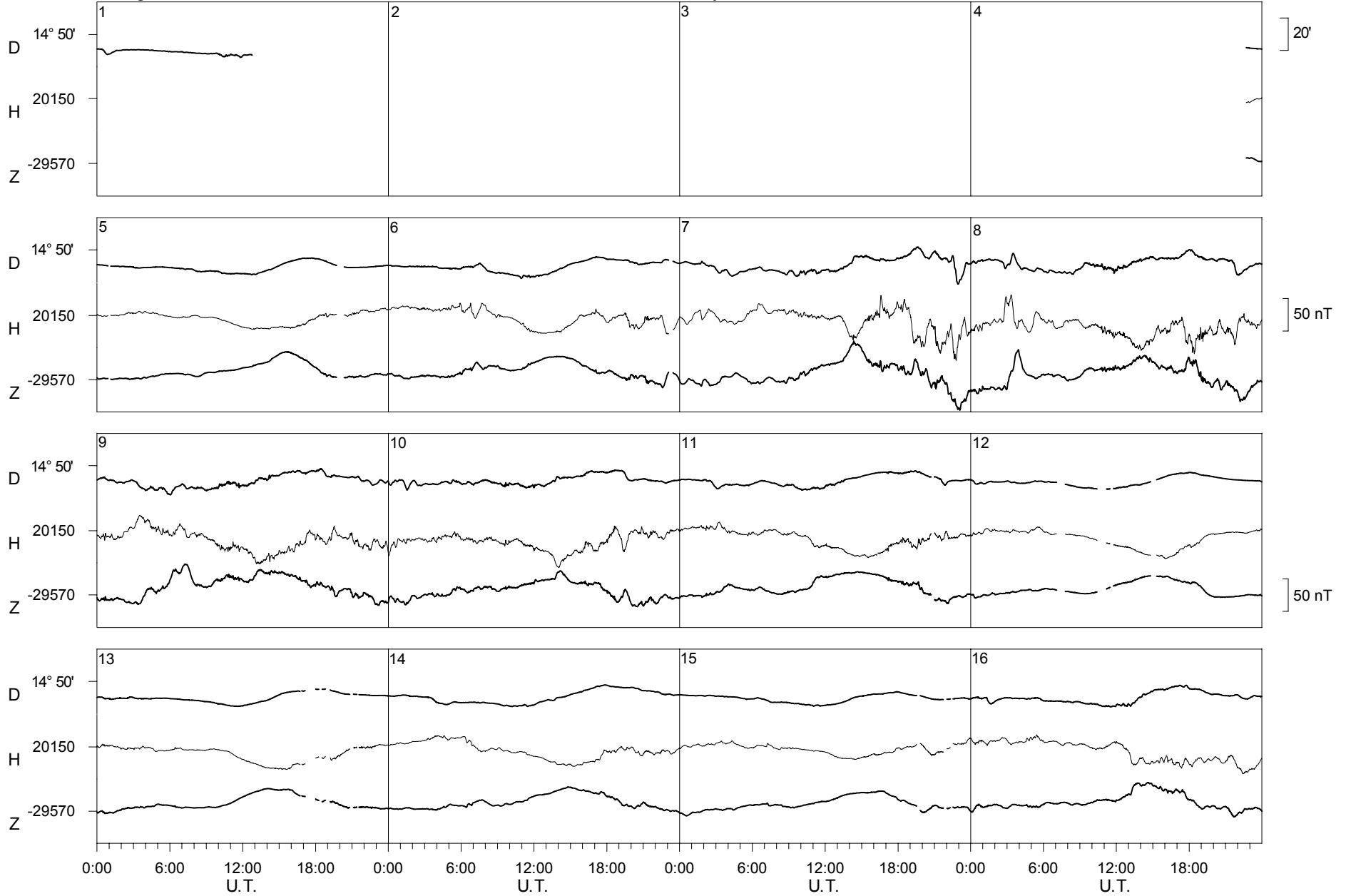
2005



Livingston Island

February

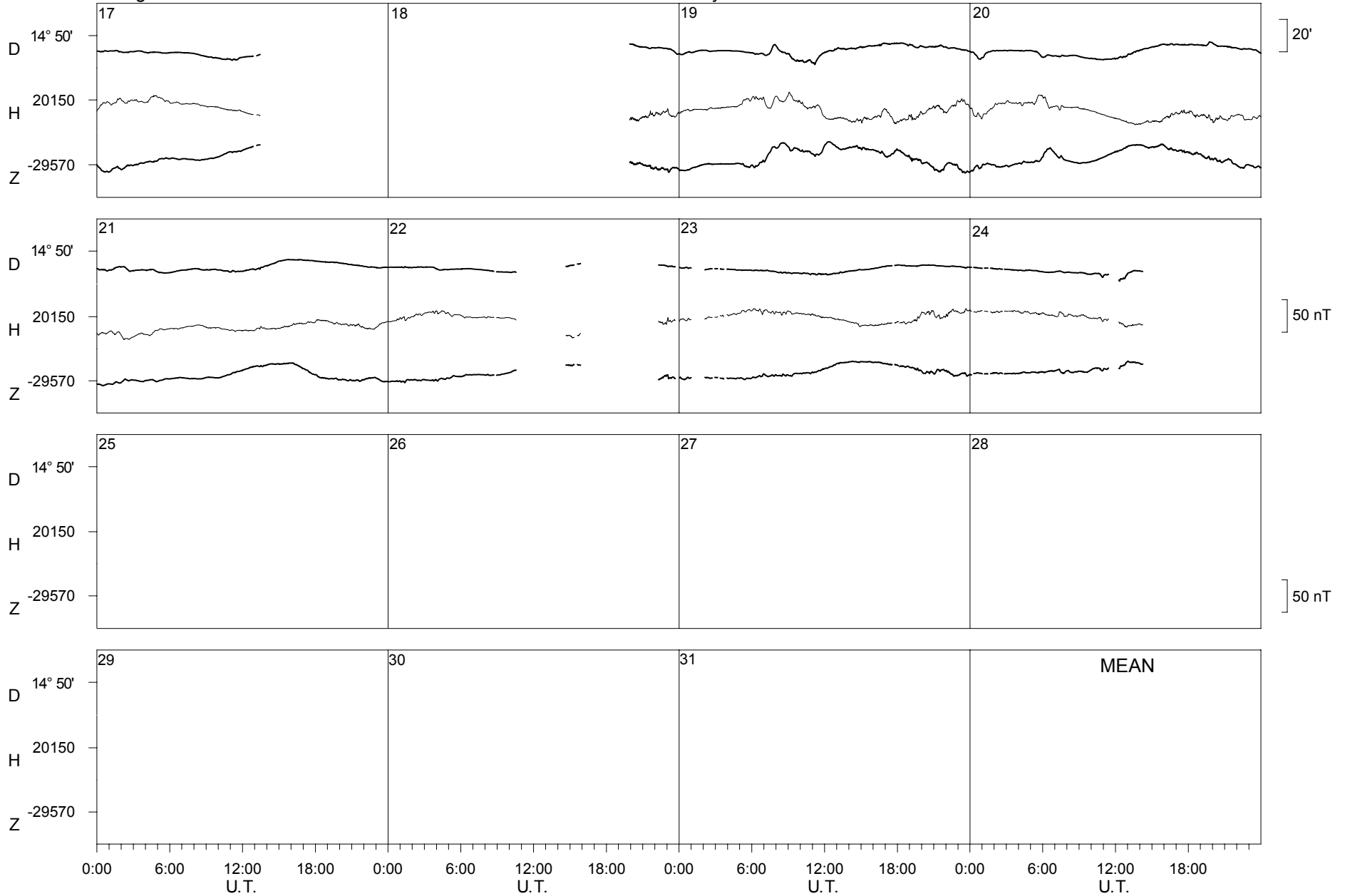
2005



Livingston Island

February

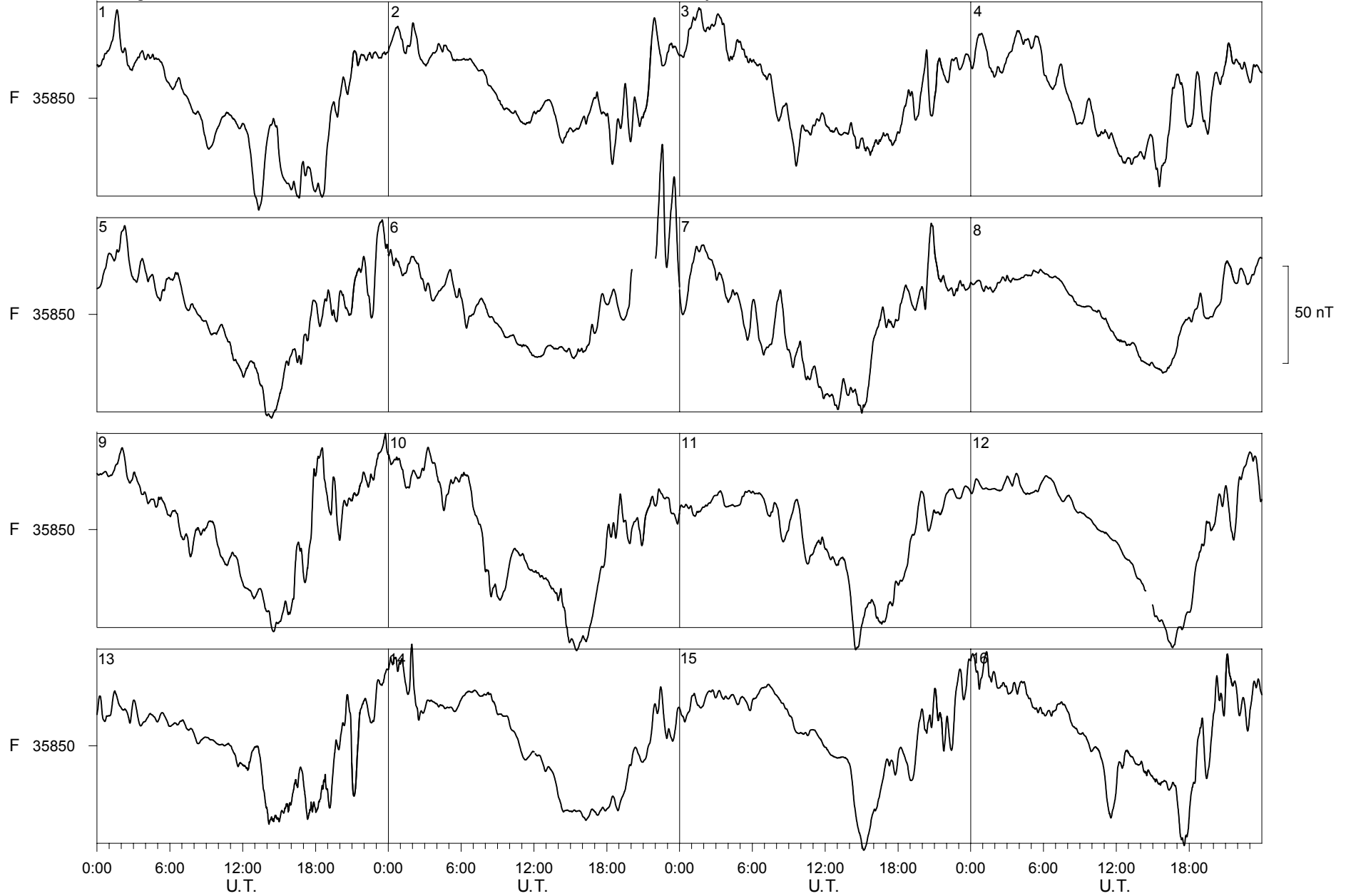
2005



Livingston Island

January

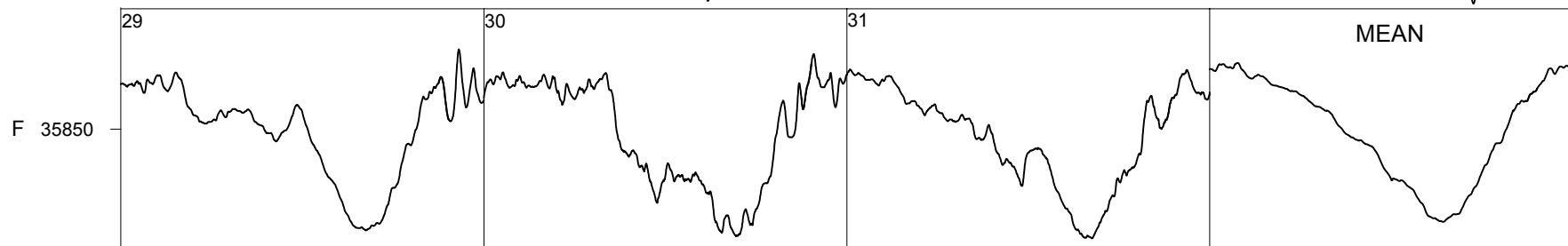
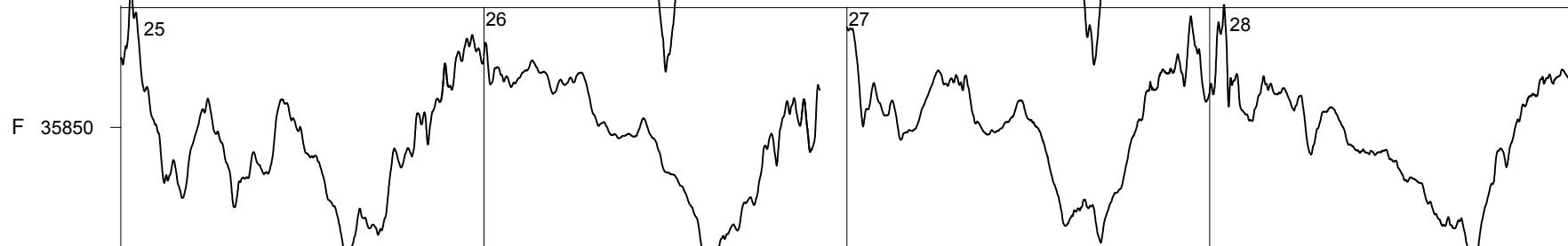
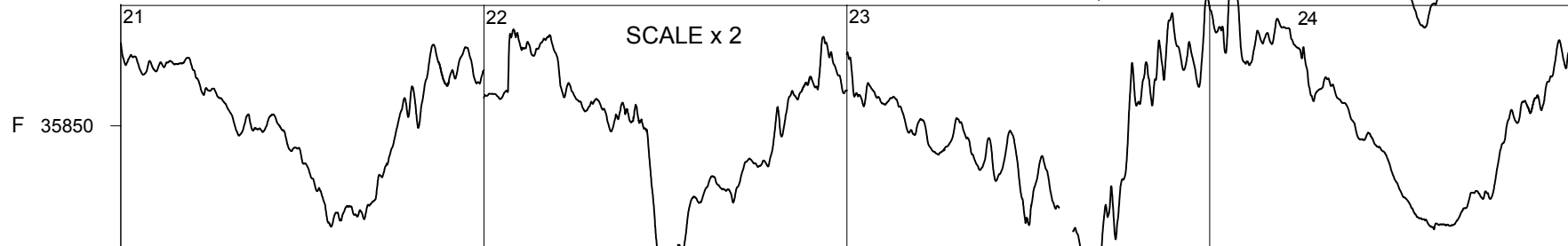
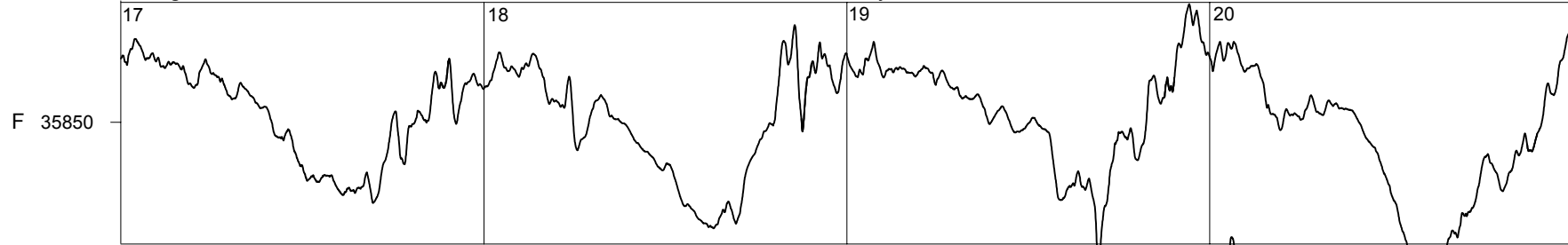
2004



Livingston Island

January

2004

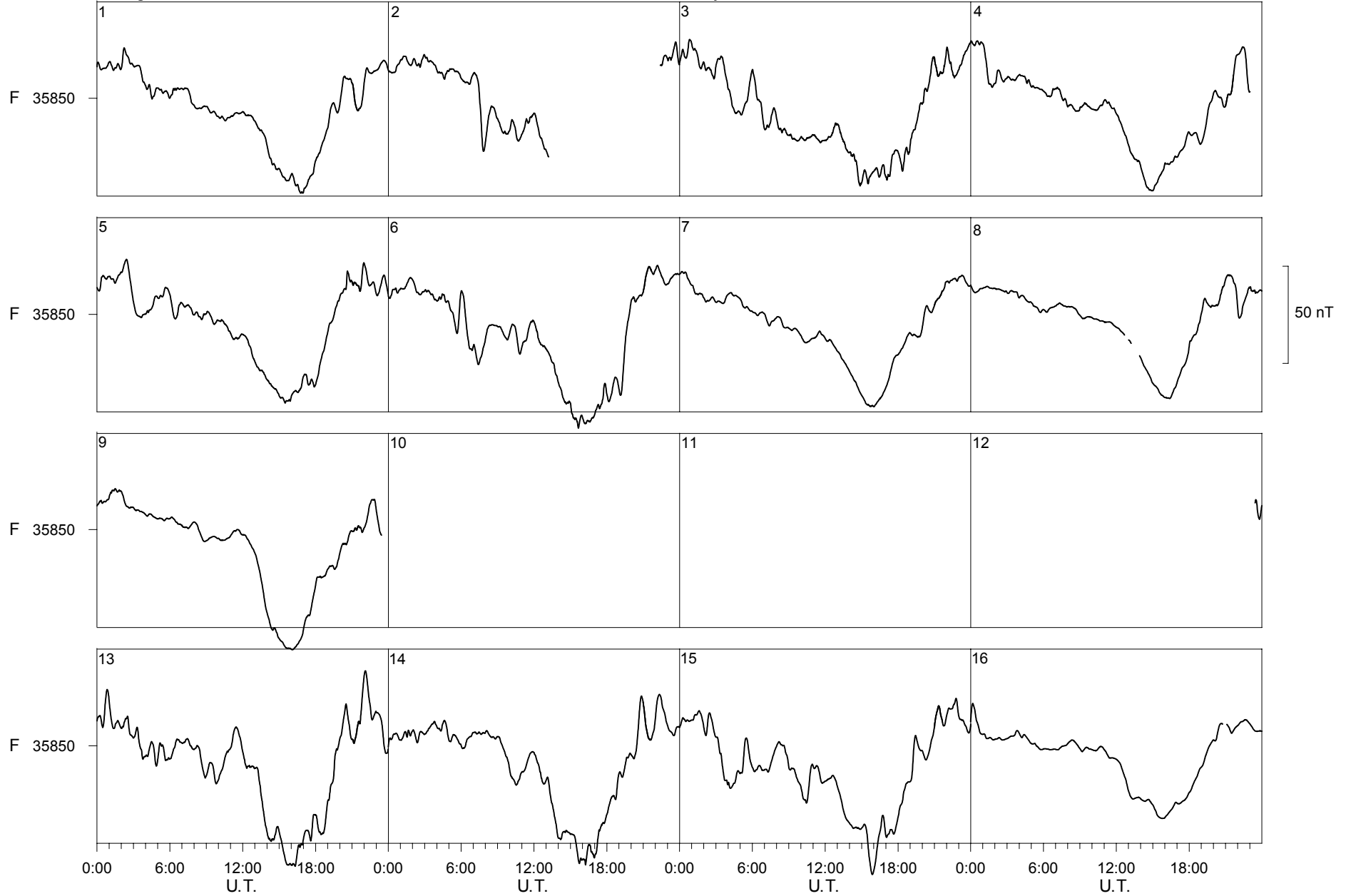


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Livingston Island

February

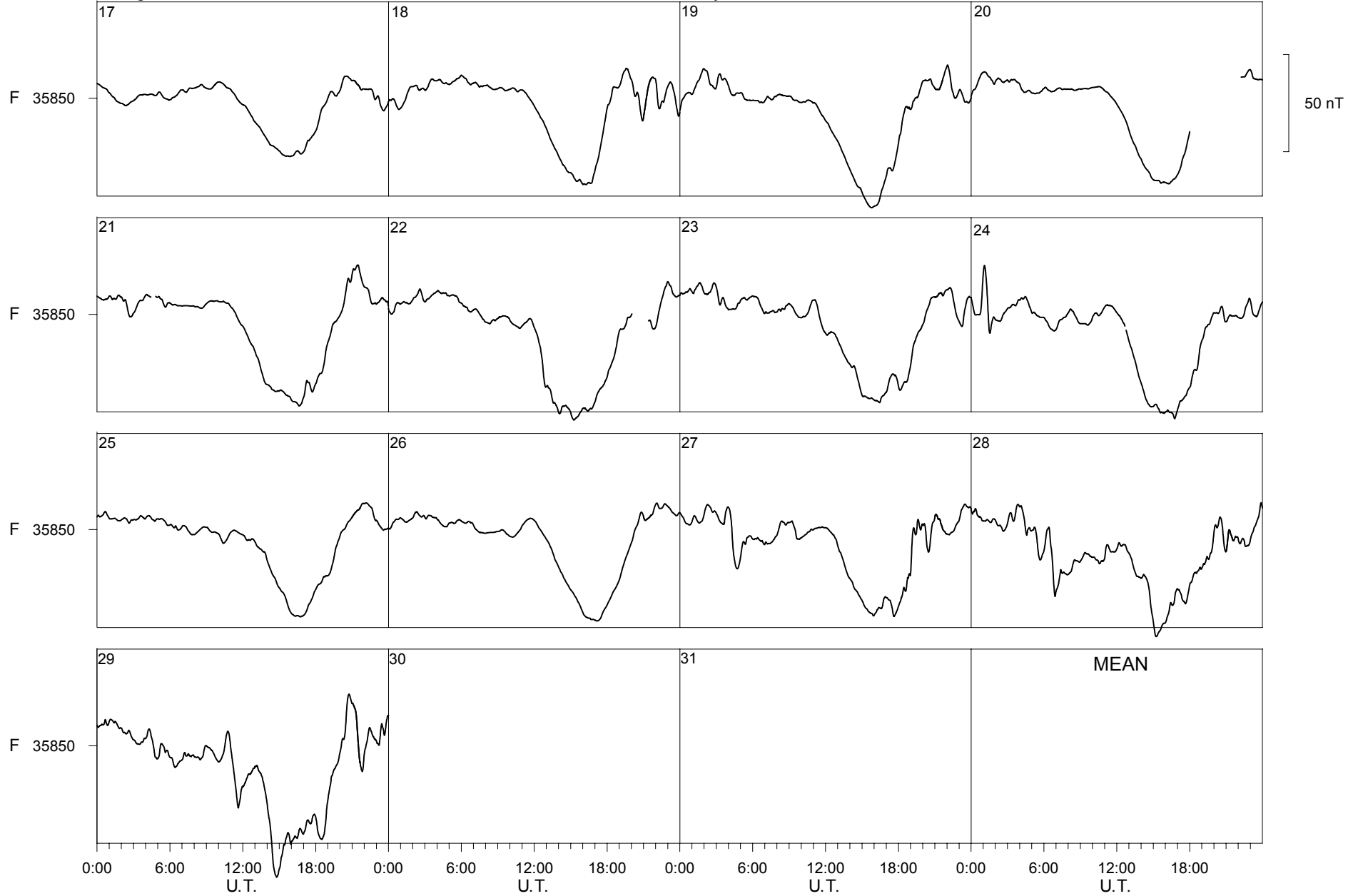
2004



Livingston Island

February

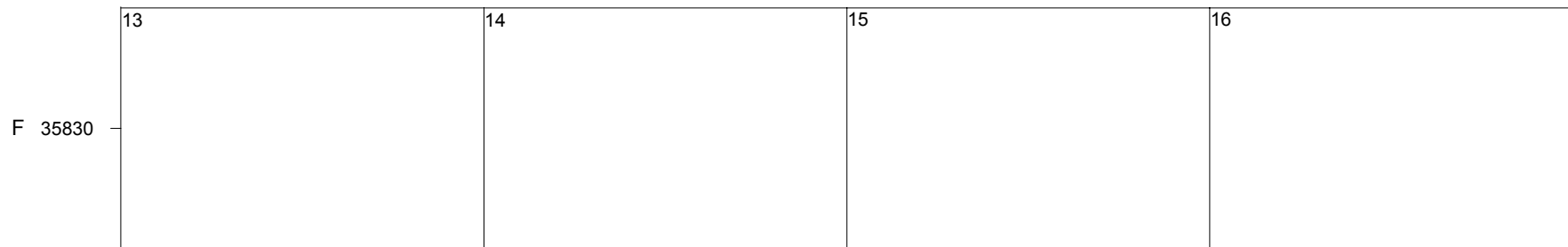
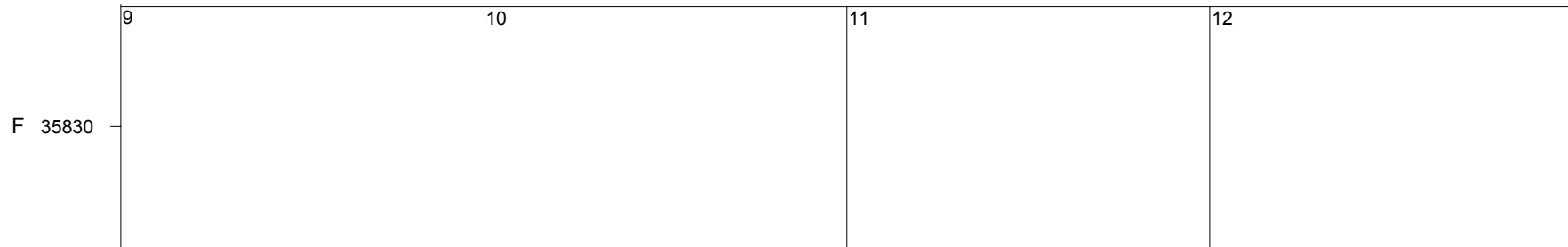
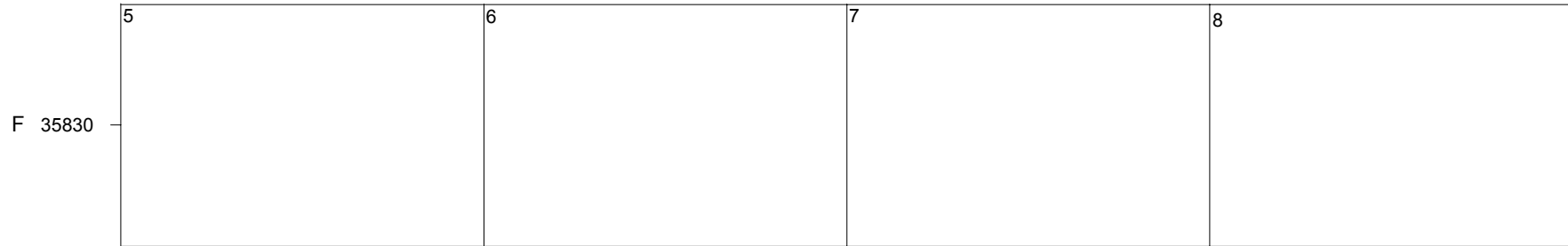
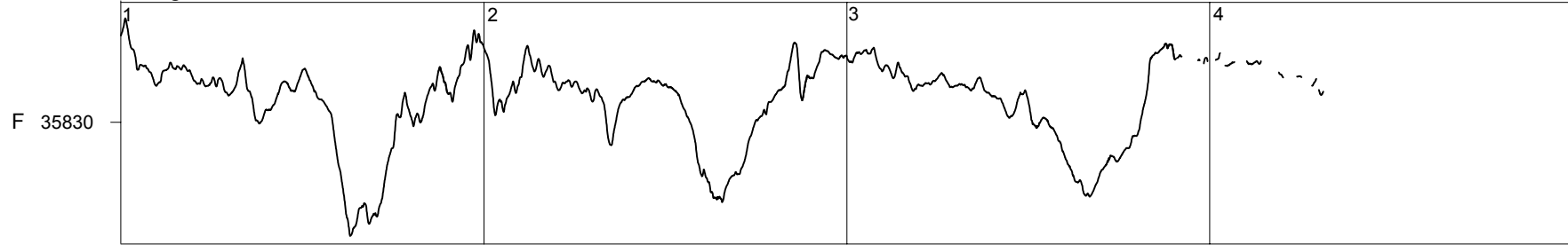
2004



Livingston Island

March

2004



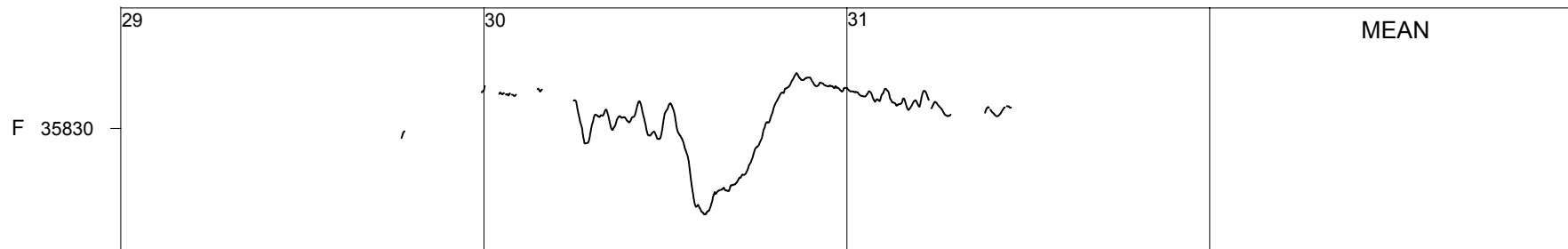
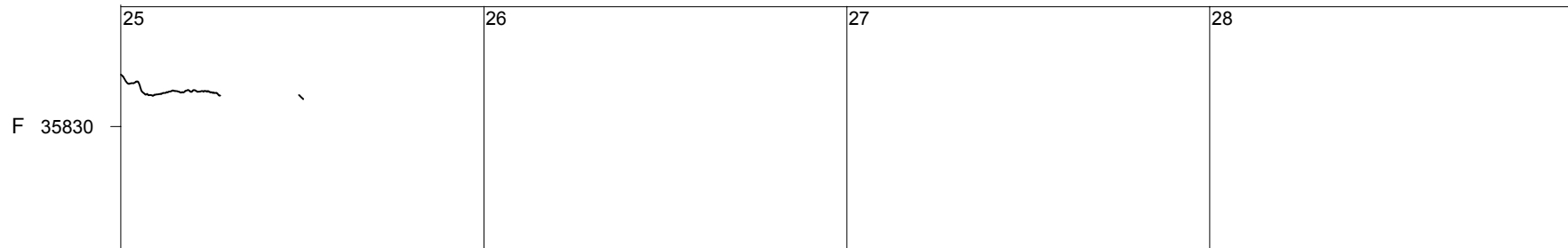
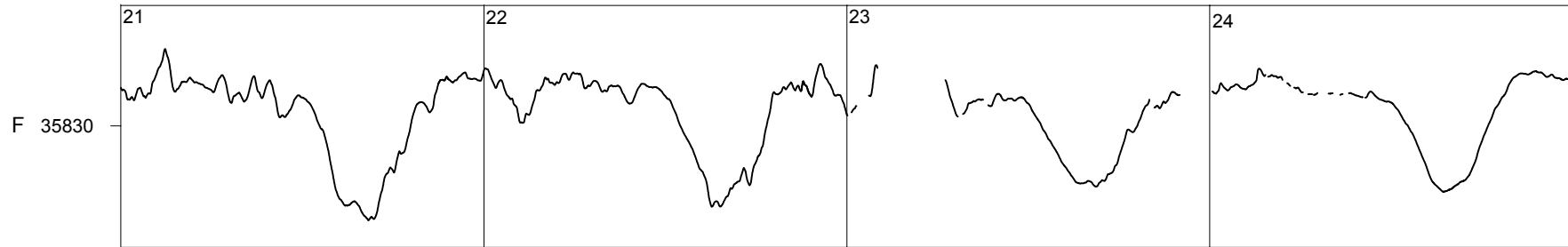
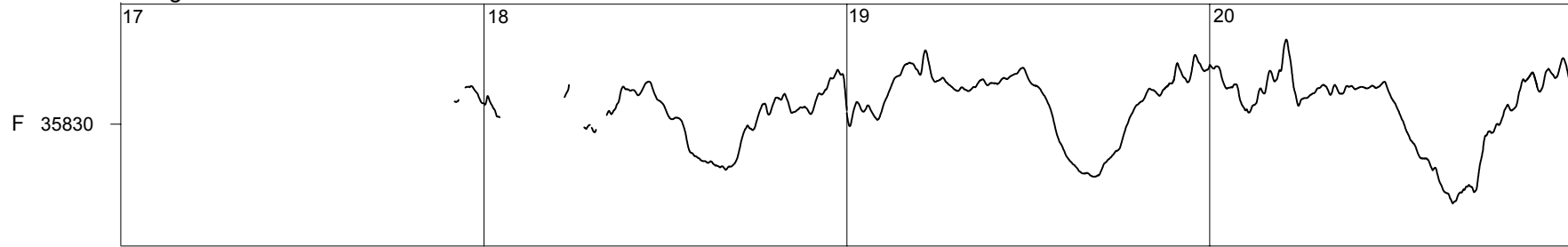
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Livingston Island

March

2004



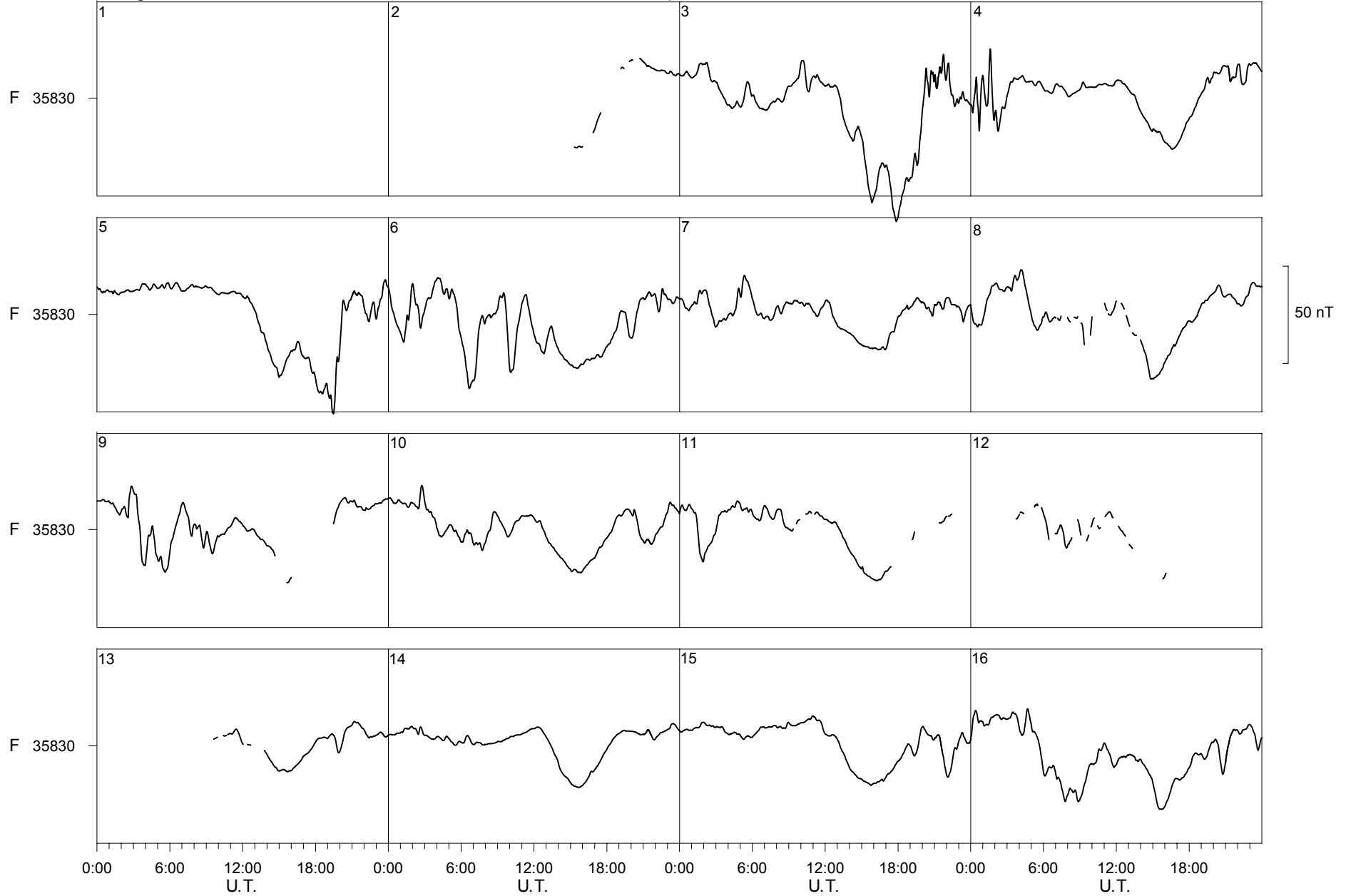
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Livingston Island

April

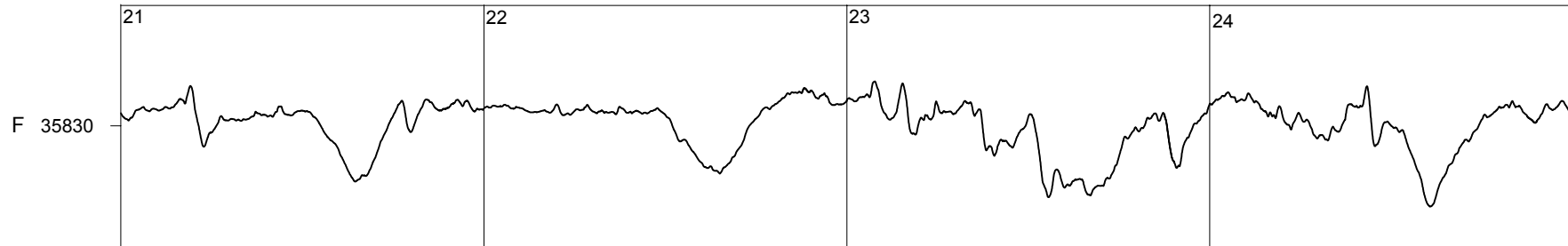
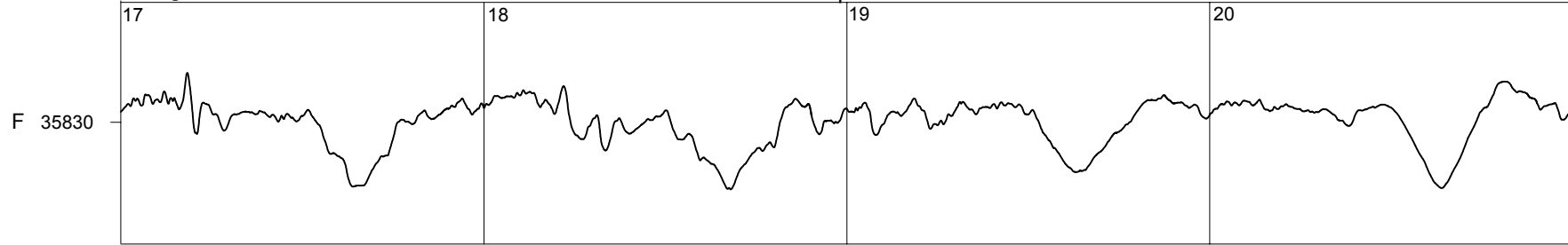
2004



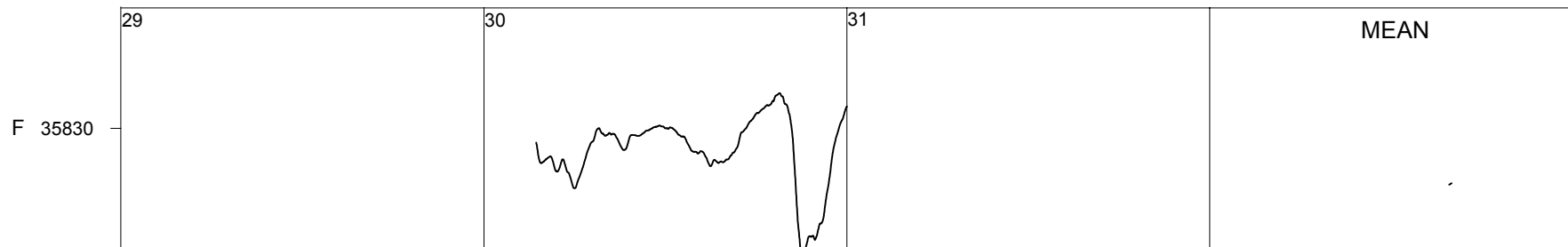
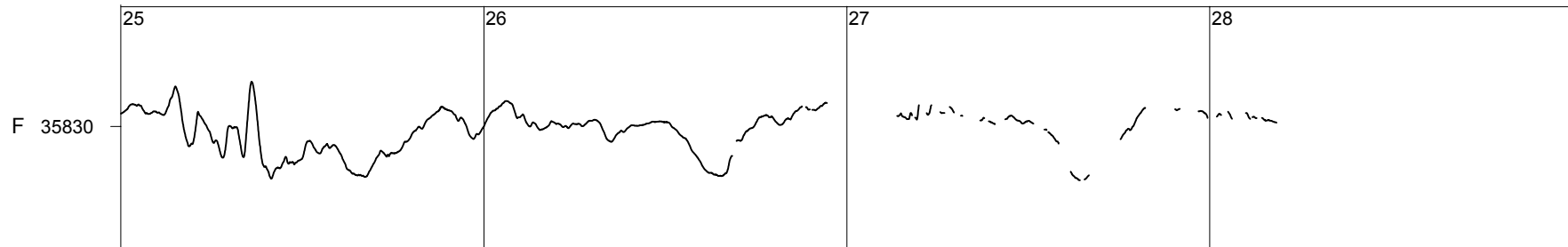
Livingston Island

April

2004



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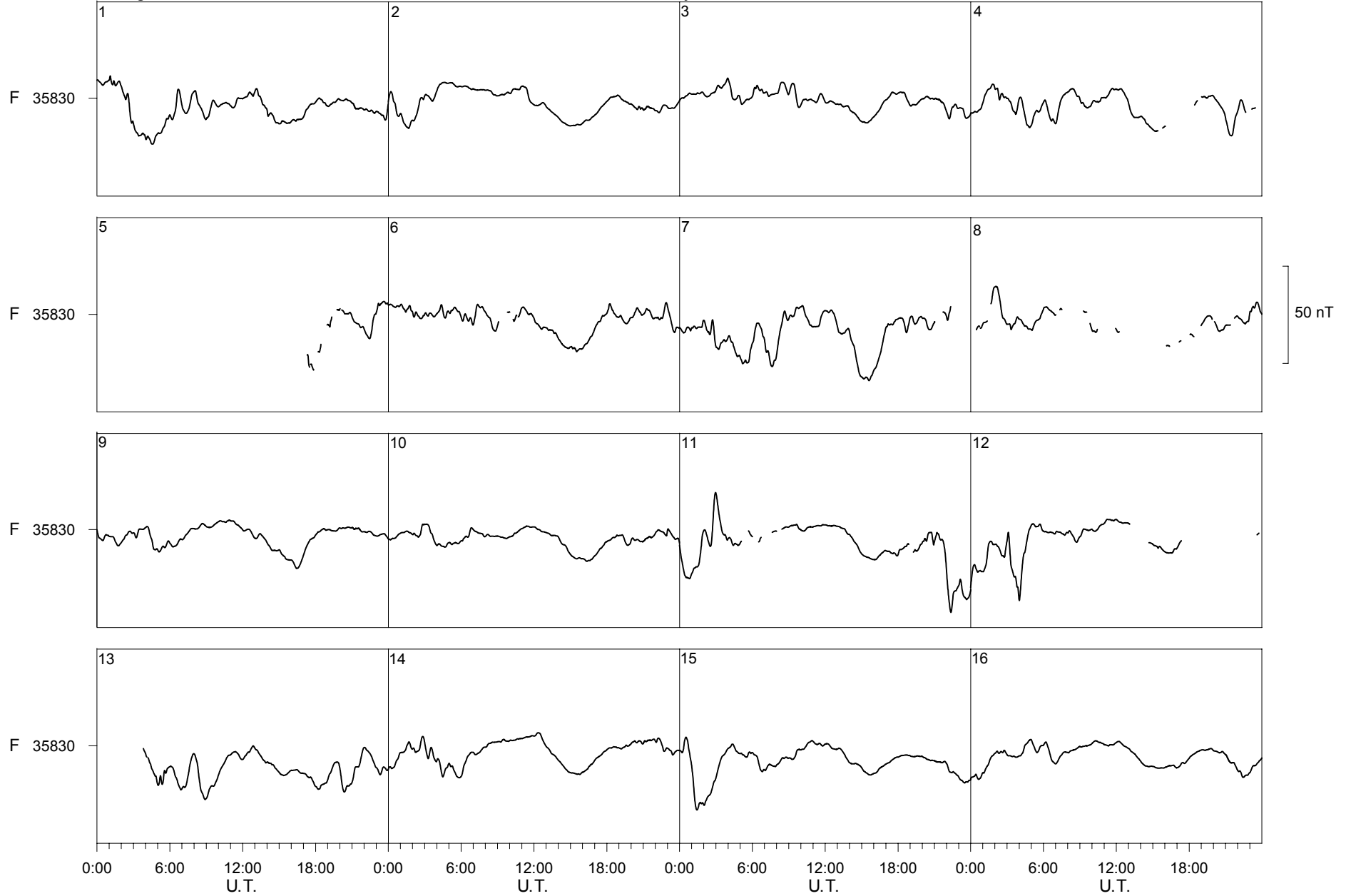
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Livingston Island

May

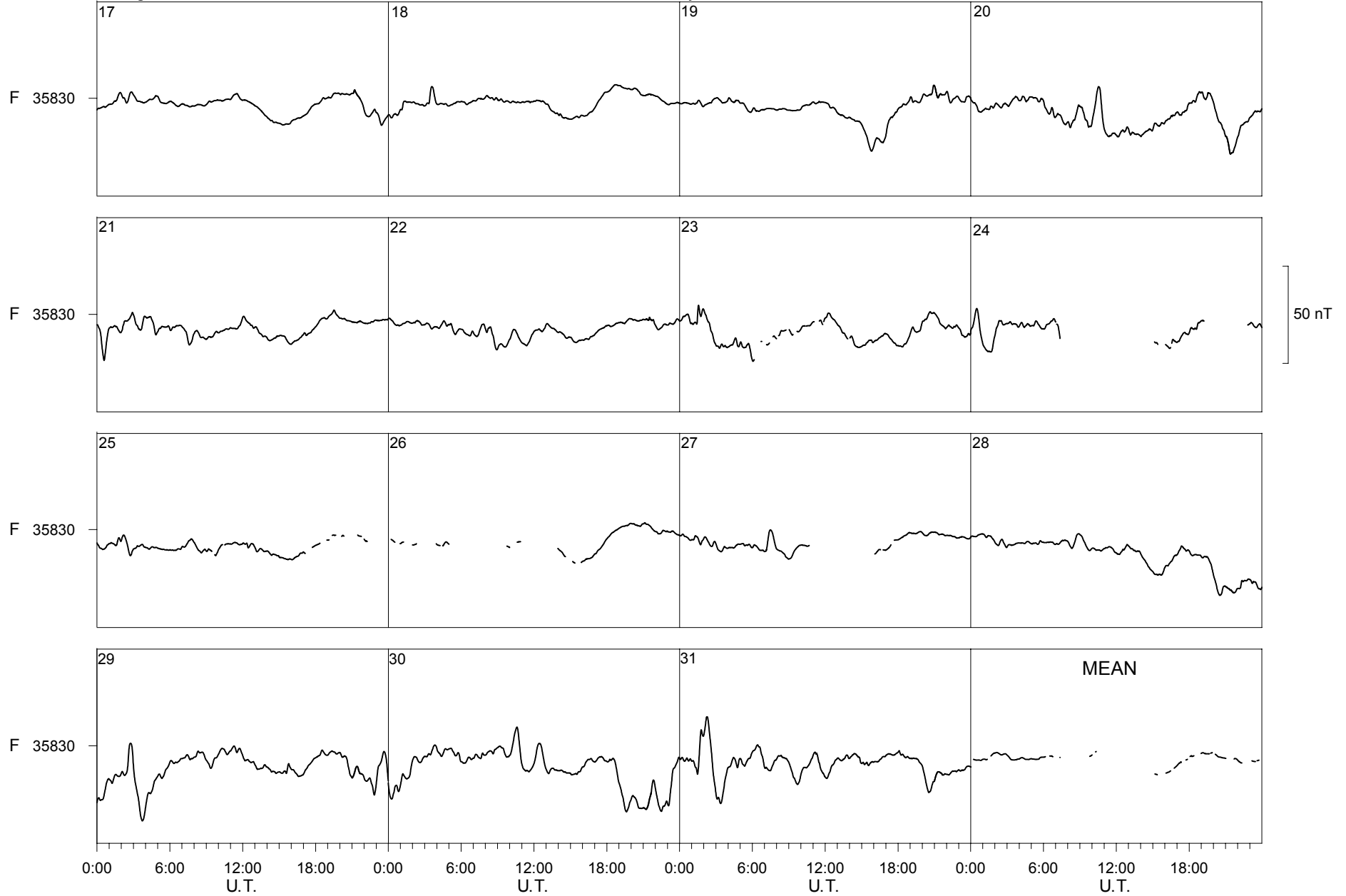
2004



Livingston Island

May

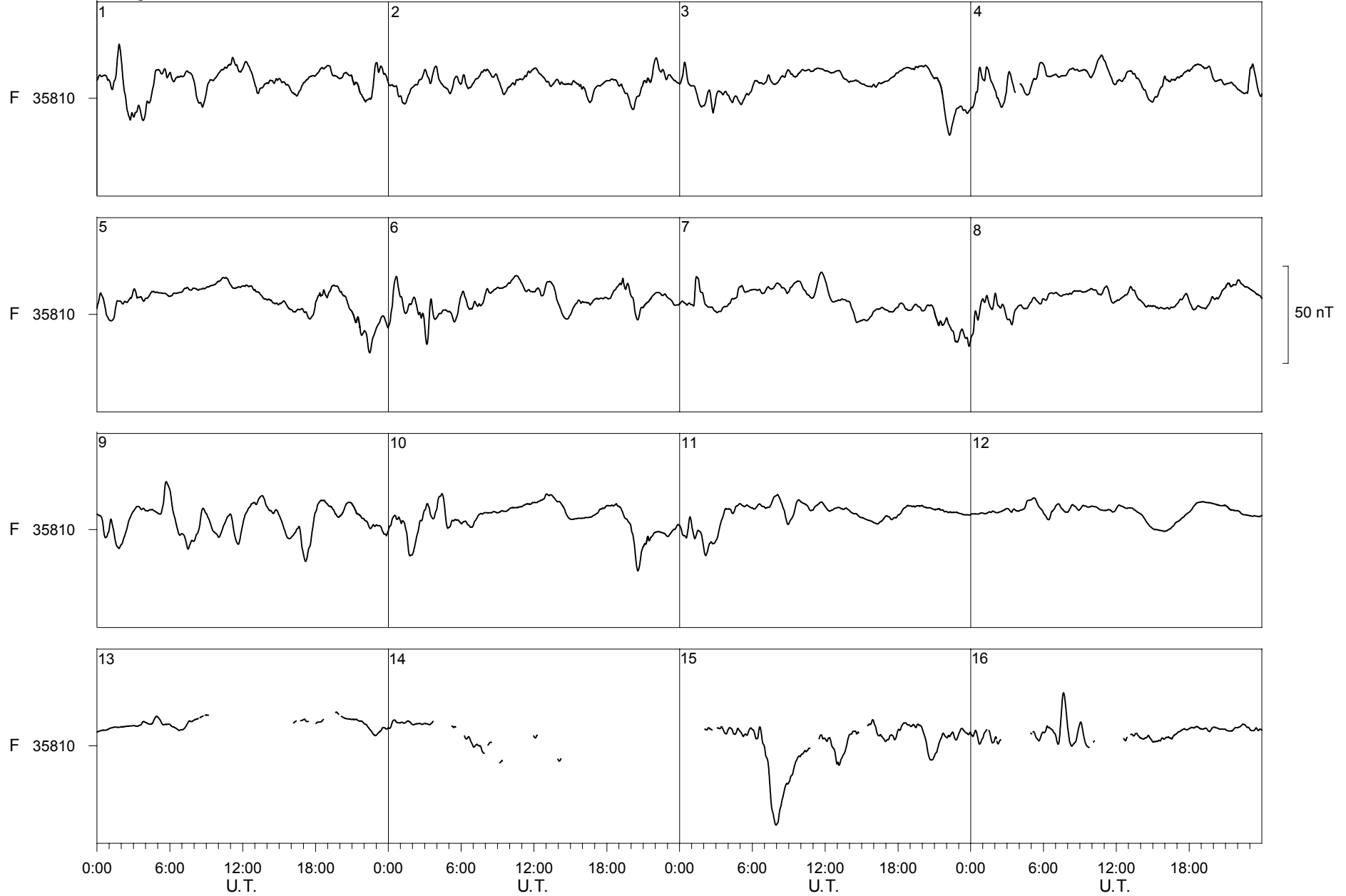
2004



Livingston Island

June

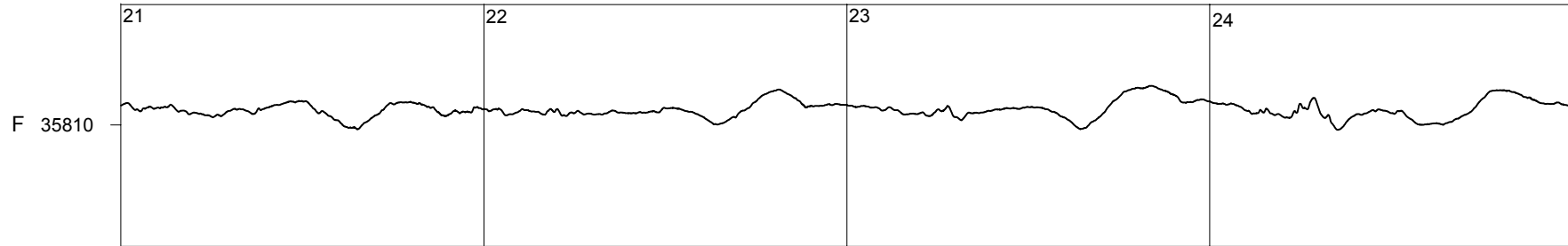
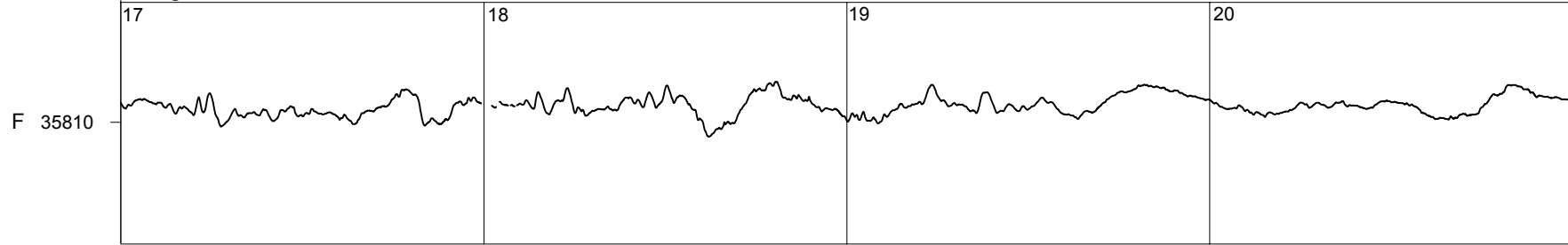
2004



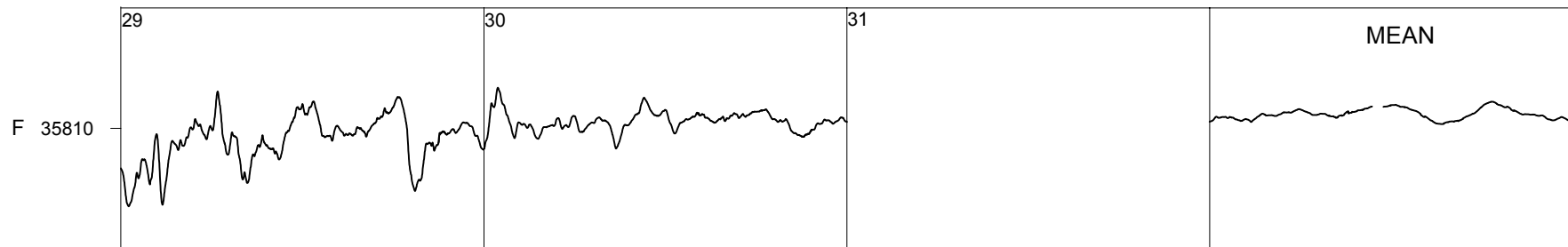
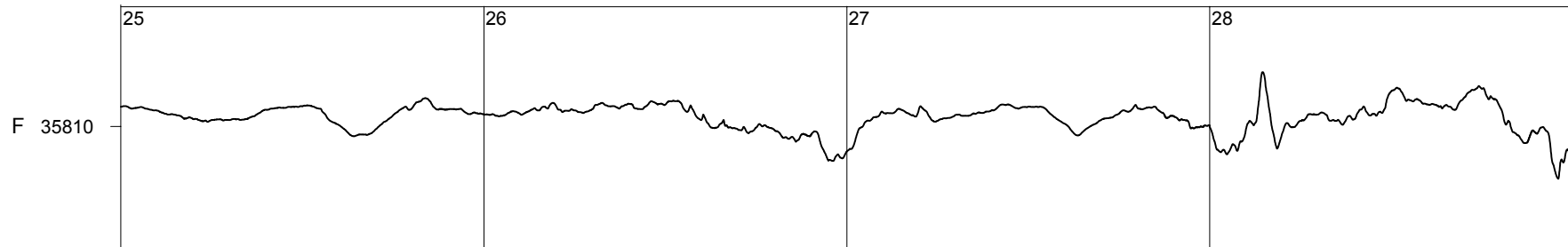
Livingston Island

June

2004



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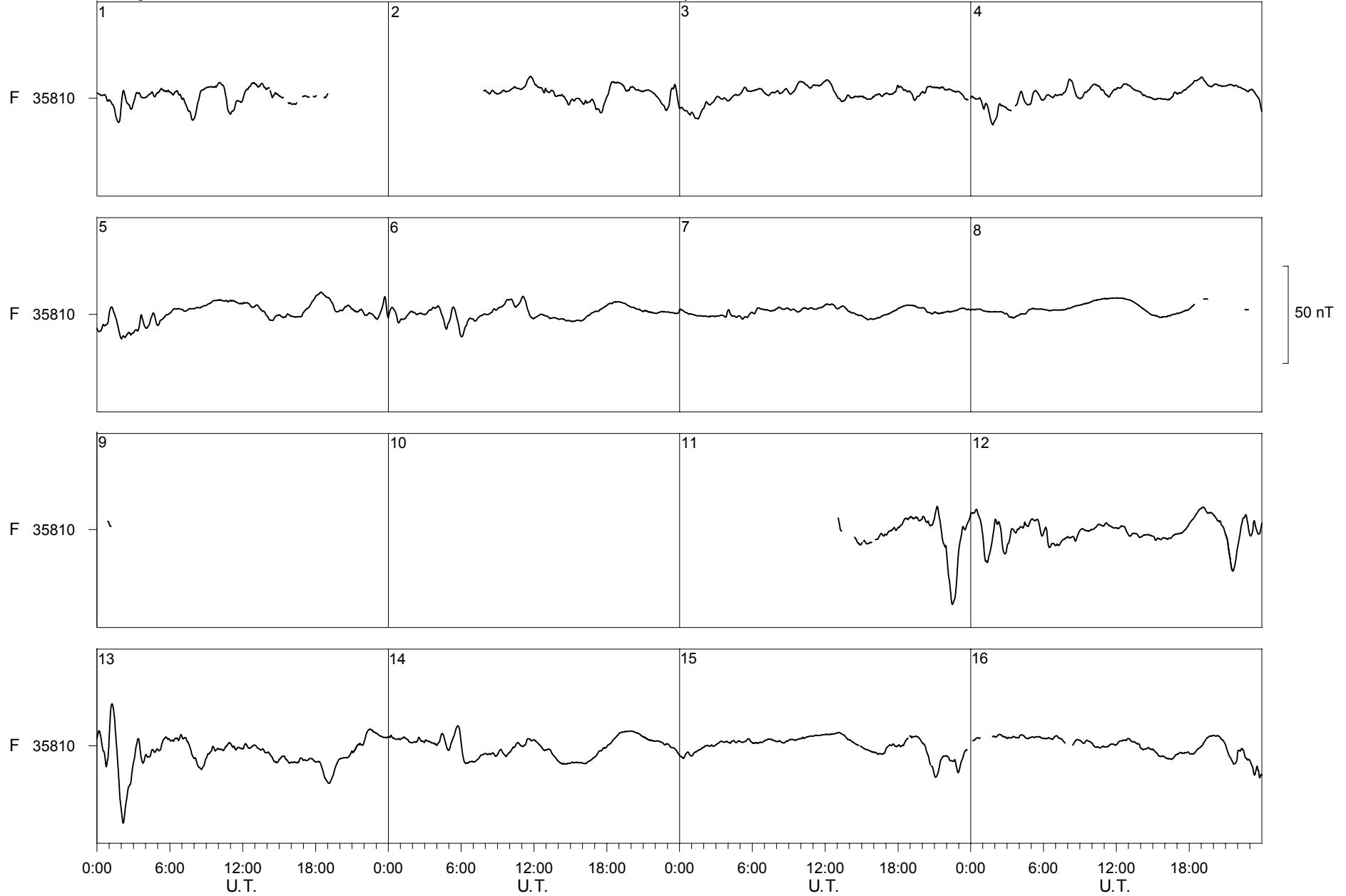
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Livingston Island

July

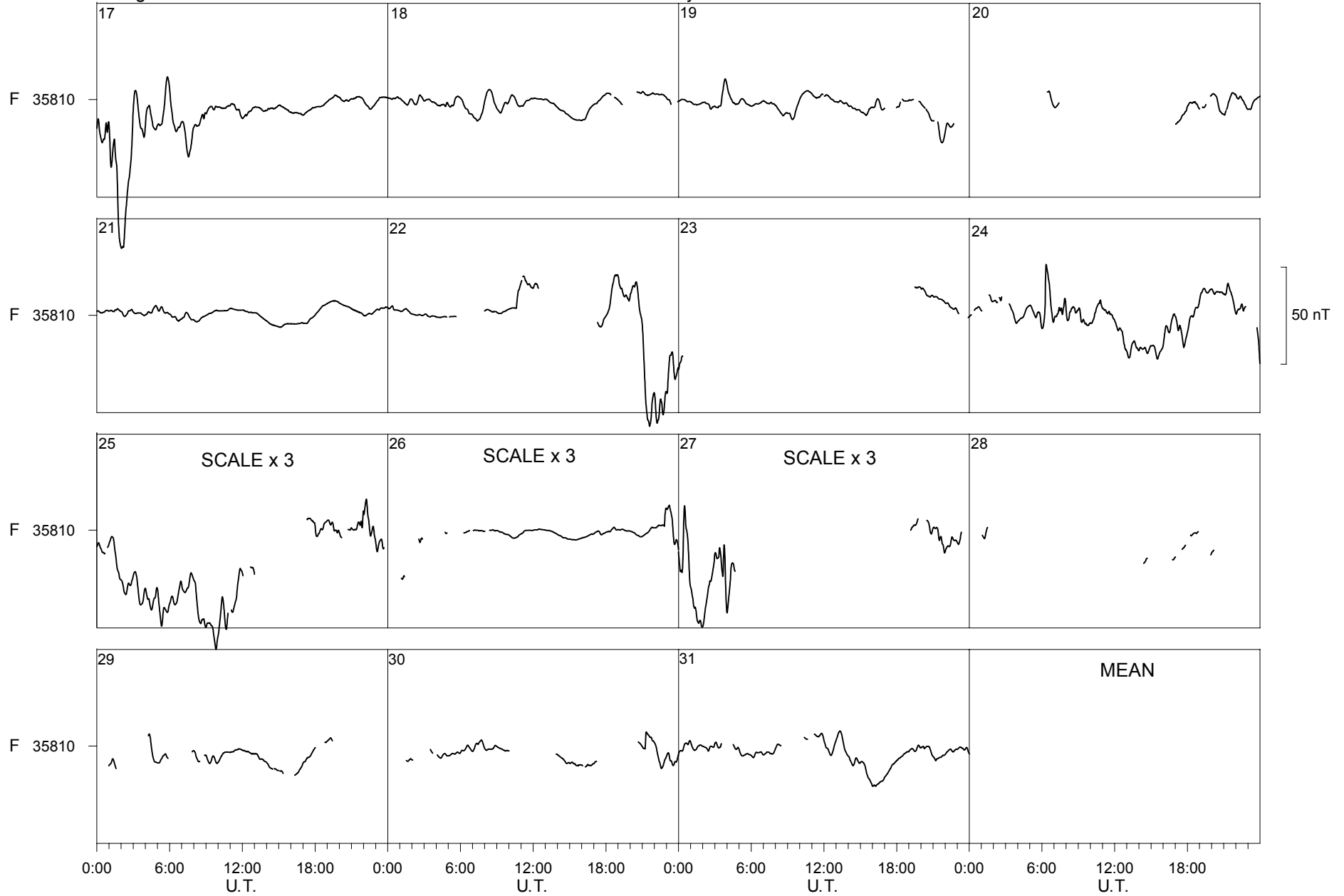
2004



Livingston Island

July

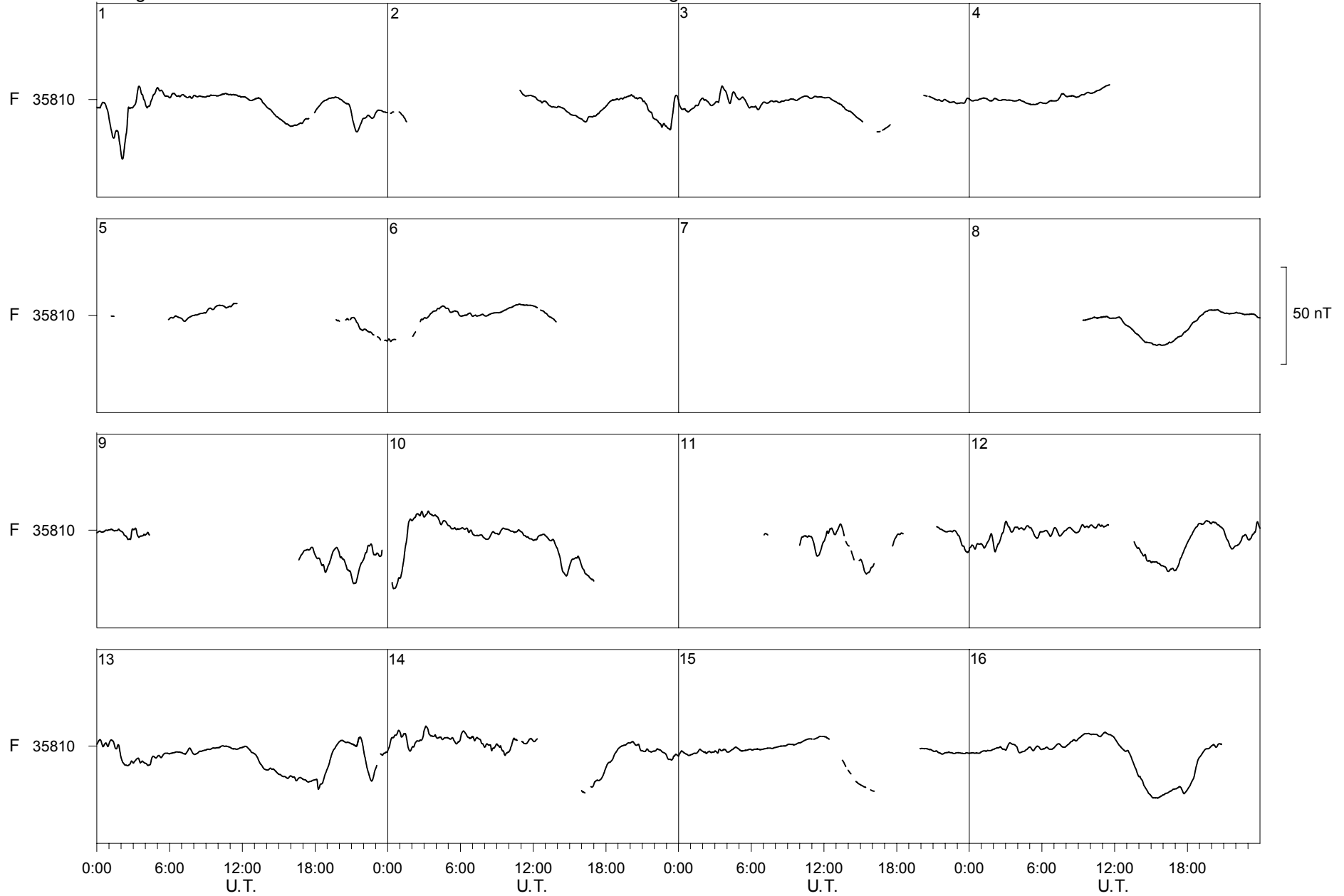
2004



Livingston Island

August

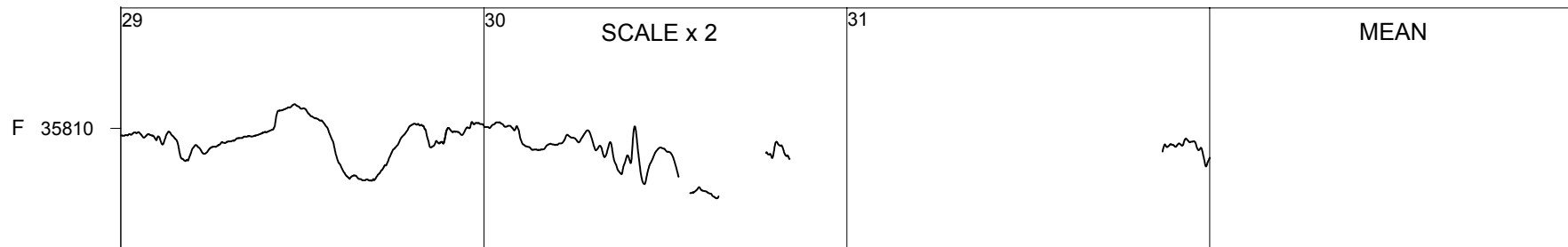
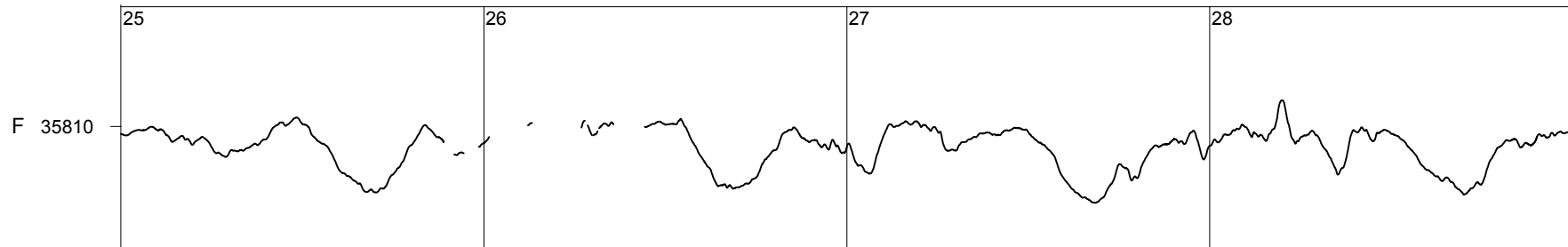
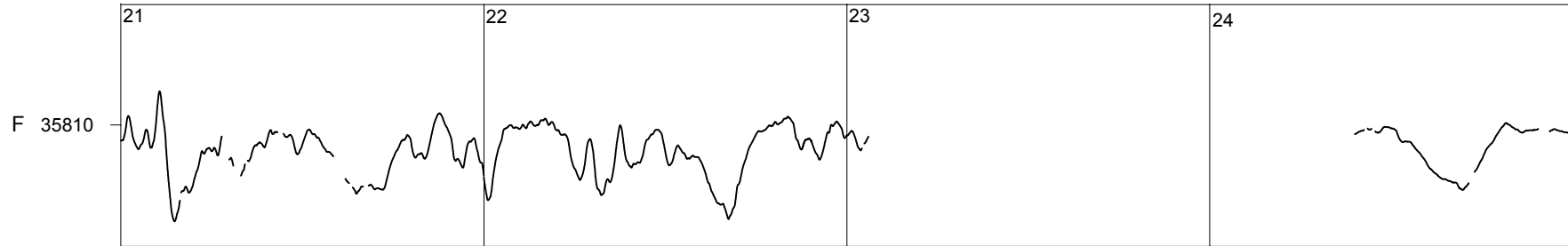
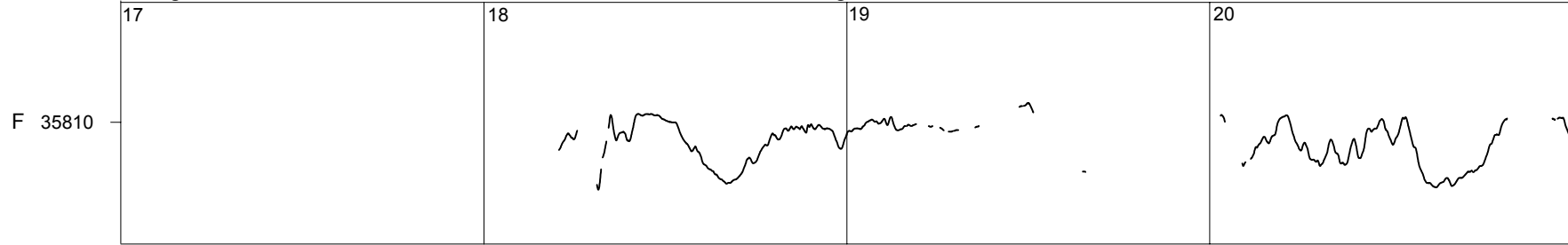
2004



Livingston Island

August

2004



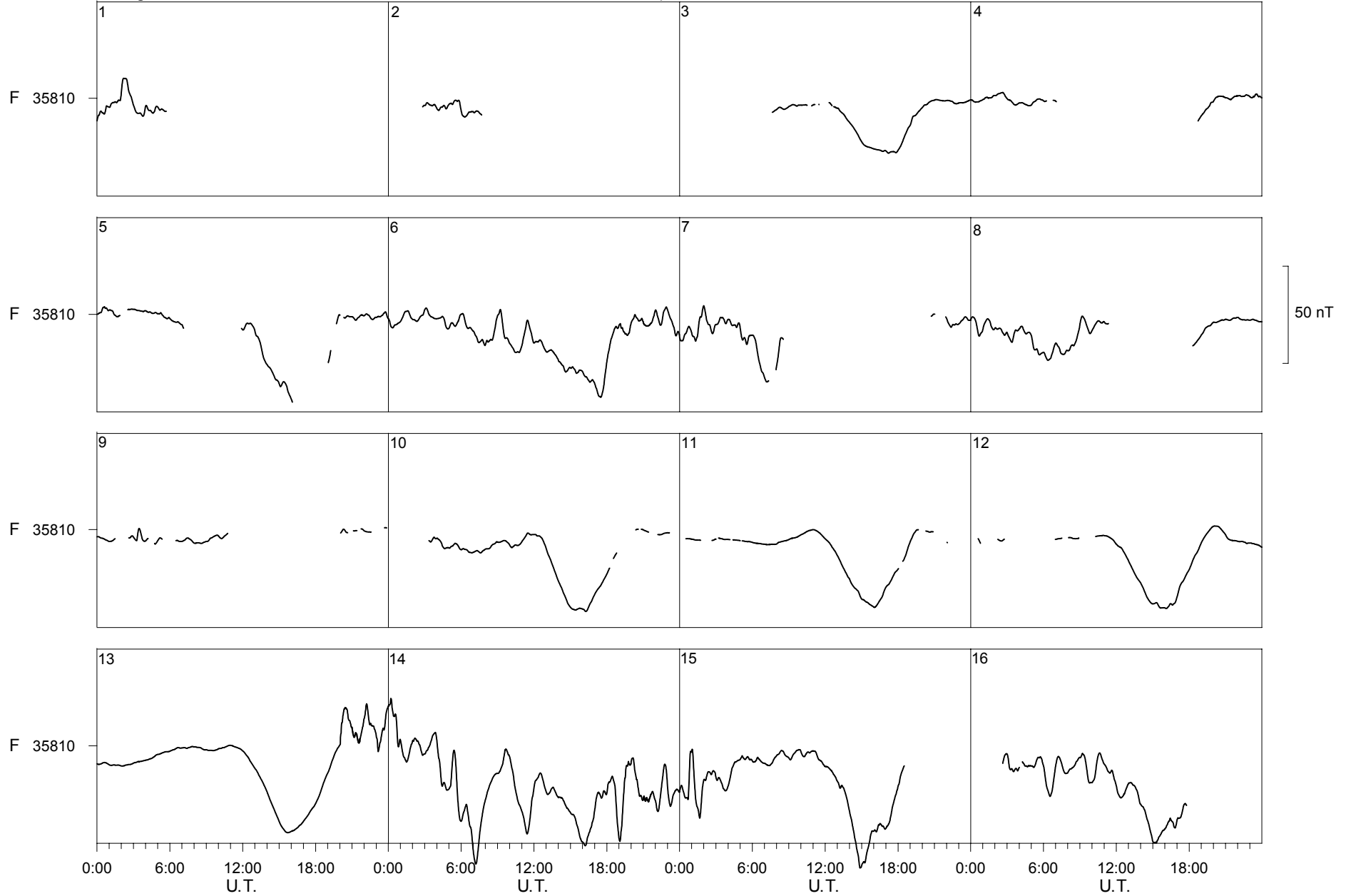
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Livingston Island

September

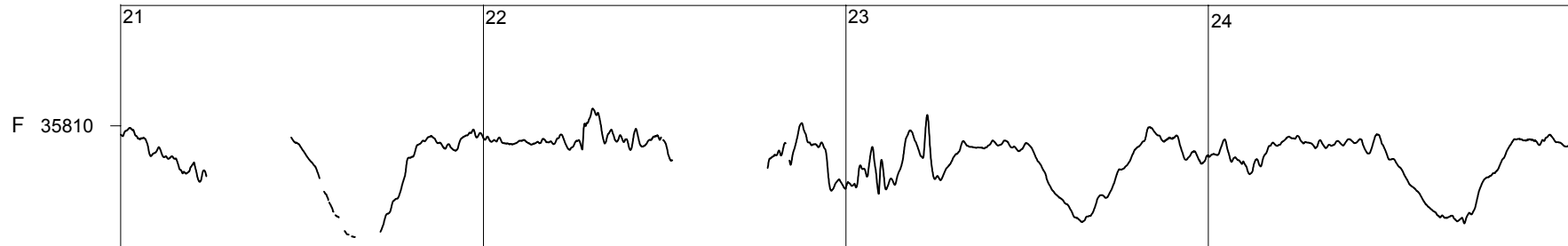
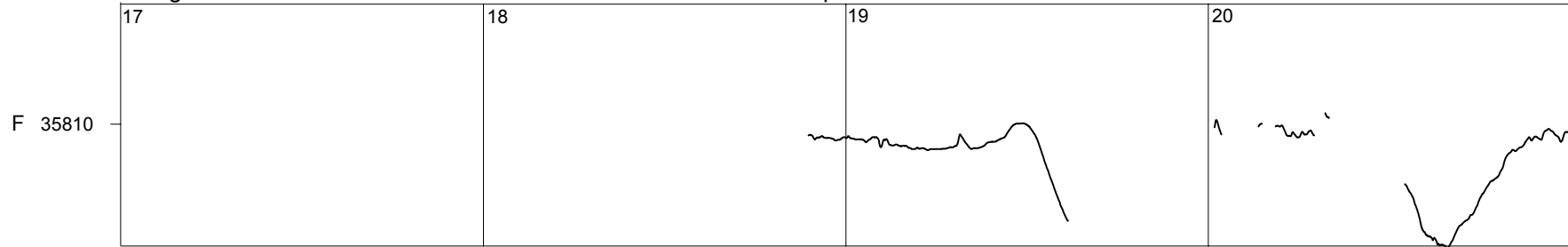
2004



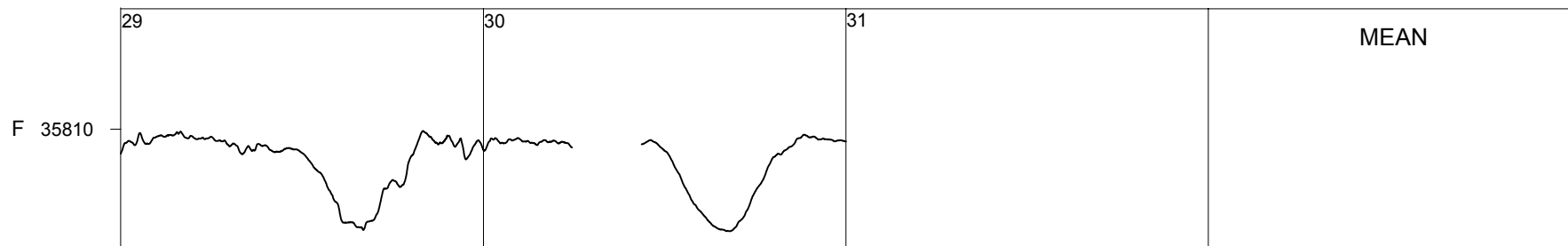
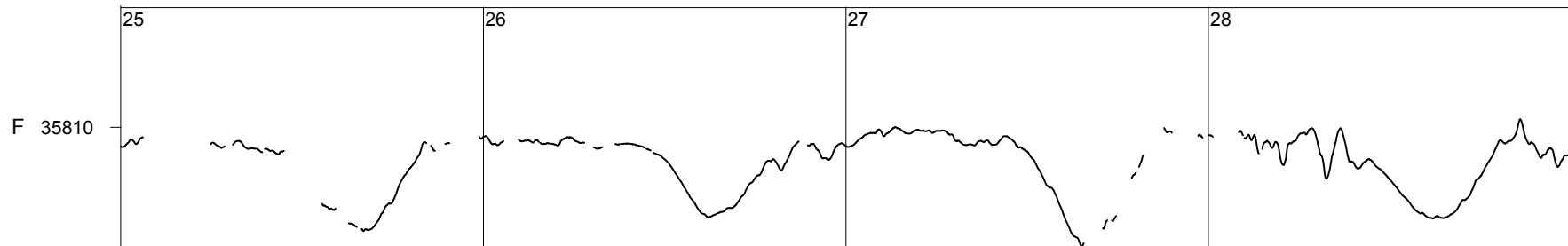
Livingston Island

September

2004



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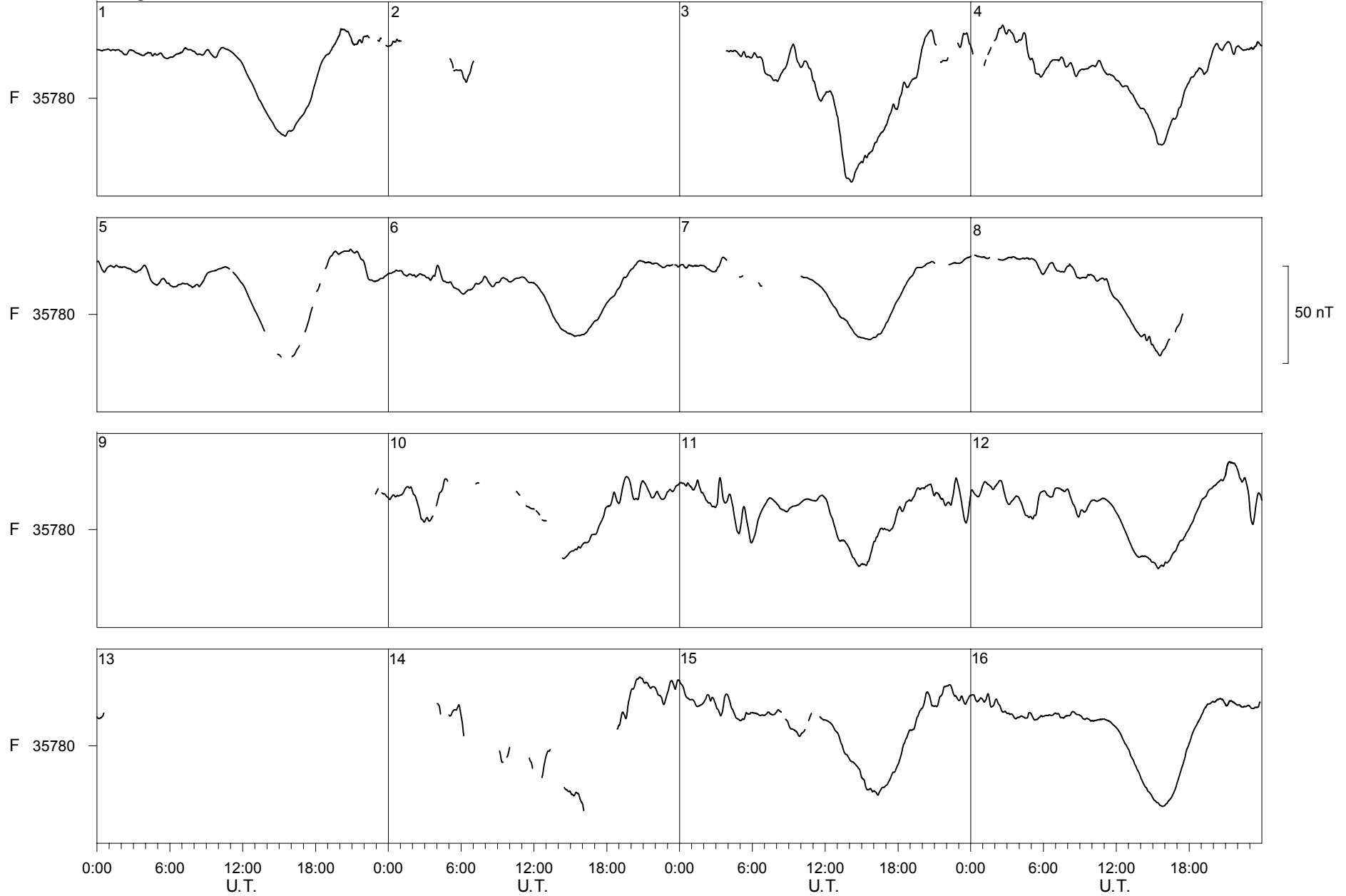
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Livingston Island

October

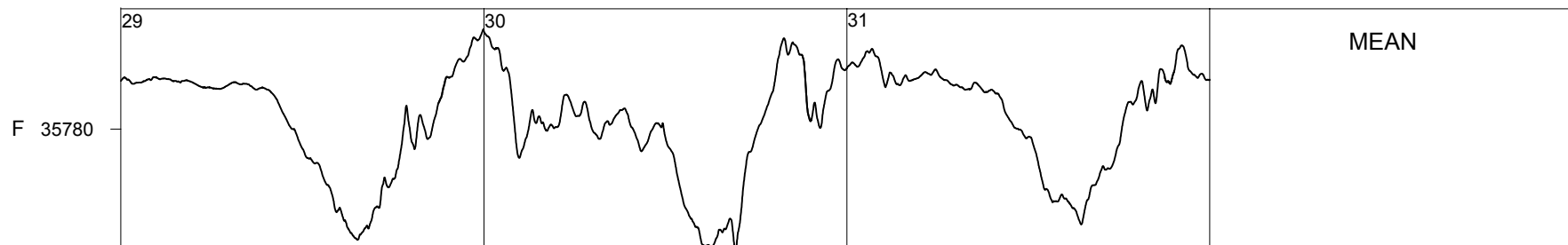
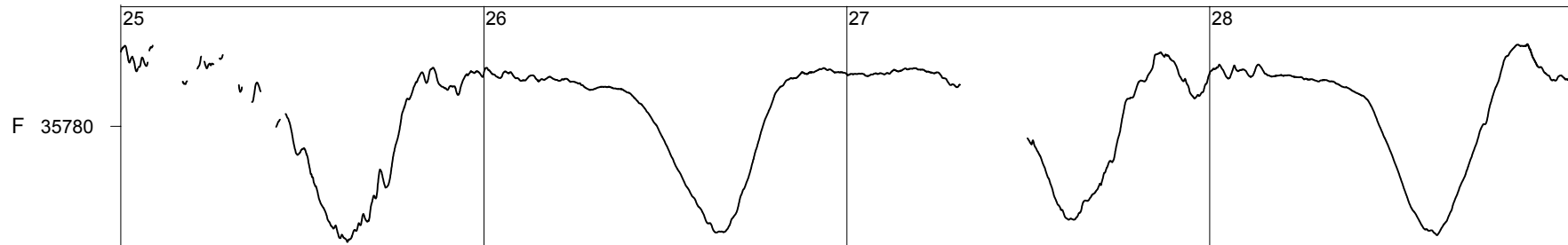
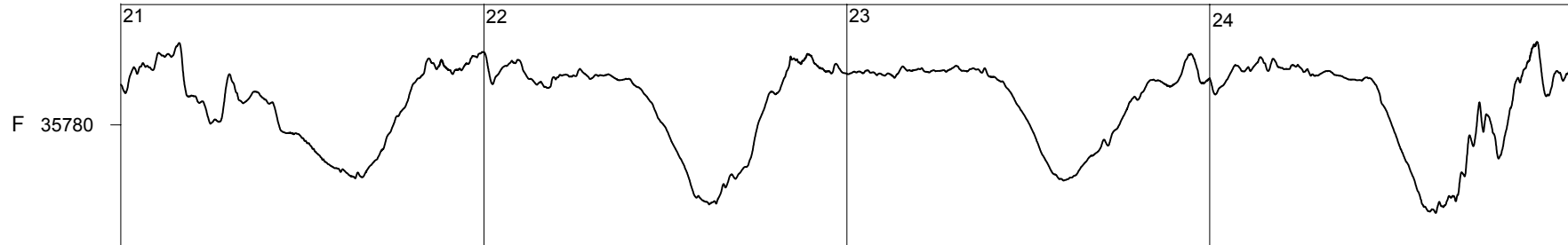
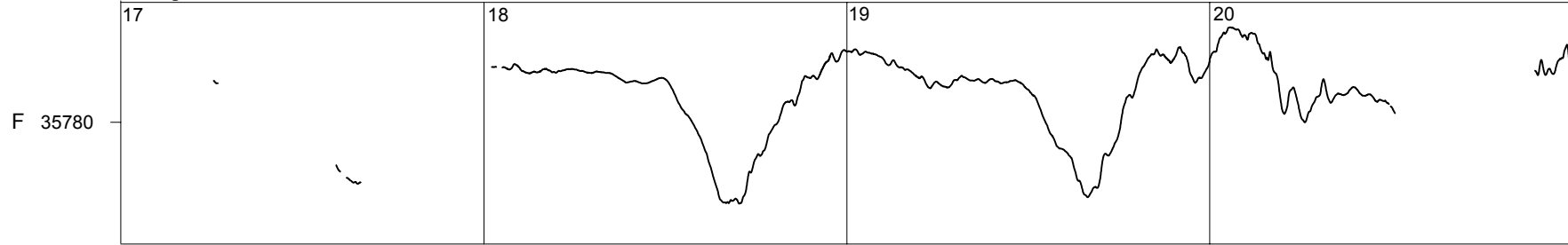
2004



Livingston Island

October

2004

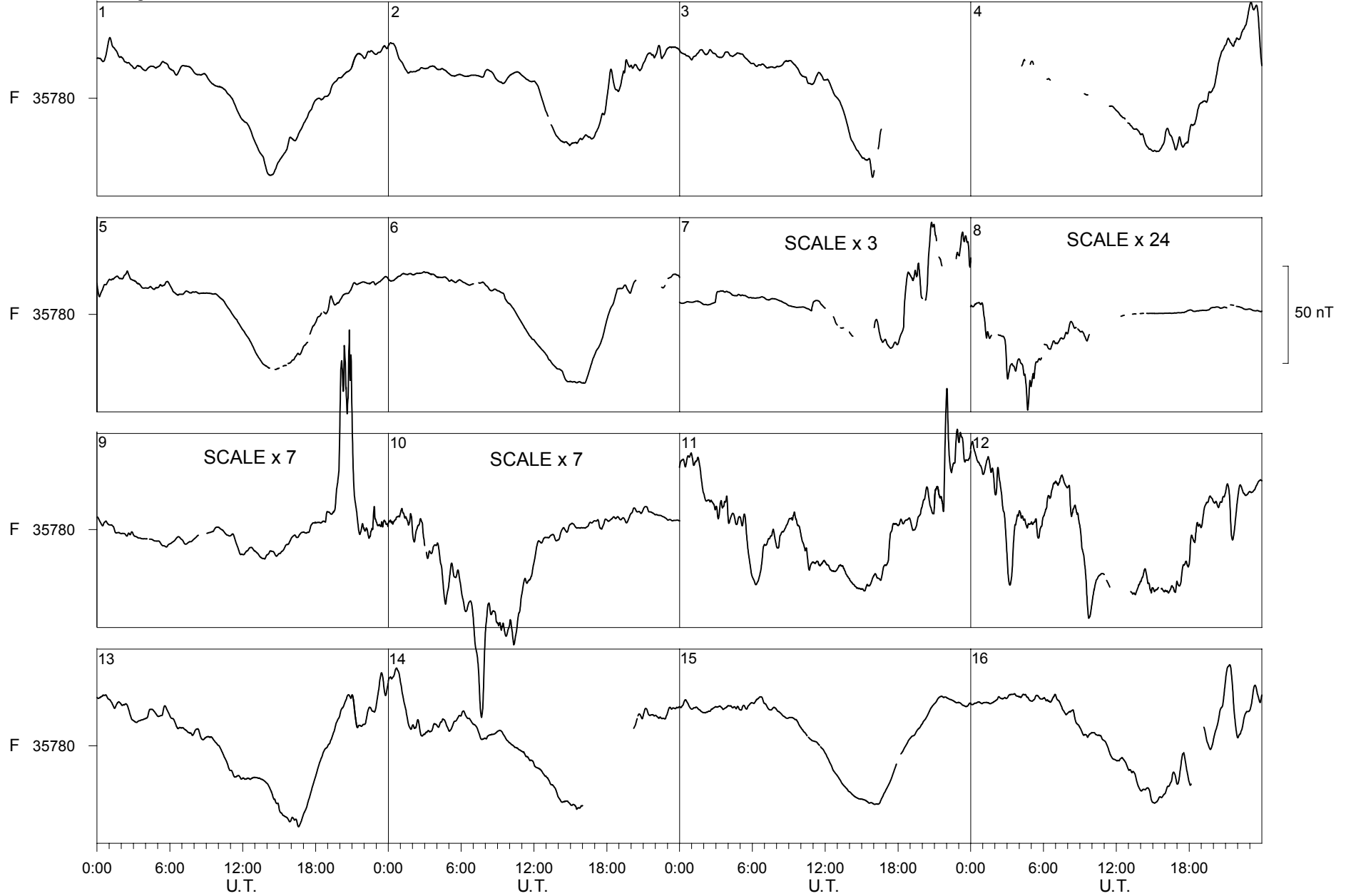


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Livingston Island

November

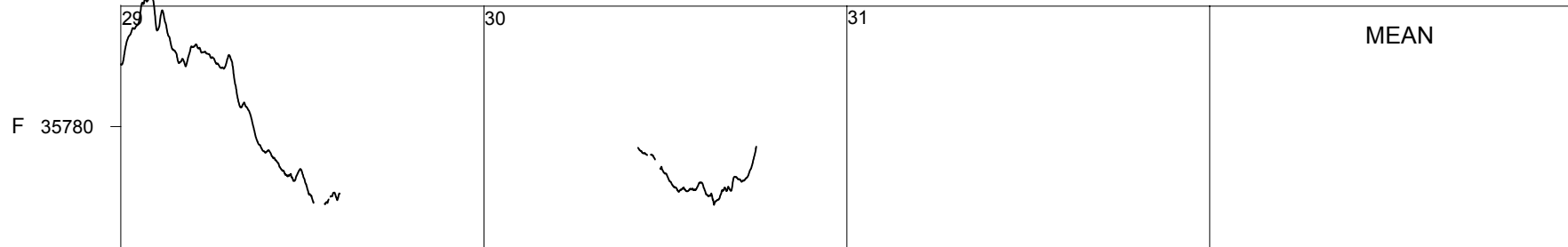
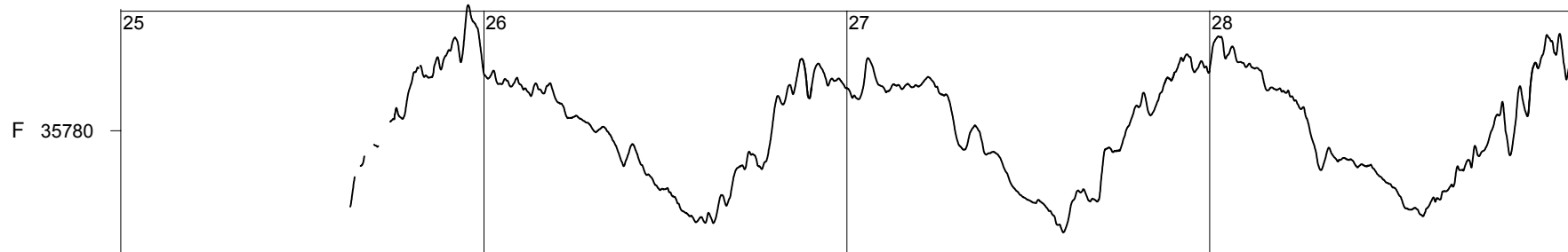
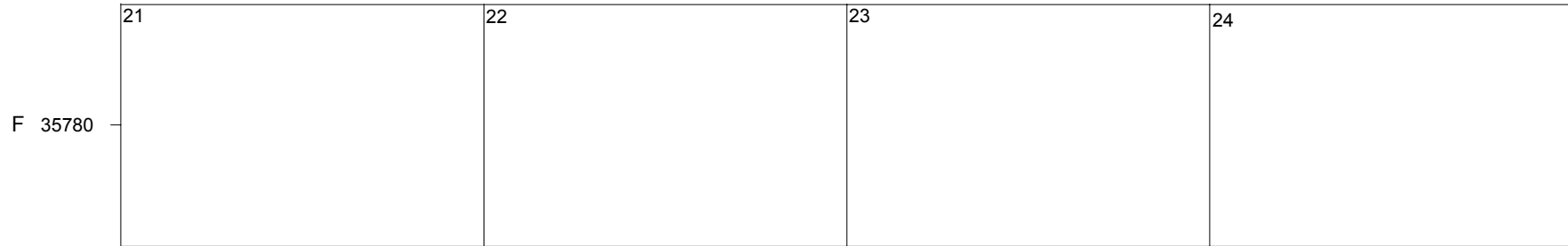
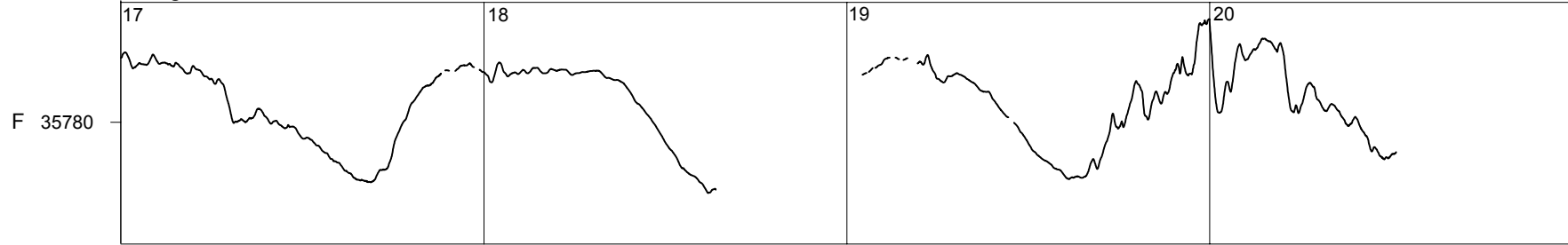
2004



Livingston Island

November

2004



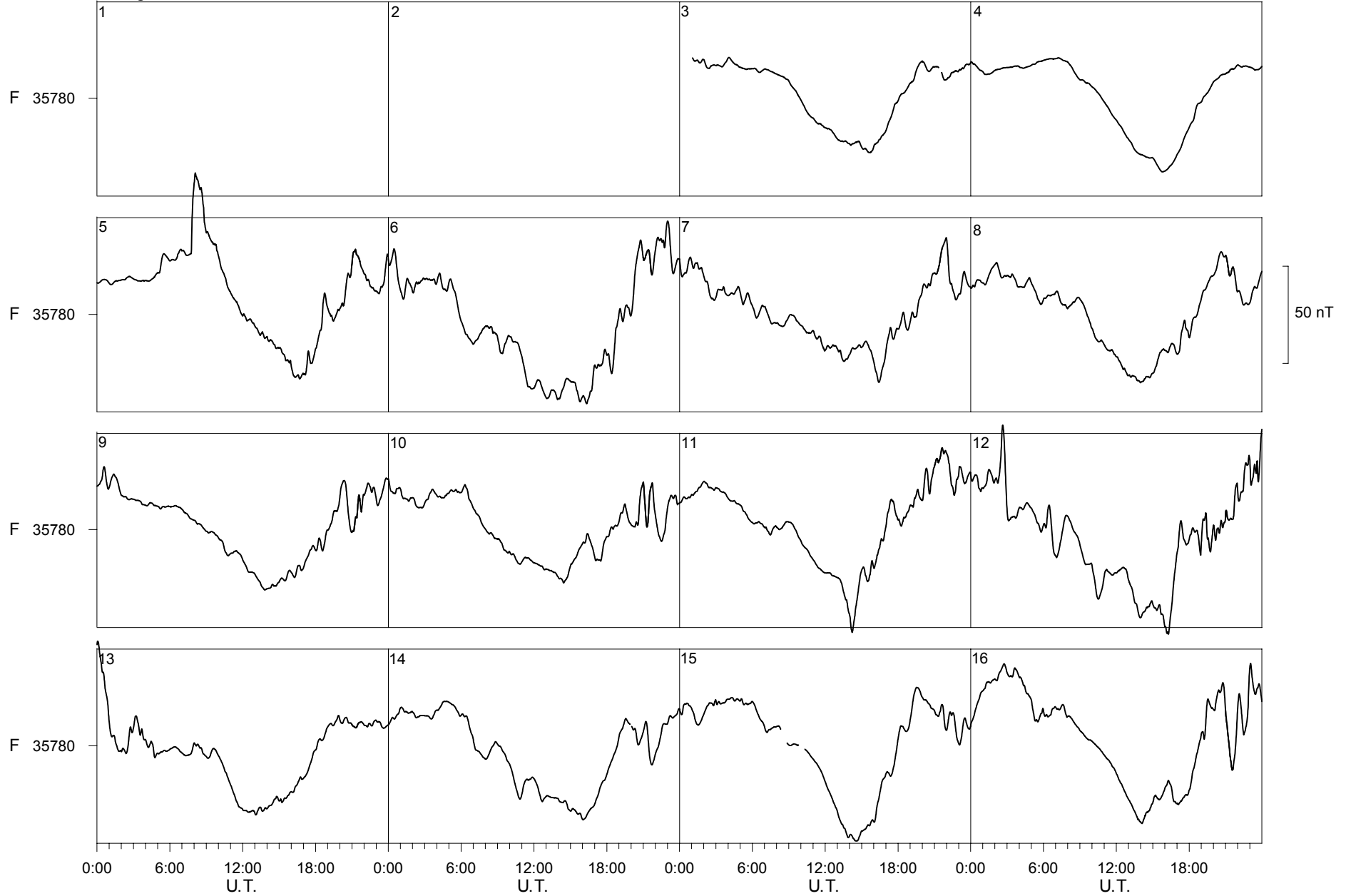
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Livingston Island

December

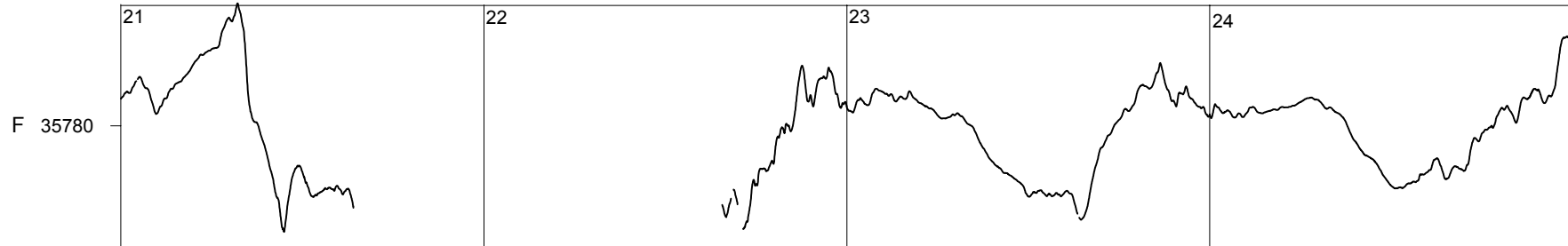
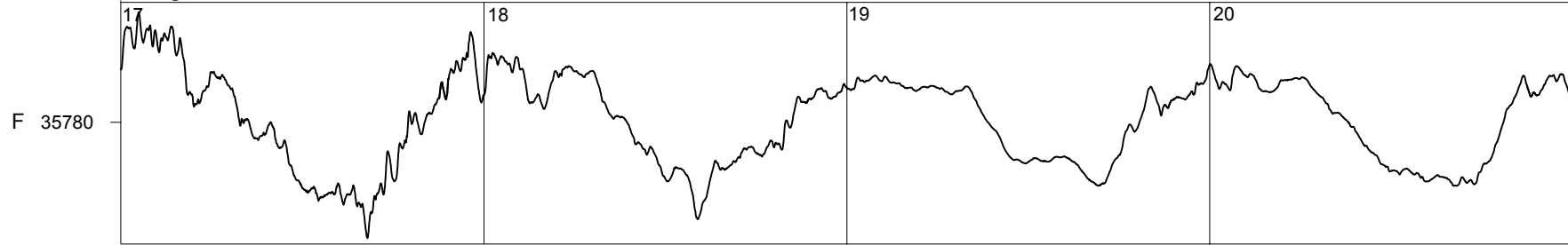
2004



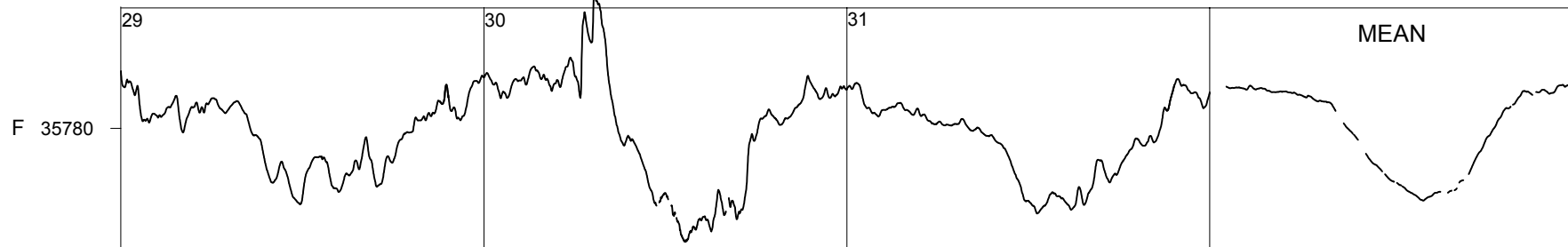
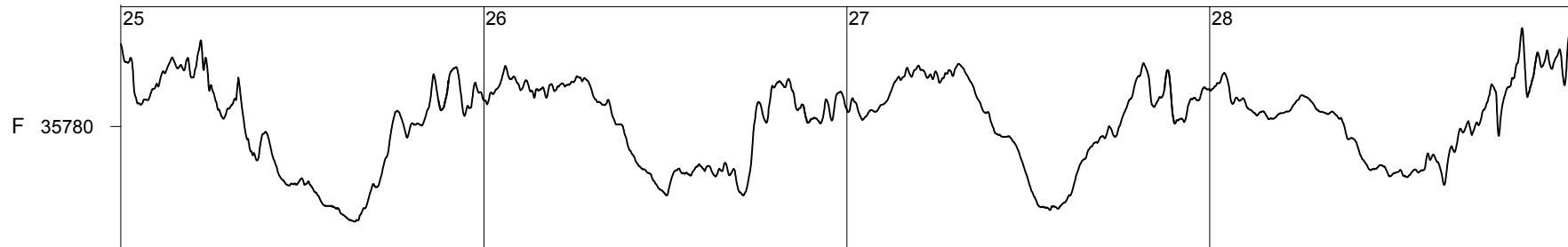
Livingston Island

December

2004



50 nT



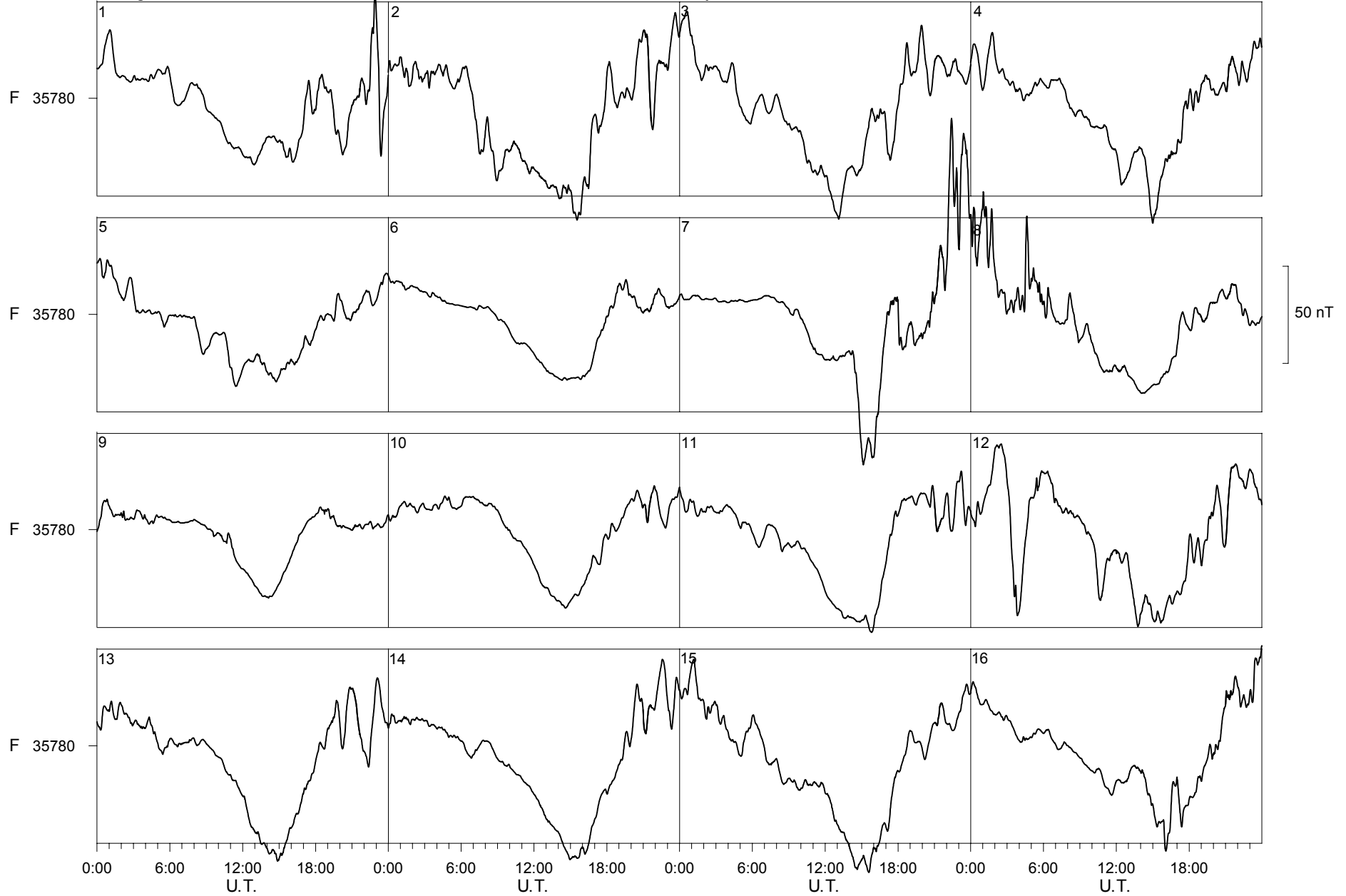
MEAN

0:00 6:00 12:00 18:00 U.T. 0:00 6:00 12:00 18:00 U.T. 0:00 6:00 12:00 18:00 U.T. 0:00 6:00 12:00 18:00 U.T.

Livingston Island

January

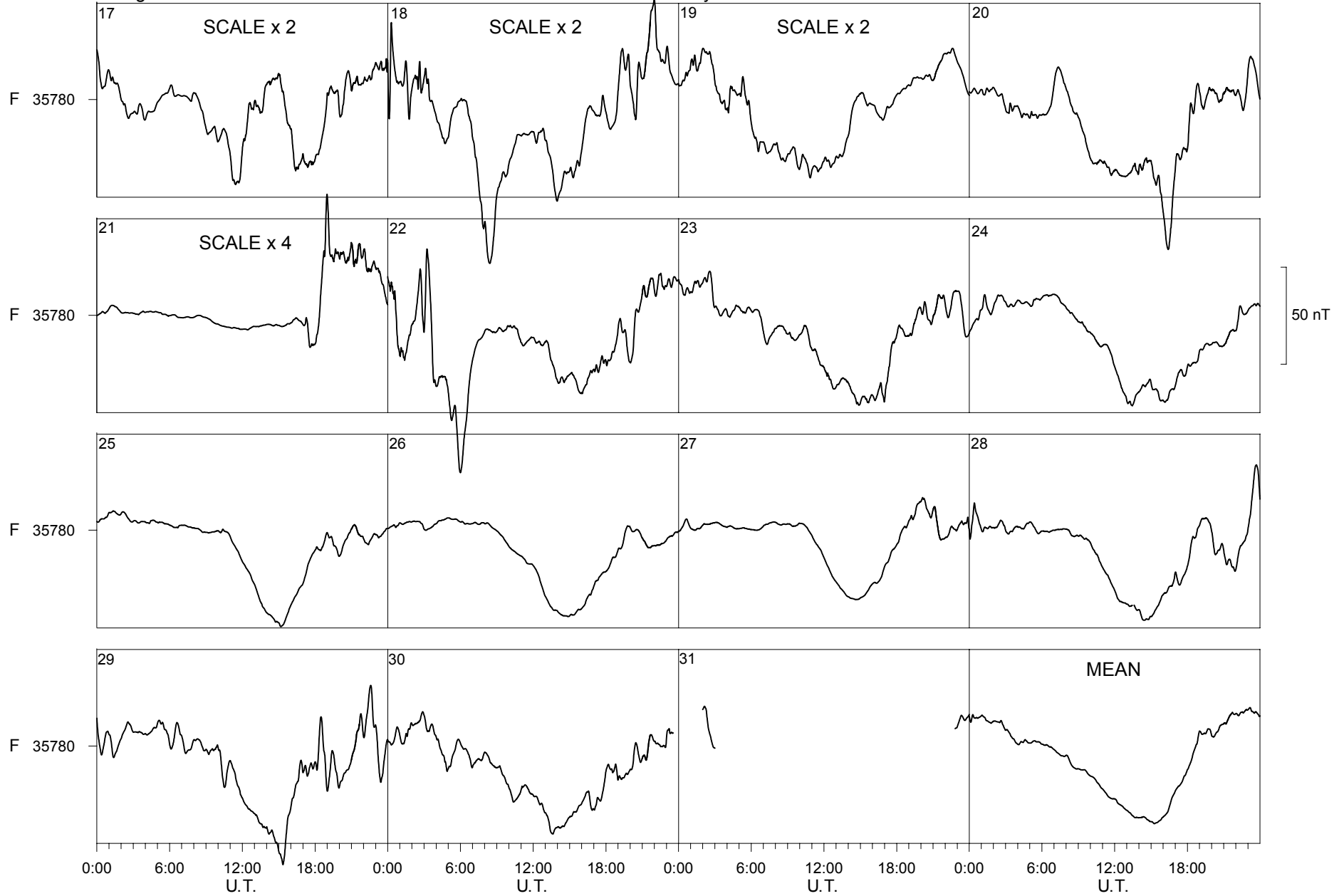
2005



Livingston Island

January

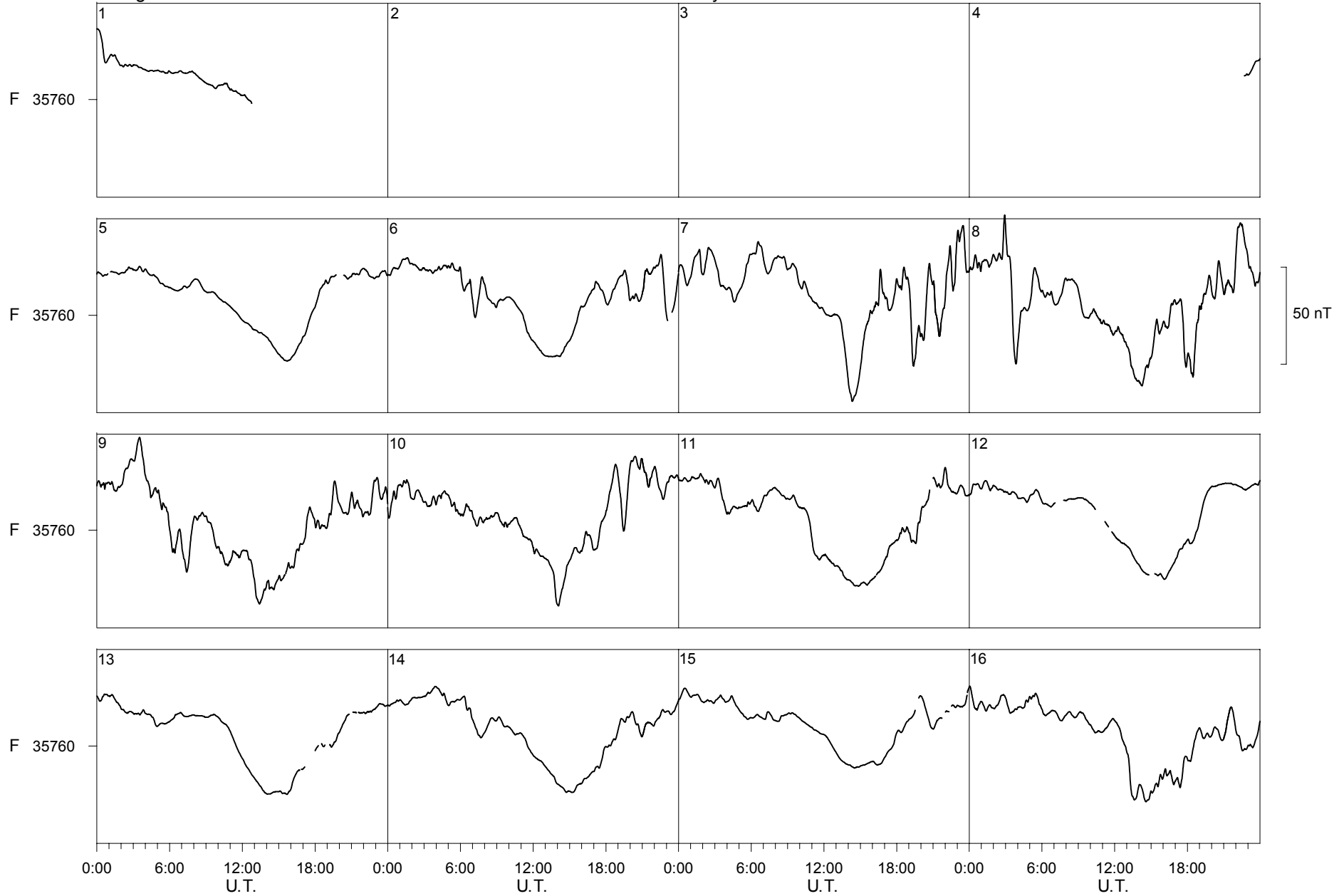
2005



Livingston Island

February

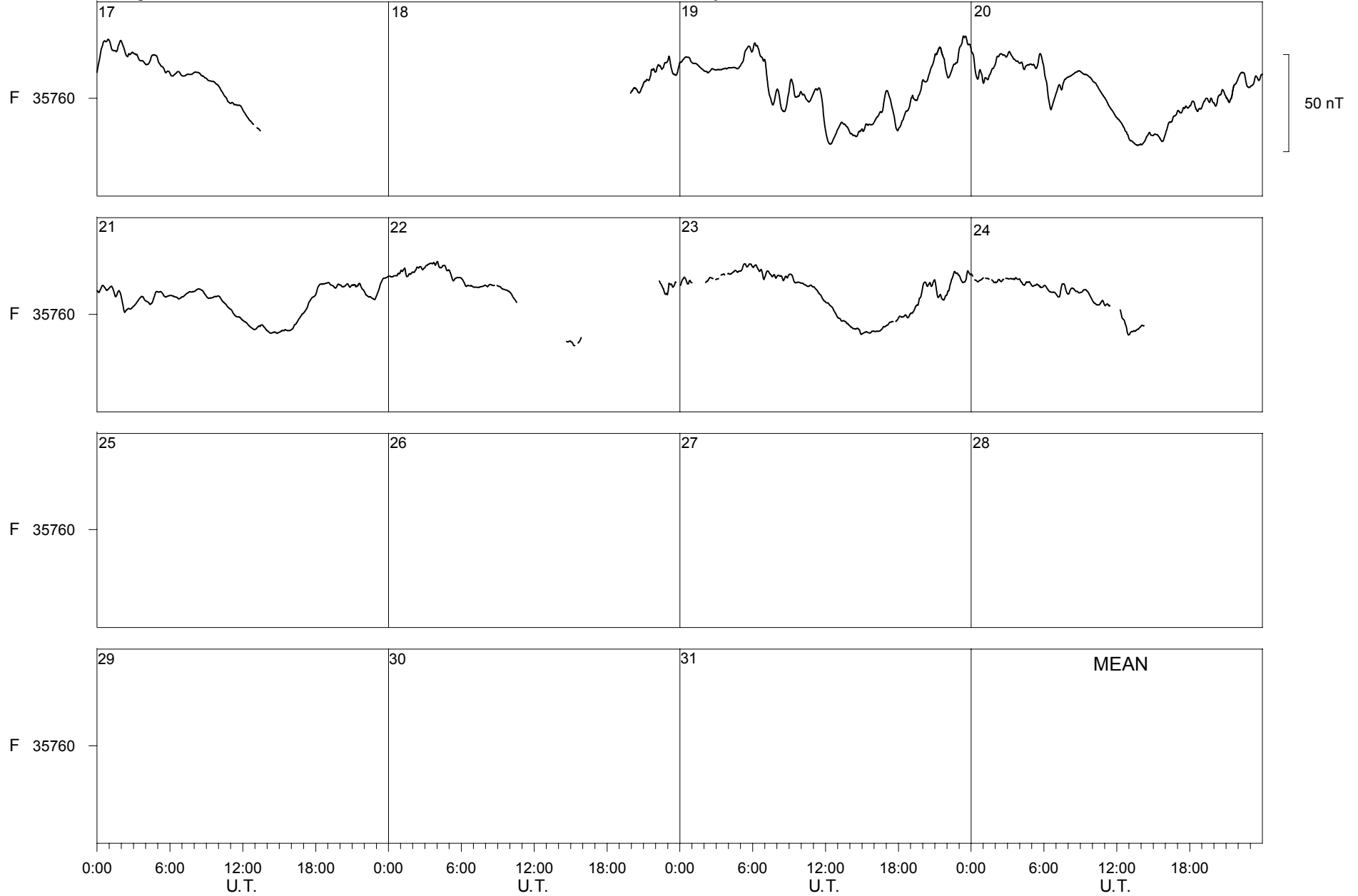
2005



Livingston Island

February

2005



LIVINGSTON ISLAND MAGNETIC OBSERVATORY

DECLINATION EAST

JANUARY 2004

D = 14 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	442	424	401	412	417	426	418	376	385	394	397	398	386	437	444	482	533	570	571	545	521	488	472	461	450
2	447	437	415	421	427	415	404	397	392	396	403	407	399	400	433	449	456	473	485	493	488	460	461	461	434
3	450	436	422	404	388	370	375	371	348	367	384	382	384	406	430	463	482	486	493	501	514	480	466	454	427
4	444	432	420	427	405	373	366	373	382	387	399	390	401	440	437	475	488	510	499	477	481	481	474	466	434
5	453	415	386	390	388	397	405	389	391	401	397	400	416	420	447	473	516	526	531	515	489	488	459	425	438
6	429	430	414	410	425	405	403	390	383	399	407	420	434	436	445	468	471	472	482	464	---	---	482	428	432
7 D	435	439	438	430	396	341	317	347	368	371	387	399	456	499	502	523	531	545	543	503	467	460	449	436	441
8 Q	431	429	424	426	420	417	410	404	403	397	389	399	393	405	412	435	461	482	481	475	465	467	459	439	430
9	432	416	412	420	404	377	366	382	350	365	385	398	405	412	436	466	510	514	547	568	536	513	495	474	441
10	458	442	435	412	401	397	382	370	357	334	392	399	400	404	425	462	496	507	502	497	485	471	460	453	431
11	443	443	442	438	433	426	415	395	378	378	385	405	417	415	447	471	503	526	507	496	477	454	442	434	440
12 Q	428	427	425	422	418	412	409	402	394	393	396	401	396	406	---	446	472	498	522	530	518	505	457	467	440
13	454	439	434	427	435	434	419	408	410	406	398	382	360	389	425	452	475	521	530	515	514	488	479	446	443
14 Q	434	417	410	416	427	431	433	429	408	395	397	405	402	409	432	459	483	504	520	520	496	468	458	448	442
15	423	425	425	431	426	428	430	415	406	399	403	398	405	398	422	471	479	491	487	491	495	500	487	468	442
16 D	419	410	433	426	425	431	427	412	396	415	410	448	483	457	446	473	511	547	535	537	517	475	484	468	458
17	445	453	444	423	422	421	415	415	399	391	377	388	394	403	419	430	453	480	495	469	463	463	449	441	431
18	438	437	431	415	393	406	404	393	386	390	399	392	411	438	458	473	502	511	497	492	506	477	470	458	441
19	449	420	436	426	430	434	415	397	394	380	394	400	407	422	465	476	508	526	519	503	505	465	445	428	444
20	424	420	407	390	399	391	398	407	397	383	370	375	387	427	458	484	498	496	513	509	496	481	460	438	434
21	434	432	430	432	420	421	406	407	402	375	361	385	405	422	439	466	486	486	492	493	467	457	452	442	434
22 D	436	384	365	327	363	333	344	302	353	350	344	409	492	530	510	520	529	544	558	581	529	509	448	453	438
23 D	433	420	437	424	420	431	425	399	383	424	438	446	467	461	---	496	543	589	560	569	512	488	480	461	465
24	451	350	428	442	437	426	427	412	409	414	416	416	430	433	447	476	501	524	525	508	505	498	489	473	452
25 D	420	421	377	373	393	407	399	407	382	406	429	442	455	442	455	489	507	522	548	536	532	514	479	444	449
26	432	429	445	431	426	434	431	421	412	407	397	394	404	407	442	476	493	516	518	521	513	512	---	---	449
27	449	397	401	408	414	431	430	432	408	403	391	388	377	384	416	445	487	521	507	490	476	468	455	448	434
28	418	328	398	421	416	392	360	382	369	377	388	369	386	411	423	445	474	497	506	509	470	467	450	449	421
29 Q	442	437	434	426	416	411	410	408	400	391	402	415	399	400	413	437	468	490	493	482	471	463	456	445	434
30	435	445	439	434	412	397	384	356	340	343	349	397	419	426	425	444	467	487	494	502	485	468	439	437	426
31 Q	436	437	423	424	421	412	399	390	380	366	360	382	404	393	403	428	450	472	489	484	475	455	443	435	423
MEAN	437	422	420	416	413	407	401	393	386	387	392	401	412	424	440	466	491	511	514	509	496	479	464	449	439
MEAN Q	434	430	423	423	420	417	412	406	397	388	389	400	399	403	---	441	467	489	501	498	485	472	455	447	434
MEAN D	429	415	410	396	399	388	382	373	377	393	402	429	471	478	---	500	524	549	549	545	511	489	468	452	450

LIVINGSTON ISLAND MAGNETIC OBSERVATORY

HORIZONTAL INTENSITY

JANUARY 2004

H = 20000 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	198	213	201	205	207	212	213	200	188	180	188	182	171	158	184	164	167	167	158	184	191	195	197	200	188
2	210	208	210	204	211	208	206	202	196	194	192	193	201	198	186	186	198	203	184	190	189	204	208	212	200
3	216	228	223	226	217	217	213	210	196	185	194	196	197	194	194	184	184	182	192	191	191	195	200	202	201
4	210	199	198	211	215	220	204	204	196	202	194	186	180	180	191	179	198	201	193	180	196	204	201	199	197
5	205	212	218	208	204	208	214	202	195	186	183	177	180	174	168	186	195	202	204	199	197	207	192	212	197
6	211	212	208	205	205	208	202	198	189	184	183	181	178	181	181	181	191	206	208	197	---	---	233	206	198
7 D	188	208	209	203	202	189	196	197	220	200	185	173	165	165	159	160	189	191	203	192	198	192	186	189	190
8 Q	193	193	198	200	202	204	204	200	194	191	187	183	179	173	170	170	174	190	196	188	198	212	208	204	192
9	205	207	207	207	202	205	200	206	219	221	204	196	172	162	148	152	179	189	226	201	194	206	210	222	198
10	218	212	216	227	219	220	218	204	204	188	191	180	174	166	151	138	148	169	188	186	187	194	197	189	191
11	194	194	202	204	201	206	205	200	193	204	192	197	191	183	151	155	150	157	169	191	187	188	192	195	188
12 Q	201	203	207	213	209	211	214	206	203	200	198	198	191	181	---	157	147	159	180	189	198	184	203	199	193
13	193	200	199	200	200	200	198	196	192	190	189	183	184	186	173	172	185	175	175	181	197	185	192	206	189
14 Q	216	215	203	210	209	212	219	218	214	207	199	193	194	188	171	170	172	175	176	181	190	197	200	192	197
15	195	205	211	214	216	219	222	223	219	213	212	210	201	193	164	147	157	173	174	184	191	184	179	186	195
16 D	192	211	206	210	216	212	211	211	203	199	195	180	200	194	186	180	178	153	180	180	188	196	182	191	194
17	194	202	201	205	203	206	203	200	199	198	190	186	175	171	164	160	162	177	178	185	192	193	190	199	189
18	203	205	207	212	200	207	197	199	194	188	182	176	173	168	160	161	162	172	180	201	202	192	198	194	189
19	196	204	203	207	208	210	209	204	203	197	199	197	198	185	174	176	161	171	176	172	184	185	202	196	192
20	195	201	200	201	191	193	193	195	193	192	184	175	162	146	139	145	151	161	175	166	173	171	184	197	179
21	195	196	201	207	211	205	199	193	199	194	195	190	178	159	149	149	148	161	179	181	195	192	198	193	186
22 D	200	218	244	251	260	233	227	230	219	218	195	101	108	131	134	131	120	136	129	147	152	166	185	178	180
23 D	163	166	170	172	174	181	166	171	159	168	175	162	162	156	---	128	112	131	148	163	157	173	167	177	161
24	178	198	195	208	217	216	206	200	195	190	194	185	169	157	151	151	157	165	159	172	180	182	187	190	183
25 D	202	195	160	151	148	166	174	159	157	159	192	195	179	160	142	140	140	143	158	159	159	162	171	170	164
26	170	174	185	195	193	195	199	188	182	179	182	175	168	161	146	144	148	157	169	175	177	176	---	---	175
27	180	160	167	174	181	187	192	193	177	172	176	185	179	168	155	159	154	161	170	187	198	205	209	199	179
28	207	185	186	197	199	199	194	193	190	183	182	180	173	172	169	163	162	148	168	173	183	193	199	198	183
29 Q	199	200	205	208	202	196	197	197	195	190	192	205	198	184	173	159	154	159	169	183	198	195	202	198	190
30	203	206	208	209	207	204	207	213	210	192	186	184	188	182	181	170	162	163	169	191	192	204	201	199	193
31 Q	206	207	209	207	202	200	197	198	198	197	189	186	190	179	164	154	155	167	175	187	190	197	204	200	190
MEAN	198	201	202	205	204	205	203	200	196	192	190	184	179	173	165	160	163	170	178	183	188	191	196	196	188
MEAN Q	203	204	204	207	205	205	206	204	201	197	193	193	190	181	---	162	160	170	179	186	195	197	203	199	192
MEAN D	189	200	198	197	200	196	195	194	191	189	188	162	163	161	---	148	148	151	163	168	171	178	178	181	178

LIVINGSTON ISLAND MAGNETIC OBSERVATORY
JANUARY 2004

VERTICAL INTENSITY

						Z = -29500 nT PLUS TABULAR QUANTITIES (UNITS nT)																				
DAY	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
1		-143	-150	-141	-139	-138	-126	-117	-116	-112	-105	-114	-114	-106	-90	-109	-92	-86	-92	-92	-119	-132	-147	-146	-144	-120
2		-149	-146	-143	-140	-141	-137	-137	-134	-127	-117	-112	-108	-110	-112	-103	-108	-110	-110	-104	-113	-114	-132	-140	-140	-124
3		-139	-149	-146	-144	-135	-132	-128	-118	-112	-99	-101	-107	-100	-99	-97	-98	-102	-104	-114	-119	-130	-136	-137	-139	-120
4		-142	-142	-137	-143	-143	-137	-124	-128	-111	-108	-102	-103	-94	-94	-94	-89	-109	-116	-122	-120	-134	-141	-135	-135	-121
5		-138	-147	-146	-139	-135	-128	-130	-122	-119	-116	-117	-104	-98	-90	-79	-91	-95	-111	-117	-122	-125	-137	-138	-159	-121
6		-144	-138	-140	-127	-131	-129	-116	-125	-123	-117	-113	-108	-107	-110	-109	-106	-107	-116	-122	-121	---	---	-160	-170	-125
7	D	-136	-150	-146	-135	-127	-119	-112	-104	-103	-92	-92	-93	-89	-92	-94	-100	-120	-118	-126	-132	-150	-148	-142	-142	-119
8	Q	-141	-138	-139	-139	-139	-141	-139	-137	-130	-128	-127	-120	-115	-115	-108	-103	-105	-116	-123	-125	-129	-135	-135	-144	-128
9		-148	-152	-150	-140	-133	-129	-124	-104	-103	-104	-96	-99	-98	-102	-95	-99	-109	-119	-138	-131	-135	-138	-142	-152	-123
10		-148	-141	-141	-143	-126	-134	-135	-116	-81	-88	-109	-109	-107	-104	-99	-88	-91	-111	-126	-131	-127	-134	-140	-135	-119
11		-136	-132	-133	-134	-131	-135	-136	-130	-122	-126	-109	-110	-106	-107	-88	-99	-96	-104	-112	-130	-135	-138	-146	-144	-122
12	Q	-144	-140	-139	-140	-135	-135	-139	-133	-131	-126	-120	-114	-110	-105	---	-91	-85	-88	-100	-123	-134	-136	-152	-155	-124
13		-143	-144	-139	-135	-135	-135	-133	-131	-127	-128	-125	-121	-119	-112	-91	-97	-105	-97	-104	-115	-136	-127	-144	-155	-125
14	Q	-158	-152	-141	-138	-136	-133	-137	-137	-137	-131	-124	-116	-113	-108	-99	-97	-93	-94	-98	-105	-118	-123	-139	-134	-123
15		-141	-141	-142	-139	-135	-131	-135	-137	-130	-121	-117	-116	-112	-114	-104	-98	-118	-124	-127	-126	-139	-144	-148	-169	-130
16	D	-170	-158	-151	-145	-142	-132	-130	-135	-128	-122	-116	-96	-107	-113	-111	-109	-107	-96	-117	-129	-155	-162	-150	-159	-131
17		-156	-151	-147	-143	-136	-139	-136	-131	-132	-125	-118	-114	-107	-109	-109	-111	-109	-116	-123	-128	-134	-142	-135	-138	-129
18		-138	-142	-139	-139	-129	-123	-111	-128	-125	-122	-117	-113	-109	-97	-95	-95	-98	-113	-125	-137	-147	-141	-150	-144	-124
19		-146	-147	-141	-139	-136	-135	-133	-129	-127	-122	-122	-115	-118	-113	-100	-104	-95	-114	-127	-128	-145	-150	-165	-163	-130
20		-154	-153	-144	-135	-125	-126	-129	-127	-130	-126	-119	-110	-96	-80	-79	-91	-99	-105	-114	-111	-122	-128	-142	-155	-121
21		-155	-149	-146	-144	-141	-133	-132	-123	-119	-122	-120	-112	-108	-105	-108	-109	-113	-124	-136	-140	-152	-148	-152	-148	-131
22	D	-148	-157	-170	-160	-156	-131	-120	-119	-109	-118	-120	-59	-16	-69	-95	-106	-107	-123	-128	-151	-179	-182	-198	-181	-129
23	D	-165	-157	-150	-145	-134	-123	-129	-136	-129	-122	-114	-114	-114	-116	---	-101	-94	-120	-146	-162	-172	-180	-173	-173	-138
24		-182	-181	-155	-156	-154	-150	-138	-137	-136	-126	-115	-114	-108	-104	-102	-101	-102	-106	-112	-131	-138	-140	-150	-160	-133
25	D	-164	-148	-136	-127	-133	-148	-129	-115	-126	-125	-129	-123	-118	-116	-105	-105	-109	-117	-131	-142	-150	-164	-174	-177	-134
26		-168	-159	-153	-151	-143	-143	-142	-130	-126	-128	-130	-123	-115	-108	-94	-96	-102	-109	-121	-131	-142	-133	---	---	-129
27		-169	-156	-149	-136	-131	-145	-147	-145	-139	-133	-135	-137	-132	-117	-103	-106	-101	-106	-120	-134	-141	-143	-148	-144	-134
28		-149	-154	-133	-138	-136	-131	-119	-127	-129	-119	-117	-118	-115	-110	-101	-95	-94	-89	-107	-123	-134	-139	-142	-144	-123
29	Q	-140	-139	-138	-136	-128	-123	-126	-128	-128	-124	-120	-122	-115	-108	-102	-97	-100	-105	-119	-130	-137	-135	-139	-139	-124
30		-139	-137	-135	-134	-135	-132	-132	-132	-123	-111	-109	-98	-103	-105	-102	-92	-94	-98	-108	-125	-127	-139	-140	-139	-120
31	Q	-141	-137	-136	-132	-128	-127	-126	-124	-118	-115	-109	-106	-114	-110	-103	-97	-98	-105	-112	-123	-132	-133	-141	-134	-121
MEAN		-149	-148	-143	-140	-136	-133	-130	-127	-122	-118	-116	-110	-106	-104	-99	-99	-102	-109	-118	-128	-138	-143	-148	-151	-126
MEAN Q		-145	-141	-139	-137	-133	-132	-133	-132	-129	-125	-120	-116	-113	-109	---	-97	-96	-102	-110	-121	-130	-132	-141	-141	-124
MEAN D		-157	-154	-151	-142	-138	-130	-124	-122	-119	-116	-116	-97	-89	-101	---	-104	-108	-115	-130	-143	-161	-167	-167	-166	-130

LIVINGSTON ISLAND MAGNETIC OBSERVATORY
 JANUARY 2004

TOTAL INTENSITY

F = 35500 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	370	384	370	371	371	364	357	349	339	328	340	337	325	304	334	309	305	310	306	342	357	371	372	372	345
2	382	378	377	371	376	371	370	365	356	346	341	338	345	345	331	335	343	346	330	341	341	364	374	376	356
3	377	392	386	387	374	372	367	357	343	326	334	339	334	332	330	325	329	329	343	347	355	363	366	369	353
4	376	370	365	378	380	377	358	361	343	343	334	330	320	319	325	315	342	350	350	341	361	372	365	364	352
5	370	381	384	372	367	363	369	355	349	341	340	326	323	313	300	320	329	346	352	353	355	370	362	392	351
6	378	374	373	361	365	364	350	355	349	341	337	332	329	333	332	330	336	352	358	351	---	---	404	397	355
7 D	358	382	379	366	360	345	343	338	349	330	321	315	307	310	308	314	346	346	359	357	376	371	362	365	346
8 Q	366	363	367	368	370	372	370	366	358	354	351	343	336	333	325	322	325	344	352	350	359	372	369	374	354
9	379	382	381	373	364	363	356	343	349	351	335	333	319	316	302	308	331	345	382	362	361	371	376	391	353
10	386	376	379	386	369	375	375	351	322	320	338	332	327	320	307	291	299	327	350	354	351	360	367	359	347
11	362	359	364	366	362	368	368	360	350	360	338	343	336	332	298	310	304	314	328	355	357	361	369	370	347
12 Q	373	371	372	376	370	371	376	367	363	357	351	346	339	329	---	304	293	302	325	349	363	357	381	381	352
13	368	372	367	365	365	364	361	360	353	353	351	344	342	338	313	317	332	319	325	337	364	350	367	384	350
14 Q	392	387	371	372	370	370	377	377	374	365	355	345	343	335	318	316	315	316	320	329	345	353	368	359	353
15	367	372	377	376	374	372	377	379	372	360	357	354	346	344	319	304	326	340	344	348	363	363	364	385	358
16 D	389	390	381	379	379	369	367	371	361	353	346	321	342	343	337	332	329	306	339	348	374	385	367	379	358
17	378	379	375	374	367	372	368	362	362	355	345	339	327	327	322	322	322	336	342	351	359	367	359	367	353
18	369	374	372	374	360	359	343	358	353	347	339	333	328	315	309	310	313	330	345	367	376	365	376	369	349
19	372	377	371	372	370	370	368	362	360	352	353	347	350	338	321	325	310	330	345	343	364	369	391	385	356
20	377	380	373	366	351	353	356	355	357	353	343	330	311	289	285	297	307	318	333	326	339	342	362	380	341
21	378	374	374	376	375	365	362	351	351	350	350	340	330	316	314	315	318	334	354	358	376	371	377	371	353
22 D	376	393	419	414	416	380	367	368	354	361	350	246	215	271	294	302	296	319	319	348	374	385	408	390	349
23 D	368	364	360	357	349	344	341	349	337	336	339	325	326	324	---	296	282	314	344	366	371	387	378	383	345
24	391	401	378	387	390	386	371	367	362	351	345	339	325	315	310	309	313	321	323	346	356	359	369	379	354
25 D	390	372	343	330	334	356	345	326	333	333	355	352	339	327	307	307	310	318	338	347	354	367	380	382	344
26	375	370	371	375	368	369	370	354	348	347	350	341	330	320	300	301	308	319	336	347	357	349	---	---	346
27	381	360	358	351	351	365	370	369	355	348	351	358	350	332	313	317	311	319	335	356	369	374	381	371	352
28	380	372	355	365	365	361	348	354	354	342	340	339	333	328	319	311	309	298	323	339	354	365	370	371	346
29 Q	368	368	370	370	360	353	355	358	356	350	347	357	348	334	322	311	310	317	334	351	365	362	369	366	350
30	369	370	369	369	369	364	366	369	361	341	335	325	332	330	327	313	309	313	325	351	354	370	370	367	349
31 Q	373	370	370	366	360	358	355	354	349	347	337	332	341	332	318	307	309	322	332	347	356	361	371	364	347
MEAN	375	376	373	371	368	366	362	358	352	347	343	335	329	324	315	313	316	326	338	349	360	366	373	375	350
MEAN Q	375	372	370	370	366	365	367	364	360	355	348	345	341	333	---	312	310	320	333	345	358	361	372	369	351
MEAN D	376	380	376	369	368	359	353	350	347	343	342	312	306	315	---	310	313	320	340	353	370	379	379	380	348

LIVINGSTON ISLAND MAGNETIC OBSERVATORY

DECLINATION EAST

APRIL 2004

D = 14 DEGREES PLUS TABULAR QUANTITIES (UNITS 0.1 MINUTES)

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 Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2 Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	428	425	423	---
3 D	423	421	400	358	382	401	415	399	411	408	396	415	392	402	396	444	479	539	574	539	525	522	538	512	446	
4	526	459	402	430	438	439	438	439	439	434	427	415	403	400	411	427	451	466	474	467	450	437	430	426	439	
5 D	425	423	424	423	422	422	414	413	416	420	423	412	400	395	412	458	467	490	531	566	544	496	476	390	444	
6 D	423	369	353	394	387	330	353	424	428	441	478	455	446	427	422	437	457	473	480	471	441	434	382	403	421	
7	425	417	386	393	410	401	405	436	438	419	419	419	410	414	421	434	455	473	472	461	407	418	444	384	423	
8	417	433	431	408	373	405	416	---	---	---	---	---	---	---	425	455	464	480	475	461	440	413	411	429	---	
9 D	428	416	393	348	331	405	423	426	447	416	409	408	403	406	---	---	---	---	---	---	442	444	435	428	---	
10	427	424	411	367	388	394	401	415	425	403	412	406	399	397	408	427	444	456	459	450	441	445	443	412	419	
11	414	390	391	408	406	409	434	431	416	---	---	---	410	405	411	433	455	---	---	---	---	---	---	---	---	
12	---	---	---	---	---	---	---	424	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
13	---	---	---	---	---	---	---	---	---	---	---	416	---	---	413	433	446	454	453	446	435	429	425	427	---	
14	427	422	398	392	411	415	420	424	425	425	422	413	396	390	402	427	452	461	454	442	432	428	426	423	422	
15	421	417	417	416	412	420	423	421	422	421	413	402	393	386	400	426	448	460	461	460	455	444	387	427	423	
16	409	418	419	412	408	364	343	373	407	454	433	430	428	415	417	436	447	458	472	465	438	435	437	413	422	
17	410	420	418	408	403	395	404	418	423	422	415	409	397	399	408	431	453	469	479	465	450	439	424	414	424	
18	415	419	418	410	405	383	389	420	448	408	413	408	400	416	422	435	454	466	472	467	450	443	431	438	426	
19	411	368	393	397	386	382	412	419	417	423	424	413	399	401	412	432	449	459	457	447	437	432	428	424	417	
20 Q	405	405	412	402	405	412	416	415	410	422	413	404	392	393	411	435	453	456	445	433	426	425	427	428	419	
21	428	424	422	418	389	388	414	413	414	412	409	408	396	397	408	430	451	458	453	440	431	430	429	425	420	
22 Q	421	421	420	420	419	417	414	410	408	407	406	401	393	401	411	429	447	453	455	439	434	428	426	426	421	
23 D	424	418	421	405	403	405	401	403	398	426	394	395	390	447	455	451	456	464	468	459	457	471	455	453	430	
24	437	428	421	422	416	415	405	402	415	400	388	417	399	399	428	437	459	458	457	443	437	436	431	429	424	
25	423	421	419	404	364	356	373	385	393	378	397	412	405	399	409	423	441	451	454	449	443	435	431	426	412	
26	425	419	410	399	412	415	427	419	424	424	421	415	405	402	410	426	---	442	445	433	430	---	---	---	421	
27	---	---	---	---	---	---	---	---	---	---	---	406	---	---	---	---	---	---	448	---	---	---	---	---	---	
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
29 Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
30	---	---	---	---	362	350	400	418	412	421	419	413	405	405	415	434	446	443	435	435	447	442	468	442	---	
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN D	425	410	398	385	385	393	401	413	420	422	420	417	406	415	420	---	---	---	---	501	482	473	457	437	431	

LIVINGSTON ISLAND MAGNETIC OBSERVATORY
 APRIL 2004

HORIZONTAL INTENSITY

H = 20000 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 Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
2 Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	191	191	191	---
3 D	192	195	191	181	177	189	195	183	181	188	193	197	191	176	165	146	148	137	132	133	145	156	114	114	167	
4	88	129	129	140	148	151	152	156	154	158	159	161	162	156	145	142	141	151	163	173	179	179	180	185	153	
5 D	183	183	185	188	189	191	191	191	192	192	192	190	184	167	149	147	151	142	127	115	134	144	132	144	167	
6 D	138	135	172	165	174	194	171	177	171	177	171	178	156	153	137	131	136	140	149	149	147	157	155	163	158	
7	161	167	169	161	170	192	175	172	176	177	175	171	170	160	154	148	147	156	165	165	153	159	161	158	165	
8	157	169	175	183	192	175	191	---	---	---	---	---	---	---	144	139	148	160	165	170	170	167	169	179	---	
9 D	181	178	185	177	188	179	187	194	200	189	179	177	170	161	---	---	---	---	---	---	173	172	174	179	---	
10	182	183	188	188	180	177	180	175	185	179	178	177	169	156	148	144	149	161	171	175	166	158	165	170	171	
11	175	160	155	174	181	184	186	188	184	---	---	---	174	165	152	148	147	---	---	---	---	---	---	---	---	
12	---	---	---	---	---	---	---	187	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
13	---	---	---	---	---	---	---	---	---	---	---	183	---	---	163	161	164	171	176	173	177	180	176	177	---	
14	178	181	181	183	183	182	184	183	182	183	184	185	183	172	160	156	160	167	173	175	175	175	177	181	177	
15	180	183	185	184	184	183	187	189	191	193	195	192	185	173	162	158	160	166	172	174	178	167	156	170	178	
16	183	184	188	191	194	195	190	188	182	178	176	172	167	163	157	141	145	151	161	162	155	166	171	165	172	
17	171	176	178	179	194	196	184	181	183	184	181	179	176	163	153	144	150	159	169	168	169	172	173	172	173	
18	178	182	186	184	183	191	180	182	190	181	179	179	174	169	159	152	150	157	160	165	172	167	162	167	173	
19	168	169	167	172	180	175	176	183	181	182	184	180	175	165	155	152	159	166	172	177	180	180	180	176	173	
20 Q	180	183	185	185	186	187	186	188	184	183	184	183	177	166	156	150	159	172	182	190	189	186	187	183	180	
21	185	188	188	191	195	182	185	185	186	186	188	187	184	174	164	155	158	171	178	175	182	182	186	184	181	
22 Q	187	189	190	189	191	189	191	190	191	191	190	189	180	172	162	159	164	172	179	183	189	191	191	191	184	
23 D	194	198	190	196	184	191	193	194	193	195	188	184	175	162	156	151	147	149	162	165	169	154	157	166	175	
24	174	178	181	179	180	181	179	174	178	186	187	182	175	163	148	152	159	166	172	176	176	174	179	181	174	
25	183	182	182	190	179	189	178	186	211	196	184	172	169	163	157	150	154	160	161	167	172	176	172	167	175	
26	176	181	177	177	179	180	185	185	178	179	179	179	174	165	156	152	---	171	177	176	179	---	---	---	175	
27	---	---	---	---	---	---	---	---	---	---	---	187	---	---	---	---	---	---	176	---	---	---	---	---	---	
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
29 Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
30	---	---	---	---	175	170	165	178	180	174	175	176	173	167	162	162	166	176	183	189	158	123	131	157	---	
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
MEAN Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
MEAN D	178	178	185	181	182	189	187	188	187	188	185	185	175	164	152	---	---	---	---	144	154	157	146	153	169	

LIVINGSTON ISLAND MAGNETIC OBSERVATORY
 APRIL 2004

VERTICAL INTENSITY

HOUR (UT) DAY	Z = -29500 nT PLUS TABULAR QUANTITIES (UNITS nT)						Z = -29500 nT PLUS TABULAR QUANTITIES (UNITS nT)																	MEAN		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22		23	
1 Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2 Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-119	-116	-114	---
3 D	-113	-114	-115	-109	-104	-103	-93	-101	-107	-112	-111	-107	-107	-100	-95	-82	-81	-76	-82	-102	-139	-138	-156	-151	-108	
4	-168	-147	-132	-143	-140	-136	-131	-129	-128	-129	-129	-128	-128	-123	-116	-111	-103	-105	-113	-120	-125	-123	-122	-124	-127	
5 D	-119	-118	-118	-118	-117	-117	-116	-116	-115	-114	-112	-113	-113	-107	-99	-98	-105	-102	-96	-106	-141	-144	-141	-143	-116	
6 D	-136	-133	-115	-129	-128	-102	-79	-93	-112	-111	-94	-112	-103	-111	-109	-108	-108	-109	-114	-125	-129	-134	-133	-127	-115	
7	-125	-125	-119	-115	-118	-116	-111	-110	-114	-117	-116	-115	-116	-111	-110	-109	-108	-112	-119	-125	-129	-127	-126	-124	-117	
8	-118	-124	-126	-124	-116	-104	-97	---	---	---	---	---	---	---	-103	-98	-105	-111	-115	-123	-128	-127	-123	-125	---	
9 D	-124	-122	-120	-109	-94	-86	-104	-104	-91	-92	-106	-114	-114	-114	---	---	---	---	---	---	-129	-127	-124	-125	---	
10	-123	-120	-120	-111	-105	-107	-103	-100	-107	-109	-112	-118	-117	-113	-109	-105	-106	-109	-115	-121	-120	-115	-120	-127	-113	
11	-124	-119	-114	-120	-121	-117	-111	-111	-111	---	---	---	-115	-112	-107	-101	-99	---	---	---	---	---	---	---	---	
12	---	---	---	---	---	---	---	-99	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
13	---	---	---	---	---	---	---	---	---	---	-112	---	---	-107	-104	-106	-110	-114	-115	-116	-120	-116	-116	-116	---	
14	-115	-117	-115	-110	-110	-108	-107	-106	-107	-109	-111	-113	-115	-110	-103	-98	-101	-107	-115	-119	-118	-118	-117	-118	-111	
15	-116	-117	-116	-114	-111	-110	-111	-112	-111	-111	-112	-113	-110	-107	-101	-99	-99	-102	-108	-111	-115	-115	-114	-118	-111	
16	-121	-119	-119	-117	-111	-99	-85	-75	-76	-87	-104	-106	-108	-111	-107	-98	-103	-108	-113	-115	-118	-121	-123	-122	-107	
17	-122	-121	-120	-117	-108	-102	-105	-109	-110	-108	-108	-110	-113	-109	-106	-100	-101	-106	-114	-116	-117	-118	-121	-119	-112	
18	-118	-118	-117	-116	-113	-107	-100	-103	-95	-102	-107	-110	-109	-107	-103	-100	-97	-104	-108	-114	-122	-120	-117	-118	-109	
19	-121	-117	-115	-117	-116	-111	-111	-112	-112	-113	-113	-113	-112	-106	-103	-102	-105	-108	-111	-117	-118	-117	-115	-113	-112	
20 Q	-114	-114	-113	-112	-110	-110	-108	-107	-106	-106	-111	-113	-112	-106	-98	-96	-103	-110	-116	-120	-116	-113	-111	-108	-110	
21	-108	-110	-109	-110	-110	-100	-105	-107	-107	-108	-109	-108	-110	-107	-103	-98	-101	-110	-116	-113	-117	-114	-115	-112	-109	
22 Q	-111	-110	-109	-107	-108	-107	-108	-107	-106	-107	-106	-108	-106	-103	-100	-99	-102	-110	-115	-117	-117	-116	-113	-110	-109	
23 D	-111	-112	-108	-109	-104	-105	-105	-107	-105	-86	-93	-101	-105	-90	-95	-98	-98	-104	-113	-116	-119	-112	-115	-121	-105	
24	-124	-123	-120	-116	-113	-108	-108	-105	-107	-113	-109	-103	-108	-102	-92	-100	-109	-113	-118	-119	-118	-114	-116	-116	-111	
25	-114	-113	-112	-114	-103	-102	-98	-100	-91	-79	-84	-95	-104	-108	-108	-103	-103	-107	-109	-113	-117	-118	-115	-112	-105	
26	-115	-117	-113	-109	-109	-107	-105	-105	-103	-106	-108	-110	-110	-108	-103	-101	---	-111	-113	-112	-114	---	---	---	-109	
27	---	---	---	---	---	---	---	---	---	---	---	-105	---	---	---	---	---	---	-107	---	---	---	---	---	---	
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
29 Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
30	---	---	---	---	-93	-92	-97	-105	-103	-104	-108	-110	-111	-108	-105	-102	-105	-112	-115	-116	-102	-88	-101	-122	---	
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
MEAN Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
MEAN D	-121	-120	-115	-115	-109	-103	-100	-104	-106	-103	-103	-109	-108	-104	-101	---	---	---	---	-114	-132	-131	-134	-133	-111	

LIVINGSTON ISLAND MAGNETIC OBSERVATORY

APRIL 2004

TOTAL INTENSITY

F = 35500 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	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2 Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	346	344	343	---
3 D	342	344	343	332	326	332	327	326	331	339	341	339	336	322	312	290	291	280	282	300	337	343	334	329	324
4	329	334	322	338	340	338	334	335	332	336	336	337	338	330	318	312	305	313	325	338	344	343	342	347	332
5 D	342	341	342	344	344	345	344	343	344	343	341	341	337	323	306	304	312	304	292	292	333	340	331	340	330
6 D	331	326	333	340	344	334	302	317	330	332	315	333	314	319	308	303	307	310	319	327	330	340	338	337	324
7	335	338	334	327	334	345	331	329	334	336	335	332	332	322	317	313	312	320	332	336	333	335	336	332	330
8	326	338	344	346	344	325	328	---	---	---	---	---	---	---	306	300	311	322	329	338	342	339	337	345	---
9 D	345	341	343	330	324	312	332	336	328	323	329	334	330	325	---	---	---	---	---	---	345	342	341	344	---
10	345	343	345	338	328	329	327	322	333	331	333	337	332	321	313	309	313	321	331	339	333	324	332	341	330
11	341	328	322	337	342	340	337	338	336	---	---	---	334	326	314	307	305	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	327	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	336	---	---	321	317	321	328	334	333	336	341	335	336	---
14	336	339	338	334	334	332	333	331	331	333	335	338	338	329	315	309	314	323	333	337	337	336	336	340	332
15	338	340	340	339	336	334	338	340	340	341	343	342	335	326	315	311	312	318	327	330	336	329	322	334	332
16	343	342	345	345	341	332	318	309	306	313	325	325	324	324	318	301	307	314	324	327	325	334	338	334	326
17	337	339	340	338	339	335	330	332	334	334	332	332	333	323	315	304	309	317	330	331	332	335	338	335	330
18	339	340	342	340	337	337	325	328	326	327	329	332	328	324	315	309	305	315	320	327	338	334	329	332	328
19	335	332	330	334	337	330	331	337	335	336	337	336	332	321	313	310	316	323	329	337	340	339	337	334	331
20 Q	336	338	338	337	336	336	335	335	332	331	336	337	332	322	310	304	315	329	339	346	343	339	337	333	332
21	334	337	337	339	342	326	331	332	334	335	336	335	335	327	318	309	313	328	337	332	339	337	340	337	332
22 Q	338	338	337	336	337	335	337	336	336	336	336	336	329	322	314	312	317	328	336	340	344	344	342	339	334
23 D	341	344	337	340	330	335	336	338	336	321	323	327	325	306	307	306	304	311	324	330	334	320	324	334	326
24	341	342	341	337	335	332	331	325	329	338	336	328	328	316	300	309	320	327	335	338	337	333	337	338	331
25	338	337	336	342	326	331	321	328	335	316	314	315	322	321	318	310	313	319	321	328	334	337	332	327	326
26	335	339	334	330	331	330	331	331	325	329	331	332	330	323	314	310	---	328	334	332	335	---	---	---	329
27	---	---	---	---	---	---	---	---	---	---	---	332	---	---	---	---	---	---	328	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
29 Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	316	312	313	327	327	324	328	331	329	324	319	316	321	332	338	343	314	283	298	330	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN D	340	339	340	337	334	332	328	332	334	332	330	335	329	319	310	---	---	---	---	316	336	337	334	337	327

LIVINGSTON ISLAND MAGNETIC OBSERVATORY						DECLINATION EAST																					
MAY 2004						D = 14 DEGREES PLUS TABULAR QUANTITIES (UNITS 0.1 MINUTES)																					
HOURL (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	430	421	383	328	367	376	418	426	412	439	427	425	409	410	419	441	449	445	441	435	432	433	436	404	417		
2	350	396	411	410	417	416	416	414	416	416	414	413	408	407	416	428	437	437	433	429	420	416	427	427	416		
3	425	421	413	395	401	417	412	421	428	416	411	413	408	409	418	432	441	444	438	437	421	405	395	413	418		
4	418	420	419	387	371	403	416	436	416	419	420	416	411	418	421	---	---	---	---	432	434	413	---	---	---		
5	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	437	427	421	---		
6		422	390	392	415	417	414	419	434	415	---	---	418	416	413	422	435	443	444	440	434	430	424	381	397	419	
7	D	411	404	383	333	340	395	389	413	440	421	421	432	424	417	435	451	466	461	451	438	445	---	---	---	418	
8		---	---	405	396	404	425	422	---	---	---	---	---	---	---	---	---	---	---	---	447	443	---	426	389	---	
9		408	410	403	408	383	395	407	423	421	419	418	420	424	422	413	423	436	435	431	428	425	424	424	423	418	
10		419	418	415	390	397	410	418	416	410	413	416	411	409	407	411	425	440	444	437	436	429	429	428	425	419	
11		398	392	373	350	382	---	---	---	---	414	413	408	402	397	398	409	426	436	440	---	434	435	377	441	---	
12		433	435	391	319	398	412	430	430	433	428	422	416	411	---	---	419	429	---	---	---	---	---	---	---	---	
13		---	---	---	---	389	398	386	411	377	409	422	423	418	414	421	434	443	446	456	442	440	415	436	431	---	
14		424	414	400	385	379	384	419	429	428	423	420	415	407	411	421	431	439	438	432	427	422	418	419	421	417	
15		421	403	397	410	411	403	383	396	413	417	423	414	411	411	415	426	438	441	441	436	432	428	427	432	418	
16	Q	416	411	409	401	402	405	397	408	413	423	423	415	408	409	413	422	433	441	438	430	426	426	423	426	417	
17	Q	422	416	407	398	411	415	415	413	414	413	413	408	407	403	410	423	431	431	426	419	415	413	414	405	414	
18	Q	419	419	418	410	406	416	416	414	411	420	409	409	406	409	416	424	434	437	429	421	416	414	414	416	417	
19		417	417	414	414	403	394	407	412	411	411	408	408	413	411	413	433	460	464	452	428	425	419	421	418	420	
20	D	418	419	418	416	412	408	398	380	392	377	409	394	406	411	418	428	439	439	437	430	441	431	440	433	416	
21		404	416	424	412	400	413	409	396	397	405	415	419	415	417	422	429	432	436	435	428	422	423	422	419	417	
22		423	422	420	416	412	393	398	390	409	418	403	415	411	413	415	426	433	438	434	432	425	422	420	419	417	
23		420	393	368	393	416	378	---	---	---	---	418	---	410	---	415	417	432	444	452	436	424	427	426	428	---	
24		387	410	414	410	413	413	407	---	---	---	---	---	---	---	---	---	---	436	435	---	---	---	---	421	---	
25		419	420	418	407	415	414	411	411	398	---	---	413	414	413	416	424	433	---	---	---	---	---	---	---	---	
26	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	435	438	434	426	418	415	413	413	---		
27	Q	413	409	410	413	413	412	408	410	403	412	---	---	---	---	---	---	---	---	427	419	415	412	409	411	---	
28		411	411	407	415	413	412	409	406	397	383	390	393	396	404	414	428	444	450	442	436	437	455	448	460	419	
29	D	433	403	357	328	357	378	412	414	430	434	437	465	425	413	419	428	438	439	433	424	427	427	416	361	412	
30		401	395	408	413	414	401	410	412	415	421	437	432	428	422	418	423	434	431	435	443	447	443	442	433	423	
31	D	424	341	308	386	411	415	435	429	403	415	426	428	442	425	424	426	431	431	429	425	426	421	422	420	414	
MEAN		---	409	400	391	399	404	---	---	---	---	---	---	---	---	---	---	438	---	---	---	429	---	---	---	---	
MEAN Q		---	---	---	---	409	---	---	---	---	---	---	---	---	---	---	---	---	---	---	431	423	418	416	415	414	---
MEAN D		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	432	436	---	---	---	---

LIVINGSTON ISLAND MAGNETIC OBSERVATORY							HORIZONTAL INTENSITY																			
MAY 2004							H = 20000 nT PLUS TABULAR QUANTITIES (UNITS nT)																			
HOURLY (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	167	170	163	162	157	161	172	177	179	176	172	171	172	171	164	163	162	166	169	170	171	168	166	160	168	
2	170	157	165	174	180	181	182	182	182	183	186	183	176	171	165	165	165	170	175	174	171	172	171	171	174	
3	177	179	179	188	186	181	186	186	196	197	190	187	182	177	169	166	173	181	181	179	179	175	170	170	181	
4	172	182	182	177	176	176	179	187	188	181	182	185	184	173	168	---	---	---	---	178	174	160	---	---	---	
5	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	167	164	178	---	
6		180	179	179	181	185	185	194	185	---	---	185	175	168	159	157	162	172	176	173	176	176	175	174	177	
7	D	172	171	178	178	171	188	171	180	182	182	178	177	165	153	142	153	165	164	165	164	---	---	---	170	
8		---	---	189	180	178	186	---	---	---	---	---	---	---	---	---	---	---	---	169	164	---	167	176	---	
9		171	169	175	182	178	174	179	182	183	185	185	182	177	169	165	162	171	176	176	177	177	176	175	176	
10		174	177	179	182	175	176	182	183	181	179	181	183	183	180	173	167	166	170	174	172	171	173	174	171	176
11		148	155	174	185	176	---	---	---	185	184	186	186	183	175	168	170	170	172	---	175	173	136	139	---	
12		138	143	145	139	149	165	168	171	173	178	177	180	179	---	---	168	168	---	---	---	---	---	---	---	
13		---	---	---	---	171	170	173	194	184	168	172	173	172	167	161	158	160	158	155	160	149	156	160	153	---
14		155	163	168	166	166	169	171	175	179	181	183	184	183	175	168	164	168	175	178	179	183	185	183	179	174
15		183	152	147	162	169	169	170	167	169	173	179	181	179	173	166	161	163	167	171	170	169	167	161	155	168
16	Q	153	157	163	163	172	179	178	174	177	181	185	183	181	176	170	168	170	172	176	177	176	171	165	169	172
17	Q	173	178	181	180	181	180	180	179	179	181	183	185	182	176	170	168	172	177	180	182	184	183	176	173	179
18	Q	176	181	181	187	184	183	184	186	187	189	188	187	186	181	175	173	176	184	190	191	190	190	189	188	184
19		188	188	189	189	189	186	184	183	183	182	184	186	184	180	175	166	166	174	178	177	182	183	183	184	182
20	D	181	182	184	186	188	187	183	181	177	180	202	186	174	167	165	169	173	176	181	182	171	156	165	170	178
21		160	170	175	175	179	177	182	180	176	174	176	178	180	176	172	172	169	171	178	181	179	179	180	181	176
22		181	181	182	180	181	181	178	178	184	180	179	174	179	178	174	171	172	177	178	180	180	180	178	180	179
23		183	185	184	173	179	175	---	---	---	---	179	---	184	---	169	168	171	171	171	173	179	176	175	171	---
24		176	163	175	177	179	182	186	---	---	---	---	---	---	---	---	---	169	175	---	---	---	---	---	177	---
25		174	177	177	176	176	175	175	182	178	---	---	178	178	174	170	167	168	---	---	---	---	---	---	---	---
26	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	168	174	181	185	186	186	185	185	---	
27	Q	184	183	181	178	180	180	179	186	179	179	---	---	---	---	---	---	---	180	182	182	182	181	182	---	
28		183	183	181	181	182	182	182	183	184	183	180	180	179	177	169	164	169	172	170	166	150	145	146	138	172
29	D	135	141	151	138	146	157	164	167	177	175	186	192	182	170	165	164	162	167	171	173	169	163	152	164	164
30		149	156	164	173	176	177	174	177	181	184	198	187	189	175	170	168	172	174	173	156	151	146	134	148	169
31	D	157	161	184	159	168	172	187	181	184	174	176	178	177	177	177	173	175	177	177	176	164	168	168	169	173
MEAN		---	170	174	174	175	176	---	---	---	---	---	---	---	---	---	---	167	---	---	---	173	---	---	---	---
MEAN Q		---	---	---	---	179	---	---	---	---	---	---	---	---	---	---	---	172	176	181	183	184	182	179	180	---
MEAN D		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	173	168	---	---	---	---

LIVINGSTON ISLAND MAGNETIC OBSERVATORY

MAY 2004

VERTICAL INTENSITY

HOURL (UT) DAY	Z = -29500 nT PLUS TABULAR QUANTITIES (UNITS nT)						VERTICAL INTENSITY																	MEAN		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1	-126	-123	-115	-97	-97	-103	-108	-104	-102	-104	-108	-110	-114	-113	-106	-103	-105	-111	-112	-111	-112	-109	-108	-110	-109	
2	-110	-107	-111	-112	-116	-115	-112	-110	-109	-107	-108	-107	-105	-104	-102	-101	-103	-107	-110	-109	-107	-106	-106	-107	-108	
3	-110	-111	-110	-109	-105	-104	-108	-105	-103	-97	-98	-102	-103	-104	-104	-102	-105	-108	-108	-105	-108	-108	-106	-104	-105	
4	-104	-110	-108	-104	-100	-100	-98	-99	-105	-102	-104	-107	-108	-101	-100	---	---	---	---	-109	-107	-103	---	---	---	
5	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-109	-109	-115	---	
6	-112	-111	-107	-106	-105	-103	-100	-100	-98	---	---	-105	-103	-104	-102	-101	-103	-109	-111	-108	-110	-110	-110	-105	-105	
7	D	-103	-105	-99	-90	-92	-87	-91	-86	-99	-107	-104	-104	-109	-106	-100	-93	-101	-111	-113	-114	-112	---	---	-102	
8	-110	-111	-110	-109	-105	-104	-108	-105	-103	-97	-98	-102	-103	-104	-104	-102	-105	-108	-108	-105	-108	-108	-106	-104	-105	
9	-108	-107	-107	-104	-102	-100	-102	-105	-107	-107	-108	-107	-104	-104	-102	-100	-98	-104	-108	-109	-110	-109	-108	-107	-105	
10	-106	-107	-106	-104	-100	-101	-102	-102	-102	-102	-104	-106	-105	-104	-102	-98	-97	-101	-105	-106	-106	-107	-109	-109	-104	
11	-103	-105	-111	-107	-101	---	---	---	---	-105	-104	-105	-105	-105	-101	-97	-98	-99	-101	---	-105	-104	-96	-96	---	
12	-110	-118	-118	-111	-113	-119	-113	-111	-107	-108	-110	-112	-112	---	---	-104	-101	---	---	---	---	---	---	---	---	
13	---	---	---	---	-99	-95	-92	-80	-82	-89	-102	-106	-108	-109	-107	-104	-104	-102	-99	-107	-104	-111	-114	-110	---	
14	-112	-116	-115	-111	-103	-98	-104	-107	-109	-109	-108	-109	-110	-105	-102	-100	-101	-104	-107	-107	-107	-107	-106	-104	-107	
15	-103	-93	-100	-110	-112	-109	-103	-103	-105	-106	-108	-107	-107	-107	-105	-103	-104	-106	-107	-107	-106	-105	-104	-102	-105	
16	Q	-106	-111	-114	-111	-111	-104	-104	-106	-106	-106	-105	-107	-104	-101	-101	-101	-101	-105	-107	-106	-103	-99	-102	-105	
17	Q	-106	-107	-107	-105	-105	-104	-103	-103	-104	-104	-104	-103	-102	-99	-99	-99	-102	-105	-107	-107	-105	-100	-98	-103	
18	Q	-99	-102	-102	-102	-101	-101	-102	-102	-99	-98	-99	-100	-99	-98	-100	-100	-104	-107	-106	-104	-102	-100	-98	-101	
19	-98	-98	-98	-99	-99	-97	-97	-98	-98	-98	-99	-100	-99	-96	-96	-91	-90	-98	-104	-107	-108	-107	-105	-103	-99	
20	D	-101	-99	-100	-101	-101	-102	-97	-93	-96	-94	-88	-80	-90	-94	-96	-98	-100	-101	-106	-107	-99	-93	-100	-105	-98
21	-104	-105	-106	-105	-103	-101	-97	-94	-97	-98	-100	-101	-102	-98	-97	-97	-99	-101	-105	-106	-104	-103	-102	-103	-101	
22	-101	-101	-100	-99	-100	-97	-97	-98	-91	-88	-94	-94	-98	-100	-98	-97	-97	-99	-101	-103	-103	-103	-101	-102	-98	
23	-103	-102	-96	-92	-89	-90	---	---	---	---	-100	---	-102	---	-96	-97	-98	-97	-95	-102	-107	-104	-102	-101	---	
24	-104	-97	-104	-103	-101	-99	-97	---	---	---	---	---	---	---	---	---	---	-101	-103	---	---	---	---	-102	---	
25	-100	-101	-99	-99	-98	-97	-97	-97	-96	---	---	-99	-99	-98	-98	-97	-98	---	---	---	---	---	---	---	---	
26	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-97	-100	-104	-106	-106	-105	-102	-101	---	
27	Q	-99	-98	-98	-96	-96	-97	-96	-96	-93	-94	---	---	---	---	---	---	---	-103	-104	-103	-103	-101	-100	---	
28	-101	-100	-97	-97	-97	-97	-97	-97	-97	-96	-94	-95	-95	-96	-94	-90	-94	-99	-98	-97	-91	-93	-97	-101	-96	
29	D	-108	-113	-116	-101	-103	-106	-108	-108	-104	-101	-99	-96	-96	-100	-101	-103	-102	-104	-107	-107	-104	-102	-102	-106	-104
30	-99	-105	-109	-108	-106	-104	-102	-102	-103	-101	-97	-88	-96	-95	-98	-98	-102	-103	-100	-89	-92	-98	-102	-109	-100	
31	D	-114	-114	-104	-93	-105	-103	-98	-93	-97	-92	-97	-98	-94	-101	-102	-101	-102	-104	-103	-101	-94	-97	-99	-100	-100
MEAN	---	-106	-106	-103	-102	-101	---	---	---	---	---	---	---	---	---	---	-100	---	---	---	-105	---	---	---	---	
MEAN Q	---	---	---	---	-102	---	---	---	---	---	---	---	---	---	---	---	-99	-101	-105	-106	-105	-103	-100	-100	---	
MEAN D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-108	-104	---	---	---	---	

LIVINGSTON ISLAND MAGNETIC OBSERVATORY							TOTAL INTENSITY																							
MAY 2004							QUANTITIES (UNITS nT)																							
HOUR (UT)	0	1	2	3	4	5	F = 35500	nT	PLUS	TABULAR	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	MEAN	
DAY																														
1	338	338	328	312	309	316	326	326	326	325	327	328	331	330	320	318	319	325	328	328	329	325	323	322						325
2	327	317	325	331	337	337	336	334	333	332	334	332	327	323	317	316	319	325	330	329	325	325	325	326						328
3	331	332	332	337	332	329	334	332	335	332	329	330	328	326	321	318	325	332	331	327	330	328	324	322						329
4	324	334	332	326	322	323	322	328	333	326	329	333	333	322	317	---	---	---	---	331	327	316	---	---						---
5	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---						---
6		334	333	329	330	331	328	332	326	---	---	331	324	321	314	312	317	327	331	327	331	330	330	325						327
7	D	322	324	322	315	313	322	308	324	331	329	327	330	321	309	298	310	325	326	327	325	---	---	---						320
8		---	---	335	325	325	332	---	---	---	---	---	---	---	---	---	---	---	---	---	328	323	---	327	333					---
9		326	324	327	329	325	323	328	332	332	334	333	329	326	320	316	312	323	329	330	331	330	328	327						327
10		326	329	329	329	322	327	328	327	326	328	331	330	327	322	316	315	320	326	325	325	326	329	327						325
11		309	315	330	333	323	---	---	---	---	332	330	332	332	330	323	316	317	318	321	---	326	324	296	298					---
12		309	318	319	311	317	329	328	326	329	331	335	334	---	---	321	319	---	---	---	---	---	---	---						---
13		---	---	---	---	318	315	314	316	312	309	321	326	327	325	320	316	317	314	310	319	310	320	325	318					---
14		321	329	330	326	319	323	327	331	333	333	335	334	326	319	316	319	325	329	330	332	333	331	327						327
15		329	303	306	323	329	322	319	323	325	330	331	330	326	321	316	318	323	325	325	323	322	317	312						322
16	Q	314	321	327	325	329	327	325	328	330	332	331	331	326	320	319	320	321	326	328	327	322	315	320						325
17	Q	325	329	331	329	330	328	327	326	326	328	329	331	328	324	318	317	320	324	329	332	332	331	322	319					326
18	Q	321	327	327	330	327	328	329	330	329	328	328	328	324	320	320	322	330	335	335	334	332	329	327						328
19		327	327	328	329	329	325	324	325	324	324	326	328	326	321	319	309	308	320	327	329	332	332	330	329					325
20	D	326	325	327	329	330	330	324	319	320	320	327	312	313	312	313	316	320	323	330	331	319	305	316	323					321
21		317	323	327	325	326	323	324	319	319	319	322	324	326	320	318	318	317	321	327	330	327	326	326	327					323
22		326	326	326	324	325	322	321	322	319	314	319	316	322	323	319	317	318	322	325	326	327	327	324	326					322
23		328	329	324	314	315	313	---	---	---	---	324	---	328	---	315	315	318	317	315	322	329	326	324	320					---
24		325	313	325	325	325	324	325	---	---	---	---	---	---	---	---	---	319	324	---	---	---	---	324	---					---
25		321	323	322	321	321	320	320	323	320	---	---	323	322	319	317	315	316	---	---	---	---	---	---	---					---
26	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	315	321	328	332	332	332	329	328						---
27	Q	326	325	324	320	321	322	320	325	318	319	---	---	---	---	---	---	---	---	327	328	328	328	326	326					---
28		327	326	323	322	323	323	323	324	324	323	320	320	319	320	313	307	314	320	317	314	300	299	303	302					317
29	D	306	314	321	301	308	316	322	324	326	322	327	328	322	319	317	317	316	320	326	326	322	316	311	321					319
30		307	315	323	327	327	326	323	325	327	327	332	318	326	317	317	316	322	323	321	302	301	303	300	314					318
31	D	323	325	330	307	321	322	327	319	324	314	320	321	318	324	324	321	323	326	325	323	311	315	316	318					321
MEAN		---	324	326	323	323	323	---	---	---	---	---	---	---	---	---	---	317	---	---	---	325	---	---	---					---
MEAN Q		---	---	---	---	326	---	---	---	---	---	---	---	---	---	---	---	319	324	329	331	331	329	324	324					---
MEAN D		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	327	321	---	---	---					---

LIVINGSTON ISLAND MAGNETIC OBSERVATORY
 JUNE 2004

DECLINATION EAST

D = 14 DEGREES PLUS TABULAR QUANTITIES (UNITS 0.1 MINUTES)

HOURL (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	417	349	329	372	404	412	426	415	430	428	415	415	424	438	427	440	438	435	428	427	422	431	417	380	413	
2	381	402	419	422	402	410	405	411	418	433	421	413	416	422	420	432	443	441	435	439	429	400	403	415	418	
3	402	390	385	377	381	404	416	430	414	411	413	416	415	415	419	425	432	431	427	420	419	417	421	417	412	
4	420	395	399	---	400	415	414	414	409	418	434	424	426	421	429	438	437	436	434	425	425	422	420	407	419	
5	398	412	414	412	404	411	411	410	411	414	412	417	411	415	416	422	427	434	434	426	429	415	416	426	417	
6	394	402	401	357	377	378	384	417	427	424	416	425	427	425	418	422	427	431	428	425	415	411	417	416	411	
7	409	390	394	410	413	412	409	421	419	409	420	428	417	416	420	430	438	441	438	435	431	425	438	395	419	
8	427	417	362	391	402	401	420	419	418	419	445	428	415	417	417	431	431	435	437	430	420	418	418	420	418	
9 D	386	367	411	418	415	397	378	372	398	410	426	442	436	437	442	451	453	462	455	442	416	429	426	422	421	
10	398	342	400	385	402	392	402	424	419	418	415	415	412	410	413	418	422	422	415	414	421	422	418	416	409	
11	399	356	380	403	417	417	420	433	413	420	409	410	412	411	415	422	427	431	424	418	413	412	415	419	412	
12	420	419	419	416	413	405	422	420	416	415	411	408	413	413	415	424	431	429	425	419	417	415	415	416	417	
13	417	417	414	413	412	410	411	414	---	---	---	---	---	---	---	---	---	---	---	---	---	---	407	402	406	---
14	412	410	408	---	---	---	---	393	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
15 D	---	---	---	411	399	401	364	290	326	404	---	---	420	432	---	---	436	438	440	430	435	433	427	429	---	
16	426	---	---	---	---	408	392	398	395	---	---	---	---	---	417	418	425	428	425	422	417	418	416	418	---	
17	417	420	417	415	411	399	396	401	403	412	428	412	416	414	415	420	423	428	427	425	421	420	418	---	416	
18	---	---	---	404	405	410	402	404	401	413	413	407	410	412	416	427	434	434	425	420	414	415	414	417	414	
19	416	407	414	414	412	409	405	403	404	404	405	412	411	411	413	424	428	430	423	417	413	412	413	413	413	
20 Q	413	412	414	413	411	409	408	409	405	409	410	413	411	409	411	416	421	427	427	418	412	411	411	411	413	
21	411	411	409	407	407	406	405	405	408	407	408	408	407	409	412	422	428	428	424	417	414	414	411	412	412	
22 Q	413	413	410	410	408	408	408	411	411	413	413	416	414	411	415	422	428	430	425	419	413	411	411	412	414	
23 Q	412	412	413	413	412	407	400	403	407	411	411	411	408	407	413	422	429	430	425	417	412	410	410	410	413	
24	409	408	410	410	410	409	403	390	406	412	413	414	411	413	413	419	426	430	424	417	413	411	410	410	412	
25 Q	411	410	410	411	410	409	410	410	410	409	407	408	409	410	409	417	425	425	420	413	405	407	409	410	411	
26	409	411	411	411	409	413	411	411	410	410	412	410	408	406	407	419	423	426	428	429	429	423	425	426	416	
27 Q	422	413	413	413	411	404	412	412	412	415	412	408	408	406	411	419	422	423	421	418	417	419	420	416	414	
28 D	402	401	397	360	367	397	408	400	400	400	403	415	416	411	410	417	419	417	412	409	411	407	405	380	403	
29 D	400	373	363	353	383	379	380	353	386	410	436	426	426	429	426	426	433	435	433	431	426	423	427	417	407	
30	384	394	397	400	404	412	413	408	422	425	415	416	421	417	416	419	424	421	418	416	415	414	412	413	412	
MEAN	408	400	401	401	404	405	404	403	407	413	---	---	415	416	417	425	429	431	428	423	418	416	416	413	414	
MEAN Q	414	412	412	412	410	407	408	409	409	411	410	411	410	409	412	419	425	427	423	417	412	412	412	412	413	
MEAN D	---	---	380	382	394	398	391	366	388	411	419	424	424	429	425	434	436	437	434	428	422	425	420	406	411	

LIVINGSTON ISLAND MAGNETIC OBSERVATORY							HORIZONTAL INTENSITY																				
JUNE 2004							H = 20000 nT PLUS TABULAR QUANTITIES (UNITS nT)																				
HOURL (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	171	176	166	154	167	176	179	180	174	180	180	182	181	172	170	169	165	169	173	171	172	166	164	178	172	
2		170	162	168	176	176	175	174	176	183	178	176	178	177	172	170	169	164	169	169	164	160	167	173	171	172	
3		176	166	166	180	168	166	174	179	176	177	180	181	180	176	173	171	171	175	178	180	180	169	153	155	173	
4		167	176	164	---	169	181	180	177	181	183	195	189	185	182	170	171	174	177	182	180	176	174	171	178	178	
5		173	168	172	180	179	178	179	182	182	185	189	187	187	182	176	173	170	167	174	178	171	157	147	153	175	
6		166	163	165	173	165	163	169	171	177	178	184	181	180	179	164	166	168	171	174	177	163	168	171	167	171	
7		167	177	171	168	174	178	179	184	184	186	183	190	181	176	166	165	168	166	166	165	163	154	143	137	170	
8		151	155	158	155	160	165	168	170	173	174	182	183	174	174	168	167	167	170	167	167	170	175	176	173	168	
9	D	160	159	163	172	173	185	187	174	178	176	172	171	180	184	179	168	162	159	174	169	170	167	161	156	171	
10		158	149	154	168	183	173	169	173	174	174	176	178	180	182	176	174	175	178	180	174	156	161	159	159	170	
11		157	157	149	161	169	173	175	183	184	182	182	181	179	178	174	171	170	171	175	177	177	177	176	175	173	
12		176	176	176	177	180	183	180	185	184	184	183	181	183	180	172	167	166	172	178	180	181	179	177	176	178	
13		177	178	178	180	182	182	180	183	---	---	---	---	---	---	---	---	---	---	---	---	---	---	189	184	185	---
14		188	187	186	---	---	---	---	173	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
15	D	---	---	---	173	171	171	175	167	148	156	---	---	162	160	---	---	170	169	175	174	162	165	167	168	---	
16		164	---	---	---	---	165	170	184	177	---	---	---	---	---	170	168	169	173	173	173	173	173	175	174	---	
17		174	176	175	172	170	176	169	168	169	171	173	172	168	167	164	162	165	168	173	170	163	164	170	---	170	
18		---	---	---	174	172	178	174	172	172	178	180	178	179	176	163	161	162	169	174	175	173	173	171	170	172	
19		168	167	166	170	172	179	176	175	175	179	175	175	177	176	172	169	170	175	178	181	182	182	181	180	175	
20	Q	178	177	176	175	174	176	178	179	179	178	177	179	179	176	173	172	171	171	176	180	182	181	181	180	177	
21		180	179	179	179	178	177	177	180	179	179	181	182	181	176	173	170	172	178	180	180	178	176	176	177	178	
22	Q	178	177	178	178	179	178	178	178	178	178	179	179	179	177	174	172	174	177	181	184	182	180	181	181	178	
23	Q	181	181	181	180	180	179	181	178	179	180	181	181	181	177	172	168	171	177	183	185	186	185	183	184	180	
24		183	183	181	181	179	180	184	182	176	178	180	180	179	174	173	171	173	177	183	185	185	183	183	182	180	
25	Q	182	182	181	180	179	177	177	177	178	181	182	183	183	178	173	169	170	174	178	181	181	180	180	179	178	
26		179	179	180	182	184	183	183	185	185	186	186	187	188	183	178	177	175	174	174	171	169	167	157	152	178	
27	Q	156	164	168	171	172	172	172	173	174	177	180	179	178	174	169	165	169	172	175	177	178	175	173	170	172	
28	D	159	153	158	180	167	169	172	173	173	175	177	180	186	182	181	181	185	192	190	183	175	175	164	155	174	
29	D	136	145	166	161	162	169	201	186	163	165	163	172	175	165	162	160	163	168	171	144	153	157	160	154	163	
30		167	173	166	163	167	173	174	173	170	175	179	176	171	171	172	171	173	174	176	174	170	169	173	173	172	
MEAN		169	170	170	173	173	175	177	177	176	177	---	---	179	176	171	169	170	173	176	175	173	172	170	169	174	
MEAN Q		175	176	177	177	177	176	177	177	178	179	180	180	180	176	172	169	171	174	179	182	182	180	179	179	177	
MEAN D		---	---	165	168	168	174	183	176	167	170	171	175	177	173	172	170	169	172	177	168	166	166	163	162	170	

LIVINGSTON ISLAND MAGNETIC OBSERVATORY

JUNE 2004

VERTICAL INTENSITY

hour (UT) DAY	0	1	2	3	4	5	Z ==-29500 6	nT PLUS 7	TABULAR 8	QUANTITIES 9	(UNITS 10 nT)	11	12	13	14	15	16	17	18	19	20	21	22	23	MEAN
1 D	-102	-102	-90	-91	-96	-101	-96	-98	-86	-94	-101	-101	-100	-95	-100	-99	-97	-102	-105	-104	-102	-99	-97	-101	-98
2	-96	-95	-101	-100	-94	-95	-96	-99	-96	-90	-95	-99	-100	-98	-98	-99	-95	-99	-101	-97	-96	-104	-105	-101	-98
3	-99	-93	-90	-86	-90	-93	-96	-94	-99	-100	-100	-100	-99	-99	-98	-97	-97	-99	-102	-101	-100	-94	-87	-92	-96
4	-97	-98	-93	---	-95	-98	-98	-98	-99	-96	-94	-91	-91	-95	-92	-93	-98	-99	-101	-100	-96	-95	-93	-95	-96
5	-94	-93	-97	-94	-96	-97	-96	-97	-97	-97	-98	-95	-95	-93	-93	-94	-92	-92	-98	-100	-97	-92	-89	-97	-95
6	-103	-100	-96	-84	-94	-95	-98	-95	-99	-101	-102	-97	-97	-100	-94	-98	-98	-99	-100	-103	-97	-100	-101	-99	-98
7	-99	-99	-94	-94	-97	-99	-98	-96	-96	-97	-94	-96	-93	-94	-91	-90	-94	-95	-97	-97	-98	-96	-97	-98	-96
8	-100	-107	-103	-99	-101	-102	-102	-102	-101	-101	-95	-92	-97	-100	-97	-96	-96	-99	-96	-97	-101	-104	-104	-101	-100
9 D	-98	-92	-96	-101	-99	-98	-84	-79	-88	-87	-91	-86	-95	-98	-95	-90	-91	-88	-103	-101	-103	-101	-99	-99	-94
10	-103	-99	-100	-102	-95	-92	-94	-95	-97	-98	-99	-99	-100	-101	-97	-94	-94	-96	-98	-95	-85	-90	-95	-96	-96
11	-98	-95	-93	-100	-103	-102	-100	-97	-93	-93	-96	-97	-96	-97	-96	-95	-95	-96	-99	-99	-98	-97	-96	-95	-97
12	-95	-96	-96	-97	-97	-97	-92	-93	-93	-94	-94	-93	-95	-95	-93	-91	-93	-96	-99	-99	-97	-96	-94	-93	-95
13	-94	-95	-96	-96	-96	-95	-93	-94	---	---	---	---	---	---	---	---	---	---	---	---	---	-92	-90	-89	---
14	-91	-92	-92	---	---	---	---	-86	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
15 D	---	---	---	-97	-98	-97	-92	-65	-70	-86	---	---	-95	-91	---	---	-97	-95	-99	-99	-93	-95	-98	-99	---
16	-99	---	---	---	---	-99	-99	-96	-89	---	---	---	---	---	-94	-94	-96	-97	-98	-98	-98	-97	-98	-96	---
17	-95	-96	-95	-95	-95	-95	-92	-94	-94	-93	-91	-93	-95	-96	-96	-96	-98	-100	-102	-100	-94	-95	-99	---	-96
18	---	---	---	-97	-95	-96	-92	-94	-95	-95	-93	-95	-96	-95	-92	-92	-96	-102	-104	-103	-99	-98	-95	-94	-96
19	-93	-94	-94	-97	-97	-98	-95	-95	-93	-94	-93	-93	-94	-94	-92	-94	-96	-99	-99	-100	-99	-97	-95	-94	-95
20 Q	-93	-91	-91	-90	-91	-92	-93	-92	-93	-92	-92	-93	-93	-93	-90	-90	-92	-93	-96	-98	-99	-96	-95	-94	-93
21	-93	-91	-92	-92	-90	-90	-89	-90	-90	-91	-92	-93	-92	-90	-89	-88	-91	-93	-93	-94	-92	-91	-92	-92	-91
22 Q	-92	-91	-91	-90	-90	-89	-90	-90	-90	-90	-90	-91	-92	-91	-90	-89	-91	-94	-96	-97	-95	-92	-92	-92	-91
23 Q	-91	-91	-90	-89	-88	-89	-90	-88	-89	-90	-90	-90	-91	-92	-91	-89	-91	-95	-97	-97	-97	-95	-92	-92	-91
24	-91	-91	-89	-89	-88	-88	-90	-87	-84	-88	-89	-90	-90	-88	-88	-89	-91	-93	-96	-96	-95	-93	-91	-91	-90
25 Q	-91	-90	-89	-88	-88	-87	-88	-88	-88	-90	-90	-90	-91	-90	-88	-86	-86	-89	-92	-93	-94	-91	-91	-90	-89
26	-89	-89	-89	-89	-90	-88	-88	-89	-89	-89	-88	-89	-90	-89	-87	-85	-85	-85	-87	-85	-84	-87	-87	-87	-88
27 Q	-92	-97	-97	-97	-95	-93	-92	-92	-93	-93	-93	-93	-93	-93	-91	-90	-92	-93	-94	-93	-93	-90	-89	-89	-93
28 D	-88	-90	-95	-98	-87	-91	-92	-93	-90	-91	-92	-92	-96	-94	-93	-92	-91	-93	-91	-86	-80	-83	-83	-83	-90
29 D	-81	-86	-71	-85	-92	-89	-72	-69	-74	-84	-84	-93	-96	-91	-93	-95	-94	-98	-99	-82	-92	-96	-97	-96	-88
30	-98	-95	-93	-92	-94	-90	-87	-91	-86	-87	-95	-93	-91	-93	-94	-93	-93	-94	-94	-91	-88	-88	-91	-91	-92
MEAN	-95	-95	-93	-94	-94	-94	-92	-91	-91	-92	---	---	-94	-94	-93	-93	-94	-95	-98	-97	-95	-95	-94	-94	-94
MEAN Q	-92	-92	-92	-91	-90	-90	-90	-90	-91	-91	-91	-91	-92	-92	-90	-89	-91	-93	-95	-96	-95	-93	-92	-91	-92
MEAN D	---	---	-89	-94	-94	-95	-87	-81	-82	-88	-92	-94	-96	-94	-96	-95	-94	-95	-99	-94	-94	-95	-95	-96	-93

LIVINGSTON ISLAND MAGNETIC OBSERVATORY
 JUNE 2004

TOTAL INTENSITY

F = 35500 nT PLUS TABULAR QUANTITIES (UNITS nT)

HOURL (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 D	321	324	308	302	314	323	321	322	310	319	325	327	325	315	319	317	313	320	325	323	322	315	313	324	319	
2	315	310	319	322	318	317	318	321	323	315	318	322	323	318	318	317	312	317	319	313	310	321	325	320	318	
3	321	311	309	313	310	311	318	319	321	322	324	325	324	321	319	317	317	321	325	326	324	314	298	304	317	
4	314	321	309	---	314	323	322	322	325	323	328	322	320	322	312	313	319	322	326	325	319	317	314	319	320	
5	315	312	317	319	320	321	321	323	323	325	328	324	324	320	316	315	312	310	320	323	317	305	297	306	317	
6	319	314	313	307	311	311	316	316	322	324	328	323	322	324	310	315	316	318	321	325	313	317	320	316	318	
7	316	322	314	313	319	323	322	324	324	325	321	327	319	317	309	308	313	312	314	314	314	306	301	298	316	
8	308	316	314	309	314	317	320	320	321	322	322	320	319	321	315	314	314	318	314	315	320	325	325	321	318	
9 D	312	307	311	321	320	326	315	304	313	311	312	308	320	325	320	310	307	303	324	320	321	318	312	310	315	
10	315	306	309	319	322	314	313	317	319	319	321	323	325	327	320	316	316	320	322	317	298	305	308	310	316	
11	310	308	301	314	321	322	322	323	321	320	322	323	320	321	318	315	314	316	320	322	321	320	319	318	318	
12	318	319	319	320	322	323	318	321	321	322	321	320	322	320	314	310	311	316	322	324	323	320	318	317	319	
13	318	319	320	321	322	322	319	321	---	---	---	---	---	---	---	---	---	---	---	---	---	---	323	318	318	---
14	322	322	321	---	---	---	---	309	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
15 D	---	---	---	318	318	317	315	288	282	299	---	---	310	306	---	---	316	314	320	320	308	312	315	317	---	
16	315	---	---	---	---	315	318	323	314	---	---	---	---	---	314	313	315	318	319	319	319	318	320	318	---	
17	317	319	318	316	315	318	312	313	313	314	313	314	314	314	312	311	315	317	322	319	310	311	318	---	315	
18	---	---	---	318	316	320	314	315	316	319	319	319	321	318	309	307	311	320	324	324	320	318	315	314	317	
19	312	312	312	316	317	322	318	317	316	319	316	316	318	318	313	313	316	320	323	325	325	323	321	320	318	
20 Q	317	316	315	313	314	316	317	317	318	317	316	318	318	317	313	312	313	314	319	323	325	322	320	319	317	
21	318	317	317	317	315	314	314	316	315	317	319	320	318	315	311	309	312	317	319	319	317	314	315	317	316	
22 Q	316	315	316	315	316	314	315	314	315	315	315	316	317	316	313	311	313	317	322	324	321	318	318	318	316	
23 Q	318	317	317	315	315	315	316	313	315	316	317	317	317	316	313	309	312	319	324	325	325	323	319	320	317	
24	319	318	316	316	314	315	319	315	309	313	315	316	315	312	310	311	313	317	323	324	323	320	319	318	316	
25 Q	318	318	316	315	313	312	313	313	314	316	318	318	318	315	310	306	307	312	317	319	319	317	317	315	315	
26	315	315	316	317	318	317	316	319	318	319	318	320	320	317	313	310	309	308	310	307	305	307	300	297	313	
27 Q	304	312	315	316	316	314	313	315	315	316	319	318	318	315	310	308	311	314	316	318	317	314	311	310	314	
28 D	303	301	309	323	306	311	314	315	312	314	316	318	324	321	319	318	319	325	323	314	305	307	301	296	313	
29 D	284	293	293	301	308	309	313	302	293	303	302	315	318	308	309	309	310	316	318	289	303	308	311	307	305	
30	315	316	311	309	312	312	311	313	308	311	319	316	312	314	315	313	315	316	317	313	309	308	313	313	313	
MEAN	314	314	313	315	316	317	317	316	315	317	---	---	319	317	314	312	314	317	320	319	316	316	314	314	316	
MEAN Q	315	316	316	315	315	314	315	314	315	316	317	317	318	316	312	309	311	315	320	322	322	319	317	317	316	
MEAN D	---	---	307	313	313	317	316	306	302	309	313	317	320	315	317	314	313	316	322	313	312	312	311	311	313	

LIVINGSTON ISLAND MAGNETIC OBSERVATORY

JULY 2004

DECLINATION EAST

HOUR (UT)	D = 14 DEGREES PLUS						TABULAR QUANTITIES (UNITS 0.1 MINUTES)																	MEAN		
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	414	405	388	405	406	417	410	400	423	416	416	432	421	418	417	---	---	---	---	---	---	---	---	---	---	
2	---	---	---	---	---	---	---	---	420	419	415	407	410	412	419	423	425	431	427	420	412	411	410	367	---	
3	388	406	407	410	409	413	412	415	418	416	415	416	410	415	415	420	426	427	427	421	413	409	410	---	414	
4	411	381	397	---	384	396	404	414	414	411	406	412	410	409	412	418	424	423	418	415	412	411	412	412	409	
5	410	400	402	381	394	410	414	412	413	412	413	415	414	413	416	420	425	433	430	420	415	416	413	376	411	
6 Q	395	411	411	410	402	368	390	401	404	404	413	412	415	415	415	419	420	419	416	411	410	411	413	414	408	
7 Q	415	415	416	416	410	414	410	409	406	413	413	414	411	409	409	416	425	426	420	414	411	411	411	411	414	
8 Q	411	413	412	409	409	410	409	409	410	410	410	410	409	406	407	412	418	420	---	---	---	---	---	---	---	
9 Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	432	430	423	418	432	447	423	---	
12	415	378	386	397	402	398	388	406	410	413	415	413	413	416	415	419	429	433	429	421	420	422	400	405	410	
13	396	316	396	400	397	408	416	390	396	406	406	411	411	411	414	417	423	429	432	434	427	403	404	410	406	
14	410	410	407	407	404	398	395	403	408	414	411	408	408	409	414	419	429	433	428	420	417	415	415	410	412	
15	405	413	411	411	411	409	411	410	407	407	408	408	406	402	---	408	418	423	---	422	418	400	424	---	411	
16	---	---	410	410	408	406	406	---	---	405	404	405	403	402	401	412	422	430	431	424	422	427	427	450	415	
17	472	434	338	406	394	386	376	370	417	404	413	423	431	426	425	428	431	434	436	433	433	430	432	428	417	
18	425	420	417	413	413	420	384	390	383	407	417	422	418	413	415	417	424	434	---	---	---	421	423	---	415	
19	418	414	414	413	408	398	401	402	391	408	406	405	409	409	411	418	425	---	---	---	424	---	---	---	---	
20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	431	432	---	411	403	413	415	---	
21 Q	416	416	414	414	413	403	405	417	412	416	416	414	412	408	409	417	425	431	429	422	416	414	413	414	415	
22	413	412	413	414	---	---	---	---	414	416	413	419	---	---	---	---	---	---	438	426	412	391	446	467	---	
23 D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	429	426	427	---	---	
24 D	---	---	---	---	410	406	432	403	393	398	409	390	402	440	431	446	453	463	450	441	436	435	---	---	---	
25 D	---	296	250	312	196	127	95	211	512	580	---	622	---	---	---	---	---	---	505	510	---	491	345	---	---	
26 D	---	---	---	---	---	---	---	434	---	436	440	433	429	430	436	443	450	448	444	436	433	424	421	288	---	
27 D	264	261	347	366	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	393	305	---	---	
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
29	---	---	---	---	---	---	---	---	---	436	442	437	434	428	---	---	---	454	---	---	---	---	---	---	---	
30	---	---	---	---	425	427	426	426	427	426	---	---	---	---	423	426	---	---	---	---	---	---	419	409	408	---
31	420	424	421	---	---	408	413	420	---	---	---	---	439	437	441	444	444	447	444	435	427	428	424	422	---	
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	434	384	---	---

LIVINGSTON ISLAND MAGNETIC OBSERVATORY
JULY 2004

HORIZONTAL INTENSITY

HOUR (UT)	H = 20000 nT PLUS TABULAR QUANTITIES (UNITS nT)																									MEAN
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	171	160	166	168	169	177	180	171	175	176	174	173	175	173	169	---	---	---	---	---	---	---	---	---	---	
2	---	---	---	---	---	---	---	---	177	178	177	180	177	175	172	170	166	163	173	171	171	171	165	172	---	---
3	165	161	164	166	168	172	174	172	173	175	177	178	177	172	171	170	169	171	172	168	172	173	173	---	171	
4	169	159	162	---	165	169	169	173	177	174	176	174	176	174	171	169	169	171	175	175	176	176	176	172	171	
5	165	169	160	166	170	170	172	172	174	177	178	179	179	176	171	170	168	174	179	174	173	171	169	171	172	
6 Q	172	171	172	175	173	180	171	172	175	181	186	182	176	173	170	168	171	174	178	178	175	174	173	173	175	
7 Q	174	173	173	173	173	174	177	176	177	177	178	178	178	176	173	172	172	174	177	177	174	174	174	175	175	
8 Q	175	175	175	173	176	178	177	178	179	181	183	185	185	183	178	174	176	179	---	---	---	---	---	---	---	
9 Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	173	178	179	178	177	140	166	---	
12	170	149	160	162	167	169	164	164	165	169	171	171	170	167	164	161	162	166	174	178	174	157	170	168	166	
13	164	172	138	156	155	164	175	184	165	166	167	167	167	164	160	159	159	159	154	152	158	160	169	170	163	
14	171	170	171	170	173	182	174	169	168	169	170	172	170	164	159	157	157	164	169	174	174	173	172	168	169	
15	165	167	169	171	172	172	172	175	175	176	177	179	179	177	---	168	167	171	---	177	168	162	162	---	171	
16	---	---	177	177	178	178	178	---	---	182	178	177	178	177	172	169	169	171	171	176	177	168	169	156	174	
17	148	103	74	132	129	137	138	137	149	148	149	151	150	151	151	149	145	147	150	154	154	157	153	158	142	
18	159	158	159	158	157	166	162	155	171	163	165	163	163	158	152	148	152	161	---	---	---	164	165	---	160	
19	162	160	160	167	170	165	164	166	163	162	171	170	168	164	161	160	164	---	---	---	158	---	---	---	---	
20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	157	162	---	161	163	163	164	---	
21 Q	168	170	170	170	173	174	173	175	172	174	175	175	173	170	166	165	165	167	173	175	174	171	170	174	171	
22	174	174	174	174	---	---	---	---	177	177	182	196	---	---	---	---	---	---	187	184	182	122	108	110	---	
23 D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	150	152	152	---	---	
24 D	---	---	---	---	161	168	189	178	171	167	175	174	166	164	158	154	165	160	169	175	173	170	---	---	---	
25 D	---	114	67	70	71	102	106	138	145	129	---	102	---	---	---	---	---	---	96	105	---	93	107	---	---	
26 D	---	---	---	---	---	---	---	132	---	135	134	139	140	137	130	128	135	141	147	146	140	144	157	146	---	
27 D	124	57	47	101	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	79	73	---	---	
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
29	---	---	---	---	---	---	---	---	---	142	145	145	143	138	---	---	---	139	---	---	---	---	---	---	---	
30	---	---	---	---	144	144	147	150	150	150	---	---	---	---	138	135	---	---	---	---	---	152	142	142	---	
31	150	151	151	---	---	152	151	151	---	---	---	---	160	165	154	147	138	141	146	148	147	144	147	148	---	
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
MEAN Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
MEAN D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	128	129	---	---

LIVINGSTON ISLAND MAGNETIC OBSERVATORY

JULY 2004

VERTICAL INTENSITY

HOUR (UT)	Z = -29500 nT PLUS TABULAR QUANTITIES (UNITS nT)						VERTICAL INTENSITY																		MEAN	
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	-90	-88	-90	-92	-92	-89	-85	-82	-86	-92	-89	-83	-92	-95	-93	---	---	---	---	---	---	---	---	---	---	
2	---	---	---	---	---	---	---	---	-88	-88	-90	-92	-91	-89	-88	-89	-89	-89	-95	-95	-94	-93	-90	-90	---	
3	-85	-85	-90	-92	-92	-93	-92	-91	-91	-91	-93	-92	-92	-87	-89	-90	-92	-93	-94	-92	-94	-94	-92	---	-91	
4	-90	-88	-88	---	-91	-92	-91	-90	-91	-90	-92	-90	-92	-92	-90	-90	-91	-93	-96	-95	-93	-93	-91	-90	-91	
5	-85	-87	-84	-85	-85	-87	-91	-91	-91	-92	-92	-91	-89	-88	-86	-89	-89	-92	-95	-92	-91	-91	-90	-91	-89	
6 Q	-88	-88	-89	-89	-85	-81	-82	-86	-88	-88	-86	-85	-85	-85	-86	-86	-88	-90	-91	-91	-89	-88	-88	-88	-87	
7 Q	-88	-87	-86	-86	-87	-86	-87	-88	-88	-87	-88	-88	-90	-89	-88	-86	-87	-88	-90	-89	-88	-88	-88	-89	-88	
8 Q	-89	-88	-87	-86	-86	-88	-87	-87	-88	-88	-89	-89	-89	-88	-86	-85	-85	-85	---	---	---	---	---	---	---	
9 Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-87	-88	-90	-89	-86	-76	-93	---	
12	-98	-91	-93	-92	-94	-93	-87	-86	-88	-90	-91	-91	-90	-88	-90	-90	-90	-91	-95	-96	-91	-81	-92	-90	-91	
13	-92	-91	-79	-95	-95	-96	-90	-80	-81	-89	-90	-90	-91	-91	-88	-89	-87	-88	-86	-85	-91	-95	-98	-95	-90	
14	-94	-93	-92	-91	-90	-87	-78	-83	-85	-86	-89	-90	-90	-88	-86	-88	-88	-90	-93	-95	-94	-92	-90	-89	-89	
15	-87	-88	-90	-91	-90	-91	-90	-90	-89	-89	-90	-90	-91	-91	---	-88	-87	-88	---	-89	-84	-83	-85	---	-89	
16	---	---	-91	-90	-90	-89	-88	---	---	-84	-83	-85	-87	-87	-86	-85	-83	-84	-85	-89	-90	-83	-85	-83	-87	
17	-84	-88	-93	-106	-105	-107	-98	-87	-90	-98	-99	-97	-95	-97	-97	-98	-98	-98	-99	-101	-100	-99	-97	-98	-97	
18	-98	-96	-96	-96	-95	-91	-90	-89	-90	-89	-92	-92	-94	-95	-94	-92	-93	-95	---	---	---	-97	-96	---	-94	
19	-94	-93	-93	-93	-89	-91	-91	-90	-87	-87	-92	-91	-92	-92	-90	-88	-90	---	---	---	-90	---	---	---	---	
20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-87	-92	---	-93	-93	-94	-91	---	
21 Q	-93	-93	-91	-90	-90	-89	-86	-85	-86	-88	-89	-90	-89	-89	-87	-87	-88	-88	-92	-94	-93	-91	-90	-91	-90	
22	-91	-89	-87	-86	---	---	---	---	-87	-87	-89	-92	---	---	---	---	---	---	-92	-94	-93	-72	-74	-97	---	
23 D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-117	-112	-107	---	---	
24 D	---	---	---	---	-96	-92	-85	-87	-90	-88	-89	-88	-81	-73	-76	-78	-86	-85	-91	-101	-102	-102	---	---	---	
25 D	---	-81	-55	-47	-28	14	-8	-10	44	72	---	-22	---	---	---	---	---	---	-142	-140	---	-150	-148	---	---	
26 D	---	---	---	---	---	---	---	-114	---	-108	-102	-109	-111	-109	-104	-101	-102	-104	-105	-106	-102	-104	-110	-114	---	
27 D	-84	-14	-59	-75	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-139	-131	---	---	
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
29	---	---	---	---	---	---	---	---	---	-100	-101	-104	-104	-104	---	---	---	-104	---	---	---	---	---	---	---	
30	---	---	---	---	-101	-102	-103	-104	-102	-101	---	---	---	---	-103	-102	---	---	---	---	---	---	-106	-101	-100	---
31	-103	-102	-101	---	---	-96	-98	-98	---	---	---	---	-94	-96	-91	-89	-88	-95	-100	-102	-103	-100	-102	-103	---	
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
MEAN Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
MEAN D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-122	-120	---	---

LIVINGSTON ISLAND MAGNETIC OBSERVATORY							TOTAL INTENSITY																			
JULY 2004							F = 35500 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	311	303	308	311	312	314	312	304	310	316	312	306	315	316	313	---	---	---	---	---	---	---	---	---	---	
2	---	---	---	---	---	---	---	---	313	313	315	318	315	313	310	309	308	305	317	316	315	314	308	312	---	
3	304	301	307	310	311	314	314	312	314	315	317	317	316	310	311	310	312	313	315	311	315	315	314	---	312	
4	310	302	304	---	309	312	311	313	315	313	316	313	316	315	311	310	311	314	319	318	317	317	315	311	312	
5	304	308	299	304	307	308	312	312	314	316	317	316	315	313	308	309	309	315	320	314	313	312	310	312	311	
6 Q	310	309	310	312	309	308	304	309	311	315	316	313	309	308	307	307	309	313	316	315	313	311	311	311	311	
7 Q	311	309	309	309	310	309	312	312	313	312	313	313	315	313	310	308	309	311	314	314	312	311	312	313	311	
8 Q	313	312	311	309	311	313	312	312	314	316	318	318	318	316	312	309	310	311	---	---	---	---	---	---	---	
9 Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	309	314	316	314	311	282	310	---	
12	317	300	307	308	312	313	305	304	306	310	312	312	311	307	307	305	306	309	317	320	314	296	312	310	309	
13	309	312	284	306	306	312	314	311	301	307	309	309	310	308	304	303	302	303	298	296	304	310	317	315	306	
14	314	313	312	312	312	315	303	304	306	306	310	312	310	306	301	301	302	307	313	317	316	313	312	309	309	
15	305	307	310	312	312	312	312	313	312	313	314	315	316	315	---	308	306	310	---	314	305	300	302	---	310	
16	---	---	315	314	315	314	314	---	---	312	310	310	313	312	308	306	304	306	307	313	314	304	306	297	310	
17	294	271	259	302	300	307	299	290	299	305	306	305	303	305	306	305	303	304	307	311	310	311	307	311	301	
18	311	309	310	309	307	309	306	301	312	306	310	309	310	308	304	300	303	310	---	---	---	313	312	---	308	
19	309	308	307	311	310	309	308	308	304	303	313	312	311	308	306	304	307	---	---	---	304	---	---	---	---	
20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	301	308	---	308	309	309	308	---	
21 Q	312	313	311	311	312	312	309	309	308	311	313	313	312	310	305	305	306	307	314	317	315	312	311	314	311	
22	313	312	310	310	---	---	---	---	312	312	317	327	---	---	---	---	---	---	322	322	320	268	263	282	---	
23 D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	321	319	315	---	---	
24 D	---	---	---	---	311	311	317	312	312	307	312	311	301	293	293	292	304	301	310	322	322	321	---	---	---	
25 D	---	272	224	218	204	186	207	226	185	154	---	216	---	---	---	---	---	---	312	316	---	317	323	---	---	
26 D	---	---	---	---	---	---	---	309	---	306	300	308	311	308	299	296	301	306	310	310	304	308	320	317	---	
27 D	280	184	216	260	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	300	290	---	---	
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
29	---	---	---	---	---	---	---	---	---	303	306	308	307	304	---	---	---	305	---	---	---	---	---	---	---	
30	---	---	---	---	305	306	308	311	309	308	---	---	---	---	303	301	---	---	---	---	---	---	313	304	303	
31	310	310	309	---	---	306	306	306	---	---	---	---	309	312	302	297	291	298	305	309	309	304	308	309	---	
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
MEAN Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
MEAN D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	313	312	---	---

LIVINGSTON ISLAND MAGNETIC OBSERVATORY

DECLINATION EAST

NOVEMBER 2004

D = 14 DEGREES PLUS TABULAR QUANTITIES (UNITS 0.1 MINUTES)

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	406	407	418	417	414	410	402	396	384	376	369	378	378	389	418	433	446	451	452	446	441	433	426	411	413	
2 Q	394	400	408	410	407	404	400	395	389	384	372	363	367	---	407	433	459	470	476	465	455	438	424	413	413	
3	408	407	407	404	402	398	391	383	372	356	353	372	372	369	381	406	---	---	---	---	---	---	---	---	---	
4	---	---	---	---	---	---	---	---	---	---	---	---	---	393	407	418	442	461	461	457	434	421	409	398	---	
5 Q	389	409	412	410	405	405	396	388	375	367	363	366	372	380	---	---	426	---	---	437	427	417	416	415	402	
6 Q	412	408	408	408	403	398	393	---	374	372	371	371	374	377	392	420	447	457	457	444	---	---	---	416	---	
7 D	411	409	405	400	398	388	381	370	355	352	343	313	---	---	---	---	515	496	485	494	---	---	---	454	---	
8 D	430	---	---	289	122	---	104	166	---	---	---	---	---	---	---	514	506	494	495	484	447	---	396	396	---	
9 D	376	369	346	365	---	373	341	421	---	439	460	446	488	474	507	557	534	567	537	578	333	572	575	571	460	
10 D	536	506	393	---	419	242	177	317	400	629	682	704	670	598	595	571	567	551	520	493	481	426	451	442	492	
11	424	377	390	398	404	356	350	329	347	373	393	391	399	411	427	452	475	472	467	462	461	455	458	452	413	
12 D	439	406	355	358	355	390	388	356	359	412	427	---	---	---	432	---	485	504	495	507	508	483	458	449	429	
13	440	420	421	420	415	401	399	396	374	370	378	389	386	397	414	433	458	470	467	460	454	443	437	431	420	
14	416	405	382	396	395	400	397	400	392	392	391	390	395	407	420	430	---	---	---	---	---	446	445	439	---	
15 Q	430	425	419	414	414	410	403	387	378	375	374	372	377	384	401	419	442	---	---	467	460	450	443	434	417	
16	426	422	416	409	403	396	382	392	403	404	383	405	402	401	417	435	443	462	---	---	465	460	440	430	420	
17	424	422	418	410	409	408	405	414	395	385	383	396	398	409	426	438	448	469	480	475	463	---	440	---	424	
18 Q	423	423	419	418	414	407	402	389	381	379	381	387	396	405	415	---	---	---	---	---	---	---	---	---	---	
19	---	---	---	---	---	400	390	379	373	365	---	369	378	392	409	423	441	460	461	454	440	431	428	422	---	
20	446	419	413	399	390	379	369	347	368	375	412	419	---	---	---	---	---	---	---	---	---	---	---	---	---	
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
24	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
25	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	477	463	455	443	407	404	---
26	417	417	415	407	380	356	342	346	350	366	353	365	375	397	425	455	473	492	484	469	452	437	414	413	408	
27	418	414	419	415	411	403	380	346	345	351	360	366	384	408	437	460	488	509	508	505	486	471	459	444	425	
28	410	381	403	401	398	383	355	375	375	372	370	374	402	417	437	468	486	497	507	500	476	459	453	451	423	
29	421	412	388	387	392	388	374	359	337	344	360	372	---	---	---	---	---	---	---	---	---	---	---	---	---	
30	---	---	---	---	---	---	---	---	---	---	---	---	387	415	422	443	459	472	---	---	---	---	---	---	---	
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
MEAN Q	410	413	413	412	409	405	399	389	379	375	372	372	377	385	402	---	---	---	---	---	---	---	---	---	---	
MEAN D	439	415	354	364	325	334	280	326	---	443	---	---	---	---	---	---	522	523	507	511	447	---	---	462	---	

LIVINGSTON ISLAND MAGNETIC OBSERVATORY

NOVEMBER 2004

TOTAL INTENSITY

F = 35500 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	302	305	298	296	296	297	294	296	292	288	284	275	265	251	243	253	261	273	280	287	293	301	303	305	285
2 Q	306	295	295	296	294	292	292	292	293	289	293	290	282	---	258	258	260	269	287	294	296	301	304	306	288
3	302	303	303	302	302	300	297	296	298	297	289	291	286	273	255	247	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---	---	265	257	254	260	257	270	281	298	309	316	321	---
5 Q	294	299	299	295	294	295	291	291	291	291	286	277	267	257	---	---	259	---	---	286	290	296	296	298	285
6 Q	298	301	301	301	299	297	296	---	293	289	281	271	263	255	249	245	250	266	286	293	---	---	---	300	---
7 D	298	299	296	315	311	308	306	304	299	292	290	298	---	---	---	---	253	233	289	337	---	---	---	387	---
8 D	404	---	---	-372	-516	---	-101	-19	---	---	---	---	---	---	---	293	296	309	325	341	366	---	355	327	---
9 D	306	280	264	251	---	226	243	235	---	276	271	227	205	185	194	217	259	283	311	383	827	353	287	300	288
10 D	315	325	277	---	114	120	11	-228	-22	-75	-61	100	227	252	275	291	297	303	319	318	346	348	328	313	196
11	316	312	294	292	286	275	258	275	278	285	267	263	260	259	251	251	257	276	284	284	294	303	322	321	282
12 D	318	311	296	270	285	282	296	304	291	255	254	---	---	---	254	---	249	258	277	292	294	289	299	302	281
13	305	302	299	293	297	297	291	287	286	283	274	265	263	263	255	244	242	254	273	287	303	294	297	310	282
14	316	298	289	288	291	292	295	287	286	285	279	274	267	260	252	249	---	---	---	---	---	297	295	299	---
15 Q	301	299	298	300	300	300	304	300	296	293	286	280	270	260	254	251	252	---	---	287	297	304	303	301	287
16	302	302	304	306	305	304	304	300	295	286	285	277	272	264	257	253	261	268	---	---	296	308	292	305	288
17	306	304	305	304	301	300	296	282	282	283	279	277	273	268	262	257	256	262	277	290	296	---	303	---	285
18 Q	300	301	301	302	301	301	301	301	298	294	286	277	267	259	254	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	303	298	299	295	291	---	276	267	262	258	258	264	277	284	290	289	298	302	319	---
20	294	300	308	313	311	288	293	287	285	280	272	266	---	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	287	303	304	311	318	320	---
26	302	300	299	297	296	287	285	281	276	270	266	257	253	245	244	248	259	268	268	290	300	302	303	300	279
27	295	305	298	298	299	300	294	276	279	271	263	254	251	246	243	254	254	272	280	291	292	303	309	306	281
28	316	311	307	302	297	293	283	268	269	267	265	260	253	247	249	254	263	269	278	281	289	303	315	309	281
29	315	329	326	312	310	311	306	300	284	271	264	260	---	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---	256	254	254	251	257	262	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN Q	300	299	299	299	298	297	297	296	294	291	286	279	270	259	253	---	---	---	---	---	---	---	---	---	---
MEAN D	328	272	235	131	81	129	155	119	---	159	---	---	---	---	---	---	271	277	304	334	445	---	---	326	---

LIVINGSTON ISLAND MAGNETIC OBSERVATORY
 DECEMBER 2004

DECLINATION EAST

D = 14 DEGREES PLUS TABULAR QUANTITIES (UNITS 0.1 MINUTES)

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	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
2 Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
3 Q	---	---	412	408	402	391	378	373	366	363	359	365	384	406	424	441	450	460	458	456	446	---	436	433	411	
4 Q	429	422	415	409	404	399	390	375	364	364	366	373	381	402	418	438	454	462	469	466	451	435	429	429	414	
5	426	422	417	412	405	395	376	357	301	302	314	334	352	375	397	413	429	438	447	441	432	425	418	419	394	
6 D	422	418	414	407	399	356	329	347	368	370	383	406	421	420	436	466	483	515	546	527	493	473	442	407	427	
7	408	413	410	404	405	413	393	379	372	369	374	375	383	408	417	428	441	464	481	468	448	439	433	423	414	
8	418	414	390	376	392	382	392	393	370	364	366	368	389	398	427	452	471	476	469	451	442	435	424	419	412	
9	406	390	404	403	401	394	387	378	372	353	346	363	370	399	423	434	454	475	473	452	448	443	435	434	410	
10	420	415	418	420	408	389	382	369	355	344	355	375	395	405	429	454	488	512	511	498	472	450	435	427	422	
11	422	417	412	409	404	392	378	390	380	359	360	367	378	392	434	465	464	477	504	529	527	493	449	438	427	
12 D	441	436	366	388	396	409	412	371	349	360	388	402	400	418	443	487	505	466	472	481	466	451	444	429	424	
13	419	411	385	358	357	373	384	388	360	351	360	379	393	401	410	422	444	463	463	453	437	429	427	426	404	
14	421	417	414	407	401	399	386	355	353	345	363	391	396	427	437	452	476	479	471	469	453	443	439	435	418	
15	431	424	423	418	416	405	391	357	---	---	---	387	393	402	425	451	472	476	468	464	459	450	451	449	425	
16	446	433	427	416	404	384	384	370	359	360	372	382	391	423	447	458	466	477	467	463	481	473	453	444	424	
17	411	409	400	401	376	375	354	370	376	364	360	378	392	397	406	439	465	474	475	475	457	440	425	424	410	
18	393	389	380	373	393	394	389	384	378	368	386	394	406	418	440	440	443	451	462	451	442	439	442	439	412	
19 Q	429	422	416	409	404	399	390	378	356	352	359	371	383	403	417	429	442	451	453	441	434	434	435	437	410	
20	435	423	399	406	402	397	388	378	365	362	358	363	385	410	430	438	444	452	452	449	437	422	417	418	410	
21	419	416	412	410	406	397	380	350	329	324	362	407	400	400	422	---	---	---	---	---	---	---	---	---	---	
22 D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
23	434	435	428	418	408	394	383	379	374	371	385	386	391	409	428	456	463	468	470	458	447	437	430	431	420	
24	436	433	429	423	416	409	400	386	372	365	374	383	392	405	428	457	483	481	480	465	448	442	437	435	424	
25 Q	434	408	415	409	404	368	333	349	329	336	353	352	380	410	428	447	475	480	472	462	445	437	433	430	408	
26	432	418	401	409	393	386	378	374	375	363	367	377	386	408	427	443	464	471	461	456	447	430	423	424	413	
27	417	424	425	414	410	410	376	360	355	348	355	367	382	397	417	428	450	459	452	456	464	458	452	436	413	
28 D	425	411	406	401	406	402	396	391	387	388	397	402	408	414	434	466	482	500	517	493	502	458	464	426	432	
29	404	409	419	416	397	401	390	375	372	379	419	432	436	429	460	466	493	502	496	486	466	446	428	417	431	
30 D	430	430	435	424	402	400	363	321	320	320	325	---	---	415	431	448	---	483	463	456	435	418	408	420	407	
31	406	421	427	423	413	402	384	377	372	366	361	369	393	403	416	444	467	475	481	459	441	426	419	419	415	
MEAN	---	---	411	406	401	393	381	371	---	---	---	---	---	407	427	---	---	---	476	468	457	---	435	429	---	
MEAN Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	492	496	487	473	452	442	425	---

LIVINGSTON ISLAND MAGNETIC OBSERVATORY

DECEMBER 2004

TOTAL INTENSITY

F = 35500 nT PLUS TABULAR QUANTITIES (UNITS nT)

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	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
2 Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3 Q	---	299	297	297	298	295	294	294	291	284	274	267	263	258	257	253	259	272	283	293	296	---	293	296	283	
4 Q	296	293	295	296	296	298	300	300	294	288	283	273	264	254	250	245	246	258	272	283	291	295	296	295	282	
5	297	297	299	297	298	307	310	316	342	317	300	286	277	270	265	258	249	255	277	280	293	308	296	297	291	
6 D	306	293	296	298	296	290	270	269	272	264	265	247	243	239	243	241	240	256	262	281	304	308	319	310	275	
7	304	304	292	292	292	288	282	278	275	278	272	267	263	259	263	263	251	269	275	283	296	309	296	296	281	
8	296	300	302	298	296	290	290	287	286	281	268	261	254	247	247	257	263	269	278	295	307	302	287	294	282	
9	305	305	296	294	293	292	292	287	282	278	271	268	260	252	251	256	259	267	273	287	295	289	301	299	281	
10	301	296	293	298	297	300	298	286	277	271	265	265	261	258	255	267	273	268	280	288	288	294	280	295	281	
11	296	301	302	299	294	288	283	280	282	280	269	261	257	248	241	258	270	290	286	296	305	318	307	308	284	
12 D	305	306	313	287	292	284	281	277	280	264	250	258	259	244	239	238	241	276	277	279	281	290	306	312	277	
13	317	282	282	289	279	277	278	276	279	276	268	252	246	247	251	253	260	270	284	292	293	291	291	291	276	
14	294	298	295	295	301	299	292	277	278	276	260	262	256	254	250	246	246	258	274	290	285	280	286	295	277	
15	300	294	301	302	304	302	296	289	---	---	---	268	254	239	233	239	254	269	289	305	302	296	292	288	282	
16	300	312	318	317	310	296	297	299	292	285	279	271	259	247	245	254	257	253	271	295	306	280	297	311	285	
17	314	318	314	314	295	293	299	289	278	276	272	259	252	250	250	249	242	258	267	280	284	296	305	302	281	
18	304	305	300	289	295	302	300	296	283	279	270	264	259	255	247	261	263	269	268	272	284	289	292	293	281	
19 Q	295	298	298	295	294	295	293	293	289	279	269	264	265	265	265	260	255	261	275	283	289	289	291	297	281	
20	298	298	300	294	295	298	296	289	283	277	269	263	260	259	256	257	255	256	265	281	294	292	298	296	280	
21	294	297	288	296	303	310	316	326	296	271	247	259	254	254	254	---	---	---	---	---	---	---	---	---	---	
22 D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
23	288	291	294	291	291	287	284	284	277	267	261	256	252	252	252	244	263	278	286	295	300	292	293	287	278	
24	286	285	286	286	287	288	291	289	285	275	267	260	255	257	262	261	262	272	279	287	287	294	293	314	280	
25 Q	305	291	299	306	304	306	288	291	274	274	261	257	255	248	245	242	252	267	282	281	292	294	294	293	279	
26	293	301	298	295	295	297	299	291	285	274	263	256	258	261	263	262	259	262	287	297	293	284	285	291	281	
27	288	285	290	300	303	301	301	304	294	282	276	267	250	246	250	264	274	277	288	302	291	291	287	294	283	
28 D	298	294	289	285	284	288	291	286	284	274	264	262	261	261	266	263	275	280	292	290	307	302	307	308	284	
29	298	287	286	289	285	289	289	290	282	268	262	252	263	265	257	264	267	263	274	282	286	291	286	299	278	
30 D	300	295	300	303	299	304	311	326	293	275	265	---	---	236	242	247	---	264	284	283	287	297	294	295	282	
31	297	288	287	289	287	283	282	282	279	276	270	256	247	251	249	251	262	260	269	274	278	294	296	292	275	
MEAN	---	---	297	296	295	295	293	291	---	---	---	---	---	253	252	---	---	---	277	287	293	---	295	298	---	
MEAN Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	265	275	281	293	298	305	303	---	

LIVINGSTON ISLAND MAGNETIC OBSERVATORY

JANUARY 2005

DECLINATION EAST

D = 14 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	414	419	425	421	411	381	348	348	348	348	346	343	367	413	421	432	448	482	523	543	490	453	436	444	417
2 D	431	414	359	373	377	368	378	367	399	386	373	364	386	403	437	479	497	494	464	458	463	484	451	447	419
3	372	426	436	429	384	365	372	354	350	364	384	387	416	467	496	481	506	521	493	468	449	433	435	437	426
4	432	410	412	400	416	403	385	375	369	349	359	366	380	413	428	465	471	472	474	436	425	417	400	395	410
5	376	394	408	404	387	386	377	372	383	372	360	394	416	418	444	472	477	471	464	455	448	437	440	424	416
6 Q	423	424	421	418	413	406	397	385	371	366	366	380	394	418	434	452	471	472	460	456	440	440	434	431	420
7	429	427	425	422	419	413	404	390	372	359	343	360	378	398	418	495	532	506	491	500	482	484	483	143	420
8	273	349	344	304	318	388	407	401	367	333	340	363	383	413	445	476	502	505	479	457	434	427	421	425	398
9 Q	429	432	428	422	419	412	403	392	377	369	361	377	395	422	450	472	474	459	433	412	407	406	413	420	416
10	424	424	417	414	408	404	396	390	376	371	366	368	382	401	429	461	485	487	467	445	434	426	403	409	416
11	415	421	420	417	410	422	376	371	385	364	353	354	359	387	425	462	489	484	466	449	443	437	433	445	416
12	435	437	426	320	360	376	388	372	342	356	375	407	403	437	438	476	492	497	507	476	460	428	407	407	418
13	416	425	421	400	400	400	379	378	367	362	358	359	377	411	452	489	518	520	482	475	431	433	401	412	419
14	428	432	431	433	425	409	385	373	368	358	358	371	385	403	425	457	484	495	483	461	462	449	439	440	423
15	425	418	427	403	412	391	397	365	373	388	394	395	405	415	436	458	475	483	472	462	436	422	414	408	420
16	413	416	407	404	405	408	394	383	373	366	366	380	396	394	418	444	473	482	479	473	460	448	452	441	420
17 D	400	374	383	385	384	405	391	387	353	328	345	345	419	414	383	407	460	561	527	525	494	480	456	454	419
18 D	427	418	357	391	342	404	420	425	394	434	449	401	407	459	505	543	503	500	491	501	511	500	446	446	445
19 D	448	346	267	274	280	254	270	316	402	476	496	505	548	484	491	504	528	524	491	476	452	436	414	422	421
20	437	444	443	441	438	431	420	390	380	381	373	374	411	430	441	479	506	505	500	476	463	459	430	432	437
21 D	426	415	425	428	429	424	401	387	370	379	380	385	402	417	426	455	472	491	522	577	612	721	651	599	466
22	562	472	440	364	455	445	400	423	416	412	409	418	422	434	438	475	496	498	487	491	474	446	436	431	448
23	439	417	413	411	412	413	413	412	393	396	388	381	387	398	423	444	469	470	474	457	448	419	393	418	420
24	428	425	415	421	422	421	413	407	401	394	373	375	392	409	434	458	482	484	473	464	458	443	427	421	427
25 Q	422	420	415	417	417	411	407	400	384	379	366	365	373	398	431	459	460	459	451	433	422	418	416	420	414
26 Q	423	421	420	416	416	412	407	396	387	375	371	374	388	400	414	433	449	459	446	436	427	414	409	410	413
27 Q	411	414	411	408	404	402	401	395	385	375	360	353	359	376	399	423	443	448	432	419	408	403	409	422	403
28	419	410	408	404	389	379	381	378	367	354	340	339	357	---	420	444	456	455	458	465	465	450	440	435	409
29	426	428	421	416	408	392	376	355	348	316	319	345	353	375	399	440	447	473	492	506	459	445	446	404	408
30	421	414	404	394	360	383	391	396	371	351	362	369	370	404	431	447	464	472	468	436	434	435	431	---	410
31	---	---	383	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	416	---
MEAN	421	416	407	398	397	397	389	383	376	372	371	377	394	413	434	463	481	488	478	470	456	450	435	422	420
MEAN Q	422	422	419	416	414	409	403	394	381	373	365	370	382	403	425	448	459	459	445	431	421	416	416	421	413
MEAN D	426	393	359	370	362	371	372	376	384	400	409	400	432	435	448	478	492	514	499	508	506	524	484	474	434

LIVINGSTON ISLAND MAGNETIC OBSERVATORY
 JANUARY 2005

TOTAL INTENSITY

F = 35500 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	302	300	290	290	291	294	280	284	283	272	262	254	249	253	259	254	254	278	286	273	261	283	300	279	276	
2 D	297	292	293	292	295	288	291	260	255	248	254	245	240	234	232	223	247	271	286	282	298	291	297	312	272	
3	319	298	296	291	289	270	278	276	273	264	251	242	230	232	243	262	271	258	293	300	294	299	295	291	276	
4	300	301	294	286	282	287	288	287	274	270	265	258	241	250	240	231	250	268	281	288	284	294	292	306	276	
5	305	298	293	283	281	278	279	279	267	267	266	247	256	256	248	253	258	267	277	282	281	284	289	296	275	
6 Q	297	294	293	290	287	285	284	283	282	276	267	263	256	249	247	247	252	270	286	294	285	284	289	285	277	
7	288	289	288	287	287	287	288	289	285	281	271	260	257	259	246	210	241	284	268	269	277	302	346	351	280	
8	322	322	292	286	297	294	284	276	279	270	257	252	252	245	241	246	255	275	279	281	289	292	282	276	277	
9 Q	290	288	286	288	285	286	284	284	283	279	276	265	256	248	247	259	274	285	290	285	281	281	282	283	278	
10	287	293	291	291	294	292	296	295	292	284	275	268	255	246	242	247	258	268	279	289	296	294	288	295	280	
11	294	290	290	290	288	282	274	281	273	272	268	257	243	236	234	232	246	279	294	296	297	286	291	295	275	
12	288	303	320	265	271	303	305	291	288	280	257	265	266	243	241	234	244	254	271	278	289	303	306	302	278	
13	295	298	295	291	289	279	282	282	282	278	269	260	244	232	225	230	246	263	280	295	295	294	284	301	275	
14	293	293	294	291	288	284	278	280	279	271	266	260	250	239	229	224	232	252	262	279	301	296	315	302	273	
15	310	312	299	294	281	285	289	272	264	260	260	260	249	235	221	221	233	252	275	283	281	296	291	305	272	
16	307	300	296	289	283	287	285	280	277	270	266	258	262	268	259	241	246	249	258	273	286	309	304	318	278	
17 D	304	297	269	268	268	284	287	282	274	247	242	202	259	276	300	276	219	215	240	288	288	297	304	314	271	
18 D	308	293	299	286	246	267	270	195	135	199	233	245	244	211	196	210	261	269	258	317	290	340	331	307	259	
19 D	302	319	324	282	284	283	239	230	223	223	213	210	216	227	271	279	266	274	290	300	303	315	328	302	271	
20	284	284	282	275	273	272	275	292	277	261	248	245	242	243	247	238	217	252	276	281	282	284	281	295	267	
21 D	285	296	285	285	287	283	279	276	278	268	258	253	253	258	260	260	269	240	339	419	402	405	384	348	299	
22	286	264	285	279	247	224	228	266	272	273	273	267	266	258	247	246	247	255	260	270	275	295	296	298	266	
23	293	295	297	282	282	283	281	269	273	269	271	258	247	246	239	237	240	257	272	277	280	287	286	279	271	
24	277	284	289	285	287	287	290	288	281	274	267	262	245	236	244	240	239	250	256	264	265	270	280	285	269	
25 Q	286	289	287	284	284	284	282	282	280	279	279	270	259	244	235	234	247	262	272	273	274	279	275	278	272	
26 Q	282	284	284	281	285	285	284	284	282	276	269	264	255	241	236	238	245	256	264	276	279	272	273	277	270	
27 Q	283	281	283	283	281	281	280	283	283	283	281	272	259	249	245	248	255	267	279	289	292	281	279	283	275	
28	285	281	283	280	282	281	279	280	278	276	267	255	244	---	235	241	250	256	274	285	271	263	271	301	269	
29	283	280	289	287	288	290	285	279	281	278	268	263	248	241	234	231	261	268	278	267	266	286	297	274	272	
30	284	285	293	289	276	277	277	273	272	265	254	258	251	239	240	247	252	254	268	265	274	279	281	---	268	
31	---	---	290	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	294	---
MEAN	295	293	292	285	282	282	280	276	271	267	262	255	250	245	243	241	249	262	276	287	288	295	297	298	274	
MEAN Q	287	287	287	285	285	284	283	283	282	278	274	267	257	246	242	245	255	268	278	284	282	280	280	281	274	
MEAN D	299	299	294	282	276	281	273	249	233	237	240	231	242	241	252	250	252	254	283	321	316	329	329	317	274	

LIVINGSTON ISLAND MAGNETIC OBSERVATORY

FEBRUARY 2005

DECLINATION EAST

D = 14 DEGREES PLUS TABULAR QUANTITIES (UNITS 0.1 MINUTES)

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	398	394	405	405	402	397	393	389	383	382	370	369	---	---	---	---	---	---	---	---	---	---	---	---	---	
2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
4 Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	413	---	
5 Q	406	---	397	390	393	394	388	382	368	370	357	354	352	361	387	419	440	449	438	---	---	393	396	402	393	
6	402	398	398	397	388	385	394	405	366	356	341	337	343	362	395	422	442	453	441	435	417	420	429	---	398	
7 D	422	416	403	370	350	373	386	374	360	356	366	368	372	391	447	455	439	438	459	503	464	459	402	374	406	
8 D	428	438	423	434	385	378	367	361	366	408	403	383	392	425	447	448	449	472	477	444	440	416	370	410	415	
9 D	419	403	402	377	356	349	359	368	359	356	385	384	384	416	433	454	463	461	464	435	429	422	396	401	403	
10 D	399	386	388	386	395	399	391	399	400	383	385	371	378	402	425	431	456	460	465	443	413	411	400	406	407	
11	414	410	399	372	382	380	399	396	378	371	354	361	382	407	425	443	457	457	455	462	---	409	405	410	407	
12	396	396	400	397	393	403	399	---	373	363	---	---	366	380	---	---	442	453	452	437	425	415	409	406	403	
13 Q	399	394	399	395	394	396	392	385	380	370	357	347	357	375	399	429	---	---	---	---	---	---	414	413	397	
14	410	413	406	394	362	369	370	370	365	353	348	351	370	387	407	428	451	472	469	462	455	441	426	418	404	
15 Q	415	412	412	408	403	393	394	376	371	364	356	351	357	373	401	415	423	431	426	---	398	---	---	395	394	
16	398	380	391	396	393	394	379	377	374	364	355	346	355	374	---	449	462	470	452	430	418	413	399	408	400	
17	404	405	399	403	397	395	397	393	381	366	357	356	---	---	---	---	---	---	---	---	---	---	---	---	---	
18 D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	438	426	424	405	---
19	392	404	407	407	406	399	389	405	405	358	343	361	407	420	423	433	443	451	450	435	431	435	424	412	410	
20	379	393	408	408	408	395	375	375	377	364	355	356	367	396	420	439	446	445	444	447	440	430	419	410	404	
21	385	395	390	383	383	367	375	386	388	386	379	376	384	397	423	445	447	443	436	431	422	412	403	399	401	
22	401	400	401	401	386	389	391	387	---	372	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
23 Q	397	---	---	---	386	383	381	378	368	365	362	358	359	370	381	388	399	---	412	409	414	409	406	401	387	
24	---	---	---	385	382	378	370	373	368	363	358	---	---	375	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	405	---
MEAN D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	437	427	398	399	---

LIVINGSTON ISLAND MAGNETIC OBSERVATORY

FEBRUARY 2005

HORIZONTAL INTENSITY

H = 20000 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	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4 Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
5 Q	150	---	153	155	154	150	147	148	148	147	142	135	130	130	131	132	133	141	150	---	---	155	157	160	148
6	161	164	161	159	160	163	159	158	154	149	143	130	123	124	130	144	152	150	145	147	133	145	140	---	147
7 D	142	152	154	143	140	149	163	156	157	155	150	148	146	140	120	143	158	156	163	118	126	106	109	127	143
8 D	130	139	149	156	133	147	139	135	142	134	133	123	120	106	106	125	133	130	110	124	129	121	143	136	131
9 D	141	139	149	166	159	149	150	146	143	134	123	125	117	102	111	118	126	142	136	144	140	130	128	128	135
10 D	127	135	137	135	140	143	137	133	137	131	135	127	120	109	105	116	126	127	146	133	149	145	141	150	133
11	153	155	154	156	148	144	146	151	146	145	139	126	125	120	112	111	115	127	134	128	---	141	140	143	137
12	145	151	150	149	148	153	146	---	143	140	---	---	125	120	---	---	110	122	129	142	145	148	147	150	138
13 Q	152	151	147	148	147	144	147	145	145	146	144	135	127	120	117	116	---	---	---	---	---	---	150	153	140
14	154	156	159	163	165	164	160	146	146	145	142	139	133	127	123	121	126	136	143	148	142	141	142	143	144
15 Q	150	153	154	156	156	149	151	151	147	148	145	143	138	132	132	136	139	143	149	---	143	---	---	157	147
16	158	157	162	156	160	163	158	155	154	152	147	154	151	128	127	128	128	125	127	129	129	131	113	120	142
17	143	147	148	148	153	151	146	144	142	140	136	134	---	---	---	---	---	---	---	---	---	---	---	---	---
18 D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	120	126	130	127
19	133	135	136	138	140	149	153	144	151	153	140	137	121	121	118	120	127	124	119	124	134	137	139	146	135
20	129	132	144	146	145	151	144	139	139	135	130	124	119	113	115	117	126	131	128	124	120	123	124	122	130
21	124	125	117	122	124	130	132	134	136	133	131	129	129	132	131	134	139	141	144	141	138	136	132	139	132
22	144	148	153	157	157	153	150	149	---	148	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
23 Q	146	---	---	---	154	159	160	158	156	156	154	151	148	145	140	137	137	---	141	146	157	150	157	158	150
24	---	---	---	159	157	155	153	153	152	151	147	---	---	137	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	155
MEAN D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	133	126	130	134

LIVINGSTON ISLAND MAGNETIC OBSERVATORY
 FEBRUARY 2005

VERTICAL INTENSITY

HOUR (UT)	Z = -29500 nT PLUS TABULAR QUANTITIES (UNITS nT)																				MEAN					
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	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
4 Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
5 Q	-68	---	-68	-68	-65	-62	-60	-62	-63	-58	-56	-54	-50	-45	-37	-28	-33	-44	-58	---	---	-65	-63	-62	-57	
6	-63	-67	-65	-64	-66	-63	-55	-48	-49	-53	-55	-48	-40	-35	-35	-41	-52	-59	-59	-67	-65	-71	-76	---	-56	
7 D	-73	-75	-75	-69	-63	-69	-75	-69	-73	-67	-59	-50	-46	-37	-16	-38	-49	-47	-56	-52	-67	-73	-99	-101	-62	
8 D	-87	-83	-84	-49	-54	-65	-63	-65	-69	-56	-54	-53	-51	-41	-37	-48	-54	-52	-48	-74	-77	-81	-97	-77	-63	
9 D	-77	-77	-81	-80	-63	-59	-36	-32	-56	-53	-44	-44	-48	-35	-35	-37	-44	-53	-55	-64	-62	-71	-74	-82	-57	
10 D	-77	-81	-73	-70	-71	-62	-64	-59	-60	-61	-58	-53	-48	-44	-40	-52	-53	-57	-73	-71	-86	-80	-76	-75	-64	
11	-72	-72	-69	-62	-57	-62	-60	-66	-68	-64	-60	-44	-41	-37	-35	-36	-40	-47	-52	-54	---	-78	-76	-71	-58	
12	-72	-70	-68	-66	-63	-63	-61	---	-66	-68	---	---	-52	-47	---	---	-44	-49	-53	-67	-73	-73	-71	-70	-62	
13 Q	-72	-71	-66	-64	-62	-60	-63	-64	-65	-64	-61	-53	-44	-37	-36	-37	---	---	---	---	---	---	-64	-66	-58	
14	-66	-66	-67	-67	-65	-61	-61	-54	-60	-60	-57	-51	-45	-41	-35	-36	-39	-42	-50	-60	-62	-61	-67	-70	-56	
15 Q	-75	-71	-68	-67	-66	-62	-60	-60	-62	-64	-60	-56	-53	-46	-42	-41	-40	-46	-55	---	-68	---	---	-65	-59	
16	-65	-62	-62	-61	-62	-63	-58	-57	-59	-59	-54	-53	-49	-33	-28	-34	-39	-43	-58	-64	-64	-72	-69	-66	-56	
17	-78	-76	-73	-68	-65	-61	-61	-61	-62	-60	-54	-49	---	---	---	---	---	---	---	---	---	---	---	---	---	
18 D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-68	-73	-76	-76	---
19	-78	-73	-69	-69	-68	-71	-69	-51	-39	-46	-49	-52	-37	-45	-42	-45	-50	-53	-52	-62	-69	-78	-69	-80	-59	
20	-76	-69	-72	-70	-66	-64	-48	-58	-66	-67	-62	-54	-46	-40	-41	-41	-45	-49	-52	-58	-63	-65	-73	-73	-59	
21	-76	-74	-69	-70	-69	-68	-66	-66	-66	-65	-63	-56	-50	-47	-44	-43	-46	-56	-64	-67	-69	-69	-66	-70	-62	
22	-71	-70	-69	-69	-67	-64	-61	-60	---	-59	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
23 Q	-66	---	---	---	-66	-66	-63	-62	-61	-60	-58	-55	-48	-42	-40	-40	-42	---	-47	-51	-57	-54	-59	-60	-55	
24	---	---	---	-59	-57	-57	-55	-55	-56	-55	-51	---	---	-41	---	---	---	---	---	---	---	---	---	---	---	
25	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
MEAN Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-63	---
MEAN D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-72	-76	-84	-82	---

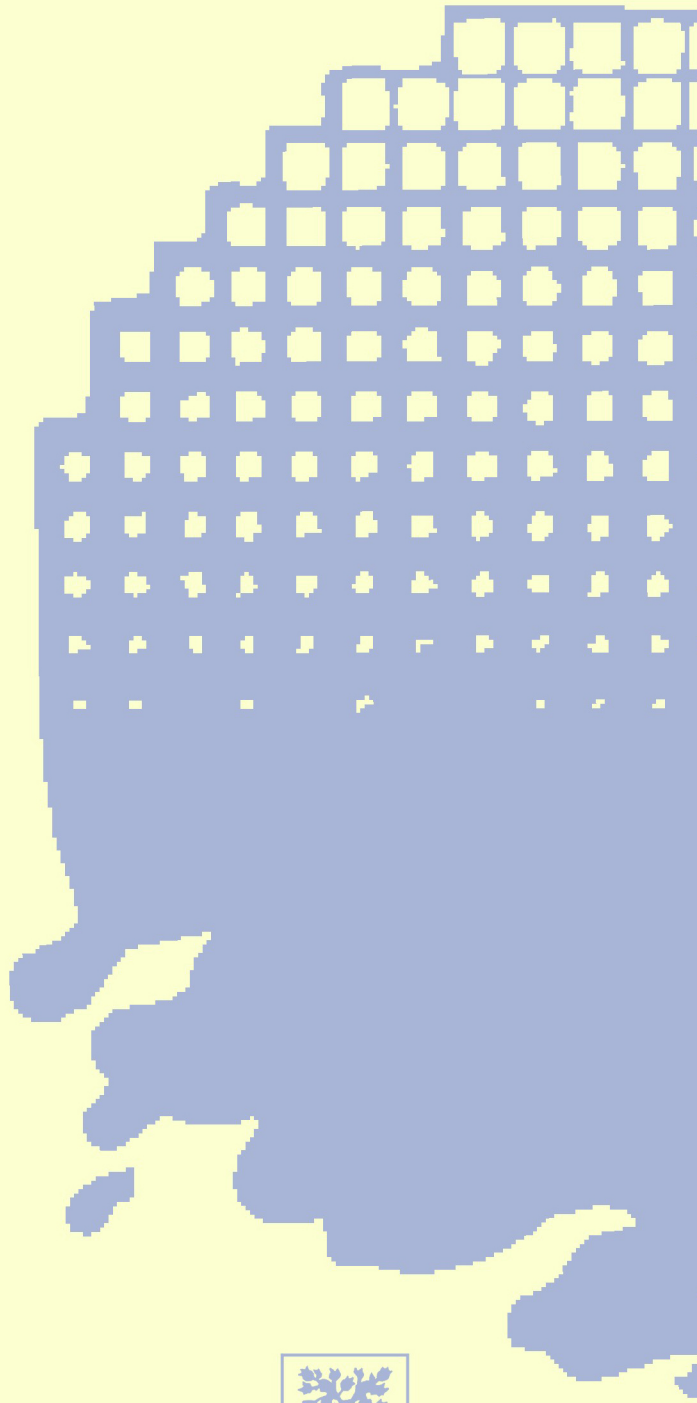
LIVINGSTON ISLAND MAGNETIC OBSERVATORY

FEBRUARY 2005

TOTAL INTENSITY

F = 35500 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	287	281	277	277	275	274	274	274	271	267	267	264	---	---	---	---	---	---	---	---	---	---	---	---	---	
2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
4 Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
5 Q	281	---	283	284	281	276	273	275	276	271	267	261	255	251	245	238	243	257	273	---	---	282	281	281	269	
6	283	288	285	283	285	284	276	269	268	268	266	253	243	239	242	255	268	274	271	279	269	281	282	---	270	
7 D	281	288	290	278	271	282	294	285	289	283	273	265	260	250	221	252	270	268	278	250	267	261	284	295	272	
8 D	286	288	293	269	260	277	271	270	277	262	260	254	250	234	230	251	260	257	242	272	277	275	301	280	267	
9 D	284	282	291	300	282	273	255	249	267	260	246	247	246	227	232	238	247	265	262	275	271	273	273	280	264	
10 D	276	283	278	274	278	272	270	265	267	264	264	256	248	238	232	249	255	259	283	275	295	288	282	287	268	
11	286	287	285	279	271	273	273	280	279	275	268	247	244	238	232	233	239	251	259	258	---	285	282	280	266	
12	282	283	281	279	276	279	273	---	276	276	---	---	254	247	---	---	239	250	257	276	283	284	282	283	269	
13 Q	285	284	278	277	275	272	275	276	275	276	272	260	248	239	236	236	---	---	---	---	---	278	281	267		
14	282	282	285	288	287	283	281	268	272	272	267	261	253	246	238	238	244	252	262	273	272	270	276	279	268	
15 Q	287	285	283	284	283	276	275	275	275	276	272	267	262	253	249	251	251	259	269	---	277	---	---	283	272	
16	283	280	283	279	281	284	277	275	276	275	268	271	266	240	235	240	245	246	260	266	267	274	261	263	267	
17	285	286	284	280	280	275	272	272	272	268	261	257	---	---	---	---	---	---	---	---	---	---	---	---	---	
18 D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	264	271	277	275	---	
19	280	277	274	275	276	283	284	264	258	264	260	260	239	246	242	246	253	254	251	261	273	282	276	289	265	
20	275	272	282	281	277	278	262	267	273	272	265	255	246	237	240	240	248	254	256	259	261	263	270	269	263	
21	273	272	263	267	268	270	269	271	272	269	266	259	254	253	251	252	256	266	275	275	275	274	269	276	267	
22	280	281	283	286	284	279	275	274	---	273	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
23 Q	277	---	---	---	282	285	283	280	279	278	275	271	263	257	252	251	252	---	259	265	276	270	278	279	271	
24	---	---	---	278	276	275	272	272	272	271	266	---	---	252	---	---	---	---	---	---	---	---	---	---	---	
25	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
MEAN Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	280	---	
MEAN D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	275	274	283	284	---



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