OBSERVATORI DE L'EBRE

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BOLETÍN DEL OBSERVATORIO DEL EBRO

OBSERVACIONES GEOMAGNÉTICAS DE LA ISLA LIVINGSTON, ANTÁRTIDA 2003 Y CAMPAÑA 2003-2004

LIVINGSTON ISLAND GEOMAGNETIC OBSERVATIONS, ANTARCTICA 2003 AND 2003-2004 SURVEY

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Por - *by*

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1. INTRODUCCIÓN

En este Boletín se presentan las observaciones magnéticas registradas en el Observatorio Geomagnético de la Isla Livingston durante el año 2003, incluyendo la Campaña Antártica 2003-2004. 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 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) se han ido resumiendo sucesivamente las medidas realizadas desde esa fecha hasta el 20 de Febrero de 2003, cuando el personal científico y técnico abandonó la BAE al final de la Campaña 2002-2003 (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 2003, habiéndose podido recuperar los datos de cada uno de esos períodos al inicio de la campaña siguiente (en concreto, el 21 de Noviembre de 2003 para el último).

La invernada correspondiente a este Boletín presenta períodos considerables sin valores (especialmente durante el período agosto-octubre), debidos a problemas de suministro eléctrico desde la BAE. Si bien los datos presentados para el campo total (F) se extienden hasta el 24 de Febrero de 2004, los correspondientes a los restantes elementos magnéticos (H, D y Z) no lo hacen más allá del 30 de Enero de 2004, por no disponer de medidas absolutas (ver apartado 3.2) para dichos elementos entre las dos fechas anteriores. Aun así, se puede obtener información sobre las variaciones en ese período dirigiéndose a:

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Desde la Campaña 1999-2000 los valores del campo registrados por el Observatorio se transmiten cada hora vía satélite Meteosat hasta el *Geomagnetic Information Node* (GIN) de Edimburgo, donde son recuperados por el Observatori de l'Ebre. Sin embargo, la calidad de las transmisiones fue deteriorándose de modo que durante la última campaña se decidió proceder a la desinstalación y traslado del equipo de transmisión para su posterior revisión, a fin de tratar de poder ofrecer un mejor servicio en el futuro.

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 460m 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 δD/δI. 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 δD/δI. 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 -1.6 nT (*Fpilar fundamental - Fmagnetómetro vector*).

4. PROCESO DE LOS DATOS

El proceso de datos preliminar, realizado en las instalaciones de la BAE, incluía la detección y eventual eliminación de valores espúreos, la visualización gráfica conjunta del registro diario de las lecturas 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 *D*, *H* y *Z* se han substraído 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, un suavizado por medio de un promedio corrido, y una interpolación por "splines". 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 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).

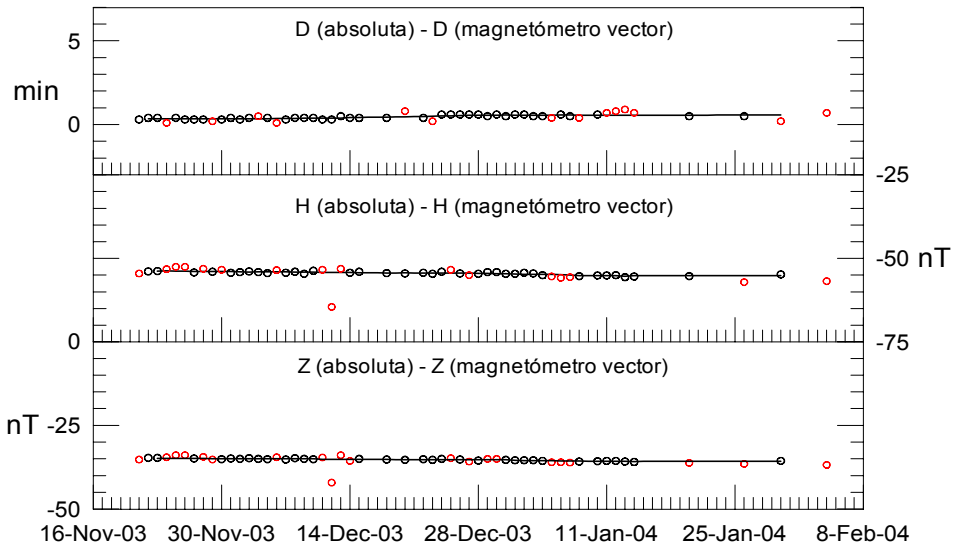

Fig. 1. Diferencias observadas (círculos) y líneas de base adoptadas (líneas continuas) para los tres elementos *D*, *H*, y *Z*. Los círculos en trazo fino corresponden a las diferencias descartadas antes de la adopción de la línea de base.

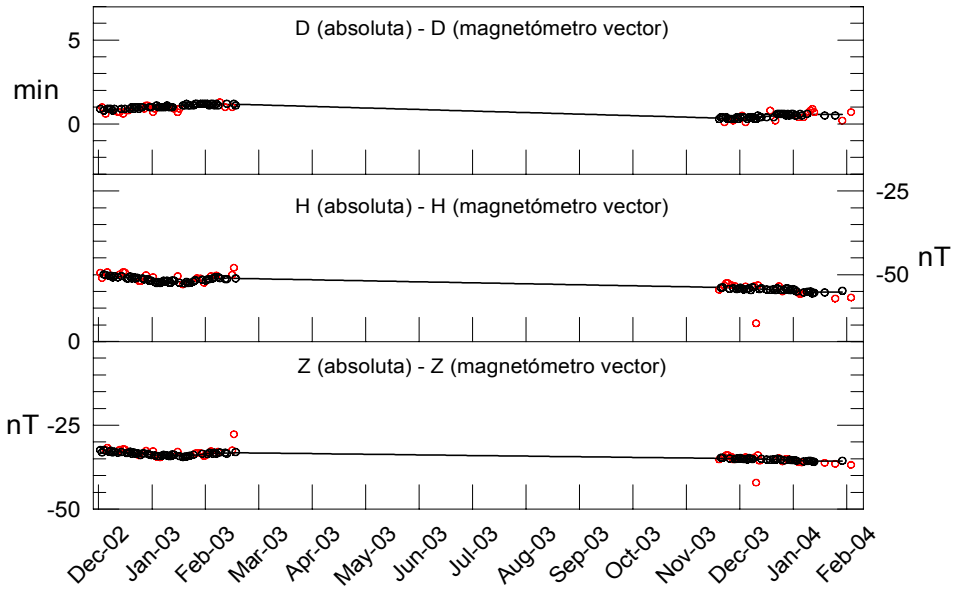

Fig. 2. Equivalente a la Fig. 1 para el período completo de registro desde Diciembre de 2002.

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.

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

Tabla 1. Valores medios anuales para todos los elementos del campo magnético.

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

Tabla 2. Valores medios para los períodos 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 al personal técnico y científico de la BAE en las Campañas desde que se instaló el Observatorio, en concreto durante el período que comprende este Boletín a Jöel Sans y Javier Prades, 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 Pankratz, del *United States Geological Survey*, quien nos ha facilitado el uso de un canal del satélite GOES para ensayar las transmisiones a través del mismo; y de Jennifer Parmelee del *Geological Survey of Canada*, para su recepción.

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1. INTRODUCTION

In this Bulletin we give details of the magnetic observations recorded at the Livingston Island Geomagnetic Observatory during 2003, including the 2003-2004 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 anomaly biases are given in TORTA et al. (1999a).

Both the variometer, deployed in a set of δD/δI 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) the measurements made between that date and February 20, 2003 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 November 21, 2003 for the latest).

The winter epoch corresponding to this Bulletin presents considerable periods without data (specially during the period August-October), due to power losses from the Base. Although data presented for the total intensity (F) extend up to February 24th, 2004, the data corresponding to the remaining magnetic elements (H, D and Z) last until January 30th, 2004, because we don't have absolute measurements (see section 3.2) between those two dates. Anyway, it is possible to obtain information about variations in this period applying to:

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Since the 1999-2000 Survey, data recorded at the Observatory are transmitted via satellite to the Geomagnetic Information Node (GIN) at Edinburgh, being them afterwards retrieved by Ebre Observatory. Nevertheless, the quality of the transmissions deteriorate and during the last survey it was decided to disassemble and translate the transmission system for revision in order to attempt offering a better service.

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 δ D/δ 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 -1.6 nT (Fabsolute pillar - Fvector 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 all 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 element D, H and Z, 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, a smoothing by means of a running average, and an interpolation by splines. 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 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).

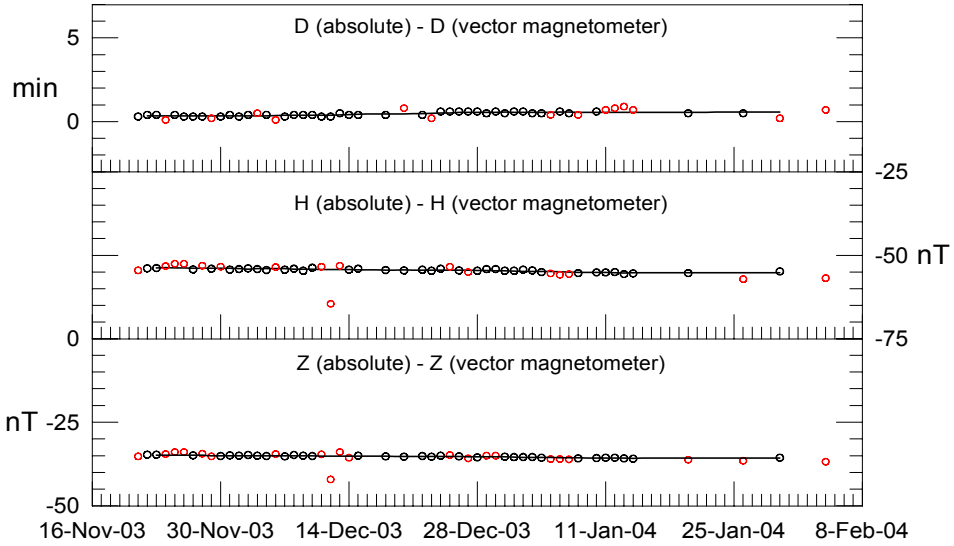

Fig. 1. *Observed differences (circles) and adopted base-lines (lines) for the three elements D, H, and Z. Thin circles correspond to differences removed before the adoption of the baseline.*

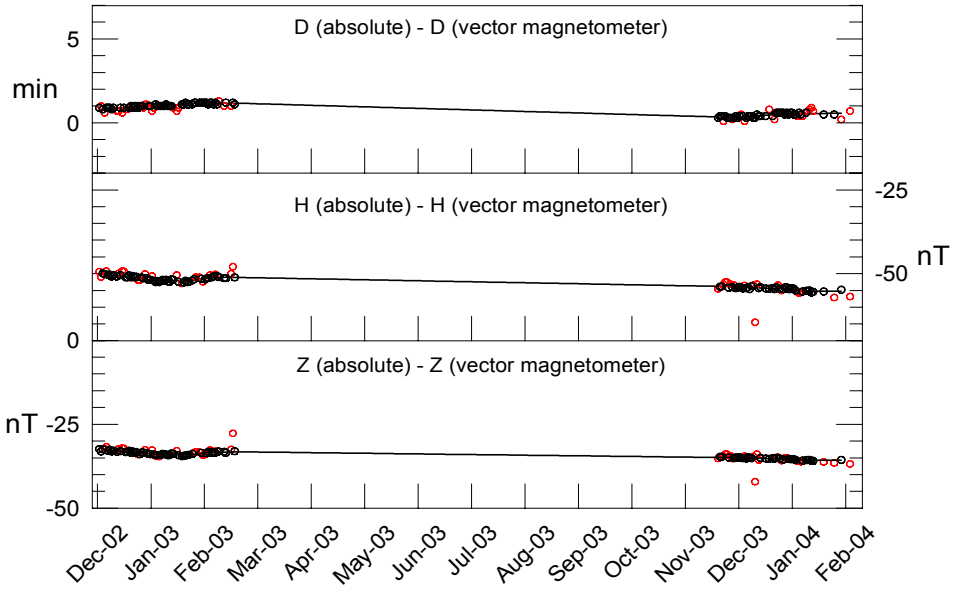

Fig. 2. *As Figure 1 but for the complete recording period from December 2002.*

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 the December, January and February months of each Survey.

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

Table 1. *Annual mean values for all magnetic elements.*

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

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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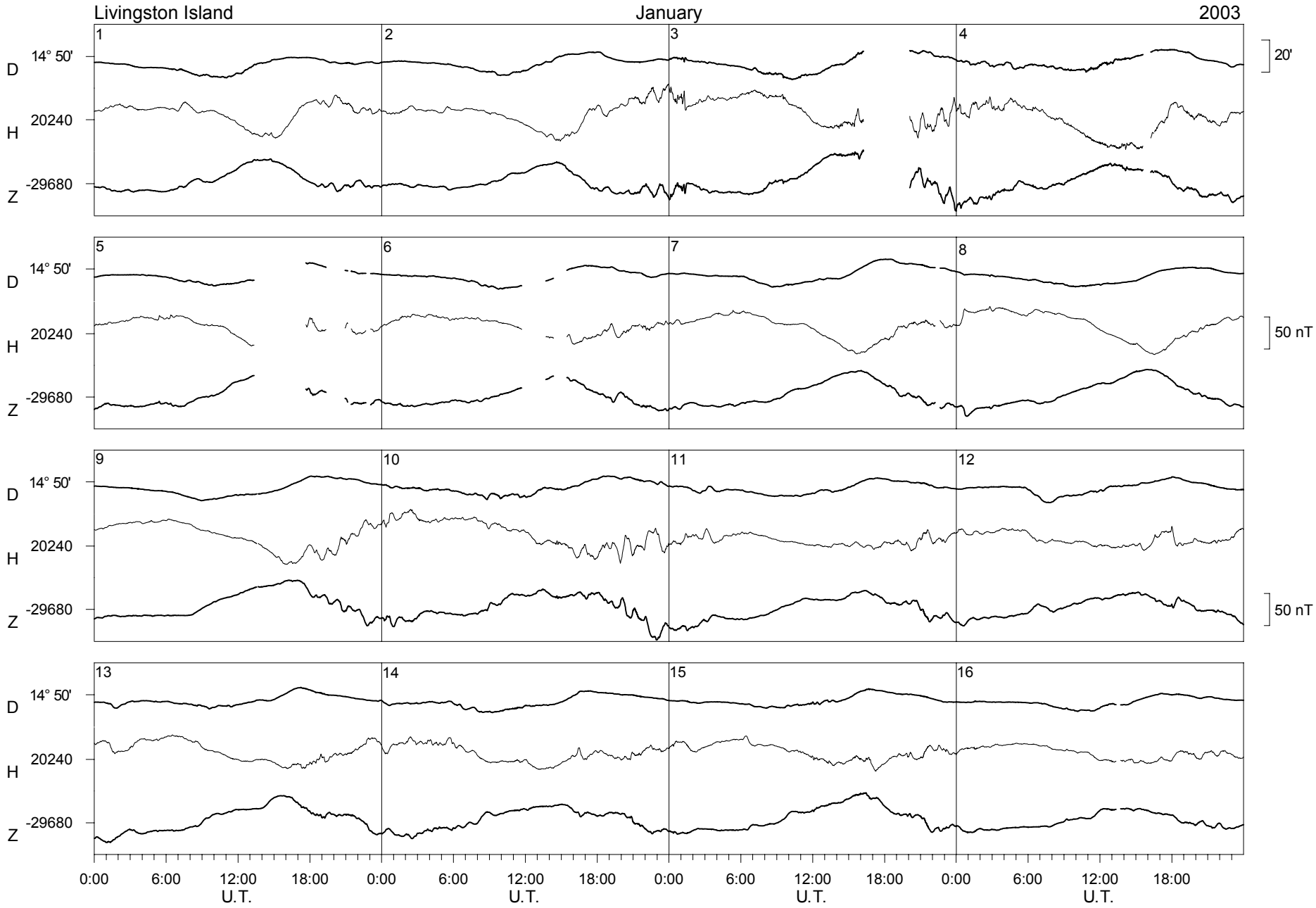
K INDICES & DAILY K SUMS AT LIVINGSTON ISLAND (K=9 LIMIT: 450 nT) FOR 2003 & JANUARY 2004

Date	JAN2003	FEB2003	MAR2003	APR2003	MAY2003	JUN2003	JUL2003
1	2222 2232 17	2112 2343 18	5213 2223 20	5422 2233 23	D6543 4334 32	3432 2235 24	2332 211- -
2	2212 2333 18	D4555 4334 33	2222 2232 17	2333 3334 24	4523 2214 23	D5555 3314 31	-333 222- -
3	4233 2--4 -	D5332 3334 26	3122 ---- -	2232 2334 21	Q3323 2213 19	4433 3245 28	--11 2234 -
4	3322 2-33 -	D3453 2344 28	D---- ---- -	D4344 4245 30	Q3-11 1111 -	4434 3333 27	4433 3323 25
5	1121 ---- -	3212 3322 18	3123 2335 22	D5433 3344 29	1211 1223 13	Q222- ---- -	4443 2322 24
6	Q312- --32 -	2233 3233 21	433- ---- -	Q3321 1211 14	4333 3335 27	---- ---3 -	3322 2212 17
7	Q1231 112- -	3233 3333 23	---- ---- -	Q2102 2111 10	D5443 3333 28	4342 3223 23	3--- --10 -
8	Q3211 1211 12	3233 3333 23	Q1112 2322 14	4343 3222 23	D4444 3454 32	4542 2355 30	Q0000 0110 2
9	Q1122 0333 15	3332 3433 24	2332 2--4 -	5343 3322 25	4444 4313 27	3443 3236 28	Q0220 0110 6
10	3233 3344 25	2432 1223 19	2323 3234 22	3443 2243 25	6564 2233 31	3233 3222 20	Q1122 2112 12
11	3321 2233 19	Q4333 2-22 -	-232 2332 -	3222 1234 19	5354 4322 28	3242 2222 19	D3455 3347 34
12	2242 2332 20	2213 23-- -	Q2112 2123 14	Q3222 2111 14	3332 3333 23	Q1121 2112 11	D6664 2233 32
13	3212 2222 16	Q2213 12-- -	4333 3222 22	Q4333 2101 17	4333 3235 26	Q2211 1123 13	4333 2313 22
14	3322 2322 19	4324 ---- -	2333 --33 -	2323 3223 20	4443 2343 27	2545 5333 30	3431 2225 22
15	2121 2323 16	D---- --2- -	5433 -333 -	3334 3122 21	4343 3334 27	5442 2233 25	6435 2134 28
16	Q2012 -222 -	---- ---- -	3323 3344 25	D4345 3355 32	Q3221 1223 16	D4625 4246 33	D5567 6236 40
17	2123 3222 17	---- 2323 -	D244- 4--5 -	4435 4431 28	Q3332 1110 14	D5665 4324 35	5323 3234 25
18	3223 3344 24	2543 2234 25	5444 3212 25	1433 3223 21	Q2221 0-23 -	D5576 3334 36	4421 1224 20
19	2344 3--- -	2322 3-3- -	4432 2222 21	Q3321 1223 17	4321 1123 17	---- ---- -	4334 3235 27
20	3323 2333 22	3233 -333 -	1334 4--- -	4332 2225 23	3223 2113 17	Q-23- ---2 -	5432 2224 24
21	3333 2233 22	2322 2332 19	---- --35 -	4443 3233 26	3431 2245 24	5453 1323 26	Q4331 1011 14
22	D3323 2335 24	2323 3322 20	4442 2223 23	4544 2234 28	5443 3332 27	Q-343 1234 -	Q3233 112- -
23	D4423 3-33 -	Q2222 3223 18	4234 2233 23	2454 2233 25	3433 2323 23	4443 2222 23	---- ---- -
24	4223 3344 25	Q2112 2--3 -	Q3222 1101 12	4354 3235 29	4453 3235 29	5544 4222 28	---- ---- -
25	D4344 3323 26	Q2111 221- -	Q1110 0111 6	D4434 3324 27	4433 1213 21	2342 1234 21	---- ---- -
26	D4333 3323 24	1233 3234 21	Q1321 1123 14	2242 2233 20	5333 1123 21	4344 3212 23	---- ---- -
27	4311 1423 19	D4433 3334 27	5254 3323 27	3332 2234 22	4433 3254 28	34-3 3225 -	---- --2- -
28	3323 1223 19	3123 3--5 -	5452 2345 30	4533 2111 20	6344 3334 30	D3535 3325 29	---- ---- -
29	2113 3344 21		D5443 2244 28	2320 2345 21	D4443 5578 40	4434 3224 26	D---- ---- -
30	D4333 3432 25		D4443 3345 30	D6644 2345 34	D7432 3433 29	4443 2112 21	---- --4- -
31	2334 2221 19		D4435 4454 33		5542 1110 19		D---- -3-- -
Mean K sum	20.2	22.7	21.4	22.9	24.8	25.4	22.0

Date	AUG2003	SEP2003	OCT2003	NOV2003	DEC2003	JAN2004
1	D---- ---- -	344- ---- -	---- ---- -	---- ---- -	2222 2223 17	4333 4333 26
2	---- ---- -	---- ---- -	---- ---- -	---- ---- -	2222 1103 13	3312 3343 22
3	---- ---- -	---- ---- -	---- ---- -	---- ---- -	Q1212 1212 12	3333 3242 23
4	Q---- ---- -	---- ---- -	Q---- ---- -	---- ---- -	1122 1234 16	3333 3442 25
5	Q---- -1-- -	---- ---- -	---- ---- -	Q---- -233 -	D4444 4344 31	4333 3334 26
6	---- ---- -	---- ---- -	---- ---- -	3211 2243 18	4333 2333 24	3332 23-- -
7	---- ---- -	Q---- ---- -	---- ---- -	3212 1222 15	1122 3443 20	D4444 3342 28
8	---- ---- -	---- ---- -	---- ---- -	Q1022 2333 16	D3424 4344 28	Q1113 2233 16
9	---- ---- -	---- -245 -	---- ---- -	3233 5333 25	D2333 4434 26	2343 3453 27
10	---- ---- -	---- ---- -	Q---- ---- -	4333 3445 29	D5334 3344 29	2355 4333 28
11	---- -22- -	---- 3223 -	Q---- ---- -	D4445 4454 34	D5444 3444 32	2223 3331 19
12	---- ---- -	333- -121 -	Q---- ---- -	4433 3443 28	3333 3335 26	Q2212 -234 -
13	---- -114 -	4321 0003 13	---- ---- -	D3345 4445 32	4323 3433 25	3323 4344 26
14	4--- ---- -	Q2111 1113 11	D---- ---- -	4433 3343 27	4222 3434 24	Q4222 2133 19
15	---- ---- -	2100 1113 9	---- ---- -	D3454 3344 30	3333 3333 24	2322 3334 22
16	Q---- ---- -	D5344 5442 31	---- ---- -	D3344 3445 30	3222 1233 18	D4234 4444 29
17	---- ---- -	D5444 5445 35	---- ---- -	4334 4434 29	2212 1221 13	2223 2333 20
18	D---- ---- -	D5434 3354 31	---- ---- -	5333 3333 26	Q1201 1221 10	2323 3244 23
19	---- ---- -	D5355 3344 32	---- ---- -	2232 2332 19	Q1111 1111 8	3222 3433 22
20	---- ---- -	444- ---- -	---- ---- -	D2356 6788 45	1223 3444 23	3323 2223 20
21	D---- --45 -	---- ---- -	D---- ---- -	6544 2333 30	3232 3443 24	2223 2232 18
22	D543- -34- -	---- ---- -	---- ---- -	3322 2345 24	3233 3443 25	D5446 5344 35
23	D---- -32- -	---- ---- -	Q---- ---- -	3342 3333 24	3122 2321 16	D3344 -554 -
24	---- ---- -	D---- ---- -	---- ---- -	-222 3324 -	1221 2212 13	5233 2232 22
25	---- ---- -	---- ---- -	---- ---- -	3323 332- -	Q3112 3212 15	D5434 3333 28
26	---- ---- -	---- ---- -	---- ---- -	2212 3-22 -	2212 2333 18	3222 223- -
27	Q---- ---- -	---- ---- -	---- ---- -	Q2222 2222 16	3313 2334 22	4333 3323 24
28	---- -222 -	Q---- ---- -	---- ---- -	Q2123 2222 16	3323 3333 23	5333 3332 25
29	---- -242 -	Q---- ---- -	D---- ---- -	Q2232 2223 18	Q2122 2221 14	Q2223 2123 17
30	5522 2121 20	Q---- ---- -	D---- ---- -	3332 2333 22	2111 2233 15	2234 3233 22
31	Q12-- --11 -		D---- ---- -		2123 3-44 -	
Mean K sum	20.0	23.1	-	25.1	20.1	23.5

OCURRENCE DISTRIBUTION OF K INDICES

K index:	0	1	2	3	4	5	6	7	8	9	-
JAN2003	2	29	83	92	25	1	0	0	0	0	16
FEB2003	0	15	63	84	19	7	0	0	0	0	36
MAR2003	3	24	64	61	38	15	0	0	0	0	43
APR2003	3	22	67	80	50	16	2	0	0	0	0
MAY2003	3	32	41	92	52	19	4	2	1	0	2
JUN2003	0	16	59	59	46	26	6	1	0	0	27
JUL2003	12	25	44	46	23	9	7	2	0	0	80
AUG2003	0	8	13	3	6	4	0	0	0	0	214
SEP2003	5	13	8	17	21	11	0	0	0	0	165
OCT2003	0	0	0	0	0	0	0	0	0	0	248
NOV2003	1	7	57	78	39	12	3	1	2	0	40
DEC2003	2	44	73	82	43	3	0	0	0	0	1
2003 TOTAL	31	235	572	694	362	123	22	6	3	0	872
JAN2004	0	8	66	108	42	10	1	0	0	0	5


Livingston Island
January
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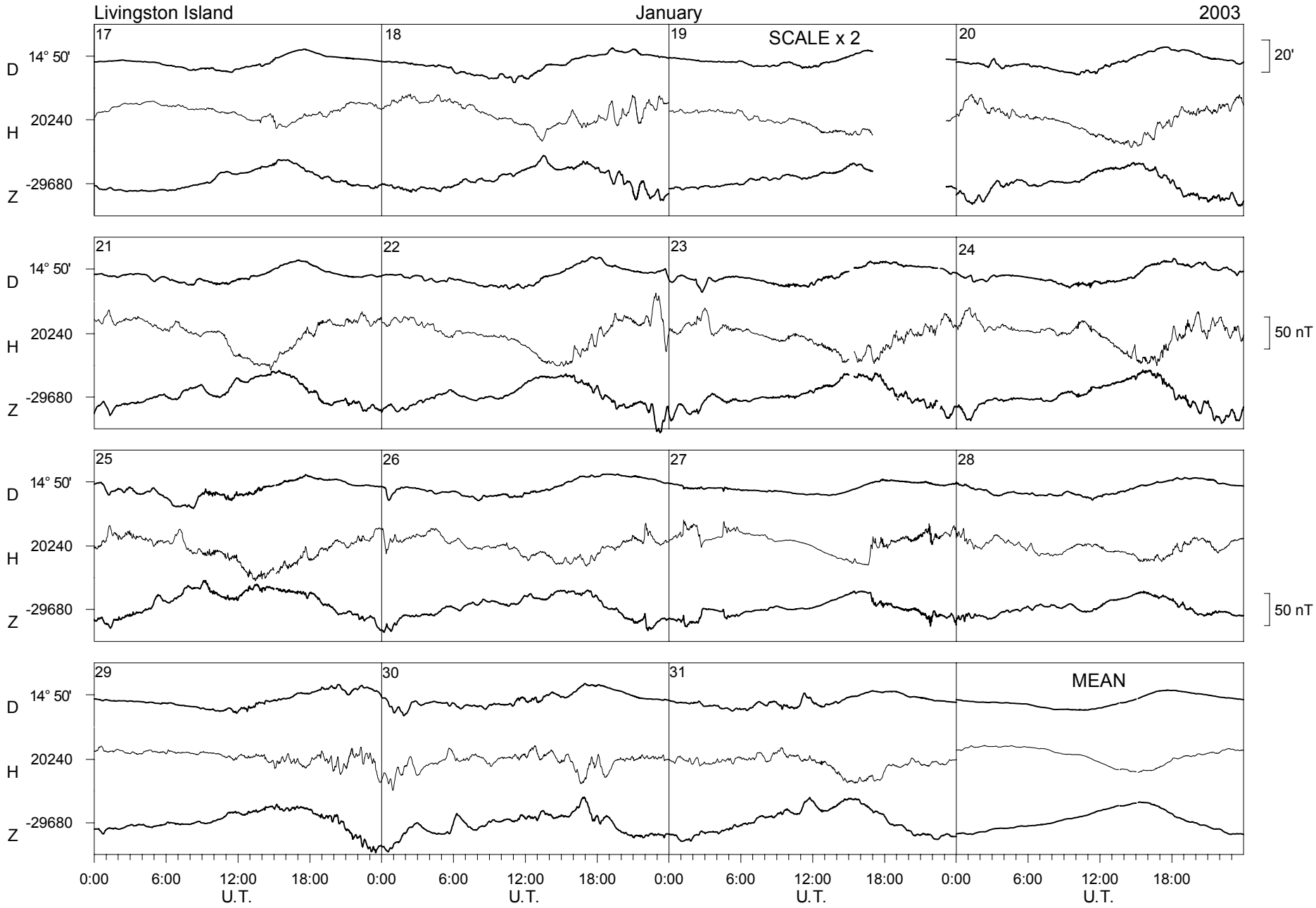
Livingston Island
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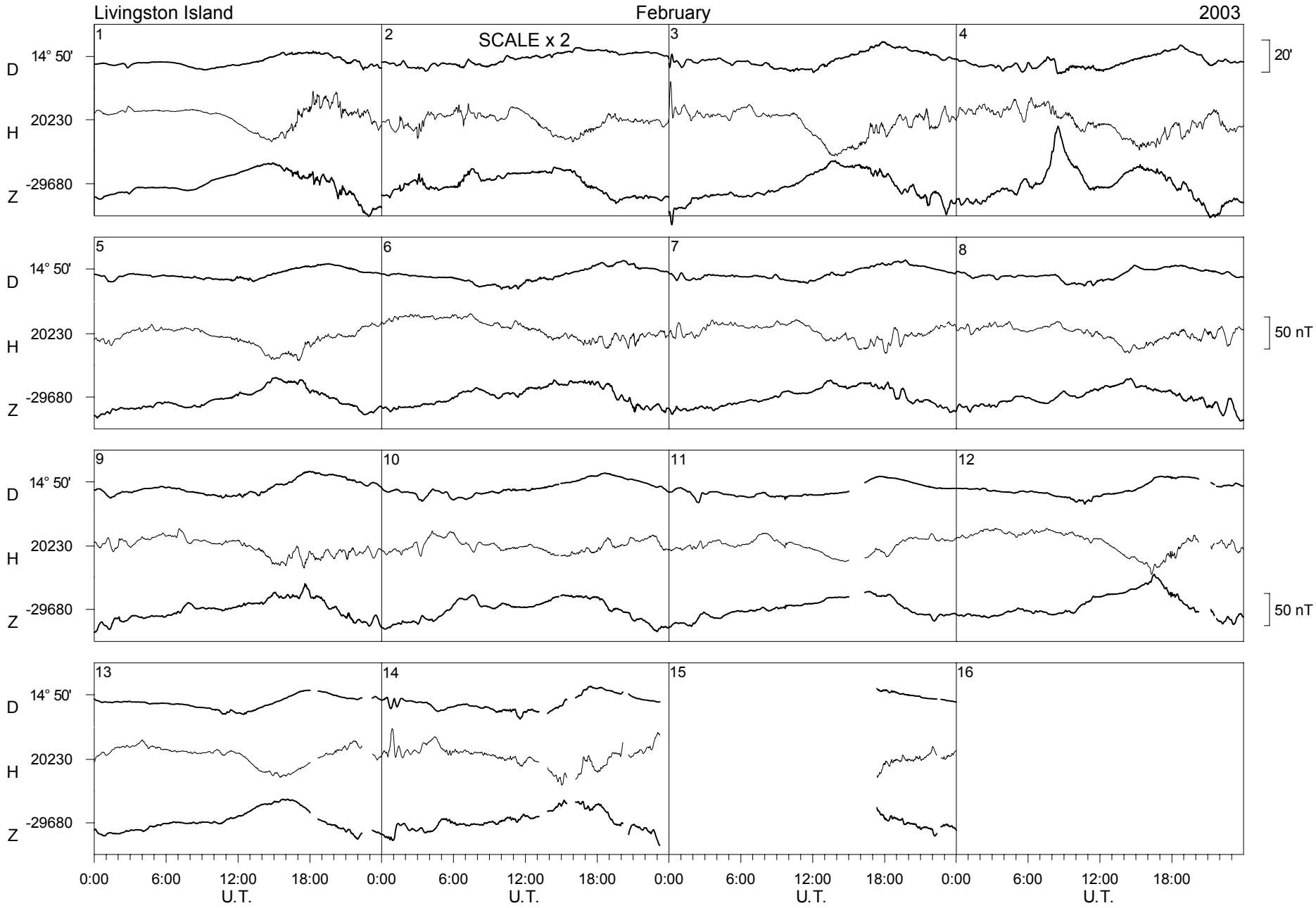
Livingston Island
February
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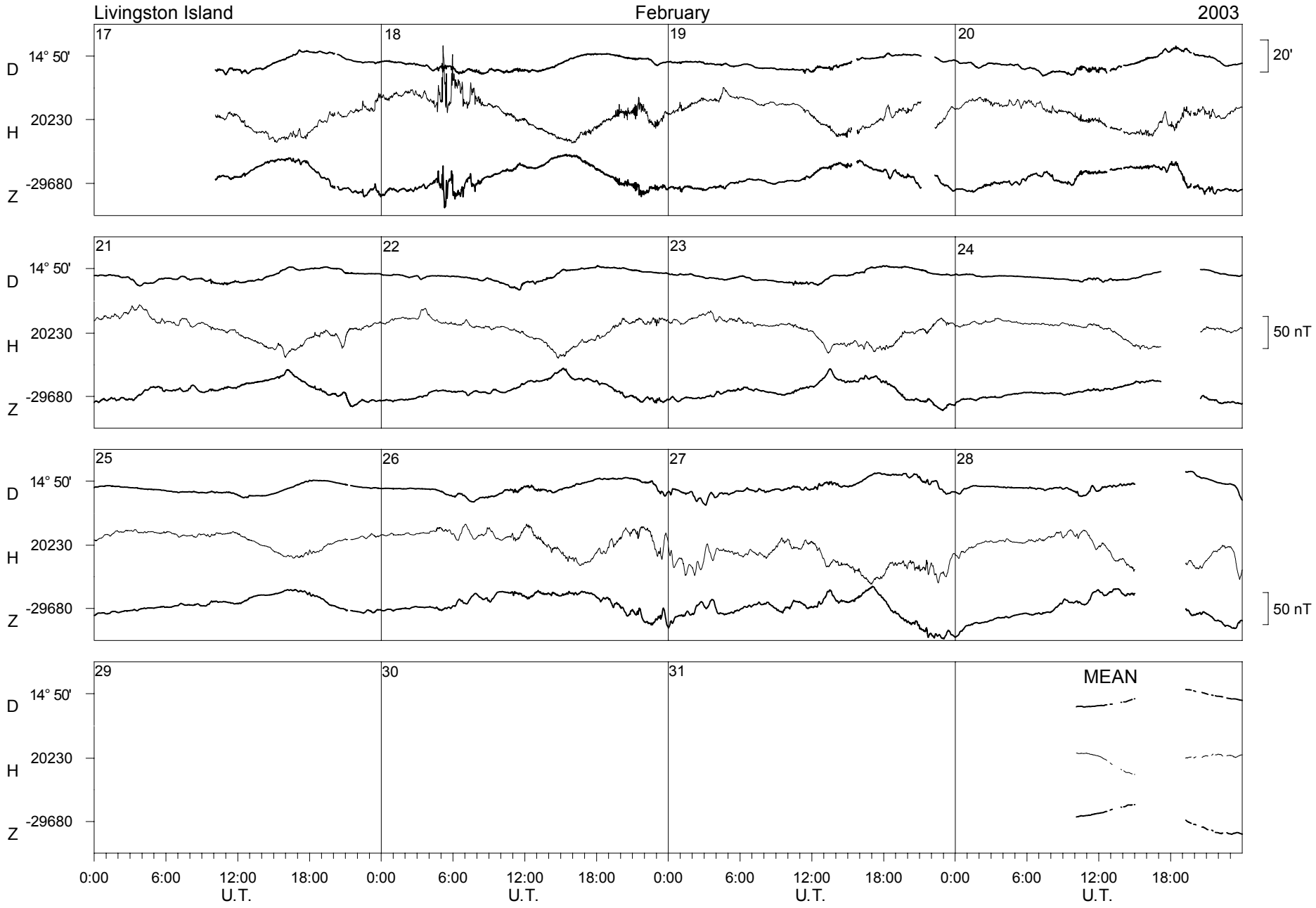
Livingston Island
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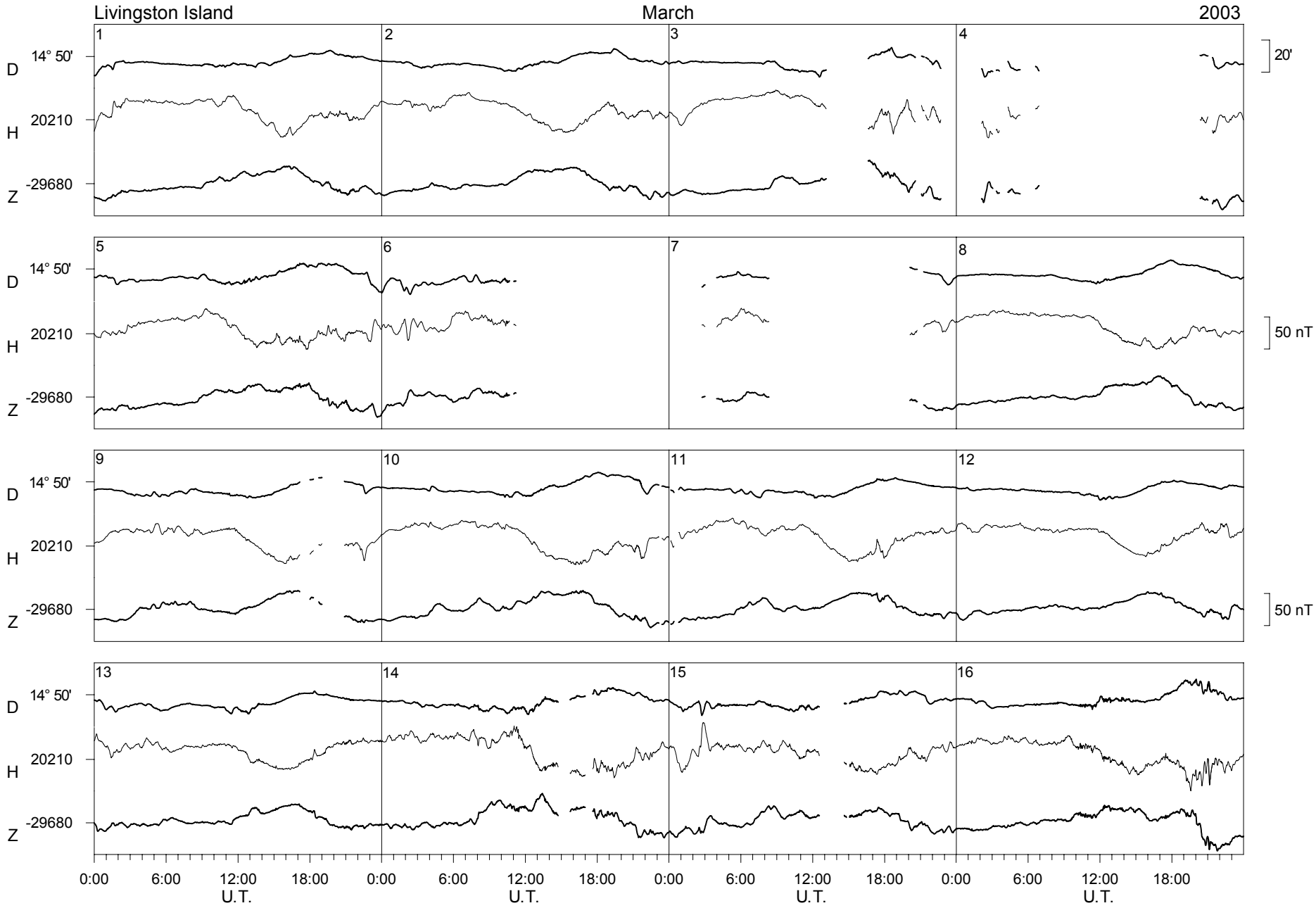
Livingston Island
March
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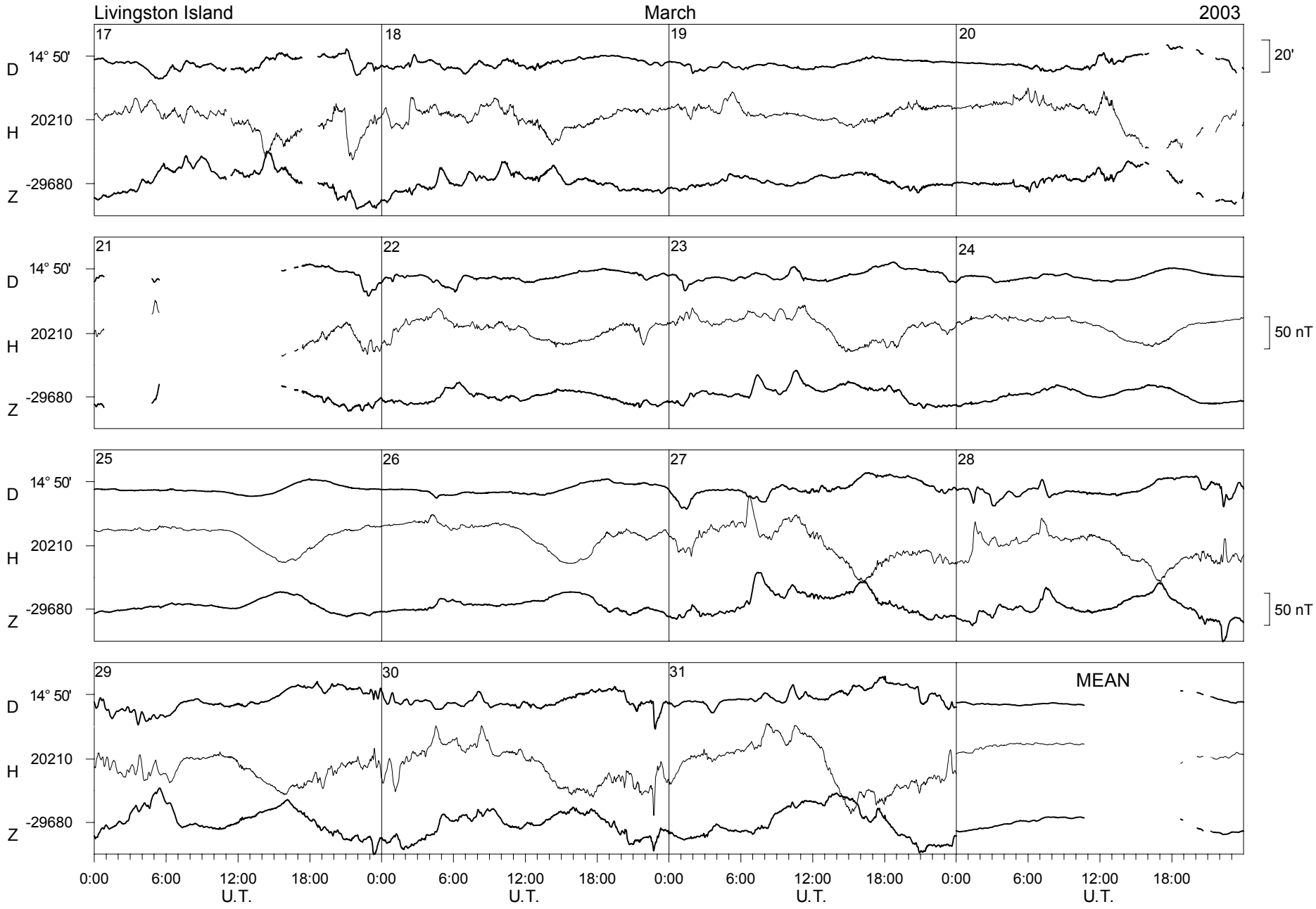
Livingston Island
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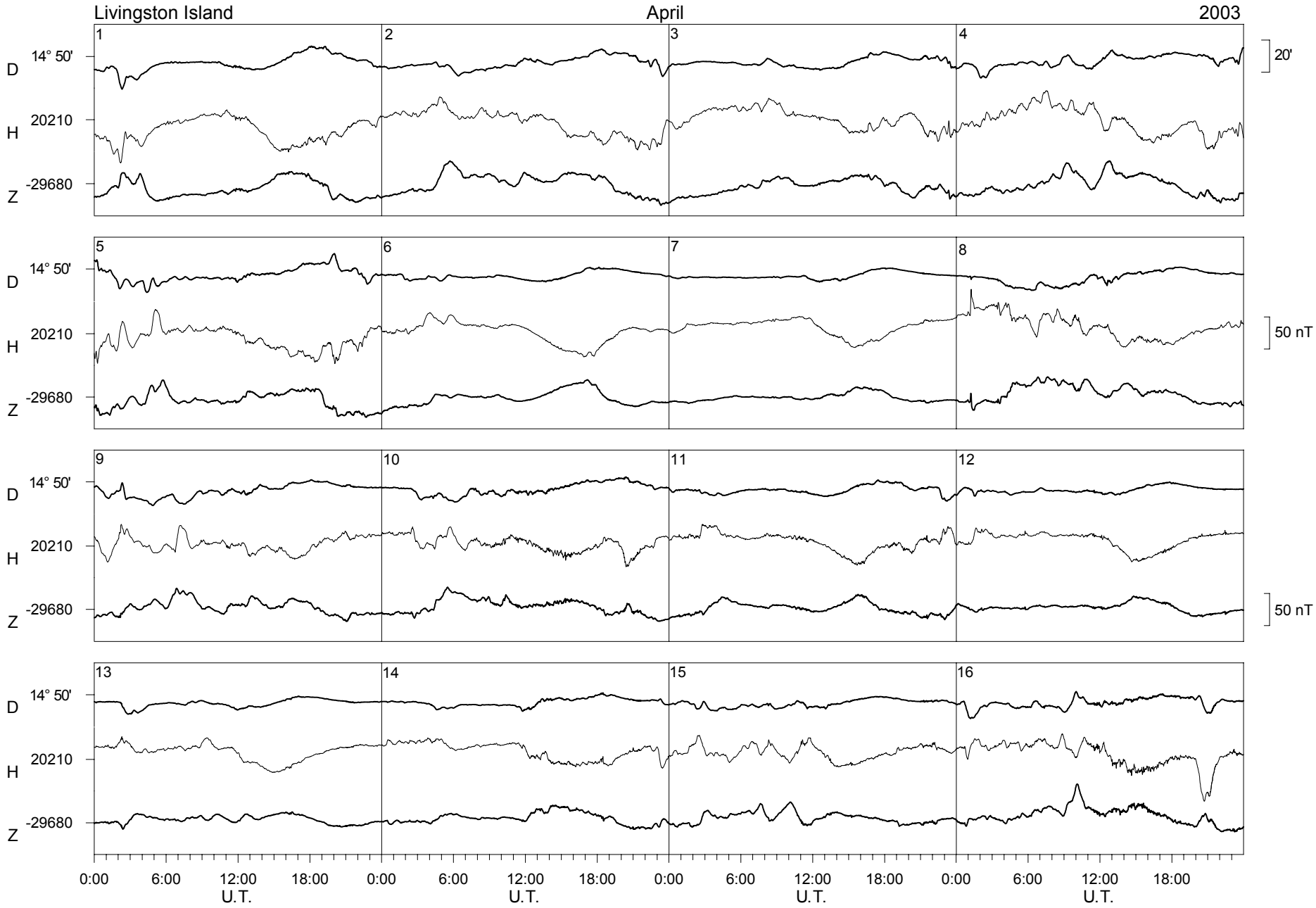
Livingston Island
April
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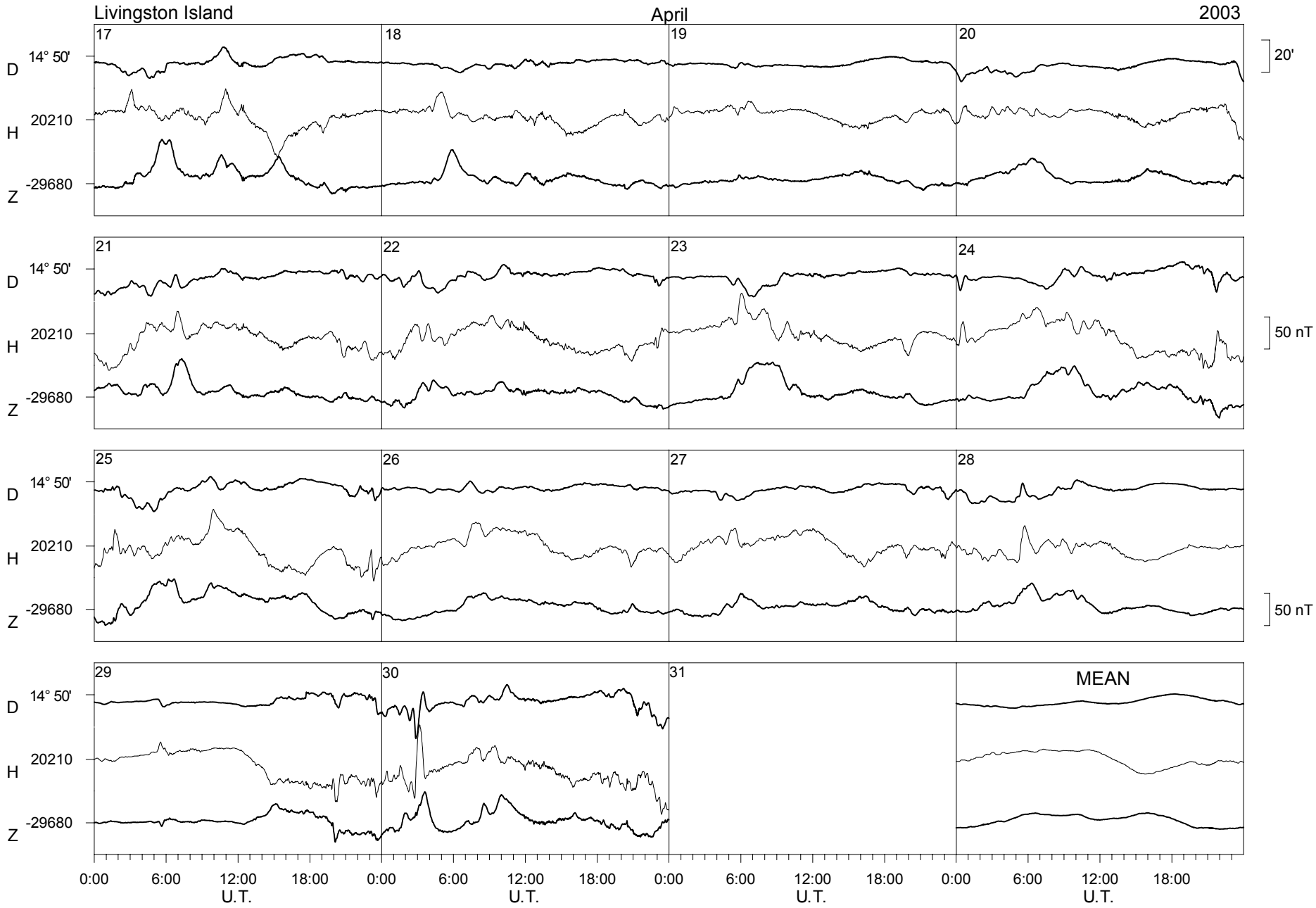
Livingston Island
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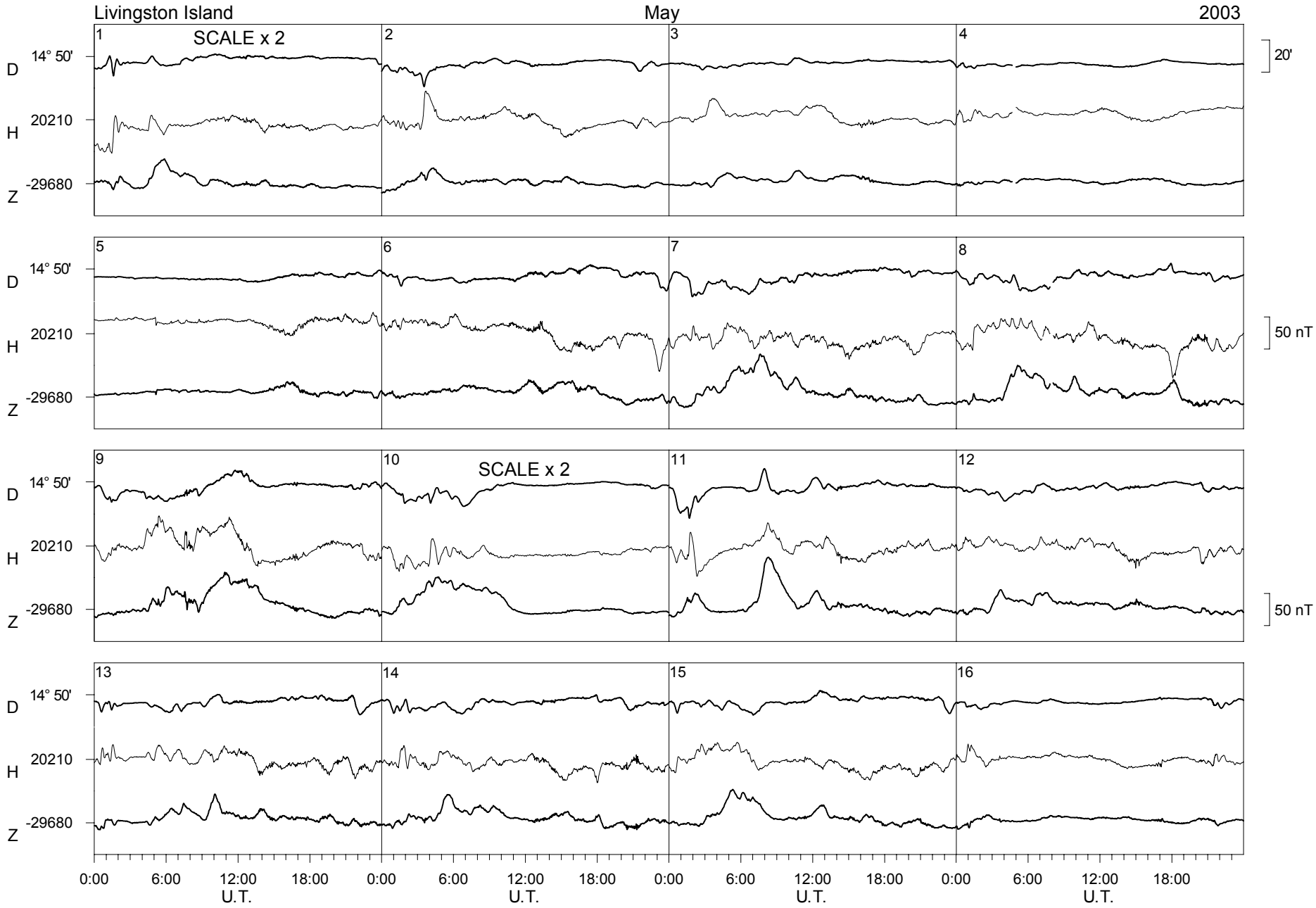
Livingston Island
May
2003
SCALE x 2
SCALE x 2
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-29680
20'
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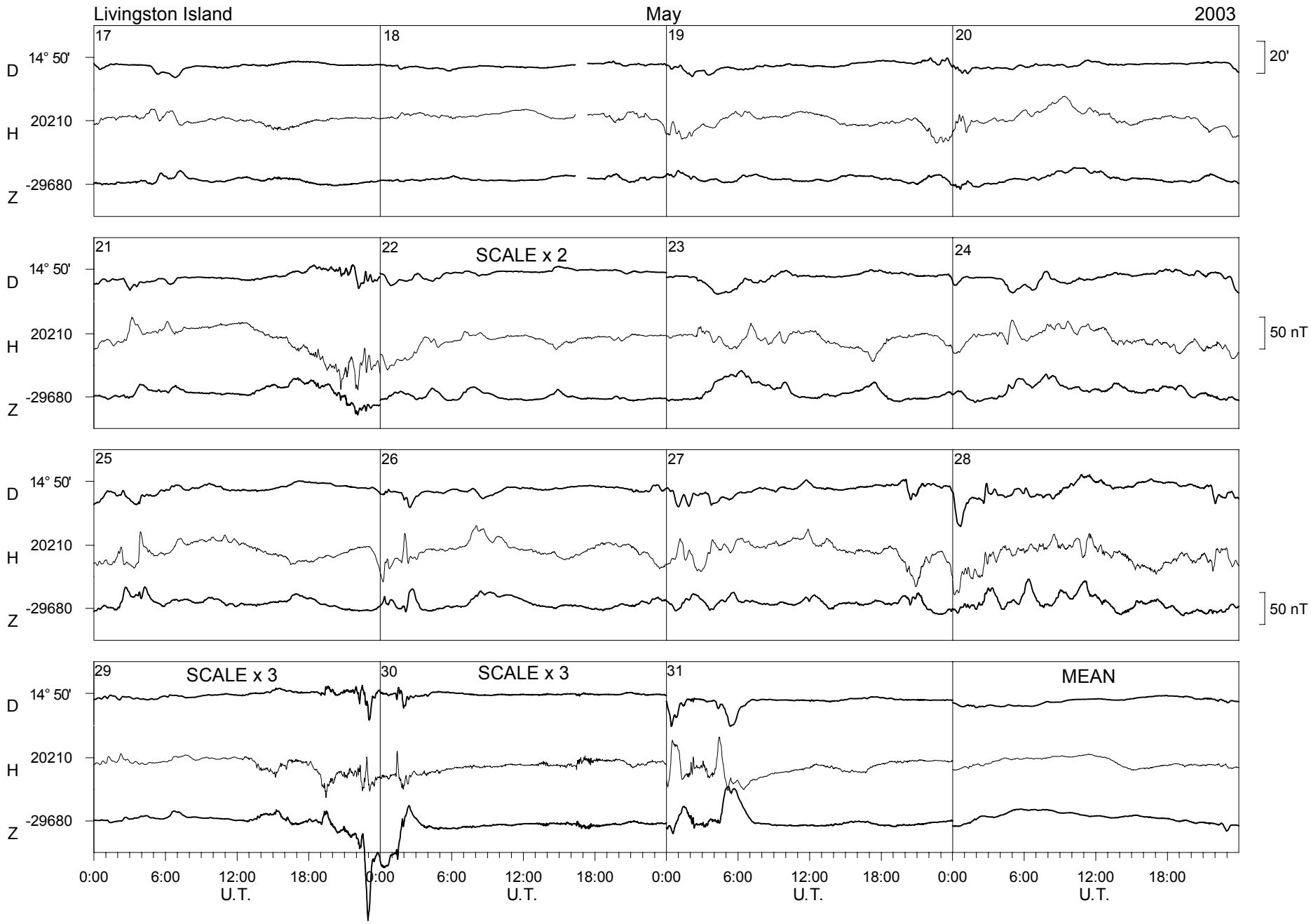
Livingston Island
May
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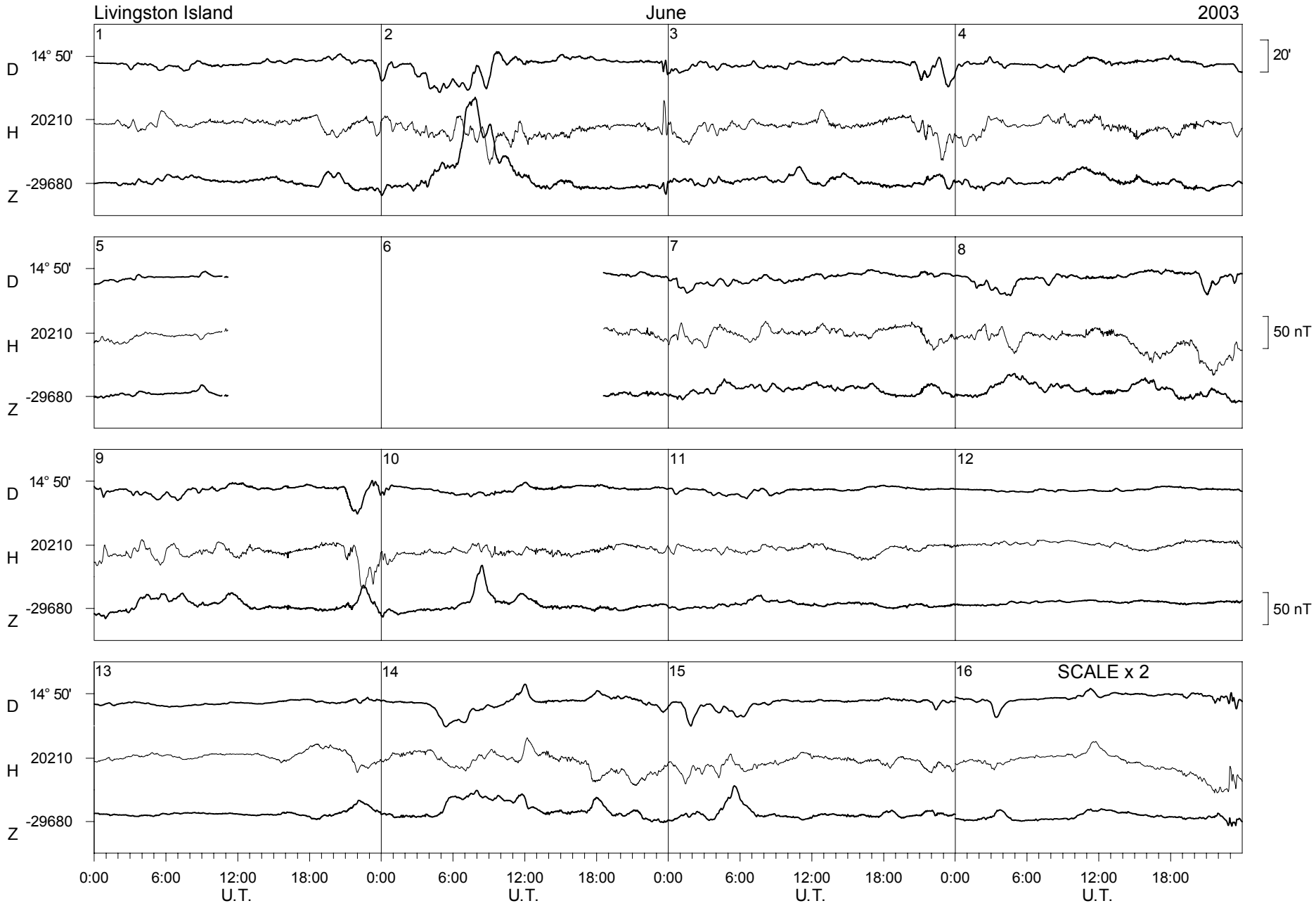
Livingston Island
June
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14° 50'
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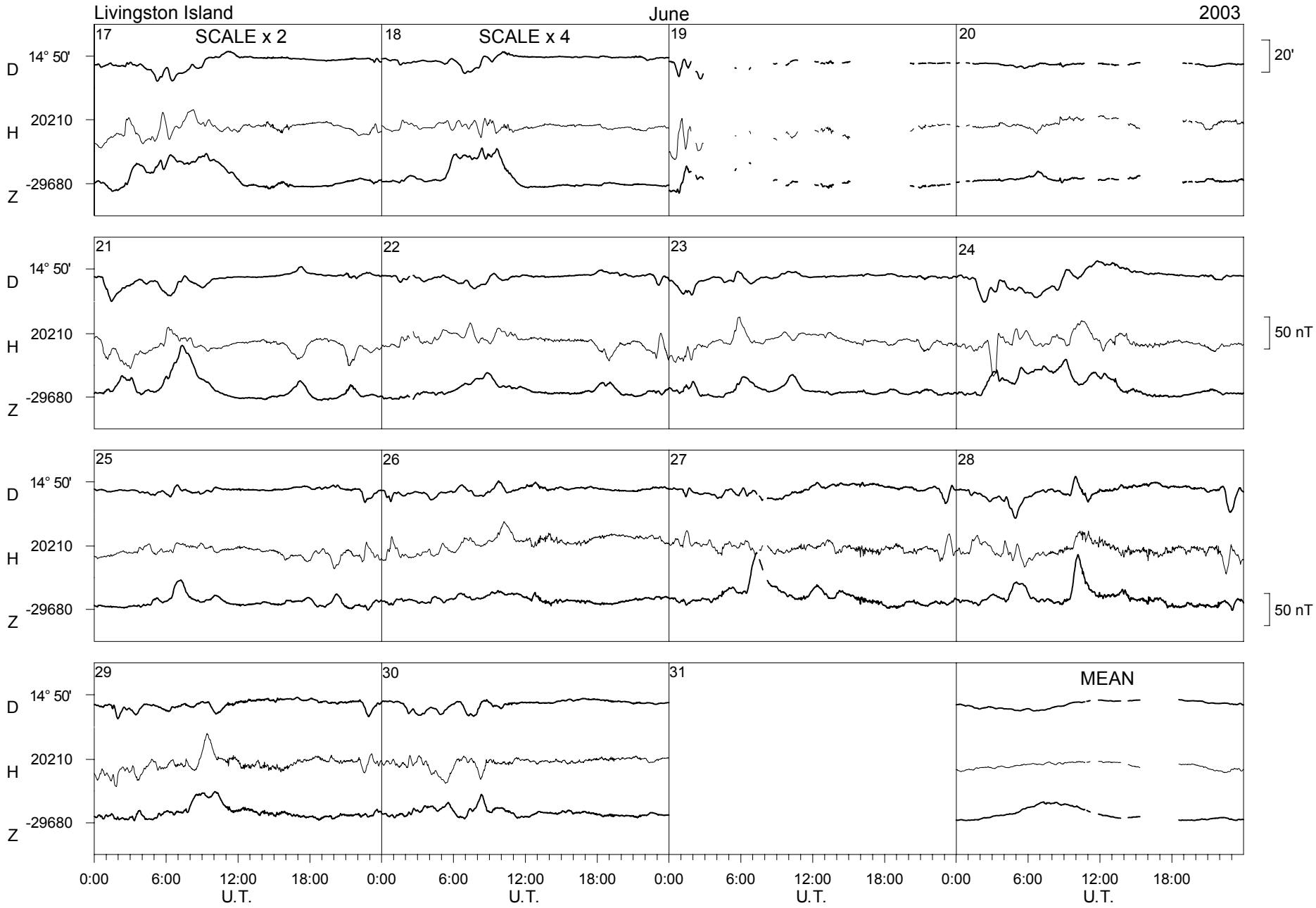
Livingston Island
June
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SCALE x 4
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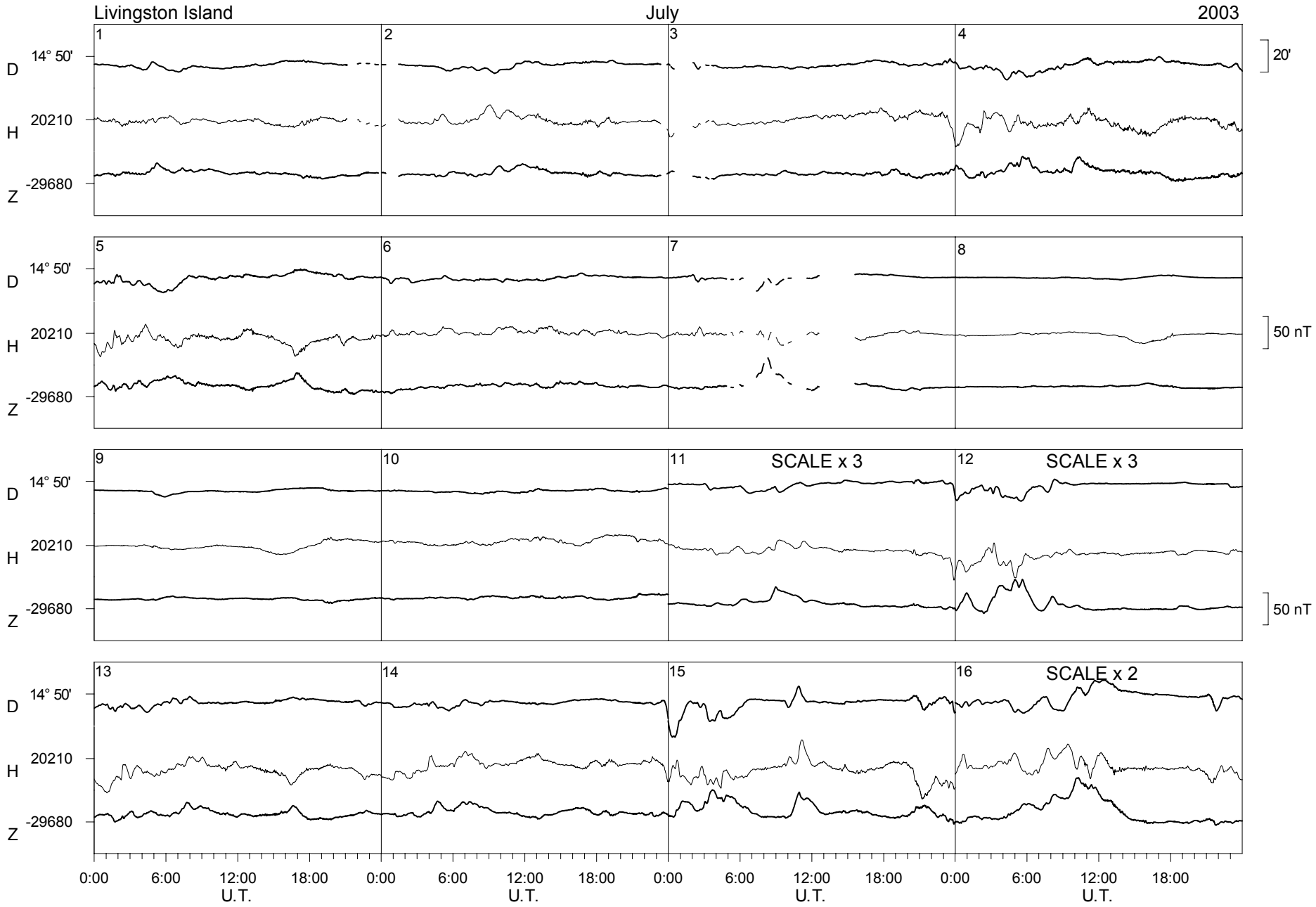
Livingston Island
July
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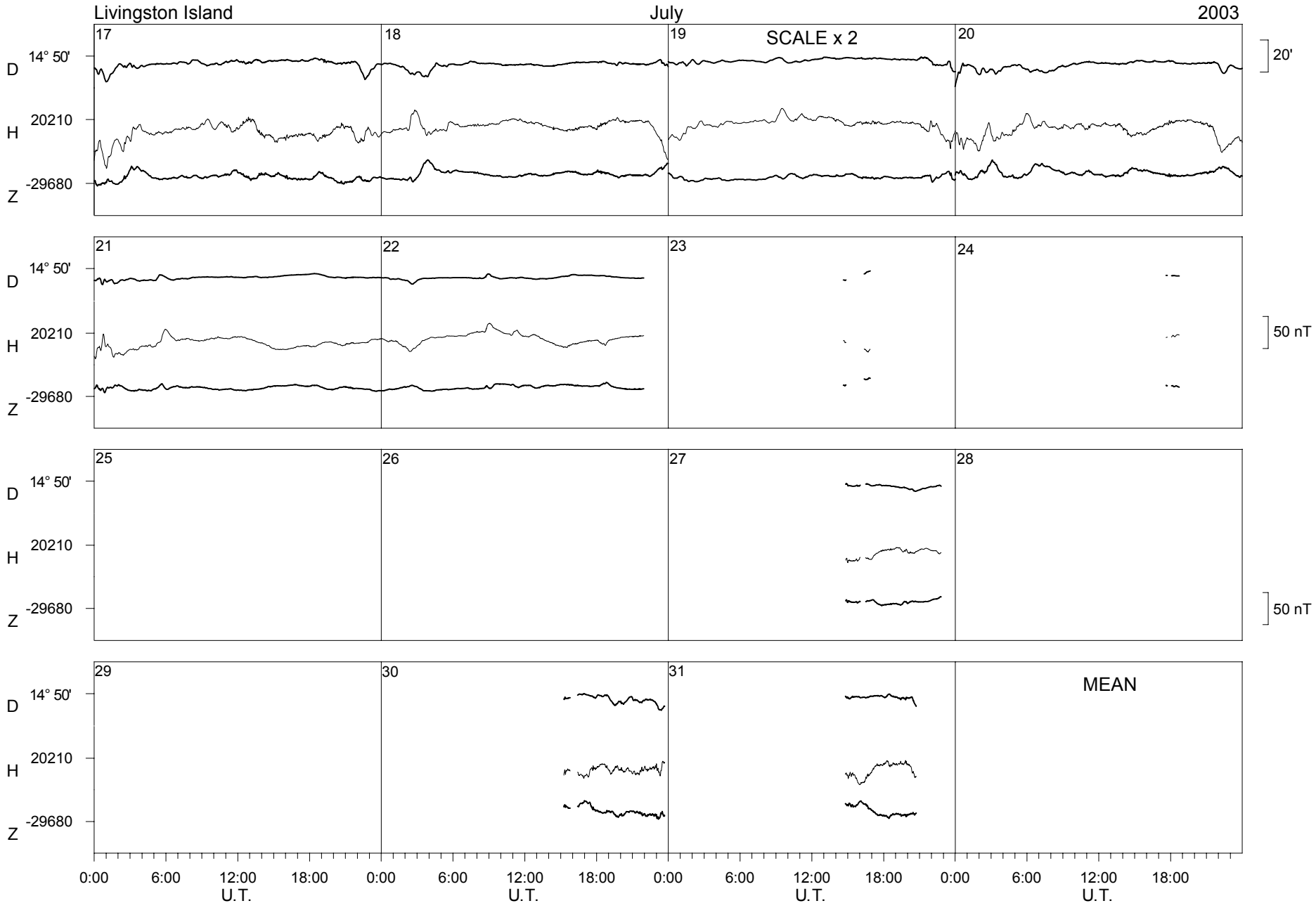
Livingston Island
July
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SCALE x 2
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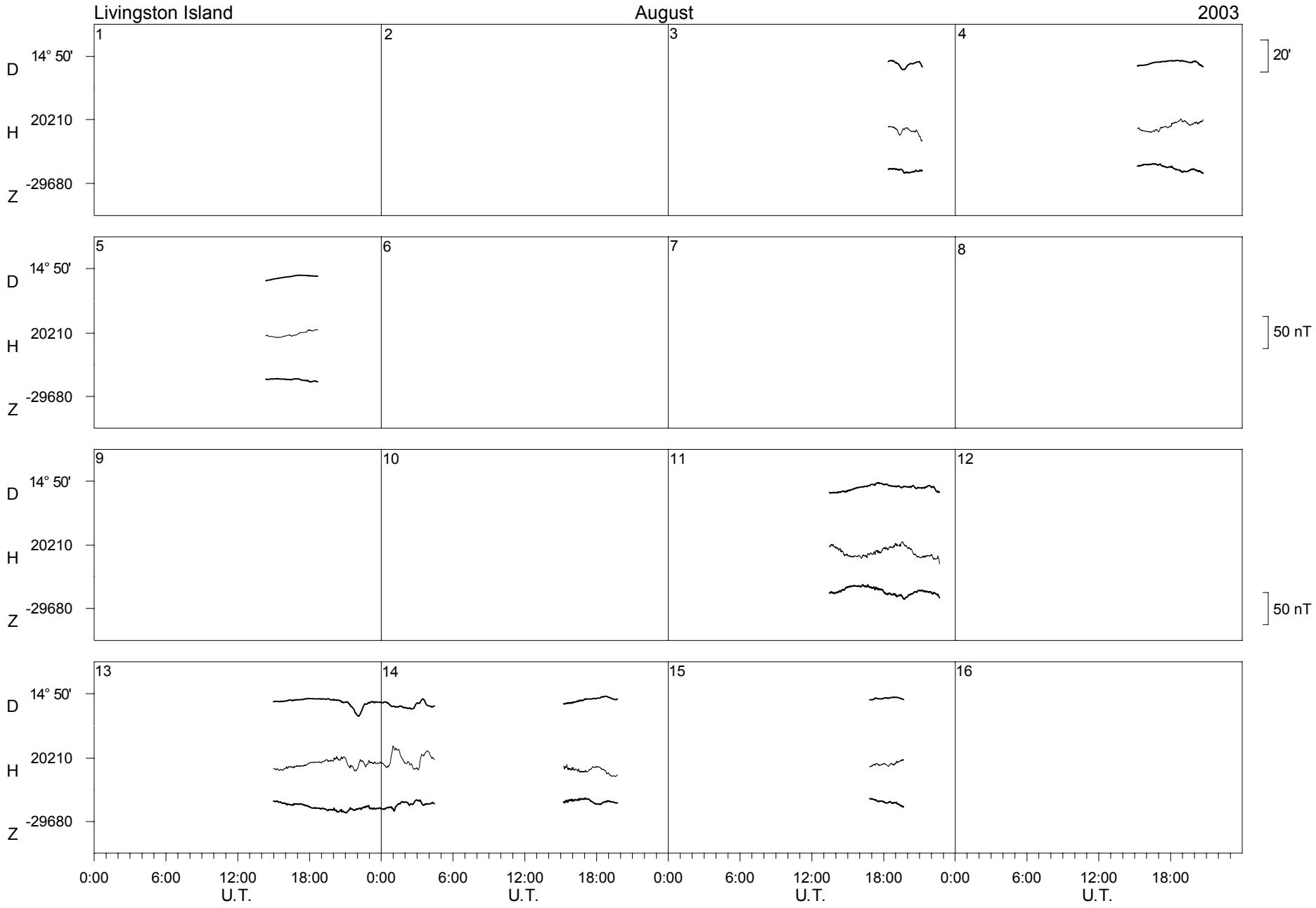
Livingston Island
August
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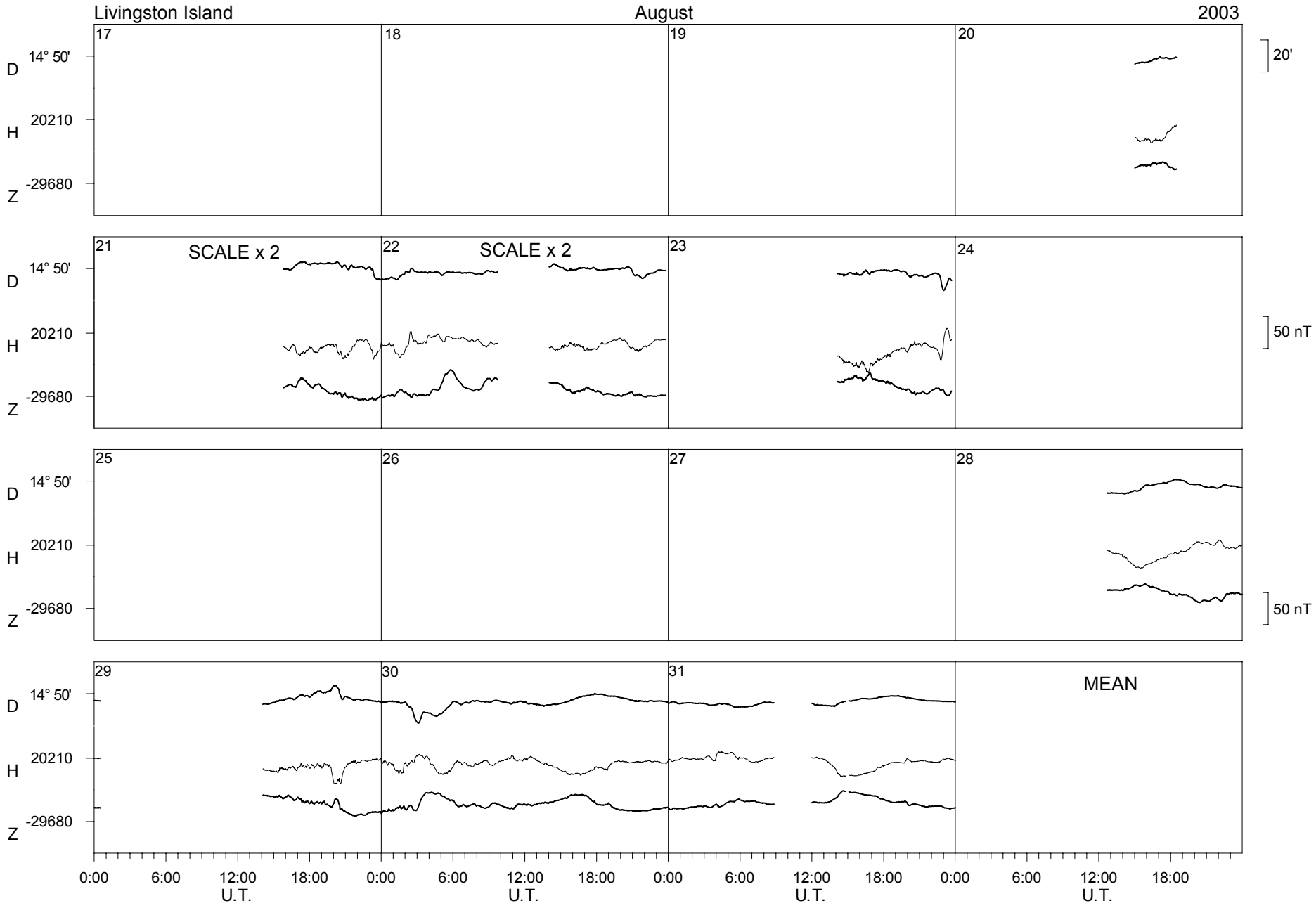
Livingston Island
August
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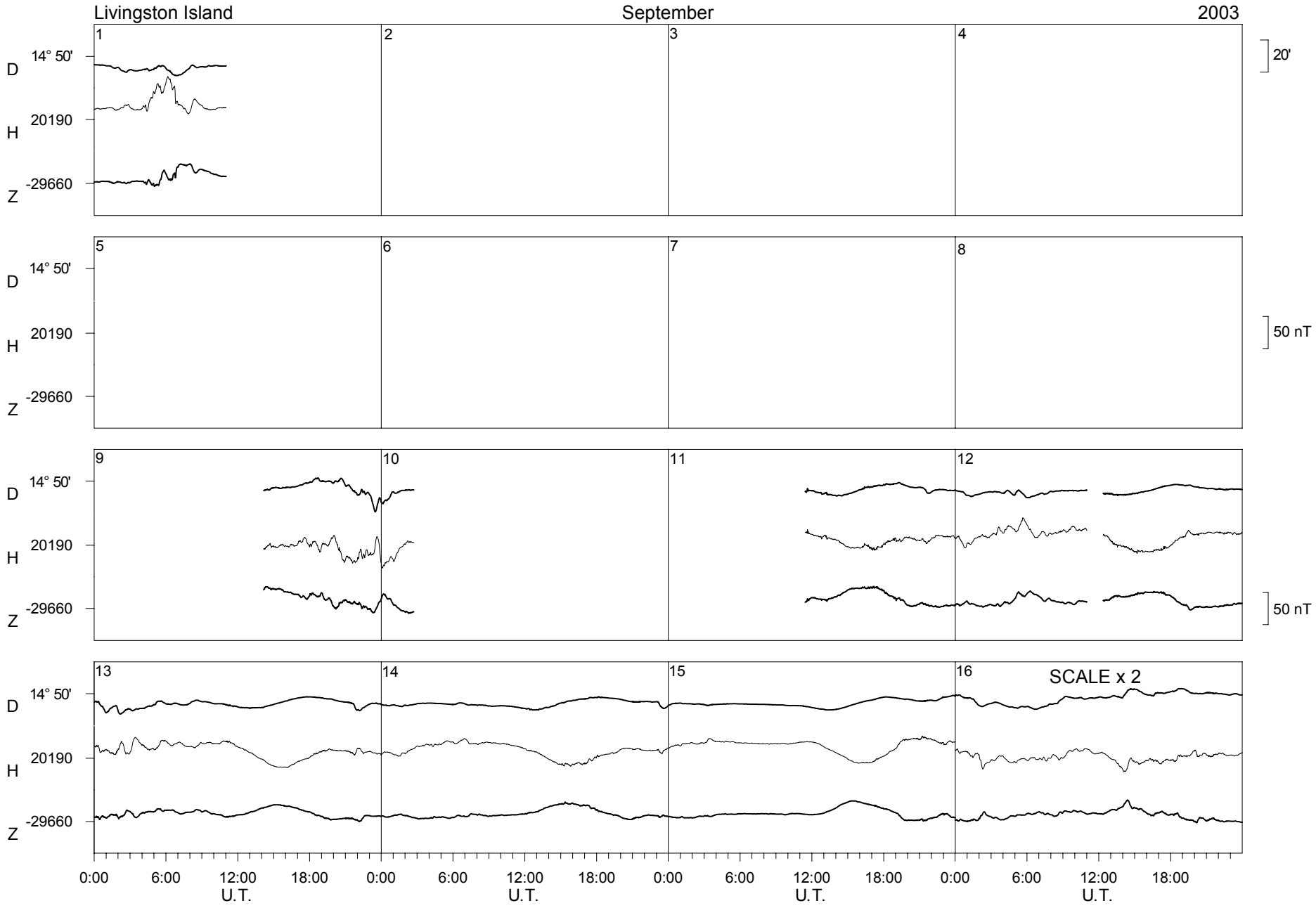
Livingston Island
September
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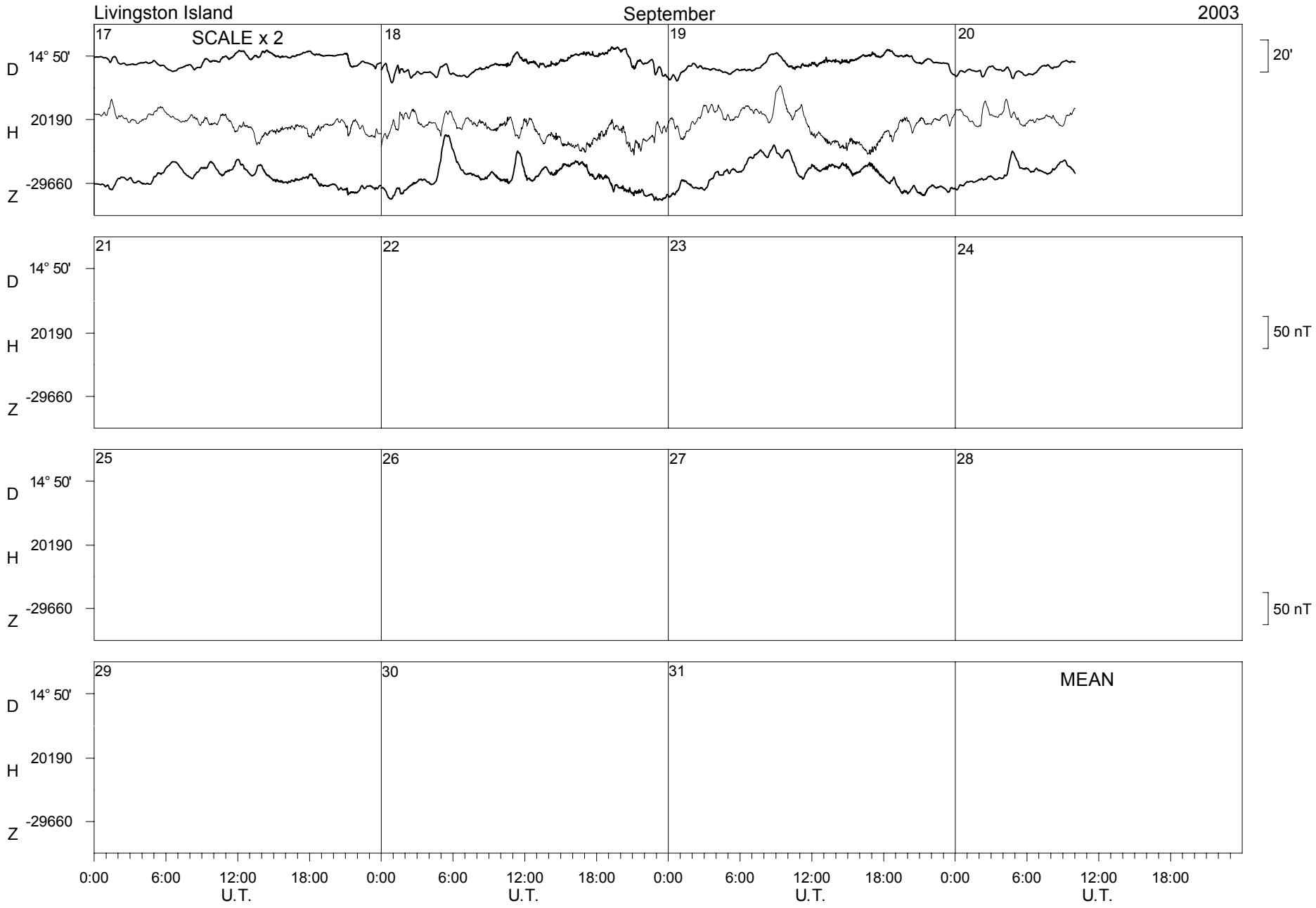
Livingston Island
September
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SCALE x 2
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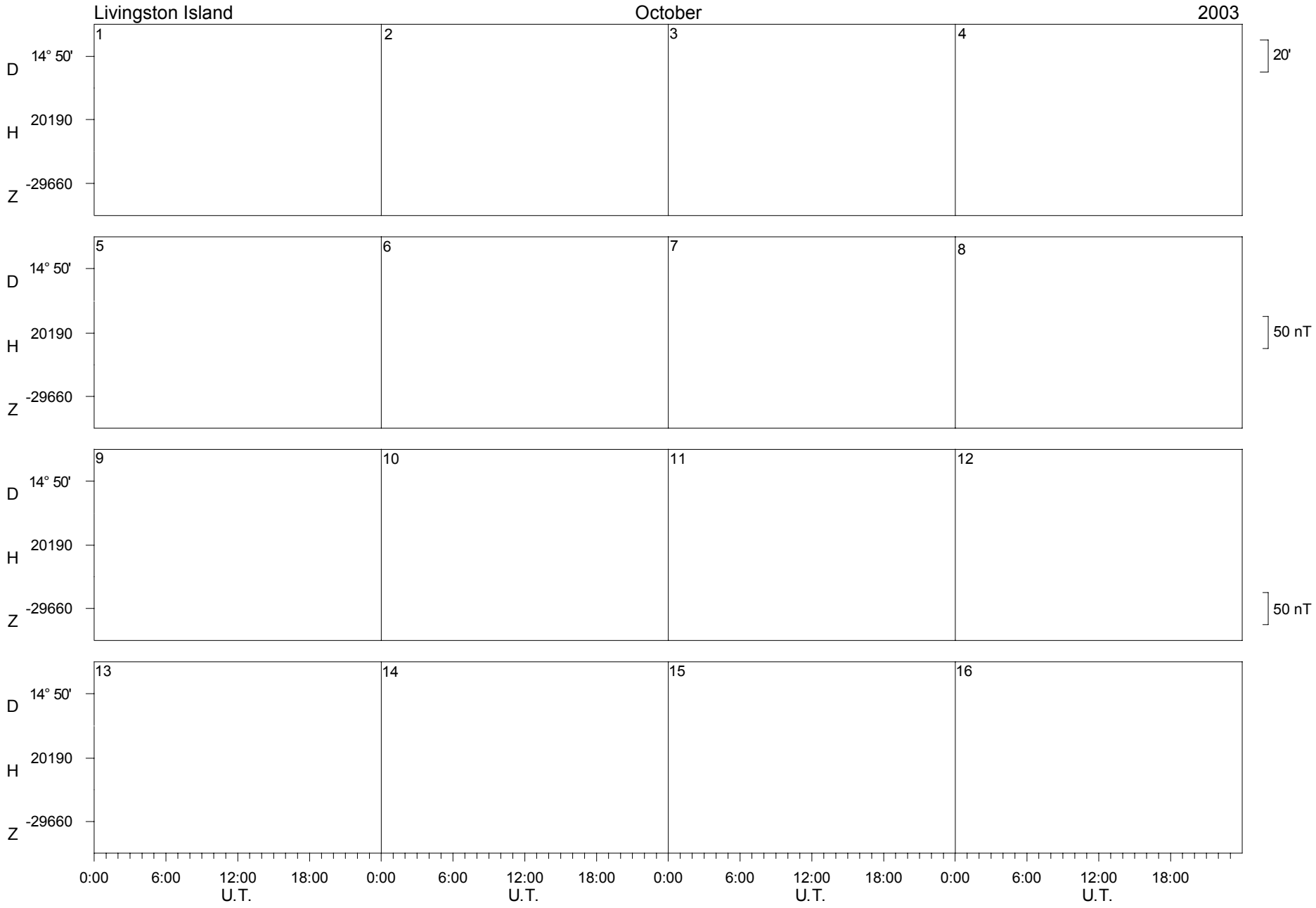
Livingston Island
October
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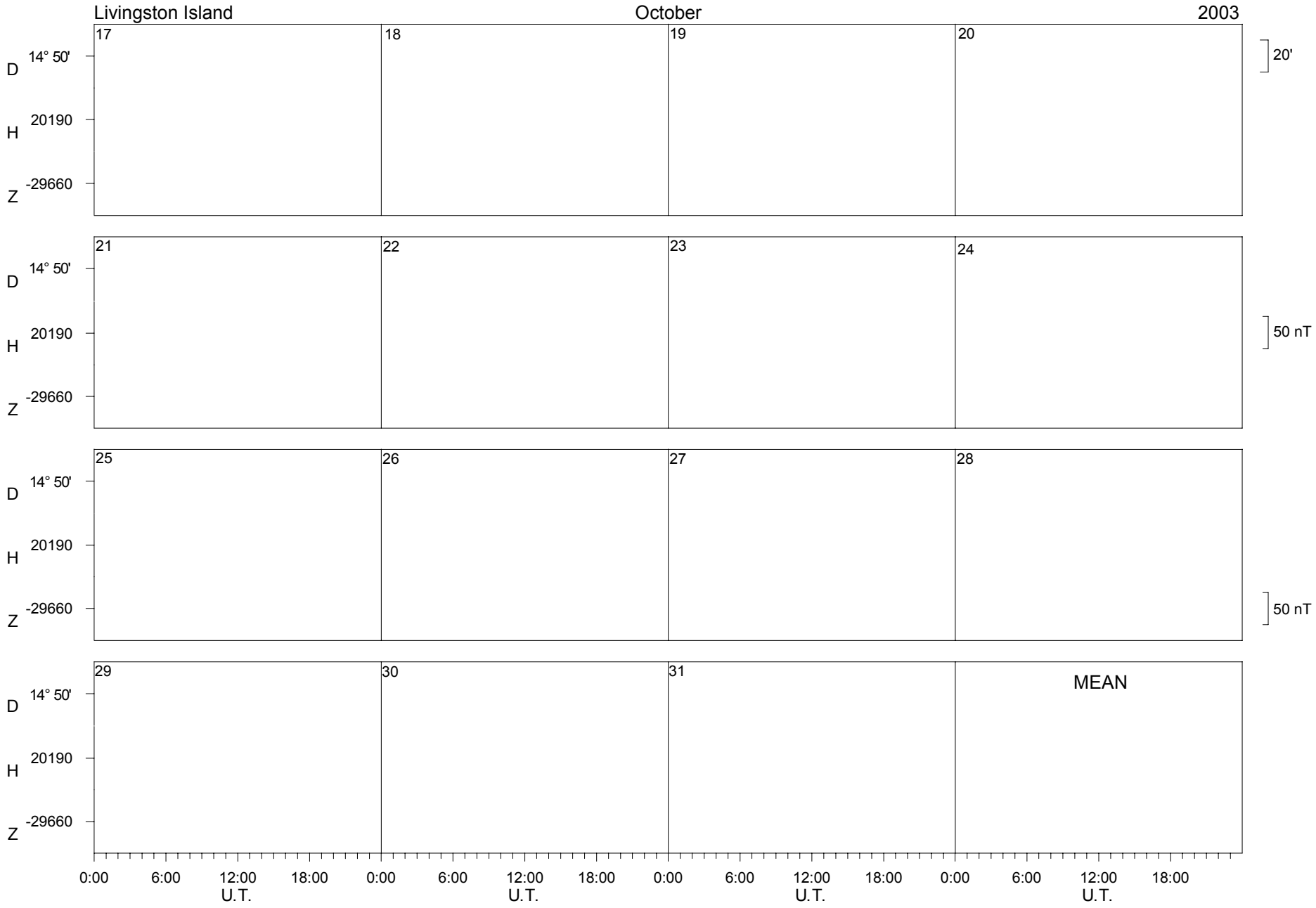
Livingston Island
October
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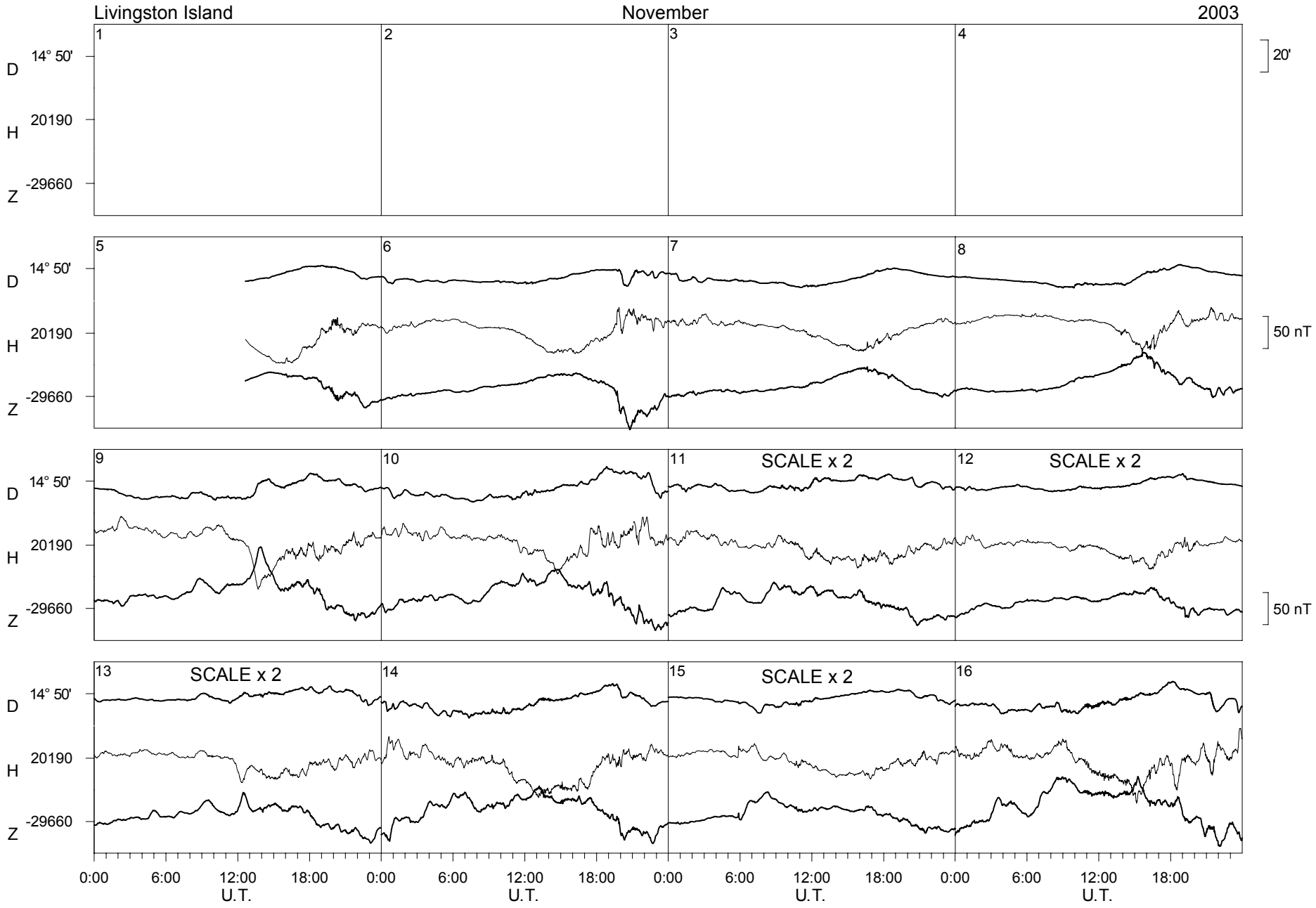
Livingston Island
November
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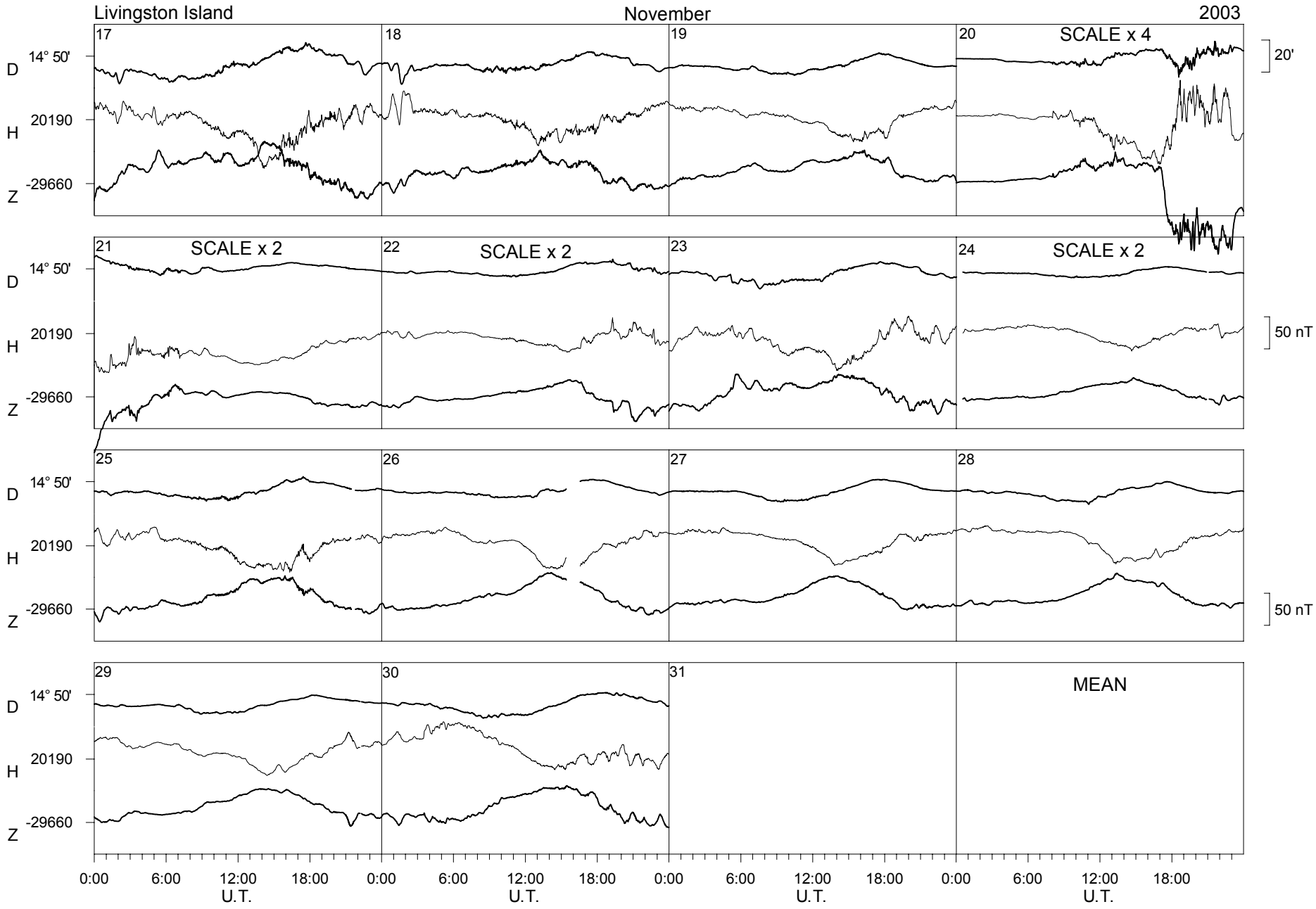
Livingston Island
November
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SCALE x 2
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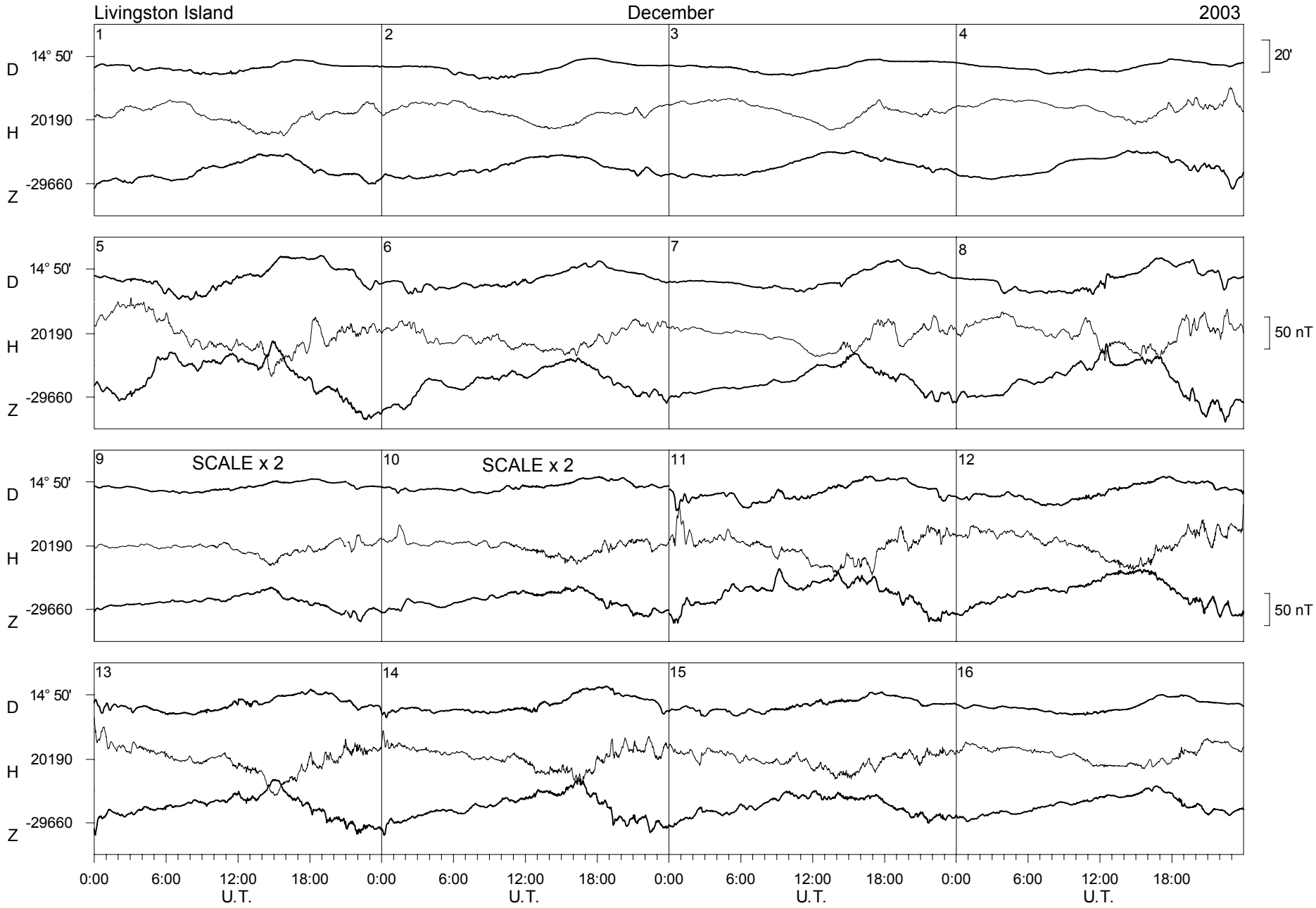
Livingston Island
December
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SCALE x 2
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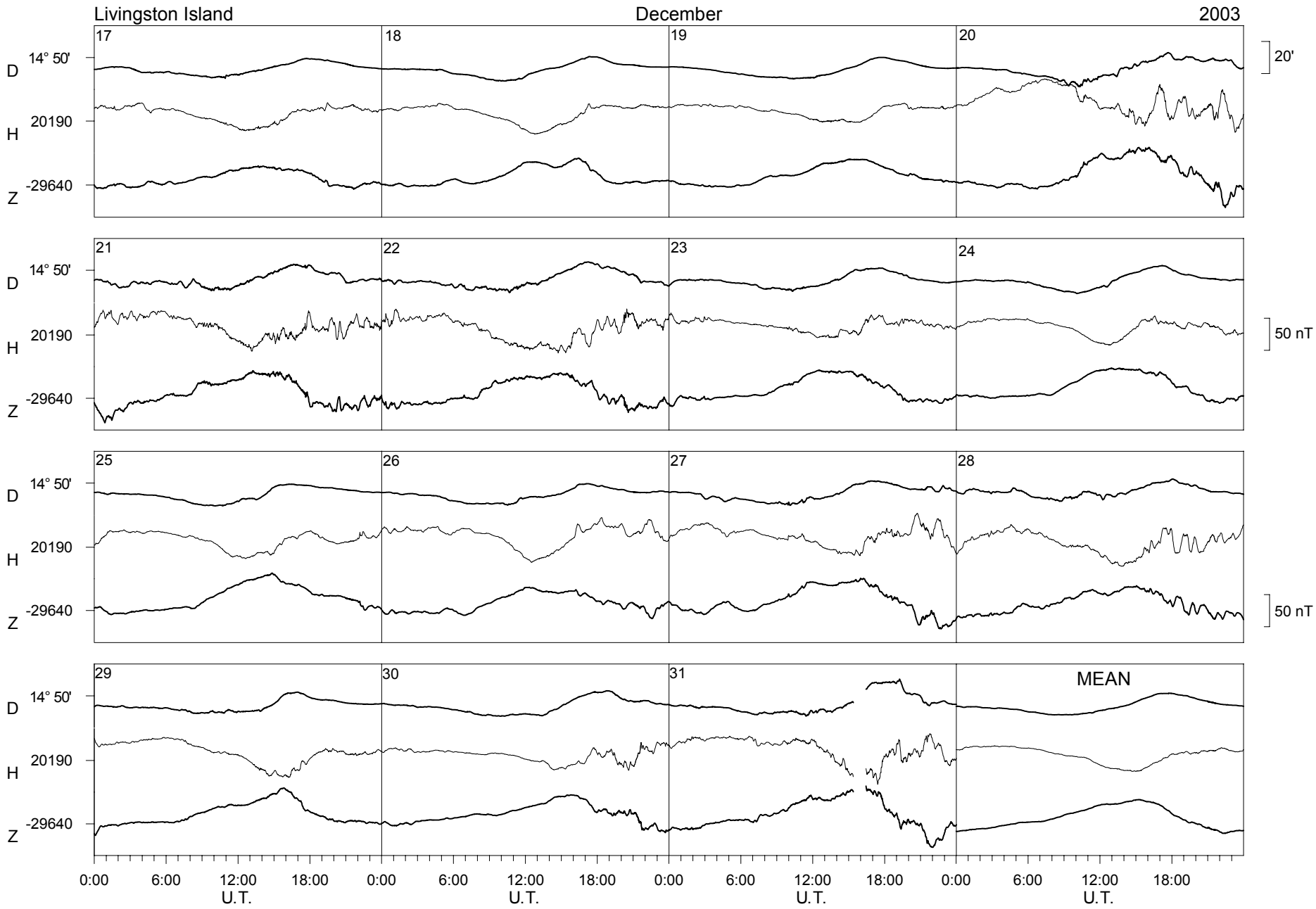
Livingston Island
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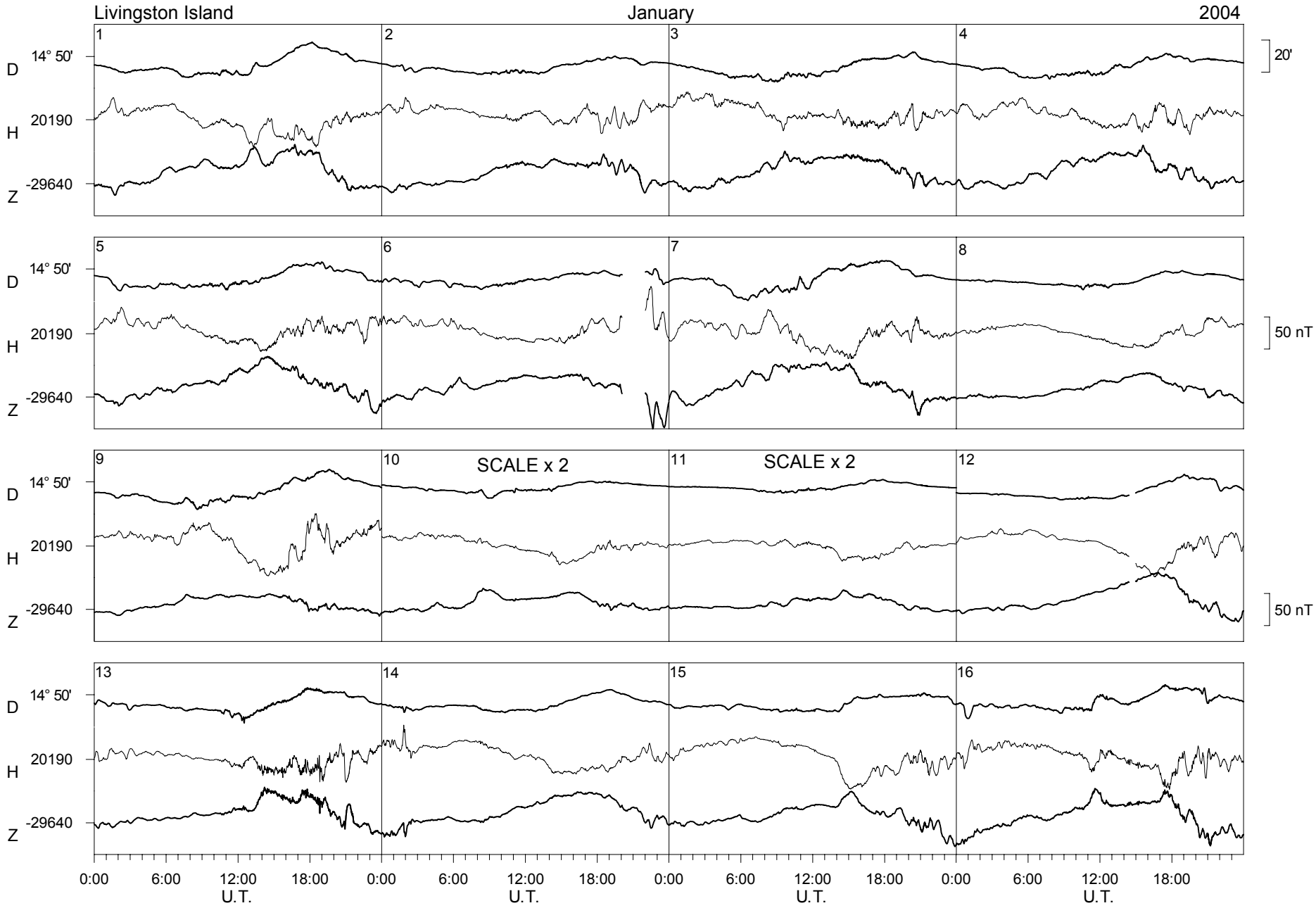
Livingston Island
January
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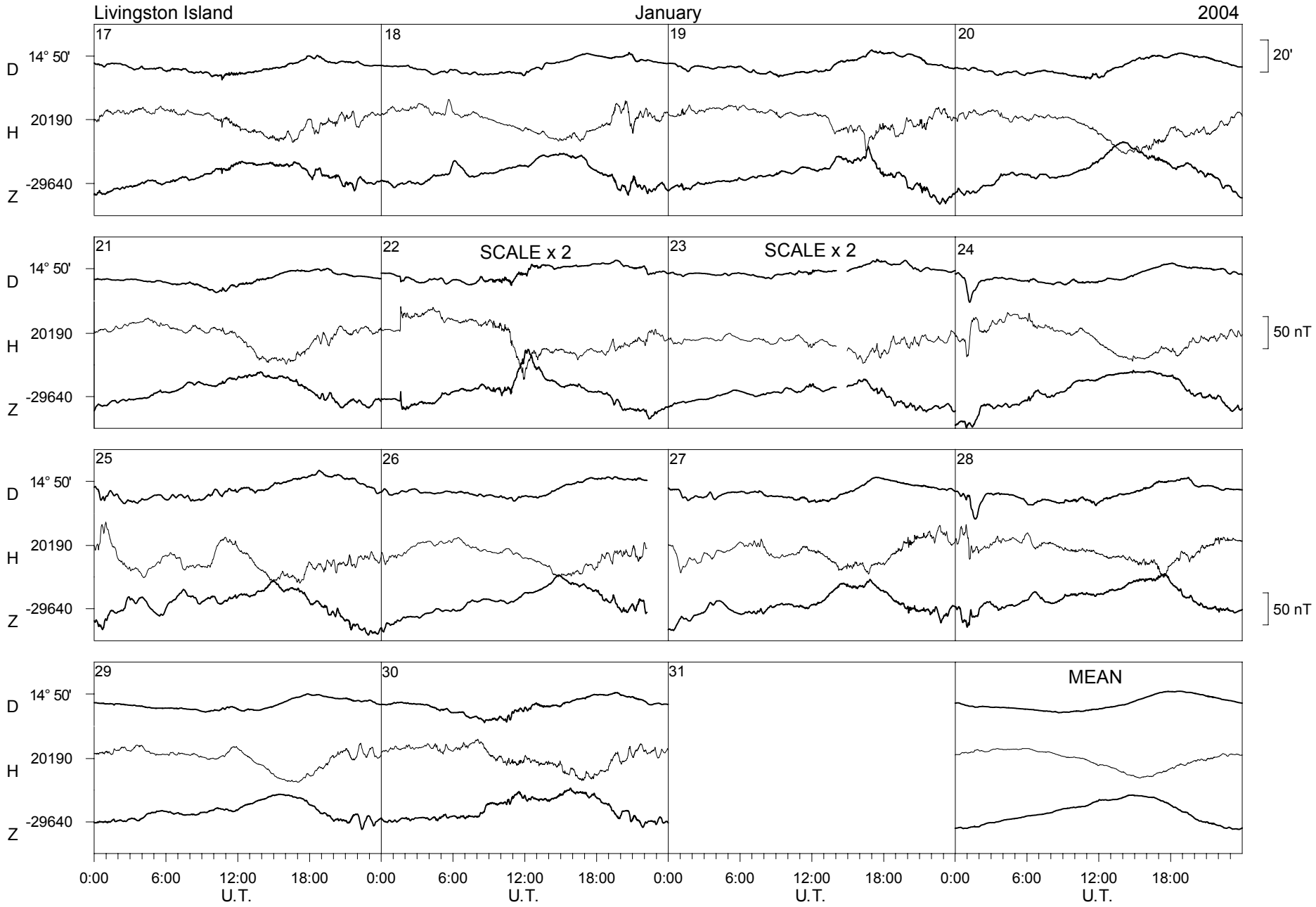
Livingston Island
January
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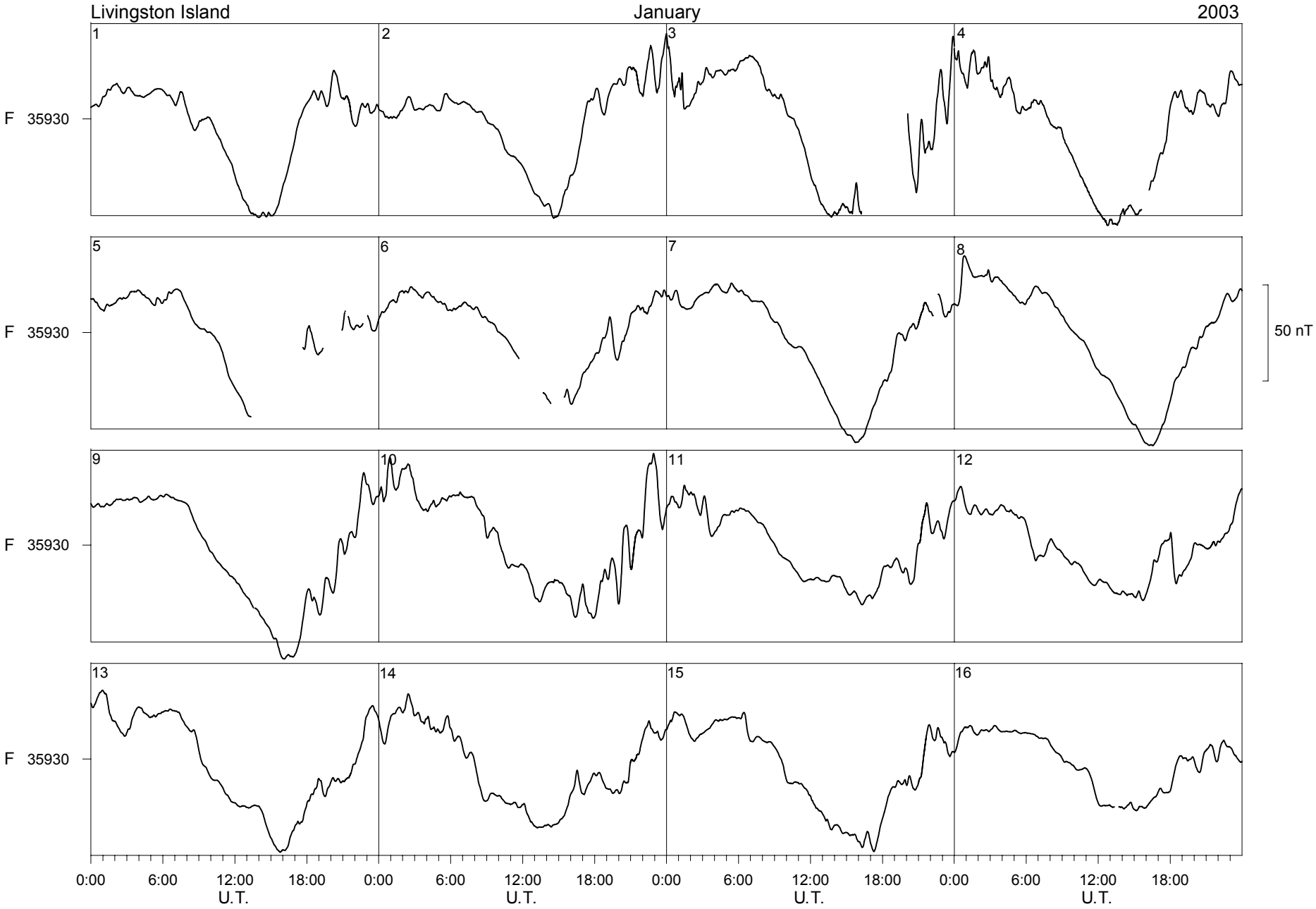
Livingston Island
January
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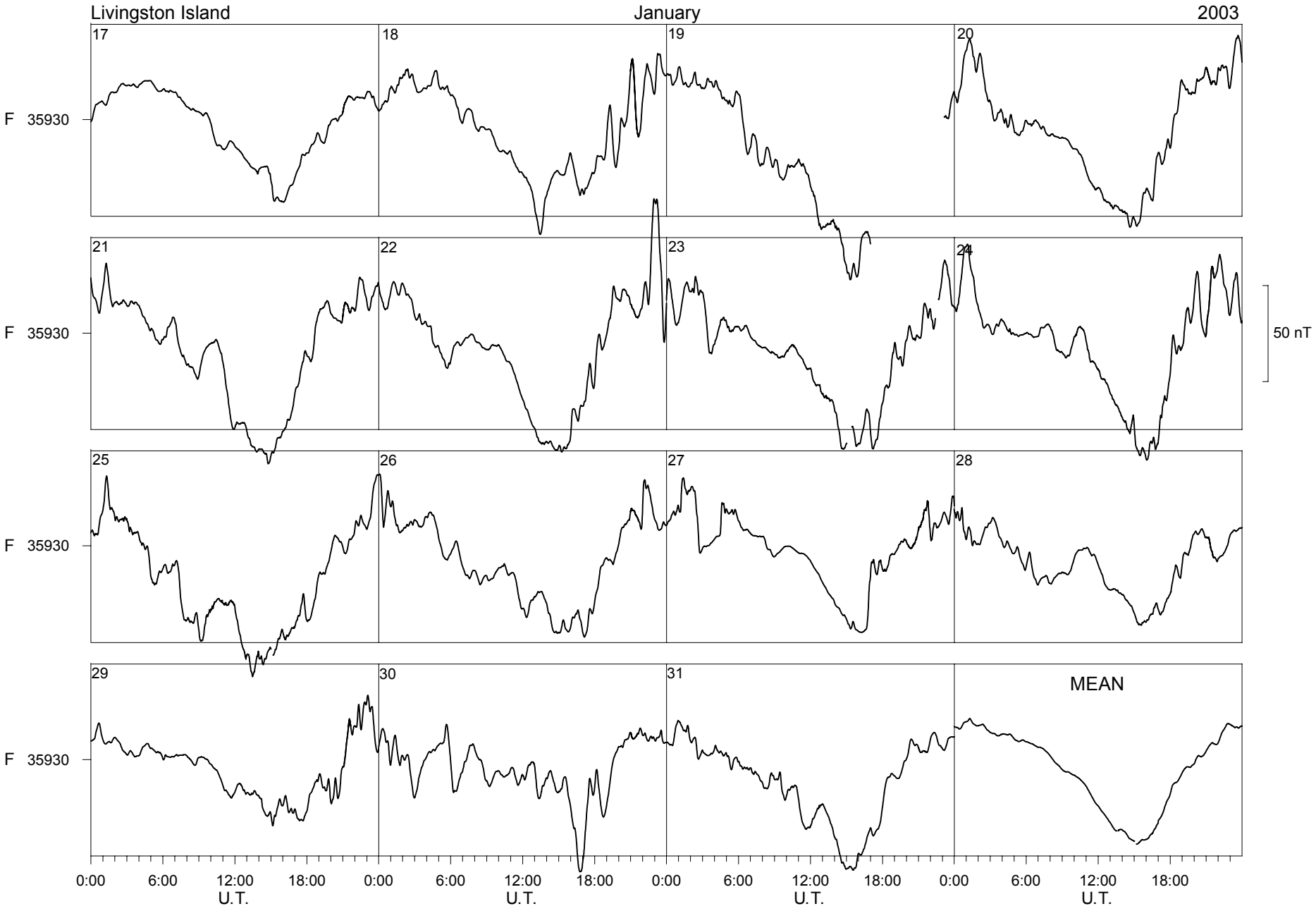
Livingston Island
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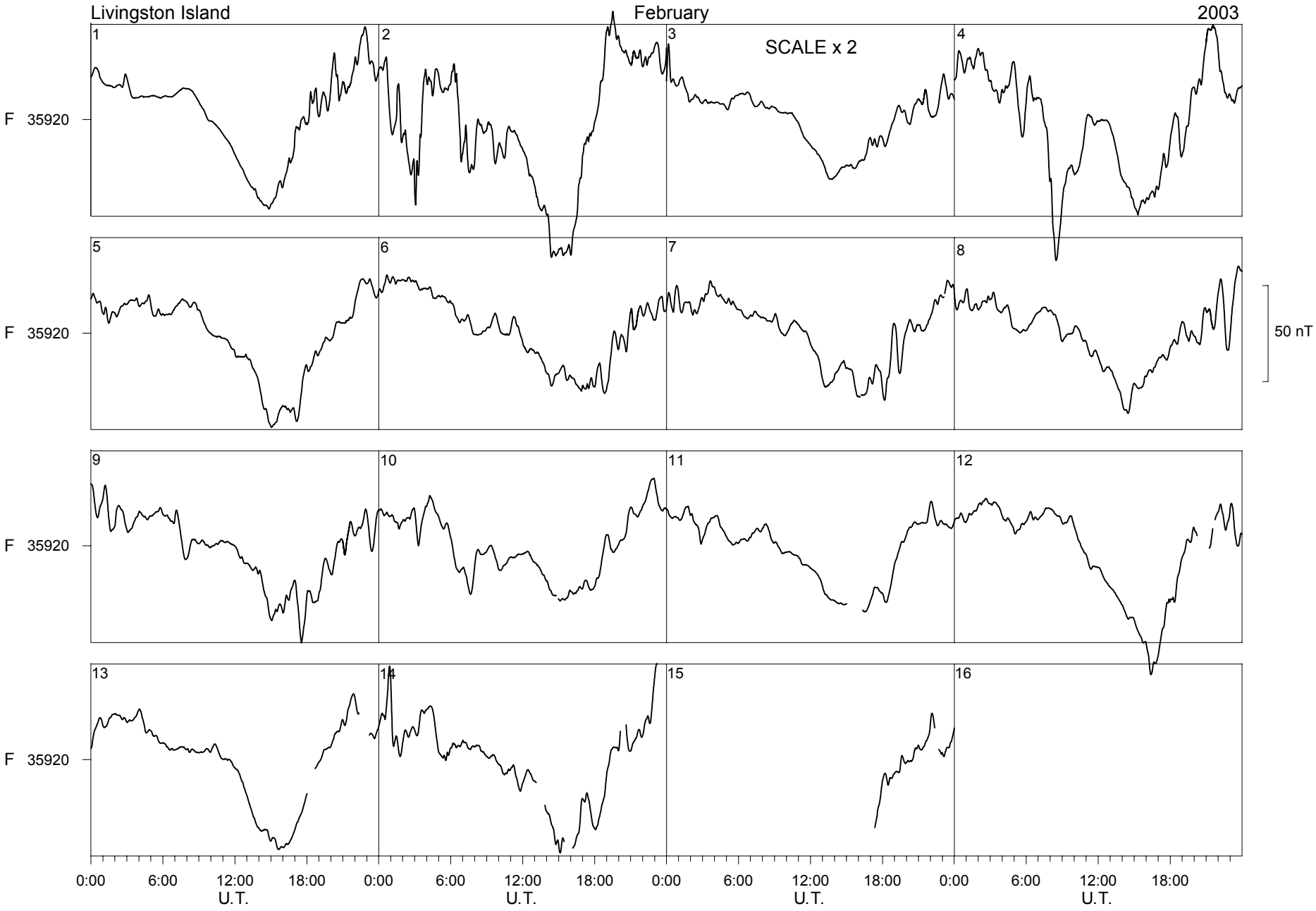
Livingston Island
February
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SCALE x 2
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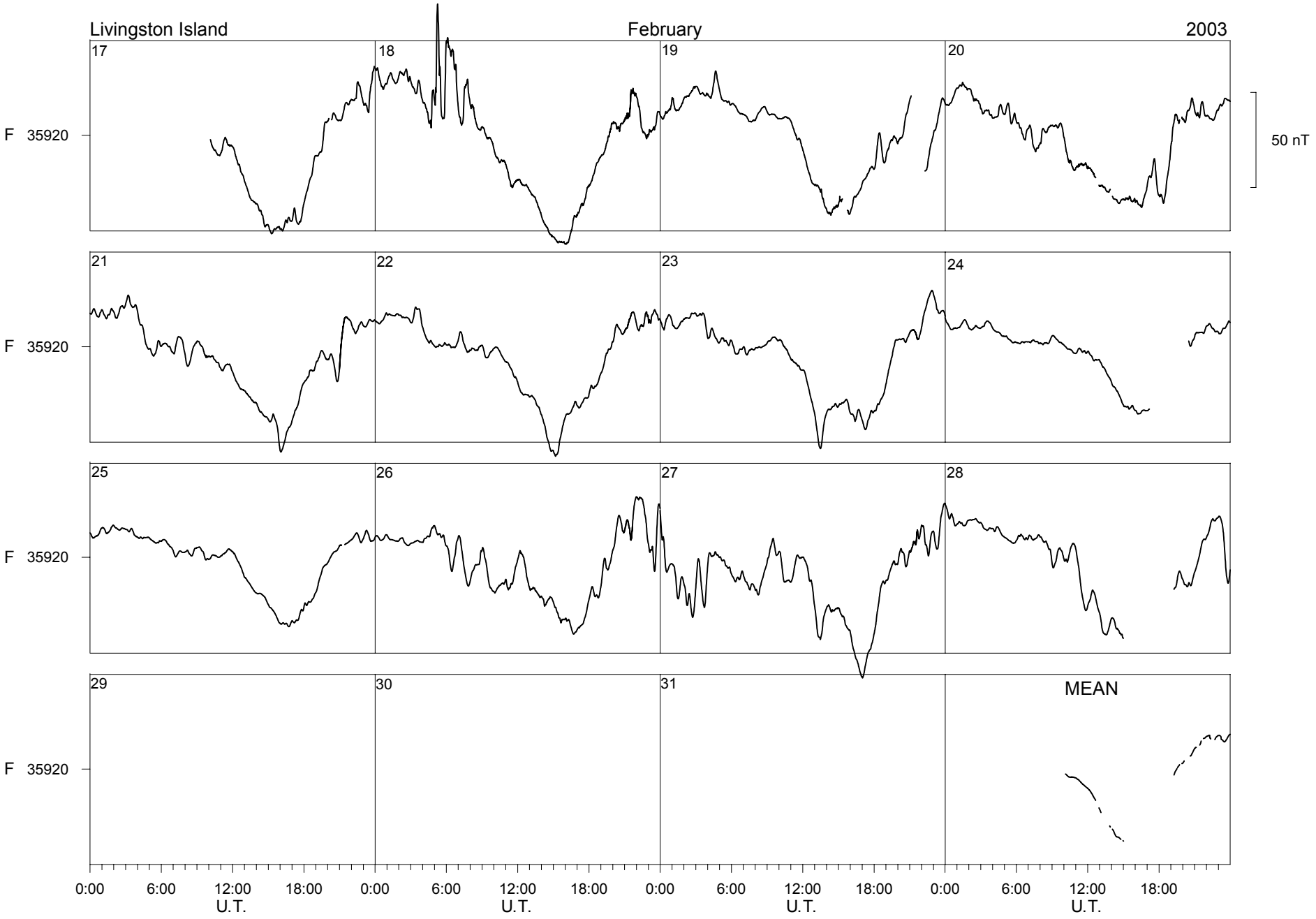
Livingston Island
February
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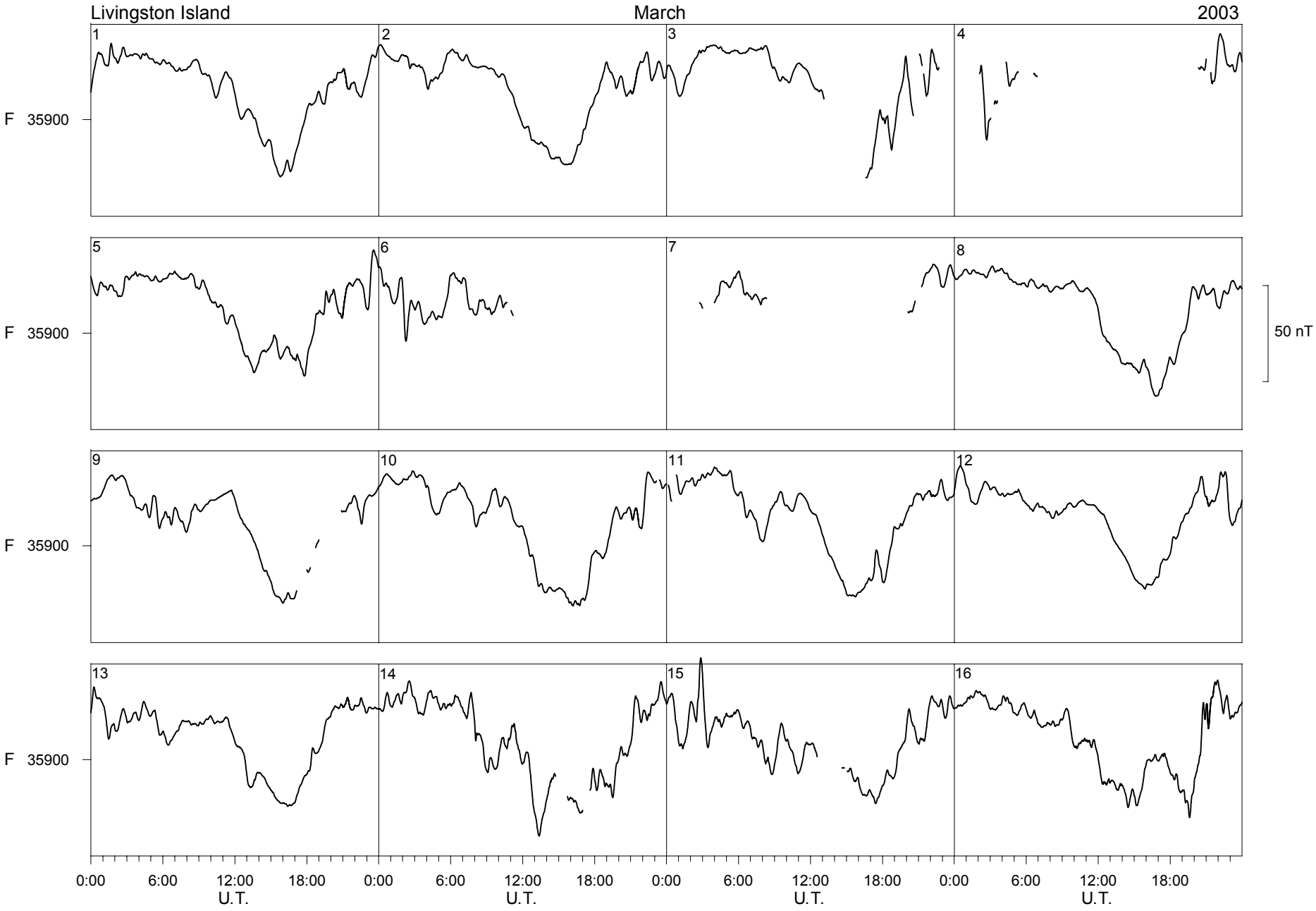
Livingston Island
March
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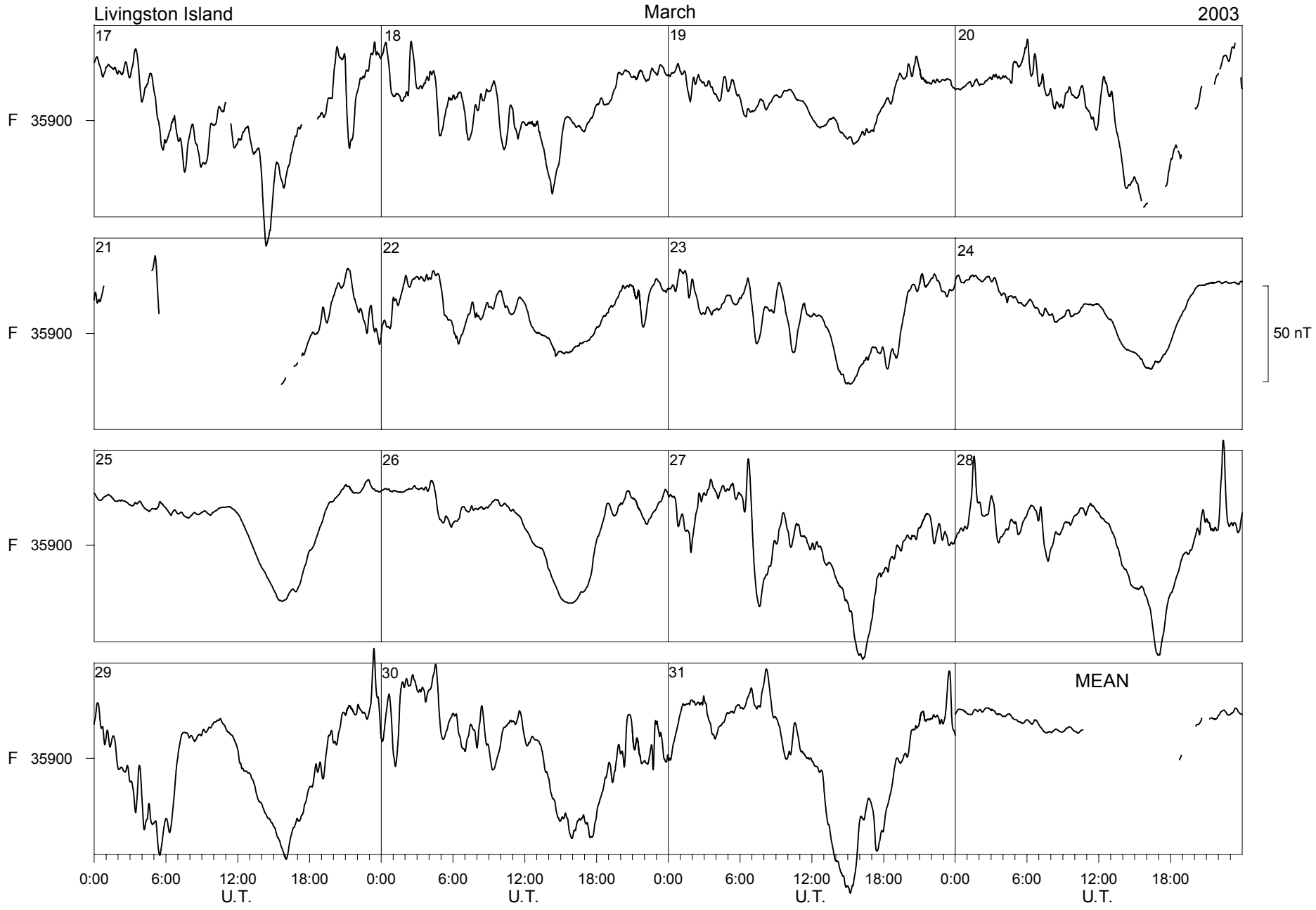
Livingston Island
March
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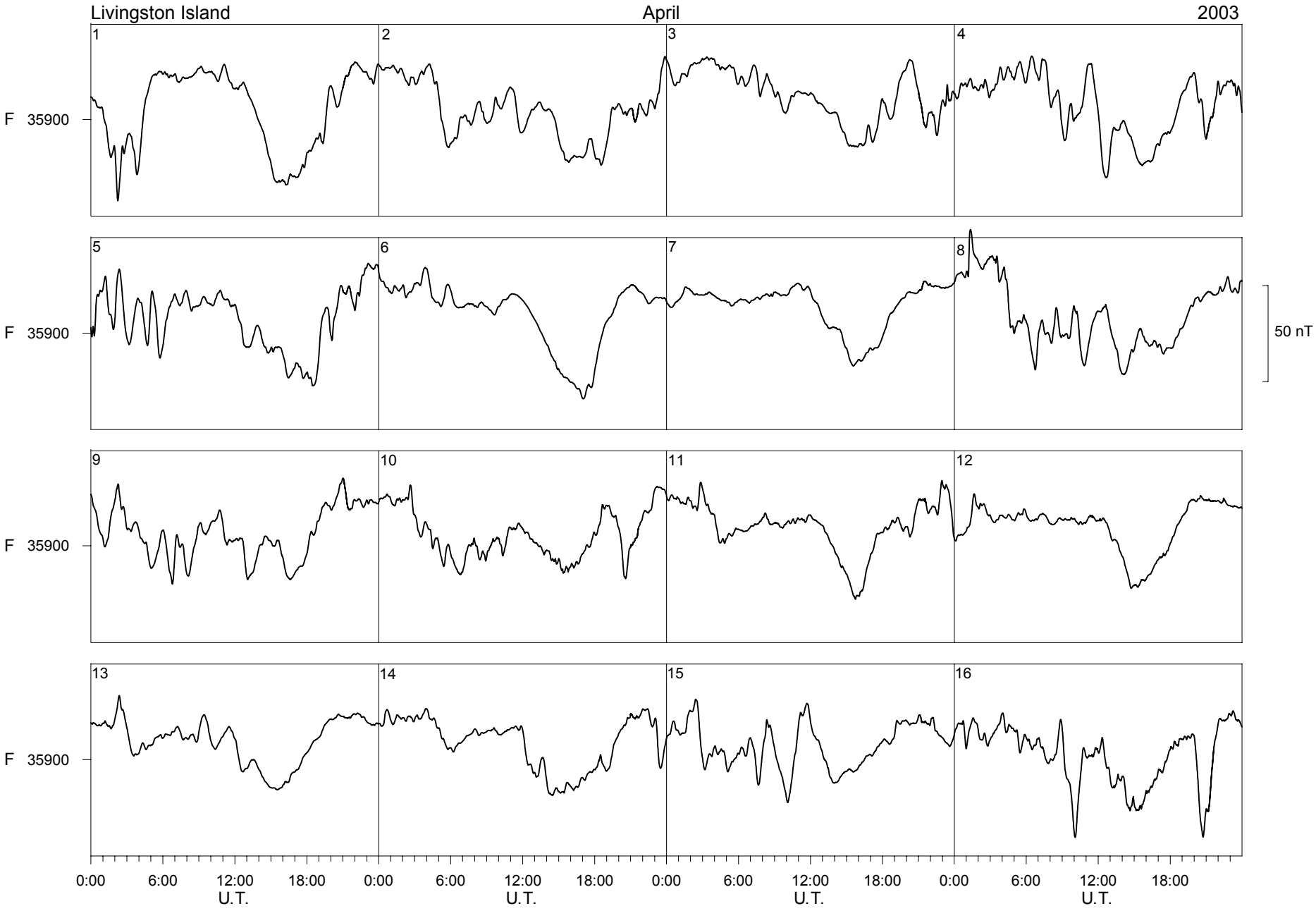
Livingston Island
April
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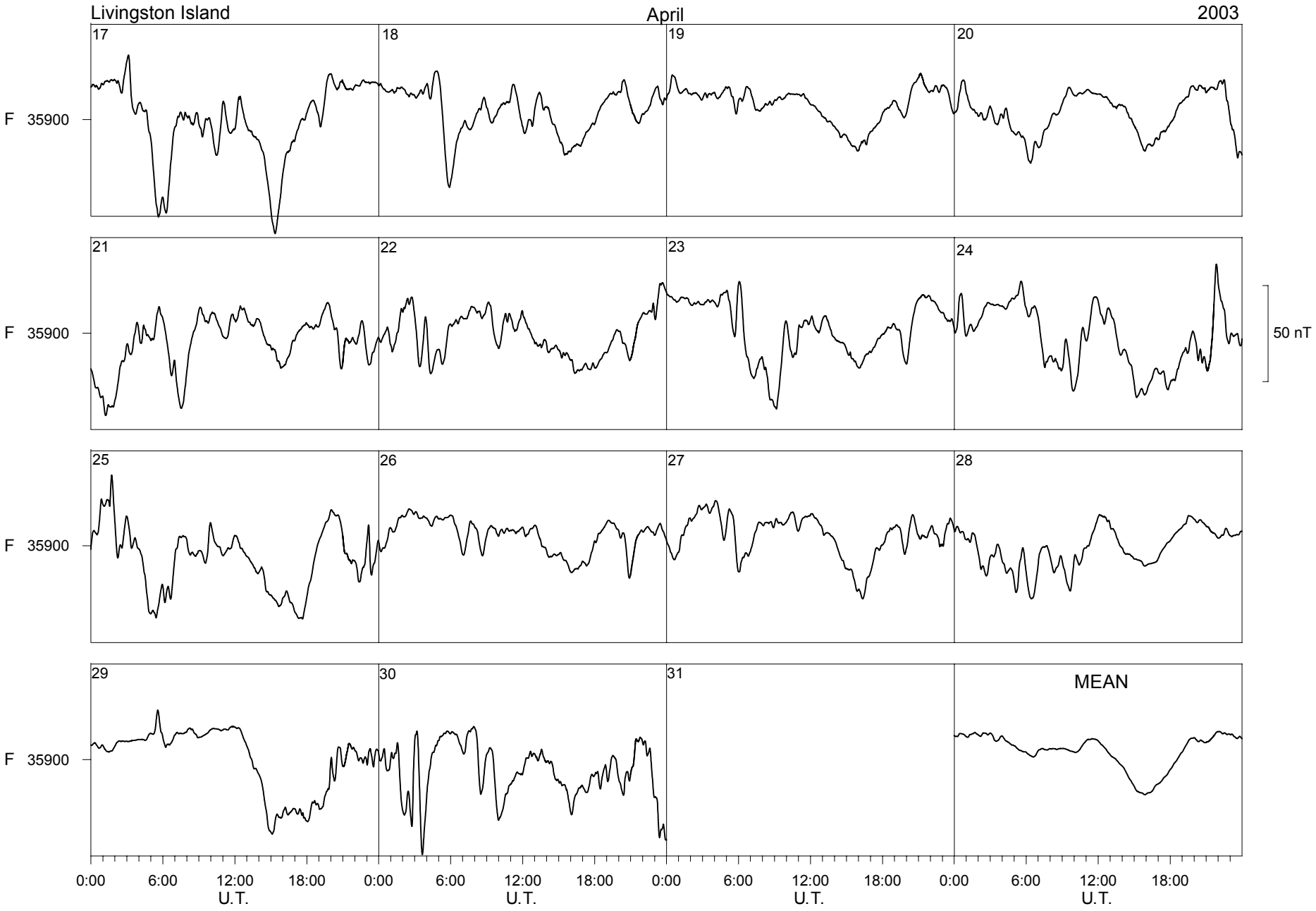
Livingston Island
April
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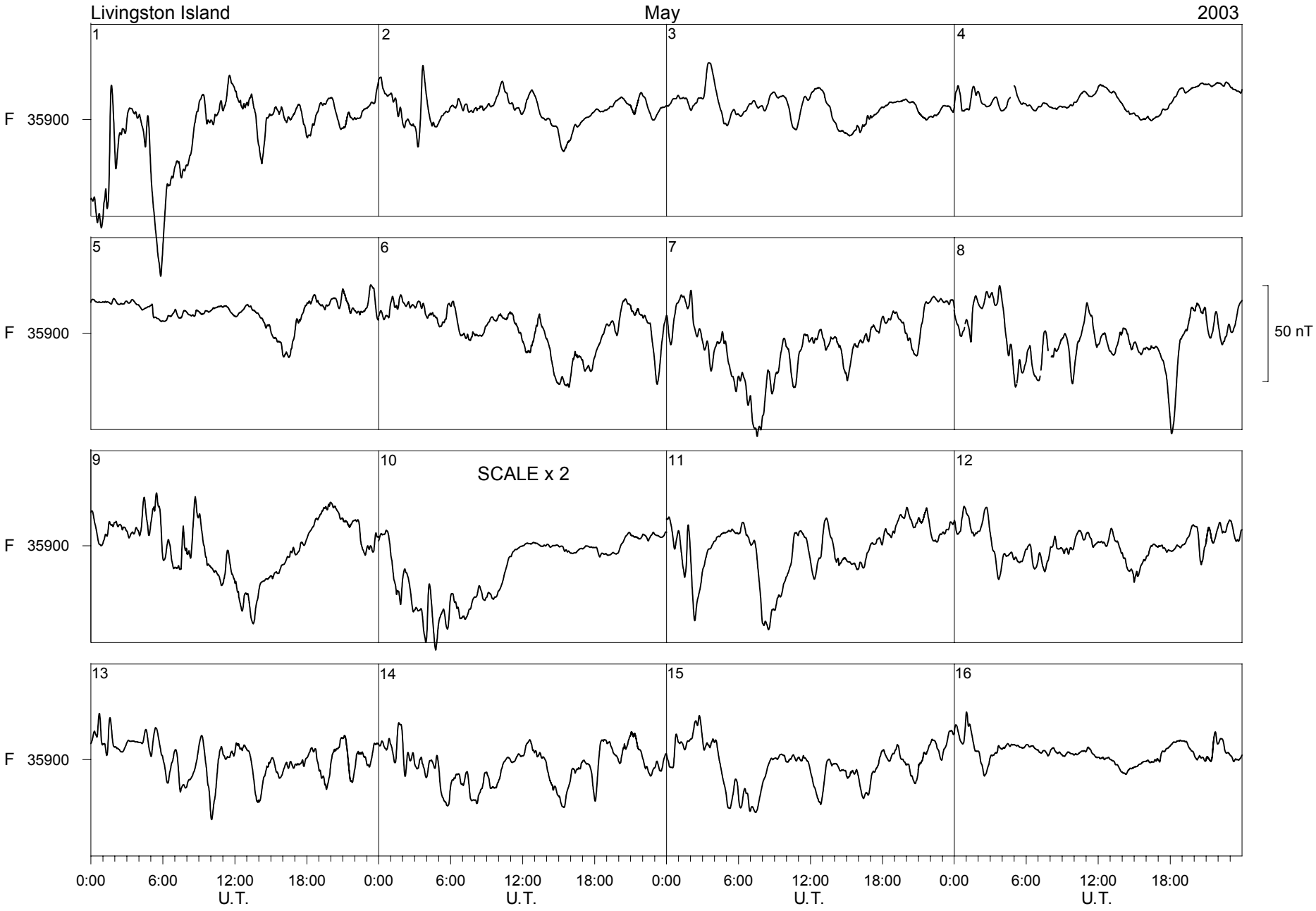
Livingston Island
May
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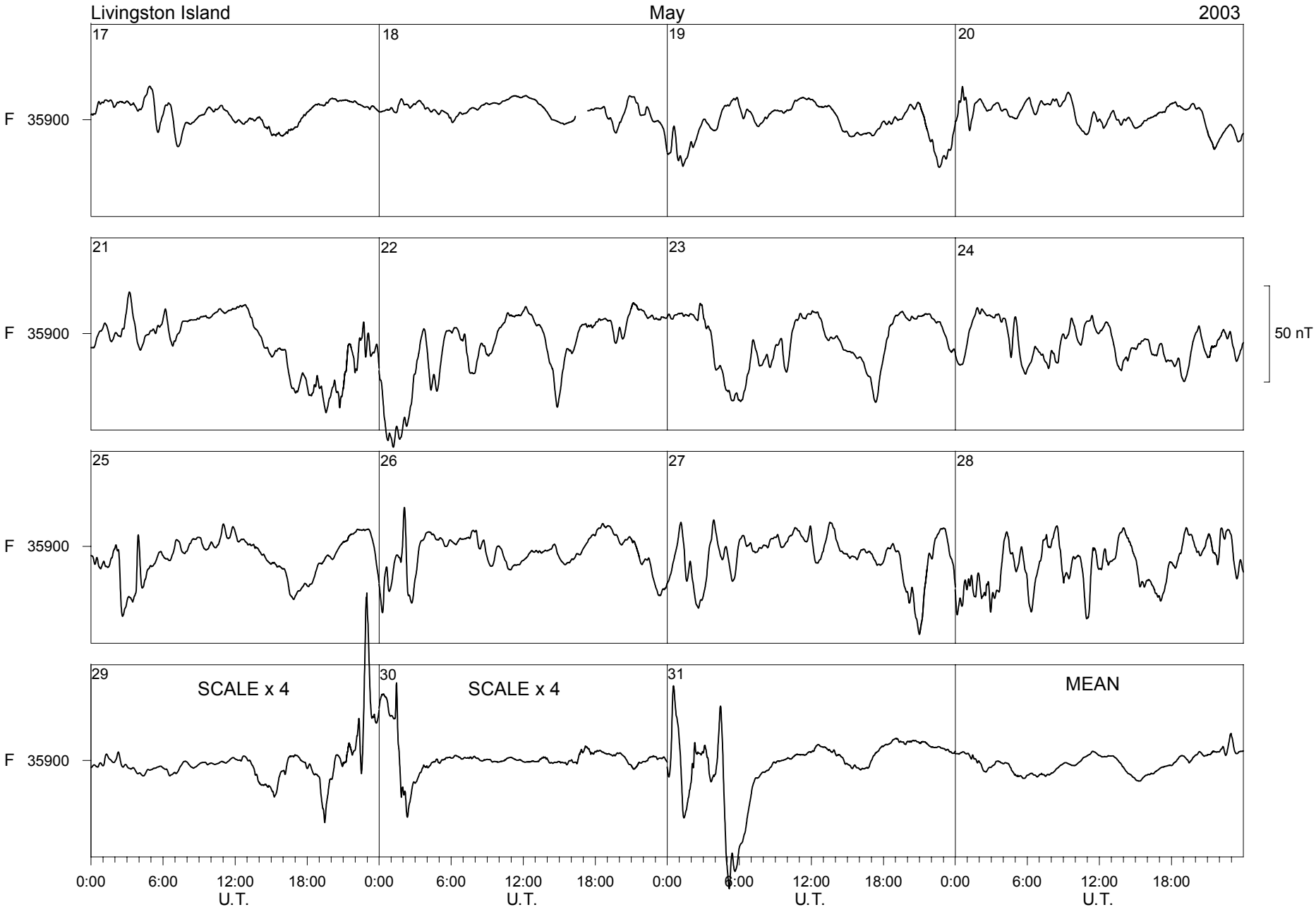
Livingston Island
May
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SCALE x 4
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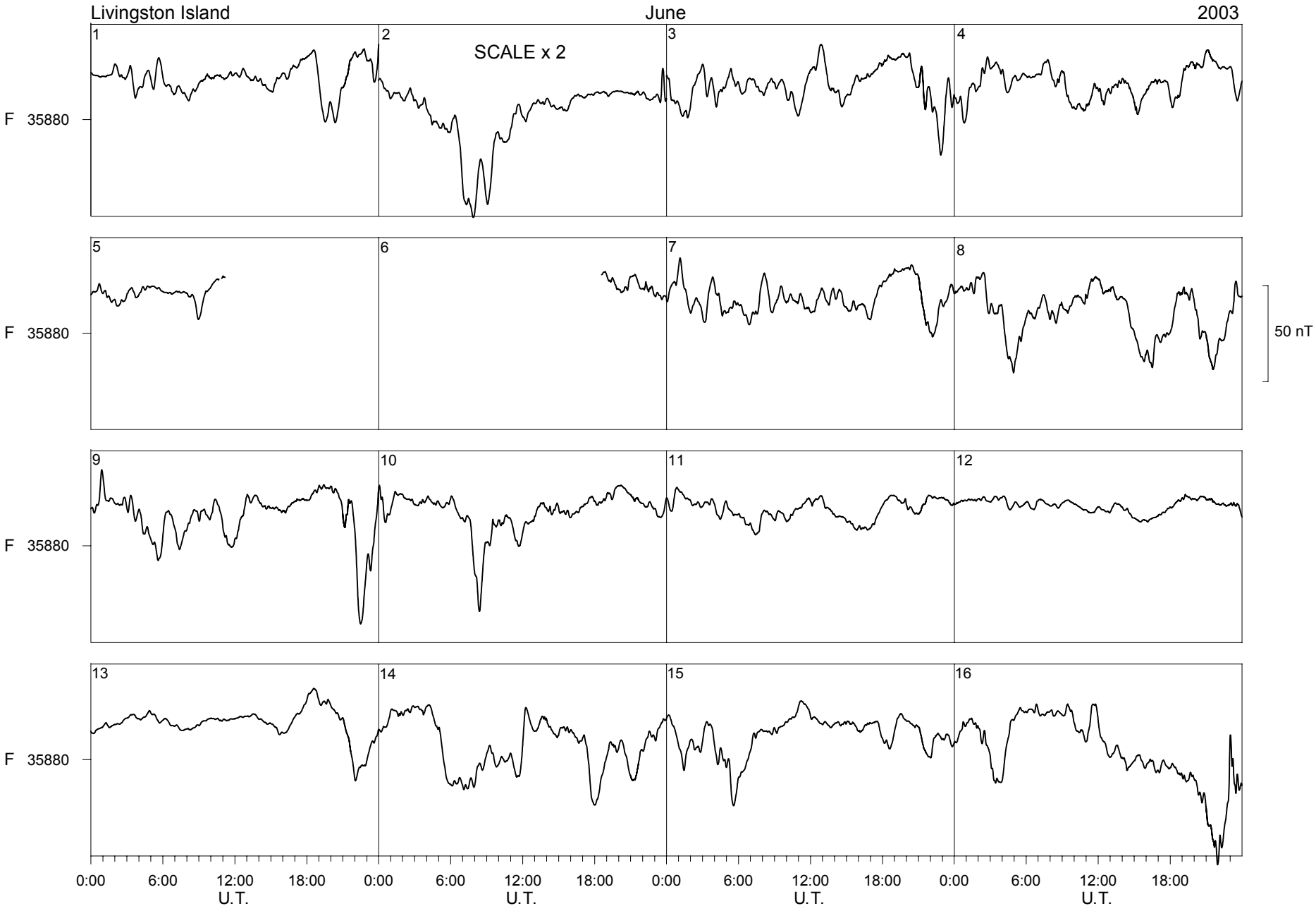
Livingston Island
June
2003
SCALE x 2
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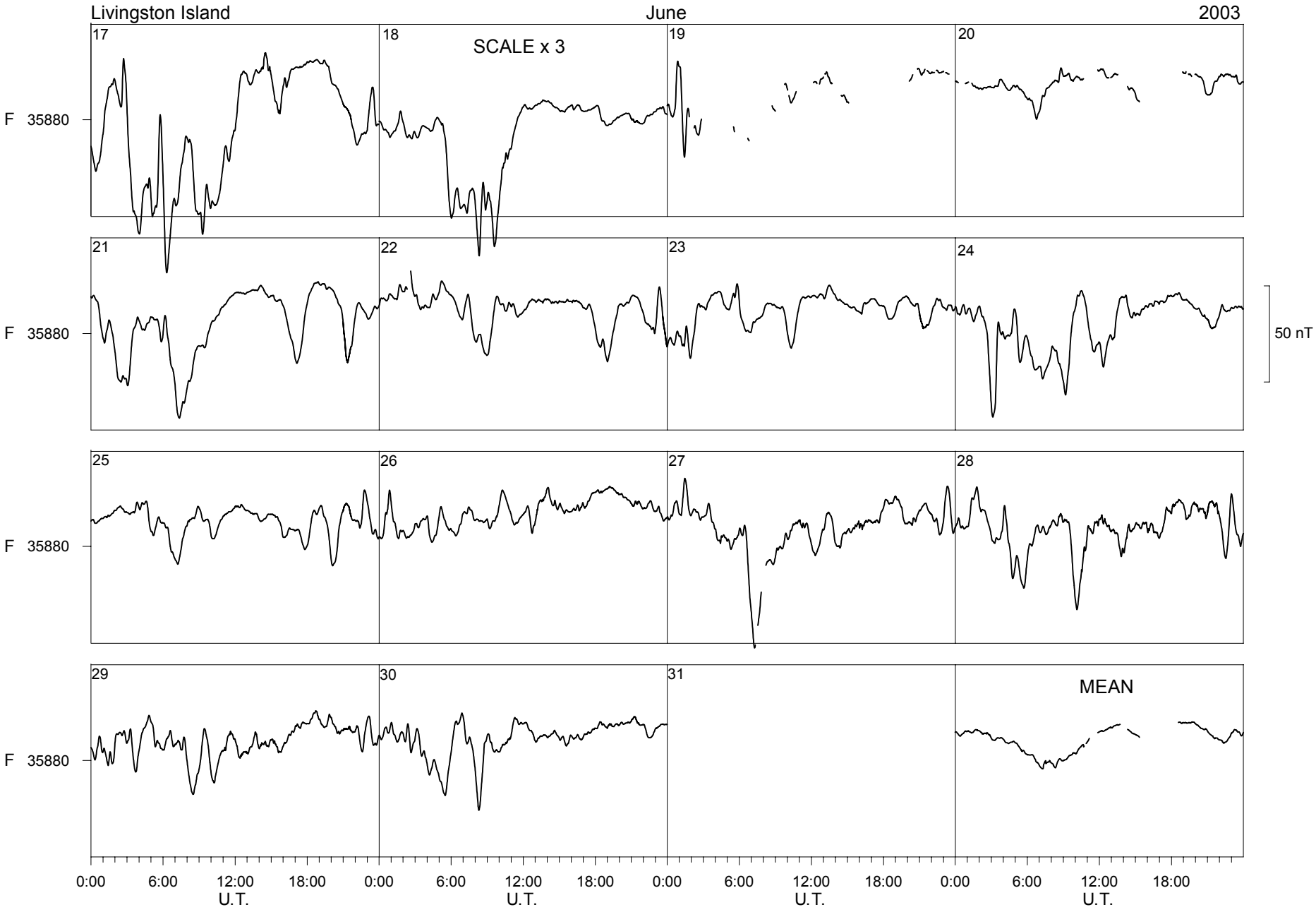
Livingston Island
June
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SCALE x 3
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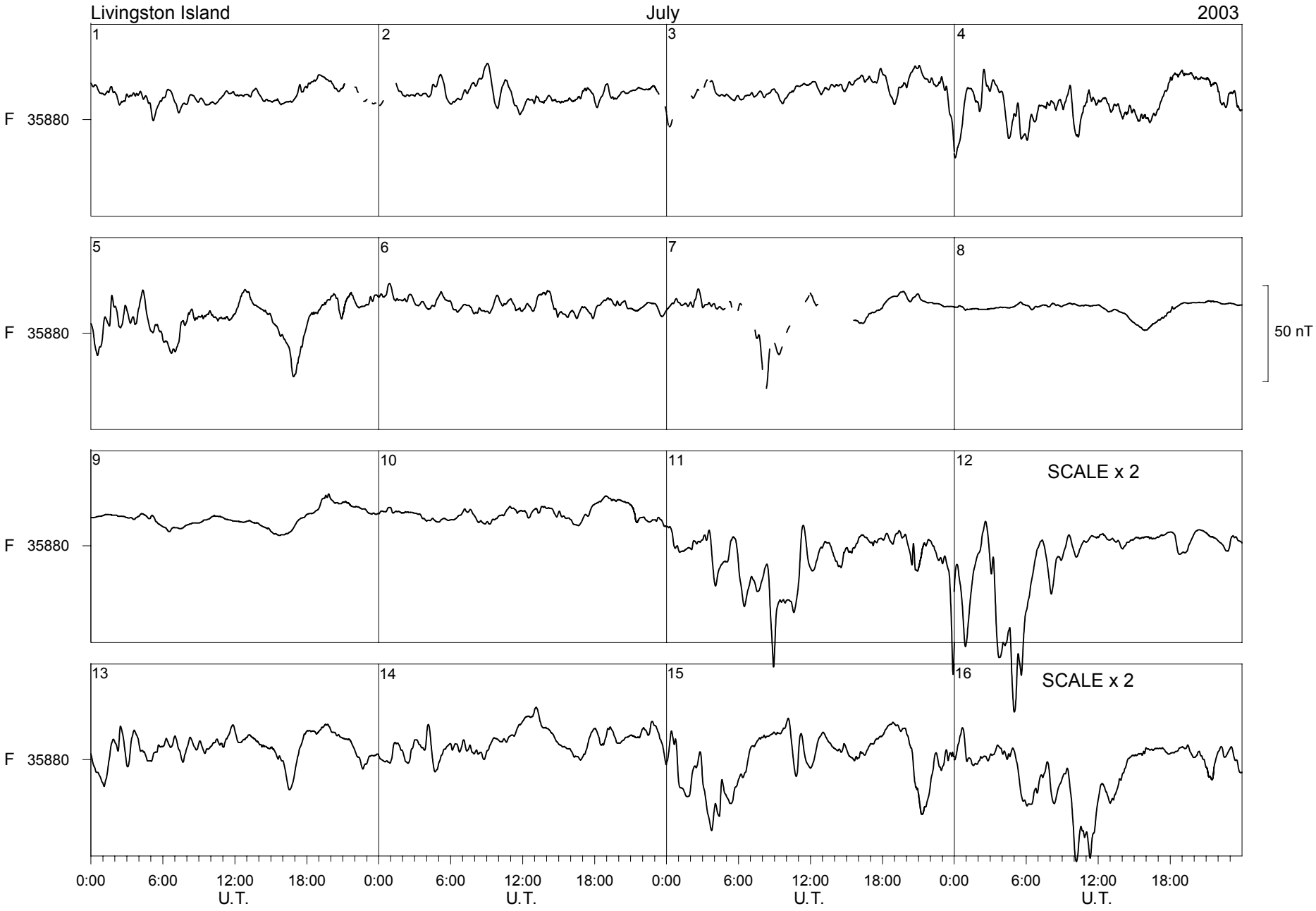
Livingston Island
July
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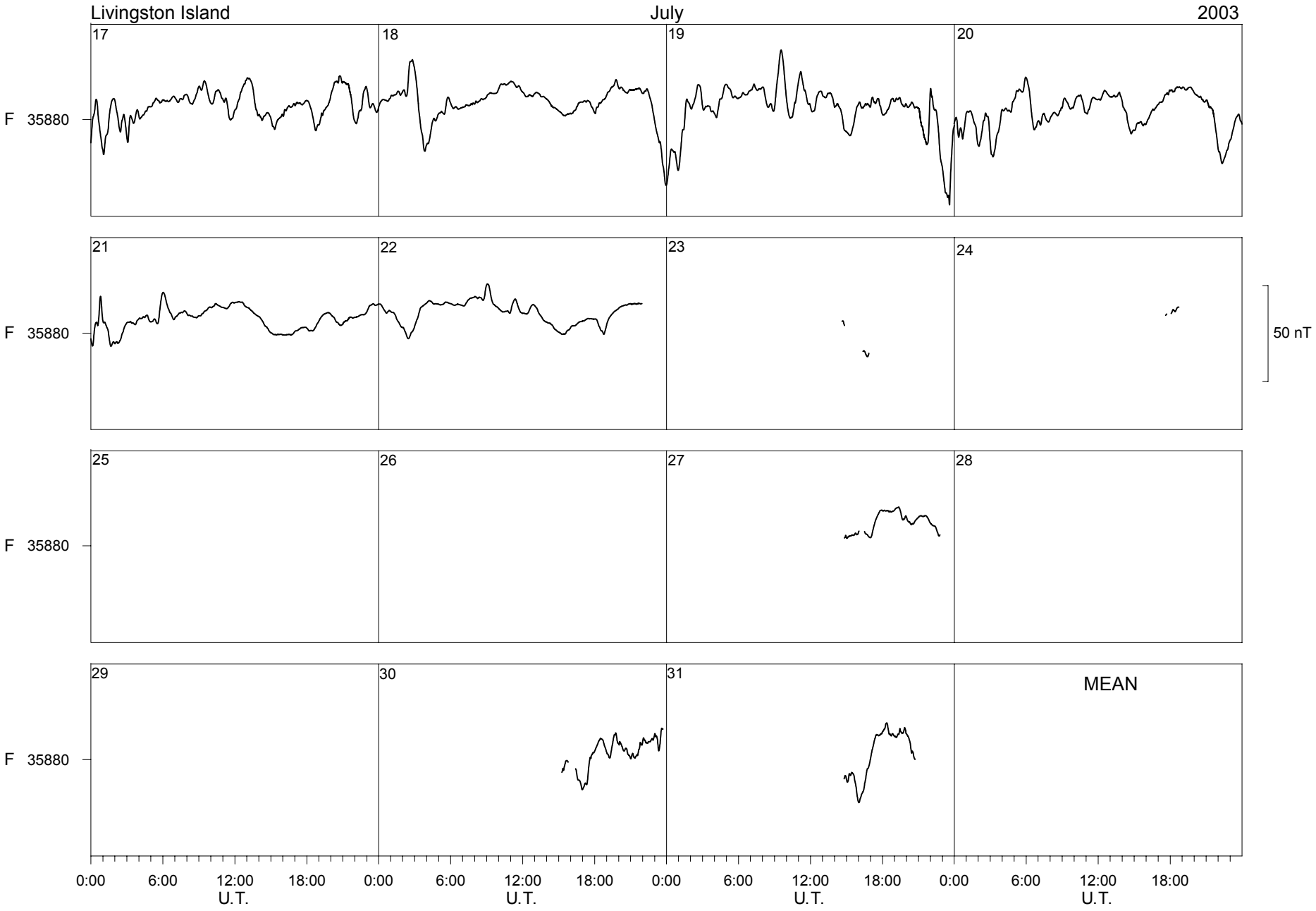
Livingston Island
July
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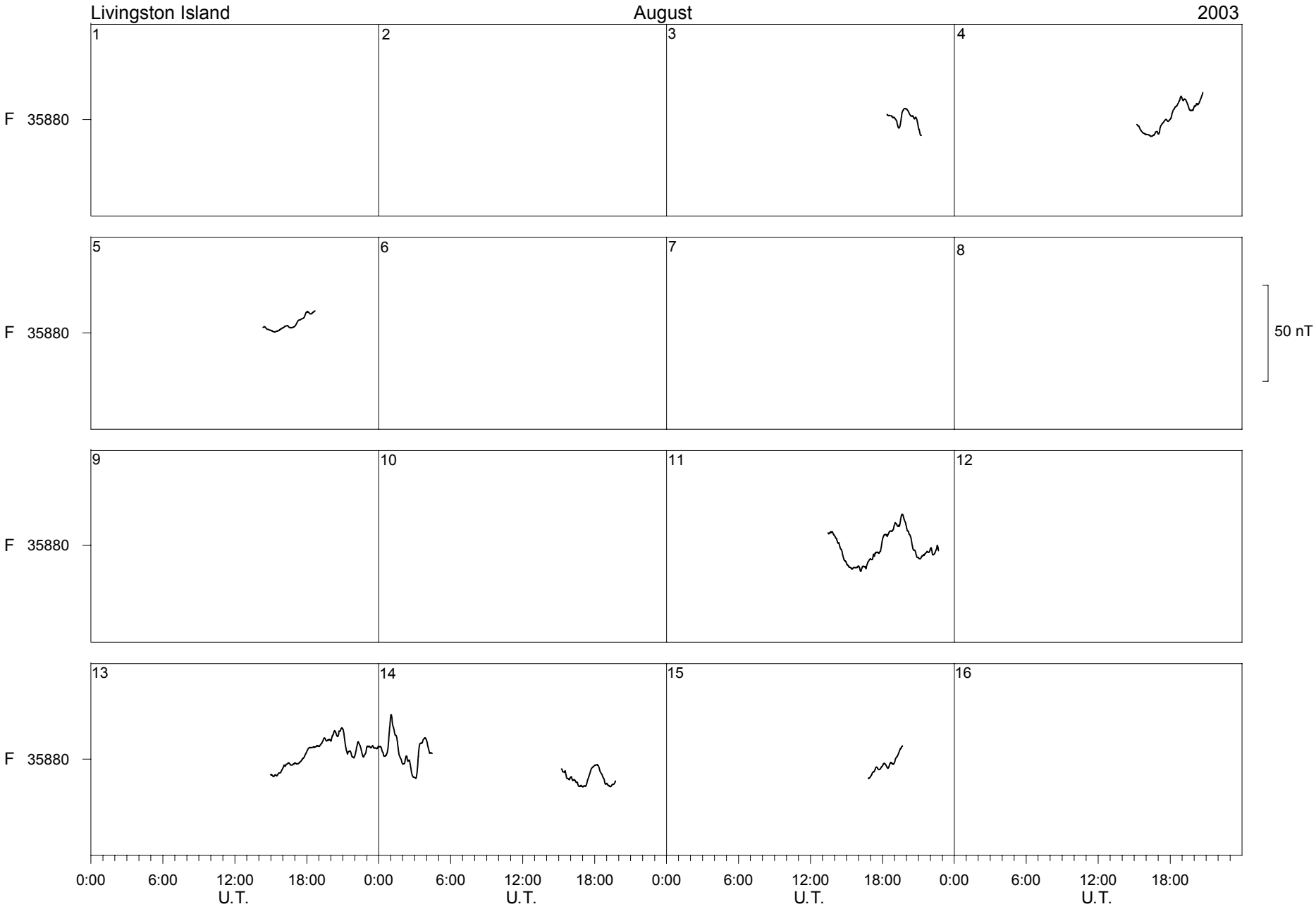
Livingston Island
August
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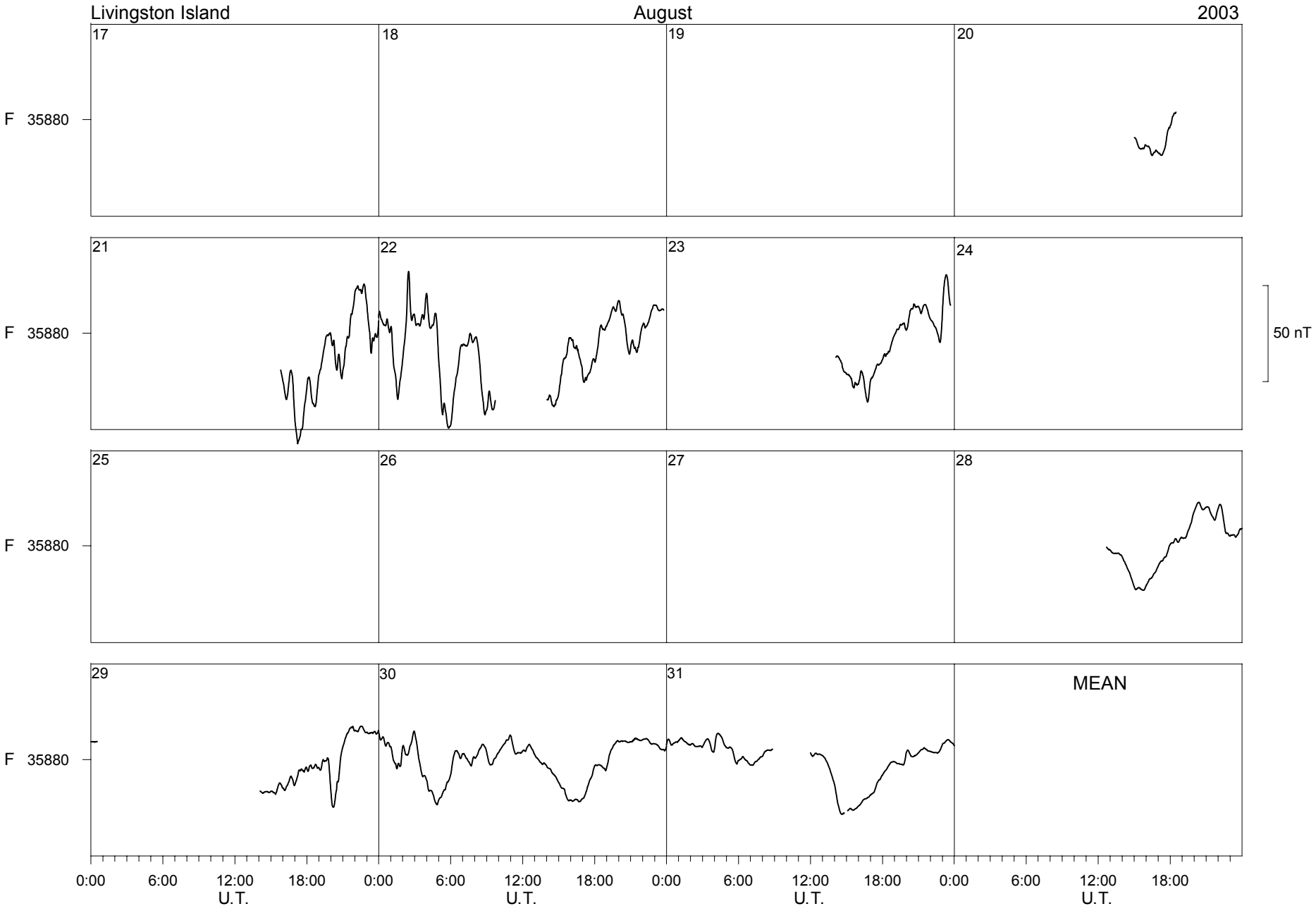
U.T.


Livingston Island
August
2003
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MEAN
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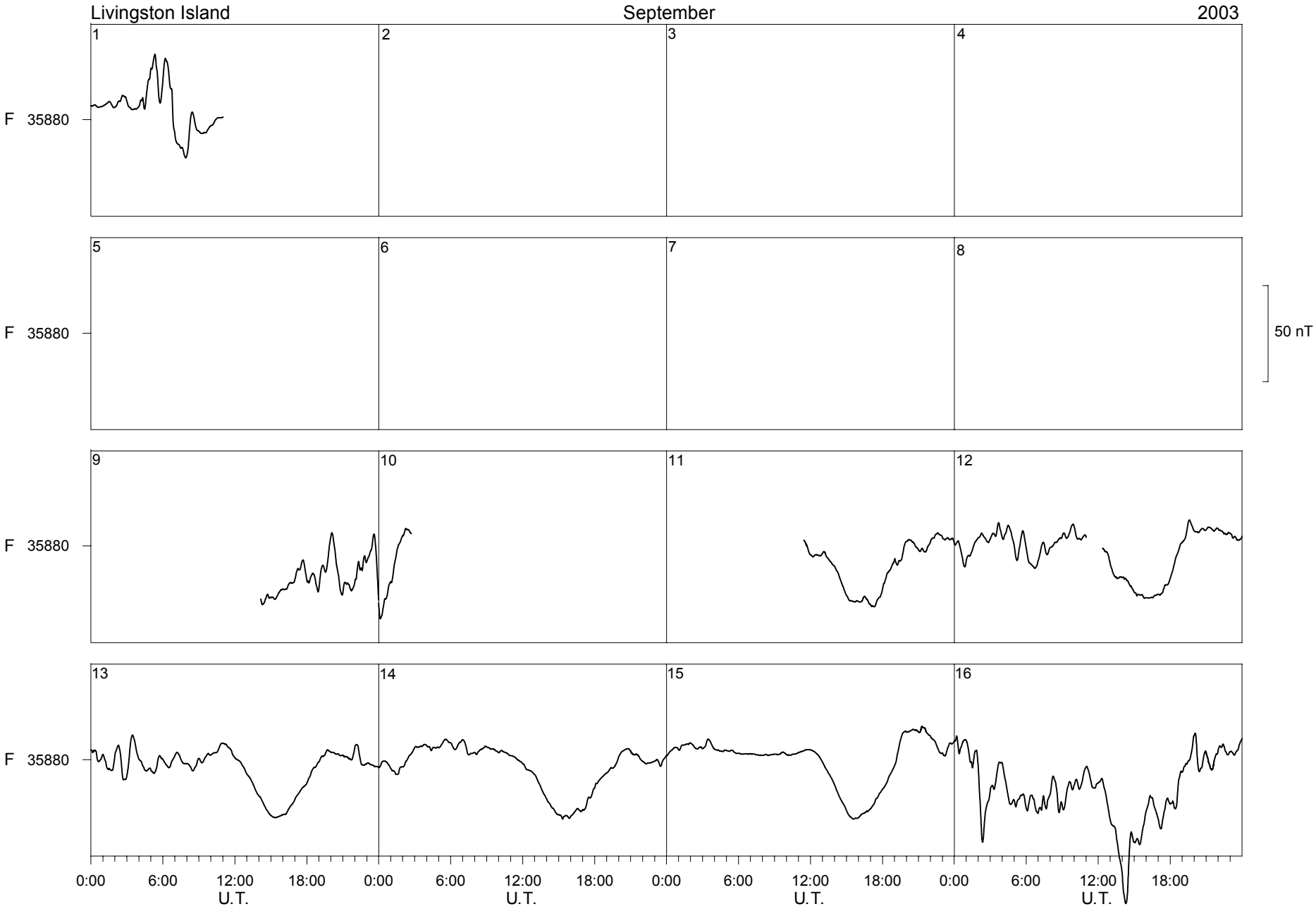
Livingston Island
September
2003
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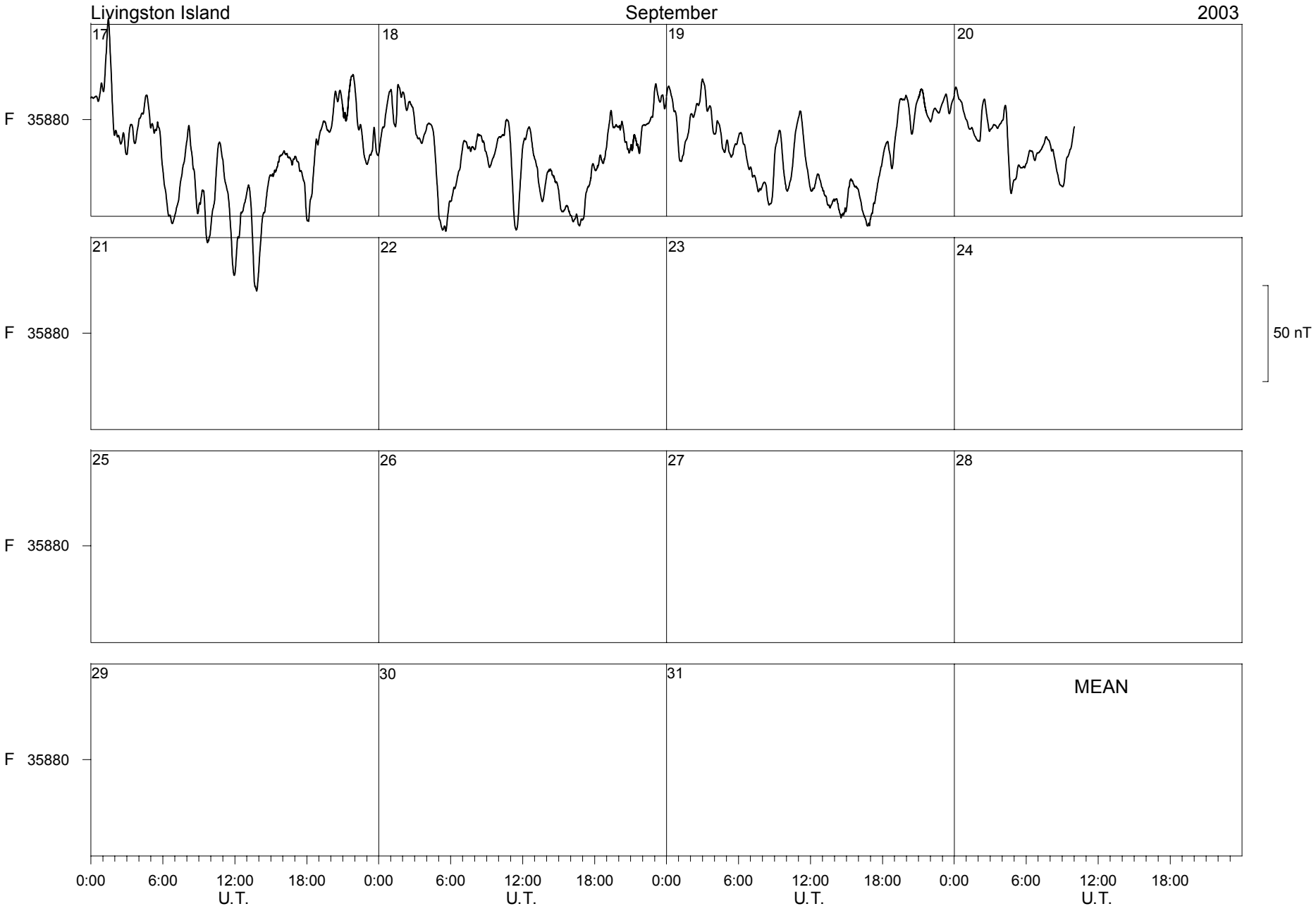
Livingston Island
September
2003
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MEAN
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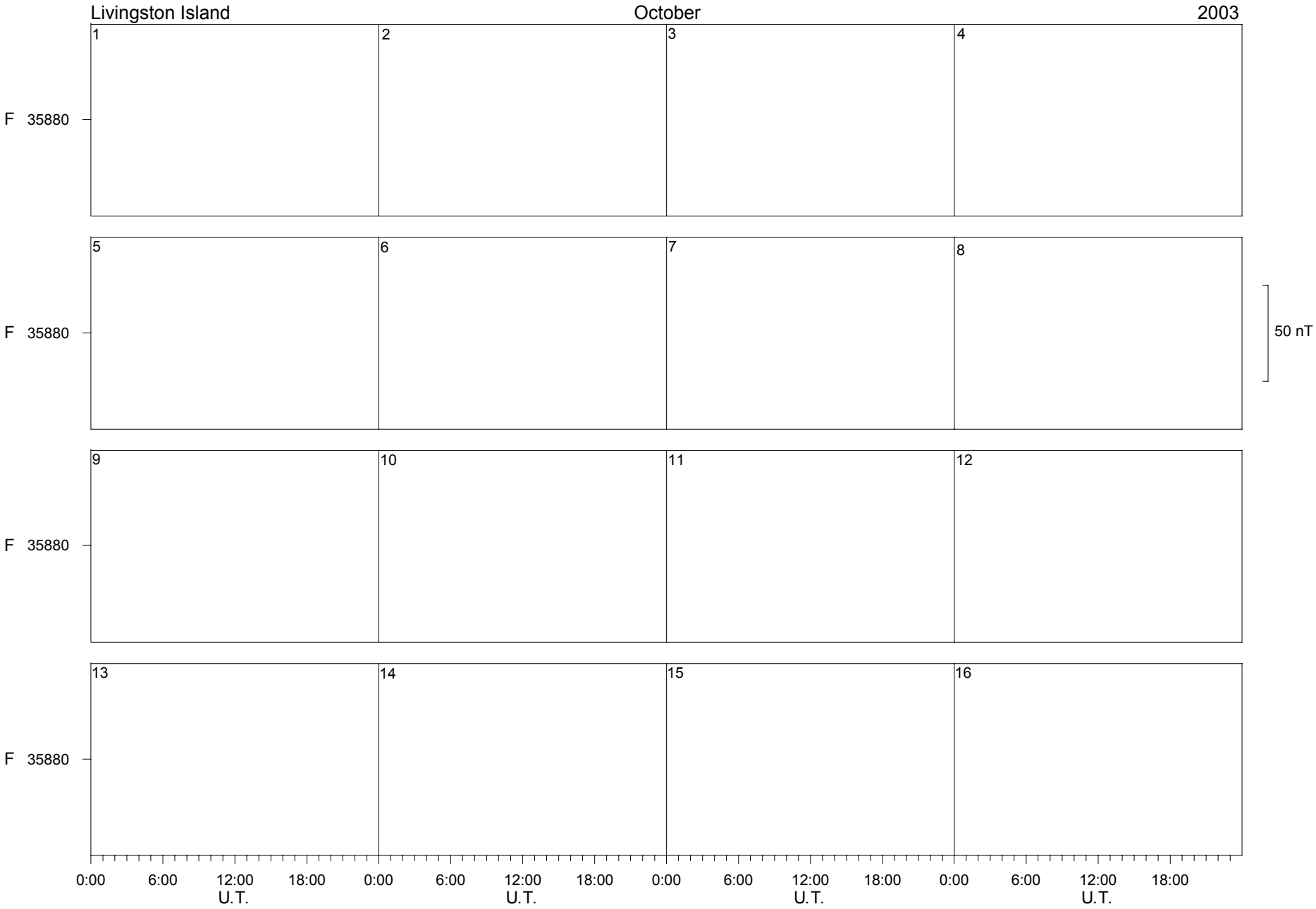
Livingston Island
October
2003
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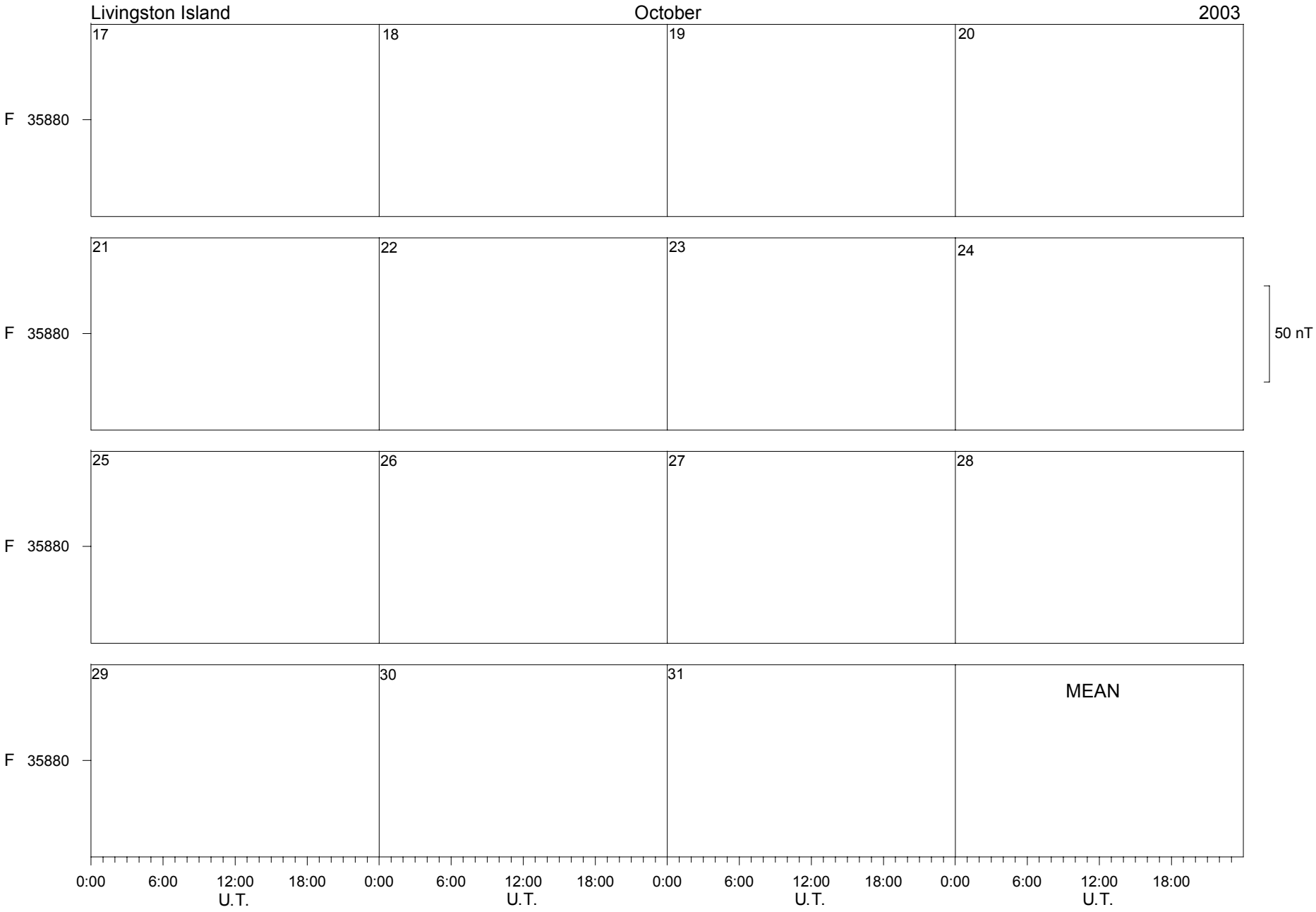
Livingston Island
October
2003
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MEAN
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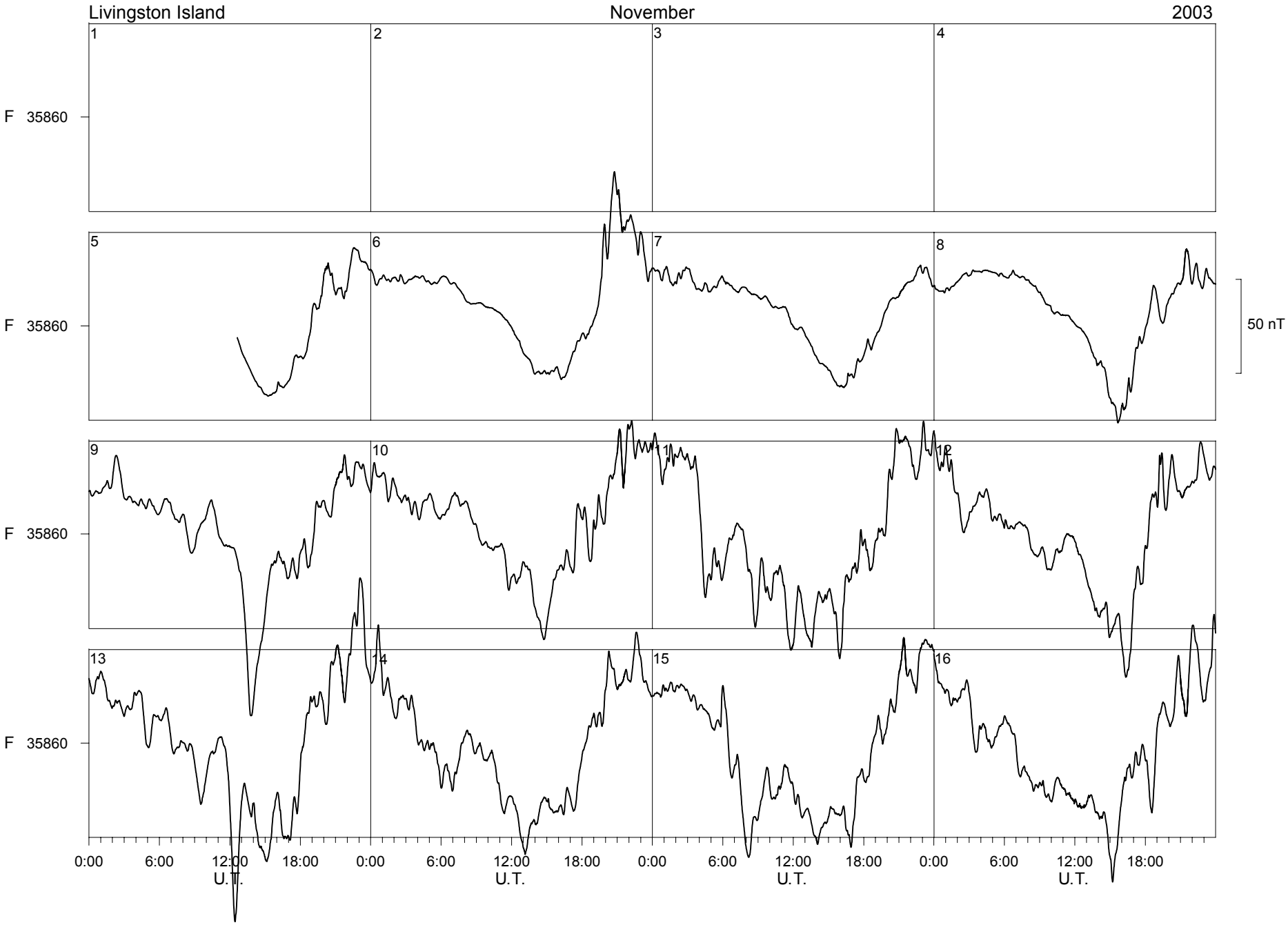
Livingston Island
November
2003
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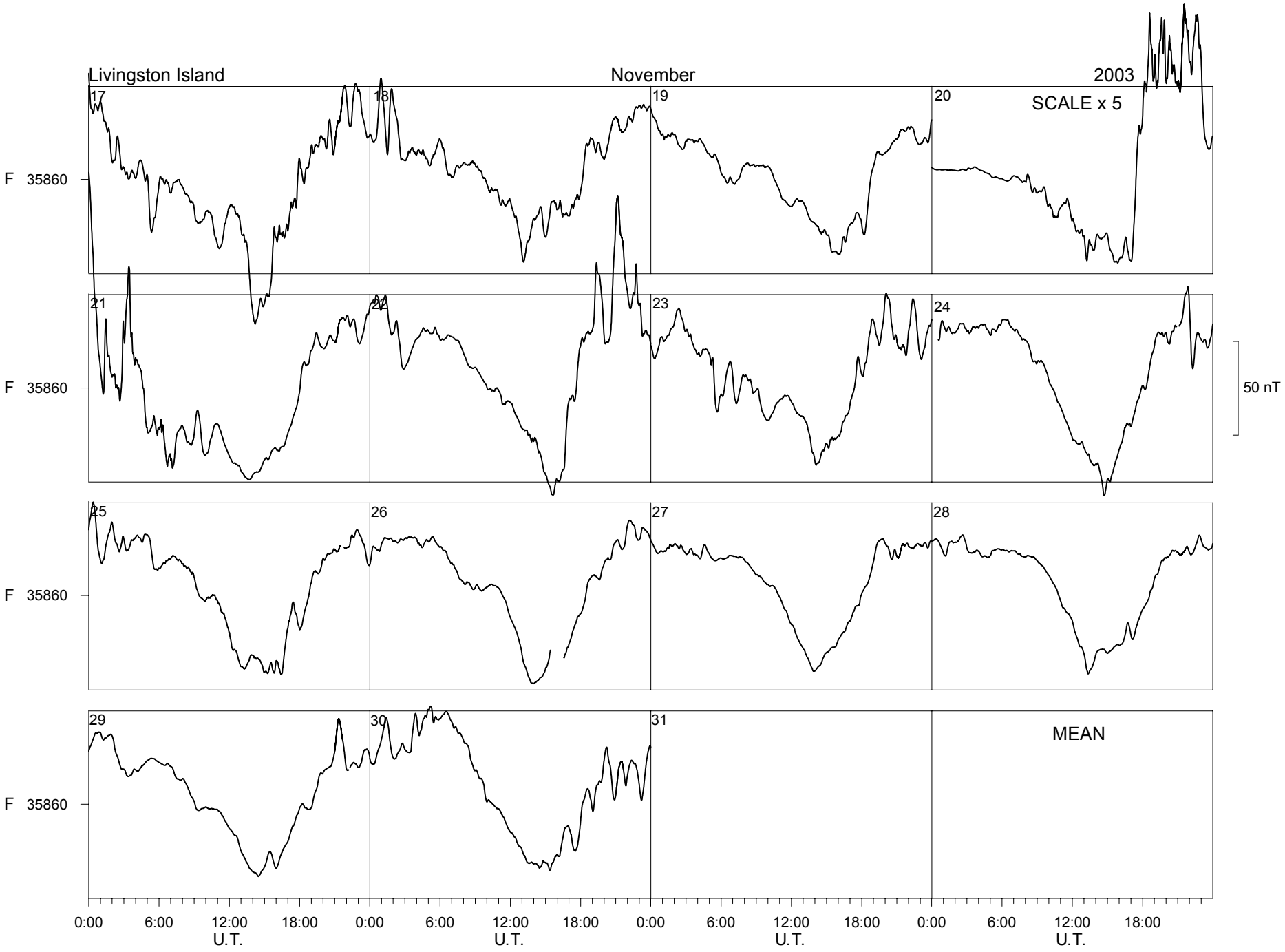
U.T.


Livingston Island
November
2003
SCALE x 5
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MEAN
F 35860
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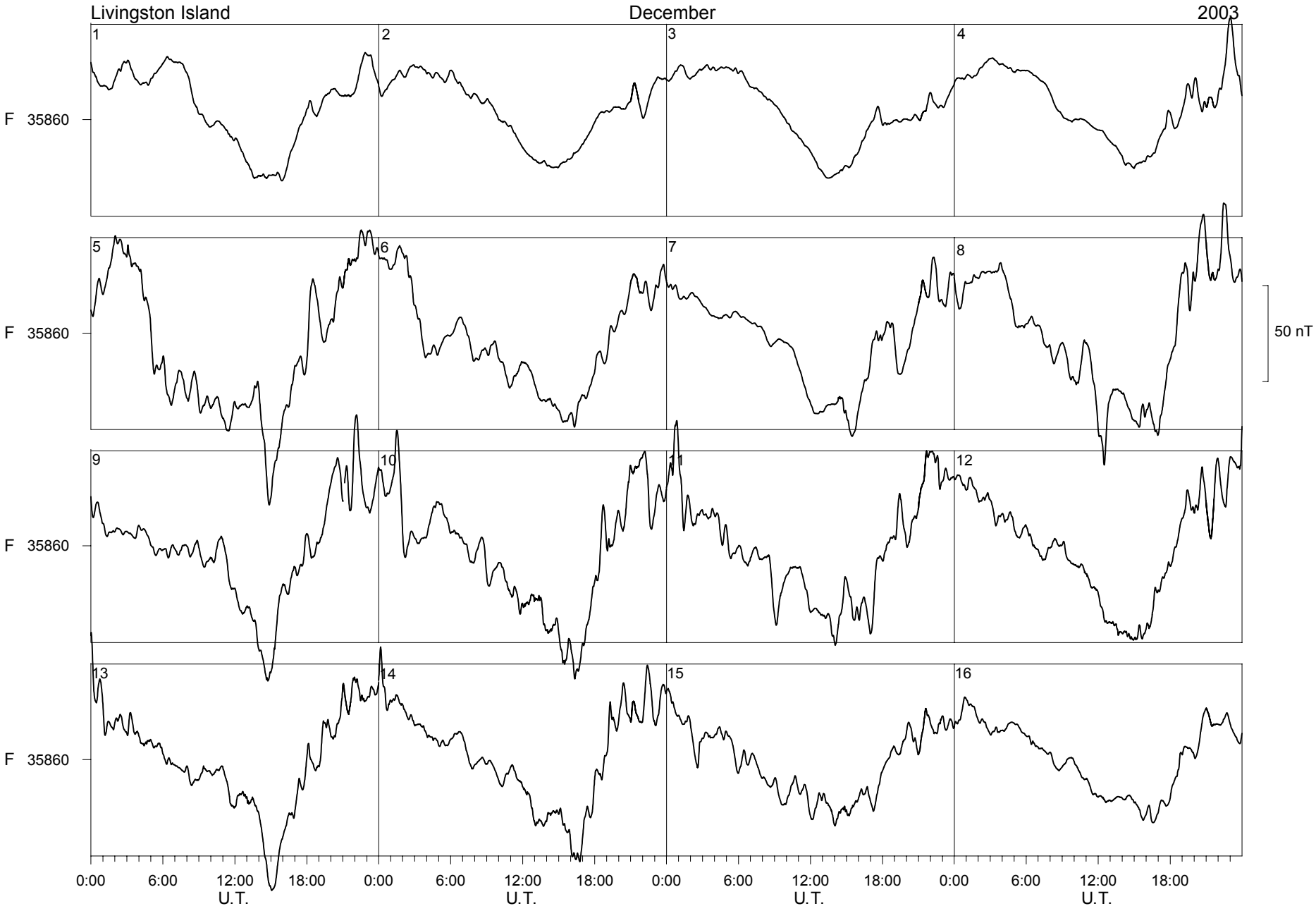
Livingston Island
December
2003
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F 35860
F 35860
F 35860
F 35860
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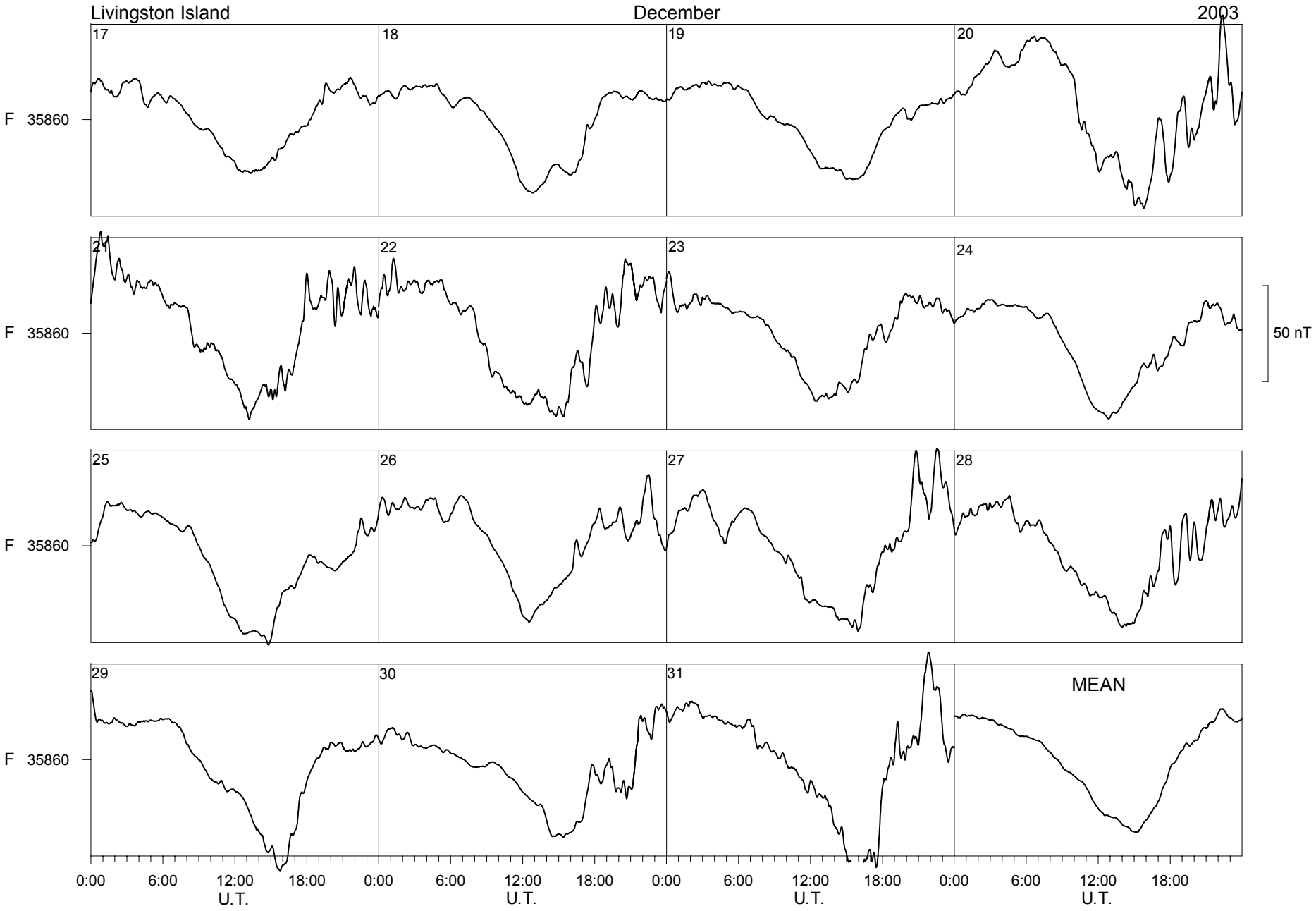
18:00
U.T.


Livingston Island
December
2003
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MEAN
F 35860
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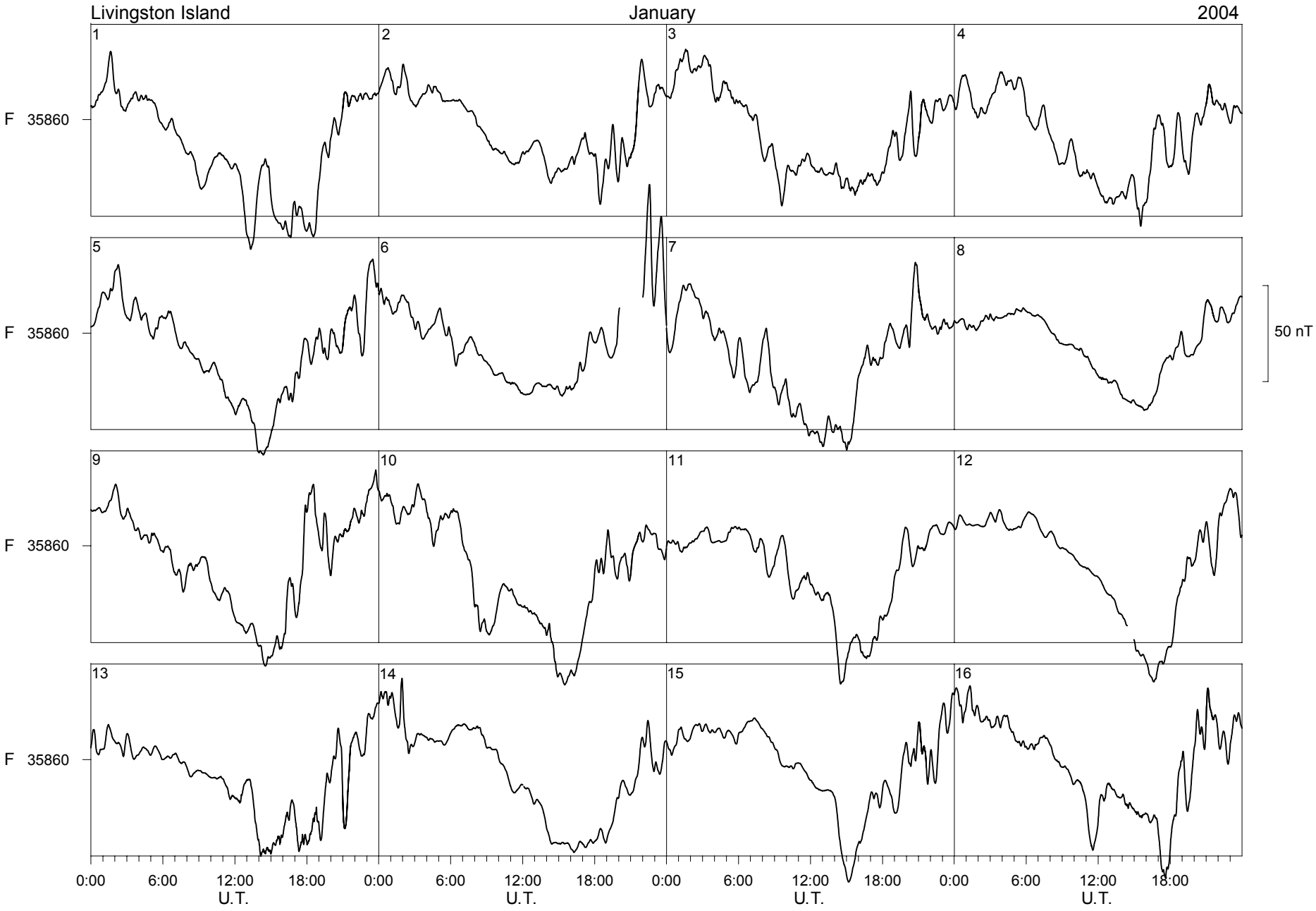
U.T.


Livingston Island
January
2004
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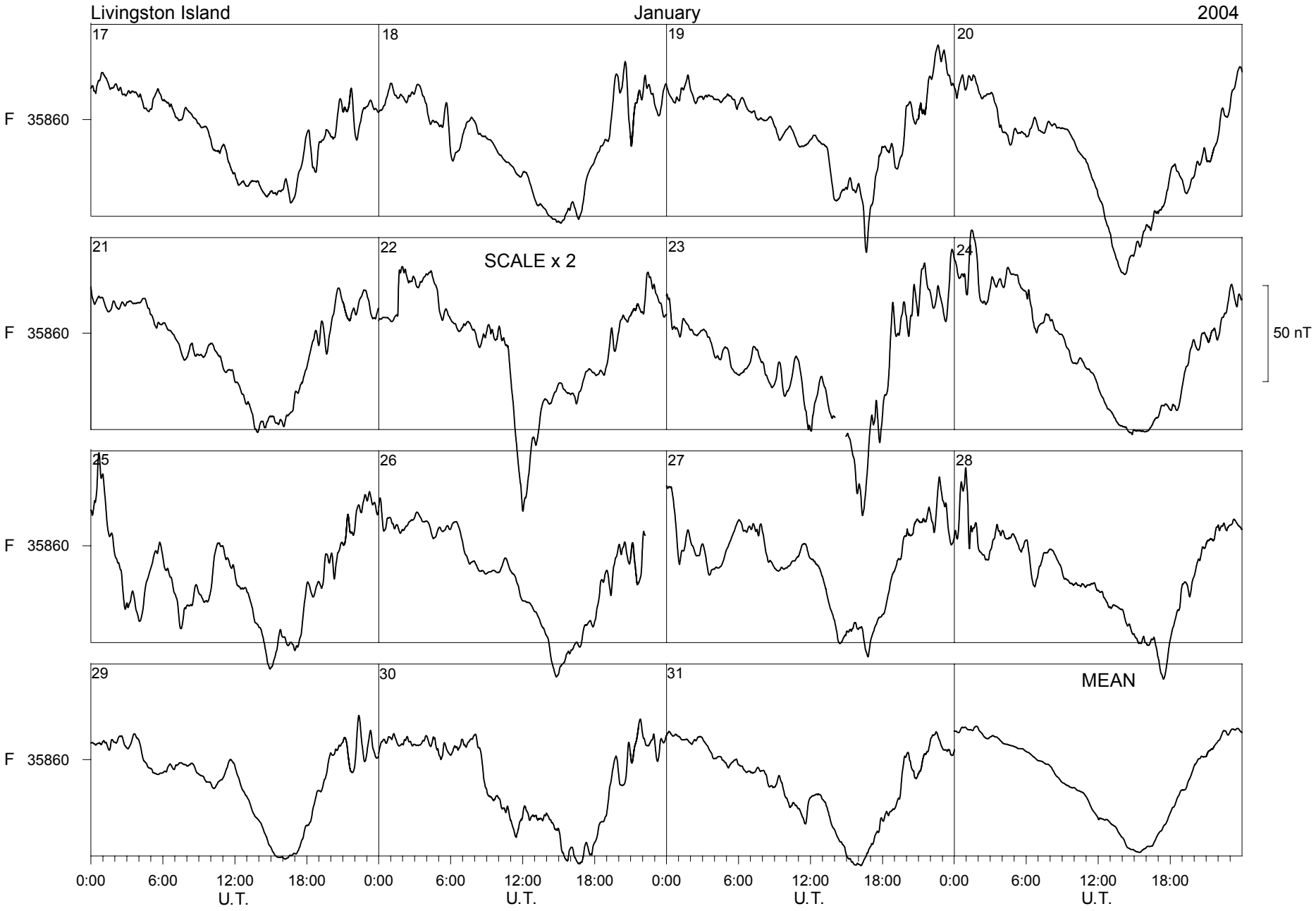
Livingston Island
January
2004
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SCALE x 2
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MEAN
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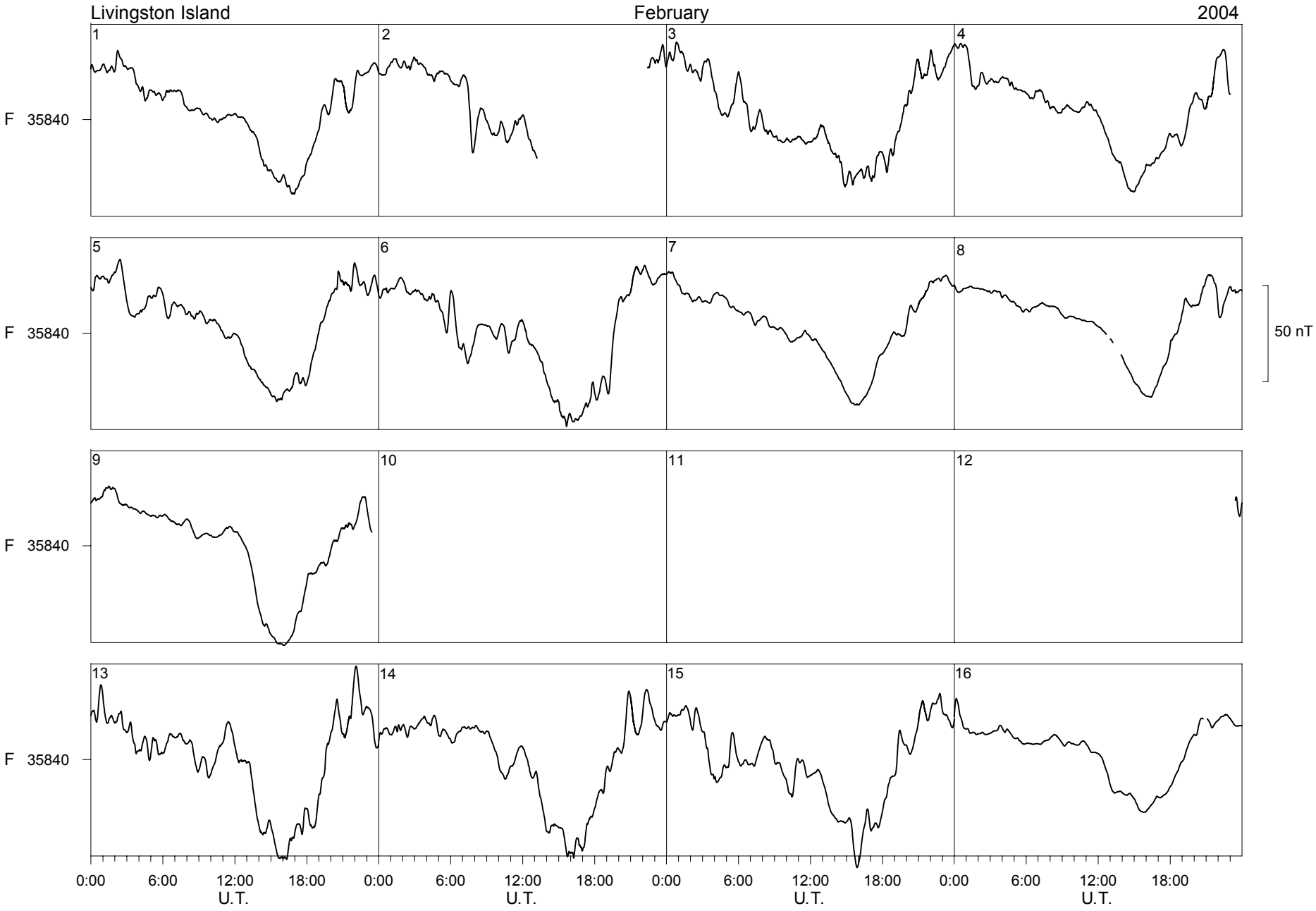
U.T.


Livingston Island
February
2004
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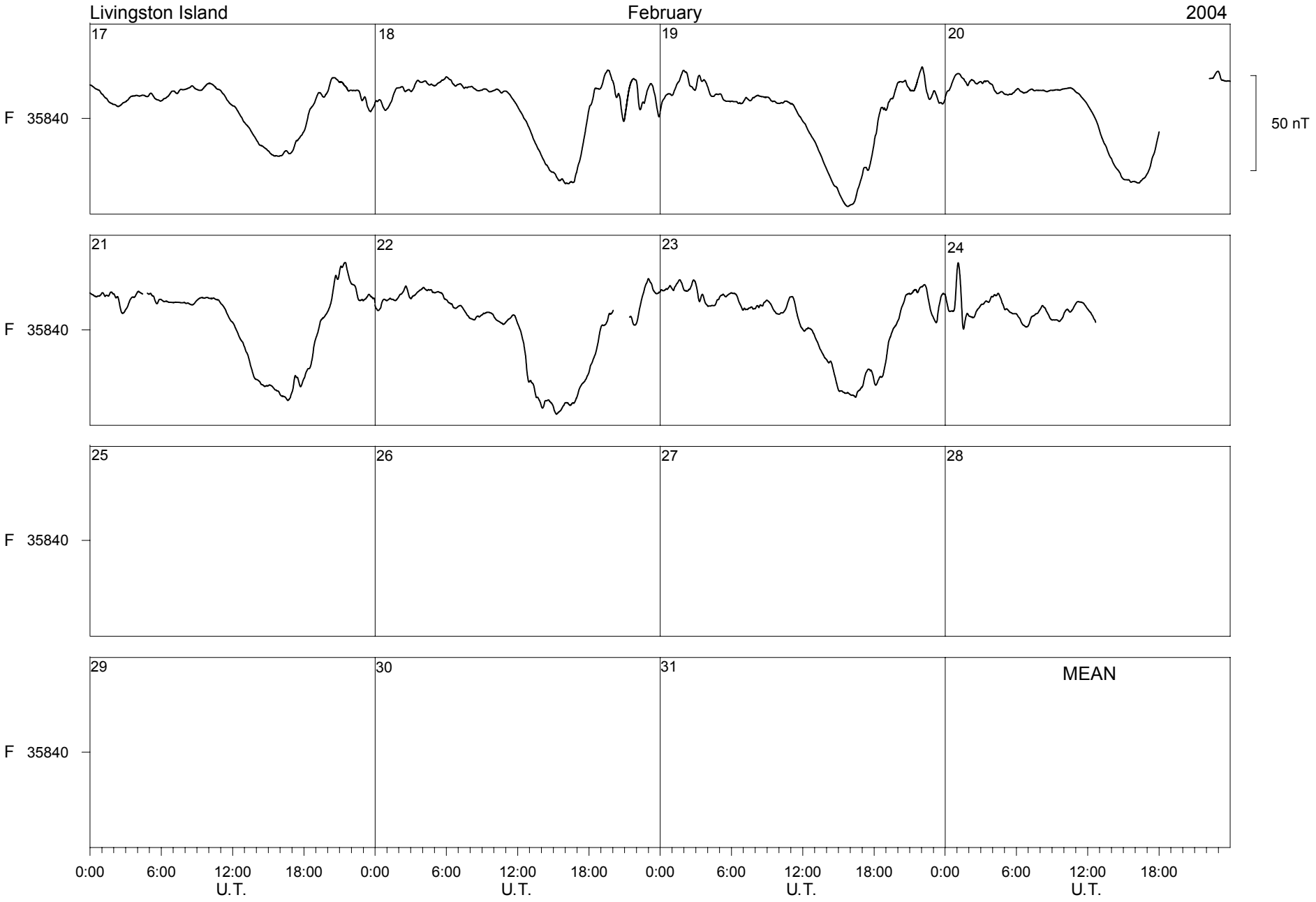
U.T.


Livingston Island
February
2004
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U.T.

LIVINGSTON ISLAND MAGNETIC OBSERVATORY DECLINATION EAST

JANUARY 2003 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	24	MEAN
1		462	455	451	436	430	429	420	411	386	380	371	380	407	448	467	484	493	493	487	469	459	455	460	460	441
2		466	471	466	460	457	450	437	425	406	395	387	404	429	457	485	511	516	526	513	482	468	465	474	481	460
3		488	479	467	460	450	440	424	409	391	379	361	383	396	434	454	497	---	---	---	---	528	528	501	491	---
4		470	454	458	445	447	432	447	439	428	415	415	425	456	477	490	---	---	541	537	518	484	471	452	444	465
5		456	463	463	464	461	454	441	426	420	403	402	409	423	---	---	---	---	---	531	---	---	---	---	470	---
6	Q	464	461	457	455	453	444	437	424	399	384	383	---	---	---	---	---	514	519	511	502	483	474	452	465	---
7	Q	470	471	464	458	456	455	445	417	395	396	406	419	433	441	447	483	525	555	558	536	531	517	---	493	469
8	Q	472	467	463	455	447	437	431	418	409	395	393	400	408	412	422	442	474	495	505	509	507	499	481	473	451
9	Q	472	466	463	457	449	443	434	414	392	388	398	413	419	---	433	453	483	516	533	531	522	517	500	486	459
10		473	465	461	451	452	449	436	422	408	417	414	414	416	457	457	459	481	510	530	529	525	511	500	486	463
11		471	464	438	458	446	450	440	426	413	413	412	421	440	443	452	481	512	521	510	503	495	485	465	461	459
12		457	464	466	469	468	464	426	377	396	414	422	439	458	472	477	489	501	518	523	501	491	474	458	452	462
13		452	432	441	459	461	456	451	443	435	421	429	431	445	462	464	488	527	539	518	500	493	481	470	462	465
14		444	445	446	450	452	454	430	414	393	394	407	419	431	434	443	472	512	521	512	506	499	491	481	472	455
15		461	458	450	455	454	447	440	424	423	422	434	440	448	461	466	501	530	526	513	504	499	485	464	454	465
16	Q	453	455	456	454	453	452	449	439	419	407	402	404	433	---	446	474	496	504	501	493	481	482	471	466	456
17		466	470	474	468	464	454	439	426	417	424	410	408	429	443	455	496	526	540	522	500	493	486	481	472	465
18		466	462	453	444	441	431	399	387	375	368	370	363	378	426	447	457	490	503	512	538	530	523	506	494	449
19		478	463	444	435	431	431	410	376	379	410	402	362	389	430	471	524	567	---	---	---	---	---	---	---	---
20		461	455	446	450	440	449	439	428	410	397	398	404	436	461	480	512	536	553	537	532	504	485	477	460	465
21		467	455	462	469	451	442	431	411	421	422	409	420	439	457	480	516	543	547	515	483	465	453	454	457	461
22	D	464	461	451	443	427	433	430	413	394	394	389	392	399	443	466	498	536	565	549	516	496	482	477	483	458
23	D	436	447	396	428	441	451	444	431	412	397	399	398	427	448	468	---	529	540	540	523	517	513	---	479	460
24		457	436	435	458	460	453	442	431	413	395	406	413	418	426	443	488	528	545	542	521	535	500	502	479	463
25	D	485	438	450	437	440	425	368	350	373	430	421	403	421	439	470	---	508	532	523	513	509	482	477	472	452
26	D	429	454	463	449	433	437	426	404	401	414	414	411	434	445	465	495	526	534	543	545	534	530	517	497	467
27		485	463	460	461	459	453	447	444	441	439	428	422	422	418	431	455	483	504	508	503	496	495	480	484	462
28		481	458	443	417	433	427	421	418	416	432	411	400	419	432	452	475	490	503	518	522	520	506	486	476	456
29		468	463	461	458	452	446	444	431	422	410	400	403	412	436	457	470	488	508	522	542	543	520	546	522	468
30	D	453	396	431	442	453	444	426	432	423	440	438	469	466	478	503	491	541	559	553	530	507	482	473	468	471
31		455	448	446	431	418	408	411	444	448	431	422	483	435	444	465	491	513	518	520	505	485	475	462	455	459
MEAN		464	456	452	451	448	443	431	418	408	407	405	411	426	444	460	486	514	526	524	513	503	492	481	474	459
MEAN	Q	466	464	460	456	452	446	439	422	403	394	396	406	---	---	---	467	498	518	522	514	505	498	480	477	458
MEAN	D	453	439	438	440	439	438	419	406	400	415	412	415	429	451	474	---	528	546	542	525	513	498	489	480	462

LIVINGSTON ISLAND MAGNETIC OBSERVATORY HORIZONTAL INTENSITY

JANUARY 2003 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	24	MEAN
1		255	261	262	258	256	259	257	263	254	254	250	240	227	217	216	217	240	263	269	266	272	259	256	253	251
2		251	252	259	255	253	256	256	257	253	250	243	237	227	218	211	215	228	255	253	258	268	271	281	283	250
3		277	265	268	273	273	275	282	283	277	275	262	249	233	229	233	240	---	---	---	---	226	234	242	249	---
4		253	259	266	257	269	261	257	249	241	231	219	208	200	198	201	---	---	245	263	248	246	236	240	251	239
5		255	257	260	265	265	264	267	266	258	254	252	242	229	---	---	---	---	---	253	---	---	---	---	247	---
6	Q	256	264	268	268	268	264	264	264	262	260	255	---	---	---	---	---	228	234	242	243	245	252	250	257	---
7	Q	258	257	262	268	270	273	273	268	260	255	255	253	242	232	220	211	214	227	235	251	256	258	---	252	250
8	Q	265	274	278	279	276	270	275	274	271	266	263	253	242	234	225	218	209	217	232	241	248	255	263	264	254
9	Q	267	272	276	278	277	279	281	276	269	263	258	254	251	---	233	219	213	228	231	228	241	254	272	272	256
10		281	286	293	280	280	283	283	283	276	274	267	265	255	246	246	240	230	226	236	234	241	237	260	241	260
11		245	253	255	255	252	258	261	257	253	247	246	242	241	240	242	243	240	239	245	245	240	257	249	256	248
12		263	260	261	264	266	264	253	247	248	245	247	241	240	238	241	238	249	262	247	246	247	246	249	262	251
13		267	257	254	266	271	272	277	273	267	255	250	242	237	239	238	230	229	230	238	241	248	252	264	270	253
14		255	265	269	267	266	268	260	252	240	236	237	237	232	225	229	240	247	248	250	243	243	249	258	255	249
15		264	262	255	263	268	271	271	262	262	257	253	248	241	234	235	241	239	227	241	247	243	254	257	251	252
16	Q	255	258	260	262	264	265	263	260	255	254	251	244	239	---	238	236	236	240	249	249	245	249	251	244	250
17		251	258	264	265	268	265	262	260	257	257	252	251	244	239	246	231	234	245	249	249	256	266	266	262	254
18		263	271	276	268	273	270	264	261	251	244	242	234	228	215	231	241	238	234	244	248	256	251	262	269	251
19		267	264	267	268	266	265	250	244	236	233	241	229	209	202	202	196	207	---	---	---	---	---	---	---	---
20		259	273	260	255	249	246	243	242	239	233	226	217	212	205	203	208	220	233	248	252	255	255	261	271	240
21		261	264	261	264	258	249	252	248	239	242	241	214	203	193	190	205	219	239	246	259	254	260	265	259	241
22	D	257	263	263	254	249	237	242	241	237	236	233	226	214	198	193	194	212	225	243	260	264	256	275	257	239
23	D	243	253	264	253	249	247	245	239	233	230	237	233	223	216	202	---	211	204	226	234	241	248	---	260	236
24		263	269	250	250	249	245	243	247	241	243	256	246	233	218	209	198	199	217	238	250	253	255	249	242	240
25	D	242	261	256	255	249	246	250	249	231	228	230	222	205	192	197	---	210	225	225	237	246	243	251	262	234
26	D	247	249	254	258	265	248	247	237	238	239	239	230	223	229	216	215	220	217	235	238	248	251	257	245	239
27		254	268	258	251	261	266	260	257	251	248	248	243	235	226	220	215	217	244	244	252	251	260	254	262	248
28		256	242	243	254	245	240	234	227	227	236	242	241	234	231	228	218	220	222	236	247	250	238	239	250	237
29		256	253	252	250	253	251	252	251	249	250	247	242	245	245	239	236	240	231	243	239	228	244	246	225	244
30	D	208	219	232	225	234	247	240	244	240	236	243	245	253	245	245	241	213	229	224	235	241	242	243	242	236
31		239	238	236	234	238	240	241	246	243	251	245	240	236	229	212	206	209	210	230	230	237	231	234	237	233
MEAN		256	260	261	260	261	259	258	256	250	248	246	239	231	225	222	221	224	233	242	245	248	250	255	255	246
MEAN	Q	260	265	269	271	271	270	271	269	263	260	257	251	---	---	---	222	220	229	238	242	247	254	259	258	253
MEAN	D	239	249	254	249	249	245	245	242	236	234	236	231	224	216	210	---	213	220	231	241	248	248	256	253	237

LIVINGSTON ISLAND MAGNETIC OBSERVATORY VERTICAL INTENSITY

JANUARY 2003 Z =-29500 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	24	MEAN
1		-185	-190	-191	-191	-190	-192	-190	-183	-174	-177	-171	-161	-150	-143	-143	-148	-158	-172	-181	-182	-188	-181	-180	-184	-175
2		-182	-181	-184	-183	-185	-187	-186	-184	-181	-176	-168	-163	-157	-151	-148	-156	-169	-184	-188	-194	-194	-191	-192	-190	-178
3		-191	-183	-186	-192	-193	-193	-196	-193	-180	-176	-171	-162	-147	-136	-135	-134	---	---	---	---	---	-167	-176	-191	-201	---
4		-212	-207	-202	-194	-189	-179	-185	-186	-181	-175	-166	-158	-151	-151	-157	---	---	-169	-186	-188	-198	-197	-199	-204	-182
5		-195	-192	-194	-195	-193	-190	-192	-193	-184	-179	-173	-160	-153	---	---	---	---	---	-174	---	---	---	---	-187	---
6	Q	-190	-192	-194	-192	-190	-187	-186	-187	-184	-179	-173	---	---	---	---	---	---	-157	-170	-177	-181	-180	-193	-196	-200	---
7	Q	-198	-191	-192	-194	-194	-192	-188	-187	-186	-179	-169	-165	-159	-150	-143	-140	-142	-154	-164	-177	-179	-189	---	-192	-175
8	Q	-199	-202	-197	-193	-189	-186	-188	-188	-182	-174	-167	-162	-158	-153	-144	-138	-138	-147	-161	-171	-177	-183	-190	-193	-174
9	Q	-193	-190	-191	-190	-190	-190	-190	-190	-185	-174	-165	-159	-152	---	-143	-139	-135	-141	-160	-165	-173	-180	-194	-196	-172
10		-196	-197	-197	-185	-185	-186	-189	-187	-182	-172	-161	-157	-157	-151	-160	-159	-156	-157	-162	-173	-181	-191	-215	-212	-178
11		-211	-209	-203	-193	-193	-195	-195	-191	-185	-176	-170	-164	-165	-165	-163	-154	-153	-160	-170	-171	-170	-190	-192	-193	-181
12		-203	-195	-193	-192	-191	-188	-178	-178	-181	-174	-169	-163	-163	-158	-156	-156	-163	-172	-168	-172	-182	-182	-186	-197	-177
13		-206	-208	-196	-194	-195	-193	-192	-190	-185	-172	-166	-162	-159	-158	-149	-138	-142	-156	-167	-168	-168	-169	-180	-196	-175
14		-193	-200	-201	-194	-190	-189	-187	-181	-169	-167	-163	-160	-157	-154	-153	-154	-166	-166	-168	-165	-170	-183	-194	-192	-176
15		-196	-195	-190	-190	-192	-192	-189	-184	-182	-175	-163	-163	-156	-151	-146	-138	-137	-145	-161	-167	-169	-182	-191	-186	-172
16	Q	-190	-193	-191	-191	-188	-187	-187	-186	-181	-175	-173	-169	-159	---	-159	-159	-164	-167	-175	-181	-181	-185	-187	-186	-178
17		-187	-188	-191	-191	-191	-190	-190	-186	-182	-178	-165	-163	-163	-157	-152	-144	-146	-156	-166	-171	-176	-181	-183	-185	-174
18		-182	-187	-190	-187	-189	-186	-179	-176	-174	-173	-165	-162	-154	-142	-155	-155	-151	-151	-160	-170	-178	-189	-197	-199	-173
19		-194	-195	-192	-190	-186	-182	-174	-166	-166	-159	-157	-163	-152	-147	-137	-121	-134	---	---	---	---	---	---	---	---	---
20		-198	-206	-199	-181	-180	-176	-183	-179	-177	-178	-174	-163	-157	-156	-151	-151	-160	-171	-186	-198	-202	-203	-203	-208	-181
21		-193	-200	-192	-189	-184	-178	-182	-172	-164	-172	-178	-161	-155	-149	-144	-141	-148	-163	-176	-191	-186	-189	-196	-197	-175
22	D	-196	-200	-194	-185	-179	-172	-177	-183	-181	-181	-177	-166	-153	-148	-149	-147	-155	-164	-177	-190	-194	-189	-204	-219	-178
23	D	-204	-201	-198	-179	-184	-185	-186	-182	-181	-179	-179	-173	-167	-162	-149	---	-149	-148	-168	-177	-185	-191	---	-206	-178
24		-202	-205	-187	-184	-184	-183	-183	-186	-180	-173	-177	-167	-162	-157	-151	-142	-143	-157	-178	-188	-196	-206	-213	-209	-180
25	D	-197	-202	-192	-187	-179	-163	-166	-151	-146	-144	-158	-163	-154	-146	-146	---	-152	-156	-160	-174	-186	-186	-194	-202	-169
26	D	-211	-196	-190	-189	-187	-177	-179	-172	-168	-169	-173	-167	-160	-164	-154	-152	-155	-155	-172	-181	-194	-198	-207	-196	-178
27		-196	-201	-193	-180	-186	-190	-184	-181	-178	-178	-180	-179	-175	-167	-160	-154	-154	-171	-174	-179	-181	-192	-189	-193	-180
28		-193	-190	-193	-189	-183	-180	-177	-175	-176	-174	-182	-181	-170	-164	-160	-154	-158	-161	-171	-180	-188	-186	-185	-190	-177
29		-193	-189	-187	-184	-186	-184	-181	-182	-180	-180	-174	-164	-166	-162	-156	-157	-157	-157	-166	-172	-177	-198	-211	-221	-178
30	D	-221	-206	-187	-188	-197	-195	-173	-188	-185	-178	-176	-173	-172	-166	-170	-169	-151	-164	-174	-184	-198	-201	-199	-199	-184
31		-201	-208	-198	-195	-193	-186	-182	-173	-171	-163	-165	-148	-156	-158	-147	-143	-154	-164	-180	-186	-197	-199	-204	-200	-178
MEAN		-197	-197	-193	-189	-188	-186	-184	-182	-178	-173	-170	-164	-159	-154	-151	-148	-152	-161	-171	-178	-183	-189	-195	-198	-177
MEAN	Q	-194	-194	-193	-192	-190	-188	-188	-188	-184	-176	-169	-164	---	---	---	-145	-147	-156	-167	-175	-178	-186	-192	-194	-176
MEAN	D	-206	-201	-192	-186	-185	-178	-176	-175	-172	-170	-173	-169	-161	-157	-154	---	-153	-157	-170	-181	-191	-193	-200	-204	-178

LIVINGSTON ISLAND MAGNETIC OBSERVATORY TOTAL INTENSITY

JANUARY 2003 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	24	MEAN
1		437	445	446	444	442	445	442	440	428	430	423	409	392	381	380	385	406	430	441	441	449	436	433	435	427
2		432	432	438	435	436	439	438	437	433	427	416	409	398	388	382	391	409	437	439	446	452	451	457	457	428
3		454	441	445	453	454	455	461	459	445	440	430	414	393	381	383	386	---	---	---	---	406	418	435	447	---
4		458	457	457	446	448	435	437	435	426	415	401	388	378	377	383	---	---	418	442	436	442	436	440	451	425
5		445	444	447	451	449	446	449	450	437	431	426	409	396	---	---	---	---	---	426	---	---	---	---	434	---
6	Q	441	448	452	450	449	444	443	444	440	434	428	---	---	---	---	---	---	399	413	423	427	427	442	443	450	---
7	Q	449	443	447	452	453	453	450	446	441	432	423	420	408	395	383	375	379	395	408	428	432	442	---	441	426
8	Q	454	462	460	458	453	446	451	451	443	434	427	417	408	399	387	378	372	384	405	417	427	435	446	449	428
9	Q	451	451	454	454	454	454	455	453	445	432	422	415	408	---	390	379	372	386	402	405	419	432	454	456	427
10		461	464	468	451	450	454	456	455	447	437	424	419	414	404	411	407	399	398	407	416	426	431	465	452	434
11		453	456	452	444	442	447	448	443	436	426	419	412	412	412	412	405	402	407	419	419	416	443	439	444	429
12		456	448	447	448	448	444	430	426	429	422	419	411	411	405	405	403	415	431	418	421	430	430	435	450	429
13		461	457	445	451	454	453	455	452	443	426	418	410	406	405	398	384	387	399	412	415	419	422	438	455	428
14		444	455	458	451	447	447	441	432	415	411	408	406	401	395	396	402	417	417	420	414	417	432	446	443	426
15		451	449	441	446	450	451	449	440	439	430	418	415	405	397	394	390	388	388	409	417	417	434	443	435	425
16	Q	441	445	445	446	444	444	443	440	434	428	425	418	406	---	406	404	409	413	425	430	428	434	437	432	429
17		436	441	447	448	450	446	445	441	435	432	419	417	413	405	405	390	393	408	417	422	431	440	441	441	428
18		439	448	453	445	451	446	437	433	426	421	413	406	396	379	399	404	399	397	410	420	431	438	451	457	425
19		452	450	449	448	444	440	425	415	410	403	406	404	384	376	367	350	367	---	---	---	---	---	---	---	---
20		449	464	451	433	429	424	428	425	421	418	411	397	390	384	379	382	396	413	434	445	451	451	455	465	425
21		447	454	446	445	437	428	433	423	411	419	424	394	383	372	367	373	386	410	424	444	437	443	452	449	421
22	D	447	454	449	437	428	416	423	428	424	423	418	405	388	375	372	371	388	403	423	444	450	441	464	466	422
23	D	446	449	453	431	433	433	432	425	421	418	422	415	404	396	377	---	382	378	406	419	429	438	---	457	421
24		456	461	436	433	432	429	429	433	425	420	431	416	406	393	383	370	371	393	422	437	445	454	457	449	424
25	D	439	454	444	438	429	413	418	406	392	388	401	400	383	369	373	---	385	396	399	418	433	431	442	455	412
26	D	454	443	441	442	444	426	428	416	413	414	418	408	398	404	390	387	393	391	415	424	440	445	456	440	422
27		446	458	446	431	442	447	439	435	429	427	429	425	417	406	396	388	390	419	421	431	431	445	440	448	429
28		444	434	437	440	429	424	418	413	414	417	427	426	412	407	401	391	395	399	414	428	437	428	427	438	421
29		444	439	437	433	436	434	431	432	429	430	423	413	415	412	404	403	406	400	414	417	415	441	453	449	426
30	D	440	434	425	422	435	440	418	433	428	420	422	421	425	416	419	415	386	405	410	425	439	443	442	441	425
31		441	446	436	433	434	429	426	422	418	417	415	398	402	400	381	375	386	395	419	424	437	435	441	439	419
MEAN		447	449	447	443	443	440	438	435	428	423	420	411	402	394	390	388	392	405	418	426	432	438	445	447	425
MEAN	Q	447	450	451	452	450	448	448	447	441	432	425	418	---	---	---	386	386	398	413	421	427	437	445	446	429
MEAN	D	445	447	442	434	434	426	424	421	416	413	416	410	400	392	386	---	387	395	411	426	438	440	450	452	420

LIVINGSTON ISLAND MAGNETIC OBSERVATORY DECLINATION EAST

FEBRUARY 2003 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	24	MEAN
1		455	447	446	456	462	465	461	446	426	420	432	444	451	466	488	513	516	523	522	513	488	467	440	441	466
2	D	419	407	361	341	395	407	380	422	384	405	476	474	493	497	527	553	596	576	575	545	532	547	547	514	474
3	D	467	464	468	480	476	460	466	448	440	422	415	420	427	462	492	514	540	574	568	556	535	520	495	487	483
4	D	473	448	441	432	437	427	435	473	425	426	431	425	419	446	472	493	509	532	555	535	496	456	471	464	463
5		459	428	459	468	459	457	456	450	445	440	435	435	442	433	458	479	499	513	520	530	519	501	481	476	469
6		465	469	460	453	448	447	436	417	395	397	384	396	428	440	448	471	489	511	529	531	540	511	503	487	461
7		455	444	442	462	457	456	452	456	450	438	425	420	439	468	467	491	510	528	533	547	523	513	495	478	473
8		477	450	460	447	455	457	455	460	449	408	406	416	433	450	498	505	497	511	520	509	492	485	475	452	465
9		447	411	435	443	458	466	462	447	433	419	410	411	420	429	450	483	505	552	556	544	536	510	486	485	467
10		443	443	431	397	443	418	397	408	429	435	449	450	451	463	---	495	511	534	549	539	519	504	480	459	463
11	Q	449	443	401	433	427	414	406	423	413	407	412	418	418	426	433	---	---	530	525	512	492	473	461	458	446
12		458	455	451	441	434	438	437	428	409	396	378	398	421	430	443	469	515	531	527	528	---	---	475	481	453
13	Q	459	453	456	454	448	446	442	438	424	415	394	393	386	407	435	463	495	523	---	510	488	475	---	---	451
14		455	459	458	451	412	414	434	432	420	402	402	378	400	---	413	---	---	543	536	515	---	475	462	---	---
15	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	520	504	493	478	---	461	---
16		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
17		---	---	---	---	---	---	---	---	---	---	---	413	404	417	435	470	501	530	525	521	---	474	462	461	---
18		468	460	451	442	420	431	404	412	397	414	402	413	410	413	437	472	499	512	513	507	491	484	472	456	449
19		461	464	463	451	449	439	447	429	425	418	415	411	424	427	443	---	486	490	507	508	508	---	---	470	455
20		460	447	444	452	446	431	421	389	403	392	423	415	---	425	446	468	491	528	544	---	504	489	449	449	453
21		457	458	447	411	408	431	437	444	435	424	407	413	416	427	448	478	504	494	502	506	494	471	468	468	452
22		459	460	450	444	455	453	449	440	432	425	398	384	415	427	456	490	496	504	510	505	498	486	478	472	458
23	Q	463	464	453	441	434	442	446	428	426	416	410	409	406	445	457	466	490	510	512	509	501	483	465	461	456
24	Q	462	460	450	454	454	450	446	441	436	430	424	437	426	430	434	450	470	---	---	---	---	---	483	465	456	---
25	Q	466	469	462	456	449	445	435	431	430	430	428	425	402	408	412	434	462	490	503	500	486	---	461	456	450
26		454	452	453	451	445	418	413	381	395	409	440	445	461	443	437	457	480	500	514	514	518	504	489	429	454
27	D	440	427	388	395	419	429	444	441	439	448	461	450	465	487	470	476	516	546	540	541	532	496	477	427	465
28		436	466	466	464	460	457	455	449	456	449	415	445	460	471	479	---	---	---	---	---	526	503	484	447	---
MEAN		---	---	---	---	---	---	---	---	---	---	419	421	428	441	456	---	---	---	---	523	---	490	477	464	---
MEAN	Q	460	458	444	448	442	439	435	432	426	420	414	416	408	423	434	---	483	---	---	---	492	477	---	461	450
MEAN	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	553	552	536	518	499	494	471	---

LIVINGSTON ISLAND MAGNETIC OBSERVATORY HORIZONTAL INTENSITY

FEBRUARY 2003 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	24	MEAN
1		242	239	245	244	244	244	244	245	245	241	239	231	218	208	200	204	218	243	258	259	254	241	240	223	236
2	D	220	209	205	221	245	243	252	250	243	237	248	263	238	207	182	172	177	199	222	238	228	226	226	219	224
3	D	249	242	238	237	236	241	251	238	237	237	237	217	200	179	181	187	203	216	215	232	229	231	226	235	225
4	D	242	245	248	240	252	240	255	253	238	235	216	222	223	210	198	189	193	206	217	216	225	240	218	217	227
5		220	218	228	236	239	237	236	238	236	229	225	223	218	212	196	194	197	204	217	225	227	227	240	244	224
6		250	256	258	257	255	256	257	257	247	245	240	245	238	231	223	227	220	217	217	223	221	223	229	230	238
7		234	229	230	245	245	245	240	240	242	246	249	243	230	221	225	217	210	218	218	223	229	230	240	244	233
8		239	235	241	244	243	235	236	241	246	235	235	231	225	215	205	209	216	224	232	228	226	230	225	236	230
9		232	231	237	236	242	247	246	246	238	237	234	238	233	226	213	202	216	210	213	218	220	219	222	219	228
10		220	222	230	230	248	247	238	228	233	231	225	228	230	224	---	216	220	223	233	231	236	239	244	229	230
11	Q	225	227	230	235	235	230	233	245	245	234	234	227	222	212	207	---	---	222	220	237	243	243	241	239	231
12		244	248	255	255	250	248	253	255	251	249	244	240	236	223	212	205	195	209	223	240	---	---	233	227	236
13	Q	236	243	250	253	252	247	244	242	240	241	241	241	234	218	209	205	208	219	---	238	245	254	---	---	236
14		249	241	242	250	259	242	242	241	239	235	231	226	230	---	204	---	---	223	219	238	---	241	252	---	---
15	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	225	230	230	235	---	237	---
16		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
17		---	---	---	---	---	---	---	---	---	---	---	238	226	212	206	199	204	206	219	232	---	241	248	255	---
18		265	270	274	268	260	277	281	265	256	251	239	231	223	214	205	198	202	212	225	236	241	248	230	232	242
19		243	249	259	261	269	266	263	255	256	254	254	244	228	216	206	---	218	227	240	244	250	---	---	242	244
20		251	261	261	254	254	256	256	248	244	240	231	229	---	215	209	209	210	229	223	---	243	238	235	246	238
21		254	256	259	270	261	249	247	250	243	242	236	234	225	217	209	206	202	214	226	230	219	235	239	245	236
22		248	253	253	263	251	246	244	244	240	239	238	233	224	218	200	200	213	219	226	239	248	250	248	251	237
23	Q	249	248	257	260	251	251	247	243	242	244	242	236	224	206	212	214	211	205	209	226	232	235	248	246	235
24	Q	242	246	247	251	249	246	245	244	243	244	240	243	238	230	217	209	208	---	---	---	---	---	238	235	---
25	Q	241	248	252	252	251	249	249	245	245	246	248	249	243	234	227	216	212	214	220	229	237	---	242	245	239
26		246	247	248	249	254	253	247	249	248	246	242	245	254	235	225	212	203	208	220	235	250	253	244	226	239
27	D	208	197	195	218	222	218	216	217	217	235	228	232	224	202	200	193	178	177	196	200	199	194	185	199	206
28		216	228	235	236	237	234	237	240	247	249	249	235	227	208	199	---	---	---	---	---	197	216	227	202	---
MEAN		---	---	---	---	---	---	---	---	---	---	238	235	228	216	207	---	---	---	---	231	---	235	234	233	---
MEAN	Q	239	243	247	250	248	245	244	244	243	242	241	239	232	220	214	---	210	---	---	---	239	242	---	240	236
MEAN	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	201	215	223	222	225	217	221	---

LIVINGSTON ISLAND MAGNETIC OBSERVATORY VERTICAL INTENSITY

FEBRUARY 2003 Z =-29500 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	24	MEAN
1		-202	-197	-194	-188	-186	-186	-187	-190	-188	-179	-171	-166	-160	-153	-149	-153	-161	-170	-172	-173	-191	-198	-222	-220		-181
2	D	-217	-196	-177	-180	-196	-192	-179	-144	-166	-164	-154	-148	-146	-144	-136	-139	-161	-191	-208	-234	-225	-223	-223	-227		-182
3	D	-224	-214	-202	-199	-197	-197	-200	-196	-193	-187	-181	-169	-160	-148	-151	-152	-156	-164	-173	-191	-190	-203	-200	-215		-186
4	D	-207	-209	-205	-192	-191	-181	-182	-164	-108	-143	-167	-187	-186	-176	-160	-155	-160	-169	-185	-191	-212	-230	-213	-207		-182
5		-209	-202	-198	-198	-195	-190	-190	-195	-195	-188	-183	-180	-175	-172	-158	-152	-157	-160	-172	-179	-187	-193	-205	-200		-185
6		-199	-197	-196	-192	-189	-186	-176	-169	-170	-179	-175	-175	-166	-164	-158	-159	-156	-158	-162	-174	-185	-197	-196	-198		-178
7		-201	-200	-197	-198	-194	-190	-186	-186	-182	-174	-173	-174	-167	-156	-163	-162	-159	-164	-167	-176	-187	-186	-194	-201		-181
8		-195	-196	-193	-191	-185	-180	-185	-189	-178	-177	-178	-169	-164	-161	-154	-164	-168	-171	-177	-184	-185	-193	-197	-207		-181
9		-207	-203	-197	-191	-192	-191	-188	-177	-177	-178	-180	-178	-173	-171	-164	-159	-159	-151	-161	-174	-184	-195	-200	-198		-181
10		-209	-202	-200	-196	-195	-182	-166	-161	-174	-177	-173	-177	-176	-170	---	-159	-160	-161	-168	-181	-187	-196	-207	-209		-181
11	Q	-204	-204	-193	-191	-191	-184	-183	-180	-180	-177	-174	-172	-169	-162	-161	---	---	-158	-160	-175	-185	-189	-192	-188		-180
12		-189	-189	-192	-190	-184	-181	-184	-185	-187	-184	-174	-163	-158	-155	-150	-143	-132	-147	-161	-177	---	---	-197	-194		-174
13	Q	-197	-197	-195	-192	-189	-183	-180	-180	-180	-179	-180	-173	-167	-156	-150	-145	-145	-155	---	-181	-188	-197	---	---		-178
14		-203	-186	-190	-192	-187	-176	-182	-183	-182	-180	-174	-173	-171	---	-157	---	---	-156	-157	-180	---	-187	-194	---		---
15	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-173	-178	-184	-188	---	-186		---
16		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---
17		---	---	---	---	---	---	---	---	---	---	---	-171	-167	-156	-147	-143	-143	-146	-160	-176	---	-191	-196	-191		---
18		-193	-190	-190	-185	-178	-184	-195	-178	-174	-166	-160	-153	-155	-151	-140	-136	-140	-151	-162	-173	-180	-189	-189	-187		-171
19		-187	-187	-188	-188	-185	-179	-175	-174	-179	-178	-176	-171	-160	-154	-150	---	-151	-159	-164	-167	-173	---	---	-187		-172
20		-189	-191	-184	-179	-179	-177	-167	-165	-175	-180	-165	-163	---	-157	-155	-155	-153	-156	-153	---	-188	-191	-190	-191		-173
21		-187	-185	-184	-182	-169	-167	-170	-170	-167	-171	-169	-166	-161	-158	-154	-149	-143	-157	-167	-175	-177	-190	-188	-187		-171
22		-186	-186	-184	-179	-172	-171	-172	-174	-173	-172	-172	-164	-156	-155	-145	-142	-153	-154	-160	-169	-179	-185	-184	-186		-170
23	Q	-185	-183	-183	-180	-174	-170	-168	-170	-173	-177	-173	-166	-159	-144	-155	-156	-151	-152	-161	-177	-185	-187	-196	-195		-172
24	Q	-186	-185	-182	-181	-177	-175	-174	-175	-175	-176	-173	-170	-169	-166	-162	-157	-155	---	---	---	---	---	-185	-190	-190	---
25	Q	-188	-187	-185	-183	-180	-178	-177	-174	-175	-173	-170	-172	-169	-161	-159	-155	-151	-154	-161	-171	-179	---	-185	-184		-173
26		-183	-181	-179	-178	-180	-180	-171	-164	-164	-161	-155	-157	-161	-156	-158	-157	-156	-157	-165	-173	-185	-189	-202	-194		-171
27	D	-199	-189	-177	-174	-188	-185	-178	-174	-175	-183	-173	-176	-174	-158	-169	-167	-154	-155	-178	-194	-203	-217	-224	-221		-183
28		-217	-205	-202	-196	-193	-189	-189	-187	-178	-169	-172	-159	-156	-152	-158	---	---	---	---	---	-188	-195	-205	-207		---
MEAN		---	---	---	---	---	---	---	---	---	---	---	-172	-169	-165	-158	-155	---	---	---	---	-180	---	-195	-199	-199	---
MEAN	Q	-192	-191	-188	-185	-182	-178	-176	-176	-177	-177	-174	-170	-167	-158	-157	---	-151	---	---	---	-184	-189	---	-190		-175
MEAN	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-169	-183	-198	-203	-212	-212	-211		---

LIVINGSTON ISLAND MAGNETIC OBSERVATORY TOTAL INTENSITY

FEBRUARY 2003 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	24	MEAN
1		444	438	439	434	432	432	432	435	434	424	416	408	396	384	376	382	396	418	428	429	441	439	459	448	423
2	D	443	420	402	413	441	437	431	401	414	409	408	411	395	376	355	352	373	410	437	468	455	452	452	452	417
3	D	466	454	441	438	436	439	447	436	433	428	424	403	386	363	367	371	384	398	404	429	427	439	433	451	421
4	D	448	451	449	434	440	425	434	418	363	391	400	420	419	404	384	375	381	396	415	420	442	466	439	433	419
5		437	430	433	437	436	430	430	436	435	425	418	415	408	402	382	376	381	388	405	415	423	428	445	443	419
6		445	448	448	444	441	438	430	425	420	426	420	424	412	407	397	400	394	393	396	410	418	429	431	434	422
7		438	435	433	442	439	435	430	430	427	423	424	421	408	394	402	397	390	399	401	412	424	424	436	444	421
8		436	435	436	435	430	421	426	432	426	419	420	410	403	394	383	393	401	408	417	420	421	429	430	445	420
9		442	438	437	431	435	437	434	426	420	421	421	421	414	408	396	386	394	384	393	407	417	425	431	428	419
10		437	433	435	431	441	430	412	402	416	416	410	415	415	407	---	393	397	399	411	420	428	437	449	442	420
11	Q	436	437	430	431	431	422	423	427	427	418	416	411	405	394	390	---	---	396	397	419	430	433	435	431	419
12		434	437	443	441	433	429	435	437	436	433	422	410	404	394	384	374	360	380	399	422	---	---	435	429	417
13	Q	436	440	442	441	439	431	426	426	425	424	425	419	410	392	383	376	378	392	---	424	434	446	---	---	420
14		448	430	434	440	441	422	427	427	425	421	414	411	412	---	385	---	---	395	394	423	---	431	443	---	---
15	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	411	417	422	429	---	427	---
16		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
17		---	---	---	---	---	---	---	---	---	---	---	415	405	388	378	371	374	377	397	416	---	434	442	442	---
18		449	449	452	444	434	449	460	437	428	419	407	397	394	386	371	364	370	385	401	416	425	436	426	426	418
19		432	435	442	442	445	438	434	428	433	430	429	420	402	389	381	---	388	400	411	416	425	---	---	432	420
20		438	445	440	432	432	431	422	417	422	425	407	404	---	392	386	386	386	398	393	---	433	432	430	437	418
21		438	437	439	443	427	419	420	422	416	419	413	409	401	393	385	380	373	391	406	415	410	430	430	433	414
22		434	437	435	437	424	421	421	422	419	417	417	408	396	391	373	370	387	391	400	415	428	434	433	436	414
23	Q	433	431	436	435	426	423	419	418	420	424	420	411	398	376	388	390	384	382	392	414	424	427	443	440	415
24	Q	431	432	430	432	427	424	422	423	422	423	419	418	414	407	396	388	386	---	---	---	---	---	428	430	430	---
25	Q	432	435	435	433	430	428	427	422	423	422	420	423	417	405	400	391	385	389	397	411	422	---	430	431	418
26		430	429	428	428	432	432	421	417	415	412	405	408	417	402	398	390	384	387	401	416	435	439	446	428	417
27	D	422	408	397	407	421	417	410	406	407	424	412	417	411	385	393	387	367	368	398	414	420	429	430	436	408
28		441	438	439	435	434	429	430	430	427	420	423	405	398	383	383	---	---	---	---	---	407	423	437	425	---
MEAN		---	---	---	---	---	---	---	---	---	---	416	413	405	393	385	---	---	---	---	419	---	434	437	436	---
MEAN	Q	434	435	435	434	431	426	424	423	423	423	420	416	409	395	391	---	384	---	---	---	427	433	---	433	418
MEAN	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	393	413	429	433	443	438	440	---

LIVINGSTON ISLAND MAGNETIC OBSERVATORY DECLINATION EAST

MARCH 2003 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	24	MEAN
1		414	444	465	463	464	456	453	447	444	449	439	449	450	447	452	471	498	507	517	529	512	499	493	476	468
2		469	464	453	433	442	452	452	452	442	429	412	421	446	463	462	486	513	523	522	535	497	475	468	457	465
3		463	463	467	464	461	461	459	458	467	430	413	407	396	---	---	---	---	516	533	498	---	---	---	---	---
4	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	448	455	---
5		454	436	425	428	430	432	447	449	447	446	416	412	420	438	455	479	505	526	523	528	521	480	468	383	456
6		410	413	376	406	406	420	446	438	422	424	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
7		---	---	---	---	452	467	462	449	---	---	---	---	---	---	---	---	---	---	---	---	---	---	461	421	---
8	Q	459	464	467	466	463	459	457	460	452	437	425	417	429	445	458	477	510	542	537	524	514	492	461	445	469
9		454	450	436	418	416	419	425	436	450	435	429	418	410	404	417	446	478	---	---	---	---	494	459	462	---
10		462	460	457	453	456	440	442	439	436	428	413	426	419	454	473	481	514	542	547	542	532	492	456	---	468
11		---	452	451	454	451	442	434	414	444	434	437	426	409	409	426	458	483	508	515	510	497	480	470	466	455
12	Q	459	449	454	454	451	450	445	440	436	435	423	414	397	403	417	448	478	498	503	492	483	467	467	473	451
13		451	411	421	440	436	407	418	440	437	430	420	402	396	424	439	457	489	507	508	496	482	469	466	463	446
14		459	459	449	433	428	436	432	424	404	418	398	416	403	459	---	---	487	---	520	534	513	502	469	465	455
15		439	414	427	433	434	436	435	451	434	417	406	422	---	---	---	458	477	505	508	508	515	472	464	470	453
16		474	461	442	422	429	434	438	442	447	439	433	438	471	469	464	458	467	499	543	578	549	529	490	474	470
17	D	482	460	462	457	411	366	418	441	444	448	423	---	415	428	482	507	491	---	---	501	510	462	422	434	451
18		431	432	469	466	460	425	415	425	455	436	473	449	428	446	465	469	486	492	501	502	489	475	455	453	458
19		462	441	409	427	452	434	427	445	452	442	428	419	431	433	449	466	487	490	480	475	472	469	464	463	451
20		459	457	453	449	449	441	430	412	415	430	423	454	489	465	497	---	---	---	---	---	---	---	---	---	---
21		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	519	511	485	476	387	383	---
22		436	455	455	456	423	385	410	448	442	445	442	432	419	436	446	463	481	488	498	491	478	463	445	465	450
23		454	395	425	444	443	435	451	470	447	443	497	439	428	430	451	466	486	516	534	508	499	488	477	428	461
24	Q	444	456	449	421	427	439	445	465	462	460	443	431	425	428	434	452	479	500	502	492	475	462	456	452	454
25	Q	452	452	445	445	447	446	449	444	443	439	438	426	413	410	420	444	479	506	510	500	477	461	454	453	452
26	Q	451	451	450	441	413	416	424	431	428	432	434	427	423	419	435	458	484	502	511	496	485	487	483	469	452
27		399	350	428	446	448	446	419	387	427	470	451	438	452	449	461	497	548	536	537	529	519	483	447	448	459
28		453	428	427	373	426	424	458	453	425	439	433	426	421	420	432	449	491	520	522	530	482	485	403	458	449
29	D	445	380	405	370	353	362	386	451	465	443	436	430	434	447	461	499	545	548	552	530	556	534	517	507	461
30	D	475	451	453	460	422	436	435	466	475	430	437	433	434	423	442	474	498	517	525	531	473	429	412	415	456
31	D	434	455	453	408	454	468	469	475	485	458	515	494	471	487	512	543	536	587	573	563	534	467	486	423	490
MEAN		450	439	440	437	436	432	437	443	444	438	---	---	---	---	---	---	---	---	---	---	---	---	480	459	450	---
MEAN	Q	453	454	453	446	440	442	444	448	444	441	433	423	417	421	433	456	486	509	513	501	487	474	464	458	456
MEAN	D	---	---	435	---	413	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	517	469	457	447	---

LIVINGSTON ISLAND MAGNETIC OBSERVATORY — HORIZONTAL INTENSITY

MARCH 2003 — H = 20000 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	24	MEAN
HOUR(UT)																											
1		213	224	237	239	240	238	237	235	240	241	235	246	229	219	204	188	191	204	217	217	219	213	214	232	224
2		236	236	236	233	229	239	249	248	241	238	234	224	214	204	195	192	201	215	230	227	217	220	219	217	225
3		214	213	232	240	242	244	246	248	253	251	246	244	233	---	---	---	---	213	208	224	---	---	---	---	---
4	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	212	217	---
5		208	211	215	224	229	230	233	232	237	245	238	223	207	195	196	200	201	194	205	213	207	212	210	219	216
6		221	217	220	221	217	221	242	237	235	227	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
7		---	---	---	---	230	237	245	235	---	---	---	---	---	---	---	---	---	---	---	---	---	---	225	225	---
8	Q	233	238	241	245	243	241	240	240	239	238	237	234	217	207	196	196	191	195	199	213	218	213	210	213	222
9		218	231	235	234	233	237	237	233	233	231	235	236	224	211	197	186	189	---	---	---	---	213	203	219	---
10		233	236	242	244	241	240	247	247	241	243	240	234	218	200	191	187	184	195	200	211	210	201	218	---	222
11		---	229	236	243	249	249	243	234	232	239	238	239	225	208	194	188	195	204	207	220	228	231	234	232	226
12	Q	243	234	241	241	241	242	237	236	233	236	237	236	229	215	203	196	200	211	222	231	240	233	238	230	229
13		239	222	229	231	237	231	224	229	230	232	233	231	220	207	202	196	196	206	216	226	235	237	239	239	224
14		241	244	249	240	247	244	247	246	238	238	250	247	221	196	---	---	188	---	198	193	201	217	218	230	226
15		219	203	234	235	231	231	226	230	227	232	222	219	---	---	---	198	192	193	201	213	220	215	229	229	219
16		233	239	239	236	243	241	236	234	236	240	230	227	213	205	194	192	203	211	202	180	188	200	200	208	218
17	D	214	219	223	234	234	221	220	217	223	217	221	---	205	193	164	180	183	---	---	207	226	163	187	210	207
18		214	201	226	223	228	219	216	211	230	237	226	211	205	193	177	196	199	205	213	220	226	225	223	227	215
19		231	222	229	226	232	244	221	217	216	219	219	215	210	211	204	202	209	212	219	228	233	228	231	230	221
20		229	231	233	236	238	246	244	237	228	232	229	222	241	213	186	---	---	---	---	---	---	---	---	---	---
21		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	200	209	221	216	189	189	---
22		197	219	229	233	244	233	222	223	220	223	221	219	207	200	196	194	198	201	210	219	224	208	217	225	216
23		229	239	236	226	228	231	239	239	236	243	240	245	227	212	188	184	192	198	193	205	222	225	223	216	221
24	Q	228	234	236	237	234	231	231	233	235	233	228	224	217	207	198	194	193	200	214	223	227	228	230	233	223
25	Q	234	235	235	236	235	239	239	236	235	234	235	232	222	208	197	186	188	199	211	225	232	235	239	240	225
26	Q	242	244	247	248	252	239	239	240	241	244	242	236	221	210	193	183	186	199	223	227	232	227	223	231	228
27		215	203	224	236	239	245	262	237	225	245	254	235	223	204	189	166	159	179	191	199	198	201	189	185	213
28		185	218	218	215	215	217	227	239	222	220	223	225	218	205	191	186	167	166	183	192	195	187	194	192	204
29	D	208	201	187	200	185	192	182	208	211	213	216	211	196	185	171	159	165	169	179	184	196	204	200	206	193
30	D	191	186	214	221	245	235	232	229	247	218	221	220	209	198	172	161	161	156	175	179	182	162	160	188	198
31	D	183	209	216	211	216	222	228	234	259	243	253	248	231	189	150	137	157	146	155	166	170	175	179	198	199
MEAN		220	223	229	231	233	234	234	233	234	234	---	---	---	---	---	---	---	---	---	---	---	---	211	213	218	---
MEAN	Q	236	237	240	241	241	238	237	237	236	237	236	232	221	209	197	191	191	201	214	224	230	227	228	229	226
MEAN	D	---	---	207	---	220	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	196	179	188	204	---

LIVINGSTON ISLAND MAGNETIC OBSERVATORY VERTICAL INTENSITY

MARCH 2003 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	24	MEAN
1		-204	-200	-193	-191	-191	-188	-187	-185	-186	-179	-173	-172	-163	-166	-161	-157	-154	-165	-177	-182	-192	-193	-186	-194	-181
2		-196	-191	-190	-187	-182	-186	-186	-182	-183	-182	-179	-169	-160	-160	-159	-156	-157	-169	-181	-186	-187	-191	-199	-197	-180
3		-196	-191	-195	-196	-193	-190	-189	-189	-182	-170	-175	-179	-175	---	---	---	---	-158	-166	-179	---	---	---	---	---
4	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-214	-202	---
5		-201	-199	-194	-197	-194	-191	-191	-191	-186	-176	-170	-171	-168	-161	-169	-169	-165	-162	-174	-187	-191	-197	-200	-203	-184
6		-196	-191	-176	-176	-177	-181	-184	-175	-171	-174	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
7		---	---	---	---	-185	-185	-176	-176	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-200	-197	---
8	Q	-192	-190	-187	-187	-184	-181	-181	-180	-179	-182	-180	-178	-166	-161	-161	-159	-152	-153	-166	-182	-192	-193	-194	-199	-178
9		-196	-198	-196	-184	-177	-174	-171	-172	-176	-181	-184	-186	-180	-174	-165	-156	-152	---	---	---	---	-194	-199	-197	---
10		-197	-193	-192	-190	-176	-179	-182	-175	-168	-179	-178	-169	-165	-154	-156	-156	-153	-161	-173	-185	-191	-195	-204	---	-178
11		---	-195	-194	-193	-190	-184	-174	-167	-171	-181	-177	-180	-177	-169	-161	-155	-156	-162	-164	-177	-186	-189	-189	-187	-178
12	Q	-193	-185	-186	-184	-182	-181	-177	-177	-175	-178	-180	-178	-175	-169	-164	-157	-155	-160	-169	-178	-187	-184	-191	-176	-177
13		-190	-185	-183	-183	-184	-180	-174	-179	-180	-180	-179	-178	-169	-160	-164	-156	-152	-157	-167	-178	-186	-187	-186	-183	-176
14		-185	-184	-188	-182	-185	-181	-182	-178	-162	-148	-153	-157	-156	-142	---	---	-157	---	-166	-169	-181	-194	-196	-198	-173
15		-198	-190	-194	-175	-181	-185	-183	-169	-157	-169	-166	-168	---	---	---	-169	-163	-160	-166	-174	-186	-186	-194	-191	-177
16		-189	-191	-190	-186	-185	-182	-181	-176	-176	-174	-167	-169	-157	-159	-160	-163	-176	-170	-163	-166	-195	-216	-214	-202	-179
17	D	-202	-198	-193	-188	-177	-159	-159	-147	-147	-149	-168	---	-166	-163	-139	-157	-169	---	---	-183	-200	-203	-214	-213	-176
18		-204	-192	-190	-185	-177	-171	-181	-167	-171	-168	-154	-166	-172	-166	-158	-178	-174	-175	-180	-184	-190	-189	-191	-191	-178
19		-188	-187	-183	-181	-175	-167	-170	-176	-178	-182	-181	-176	-168	-170	-168	-164	-164	-171	-178	-186	-190	-184	-181	-181	-177
20		-178	-180	-180	-181	-180	-185	-183	-173	-169	-172	-174	-163	-169	-165	-148	---	---	---	---	---	---	---	---	---	---
21		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-179	-185	-193	-198	-195	-190	---
22		-186	-188	-191	-190	-184	-168	-162	-175	-177	-182	-181	-184	-181	-176	-171	-170	-172	-174	-179	-184	-190	-191	-190	-190	-181
23		-189	-185	-174	-174	-177	-177	-178	-153	-168	-172	-147	-160	-170	-168	-160	-160	-167	-169	-167	-177	-191	-194	-195	-194	-174
24	Q	-193	-190	-188	-183	-177	-176	-175	-168	-163	-167	-174	-180	-179	-174	-169	-165	-162	-165	-173	-182	-189	-190	-189	-187	-177
25	Q	-185	-184	-181	-179	-177	-176	-172	-172	-173	-175	-177	-179	-175	-167	-159	-154	-156	-163	-174	-184	-189	-189	-188	-186	-176
26	Q	-184	-182	-181	-181	-173	-166	-170	-173	-173	-175	-173	-171	-168	-166	-158	-154	-155	-162	-177	-181	-186	-183	-180	-186	-173
27		-193	-186	-184	-189	-185	-181	-170	-128	-150	-159	-148	-157	-161	-162	-157	-148	-142	-166	-172	-179	-185	-194	-193	-191	-170
28		-197	-198	-187	-181	-179	-179	-182	-155	-169	-178	-184	-184	-181	-174	-164	-159	-149	-151	-169	-179	-194	-198	-215	-196	-179
29	D	-195	-187	-179	-160	-150	-135	-160	-186	-184	-188	-190	-184	-175	-168	-161	-153	-152	-168	-182	-193	-199	-205	-207	-215	-178
30	D	-209	-210	-216	-205	-192	-173	-173	-173	-164	-165	-184	-188	-183	-180	-168	-163	-164	-163	-175	-188	-204	-208	-209	-195	-185
31	D	-201	-206	-202	-193	-188	-194	-194	-191	-178	-160	-154	-147	-150	-140	-139	-149	-174	-167	-185	-201	-214	-221	-217	-212	-182
MEAN		-194	-191	-189	-185	-182	-178	-178	-173	-172	-173	---	---	---	---	---	---	---	---	---	---	---	---	-195	-198	-195	---
MEAN	Q	-189	-186	-185	-183	-179	-176	-175	-174	-173	-175	-177	-177	-173	-168	-162	-158	-156	-160	-172	-181	-189	-188	-188	-187	-176
MEAN	D	---	---	-197	---	-179	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-204	-209	-212	-207	---

LIVINGSTON ISLAND MAGNETIC OBSERVATORY TOTAL INTENSITY

MARCH 2003 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	24	MEAN
1		429	432	433	434	433	430	429	426	429	424	416	421	404	402	389	376	376	392	409	413	422	420	415	431	416
2		436	431	430	426	420	429	434	430	427	425	420	406	394	387	381	378	384	402	419	422	417	422	428	426	416
3		423	418	432	437	437	435	435	436	433	422	424	426	416	---	---	---	---	391	395	415	---	---	---	---	---
4	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	436	429	---
5		424	424	422	430	430	428	430	429	428	423	415	408	396	383	390	393	390	383	400	415	415	423	424	432	414
6		427	421	410	410	409	415	429	418	414	413	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
7		---	---	---	---	423	427	424	418	---	---	---	---	---	---	---	---	---	---	---	---	---	---	432	430	---
8	Q	430	432	430	433	430	426	426	424	423	425	423	420	400	390	384	382	373	377	390	411	422	420	419	425	413
9		425	434	435	425	419	418	415	413	417	420	425	427	415	404	388	375	373	---	---	---	---	421	419	427	---
10		435	433	436	435	422	424	430	424	415	425	423	412	400	380	377	375	370	383	396	412	417	414	432	---	412
11		---	431	434	437	438	433	421	411	413	424	421	424	414	397	383	374	379	389	393	411	423	427	428	426	415
12	Q	437	425	430	429	427	426	420	419	416	420	422	421	415	402	391	380	381	391	405	418	430	424	432	416	416
13		432	419	421	422	425	419	411	418	419	420	420	418	404	389	389	380	377	386	401	415	427	428	428	427	412
14		429	431	436	426	433	428	430	427	408	397	408	410	394	369	---	---	376	---	389	389	404	424	425	434	411
15		427	412	433	417	420	424	419	410	398	411	403	403	---	---	---	392	383	381	391	404	418	415	430	427	410
16		428	433	432	427	430	426	423	418	419	420	408	408	390	387	382	384	400	400	389	379	407	432	430	425	412
17	D	428	427	426	427	419	397	395	384	388	386	404	---	393	384	347	371	383	---	---	408	433	400	423	435	402
18		430	412	425	419	415	405	412	398	411	413	395	397	398	387	371	399	397	401	409	417	425	424	424	426	409
19		426	420	421	417	416	417	405	408	409	414	413	407	398	400	394	390	394	401	411	422	428	421	421	420	411
20		417	420	420	423	423	432	429	417	409	413	413	401	416	397	368	---	---	---	---	---	---	---	---	---	---
21		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	401	411	424	426	408	403	---
22		405	419	428	429	430	410	399	411	411	417	414	416	407	399	392	390	394	398	407	416	424	416	420	424	411
23		425	428	417	412	415	417	423	402	413	419	397	411	409	399	379	376	386	392	387	402	424	427	427	422	409
24	Q	428	429	428	425	419	416	415	411	408	410	413	415	411	401	391	387	383	389	404	417	425	426	427	426	413
25	Q	425	425	423	422	419	420	417	416	416	417	419	419	410	396	383	372	375	387	403	419	427	429	430	429	412
26	Q	429	428	430	429	425	412	415	419	419	422	420	415	404	396	380	371	373	386	412	418	425	420	415	425	412
27		421	408	419	430	428	428	428	380	391	410	406	403	399	389	377	356	347	379	391	400	405	414	406	403	401
28		407	427	418	411	410	410	418	403	405	412	418	419	413	400	383	377	358	358	383	397	411	410	427	410	404
29	D	419	408	394	385	369	360	375	411	411	415	419	411	395	384	370	357	359	374	392	404	415	425	424	434	396
30	D	420	419	440	434	437	416	414	412	415	399	417	419	409	401	376	366	366	363	383	397	411	404	403	407	405
31	D	409	428	429	419	418	425	430	430	434	410	410	402	395	363	340	341	373	361	380	400	413	421	421	427	403
MEAN		425	424	425	424	422	419	419	415	414	415	---	---	---	---	---	---	---	---	---	---	---	---	421	424	424	---
MEAN	Q	430	428	428	427	424	420	419	418	417	419	419	418	408	397	386	378	377	386	403	417	426	424	425	424	413
MEAN	D	---	---	420	---	412	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	419	414	421	427	---

LIVINGSTON ISLAND MAGNETIC OBSERVATORY DECLINATION EAST

APRIL 2003 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	24	MEAN
1		413	428	343	368	415	452	462	462	465	463	457	438	427	419	432	464	508	538	556	539	514	485	475	442	457
2		430	433	444	449	451	437	392	405	418	429	442	462	477	463	460	476	492	517	534	519	514	480	464	411	458
3		448	454	466	467	461	459	447	452	475	443	438	425	420	426	440	473	501	516	519	499	481	492	488	454	464
4	D	442	432	384	441	449	459	459	450	455	487	440	439	500	514	491	489	500	513	522	511	506	471	478	493	472
5	D	512	465	412	408	397	409	440	441	442	443	442	439	448	467	471	474	493	527	533	549	520	496	445	456	464
6	Q	464	461	433	441	442	450	450	447	450	456	454	439	428	425	435	454	479	504	503	502	490	479	471	461	459
7	Q	446	449	448	449	448	447	445	447	449	450	452	448	426	434	435	458	484	501	503	493	481	471	464	460	458
8		456	450	445	429	391	380	382	401	383	398	415	455	428	446	471	476	487	496	509	501	487	474	471	469	446
9		450	419	433	398	371	389	407	368	420	437	432	445	431	457	462	459	489	497	504	496	477	473	466	464	444
10		463	461	450	400	415	395	389	444	428	430	433	437	433	439	456	473	493	505	504	516	515	494	470	463	454
11		445	450	440	422	421	433	448	453	451	452	440	433	416	414	432	466	485	499	496	484	452	462	442	399	447
12	Q	447	438	443	438	426	434	442	450	444	441	440	438	428	425	443	466	482	493	487	474	463	456	454	453	450
13	Q	455	456	414	392	426	444	448	441	457	451	442	421	417	425	434	457	479	486	483	472	462	453	453	455	447
14		457	455	455	447	421	418	432	438	436	436	435	418	420	464	474	469	474	486	500	492	474	463	465	452	453
15		446	453	430	412	413	414	435	429	430	421	447	432	423	434	450	466	479	487	481	469	459	459	462	453	445
16	D	438	371	433	449	433	421	442	428	417	437	480	443	443	445	467	477	487	495	487	480	449	420	464	459	449
17		460	447	402	403	385	400	459	453	456	467	528	491	450	437	451	491	506	506	502	474	467	466	463	460	459
18		459	456	451	453	444	426	405	435	438	443	443	446	465	451	454	459	473	471	478	478	472	469	455	463	454
19	Q	447	452	455	453	449	436	450	437	442	445	442	437	434	435	442	457	475	487	496	489	469	467	461	442	454
20		369	397	416	406	391	390	416	443	452	449	440	434	428	420	430	451	468	481	481	471	466	459	454	422	435
21		350	353	386	405	359	411	421	397	435	449	484	479	447	441	451	474	482	484	484	477	483	452	442	451	437
22		445	423	439	423	368	402	448	477	444	466	505	470	476	466	462	471	482	493	502	497	479	464	449	425	457
23		450	445	452	453	452	421	364	363	397	453	465	464	461	459	464	479	482	486	495	496	468	466	467	457	452
24		423	434	448	453	446	436	408	387	443	479	494	464	442	466	471	479	491	511	533	518	504	432	457	438	461
25	D	445	456	418	357	344	370	445	451	471	514	469	498	489	451	453	467	495	516	505	490	472	420	447	423	453
26		455	457	463	450	444	451	447	484	438	449	461	464	465	448	448	464	484	485	484	476	474	459	463	450	461
27		431	441	445	441	407	397	406	443	454	465	462	470	460	435	439	459	482	487	486	477	440	464	455	416	448
28		437	370	390	388	377	438	406	408	451	468	499	470	453	446	452	467	487	490	486	474	457	452	454	455	445
29		446	451	453	457	463	451	444	452	452	454	450	444	430	432	438	477	477	487	503	505	462	500	492	436	461
30	D	396	411	351	429	426	450	438	481	465	478	531	480	469	456	464	479	486	505	509	506	514	418	397	318	452
MEAN		441	436	428	426	418	424	429	436	442	452	459	451	444	445	452	469	486	498	502	494	479	464	460	443	453
MEAN	Q	452	451	438	435	438	442	447	445	448	448	446	437	427	429	438	459	479	494	495	486	473	465	461	454	454
MEAN	D	447	427	400	417	410	422	445	450	450	472	472	460	470	467	469	477	492	511	511	507	493	445	446	430	458

LIVINGSTON ISLAND MAGNETIC OBSERVATORY — HORIZONTAL INTENSITY

APRIL 2003 — 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	24	MEAN
1		183	167	169	178	184	201	206	208	213	218	218	217	212	198	180	163	166	172	179	182	187	201	209	206	192
2		216	221	218	222	236	231	214	214	223	217	217	213	214	214	207	188	185	186	175	188	182	171	172	189	205
3		201	207	219	227	227	229	227	231	239	226	218	216	214	210	201	191	195	201	204	215	216	192	188	192	212
4	D	199	203	212	216	222	230	240	246	232	231	222	229	200	212	202	181	179	185	195	206	187	172	191	194	208
5	D	185	194	212	198	213	230	215	217	216	216	218	214	204	199	192	188	178	179	171	190	181	196	201	219	201
6	Q	213	214	215	229	235	233	228	224	223	220	223	222	214	202	191	183	179	178	193	207	218	218	215	217	212
7	Q	213	222	224	226	226	226	227	228	231	232	235	235	221	209	202	191	196	201	212	221	225	230	231	233	221
8		240	253	251	251	245	235	218	239	237	229	219	220	219	199	196	202	199	195	199	209	215	218	224	223	222
9		208	201	233	218	207	204	210	232	211	215	216	210	208	200	207	204	193	196	212	221	225	224	226	227	213
10		230	229	229	210	216	231	214	216	213	211	221	221	214	205	200	196	199	207	216	217	189	200	211	224	213
11		224	225	230	241	230	225	221	223	227	225	224	220	215	206	194	184	191	206	211	209	208	220	221	231	217
12	Q	214	225	233	225	225	228	227	230	226	227	226	227	221	208	192	189	195	203	212	221	225	228	229	230	219
13	Q	230	230	238	224	223	225	227	228	230	239	227	226	209	203	193	192	200	209	217	223	228	230	232	232	222
14		235	236	237	240	240	232	226	230	232	233	234	233	216	216	205	203	202	204	205	209	220	225	228	208	223
15		219	223	238	218	216	213	231	227	231	215	216	238	225	208	200	203	209	215	218	227	229	232	229	222	221
16	D	226	235	229	233	234	231	235	237	235	225	232	230	222	205	196	193	197	206	213	213	169	183	216	219	217
17		220	224	229	236	227	214	218	223	213	212	233	235	221	201	182	162	186	196	203	205	215	217	221	224	213
18		223	224	224	225	239	231	218	211	214	212	215	220	210	216	207	190	190	198	210	217	218	204	210	212	214
19	Q	223	222	222	224	227	227	234	225	222	224	226	224	217	211	204	199	201	208	215	210	219	222	223	216	219
20		219	218	217	224	225	226	221	217	215	224	225	225	221	216	212	202	204	209	217	225	227	229	227	193	218
21		169	157	175	196	222	221	223	217	212	223	225	221	218	210	202	191	192	202	203	210	192	187	189	174	201
22		179	182	215	212	204	201	214	225	226	230	226	220	213	201	193	188	182	179	183	189	177	187	195	210	201
23		212	215	217	221	227	237	252	240	226	213	209	210	205	203	195	188	186	194	200	192	198	213	210	202	211
24		208	201	211	217	222	235	245	231	231	232	220	226	216	203	189	173	179	179	180	181	170	178	187	171	203
25	D	186	213	205	203	200	201	219	222	214	238	251	235	229	204	186	173	175	168	186	203	203	178	171	180	202
26		184	192	205	208	212	219	215	235	234	236	235	233	229	216	200	193	191	196	206	208	193	197	204	203	210
27		188	199	211	218	220	229	212	218	222	225	231	233	231	217	200	190	183	198	208	204	206	205	202	207	211
28		205	201	191	199	190	215	207	215	213	208	212	213	214	203	191	187	189	195	202	209	208	207	208	209	204
29		210	208	213	215	218	227	220	223	225	225	227	227	220	204	182	175	175	172	169	168	168	181	174	169	200
30	D	178	185	171	216	192	200	205	218	217	222	209	205	204	199	191	179	176	182	181	181	169	179	170	136	190
MEAN		208	211	216	219	220	223	222	225	223	223	224	223	216	207	196	188	189	194	200	205	202	204	207	206	211
MEAN	Q	219	223	226	226	227	228	229	227	226	229	228	227	217	207	196	191	194	200	210	216	223	226	226	225	218
MEAN	D	195	206	206	213	212	218	223	228	223	227	226	223	211	204	193	183	181	184	189	198	182	181	190	190	204

LIVINGSTON ISLAND MAGNETIC OBSERVATORY VERTICAL INTENSITY

APRIL 2003 Z =-29500 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	24	MEAN
1		-199	-188	-170	-174	-193	-206	-202	-198	-197	-196	-193	-192	-190	-188	-178	-166	-163	-165	-176	-190	-200	-206	-204	-201	-189
2		-199	-195	-191	-190	-181	-150	-160	-168	-168	-171	-178	-175	-169	-176	-174	-164	-165	-169	-170	-188	-196	-202	-204	-210	-180
3		-205	-201	-200	-197	-193	-189	-183	-183	-174	-170	-179	-183	-181	-176	-174	-168	-169	-173	-180	-191	-198	-186	-186	-197	-185
4	D	-197	-198	-189	-190	-191	-187	-183	-176	-167	-154	-170	-184	-153	-162	-169	-165	-169	-178	-185	-197	-197	-201	-205	-201	-182
5	D	-203	-200	-192	-185	-176	-162	-180	-188	-184	-187	-188	-187	-179	-176	-176	-176	-170	-169	-169	-193	-206	-205	-207	-206	-186
6	Q	-200	-196	-194	-192	-179	-179	-177	-179	-180	-178	-182	-186	-184	-177	-169	-162	-158	-158	-176	-187	-192	-193	-188	-188	-181
7	Q	-187	-188	-186	-184	-181	-179	-180	-180	-181	-180	-182	-183	-182	-176	-176	-167	-166	-169	-178	-184	-186	-187	-186	-185	-181
8		-187	-192	-186	-186	-169	-161	-156	-154	-156	-160	-161	-166	-178	-168	-162	-174	-172	-171	-175	-183	-190	-190	-191	-190	-174
9		-190	-188	-183	-177	-173	-171	-163	-154	-165	-178	-185	-175	-172	-163	-176	-176	-165	-168	-177	-188	-192	-190	-187	-187	-177
10		-187	-186	-188	-182	-172	-152	-155	-164	-164	-171	-166	-175	-174	-173	-170	-167	-168	-174	-183	-186	-179	-185	-194	-197	-176
11		-192	-189	-186	-175	-164	-169	-173	-176	-176	-174	-177	-181	-183	-179	-171	-161	-163	-177	-182	-185	-187	-191	-190	-186	-179
12	Q	-174	-182	-179	-178	-178	-179	-176	-175	-175	-176	-175	-177	-178	-174	-165	-162	-166	-171	-180	-188	-190	-187	-185	-182	-177
13	Q	-180	-179	-183	-168	-170	-174	-175	-175	-171	-174	-169	-178	-171	-173	-170	-165	-166	-169	-176	-182	-186	-184	-183	-179	-175
14		-179	-178	-178	-179	-176	-167	-169	-173	-173	-173	-172	-175	-167	-162	-155	-157	-160	-166	-171	-176	-186	-188	-187	-179	-173
15		-184	-182	-179	-166	-172	-167	-163	-158	-173	-160	-159	-182	-174	-166	-167	-169	-171	-174	-177	-183	-181	-180	-177	-174	-172
16	D	-181	-174	-171	-175	-176	-169	-164	-157	-163	-148	-139	-161	-165	-160	-157	-154	-164	-170	-179	-183	-174	-182	-192	-191	-169
17		-185	-185	-182	-170	-162	-123	-128	-163	-169	-166	-144	-152	-169	-168	-161	-145	-167	-178	-184	-187	-190	-186	-186	-184	-168
18		-182	-180	-178	-177	-174	-144	-147	-167	-176	-172	-178	-177	-168	-178	-172	-166	-168	-172	-178	-182	-184	-176	-180	-184	-173
19	Q	-184	-180	-178	-177	-175	-173	-171	-169	-172	-174	-176	-175	-173	-169	-166	-163	-163	-169	-176	-177	-183	-185	-181	-182	-175
20		-180	-174	-169	-163	-160	-150	-143	-156	-171	-178	-177	-178	-177	-176	-173	-164	-160	-164	-171	-177	-179	-177	-178	-168	-169
21		-166	-161	-171	-176	-162	-170	-151	-129	-167	-173	-168	-166	-178	-178	-175	-169	-170	-178	-180	-185	-180	-181	-185	-183	-171
22		-190	-190	-186	-164	-160	-168	-175	-173	-173	-164	-165	-171	-172	-171	-173	-172	-168	-171	-173	-181	-186	-187	-195	-196	-176
23		-191	-189	-185	-183	-181	-166	-145	-128	-128	-146	-164	-177	-179	-181	-176	-170	-171	-176	-180	-179	-184	-192	-189	-185	-173
24		-184	-180	-185	-184	-181	-179	-161	-146	-138	-137	-151	-173	-179	-175	-169	-159	-164	-164	-167	-183	-185	-197	-198	-195	-172
25	D	-200	-198	-178	-180	-157	-140	-137	-166	-164	-149	-145	-152	-158	-163	-165	-161	-162	-157	-173	-188	-194	-186	-183	-187	-168
26		-190	-197	-195	-191	-185	-183	-177	-161	-157	-163	-163	-165	-167	-171	-172	-173	-170	-173	-182	-186	-181	-181	-185	-185	-177
27		-182	-187	-191	-189	-181	-169	-162	-174	-177	-175	-174	-171	-173	-173	-172	-165	-163	-174	-180	-181	-185	-181	-183	-184	-177
28		-183	-181	-171	-174	-170	-153	-146	-165	-157	-152	-163	-176	-186	-182	-178	-176	-175	-180	-184	-188	-187	-182	-180	-179	-174
29		-180	-178	-180	-179	-179	-180	-175	-179	-178	-177	-178	-179	-181	-174	-163	-156	-162	-163	-168	-176	-198	-196	-197	-201	-178
30	D	-192	-185	-170	-145	-183	-194	-188	-180	-162	-156	-145	-164	-176	-180	-178	-173	-171	-174	-181	-187	-185	-199	-199	-182	-177
MEAN		-188	-186	-182	-178	-175	-168	-165	-167	-169	-168	-169	-175	-175	-173	-170	-166	-166	-170	-177	-185	-188	-189	-189	-188	-176
MEAN	Q	-185	-185	-184	-180	-177	-177	-176	-176	-176	-177	-177	-180	-177	-174	-169	-164	-164	-167	-177	-184	-187	-188	-185	-183	-178
MEAN	D	-194	-191	-180	-175	-177	-171	-170	-173	-168	-159	-157	-170	-166	-168	-169	-166	-167	-170	-177	-190	-191	-195	-197	-193	-176

LIVINGSTON ISLAND MAGNETIC OBSERVATORY TOTAL INTENSITY

APRIL 2003 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	24	MEAN
1		408	390	376	384	403	424	423	421	423	425	423	422	417	408	389	369	369	374	386	400	411	424	427	423	405
2		427	426	421	423	423	394	393	400	405	404	410	405	400	407	401	382	381	385	380	402	405	404	406	421	404
3		423	423	429	432	427	425	420	422	419	409	411	414	410	404	398	386	390	397	404	419	426	403	400	411	413
4	D	415	418	417	419	424	425	427	424	409	398	406	422	380	394	394	379	381	391	403	419	409	403	417	416	408
5	D	412	415	419	405	406	404	410	418	415	417	418	416	403	398	394	392	381	381	377	407	413	420	425	435	407
6	Q	425	423	422	428	421	420	415	415	415	412	417	419	412	401	388	377	372	371	395	411	422	423	417	418	410
7	Q	415	421	420	420	418	416	417	418	420	420	423	424	415	404	399	386	388	393	406	417	421	425	424	424	414
8		430	441	436	435	418	406	393	402	403	402	397	402	411	391	384	398	394	392	397	410	418	421	425	423	410
9		415	409	423	410	400	396	393	399	396	409	415	403	400	388	403	400	385	390	406	420	426	424	423	423	406
10		425	423	425	410	405	396	389	398	396	401	402	410	405	399	394	388	391	401	414	416	395	406	419	430	406
11		425	423	424	421	405	407	408	412	413	411	413	414	413	404	391	378	383	403	410	411	412	422	422	424	410
12	Q	405	417	419	414	415	416	414	415	413	414	412	414	412	401	385	381	388	396	408	420	424	423	423	420	410
13	Q	418	418	426	406	407	411	413	414	411	419	408	415	399	398	390	385	390	398	408	417	422	422	423	419	410
14		421	421	421	423	421	410	407	413	414	415	414	417	400	396	384	385	387	392	397	404	418	423	423	406	409
15		416	417	422	400	404	399	405	399	414	394	394	425	411	395	391	395	400	405	410	419	419	420	416	409	407
16	D	417	417	411	416	418	411	408	404	407	389	386	403	402	388	380	376	387	398	408	412	380	394	421	422	402
17		417	420	420	414	403	363	369	401	400	397	391	398	404	392	376	351	383	398	407	411	419	416	419	419	400
18		416	416	414	414	419	390	385	397	406	402	408	410	397	409	399	385	386	395	406	413	415	401	407	412	404
19	Q	418	415	413	413	413	411	413	407	408	411	413	412	406	399	393	387	389	397	407	405	415	419	416	412	408
20		413	407	402	401	400	392	383	392	403	414	413	414	412	407	403	390	388	394	404	413	416	416	415	388	403
21		373	362	380	396	399	405	391	369	398	409	406	403	411	406	399	388	389	402	403	411	397	395	399	390	395
22		399	400	415	396	387	393	406	410	410	405	404	405	403	395	392	389	382	383	386	397	394	400	411	420	399
23		418	418	415	416	418	411	402	382	373	381	394	405	404	404	395	387	387	395	402	396	404	419	414	407	402
24		409	402	412	415	415	421	412	391	385	384	389	411	410	400	386	369	377	376	380	394	390	404	409	398	397
25	D	410	424	403	404	383	369	377	403	396	398	402	399	400	390	382	371	372	365	388	410	415	395	388	396	393
26		401	411	417	415	413	414	408	406	402	408	408	408	408	404	395	392	388	394	407	411	399	401	408	408	405
27		397	407	417	420	414	409	393	407	411	412	414	414	414	406	395	384	378	396	406	405	410	405	405	409	405
28		407	403	389	397	388	388	378	398	390	383	394	406	415	405	396	392	391	399	407	413	412	407	406	406	399
29		407	405	409	410	411	417	409	414	414	413	416	416	414	399	378	368	373	372	375	381	399	404	401	402	400
30	D	399	398	378	382	400	413	411	412	397	395	378	391	401	402	395	384	381	387	392	397	388	406	401	367	394
MEAN		413	413	413	411	409	405	402	405	406	405	406	411	406	400	392	383	384	391	399	409	410	412	414	412	405
MEAN	Q	416	419	420	416	415	415	415	414	413	415	415	417	409	401	391	383	385	391	405	414	421	423	421	419	410
MEAN	D	411	414	405	405	406	404	407	412	405	399	398	406	397	394	389	381	380	384	394	409	401	403	410	407	401

LIVINGSTON ISLAND MAGNETIC OBSERVATORY DECLINATION EAST

MAY 2003 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	24	MEAN
1	D	358	413	413	420	449	408	390	449	475	501	516	483	491	499	488	481	476	492	486	480	483	479	470	445	460
2		426	417	400	369	422	441	439	455	463	481	461	468	447	447	448	457	470	474	477	474	465	427	455	449	447
3	Q	456	452	433	433	433	442	453	456	459	451	480	470	463	460	460	467	475	472	475	471	469	465	468	466	460
4	Q	442	436	447	445	---	442	445	450	456	460	454	447	441	434	438	448	465	477	467	462	457	453	451	452	451
5		451	450	449	443	445	443	442	438	436	437	437	433	428	422	431	448	462	461	469	466	452	469	464	475	448
6		466	431	448	437	431	441	421	429	438	441	438	441	471	465	476	490	491	516	507	491	454	475	471	392	457
7	D	465	428	346	408	417	382	358	408	415	438	434	466	464	462	474	485	493	499	500	486	469	487	473	477	447
8	D	454	429	453	445	432	384	371	---	441	454	477	473	472	463	451	457	478	505	485	475	470	444	449	451	451
9		453	389	436	441	410	396	395	420	438	471	517	553	546	488	470	478	486	486	484	478	472	467	474	485	464
10		458	345	272	325	354	354	265	272	395	440	477	473	460	458	462	478	482	492	504	496	472	469	439	455	421
11		402	319	396	452	465	465	449	492	480	438	438	462	502	470	464	474	489	499	485	479	475	477	473	466	459
12		454	446	435	421	403	434	453	477	449	457	459	470	483	457	464	468	477	492	497	486	472	453	461	461	459
13		435	436	441	449	439	418	411	423	448	453	481	451	453	454	458	475	474	482	484	476	464	467	400	453	451
14		452	420	417	410	431	433	390	423	464	459	448	449	456	452	462	474	479	485	463	474	431	430	447	442	446
15		432	452	443	448	428	441	398	404	452	447	452	461	507	495	470	465	482	478	481	484	482	470	473	412	456
16	Q	447	428	424	444	456	456	449	464	460	449	448	442	445	448	455	463	472	477	476	473	476	452	435	466	454
17	Q	438	454	455	453	447	405	389	417	443	443	437	440	451	451	451	461	472	473	471	461	452	452	452	453	447
18	Q	451	440	440	437	432	423	431	439	446	444	441	440	438	435	439	448	---	---	462	468	452	457	454	457	445
19		439	421	404	401	427	433	426	438	446	448	455	449	446	442	444	459	468	475	478	472	463	475	471	475	448
20		426	421	433	434	431	442	445	453	451	447	452	477	465	455	456	457	460	460	462	460	465	468	468	439	451
21		422	432	423	400	421	437	419	449	450	449	446	444	435	437	449	457	476	485	515	503	488	495	423	439	450
22		374	337	369	401	364	433	451	461	424	452	469	467	460	460	497	514	488	488	483	484	455	463	463	457	446
23		454	456	442	396	351	366	425	423	438	475	473	459	456	455	454	463	480	492	481	477	467	459	459	461	448
24		422	449	449	445	401	377	385	448	440	415	434	436	452	471	468	461	472	489	493	474	477	470	464	410	446
25		381	429	414	369	411	429	460	457	457	478	465	444	444	442	446	461	481	498	491	487	472	466	458	450	449
26		430	428	372	425	433	434	445	443	408	419	454	460	456	447	452	459	468	472	467	462	454	438	447	459	443
27		419	375	411	399	384	399	430	448	450	453	454	488	466	454	447	454	464	473	475	489	430	469	476	462	445
28		288	378	406	427	408	441	420	411	409	459	507	521	492	463	463	484	504	494	489	474	467	453	399	415	445
29	D	404	434	414	400	384	412	451	431	427	460	471	475	463	495	514	572	535	511	514	543	499	542	449	368	465
30	D	484	472	394	452	507	515	500	478	462	464	471	471	471	471	476	481	478	483	473	473	494	490	470	472	475
31		361	439	462	453	422	324	422	458	461	458	456	456	455	451	455	465	469	476	469	461	459	458	457	458	446
MEAN		427	421	417	422	422	421	420	436	445	453	461	464	464	458	461	471	479	485	483	479	466	466	455	449	451
MEAN	Q	447	442	440	442	443	433	433	445	453	449	452	448	448	446	449	458	---	473	470	467	461	456	452	459	451
MEAN	D	433	435	404	425	438	420	414	432	444	463	474	474	472	478	481	495	492	498	492	491	483	488	462	442	460

LIVINGSTON ISLAND MAGNETIC OBSERVATORY HORIZONTAL INTENSITY

MAY 2003 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	24	MEAN
1	D	121	154	190	183	194	185	192	192	196	209	213	217	209	202	183	192	188	188	181	193	186	185	187	197	189	
2		209	203	200	225	225	209	211	212	214	220	226	216	217	208	198	186	193	198	203	207	207	204	205	205	208	
3	Q	211	211	212	235	226	217	217	219	220	223	220	228	232	220	206	202	204	207	211	211	211	204	206	207	215	
4	Q	214	218	216	217	---	224	219	219	218	218	223	223	226	221	213	209	209	213	220	223	226	227	229	228	220	
5		231	232	232	234	232	228	228	228	229	229	232	231	231	229	222	215	211	225	233	232	234	234	228	233	229	
6		222	226	229	229	225	227	230	218	217	223	224	221	217	218	196	185	193	188	196	200	207	208	197	176	211	
7	D	197	206	207	198	209	219	208	197	206	207	199	204	201	193	186	183	192	198	202	199	182	202	212	211	201	
8	D	192	207	218	225	227	224	218	---	205	205	211	216	205	197	195	190	191	181	165	195	203	192	187	199	202	
9		197	201	209	206	226	245	230	214	222	234	239	243	213	188	186	186	191	195	205	214	214	211	201	193	211	
10		200	148	159	154	193	192	190	177	200	180	174	179	180	180	180	181	182	190	186	183	196	198	200	206	184	
11		198	205	178	188	200	205	211	219	235	210	204	217	210	215	193	189	190	199	202	210	211	214	204	209	205	
12		211	212	218	215	211	204	209	216	213	207	218	215	211	204	189	188	198	198	199	204	195	199	205	201	206	
13		212	218	210	214	215	224	215	213	206	219	218	221	220	202	197	199	202	204	208	193	207	196	196	201	209	
14		205	213	210	200	206	219	210	198	201	207	207	208	214	208	191	182	195	193	197	201	200	206	194	196	203	
15		199	209	223	227	227	230	219	199	204	207	208	210	201	206	199	191	181	193	197	197	188	197	198	205	205	
16	Q	212	222	205	210	213	212	214	215	219	215	214	213	209	203	197	199	201	207	212	211	207	208	210	204	210	
17	Q	209	214	216	216	221	217	221	206	207	211	214	212	210	209	203	197	199	205	210	211	213	214	214	214	211	
18	Q	214	217	220	221	217	217	215	217	219	221	223	227	227	221	214	214	---	---	220	213	217	220	215	205	218	
19		195	186	195	201	208	220	221	216	216	216	221	224	221	216	207	203	203	204	207	208	213	203	183	182	207	
20		208	204	207	211	210	218	221	226	238	245	226	226	221	213	206	206	212	215	216	215	211	197	200	188	214	
21		193	197	201	226	211	215	219	217	219	220	224	225	227	218	209	204	194	187	178	162	148	156	157	162	199	
22		117	122	135	181	183	180	190	208	206	193	200	202	201	190	171	179	189	196	200	195	194	206	203	204	185	
23		206	208	212	209	199	188	203	211	198	204	209	212	211	198	192	188	184	175	198	205	206	210	207	194	201	
24		183	202	208	209	209	214	203	214	222	223	215	220	218	200	197	199	196	197	188	188	194	188	191	176	202	
25		182	183	190	188	204	195	203	215	215	218	219	218	212	205	198	194	184	185	186	192	194	202	207	194	199	
26		172	188	197	197	203	203	205	221	233	219	214	205	202	197	196	189	194	203	211	212	210	201	194	177	202	
27		187	203	179	194	208	207	217	208	210	212	218	224	213	215	203	199	201	198	205	195	163	175	195	185	201	
28		147	166	172	193	203	200	205	206	216	208	211	214	202	196	193	178	173	175	186	194	187	186	202	184	191	
29	D	185	197	207	186	184	189	203	218	204	209	206	209	208	186	153	156	189	190	160	81	128	136	128	96	175	
30	D	119	126	119	132	143	152	162	168	167	168	175	177	175	181	174	173	182	198	198	198	190	173	186	189	168	
31		209	188	195	188	208	170	166	176	182	186	189	192	198	196	192	188	188	197	202	203	205	205	205	204	193	
MEAN		192	196	199	204	208	208	209	209	212	212	213	215	211	204	195	192	194	197	199	198	198	199	198	194	202	
MEAN	Q	212	217	214	220	219	218	217	215	217	218	219	221	221	215	207	204	---	209	215	214	215	215	215	212	215	
MEAN	D	163	178	188	185	191	194	197	197	195	199	201	205	200	192	178	179	189	191	181	173	178	178	180	178	187	

LIVINGSTON ISLAND MAGNETIC OBSERVATORY VERTICAL INTENSITY

MAY 2003 Z =-29500 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	24	MEAN
1	D	-174	-183	-172	-194	-175	-115	-138	-153	-169	-179	-172	-184	-183	-183	-179	-189	-187	-189	-187	-193	-190	-188	-190	-192		-177
2		-191	-185	-176	-167	-160	-175	-179	-176	-175	-174	-178	-174	-179	-178	-177	-172	-177	-181	-181	-182	-185	-185	-181	-180		-178
3	Q	-182	-182	-180	-181	-167	-168	-171	-174	-175	-176	-164	-169	-175	-173	-168	-168	-172	-177	-180	-182	-181	-177	-177	-181		-175
4	Q	-180	-179	-177	-177	---	-174	-173	-174	-173	-174	-177	-178	-180	-178	-174	-173	-172	-174	-179	-181	-182	-181	-180	-177		-177
5		-177	-175	-175	-174	-172	-169	-169	-171	-170	-171	-172	-171	-170	-173	-170	-164	-159	-171	-176	-173	-175	-173	-172	-177		-172
6		-174	-179	-176	-175	-171	-169	-167	-163	-166	-170	-172	-168	-158	-170	-161	-157	-166	-165	-176	-182	-190	-185	-183	-182		-172
7	D	-186	-194	-178	-166	-166	-139	-139	-123	-138	-158	-156	-170	-175	-177	-175	-174	-179	-183	-186	-186	-181	-188	-191	-190		-171
8	D	-187	-184	-186	-183	-154	-137	-146	---	-164	-162	-167	-173	-170	-172	-178	-175	-175	-167	-168	-188	-191	-188	-185	-188		-173
9		-189	-187	-184	-182	-176	-168	-152	-162	-172	-155	-133	-134	-137	-147	-166	-170	-177	-181	-186	-191	-190	-185	-183	-184		-170
10		-191	-165	-155	-119	-90	-94	-109	-112	-117	-129	-161	-187	-194	-193	-192	-187	-183	-183	-179	-180	-189	-190	-190	-187		-162
11		-189	-172	-162	-182	-184	-183	-179	-153	-107	-141	-171	-171	-158	-177	-174	-174	-176	-181	-184	-188	-187	-186	-180	-183		-172
12		-185	-181	-182	-158	-164	-167	-165	-157	-169	-171	-172	-171	-172	-178	-172	-171	-178	-178	-177	-181	-182	-185	-186	-185		-174
13		-186	-178	-177	-180	-180	-173	-162	-158	-166	-163	-153	-166	-172	-167	-168	-172	-173	-173	-176	-171	-180	-179	-183	-181		-172
14		-184	-180	-171	-173	-171	-142	-159	-162	-158	-158	-170	-173	-176	-175	-169	-166	-175	-177	-181	-183	-184	-184	-176	-178		-172
15		-181	-182	-183	-169	-156	-135	-140	-151	-170	-175	-173	-171	-157	-168	-173	-175	-171	-178	-182	-183	-177	-182	-187	-187		-171
16	Q	-186	-178	-170	-176	-177	-178	-177	-172	-170	-171	-173	-173	-172	-173	-173	-176	-176	-178	-181	-179	-174	-179	-179	-176		-176
17	Q	-179	-179	-177	-176	-177	-169	-169	-164	-172	-175	-175	-173	-169	-172	-173	-170	-171	-174	-179	-180	-181	-180	-177	-175		-174
18	Q	-174	-174	-173	-173	-172	-170	-169	-172	-173	-174	-174	-174	-173	-173	-169	-166	---	---	-171	-166	-173	-173	-170	-168		-171
19		-165	-164	-171	-174	-174	-176	-168	-166	-170	-172	-173	-175	-173	-174	-169	-166	-167	-169	-171	-174	-178	-174	-166	-173		-171
20		-183	-180	-181	-178	-174	-171	-171	-170	-163	-160	-154	-159	-162	-169	-172	-171	-171	-174	-176	-176	-174	-166	-171	-176		-171
21		-179	-181	-179	-171	-166	-171	-168	-170	-173	-174	-175	-175	-176	-173	-164	-164	-158	-156	-159	-163	-176	-192	-199	-194		-173
22		-184	-167	-175	-183	-161	-185	-185	-155	-162	-175	-186	-188	-190	-186	-169	-173	-183	-185	-187	-183	-186	-190	-187	-185		-180
23		-185	-184	-183	-171	-153	-146	-144	-157	-163	-164	-171	-180	-181	-177	-177	-173	-167	-162	-180	-186	-183	-183	-180	-175		-172
24		-173	-184	-185	-182	-172	-155	-161	-152	-151	-165	-166	-170	-170	-162	-167	-173	-170	-167	-165	-169	-178	-177	-183	-183		-170
25		-180	-180	-161	-160	-158	-173	-169	-167	-170	-166	-168	-175	-174	-175	-172	-170	-164	-161	-167	-175	-179	-182	-183	-181		-171
26		-170	-177	-163	-179	-183	-178	-177	-170	-157	-157	-160	-163	-171	-176	-178	-175	-176	-180	-182	-179	-175	-174	-169	-166		-172
27		-177	-171	-161	-177	-171	-160	-169	-170	-174	-172	-174	-168	-163	-176	-174	-172	-174	-170	-173	-167	-165	-169	-187	-185		-172
28		-182	-177	-168	-157	-175	-168	-146	-173	-169	-158	-153	-152	-167	-181	-185	-173	-170	-172	-180	-189	-184	-186	-185	-177		-172
29	D	-177	-183	-172	-166	-159	-169	-147	-151	-162	-166	-168	-173	-178	-169	-149	-148	-183	-187	-179	-167	-221	-240	-348	-403		-190
30	D	-381	-286	-142	-195	-211	-214	-213	-207	-204	-199	-198	-197	-193	-195	-192	-192	-197	-205	-202	-195	-190	-185	-193	-191		-207
31		-190	-165	-184	-183	-167	-131	-160	-183	-185	-187	-188	-187	-188	-187	-185	-182	-181	-185	-187	-187	-187	-185	-182	-181		-180
MEAN		-188	-182	-174	-174	-168	-162	-163	-163	-165	-167	-169	-172	-173	-175	-173	-172	-174	-176	-179	-180	-183	-184	-187	-188		-175
MEAN	Q	-180	-178	-176	-177	-174	-172	-172	-171	-173	-174	-173	-173	-174	-174	-171	-171	---	-175	-178	-178	-178	-178	-177	-175		-175
MEAN	D	-221	-206	-170	-181	-173	-155	-157	-158	-168	-173	-172	-179	-180	-179	-175	-176	-184	-186	-184	-186	-195	-198	-221	-233		-184

LIVINGSTON ISLAND MAGNETIC OBSERVATORY TOTAL INTENSITY

MAY 2003 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	24	MEAN
1	D	352	379	389	404	395	340	362	375	390	406	403	415	409	405	391	404	401	402	397	409	403	400	403	410	394	
2		416	407	398	406	400	403	408	405	406	409	415	406	411	404	398	387	396	402	405	408	410	408	406	405	405	
3	Q	410	410	409	423	406	402	404	408	409	412	400	408	415	407	395	393	398	403	408	410	408	401	403	406	406	
4	Q	410	411	409	409	---	411	406	408	406	407	412	413	417	412	404	401	401	405	413	415	418	418	418	415	410	
5		417	416	416	416	413	409	408	410	410	411	413	412	411	412	406	396	391	409	417	414	417	415	411	418	411	
6		410	416	415	414	409	408	408	398	400	407	409	404	393	403	384	374	387	382	396	403	414	411	403	390	402	
7	D	405	417	404	390	396	379	373	353	371	387	381	396	398	395	390	387	397	403	408	407	393	409	418	416	395	
8	D	403	409	417	419	396	380	384	---	392	390	398	405	396	393	398	392	392	380	372	406	413	404	399	408	397	
9		408	408	410	407	413	417	395	394	408	400	385	388	374	368	382	386	395	399	410	419	418	412	405	401	400	
10		411	360	358	325	324	327	338	333	350	348	371	396	402	401	401	397	395	399	393	392	407	409	410	411	377	
11		408	398	375	396	405	407	407	390	361	375	397	403	390	408	393	390	393	402	406	414	413	415	404	409	398	
12		412	410	413	392	395	393	394	392	400	398	405	403	402	403	389	388	399	399	399	405	401	405	410	406	401	
13		414	410	406	409	410	409	395	391	394	399	389	402	407	392	390	395	397	398	403	390	406	399	402	403	401	
14		408	409	400	397	398	381	390	386	385	387	398	401	407	402	387	381	395	395	401	405	405	409	395	398	397	
15		402	408	417	408	397	382	379	377	396	401	400	400	383	396	395	393	383	397	402	402	392	402	406	411	397	
16	Q	413	413	397	404	407	407	407	404	404	403	404	404	401	397	394	398	399	404	409	407	401	405	407	401	404	
17	Q	406	409	409	407	411	403	405	392	399	404	406	403	399	400	397	392	394	400	406	408	410	410	408	406	403	
18	Q	405	407	408	408	405	403	401	405	407	408	410	412	411	407	400	398	---	---	405	397	405	407	403	395	405	
19		386	381	392	397	402	409	404	399	403	404	408	411	408	406	397	392	393	395	399	401	407	398	381	386	398	
20		408	404	407	407	403	405	407	408	409	410	395	399	399	401	399	398	402	405	408	406	403	388	394	392	402	
21		397	401	402	409	397	403	402	403	407	409	411	412	414	406	394	391	380	375	372	366	370	387	393	392	395	
22		358	347	361	394	376	395	400	386	390	394	407	410	411	401	377	385	398	404	407	402	404	414	409	408	393	
23		409	410	411	400	379	368	373	389	387	391	400	409	409	398	395	389	382	373	400	410	408	410	406	394	396	
24		387	407	410	409	400	389	388	387	391	402	399	405	403	387	389	395	391	389	383	386	397	393	400	391	395	
25		392	392	381	379	386	394	395	400	403	401	402	408	403	400	394	390	379	378	384	393	398	405	408	399	394	
26		378	392	386	399	406	402	403	406	402	394	393	391	396	397	399	392	395	403	410	408	403	397	390	377	397	
27		392	396	374	396	399	390	403	398	402	402	407	405	395	408	399	394	397	392	398	388	369	379	404	398	395	
28		373	380	376	379	400	391	377	400	402	388	385	387	392	400	402	383	379	381	394	406	398	399	407	390	390	
29	D	391	402	399	382	376	386	377	388	389	395	395	401	405	385	349	351	399	402	379	324	395	415	500	528	396	
30	D	523	448	325	376	395	403	408	407	403	400	403	403	398	403	397	397	406	421	419	413	405	391	405	405	406	
31		415	383	402	397	396	344	366	390	396	400	402	403	407	406	401	397	396	404	409	410	410	409	407	405	398	
MEAN		404	401	396	399	397	392	393	393	396	398	400	404	402	400	393	391	394	397	400	401	403	404	407	406	399	
MEAN	Q	409	410	406	410	407	405	405	403	405	407	406	408	409	405	398	397	---	403	408	408	409	408	408	405	406	
MEAN	D	415	411	387	394	391	378	381	382	389	396	396	404	401	396	385	386	399	402	395	392	402	404	425	433	398	

LIVINGSTON ISLAND MAGNETIC OBSERVATORY DECLINATION EAST

JUNE 2003 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	24	MEAN
1		458	455	449	442	449	422	439	419	459	447	442	446	447	455	470	465	472	476	473	488	501	468	474	441	456
2	D	410	442	434	378	297	318	328	345	365	477	471	479	466	463	478	496	495	490	477	469	464	467	467	445	434
3		408	415	454	443	439	437	442	444	435	430	457	454	452	454	483	470	475	472	466	459	445	381	454	346	442
4		442	456	467	460	443	451	446	438	430	431	467	490	466	455	460	469	474	486	482	466	449	444	451	427	456
5	Q	412	426	432	445	447	447	447	448	453	470	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
6		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	462	459	468	460	449	---
7		422	365	400	403	419	416	411	436	443	421	426	442	462	450	458	468	478	481	467	453	449	473	459	463	440
8		453	415	401	362	348	429	439	422	450	454	443	443	444	449	457	478	486	481	476	470	428	389	449	450	438
9		439	438	447	423	420	397	406	417	444	451	448	480	477	456	453	454	461	471	464	457	459	354	382	471	440
10		447	465	455	451	442	427	416	415	421	424	434	465	469	451	455	462	470	469	470	455	451	449	454	457	449
11		437	449	447	426	416	416	404	445	423	430	447	449	446	448	441	443	457	467	468	461	454	448	450	451	443
12	Q	449	446	445	438	435	433	437	445	440	439	439	443	437	444	440	447	455	466	463	458	450	450	448	444	445
13	Q	430	434	440	445	437	425	420	422	429	434	435	443	442	437	441	450	459	462	454	445	443	457	457	459	442
14		451	448	444	440	398	312	329	376	408	420	446	504	490	449	454	456	456	480	498	475	475	457	434	403	438
15		442	372	391	423	400	376	382	436	441	458	454	451	456	455	452	453	458	460	468	460	454	455	429	450	436
16	D	436	412	409	266	388	421	426	435	444	437	475	522	468	502	492	493	474	488	488	473	486	441	437	407	447
17	D	384	394	389	397	337	252	260	304	367	461	507	541	491	484	480	482	474	465	454	448	455	469	470	450	426
18	D	422	352	347	383	374	366	264	141	396	463	568	501	485	479	488	484	482	484	491	472	475	481	427	463	429
19		434	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
20	Q	---	---	456	451	442	432	442	452	447	448	---	---	---	---	---	---	---	---	---	---	446	440	451	450	---
21		438	332	380	421	418	390	354	436	405	410	442	449	451	449	453	461	477	495	468	460	460	455	468	463	435
22	Q	457	438	---	433	445	447	417	399	407	456	439	456	456	453	453	457	462	466	486	473	462	457	458	433	448
23		405	353	409	442	433	451	433	436	445	467	478	452	452	454	454	460	464	461	467	454	453	448	449	448	445
24		453	420	330	395	383	369	336	368	396	477	468	531	532	520	492	478	471	468	462	457	457	446	449	458	442
25		449	441	447	443	428	433	437	450	432	441	458	452	451	449	447	452	461	469	458	466	464	452	413	426	447
26		416	424	430	426	406	435	462	434	420	472	447	455	480	462	458	456	462	464	454	447	443	446	459	463	447
27		455	441	427	422	421	435	436	---	---	402	431	452	478	473	483	484	483	480	465	461	455	453	445	426	448
28	D	449	429	399	397	342	361	423	445	439	448	449	419	445	460	468	477	490	471	469	465	456	445	402	413	436
29		431	416	401	396	436	419	413	434	436	440	400	442	458	466	468	468	475	468	465	453	450	456	423	425	439
30		458	449	397	387	404	413	443	376	447	431	438	449	451	449	453	466	470	471	466	458	454	448	446	447	440
MEAN		436	421	419	416	409	405	403	408	426	444	454	---	463	460	462	---	---	---	---	461	457	447	445	440	442
MEAN	Q	---	439	444	443	441	437	433	433	435	449	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	D	420	406	396	364	348	343	340	334	402	457	494	492	471	478	481	486	483	480	476	465	467	461	440	436	434

LIVINGSTON ISLAND MAGNETIC OBSERVATORY HORIZONTAL INTENSITY

JUNE 2003 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	24	MEAN
1		203	204	202	199	200	213	208	200	201	207	206	206	208	207	205	206	207	211	213	191	188	200	209	197	204	
2	D	209	200	198	190	187	186	205	188	180	167	180	193	181	185	185	186	195	196	200	200	201	201	196	202	192	
3		191	176	195	198	193	202	200	205	201	200	203	204	214	207	199	200	201	206	211	214	204	195	175	175	199	
4		177	182	198	210	201	200	201	212	209	206	206	211	202	198	194	186	194	195	187	200	202	206	205	192	199	
5	Q	199	197	195	204	210	208	205	207	206	208	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
6		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	213	211	213	209	201	---	
7		204	208	197	204	218	210	201	208	219	212	210	211	218	216	211	207	205	213	218	221	222	203	192	201	210	
8		204	206	213	211	193	197	209	204	205	207	207	215	212	209	199	181	174	177	190	195	172	152	166	182	195	
9		188	195	194	203	205	185	208	194	197	200	211	197	197	205	200	197	199	203	207	212	210	199	157	172	197	
10		188	195	197	198	199	199	202	205	207	197	198	197	203	202	198	195	197	201	203	208	211	208	205	201	201	
11		204	207	202	203	201	201	199	203	208	205	204	209	211	204	199	193	188	195	206	207	202	206	210	209	203	
12	Q	210	211	211	213	213	213	212	217	215	217	214	211	210	212	206	202	202	207	212	216	217	216	215	213	212	
13	Q	206	208	210	214	215	215	214	209	210	215	216	216	216	216	212	207	211	220	230	227	224	209	196	202	213	
14		209	216	219	221	215	202	195	200	213	218	210	209	231	217	210	210	205	188	181	189	184	172	184	192	204	
15		198	181	192	196	195	206	191	198	202	203	210	217	212	210	209	206	205	205	199	210	207	195	198	195	202	
16	D	196	203	196	187	200	210	214	215	216	219	220	252	231	214	198	192	181	178	173	160	147	115	115	147	191	
17	D	130	156	182	173	147	187	173	208	219	199	180	179	188	190	194	179	190	196	201	200	190	177	164	179	183	
18	D	153	166	182	158	174	180	182	180	163	165	159	149	162	176	178	173	176	175	165	155	162	147	156	166	167	
19		163	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
20	Q	---	---	199	202	201	200	194	201	206	211	---	---	---	---	---	---	---	---	---	---	202	200	207	206	---	
21		195	180	164	173	182	192	213	202	193	186	188	193	196	198	198	195	181	180	200	200	193	170	187	185	190	
22	Q	191	196	---	198	201	213	207	215	200	208	211	203	202	202	199	200	200	197	180	183	194	195	181	191	199	
23		171	175	189	194	198	214	210	196	202	209	204	210	209	208	202	196	198	198	194	200	199	186	197	194	198	
24		191	187	188	181	199	209	197	194	204	203	226	206	194	205	199	192	192	195	198	196	192	185	192	194	197	
25		193	196	200	202	208	201	205	212	210	208	202	205	207	204	202	198	193	191	198	196	188	199	199	195	200	
26		201	200	193	199	198	206	209	218	213	224	239	218	215	221	220	215	215	220	225	227	225	223	224	218	215	
27		216	220	213	211	206	211	212	---	---	201	205	209	210	213	206	206	203	202	208	205	202	207	197	212	208	
28	D	201	216	213	198	201	193	193	198	200	208	227	219	213	203	201	202	198	200	207	204	203	206	187	195	204	
29		186	179	194	187	201	198	203	202	201	237	211	210	200	201	198	196	201	208	212	209	207	207	201	208	202	
30		205	202	205	207	187	181	209	206	193	206	204	210	207	206	207	206	206	209	210	211	212	212	207	211	205	
MEAN		192	195	197	198	198	201	203	204	203	205	206	---	206	205	201	---	---	---	---	202	199	193	191	194	200	
MEAN	Q	---	202	204	206	208	210	207	210	207	212	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	D	178	188	194	181	182	191	193	198	196	192	193	199	195	194	191	187	188	189	189	184	181	169	164	178	187	

LIVINGSTON ISLAND MAGNETIC OBSERVATORY VERTICAL INTENSITY

JUNE 2003 Z =-29500 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	24	MEAN
1		-179	-179	-181	-178	-179	-174	-168	-171	-169	-175	-177	-177	-177	-174	-172	-173	-179	-182	-184	-167	-169	-185	-189	-189	-177
2	D	-188	-184	-185	-180	-163	-152	-133	-54	-92	-120	-143	-166	-175	-185	-182	-177	-186	-186	-188	-187	-187	-185	-184	-186	-165
3		-176	-175	-181	-178	-175	-178	-174	-172	-174	-176	-163	-169	-181	-176	-168	-175	-179	-181	-184	-184	-182	-177	-168	-182	-176
4		-177	-184	-185	-180	-175	-180	-180	-179	-173	-166	-157	-162	-168	-177	-178	-173	-180	-180	-176	-186	-187	-188	-183	-180	-177
5	Q	-181	-179	-177	-176	-175	-176	-175	-175	-170	-170	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
6		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-177	-175	-178	-175	-176	---
7		-180	-179	-173	-172	-161	-164	-165	-165	-166	-168	-168	-165	-161	-166	-168	-165	-165	-167	-176	-179	-178	-166	-166	-177	-169
8		-178	-179	-174	-161	-148	-151	-159	-169	-163	-165	-171	-175	-174	-172	-168	-156	-160	-167	-177	-182	-178	-172	-178	-188	-169
9		-191	-188	-184	-174	-162	-161	-166	-162	-174	-173	-170	-158	-171	-180	-178	-179	-179	-180	-181	-182	-179	-175	-153	-176	-174
10		-186	-188	-185	-182	-182	-180	-176	-161	-129	-164	-171	-161	-166	-176	-178	-178	-177	-181	-179	-181	-182	-177	-176	-174	-175
11		-180	-180	-178	-179	-175	-174	-171	-162	-168	-169	-171	-174	-175	-174	-172	-171	-173	-175	-179	-178	-174	-176	-177	-175	-174
12	Q	-174	-175	-175	-174	-171	-171	-170	-170	-169	-170	-168	-168	-169	-171	-170	-168	-169	-170	-172	-173	-172	-171	-169	-170	-171
13	Q	-168	-169	-170	-171	-171	-169	-168	-167	-167	-167	-168	-168	-169	-170	-169	-168	-167	-171	-175	-171	-166	-158	-151	-162	-167
14		-169	-173	-172	-171	-171	-151	-143	-137	-140	-143	-147	-142	-156	-165	-165	-166	-164	-157	-152	-168	-168	-167	-178	-179	-160
15		-177	-170	-167	-176	-159	-134	-155	-170	-170	-172	-173	-176	-170	-169	-170	-171	-171	-171	-165	-172	-171	-166	-167	-170	-168
16	D	-173	-175	-169	-152	-165	-177	-175	-172	-172	-171	-157	-145	-143	-149	-152	-158	-163	-165	-166	-170	-169	-164	-171	-180	-165
17	D	-177	-198	-186	-127	-141	-125	-102	-115	-106	-99	-119	-150	-182	-187	-192	-181	-187	-190	-190	-188	-179	-171	-167	-174	-160
18	D	-168	-166	-139	-161	-160	-104	-8	-17	2	7	-96	-181	-203	-202	-196	-191	-193	-189	-185	-180	-189	-185	-190	-195	-145
19		-191	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
20	Q	---	---	-175	-174	-173	-171	-166	-169	-175	-172	---	---	---	---	---	---	---	---	---	---	-176	-174	-177	-175	---
21		-173	-167	-151	-165	-171	-164	-136	-108	-138	-158	-173	-179	-182	-182	-181	-178	-169	-162	-182	-183	-179	-167	-178	-178	-167
22	Q	-182	-182	---	-173	-174	-173	-165	-157	-147	-156	-164	-165	-170	-173	-174	-174	-173	-170	-160	-165	-176	-178	-171	-172	-170
23		-170	-165	-170	-178	-178	-166	-152	-165	-170	-162	-151	-169	-171	-174	-173	-172	-173	-174	-170	-174	-173	-169	-175	-174	-170
24		-174	-175	-162	-146	-156	-141	-139	-136	-135	-138	-158	-145	-148	-161	-170	-173	-178	-178	-179	-175	-172	-170	-174	-174	-161
25		-175	-176	-177	-175	-172	-166	-155	-145	-165	-165	-162	-171	-173	-171	-170	-172	-167	-165	-171	-172	-164	-176	-176	-169	-169
26		-170	-166	-166	-169	-163	-166	-158	-163	-161	-154	-156	-157	-161	-167	-168	-166	-167	-169	-171	-171	-167	-164	-162	-161	-164
27		-165	-169	-165	-165	-155	-150	-143	---	---	-153	-162	-159	-147	-161	-154	-161	-166	-169	-176	-173	-169	-173	-169	-169	-160
28	D	-166	-170	-164	-160	-154	-142	-163	-165	-170	-152	-117	-153	-159	-156	-160	-166	-165	-170	-176	-173	-174	-175	-170	-169	-162
29		-171	-170	-174	-168	-173	-168	-164	-162	-140	-137	-141	-160	-159	-163	-165	-165	-167	-170	-172	-171	-169	-168	-168	-164	-164
30		-168	-168	-164	-158	-158	-154	-169	-161	-148	-159	-161	-170	-168	-164	-165	-162	-164	-165	-168	-168	-169	-170	-166	-168	-164
MEAN		-176	-176	-172	-169	-166	-160	-153	-149	-150	-153	-158	---	-169	-172	-172	---	---	---	---	-176	-175	-173	-173	-175	-168
MEAN	Q	---	-176	-175	-174	-173	-172	-169	-167	-166	-167	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	D	-174	-179	-169	-156	-157	-140	-116	-105	-107	-107	-126	-159	-172	-176	-176	-175	-179	-180	-181	-180	-180	-176	-176	-181	-159

LIVINGSTON ISLAND MAGNETIC OBSERVATORY TOTAL INTENSITY

JUNE 2003 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	24	MEAN
1		403	404	404	400	401	404	397	395	394	401	402	403	404	401	398	399	404	410	412	386	386	406	414	407	401
2	D	414	406	405	397	380	371	366	291	318	333	359	386	387	398	395	392	404	405	408	408	408	407	403	408	385
3		393	384	400	399	394	401	397	398	398	398	389	394	411	402	391	397	402	406	411	413	406	397	378	389	398
4		387	395	405	407	399	402	402	407	401	394	386	393	393	398	397	388	398	399	391	407	409	412	407	397	399
5	Q	402	399	396	401	403	403	401	401	397	398	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
6		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	406	404	407	403	399	---
7		404	405	395	398	396	394	390	394	401	399	397	395	396	399	399	393	392	399	409	413	413	392	386	400	398
8		402	405	404	393	372	376	390	395	390	394	398	406	403	400	391	371	370	378	394	401	384	368	381	398	390
9		404	405	402	399	390	378	395	384	395	396	400	382	393	405	401	399	400	404	407	410	407	397	356	382	395
10		400	406	404	402	403	401	399	389	364	387	393	385	392	400	399	397	398	403	403	408	409	404	401	397	398
11		404	406	401	403	398	398	393	389	397	396	396	402	404	399	395	391	389	395	404	404	398	402	405	403	399
12	Q	403	404	404	404	402	401	401	403	401	403	400	398	399	401	397	393	394	398	402	405	405	403	401	400	401
13	Q	395	398	399	402	403	401	399	396	397	400	401	401	402	403	400	396	397	406	415	410	404	389	375	388	399
14		397	405	406	406	403	379	368	367	376	382	380	376	400	399	395	396	392	376	368	386	383	375	391	397	388
15		398	383	387	396	381	367	376	393	395	397	402	408	401	398	399	398	397	398	389	401	398	387	390	390	393
16	D	394	399	390	371	389	405	406	404	404	405	394	402	389	384	378	380	377	377	375	371	363	341	347	372	384
17	D	360	392	397	343	340	349	322	353	352	334	340	365	397	402	408	391	402	408	410	408	395	382	371	385	375
18	D	365	372	358	363	371	328	250	256	231	228	310	374	399	406	402	396	399	395	386	377	387	376	385	395	354
19		390	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
20	Q	---	---	397	398	397	395	387	393	401	402	---	---	---	---	---	---	---	---	---	---	400	397	403	401	---
21		394	380	358	374	384	384	373	343	363	376	389	398	401	402	402	398	382	376	404	405	397	374	393	391	385
22	Q	398	401	---	395	397	403	393	391	375	386	394	391	395	397	397	397	396	392	374	380	396	397	384	390	393
23		377	376	388	397	399	398	384	387	395	392	380	398	400	402	397	393	395	396	390	397	396	385	396	393	392
24		392	390	380	363	382	375	366	362	367	369	398	376	372	389	393	392	395	398	400	396	391	385	392	394	384
25		393	396	399	399	399	391	384	380	395	394	389	398	400	397	395	394	387	384	393	393	382	398	398	390	393
26		394	390	386	393	387	394	389	398	393	393	404	394	395	403	403	399	400	404	409	409	405	402	401	397	398
27		398	403	397	396	385	383	378	---	---	380	390	390	380	393	383	390	392	394	403	399	394	400	391	399	390
28	D	391	402	396	384	381	366	384	388	393	383	365	390	392	384	386	391	388	394	402	398	399	401	386	390	389
29		386	382	393	385	397	391	390	388	369	387	376	391	384	389	388	387	392	398	402	400	397	396	393	394	390
30		394	393	391	388	376	369	398	390	372	388	389	399	396	392	393	390	392	395	398	398	399	400	394	398	391
MEAN		394	395	394	391	390	386	381	378	379	382	387	---	396	398	395	---	---	---	---	400	397	393	391	395	391
MEAN	Q	---	400	400	400	400	401	396	397	394	398	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	D	385	394	389	371	372	364	346	338	340	337	354	384	393	395	394	390	394	396	396	392	391	381	378	390	378

LIVINGSTON ISLAND MAGNETIC OBSERVATORY DECLINATION EAST

JULY 2003 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	24	MEAN
1		449	444	437	433	435	441	411	417	437	430	424	429	436	445	447	464	471	470	462	454	448	---	---	---		443
2		---	---	443	441	435	415	427	428	420	404	419	453	465	454	447	455	460	465	464	466	452	451	450	---		444
3		---	---	---	---	431	429	434	438	433	432	427	430	434	441	446	452	465	474	465	450	444	449	449	468		444
4		434	427	432	413	374	395	384	410	426	447	471	467	460	462	465	468	481	477	467	456	447	448	441	438		441
5		417	425	429	411	397	360	371	429	450	443	441	451	457	453	450	457	478	491	476	466	457	439	449	446		439
6		430	438	424	426	436	445	429	429	432	432	429	427	431	429	443	448	463	458	457	453	447	447	445	445		439
7		445	452	438	438	---	---	---	---	---	---	---	---	---	---	---	---	465	463	460	455	450	445	445	446		---
8	Q	445	445	446	445	445	443	442	442	443	445	442	439	437	433	437	444	453	458	456	449	445	443	443	444		444
9	Q	444	442	442	441	437	412	415	430	436	440	438	435	435	433	440	449	454	457	458	449	441	439	441	440		439
10	Q	441	442	438	437	433	433	434	426	424	433	434	429	438	447	441	440	444	449	452	441	437	436	439	452		438
11	D	454	453	448	392	382	401	334	315	361	336	443	443	458	474	498	506	470	475	500	493	507	483	504	439		440
12	D	233	351	376	325	209	184	378	363	497	461	454	465	466	461	461	462	468	469	477	476	456	456	454	401		409
13		427	411	426	417	400	437	459	459	457	444	442	444	450	444	444	458	473	468	466	458	452	452	439	443		445
14		441	418	428	435	430	406	433	449	439	454	455	446	441	438	438	452	462	466	466	459	450	443	441	437		443
15		267	410	435	358	365	377	447	465	460	453	478	471	449	446	442	451	456	462	460	459	475	424	459	447		434
16	D	367	391	386	397	372	275	339	431	302	400	539	610	654	576	529	509	492	486	473	461	463	400	420	459		447
17		398	391	443	435	444	451	454	460	470	447	453	469	462	469	466	473	472	471	481	468	455	461	395	433		451
18		453	438	398	384	433	443	447	462	455	453	445	446	448	441	442	453	461	462	463	453	455	450	452	460		446
19		412	413	426	427	437	436	446	435	442	461	425	443	465	480	473	476	471	473	463	459	457	472	393	374		444
20		408	427	407	407	437	435	411	403	423	443	457	461	456	452	458	470	466	466	460	453	456	458	416	429		440
21	Q	425	418	428	430	427	447	434	437	445	447	446	448	445	448	446	452	459	463	466	451	444	444	444	444		443
22	Q	440	433	415	436	441	443	444	442	446	448	440	443	438	436	442	454	460	458	455	448	442	440	---	---		443
23		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---
24		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---
25		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---
26		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---
27		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	470	---	473	470	460	444	456	---	---		---
28		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---
29	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---
30		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	486	487	446	458	454	458	---		---
31	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	477	478	485	485	472	---	---	---	---		---
MEAN		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---
MEAN	Q	439	436	434	438	437	436	434	435	439	443	440	439	439	440	441	448	454	457	457	448	442	441	---	---		442
MEAN	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---

LIVINGSTON ISLAND MAGNETIC OBSERVATORY HORIZONTAL INTENSITY

JULY 2003 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	24	MEAN
1		210	208	203	206	208	211	212	205	210	209	206	208	209	210	204	201	199	204	210	212	208	---	---	---		207
2		---	---	205	205	208	211	204	209	221	222	222	215	216	212	205	203	203	207	205	206	206	207	208	---		209
3		---	---	---	---	202	202	203	205	206	207	211	214	215	215	215	217	220	223	217	213	220	220	218	202		211
4		181	201	209	218	200	208	201	201	203	211	212	218	209	200	195	190	189	202	210	212	212	210	199	198		204
5		182	197	200	204	214	203	194	197	206	205	202	201	211	211	205	198	185	186	197	202	201	202	200	205		200
6		209	209	211	209	209	218	211	210	209	214	219	214	212	218	216	210	211	211	213	213	210	208	210	205		212
7		209	208	212	209	---	---	---	---	---	---	---	---	---	---	---	---	202	206	211	213	212	210	209	207		---
8	Q	207	206	206	207	208	210	209	210	211	212	211	210	208	206	201	195	198	201	207	209	209	210	209	209		207
9	Q	209	210	210	209	209	207	204	204	206	208	210	209	207	206	200	196	199	206	211	220	219	219	218	215		209
10	Q	217	215	215	213	210	210	212	215	211	213	218	220	219	221	218	214	210	217	224	226	226	220	218	216		217
11	D	206	192	190	186	171	191	179	173	192	228	203	215	197	194	183	188	184	183	185	185	175	170	164	122		186
12	D	113	114	168	157	113	118	151	157	168	180	167	170	173	168	166	172	173	179	173	173	185	180	172	184		162
13		167	169	189	191	187	186	194	203	209	202	197	200	197	195	190	186	174	188	194	198	196	194	183	184		190
14		179	187	183	192	203	199	210	215	201	200	201	205	212	210	203	200	196	201	202	203	201	202	207	196		200
15		192	177	185	175	180	180	184	193	195	199	208	222	201	198	194	189	191	194	202	203	185	154	173	170		189
16	D	195	182	183	194	206	189	165	212	219	238	197	183	210	173	179	179	179	178	179	178	173	147	176	162		186
17		159	162	173	194	189	189	192	196	197	204	201	195	204	200	185	179	184	186	183	186	198	192	183	187		188
18		190	195	209	199	191	199	201	201	201	203	209	209	205	202	196	193	196	198	202	209	207	208	201	169		200
19		154	173	193	192	196	201	201	206	204	231	211	218	214	215	201	195	200	200	200	202	199	185	182	147		197
20		177	174	186	182	187	204	206	202	197	199	200	200	202	201	189	188	194	202	207	208	205	193	166	178		194
21	Q	188	182	179	185	190	200	206	201	199	200	203	203	203	197	191	185	186	190	190	196	192	194	195	200		194
22	Q	199	194	185	197	203	205	206	209	215	219	209	210	206	201	193	190	195	198	195	201	204	205	---	---		202
23		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---
24		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---
25		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---
26		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---
27		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	186	---	197	203	203	199	204	---	---		---
28		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---
29	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---
30		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	189	198	192	191	188	194	---		---
31	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	180	177	197	201	201	---	---	---	---		---
MEAN		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---
MEAN	Q	204	202	199	202	204	206	207	208	208	210	210	210	209	206	201	196	198	202	206	210	210	210	---	---		206
MEAN	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---

LIVINGSTON ISLAND MAGNETIC OBSERVATORY VERTICAL INTENSITY

JULY 2003 Z =-29500 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	24	MEAN
1		-166	-165	-164	-165	-161	-153	-161	-159	-160	-158	-161	-165	-163	-164	-163	-164	-165	-169	-170	-171	-168	---	---	---		-164
2		---	---	-165	-166	-167	-166	-163	-167	-166	-159	-159	-152	-154	-158	-163	-163	-165	-167	-164	-165	-166	-168	-168	---		-163
3		---	---	---	---	-168	-166	-166	-166	-166	-162	-164	-166	-164	-163	-164	-165	-166	-164	-162	-163	-169	-168	-165	-161		-165
4		-158	-169	-166	-162	-153	-145	-150	-162	-162	-158	-143	-154	-159	-160	-162	-162	-163	-168	-175	-174	-172	-170	-166	-167		-162
5		-160	-167	-164	-160	-161	-153	-149	-156	-160	-161	-162	-162	-167	-166	-164	-159	-151	-153	-167	-171	-172	-174	-171	-172		-163
6		-173	-170	-168	-166	-165	-164	-162	-163	-161	-162	-160	-161	-161	-164	-162	-159	-159	-160	-163	-165	-164	-163	-165	-164		-163
7		-166	-166	-167	-165	---	---	---	---	---	---	---	---	---	---	---	---	-161	-164	-167	-169	-168	-167	-166	-165		---
8	Q	-165	-164	-164	-165	-164	-165	-164	-164	-164	-164	-164	-164	-164	-163	-163	-161	-160	-163	-165	-167	-167	-167	-166	-165		-164
9	Q	-166	-166	-166	-165	-166	-164	-161	-162	-163	-164	-165	-164	-164	-165	-165	-163	-163	-166	-167	-170	-168	-167	-165	-163		-165
10	Q	-164	-165	-164	-164	-163	-163	-163	-165	-161	-160	-162	-163	-161	-162	-163	-162	-161	-163	-166	-165	-164	-159	-158	-158		-162
11	D	-156	-157	-162	-164	-159	-159	-140	-148	-126	-96	-116	-142	-147	-158	-156	-160	-170	-168	-168	-171	-164	-173	-174	-178		-155
12	D	-151	-157	-185	-99	-80	-62	-146	-174	-145	-169	-173	-184	-184	-181	-180	-183	-182	-183	-176	-172	-183	-179	-172	-174		-162
13		-169	-173	-172	-169	-166	-169	-168	-157	-157	-160	-166	-169	-169	-170	-169	-167	-159	-170	-175	-175	-172	-170	-165	-167		-168
14		-167	-170	-168	-169	-156	-160	-155	-151	-157	-164	-166	-169	-172	-172	-167	-162	-159	-164	-166	-168	-166	-167	-169	-168		-165
15		-167	-149	-160	-139	-142	-145	-159	-169	-172	-172	-155	-144	-159	-167	-164	-163	-165	-170	-173	-172	-163	-157	-169	-176		-161
16	D	-179	-164	-168	-170	-158	-134	-129	-129	-100	-95	-53	-73	-108	-133	-166	-176	-182	-180	-180	-181	-176	-178	-180	-179		-149
17		-180	-178	-172	-156	-165	-173	-172	-170	-169	-170	-168	-163	-167	-170	-167	-167	-172	-173	-168	-169	-178	-176	-174	-172		-170
18		-172	-173	-174	-155	-154	-162	-161	-162	-165	-168	-170	-169	-165	-168	-165	-162	-164	-165	-162	-168	-167	-167	-166	-155		-165
19		-159	-169	-173	-166	-168	-169	-169	-169	-162	-161	-154	-161	-155	-158	-156	-154	-163	-164	-162	-164	-163	-159	-164	-155		-162
20		-164	-171	-159	-154	-169	-169	-156	-152	-160	-164	-165	-164	-168	-168	-160	-159	-162	-166	-168	-167	-164	-161	-156	-166		-163
21	Q	-168	-165	-166	-170	-170	-165	-166	-166	-165	-167	-169	-169	-170	-169	-165	-163	-162	-163	-163	-168	-166	-166	-168	-171		-167
22	Q	-170	-167	-164	-169	-171	-169	-168	-168	-167	-163	-161	-164	-164	-164	-163	-161	-163	-164	-161	-165	-168	-168	---	---		-165
23		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---
24		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---
25		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---
26		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---
27		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-170	---	-172	-173	-172	-170	-169	---	---		---
28		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---
29	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---
30		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-155	-165	-168	-167	-166	-170	---		---
31	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-154	-154	-168	-171	-169	---	---	---	---		---
MEAN		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---
MEAN	Q	-167	-165	-165	-167	-167	-165	-164	-165	-164	-164	-164	-165	-164	-165	-164	-162	-162	-164	-164	-167	-167	-166	---	---		-165
MEAN	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---

LIVINGSTON ISLAND MAGNETIC OBSERVATORY — TOTAL INTENSITY

JULY 2003 — 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	24	MEAN
1		396	394	390	393	391	385	393	387	391	389	390	394	393	394	390	389	389	395	400	402	396	---	---	---		392
2		---	---	392	393	396	396	390	396	402	397	397	387	389	390	391	390	391	395	391	393	394	396	396	---		393
3		---	---	---	---	393	391	392	393	394	391	395	398	397	396	397	399	401	402	397	395	404	403	399	387		396
4		373	394	395	397	379	377	378	387	388	390	379	391	390	386	384	381	381	393	403	404	401	399	390	390		389
5		375	389	389	388	393	382	373	380	389	389	388	388	398	397	391	383	370	371	389	395	396	397	394	398		388
6		401	398	398	395	395	398	393	394	391	394	396	394	393	399	396	390	391	391	395	396	395	392	395	391		395
7		395	395	398	395	---	---	---	---	---	---	---	---	---	---	---	---	387	392	397	400	398	397	395	394		---
8	Q	393	393	392	393	393	395	393	394	395	395	394	394	393	392	388	383	384	389	394	396	396	397	395	395		393
9	Q	395	396	395	394	396	393	389	389	392	393	395	394	393	392	390	386	387	394	397	404	403	402	400	397		394
10	Q	398	398	397	395	393	394	395	398	393	393	397	399	397	399	398	395	392	398	404	404	403	396	393	393		397
11	D	385	378	381	381	368	379	357	360	353	348	351	379	373	380	373	379	384	383	384	386	374	379	376	356		373
12	D	329	334	388	311	270	258	346	372	355	382	377	389	390	385	383	389	389	392	384	380	396	390	380	387		365
13		374	379	389	388	383	384	389	385	388	386	389	393	390	391	387	383	370	386	395	397	393	390	379	382		386
14		380	386	382	388	384	385	387	386	383	389	390	396	402	401	393	387	382	389	391	393	391	392	396	390		389
15		387	364	377	354	359	362	375	389	393	395	386	384	385	390	386	382	384	390	397	397	379	357	377	382		380
16	D	398	378	382	390	387	357	340	366	346	353	296	303	348	348	378	387	391	390	390	390	383	370	389	379		368
17		379	379	380	379	384	389	390	391	391	396	392	385	393	394	382	379	386	389	382	385	399	394	387	387		387
18		390	393	402	380	376	386	386	388	390	394	398	398	393	393	387	383	386	388	388	397	395	396	391	363		389
19		359	377	392	386	390	394	393	396	389	404	387	396	390	392	383	378	387	389	386	389	387	376	378	351		385
20		376	380	376	370	386	395	385	380	383	388	390	388	393	392	379	377	384	391	396	396	391	382	362	378		384
21	Q	385	380	379	386	388	389	393	390	389	391	394	394	396	391	385	379	379	382	383	390	386	387	389	394		388
22	Q	393	388	380	391	396	395	395	397	399	398	391	394	392	390	384	381	385	387	383	390	394	395	---	---		391
23		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---
24		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---
25		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---
26		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---
27		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	385	---	393	398	397	393	395	---	---		---
28		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---
29	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---
30		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	375	388	387	385	384	390	---		---
31	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	369	368	390	395	394	---	---	---	---		---
MEAN		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---
MEAN	Q	393	391	389	392	393	393	393	394	393	394	395	395	394	393	389	385	385	390	392	397	396	395	---	---		392
MEAN	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---

LIVINGSTON ISLAND MAGNETIC OBSERVATORY DECLINATION EAST

AUGUST 2003 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	24	MEAN
1	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	435	457	---	---	---	---
4	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	458	468	473	466	---	---	---	---	---	---
5	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	441	452	457	---	---	---	---	---	---	---	---
6		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
7		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
8		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
9		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	432	450	468	483	473	465	462	462	---	---	---
12		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
13		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	451	458	465	468	465	454	416	407	446	---
14		438	418	413	445	---	---	---	---	---	---	---	---	---	---	---	---	---	453	467	478	---	---	---	---	---	---
15		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	467	474	---	---	---	---	---	---
16	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
17		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
18	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
19		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
20		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	459	475	489	---	---	---	---	---	---	---	---
21	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	503	566	557	560	549	511	508	413	---	---
22	D	368	388	465	447	447	439	444	437	440	---	---	---	---	---	531	485	492	497	479	490	500	400	429	---	---	---
23	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	468	474	486	488	483	457	453	449	---	---	---
24		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
25		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
26		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
27	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
28		---	---	---	---	---	---	---	---	---	---	---	---	---	---	424	428	452	477	489	506	488	473	460	470	464	---
29		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	437	455	469	486	503	516	509	469	462	453	---
30		449	446	397	360	368	408	442	449	451	453	443	447	438	427	433	449	475	492	493	482	467	453	453	451	443	
31	Q	443	441	440	431	435	421	419	433	---	---	---	---	430	424	---	458	468	474	484	481	469	457	453	451	---	
MEAN		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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LIVINGSTON ISLAND MAGNETIC OBSERVATORY — HORIZONTAL INTENSITY

AUGUST 2003 — H = 20000 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	24	MEAN
1	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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4	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	192	197	206	204	---	---	---	---	---	---
5	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	204	207	212	---	---	---	---	---	---	---	---
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12		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
13		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	192	196	199	203	206	210	197	202	203	---
14		203	218	199	211	---	---	---	---	---	---	---	---	---	---	---	---	---	190	193	192	---	---	---	---	---	---
15		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	200	200	---	---	---	---	---	---
16	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
17		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
18	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
19		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
20		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	178	177	183	---	---	---	---	---	---	---	---
21	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	161	149	156	170	150	157	186	151	---	---
22	D	172	146	185	182	200	192	193	186	176	---	---	---	---	---	160	171	169	158	173	187	178	159	176	---	---	---
23	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	161	158	166	177	185	191	192	182	---	---	---
24		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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27	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
28		---	---	---	---	---	---	---	---	---	---	---	---	---	---	197	185	176	183	191	198	204	214	212	210	207	---
29		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	191	191	194	197	198	195	177	202	205	208	---
30		203	191	204	213	194	188	202	199	204	201	209	208	210	202	196	187	185	190	194	203	204	204	205	203	200	
31	Q	207	209	209	210	218	215	208	205	---	---	---	---	210	201	---	183	186	193	201	204	205	205	205	208	---	
MEAN		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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LIVINGSTON ISLAND MAGNETIC OBSERVATORY VERTICAL INTENSITY

AUGUST 2003 Z =-29500 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	24	MEAN
1	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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4	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-150	-153	-158	-160	---	---	---	---
5	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-152	-153	-154	---	---	---	---	---	---	---
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11		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-152	-145	-145	-149	-157	-161	-156	-153	---	---	---
12		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
13		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-150	-153	-154	-159	-161	-163	-162	-158	-159	---
14		-159	-154	-151	-151	---	---	---	---	---	---	---	---	---	---	---	---	---	-145	-147	-151	---	---	---	---	---	---
15		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-147	-150	---	---	---	---	---	---
16	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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21	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-146	-131	-146	-164	-172	-183	-191	-186	---
22	D	-179	-167	-175	-176	-161	-112	-130	-158	-144	---	---	---	---	---	---	-138	-156	-164	-158	-169	-175	-173	-176	-179	---	---
23	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-150	-150	-154	-159	-168	-173	-174	-169	---	---
24		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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27	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
28		---	---	---	---	---	---	---	---	---	---	---	---	---	---	-151	-148	-143	-146	-153	-158	-161	-169	-166	-162	-156	---
29		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-139	-141	-143	-147	-150	-153	-154	-169	-169	-165	---
30		-164	-159	-159	-143	-135	-143	-154	-154	-157	-153	-158	-155	-154	-151	-148	-142	-138	-145	-153	-158	-162	-163	-162	-159	-153	
31	Q	-160	-159	-157	-156	-154	-147	-148	-149	---	---	---	---	-150	-148	---	-134	-138	-142	-148	-149	-153	-156	-156	-159	---	
MEAN		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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LIVINGSTON ISLAND MAGNETIC OBSERVATORY TOTAL INTENSITY

AUGUST 2003 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	24	MEAN
1	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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4	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	372	378	387	387	---	---	---	---	---	---
5	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	381	383	387	---	---	---	---	---	---	---	---
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12		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
13		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	372	377	380	386	389	394	385	385	386	---
14		386	390	377	384	---	---	---	---	---	---	---	---	---	---	---	---	---	368	371	373	---	---	---	---	---	---
15		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	374	377	---	---	---	---	---	---
16	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
17		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
18	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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20		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	367	364	367	---	---	---	---	---	---	---	---
21	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	352	333	349	372	367	380	403	380	---	---
22	D	386	361	390	388	386	341	357	376	358	---	---	---	---	---	345	366	371	360	378	391	383	375	388	---	---	---
23	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	355	353	361	371	383	391	392	382	---	---	---
24		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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27	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
28		---	---	---	---	---	---	---	---	---	---	---	---	---	---	376	367	358	364	374	383	389	400	397	393	386	---
29		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	363	365	368	373	376	377	368	394	396	394	---
30		390	380	387	379	362	365	381	380	385	380	388	385	386	379	373	363	359	367	376	385	389	390	390	386	379	
31	Q	389	389	387	388	391	383	380	379	---	---	---	---	383	376	---	354	359	366	376	378	383	385	384	389	---	
MEAN		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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LIVINGSTON ISLAND MAGNETIC OBSERVATORY DECLINATION EAST

SEPTEMBER 2003 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	24	MEAN
1		445	434	411	412	417	435	396	399	436	437	440	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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9		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	458	462	481	506	497	500	452	426	364	---
10		388	434	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11		---	---	---	---	---	---	---	---	---	---	---	---	429	416	411	431	457	470	480	481	461	443	444	442	---	---
12		431	410	427	431	428	424	405	423	437	440	440	---	---	415	417	429	446	467	477	472	459	451	448	449	437	---
13		428	407	389	402	418	445	436	431	453	446	436	424	413	412	422	443	463	477	477	468	453	433	411	438	434	---
14	Q	427	424	430	439	439	435	438	430	427	422	422	413	402	407	426	449	463	473	476	469	456	449	449	423	437	---
15		436	437	434	430	434	436	435	433	431	428	425	420	407	399	409	432	452	469	477	468	459	455	463	483	440	---
16	D	464	414	352	378	335	327	314	338	387	451	439	442	450	459	525	521	486	508	542	527	499	505	490	489	443	---
17	D	488	464	402	403	421	397	324	368	359	443	457	499	540	490	552	498	495	540	529	508	517	418	417	392	455	---
18	D	403	408	390	396	392	423	380	389	423	445	449	499	463	443	452	482	512	511	514	546	513	453	451	396	447	---
19	D	363	420	438	420	405	403	414	426	494	486	432	442	453	471	466	476	502	504	527	501	479	470	460	423	453	---
20		396	410	405	421	401	394	393	437	437	467	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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24	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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27		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
28	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
29	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
30	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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LIVINGSTON ISLAND MAGNETIC OBSERVATORY HORIZONTAL INTENSITY

SEPTEMBER 2003 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	24	MEAN
1		207	207	210	206	215	239	242	208	216	207	208	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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7	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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9		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	189	189	196	189	194	183	167	176	184	---
10		163	181	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11		---	---	---	---	---	---	---	---	---	---	---	---	204	201	193	186	188	186	196	199	200	197	204	204	---
12		196	197	204	211	216	222	209	208	210	215	215	---	---	191	185	180	181	185	197	208	208	210	209	208	203
13		205	199	205	215	206	212	213	211	210	214	214	213	204	194	183	176	179	188	197	203	202	199	201	198	202
14	Q	198	196	203	210	211	215	216	215	214	214	212	208	202	194	184	180	181	187	195	199	205	204	202	202	202
15		209	213	213	218	216	215	214	213	213	213	214	216	213	203	194	185	183	189	199	215	220	222	216	215	209
16	D	212	201	174	190	182	185	188	188	194	207	216	209	202	175	169	177	184	180	189	201	203	199	202	201	193
17	D	207	221	194	185	200	222	200	187	191	183	192	175	169	137	147	157	165	163	152	172	185	170	157	144	178
18	D	167	187	200	182	181	195	181	187	183	176	187	172	184	161	164	151	146	152	167	180	160	150	161	177	173
19	D	183	169	193	208	200	193	208	202	197	229	200	190	166	155	149	155	143	152	167	185	181	186	191	193	183
20		202	185	202	196	206	186	188	193	187	196	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
21		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
22		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
23		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
24	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
25		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
26		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
27		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
28	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
29	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
30	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

LIVINGSTON ISLAND MAGNETIC OBSERVATORY VERTICAL INTENSITY

SEPTEMBER 2003 Z =-29500 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	24	MEAN
1		-157	-158	-159	-157	-158	-154	-148	-131	-138	-141	-148	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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7	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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9		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-131	-136	-142	-139	-146	-154	-151	-157	-159	---
10		-144	-160	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11		---	---	---	---	---	---	---	---	---	---	---	---	-145	-145	-137	-129	-128	-128	-139	-148	-155	-154	-157	-155	---	---
12		-153	-153	-156	-155	-150	-139	-136	-145	-149	-152	-150	---	---	-141	-141	-136	-135	-137	-147	-158	-158	-157	-156	-153	-148	---
13		-153	-151	-149	-150	-145	-142	-143	-147	-143	-145	-150	-152	-148	-143	-136	-134	-137	-143	-149	-155	-156	-156	-155	-151	-147	---
14	Q	-152	-150	-153	-155	-154	-154	-152	-150	-150	-151	-150	-149	-146	-141	-134	-132	-134	-137	-145	-150	-156	-153	-150	-152	-148	---
15		-153	-154	-153	-151	-149	-148	-148	-148	-148	-149	-148	-149	-148	-143	-134	-128	-132	-137	-142	-153	-158	-157	-152	-151	-147	---
16	D	-156	-156	-139	-150	-147	-139	-134	-134	-137	-128	-129	-134	-132	-120	-106	-122	-136	-134	-139	-154	-154	-153	-159	-160	-140	---
17	D	-164	-169	-145	-154	-160	-130	-99	-123	-131	-105	-124	-112	-108	-121	-133	-154	-154	-144	-149	-167	-175	-188	-175	-173	-144	---
18	D	-176	-173	-163	-155	-152	-93	-129	-146	-151	-147	-156	-124	-152	-140	-142	-132	-128	-144	-149	-164	-170	-174	-180	-183	-151	---
19	D	-175	-159	-167	-157	-143	-141	-130	-113	-110	-113	-128	-144	-137	-133	-133	-142	-134	-141	-155	-170	-170	-173	-165	-169	-146	---
20		-164	-157	-152	-152	-131	-132	-139	-142	-133	-132	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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24	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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28	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
29	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
30	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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MEAN	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

LIVINGSTON ISLAND MAGNETIC OBSERVATORY TOTAL INTENSITY

SEPTEMBER 2003 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	24	MEAN
1		387	388	390	386	393	402	399	365	376	374	380	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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7	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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9		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	355	359	368	362	370	371	359	369	376	---	---
10		351	374	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11		---	---	---	---	---	---	---	---	---	---	---	---	375	373	362	352	352	351	366	374	381	378	385	384	---	---
12		377	378	384	387	386	380	371	378	382	387	385	---	---	365	361	354	354	358	373	388	388	389	387	384	377	---
13		382	377	379	385	376	377	378	381	377	381	385	386	378	367	356	351	355	364	374	383	383	381	381	377	376	---
14	Q	378	374	381	387	386	389	388	385	385	385	384	380	375	366	355	350	353	359	370	376	385	382	379	379	376	---
15		385	387	387	388	385	384	383	383	383	383	383	385	383	373	360	350	352	359	370	388	395	395	387	386	380	---
16	D	389	382	354	371	364	359	357	357	363	363	369	369	363	338	323	341	356	352	362	380	382	379	385	385	364	---
17	D	393	405	370	372	385	373	335	348	356	330	351	331	325	317	333	356	361	351	349	375	389	392	373	364	360	---
18	D	380	389	388	371	368	328	349	366	368	361	374	340	370	347	350	334	328	345	358	377	371	368	380	392	363	---
19	D	388	366	387	387	371	365	365	348	343	363	359	366	347	338	334	345	331	343	363	385	383	388	384	389	364	---
20		390	374	380	377	365	354	361	367	356	360	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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24	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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28	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
29	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
30	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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MEAN	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

LIVINGSTON ISLAND MAGNETIC OBSERVATORY DECLINATION EAST

OCTOBER 2003 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	24	MEAN
1		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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4	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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10	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
12	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
13		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
14	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
15		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
16		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
17		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
18		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
19		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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21	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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23	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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LIVINGSTON ISLAND MAGNETIC OBSERVATORY HORIZONTAL INTENSITY

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LIVINGSTON ISLAND MAGNETIC OBSERVATORY TOTAL INTENSITY

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LIVINGSTON ISLAND MAGNETIC OBSERVATORY DECLINATION EAST

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7		461	427	428	434	426	427	422	414	411	409	390	389	394	406	419	438	457	483	498	495	483	466	455	449	437	
8	Q	448	443	437	432	426	420	415	406	389	385	402	403	401	405	411	455	480	495	515	512	499	480	469	460	441	
9		452	444	415	397	390	400	403	394	426	409	394	396	393	444	501	467	481	512	538	504	500	476	450	452	443	
10		446	413	423	418	408	408	390	377	388	403	402	402	427	435	451	474	481	497	558	561	553	534	504	422	449	
11	D	448	410	451	445	434	382	378	370	428	423	422	416	518	528	507	530	564	541	570	525	496	464	468	420	464	
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14		424	431	432	427	384	376	386	367	378	383	386	403	427	462	459	468	492	503	534	549	489	484	435	445	438	
15	D	453	446	443	421	401	397	371	287	352	355	366	396	429	444	471	494	521	526	522	540	494	463	440	386	434	
16	D	429	433	432	408	390	397	405	419	421	390	398	423	442	445	469	494	498	544	553	521	499	450	437	438	447	
17		411	383	383	408	390	367	350	369	362	378	407	444	445	454	493	530	542	559	544	513	503	455	416	443	440	
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19		433	442	438	436	427	415	424	418	395	392	388	407	418	432	443	468	492	514	506	484	463	443	434	438	439	
20	D	441	435	433	416	371	359	354	355	326	334	321	299	409	543	559	628	654	551	241	345	581	656	628	688	455	
21		631	576	538	494	474	439	480	460	448	505	467	471	487	520	533	550	570	554	539	535	518	497	485	473	510	
22		459	445	450	445	458	461	444	436	423	406	406	411	425	446	470	525	566	564	578	569	545	489	491	444	473	
23		474	481	475	451	450	426	428	399	404	418	431	430	431	466	494	511	527	537	534	519	510	473	466	449	466	
24		---	449	441	442	439	438	433	415	404	392	391	395	402	415	449	484	500	518	511	489	466	---	441	442	444	
25		438	424	436	434	437	423	412	406	396	390	399	393	422	433	450	485	504	516	496	490	473	---	444	452	442	
26		446	434	429	431	431	433	431	421	418	403	403	405	407	442	442	---	---	510	507	487	466	446	432	423	440	
27	Q	440	440	439	438	439	439	427	407	383	379	382	389	408	426	448	472	498	511	506	494	473	452	444	441	441	
28	Q	444	440	434	430	435	425	415	402	383	381	375	386	410	441	459	462	479	495	481	460	440	431	429	439	432	
29	Q	433	428	429	426	431	435	428	421	391	383	384	388	395	422	434	454	466	478	493	480	469	462	---	446	434	
30		444	439	441	438	426	415	398	380	360	364	373	373	379	408	431	457	490	501	509	500	493	478	457	445	433	
MEAN		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	425	439	461	482	497	502	492	477	461	447	447	---	
MEAN	D	436	428	436	425	403	389	385	370	395	396	386	388	456	487	500	528	554	544	484	498	519	511	478	469	453	

LIVINGSTON ISLAND MAGNETIC OBSERVATORY HORIZONTAL INTENSITY

NOVEMBER 2003 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	24	MEAN
1		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
5	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	165	153	144	147	163	176	197	203	193	202	202	---
6		195	201	203	206	210	210	210	204	199	199	197	191	180	167	161	163	161	175	182	203	213	216	210	207	194
7		207	206	212	211	204	206	205	203	201	200	195	191	185	177	171	166	166	175	185	191	198	204	209	209	195
8	Q	206	209	214	217	219	218	218	217	214	210	210	210	206	196	187	171	174	196	215	206	212	220	215	215	207
9		212	216	228	217	214	207	208	204	207	216	218	202	193	145	142	166	178	180	179	183	183	198	196	204	196
10		209	214	210	205	206	209	203	202	200	203	200	190	180	177	156	164	178	198	202	195	209	216	209	196	197
11	D	203	220	226	216	198	197	183	186	189	209	194	160	161	142	148	139	144	153	145	155	175	190	182	201	180
12		198	210	188	192	194	200	199	198	187	177	185	187	174	155	147	141	127	161	188	186	193	193	206	203	183
13	D	201	203	201	208	212	203	203	193	202	203	194	183	137	157	134	136	143	146	173	176	176	180	191	198	181
14		202	208	195	203	194	184	185	185	187	184	175	155	145	136	143	143	148	156	186	186	195	193	200	198	179
15	D	196	202	211	213	210	199	216	211	189	195	174	175	157	145	136	141	140	151	165	177	178	196	192	208	182
16	D	197	193	207	208	204	192	192	195	210	204	186	171	162	159	148	138	169	186	164	188	195	186	199	209	186
17		211	199	207	198	198	189	196	200	196	182	171	166	169	146	123	141	154	177	181	192	192	201	199	202	183
18		203	212	216	204	203	201	198	196	197	195	187	181	169	160	167	169	172	175	191	191	196	199	209	216	192
19		211	208	206	208	207	203	196	199	199	196	192	186	186	174	165	160	165	171	176	196	201	207	208	211	193
20	D	215	215	215	223	217	201	197	210	215	215	185	173	95	51	51	-27	-44	3	235	300	281	257	285	77	169
21		80	87	103	143	133	122	138	127	127	131	118	108	97	93	99	110	112	127	149	161	163	171	174	181	127
22		192	185	183	182	191	193	193	190	180	175	173	167	159	153	149	135	152	170	189	199	188	205	180	161	177
23		172	186	195	188	192	193	191	182	176	162	162	167	163	149	139	149	160	181	198	203	199	181	190	188	178
24		---	198	201	205	209	211	214	208	204	202	191	175	163	154	145	150	169	182	194	206	201	---	187	197	190
25		206	201	205	205	214	207	199	199	194	186	186	177	162	158	159	156	161	179	179	195	199	---	204	200	189
26		203	207	208	212	212	216	209	199	195	196	198	195	181	160	155	---	---	175	189	191	198	205	210	210	195
27	Q	209	212	213	212	214	211	210	207	203	200	199	191	182	168	163	169	175	181	192	207	201	205	208	211	198
28	Q	215	216	219	214	212	213	212	211	212	211	203	193	179	166	170	169	176	178	186	200	204	207	211	213	200
29	Q	222	223	214	208	211	215	213	207	199	196	199	196	189	176	167	175	178	192	195	202	214	221	---	215	201
30		217	226	221	230	238	244	245	239	229	220	212	202	189	180	178	180	191	186	197	198	195	191	187	188	208
MEAN		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	174	168	166	170	182	193	202	207	209	209	211	---
MEAN	D	203	207	212	214	208	198	198	199	201	205	187	172	142	131	123	105	110	128	176	199	201	201	210	179	180

LIVINGSTON ISLAND MAGNETIC OBSERVATORY VERTICAL INTENSITY

NOVEMBER 2003 Z =-29500 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	24	MEAN
1		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
5	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-129	-123	-124	-128	-130	-132	-147	-161	-156	-172	-169	---
6		-164	-159	-158	-155	-153	-150	-153	-151	-145	-144	-142	-140	-135	-129	-126	-126	-125	-133	-138	-154	-194	-188	-183	-166	-151
7		-159	-156	-155	-151	-151	-152	-153	-151	-150	-147	-145	-144	-138	-132	-125	-119	-117	-121	-127	-137	-147	-152	-157	-156	-143
8	Q	-149	-149	-152	-152	-152	-151	-150	-149	-146	-139	-131	-128	-123	-116	-108	-95	-103	-120	-133	-134	-145	-153	-150	-150	-137
9		-148	-149	-151	-140	-139	-142	-144	-138	-122	-123	-133	-123	-119	-87	-91	-126	-125	-121	-131	-155	-159	-172	-171	-164	-136
10		-161	-152	-147	-144	-143	-140	-144	-150	-143	-124	-121	-117	-116	-118	-101	-117	-126	-129	-128	-144	-159	-172	-184	-187	-140
11	D	-178	-164	-162	-162	-110	-111	-132	-141	-100	-93	-105	-103	-109	-106	-125	-119	-127	-147	-153	-162	-194	-196	-186	-187	-140
12		-180	-162	-148	-154	-156	-139	-135	-137	-129	-129	-127	-137	-132	-119	-114	-111	-101	-129	-151	-170	-171	-162	-170	-168	-143
13	D	-167	-161	-153	-148	-144	-138	-144	-132	-125	-99	-126	-136	-93	-122	-114	-115	-118	-123	-159	-173	-180	-189	-207	-203	-145
14		-181	-157	-158	-149	-133	-132	-119	-128	-140	-134	-133	-122	-119	-114	-127	-126	-127	-129	-145	-156	-180	-175	-185	-169	-143
15	D	-164	-163	-158	-148	-143	-144	-121	-91	-78	-104	-115	-126	-119	-117	-118	-126	-118	-132	-141	-153	-170	-184	-181	-188	-138
16	D	-172	-163	-159	-132	-132	-143	-145	-116	-96	-95	-111	-116	-116	-119	-113	-105	-129	-131	-131	-157	-163	-176	-184	-174	-137
17		-170	-164	-140	-134	-137	-117	-130	-127	-121	-116	-121	-119	-130	-116	-97	-108	-126	-132	-149	-157	-161	-173	-179	-167	-137
18		-163	-163	-146	-143	-144	-145	-143	-139	-141	-137	-131	-128	-123	-116	-127	-129	-128	-131	-151	-156	-160	-164	-165	-165	-143
19		-158	-152	-149	-149	-146	-141	-132	-132	-140	-141	-136	-125	-125	-125	-121	-113	-114	-124	-129	-148	-150	-155	-153	-149	-138
20	D	-151	-149	-148	-149	-141	-134	-131	-124	-101	-73	-34	-61	-39	-10	-47	-41	-61	-264	-463	-464	-436	-512	-511	-365	-192
21		-281	-222	-202	-210	-179	-157	-136	-144	-147	-148	-154	-159	-151	-145	-146	-148	-152	-162	-179	-185	-185	-190	-188	-181	-173
22		-190	-188	-170	-164	-171	-170	-167	-166	-159	-154	-147	-144	-140	-132	-122	-111	-117	-152	-170	-191	-186	-221	-203	-194	-164
23		-174	-174	-178	-168	-158	-136	-142	-141	-149	-143	-141	-146	-140	-134	-127	-130	-135	-148	-156	-165	-176	-169	-179	-168	-153
24		---	-168	-168	-164	-163	-160	-162	-158	-149	-143	-132	-124	-120	-116	-109	-111	-122	-131	-144	-160	-163	---	-167	-162	-147
25		-171	-161	-161	-159	-158	-150	-151	-154	-151	-140	-138	-133	-120	-115	-115	-112	-115	-131	-135	-149	-157	---	-163	-160	-144
26		-156	-161	-159	-159	-155	-154	-150	-145	-139	-137	-137	-130	-119	-107	-107	---	---	-126	-138	-149	-157	-161	-166	-163	-143
27	Q	-153	-152	-151	-149	-148	-146	-147	-149	-146	-140	-135	-126	-115	-110	-111	-117	-124	-134	-144	-158	-157	-156	-156	-155	-141
28	Q	-153	-150	-152	-148	-147	-150	-150	-148	-146	-140	-133	-124	-115	-108	-115	-116	-120	-124	-138	-148	-154	-153	-154	-152	-139
29	Q	-157	-157	-151	-144	-146	-148	-146	-143	-140	-129	-127	-124	-116	-109	-108	-111	-113	-122	-131	-139	-145	-158	---	-150	-136
30		-149	-157	-149	-151	-156	-157	-156	-150	-142	-131	-121	-118	-114	-107	-106	-105	-113	-115	-135	-142	-154	-155	-163	-158	-138
MEAN		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	-114	-113	-113	-117	-126	-136	-145	-152	-155	-156	-155	---
MEAN	D	-166	-160	-156	-148	-134	-134	-134	-121	-100	-93	-98	-108	-95	-95	-103	-101	-111	-159	-209	-222	-229	-251	-254	-223	-150

LIVINGSTON ISLAND MAGNETIC OBSERVATORY TOTAL INTENSITY

NOVEMBER 2003 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	24	MEAN
1		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
5	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	340	328	324	329	340	349	373	387	378	396	393	---
6		385	385	385	385	385	383	385	380	372	371	369	363	353	341	335	336	335	349	357	382	421	418	410	394	374	
7		388	386	388	384	380	382	382	379	377	375	370	367	359	350	340	332	330	339	350	361	374	381	388	387	369	
8	Q	379	381	386	389	389	388	387	386	381	373	367	364	358	346	335	315	323	350	372	367	379	391	386	385	370	
9		382	385	394	378	376	374	376	369	358	363	373	355	348	294	295	338	344	342	349	371	375	394	392	391	363	
10		391	386	381	375	375	374	373	378	371	357	353	344	338	337	311	330	345	358	360	369	389	405	410	406	367	
11	D	402	400	402	395	343	343	352	362	329	335	336	315	321	308	327	317	326	348	349	361	399	409	396	408	358	
12		401	393	368	376	379	368	364	365	352	346	349	358	348	326	317	312	296	337	371	386	391	383	397	393	362	
13	D	392	388	380	380	378	369	373	358	358	336	354	355	295	330	310	312	318	324	369	383	389	398	419	420	362	
14		404	387	381	378	359	353	342	351	362	355	348	328	320	311	325	325	329	334	365	374	398	393	406	392	359	
15	D	387	389	390	383	377	372	362	334	311	336	333	343	327	318	314	323	316	335	350	367	381	403	398	412	357	
16	D	394	384	388	367	364	366	368	346	338	334	337	332	327	328	317	305	342	353	341	376	385	390	404	402	358	
17		400	388	372	363	365	344	358	358	351	339	337	332	343	318	290	310	331	349	366	379	381	396	400	392	357	
18		389	395	383	374	373	374	370	365	368	363	354	348	337	326	339	342	343	347	373	376	383	388	395	398	367	
19		390	383	379	381	378	371	360	361	368	367	361	348	348	341	333	324	327	339	346	373	378	385	384	382	363	
20	D	386	385	384	389	379	365	360	361	345	322	273	288	227	178	207	159	166	361	656	693	659	708	723	486	394	
21		418	373	365	395	363	339	330	331	333	337	334	332	320	313	317	325	329	345	372	384	385	393	394	392	355	
22		406	400	383	378	389	389	387	384	373	366	359	353	346	336	325	308	323	362	388	410	400	439	409	391	375	
23		381	389	397	385	379	361	366	359	362	350	348	355	348	335	324	332	342	365	381	391	398	382	396	386	367	
24		---	391	392	391	392	392	395	388	379	372	357	342	331	323	312	317	336	351	368	388	388	---	384	385	369	
25		397	387	389	387	391	381	377	380	374	361	359	350	330	324	325	321	326	349	353	373	382	---	390	385	365	
26		384	390	389	391	388	389	382	372	365	364	365	357	340	319	316	---	---	343	361	371	382	388	396	393	369	
27	Q	385	385	385	383	383	380	380	380	375	369	364	352	338	325	324	332	341	353	368	387	383	385	386	387	368	
28	Q	388	386	390	383	381	384	384	382	380	375	365	352	337	323	331	332	339	344	359	375	382	383	386	386	368	
29	Q	395	396	385	377	380	384	381	375	368	358	358	353	343	329	324	331	334	349	358	369	380	395	---	386	366	
30		385	398	388	394	403	407	407	399	387	372	360	352	341	330	328	329	341	341	363	369	378	376	380	377	371	
MEAN		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	333	328	327	333	347	361	374	383	387	387	387	---	
MEAN	D	392	389	389	383	368	363	363	352	336	333	327	327	299	293	295	283	294	344	413	436	442	462	468	426	366	

LIVINGSTON ISLAND MAGNETIC OBSERVATORY DECLINATION EAST

DECEMBER 2003 D = 14 DEGREES PLUS TABULAR QUANTITIES (UNITS 0.1 MINUTES)

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	24	MEAN
1		445	445	445	421	417	425	418	413	398	392	391	396	412	426	433	459	473	475	462	447	440	439	440	438	431
2		435	436	439	436	432	414	393	381	365	365	372	383	394	407	425	451	478	487	479	464	454	444	443	443	426
3	Q	441	441	438	434	432	428	412	397	387	387	386	400	413	425	435	458	476	479	470	469	469	469	467	464	437
4		456	445	437	434	427	422	417	396	396	403	414	416	407	408	422	441	454	471	479	470	462	449	443	453	434
5	D	453	440	428	434	420	390	352	324	330	353	397	427	456	460	492	564	570	568	570	542	499	487	405	404	449
6		419	416	360	382	385	381	399	396	398	397	397	417	423	452	466	492	518	523	533	496	483	471	446	423	436
7		419	424	426	421	417	412	397	385	388	383	369	370	396	412	415	465	495	525	547	536	506	483	474	450	438
8	D	441	436	433	402	369	367	357	357	360	355	373	371	433	449	465	493	549	554	524	544	474	486	414	446	435
9	D	442	442	439	431	396	391	382	371	372	390	409	411	437	450	486	504	501	521	537	503	499	---	438	447	444
10	D	433	400	396	410	418	407	408	379	368	383	434	436	446	444	460	484	535	551	547	533	522	444	457	443	447
11	D	393	392	407	418	424	406	345	371	393	424	397	404	427	460	471	498	526	511	517	519	481	460	424	406	436
12		397	413	416	410	424	404	379	357	357	380	397	410	432	458	472	490	506	529	507	497	497	474	459	448	438
13		426	428	425	411	420	396	382	384	383	399	409	438	458	447	454	491	499	511	514	508	470	444	421	428	439
14		385	406	417	405	392	401	406	396	390	391	404	413	403	444	443	475	522	536	547	517	493	481	466	406	439
15		406	421	391	394	405	376	397	388	402	409	427	437	454	450	461	463	494	509	495	484	468	434	442	443	436
16		425	431	421	421	421	415	410	397	384	379	380	386	397	405	414	443	480	492	491	486	457	451	444	441	428
17		431	441	439	421	407	408	406	397	387	380	379	392	402	418	433	451	467	490	490	481	469	451	440	434	430
18	Q	429	429	428	426	424	412	397	389	372	359	357	368	400	423	436	456	484	504	492	465	456	449	442	441	426
19	Q	442	438	431	424	411	402	392	382	378	376	370	374	384	399	423	445	476	499	493	479	461	444	435	434	425
20		437	434	430	424	415	402	388	382	363	342	340	364	389	408	441	466	485	519	491	501	481	487	484	446	430
21		437	416	396	423	420	431	417	411	423	386	386	390	419	452	470	503	531	526	502	481	469	426	439	445	442
22		434	428	426	431	422	408	401	382	392	381	376	398	417	431	468	499	534	546	522	508	481	446	428	417	441
23		428	440	440	440	433	422	415	398	387	383	381	394	405	428	455	496	507	512	495	474	447	437	427	425	436
24		432	438	436	434	436	427	415	395	378	366	362	383	404	448	477	499	520	522	488	470	454	446	439	441	438
25	Q	439	434	432	430	425	418	403	390	369	360	360	374	398	402	443	485	491	486	476	470	462	454	445	442	429
26		441	432	432	424	419	398	382	371	371	371	368	393	412	414	425	449	485	491	478	463	451	441	442	447	425
27		443	440	428	409	396	401	395	382	373	373	372	398	403	418	446	486	504	509	496	475	461	467	459	460	433
28		441	459	445	443	451	446	413	403	393	408	433	435	418	426	446	471	497	509	509	488	467	446	443	434	447
29	Q	437	432	431	427	426	424	417	409	393	397	397	404	402	406	431	482	518	508	480	473	463	452	448	448	438
30		447	442	437	430	429	419	408	394	380	376	378	384	383	382	415	455	492	517	525	510	472	466	460	448	435
31		439	438	428	430	427	412	396	388	391	398	398	388	406	406	433	---	---	581	584	557	509	458	459	452	448
MEAN		431	431	425	422	417	409	397	386	381	382	387	398	414	428	447	477	503	515	508	494	473	456	444	439	436
MEAN	Q	438	435	432	428	424	417	404	393	380	376	374	384	400	411	433	465	489	495	482	471	462	454	447	446	431
MEAN	D	432	422	421	419	405	392	369	360	365	381	402	410	440	453	475	509	536	541	539	528	495	467	428	429	442

LIVINGSTON ISLAND MAGNETIC OBSERVATORY HORIZONTAL INTENSITY

DECEMBER 2003 H = 20000 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	24	MEAN
1		195	195	208	209	206	214	219	217	203	193	190	187	181	171	169	169	179	195	195	199	201	200	213	209	197	
2		201	209	215	216	215	216	219	209	203	201	198	193	184	178	177	181	187	198	201	200	199	202	203	212	201	
3	Q	216	217	217	221	222	222	216	211	208	203	196	191	183	175	179	190	205	216	207	203	199	200	202	206	204	
4		211	211	218	222	220	220	220	215	210	209	212	207	200	195	188	187	196	209	205	217	213	210	224	217	210	
5	D	212	225	234	236	230	213	201	188	176	171	172	170	171	169	144	146	157	170	203	178	191	196	195	199	190	
6		197	204	202	188	178	175	182	181	180	185	173	170	172	164	165	161	168	174	182	190	201	207	200	205	183	
7		199	198	198	192	191	193	192	189	184	184	178	164	156	159	169	165	181	206	207	175	188	201	204	196	186	
8	D	194	205	213	218	218	201	198	190	190	189	200	193	164	176	166	163	164	167	191	206	211	196	207	200	192	
9	D	190	185	189	190	193	183	188	187	190	189	193	185	169	163	138	151	168	177	177	191	206	---	202	200	183	
10	D	206	231	197	191	200	200	200	197	200	187	198	186	176	167	158	149	144	163	185	191	199	205	190	193	188	
11	D	217	211	195	199	206	201	193	194	184	181	183	171	158	155	160	166	162	177	196	204	193	212	209	210	189	
12		206	217	213	208	212	207	205	194	200	193	189	182	169	164	157	162	176	187	195	213	216	204	212	220	196	
13		231	211	207	210	205	200	192	189	186	189	196	185	178	172	151	143	158	177	183	192	195	206	204	206	190	
14		216	212	207	205	202	199	201	193	191	190	192	193	180	169	172	173	160	174	191	201	210	206	211	203	194	
15		205	201	191	204	200	193	191	187	186	184	193	185	177	170	167	167	183	181	196	196	194	197	199	201	190	
16		208	212	206	205	209	206	203	201	195	198	192	182	180	180	182	179	184	187	195	202	212	218	216	206	198	
17		213	210	212	216	209	209	208	204	197	194	189	183	176	178	182	189	202	207	209	212	210	214	209	206	202	
18	Q	209	209	211	213	215	215	209	207	202	196	192	182	172	173	182	188	199	212	214	214	211	214	213	212	203	
19	Q	214	215	215	215	213	213	212	207	206	204	201	196	191	190	191	189	194	207	214	216	210	211	211	212	206	
20		215	223	232	241	237	243	251	255	249	246	227	221	211	210	200	190	216	217	212	208	204	207	218	185	222	
21		217	218	219	221	221	226	219	216	208	206	202	186	176	173	188	190	188	203	202	205	194	209	209	204	204	
22		212	220	216	216	220	219	209	207	198	186	178	173	170	175	168	171	195	187	208	203	219	209	213	209	199	
23		215	211	214	214	213	210	208	206	204	201	198	194	188	188	195	193	211	218	208	211	212	208	204	202	205	
24		206	211	214	215	215	215	211	209	205	201	192	181	176	180	194	210	214	210	205	206	206	203	194	194	203	
25	Q	201	214	215	214	214	214	211	207	205	200	190	177	174	179	181	194	205	212	210	201	197	200	208	208	201	
26		217	216	218	217	220	212	217	216	212	208	198	182	169	174	183	197	216	221	228	222	213	214	225	205	208	
27		211	219	225	224	213	213	217	213	207	203	206	202	195	186	181	181	198	208	212	210	229	217	223	197	208	
28		190	204	210	214	221	215	213	207	197	191	192	185	173	163	166	179	193	214	192	199	188	204	204	210	197	
29	Q	215	216	218	220	223	225	225	220	212	206	203	200	194	181	170	168	171	185	200	206	204	200	201	204	203	
30		206	207	205	203	205	204	203	201	200	201	199	195	190	187	177	180	186	201	199	195	183	200	207	216	198	
31		215	221	224	225	226	225	225	217	216	217	221	219	213	198	183	---	---	171	201	201	202	220	210	188	209	
MEAN		208	212	212	212	212	210	208	204	200	197	195	188	180	176	174	176	185	194	201	202	204	206	208	204	199	
MEAN	Q	211	214	215	216	217	218	215	211	207	202	196	189	183	180	181	186	195	206	209	208	204	205	207	208	203	
MEAN	D	204	212	205	207	209	200	196	191	188	183	189	181	168	166	153	155	159	170	191	194	200	201	201	200	188	

LIVINGSTON ISLAND MAGNETIC OBSERVATORY VERTICAL INTENSITY

DECEMBER 2003 Z =-29500 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	24	MEAN
1		-159	-153	-156	-153	-148	-150	-154	-152	-143	-134	-134	-129	-124	-116	-115	-116	-118	-129	-139	-143	-146	-145	-153	-157	-140
2		-147	-151	-150	-151	-147	-145	-142	-139	-140	-136	-129	-124	-118	-117	-116	-116	-118	-122	-132	-136	-138	-142	-139	-146	-135
3	Q	-146	-148	-146	-148	-147	-146	-145	-141	-137	-132	-126	-120	-114	-110	-112	-110	-115	-121	-122	-127	-131	-135	-138	-140	-132
4		-147	-149	-152	-151	-148	-147	-144	-141	-131	-124	-121	-120	-120	-115	-110	-111	-111	-119	-124	-134	-134	-133	-148	-156	-133
5	D	-144	-152	-161	-150	-133	-102	-94	-108	-113	-104	-104	-95	-103	-111	-92	-89	-118	-130	-147	-146	-157	-174	-189	-188	-129
6		-177	-175	-166	-139	-133	-142	-147	-138	-130	-131	-124	-124	-126	-114	-109	-102	-103	-112	-126	-137	-145	-156	-153	-161	-136
7		-159	-153	-153	-148	-146	-146	-144	-142	-136	-136	-133	-121	-111	-112	-106	-94	-109	-121	-128	-126	-139	-155	-160	-160	-135
8	D	-157	-159	-158	-157	-145	-133	-138	-133	-123	-118	-109	-109	-91	-109	-106	-102	-101	-114	-141	-158	-179	-170	-187	-167	-136
9	D	-158	-149	-147	-144	-143	-138	-135	-136	-134	-128	-132	-124	-113	-108	-96	-112	-128	-135	-144	-154	-172	---	-179	-161	-139
10	D	-164	-157	-134	-139	-149	-149	-137	-127	-128	-120	-112	-106	-111	-112	-107	-98	-94	-110	-139	-142	-154	-176	-170	-166	-133
11	D	-175	-151	-151	-150	-137	-126	-126	-129	-126	-109	-127	-125	-117	-112	-114	-116	-115	-123	-132	-143	-146	-167	-174	-167	-136
12		-167	-155	-150	-144	-139	-133	-130	-128	-131	-127	-123	-117	-108	-103	-103	-100	-105	-119	-134	-146	-152	-152	-159	-169	-133
13		-157	-143	-148	-143	-137	-138	-134	-131	-127	-129	-125	-120	-121	-121	-104	-100	-120	-129	-140	-151	-155	-165	-169	-168	-136
14		-164	-159	-153	-147	-142	-140	-145	-136	-134	-131	-123	-124	-119	-111	-115	-107	-97	-114	-129	-151	-158	-154	-164	-164	-137
15		-162	-153	-142	-142	-146	-141	-135	-135	-125	-117	-117	-118	-116	-121	-118	-122	-120	-120	-133	-140	-149	-152	-150	-151	-134
16		-153	-154	-147	-143	-144	-144	-139	-134	-129	-130	-127	-123	-118	-119	-118	-111	-105	-111	-123	-135	-137	-141	-144	-140	-132
17		-144	-140	-140	-143	-136	-138	-136	-135	-130	-127	-123	-117	-114	-112	-112	-115	-116	-118	-127	-137	-141	-144	-139	-136	-130
18	Q	-140	-139	-141	-141	-140	-134	-133	-137	-135	-129	-122	-110	-104	-106	-111	-105	-100	-114	-129	-137	-136	-135	-135	-133	-127
19	Q	-135	-139	-140	-142	-142	-142	-140	-133	-126	-125	-124	-119	-109	-105	-102	-100	-101	-108	-115	-123	-125	-131	-132	-134	-125
20		-135	-137	-140	-143	-138	-140	-145	-142	-136	-129	-114	-98	-95	-98	-88	-84	-88	-100	-110	-121	-128	-142	-163	-147	-123
21		-164	-166	-156	-146	-145	-141	-135	-136	-123	-116	-117	-113	-106	-100	-102	-104	-110	-131	-149	-153	-152	-153	-147	-142	-134
22		-149	-151	-149	-148	-148	-144	-139	-140	-128	-117	-112	-109	-107	-107	-102	-103	-115	-119	-139	-143	-151	-153	-154	-146	-132
23		-146	-139	-141	-141	-138	-137	-136	-135	-130	-121	-115	-103	-97	-98	-98	-101	-108	-118	-123	-139	-143	-143	-145	-140	-127
24		-135	-136	-138	-138	-137	-136	-134	-134	-129	-118	-109	-99	-95	-94	-95	-97	-101	-105	-121	-127	-137	-145	-143	-140	-123
25	Q	-137	-145	-144	-142	-140	-139	-137	-135	-134	-122	-113	-103	-95	-90	-84	-91	-99	-104	-115	-117	-118	-123	-134	-135	-121
26		-143	-143	-143	-143	-144	-138	-144	-143	-132	-124	-117	-109	-105	-110	-112	-110	-113	-119	-127	-128	-133	-133	-146	-132	-129
27		-132	-139	-144	-139	-128	-134	-141	-136	-128	-121	-113	-99	-97	-100	-97	-94	-96	-107	-119	-127	-145	-150	-160	-161	-125
28		-150	-147	-148	-146	-143	-132	-134	-134	-128	-121	-114	-110	-115	-109	-103	-106	-111	-123	-125	-139	-137	-147	-146	-147	-130
29	Q	-148	-142	-140	-138	-138	-137	-137	-134	-125	-119	-114	-111	-110	-104	-97	-88	-93	-113	-125	-132	-136	-136	-137	-139	-125
30		-140	-141	-139	-135	-134	-132	-130	-126	-125	-126	-122	-117	-112	-108	-99	-96	-98	-112	-119	-124	-123	-136	-144	-151	-125
31		-148	-148	-146	-140	-136	-134	-135	-131	-126	-120	-109	-101	-101	-102	-94	---	---	-96	-122	-137	-139	-161	-167	-143	-127
MEAN		-151	-149	-147	-144	-141	-138	-137	-135	-130	-124	-120	-113	-109	-108	-104	-103	-107	-117	-129	-137	-143	-149	-154	-151	-131
MEAN	Q	-141	-143	-143	-142	-141	-140	-138	-136	-131	-126	-120	-112	-106	-103	-101	-99	-102	-112	-121	-127	-129	-132	-135	-136	-126
MEAN	D	-159	-154	-150	-148	-142	-130	-126	-126	-125	-116	-117	-112	-107	-111	-103	-103	-111	-122	-141	-149	-161	-172	-180	-170	-135

LIVINGSTON ISLAND MAGNETIC OBSERVATORY TOTAL INTENSITY

DECEMBER 2003 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	24	MEAN
1		381	377	387	385	379	385	391	388	373	360	358	353	345	333	331	331	339	357	365	371	374	373	386	388	367
2		375	383	385	387	383	382	381	373	370	366	358	351	342	338	335	338	343	352	363	365	367	372	370	381	365
3	Q	383	385	384	387	387	386	382	376	371	364	355	347	338	330	333	338	351	362	358	360	361	365	368	372	364
4		381	383	389	390	387	385	384	379	367	360	360	357	352	345	337	337	342	356	359	373	372	369	389	391	369
5	D	379	393	406	398	380	344	331	335	332	323	323	314	322	327	297	296	326	344	376	361	378	394	406	407	354
6		398	400	392	361	351	356	364	357	349	352	340	339	341	327	323	316	320	331	347	360	374	386	379	389	356
7		384	379	379	371	368	370	368	364	356	356	351	333	319	322	324	311	333	357	363	343	361	382	388	383	357
8	D	379	388	391	393	383	364	366	357	349	344	343	339	308	330	322	316	316	328	365	387	408	392	411	391	361
9	D	378	367	368	366	367	358	358	358	358	352	358	347	329	321	297	318	341	352	359	375	398	---	402	386	358
10	D	392	400	362	363	376	376	366	356	359	345	344	333	331	328	318	306	299	323	359	365	380	401	388	386	357
11	D	407	384	375	376	370	358	354	356	348	332	348	340	326	321	325	330	326	341	360	374	370	398	402	396	359
12		394	391	385	376	375	367	363	355	361	355	349	340	325	318	314	314	326	344	361	381	388	381	391	404	361
13		400	378	379	377	369	367	359	355	350	354	354	344	341	337	311	303	328	346	359	373	378	393	395	395	360
14		398	391	383	377	371	368	373	362	359	356	350	352	340	327	332	327	311	333	355	378	389	383	395	390	363
15		390	380	366	372	374	366	359	358	348	341	346	342	336	336	332	335	343	342	361	366	373	377	377	378	358
16		384	387	378	375	377	376	369	365	357	359	353	345	340	340	340	333	331	337	352	365	373	380	381	372	361
17		379	375	376	380	371	372	371	367	359	355	349	340	334	333	336	342	350	355	363	374	375	380	373	369	362
18	Q	374	373	376	377	378	372	368	371	365	358	349	334	323	326	335	333	335	354	368	374	372	373	372	370	360
19	Q	373	376	378	379	378	377	375	367	361	358	356	349	338	335	333	329	333	346	357	364	362	367	369	371	360
20		374	379	387	394	388	393	402	402	394	386	363	346	338	340	326	317	335	345	351	357	361	374	398	366	367
21		398	401	392	386	385	384	375	374	360	352	351	338	327	321	331	333	338	363	377	382	376	384	380	372	366
22		383	389	385	384	386	382	374	373	358	341	333	328	324	328	320	322	345	344	373	373	388	385	388	378	362
23		382	374	378	377	375	371	370	368	363	354	348	335	327	327	332	333	349	361	360	374	378	376	376	370	361
24		368	372	375	376	374	374	371	369	363	351	338	324	318	319	328	339	344	346	356	361	370	375	368	365	356
25	Q	366	381	381	378	377	376	372	369	367	354	341	325	317	315	312	325	338	346	354	350	349	354	368	369	353
26		381	380	382	380	384	374	382	380	369	360	349	333	322	329	336	342	356	364	374	372	370	371	388	365	364
27		368	379	386	382	366	371	379	372	363	355	350	336	331	328	323	320	331	346	359	364	389	386	399	384	361
28		372	377	381	381	383	371	371	368	357	348	342	336	332	323	319	329	341	363	351	367	359	377	376	380	358
29	Q	384	380	379	378	380	380	381	375	364	355	349	345	341	329	317	307	314	338	356	365	368	365	367	370	358
30		372	374	371	367	367	365	362	358	356	358	354	348	340	335	322	321	326	346	351	352	345	365	376	387	355
31		383	387	388	382	380	378	378	371	366	362	355	347	344	336	321	---	---	316	355	367	369	398	397	365	363
MEAN		383	383	381	379	376	373	371	367	360	354	349	340	332	329	325	325	333	346	360	368	373	380	385	380	361
MEAN	Q	376	379	380	380	380	378	376	371	365	358	350	340	331	327	326	327	334	349	358	363	362	365	369	370	359
MEAN	D	387	387	380	379	375	360	355	353	349	339	343	335	323	325	312	313	322	338	364	372	387	396	402	393	358

LIVINGSTON ISLAND MAGNETIC OBSERVATORY DECLINATION EAST

JANUARY 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	24	MEAN
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	405	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	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN		438	421	420	416	413	407	401	393	386	388	393	402	412	425	441	468	493	512	515	510	496	480	464	450	439
MEAN	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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	24	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	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN		198	201	202	205	204	205	203	200	196	192	190	183	179	173	165	161	163	170	178	182	187	191	196	196	188
MEAN	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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 VERTICAL INTENSITY

JANUARY 2004 Z =-29500 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	24	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	-100	-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	-121	-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	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN		-150	-148	-144	-140	-136	-133	-130	-127	-122	-118	-116	-110	-106	-104	-99	-99	-102	-109	-119	-128	-138	-143	-148	-151	-126
MEAN	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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 TOTAL INTENSITY

JANUARY 2004 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	24	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	319	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	370	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 TOTAL INTENSITY

FEBRUARY 2004 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	24	MEAN
1		366	366	370	364	354	353	354	352	345	343	340	342	341	333	317	310	305	309	326	344	358	349	363	367	345
2		365	369	369	369	363	364	359	347	341	334	333	338	332	---	---	---	---	---	---	---	---	---	---	372	---
3		374	371	364	367	346	350	350	339	334	329	330	329	332	329	316	310	313	317	320	338	359	365	366	372	342
4		378	363	361	360	360	355	353	352	345	346	345	346	335	320	307	309	318	325	330	340	350	358	370	---	345
5		367	369	371	350	354	361	353	354	350	348	345	338	334	321	313	306	311	316	327	350	365	367	367	365	346
6		361	366	362	360	358	349	344	330	343	341	339	341	337	325	308	297	296	306	312	331	359	371	370	369	341
7		370	361	358	357	360	354	351	347	346	342	337	339	335	326	315	304	307	322	335	339	352	360	368	367	344
8	Q	363	364	363	361	358	353	353	355	353	349	347	345	---	---	321	311	309	323	341	355	359	367	355	362	348
9		364	370	363	359	357	355	354	352	348	346	345	349	344	324	300	291	291	308	326	332	344	350	360	---	341
10	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
12	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
13	D	368	362	360	351	347	346	350	351	344	337	342	355	340	325	304	294	294	307	309	337	362	362	374	357	341
14		354	356	356	360	359	353	352	357	355	348	333	342	337	320	305	298	294	306	323	340	357	358	370	358	341
15	D	363	365	360	342	332	345	338	342	349	335	328	336	333	318	308	299	303	306	325	346	348	365	370	361	338
16		363	354	354	356	354	350	348	349	352	348	348	345	337	324	322	315	317	322	332	347	---	359	362	358	345
17	Q	356	350	347	351	352	351	352	354	356	356	357	350	343	334	325	321	322	328	343	352	360	357	353	347	346
18		348	351	355	358	358	359	359	357	355	355	354	351	341	327	315	309	307	327	352	362	349	355	350	351	346
19		351	359	359	360	353	350	348	350	351	349	348	344	333	321	307	296	300	316	340	351	359	358	356	350	342
20	Q	357	361	359	359	354	353	354	355	354	355	355	351	341	326	313	307	308	320	---	---	---	---	---	360	---
21		358	359	353	356	---	356	355	354	354	357	356	349	338	322	312	309	305	313	323	344	361	371	359	357	345
22		353	356	360	359	361	359	353	350	346	349	344	346	330	308	302	298	302	312	328	345	---	---	357	362	340
23		361	364	363	357	354	358	356	351	353	352	352	349	340	330	319	307	307	317	315	337	354	360	357	352	344
24		353	355	349	355	357	350	344	347	350	345	351	354	---	---	---	---	---	---	---	---	---	---	---	---	---
25		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
26	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
27		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
28		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
29	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---