



British
Geological Survey

NATURAL ENVIRONMENT RESEARCH COUNCIL

Gateway to the Earth

Recent Activities Of The World Data Centre For Geomagnetism (Edinburgh)

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British Geological Survey

SCOSTEP-WDS Workshop on
'Global Data Activities for the Study of Solar-Terrestrial Variability'
28-30th Sep 2015 Tokyo, Japan

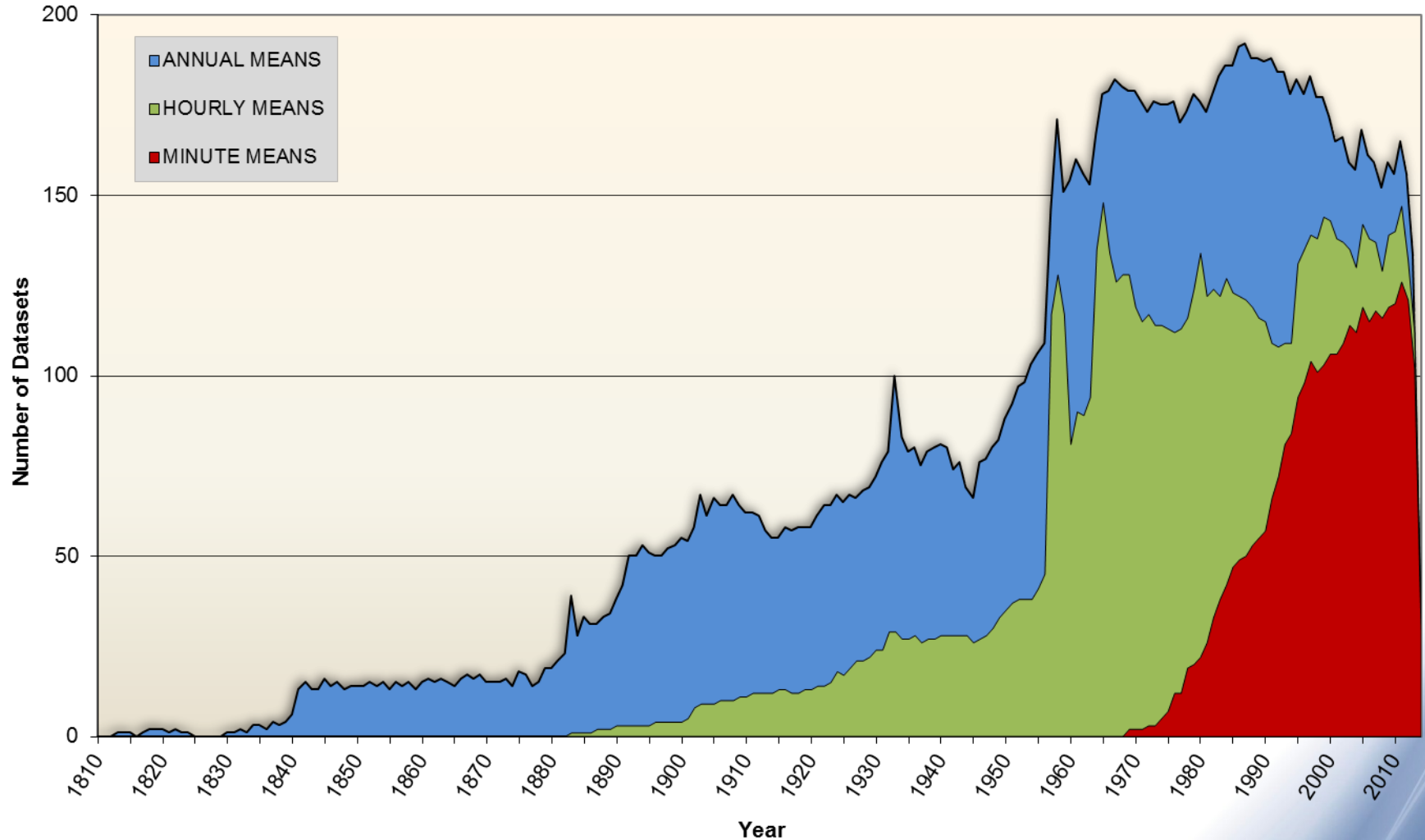


WDC Geomagnetism (Edinburgh)

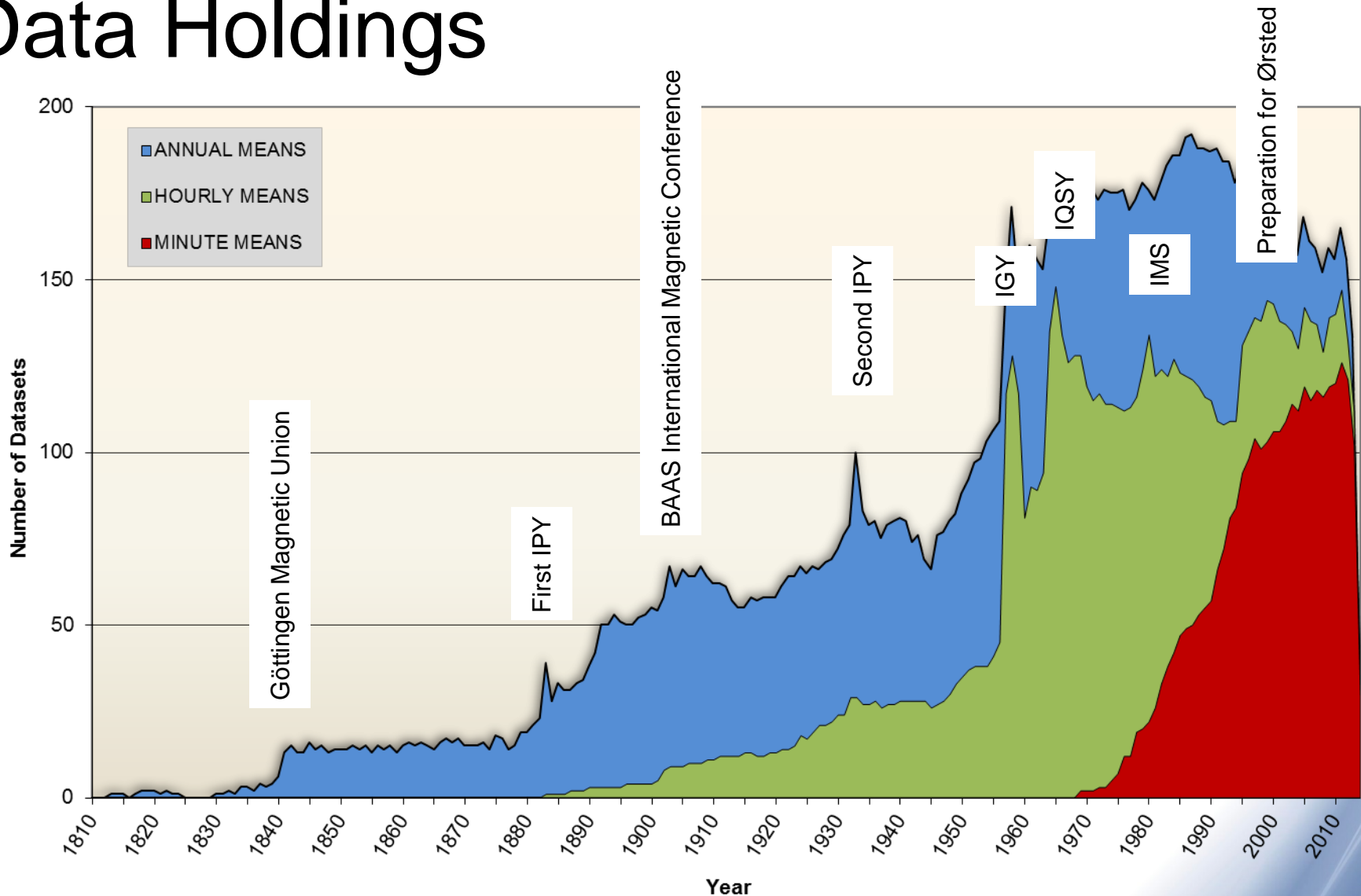
A world map showing the locations of geomagnetic observatories. Red dots are scattered across all continents, with a higher density in the Northern Hemisphere, particularly in North America, Europe, and Asia. The map includes labels for major oceans (North Pacific, South Pacific, Indian, Southern) and continents (Greenland, Antarctica).

- Geomagnetic observatory annual, hourly, minute means
- Global & local magnetic model information
- Land, marine, aeromagnetic and repeat stations survey
- Solar & geomagnetic indices
- Analogue magnetograms
- Historical yearbooks, memoirs, logs etc.
- Ship-borne data
- Observatory metadata

WDC Geomagnetic Observatory Data Holdings



WDC Geomagnetic Observatory Data Holdings



IPY – International Polar Year IGY – International Geophysical Year
 IQSY – International Quiet Sun Year IMS – International Magnetospheric Study
 BAAS – British Association for the Advancement of Science


WDC Data Access

[Main Page](#)

[Observatory list by IAGA code](#)

Observatory list by name

ABN	Abinger	HR
ABK	Abisko	HR MIN
AAE	Addis Ababa	HR MIN
AGN	Agincourt	HR
ALE	Alert	HR MIN
ABG	Alibag	HR MIN
ASP	Alice Springs	HR MIN
AAA	Alma Ata	HR MIN
ALM	Almeria	HR
AMT	Amatsia	HR
AML	Amberley	HR
AMU	Anchorage	HR
ANN	Annamalainagar	HR
TAN	Antananarivo	HR MIN
API	Apia	HR MIN
ARC	Arctowski	HR MIN
ARE	Arequipa	HR
ARK	Arkhangelsk	HR
ARS	Arti	HR
ASC	Ascension Island	HR MIN
ASH	Ashkhabad (Vannovskaya)	HR
ASO	Aso	HR
BAG	Baguio	HR
BLC	Baker Lake	HR MIN
BNG	Bangui	HR MIN
BGY	Bar Gyora	HR MIN
BRW	Barrow	HR MIN
BJN	Bear Island	HR MIN
BJI	Beijing	HR
BMT	Beijing Ming Tombs	HR MIN
BLT	Beloit	HR
BEL	Belsk	HR MIN
KGD	Bereznyaki	HR
BDE	Big Delta	HR
BFO	Black Forest	HR MIN
BOX	Borok	HR MIN
BOU	Boulder	HR MIN
BFE	Brorfelde	HR MIN
BDV	Budkov	HR MIN
BRT	Burlington	HR
BYR	Byrd Station 2	HR



World Data Centre for Geomagnetism (Edinburgh)

Geomagnetic Data Master Catalogue

[How to use the Master Catalogue](#)

- [Map showing all observatories in WDC database for which there exists annual, hourly or 1-min data](#). Download the [map in KMZ format](#) (for viewing in Google Earth).
- [WDC hourly & 1-min](#) and new [IAGA-2002](#) data formats
- Geomagnetic indices at [ISG](#) and [WDC](#) and [BGS](#)
- [Observatory annual means](#) and [global magnetic survey data](#)
- [Observatory metadata database](#)

- [WDC for Geomagnetism, Kyoto](#)
- [WDC for Solar-Terrestrial Physics, Boulder](#)
- [WDC for Solar-Terrestrial Physics, Moscow](#)
- [JPGP World Monthly Means Database](#)
- [INTERMAGNET](#)

[Go to WDC Home page](#)

If you have any questions about this service at the WDC, please contact:
wdcgeomag@bgs.ac.uk British Geological Survey, Murchison House, West Mains Road, Edinburgh EH9 3LA.
 Tel: +44 (0)131 667 1000 Fax: +44 (0)131 668 2683

The Online Master Geomagnetic Data Catalogue was originally developed at DMI in 1999 by Dr. Natalia Papitashvili of NASA/GSFC (<http://spdf.gsfc.nasa.gov>).

Hourly values Catalogue

FTP data by Name or Year

Abinger		(ABN)
1926	JFMAMJ	JASOND
1927	JFMAMJ	JASOND
1928	JFMAMJ	JASOND
1929	JFMAMJ	JASOND
1930	JFMAMJ	JASOND
1931	JFMAMJ	JASOND
1932	JFMAMJ	JASOND
1933	JFMAMJ	JASOND
1934	JFMAMJ	JASOND
1935	JFMAMJ	JASOND

1-Min Values Catalogue

Abisko	(ABK)
1979	JFMAMJ JASOND
1981	JFMAMJ JASOND
1982	JFMAMJ JASOND
1983	JFMAMJ JASOND
1984	JFMAMJ JASOND
1985	JFMAMJ JASOND
1986	JFMAMJ JASOND
1987	JFMAMJ JASOND
1988	JFMAMJ JASOND
1989	JFMAMJ JASOND
1990	JFMAMJ JASOND

WDC Data Portal

World Data Centre for Geomagnetism

Geomagnetism Data Portal

WDC Catalogue Search

Use the controls below to search for data. You can filter the results by: station name or IAGA code (hourly or 1-minute values), and geographical coordinates of station (by drawing a bounding box c

Datasets matching your selection criteria will be listed in the right-hand panel. You can view a plc results by clicking on the 'plot' icon that appears when you hover over a result. Data may be down checking the required datasets, choosing a data format from the drop-down menu, then clicking 'l

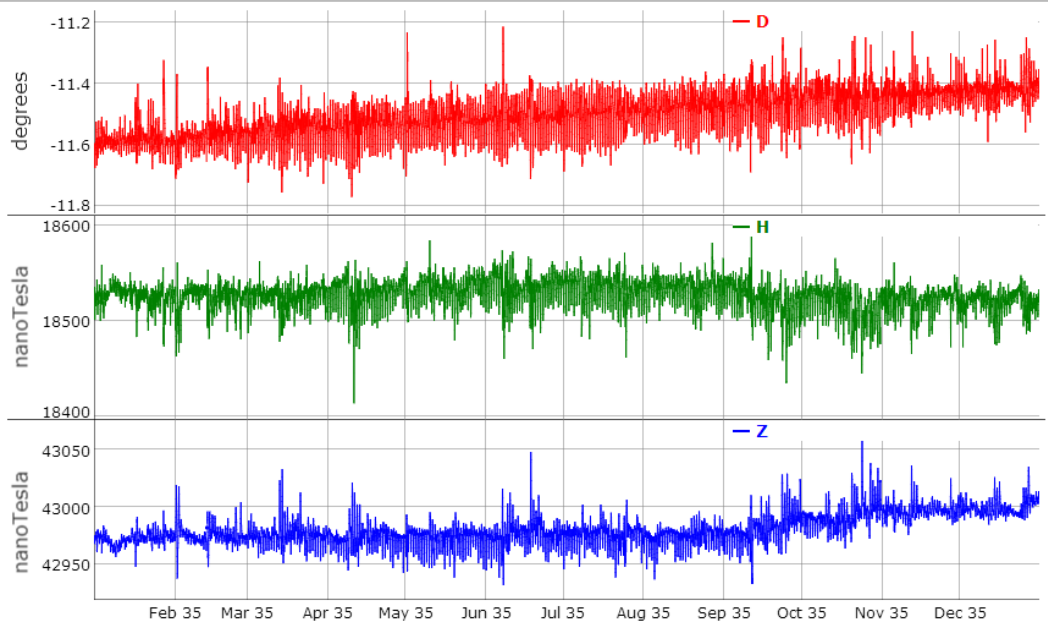
Filter by station:

Filter by year range: 1883 - 2015

Dataset Type:



ABN 1935 Hourly Values



Zoom: click-drag, Pan: shift-click-drag, Reset: double-click

- AAA 1979
- AAA 1980
- AAA 1981
- AAA 1982
- AAA 1984
- AAA 1985
- AAA 1986
- AAA 1987
- AAA 1988
- AAA 1989
- AAA 1990
- AAA 1999
- AAA 2000
- AAA 2001
- AAA 2002

Data formats offered

- IAGA2002
- WDC
- XML
- JSON
- CSV

www.wdc.bgs.ac.uk/dataportal



Select stations by shift-click-dragging to draw bounding box.

WDC Data Portal – Web Service

- Client side (Data portal) – web application using AngularJS and jQuery
- Server side – RESTful web service

EXAMPLES

Retrieve list of all observatories

<http://app.geomag.bgs.ac.uk/wdc/stations>

Retrieve observatory metadata

<http://app.geomag.bgs.ac.uk/wdc/stations/kak>

Retrieve data set

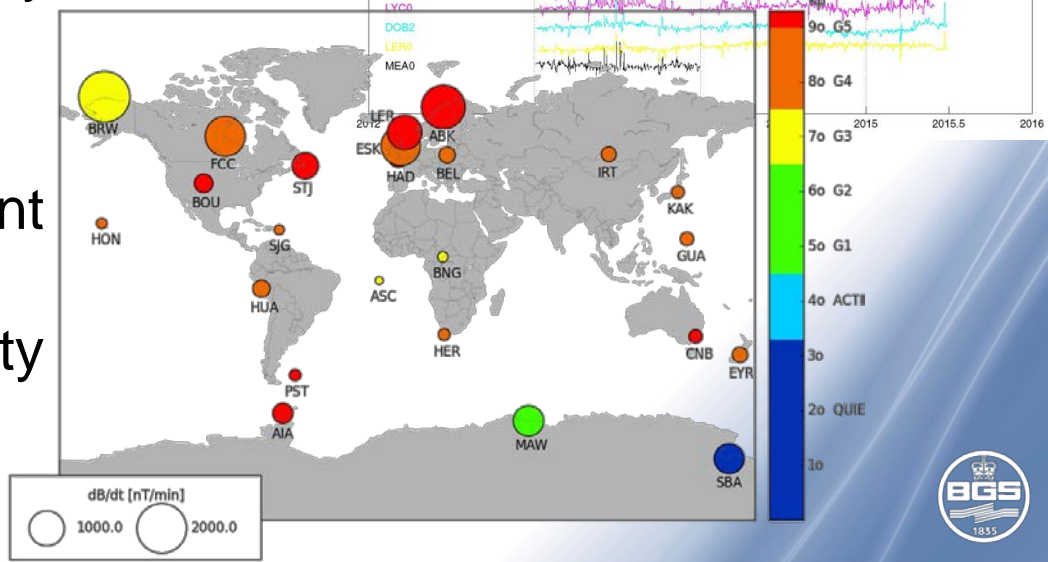
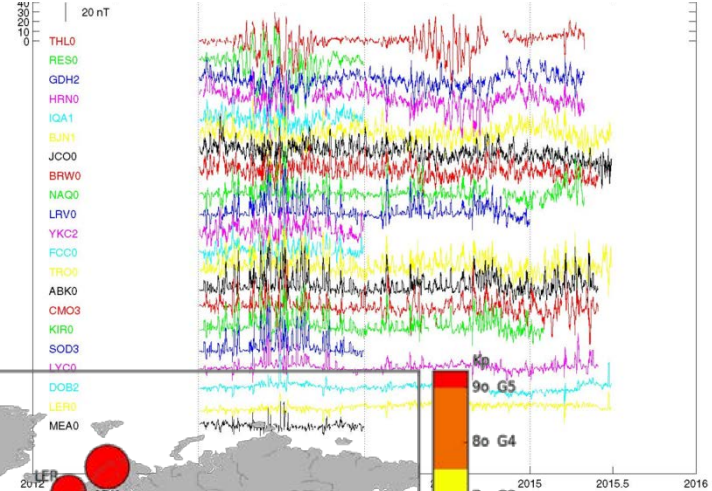
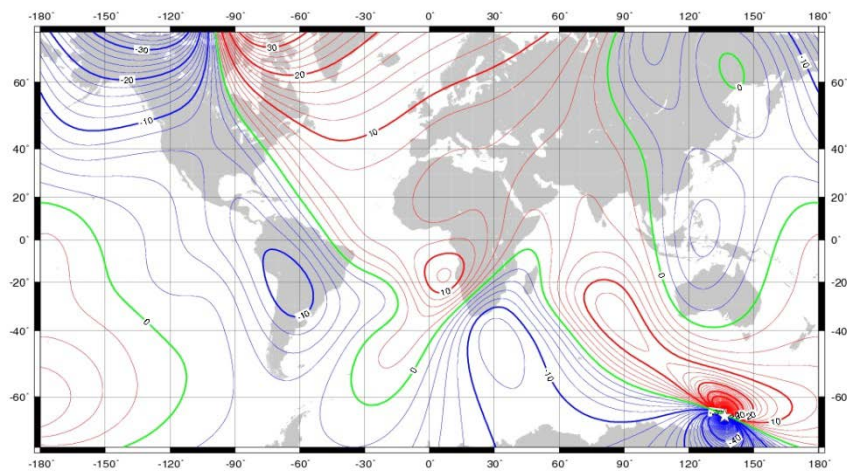
<http://app.geomag.bgs.ac.uk/wdc/datasets/hour/esk2013?media=iaga2002>

Search catalogue

<http://app.geomag.bgs.ac.uk/wdc/catalogue/search?minYear=2000&maxYear=2014&frequencyTypes=MINUTE>

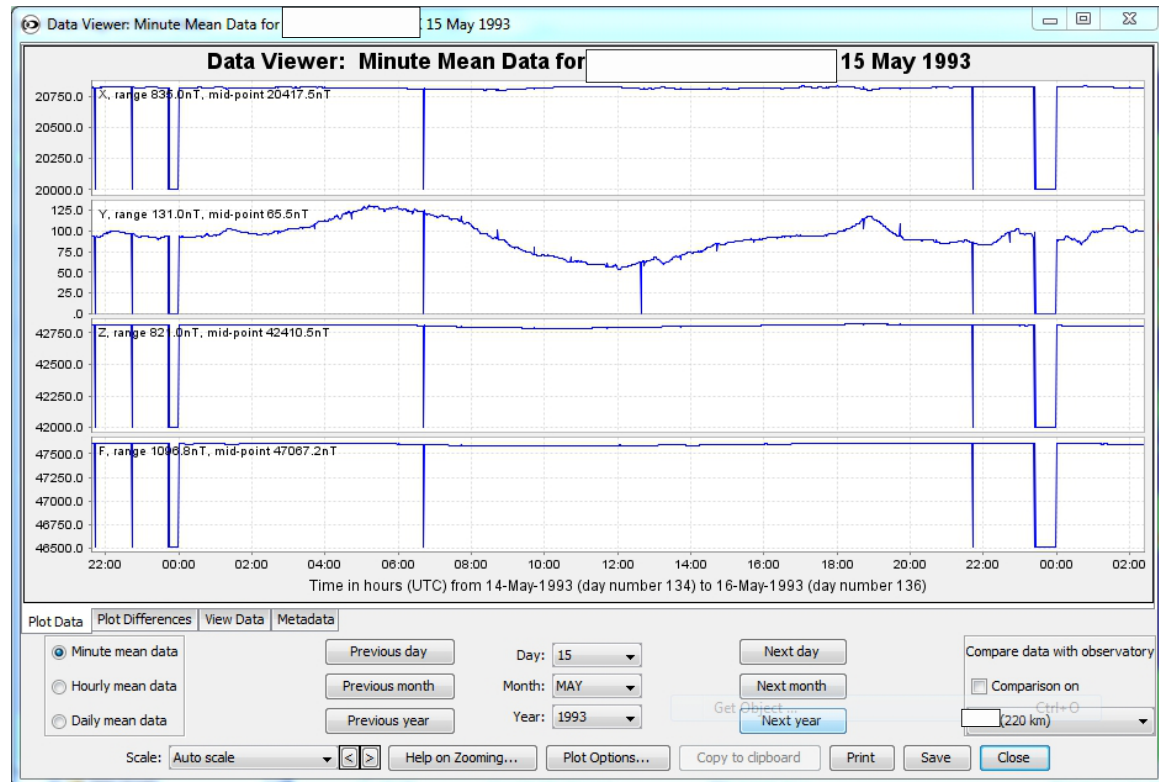
Science – examples

- Contribute to geomagnetic field modelling such as the International Geomagnetic Reference Field (IGRF) and World Magnetic Model (WMM)
- ESA Swarm Expert Support Laboratory – high-quality hourly means suitable for modelling
- Space weather - extreme event analysis to estimate likely maxima in geomagnetic activity levels



Data Quality Control

- Data inspected on receipt from data providers
- Obvious errors corrected (original data retained)
- Feedback to data providers



Data correction campaigns for science also carried out.

Historic data digitisation

Search for Magnetogram Recordings

Please use the forms below to search for magnetograms. Please note that the search results will not show our full collection as they enter into our online system is ongoing.

Search by observatory

Choose observatory

- Abinger (1924 - 1958)
- Cape Evans (1911 - 1912)
- Eskdalemuir (1909 - 1984)
- Falmouth (1880 - 1913)
- Greenwich (1846 - 1934)
- Hartland (1907 - 1987)
- Kew (1857 - 1925)
- Lerwick (1922 - 1984)
- Stonyhurst (1867 - 1976)

Date range

1857 1925

69 years

Search all observatories by date

Choose month and year

September 1850

Please note that the online records begin in December of 1846 and end in January 1987.

Currently loaded data

Currently loaded on the system are the records between 1846 and 1987 from:

- Abinger (1924 - 1958)
- Cape Evans (1911 - 1912)
- Eskdalemuir (1909 - 1984)
- Falmouth (1880 - 1913)
- Greenwich (1846 - 1934)
- Hartland (1907 - 1987)
- Kew (1857 - 1925)
- Lerwick (1922 - 1984)
- Stonyhurst (1867 - 1976)

Historical UK magnetic observatory magnetograms and yearbooks

The BGS holds a unique collection of about 250 000 historical magnetograms on photographic paper — original recordings of the variations in the strength and direction of the Earth's magnetic field.

The magnetogram collection — one of the longest running geomagnetic series in the world — provides a continuous record of more than 160 years of UK magnetic field.

So what's the attraction of magnetograms?

The collection is a valuable, partly untapped, data resource for studying geomagnetic storms, space weather and the evolution of the Earth's magnetic field.

The magnetograms provide insight into:

- The Earth's outer core — long-term change (years to centuries) in the dynamo that sustains our magnetic field
- Space weather — short-term changes (seconds to days) in near Earth space and on the ground
- Space climate — long-term change (decades to centuries) in solar activity and consequences for Earth's environment

All the above have an impact on human activities; for example, bad space weather affects technologies that we increasingly rely on, such as electrical power and GPS networks.

Measurements from nine observatories

The UK measurements were made at eight, long-running observatories.

- Abinger, London
- Eskdalemuir, Dumfries and Galloway
- Falmouth, Cornwall
- Greenwich, London
- Hartland, Devon
- Kew, London
- Lerwick, Shetland
- Stonyhurst, Lancashire

Historical yearbooks

Search the magnetograms collection

See also

- Search the magnetogram collection
- Geomagnetism
- Long-term monitoring of the Earth's magnetic field
- Geomagnetic Yearbooks and Historical Articles

Historical observatories

- Abinger
- Falmouth
- Greenwich
- Historic British Colonial Magnetic Observatories
- Kew
- Stonyhurst

Magnetic stories

- The Largest Magnetic Storm on Record
- Space weather and power grids (30 KB pdf)

Media coverage

- Sun unleashes huge solar flare | Feb 2011 | BBC News
- Is there still a chance of...

TRANSACTIONS OF THE ROYAL SOCIETY OF EDINBURGH.

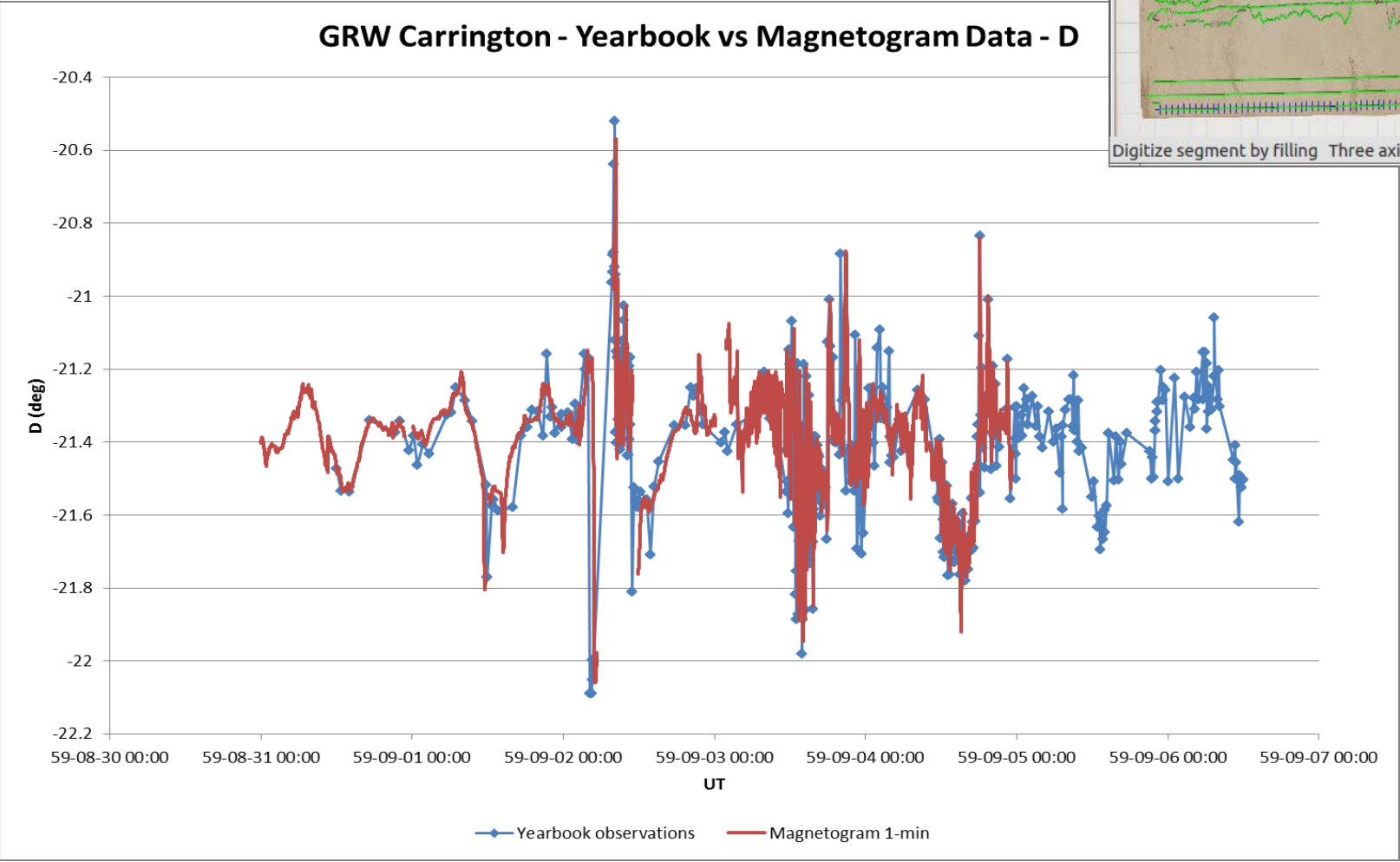
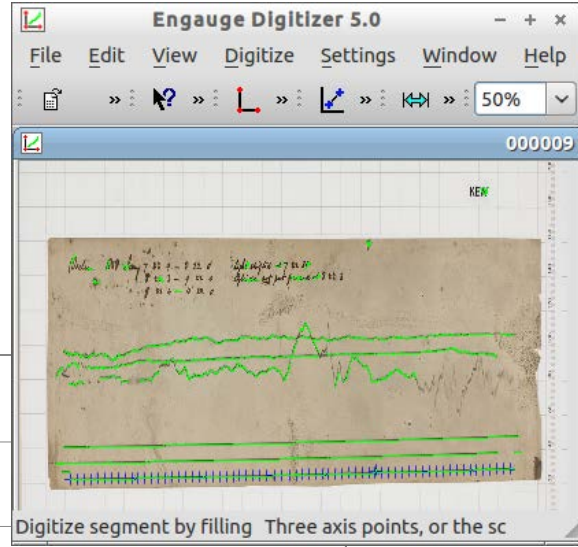
VOL. XVII.—PART I.

CONTAINING THE MAKERSTOUN MAGNETICAL AND METEOROLOGICAL OBSERVATIONS FOR 1841 AND 1842.

EDINBURGH: PUBLISHED BY ROBERT GRANT & SON, 82 PRINCES STREET; AND T. CADELL, STRAND, LONDON. MDCCCXLV.



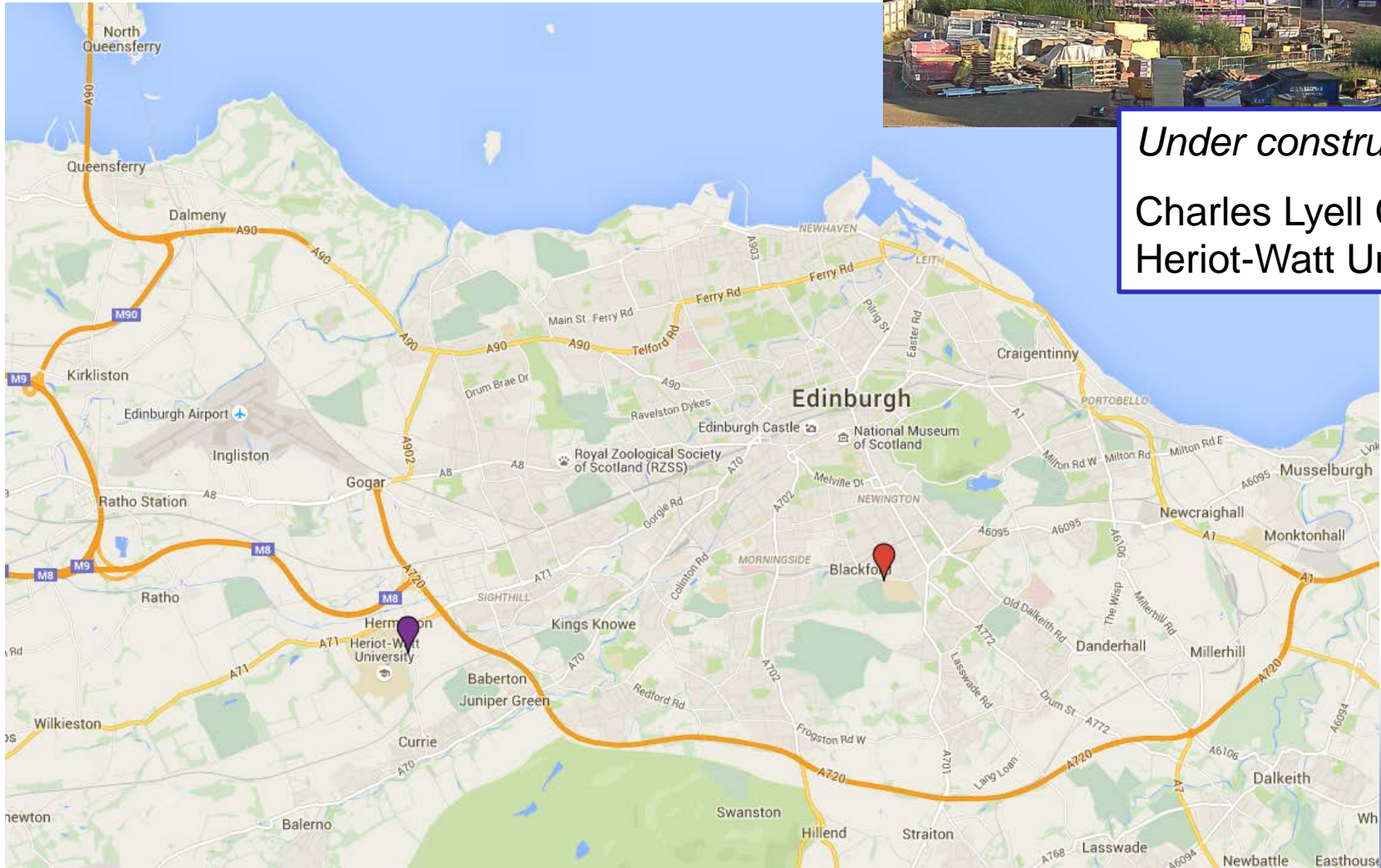
Historic data digitisation



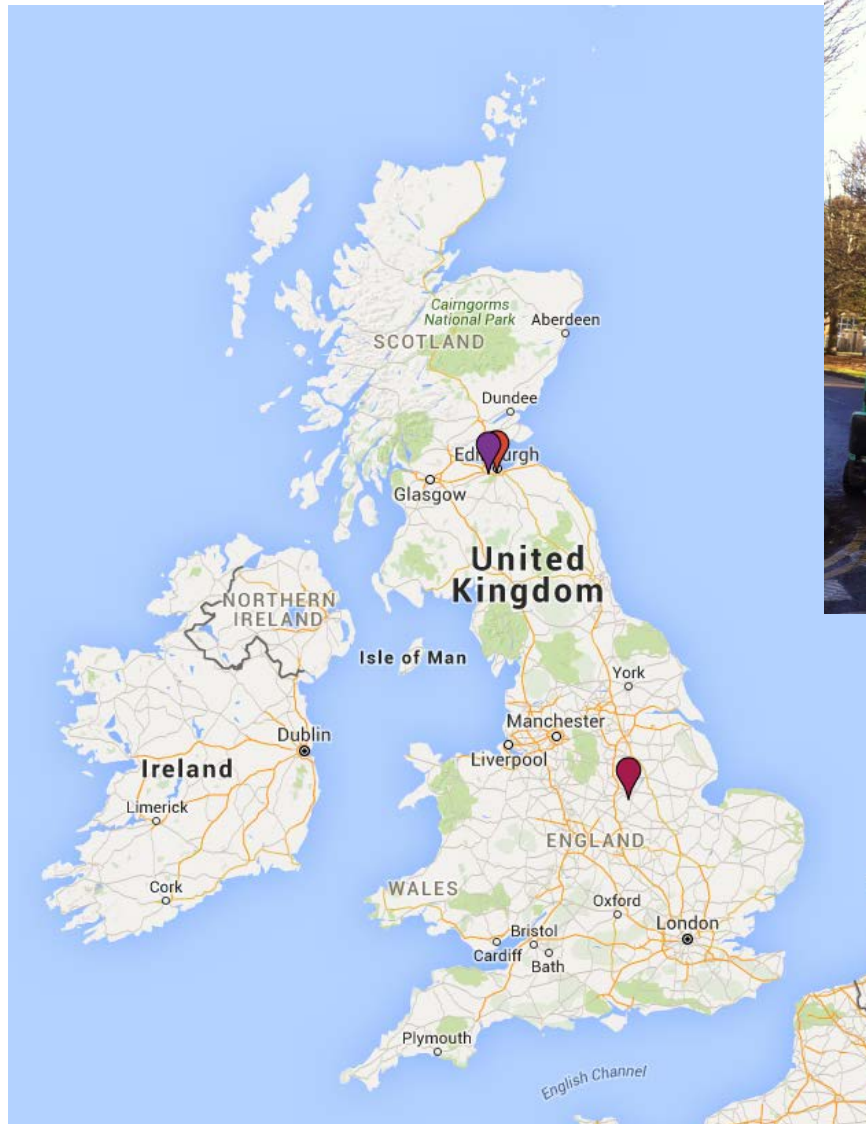
WDC on the move



Under construction..
Charles Lyell Centre
Heriot-Watt University



WDC on the move



Analogue records will be transported to and stored at BGS Head Office in Keyworth

System of access and retrieval at WDC Edinburgh to be established

Preparing for office relocation – moving WDC paper records



Before



After



- Custom archive-quality boxes
- Catalogued
- Bar-coded

Thank You

Please visit us at:

www.wdc.bgs.ac.uk

History of WDC for Geomagnetism Edinburgh

