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World Data Centre for Geomagnetism, Edinburgh

WDC
MEMBERS
FORUM
2025



British
Geological
Survey

INTRODUCTION

World Data Centre for Geomagnetism, Edinburgh

- The World Data Centre (WDC) for Geomagnetism, Edinburgh serves the geomagnetism community by hosting and providing access to geomagnetic data.
- Regular member of WDS since 2012
- Holdings includes:

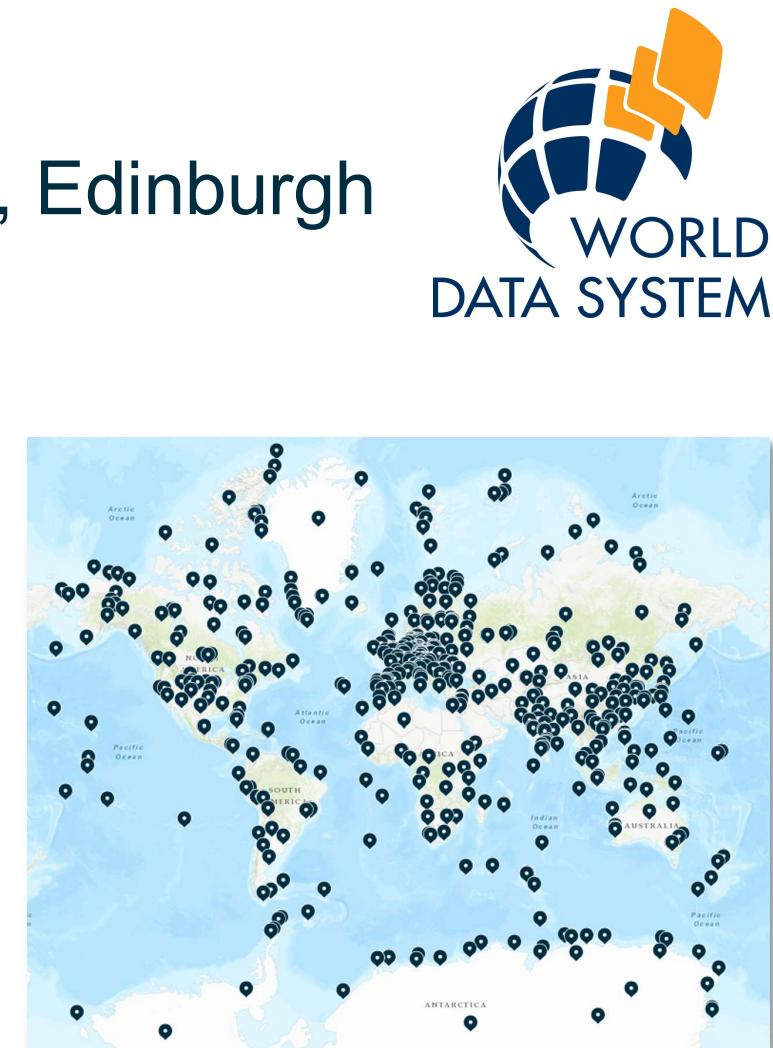
Data and metadata for ~500 magnetic observatories worldwide.

Definitive geomagnetic observatory data:
annual means (from 1813), hourly means (from 1883), minute means (from 1969)

Magnetic survey records & magnetic field models.

Historic UK magnetograms (from 1850), including an online archive of scans.

Physical storage of historic observatory yearbooks from UK and worldwide.

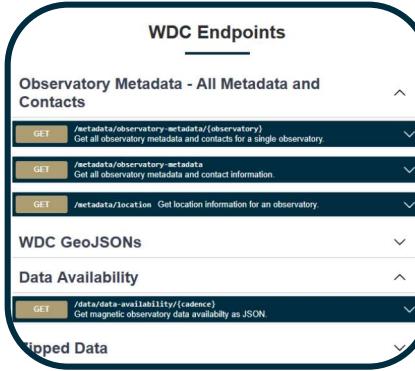


NEW DEVELOPMENTS

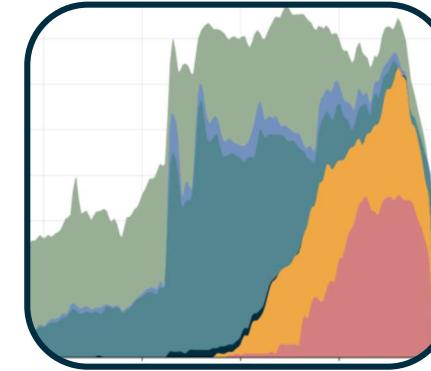
Progress 2023-2025



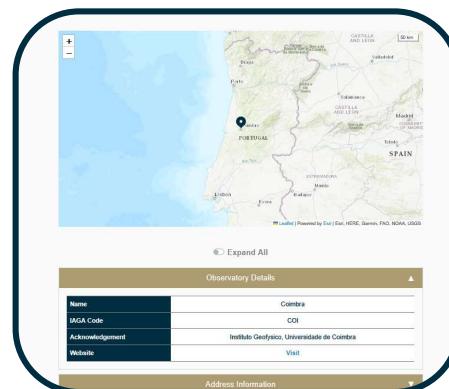
New front-end
data portal



New back-end
API



New data types
available



Improved
metadata access



CoreTrustSeal
Accreditation

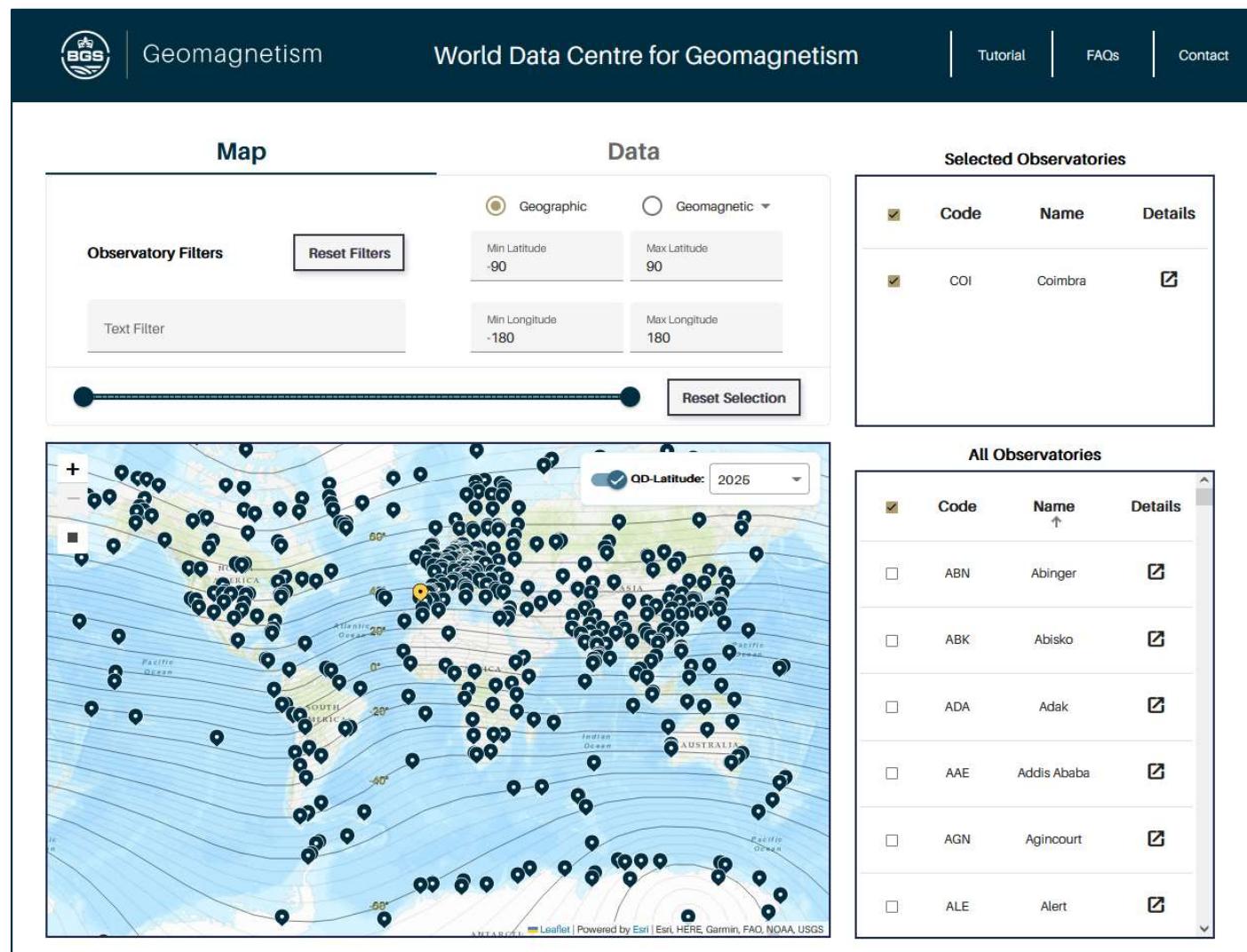
NEW DEVELOPMENTS

New WDC Portal

- Launched October 2024

Data discovery

- Temporal, spatial and text-based filtering.
- Filter by geographic or geomagnetic coordinates (quasi-dipole or dip angle).



Explore the new portal: wdc-dataportal.bgs.ac.uk

NEW DEVELOPMENTS

New WDC Portal

Data discovery

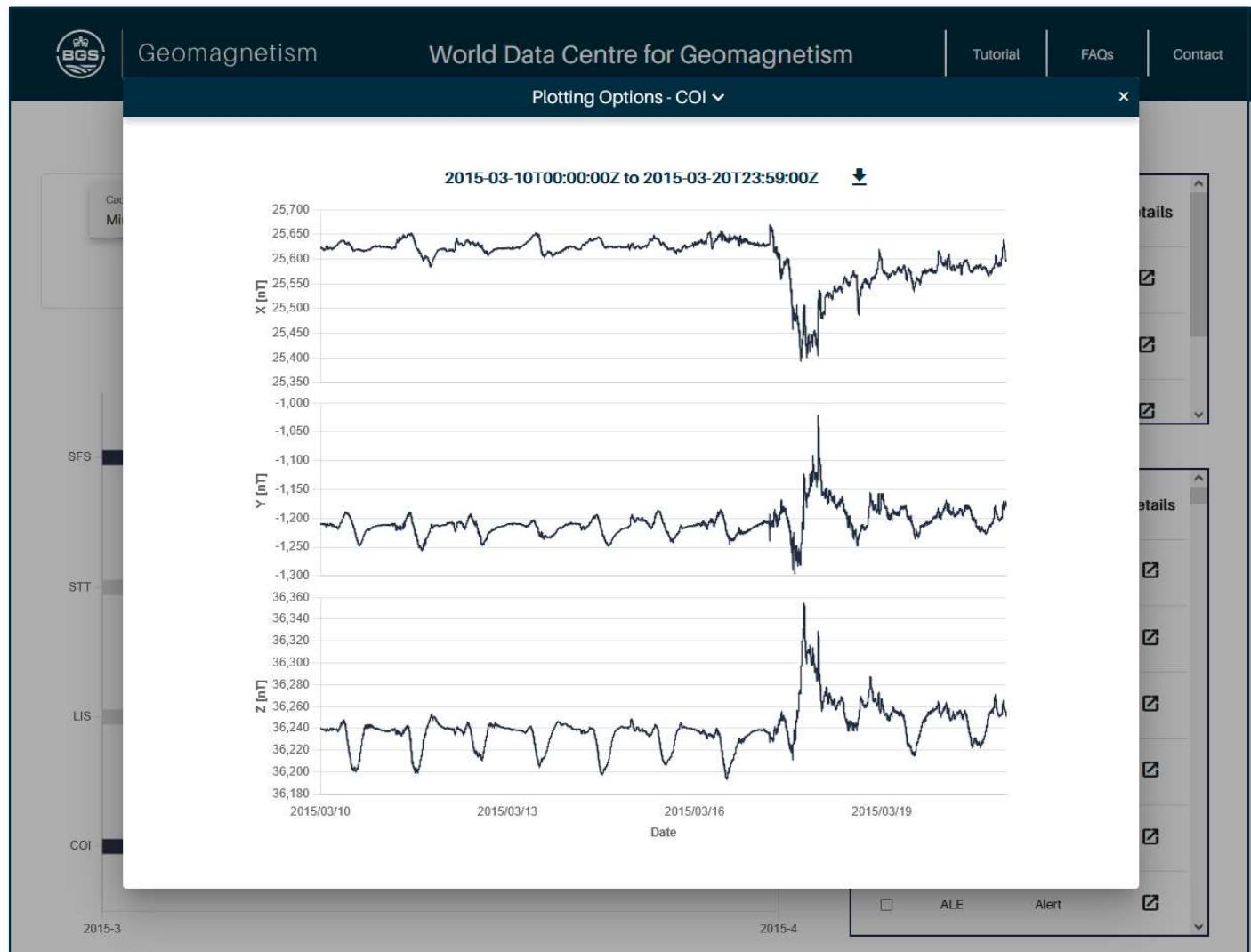
- Data availability can be displayed as a chart.

Data plotting and preview

- Users can view the original dataset or convert orientation

Data downloads

- Data download options in range of interoperable and community-standard formats.

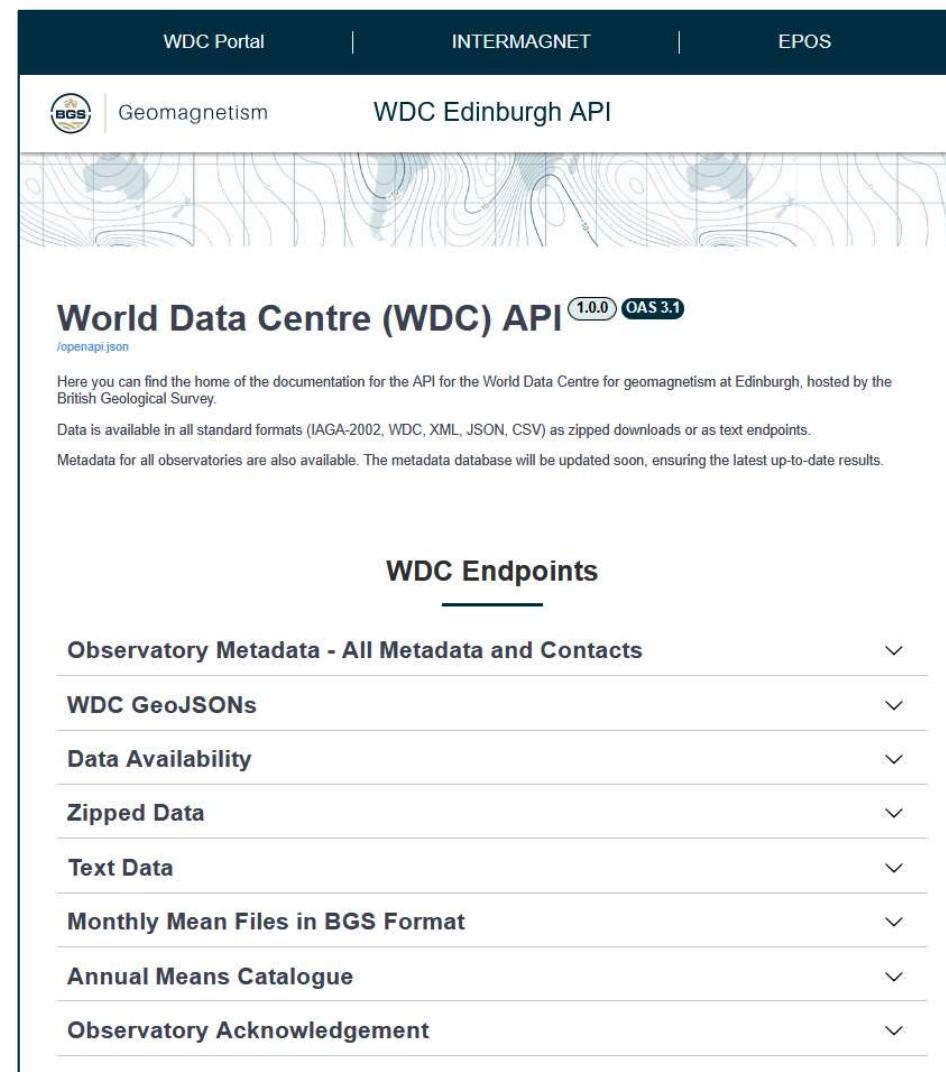


Explore the new portal: wdc-dataportal.bgs.ac.uk

NEW DEVELOPMENTS

New API (application programming interface)

- Conforms to OpenAPI Specification (OAS) defining a standard, language-agnostic interface to HTTP API.
- Various Endpoints available for data and metadata discoverability and download.
- Community endpoints for:
 - HAPI (*Heliosysics Data Application Programmer's Interface*)
 - INTERMAGNET
 - EPOS (*European Plate Observing System*)



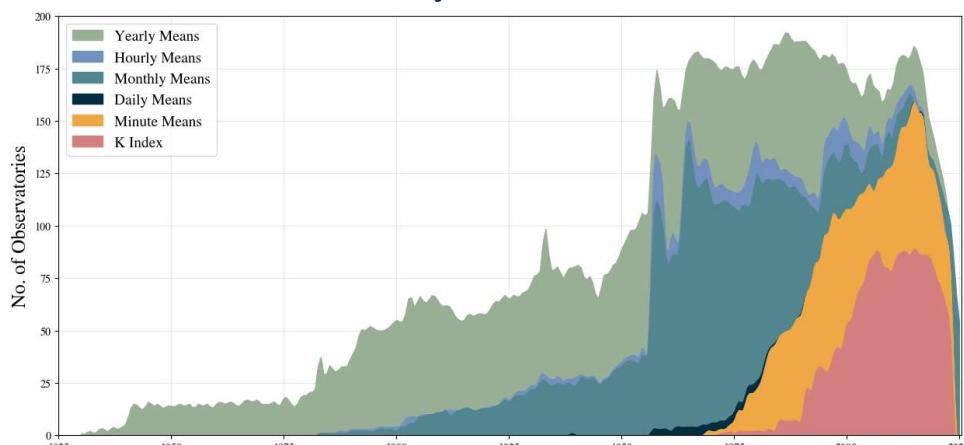
The screenshot shows the homepage of the WDC Edinburgh API documentation. At the top, there are links for 'WDC Portal', 'INTERMAGNET', and 'EPOS'. Below that, the 'Geomagnetism' logo is next to the text 'Geomagnetism' and 'WDC Edinburgh API'. A decorative background image of a contour map is visible. The main title is 'World Data Centre (WDC) API 1.0.0 OAS 3.1'. Below it is a link to 'openapi.json'. A brief description states: 'Here you can find the home of the documentation for the API for the World Data Centre for geomagnetism at Edinburgh, hosted by the British Geological Survey.' It also mentions that data is available in various formats and that metadata for all observatories is available. A section titled 'WDC Endpoints' is shown, with a list of expandable items: 'Observatory Metadata - All Metadata and Contacts', 'WDC GeoJSONs', 'Data Availability', 'Zipped Data', 'Text Data', 'Monthly Mean Files in BGS Format', 'Annual Means Catalogue', and 'Observatory Acknowledgement'.

API Documentation: wdcapi.bgs.ac.uk/docs

NEW DEVELOPMENTS

More data types available

- More data types, and time cadences, now available from the portal and API
 - Daily Means
 - K-index
 - One-second data
 - Annual Means
 - Monthly Means



The number of datasets per year available from the WDC Edinburgh for each data type.

Improved Metadata access

- Web pages displaying detailed metadata for each magnetic observatory are now available.

The screenshot shows a web page for the Coimbra observatory. The header includes the BGS logo, the word 'Geomagnetism', and navigation links for Home, Data, About, Usage, Submission, and Contact. Below the header, a sub-header reads 'Coimbra World Data Centre for Geomagnetism'. A 'WDC Observatory Information' button is highlighted. The main content area features a map of the Iberian Peninsula and surrounding regions, with a marker indicating the location of Coimbra. Below the map is a section titled 'Observatory Details' containing the following table:

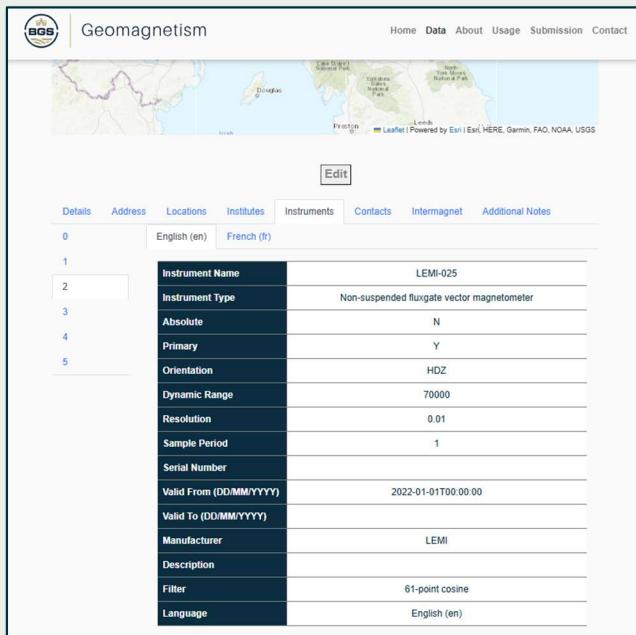
Observatory Details	
Name	Coimbra
IAGA Code	COI
Acknowledgement	Instituto Geofísico, Universidade de Coimbra
Website	Visit

Below this are sections for 'Address Information', 'Locations', 'Institutes', 'Instruments', and 'Persons', each with a collapse/expand arrow.

FUTURE PLANS

Priorities for 2025-2027

Develop a metadata update tool



The screenshot shows a web-based form for updating instrument metadata. The top navigation bar includes links for Home, Data, About, Usage, Submission, and Contact. Below the navigation is a map of the British Isles with various locations marked. The main content area is titled 'Edit' and contains a table with the following data:

	Instrument Name	LEMI-025
Instrument Type	Non-suspended fluxgate vector magnetometer	
Absolute	N	
Primary	Y	
Orientation	HDZ	
Dynamic Range	70000	
Resolution	0.01	
Sample Period	1	
Serial Number		
Valid From (DD/MM/YYYY)	2022-01-01T00:00:00	
Valid To (DD/MM/YYYY)		
Manufacturer	LEMI	
Description		
Filter	61-point cosine	
Language	English (en)	

Enable data providers to review and submit changes to magnetic observatories metadata

Improve data submission process



Develop an interface to allow data providers to easily deposit data

Combine metadata submission at time of data submission



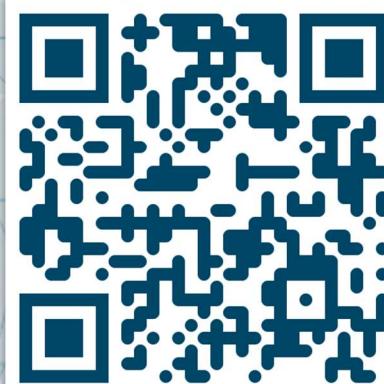
Conclusion

- New WDC Data Portal and API launched
- Users can now easily search for, plot, and download observatory data
- More data types (K-index, Daily & Monthly means) now available
- WDC has been certified by the CoreTrustSeal as a trustworthy data repository

Data Portal



wdc-dataportal.bgs.ac.uk



API Documentation

wdcapi.bgs.ac.uk/docs