OR/16/030 Looking ahead to 2016

From Earthwise


David Kerridge presenting at IUGG 2015.

Ciaran Beggan at IUGG 2015.
Alan Thomson chairing IAGA Division V business meeting at IUGG 2015.

Sarah Reay at the WDS-SCOSTEP meeting, September 2015.

Chris Turbitt presenting at the Geomagnetism Advisory Group meeting, September 2015.
In 2016 our scientific research will focus on the space weather hazard to technology and infrastructure, as well as on global and UK magnetic models and the ESA Swarm magnetic survey mission. Major activities to support these activities will include the operation of the BGS magnetic observatories and the UK magnetic survey program to international standards. We will also continue to produce high quality academic and other geomagnetic models, data products and publications.

**Key objectives**

The Geomagnetism team will continue to meet the aims of the current BGS and NERC strategies by means of the following objectives:

- Geomagnetic monitoring and modelling of the shallow and deep Earth and of the Earth’s space environment
- Applying our data, models and expertise in services and research for academia, industry and society

**Main deliverables**

Our specific deliverables for 2016 will be:

- An INTERMAGNET-standard (www.intermagnet.org) UK and overseas observatory network, obtained through regular observatory service visits and high-standard quality assurance procedures
- Supply of observatory data and products to INTERMAGNET, according to the timetable set by the INTERMAGNET organisation
- An annual re-survey of sites in the UK magnetic repeat station network, leading to production of the 2016 national magnetic model and delivery of a report to Ordnance Survey
- Publication of our observatory data and data products online and in the Monthly Bulletins series
- Supply of magnetic index products to the International Service for Geomagnetic Indices (ISGI), according to the timetable set by ISGI
- Operation of the World Data Centre for Geomagnetism (Edinburgh), including an annual ‘call for data’ and associated quality control activities
- Active participation (through presentations and organisation of sessions) in a number of major international scientific conferences, e.g. the UK National Astronomy Meeting and the 13th European Space Weather Week
- Publication of a number of papers in scientific and professional journals, and the writing of articles for scientific and other publications
- Provision of data products for the ESA Swarm ‘Data, Innovation and Science Cluster (DISC)’, the successor to the ‘Expert Support Laboratories’, set up by ESA in support of the goals of the Swarm satellite mission
- Publication of a Geomagnetism team annual report and hosting of the annual Geomagnetism Advisory Group of stakeholders
- Provision of information and other data through the Geomagnetism web site, the main BGS site and by other electronic means
- The supply of solar and geomagnetic activity index forecasts and now-casts to European Space Agency for the Space Weather Network (SWENET); real-time one-minute data from Hartland observatory to the US Geological Survey and the US NOAA Space Weather Prediction Centre (SWPC)
- Support for the UK Met Office Space Weather Operations Centre (MOSWOC) and, as part of the Natural Hazards Partnership project, providing local and planetary magnetic indices, daily forecasts and magnetic data products
• Monitoring and analysis of geo-electric (telluric) measurements at the UK magnetic observatories
• Development of the ‘Monitoring and Analysis of GIC’ (MAGIC) web tool, in association with National Grid for space weather hazard assessment and monitoring
• Production of the 2016 update of the BGS Global Geomagnetic Model (BGGM), using satellite and other geomagnetic data, including data from all BGS operated observatories
• Delivery of geomagnetic observatory data and magnetic field products, including daily geomagnetic activity forecasts, to support geophysical survey companies and directional drilling operations, through the ‘In-Field Referencing’ (IFR) and ‘Interpolation IFR’ (IIFR) services
• Provision of observatory facilities for calibration and testing of instruments
• Delivery of a lecture course to 4th year undergraduates at Edinburgh University on Geomagnetism and to 3rd year students on Planetary Geophysics, including setting and marking of exam questions, running tutorials; and setting and supervising student projects
• Roll out of the ‘Raspberry Pi’ magnetometer systems as part of the STFC-funded schools’ magnetometer project, in association with University of Lancaster’s ‘Aurora Watch’ team
• Study and report on the impact of extreme geomagnetic storms on the UK and French transmission systems, in partnership with the Finnish Meteorological Institute, for a customer
• Development and assessment of near real-time data products from the ESA Swarm satellite mission, as part of the ESA Space Situational Awareness programme, in collaboration with GFZ, DTU and other European institutes
• Collaboration with the University of Otago (Dunedin, New Zealand) on a three-year project to assess and model geomagnetically induced currents in the New Zealand power system
• Relocation of Geomagnetism operations to the new, purpose built, Charles Lyell Building at Heriot-Watt University in February 2016

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