Space weather at the UK Met Office

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Met Office, Exeter, UK, http://www.metoffice.gov.uk/publicsector/emergencies/space-weather

The UK Met Office has been providing a 24/7 space weather forecast, alert and warning service since April 2014. This was in response to the UK Government adding solar storms to the National Risk Register in 2011. The Met Office has built upon its terrestrial weather forecasting experience and infrastructure to create a Met Office Space Weather Operations Centre (MOSWOC). MOSWOC provides vital information to sectors such as defence and satellite operators. There is also a space weather research group which collaborates with universities and centres both in the UK and internationally. The Met Office provides a platform for space weather models. It is also in a good position to adapt terrestrial weather forecasting verification techniques and methods, to space weather.

Models, tools and systems have been implemented within the Met Office to provide forecasters with the information they require to issue twice daily guidance, and to provide timely alerts and warnings. One such system is the Bath University Multi-Instrument Data Analysis System (MIDAS). MIDAS, which is a tomographic algorithm, takes measurements from ground- and space-based GPS receivers as input. As output, MIDAS produces near real-time European region Total Electron Content nowcasts of the ionosphere.

One of the models running operationally at the Met Office is the NOAA Space Weather Prediction Centre's D Region Absorption Prediction model (D-RAP). D-RAP produces global maps of frequencies affected by absorption in the ionosphere and is used to understand high frequency radio degradation and blackouts.

This presentation will introduce space weather at the Met Office. It will discuss the models and systems implemented, and validation and verification methods undertaken and planned.