



Solar flare forecasting at the UK Met Office

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The Met Office Space Weather Operations Centre (MOSWOC) officially opened in 2014. MOSWOC provides 24/7 space weather forecasts along with timely alerts and warnings. Twice daily, human-in-the-loop forecasts are produced for X-ray flares, geomagnetic storms, high energy electron events and high energy proton events. This presentation will focus on the flare forecasts, firstly describing the process used to produce these 4-day forecasts. The MOSWOC forecaster begins the process by undertaking analysis of the solar conditions using images from the Solar Dynamics Observatory's Heliospheric Magnetic Imager. The forecaster classifies any active regions present, and flare probabilities are calculated based on historical flare rates for each classification. Flare probabilities for M- and X-class flares are calculated using Poisson statistics. A full-disk percentage probability is then calculated and used as a basis for the 4-day flare forecasts issued by MOSWOC.

Verification results will be presented which suggest that MOSWOC forecasts outperform original model results and that forecasting skill decreases over longer forecast lead time. Real-time verification will also be presented. Future plans for forecast development will be outlined including the possibility of developing an ensembles flare prediction system.