



Short-term Forecasting Ground Magnetic Perturbations with the Space Weather Modeling Framework

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Predicting ground-based magnetic perturbations is a critical step towards specifying and predicting geomagnetically induced currents (GICs) in high voltage transmission lines. Currently, the Space Weather Modeling Framework (SWMF), a flexible modeling framework for simulating the multi-scale space environment, is being transitioned from research to operational use (R2O) by NOAA's Space Weather Prediction Center. Upon completion of this transition, the SWMF will provide localized dB/dt predictions using real-time solar wind observations from L1 and the F10.7 proxy for EUV as model input.

This presentation describes the operational SWMF setup and summarizes the changes made to the code to enable R2O progress. The framework's algorithm for calculating ground-based magnetometer observations will be reviewed. Metrics from data-model comparisons will be reviewed to illustrate predictive capabilities. Early data products, such as regional-K index and grids of virtual magnetometer stations, will be presented. Finally, early successes will be shared, including the code's ability to reproduce the recent March 2015 St. Patrick's Day Storm.