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**Ionospheric Data Assimilation and Targeted Observation Strategies: Proof of Concept Analysis in a Geomagnetic Storm Event**[1] ERIC KOSTELICH, JUAN DURAZO, ALEX MAHALOV, Arizona State Univ — The dynamics of the ionosphere involve complex interactions between the atmosphere, solar wind, cosmic radiation, and Earth's magnetic field. Geomagnetic storms arising from solar activity can perturb these dynamics sufficiently to disrupt radio and satellite communications. Efforts to predict "space weather," including ionospheric dynamics, require the development of a data assimilation system that combines observing systems with appropriate forecast models. This talk will outline a proof-of-concept targeted observation strategy, consisting of the Local Ensemble Transform Kalman Filter, coupled with the Thermosphere Ionosphere Electrodynamics Global Circulation Model, to select optimal locations where additional observations can be made to improve short-term ionospheric forecasts. Initial results using data and forecasts from the geomagnetic storm of 26–27 September 2011 will be described.

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