# Development of a sensor web simulator: status and preliminary results for a future satellite wind lidar mission

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Abstract

Progress toward constructing a Sensor Web Simulator (SWS), as applied to a future wind lidar mission, is discussed together with preliminary results. The motivation for the SWS is to quantify the scientific return of a meteorological application, in which a numerical forecast model objectively drives data collection. Because the design and implementation of such a complex observing system would be costly and would involve significant risk, end-to-end simulation is essential. The SWS is expected to provide information systems engineers and Earth scientists with the ability: (1) to define and model candidate designs; and (2) to quantitatively measure predictive forecast skill improvements.

The SWS will serve as a necessary trade studies tool to: (1) evaluate the impact of selecting different types and quantities of remote sensing and in-situ sensors; (2) characterize alternative platform vantage points and measurement modes; and (3) explore rules of interaction between sensors and weather forecast/data assimilation components to reduce model error growth and forecast uncertainty. Results are presented demonstrating forecast skill impact from an end-to-end simulation performed "by hand," in which key elements of the simulator were present. A status report is also provided, noting the progress toward construction and delivery of the SWS as a mission design tool in 2012.