Assessing the Utility of 3-km Land Information System Soil Moisture Data for Drought Monitoring and Hydrologic Applications

Kristopher D. White
National Weather Service/NASA Short-term Prediction Research and Transition (SPoRT) Center
Huntsville, AL

Jonathan L. Case
ENSCO, Inc./NASA SPoRT Center
Huntsville, AL

The NASA Short term Prediction Research and Transition (SPoRT) Center in Huntsville, AL has been running a real-time configuration of the Noah land surface model within the NASA Land Information System (LIS) since June 2010. The SPoRT LIS version is run as a stand-alone land surface model over a Southeast Continental U.S. domain with 3-km grid spacing. The LIS contains output variables including soil moisture and temperature at various depths, skin temperature, surface heat fluxes, storm surface runoff, and green vegetation fraction (GVF). The GVF represents another real-time SPoRT product, which is derived from the Moderate Resolution Imaging Spectroradiometer instrument aboard NASA's Aqua and Terra satellites. These data have demonstrated operational utility for drought monitoring and hydrologic applications at the National Weather Service (NWS) office in Huntsville, AL since early 2011. The most relevant data for these applications have proven to be the moisture availability (%) in the 0-10 cm and 0-200 cm layers, and the volumetric soil moisture (%) in the 0-10 cm layer. In an effort to better understand their applicability among locations with different terrain, soil and vegetation types, SPoRT is conducting the first formal assessment of these data at NWS offices in Houston, TX, Huntsville, AL and Raleigh, NC during summer 2014. The goal of this assessment is to evaluate the LIS output in the context of assessing flood risk and determining drought designations for the U.S. Drought Monitor. Forecasters will provide formal feedback via a survey question web portal, in addition to the NASA SPoRT blog. In this presentation, the SPoRT LIS and its applications at NWS offices will be presented, along with information about the summer assessment, including training module development and preliminary results.