Expansion of the Real-Time SPoRT-Land Information System for NOAA/National Weather Service Situational Awareness and Local Modeling Applications

Jonathan L. Case
ENSCO Inc./NASA Short-term Prediction Research and Transition (SPoRT) Center
320 Sparkman Dr., Room 3008, Huntsville, AL 35805; Voice: 256.961.7504, Fax: 256.961.7788

The NASA Short-term Prediction Research and Transition (SPoRT) Center has been running a real-time version of the Land Information System (LIS) since summer 2010 (hereafter, SPoRT-LIS). The real-time SPoRT-LIS runs the Noah land surface model (LSM) in an offline capacity apart from a numerical weather prediction model, using input atmospheric and precipitation analyses (i.e., "forcings") to drive the Noah LSM integration at 3-km resolution. Its objectives are to (1) produce local-scale information about the soil state for NOAA/National Weather Service (NWS) situational awareness applications such as drought monitoring and assessing flood potential, and (2) provide land surface initialization fields for local modeling initiatives. The current domain extent has been limited by the input atmospheric analyses that drive the Noah LSM integration within SPoRT-LIS, specifically the National Centers for Environmental Prediction (NCEP) Stage IV precipitation analyses. Due to the nature of the geographical edges of the Stage IV precipitation grid and its limitations in the western U.S., the SPoRT-LIS was originally confined to a domain fully nested within the Stage IV grid, over the southeastern half of the Conterminous United States (CONUS).

In order to expand the real-time SPoRT-LIS to a full CONUS domain, alternative precipitation forcing datasets were explored in year-long, offline comparison runs of the Noah LSM. Based on results of these comparison simulations, we chose to implement the radar/gauge-based precipitation analyses from the National Severe Storms Laboratory as a replacement to the Stage IV product. The Multi-Radar Multi-Sensor (MRMS; formerly known as the National Mosaic and multi-sensor Quantitative precipitation estimate) product has full CONUS coverage at higher-resolution, thereby providing better coverage and greater detail than that of the Stage IV product. This paper will describe the expanded/upgraded SPoRT-LIS, present comparisons between the original and upgraded SPoRT-LIS, and discuss the path forward for future collaboration opportunities with SPoRT partners in the NWS.

Submitted to *26th Conf. on Weather and Forecasting/22nd Conf. on Numerical Weather Prediction*