Development and Implementation of Dynamic Scripts to Support Local Model Verification at National Weather Service Weather Forecast Offices

Bradley Zavodsky[1], Jonathan L. Case[2], John H. Gotway[3], Kristopher White[4], Jeffrey Medlin[5], Lance Wood[6], Dave Radell[7]

[1]NASA Marshall Space Flight Center, Huntsville, AL
[2]ENSCO, Inc., Huntsville, AL
[3]National Center for Atmospheric Research; Boulder, CO
[4]NOAA National Weather Service, Huntsville, AL
[5]NOAA National Weather Service, Mobile, AL
[6]NOAA National Weather Service, Houston, TX
[7]NOAA National Weather Service, Scientific Services Division, Bohemia, NY

Local modeling with a customized configuration is conducted at National Weather Service (NWS) Weather Forecast Offices (WFOs) to produce high-resolution numerical forecasts that can better simulate local weather phenomena and complement larger scale global and regional models. The advent of the Environmental Modeling System (EMS), which provides a pre-compiled version of the Weather Research and Forecasting (WRF) model and wrapper Perl scripts, has enabled forecasters to easily configure and execute the WRF model on local workstations. NWS WFOs often use EMS output to help in forecasting highly localized, mesoscale features such as convective initiation, the timing and inland extent of lake effect snow bands, lake and sea breezes, and topographically-modified winds. However, quantitatively evaluating model performance to determine errors and biases still proves to be one of the challenges in running a local model. Developed at the National Center for Atmospheric Research (NCAR), the Model Evaluation Tools (MET) verification software makes performing these types of quantitative analyses easier, but operational forecasters do not generally have time to familiarize themselves with navigating the sometimes complex configurations associated with the MET tools. To assist forecasters in running a subset of MET programs and capabilities, the Short-term Prediction Research and Transition (SPoRT) Center has developed and transitioned a set of dynamic, easily configurable Perl scripts to collaborating NWS WFOs. The objective of these scripts is to provide SPoRT collaborating partners in the NWS with the ability to evaluate the skill of their local EMS model runs in near real time with little prior knowledge of the MET package. The ultimate goal is to make these verification scripts available to the broader NWS community in a future version of the EMS software. This paper provides an overview of the SPoRT MET scripts, instructions for how the scripts are run, and example use cases.