



The Model Evaluation Tools: Expanded tools for forecast evaluation

Barbara Brown, Tara Jensen, John Halley Gotway, Paul Kucera, Randy Bullock, and Tressa Fowler
NCAR, RAL, Boulder, United States (bgb@ucar.edu)

The Model Evaluation Tools (MET) is a freely-available, supported software package for forecast verification, which has a modular software design, which allows additional capabilities and features to be added in future releases. MET was developed and is supported by the U.S. Developmental Testbed Center (DTC) and has become a cornerstone tool in DTC model testing and evaluation. It also is applied world-wide by over 2,700 registered users.

MET capabilities include tools for application of traditional verification methods (e.g., ACC, RMSE), focused mainly on comparing gridded forecasts to verify point or gridded observations. To account for the sampling uncertainty associated with these measures, methods for estimating confidence intervals for the verification statistics are an integral part of MET. MET also includes state-of-the-art tools for application of new spatial methods, including object-based and neighborhood approaches that provide meaningful diagnostic information regarding the forecast performance for coherent spatial fields such as precipitation. MET-TC is a relatively new MET module that is designed to aid in tropical cyclone (TC) forecast evaluation and verification. This toolkit provides a standard set of verification metrics and comprehensive output statistics that can be used for homogeneous comparisons of track and intensity forecasts, including comparisons of error distributions, application of conditional evaluations, and estimation of statistical confidence intervals. MET has also recently been enhanced with several new capabilities, such as automated re-gridding, application of MET to data assimilation diagnostic files, use of storm-following masking regions for tailored verification, calculation of categorical statistics for TC rapid intensification and rapid weakening events, and application of the Method for Object-based Diagnostic Evaluation – Time Domain (MODE-TD) approach for a variety of spatial and temporal scales of data. MET is freely available at <http://www.dtcenter.org/met/users/index.php>. New MET capabilities and example applications will be described in this presentation.