



Creating tools for forecast verification: MET and R verification package

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Part of NCAR's mission is to “foster the transfer of knowledge and technology for the betterment of life on Earth”. In forecast verification, this transfer of knowledge includes sharing of software that assists in weather forecast verification. Sharing software has many advantages. Readily available software has more users and with more users, feedback in the form of error-corrections and suggestions is more rapid. New verification methods are more quickly adopted if the tools to perform the techniques are available. This talk highlights two such efforts at NCAR: the Model Evaluation Tool (MET) and the “verification” package created in R.

The MET package is a highly-configurable forecast verification package that will be freely available to the Weather Research and Forecasting (WRF) user community. This toolkit provides WRF users with tools for use in model evaluation and verification. The initial release of the package will include capabilities for both grid-to-point and grid-to-grid verification methods. The verification methods included provide both traditional verification statistics and new diagnostic techniques, including object-based methods and confidence intervals. The MET has been developed by the Developmental Testbed Center (DTC) through the generous support of the Air Force Weather Agency (AFWA) and the National Oceanic and Atmospheric Administration (NOAA).

R is a open-source, statistical programming language that is used to create a package named “verification.” This package contains functions that provide both basic as well as new verification methods. Basic functions include those that create ROC diagrams, attribute diagrams and discrimination plots as well as a variety of skill scores.

New methods include those that incorporate measurement error in skill scores, calculate skill scores as a function of scale, and continuous ranked probability scores for angular values. This package has been created with contributions by users throughout the weather verification community. The package is distributed via R's website (r-project.org) so it is readily available to users in and outside the atmospheric community around the world.