



The Spatial Prediction Comparison Test: Account for Spatial Correlation and Location Errors

Eric Gilleland and Barbara Brown

National Center for Atmospheric Research, Boulder, CO, USA

Often it is of interest to test whether one forecast is better than another in terms of a specific loss function (e.g., RMSE, correlation, MAE). However, most tests require an independence assumption that is not generally valid for atmospheric models. Moreover, most of these tests do not account for small-scale errors of increasingly higher resolution forecasts, nor do they account for location/timing errors that have been known to greatly hinder their usefulness. An hypothesis test for competing forecasts that accounts for spatial correlation and location errors is described. The test is a modification of the Diebold-Mariano (DM) test for time series that also makes use of recently proposed spatial verification methods established to handle small-scale accumulation of errors and double penalties associated with location/timing errors.