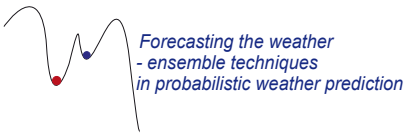
EMS Annual Meeting Abstracts
Vol. 8, EMS2011-101, 2011
11th EMS / 10th ECAM



Spatial Bayesian Model Averaging for Precipitation Forecasts from COSMO-DE-EPS

M. Scheuerer

Universität Heidelberg, Institut für Angewandte Mathematik, Heidelberg, Germany (michael.scheuerer@uni-heidelberg.de)

We present a statistical postprocessing technique that aims to calibrate precipitation forecast ensembles while maintaining the spatial correlation structure of forecast errors at different sites.
Raw forecast ensembles are sometimes biased and often underdispersive due to the great difficulties in representing all sorts of uncertainty by the ensemble. Bayesian model averaging (BMA) was demonstrated to be an effective method for generating calibrated probabilistic precipitation forecasts at individual sites based on the information contained in the dynamical ensemble. We present an extension of BMA which uses geostatistical methods to model the spatial correlation structure of forecast errors, allowing to generate calibrated probabilistic forecasts of whole precipitation fields simultaneously. At any site individually, spatial BMA reduces to the original BMA technique, but it can have great advantages when the interest is in forecasting of aggregate quantities such precipitation maxima or the overall amount of precipitation in some catchment basin.
We apply the spatial BMA technique to forecasts from COSMO-DE-EPS to obtain both precipitation forecasts at individual sites and precipitation field forecasts, and compare the verification results with those of the raw ensemble and of the standard BMA technique.