Geophysical Research Abstracts,
Vol. 11, EGU2009-1449-1, 2009
EGU General Assembly 2009

Evaluation and verification of a short-range ensemble precipitation prediction system over Iberia

M.L.. Martin (1), D. Santos-Muñoz (2), F. Valero (3), A. Pascual (3), and L.I. Sebastian (1)

(1) Universidad de Valladolid, Matematica Aplicada, Segovia, Spain (mlmartin@eis.uva.es), (2) Área de Medio Físico, Ente Público Puertos del Estado (EPPE). Av. Partenón, 10. 28042 Madrid. Spain. Fax: +34 915245504 , (3) Agencia Estatal de Meteorología. Leonardo Prieto Castro, 8. 28040 Madrid. Spain.

The purpose of this study is the evaluation and verification of a Short-Range Ensemble Prediction System (SREPS) built with five different model physical process parameterization schemes and two different initial conditions from global models, allowing to construct several versions of the non-hydrostatic mesoscale MM5 model for a 1-month period of October 2006. From the SREPS, flow-dependent probabilistic forecasts are provided by means of predictive probability distributions over the Iberian Peninsula down to a 10-km grid spacing. In order to carry out the verification, 25 km grid of observational precipitation records over Spain from the Spanish Climatic Network has been used to evaluate the ensemble accuracy together with the mean model performance and forecast variability by means of comparisons between such records and the ensemble forecasts. This verification has been carried out upscaling the 10 km probabilistic forecast to the observational data grid. Temporal evolution of precipitation forecasts for both mean ensemble members and the ensemble mean is shown, illustrating the consistency of the SREPS. Such evolutions, also named spaghetti diagrams, summarize the SREPS information, showing the different isolines for each of the members as well as the ensemble mean. Additionally, the probabilistic meteogram of the spatial daily mean precipitation values shows the range of forecast values, providing discrete probability information in different quantile intervals. The epsgram shows different daily distributions, indicating the predictability of each day. Moreover, the Talagrand derived from the SREPS results shows underdispersion which indicates some bias behaviour. The ROC curve shows a very outstanding area, indicating potential usefulness of the forecasting system. Additionally, the reliability diagram also depicts a good ensemble system performance, illustrating in general good agreement between forecast probability and the mean observed frequency.