

Limited Area Modelling in Romania

D. Banciu, O. Diaconu, C. Soci, S. Stefanescu

National Institute of Meteorology and Hydrology

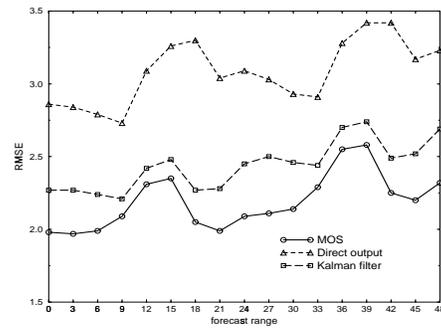
97 Sos. Bucuresti-Ploiesti, 71552 Bucharesti, Romania

banciu@meteo.inmh.ro

1 Numerical Weather Prediction System

During last year there were no important changes in the Romanian national numerical prediction system which is based on the Aladin model. The operational suite includes the post-processing for visualization, statistical adaptation (Kalman Filter and MOS) and the objective verification.

Since 2001 the statistical models are based on MOS technique using multiple linear regression (temperature, wind) and discriminant analysis (cloudiness and precipitation), leading to an improvement of the model scores (see figure) .

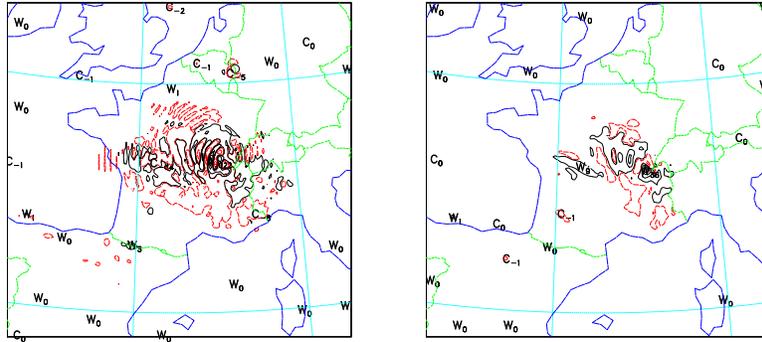


As a reserve, the workstation (updated) version of HRM developed by DWD is daily integrated at NIMH up to 78 hours (V. I. Pescaru).

2 Research and development activities

The research and development activities were mainly related to the Aladin model and concerned the data assimilation and coupling problem at high resolutions.

Sensitivity study at high resolution using a limited-area model and its adjoint for the mesoscale range. This study gives a first experimental frame for the evolution and performance of an adjoint model for the mesoscale range. The results have shown that the adjoint of a high resolution model including a description of the moist processes such as large scale precipitation, became unstable (left side figure). After investigations the problem was cured by modifying the shape and shift of the regularization function (right side figure).



The spectral representation of the spatial variability of the bi-dimensional forecast error covariances for temperature. The used covariances have been derived using the NMC method from the ARPEGE coupling files for the ALADIN/Morocco domain over a 87 days winter period. Pseudo-single-observation experiments have been done, including calculation of the latitudinal and longitudinal variation of the correlation function for different levels of the model and different locations of the observation point. The latitudinal and longitudinal variation of standard deviation and length scale of the correlation function have been also investigated. Different evolutions for the latitudinal and longitudinal variability have been observed.

