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2nd generation of the ALADIN-Limited Area Ensemble Forecasting System at ZAMG

F. Weidle (1), M. Bellus (2), A. Kann (1), M. Steinheimer (3), C. Wittmann (1), and Y. Wang (1)
(1) ZAMG, Vienna, Austria (f.weidle@zamg.ac.at), (2) SHMU, Bratislava, Slovakia, (3) ECMWF, Reading, UK

The Central European Limited Area Ensemble Forecasting system ALADIN-LAEF has been developed at ZAMG in frame of the international cooperation ALADIN/LACE. A modified version of the LAEF-System will be presumably in operational use on 1st Feburary 2009. The horizontal resolution is 18km with 31 levels in the vertical. The system runs with 16 perturbed members which are generated as follows:

The creation of the perturbed initial conditions is done separately for upper air fields and surface fields. The generation of the perturbed upper air fields base on 16 members from the ECMWF-EPS system. Since these EPS-members only consider large scale perturbations due to the lower resolution of the ECMWF-EPS with respect to the ALADIN-LAEF system (50 km against 18 km) these fields are combined by a digital filtering method (blending) with small scale perturbations that stem from a breeding cycling method. For the generation of the small scale perturbations by breeding, pairs of 12h forecasts from the LAEF-system are scaled by a predefined factor with respect to the ECMWF control run.
Since the use of the ECMWF-EPS surface fields lead to a high bias of low level surface parameter a non-cycling blending/breeding technique is implemented to create surface perturbation fields. Therefore the surface of the ECMWF-EPS members is exchanged by the ARPEGE surface analysis and a 12h forecast of the 16 system members is done to achieve 16 perturbed surface fields.

Now the initial conditions for a forecast by the ALADIN-LAEF system are ready where the lateral boundary conditions are derived from ECMWF-EPS coupling files. In addition, the LAEF-system runs with multi-physics to account for errors by the physical packages of the system.

The design of the 2nd generation of the ALADIN-LAEF system is presented as well as first validations of the improvements against the old version.