



## **Towards a high-resolution LETKF / ensemble nudging reanalysis system**

Liselotte Bach (1), Jan D. Keller (2,3), Christian Ohlwein (1,2), Andreas Hense (1), and Petra Friederichs (1)

(1) University of Bonn, Germany (libach@gmx.de), (2) Hans-Ertel-Centre for Weather Research, University of Bonn, Germany, (3) Deutscher Wetterdienst, Offenbach, Germany

Within the framework of the Hans-Ertel-Centre for Weather Research, a deterministic high-resolution regional reanalysis system has been set up based on the limited area NWP model COSMO. However, as providing users with reliable estimates of underlying uncertainty is becoming increasingly important, we propose an ensemble data assimilation system for regional reanalyses.

In the EU funded project UERRA, a hybrid local ensemble transform Kalman filter / ensemble nudging reanalysis system is developed, which will be used to generate an ensemble reanalysis data set for the European CORDEX domain at a target resolution of 12 km. The objective is to estimate the uncertainty with respect to both model and observational error. Therefore, a new approach called ensemble nudging is applied, which uses perturbed observations. Furthermore, in order to increase the number of observations available for data assimilation regions, statistical transfer functions are used to derive pdfs of boundary layer quantities from surface observations.

We present the perturbed observation data sets as well as the first ensemble nudging implementation in the data assimilation system by means of reanalysis case studies.