



## Preliminary evaluation and verification of the pre-operational COSMO-DE Ensemble Prediction System

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COSMO-DE-EPS is an ensemble prediction system (EPS) based on the operational model COSMO-DE, which covers the area of Germany and produces forecasts with a lead time of 0-21 hours. We present the pre-operational phase of the COSMO-DE-EPS which started in December 2010 with 20 ensemble members. Operational use is envisaged to start in 2012, after an upgrade to 40 members. The ensemble members include variations of initial conditions, lateral boundary conditions, and model physics. At present, pragmatic methods are applied which resemble the basic ideas of a multi-model approach. For the variation of initial and lateral boundary conditions four runs of COSMO on a 7km grid are nested into forecasts of four different global models and are used as boundary condition EPS ('BC-EPS'). For the variation of model physics different configurations of COSMO-DE are used.

We show case studies that illustrate advantages and weaknesses of the COSMO-DE-EPS. Statistical verification of the ensemble forecasts during the first period of pre-operation is also presented. Future plans include the perturbation of soil moisture fields, for which sensitivity studies using a simple approach have been performed. The impact of this type of perturbation on the ensemble is presented, along with future developments. The pragmatic approach for disturbing initial conditions currently used will be eventually replaced by a data-assimilation-based approach which uses the Ensemble Transform Kalman Filter method (under development in the COSMO project KENDA).