

# Systematic errors of the new high-resolution NWP ensemble prediction system of MeteoSwiss

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MeteoSwiss has recently developed the new ensemble prediction system COSMO-E<sup>1</sup> which is in operations since May 2016. COSMO-E with a mesh-size of 2.2 km provides 21 equally likely forecasts for the Alpine region out to +120 hours twice a day. The initial conditions (ICs) for these forecasts are generated by a new ensemble data assimilation system based on a Local Ensemble Transform Kalman Filter (LETKF; 40 members at 2.2 km mesh-size). The lateral boundary conditions (LBCs) as well as the LBC perturbations are taken from the global IFS-ENS ensemble of ECMWF (51 members at 18 km mesh-size). Model errors are taken into account with a Stochastic Perturbation of Physical Tendencies (SPPT) scheme.

The poster will show first operational verification results as well as selected results from spread-error comparisons, both for individual cases and extended periods. The results suggest that COSMO-E is moderately overconfident. The lack of ensemble spread is most pronounced for humidity and temperature in the lower troposphere and for short lead-times and winter / strong synoptic forcing. For longer lead-times and the upper troposphere the ensemble spread matches the forecast error fairly well, especially for summer / weak synoptic forcing. Ideas to further increase the model spread by adding more perturbations at the lower as well as lateral boundaries and by adding more model error schemes will also be presented.

<sup>1</sup> <http://www.meteoswiss.admin.ch/home/measurement-and-forecasting-systems/warning-and-forecasting-systems/cosmo-forecasting-system/cosmo-e-probabilistic-forecasts-for-the-alpine-region.html>