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The impact of initial condition perturbations in COSMO-DE-EPS under different synoptic-scale forcing

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The convection-permitting ensemble prediction system COSMO-DE-EPS has been operational at Deutscher Wetterdienst since May 2012. The individual ensemble members are created by perturbing the lateral boundary conditions of the limited-area model to account for synoptic-scale uncertainty, and selected physics parameterisation schemes aiming at smaller-scale uncertainty. In addition, initial condition perturbations have been incorporated in a pragmatic approach consistent with the lateral boundary condition perturbations.

Here, we investigate the influence of the initial condition perturbations on the EPS forecasts with a focus on the predicted precipitation. For this purpose, the pre-operational setup of COSMO-DE-EPS is compared to a similar EPS without initial condition perturbations for a 3.5-month period in spring/summer 2011. The impact of the initial condition perturbations is studied under consideration of the prevailing regime of large-scale forcing using the concept of the convective adjustment time scale.