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The challenge of generating initial atmospheric and land surface perturbations in regional EPS

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Over recent years regional EPS has become more important as a scientific tool for improving prediction of extreme weather. However, there are still several challenging subjects in regional EPS, for example, how to cope with the interaction between larger scale perturbations given by the driving global EPS and "local" perturbations generated specifically for regional EPS; and how to generate the land surface initial perturbation etc.

Some methods for dealing with initial atmospheric and land surface uncertainties have been proposed and implemented in the Central European ensemble prediction system ALADIN-LAEF (Limited Area Ensemble Forecasting): blending large-scale atmospheric perturbations derived from ECMWF EPS with small-scale atmospheric perturbations from ALADIN breeding; generating surface initial perturbations by a non-cycling surface breeding technique (NCSB); ensemble land surface assimilation for the ALADIN-LAEF surface initial perturbations.

Experiments have been carried out for evaluation of those perturbation generation methods in ALADIN-LAEF. Different methods for the initial perturbations have been also compared. Outcomes of these evaluations will be presented at the meeting.