

Regional reanalysis: Concepts, potential and added value

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Abstract:

In the framework of the Hans-Ertel-Centre for Weather Research (HErZ - a virtual center of university groups dedicated to basic research towards the needs of the German national Meteorological Service DWD) two regional reanalysis data sets for Europe have been produced. Further, efforts are continuously made in order to enhance the existing and develop new regional reanalysis systems and therefore improve the representation of the atmospheric state estimates in regional reanalyses.

In the first part of the presentation, the main motivation for the development of regional reanalyses is outlined and the setup of the reanalysis systems is described. Further, evaluations are shown for various parameters in order to illustrate the added value of regional reanalyses in comparison to global reanalyses with respect to the representation of weather and climate. In addition, current work and future developments in the field of regional reanalysis at HErZ and DWD are presented.

In the second part of the presentation, the so-called ensemble singular vector (ESV) method will be introduced. This approach allows for an enhanced estimation of error growth structures in ensemble forecast. Here, the application of this technique to the limited area model COSMO is shown for estimating error growth structures on the convective scale. Further, first experiments are presented on the utilization of ESVs in potentially improving data assimilation in the LETKF-based KENDA scheme.