



Assimilation of cloud information into the numerical weather prediction model COSMO-DE

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Currently a new data assimilation system is under development at DWD for the COSMO model on the 2.8km scale. This new data assimilation scheme is based on a Local Ensemble Transform Kalman Filter (LETKF) and will replace the currently operational nudging system. The LETKF will overcome some drawbacks of the nudging approach, especially with respect to the assimilation of indirect observations as from satellites, i.e. the assimilation of variables which are not state variables of the model. This offers new perspectives for the assimilation of a variety of data that have up to now not been assimilated in the regional model.

In this presentation the strategy and steps towards the assimilation of cloud information into the COSMO model will be presented. Cloud information is obtained from Meteosat-SEVIRI satellite cloud retrieval products, radiosonde ascents and surface cloud information and is combined to a cloud analysis. This cloud analysis will be used within the LETKF for weighting the ensemble members to best fit this “pseudo” observation in the analysis step for improving the horizontal and vertical position and extent of clouds in the model. In order to develop a strategy how to exploit this information in the LETKF, COSMO model clouds have been compared to the observations. These comparisons reveal characteristics of the different observation systems and the cloud parameterization within the model and give indications how to use the cloud information in the data assimilation process.