



Ensemble data assimilation of radiance in a high-resolution limited-area model

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A 1D-var system has been designed for the assimilation of temperature and humidity profiles from MSG's images (Meteosat Second Generation) in the high-resolution limited area model Lokal Modell, the non-hydrostatic model of the COSMO Consortium.

In order to have a flow-dependent background error covariance matrix (B), an ensemble data assimilation technique is followed. The B -matrix is created from limited-area ensemble forecast members, generated either by hourly-lagged forecasts or by perturbing the model parameters, the spread of the ensemble being representative of the errors during the assimilation cycle.

The retrieved profiles are compared with that obtained by using a reference B -matrix, calculated following a standard observational approach where statistics of model-observation departures are calculated over radiosound locations. The profiles are compared with radio sound measurements and it is shown that the inclusion of flow-dependent components in the B -matrix is relevant to improve the performance of the 1D-var algorithm.