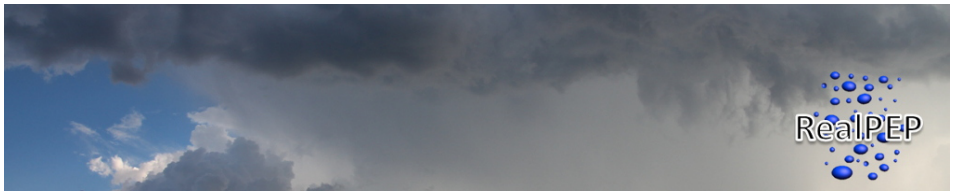

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Improvements on the assimilation of radar reflectivities

Tuesday, October 6, 2020 4:00 PM (20 minutes)

Recently, the assimilation of radar reflectivities has become operational at the DWD. However, the assimilation of radar data still comes along with some unique challenges and shows several deficiencies in practice.

For addressing some of these deficiencies, we present two approaches for further improving the assimilation of this new kind of data within the framwork of the localized ensemble transform Kalman filter (LETKF).

First, we investigate the impact of an update of additional hydrometeors like, e.g., qr, qg, qs during the assimilation which, eventually, aims for improving the model physics.

Second, we address one of the limitations of the LETKF itself which occurs in the case where simulated reflectivities exhibit a comparatively small spread leading to small increments even for situations where observed and simulated reflectivities show large discrepancies. For overcoming this issue, we present the *additive covariance inflation* approach which exploits an additional correlation between the reflectivity and humidity qv for artificially increasing the spread of simulated reflectivites if necessary.

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