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Assimilating solar reflectances in ICON-D2

Enabled by the new fast and accurate forward operator MFASIS (Scheck et. al, 2016), we work on assimilating solar reflectances measured by the SEVIRI instrument on Meteosat Second Generation in our new convective-scale NWP system ICON-D2-KENDA. We discuss key challenges calling for progress in research areas such as cloud microphysics, data assimilation algorithms to deal with the non-linearity of the forward operator and approaches to handle the non-local character of the observations. Subsequently, we show that despite these challenges we obtain promising positive impact in forecasting cloud cover and precipitation in numerical experiments with a local ensemble transform Kalman filter.

Primary authors: Dr BACH, Liselotte (Deutscher Wetterdienst); Dr SCHECK, Leonhard (Deutscher Wetterdienst); Dr STUMPF, Christina (Deutscher Wetterdienst); Dr SCHRAFF, Christoph (Deutscher Wetterdienst); Dr KÖPKEN-WATTS, Christina (Deutscher Wetterdienst); Prof. POTTHAST, Roland (Deutscher Wetterdienst)

Presenter: Dr BACH, Liselotte (Deutscher Wetterdienst)

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