



Assimilation of hyperspectral IR radiances over land using a principal components based representation of surface emissivity

Kristin Raykova, Christina Köpken-Watts, Andreas Rhodin, Olaf Stiller, Anne Walter, Robin Faulwetter, and Roland Potthast

Deutscher Wetterdienst, Meteorological Analysis and Modelling, Offenbach, Germany (kristin.raykova@dwd.de)

The assimilation of IR radiances from hyperspectral sounders (IASI, CrIS) shows large positive impact in many operational numerical forecasting systems. However, most data are still used over the oceans, as the extension of data use for the analysis of temperature and humidity fields over land presents more challenges related to the accuracy of the description of the underlying surface – and this is an active research area. At DWD, a method to retrieve the surface skin temperature and surface emissivity together with the profile of atmospheric temperature and humidity has been implemented and is being evaluated. The method we chose relies on a description of the spectral variations of the emissivity through a set of principal components which are analysed together with the other variables. The poster will introduce the method and discuss evaluation results using IASI (and CrIS) data within the DWD ICON+EnVar system with a focus on single case analysis for a range of surface types and retrieval conditions.