



Data assimilation of SMOS data: making sense of soil moisture observations

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The land data assimilation system developed at NILU in collaboration with the Norwegian Meteorological Institute and Météo-France will be used to assimilate soil moisture from the ESA SMOS (Soil Moisture and Ocean Salinity) mission. Planned applications include studies of the hydrological cycle in Norway and Amazonia, highly challenging regions due to their surface characteristics. The system is based on the SURFEX land surface model from Météo-France, and uses various variants of the Ensemble Kalman Filter, as well as the Extended Kalman Filter currently in place at Météo-France. Assimilation of SMOS soil moisture data makes sense of these observations by extending their spatial and temporal coverage and testing their error characteristics. In preparation for data assimilation of SMOS data, a thorough analysis of the error characteristics of SMOS soil moisture observations and SURFEX is being carried out. Parallel to this effort, on-going experiments with assimilation of AMSR-E soil moisture are being used to test the system. This presentation will show results from this effort, with a focus on Norway. Preliminary estimates of the error characteristics of SMOS soil moisture observations will be provided. Results will be of benefit to Numerical Weather Prediction agencies, space agencies and the broad scientific community, including hydrologists and climate modellers.