



Use of SMOS data for Numerical Weather Prediction (NWP): The ECMWF soil moisture analysis

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This paper presents the contribution of the European Centre for Medium-Range Weather Forecasts (ECMWF) to the SMOS (Soil Moisture and Ocean Salinity) mission. ECMWF plays a major role in developing and implementing the use of SMOS brightness temperature data in NWP models. The contribution of ECMWF to the SMOS mission is two-fold.

- Development of a global data monitoring system for the SMOS near-real-time product to provide a timely quality check for ESA and the SMOS Validation and Retrieval Team (SVRT).
- Assimilation of SMOS brightness temperature data over land in ECMWF's global NWP system through the Surface Data Assimilation System based on an Extended Kalman Filter.

One main component of the monitoring is the observation operator that transforms model fields of soil moisture and ocean salinity into observation equivalent brightness temperatures. To this end the CMEM (Community Microwave Emission Model) has been developed at ECMWF. CMEM as well as forward modelling results and validation are presented. The EKF system is introduced and preliminary results are shown based on soil moisture data assimilation.