

Satellite inspired hydrology in an uncertain future: a H SAF and HEPEX workshop



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Type: **Oral presentation**

SMOS Soil Moisture and its potential within the Copernicus Emergency Management Service for Flood Forecasting at ECMWF

Wednesday, 27 November 2019 09:30 (20 minutes)

The flood forecasting component of the Copernicus Emergency Management Service Early Warning System (CEMS-EWS Floods), run at the European Centre for Medium-range Weather Forecasts (ECMWF), provides medium range flood forecasts at both the European and global scales. Forecast accuracy correlates strongly with accurately representing the initial status of hydrological variables including soil moisture. Initial soil moisture status within CEMS-EWS Floods is currently obtained by a hydrological analysis of point scale temperature and precipitation observations. Remotely sensed soil moisture from SMOS may provide a better representation of the initial soil moisture status than the current methodology.

This study evaluates the potential use of SMOS soil moisture data within CEMS-EWS Floods, using the level 1 Near Real Time (NRT) SMOS soil moisture Neural Network product trained on the ECMWF land surface scheme. First a long-term comparison against existing re-analysis datasets was made, including the CEMS-EWS Floods analysis in Europe and ERA5 globally, to ascertain spatial and temporal correlations. Data assimilation was then conducted within the European and global components of CEMS-EWS Floods. The resulting changes in streamflow accuracy provide a good test of benefits of assimilating SMOS soil moisture data.

Which session would you like to present in?

1. Hydrological validation and benchmarking

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