Contribution ID: **16** Type: **Poster presentation**

Overview of the Met Office land surface data assimilation system

The operational Met Office (MO) Land Surface Data Assimilation (LSDA) system for Global and Regional (UKV) models is summarised alongside upcoming developments. The MO land and atmospheric analyses are weakly coupled. Each component is computed separately and then the joint analysis is propagated by the Unified Model coupled with the land surface model Jules.

In the global model, LSDA is performed using an Extended Kalman Filter algorithm (6-hourly cycling) to assimilate screen-level pseudo-observations, derived from a DA variational step, and ASCAT soil wetness. The sensitivity to observations is estimated by finite differences computed using perturbed Jules standalone runs. This methodology is being tested in the UKV so that, instead of receiving a daily soil moisture analysis reconfigured from the global model, it assimilates (hourly cycling) the same observation types.

Currently, in the global model, a daily snow analysis is created for the Northern Hemisphere using the snow cover product from the NESDIS Interactive Multi-sensor Snow and Ice Mapping System. A new system is being developed to provide the UKV with a snow depth analysis using an optimal interpolation algorithm and assimilating in situ SYNOP reporting stations and satellite-derived observations of snow cover from EUMETSAT H-SAF.

Which session would you like to present in?

1. Hydrological data assimilation for NWP

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Track Classification: H SAF and HEPEX joint workshop on ”Satellite inspired hydrology for an uncertain future”