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A combination of land surface modelling and remote sensing: synergy between LSA-SAF and H-SAF for soil moisture retrieval.

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The EUMETSAT Satellite Application Facility on Land Surface Analysis (LSA-SAF) has the objective to provide output fields able to characterise continental land surfaces by using information obtained from MSG and METOP satellites (see for information http://landsaf.meteo.pt/). LSA-SAF products include surface radiation budget components and biophysical parameters related to water balance and vegetation. In this framework, evapotranspiration (ET) is produced, based on LSA-SAF results. For this purpose, a model is used and adapted from the ECMWF Tessel Soil Vegetation Atmosphere Transfer (SVAT) scheme, forced with data derived from MSG. The current version of the algorithm is running since November 2006 in near real time at the Portuguese Meteorological Institute, host of the LSA-SAF. The results are presently in an extensive validation phase and are already freely accessible to registered beta users.

While the current version of the algorithm uses surface radiation fluxes derived from the MSG SEVIRI instrument and soil moisture (SM) from ECMWF, research is ongoing in view to improve further the results. In the current phase of the project special attention is paid to SM. The objective is to start from past experience gained with ERS/SCAT and current expertise available in the EUMETSAT H-SAF (SAF on Support to Operational Hydrology and Water Management) to assimilate in the future METOP/ASCAT data.

For this purpose, the LSA-SAF ET algorithm has been further developed to model

heat and moisture fluxes in the soil layers. Preliminary to the active microwave data exploitation, a comparison is done over 10 years SM time series. LSA-SAF, ECMWF-ERA40 and ERS/SCAT SM are considered with the objective to match these different datasets. This exercise is done on a large sample of points spread over Europe. In this contribution, a short description of past and current activities is given as well as validation results of the LSA-SAF ET model against in-situ observations. Comparisons between the considered SM datasets are presented as well as steps planned for their exploitation in the near-future.

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