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Evapotransiration at large scale derived from MSG SEVIRI and ECMWF data.

Françoise Gellens-Meulenberghs, Alirio Arboleda, Nicolas Ghilain, and Guadalupe Sepulcre Canto
Royal Meteorological Institute, Avenue Circulaire, 3, B-1180 Brussels, Belgium (f.meulenberghs@oma.be)

Evapotranspiration (ET) is an important component of the water cycle. Its quantification is of primary importance for a lot of applications like environment management, agriculture and drought monitoring. As it cannot be observed directly, it remains one of the poorly known water balance components. Nevertheless, it can be obtained indirectly through land surface modeling. This indirect approach is adopted here to derive ET at continental scale by using as forcing ECMWF and satellite data. The geostationary Meteosat Second Generation (MSG) satellite is designed to continuously survey Europe, Africa and the Eastern part of South America. The on-board SEVIRI instrument has a 3 km spatial resolution at sub-satellite point and is designed to monitor quickly evolving surface characteristics. The study is achieved in the framework of the EUMETSAT (http://www.eumetsat.int) 'Land-Surface-Analysis Satellite Application Facility' (LSA-SAF, http://landsaf.meteo.pt/). Current phase is called 'Continuous Development and Operations Phase 1 (CDOP1, 2007-2012) and should be followed by a next phase (CDOP2, 2012-2017). The purpose of this contribution is to present the currently ET model and results and to give insights into on-going developments.

The baseline version of the model is a simplified Soil-Vegetation-Atmosphere Transfer (SVAT) scheme using as input remote sensed albedo and associated surface radiative fluxes. An extensive validation is done at different spatial and temporal scales. Results analysis, comparison with other models (ECMWF and GLDAS) and validation with in-situ observations from FLUXNET and CEOP stations are used to assess model uncertainty. Illustrations show how the model can provide information on spatial and temporal variability of ET.

Research activities are pursued, searching for additional validation sites and evolving towards an improved combination of observations and models. Research activities include (1) assessing the benefit of including an explicit modeling of soil thermal and moisture fluxes and comparing with ECMWF SM, (2) investigating satellite observations of Land Surface Temperature (LST) and its relationships with modeled skin temperature and SM, (3) evaluating the potential use of scatterometer data (available from ERS/Metop) to improve superficial SM, (4) evaluating uncertainty decrease by replacing monthly constant vegetation parameters from ECOCLIMAP data base by ten-day vegetation parameters obtained by RS. Successful activities will be successively implemented to replace previous versions of the model.

The baseline version of the model is currently running in near real time at the LSA-SAF host institute producing ET results over the full MSG disk with a time step of 30 minutes. The data are freely accessible to registered user via internet, ftp or EUMETCast. Interested users are able to contribute to the product improvement by giving a feedback to the authors of this abstract on their advice or suggestions.