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Reference Crop Evapotranspiration: a new LSA SAF product

Henk A. R. de Bruin (1), Isabel F. Trigo (2,3), and Fred C. Bosveld (4)

(1) Associate Professor Emeritus, Wageningen University, freelance consultant, Bilthoven, The Netherlands, (2) Português do Mar e da Atmosfera (IPMA), Lisbon, Portugal, (3) Instituto Dom Luiz (IDL), Universidade de Lisboa, Portugal, (4) Royal Netherlands Meteorological Institute, De Bilt, The Netherlands

This presentation can be seen as a follow-up of the solicited presentation at the EMS 2012 meeting on LSA SAF by Viterbo et al. In February 2017 the LSA SAF Reference Crop Evapotranspiration (ETref) product became operational. It concerns daily mean values of ETref disseminated almost real-time for each pixel of the geostationary European meteorological satellite MSG (Trigo et al. 2017a and b). That means daily ETref is estimated in Near Real Time for most of Europe, the Mediterranean, the Middle East, Africa, and a part of South America.

The product can be used within the framework of the crop-factor methodology described in the FAO Irrigation and Drainage report 56 (FAO56) to estimate water requirements of irrigated crops. Furthermore, the product can be applied also as a drought indicator. The method is simple, but based on sound thermodynamics combined with boundary layer physics.

The algorithm will be described briefly and the main findings of the validation report will be summarized. Comparisons between the LSA SAF ETref approach and the Penman-Monteith methodology proposed in FAO56 and widely used in irrigation practice reveal that the LSA SAF methodology does not suffer from the so-called surface aridity error, by which over-pumping of ground water for irrigation can be avoided. Evidence will be presented that the FAO56 method - if not corrected for surface-aridity errors - can lead to significant overestimations. Moreover, aspects of local advection will be discussed.

References:
LSA SAF: https://landsaf.ipma.pt/
Trigo et al. (2017): algorithm report SAF_LAND_IPMA_ATBD_ET0_v1.1.pdf
Trigo et al. (2017): validation report SAF_LAND_IPMA_VR_ETREF_v1.1.pdf