

PREMIER-EO: Evaluating the Accuracy of EO-based Evapotranspiration and Soil Moisture Operational Products

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Abstract

Earth Observation (EO) technology provides today the only viable solution for obtaining continuous spatio-temporal estimates of latent (LE) and sensible (H) heat fluxes as well as soil moisture content (SMC). Being able to map those parameters is of great importance, given their close relevance to many physical processes of the different components of the Earth system as well as their use in a wide range of multi-disciplinary research studies and applications. Such information is of key value to practitioners, decision makers and scientists alike where it can help address key outstanding issues of global scientific interest related to water and food security.

Although important, global operational estimation of LE/H fluxes and of SMC from EO datasets is lacking or is underdeveloped. The PREMIER-EO project, funded by High Performance Computing Wales (HPCW), recognising this gap that currently exists in the operational retrieval of such parameters, proposes to develop a fundamental understanding of the present operational ability of EO technology at a global scale and contribute to current ongoing efforts towards enhancing the accuracy of such products.

In this presentation we introduce the PREMIER-EO project and provide a detailed overview of the research aims and objectives for the 1 year duration of the project's implementation. Subsequently, we make available the initial results of the work carried out herein, in particular, related to an all-inclusive and robust evaluation of the accuracy of existing operational products of ET and SMC from different European ecosystems.

Our findings support the potential value of the different operational products for regional to mesoscale studies and practical applications. The latter is of particular importance for water limiting environments such as those found in the Mediterranean basin, as accurate information on ET rates as well as SMC can provide tremendous support in sustainable water resource management as well as policy and decision making.

Key Words: PREMIER-EO, HPC Wales, Soil Moisture, Evapotranspiration, LE, Earth Observation