

# **Towards Improving our Understanding on the Retrievals of Key Parameters Characterising Land Surface Interactions from Space: Introduction & First Results from the PREMIER-EO Project**

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## **Abstract**

Acquiring accurate information on the spatio-temporal variability of soil moisture content (SM) and evapotranspiration (ET) is of key importance to extend our understanding of the Earth system's physical processes, and is also required in a wide range of multi-disciplinary research studies and applications. The utility and applicability of Earth Observation (EO) technology provides an economically feasible solution to derive continuous spatio-temporal estimates of key parameters characterising land surface interactions, including ET as well as SM. Such information is of key value to practitioners, decision makers and scientists alike.

The PREMIER-EO project recently funded by High Performance Computing Wales (HPCW) is a research initiative directed towards the development of a better understanding of EO technology's present ability to derive operational estimations of surface fluxes and SM. Moreover, the project aims at addressing knowledge gaps related to the operational estimation of such parameters, and thus contribute towards current ongoing global efforts towards enhancing the accuracy of those products.

In this presentation we introduce the PREMIER-EO project, providing 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 SM from different ecosystems globally.

The research outcomes of this project, once completed, will provide an important contribution towards addressing the knowledge gaps related to the operational estimation of ET and SM. This project results will also support efforts ongoing globally towards the operational development of related products using technologically advanced EO instruments which were launched recently or planned be launched in the next 1-2 years.

**Key Words:** *PREMIER-EO, HPC Wales, SVAT, Triangle Method, Soil Moisture, Evapotranspiration, LE, Earth Observation*