



A Ground-based Network Set Up for Soil Moisture Monitoring in West Wales, UK: the WSMN Network

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Soil moisture (SM) is a significant component of climatological, hydrological and ecological systems. It has long been recognised as a key state variable of the global energy and water cycle due to its control on exchanges of energy and matter and physical processes. Thus, information on its variation over time and space domains is of key importance to both practitioners and researchers alike from a variety of disciplines. There is a breadth of options that can be considered for deriving estimates of SM, one of which is the use of ground instrumentation. In view of the requirement for information on the spatial distribution of SM, ground-based observational networks have also been developed worldwide, providing SM data operationally, and at no cost to the user's community globally. Such data is also pivotal in studies concerned with benchmarking related Earth Observation-based datasets, since ground measurements are often used as "reference" in validating satellite-derived products of SMC.

In this context, we present herein our recent progress towards the establishment of an autonomous in-situ network - named WSMN (Wales Soil Moisture Monitoring Network) - for obtaining, on a long term basis and in near real-time, measurements of SM and related parameters for west Wales, United Kingdom. The WSMN network currently consists of six stations based close to the Aberystwyth region and has been collecting data since 2011. The network is now fully deployed distributing all collected data via the International Soil Moisture Network (ISMN) platform. Herein, we present results on SM trends from a time series analysis conducted analysing the data collected until end of 2014.

The availability of this new in-situ dataset is of paramount importance to the region as it is expected to help advance our understanding on the physical processes involved in water and energy exchanges at the local scale. Moreover, in a boarder scale, this study assists towards an objective evaluation of the retrieval accuracy of relevant satellite-derived SM estimations for the region of Wales, something that to our knowledge is at present largely lacking or under-developed.

KEYWORDS: soil moisture, in-situ measurement networks, ISMN, WSMN