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Assessment of SMOS satellite derived soil moisture for soil moisture deficit estimation.

Microwave remote sensing has a huge potential in monitoring global hydrological processes. The latest satellite soil moisture dedicated mission like SMOS is providing a flow of coarse resolution soil moisture data, which can be used for hydrological applications. In this study, various linear and non linear algorithms are tested for estimating soil moisture deficit (SMD) from SMOS derived soil moisture. The observed high Nash Sutcliffe Efficiencies and low RMSE errors between the SMDs from SMOS and Probability Distribution Model (as a benchmark) clearly demonstrate a high interrelationship between the two. The derived algorithms may be extended to ungauged catchments by regionalisation. This assessment of SMOS soil moisture serves as one of the first demonstrations that there is hydrologic relevant information in the coarse resolution microwave satellite data, which could be used for hydrological modelling.