



## **Soil moisture retrieval from Space: How and what for**

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Soil moisture has always been a most required surface variable, but its retrieval in a global fashion has always proved very difficult. The quest for the soil moisture started to find solutions when remotely sensed data became available. However, to be useful, soil moisture estimates have to fulfil a number of requirements. Remote sensing could thus provide a solution but the requirements are very stringent and only “all weather” direct measurements could provide a satisfactory answer. The goal of this presentation is to try to give an overview of existing all over the available spectrum, asses advantages and drawbacks with respect to varying end uses so as to identify the different possibilities currently available as well as the potential ways forward. Currently, it is often considered that the only possible and efficient approach relies for a good part on the use of low frequency passive microwave measurements as depicted in the SMOS and HYDROS/SMAP missions. But also requires otherdata sets.. Moreover, these measurements only concern the surface layer. To access the vadose zone, indirect methods using models and assimilation are required. The first goal of this keynote is to endeavour to give a view of the history and the current state of the art of “global” soil moisture retrievals. The second goal is to provide a feeling of what could be the future evolution required to obtain, from space, accurate, adequate, and useful information on soil moisture.