



The International Soil Moisture Network and its benefit for soil moisture product validation

Irene Himmelbauer, Luca Zappa, Angelika Xaver, and Wouter Dorigo

Technische Universität Wien, Climate and Environmental Remote Sensing, Geodesy and Geoinformation, Austria
(irene.himmelbauer@geo.tuwien.ac.at)

Soil moisture was recognized as an Essential Climate Variable in 2010, highlighting its key role for the environment and climate. Therefore, monitoring soil moisture conditions is of major interest. Several retrieval methods and approaches have been developed based on satellite missions. Still, in situ soil moisture measurements are crucial to calibrate and validate these products. For a meaningful comparison with remotely sensed data and reliable validation results, the quality of in situ observations is essential.

Various independent locally and regionally operating in situ networks exist but they do not follow standardized techniques or protocols. Data is collected in different units, at different depths and at various sampling rates. Besides, quality control is rarely applied.

The International Soil Moisture Network (ISMN;<http://ismn.geo.tuwien.ac.at/>) is a unique project with its assignment to collect in situ soil moisture data and further to make it available for users. In short, the ISMN is a centralized data hosting facility for in situ soil moisture data. In situ measurements (surface and sub-surface) are collected, harmonized in terms of units and sampling rates, advanced quality control is applied and the data is then stored in a data base from where users can download the data for free. Since its development in 2009, the ISMN is growing continuously (data volume and users). Historic measurements starting in 1952 up to near-real time observations are available through a web portal. Currently, the ISMN consists of 59 networks with almost 2500 stations spread all over the globe. With more than 2300 users the value of the ISMN as a well-established source for in situ soil moisture observations is widely recognized.

In conclusion, with its data the ISMN undoubtedly created an broad base for soil moisture validation of remotely sensed and modelled products in science.