EGU24-2102, updated on 26 Apr 2024
https://doi.org/10.5194/egusphere-egu24-2102
EGU General Assembly 2024

Quality Assurance for Soil Moisture (QA4SM): A Platform for Validating Satellite Soil Moisture Data Against Fiducial Reference Measurements

Nicolas Bader[1], Wolfgang Preimesberger[1], Monika Tercjak[2], Alexander Boresch[2], Daniel Aberer[1], Irene Himmelbauer[1], François Gibon[3], Arnaud Mialon[3], Raffaele Crapolicchio[4], and Alexander Gruber[1]

[1]TU Wien, Department of Geodesy and Geoinformation, Vienna, Austria
[2]Angewandte Wissenschaft und Technologie GmbH (AWST), Vienna, Austria
[3]CESBIO, Université de Toulouse, CNES/CNRS/INRAe/IRD/UPS, Toulouse, France
[4]European Space Agency (ESA) - ESRIN, Frascati, Italy

The purpose of the Quality Assurance for Soil Moisture (QA4SM) service is to provide a central, cloud-based platform for soil moisture data validation. QA4SM is an easy-to-use graphical web interface that caters to both producers of satellite soil moisture data as well as users of such products. It provides the means to assess quality requirements for satellite products, as defined by the Global Climate Observing System (GCOS) for example, all the way to the validation and (inter)comparison of satellite data against (fiducial) reference measurements and land surface model data.

QA4SM delivers reproducible validation results based on a consistent methodology and community-agreed best practices. Numerous well-known data products are readily available and periodically kept up to date. This includes satellite products of different levels from SMOS, SMAP, ASCAT, and Sentinel-1 missions. Further, data products from both the Copernicus Climate Change Services (C3S) and the ESA Climate Change Initiative (CCI) are provided, too. Also included is data from the International Soil Moisture Network (ISMN) and reanalysis model data such as NASA's GLDAS-Noah or ECMWF's ERA5(-Land). Beyond that, users can upload custom datasets to the platform in different formats.

QA4SM offers a broad palette of processing tools such as: the filtering of datasets according to flags or versions; spatial and temporal scaling options; the selection of spatial and temporal subsets; temporal matching methods; and different metric and anomaly calculations for up to six datasets simultaneously. Means for a subsequent publication of the results, including the generation of a digital object identifier (DOI), are implemented as well.

In this talk, we will present the functionalities and tools provided by QA4SM, and report on recent updates, the latest features, and planned future developments of the platform. Both scientific and technical aspects will be discussed.