



The International Soil Moisture Network (ISMN) in support of Satellite Soil Moisture Validation

Daniel Aberer¹, Irene Himmelbauer¹, Lukas Schremmer¹, Ivana Petrakovic¹, Wouter Dorigo¹, Philippe Goryl², and Roberto Sabia²

¹ Technische Universität Wien, Department of Geodesy and GeoInformation (Austria) | ²European Space Agency, ESA-ESRIN, Telespazio – Vega UK Ltd

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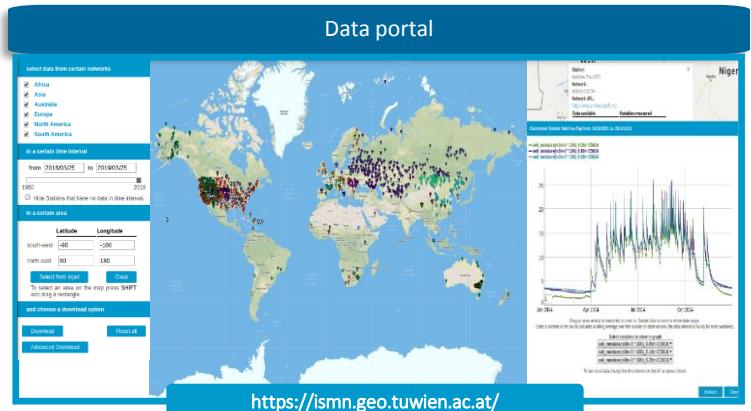


Figure: available stations in ISMN Data viewer

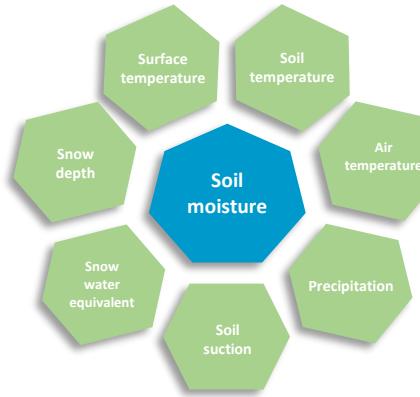
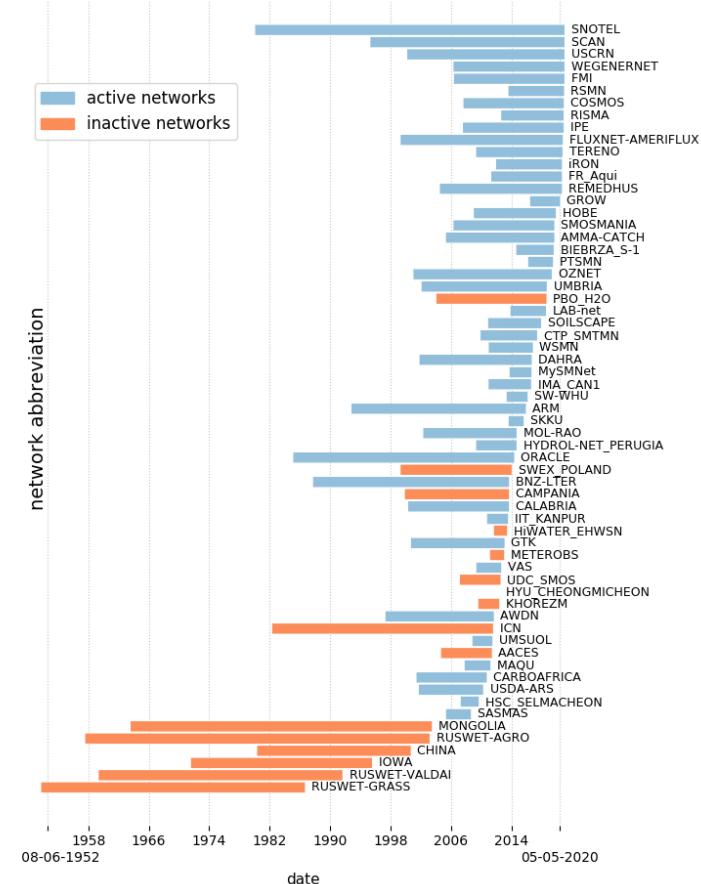
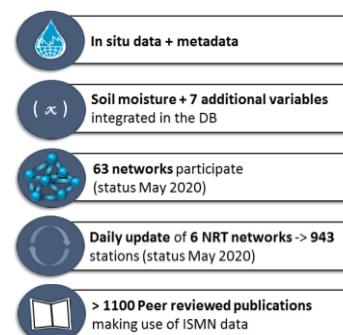


Figure: Additional variables at ISMN

- 💧 The ISMN collects **in situ soil moisture data**
- 💧 harmonizes the data (units and sampling rates)
- 💧 applies **advanced quality controls**
- 💧 stores the processed data and
- 💧 distributes the data for **FREE**



Graph: Temporal coverage of all 63 contributing networks



Data Collection

Data Harmonization

Quality Control

Database Storage

Data Portal

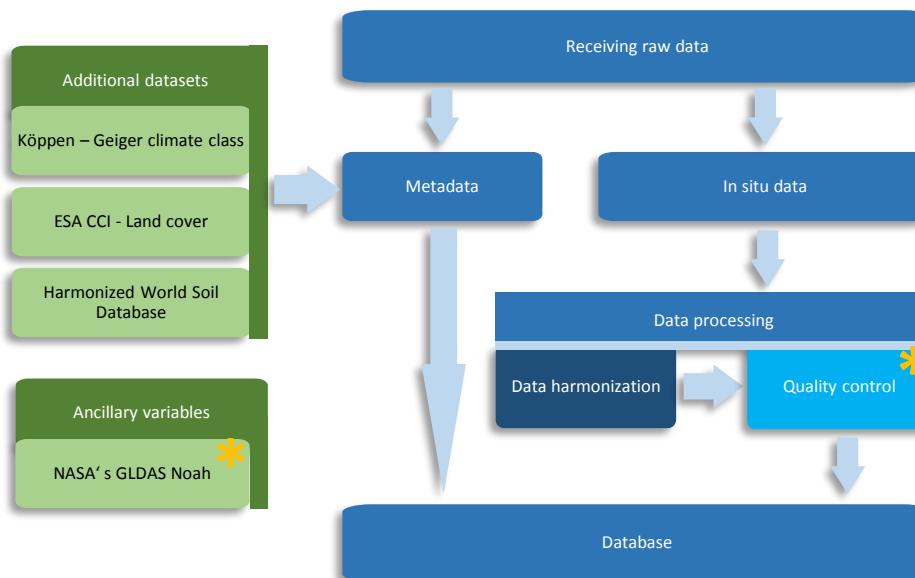


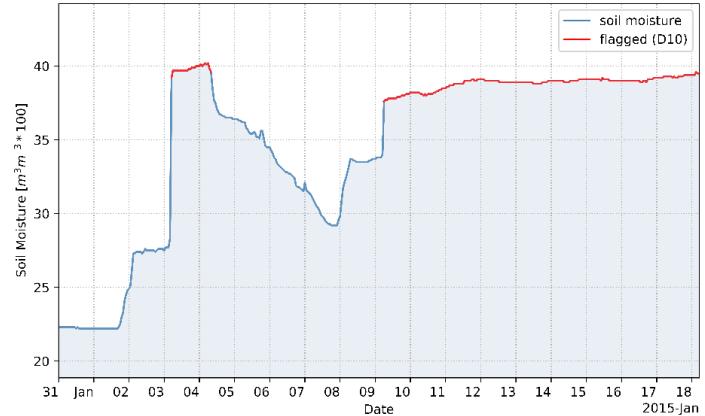
Figure: ISMN processing – from raw data to database storage

- 💧 unified data format
- 💧 hourly data
- UTC
- Same units

Quality control

Flag D10 – Saturated Plateau

HOBE, 1.07, Decagon STE-A, Depth: 0.05m, id: 73818



Plot: Suspicious values on plateau flagged with value "D10"

Flag category	Flag values	Definition
C	C01 - C03	Threshold based flags for all variables used in the ISMN (soil moisture, soil temperature, temperature air, etc.)
D	D01 - D10	Questionable /dubious
M		Parameter value missing OR derived parameter can not be computed
G		Good



Applications/Products using ISMN data



ESA CCI Soil Moisture

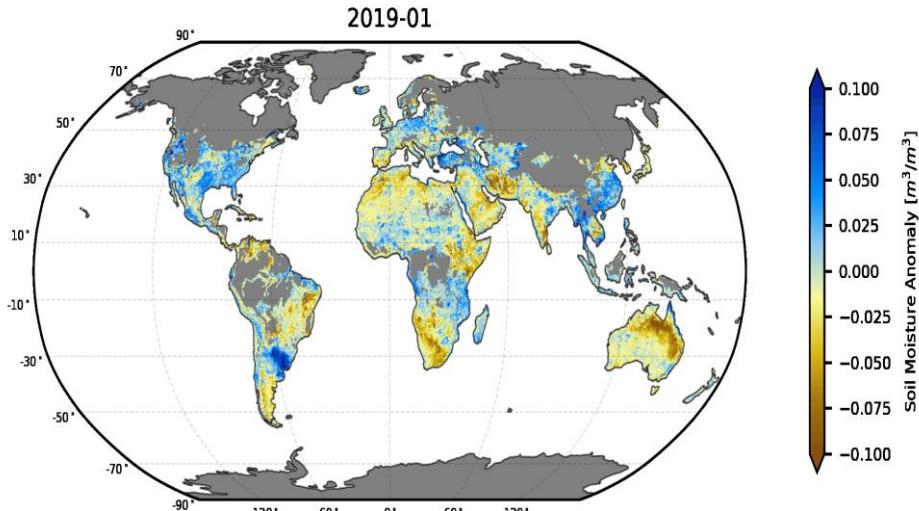


Figure: ESA CCI Soil Moisture Product (v04.7)

Quality Assurance for Soil Moisture

The figure shows a screenshot of the "Quality Assurance for Soil Moisture" web application. The interface is divided into several sections:

- Data:** Includes dropdowns for Dataset (C3S), Version (v201706), and Variable (sm). Below these are filter options for "Filter dataset":
 - Variable in valid geophysical range
 - Data with no inconsistencies detected (flag = 0)
 - Not freezing and no snow-cover (flag != 1)
 - No dense vegetation (flag != 2)
 - Ascending mode only
 - Descending mode only
- Reference:** Includes dropdowns for Dataset (ISMN), Version (20180712 mini testset), and Variable (soil moisture). Below these are filter options for "Filter dataset":
 - Variable in valid geophysical range
 - Quality flag is "good" (G)
 - Use ISMN networks: [select...](#)
- Spatial Subsetting:** Includes "Lower left" and "Upper right" coordinates for latitude and longitude.
- Validation Period:** Includes "From" (1978-01-01) and "To" (2020-05-05) date fields.
- Anomalies:** A section for naming the validation.
- Scaling:** A section for naming the validation.
- Validate:** A blue button at the bottom right.

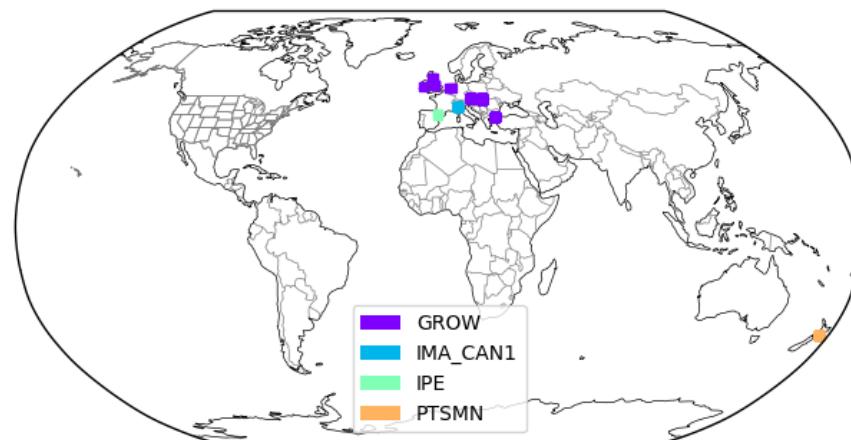
<https://www.esa-soilmoisture-cci.org/>

<https://qa4sm.eodc.eu/>



Please share your in situ data with us

Welcome to our newest contributors!



Plot: Stations of new networks mapped with ISMN data reader

ISMN - <https://ismn.geo.tuwien.ac.at/>
ISMN data reader - <https://github.com/TUW-GEO/ismn> 
contact - ismn@geo.tuwien.ac.at