ICWRGC
International Centre for Water Resources and Global Change

BfG Federal Institute of Hydrology

EGU

esa

TU WIEN GEO

Photography encouraged

A European vision for hydrological observations and experimentation

8th Galileo Conference

NAPLES | ITALY | 12–15 JUNE 2023

Ensuring ISMN's permanent service for delivering long-term, in-situ soil moisture

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contact: ismn@bafg.de

Motivation

source: pixabay.com

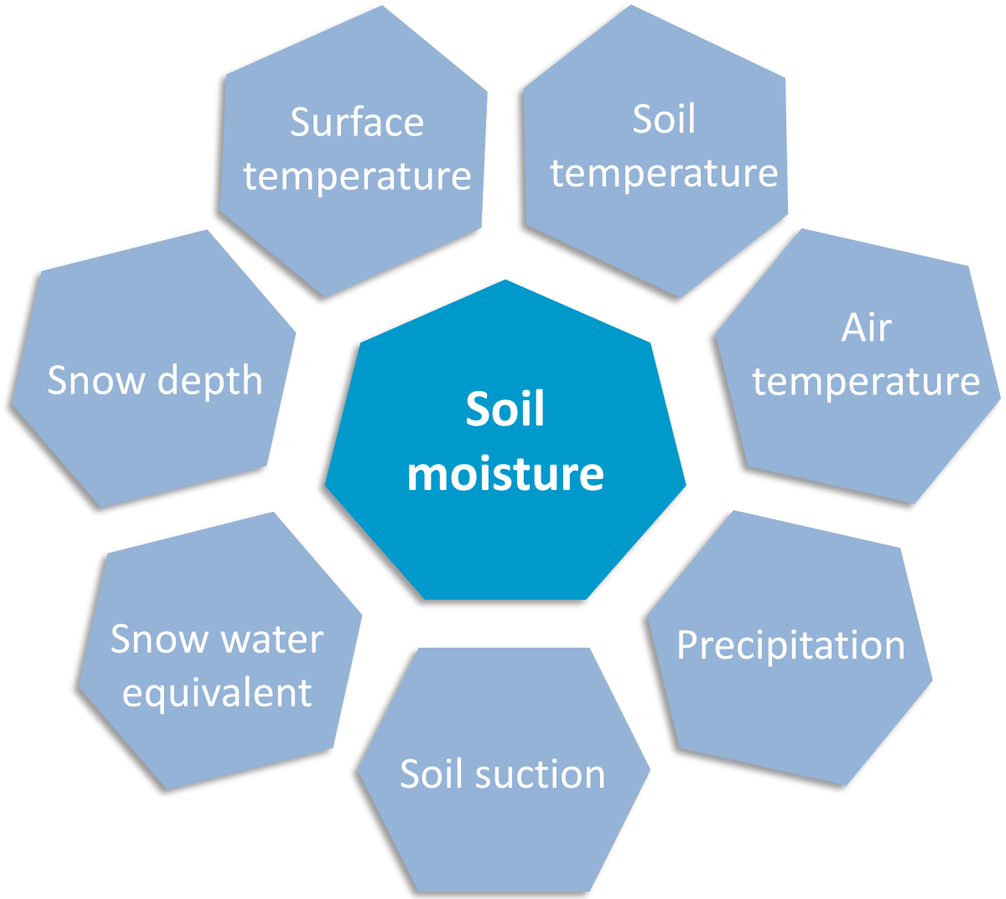
source: www.esa.int

https://ismn.earth

ISMN data availability

In situ data + metadata

(x) **Soil moisture + 7 additional variables** integrated in the DB



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ISMN data availability

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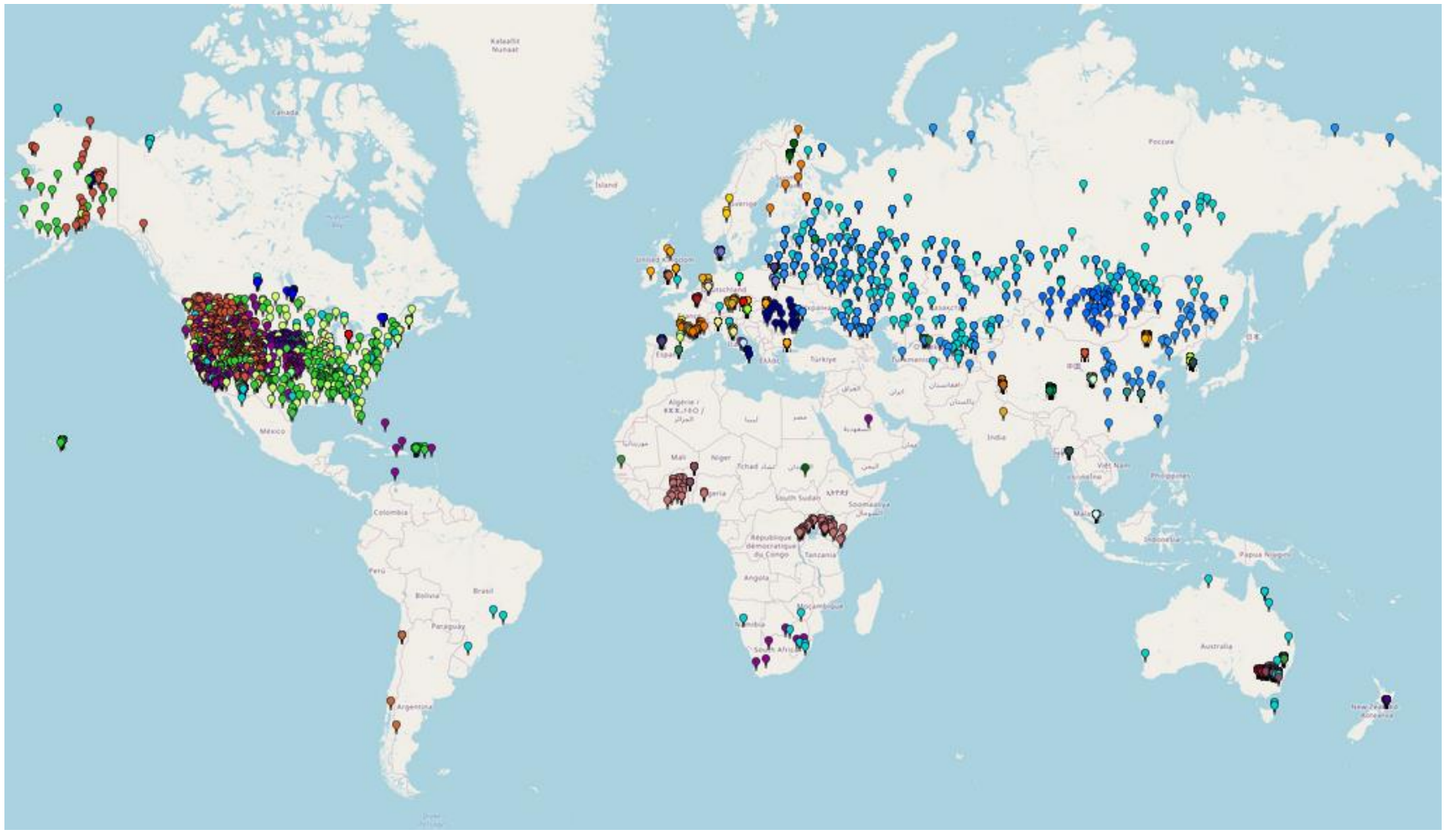
77 networks participate (June 2023)

>3,000 stations with **> 11,000 timeseries** integrated (June 2023)



Distribution of the soil moisture stations

Dorigo et al., 2021 et al: The International Soil Moisture Network: serving Earth system science for over a decade, HESS

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ISMN data availability

In situ data + metadata

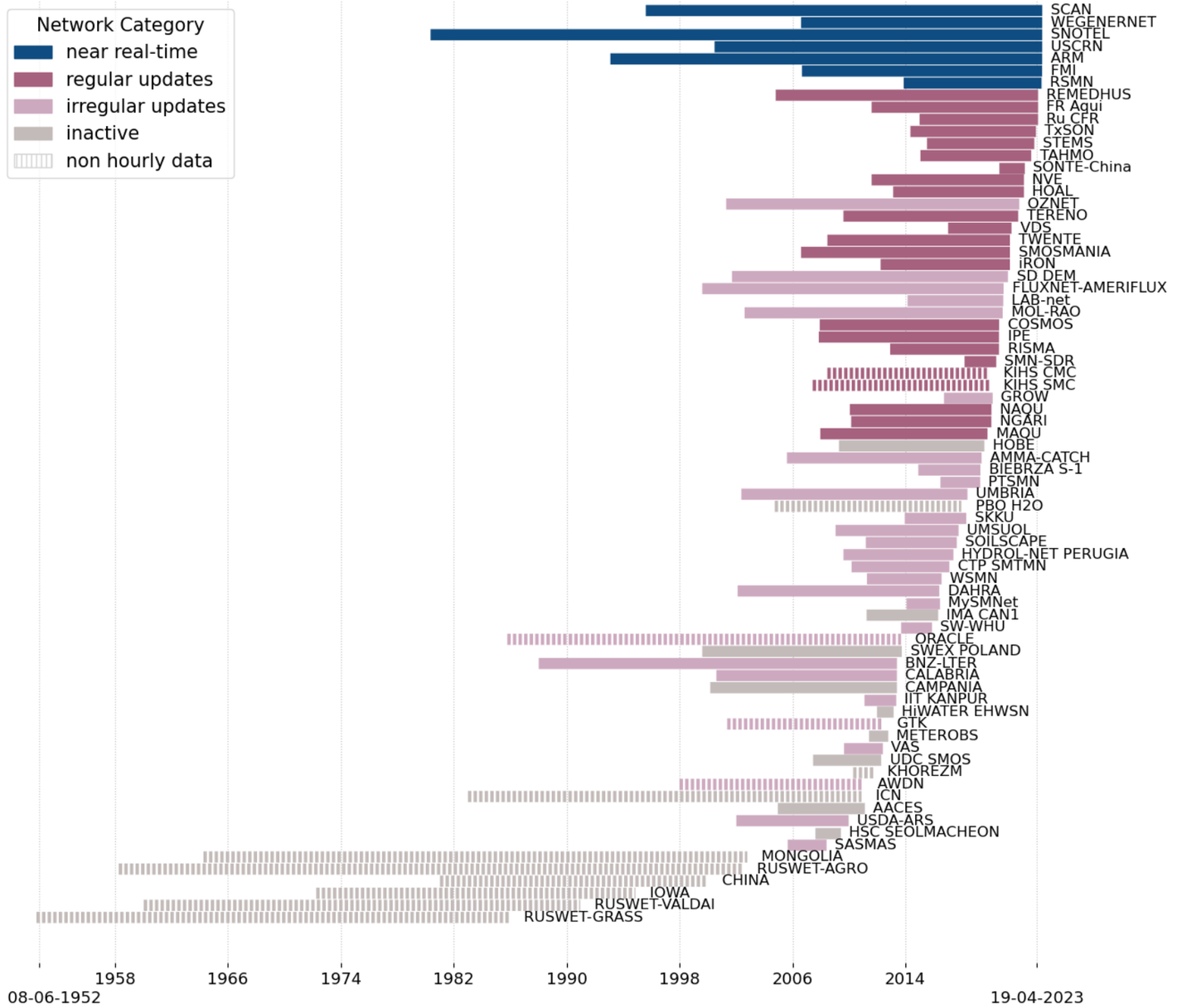
Soil moisture + 7 additional variables integrated in the DB

77 networks participate (June 2023)

>3,000 stations with **> 11,000 timeseries** integrated (June 2023)

Time series available from **1952** up **to near real time** (see graph)

Daily update of **6 NRT networks** → **~1,000 stations** (June 2023)



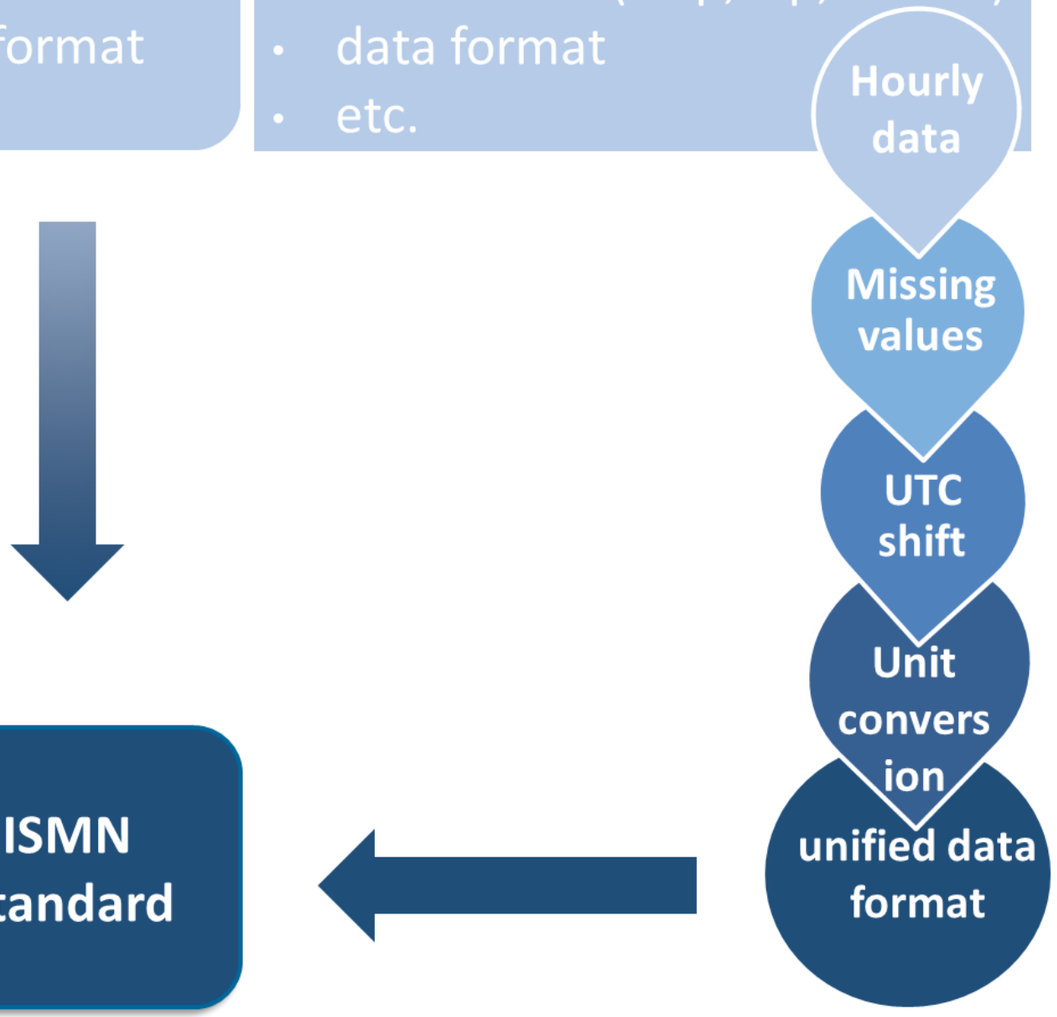
Dorigo et al., 2021 et al: The International Soil Moisture Network: serving Earth system science for over a decade, HESS

Data harmonisation

PROVIDER format

Provider have different systems:

- data access (http, ftp, E-Mail)
- data format
- etc.



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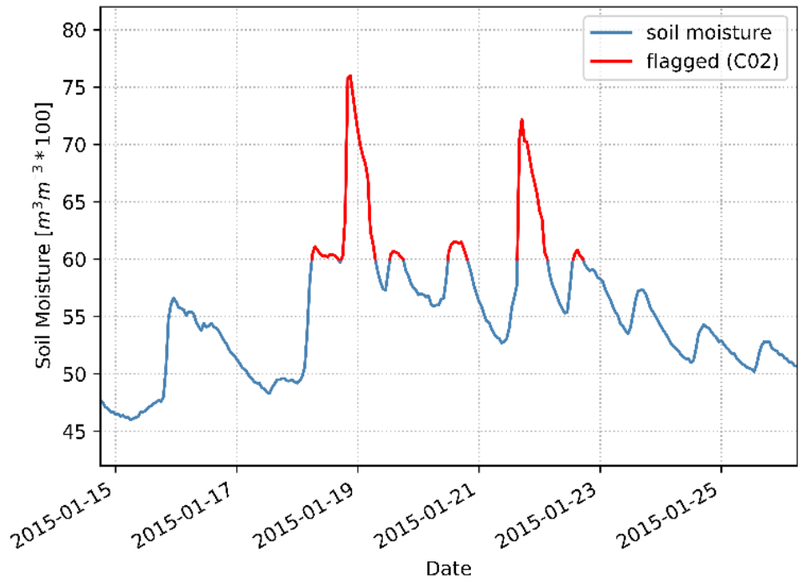
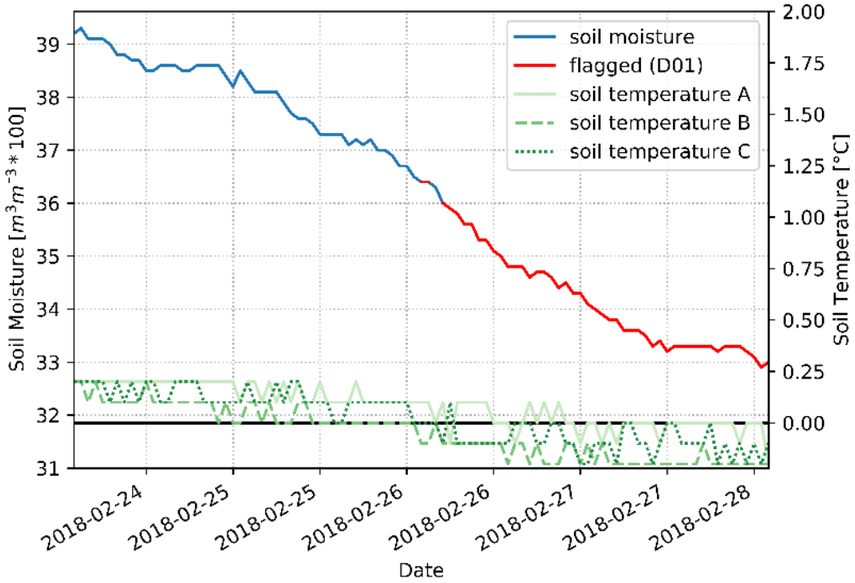
Data quality flagging

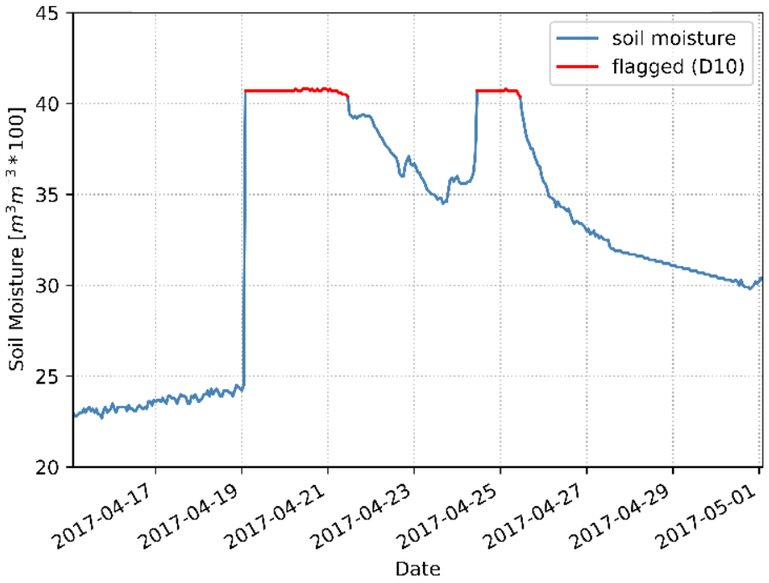
1) Geophysical Dynamic Range
thresholds for all variables



2) Geophysical Consistency
check plausibility with other variables, i.e, soil temperature and precipitation



3) Spectrum– Based Approach
detection of spikes and plateaus



- Keeping flags from provider
- quality flag added to each data point

Dorigo et al, 2013: Global Automated Quality Control of In Situ Soil Moisture Data from the International Soil Moisture Network, Vadose Zone Journal

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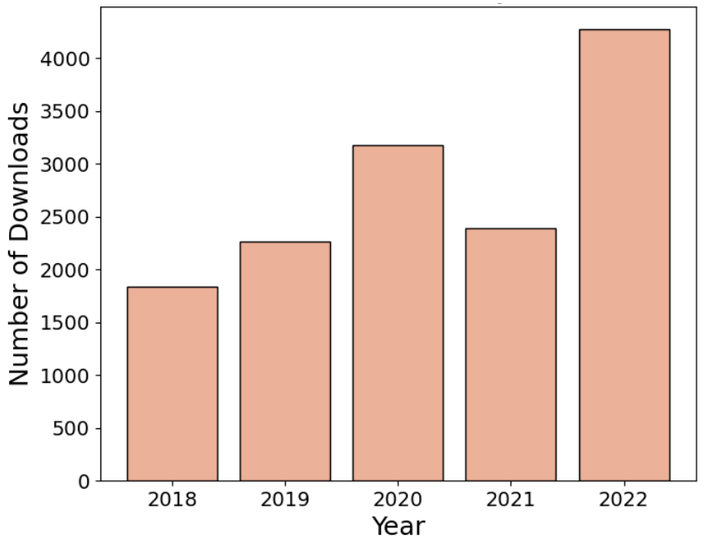
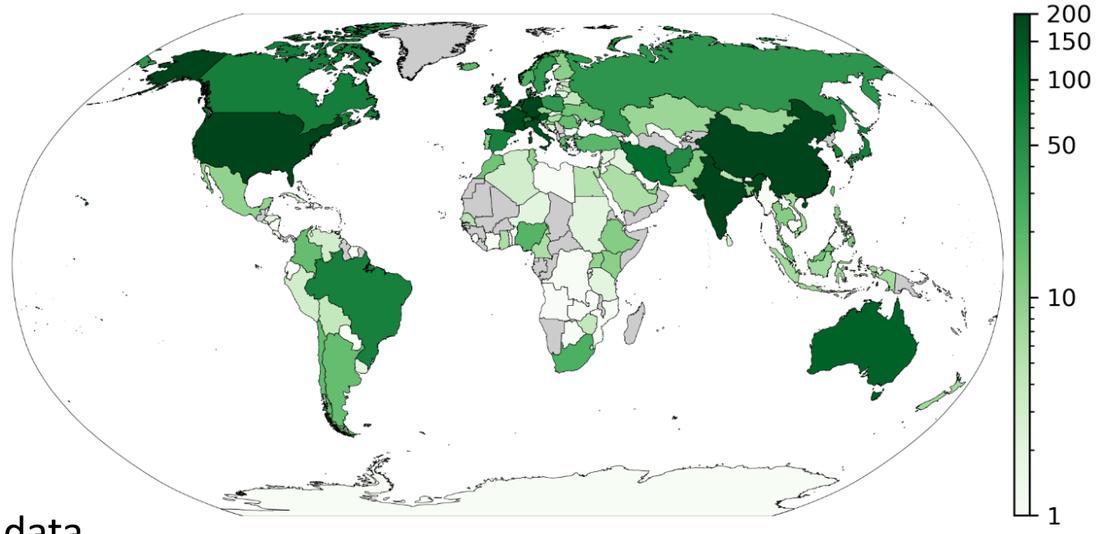
ISMN data usage

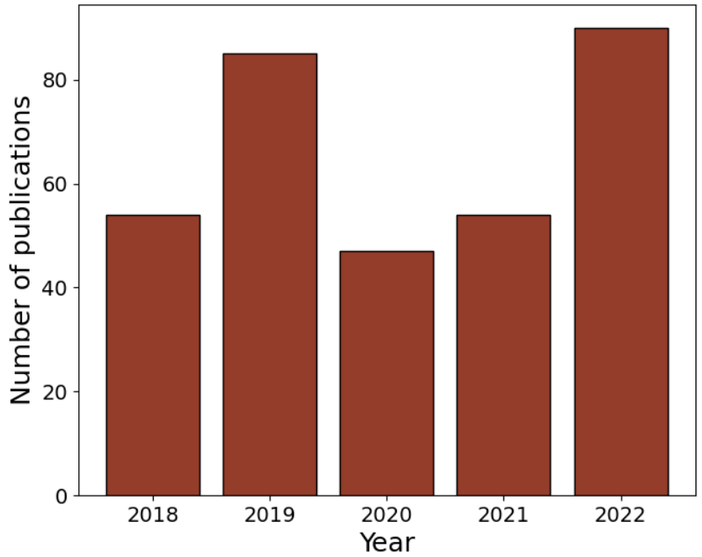
ISMN data download by users



Number of ISMN users



Publications using ISMN data



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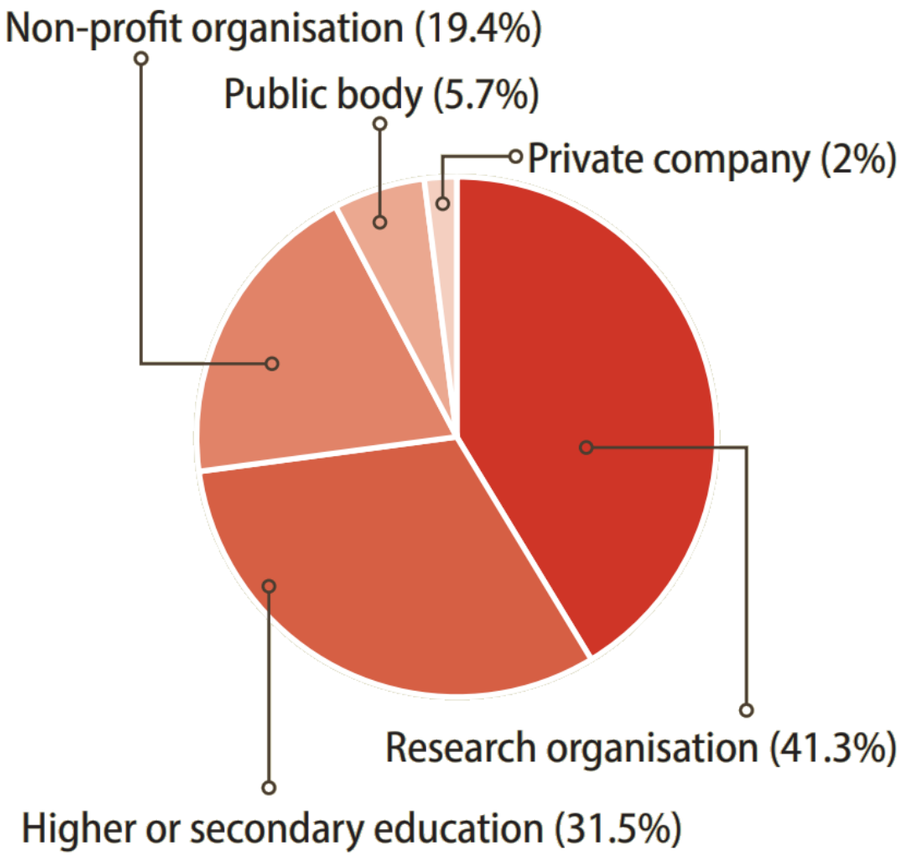
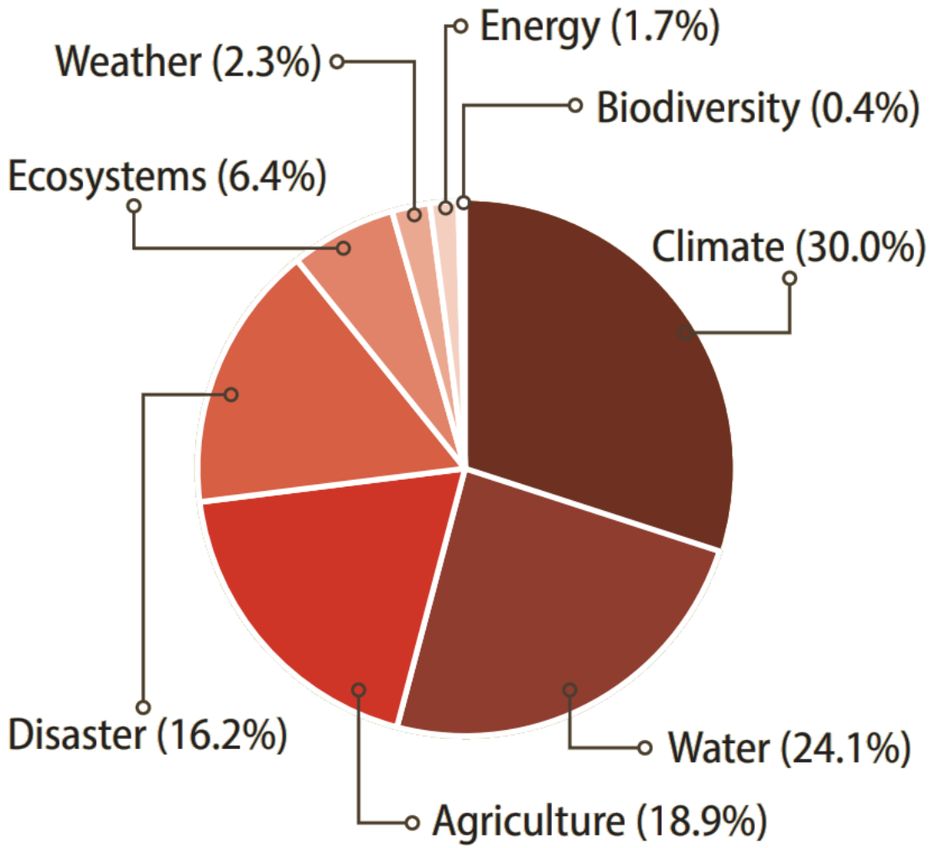
ISMN data usage

Organisations using ISMN data



Application areas of ISMN data product



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Research to operations

2009
ISMN is established at TU Wien

2017
GTN-H Panel Meeting

2018
Start of negotations with the German Government

2021/2022
ISMN Migration

- Jan: Financial clearance
- Nov 2021 - May 2022: Recruitment of staff
- Feb 2021 - June 2022 technical transfer from software stack and data to new host
- Jul – Dec 2022: Parallel operations
- Legal Clearance

2023 ISMN in production at ICWRGC/BfG

- Application for auspices of WMO und FAO
- Set up of a advisory board
- Increase data acquisition activities
- Improve robustness and maturity of the service

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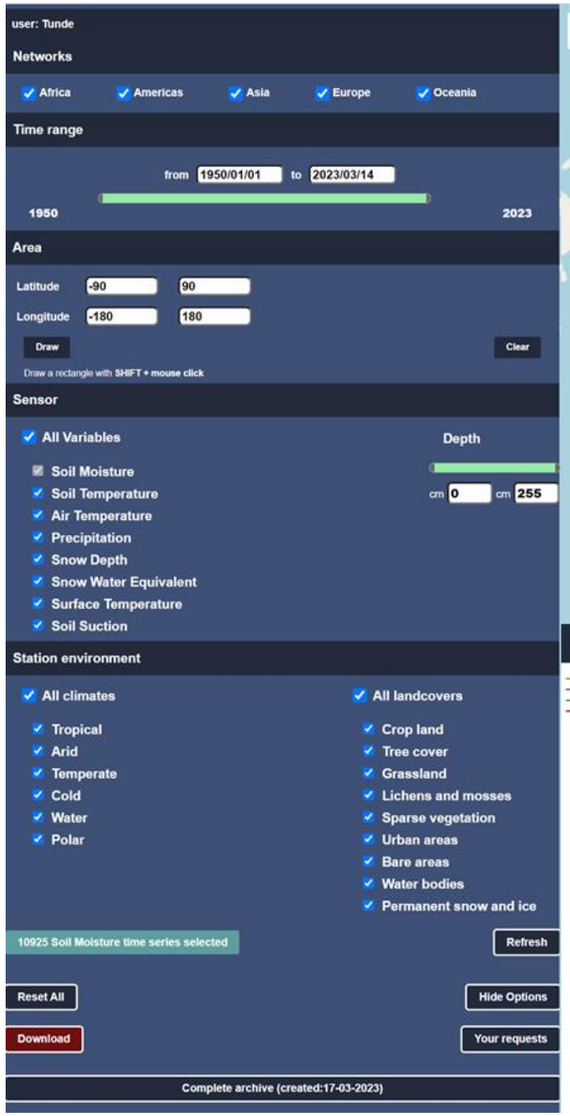
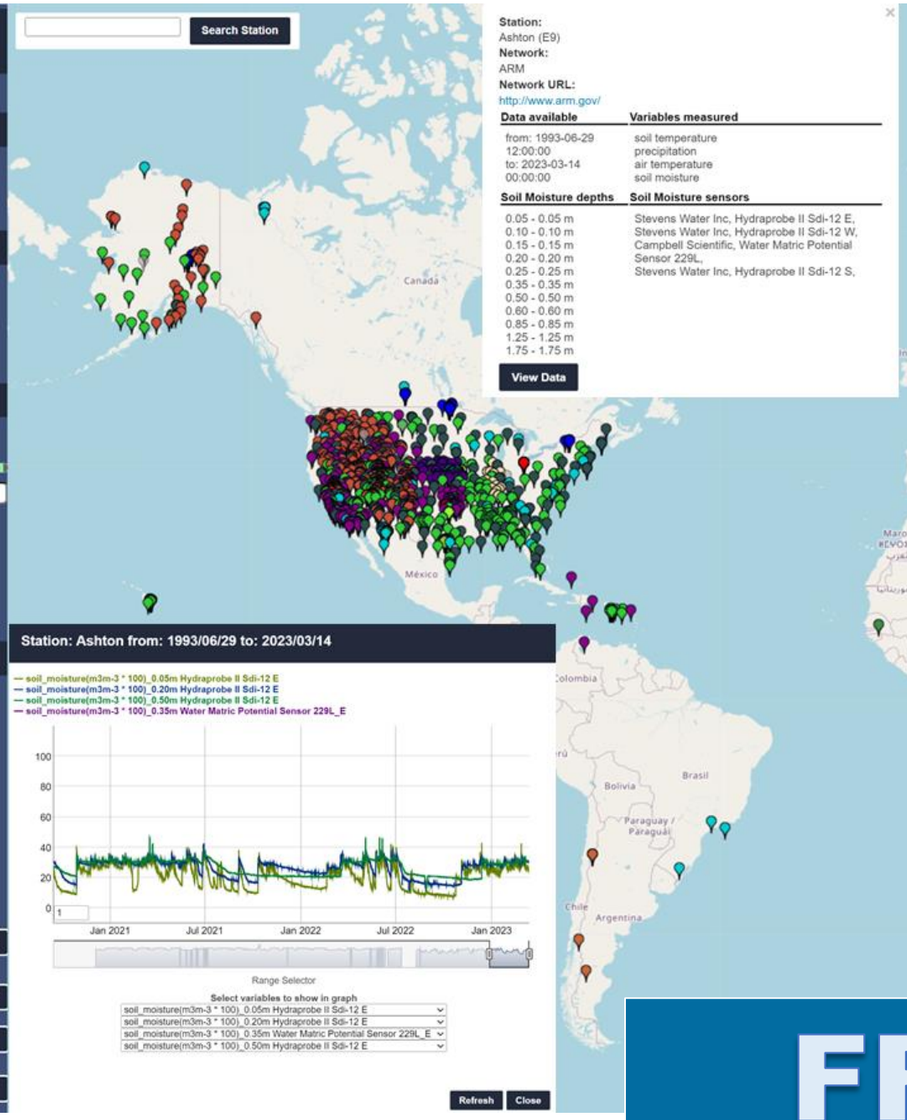
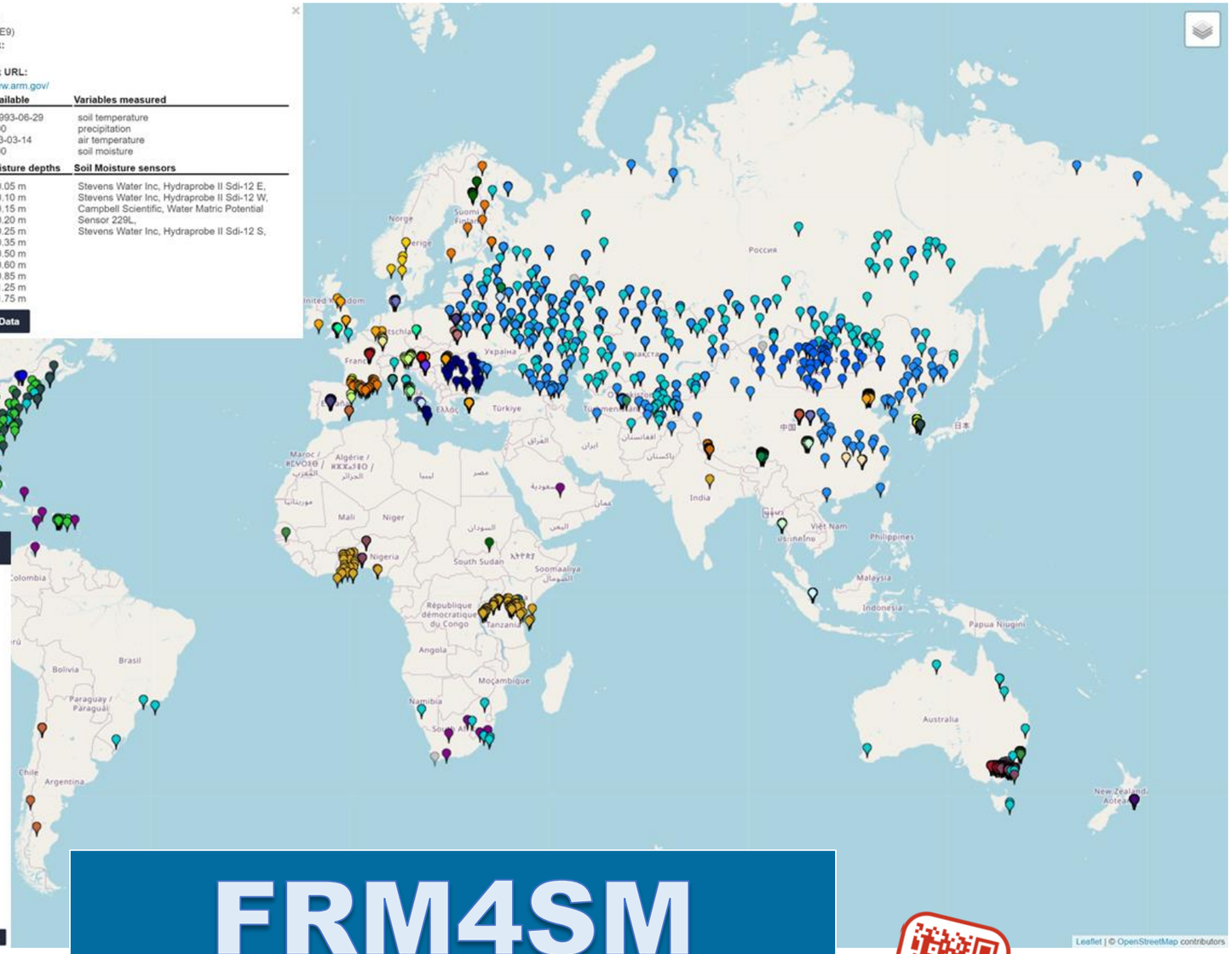
New Dataviewer







FRM4SM

Fiducial Reference Measurement for Soil Moisture

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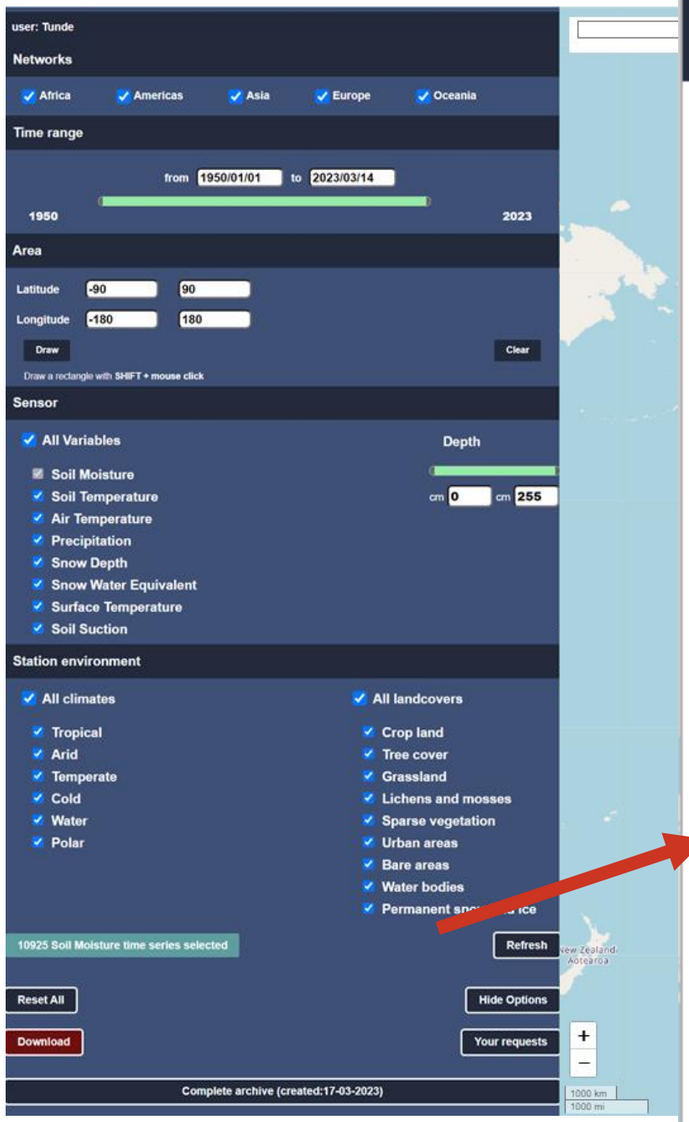
New Dataviewer



Download

You are about to download the following data:

Networks:
AACES, CALABRIA, COSM[illegible] x, y, z

Variables:
Soil Moisture,

Climates:
Tropical, Arid, Temperate, Cold, Water, Polar

Landcovers:
Crop land, Tree cover, Grassland, Lichens and mosses, Sparse vegetation, Urban areas, Bare areas, Water bodies, Permanent snow and ice

Time range:
from 2022/04/21 until 2023/04/21

Number of Soil Moisture timeseries selected:
0

Choose Format:

- (•) Variables stored in separate files (Header+values) (zipped) (View Specifications)
- ( ) Variables stored in separate files (CEOP formatted) (zipped) (View Specifications)

Gap filling:

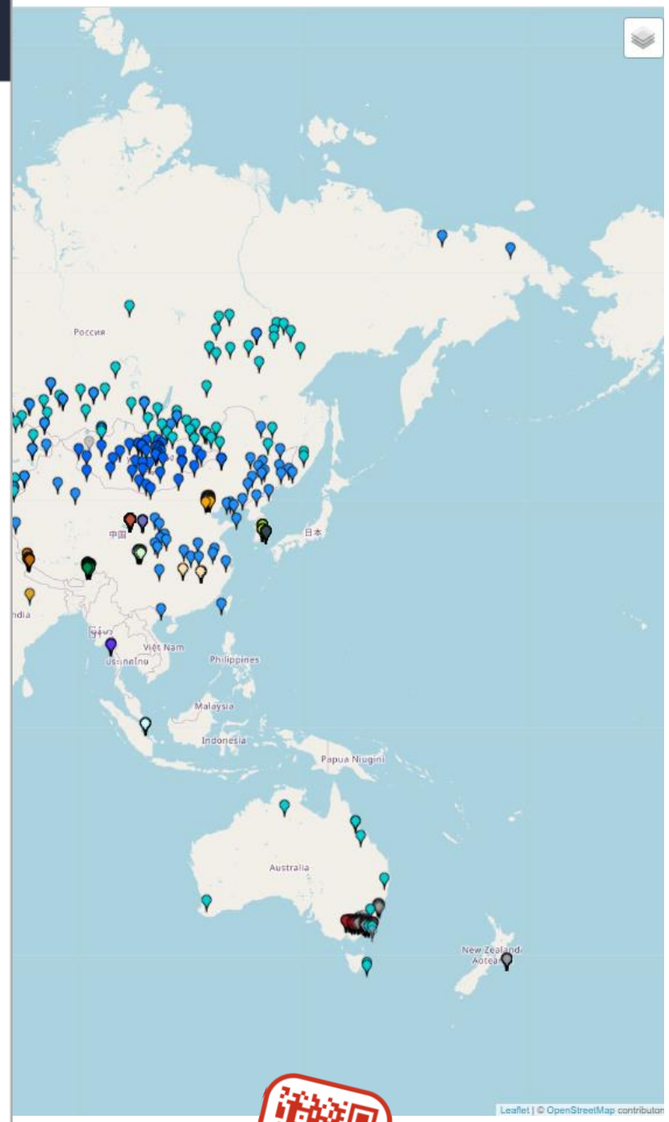
- [ ] Fill data gaps with NaN values (to always have 24 data points per day)

Quality flags:

- [x] Only download observations tagged as "Good" by the ISMN QC

Large data requests may require hours of processing time. If your request is not ready within 30 seconds you will receive an email with a download-link. The data can be downloaded within 20 days.

Download | Close



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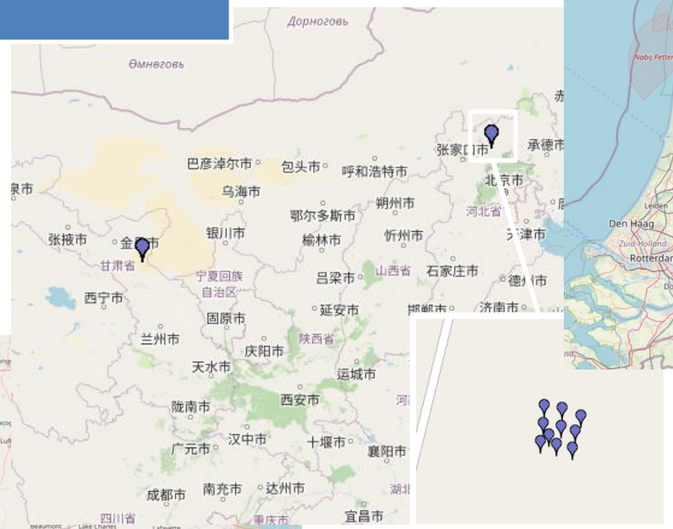
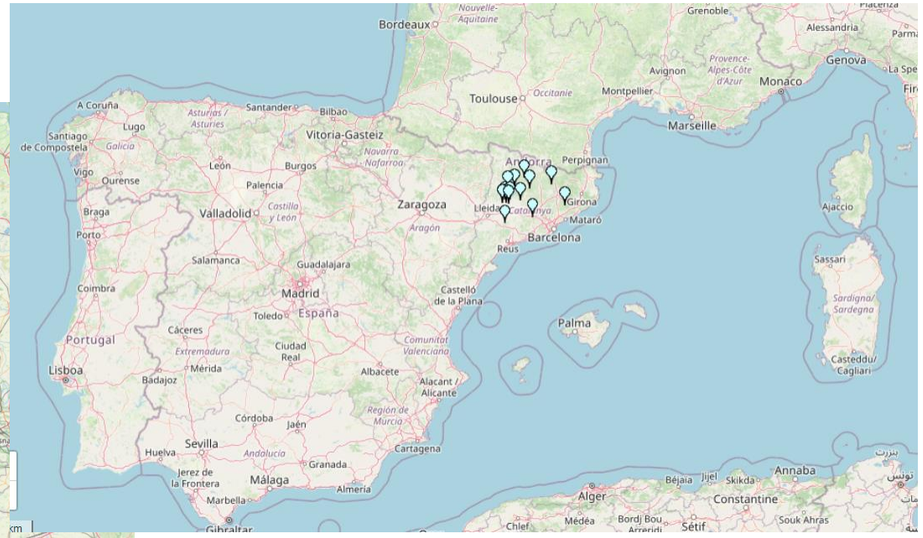
Network Integrations & Updates

Data contributions are very welcome. Please get in touch with us:
ismn@bafg.de

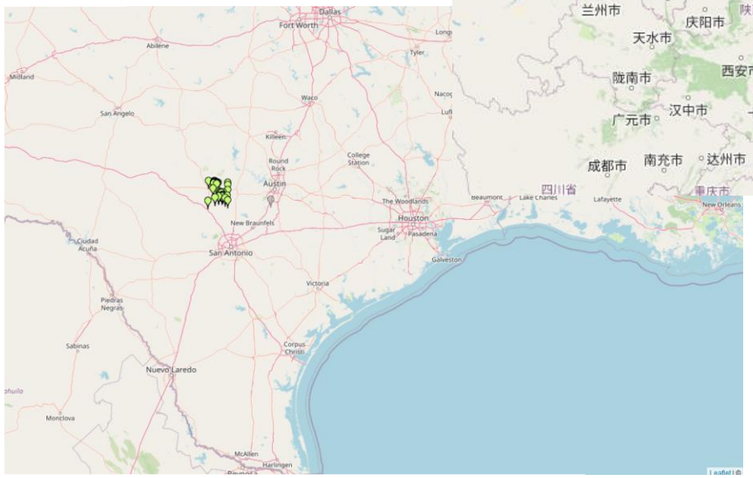


SONTE-China (China)
20 stations
2021 - 2022

TWENTE (Netherlands)
44 stations
2008 - 2021



XMS-CAT (Spain)
15 stations
2016-2023



TxSON (United States, Texas)
41 stations
2014 - 2022

! Please cite correctly

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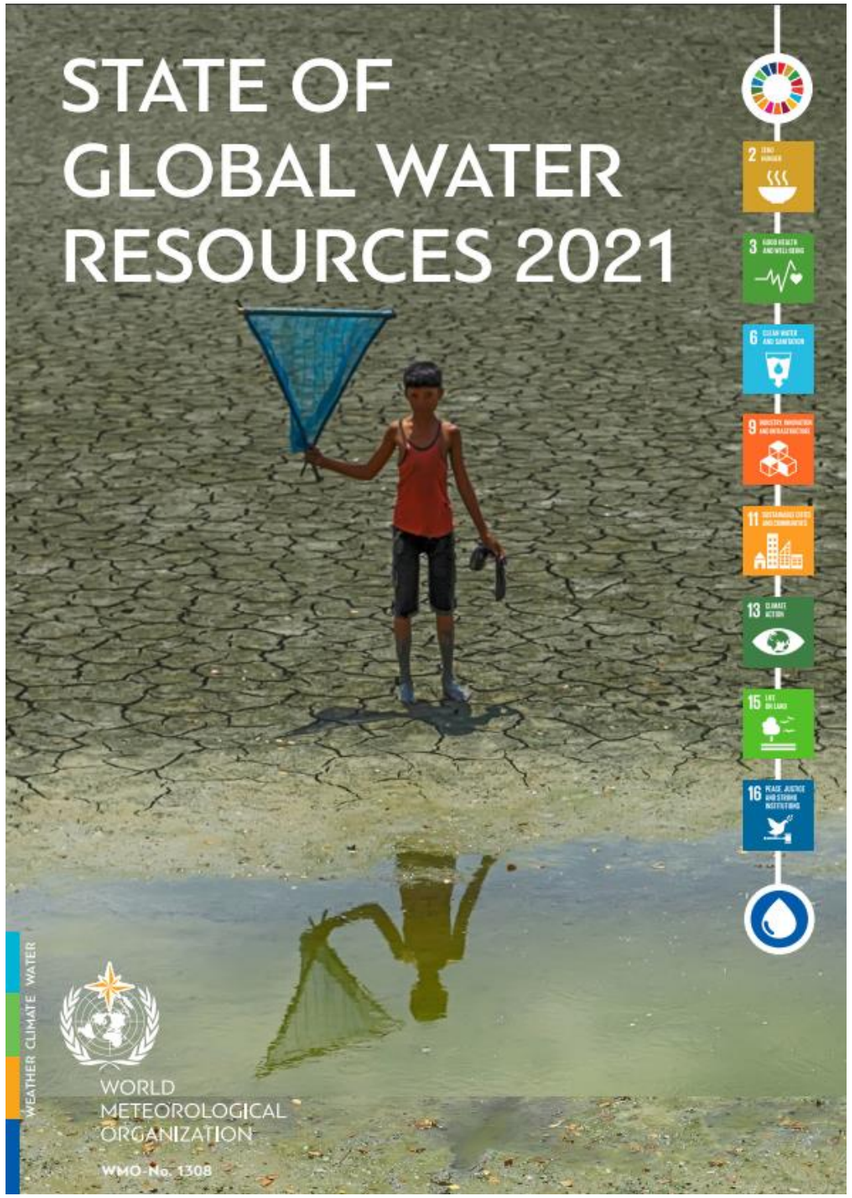
HYDROlogical Status and Outlook System



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