LIGHTNING TALKS

Presentations of ESA & EC Hydrology projects

ESA Hydrology Science Cluster Meeting | ESRIN, Frascati
25-27 November 2024

STARS4Water

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INTRODUCTION

Main information about project:

- 1 October 2022 – 30 September 2026, 4 years
- EU budget: 4.5 MEuros
- Coordination: Deltares (NL)

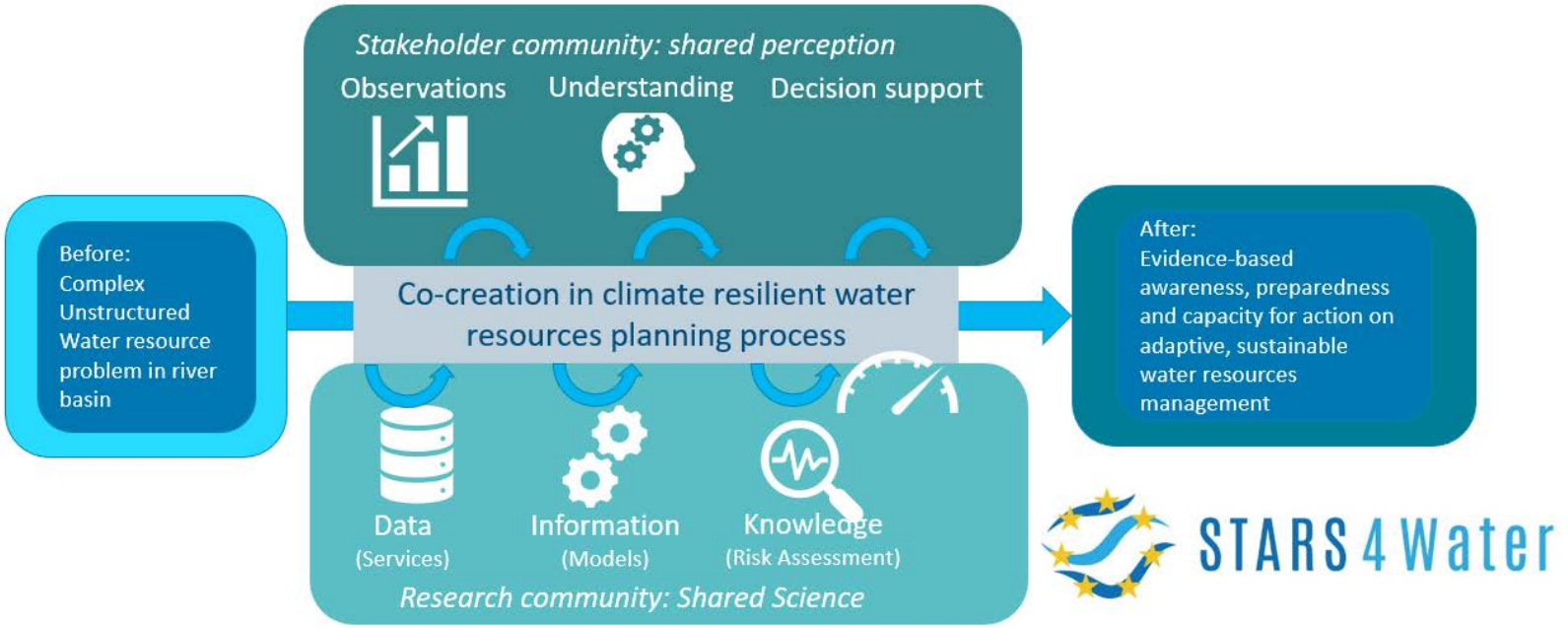
Consortium:

- **Research partners**: INRAE (FR), Vandersat (NL), BOKU (AU), IGME (ES), UCM (ES), SEVEN (GR), GeoEcoMar (RO), UKCEH (UK), FZJ (DE), JKU (AU), WULS (PO)
- **Stakeholder partners**: RWS (NL), NVE (NO), BfG (DE), CHR, ICPDR, Lower Danube River Administration (RO), Anglia Water Services (UK), Seine Grands Lacs (FR), Duero River Basin Authority (ES), Region of Crete (GR), Hellenic Ministry of Environment (GR)

INTRODUCTION

STARS4Water is about:

- To improve the understanding of climate change impacts on water resources availability and the vulnerabilities for ecosystems, society and economic sectors at river basin scale.
- To develop and deliver new data services and data driven models for better supporting the decision making on planning on actions for adaptive, resilient and sustainable management of freshwater resources.



DATA

River basin hubs

River basin hub datasets and platforms

Water resources models applied in river basin hubs

STARS4Water: next generation tools and data services

Data services:

- Unlocked existing data sets
- Data sets on indicators
- Improved projections
- Meta-data platform

Next generation tools:

- water resources models: data-driven models, multi-level scale integration models, improved existing models
- Dashboards

Global and EU data services and platforms

Copernicus

GEOSS

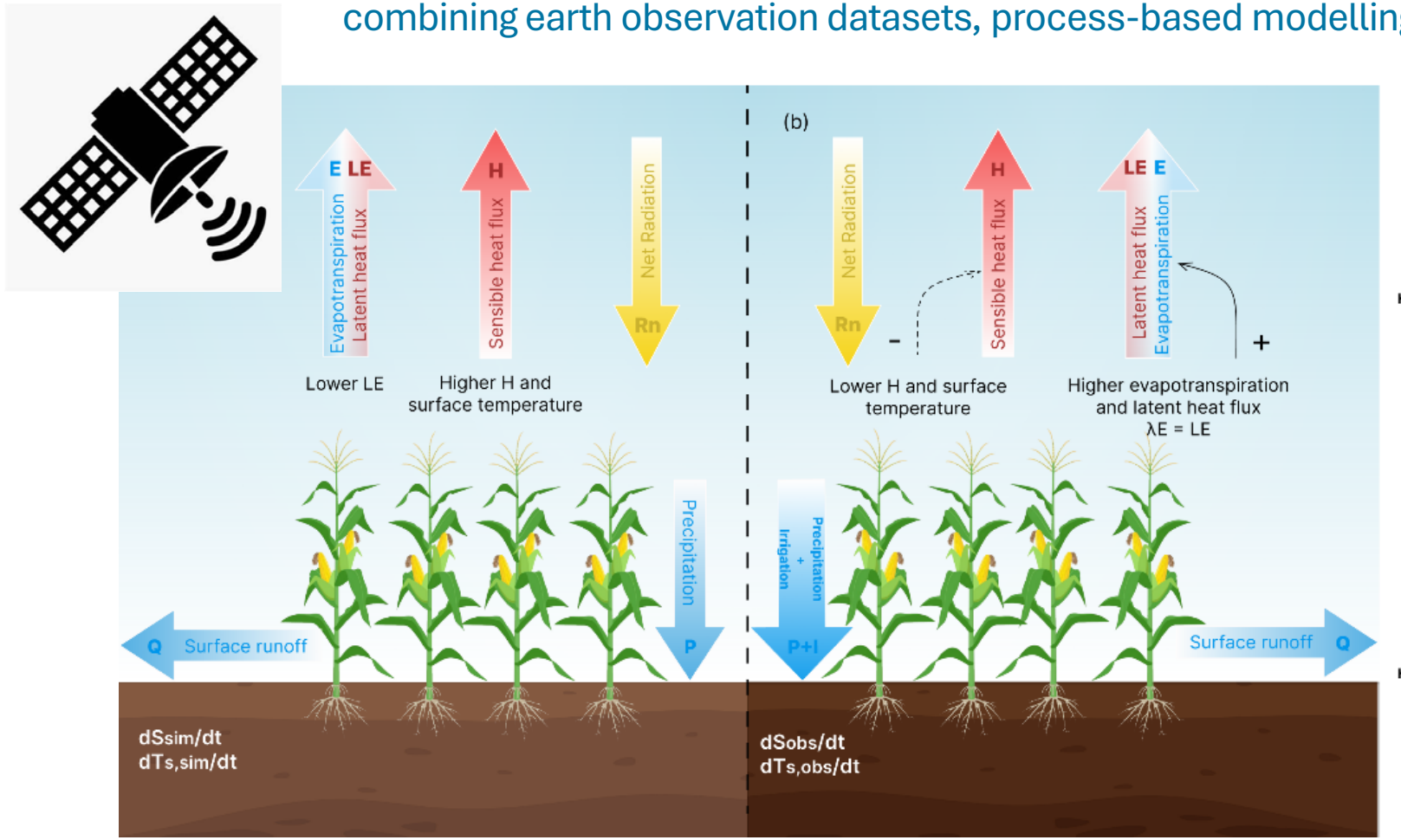
eurostat

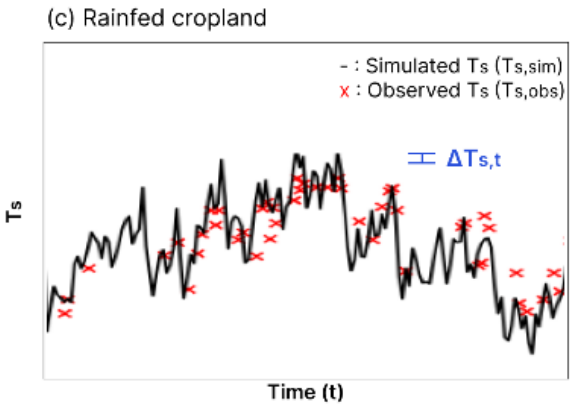
WISE

National data services and platforms

NEW DATA

Upcoming water demand datasets by STARS4Water: combining earth observation datasets, process-based modelling and Machine Learning





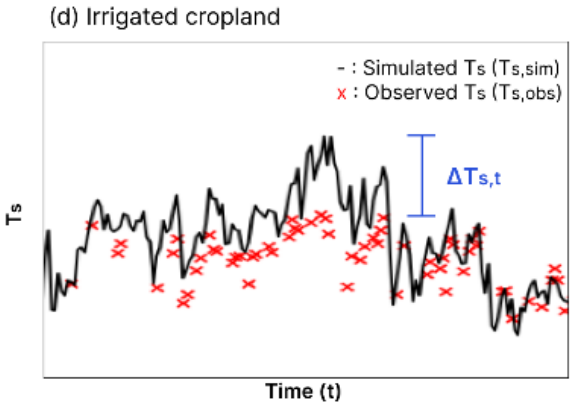
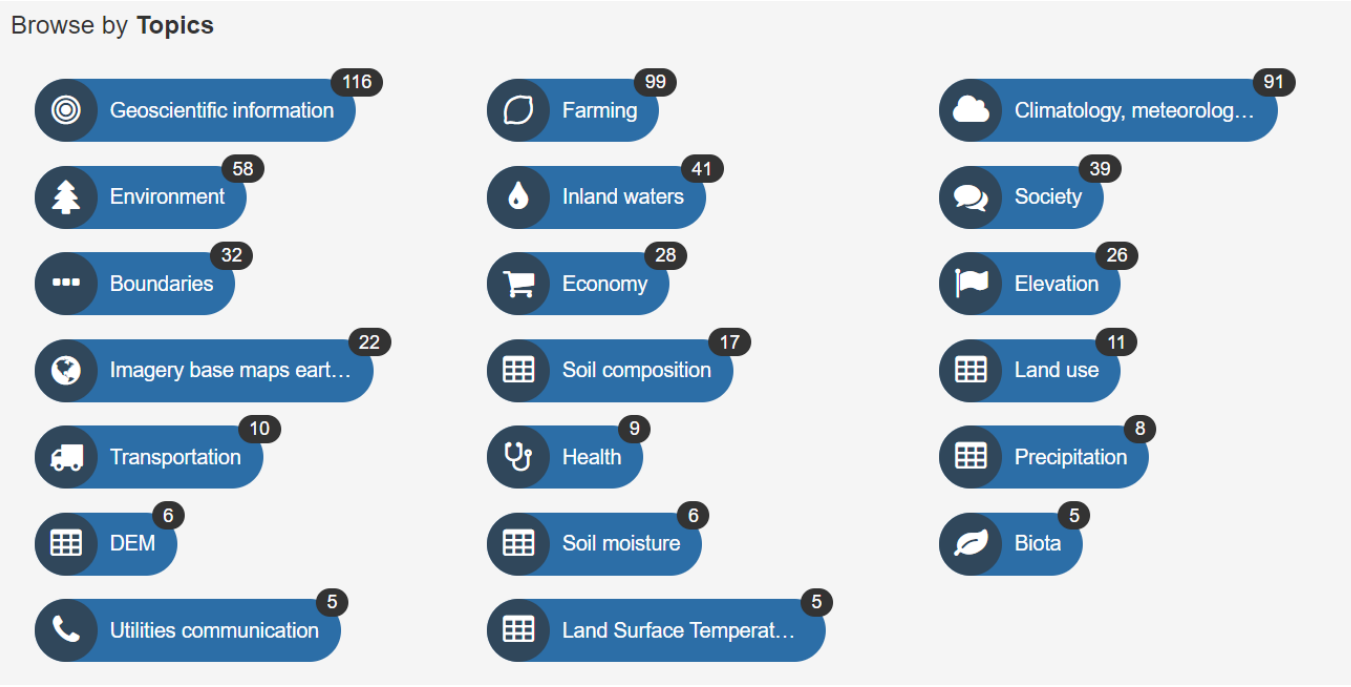


Figure: Illustration of energy and water balance in the wflow_sbm hydrological model and observations (Purnamasari, in preparation)

STARS4Water Metadata Portal

Access to portal through STARS4Water website

- open access to open data to support understanding of water resources at river basin scale
- metadata portal is providing access to >400 data sets (global, EU, national, river basin)
- new data sets on **hydrological parameters** are becoming available in spring 2025
- STARS4Water **water resources projections** are becoming available in autumn 2025 / spring 2026



CONCLUSIONS

What have we learned from basin stakeholders:

- **Urgent need** for data and information to better understand hydrological processes and water resources availability within river basins (water use, climate change, impacts on ecosystems, society and economy)
- **Untapped potential**: EO data sources being unknown or not findable by basin stakeholders
- **Too complex:** the time and effort needed for the end-user to access and explore the data, become familiar with it and assess its applicability is significant and often not available
- **Uncertainty in sustainability:** concerns about the availability of data in the future, terms of use, or about the reliability and accuracy of the data
- **No fit for purpose:** gaps between the available data and the required information at the basin scale (data services)
- **Wide range of stakeholder driven data needs**: river basins across Europe face many challenges, but need for data is in many cases very river basin specific (e.g., glacier and snow melt, agricultural water use, ….).