STARS4Water

STARS4Water Metadata Portal: second release

Deliverable D2.4

September 2024

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1.0		Harm Duel	Approval final version

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Summary

The STARS4Water project aims at improving the understanding of climate change impacts on water resources availability and the vulnerabilities for ecosystems, society and economic sectors at river basin scale. To this end, STARS4Water will 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 and in particular spatial data play an important role in the project. In addition to generating new datasets, STARS4Water will unlock existing data sets and data services from earth observations initiatives, JRC activities and earlier EU research projects that are currently underexploited by public and private stakeholders in water resources planning.

An important activity is the development of the STARS4Water Metadata Portal, which provides information and links to datasets that are relevant to water resources modelling and management. Following the first release of this portal in September 2023, this report introduces the second version of the Metadata Portal. The changes and additions relative to the first version are described in detail. The current version contains information about more than 400 datasets. More datasets will be added over the coming months. The third and final release of the Metadata Portal is scheduled for September 2026.

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1. Introduction

1.1. The STARS4Water project

The project STARS4Water (Horizon Europe No 101059372) aims 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. The project is developing new data services and data-driven models for better supporting the decision making for adaptive, resilient, and sustainable management of freshwater resources.

Many global and local datasets are already used by river basin authorities to understand and manage their system. However, the STARS4Water project team believes that data utilisation can be improved. A vast amount of public geophysical, hydro-meteorological, and various other spatial data is produced each year and river basin authorities often do not have the time to keep track of all new data sources and developments. Some available datasets remain unknown to river basin authorities, some are difficult to access, and some may be difficult to apply to the scale of the river basin. STARS4Water will unlock existing data sets and data services from earth observations initiatives (Copernicus, GEOSS), JRC activities and earlier EU research projects that are underexploited by public and private stakeholders in water resources planning.

Moreover, data science techniques like machine learning have resulted in new modelling approaches and ways to combine data and generate new insights. STARS4Water builds upon these new technologies to develop data services and data-driven models, particularly with respect to water use by economic sectors and the impacts on water resources availability for ecosystems and water quality.

STARS4Water is developing data services and modelling tools in close consultation and collaboration with stakeholders from seven river basin hubs to meet their needs and to promote uptake of data services beyond the lifetime of the project. The river basin hubs serve as living labs for co-creation of data services and tools with stakeholder communities and as accelerators for further upscaling of these services and tools to other river basins worldwide.

1.2. Unlocking and improving data services

One of the key objectives of the STARS4Water project is unlocking and improving data-services. This includes activities dedicated to collecting, managing, and providing access to existing and newly developed datasets. To this end, the project has developed a Metadata Portal (Schotmeijer et al., 2023), to facilitate access to global and regional data services for water resources management and to stimulate uptake by river basin authorities. The project is also developing some new data services in the form of climate indicators that help to assess climate change risks and impacts for ecosystems, society and water depending economic sectors. The project has already delivered a review existing observational systems and initiatives (Beckers et al, 2023). This report describes the second release of the Metadata Portal.

1.3. This report

The purpose of the Metadata Portal is to unlock existing data information sources for water resources management, including new developments at EU and global level and lessons learnt from previous studies on data collection, data standards and unlocking data. Over the course of the STARS4Water project, more and more datasets will be added to the portal to add to its value as a central hub for finding relevant data for water resources management.

The STARS4Water Metadata Portal is accessible thorough the STARS4Water website: https://STARS4water.eu/.

A first version of the Metadata portal was released in September 2023. This first version contained information about 200 global and local datasets. This report introduces the second release of the Metadata Portal (Deliverable 2.4 of the STARS4Water project), with more than 400 datasets included. The next chapter describes the changes to the portal relative to the first release.

2. The Updated Metadata Catalogue

2.1. Functional changes to the Metadata Catalogue

The design of the Metadata Portal is reported in Deliverable D1.3 (Schotmeijer et al., 2023). The functionality of the portal has seen only minimal changes since the first release. The design of the portal is therefore not repeated here.

One important change implemented in the second release of the Metadata Portal is adding PiD[1] to the list of mandatory metadata fields. This contrbutes to the findability of the datasets in the portal.

Although not formally a part of the Metadata Portal, we would like to mention that Zenodo[2] was selected as the default DOI-provider for datasets that are generated and published by the STARS4Water project.

2.2. Current content of the Metadata Catalogue

The first release of the Metadata portal contained about 75% of the datasets from the inventory of existing data sources that were collected in task WP2.1 (Beckers, 2023), totalling around 200 datasets.

The metadata of the remaining 25% of datasets are now added to the portal, as well as from additional datasets that were identified as relevant to the project over the course of 2023 and 2024. The second release of the Metadata Portal contains Metadata and PiD references of 433 data sources, making them findable for the STARS4Water partners and stakeholders as well as the wider water resources management community.

[1] PiD = Persistent Identifier
[2] https://zenodo.org/

3. Conclusions and next steps

The second release of the STARS4Water Metadata Portal was presented at the STARS4Water all partners meeting in Segovia, Spain on September 24, 2024. With this second release, end-users can now find and explore more datasets. Feedback from the project partners and advisory board were very positive.

From the discussions following the presentation, the following actions were formulated:

- WP2 will organize a meeting with contributors to WP3 and WP4 to explain in detail the procedure for uploading new datasets to the portal.
- Contributors to work packages 3 and 4 are encouraged to add all datasets that are used in their modelling and ML work to the Metadata Portal.
- The need to develop a strategy for maintenance and updating of the metadata portal beyond the lifetime of the project was identified.

References

Beckers, J. (2023): Review of existing observational systems. Horizon Europe project STARS4Water. Deliverable D2.1.

Schotmeijer, G.J., J. Beckers & G. Hendriksen (2023): First release of the STARS4Water Metadata Portal. Horizon Europe project STARS4Water. Deliverable D2.2