Steinbuch Centre for Computing (SCC),
Institute of Water and River Basin
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V FOR WaTer

V-FOR-WaTer – A virtual research environment for storage and processing of environmental data

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Motivation

Although the amount of hydrological data is constantly growing, the availability of these data often lags behind the needs of sophisticated models and big data analysis. Data preprocessing is still a demanding task and typically involves gathering of datasets from different sources, extensive work within geoinformation systems, data transformation and the generation of computational grids.

V-FOR-WaTer solves that problem by bringing together various datasets from different sources, a comprehensive search function and both, widely-used and advanced tools, e.g. for scaling data in space and time.
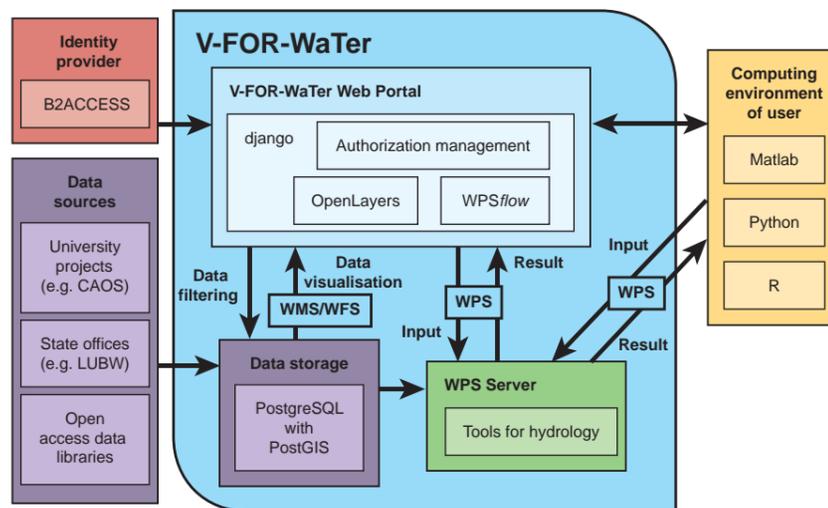
Fig. 1: Component diagram for the V-FOR-WaTer Portal. The components in the blue box are implemented on the servers at KIT. Data storage and tools interact with the django front end directly and via WFS, WMS and WPS.
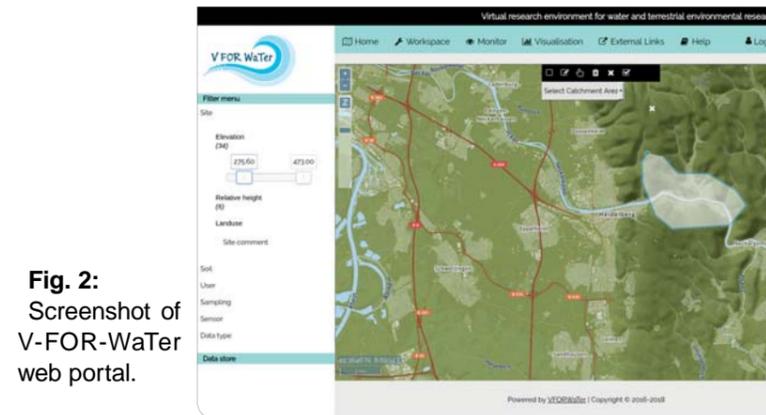
Fig. 2: Screenshot of V-FOR-WaTer web portal.

Objectives

- Quick and simple access to hydrological data **(Fig. 2)** and tools **(Fig. 3)**.
- Quick pre-processing of data from diverse data sources.
- Save and share tools for data analysis.
- Opportunity to easily upload data to established data repositories for publication.
- Centralise hydrological data from universities and state offices for a coordinated long-term monitoring.
- Security layer to ensure that users can access only data for which they have access rights.
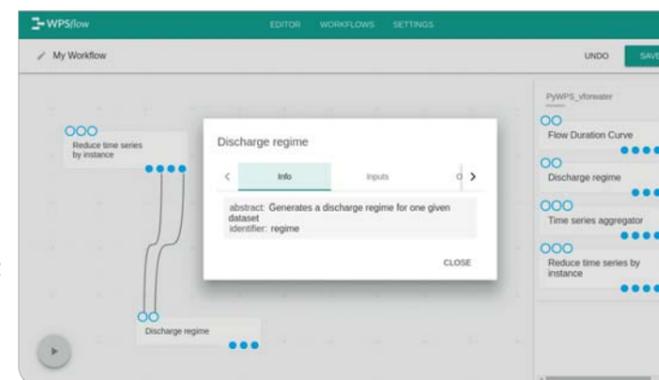
Fig. 4: Screenshot of the model builder for the web portal.

Data

- Extensive meta data model to ensure usability of stored datasets.
- Initial data in the portal will come from the KIT Hydrology group and LUBW (Landesanstalt für Umwelt, Messungen und Naturschutz Baden-Württemberg).
- Development and testing of the portal is based on datasets from the CAOS research unit (Catchments as organised systems).
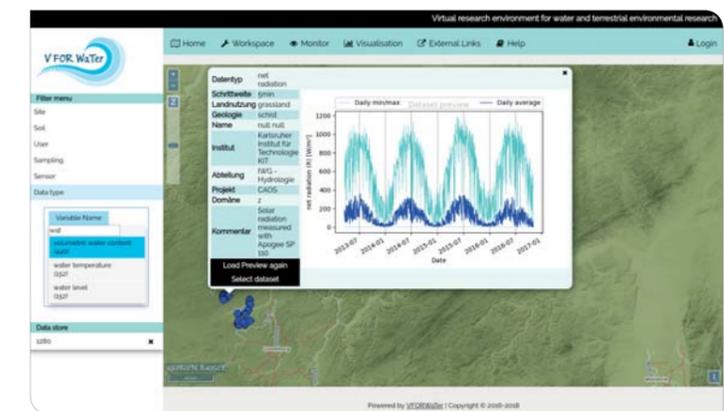- Extensible database for user data and interface to open data repositories.

Fig. 3: Screenshot of filter menu and data preview.

Processing

- Model builder to simplify development of complex workflows.
- Tools for hydrological analyses provided as Web Processing Services (WPS) **(Fig. 4)**.
- Tools and data available through web portal and interfaces for common computing environments (Matlab, Python and R).
- Monitoring of processes.
- Results will come with references to enable users to cite data owners appropriately.

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Stay tuned!

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