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The Dam and Reservoir Atlas of Southern Africa (DRASA): A SASSCAL service for monitoring and sustainably managing dams and reservoirs in SADC

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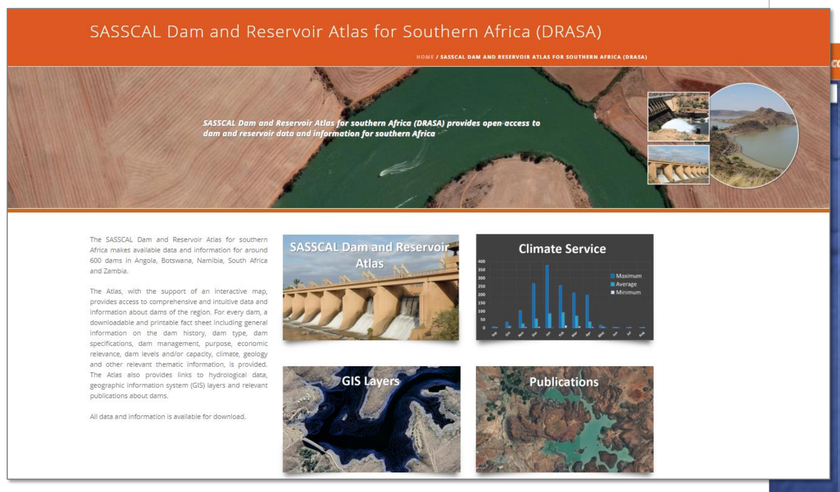
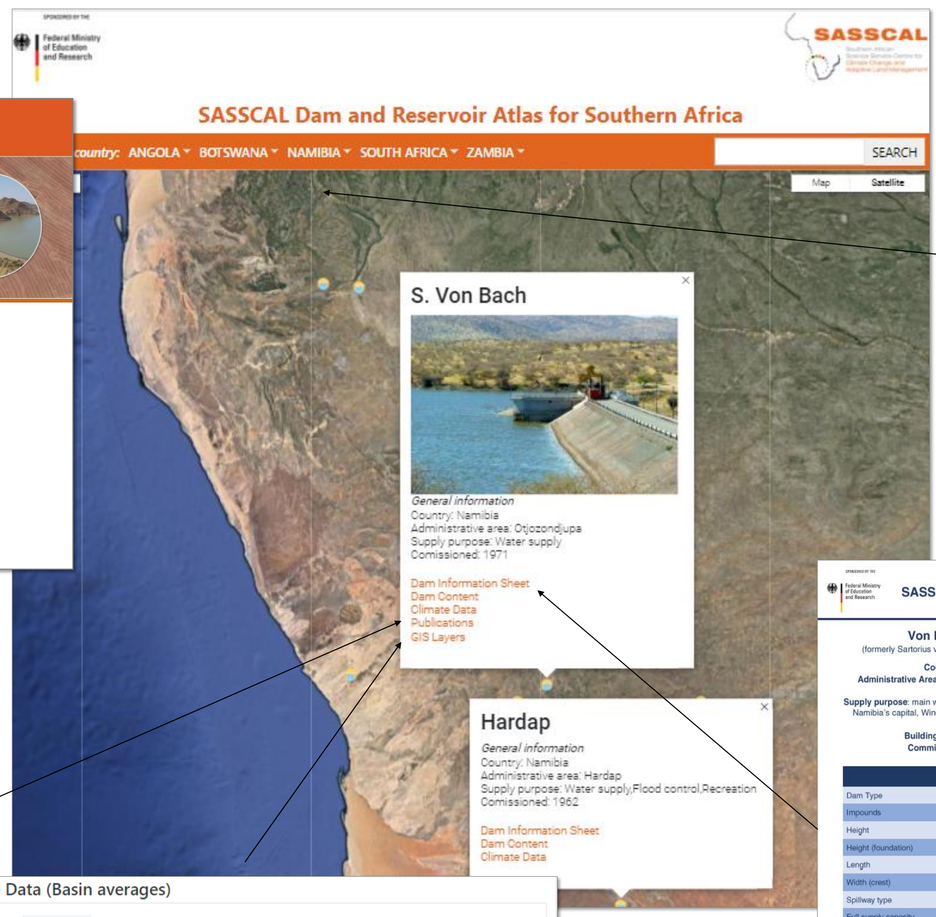
INTRODUCTION

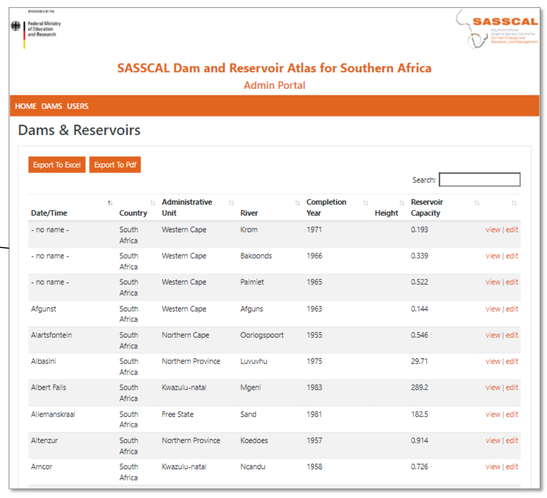
The sustainable management of water resources is of crucial importance to the livelihood and socio-economic development in Southern Africa. Precipitation, as the main source of water, is irregular and unevenly distributed. To ensure water supply for agriculture, energy-generation, industrial use, and direct consumption in the dry seasons, governments invest in the construction of dams for surface water harvesting during the rainy season. Although multi-faceted information on current dams and reservoirs is available, data are often not harmonized, and it remains challenging to relevant authorities and communities to timely access such data for planning and management.

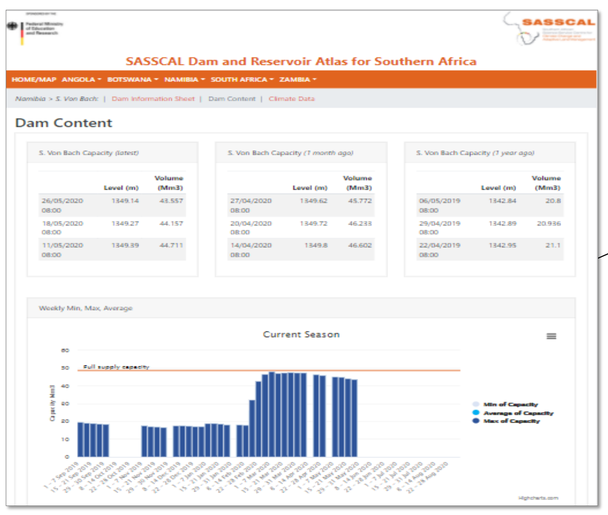
DRASA

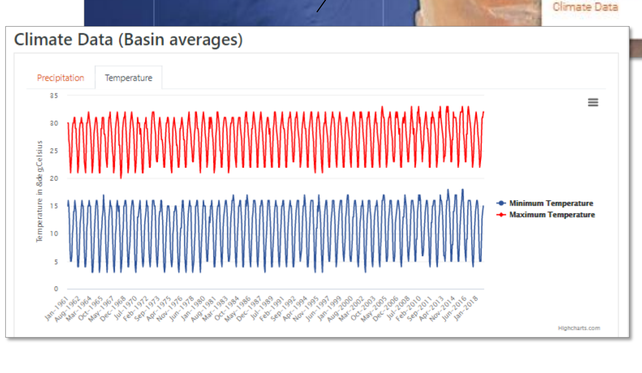
The Southern African Science Service Center for Climate Change and Adaptive Land Management (SASSCAL) intends to support the management of water resources through its integrated, web-based, open access Dam and Reservoir Atlas of Southern Africa (DRASA). As a first phase, all dams of national and regional importance are mapped and further represented with complementary details such as dam history, dam type, dam specifications, dam management, purpose, economic relevance, dam levels and/or capacity, climatic conditions in the catchment areas, geology, and fact sheets. To cater for analysis of the dam content levels over time in relation to contributing climatic factors, historic and current precipitation and air temperature data is availed in graphs and charts clipped to the catchment areas of the dam. SASSCAL aims to make all resources in DRASA freely available via the SASSCAL Data and Information Portal (http://data.sasscal.org/)

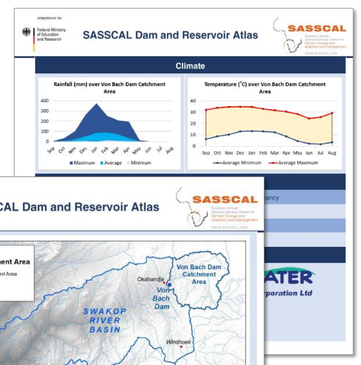


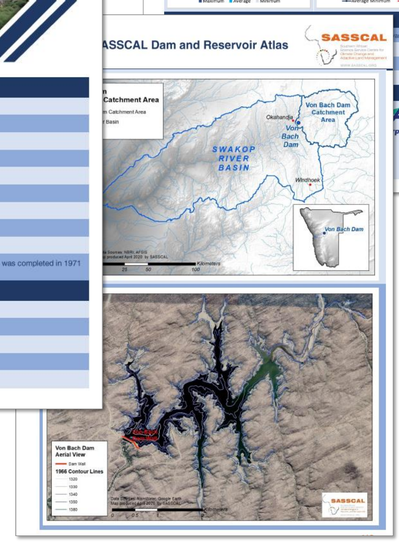




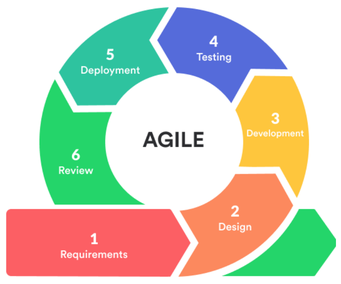








DEVELOPMENT APPROACH



SASSCAL, as the coordinator and implementer of DRASA, works closely with national authorities and dam operators throughout the region to jointly develop functionalities as needed by the technical partners and to populate and update the platform. Following an agile development methodology, the agreed set of functionalities are being incrementally delivered in a Model-View-Controller architecture using the open-source Ruby-on-Rails web application framework and PostgreSQL as the database backend.

FUTURE VISION

Post implementation and with continuous contributions of correct, timely, and up-to-date information from water authorities and dam operators in the member countries, it is envisaged that the atlas will not only become the go-to reference for dams and reservoirs in the region, but also inform policy makers in their development of sustainable water governance systems, as well as improve general public awareness of shortages or floods based on available information. SASSCAL has an open data policy and with the support of its partner water institutions, aims that all data of the Atlas can be made available for download and accompanied by comprehensive metadata on these data.

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Technical Partners

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