

Sharing spatial research data

The Spatial Information Services Stack for the Bureau of Meteorology project is helping the Bureau to share spatial data via interoperable standards and services. This will allow the Bureau to publish data of national significance in accessible formats, helping to develop a community of practice where Australian industry, government and academic organisations can easily exchange water information.

April 2013

Transforming Australia's water resources information

The need to accurately monitor, assess and forecast the availability, condition and use of Australia's water resources is now more important than ever. The past decade of severe drought and recent extreme climatic events in Australia pose significant challenges to the management of Australia's water resources as we attempt to deal with an ever-increasing demand for water. The Water Information Research and Development Alliance is transforming the way Australia manages water resources, by bringing together the research and development expertise of CSIRO's Water for a Healthy Country Flagship in water and information sciences, and the Bureau of Meteorology's operational role in hydrological analysis and prediction.

Objective

The Bureau has been adopting the principles of interoperability. Interoperability is concerned with making data easily discoverable, accessible and usable. That is, data is easy to find and is provided in a well understood, community-agreed format that allows it to be combined with other data sources of the same type. The project team aims to help further the Bureau's interoperability by leveraging the work of CSIRO under the AuScope infrastructure project funded by the Australian Government through the National Collaborative Research Infrastructure Strategy. The team will use the Spatial Information Services Stack (SISS), developed under AuScope and further funded by the Australian National Data Service (ANDS), to allow the Bureau to share its data with the research community by continuing to support the deployment of SISS. Building on earlier work, the project team will assist the Bureau with a number of key SISS deployments and further immerse the Bureau team in the full details of the key services, practices and philosophy at the core of SISS. This knowledge transfer is critical for the Bureau to maintain existing and future deployments. This project is expected to be of considerable advantage for future endeavours by the Bureau, including alignment with the National Plan for Environmental Information and its National Environmental Information Infrastructure.

What is the Spatial Information Services Stack?

Through the National Collaborative Research Infrastructure Strategy (NCRIS), the Australian Government funded a number of research infrastructure projects to foster world-class research. Through NCRIS, the AuScope project has promoted interoperable information exchange in the geosciences domain through the use of open-standards based services and community-agreed information exchange models. Together, the range of services that facilitate web-services based information delivery is called the Spatial Information Services Stack (SISS).

The Spatial Information Services Stack (SISS) is an interoperable suite of tools or spatial data infrastructure that encompasses best practices and builds on existing open-source technology to deliver information in multiple domains using open standards. SISS is developing some of the component services and functional capabilities needed to realise a spatial information data commons within Australia, supporting links with academia, research, public and private sector data and service providers and users. Each component of SISS and its governance model has deliberately been built as an open-source community, allowing others to use it and assist in its development, which should see the technology continue to grow and evolve beyond the life of currently funded projects. The SISS has been deployed in multiple Australian Government agencies and research organisations (including the Bureau of Meteorology), and various web portals and other client applications have been developed to utilise the infrastructure. Deploying SISS into other organisations builds on a community of practice who are interested in interoperable data exchange, ensuring business models can evolve and maintaining the relevance of SISS into the next generation of spatial data infrastructures. For more information, visit <http://siss.auscope.org/>



Australian Government
Bureau of Meteorology



Water Information
DATA > INFORMATION > INSIGHT

Key research areas

The activities in this project are designed to be sustainable beyond the project duration and are intended to meet operational requirements. Sufficient key documentation and skills transfer will take place for the Bureau to continue with further SISS deployments in suitable areas within the Bureau, leveraging off the successful deployments from this engagement.



Weir on Barambah Creek near Murgon, S.E. Queensland.
(Image credit: Brad Sherman, CSIRO)

The project is focusing on three key areas:

1. Further investigating and profiling Open Geospatial Consortium Standards, which may be necessary for effective data delivery from the Bureau's web coverage, web feature and web mapping services. Web processing services and a sensor observation service may also be included in this work.
2. Helping the Bureau deploy SISS for interoperable information delivery of datasets, which is important to both the Bureau and to the research community.
3. Providing training to transfer the necessary skills involved in SISS deployment and sustained interoperability to the Bureau. This will remove any long-term reliance on the project and empower the Bureau to independently manage similar interoperability projects in future.

Delivering outcomes

Using SISS technology, the Bureau of Meteorology has already been able to catalogue two data sources (Geofabric products and a Bureau products database) for sharing with Australian researchers via the Australian National Data Service catalogue, Research Data Australia (RDA). The Bureau has also shared via open standards various data, including the Geofabric and Australian Water Resources Information System (AWRIS) observational datasets. The project team developed mechanisms for the Bureau to share their data in a way that can be queried and a Bureau data portal for discovery and querying of datasets.

The project will:

- ◆ work with the Bureau to further deploy SISS within the organisation
- ◆ develop a web service to deliver sensor observations that can be used in water monitoring
- ◆ develop a service to link various Bureau products to each other and their different versions.

Partners

From 2008 to 2013, the Water Information Research and Development Alliance is delivering the scientific and research innovation required by the Bureau to fulfil its national water information mandate. Through a strategic investment of \$50 million over five years, more than 40 researchers are focusing on several challenging areas. These include large-scale information architectures, earth observation, hydrological modelling, water accounting, water resource assessment and water forecasting.

Other partners in the Spatial Information Services Stack for the Bureau project include:

- ◆ AuScope
- ◆ CSIRO Minerals Down Under Flagship

CONTACT US

t 1300 363 400
+61 3 9545 2176
e enquiries@csiro.au
w www.csiro.au

YOUR CSIRO

Australia is founding its future on science and innovation. Its national science agency, CSIRO, is a powerhouse of ideas, technologies and skills for building prosperity, growth, health and sustainability. It serves governments, industries, business and communities across the nation.

FOR FURTHER INFORMATION

Mr Ryan Fraser
Project Leader
CSIRO's Water for a Healthy Country Flagship
t 61 8 6436 8760
e Ryan.Fraser@csiro.au

Find out more about the Water Information Research and Development Alliance at www.csiro.au/partnerships/WIRADA