



Australian Government
Bureau of Meteorology

INFORMATION SHEET 4



Water Information Research and Development Alliance

Water scarcity and increasing demand are major challenges facing Australia. The need to accurately monitor, assess and forecast the availability, condition and use of our water resources is now more vital than ever.

The Water Information Research and Development Alliance brings together CSIRO's research and development expertise in water and information sciences and the Bureau of Meteorology's operational role in hydrological analysis and prediction to transform the way Australia manages its water resources.

Transforming Australia's water resources information

Water resources information is currently collected and reported by more than 200 organisations across Australia, using a variety of methods. The range of collection and reporting methods and arrangements for accessing water data has made it difficult to monitor the status and use of Australia's water resources and reliably forecast water availability. This has compromised the effectiveness of water resources management and planning.

Through the Commonwealth *Water Act 2007*, the Australian Government has given the Bureau of Meteorology responsibility for compiling and delivering comprehensive water information across the water sector.

Improved accessibility, integration and use of national water resources information will result in better informed policy and infrastructure decisions and better evaluation of water sector reforms. This will also lead to greater confidence in how Australia manages this vital resource.

These outcomes require substantial innovation and this can only be achieved through a world-class water information research and development program.

A water information alliance

The Bureau of Meteorology and CSIRO have established the Water Information Research and Development Alliance (the Alliance). The Alliance is a strategic investment of \$50m over five years that will deliver most of the innovation required by the Bureau to fulfil its national water information mandate.

The Alliance brings together CSIRO's nation-leading expertise in water and information sciences with the Bureau's new operational responsibilities in water information. Around 40 leading CSIRO researchers will focus on topics including data interoperability, hydrologic modelling, water accounting and water resource assessment.

A major research and development program

Through the Alliance, the Bureau and CSIRO will improve the management of Australia's water resources by delivering value-added water information products, based on a comprehensive and robust nationwide water information system.

The Alliance builds on the achievements of Australia's premier water research program, CSIRO's Water for a Healthy Country National Research Flagship. The Flagship has recently undertaken an urgently needed assessment of water availability in the Murray-Darling Basin through the Sustainable Yields Project, now being extended to the other States of Australia. It has also been an innovator in water information through the Water Resources Observation Network (WRON) project.

Building on insights from those projects, CSIRO will deliver new science and technology that will enable the Bureau to undertake real-time interactive analysis of water information and begin using advanced methods for forecasting of water availability and floods across Australia. The first set of projects, listed on the next page, focus on key stages of the water information development process.

National Research
FLAGSHIPS
Water for a Healthy Country



Water Information Research and Development Alliance

www.bom.gov.au/water

Water Information Systems

Water data access and management: The Australian Hydrological Geospatial Fabric (Geofabric) Design project is developing web-based standards and tools for managing access, storage and retrieval of hydrological data. It will provide the geospatial framework used by the Bureau to undertake water related analysis and reporting.

Water data transfer standards: The Water Data Transfer Standards project is defining and developing transfer standards and procedures for supply of specified data from water information providers to the Bureau. The new data transfer standards will help organisations meet the Bureau's data compilation and publishing requirements.

Water data and modelling workflows: The Hydrologists Workbench project will develop tools to automate common workflow processes to access and use hydrological data and models. These tools will enable the Bureau's hydrologists to more readily perform complex tasks involved in the integration of hydrologic data and models.

Foundation Data Products

Rainfall and Evapotranspiration: The Precipitation and Actual Evapotranspiration Data Products project is developing new methods and tools to produce gridded (~5km, ~daily) data products to underpin hydrologic assessment and forecasting across Australia.

Digital Elevation Model: The One-second Digital Elevation Model project is developing consistent elevation datasets from Shuttle Radar Topographic Mission (SRTM) data, at a resolution of approximately 30m across the Australian continent, that are customised for hydrological applications.

Water Accounting and Assessment

Data and Models for Water Resource Assessment: The Water Resources Assessment and Water Use Accounting project is developing methods and technologies, to enable the Bureau to provide (on demand) integrated surface and groundwater resource assessments, water accounts and water resource outlooks.

Improved Australian rainfall data and evapotranspiration datasets—based on in-situ measurement, remote sensing and modelled data—will form the basis of national and regional water balances. Modelling technology and software will be developed for undertaking water resources assessments and producing the National Water Account.

Water Forecasting and Prediction

Flood and short-term water forecasting: The Short-Term Water Forecasting and Prediction project is developing methods and tools to enhance the Bureau's operational flood forecasting and generate continuous short-term streamflow forecasts across Australia.

New techniques will also be developed to forecast water flow at particular river sites for periods from hours to weeks and to predict flow volumes and water availability at particular river sites for periods of months to years. Software will be developed to improve the integration of hydrologic data and models needed for water resources assessments.

Seasonal and long-term water forecasting: The Seasonal and Long-Term Water Forecasts project is developing new methods and tools to provide reliable seasonal and long-term water forecasts of inflows to river systems across Australia.

The outcome

Through the Alliance, the Bureau will adopt CSIRO's leading science and technology, resulting in vastly improved water data integration, water resources assessments, National Water Accounts and flood and water availability forecasts.

Further information

For further information please visit www.bom.gov.au/water/wirada and www.csiro.au/partnerships/wirada

Other fact sheets in this series include:

- Transforming Australia's Water Resources Information
- The *Water Act 2007* and Water Regulations 2008
- The Australian Water Resources Information System (AWRIS)

A water information R&D alliance between the Bureau of Meteorology and CSIRO's Water for a Healthy Country Flagship.