



Modelling water balances for Australian rivers



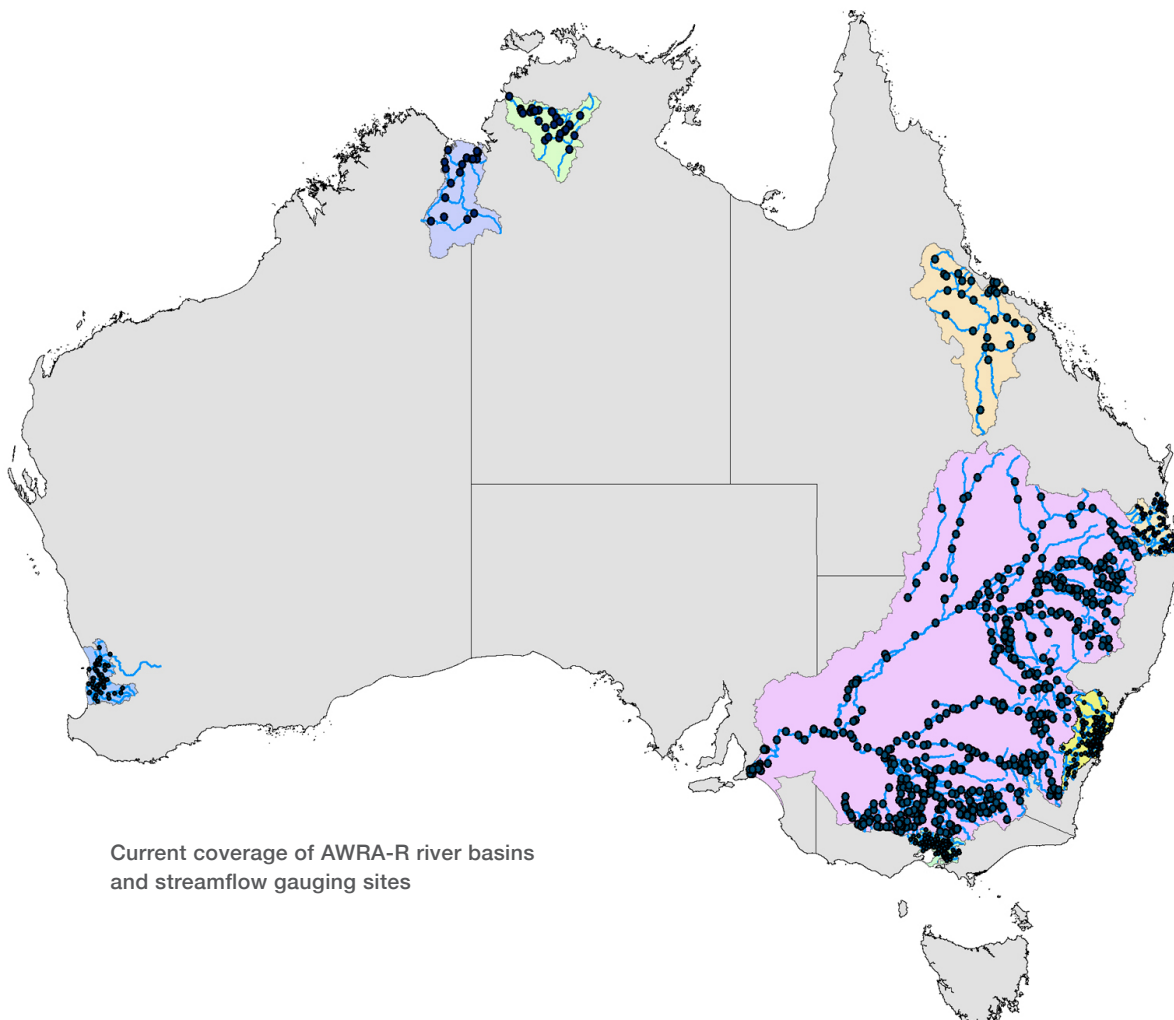
Of the water that makes it into our rivers, how much goes to the landscape, how much goes to the atmosphere, how much is extracted for consumptive use and how much flows out to sea? This is important information for water resource managers, planners and policy makers.

The Australian Water Resources Assessment River (AWRA-R) model makes it possible to quantify these water flows for individual river reaches and whole river systems.

What data is available?

River water balance data is available for 40 large river basins, covering the most developed and populated Australian river regions. You can use the water balance data to provide daily estimates of the volume of water in a river reach, the losses to groundwater, overbank flooding and return flows, and the amounts of rainfall and evaporation to and from the river and dam surfaces.

This data is currently available from January 1970 to June 2017 at reach, river and regional scales.



Current coverage of AWRA-R river basins and streamflow gauging sites

What can the data be used for?

Knowing where river water goes is useful for our understanding of river systems, as well as for accounting for river water at basin, State and national scale. The data can also be used for local surface water and groundwater managers to manage their resources, and for determining environmental flow priorities. It can also be used for water resources assessment, catchment condition monitoring, managing native fish in the river, education and agricultural applications. For example:

- A fisheries manager could use information on the volume of water in the river for managing flows to support breeding, survival and growth of native fish.
- An environmental water holder could use the past and current river volume data to determine the need for environmental water releases along a particular river reach, and the groundwater loss estimates to determine how much extra water needs to be delivered from an upstream dam to meet the environmental needs at that reach.
- A water resources modeller could use the simulated data such as river, groundwater, evaporation and overbank flow losses as inputs into their local water resources and ecological models.

The model behind the data

The AWRA-R model is a node-link network model developed with explicit representation of key hydrological processes and anthropogenic water uses. It uses a river water balance approach feeding observed data wherever available to estimate the system-wide daily river fluxes and stores including river volume, losses to groundwater, overbank flooding and return flows, rainfall and evaporation at the river surface.

The model was developed through the Water Information Research and Development Alliance between the Bureau and CSIRO. The model is applied for 40 basins across Australia using a nationally consistent approach.

What is the Bureau's role?

The Bureau's Water program has built a comprehensive and reliable picture of Australia's water resources to support policy and planning. It provides nationally consistent river water balance estimates as part of its water information role and responsibilities under the *Water Act 2007*.

FIND OUT MORE

To access the Australian river water balance data or to apply the model in your region please contact awrams@bom.gov.au

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