

for managing catchments



eWater Source enables local knowledge, data and models to be combined with industry best practice to generate effective, transparent catchment management scenarios and options.

Source is a water quality and quantity modelling framework that supports decision making and a whole-of-catchment modelling approach. Output from the model allows catchment (watershed) managers and their stakeholder communities to develop targets, prioritise programs and measure the effectiveness of a broad range of activities.

The software provides a framework for modelling the amounts of water and contaminants flowing through a catchment and into major rivers, wetlands, lakes, or estuaries. Source integrates an array of models, data and knowledge that can be used to simulate how climate and catchment variables (rainfall, evaporation, land use, vegetation) affect runoff, sediment and contaminants. The output can be used to offer clear scenarios and options for making improvements in a catchment.

Using Source to manage catchments

Source allows users to answer a range of management questions, such as where to place on-ground works to maximise water quality. It can predict the flow and constituent loads at any location in any catchment over time. Scenarios can include actual or planned changes in land use, land management, climate variability and climate change. For example, Source can be used to understand issues such as:

- quantity and quality of rainfall-driven runoff and groundwater reaching streams in the catchment under present conditions
- alterations made to quantity and quality of runoff by climate variability, different land uses, or riverbank restoration – now, or in the future
- optimal locations for on-ground work to maximise water quality improvement
- impacts of bushfire, flood, drought, construction activity or water extractions on the quality of receiving waters
- the effect of land use change on water quality and quantity into receiving waters.

BENEFITS:

Using Source to manage catchments:

- explore the volumes and quality of rainfall-driven runoff and groundwater
- plug in your existing models such as rainfall run-off or water quality models
- predict the impact of climate change, land use or management changes on the volume and quality of run-off entering streams
- optimise investment in on-ground work to maximise water quality
- understand the impact of bushfire, flood or drought on receiving waters
- consider the impact of land use change on water quality and quantity
- extend the model as needs change.

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www.ewater.com.au

How Source works for catchments

Source is highly flexible and is able to create an overall integrated model that is tailored to the problem. Constructing a model for a particular catchment management situation involves selecting appropriate component models and linking them in the software.

The model is based on the following building blocks:

- **Sub-catchments:** The sub-catchment is the basic spatial unit, which is then divided into hydrological response units (or functional units) based on a common response or behaviour such as land use. Within each functional unit, three models can be assigned: a rainfall-runoff model, a constituent generation model and a filter model.
- **Nodes:** Nodes represent sub-catchment outlet, stream confluences or other places of interest such as stream gauges or dam walls. Nodes are connected by links, forming a representation of the stream network.
- **Links:** Links represent the river reaches. Within each link, a selection of models can be applied to:
 - route or delay the movement of water along the link
 - modify the contaminant loads due to processes occurring within the links, such as decay of a particular constituent over time.

Source features a wide range of data pre-processing and analysis functions that allows users to create and compare multiple scenarios, assess the consequences, and report on the findings.

The contribution of a particular constituent on areas of the catchment can be viewed, and various visualisation methods used to show uncertainty including bar charts, line graphs, tables and maps such as rasters or polygons.

eWater Source is Australia's first truly integrated, river basin-scale water modelling system. It is an enterprise platform which enables organisations to make a step change improvement in their approach to integrated water resources management. Its groundbreaking capability links science, policy and management allowing decision makers to consider future scenarios and alternative management options for catchments, urban environments and rivers systems.



For the first time, policy makers and operators can plan and manage the sharing of water for human and ecological use ranging from local urban systems to an entire river basin, such as:

- The Great Barrier Reef
- South-east Queensland
- Sub-catchments of the Hawkesbury-Nepean region
- Australian Capital Territory and region
- Melbourne's Yarra River
- Goulburn-Ovens rivers in northern Victoria
- Mount Lofty Ranges in South Australia.

Want to know more?

Go to our website at www.ewater.com.au

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