eWater Source

Integrated Modelling System

eWater CRC

for managing rivers

eWater Source can be used in planning and operations modes for river management.

Source provides Australia's first nationally applicable integrated modelling software combining river and catchment modelling to support water planning and river operations across the country. Its use in river management is to simulate the physical and management aspects of river systems at a range of spatial and temporal scales. It can be run in one of two interchangeable operations and planning 'modes'. The first mode is used to inform day-to-day operational decisions. The second mode is used to inform policy decisions relating to the long-term impacts on water and environment resources.

Source has been developed to address water sharing and savings for entire river and connected groundwater systems. It offers important new features and capabilities dealing with water reform, climate change and environmental water.

It allows users to:

- share water between environmental and irrigation demands
- consider what impact climate change will have on water security
- manage multiple water owners in storage and in transit in the river system
- link existing models to build on current approaches.

Source provides a consistent modelling environment to support transparent river management decisions. Fundamental to this design is the flexibility which makes it readily customisable and easy to update as new science becomes available. New capabilities can be incorporated via plug-ins developed to suit particular needs.

Extensive trials with eWater partners have proved the capabilities of Source in river basins across the country.

BENEFITS:

Using Source to manage rivers:

- develop, implement and monitor robust and defensible water sharing plans
- make daily operation decisions and develop seasonal operating plans
- predict the combined impacts of climate, land use, farm dams, irrigation, water savings, and groundwater development
- model water availability—historical, present and future—across the whole country using models that are consistent at catchment, regional and continental scales
- assess the impact of land use and water management on water quality
- use with existing models or develop plug-ins as required
- share knowledge by joining a community of practice.

For more info
www.ewater.com.au

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In the planning mode, Source is designed to assess the long term impacts of water resources policy on system storages, flows, and water shares.

In the operations mode, Source is designed to support the operation of regulated river systems and forecast inflows, on a daily or seasonal basis.

Consistent approach across the jurisdictions

Source will be able to single-handedly model the entire Murray-Darling Basin. It will be fit-for-purpose for the jurisdictions, supporting different water sharing arrangements, accounting systems, and management rules, so it can be used consistently across different catchments and state boundaries.

Unique capabilities

Source has a unique range of capabilities. Users are able to simultaneously answer catchment management and river modelling questions, including the ability to handle complex policy and management rules at a system-wide scale.

Key features include the ability to:

- model water sharing and accounting using a selection of resource assessment systems dealing with water sharing plans in place in different catchments and jurisdictions
- assign, track, manage and reassign an owner's (such as a state or 'the environment') share of water as it moves through the river system
- support both rules based and optimised solutions to manage the delivery of water from multiple supply storages via multiple paths
- track the concentration of salinity and other 'conservative constituents' through the river system
- take explicit account of fluxes between the river and the groundwater aquifer along entire river reaches at any time step
- predict inflows from rainfall and runoff using a collection of available models
- select from a range of 'water user' demand models, including urban, environmental and irrigation demand, to inform storage releases.

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.

Trials

Source is being road-tested by our partners in catchments of the Murray-Darling Basin where different component parts are tested on modelling problems.

- **Macintyre Brook (QLD)**
  Application: Source (Planning)
  Partner: QDERM
- **Namoi (NSW)**
  Application: Source (Planning)
  Partner: NSW Office of Water
- **The River Murray (VIC, SA, NSW)**
  Application: Source (Planning)
  Partners: MDBA, SA Department for Water
- **The River Murray (VIC, SA, NSW)**
  Application: Source (Operations)
  Partners: MDBA
- **Goulburn-Broken-Loddon-Campaspe (VIC)**
  Application: Source (Planning)
  Partners: DSE Vic, SKM.

Want to know more?

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