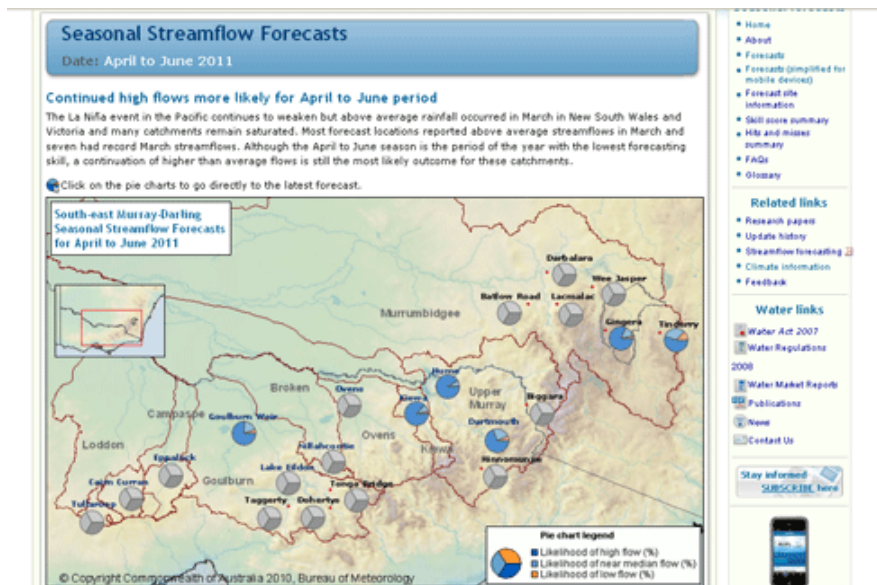


Published: 4 May 2011

Online forecasts take guesswork out of water management

Laura Wynne

A new Seasonal Streamflow Forecasting service, developed by the CSIRO and the Bureau of Meteorology, is helping reduce the uncertainty faced by Australia's water managers in managing their resource.



Credit: Bureau of Meteorology

The availability of water in Australia is highly variable. The lack of certainty about how much water will be flowing through streams over the next growing season means many farmers, for example, have difficulty planning cropping strategies.

But with the new service providing more reliable streamflow forecasts up to three months ahead, more robust information is now available for those managing seasonal water allocations, reservoir operations, environmental flows and water markets.

The Bureau and CSIRO consulted with water organisations such as the ACT's water authority, ACTEW Corporation.

'We have understood a whole lot more about the development of flows in recent months than we ever would have without the tool,' comments ACTEW's Managing Director, Mark Sullivan.

'This is the first operational Seasonal Streamflow Forecasting service in the world that is accessible to the public that we're aware of,' said Dr Rob Vertessy, the Bureau's Deputy Director (Climate and Water).

'We expect that climate change will result in higher temperatures, enhanced evaporation and reduced streamflows in southern Australia in the future. This makes it all the more important to be able to forecast seasonal water availability.'

The Bureau provides Seasonal Streamflow Forecasts at the catchment scale, which means the information will be more useful for farmers within the forecast area as it will have a relatively high degree of accuracy locally, compared to information sources based on continent-wide trends.



Credit: Tourism Queensland

Launched by the Bureau in December 2010, the monthly, free forecasts are available for 13 sites and eight major storages in the south-east Murray–Darling Basin, with more forecasts planned for other rivers and catchments in the next two years.

The service is based on an advanced statistical modelling approach called Bayesian Joint Probability (BJP), which provides the information on likely water inflows into major rivers and storage systems three months ahead through modelling the likelihood of streamflows exceeding various volumes. The model takes into account how current catchment conditions, such as existing soil moisture and groundwater, and climate patterns such as El Nino cycles may influence future catchment runoff.

Model verification has shown the experimental forecasts produced by the BJP approach for the last 12 months to be reliable and robust.

'The research started only three years ago. To see the research outcome successfully adopted for a new service is amazingly rewarding for CSIRO,' says Dr Bill Young, Director of CSIRO's Water for a Healthy Country Flagship.

CSIRO is currently investigating several catchments to test the applicability of the BJP model across different climate regimes. These include the Yarra and Thomson catchments in Victoria; the Mersey–Forth and King catchments in Tasmania; the Brisbane, Stanley, Barron, Johnstone and Burdekin in Queensland; and the Serpentine in Western Australia.

The Bayesian Joint Probability research was carried out through the Water Information Research and Development Alliance between CSIRO's Water for a Healthy Country Flagship and the Bureau. The research has also been supported by the South Eastern Australia Climate Initiative.

More information
Seasonal Streamflow Forecasts: www.bom.gov.au/water/ssf

From **ECOS** online <http://www.ecosmagazine.com/?paper=EC10102>