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Advancing methods and tools for water management in the Murray-Darling Basin

Key words: Ecosystem services, Ecology, Hydrology

Abstract:

In 2012, the Australian Government adopted the Murray-Darling Basin Plan to reform the consumptive use of arguably Australia's most important resource – water – to ensure the long-term health of environments, communities and agricultural production in Australia's largest river basin. However, measuring the success of the package of reforms presents new challenges in trying to assess environmental, social and economic flow-on effects of the Basin Plan.

A partner research project between the Commonwealth Scientific Industrial Research Organisation (CSIRO) and the Murray-Darling Basin Authority (MDBA) seeks to aid with the prediction of basin ecological outcomes by developing methods to measure and evaluate the ecosystem benefits of water management.

By building on past investments by both institutions, the Ecology-Hydrology project proposed within, will develop a model to predict spatiotemporal change across the basin. The model framework will be populated using field and expert data as well as remote sensing data and spatial and temporal models will be incorporated to indicate the trajectories of change as a consequence of future water management. Current tools have limited ability to represent ecosystem temporal and spatial changes and this gap will be addressed within the project. In addition, the project aims to review varying approaches to benefit valuation such as ecosystem services and economic evaluation, in order to test and demonstrate an approach that can be utilised to measure and evaluate the ecosystem benefits of river management decisions.

The MDBA has ongoing responsibilities to plan and manage Murray-Darling Basin resources. The model framework will improve the tools and evaluation methods used to measure system-wide impacts of water management and provide a better framework for future environmental accounting. This in turn will help improve the way managers prioritise, plan and implement water reforms across the Basin, and improve confidence in water management and planning actions of the MDBA.