

KEYNOTE
EXTENDED ABSTRACT ONLY

From hydro-climate model to services: case study of the AWRA modelling system

Julien Lerat^a, Andrew Frost, Jai Vaze^a, Elisabeth Vogel^b, Wendy Sharples^b, Ulrike Bende-Michl^c, Justin Hughes^a and Shaun Kim^a

^a CSIRO, Land & Water, Canberra

^b Bureau of Meteorology, Melbourne

^c Bureau of Meteorology, Canberra

Email: julien.lerat@csiro.au

Abstract: The delivery of hydro-climate science to stakeholders has recently seen a significant shift from traditional channels based on publications and one-off data packaging, to "on-demand" customised products that are frequently updated and where users select content interactively. This trend has recently accelerated due to increasing public interest and availability of large computing resources through cloud services. This talk presents the challenges and opportunities arising when standing up a hydro-climate service, starting from forging science partnerships to support model development, right through to user-centred design with a public-facing user-interface and data platform, via a case study: the Australian Water Resource Assessment (AWRA) modelling system.

The AWRA modelling system has been developed over the past 15 years as part of the Wirada alliance between CSIRO and the Bureau of Meteorology to deliver improved water balance estimates for the Australian continent. It initially included three components (AWRAL-L, AWRA-R and AWRA-G) focusing on landscape, river and groundwater systems, respectively. A first service was released in 2016 by the Bureau of Meteorology, soon to be upgraded with seasonal forecasts and hydro-climate projections as part of the Australian Water Outlook (AWO).

The talk will cover several key points related to this transition to "on-demand" combined hydrology and climate services, including the need to conduct user engagement and get a clear definition of end-user products, the challenges of coupling atmospheric and hydrological models, the need for transparent estimates of skill, confidence and uncertainty, the value of community modelling platforms and the importance of science partnerships.

Keywords: *Model integration, landscape models, river routing models, water balance models, continental scale modelling*