

## **Regional calibration against multiple data sources to predict streamflow**

**J. VAZE, Y. ZHANG, F.H.S. CHIEW, B. WANG & J. TENG**

*Water for a Healthy Country Flagship, CSIRO Land and Water, Canberra, ACT, Australia*

[jai.vaze@csiro.au](mailto:jai.vaze@csiro.au)

**Abstract** This paper presents modelling experiments with three hydrological models to compare daily runoff predictions from regional calibration (where one set of parameter values are used to model an entire sub-region or region) and from regionalisation based on geographical proximity (where ungauged catchments are modelled using optimised parameter values from the closest gauged catchment). Data from 196 catchments across southeastern Australia are used, and the model is calibrated against observed runoff and remotely-sensed evapotranspiration and soil moisture. The results show that daily runoff predictions from the geographical proximity regionalisation are generally only slightly better than the runoff predictions from regional calibration. The results also show that calibration against multiple data sources only very marginally improves the runoff predictions compared to calibration against runoff alone. Nevertheless, these are early attempts, and the results suggest that regional calibration and modelling utilising multiple data sources have the potential to improve runoff predictions across large regions, as well as provide more parsimonious interpretation of parameter values for impact studies and more consistent simulations of the various fluxes and stores.

**Key words** rainfall–runoff modelling; remote sensing; regional calibration; regionalisation