

Exciting PhD opportunities at the University of Melbourne

*Environmental Hydrology and Water Resources Group,
Department of Infrastructure Engineering*



Four exciting PhD projects are available for motivated and suitably qualified candidates to undertake original research in the hydrologic sciences, funded by the Australian Research Council and the Government of Victoria and in partnership with the Commonwealth Scientific and Industrial Research Organisation (CSIRO). You will work with a dynamic and industry-aligned team to explore interrelated issues of water availability, drought and climate change in south-east Australia. Your findings will inform the water industry and contribute to the international body of knowledge. Upon selection, applicants will then need to obtain University of Melbourne scholarship funding through standard competitive scholarship selection processes (see [here](#)). Successful applicants will receive a stipend of \$30,600 p.a. tax-free plus an additional \$5,000 p.a. top up scholarship. PhD candidatures run for 3 years full time, and candidates are given considerable intellectual freedom and the opportunity to present findings at international conferences. If you are interested, please send a cover letter, response to selection criteria, CV and certified transcript from all University degrees, to fowler.k@unimelb.edu.au by 15th September 2019 (earlier applications preferred). In the cover letter, please state your project preference. Please do not apply directly with the university without first contacting us.

Selection criteria: 4-year degree or masters in relevant discipline with weighted average over final two years of >82% (international applicants >88%), outstanding written communication skills, demonstrated competency in scientific programming, statistical and/or mathematical experience. Industry experience preferred. Female applicants are highly encouraged to apply.

Project 1: Catchment resilience to droughts: from thresholds to catchment planning. Recently we've shown catchment streamflow does not always recover from droughts. However, we do not know if and when a catchment will recover. This exciting project aims to statistically quantify the drivers and thresholds that control recovery, and explore if and how management actions alter those thresholds and their influence on catchment resilience.

Further information: Dr Tim Peterson, timjp@unimelb.edu.au

Projects 2 & 3: Water availability during droughts: better understanding & modelling. Two PhD positions are available to address challenges of hydrological predictions under changing climate. The PhD projects will investigate changes in hydrological processes in response to long, slow changes in climate, and will advance hydrologic models to support improved water resources decision making and policy formation (including climate change impact assessment). The first project will focus on physical processes & conceptualisation, examining hydrologic response and associated changes in catchment processes. The second PhD will focus on an operational perspective, seeking to create new rainfall-runoff models that are suitable for future decision making, for example under climate change.

Further information: Dr Margarita Saft (margarita.saft@unimelb.edu.au) or Dr Keirnan Fowler (fowler.k@unimelb.edu.au).

Project 4: Improved rainfall-runoff simulation in a changing world. Rainfall-runoff models are useful tools in water resource planning under climate change, but currently they are not reliable enough when applied in changing climatic conditions. Recent research at the University of Melbourne has revealed that some existing rainfall-runoff models have a wealth of untapped possibilities. This PhD will focus on the question of how to choose the right set of parameters to predict future hydrology, using only the information available to us in the present, considering how hydrological processes might change in the future, and how the model might be used for water resources and ecological applications.

Further information: Dr Keirnan Fowler, fowler.k@unimelb.edu.au