

New model to assess urban water security

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University of Adelaide water engineers have developed a model to estimate potential urban water supply shortfalls. Photo by Ivan Prole.

University of Adelaide water engineering researchers have developed a model to estimate potential urban water supply shortfalls under a range of climate change scenarios.

The model developed by PhD candidate Fiona Paton, with supervisors Professor Graeme Dandy and Professor Holger Maier, should help water supply managers plan for future [water security](#) despite the uncertainty surrounding the impacts of climate change.

"Urban water supply is closely linked with climate variables, so climate change is expected to have a major impact on urban water security," said Ms Paton. "Rainfall is obviously particularly important in determining water supply, but there is considerable uncertainty about how rainfall

patterns will be affected by climate change."

The researchers have developed a method to incorporate rainfall projections under a range of possible climate change scenarios into an urban water supply model. The model makes use of multiple probability-based daily rainfall sequences combined with historical rainfall data.

"Water supply managers are struggling to revise future water plans as they seek to take into account the likely impacts of climate change on future water security," said Ms Paton.

"This is made more difficult by lack of agreement surrounding various global climate models and emissions scenarios, as well as the need to balance various conflicting objectives of water supply system planning.

"We hope this model will help water managers estimate some of the climate change effects on supply security."

In the paper '[Sensitivity of Estimated Urban Water Supply Security based on Various Global Circulation Models and Emission Scenarios](#)', the researchers applied their new approach to Adelaide's Southern water supply system to the year 2100 in a case study including alternative water sources. This research won best paper award at the recent Engineers Australia's 'Practical Responses to Climate Change' conference.

The future Adelaide supply system includes reservoirs fed from catchments, water pumped from the River Murray, household rainwater tanks, stormwater reuse schemes and the desalination plant.

The researchers, who are all part of the eWater CRC, said that recent moves towards diversification of water sources and demand management were commendable but there was a need for a more rigorous scientific approach as [climate change](#) further threatens supplies.

Provided by University of Adelaide

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