Geophysical Research Abstracts Vol. 17, EGU2015-13670-1, 2015 EGU General Assembly 2015 © Author(s) 2015. CC Attribution 3.0 License.



## Comparing approaches for using climate projections in assessing water resources investments for systems with multiple stakeholder groups

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Climate change has challenged conventional methods of planning water resources infrastructure investment, relying on stationarity of time-series data. It is not clear how to best use projections of future climatic conditions. Many-objective simulation-optimisation and trade-off analysis using evolutionary algorithms has been proposed as an approach to addressing complex planning problems with multiple conflicting objectives. The search for promising assets and policies can be carried out across a range of climate projections, to identify the configurations of infrastructure investment shown by model simulation to be robust under diverse future conditions. Climate projections can be used in different ways within a simulation model to represent the range of possible future conditions and understand how optimal investments vary according to the different hydrological conditions. We compare two approaches, optimising over an ensemble of different 20-year flow and PET timeseries projections, and separately for individual future scenarios built synthetically from the original ensemble. Comparing trade-off curves and surfaces generated by the two approaches helps understand the limits and benefits of optimising under different sets of conditions. The comparison is made for the Tana Basin in Kenya, where climate change combined with multiple conflicting objectives of water management and infrastructure investment mean decision-making is particularly challenging.