

Resilience of Sydney Water Supply System Under Changing Climate

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Abstract

Climate change impact remains major risk for water security across the world. Water supply security assessment in Australia is primarily based on estimated inflow data over last 100 years assuming future inflow variability will follow the past. However droughts within the records periods and paleo records show evidence of significant climate variability. Urban supply systems are designed using extended synthetic hydrological data to withstand droughts worse than recorded. The drinking water for Sydney's over 4 Million residents is primarily supplied by surface water sources in the Hawkesbury-Nepean river system. The Climate Change Impact assessment methodology included techniques of interpretation of Global Climate Model (GCM) estimates, downscaling of results to catchment scale, plus catchment rainfall-runoff and water supply system modelling. The recent assessment incorporated NSW / ACT Regional Climate Model (NARClM) developed for the purpose. The availability of multiple model ensemble results in terms of plausible extremes has greatly improved Risk management adaptation planning for climate change. The presentation deals with uncertainty about future climate, incorporating the attributes of supply system resilience (the ability to bounce back after unexpected) and robustness (the ability to cope with the unexpected), and communicating complex results and difficult-to-visualize trade-offs.