



## **Modeling the impact of climate change on macro versus micro hydrology on lake systems**

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After an extremely dry year in the southwest of Western Australia, the region received over 200mm of rain within a 24 hour period resulting in catastrophic flooding. This is a classic climate change scenario predicted by numerous models of the southwest Australian region in which severe droughts are followed by extreme rainfall and subsequent floods. These anticipated scenarios mean vegetation must be able to withstand the extremities of drought conditions and flood events. The fringing vegetation of playa lakes in the Lake Warden Catchment contain sets of conservation priority species and important remnants of a biologically diverse region that has largely been cleared for agriculture. Modeling the impact of climate change on macro versus micro hydrology on lake systems surrounded by primary production land is the first step in evaluating the long-term threat to the fringing vegetation of the regions' playa lakes. Simulations incorporating predicted climate change and land management options designed to mitigate the effects of climate change, including various extents of planting adjacent farmland, have been undertaken to evaluate the water balance of the playa lakes under different management options. The output of different scenarios are analyzed in conjunction with vegetation data in which vegetation structure has been correlated with site specific variables such as elevation, depth to groundwater, hydroperiod and soil type. The relative 'threat' to the vegetation of the playa lakes is determined for different management scenarios according to how the site specific variables will be affected by climate change and different management options.