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Ecohydrological Adaptation to Climate Change - from Gondwana to the Globe

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The south west corner of Australia holds a level of plant diversity unmatched outside tropical rainforests; fostered through millions of years of isolation and relative tectonic and climatic stability. Across deep time, pressures of pollinator scarcity, severe nutrient limitation in an ancient, highly weathered Critical Zone, and fire disturbance have produced what might be the most specialised flora in the world. Southwest Western Australia (SWWA) is also on the bleeding edge of climatic heating and drying, in a trend that has been apparent since the 1960s. Water resources management in response to these trends has made the cities of SWWA global leaders in conservation and water technologies – but as the drying continues, groundwater recharge is dropping, phreatophytic plants are dying, and more severe summer heatwaves and droughts are impacting key ecosystems over huge areas. In this Darcy Oration, I hope to introduce you to the often forgotten, but exceptional set of ecosystems, catchments and Critical Zones of SWWA, and ask how can ecohydrology as a discipline support meaningful adaptation to such climatic changes in this megabiodiverse, hyper-endemic area? I will present a potential hierarchy of actions and research gaps to consider, and suggest that research in support of making decisions about where and how to adapt is a key challenge for our community. Finally, I will spend a little time reflecting on my personal experiences as a caregiver to special needs children, and how those caregiving responsibilities impact a career in hydrological science.