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Forest health in the drying climate of southwest Western Australia

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The southwest of Western Australia (SWWA) has experienced a declining trend in rainfall since the early 1960's. The future projections are unanimous in that this trend will continue at a rate of 1-5 mm reduction in rainfall per year. This has major consequences for the unique flora and fauna that occur in this internationally recognised biodiversity hotspot. In SWWA, large-scale surveys have been conducted measuring canopy health across the distribution of 3 endemic Eucalypt species (Eucalyptus wandoo (wandoo), E. gomphocephala (tuart), E. marginata (jarrah)). These surveys indicated a variation in crown health across the rainfall gradient indicating a possible relationship between health and rainfall and/or soil moisture availability. This research therefore aims to determine what water related climate factors are related to Eucalypt health/decline in SWWA, using a time series of LandsatTM/ATM data and observed and modelled estimates of water fluxes. This project will specifically test the hypothesis that reduced soil moisture availability is the main driver of observed trends in tree health. Preliminary results of this research will be presented and future steps and conservation/management challenges will be discussed.