

RESEARCH DIRECTIONS

Fire affects on tree water use

Professor David Tissue from the Centre for Plants and the Environment is examining the impact of forest fire on water use by trees and groundwater recharge within a highland catchment. This research is an Australian Research Council Linkage project supported by the Australian Capital Territory's water utility, ACTEW Corporation.

'Most Australian cities rely on dams, reservoirs and catchments as their main source of water' says Professor Tissue. 'Many of these dams and catchments are surrounded by forests, which can affect the amount of water collected. We need to understand how much water is used by surrounding trees, and how these trees are affected by fire in order to predict how much water will remain in the catchment.'

This research will use eight bio-hydrological monitoring sites already in place in highland forests, surrounding Canberra and north-eastern Victoria. Three approaches will be used to monitor water use in trees at different elevations. First, tree sap flow will be measured to characterise the amount of water stored in trees and the amount that is lost through the canopy. Second, the impact of the environment on leaf-level water stress will be determined, and third, how much water is lost at night, which may greatly affect how much water is available for groundwater recharge, will be measured. To date, these approaches have not been utilised in forests following fire. By doing so, this project will develop models for quantifying evaporation and transpiration (evapotranspiration) in forests, and subsequently a whole forest water balance in response to fire and changes in climate.



The research will contribute to our understanding of key elements of the operation of forests in water catchment areas, improving our ability to manage those catchments. This will benefit the majority of Australians, who are dependent on the water captured in forest catchments for domestic, agricultural and industrial purposes.

Project Title: Testing climatic, physiological and hydrological assumptions underpinning water yield from montane forests

Funding has been set at: \$2,429,228

Contact Details: d.tissue@uws.edu.au

<http://www.uws.edu.au/cpe>

December 2009