

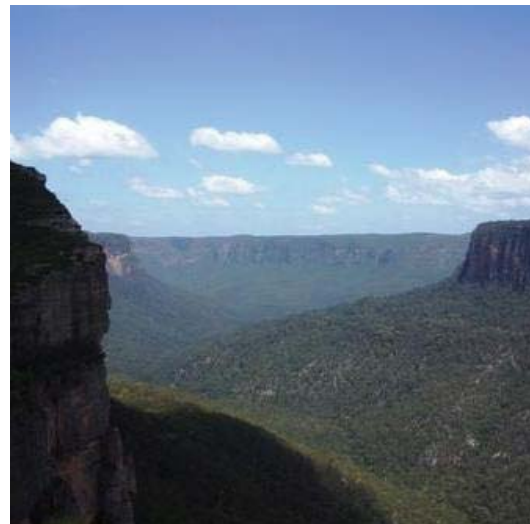
# RESEARCH DIRECTIONS

## Up a Gum Tree with Climate Change

**Professor David Tissue and Professor Jann Conroy from the Centre for Plant and Food Science are collaborating with United States researchers Dr Nathan Phillips of Boston University and Barry Logan of Bowdoin College to explore eucalypt growth reactions to increasing carbon dioxide (CO<sub>2</sub>) levels and climate change through a three-year ARC Discovery Project.**

'Climate change and rates of increase in atmospheric CO<sub>2</sub> concentrations will accelerate during this century, with unknown consequences for Australia's plantation and native forests', says Professor Tissue. 'This issue is of major concern to government, the community and land managers, as these forests are important for environmental, aesthetic, and economic purposes, including carbon sequestration and trading. Forests use large amounts of water, reducing stream flow and water supplies for rural and urban communities. Our project takes a unique approach, investigating how fast- and slow-growing eucalypts respond to combinations of three environmental factors – drought, pre-industrial and future CO<sub>2</sub> emissions, and increasing day and night temperatures. The knowledge generated about the mechanisms driving tree growth and water use under these conditions will provide insights into responses of trees and future environments'.

The research team will use the Hawkesbury Forest Experiment – a national facility with whole tree chambers, that allows a closed experimental system where a single tree can be isolated from the outside environment and be grown in conditions in which one or more variables, such as CO<sub>2</sub> levels,



temperature, light, soil conditions, nutrients and water supply can all be controlled by the researchers.

The knowledge generated from the project will provide insights into mechanisms driving productivity and water use of forests in the present and in expected future environments. Such knowledge will be used by land managers, policy makers and governments to develop strategies to cope with the short- and long-term impacts of climate change.

**Project Title:** Eucalypt growth in past and future environments – a novel approach to understanding the impacts of atmospheric CO<sub>2</sub> and climate

**Funding has been set at:** \$300,000

**Contact Details:** [d.tissue@uws.edu.au](mailto:d.tissue@uws.edu.au),  
<http://www.uws.edu.au/pafs>

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