

**WESTERN SYDNEY
UNIVERSITY**



Hawkesbury Institute
for the Environment

EucFACE Facility

SCIENTIFIC FACILITIES



The EucFACE Experiment

EucFACE (Eucalyptus Free Air CO₂ Enrichment) is Australia's largest climate change research experiment based in remnant Cumberland plain woodland in Sydney's Hawkesbury district.

The experiment aims to assess the effects of elevated CO₂ on Australian forest ecosystems. It will enhance our knowledge about how rising levels of atmospheric carbon dioxide (CO₂) will affect our fragile forest ecosystems and inform effective forest management strategies into the future.



HOW DOES IT WORK

EucFACE enriches the atmosphere locally with CO₂ without altering or modifying the environment. There are six 25m-high rings (three control and three CO₂-enriched) constructed with perforated composite-fibre pipes through which CO₂ is released.

CO₂ concentrations inside the rings are held at a constant level of 150ppm above ambient levels by control mechanisms that adjust the rate and direction of release according to prevailing winds. Atmospheric CO₂ levels are predicted to reach 550ppm by around 2050.

On-site cranes provide safe access to the treetops to a height of 35m, overcoming the challenge of reaching the growing parts of trees without damaging the trees or their inhabitants.

The CO₂ has a unique isotopic signature compared to atmospheric CO₂ which enables the tracking of CO₂ movement into trees, plants and soil.

“EucFACE offers the large-scale infrastructure needed to answer the biggest and most complex questions about what will happen to native trees, forests and ecosystems under increased atmospheric CO₂ levels.”

SCIENTIFIC DIRECTIONS

A team of plant physiologists, soil biologists, molecular biologists, entomologists and ecological modellers study the various aspects of EucFACE experiment.

EucFACE is already providing unprecedented insights into the responses of trees, soils and ecosystems to increased CO₂ levels.

Over 250 different instruments are streaming a variety of data from EucFACE that will enable researchers and collaborators to use the facilities for prediction modelling and to make informed management decisions at a much earlier date than otherwise would have been possible.



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