

The path to impact for ACCESS climate modelling

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The Australian Community Climate and Earth System Simulator (ACCESS) equips Australia with a global modelling capability that is uniquely concerned with the weather and climate of the Australasian and Southern Hemisphere region. It is a modelling system that underpins weather and climate applications from short-term weather forecasting to multi-centennial climate projections by simulating the atmosphere, biosphere, ocean and sea-ice, with the option of including interactions between climate and the carbon cycle.

ACCESS is a national effort between the Bureau of Meteorology, CSIRO and the universities, and relies on extensive international collaborations.

This presentation will focus on how ACCESS is used for understanding past and future climate using a 'path to impact' framework. Examples will be given of inputs, activities and outputs of the ACCESS climate modelling work, and how these have contributed to international assessments and national climate projections. These examples will illustrate:

- how climate models are developed, tested and refined
- how improvements in one component of the model can lead to unexpected consequences in other parts of the climate system
- how models can be used to explore a range of 'what if' scenarios.

The presentation will also discuss the contribution ACCESS made to the international Coupled Model Intercomparison Project 5 (CMIP5) and its planned involvement in the present phase of the project, CMIP6.



Dr Rachel Law is a principal research scientist at CSIRO and leader of the ACCESS group within CSIRO's Climate Science Centre. Scientists from this group contribute to a number of ESCC Hub projects including Project 2.1 *Preparing ACCESS for CMIP6* and Project 2.5 *Improving Australia's climate model*. Rachel's research interests are in modelling and interpreting atmospheric carbon dioxide. She played a key role in implementing the carbon cycle component of ACCESS.