The aim of the winter school was to provide the next generation of earth system scientists in Australia with an overview of the methods and applications of earth system modelling.

Thirty participants gathered at the plush new Climate Change Research Centre at UNSW for the week-long school. They consisted mostly of postgraduate students, with a handful of more senior researchers. There was a good geographical spread, with participants coming from all six states and also the ACT.

Morning sessions were dedicated to presentations from leading earth system scientists. Andy Pitman began the week with an inspiring overview of earth system science, emphasising the vitally important contribution that it makes. Subsequent presentations covered each of the individual components of the earth system. Jason Roberts spoke about the past, present and future of the cryosphere, including the numerical methods used to model it. Alex Sen Gupta covered ocean dynamics, ocean modelling, and projections of the ocean's response to anthropogenic climate change. Mike Roderick gave a thought-provoking presentation on modelling terrestrial surfaces, while Steve Sherwood covered atmospheric convection and climate modelling. Finally, Richard Matear spoke about the response of ocean biogeochemical cycles to climate variability and change.

Presentations also covered some of the applications of earth system modelling. Gab Abramowitz began with a presentation on understanding climate models, evaluating model performance and the use of models to investigate scientific questions. Scott Power spoke on the causes of decadal climate variability, and Lisa Alexander covered observations, modelling and projections of climate extremes. Steven Phipps and Matt England finished the week with presentations on the modelling of past climates.

Afternoon sessions consisted of hands-on training. Margaret Kahn and Rika Kobayashi began by giving the participants an introduction to the NCI National Facility. Over the following three afternoons, Steven Phipps taught everyone how to use the CSIRO Mk3L climate system model. Many of the participants had no prior experience with using either high-performance computing facilities or climate models. However, by the end of the week, everyone was able to design and execute their own climate modelling experiments and then visualise the results.

The winter school was clearly enjoyed by all those who attended, and hopefully many of the participants will go on to pursue successful and rewarding careers in earth system modelling!

All the presentations are available online at http://wiki.arcs.org.au/bin/view/ARCNESSPalaeo/WinterSchool2009.