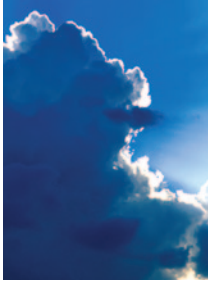
South Eastern Australian
Climate Initiative


The South Eastern Australian Climate Initiative

Phase 2 of the South Eastern Australian Climate Initiative (SEACI) is a three-year (2009–2012), $9 million research program investigating the causes and impacts of climate variability and change across south-eastern Australia.

SEACI is a partnership between the CSIRO Water for a Healthy Country Flagship, the Bureau of Meteorology, the Murray–Darling Basin Authority, the Victorian Department of Sustainability and Environment, and the Australian Government Department of Climate Change and Energy Efficiency.

The SEACI region includes the Murray–Darling Basin, the state of Victoria and southern South Australia, as illustrated in Figure 1.

The program of research for Phase 2 of SEACI builds on the outcomes of Phase 1, in which significant advances were made in our understanding of the key drivers influencing the climate of south-eastern Australia. Phase 2 includes studies of climate variations on time scales ranging from weeks to decades, providing information which is relevant to a range of policy and water management stakeholders.

Research is conducted through three related themes.

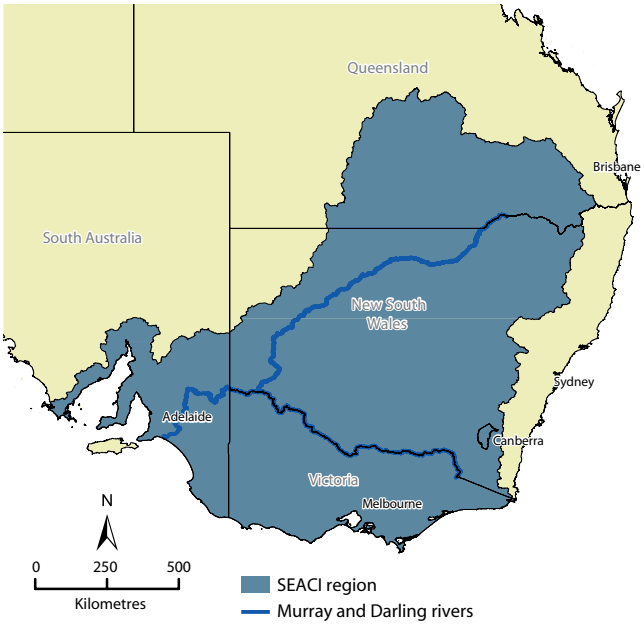


Figure 1. South Eastern Australian Climate Initiative (SEACI) region

Theme 1: Understanding past hydroclimate variability and change in south-eastern Australia

Research in Theme 1 is leading to a better understanding of the factors that drive climate across south-eastern Australia, and how these impact on the water balance.

This theme seeks to describe the relationships between the large-scale climate factors which affect south-eastern Australia, including the Hadley circulation and the sub-tropical ridge, and is undertaking an assessment of the ability of climate models to capture these observed relationships.

This research is determining the extent to which observed changes in climate can be attributed to enhanced greenhouse gas concentrations, and aims to determine the cause of the greater-than-expected decline in streamflow which was observed across south-eastern Australia throughout the Millennium Drought (1997–2009).

Further details can be found in Factsheet 2 of 4: *The Millennium Drought and 2010/11 Floods*.

Theme 2: Long-term hydroclimate projections in south-eastern Australia

Research in Theme 2 is leading to improved future hydroclimate projections in south-eastern Australia.

Research in this theme seeks to improve projections of future climate across south-eastern Australia, and the impact of climate variability and change on future water availability and river flow characteristics.

This research is further refining appropriate greenhouse gas emission and global warming scenarios for water resources impact assessment, and is assessing the ability of global climate models to simulate the observed large-scale atmospheric drivers of south-eastern Australian climate.

Research is also being undertaken to improve the understanding and estimation of streamflow sensitivity to rainfall and temperature, and to improve hydrological models in order to adequately capture potential changes in climate–runoff relationships and dominant hydrological processes. This is providing updated and more accurate projections of the impact of climate change on water availability across south-eastern Australia.

Further details can be found in Factsheet 4 of 4: *Understanding future changes in climate and streamflow*.

Theme 3: Seasonal hydroclimate prediction in south-eastern Australia

Research in Theme 3 is exploring the predictability of streamflow, leading to improved seasonal climatological and hydrological forecasts.

Phase 1 of SEACI contributed to the development of a statistical streamflow forecasting model which utilised climate forecasts from the Predictive Ocean Atmosphere Model for Australia (POAMA). In Phase 2, SEACI research is further improving the ability of POAMA to predict rainfall at lead times ranging from several weeks to nine months. Outputs from the statistical streamflow forecasting model are being improved by better accounting for large-scale drivers such as the El Niño – Southern Oscillation and the Indian Ocean Dipole.

SEACI research has contributed to the development of a seasonal streamflow forecasting service which provides predictions of streamflow for three months ahead. The service is available at: <http://www.bom.gov.au/water/ssf/index.shtml>.

Research in Phase 2 of SEACI is further developing modelling approaches and assessing the utility of seasonal forecasts, which will improve the skill of hydrological modelling for south-eastern Australia.

Further details can be found in Factsheet 3 of 4: *Predicting seasonal climate and streamflow*.

National Research FLAGSHIPS Water for a Healthy Country CSIRO

State Government Victoria Department of Sustainability and Environment

Australian Government Department of Climate Change and Energy Efficiency Bureau of Meteorology

MURRAY–DARLING BASIN AUTHORITY

FACTSHEET 1 OF 4

The suite of four factsheets is available from www.seaci.org or by emailing seaci@csiro.au