



Climate change information for Australia

A partnership of Australia's leaders in climate, atmosphere and ocean science, the Earth Systems and Climate Change (ESCC) Hub is undertaking research to address nationally significant challenges relating to the causes and impacts of climate change, variability and extremes in Australia.

Our goal is to ensure that Australia's policies, planning and management decisions are effectively informed by the latest Earth systems and climate change science, now and into the future.

The ESCC Hub is one of six multi-disciplinary research hubs delivering world-class science to support decision-makers through the Australian Government's National Environmental Science Program (NESP).

Science to inform sound decision-making

The NESP is a long-term commitment by the Australian Government to support environmental and climate research, with a focus on science that will inform on-ground action and yield measurable improvements to the environment.

The NESP is building on its predecessors – the National Environmental Research Program and the Australian Climate Change Science Program – in providing decision-makers with the best available information to support understanding, management and conservation of Australia's environment.

Who benefits?

The ESCC Hub is delivering climate change information and services to a range of next and end users, including:

- the Australian Government Department of the Environment and Energy, other departments and relevant ministers
- ESCC Hub partners and other NESP Hubs
- university researchers
- state and local governments
- industry and the private sector
- Indigenous communities.

Our research

The ESCC Hub's research is focused on three key priorities:

- We're improving our observations of our **past and current climate** so we can better understand the processes driving our climate system and how they are changing.
- We're improving our understanding of **how the climate system may change in the future** so we can be better prepared to address challenges and take advantage of opportunities.
- We're building the **utility of Earth systems and climate change information** so policy and decision makers have the best available tools to inform adaptation, planning and mitigation responses.



Australian
National
University



Our research is helping address five key climate challenges facing Australia



HYDROCLIMATE AND WATER RESOURCES



Water availability and quality are likely to be affected by changing rainfall patterns and more frequent and/or severe droughts. We're improving our understanding of Australia's future hydroclimate, to inform planning, infrastructure and investment for Australia's future water resources management.



CARBON CYCLE AND FUTURE WARMING



Limiting future global climate change requires substantial and sustained reductions in net greenhouse gases emissions. We're tracking, understanding and predicting future changes in **greenhouse gases** and **Australia's carbon budget** to support and inform Australia's emissions mitigation policy responses.



FOOD SECURITY, ECOSYSTEMS AND NATURAL RESOURCE MANAGEMENT



Primary industries and the environment are vulnerable to rising temperature, changes in rainfall, more frequent and severe extreme events, rising sea levels and temperatures, and ocean acidification. We're developing and delivering improved climate change and climate variability information relevant to ecosystem function and food production, to inform agency and sector decision-making and planning.



CHANGES IN COASTAL CLIMATE



Australia's coasts are vulnerable to rising sea levels, more frequent and intense storms, ocean acidification and changes in rainfall, run-off, wave size and direction, and ocean currents. We're providing access to nationally coordinated and refined knowledge, information and data on how Australia's coastal climate will change in the future, to inform coastal planning, investment and development.



EXTREMES AND DISASTER RISK MANAGEMENT



Extreme events such as bushfires, floods and storms are likely to become more severe and/or frequent, with a corresponding increase in economic, social and environmental costs. We're improving our understanding of current and future climate variability and extremes in the Southern Hemisphere, and improving the quality and delivery of this information, to enable greater resilience to extreme weather and climate events.

For more information

To find out more about the ESCC Hub's research and how it can be used to inform planning and policy decisions, please contact us.

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