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Overview

Earth systems and climate change science is entering a new era in Australia with the establishment of a dedicated research hub as part of the Australian Government's new National Environmental Science Programme. The ESCC Hub is one of six multi-disciplinary research hubs delivering world-class science to support decision-makers in Australia through the National Environmental Science Programme (NESP). The new Earth Systems and Climate Change (ESCC) Hub has brought together a consortium of Australia's leading climate, atmosphere and ocean researchers to address nationally significant challenges relating to the causes and impacts of climate change, variability and extremes in Australia. The goal of the ESCC Hub is to ensure that Australia's policies and management decisions are effectively informed by the latest Earth systems and climate change science, now and into the future.

Science to inform sound decision-making

The ESCC Hub will work closely with other NESP Hubs and together they will ensure managers and decision-makers have access to current, high quality environmental science.

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

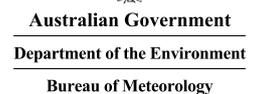
The NESP will build on its predecessors – the National Environmental Research Programme and the Australian Climate Change Science Programme – in providing decision-makers with

the best available information to support understanding, management and conservation of Australia's environment.

Climate challenges for Australia

Research in the ESCC Hub will address Australia's key climate challenges. In particular it aims to:

- improve our understanding of Australia's future hydroclimate, to inform planning, infrastructure and investment for Australia's future water resources management
- track, understand and predict future changes in greenhouse gases and Australia's carbon budget, to support and inform Australia's emissions mitigation policy responses





Lake Burbury, Tasmania | CSIRO



Bushfire: Mansfield-Benalla region, Victoria | BoM

- improve our understanding of current and future climate variability and extremes in the Southern Hemisphere, and improve the quality and delivery of this information, to enable greater resilience to extreme weather and climate events
- provide 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, and
- develop and deliver improved climate change and climate variability information relevant to ecosystem function and food production, to inform agency and sector decision-making and planning.

The ESCC Hub's science will be accessible and available to a broad range of stakeholders and end-users to maximise its impact.

The ESCC Hub will deliver climate information and services that are tailored to meet the needs of policy and decision-makers, managers and the public.

Our key stakeholders include:

- Minister for the Environment, Department of the Environment and other Australian Government Departments and Ministers
- ESCC Hub Partners and other NESP Hubs
- University researchers, Centres of Excellence, and departments
- Australian state and local governments
- Australian industry
- Indigenous communities, and
- Australian community in general.

World-leading, multi-disciplinary capability

The vision of the ESCC Hub is for a vibrant and critical mass of Australian capability in Earth systems and climate science that is deeply engaged with global climate research activities that deliver benefit to Australia.

The ESCC Hub is a partnership of Australia's leading Earth systems and climate change research institutions that bring together world-leading, multi-disciplinary climate, atmosphere and oceans science capability:

- CSIRO (ESCC Hub lead agency)
- Bureau of Meteorology
- University of New South Wales
- Australian National University
- Monash University
- University of Melbourne and
- University of Tasmania.

The collective capability of the partners has provided much of the science-based evidence informing Australia's climate-related policies and decisions for more than 20 years, having delivered climate projections and application-ready data sets for the Australian community; researched past, present and future drivers of Australia's climate using modelled and observed data; led the development of a national weather and climate modelling capability; and delivered major regional climate research programs.

The ESCC Hub includes expertise in:

- Earth systems modelling and assessment
- atmospheric dynamics
- climate variability and extremes
- regional climate projections and impacts
- carbon-climate dynamics and feedbacks
- global and regional sea-level changes
- coastal extremes, storm surge and inundation modelling, and
- ocean, land and air observations and modelling.

Climate challenges for Australia:



HYDROCLIMATE & WATER RESOURCES

More effective water resources planning, management and infrastructure investment



NRM & FOOD SECURITY

More effective decision-making and planning through better climate information at multi-annual to multi-decadal timescales



CARBON CYCLE & FUTURE WARMING

Australia's emissions mitigation policy responses are informed by tracking past, and predicting future, changes in greenhouse gas emissions



CHANGES IN COASTAL CLIMATE

Coastal planning and development decisions informed by nationally coordinated data and information on changing sea levels and climate in coastal regions



EXTREMES & DISASTER RISK REDUCTION

Greater resilience to extreme weather and climate events through improved knowledge, better quality, relevance and delivery of targeted information

More information

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