

Pacific-Australia Climate Change Science
and Adaptation Planning Program



**Climate Variability, Extremes and
Change in the Western Tropical Pacific:**
New Science and Updated Country Reports
2014



Australian Government



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Foreword

On a global basis, small island developing states are known to be highly vulnerable to climate-related impacts. People living in the Pacific Islands and East Timor are already experiencing higher temperatures, shifts in rainfall patterns, rising sea levels and changes in frequency and intensity of extreme climatic events. Further changes are expected long into the future as a result of climate change associated with human activity. On top of an existing, naturally variable climate, these longer-term changes are now affecting the sustainability of important infrastructure, industries and environmental assets in the western tropical Pacific region. As a consequence, changes of this magnitude are having a profound impact directly on the livelihoods of Pacific islanders, particularly in terms of cultural heritage, socio-economic wellbeing and personal health and safety.

Despite widespread international awareness of climate impacts in this region, to date there has been limited scientific information available to inform climate adaptation planning and disaster risk management for Pacific Island countries and East Timor. Indeed, better scientific knowledge is urgently needed to provide evidence that is based on reliable data and analyses to enable these countries to more effectively and efficiently plan and adapt for a sustainable future.

The science component of the Pacific-Australia Climate Change Science and Adaptation Planning (PACCSAP) program works in 14 island countries and East Timor. The program is a collaborative partnership between Australian scientists and Partner Countries and regional and non-government organisations in the western tropical Pacific over the period 2011–14. This program has helped fill the climate information and knowledge gap in the region by:

- Collating and digitising climate data records for Pacific Island countries and East Timor.
- Examining past climate observations and trends, large-scale climate processes and natural variability.
- Providing national-scale climate projections for the 21st century for four different greenhouse gas and aerosol emissions scenarios based on global climate model outputs.
- Developing a suite of digital tools to improve management, access, modelling and analysis of climate data, including enhanced seasonal forecasting capability at national-scale; and
- Communicating key climate science findings and developing in-country climate science capacity.

This report is a key output of the program and provides policy developers, planners and other stakeholders with the latest peer-reviewed and most relevant, science-based evidence to inform decision-making for climate adaptation planning and disaster risk management purposes. In the longer term, such evidence-based decisions are expected to facilitate more sustainable, resilient development outcomes for Partner Countries and communities across the region.



A handwritten signature in blue ink, appearing to read 'A. Johnson'.

Dr Andrew Johnson

Executive Director Environment
CSIRO



A handwritten signature in blue ink, appearing to read 'Rob Vertessy'.

Dr Rob Vertessy

Director of Meteorology and CEO
Bureau of Meteorology



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