

**INDIAN OCEAN CLIMATE INITIATIVE STAGE 3**  
**MILESTONE REPORT 3 (to December 2010)**

**FOREWORD**

The Indian Ocean Climate Initiative Stage 3 (IOCI3) is entering an exciting phase of its research. As this milestone report demonstrates, many of the IOCI3 projects are well advanced. Some of their findings are already influencing planning and decision-making in Western Australia.

Recent extreme weather events such as the floods in Queensland, which are estimated to cost \$5billion, remind us that we are living in a changing climate and that governments, communities and industry need to plan now to avoid the costs and the disruptions caused by these events in the future.

IOCI3 is undertaking research on the expected changes in the intensities, frequencies and duration of extreme rainfall and temperature in north-west and south-west Western Australia. Its research into tropical cyclones in the Western Australian region has revealed the decrease in the number of tropical cyclones. A 50% decrease is expected for latter half of this century compared to the last 30 years of the last century. Although there is a projected decrease in tropical cyclone numbers, more intense tropical cyclones are expected. Tropical cyclones are also expected to form and decay approximately 100km further south of current regions.

These results have significant implications for government policies and planning, industry and the communities in Western Australia. They reinforce the critical role that IOCI3 plays in helping the Western Australian Government to plan and prepare for such events, manage the risks of our changing climate and reduce future costs.

IOCI3 is also significantly improving the coverage of high quality rainfall, temperature and cloud data in north-west and south-west Western Australia. Robust data provides a solid foundation on which good science is done. The improvement in the data will lead to an improvement in the outputs of climate models, providing stakeholders with greater certainty on the causes of climate change and its likely impacts on our communities, environment and economy. The Fire and Emergency Services Authority of Western Australia, the Department of Environment and Conservation and the Department of Health are already working with IOCI3 scientists to develop fire weather and heat wave climatologies, which will help these agencies to put into place mechanisms to better manage future extreme fire and heat events. Other agencies such as the Department of Water and Department of Agriculture are also benefiting from the improved information that IOCI3 is producing.

IOCI3 is uncovering the causes underlying the climate trends in Western Australia. In north-west Western Australia, research has shown that anthropogenic aerosols from South-East Asia are delaying the impact of increasing greenhouse gases on the climate of that region. The link between the climate of north-west Western Australia and aerosols has important implications for policy- and decision-making. As aerosol levels decrease, north-west Western

Australia will likely feel the full response of increasing greenhouse gases on its climate. This research is in its preliminary stage and further work is needed to resolve uncertainties and include more models in the simulations.

IOCI3 will continue to provide information about our future climate and enable Western Australia to improve its ability to manage the risks and impacts and take advantage of any opportunities that climate change might present.

I am pleased to be involved in this significant and innovative climate research program. On behalf of the IOCI3 Project Board, I commend the scientists in IOCI3 on their dedication and aptitude in providing information that will help secure the future of Western Australia in a changing climate. The effort to communicate the results from the research projects to stakeholders will be stepped up to ensure that the investment of the Western Australian Government, CSIRO and Bureau of Meteorology are fully realised.



Hon Hendy Cowan

Chair, Indian Ocean Climate Initiative Stage 3 Project Board

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