Science and Technology Infusion Climate Bulletin
NOAA's National Weather Service
41st NOAA Annual Climate Diagnostics and Prediction Workshop
Orono, ME, 3-6 October 2016

Improved Climate Prediction Services for Australia

Robyn Duell, David Jones, Oscar Alves, and Andrew Watkins
Australian Bureau of Meteorology

The Bureau of Meteorology (the Bureau) has recently upgraded its climate prediction service. This upgrade focussed on improving user satisfaction and comprehension, and included a move from a statistical forecast system to a dynamical climate model (the Predictive Ocean Atmosphere Model for Australia - POAMA). Further substantial improvements to the service are now underway as a result of investment by the Australian Government and support from agricultural research and development groups.

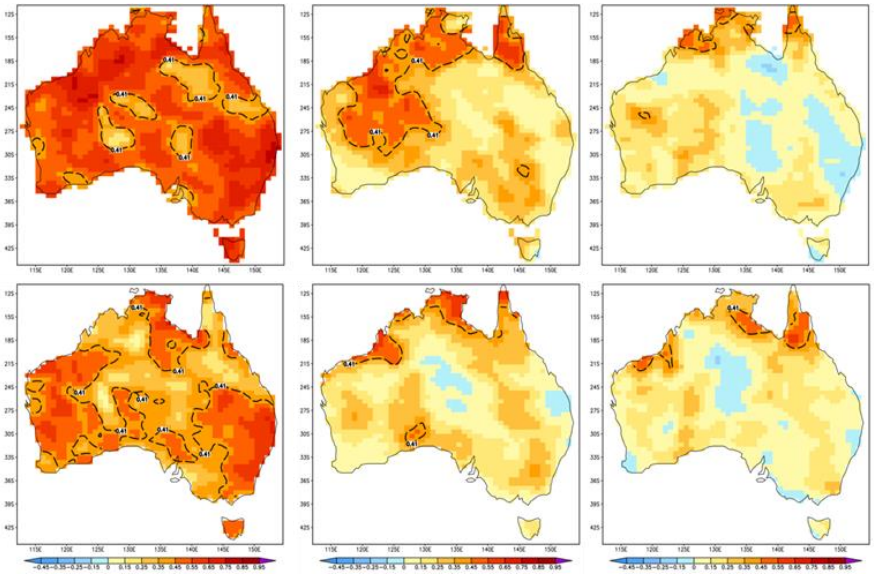

Fig. 1 Correlation skill for rainfall for ACCESS-S1 (top) and POAMA (bottom) for Week 1+2 (left), Week 2+3 (middle) and Week 3+4 (right).

These new improvements will be delivered to industry over the coming three years, and will include increasing model resolution, increasing model accuracy, issuing forecasts more frequently and issuing new weekly forecasts. The weekly forecasts will fill the gap between the Bureau's current seven day weather forecast and monthly and seasonal climate outlooks. For the first time the Bureau will be providing a service from days to weeks to months to seasons.

The new improvements have been made possible by the Bureau's recent purchase of a new Cray supercomputer and the introduction of a new modelling system (ACCESS-S, the Australian Community Climate and Earth–System Simulator – Seasonal) that is being developed in collaboration with the UK Met Office. Early analysis of the new modelling system over Australia indicates accuracy is significantly better than the current operational POAMA model on weekly timescales for rainfall (Fig.1) and temperature, and for minimum temperature on seasonal timescales. Similar skill to POAMA is achieved for rainfall and maximum temperature. ACCESS-S also outperforms POAMA for long lead predictions of ENSO (Fig. 2). Future development will focus on improving data assimilation, reducing model systematic errors and introducing a calibration component, all of which are expected to further

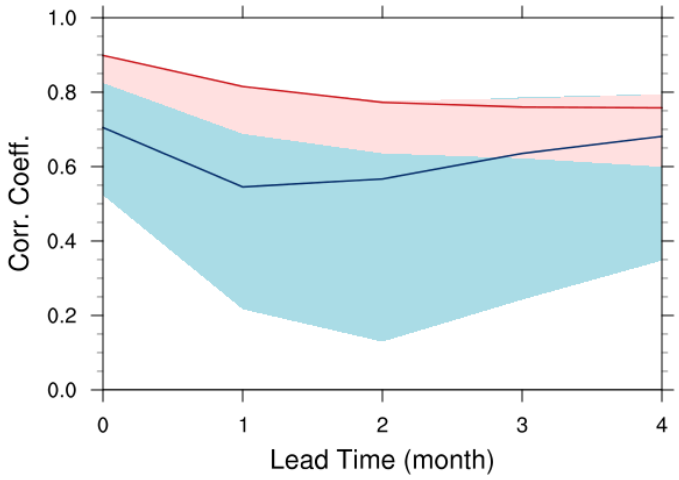

Fig. 2 Correlation skill for Niño3, initialized on 1 May.

Correspondence to: Robyn Duell, Australian Bureau of Meteorology, Melbourne, Australia;
E-mail: robyn.duell@bom.gov.au

increase model skill.

In addition to the introduction of a new modelling system, the improved service will also include changes in the communication and presentation of the model outputs, making outlooks more tailored to suit user needs.

The improved service will deliver better intelligence to Australian industry that will improve management of climate risks in Australia. Details of recent and upcoming service improvements were presented.

Visit the Bureau's climate outlook service on the web: www.bom.gov.au/climate/ahead