



CLIMATE OUTLOOK and REVIEW
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(available on www.usq.edu.au/acsc)



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The El Niño pattern in the Pacific Ocean is continuing to weaken with increasing potential for higher than normal autumn and winter rainfall in many districts.

The aims of this review are to provide a critical analysis of climate forecasts and associated information from a wide range of credible sources.

For the April-June period, 2010, the SOI phase system forecast shows relatively high rainfall probability values for most of Queensland and New South Wales. It is important to note this forecast for high rainfall probability values occurs despite a '**consistently negative**' SOI phase at this time of the year. This is because a consistently negative SOI phase at this time of the year does not normally persist into winter (except in rare occasions), thereby producing an inverse relationship between this phase and subsequent autumn/winter rainfall. The latest 30-day average (3rd April) is minus 4.8, a considerable rise in values over past months.

Rainfall patterns over recent months

Well above average rainfall has been recorded over much of the state during summer, especially in the south-west of the State (Figure 1). However, below average rainfall was recorded for much of Western Australia (and NE NSW) – and also in countries such as China - associated with the El Niño pattern of 2009.

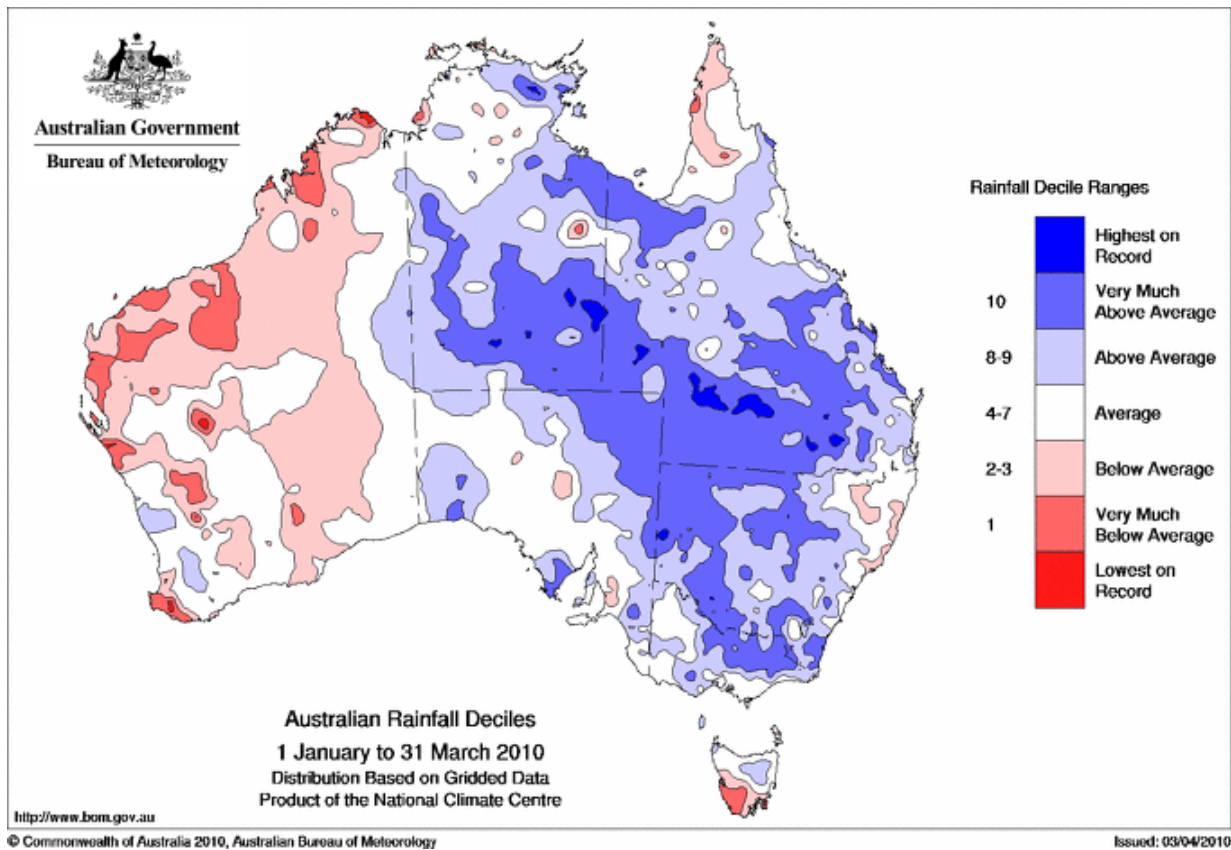


Figure 1. Australian rainfall deciles, 1 January to 31 March, 2010 (Courtesy: Bureau of Meteorology)

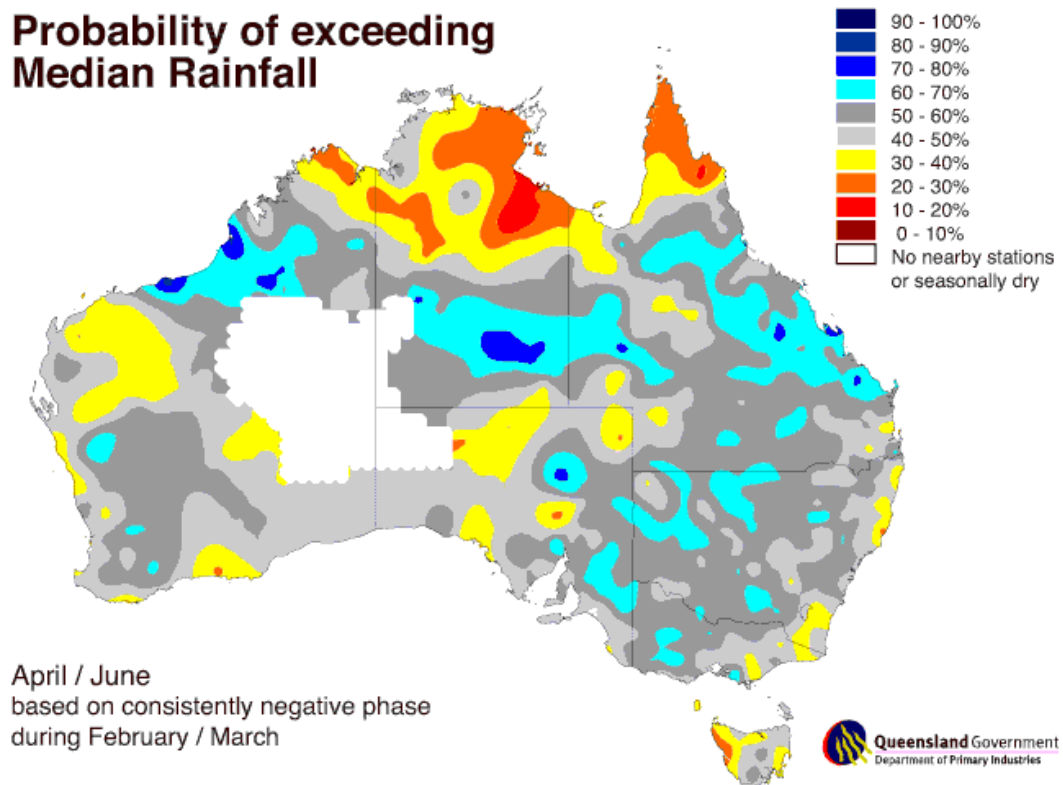


Figure 2. Forecast rainfall probability values for Australia, April to June, 2010

Overview of climate forecasts

While warmer than normal sub-surface and surface ocean temperatures still exist in the central and eastern equatorial Pacific Ocean, indicative of an El Niño event, most ocean-climate forecast models suggest a rapid cooling (weakening) of this event through the southern hemisphere autumn. Additionally, unusually strong easterly wind anomalies have developed in the central Pacific Ocean, also suggesting the continued demise of this El Niño system.

This type of pattern often suggests the chances of normal or higher rainfall for the coming winter for Queensland are quite promising.

The output from the 'European Centre' (ECMWF) is similar to Australian models but, **importantly, also with a 70% probability off above normal rainfall for much of eastern Australia for the June to August period, 2010.**

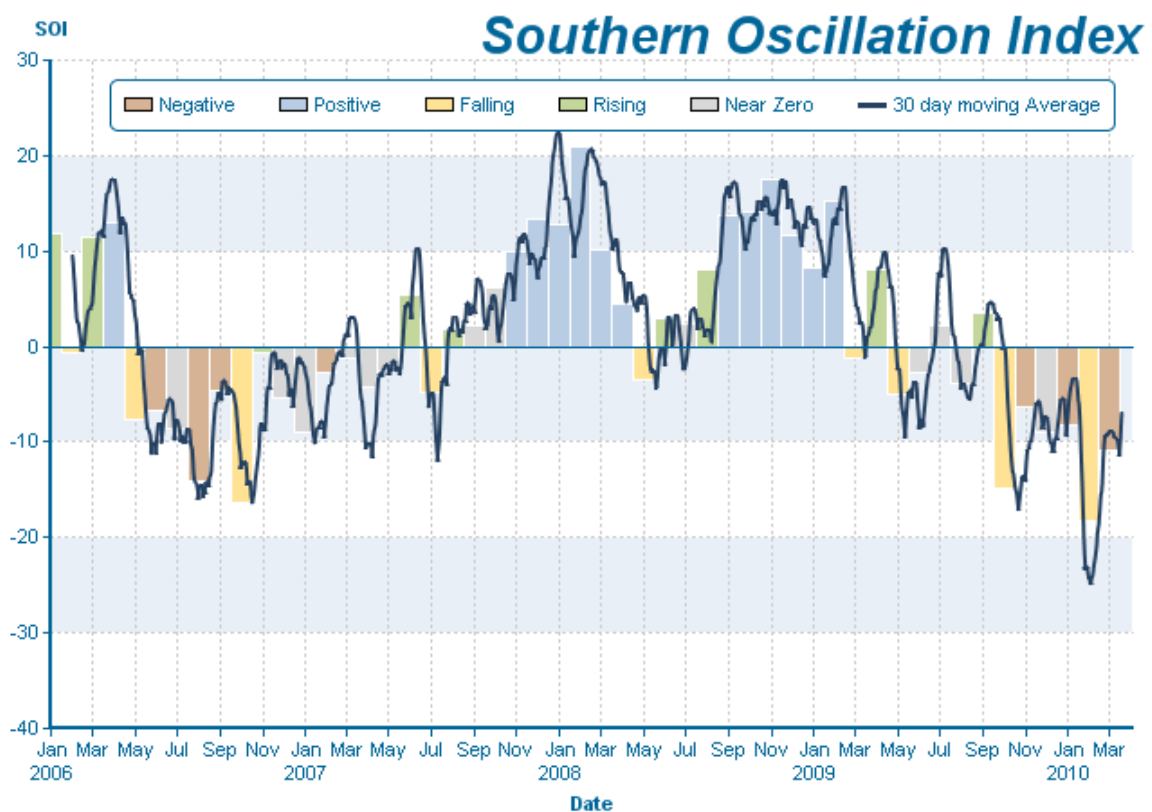


Figure 3. Monthly SOI values since 2006. Note the falling but widely fluctuating values since 2009.

Results from the Bureau of Meteorology assessment of climate forecast systems used in these analyses is presented in the Appendix.

For updated information, sometimes available on a daily basis, we recommend the following:

International Research Institute (for Climate and Society):

<http://portal.iri.columbia.edu/portal/server.pt?open=512&objID=944&PageID=0&cached=true&mode=2&userID=2>

European Centre for Medium Range Weather Forecasting (ECMWF):

http://www.ecmwf.int/products/forecasts/d/charts/seasonal/forecast/seasonal_range_forecast/nino_plumes_public_s3/

US Climate Prediction Center:

<http://www.cpc.noaa.gov/products/precip/CWlink/MJO/enso.shtml>.

UK Met Office Hadley Centre:

<http://www.metoffice.gov.uk/research/seasonal/elnino/index.html> and we suggest that you explore the associated images from:

http://www.ecmwf.int/products/forecasts/d/charts/seasonal/forecast/seasonal_range_forecast/group_public/seasonal_charts_public_rain!rain!1%20month!East%20Asia!200905!prob%20exceeding%20median!/

Bureau of Meteorology: www.bom.gov.au/climate/ahead/ENSO-summary.shtml and:

http://www.bom.gov.au/climate/ahead/rain_ahead.shtml.

Madden Julian Oscillation (MJO)

The MJO is predicted to traverse the north of Australia again around the middle of May

Updated information on the Madden Julian Oscillation (MJO) can be found at <http://www.bom.gov.au/climate/tropnote/tropnote.shtml>). See 'Weekly Tropical Climate Note' on <http://www.bom.gov.au/climate/tropnote/tropnote.shtml> for updated information.

Probability of exceeding Median Rainfall

for April / June

based on consistently negative phase
during February / March

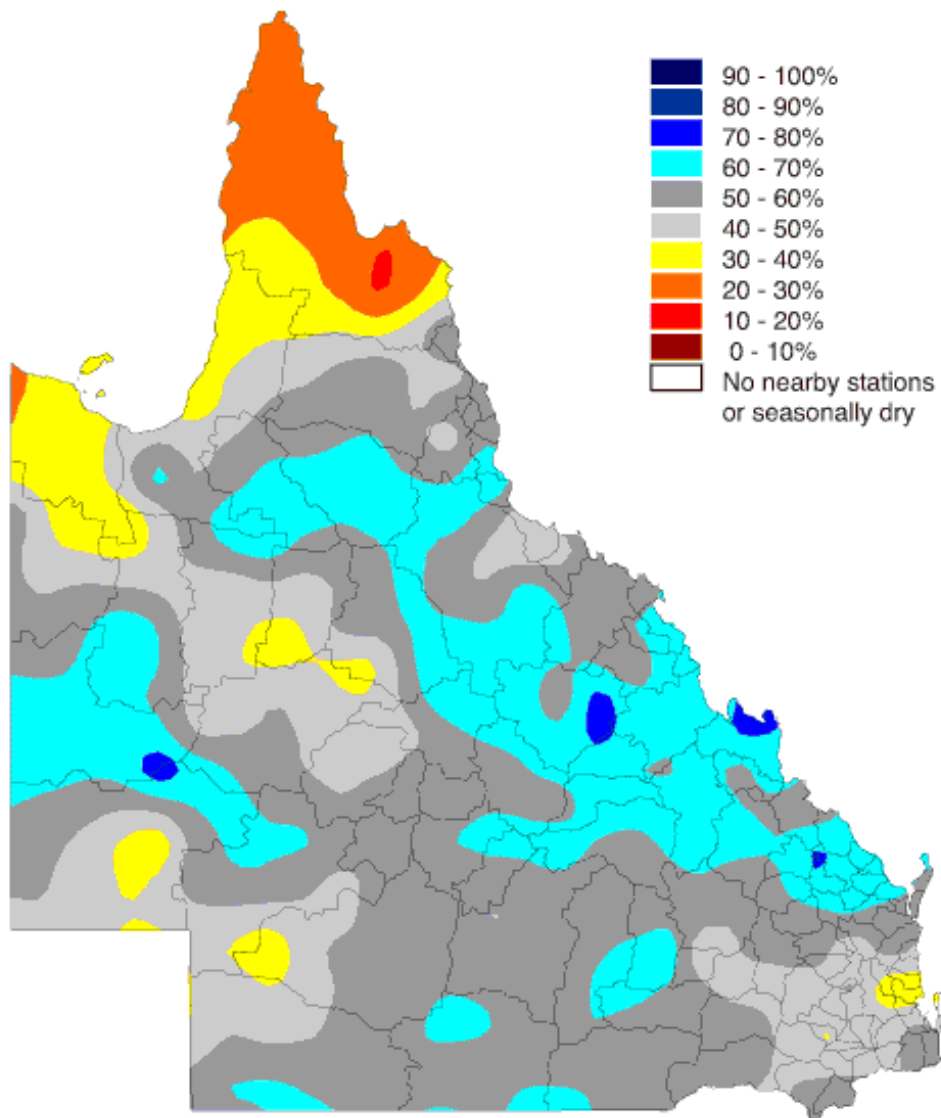


Figure 4. Rainfall forecast probability values for Queensland for the April-June period, 2010.
(Source: Stone, R.C., Hammer, G.L., and Marcussen, T. (1996) *Nature*, 384, 252-255).

Rainfall forecast probability values for Queensland and Australia for the January/March period, 2010.
Map source courtesy of and available at: <http://www.longpaddock.qld.gov.au> and useful information is
available on <http://www2.dpi.qld.gov.au/climate>

Global Forecast Maps

Global rainfall probability forecast values are also contained in this coverage as per the map below (Figure 5).

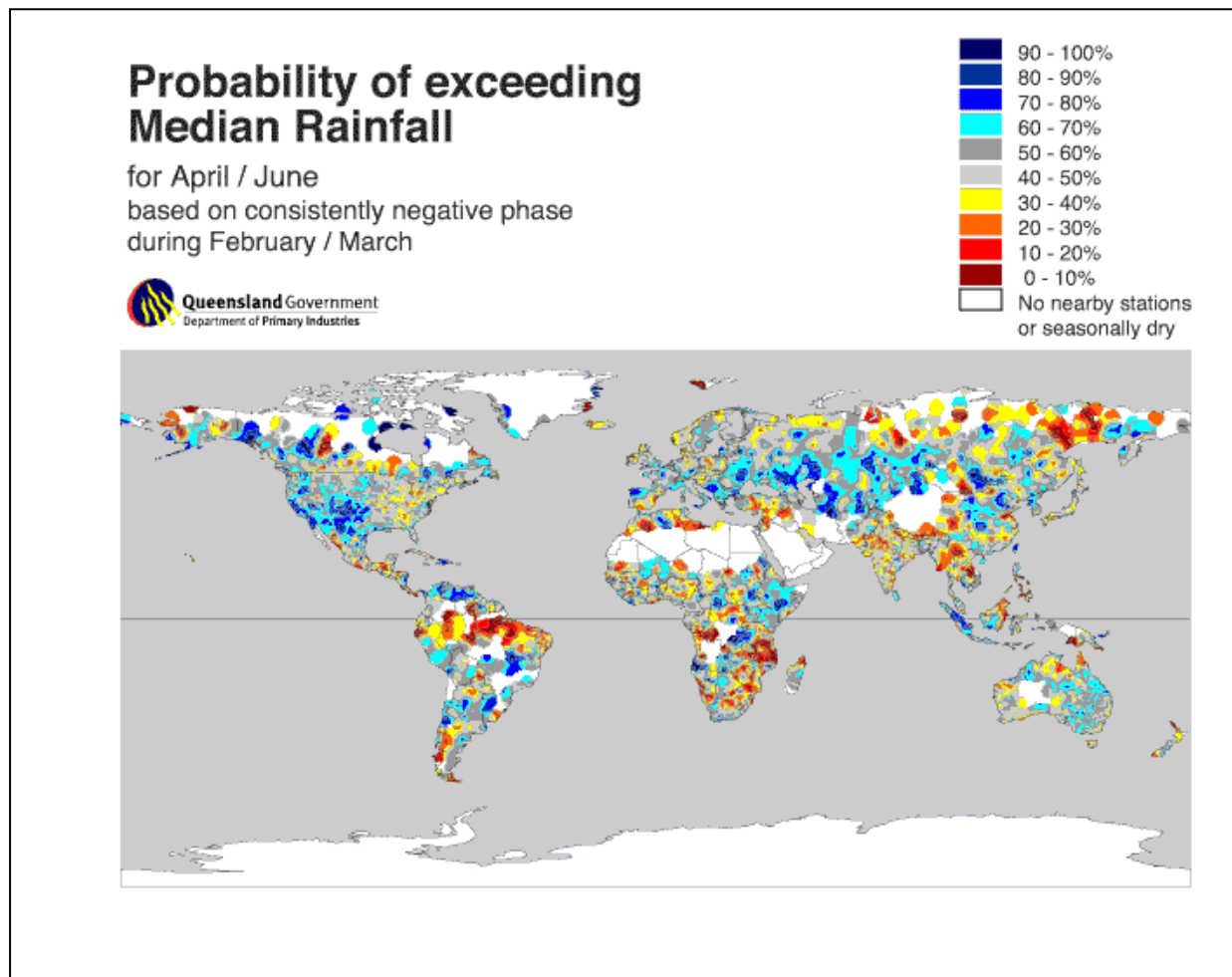


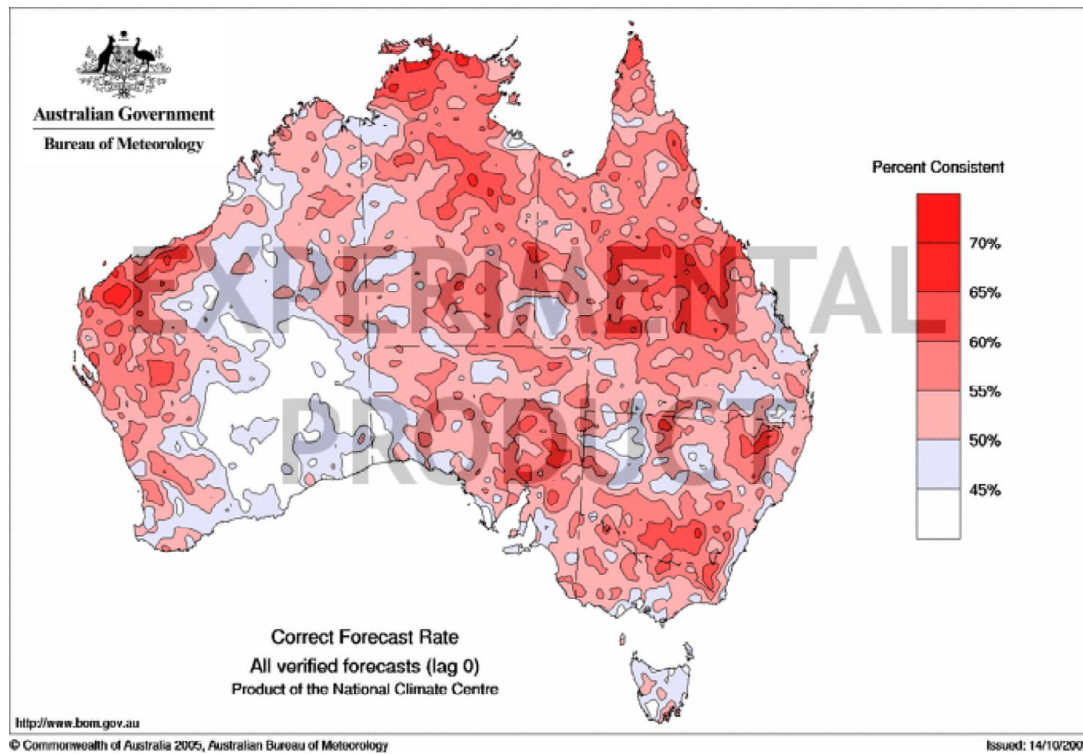
Figure 5. Rainfall probability values for global regions for the April/June period, 2010.

Note the **high rainfall probability values** (probability of exceeding the long-term median) for the Balkans, central Russia, southwest and central United States, central and western Canada, central China, parts of eastern Africa, and parts of Brazil.

Conversely, note the **low rainfall probability values** for much of southern Africa, India, Myanmar, Laos, western Alaska, eastern Russia, and northeast Brazil.

Appendix

Independent verification in real-time analysis (note this relates to all forecasts for all months, not only when El Niño/La Niña were present). Dark red-shaded regions denote regions of high forecast 'skill' while regions shaded white (eg inland Western Australia) have relatively low forecast 'skill' using this method.



USQ/EPA/DPIF SOI phase system – independent verification results - all forecasts by each month's output over 10 years.