

Project Update

- The Australian Greenhouse Office and Cotton Catchment Communities CRC funded project *Climate Change in Cotton Catchment Communities – A Scoping Study*
- It has two main objectives:
 - To increase understanding of climate change in the cotton industry
 - Develop an agreed industry position relating to options for adaptation.

Key outputs

- A summary of climate change impacts for cotton industries and cotton-based communities
- Improved understanding and awareness of climate change issues
 - including potential impacts and possible future needs of the industry
- Possible adaptation strategies

Workshops

- 5 planned
- Narrabri (21st March), Dalby (24th April), St George (26th April), Goondiwindi (27th April), Emerald (1st May)

Format

- Introduction to climate variability and change
- What has happened at that location historically
- IPCC findings
- CSIRO projections
- Any adaptation strategies
- Feedback/development of case studies

Climate change has already or has the potential to result in:

- Crop industries
 - Variety and planting date changes
 - Species change
 - Changes in crop management
 - More opportunity cropping
 - Increase risk of soil erosion due to higher rainfall intensity

Climate change has already or has the potential to result in:

- Grazing industries
 - Changes in grazing systems from set grazing rates to more variable rotational/cell/spell grazing systems
 - Change in species
 - Changes in breeding cycles

Climate change has already or has the potential to result in:

- Horticultural industries
 - Enterprise structure and location
 - Crop selection/mix
 - Irrigation management
 - Changes in crop windows

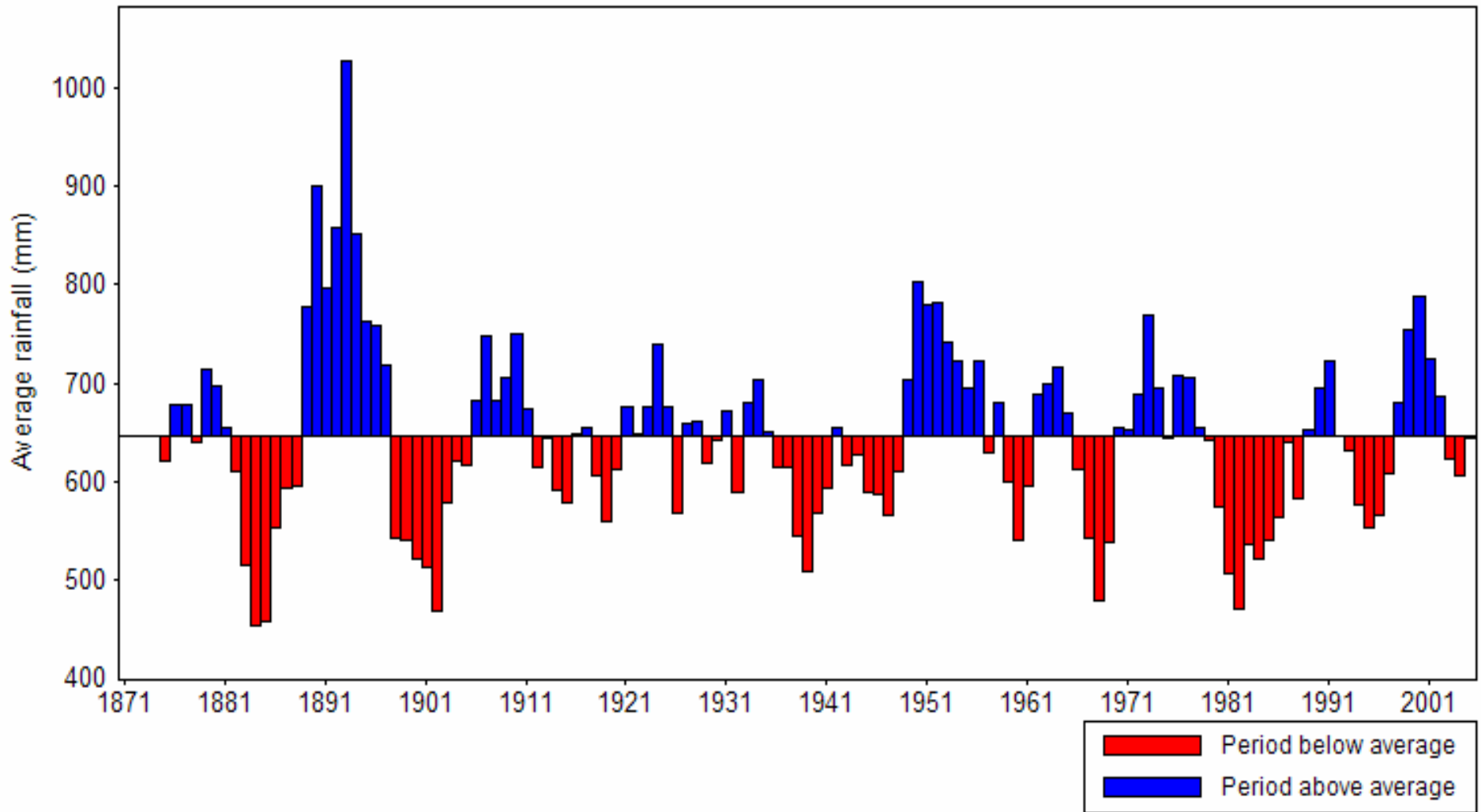
Climate change has already or has the potential to result in:

- All industries
 - Management of pest and disease
 - Increased public and political pressure on the use of resources
 - Improvement in infrastructure
 - Increase in property/business size
 - Changes in enterprise structure

- Key starting point for any industry may be to aim at managing seasonal and annual variability more effectively - look at the strengths and what works in the industry now and focus on that
- Accept no one solution will work for all problems

5-year moving average rainfall (12 months, May in year 1 to Apr in year 2) at NARRABRI BOWLING CLUB

Long-term average rainfall (12 months, May in year 1 to Apr in year 2) is 646 mm



Ending year of 5-year period

Source: Rainman StreamFlow

Chance of rainfall at NARRABRI BOWLING CLUB

Analysis of historical data (1871 to 2007) using SOI Phases: Jan to Feb Leadtime of 0 months

The SOI phases/rainfall relationship for this season is statistically doubtful because KW test is below 0.9 but Skill Score (13.9) is above 7.6 ($p = 0.98$).

Rainfall period: Mar to May SOI negative All years

% yrs with at least 328 mm 0 5

240 mm 5 14

190 mm 25 26

140 mm 45 46

100 mm 70 65

60 mm 80 79

30 mm 100 95

% yrs above median 132 mm 60 49

KS/KW probability tests KS=0.15 KW=0.82

Significance level Not significant

Years in historical record 20 131

Highest recorded (mm) 275 667

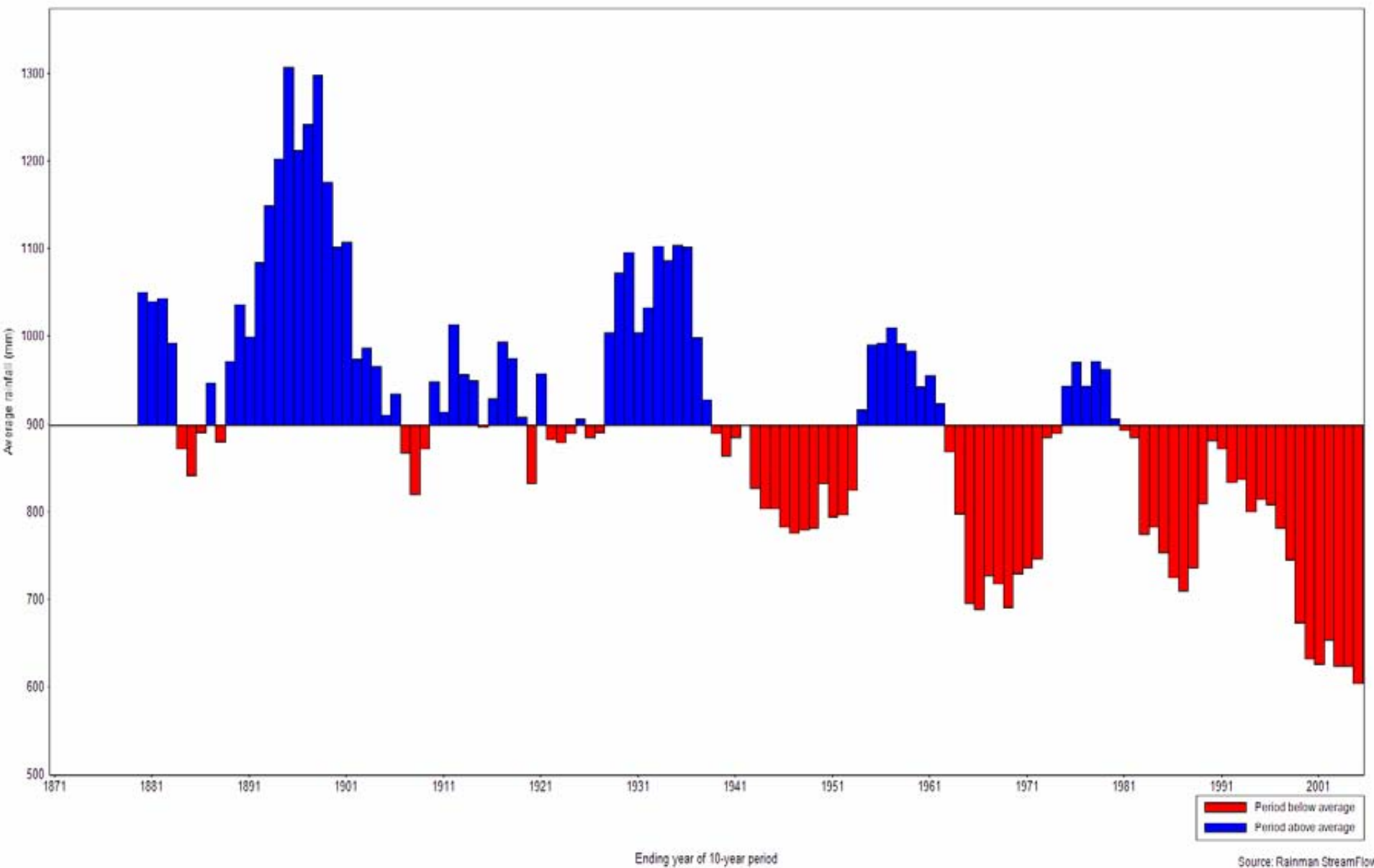
Lowest recorded (mm) 39 4

Median rainfall (mm) 139 132

Average rainfall (mm) 135 144

10-year moving average rainfall (12 months, May in year 1 to Apr in year 2) at ROCKHAMPTON AMO COMPOSITE*

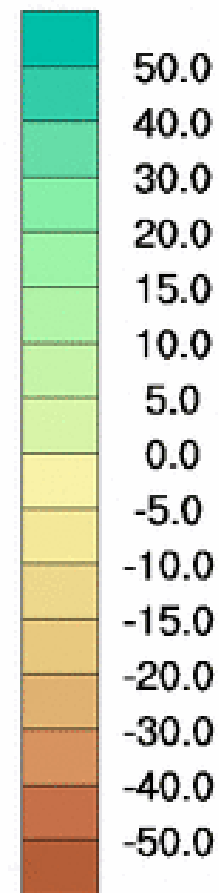
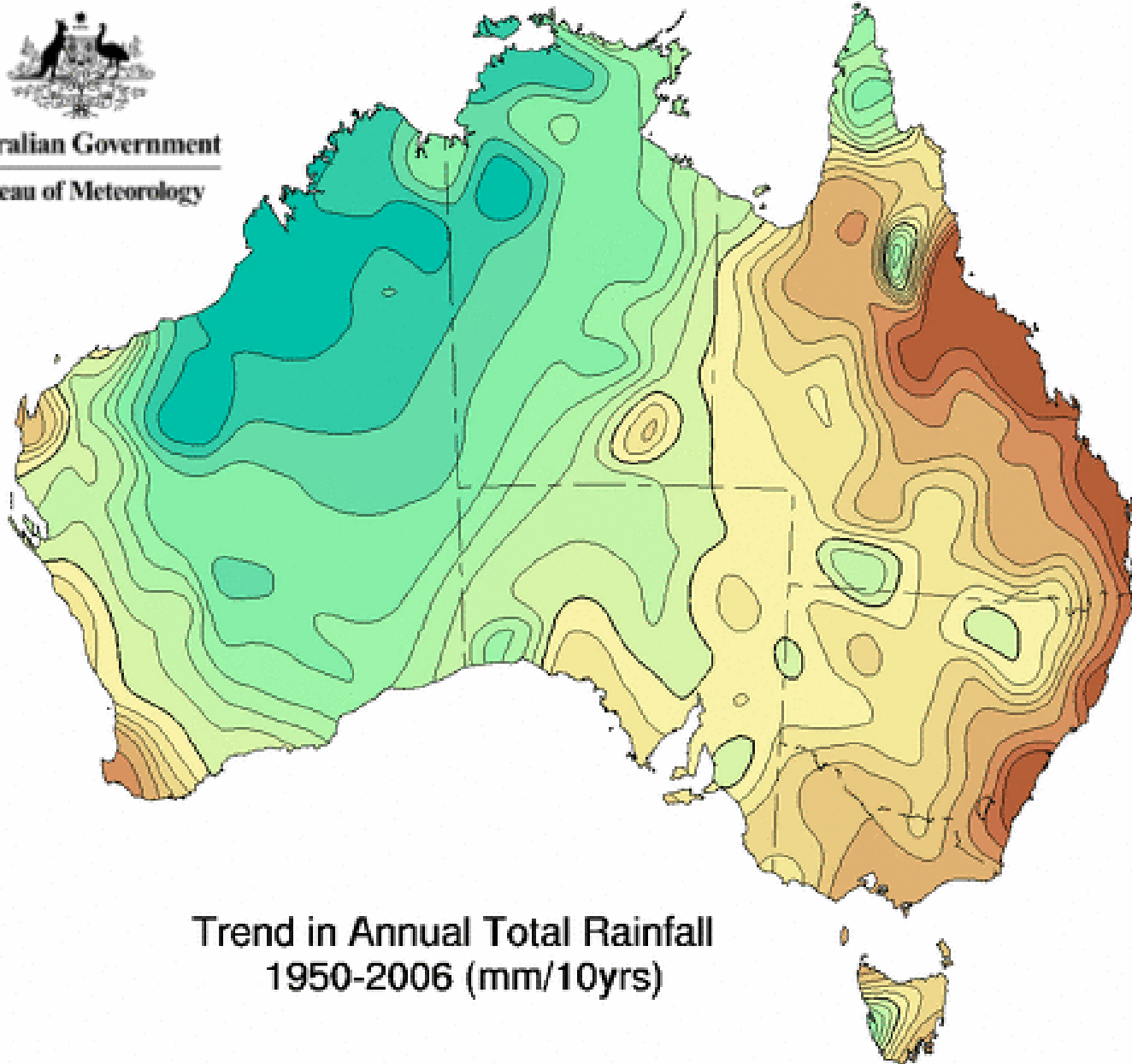
Long-term average rainfall (12 months, May in year 1 to Apr in year 2) is 898 mm



Source: Rainman StreamFlow



Australian Government
Bureau of Meteorology



Trend in Annual Total Rainfall
1950-2006 (mm/10yrs)



Inter-governmental Panel on Climate Change (IPCC)

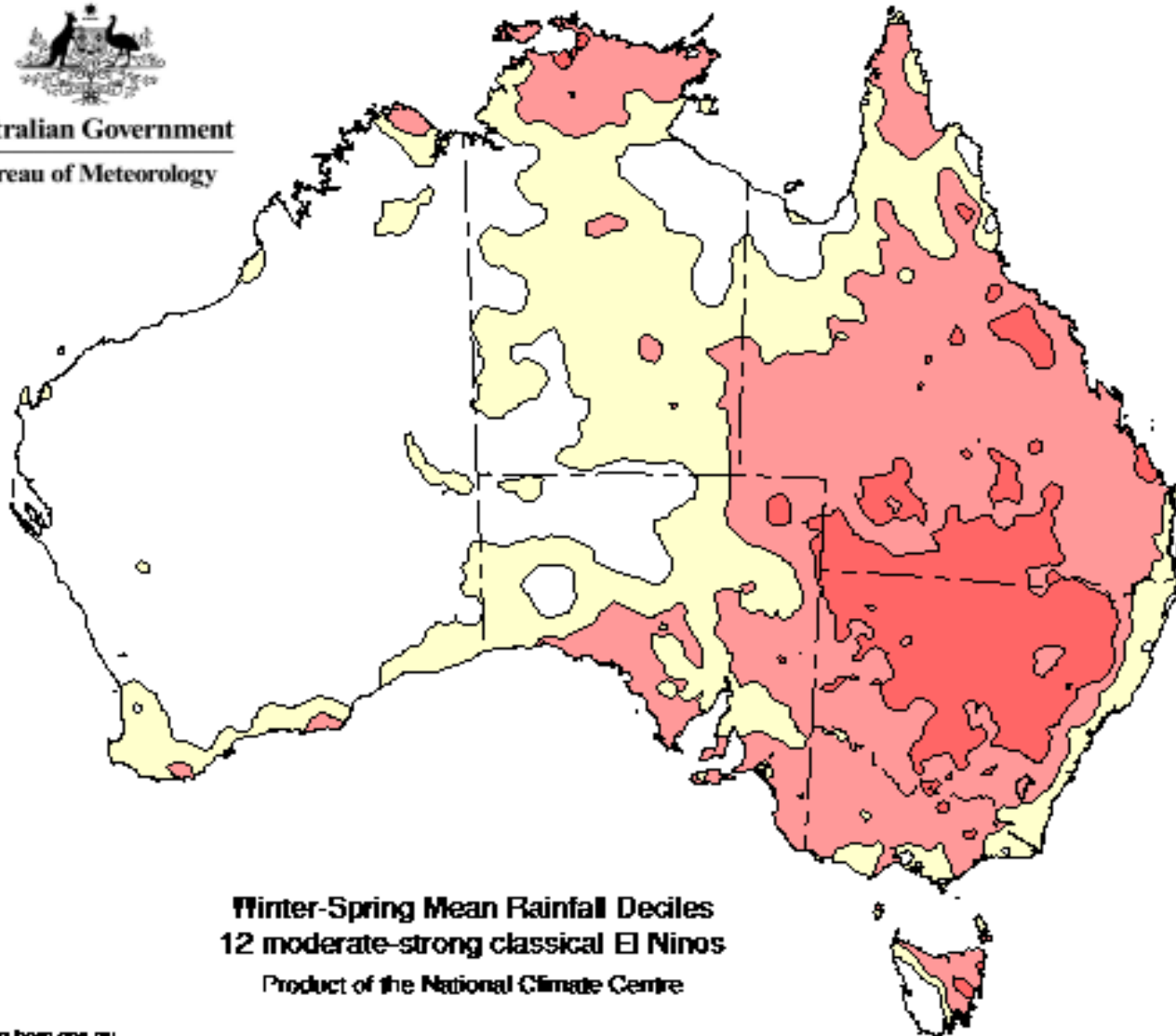
- 2007 Report and Summary
- The key issue for Australian agriculture is: *'El Niño events are becoming more common' and 'more El Niño-like mean conditions' may prevail in the future.*

Are they?

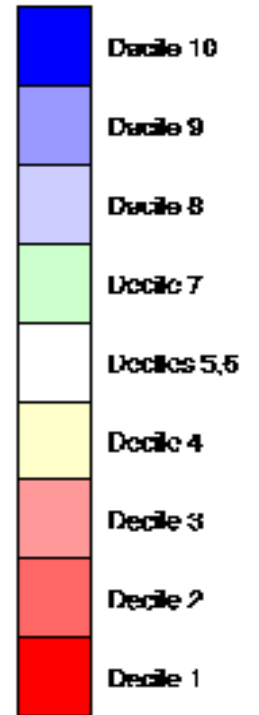
- Since 1990 there have been 8 identified El Nino events
- 1991/92, 1992/93, 1993/94, 1994/95, 1997/98, 2002/03, 2004/05 and now 2006/2007 which is an average of 1 every 2 years.



Australian Government
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Mean Rainfall Decile Ranges



Winter-Spring Mean Rainfall Deciles
12 moderate-strong classical El Ninos

Product of the National Climate Centre

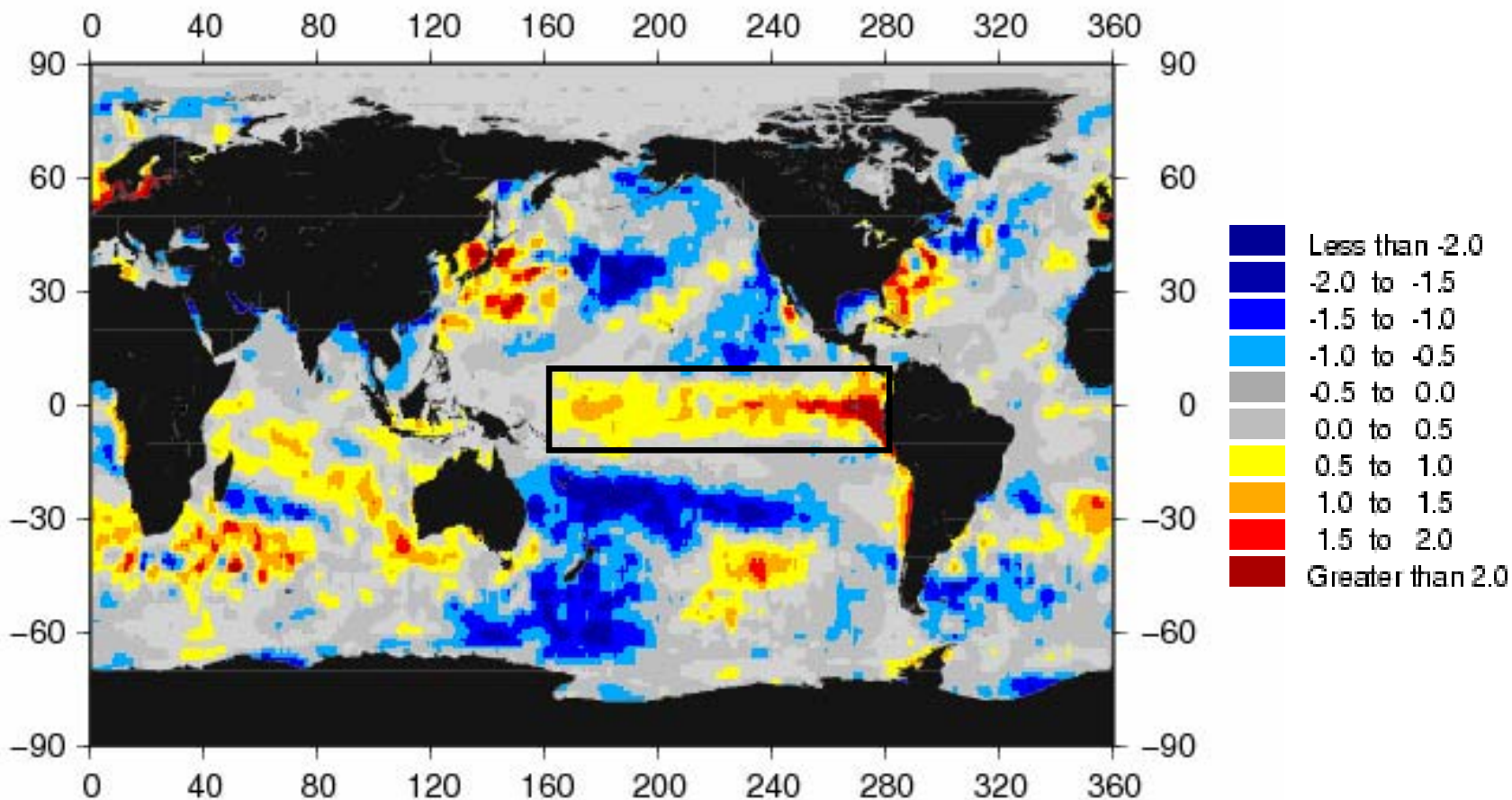
1000/1mm mean per yr

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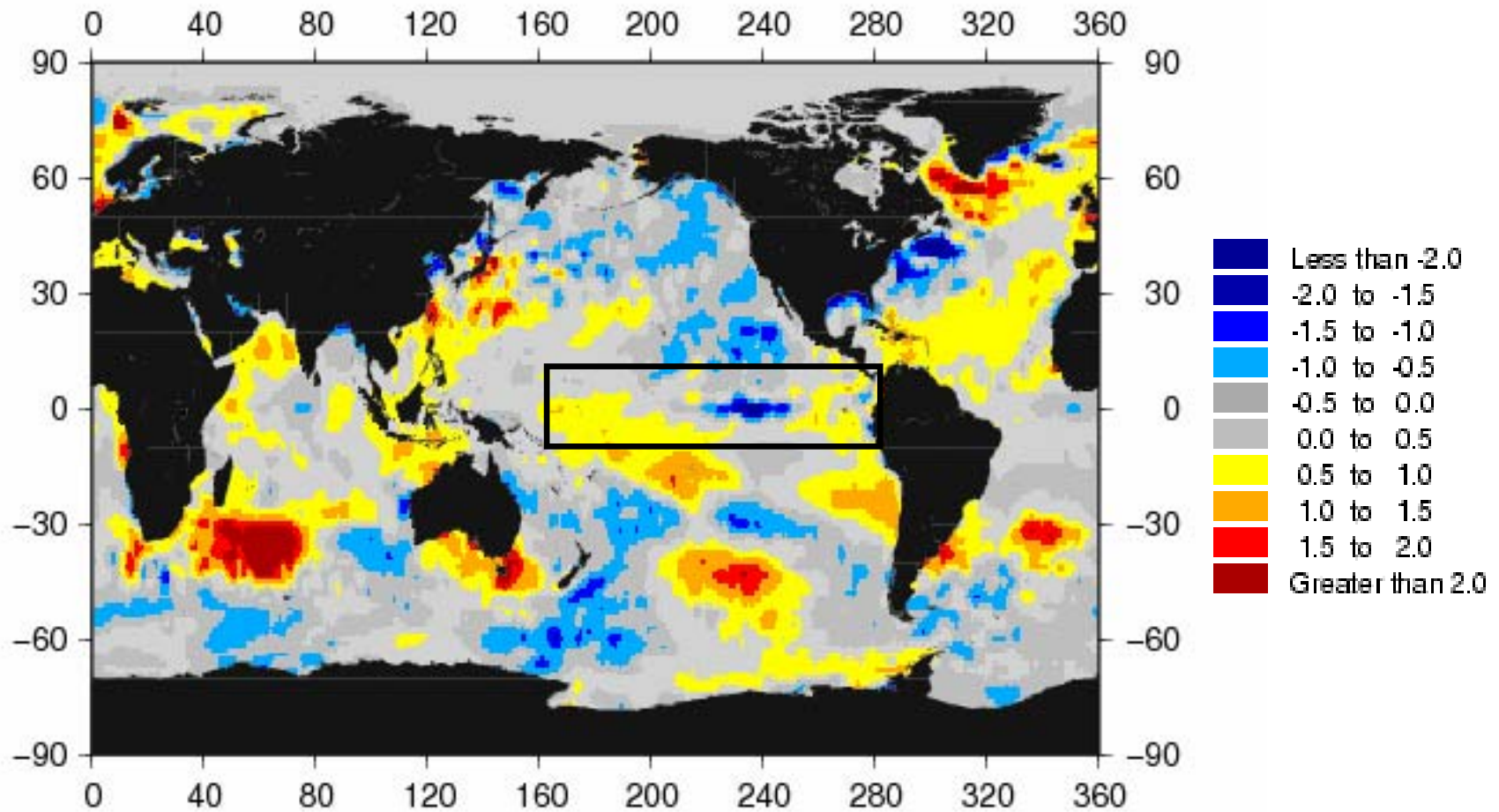
Issued: 22/02/2005



Monthly SST Anomalies 2006

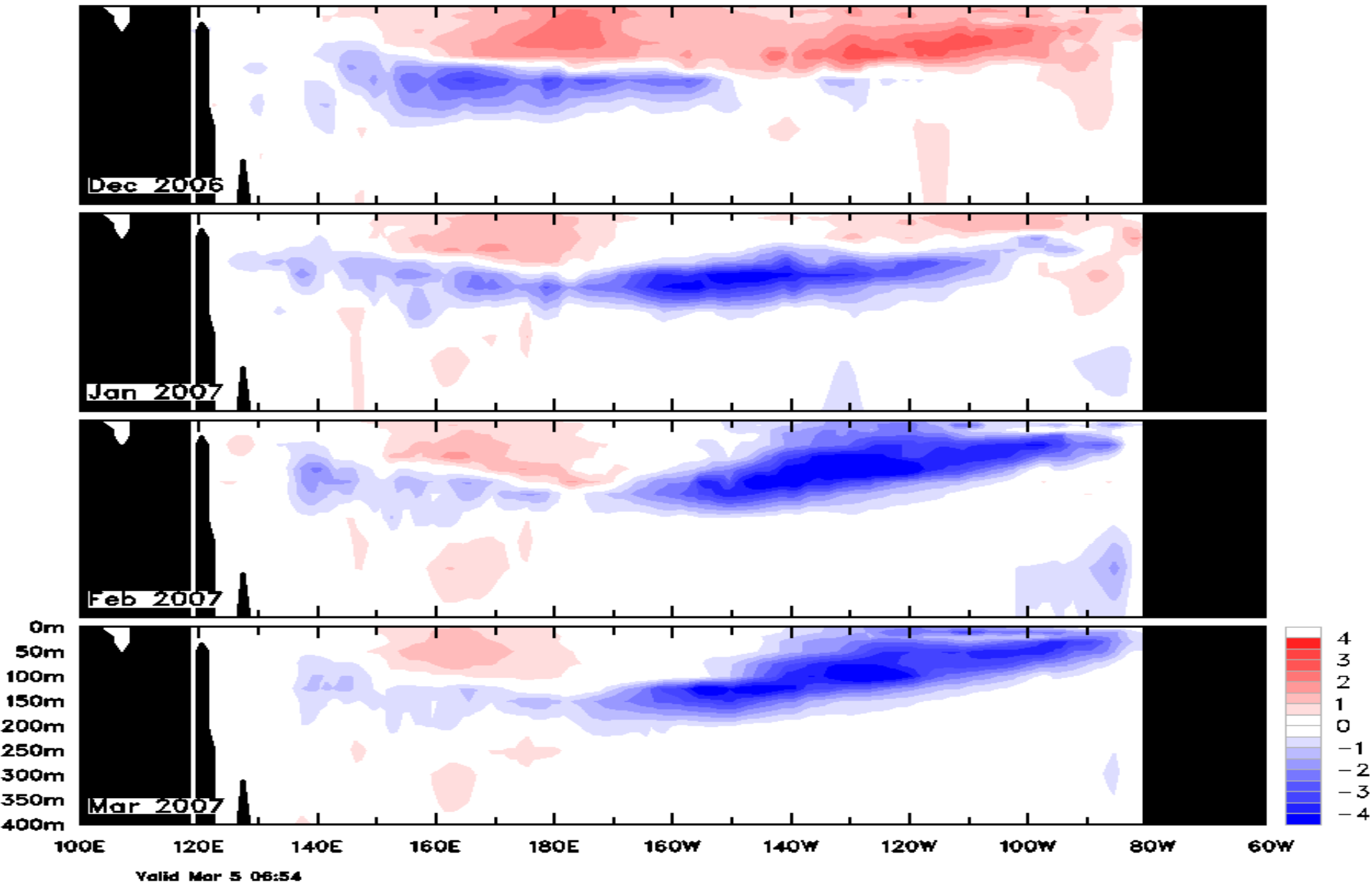


Weekly SST Anomaly 21st February 2007

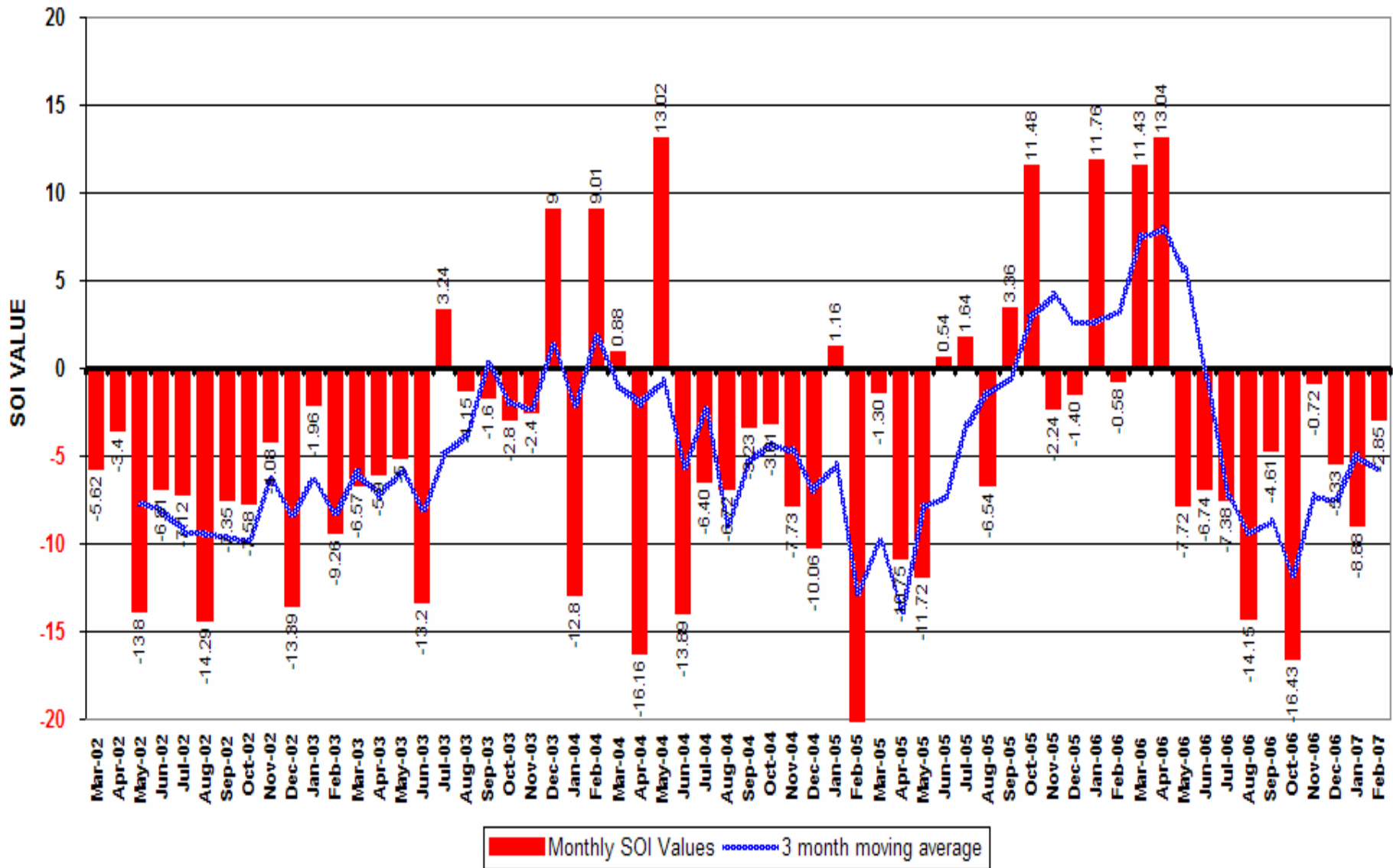


Pacific Ocean Eq Anomaly

$\Delta=0.5^\circ\text{C}$

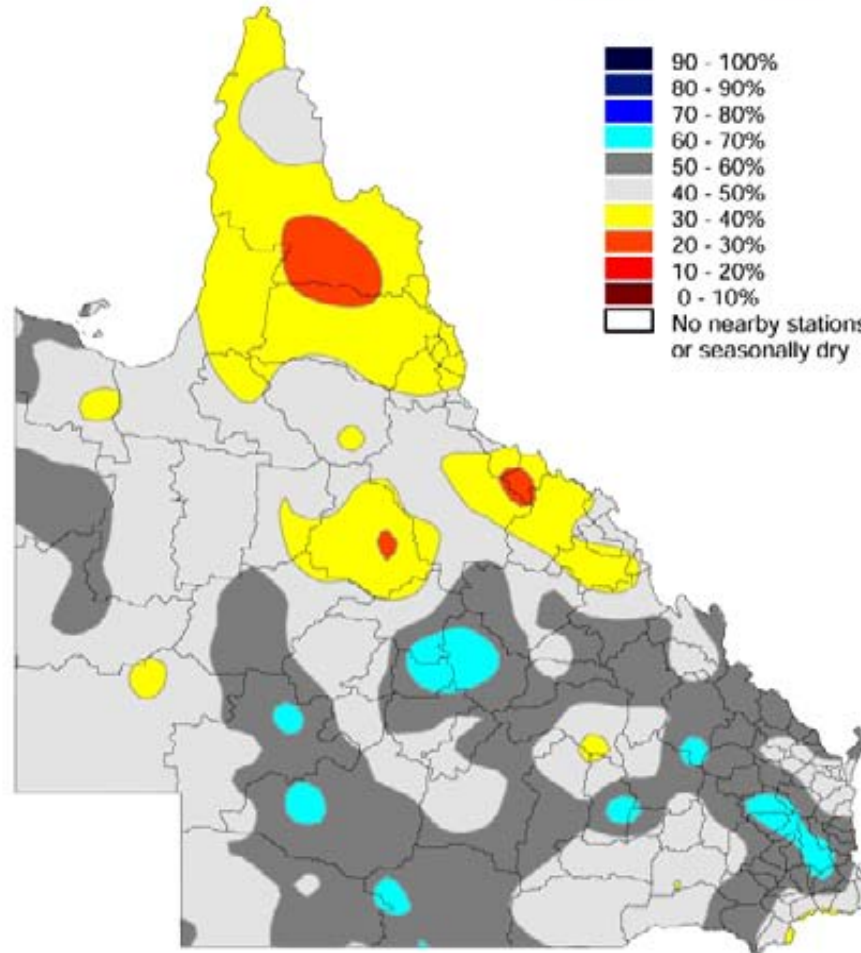


MONTHLY VALUE OF THE SOI

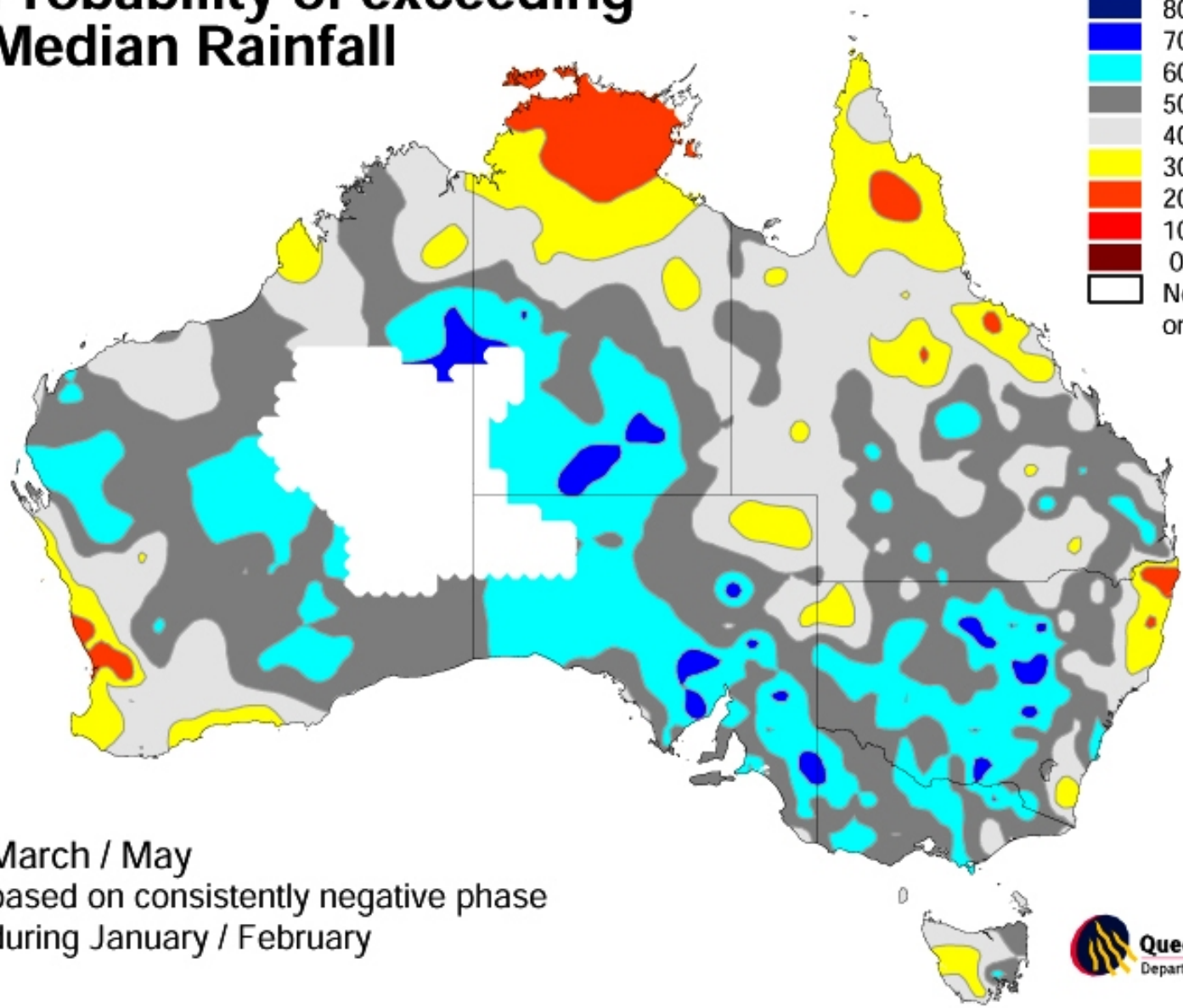
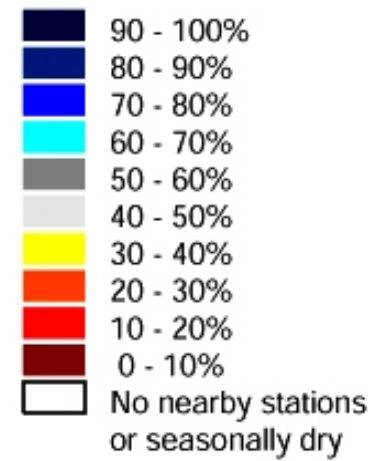


Probability of exceeding Median Rainfall

for March / May
based on consistently negative phase
during January / February



Probability of exceeding Median Rainfall



March / May
based on consistently negative phase
during January / February

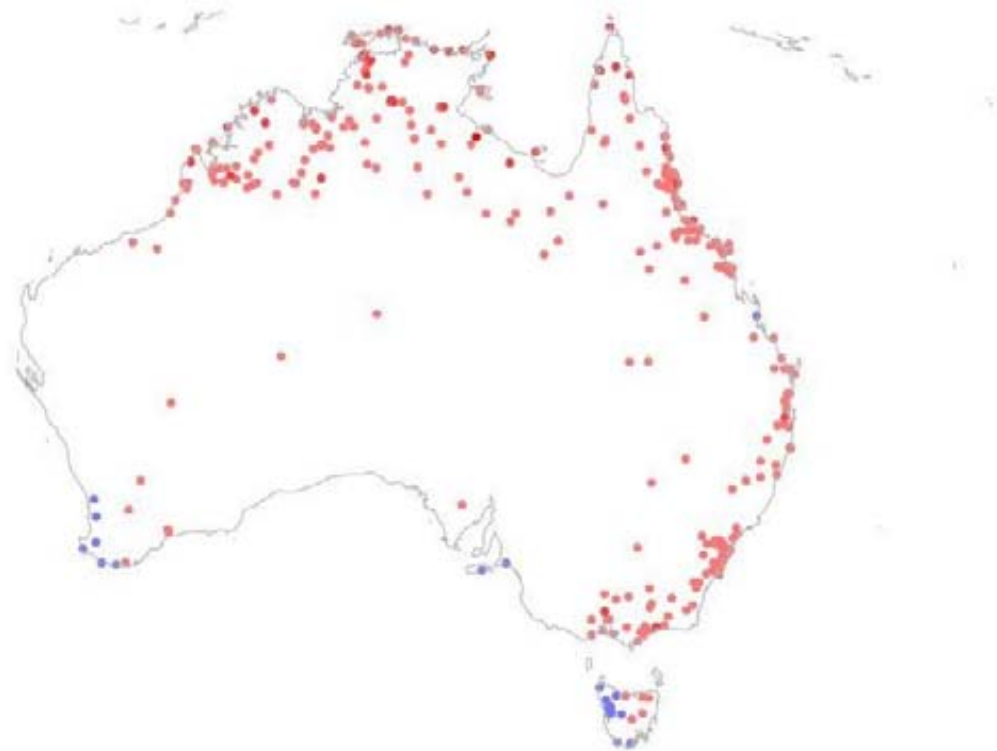
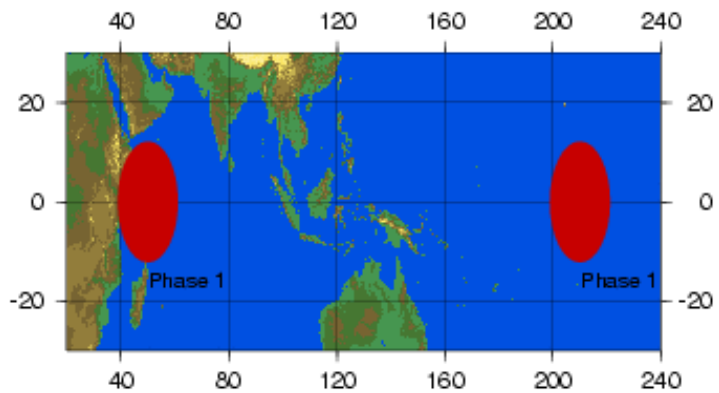


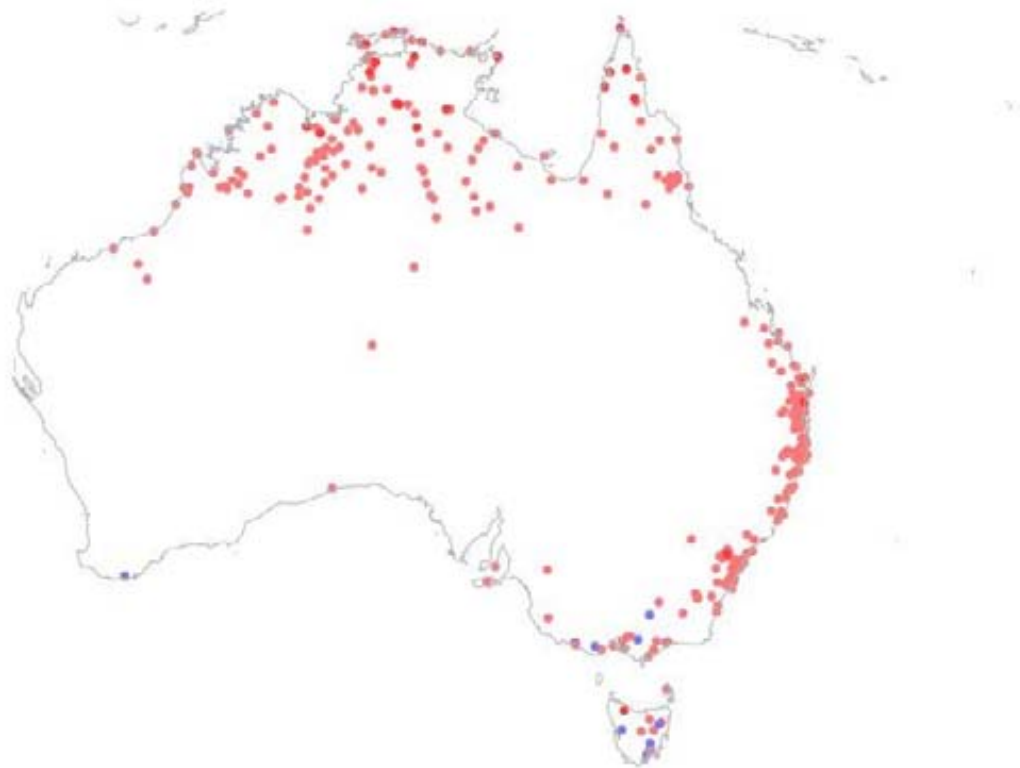
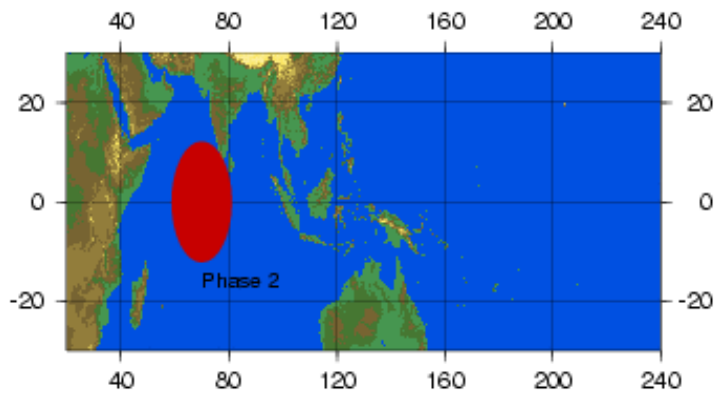
Chance of rainfall at CLIFTON POST OFFICE

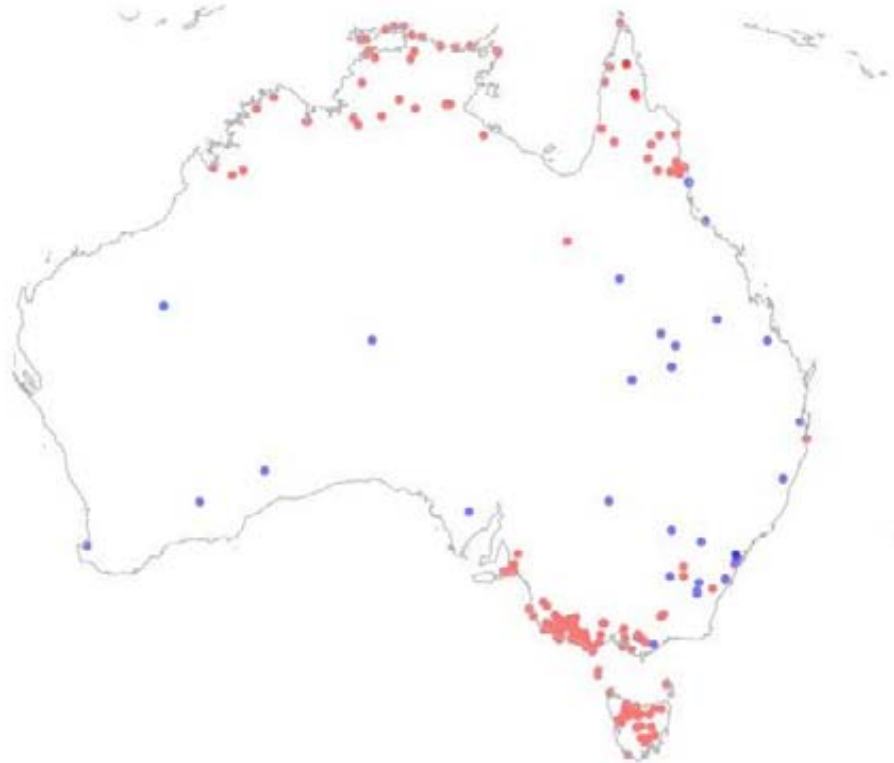
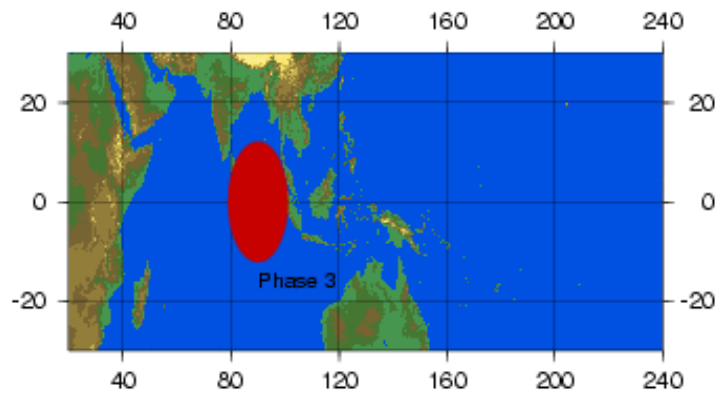
Analysis of historical data (1893 to 2007) using SOI Phases: Jan to Feb Leadtime of 0 months

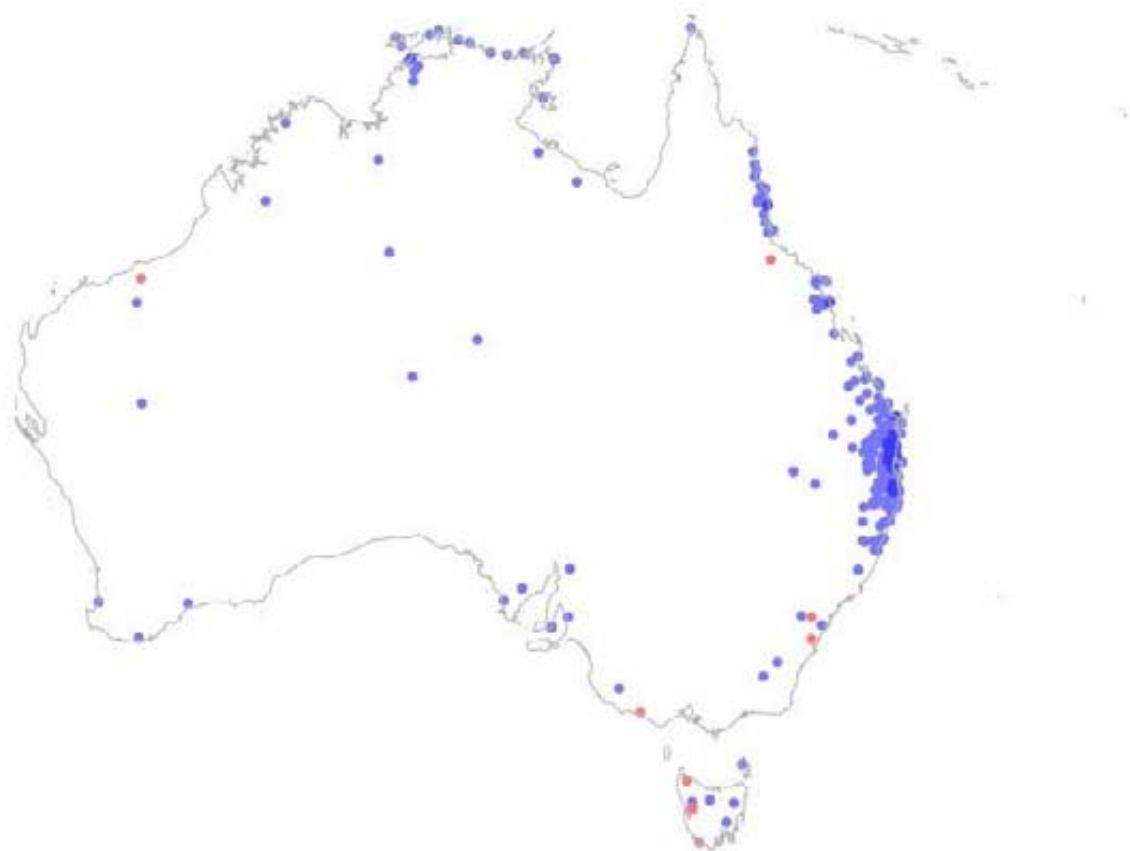
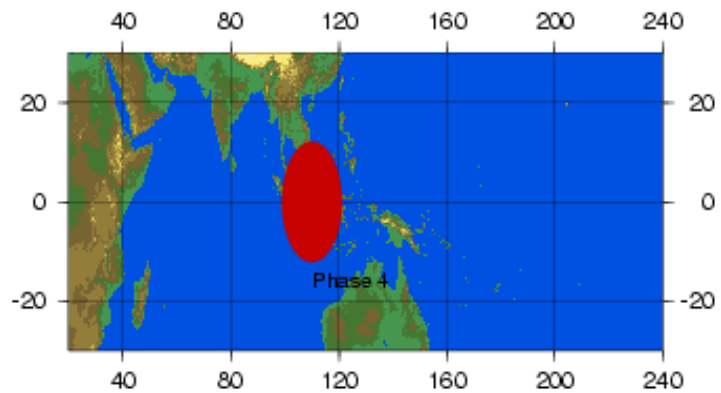
The SOI phases/rainfall relationship for this season is statistically not significant because KW test is below 0.9 and Skill Score (1.5) is below 7.6 ($p = 0.64$).

Rainfall period: Mar to May	SOI negative	All years			
% yrs with at least 288 mm	6	5			
180 mm	18	25			
160 mm	24	31			
140 mm	41	39			
100 mm	82	68			
60 mm	100	89			
46 mm	100	95			
% yrs above median 128 mm	59	49			
KS/KW probability tests	KS=0.62	KW=0.50			
Significance level	Not significant				
Years in historical record	17	114			
Highest recorded (mm)	427	427	1983		
Lowest recorded (mm)	64	17	1993		
Median rainfall (mm)	132	128			
Average rainfall (mm)	151	140			

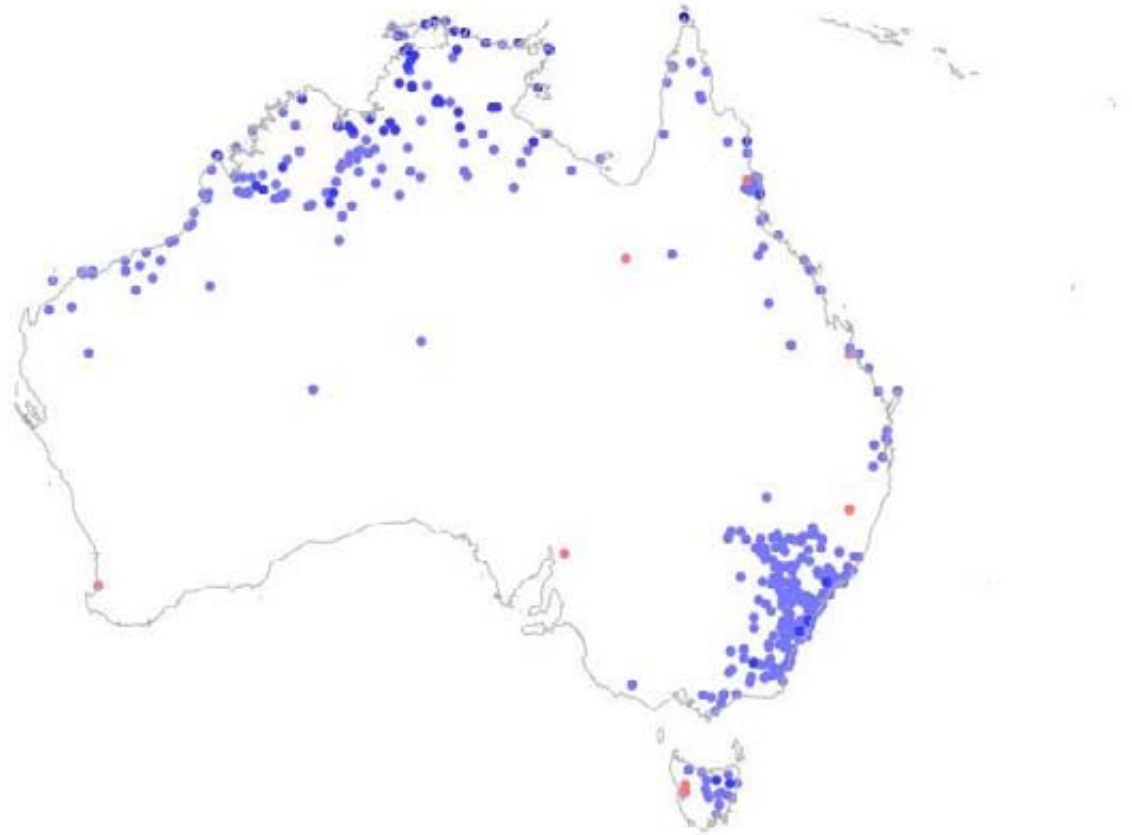
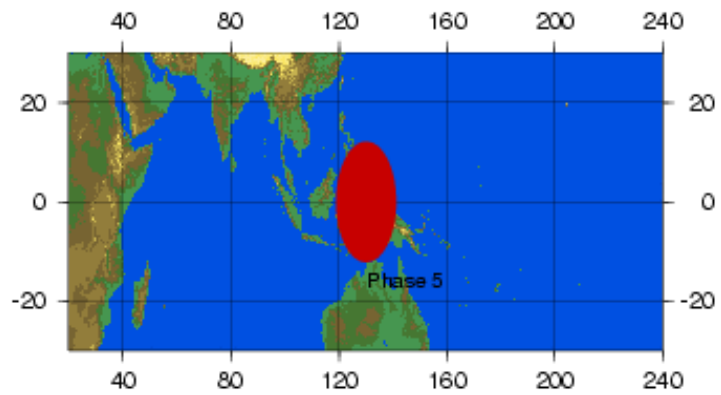




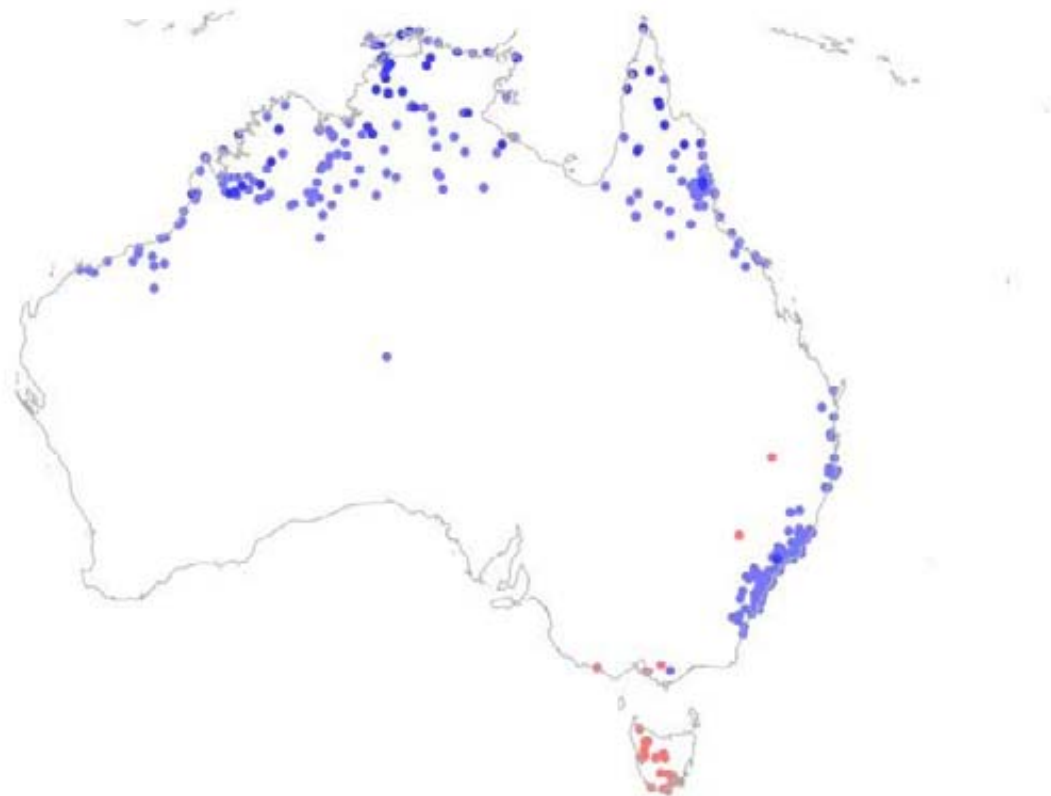
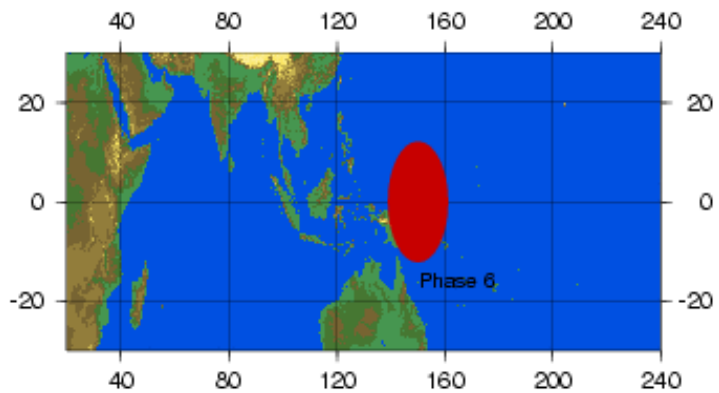


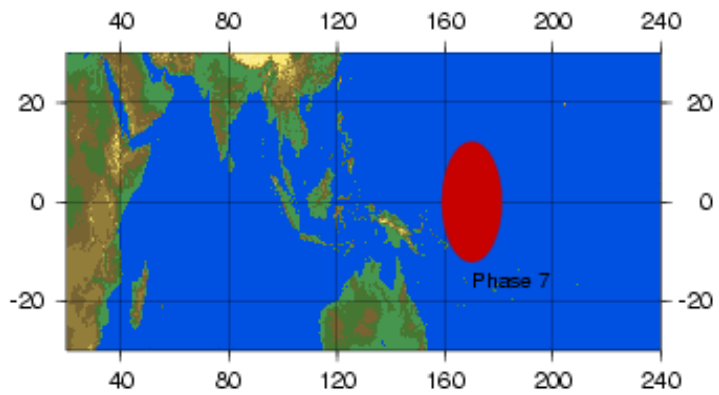


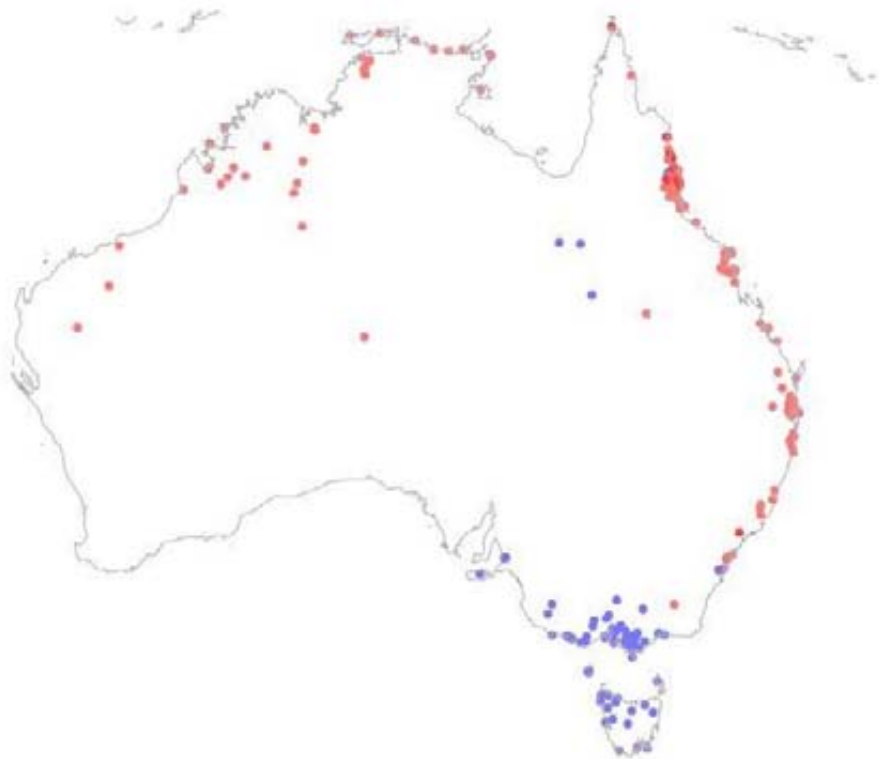
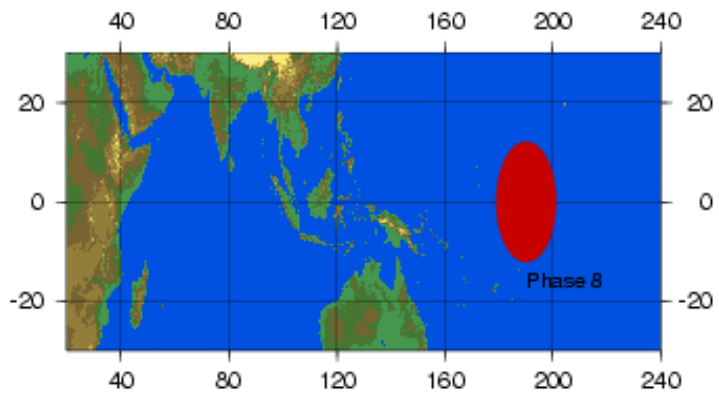
Delivery



Delivery







Summary

- El Nino pattern has broken down
- SOI values slowly rising
- Outlook is slowly improving
- MJO next due mid April