



June 2009 (next update by 10 July 2009)

# GROWING SEASON OUTLOOK

[www.agric.wa.gov.au/climate](http://www.agric.wa.gov.au/climate)

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## Summary

- There has been a rapid change in the ocean-atmosphere indicators over the last two months with ocean indicators showing signs of a possible El Niño. However, the atmosphere (pressure, winds, cloudiness) have been much slower to trend into El Niño conditions. ESS analogue years suggest that there is a 50% chance of an El Niño developing in the next 6 months. Local indicators have deteriorated in the last two months with stronger high pressure systems, weaker fronts and reduced cloud-band activity reducing rainfall.
  - The most appropriate ESS analogue years selected mainly since the mid-1970s climate break are the neutral years 2001, 2008, and the El Niño years 1957, 1976 and 2006. The median rainfall map of these years suggests that below average rainfall is the most likely outcome across much of Australia for the next three months. The ENSO state and the SST gradient to the northwest of Australia are in the balance, so confidence in spring rainfall from August to October is low at this stage. Longer term predictions will depend on what Indian Ocean SST gradient develops in June, and whether a late El Niño forms.
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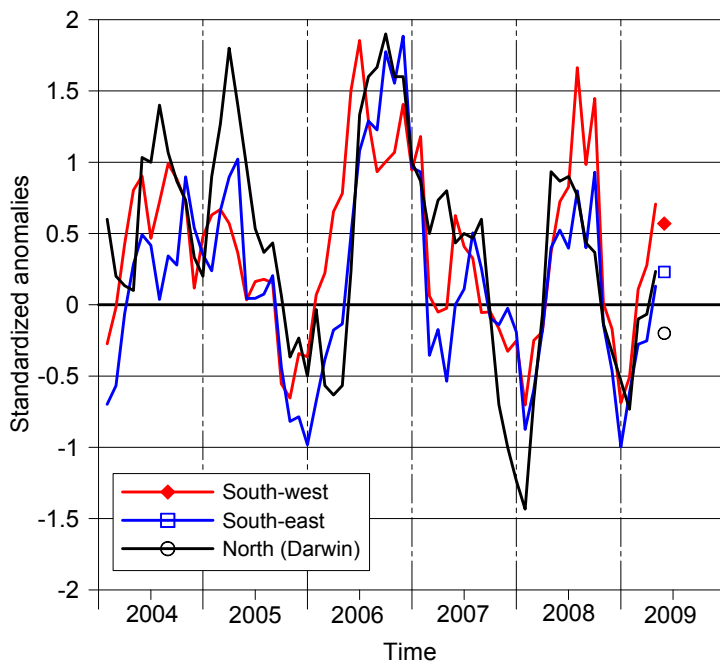
## Discussion of Climatic Indicators

### ***ENSO (El Niño – Southern Oscillation), or Pacific indicators***

- The current ENSO status from most dynamic computer models are predicting neutral to weak El Niño conditions by the end of the year. The Department's experimental [ENSO Sequence System](#) (ESS) has selected analogues which suggest that the odds of each ENSO State through the growing season are: neutral 50%, El Niño 50% and La Niña 0% (see [DAFWA ENSO Technical Summary](#) which highlights the rapidly changing situation in ENSO indicators).

### ***Local Australian indicators***

- [Sea surface temperatures](#) (SSTs) are slightly cooler than normal to the north of Australia and slightly warmer than normal to the southwest of WA. The Mean Sea Level Pressure (MSLP) has risen dramatically across Western Australia in recent months and this has been related to drier than normal rainfall and a patchy start to the season. Above normal rainfall over north-eastern Australia has been related to below normal pressure over Darwin recently.



**Figure 1:** Three month mean sea level pressure anomalies averaged for south-western Australia (Geraldton, Corrigin), south-eastern Australia (Mildura, Alice Springs) and northern Australia (Darwin). The last 2-month mean pressures are shown with the symbol at the end of the time series. Drought to dry conditions are indicated with above normal pressure (stronger high pressures) in mid 2006-2008; better rainfall conditions are indicated where pressure was below normal in late 2005, 2007 and 2008.

### Confidence in Outlook

The confidence placed in rainfall outlooks produced by ESS depends on how many global and local indicators are adding together to produce a consistent rainfall outcome and what agreement there is in the ESS analogue years. The ENSO state is compared with four local indicators and when there is agreement between the indicators a higher level of confidence is placed on the rainfall outlook. When local indicators are inconsistent with the global scale pattern (e.g. cold SST north of Australia in the 2007 La Niña) then confidence is lowered. Over the last two months there has been a deterioration in most indices. The confidence in a below average outlook for the next three months is high given the number of crosses (negative trends) listed in Table 1.

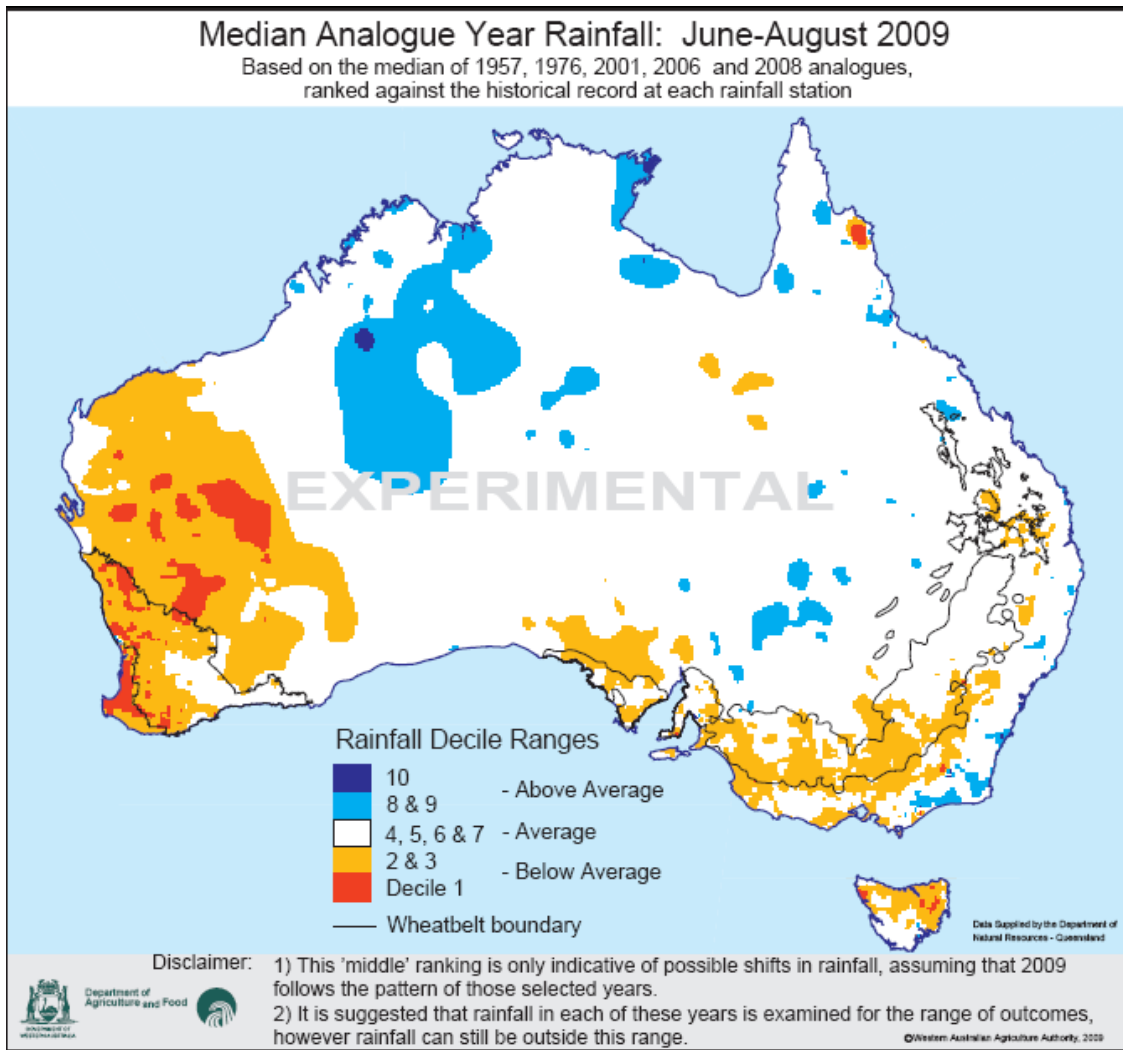
Table 1 WA Climate Indicators Summary

Climate Indicator	Meaning	Current status
1. ENSO state (global – Indo-Pacific)	Pressure, SST - picked by ESS	Neutral to El Nino (- to X)
2. Barometric Pressure over Australia	Strongly relates to rain – stronger high pressures relate to dry conditions	Above normal pressure suggests below average rainfall (X)
3. SST gradient north of Australia	How warm is ocean north and northwest of WA	SST gradient is slightly weakened (- to X)
4. Cloud-band activity	Important in more northern cropping areas	weak (X)
5. Frontal activity	Important in southern Australia	Weak (X)

(X) = negative trend, (-) = no trend indicated, (√) = positive trend

### Three Month Rainfall Outlook June to August 2009

The May to July rainfall outlook based on ESS analogue years shows rainfall from the five top ranked analogue years ranked by decile (rainfall record is grouped into equal tenths) with the middle rainfall ranking mapped. This means there are two drier years and two wetter years than the year that is mapped. Confidence in the median rainfall map for winter is high given the agreement in indicators in Table 1.



**Figure 2** Median (middle) rainfall ranking of the five analogue years 1981, 1984, 2001, 2006 and 2008.

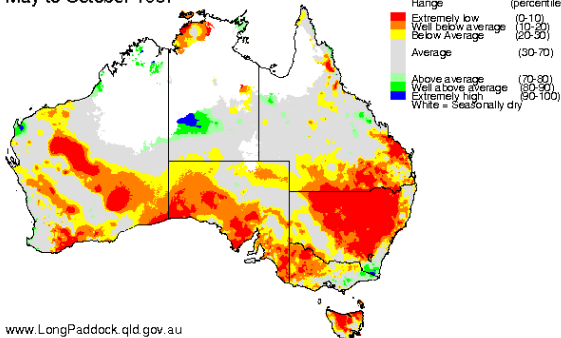
**Experimental Map disclaimer:**

This map should not be interpreted to mean that rainfall will be the same in the selected period, but may be indicative of possible trends in rainfall as long as 2009 conditions follows the pattern of those selected years.

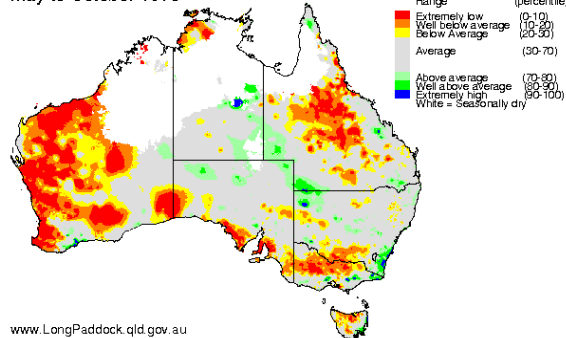
## 2009 Growing Season Outlook

**Growing Season Rainfall:** This map has been derived from the same set of analogue years and mapped in the same way as the 3-month map. May to October rainfall maps of these five analogue years are shown below. For south west WA, all five years had regions of the southwest that were below average. Since growing season rainfall has been found to be strongly related to the SST gradient west and north of WA this feature should be closely monitored in coming months. Over the last few weeks there has been a slight warming of SST north of Australia and a slight cooling west of Perth. If this trend continues then this would point to improving conditions for the finish to the growing season. However, if an El Nino develops then this would increase the confidence in below average rainfall.

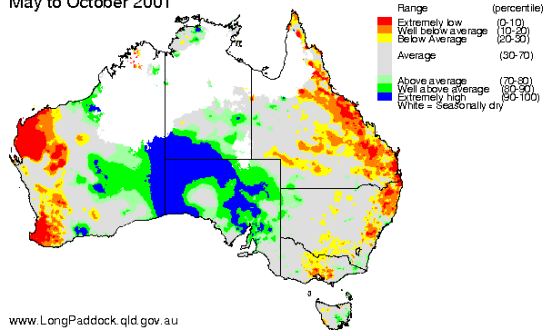
Rainfall Relative to Historical Records  
May to October 1957



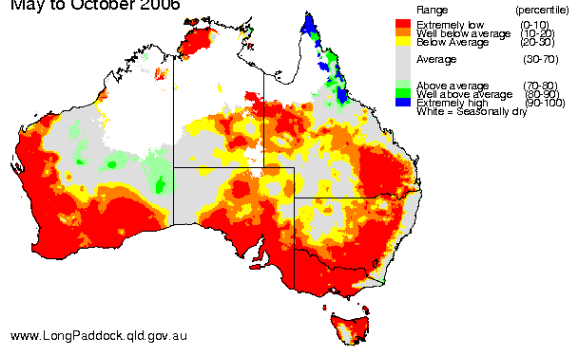
Rainfall Relative to Historical Records  
May to October 1976



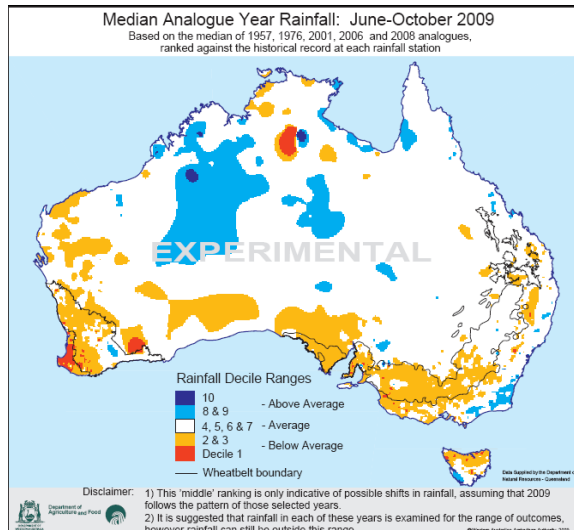
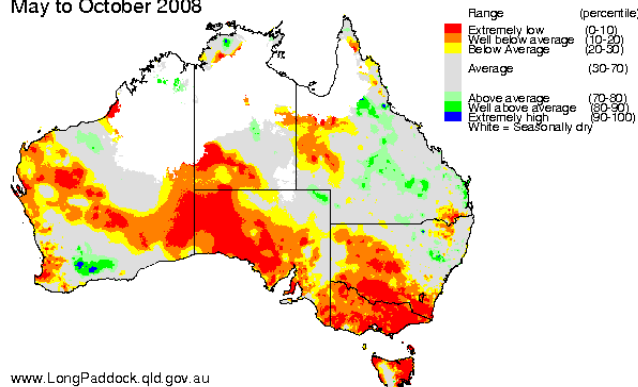
Rainfall Relative to Historical Records  
May to October 2001



Rainfall Relative to Historical Records  
May to October 2006



Rainfall Relative to Historical Records  
May to October 2008



**Experimental Map disclaimer:**

*This map should not be interpreted to mean that rainfall at any location will be the same in the selected period, but may be indicative of possible trends in rainfall as long as 2009 conditions follows the pattern of the selected years*

## Other Seasonal Outlooks for south-west Western Australia

Some other agencies that produce seasonal rainfall (and for some temperature) outlooks are listed below. None of the models have skill for May to July south- west Western Australian rainfall.

There is no indication from these models that the next three months rainfall will be in serious deficiency, but that the overall trend will be average over the south west. Outlooks which indicate an even chance of receiving below or above median rainfall are from International Research Institute and the Queensland Department of Natural Resources and Mines. The Bureau of Meteorology and Experimental Centre for Climate Prediction, indicate slightly below median rainfall, while the European Centre for Medium Range Weather Forecasts and the UK Met Office indicate slightly above median rainfall as being more likely. The experimental predictions from the POAMA outputs from the Bureau of Meteorology are also trending close to normal over the south west corner but within the context of slightly drier conditions over the Southern Ocean region south of WA..

For temperature, the International Research Institute indicates a higher chance of receiving below median temperatures. The Bureau of Meteorology , Experimental Centre for Climate Prediction and UK Met Office and The European Centre for Medium Range Weather Forecast indicate a higher chance of above median temperatures .

- [Bureau of Meteorology](#)
- [Queensland Department of Natural Resources and Mines](#)
- [International Research Institute](#)
- [European Centre for Medium Range Weather Forecasts](#)

- [UK Met Office](#)
  - [Experimental Centre for Climate Prediction](#)
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## Additional Information for Western Australia

May edition of DAFWA's [Seasonal Update](#) which has the May Plant Available Soil Moisture Map

Latest [Pestfax](#) – reports on diseases and pests threatening crops and pastures throughout the grain belt of WA

List of [tools to assist in decision making](#)

Farmnote on [where to find rainfall data](#)

Farmnote on [rainfall deciles](#)

Weather websites and short term outlooks:

[Australian Bureau of Meteorology](#)

[Water and the Land](#)

[Australian Weather News](#)

[Centre for Ocean-Land-Atmosphere Studies short term climate outlooks](#)

[US Navy's Fleet Numerical Meteorology and Oceanography Centre](#)

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