



July 2009 (next update by 10 August 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 slow but steady development of a weak El Niño in the eastern Pacific Ocean. However, the atmosphere (pressure, winds, cloudiness) have been much slower to trend into El Niño conditions. In particular, the local Australian indicators are the opposite of what is normally expected in El Niño years. Barometric pressure has trended down to below normal over the last two months and the SST to the north of Australia has warmed over the last four weeks (after cooling in April and May). There is now a slightly enhanced SST gradient to the northwest of Australia and northwest cloud-band activity has started to pick up.
- The most appropriate ESS analogue years selected with Australian indicators taken into account are the El Niño years 1951, 1965 and 1986 and the neutral years 2001, 2008. The median rainfall map of these years suggests that average rainfall is the most likely outcome across much of Australia for the rest of the growing season.

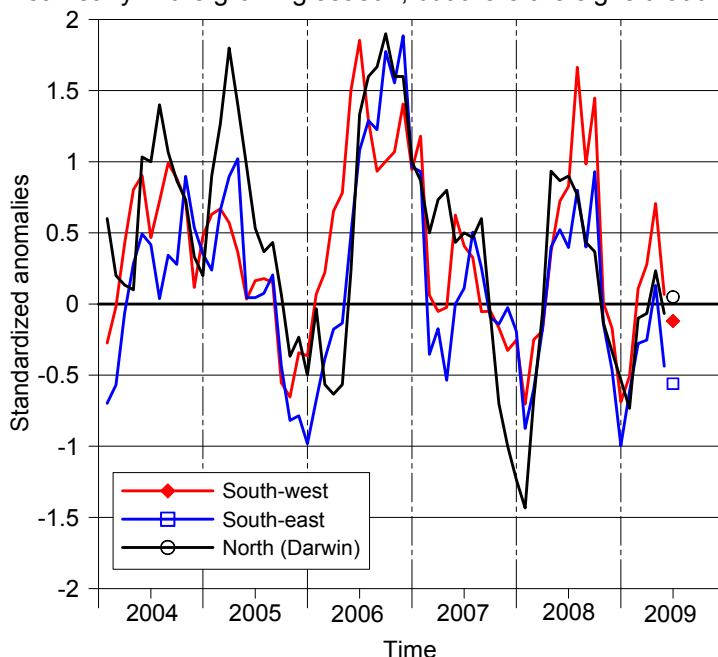
## Discussion of Climatic Indicators

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

• The current ENSO status from most dynamic computer models are predicting weak to moderate 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 by the end of the year are: El Niño 70% neutral 30% and La Niña 0% (see [DAFWA ENSO Technical Summary](#)) which highlights the mixed ocean and atmospheric conditions).

### Local Australian indicators

• [Sea surface temperatures](#) (SSTs) are slightly warmer than normal to the north of Australia and slightly cooler to the southwest of WA. The Mean Sea Level Pressure (MSLP) has fallen dramatically across Australia in recent months and this has been related to an improvement in rainfall since late May. Cloud-band and frontal activity were weak early in the growing season, but there are signs that these are strengthening.



**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 month there has been an improvement in most local indices, whereas at the global scale a more negative El Niño pattern is in the process of forming (note: this is the reverse situation to 2007). The confidence in an average outlook for the next three months is moderate given the number of ticks (positive trends) listed in Table 1.

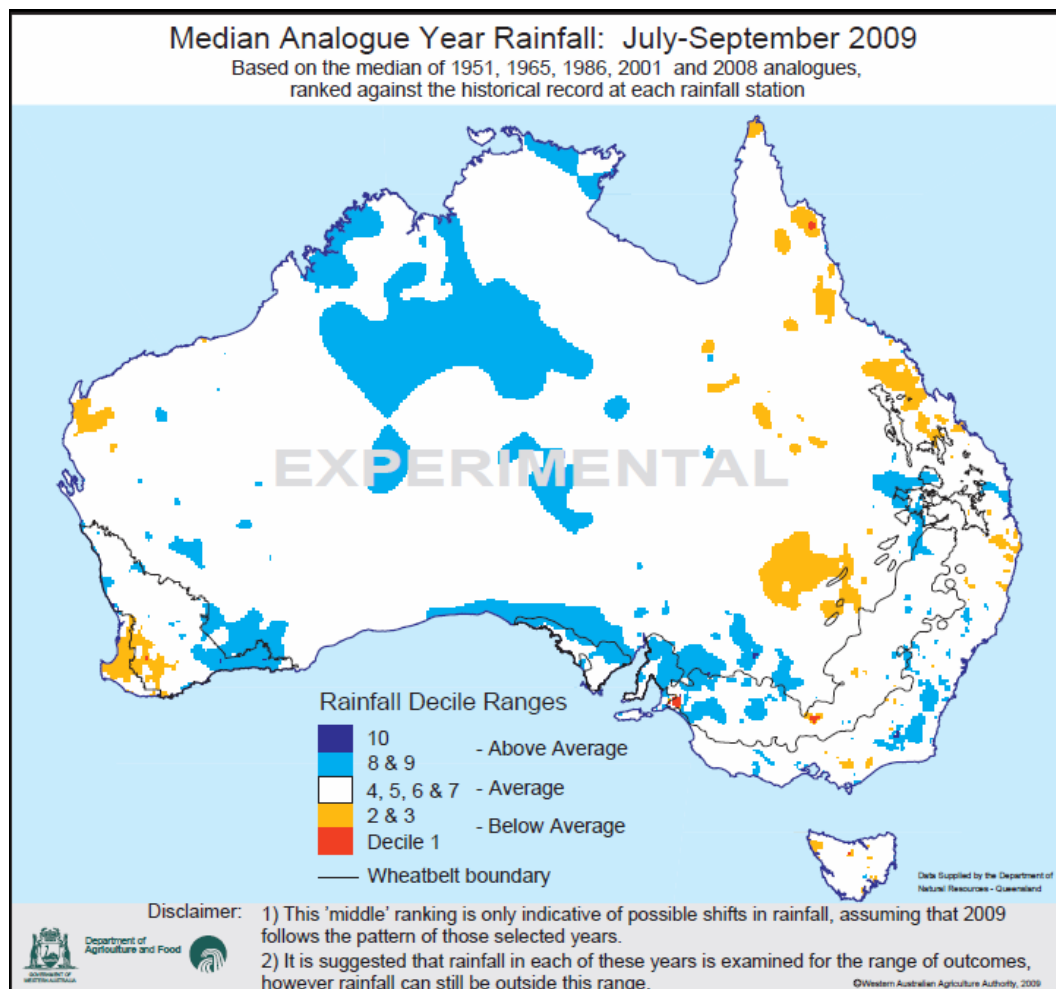
Table 1 WA Climate Indicators Summary

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

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

## Three Month Rainfall Outlook June to August 2009

The July to September 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.

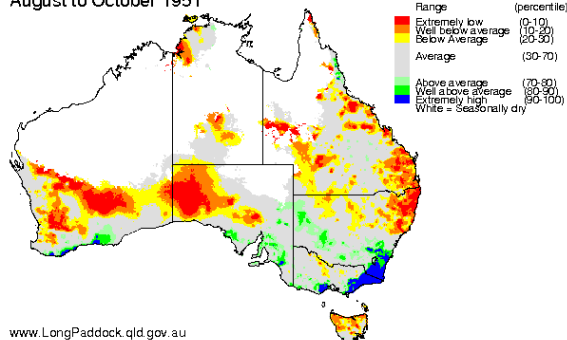
**Experimental Map disclaimer:**

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.

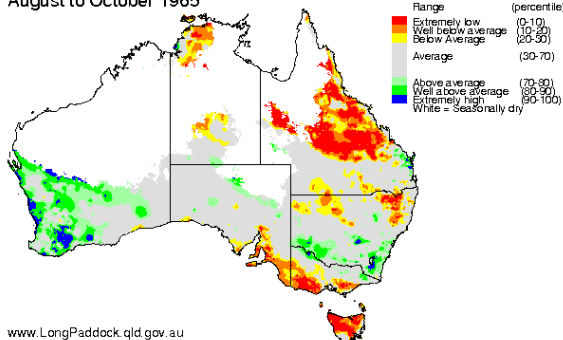
## 2009 Growing Season Outlook

**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. August to October rainfall maps of these five analogue years are shown below. For south west WA there is a mixture of rainfall indicated from the different analogue years. 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 month there has been a slight warming of SST north of Australia and a slight cooling west of Perth. If this trend continues this would point to improving conditions for the finish to the growing season

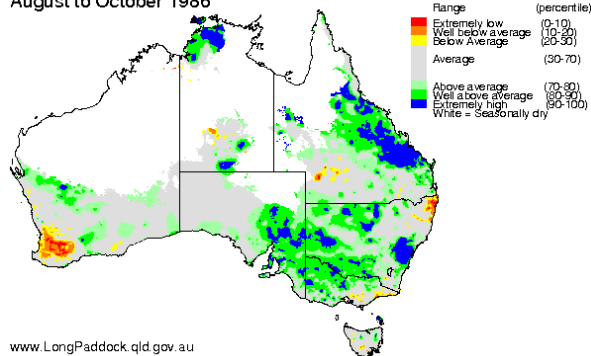
Rainfall Relative to Historical Records  
August to October 1951



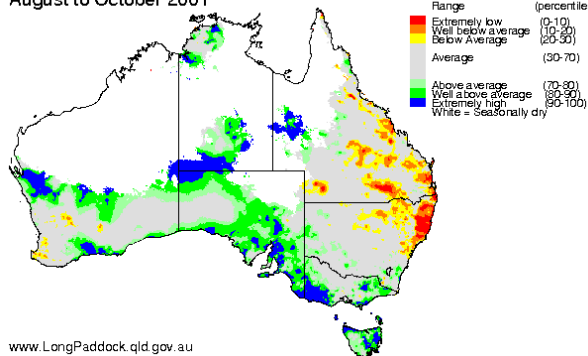
Rainfall Relative to Historical Records  
August to October 1965



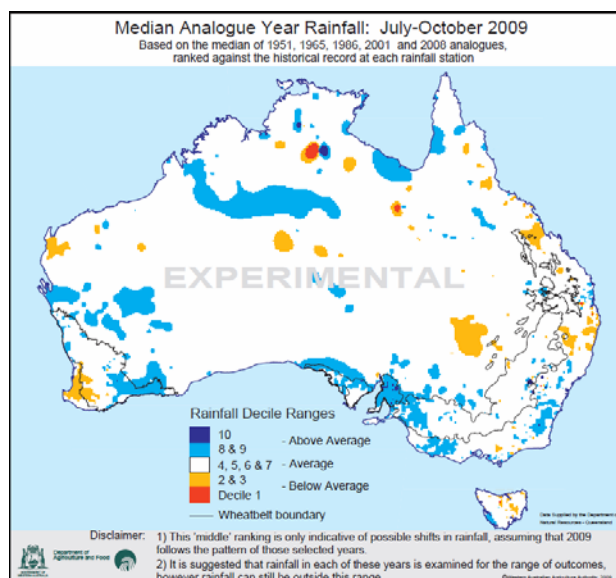
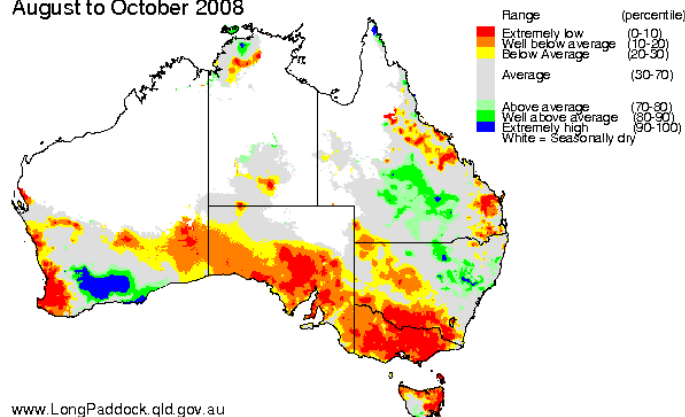
Rainfall Relative to Historical Records  
August to October 1986



Rainfall Relative to Historical Records  
August to October 2001



Rainfall Relative to Historical Records  
August 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 July to September rainfall for the south- west of Western Australia.

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 the European Centre for Medium Range Weather Forecasts, Experimental Centre for Climate Prediction and the Queensland Department of Natural Resources and Mines. The Bureau of Meteorology and the International Research Institute indicate slightly below median rainfall, while the UK Met Office indicates wet conditions in the southwest corner are more likely. The experimental predictions from the POAMA outputs from the Bureau of Meteorology are also trending close to normal over much of Australia.

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

July's 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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