

## Monthly Climate Statement—June 2012

### Key messages

- Rainfall probabilities for winter (June to August) currently near-normal
- Experimental long-lead outlook for next summer currently wetter than average, based on a cool Pacific Decadal Oscillation pattern
- This long-lead outlook may moderate if El Niño conditions develop by the end of this year
- Rainfall probabilities will continue to be updated each month

### Findings for June 2012

It is considered that **the probability of above or below-median rainfall for the next three-month period (June to August) is normal (40-60 per cent) for most of Queensland. This outlook is based on the currently neutral state of the El Niño-Southern Oscillation (ENSO) phenomenon. The sea-surface temperature pattern in the extra-tropical Pacific currently indicates a higher than normal probability of above-median rainfall for the coming summer (November to March).**

This assessment is based on the current and projected state of the ENSO phenomenon and on factors which alter the impact of ENSO on Queensland rainfall (e.g. the Pacific Decadal Oscillation (PDO)). The PDO modulates the impact of ENSO on summer rainfall in Queensland.

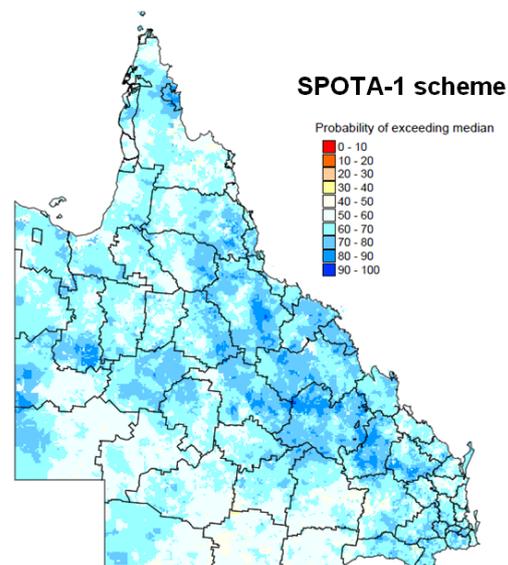
The Bureau of Meteorology (BoM) have stated that ENSO indicators, including the Southern Oscillation Index (SOI), trade winds, cloudiness and sea-surface temperatures, remain at neutral values for this time of year. Some [international global climate models](#), including those surveyed by the BoM ('[ENSO Wrap-Up](#)' June 5), indicate the possibility of an El Niño event developing during spring or early summer.

As at 1 June 2012, it is noted that:

- The [SOI](#), a key atmospheric measure of ENSO, increased from a quite negative value in April (-6.2) to a near-average value in May (-2.4).
- Observed [sea-surface temperatures](#) in the key Niño 3.4 and Niño 4 regions remained near-normal in May.
- Over the coming months, the Department of Science, Information Technology, Innovation and the Arts (DSITIA) will closely monitor the sea-surface temperature pattern in the South-West Pacific which has the most relevance for summer rainfall in the Queensland region.
- It is considered that the current cool phase of the PDO would tend to moderate the impact of El Niño over spring and summer should such a pattern develop.
- The outlook for spring and summer rainfall will be updated in July once ENSO conditions are further established.

DSITIA reaffirms previous advice that assessments based on ENSO indices in autumn are least reliable for seasonal forecasting. The SOI and sea-surface temperatures will be closely monitored in coming months when ENSO conditions tend to 'lock in' and become a more reliable indicator of rainfall for the season ahead.

Probability of Exceeding Median Summer Rainfall  
November 2012 - March 2013 based on the SPOTA-1 Index  
as at June 1, 2012



## Rainfall outlook

There are various approaches used to provide rainfall outlooks. These approaches tend to differ in terms of the components of the climate system that are considered and, for this reason, each approach may convey a different outlook, particularly for specific locations.

DSITIA produces two statistical climate risk assessment schemes. They are:

- the experimental [SPOTA-1 scheme](#), which integrates sea-surface temperature information, including indices of ENSO and the PDO; and
- the [SOI phase scheme](#), which relies solely on the SOI, an atmospheric measure of ENSO.

The experimental [SPOTA-1 scheme](#) provides long-lead probabilities of summer (November to March) rainfall for Queensland from mid-April through to mid-November each year

An updated assessment of rainfall probabilities, for the upcoming 2012/13 summer, based on the experimental SPOTA-1 scheme is now available and continues to indicate a higher than normal probability of above-median rainfall for much of Queensland. This assessment is based on an index of March sea-surface temperature anomalies in both the South-West Pacific and the North Pacific which, in part, reflect the current 'cool' state of the PDO. This latest assessment, which also takes into account a monthly ENSO index, will be revised from July through to November this year.

DSITIA's SOI phase scheme provides probabilities of rainfall for the coming three-month season based on SOI values over the previous two months. The SOI phase scheme currently indicates that the [probability of above or below-median rainfall](#) for the next three-month period (June to August) is near-normal (50 per cent) for most of Queensland. This analysis is based on the SOI being in a consistently near-zero phase at the end of May, as discussed further in the [commentary on rainfall based on phases of the SOI](#).

Rainfall over the last three-month period (March to May) has been average to above-average for much of Queensland, which was consistent with the SOI phase scheme's pre-season assessment.

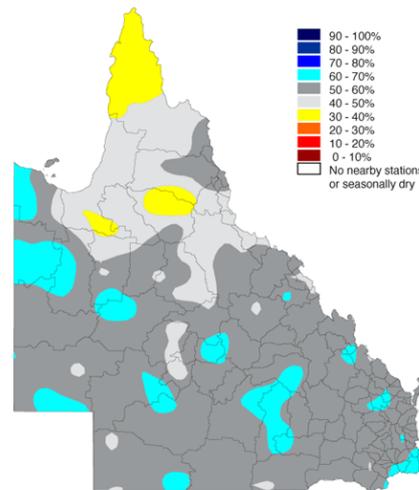
The SPOTA-1 and SOI phase schemes indicate probabilities based on historical relationships. It is important that the probabilistic nature of seasonal outlooks is understood and long-term risk management is undertaken. For example, if an outlook indicates a 70 per cent probability of above-median rainfall, this also means there is a 30 per cent probability of below-median rainfall.

Also, an increased risk of above or below-median rainfall in Queensland will not necessarily result in above or below-median rainfall occurring throughout all of the state (see [Australia's Variable Rainfall poster](#), or the Division's [archive of historical rainfall maps](#)).

### Probability of exceeding Median Rainfall

for June / August  
based on consistently near zero phase  
during April / May

### SOI Phase scheme



Each of the above schemes may have their own particular following. Although such schemes cannot provide outlooks with absolute certainty, users of the information who follow a skilful scheme should benefit from doing so in the long-term. Users should consider the historical track record of any scheme, and such historical information is becoming increasingly available.

DSITIA's Long Paddock website provides the historical archive of [SPOTA-1 reports](#) and [past commentaries](#) on the SOI phase scheme. Users should also consider the wide range of information available each month describing the current state of the ocean/climate system, for example the ['ENSO Wrap-Up'](#).

ENSO influences other climate variables apart from rainfall (e.g. temperature, pan evaporation and vapour pressure). This means that the impact of ENSO on crop or pasture growth can be stronger than on rainfall alone. The impact of ENSO on pasture growth is also dependent upon current pasture condition and soil water status. DSITIA's AussieGRASS model takes these factors into account in producing seasonal pasture growth probabilities.

For more information, please visit [www.LongPaddock.qld.gov.au/climatestatement](http://www.LongPaddock.qld.gov.au/climatestatement) or contact [QCCCE@derm.qld.gov.au](mailto:QCCCE@derm.qld.gov.au).