

# Monthly Climate Statement — October 2014

## Key messages

- The Southern Oscillation Index has been negative for each of the last three months (from July to September).
- Sea surface temperatures in the central equatorial Pacific are close to El Niño thresholds.
- These conditions highlight the ongoing risk of the atmosphere and ocean 'coupling' to form an El Niño event before the end of the year.
- The probability of exceeding median rainfall for the rest of this year (October to December) and over summer (November to March) is below normal for most of Queensland.
- This means that there is a low probability of widespread drought-breaking rainfall across the state, leading into and over the coming summer.

## Findings for October 2014

The Science Division of the Department of Science, Information Technology, Innovation and the Arts (DSITIA) considers that **the probability of exceeding median rainfall for the rest of this year (October to December) and over summer (November to March) is below normal for most of Queensland. This means that there is a low probability of widespread drought-breaking rainfall across the state, leading into and over the coming summer.**

DSITIA's rainfall outlooks for Queensland are based on the current and projected state of the El Niño–Southern Oscillation (ENSO) phenomenon and on factors which alter the impact of ENSO on Queensland rainfall (i.e. the more slowly changing extra-tropical sea surface temperature (SST) pattern in the Pacific Ocean).

At this time of year the prevailing ENSO pattern (as measured by indices such as the Southern Oscillation Index (SOI) or central equatorial Pacific Ocean SST anomalies) offers a useful basis for providing seasonal outlooks for spring and summer.

Values of the [SOI](#), the key atmospheric measure of ENSO, have been negative for each of the last three months (July -4.0, August -10.1, September -6.6). In September, observed SSTs in the central equatorial Pacific warmed closer to, but remained below, El Niño thresholds.

Currently:

- As at 10 October, the 90-day mean value of the SOI is -6.0 (end of September -6.9).

**Great state. Great opportunity.**

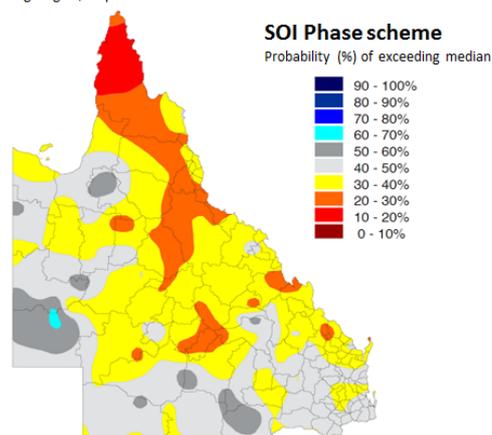
- [Observed SST anomalies](#) in the Niño 3.4 region of the central equatorial Pacific Ocean warmed over the last month (August +0.20 °C, September +0.45 °C).
- The majority of [international global climate models](#) indicate further warming of central equatorial Pacific Ocean SSTs in coming months with the risk of a weak El Niño event developing.
- Recent negative SOI values highlight the continuing risk of the ocean and atmosphere 'coupling' to form an El Niño event before the end of the year.
- If an El Niño event does develop, it would likely persist until the end of summer 2014/15.
- The SST gradient (west to east) across the South Pacific Convergence Zone (i.e. between eastern Australia and the central Pacific) is now slightly negative (September anomaly -0.08 °C).
- Should this SST gradient become more negative during October then the probability of below-median summer rainfall in Queensland will increase.

## What if an El Niño event develops this year?

More than [75 per cent of Queensland remains drought declared](#) under state government processes, including most inland regions and all of south-eastern Queensland. The possibility of an El Niño event developing, and with it the threat of another dry summer for some regions, poses a risk of current drought conditions becoming more protracted. This risk should be factored into decision-making and allocation of resources. In this context, DSITIA's long-lead outlook for summer rainfall (next page) should be taken into consideration.

### Probability of exceeding Median Rainfall

for October to December  
based on a Consistently Negative SOI phase  
during August/ September



**Queensland  
Government**

## Outlook for summer rainfall

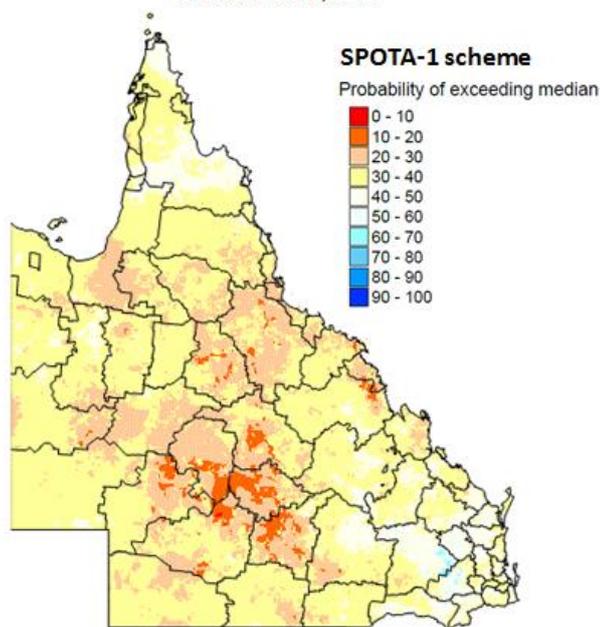
DSITIA scientists have shown that extra-tropical SST anomalies, when measured in specific regions of the Pacific Ocean in March, provide a useful basis for long-lead forecasting of summer rainfall in Queensland. This outlook can be modified, with increasing accuracy, as the monthly ENSO-related SST pattern is also taken into account from June to November.

This understanding has been incorporated in an experimental system known as SPOTA-1 (Seasonal Pacific Ocean Temperature Analysis version 1), which has been operationally evaluated by DSITIA scientists for over a decade.

Currently, DSITIA's long-lead outlook for summer rainfall maintains a higher than normal probability of below-median rainfall for most of Queensland over the coming summer (November to March 2014/15) and, conversely, a low probability of widespread drought-breaking rainfall.

This outlook has been extremely consistent since April this year and is strongly related to the extra-tropical SST pattern detected in March this year, which is related to the Inter-decadal Pacific Oscillation (IPO). Although this outlook is not expected to change significantly before summer, the probability of below median summer rainfall could increase further should the gradient (west to east) across the South Pacific Convergence Zone (i.e. between eastern Australia and the central Pacific) become more negative during October (August +0.22 °C, September -0.08 °C). A final assessment of rainfall probabilities for the coming summer will be made in November.

**Probability of Exceeding Median Summer Rainfall**  
November 2014 – March 2015 based on the SPOTA-1 Index  
as at October 1, 2014



### Why is SPOTA-1 labelled “Experimental”?

The SPOTA-1 system is currently labelled 'experimental' and will continue to be labelled as such until the details of the system, including its strong operational track record, are published in the international peer-reviewed scientific literature. Until then, further details on the current outlook and access to previous outlooks (since 2001) are currently provided on a password-protected area of the Long Paddock website (see the link at bottom of page to request password).

In summary, it should be noted that:

- The current long-lead outlook for summer rainfall is based on both extra-tropical and central equatorial Pacific Ocean SST anomalies.
- Central equatorial Pacific Ocean SST anomalies over spring and summer will define the state of ENSO ('El Niño', 'La Niña' or 'ENSO-neutral') for 2014/15.
- Should an El Niño event occur, it is increasingly likely to be a weak event. However, both 'weak' and 'strong' El Niño events have an equal tendency to produce dry conditions in Queensland.
- For Queensland, the state of the extra-tropical Pacific Ocean determines whether an El Niño event (weak or strong) is most likely to result in a dry summer.
- A range of analyses (based on different approaches) support DSITIA's view that there is a low probability of widespread wet conditions across Queensland over summer (although this can't be ruled out).

For more information, please visit:

[www.longpaddock.qld.gov.au/seasonalclimateoutlook](http://www.longpaddock.qld.gov.au/seasonalclimateoutlook)  
or contact Stuart Burgess at:  
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