

# Monthly Climate Statement — July 2014

## Key messages

- Seventy-five per cent of Queensland remains drought declared under State Government processes.
- For most of Queensland, there is an increased likelihood of below-median July to September rainfall, with a similar outlook for the coming summer (November to March 2014/15).
- The probability of an El Niño event developing before summer is currently at least 70 per cent.
- If an El Niño event develops, it would likely persist until the end of summer 2014/15.

- Most [international global climate models](#) currently indicate that central equatorial Pacific Ocean SSTs should warm further, with at least a 70 per cent probability of El Niño conditions developing before summer. If an El Niño event develops, it would likely persist until the end of summer 2014/15.
- For most of Queensland, an increased likelihood of below-median July to September rainfall is supported by several well-known climate models (e.g. Bureau of Meteorology, ECMWF, International Research Institute – USA and the Meteorological Office – UK).

## What if an El Niño develops this year?

Currently, [75 per cent of Queensland remains drought declared](#) under State Government processes. The high probability of an El Niño event developing in coming months, 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.

## Findings for July 2014

The Science Division of the Department of Science, Information Technology, Innovation and the Arts (DSITIA) considers that, **for most of Queensland, there is an increased likelihood of below-median July to September rainfall, with a similar outlook for the coming summer (November to March 2014/15).**

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).

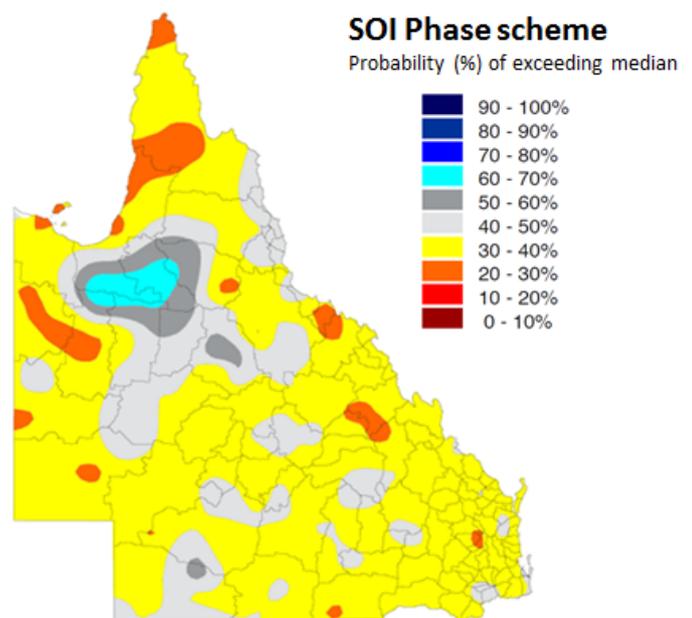
At this time of year, and over the coming months, the prevailing ENSO pattern (as measured by indices such as the Southern Oscillation Index (SOI) or central equatorial Pacific Ocean SST anomalies) offers a useful basis for providing seasonal outlooks for winter, spring and summer.

Currently:

- The [SOI](#), a key-atmospheric measure of ENSO, averaged +3.3 from April to June, remaining in the ENSO-neutral range. Over the previous two months the SOI fell from +4.3 (May) to -0.8 (June) and, as at 7 July, the 30-day mean SOI value was -4.3.
- [Observed SST anomalies](#) in the key Niño 3.4 region of the central equatorial Pacific Ocean remain warm (+0.46 °C in both May and June).

## Probability of exceeding Median Rainfall

for July / September  
based on a consistently near zero SOI phase during May / June



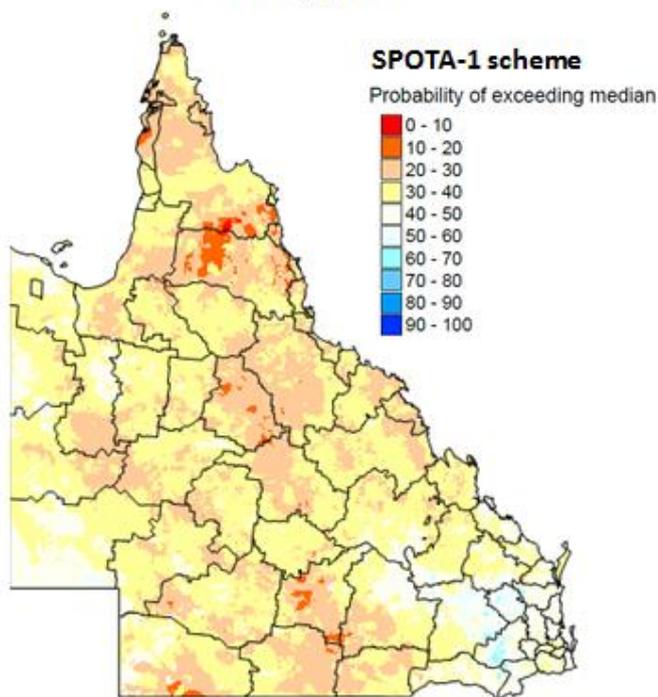
## Outlook for summer rainfall

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 indicates a high probability of below-average rainfall for most of Queensland over the coming summer (November to March 2014/15) and, conversely, a very low probability of widespread drought-breaking rainfall. This outlook will be updated on a monthly basis until November, with accuracy increasing each month.

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



In summary, it should be noted that:

- The current long-lead outlook is based on both extra-tropical and central equatorial Pacific Ocean SST anomalies.
- Central equatorial Pacific Ocean SST anomalies, in coming months, will define the state of ENSO ('El Niño', 'La Niña' or 'ENSO-neutral') for 2014/15.
- SST anomalies have continued to slowly approach El Niño thresholds in the central equatorial Pacific Ocean.
- The World Meteorological Organisation in their [WMO El Niño/La Niña Update](#) (issued June 26) and the Australian Bureau of Meteorology in their [BoM 'ENSO Wrap-Up'](#) (issued July 1) note that, while tropical Pacific Ocean SSTs have reached levels typically associated with a weak El Niño, the atmospheric pattern has so far remained neutral.
- The BoM also note that, while the SOI has fallen over recent weeks and trade winds have weakened, these changes would need to persist for several weeks in order for an El Niño to be established.
- Should an El Niño event occur, this coupled oceanic and atmospheric pattern would likely persist over the coming summer (November to March).
- An El Niño pattern in the central equatorial Pacific Ocean, coupled with the recent extra-tropical Pacific Ocean SST pattern, would weaken the atmospheric Walker Circulation, leading to a high probability of dry conditions (< decile 3 rainfall) for much of Queensland over the coming summer.
- Irrespective of how ENSO develops, for much of Queensland the probability of wet conditions (> decile 7 rainfall) will remain low over the coming summer.
- DSITIA's long-lead outlook for summer rainfall will be updated each month until November, by factoring in the developing ENSO-related SST pattern.

### 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 below to request password).

For more information, please visit: [www.longpaddock.qld.gov.au/seasonalclimateoutlook](http://www.longpaddock.qld.gov.au/seasonalclimateoutlook)  
or contact Stuart Burgess at: [stuart.burgess@dsitia.qld.gov.au](mailto:stuart.burgess@dsitia.qld.gov.au)