

Monthly Climate Statement — July 2015

Key messages

- More than 80 per cent of Queensland is drought declared under State Government processes.
- The current El Niño climate pattern is likely to persist, through winter, spring and summer.
- For most of Queensland, the current 'Consistently Negative' phase of the Southern Oscillation Index (SOI) indicates lower than normal probabilities of exceeding median rainfall over the next three-month period (July to September).
- For most of Queensland, the probability of exceeding median rainfall over summer (November to March 2015/16) is lower than normal, based on DSITI's latest analysis of Pacific Ocean sea surface temperatures (SSTs).

- Most [international global climate models](#) currently indicate that central equatorial [Pacific Ocean SSTs](#) should continue to warm in the coming months, with at least a 90 per cent probability of El Niño conditions persisting over winter and spring, and at least an 80 per cent probability of El Niño conditions persisting through summer.

What if the El Niño continues to develop?

Currently, [more than 80 per cent of Queensland remains drought declared](#) under state government processes. For January to June this year, rainfall was below average (less than the 30th percentile) across parts of northern, central and western Queensland (see map, below). The high probability of the current El Niño event developing further over winter and spring, 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, DSITI's long-lead outlook for summer rainfall (opposite page) should be taken into consideration.

Findings as at 15 July 2015

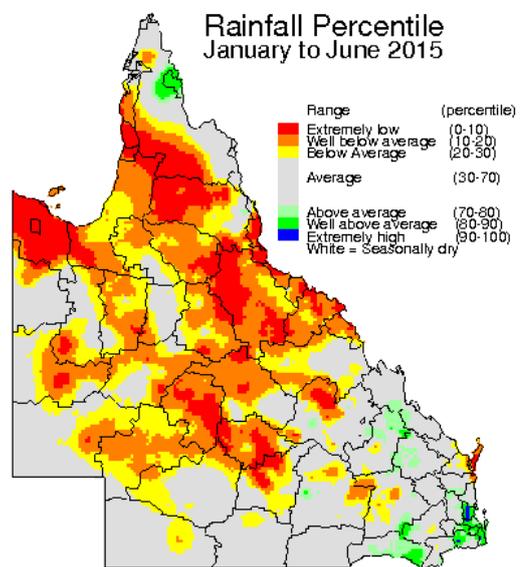
The Science Division of the Department of Science, Information Technology and Innovation (DSITI) considers that, **for most of Queensland, there is an increased probability of below median July to September rainfall, with a similar outlook for the coming summer (November to March 2015/16).**

DSITI's seasonal 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 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 SOI or central equatorial Pacific Ocean SST anomalies) begins to offer a useful basis for providing seasonal outlooks for winter, spring and summer.

Currently:

- The monthly value of the [SOI](#) was -13.1 in May and -10.3 in June, remaining negative for the 13th consecutive month. As at 13 July, the 30-day mean value was -16.3 and the 90-day mean value was -10.2.
- The monthly SST anomaly in the Niño 3.4 region of the central equatorial Pacific Ocean warmed from +1.03 °C in May to +1.32 °C in June. As at 11 July the weekly SST anomaly was +1.5 °C, remaining well-above El Niño thresholds.



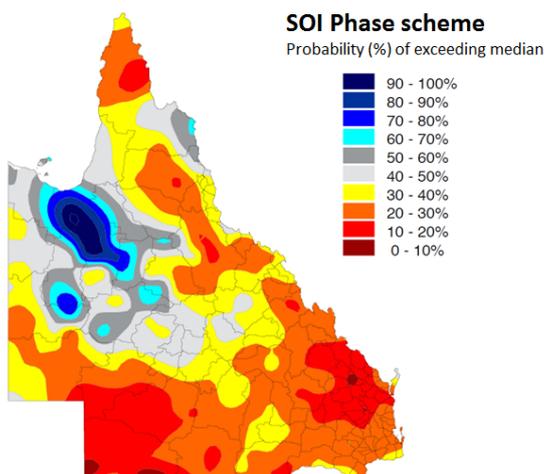
Map is Relative to Historical Records from 1890
www.LongPaddock.qld.gov.au

Seasonal rainfall outlook (Jul-Sep 2015)

An analysis of rainfall probabilities, based on previous years when the SOI has been in a 'Consistently Negative' phase at the end of June, indicates that the probability of above-median rainfall for the next three-month period (July to September, see map below) is less than 50 per cent for most of Queensland and less than 30 per cent for many southern regions. While the probability of exceeding median rainfall exceeds 50 per cent for parts of the Gulf, median July to September rainfall is typically low in this region.

Probability of Exceeding Median Rainfall

for July to September
based on a Consistently Negative SOI phase
during May / June



Summer rainfall outlook (Nov-Mar 2015/16)

DSITI scientists have shown that extra-tropical SST anomalies, when measured in specific regions of the Pacific Ocean in March each year, provide a useful basis for long-lead forecasting of summer (November to March) rainfall in Queensland. The accuracy of this outlook increases as the evolving ENSO-related SST pattern is also taken into account from May through to October. 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 DSITI scientists for over a decade.

As at 1 July 2015, DSITI's updated long-lead outlook for the coming summer (November to March 2015/16) indicates a lower than normal probability of exceeding median rainfall for most of Queensland, mostly due to warmer than average SSTs in the central equatorial Pacific.

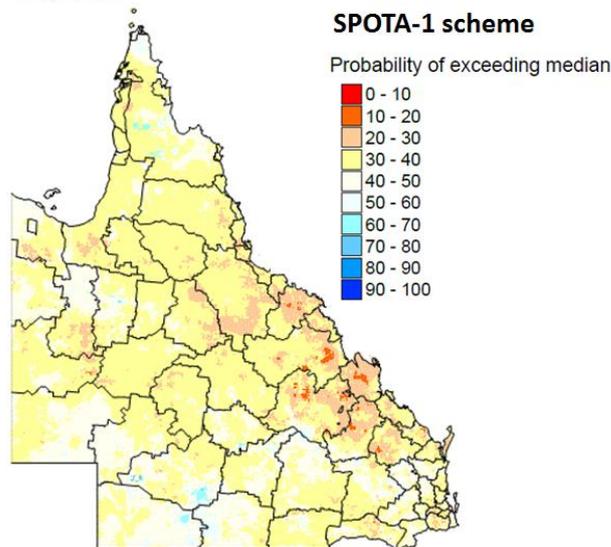
DSITI's long-lead outlook for summer rainfall will be reassessed in August, and then updated monthly until November, by factoring in further developments in ENSO conditions.

It should be noted that:

- The current long-lead outlook is based on both extra-tropical and central equatorial Pacific Ocean SST anomalies.
- Should the current El Niño event develop further, this coupled oceanic and atmospheric pattern would likely persist into 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 higher than normal probability of dry conditions (< decile 3 rainfall) for much of Queensland over the coming summer.
- The BoM, in their [12 May Newsroom release](#) noted that "while El Niño increases the risk of drought, it does not guarantee it, reporting that of 26 [El Niño events since 1900](#), 17 have resulted in widespread drought".

Probability of Exceeding Median Summer Rainfall

November 2015 – March 2016
based on the SPOTA-1 Index
as at July 1, 2015



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 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 above to request password access).

For more information, please visit: www.longpaddock.qld.gov.au/seasonalclimateoutlook or contact Stuart Burgess at: stuart.burgess@dsiti.qld.gov.au.