

Monthly Climate Statement — September 2015

Key messages

- The Southern Oscillation Index fell to an extremely negative monthly value (-19.0) in August and sea surface temperatures in the central equatorial Pacific are the highest since the 1997-98 El Niño.
- This development highlights the continuing risk of the current El Niño pattern persisting over spring and summer.
- For most of Queensland, there is an increased probability of below median September to November rainfall, with a similar outlook for summer (November to March 2015/16).
- At least eighty per cent of Queensland remains drought declared under State Government processes.

- Based on central equatorial Pacific Ocean SSTs, the 2015 El Niño climate pattern is now the strongest since that of 1997-98 (see [1 September Bureau of Meteorology 'ENSO Wrap-Up'](#)).
- 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 95 per cent probability of El Niño conditions persisting through spring and summer.

What if the El Niño continues to develop?

Currently, [more than 80 per cent of Queensland remains drought declared](#) under state government processes. The high probability of the current El Niño event developing further into 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.

Rainfall over the last six-month period (March to August) has been extremely low (less than the 10th percentile) across much of central and north western Queensland. However, rainfall has been close to average in some northern and many southern parts of the state (see map, below).

Findings as at 15 September 2015

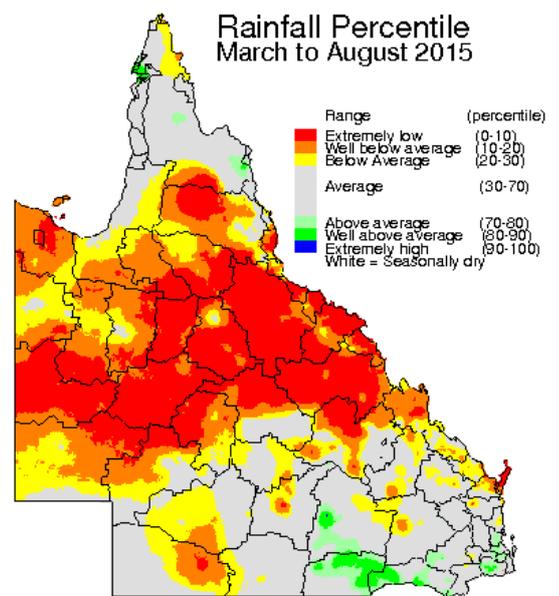
The Science Division of the Department of Science, Information Technology and Innovation (DSITI) considers that, **for most of Queensland, there is an increased probability of below median September to November rainfall, with a similar outlook for the coming summer (November to March 2015/16).**

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 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 monthly value of the [SOI](#) was -13.8 in July and -19.0 in August, remaining negative for the 15th consecutive month. As at 14 September, the 30-day mean SOI value was -16.3 and the 90-day mean value was -18.1.
- The monthly SST anomaly in the Niño 3.4 region of the central equatorial Pacific Ocean warmed from +1.60 °C in July to +2.06 °C in August. As at 12 September the weekly SST anomaly was +2.3 °C, remaining well-above El Niño thresholds.



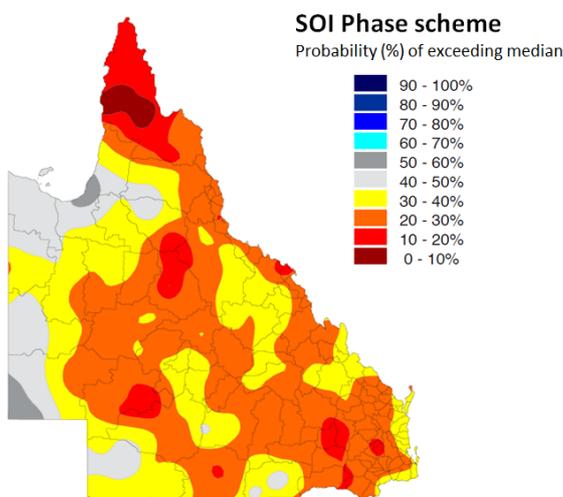
Map is Relative to Historical Records from 1890
www.LongPaddock.qld.gov.au

Seasonal rainfall outlook (Sep-Nov 2015)

Based on previous years when the SOI has been in a 'Consistently Negative' phase at the end of August, the probability of rainfall being above median for the next three-month period (September to November) is less than 40 per cent for most of Queensland (see map below). While the probability of exceeding median rainfall is close to 50 per cent for some western parts of the state, median September to November rainfall there is typically low .

Probability of Exceeding Median Rainfall

for September to November
based on a Consistently Negative SOI phase
during July / August



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.

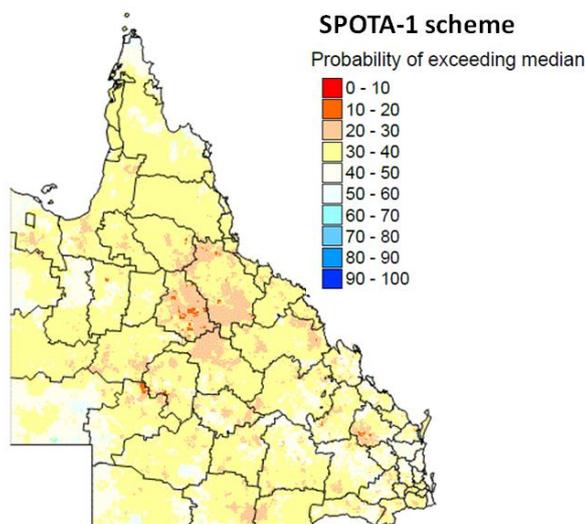
As at 1 September 2015, DSITI's updated long-lead outlook for the coming summer (November to March 2015/16) continues to indicate a lower than normal probability of exceeding median rainfall for most of Queensland, due to much warmer than average SSTs in the central equatorial Pacific. DSITI's long-lead outlook for summer rainfall will be reassessed in October, 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.
- The current El Niño pattern is likely persist over spring and summer (November to March). This means that there is a high probability of below median rainfall for most of Queensland until the end of summer.
- The Bureau of Meteorology, 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 September 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.