

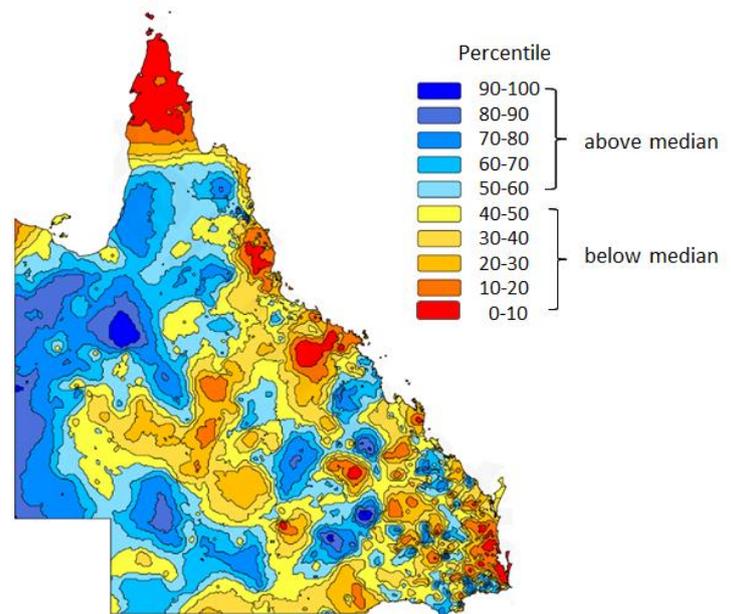
# Monthly Climate Statement — April 2016

## Key messages

- Rainfall for summer (November to March 2015/16) was above median in many north-western and far-western parts of Queensland. Patches of above-median summer rainfall occurred elsewhere.
- The probability of exceeding median summer (November to March 2016/17) rainfall is currently slightly higher than normal for most of Queensland. This outlook is based on DSITI's analysis of the March extra-tropical Pacific Ocean sea surface temperature pattern.
- This long-lead outlook does not yet factor in central equatorial Pacific Ocean SST anomalies which will define the state of the El Niño-Southern Oscillation phenomenon in coming months.

- [Eighty-six per cent of Queensland has been drought declared since 1 November](#) under state government processes.
- Summer (November to March 2015/16) rainfall was above-median in many north-western and far-western parts of Queensland. Elsewhere, areas of above-median summer rainfall tended to be patchy (see rainfall percentile map below).

## Rainfall Relative to Historical Records November 2015 to March 2016



## Findings as at 15 April 2016

The Department of Science, Information Technology and Innovation's (DSITI's) seasonal outlooks for the Queensland summer are based on the state of the El Niño–Southern Oscillation (ENSO) phenomenon prior to summer, 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). **The Science Division of DSITI considers that, for most of Queensland, the probability of exceeding median rainfall for summer (November to March 2016/17) is currently slightly higher than normal.** This view is based on an analysis of the March extra-tropical Pacific Ocean sea surface temperature (SST) pattern.

Currently:

- As at 13 April, the 30-day average [SOI](#) value remains negative (-8.6). The monthly value of the SOI was -6.3 in March, compared to -19.1 in February and -21.8 in January. The three-month (January to March) average was -15.7.
- The monthly SST anomaly in the Niño 3.4 region of the equatorial Pacific Ocean was +1.7 °C in March, compared to +2.4 °C in February and +2.6 °C in January. As at 9 April, the weekly Niño 3.4 region SST anomaly was +1.3 °C.
- The Bureau of Meteorology (ENSO Wrap Up, 12 April), notes that the current El Niño (which remains at weak to moderate levels) is likely to have ended by mid-2016.
- Only a few (less than 10 per cent) [international global climate models](#) indicate continued El Niño conditions beyond mid-2016.
- ENSO development is least predictable at this time of year and this period known as the 'autumn predictability gap'.

**Great state. Great opportunity.**

## The El Niño - Southern Oscillation (ENSO)

At this time of year (known as the 'autumn predictability gap'), the ENSO pattern tends to change very rapidly. Although the change in the ENSO pattern over autumn may provide a guide as to the likely development of El Niño or La Niña events, it is not until late autumn (May) that the prevailing ENSO pattern (as measured by indices such as the SOI or central equatorial Pacific Ocean SST anomalies) begins to provide a useful basis for seasonal forecasting (i.e. for providing rainfall outlooks for winter, spring or summer). However, it is useful to monitor the change in ENSO indices over this time of year as a guide as to whether an El Niño or La Niña pattern may develop. Global climate models also provide a more formal means of assessing this likelihood.

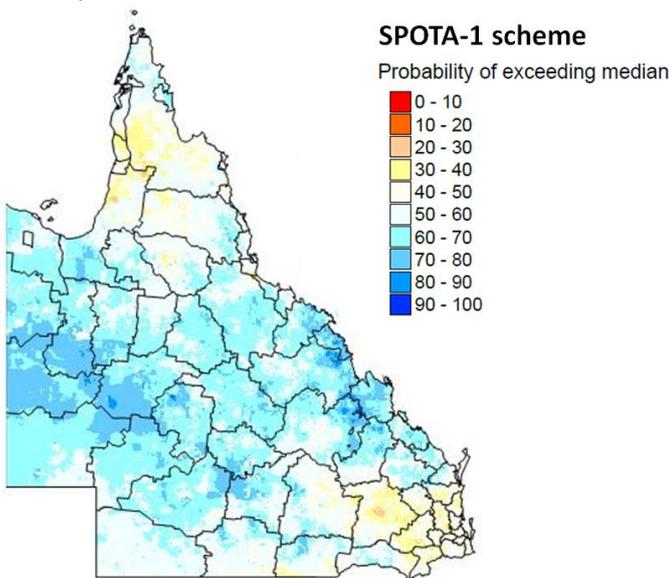
## Summer rainfall outlook (Nov-Mar 2016/17)

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 April 2016, DSITI's initial long-lead outlook for summer (November to March 2016/17) indicates a slightly higher than normal probability of exceeding median rainfall for most of Queensland (see map below). This outlook indicates that warmer than normal extra-tropical SSTs currently east of Australia may have a favourable influence on Queensland summer rainfall.

### Probability of Exceeding Median Summer Rainfall

November 2016 – March 2017  
based on the SPOTA-1 Index  
as at April 1, 2016



In summary, it should be noted that:

- The current long-lead summer rainfall outlook is based solely on extra-tropical Pacific Ocean SST anomalies.
- While the current El Niño is likely to have ended by mid-2016, outlooks for ENSO development are least predictable at this time of year – a period known as the ‘autumn predictability gap’.
- Users should also be aware that seasonal outlooks are probabilistic, rather than deterministic, in nature. For example, if an outlook is described as having a 50 to 70 per cent probability of below median rainfall, there is also a 30 to 50 per cent probability of above median rainfall. Although outcomes with a high probability may be more likely, it does not mean that less probable events will not occur in any given year.

### Why was SPOTA-1 developed?

The SPOTA-1 system was developed specifically with Queensland pastoralists in mind. At this time of year, when ENSO indices are least reliable, critical livestock and pasture management decisions are made leading into the winter ‘dry’ season. An indication of rainfall probabilities for the coming summer ‘wet’ season (November to March) would therefore have greatest utility if available from April onward. SPOTA-1 meets this need in Queensland’s pastoral industry for long-lead outlooks of summer rainfall. However, because the summer season (November to March) is generally when Queensland receives most of its annual rainfall, SPOTA-1 long-lead outlooks have also proven useful to other sectors (e.g. water management and summer cropping).

Updates to the summer rainfall outlook will be reported in future Monthly Climate Statements.

### 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](http://www.longpaddock.qld.gov.au/seasonalclimateoutlook) or contact Stuart Burgess at: [stuart.burgess@dsiti.qld.gov.au](mailto:stuart.burgess@dsiti.qld.gov.au)