

Monthly Climate Statement — June 2016

Key messages

- The Southern Oscillation Index and equatorial Pacific Ocean sea surface temperatures no longer exceed El Niño thresholds.
- Eighty-four per cent of Queensland is drought declared.
- The probability of exceeding median summer (November to March 2016/17) rainfall is currently higher than normal for most of Queensland.
- Updates to this outlook will factor in the evolving Pacific Ocean sea surface temperature pattern over coming months.

Current conditions in detail

- Key ENSO indicators, such as the SOI and equatorial Pacific Ocean SSTs no longer exceed El Niño thresholds.
- The monthly value of the [Southern Oscillation Index \(SOI\)](#) rose sharply from -19.1 for April to +2.8 for May. The three-month average SOI value for March to May was -7.5. As at 14 June, the 30-day average SOI value was +1.0.
- The monthly SST anomaly in the Niño 3.4 region of the equatorial Pacific Ocean cooled from +1.1°C for March to +0.4°C for April. As at 11 June, the weekly Niño 3.4 region SST anomaly was +0.1°C.
- Fewer than 10 per cent of [international climate models](#) indicate a return to El Niño conditions in 2016.
- As at 1 May, [eighty-four per cent of Queensland was drought declared](#) under state government processes (see map below).

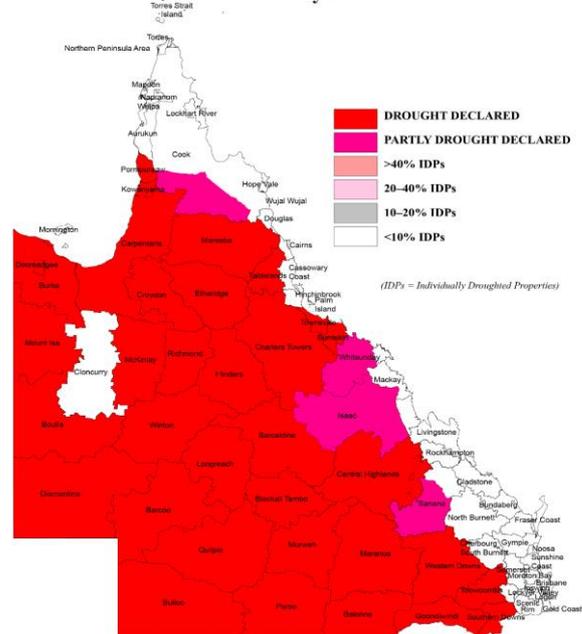
Summary as at 15 June 2016

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 summer (November to March 2016/17) rainfall is currently higher than normal.** This view is based on an analysis of recent tropical and extra-tropical Pacific Ocean SSTs.

'El Niño', 'La Niña' and 'ENSO-neutral' are phases of the ENSO climate pattern. Key ENSO indicators, including the Southern Oscillation Index (SOI) and equatorial Pacific Ocean SSTs, no longer exceed El Niño thresholds. Fewer than 10 per cent of international climate models indicate a return to El Niño conditions this year.

SOI values and equatorial Pacific Ocean SSTs are currently near average for this time of year. DSITI monitors these key ENSO indicators closely over winter and spring, a period when El Niño and La Niña events tend to form. Rather than speculate on the development of El Niño or La Niña events, DSITI bases the seasonal outlook for summer on the evolving SST pattern over winter and spring and updates this outlook on a monthly basis leading up to summer. Likewise, DSITI bases the seasonal outlook for the next three months on the most recent SOI values (i.e. over the previous two months). The current outlooks are presented overleaf.

QUEENSLAND DROUGHT SITUATION as at 1st May 2016



Seasonal Outlooks

DSITI monitors key ENSO indicators, such as the SOI and Pacific Ocean SSTs, and on this basis provides seasonal outlooks in the form of rainfall probabilities for the next three months and for the coming summer (November to March).

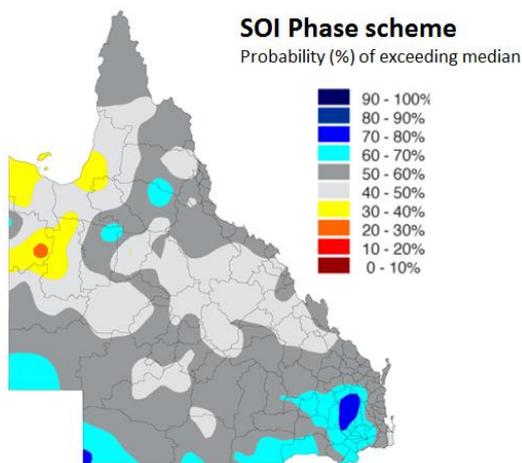
It should be noted that seasonal outlooks are probabilistic, rather than deterministic, in nature. For example, if an outlook is described as having a 50 to 70 per cent probability of below median rainfall, there is also a 30 to 50 per cent probability of above median rainfall. Although outcomes with a high probability may be more likely, it does not mean that less probable events will not occur in any given year.

Outlook for the next three months (Jun-Aug 2016)

An analysis of rainfall probabilities as at 1 June, based on the current 'Rapidly Rising' phase of the SOI, indicates, for most of Queensland, a 40 to 60 per cent probability of exceeding median rainfall over winter (June to August, see map below), with higher probabilities in southern border regions.

Probability of Exceeding Median Rainfall

for June to August
based on a Rapidly Rising SOI phase
during April / May



Outlook for summer (Nov-Mar 2016/17)

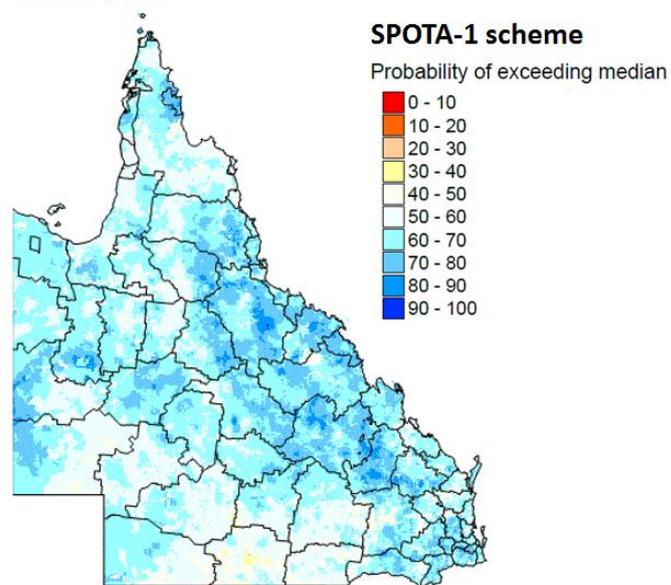
DSITI scientists have shown that tropical and extra-tropical SST anomalies, when measured in specific regions of the Pacific Ocean, provide a useful basis for long-lead forecasting of summer (November to March) rainfall in Queensland. The accuracy of this long-lead outlook increases as the evolving ENSO-related 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 June 2016, DSITI's long-lead outlook for summer (November to March 2016/17) indicates a higher than normal probability of exceeding median rainfall for most of Queensland (see map below).

As noted, the current long-lead summer rainfall outlook is based on tropical and extra-tropical Pacific Ocean SST anomalies. This outlook will be revised each month from July to November, taking into account the evolving ENSO pattern in the central equatorial Pacific.

Probability of Exceeding Median Summer Rainfall

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



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 (click the [SPOTA-1 link](#) 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