

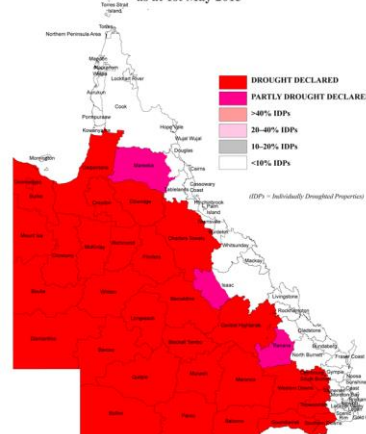
Monthly Climate Statement — May 2015

Key messages

- Rainfall was extremely low from February to April across extensive areas of northern and western Queensland.
- More than 80 per cent of Queensland is now drought declared under state government processes.
- For most of Queensland the current 'Consistently Negative' phase of the Southern Oscillation Index (SOI) favours an equal likelihood of rainfall being either above or below median over the next three-month period (May to July).
- Global climate models indicate a high probability of the current El Niño event developing further over winter and extending into spring, increasing the risk of below median winter and spring rainfall.
- The current warm sea surface temperatures off eastern Australia, if they persist, would likely dampen El Niño impacts on Queensland next summer. Any changes in climate indicators such as sea surface temperatures need to be monitored closely over coming months.

[More than 80 per cent of Queensland is now drought declared](#) under state government processes (see map below). This is an increase since 1 April 2015 (75 per cent).

QUEENSLAND DROUGHT SITUATION
as at 1st May 2015



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 (March to May) may provide a guide as to the likely development of El Niño or La Niña events, it is not until June that the prevailing ENSO pattern (as measured by indices such as the SOI or central equatorial Pacific Ocean SST anomalies) begins to provide a more 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, for example, the current El Niño pattern may further develop. Global climate models also provide a more formal means of assessing this likelihood.

Currently:

- The monthly value of the [SOI](#) rose from -10.7 in March to -3.1 in April, remaining negative for the 11th consecutive month. As at 13 May, the 30-day mean value was -11.2.
- The monthly SST anomaly in the Niño 3.4 region of the central equatorial Pacific Ocean increased from +0.58 °C in March to +0.78 °C in April. As at 9 May the latest weekly SST anomaly was +1.0°C (exceeding El Niño thresholds).
- Although definitions of 'El Niño' vary, since November last year, warm SST anomalies in the central equatorial Pacific have met NOAA's definition based on their Oceanic Niño Index (five consecutive overlapping three-month periods at or above +0.5 °C).

Findings as at 15 May 2015

The Science Division of the Department of Science, Information Technology and Innovation (DSITI) considers that, **for most of Queensland, there is currently an equal likelihood of rainfall being above or below median over the next three-month period (May to July). This view is based on an analysis of the historical relationship between Queensland rainfall and the Southern Oscillation Index (SOI) which, at this time of year, is quite weak.** DSITI's analysis of the March sea surface temperature (SST) pattern in the South-West Pacific indicates that the probability of exceeding median summer (November to March 2015/16) rainfall is currently slightly higher than normal for most of Queensland.

DSITI'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 SST pattern in the Pacific Ocean).

Rainfall for the last three-month period (February to April) was extremely low (less than the 10th percentile) across extensive areas of northern and western Queensland. However, parts of the state (mainly in the south east) recorded above median rainfall.

Great state. Great opportunity.

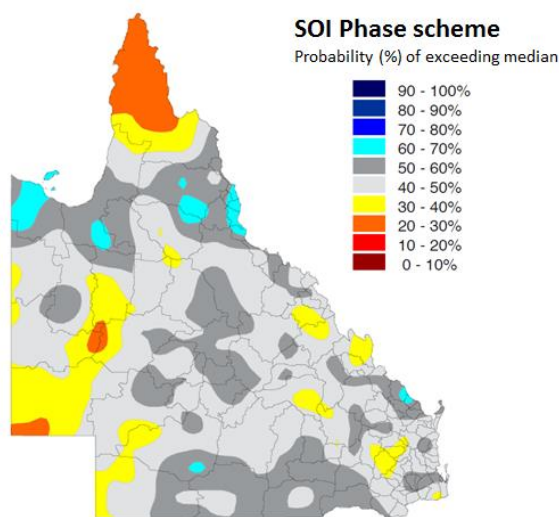
- Furthermore, most [international global climate models](#) currently indicate that central equatorial [Pacific Ocean SSTs](#) should continue to warm in the coming months, with at least a 70 per cent probability of El Niño conditions over winter and possibly into spring.
- The probability of the El Niño event intensifying over winter, and with it the threat of a dry winter and spring 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.
- The BoM, in their [12 May Newsroom release](#) confirmed that the tropical Pacific has reached El Niño levels, adding that “while El Niño increases the risk of drought, it does not guarantee it; of the 26 El Niño events since 1900, 17 have resulted in widespread drought”.
- At this stage, DSITI considers that outlooks for ENSO development over the coming months (and likely climate impacts) will become clearer from June onwards.

Seasonal rainfall outlook (May-Jul 2015)

An analysis of rainfall probabilities as at 1 May, based on the SOI being in a ‘Consistently Negative’ phase, indicates for most of Queensland a 40 to 60 per cent probability of exceeding median rainfall over the next three-month period (May to July, see map below). This means that there is an equal likelihood of rainfall being either above or below median over the next three-month period (May to July).

Probability of Exceeding Median Rainfall

for May to July
based on a Consistently Negative SOI phase
during March / April



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 April 2015, DSITI's initial long-lead outlook for the coming summer (November to March 2015/16) indicated a slightly higher than normal probability of exceeding median rainfall for most of Queensland, due to warmer than average sea surface temperatures in the extra-tropical South-West Pacific (east of Australia). However, this outlook may change if the current El Niño event intensifies and the extra-tropical warmth in the South-West Pacific does not persist.

DSITI's long-lead outlook for summer rainfall will be reassessed in June, and then updated monthly until November, by factoring in the most recent ENSO conditions.

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).

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