

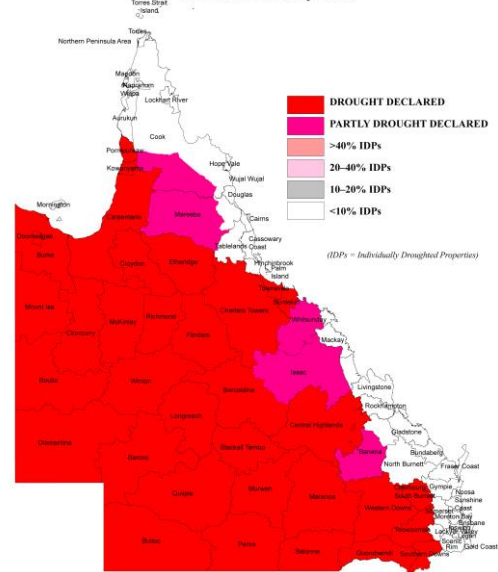
Monthly Climate Statement — March 2016

Key messages

- Eighty-six per cent of Queensland is currently drought declared.
- February rainfall was near average across much of Queensland, but well-below average to extremely low in many northern and some south-eastern areas.
- Leading into summer, there was an increased risk of below median summer (November to March) rainfall for most of Queensland and this outlook holds for the January to March period.
- An increased probability of below median rainfall does not rule out the possibility of localised high rainfall events or mean that below median rainfall will occur across all of the state.
- There remains a risk of one or more tropical cyclones making landfall in Queensland this summer.

- [Eighty-six per cent of Queensland has been drought declared since 1 November](#) under state government processes (see map below).

QUEENSLAND DROUGHT SITUATION as at 1st February 2016



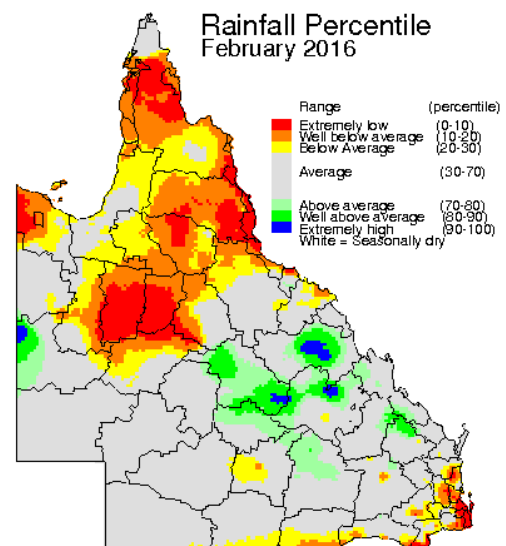
Findings as at 15 March 2016

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 there is an increased probability of below median rainfall for most of Queensland for January to March.**

Currently:

- As at 9 March, the 30-day average [SOI](#) value remains very low (-22.3). The monthly value of the SOI was -19.1 in February, compared to -21.8 in January and -10.1 in December. The three-month (December to February) average was -17.0.
- The monthly SST anomaly in the Niño 3.4 region of the equatorial Pacific Ocean was +2.4 °C in February, compared to +2.6 °C in January and +2.8 °C in December. As at 5 March, the weekly Niño 3.4 region SST anomaly was +1.9 °C.
- The Bureau of Meteorology (ENSO Wrap Up, 1 March), notes that the current El Niño is now at moderate levels, and is likely to end in the second quarter of 2016. This view is supported by most [international global climate models](#). However, outlooks for ENSO development are least reliable at this time of year – a period known as the 'autumn predictability gap'.

- February rainfall was near average across much of Queensland. However, a break in monsoonal activity meant that rainfall was well-below average to extremely low in many northern parts of the state (see rainfall percentile map below). February rainfall was also extremely low in some south-eastern areas.



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

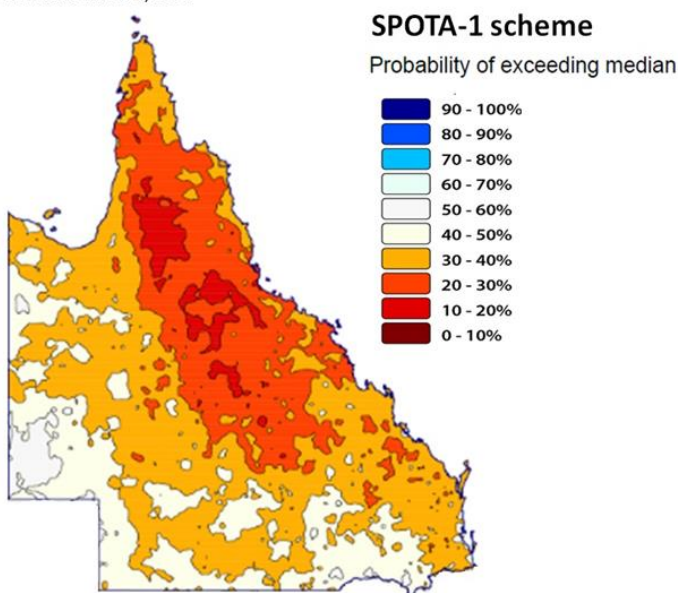
Summer rainfall outlook (Nov-Mar 2015/16)

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 November 2015, DSITI's final outlook for summer (November to March 2015/16) indicated a lower than normal probability of exceeding median rainfall for most of Queensland. Conversely, there was a low probability of drought-breaking rainfall, based on the evolving sea surface temperature pattern across the Pacific. Produced on the same basis, the rainfall outlook for January to March 2016 indicates an increased risk of below median rainfall for most of Queensland (see map below).

Probability of Exceeding Median Summer Rainfall

January to March 2016
based on the SPOTA-1 Index
as at November 1, 2015



In summary, it should be noted that:

- Although most international models are suggesting a higher than normal probability of ENSO – Neutral conditions developing over winter, outlooks for ENSO development are least reliable at this time of year – a period known as the ‘autumn predictability gap’.
- An increased risk of below median (January to March) rainfall for most of Queensland means that there is also a low probability of widespread drought-breaking rainfall. However, this does not rule out the possibility of localised high rainfall events or mean that below median rainfall will occur across all of the state (see [Australia's Variable Rainfall poster](#), or the department's [archive of historical rainfall maps](#)).
- 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.
- The Bureau of Meteorology, which provides advice on the tropical cyclone season (November to April), has noted, in regard to eastern Australia, that El Niño shifts the odds toward both fewer cyclones and a later first cyclone crossing of the season. Although the probability of tropical cyclones is lower than normal, this does not rule out the possibility of a tropical cyclone making landfall this summer.
- On average, two tropical cyclones make landfall in Queensland during the tropical cyclone season.

The ‘autumn predictability gap’

El Niño and La Niña events tend to form in winter or spring, persist through summer and break down in autumn. Seasonal outlooks are based on the persistence of these events and their associated rainfall and climate patterns. Seasonal outlooks are therefore least reliable leading into autumn when El Niño or La Niña events tend to break down. This period is known as the ‘autumn predictability gap’.

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