

Monthly Climate Statement – December 2018

Key messages

- Although the El Niño-Southern Oscillation is currently in an 'ENSO-neutral' state, the potential remains for El Niño conditions to develop over summer.
- Based on an objective analysis of the evolving Pacific Ocean sea-surface temperature pattern, the Science Division of DES considers that the probability of above-median rainfall for summer (November to March) is near-normal for most of Queensland.
- Furthermore, DES considers that the probability of 'near-average' summer rainfall is higher than normal for most of Queensland, whereas the probability of either a 'wet' or 'dry' summer is lower than normal.

The Bureau of Meteorology's current outlook for December to February indicates a higher than normal probability of below-median rainfall for much of Queensland (<http://www.bom.gov.au/climate/outlooks/>). This analysis is based on the Bureau's ACCESS-S1 climate model.

DES independently calculates rainfall probabilities for the Queensland summer (November to March) based on an experimental system known as SPOTA-1 (Seasonal Pacific Ocean Temperature Analysis - version 1). SPOTA-1 provides an objective comparison of historical summer rainfall with Pacific Ocean SST anomalies from March through to October each year. The final SPOTA-1 update for 2018 indicates, for most of Queensland, a higher than normal probability of 'near-average' (Decile 3 to 7) summer rainfall, and a lower than normal probability of either a 'wet' or 'dry' summer (> Decile 7 or < Decile 3 summer rainfall respectively). On the same basis, the probability of above-median summer rainfall is near-normal for most of Queensland.

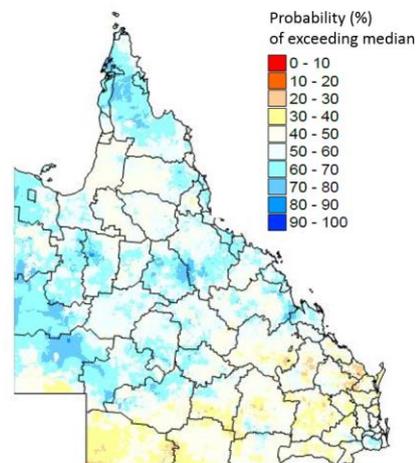
Summary as at 6 December 2018

The Department of Environment and Science (DES) monitors sea-surface temperature (SST) anomalies in key regions of the Pacific Ocean over autumn, winter and spring, and provides objective outlooks for summer (November to March) rainfall on this basis. **The Science Division of DES considers that the probability of 'near-average' summer (November to March) rainfall is higher than normal for most of Queensland, whereas the probability of either a 'wet' or 'dry' summer is lower than normal.**

Rainfall in Queensland over spring and summer is influenced by the El Niño-Southern Oscillation (ENSO) – a coupled atmospheric and oceanic phenomenon which is strongly persistent at seasonal timescales. Values of key ENSO indices, including the Southern Oscillation Index (SOI) and SSTs in the central equatorial Pacific Ocean, tend to 'lock-in' during spring and persist through summer (November to March).

The three-month (September to November) average value of the SST anomaly in the key Niño 3.4 region of the Pacific was warmer than normal (+0.7°C). However, the average value of the SOI for this period (minus 1.8) was near-average. National and international agencies agree that ENSO is currently in an 'ENSO-neutral' state. Although Pacific Ocean SSTs have reached El Niño thresholds, most atmospheric indicators remain at ENSO-neutral (neither El Niño nor La Niña) levels. However, the potential still remains for El Niño conditions to develop over summer.

Probability of exceeding median summer rainfall
for November 2018 – March 2019, as at 1 November 2018



It should be noted that seasonal outlooks are probabilistic, rather than deterministic, in nature. For example, if an outlook is described as having a 60 per cent probability of above median rainfall, there is also a 40 per cent probability of below median rainfall. In cases where outcomes with a high probability may be more likely, this does not mean that less probable events will not occur in any given year.

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