

Monthly Climate Statement – April 2019

Key messages

- The Science and Technology Division of DES considers that the probability of exceeding median summer (November to March) rainfall is currently higher than normal for much of Queensland.
- The current outlook for summer rainfall does not factor in the state of the El Niño-Southern Oscillation (ENSO), which tends to be in transition at this time of year.
- The outlook for summer rainfall will be updated from June to November, factoring in the evolving ENSO-related SST pattern during this period.
- The Bureau of Meteorology currently have an 'El Niño Alert' in place for the winter and spring period.

Summary as at 15 April 2019

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 and Technology Division of DES considers that the probability of exceeding median summer (November to March) rainfall is currently higher than normal for much of Queensland.**

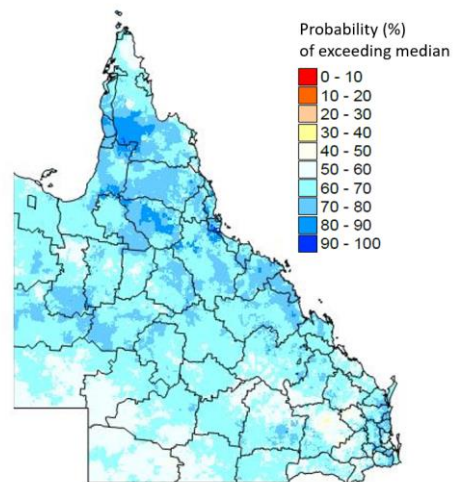
With respect to drivers of Queensland rainfall, the most closely monitored phenomenon is the El Niño-Southern Oscillation (ENSO). Climate scientists monitor several ENSO indices, including the atmospheric Southern Oscillation Index (SOI) and SST's in the central equatorial Pacific Ocean. Over the last three-month period (January to March), SSTs in the central equatorial Pacific Ocean have been warmer than average (+0.7°C) and the average value of the SOI has been negative (-7.8). Whilst these indices are approaching El Niño thresholds, the Bureau of Meteorology classify the current state of ENSO as being 'ENSO-neutral'. However, the Bureau of Meteorology currently has an 'El Niño Alert' in place for the winter and spring period.

The 'autumn predictability gap'

El Niño and La Niña events tend to form in the austral winter or spring, persist through summer and break down in autumn. Seasonal outlooks are possible due to the persistence of the ENSO signal, and associated rainfall and climate patterns, over spring and summer. The lack of persistence of the ENSO signal from autumn to winter leads to low predictability, known as the 'autumn predictability gap' or 'autumn predictability barrier'.

At this time of year, the ENSO phenomenon tends to be in a state of transition. As such, the relationship between ENSO indices and subsequent winter, spring and summer rainfall is very weak. However, SST anomalies in the extra-tropical Pacific tend to be more persistent and are strongly related to rainfall in Queensland over the following summer. The current DES outlook for summer rainfall in Queensland is based on an objective analysis of this extra-tropical SST pattern. On this basis, the Science and Technology Division of DES considers that the probability of exceeding median summer (November to March) rainfall is currently higher than normal for much of Queensland (see map).

Probability of exceeding median summer rainfall
for November 2019 – March 2020, as at 1 April 2019



SST anomalies in the central equatorial Pacific tend to 'lock in' over the winter, spring and summer seasons. This persistence provides a basis for seasonal forecasting. DES will provide an updated outlook for summer rainfall in June and this outlook will begin to factor in the evolving ENSO-related SST pattern.

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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