

Monthly Climate Statement – April 2021

Key messages

- The Science and Technology Division of DES considers that the probability of exceeding median rainfall for the coming summer (November to March) is slightly 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 classifies the state of the ocean and atmosphere as 'ENSO-neutral'.

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. Based on the March SST pattern in the Pacific Ocean, **the Science and Technology Division of DES considers that the probability of exceeding median summer (November to March) rainfall is currently slightly higher than normal for much of Queensland.**

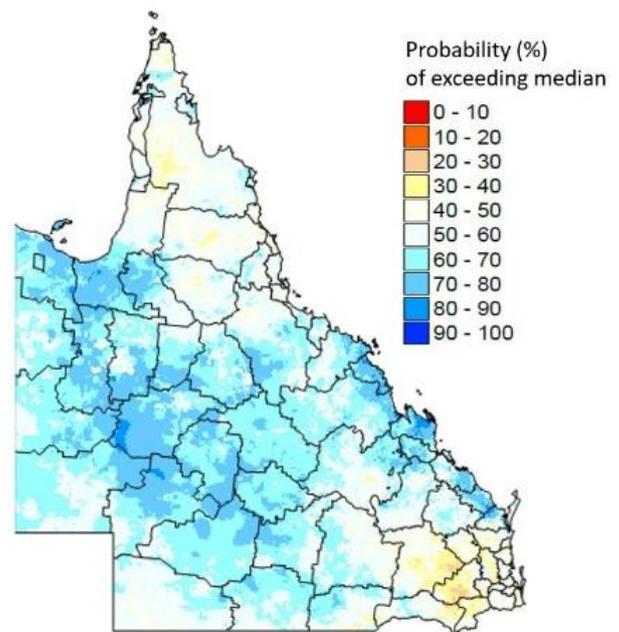
The most closely monitored driver of Queensland rainfall is the El Niño-Southern Oscillation (ENSO) phenomenon. Climate scientists monitor several ENSO indices, including the atmospheric Southern Oscillation Index (SOI) and SST anomalies in the central equatorial Pacific Ocean. Associated with the 2020-21 'La Niña' climate pattern, the three-month average SOI value was quite positive (+8.9 for January to March) and the three-month average SST anomaly in the Niño 3.4 region remained cooler than average (-0.8°C). However, the monthly Niño 3.4 SST anomaly weakened from -0.9°C in February to -0.5°C in March and the monthly value of the SOI fell from +11.3 in February to -0.5 in March. In late March, the Bureau of Meteorology classified conditions as 'ENSO-neutral'.

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 slightly higher than normal for much of Queensland (see map below).

Probability of exceeding median summer rainfall
for November 2021 – March 2022, as at 1 April 2021



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, at which time this outlook will begin to factor in the evolving ENSO-related SST pattern.

Readers are cautioned that seasonal outlooks are expressed in terms of probabilities. Even though an outcome has a high probability of occurring based on historical records, a less likely outcome may still occur in any given year. For more information, please contact Ken Day at:

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