Monthly Climate Statement – October 2018

Key messages

- Key oceanic and atmospheric indicators are approaching El Niño thresholds.
- The most recent rainfall outlook from the Bureau of Meteorology indicates a higher than normal probability of below-median rainfall across much of Queensland from November to January.
- For the entire summer (November to March), DES considers that the probability of exceeding median rainfall is currently near-normal for much of Queensland, tending to lower than normal in the south-east and higher than normal in the far-west.

Summary as at 15 October 2018

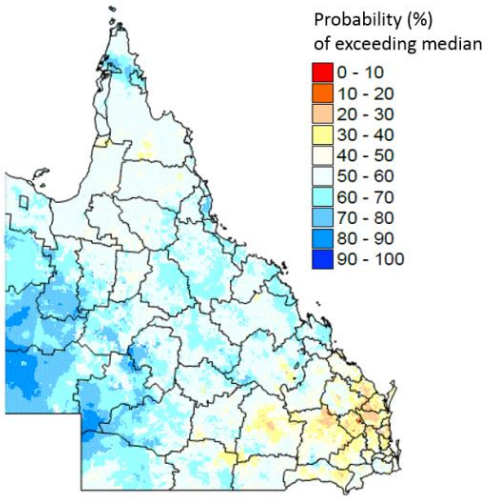
The Department of Environment and Science (DES) monitors sea-surface temperature (SST) anomalies in key regions of the Pacific Ocean over autumn, winter and spring, and provides objective outlooks for summer (November to March) rainfall on this basis. **The Science Division of DES considers that the probability of exceeding median summer (November to March) rainfall is currently near-normal for much of Queensland, tending to lower than normal in the south-east and higher than normal in the far-west.**

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' at this time of year and persist through summer. The September SST anomaly in the key Niño 3.4 region of the Pacific was warmer than normal (+0.3°C). The average value of the SOI from July to September was minus 4.5. These values are approaching El Niño thresholds.

Although El Niño thresholds are yet to be reached, the most recent rainfall outlook from the Bureau of Meteorology (http://www.bom.gov.au/climate/outlooks/) is indicative of El Niño conditions. This three-month outlook for November to January indicates a higher than normal probability of below-median rainfall across much of Queensland. However, for the entire summer (November to March), DES considers that the probability of exceeding median summer rainfall is currently near-normal for much of Queensland, tending to lower than normal in the south-east and higher than normal in the far-west (see map opposite).

This analysis takes into account not only SST anomalies in the central equatorial Pacific, but also SST anomalies in the south-western Pacific. SST anomalies in the south-western Pacific are currently much warmer than average (+0.9°C in September) which, in isolation, is historically favourable for summer rainfall as a whole. However, in combination with unfavourable warm SST anomalies in the central equatorial Pacific, the overall SST pattern results in the 'near-normal' rainfall outlook below.

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



DES will update the above outlook for summer rainfall in November, based on any changes in the Pacific Ocean SST pattern. Should El Niño conditions emerge, and warm SST anomalies in the central equatorial Pacific approach the same warm levels as those in the south-western Pacific, the probabilities of exceeding median summer rainfall, which are currently favourable for much of Queensland, will decrease.

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.

The DES outlook for summer rainfall is based on an experimental system called SPOTA-1 (Seasonal Pacific Ocean Temperature Analysis version 1). For more information please contact Ken Day at: ken.a.day@des.qld.gov.au.