

Monthly Climate Statement – September 2018

Key messages

- The World Meteorological Organisation has, this month, stated that there is a high (70%) probability of an El Niño event developing before the end of the year.
- However, Pacific Ocean SST anomalies currently indicate, for most of Queensland, a slightly higher than normal probability of exceeding median rainfall over the coming summer.
- DES will continue to monitor sea surface temperatures in the Pacific Ocean over coming months, and update outlooks for summer rainfall on this basis.

Summary as at 14 September 2018

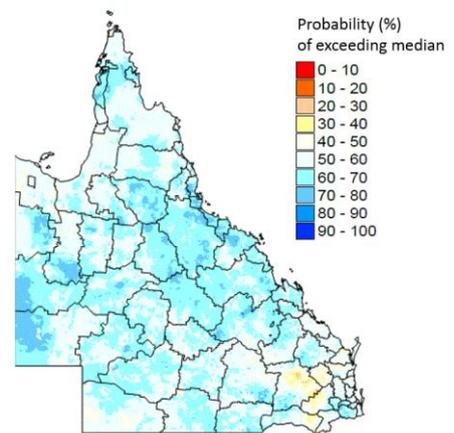
The Department of Environment and Science (DES) monitors sea-surface temperature (SST) anomalies in key regions of the Pacific Ocean over autumn, winter and spring, and provides objective outlooks for summer (November to March) rainfall on this basis. **The Science Division of DES considers that the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

At this time of year, the relationship between the El Niño-Southern Oscillation (ENSO) and rainfall for the season ahead tends to strengthen. This is also the time of year when ENSO indices tend to 'lock-in' for the coming summer. Key ENSO indices include the atmospheric Southern Oscillation Index (SOI) and SST anomalies in the central equatorial Pacific. The average value of the SOI over the three months from June to August was -3.7. SST anomalies in the Niño 3.4 region of the central equatorial Pacific Ocean warmed slightly over this period (from +0.2°C in June to +0.3°C in August). These values, for both indices, are within the ENSO-neutral range.

The Bureau of Meteorology has maintained an 'El Niño Watch' since June and the World Meteorological Organisation has now stated that there is a high (70%) probability of an El Niño event developing before the end of the year. Whilst national and international agencies focus on changes in SST anomalies in the central equatorial Pacific, DES also monitors SST anomalies in the south-western Pacific, which are an equally important indicator of Queensland summer rainfall. On this basis, DES currently maintains a positive outlook for summer

rainfall as noted. The map below, which is based on historical relationships between Pacific Ocean SST anomalies and rainfall, currently indicates, for most of Queensland, at least a 50% probability of summer (November to March) rainfall exceeding the long-term median. This outlook 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 (+1.0°C in August) and, historically, such conditions have tended to be favourable for rainfall in Queensland over the following summer.

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



DES will continue to update the above outlook for summer rainfall based on the evolving SST pattern in the Pacific Ocean over coming months. 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 currently favourable outlook for summer rainfall will moderate.

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 Stuart Burgess at: stuart.burgess@des.qld.gov.au.