Monthly Climate Statement — November 2015

Key messages

- Monthly values of the Southern Oscillation Index have been strongly negative for each of the last three months (from August to October).
- Weekly sea surface temperatures in the central equatorial Pacific have equalled those of the strong 1997-98 El Niño.
- For most of Queensland, there is an increased probability of below median summer (November to March) rainfall.
- Although there is a low probability of widespread drought-breaking rainfall, this does not rule out the possibility of localised high rainfall events or mean that below-median rainfall will occur throughout all of the state.

Findings as at 15 November 2015

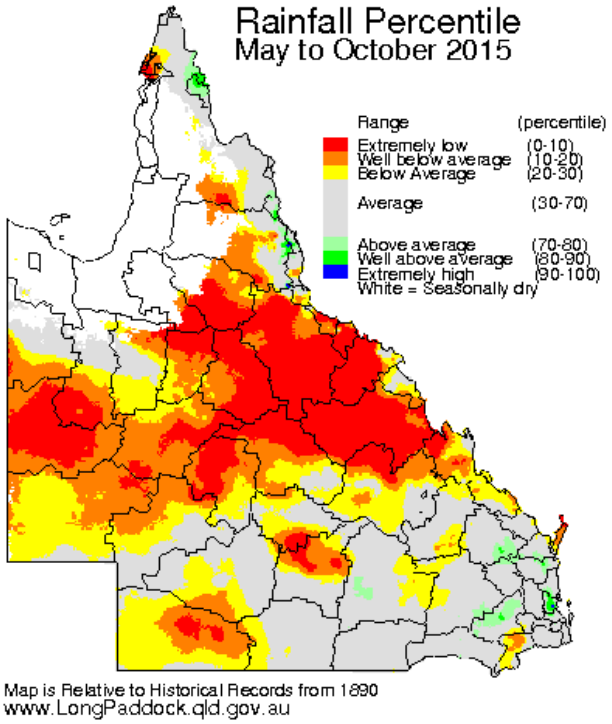
The Science Division of the Department of Science, Information Technology and Innovation (DSITI) considers that, **for most of Queensland, there is an increased probability of below median summer (November to March 2015/16) rainfall.**

DSITI's seasonal outlooks for Queensland are based on the current and projected state of the El Niño–Southern Oscillation (ENSO) phenomenon and on factors which alter the impact of ENSO on Queensland rainfall (i.e. the more slowly changing extra-tropical sea surface temperature (SST) pattern in the Pacific Ocean).

At this time of year, the prevailing ENSO pattern, as measured by indices such as the Southern Oscillation Index (SOI) or central equatorial Pacific Ocean SST anomalies, offers a useful basis for providing seasonal outlooks for summer.

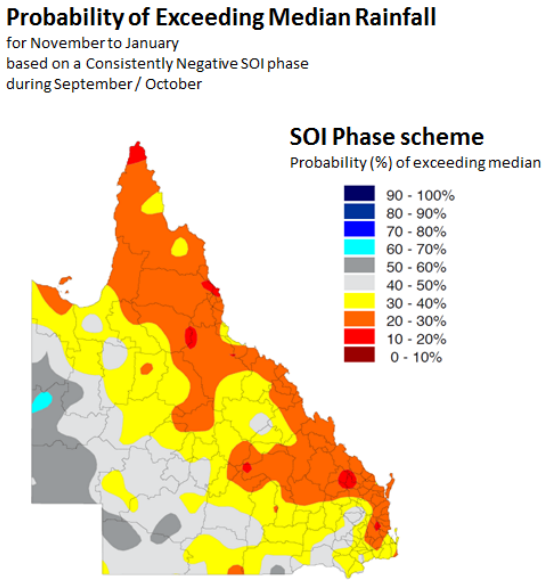
Currently:

- Monthly values of the SOI have been strongly negative for each of the last three months (August -19.0, September -16.7, October -21.3), averaging -19.0 for the three-month period. As at 10 November, the 30-day mean SOI value was -14.0 and the 90-day mean value was -17.4.
- Likewise, monthly SST anomalies in the Niño 3.4 region of the central equatorial Pacific Ocean have been very warm (August +2.1 ºC, September +2.3 ºC, October +2.5 ºC), averaging +2.3 ºC for the three-month period. As at 7 November, the weekly SST anomaly in the Niño 3.4 region was +2.8 ºC, equalling that recorded during the strong El Niño of 1997/98.
- Most international global climate models indicate that the current warming observed in the central equatorial Pacific Ocean SSTs should peak over summer.
- Associated with the current El Niño pattern, a strong SST gradient currently exists in the Pacific Ocean between eastern Australia and the central equatorial Pacific region. An index of this SST gradient (which is related to ENSO and Queensland summer rainfall), is incorporated in DSITI's summer rainfall outlook (opposite page).
- Rainfall over the last six-month period (May to October) has been extremely low (less than the 10th percentile) across most of central, and parts of western, Queensland. However, for the same period, close to average rainfall has occurred in southern and southern-eastern parts of the state (see map below).
- Currently, 80 per cent of Queensland remains drought declared under state government processes. The high probability of the current El Niño event continuing further over summer poses a risk of current drought conditions becoming more protracted. This risk should be factored into decision making and allocation of resources. In this context, DSITI's outlook for summer rainfall (opposite page) should be taken into consideration.



Seasonal rainfall outlook (Nov-Jan 2015/16)

Based on previous years when the SOI has been in a 'Consistently Negative' phase at the end of October, the probability of rainfall being above median for the next three-month period (November to January) is less than 30 per cent for most northern and eastern parts of Queensland (see map below). However, for most western and some southern parts of the state the probability of above median November to January rainfall is marginally higher (30 to 60 per cent).



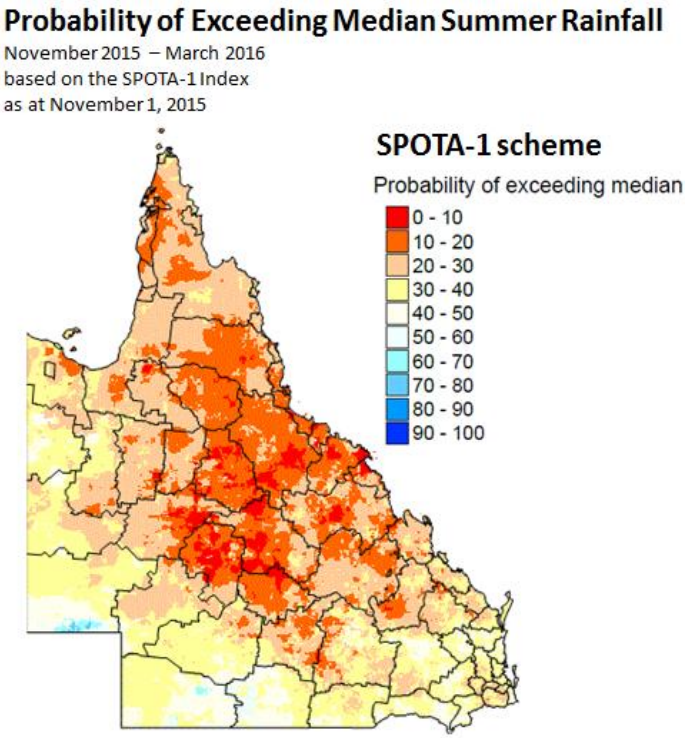
Summer rainfall outlook (Nov-Mar 2015/16)

DSITI scientists have shown that extra-tropical SST anomalies, when measured in specific regions of the Pacific Ocean in March each year, provide a useful basis for long-lead forecasting of summer (November to March) rainfall in Queensland. The accuracy of this outlook increases as the evolving ENSO-related SST pattern is also taken into account from May through to October. This understanding has been incorporated in an experimental system known as SPOTA-1 (Seasonal Pacific Ocean Temperature Analysis version 1), which has been operationally evaluated by DSITI scientists for over a decade.

As at 1 November 2015, DSITI's final outlook for summer (November to March 2015/16) continues to indicate a lower than normal probability of exceeding median rainfall for most of Queensland, based on the evolving sea surface temperature pattern across the Pacific. The outlook for summer rainfall, which has been consistent since June this year, is closely related to the SST gradient across the South West Pacific Ocean measured in October, and is indicative of the current strong El Niño event.

It should be noted that:

- The current El Niño pattern is likely to persist over summer (November to March).
- An increased risk of below-median rainfall for Queensland means that there is also a low probability of widespread drought-breaking rainfall. However, this does not rule out the possibility of localised high rainfall events or mean that below-median rainfall will occur throughout all of the state.
- The Bureau of Meteorology provides advice on the tropical cyclone season (November to April). As at 12 October, the Bureau advises that, "While El Niño is typically associated with fewer cyclones and a later start to the season, there has never been a cyclone season without at least one tropical cyclone crossing the Australian coast" (see 12 October 2015-16 Newsroom release).



Why is SPOTA-1 labelled "experimental"?

The SPOTA-1 system is currently labelled "experimental" and will continue to be labelled as such until the details of the system, including its operational track record, are published in the international peer reviewed scientific literature. Until then, further details on the current outlook and access to previous outlooks (since 2001) are currently provided on a password protected area of the Long Paddock website (see the link above to request password access).

For more information, please visit: www.longpaddock.qld.gov.au/seasonalclimateoutlook
or contact Stuart Burgess at: stuart.burgess@dsiti.qld.gov.au