Monthly Climate Statement — March 2015

Key messages

- Rainfall for February was mostly near-average or below-average across Queensland, except for parts of Central and South East Queensland where totals were well-above average due to a trough of low pressure associated with tropical cyclone Marcia.
- For most of Queensland the current 'Rapidly Rising' phase of the Southern Oscillation Index indicates a near-normal probability of exceeding median rainfall over autumn (March to May). However, probabilities are higher for some northern areas.
- It should be noted that climate outlooks leading into autumn (a period known as the 'autumn predictability gap') have lowest reliability.

Findings for March 2015

The Science Division of the Department of Science, Information Technology and Innovation (DSITI) considers that, **for most of Queensland, there is a near-normal probability of exceeding median rainfall over autumn (March to May). However, probabilities are higher for some northern areas. This view is based on an analysis of the historical relationship between Queensland rainfall and the Southern Oscillation Index (SOI).**

DSITI's rainfall 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 climate outlooks (including outlooks for El Niño or La Niña development) are least reliable – a period known as the 'autumn predictability gap'.

The 'autumn predictability gap'

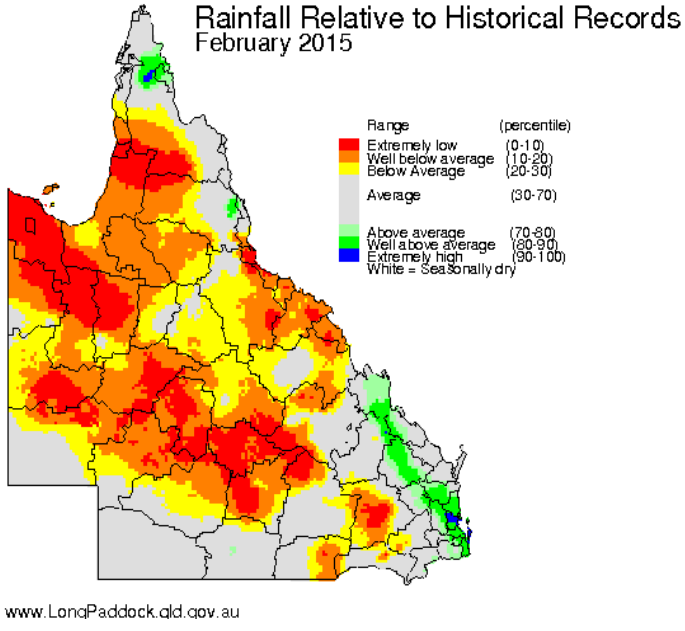
El Niño and La Niña events tend to form in winter or spring, persist through summer and break down in autumn. Seasonal outlooks are based on the persistence of these events and their associated rainfall and climate patterns. Seasonal outlooks are therefore least reliable leading into autumn when El Niño or La Niña events tend to break down. This period is known as the 'autumn predictability gap'.

Although definitions of 'El Niño' vary, DSITI's 'Australia's Variable Rainfall' poster stipulates a six-month period, ending in any month between November and March, having an average SOI value less than -6.0. Based on the Bureau of Meteorology's calculation of the SOI, the six-month average SOI values were -6.9, -7.6, -8.4 and -6.4 in November, December, January and February respectively, in each case meeting the above criterion for an El Niño event. Likewise, since November, warm sea-surface temperature anomalies in the central equatorial Pacific have met the World Meteorological Organisation's operational 'consensus' definition of El Niño (three-month anomalies at or above +0.5 ºC).

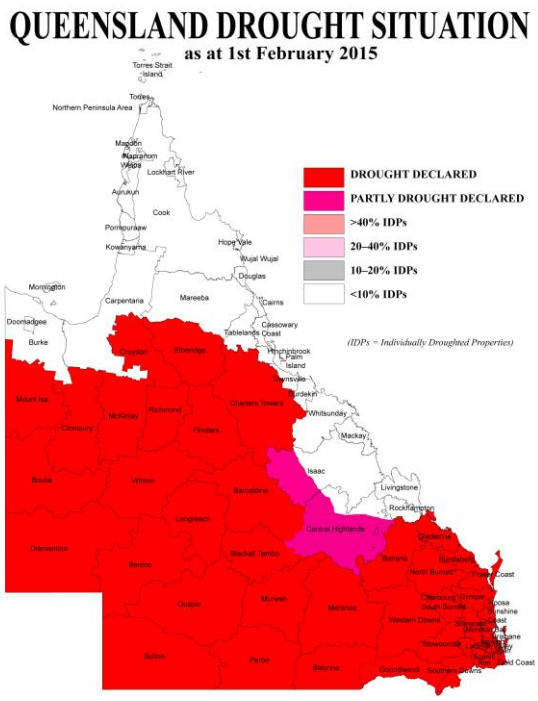
Currently:

- The monthly SST anomaly in the Niño 3.4 region of the central equatorial Pacific Ocean rose slightly from +0.5 ºC in January to +0.6 ºC in February. As at 7 March the latest weekly SST anomaly was +0.5 ºC.
- The monthly value of the SOI rose from -8.7 in January to -0.5 in February and, as at 9 March, the 30-day mean value was -0.4.

Rainfall for February (see map below) was near-average or below-average across much of Queensland. However, February rainfall totals were well-above average in parts of Central and South East Queensland due to a trough of low pressure associated with tropical cyclone Marcia.



As at 1 February, more than 75 per cent of Queensland remains drought declared under state government processes, including most inland regions and all of south-eastern Queensland (see map below).



Summer rainfall outlook (Nov-Mar 2014/15)

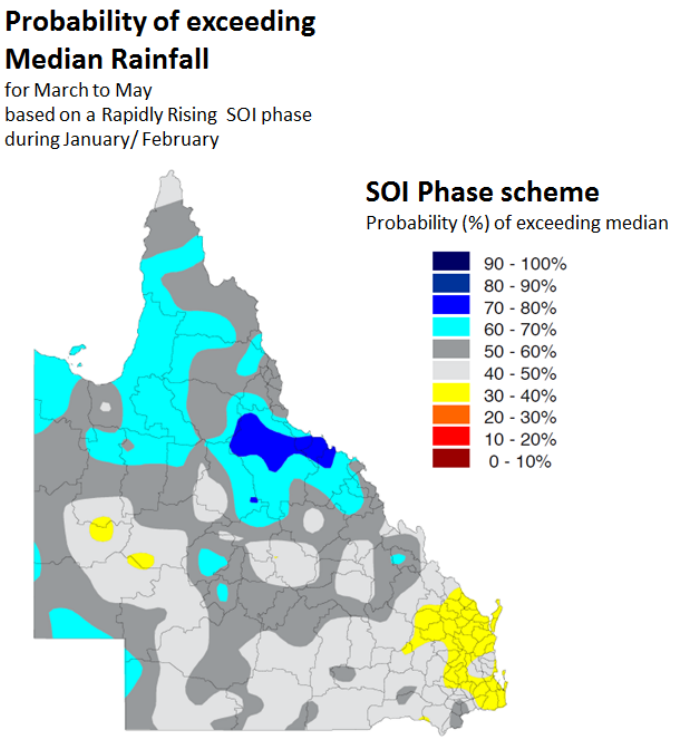
DSITI scientists have shown that extra-tropical SST anomalies, when measured in specific regions of the Pacific Ocean in March each year, provide a useful basis for long-lead forecasting of summer (November to March) rainfall in Queensland. The accuracy of this outlook increases as the evolving ENSO-related SST pattern is also taken into account from June through to November.

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, DSITI's final long-lead outlook for the whole of summer (November to March 2014/15) indicated a higher than normal probability of below-median to well below-median rainfall for most of Queensland and, conversely, a low probability of widespread drought-breaking rainfall. The outlook was strongly related to the extra-tropical SST pattern measured in March last year, which was indicative of a warm phase of the Inter-decadal Pacific Oscillation.

Seasonal rainfall outlook (Mar-May 2015)

An analysis of rainfall probabilities as at 1 March based on the SOI being in a 'Rapidly Rising' phase indicates, for most of Queensland, a near-normal probability of exceeding median rainfall over the next three-month period (Mar to May). However, probabilities are higher for some northern areas (see map below).



Furthermore, it should be noted that:

- The possibility remains of more tropical cyclones making landfall over Queensland during the remaining two months (March and April) of the cyclone season.

For more information, please visit: www.longpaddock.qld.gov.au/seasonalclimateoutlook
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