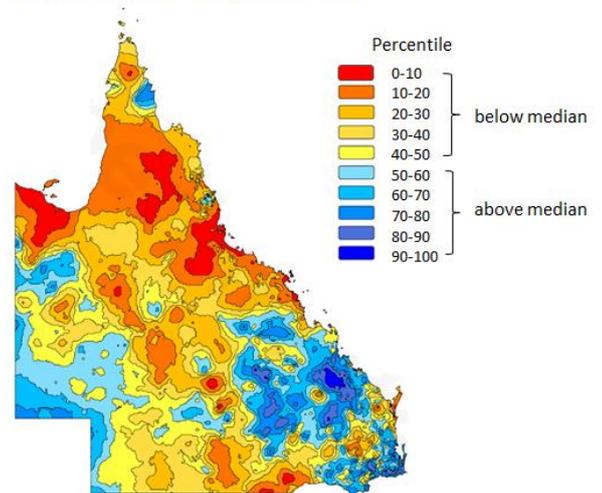


Monthly Climate Statement — April 2015

Key messages

- Rainfall for the summer period (November to March) was below median for much of Queensland, although parts of the state recorded well-above median summer rainfall.
- The probability of exceeding median summer (November to March 2015/16) rainfall is currently slightly higher than normal for most of Queensland, based on DSITI's analysis of the March extra-tropical Pacific Ocean sea surface temperature pattern.
- This long-lead outlook does not yet factor in central equatorial Pacific Ocean SST anomalies which will define the state of the El Niño-Southern Oscillation phenomenon in coming months.

Rainfall Relative to Historical Records
November 2014 to March 2015



Findings as at 15 April 2015

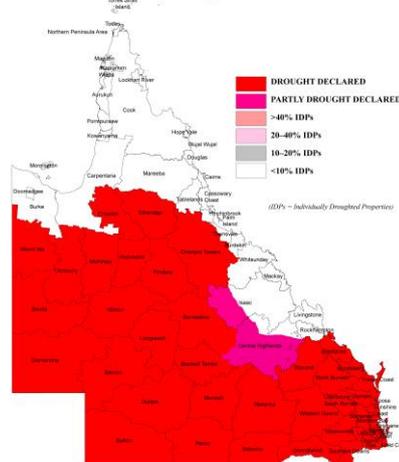
The Science Division of the Department of Science, Information Technology and Innovation (DSITI) considers that, **for most of Queensland, there is a lower than normal probability of exceeding median rainfall over the next three-month period (April to June). This view is based on an analysis of the historical relationship between Queensland rainfall and the Southern Oscillation Index (SOI) which, at this time of year, is quite weak. The probability of exceeding median summer (November to March 2015/16) rainfall is currently slightly higher than normal for most of Queensland, based on DSITI's analysis of the March extra-tropical Pacific Ocean sea surface temperature (SST) pattern.**

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 SST pattern in the Pacific Ocean).

Rainfall for the summer period (November to March) was below median for much of Queensland, although parts of the state recorded well-above median summer rainfall (see map, top-right).

Currently, 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, centre-right).

QUEENSLAND DROUGHT SITUATION
as at 1st April 2015



The El Niño - Southern Oscillation (ENSO)

At this time of year (known as the 'autumn predictability gap'), the ENSO pattern tends to change very rapidly. Although the change in the ENSO pattern over autumn may provide a guide as to the likely development of El Niño or La Niña events, it is not until late autumn (May) that the prevailing ENSO pattern (as measured by indices such as the SOI or central equatorial Pacific Ocean SST anomalies) begins to provide a useful basis for seasonal forecasting (i.e. for providing rainfall outlooks for winter, spring or summer). However, it is useful to monitor the change in ENSO indices over this time of year as a guide as to whether an El Niño or La Niña pattern may develop. Global climate models also provide a more formal means of assessing this likelihood.

Currently:

- The monthly value of the [SOI](#) fell sharply from -0.5 in February to -10.7 in March and, as at 13 April, the 30-day mean value was -8.4.
- The monthly SST anomaly in the Niño 3.4 region of the central equatorial Pacific Ocean rose slightly from +0.56 °C in February to +0.58 °C in March. As at 11 April the latest weekly SST anomaly was +0.7 °C.
- Although definitions of ‘El Niño’ vary, DSITI’s [‘Australia’s Variable Rainfall’ poster](#) stipulates that an El Niño event occurs if any six-month period, ending between November and March, has an average SOI value less than -6.0. This criterion for an El Niño has been met each month since November last year, based on the Bureau of Meteorology’s calculation of the SOI (six-month average SOI values being -6.9, -7.6, -8.4, -6.4 and -6.9 in November, December, January, February and March respectively). Also, since November, warm SST anomalies in the central equatorial Pacific have met the World Meteorological Organisation’s operational ‘consensus’ definition of El Niño (three-month anomaly at or above +0.5 °C) as well as NOAA’s definition based on their Oceanic Niño Index (five consecutive overlapping three-month periods at or above +0.5 °C).
- Most [international global climate models](#) currently indicate that central equatorial [Pacific Ocean SSTs](#) should continue to warm in the coming months, with a higher than normal probability of El Niño conditions over winter and possibly spring. At this stage, DSITI considers that it is too early to factor an El Niño into risk management.

Seasonal rainfall outlook (Apr-Jun 2015)

An analysis of rainfall probabilities as at 1 April based on the SOI being in a ‘Rapidly Falling’ phase indicates, for most of Queensland, a lower than normal probability of exceeding median rainfall over the next three-month period (April to June).

Summer rainfall outlook (Nov-Mar 2015/16)

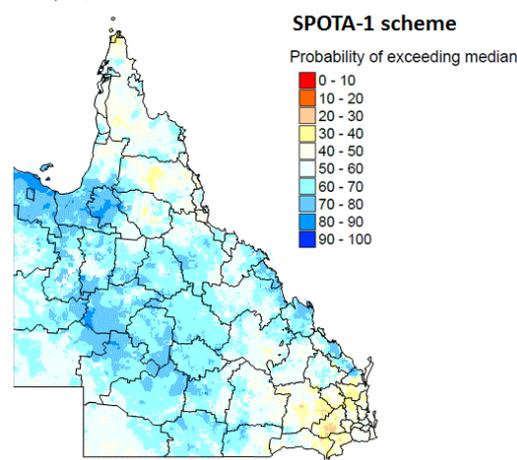
DSITI scientists have shown that extra-tropical SST anomalies, when measured in specific regions of the Pacific Ocean in March each year, provide a useful basis for long-lead forecasting of summer (November to March) rainfall in Queensland. The accuracy of this outlook increases as the evolving ENSO-related 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 April 2015, DSITI’s initial long-lead outlook for the coming summer (November to March 2015/16) indicates a slightly higher than normal probability of exceeding median rainfall for most of Queensland (see map below). This outlook indicates that the current warmer than normal extra-tropical SSTs east of Australia may have a favourable influence on Queensland summer rainfall.

Probability of Exceeding Median Summer Rainfall

November 2015 – March 2016
based on the SPOTA-1 Index
as at April 1, 2015



Why was SPOTA-1 developed?

The SPOTA-1 system was developed specifically with Queensland pastoralists in mind. At this time of year, when ENSO indices are least reliable, critical livestock and pasture management decisions are made leading into the winter ‘dry’ season. An indication of rainfall probabilities for the coming summer ‘wet’ season (November to March) would therefore have greatest utility if available from April onward. SPOTA-1 meets this need in Queensland’s pastoral industry for long-lead outlooks of summer rainfall. However, because the summer season (November to March) is generally when Queensland receives most of its annual rainfall, SPOTA-1 long-lead outlooks have also proven useful to other sectors (e.g. water management and summer

Updates to the summer rainfall outlook will be reported in future Monthly Climate Statements.

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@dsitia.qld.gov.au