

# QUEENSLAND CLIMATE ASSESSMENT REPORT

Current climate and seasonal outlook information to support sustainable grazing land, water, catchment and environmental management in Queensland.

## SEASONAL CONDITIONS SUMMARY

### FINDINGS AS AT 17 APRIL 2026

- A tropical low associated with an active monsoon trough during early March combined with passage of Tropical Cyclone Narelle across Cape York Peninsula on 20 March 2026, resulted in heavy rainfall across northern, central and parts of southeast Queensland.
- Twelve-month rainfall to the end of March 2026, averaged over the main grazing lands of Queensland, was 22 per cent above the long-term average (1890 to 2025).
- Rainfall over the last three-, six- and 12-month periods has been well-above average to extremely high over most parts except for southern Queensland.
- Oceanic sea surface temperatures (SST) in the tropical Pacific are now reflecting ENSO-neutral conditions while the SOI remains positive. All global models observed by BoM predict ENSO-neutral conditions during March-to-May period.
- As of 1 April 2026, the Science Division of DETSI considers that the probability of exceeding median summer (November 2026 to March 2027) rainfall for much of Queensland is currently in the below- to near-average range.
- The DETSI outlook for summer rainfall factored in the extra-tropical SST pattern in Pacific Ocean in March.

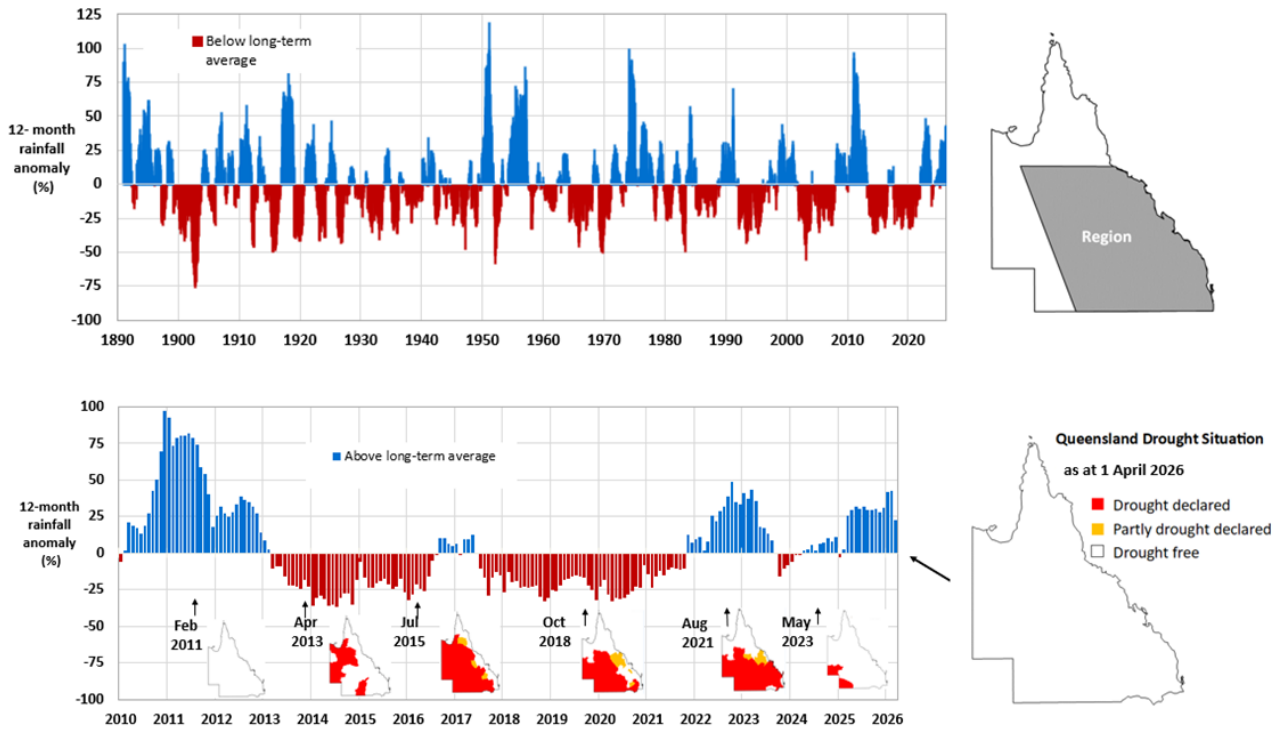
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## Historical Rainfall Variability and Drought Situation

Figure 1 shows 12-month rainfall averaged over the region of Queensland shown on the grey map (top right). This region carries over 80 per cent of the State’s cattle and sheep herd and covers only 60 per cent of Queensland’s land area. In each graph, rainfall is expressed as a percentage difference from the long-term (1890 to 2025) average. The upper graph shows the running 12-month rainfall anomaly since 1890, indicating the long-term history of wet and dry periods over this region. The lower graph focuses on changes since 2010 and shows, at selected times, those parts of Queensland drought-declared under State Government processes. Twelve-month rainfall to the end of March 2026, averaged over the main grazing lands of Queensland, was 22 per cent above the long-term average (1890 to 2025). Queensland currently has [no local government areas which are officially drought-declared](#).

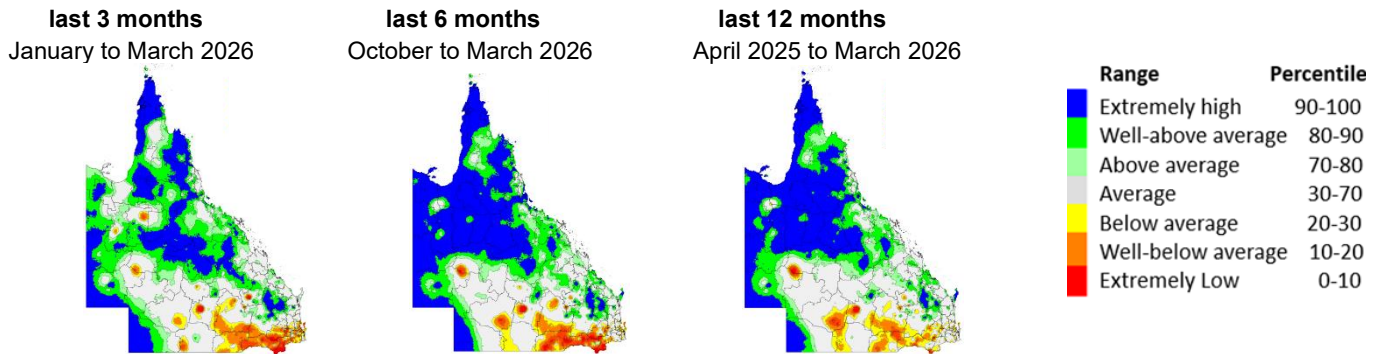


**Fig.1: Historical 12-month rainfall anomalies**

(Rainfall data source: <https://www.longpaddock.qld.gov.au/silo/>)

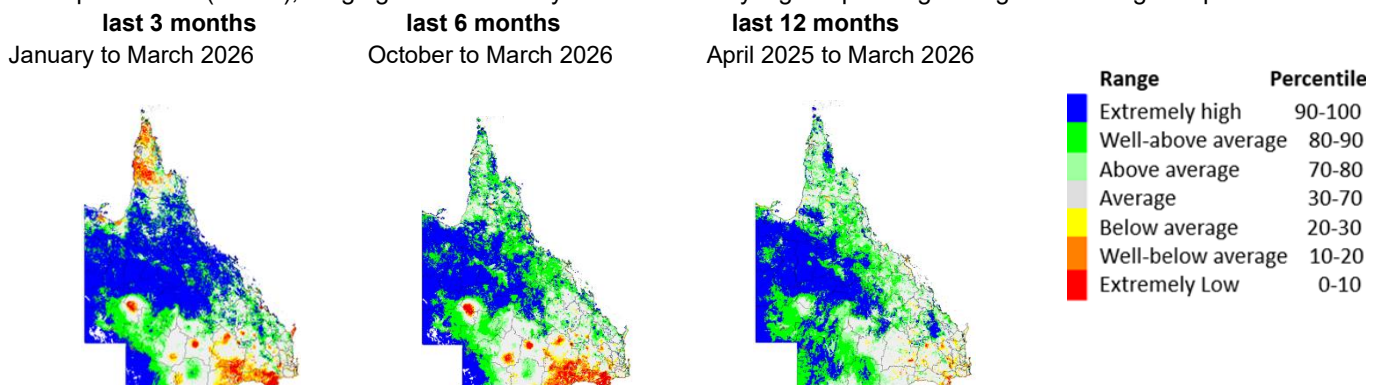
## Rainfall and Pasture Growth Update

Figures 2 and 3 are products of the [AussieGRASS Environmental Calculator](#) (Carter et al. 2000). Figure 2 shows rainfall over the last three-, six- and 12-month periods (up to March 31, 2026) ranked against historical values. Heavy rainfall from a tropical low associated with an active monsoon trough during the first week of March affected northern, central and southeastern coastal areas of Queensland while the passage of Tropical Cyclone Narelle on 20 March impacted much of the Cape York Peninsula. Rainfall over the last three-, six- and 12-month periods has been generally well-above average to extremely high in most parts except for southern Queensland.



**Fig. 2: Rainfall percentiles (base period 1890 to current)**  
(Source: <https://www.longpaddock.qld.gov.au/aussiegrass/>)

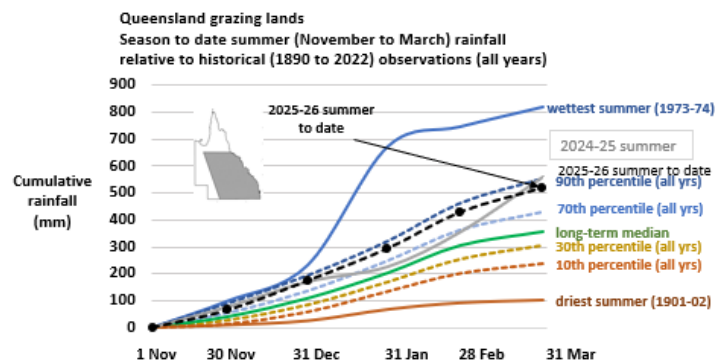
Figure 3 shows calculated pasture growth percentiles over the last three-, six-, and 12-month periods. The pattern of calculated pasture growth percentiles over the last three-, six-, and 12-month periods has broad similarities for much of the state to that of rainfall percentiles (above), ranging from extremely low to extremely high depending on region and length of period considered.



**Fig. 3: Pasture growth percentiles (base period 1957 to current)**  
White shading indicates areas that normally have "seasonally low" pasture growth.  
(Source: <https://www.longpaddock.qld.gov.au/aussiegrass/>)

## Season-to-Date Rainfall versus November to March historical records

Rainfall for November to March 2026 period, averaged across Queensland's major grazing lands region (grey region on the map in Fig.4), totalled 520 mm, and is above the long-term median for November to March period. The season falls between the 70<sup>th</sup> and 90<sup>th</sup> percentile and is slightly lower than the same period last year for November and March 2025.

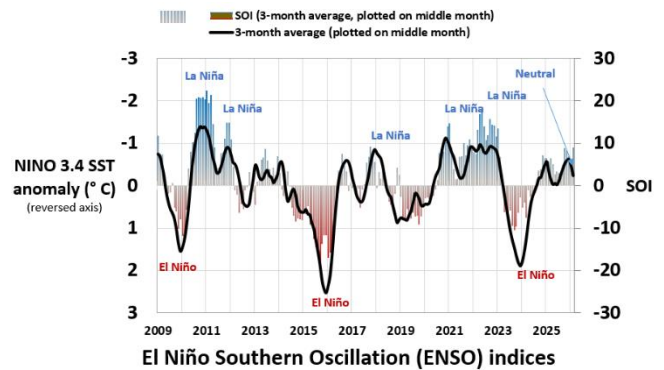


**Fig. 4: November 2025 to March 2026 season accumulated rainfall as at 1 April 2026, compared to historical values.**  
Percentiles based on season-to-date rainfall at the end of each month since 1 November (based on data from 1890 to 2024).  
Data source: <https://www.longpaddock.qld.gov.au/silo/>

## El Niño-Southern Oscillation (ENSO)

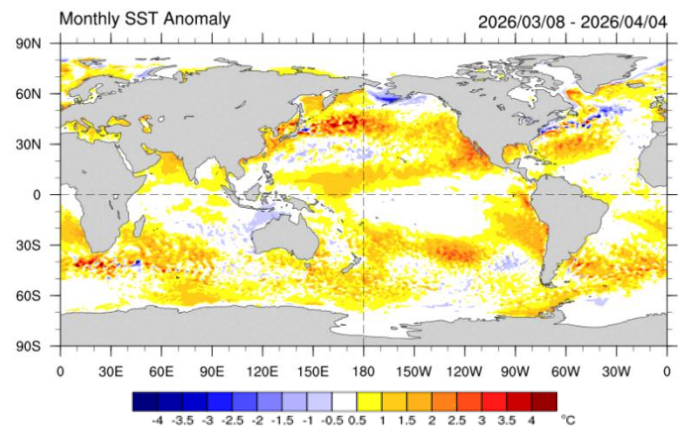
The most closely monitored driver of Queensland rainfall is the El Niño-Southern Oscillation (ENSO) phenomenon. Climate scientists monitor several ENSO indices, including the atmospheric [Southern Oscillation Index](#) (SOI) and sea-surface temperature (SST) anomalies in the central equatorial Pacific Ocean.

Rolling three-month average values of the SOI and central equatorial Pacific (Niño 3.4 region) SST anomalies since 2009 are shown in Figure 5. The most recent three-month (January to March) value of the SOI (+8.9) has remained positive while the NOAA 3-month rolling Oceanic Niño 3.4 (ONI) SST anomaly (-0.23°C) indicate a gradual weakening of La Niña conditions as SST anomalies in the equatorial Pacific show a tendency towards warming (Figure 6). The most recent weekly average of the Oceanic Niño3.4 centred on April 5, 2026, was about -0.35 indicating oceanic ENSO-neutral conditions. Most international models are projecting ENSO-neutral conditions during March-to-May period.



**Fig. 5: El Niño Southern Oscillation (ENSO) Indices**

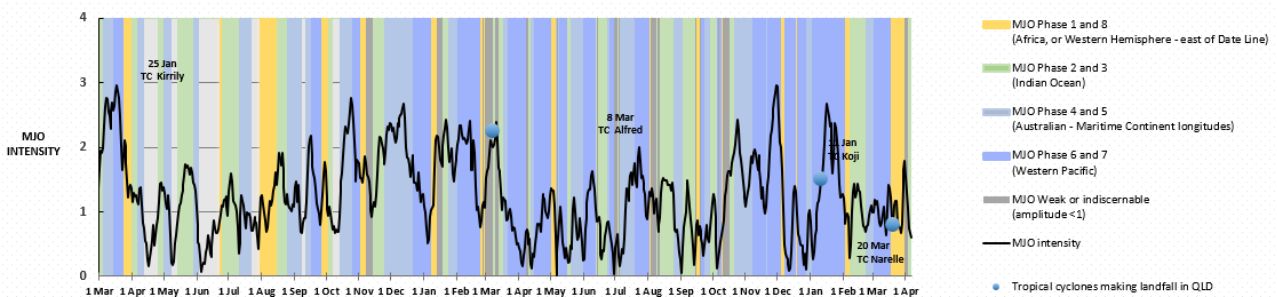
SST source: [www.cpc.ncep.noaa.gov/data/indices](http://www.cpc.ncep.noaa.gov/data/indices)  
 (NINO3.4 SST, monthly OISST.v2.1 (1991 to 2020 base period))  
 SOI source: [www.longpaddock.qld.gov.au/soi/soi-data-files](http://www.longpaddock.qld.gov.au/soi/soi-data-files)  
 (monthly SOI 1887-1989 base period)



**Fig. 6: Pacific Ocean sea-surface temperature anomalies (°C) for 8 March to 4 April 2026 based on NOAA OISST.v3.1 SST data (1991 to 2020 based period) Map source: <https://psl.noaa.gov/map/clim/sst.shtml>**

## Madden-Julian Oscillation (MJO)

The [Madden-Julian Oscillation \(MJO\)](#) is a broad area of tropical convection (cloud and rainfall) which tracks east from the western Indian Ocean toward the eastern Pacific Ocean. This MJO cycle tends to recur on average every 30 to 60 days (intraseasonal), distinct from El Niño and La Niña events which typically persist for three to nine months. In Queensland, the MJO has its greatest influence on rainfall during the tropical cyclone season (November to April), particularly in northern parts of the State, as its passage can enhance the strength of the northern Australian monsoon and increase the chance of tropical cyclones. For example, two tropical cyclones made landfall in Queensland during the 2023-24 season ('Kiriilly' on 25 January and 'Alfred' on 8 March), both occurred when the MJO was active in Australian-Western Pacific longitudes, unlike tropical cyclone Alfred which made landfall on 8 March 2025. As of 7 April 2026, a strong MJO pulse was in the Western Pacific and is expected to progress into the Western Hemisphere and Africa region during mid-April, a position where it typically suppresses rainfall across eastern Australia. An MJO in the Western Pacific can also contribute to the development of El Niño conditions.



Data source: [http://www.bom.gov.au/clim\\_data/IDCKGEM000/rmm.74toRealtime.txt](http://www.bom.gov.au/clim_data/IDCKGEM000/rmm.74toRealtime.txt)

**Fig. 7: Madden-Julian Oscillation intensity and phase-location**

The graph shows the general location (coloured bars) and intensity (grey line) of the MJO from 1 March 2024 to 6 April 2026.  
 Data source: [http://www.bom.gov.au/clim\\_data/IDCKGEM000/rmm.74toRealtime.txt](http://www.bom.gov.au/clim_data/IDCKGEM000/rmm.74toRealtime.txt)

## Long-lead Summer Rainfall Outlook

(produced on 8 April, based on SPOTA-1)

The Department of the Environment, Tourism, Science and Innovation (DETSI) monitors 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 current DETSI outlook for summer rainfall in Queensland is an objective analysis of historical conditions using an index based on SST anomalies measured in key regions of the extra-tropical Pacific Ocean. Historical SST gradients across these regions, from March to October, have been related to rainfall over much of Queensland in the following summer. On this basis, as at 1 April, the Science Division of DETSI considers that the probability of exceeding median summer (November 2026 to March 2027) rainfall is within the below- to near-normal range (20 to 50 per cent) for much of Queensland. (Figs. 8 and 9).

This long-lead outlook for summer is based on the extra-tropical SST pattern in the Pacific Ocean in March 2026. DETSI will provide an updated outlook for summer rainfall in June, at which time the outlook will begin to factor in the evolving ENSO-related SST pattern in the central and southwest Pacific. Further updates will follow each month from July to November.

## Three-month Rainfall Outlooks

based on international dynamical models

The maps in Figure 10 show rainfall probabilities for upcoming three-month periods, based on dynamical climate modelling, sourced from a range of international climate agencies. Rainfall probabilities differ for each model, on both a spatial and temporal basis, due to the different methodologies used.

For April to June period, models show normal to slightly higher-than-normal probability of above median rainfall for coastal Cape York Peninsula and below-normal probability for the rest of the State.

### Dynamical model outlook sources:

Australian Bureau of Meteorology <http://www.bom.gov.au/isp/sco/archive/>

UK Met Office: <http://www.metoffice.gov.uk/research/climate/seasonal-to-decadal/gpc-outlooks/glob-seas-prob>

European C3S (Copernicus Climate Change Service) multi-model: [https://climate.copernicus.eu/charts/c3s\\_seasonal/](https://climate.copernicus.eu/charts/c3s_seasonal/) (C3S multi-system (7))

NOAA North American Multi-model Ensemble -USA: <https://www.cpc.ncep.noaa.gov/products/NMME/seasnom.shtml> (Global prate)

Probability of exceeding median summer rainfall for November 2026 - March 2027, as at 1 April 2026

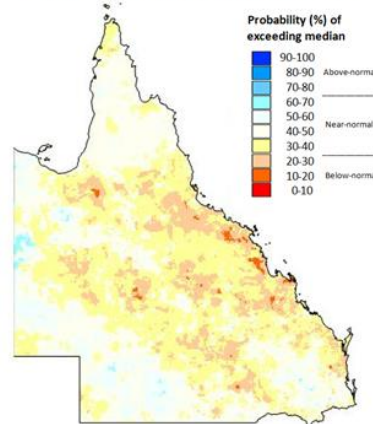


Fig. 8: Probability of exceeding median summer rainfall (for November 2026 to March 2027) as at 1 April 2026  
Produced by the DETSI SPOTA-1 system.

Summer (Nov to Mar) rainfall probabilities for Queensland regions, as at 1 April 2026

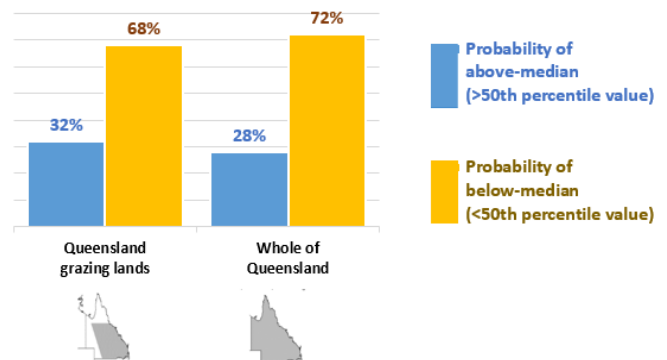


Fig. 9: Probabilities of above and below median summer rainfall (for November to March) as at 1 April 2026.

For the Queensland's major grazing region and the State as a whole, based on historical analogue year output from the DETSI SPOTA-1 system.

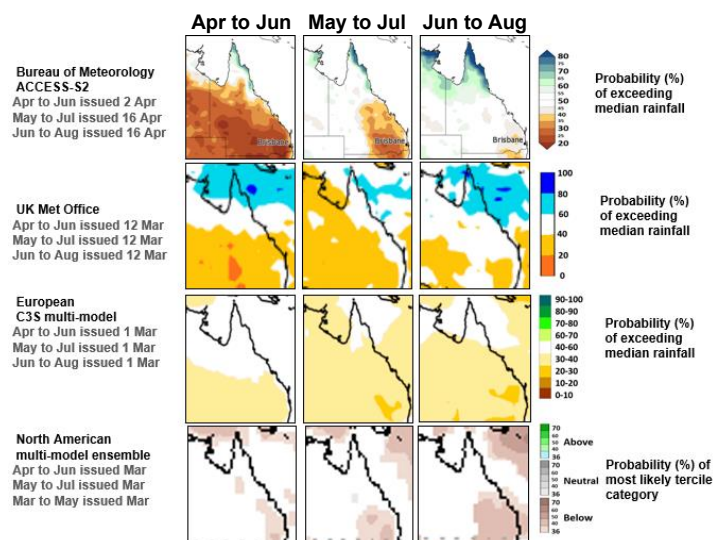


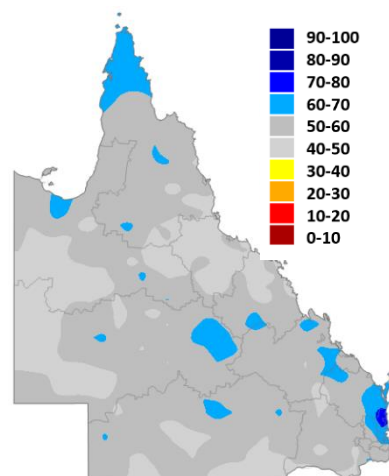
Fig. 10: Rainfall probabilities for April to Aug 2026, based on international dynamical models.

## Three-month Rainfall Outlook

### based on the SOI Phase system

The map in Figure 11 shows rainfall probabilities for the coming three-month period, based solely on a Consistently Positive 'phase' of the SOI at the end of March 2026, as determined by the SOI Phase system. The current phase of the SOI ([click for more detail](#)) is based on the most recent values of the SOI +11.2 for February and +7.6 for March 2026).

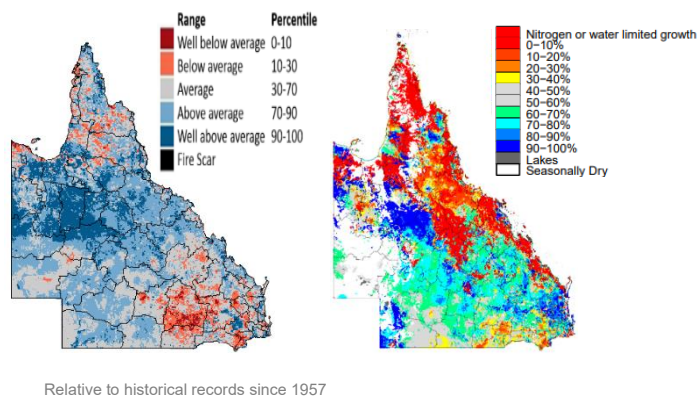
The map, which is based on 28 previous years (from 1889 to 2015) which had a 'Consistently Positive' phase of the SOI at the end of March 2026, indicates a generally 40 to 70 per cent probability of exceeding median April to June 2026 rainfall across much of Queensland.



**Fig. 11: Probability of exceeding median rainfall for April to June 2026 based on a 'Consistently Positive' phase of the SOI at the end of March 2026.**

## Pasture Outlook

Figures 12 and 13 are products of the [AussieGRASS Environmental Calculator](#). Calculated pasture ground cover at the end of March 2026 (Fig. 12) ranged from average to well-above average in most parts, except for parts of southeast Queensland with below average ground cover. Figure 13 shows that the probability of exceeding median pasture growth over April to June 2026 is above-normal for most parts of Queensland, except for southern parts of the State with below-average ground cover. Lower than normal pasture growth may be due to nitrogen limitations to growth rather than rainfall. The end of the main pasture growing season is the end of March, so pasture growth is generally low in the projected months. This calculation takes into account both current conditions (e.g., soil water content) and rainfall probabilities for the next three-month period) based on [SOI Phase analogue years](#).



Relative to historical records since 1957

**Fig. 12:**  
Calculated pasture cover at 31 March 2026.

**Fig. 13:**  
Probability of exceeding median pasture growth for April to June 2026 based on a 'Consistently Positive' phase of the SOI at the end of March 2026.

## REFERENCES AND RESOURCES

### References:

Carter, J.O. *et al.* (2000). Aussie GRASS: Australian Grassland and Rangeland Assessment by Spatial Simulation. In 'Applications of seasonal climate forecasting in agricultural and natural ecosystems - the Australian experience.' (Eds. G. Hammer, N. Nicholls and C. Mitchell). Kluwer Academic Press, Netherlands, pp. 329-349.

Day, K.A. *et al.* (2001). 'Queensland summer rainfall in relation to sea-surface temperature in the previous autumn (March) and spring (October).' Seasonal Pacific Ocean Temperature Analysis - 1 (SPOTA-1), Report 7, 2001/2. Issued 09/11/2001 on <http://www.LongPaddock.qld.gov.au>. Queensland Department of Natural Resources and Mines, Brisbane.

Day, K.A. and McKeon, G.M. (2018). An Index of Summer Rainfall for Queensland's Grazing Lands. *Journal of Applied Meteorology and Climatology*, **57**, 1623-41. <https://doi.org/10.1175/JAMC-D-17-0148.1>

McKeon, G. *et al.* (2004). 'Pasture Degradation and Recovery in Australia's Rangelands: Learning from History.' Queensland Department of Natural Resources, Mines, and Energy, Brisbane, Australia.

Stone, R. and Auliciems, A. (1992), SOI phase relationships with rainfall in eastern Australia. *Int. J. Climatol.*, **12**: 625-636. <https://doi.org/10.1002/joc.3370120608>

Stone, R., Hammer, G. & Marcussen, T. Prediction of global rainfall probabilities using phases of the Southern Oscillation Index. *Nature* **384**, 252–255 (1996). <https://doi.org/10.1038/384252a0>

### Additional resources:

For further information on AussieGRASS, seasonal climate outlooks (including the SOI Phase scheme and the SPOTA-1 scheme) and Queensland drought declarations, visit the Long Paddock website, <https://www.longpaddock.qld.gov.au>.

MJO description: <https://www.climate.gov/news-features/blogs/enso/what-mjo-and-why-do-we-care>

### General Disclaimer:

Information contained in this report is provided as general advice and the maps are designed to provide information relevant at a regional (shire) scale. More detailed information is required when making specific property scale management decisions. The State of Queensland, as represented by the Department of the Environment, Tourism, Science and Innovation, gives no warranty in relation to the data including without limitation, accuracy, reliability, completeness or fitness for a particular purpose.

*It should be noted that seasonal outlooks are probabilistic and not deterministic in nature.* For example, if an outlook indicates that there is an 80 per cent probability of exceeding median rainfall, should be interpreted as also meaning that there is a 20 per cent probability of rainfall being below the long-term median. 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. Users should also consider sourcing information related to the historical track record of any outlook scheme, and such information is becoming increasingly available.

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