

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 15 SEPTEMBER 2026

- The El Niño event continues to intensify across the central and eastern tropical Pacific Ocean.
- As of 1 September 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 (20 – 50%).
- The DETSI outlook for summer rainfall factored in the extra-tropical sea surface temperature (SST) pattern in March and the evolving ENSO related SST in Pacific Ocean in August.
- Twelve-month rainfall to the end of August 2026, averaged over the main grazing lands of Queensland, was 12 per cent above the long-term average (1890 to 2025).
- Over the last three months rainfall was well-below average over much of eastern Queensland, while much of western Queensland experienced well-above average rainfall.
- Over the last six- and 12-month periods rainfall was above average to extremely high over parts of western and northern Queensland but well-below average in parts of central coastal and southern Queensland.

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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 August 2026, averaged over the main grazing lands of Queensland, was 12 per cent above the long-term average (1890 to 2025). As reviewed at 1 September 2026, there are now three fully drought-declared local government areas and one partly drought-declared local government area.

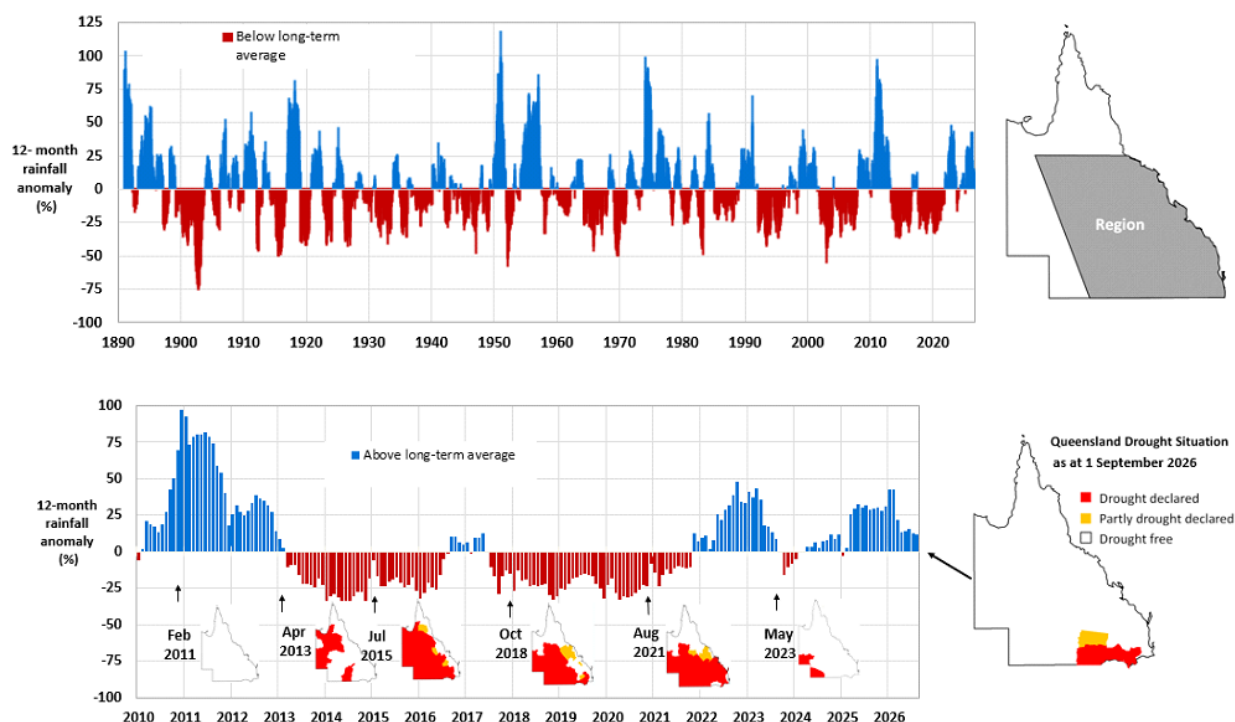


Fig.1: Historical 12-month rainfall anomalies

(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](https://www.longpaddock.qld.gov.au/aussiegrass/) (Carter et al. 2000). Figure 2 shows rainfall over the last three-, six- and 12-month periods (up to June 30, 2026) ranked against historical values. Rainfall over the last three-months was well-below average across the north-eastern half of Queensland, while south-western parts of the State experienced well-above average rainfall. Over the six- and 12-month periods, rainfall was above average to extremely high across parts of western and northern Queensland, but well-below average in parts of central coastal and southern Queensland.

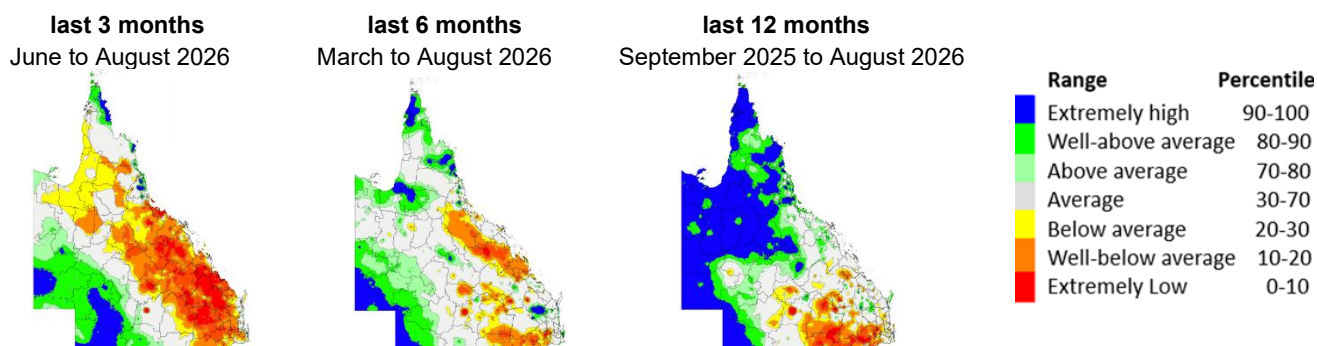


Fig. 2: Rainfall percentiles (base period 1890 to current)
(Source: <https://www.longpaddock.qld.gov.au/aussiegrass/>)

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.

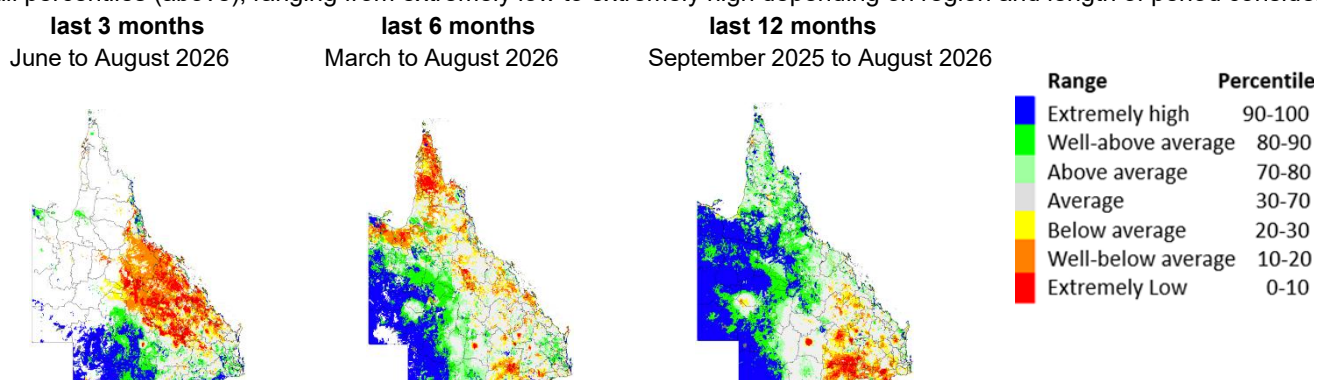


Fig. 3: Pasture growth percentiles (base period 1957 to current)
White shading indicates areas that normally have "seasonally low" pasture growth.
(Source: <https://www.longpaddock.qld.gov.au/aussiegrass/>)

Season-to-Date Rainfall versus April to October historical records

Rainfall for April to August 2026 period, averaged across Queensland's major grazing lands region (grey region on the map in Fig.4), totalled 82 mm, and is tracking lower than the long-term median for April to October period and the current season is drier, about 60 per cent compared to the same period last year for April to August 2025.

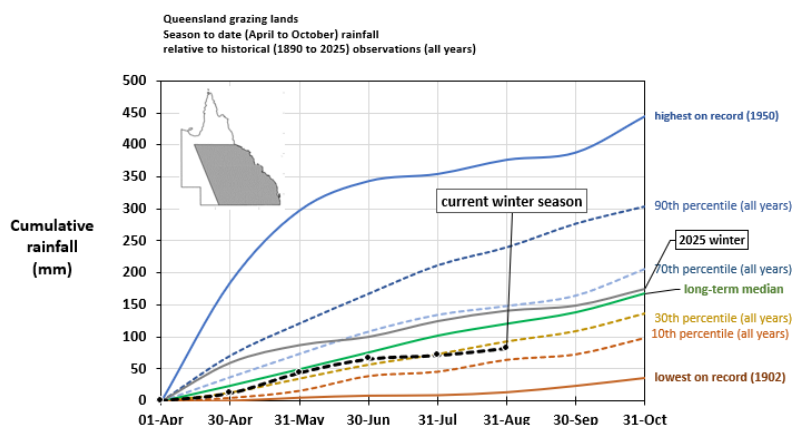


Fig. 4: April to October 2026 season accumulated rainfall as at 1 September 2026, compared to historical values.

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. Both the recent three-month (June to Aug) value of the SOI (-21.2) and the NOAA 3-month rolling Oceanic Niño 3.4 (ONI) SST anomaly (+2.03°C) are well in the El Niño range. The El Niño event continues to intensify in the central and eastern tropical Pacific Ocean (Figure 6). The increasingly aligning oceanic and atmospheric indicators provide strong evidence that the El Niño event will continue to intensify. The most recent weekly average (anomaly) of the ONI Niño3.4 centred around August 12, 2026, reached +2.7°C, which is well above the El Niño threshold. The majority of international models, including the Bureau's, are forecasting a very strong El Niño event likely to peak in late spring or early summer.

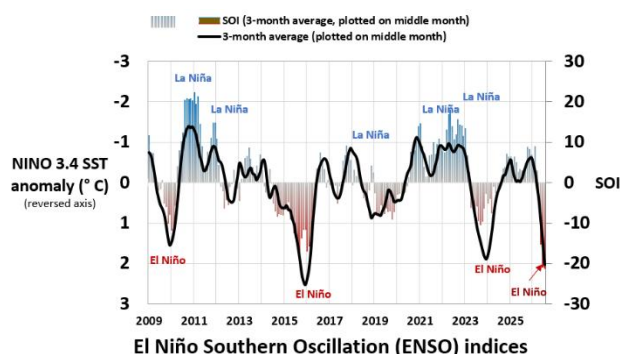


Fig. 5: El Niño Southern Oscillation (ENSO) indices

SST source: 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
(monthly SOI 1887-1989 base period)

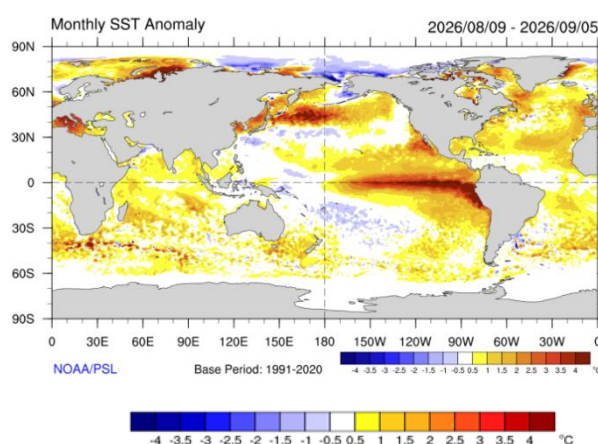
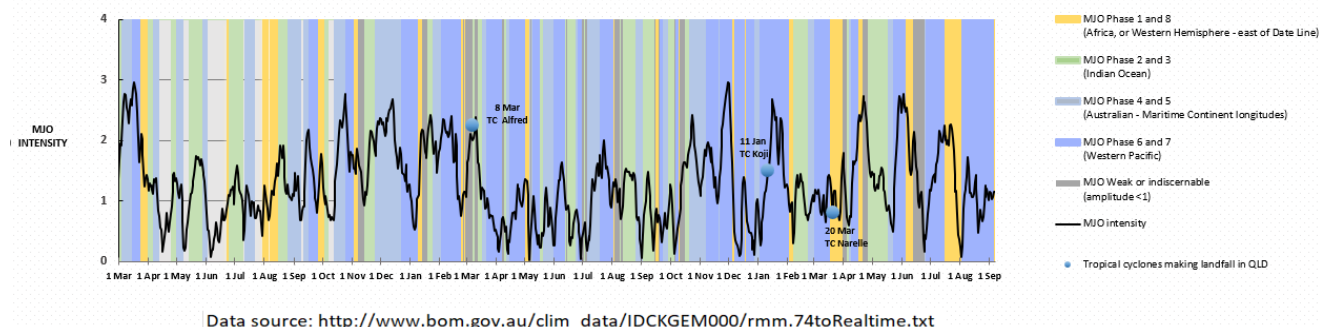


Fig. 6: Pacific Ocean sea-surface temperature anomalies (°C)

for 9 August to 5 September 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 2025 and 2026 ('Alfred' on 8 March 2025 and 'Koji' on 11 Jan 2026), and they occurred when the MJO was active in Australian-Western Pacific longitudes and Western Hemisphere respectively. The MJO signal is currently weak or indiscernible and as of 22 August forecasts indicated it was most likely to remain weak at least until the first week of September.



Data source: 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 September 2026.

Data source: http://www.bom.gov.au/clim_data/IDCKGEM000/rmm.74toRealtime.txt

Long-lead Summer Rainfall Outlook

(produced on 7 September, 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. As at 1 September, the Science Division of DETSI considers that the likelihood of much of Queensland receiving above-median summer rainfall (November 2026 to March 2027) is currently below- to near-normal (20-50 per cent; Figs. 8 and 9).

This long-lead outlook for summer is based on both the extra-tropical SST pattern in the Pacific Ocean in March, and the evolving ENSO-related SST pattern in the central and southwest Pacific in August 2026. Further updates will follow each month until 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 September to November period, models show normal-to-below normal probability of median rainfall for much of Queensland.

Dynamical model outlook sources:

Australian Bureau of Meteorology <http://www.bom.gov.au/jsp/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/ (C3S multi-system (7))

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

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

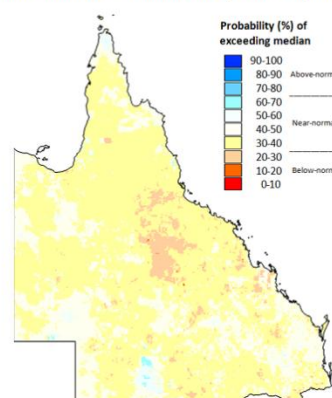


Fig. 8: Probability of exceeding median summer rainfall (for November 2026 to March 2027) as at 1 September 2026
Produced by the DETSI SPOTA-1 system.

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

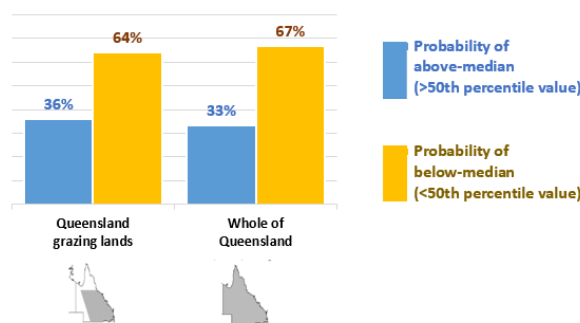


Fig. 9: Probabilities of above and below median summer rainfall (for November to March) as at 1 September 2026.

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.

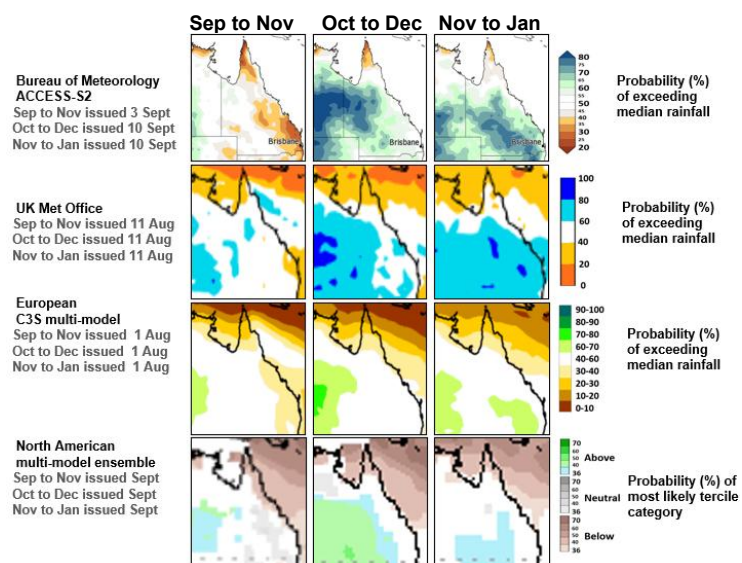


Fig. 10: Rainfall probabilities for September 2026 to January 2027, based on international dynamical models.

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 Negative 'phase' of the SOI at the end of August 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 -26.8 for July and -14.1 for August 2026.

The map, which is based on 22 previous years (from 1889 to 2015) which had a 'Consistently Negative' phase of the SOI at the end of August 2026, indicates a generally 10 to 50 per cent probability of exceeding median September to November 2026 rainfall across much of Queensland.

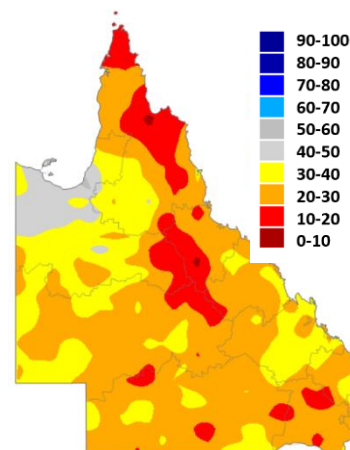
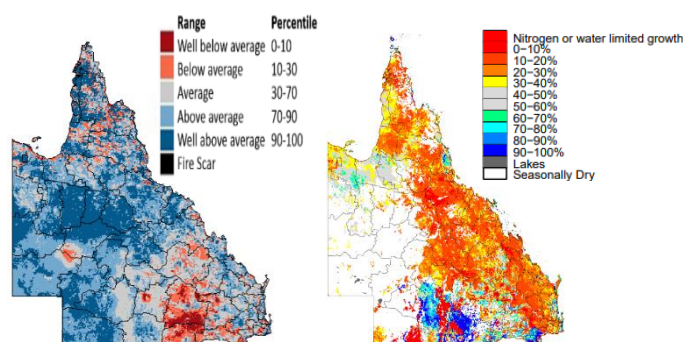


Fig. 11: Probability of exceeding median rainfall for September to November 2026 based on a 'Consistently Negative' phase of the SOI at the end of August 2026.

Pasture Outlook

Figures 12 and 13 are products of the [AussieGRASS Environmental Calculator](#). Calculated pasture ground cover at the end of August 2026 (Fig. 12) ranged from average to well-above average in most parts of Queensland, except for parts of southern and northern Queensland with below average ground cover. Figure 13 shows that the probability of exceeding median pasture growth over September to November 2026 is above-average for parts of southern Queensland and generally below-average ground cover across the rest of the State. 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 August 2026.

Fig. 13:
Probability of exceeding median pasture growth for September to November 2026 based on a 'Consistently Negative' phase of the SOI at the end of August 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.
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- 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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