In the last 30 years in the Southern Gulf

- Annual rainfall has increased by 10%
- Dry years have occurred six times and wet years 11 times
- Summer rainfall has increased in the west of the region, but decreased in the east
- Wet season rainfall has been reliable
- The wet season typically began around the second week of November in the far north west and in the east, mid to late November from Burketown down to Mount Isa, and not until early December in the region’s south
- There have been more hot days, with more consecutive days above 42 °C
- Extreme heat stress days are increasing

Southern Gulf region at a glance

The Southern Gulf region region covers around 20.4 million hectares, of which 90% is under agricultural production. Almost all of the agricultural output (>98%) of the Southern Gulf is beef cattle. The region contributed around $580 million to the Australian economy in 2017–18.

A guide to weather and climate in the Southern Gulf

Primary producers make decisions using their knowledge and expectations of regional weather patterns. The purpose of this guide is to provide an insight into the region’s climate and an understanding of changes that have occurred through recent periods. This information can potentially assist primary producers and rural communities make better informed decisions for their business and livelihoods. This guide is part of a series of guides produced for every Natural Resource Management area around Australia.
Annual Rainfall

Annual rainfall in the Southern Gulf has increased by 10%

Annual (July–June) rainfall in the Southern Gulf has increased by about 60 mm (10%) from about 540 mm to about 600 mm over the past 30 years (1989–2018) when compared to the previous 30 years (1959–1988). The charts show annual rainfall (blue bars), with a 10-year running average (solid blue line) for Burketown and Richmond. The chart also shows the years when at least one tropical cyclone moved within 100 km of the location, highlighted in yellow (since satellite observations began in 1969). Although there has been an increase in annual rainfall in the past 30 years, rainfall in the Southern Gulf region is highly variable and the measured increase is within the range of natural variability.

In the past 30 years (1989–2018), dry years (lowest 30%) have occurred seven times and wet years (highest 30%) have occurred 11 times, while the remaining years were in the average range. During the previous 30-year period (1959–1988), drier wet seasons occurred 12 times and wetter wet seasons occurred eight times.

Southern Gulf wet season rainfall is reliable; the build-up is unreliable

Rainfall reliability maps for the past 30 years (1989–2018) show monsoon season rainfall (January to April) has been reliable in the east of the region and south east of Burketown (blue areas). While the monsoon may be a regular feature of the Northern Gulf climate, monsoonal rainfall comes in bursts and is not consistent throughout the season. During the build-up months rainfall usually comes in isolated thunderstorms, which is inconsistent across the region, and has high variability from year to year.

Taken as a whole, the wet season (October to April) is usually reliable from year to year.

For more information on future projections, visit the Climate Change in Australia website: [www.climatechangeinaustralia.gov.au](http://www.climatechangeinaustralia.gov.au)

Rainfall increased in the wet season months at Mount Isa, but decreased at Richmond between 1989–2018 (orange bars) compared with 1959–1988 (blue bars). Monthly average rainfall at Burketown and Cloncurry showed a similar pattern to Mount Isa. Over the past 30 years, wet season rainfall (December to April inclusive) for Mount Isa was 390 mm; 61 mm higher than the 329 mm average for the previous 30-year period (1959–1988). For Richmond, wet season rainfall decreased by 5 mm over the same period, from 391 mm to 386 mm. Small increases in November and February rainfall at Richmond has gone some way to offset the decreases observed in December and January. Over the same 30-year periods, dry season rainfall (May to November inclusive) increased by 18 mm at Mount Isa, from 81 mm to 99 mm. At Richmond, dry season rainfall increased by 10 mm, from 89 mm to 99 mm.

Rainfall Timing

Wet season rainfall has increased in the west, but decreased in the east

In the Southern Gulf, the onset of the wet season can be defined as the date that 50 mm of rainfall is accumulated after the 1st of September. The map shows that over the past 30 years (1989–2018), the wet season typically began around the second week of November in the far north west of the region and in the east around Hughenden (blue areas), mid to late November from Burketown down to Mount Isa (teal and dark green areas) and not until early December in the region’s south from Cloncurry across to Richmond (light green areas). Early wet season rainfall is not always reliable. The region occasionally gets false starts to the wet season. This happens when a rainfall event of 50 mm or more is followed by a few weeks of low rainfall allowing the soil to dry completely before the next rainfall event. Over the last 30 years this happened across the region between 10–20% of the time, about once every five to 10 years, and a little more frequently at Mount Isa. The last heavy rainfall of the wet season usually comes towards the end of March.

For more information on the latest observations and science behind these changes, refer to the State of the Climate Report > www.bom.gov.au/state-of-the-climate/
Temperature

The Southern Gulf has experienced more hot days in the past 30 years

The chart shows the annual number of days above 42 °C (red bars), with a 10-year running average (solid red line) for Cloncurry. Cloncurry experienced an average of seven days per year above 42 °C between 1989–2018, compared to an average of six days per year above 42 °C between 1959–1988. Instances of consecutive days above 42 °C have also been more frequent in the last 30 years. In 2006 and 2018, Cloncurry experienced periods of seven or more days in a row above 42 °C. A run of seven or more days above 42 °C is unusual at Cloncurry and had not happened since 1972. Since 1989, temperatures of 45 °C have been recorded for Cloncurry 11 times. In the previous 30-year period, the temperature reached 45 °C in Cloncurry only three times.

Moderate to severe heat stress days are increasing

THI (temperature humidity index) is a measure of heat stress for animals and humans. The THI charts show the annual number of days with a THI of 80 and above (Moderate-Severe), and 90 or above (Severe), for Cloncurry. Cloncurry experienced an average of 171 days per year with a THI of 80 or above between 1989–2018, compared to an average of 155 days per year between 1959–1988. Between 1989–2018, Cloncurry experienced an average of five days per year with a THI of 90 or above, compared to an average of four days per year between 1959–1988.