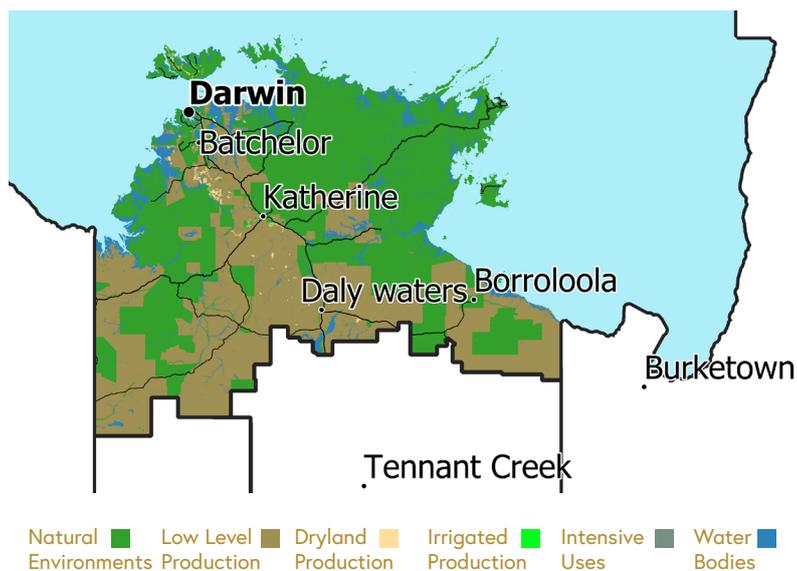




Regional Weather and Climate Guide

In the last 30 years in the Top End

- ☁ Annual rainfall has increased by 11%
- ☁ Dry years have occurred three times and wet years 17 times
- ☁ There has been an increase in monsoon rains
- ☁ Monsoon season rainfall has been reliable across the region
- ☁ Early wet season rainfall is not always reliable
- 🌡 There have been more hot days, with more consecutive days above 40 °C



The Top End at a glance

The Top End region covers around 47.7 million hectares, of which 48% is under agricultural production. Although grazing cattle is the predominant industry, the region also supports a diverse mix of other agricultural enterprises, including horticulture (mangoes, melons, vegetables), forestry and some broadacre cropping. The region contributed around \$419 million to the Australian economy in 2015–16. This guide covers the Victoria Daly and Roper Gulf LGAs, and all regions to the north.

A guide to weather and climate in the Top End

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.



A climate guide for agriculture
Top End, Northern Territory



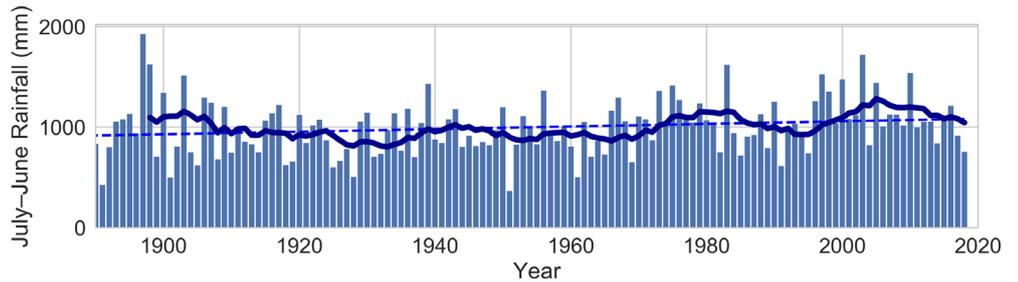


Annual Rainfall

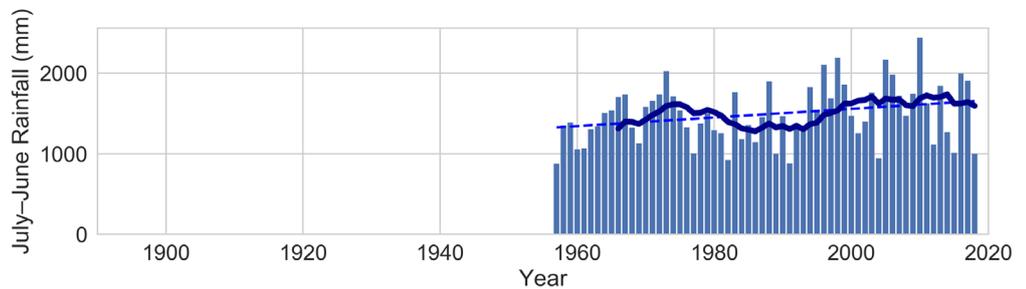
Annual rainfall in the Top End has increased by around 11%

Annual (July-June) rainfall in the Top End has increased by around 110 mm (11%) from about 940 mm to about 1050 mm over the past 30 years (1989–2018) when compared to the previous 30 years (1959–1988). This represents a significant increase in annual rainfall totals. The charts show annual (July-June) rainfall (blue bars), with a 10-year running average (solid blue line) for Katherine and Middle Point Rangers. In the past 30 years (1989–2018), dry years (lowest 30%) have occurred three times and wet years (highest 30%) have occurred 17 times, while the remaining years were in the average range. During the previous 30-year period (1959–1988), dry years occurred nine times and wet years occurred 10 times.

Katherine Council
Annual (July to June) Rainfall 1889/90 - 2018/19



Middle Point Rangers
Annual (July to June) Rainfall 1957/58 - 2018/19



For more information on future projections, visit the Climate Change in Australia website > www.climatechangeinaustralia.gov.au

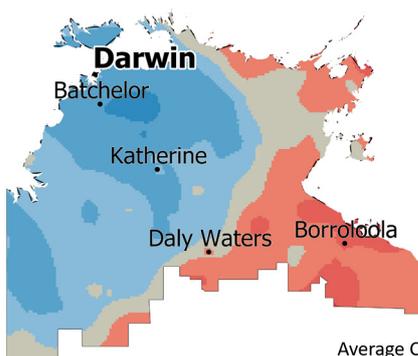
Want to know more about the guides? Try Frequently Asked Questions at > www.bom.gov.au/climate/climate-guides/#faqs

Top End monsoon season rainfall is reliable across the region

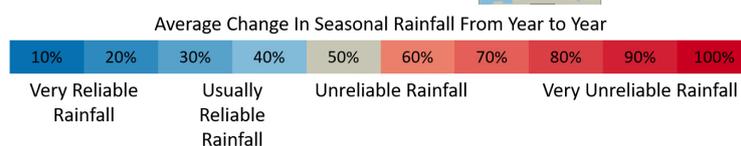
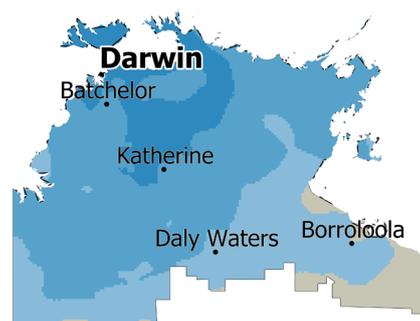
Rainfall reliability maps represent year-to-year rainfall variability across the region and seasons for the last 30 years (1989-2018). Areas shaded blue represent lower variability, or more reliable rainfall, while red areas show either very large variability in the rainfall, such as in the eastern Top End in the build-up months, or seasonally very low rainfall such as in the dry season. Low rainfall months are not shown.

Monsoon season rainfall has been reliable across the region. During the build-up, rainfall is reliable in the region's west, but unreliable in the east, especially in the north east around Nhullunbuy and in the gulf country.

Build-up (Oct-Dec)



Monsoon season (Jan-April)





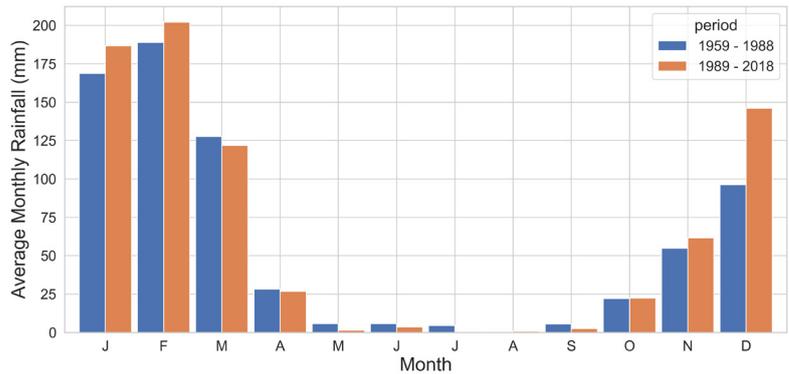
Rainfall Timing

There has been an increase in monsoon rains

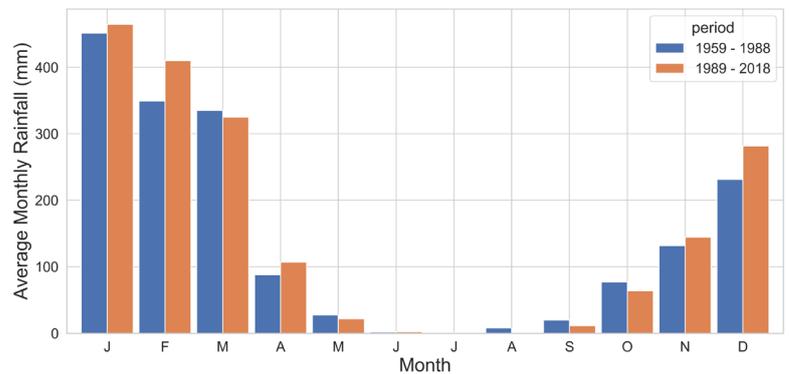
Rainfall in the monsoon season has increased at Daly Waters and Darwin between 1989–2018 (orange bars) compared with 1959–1988 (blue bars).

Over the past 30 years, wet season rainfall (November to April inclusive) for Darwin was 1732 mm, 146 mm higher than the 1586 mm average for the previous 30-year period (1959–1988). For Daly Waters, wet season rainfall increased by 81 mm, from 664 mm to 745 mm.

Daly Waters 30-year Average Rainfall by Month



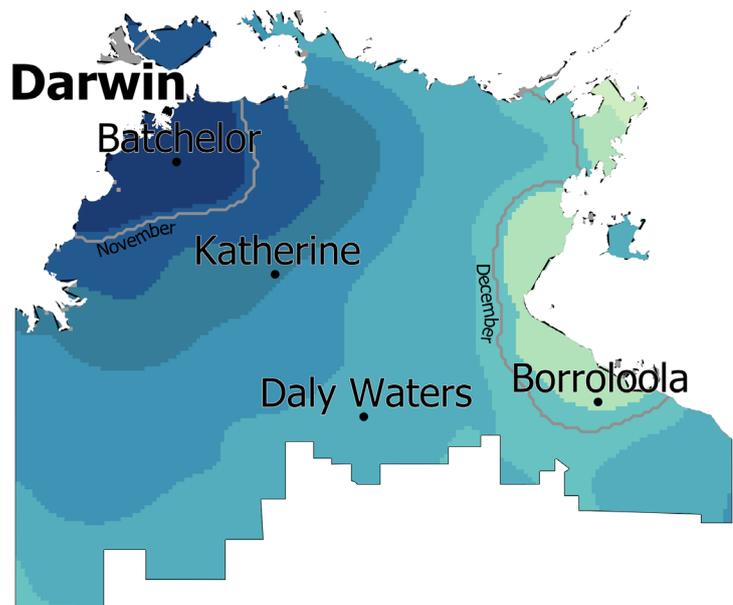
Darwin Airport 30-year Average Rainfall by Month



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/

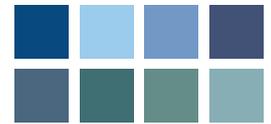
Early wet season rainfall is not always reliable

Across the Top End the beginning of the wet season can be defined as the date of accumulation of 50 mm of rainfall after the dry season. In the western Top End, around Darwin and surrounds, the wet season typically begins within the last week of October (blue colours on the map). Katherine and Victoria River usually see the first signs of the wet season a few weeks later in mid-November. Early wet season rainfall is not always reliable. The region is known to see 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 about 30% of the time across the western Top End.



Weeks after 1 Oct	3	4	5	6	7	8	9	10
Wet Season Rainfall Usually Arrived After...	22 Oct	28 Oct	5 Nov	12 Nov	19 Nov	26 Nov	2 Dec	9 Dec



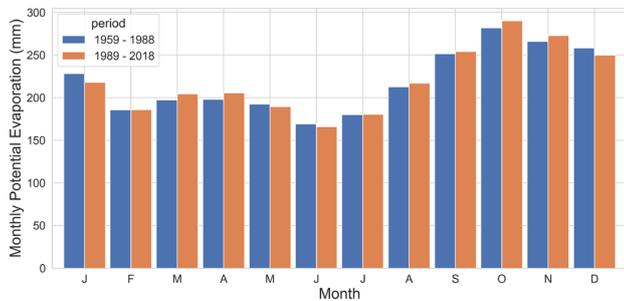


Evaporation

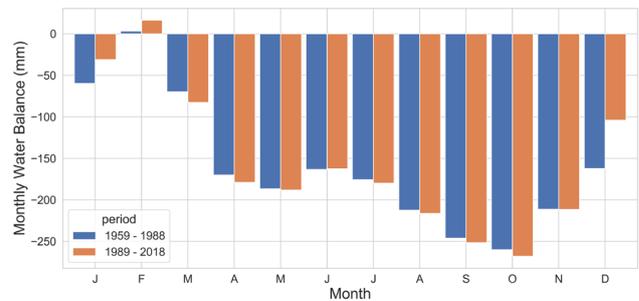
Evaporation rates have remained largely unchanged

The graphs show the mean monthly evaporation and water balance (rainfall minus evaporation) between 1989-2018 (orange bars) compared with 1959-1988 (blue bars) for Daly Waters. The increases in rainfall have positively impacted the overall water balance, with the deficit reducing by 56 mm between the two periods.

Daly Waters 30-year Average Potential Evaporation



Daly Waters 30-year Average Water Balance

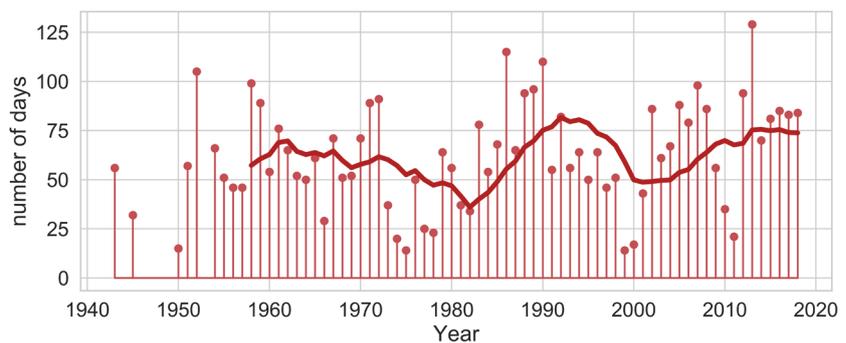


Temperature

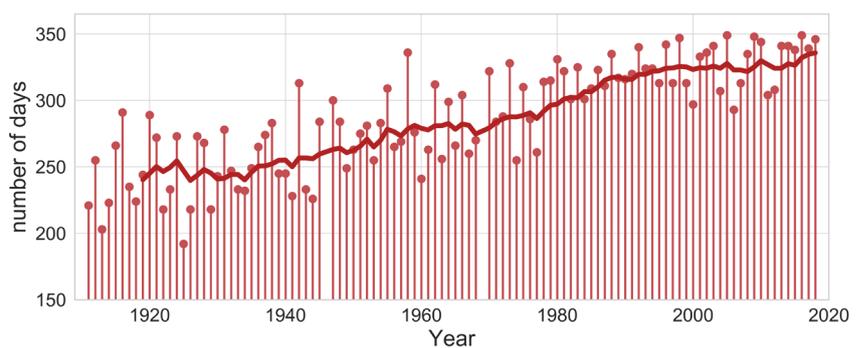
The Top End has experienced more hot days in the past 30 years

The chart shows the annual number of days above 38 °C (red bars), with a 10-year running average (solid red line) for Daly Waters, and days above 30 °C at Darwin. Daly Waters experienced an average of 68 days per year above 38 °C between 1989–2018, compared to an average of 58 days per year above 38 °C between 1959–1988. At Darwin Airport the average number of days above 30 °C has increased by 41 days when comparing the 1959–1988 average to the 1989–2018 average. Instances of consecutive days above 40 °C have also been more frequent in the past 30 years. In 2002 and 2015, Daly Waters experienced periods of 14 or more days in a row above 40 °C. A run of two weeks or more above 40 °C is unusual at Daly Waters and had been recorded only once before, in December 1939. In 2002, the run above 40 °C lasted 16 days. In Darwin, days with a maximum

Daly Waters Days Over 38 °C



Darwin Airport Days Above 30 °C



temperature above 35 °C has increased from an average of seven per year between 1959–1988 to 14 per year in the period 1989–2019.

Days above 30 °C, which are common, have increased from 295 to 327 between the same two periods.

Regional Weather and Climate Guides are produced as a partnership between Bureau of Meteorology, CSIRO and FarmLink



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