



# Regional Weather and Climate Guide

## In the last 30 years in the Wet Tropics

- ☁ Annual rainfall has been relatively stable
- ☁ Dry years have occurred nine times and wet years six times
- ☁ There has been a decrease in monsoon rains
- ☁ Monsoon season rainfall has been reliable; the build-up is unreliable, especially in the south around Ingham
- ☁ Heavy rainfall events have occurred twice a year on average
- 💧 Evaporation rates have increased in the north of the region and decreased in the south
- 🌡 There have been more hot days, with more consecutive days above 30 °C



## Wet Tropics region at a glance

The Wet Tropics/Terrain NRM region covers around 2.8 million hectares, of which 41% is under agricultural production. The region supports a diverse range of agricultural industries, and is a major producer of sugar cane, bananas, avocados and potatoes, as well as cattle – beef and dairy – and poultry. The region contributed around \$1.15 billion to the Australian economy in 2017–18.

Natural Environments ■ Low Level Production ■ Dryland Production ■ Irrigated Production ■ Intensive Uses ■ Water Bodies ■

## A guide to weather and climate in the Wet Tropics

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  
**Wet Tropics, Queensland**

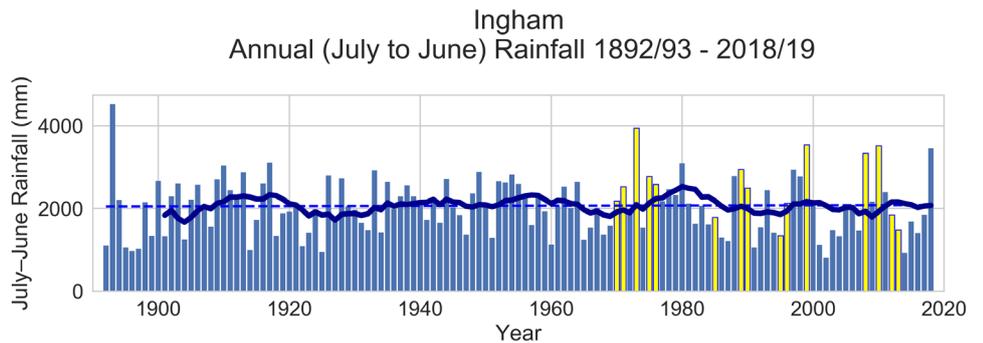
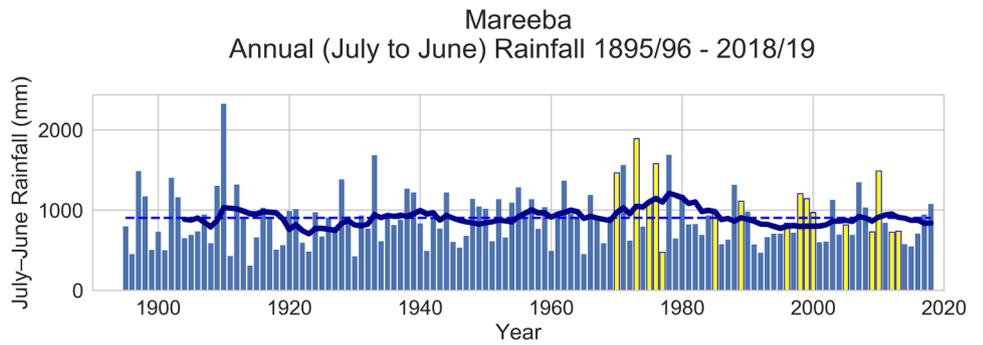




# Annual Rainfall

## Annual rainfall in the Wet Tropics has been relatively stable

Annual rainfall (July to June) in the Wet Tropics has been relatively stable, decreasing by around 30 mm (-2%) from about 2010 mm to about 1980 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) and a trend line (dashed) for Mareeba and Ingham. 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 the average annual rainfall has been relatively stable, it still fluctuates from year to year with natural variability. In the past 30 years (1989–2018), dry years (lowest 30%) have occurred nine times and wet years (highest 30%) have occurred six times, while the remaining years were in the average range. During the previous 30-year period (1959–1988), dry years occurred 10 times and wet years occurred 10 times.



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

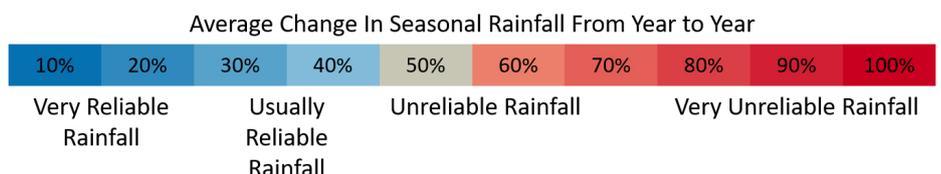
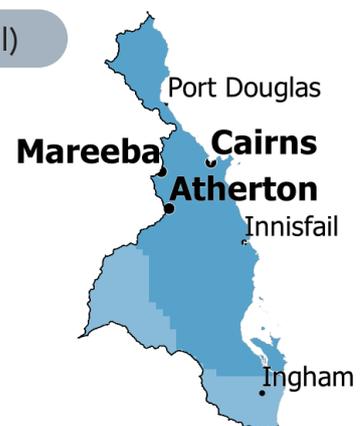
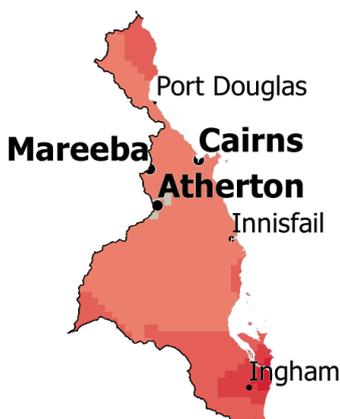
Want to know more about the guides? Try Frequently Asked Questions at > [www.bom.gov.au/climate/climate-guides/#faqs](http://www.bom.gov.au/climate/climate-guides/#faqs)

## Wet Tropics monsoon season rainfall is reliable across the region

Rainfall reliability maps for the past 30 years (1989–2018) show monsoon season rainfall has been reliable across the region (blue areas), with about 400 mm difference from one year to the next, or around 30% of the monsoon season average, which is 1337 mm. During the build-up, rainfall is unreliable across the region (red areas), particularly in the south around Ingham.

Early wet season (Oct-Dec)

Monsoon season (Jan-April)



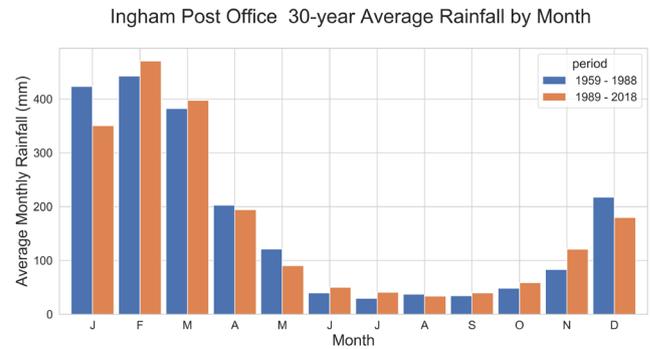
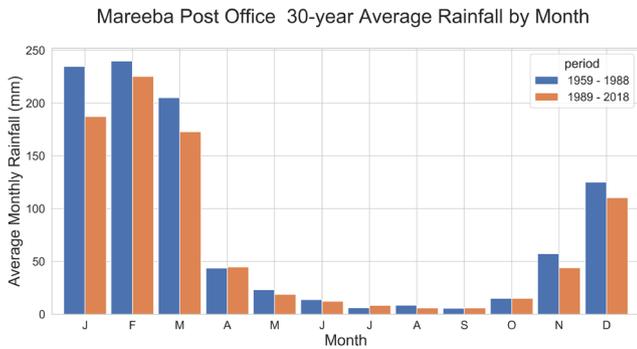


# Rainfall Timing

## There has been a decrease in monsoon rains

Rainfall in the monsoon season (January through April) has decreased at Ingham and Mareeba between 1989–2018 (orange bars) compared with 1959–1988 (blue bars).

Over the past 30 years, wet season rainfall (November to April inclusive) for Mareeba was 787 mm, 119 mm lower than the 906 mm average for the previous 30-year period (1959–1988). At Ingham, wet season rainfall has decreased by 38 mm from 1751 mm to 1713 mm over the same period.

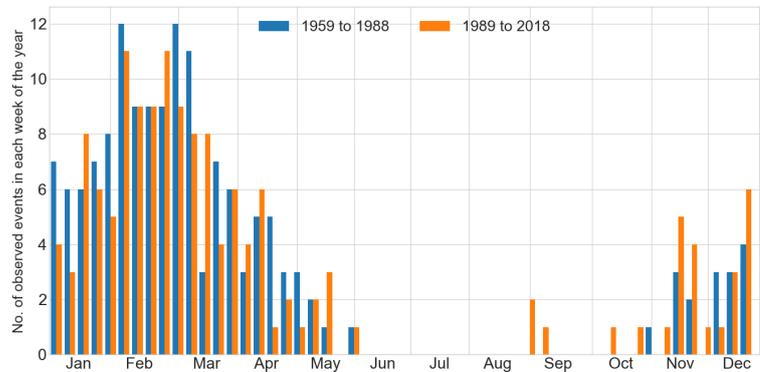


For more information on the latest observations and science behind these changes, refer to the State of the Climate Report > [www.bom.gov.au/state-of-the-climate/](http://www.bom.gov.au/state-of-the-climate/)

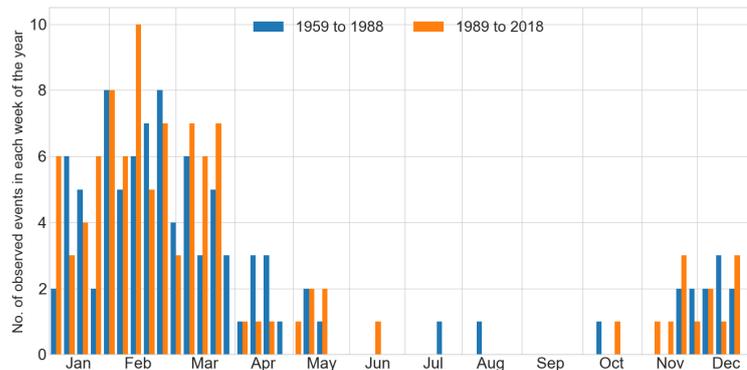
## Heavy rainfall events have occurred an average of twice a year

The heavy rainfall charts show the total number of heavy rainfall events (single or multi-day) for each week over a 30-year period. At Victoria Sugar Mill, near Ingham, three quarters of rain events of 100 mm or more occur from December through February. On average, five such events occur every wet season, but this can range from one to 12. There have been no wet seasons since 1900 that have not had a 100 mm rain event.

Victoria Sugar Mill: Occurrence of 100 mm rain events through the year



Kairi Research Station: Occurrence of 100 mm rain events through the year



At Kairi, about 5 km northeast of Atherton, an average of two such events occur every wet season, but this can range from zero to eight. Most of these events occur in the period December through March, although the occasional dry season shower has happened. There have been two wet seasons since records began in 1913 at Kairi that have not had a 100 mm rain event.

Over the last 30 years (1989-2018), on average, the first 100 mm or more rainfall event of the wet season at Kairi occurred in early January, and the last one

happened in late February. At Victoria Sugar Mill, the average first occurrence of rainfall above 100 mm was in early December and the average last date was in

mid-April. At both of these locations the first and last heavy rainfall event varied from year to year by nearly a month and a half.



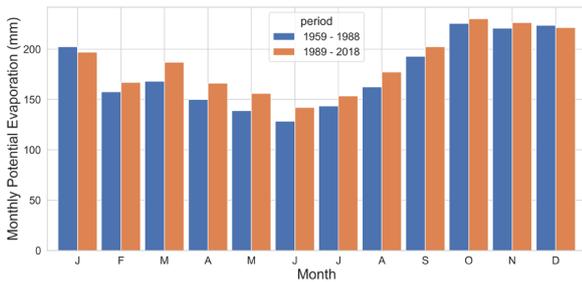


## Evaporation

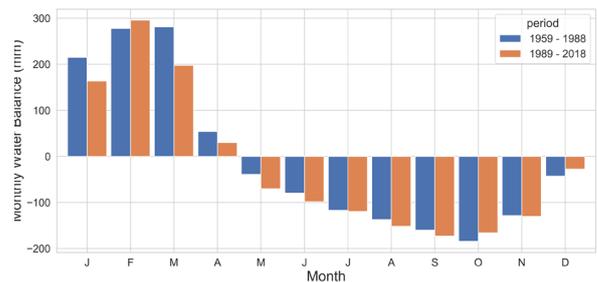
### Evaporation rates have increased in the north and decreased in the south

The graphs show the mean monthly evaporation and water balance (rainfall minus evaporation) between 1989-2018 (orange bars) compared with 1959-1988 (blue bars). There has been a decrease in annual evaporation totals in the north of the region and a large increase in evaporation in the south of the region. At Cairns, evaporation rates from February to September have increased by about 10 to 20 mm for each month in the past 30 years (1989-2018) when compared to the previous 30 years (1959-1988). December and January show a decrease in evaporation, but only by about 5 mm each month on average. Over the past 30 years (1989-2018), evaporation rates at Ingham have increased slightly across all months of the year when compared to the previous 30 years (1959-1988). The largest increases have occurred in the months from March through to May.

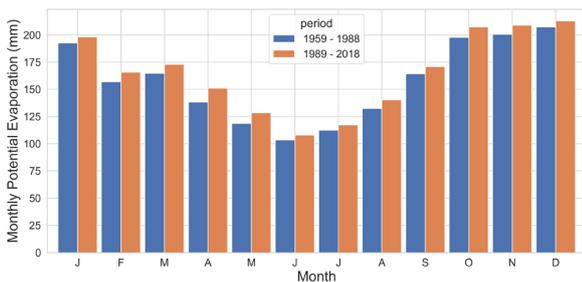
Cairns (AS) 30-year Average Potential Evaporation



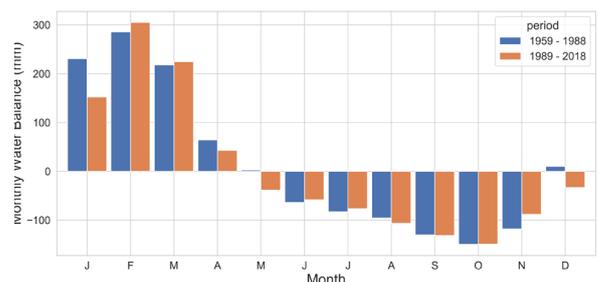
Cairns (AS) 30-year Average Water Balance



Ingham Post Office 30-year Average Potential Evaporation



Ingham Post Office 30-year Average Water Balance



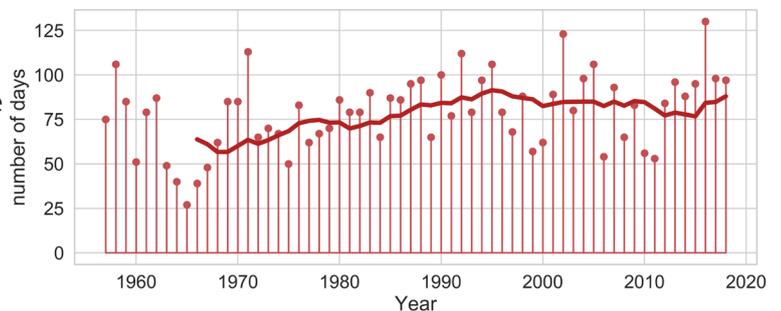
## Temperature

### The Wet Tropics has experienced more hot days in the past 30 years

The chart shows the annual number of days above 30 °C (red bars), with a 10-year running average (solid red line) for Walkamin. Walkamin experienced an average of 86 days per year above 30 °C between 1989–2018, compared to an average of 72 days per year above 30 °C between 1959–1988. Since 1989, temperatures of 38 °C have been recorded for Walkamin 14 times. In the previous 30-year period, a temperature of 38 °C was recorded at Walkamin only once, in 1971.

Instances of consecutive days above 38 °C have also been recorded in the past 30 years. In 1990, 1994 and 2018, Walkamin experienced periods of three or more days in a row above 38 °C. Prior to 1990, a run of three or more days above 38 °C had not been recorded at Walkamin.

Walkamin DPI Days Over 30 °C



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