

# Climate Change in Queensland | fact sheet



## Climate Change in Queensland

Climate change refers to any significant change in the measures of climate lasting for several decades or longer, such as temperature, rainfall or wind patterns. It is different to weather, which is short-term and variable. Climate change is attributed to a number of natural and human-induced factors and is ongoing.

### *Projected climate change trends for Queensland*

The broad climate change trends projected for Queensland are outlined below. However, it is important to note that these trends represent the projected average trend, meaning that changes to climate over time will be experienced unevenly across the State. For further information about the sources used for these broad trends, refer to the full version of the Emergency Management Sector Adaptation Plan (EM-SAP) found at [www.disaster.qld.gov.au](http://www.disaster.qld.gov.au)

**Higher Temperatures** - Maximum, minimum and average temperatures are projected to continue to rise.

**Hotter and more frequent hot days** - There is likely to be a substantial increase in the temperature on the hottest days, and an

increase in the frequency of hot days and the duration of warm spells.

**Harsher fire weather** - Across the region, when and where fire does occur, it is likely that fire behaviour will be more extreme due to harsher fire weather conditions. Note: Fire weather is a measure of fuel dryness and hot, dry, windy conditions.

**Fewer frosts** - A substantial decrease in the frequency of frost risk days is projected by the end of the century.

**Reduced rainfall in the south-east** - High climate variability is likely to remain the major factor influencing rainfall changes in the next few decades and under a high emissions scenario future rainfall are projected to decrease across the whole state across the dry season.

**More intense downpours** - The intensity of heavy rainfall events is likely to increase.

**Changes to the behaviour of tropical cyclones** - Uncertainty remains over the influence of climate change on the location, frequency and severity of tropical cyclones in Queensland. However, model projections show a future decrease in the number of tropical cyclones globally, but with an increase in the proportion of high intensity

tropical cyclones. Recent historical data analysis also suggests TCs are travelling slower and southward with increasing rainfall intensity.

**Changes to drought are less clear** - By late this century, under a high emissions scenario, it is likely that eastern parts of Queensland will experience more time in drought. However, direction and magnitude of changes in regional rainfall are subject to high levels of uncertainty.

**Sea level will continue to rise** - Sea level is projected to rise at least 0.8m above present day levels by 2100.

**More frequent sea-level extremes** - Higher sea levels will increase the risks of coastal hazards such as storm tide inundation.

**Warmer and more acidic seas** - Sea surface temperature is projected to continue rise and the ocean will become more acidic due to dissolved carbon dioxide.

For further information on trends by region in Queensland, refer to the Climate Change in Queensland Interactive Mapping Tool found at <https://www.longpaddock.qld.gov.au/>

## Climate Change Projection Challenges

The challenge presented by recent periodic observations and current climate change projections is the rate of change that is identified across a range of scenarios and the number of climate variables that influence 'plausible' futures.

Evidence suggests that the rate of change has not been observed in recent or paleoclimate records.

Given observed climate change will vary due to the variation in the Climate across

the State and the uneven distribution of climate projections, obtaining a reliable climate outlook will also depend on obtaining high-resolution downscaled climate models.

## Useful Information Sources

Climate change assessment and projection continues to be a global effort with several domestic and international agencies providing information and guidance on the issue. The Queensland Department of Environment and Science, the Commonwealth Scientific and Industry Research Organisation (CSIRO) and, the

Bureau of Meteorology continue to lead the provision of data and information for jurisdictional decision-making.

When using the information and data from any source for planning or decision-making, it is important to give full consideration of the limitations and assumptions underpinning the models and resolutions.

For example, some of the sources use GCMs at low resolution spatial scales, whilst others use downscaled high-resolution models.

Table 1 provides a summary of widely used sources of National, State and Regional climate change related information and data.



Type of hazard/ climate variable	Source of information	Type of information that is available	Climate change scenarios and time frame of data	Potential application in emergency management
Mean Climate, Heatwaves, Extreme Indices, Droughts and Floods	Queensland Future Climate Dashboard <a href="https://www.longpaddock.qld.gov.au/">https://www.longpaddock.qld.gov.au/</a> (to be updated in the near future)	Provides regional climate change summaries for a range of different regions and metrics	RCP 8.5 for year 2030, 2050, 2070 and 2090 across seasons with 10 km of spatial resolution	Suitable for getting detailed future climate change information at regional levels e.g. disaster management districts and Local Government areas of Queensland.
Heat wave, excessive rainfall, drought, coastal inundation	Climate Change in Australia website <a href="http://www.climatechangeinaustralia.gov.au/climatechangeinaustralia.gov.au/">http://www.climatechangeinaustralia.gov.au/climatechangeinaustralia.gov.au/</a>	Provides general information about climate change as well as regional summaries for 5 climate sub clusters roughly aligned with NRM regions for 14 climate variables based on global coarse resolution climate models (~200 km). It also provides comprehensive technical data and information to provide projections or inform decision-making.	4 RCP and 3 SRES scenarios at 5-year intervals from 2025 to 2090; monthly, 3-monthly, 6-monthly and annual changes	Can be used for obtaining an overview of future climate at a broad scale (Natural Resource Management Regions).
Information on impacts and adaptation in for coastal areas.	CoastAdapt (NCCARF) <a href="https://coastadapt.com.au/">https://coastadapt.com.au/</a>	The program provides a number of technical and adaptation guidelines for the coastal context.	Summary of mean climate based on Climate Change in Australia website <a href="http://www.climatechangeinaustralia.gov.au/">http://www.climatechangeinaustralia.gov.au/</a>	Suitable for getting an overview of impacts and adaptation in for coastal areas.
Coastal erosion and inundation	Department of Environment and Science <a href="https://www.ehp.qld.gov.au/coastalplan/coastalhazards.html#erosion_prone_area_maps">https://www.ehp.qld.gov.au/coastalplan/coastalhazards.html#erosion_prone_area_maps</a>	Coastal hazard area maps indicate the footprint of the inundation from a defined storm event or storm tide event with a 1% (or one-in-100 year) annual return probability and declared erosion prone areas	It considers state wide 0.8m rise of sea level by 2100	Suitable for identifying hazard prone coastal areas

## Further information

For further information on the Emergency Management Sector  
Adaptation Plan or Climate Change Information, please contact:

The QFES Sustainable Development Unit

[sdu@qfes.qld.gov.au](mailto:sdu@qfes.qld.gov.au)

(07) 3635 3282

