

## Health and wellbeing

More frequent heatwaves may result in increases in heat-related illness—with the number of annual temperature-related deaths (without climate change mitigation) expected to rise to over 5800 deaths by 2100. Changes in temperature and rainfall may increase the occurrence of diseases carried by mosquitoes and waterborne pathogens.



## Meeting the challenge

The Queensland Government's climate change strategy, *ClimateQ: toward a greener Queensland*, sets out the next crucial steps for Queensland's transition to a lower carbon future. The \$196 million strategy updates the approaches taken in *ClimateSmart 2050* and *ClimateSmart Adaptation 2007–12* and takes into account the latest national and international science and policy.

The Queensland Government's climate change response is informed by world-leading climate research, including the CSIRO and Bureau of Meteorology, and the findings of the IPCC.

Queensland is the only Australian state that invests in its own in-house climate science capability, the Queensland Climate Change Centre of Excellence (QCCCE). This ensures that the Queensland Government's policies and programs are relevant and informed by the best available climate science and advice. QCCCE fosters collaborative relationships with world-class international climate science institutions, such as the UK Met Office Hadley Centre, the University of Reading's Walker Institute in the United Kingdom and the Ministry of Science and Technology, China.

To download a copy of *Climate Change in Queensland: What the Science is Telling Us 2010* visit [www.climatechange.qld.gov.au](http://www.climatechange.qld.gov.au)

## For more information

Queensland Climate Change Centre of Excellence  
Department of Environment and Resource Management

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change**

# Climate Change in Queensland

What the Science is Telling Us

KEY FINDINGS

10  
2010

**Toward 2**  
Tomorrow's Queensland

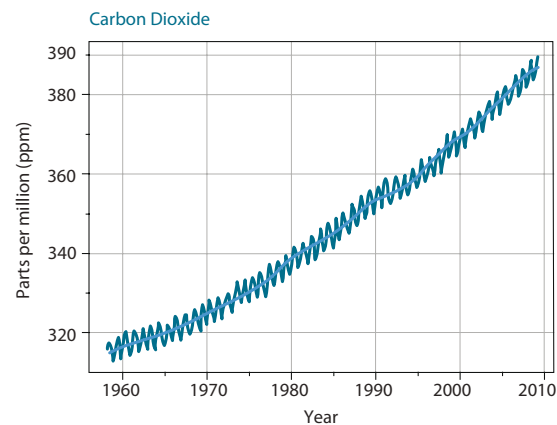
**Queensland**  
Government

## Global climate change

The science on climate change is clear. Increasing global land and ocean temperatures, rising sea levels, the retreat of glaciers and ice sheets, and more extreme weather events all indicate the climate is changing.

The Intergovernmental Panel on Climate Change (IPCC) in its Fourth Assessment Report concluded that warming of the climate system is unequivocal and that there is a higher than 90 per cent chance that the warming is due to human activities. The burning of fossil fuels and the removal of natural vegetation have resulted in increased greenhouse gas levels, such as carbon dioxide, enhancing the greenhouse effect (Figure 1).

*Climate Change in Queensland: What the Science is Telling Us 2010* outlines the current state of knowledge on climate change and discusses the likely implications for Queensland over the next century. It provides new detailed information on how climate change will impact different sectors and suggests some adaptation options for each.



**Figure 1:** Atmospheric concentrations of carbon dioxide in parts per million (Source: Richardson *et al.* 2009; Tans 2009; Hoffman 2009; Dlugokencky *et al.* 2005)

## Queensland climate change

Queensland is getting warmer (the last decade was the hottest on record) and this warming trend is expected to continue.

Over the next 40 years, Queensland regions can expect increased temperatures of between 1.0 °C and 2.2 °C and reduced rainfall across all of Queensland, except Cape York.

The IPCC predicts that global sea level will rise by 0.26–0.79 metres by 2100.

In addition to higher sea levels, Queensland's coastline may also be subjected to more frequent severe tropical cyclones.

Increased numbers of hot days (Figure 2) and warm nights and more heatwave events are also projected.

Station Name	Number of days per year over 35°C			
	Current	2030 Mid	2050 Low	2050 High
Barcaldine	87	110 (100-121)	115 (103-129)	134 (116-156)
Birdsville	125	141 (135-149)	144 (137-154)	158 (145-173)
Brisbane Aero	1	2 (1-2)	2 (2-3)	3 (2-5)
Cairns	4	6 (5-8)	7 (5-11)	13 (8-26)
Camooweal	156	180 (168-190)	183 (171-195)	204 (185-224)
Longreach	112	133 (126-144)	138 (129-152)	156 (140-179)
Mackay	1	1 (1-2)	1 (1-3)	3 (2-8)
Rockhampton	16	26 (22-33)	29 (24-36)	40 (31-58)
Townsville	4	7 (6-9)	8 (6-13)	16 (9-31)
Weipa	55	82 (74-92)	86 (76-105)	118 (91-162)

**Figure 2:** Number of projected days per year above 35 °C for a range of emissions scenarios in regional centres (Source: Office of Climate Change 2009, using CSIRO high-quality data set 2009)

## Impacts on key sectors

### Human settlements and infrastructure

Building structure and integrity is at risk from higher temperatures and increased intensity of extreme weather events. Coastal infrastructure is at risk from flooding and shoreline erosion due to sea level rise and storm tides.

### Water supplies

Increases in temperature and evaporation and reductions in rainfall are expected to significantly impact water availability for agricultural, industrial and urban use.

### Terrestrial biodiversity

An increase of 1.0 °C in temperature may lead to the loss of half the existing high-altitude Wet Tropics rainforest in Queensland. This will lead to an overall decline in native biodiversity and favour pest species.

### Marine biodiversity

An increase in average sea-surface temperature of 2 °C is predicted to lead to annual bleaching of up to 97 per cent of the Great Barrier Reef. Ocean acidification will adversely affect the calcification and early development of corals.

### Primary industries

Changes in average rainfall and temperatures and increased frequency of severe weather events, including droughts and floods, could reduce primary and agricultural production.

### Emergency management

An increase in the number of severe tropical cyclones and a southward shift in the region in which cyclones develop will expose additional communities to risk, including south-east Queensland.