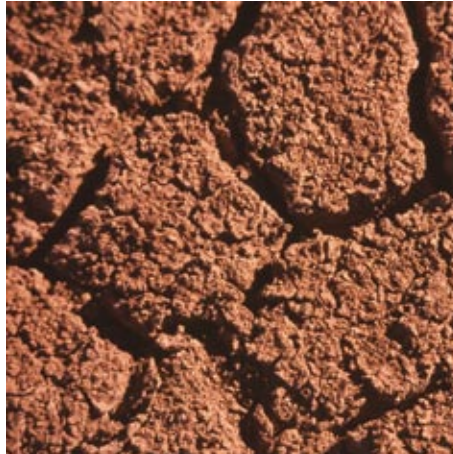


Climate Change in Queensland:

What the science is telling us



Climate change is happening now. Even if greenhouse gas emissions are drastically reduced climate change will continue into the next few decades at least. The build-up and long life of these greenhouse gases in the atmosphere guarantees this. Furthermore, the climate is changing at a faster rate than was previously anticipated.

Climate Change in Queensland: What the science is telling us was released by the Office of Climate Change, Environmental Protection Agency, in June 2008. This report captures the latest peer reviewed data on climate change to help us understand the current situation and projected impacts for Queensland.

The report is based on two main sources: the *Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (2007)* and the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and Australian Bureau of Meteorology *Climate Change in Australia – Technical Report 2007*.

This fact sheet summarises key findings from the report.

Key findings

Observed climate change

Australian average temperatures have increased by 0.9 °C since 1950, with significant regional variations. During this same period Queensland's annual average temperature has increased at a faster rate than the national average, with the rate of temperature increase ranging from 0.07 °C per decade in the far north to 0.32 °C per decade in the south-west of the state.

Future climate change

According to the *IPCC Fourth Assessment Report (2007)*, the projected impacts of climate change for Australia are dire. Impacts for Queensland include significant biodiversity loss on the Great Barrier Reef and in the Wet Tropics by 2020, water security problems, declining

production from agriculture and forestry, and increasing risks to infrastructure from storm surge and coastal flooding.

Temperatures

By 2030 Queensland's annual average temperatures are projected to increase by about 0.9 °C in coastal areas and by about 1.1 °C inland, relative to the climate of recent decades. Warming by 2070 depends heavily on the level of greenhouse gas emissions from now into the future. Therefore, by 2070, annual average temperatures are projected to increase by about 1.7 °C across the state for a low emissions scenario and by about 3 °C for a high emissions scenario.

These changes in average temperatures might seem small, but they have a big impact on extremes. For example, St George (western Queensland) currently has an average of 52.7 days over 35 °C per year, which by 2030 is projected to increase to 71 days for a mid emissions scenario, and by 2070 is projected to

increase to 84 days for a low emissions scenario and to 116 days for a high emissions scenario.

Rainfall and cyclones

Queensland projections include a tendency for less rainfall, increased evaporation, more severe droughts, an increase in extreme daily rainfall when it does rain, sea-level rises, more intense tropical cyclones and an increased risk of storm surge.

Rainfall in winter and spring is likely to decrease in central and southern Queensland. Changes in summer and autumn rainfall are less certain. Potential evaporation from soils, water and vegetation is projected to increase over Queensland. Irrespective of changes in rainfall, increased evaporation will result in an increase in aridity and the severity of droughts.

Increased intensity of tropical cyclones in the Queensland region is likely, but total numbers of cyclones may decrease. Storm surge risk is also projected to increase from sea-level rise and increased cyclone intensity. This has implications for emergency management and regional planning in

coastal areas, as well as for local tourism and agricultural industries. An increase in average wind speed in coastal areas, mainly in winter and spring, is expected to have an impact on marine tourism in central and north Queensland.

Implications for Queensland

Queensland is particularly vulnerable to climate change, as:

- many of our important sectors, such as agriculture and tourism, are climate-dependent
- most of our population lives on the coast and is at risk from more extreme weather and rising sea levels
- our ecologically rich areas, such as the Great Barrier Reef and Wet Tropics, are vulnerable to a significant loss of biodiversity.

Urgent steps are necessary to stabilise our greenhouse gas emissions at a level where dangerous climate change impacts can be avoided. We must also move quickly to implement adaptation

measures to reduce the impacts likely to result from greenhouse gases already in the atmosphere. Putting in place actions to minimise the potential impacts of climate change is essential to ensuring Queensland's future.

More information

References for the material used in this fact sheet are provided in the *Climate Change in Queensland: What the science is telling us* report.

Climate change in Queensland: What the science is telling us

Report can be downloaded at www.climatechange.qld.gov.au

IPCC

Reports can be downloaded at www.ipcc.ch/

CSIRO and Australian Bureau of Meteorology

Report can be downloaded at www.climatechangeinaustralia.gov.au/

Key impacts by region

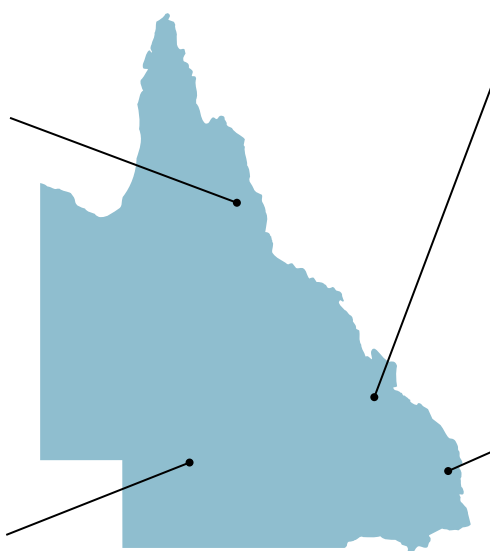
(Source: Figure adapted from Local Government Association of Queensland, 2007, p7. Content updated from CSIRO et al., 2007)

Far North Queensland

- Significant loss of biodiversity in Great Barrier Reef and Queensland Wet Tropics by 2020
- Increase in rainfall intensity and variability
- Towns, infrastructure and resorts in low-lying coastal areas vulnerable to higher flood or storm surge levels
- Higher risk of Cairns being inundated by 1-in-100-year storm surge by 2050
- Sea-level rise to cause salt-water intrusion in Torres Strait Islands
- Increased risk of water, food and vector-borne diseases.

Western Queensland

- Warming projected to be greatest in this region, particularly in south-western Queensland
- More severe droughts and heatwaves but increased rainfall intensity when it does rain
- Strong decline in rainfall could affect water quality, availability, and soil moisture.



Central Queensland

- Drying projected to continue
- Strong decline in rainfall and increased evaporation could affect soil moisture and availability and quality of water
- Water availability could affect the region's key agricultural, industrial and mining activities.

South East Queensland

- Potential for more significant increases in inundation as a result of storm surges due to higher mean sea level and more intense weather systems
- Increase in 1-in-100-year storm tide events projected to be 0.45 m along the Sunshine Coast, mostly due to sea-level rise
- Less water available in future for cities, industries, agriculture and natural ecosystems
- Days over 35 °C expected to increase, affecting peak energy demand
- Increased pest and disease risk.