

Climate Change

What is it and what does it mean?

Since the industrial revolution in the 1800s, human activities have been rapidly raising the amount of greenhouse gases in the atmosphere. This means the heat trapping effect is getting stronger. This is referred to as **global warming** or **climate change**.

What is the greenhouse effect?

Greenhouses work by trapping heat from the sun – the glass panels let light in and keep heat from escaping. The earth's atmosphere acts in much the same way.

Sunlight passes through the atmosphere and warms the earth's surface. The land, oceans and ice caps reflect heat back towards space, but much is trapped by gases in the lower atmosphere. The gases that trap heat are called 'greenhouse gases', and include water vapour, carbon dioxide, and methane. Without this heating effect, average global surface temperature would be about 33°C colder than today (-18°C), and would not support human life.

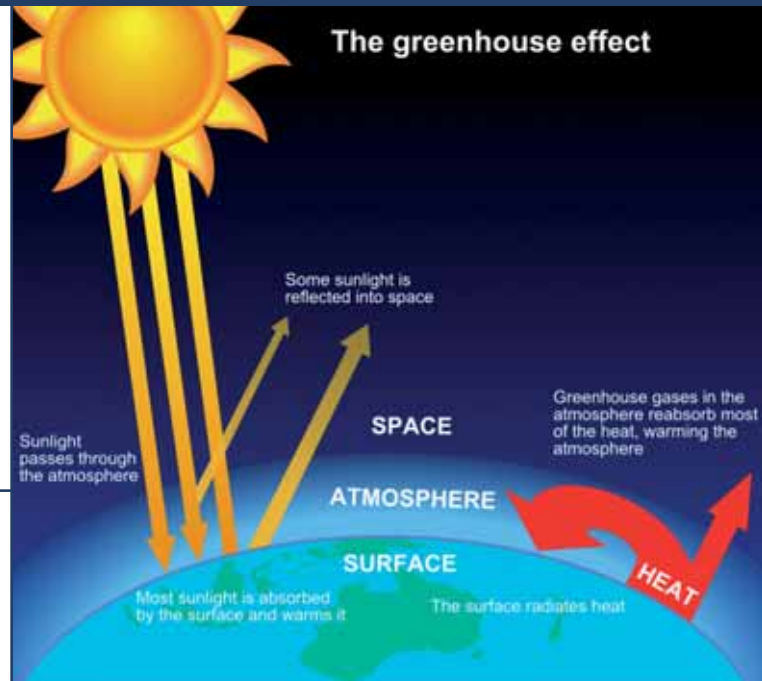
Why is the climate changing?

Carbon dioxide (CO₂) is the most significant greenhouse gas because it is released in such vast quantities, mainly as a result of burning fossil fuels like coal, oil, and gas. From the dawn of human society until the industrial revolution, the level of carbon dioxide in our atmosphere was fairly steady. The graph shows how CO₂ has risen dramatically since pre-industrial times. Increasing greenhouse gases are causing temperatures to rise.

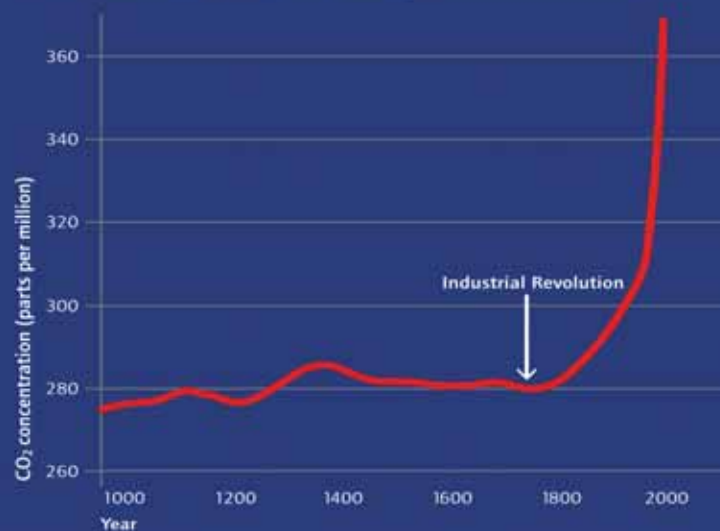
How is climate change affecting Australia?

Global average temperature is predicted to rise by between 1.1° and 6.4°C by 2100. Temperature in Australia has increased by 0.9°C since 1910, slightly more than the global average.

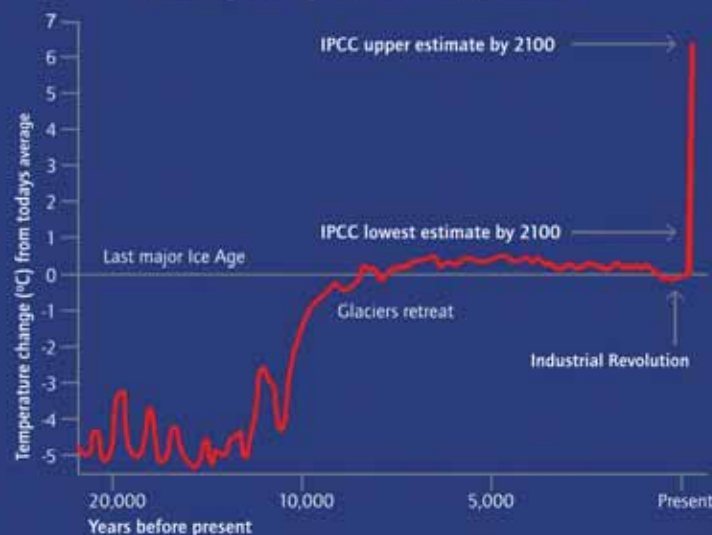
Australia is already experiencing changing weather conditions that are impacting our environment and way of life. CSIRO research shows that further climate change will lead to very serious impacts, such as severe drought, bushfires and loss of food production.



Change in global CO₂ concentrations



Change in global temperature



- **Droughts:** are likely to become more severe and prolonged. With even 1°C rise we are likely to see 70% increase in droughts in NSW. Food crops will also suffer from a changing climate and increasing pests.
- **Ecosystems:** forests, coral reefs, alpine ecosystems, mangroves and wetlands will be damaged or lost. Coral bleaching will devastate up to 97% of the Great Barrier Reef each year with rises of 2-3°C.
- **Storms, floods and fires:** more frequent and more severe bushfires, storms, and flooding are predicted, as well as more intense cyclones. These events risk lives, as well as damage property and the economy. For example, the number of people exposed to flooding doubles with just 1-2°C temperature increase.
- **Tourism:** iconic areas such as the Great Barrier Reef, Kakadu, and the Snowy Mountains are under threat as temperatures rise. Australian snow cover will shrink by 10-40% with just a 1°C rise in temperature.

If we take action now to reduce greenhouse pollution we can still avoid some of the worst impacts.

What urgent action is needed to reduce emissions?

There is general consensus amongst scientists, governments and environment groups that to avoid dangerous climate change we must keep warming below 2°C.

The risk of going above 2°C warming increases as we continue to release greenhouse gases. Our emissions are still going up in NSW, Australia and globally.

We only have a small window of opportunity to act. According to the recent Stern Review, we need to stop global emissions going up by 2010 if we are to have a reasonable chance of staying below dangerous levels of greenhouse pollution. This means we need to start reducing greenhouse gas emissions **now**, by switching to a **clean, renewable energy future**.

To achieve this, developed countries, including Australia and the US need to commit to reductions of at least 30% below 1990 levels by 2020 and more than 80% by 2050. The UK has pledged to reduce emissions by 26-32% by 2020 and the European Commission has proposed an EU target of 20-30% reductions by 2020.

NSW and Australia should become leaders on climate change and pass laws to cut at least 30% of greenhouse pollution by 2020.

“Significant impacts on ecosystems and water resources are likely even with a temperature increase between 1-2°C. But once the global temperature increase exceeds 2°C, climate impacts on ecosystems, food production and water supply are projected to increase significantly, unexpected response of the climate becomes more likely, and irreversible catastrophic events may occur.”

European Union, February 2005.



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Photo by John Schilling

For more information contact us:

Level 2, 301 Kent St, Sydney NSW 2000

Tel: (02) 9279 2466 Fax: (02) 9279 2499

Email: ncc@nccnsw.org.au www.nccnsw.org.au



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