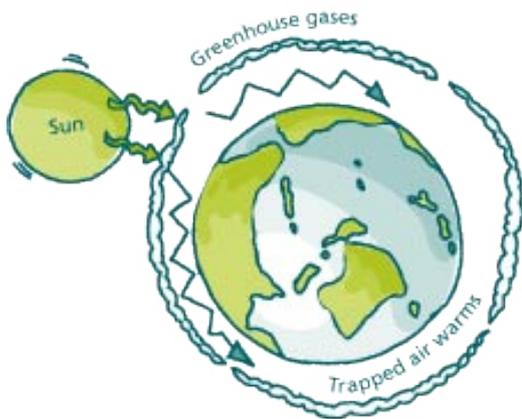




Climate Change Hazards



What is climate change?

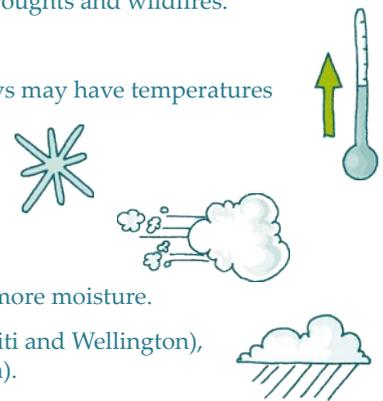
Climate change is actually a naturally occurring phenomenon. Greenhouse gases (which you will read about in this fact sheet) are also natural; they warm the earth by trapping the heat from the sun so that human life can exist. Since industrialisation, humans on earth have released more greenhouse gases into the atmosphere through cars, factories, farm animals and clearing forests. This has the effect of increasing the average temperatures of the earth - which contributes to climate change.

Climate change: what does it mean for our meteorological hazards:

It is likely that with climate change there will also be changes in the frequency and severity of weather-related hazards. There will probably be more rainfall (particularly in the west of the Region), which is likely to lead to floods, landslides and erosion. We will experience higher temperatures, especially in the eastern Region, which could lead to more droughts and wildfires.

The New Zealand scenario, according to NIWA, suggests that there is likely to be:

- A rise in **temperature** of +1 to +2° C by the year 2100. This means that at least 50% more days may have temperatures greater than 25°C, with bigger increases in the Wairarapa than in the west of the Region.
- Fewer **frosts** - about 10 fewer frost days per year by 2100 in the greater Wellington Region.
- More **evaporation**.
- **Wind** - enhanced westerlies (expected to increase by 10% over the next 50 years).
- More **moisture** - for every 1°C increase in temperature, the atmosphere can hold about 8% more moisture.
- **Rain** - there is expected to be a modest increase in rainfall in the west of New Zealand (Kapiti and Wellington), whereas there is expected to be a decrease in rainfall in the east of New Zealand (Wairarapa).
- Incidents of very **heavy rain** are likely to become more frequent. It is predicted that the intensity of heavy rainfall could increase by about 7% by 2050.
- **Sea level** could rise by 30-50cm by 2100.



Hail Storm, Wellington, 12 September 2002.

How do we know that climate change is happening?

We are **already** seeing:

- **Warmer temperatures** - in the twentieth century the temperature in New Zealand increased by +0.7°C.
- Fewer frosts.
- An increase in New Zealand's mean **sea level** - sea level has risen by approximately 20cm since records began in the early 1800's.

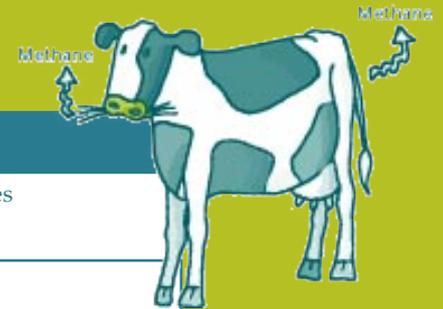
We are **starting** to see:

- A difference in **rain levels** between the east and the west coasts of New Zealand.
- More events of **intense rainfall**.

Climate change - causes and effects:

Causes of climate change are:

- **Greenhouse gases** - they are made up from carbon dioxide (CO₂), nitrous oxide (N₂O), methane (CH₄) and small amounts of other gases. The earth is warming because all these gases trap the heat from the sun and act like an invisible blanket around the earth, making the air warmer.
- **Emissions** - from cars, homes and industry.
- **The burning of fossil fuels** - (e.g. oil, coal and gas) to cope with our increased energy use (e.g. heating our homes, factories).
- **Farming** - cows and sheep release large amounts of methane into the air.



CLIMATE CHANGE TREND	EFFECTS (climate change can modify these effects)
More rainfall/storms	• Floods • Landslides • Erosion • Increased threat to lifelines and services • Pest and plant eradication problems •
Higher temperatures	• Drought • Suitability for crops affected • Pest and plant eradication problems • Lightning/wildfire risk
Sea level rise	• Salt water intrusion - affecting crops and buildings • Inundation • Erosion
Increase in wind	• Potential damage to lifelines, services and homes/buildings

What can you do about climate change?

You can help to reduce the causes of climate change by:

- Using less electricity at home, school and work.
- Reducing emissions from cars by biking, walking or taking the bus.
- Reducing, reusing, recycling - create compost or a worm farm!
- Planting more plants and trees to soak up carbon dioxide - protect our forests!



You and your family can become more energy efficient!

Check out www.climatechange.govt.nz (The New Zealand Climate Change Group) to look at or order copies of their climate change booklets. You can also phone them on 04) 918 3129, or write to them at: Level 1, 22 The Terrace, PO Box 55, Wellington.

The Energy Efficiency Conservation Authority (EECA) can provide information on how to conserve energy at home, at the office or while driving. Check out their website at www.eeca.govt.nz. You can phone them on 04) 470 2200, or write to them at: Simpson Grierson Building, 44 The Terrace, PO Box 388, Wellington.

Further reading:

NIWA, 2002. *Meteorological Hazards and the Potential Impacts of Climate Change in the Wellington Region - a Scoping Study*. Report prepared for Greater Wellington -The Regional Council. Copies are available from Greater Wellington's website www.gw.govt.nz or a printed version may be requested.

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