

Extreme events point to Climate Change

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It is likely that 2007 will be remembered as a turning point for public acceptance of Climate Change. Scepticism is still however a major stumbling block to action on climate change, most notably in some sections of the Australian government.

It is difficult to prove the existence of Climate Change based on science, despite the massive research effort of the Intergovernmental Panel on Climate Change. There are still problems interpreting the changes in carbon dioxide and temperature which have occurred over the long history of our planet.

However, evidence of climate change is growing around us. Since the start of 2007, there has been a tropical storm at Newcastle in July, floods in the UK, 45°C temperatures in Romania, drought in Australia, extreme fires in Greece and California and most recently, record floods in southern Mexico. None of these events on their own can be said to be *climate change*, but the increasing number of extreme events and climate records being broken is building a picture which is consistent with the science and projections of climate change. Put this together with data on rising temperatures and the melting of Arctic ice and the evidence is powerful that climate change exists!

There have been extreme events in the past, why does a few more indicate climate change? The science suggests it is to do with higher temperatures resulting in more extreme events and changes in weather patterns. For example, a cyclone will start where the water is unusually warm and the warmer the water, the stronger the intensity of the cyclone or hurricane.

New Orleans has experienced hurricanes many times over the last 200 years, the difference with Hurricane Katrina was the intensity which has not been seen before.

Increased warming of land may change the patterns of high and low pressure systems and change the intensity of rain and where it falls. England has not seen rainfall of the intensity which caused flooding in July this year; 20 mm is considered a big daily fall in England; 120 mm is climate change.

Some parts of the world will receive more rainfall as a result of climate change. Rising temperatures should increase wheat production in cold countries, such as Russia, but not if a change in jet streams send the rain elsewhere. At the same time as the UK was being repeatedly flooded this year, blocking high pressure systems were producing record high temperatures and drought in eastern Europe.

The combination of drought in eastern Europe and in Australia has resulted in a crisis in the world wheat supply. Stocks of wheat have declined to a point where most of the world's reserves (around 65 days of supply) consist of the wheat in transit between farm and customer. The world price of wheat has tripled over the past two years – a result of climate change!

Acceptance of climate change is still low in farming communities, although they will be more affected than city dwellers. A lot of the extra carbon dioxide in the atmosphere has come from farming land and putting carbon back into agricultural soils will not only mitigate global warming, it will increase agricultural production.

Assessments by the Bureau of Meteorology and CSIRO in a recent report on *Climate Change in Australia* say that the world needs to reduce emissions of greenhouse gases by 50% by 2050 if the anticipated global warming is to stay below 2.5°C. Such an increase in temperature is likely to melt the remaining Arctic ice, cause a rise in sea levels and considerable stress in agriculture and ecosystems such as the Great Barrier Reef. A more urgent and decisive response would be better.

Trends in Australia's show that between 1990 and 2005, greenhouse gas emissions from power, mostly electricity produced from coal, rose by 36%, while motor vehicle emissions rose 43% over the same period. These trends need to be reversed. All new power sources should preferably be from renewable energy, while a temporary reduction in the growth of motor vehicle emissions would result from using more efficient (and cheaper) fuels, such as natural gas.

For the individual consumer, a start to their contribution to climate change should include a change in light bulbs, sharing a commuter vehicle and a switch to a solar hot water system when the old one needs replacing. To offset of our personal greenhouse emissions, a useful option is to take advantage of government rebates and install a solar power panel on our roof, which is connected to the electricity grid.