



IS CLIMATE CHANGE HAPPENING NOW?

With talk of emissions reductions in 2050 and sea level rises in 2100 it can often seem like climate change is a long-term issue, something that will only affect us in the future. This edition of the *Climate Monitor* examines three extreme climate effects that have been linked to climate change and are happening now. Although it cannot be definitively concluded that these effects have been caused by climate change, these sorts of effects are likely to become more frequent in a warming world.

HAPPENING NOW Ocean acidification

Humans have emitted larger and larger quantities of CO₂, much of which has been absorbed by the oceans. The ocean's ability to absorb CO₂ has limited the atmospheric warming that might otherwise have occurred, however it has also altered the pH of the water. Since the Industrial Revolution the world's oceans have become 30% more acidic. A recent study has indicated that our oceans are becoming acidic at a rate ten times faster than previously thought.

Alan Dupont from the Lowy Institute has signalled that there are major health and security implications of rising ocean acidification, with over 1 billion people in Asia currently relying on fish as their main source of protein. Increased ocean acidity threatens to decimate, within decades, the tiny snails and krill which are the primary source of food for fish and whales.

The effect of ocean acidification can already be seen. The Australian Research Council's Centre for Excellence for Coral Reef Studies noted in 2007 that coral cores have shown a steady drop in calcification over the last 20 years. Species such as the Californian Mussel are also thought to have decreased in numbers due to ocean acidification.



WANT TO KNOW MORE?

Click for more information on ocean acidification see this release by the **Centre for Excellence**. Click to see the report into the security implications of climate change by the **Lowy Institute**.

HAPPENING NOW Destruction of over 14 million ha of forest

Across North America warmer weather has led to bark beetle infestations which have devastated the region's pine and spruce forests. In Canada, 14 million hectares (an area twice the size of Ireland) of forest has been destroyed. Across the Continental US, Northern Yukon and Alaska over 3 million hectares of pine and spruce forests have also been devastated.

Bark beetles bore under the bark of a tree, cutting off nutrients and killing it. Usually, winter spells of minus 40° Celsius kill off the beetles. However, such deep freezes are becoming less common and warmer summer temperatures are significantly speeding up the population growth of the beetles. Further, prolonged drought has weakened the ability of many trees to extrude sticky pitch which they use to trap and expel the beetles.

The combination of warmer temperatures, drought and dying forests has created a dangerous feedback loop as forests become more susceptible to wild fires. In Canada, the area burned during the fire season is double what it was in the 1970s despite greater fire fighting capacity.



WANT TO KNOW MORE?

For more information on the destruction of North American forests see this story by the **Associated Press**. This report which appeared in the science journal **Nature** looks at how the dying forests could become a major source of emissions: <http://www.nature.com/climate/2008/0805/full/climate.2008.35.html>

HAPPENING NOW Record temperatures in Australia

For most parts of Australia, 2009 was the warmest winter on record with parts of Queensland seeing an average daily maximum temperature at more than two degrees above average. This follows an exceptional heat wave in late January and early February which broke temperature records across South Eastern Australia.

On 7 February, now known as Black Saturday due to devastating bushfires, an all-time state record was set in Victoria. The temperature reached 48.8°C, exceeding the old record of 47.2°C in 1939 by a considerable margin. This heatwave was notable not just for its intensity but its duration. Between 27–31 January 2009, maximum temperatures were 12–15°C above normal over much of Victoria and southern South Australia.

Record temperatures helped drive intense bushfires across Victoria. In addition to the 173 deaths which were caused by these fires, the Victorian Department of Human Services has reported that there were 374 'excess deaths' over what would have been expected during the same period. Most of these deaths occurred amongst people over 75 years of age.



WANT TO KNOW MORE?

The Australian Bureau of Meteorology has released two fact sheets regarding the January and August heatwaves:

Fact Sheet 17 & Fact Sheet 18

Click to read the Department of Human Services' report into heatwave deaths.



From August 2007 to July 2008 Brazil deforested almost 3 million acres

HAPPENING NOW POLICY COMMITMENTS BY DEVELOPING NATIONS

International climate change negotiations often focus on whether developing nations such as China and India will join developed nations in committing to legally binding emissions reductions. Although important, this is only one means of achieving emissions reductions, and developing economies have started to propose other complimentary approaches and commitments.

Mexico



Despite being classed as a developing country, Mexico was the world's 12th

largest greenhouse emitter in 2006. Under the *Kyoto Protocol* Mexico was classified as a non-Annex I country and not legally required to reduce emissions. However, the 'greening' of Mexico is one of the key priorities of the Government of President Felipe Calderon. Mexico has committed to a 50% emissions reduction from 2000 levels by 2050.

In June 2008 Mexico gained prominence in international negotiations by proposing a World Climate Change Fund. The Fund proposes to obtain resources from all countries to be redistributed for climate change mitigation activities. In June this year the President also announced that Mexico would voluntarily cut 50 million tonnes of verifiable annual emissions by the end of his term in 2012. These reductions are to be achieved by improving efficiency in the state run electricity and oil industries and improving forestation and rural land use. Kinesis also understands that the next UNFCCC meeting, after Copenhagen, will be held in Mexico City.

WANT TO KNOW MORE?

Click to see the Mexican press release outlining their greenhouse policies.

For Mexico's Green Fund submission to the UNFCCC see http://unfccc.int/files/kyoto_protocol/application/pdf/submission_mexico.pdf

South Korea




South Korea, the world's 9th largest greenhouse emitter in 2006, is regarded as a developing country, being a non-

Annex I country under the *Kyoto Protocol*. According to UN data South Korea's emissions have almost doubled since 1990.

South Korean President Lee Myung-bak announced on 6 June 2009 that Korea aims to be among the top seven green powers in the world by 2020. South Korea will choose an emissions reduction target by the end of the year from one of the following options: an 8% increase in emissions from 2005 levels, the stabilisation of emissions at 2005 levels or the reduction of emissions by 4% from 2005 levels. These three targets are anticipated to reduce emissions by 21, 27 or 30%, compared with business as usual levels.

South Korea dedicated a larger proportion of its global financial crisis stimulus package to green measures than almost any other country. The government now proposes to further promote green growth by injecting a total of AUD \$102 billion into their economy by 2013. South Korea also intends to test an emissions trading scheme by 2011 and run a carbon credit exchange from 2012.

 **WANT TO KNOW MORE?** For further details on South Korea's plans to reduce GHG emissions see www.korea.net

Click for further details on South Korea's plans to become one of the top seven green powers in the world by 2020.


Brazil



Including emissions from deforestation, Brazil is one of the world's 10 largest emitters of greenhouse

gases. Deforestation was not included in the *Kyoto Protocol*, however, the Brazilian Government has focused on reducing deforestation as part of its *National Plan on Climate Change*. This plan was released on 1 December 2008.

This plan aims to reduce deforestation by 70% by 2018. This would avoid the release of 4.8 billion tons of greenhouse gas emissions into the atmosphere. Brazil also intends to eliminate net loss of forest cover by 2015 by increasing the amount of planted forests. The WWF has criticised Brazil's National Plan publicly and emphasised that even if the Brazilian target is to be reached, the deforestation of more than 5,000km² per year would still occur. From August 2007 to July 2008, Brazil deforested almost 3 million acres.

 **WANT TO KNOW MORE?** For the Executive Summary of Brazil National Plan on Climate Change see: http://www.mma.gov.br/estruturas/imprensa/_arquivos/96_11122008040728.pdf

See also, analysis of Brazil's National Plan by the WWF: <http://www.worldwildlife.org/who/media/press/2008/WWFPresitem10927.html>

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