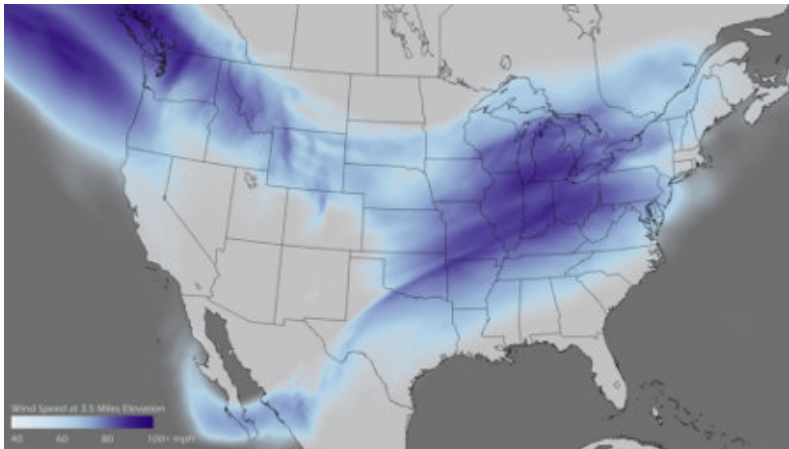


Climate Change Bulletin: Weather-disaster record in US, IPCC report on extreme events, more evidence for human-induced climate change

While Australia is still recovering from a series of weather-related disasters in 2011 – extensive flooding in south-east Queensland and Victoria, Cyclone Yasi, and bushfires in Perth – the US National Oceanic and Atmospheric Administration (NOAA) has identified a new record for the US, with [a dozen billion-dollar weather disasters in a single year](#).



Credit: NOAA

NOAA tallied the total damage at \$52 billion. This record year breaks the previous record of nine billion-dollar weather/climate disasters in one year, which occurred in 2008.

The events included:

1. Wildfires in Texas, New Mexico and Arizona, the cost of which exceeded \$1 billion.
2. Midwest/Southeast tornadoes and severe weather event in June, which has also exceeded the \$1 billion threshold.

The twelve disasters alone resulted in the tragic loss of 646 lives, with the US National Weather Service reporting over 1000 deaths across all weather categories for the year.

IPCC Special Report on Extreme Events

The [IPCC's Special Report on Extreme Events](#) released in November is the first scientific assessment to focus solely on extreme events.

Key – and carefully qualified – findings relevant to Australia are:

1. A *very likely* decrease in the number of cold days and nights and an overall increase in the number of warm days and nights.
2. A *likely* increase in extreme coastal high water related to trends in mean sea level in the late 20th century.
3. The *likely* probability that human influences have led to warmer extreme daily minimum and maximum temperatures globally.
4. Scientists have *medium confidence* that anthropogenic influences have contributed to intensification of extreme precipitation globally; and to increasing extreme sea levels via mean sea level contributions.
5. Increases in the frequency and magnitude of warm daily temperature extremes and decreases in cold extremes are *virtually certain* to occur through the 21st century.
6. Length, frequency and/or intensity of warm spells, including heat waves, will *very likely* continue to increase over most land areas.

The IPCC qualifies the terms as: virtually certain 99-100% probability; very likely 90-100% probability; likely 66-100% probability; about as likely as not 33-66% probability; unlikely 0-33% probability; very unlikely 0-10% probability; exceptionally unlikely 0-1% probability.

The report also brought together specialists from the climate change adaptation and disaster risk management communities to assess the how such extremes may interact with natural and human systems to cause disasters

Guidelines for effective preparation towards changing risks of climate extremes and disasters are also included.

The report's Australian co-authors were CSIRO's Dr Kathleen McInness, Prof Neville Nicholls from Monash University and Prof John Handmer from RMIT, Melbourne.

More evidence for human-induced climate change

Natural climate variability accounts for only one-quarter of the temperature rise observed in the past 60 years, according to recent a letter published in [Nature Geoscience](#). At least 74 per cent of the observed warming over that time, say the authors, is almost certainly due to human activity.

Since 1950, the average global surface air temperature has increased by more than 0.5°C. To separate human and natural causes of this increase, the researchers analysed changes in the balance of heat energy entering and leaving Earth – a new ‘attribution’ method for understanding the physical causes of climate change.

Greenhouse gases such as carbon dioxide have contributed around 0.85°C to global warming since the 1950s. Almost half of this has been offset by the cooling effects of aerosols in the atmosphere, with a total observed change of about 0.56°C.

In the same week, [a paper published in Nature Climate Change](#) showed global carbon dioxide emissions increased by a record 5.9 per cent in 2010, following the dampening effect of the 2008-2009 Global Financial Crisis (GFC).

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