

OFF THE CHARTS

Record-breaking
October Heat
and Climate
Change

This has been a record-breaking year for Australia. The 2012/2013 summer was the hottest on record, and we have just experienced the hottest September on record. In October temperatures were much higher than average and intense bushfires burned around the Blue Mountains in New South Wales, destroying hundreds of properties and threatening lives and livelihoods. And we are still on track to break the record for the warmest calendar year ever recorded in Australia.

Climate change influences our weather. In Australia, this means hotter days, and more frequent and intense heatwaves. These conditions increase the risk of bushfires, which in turn affect our communities, economy, and flora and fauna.

The Climate Council is an independent non-profit organisation funded by donations from the public. Our mission is to provide authoritative, expert advice to the Australian public on climate change.



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KEY FACTS:

- 1** The period of exceptionally warm weather continues. The average temperature in Australia for October was 1.43°C above the long-term average (1961-1990).
- 2** The record for the warmest average temperature for a 12-month period has been set again—from 1 November 2012 to 31 October 2013. This is the third month in a row that such a record has been set.
- 3** As global average temperature rises, the frequency and the intensity of hot days and heatwaves is increasing.
- 4** More than 100 heat-related records have been broken over the past year, and 2013 is on track to become Australia's warmest calendar year on record.
- 5** It is essential to rapidly and significantly reduce CO₂ emissions to stabilise the climate and halt the current trend towards more extreme weather events and hotter average temperatures.

WHAT HAVE WE SEEN THIS OCTOBER?

2013 is likely to be the hottest year on record for Australia. The hottest 10 years ever recorded globally have all occurred within the past 15 years (NASA, 2012), and in Australia, the overall average temperature for the last 12 months is 0.22°C higher than for any 12-month period prior to 2013.

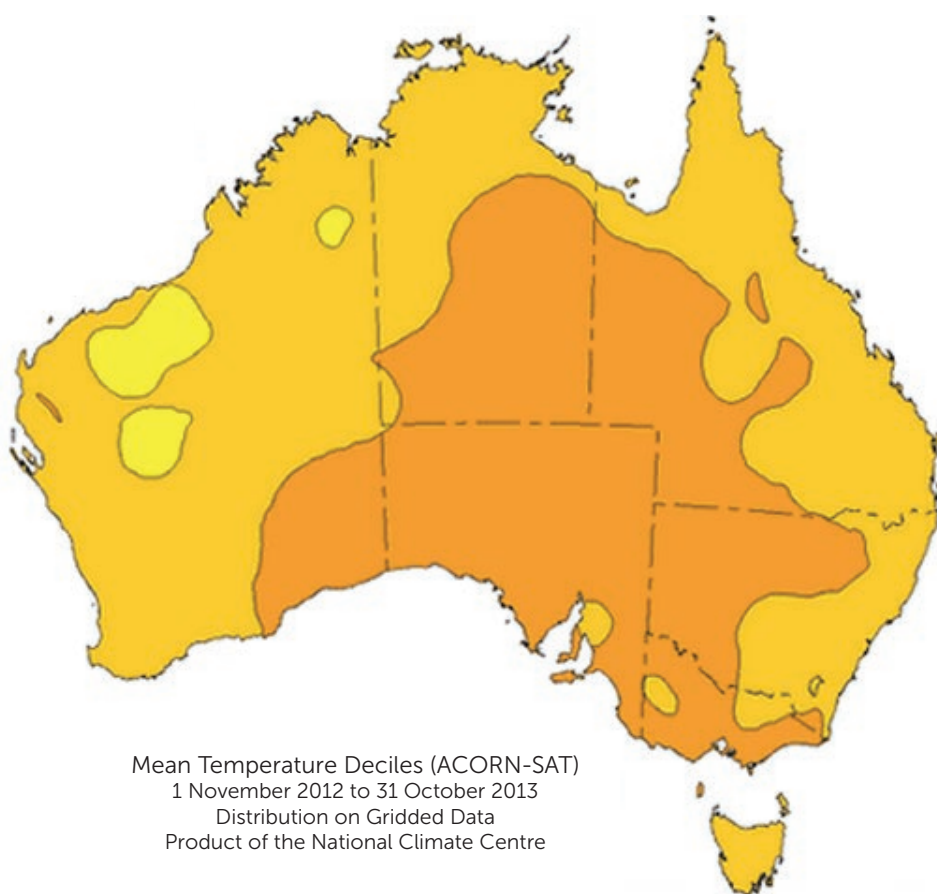
Feeling the heat around Australia

- Alice Springs Airport recorded its hottest ever October day with a maximum temperature of 42.6°C, beating the previous record set in October last year. This year was also the first time that Alice Springs airport recorded three days above 40°C in October (BoM, 2013d).
- The average temperature in Canberra for October was 2.5°C above the long-term average (BoM, 2013c).
- Fitzroy Crossing in Western Australia recorded the highest average maximum temperature ever in Australia for October (42.0°C) (BoM, 2013g).
- This October was the second warmest on record in Sydney, at 3.6°C above the long-term average (BoM, 2013f).
- The average temperature for this October in the Northern Territory was 1.73°C above the long-term October average for the territory (BoM, 2013d).
- Queensland experienced the second-hottest average maximum temperature for October on record, 2.38°C above the long-term average (BoM, 2013e).
- Brisbane recorded its highest ever average maximum temperature in October (28.8°C).
- Western Australia experienced the second-hottest October on record (BoM, 2013g).
- In October, the West Kimberley region of Western Australia recorded the highest ever monthly average maximum temperature, around 4°C higher than the long-term average (BoM, 2013g).

WHAT HAVE WE SEEN THIS OCTOBER?

The latest report from the Bureau of Meteorology highlights the large number of temperature records that have fallen across Australia in the last year, including (BoM, 2013a):

- Australia's warmest summer on record (December 2012 to February 2013).
- Australia's warmest January and September on record.
- Australia's warmest 12-month period on record (now broken three times, for the periods ending August, September, and October).
- 15 months in a row of above average temperatures.



Between November 2012 and October 2013, the overall average temperature across Australia was 0.22°C higher than for any 12-month period prior to 2013.

Source: Modified from a graphic created by the Bureau of Meteorology (BoM, 2013a).

THE CLIMATE CHANGE LINK

Hot weather, heatwaves and bushfires have always been part of the Australian experience. However, as average global temperatures rise, the severity and frequency of hot weather and heatwaves in Australia is also increasing.

The global increase in atmospheric and ocean temperature is directly connected to increasing greenhouse gases released into the atmosphere by human activities (IPCC, 2013).

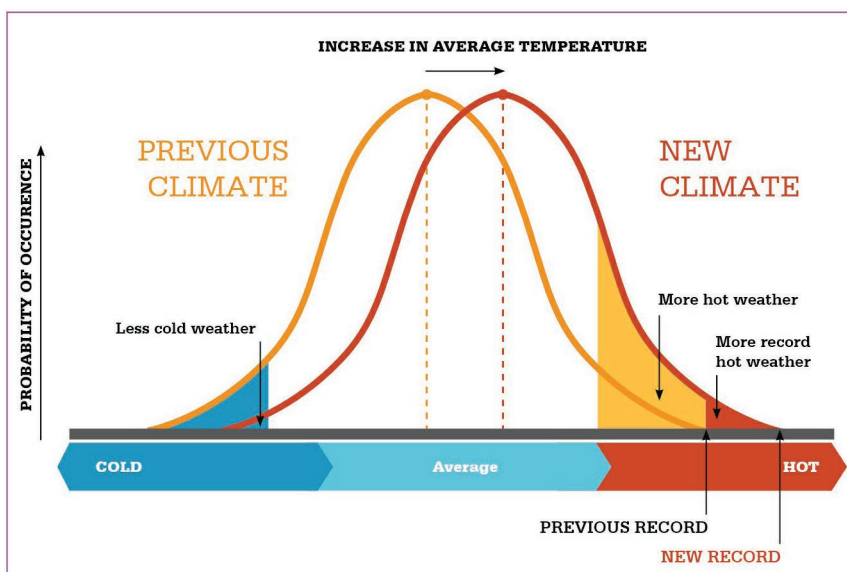
Australia has experienced a significant increase in the frequency of hot days (days over 35°C) during the past 50 years (CSIRO and BoM, 2012). Over the past 10 years in Australia, record hot days occurred three times as often as did record cold days (Trewin and Smalley, 2012).

Since 1910, Australia's average temperature has risen by 0.9°C (CSIRO and BoM, 2007).

This is consistent with the trend of increasing global average temperature.

Although a temperature increase of 0.9°C may seem modest, even small changes in average temperature can have significant impacts on the frequency and nature of extreme weather events.

A small increase in average temperature leads to a much larger increase in the number of very hot days. Many more record hot days will occur if global warming progresses unabated during the 21st century.



An increase in average temperature shifts the temperature ranges towards warmer weather and makes extreme heat more likely.

Source: Climate Commission, 2013.

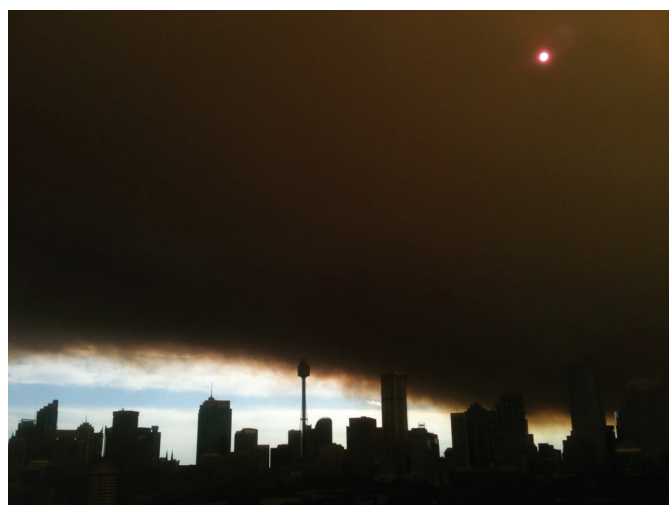
WHAT ARE THE CONSEQUENCES OF AUSTRALIA HEATING UP?

Health impacts

Heat and heatwaves pose significant risks to human health. The elderly and those with existing health conditions are most at risk. For example, the heatwave in southeast Australia in 2009 was estimated to be responsible for 374 heat-related deaths.

Bushfires

Hotter spring and summer temperatures provide favourable conditions for bushfires. Aside from the obvious and dramatic consequences of bushfire injuries and loss of life, the smoke from bushfires—which contains respiratory irritants and carcinogens—is associated with respiratory problems in Australia and around the world.



Sydney experienced smoke haze while fires were burning in the Blue Mountains in October 2013.

Photo: Matte Rochford.

Globally, it has been estimated that smoke from bushfires causes more than 300,000 deaths annually (Johnston et al., 2012). Smoke can travel to locations many hundreds of kilometres from the fire front, and a significant increase in the number of hospital admissions due to asthma and other respiratory illness occurs in Australian cities during 'smoke days' (Martin et al., 2013).

Changes to ecosystems

Increasing temperatures on land and in the ocean around Australia also affect biodiversity. Ocean temperatures are rising globally, and the seas off eastern Australia are warming up to three times the global rate (Wu et al., 2012). Many marine species along Australia's east coast are migrating south as ocean temperatures rise (Figueira and Booth 2010).

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