Environment
Planet Oz

Fossil fuel emissions behind Australia's record-breaking spring heat, suggests study

Graham Readfearn

Scientists say it is highly likely greenhouse gas emissions are behind Australia's run of three hottest springs on record - 2014, 2015 and 2013

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Leanne Brow inspects the remains of her home in Winmalee, New South Wales, following severe bush fires in October 2013, one of Australia's hottest springs on record. Photograph: Lisa Maree Williams/Getty Images

World leaders and street protesters were struggling in a heatwave with temperatures hovering around 40C at Brisbane's G20 meeting.

Longreach in central Queensland had 13 days straight when the maximum temperature hit 40C (104F) or higher - four days longer than the town's previous record.

Down in New South Wales and Tasmania, residents fought off bushfires. A few weeks earlier, South Australia had its hottest October on record.

This was the spring of 2014, Australia's hottest September-November period on a record going back to 1910, beating the previous record by a 10th of a degree - a large margin in climatological terms.

"Temperatures were 1.67C above the 1961-1990 average, the largest such departure from the long-term average observed since national records began in 1910," the Bureau of Meteorology said.

These sorts of spring conditions are perfect for priming bush areas for dangerous fire seasons (extreme fire weather is on the rise in Australia) that damage property, risk lives and devastate wilderness areas.

But the spring of 2014 had been the second record breaker in a row. The previous hottest spring had been the year before, 2013.

There had never been two record-breaking springs occurring back-to-back in Australia's entire record, going back to 1910.

The most recent spring of 2015 was hotter than 2013, but not quite as hot as 2014. The hottest October on record was the one we just had.

So springs in Australia are starting to feel like summer, but could the so-called "lucky country" just be having a run of bad luck?

> We had just had two hit springs in a row and we were set for a third. They broke records by a long way.
> Dr Ailie Gallant

If there had not been about 40% more carbon dioxide in the atmosphere now than there had been before the start of the industrial revolution, could Australians have still sweated through record-breaking springs?

A new study in the journal Geophysical Research Letters by Dr Ailie Gallant, of Monash University, and Dr Sophie Lewis, of Australian National University, has come to a conclusion.

Gallant told me:

> *When we examined a world without human-emitted greenhouse gases in climate models, we found zero instances when there were two consecutive years with record-breaking springtime temperatures like those we observed in 2013 and 2014.*
>
> *But when we examined a world with these additional greenhouse gases, we saw that this happened somewhere between 1 in every 10 years and one in every four. This evidence suggests that this repeated record breaking that we saw in spring in 2013 and 2014, and again in 2015, is almost certainly due to greenhouse warming.*

Now this isn't a surprising outcome. Australia has been warming at roughly the same rate as the rest of the globe, and the cause is the greenhouse gases accumulating in the atmosphere, mainly from burning fossil fuels.

Previous studies have found human fingerprints all over Australia's recent heat records.

To carry out the study, Gallant and Lewis combined computer climate models. They ran the models to see if the results they gave matched what was happening in the real world. The differences were "statistically indistinguishable".

To see what impact greenhouse gases were having, they then removed the greenhouse gases from the models to make a comparison.

What makes the study intriguing is that it not only tried to answer the question of the impacts of greenhouse gas emissions, but also looked to find out exactly how they were affecting temperatures. Gallant says:

> *We had just had two hot springs in a row and we were set for a third. They were really remarkable. They broke records by a long way. We wanted to know; is the weather we are experiencing changing, or is it just that we've warmed up.*
>
> *The evidence is that the underlying air masses are warming, rather than the systems themselves changing.*
>
> *We are getting more record hot springs and it is highly unlikely that this is not due to climate change. But the reason we are getting more record hot springs is not because the weather systems are changing, it is just that everything is warmer.*

The study found the natural background conditions (such as atmospheric circulations and the state of the El Niño/La Niña cycle) that existed during those record-breaking springs "have occurred in the past" yet temperatures had been at least 0.21C cooler.

If the dignitaries at that Brisbane G20 meeting were wondering why they were struggling in such oppressive heat, then it seems they had the answer right in their hands.



— Graham Readfearn (@readfearn)
November 12, 2014

The #G20 "delegate publication" has mining ad across page 2 and 3 and Peabody Energy coal ad on page 14 #priorities pic.twitter.com/g4VdDHakNz

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nottrue ↪ Keith Martin 16m ago 0
Very interesting observation. I noted that the average monthly temperatures, where I live have maximum temps 0.7 higher than average and minimum temps 1.4 higher, which is one of the markers of GHG increasing and agrees with the 2 to 1 ratio expected. Maybe we both live in places that are outliers or one of us is lying.
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crap_in 5h ago 0
Stop the presses.
Even the Guardian says we saved the planet from a New Ice Age
http://www.theguardian.com/environment/2016/jan/13/fossil-fuel-burning-postponing-next-ice-age?NTCMP=sfl
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Happiness4All ↪ crap_in 4h ago 1
Do you get some kind of kick out of looking stupid? Next time you are feeling a bit nippy, you should torch your house. That'll deal with the immediate problem.
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