

# Heatwaves show global warming is not just a future threat

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Europe was hit by a scorching heatwave in 2003. About 70,000 people, mostly very young or very old, died. Given the inexorable rise in global temperatures, suspicions naturally fell on climate change: it is well-established that as greenhouse gas emissions push the mercury up, weather extremes of all types will become more frequent.

But it took more than a year for rigorous science to confirm the hunch. Climate change had made the odds of an event of that magnitude at that time at [least twice as likely](#).

For years, climate researchers toed the official line that it was impossible to attribute any specific weather event to climate change in real time. The accepted wisdom was that it took too long to do this and so an important distinction was made between statements about long-term trends such as “climate change will make extreme heatwaves more frequent” and trying to attribute any specific weather event to global warming.

That approach is rapidly changing, and it needs to. This week, parts of Europe are sweltering. So is New York. And the Australian autumn was unseasonably hot. All these events are in keeping with what we expect from a warmer climate. But are they caused by climate change?

Soon we should be able to answer that question quickly, thanks to a collaboration between European meteorological agencies dubbed [EUPHEME](#). The aim is for your daily weather report to include information about how global warming influenced very recent or [ongoing events](#). Those involved in the project say a prototype should be up and running next year. The Australian meteorological bureau is looking to develop a similar programme.

This is being made possible by better climate models and faster computers running climate simulations over and over again. Heatwaves are large events and their causes are well-understood, making them relatively simple to simulate. There are just two primary factors involved in European heatwaves: the temperature of the air and the movement of weather patterns.

But not all weather events can be modelled so easily. South Asian heatwaves are harder to handle because factors like aerosols in the atmosphere complicate matters. And thunderstorms are too small to be resolved in climate models. Still, there is no question that we are in a better position than we were even five years ago.

The UK researchers who lead attribution work are not studying the current European heatwave. But they did examine the record high temperatures of June to August 2017. By late September, the World Weather Attribution project reported that emissions had “increased the chances of seeing a summer as hot as 2017 by at least a factor of 10” and the odds of the three-day heatwave in August dubbed Lucifer “by at least a factor of four since 1900”.

Researchers think the numbers are likely to be similar for this year’s heatwaves. This matters because climate change is frequently seen as a problem for another day. There can no longer be an excuse for that. Just look out your window and say hello to a warmer world.