

Leaked IPCC report doesn't let us off the hook

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Can we all stop worrying about global warming? According to a recent rash of [stories in the media](#), the "climate sensitivity" – the extent to which temperatures respond to more carbon dioxide in the atmosphere – is lower than expected, and thus that the world won't get as hot as predicted. One story, in [The Economist](#), based on leaked information from a draft of the next assessment by the Intergovernmental Panel on Climate Change, claims the IPCC will revise its sensitivity estimate downwards when they release their official report this September.

The sceptics have mounted a [concerted campaign](#) to persuade journalists and politicians that climate scientists now think that climate sensitivity is lower, says [Bob Ward](#) of the Grantham Research Institute on Climate Change and the Environment, London. But is there any truth to the claims?

Climate sensitivity refers to how much the world will warm if carbon dioxide levels double. But this apparently simple concept is slippier than a Turkish wrestler. As the planet warms in response to rising CO₂ levels, a whole series of feedbacks kick in over the following decades, centuries or millennia. Depending on which feedbacks are included and what the timescale is, there are [many competing ways of defining sensitivity](#). To add to the confusion, there are also dozens of ways of calculating it.

Pollutants

One way is to look at how much warming there has been in response to rising CO₂ levels over the past century. But this approach has all kinds of problems. For starters, we have been pumping out all kinds of pollutants, some of which may be masking the effect of CO₂.

What's more, in the last decade, CO₂ levels have continued to rise but with little surface warming. Such lulls are expected and the latest is [probably a blip, due to the oceans soaking up more heat than usual](#). Unsurprisingly, this means that any sensitivity estimate that includes the past decade will produce a lower value than any calculated without taking the last decade into account, says [Reto Knutti](#) of the Institute for Atmospheric and Climate Science in Zurich, Switzerland. He co-authored one such study published earlier this year, which [concluded that "equilibrium sensitivity" – usually taken to mean the warming expected after several decades of doubled CO₂ – is between 1° C and 5° C, most likely 2° C](#).

Another way to calculate sensitivity is to look at [how global temperatures changed thousands or millions of years ago in response to changing CO₂ levels](#). Such studies point to a higher value for equilibrium sensitivity, closer to 3° C, says Knutti, who reviewed the evidence last year. But there are all kinds of problems with this approach too, such as the uncertainties about what the world was like in the past.

A third way to calculate sensitivity is to use climate models, which point to even higher values

for equilibrium sensitivity, between 2.2 and 4.7° C, says Knutti: "Above 3 °C at least." But there's a lot missing from the models. For one thing, most only include fast feedbacks such as the effect of water vapour. They don't include slower feedbacks such as increasing vegetation, or [the risk of a sudden methane "belch" as the Arctic warms](#).

No new consensus

The bottom line is that there is no new consensus that climate sensitivity is lower than previously thought, says Knutti. The observed trend points to lower values because of the recent slowdown, but other evidence continues to support higher values.

The last IPCC report stated that equilibrium climate sensitivity was between 2 and 4.5 °C, mostly likely 3 °C. *The Economist* claims the IPCC's next report will give a figure between 1.5 and 4.5 °C, with no most likely value. The [IPCC won't confirm or deny it](#), but it's not a huge change if it is true.

"What matters for avoiding dangerous climate change is the upper end, and that hasn't changed," says Knutti. Ward makes the same point. "We can't afford to gamble on sensitivity definitely being low," he says.

But will it all be a huge waste if sensitivity does turn out to be low? Far from it. If we don't cut emissions, Knutti points out, all low sensitivity means is that it will take a decade or two longer for the planet to warm as much as it would if sensitivity was high. "It doesn't get away from the fact that emissions have to be reduced," he says.