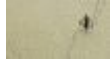


Those 3% of scientific papers that deny climate change? A review found them all flawed

Q qz.com/1069298/the-3-of-scientific-papers-that-deny-climate-change-are-all-flawed/

Katherine Ellen Foley September 05, 2017



It's often said that of all the published scientific research on climate change, 97% of the papers conclude that global warming is real, problematic for the planet, and has been exacerbated by human activity.

But what about those 3% of papers that reach contrary conclusions? Some skeptics have suggested that the authors of studies indicating that climate change is not real, not harmful, or not man-made are bravely standing up for the truth, like maverick thinkers of the past. (Galileo is often invoked, though his fellow scientists [mostly agreed with his conclusions](#)—it was church leaders who tried to suppress them.)

Not so, according to a review [published in](#) the journal of Theoretical and Applied Climatology. The researchers tried to replicate the results of those 3% of papers—a common way to test scientific studies—and found biased, faulty results

Katharine Hayhoe, an atmospheric scientist at Texas Tech University, worked with a team of researchers to look at the 38 papers published in peer-reviewed journals in the last decade that denied anthropogenic global warming.

“Every single one of those analyses had an error—in their assumptions, methodology, or analysis—that, when corrected, brought their results into line with the scientific consensus,” Hayhoe wrote in a [Facebook post](#).

One of Hayhoe's co-authors, Rasmus Benestad, an atmospheric scientist at the Norwegian Meteorological Institute, built the program using the computer language R—which conveniently works on all computer platforms—to replicate each of the papers' results and to try to understand how they reached their conclusions. Benestad's program found that none of the papers had results that were replicable, at least not with generally accepted science.

Broadly, there were [three main errors](#) in the papers denying climate change. Many had cherry-picked the results that conveniently supported their conclusion, while ignoring other context or records. Then there were some that applied inappropriate “curve-fitting”—in which they would step farther and farther away from data until the points matched the curve of their choosing.

And of course, sometimes the papers just ignored physics altogether. “In many cases, shortcomings are due to insufficient model evaluation, leading to results that are not universally valid but rather are an artifact of a particular experimental setup,” the authors write.

Those who assert that these papers are correct while the other 97% are wrong are holding up science where the researchers had already decided what results they sought, the authors of the review say. Good science is objective—it doesn't care what anyone *wants* the answers to be.

The review serves as an answer to the charge that the minority view on climate change has been consistently suppressed, wrote Hayhoe. “It's a lot easier for someone to claim they've been suppressed than to admit that maybe they can't find the scientific evidence to support their political ideology... They weren't suppressed. They're out there, where anyone can find them.” Indeed, the review raises the question of how these papers came to be published in the first place, when they used flawed methodology, which the rigorous peer-review process is designed to weed out.

In an article [for the Guardian](#), one of the researchers, Dana Nuccitelli points out another red flag with the climate-

change-denying papers: “There is no cohesive, consistent alternative theory to human-caused global warming,” he writes. “Some blame global warming on the sun, others on orbital cycles of other planets, others on ocean cycles, and so on. There is a 97% expert consensus on a cohesive theory that’s overwhelmingly supported by the scientific evidence, but the 2–3% of papers that reject that consensus are all over the map, even contradicting each other.”

The Galileo example is also instructive, Nuccitelli points out. The “father of observational science,” championed the astronomical model that the earth and other planets in our solar system revolve around the sun—a view that was eventually accepted almost universally as the truth. “If any of the contrarians were a modern-day Galileo, he would present a theory that’s supported by the scientific evidence and that’s not based on methodological errors,” he writes. “Such a sound theory would convince scientific experts, and a consensus would begin to form.”

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