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CLIMATE AND ENVIRONMENT

Research shows — yet again — that there's no scientific debate about climate change

By Chelsea Harvey
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It's a well-known and widely cited statistic: 97 percent of scientific experts agree that human-caused climate change is real. The consensus has been supported by numerous studies — and yet the idea that the statistic is made up, or wrong, is still a common position among climate doubters and a major tool used to foster public uncertainty about climate change.

Now, researchers have reinforced this finding of a scientific consensus once again in a new paper, published Wednesday in the journal Environmental Research Letters. The paper finds that an overwhelming majority of climate experts agree on the issue, and that — even though the contrarian movement begs to differ — there is no substantial scientific debate about it.

While the consensus has been documented by many studies over the years, the most widely cited is a 2013 paper led by John Cook of the University of Queensland's Global Change Institute. The study examined thousands of peer-reviewed scientific papers and found that, among those papers that took a position on the causes of climate change, 97.1 percent of them supported the idea that global warming is caused by humans.

Earlier this year, however, University of Sussex professor Richard Tol published a comment criticizing the 2013 study and suggesting that 97 percent may be too high a figure. In his comment, Tol returned to some of the published research on the consensus and re-examined the accompanying data, noting that Cook's paper did not include studies that took no position on climate change, and that surveys including scientists who don't study climate tend to have somewhat lower rates of consensus.

After examining the comment, however, Cook and a team of other researchers concluded that these arguments were problematic at best. In their new paper, they re-examined the published literature on the climate consensus, finding that the 97 percent calculation remains a robust and well-supported statistic.

“The biggest flaw [in Tol’s argument] is that he misrepresents many of the other studies on the consensus,” said Cook, lead author on the new paper.

“He tries to argue that our paper is an outlier — is different to all the other studies in their estimates of the expert consensus,” Cook said. “But the way he arrives at the expert consensus is by using groups that include non-experts, which is a classic technique to try to obtain lower estimates of the scientific consensus.”

It’s true that scientists who don’t study climate also don’t accept the scientific consensus as strongly. But this variability is to be expected when non-experts are included, the authors of the new paper explain.

“A significant contributor to variation in consensus estimates is the conflation of general scientific opinion with expert scientific opinion,” they point out. When defining experts as scientists who actually study and publish on climate change — the people who are best qualified to take a position on the subject, in other words — the surveys consistently find consensus rates well above 90 percent.

The comment by Tol also took issue with another aspect of Cook’s 2013 paper — the fact that his analysis only considers papers that took a concrete stand on whether human-caused climate change is occurring. Tol noted that when papers with no position are included in a sample, the consensus shrinks considerably. But Cook finds this a questionable method.

“The question that our research addressed was: Is there an ongoing scientific debate in the peer-reviewed literature about global warming?” Cook said. “To answer that question, you need to look at papers that state a position one way or the other.”

In fact, he added, the growing number of papers that express no explicit position on anthropogenic climate change is an indicator that the issue is past the point where its discussion is necessary.

“As a consensus gets stronger, you expect to see less and less papers stating a position on it — because it’s a consensus, you don’t really need to reaffirm what everyone knows,” Cook said. “It would be like every astronomy paper affirming that the Earth revolves around the sun.”

In fact, the new paper points out that a 2015 study actually demonstrated that if this method of including “no position” papers were applied to a survey of studies on plate tectonics, the results would require scientists “to reject the scientific consensus in that field because nearly all current papers would be classified as taking ‘no position.’”

In a Wednesday blog post, Tol responded to the new paper’s claims that he misrepresented results in his comment. “Misrepresentation is a big word,” he wrote. “Earlier consensus studies claim to have found a very high degree of agreement with the notion that the global warming observed in the instrumental record is at least partly caused by humans. However, these high rates of consensus are only found if the sample is restricted in a way that is superficially plausible but ultimately arbitrary.”

In a follow-up email to The Washington Post, Tol added that he felt the new paper also failed to address several other points he made in his comment.

“The most important one is that the ratings in Cook 2013 were not blind,” he said. In the original 2013 paper, the researchers relied on independent “raters” to assess the degree to which each included paper endorsed the idea of human-caused climate change, using a set of criteria prepared by the researchers themselves. In his comment, Tol argued that the 2013 paper did not describe any steps taken to limit communication among the raters or prevent them from viewing other raters’ responses or using additional information when making their assessments.

“The people who rated abstracts had access to earlier ratings, and could thus steer, perhaps unconsciously, the final result in a particular direction,” he told The Post.

In a supplement to the new paper, however, Cook and his colleagues addressed this issue, noting that their methods made collusion among the raters “virtually impossible.” They also added that the 97.1 percent consensus established by the independent raters was further supported by a second phase of the study, which asked the authors of the examined papers to rate their own studies in regard to their positions on anthropogenic climate change. This self-rating phase returned a consensus of 97.2 percent.

Returning to the published literature on the climate consensus, Cook and his colleagues concluded that “the scientific consensus on [anthropogenic global warming] is robust, with a range of 90 percent to 100 percent depending on the exact question, timing and sampling methodology.”

While the consensus on, well, the consensus is growing ever stronger, scientists say it’s still important to make sure the public is well-informed that the debate is over. While research has shown that it’s notoriously difficult to change an individual’s mind about climate change once it’s made up, studies have also suggested that spreading doubt about the scientific consensus is a particularly effective way to reduce public acceptance of both the existence of global warming and policies intended to mitigate it.

“It is an important component of thinking about climate change,” said Stuart Carlton, a coastal ecosystem and social science specialist at Texas Sea Grant, who has published on the consensus issue and was a co-author on the new paper. “Belief in the climate consensus is sort of an entry point into developing thoughts about climate change as a whole.”

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