97% Consensus Comment – Bast & Spencer

Last week Secretary of State John Kerry warned graduating students at Boston College of the "crippling consequences" of climate change. "Ninety-seven percent of the world's scientists," he added, "tell us this is urgent."

Where did Mr. Kerry get the 97% figure? Perhaps from his boss, President Obama, who tweeted on May 16 that "Ninety-seven percent of scientists agree: #climate change is real, man-made and dangerous." Or maybe from NASA, which posted (in more measured language) on its website, "Ninety-seven percent of climate scientists agree that climate-warming trends over the past century are very likely due to human activities."

Yet the assertion that 97% of scientists believe that climate change is a man-made, urgent problem is a fiction. The so-called consensus comes from a handful of surveys and abstract-counting exercises that have been contradicted by more reliable research.

One frequently cited source for the consensus is a 2004 opinion essay published in Science magazine by Naomi Oreskes, a science historian now at Harvard. She claimed to have examined abstracts of 928 articles published in scientific journals between 1993 and 2003, and found that 75% supported the view that human activities are responsible for most of the observed warming over the previous 50 years while none directly dissented.

Ms. Oreskes's definition of consensus covered "man-made" but left out "dangerous"—and scores of articles by prominent scientists such as Richard Lindzen, John Christy, Sherwood Idso and Patrick Michaels, who question the consensus, were excluded. The methodology is also flawed. A study published earlier this year in Nature noted that abstracts of academic papers often contain claims that aren't substantiated in the papers.

Another widely cited source for the consensus view is a 2009 article in "Eos, Transactions American Geophysical Union" by Maggie Kendall Zimmerman, a student at the University of Illinois, and her master's thesis adviser Peter Doran. It reported the results of a two-question online survey of selected scientists. Mr. Doran and Ms. Zimmerman claimed "97 percent of climate scientists agree" that global temperatures have risen and that humans are a significant contributing factor.

The survey's questions don't reveal much of interest. Most scientists who are skeptical of catastrophic global warming nevertheless would answer "yes" to both questions. The survey was silent on whether the human impact is large enough to constitute a problem. Nor did it include solar scientists, space scientists, cosmologists, physicists, meteorologists or astronomers, who are the scientists most likely to be aware of natural causes of climate change.

The "97 percent" figure in the Zimmerman/Doran survey represents the views of only 79 respondents who listed climate science as an area of expertise and said they published more than half of their recent peer-reviewed papers on climate change.

Seventy-nine scientists—of the 3,146 who responded to the survey—does not a consensus make.

In 2010, William R. Love Anderegg, then a student at Stanford University, used Google Scholar to identify the views of the most prolific writers on climate change. His findings were published in Proceedings of the National Academies of Sciences. Mr. Love Anderegg found that 97% to 98% of the 200 most prolific writers on climate change believe "anthropogenic greenhouse gases have been responsible for 'most' of the 'unequivocal' warming." There was no mention of how dangerous this climate change might be; and, of course, 200 researchers out of the thousands who have contributed to the climate science debate is not evidence of consensus.

In 2013, John Cook, an Australia-based blogger, and some of his friends reviewed abstracts of peer-reviewed papers published from 1991 to 2011. Mr. Cook reported that 97% of those who stated a position explicitly or implicitly suggest that human activity is responsible for some warming. His findings were published in Environmental Research Letters.

Mr. Cook's work was quickly debunked. In Science and Education in August 2013, for example, David R. Legates (a professor of geography at the University of Delaware and former director of its Center for Climatic Research) and three coauthors reviewed the same papers as did Mr. Cook and found "only 41 papers—0.3 percent of all 11,944 abstracts or 1.0 percent of the 4,014 expressing an opinion, and not 97.1 percent—had been found to endorse" the claim that human activity is causing most of the current warming. Elsewhere, climate scientists including Craig Idso, Nicola Scafetta, Nir J. Shaviv and Nils- Axel Morner, whose research questions the alleged consensus, protested that Mr. Cook ignored or misrepresented their work.

Rigorous international surveys conducted by German scientists Dennis Bray and Hans von Storch—most recently published in Environmental Science & Policy in 2010—have found that most climate scientists disagree with the consensus on key issues such as the reliability of climate data and computer models. They do not believe that climate processes such as cloud formation and precipitation are sufficiently understood to predict future climate change.

Surveys of meteorologists repeatedly find a majority oppose the alleged consensus. Only 39.5% of 1,854 American Meteorological Society members who responded to a survey in 2012 said man-made global warming is dangerous.

Finally, the U.N.'s Intergovernmental Panel on Climate Change—which claims to speak for more than 2,500 scientists—is probably the most frequently cited source for the consensus. Its latest report claims that "human interference with the climate system is occurring, and climate change poses risks for human and natural systems." Yet relatively few have either written on or reviewed research having to do with the key question: How much of the temperature increase and other climate changes observed in the 20th century was caused by man-made greenhouse-gas emissions? The IPCC lists only 41 authors and editors of the relevant chapter of the Fifth Assessment Report addressing "anthropogenic and natural radiative forcing."

Of the various petitions on global warming circulated for signatures by scientists, the one by the Petition Project, a group of physicists and physical chemists based in La Jolla, Calif., has by far the most signatures—more than 31,000 (more than 9,000 with a Ph.D.). It was most recently published in 2009, and most signers were added or reaffirmed since 2007. The petition states that "there is no convincing scientific evidence that human release of . . . carbon dioxide, methane, or other greenhouse gases is causing or will, in the foreseeable future, cause catastrophic heating of the Earth's atmosphere and disruption of the Earth's climate."

We could go on, but the larger point is plain. There is no basis for the claim that 97% of scientists believe that man-made climate change is a dangerous problem.

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