

The Scientific Tragedy of Climategate

Can climate change science recover from the damage done by leaked emails?

Ronald Bailey | December 1, 2009

Climategate. What a hot mess. Researchers at the Climatic Research Unit (CRU) at the University of East Anglia and their colleagues around the globe may have fiddled with historical climate data and possibly the peer review process to ensure that publicized temperature trends fit the narrative of man-made global warming—then they emailed each other about it. Now those emails and other documents have been splashed all over the Web. Revelations contained in the leaked emails are roiling the scientific community and the researchers may be in pretty serious trouble. But the real tragedy of the Climategate scandal is that a lack of confidence in climate data will seriously impair mankind's ability to assess and react properly to a potentially huge problem.

Consider researcher Tom Wigley's email describing his [adjustments to mid-20th century global temperature data](#) in order to lower an inconvenient warming "blip." According to the global warming hypothesis, late 20th century man-made warming was supposed to be faster than earlier natural warming. But the data show rapid "natural" warming in the 1930s. Adjusting the 1940 temperature blip downward makes a better-looking trend line in support of the notion of rapidly accelerating man-made warming. Collecting and evaluating temperature data requires the exercise of scientific judgment, but Wigley's emails suggest a convenient correction of 0.15 degree Celsius that fits the man-made global warming hypothesis. The adjustment may be reasonable—changes in instrumentation might need to be accounted for—but all raw data and the methodologies used to adjust them should be publicly available so others can check them to make sure.

In another set of troubling emails, the CRU crew and associates discussed how to freeze out researchers and editors who expressed doubts about the man-made climate change. For example, an email from CRU's leader Phil Jones saying that he and Kevin Trenberth would [keep two dissenting](#) scientific articles out of the United Nations Intergovernmental Panel on Climate Change's next report "even if we have to redefine what the peer-review literature is!" In addition, the CRU crew evidently [plotted to remove](#) journal editors with whom they disagreed and suppress the publication of articles that they disliked. If they actually succeeded, this compounds the tragedy. Eliminating dissenting voices distorts the peer review process and the resulting scientific literature. The world's policymakers rarely enjoy access to complete information, but the Climategate emails suggest they have been robbed of the chance to get the best information available.

In the wake of the Climategate leaks, some researchers are openly decrying the scientific censorship exercised by powerful gatekeepers associated with the CRU. Climatologist Eduardo Zorita at the German Institute for Coastal Research has [publicly declared](#) that "editors, reviewers and authors of alternative studies, analysis, interpretations, even based on the same data we have at our disposal, have been bullied and subtly blackmailed." Zorita adds, "In this atmosphere, PhD students are often tempted to tweak their data so as to fit the 'politically correct picture.'" Zorita evidently believes even after the email scandal that he will be punished by editors and reviewers for denouncing the CRU crew: "By writing these lines I will just probably achieve that a few of my future studies will, again, not see the light of publication."

Now under pressure, the CRU has finally agreed to publicly release all of its temperature data. Just how valuable this will be has been thrown into doubt, however, since the CRU has [admitted](#), "We do not hold the original raw data but only the value-added (quality controlled and homogenised) data." This raises legitimate scientific questions about how the lost original data were manipulated to produce the "value-added." The *Times* (London) reported that Roger Pielke Jr., professor of environmental studies at Colorado University, discovered data had been lost when he asked for original records. "The CRU is basically saying, 'Trust us'. So much for settling questions and resolving debates with science," he said.

Phil Jones, the embattled head of the CRU tried to put to rest concerns about the integrity of his center's data by issuing this [statement](#):

Our global temperature series tallies with those of other, completely independent, groups of scientists working for NASA and the National Climate Data Center in the United States, among others. Even if you were to ignore our findings, theirs show the same results. The facts speak for themselves; there is no need for anyone to manipulate them.

It is reassuring to think that even if the CRU data are shown to be distorted (either wittingly or unwittingly) other independent sources of data are at hand. But that belief may not be entirely accurate. Besides the CRU temperature data, there are two other leading sources used by the IPCC, one created by the NASA Goddard Institute for Space Studies (GISS), and the other by the National Ocean and Atmospheric Administration's (NOAA) National Climatic Data Center (NCDC).

While it is true that the scientific groups are independent, as University of Colorado climatologist [Roger Pielke Sr.](#) (father of Pielke Jr.) observes, the temperature data sets are not all that independent. Pielke cites the 2006 U.S. Climate Change Science Program report, which [noted](#), "Since the three chosen data sets utilize many of the same raw observations, there is a degree of interdependence." The report further observed, "While there are fundamental differences in the methodology used to create the surface data sets, the differing techniques with the same data produce almost the same results." In 2007, Pielke and his colleagues [reported](#), "The raw surface temperature data from which all of the different global surface temperature trend analyses are derived are essentially the same. The best estimate that has been reported is that 90-95 percent of the raw data in each of the analyses is the same (P. Jones, personal communication, 2003). That the analyses produce similar trends should therefore come as no surprise."

One of the leaked emails from CRU's Phil Jones appears to [confirm](#) this data interdependence: "Almost all the data we have in the CRU archive is exactly the same as in the Global Historical Climatology Network (GHCN) archive used by the NOAA National Climatic Data Center." Given this interdependence, Jones' appeal to correlation with other data sets to support the validity of the CRU data is less convincing than one would hope. To the contrary, the fact that the three data sets correlate so well may instead provoke concerns about the validity of all three.

In an email to University of Alabama climatologist John Christy I asked, "Is there a possibility that the teams that compile temperature data could all be making the same set of errors which would result in them finding similar (and perhaps) spurious trends?" Christy replied that he believed this was possible and cited some [recent work](#) he had done on temperature trends in East Africa as evidence. In that article he found that using both the maximum and minimum temperature rather than the mean temperature (TMean) used by the three official data sets gives a better indication of actual temperature trends in the region.

Christy found that the maximum temperature (TMax) trend has been essentially zero since 1900 while the minimum temperature (TMin) trend has been increasing. In his email to me, Christy explained, "As it turns out, TMin warms significantly due to factors other than the greenhouse effect, so TMean, because it is affected by TMin, is a poor proxy for understanding the greenhouse effect of 'global warming'." Or as his journal article puts it, "There appears to be little change in East Africa's TMax, and if TMax is a suitable proxy for climate changes affecting the deep atmosphere, there has been little impact in the past half-century." So if Christy's analysis is correct, much of the global warming in East Africa reported by the three official data sets is exaggerated. Christy has found similar effects on temperature trend reporting for other regions of the world.

Roger Pielke Jr. notes, "If it turns out that the choices made by CRU, GISS, NOAA fall on the 'maximize historical trends' end of the scale that will not help their perceived credibility for obvious reasons." On the other hand, Pielke Jr. adds that Climategate could dissipate if probing by outside researchers finds that CRU, GISS, and NOAA researchers made temperature data adjustments "in the middle of the range or even low end, then this will enhance their credibility." The good news is that a truly [independent set of temperature data](#) has been produced over the past thirty years by NOAA satellites. In general, the global satellite temperature trends tend to be on the low end of the climate computer model projections.

The more benign interpretation of what has been going on in climate change science is that as the man-made global warming narrative took hold among climatologists, research that confirmed the dominant paradigm had a much easier time getting through the peer review process. Meanwhile research that contradicted the paradigm was subject to much greater scrutiny and thus had a harder time making it through the peer review sieve. Scientists are human too and not free from [confirmation bias](#).

But for now, regardless of the motivations of the researchers, damage has been done. How can the world of climate science recover? First, carry out independent investigations of the activities of the researchers involved. Pennsylvania State University has announced that it will [investigate](#) the activities of researcher Michael Mann, who worked closely with the CRU and several times expressed in the leaked emails his desire to stifle the scientific work of researchers with whom he disagreed. In Britain, Nigel Lawson, former chancellor of the exchequer, has called for an independent investigation of the CRU. Tireless journalistic global warming scold George Monbiot has [declared](#), "It's no use pretending this isn't a major blow.... I believe that the head of the unit, Phil Jones, should now resign."

Another important step to recovering from the tragedy of Climategate is to institute the kind of research transparency that should have been happening in the first place. "Climate data needs to be publicly available and well documented," argues Georgia Tech climatologist Judith Curry. "This includes metadata that explains how the data were treated and manipulated, what assumptions were made in assembling the data sets, and what data was omitted and why."

In a BBC News article, Michael Hulme, a climatologist at the University of East Anglia, and Jerome Ravetz, who is associated with an institute at Oxford University, warn that the tribalism revealed in the leaked CRU emails is damaging public trust in climate science. In addition, they believe that the usefulness of the U.N.'s Intergovernmental Panel on Climate Change, which relied heavily on the work of CRU scientists, may have run its course. Hulme and Ravetz worry that the IPCC's "structural tendency to politicize climate change science...has helped to foster a more authoritarian and exclusive form of knowledge production—just at a time when a globalizing and wired cosmopolitan culture is demanding of science something much more open and inclusive."

And greater transparency should not be limited to just temperature data, but to all aspects of climate science. In an email response to me, climatologist Pielke Sr. argues, "I completely support the view that the computer software [of climate models] must be available for scrutiny by independent scientists. Otherwise these models should not be used in climate assessment reports." Only through such transparency can other researchers determine whether or not climate models are adequate forecasters of future climate change or are merely prejudices made plausible.

One thing more transparency won't fix: the complications and uncertainty inherent in the policy debate about global warming. "In the end, I would hypothesize that the result of the freeing of data and code will necessarily lead to a more robust understanding of scientific uncertainties, [and] that may have the perverse effect of making the future less clear," emails Pielke Jr. "The inability to tolerate dissent has unfortunately destroyed the credibility of climate change science and I don't know how it's going to come back," laments climatologist and free-market Cato Institute fellow Patrick Michaels, who was frequently reviled in the CRU emails. "I don't know how the public and policymakers will ever trust what climate scientists say in the future."

In their zeal to marginalize and stifle their critics, this insular band of climate researchers has damaged the very science they sought to defend. We all now are the losers. That's the true tragedy of Climategate.

Ronald Bailey is Reason's science correspondent. His book [Liberation Biology: The Scientific and Moral Case for the Biotech Revolution](#) is available from Prometheus Books.