

The Climategate Affair Brent Ranalli, 2012

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In November 2009, a trove of thousands of emails and other electronic files belonging to members of the Climatic Research Unit (CRU) at the University of East Anglia (UEA) in Norwich, England, was released to the public by one or more anonymous hackers. The result, dubbed Climategate, was a major media event. Concern about possible misconduct by scientists at the CRU and elsewhere, based on the contents of the emails, led to several official investigations. These investigations cleared the scientists of allegations of fraud, but found that the CRU and UEA had not complied with the letter and spirit of the United Kingdom's Freedom of Information Act, and made other criticisms as well. The episode led to a wider debate about the dissemination of scientific data and the peer review process.

The hackers initially released approximately 4,660 files, including 1,073 email files (many of which include chains of earlier correspondence), plus documents, data files, and computer code. The emails were not a random selection: they predominantly discuss professional matters, and most involve a handful of senders and receivers, including CRU director Phil Jones, CRU deputy director Keith Briffa, and U.S. colleagues Michael Mann, Ben Santer (a CRU graduate), and Tom Wigley (a former CRU director). The primary emails span a period from March 1996 to November 2009, but some of the email chains embed messages from as early as 1991.

The hack occurred, or culminated, sometime between November 12, the date of the final email, and November 17, when the hack was revealed. Though there was early speculation that the hack could have been as simple as downloading information accidentally discovered on a public server or even deliberately leaked by CRU staff, the official police investigation confirmed that it was "a sophisticated and carefully orchestrated attack" on the CRU's servers. In the weeks preceding the final attack, the CRU servers had been probed and compromised multiple times from IP address located in seven different countries, and the hacker(s) altered web logs to try to leave a false trail. The dissemination of the stolen files also involved sophisticated anonymous use of open servers in multiple countries. The police closed their investigation in July 2012 without having identified a suspect.

The initial release of the files in November 2009 coincided with the run-up to the Copenhagen Climate Change Conference. This fact and the fact that additional files apparently from the same trove were released in 2011 at the time of the Climate Change Conference in Durban (a release that created less of a sensation but was dubbed Climategate 2.0 by the media) suggest that the intention of the hacker(s) was to undermine or distract media attention from those climate policy discussions.

In the initial release, the hacker(s) first tried to disseminate the files on RealClimate, a climate scientists' blog, affiliated with Michael Mann. On the morning of November 17, the hacker(s) compromised the RealClimate server and prepared a draft post with an announcement and a link to a zipped file on a Russian server. The hacker(s) also uploaded the entire zipped file onto the RealClimate server, and put a link to that location in a comment at ClimateAudit, a blog belonging to Stephen McIntyre, a prominent Toronto-based skeptic. The RealClimate editor quickly took down the unauthorized post and the files and notified the CRU. Later the same day, the hacker(s) posted more announcements and links to the Russian server in comments at a handful of blogs run by U.S. skeptics. By November 19, the skeptical blogs were systematically downloading and commenting on the files, and by the following day, mainstream media were reporting the story.

In the early days of the affair, skeptical bloggers and portions of the right-wing media scoured the emails for damaging and headline-catching phrases, and touted the emails as proof of scientific fraud, manipulation of the peer-review process, and corruption at the Intergovernmental Panel on Climate Change (IPCC). In some cases they cited the emails as proof that anthropogenic global warming was a hoax. UEA was slow to contact the police (November 20) and slower to issue a press statement (November 23). UEA emphasized that the hack was a matter for police investigation and refused to make CRU staff available to the press for comment.

In the absence of vigorous assurances from the scientists of their innocence in the face of such grave accusations (with the notable exception of the scientists blogging at RealClimate), the response of the environmental community was muted and fragmented. UK environmental journalist George Monbiot deplored what he read in the emails and went so far as to call for Jones to resign. (Monbiot later backed off this stance as details about the context of some of the controversial emails emerged.) On the other hand, Elizabeth May of the Canada Green Party called the skeptics' bluff, announcing that she had read through all the emails and found nothing as damning as was alleged.

Several official investigations were launched in response to the apparent scandal. The House of Commons held hearings in March 2010. The UK Information Commissioner's Office investigated compliance with information-access laws at UEA. The university commissioned two investigations of its own, chaired by Sir Muir Russell and Lord Oxburgh (the former investigation broad in scope, the latter focused on reviewing and critiquing the scientific output of the CRU). Across the Atlantic, Penn State University investigated the scientific conduct of Mann.

Several of the most prominent issues raised during the scandal are discussed below. These include: (1) what the emails reveal about the climate scientists' ongoing conflict with skeptics, especially over the issue of data openness; (2) allegations of scientific misconduct; (3) allegations of subverting the peer review process; (4) allegations of violating IPCC rules; and (5) allegations of violating UK information-access law. Where appropriate, salient findings from the official investigations are noted.

(1) The most immediately damaging revelation in the emails is the often disrespectful tone taken by some of the scientists when discussing intellectual opponents, especially climate skeptics (e.g., Jones's comment on the death of a prominent Australian skeptic: "In an odd way this is cheering news!")

Jones and others have publicly expressed regret about the tone of some of the released emails. Defenders of the climate scientists have pointed out that the tone of disrespect in the scientists' private emails is easily outmatched by the vitriol, profanity, and even death threats that climate scientists have been subjected to.

The emails reveal a siege mentality among the scientists, who understood that there were those who opposed their work on ideological grounds and were willing to misrepresent it at any opportunity, and that coordinated smear campaigns had been launched at their peers in the past. (The 1996-97 media crucifixion of Benjamin Santer in particular—described well in the book *Merchants of Doubt*—sheds light on the scientists' expectations and fears.) It is clear from the emails that the scientists viewed inquiries by skeptical amateurs such as McIntyre as motivated by a desire to harass, disrupt, and misrepresent, rather than legitimate scholarly intentions.

In the analysis of the *Guardian's* Fred Pearce, Climategate is in essence a tragedy of misunderstood motives. So long having been victims of harassment by ideologically motivated skeptics and deniers, the scientists failed to recognize that some skeptics, such as McIntyre, had a legitimate interest in research. And the wall of defensive silence erected by the scientists to shield themselves convinced many skeptics that the scientists had something sinister to hide.

As the emails show, frequently the conflict between scientists and skeptics revolved around access to data. Early requests were sometimes honored graciously, but as relations soured they were refused. Requests became demands, and finally Freedom of Information (FOI) requests. The hack itself, as a hostile "liberation of data," can be seen as representing a late stage and culmination of this struggle.

The emails reveal the scientists debating the best course of action when requests for data were made by hostile parties. At one extreme, Santer decided to put the entire set of data, calculations, and code pertaining to a 2008 paper in the public domain in order to be rid of McIntyre's FOI requests. At the other extreme, the emails reveal that Jones was determined to deny skeptics access to CRU data as a matter of principle.

Jones was able to deny some requests by invoking confidentiality agreements with other parties who had provided primary data. (These ranged from formal written agreements to verbal agreements and standard academic courtesy. When skeptics challenged CRU to produce particular agreements under FOI rules, some of the written agreements turned out to have been misplaced.) Jones also invoked intellectual property rights. He wrote to one skeptic that "even if WMO [World Meteorological Association] agrees, I will still not pass on the data. We have 25 or so years invested in the work."

Another reason for the reluctance of some scientists to share data, especially intermediate calculations and computer code, has to do with the distinction between duplication and replication of results. The declared aim of some skeptics has been to “audit” the work of climate scientists: to review intermediate steps and calculations and scrutinize computer code in search of fraud or error. By contrast, the normal check on fraud and error in science is independent attempts to replicate results. This is in part because the reward structures and norms of academic science encourage scholars to perform original research and make new contributions to knowledge, not just pick apart the work of others. It is also in part a matter of academic civility: unless they have good reason to think otherwise (e.g., multiple failed replications), scientists generally operate on a default presumption of peers’ honesty and competence.

If climate skeptics failed to conform to academic norms and civilities, climate scientists often failed to understand that skeptics were operating on different principles: so, for example, the peer-reviewed articles by McIntyre and his co-author Ross McKittrick criticizing Mann et al.’s “hockey stick” graph were frequently misunderstood as attempts to produce a superior temperature reconstruction, when their stated intention was only to show that Mann’s methods were flawed.

For replication of results, sharing of primary data is enough. Indeed, sharing more than primary data could compromise the integrity of the replication process. The reluctance of Jones and others to share intermediate calculations and computer code reflected not only concern about intellectual property rights and a determination not to be bullied, but also an adherence to the norm of independent replication of results.

Although the incentive structure of science promotes replication of results over duplication, another norm of science is open sharing of data, methods, and results. The Muir Russell review saw no reason why interested amateurs should not have an opportunity to study the evidence behind climate scientists’ conclusions and recommended that the climate science community move toward fuller and more timely disclosure of data and methods associated with published research.

(2) A number of allegations of scientific misconduct were raised in light of the emails. Many were connected to specific phrases found in specific emails.

The most notorious phrase to emerge from the emails was Phil Jones’s 1999 statement that he had “just completed Mike’s Nature trick of adding in the real temps to each series for the last 20 years (ie from 1981 onwards) and [sic] from 1961 for Keith’s to hide the decline.” The quotation has been widely cited as evidence that Jones had “tricked” the public by “hiding a decline” in global temperatures.

The context of Jones’s email was that he had been preparing a graph of proxy temperature trends for a WMO publication. “Mike’s Nature trick” refers to a graph used in a 1998 paper by Michael Mann et al. that superimposed actual measured temperatures at the end of a long graph of proxy temperatures. Jones’s graph adopted this “trick” of combining

actual and proxy data in one graph, and went a step further by using the actual temperature data to complete the 50-year smoothed series for each proxy data set.

The reason for cutting off Keith Briffa's proxy tree-ring data in the 1960s, earlier than the other proxy data, is a phenomenon discussed extensively in the literature on temperature proxies, known as "divergence." The Briffa tree ring data match measured temperatures closely from the mid-nineteenth century to the mid-twentieth century, and then they diverge: the tree rings indicate a decline while actual temperatures have risen. Jones's graph omitted the spurious decline. He later explained to an interviewer that "it was absolutely necessary to remove the incorrect impression given by the tree rings that temperatures between about 1960 and 1999 (when the email was written) were not rising, as our instrumental data clearly showed they were." The exact cause of the late 20th century divergence is not known, and this fact casts some doubt on the reliability of tree ring data as a proxy for temperature in earlier periods. Again, this is extensively discussed in the literature.

The House of Commons and the Muir Russell review were satisfied that there was nothing inherently improper about truncating the proxy data set where it was no longer reliable or combining proxy and actual temperatures in one time series. The Muir Russell review chastised Jones, however, for not adequately explaining these procedures in the WMO publication.

Another controversial email statement came from Kevin Trenberth of the National Center for Atmospheric Research: "The fact is that we can't account for the lack of warming at the moment and it is a travesty that we can't." This was widely cited as evidence that climate scientists were secretly in doubt about global warming.

The context of the quotation is a discussion of tracking the effects of oceanic and atmospheric oscillations. Trenberth was criticizing what he saw as inadequacies in current climate monitoring systems, specifically in their ability to pinpoint energy transfers. The adequacy of climate models was not under discussion; nor was the theoretical basis of understanding and explaining climate change.

It should be noted that in the chain of emails, Trenberth's view was a minority view, so his criticism of the state of climate monitoring cannot be taken as representative of the views of the climate science community. It should also be noted that Trenberth's critique of the state of climate monitoring was not a secret. Trenberth laid out his critique in an August 2009 article.

A third quotation that became notorious was from Michael Mann: "It would be nice to try to 'contain' the putative 'MWP.'" This statement was widely cited as indicating some sinister intention, such as a desire to suppress ("contain") the idea of, or evidence of, medieval warming.

That Mann doubts the existence of a global Medieval Warming Period (MWP) is well known. But the email does not discuss evidence of medieval warming or the sharing or suppression of evidence. In context, the word "contain" refers to the scope of a proposed

temperature reconstruction—making sure it reaches far enough back in time to capture any trend that could be considered medieval warming. The larger passage reads:

What I had in mind [was] a plot of various of the most reliable . . . regional proxy temperature reconstructions around the Northern Hemisphere that are available over the past 1-2 thousand years to convey the important point that warm and cold periods where [sic] highly regionally variable. . . . I think that trying to adopt a timeframe of 2K, rather than the usual 1K, addresses a good earlier point . . . , that it would be nice to try to "contain" the putative "MWP", even if we don't yet have a hemispheric mean reconstruction available that far back.

A fourth widely cited quote can be taken at face value: “It seems to me that Keenan has a valid point.” Tom Wigley wrote this upon learning of problems that skeptic Doug Keenan had identified in a 1990 paper, co-authored by Jones, on urban heat island effect. The paper had stated with confidence that there had been “few, if any, changes in instrumentation, location or observation times” at the dozens of Chinese monitoring stations where the data had been gathered. Investigation by Keenan and others cast doubt on the accuracy of the statement: records from the monitoring stations did not appear to be complete, and where records existed they sometimes showed significant changes in location. A formal complaint by Keenan against Jones’s co-author Wei-Chyung Wang, who had compiled the data for the team, led to an investigation of Wang’s conduct by the University at Albany.

The emails from the period reveal that Jones was given conflicting advice by colleagues: to go on the offensive, or to ignore Keenan. But they also reveal that Wigley, for one, thought that Keenan’s allegations had merit: “Seems to me that Keenan has a valid point. The statements in the papers that he quotes seem to be incorrect statements, and that someone (W-CW at the very least) must have known at the time that they were incorrect.” He thought that correcting the misstatement in the original paper would have resolved the whole issue. “Why, why, why did you and W-CW not simply say this right at the start? Perhaps it's not too late?” As the director of the CRU at the time when Jones had been engaged in the research, Wigley wrote, he felt personally responsible for its integrity.

Although Jones and his coauthors did not issue a correction to the 1990 paper, in 2008 Jones published a new analysis on the same topic. In the wake of Climategate, he publicly acknowledged that “the stations probably did move,” and that the loss of documentation about the stations was “not acceptable . . . not best practice.”

In addition to allegations arising from specific emails, the scandal raised general questions about the integrity of climate research. The three academic investigations made inquiries into the subject.

Lord Oxburgh’s Science Advisory Panel was charged with evaluating the scientific integrity of the CRU’s research program. After reviewing the research behind eleven

significant CRU publications, the panel concluded that it had found “no evidence of any deliberate scientific malpractice.” The panel criticized what it viewed as inadequate record-keeping policies and practices and remarked that “it is very surprising that research in an area that depends so heavily on statistical methods has not been carried out in close collaboration with professional statisticians.”

The Muir Russell review was the most thorough of all the official investigations. Although, as noted above, this review criticized CRU staff for what it perceived as “a consistent pattern of failing to display the proper degree of openness,” it also concluded that it found no evidence to cast doubt on “their rigour and honesty as scientists.” In one case the review tested allegations that the CRU had falsified recent global warming trends by (successfully) replicating the CRU’s temperature trends analysis, using data from public sources and independently programmed code.

Penn State University, Mann’s employer, established a committee to determine whether Mann had engaged in “research misconduct,” as defined by university policy. After reviewing the released emails and Mann’s own email archive, and conducting interviews, the committee concluded that it had found no evidence of misconduct.

(3) A major allegation to emerge from the scandal was subversion of the peer review process: specifically, that prestigious climate scientists threw their weight around inappropriately to prevent skeptical papers from being published or punish journals that gave them a voice.

In the opinion of the Muir Russell review, the expression of candid and strongly opinionated views about journals and articles, such as were found in the emails, is not unusual in science and is not in itself an indication of misconduct. The review investigated several cases in detail, and did not find that CRU staff or other scientists had exerted any improper influence on journal editors.

The Climategate scandal provoked some serious thought about the institution of peer review in the scientific community at large, and provided an opportunity to educate the public about how peer review works, the range and diversity of peer review practices, and what sorts of assurances peer review does and does not provide. Members of Parliament, for example, were surprised to learn that Phil Jones had not been asked for underlying data by peer reviewers of important early papers. And the fact that a paper challenging the research of a scholar is often given to that same scholar for review and comment, in addition to independent reviewers, is not well understood.

(4) Controversy arose over allegations of misbehavior among scientists at the IPCC. The most widely cited email on this subject was from Jones, who wrote: “I can’t see either of these papers being in the next IPCC report. Kevin and I will keep them out somehow - even if we have to redefine what the peer-review literature is!” Phil Jones

and Kevin Trenberth were coordinating lead authors for a chapter of the IPCC's Fourth Assessment (AR4), and the two papers in question suggest that the urban heat island effect is responsible for a significant amount of the observed warming in the instrumental record, contrary to findings published by several research teams, one of which included Jones himself. The two papers did not appear in the first and second drafts of the relevant IPCC chapter, but they were discussed in the final version. There they were acknowledged and their conclusions were judged not to be compelling. The quotation from the email has been cited as evidence of a determination to exclude views inconvenient to the CRU from the IPCC report, or of actual corruption at IPCC.

When questioned by the Muir Russell review, Jones indicated that the email was written in the heat of the moment and "quickly forgotten," and that the strong negative reaction to the papers was a sincerely held conviction that they were scientifically flawed. The Muir Russell review found these arguments credible. The review noted that in the documented group decision-making process of the IPCC there is no evidence that Jones was responsible for excluding the paper from the first two drafts or that he was more responsible than any other member of the writing team for the eventual treatment of the papers.

The statement about redefining peer review, though it made headlines, appears meaningless and was not the subject of any serious inquiry.

(5) UK's Freedom of Information Act and a set of related Environmental Information Regulations (EIR) went into effect in 2005. These regulations provided a new means by which skeptics could extract data from an unwilling CRU.

The hacked emails indicate that when FOI/EIR requests started arriving, Jones convinced university staff responsible for administering the laws that requests coming from skeptics were frivolous and unreasonable. He also advised colleagues to delete emails and files as a precaution against future requests (and possibly in response to a pending request in one case—though Jones denies that any such deletion was actually carried out).

The Muir Russell review found that the CRU and UEA had failed to comply with the letter and spirit of the FOI/EIR laws, and recommended changes in policy and procedure at the university to ensure future compliance. A separate inquiry by the UK Information Commissioner's Office (ICO) agreed, and said this was a matter "of considerable concern," and that the Commissioner would "consider whether further action is appropriate to secure future compliance." As for allegations that CRU staff had deleted data relevant to an ongoing information request, the ICO said that the emails offered "prime [sic] facie evidence of an offence," but that it could not prosecute due to the expired statute of limitations (six months).

The Muir Russell review also raised some general issues for UK policy-makers. First, in the summer of 2009 the CRU had been deluged with 70 FOI/EIR requests within the space of a month, the "vast majority" of which were part of an organized campaign of McIntyre's readers. Although the review found that the CRU's prior refusal to share data

was partly to blame for the situation, it seemed advisable for UK policy-makers “to give guidance on how best to respond to such organised campaigns, consistent with the underlying principle of openness.” Second, the scandal raised awareness of the problem of applying FOI provisions in heavy-handed ways that could damage the ability of the research community to function—for example, by forcing researchers to release work in progress, anonymously written peer reviews, and plans for future research. The review suggested that the United Kingdom might profitably learn from the way the United States has implemented freedom-of-information regulations for the research community.

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