

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

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 W K 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 K De Fail indicate that when FOI/EIR requests started arriving, Jones convinced niversity 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 WCRU and UE \$ had failed to comply with the letter and spirit of the FOI/EIR laws, and recommended changes in policy and procedure at the niversity to ensure future compliance. A separate inquiry by the UK Information Commissioner's Office , 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, WCRU 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 W K 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 WCRU'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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