

Reaffirming climate science

The conclusion that our planet is warming thanks to human activity must not be forgotten amid discussion of research ethics, say climatologists Hans von Storch and Myles Allen.

Hans von Storch & Myles Allen

The publication of hacked e-mails from prominent scientists at the Climatic Research Unit (CRU) at the University of East Anglia in Norwich, UK, has initiated an intense debate, in particular in the United States, about the credibility of climate science. We welcome debate about the ethics of science prompted by the language of some of these e-mails, which, rightly or not, have created concerns about the scientific process. But, at the same time, it is crucial to point out that no grounds have arisen to doubt the validity of the thermometer-based temperature record since it began in about 1850.

The mainstream media has confused discussions about relatively uncertain climate reconstructions built on tree-ring data, among them the 'hockey-stick' graph of rising temperatures, and the much more secure thermometer record. Whereas proxy-based reconstructions remain a controversial area of active research, the thermometer record shows unequivocally that Earth is warming, and provides the main evidence that this is thanks to human activity. This important record remains essentially unchallenged.

In a recent survey of US citizens conducted by electronic media company **Rasmussen Reports**, 49% of 1,000 respondents said that they have "very closely or somewhat closely" followed news reports about the CRU e-mail leak, and 59% find it "very likely or somewhat likely" that, in order to support their own theories and beliefs about global warming, some scientists have falsified research data. The Swedish daily newspaper *Aftonbladet* asked its readers — beginning on 21 November, just after the first publication of the CRU e-mails — if they considered the climate change threat to be oversold, and 51% of the almost 65,000 respondents thought so. After years of communication, researchers have to face the fact that a large body of public opinion still does not trust the evidence presented to them by the scientific community.



Hans von Storch.

Hans von Storch

Team thinking

Some commentators have suggested that the e-mails disclose a 'team mentality' among a group of prominent climate scientists. Even we — the two authors of this piece — find it impossible to agree whether or not some people went too far to ensure dominance for particular points of view. We do agree, however, that it is absurd to suggest there is some kind of global conspiracy involving all climate scientists. We ourselves have variously worked with the scientists at the centre of this controversy, and have examined, used and at times criticized their data and results just as they, at times, have criticized ours.



Myles Allen.

CIRES

What the e-mails do not prove — or even suggest — is that the main product of the CRU, namely the record of global surface air temperature based on thermometer readings, has been compromised. Indeed, the thermometer-based temperature record has been verified by results from other groups.

In spite of some disagreement about technical issues, which is normal in the process of science, we are convinced (insofar as is possible in an empirical science) that anthropogenic climate change is taking place and will emerge more strongly in the future. This conclusion is a result of the science behind both the detection and the attribution of climate change.

Detection and attribution

The detection step reveals that the warming trend extending across the recent few decades is more rapid and sustained than warming or cooling trends that would be expected from internal variability alone (from phenomena such as El Niño, the Pacific decadal oscillation and so on). The statement is not that the present level of warmth is unprecedented, even though it may very well be, but that the speed and pattern of warming, as described by the CRU data and similar products, is remarkable.

Attributing observed temperature variations to specific causes relies more on climate models, because they are needed to discriminate between the response of the climate system to different 'drivers', such as solar activity, greenhouse gases and volcanoes. It turns out that the best, and really the only, satisfactory explanation of the history of surface air temperature change — particularly over the past few decades — is obtained when the warming influence of anthropogenic greenhouse gases is taken into account.

Importantly, both of these conclusions rely on the thermometer-based temperature record compiled by the CRU and other institutions. They do not rely on proxy reconstructions of temperature over the past millennium, which are based on indirect evidence such as tree rings.

ADVERTISEMENT

These reconstructions have been the subject of intense debate over the past few years — including, prominently, between one of us (von Storch) and the lead author of one of the first 'hockey-stick' reconstructions, US climatologist Michael Mann. Because of uncertainty in both these reconstructions and in the drivers of climate change prior to the 20th century, they have contributed less to our understanding of the climate than the thermometer record.

Climate science is clearly a knowledge producer and broker for some of the most important issues of world policy, and therefore cannot be conducted behind closed doors. It is essential that the public at large, including the media, considers climate science a trustworthy effort, honouring the principles of openness, falsification, replicability and fair independent review. Justly or unjustly, this trust has been damaged. The task of the climate-research community, and responsible media reporting on this affair, is to rebuild that trust while ensuring that uncompromised knowledge about ongoing and future anthropogenic climate change continues to be perceived as valid.

Hans von Storch is at the GKSS Institute of Coastal Research in Geesthacht, Germany, and at the KlimaCampus of the University of Hamburg, Germany. Myles Allen is at the Department of Physics at the University of Oxford, UK.

Comments

Reader comments are usually moderated after posting. If you find something offensive or inappropriate, you can speed this process by clicking 'Report this comment' (or, if that doesn't work for you, email webadmin@nature.com). For more controversial topics, we reserve the right to moderate before comments are published.

There are currently no comments.

Add your own comment

You can be as critical or controversial as you like, but please don't get personal or offensive, and do keep it brief. Remember this is for feedback and discussion - not for publishing papers, press releases or advertisements, for example. If you ramble on in an annoying way too often, we may remove your posting privileges.

You need to be registered with Nature to leave a comment. Please log in or register as a new user. You will be re-directed back to this page.

[Log in / register](#)

Nature ISSN 0028-0836 EISSN 1476-4687

[About NPG](#)
[Contact NPG](#)
[RSS web feeds](#)
[Help](#)

[Privacy policy](#)
[Legal notice](#)
[Accessibility statement](#)

[Nature News](#)
[Naturejobs](#)
[Nature Asia](#)
[Nature Education](#)

[About Nature News](#)
[Nature News Sitemap](#)

Search:

