

Climate change confirmed... again

Year after year, three top climate science groups analyse global surface temperature data and reach the same conclusion: the planet is warming at unprecedented rates. So why would a fourth team be needed to also scrutinize the data?

The answer lies in the sociopolitical morass of how climate science is received today by much of the public. Sceptics have done their best to sow confusion by questioning, among other things, the integrity of the global temperature record. The criticisms are manifold.

Weather monitoring stations have been cherry-picked, data sloppily extrapolated, and spurious effects not properly accounted for — or so say the detractors. Such arguments have gained traction among many audiences.

This explains the intense media response to the first papers published from the Berkeley Earth Surface Temperature (BEST) project, led by iconoclastic physicist Richard Muller of the University of California, Berkeley. The BEST scientists

set out to reassess records from weather stations by compiling an independent, bigger data set from scratch and developing their own statistical techniques to analyse it. Their goal is to resolve current criticism of the temperature analyses provided by the US National Oceanic and Atmospheric Administration, NASA's Goddard Institute for Space Studies, and the UK Met Office's Hadley Centre in collaboration with the Climatic Research Unit of the University of East Anglia.

The BEST scientists have not been afraid of raw numbers. They reviewed some 1.6 billion records from

more than 39,000 temperature stations on land worldwide — far more than the roughly 4,400 to 7,500 stations used in other analyses. In some cases the records stretched back as far as the year 1800.

Next, the scientists devised new algorithms for sorting through this data set, for instance to better combine

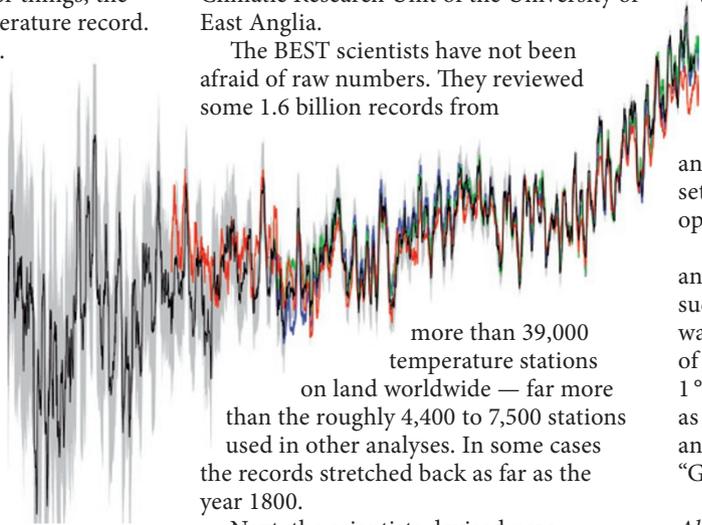
fragmented records from a single station, cut out spurious signals, and reduce the importance of input from stations with poor sampling records. The result confirms the bottom line of the three other analyses: BEST finds about a 1 °C rise (0.911 ± 0.042 °C) on land since the mid-1950s.

A related study excluded stations deemed to be of poor quality by climate sceptic Anthony Watts and his team, but doing so did not appreciably change the final result.

BEST reported its initial findings in October, in four papers published on its website (www.berkeleyearth.org) and submitted for peer review. The data set and algorithms are also available for open scrutiny.

The team next plans to run the same analysis on ocean data gathered by sources such as buoys and ship trawls. Oceans have warmed less than land, so the total amount of warming is likely to be less than the 1 °C rise found in terrestrial records. Yet, as the lead sentence of the BEST summary announcing the findings made clear, "Global warming is real." □

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The journalist's take

For climate scientists, the question of whether Earth's surface is warming was settled in the affirmative long ago. But for journalists, other considerations come into play when deciding whether to run such a well-trodden story.

In this case, the very fact of who was releasing the study, and why they actually did it, was newsworthy. Nearly every public discussion of the surface-temperature record now comes with at least one sceptic raising the issue of station quality and data integrity. Richard Muller, head of the BEST team, is a self-proclaimed climate sceptic to a certain degree.

His idea of going back to the original surface-temperature data, and analysing them rigorously and independently, was too compelling for journalists to ignore. Indeed, the story got press coverage as early as March, when Muller testified to a Congressional committee that initial BEST

results were falling in line with the other temperature analyses.

Even bigger headlines appeared in October, when BEST released its land-temperature findings along with a summary titled 'Cooling the warming debate.' Many people criticised the project for releasing results that had not been peer-reviewed, but BEST says it made the decision "in order to invite additional scrutiny."

Project member Judith Curry of the Georgia Institute of Technology worried on her blog whether the findings may have been oversold; she and Muller later issued a joint statement denying that they disagreed. Such controversy among leading scientists is like catnip to reporters.

On its website, BEST claims that "the best alternative would be to have the media hold back and not report preprint material. Unfortunately they refuse to do that." Such

a statement contradicts the fundamental principle of freedom of the press. Of course journalists will report on publicly available information of broad interest.

What makes a good story for scientists and for journalists may be close in principle, but remains far apart in practice. Elements that made this story irresistible for reporters included:

- Public attitudes: the sceptical community maintains a strong influence over perceptions of global warming through its criticisms of temperature data and analysis.
- Source of the study: BEST was led by a self-identified sceptic and received funding from organizations including the conservative Charles Koch Foundation.
- Results: the close agreement with the other temperature analyses generated the idea of 'climate sceptic converted.'