

# How a culture clash at NOAA led to a flap over a high-profile warming pause study

Allegations of data misuse appear to have little foundation

8 FEB 2017 • BY WARREN CORNWALL, PAUL VOUSEN



Data collected by satellites, land-based sensors, and NOAA ocean buoys like this are at the heart of the dispute. NOAA

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A former scientist at the National Oceanic and Atmospheric Administration (NOAA) in Washington, D.C., made waves this past weekend when he alleged that climate scientist Thomas Karl, the former head of a major NOAA technical center, "failed to disclose critical information" to the agency, journal editors, and Congress about the data used in a controversial study published in *Science* in June 2015. Karl was the lead author of that paper, which concluded that global surface temperatures continued rising in recent years, contrary to earlier suggestions that there had been a "pause" in global warming.

John Bates, who retired from NOAA this past November, made the claims in [a post](#) on the prominent blog of Judith Curry, a climate researcher who [recently retired](#) from the Georgia Institute of Technology in Atlanta and has walked the line between science and climate contrarians over the past decade. Bates's complaints were also the centerpiece of [a story](#) published Sunday

by David Rose of the United Kingdom's *The Mail on Sunday*, a tabloid, which claimed that national leaders "were strongly influenced" by the "flawed NOAA study" as they finalized the 2015 Paris climate agreement.

Rose's story ricocheted around right-wing media outlets, and was publicized by the Republican-led House of Representatives science committee, which has spent months [investigating earlier complaints about the Karl study that is says were raised by an NOAA whistleblower](#). But *ScienceInsider* found no evidence of misconduct or violation of agency research policies after extensive interviews with Bates, Karl, and other former NOAA and independent scientists, as well as consideration of documents that Bates also provided to Rose and the *Mail*.

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Instead, the dispute appears to reflect long-standing tensions within NOAA's National Centers for Environmental Information (NCEI), based in Asheville, North Carolina, over how new data sets are used for scientific research. The center is one the nation's major repositories for vetted earth observing data collected by satellites, ships, buoys, aircraft, and land-based instruments.

In the blog post, Bates says that his complaints provide evidence that Karl had his "thumb on the scale" in an effort to discredit claims of a warming pause, and his team rushed to publish the paper so it could influence national and international climate talks. But Bates does not directly challenge the conclusions of Karl's study, and he never formally raised his concerns through internal NOAA mechanisms.

Tuesday, in [an interview with E&E News](#), Bates himself downplayed any suggestion of misconduct. "The issue here is not an issue of tampering with data, but rather really of timing of a release of a paper that had not properly disclosed everything it was," he told reporter Scott Waldman. And Bates told *ScienceInsider* that he is wary of his critique becoming a talking point for those skeptical of human-caused climate change. But it was important for this conversation about data integrity to happen, he says. "That's where I came down after a lot of soul searching. I knew people would misuse this. But you can't control other people," he says.

At a House science committee hearing yesterday, Rush Holt, CEO of AAAS (publisher of *Science* and *ScienceInsider*) stood by the 2015 paper. "This is not the making of a big scandal—this is an internal dispute between two factions within an agency," Holt said in response to a question from Representative Lamar Smith (R-TX), the panel's chairman, and a longtime critic of NOAA's role in the Karl paper. This past weekend, Smith issued [a statement](#) hailing Bates for talking about "NOAA's senior officials playing fast and loose with the data in order to meet a politically predetermined conclusion."

Some climate scientists are concerned that the hubbub is obscuring the more important message: that the NOAA research has generally proved accurate. "I'm a little confused as to why this is a big deal," says Zeke Hausfather, a climate scientist with Berkeley Earth, a California nonprofit climate research group that has examined surface temperatures. He's the lead author of a paper published in January in *Science Advances* that found Karl's estimates of sea surface temperature—a key part of the work—matched well with estimates drawn from other methods.

Researchers say the Karl paper's findings are also in line with findings from the Met Office, the U.K. government's climate agency, which preceded Karl's work, and findings in a recent paper by scientists at the European Centre for Medium-Range Weather Forecasts, an alliance of 34 states based in Reading, U.K. And although other researchers have [reported evidence that the rise in global temperature has slowed recently](#), they have not challenged the ethics of Karl's team, or the quality of the data they used.

## When is data ready for prime time?

If there's a dirty secret to the 2015 paper, it's that "there wasn't a lot of new science in it," says Karl, who retired in August 2016. It simply assembled the updated, already published NOAA ocean temperature record that their center had been assembling since 2011, and paired it with a published, nonoperational data set of land surface temperatures that included much more coverage around the world. "We said, let's just put it together, and that's what made it newsworthy and important."

At its heart, Bates's concerns amount to a desire for Karl and his team to have more clearly stated that one data set used for their study was not defined by NOAA to have been in a final, "operational" form.

One focus is the handling of a new approach to estimating temperatures on land around the globe. The agency's monthly temperature estimates—which it uses to track climate trends—are drawn from 7000 stations scattered around the world. But a team of NOAA researchers sought to improve the accuracy of these global estimates by incorporating measurements from more than 15,000 sites with data collected by an international consortium, the International Surface Temperature Initiative (ISTI). They also incorporated measurements from farther north in the Arctic, where temperatures in recent decades have risen faster.

In the blog post, Bates says that when the Karl paper was published, this new merged data set hadn't been put through a series of quality checks that NOAA required before data used for research are deemed ready for "operational" use such as routine monitoring of climate trends.

Bates says he first became concerned when the Karl paper came out, as the team shared their data only on a public NOAA file server, not NCEI's data archive, as the agency would for its operational data sets. Karl and his team have since uploaded the data to NCEI's archive, a process that finished last year. Bates claims that happened as a result of his concerns. "I shouldn't have to be the whistleblower. They should have had a process in place at NOAA to check this off. And they didn't do it," he says.

The *Science* paper would have been fine had it simply had a disclaimer at the bottom saying that it was citing research, not operational, data for its land-surface temperatures, Bates says.

But Mike Tanner, director of NOAA's Center for Weather and Climate at NCEI, says there's no NOAA policy that requires such a disclosure. "There's nothing. That doesn't exist," he says.

## Tension in the NOAA ranks

The new furor underscores a long-running tension within NCEI, one that has generally pitted research scientists trying to publish new advances against engineers seeking to ensure everything follows standard protocols, say several scientists who have worked at the center.

Thomas Peterson, a principal scientist at NCEI who was involved in developing the new surface temperature estimates before retiring in 2015, says he spent several years pressing the agency to let its scientists publish parts of the new data analysis. But he says he met resistance from some who argued that even though the older approach was less accurate, it had gone through the quality control checks for operational data. The new study "wasn't rushed. It was delayed for a long time. It would have been out years ago except for all this processing that John [Bates] pushed."

The decision to move forward with the paper came in 2014 after Karl was presented with new analyses of both the land temperatures and ocean temperatures, Peterson says. When they realized the significance it could have for understanding the "pause," Peterson says they worked to find a way to abide by the agency's data rules without delaying further. "My view of the decisions is they met the letter of the law. And I would say—if I was trying to be polite—that John would view it as not meeting the full, strict measure of what should be done in an optimum condition. But it would have delayed getting this paper out for at least 2 years."

This split within the office traces partly to cultural differences between scientists working with satellites and those working with ground-based measurements, says Peter Thorne, a climate scientist at Ireland's Maynooth University, and chair of the ISTI. He worked on surface temperature research at NCEI from 2010 to 2013. By contrast, for several years Bates was division chief for the part of the center that worked with satellite data.

Because the stakes are so high for ensuring the accuracy of a single, costly piece of equipment, and the streams of data are so massive, the people working with the satellites were more inclined to insist on always following detailed protocols.

"Fundamentally it was a conflict between science and engineering," Thorne says. "Do you want a product that is very well documented; where the code is available, transparent, well documented; where there is fundamental, deep archiving of everything; where you've dotted every 'i' and crossed every 't,' even if that product, scientifically, has issues? Or would you rather have the best scientific product you can get your hands on at this time and forgo that process maturity?"

## Personal grudge?

Some suggest Bates's criticism might also have a personal side to it. Tanner says Bates was administratively admonished and relieved of a supervisory position at NCEI in 2012, at a time when Karl led the center. Karl confirms that Bates was removed from his post as division chief, and placed in a position where he was not supervising other people.

Bates confirms the job shift, but denies his complaints are driven by any animus toward Karl. "He's just sort of an example. The reason I wanted to have a more public discussion was not to focus on him, [but] to have a bigger discussion about how we ensure the quality of the data," Bates says.

Bates also says he was not the "whistleblower" cited in the past by Smith's committee. Others note the accusations mirror those previously floated by Smith. And Karl says he can now understand why the committee has pursued him. "They're getting a lot of misleading information... I can understand why they've gone in the direction that's not reflecting reality," he says.

In a strange coincidence, Peterson ran into Bates at the theater in Asheville on Saturday, shortly before the *Mail* article was published. He says he asked Bates how retirement was treating him. Bates replied that it was "going to get interesting," then walked off without clarifying what he meant. The play they were attending: Shakespeare's *Much Ado About Nothing*.

"That just strikes me as perfect," Peterson says.

**Updated, 2:23 p.m., 02/08/2017:** *This story has been updated to clarify recent findings regarding the pause, several quotes, and Bates' concerns about the NOAA data. One paragraph regarding Karl's paper was moved to improve the organization.*

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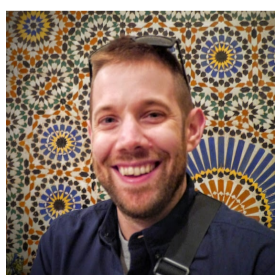
## ABOUT THE AUTHOR



**Warren Cornwall**  

Author

Warren Cornwall is a contributing correspondent who covers a wide range of issues, including energy, the environment, and science policy. He lives in Washington state.



**Paul Voosen**  

Author

Paul Voosen is a staff writer who covers Earth and planetary science.

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