

Local weather patterns affect beliefs about global warming, researchers find

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Local weather patterns temporarily influence people's beliefs about evidence for global warming, according to research by political scientists at New York University and Temple University. Their study, which appears in the *Journal of Politics*, found that those living in places experiencing warmer-than-normal temperatures at the time they were surveyed were significantly more likely than others to say there is evidence for global warming.

"[Global climate change](#) is one of the most important public policy challenges of our time, but it is a complex issue with which Americans have little direct experience," wrote the study's co-authors, Patrick Egan of New York University and Megan Mullin of Temple University. "As they try to make sense of this difficult issue, many people use fluctuations in local temperature to reassess their beliefs about the existence of global warming."

Their study examined five national surveys of American adults sponsored by the [Pew Research Center](#): June, July, and August 2006, January 2007, and April 2008. In each survey, respondents were asked the following question: "From what you've read and heard, is there solid evidence that the [average temperature](#) on earth has been getting warmer over the past few decades, or not?" On average over the five surveys, 73 percent of respondents agreed that the earth is getting warmer.

Egan and Mullin wondered about variation in attitudes among the survey's respondents, and hypothesized that local temperatures could

influence perceptions. To measure the potential impact of temperature on individuals' opinions, they looked at zip codes from respondents in the Pew surveys and matched weather data to each person surveyed at the time of each poll. They used local [weather data](#) to determine if the temperature in the location of each respondent was significantly higher or lower than normal for that area at that time of year.

Their results showed that an abnormal shift in local temperature is associated with a significant shift in beliefs about evidence for global warming. Specifically, for every three degrees Fahrenheit that local temperatures in the past week have risen above normal, Americans become one percentage point more likely to agree that there is "solid evidence" that the earth is getting warmer. The researchers found cooler-than-normal temperatures have similar effects on attitudes—but in the opposite direction.

The study took into account other variables that may explain the results—such as existing political attitudes and geography—and found the results still held.

The researchers also wondered if heat waves—or prolonged higher-than-normal temperatures—intensified this effect. To do so, they looked at respondents living in areas that experienced at least seven days of temperatures of 10° or more above normal in the three weeks prior to interview and compared their views with those who experienced the same number of hot days, but did not experience a heat wave.

Their estimates showed that the effect of a heat wave on opinion is even greater, increasing the share of Americans believing in [global warming](#) by 5.0 to 5.9 percentage points.

However, Egan and Mullin found the effects of temperature changes to be short-lived—even in the wake of heat waves. Americans who had

been interviewed after 12 or more days had elapsed since a heat wave were estimated to have attitudes that were no different than those who had not been exposed to a heat wave.

"Under typical circumstances, the effects of temperature [fluctuations](#) on opinion are swiftly wiped out by new [weather patterns](#)," they wrote.

"More sustained periods of unusual weather cause attitudes to change both to a greater extent and for a longer period of time. However, even these effects eventually decay, leaving no long-term impact of weather on public opinion."

The findings make an important contribution to the political science research on the relationship between personal experience and opinion on a larger issue, which has long been studied with varying results.

"On issues such as crime, the economy, education, health care, public infrastructure, and taxation, large shares of the public are exposed to experiences that could logically be linked to attitude formation," the researchers wrote. "But findings from research examining how these experiences affect opinion have been mixed. Although direct experience—whether it be as a victim of crime, a worker who has lost a job or health insurance, or a parent with children in public schools—can influence attitudes, the impact of these experiences tends to be weak or nonexistent after accounting for typical predictors such as party identification and liberal-conservative ideology."

"Our research suggests that personal experience has substantial effects on political attitudes," Egan and Mullin concluded. "Rich discoveries await those who can explore these questions in ways that permit clean identification of these effects."

Provided by New York University

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