

Researchers Link Extreme Rains To Global Warming

by Richard Harris

February 16, 2011

All Things Considered



Stewart Writtle/AP

An aerial view of the flooded town of Worcester in central England after the River Sever burst its banks on Nov. 2, 2000. Rain swept across Britain in the country's most widespread flooding in 50 years.

Scientists have been saying for years that as the planet heats up, we will have to deal with more severe weather. But pinning any particular event — such as a specific hurricane — to global warming is difficult at best.

Now, scientists have tried to do just that: They've linked extreme precipitation to global warming.

Myles Allen at Oxford University is one of the scientists who undertook this effort, and he acknowledges upfront it's hard to feel the effects of a slowly warming planet.

"One of the problems I think many people find with climate change is it's a victimless crime, in the sense that the impacts are largely hypothetical for many people," Allen said in a press briefing.



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A cyclist wearing a wet suit cycles to work on Nov. 7, 2000, as roads in North Wales were impassable by vehicles. Computer models of the climate show that heavy rains were less likely to occur in a simulated world without global warming.

But climate change isn't just about a gradual temperature rise — many studies forecast more extreme weather, like stronger hurricanes and bigger downpours. Even so, it's hard to look back at something like Hurricane Katrina or Europe's devastating heat wave of 2003 and say it was the result of global warming.

"It is a reasonable question, which you [reporters] ask all the time: Is human influence on climate anything to do with this nasty bit of weather we're having?" Allen says. "But answering it isn't easy."

Computer-Simulated Worlds

In an effort to do just that, they focused on some major flooding in England and Wales during the fall of 2000. This deluge shattered records dating back to 1766 — snarling travel and forcing thousands of people from their homes.

The question is: "Would this have happened in the absence of the global warming we've experienced to date?" To find out, Allen's colleague, Pardeep Pall, explains they ran thousands of computer simulations of the climate, on thousands of computers. They compared simulated worlds with and without global warming.

"To do those thousands of repetitions would have been pretty tough to do all by ourselves," Pall says, "so we actually asked members of the public across the world to run the simulations for us on their own personal computers, using their idle time." They used the climateprediction.net project.

Extreme rainfall was far more likely to appear in the computer simulations of our current climate than in a world without global warming, so they're fairly confident

in saying that the flooding was linked to global warming. The excessive rainfall is pretty simple to explain.

"It's largely driven by the fact that the air is just warmer, and therefore holding more water," Allen says.

This particular experiment took a huge amount of computing power, so it's not something that climate scientists can do routinely. But Allen hopes the day will come when analysis like this will become routine after major events.

Warmer oceans mean more water vapor rises up into the air, and what goes up must come down.

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"It won't be enough for your weather service to predict the weather," he says. "They'll have to explain it as well."

Is Bad Weather Getting Worse?

Allen hastens to add that not all extreme weather events can be blamed on climate change. The world has always had bad weather, and it will keep having bad weather.

Meanwhile, a second study in *Nature* asks a much broader question: whether the worst downpours are getting even more extreme over time. The answer is yes.

"Extreme precipitation events today generally are a fair bit larger than they were in the 1950s and '60s," says Francis Zwiers of the Pacific Climate Impacts Consortium in British Columbia. He also attributes at least some of that increase to humans warming the planet.

Some scientists not involved in these studies find them provocative, but not convincing.

"I think it's going to be very tough ever to do individual events," says Kerry Emanuel of MIT. "The only exceptions are events that are so extreme that they couldn't have occurred in the current climate. But proving that is difficult."

The trend is clearly toward a warmer world with more severe weather, but it's still going to be hard to blame humans for any single disaster.

The research was reported in *Nature*