

Climate change implicated in France floods: study

June 10 2016, by Marlowe Hood



A picture taken on June 2, 2016 shows the river Seine bursting its banks next to the Eiffel Tower in Paris

Torrential rains which caused flooding in France recently bore the unmistakable fingerprint of climate change, according to research to be submitted to a scientific journal next week.

Global warming, especially in the last 50 years, had almost doubled the

likelihood of the kind of three-day downpour that burst the banks of the Seine and Loire rivers, they calculated.

At the very least, the probability of such an extreme rainfall event had increased by more than 40 percent.

"We found that we could tie global warming directly to the recent rainstorms in France that triggered so much flooding and destruction," Robert Vautard, a senior scientist with France's Laboratory for Climate and Environment Sciences, said in a statement.

The Seine hit its highest water mark in three decades, while overflowing tributaries forced evacuations and left tens of thousands of people without power in nearby towns.

In southern Germany, heavy rains also caused flash flooding that swept away houses and cars. At least 18 people were killed in four European countries.

Unlike for France, the evidence was not strong enough to establish a direct link between warming and the destructive rainfall in Germany, the researchers said.

This does not mean that [climate change](#) did not play a key role, only that observations failed to line up with the models well enough to draw similarly robust conclusions.



A man sits on a low wall by the rain-swollen river Seine and Notre Dame De Paris cathedral on June 5, 2016 in Paris

Indeed, scientists have been struggling for years to connect the dots between climate change—best measured over centuries—and individual extreme weather events, such as superstorms or droughts.

Basic physics

"Until recently, scientists weren't able to make this sort of judgment, but that's changing fast," said Richard Black, director of the Energy and Climate Intelligence Unit, an advocacy group, in London.

"We've learned that climate change made both last year's European heatwave and last December's extreme rainfall in parts of the UK more likely."

Part of the explanation lies in basic physics. A warmer atmosphere can hold—and discharge—more water.

So far, man-made warming has increased Earth's average surface temperature by about one degree Celsius (1.8 degrees Fahrenheit).

On current trends, that temperature is set to rise by another 2.0 C (3.6 F), even taking into account national pledges made by virtually all the world's nations last year to slash carbon pollution.

Over the last 25 years, satellites have measured a four-percent rise in atmospheric water vapour.



Rescuers evacuate residents across a flooded street on June 1, 2016 in Souppes-sur-Loing, southeast of Paris

It should come as no surprise, then, that the number of record-breaking rainfall events has significantly increased over the same period, scientists say.

This trend has been particularly pronounced in western and central Europe, earlier studies have shown.

The new findings are based on two types of analyses, explained Geert Jan van Oldenborgh, lead author of the study to be submitted to the journal Hydrology and Earth System Sciences.

The first compared changes in the real world to an imaginary one in which humans had not injected massive amounts of heat-trapping carbon dioxide into the atmosphere, he told AFP.

If there was a significantly different outcome, with carbon emissions the only added variable, "it follows that these emissions caused the difference," said van Oldenborgh.

The second type of analysis tracks trends across time, but say nothing about what caused them.

Put together, the data gave "full attribution of these changes to [global warming](#)," said van Oldenborgh.

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Citation: Climate change implicated in France floods: study (2016, June 10) retrieved 25 April 2024 from <https://phys.org/news/2016-06-climate-implicated-france.html>

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