



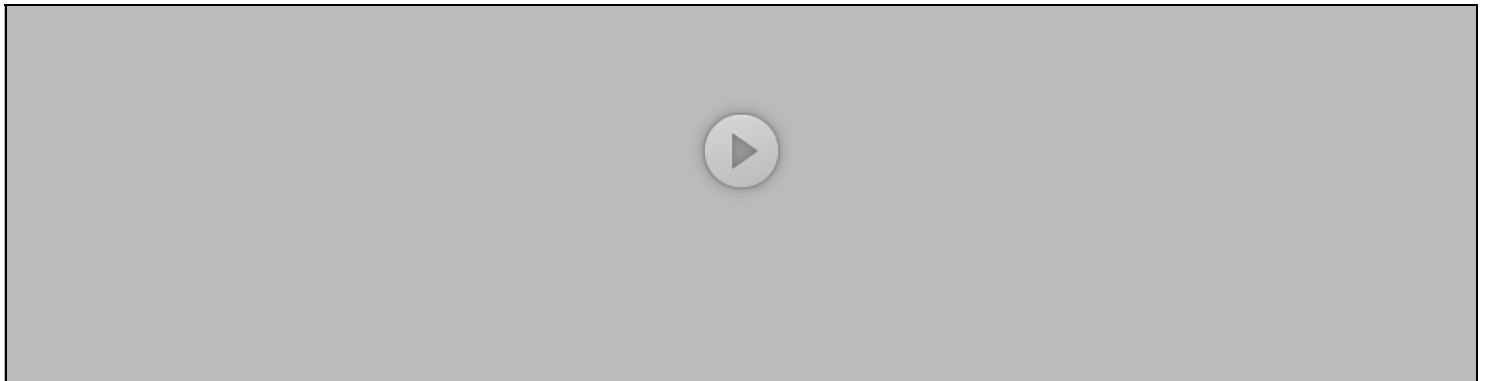
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Global Warming Will Bring More US Lightning Strikes

by [Becky Oskin](#), Senior Writer | November 13, 2014 02:00pm ET

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A 50 percent increase in the number of lightning strikes within the United States can be expected by 2100 if



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temperatures continue to rise due to greenhouse gas emissions, a new study claims.

Researchers found a 12 percent increase in [lightning activity](#) for every 1.8 degrees Fahrenheit (1 degree Celsius) of warming in the atmosphere, according to the study, published today (Nov. 13) in the journal Science. Without emissions cuts, scientists expect this century to end with global temperatures that are about 7 F (4 C) higher than current global temps.

Because lightning often triggers wildfires, the onslaught could mean more fire damage in the future, the study authors said.

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"This is yet another noticeable change to climate and weather in the U.S. if we stay on our current [emissions] trajectory," said lead study author David Romps, an atmospheric scientist at the University of California, Berkeley. "It's certainly reasonable that a 50 percent increase will lead to an increase in wildfires." About 25 million lightning flashes are recorded yearly in the United States. [[Video: Watch U.S. Lightning Strikes](#)]

The study's biggest drawback is that the results can't forecast when or where lightning activity will intensify.

"At this point, we don't know where the increase will take place, or when it will take place," Romps said. Figuring this out would require a more detailed analysis of the [data](#) [↗](#), he said.

Romps and his co-authors aren't the first to forecast new weather risks that will come with [climate change](#). Earlier studies also warned of more lightning activity, in part because storms may become more violent and [powerful](#) [↗](#) as the atmosphere warms.

In every case — including Romps' new study — the set of [tools](#) [↗](#) the researchers forecast future lightning patterns by first looking for factors that control the timing and location of lightning in the present day. Then, with help from climate models, the teams estimated how these factors would change as global warming altered climate and weather.

Romps and his colleagues discovered a new combination of two factors that they say predicts 77 percent of the geographic and time patterns seen in U.S. lightning strikes. The first factor was precipitation, which relates to how much water vapor is available to fuel growing storms. The second factor was what storm experts call CAPE, or convective available potential energy, which is a measure of the atmosphere's potential for creating towering [clouds](#) [↗](#).

The researchers were surprised by how well these factors predicted current lightning strikes, Romps said. "This [success](#) [↗](#) gave us confidence to say this is a metric for what lightning would be doing in the future," he told Live Science.

The [team](#) [↗](#) calculated the changes in yearly precipitation and CAPE that are expected to happen with global warming using 11 climate models, all of which assume there are no major cuts to [greenhouse gas emissions](#). The average of all the models resulted in a 50 percent increase in lightning activity by 2100.

That means for every two lightning strikes in 2000, there will be three lightning strikes in 2100, Romps said.

One drawback of the researchers' approach is that the factors that control lightning activity today, such as CAPE, may have different roles in storms in the future precisely because the climate will change. "Their approach does a reasonable job of reproducing current patterns and time variations of lightning in the U.S.," said Anthony Del Genio, a research physical scientist at NASA's Goddard Institute for Space Studies in New York, who was not involved in the study. "The question is whether something that works in the current climate is also applicable to a climate change."

It's possible that the country's lightning-prone regions could become less hospitable to storms in future decades, while other areas could [see an uptick in thunderstorms](#). Climate studies disagree on whether storms will become more powerful but less frequent, or if the United States will be pounded by storm after severe storm. The Southeast is most prone to lightning in today's climate.

"The bottom line is that this is a plausible metric to propose for lightning, but it remains to be seen whether it gives realistic projections for the future," Del Genio said. "Other proposed metrics are equally likely to do a good job."

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