

Some scientists think extreme weather events connected to climate change

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Credit: NOAA.gov

Recent heavy rains in Texas and the deadly heat wave in India are indicators that climate change, brought on by increased greenhouse gases in the atmosphere, is most likely enhancing the effects of these extreme weather events, according to climatologist Jim White, director of CU-Boulder's Institute of Arctic and Alpine Research.

"There is so much additional [greenhouse gases](#) in the atmosphere today that our climate we know is modified by greenhouse gases – by the additional energy that comes from that," White said. "The [heat wave](#) in India is quite consistent with what we expect to see in the future. Heat waves, in general, we expect to increase, not only in areas like India, but we expect them to increase in the United States as well."

According to a new study by Swiss researchers published in *Nature Climate Change*, [extreme weather events](#) world-wide are increasing with regularity, indicators that these events are becoming part of the Earth's over-all climate pattern.

But, White says, it's one thing to know these [extreme weather](#) events will happen in the future but predicting when and where they will happen is something we can't do.

"We can generally say that we expect more precipitation in a warmer world because the atmosphere just holds more moisture," he said. "That's not terribly comforting, however, because where it rains is really important. Because if it's raining out over the ocean that doesn't do us any good. And so predicting where it rains is not an easy thing to do. What we do think is going to happen is as the atmosphere warms up we'll get more rain per event. So convective storms - thunderstorms – we expect to get stronger."

There are other aspects of [climate change](#) that White says are up for debate. One is the increase of cutoff lows – a weather event similar to what happened in Colorado in 2013, that caused widespread flooding along the Front Range.

"There are other aspects of climate and weather that we argue about having to do with slower moving storms - more of what we call 'cutoff lows' where you have a low pressure system that is cut off from the jet

stream," White said. "It just idles and continues to dump rain or snow in one location. Features like that we argue about but we do expect features like that to increase in the future."

White says right now there are two things happening that can be directly attributed to climate change – rising sea levels caused by melting glaciers and the shrinking arctic ice sheet.

"The Arctic is warming up," he said. "Sea ice in the Arctic is going away. Sea level is rising and that is also quite attributable to a warmer world. And it's very difficult for people to grasp just how dynamic that impact is. So we expect a significant [sea level](#) rise over the next several hundred years just from the CO2 we have in the atmosphere today. The amount of [sea level rise](#) we expect is something on the order of 10 to 20 meters. So you are talking 30 feet or more."

According to the 2014 National Climate Assessment report by the U.S. Global Change Research Program, the amount of rain or snow falling in the heaviest one percent of storms has risen nearly 20 percent on average in the United States—almost three times the rate of increase in total precipitation between 1958 and 2007. According to the report, the Northeast alone has seen a 74 percent increase in the amount of rain or snow falling in the heaviest storms.

Provided by University of Colorado at Boulder

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