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Hotter World Means Hotter Tempers, More Violence

By [Maia Szalavitz](#) | Aug. 02, 2013

Climate change may be one of the factors contributing to violence within and among societies, according to the latest study.

Whether it's a drought in India, a heat wave in the U.S. or an extreme change in rainfall in Africa, Asia or South America, the outcomes tend to be the same: more wars, more murder, more riots and more domestic violence.

The intimate connection between climate and human interaction has long been documented, and could have contributed to the downfall of Chinese

and Mayan empires, say the study's authors. Reporting in the journal *Science*, lead author Solomon Hsiang, assistant professor of public policy at the University of California in Berkeley, and his colleagues analyzed 60 studies of climate change and human conflict at several levels, from domestic violence to the collapse of entire civilizations. "All around the world across different societies in the modern world as well as throughout history, we find that human conflict seems to be linked to changes in climate," says Hsiang.

Rising temperatures have the greatest effect on human conflict; the equivalent of a five degree Fahrenheit increase in an average U.S. county over a month, for example, could raise the odds of personal violence such as assault, murder and domestic violence by 4%, and the risk of civil war, riots or ethnic violence by 14%.

Rainfall and drought can also contribute to conflict; the researchers found spikes in domestic violence in India, as well as higher murder rates in the U.S. and in Tanzania and civil wars in tropical regions tied to relatively small changes in rain or temperature.

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The findings reinforce previous studies that linked climate change to human affairs, and raise concerns about the potential impact that changing environmental conditions will have on the stability of societies in coming decades. Most climate change estimates predict a rise of two to four standard deviations in temperature, rainfall or drought by 2050, which suggests a 30% greater risk of intergroup conflicts, says Hsiang.

"It's a very, very impressive review of the literature," says Dr. Mark Shapiro, chief of acute care surgery at Duke University Medical Center, who has published research on the link between heat and assaults, but was not associated with the latest study.



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Heat could provide fertile ground for interpersonal violence by bringing people into closer contact indoors to seek relief. Assault, rape— even the [number](#) of baseball pitchers who retaliate against batters by hitting them with pitches — all rise with temperature, studies show. Even noise can become a more anger-inducing irritant, according to Dutch [researchers](#).

On a population level, climate change may have more indirect effects on social stability; as crops fail due to drought or flood, for instance, migration may provoke conflicts as communities compete for more limited resources.

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However, Shapiro says it's not clear that rising global temperatures will necessary lead to ever-escalating conflict. His own work found a direct, linear relationship between assault and temperature, but other studies suggested there may be a threshold at which violence starts to decline.

Still, says Hsiang, his data show that man is historically ill-equipped to cope with changing climate, and may continue to fall prey to the influence that higher temperatures and more rainfall can have on the stability of both personal and society relationships. "We need to understand why climate changes cause conflict so we can help societies to adapt to these events and avoid the violence," he said in a statement.