

## Global Warming Tied To Rise In Violence: Study

By ROXANNE PALMER (/REPORTERS/ROXANNE-PALMER)  
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Hotter climates mean a higher risk of violence, both between persons, countries and ethnic groups, a new study says. Flickr via Creative Commons/neychurluvr

In coming decades, climate change may heat things up in more ways than one – a new study suggests that even small changes in temperature and rainfall can lead to spikes in violence across the world.

Researchers have found that even minor deviations from temperature or precipitation norms correlate with spikes of conflict. The climate pattern could be mapped to a rise in murders in the U.S., increases in domestic violence in India and Australia, and ethnic violence in Europe and South Asia.

“We find strong causal evidence linking climatic events to human conflict across a range of spatial and temporal scales and across all major regions of the world,” the authors wrote in the journal *Science* on Thursday.  
(<http://www.sciencemag.org/content/early/2013/07/31/science.1235367>)

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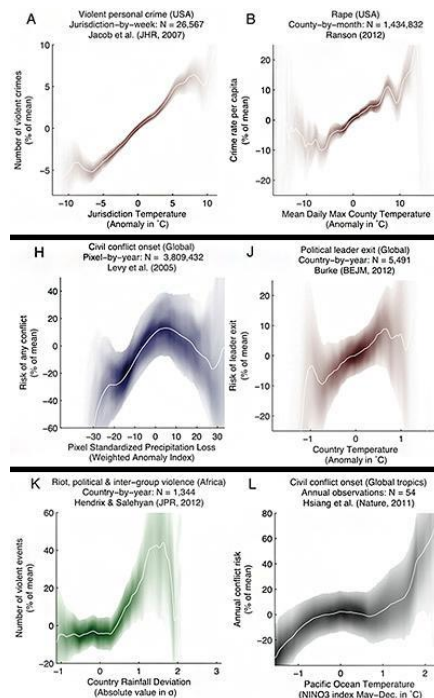
In their paper, University of California, Berkeley researcher Solomon Hsiang – a Princeton University researcher at the time of the study -- and his colleagues reanalyzed data from 60 existing studies. The well of data they drew from was diverse, spanning hundreds of years, and includes papers in archaeology, economics, political science, psychology, and of course, climatology.

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Hsiang and his team eventually were able to quantify the relationship between climate and conflict. For every standard deviation shift toward a warmer world, the likelihood of personal violence rises by 4 percent and the likelihood of intergroup violence rises 14 percent.

"For a sense of scale, this kind of temperature change is roughly equal to warming an African country by 0.4°C (0.6°F) for an entire year or warming a United States county by 3°C (5°F) for a given month," coauthor Marshall Burke said in a statement. "These are moderate changes, but they have a sizable impact on societies."



A sample of results. A, B: The correlation between temperature and violent personal crime and rape in the U.S.; H: drought and global civil conflict; J: temperature and political leaders being forced out; K: deviation from normal rainfall and large-scale violence in Africa; L: and global civil conflict and the intensity of El Niño. Darker areas indicate a stronger connection between climate and violence. Science/AAAS

The researchers are trying to leaven their findings with a bit of caution. Climate alone can't be the single explanation for violence, and it's still unclear exactly how climate change translates into unrest.

"We want to be careful, you don't want to attribute any single event to climate in particular, but there are some really interesting results," Burke told the BBC. (<http://www.bbc.co.uk/news/science-environment-23538771>)



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Other researchers have suggested that during the Middle Ages, climate shifts toward the lower end of the thermometer may also contribute to unrest. When Swiss researcher Ulf Buntgen and his team traced Europe's shifting climate through tree rings, they found that prolonged cold periods correlated with social and political upheaval. The Black Death plague in the mid-1300s, the Thirty Years War in the early 1600s and the French invasion of Russia in the early 1800s all coincided with the coldest episodes in the past 1,000 years, Buntgen and colleagues wrote in the Proceedings of the National Academy of Sciences this past January. (<http://www.ibtimes.com/global-warming-history-written-trees-1016468>)

Other environmental factors have been linked to violence as well. One theory that's been gaining steam in recent years is the connection between a crackdown on lead in gas and paint and the violent crime drop in the U.S. that began in the early 1990s. Mother Jones reporter Kevin Drum ran through a battery of the evidence (<http://www.motherjones.com/environment/2013/01/lead-crime-link-gasoline>) in January: higher blood lead levels at childhood are consistently associated with arrest rates for violent crimes in adulthood; the pace of lead reductions in gasoline, state-by-state, mirrored the pace of crime reduction; neighborhoods in New Orleans with higher concentrations of lead are also more affected by crime (and poverty).

"Say you look at data on car accidents, and you see that they become more likely on rainy days," Hsiang explained in a statement. "Does that mean that rain is the only factors responsible for accidents? Of course not. Driver error ultimately causes accidents but rain can make it much more likely. Similarly, violent conflicts might occur for a variety of reasons that simply become more likely when climatic conditions deteriorate."

SOURCE: Hsiang et al. "Quantifying the Influence of Climate on Human Conflict." (<http://www.sciencemag.org/content/early/2013/07/31/science.1235367>) Science published 1 August 2013.



**Roxanne Palmer (/reporters/roxanne-palmer)**

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