

# SCIENCE WORLD REPORT

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## Violence Rises with Temperature: Climate Change Linked to Social Upheaval

By Catherine Griffin



Arctic Sea Ice

It turns out that the heat makes some people hotter under the collar--an unfortunate trait considering our warming climate. Scientists have revealed that even slight spikes in temperature and precipitation have greatly increased the risk of personal violence and social upheaval throughout human history.

In order to see how climate might affect human behavior, the researchers analyzed 60 studies from a number of disciplines, including everything from archaeology to criminology to economics and psychology. These studies examined the connection between weather and violence in different parts of the world from about 10,000 BCE to the present day.

So what did they find? While climate wasn't the only cause of violence, it certainly exacerbated existing social and interpersonal tension in all societies, regardless of wealth or stability. In fact, they found that a 1 standard-deviation shift--the amount of change from the local norm--in heat or rainfall boosts the risk of a riot, civil war or ethnic conflict by an average of 14 percent. In addition, they found that there was a four percent chance of a similarly sized upward creep in heat or rain sparking person-on-person violence such as rape, murder and assault.

"We think that by collecting all the research together now, we're pretty clearly

establishing that there is a causal relationship between the climate and human conflict," said Solomon Hsiang, one of the researchers, [in a news release](#). "People have been skeptical up to now of an individual study here or there. But considering the body of work together, we can now show that these patterns are extremely general. It's more of the rule than the exception."

Currently, climate models predict that the Earth is expected to warm by 2 degrees Celsius by 2050. In fact, there will be an average of 2 to 4 standard-deviation shifts in global climate conditions in that same period. This could mean that there may be more conflict in the future, as well.

"Whether there is a relationship between climate and conflict is not the question anymore. We now want to understand what's causing it," said Hsiang. "Once we understand what causes this correlation we can think about designing effective policies or institutions to manage or interrupt the link between climate and conflict."

Exactly why conflict and climate are intertwined may not be exactly understood, but the researchers have a few theories. Drought and flooding can cripple an economy, especially one based on agriculture or one that is already weak. This can cause violence against governmental leaders to escalate. In addition, the heat itself may just make people more aggressive; a previous study found that two groups of police officers undergoing the exact same simulation training were more likely to pull their weapons if the room was uncomfortably warm.

The findings reveal a little bit more about how climate and human interaction are intertwined. In addition, it could allow researchers to develop better policies for the future in order to prevent conflict.

The findings are published in the journal [Science](#).