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Can Climate Change Cause Conflict? Recent History Suggests So

A survey delving into the past 30 years in sub-Saharan Africa reveals that temperature changes match up with a significant increase in the likelihood of civil war

By [David Biello](#)



CLIMATE CONFLICT?: New research suggests that higher average temperatures could create conditions for more civil wars, like the ongoing conflict in Darfur.
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Some experts call the [genocide in Darfur](#) the world's first conflict caused by climate change. After all, the crisis was sparked, at least in part, by a decline in rainfall over the past 30 years just as the region's population doubled, pitting wandering pastoralists against settled farmers for newly scarce resources, such as arable land.

"Is [Darfur the first climate change war](#)?" asked economist and *Scientific American* columnist Jeffrey Sachs at an event at Columbia University in 2007. "Don't doubt for a moment that places like Darfur are ecological disasters first and political disasters second."

But new research would suggest the answer to Sachs's question is no, at least regarding the novelty of Darfur. [Agricultural economist Marshall Burke](#) of the University of California, Berkeley and his colleagues have analyzed the history of conflict in sub-Saharan Africa between 1980 and 2002 in a new paper in [Proceedings of the National Academy of Sciences](#).

"We find that [civil wars](#) were much more likely to happen in warmer-than-average years, with one degree Celsius warmer temperatures in a given year associated with a 50 percent higher likelihood of conflict in that year," Burke says. The implication: because average temperatures may warm by at least one degree C by 2030, "climate change could increase the incidences of African civil war by 55 percent by 2030, and this could result in about 390,000 additional battle deaths if future wars are as deadly as recent wars."

In fact, temperature change offered a better prediction of impending conflict in the 40 countries surveyed than even [changes in rainfall](#), despite the fact that agriculture in this region is largely dependent on such precipitation. Burke and his fellow authors argue that this could be because many staple crops in the region are vulnerable to reduced yields with temperature changes—10 to 30 percent drops per degree C of warming.

"If temperature rises, crop yields decline and rural incomes fall, and the disadvantaged rural population becomes more likely to take up arms," Burke says. "Fighting for something to eat beats starving in their fields."

Whereas 23 years in 40 countries provides a relatively large data set, it does not exclude other possible explanations, such as violent crime increasing with temperature rise, a drop in farm labor productivity or population growth. "Fast population growth could create resource shortage problems, as well," notes geographer David Zhang of the University of Hong Kong, who previously analyzed world history back to A.D. 1400 to find [linkages between war and temperature change](#). Those results were also published in *Proceedings of the National Academy of Sciences*. But "the driver for this linkage," Zhang says, "is resource shortage, mainly agricultural production, which is caused by climate change."

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Burke and his colleagues specifically excluded records from prior to 1980, because of the conflict rampant in the wake of Africa's emerging colonial independence after World War II. "A lag of a couple of decades would leave sufficient time for post-independence turmoil to wear out," Burke argues. "We took the approach that the best analogue to the next few decades were the last few decades."

Proving the link—and providing a specific mechanism for the increase in conflict, whether agricultural productivity or otherwise—remains the next challenge. "I believe that the historical experience of human society of climate change would provide us [with] the evidence of how climate cooling and warming during the last thousand years created human crisis, and also the lessons for human adaptive choices for climate change," Zhang notes.

"We feel that we have very clearly shown the strong link between temperature increases and conflict risk," Burke adds. But "what interventions will make climate-induced conflict less likely?"









The U.S. military, for its part, is concerned about the issue, analyzing the possibility for climate change to destabilize countries in recent reports, such as an essay from members of the [CNA Military Advisory Board](#) in November, "[Climate and Energy the Dominant Challenges of the 21st Century](#)."

But, given the recent historical record in places like Darfur, the question about intervention may remain unanswered. "We need 18 helicopters but no one has provided it and yet we are so concerned about Darfur," said former [United Nations Secretary General Kofi Annan](#) at an event at Columbia University in September, noting the stretched resources of the peacekeeping forces in that region. "No one can tell me we don't have 18 helicopters. We have thousands."

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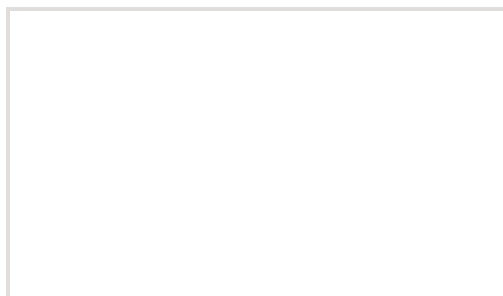
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