

A warming world and heated humans



The ancient Mayan city of Chichen Itza in Mexico. Drought led to crop failure, then economic collapse, violence, and civil war for the Mayans. Researchers said even minor temperature rises can increase conflict. (ISRAEL LEAL / AP)

Look at 60 studies reveals a pattern of violence.



GALLERY: The ancient Mayan city of Chichen Itza in Mexico. Drought... (ISRAEL LEAL...)

By Sandy Bauers, Inquirer Staff Writer

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Considering everything from whether drivers honk more when it's hot (they do) to drought's role in the downfall of the Mayan empire, a team of researchers has concluded that violence - everything from wars to personal assaults - will increase as the world warms.

Combining 60 previous studies that examined events back to 10,000 years ago, the researchers' statistical analysis found a jaw-dropping pattern - "more violence, whether we're talking domestic violence in India or murder in U.S. cities or civil war in Africa," said Edward Miguel, director of the Center for Effective Global Action at the University of California, Berkeley.

Miguel and his colleagues found that even minor departures from normal temperatures and rainfall increase the risk of conflict.

They projected that temperature increases predicted by mid-century could boost risk for civil wars in tropical Africa by up to 50 percent.

Their research, published in Friday's issue of the journal *Science*, lends credence to the view of many security experts that climate change could result in shortages of food, water, electricity, and other resources.

Those, in turn, could lead to everything from shorter tempers to all-out conflict over who gets what.

Lead author Solomon Hsiang, who was a postdoctoral fellow at Princeton University during the research project and now is at Berkeley, termed the results "striking."

Numerous studies over the last five to eight years have examined whether climate changes will make people more likely to fight, said Columbia University political scientist Marc Levy, who has worked with



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governments on climate-security problems.

But they came from scientists in disparate fields, and their answers differed somewhat. "If someone sat down over the weekend and read every one of these articles, they might come away confused," said Levy, who was not involved with the new study.

This one, he said, "lays to rest" a lot of debate.

The researchers culled from diverse sets of data. They looked at crime rates in the United States and domestic violence in drought areas.

One study, in the Netherlands, showed that police officers were more likely to respond aggressively - to shoot, say - if they were hot. Others looked at witch-killings in Tanzania and peasant revolts in China.

Even retaliation pitches in baseball.

As for the Mayans, drought led to crop failure, then economic collapse, violence, and civil war.

Levy said the new paper takes climate change research into a realm that most people feel affects them directly - unlike, say, findings that bird ranges have shifted north.

As the United Nations' Intergovernmental Panel on Climate Change finalizes its fifth assessment on the impacts - addressing human security for the first time - this study could have an influence.

But some in the climate change community have bristled at this kind of research because it suggests that humans don't have a choice in how they act, Levy said.

And he raised a discomfiting liability issue: Could an abusive spouse claim the heat made him do it? Could a warring faction blame the nations that emitted the most greenhouse gases?

The researchers said their data show a causal relationship between climate change and violence.

But they don't know the mechanism that causes it. They compared it with the days when physicians knew smoking caused lung cancer, but didn't know why.

Still, whether climate change actually results in more violence "depends on what we do," said Miguel, the coauthor.

Scientists could develop crops that could better withstand droughts and lessen economic stress. Governments could devise law enforcement and security strategies.

Joshua Goldstein, an international-relations professor at American University, said that, due to changes in other areas - technology, economics, politics, and health - conflict will likely continue a long trend of decline.

But Thomas Homer-Dixon, a professor at Canada's Balsillie School of International Affairs and author of the book *Environment, Scarcity and Violence*, said the new paper was "remarkably strong."

"This is clearly a critical focus for future research," he said. "What does it all mean? The world will be a very violent place by mid-century, if climate change continues as predicted."

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