

COMMENTARY:

Extreme temperatures and violence

Clionadh Raleigh, Andrew Linke and John O'Loughlin

Ascribing violence to extreme weather and climate change risks anchoring a modern form of environmental determinism.

In his book *Civilization and Climate*, Ellsworth Huntington (1876–1947) noted¹ that “Almost any American or European who has travelled or resided within the tropics will confess that he has occasionally flown into a passion, and perhaps used physical violence, under circumstances which at home would merely have made him vexed.” This begs the question — why is there no violent conflict when severe droughts, heavy floods or hot temperatures hit rich countries. One reason is that high levels of social and political stability exist in comparatively developed countries: farmers’ crops fail, but they have insurance; property is damaged, but recovery centres are available to house victims; the injured are treated in hospitals; state agencies rush to assist. When disasters strike truly destitute societies with low levels of social stability, it compounds already poor governance, economic marginalization and substantial environmental vulnerabilities.

Some studies in environmental security are in danger of promulgating a modern form of environmental determinism by suggesting that climate conditions directly and dominantly influence the propensity for violence among individuals, communities and states. For example, increased temperatures have recently been shown to be correlated with more violence and decreased temperatures with less violence^{2–4}, leading to the claim that climatic anomalies are linked to social conflict at all scales and across all major regions of the world. The implication is that poor people act violently for natural reasons. However, such de-politicized analyses remove violence from its local, social and political contexts, and reduce conflict to an immediate and unmediated function of physical, biological and physical–geographical signals. Instead, the impression is given that environmental conditions determine conflict occurrence, type and rate, in line with an environmental

determinist perspective that has been widely discredited as a lens for academic research about social instability. We caution against a renewed environmental determinism in the study of a climate–conflict link.

Political (for example, regime type) and economic (for example, country-level income and inequality) measures should not be discarded in conceptual and statistical models of conflict occurrence. Most studies on the relationships between climate change, degradation, resources, disasters and violence confirm that any political violence is contingent on the political and economic characteristics of societies⁵. The deterministic approach, in contrast, is marked by substantial disregard for the complicated social processes and historical circumstances under which contemporary conflict emerges.

In our view, environmental triggers need to be analysed in the context of political, social, demographic or economic explanations of conflict. Hsiang, Meng and Cane⁴ argue that the latter influences are ‘bad controls’ due to the possibility of endogenous effects of weather indicators on, for example, gross domestic product. But to exclude these variables — in favour of ‘fixed effects’⁶ — undermines key factors that are known to influence political violence. These factors include government capacity, poverty levels, democratic transitions, population characteristics, seasonality and previous and surrounding violence patterns. Inevitably, such an approach overemphasizes climate change as a causal factor.

If the social setting that engenders conflict is ignored, there is also danger that multiple types of conflict become conflated. Conflict in wealthy areas can be reduced to the level of baseball skirmishes instead of large-scale societal violence. Most conflict researchers would not accept that such individual displays of anger compare to the political instability experienced in developing countries.

Conflict rates and types in similar physical environments vary greatly. Civil wars, militia activity, communal violence and rioting may occur in the same state, but are subject to different political triggers⁷. Even when studies have detected a climate/weather signature — such as the significant links between precipitation variation and violence — researchers often seek to explain the results through the incentives and disincentives for conflict. For example, studies of rebel movements show decreases in violence during the rainy season, when it is difficult for both national and rebel armies to traverse terrain with poor infrastructure⁸. In pastoral areas, violent activity is highest in periods preceding the rainy season, when strategic efforts to gain territory, wealth (for example, through cattle raiding) and control of migration paths is likely to yield the most profitable outcome. These strategic movements are associated with climate patterns, where participants consider and interact with the environment in their decision-making, cost/benefit calculations and logistical considerations. Failing to cast explanations in such terms risks reaching conclusions that are little different from those ascribing poverty to latitudinal location or lessened individual productivity to hot climates, as was common in European and American scholarship about a century ago.

A de-politicized conflict framework necessarily ignores how politics in developing states create environments where risks accumulate for poorer, marginalized and geographically peripheral communities. The implications of such an analysis are especially problematic; namely, that a stimulus (temperature)–response (violence) relationship is a valid interpretation of conflict and that the more dangerous forms of violence (intergroup, genocide, civil and international war) will occur as poor people cannot contain violence during periods of environmental change. In arguing that

communities directly or indirectly respond to increased temperatures by attacking their neighbours, competitors or the state, deterministic studies neglect the complex political calculus of governance, the agency of communities, and the multiple ways that people actually cope with challenging environmental conditions.

The present direction of the climate–conflict debate resembles that which emerged to explain high famine rates across Africa in the 1970s and 1980s. At that time, famine scholars asserted that these events were simply natural disasters, caused by a confluence of poor weather and bad land stewardship. The evidence seemed to be a simple and strong correlation between stressed environments and the practices of the poor. Yet, when scholars considered the contexts of famine occurrence, they identified interactions between natural triggers and political strategies and conditions, including poor governance, autocracy, ongoing conflict and widespread poverty⁹. These interactions offer more insightful perspectives on famine incidence.

Perhaps most troubling is the tendency in environmental security studies to presume that individuals and communities cannot (or choose not to) engage in positive coping behaviour to attenuate climate risks. On the ground in developing countries, climate change and ecological stress is treated as a problem to be solved, not a harbinger of apocalyptic violence as it is viewed by many analysts. Indeed,

during periods of hardship, higher levels of cooperation are found between erstwhile competitors. During disasters and periods of ecological stress, cooperation and aid, not violence, is the dominant response. Yet cooperation is far less likely to make headline news. Alternative livelihoods, migration, and changing agricultural patterns are all examples of how individuals and communities adapt to new and volatile circumstances. Anthropologists and human ecologists have documented these across continents in the scholarly literature for decades^{10–14}. Studies that assume maladaptive conflict responses to climate stress and conflate types of conflict and scales of analysis cannot capture the realities of the contemporary developing world.

In terms of predicting and interpreting future insecurity in developing states, it is probably more critical to understand ‘the nature of the state’ than the ‘state of nature’. There is a range of likely conflict causes in poor and weakly governed states, and variable rates of violence correspond more closely to strategic explanations than they do to physical neo-Malthusian explanations such as resource scarcity, biological claims about anger and aggression, or demographic stresses. People in poor countries do not respond to bad weather by attacking each other. Misconstruing the true nature and correlates of violence across developing states can lead to inferior policy suggestions and frame climate change as a military/security issue rather than a needs-based question¹⁵. □

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COMMENTARY:

Making the most of climate impacts ensembles

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Increasing use of regionally and globally oriented impacts studies, coordinated across international modelling groups, promises to bring about a new era in climate impacts research. Coordinated cycles of model improvement and projection are needed to make the most of this potential.

Climate impacts ensembles, usually comprising multiple impact models, are a promising tool for projecting future crop productivity¹ and increasing coordination between international modelling groups, evident in model intercomparison programmes (MIPs),

is producing high-profile multi-model studies². An increasing number of these studies are global in extent, whereas model accuracy and data quality are often better at local to regional scales. Here, we explore the implications of this trend for the design and coordination of future

studies. We develop recommendations based on the assertion that a single-model intercomparison study, if it is to avoid being unwieldy, can focus on either projecting impacts, or on model evaluation and model intercomparison, but not both. Further, we assess the suitability of global