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Temperature and violence

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Temperature is one factor contributing to violence
By Mark A. Cane, Edward Miguel, Marshall Burke, Solomon M. Hsiang, David B. Lobell, Kyle
C. Meng, and Shanker Satyanath.

Academic disputes are often contentious, but “conflict studies” are especially so [1]. The
commentary, Extreme temperatures and violence by Raleigh et al [2] (henceforth RLO) is an
unhappy illustration. RLO criticize our recent papers [3-5] for “anchoring a modern form of
environmental determinism,” claiming that our focus on environmental conditions “removes
violence from its local, social, and political contexts”, and that our results imply that “poor
people act violently for natural reasons.” Both claims are gross misrepresentations of our work
and the methods we employ.

Our findings show the relationship between extreme temperatures and violence is observed in
both rich and poor populations alike [5] and we have consistently highlighted the importance
of socioeconomic settings. For instance, we demonstrated that the effects of global climatic
variation on civil conflicts in the tropics are lower but still positive for relatively richer countries
[4]. Similarly, in our meta-analysis of this literature we find the magnitude of the effects of
climate anomalies on intergroup conflict to be over three times larger than that on
interpersonal conflict [5]. Surely, this implies that both the local socioeconomic context and
the type of conflict examined are important. Even our earliest work studied how the effects
of climate on conflict differed across local economic, political, social, geographic, and demographic
conditions [6].

None of this work claims that high temperatures or other climatic variations are necessary or
sufficient to trigger violence at any scale. To use an analogy, drunkenness may increase traffic
accidents, but not all traffic accidents involve drunk drivers, and certainly not all drunk drivers
have traffic accidents. Do RLO feel that carefully establishing a causal link between drinking
and accidents is misleading or a waste of time because it distracts us from examining the other
causes of traffic accidents?

All of us believe that political and economic factors influence conflict occurrence. Indeed all of
our statistical models acknowledge them, as RLO themselves note. We agree with the sentiment
that a complete conceptual model of conflict must include political, social and economic factors
in additional to environmental causes. The research community will get there faster by first
acknowledging the empirical facts that can be credibly established in data, including our
observation that hot weather makes societies at various scales more violent.

REFERENCES
1. Solow, A. R. Global warming: A call for peace on climate and conflict. Nature 496, 179-
180 (2013).
2. Raleigh C., Linke, A. & O’Loughlin J. Extreme temperatures and violence, Nature
Climate Change 4, 76-77 (2014).
3. Burke, M., Miguel, E., Satyanath, S., Dykema, J. & Lobell, D. Warming increases risk of