Temperature is one factor contributing to violence

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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.

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