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The Economics of Civil War: Climate, Poverty and Trade

Edward Miguel

Selected Paper prepared for presentation at the International Agricultural Trade Research Consortium's (IATRC's) 2014 Annual Meeting: Food, Resources and Conflict, December 7-9, 2014, San Diego, CA.

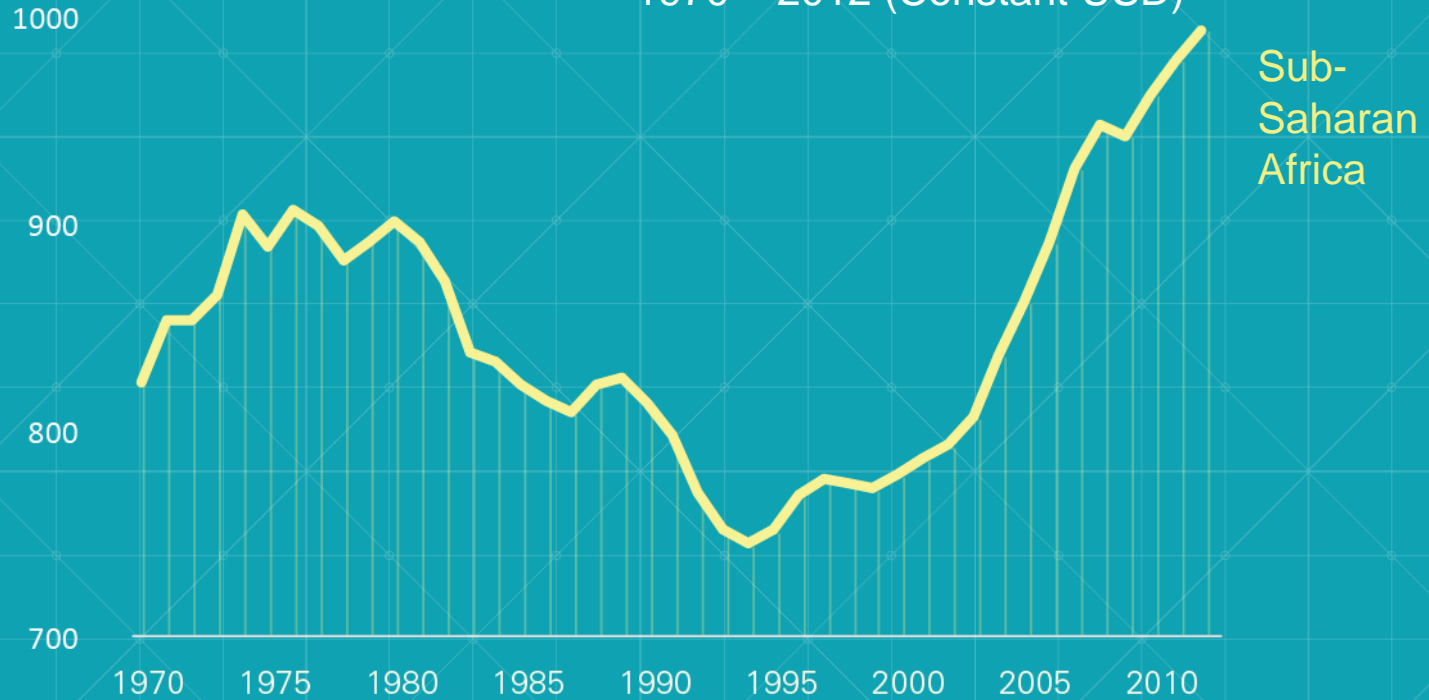
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CLIMATE, CONFLICT, TRADE & DEVELOPMENT



AFRICAN PER CAPITA INCOME

1970 – 2012 (Constant USD)



Source: World Bank





CLIMATE CHANGE →
POVERTY & CONFLICT?

80% OF AFRICAN
countries have
experienced at
least ONE YEAR of
ARMED CONFLICT
since 1980



(Source: UCDP/PRIO)



INCOMES FELL 40%
during Sierra Leone's civil war
(Source: Casey et al 2014)

ARMED CONFLICT REDUCES INTERNATIONAL TRADE

Holds for civil & international wars
with negative spillovers for neighboring
countries, trading partners

(Source: Blomberg and Hess 2006, Qureshi 2013)

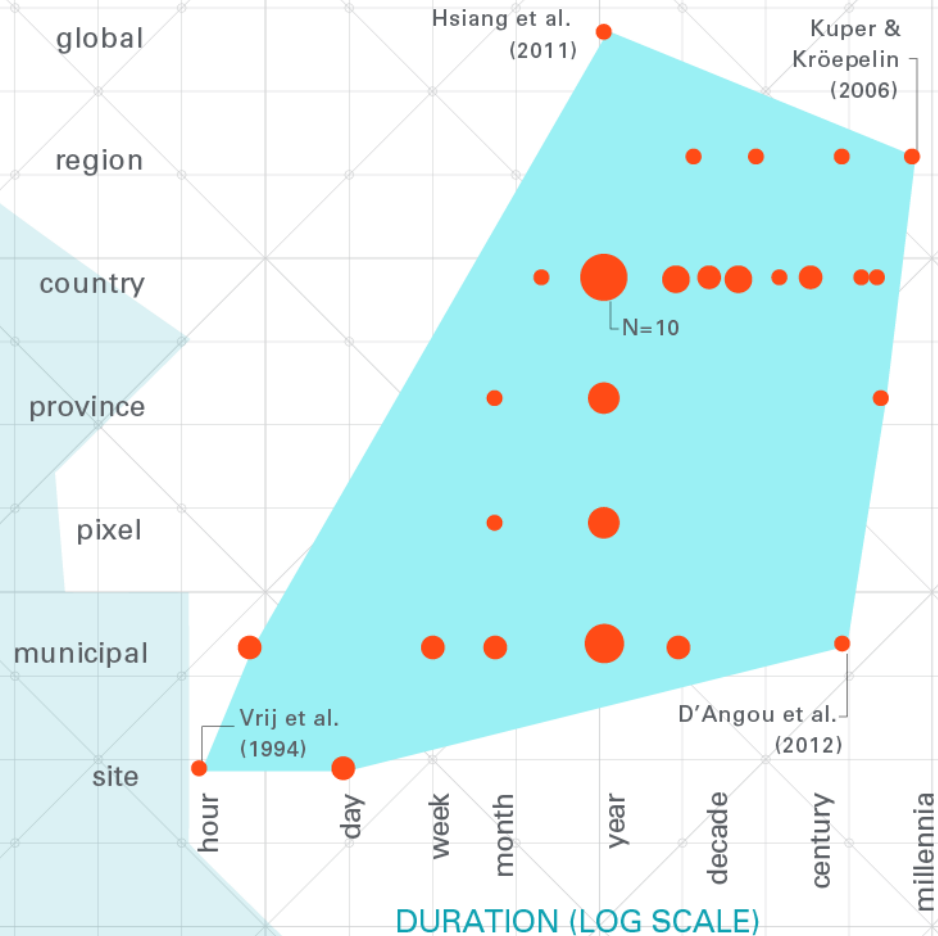
A photograph of a herd of cows grazing in a field during sunset. The sky is a mix of orange, red, and purple. The cows are scattered across the field, some in the foreground and some in the background. The overall scene is peaceful but has a somber tone due to the lighting.

DOES EXTREME CLIMATE LEAD TO VIOLENT CONFLICT?

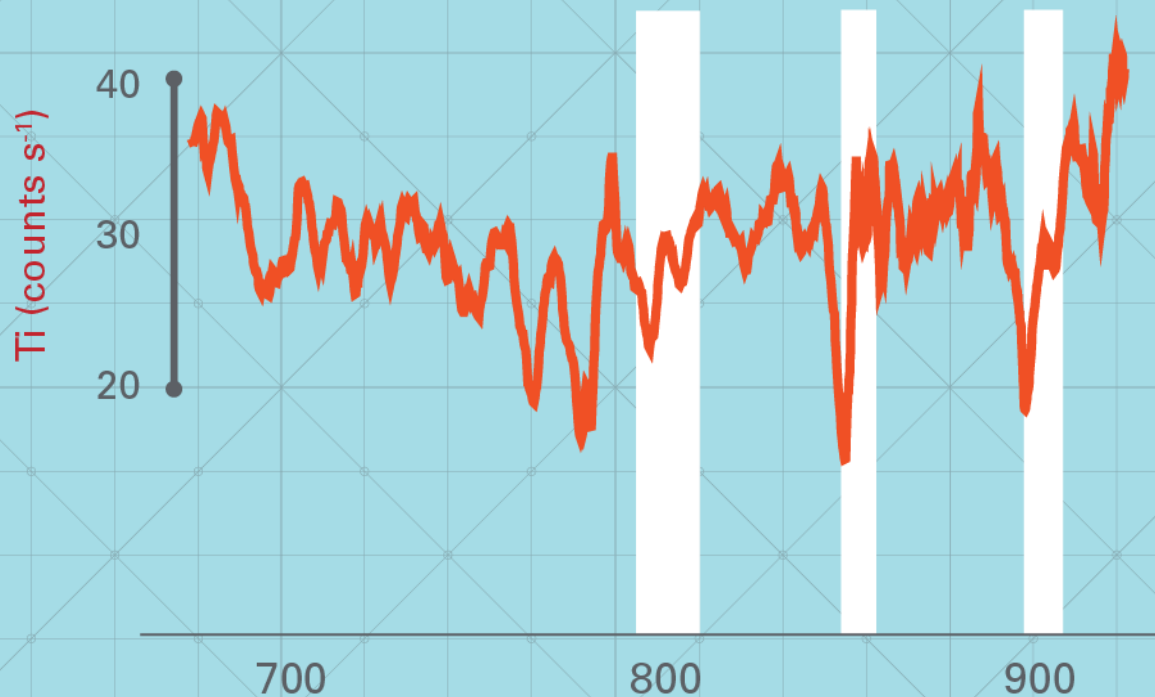
60 quantitative studies from economics,
archeology, psychology, history,
criminology, political science

(Source: Hsiang, Burke and Miguel, Science 2013)


STUDIES BY DURATION & SCALE



Major phases of collapse for the “Classic” Mayan empire (Mexico)



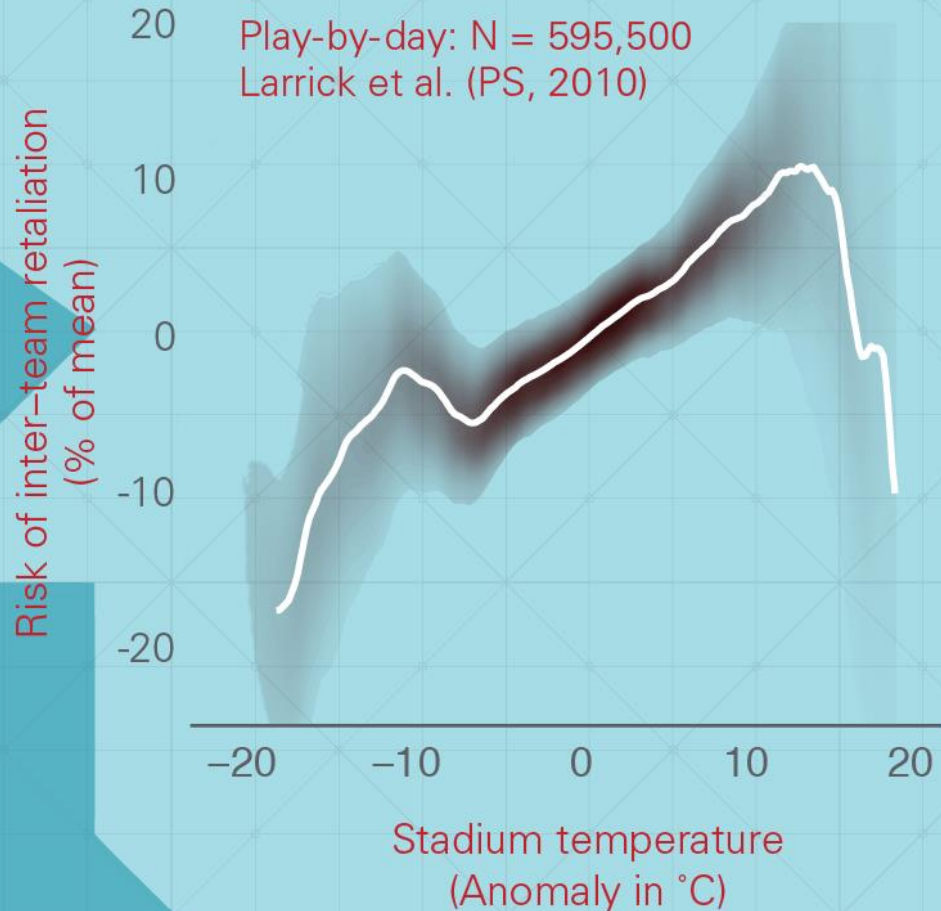
(Source: Haug et al. 2003, Science)



High temperatures make police trainees more aggressive, provoke “road rage” – and increase the risk that pitchers hit batters in baseball

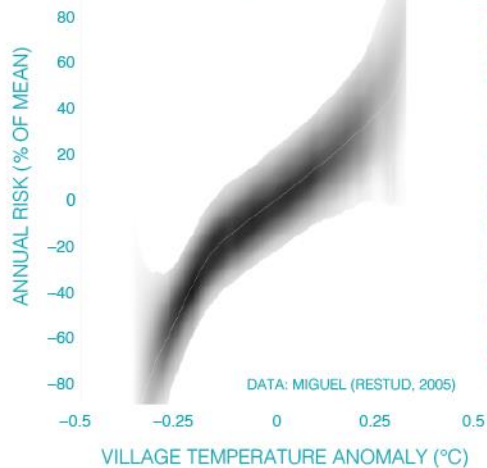
(Sources: Kenrick et al. 1986; Vrij et al. 1994; Larrick et al. 2011)

VIOLENT INTER-GROUP RETALIATION (USA)

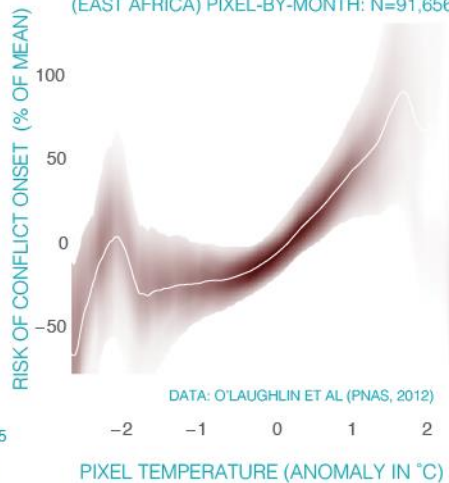


TEMPERATURE AND VIOLENCE IN AFRICA

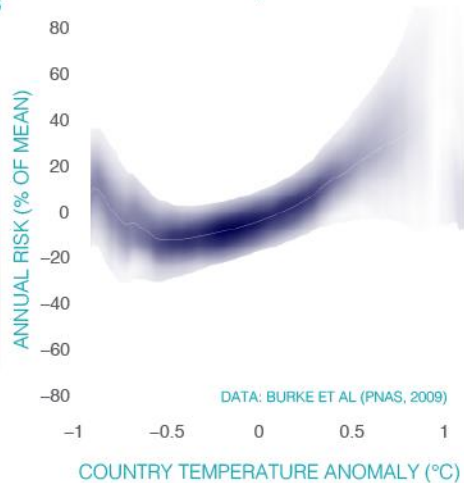
WITCH MURDER (TANZANIAN VILLAGES)



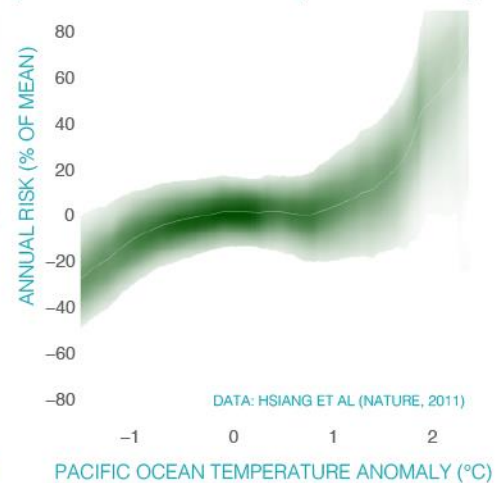
POLITICAL & INTER-GROUP VIOLENCE (EAST AFRICA) PIXEL-BY-MONTH: N=91,656



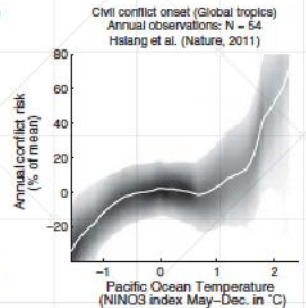
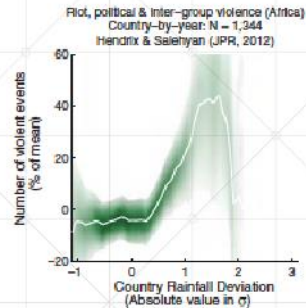
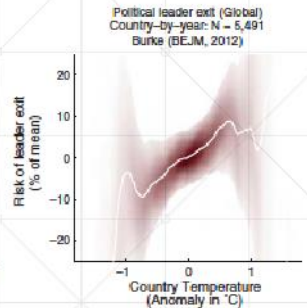
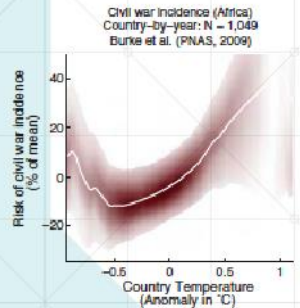
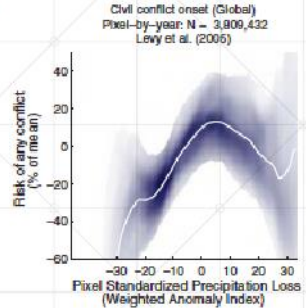
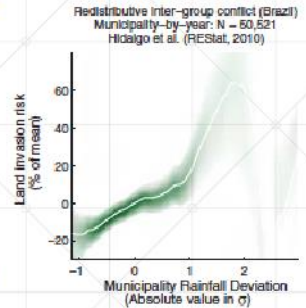
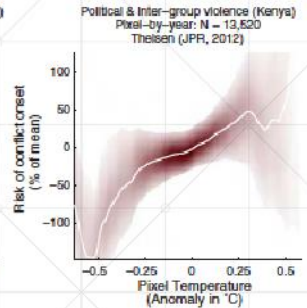
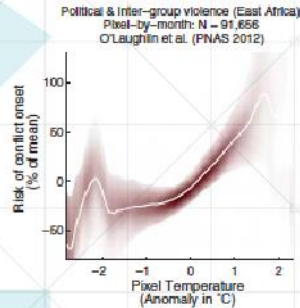
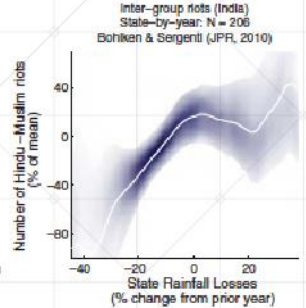
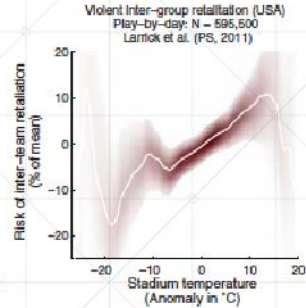
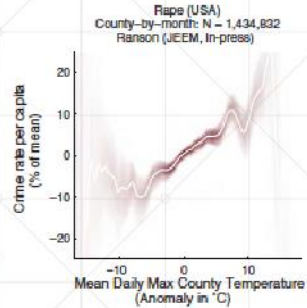
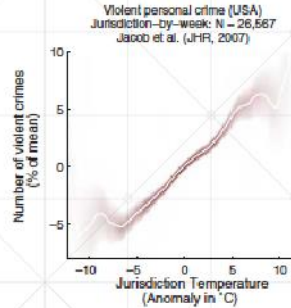
CIVIL WAR INCIDENCE (SUB-SAHARAN AFRICA)



CIVIL CONFLICT ONSET (GLOBAL TROPICS)

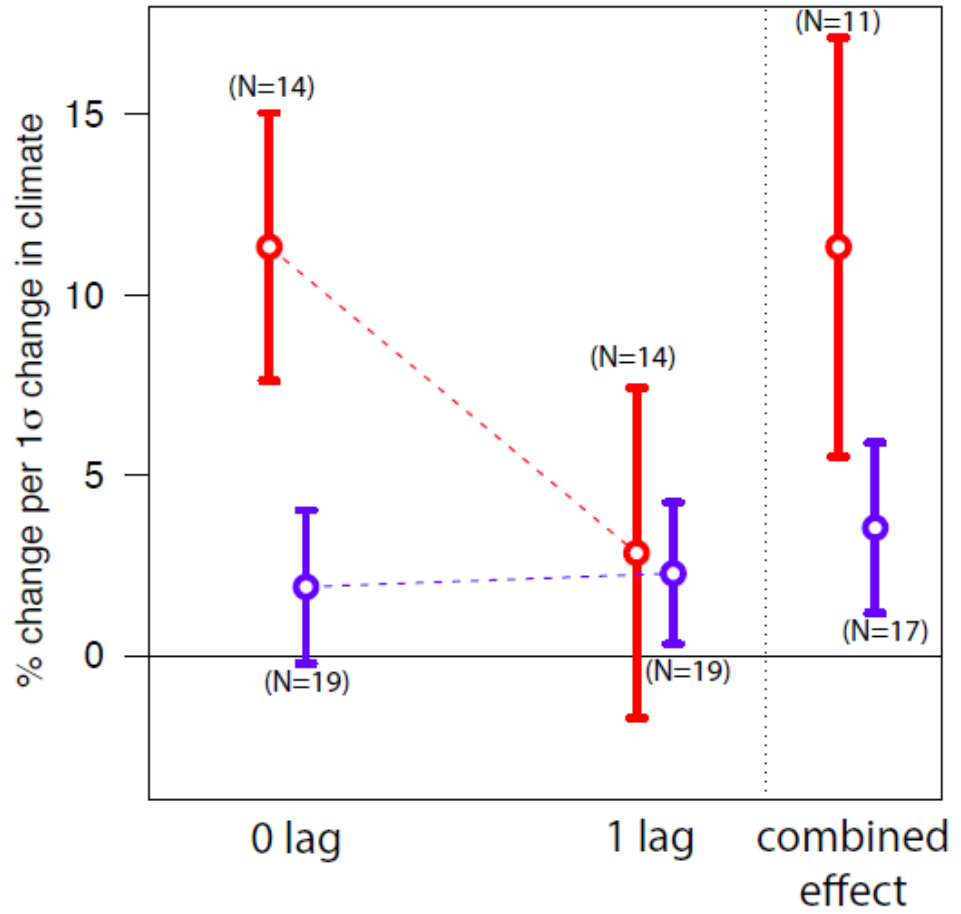


High temps
lead to more
violence in
27 OUT OF
27 STUDIES



In a meta-analysis
with 19 studies,
+1 SD IN
TEMPERATURE
INCREASES
VIOLENCE 12%

Intergroup conflict



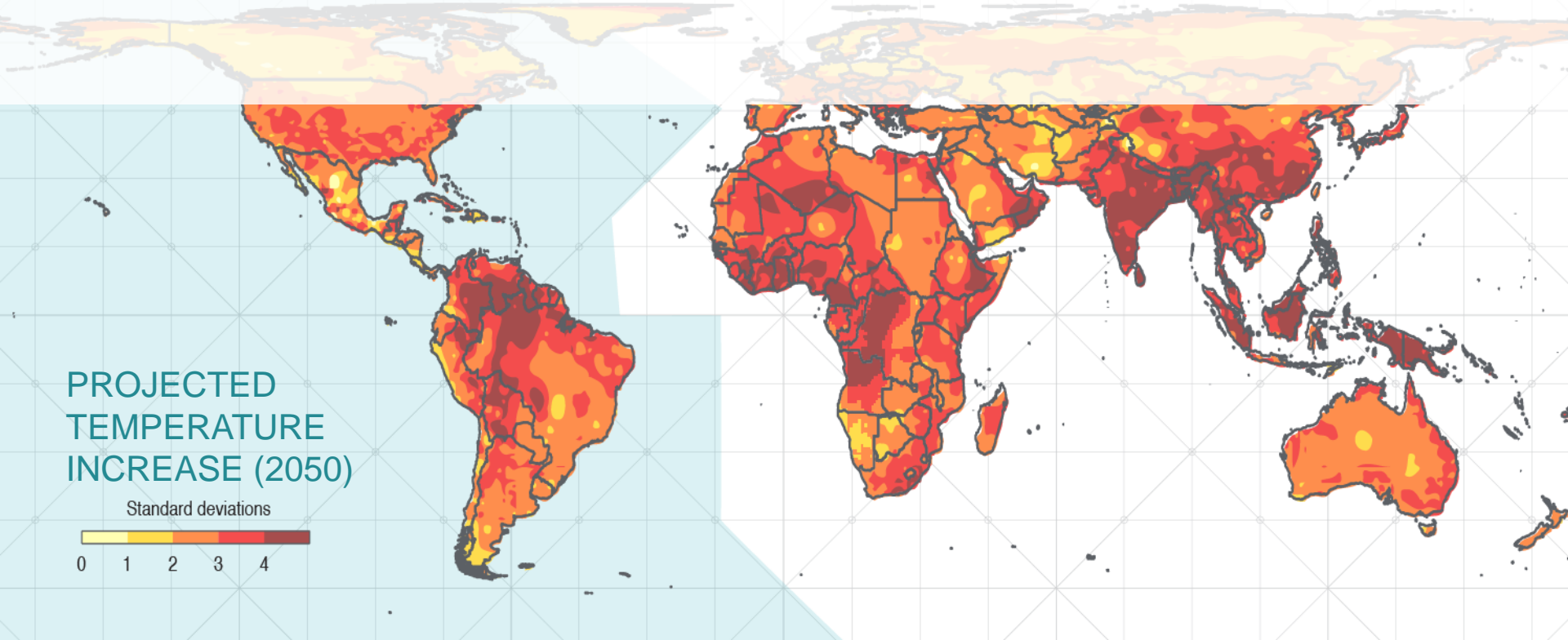
(Source: Burke, Hsiang and Miguel 2015)

2°C rise (projected for 2050)

VIOLENT CONFLICT UP 40%

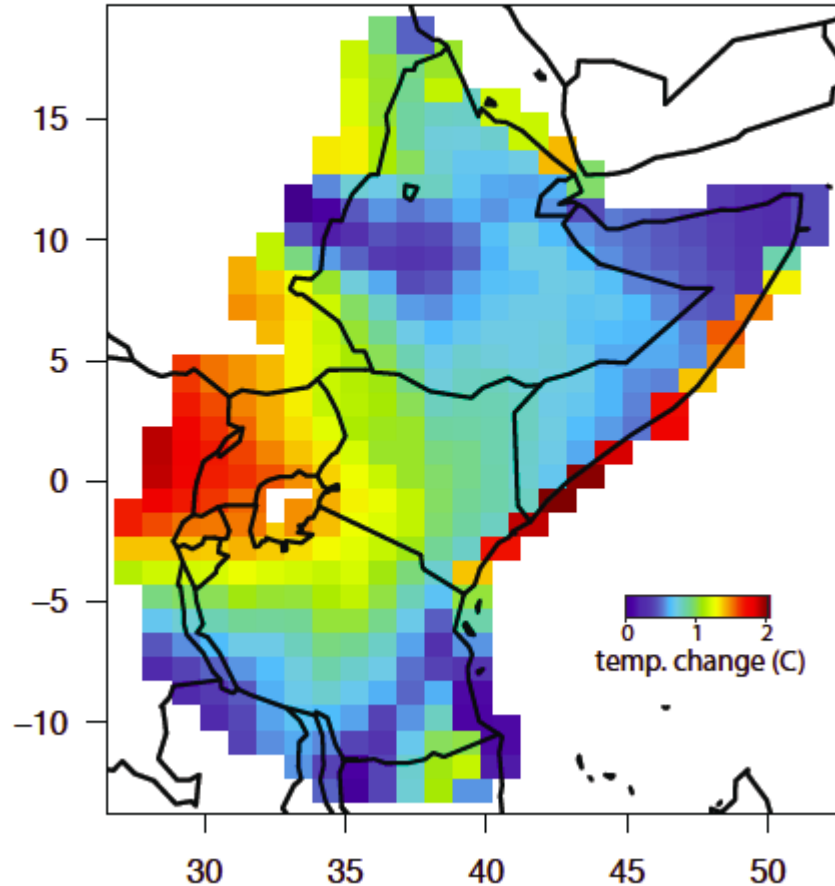
PROJECTED
TEMPERATURE
INCREASE (2050)

Standard deviations



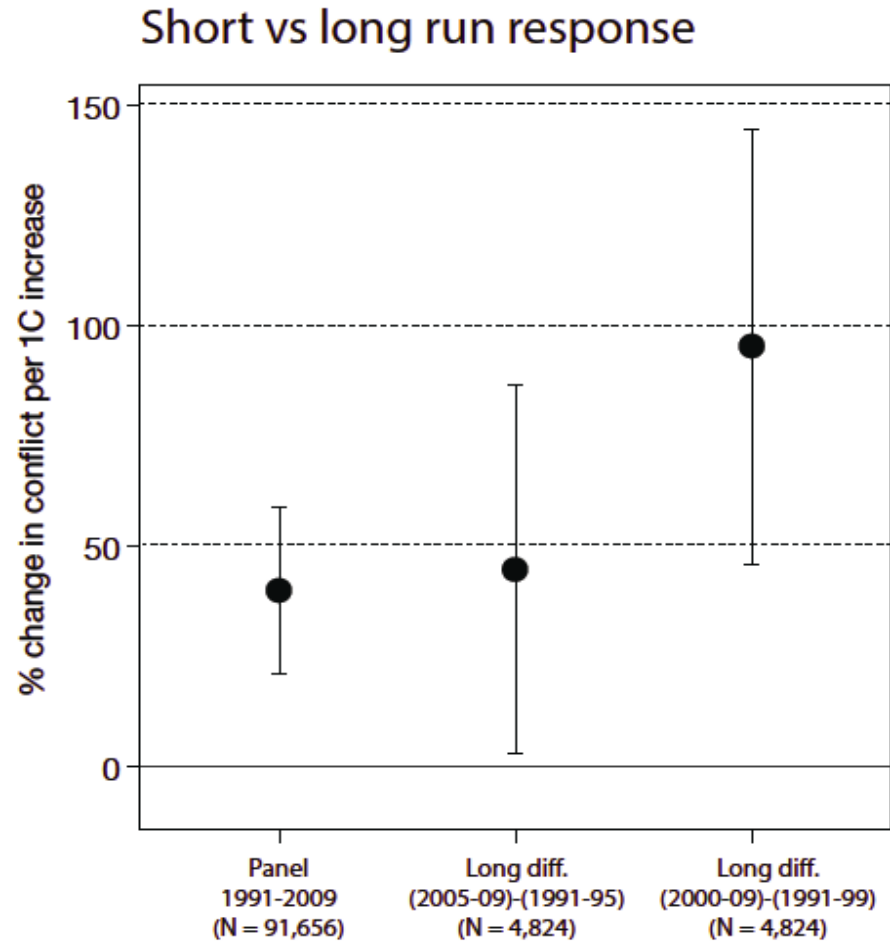
Re-analyzing data
in O'Loughlin et al.
(2012, PNAS),
**MINIMAL
ADAPTATION TO
WARMING OVER
20 YEARS**

Change in temperature (C),
2005-09 minus 1991-95



(Source: Burke, Hsiang and Miguel 2015)

Re-analyzing data
in O'Loughlin et al.
(2012, PNAS),
MINIMAL
ADAPTATION TO
WARMING OVER
20 YEARS



(Source: Burke, Hsiang and Miguel 2015)



With global mitigation efforts at a standstill, a new climate adaptation agenda for Africa is desperately needed

E.g., drought-resistant crop varieties,
weather insurance, foreign aid programs?
Nunn and Qian (2014, AER) on food aid



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