



# Climate Shocks and Political Violence: Is Africa Exceptional?

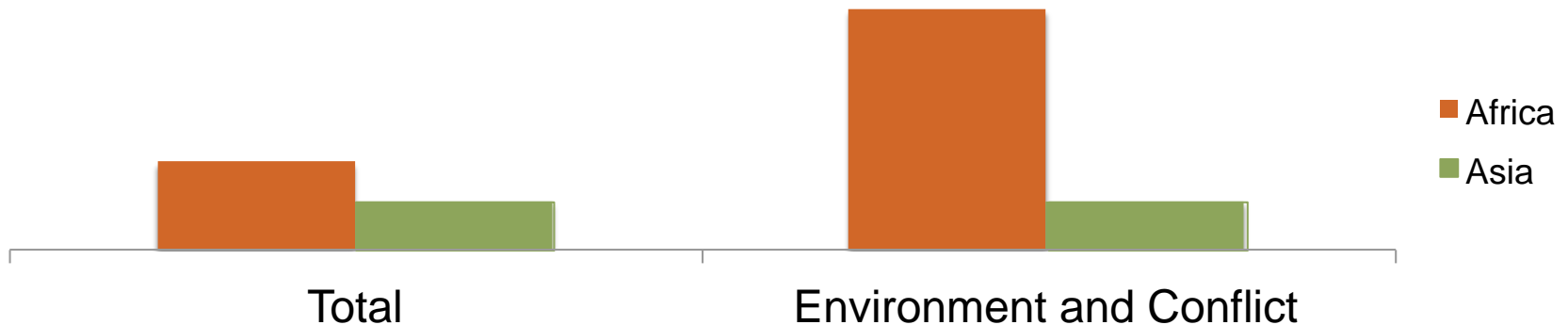
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# Environment and conflict: focus on Africa

2

## Google Scholar-listed Publications, 2000-2010 (adjusted for population)



“Because the effects of resource scarcity are mediated by existing asymmetries of access and wealth, these [climatic] effects are especially threatening to Sub-Saharan Africa, the population of which is primarily *rural, poor, and dependent on forests for fuel and rain-fed subsistence agriculture.*”

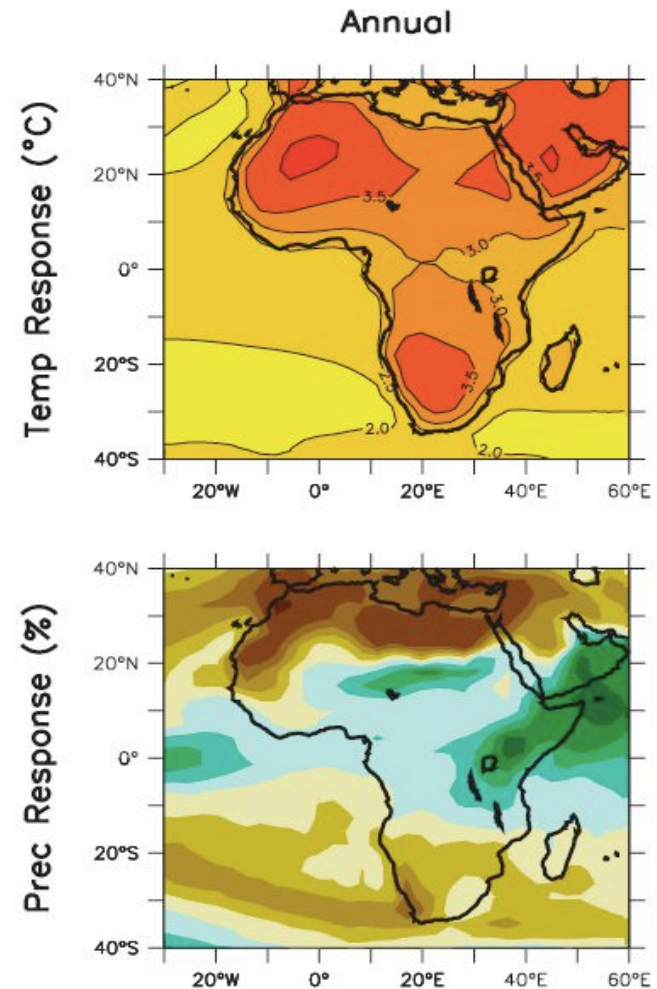
Hendrix & Glaser (2007)

# Climate change and conflict: trends vs. shocks

3

- Long-term trends: changes in means
  - ▣ Desertification
  - ▣ Temperature
  - ▣ Longer time scales, more adaptive capacity
- Short-term shocks: changes in variability
  - ▣ Hydro-meteorological disasters (floods, droughts, storms)
  - ▣ Shorter time scales, less adaptive capacity

Change, 1980-1999 to 2080-2099



IPCC, 2007

# Climate shocks and violence: theory

4

- Climate shocks: water availability and grievances
  - Income shocks, food security shocks, etc.
- Mediators
  - Development
  - Political democracy
  - Agricultural dependence
- Link should be stronger in less developed, non-democratic, and agriculture-dependent countries

# Dependent variable: violent conflict

5

- Civil conflict onset, incidence
  - UCDP/PRIO coding
- Terrorist acts
  - Global Terrorism Database
  - Bombings, attacks, assassinations, etc., perpetrated by non-state actors

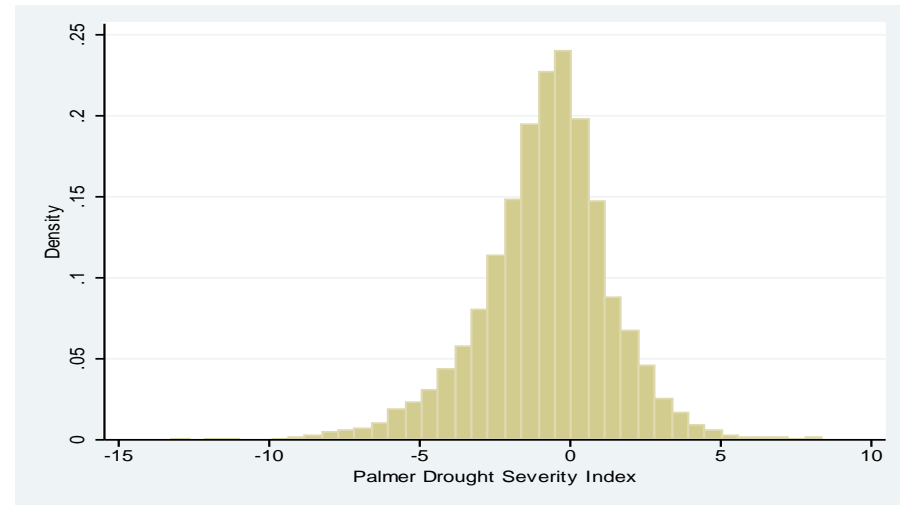
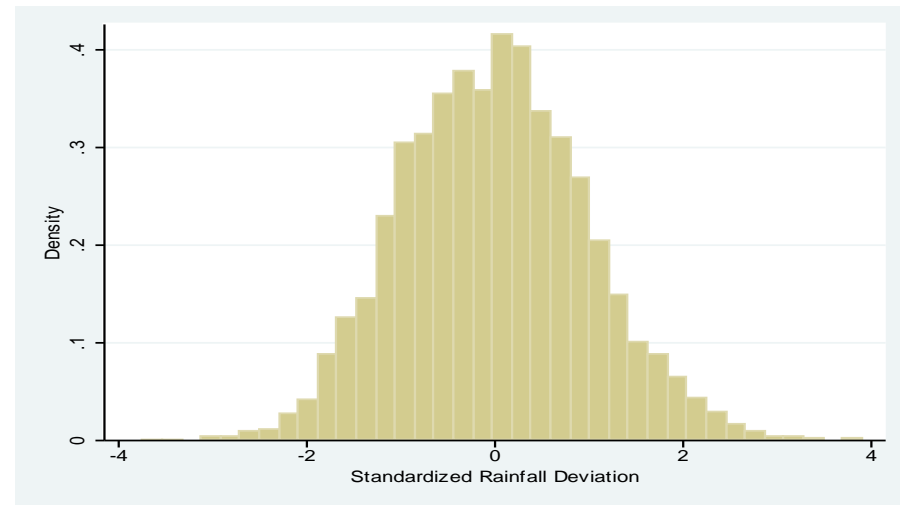
## 25+ Deaths, GTD

|                | 0    | 1   | Total |
|----------------|------|-----|-------|
| Civil conflict | 0    | 1   | Total |
| 0              | 3979 | 190 | 4914  |
| 1              | 405  | 512 | 172   |
| Total          | 4384 | 702 | 5086  |

# Independent variable: climatic shocks

6

- Water availability
  - Rainfall deviations
    - $(X_{it} - \bar{X}_i) / \sigma_i$
    - GPCP
  - Palmer Drought Severity Index
  - $r = 0.42$



# Dealing with mediators

7

- Samples
  - Global
  - Sub-Saharan Africa
  - Non-Sub Saharan Africa
- Split-sample analysis
  - > median, < median **development** (GDP per capita)
  - **Political democracy** (Polity2  $\geq$  6, Polity2 < 6)
  - > median, < median **agricultural dependence** (Ag. % GDP)

# Estimators and controls

8

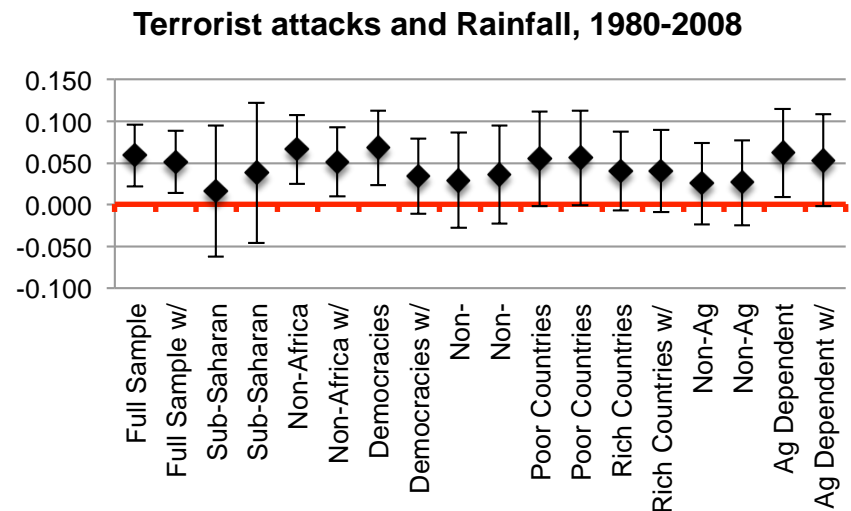
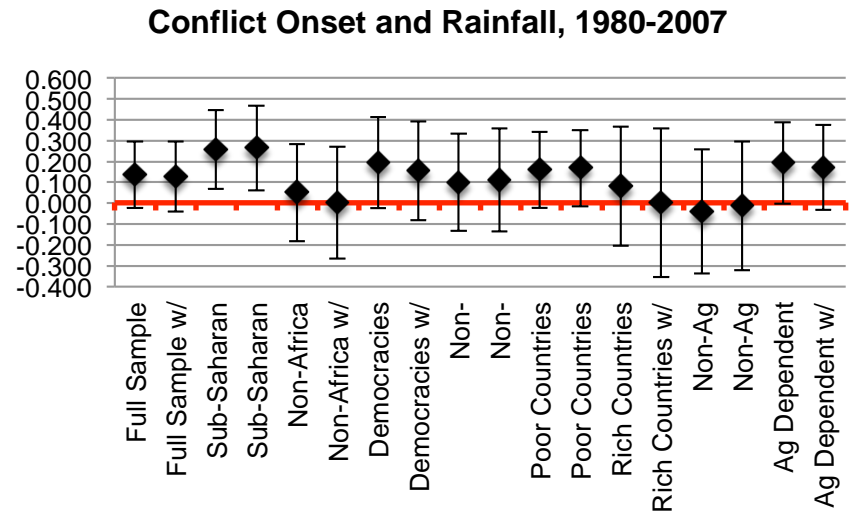
- Sample: 177 countries, 1980-2007
- Estimators
  - Conflict onset, incidence: logistic regression, lagged DV and controls for temporal dependence (Carter & Signorino, 2010)
  - GTD events: conditional fixed-effects negative binomial regression with lagged DV, time trend
- Controls
  - GDP per capita, GDP growth, population, Polity2
  - But...OVB is not a real concern – endogenous controls (economic growth) bias against significant findings
- 108 models ...
  - No regression tables for you!



# Results

9

- Sub-Saharan Africa *is* different
  - ▣ More rain (less drought), greater risk of conflict
    - Non-African cases: no relationship
  - ▣ No relationship between climate shocks and terrorist attacks
    - Non-African cases: positive relationship
- Relationship is consistently ***positive***
- Mediators: poverty and agricultural dependence



# Conclusions

10

- Climate change – conflict discourse has focused on Sub-Saharan Africa
  - The region is unique, but for well-known reasons
  - These reasons cluster in Sub-Saharan Africa, but are present elsewhere
    - Central Asia (Pakistan, Kyrgyzstan, Tajikistan, Uzbekistan)
    - Southeast Asia (Bangladesh, Bhutan, Cambodia, Laos, PNG)
- More water, more violence?
- Other mediators?
  - Inequality? Ethnic fractionalization?