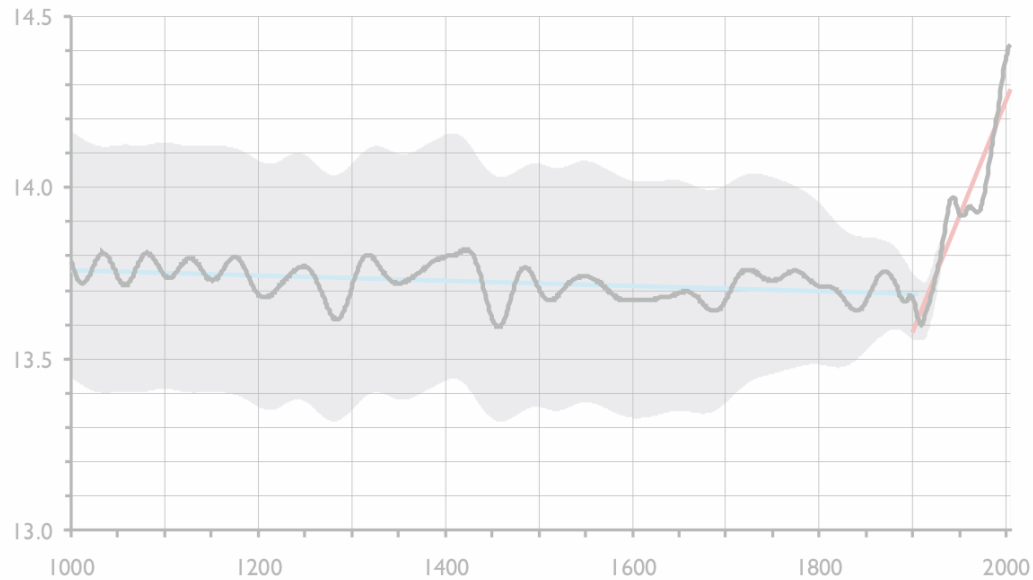


# Climate Change and Armed Conflict

## Challenges for Future Quantitative Research



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**CSCW**  
Centre for the Study of Civil War

Conference on "Climate Change, Social Stress and Violent Conflict"  
Research Group Climate Change and Security (CLISEC), Hamburg University  
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# Outline

- Status of knowledge
- Challenges for future quantitative research
  1. Theory
  2. Data
  3. Research design
  4. New research avenues
  5. Policy relevance
- Conclusions

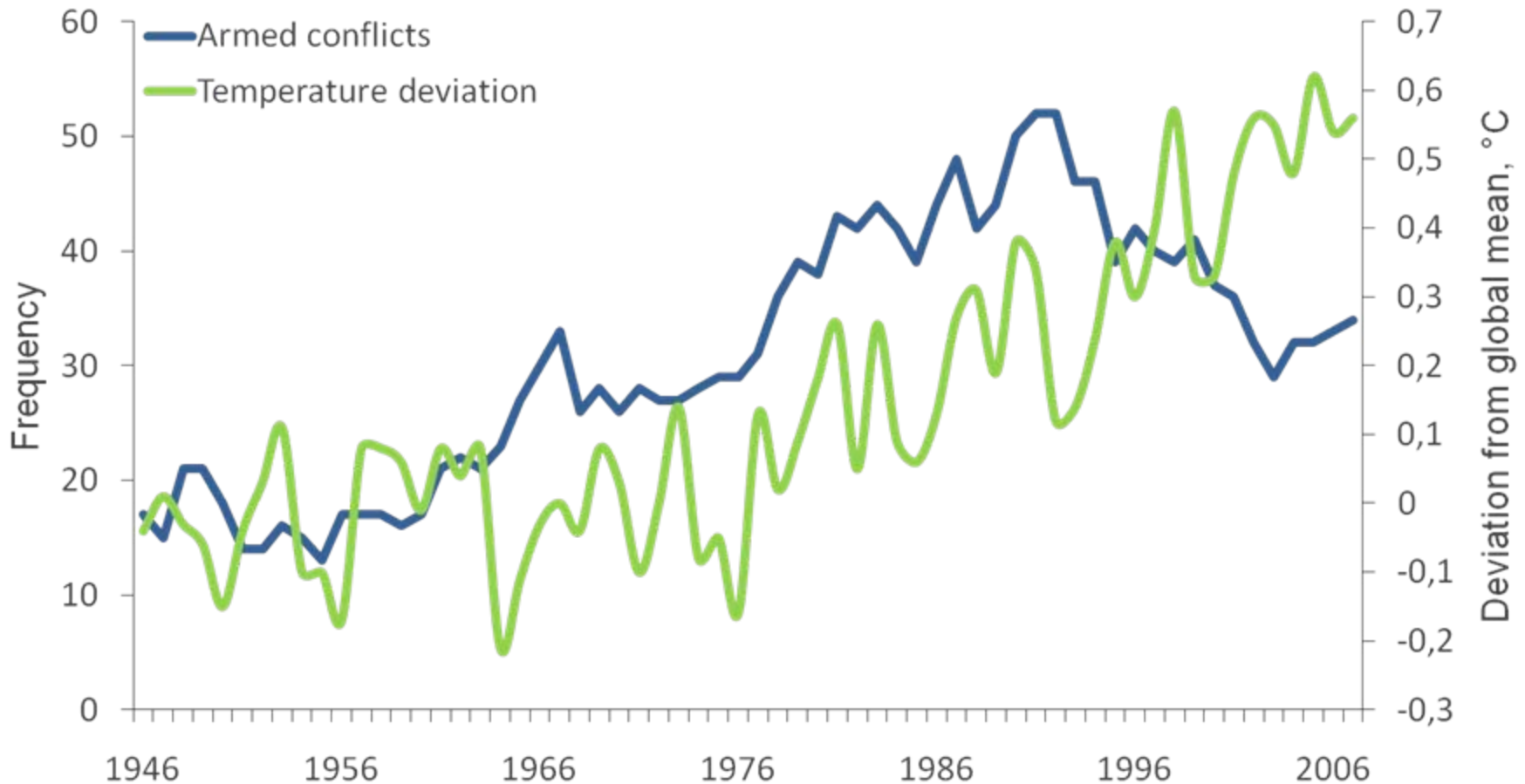


# Status of knowledge

- Quantitative civil war literature has identified several general characteristics of countries with conflict
  - National poverty
  - High population
  - Anocracy, political instability
  - Proximity to conflict in space and time
  - Ethnopolitical exclusion
- Little evidence that environmental factors increase risk of civil war
  - Mostly insignificant results for resource scarcities
  - Inconclusive results for population density and growth
  - Some indication that refugee flows increases conflict risk, but unclear whether other forms of migration exhibit similar patterns
  - Some indication that natural disasters matter, but mostly geological events



# A comparison of trends



Note: Temperature statistics from NASA Goddard Institute for Space Studies (GISS), Columbia University; conflict data from the UCDP/PRIO Armed Conflict Dataset, Uppsala University and PRIO



# A research paradox?

- *Why maintain focus on environmental scarcity and climate change if they are irrelevant for peace and security?*
  - Strong public conception that environment matters
  - Strong Neo-Malthusian orientation in the environmental movement and many ministries of environment
  - Poorly specified theoretical models in earlier research
  - Poor quantification of central phenomena
  - Incompatibility between theory and empirical analysis
- More research not only warranted but much needed



# 1. Theory

- Specify aggravating and dampening contexts
- Pay attention to scale
- Pay attention to temporal dimension
- Focus on intermediate factors – conflict as a ‘consequence of consequences’

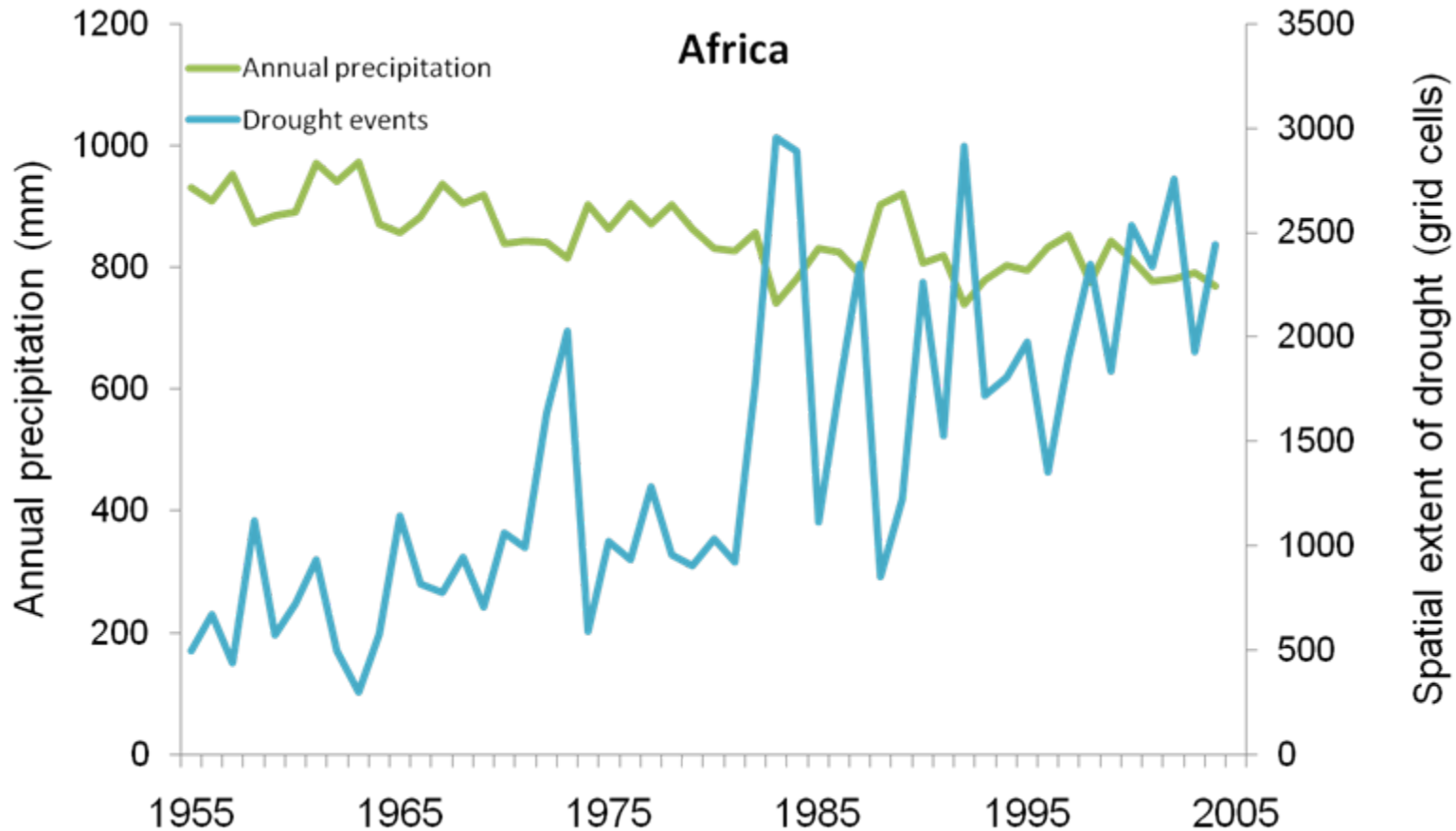


## 2. Data quality

- Until most recently, most environmental data have been poorly suited for cross-national analysis of scarcity and conflict
- While the Environmental Security (ES) literature points to changes (flow) in the resource base, most quantitative studies used data contain static measures of resource availability (stock)
- While the ES literature frequently points to local developments and consequences, most environmental data are measured by country
- Recent developments in remote sensing and geographic information systems (GIS) are promising, but few environmental datasets come with high resolution in both time and space



# Time-series precipitation data



Note: Precipitation statistics from Global Precipitation Climatology Center (GISS); drought defined by the Standardized Precipitation Index based on six-month intervals (SPI-6); graph generated in PRIO GRID



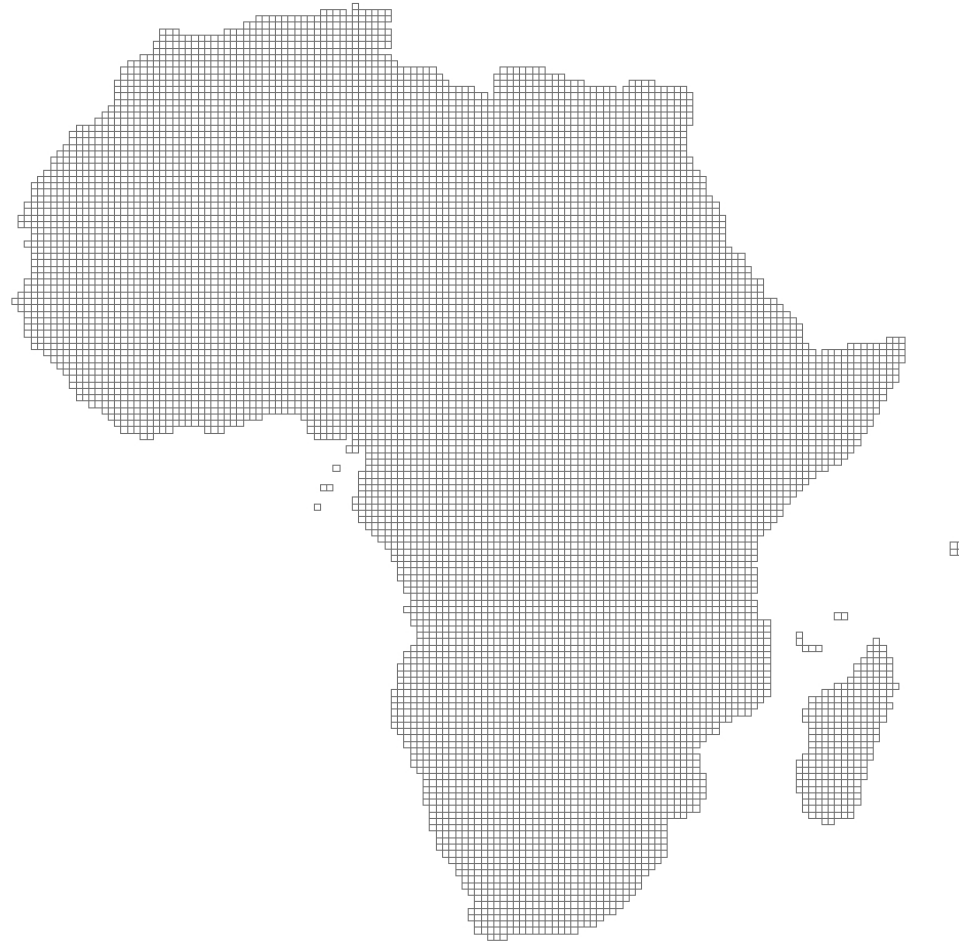


# 3. Research designs

- Informed by theory and qualitative ES literature
- Sample selection strategies (context)
- Scale
- Timing
- Complexity (non-linearities, threshold effects, interactions, etc)
- Type of insecurity/violence
- Couple with climate models for implications of alternative scenarios



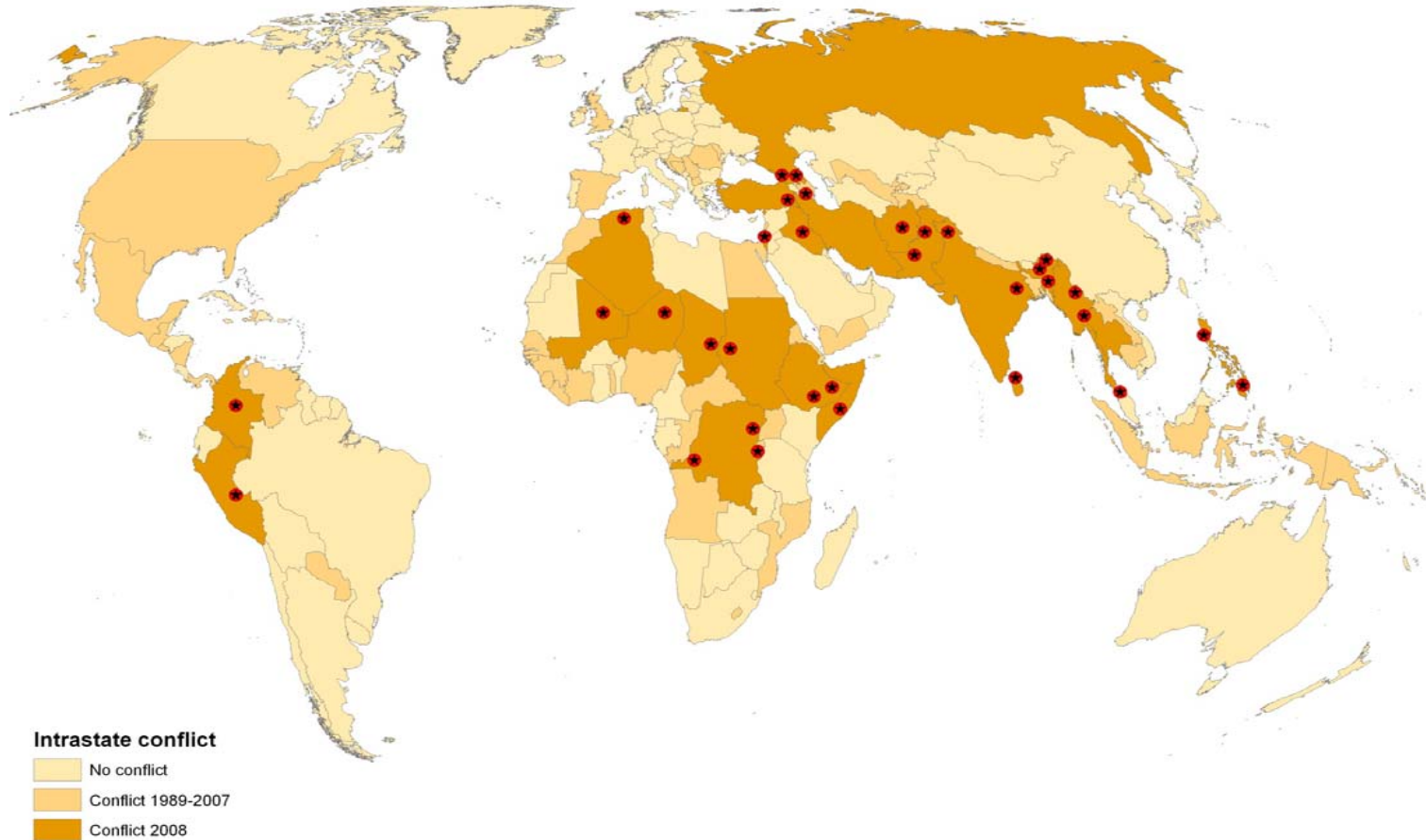
# PRIO GRID approach



## 4. New research avenues

- Most research to date limited to outbreak/prevalence of conflict

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# 5. Policy relevance

- Stress importance of socio-political context
  - We cannot change or revert nature *in the short term*
  - We *can* change societies' resilience to extreme events (infrastructure, insurance...)
  - We *can* change conditions conducive to violence (poverty, inequality, exclusion...)
- Ultimate ambition: being able to predict future 'hot spots'
  - Prioritization
  - Preparation
  - At various scales
- Express uncertainty
  - All social projections come with significant uncertainties but these are rarely stated
  - Risk management: impact vs. probability



# Conclusions

- Lack of robust evidence that environment matters for conflict may be due to poor understanding of causal relationships and data limitations
- Many plausible intermediate factors between environmental change and collective violence not explored
- Research priorities:
  - Identify facilitating (and dampening) conditions
  - More focus on immediate social effects
  - Expand narrow civil/interstate war focus
  - Consequences of environmental change for ongoing conflicts
  - Consequences of conflict for environmental vulnerability
  - Better environmental data
  - More appropriate research designs
  - Coupling of climate and conflict models for prediction

