

# El Niño in the Context of Global Change

## Implications for Risk

El Niño 2015 Conference  
International Research Institute for Climate and Society  
Columbia University  
17-18 November 2015

Marc Levy  
CIESIN, Earth Institute  
Columbia University

mlevy@columbia.edu  
@marc\_a\_levy



# El Niño Strengthening, Will Be among Biggest on Record, WMO Says

U.N. weather agency says current warming pattern in the Pacific likely to be in the top three strongest on record

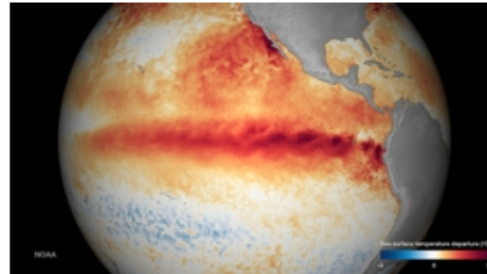
 REUTERS

November 16, 2015

By Tom Miles

GENEVA, Nov 16 (Reuters) - The El Niño weather pattern, a phenomenon associated with extreme droughts, storms and floods, is expected to strengthen before the end of the year and become one of the strongest on record, the U.N. weather agency said on Monday.

The World Meteorological Organization (WMO) said this El Niño was already "strong and mature" and the biggest in more than 15 years.

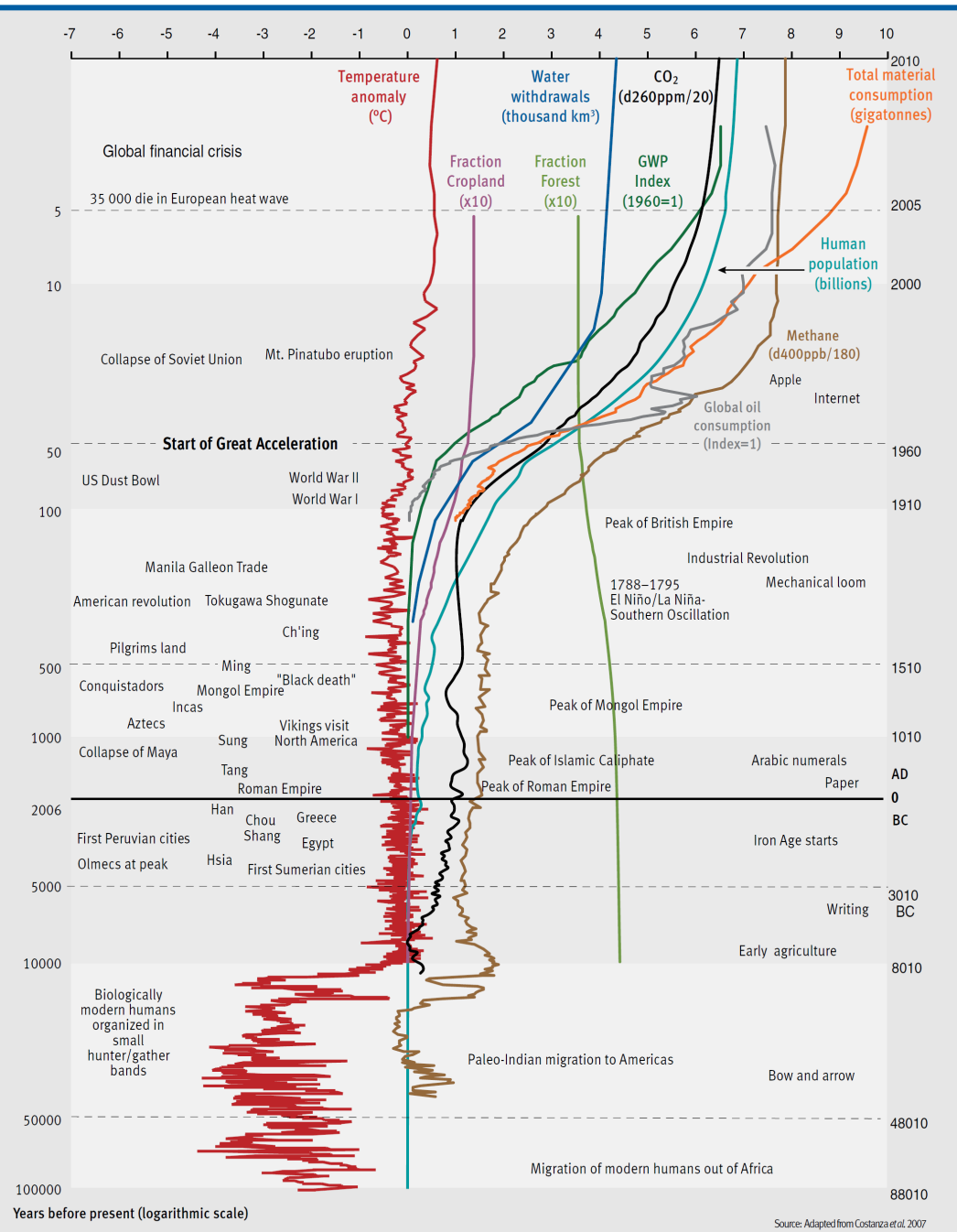


El Niño conditions normally reach maximum strength between October and January, then persist through much of the first quarter

*Credit: NOAA*

# What makes this El Niño different from all other El Niños?

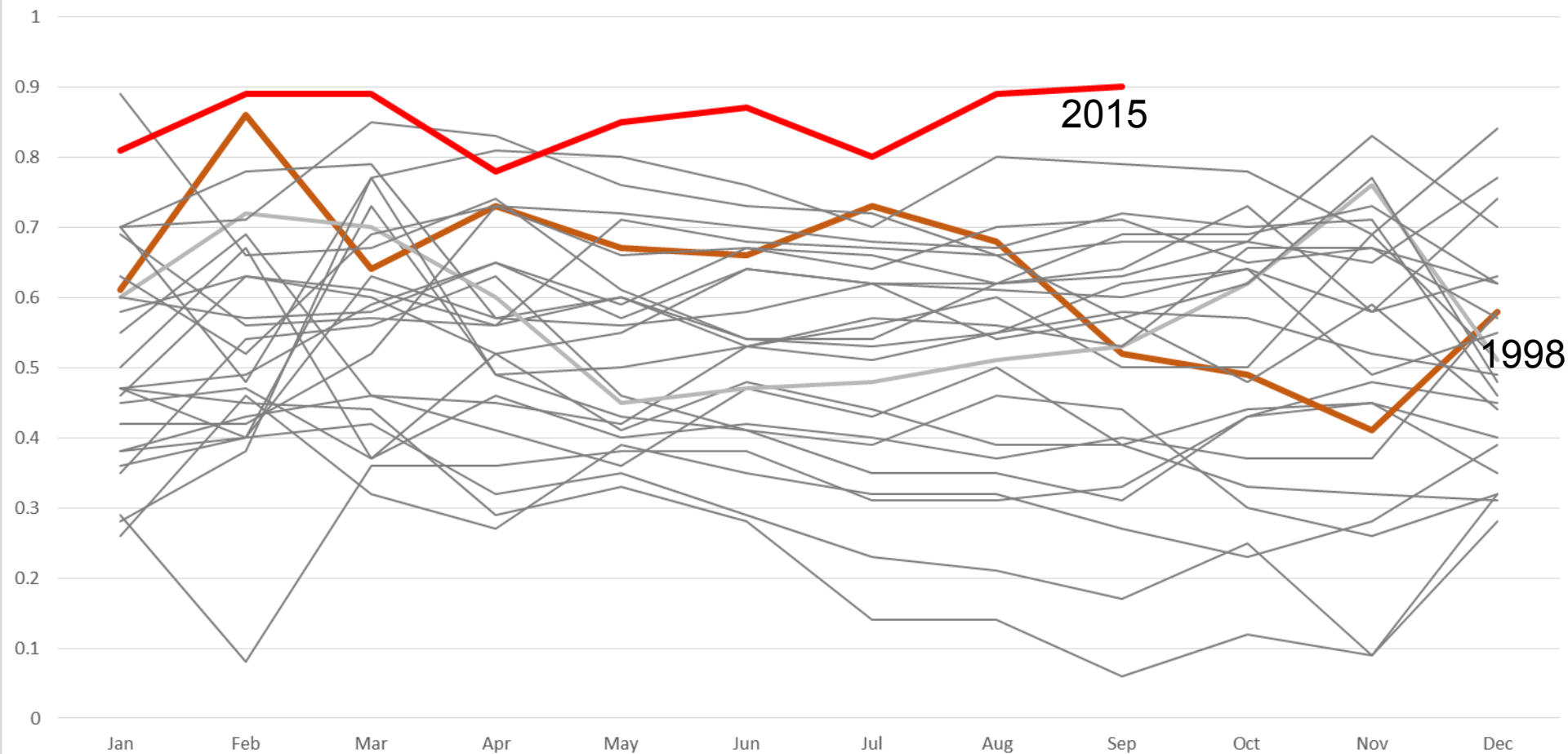
Figure 1.9 The great acceleration after the Second World War



# Climate change doesn't have a monopoly on non-analog states

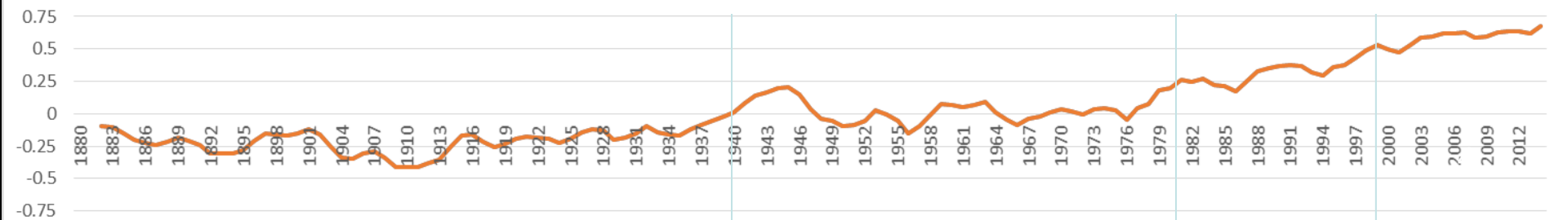
- Rapid global change underway
- Many trends unfavorable
- Alarming implications for risk

Monthly Global Land and Ocean Temperature Anomalies, 1990-2015



Annual Global Land and Ocean Temperature Anomalies 1880-2014

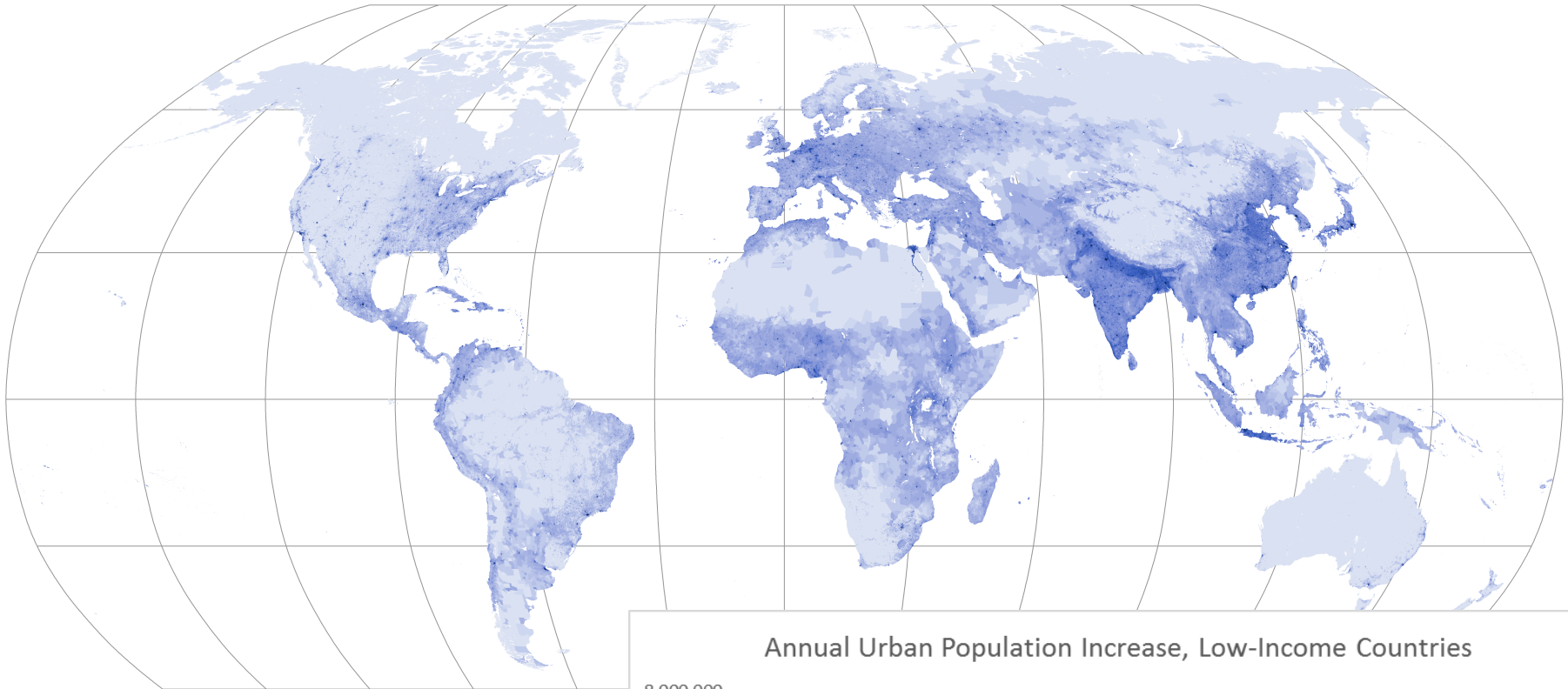
10-year moving average



# Gridded Population of the World (GPW) version 4

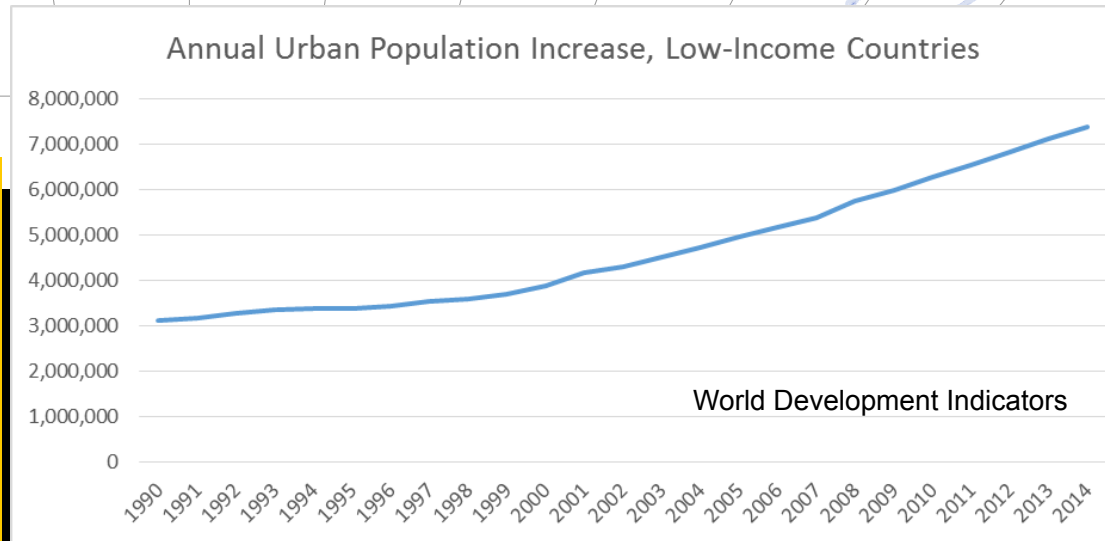
<http://beta.sedac.ciesin.columbia.edu/data/collection/gpw-v4>

Center for International Earth  
Science Information Network  
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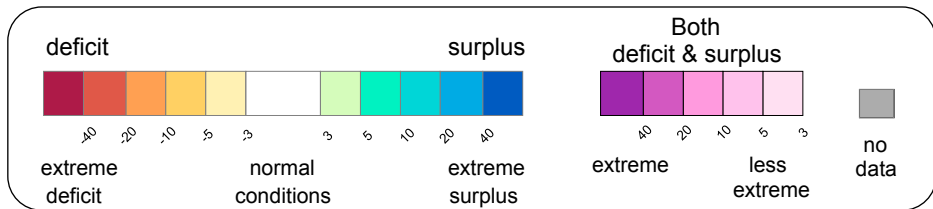
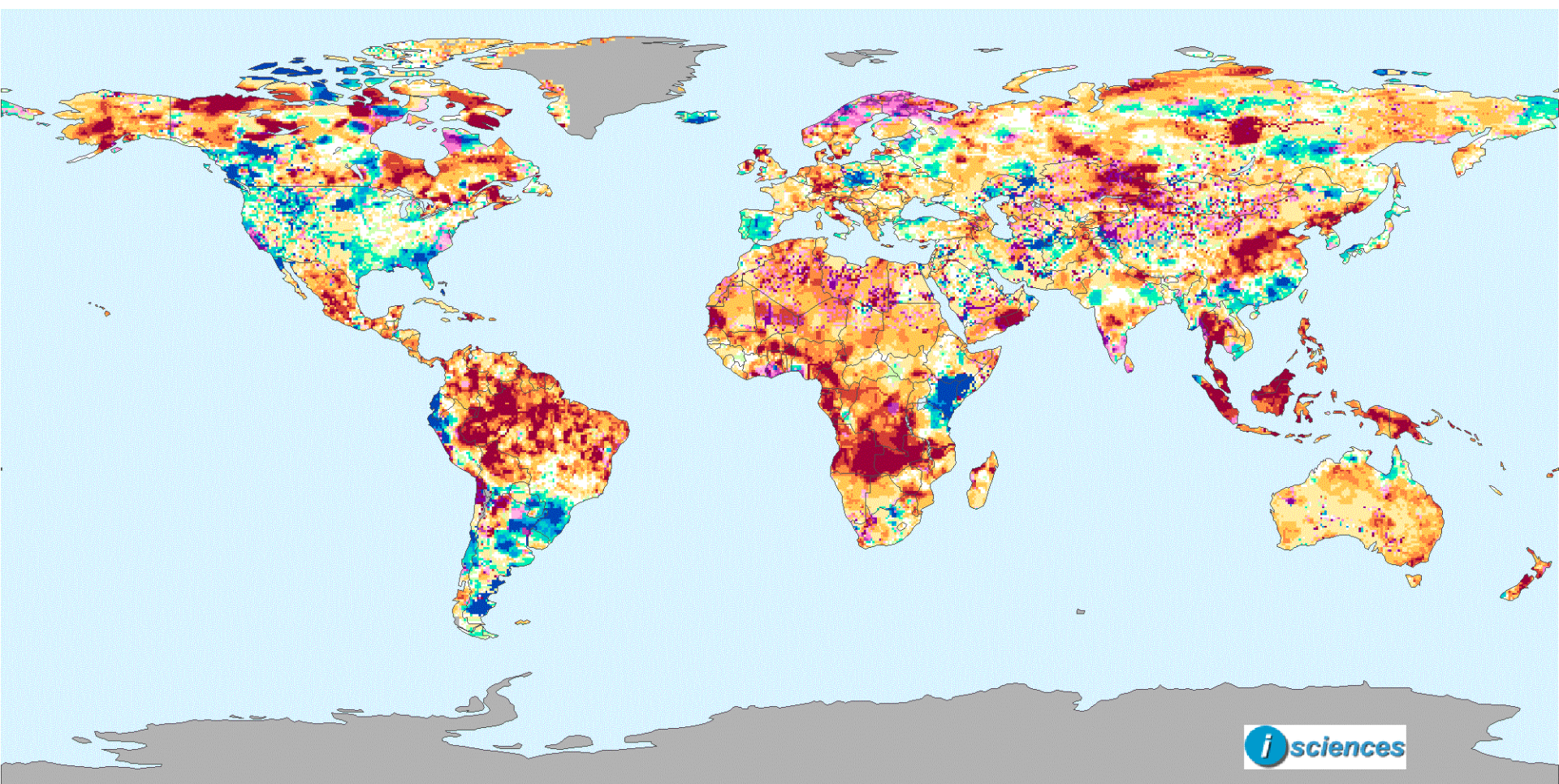
**Global population is up  
1.3 billion since 1998**

**Poor urban residents  
fastest growing group**



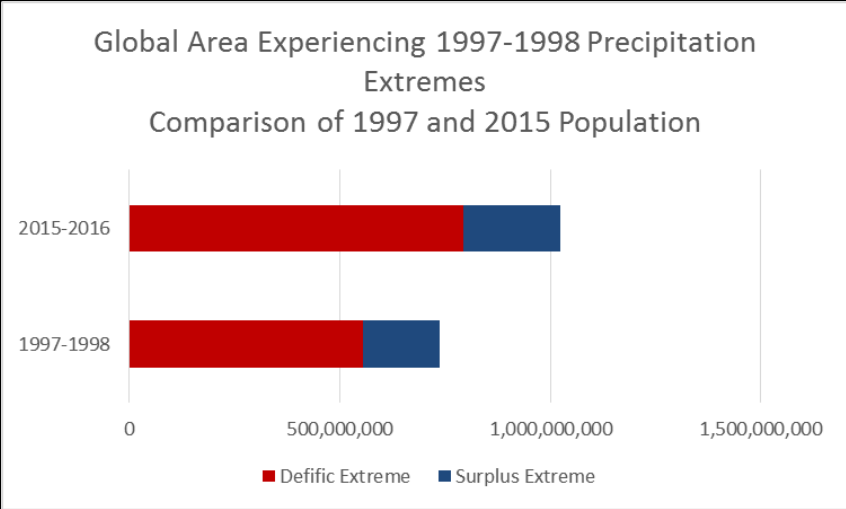
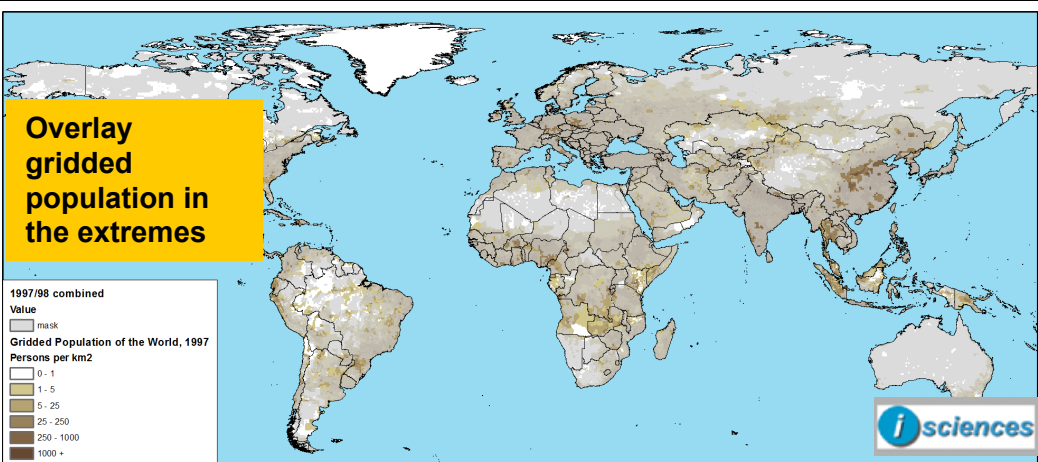
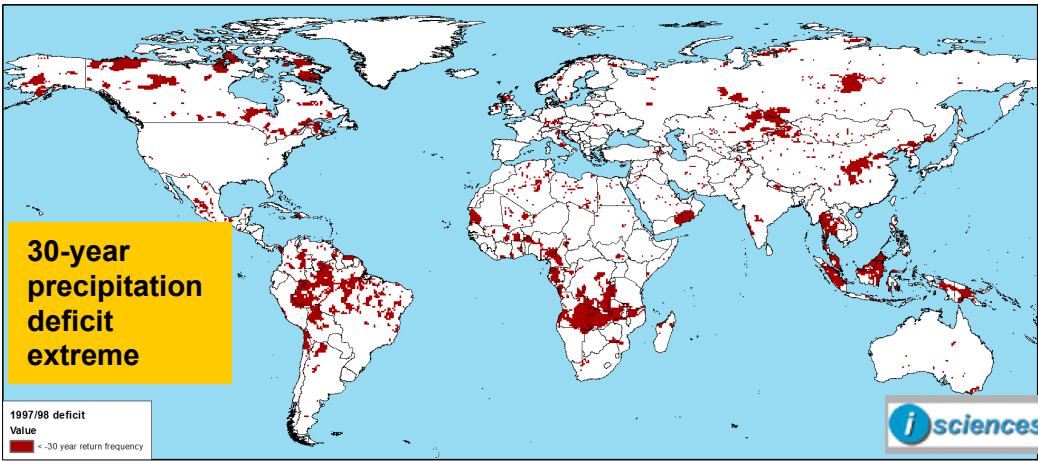
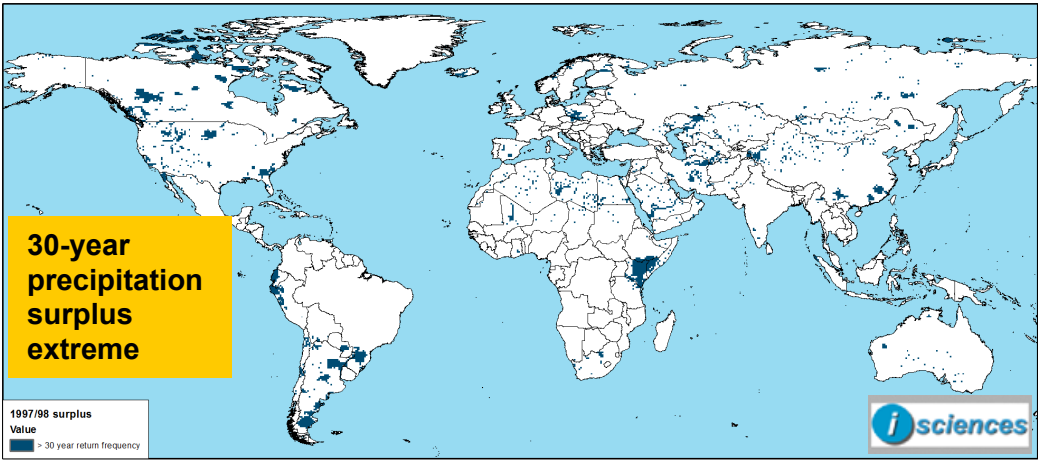


# May 1997 – April 1998



**Global population is up 1.3 billion since 1998**

**Within areas affected by 1997-1998 El Niño 230 million additional people**



## FAO Food Price Index (Real)



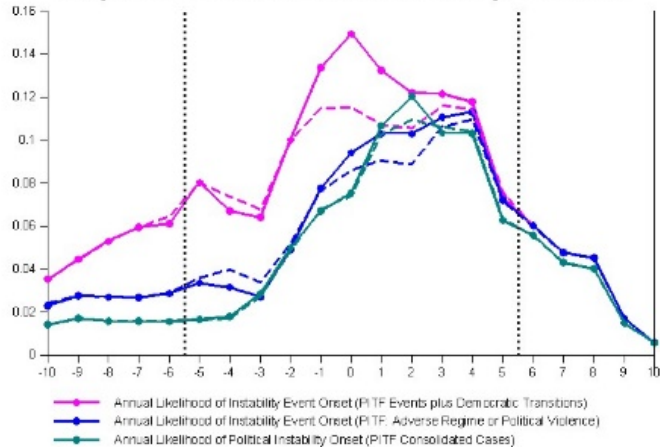
**Globalization and political fragmentation yield little resilience, few tools.**



Number of Countries Neither Strongly Democratic nor Strongly Autocratic 1990-2013



Polity and the Onset of Political Instability, 1955-2006

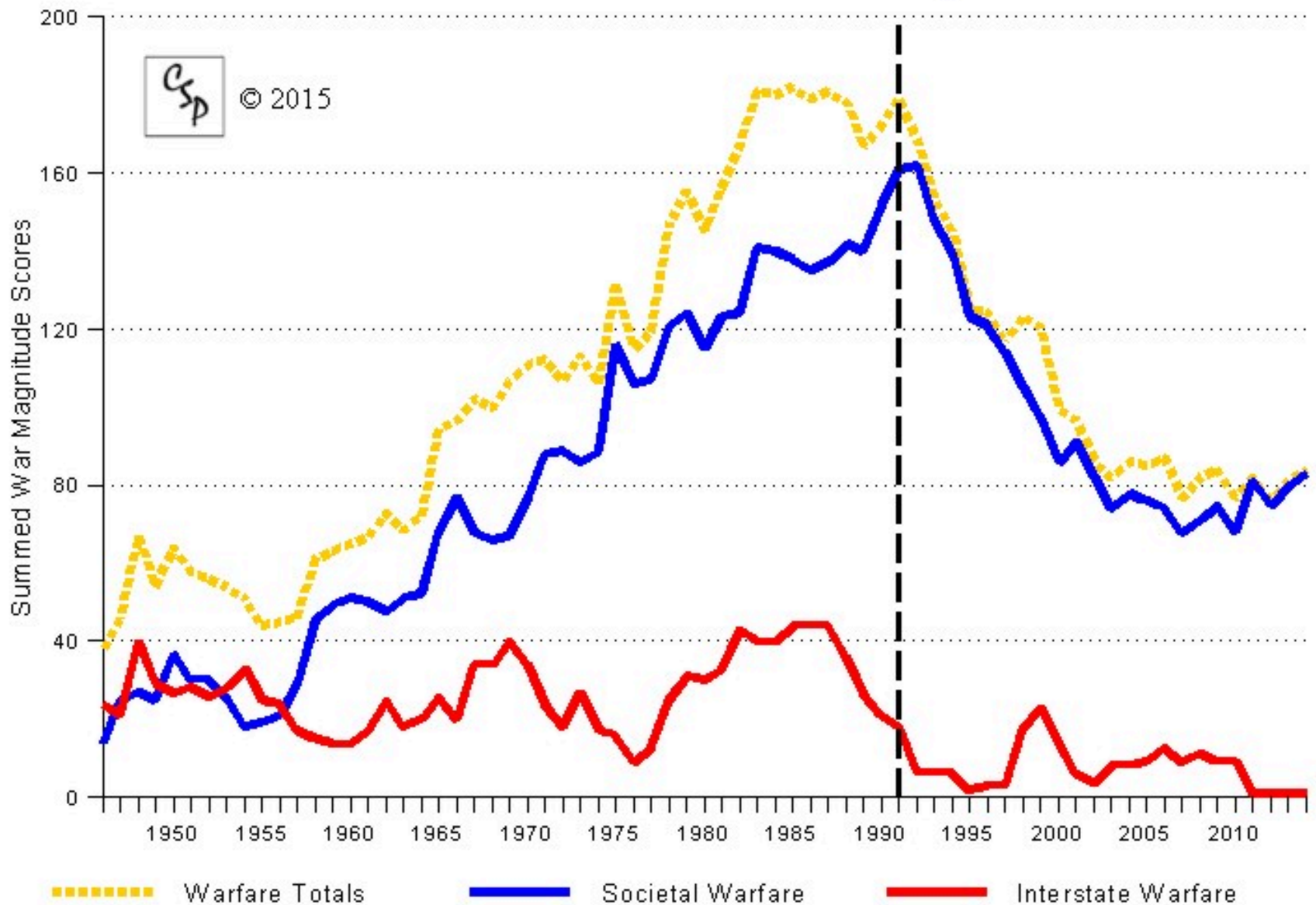


**We remain in period of high political transition**

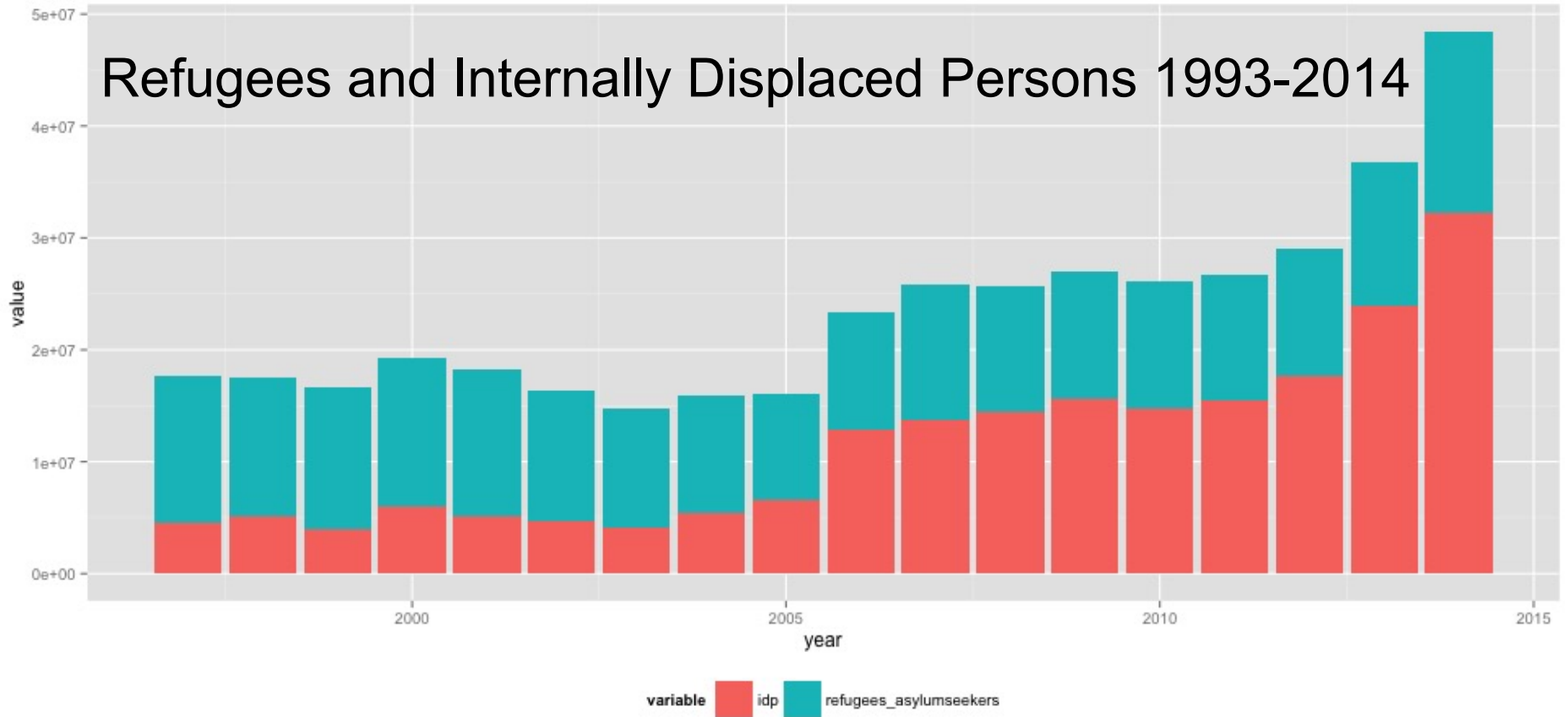
**Dominant trend is democratization**

**But system transitions are dangerous**

# Global Trends in Armed Conflict, 1946-2014



# Refugees and Internally Displaced Persons 1993-2014



## The Ungoverned World

chaos inside Syria, where Islamic State terrorists and other rebel groups control large portions of the country. More than 4 million people have fled and the U.N. has stopped trying to keep count of the deaths. In other places across the globe where warlords, separatists, drug cartels, or terror groups have seized power, leaving the government with little or no power—and the people to fend for themselves.

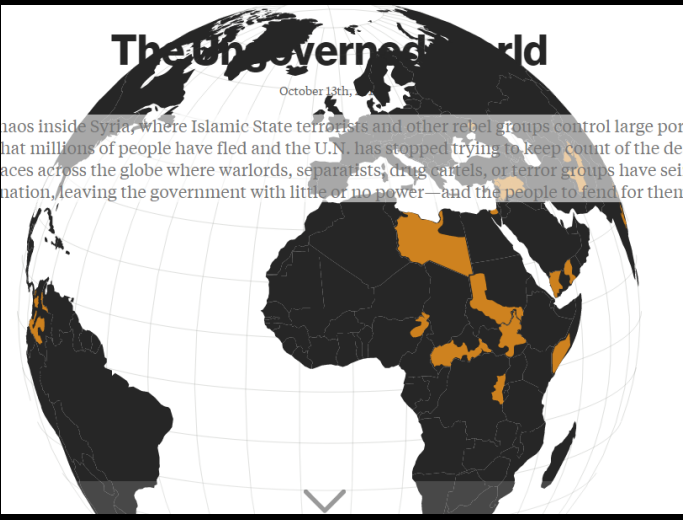


# Expansion of ungoverned territory

## The Ungoverned World

October 13th,

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## The Ungoverned World

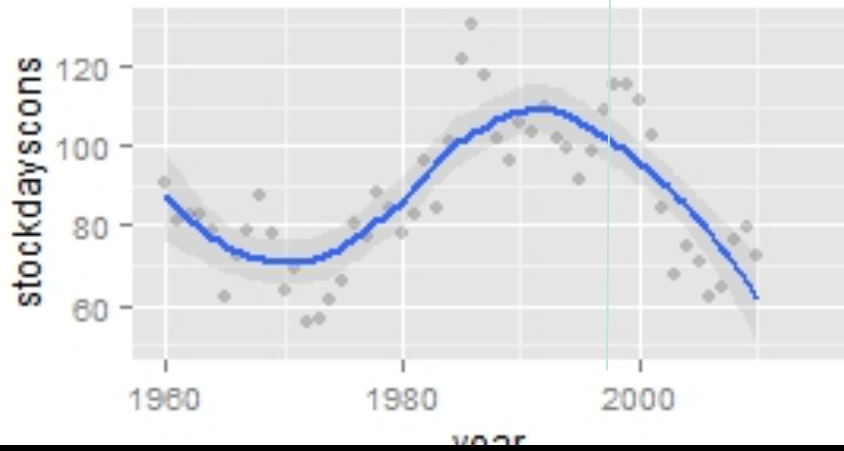
October 13th, 2015

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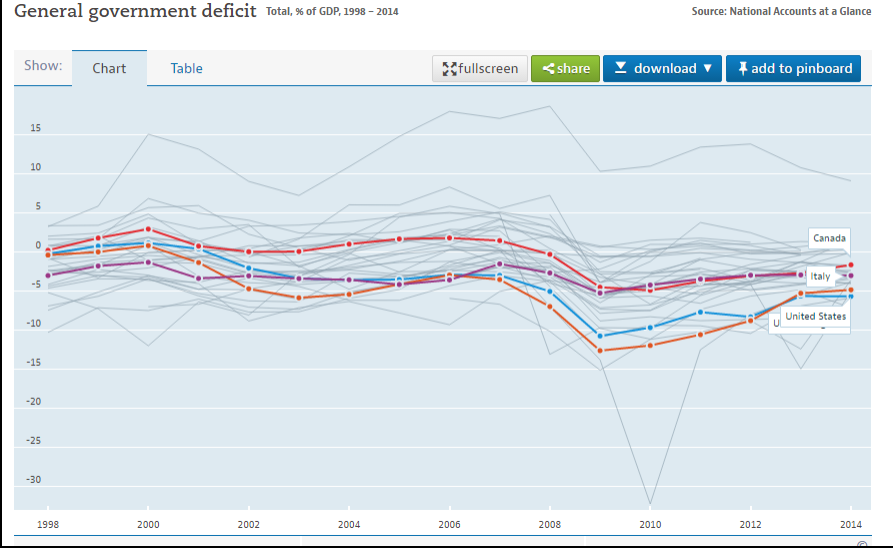
***The Ungoverned World***  
**bloomberg.com**  
**13 October 2015**



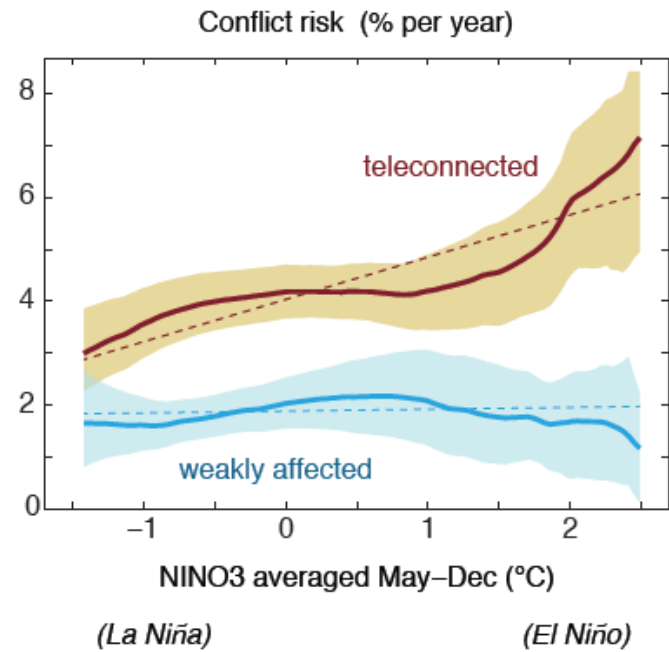
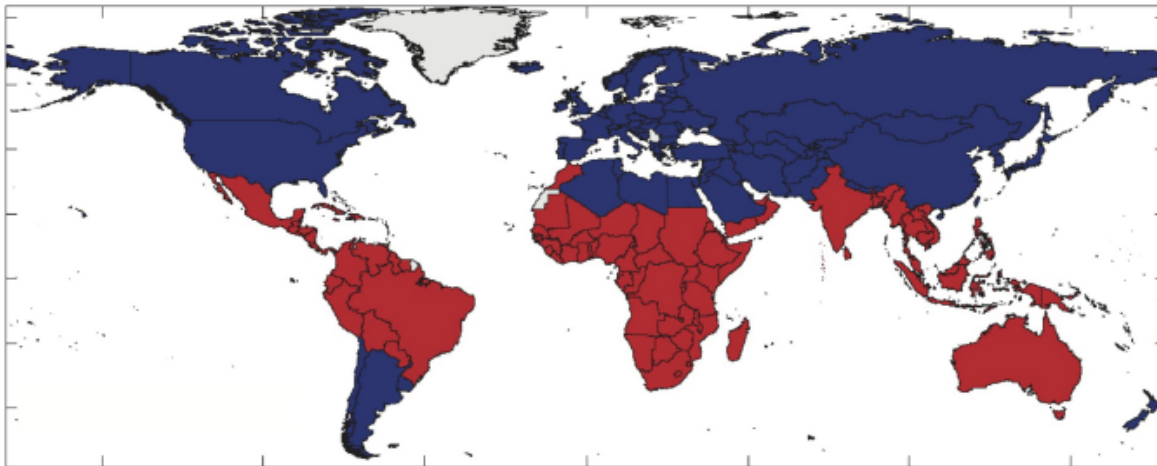


**Food stocks are at all-time low, and distributed in ways that make rapid response to food crises difficult**

**Capacity and tolerance for humanitarian assistance is low**



Hsiang, Meng & Cane, Nature, 2011





# Implications for Risk

**Since 1998,  
widespread  
anxiety over  
systemic risk.**

**We worry  
about linked  
risk more**

**Our worst-  
case  
scenarios are  
much worse**

**Our audience  
is different**

**The decision-  
support needs  
are different**

**We need to embed in  
multi-risk  
communities and  
frameworks**