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

**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*
Climate change doesn’t have a monopoly on non-analog states

- Rapid global change underway
- Many trends unfavorable
- Alarming implications for risk
Global population is up 1.3 billion since 1998

Poor urban residents fastest growing group
May 1997 – April 1998

Both deficit & surplus

extreme

no data

extreme

less extreme

normal conditions

extreme

surplus
Global population is up 1.3 billion since 1998

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

Overlay gridded population in the extremes

30-year precipitation surplus extreme

30-year precipitation deficit extreme

Global Area Experiencing 1997-1998 Precipitation Extremes
Comparison of 1997 and 2015 Population

- 2015-2016
- 1997-1998

Deficit Extreme | Surplus Extreme

- 0
- 500,000,000
- 1,000,000,000
- 1,500,000,000

Persons per km²

- ≤ 5
- 5 - 25
- 25 - 50
- 50 - 100
- 100 - 250
- 250 - 500
- 500 -
Globalization and political fragmentation yield little resilience, few tools.
We remain in period of high political transition

Dominant trend is democratization

But system transitions are dangerous
Expansion of ungoverned territory

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.
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.