Disasters Without Borders: Trends and a Look at U. S.-Mexico Relations

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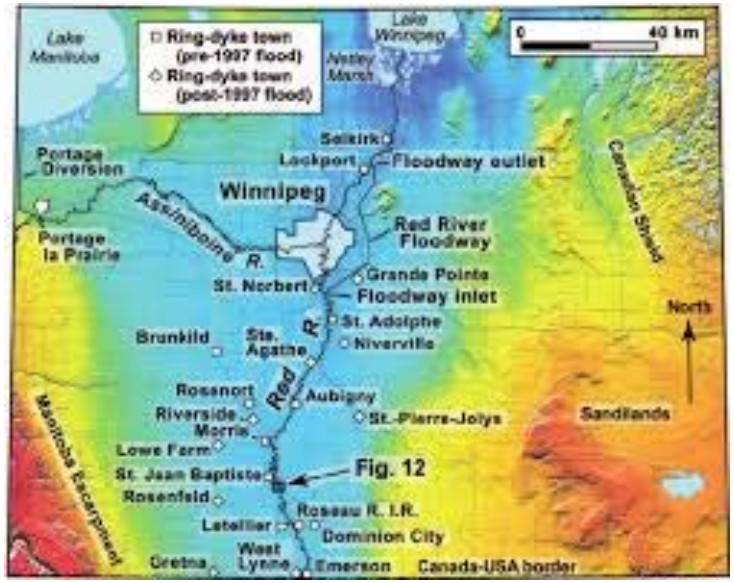
Themes for this Presentation

- **Trans-boundary disasters and crises: The increasing irrelevance of borders**
- **Challenges associated with efforts to manage trans-boundary crises**
- **U. S.-Mexico trans-boundary hazards activities**



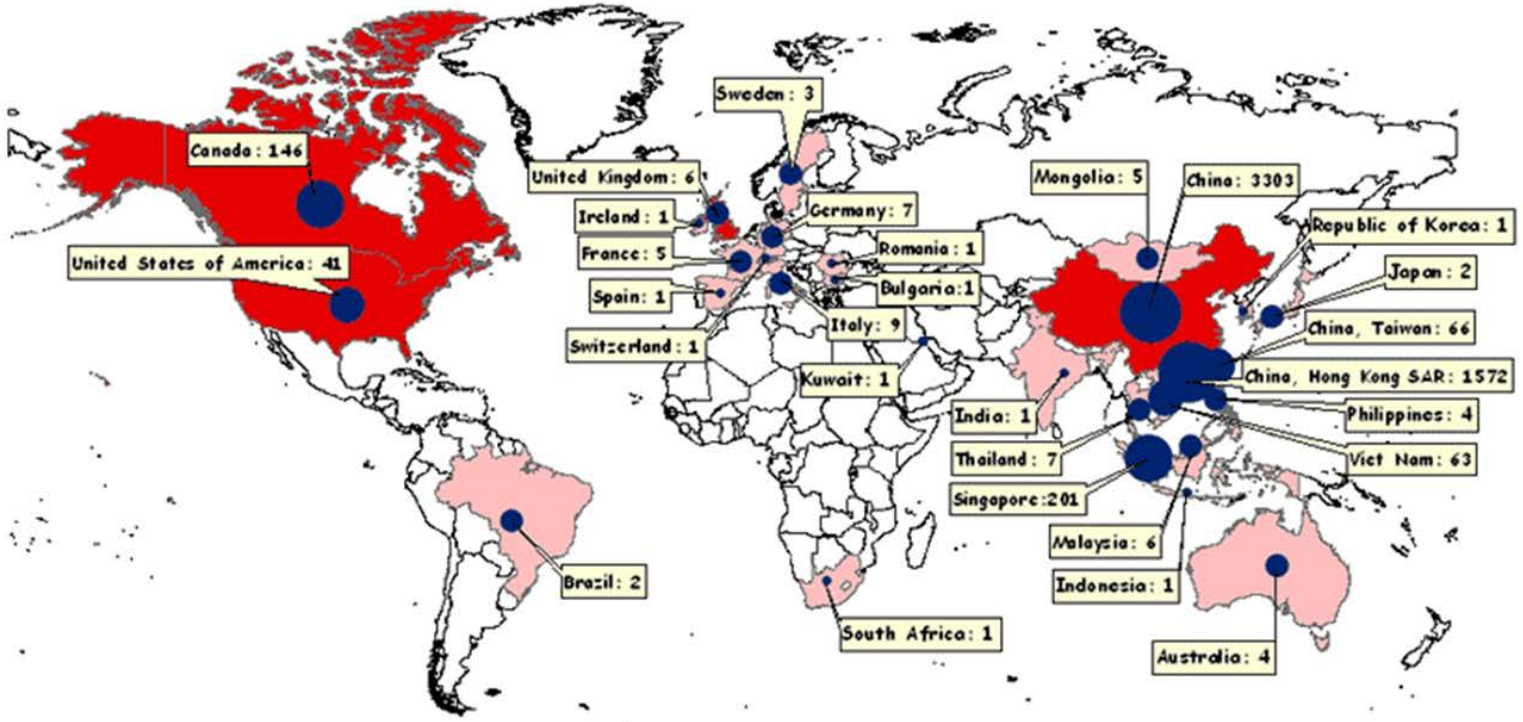
Red River Floods 1997

	Measurement place:	Date:	Max. concentration:
1.	Szamos at Csenger	02.01.	32.6 mg/l cyanide
2.	Tisza at Lónya	02.03.	13.5 mg/l cyanide
3.	Tisza at Tiszalök	02.05.	3.7 mg/l cyanide
4.	Tisza at Kisköre	02.08.	3.8 mg/l cyanide
5.	Tisza at Szolnok	02.09.	3.2 mg/l cyanide
6.	Tisza at Tápé	02.11.	2.2 mg/l cyanide
7.	Tisza at Tiszasziget	02.11.	1.49 mg/l cyanide

Baia Mare Cyanide Spill 2000

SARS : Cumulative Number of Reported Probable Cases

Total number of cases: 5462 as of 29 April 2003, 17:00 GMT+2



Cumulative number of Reported Cases
(From 1 November 02 to 29 April 03)

- 1
- 2 - 10
- 11 - 100
- 101 - 1000
- > 1000

Type of transmission

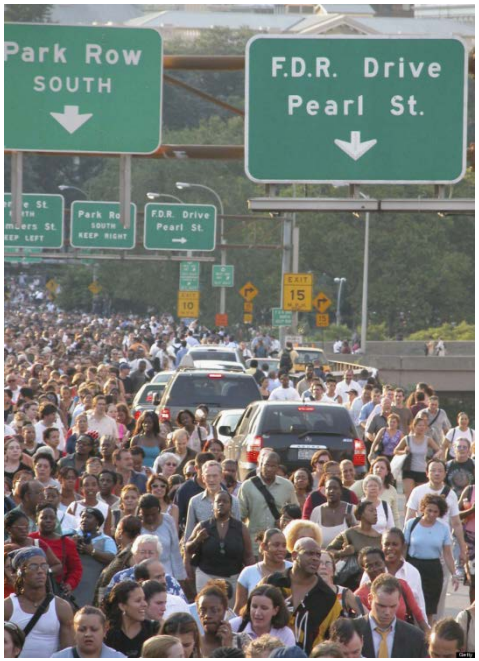
- no local transmission
- local transmission

Data Source: World Health Organization
Map Production: Public Health Mapping Team
Communicable Diseases (CDS)

Power Grid Failure and Blackout 2003

Toronto Airport

New York City



Indian Ocean Tsunami 2004

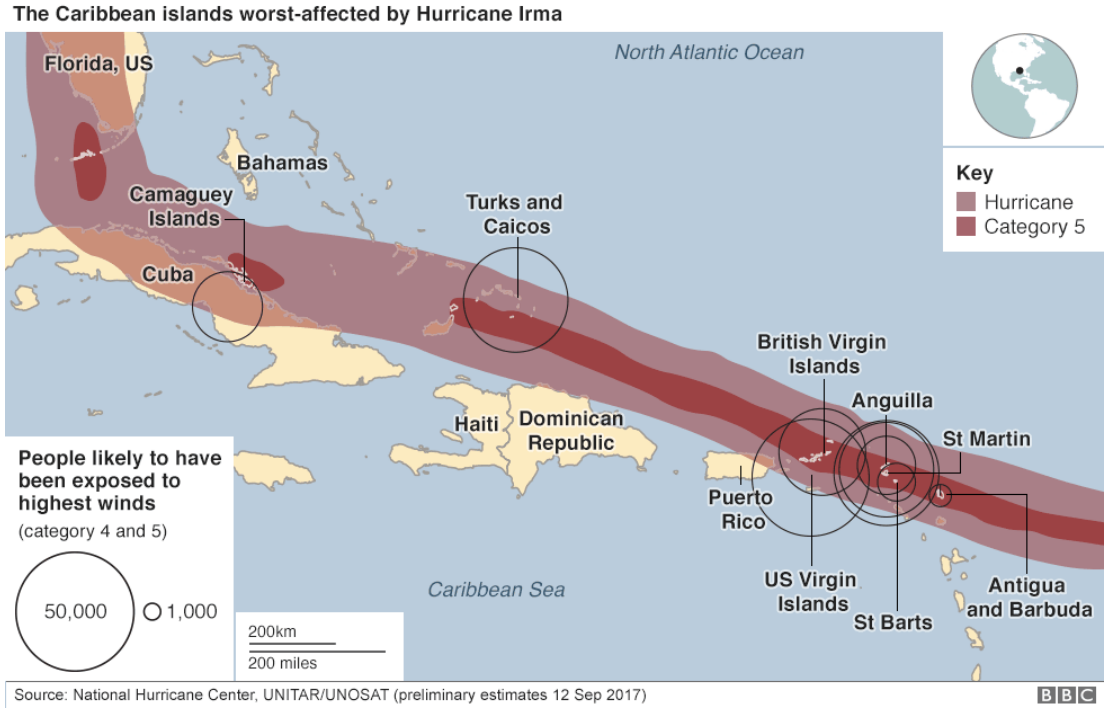
India

Sri Lanka

September 7, 2017
Chiapas Earthquake

Hurricane Irma 2017

St. Martin



St. Barts

Trans-boundary Crises

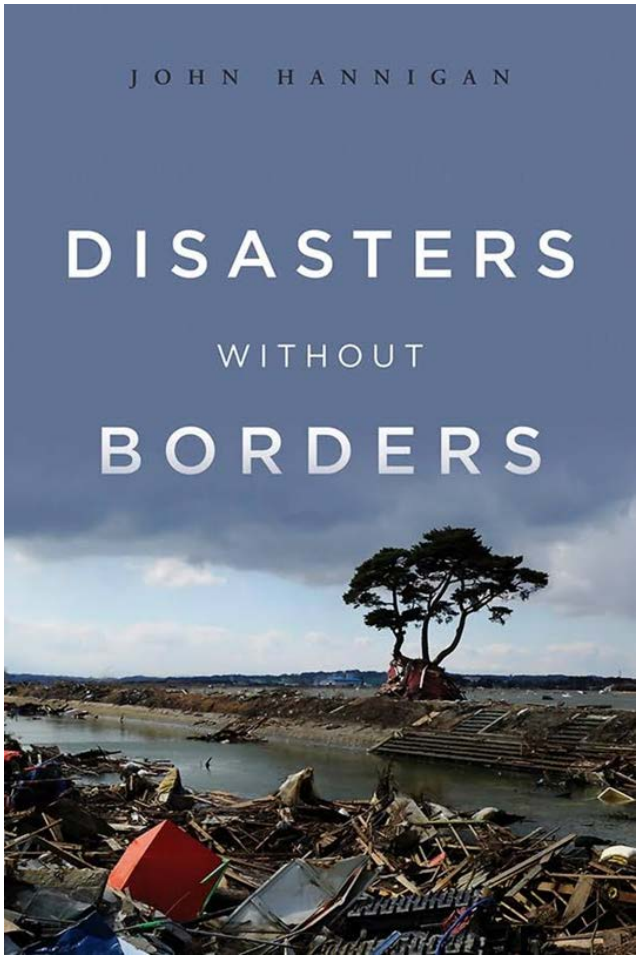
- **Span national borders**
- **Often begin with small failures, accidents that expand rapidly**
- **Make situational awareness difficult**
- **Pose special coordination challenges owing to their size and complexity**
- **Are often not well understood until *after* they occur**
- **Have the potential for creating legitimacy crises**

Trans-boundary Issues in Context

Globalization and Interconnectedness:

- Interdependencies complex, not well understood
- Size of global enterprises: Lack of awareness of, indifference to, risks at more local scales
- Diffusion of risky (and often criminal) practices through global networks: the 2008 financial crash

Trans-Boundary Crises in Context



Fragmented, Weak Risk Governance Systems

Key Actors in Global Disaster Management

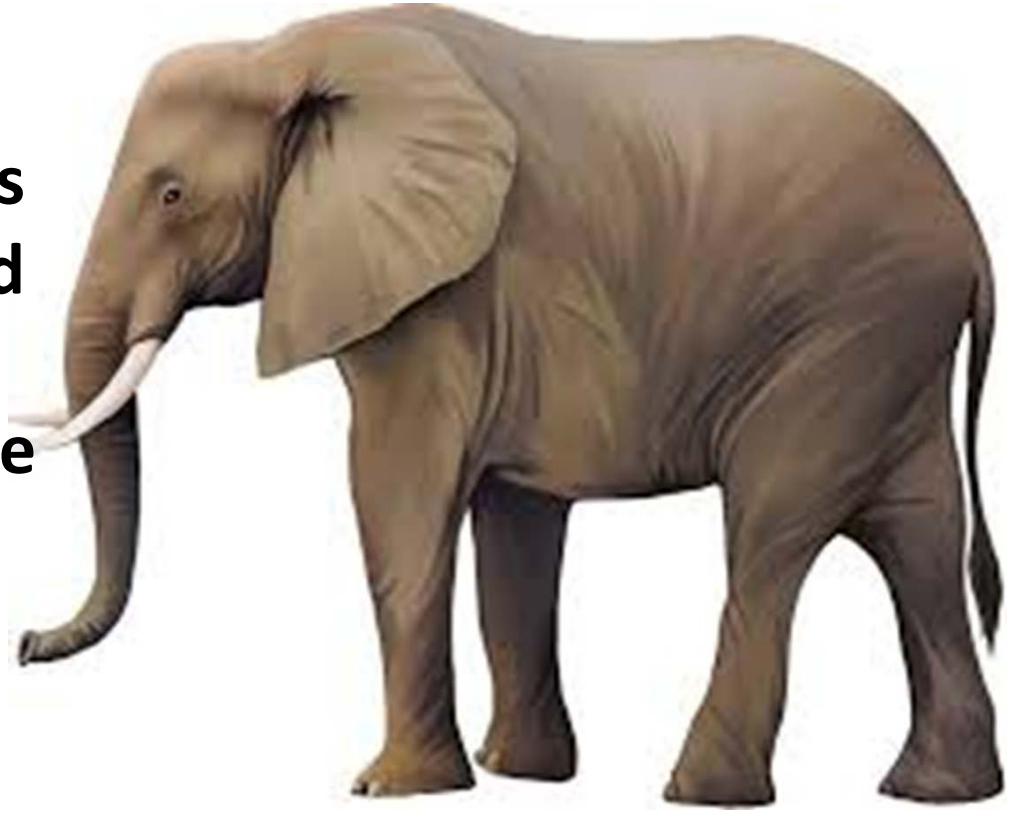
- Nation states
- Regional cooperative organizations
- International finance institutions
- Multi-Actor initiatives
- Intergovernmental organizations, agreements
- Non-governmental organizations
- Scientific and technical communities
- Private sector (insurance, reinsurance, etc.)
- Global media

Governance Issues: Examples

- **Variations among nation states: capabilities, legal frameworks, priorities, willingness to collaborate**
- **Global institutions: Risk reduction or risk production?**
- **Intergovernmental organizations: Effective or weak?**
- **NGOs: Actions usually uncoordinated**
- **No existing "transnational legal order" for most hazards and disasters**

The U.S.-Mexico Border: Collaboration for Disaster Risk Reduction

- **Broader context of Mexico-U. S. relations has always influenced co-operation, regardless of the issue**



The U. S.-Mexico Border: Collaboration and Coordination for Disaster Risk Reduction

- **Hazard- and disaster-related cooperative activities are affected by overall status of cross-border collaboration:**

"Cooperation across the border remains spotty and imperfect. Many of these efforts remain unsystematic and ad hoc; they are not guided by any broader vision of how the shared boundary between Mexico and the United States should be managed."---Binational Task Force on the United States-Mexico Border

"While international agreements and joint co-operation mechanisms related to risk management have been established between Mexico and the United states, both at federal and local levels, cross-border cooperation has not been developed to its full potential."---Organization for Economic Co-operation and Development

The U. S.-Mexico Border: Collaboration and Coordination for Disaster Risk Reduction

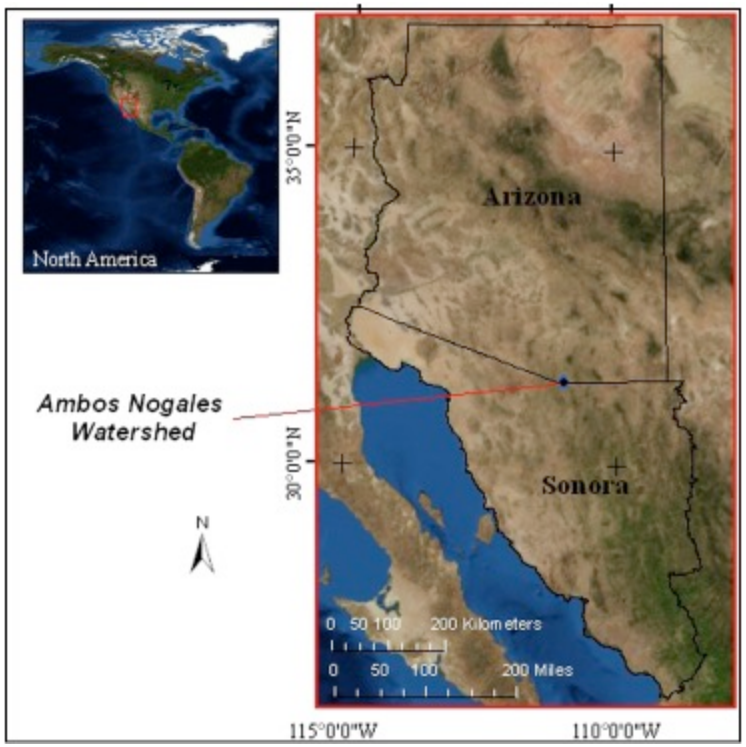
- **Some agreements are in place, such as the 2008 Agreement on Emergency Management Co-operation, but that treaty only set up a working group on the topic**

- **Best-developed areas of cross-border collaboration involve water resources (IBWC) and chemical hazards and the environment (1983 La Paz Agreement, Joint Contingency Plan), pandemics**

- **Very limited collaboration on risk reduction for cross-border hazards such as hurricanes, earthquakes, and floods, or on providing assistance during disasters**

- **Considerable scientific and technical collaboration on hazard and risk assessment**

Areas of Collaboration: Flood Risk Assessment

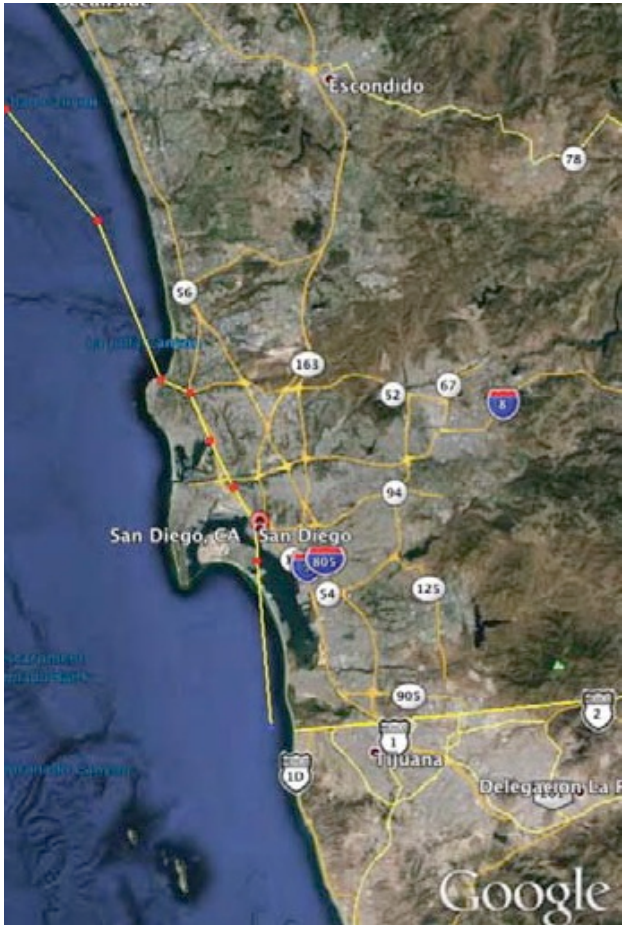


"Flood hazard awareness and hydrologic modelling at Ambos Nogales, United States-Mexico border"

L. M. Norman, H. Huth, L. Levick, I. Shea Burns, D. Phillip Guertin, F. Lara-Valencia, D. Semmens

Journal of Flood Risk Management **3**: 151-165

Scenario Development: Earthquake Hazards



USGS science for a changing world

Earthquake Shaking — Red Alert

USAID FROM THE AMERICAN PEOPLE

GSN ANSS

PAGER Version 1

M 6.9, Shakeout 2015 SD-TJ Scenario (Wills 2015 Hybrid Vs30 + TJ Overlay)

Origin Time: Thu 2015-04-30 18:00:00 UTC (11:00:00 local)

Location: 33.01 N 117.32 W Depth: 7 km

Created: 15 minutes, 0 seconds after earthquake

Estimated Fatalities

Red alert level for economic losses. Extensive damage is probable and the disaster is likely widespread. Estimated economic losses are 0-3% GDP of the United States. Past events with this alert level have required a national or international level response.

Orange alert level for shaking related fatalities. Significant casualties are likely.

Estimated Economic Losses

Estimated Population Exposed to Earthquake Shaking

ESTIMATED POPULATION EXPOSURE (k = x1000)		- - *	- - *	- - *	114k*	1,195k	2,772k	1,048k	18k	0
ESTIMATED MODIFIED MERCALLI INTENSITY		I	II-III	IV	V	VI	VII	VIII	IX	X+
PERCEIVED SHAKING		Not felt	Weak	Light	Moderate	Strong	Very Strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	Resistant Structures	none	none	none	V. Light	Light	Moderate	Moderate/Heavy	Heavy	V. Heavy
	Vulnerable Structures	none	none	none	Light	Moderate	Moderate/Heavy	Heavy	V. Heavy	V. Heavy

*Estimated exposure only includes population within the map area

Population Exposure

population per 1 sq. km from Landscan

0 5 50 100 500 1000 5000 10000

Structures:
Overall, the population in this region resides in structures that are highly resistant to earthquake shaking, though some vulnerable structures exist. The predominant vulnerable building types are reinforced masonry and reinforced concrete frame construction.

Historical Earthquakes (with MMI levels):

Date (UTC)	Dist. (km)	Mag.	Max MMI(#)	Shaking Deaths
1979-10-15	158	6.5	[illegible]	0
1987-10-01	139	5.9	VIII(20k)	8
1994-01-17	172	6.7	[illegible]	33

Recent earthquakes in this area have caused secondary hazards such as landslides and liquefaction that might have contributed to losses.

Selected City Exposure

from GeoNames.org

MMI	City	Population
VIII	San Diego	1,307k
VIII	Coronado	19k
VIII	Imperial Beach	26k
VIII	Encinitas	60k
VIII	Solana Beach	13k
VIII	Del Mar	4k
VIII	Tijuana	1,376k
VII	Chula Vista	244k
VII	Carlsbad	105k
VII	Oceanside	167k
VI	Escondido	144k

bold cities appear on map (k = x1000)

PAGER content is automatically generated, and only considers losses due to structural damage. Limitations of input data, shaking estimates, and loss models may add uncertainty.

http://earthquake.usgs.gov/pager

Event ID: usshakeout.sdtj2015.hybridvs30.tj_se

Thank you!

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