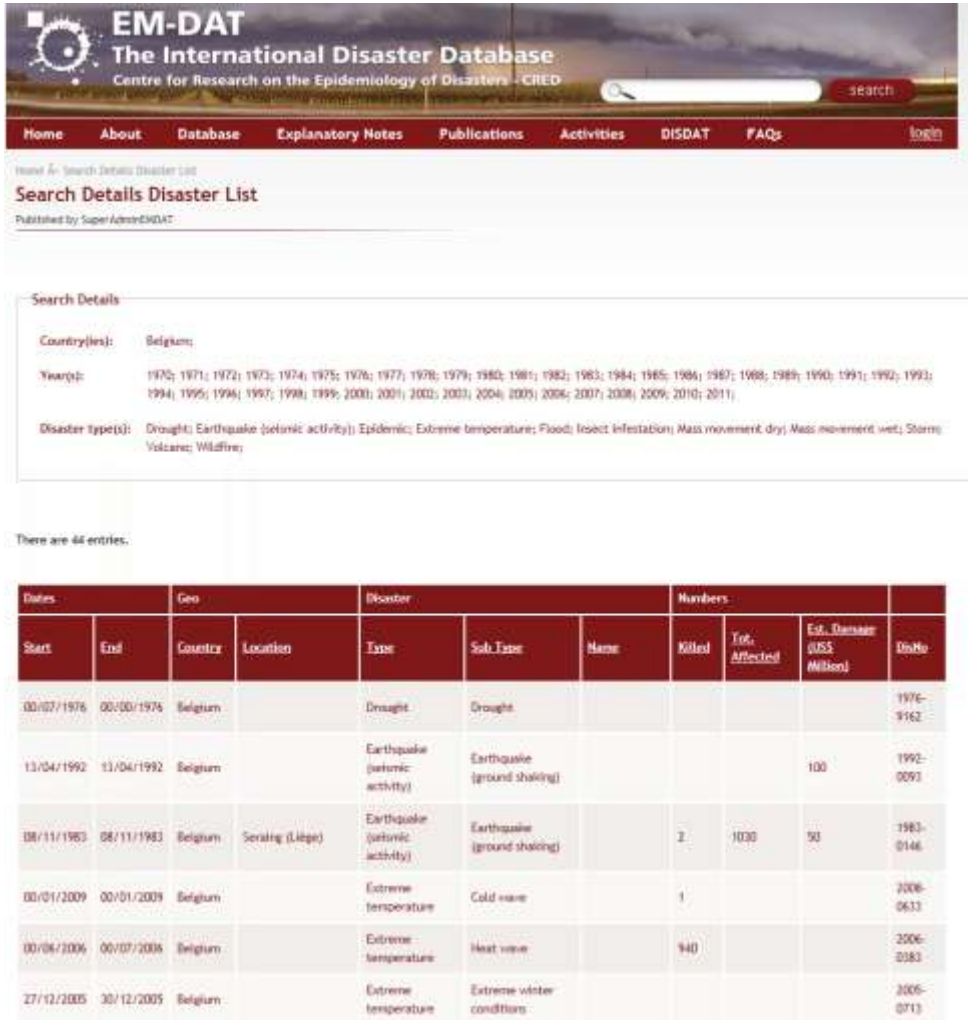
Systematically accounting and assessing disaster losses and impacts

Headline news

The economic damage from natural disasters has reached roughly 265 billion dollars, or about 21 trillion yen, in the first six months of 2011, surpassing the previous full-year record of 220 billion dollars in 2005, according to leading reinsurer Munich Re.

Global Disaster databases: EMDAT



EM-DAT
The International Disaster Database
Centre for Research on the Epidemiology of Disasters - CRED

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Published by SuperAdminEMDAT

Search Details

Country(ies): Belgium;

Year(s): 1970; 1971; 1972; 1973; 1974; 1975; 1976; 1977; 1978; 1979; 1980; 1981; 1982; 1983; 1984; 1985; 1986; 1987; 1988; 1989; 1990; 1991; 1992; 1993; 1994; 1995; 1996; 1997; 1998; 1999; 2000; 2001; 2002; 2003; 2004; 2005; 2006; 2007; 2008; 2009; 2010; 2011;

Disaster type(s): Drought; Earthquake (seismic activity); Epidemic; Extreme temperature; Flood; Insect infestation; Mass movement dry; Mass movement wet; Storm; Volcano; Wildfire;

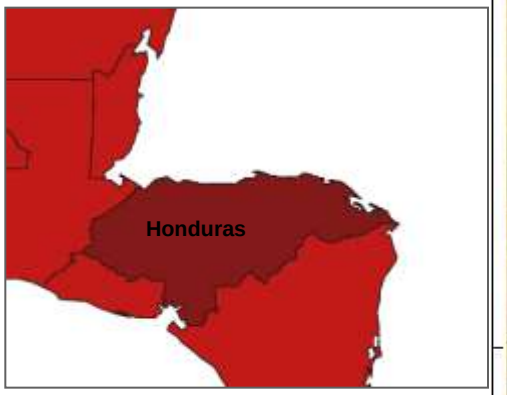
There are 44 entries.

Dates		Geo		Disaster			Numbers			
Start	End	Country	Location	Type	Sub Type	Name	Killed	Tot. Affected	Est. Damage (US$ Million)	DisNo
00/07/1976	00/00/1976	Belgium		Drought	Drought					1976-9162
11/04/1992	11/04/1992	Belgium		Earthquake (seismic activity)	Earthquake (ground shaking)				100	1992-0093
08/11/1983	08/11/1983	Belgium	Seraing (Liège)	Earthquake (seismic activity)	Earthquake (ground shaking)		2	1030	50	1983-0146
00/01/2009	00/01/2009	Belgium		Extreme temperature	Cold wave		1			2008-0633
00/06/2006	00/07/2006	Belgium		Extreme temperature	Heat wave		940			2006-0383
27/12/2005	30/12/2005	Belgium		Extreme temperature	Extreme winter conditions					2005-0713

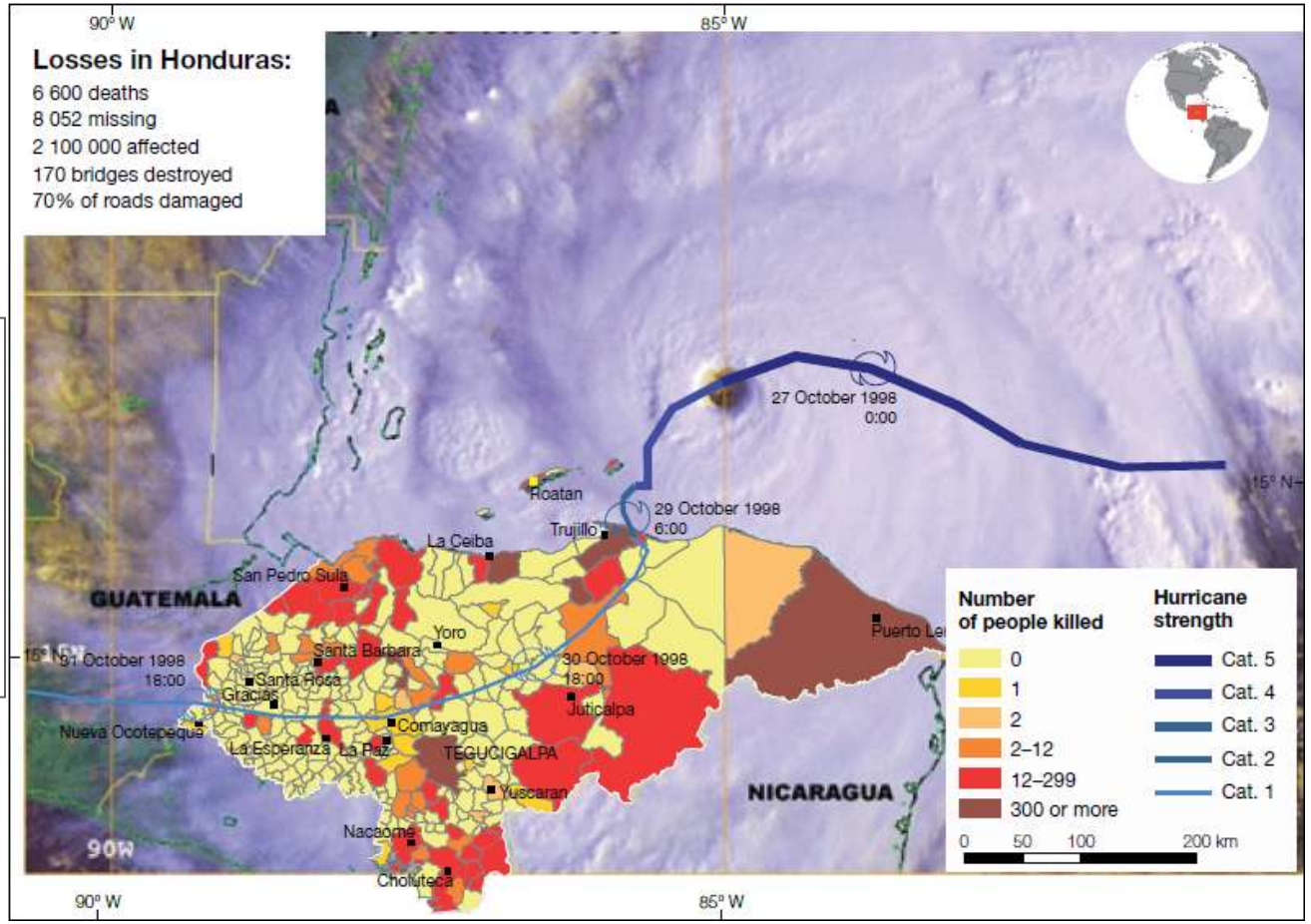
An incomplete picture of disaster losses and impacts

- **EM-DAT:** Public domain coverage of large-scale mortality. Weak coverage of smaller disasters. Inconsistent reporting of economic loss.
- **NAT-CAT** and **SIGMA:** Re-insurance industry databases. Insured losses in developed markets. Restricted access.
- **ECLAC methodology evaluations**: comprehensive data for selected large disasters
- **National data:** heterogeneous, dispersed and inaccessible data held by governments, NGOs, universities and others.

National databases: Deconstructing disasters



EM-DAT: Global level of Observation, National level resolution

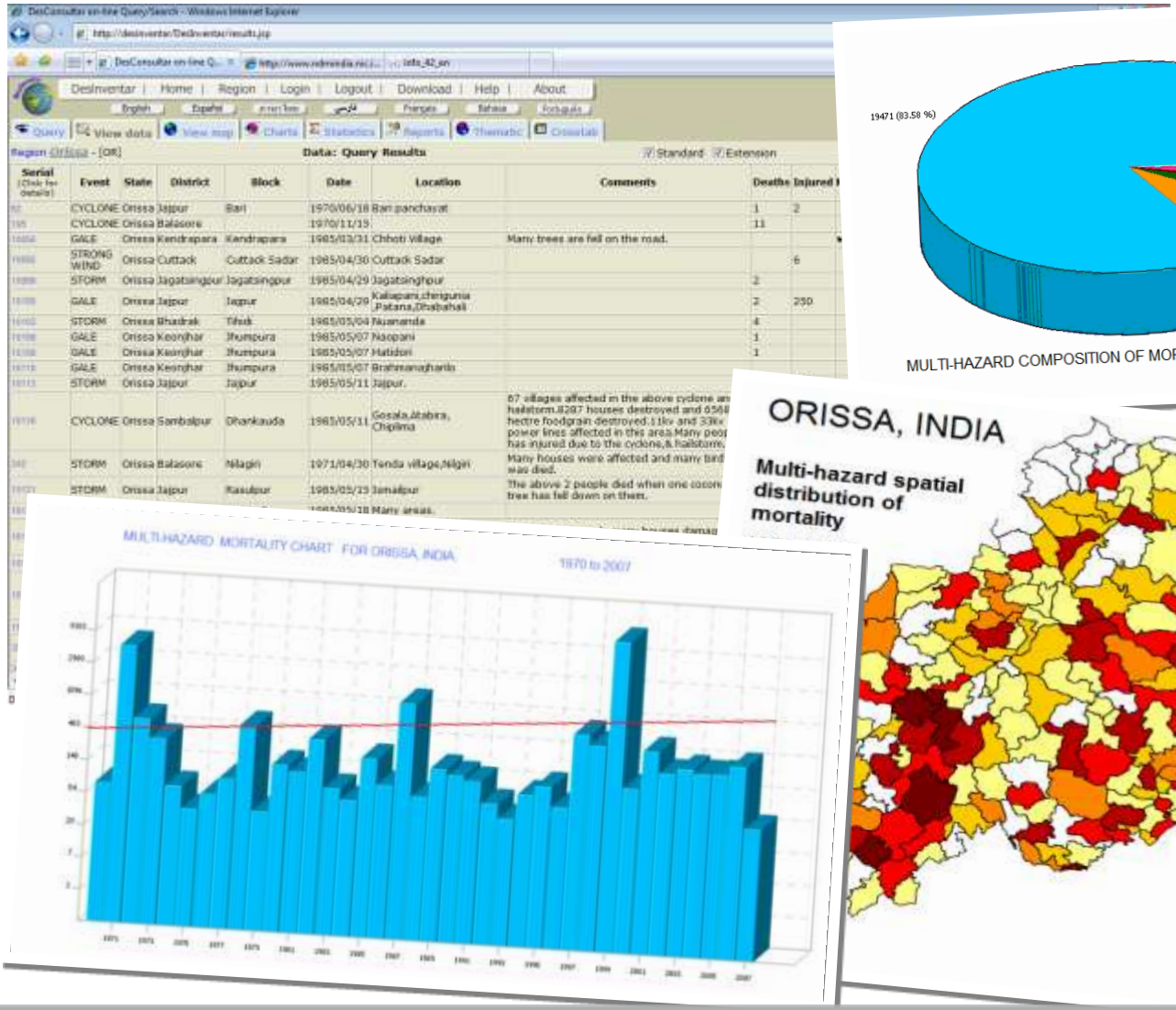


National database: Local level of Observation, municipality level resolution

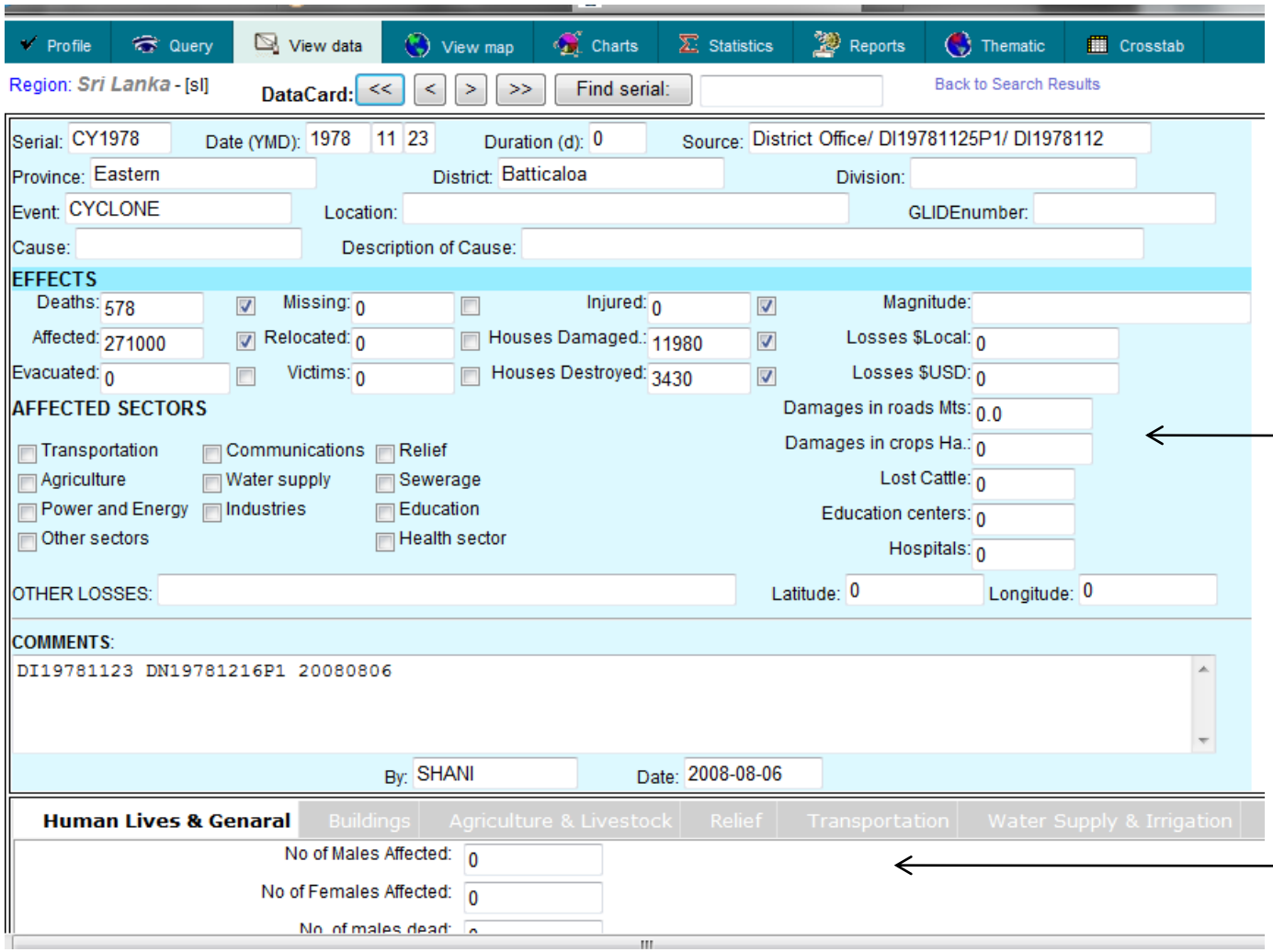
A better picture of disaster losses and impacts

- Richer set of indicators
- Wider coverage of small and medium scale disasters.
- Disaggregation of data to usable units (county/municipality)
- Collected and validated locally within the country

Disaster loss accounting, analysis and reporting



Typical contents of a DesInventar dataset



Actual data capture screen.

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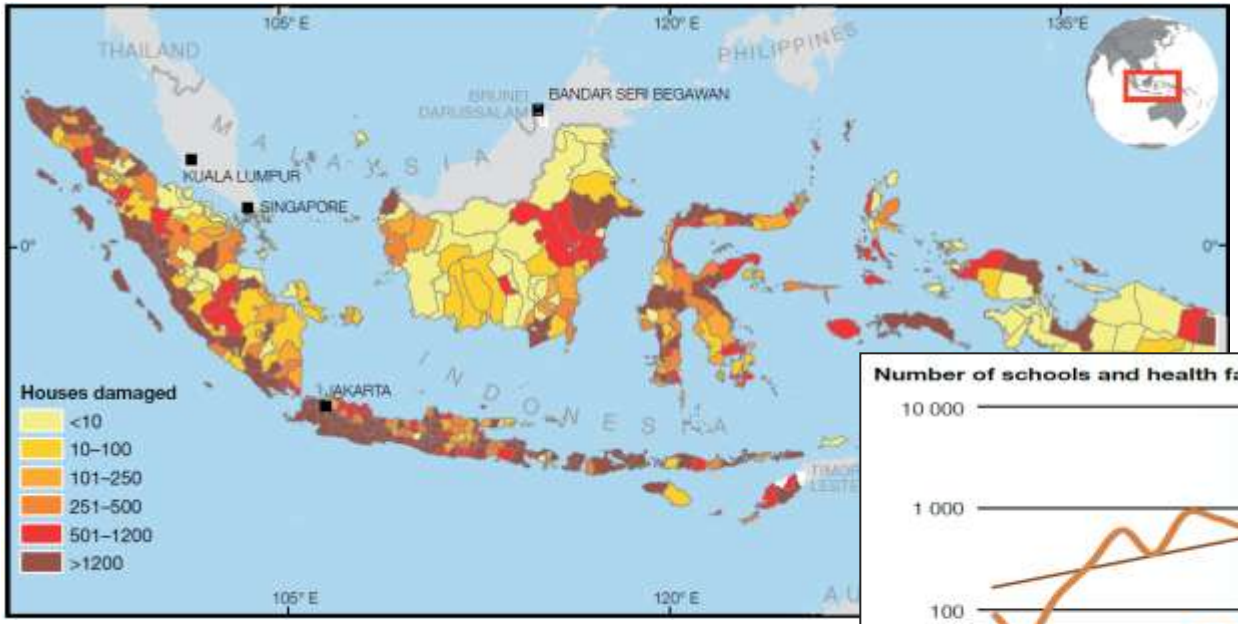
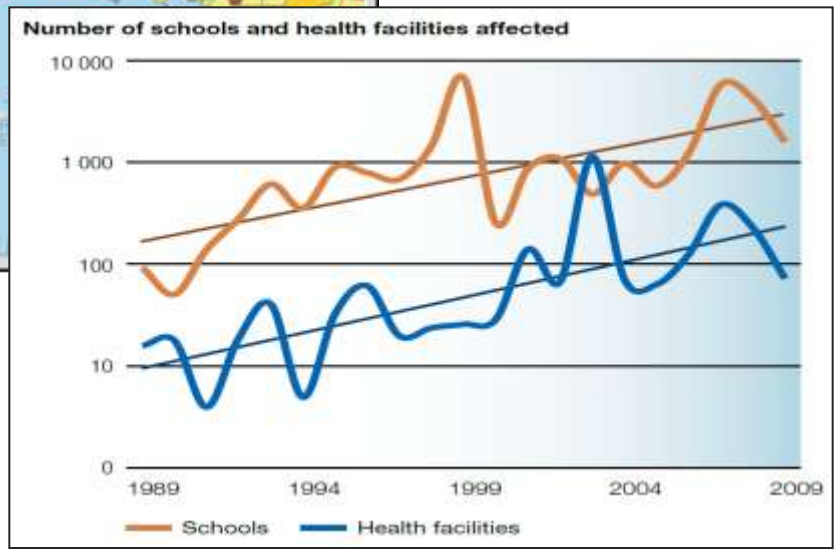
Standard Effects (16 quantitative indicators, 12 qualitative .

Global databases: 3-5 indicators.

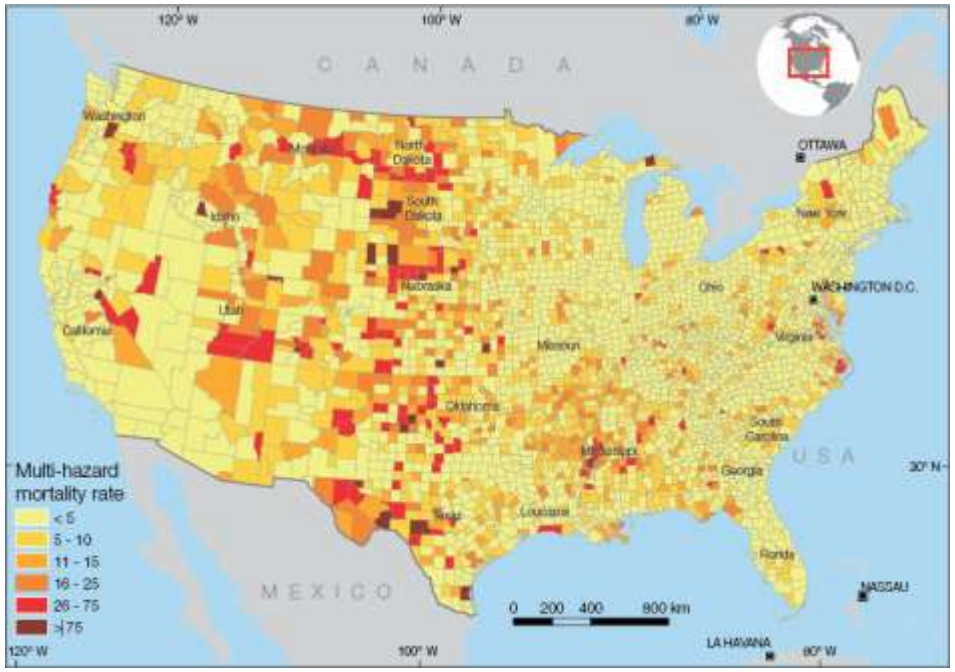
Extension (Sectorial detail information, unlimited additional indicators)

National databases: Trends and patterns of realized risk

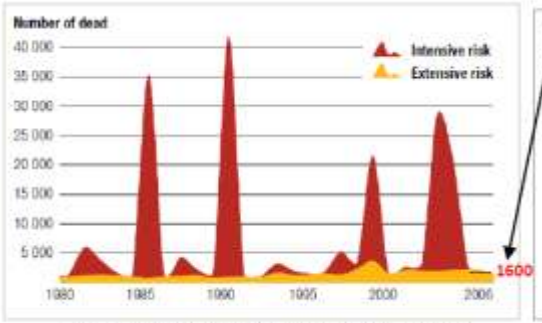




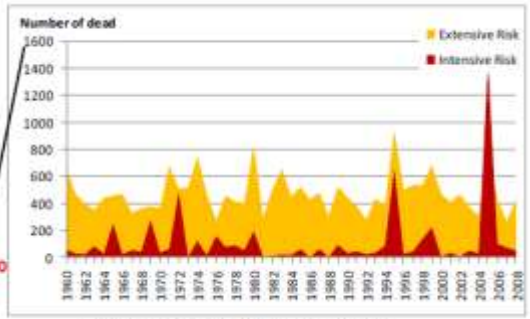
SHELDUS database in the USA



National/Local level of Observation, County level resolution

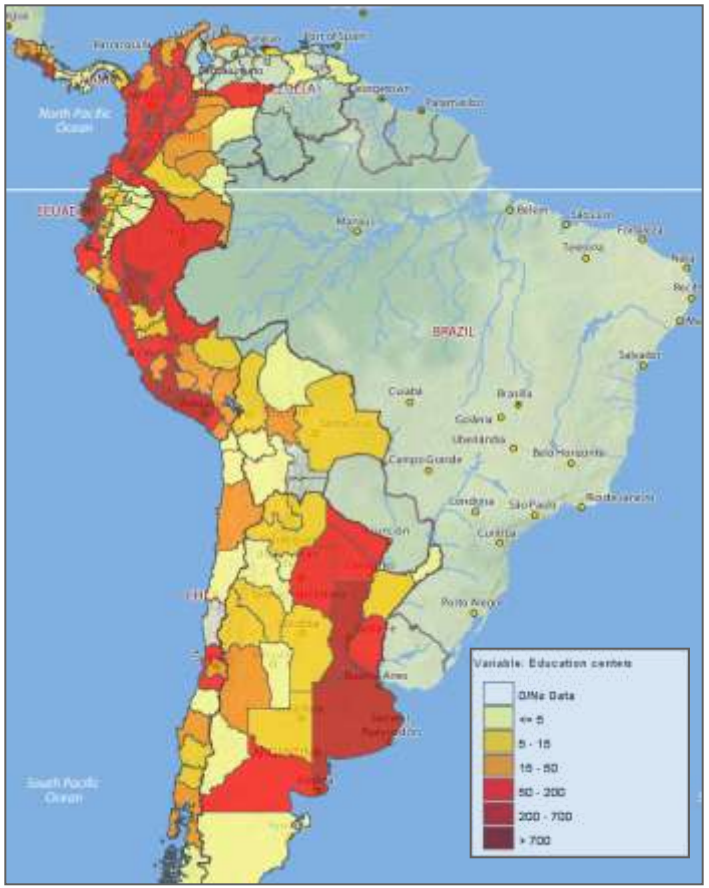


. Extensive/Intensive Risk pattern in LAC-Asia Sample

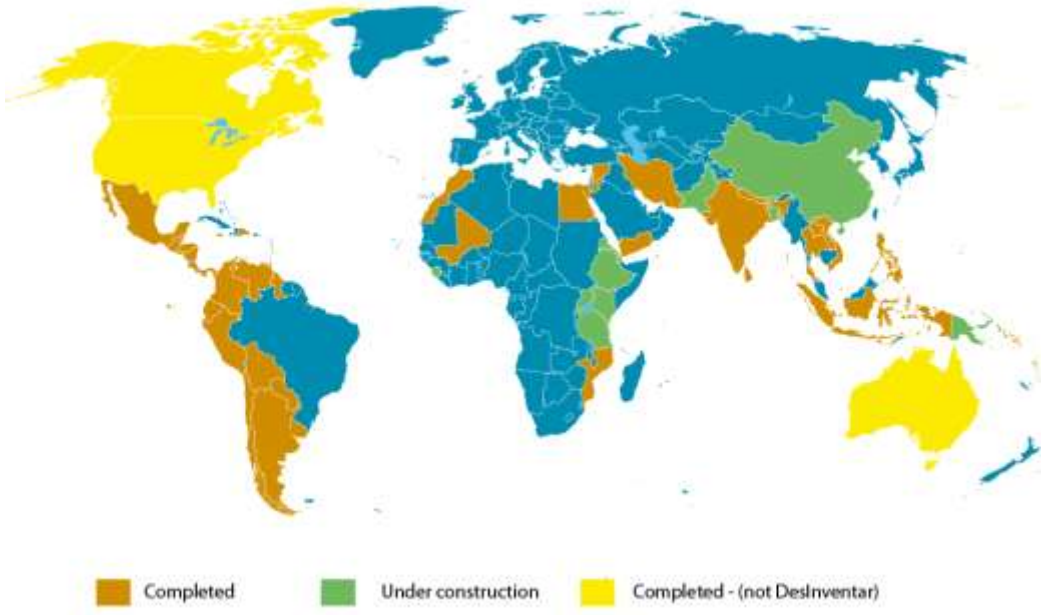


Extensive/Intensive Risk pattern in USA

UNISDR support to countries building DLDB



Number of education facilities damaged (1970-2009) per province (Argentina, Bolivia, Chile, Colombia, Costa Rica, Ecuador, Panama, Peru, Venezuela)



Status of Progress in building National Disaster Datasets
June 2011

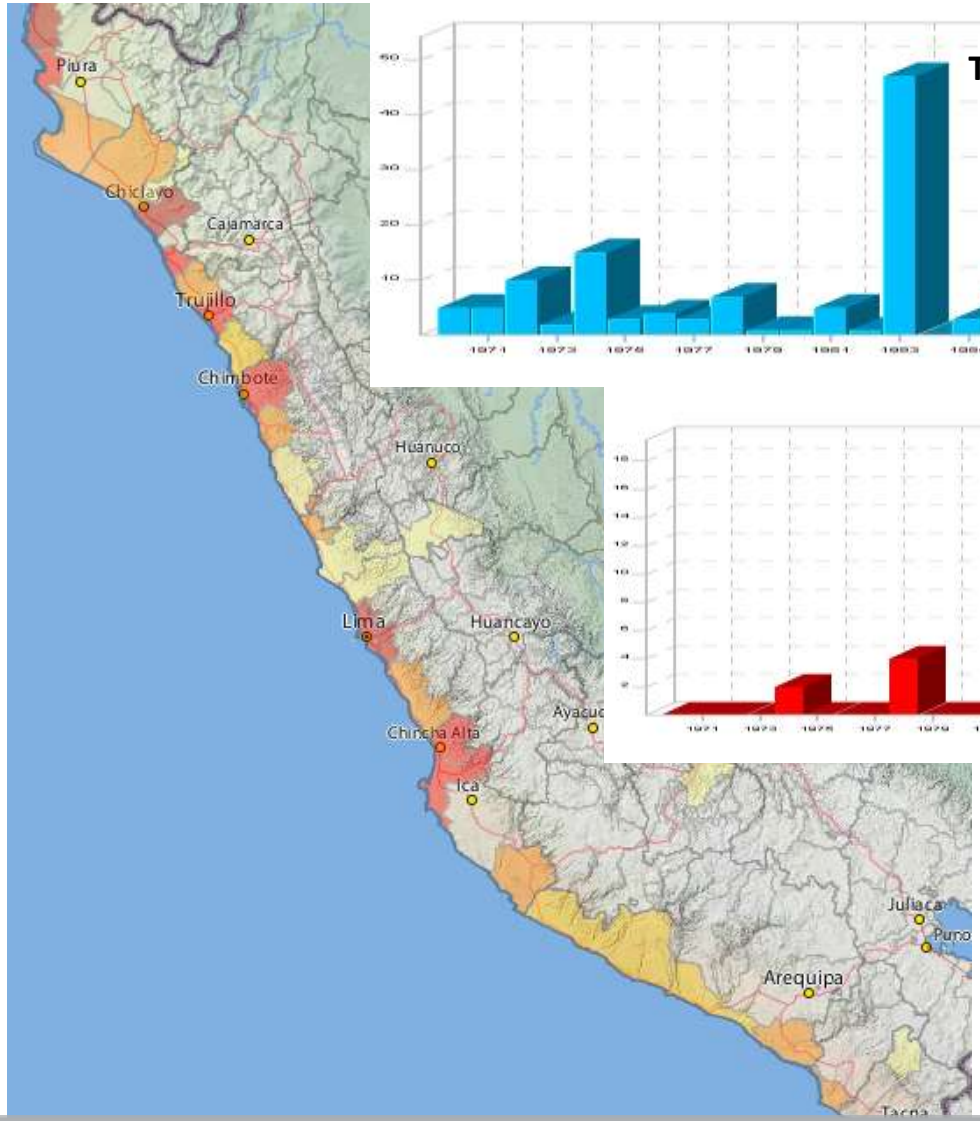
Informing risk governance and population

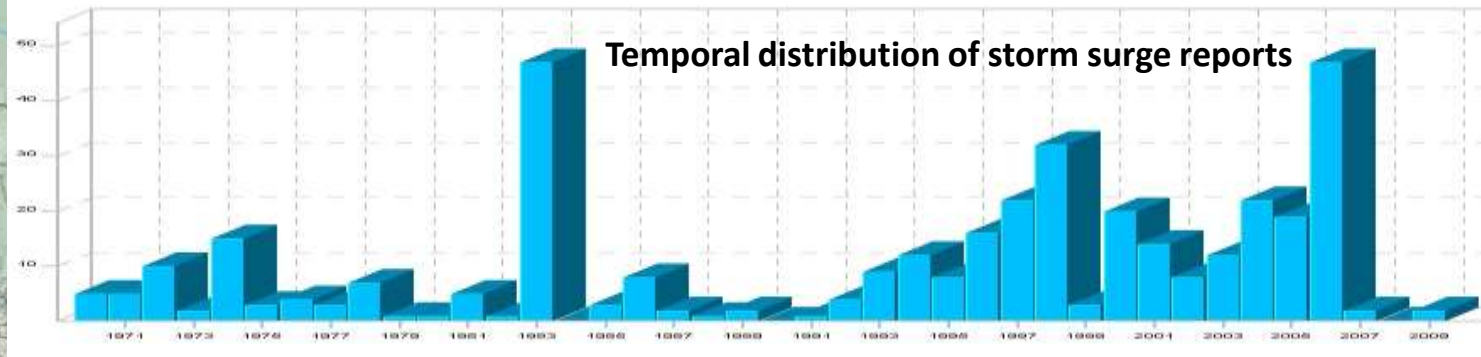
Addressing the challenges

- Disaster loss data informing risk assessment and investment in DRR
- Account for both intensive **and** extensive disaster losses
- National governments institutionalising disaster loss accounting systems
- Standardised criteria, indicators and definitions to enable comparative/cross-boundary studies
- From physical damages to economic loss

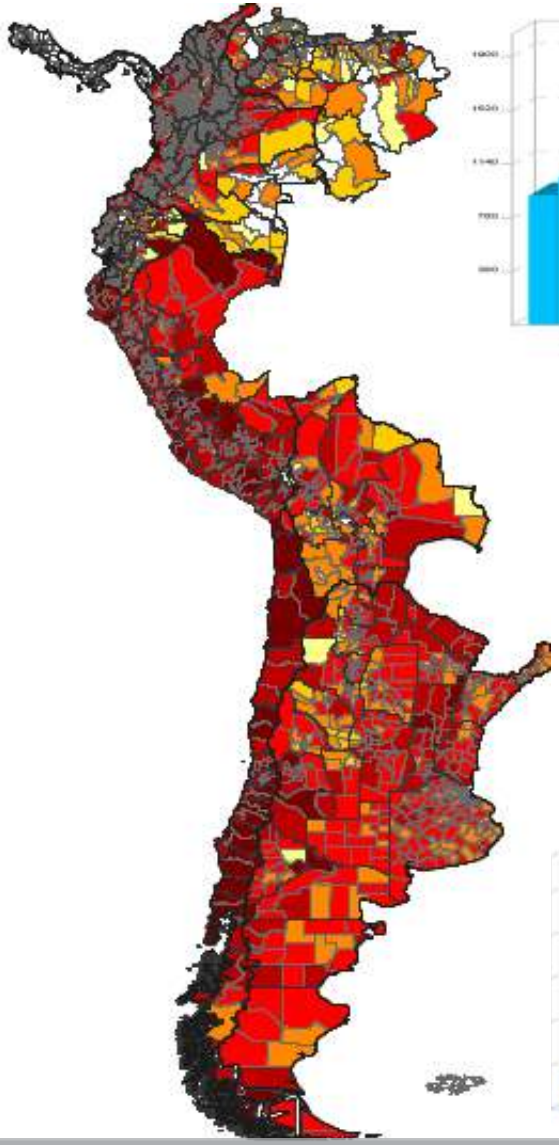
- A global picture built from the local level upwards

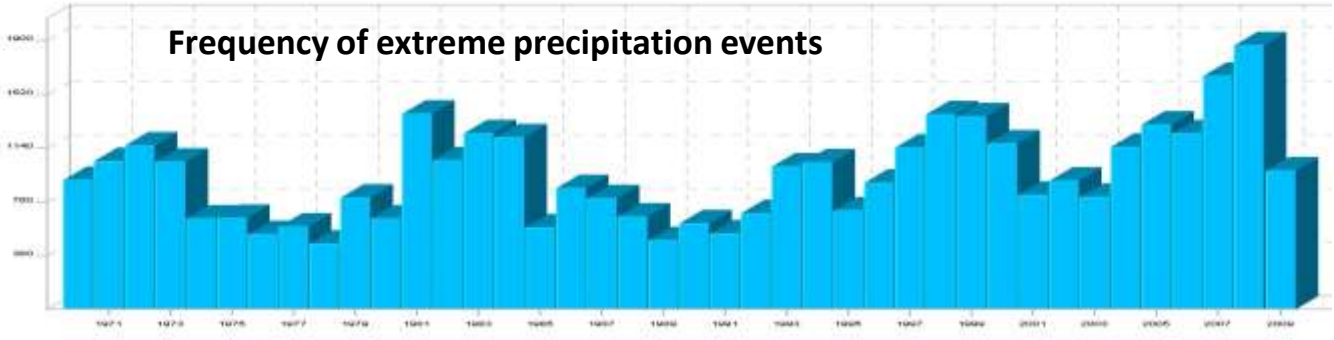
DRR and CCA: Storm surges in Peru (1970 – 2009)

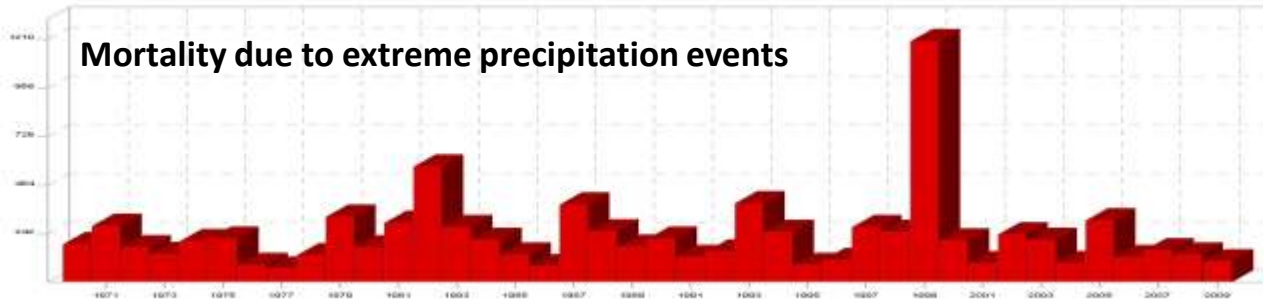


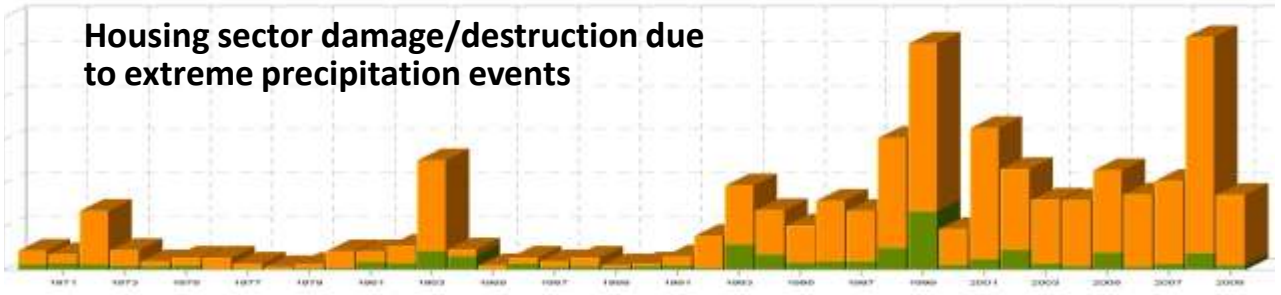


Weather related disasters in S. America (1970 – 2009)

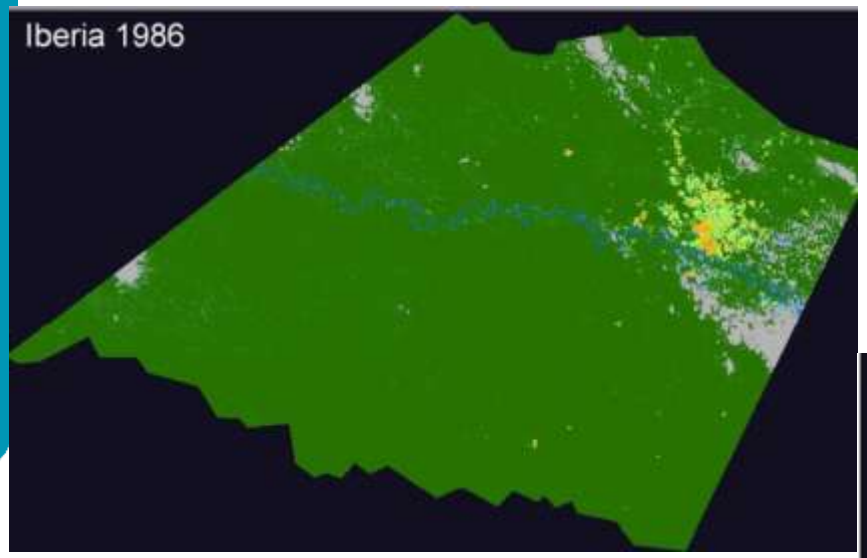






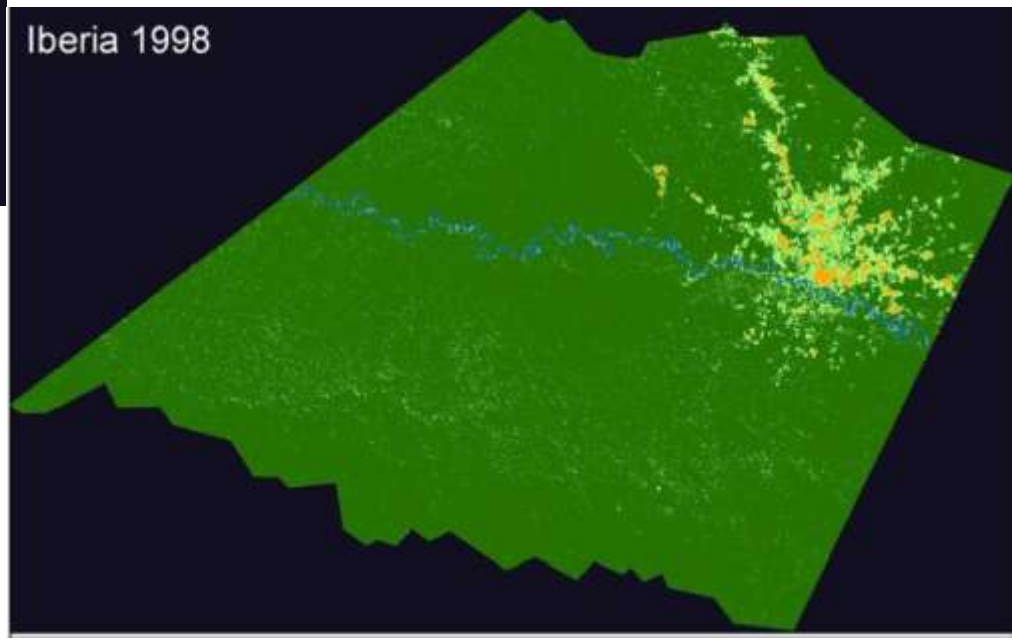


Climate Change Adaptation and Environment.



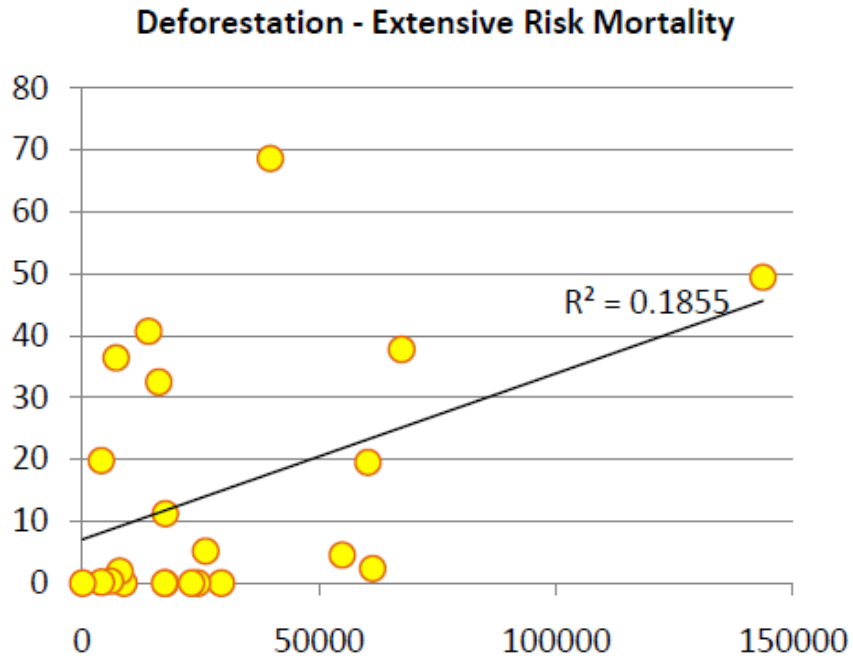
Environmental degradation and Disaster Risk,
A quantitative approach

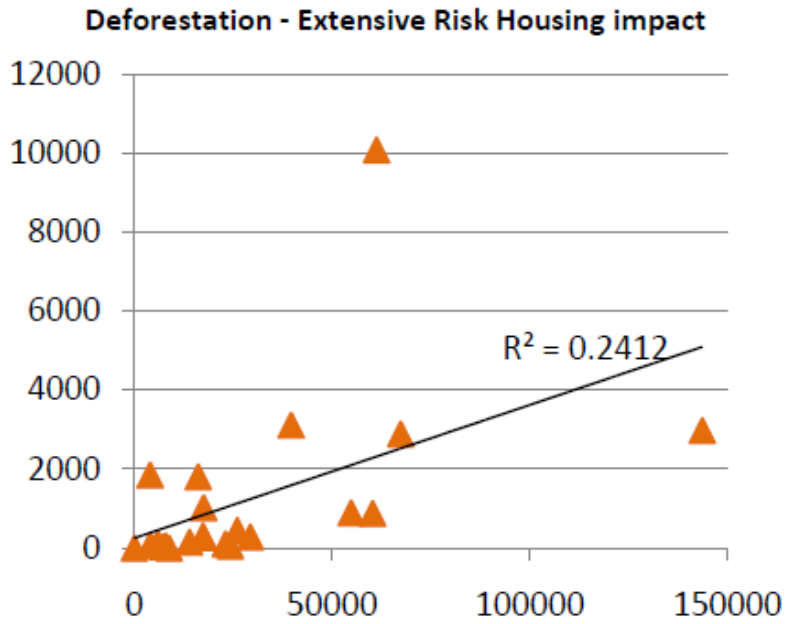
Unclassified Forest Water Cloud Bare soil Agriculture



Classified Landsat images acquired on 1986 (left) and 1998(right). The deforestation and environmental degradation can be seen easily as the lighter areas of the image, where forests have been turned into agricultural and bare soil.

Drivers of Risk: environmental degradation



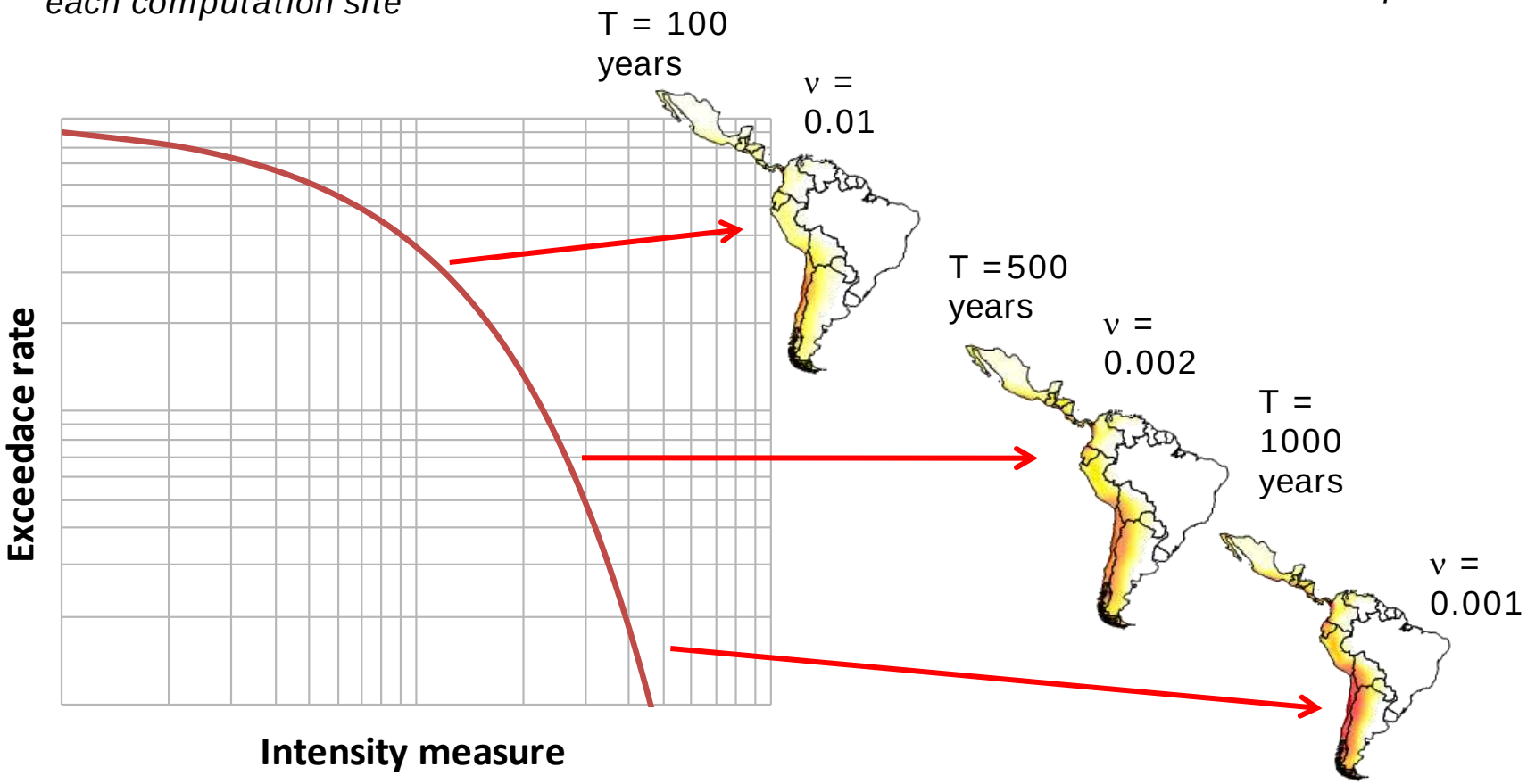


Correlation between Deforestation in watersheds and disaster losses due to extensive risk

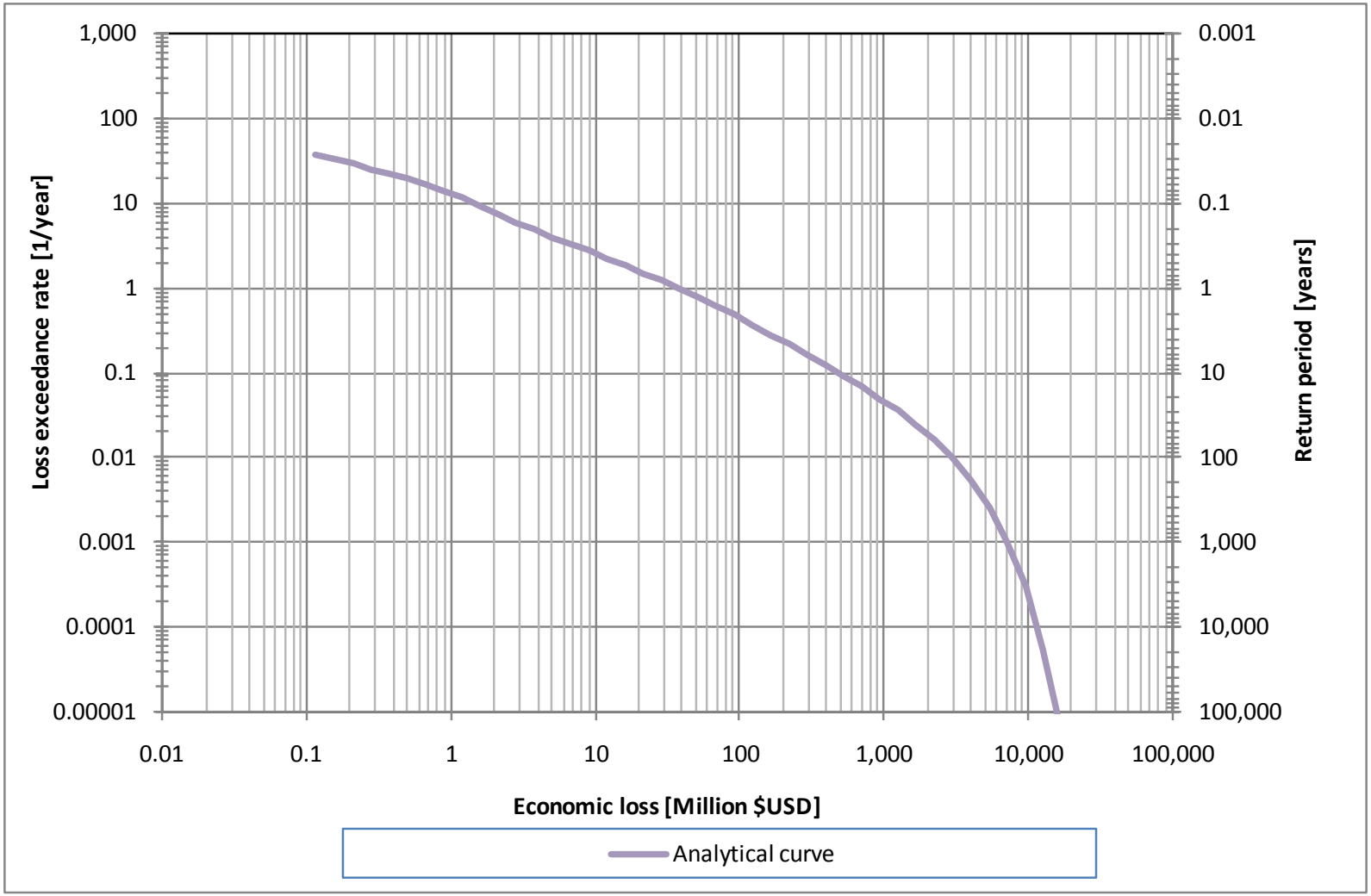
CAPRA: Probabilistic Risk Assessment And Hybrid Risk Assessment Models

Intensity exceedance curve for each computation site

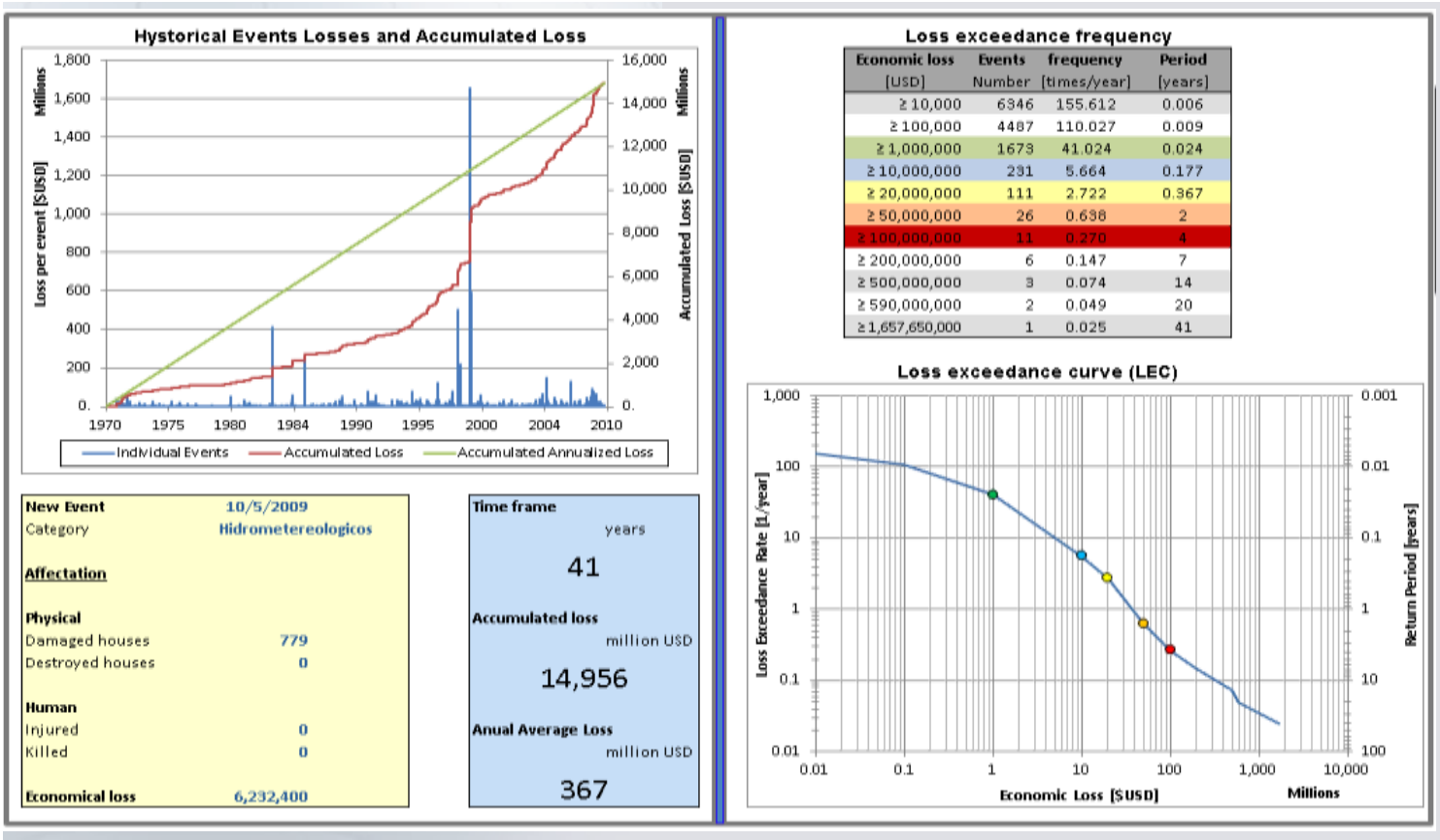
Hazard maps for several return periods



Modeled Loss Exceedance Curves

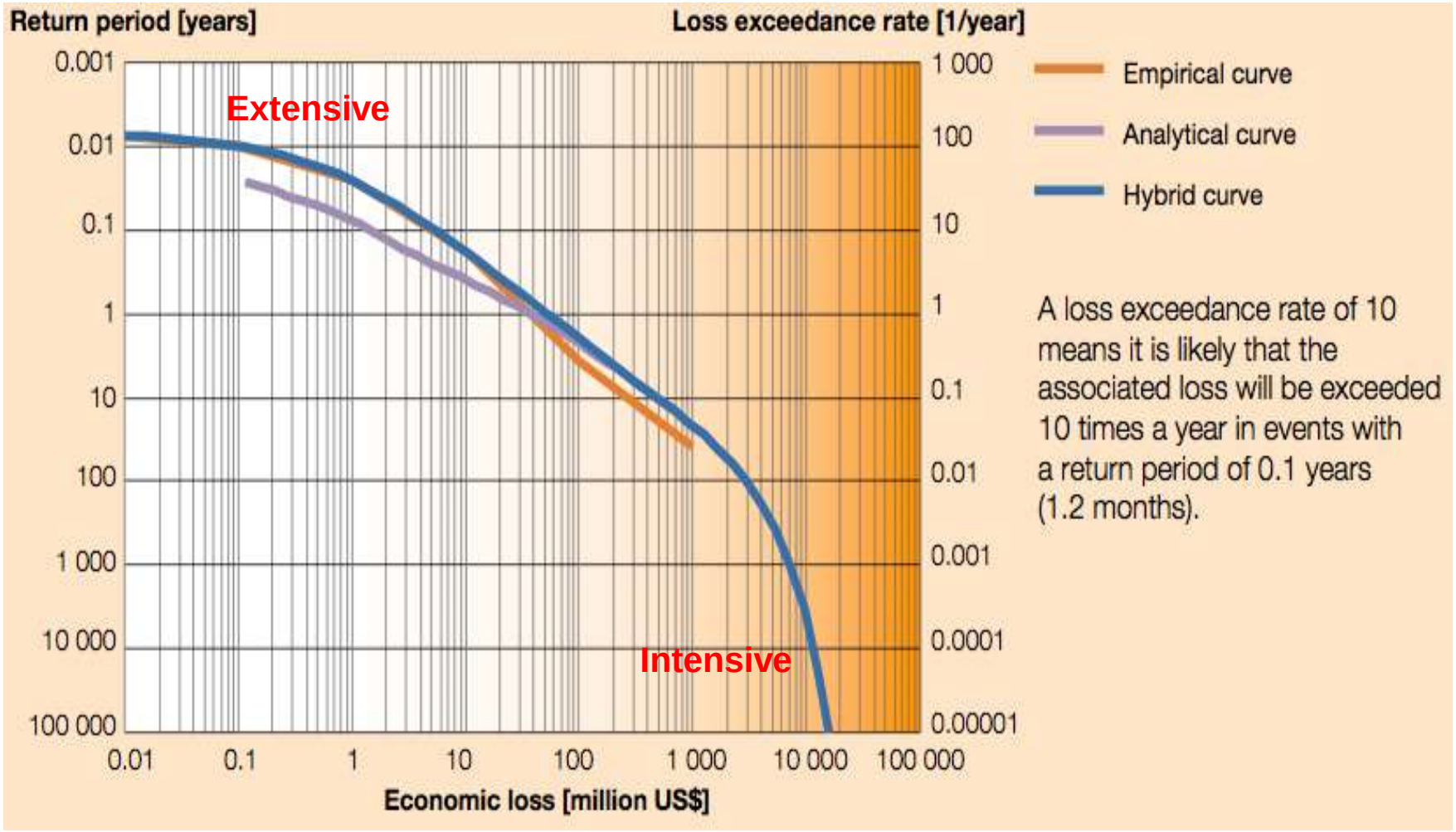


Extensive Risk Assessment: 'Empirical' Loss Exceedance Curves

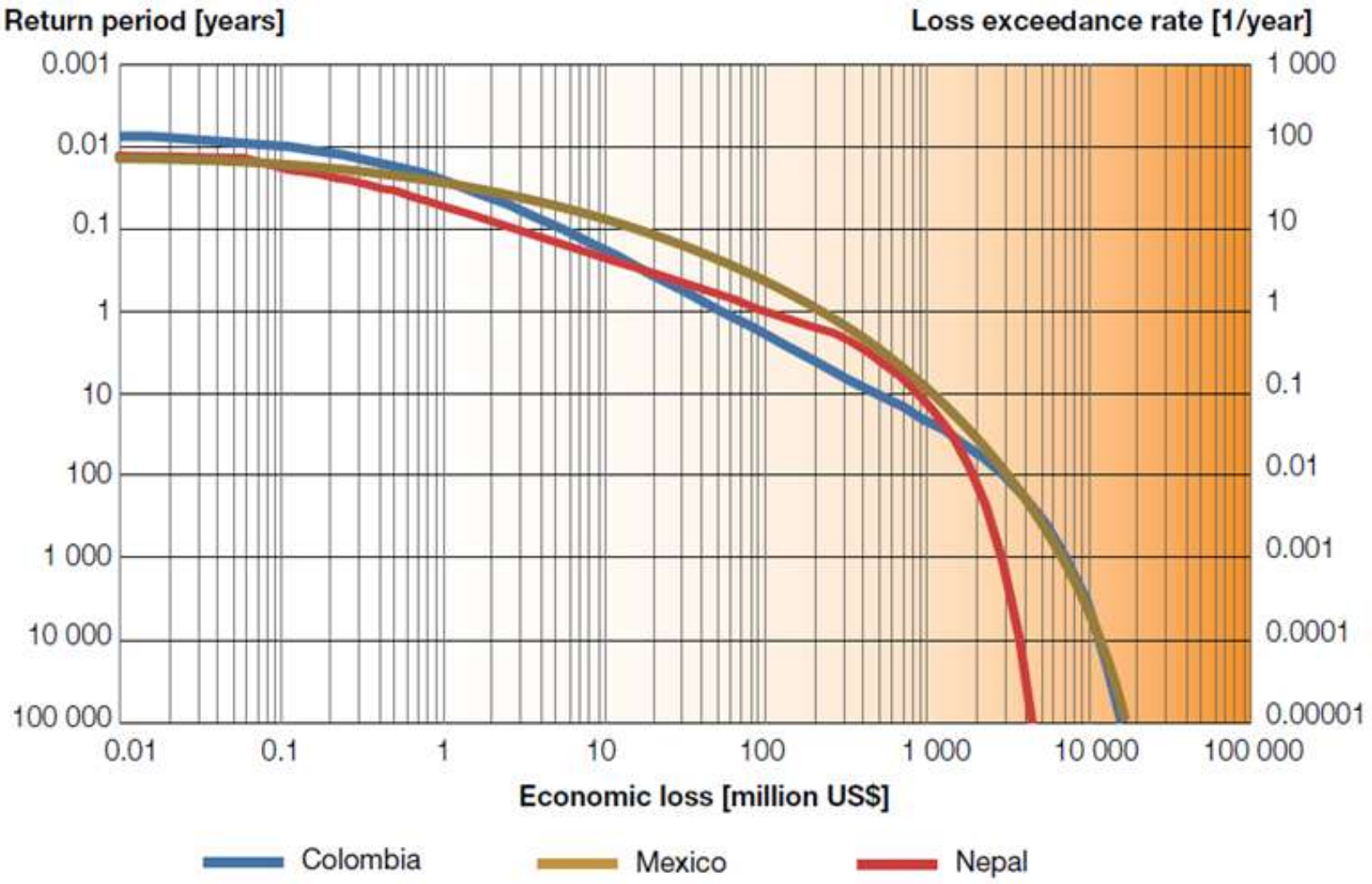


Empirical loss exceedance curve and historic risk metrics for Colombia as generated by DesInventar

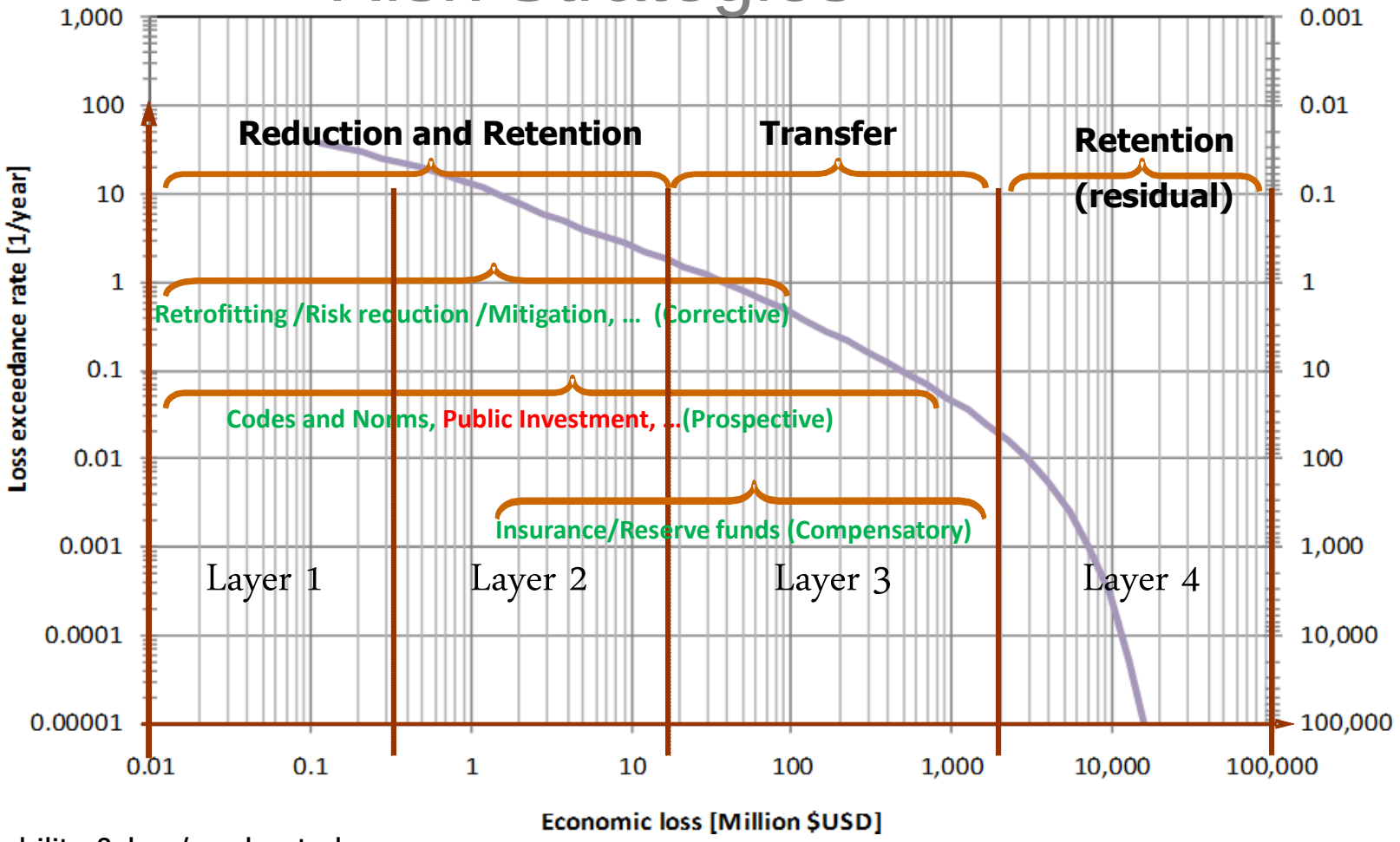
Reveal risk: integrate analytical and empirical views



CAPRA Hybrid models for 3 countries

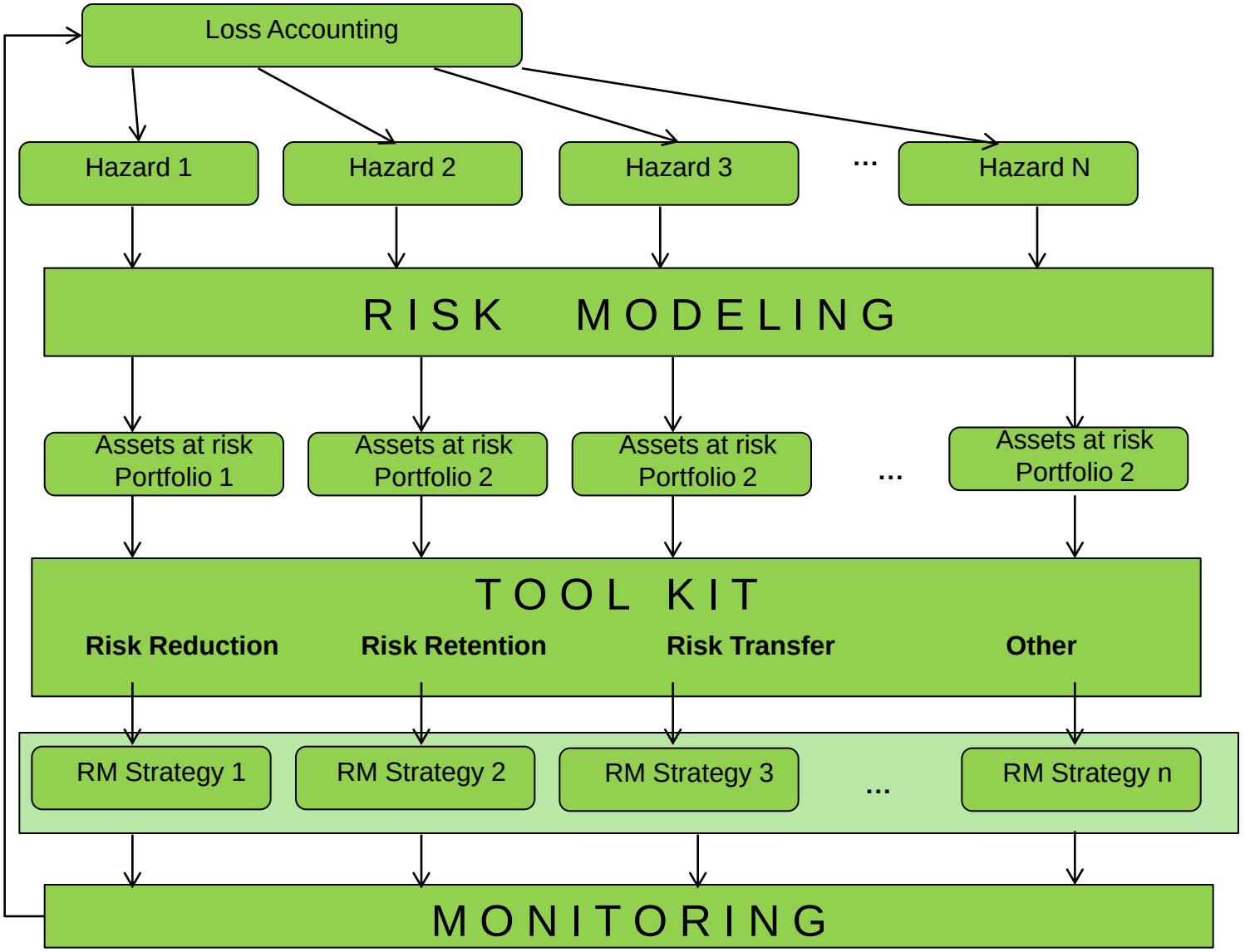


Risk Strategies



1 = High probability & low/moderate losses
2 = Medium probability & moderate/high losses
3 = Low probability & high losses
4 = Very low probability & very high losses

Overall Process



GAR 2013

THANK YOU