

IDMC approaches and work to date

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The Guiding Principles on Internal Displacement (E/CN.4/1998/53/Add.2)

Internally displaced persons are persons or groups of persons who have been forced or obliged to flee or to leave their homes or places of habitual residence, in particular as a result of or in order to avoid the effects of **armed conflict, situations of generalized violence, violations of human rights or natural or human-made disasters**, and who have not crossed an internationally recognized state border.

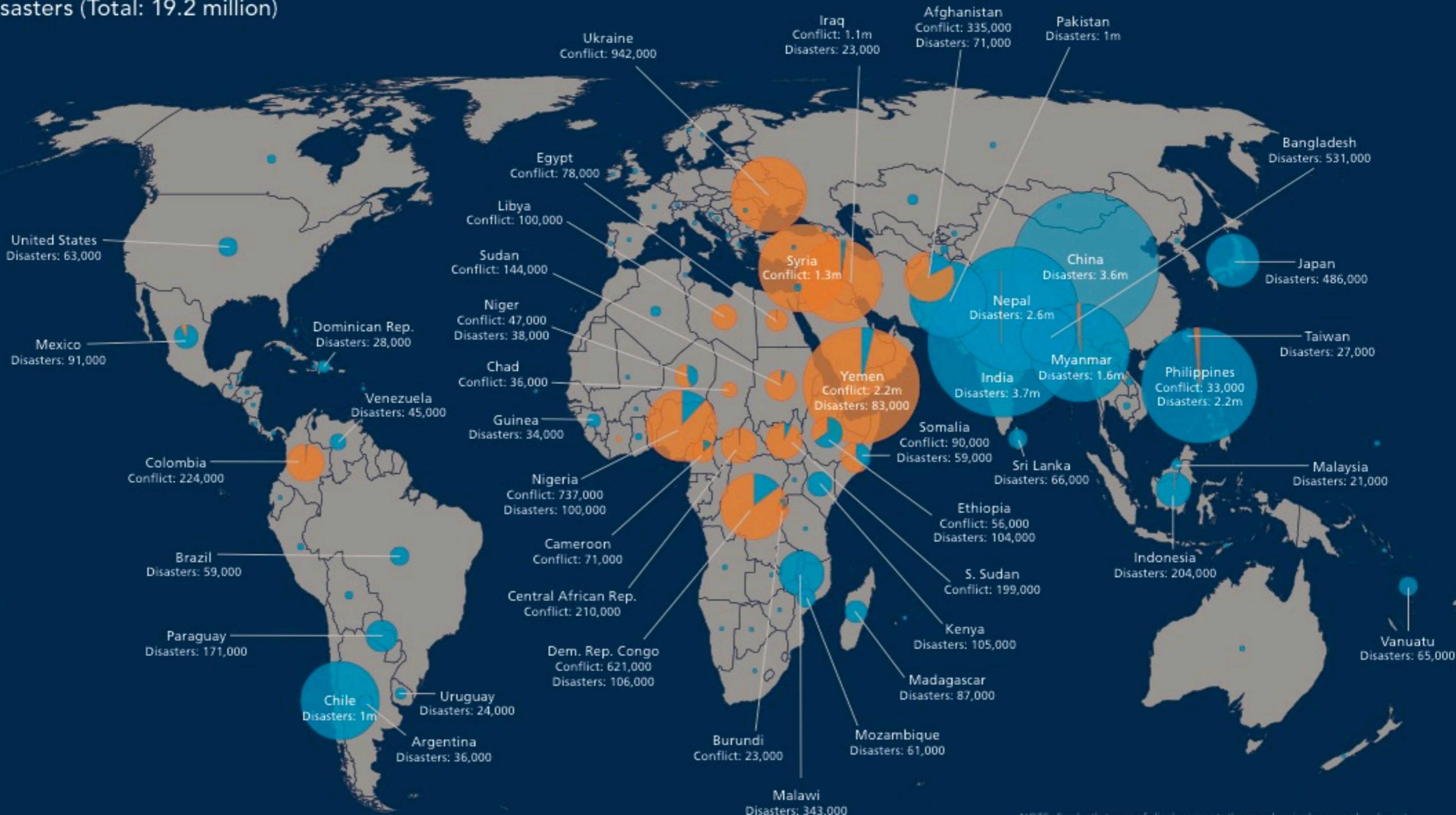
UN Resolution A/C.3/70/L.51/Rev.1 of 18 November 2015

33. Recognizes the need to collect reliable disaggregated data, including data disaggregated by sex, age and location, on internally displaced persons and the impact of long-term displacement on host communities in order to improve policy, programming and response to internal displacement and, in this respect, the relevance of the inter-agency Joint Internally Displaced Person Profiling Service and the **global database on internally displaced persons maintained by the Internal Displacement Monitoring Centre;**

34. Encourages Governments, members of the Inter-Agency Standing Committee, United Nations humanitarian coordinators and country teams to ensure the provision of reliable data on internal displacement situations by collaborating with the **Internal Displacement Monitoring Centre**, requesting the support of the Joint Internally Displaced Person Profiling Service and providing financial resources, as appropriate in these respects;

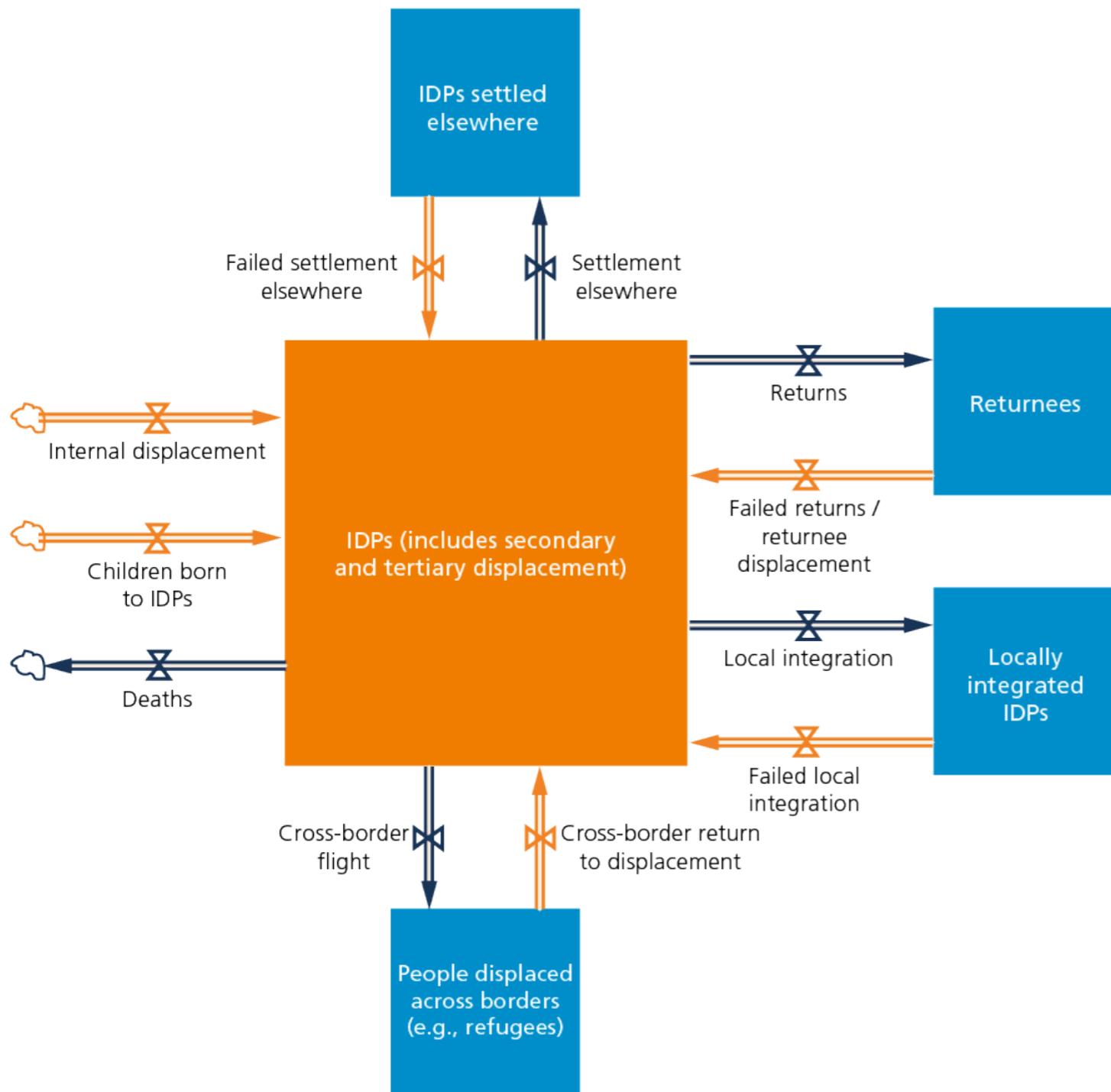
New displacements associated with conflict and disasters in 2015

■ Conflict and violence (Total: 8.6 million)
■ Disasters (Total: 19.2 million)



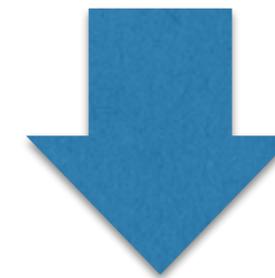
NOTE: For both types of displacement, the number is shown only when it exceeds 20,000. The size of the pie charts is fixed for estimates of 5,000 or less. In a few cases, the same person may be displaced more than once.

IDMC data model



Challenges:

- **Global** monitoring
- **Protracted** situations
- **Slow-onset** hazards

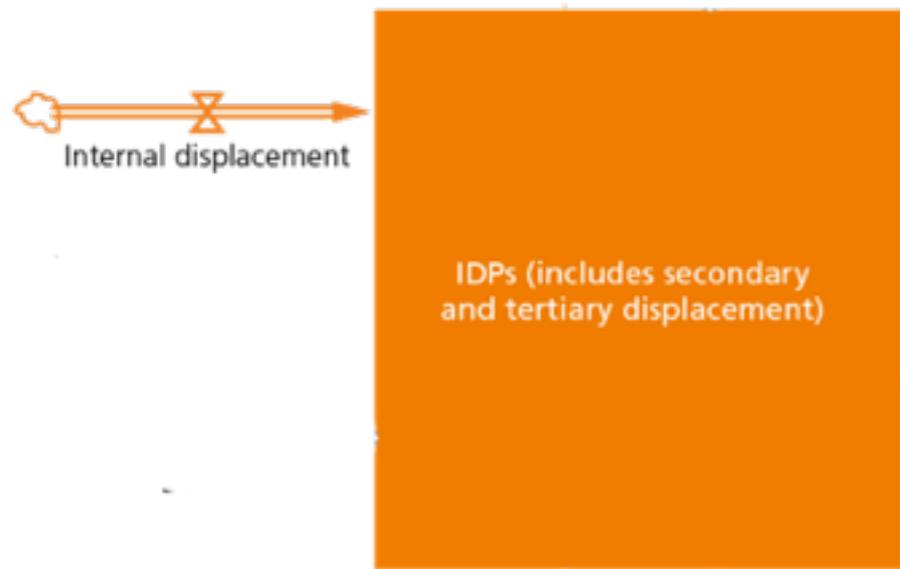


Modeling / use of proxies

IDMC - Global Report on Internal Displacement 2016
<http://www.internal-displacement.org/globalreport2016/>

Let's make it simple

Only one flow and stock



- Missing events
- Only sudden onset hazards

	New displacements Jan – Dec 2015	Total number of IDPs at end 2015
CONFLICT	8.6 million	40.8 million
DISASTERS	19.2 million	?
Development		

Lack of information

Global monitoring

- **Global monitoring**
- **Protracted situations**
- **Slow-onset hazards**

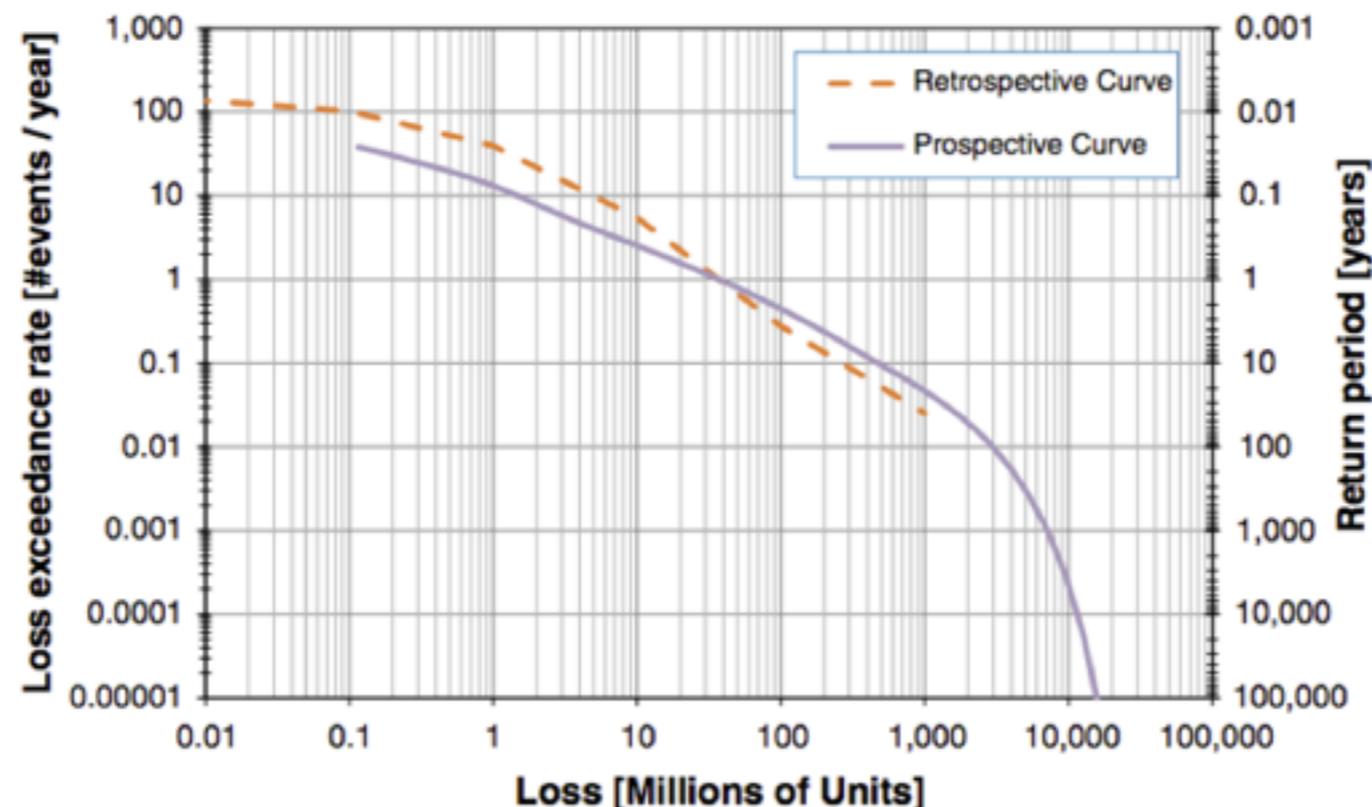
Probabilistic displacement risk model

$$\text{Displacement risk} = \text{Hazard} * \text{Exposure} * \text{Vulnerability}$$



Combines:

- **Retrospective** analysis (past events)
- **Prospective** analysis (events we never experienced / rare events)



Nat Hazards (2014) 72:455–479 DOI 10.1007/s11069-013-1017-z

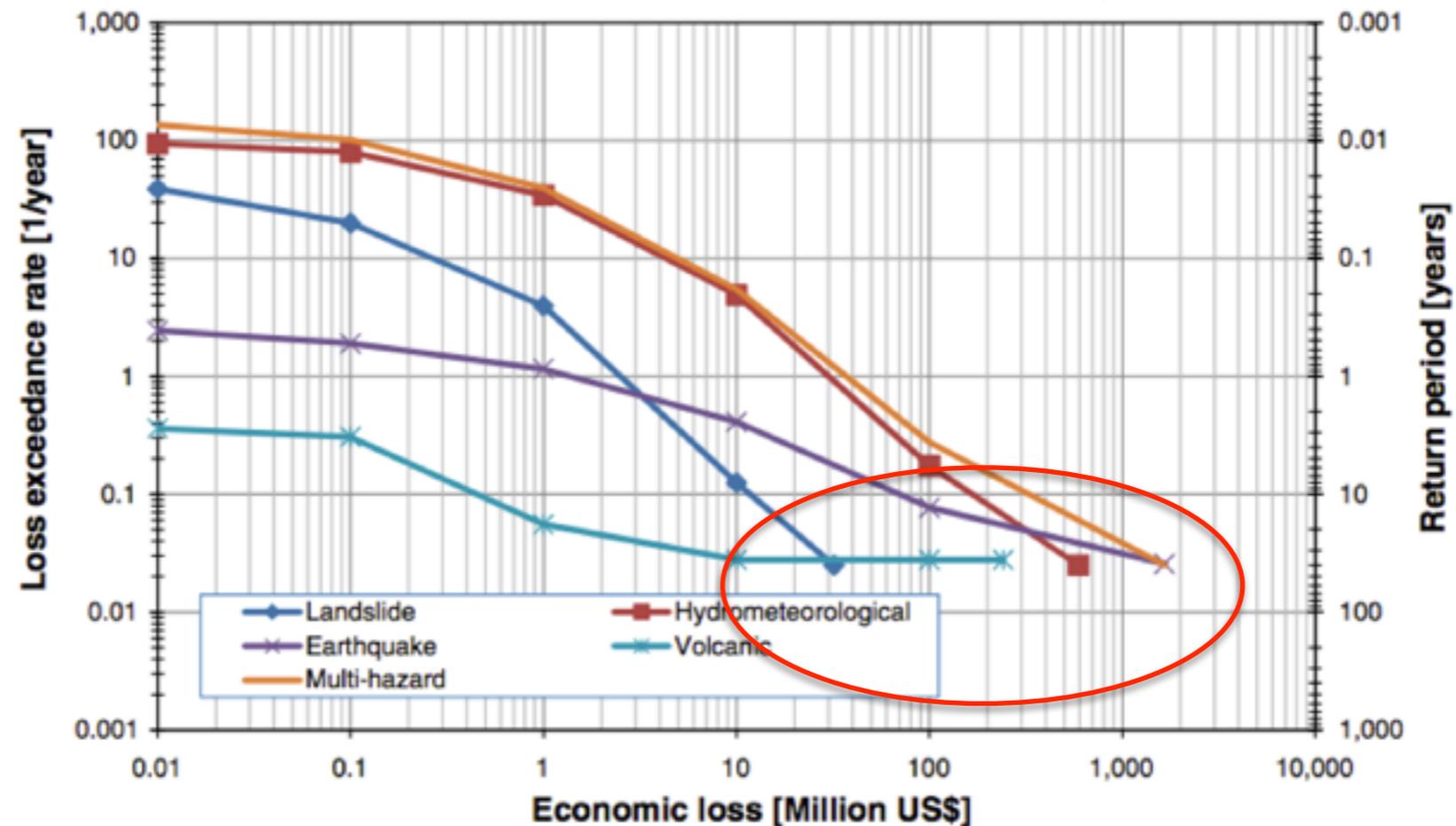
Retrospective analysis - *probabilistic displacement risk model*

Displacement - based on the analysis of disaster databases:

- IDMC's Global Internal Displacement Database
- DesInventar - # houses destroyed as proxy for displacement

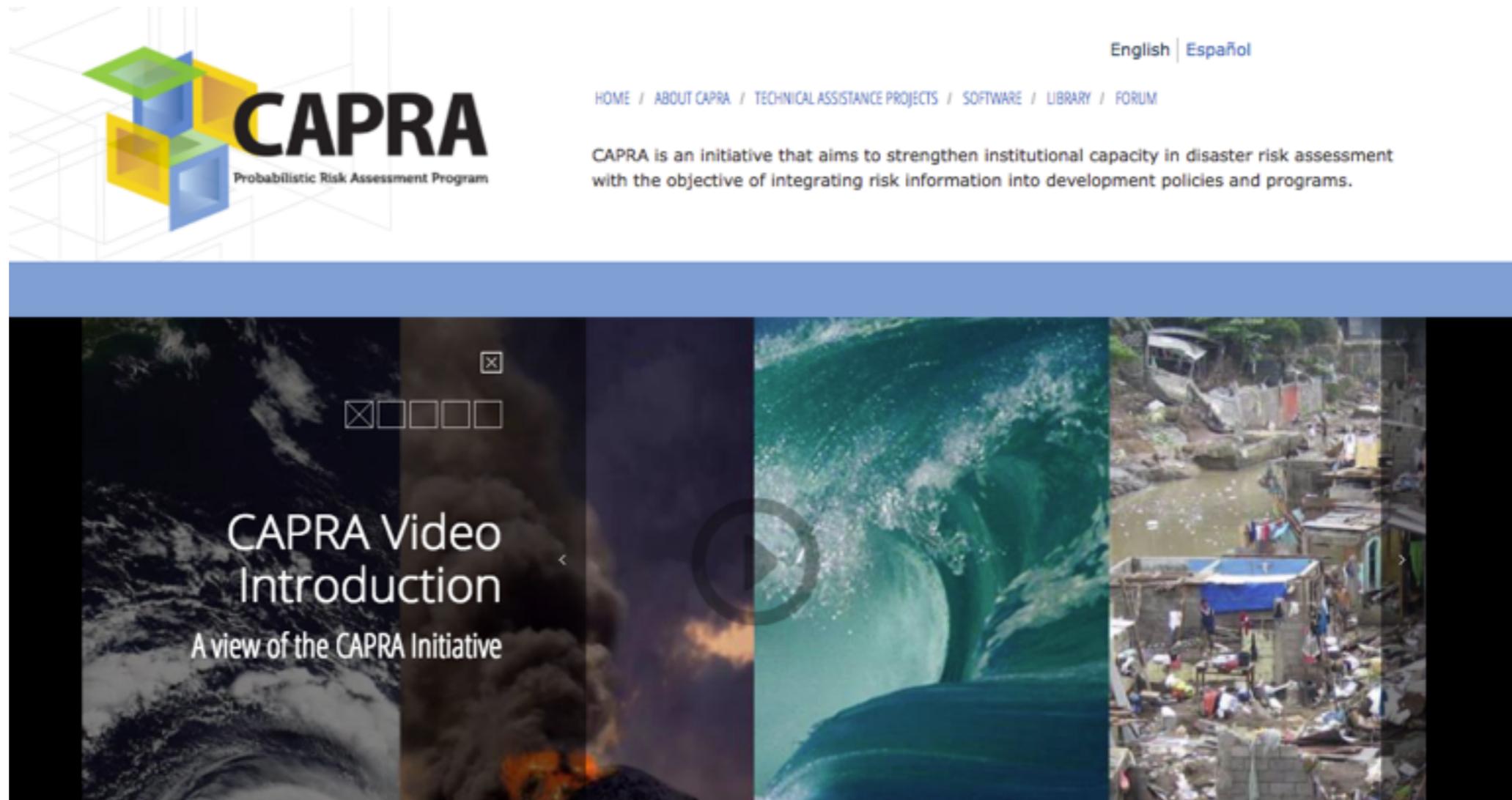
Return period - based on the frequency of events in the database

Nat Hazards (2014) 72:455–479 DOI 10.1007/s11069-013-1017-z



Hazard - *probabilistic displacement risk model*

Displacement risk = **Hazard** * **Exposure** * **Vulnerability**



ABOUT CAPRA

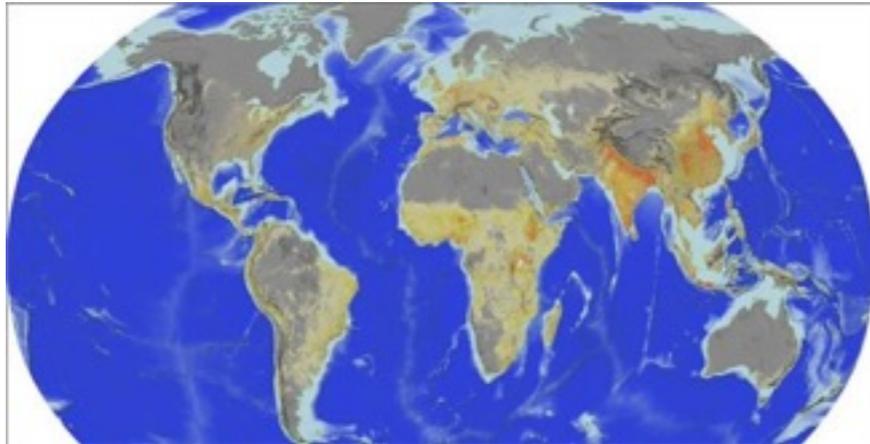
The CAPRA (Probabilistic Risk Assessment) Program is an initiative that aims to strengthen the institutional capacity for assessing, understanding and communicating disaster risk, with the ultimate goal of integrating disaster risk information into development policies and programs. Under the CAPRA Program, government institutions and other agencies partner with The World Bank to address specific development challenges and meet disaster risk information needs through hands-on practical training and other complementary services.

UNISDR - CAPRA framework

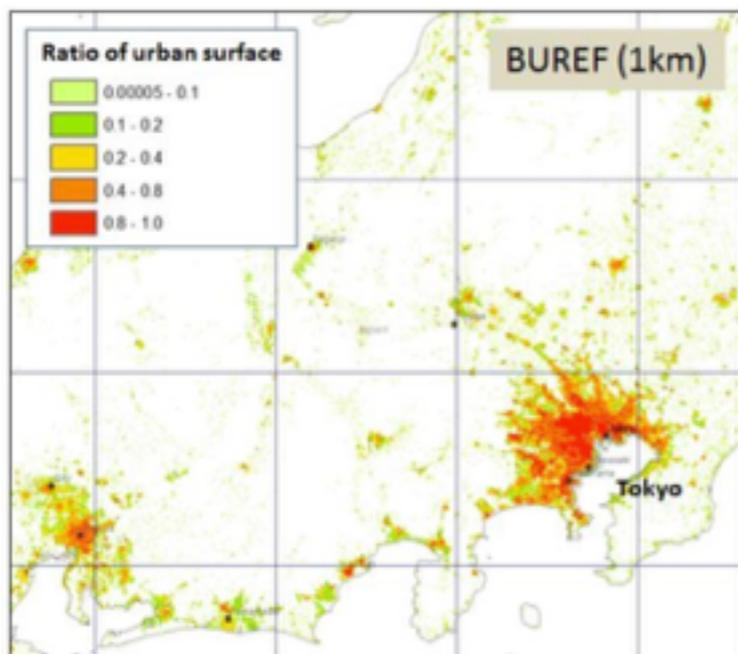
Exposure - *probabilistic displacement risk model*

Displacement risk = Hazard * Exposure * Vulnerability

Top-down approach - same used for GAR 2015
5*5 (1*1 on coastal areas) Km² grid cell



ORNL's LandScan



JRC Built-Up REference)

Sector	Socio-economic indicator	Data sources	
Population	country population in 2011	UN WPP 2013 ³	
Capital stock	Produced capital (machinery and urban)	WB 2011	
Residents	1) % of people living below 1005 \$	WDI 2013 ⁴	
	2) % of people living between 1005 \$ and 3975 \$		
	3) % of people living between 3975 \$ and 12275 \$		
	4) % of people living above 12276 \$		
Non residents	5) % of people employed in industry	WDI 2012, ILO 2012 ⁵ , UNSD 2012 ⁶	
	6) % of people employed in services		
	7) % of people employed in government		
	Health	8) number of beds per 1000 people private	WDI 2012
		9) number of beds per 1000 people public	
	Education	10) number of pupils (private)/total population	UNESCO 2012 ⁷
		11) number of pupils (public)/total population	

Table 1: The list of socio economic indicators (SEI) and their sources

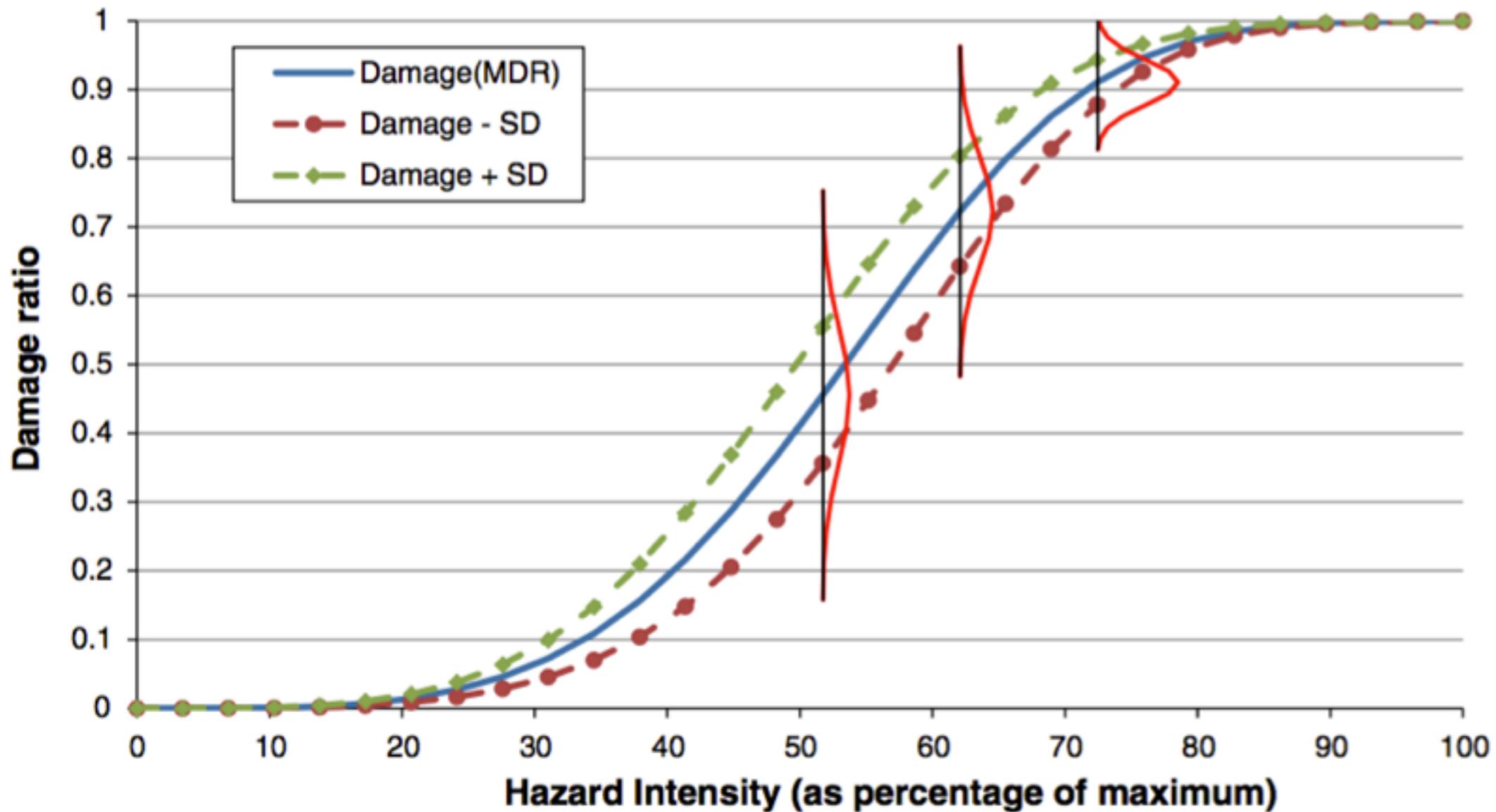
Socio-economic indicators

A global exposure model for GAR 2015 - Andrea de Bono and Bruno Chatenoux

Vulnerability - *probabilistic displacement risk model*

$$\text{Displacement risk} = \text{Hazard} * \text{Exposure} * \text{Vulnerability}$$

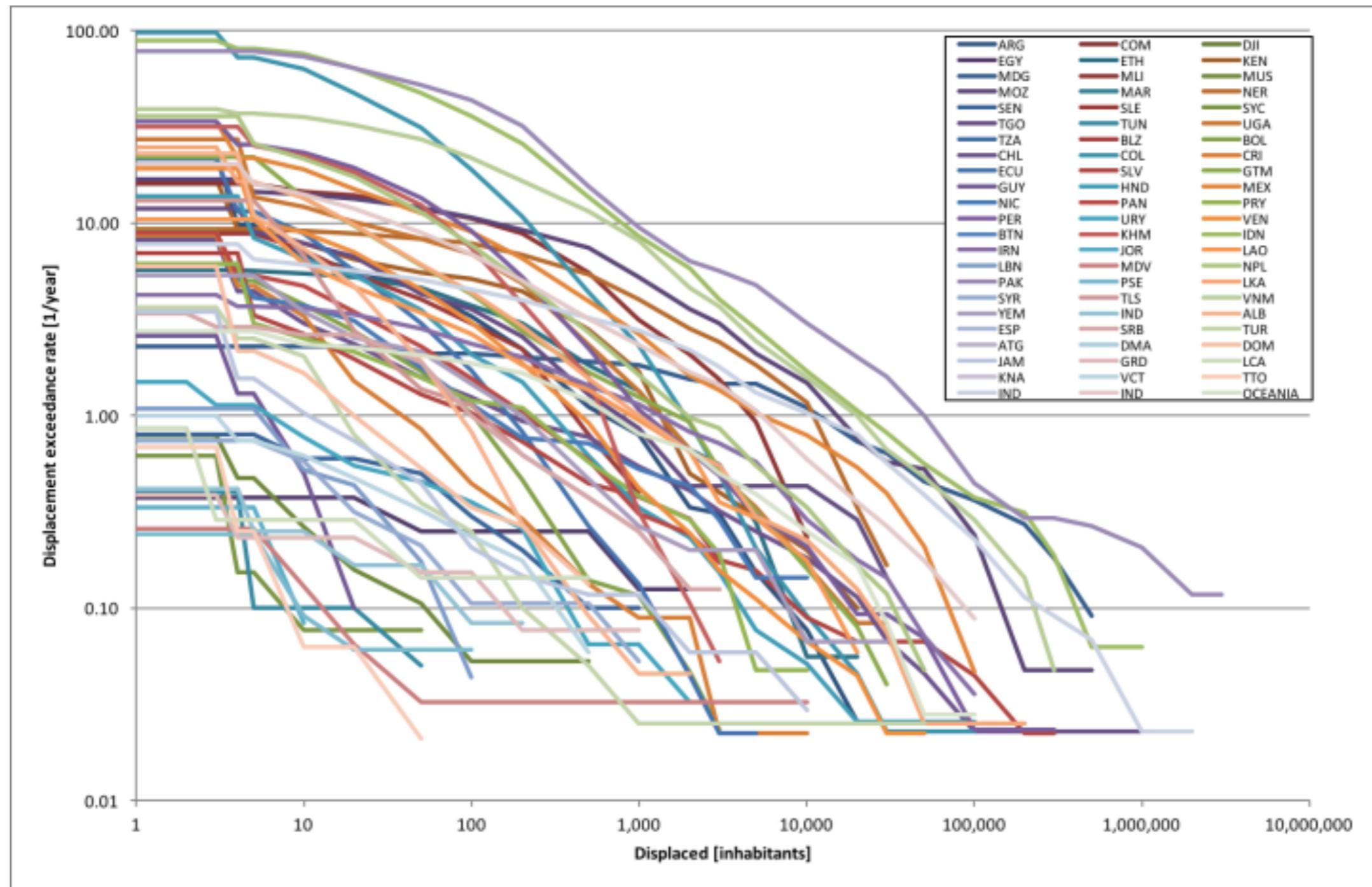
Vulnerability curve per building type



- Literature (HAZUS, Risk-UE)

- Computational models (FEMA 2006; Lagomarsino and Giovinazzi 2006; Lantada et al. 2009a, b; Vargas et al. 2013a, b, c)

First results from retrospective analysis



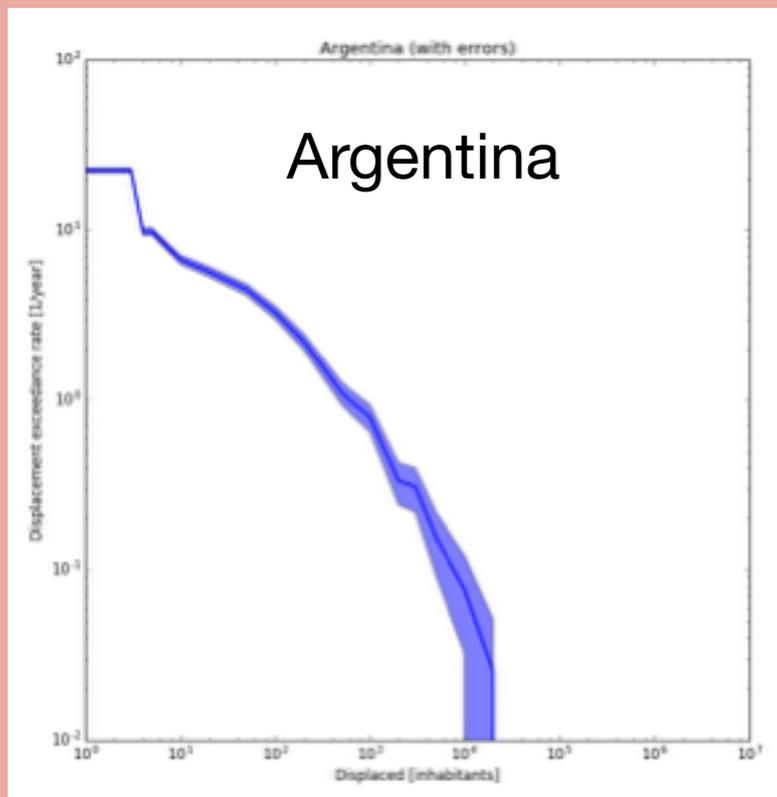
Assessing the uncertainty

Statistical

Assuming:

- independent events
- only characterized by the return period.

We can use a Poisson distribution of events -> $\sigma = \sqrt{N}$



Systematic error

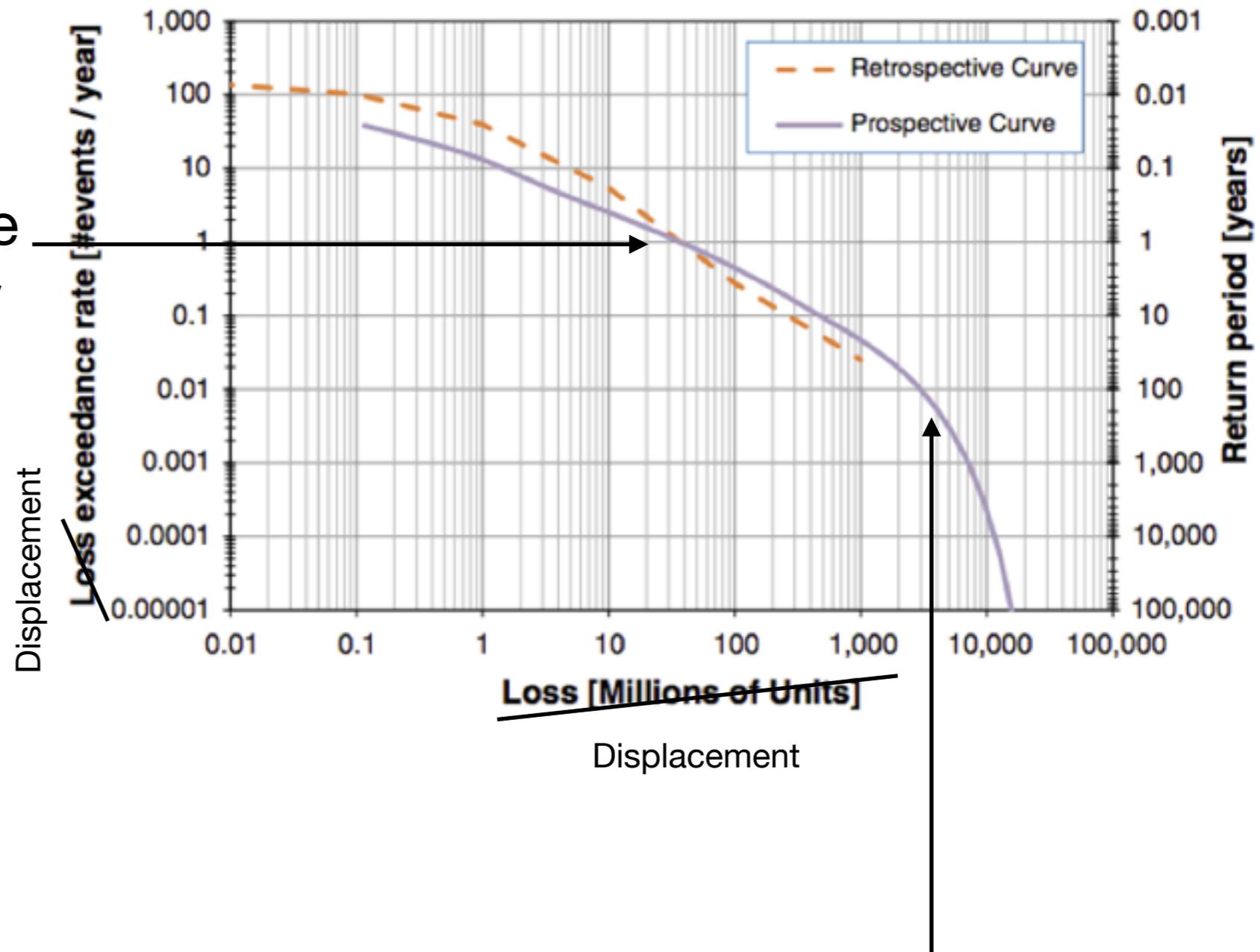
Test the sensitivity of the results to the assumptions done in the analysis:

- clustering of reports in events (based on location + day + time range)
- HH size estimation
- percentage of damage to consider a house collapsed

What we learn from the risk curve

Preparedness

National / regional average
over a given time window



Early displacement figure

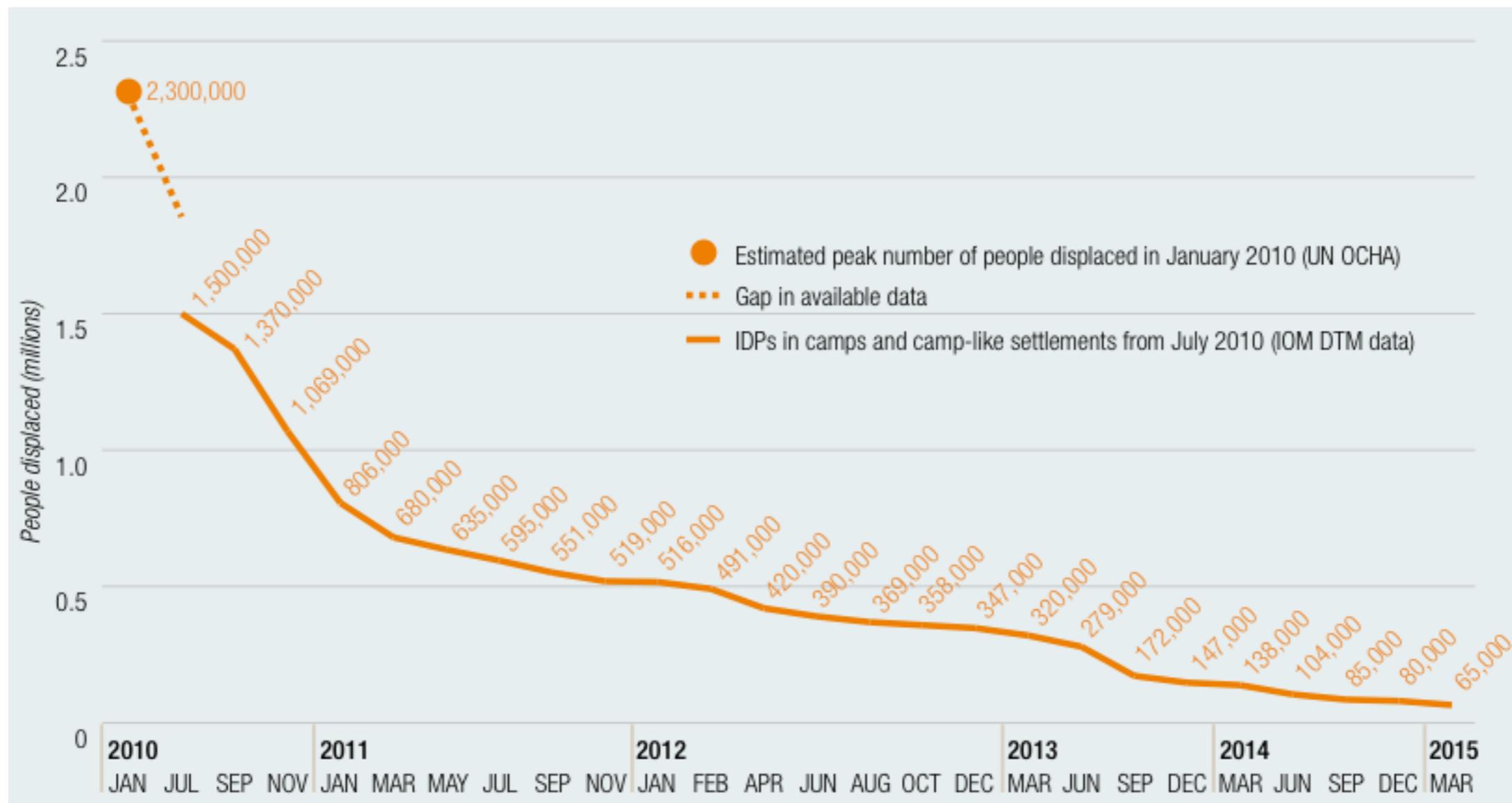
Based on context / hazard intensity

Caveats / limitations

- Displacement = Housing destroyed x Average household size.
 - **Mortality** and **evacuations** are not accounted for, and additional displacement due to damaged infrastructure is not accounted for
 - Changes in **hazard frequency and severity (e.g., due to climate change)** are not yet captured in this model, nor are changes in exposure and vulnerability. The risk metrics provide a relatively static snapshot or profile.
- Possible next step: make it **more dynamic, potentially turning the model into a decision-support tool for policymakers.**

Protracted displacement

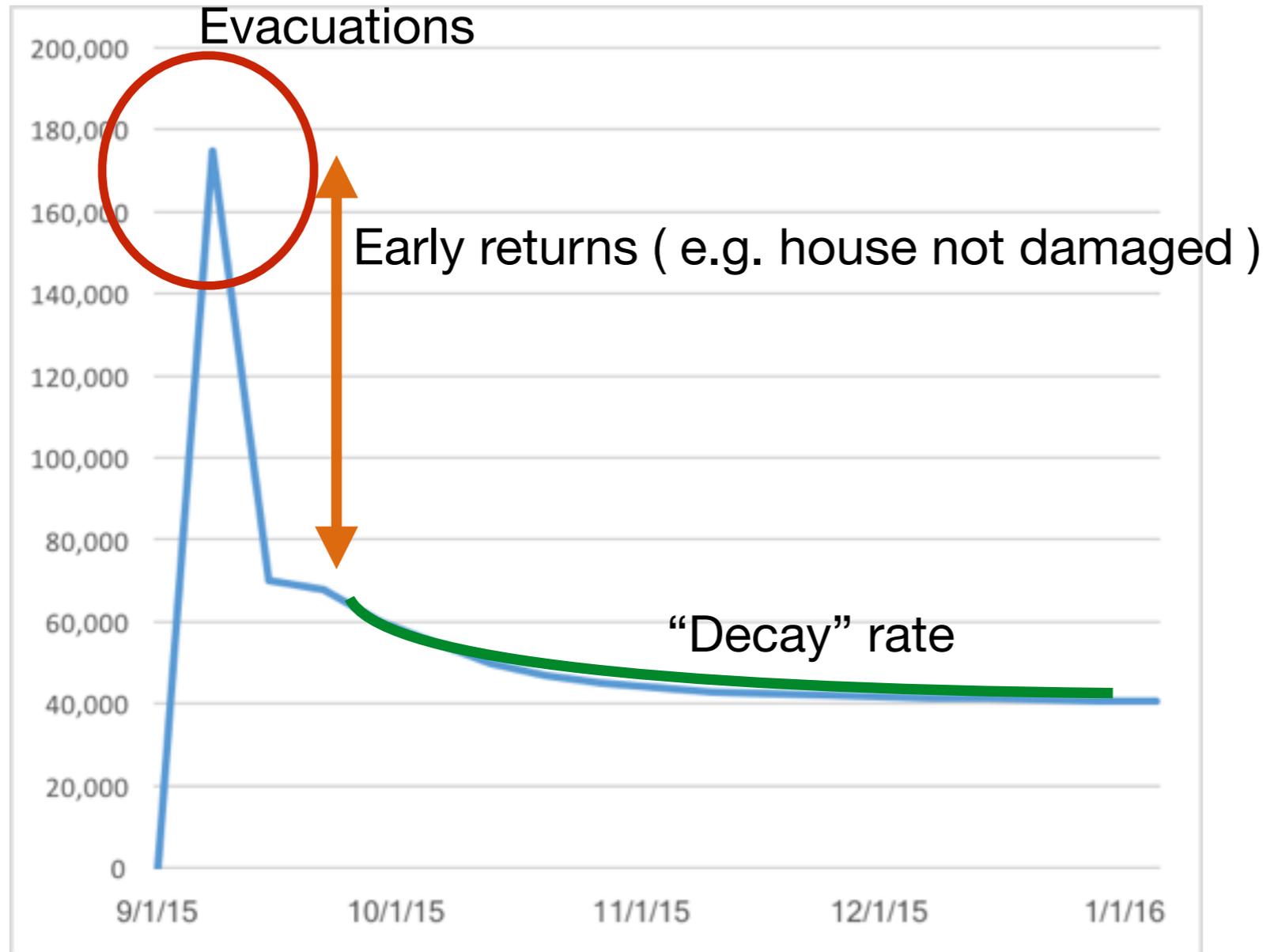
- **Global** monitoring
- **Protracted** situations
- **Slow-onset** hazards



Policy message: disaster displacement situation can be protracted

Huge **data gap** - hard to collect time series for disasters (especially small events)

Decay rate - modeling



	New displacements Jan – Dec 2015	Total number of IDPs at end 2015
CONFLICT	8.6 million	40.8 million
DISASTERS	19.2 million	?

- Model decay rate (hazard type, region, HDI index etc.) based on observed time series
- Apply modeled decay rate to outdated stock measurements

Slow-onset hazards

- **Global** monitoring
- **Protracted** situations
- **Slow-onset** hazards



A family walks through the drought-affected area of Barisle village, outside Jigjiga in Ethiopia. Photo: NRC, April 2016

Modeling the effect of drought on pastoralists in the horn of Africa

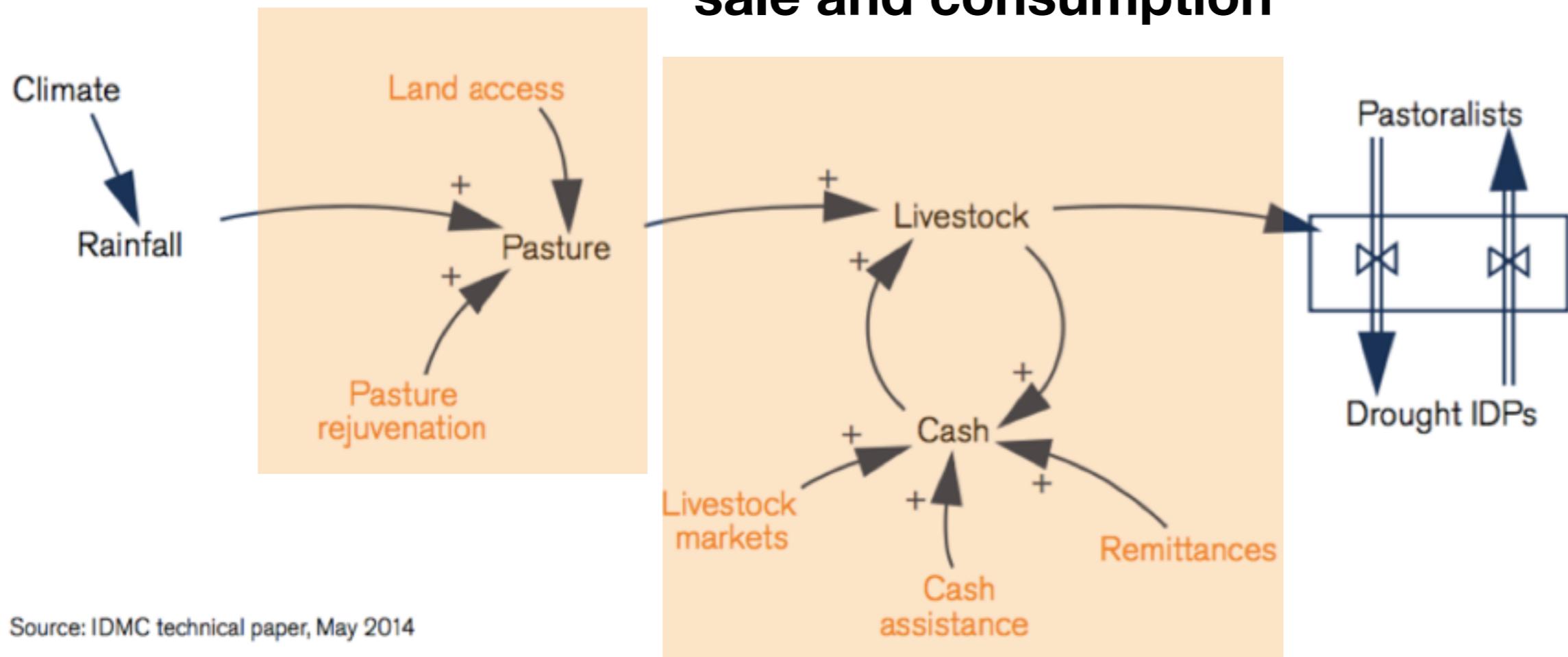
Slow-onset hazards

- **Global** monitoring
- **Protracted** situations
- **Slow-onset** hazards

Pastoralism is a livelihood based on:

production

sale and consumption



of livestock and livestock products.

IDMC, Assessing drought displacement risk for Kenyan, Ethiopian and Somali pastoralists - 2014

Displacement of pastoralists

Critical threshold for displacement:
livestock necessary to support a household

Why system dynamics:

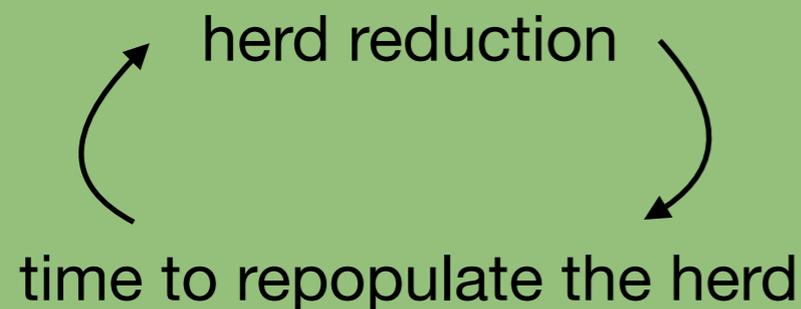
Multiple causes:

Displacement mainly as an effect of loss of livelihood

Delays

Slowly changing factors: pasture quality, livestock health etc.

Feedbacks



Limitations

Lack of data

Both historical and baseline data to validate the model

Ground validation

Need more field research to understand the weight of triggers in different contexts

Demographic

Improve demographic modeling / urbanization / pastoralist dropouts

Conclusions

Modelling can significantly impact IDMC figures

	New displacements Jan – Dec 2015	Total number of IDPs at end 2015
CONFLICT	8.6 million	40.8 million
DISASTERS	19.2 million	?

- A **global** monitoring center
- Cover **protracted** situations
- Understand **slow-onset** hazards

I am happy to discuss new ideas common projects,
Thank you!

