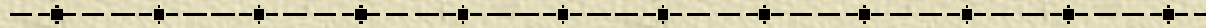# Investigating the International Disaster Database
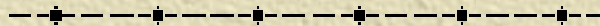
Maxx Dilley
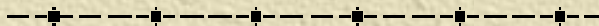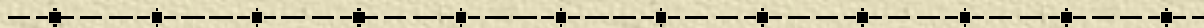
Disaster and Risk Management

International Research Institute for Climate Prediction

How completely and consistently do currently available disaster data capture reported losses?

Antecedents and intent

* launched by WG3 in March 2003
* builds on previous studies by CRED and *La Red*
* intended as an authoritative assessment of currently-available global disaster and loss data for selected countries
* identifies statistical significance of differences in numbers of people killed and economic losses in different databases
* seeks to substantiate the suitability of these data as an evidence base for decision-making
* identifies areas for database improvement

Eight countries

- Honduras, India, Mozambique, Vietnam
  - EM-DAT, NatCat, Sigma
  - previously analyzed by CRED

- Chile, Colombia, Jamaica, Panama
  - EM-DAT, *DesInventar*
 - previously analyzed by *La Red*

Example: EM-DAT

DisNo	Country	DisType	Year	Month	Day	Killed	Injured	Home-less	Affected	Damage-US(000's)	Location	PrimarySource
19800033	Afghanistan	Flood	1980	3		0	0	0	30,000		Southern provinces	US Gov:OFDA
19800096	Algeria	Earthquake	1980	10	10	2,633	8,369	443,000	478,948	5,200,000	El Asnam	US Gov:OFDA
19800111	Algeria	Earthquake	1980	12	7	2	90				El Asnam area	UN:OCHA
19800035	Argentina	Flood	1980	3	15	10			4,000		Northwestern	US Gov:OFDA
19800042	Argentina	Flood	1980	5	1	31			36,000		Buenos Aires province	US Gov:OFDA
19800286	Australia	Wind storm	1980	1		0				6,966	New South Wales Coast	Government
19800287	Australia	Wind storm	1980	2		0				40,026	Pilbara	Government
19800288	Australia	Wild fire	1980	2		0	40			25,975	Adelaide Hills (South)	Government
19800289	Australia	Wind storm	1980	2		0				4,605	Pilbara	Government
19800290	Australia	Wind storm	1980	12		0				13,932	Brisbane, Queensland	Government
19800291	Australia	Wind storm	1980	12		0				29,399	Brighton, Queensland	Government
19800233	Austria	Flood	1980	10	13	0					Styria province (South region	UN:OCHA:lib/ver
19800001	Azores	Earthquake	1980	1	1	69	600	0	21,300	5,000	Terceira, San Miguel, Santa I	US Gov:OFDA
19800038	Bangladesh	Wind storm	1980	4		11	50		1,000			US Gov:OFDA
19800073	Bangladesh	Flood	1980	8		655			10,000,000	150,000	North Western	US Gov:OFDA
19800306	Barbados	Wind storm	1980	8	4	0	7	5,000		1,500		UN:OCHA:lib/ver
19800004	Bolivia	Flood	1980			0			15,000		Beni department	US Gov:OFDA
19800008	Brazil	Flood	1980	1		17			1,000		Minas Gerais state	US Gov:OFDA
19800031	Brazil	Flood	1980	2		50			270,000		North, Central	US Gov:OFDA
19800054	Brazil	Wind storm	1980	6	25	15	48				Irati town	US Gov:OFDA
19800114	Burkina Faso	Drought	1980			0						UN:OCHA
19800209	Canada	Drought	1980			0				1,250,000	Prairie provinces	Government
19800211	Canada	Wild fire	1980	6		0		0	5,000		Red Lake, Ontario	Government
19800023	Chad	Famine	1980			0	0		600,000			US Gov:OFDA
19800050	China, P Rep	Flood	1980	6		65					Anhui province	US Gov:OFDA
19800056	China, P Rep	Flood	1980	7		38	100		40,000		Sichuan province	US Gov:OFDA

Why is disaster loss data important?

- Assessments guide relief and reconstruction
- Historical databases can provide (partial) information on characteristics of disaster risks
- Provides outcome and/or vulnerability data for risk assessments
- Constitutes an inventory of losses for assessing disaster impacts on development
- Allows analysis of trends and provides a metric for success of loss reduction efforts
- Could be used as a baseline for climate change adaptation

Why is disaster loss data important?

✳ Disaster research

Reported Hydro-Meteorological Disasters
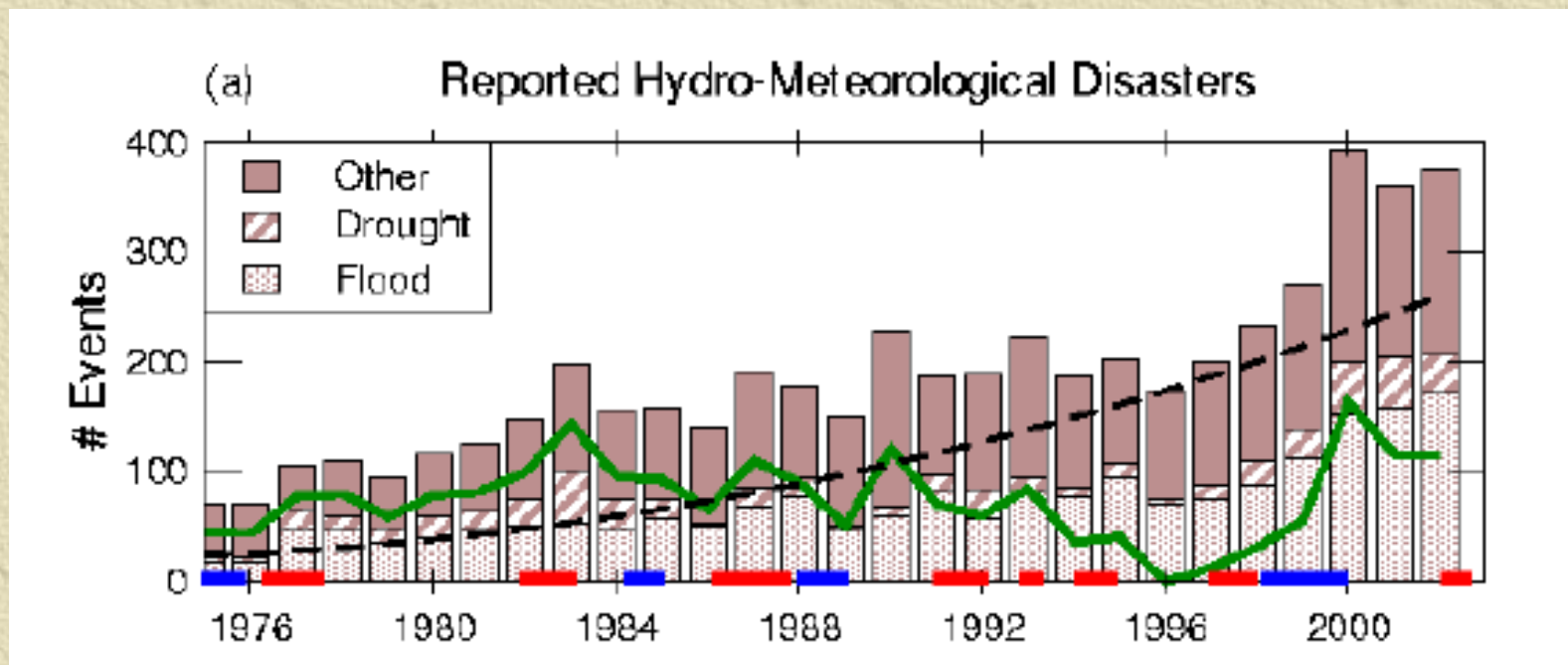
Green line = detrended disaster frequency (EM-DAT)

Red line = El Niño periods

Blue line = La Niña periods
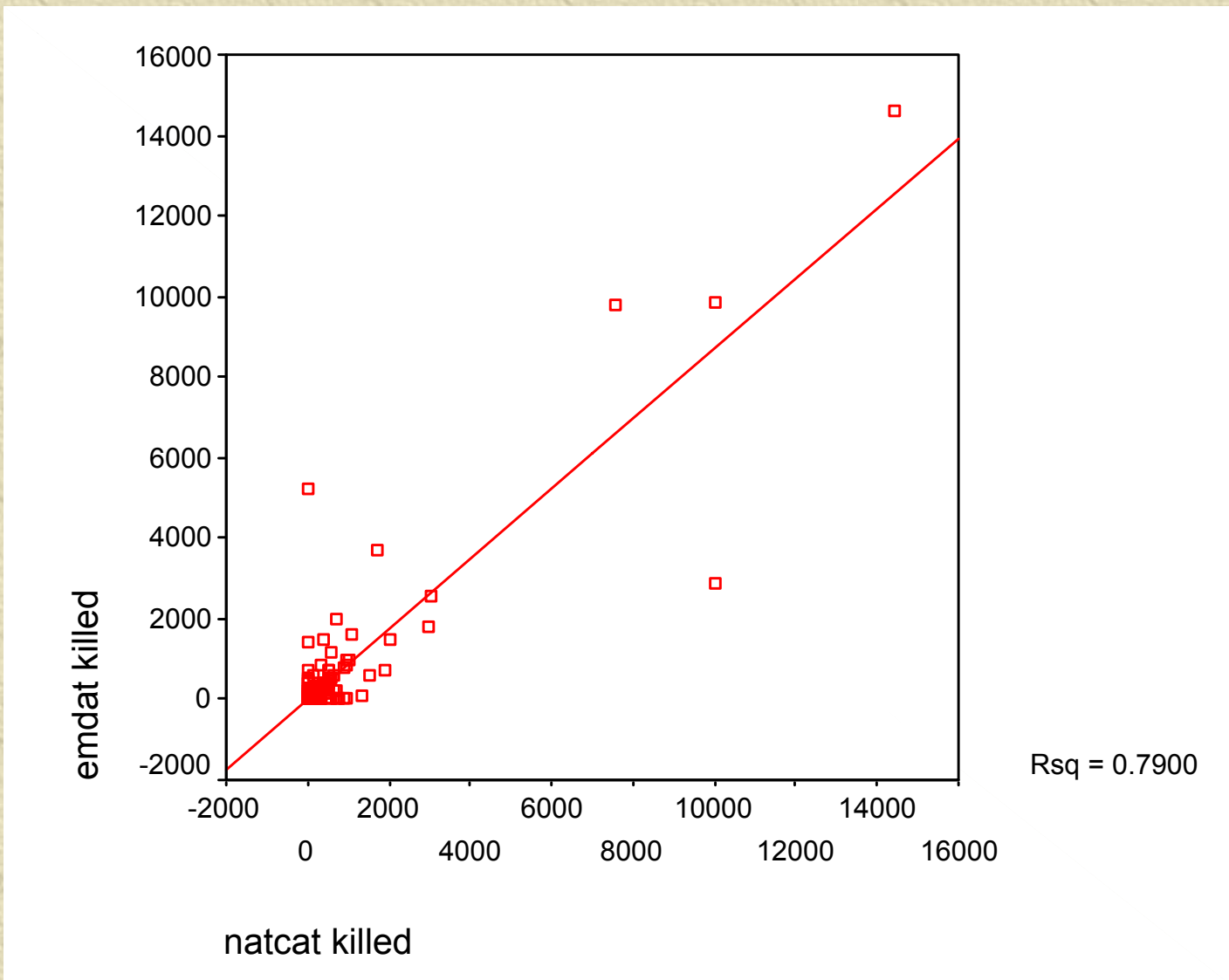
Global databases: Disaster frequency

Country	Emdat	NatCat	Sigma	Total Unique Events
Honduras	14	20	8	24
India	142	191	115	238
Mozambique	12	13	4	18
Vietnam	54	81	35	90
TOTAL	222	305	162	370
%	60	82	44	100

Disaster: ≥10 dead/missing or ≥100 affected

Common set of hazards (drought excluded)

Same period

EM-DAT/NatCat, number killed
all events, raw data (not significant)

Rsq = 0.7900

natcat killed

EM-DAT/NatCat, number killed
all events, square roots (significant)
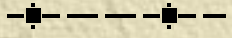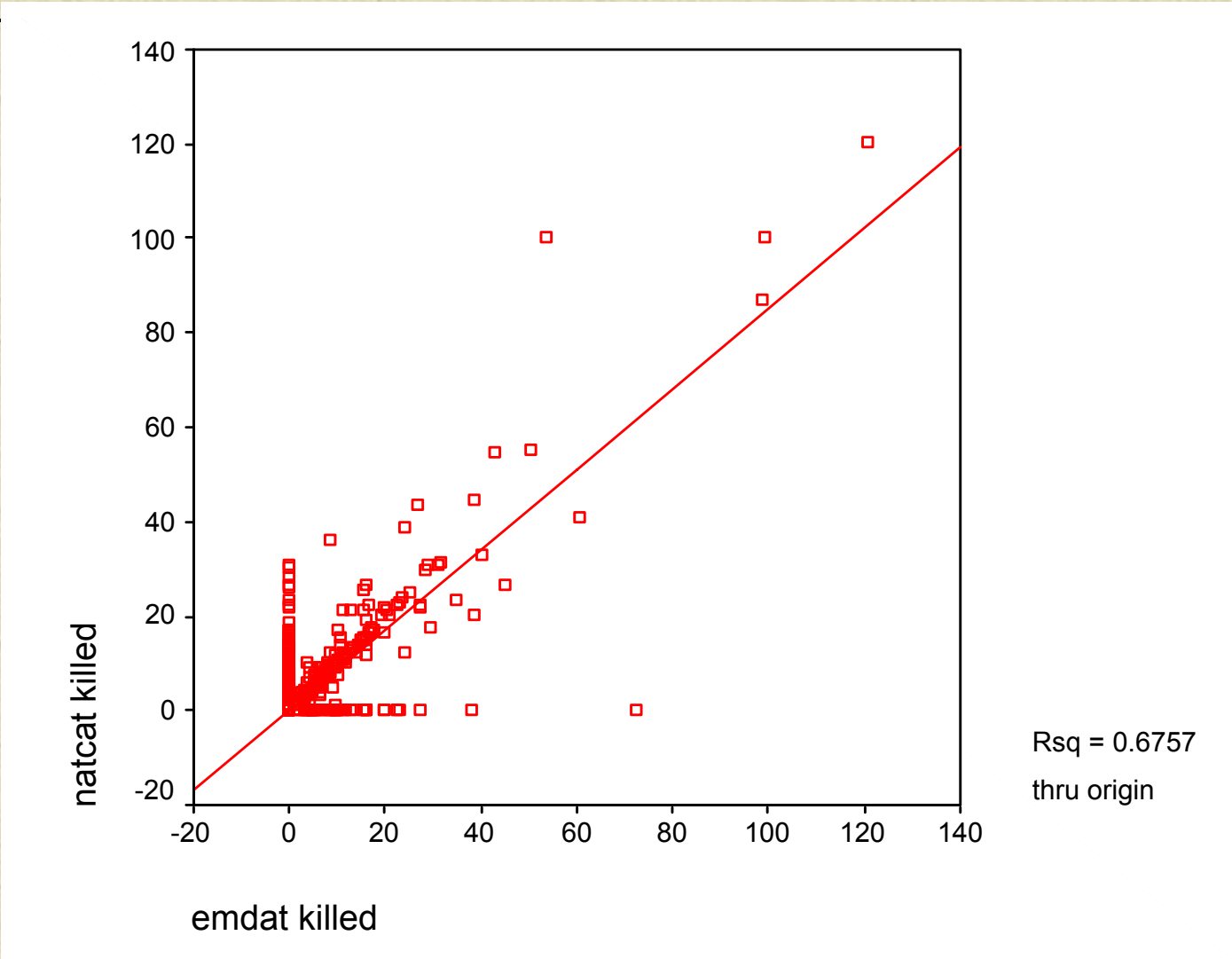
Rsq = 0.6757

thru origin

Economic losses

* Missing values
* Inconsistent methodology

Hazard	Year	Country	Social Sectors (10^6 US$)	Infrastructure Sectors (10^6 US$)	Productive Sectors (10^6 US$)	Environment and Other (10^6 US$)	TOTAL (10^6 US$)	TOTAL (10^6 US$)
Earthquake	1999	Turkey (Marmara)	2,187	739	1,850	0	4,776	8,500
Earthquake	2001	India (Gujarat)	1,302	334	440	55	2,131	4,600
Earthquake	2001	El Salvador	472	398	275	68	1 212	1,300
Hurricane	2000	Belize	38	44	165	407	655	265
Flood	2000	Mozambique	69	133	281	5	488	15
		TOTAL	4,068	1,648	3,011	535	9,262	14,680
							(ECLAC & IBRD)	(EM-DAT)

* Relief costs

National level: Dead and missing
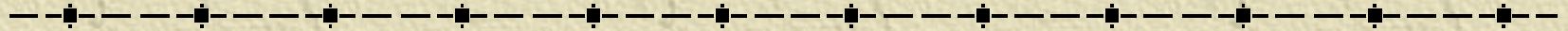
|	EM-DAT	DesInventar total	DesInventar matching	DesInventar non-matching (meet criteria)	DesInventar "small"	Percent DesInventar "small"
Panama	2	46	2	10	34	74
Jamaica	185	288	114	51	123	43
Chile	1050	1877	489	389	999	53
Colombia*	29900	34342	29703	3326	1313	4
TOTAL	31137	36553	30308	3776	2469	7

*Includes Ruiz eruption (appx. 23,000)

Disaster: ≥10 dead/missing or ≥100 affected

Same period

DesInventar entries aggregated for comparability

Areas of improvement

- Reconciliation of existing data
- National level databases
- Standardized assessment methods
- Improved data capture (e.g. economic losses and relief costs)
- GLIDE indexing, on-going and retroactive

Hazard code   Serial number

FL-2002-0499-PHL

Year   ISO country code
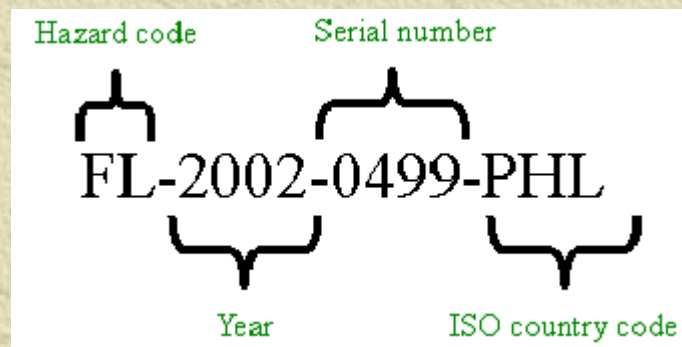
On-going and planned activities

- Disaster Data Consortium
- www.proventionconsortium.org/toolkit
- www.glidenumber.net
- database comparative analyses
- adaptation baselines