





NatCatSERVICE®


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Munich Re America

One of the world's largest databases on natural catastrophes



NATCATSERVICE
Natural catastrophe know-how for
risk management and research



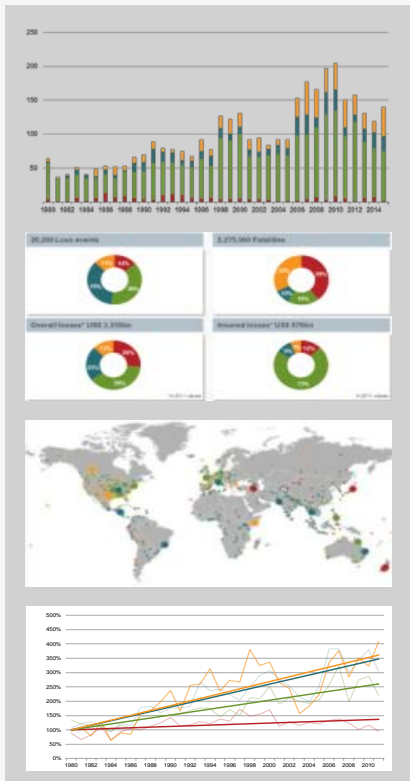
Munich RE 

The Database Today

- From 1980 until today all loss events; for USA and selected countries in Europe all loss events since 1970.
- Retrospectively, all great disasters since 1950.
- In addition, all major historical events starting from 79 AD – eruption of Mt. Vesuvius (3,000 historical data sets).
- **Currently ca. 36,000 data sets**

MR NatCatSERVICE

Downloadcenter for statistics and analyses on natural disasters



The downloadcenter provides **free** access to:

- Annual statistics
- Long-term statistics
- Information on significant natural disasters
- Focus analyses
- NatCatSERVICE methodology, info brochure
- Publication Topics Geo

www.munichre.com/natcatservice/downloadcenter/en

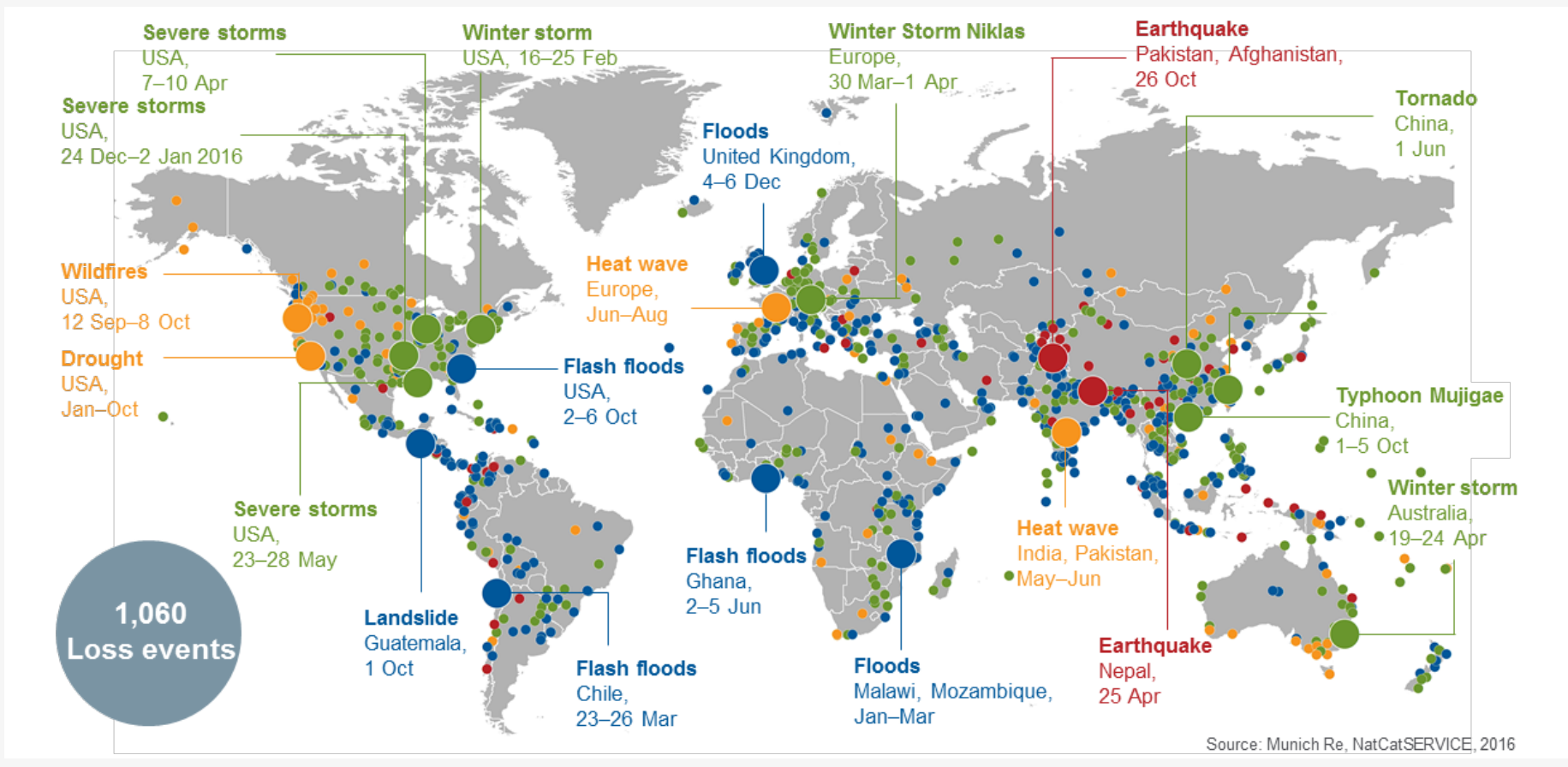
Database Structure – Peril Families

(updated structure following IRDR DATA project)

Family	Main event	Sub Peril	
Geophysical	Earthquake	Earthquake (ground shaking)	Winter storm (i.e. extra-trop. cyclone)
	Volcanic eruption	Fire following	Tempest / severe storm
	Mass movement dry	Tsunami	Hail storm
Meteorological	Tropical storm	Volcanic eruption	Lightning
		Ash cloud	Tornado
		Subsidence	Local windstorm (i.e. orographic storm)
		Rockfall	Sandstorm / dust storm
Hydrological	Extra-tropical storm	Landslide (dry)	Blizzard / snowstorm
	Convective storm	Heat wave	Storm surge
	Local windstorm	Cold wave / frost	General flood
Climatological	Flood	Extreme winter conditions	Flash flood
	Mass movement wet	Wildfire	Glacial lake outburst
	Extreme temperature	Unspecified	Subsidence
	Drought	Drought	Avalanche
	Wildfire		Landslide (wet)

Loss Events Worldwide 2015

Geographical overview



○ **Loss events**

● **Geophysical events**
(Earthquake, tsunami, volcanic activity)

● **Hydrological events**
(Flood, mass movement)

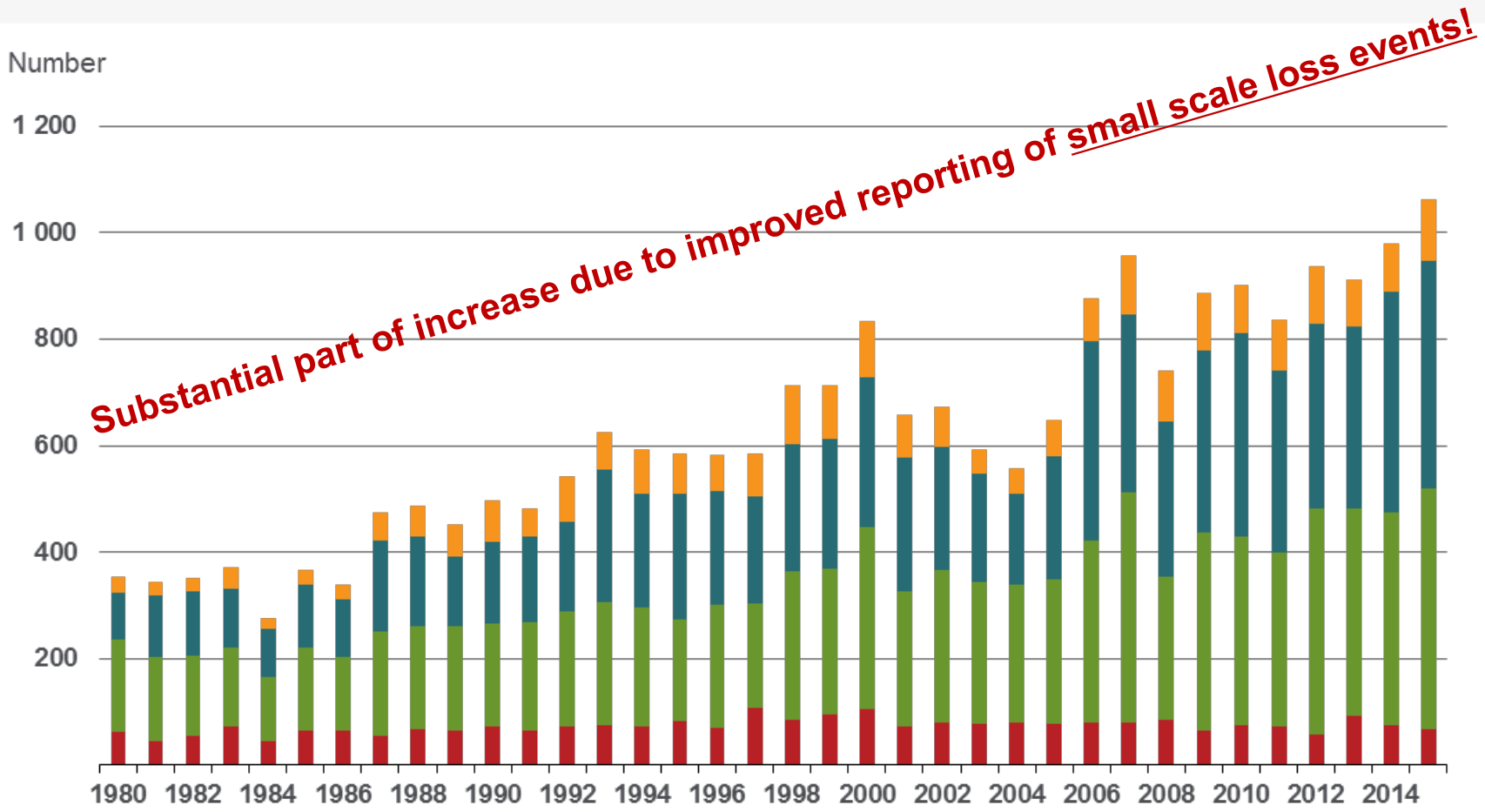
○ **Selection of catastrophes**
Overall losses ≥ US\$ 1,500m

● **Meteorological events**
(Tropical storm, extratropical storm, convective storm, local storm)

● **Climatological events**
(Extreme temperature, drought, wildfire)

Loss Events Worldwide 1980 – 2015

Number of events



■ Geophysical events
(Earthquake, tsunami,
volcanic activity)

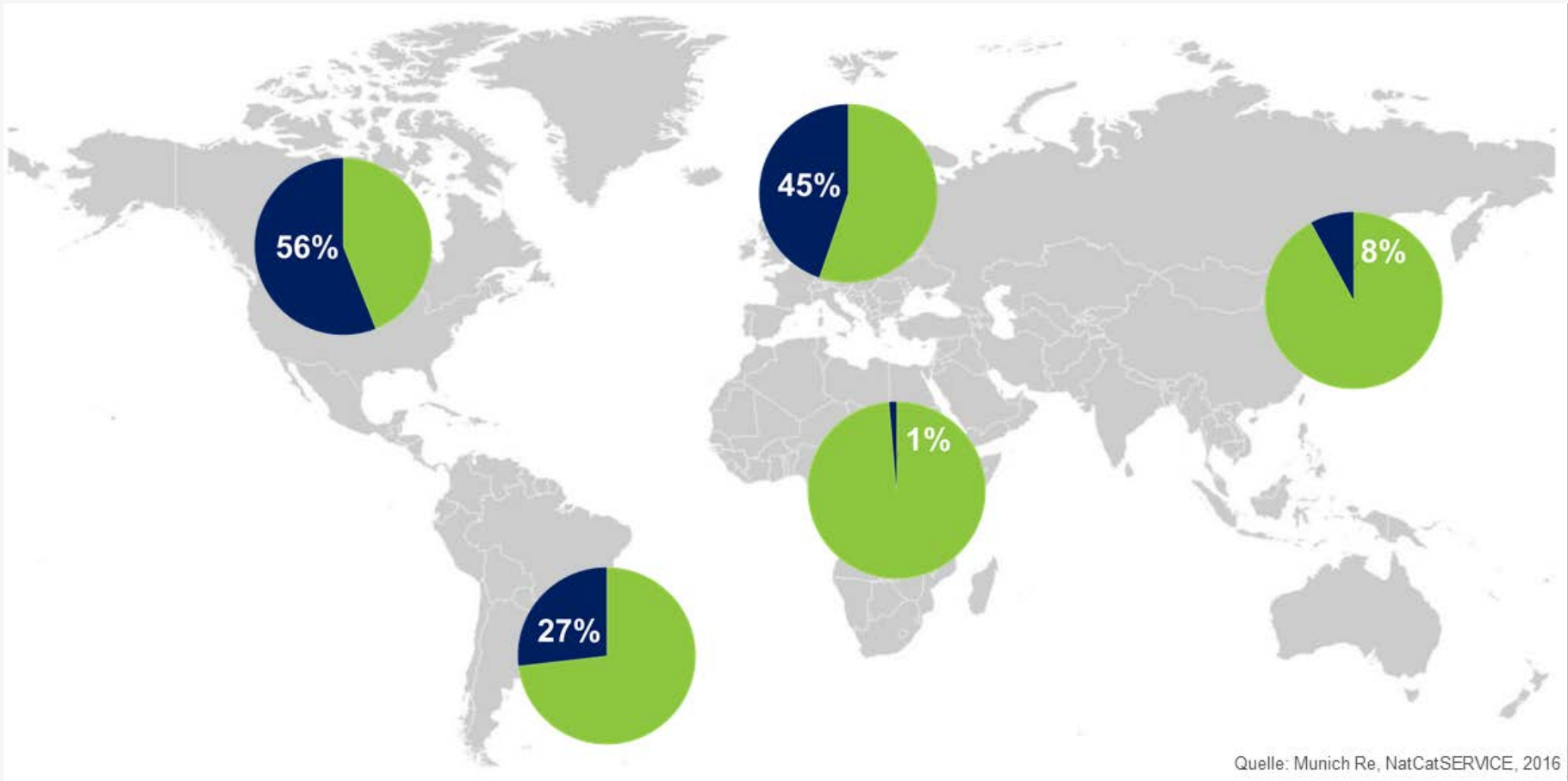
■ Meteorological events
(Tropical storm, extratropical
storm, convective storm,
local storm)

■ Hydrological events
(Flood, mass
movement)

■ Climatological events
(Extreme temperature,
drought, forest fire)

Loss Events Worldwide 2015

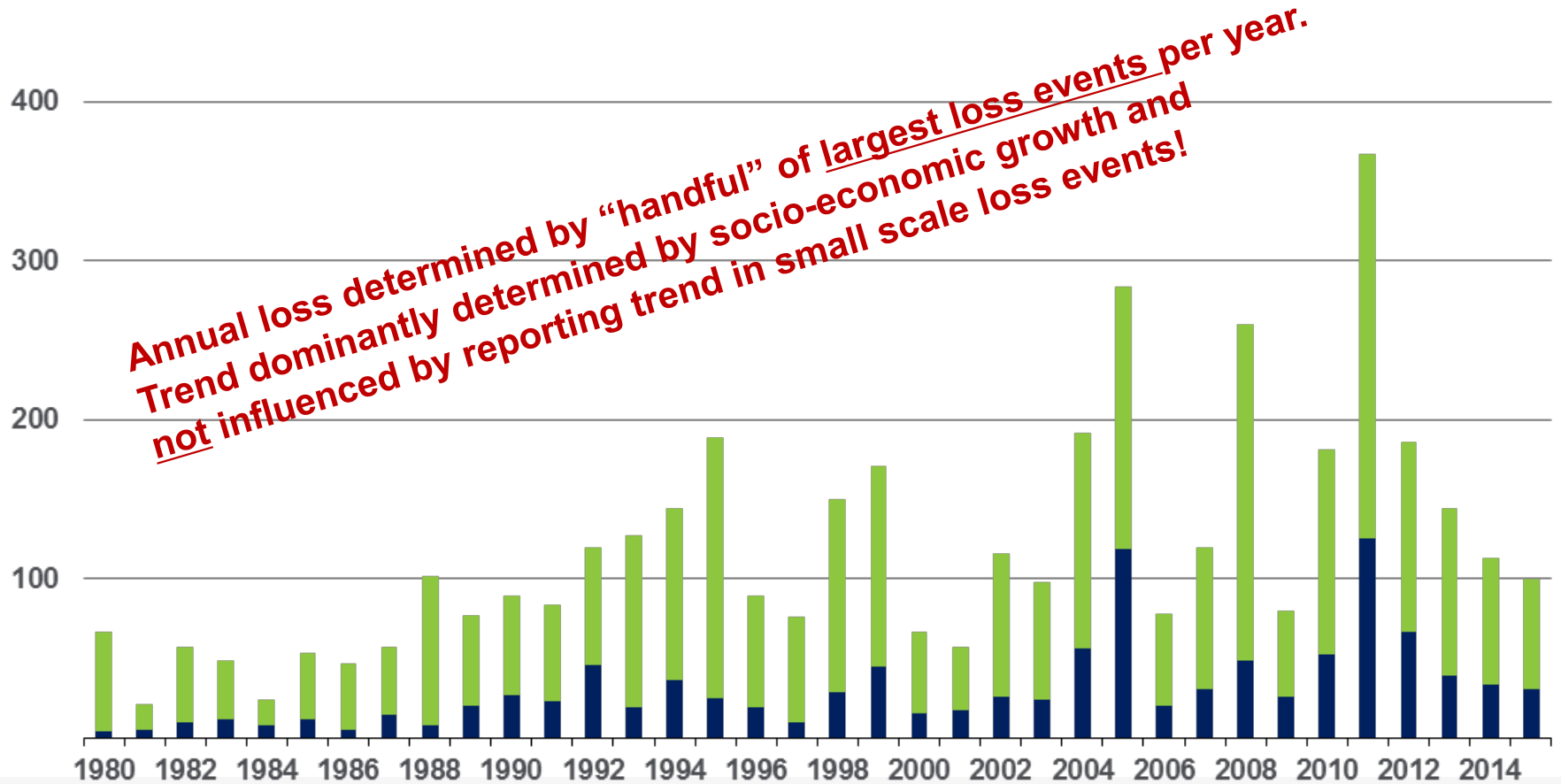
Insured share on overall losses per continent



 Overall losses  Insured share on overall losses per continent

Loss Events Worldwide 1980 – 2015

Overall and insured losses



Overall losses (in 2015 values)*

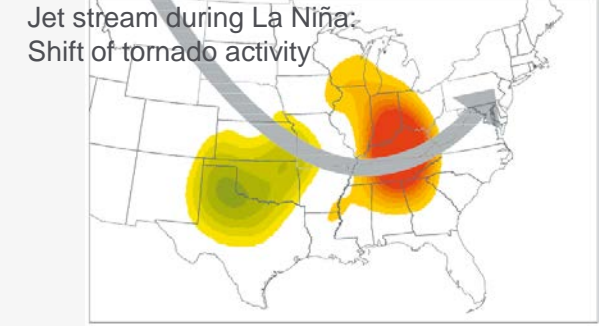
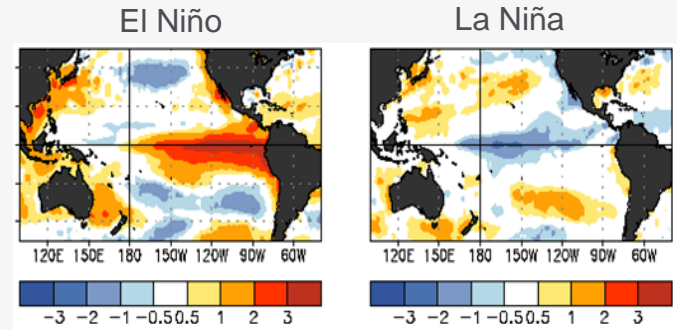
Insured losses (in 2015 values)*

*Losses adjusted to inflation based on country CPI considering ROE of LCU and US\$

Risk ~ Hazard x Vulnerability x Exposure

All three factors can and will change over time!

Examples of Drivers of NatCat Losses



Exposure:

- Inflation
- Population increase/shift
- Increase of wealth
- Increase of building stock

Vulnerability:

- Building codes
- Improved materials
- Expensive materials
- Flood zones

Hazard:

- Natural variability
(rather short time scales)
- Climate change
(long time scales)

NatCatSERVICE

Data Maintenance	Loss Estimation	Loss Normalization	Analytics
<p>Sourcing of event information</p> <p>Geo-coding</p> <p>Quality control</p>	<p>Insured loss information:</p> <ul style="list-style-type: none"> - Internal / external sources <p>Economic loss estimation:</p> <ul style="list-style-type: none"> - Insurance penetration data - Home values / building & construction cost data - Agricultural data - Infrastructure information - etc. <p>Loss estimation procedures</p>	<p>Normalization procedures</p> <ul style="list-style-type: none"> - CPI adjustment - GDP normalization - GCP normalization <p>Provision and preparation of socio-economic proxy data</p> <p>CatClassification</p> <ul style="list-style-type: none"> - Applying income group data on normalized loss data to assign a CatClass to each event 	<p>Statistics & charts</p> <p>Trends & correlations</p> <p>Customized analyses</p> <p>Explanations & illustrations</p> <p>(Re-)Presentation of NCS</p> <ul style="list-style-type: none"> - Publications, ppt, internet - Work projects, cooperations

Five levels of information quality:

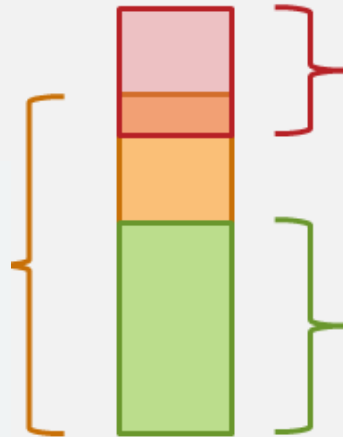
1. Info on **insured loss** in industrial countries, compiled by institutions such as *PCS*, *Perils AG* or various *Insurance Associations*
2. Partial info on **insured loss** in developing markets / countries
3. Info on total **economic loss**, often from governments (no info on insured loss)
4. Partial info on **economic loss** (e.g. impact on agriculture, infrastructure etc.)
5. Only **description of event** (e.g. number of houses damaged / destroyed by flood, storm, earthquake etc.)

Economic Loss Estimation

Based on insurance market loss information (info level 1)

Economic loss estimation based on insured loss data is of best quality!
...and easiest way to scale up

2. Up-scaling of insured loss based on insurance penetration & take-up rates information

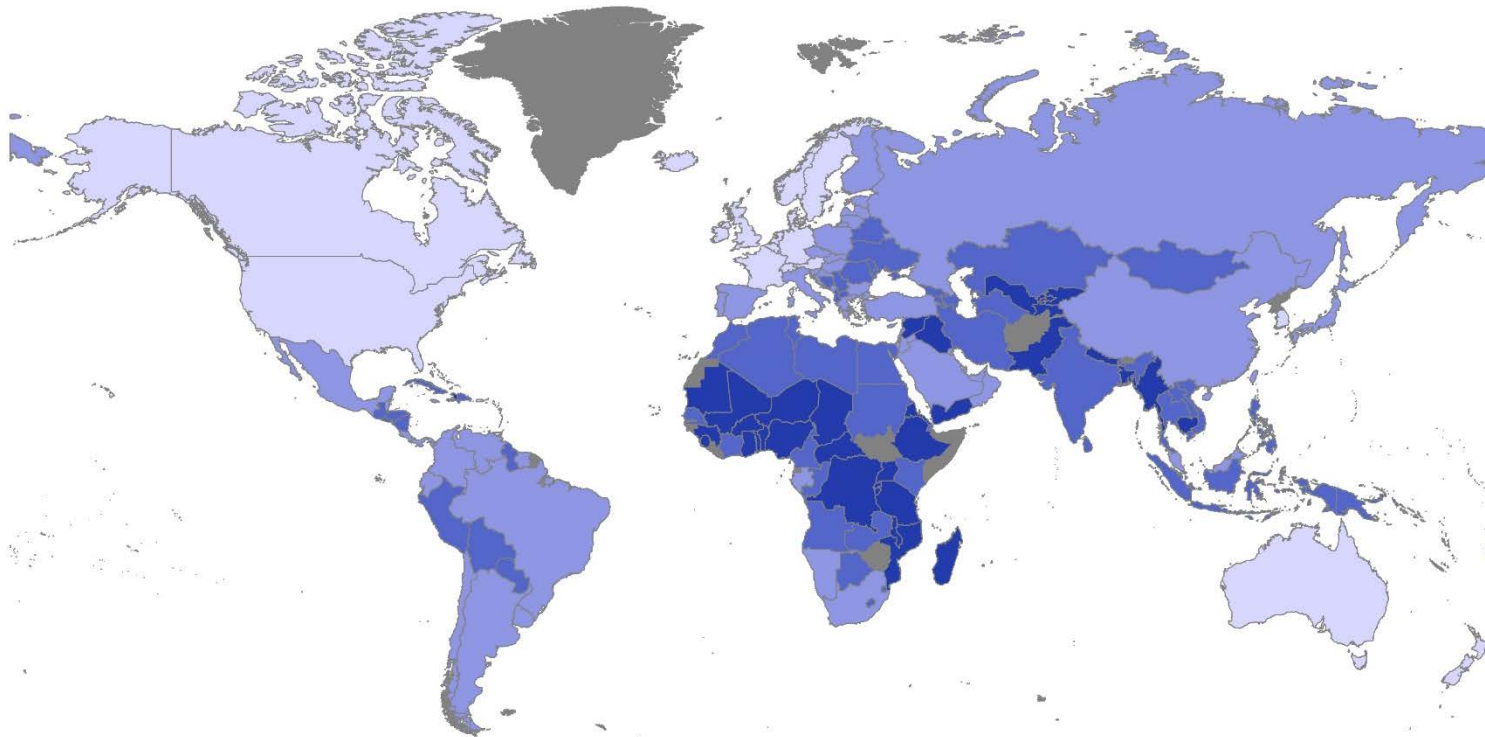


3. Modulation of economic loss based on event-specific information and/or NatCatSERVICE experience

1. Insured loss info

Insurance penetration worldwide 2014

Defined by Munich Re



Insurance penetration per country

Classification per capita by property insurance premium (non-life including health)

-  Highly insured (>1,000 US\$)
-  Well insured (101 – 1,000 US\$)
-  Basically insured (10 – 100 US\$)
-  Inadequately insured (<10 US\$)
-  No data