



GREENHOUSE 2011, CAIRNS

MANAGING THE UNAVOIDABLE:

NATURAL CATASTROPHES

Data, trends, analysis

Sandra Schuster

Who is Munich RE?

- Insurer of Insurances
- Founded 1880
- The world's largest re-insurer
- Premium income ca. €22 bn
- Leading role in insurance of natural catastrophes



Geo Risks Research of Munich Re –
Analyses of natural disasters since 1974

Core business of insurance industry is quantification of risks!



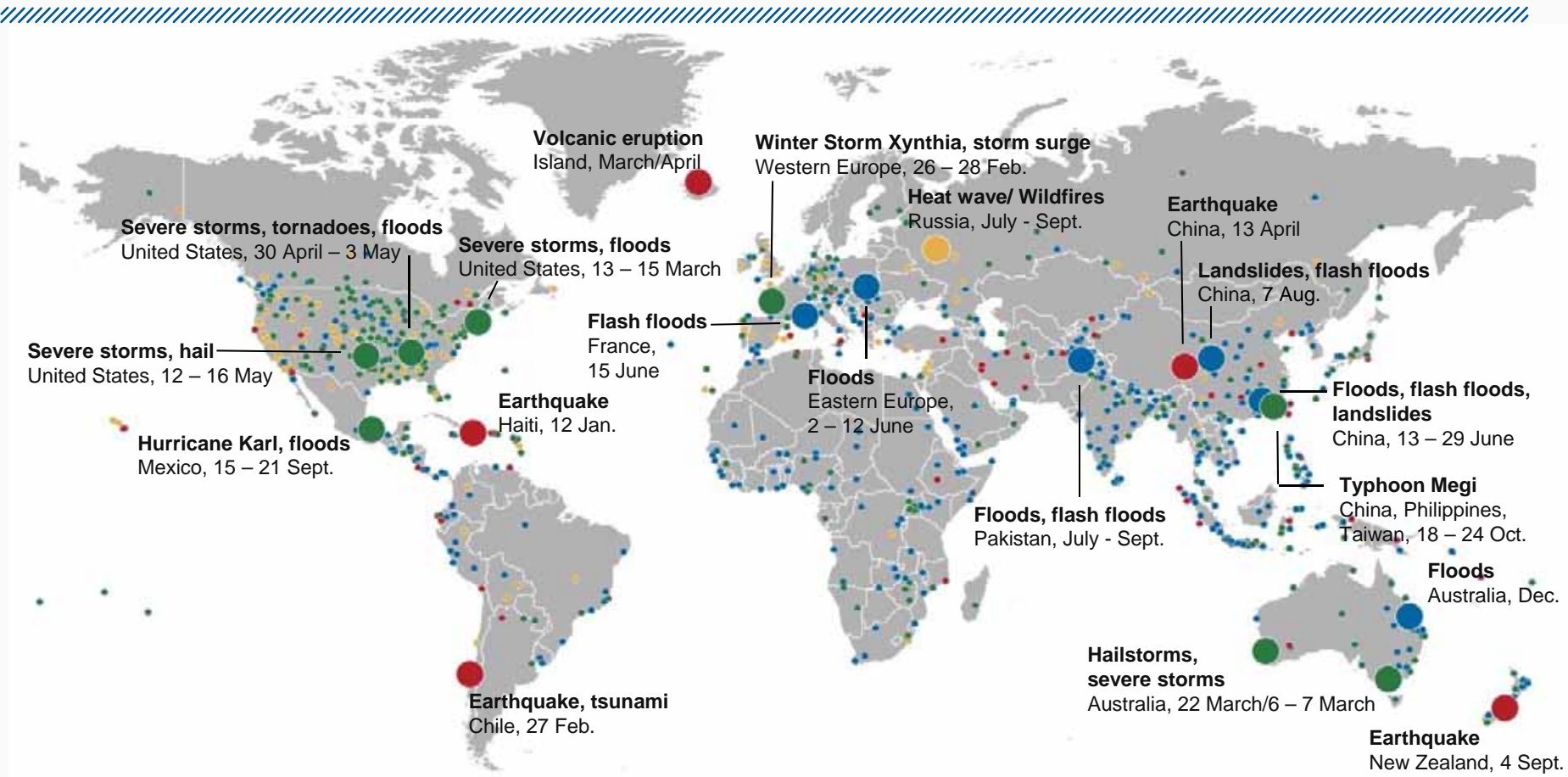
The last years have brought records in weather disasters in respect to:

- Intensities
- Frequencies
- Damages and losses

-
- from 1980 until today all loss events
 - retrospectively, all “great” natural catastrophes since 1950
 - all major events starting from 79 AD – eruption of Mt. Vesuvio (3,000 historical data sets)
 - currently more than 27,000 events documented
 - The Munich Re NatCatSERVICE records up to 1,000 loss events per year.

Natural Catastrophes 2010

960 loss events



○ **Natural catastrophes**

○ **Selection of significant loss events (see table)**

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

● **Meteorological events**
(storm: tc, hail, etc)

● **Hydrological events** (flood incl flash flood, wet mass movement incl. landslide)

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

Wildfires in Russia: July to Sept

Flooding Pakistan: July to Sept

Winter storm Xynthia - Spain, France, Germany: February

Fatalities	56,000
Overall losses (US\$ m)	3,600
Insured losses (US\$ m)	20
Number of homes destroyed	2,500
Burned area *	>12,500 km ²

* Black Saturday: 4,300 km²

Fatalities	1,760
Homeless	6 million
Overall losses (US\$ bn)	9.5
Insured losses (US\$ m)	100
Number of homes destroyed/damaged	approx. 1.5 million
Flooded fields, one-fifth of the country was flooded	>69,000 km ²

Overall losses (US\$ m)	6,100
Insured losses (US\$ m)	3,100

2010 hurricane season was most active, however, the losses inflicted were only moderate as very few made landfall.

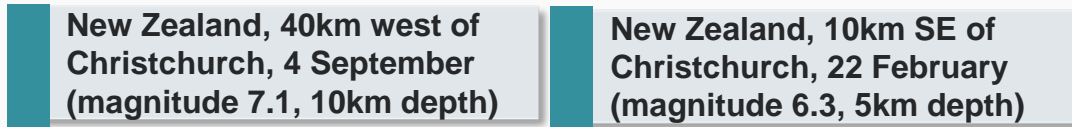
2010 (2011?): a year of earthquakes

2010 fatalities: 295,000 second highest death toll since 1980



Second deadliest EQ with 222,570 fatalities

Second costliest EQ with US\$ 8bn insured losses

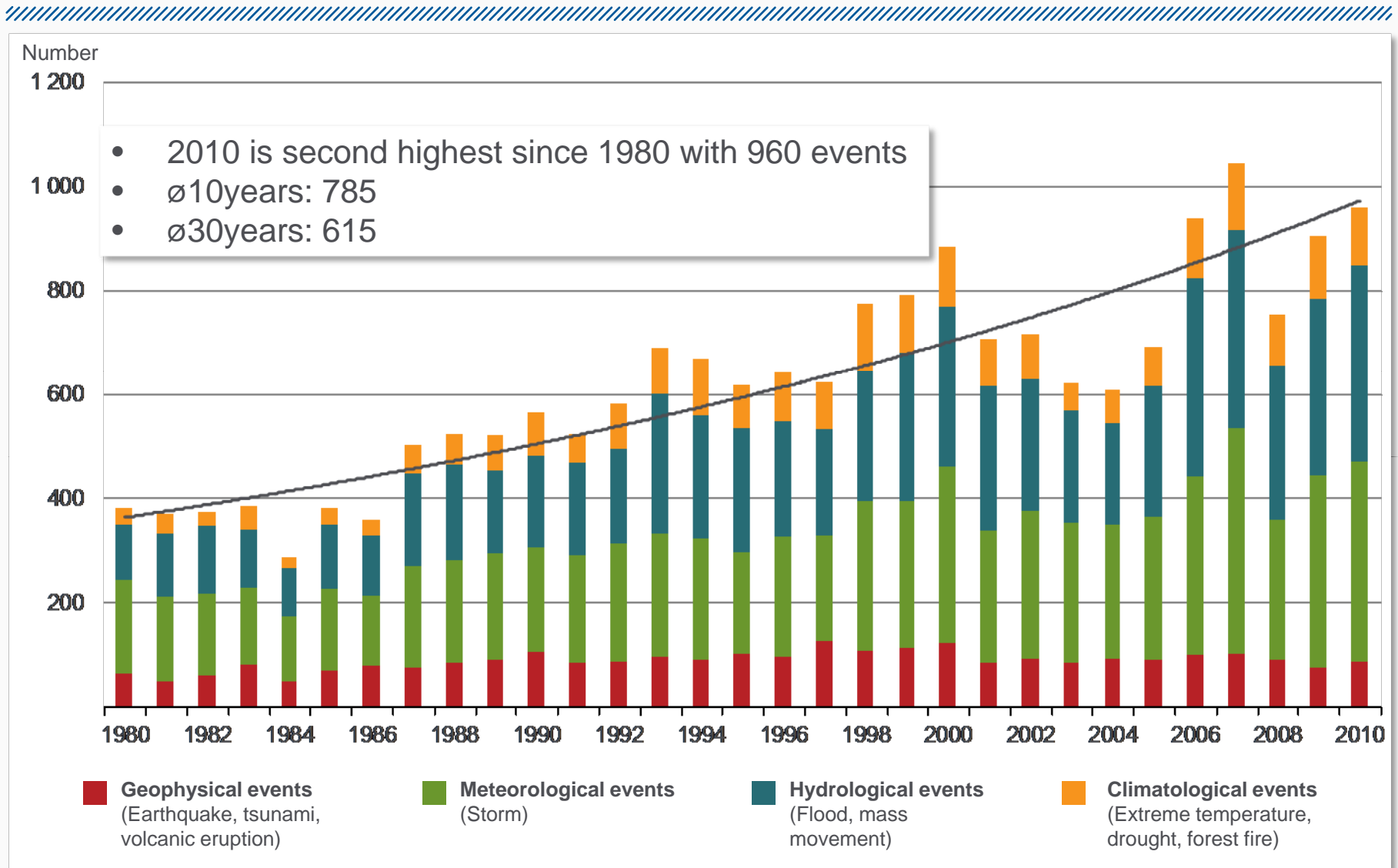


Costliest insured natural catastrophe in NZ history.

Fatalities	-	Fatalities	165 +
Injured	2	Overall losses (US\$ bn)	10-15 Est. NZ Treasury
Overall losses (US\$ bn)	6.5	Insured losses (US\$ bn)	6 –12 MKT Est. Only
Insured losses (US\$ bn)	5		

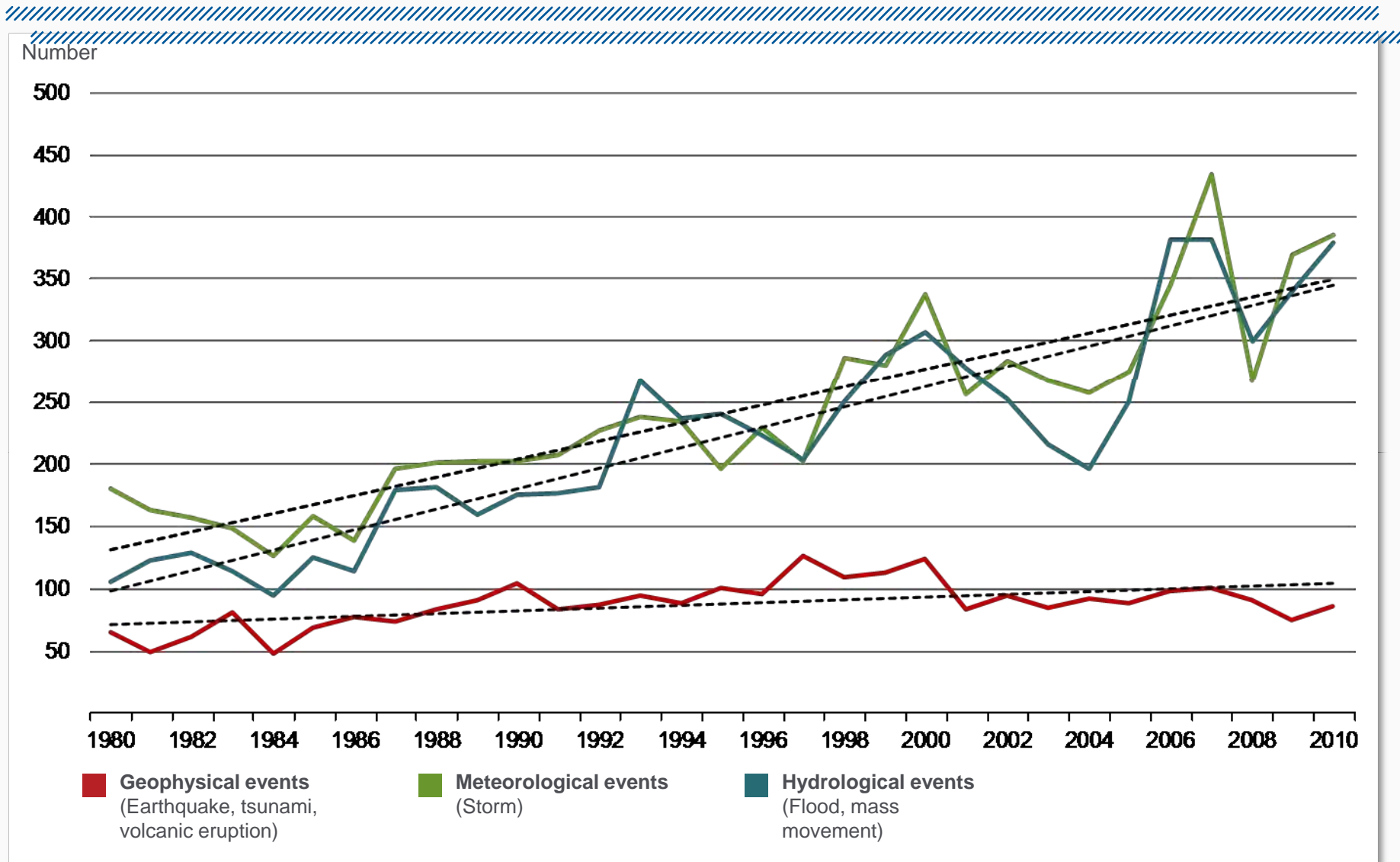
Natural catastrophes worldwide 1980 – 2010

Number of events with trend



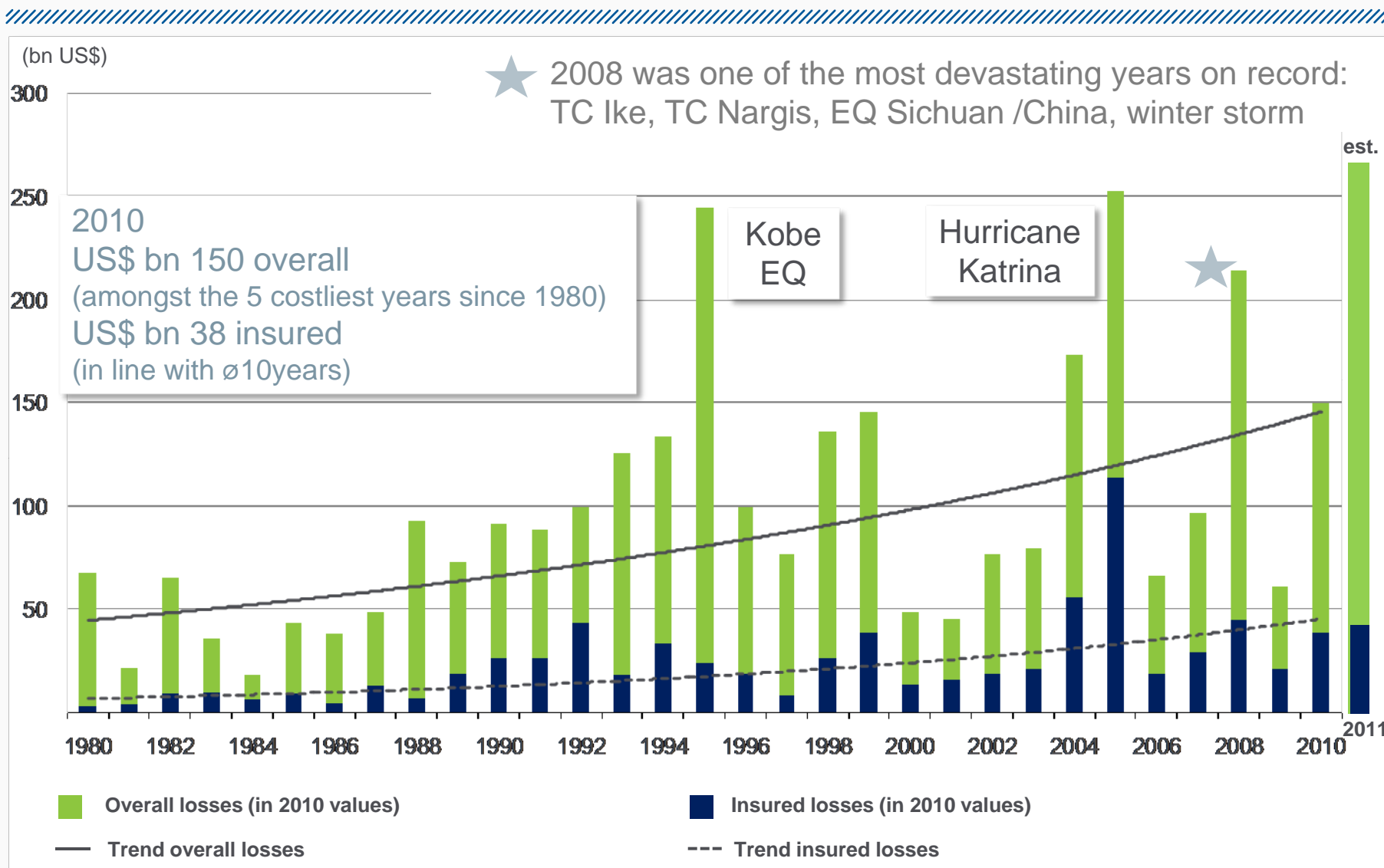
Natural catastrophes worldwide 1980 – 2010

Number of events by peril with trend



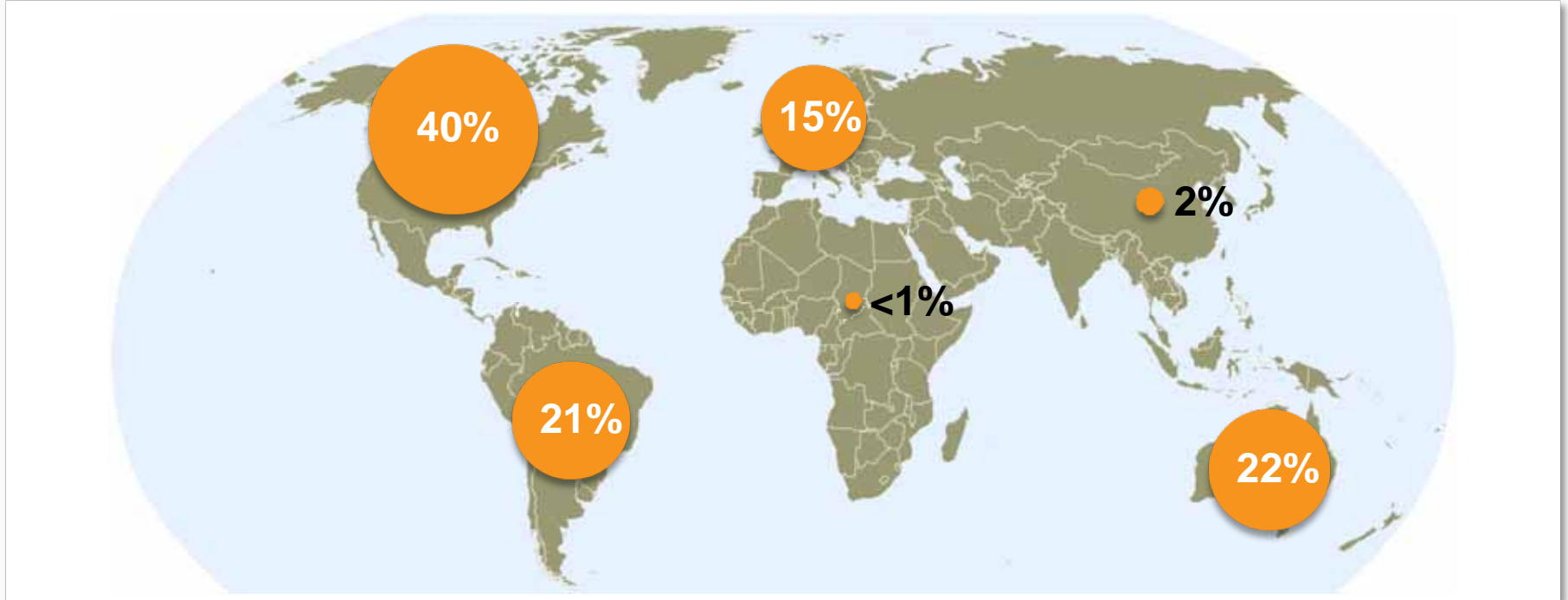
Natural catastrophes worldwide 1980 – 2010

Overall and insured losses with trend



Natural catastrophes 2010

Insured losses US\$ 38bn - Percentage distribution per continent

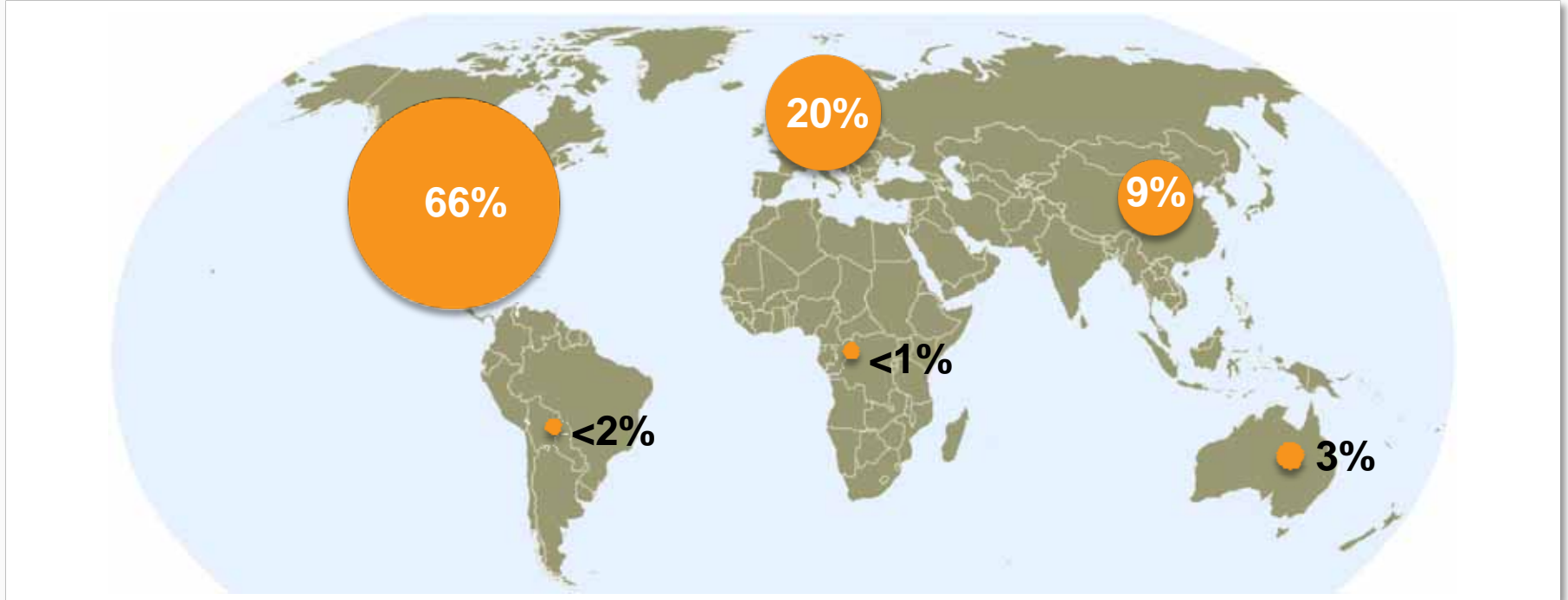


Continent	Overall losses [US\$ m]	Insured losses [US\$ m]	Fatalities
Africa	110	Minor losses	1,300
America (North and South America)	75,000	23,600	225,000
Asia	36,000	900	12,400
Australia/Oceania	16,000	8,200	40
Europe	22,000	5,600	56,500

11% of premium income was paid by MR for natural catastrophes in 2010
(avg. 6-7% in normal year!)

Natural catastrophes 1980 - 2010

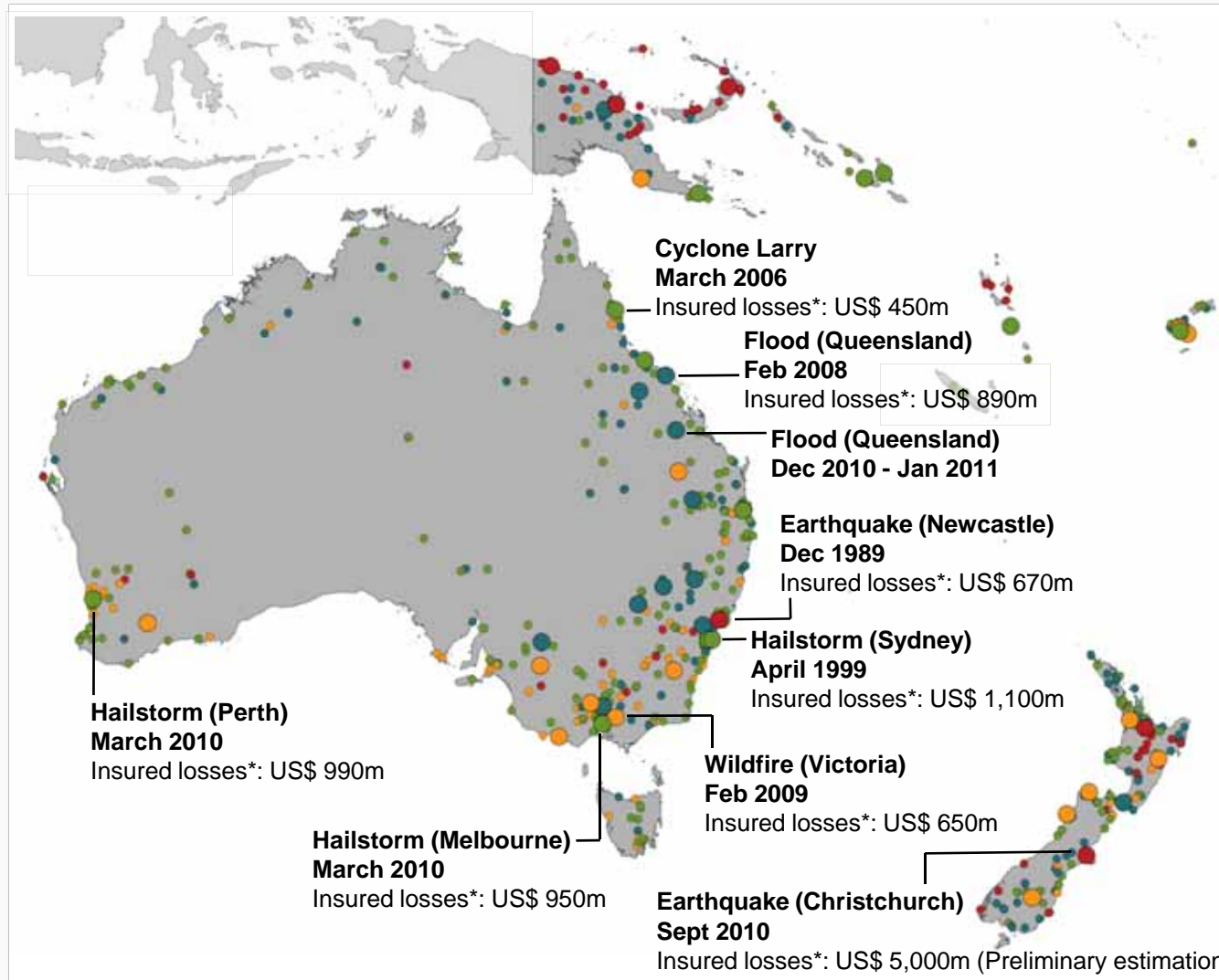
Insured losses US\$ 740bn - Percentage distribution per continent



Continent	Insured losses* [US\$ m]
Africa	2,000
America (North and South America)	496,000
Asia	66,000
Australia/Oceania	23,000
Europe	148,000

Natural catastrophes in Australia/Oceania 1980 – 2010

Geographical overview in US\$



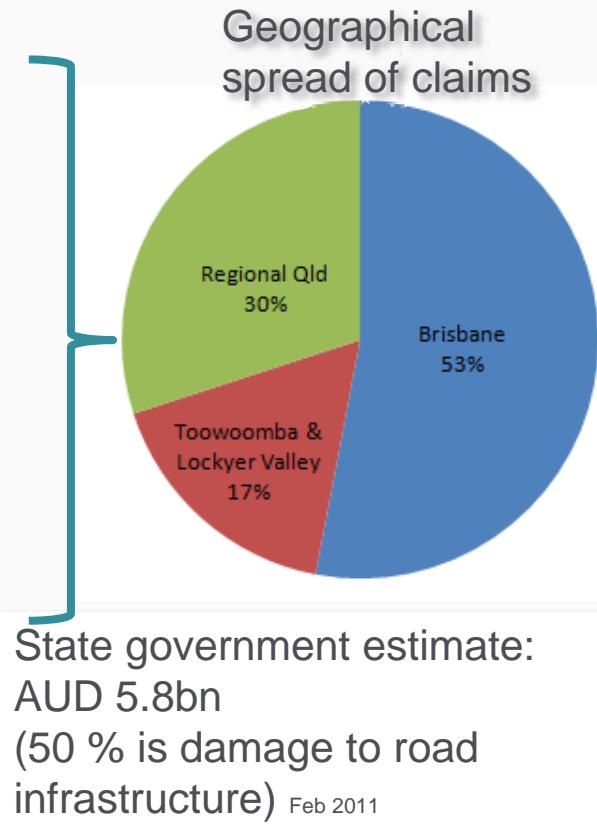
- Small-scale¹/Moderate¹/Severe¹ loss events
 - Major¹/Devastating¹/Great¹ Catastrophes
- [Overall losses of US\$ >200m (in 2010 values) and/or >100 fatalities]

- Geophysical events (Earthquake, tsunami, volcanic eruption)
- Meteorological events (Storm)
- Hydrological events (Flood, mass movement)
- Climatological events (Extreme temperature, drought, forest fire)

¹Munich Re catastrophe categories
* Losses in original values

Recent Disaster Statistics - estimates

Event	Location	Preliminary insured losses (AUD m)	Number of Claims
QLD floods (Dec 19-28)	Central & Coastal (Rockhampton, Bundaberg, Bowen (incl. some of the mining losses))	414m (includes some mining losses)	14,588
QLD floods (Jan 11-13) • Costliest floods in Australia since 1980!	Toowoomba, Lockyer Valley, Ipswich, Brisbane (CBD)	1,700m	34,021
QLD Tropical Cyclone Yasi (Feb 3)	North Queensland	868m (TC Larry 540m)	59,990
VIC floods (Jan 12-15)	Victoria	86m	6,609
VIC severe Storm Melbourne & suburbs (Feb 3-5)	Victoria, Melbourne (CBD)	299m	38,984
WA Feb Bushfires Perth and surroundings	Perth, WA	35m	410



Australia 2010

Hailstorms

Melbourne, 6th March 2010

- Grapefruit size hail
- Wind gusts of more than 100km/h
- 45mm of rain in 30min
- Over 6000 requests for assistance
- AUD 1,044m; 130,000 claims
- Com/Motor/Home 10%/45%/45% (MR estimates)

Perth, 22nd March 2010

- Tennis ball size hail
- Wind gusts of more than 120km/h
- 63mm of rain in 2h
- Over 3000 requests for assistance
- AUD 1,053m; 150,000 claims
- Com/Motor/Home 5%/55%/40% (MR estimates)

What do we know about Hail?

- Very few studies globally as to how hail risk will change
- Sydney study: increase in frequency & intensity of hailstorms
- Australian wide study: similar increase in hail frequency along eastern seaboard / decrease in the south
- Little work has been done to quantify the relation of hailstorms and ENSO
- Comprehensive and detailed analysis of past and future hailstorms is crucial in order to improve risk management strategies

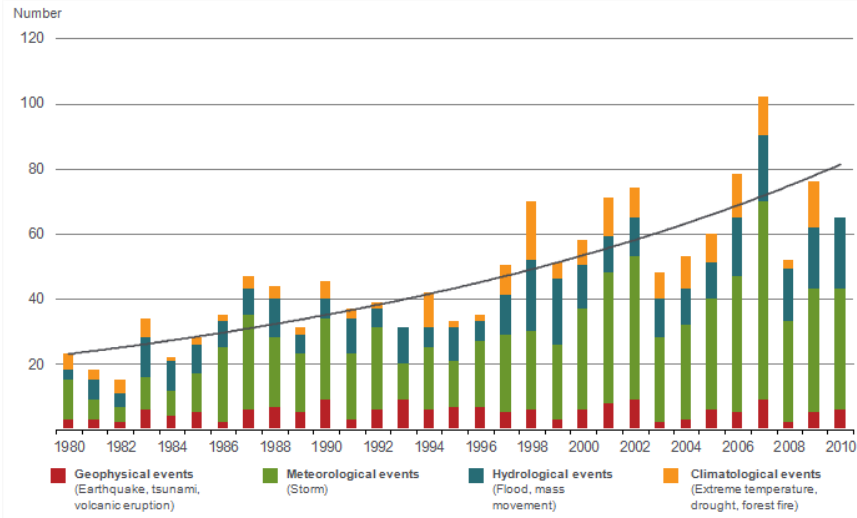
With 9 out of the largest 27 losses* in Australia, Hail presents the most underestimated insured peril!

* greater than AUD 400m

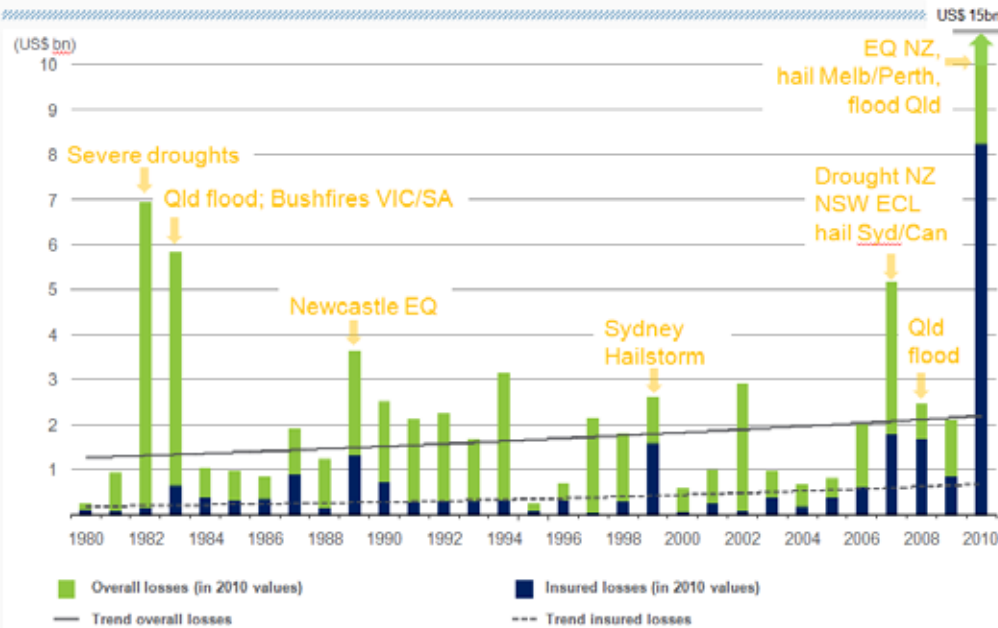
Natural catastrophes in Australia / Oceania 1980 – 2010

Number of events and trend; 65 in 2010

Number of events



Overall and insured losses

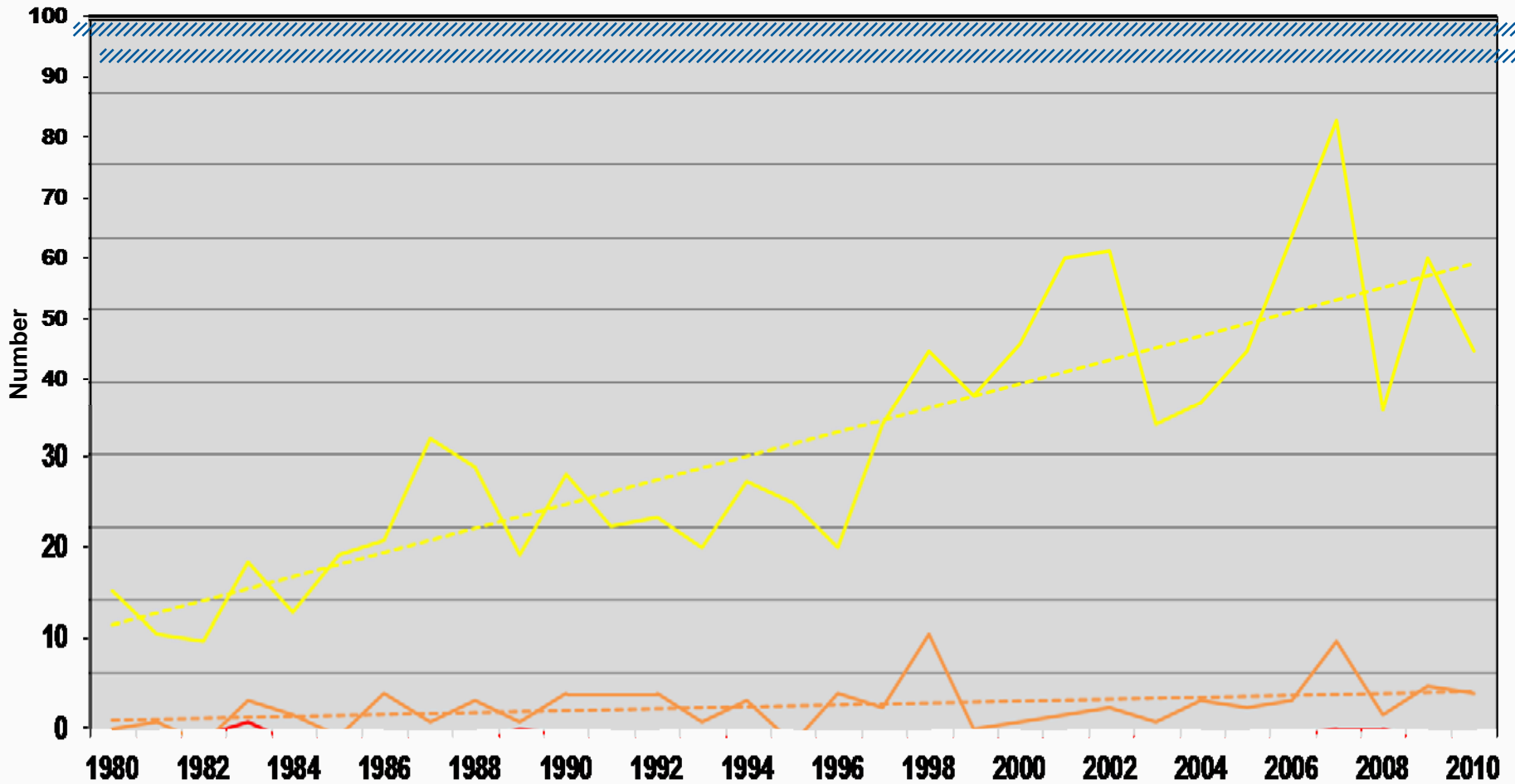


Significant trend for **weather** related perils

Increasing ratio of insured / overall losses

Natural catastrophes in Australia/Oceania 1980 – 2010

Annual number of events according to catastrophe classification



Munich Re's catastrophe classification:

- Damaging events:
 <20 deaths,
 up to considerable property damage
- Severe catastrophes:
 20-500 deaths,
 AU\$ 55-550m overall losses
- Major catastrophes:
 >500 deaths,
 >AU\$ 550m overall losses

Reasons for globally increasing losses caused by natural disasters

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Natural catastrophes, especially weather related events, are increasing dramatically in number and loss magnitude, both globally and in Australia

- Rise in population
- Better standard of living
- Increasing insurance density

- Settlement in extremely exposed regions
- Increased vulnerability of modern societies and technologies to natural hazards
- More scientific evidence for causal links between global warming and increasing frequencies and intensities of natural catastrophes.

Thank you for your attention!

sschuster@munichre.com

Dr. Sandra Schuster

