Adapting to weather extremes – Implications for the insurance industry

Baden-Baden, 21 October 2013

Dr. Ludger Arnoldussen

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Significant nat cat events in Europe 2013

- Losses from natural catastrophes in Europe for the first nine months of 2013 amount to around US$ 22bn = above average for the past ten years (US$ 17bn)
  Insured losses totalled approximately US$ 8bn (ten-year average: US$ 6bn)
- Floods dominate nat cat statistics in Europe in Q1-Q3 2013: around 75% of the overall losses and 50% of insured losses derived from inland flooding

- Flood in central Europe May/June with overall loss of more than €12bn
- End of July, hailstorm in Germany with estimated market losses of around €2.5bn

What comes next? Our statistics reveal an upward trend for weather-related events

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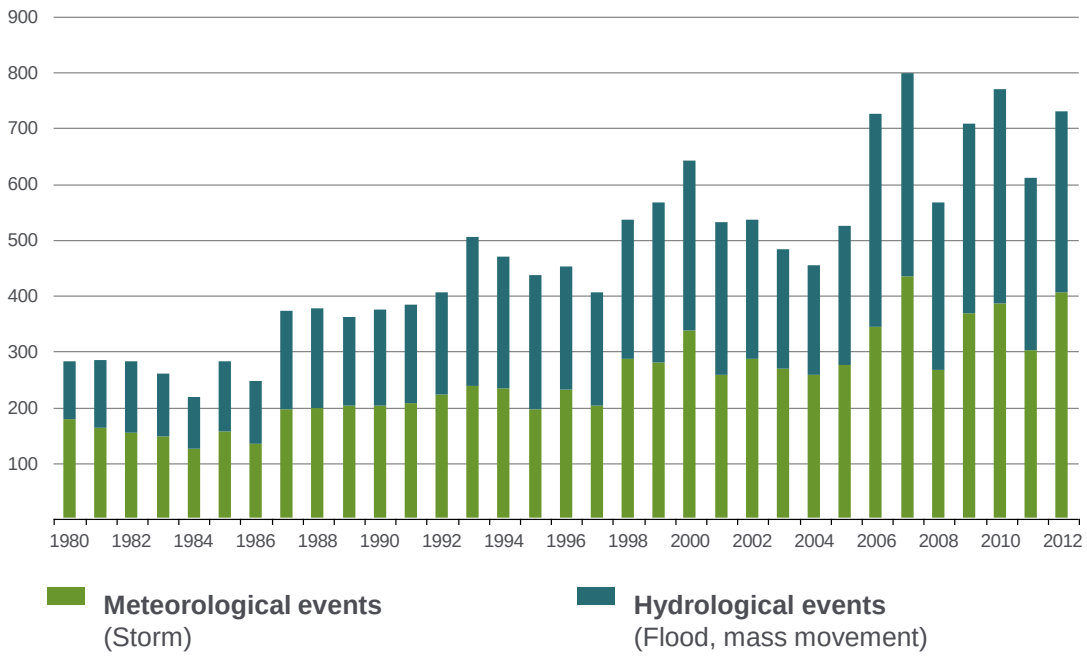
Weather catastrophes worldwide 1980–2012
Number of events



"Whether you believe climate change is real or not is beside the point. The bottom line is: We can't run the risk."
Michael Bloomberg, Mayor of the City of New York

- Frequency of flood events in Germany and central Europe has increased by a factor of two since 1980
- Frequency of weather events globally has increased almost threefold since 1980
- Parallel rise of weather extremes and almost stable number of geophysical events indicates influence of climate change
- Overwhelming majority of global scientists expect increase in extreme weather events due to climate change (with trends varying between regions)
- But no regions will become generally uninsurable in the foreseeable future, even with climate change

With an increase in weather-related events, what are the consequences?

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Consequences for adaptation of economies

Becoming more resilient is a no-regrets decision:

- Humanitarian aspect
- Economic aspect: Investing in prevention and risk transfer solutions helps to mitigate effects of loss events and is a more cost-efficient solution overall
- Stabilised state budgets and indemnity payments ensure a faster recovery
- With reduced vulnerability of the infrastructure, the economic environment is less volatile

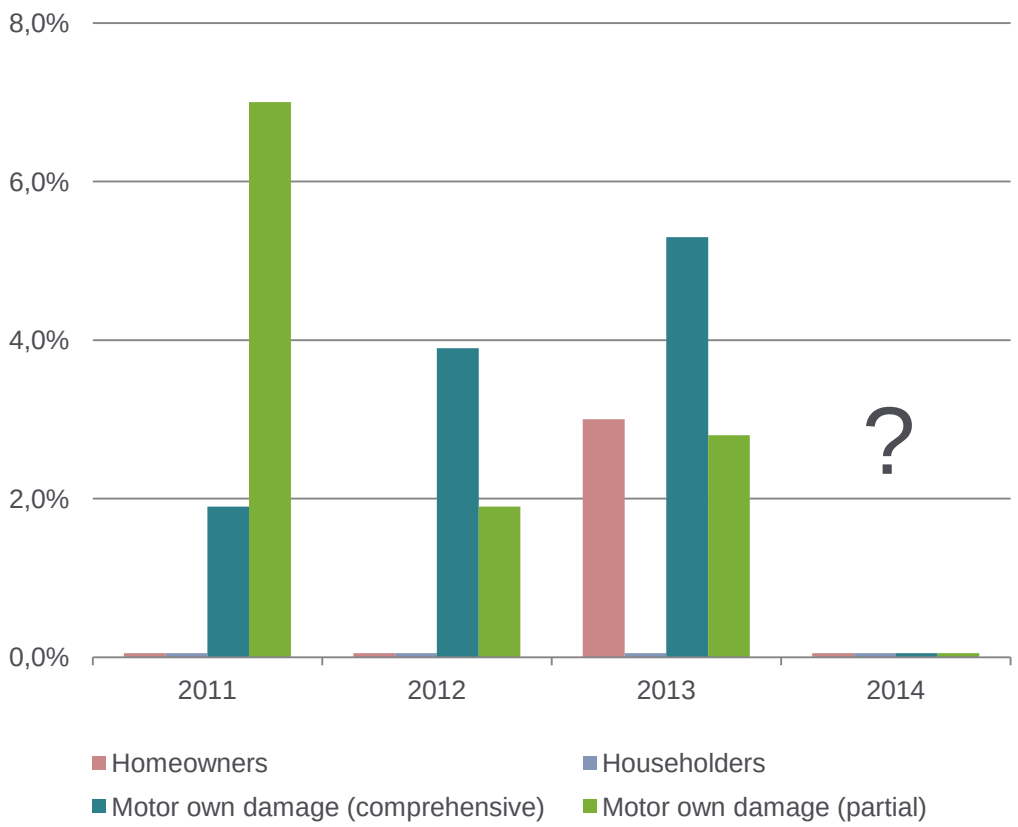
Consequences for the insurance industry

Holistic analysis of individual exposures is more necessary than ever:

- New developments of exposures triggered by climate change have to be reflected in risk models and pricing
- An in-depth analysis of each individual book of business needs to be conducted to discover individual exposure “hot spots”
- The effect of major events on the balance sheet has to be looked into – possibly in combination with a harsh capital market environment
- Depending on the above, tailor-made risk transfer solutions need to be employed to stabilise revenues

Changes in natural risk exposure need to be mirrored in original property rates and motor own damage

Original market development: Germany



- In 2013, first increases in homeowners premium rates visible
- Flood and hail mainly hit property and motor own damage policies, underlining the unsustainable premium rate levels in these lines
- This, in combination with the increase in weather-related events, means that premium rates need to be adjusted to reflect the natural catastrophe exposure covered!

Source: Munich Re Research

Ability to offer individual and holistic solutions to the client will be a decisive competitive advantage

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Focus on core competencies

	Client focus	Underwriting expertise	Financial security
Well-diversified knowledge-driven reinsurers	**Ability to offer tailor-made solutions**, e.g. multi-year concepts, retroactive reinsurance, capital relief transactions **Comprehensive capital consultation services** incl. internal capital model support	**Covering full range of RI buying needs**, incl. complex casualty, credit, large industrial risks, facultative services **Consulting services in the area of underwriting and claims**, e.g. premium calculation, nat cat risk analysis, claims support	**Significant capacity,** top financial security and **leverage effect** due to high diversification **Capital management know-how** and efficient capital allocation
Less diversified reinsurers	**Covering only specific parts** of the RI value chain Often display **opportunistic** behaviour	Underwriting know-how and pricing knowledge **limited to certain segments**	**Lower capital efficiency** Often have **limited capacity**

NATHAN (Natural Hazards Assessment Network) Risk Suite – Our next step in risk analysis

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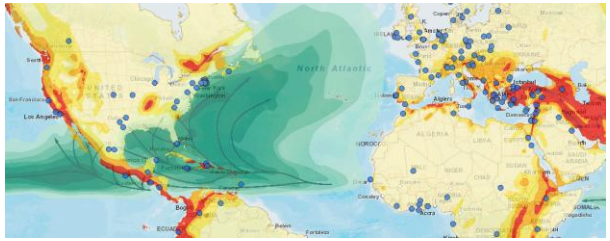
Input data

ISO3_Country	CITY	STREET	POSTCODE
DEU	Dresden	Bertolt-Brecht-Allee	01309
DEU	Radeberg	Hauptstr.	01454
DEU	Regensburg	Wernerwerkstrasse 2	93049
USA	Woonsocket	20 CUMBERLAND HILL RD.	2895
USA	Honolulu	888 South King Street	96813
USA	Tamc	3288 Moanalua Hospital	96819
USA	Redondo Beach	One Space Park	90278
USA	Goleta	340 Storke Road	93117
USA	Blacksburg	3155 State Street,	

Analysis



Source: DeLorme, Esri, NGA, NOAA, USGS, IFL

Result data

ISO3_Country	CITY	STREET	POSTCODE	Earthquake	Tropical Cyclone
DEU	Dresden	Bertolt-Brecht-Allee	01309	0	-1
DEU	Radeberg	Hauptstr.	01454	0	-1
DEU	Regensburg	Wernerwerkstrasse 2	93049	0	-1
USA	Woonsocket	20 CUMBERLAND HILL RD.	2895	0	2
USA	Honolulu	888 South King Street	96813	1	2
USA	Tamc	3288 Moanalua Hospital	96819	1	2
USA	Redondo Beach	One Space Park	90278	3	-1
USA	Goleta	340 Storke Road	93117	4	-1
USA	Blacksburg	3155 State Street,		0	0

- Exposure analysis of clients' risk locations or portfolios for windstorm, flood or earthquake – anywhere in the world
- Prevention: Analysis supports site decisions of companies
- Combining individual risk data with respective levels of exposure to natural hazards, efficient premium calculation and identification of unknown accumulations
- Allowing risk capital steering to increase portfolio profitability
- More than ten million risk location assessments per year
- Fast delivery of geographic "footprints" after loss events as first indicators for size of loss and loss management

Flood and windstorm in Europe – Sample results of NATHAN risk analysis

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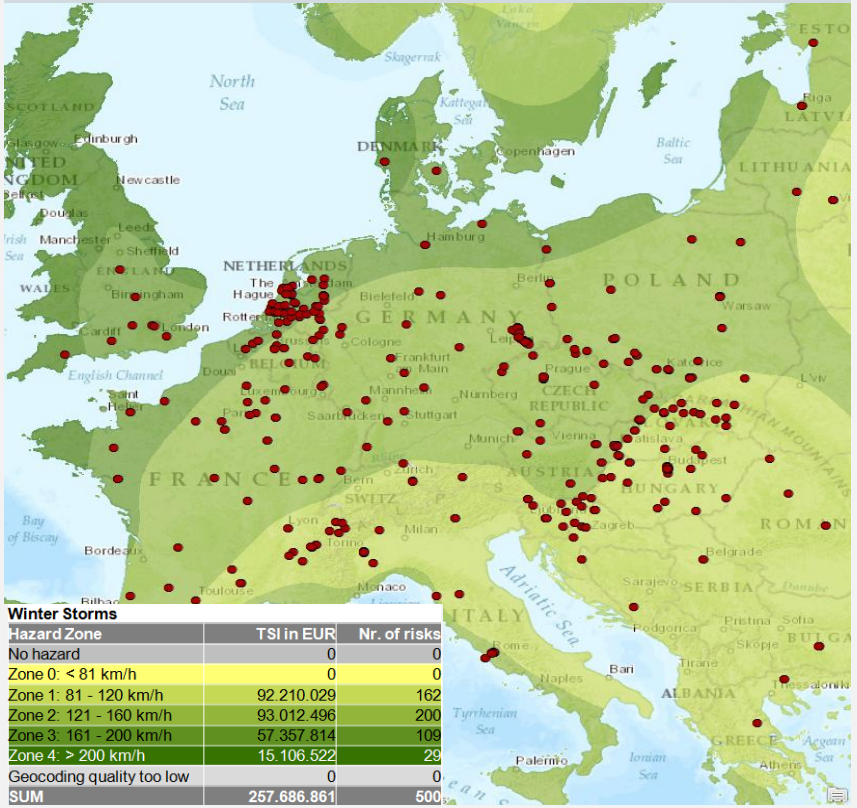
NATHAN river-flood risk analysis

River Flood

Hazard Zone	TSI in EUR	Nr. of risks
Zone 0: Areas of minimal flood risk	0	0
Zone 500: 500 year return period	10.459.780	20
Zone 200: 200 year return period	191.736.993	368
Zone 100: 100 year return period	14.728.241	32
Zone 50: 50 year return period	40.761.846	80
No information available	0	0
Geocoding quality too low	0	0
SUM	257.686.861	500

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

NATHAN windstorm risk analysis



Winter Storms

Hazard Zone	TSI in EUR	Nr. of risks
No hazard	0	0
Zone 0: < 81 km/h	0	0
Zone 1: 81 - 120 km/h	92.210.029	162
Zone 2: 121 - 160 km/h	93.012.496	200
Zone 3: 161 - 200 km/h	57.357.814	109
Zone 4: > 200 km/h	15.106.522	29
Geocoding quality too low	0	0
SUM	257.686.861	500

Source: DeLorme, Esri, NGA, NOAA, USGS, FAO

Risk analysis services shed light on the complexities involved, supporting more accurate premium calculations and helping to identify peak exposures

Summary

- Flood events dominate natural catastrophe statistics the first quarters of 2013 in Europe. An upward trend in the frequency of both hydrological and meteorological events is evident globally, too
- With climate change, the trend of increasing extreme weather events will continue, but there are no regions that will become generally uninsurable in the foreseeable future
- Adaptation to become more resilient is a no-regrets decision for societies
- For the insurance industry, a holistic analysis of individual exposures is more necessary than ever
- Tailor-made risk transfer solutions need to be employed to manage the risk situation and thus stabilise revenues
- Developing efficient risk transfer solutions requires special expertise in the area of nat cat analysis and experience in structuring appropriate solutions

As a well-diversified and knowledge-driven reinsurer, Munich Re leverages its capital efficiency and in-depth know-how to holistically serve our clients as a trusted long-term partner

For its own portfolio, Munich Re expects largely stable renewals at 1 January 2014, but Germany is a special case due to 2013 nat cat losses

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Thank you very much for your attention. Questions?

Dr. Ludger Arnoldussen

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