ICELAND CAT FUND

November 2011

- **About ICF**
- Recent Natural Hazards
- Risk Model (Hazard model)
- Vulnerability Model
- Conclusion

Development of the Icelandic Cat Fund

- Formed by Act of Parliament after the 1973 Vestman Iceland incident to cover all catastrophe perils except Windstorm
- First purchased reinsurance in 1976 from London Market and is one of Guy Carpenter's oldest clients
- Reinsurance strategy is to buy high level reinsurance
- Only one ever reinsurance claim in 2008.

Profit and loss to reinsures since 2000

- **Premium ISK 3,360,000,000**

(USD 28,573,858)

- **Claim ISK 3,081,000,000**

(USD 26,201,207)

- **Overall reinsurer profit ISK 279,000,000**

(USD 2,372,650)

Deductibles from 2000 to 2011

Deductible 2011

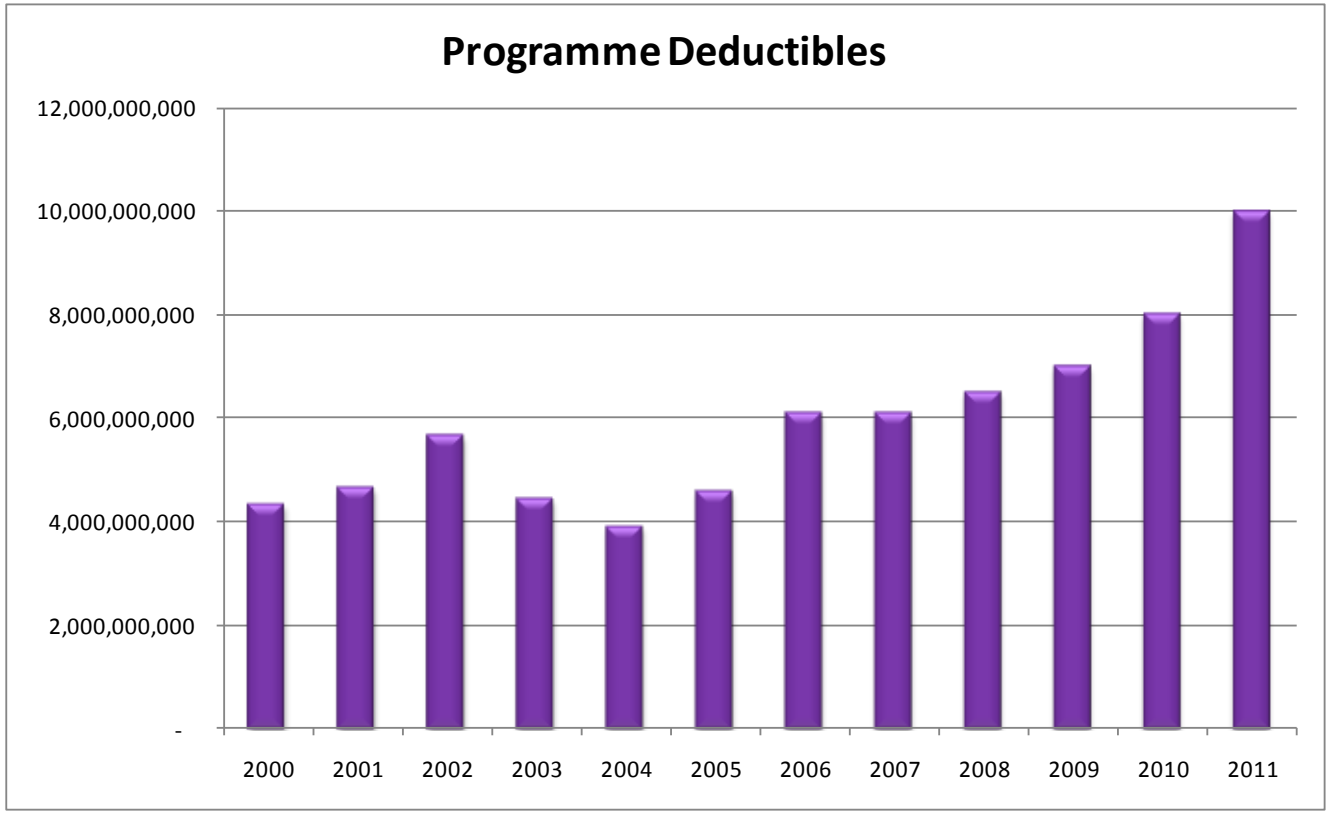
10,000,000,000

(USD 86.775.000)

Deductible 2008

6.500.000.000

(USD 56.400.000)



Important Changes to the Icelandic Catastrophe Fund

- Formalizing and documenting external and internal procedures
- Committee was appointed by The Prime Minister‘s office (PMO)
  - To evaluate all departments and agencies that can possibly be affected by natural hazards in Iceland
  - Includes Guy Carpenter
  - Has already resulted in a more professional and coordinated response to natural hazards.
- Committee to revise the legislation for the CAT fund
  - Appointed by the Minister of Economic Affairs
  - Charged with rewriting the Icelandic catastrophe laws to improve efficiency and understanding of the coverage provided

Important Improvements of the Act

- Specific catastrophe footprint will be introduced
  - To be determined by independent scientific advisors
  - Outside this area the onus for proving the validity of the claim will be on the claimant
- Deadline for presenting claim reduced
- Claims payment must be used to repair the building

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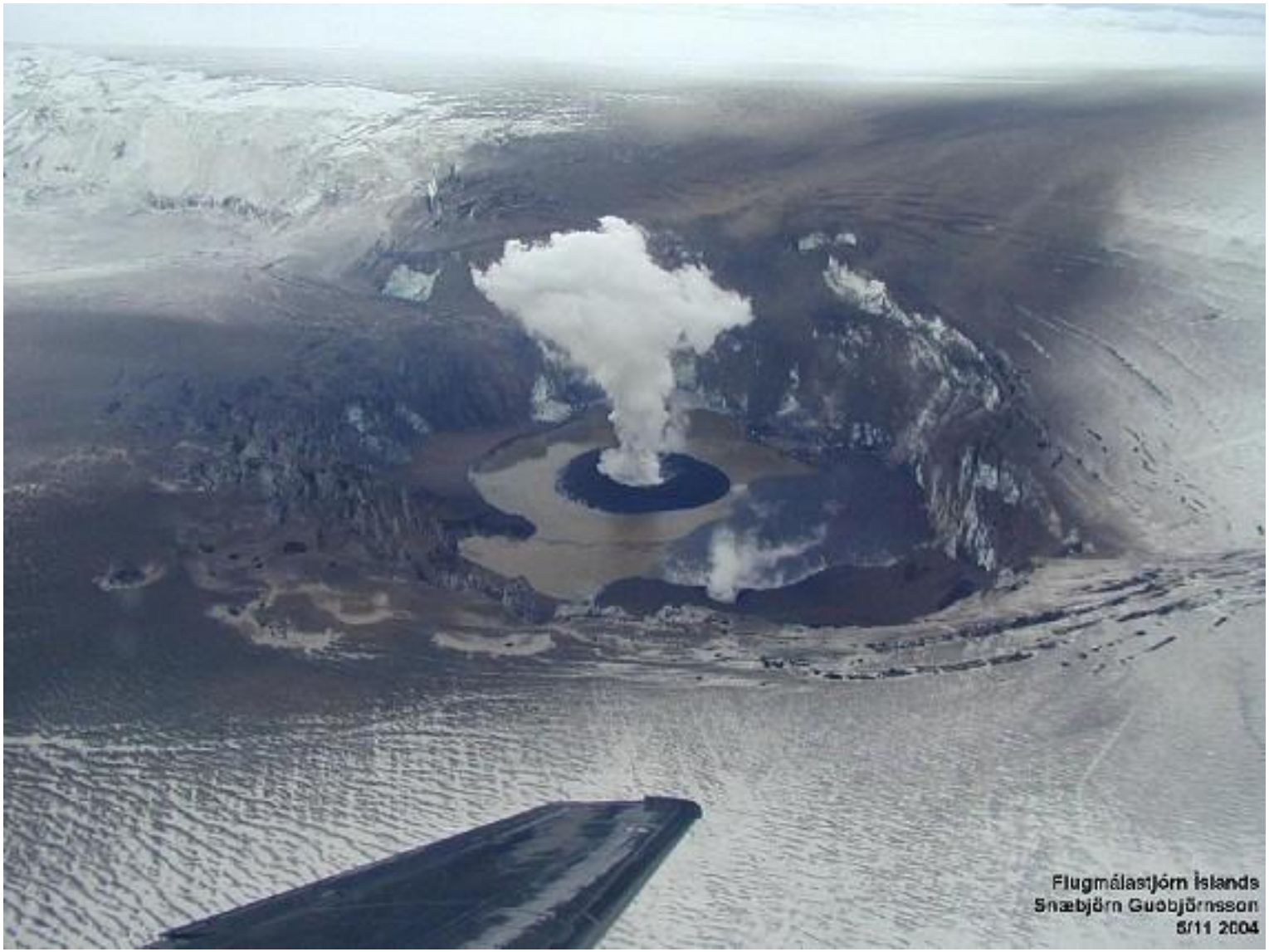
On March 20th, 2010, an eruption of the Eyjafjallajökull volcano began in Fimmvörðuháls following months of small earthquakes under the Eyjafjallajökkull glacier.

In April 2010 this was followed by a larger eruption on Eyjafjallajökull itself, and there are fears that this will trigger a much bigger eruption of nearby Katla.

Grímsvötn, 1983, 1996, 2004 and 2011

Grímsvötn, 1996 it closed Road 1 in Iceland for few days with rocks and ice - no ash at this time

Grímsvötn 2004, small eruptions – no ash and no floods



Grímsvötn, 2011, no floods but a lot af ash in south east of Iceland

Losses from these volcanic eruptions in the years 2010 and 2011

Eyjafjallajökull total loss less than 6 m US $

Grímsvötn total loss less than 6 m US $

Total loss in each event less than 7% of the ICF's deductibles

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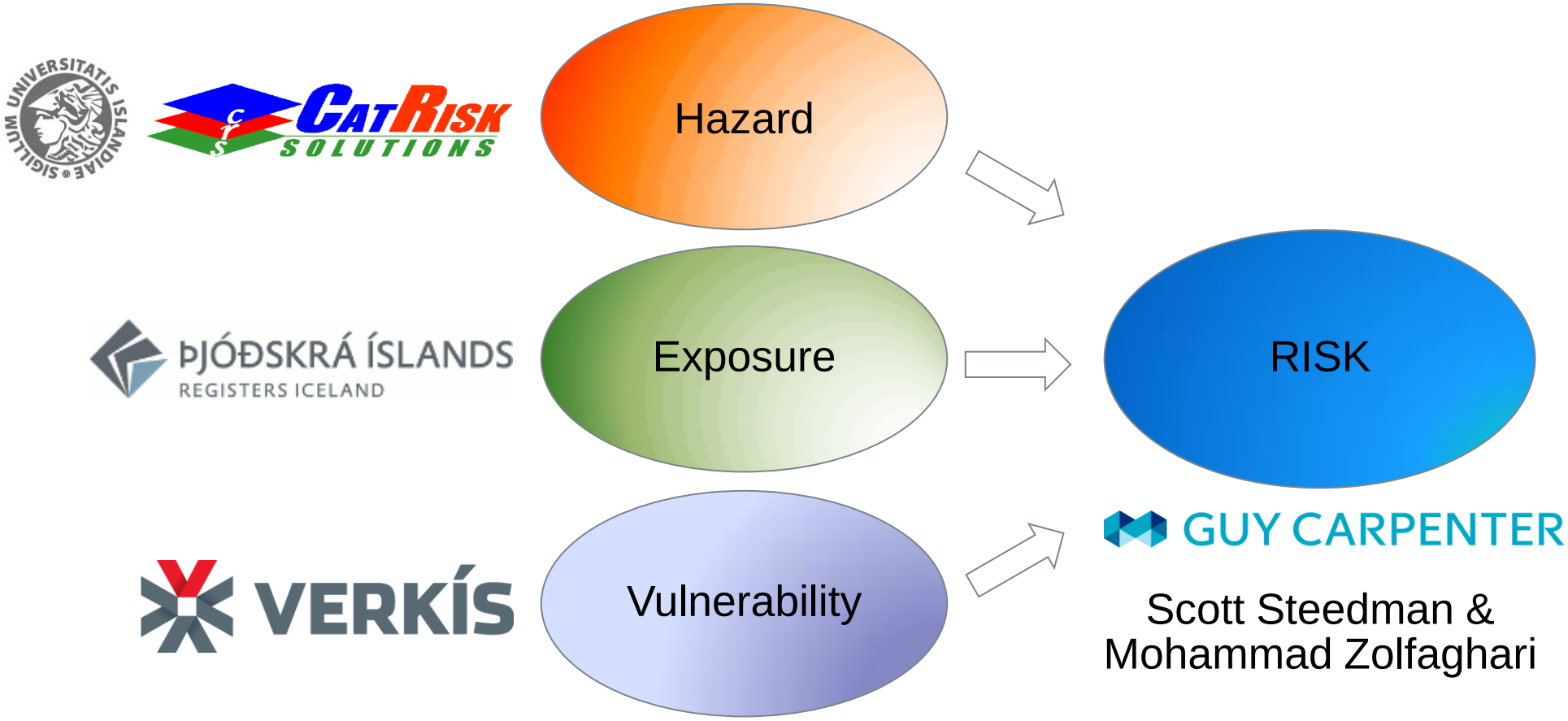
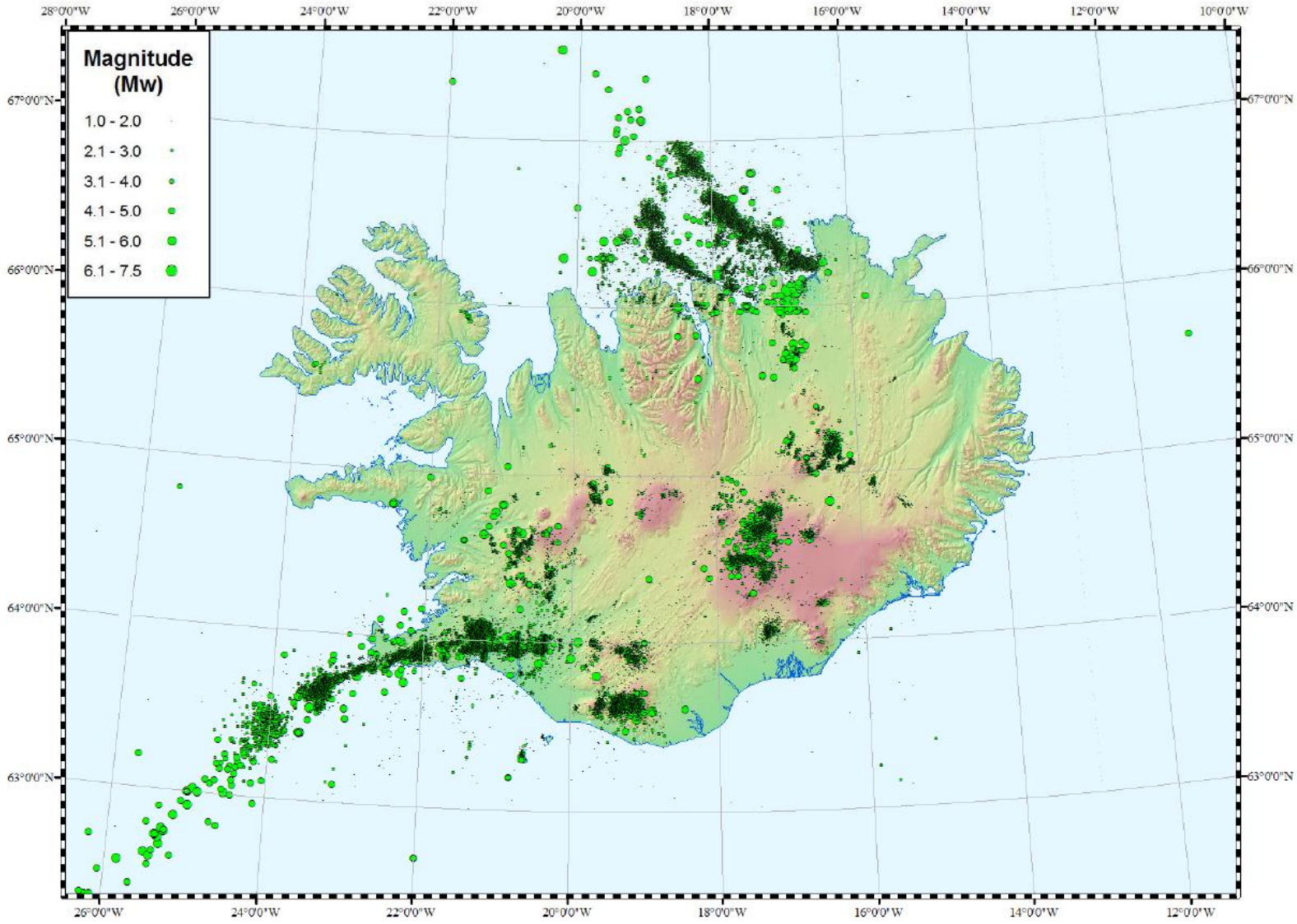
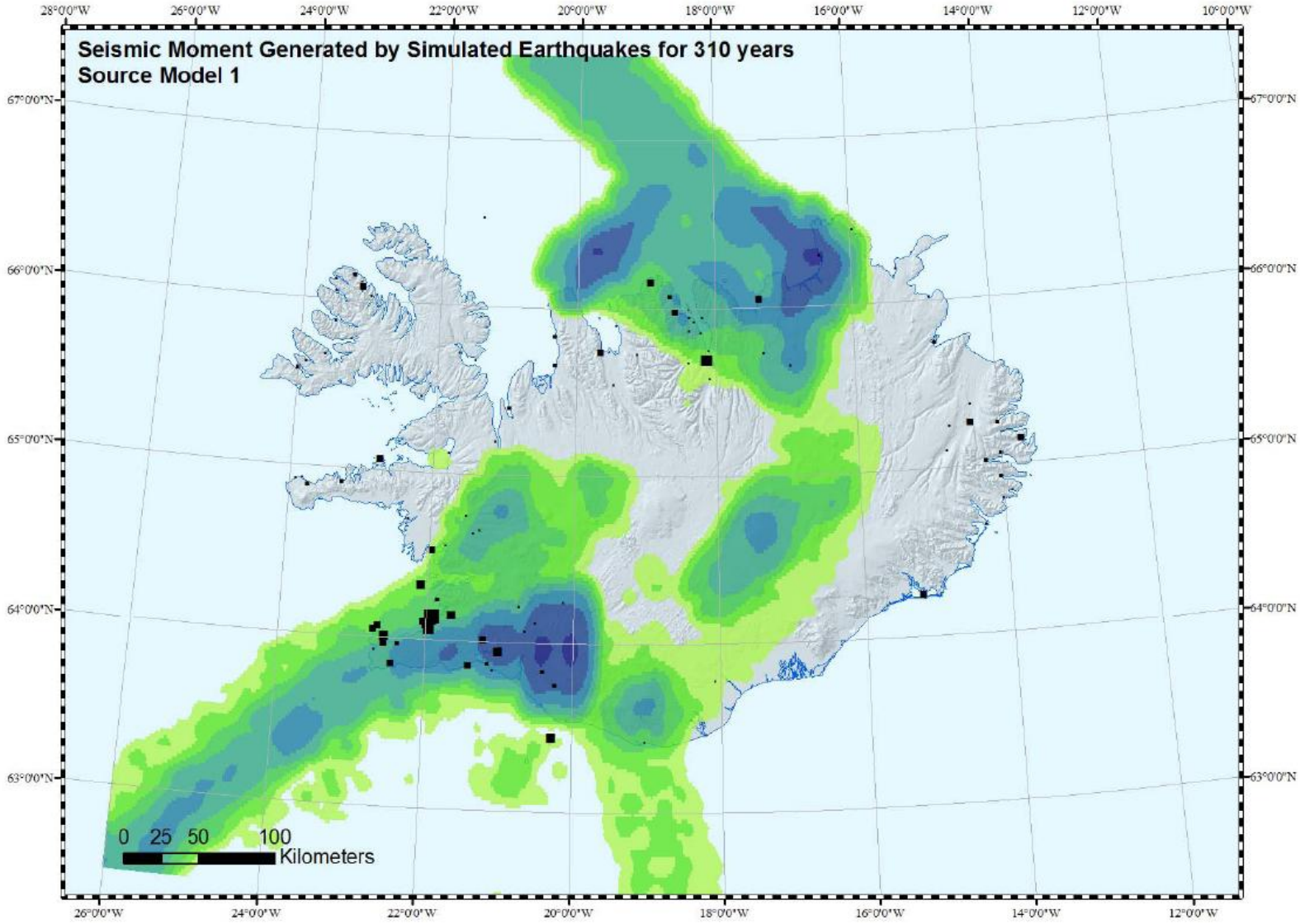
Catastrophe Response
Modules and project participants



Historic Earthquake Record (Hazard)



Computer Simulated Earthquake Hazard



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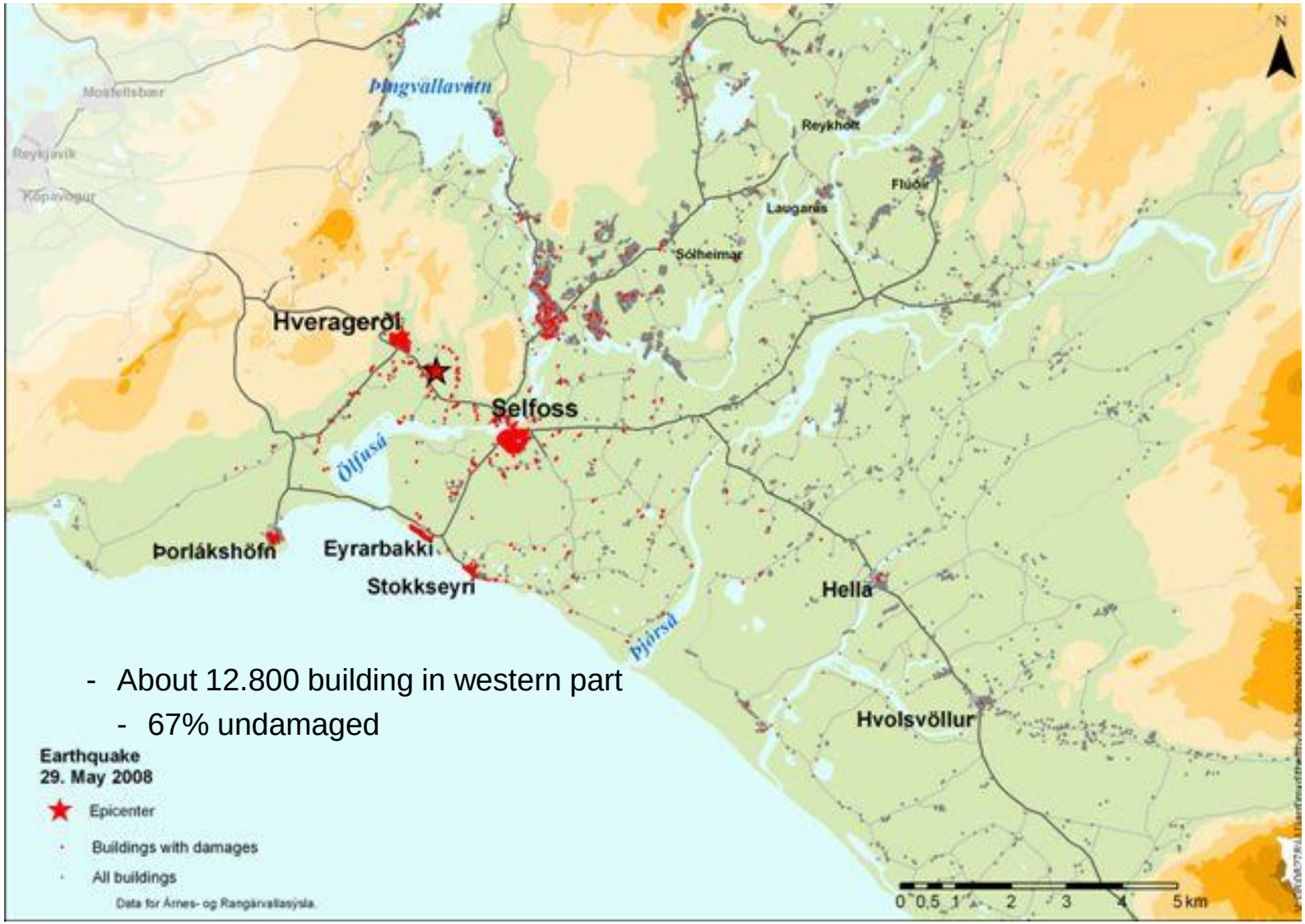
EXPOSURE
Property registry database

- High quality exposure information about all insured buildings
- Nominated by *IAAO in 2011* *(The International Association of Assessing Officers)*
- 250,000 building items in Iceland

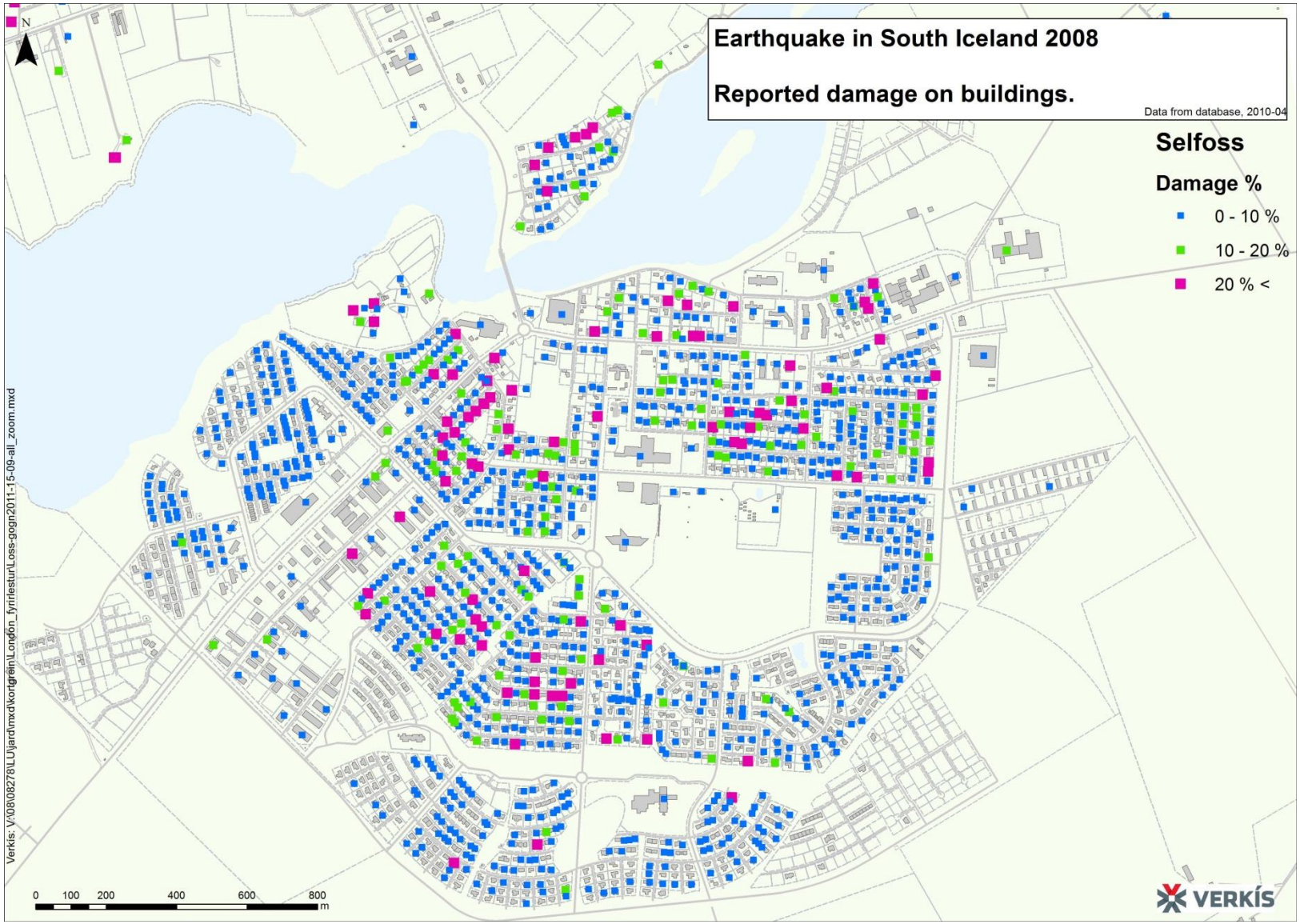
- GPS coordinates
- Insurance/replacement value
- Type of use
- Construction year
- No. floors and m^2
- Material

Iceland Portfolio

Earthquake 2008
Damage overview



Earthquake 2008
Damage overview



EXPOSURE
Building classification

- All buildings in the Property Registry database are classified
- 19 classes with regard to earthquake vulnerability

No	TYPE OF USE	MATERIAL	AGE
1	Residental	Concrete	<1980
2			1980-2000
3			2001-2008
4		Timber	<1973
5			1973-1998
6			1999-2008
7		Pumice	All
8		Appartment houses >2 storeys Concrete	<1960
9			1960-1980
10			1981-2008
11	Summer houses	Timber	All
12	Garages	Pumice	All
13		Concrete - Timber	All
14	Farm buildings	Concrete – Timber - Steel	<1970
15			1970-2008
16	Industrial buildings	concrete	All
17		Timber/Steel	All
18	Service buildings	concrete	All
19		Timber - Steel	All

DAMAGE AND LOSS
Database

- All damaged buildings surveyed by trained engineers
- Damage/loss assessment recorded in a comprehensive data base
- No liquefaction or landslide

Structural

4.3 Burðarvirki úti		
4.3.1 Veggir	149754	
4.3.2 Súlur	0	
4.3.3 Bitar	0	
4.3.4 Tröppur	0	V-viðgerð á hlöðnum vegg undir svölum við stigagang 6. Endursteypa vegna sprungna í steyptum veggjum á milli glugga í kjallara.
4.3.5 Tæknileg aðstoð	0	
4.3.6 Annað	0	
4.3 ALLS	149754	

Non-structural

4.9 Málun og yfirborðsmeðferð		
4.9.1 Veggfóður	0	
4.9.2 Málun inni með eða án spartlvinnu	0	
4.9.3 Málun úti	88222	Heilmálun á húsi að utan og leiga á vinnulyftu í þrjár vikur.
4.9.4 Annað	0	
4.9 ALLS	88222	

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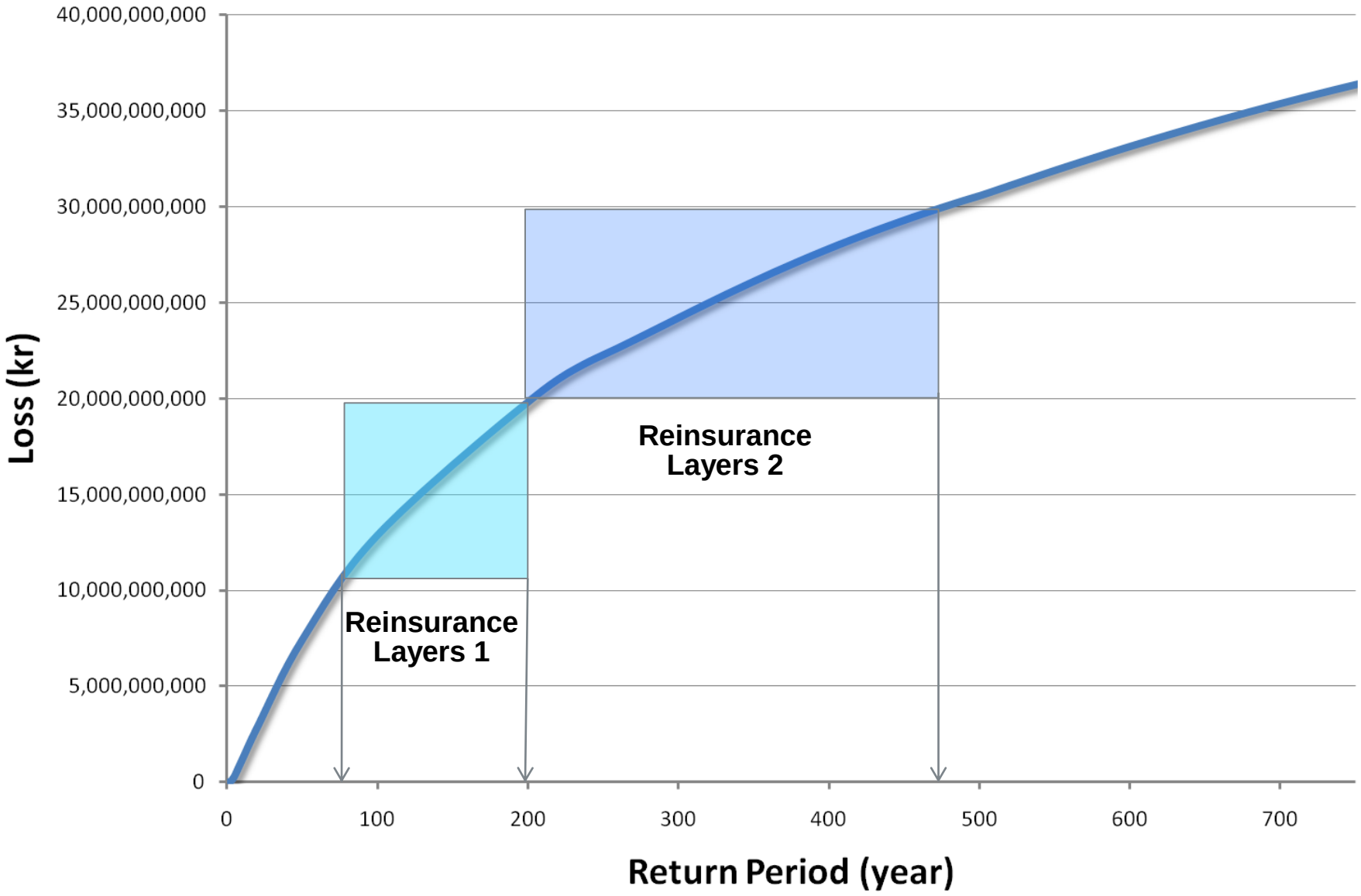
Analytical Outputs
e.g. Loss curves



Modelling Conclusions

- Bespoke full probabilistic model
- Hazard module using state-of-the-art techniques
- Includes full integration of local scientific knowledge, peer reviewed by University of Iceland
- Detailed vulnerability functions based on recent experience and local engineering understanding and expertise.
- Fully geocoded and classified portfolio. 1 to 1 match of risks to vulnerability functions
- 100% of the market portfolio. No need for disaggregation or estimation.

Modelling Conclusions

- The greatest benefit for the Icelandic Cat Fund is that now we have a unique model which gives us true information, based on previous events, hopefully resulting in more reasonable premium on the cover for our highest risk factor, earthquakes.
- This does as well give us the opportunity to inform our reinsurance companies about expected total cost in a earthquake event immediately.

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