



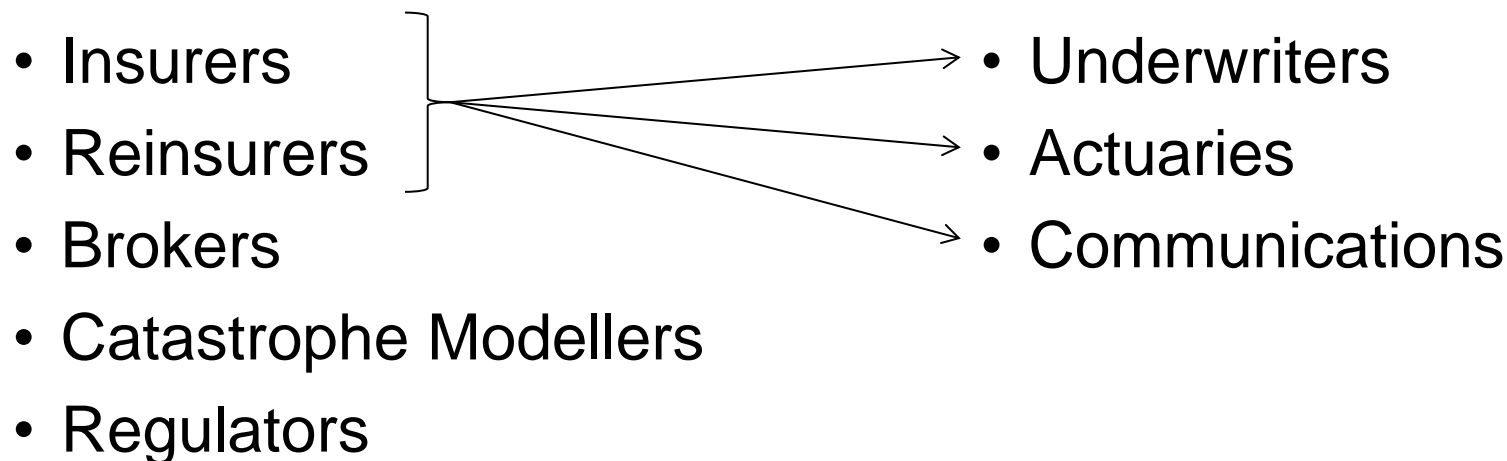
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USE OF CLIMATE DATA AND INFORMATION IN THE INSURANCE INDUSTRY

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12/12/16

Insurance Industry Actors and Structure



- Each speaks a slightly different language

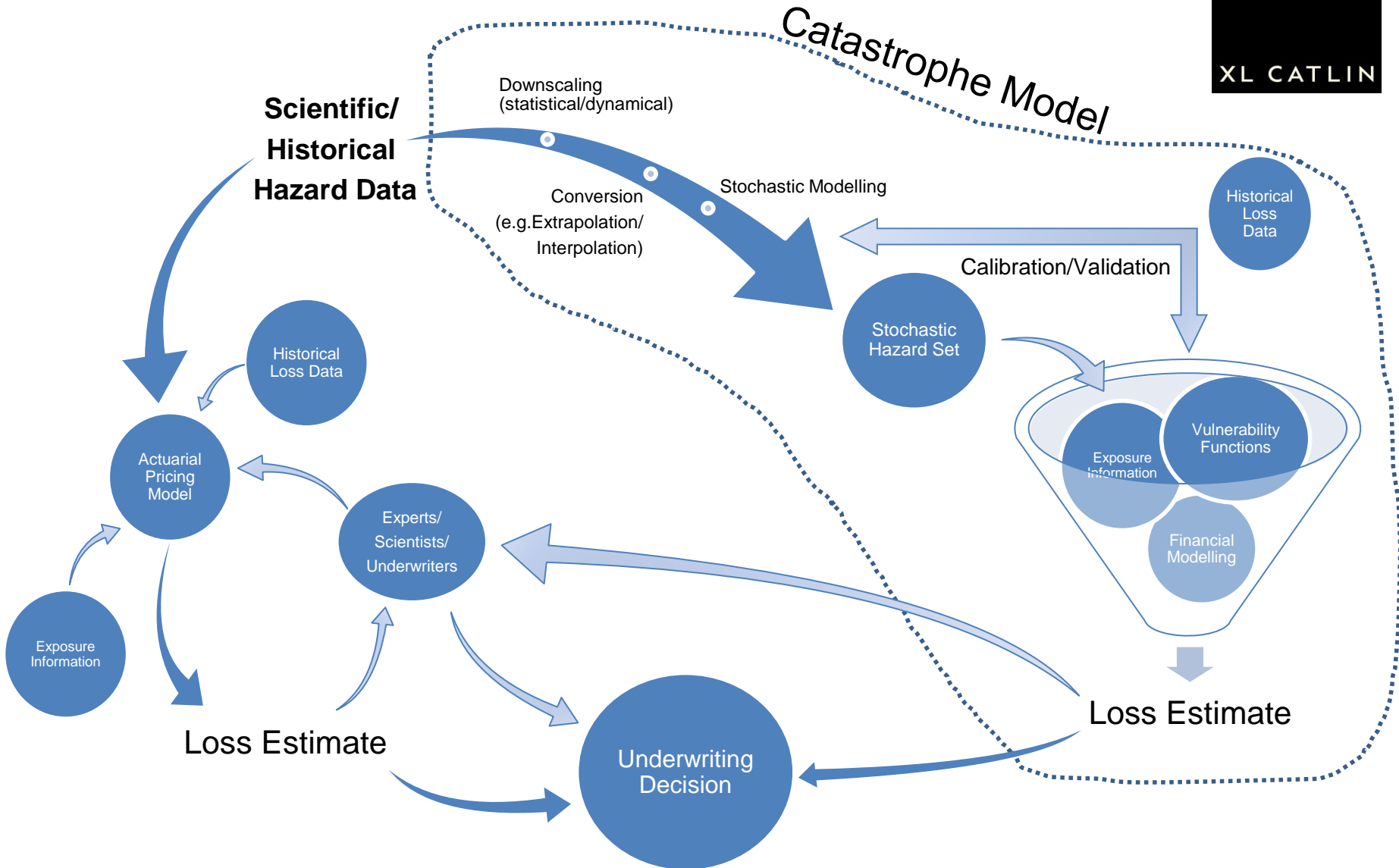
- Worldwide premium breakdown 2015:

Source: Swiss Re,
Sigma, No. 3/2016.

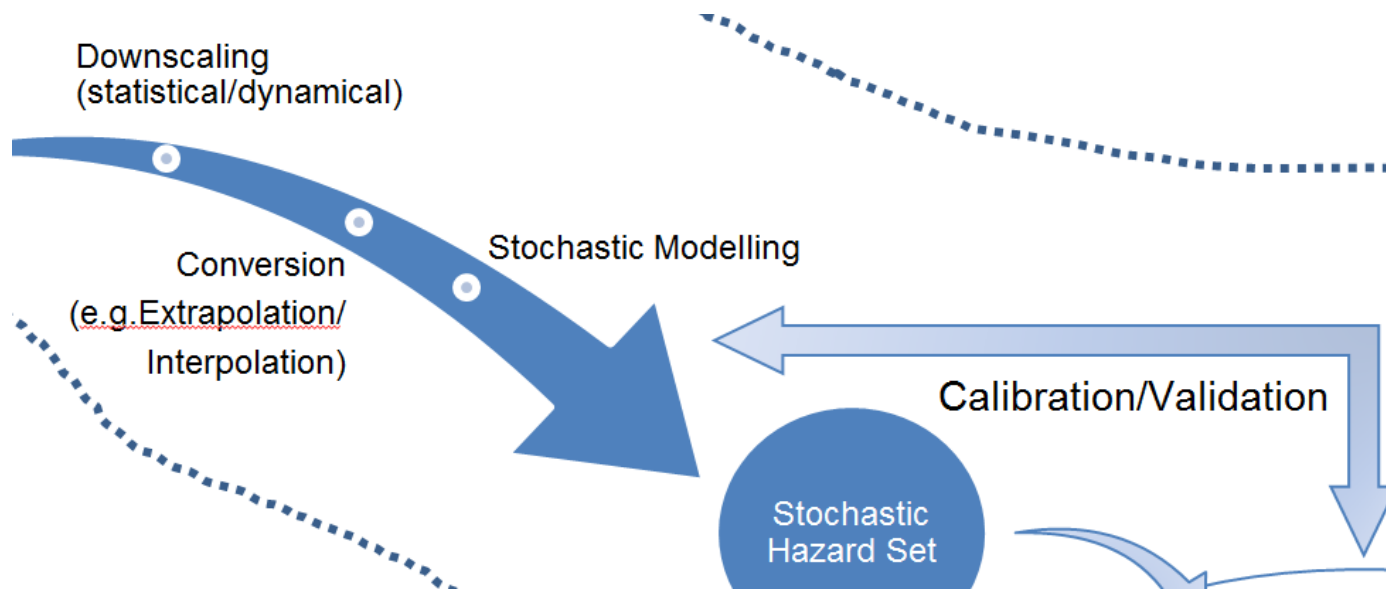
Life insurance = ~\$2.5 trillion (~56%)

Non-life insurance = ~\$2.0 trillion (~44%)

Chain of Information within Traditional Re/Insurer

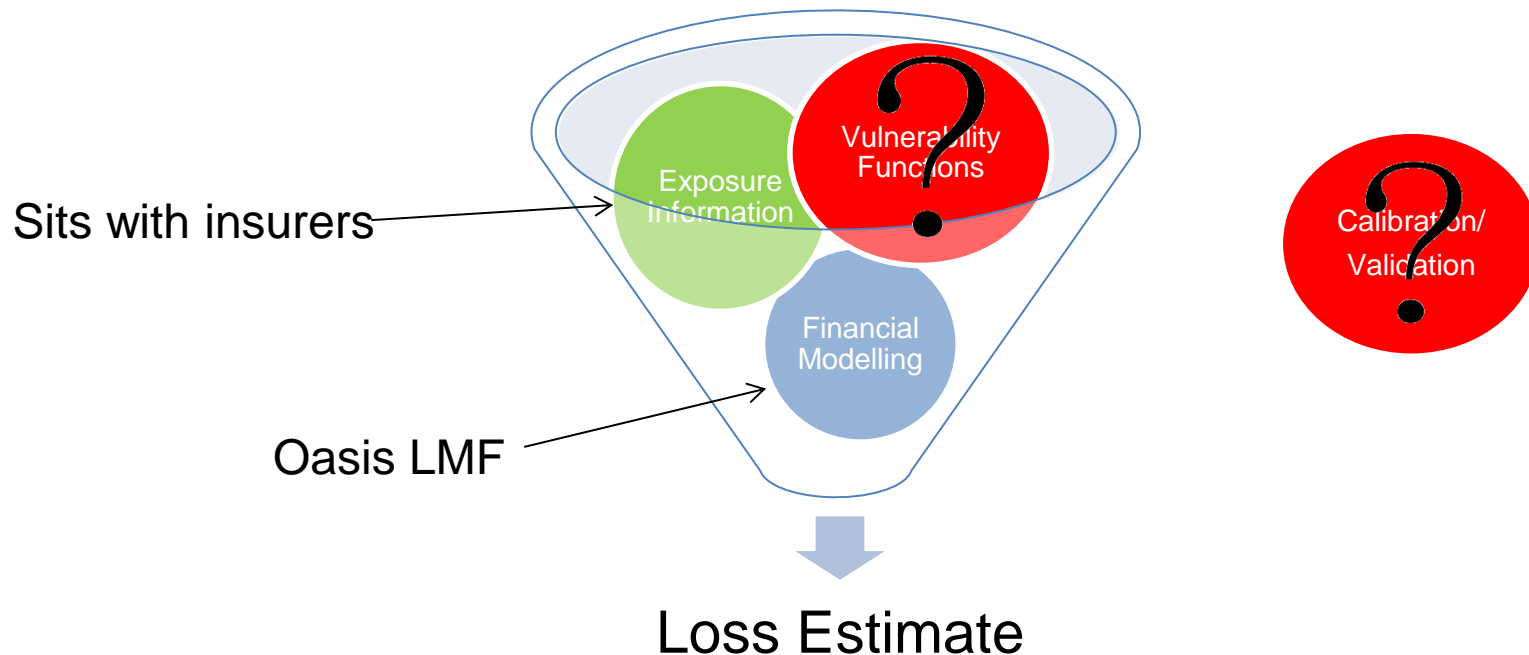


This process is currently not peer-reviewed or transparent, and consequently has no widely accepted quality standards...



Oasis and Open Source Modelling?

- Many academic stochastic hazard sets exist, however:



Climate Predictions/Projections?



- Number of barriers to entry:
 1. Massive uncertainty in predictions/forecasts of perils that cause biggest re/insurance losses.
 2. Timing of predictions don't often coincide with traditional re/insurance underwriting timeline.
 - a. Insurance inception/renewal dates by quarter - e.g. 1/1, 1/4, 1/7, 1/10
 - b. Regional variation (e.g. US 1/1, Asia-Pac 1/4).
 - c. Difference between volume of renewals by insurance (usually more attritional losses) vs reinsurance (usually more catastrophic losses).
 3. Climate projections most often made at time-scales that don't fit insurance contracts (annual), or traditional re/insurance business plans (multi-annual).
 4. Climate projections made at resolutions that preclude the insurance industry from being able to take a view of climate change impacts on most impactful perils.

Regions of Interest



Non-life Premium Distribution 2015

Source: Swiss Re,
Sigma, No. 3/2016

Western Europe – 28%

North America – 24%

Advanced Asia – 10%

Emerging Asia – 10%

Latin America – 4.5%

Middle East/Central Asia/Turkey – 2.1%

Central/Eastern Europe – 1.9%

Oceania – 1.7%

Projected growth in property-casualty premiums 2016-2025

Source: Munich Re Insurance Market Outlook,
Munich Re Economic Research, May 2016

Emerging Asia – 9.1%

Middle East/North Africa – 5.5%

Sub-Saharan Africa – 4.7%

Eastern Europe – 4.2%

Latin America – 3.3%

Mature Asia/Pacific – 2.0%

Western Europe – 1.6%

North America – 1.5%

Summary



- Historical climate data is used widely within the insurance industry, but by many different actors with varying levels of technical expertise.
- Standards and peer review are sorely needed for the catastrophe modelling chain.
- Although open source modelling exists on the horizon, scientists producing stochastic hazard sets need to be interacting with vulnerability/damage expertise if these sets will see uptake by the industry.
- The uptake of climate projections and predictions is limited by the mismatch between insurance desires and current scientific practice.
- Although the worldwide (non-life) insurance market is dominated by Western Europe and North America, the rapid growth regions tend to be in the developing world, particularly emerging Asia.