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"The Use of Engineering Expertise in Latin American Catastrophes and pre- and post-loss efforts to minimize future claims"

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The Course Agenda

- Overview
- Building Codes and Construction Practices
- Catastrophe Modeling
- Use of Engineering Post-Loss
- Wrap-up

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Blame it on Something

"Do you think we can blame it on El Nino?"

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Floods in Guiana

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Windstorms in Venezuela

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Earthquake in Chile

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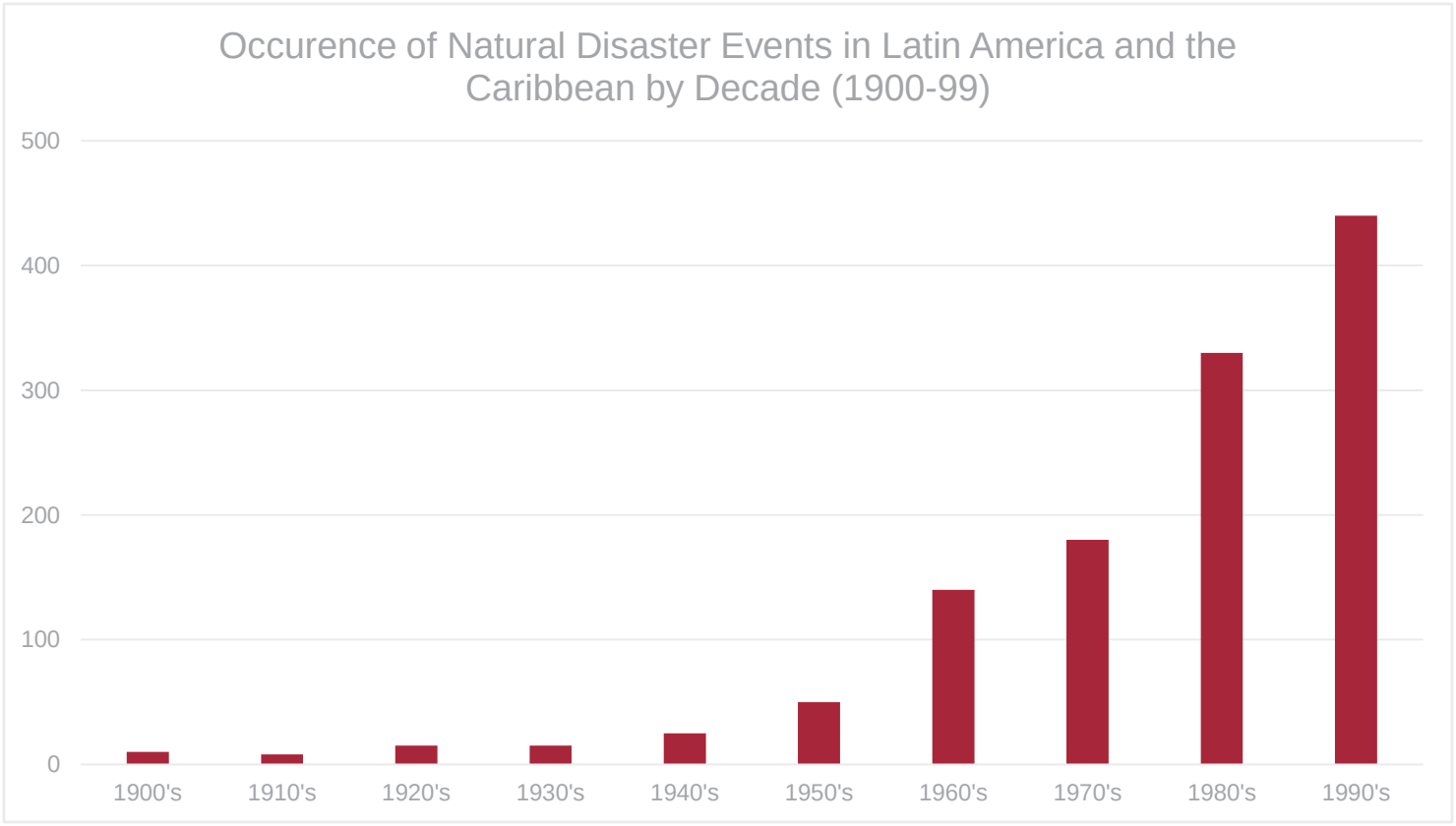
Hundred Years



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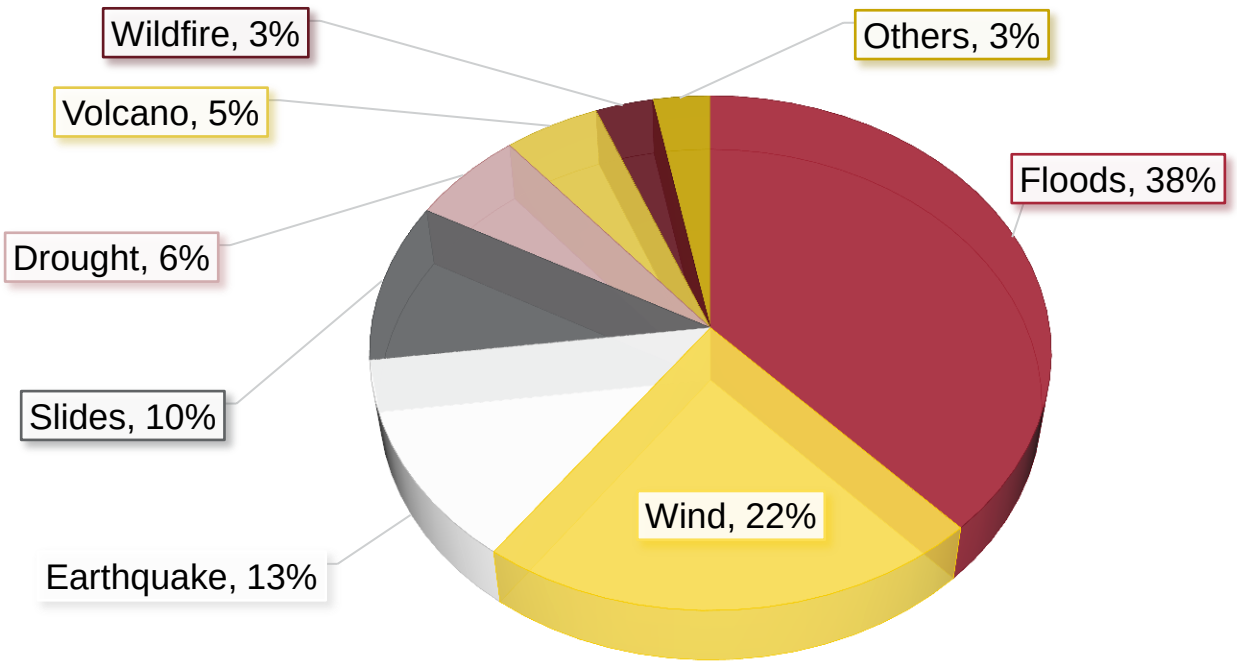
Disaster Type

DISTRIBUTION BY DISASTER TYPE (LATIN AMERICAN & CARIBBEAN, 1970-1999)



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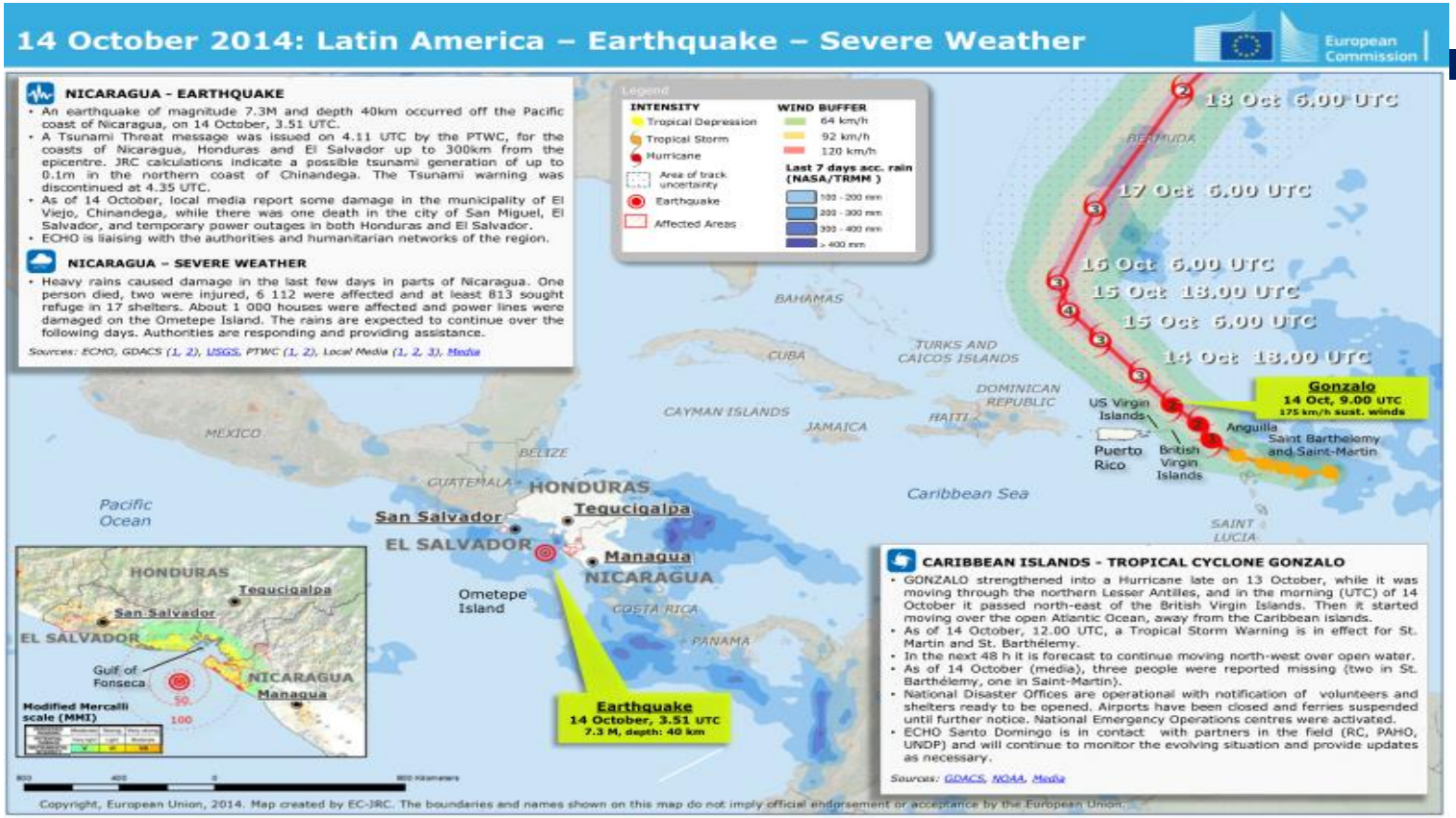
October 2014



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The Past

- Prior to 1989, the insurance industry in the U.S. had never suffered a loss of more than $1B from a single disaster
- 1992 - Hurricane Andrew $15.5B
- 1994 - Northridge EQ $12.5B

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Recent Years

- *"Average annual losses from natural disasters in the decade to 2013 were $190B, compared with $130B over the 30 years to 2013."* – Munich Re

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Need to Do More

- *"As economic losses from disasters rise around the world, more effort is needed to reduce the risks from extreme weather and earthquakes in every area, from infrastructure to health."* – United Nations January 2015

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Building Codes and Construction Practices

- October 2002 – President Bush signed HB 1646 into law.
- “HB 1646 – Program to Improve Building Construction and Practices in Latin American Countries.”
- Most refer to this as the “CASA Act” (Codes and Safety for the Americas Act)

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CASA Act

- Purpose was:
- Improve Building Safety in Latin America
- Increase cost-effectiveness of our disaster relief assistance
- Save lives

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How to Get it Done

- CASA Act was to….provide funding to train architects, engineers, and contractors in El Salvador and Ecuador in the proper use of the U.S. Building Codes and Standards
- Through education ….only a matter of time before we see safer buildings

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Education is Everything

- Case Study
- Cement Manufacturer in Latin America
- Claim was that company's cement exceeded ASTM standards by 25 percent; therefore you can use 15 percent less cement to complete project
- Clear misunderstanding of Standards

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Avoiding the “anything goes” environment

- A nation without a well-understood and controlled system of codes and standards becomes an “anything goes” environment.

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Anyone have some extra tape?

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Latest Seismic Codes

- USA – IBC (2012)
- Brazil – NBR 15421 (2006)
- Venezuela- COVENIN 1756 (2001)
- Peru – E.030 (2003)
- Ecuador INEN-5 (2001)
- Argentina CIRSOC-103 (2005)

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The Message

- Use of proven material in a proper method of construction and a building should perform in a predictable manner in a disaster.
- Engineers will play an important role in helping foreign countries establish benchmarks and education for the design and construction industry

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Catastrophe Modeling

- A new approach to managing risk
- Insurers are interested in setting premiums and evaluation of overall risk portfolios
- Governments are interested to determine what codes, regulations, and standards are appropriate

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Who is doing this

- Handled by 3 leading companies
- AIR Worldwide
- EQCAT
- Risk Management Solutions

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Objectives

- You can’t reduce the probability of these events occurring, but you can lessen the damage that results from them.

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What exactly is it?

- Models are built to analyze the probability of EQ of a particular magnitude occurring over a define time period on a certain EQ fault
- Model provides predictions of damage from a particular event and the impact to the portfolio of a hypothetical insurer

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Example of Modeling Output

- Insured has portfolio of businesses in Peru
- What is the likely damage for an EQ event greater than 7.0?
- What is the probability that each loss will be greater than $X million or $Y million?
- Price policies accordingly
- Modeling can also be used to determine if PIF is too great, too few, etc.

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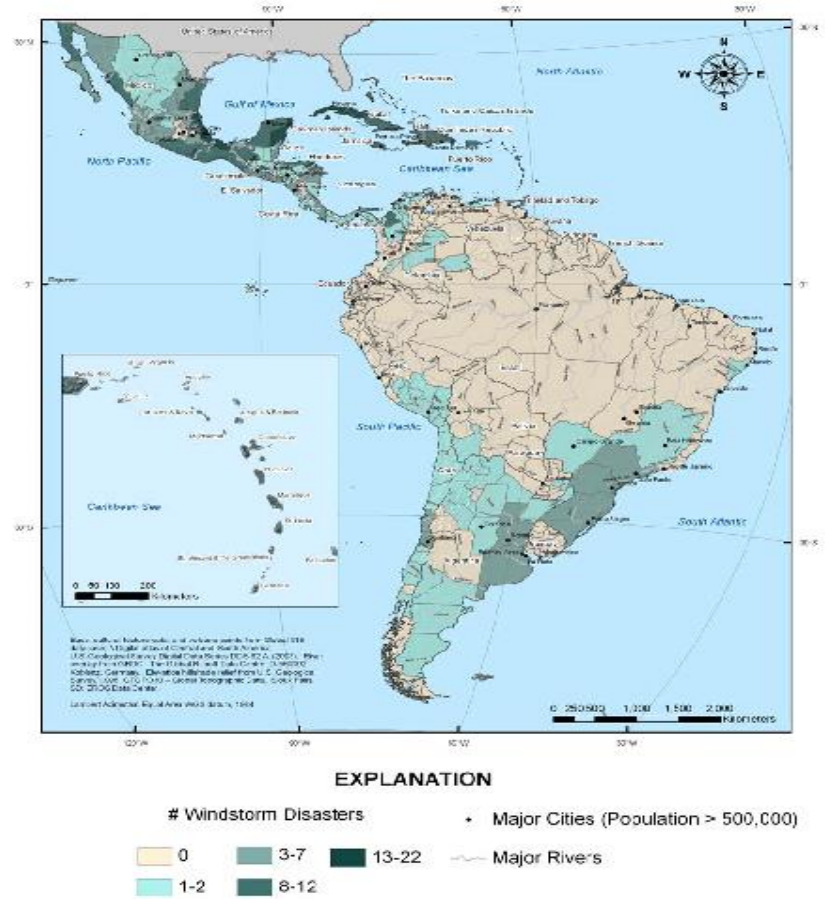

Figure 4. Windstorm disaster occurrences by first administrative level boundary, 1900–2007.

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A look from the Carrier

- Carrier said it does not want to tolerate more than a 1% probability of a loss over $1M
- Numerous options based on modeling results

1. Reinsurance
2. Catastrophe Bonds
3. Mitigation
4. Reduction in Coverage
5. Raise Premiums

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Use of Experts Post-Loss

- Engineers, Architects, and Contractors can be used post-loss to mitigate structures to reduce or eliminate loss from future natural disasters

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Limited Progress

- Disaster responses have improved in many LAC countries, but in most still are found wanting.

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Sad News

- Wealthier countries like Peru, Chile, and Colombia which, while disaster-prone and committed to risk reduction and prevention policies, have mixed records in terms of investing their own resources in prevention and recovery projects.

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After the Storm

- Given the low rate of insurance coverage in developing countries, the negative effect of disasters on fiscal balances and the limited amount of available international assistance, governments in the region usually have to resort to borrowing to finance reconstruction.

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Bottom Line

- Insurance payments are often looked at to fully finance the reconstruction following a disaster
- Utilization of engineers, architects, and contractors in the claims adjudication process can help in minimizing and preventing future losses

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Rebuild of School/Corp of Engineers

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