



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

Presented by: Van Fisher, Director of Engineering
van.fisher@ptcforensics.com

The Course Agenda

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

Blame it on Something



“Do you think we can blame it on El Nino?”

© 2015 PT&C Forensic Consulting Services, P.A.

Floods in Guiana



© 2015 PT&C Forensic Consulting Services, P.A.

Windstorms in Venezuela



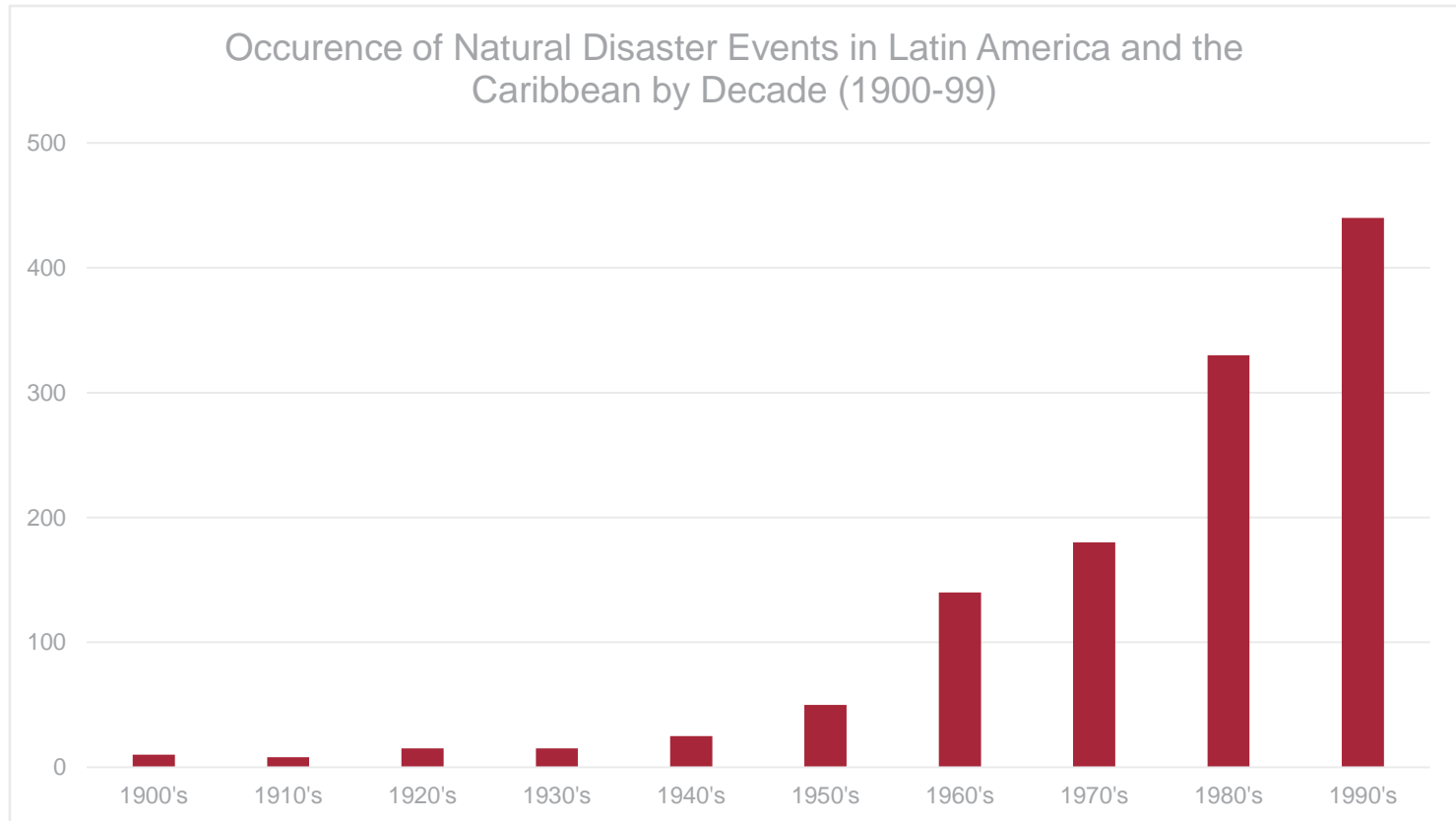
© 2015 PT&C Forensic Consulting Services, P.A.

Earthquake in Chile



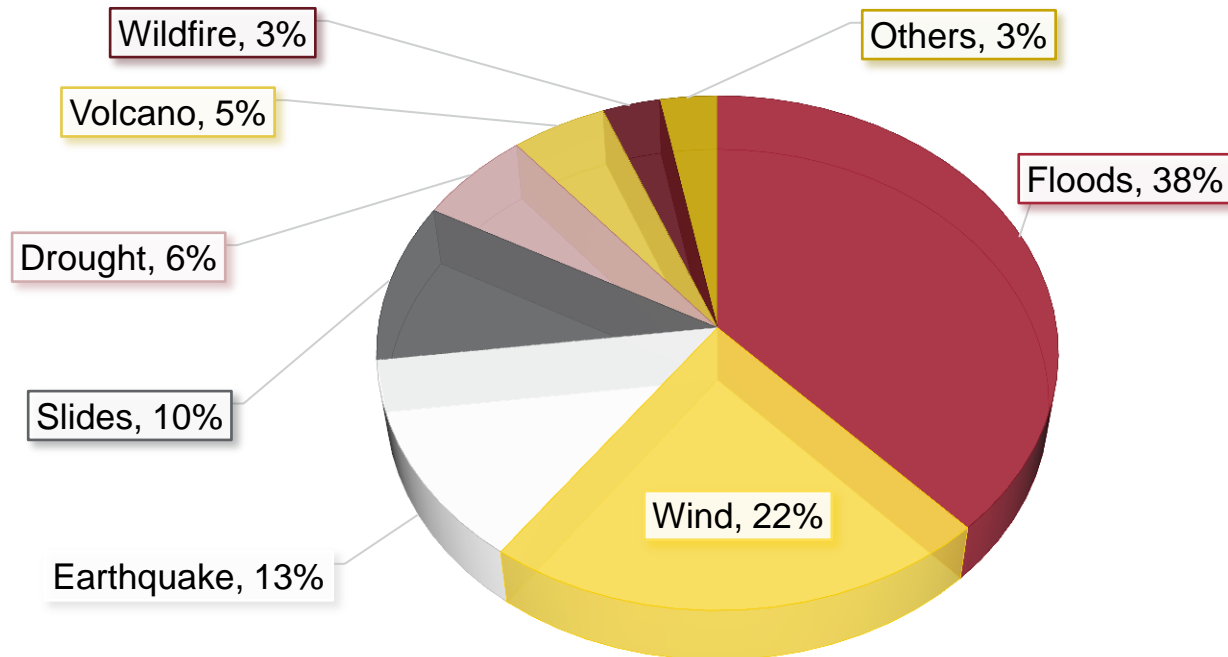
© 2015 PT&C Forensic Consulting Services, P.A.

Hundred Years



Disaster Type

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



October 2014

14 October 2014: Latin America – Earthquake – Severe Weather



NICARAGUA – EARTHQUAKE

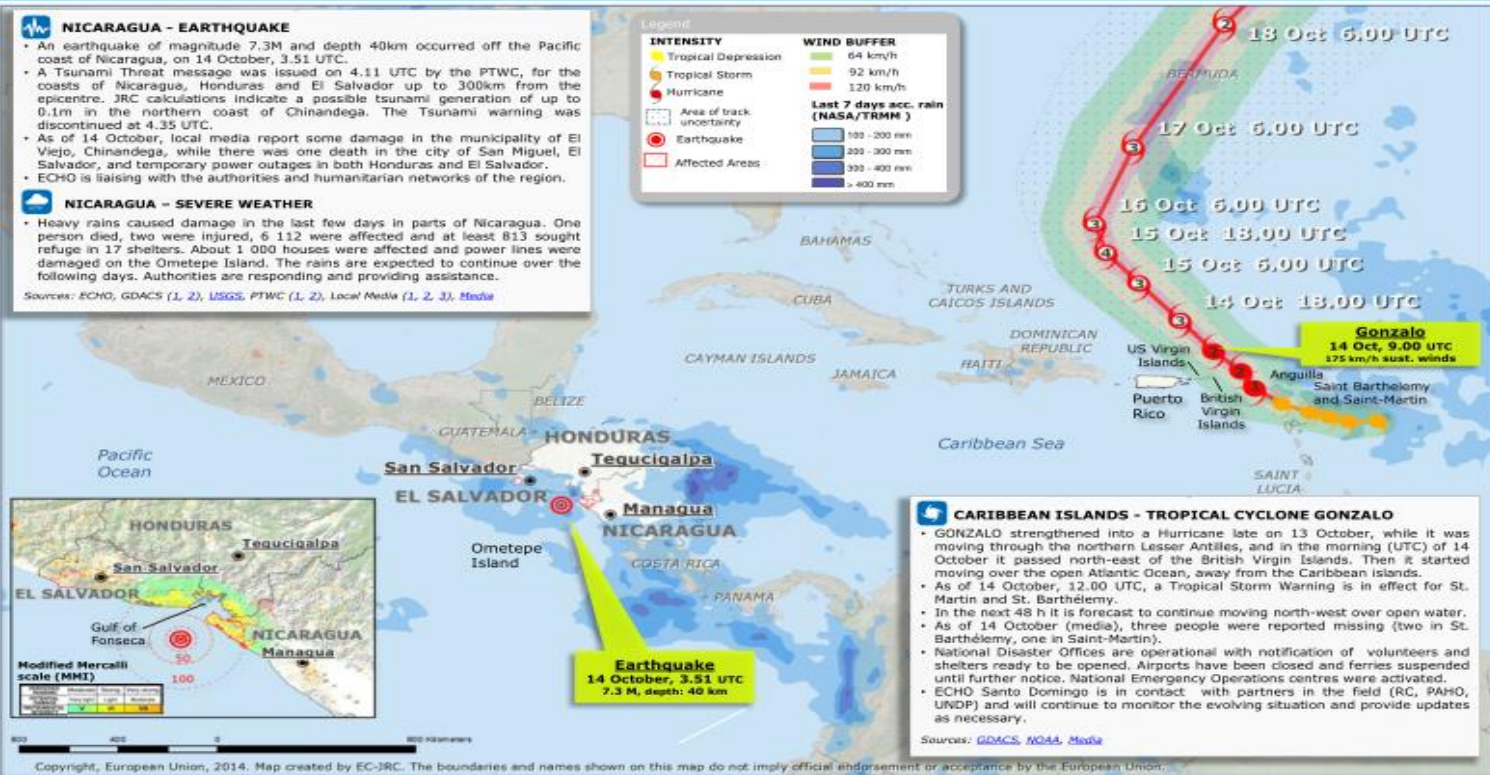
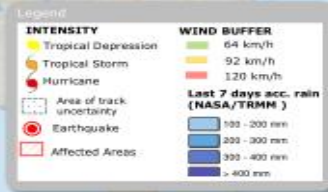
- An earthquake of magnitude 7.3M and depth 40km occurred off the Pacific coast of Nicaragua, on 14 October, 3.51 UTC.
- A Tsunami Threat message was issued on 4.11 UTC by the PTWC, for the coasts of Nicaragua, Honduras and El Salvador up to 300km from the epicentre. JRC calculations indicate a possible tsunami generation of up to 0.1m in the northern coast of Chinandega. The Tsunami warning was discontinued at 4.35 UTC.
- As of 14 October, local media report some damage in the municipality of El Viejo, Chinandega, while there was one death in the city of San Miguel, El Salvador, and temporary power outages in both Honduras and El Salvador.
- ECHO is liaising with the authorities and humanitarian networks of the region.



NICARAGUA – SEVERE WEATHER

- Heavy rains caused damage in the last few days in parts of Nicaragua. One person died, two were injured, 6 112 were affected and at least 813 sought refuge in 17 shelters. About 1 000 houses were affected and power lines were damaged on the Ometepe Island. The rains are expected to continue over the following days. Authorities are responding and providing assistance.

Sources: ECHO, GDACS (1, 2), USGS, PTWC (1, 2), Local Media (1, 2, 3), Media



CARIBBEAN ISLANDS - TROPICAL CYCLONE GONZALO

- GONZALO strengthened into a Hurricane late on 13 October, while it was moving through the northern Lesser Antilles, and in the morning (UTC) of 14 October it passed north-east of the British Virgin Islands. Then it started moving over the open Atlantic Ocean, away from the Caribbean islands.
- As of 14 October, 12.00 UTC, a Tropical Storm Warning is in effect for St. Martin and St. Barthélemy.
- In the next 48 h it is forecast to continue moving north-west over open water.
- As of 14 October (media), three people were reported missing (two in St. Barthélemy, one in Saint-Martin).
- National Disaster Offices are operational with notification of volunteers and shelters ready to be opened. Airports have been closed and ferries suspended until further notice. National Emergency Operations centres were activated.
- ECHO Santo Domingo is in contact with partners in the field (RC, PAHO, UNDP) and will continue to monitor the evolving situation and provide updates as necessary.

Sources: GDACS, WdA, Media

Copyright, European Union, 2014. Map created by EC-JRC. The boundaries and names shown on this map do not imply official endorsement or acceptance by the European Union.

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

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

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

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)

CASA Act

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

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 educationonly a matter of time before we see safer buildings

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

Avoiding the “anything goes” environment

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

Anyone have some extra tape?



© 2015 PT&C Forensic Consulting Services, P.A.

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)

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

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

Who is doing this

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

Objectives

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

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

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.

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

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

Limited Progress

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

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.

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.

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

Rebuild of School/Corp of Engineers



© 2015 PT&C Forensic Consulting Services, P.A.