

The Business Case for Building More Resilient Communities

Lessons Learned from Major Catastrophes

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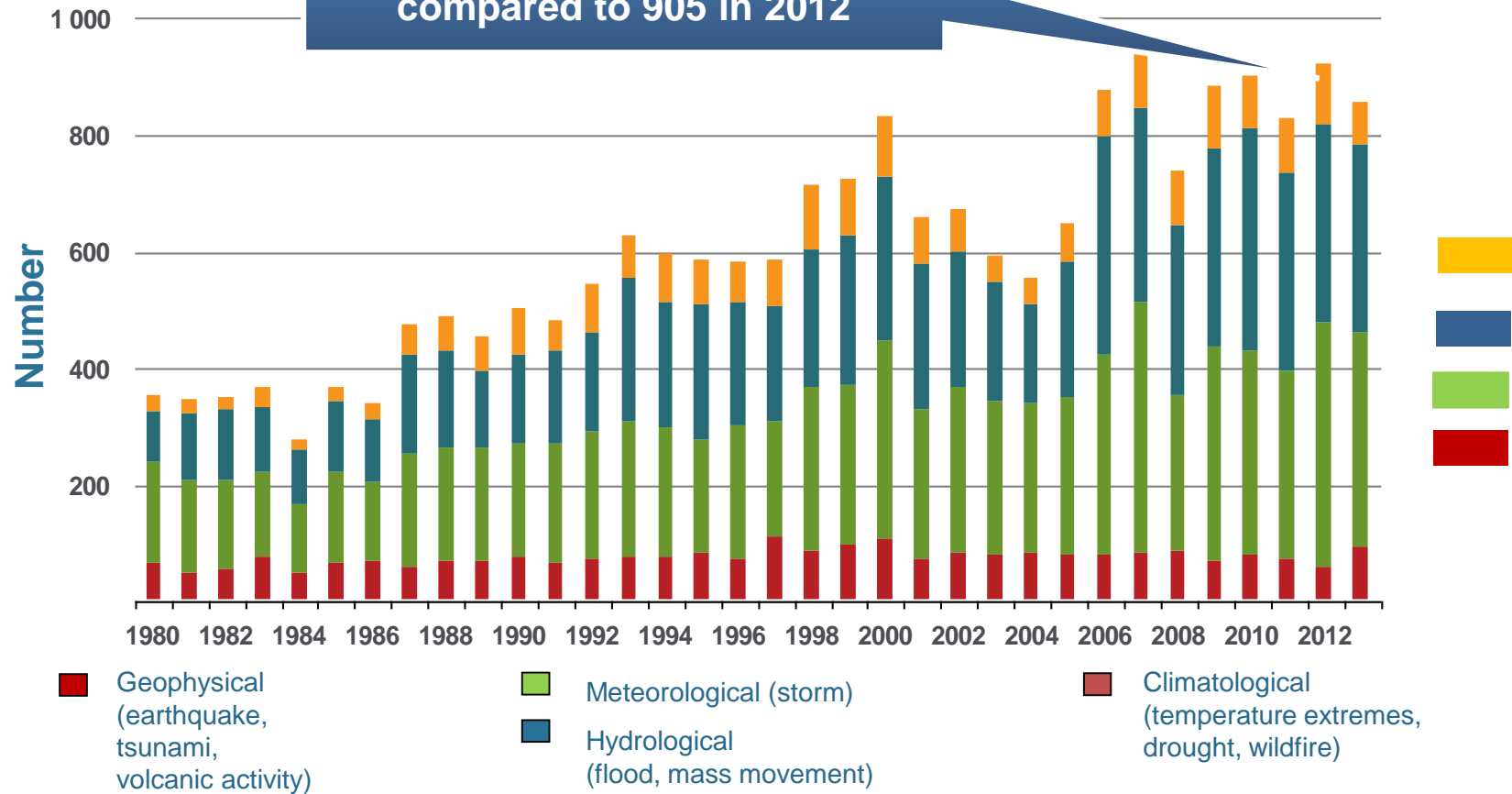
Natural Disasters Global and US – Historical Overview



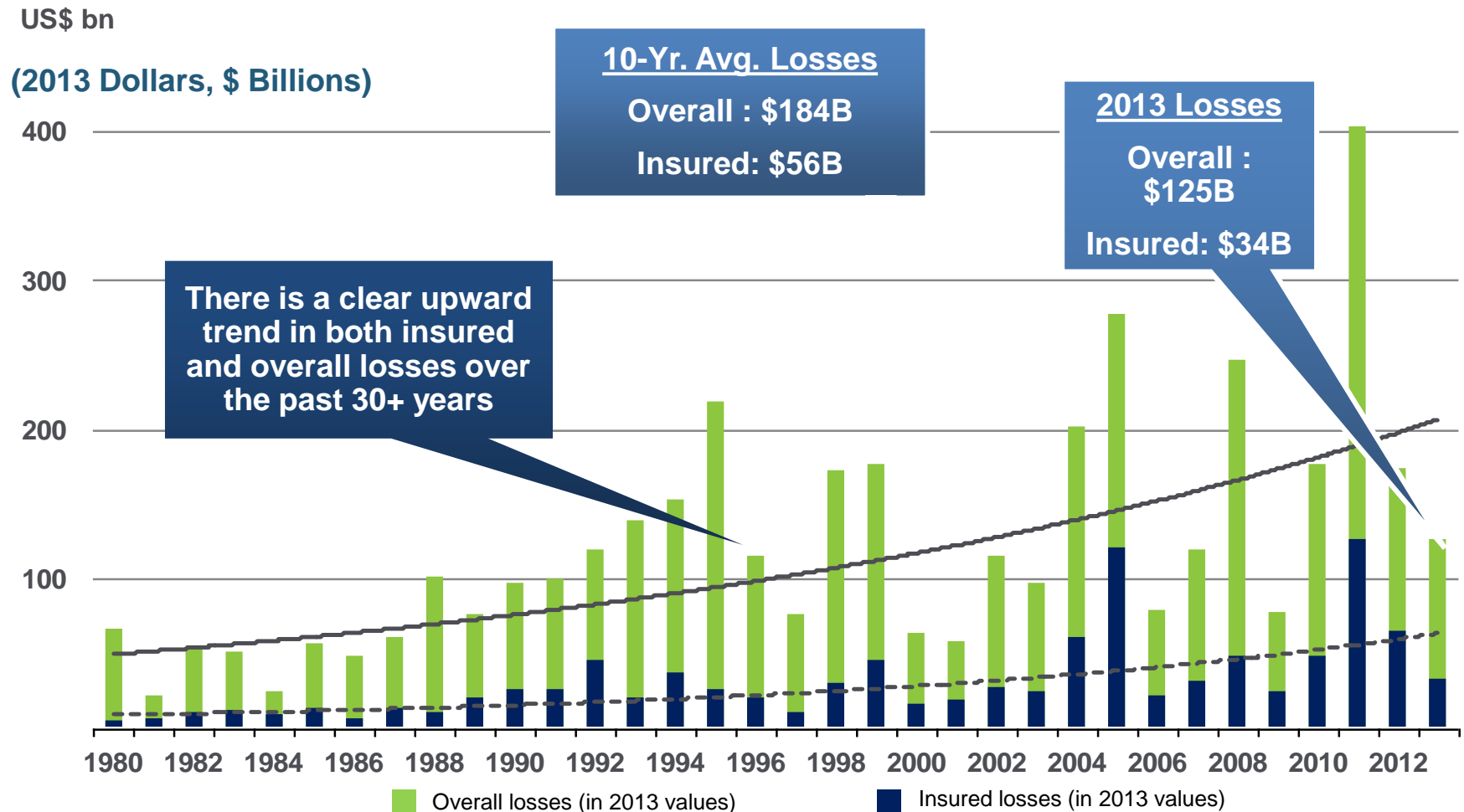
Natural Disasters Worldwide, 1980 – 2013 (Number of Events)

Source: MR NatCatSERVICE

There were 880 natural disaster events globally in 2013 compared to 905 in 2012



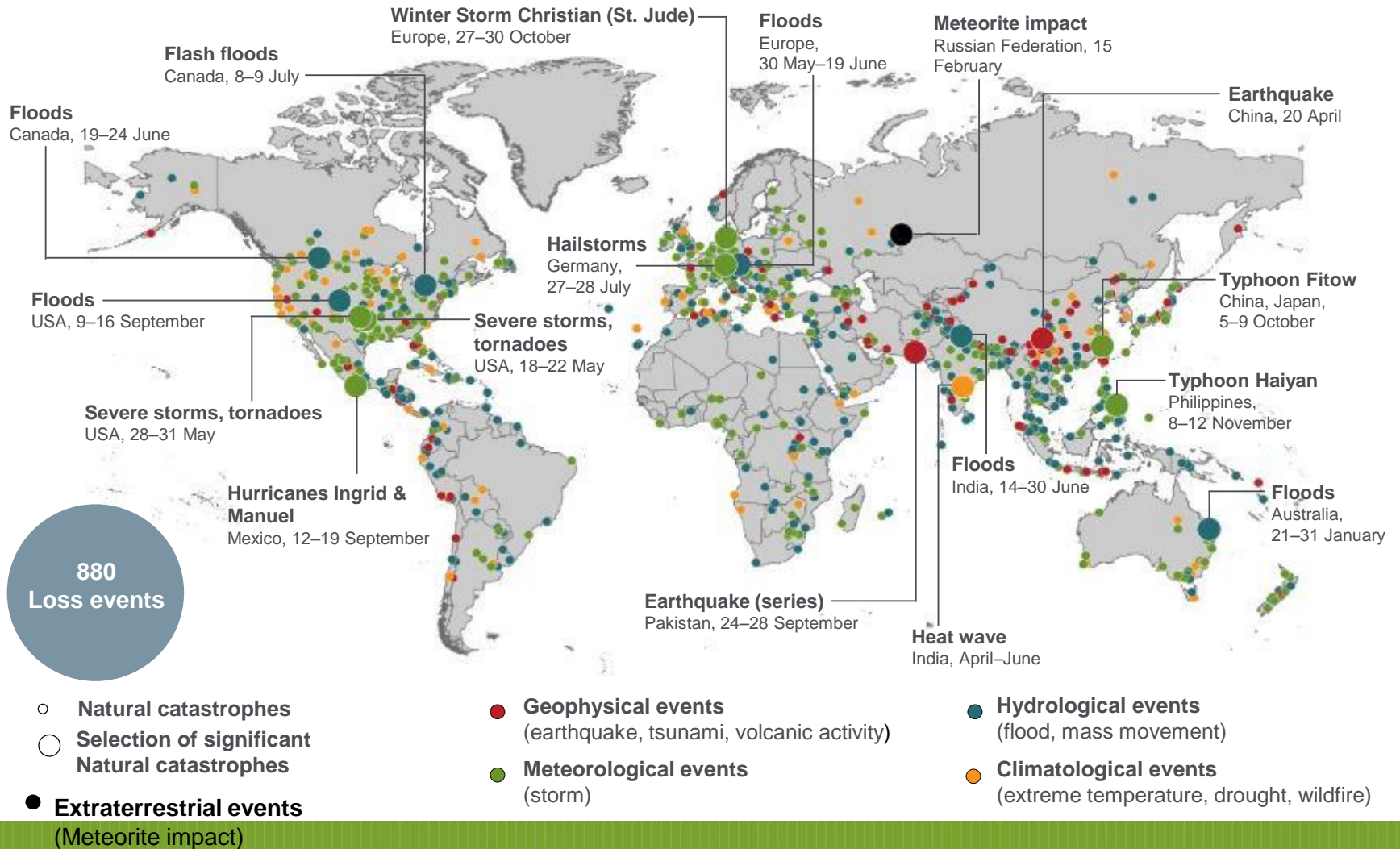
Losses Due to Natural Disasters Worldwide, 1980–2013 (Overall & Insured Losses)



Source: MR NatCatSERVICE

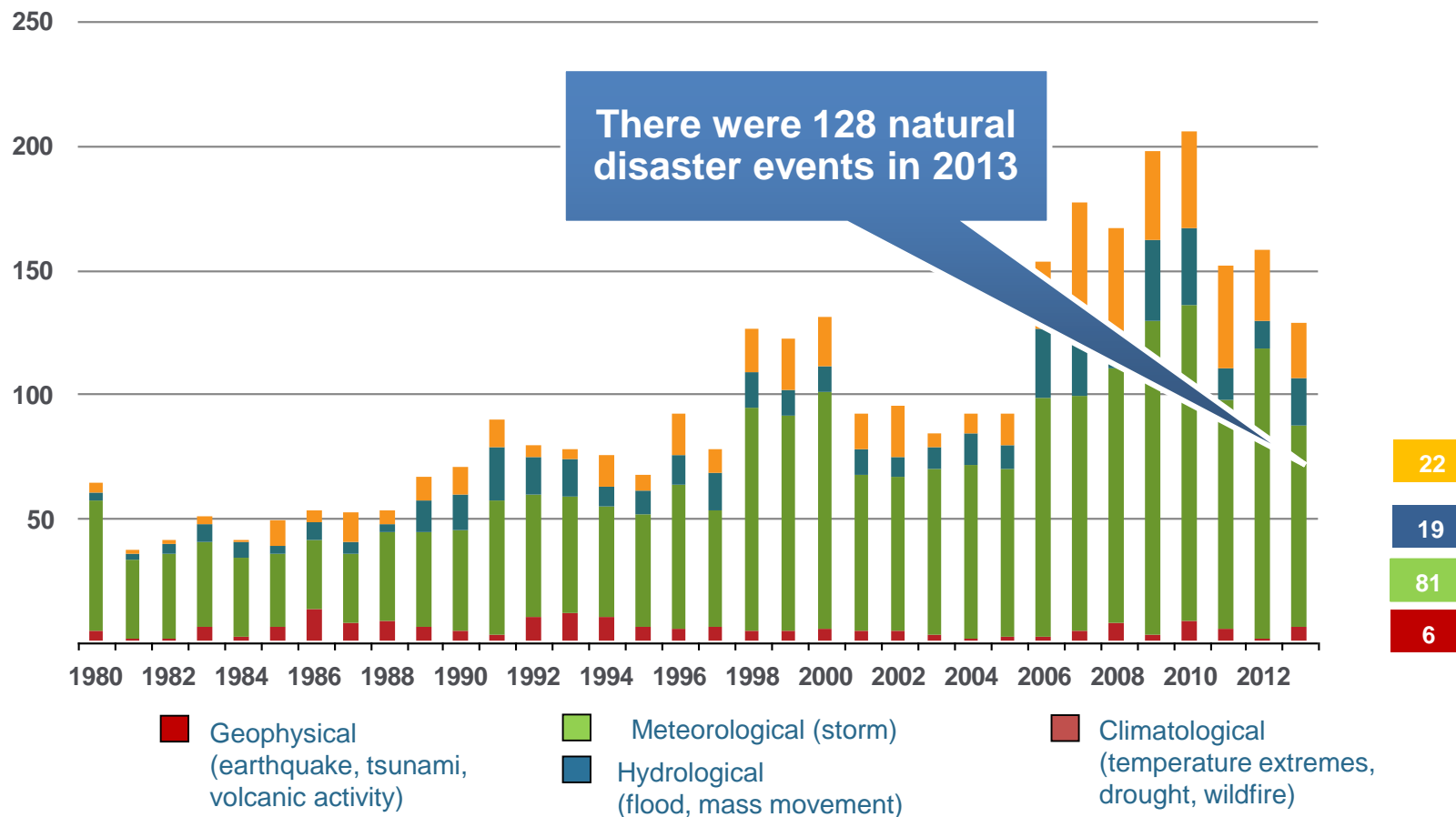
Natural Loss Events: Full Year 2013

Source: Munich Re Geo Risks Research, NatCatSERVICE – as of January 2014.



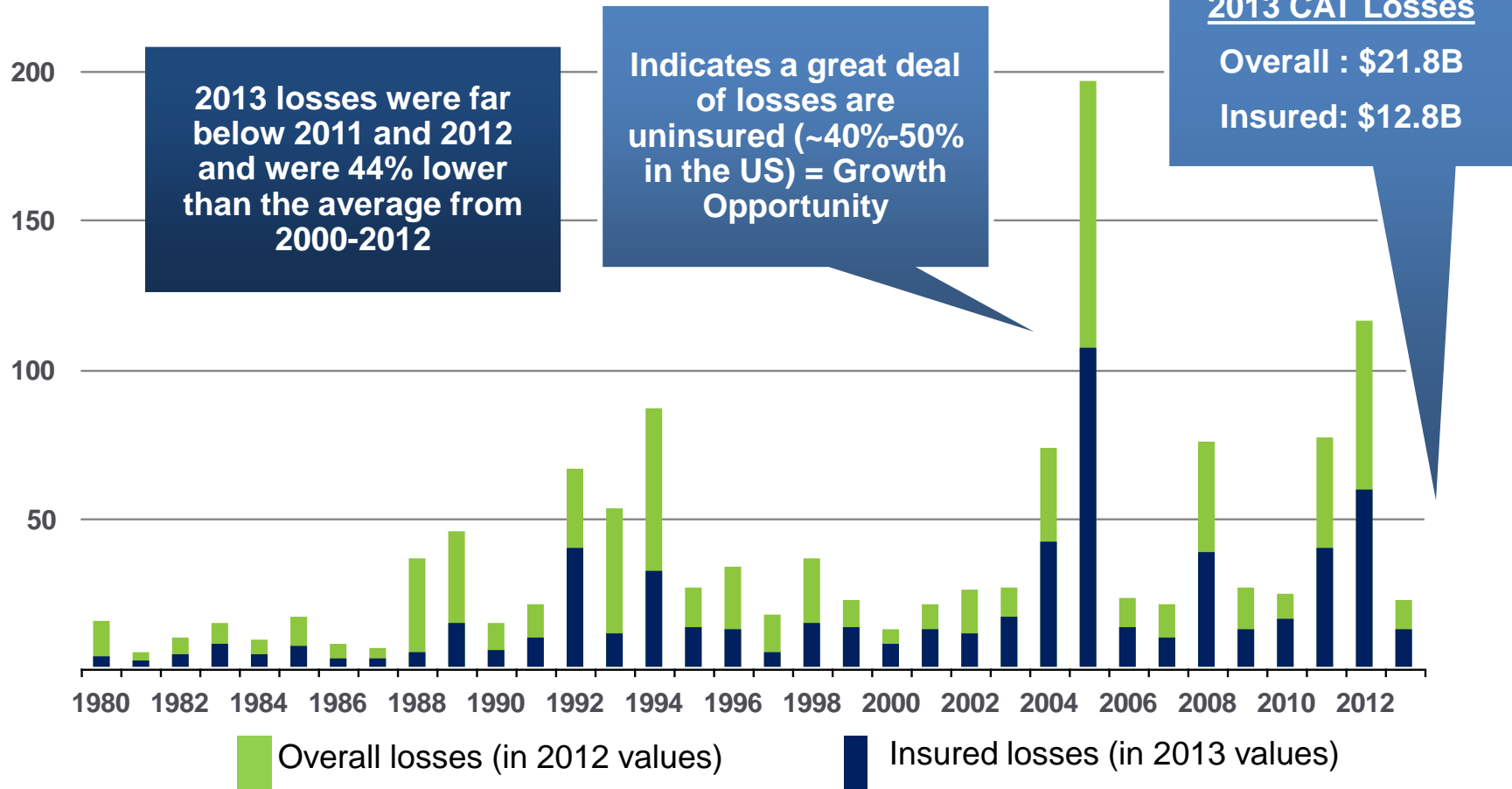
Natural Disasters in the United States

Number of Events (Annual Totals 1980 – 2013)



Losses Due to Natural Disasters in the U.S., 1980–2013 (Overall and Insured Losses)

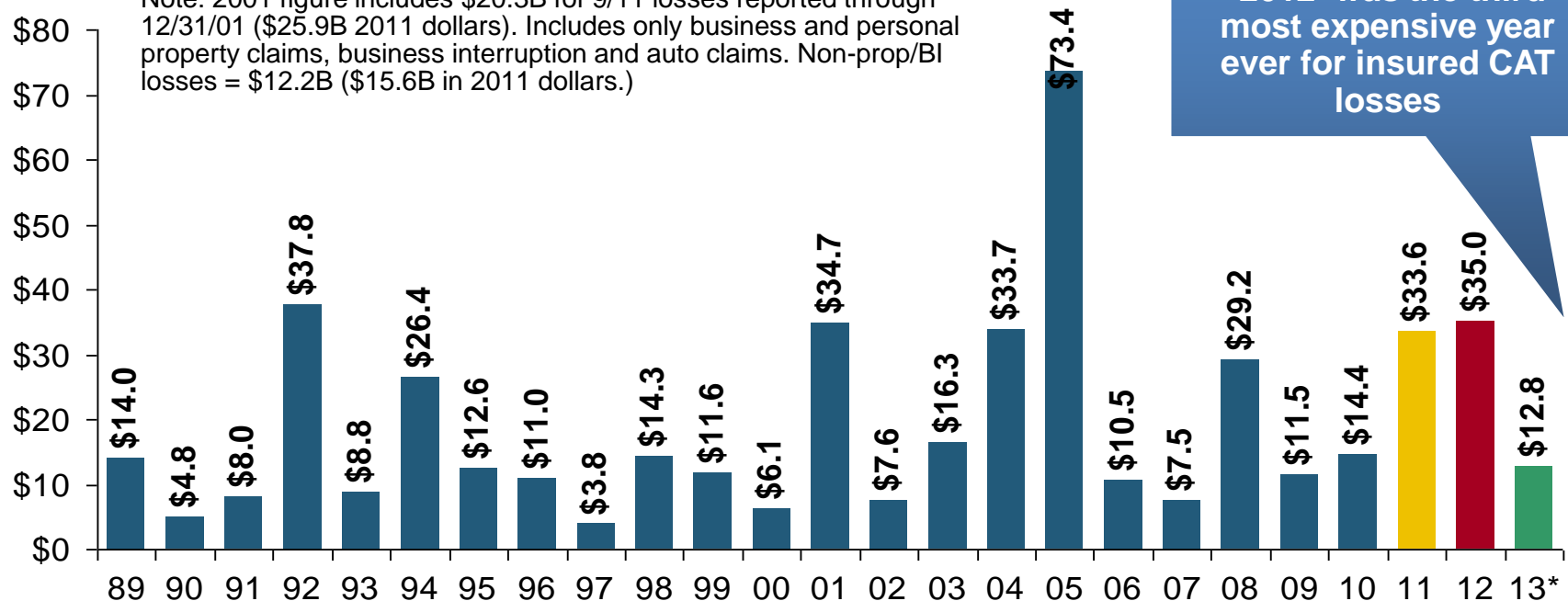
(2013 Dollars, \$ Billions)



U.S. Insured Catastrophe Losses (\$ Billions, \$2012)

*Through 12/31/13.

Note: 2001 figure includes \$20.3B for 9/11 losses reported through 12/31/01 (\$25.9B 2011 dollars). Includes only business and personal property claims, business interruption and auto claims. Non-prop/BI losses = \$12.2B (\$15.6B in 2011 dollars.)



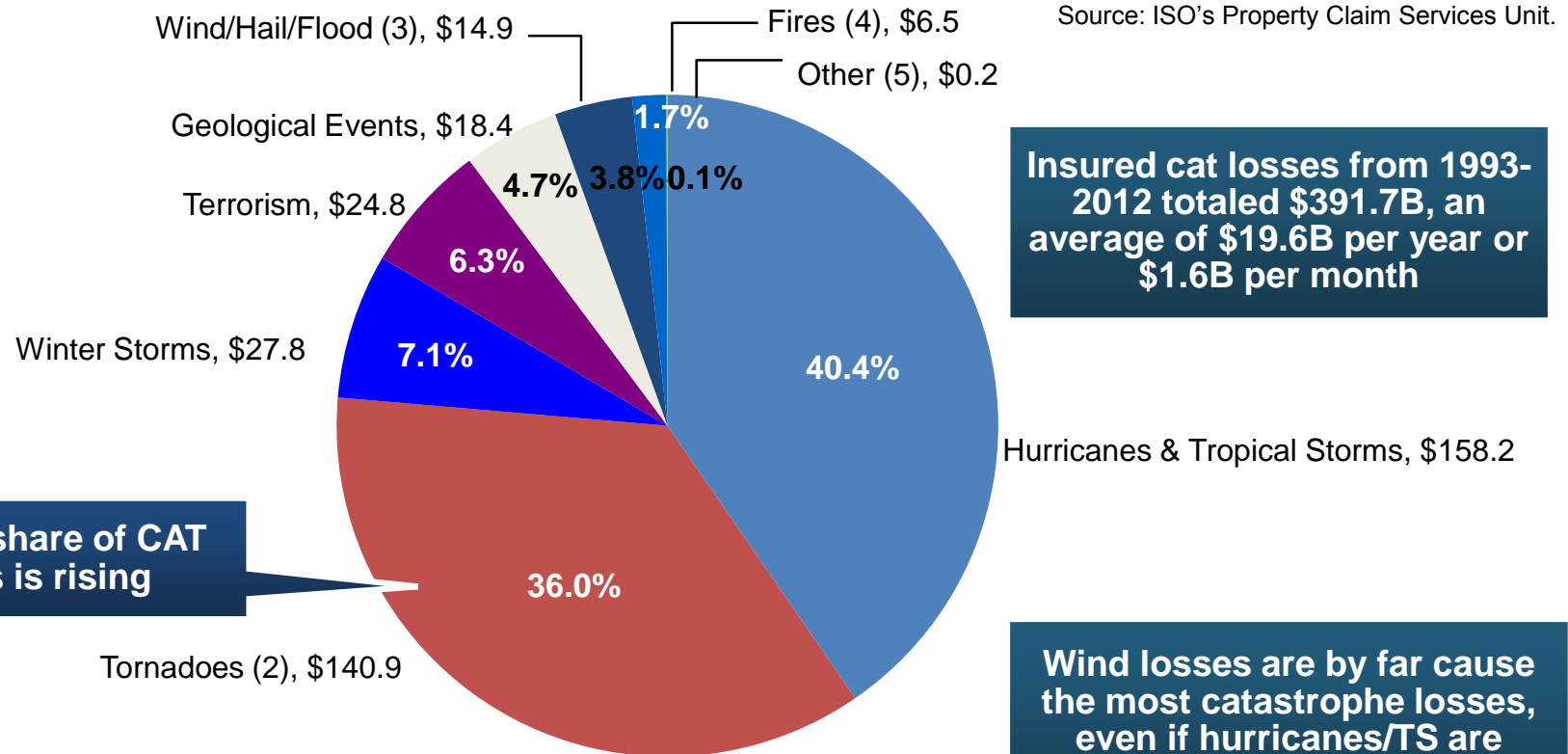
2012 was the third most expensive year ever for insured CAT losses

2012 Was the 3rd Highest Year on Record for Insured Losses in U.S. History on an Inflation-Adj. Basis. 2011 Losses Were the 6th Highest. YTD 2013 Running Well Below 2011 and 2012 YTD Totals.

Record tornado losses caused 2011 CAT losses to surge

Sources: Property Claims Service/ISO; Insurance Information Institute.

Inflation Adjusted U.S. Catastrophe Losses by Cause of Loss, 1993–2012

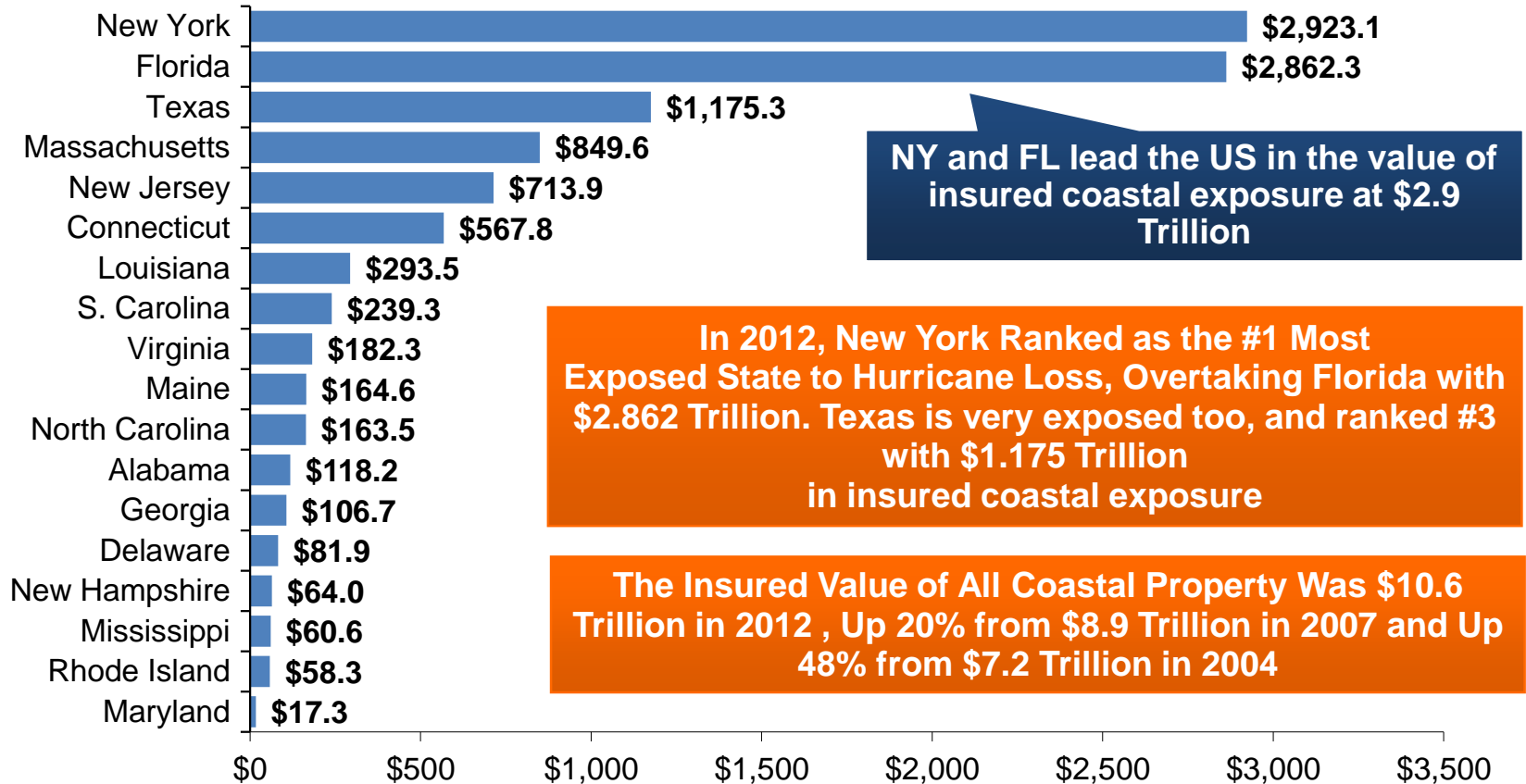


- Catastrophes are defined as events causing direct insured losses to property of \$25 million or more in 2012 dollars.
- Excludes snow.
- Does not include NFIP flood losses
- Includes wildland fires
- Includes civil disorders, water damage, utility disruptions and non-property losses such as those covered by workers compensation.

Total Value of Insured Coastal Exposure in 2012

(2012, \$ Billions)

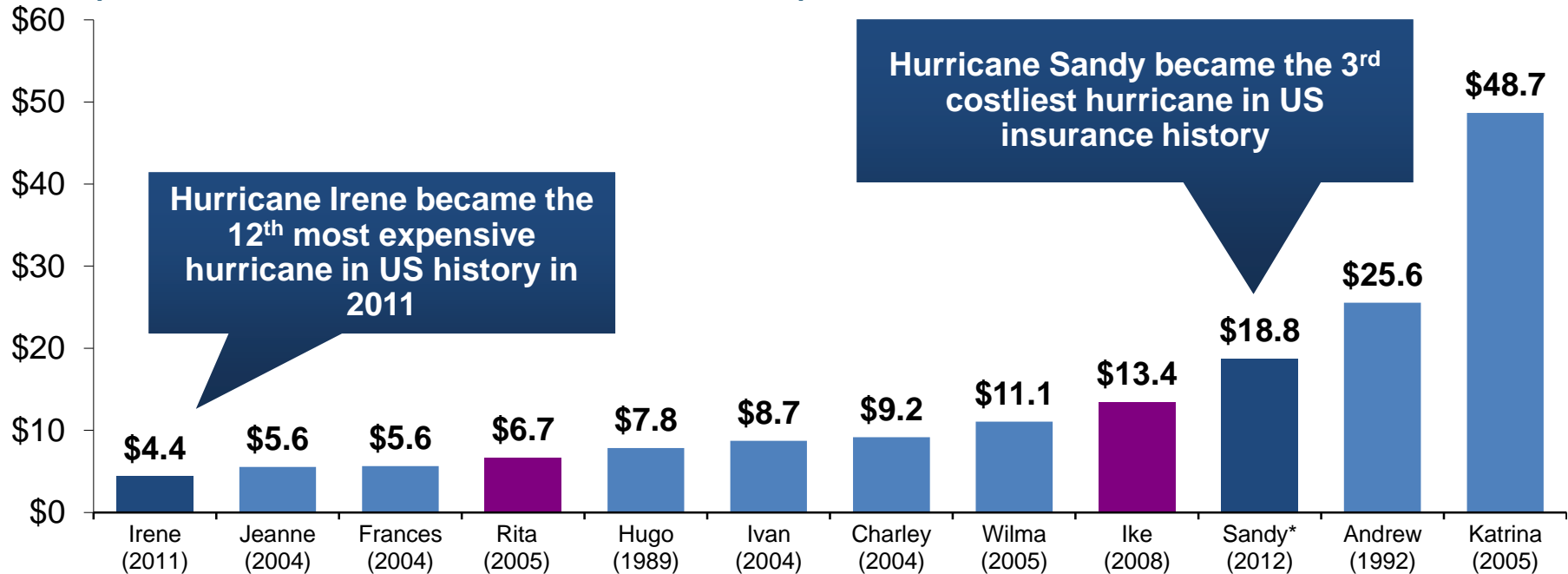
Source: AIR Worldwide



Top 12 Most Costly Hurricanes in U.S. History

10 of the 12 most costly hurricanes in insurance history occurred over the past 9 years (2004—2012)

(Insured Losses, 2012 Dollars, \$ Billions)



*PCS estimate as of 4/12/13.

Sources: PCS; Insurance Information Institute inflation adjustments to 2012 dollars using the CPI.

Storm Case Study



Storm Case Study

Pre-Sandy

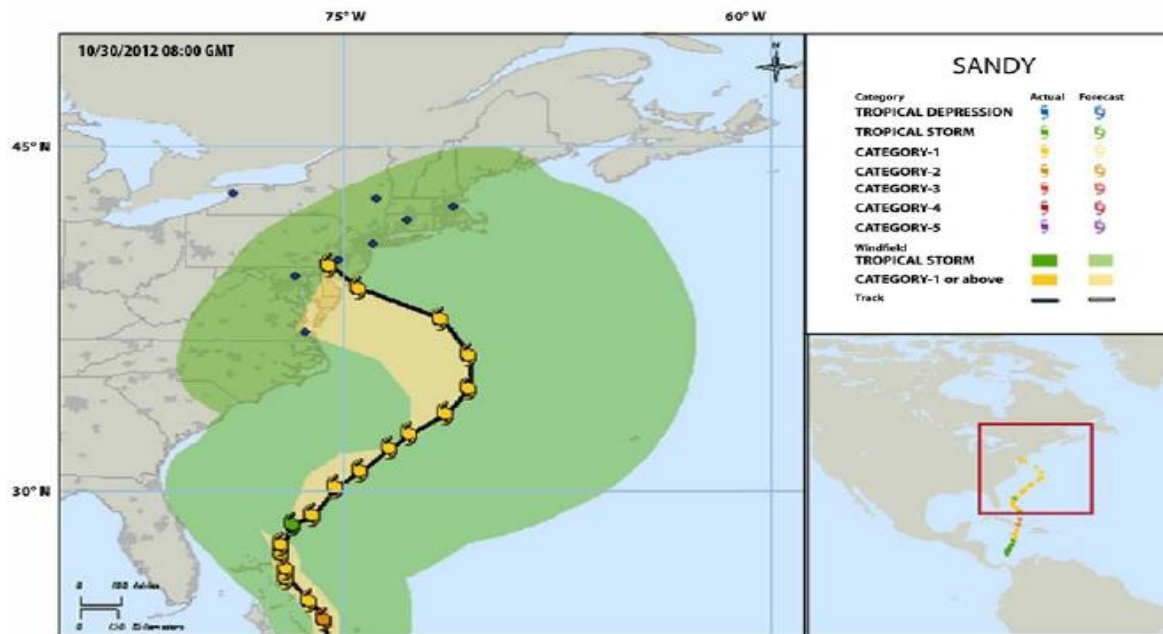


Storm Case Study



What Happened Sandy at a Glance

- On Monday October 29, 2012 Superstorm Sandy made landfall just south of Atlantic City with winds in excess of 80 mph
- Largest hurricane ever to hit the mid-Atlantic and Northeast regions of the United States
 - Winds extending 580 miles from the center approximately 1,000 miles wide (twice the size of Texas)
 - Delivered over 12" of rain in certain areas of the northeast over a 36 hour span
 - Massive flooding throughout the NY Metro area



SOURCE: i-aXs®.

What Happened Sandy at a Glance

- Storm surge reached 12.5 ft in some areas
- Storm surge level at Battery Park was nearly 4 feet higher than the record set by Hurricane Donna in 1960
 - Peak surge of the storm hit within 30 minutes of high tide
 - Full moon
- Sandy was more than double the size of Katrina in diameter and affected over 2.5M more people



Economic Losses

Quantifying the Devastation

- Over 8.6MM people lost power according to the US Dept of Energy
- At least 110 confirmed deaths in the United States
- According to FEMA, the assistance to NY, NJ and CT will total more than \$455M
- NYSE closed for 2 days
 - First time since 1888 that this happened due to a weather event
- Almost 20,000 flights cancelled accordingly to FlightAware



Insurable Losses

Quantifying the Devastation

- Insured Losses topped \$20B, Sandy is the second most expensive hurricane in history, trailing only Hurricane Katrina's \$41.1B
- Based on density population, the volume of claims reported broke industry records in personal and commercial insurance markets
 - NY Metro region has the highest population density in the country
 - Population affected by Sandy is over 17.5M (compared to 15M in Katrina)
- More than 70,000 property owners filed claims with NFIP according to FEMA
- The National Flood Insurance Program (NFIP) is paying \$8B in indemnity payments alone (<http://www.consumerfed.org/news/607>)

Company	Insured Loss Estimate (In USD billions)	Notes	Date of Estimate
AIR Worldwide	7.0-15.0	Does not include: Losses paid out by the National Flood Insurance Program, resulting from the compromise of existing defenses, the flooding of tunnels and subways, uninsured properties, infrastructure, states distant to the storm's center, extra-contractual obligations, hazardous waste cleanup, vandalism, civil commotion, other non-modeled losses and losses for U.S. offshore assets and non-U.S. property.	10/31/2012
Dowling & Partners	<20.0	Expect initial reported losses will likely not equal "ultimate losses." At a USD20 billion market loss, Sandy should help North American pricing on the margin, but it won't "turn" the market.	11/5/2012
Endurance Specialty Holdings, Ltd.	15.0	CEO David Cash, "It's my sense today that economic damage in excess of USD30 billion and insured losses in excess of USD 15 billion are quite plausible." Q3 2012 Earnings Call.	11/1/2012
EQECAT	10.0 - 20.0	Insured losses would be in the range of USD 10 billion to USD20 billion, with total economic damage rising to USD30 billion to USD50 billion. Most insured losses will be triggered from business interruption losses. Geographic breakdown of estimated losses are: New York (34 percent), New Jersey (30 percent) and Pennsylvania (20 percent) with the balance in the remaining states affected.	11/1/2012
RMS	None	On November 2, Vice President Claire Souch, "It is evident that Sandy's impacts are widespread and multiple, with mounting super-cat like elements. The event is still live and several variables are yet to play out. Consequently, it remains too early to provide a reliable estimate of the total insured losses."	11/2/2012
Median of all maximum estimates in market ¹	20.0		

Issues Facing Real Estate Firms

Areas of Concern – Rebuild & Recover After Sandy

- Lease Review and Contract Certainty
 - Rent abatement and lease termination clauses
 - Loss of rent or extended business interruption
 - Marketing to prospective tenants
 - Possibility for reimbursement only up to 12 months
 - Every lease is different
- Increased cost of construction in NYC
 - Highest in nation
 - High demand but low supply – demand surge for contractors and materials
 - Loss Invoices were higher than under normal industry conditions
- Rebuilding and Code Issues
 - Reconstruction permits and enforcement of stringent building codes:
 - American with Disabilities Act (ramps, elevators, restrooms)
 - Electrical. Sprinklers, Roof/Structural
 - Generators to higher floors
- Redevelopment of Coastal/Waterfront Areas new code
- Mayor Bloomberg Report on Sandy



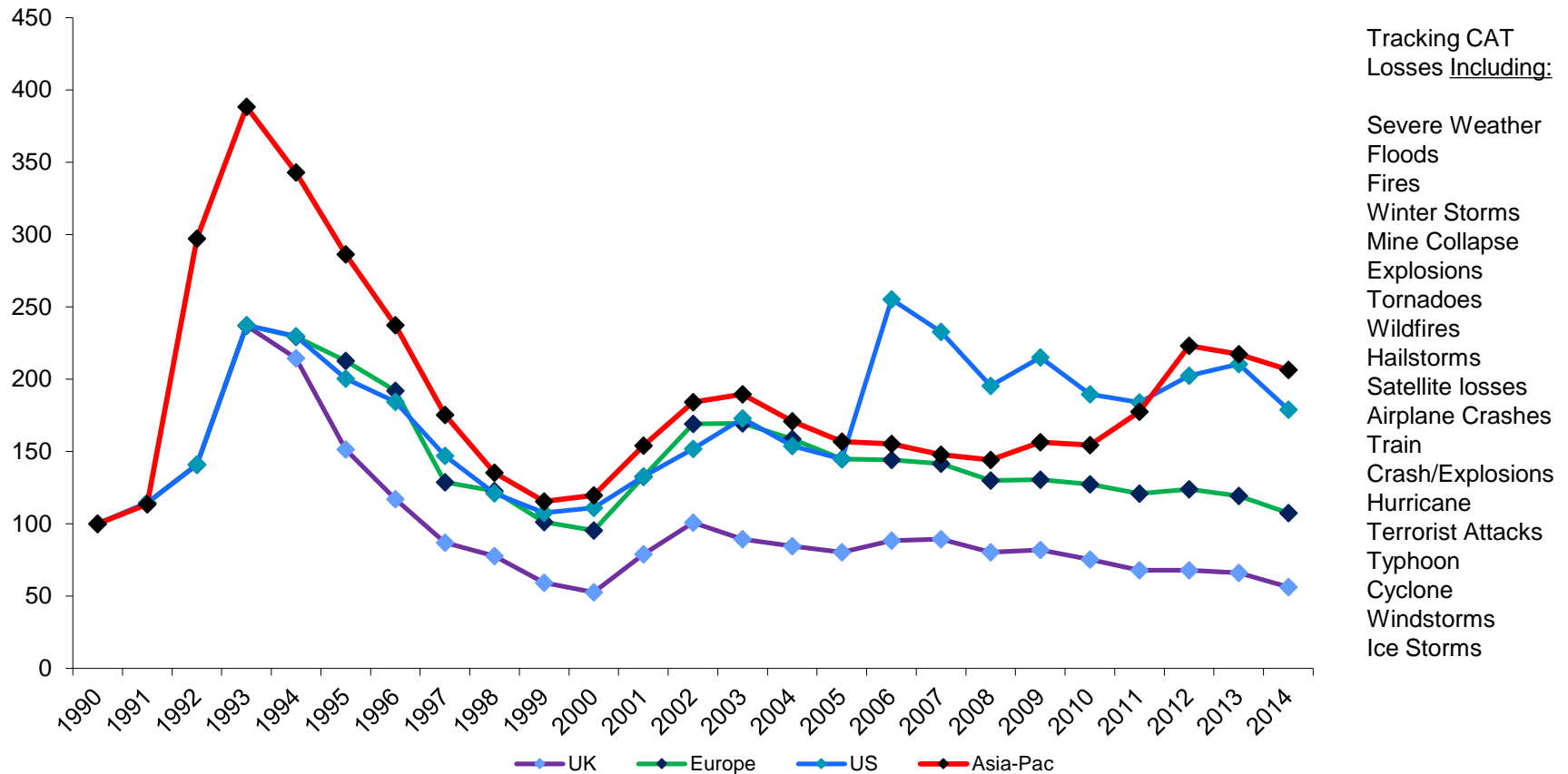
Insurance Market Impact

How Sandy Will Affect the Insurance Marketplace

- Analytical Modeling – shift due to Sandy and Irene
 - Tier 1 & Tier 2 Counties
 - Wind models traditionally focused on Florida and Texas
 - Northeast coastal exposures have greater focus post Sandy & Irene
- Lenders and Loan Covenants
 - Loan Covenants have increased focus on mandated windstorm and flood coverage within the NY Metro area and Northeast
- Pricing
 - Underwriters may look for price adjustments in conjunction with deductible increases
 - Portfolio allocations may change dramatically in the Mid-Atlantic/Northeast
- Business Continuity Planning and Hurricane Preparedness
- Insurance and Reinsurance Market Conditions
 - Capital & Surplus has reached record levels in 2014
 - New RMS PML Models released in 2013
 - 2013 benign Hurricane Season
 - Windstorm risk including Northeast Wind is a focus as well as flooding risk

Reinsurance/Insurance Industry Analytics

Regional Property Catastrophe Rate Online Index

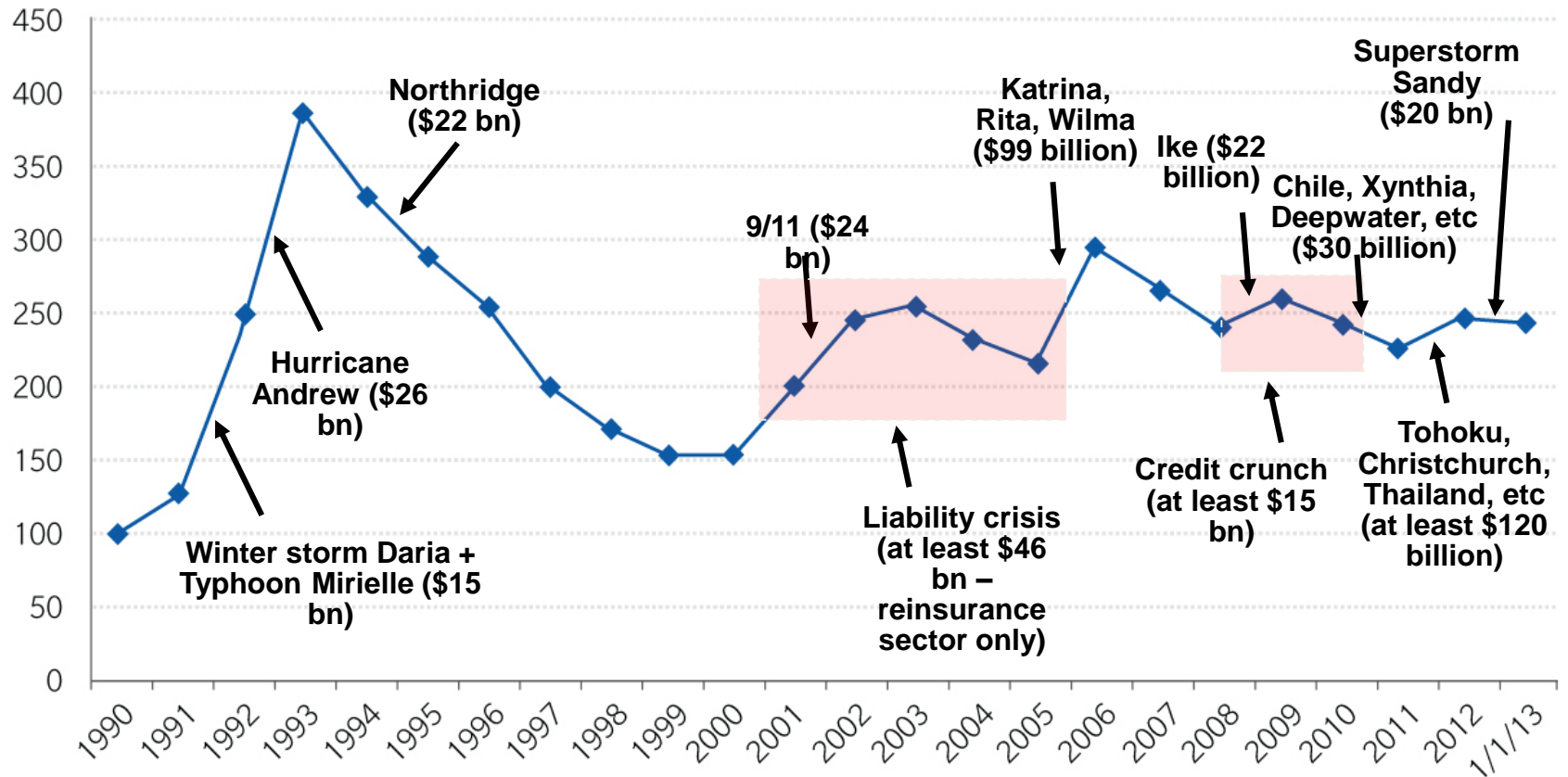


(Source: Guy Carpenter)

Reinsurance/Insurance Industry Analytics

Global Property Catastrophe Reinsurance Rate-on-Line Index

Inferring pricing cycles and stabilization from history



Source: Guy Carpenter & Company, LLC

(all losses in 2012 USD)

Questions and Answers

