



# 2010 NATURAL CATASTROPHE YEAR IN REVIEW

January 10, 2011

---

## **Welcome/Introduction**

Terese Rosenthal

## **U.S. Natural Catastrophe Update**

Carl Hedde

## **Global Natural Catastrophe Update**

Ernst Rauch

## **Economic Implications of Natural Catastrophe Losses**

Dr. Robert Hartwig

## **Questions and Answers**



You will have an opportunity to ask questions at the conclusion of the presentation.

To ask a question, please dial 1 4 on your phone.

An operator will facilitate your participation.

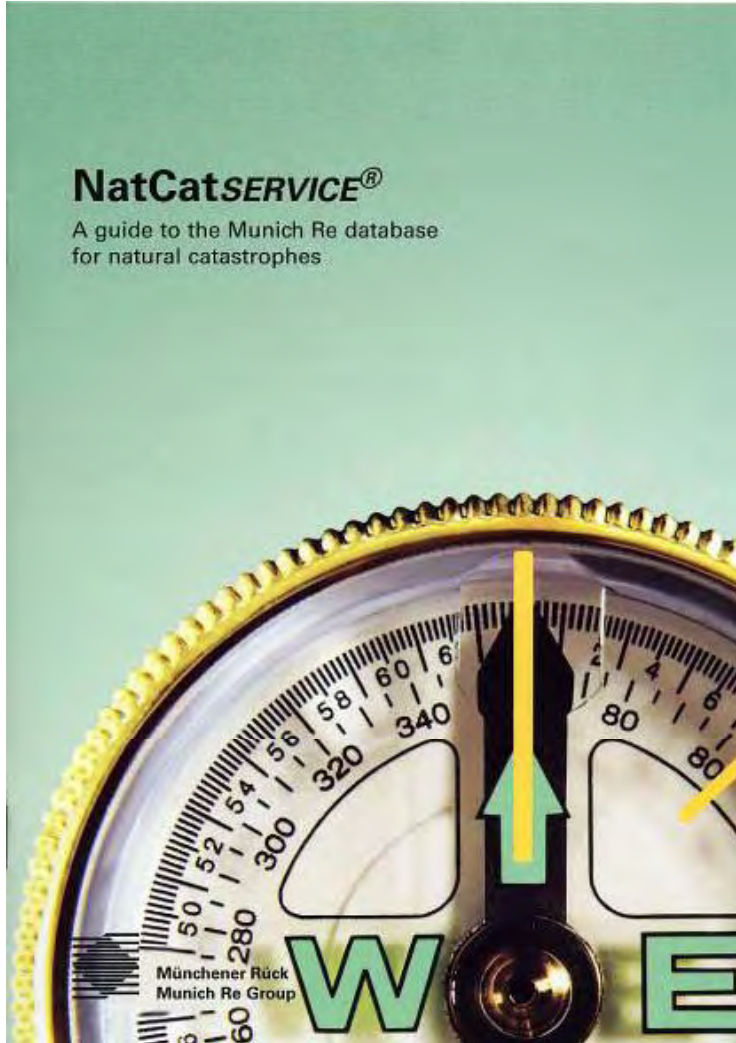


---

# U.S. NATURAL CATASTROPHE UPDATE

Carl Hedde, SVP, Head of Risk Accumulation  
Munich Reinsurance America, Inc.





### The Database Today

- From 1980 until today all loss events; for USA and selected countries in Europe all loss events since 1970.
- Retrospectively, all great disasters since 1950.
- In addition, all major historical events starting from 79 AD – eruption of Mt. Vesuvio (3,000 historical data sets).
- **Currently more than 29,500 events**

- Insured losses in the United States in 2010 totaled \$13.6 billion – much lower than the 2000 to 2009 average loss of \$25.8 billion (in 2010 Dollars)
- Multiple severe winter storms across the country create the highest losses from this peril since 2003.
- Third consecutive year with over \$9 billion in insured thunderstorm losses.
- Very active hurricane season, but no hurricane landfalls in United States.
- Large, damaging wildfire near Boulder, Colorado.

# Natural Disasters in the United States, 2010

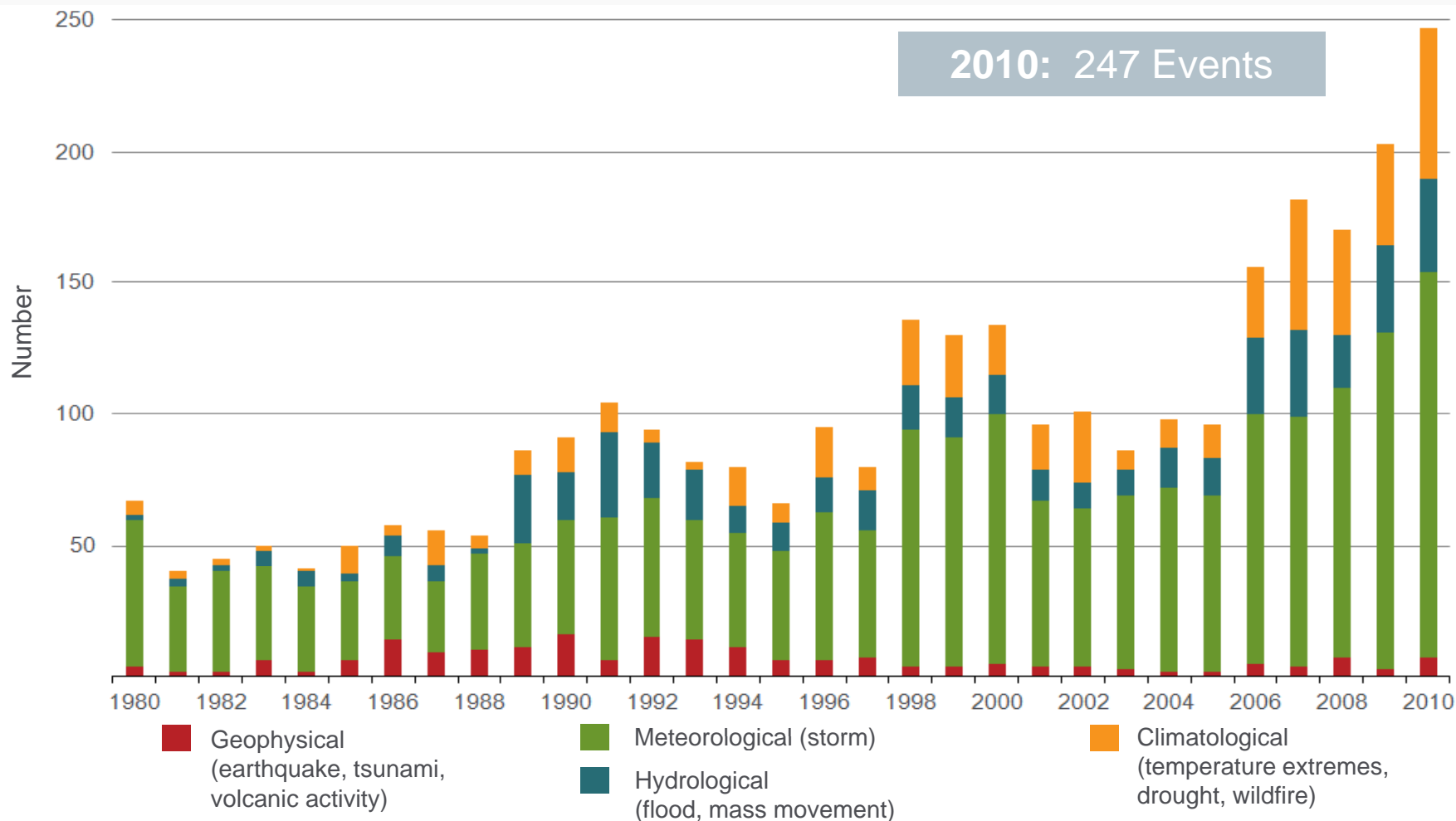
## Insured Losses

As of December 31, 2010	Fatalities	Estimated Overall Losses (US \$m)	Estimated Insured Losses (US \$m)
Severe Thunderstorms	56	13,185	9,503
Winter Storm	64	3,734	2,625
Flood	68	2,933	1,059
Wildfire	1	314	210
Earthquake	0	200	128
Tropical Cyclone	8	200	120

## Natural Disasters in the United States, 1980 – 2010

## Number of Events, Annual Totals

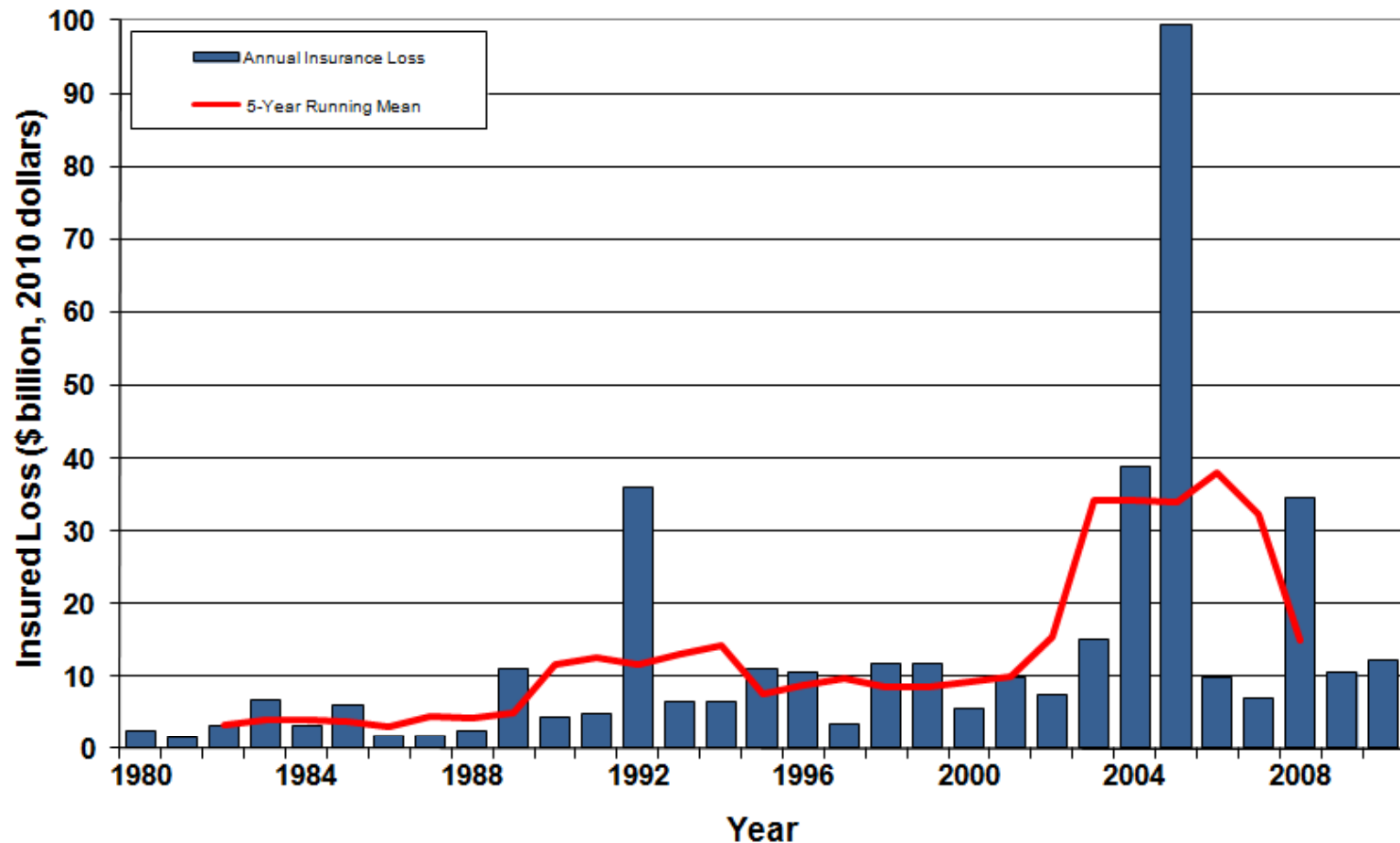
The number of events in the United States in 2010 set a new record.



# Insured Losses Due to Weather Perils in the U.S. 1980 – 2010

## Tropical Cyclone, Thunderstorm, and Winter Storm only

For the second year in a row, insured losses due to weather perils in the U.S. in 2010 were the highest on record for a year without a hurricane landfall.



# Significant Natural Catastrophes, 2010

\$1 billion economic loss and/or 50 fatalities

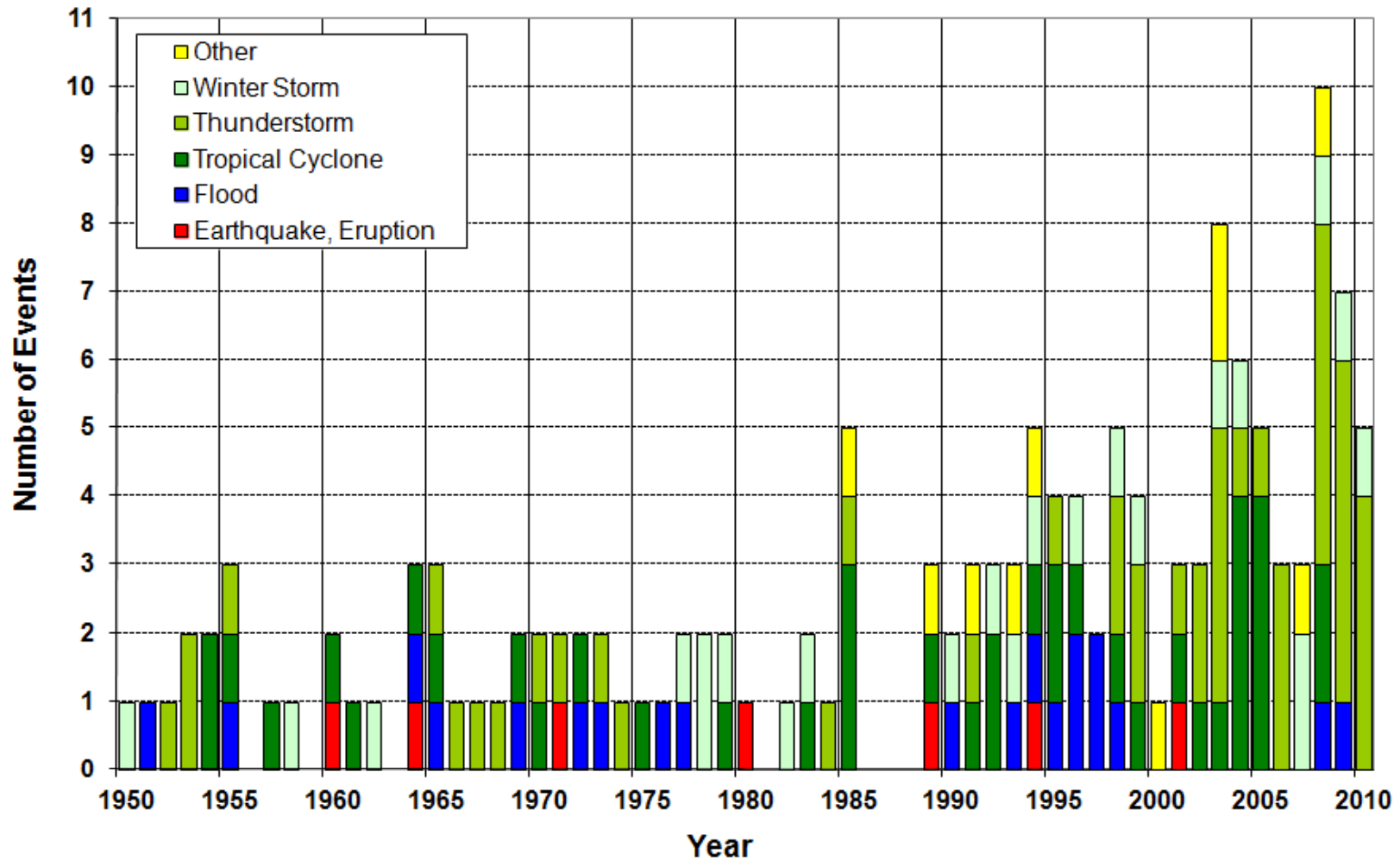


Date (As of January 1, 2011)	Event	Estimated Economic Losses (US \$m)	Estimated Insured Losses (US \$m)
March 13 - 15	Winter Storm	1,700	1,225
April 30 – May 3	Thunderstorms	2,700	800
May 12 – 16	Thunderstorms	2,700	2,000 <sup>†</sup>
July 20 – 25	Thunderstorms	1,050	785 <sup>†</sup>
October 4 – 6	Thunderstorms	2,000	1,450 <sup>†</sup>

# Significant Natural Catastrophes, 1950 – 2010

Number of Events (\$1 billion economic loss and/or 50 fatalities)

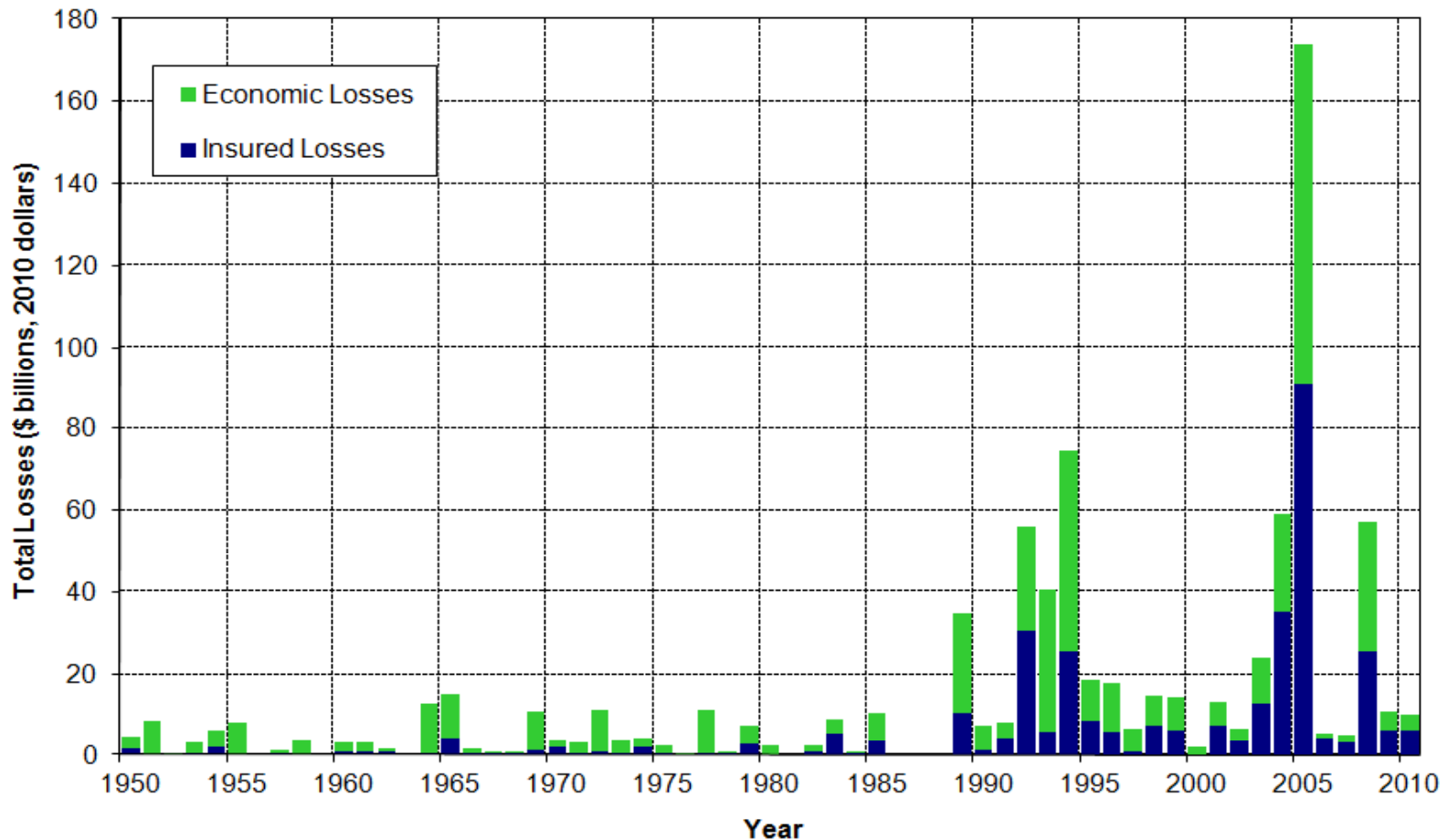
There were 5 significant natural catastrophes in the United States in 2010.



# Significant Natural Catastrophes, 1950 – 2010

Losses (\$1 billion economic loss and/or 50 fatalities)

Overall losses from U.S. significant catastrophes totaled \$8.6 billion;  
Insured losses totaled \$6.3 billion

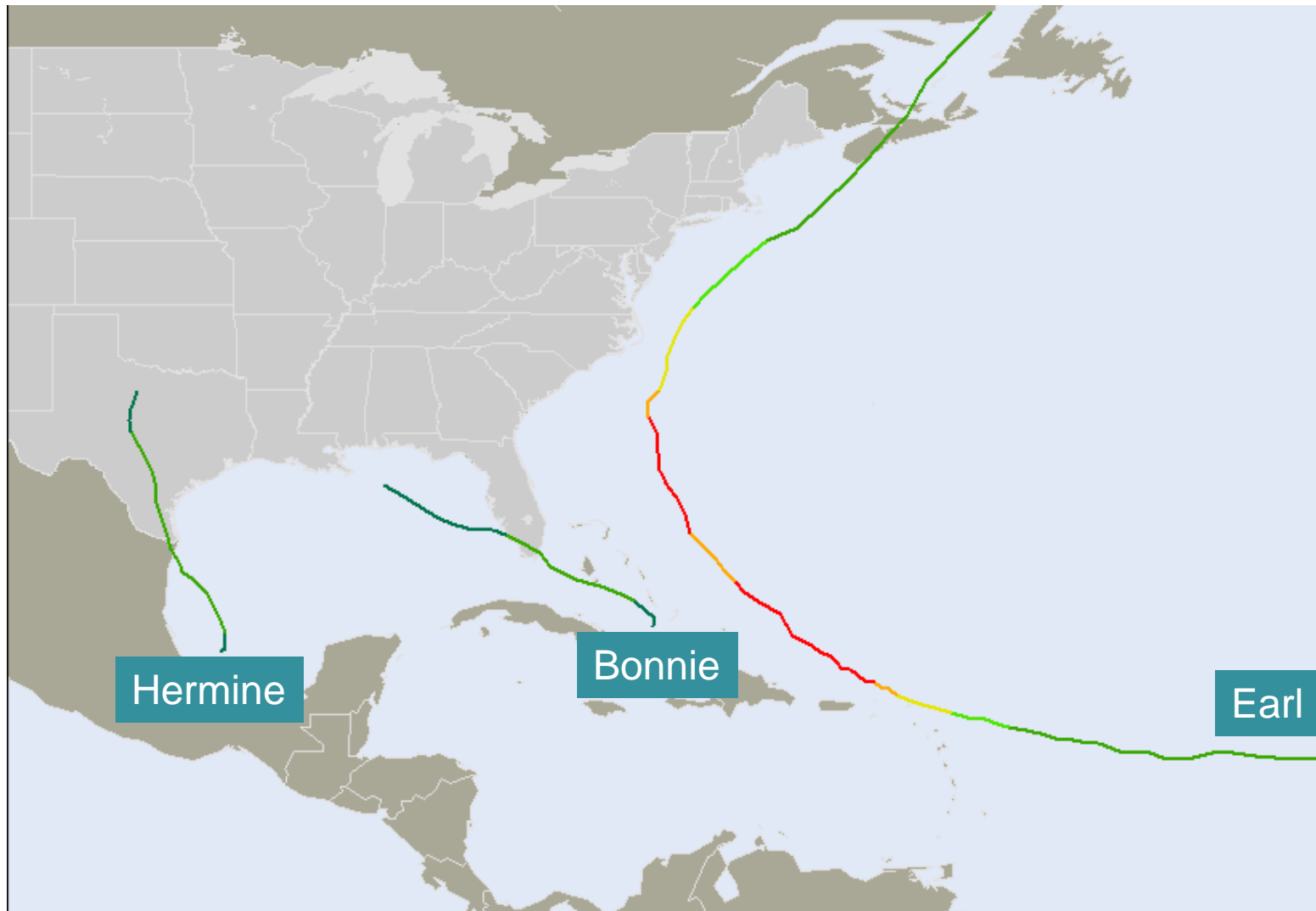


---

# U.S. TROPICAL CYCLONES 2010



# Tropical Cyclones Impacting the United States in 2010



## **Tropical Storm Bonnie**

- Landfall near Homestead, Florida on July 23
- Sustained winds at landfall of 40 mph, no damage reported

## **Hurricane Earl**

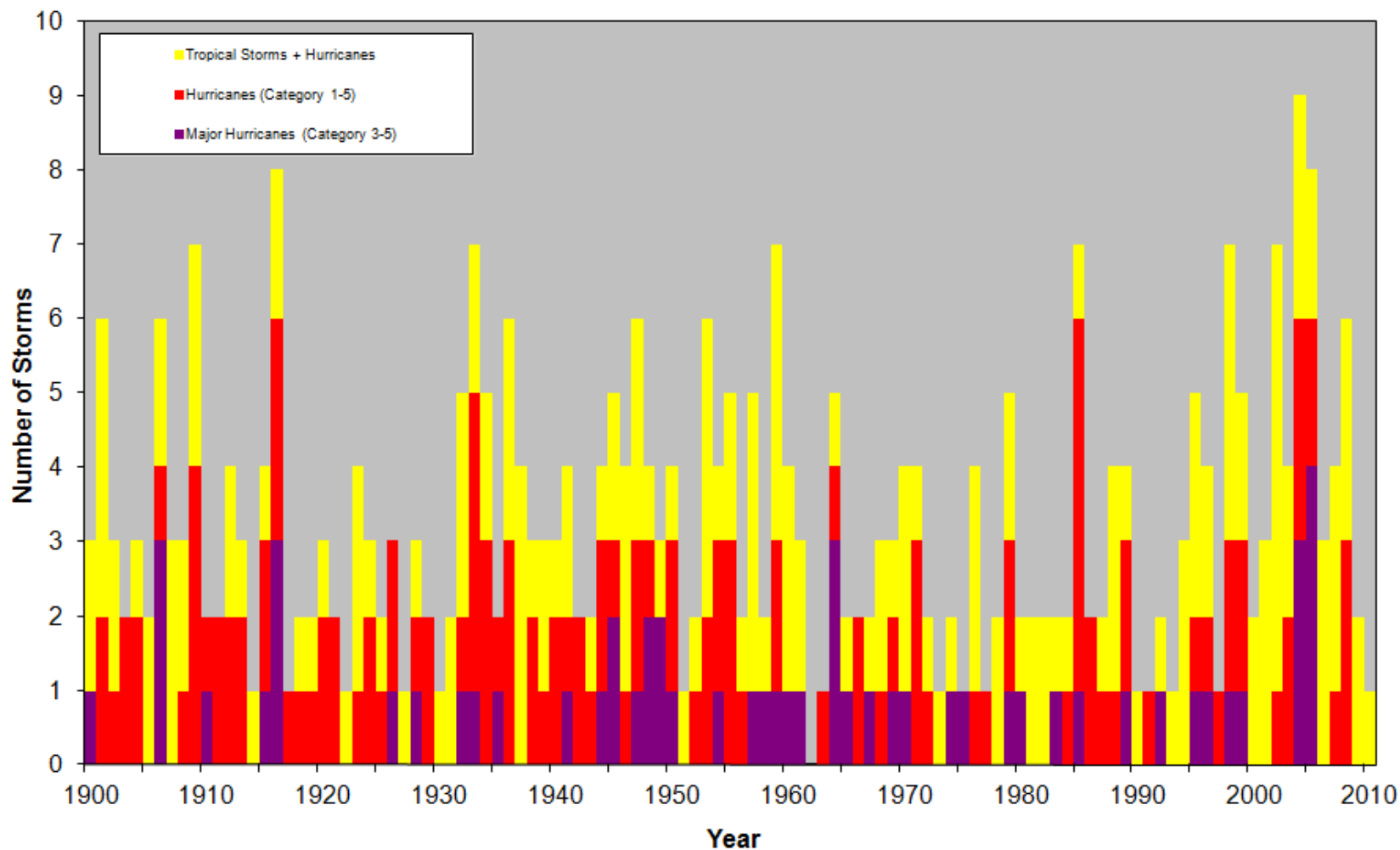
- Brushed the Outer Banks of North Carolina on September 2
- Gusts to hurricane force experienced, but only isolated damage

## **Tropical Storm Hermine**

- Landfall in Mexico on September 26, then tracked across Texas
- Minor wind damage and moderate flooding, \$120 million insured loss

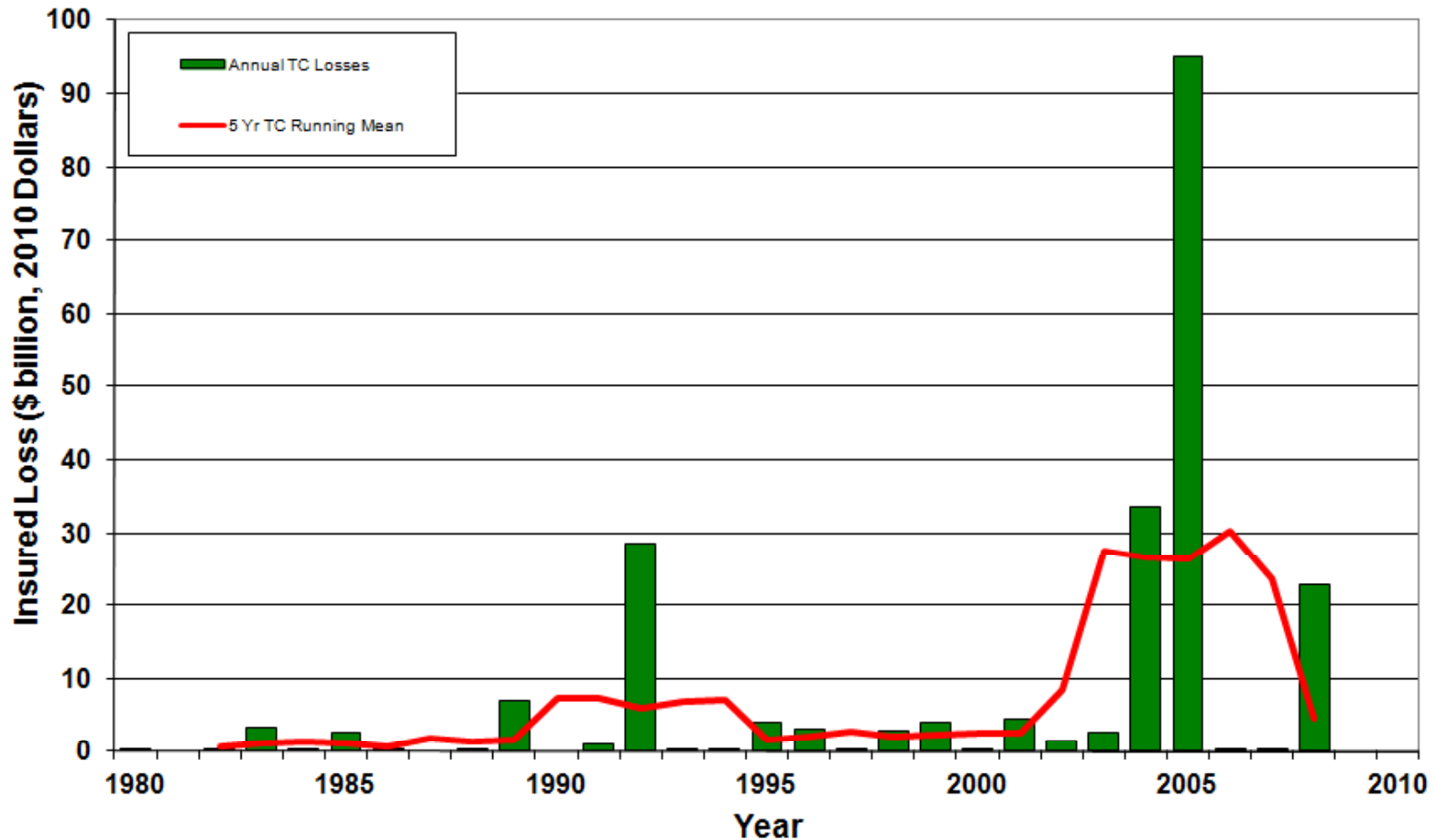
# Number of U.S. Landfalling Tropical Cyclones, 1900 – 2010

Only one tropical cyclone, Bonnie, made a direct landfall in the U.S. in 2010.



## Insured U.S. Tropical Cyclone Losses, 1980 – 2010

The current 5-year average (2006-2010) insured tropical cyclone loss is \$4.6 billion, down \$19 billion from the previous 5-year average.



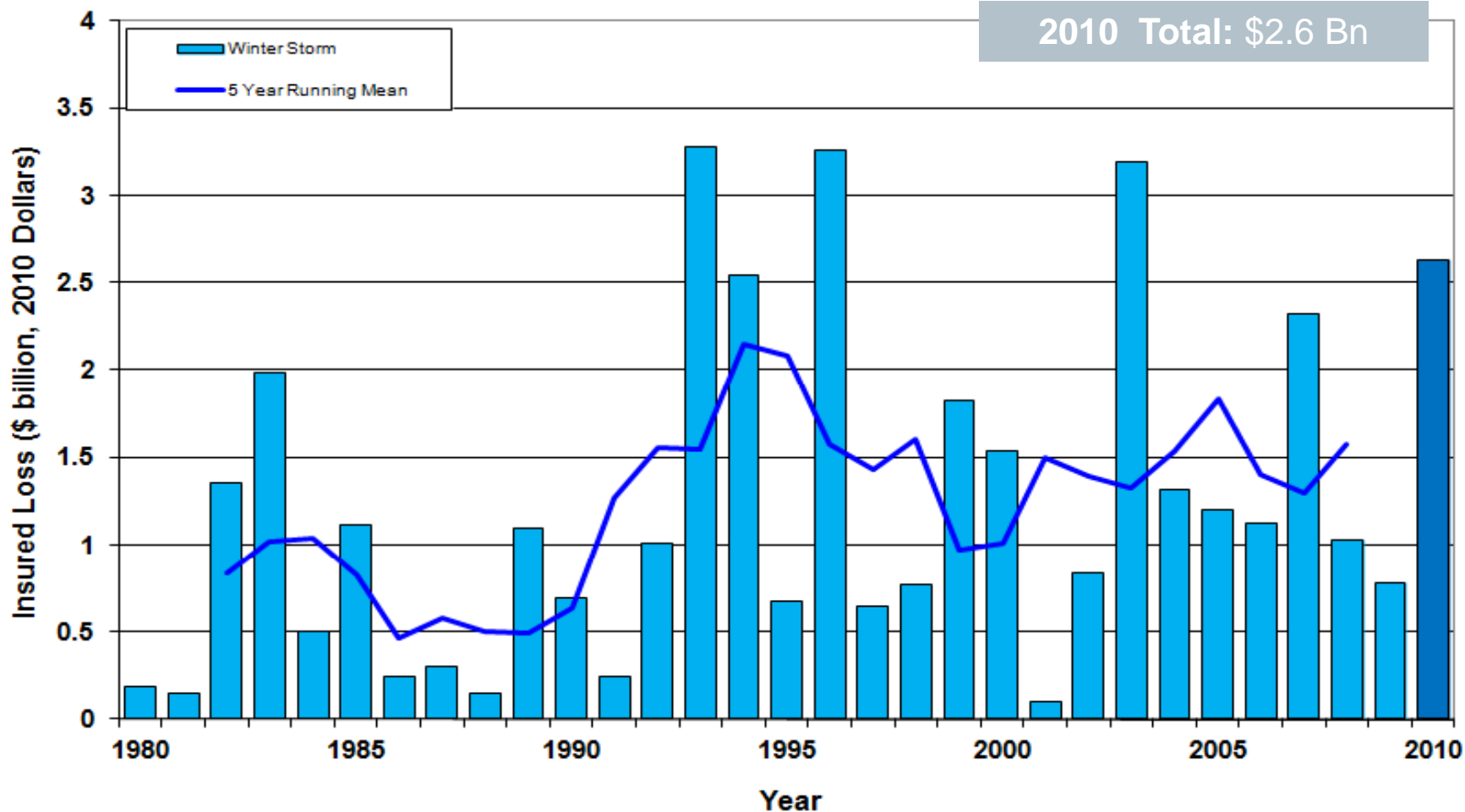
## OTHER U.S. NATURAL CATASTROPHES IN 2010



# U.S. Winter Storm Loss Trends, 1980 – 2010

## Annual Totals

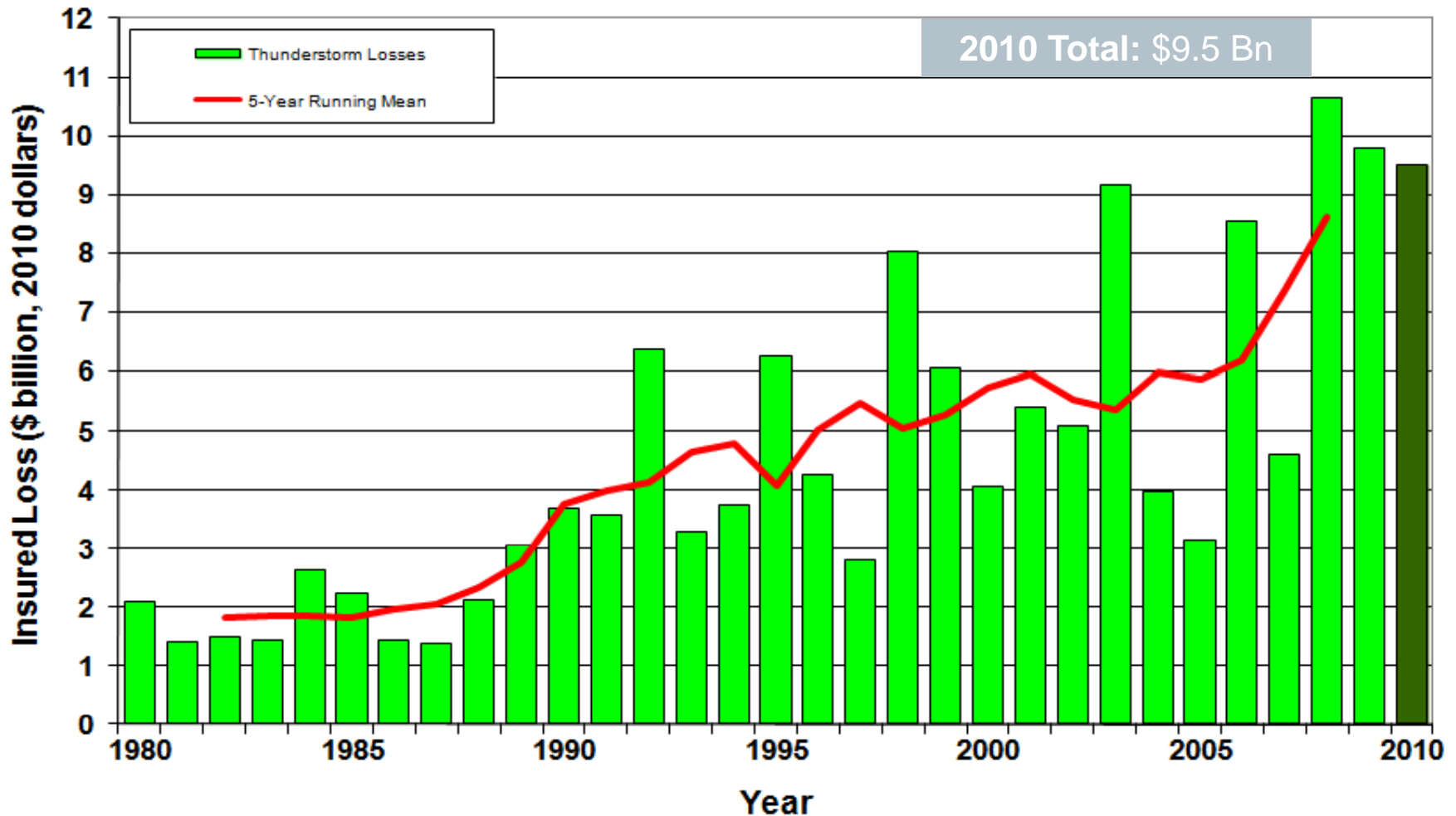
Insured winter storm losses in 2010 are one of the top five largest in U.S. history.



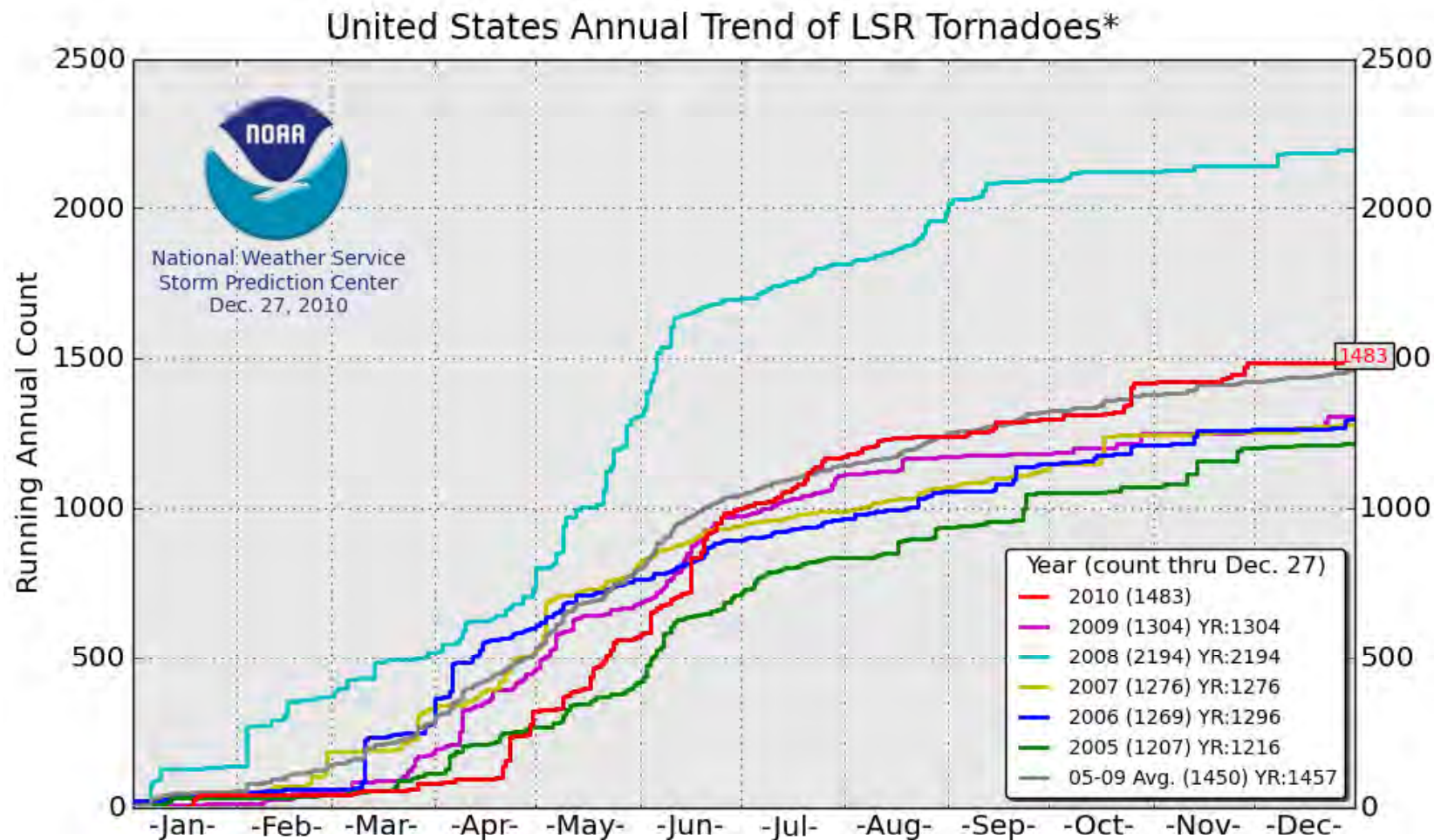
# U.S. Thunderstorm Loss Trends, 1980 – 2010

## Annual Totals

Average thunderstorm losses have now quintupled since the early 1980s.



## U.S. Tornado Count, 2010

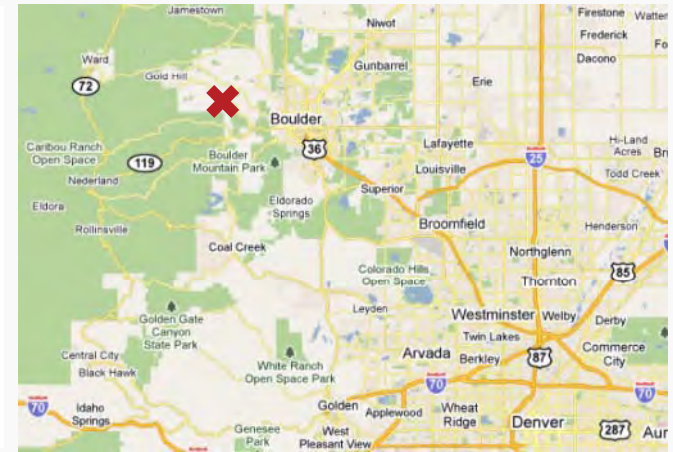


\*Preliminary tornadoes from NWS Local Storm Reports (LSRs)  
Annual average is based on preliminary LSRs, 2005-2009

# Fourmile Canyon Wildfire

## West of Boulder, Colorado - September 6 - 16

- Burned out of control in the Front Range foothills for several days, scorching 6,181 acres.
- An estimated 169 homes were destroyed during the fire.
- \$210 million in insured losses, largest wildfire loss in Colorado history.



---

# GLOBAL NATURAL CATASTROPHE UPDATE

Ernst Rauch  
Head of Corporate Climate Center  
Munich Re



## Headlines



### **Year of earthquakes**

- Haiti: >220,000 fatalities; deadliest quake since 1976 earthquake in Tangshan, China.
- Chile: Costliest disaster in 2010; 2<sup>nd</sup> costliest earthquake for the insurance industry since 1950.
- New Zealand: Costliest natural disaster in Australia/Oceania ever.

### **Number of events: 950**

- Second highest number of events since 1980. (10-year-average: 785)

### **Fatalities: more than 295,000**

- Since 1980, the second highest death toll. (1983: 300,000 deaths – drought Ethiopia)

### **Overall direct losses: >US\$ 130bn**

- 2010 is amongst the five costliest years since 1980.

### **Insured losses: US\$ 37bn**

- In line with 10-year-average - although there was no important hurricane loss.

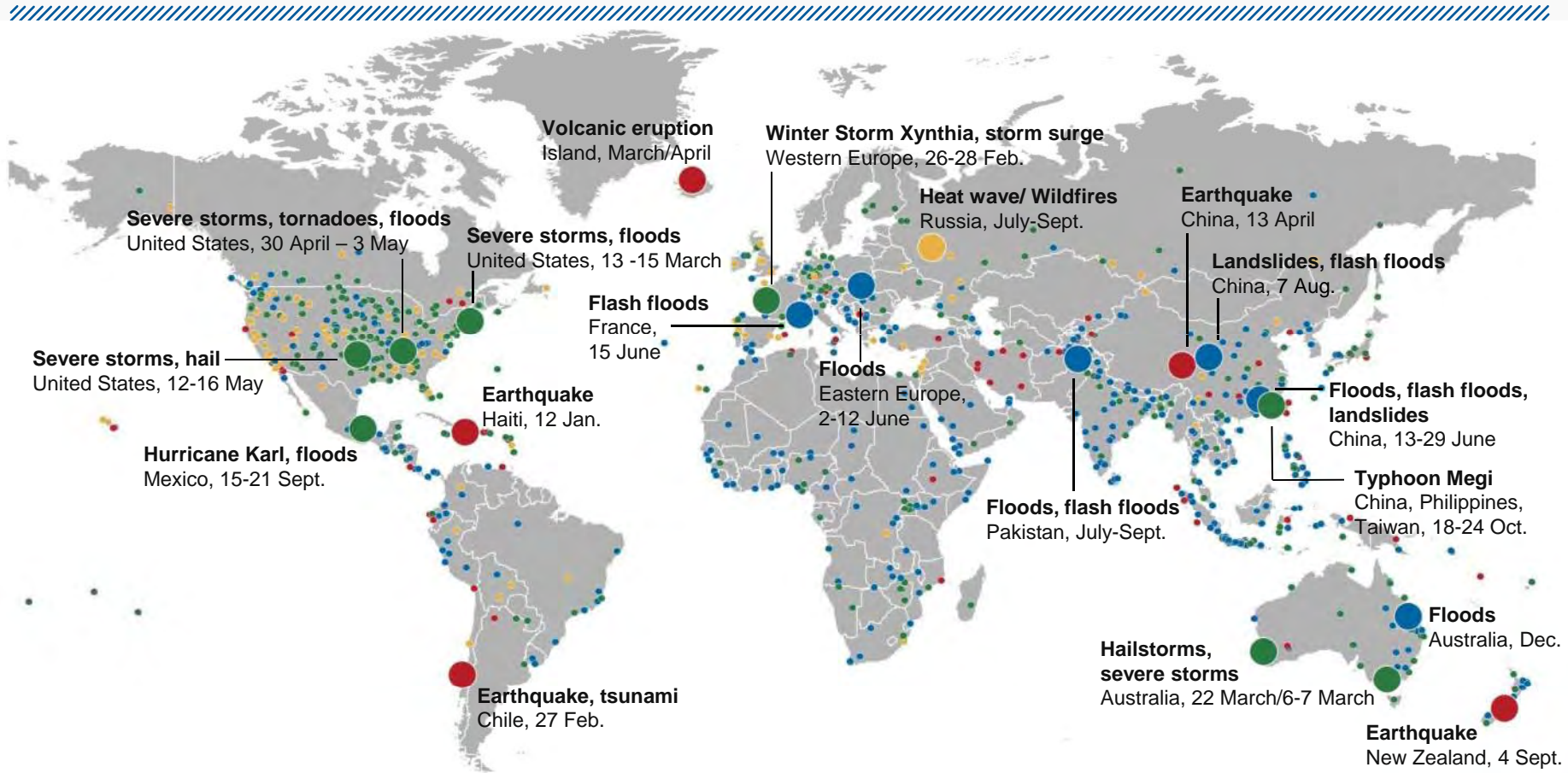
# Natural Catastrophes, 2010

## Overview and comparison with previous years

	2010	2009	Average of the last 10 years 2000-2009	Average of the last 30 years 1980-2009
Number of events	950	900	785	615
Overall losses (US\$m)	130,000	60,000	110,000	95,000
Insured losses (US\$m)	37,000	22,000	35,000	23,000
Fatalities	295,000	11,000	77,000	66,000

# Natural Catastrophes, 2010

950 loss events



○ Natural catastrophes

● Geophysical events  
(earthquake, tsunami, volcanic activity)

● Hydrological events  
(flood, mass movement)

○ Selection of significant  
loss events (see table)

● Meteorological events  
(storm)

● Climatological events  
(extreme temperature, drought, wildfire)

# Natural Catastrophes, 2010

## The five costliest natural catastrophes for the insurance industry

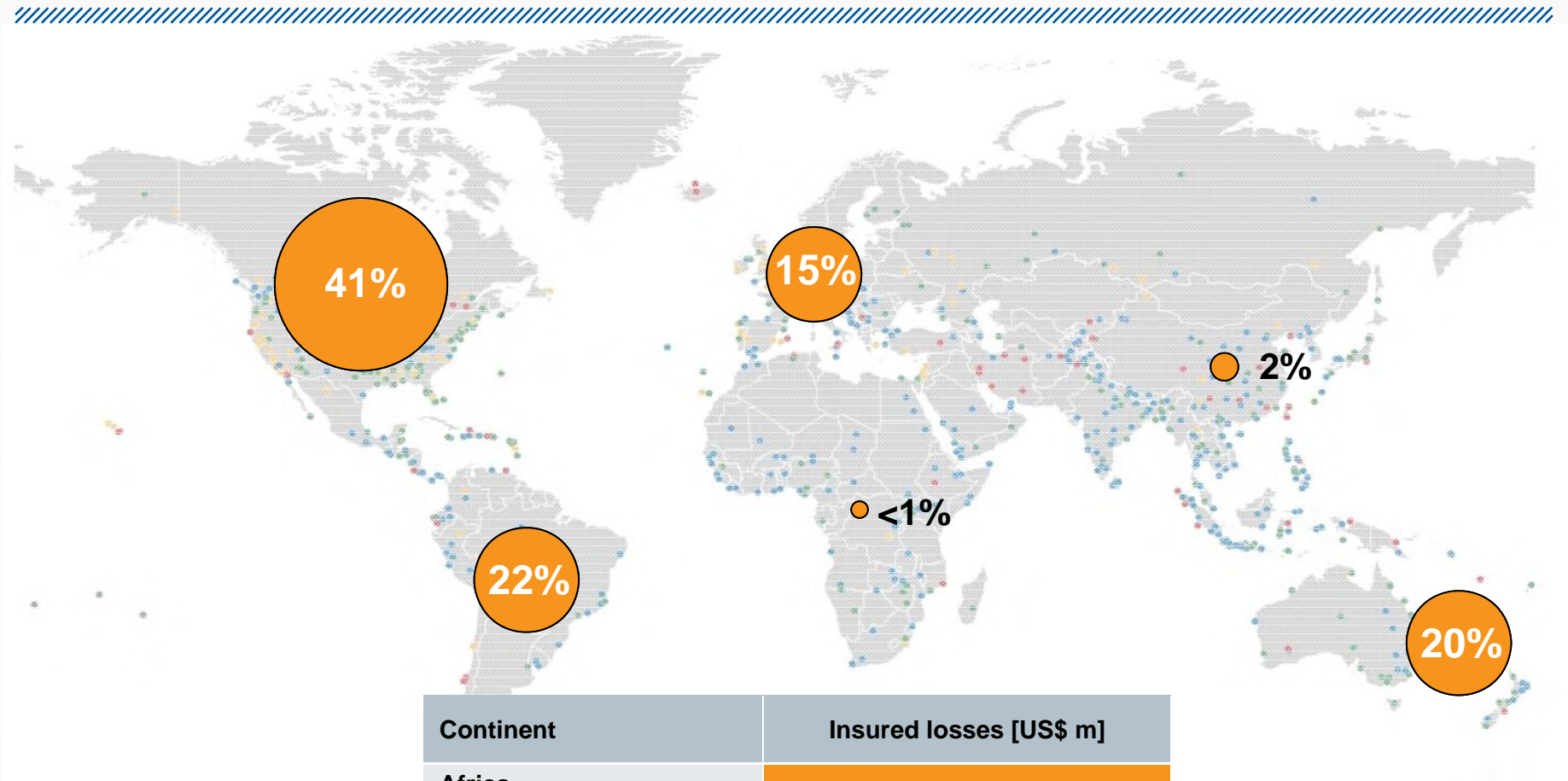


Date	Region	Event	Fatalities	Overall losses US\$m	Insured losses US\$m
27.2.2010	Chile	Earthquake, tsunami	520	30,000	8,000
3.9.2010	New Zealand	Earthquake (Preliminary estimation October 2010)		3,700*	3,300*
26-28.2.2010	Europe	Winter Storm Xynthia	65	6,100	3,100
12-16.5.2010	USA	Severe storm, hail	3	2,700	2,000
4-6.10.2010	USA	Severe storm, tornadoes		2,000	1,450

\*Loss estimation in progress

# Natural Catastrophes, 2010

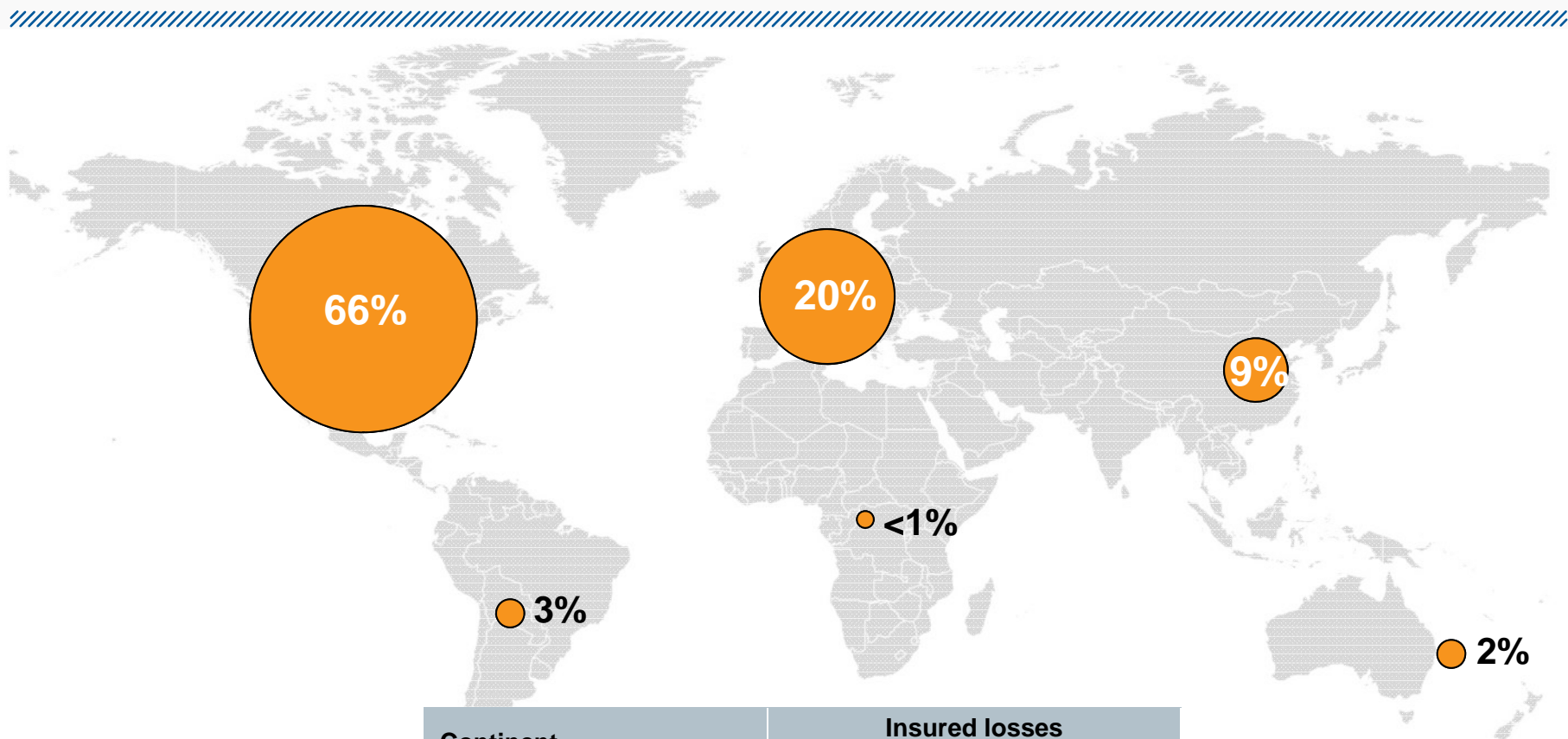
Insured losses US\$ 37bn - Percentage distribution per continent



Continent	Insured losses [US\$ m]
Africa	-
America	23,000
Asia	750
Australia/Oceania	7,500
Europe	5,500

# Natural Catastrophes, 1980 - 2009

## Insured losses US\$ 700bn - Percentage distribution per continent



Continent	Insured losses [US\$ m – in 2010 values]
Africa	2,000
America	475,000
Asia	66,000
Australia/Oceania	15,000
Europe	142,000



Country	Overall losses	Insured losses	Fatalities
Chile	US\$ 30,000m	US\$ 8,000m	>520

# Costliest Natural Catastrophes Since 1950

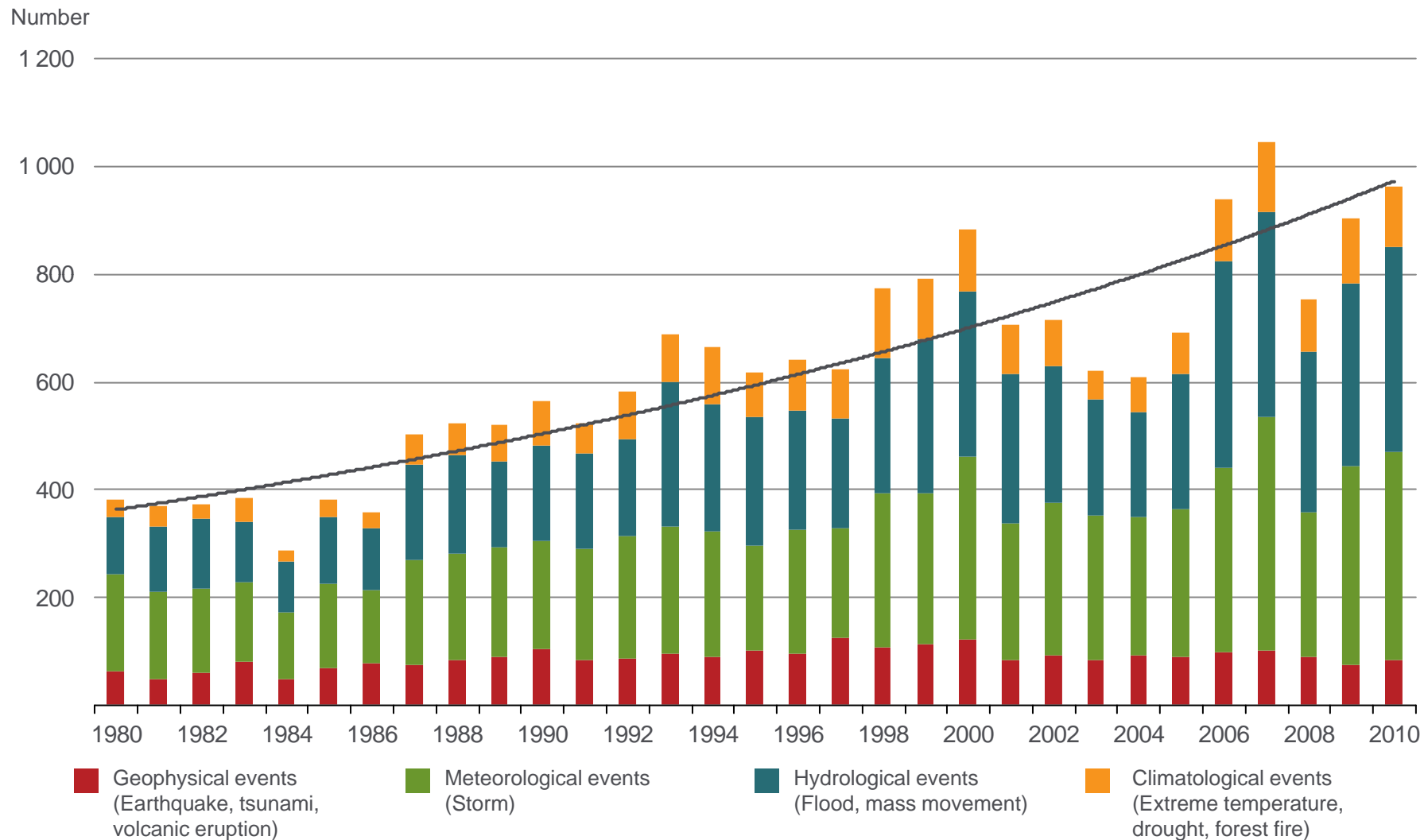
Rank by insured losses - in values of 2010

////////////////////////////////////

Year	Event	Region	Insured loss US\$m, 2010 values
2005	Hurricane Katrina	USA	69,900
1992	Hurricane Andrew	USA	26,500
1994	EQ Northridge	USA	22,500
2008	Hurricane Ike	USA, Caribbean	18,700
2004	Hurricane Ivan	USA, Caribbean	16,000
2005	Hurricane Wilma	USA, Mexico	14,000
2005	Hurricane Rita	USA	13,500
1991	Typhoon Mireille	Japan	11,200
2004	Hurricane Charley	USA, Caribbean	9,250
1989	Hurricane Hugo	USA, Caribbean	9,000
1990	Winter Storm Daria	Europe	8,500
2010	Earthquake	Chile	8,000

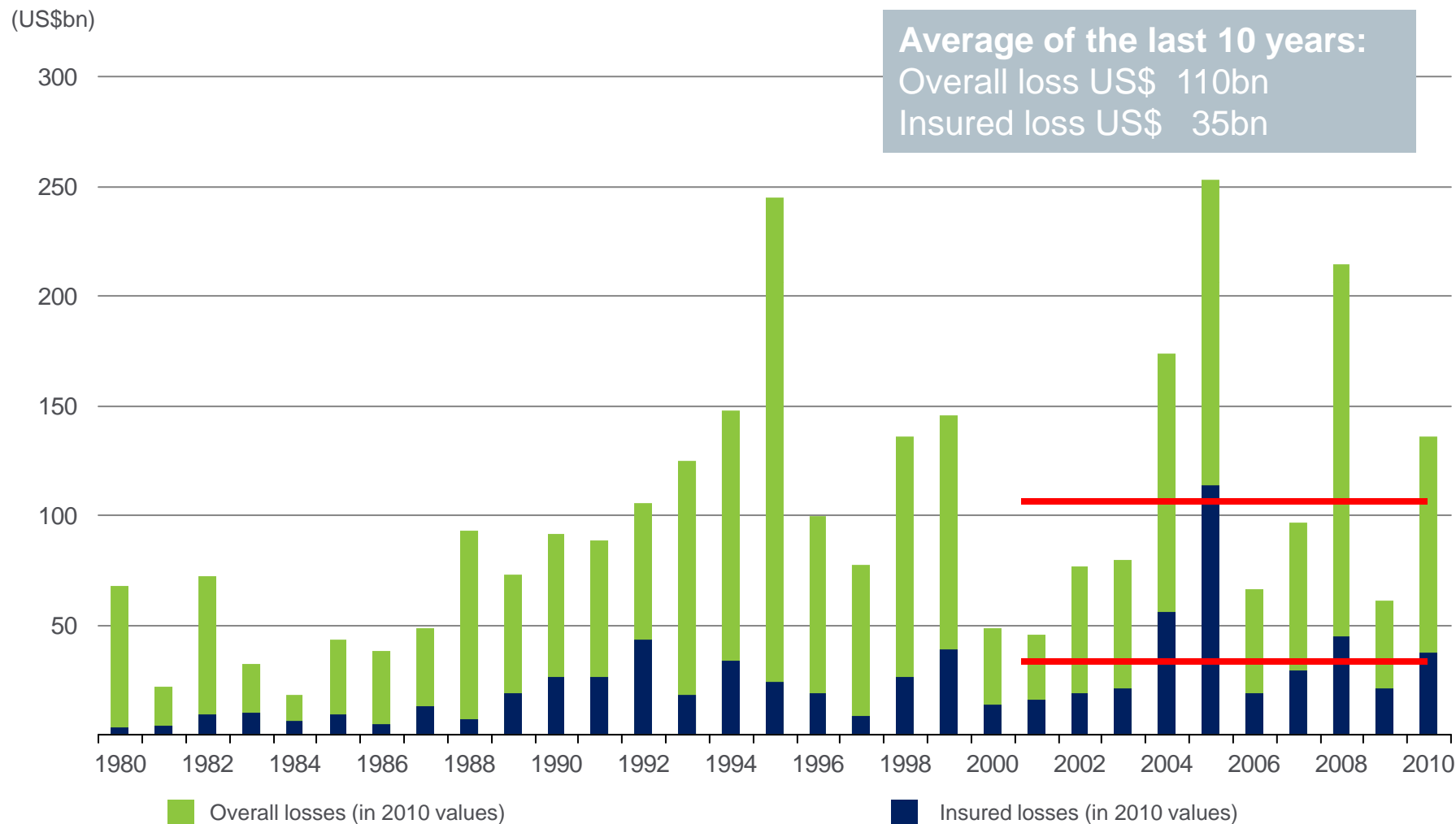
## Natural Catastrophes Worldwide, 1980 – 2010

## Number of events with trend



## Natural Catastrophes Worldwide 1980 – 2010

## Overall and Insured Losses



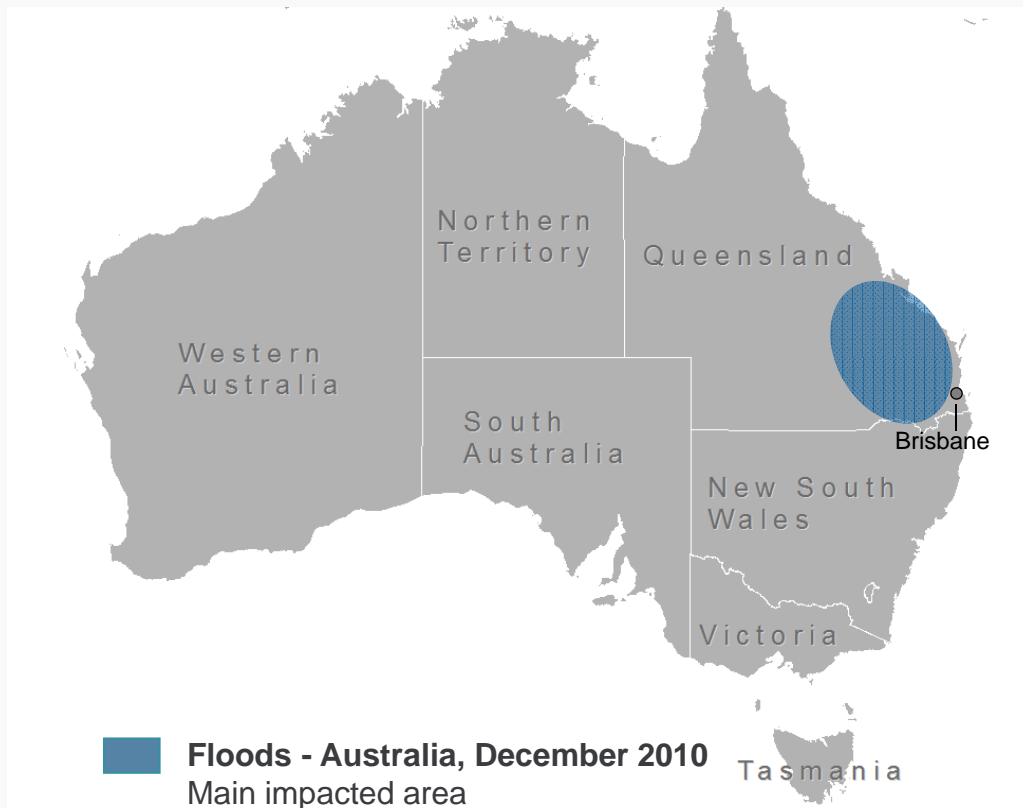
# December 2010 – still ongoing, Floods Australia (Queensland)



- Record precipitation
- 75 % of coal mines impacted
- 22 towns cut off
- Transport system severely impacted

# Natural Catastrophes, 2010

## Floods Australia



### Costliest floods in Australia since 1980

Date	Region	Insured losses (US\$m, 2010 values)
Feb 2008	Queensland	900
Jan 2008	Queensland	450
Nov 1984	New South Wales	190
March 2010	Queensland	110

## Summary

950 events - Second highest number of events since 1980

US\$ 37bn insured losses - 35 % of losses due to earthquakes (30-year-average = 8 %)

Continents of Australia and South-America over-proportionally high impacted

Haiti Earthquake – >220,000 deaths - deadliest natural disaster since 1983

Chile and New Zealand Earthquakes– high losses for the markets, low number of fatalities

Building codes are essential to save lives – however, insured losses are nevertheless significant



# Economic Financial Implications of Natural Catastrophe Losses in 2010

**January 10, 2011**

**Robert P. Hartwig, Ph.D., CPCU, President & Economist**

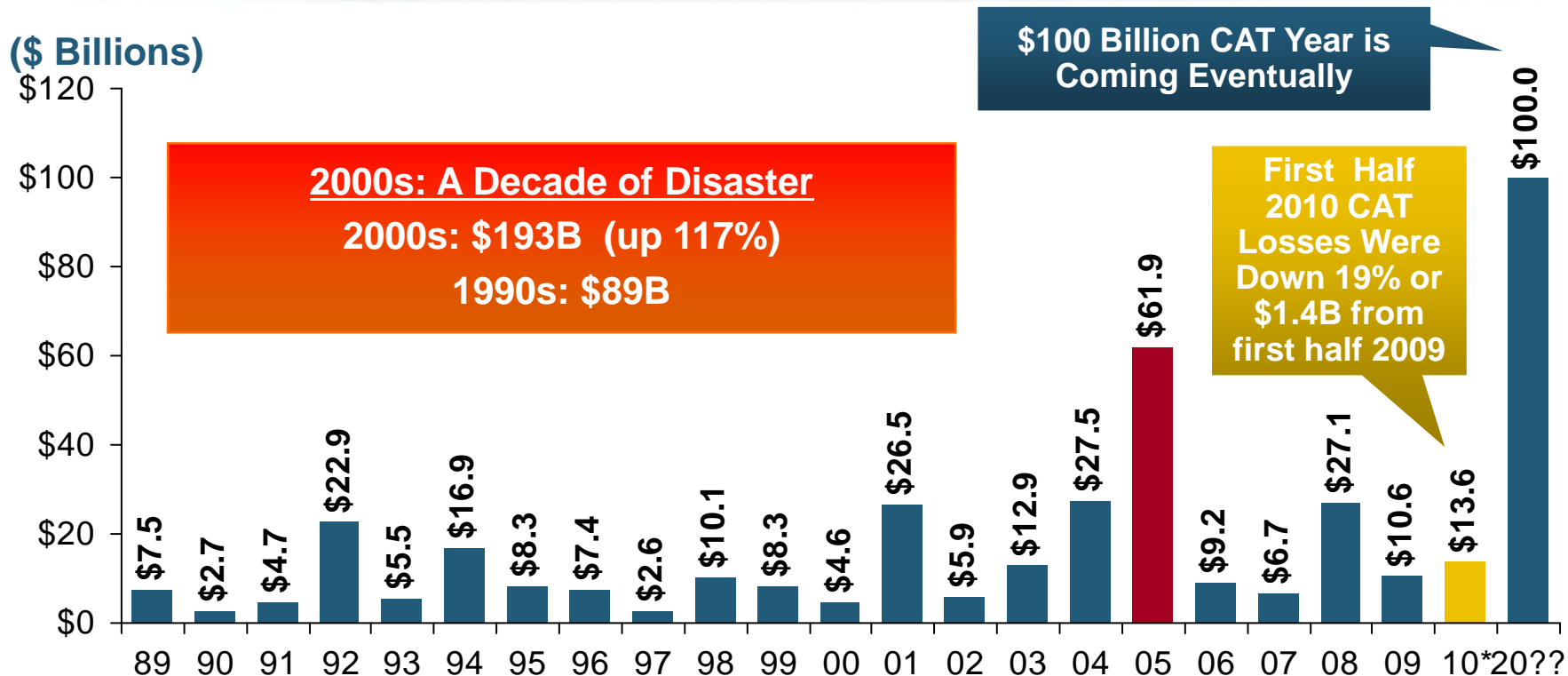
**Insurance Information Institute ♦ 110 William Street ♦ New York, NY 10038**

**Tel: 212.346.5520 ♦ Cell: 917.453.1885 ♦ bobh@iii.org ♦ www.iii.org**



**US Insured CAT Losses in  
2010 Were Below Average  
Relative to the Prior Decade  
(2000-2009)**

# US Insured Catastrophe Losses



**2010 CAT Losses Were Below the 2000-2009 Average**  
**Figures Do Not Include an Estimate of Deepwater Horizon Loss**

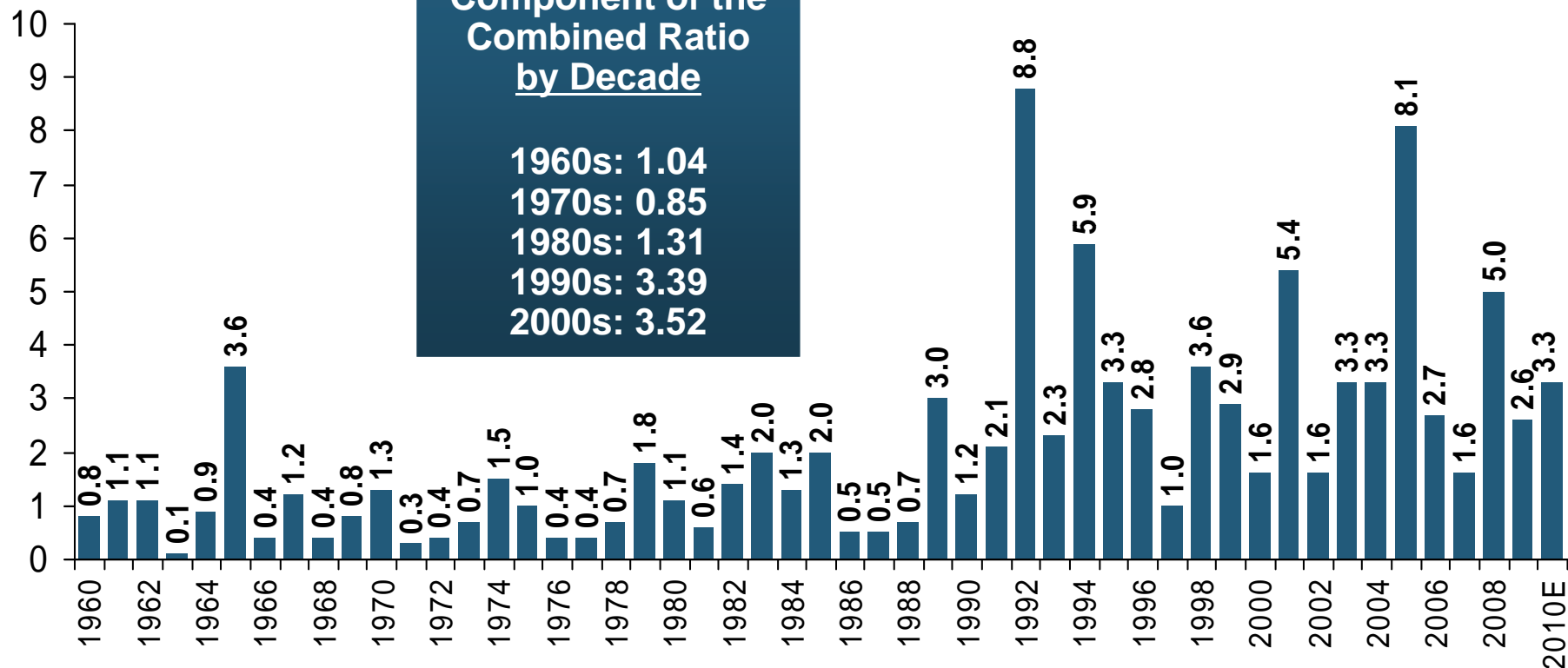
\*Estimate from Munich Re.

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

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

# Combined Ratio Points Associated with Catastrophe Losses: 1960 – 2010E

## Combined Ratio Points



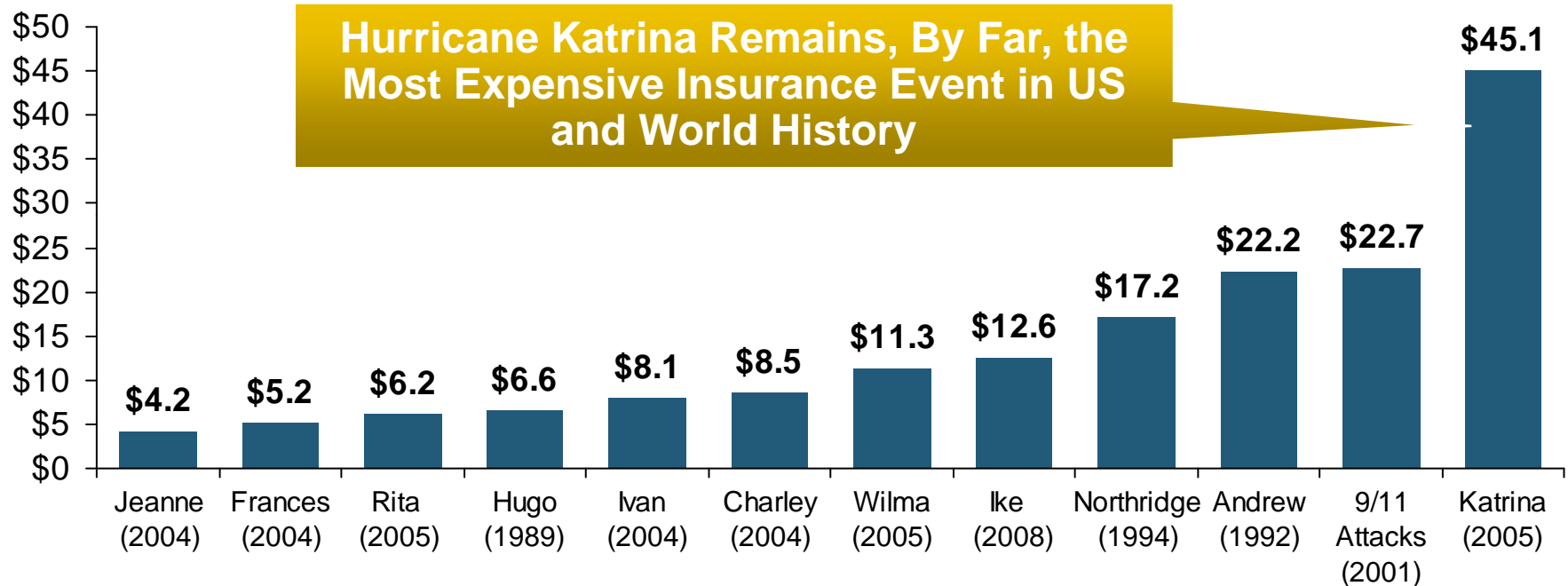
**The Catastrophe Loss Component of Private Insurer Losses Has Increased Sharply in Recent Decades**

Notes: Private carrier losses only. Excludes loss adjustment expenses and reinsurance reinstatement premiums. Figures are adjusted for losses ultimately paid by foreign insurers and reinsurers.

Source: ISO; Insurance Information Institute estimate for 2010.

# Top 12 Most Costly Disasters in US History

(Insured Losses, 2009, \$ Billions)

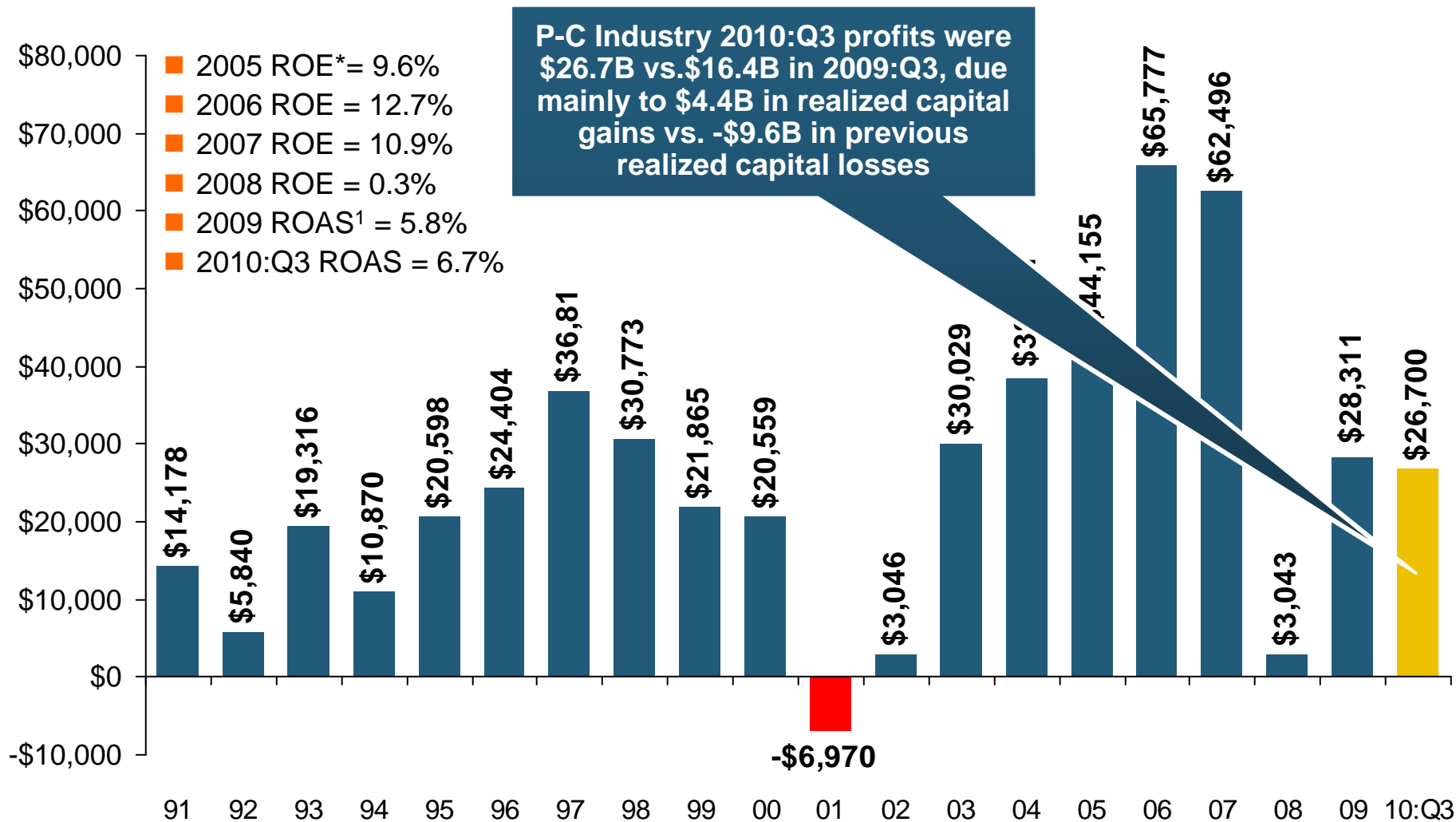


**8 of the 12 Most Expensive Disasters in US History  
Have Occurred Since 2004;  
*8 of the Top 12 Disasters Affected FL***

# **Financial Performance**

**Lower Catastrophe Losses,  
Easing of Crisis Bolstered Results**

# P/C Net Income After Taxes 1991–2010:Q3 (\$ Millions)

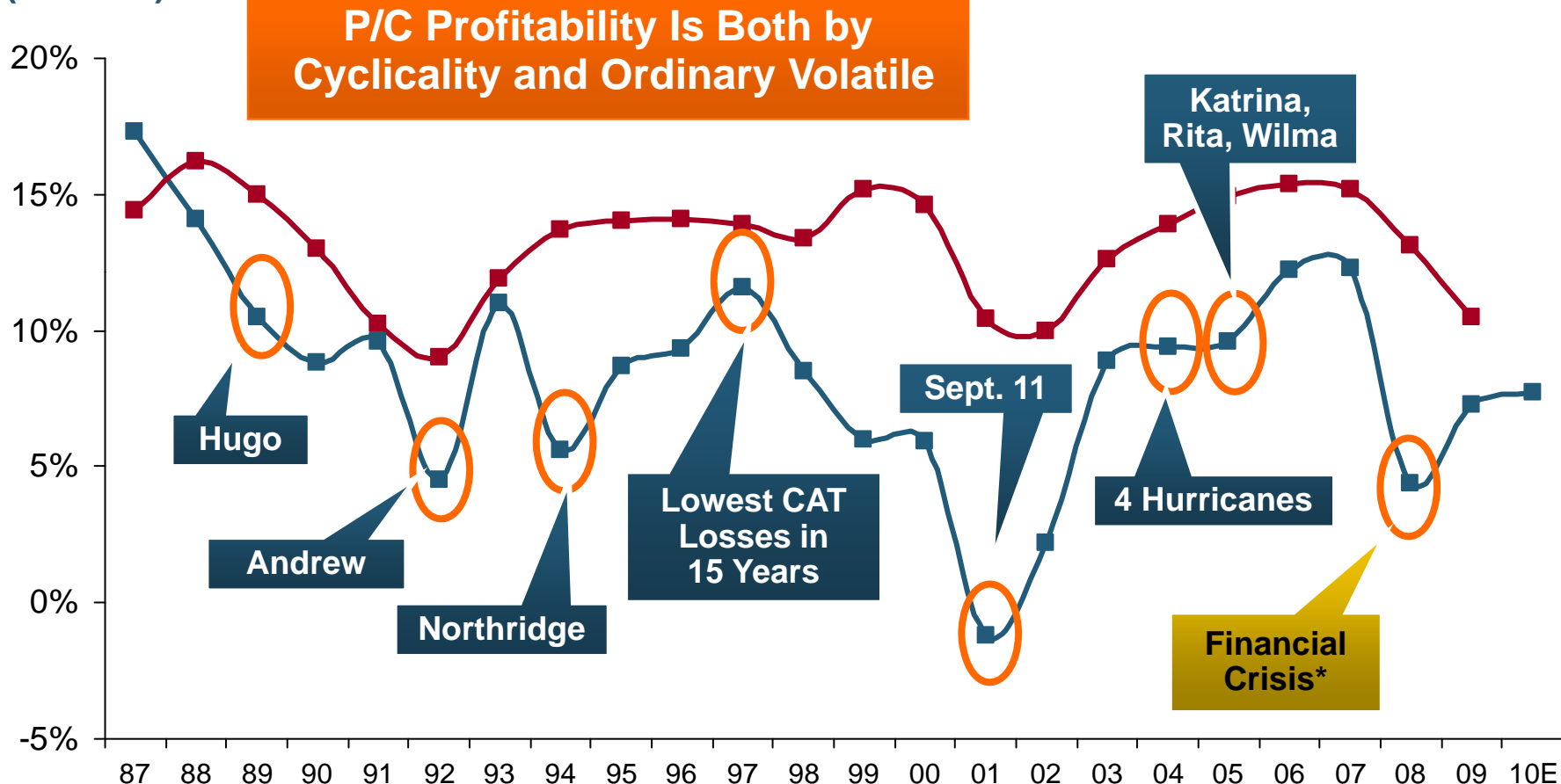


\* ROE figures are GAAP; <sup>1</sup>Return on avg. surplus. Excluding Mortgage & Financial Guaranty insurers yields a 7.7% ROAS for 2010:Q3 and 4.6% for 2009. 2009:Q3 net income was \$29.8 billion excluding M&FG.

Sources: A.M. Best, ISO, Insurance Information Institute

# ROE: Property/Casualty Insurance, 1987–2010E\*

(Percent)

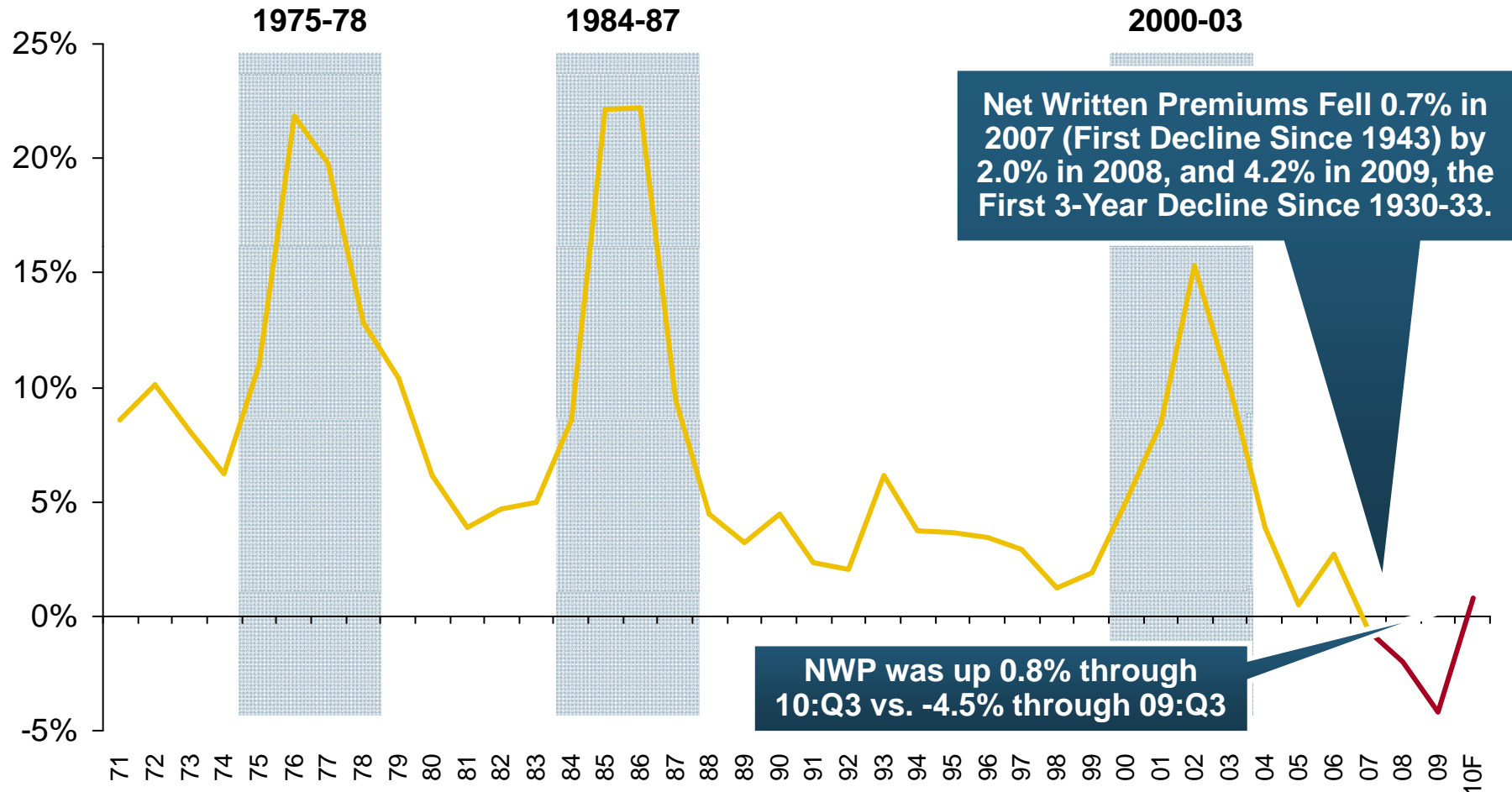


\* Excludes Mortgage & Financial Guarantee in 2008 - 2010.

Sources: ISO, *Fortune*; Insurance Information Institute figure for 2010 is actual through 2010:Q3.

# Soft Market Persisted in 2010 but May Be Easing: Relief in 2011?

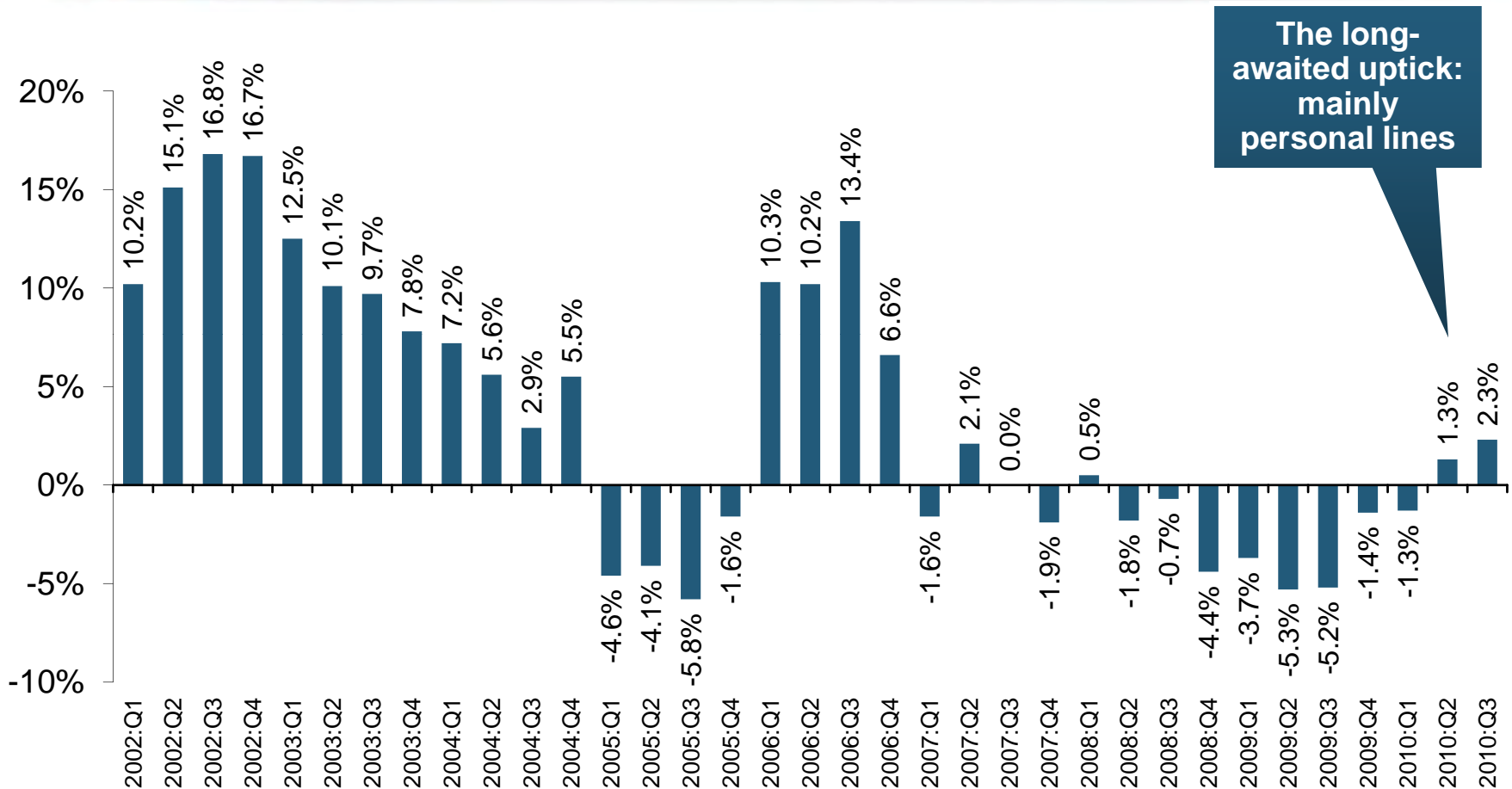
(Percent)



Shaded areas denote "hard market" periods

Sources: A.M. Best (historical and forecast), ISO, Insurance Information Institute.

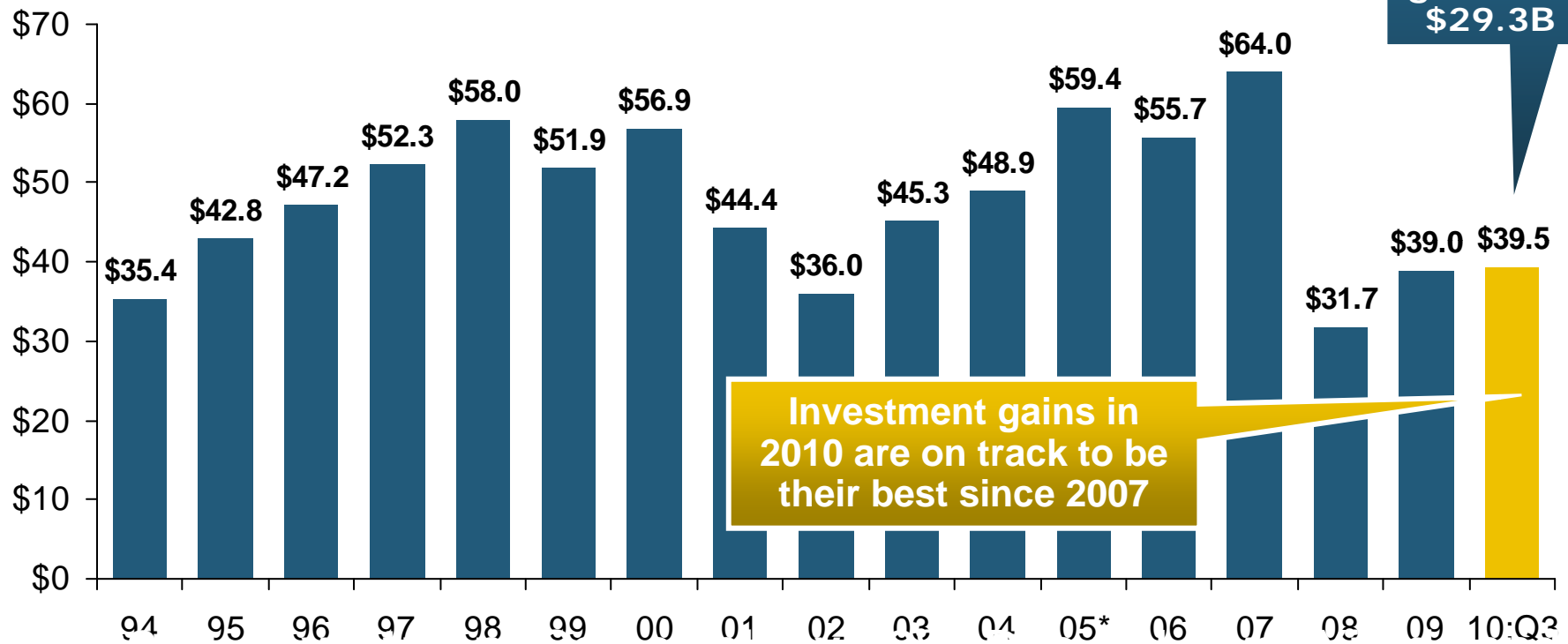
# P/C Net Premiums Written: % Change, Quarter vs. Year-Prior Quarter



**Finally! Back-to-back quarters of net written premium growth  
(vs. the same quarter, prior year)**

# Property/Casualty Insurance Industry Investment Gain: 1994–2010:Q3<sup>1</sup>

(\$ Billions)



**In 2008, investment gains fell by 50% due to lower yields and nearly \$20B of realized capital losses. 2009 saw smaller realized capital losses but declining investment income. Investment gains recovered significantly in 2010.**

<sup>1</sup> Investment gains consist primarily of interest, stock dividends and realized capital gains and losses.

\* 2005 figure includes special one-time dividend of \$3.2B.

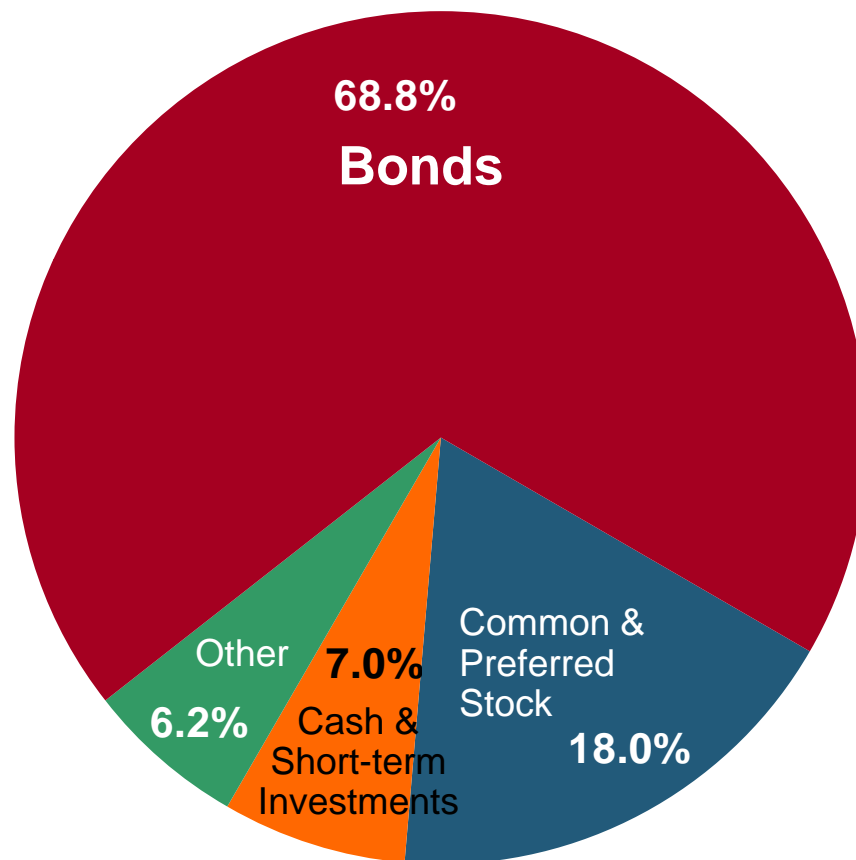
Sources: ISO; Insurance Information Institute.

# Distribution of P/C Insurance Industry's Investment Portfolio

## Portfolio Facts as of 12/31/2009

- Invested assets totaled \$1.26 trillion
- Generally, insurers invest conservatively, with over 2/3 of invested assets in bonds
- Only 18% of invested assets were in common or preferred stock

As of December 31, 2009

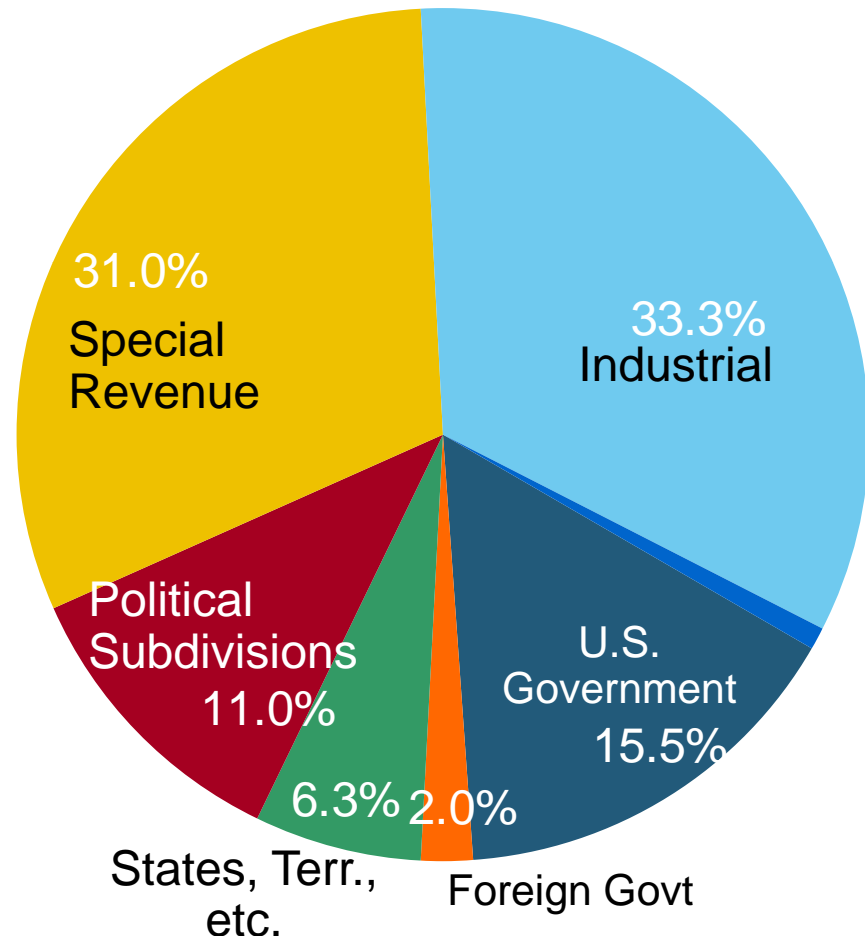


# About Half of the P/C Insurance Industry's Bond Investments Are in Municipal Bonds

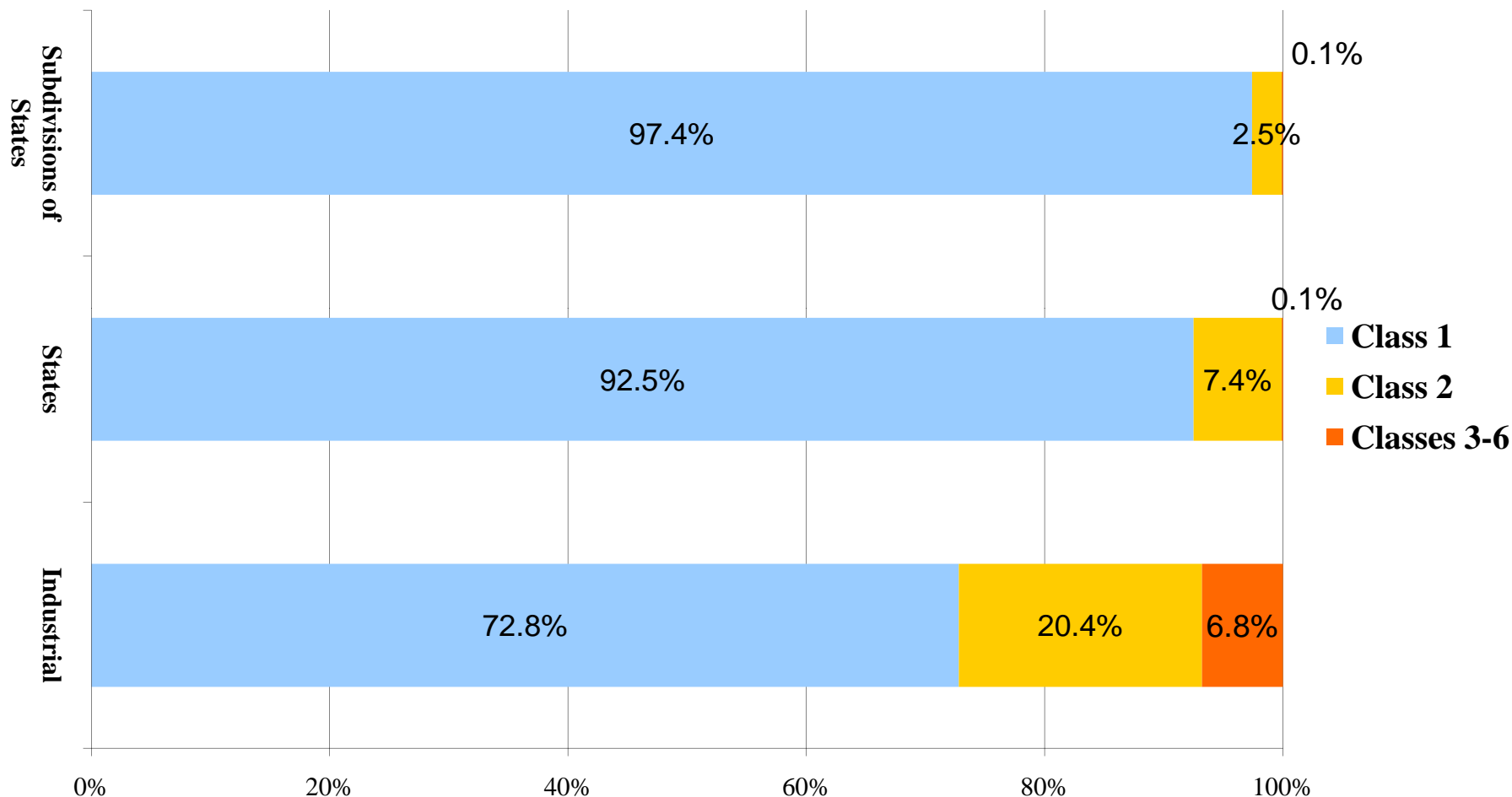
## Bond Investment Facts as of 12/31/09

- Investments in "Political Subdivision [of states]" bonds were \$102.5 billion
- Investments in "States, Territories, & Possessions" bonds were \$58.9 billion
- Investments in "Special Revenue" bonds were \$288.2 billion
- All state, local, and special revenue bonds totaled 48.2% of bonds, about 35.7% of total invested assets

As of December 31, 2009



# When P/C Insurers Invest in Higher Risk Bonds, It's Corporates, Not Munis

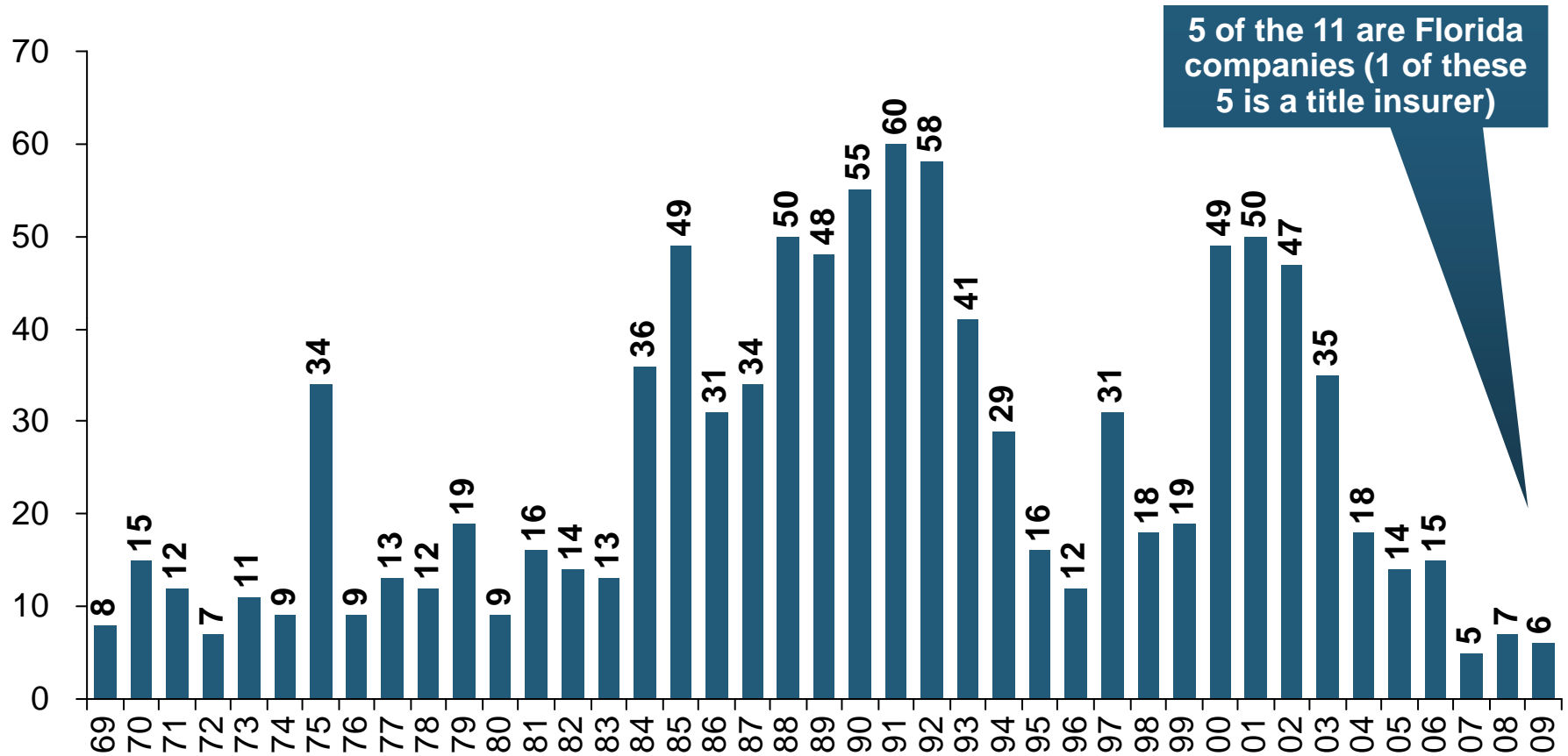


**The NAIC's Securities Valuation Office puts bonds into one of 6 classes: class 1 has the lowest expected impairments; successively higher numbered classes imply increasing impairment likelihood.**

# **Financial Strength & Ratings**

**Industry Remained Strong in 2010  
Despite Lingering Impacts of the  
Global Financial Crisis**

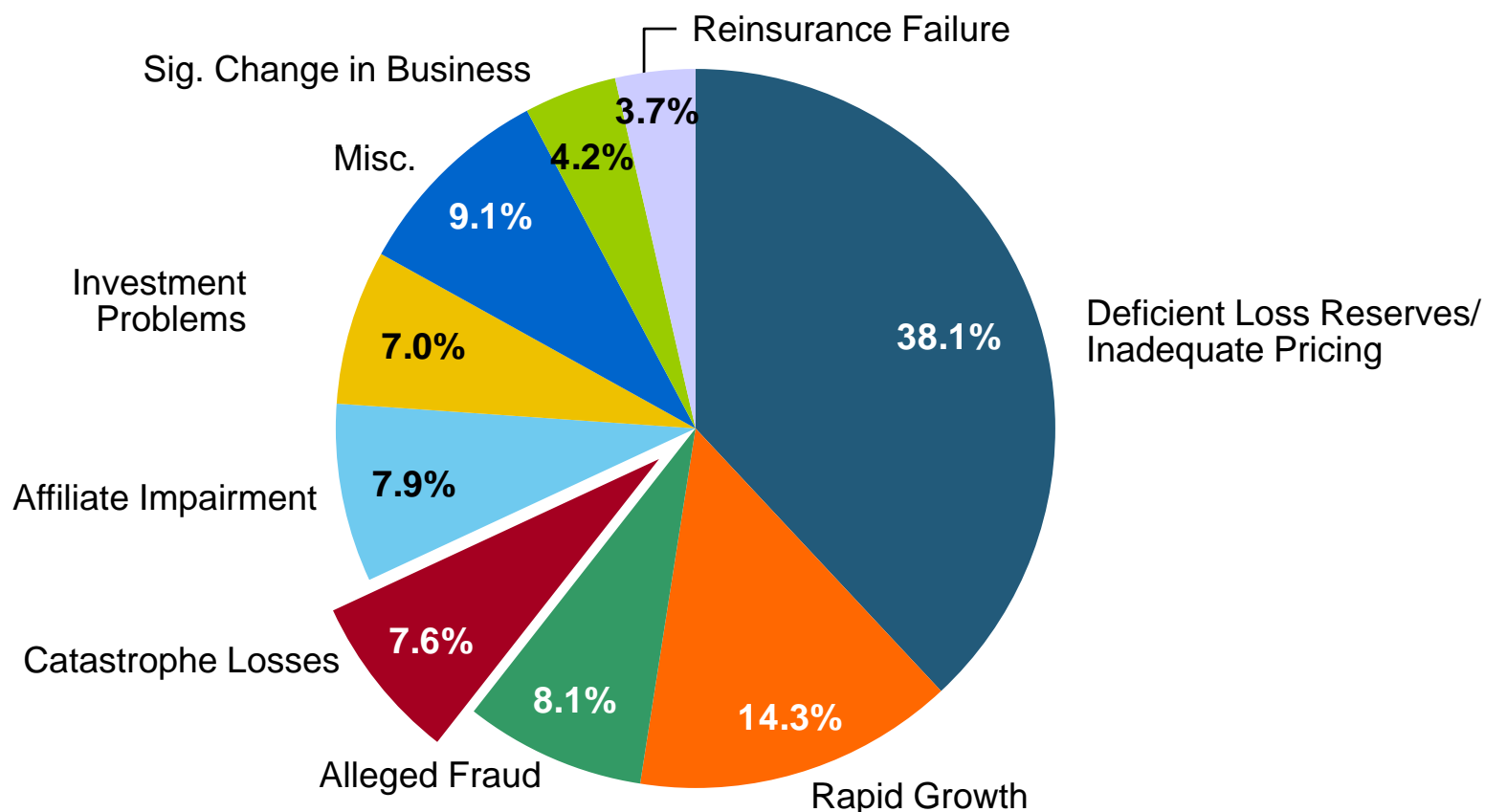
# P/C Insurer Impairments, 1969–2009



**The Number of Impairments Varies Significantly Over the P/C Insurance Cycle, With Peaks Occurring Well into Hard Markets**

# Reasons for US P/C Insurer Impairments, 1969–2008

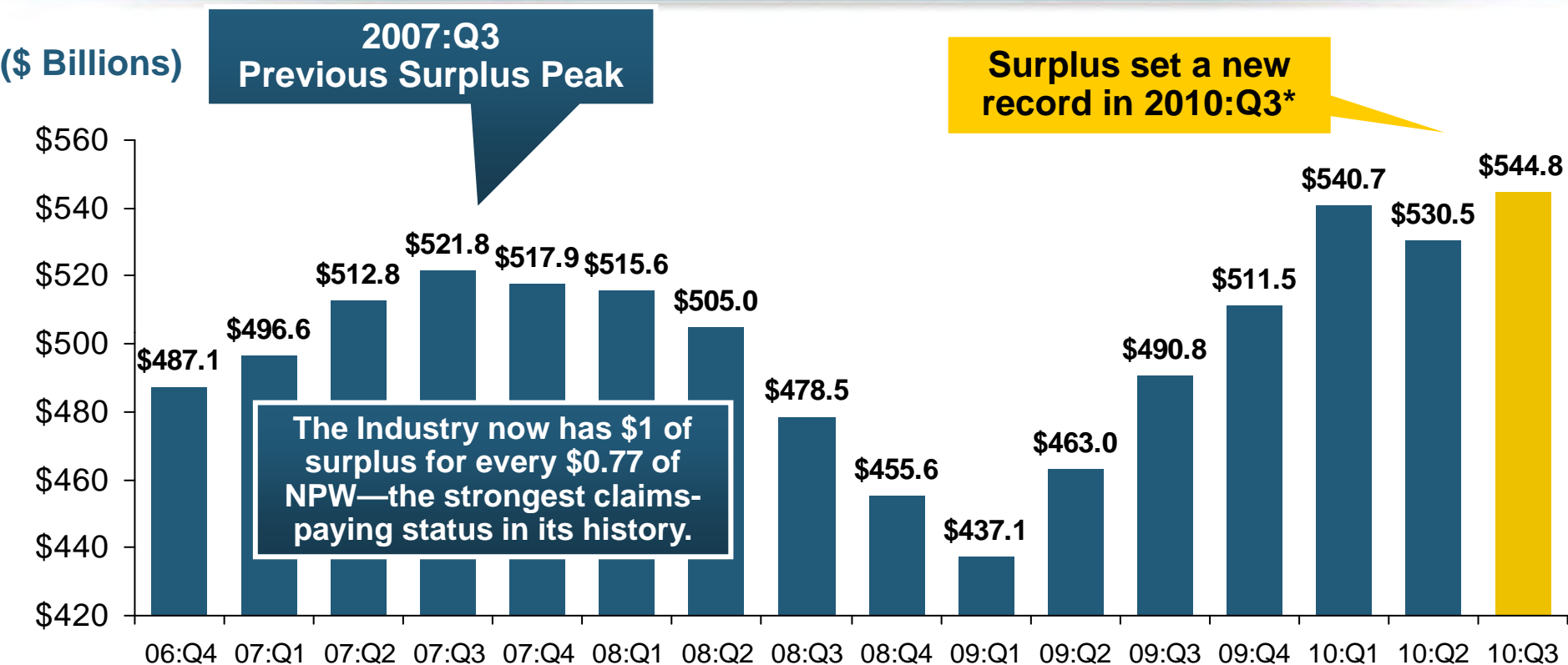
**Deficient Loss Reserves and Inadequate Pricing Are the Leading Cause of Insurer Impairments, Underscoring the Importance of Discipline. Investment Catastrophe Losses Play a Much Smaller Role**



# **Capital/Policyholder Surplus (US)**

**Improving Financial Markets,  
Moderate CAT Losses Are  
Restoring Capacity**

# Policyholder Surplus, 2006:Q4–2010:Q3



## Quarterly Surplus Changes Since 2007:Q3 Peak

**09:Q1: -\$84.7B (-16.2%)**

**09:Q2: -\$58.8B (-11.2%)**

**09:Q3: -\$31.0B (-5.9%)**

**09:Q4: -\$10.3B (-2.0%)**

**10:Q1: +\$18.9B (+3.6%)**

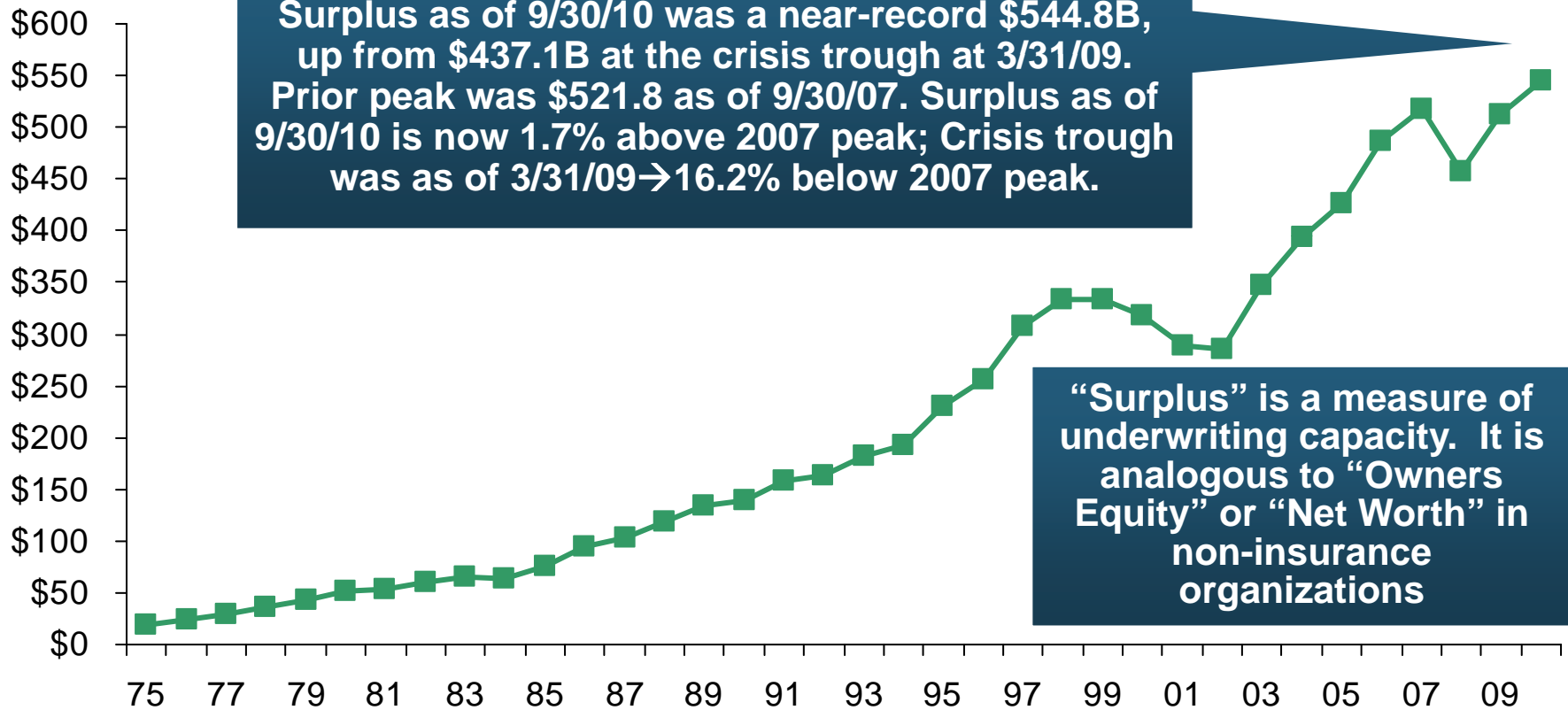
**10:Q2: +\$8.7B (+1.7%)**

**10:Q3: +\$23.0B (+4.4%)**

\*Includes \$22.5B of paid-in capital from a holding company parent for one insurer's investment in a non-insurance business in early 2010.

# US Policyholder Surplus: 1975–2010\*

(\$ Billions)



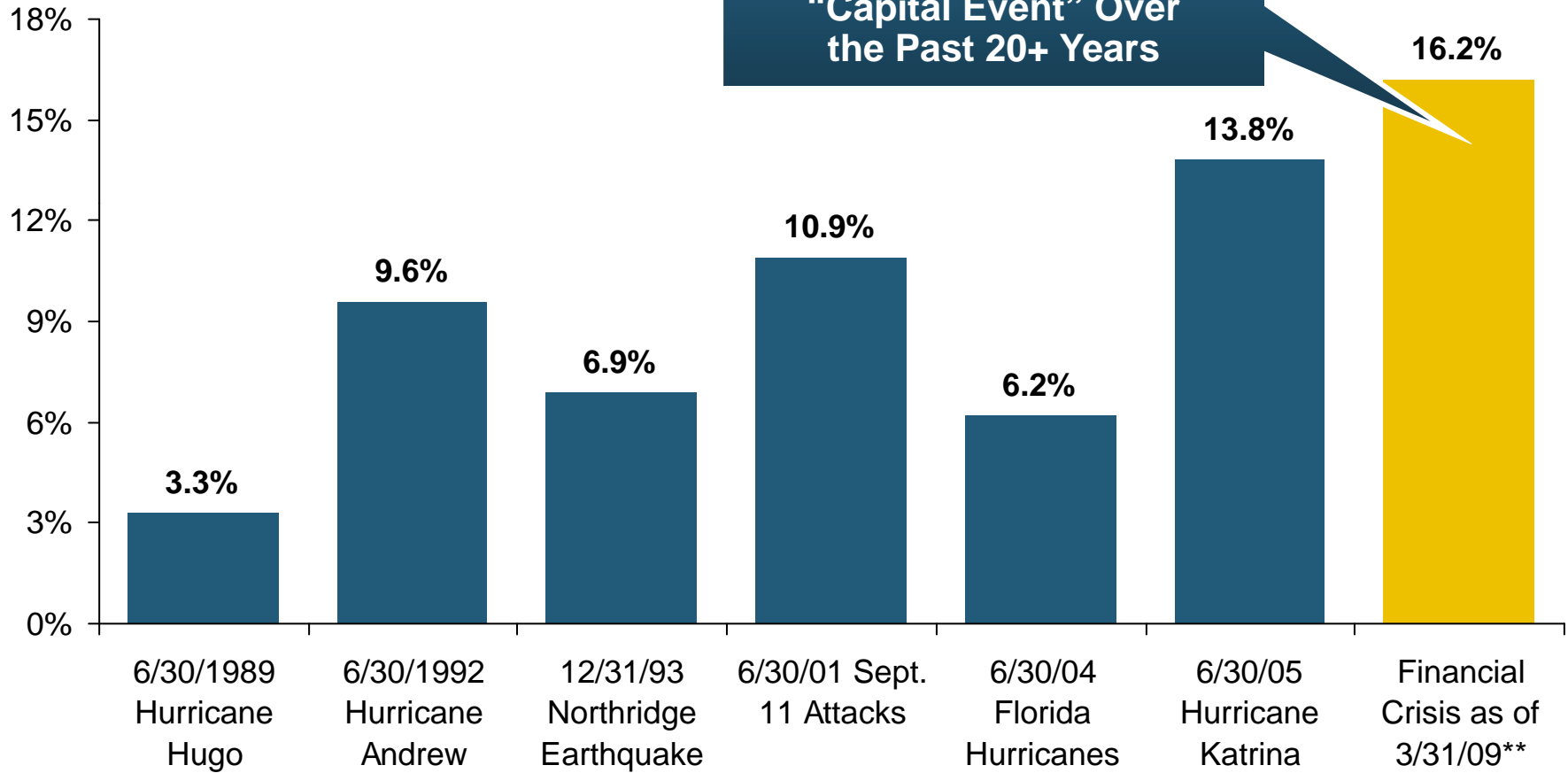
**The Premium-to-Surplus Ratio Stood at \$0.77:\$1 as of 9/30/10, A Record Low (at Least in Recent History)\*\***

\* As of 9/30/10; \*\*Calculated using annualized net premiums written based on 9-month 2010 data.

Source: A.M. Best, ISO, Insurance Information Institute.

# Ratio of Insured Loss to Surplus for Largest Capital Events Since 1989\*

(Percent)



\* Ratio is for end-of-quarter surplus immediately prior to event. Date shown is end of quarter prior to event

\*\* Date of maximum capital erosion; As of 9/30/09 (latest available) ratio = 5.9%

Source: PCS; Insurance Information Institute



# **The Deepwater Horizon Disaster: *Insurance Market Impacts***

***Download Full PowerPoint Presentation at:  
[www.iii.org/presentations](http://www.iii.org/presentations)***

# Largest International Oil Well Blowouts by Volume\*

Date	Well	Location	Bbl Spilled
<b>April 20 – July 15, 2010</b>	<b>Deepwater Horizon</b>	<b>Gulf of Mexico, USA</b>	<b>est. 4,900,000 thru July 15*</b>
June 1979-April 1980	Ixtoc I	Bahia del Campeche, Mexico	3,300,000
October 1986	Abkatun 91	Bahia del Campeche, Mexico	247,000
April 1977	Ekofisk Bravo	North Sea, Norway	202,381
January 1980	Funiwa 5	Forcados, Nigeria	200,000
October 1980	Hasbah 6	Gulf, Saudi Arabia	105,000
December 1971	Iran Marine International	Gulf, Iran	100,000
January 1969	Alpha Well 21 Platform A	Pacific, CA, USA	100,000
March 1970	Main Pass Block 41 Platform C	Gulf of Mexico	65,000
October 1987	Yum II/Zapoteca	Bahia del Campeche, Mexico	58,643
December 1970	South Timbalier B-26	Gulf of Mexico, USA	53,095

\*Based on official estimate by U.S. scientific teams of 53,000 barrels per day leaking from BP well immediately preceding it being capped on July 15. Includes offset for capture of approximately 800,000 barrels of oil prior to capping of well.

Source: American Petroleum Institute (API), 09/18/2009; <http://www.api.org/ehs/water/spills/upload/356-Final.pdf> and updates from the Insurance Information Institute.

# Long-Run Implications of Deepwater Horizon on Energy & Energy Insurance Markets

- **Deepwater Horizon Will Become the Single Most Expensive Environmental Disaster in US History**
- **Vast Majority of Losses Will Be Paid by BP and Its Partners**
- **\$20 Billion Compensation Fund Should Reduce Litigation**
- **Total Insured Losses Likely in the \$3 Billion Range (still uncertain)**
- **Insured losses are Spread Globally Across a Wide Range of Insurers and Reinsurers**
  - Although unprecedented, the event was manageable and had a minimally disruptive effect on offshore energy insurance markets
- **Reaction (and Overreaction) to Spill Will Have Multi-Decade Impact on Energy Business and Insurers**
  - Impacts will not be confined to offshore oil & gas industry
- **Regulatory Changes Are Occurring**
- **Insurers Developing Products to Meet New Regulatory Requirements Imposed on Operators**

# **Some Property Catastrophe Issues Likely To Be in the News in 2011**

**A Wide Variety of Potential  
Concerns in the Year Ahead**

# Property Insurance Issues Likely To Be in the News in 2011

## ■ **Busy 2011 Hurricane Season Anticipated**

- 2010 was busy, but with little impact on US
- Solvency of state-run insurers may be questioned

## ■ **Terrorism**

- Was a major concern in 2010, perhaps more so in 2011
- 10<sup>th</sup> anniversary of 9/11 attack

## ■ **Environmental Disasters**

- Reverberations of Deepwater Horizon

## ■ **Flood Program Reauthorization (expires 9/30/11)**

## ■ **Sinkholes**

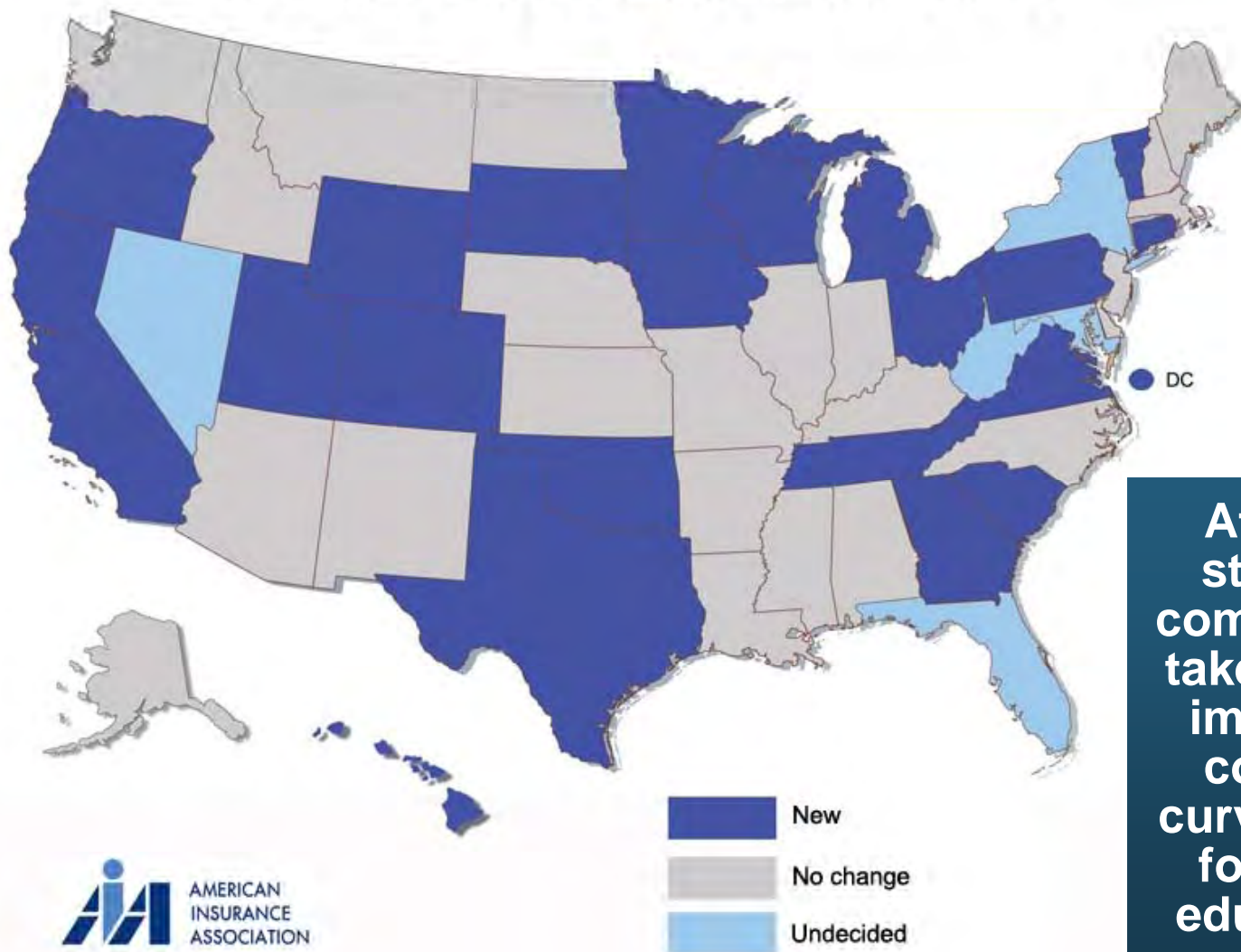
- Florida's "other" property insurance problem

## ■ **Regulatory Issues**

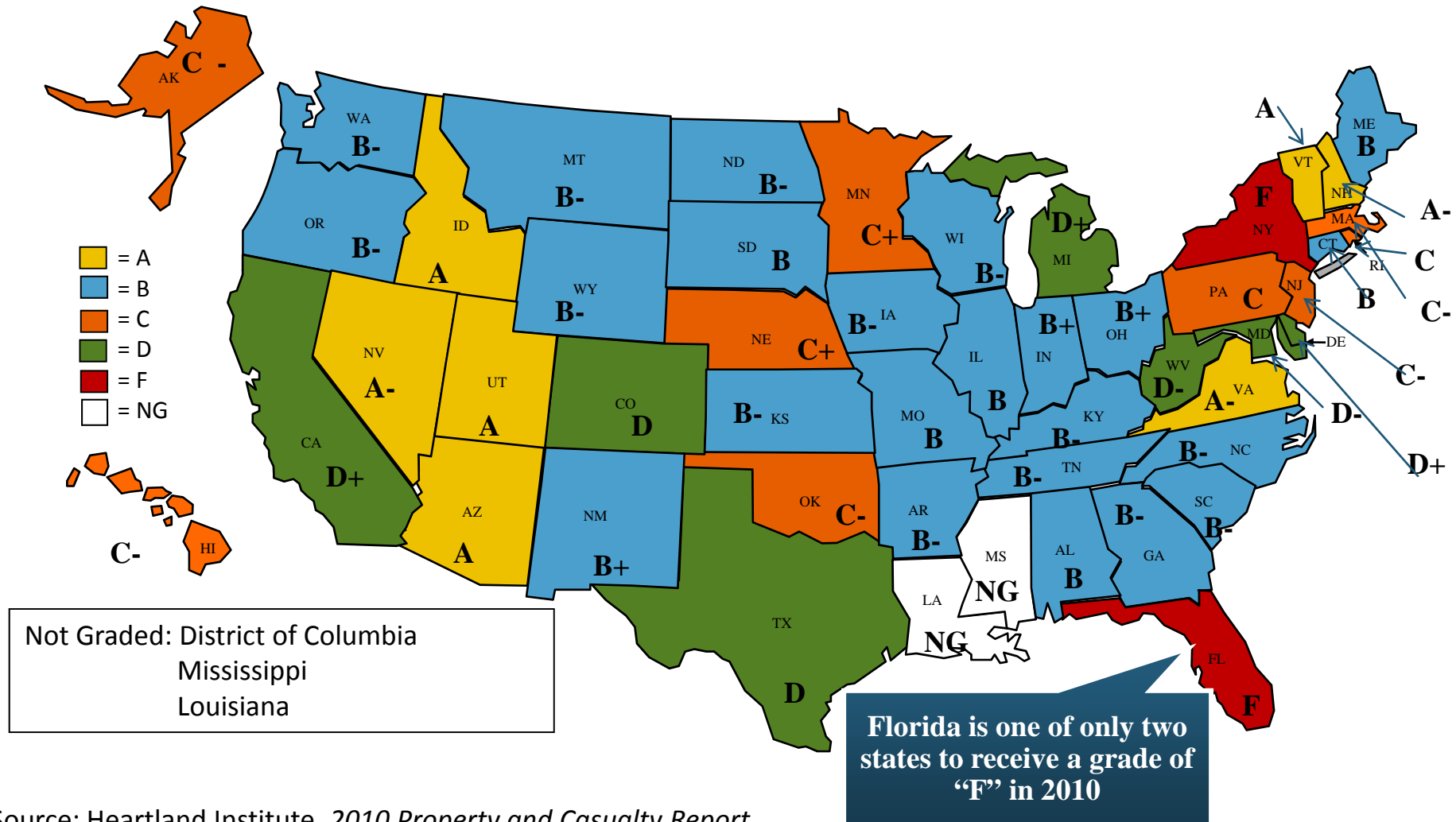
- Nearly half of the state insurance regulators in the US are new in 2011. How will they react to the challenges poses by CAT losses?

# Turnover Among Insurance Regulators is Very High in 2011

## 2011 Insurance Commissioners Chart



# 2010 Property and Casualty Insurance Report Card: Regulatory Burden



Source: Heartland Institute, *2010 Property and Casualty Report Card: A State-by-State Analysis of Regulatory Burden*, May 2010.

**Insurance Information Institute Online:**

**[www.iii.org](http://www.iii.org)**

***Thank you for your time  
and your attention!***

***Twitter: [twitter.com/bob\\_hartwig](https://twitter.com/bob_hartwig)***

---

## Q AND A



////////////////////////////////////

To ask a question, please  
press 1 4 on your phone.

An operator will facilitate  
your participation.



---

## **Press Inquiries**

Terese Rosenthal

Phone: 609.243.4339

E-mail: [trosenthal@munichreamerica.com](mailto:trosenthal@munichreamerica.com)



THANK YOU FOR ATTENDING TODAY'S WEBINAR.



© Copyright 2011 Munich Reinsurance America, Inc. All rights reserved. "Munich Re" and the Munich Re logo are internationally protected registered trademarks. The material in this presentation is provided for your information only, and is not permitted to be further distributed without the express written permission of Munich Reinsurance America, Inc. or Munich Re. This material is not intended to be legal, underwriting, financial, or any other type of professional advice. Examples given are for illustrative purposes only. Each reader should consult an attorney and other appropriate advisors to determine the applicability of any particular contract language to the reader's specific circumstances.