2011 HALF-YEAR NATURAL CATASTROPHE REVIEW

July 12, 2011

Munich RE

Agenda

Welcome/Introduction
Terese Rosenthal

U.S. Natural Catastrophe Update
Carl Hedde

Global Natural Catastrophe Update
Peter Höppe

Economic Implications of Natural Catastrophe Losses
Dr. Robert Hartwig

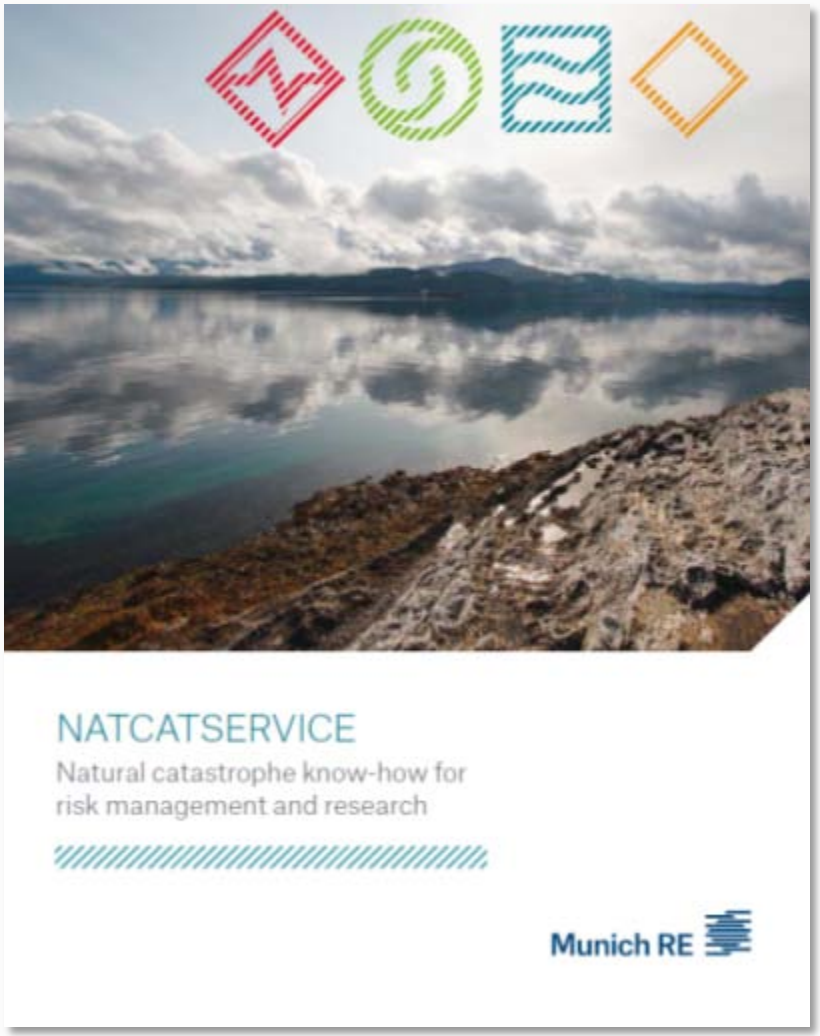
Questions and Answers

U.S. NATURAL CATASTROPHE UPDATE

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

MR NatCat*SERVICE*

One of the world‘s largest databases on natural catastrophes



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. Vesuvius (3,000 historical data sets).
- **Currently more than 30,000 data sets**

2011 Headlines

- Very active thunderstorm (tornado-hail) season with insured losses exceeding $16 billion, far above the 2001 to 2010 January – June average thunderstorm loss of $6.4 billion (in 2010 Dollars). It was also the deadliest thunderstorm season in over 50 years.
- Extensive severe flooding events in Midwest and Great Plains
- Large, damaging wildfires in Texas, Arizona, and New Mexico.
- Major blizzard and ice storm in Midwest; severe freezing conditions in Southwest
- Seasonal forecasts indicate “active” hurricane season; neither El Niño or La Niña conditions are expected to be a factor this year

Natural Disaster Losses in the United States

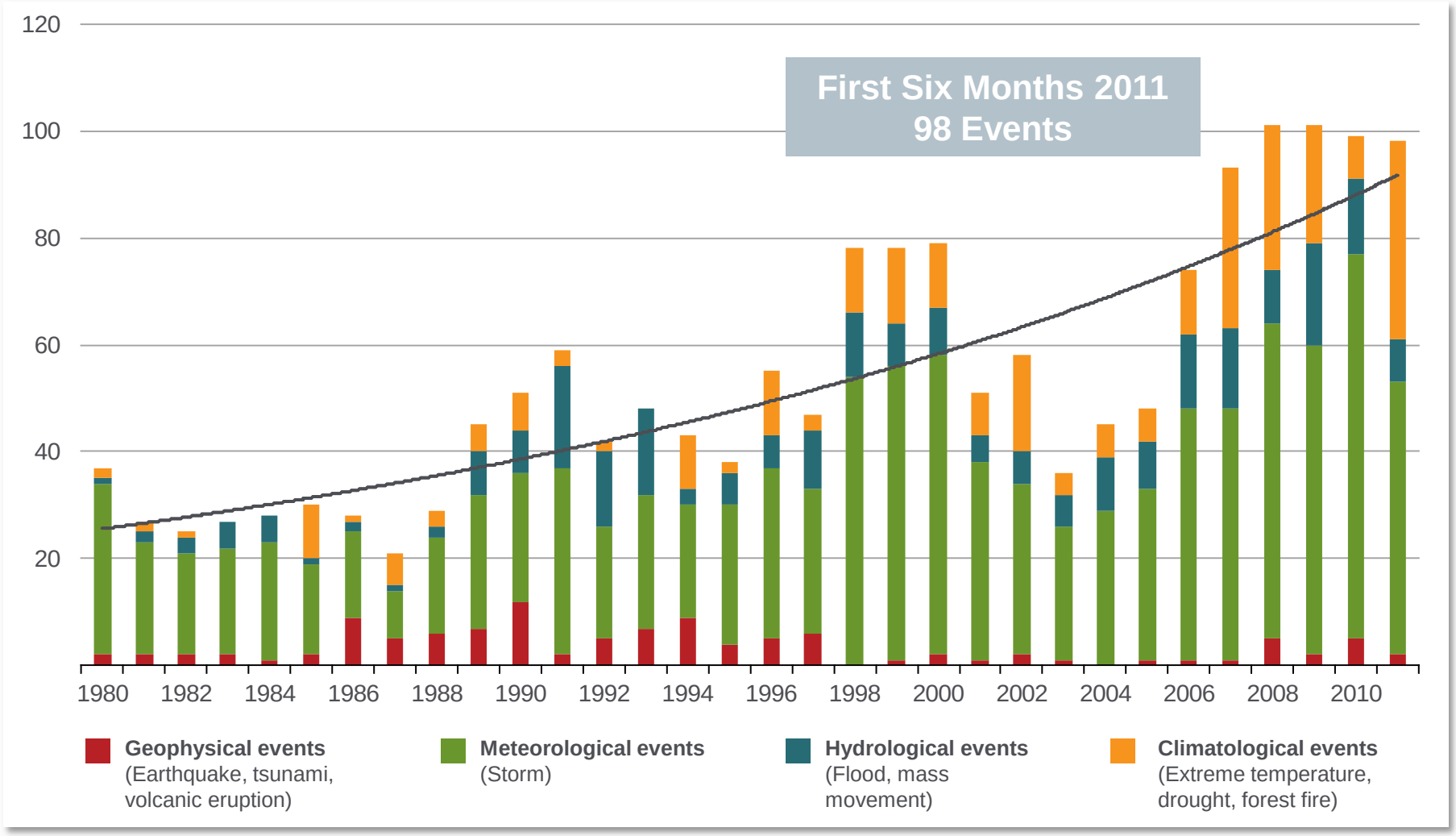
First Six Months of 2011

As of July 6, 2011	Number of Events	Fatalities	Estimated Overall Losses (US $m)	Estimated Insured Losses (US $m)
Severe Thunderstorm	43	593	23,573	16,350
Winter Storm	8	15	1,900	1,425
Flood	8	15	2,100	in progress
Earthquake	2	1	105	in progress
Tropical Cyclone	0	0	0	0
Wildfire	37	7	125	50

Source: MR NatCat*SERVICE*

Natural Disasters in the United States, 1980 – 2011

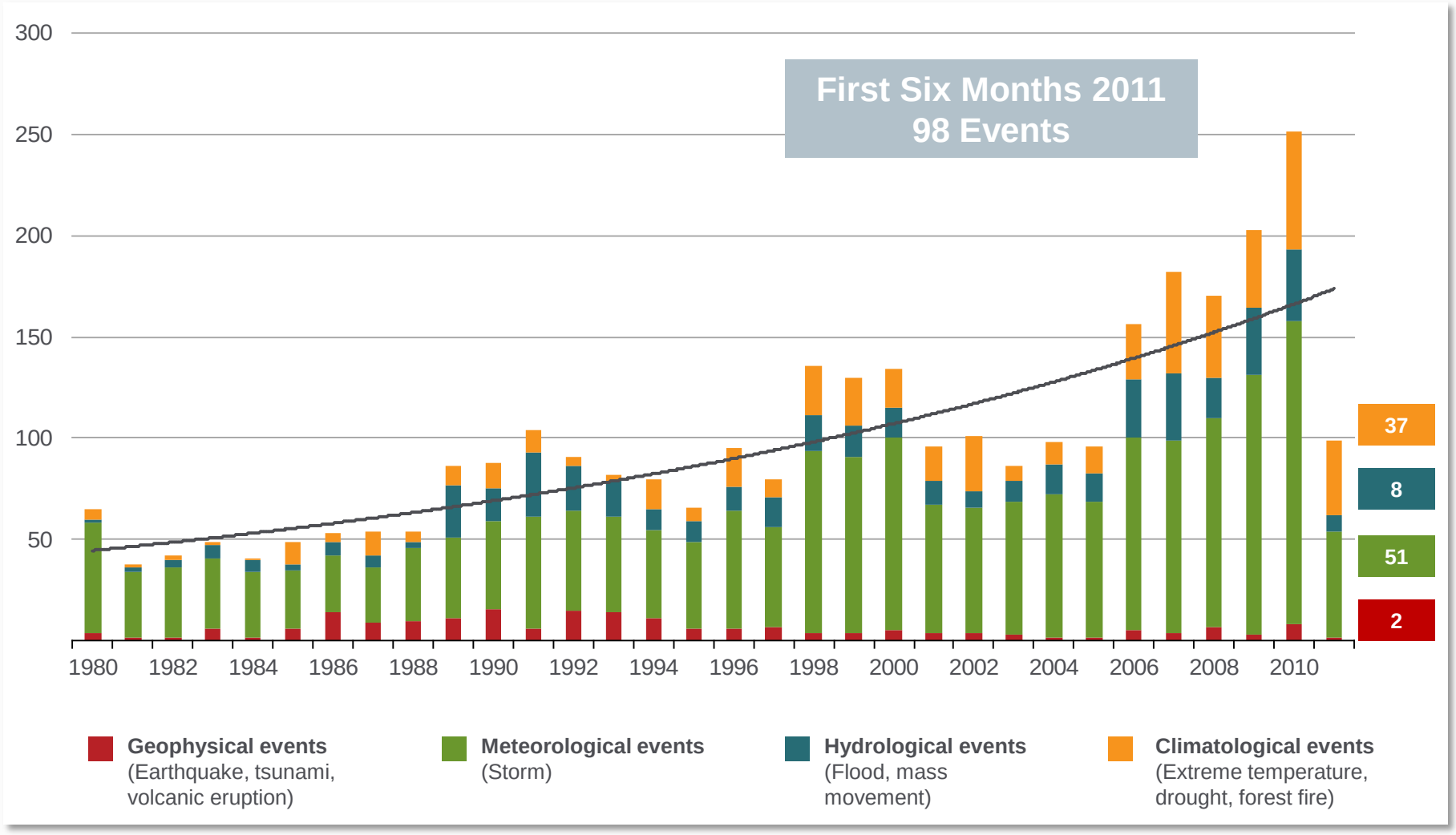
Number of Events (January – June Only)



Source: MR NatCat*SERVICE*

Natural Disasters in the United States, 1980 – 2011

Number of Events (Annual Totals 1980 – 2010 vs. First Six Months 2011)



Source: MR NatCat*SERVICE*

2011: Year of the Tornado

Source: FEMA

2011: Year of the Tornado

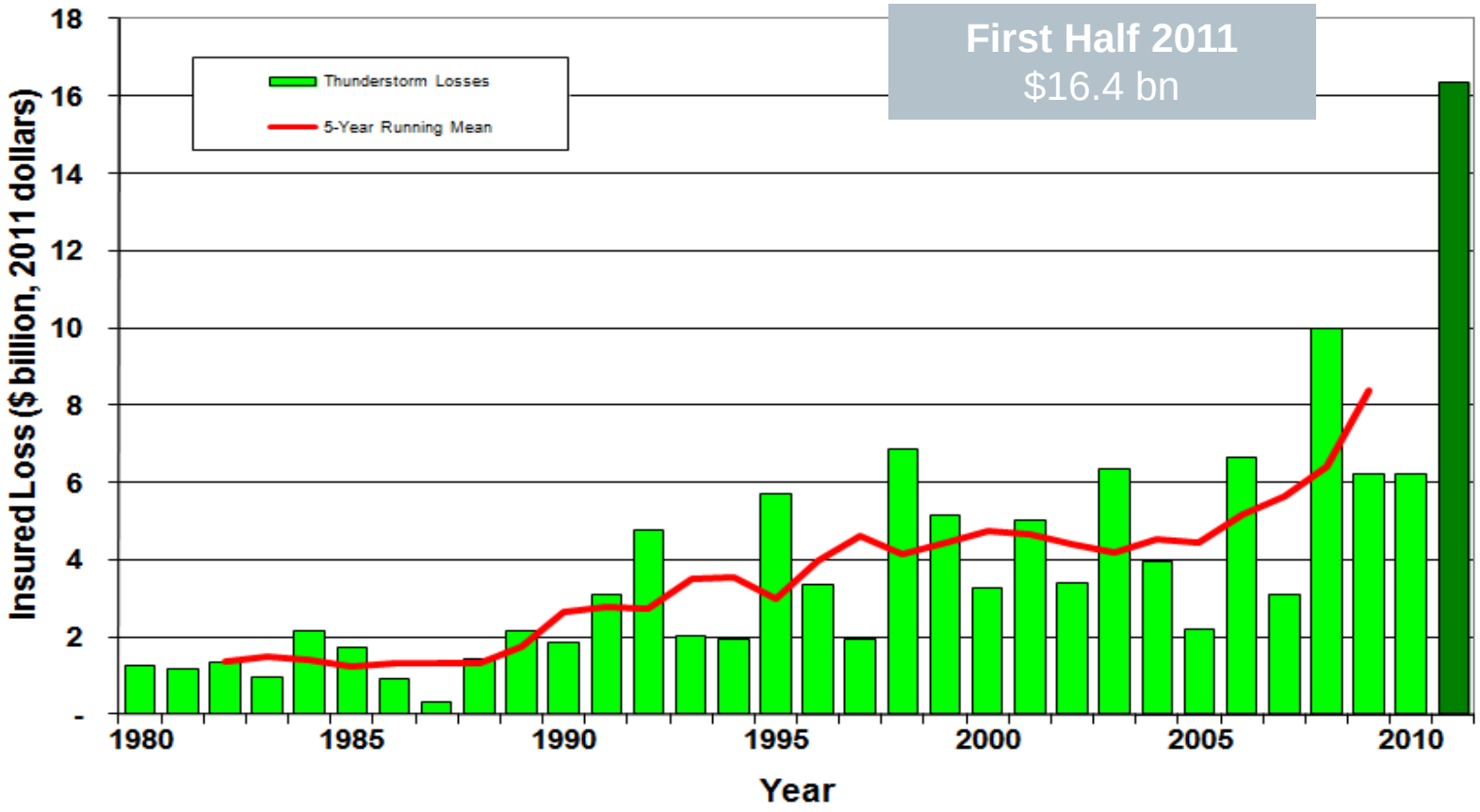
Munich RE

- Deadliest tornado year since 1953: 593 fatalities
- Deadliest single tornado since 1947: Joplin, Missouri, 155 fatalities
- Most observed tornadoes in a month: 875, April
- Largest number of tornadoes in a day: 226, April 27
- Most EF5 Tornados in a year: 6 (tied for first with 1974)
- Five insured billion-dollar outbreaks
- Two thunderstorm outbreaks each caused insured losses of about $5 billion
- Late April (Alabama) outbreak is among top 10 largest natural catastrophe losses in U.S. history

U.S. Thunderstorm Loss Trends

January – June only, 1980 - 2011

Thunderstorm losses for the period January – June in 2011 were more than double of the 2006-2010 5-year average.



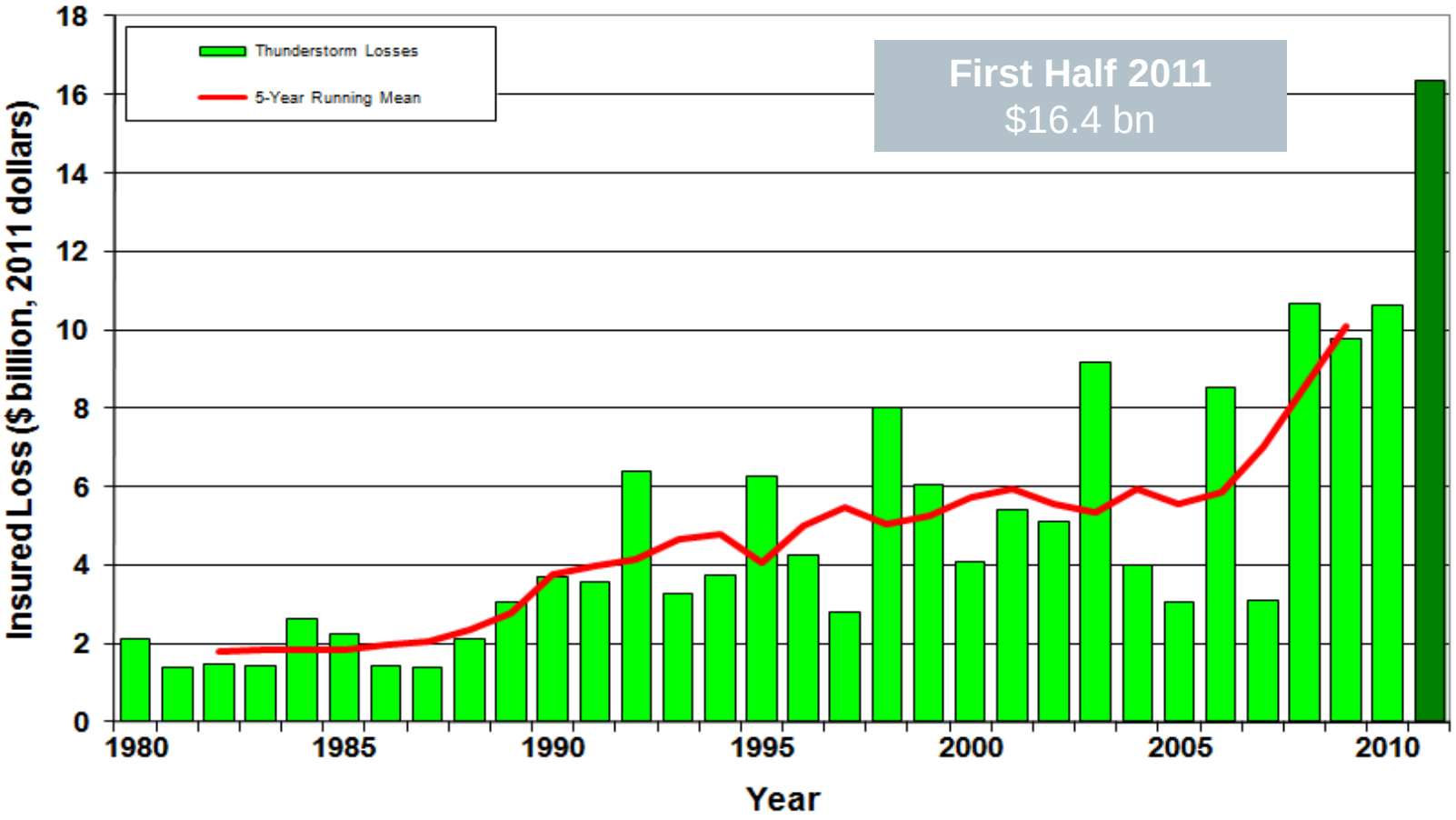
Source: Property Claims Service
MR NatCat*SERVICE*

U.S. Thunderstorm Loss Trends

Annual Totals 1980 – 2010 vs. First Half 2011

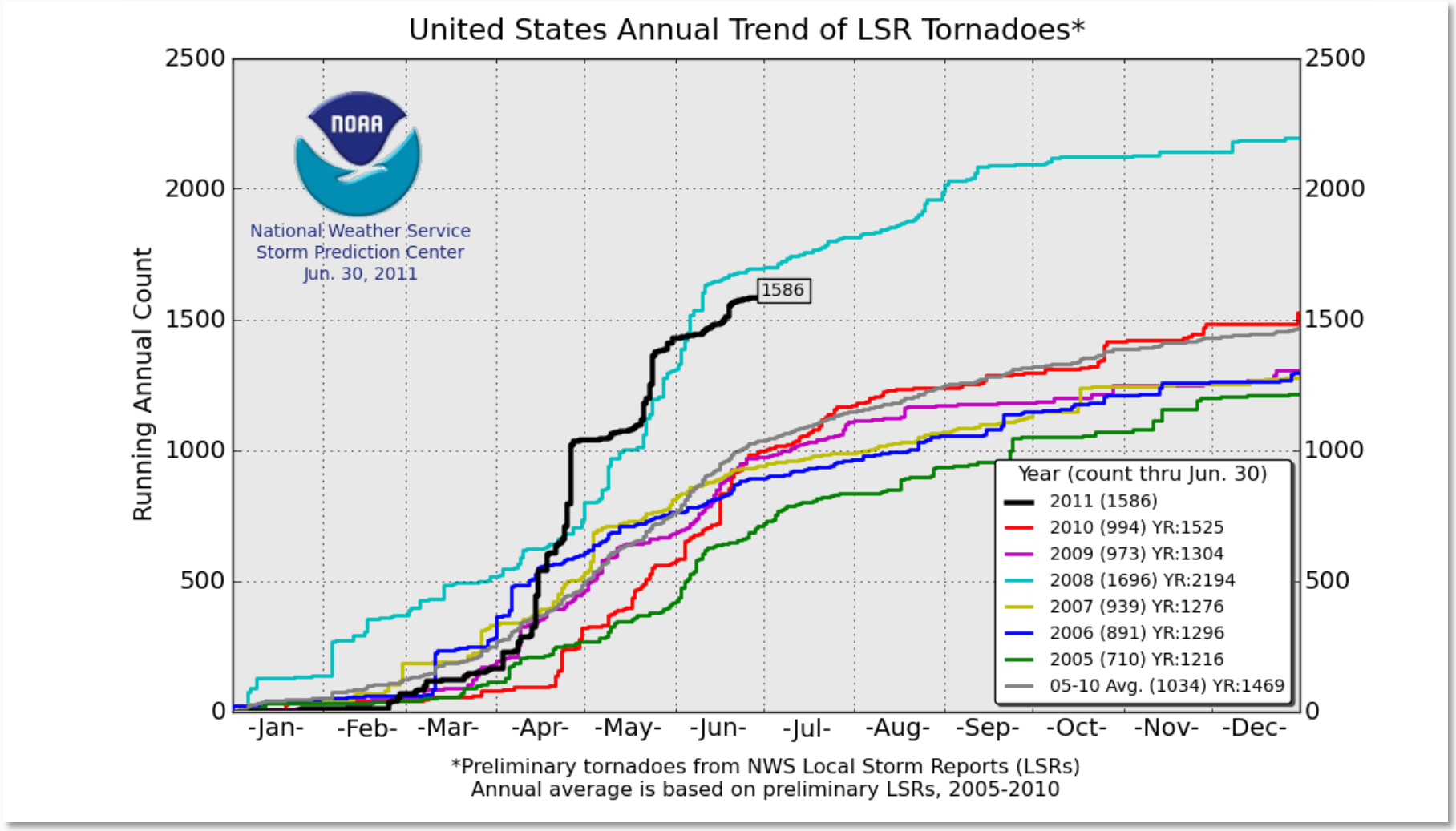
Munich RE

Average thunderstorm losses have increased fivefold since 1980.



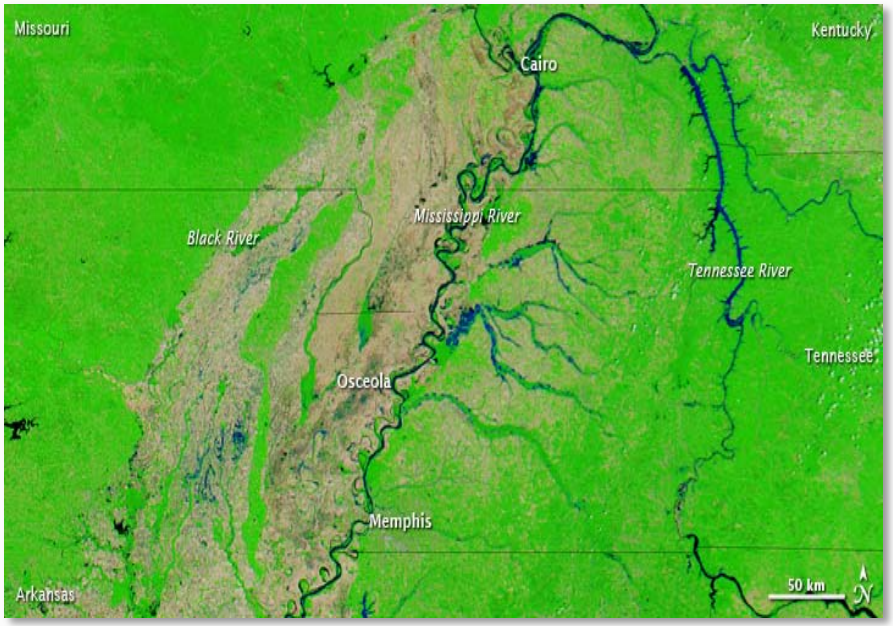
Source: Property Claims Service
MR NatCat*SERVICE*

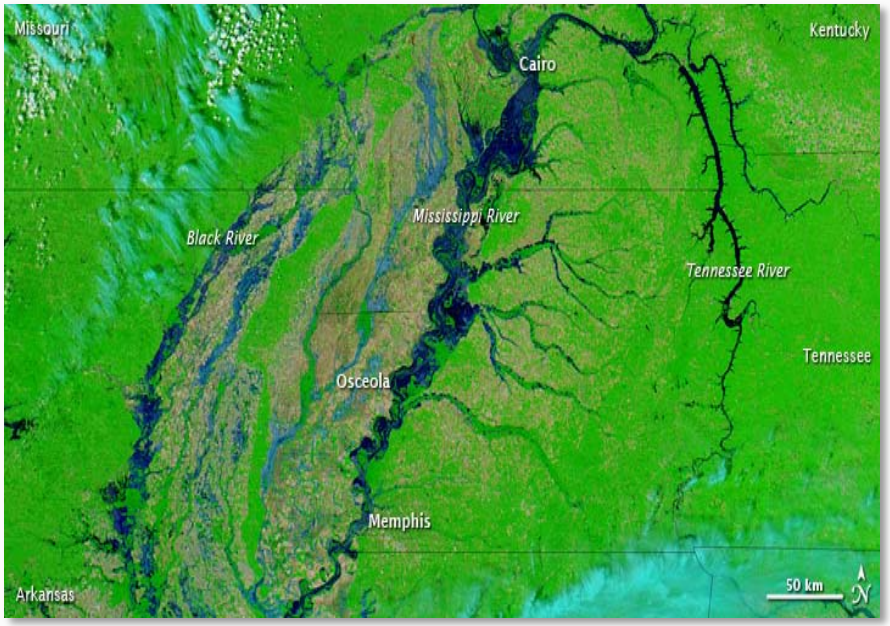
2011 U.S. Tornado Count



Lower Mississippi Flood of 2011

April 2011





Source: NASA

Lower Mississippi Flood of 2011

April 2011

- Heavy snowmelt, saturated soils, and over 20 inches of rain in a month lead to the worst flooding of the lower Mississippi River since 1927.
- Record river crests at Vicksburg and Natchez; Morganza Spillway opened in Louisiana to protect Baton Rouge and New Orleans from possible levee failures.
- Extensive agricultural damage, property, and inland marine losses due to flood.
  - Economic Losses: $2 billion
  - Insured Losses: Estimation in Progress

Other Notable Floods of 2011

June 2011

- Similar to the triggers of the Mississippi River flood, heavy rains in the northern plains states and the melting of a heavy snowpack in the Rockies resulted in severe flooding along several river systems, including the:
  - Missouri River: Numerous breached levees (some intentional to prevent flooding in densely populated regions), agriculture and transportation networks severely disrupted, Fort Calhoun nuclear power plant threatened, but no damage.
  - Souris River: Record flood levels at Minot, North Dakota. Levees were overtopped by flood waters; an estimated 11,000 residents (25% of Minot's population) was evacuated.

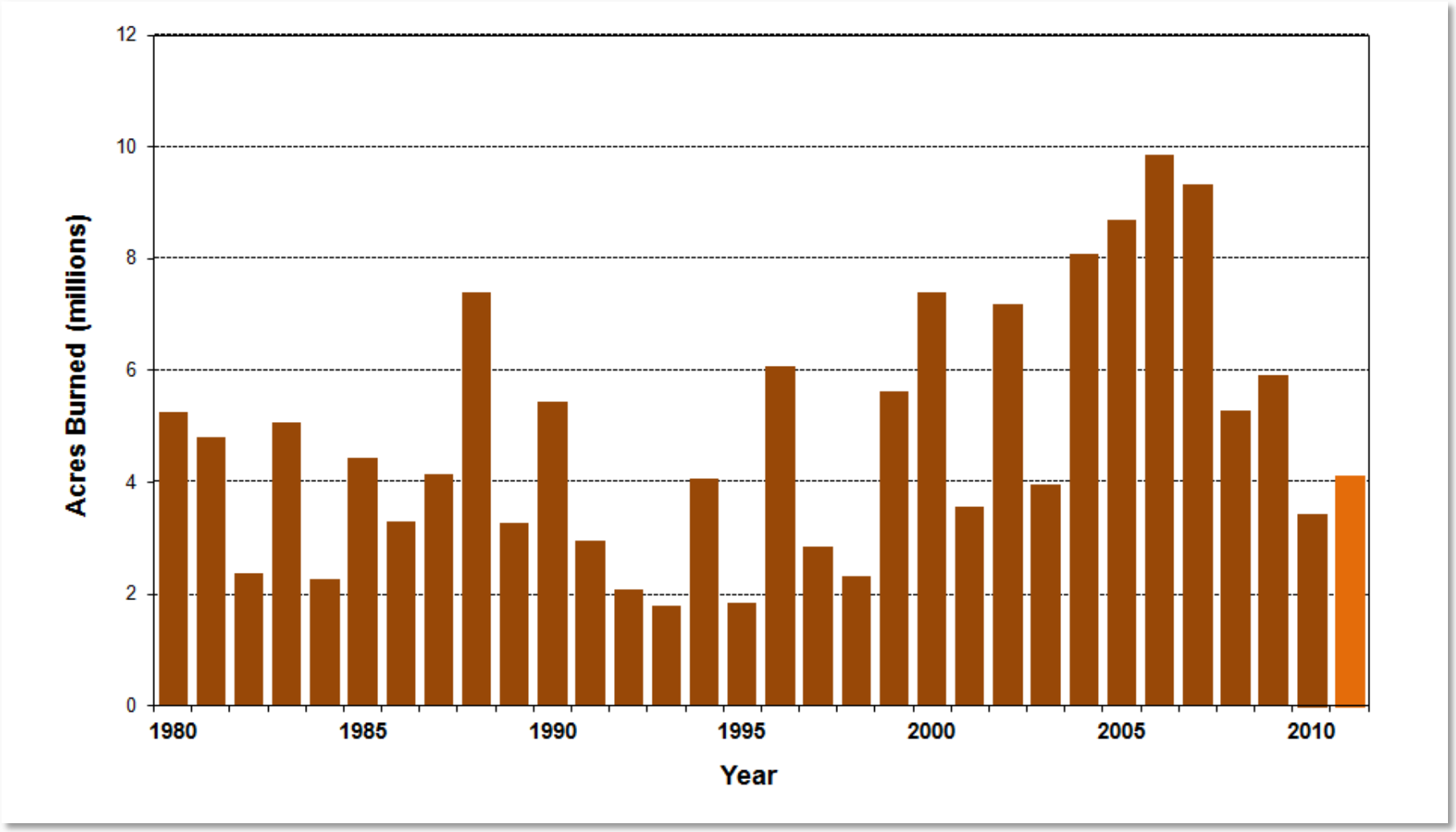
Notable Wildfires in 2011

April – June

- Texas: Over 3 million acres burned in west Texas from 12 major seats of fire. Over 200 homes and businesses destroyed, $50 million insured loss.

- Arizona and New Mexico: “Wallow” fire largest in AZ history at 538,000 acres, Las Conchas fire near Los Alamos, 30 buildings destroyed.

Number of Acres Burned in Wildfires, 1980 – 2011 YTD



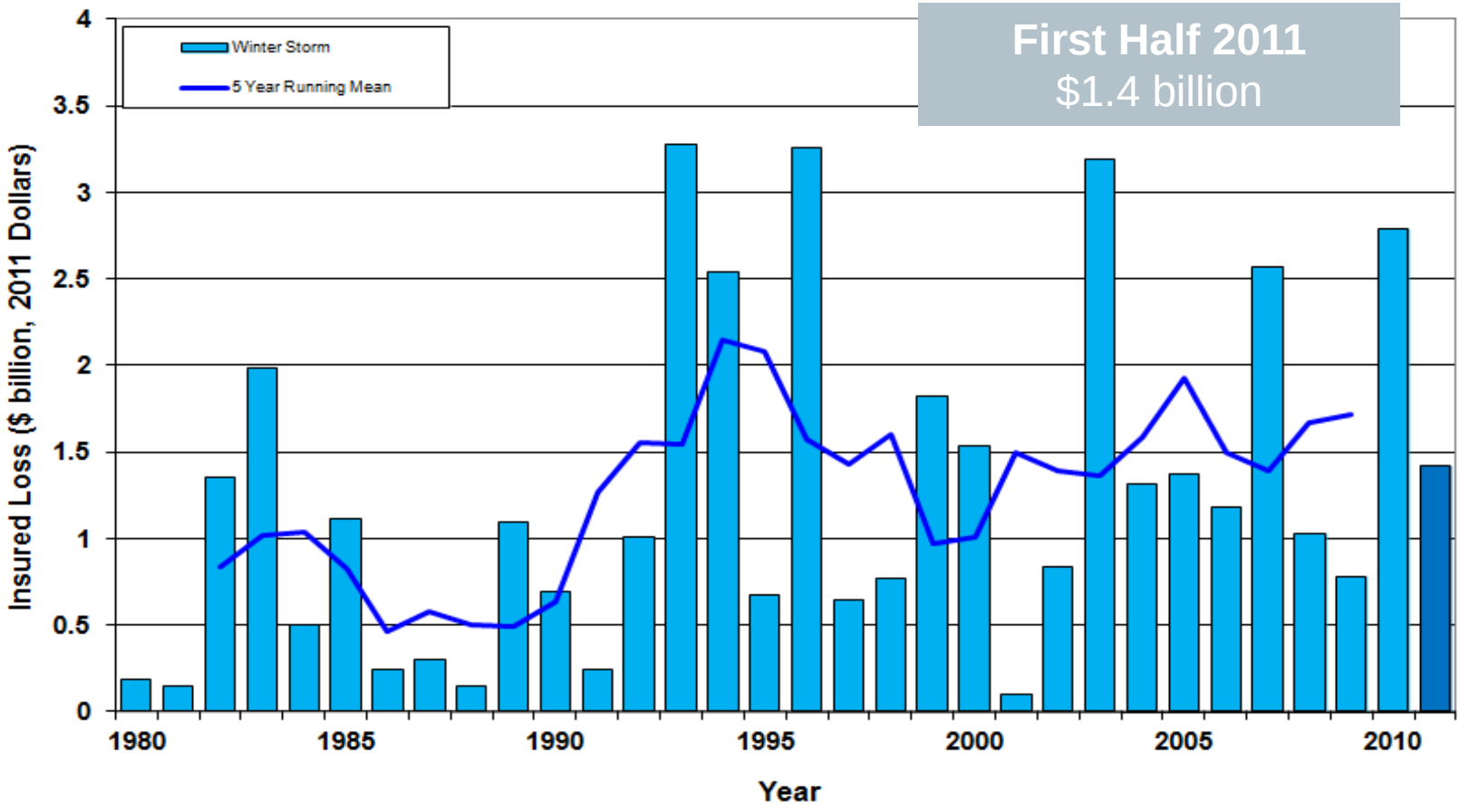
Source: Property Claims Service
MR NatCat*SERVICE*

U.S. Winter Storm Loss Trends

Annual totals 1980 – 2010 vs. First Half 2011

Munich RE

Average annual winter storm losses have increased over 50% since 1980.



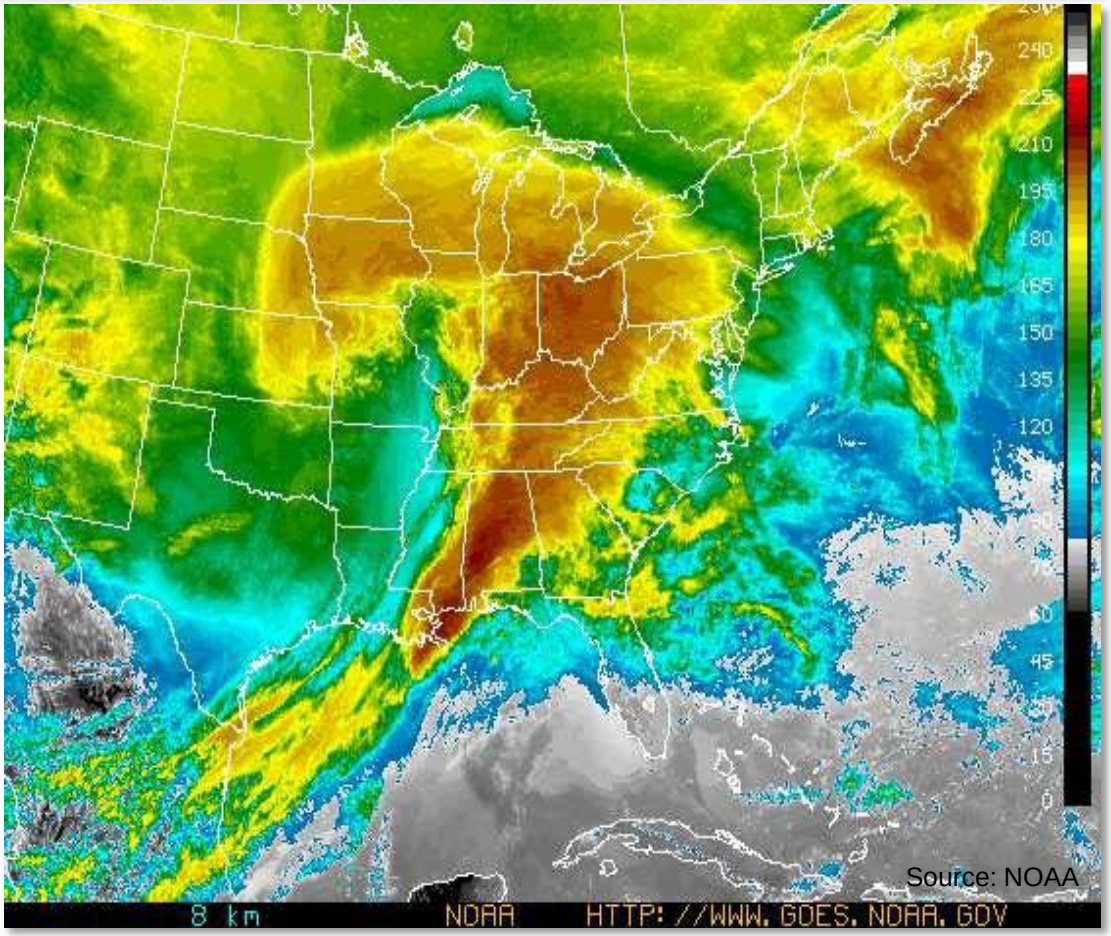
First Half 2011
$1.4 billion

Source: Property Claims Service
MR NatCat*SERVICE*

Notable Winter Storms of 2011

January 31-February 3, 2011

- 1-2 feet of snow in Chicago with 60+ mph wind gusts
- Up to 1” of freezing rain across Ohio River Valley
- Economic Losses: $900 million
- Insured Losses: $650 million



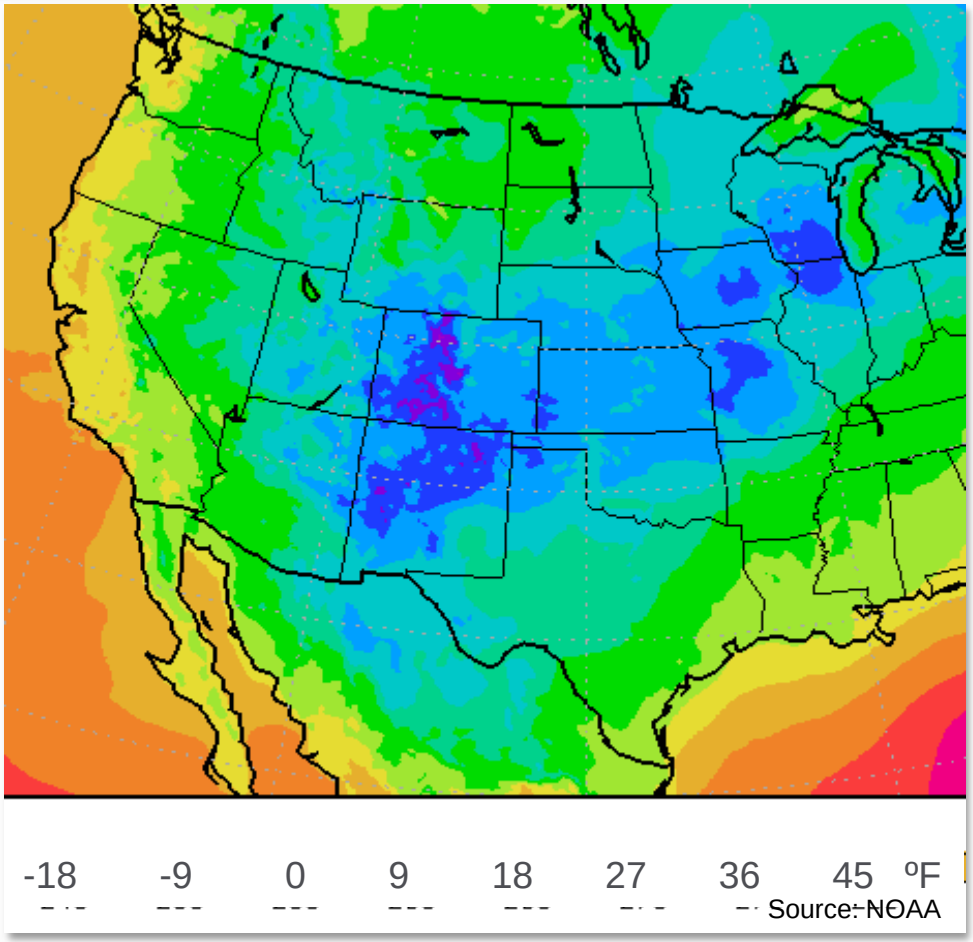
Source: NOAA

Source: Property Claims Service
MR NatCat*SERVICE*

Notable Winter Storms of 2011

February 2-6, 2011

- Cold arctic air over Rockies and Southwest
- Deep freeze over agricultural areas of southwest during growing season
- Economic Losses: $600 million
- Insured Losses: $450 million (not including Agriculture)



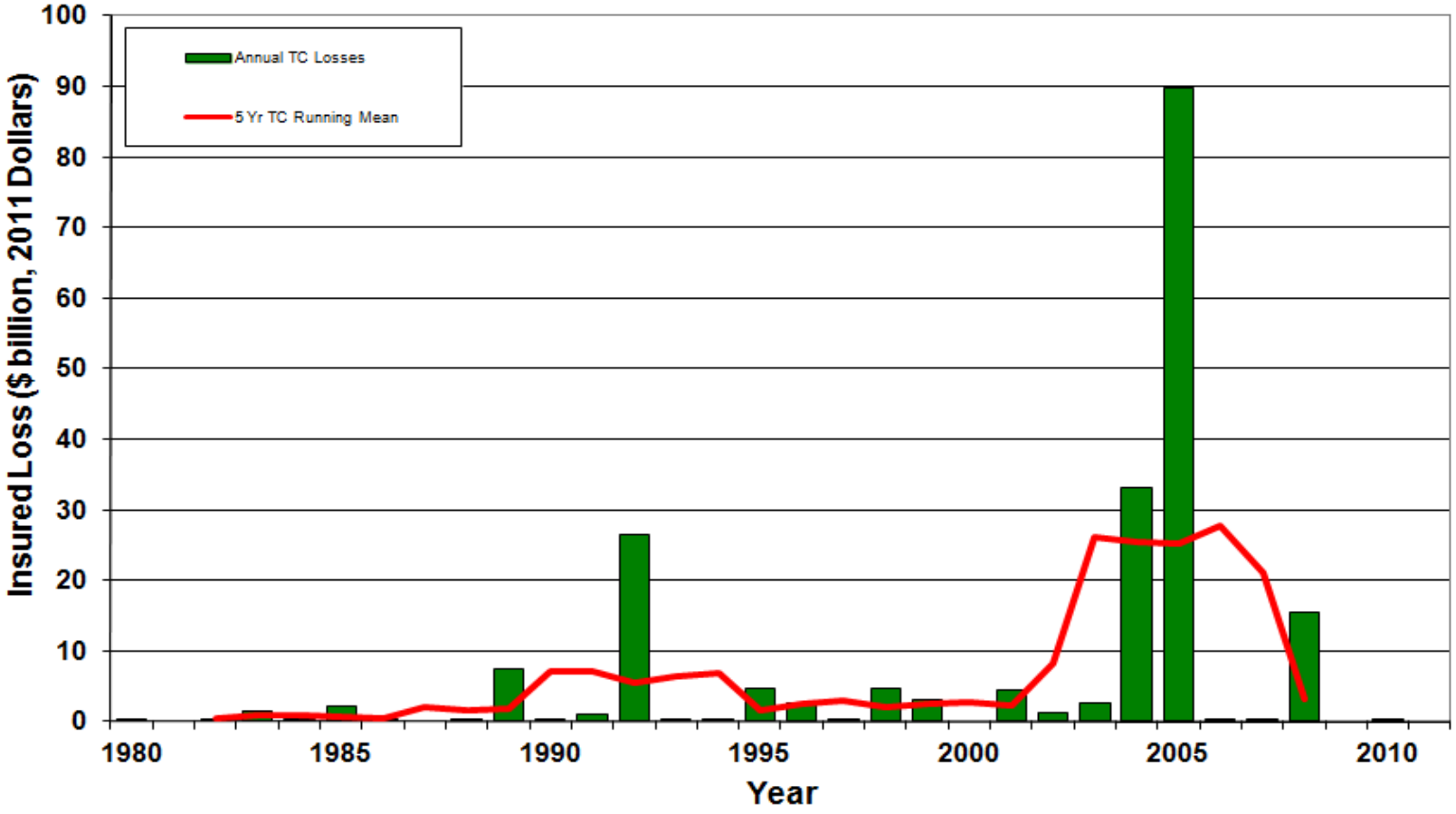
Source: Property Claims Service
MR NatCat*SERVICE*

U.S. Tropical Cyclone Loss Trends

1980 – 2011

Munich RE

The current 5-year average (2006-2010) insured tropical cyclone loss is $3.2 bn.



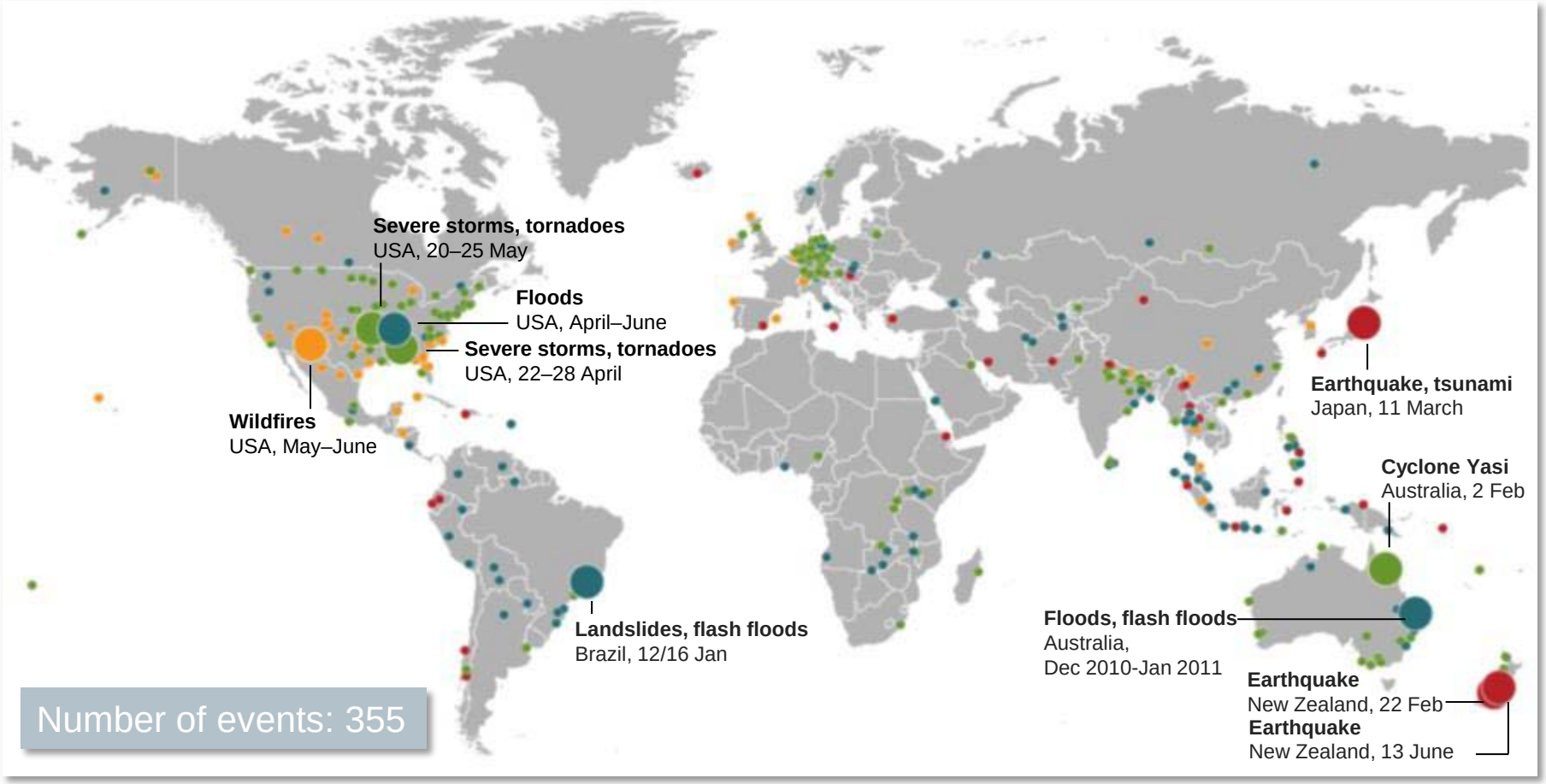
Source: Property Claims Service
MR NatCat*SERVICE*

GLOBAL NATURAL CATASTROPHE UPDATE

Prof. Dr. Peter Höppe
Head of Geo Risks Research/ Corporate Climate Center
Munich Re

Natural loss events January – June 2011

World map



- **Natural catastrophes**
- **Selection of significant loss events (see table)**
- **Geophysical events** (earthquake, tsunami, volcanic activity)
- **Meteorological events** (storm)
- **Hydrological events** (flood, mass movement)
- **Climatological events** (extreme temperature, drought, wildfire)

Source: MR NatCat*SERVICE*

Worldwide Natural Disasters 2011

Significant Natural Disasters (January – June only)

Munich RE

Deadliest Disasters			
Date	Event	Area	Deaths
11.3.2011	Earthquake, tsunami	Japan	15,500 (still missing: 7,297)
12/16.1.2011	Landslides, flash floods	Brazil	1,350
22-28.4.2011	Severe storm, tornadoes	USA	350

Costliest Disasters (Insured Losses)			
Date	Event	Area	Insured losses in US$m
11.3.2011	Earthquake, tsunami	Japan	~30.000
22.2.2011	Earthquake	New Zealand	>10,000
22-28.4.2011	Severe storm, tornadoes	USA	5,050

Costliest Disasters (Overall Losses)			
Date	Event	Area	Overall losses in US$m
11.3.2011	Earthquake, tsunami	Japan	210,000
22.2.2011	Earthquake	New Zealand	20,000
22-28.4.2011	Severe storm, tornadoes	USA	7,500

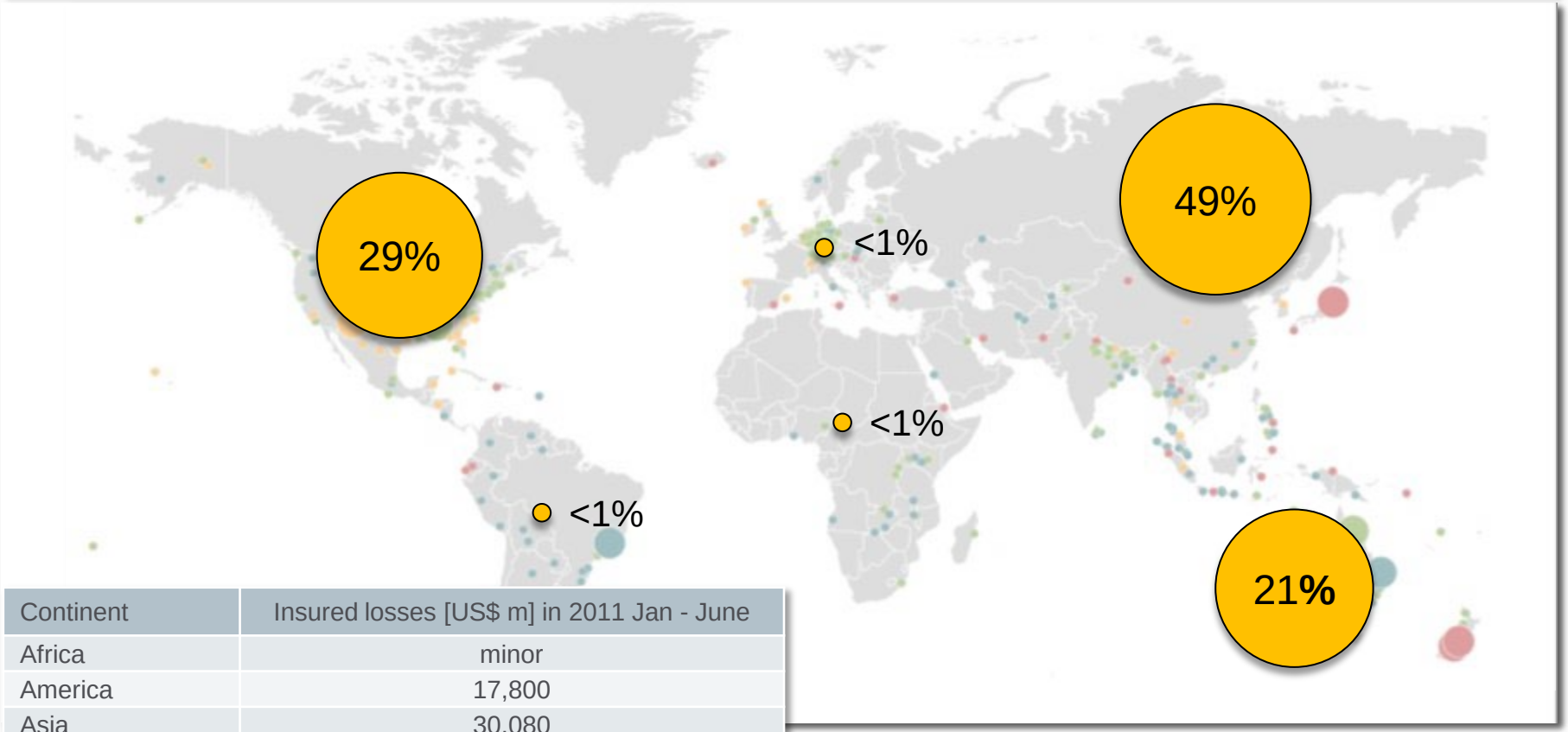
Source: MR NatCat*SERVICE*

Worldwide Natural Disasters 2011

Percentage Distribution of Insured Losses Per Continent (January – June only)

Munich RE

Insured losses 2011 (January – June only): US$ 60bn



Continent	Insured losses [US$ m] in 2011 Jan - June
Africa	minor
America	17,800
Asia	30,080
Australia/Oceania	12,900
Europe	100

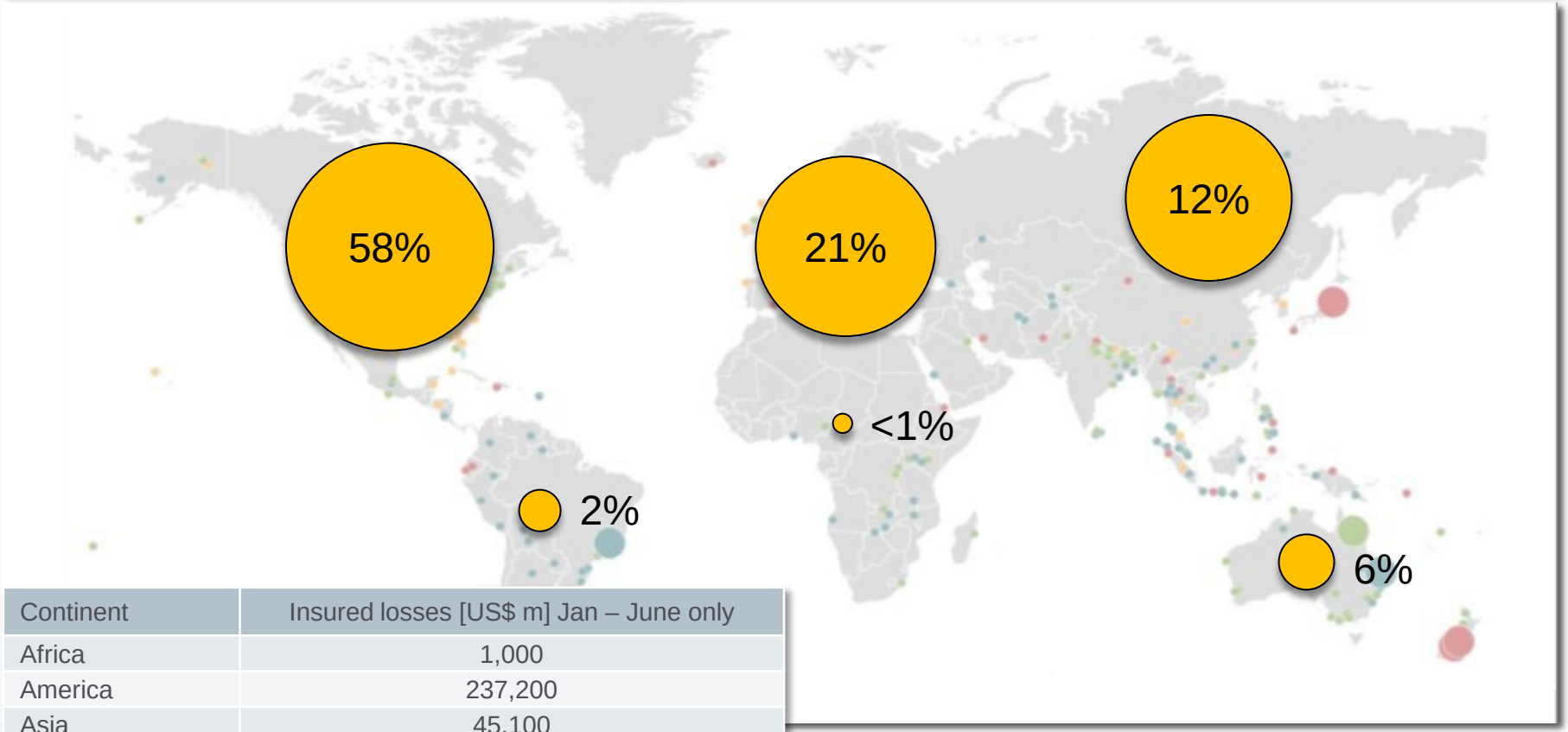
Source: MR NatCat*SERVICE*

Worldwide Natural Disasters 1980 – 2011

Percentage Distribution of Insured Losses Per Continent (January – June only)

Munich RE

Insured losses 1980 - 2011 (January – June only): US$ 389bn

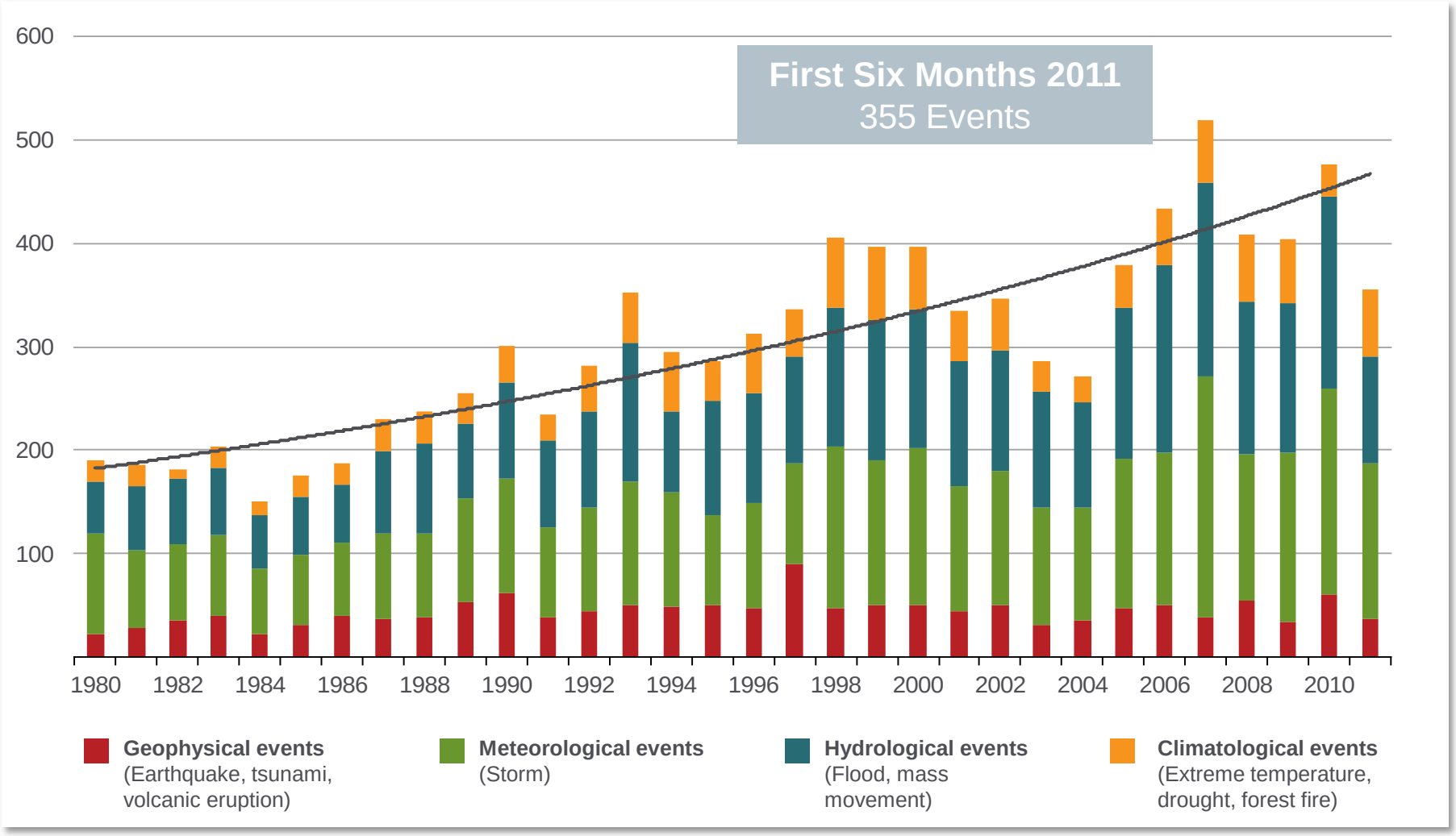


Continent	Insured losses [US$ m] Jan – June only
Africa	1,000
America	237,200
Asia	45,100
Australia/Oceania	25,100
Europe	80,900

Source: MR NatCat*SERVICE*

Worldwide Natural Disasters 1980 – 2011

Number of Events (January – June only)



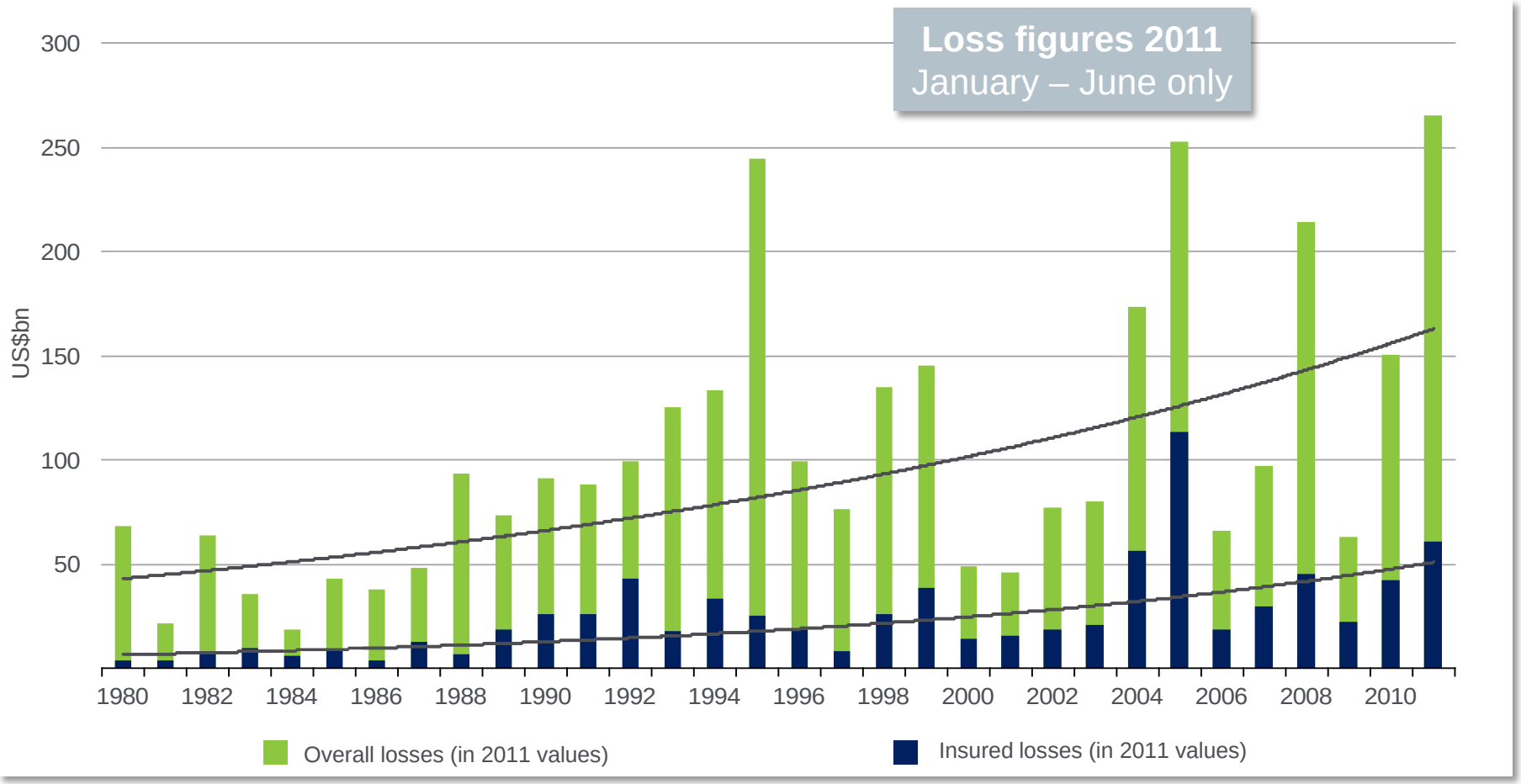
Source: MR NatCat*SERVICE*

Worldwide Natural Disasters 1980 – 2011

Overall and Insured Losses

Munich RE

Losses in 2011: Overall = US$ 265bn ; Insured = US$ 60bn



Source: MR NatCat*SERVICE*

Natural Catastrophes, 2011

Overview and comparison with previous years

	2011 (Jan – June)	2010 (Jan – June)	Average of the last 10 years 2001-2010 (Jan – June)	Average of the last 30 years 1981-2010 (Jan – June)	Top Year 1981 -2010 (Jan – June)
Number of events	355	480	390	310	2007
Overall losses in US$m (original values)	265,000	97,200	47,400	36,400	1995 (EQ Kobe)
Insured losses in US$m (original values)	60,000	26,900	12,100	8,200	1994 (EQ, US Northridge)
Fatalities	19,380	230,300	52,900	42,700	2010 (EQ Haiti)

Source: MR NatCat*SERVICE*

Worldwide Natural Disasters 2011

January – June only

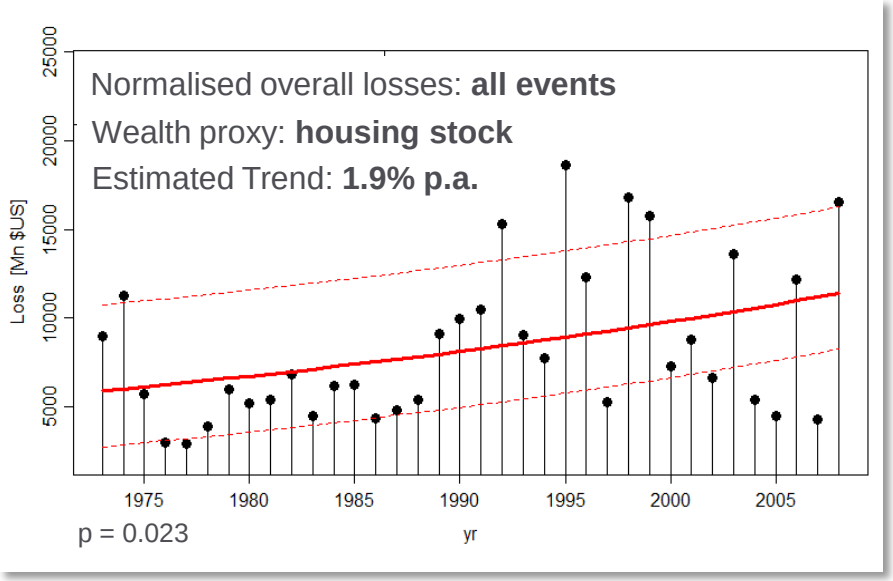
Earthquake New Zealand	Three strong earthquakes in 9 months	High losses due to soil liquefaction
Earthquake Japan	Strongest EQ in Japan	Mw 9.0
Tornadoes, Wildfires, Floods US	Spring time brought extreme weather and climate events	Deadliest tornado outbreak since 1925 in the US (1. Half year : 589)
Floods Australia	The series of floods 2010/11 were the most devastating in modern Australian history	Highest sea surface temperature off the Australian coastline

Source: MR NatCat*SERVICE*

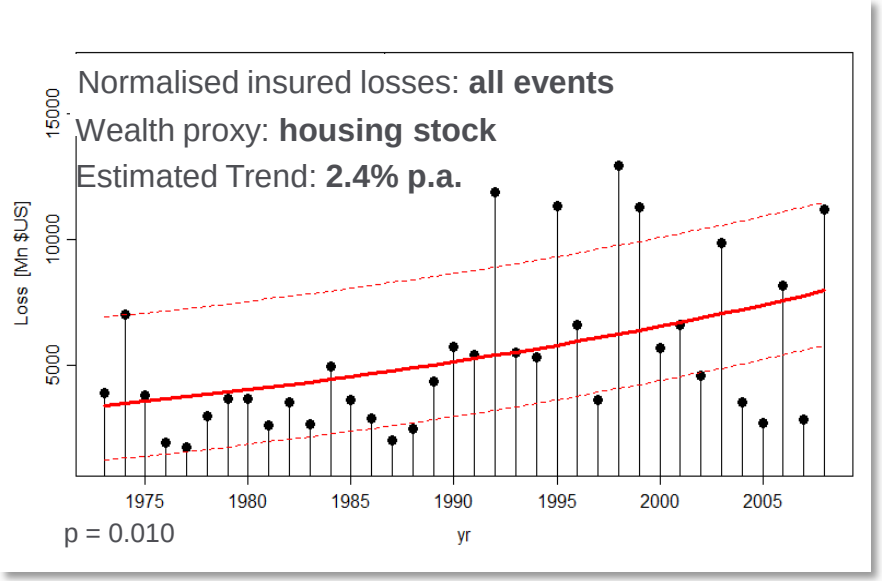
Normalised overall and insured losses from US thunderstorms All events

Munich RE

Overall losses



Insured losses



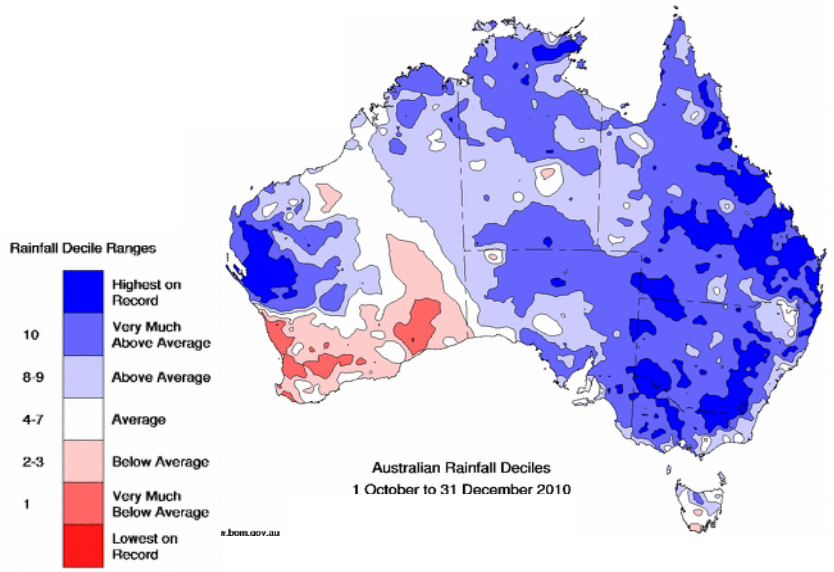
Trends of losses in line with meteorological trend of thunderstorm conditions.

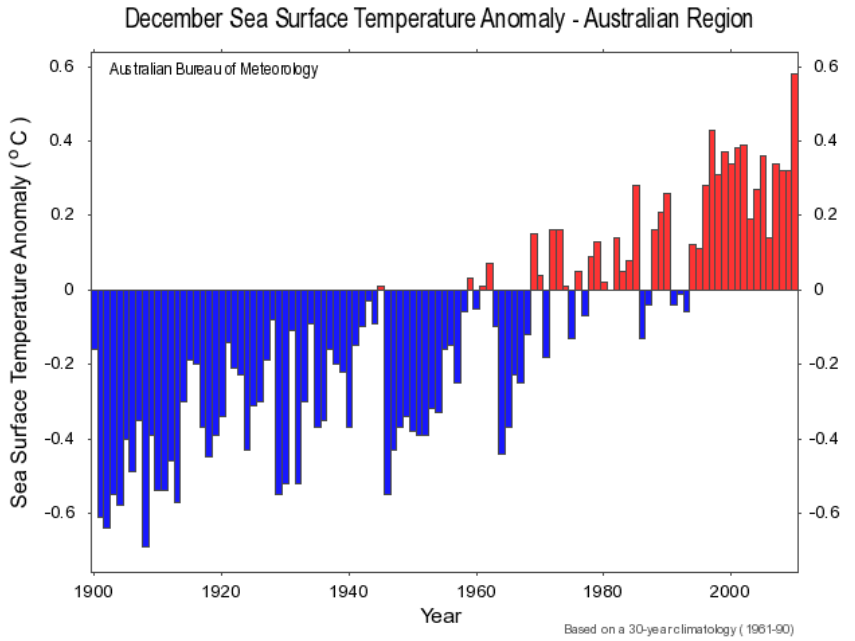
Floods, Queensland, Australia

December 2010 to January 2011

Munich RE

Australia rainfall anomalies (Oct-Dec 2010)



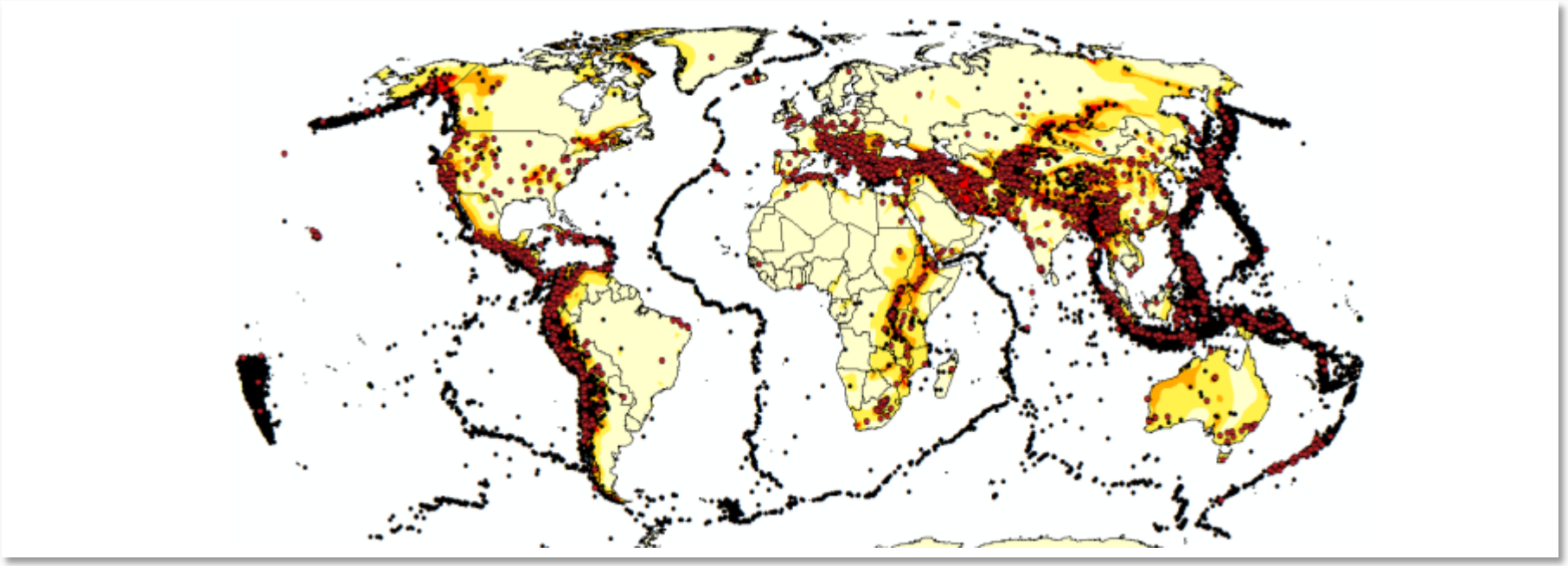


Sea surface temperature is rising due to climate change

Region	Overall losses	Insured losses	Fatalities
Australia	US$ 7,300m	US$ 2,550m	35

Sources: MR NatCat*SERVICE and New York Times*

Deadliest/Costliest Earthquakes 1900 – June 2011



Date	Affected Area	Fatalities
1920	China	273,400
1976	China	242,800
2010	Haiti	222,570
2004	Indonesia	220,000
1923	Japan	142,800

Date	Affected Area	Overall losses (US$m, original values)
2011	Japan	210,000
1995	Japan	100,000
2008	China	85,000
1994	USA	44,000
2010	Chile	30,000

Source: MR NatCat*SERVICE*

Costliest Natural Catastrophes Since 1950

Rank by insured losses

Year	Event	Region	Insured loss US$m (in original values)
2005	Hurricane Katrina	USA	62,200
2011	EQ, tsunami	Japan	~30,000
2008	Hurricane Ike	USA, Caribbean	18,500
1992	Hurricane Andrew	USA	17,000
1994	EQ Northridge	USA	15,300
2004	Hurricane Ivan	USA, Caribbean	13,800
2005	Hurricane Wilma	USA, Mexico	12,500
2005	Hurricane Rita	USA	12,100
2011	EQ New Zealand	New Zealand	>10,000
2004	Hurricane Charley	USA, Caribbean	8,000

Source: MR NatCat*SERVICE*

INSURANCE INFORMATION INSTITUTE

Economic & Financial Implications of Natural Catastrophe Losses

First Half 2011

Insurance Information Institute

July 12, 2011

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

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

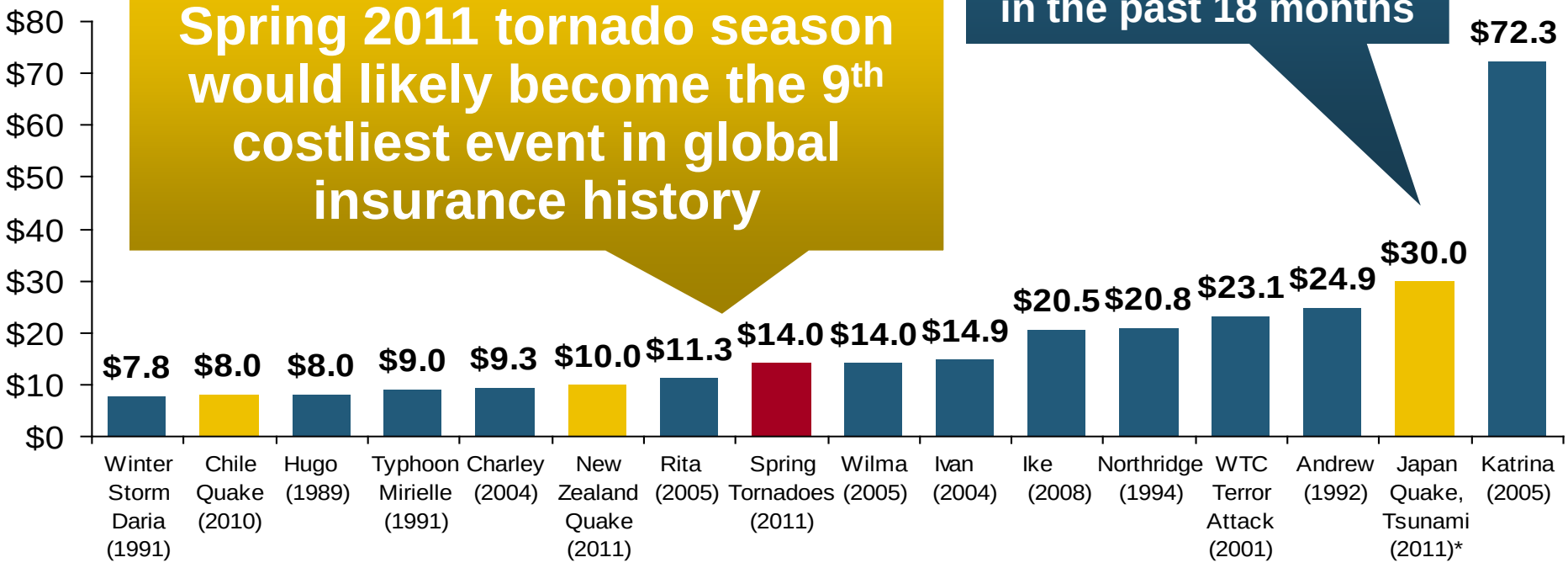
Tel: 212.346.5520 ♦ Cell: 917.453.1885 ♦ bobh@iii.org ♦ www.iii.org

Top 16 Most Costly World Insurance Losses, 1970-2011*

(Insured Losses, 2010 Dollars, $ Billions)

Taken as a single event, the Spring 2011 tornado season would likely become the 9th costliest event in global insurance history

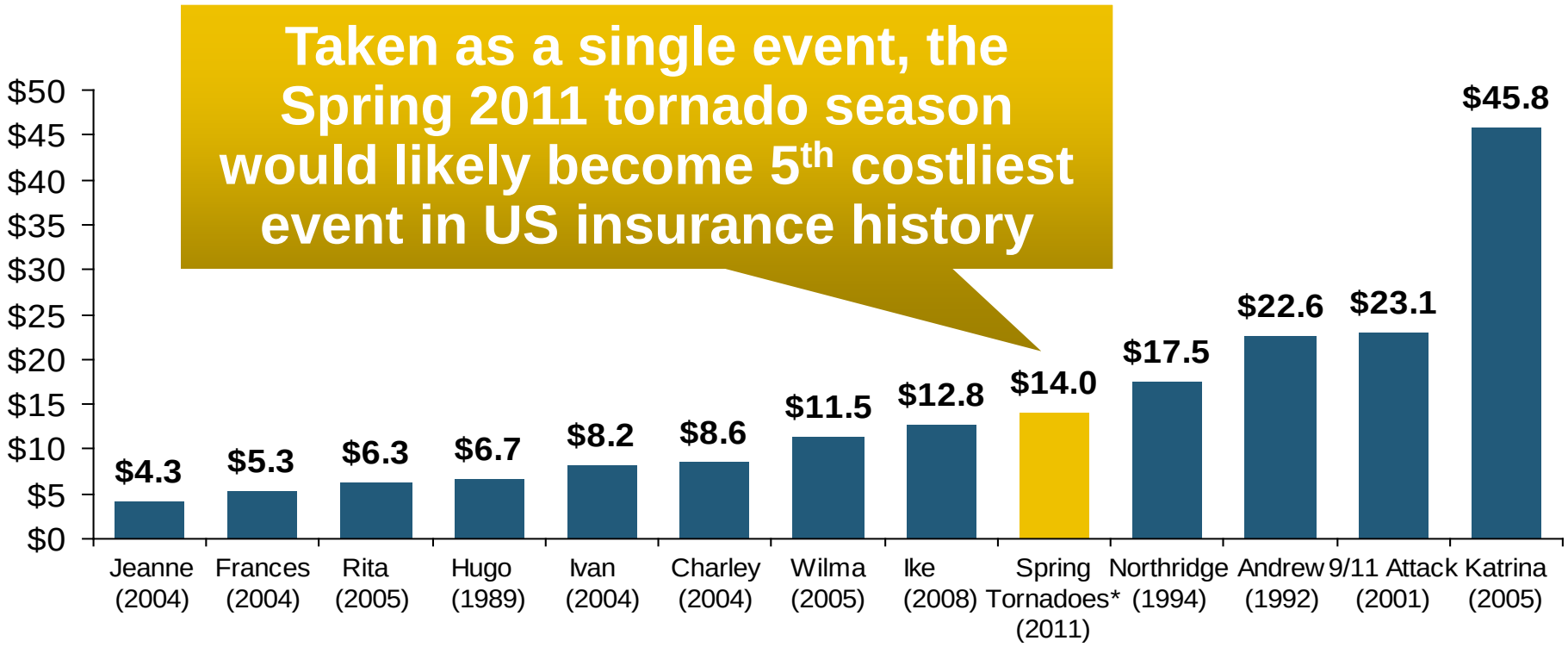
3 of the top 15 most expensive catastrophes in world history have occurred in the past 18 months



*Through June 20, 2011. 2011 disaster figures are estimates; Figures include federally insured flood losses, where applicable.
Sources: Swiss Re *sigma 1/2011*; AIR Worldwide, RMS, Eqecat; Insurance Information Institute.

Top 12 (13?) Most Costly Disasters in U.S. History

(Insured Losses, 2010 Dollars, $ Billions)



*Losses will actually be broken down into several "events" as determined by PCS.

Sources: PCS; Insurance Information Institute inflation adjustments.

Insurers Making a Difference in Impacted Communities

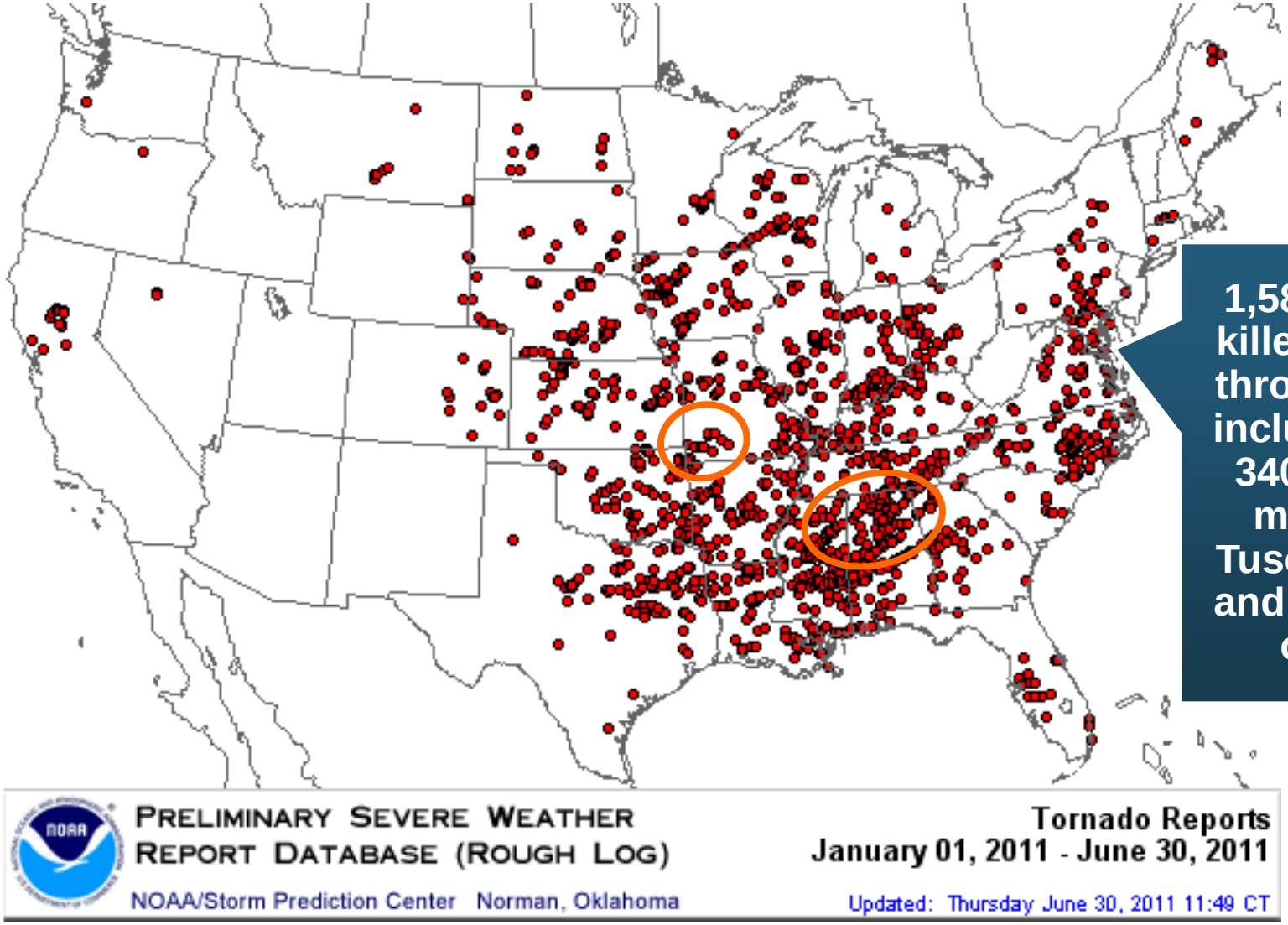
Destroyed home in Tuscaloosa. Insurers will pay some 165,000 claims totaling $2 billion in the Tuscaloosa/ Birmingham areas alone.

Presentation of a check to Tuscaloosa Mayor Walt Maddox to the Tuscaloosa Storm Recovery Fund

Source: Insurance Information Institute

Location of Tornadoes in the US, January 1—June 30, 2011

INSURANCE INFORMATION INSTITUTE

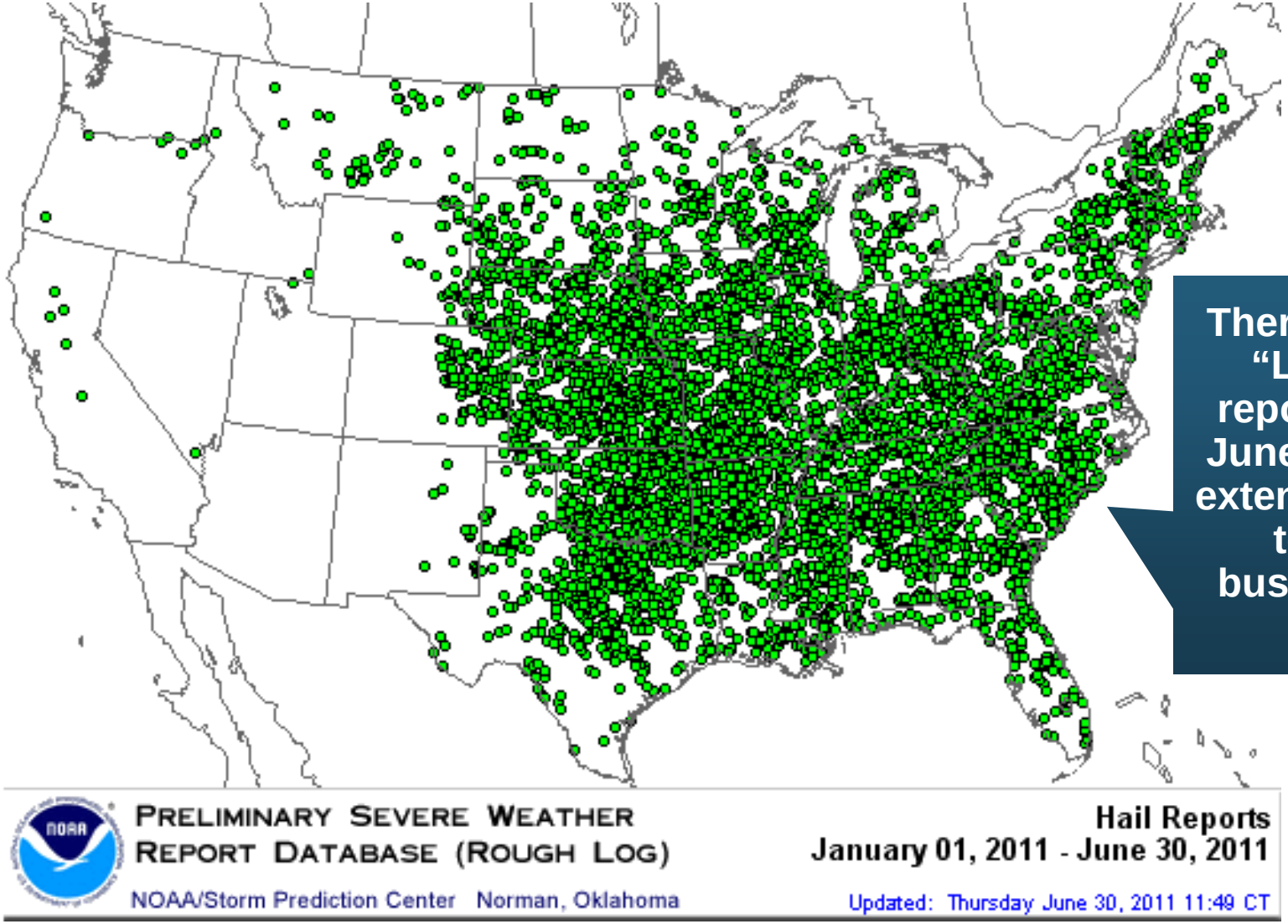


1,585 tornadoes killed 537 people through June 30, including at least 340 on April 26 mostly in the Tuscaloosa area, and 130 in Joplin on May 22

Source: NOAA Storm Prediction Center; http://www.spc.noaa.gov/climo/online/monthly/2011_annual_summary.html#

Location of Large Hail Reports in the US, January 1—June 30, 2011

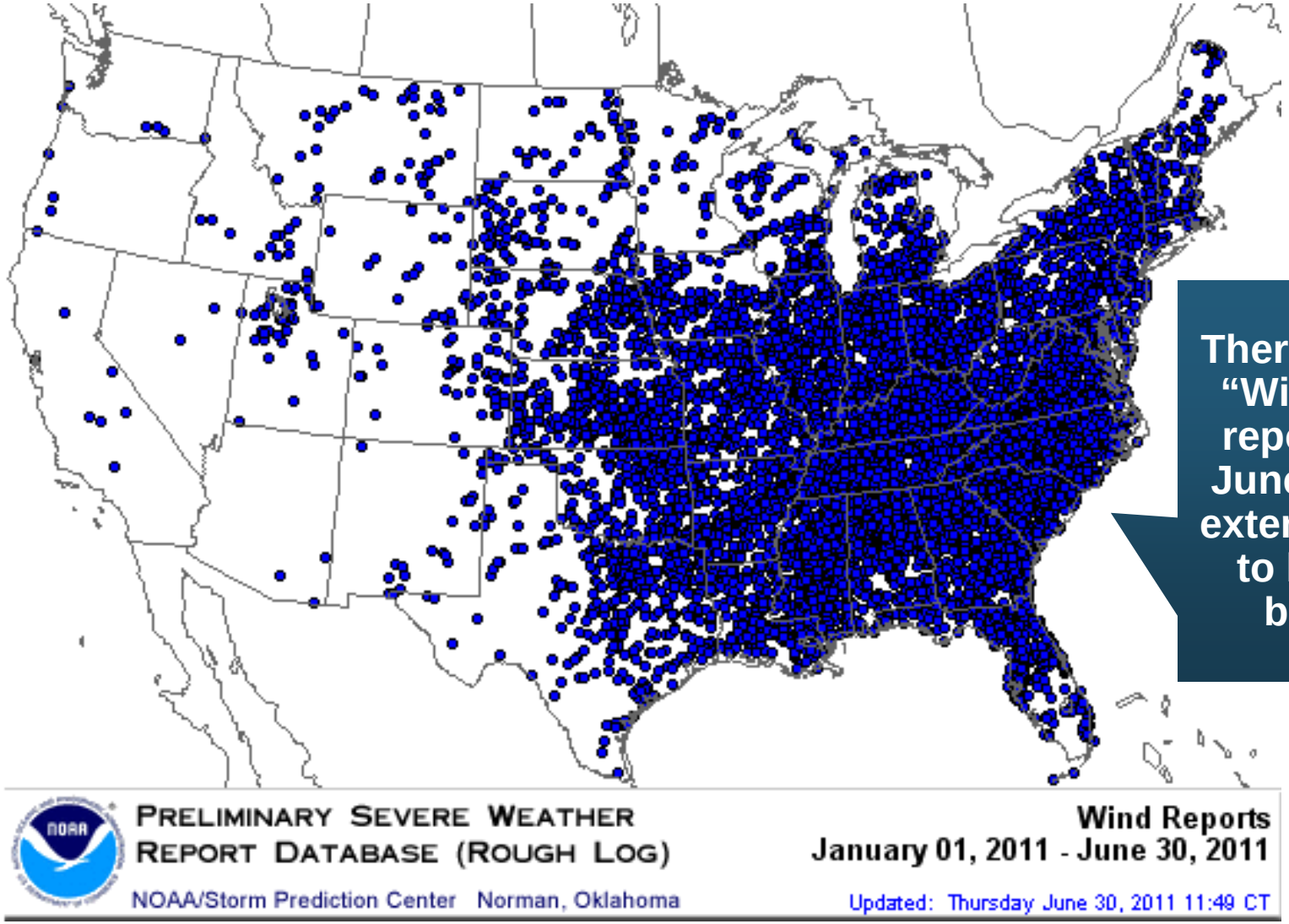
INSURANCE INFORMATION INSTITUTE



There were 7,176 "Large Hail" reports through June 30, causing extensive damage to homes, businesses and vehicles

Source: NOAA Storm Prediction Center; http://www.spc.noaa.gov/climo/online/monthly/2011_annual_summary.html#

Location of Wind Damage Reports in the US, January 1—June 30, 2011

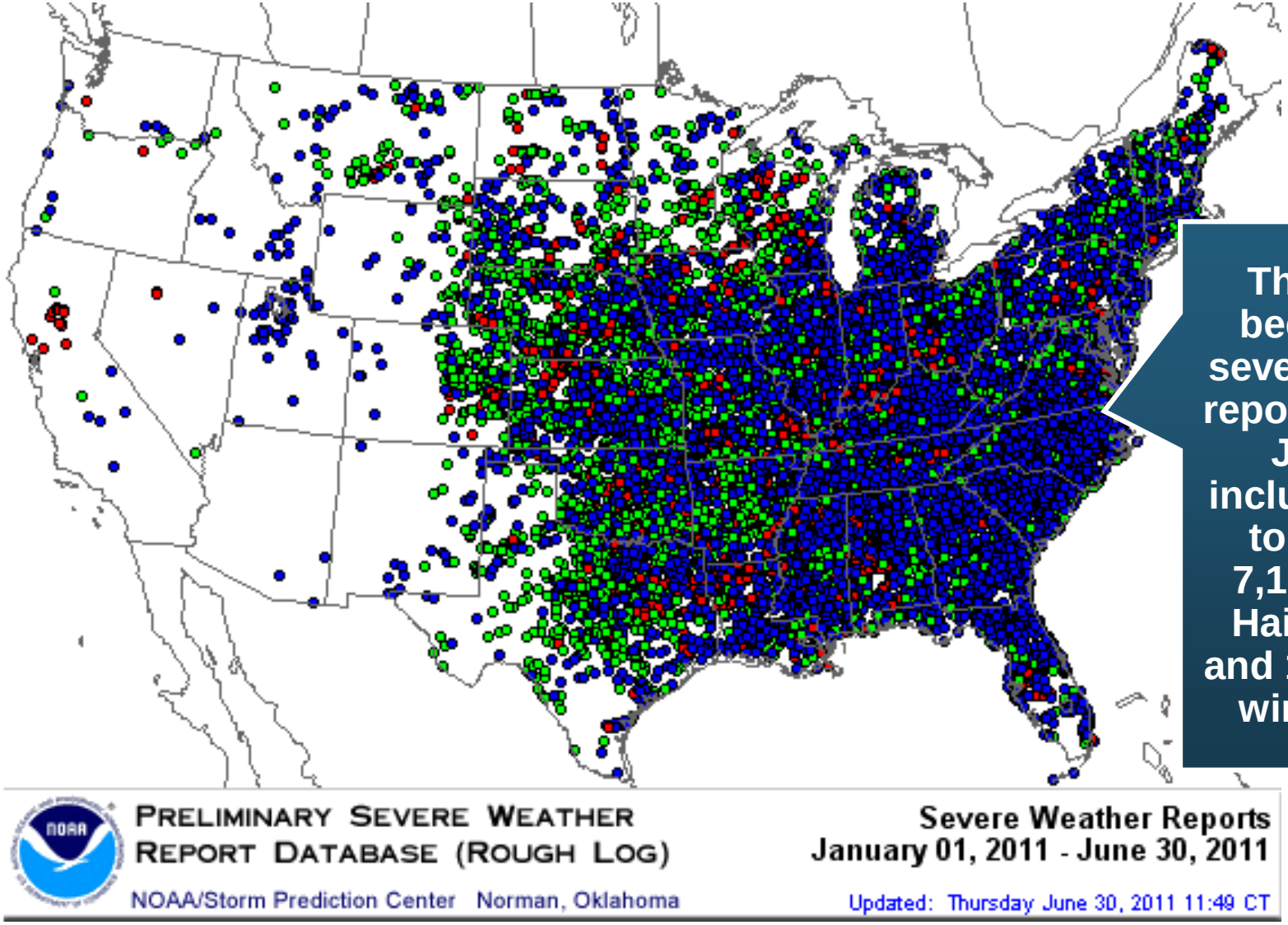


There were 11,283 "Wind Damage" reports through June 30, causing extensive damage to homes and, businesses

Source: NOAA Storm Prediction Center; http://www.spc.noaa.gov/climo/online/monthly/2011_annual_summary.html#

Severe Weather Reports, January 1—June 30, 2011

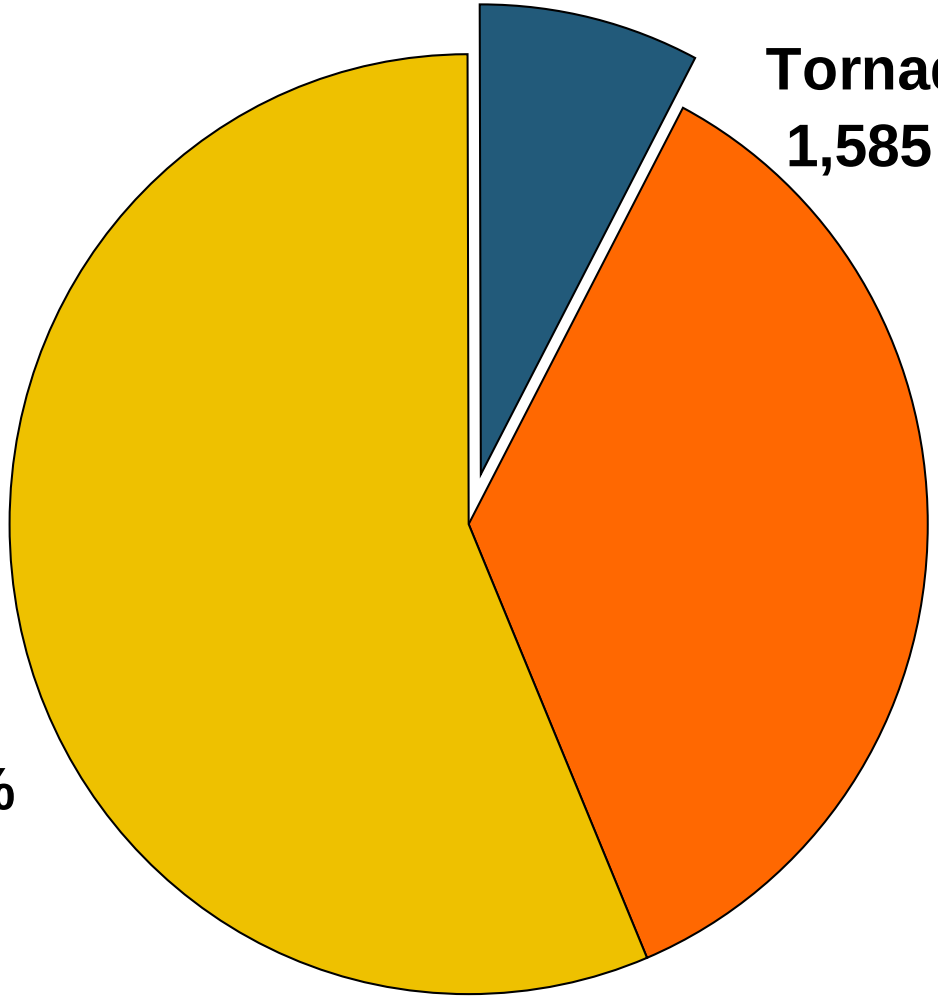
INSURANCE INFORMATION INSTITUTE



There have been 20,044 severe weather reports through June 30; including 1,585 tornadoes; 7,176 "Large Hail" reports and 11,283 high wind events

Source: NOAA Storm Prediction Center; http://www.spc.noaa.gov/climo/online/monthly/2011_annual_summary.html#

Number of Severe Weather Reports in US, by Type: January 1—June 30, 2011



Tornadoes accounted for just 8% of all Severe Weather Reports through June 30 but more than 500 deaths

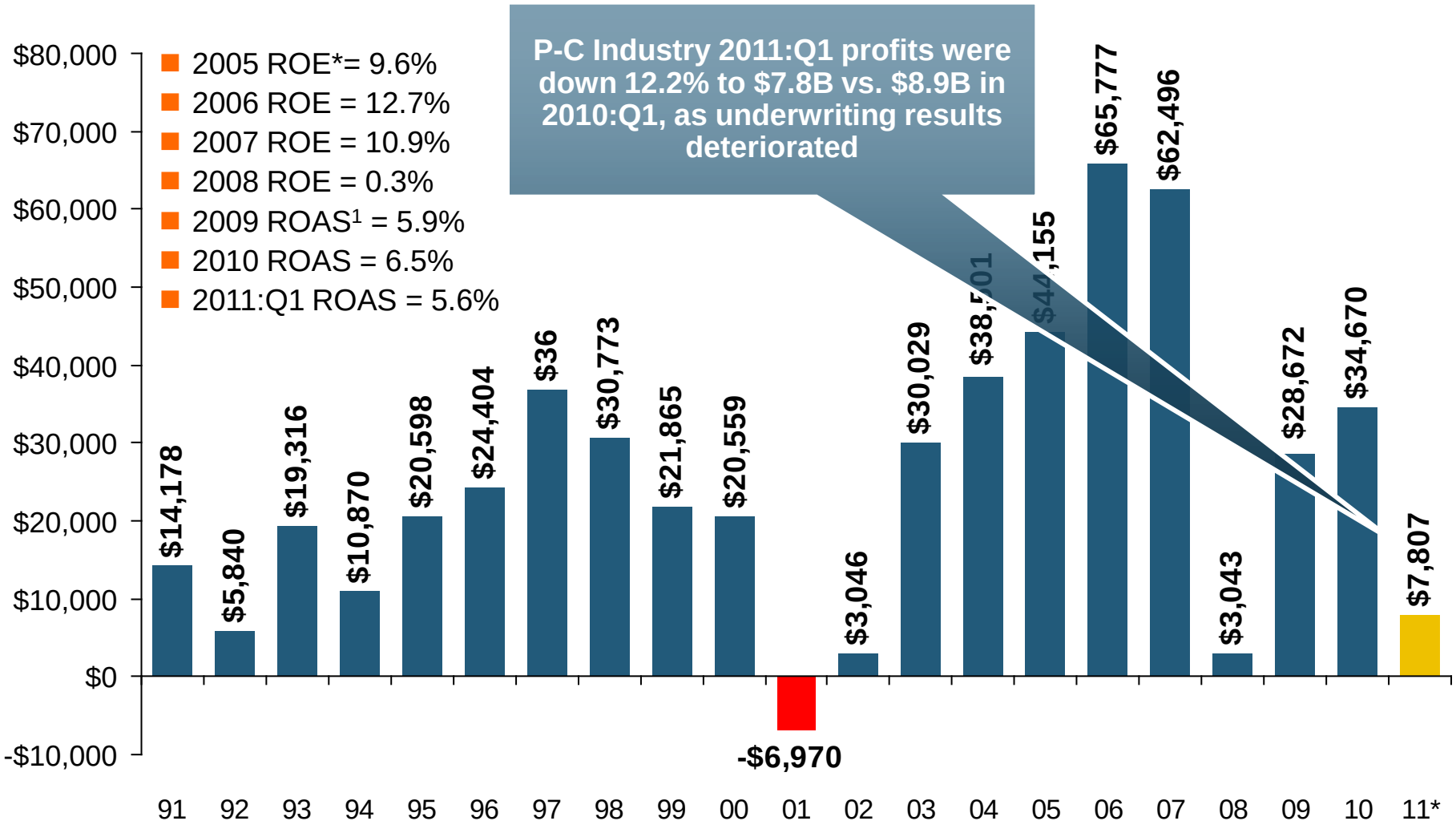
Source: NOAA Storm Prediction Center; http://www.spc.noaa.gov/climo/online/monthly/2011_annual_summary.html#

INSURANCE INFORMATION INSTITUTE

P/C Insurance Industry Financial Overview

Profit Recovery Will Be Set Back by High Catastrophe Losses & Other Factors

P/C Net Income After Taxes 1991–2011:Q1 ($ Millions)



* ROE figures are GAAP; [1]Return on avg. surplus. Excluding Mortgage & Financial Guaranty insurers yields a 6.5% ROAS for 2011:Q1, 7.5% for 2010 and 7.4% for 2009.

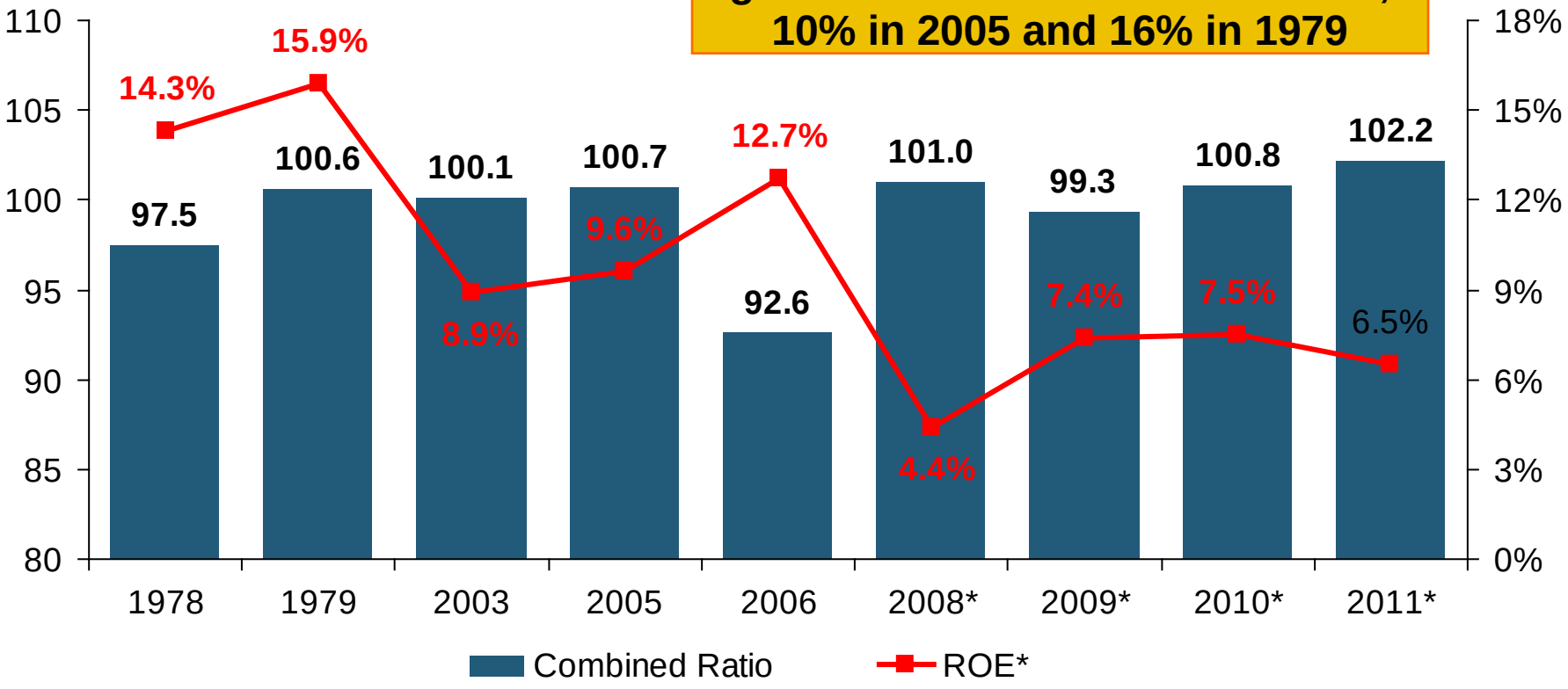
Sources: A.M. Best, ISO, Insurance Information Institute

A 100 Combined Ratio Isn't What It Once Was: Investment Impact on ROEs

INSURANCE INFORMATION INSTITUTE

Combined Ratio / ROE

A combined ratio of about 100 generated ~7.5% ROE in 2009/10, 10% in 2005 and 16% in 1979

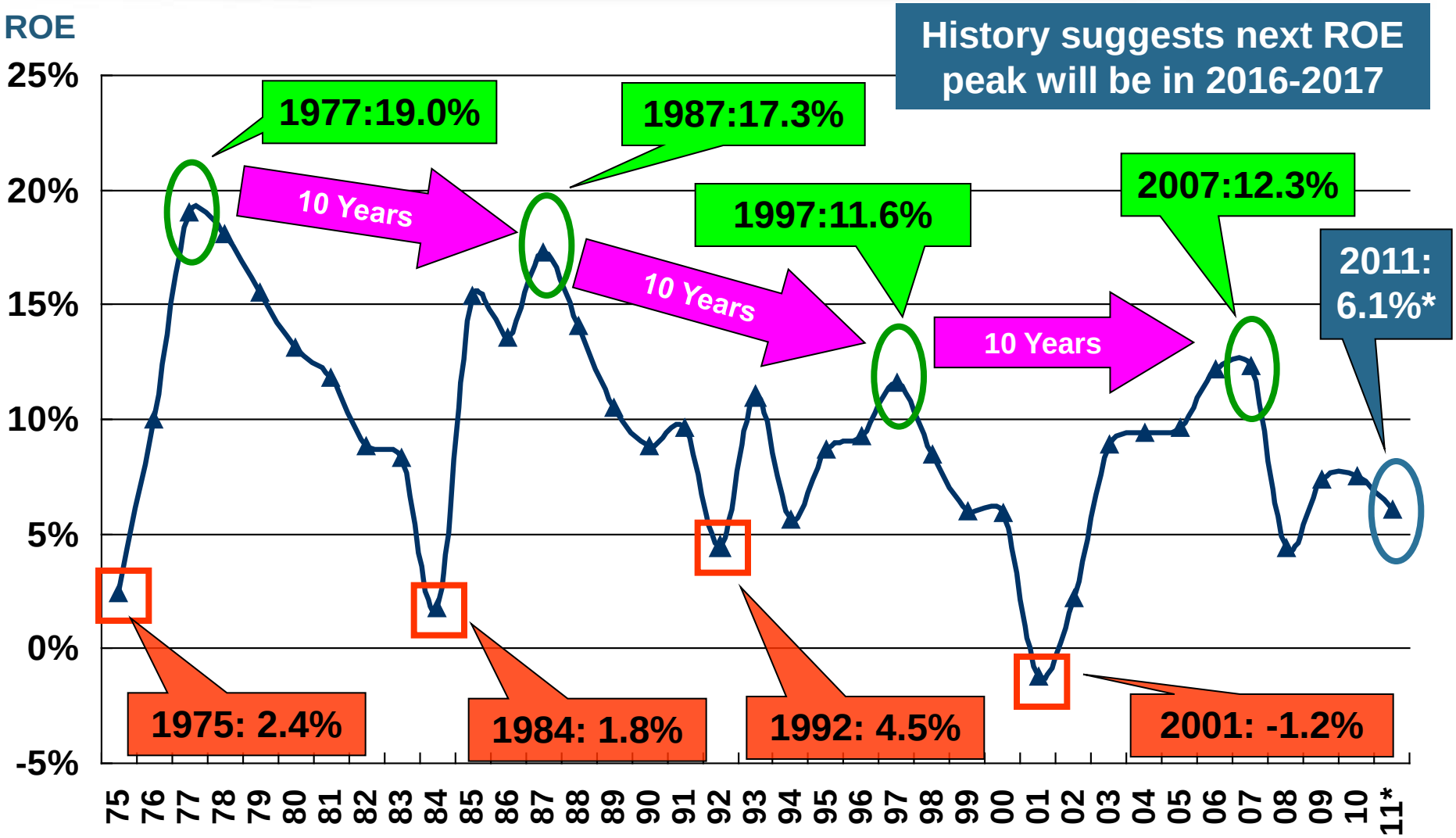


Combined Ratios Must Be Lower in Today's Depressed Investment Environment to Generate Risk Appropriate ROEs

* 2009 and 2010 figures are return on average statutory surplus. 2008 -2011 figures exclude mortgage and financial guaranty insurers

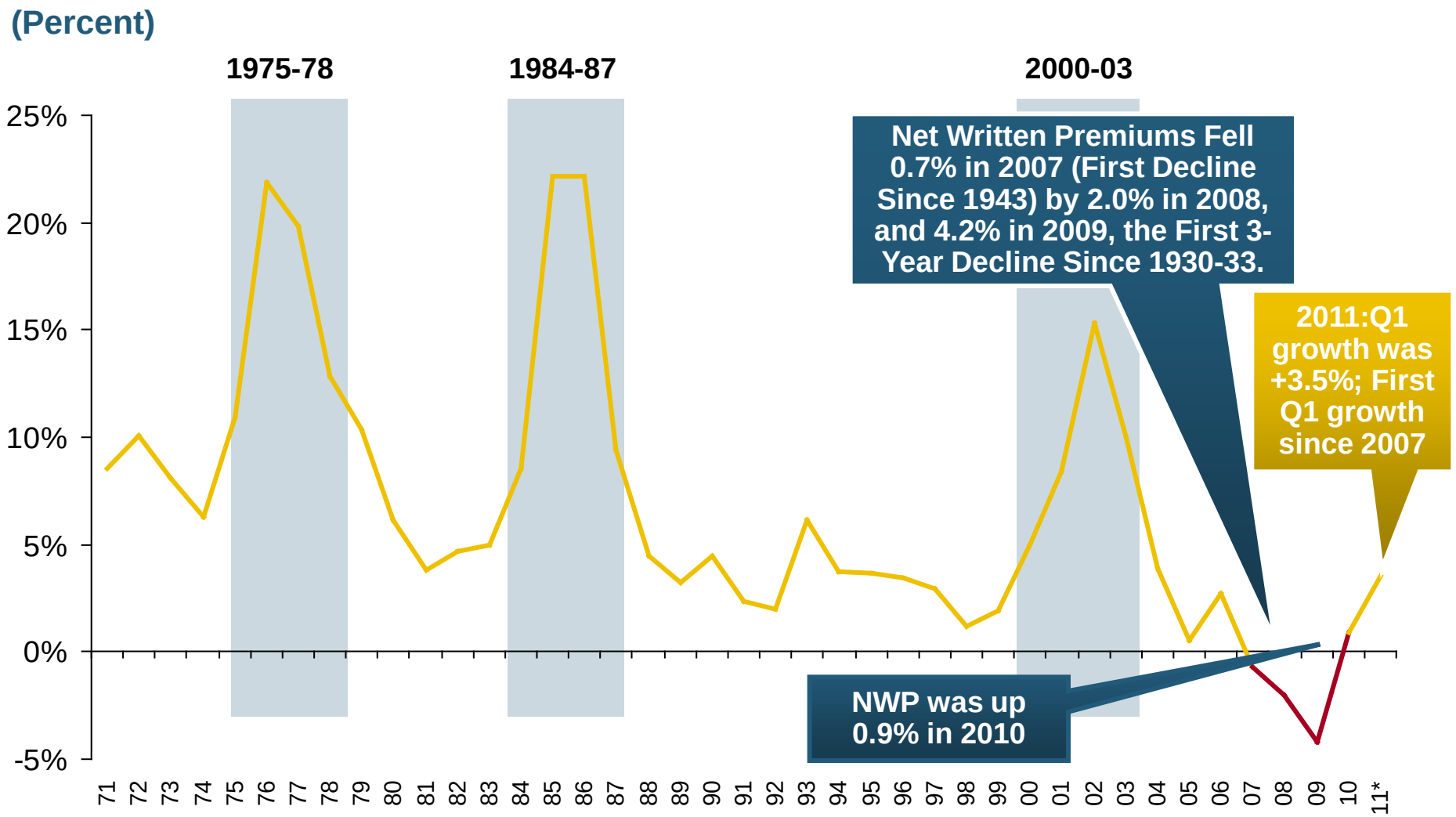
Source: Insurance Information Institute from A.M. Best and ISO data.

Profitability Peaks & Troughs in the P/C Insurance Industry, 1975 – 2011*



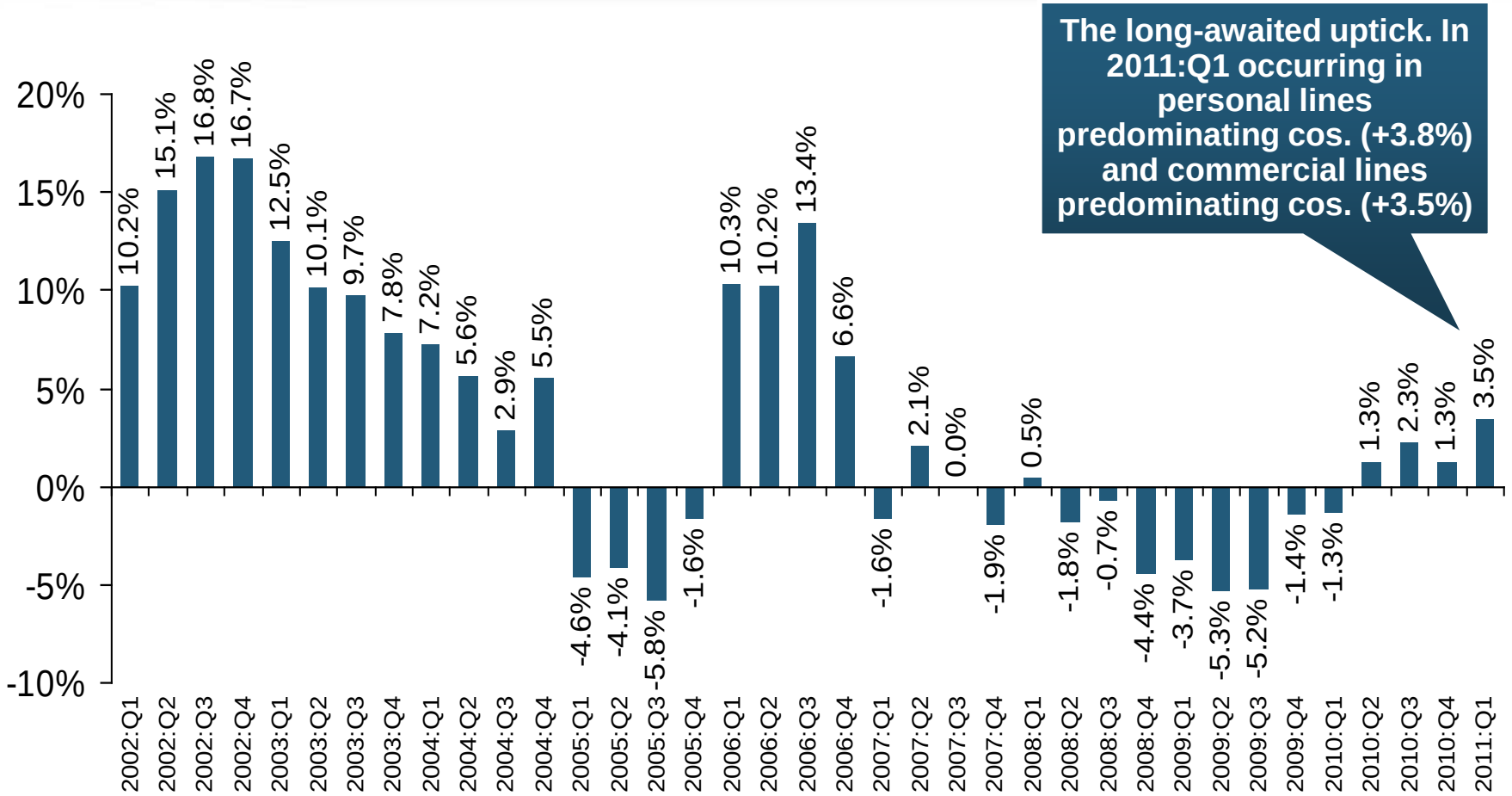
*Profitability = P/C insurer ROEs are I.I.I. estimates. 2011 figure is an estimate based on annualized ROAS for Q1 data.
Note: Data for 2008-2011 exclude mortgage and financial guaranty insurers.
Source: Insurance Information Institute; NAIC, ISO, A.M. Best.

Soft Market Persisted in 2010 but Growth Returned: More in 2011?



*2011 figure is an estimate based on Q1 data.
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

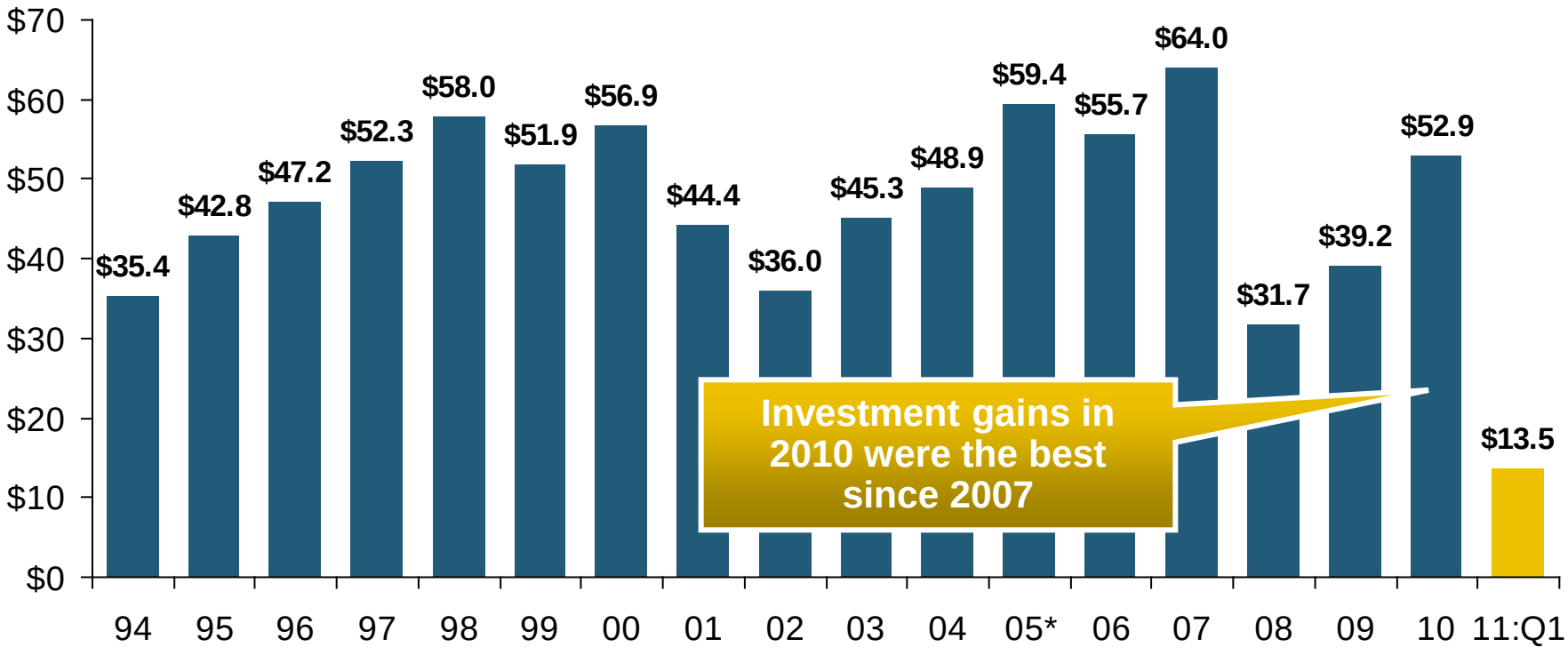


Finally! Back-to-back quarters of net written premium growth (vs. the same quarter, prior year)

Sources: ISO, Insurance Information Institute.

Property/Casualty Insurance Industry Investment Gain: 1994–2011:Q1[1]

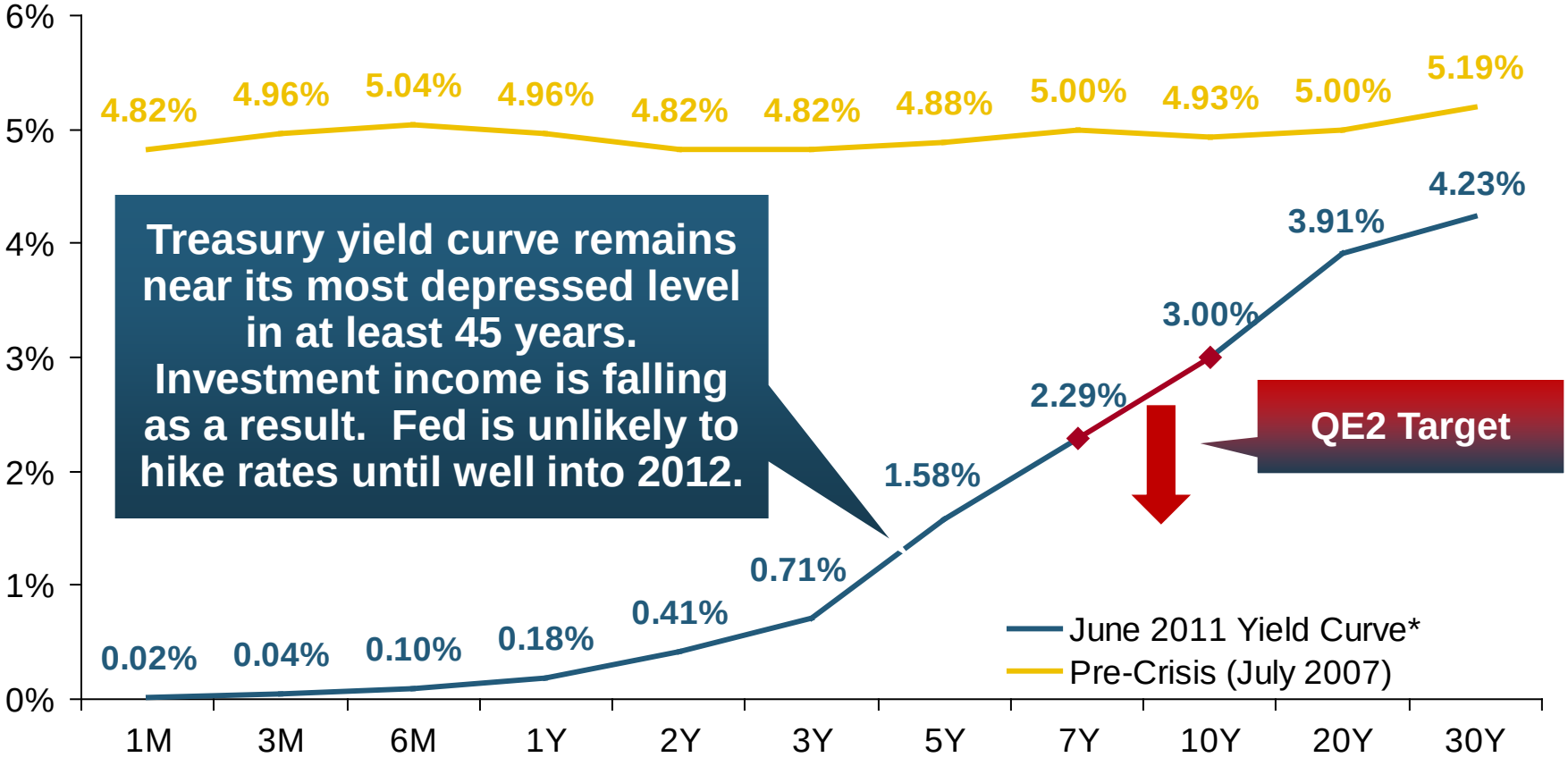
($ Billions)



Investment Gains Recovered Significantly in 2010 Due to Realized Investment Gains; The Financial Crisis Caused Investment Gains to Fall by 50% in 2008

[1] 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.

Treasury Yield Curves: Pre-Crisis (July 2007) vs. June 2011*



The End of the Fed's Quantitative Easing Is Unlikely to Push Interest Rates Up Substantially Given Ongoing Economic Weakness

*Average of daily rates.

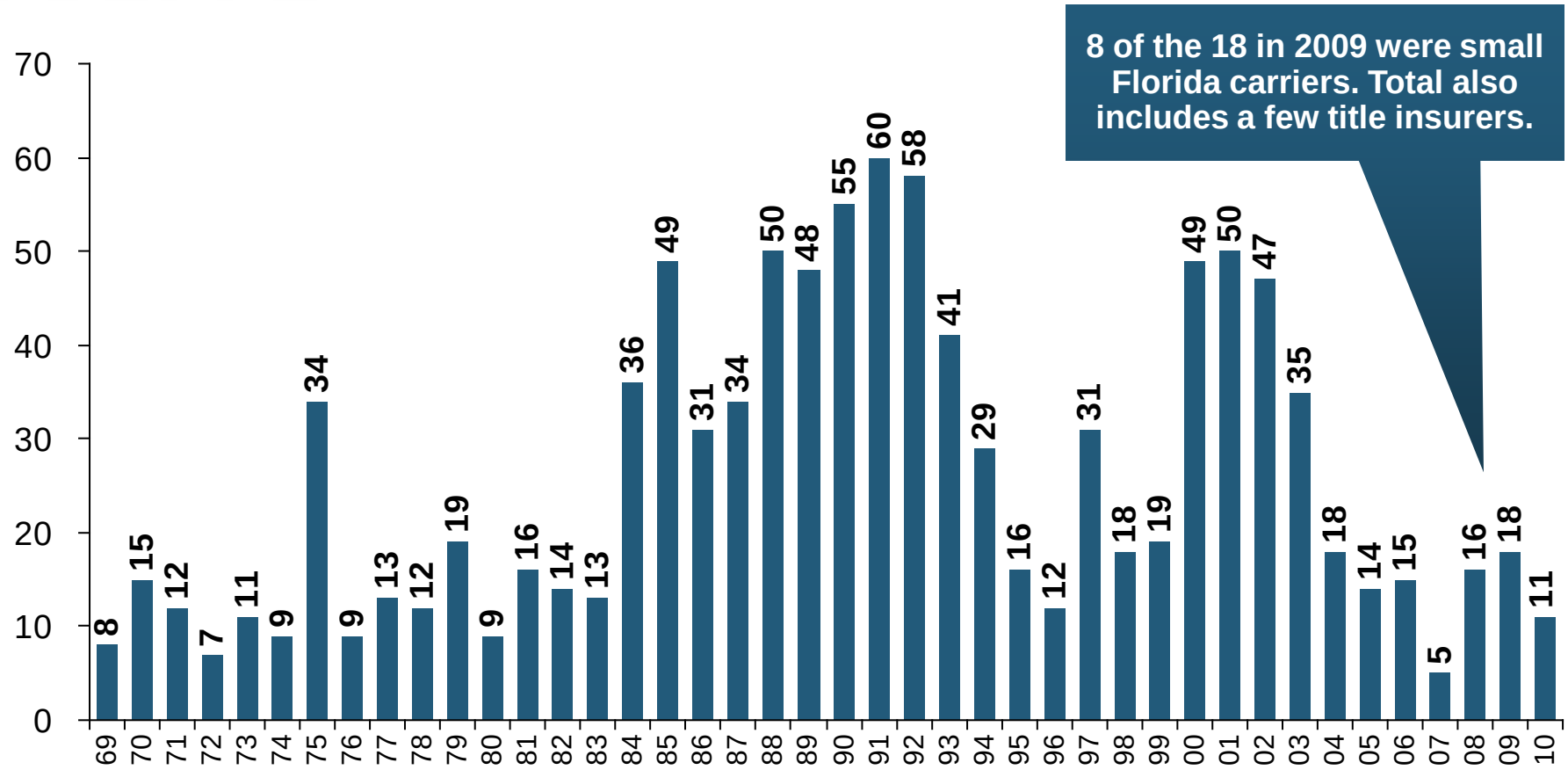
Sources: Board of Governors of the United States Federal Reserve Bank; Insurance Information Institute.

INSURANCE INFORMATION INSTITUTE

Financial Strength & Underwriting

Cyclical Pattern is P-C Impairment History is Directly Tied to Underwriting, Reserving & Pricing

P/C Insurer Impairments, 1969–2010

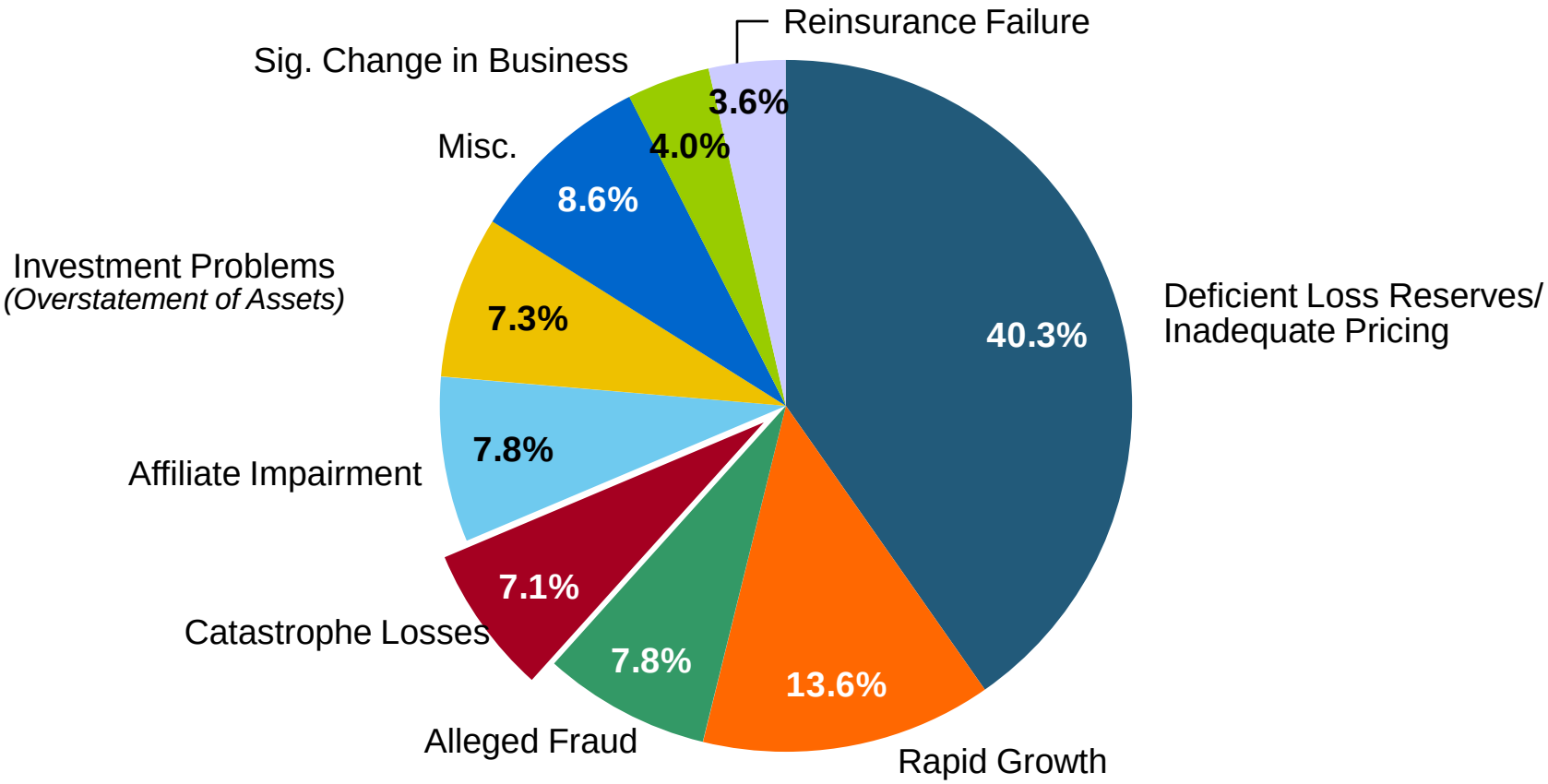


The Number of Impairments Varies Significantly Over the P/C Insurance Cycle, With Peaks Occurring Well into Hard Markets

Source: A.M. Best Special Report "1969-2010 Impairment Review," June 21, 2010; Insurance Information Institute.

Reasons for US P/C Insurer Impairments, 1969–2010

Historically, Catastrophe Losses Account for Only a Small Share of P-C Insurer Impairments.

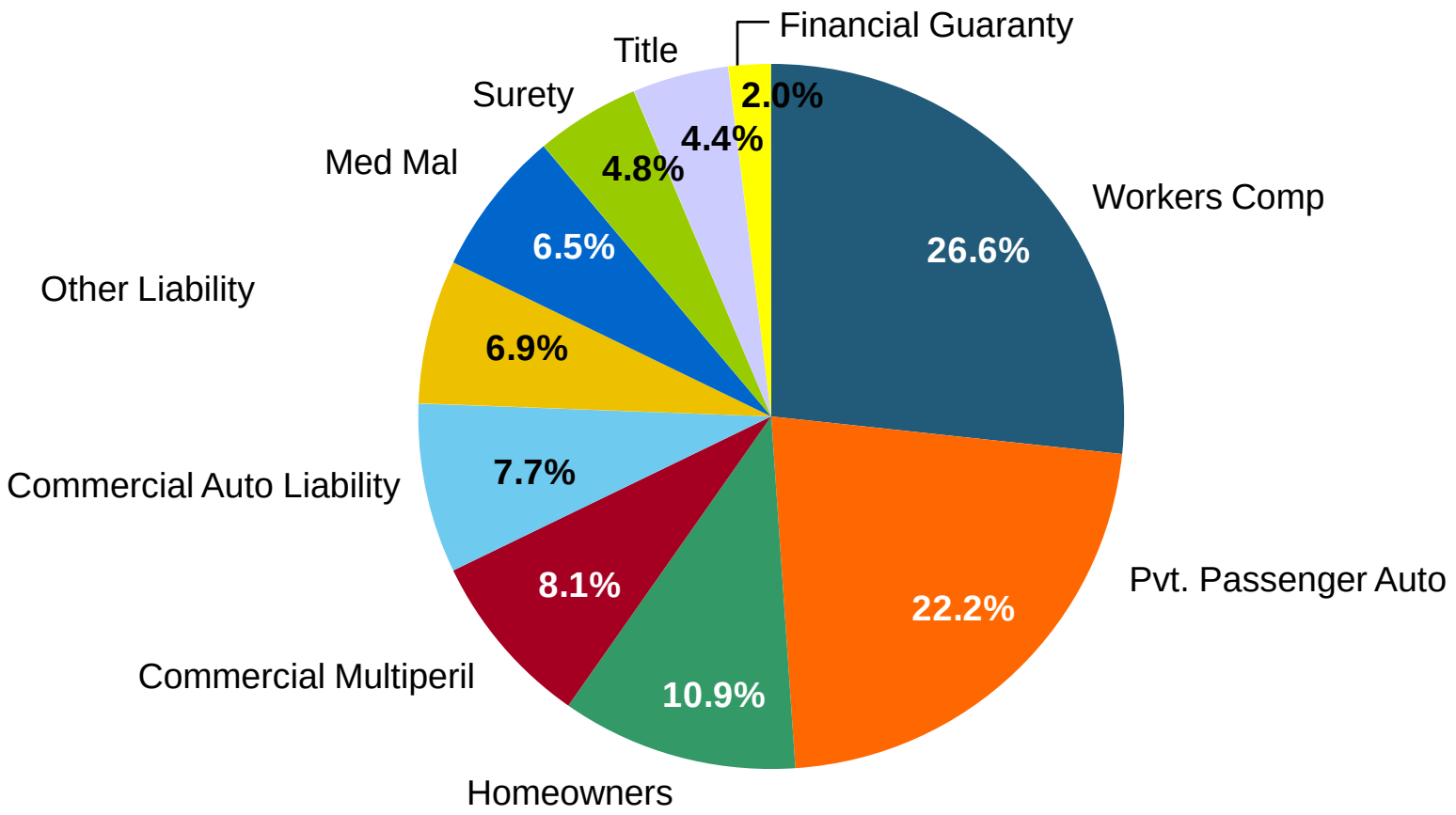


Source: A.M. Best: *1969-2010 Impairment Review*, Special Report, April 2011.

Top 10 Lines of Business for US P/C Impaired Insurers, 2000–2010

INSURANCE INFORMATION INSTITUTE

Catastrophe Exposed Lines Account for a Relatively Small Share of the Premium Volume of Impaired Insurers Over the Past Decade



Source: A.M. Best: *1969-2010 Impairment Review*, Special Report, April 2011.

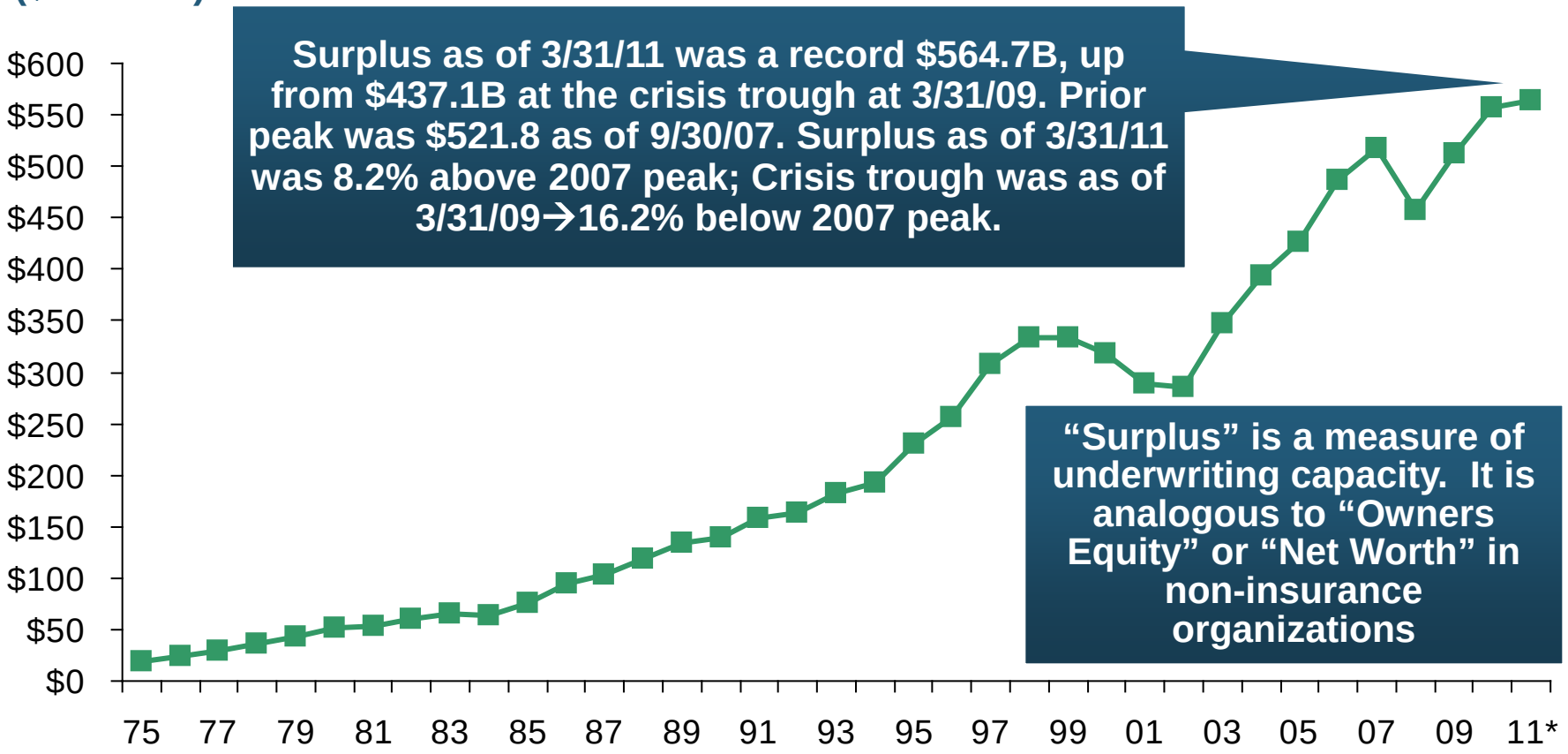
INSURANCE INFORMATION INSTITUTE

SURPLUS/CAPITAL/CAPACITY

Have Large Global Losses Reduced Capacity in the Industry, Setting the Stage for a Market Turn?

US Policyholder Surplus: 1975–2011*

($ Billions)



Surplus as of 3/31/11 was a record $564.7B, up from $437.1B at the crisis trough at 3/31/09. Prior peak was $521.8 as of 9/30/07. Surplus as of 3/31/11 was 8.2% above 2007 peak; Crisis trough was as of 3/31/09→16.2% below 2007 peak.

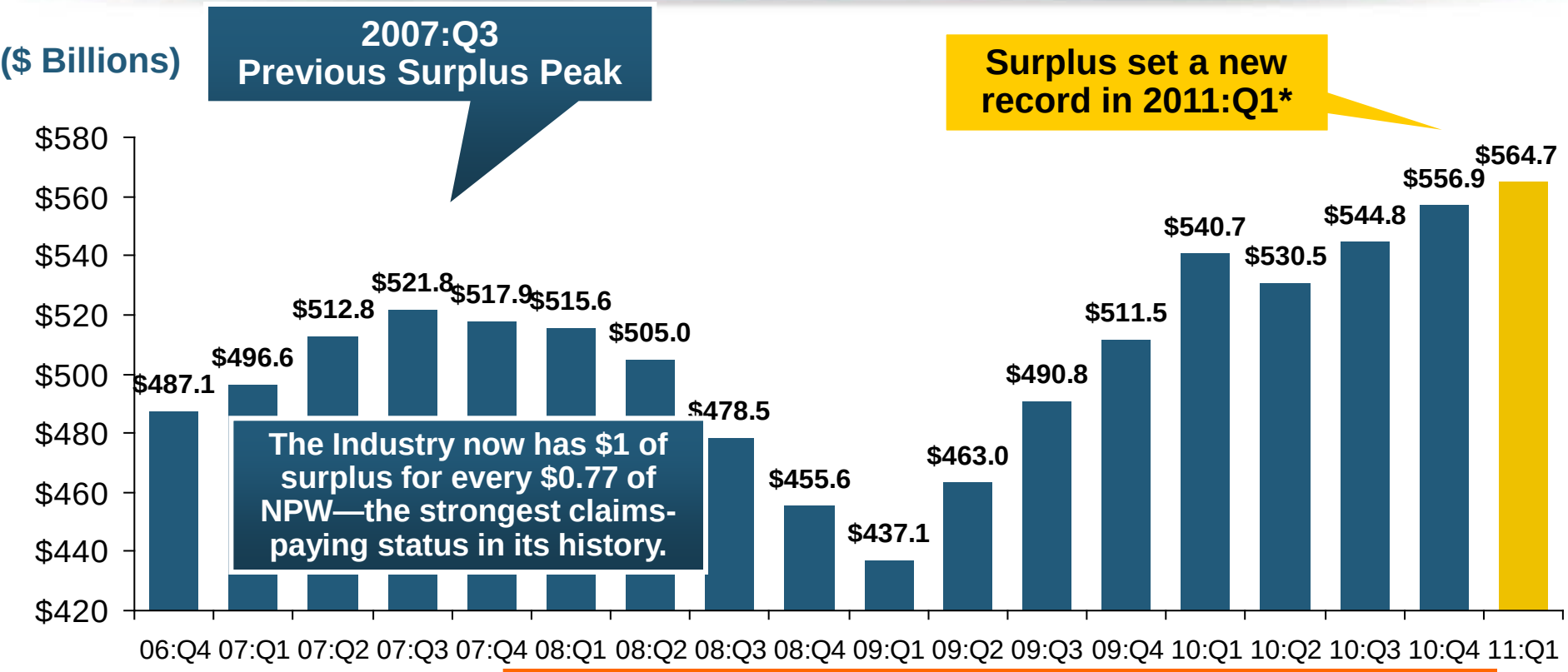
"Surplus" is a measure of underwriting capacity. It is analogous to "Owners Equity" or "Net Worth" in non-insurance organizations

The Premium-to-Surplus Ratio Stood at $0.77:$1 as of 3/31/11, A Near Record Low (at Least in Recent History)**

* As of 3/31/11.

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

Policyholder Surplus, 2006:Q4–2011:Q1



*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.

Quarterly Surplus Changes Since 2007:Q3 Peak

09:Q1: -$84.7B (-16.2%)	10:Q1: +$18.9B (+3.6%)
09:Q2: -$58.8B (-11.2%)	10:Q2: +$8.7B (+1.7%)
09:Q3: -$31.0B (-5.9%)	10:Q3: +$23.0B (+4.4%)
09:Q4: -$10.3B (-2.0%)	10:Q4: +$35.1B (+6.7%)
	11:Q4: +$42.9B (+8.2%)

Sources: ISO, A.M .Best.

INSURANCE INFORMATION INSTITUTE

Outlook for the 2011 Atlantic Hurricane Season

Above Average Activity, More Landfalls Expected

Outlook for 2011 Hurricane Season: 75% *More* Active Than Average

	Average*	2005 (Katrina Year)	2011F
Named Storms	9.6	28	16
Named Storm Days	49.1	115.5	80
Hurricanes	5.9	14	9
Hurricane Days	24.5	47.5	35
Intense Hurricanes	2.3	7	5
Intense Hurricane Days	5.0	7	10
Accumulated Cyclone Energy	96.1	NA	160
Net Tropical Cyclone Activity	100%	275%	**175%**

*Average over the period 1950-2000.
Source: Dr. Philip Klotzbach and Dr. William Gray, Colorado State University, June 1, 2011.

Probability of Major Hurricane Landfall (CAT 3, 4, 5) in 2011

	Average*	2011F
Entire US Coast	52%	72%
US East Coast Including Florida Peninsula	31%	48%
Gulf Coast from FL Panhandle to Brownsville, TX	30%	47%
ALSO…Above-Average Major Hurricane Landfall Risk in Caribbean for 2011 (61% vs. 42%)		

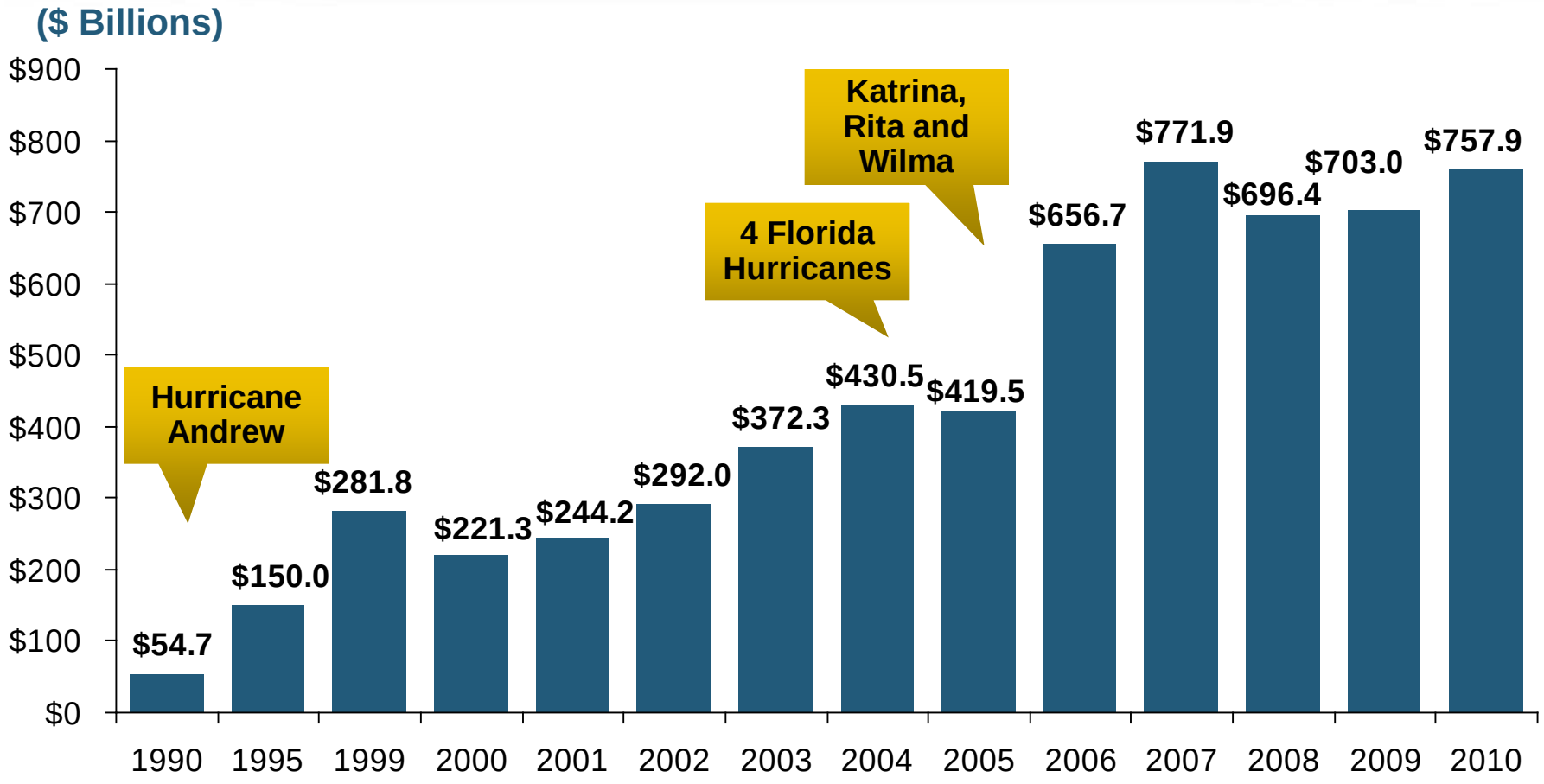
*Average over the period 1950-2000.
Source: Dr. Philip Klotzbach and Dr. William Gray, Colorado State University, June 1, 2011.

INSURANCE INFORMATION INSTITUTE

US Property Residual Markets Remain Under Strain

Most States Fail to Address Their Vulnerabilities to Catastrophic Coastal Loss

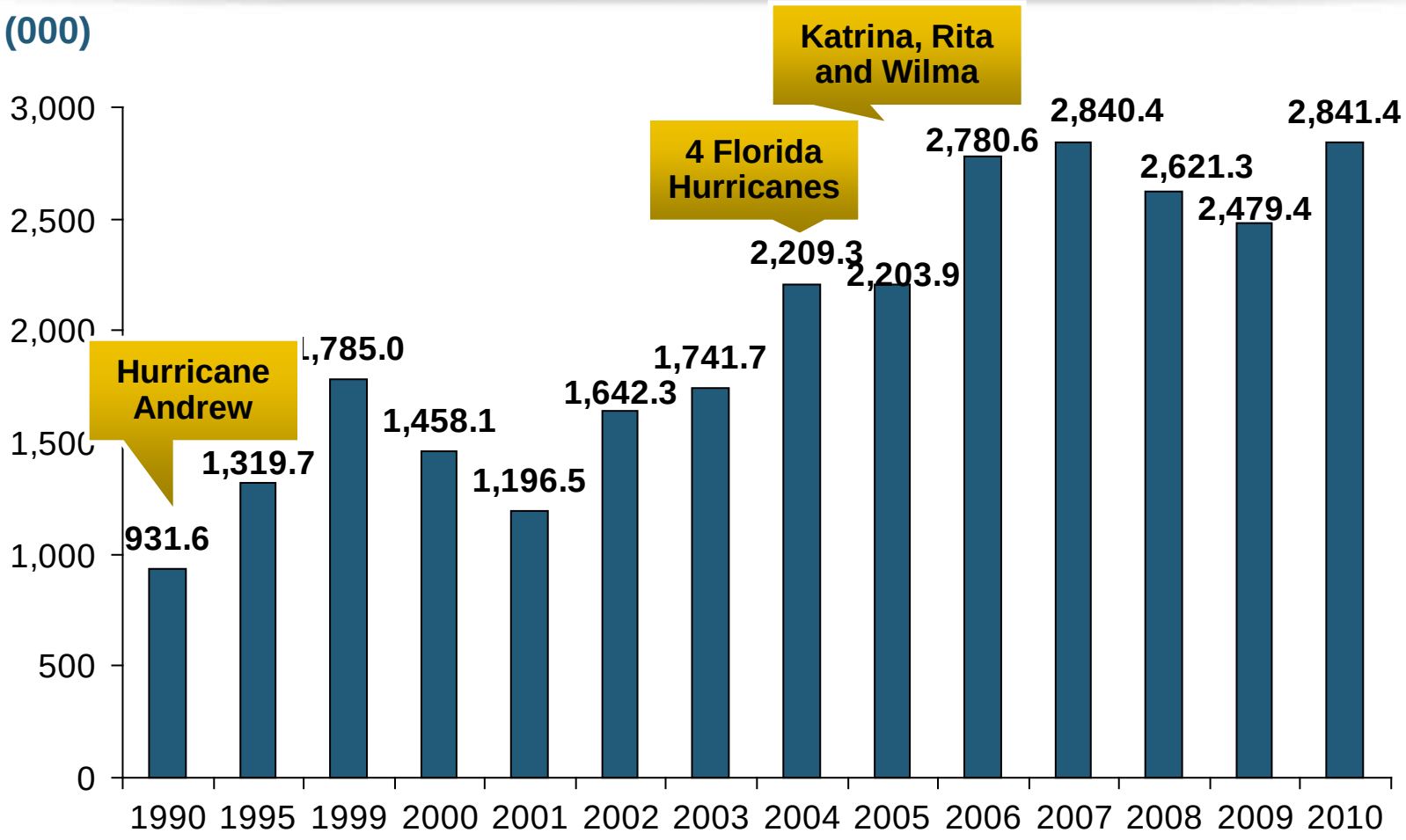
U.S. Residual Market Exposure to Loss ($ Billions)



In the 21-year period between 1990 and 2010, total exposure to loss in the residual market (FAIR & Beach/Windstorm) Plans has surged from $54.7 billion in 1990 to $757.9 billion in 2010.

Source: PIPSO; Insurance Information Institute (I.I.I.); http://www.iii.org/pr/last-resort-2010.

U.S. Residual Market: Total Policies In-Force (1990-2010) (000)



In the 21-year period between 1990 and 2010, the total number of policies in-force in the residual market (FAIR & Beach/Windstorm) Plans has more than tripled.

Source: PIPSO; Insurance Information Institute; http://www.iii.org/pr/last-resort-2010.

Insurance Information Institute Online:

www.iii.org

Thank you for your time and your attention!

Twitter: twitter.com/bob_hartwig

More Information

Press Inquiries
Terese Rosenthal
Phone: 609.243.4339
E-mail: trosenthal@munichreamerica.com

Follow us on Twitter
MunichRe_US
MunichRe

THANK YOU FOR ATTENDING TODAY'S WEBINAR.

Munich RE

Munich RE