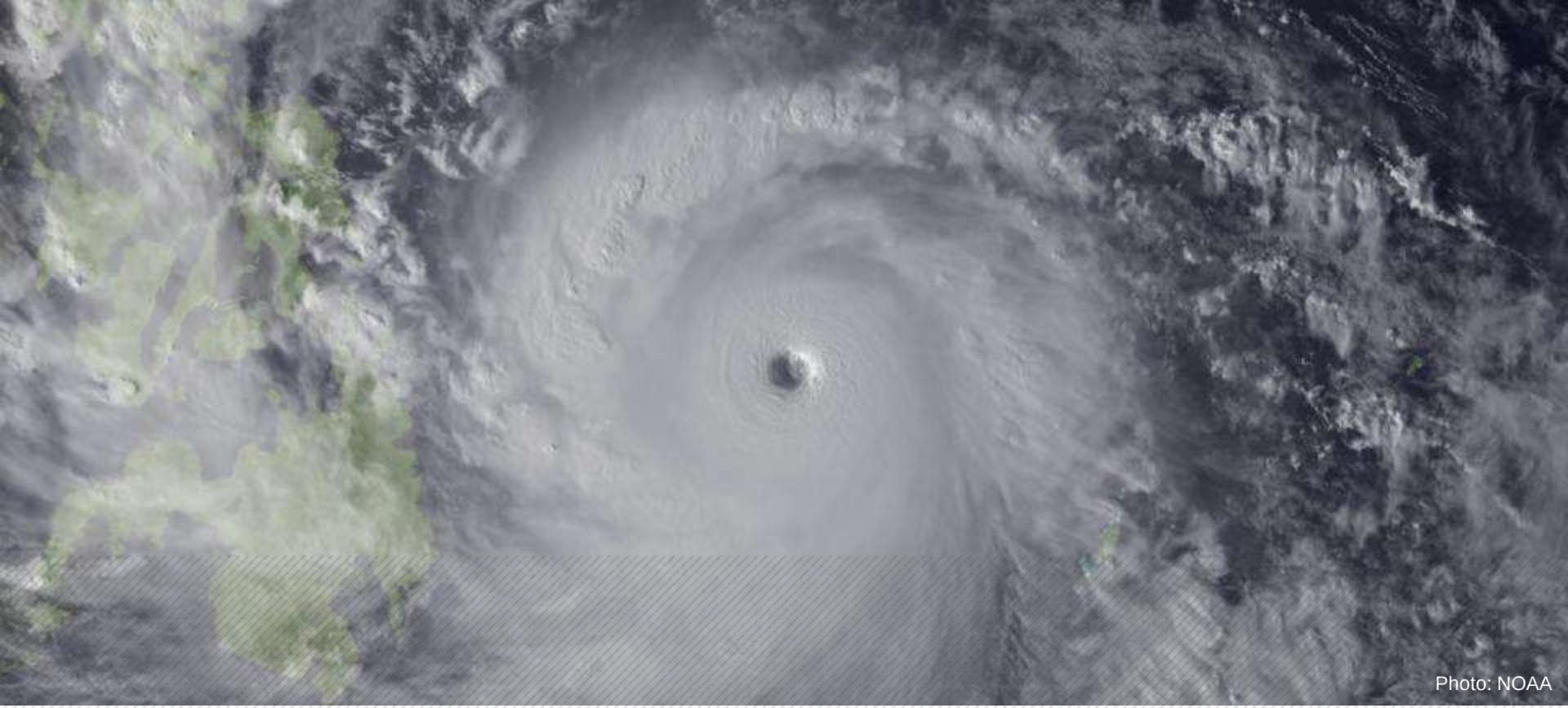


2013 Natural Catastrophe Year in Review

January 7, 2014

Munich RE

Agenda

Welcome/Introduction
Bill Fellows

US/Global Natural Catastrophe Update
Carl Hedde

Economic Implications of Natural Catastrophe Losses
Dr. Robert Hartwig

Special Topic: Hurricanes, Typhoons and Tornados
Peter Höppe

Questions and Answers

Webinar Interactivity

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.

Live Tweeting

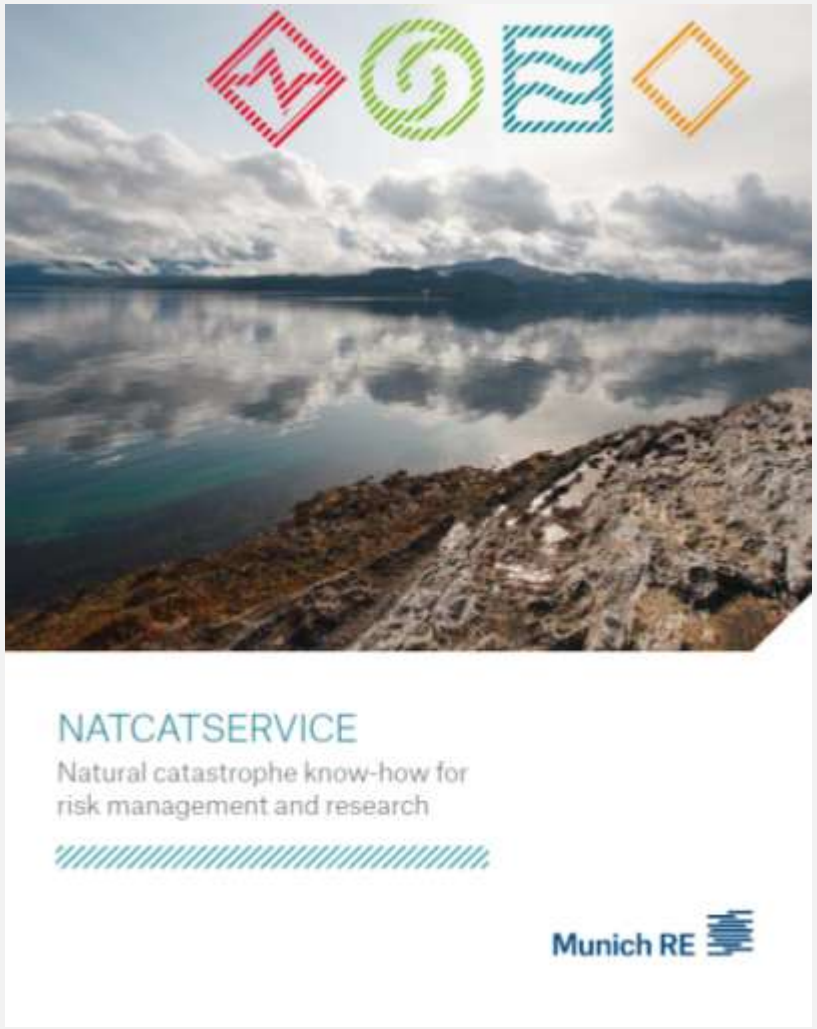
@Munichre_US @lworters @iii #NATCAT2014

US/Global Natural Catastrophe Update

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

MR NatCatSERVICE

The world‘s largest database on natural catastrophes



The Loss 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 33,000 events**

US Headlines - 2013

- Insured losses in the United States in 2013 totaled $12.8 billion – far below the 2000 to 2012 average loss of $29.4 billion (in 2013 Dollars).
- Quiet Atlantic hurricane season despite expectations for an active year; US drought of major hurricane landfalls is now 8 years, unprecedented in the reliable historical record.
- Insured losses from thunderstorm events exceeded $10.0 billion, despite the lowest observed tornado count in a decade.
- Colorado experienced record-setting wildfires in June, then record flooding in September.
- Drought conditions ease in the Desert Southwest, but worsen in California.

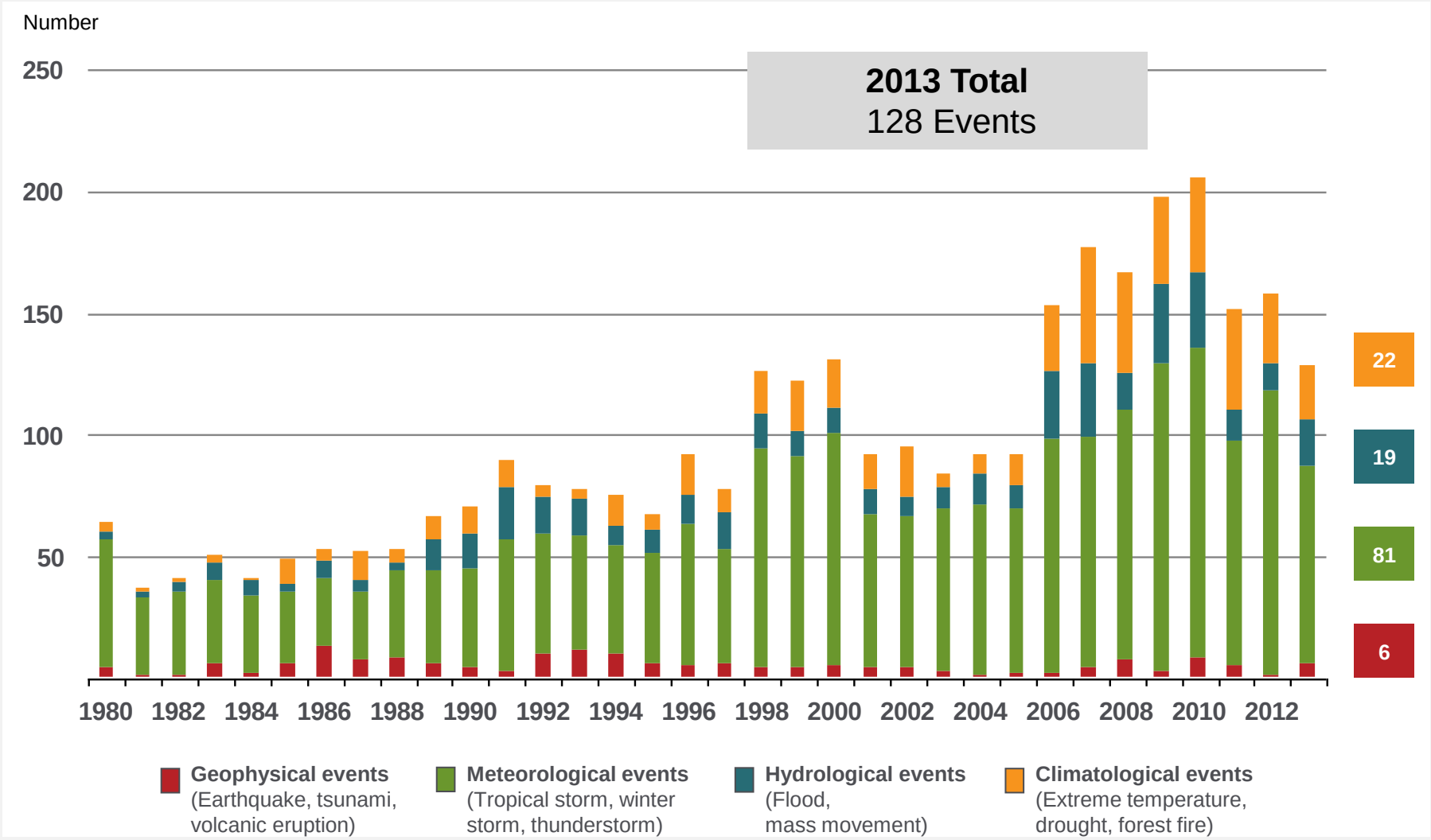
Natural Disaster Losses in the United States, 2013

As of December 31, 2013	Number of Events	Fatalities	Estimated Overall Losses (US $m)	Estimated Insured Losses (US $m)
Severe Thunderstorm	69	110	16,341	10,274
Winter Storm	11	43	2,935	1,895
Flood	19	23	1,929	240
Earthquake & Geophysical	6	1	Minor	Minor
Tropical Cyclone	1	1	Minor	Minor
Wildfire, Heat, & Drought	22	29	620	385
Totals	**128**	**207**	**21,825**	**12,794**

Source: Munich Re NatCat*SERVICE*

Loss Events in the U.S. 1980 – 2013

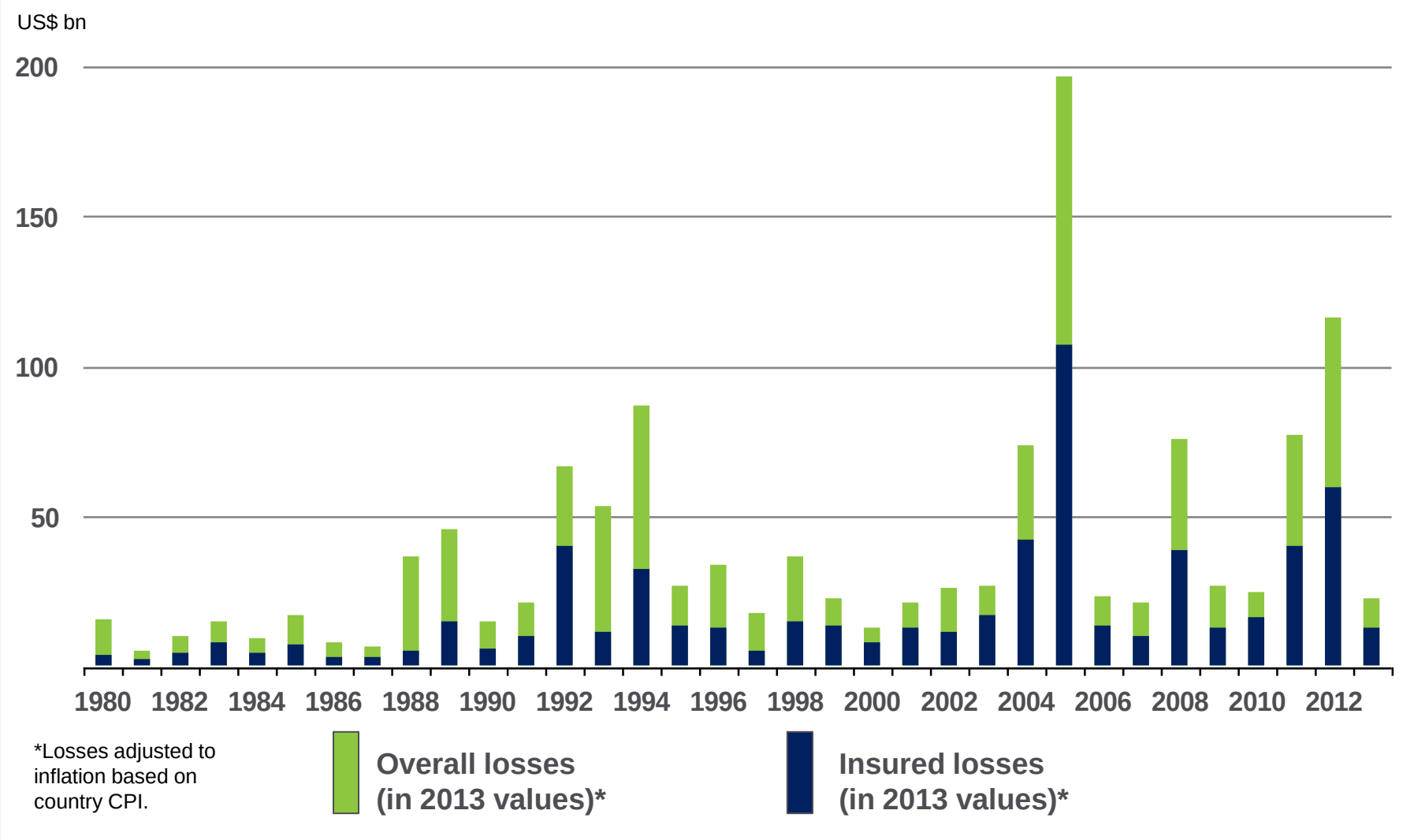
Number of events



Source: MR NatCat*SERVICE*

Loss Events in the US 1980 – 2013

Overall and insured losses



Source: MR NatCat*SERVICE*

Significant Natural Catastrophes, 2013

$1 billion economic loss and/or 50 fatalities

Date	Event	Estimated Economic Losses (US $m)	Estimated Insured Losses (US $m)
February 24 – 25	Winter Storm	1,300	690
March 18 – 19	Thunderstorms	2,200	1,600
April 7 – 11	Winter Storm	1,600	1,200
April 16 – 18	Thunderstorms	1,100	560
May 18 – 20	Thunderstorms	3,100	1,800
May 28 – 31	Thunderstorms	2,800	1,400
August 6 – 7	Thunderstorms	1,300	740
September 9 – 16	Flooding	1,500	160
November 17 - 18	Thunderstorms	1,300	931

Source: Munich Re NatCat*SERVICE*

Significant Natural Catastrophes, 1950 – 2013

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

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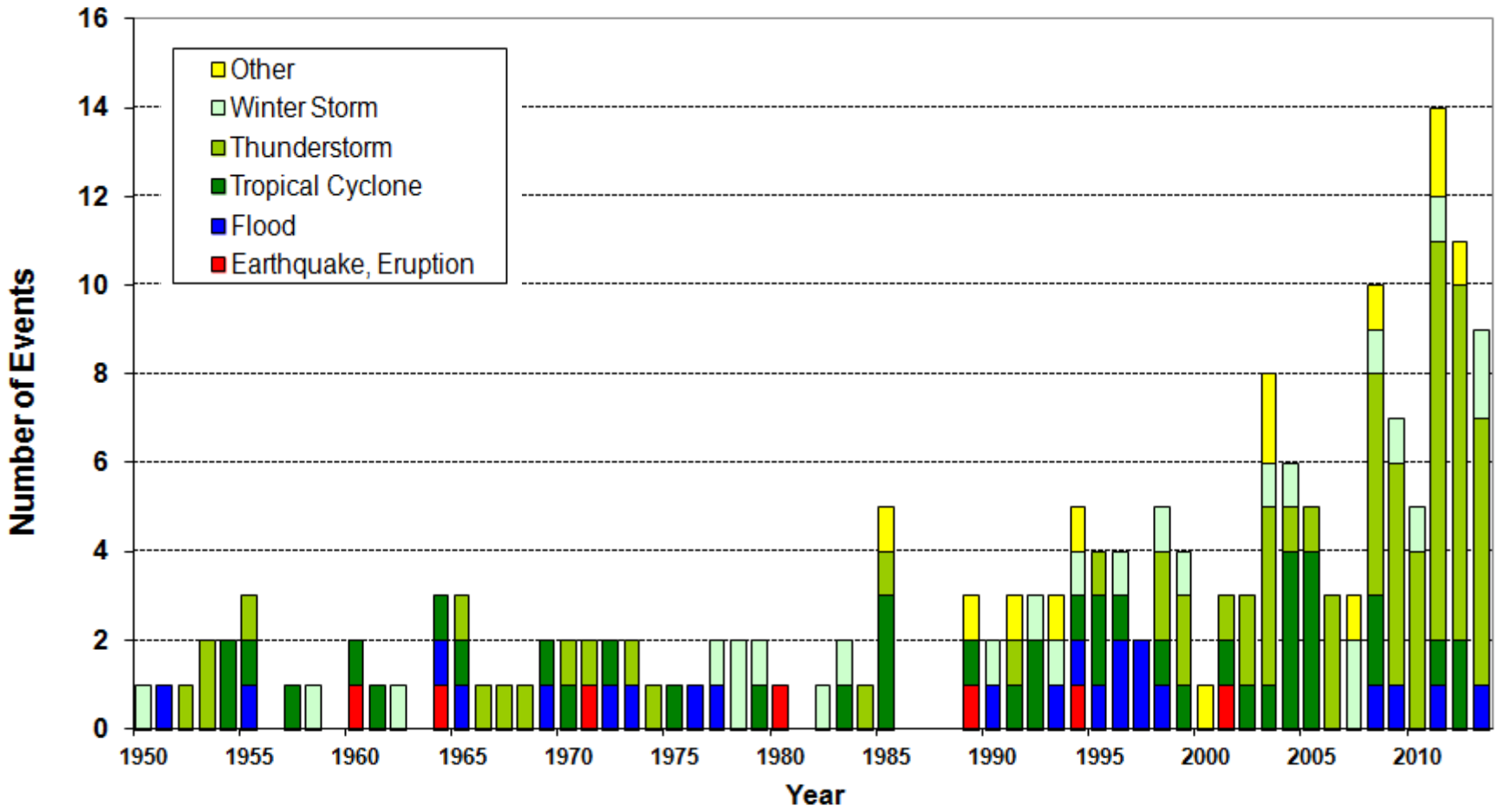
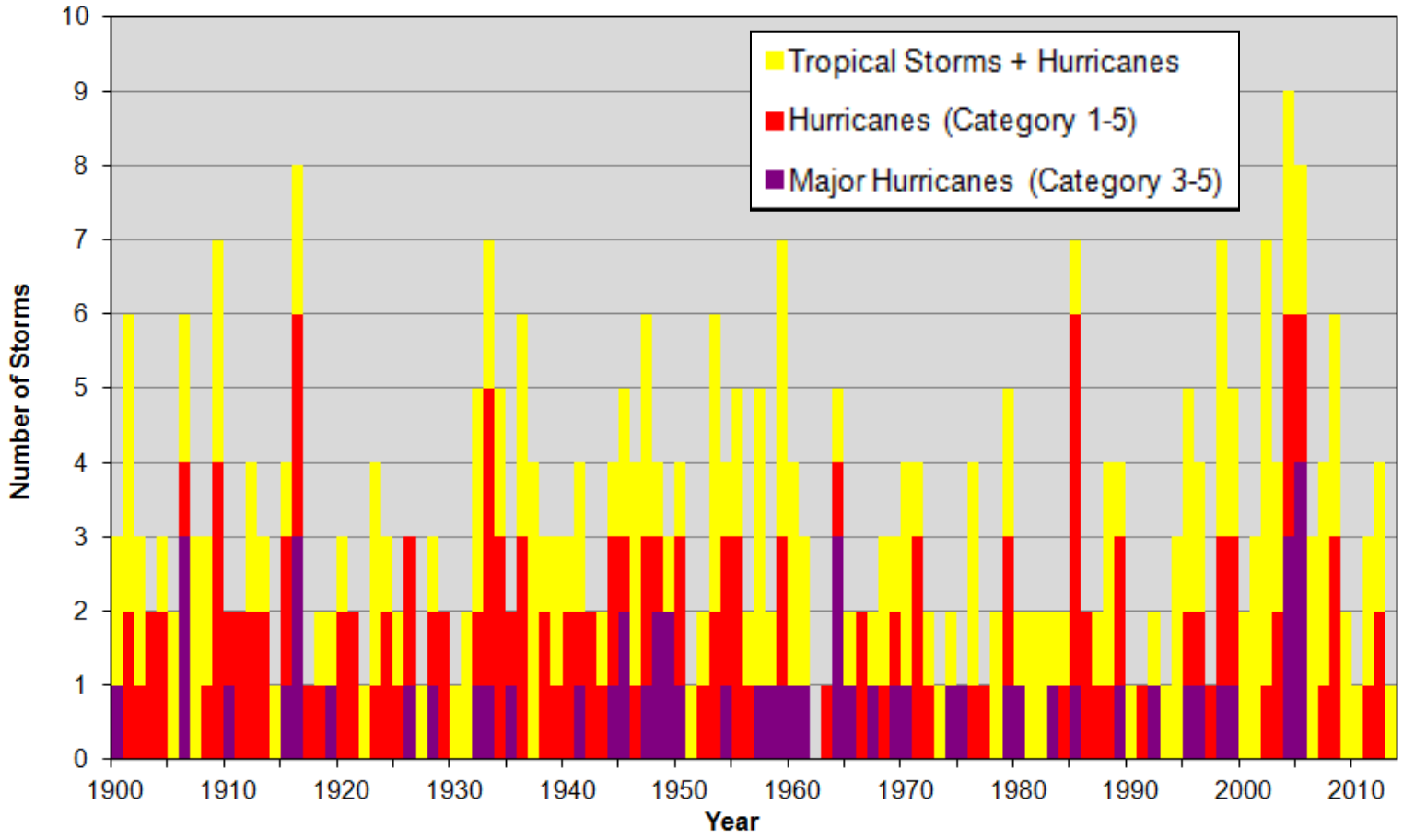
Nine significant natural catastrophes occurred in the United States in 2013.



Source: Munich Re NatCat*SERVICE*

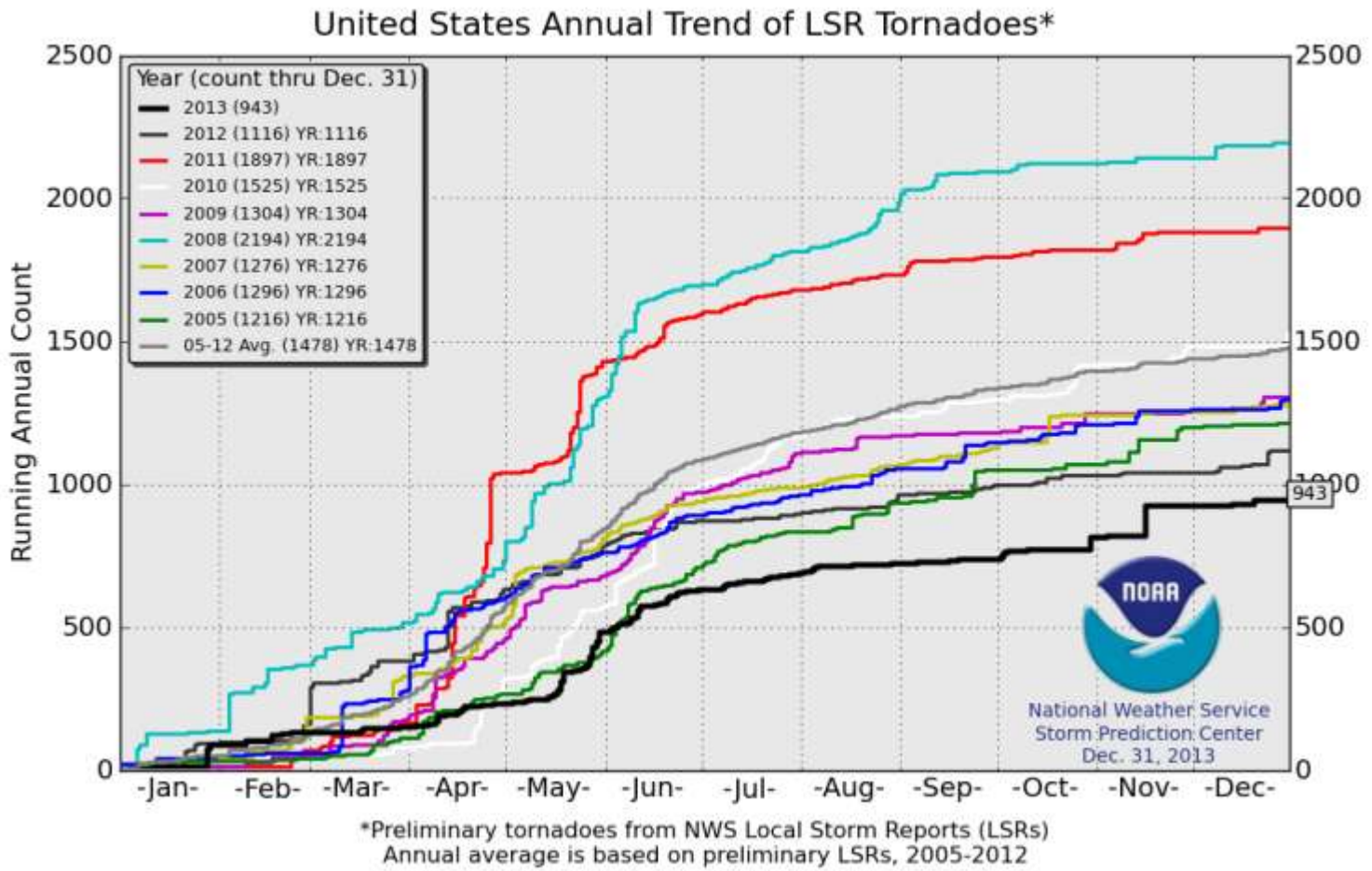
Number of US Landfalling Tropical Cyclones 1900 – 2013

There has not been a major hurricane landfall in the US since Wilma in October 2005.



Source: NOAA

2013 US Tornado Count

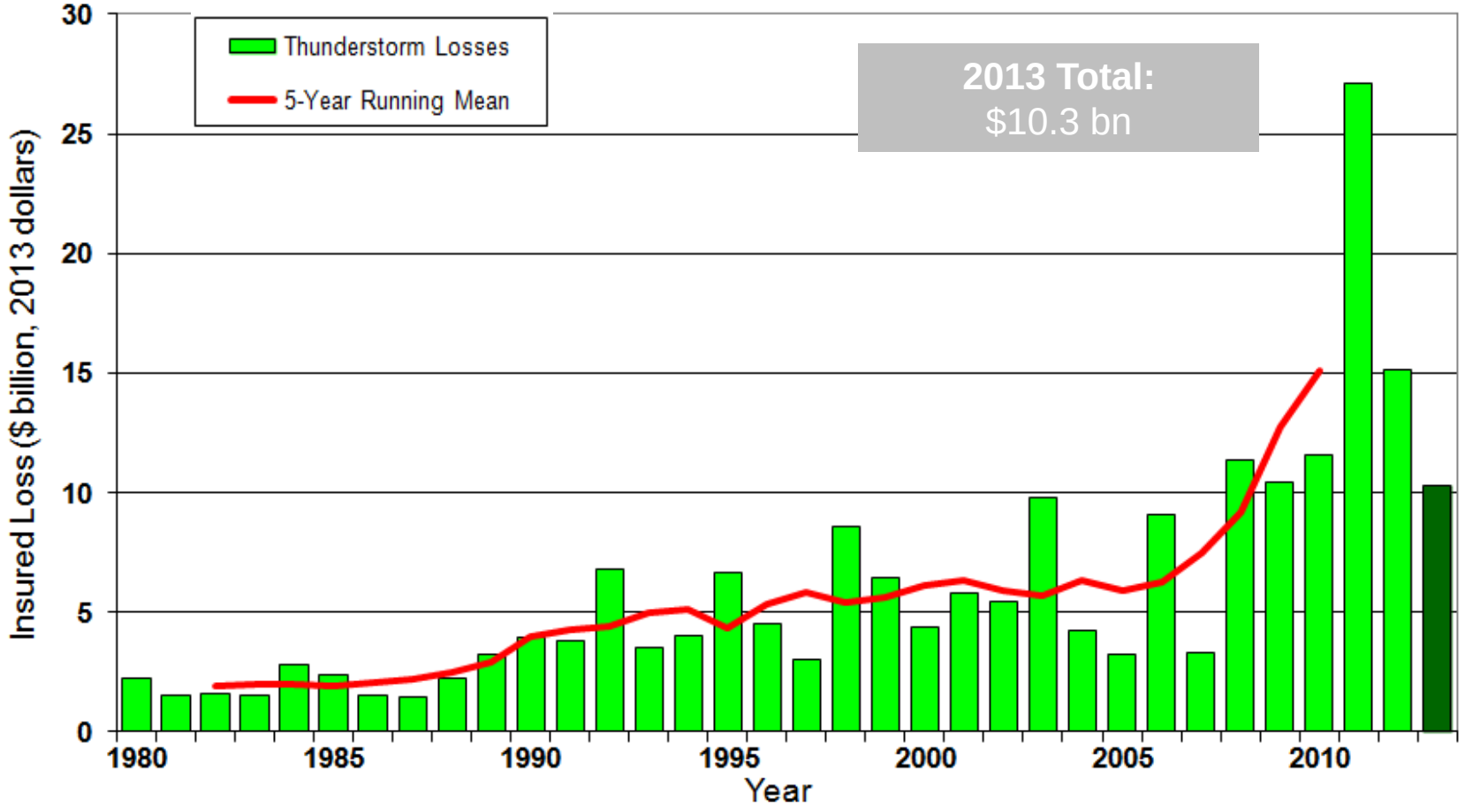


US Thunderstorm Loss Trends

Insured Annual Totals 1980 – 2013

Munich RE

Average insured thunderstorm losses have increased sevenfold since 1980.



Source: Property Claims Service
Munich Re NatCat*SERVICE*

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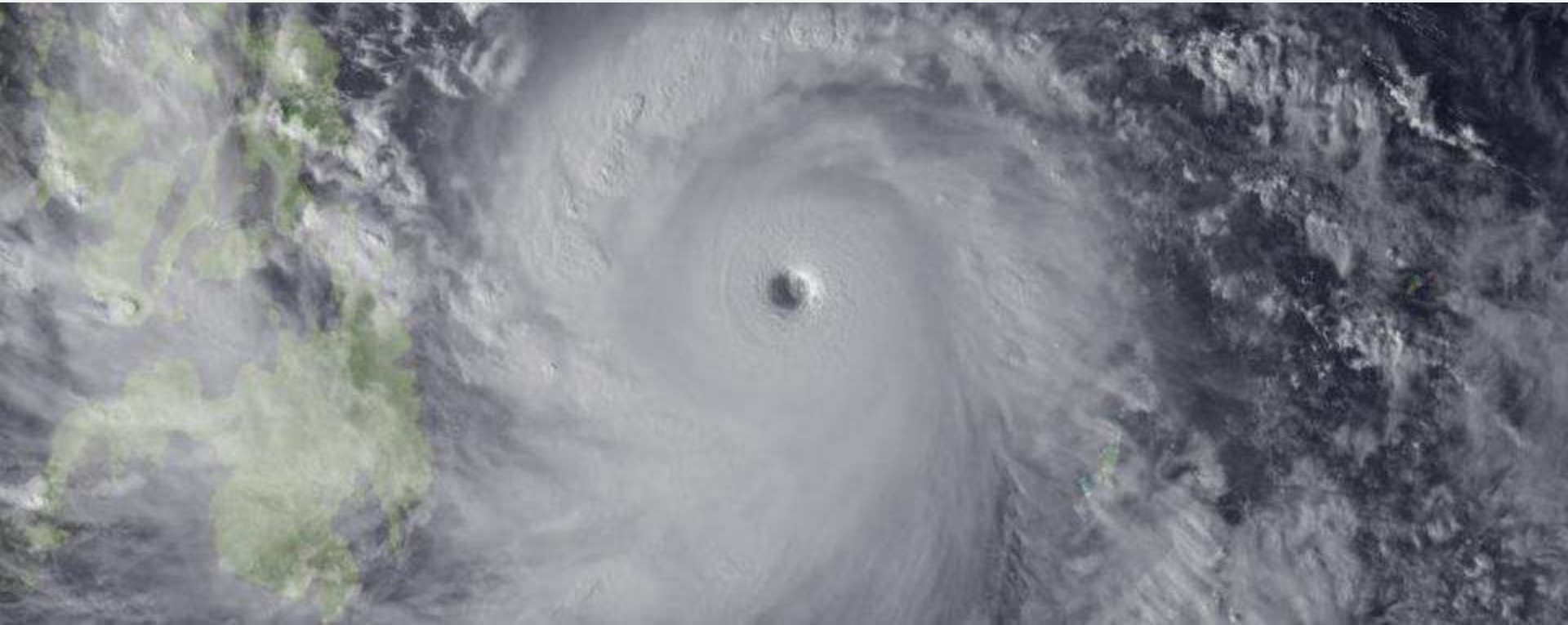
Global Natural Catastrophes in 2013



Natural Catastrophes Worldwide 2013

Significant events

Typhoon Haiyan, Philippines	Super typhoon making landfall with record-breaking wind speeds over central Philippines	With over 6,000 fatalities and many people still missing it was the deadliest event in 2013
Hailstorms, Germany	Two severe hailstorms affecting southwestern and northern Germany within two days	With insured losses of US$ 3.7bn, it was the largest insured loss event in 2013
Floodings in Central Europe	Torrential persistent rainfalls caused the rivers Danube, Inn, and Elbe to reach record water levels	With est. US$ 15.2bn it was the costliest direct economic loss event in 2013
Series of tornadoes, USA	Despite the weakest tornado season in a decade, three very severe tornado outbreaks happened in the USA	With US$ 10.3bn of insured losses in the USA it was the 6th costliest thunderstorm season on record in the USA

Source: Geo Risks Research, NatCat*SERVICE* – As at January 2014

Loss Events Worldwide 2013

Five costliest natural catastrophes for the insurance industry

Date	Region	Event	Fatalities	Insured losses US$ m
27-28.7.2013	Germany	Hailstorms	-	3,700
June 2013	Central Europe	Flooding	25	3,000
18-22.5.2013	USA	Severe storms, tornadoes	28	1,800
18-19.3.2013	USA	Severe storms, tornadoes	2	1,600
19-24.6.2013	Canada	Flooding	4	1,600

Source: Geo Risks Research, NatCat*SERVICE* – As at January 2014

Loss Events Worldwide 1980 – 2013
Facts

Number of events: 880

- The number is well above the 10-year average (2003–2012): 790

Fatalities: 20,000

- The number is very low in comparison with previous years (2003–2012): 106,000
- The deadliest event was Typhoon Haiyan in the Philippines, with more than 6,000 deaths

Overall direct losses: US$ 125bn

- 2013 is below the 10-year average (2003–2012): US$ 184bn (adjusted to inflation)

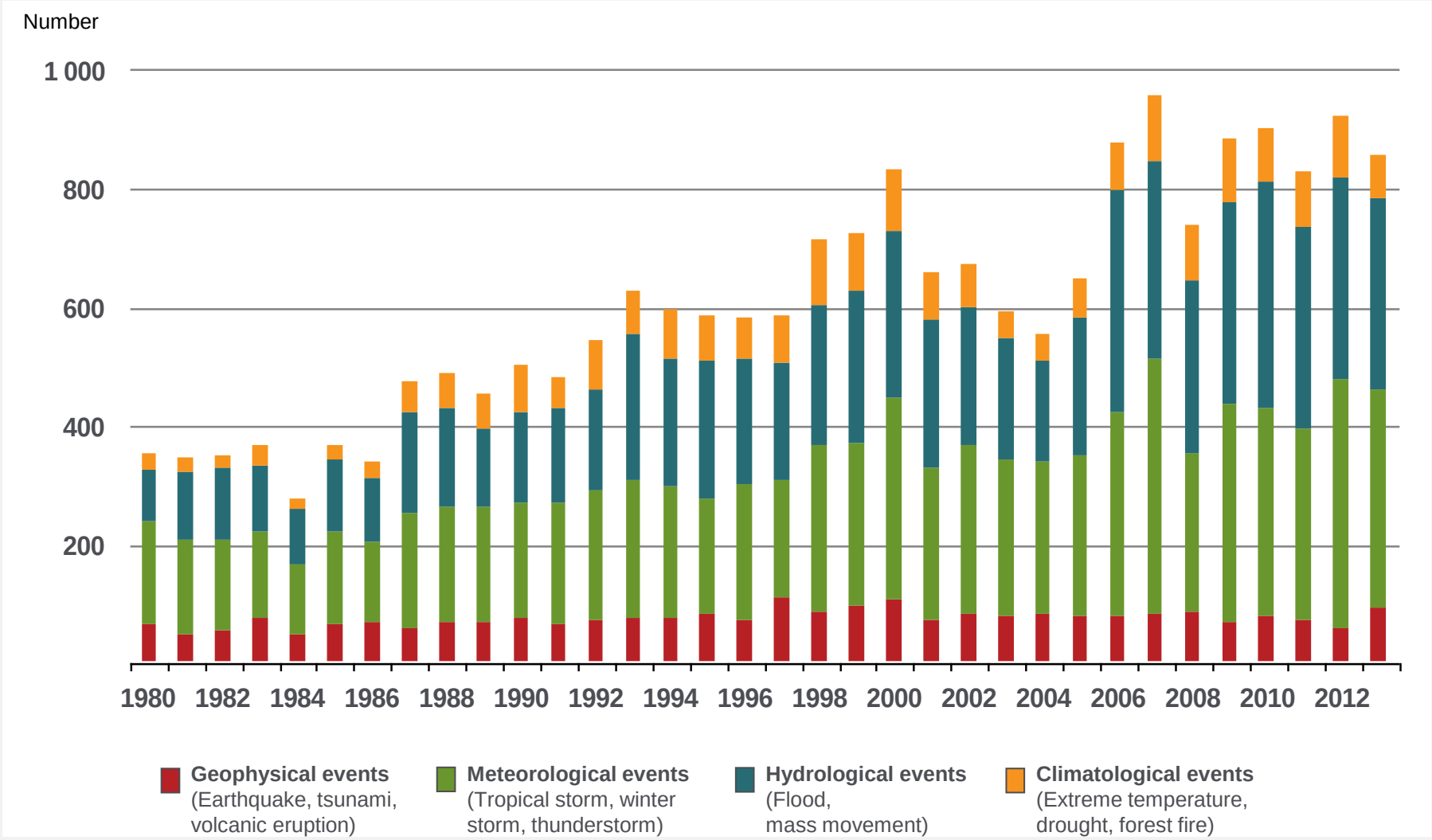
Insured losses: US$ 31bn

- The insured losses are below the 10-year-average (2003–2012): US$ 56bn (adjusted to inflation)

Source: Geo Risks Research, NatCat*SERVICE* – As at January 2014

Loss Events Worldwide 1980 – 2013

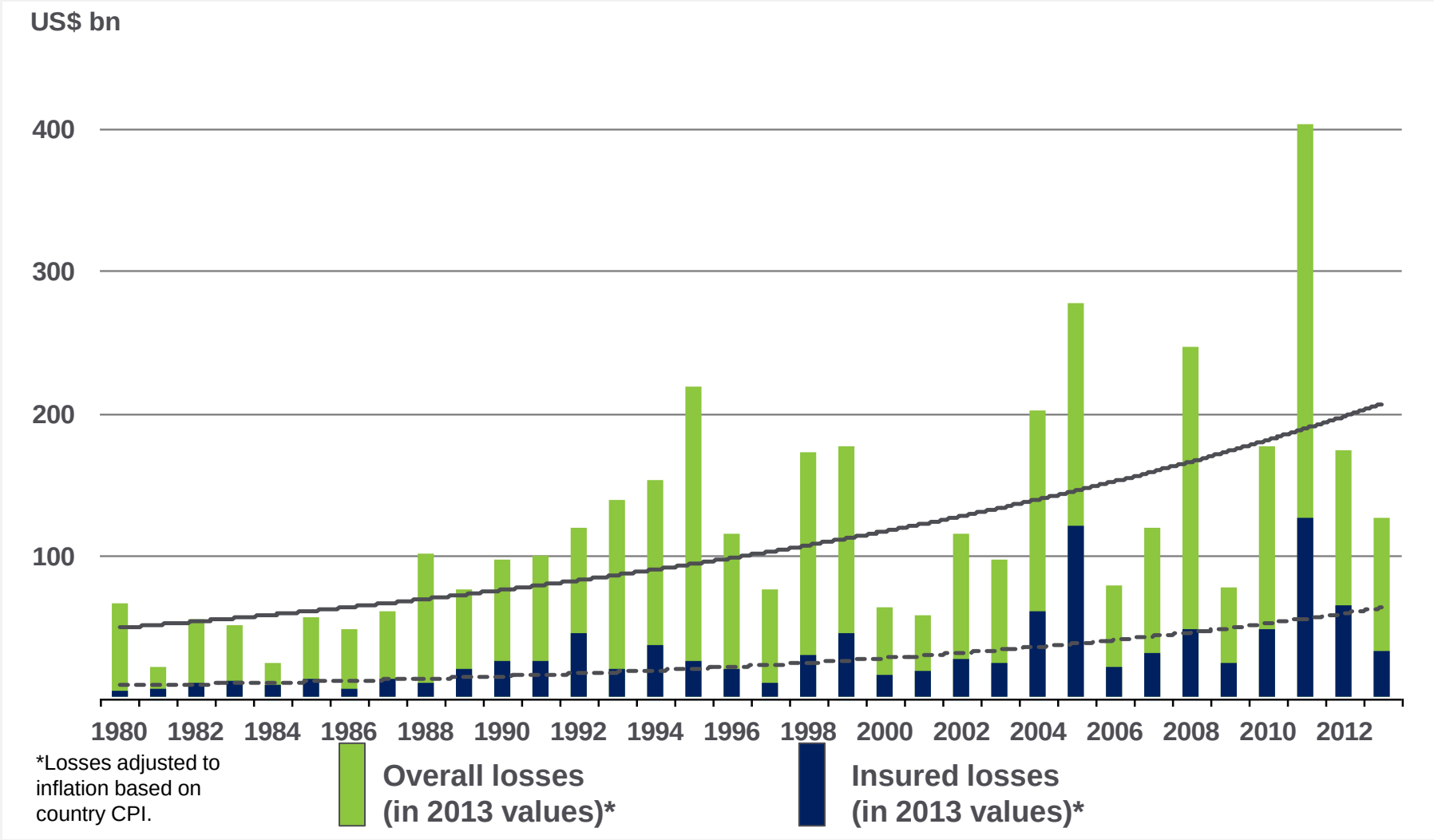
Number of events



Source: Geo Risks Research, NatCat*SERVICE* – As at January 2014

Loss Events Worldwide 1980 – 2013

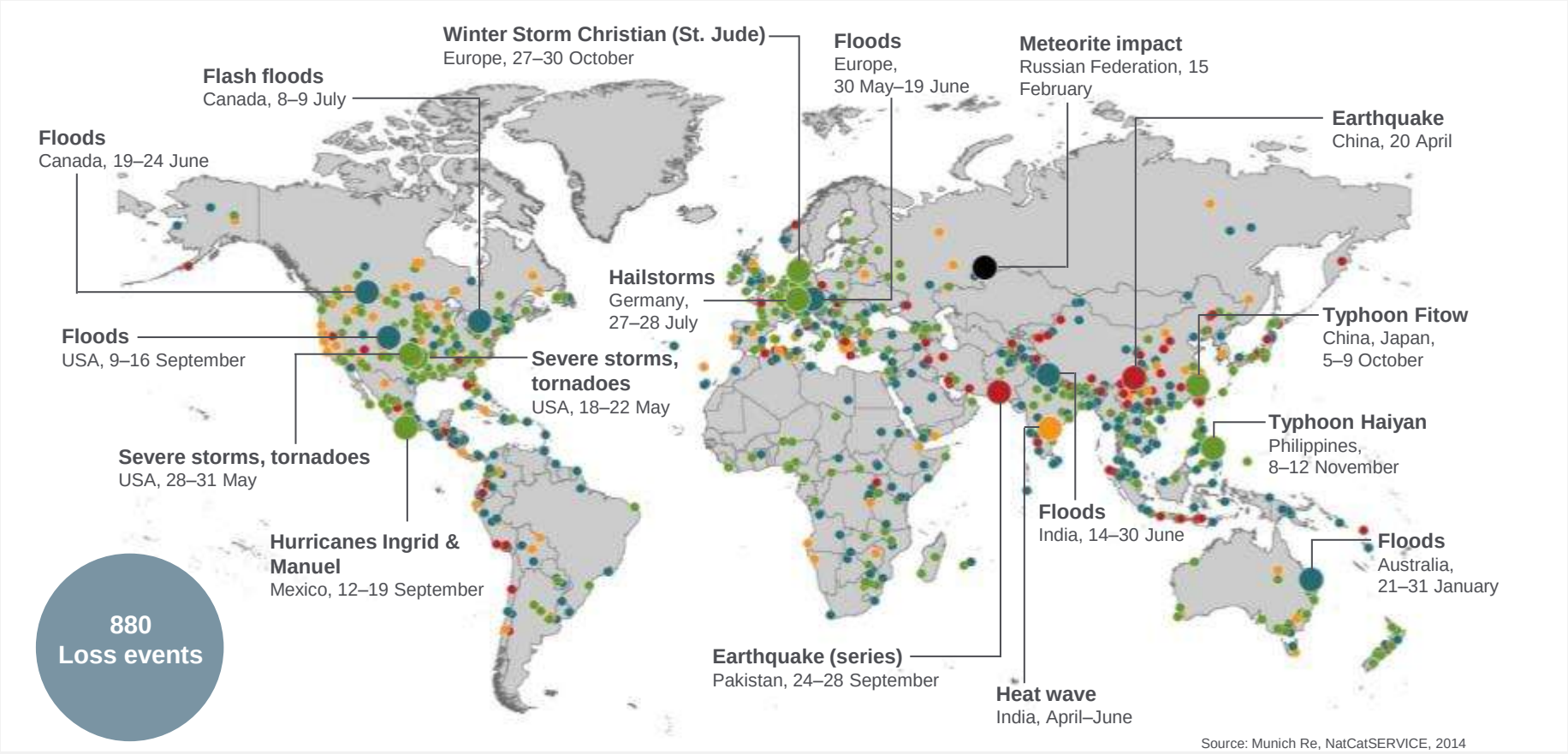
Overall and insured losses



Source: Geo Risks Research, NatCat*SERVICE* – As at January 2014

Loss Events Worldwide 2013

Geographical overview



- ○ **Natural catastrophes**
- ◯ **Selection of significant loss events**
- ● **Geophysical events** (earthquake, tsunami, volcanic activity)
- ● **Meteorological events** (storm)
- ● **Hydrological events** (flood, mass movement)
- ● **Climatological events** (extreme temperature, drought, wildfire)
- ● **Extraterrestrial events** (Meteorite impact)

Source: Geo Risks Research, NatCat*SERVICE* – As at January 2014

Natural Catastrophes Worldwide 2013

Summary

In total the USA had to bear insured losses of US$ 12.8bn (2003-2012-average: US$ 35bn).

With insured losses over US$ 6.6bn, Germany was the second largest contributor to worldwide insured losses of US$ 31bn.

In the Philippines super typhoon Haiyan produced record wind speeds higher than 300 km/h, destroyed more than half a million homes and left over 6,000 people dead.

The Atlantic hurricane season was one of the most inactive seasons in decades.

Compared to the long-term average the year 2013 was clearly below average in both, loss of life and loss of assets.

Source: Geo Risks Research, NatCat*SERVICE* – As at January 2014

INSURANCE INFORMATION INSTITUTE

Market & Financial Impact of Catastrophe Losses:

2013 Summary

Insurance Information Institute

January 7, 2014

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

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

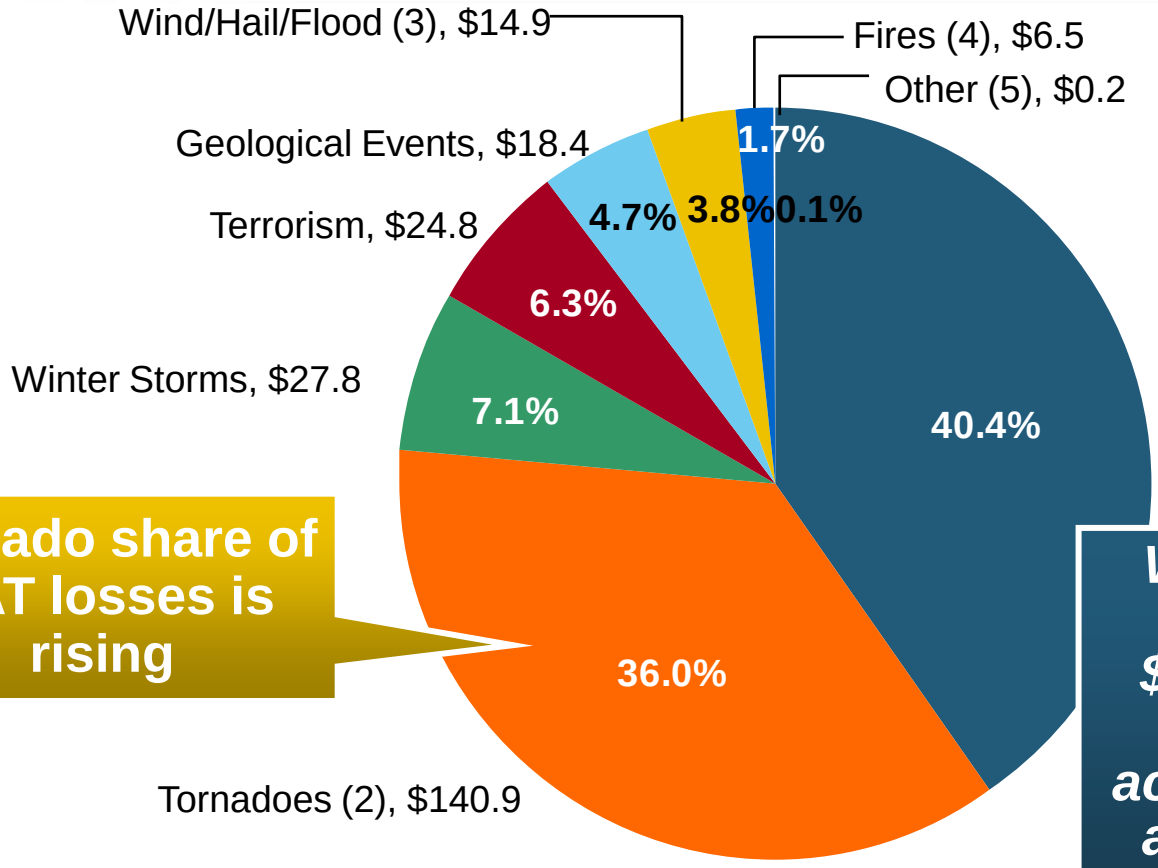
Tel: 212.346.5520 ♦ Cell: 917.453.1885 ♦ bobh@iii.org ♦ www.iii.org

INSURANCE INFORMATION INSTITUTE

WINTER STORM LOSSES: HOW BAD ARE THEY?

Losses from Snow, Ice, Freezing and Related Causes Typical Cost Insurers Between $1 Billion and $2 Billion Annually

Inflation Adjusted U.S. Catastrophe Losses by Cause of Loss, 1993–2012[1]



Insured cat losses from 1993-2012 totaled $391.7B, an average of $19.6B per year or $1.6B per month

Tornado share of CAT losses is rising

Winter storm losses totaled $27.8B or $1.4B/yr. on average from 1993-2012 accounting for 7.1% of all CAT losses; 2013 losses totaled $1.895B

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

Source: ISO's Property Claim Services Unit.

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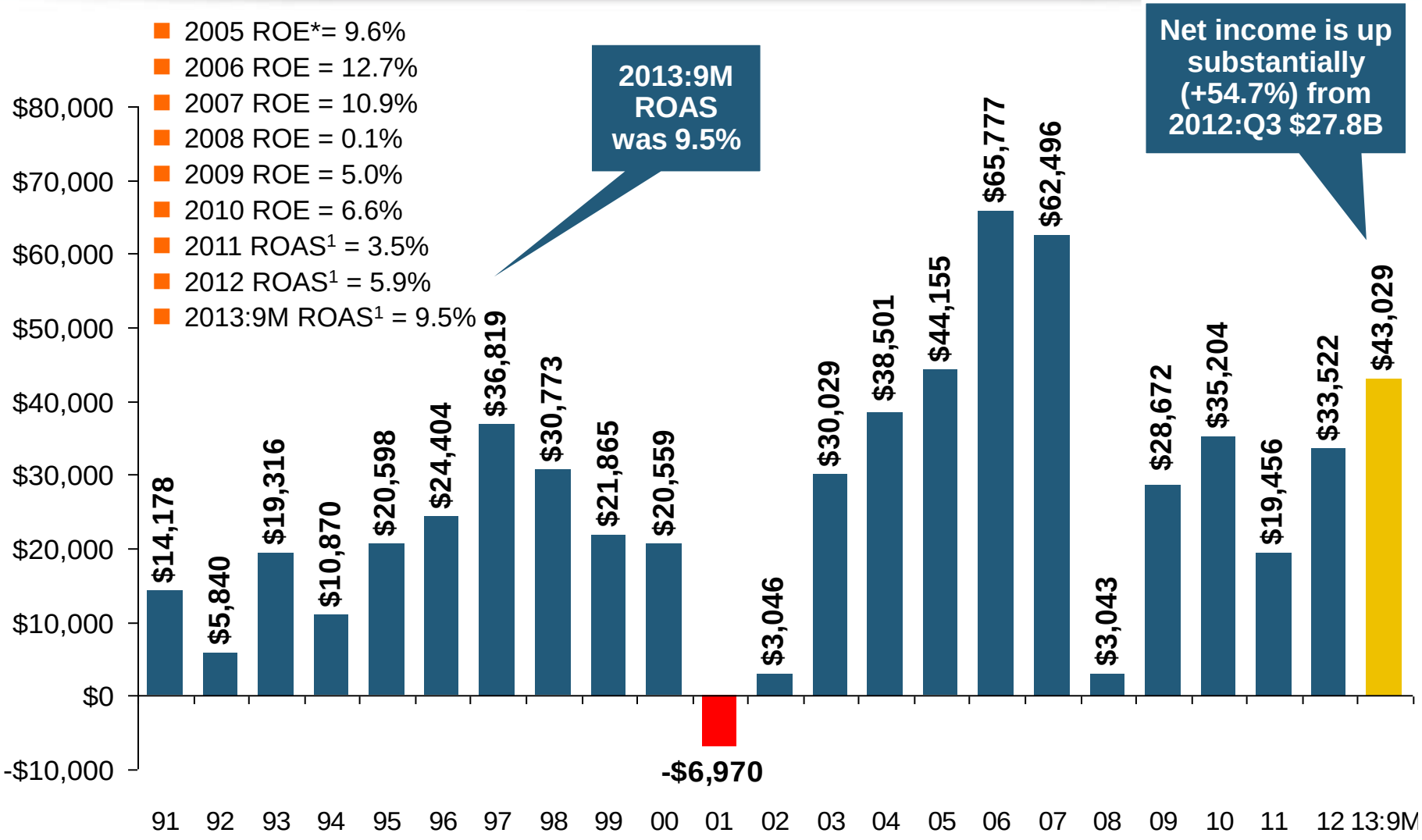
U.S. P/C Insurance Industry Financial Overview

Industry's Financial Strength and Overall Performance Improved During 2013 Due in Part to Materially Lower Catastrophe Losses

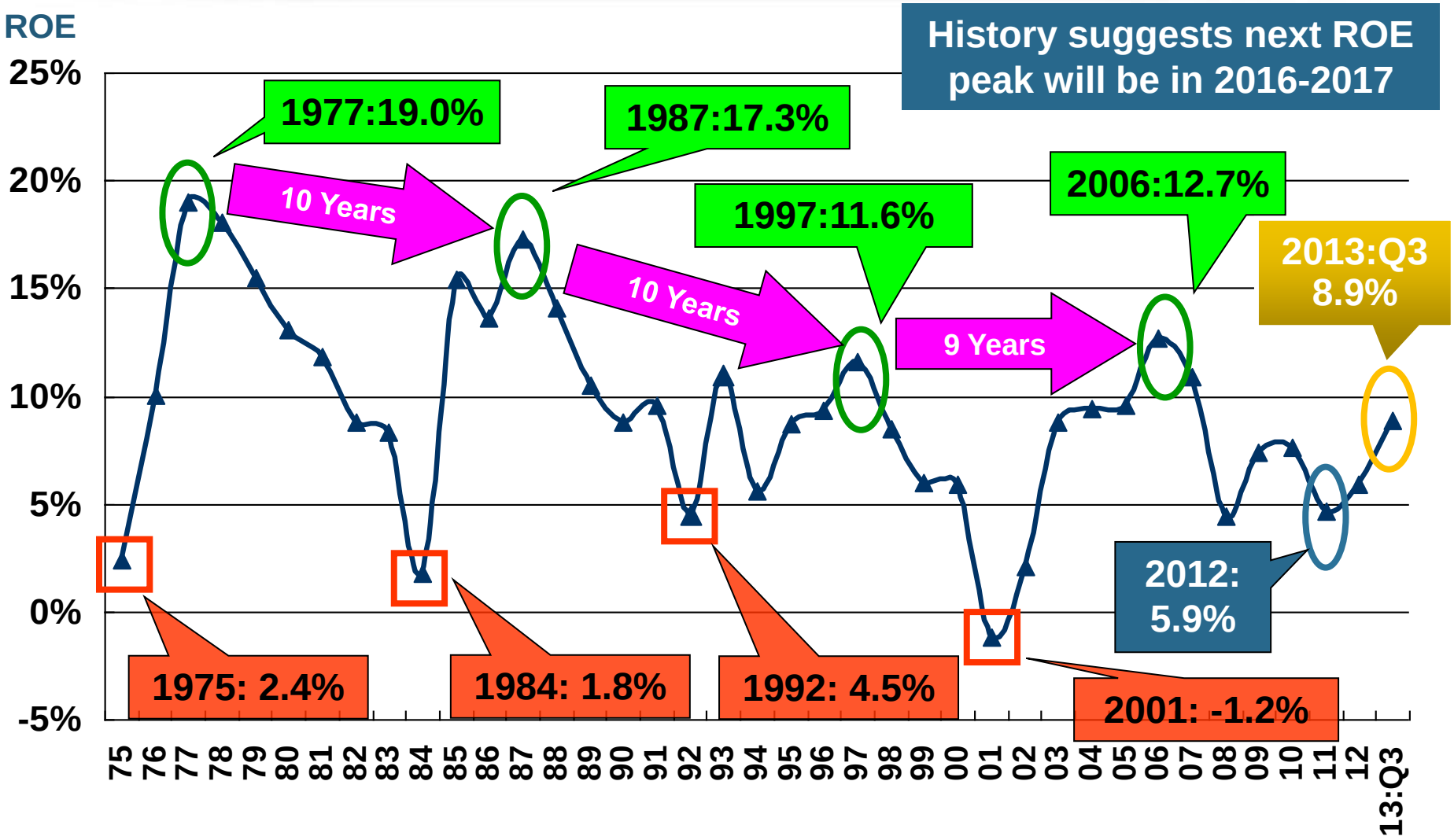
P/C Net Income After Taxes 1991–2013:Q3 ($ Millions)



•ROE figures are GAAP; [1]Return on avg. surplus. Excluding Mortgage & Financial Guaranty insurers yields a 8.9% ROAS through 2013:Q3, 6.2% ROAS in 2012, 4.7% ROAS for 2011, 7.6% for 2010 and 7.4% for 2009.

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

Profitability Peaks & Troughs in the P/C Insurance Industry, 1975 – 2013:Q3*



*Profitability = P/C insurer ROEs. 2011-13 figures are estimates based on ROAS data. Note: Data for 2008-2013 exclude mortgage and financial guaranty insurers.

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

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

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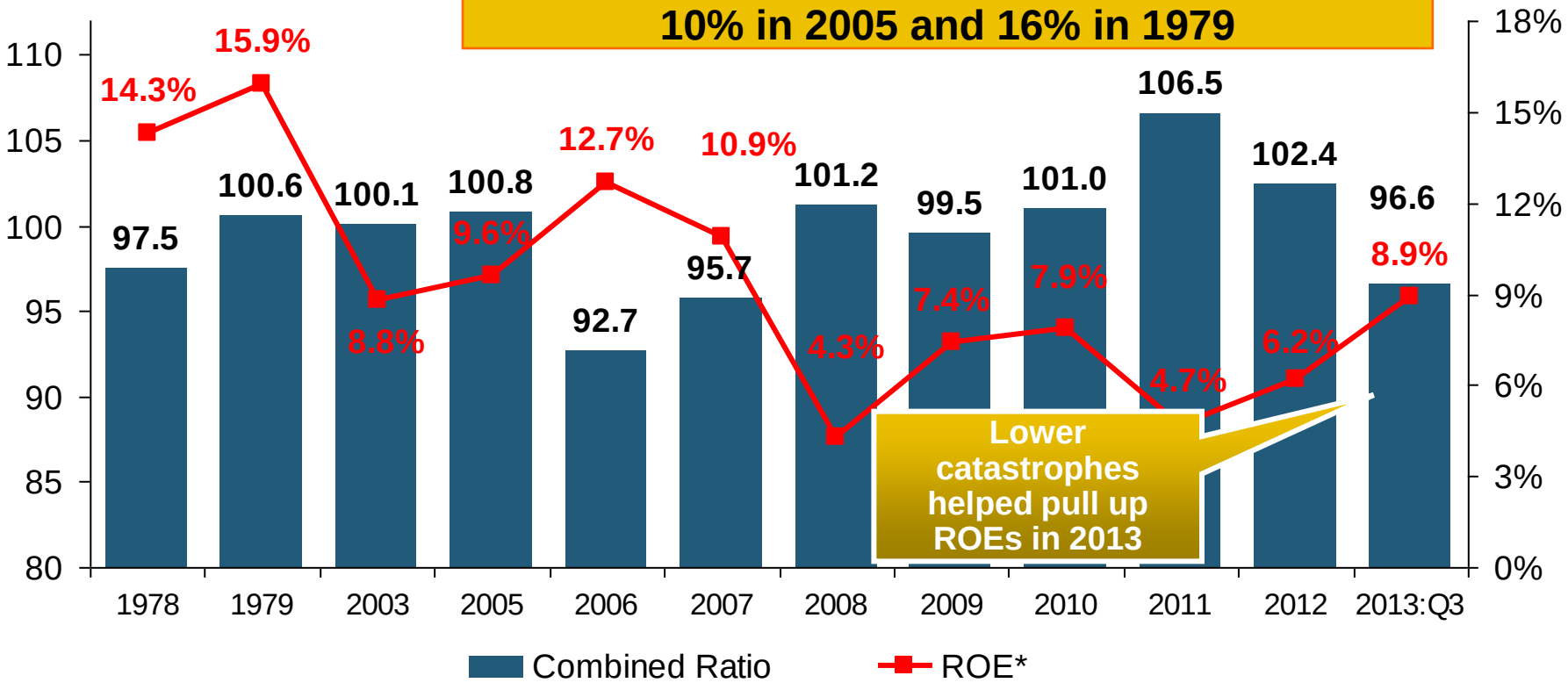
Combined Ratio / ROE

A combined ratio of about 100 generates an ROE of ~7.0% in 2012, ~7.5% ROE in 2009/10, 10% in 2005 and 16% in 1979

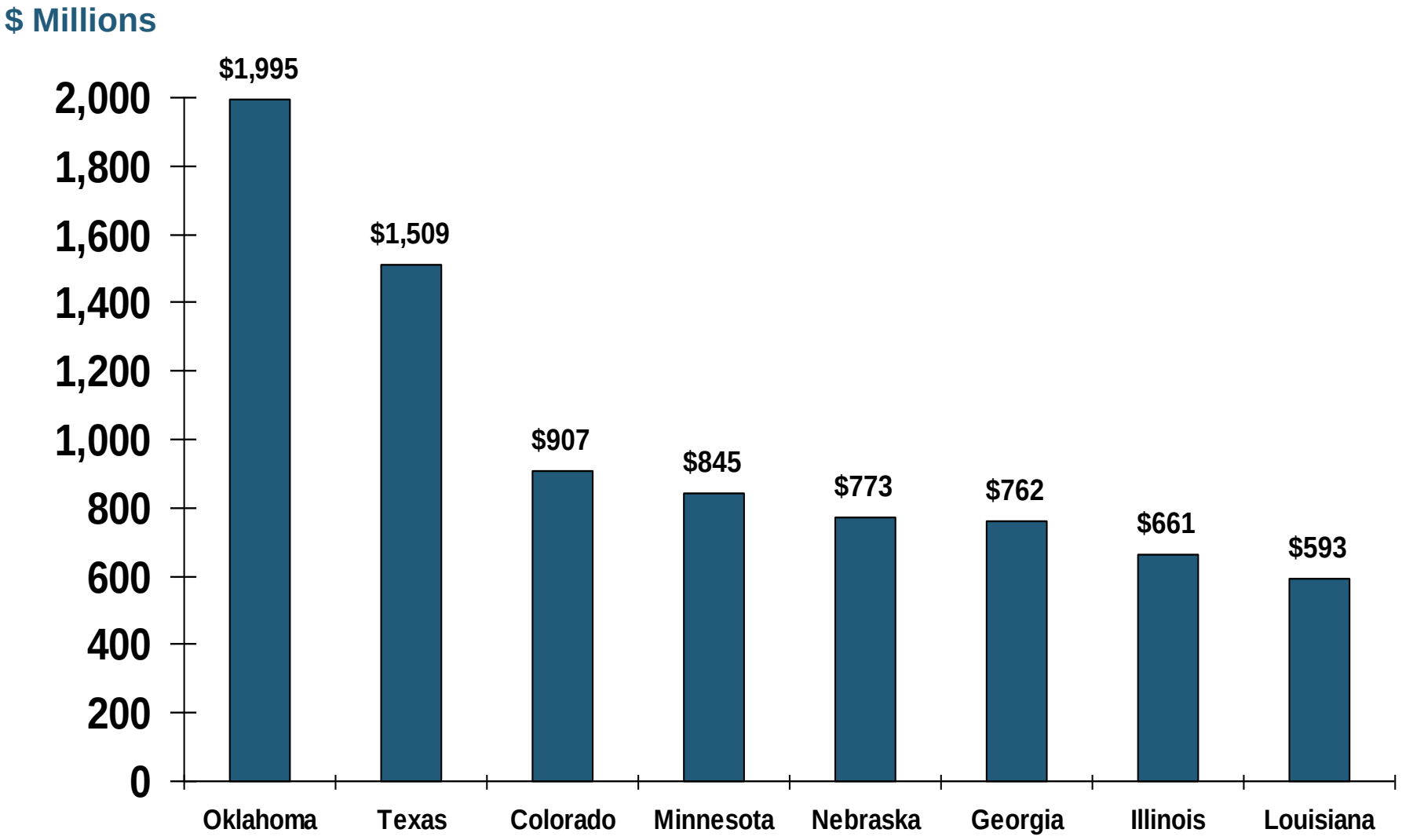


Combined Ratios Must Be Lower in Today's Depressed Investment Environment to Generate Risk Appropriate ROEs

* 2008 -2012 figures are return on average surplus and exclude mortgage and financial guaranty insurers. 2012 combined ratio including M&FG insurers is 103.2, 2011 combined ratio including M&FG insurers is 108.1, ROAS = 3.5%.

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

Top Eight States for Insured Catastrophe Losses, 2013



Source: The Property Claim Services (PCS) unit of ISO, a Verisk Analytics company.

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SURPLUS/CAPITAL/CAPACITY

Industry Claims Paying Capital Stands at Record High in Late 2013

(Re)Insurance Industry is Well Positioned to Manage Large Scale Catastrophe Losses in 2014

Policyholder Surplus, 2006:Q4–2013:Q3

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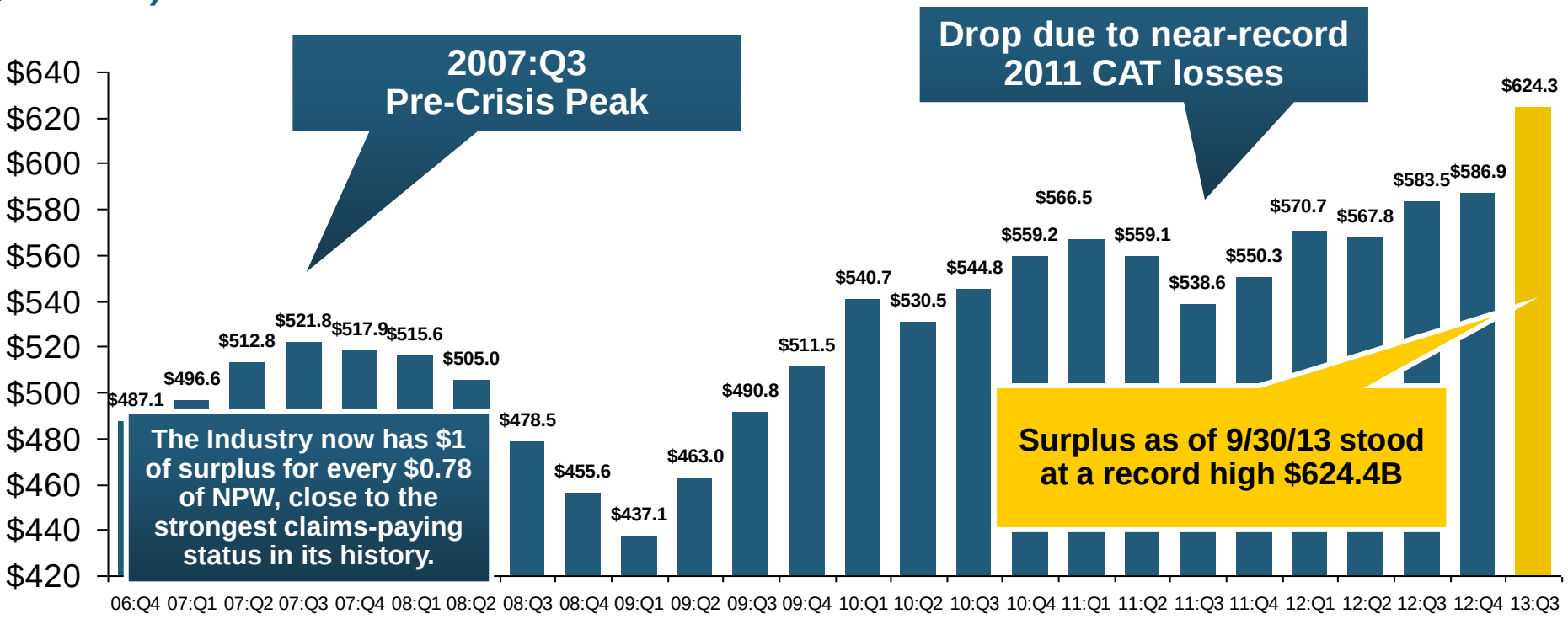
($ Billions)



*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.

The P/C Insurance Industry Entered 2014 in Very Strong Financial Shape

Sources: ISO, A.M .Best.

INSURANCE INFORMATION INSTITUTE

INVESTMENTS: THE NEW REALITY

Depressed Yields Will Necessarily Influence Underwriting & Pricing

Property/Casualty Insurance Industry Investment Income: 2000–2013*[1]

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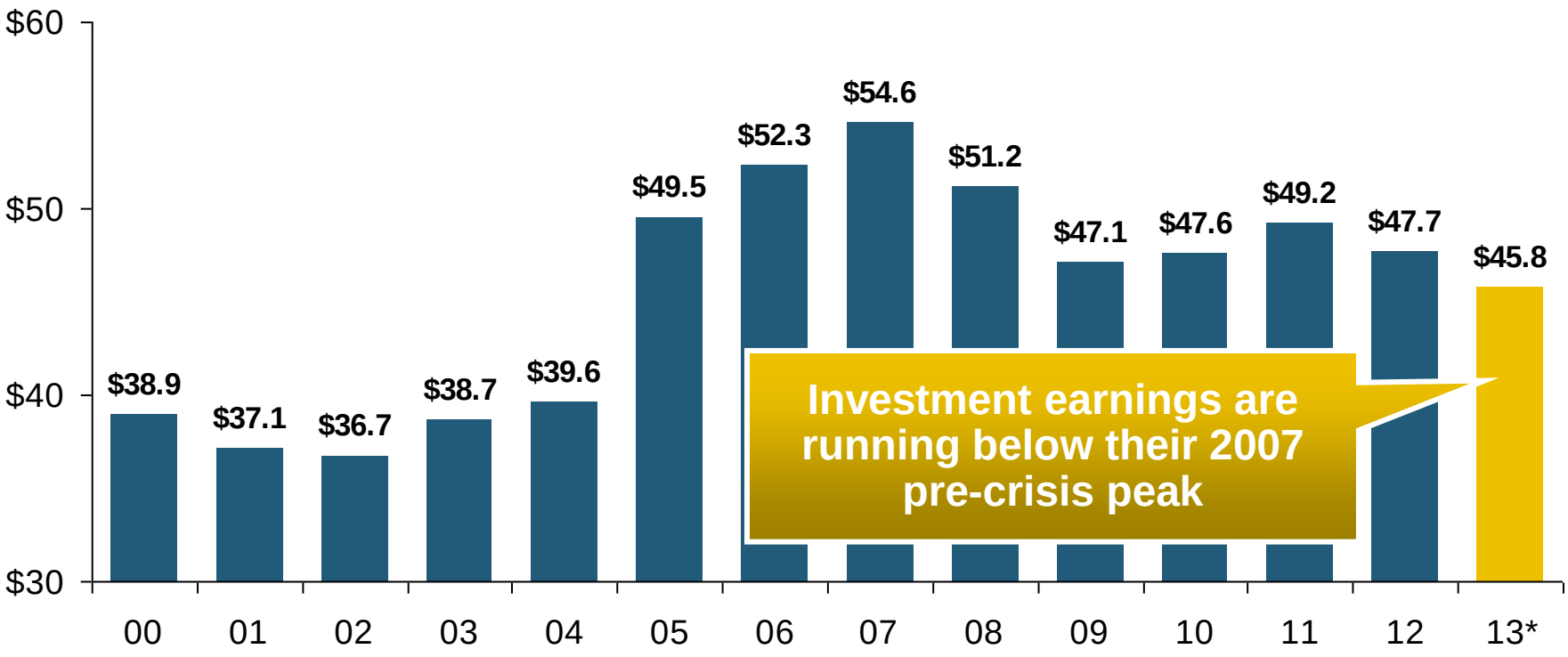
($ Billions)



Investment Income Fell in 2012 and is Falling in 2013 Due to Persistently Low Interest Rates, Putting Additional Pressure on (Re) Insurance Pricing

[1] Investment gains consist primarily of interest and stock dividends..
*Estimate based on annualized actual net investment income earned through Q3:2013 of $34.338B.
Sources: ISO; Insurance Information Institute.

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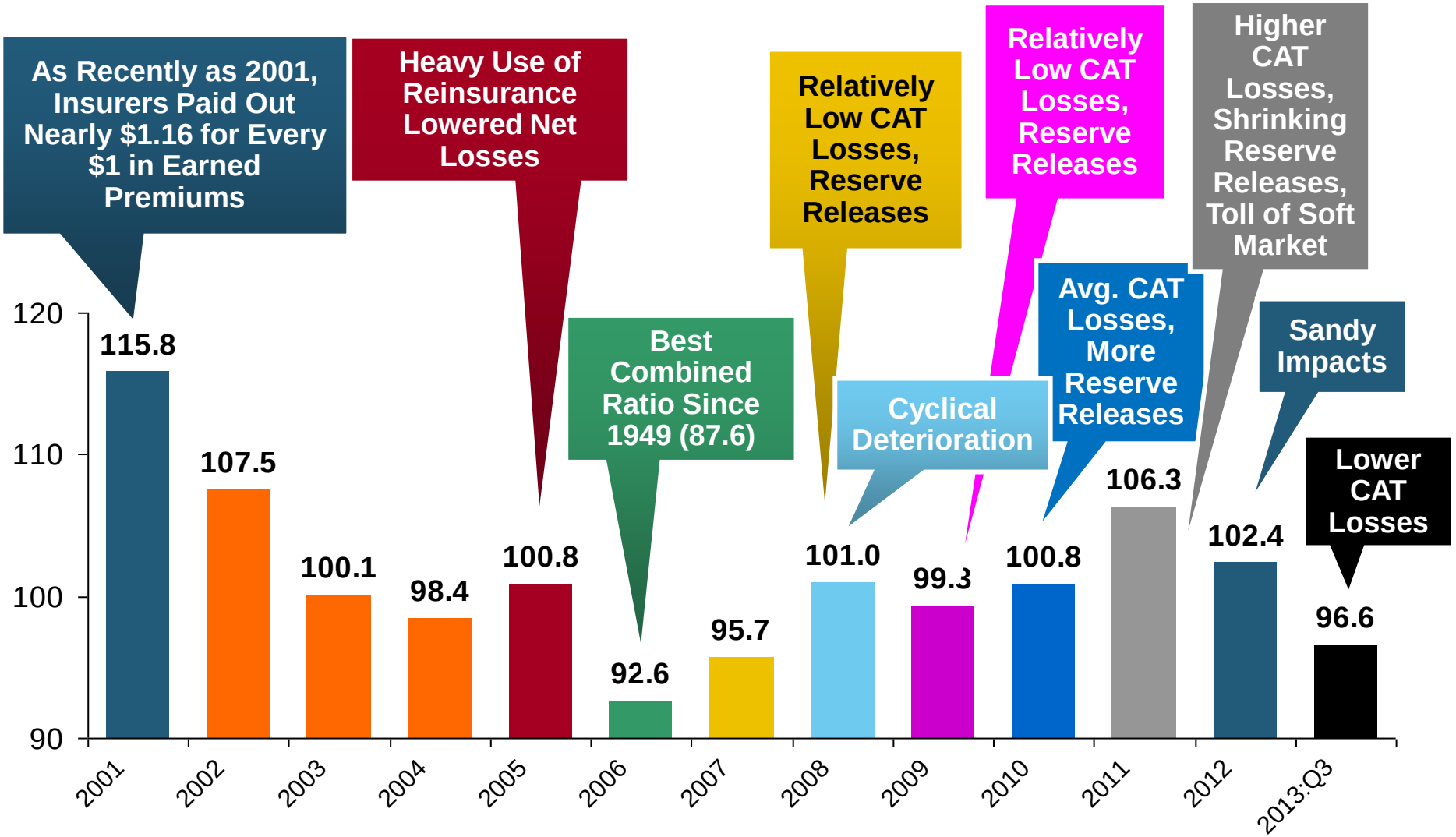
UNDERWRITING

Underwriting Results in 2013 Were Helped by Lower Catastrophe Losses

Was 2013 Only a Respite from High Catastrophe Loss Years Like 2011/2012?

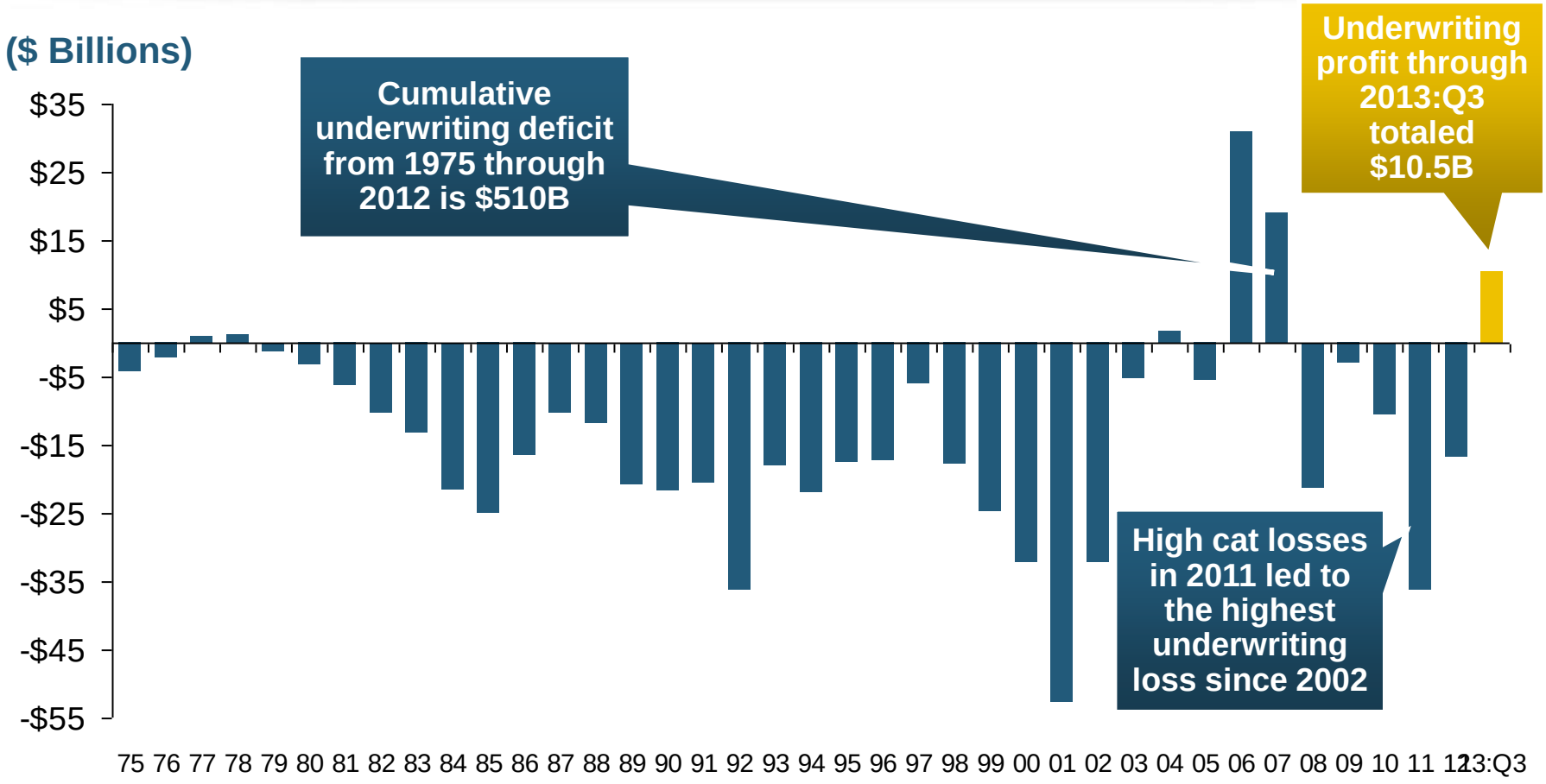
P/C Insurance Industry Combined Ratio, 2001–2013:Q3*



* Excludes Mortgage & Financial Guaranty insurers 2008--2012. Including M&FG, 2008=105.1, 2009=100.7, 2010=102.4, 2011=108.1; 2012:=103.2; 2013:Q3 = 95.8.

Sources: A.M. Best, ISO.

Underwriting Gain (Loss) 1975–2013:Q3*

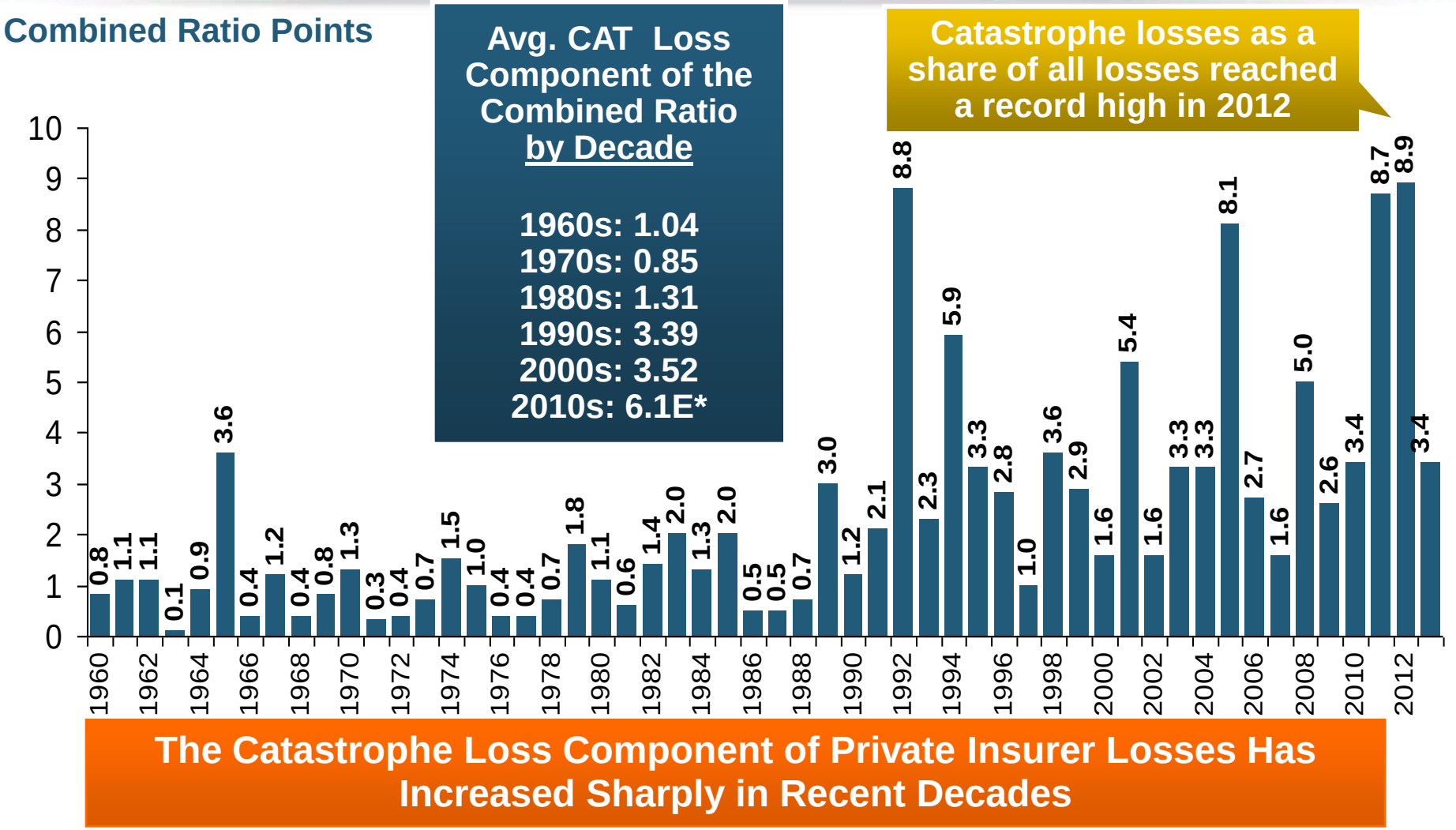


Large Underwriting Losses Are *NOT* Sustainable in Current Investment Environment

* Includes mortgage and financial guaranty insurers in all years.

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

Combined Ratio Points Associated with Catastrophe Losses: 1960 – 2013*



*2010s represent 2010-2013.

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 (1960-2011); A.M. Best (2012E) Insurance Information Institute.

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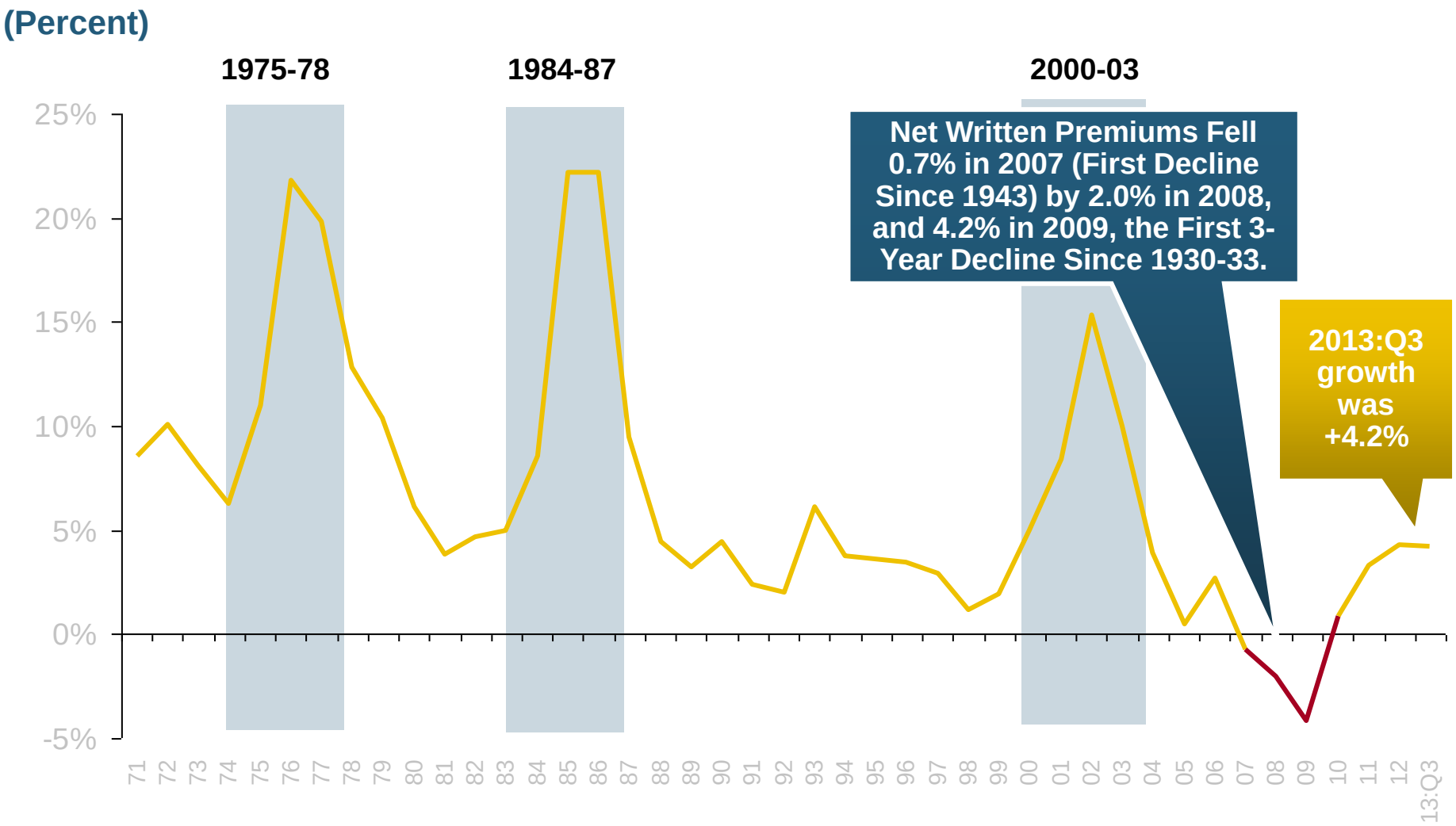
Premium Growth

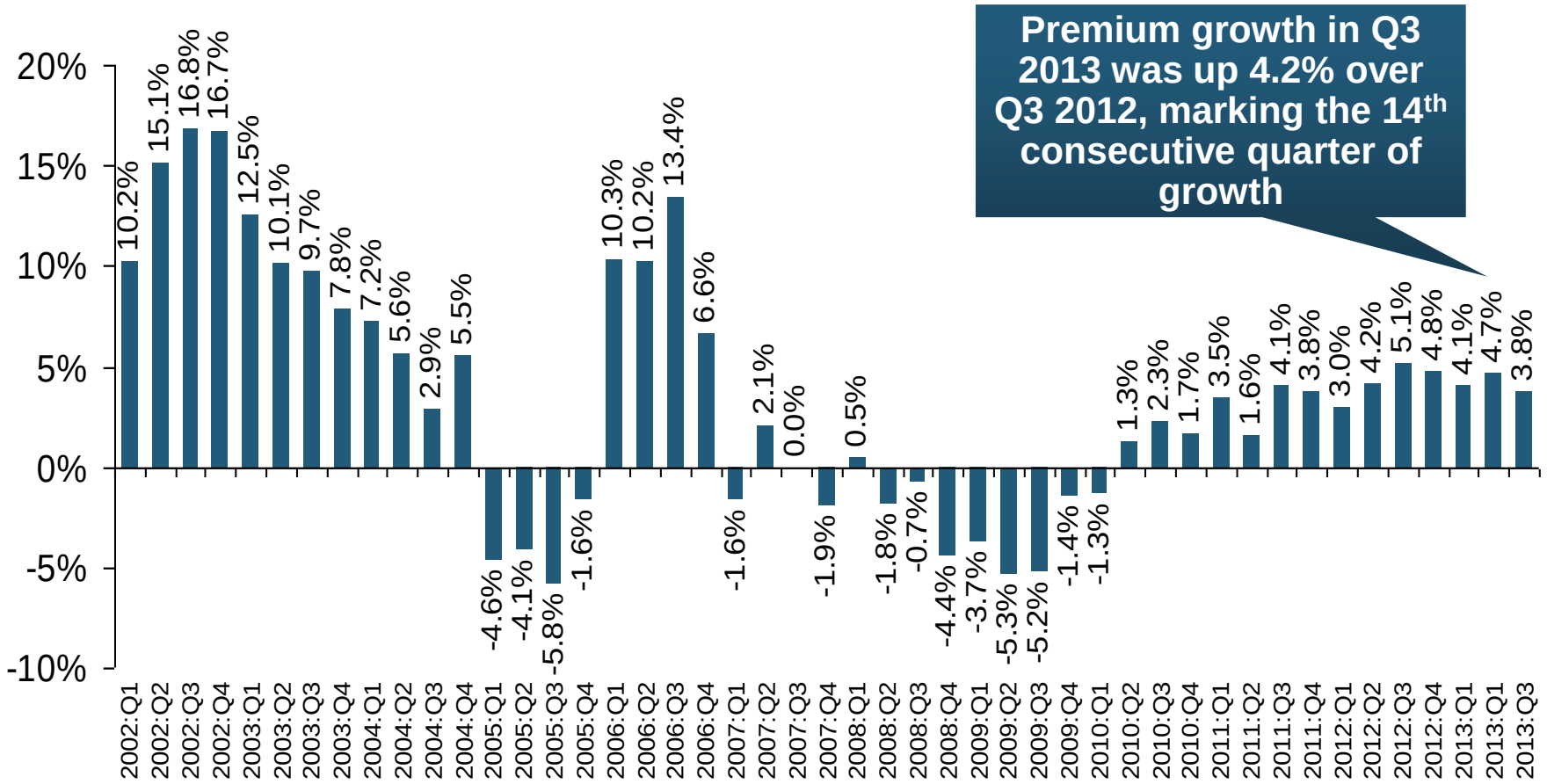
Catastrophe Losses Impact Trajectory of Premium Growth

Net Premium Growth: Annual Change, 1971—2013:Q3



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



Sustained Growth in Written Premiums (vs. the same quarter, prior year) Should Continue through 2014

Sources: ISO, Insurance Information Institute.

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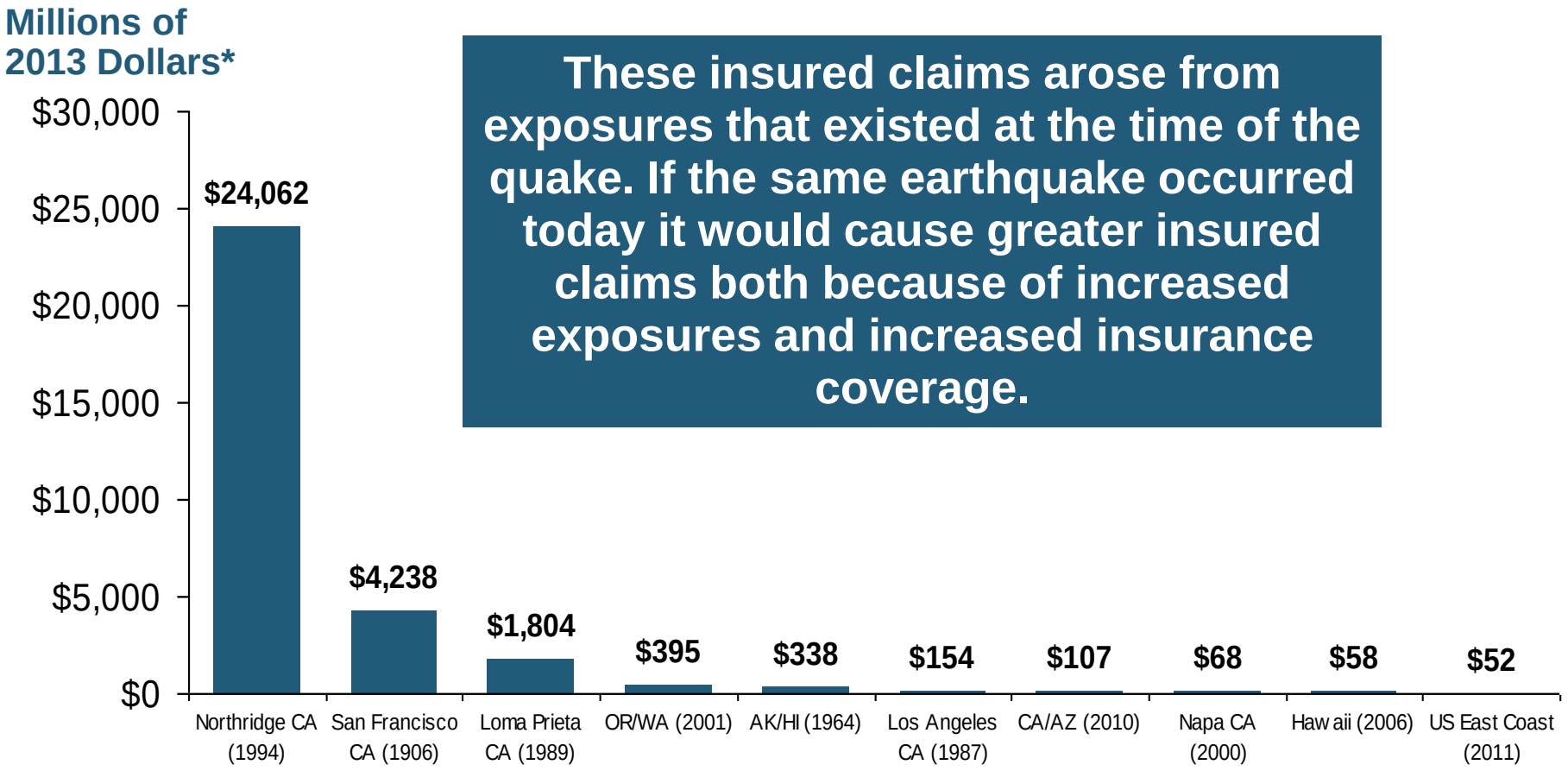
Earthquakes: Jan. 17, 2014 is the 20th Anniversary of the Northridge Earthquake

Northridge Remains the Most Costly Earthquake in Terms of Insured Losses in US History

10 Most Costly Earthquakes in U.S. History (Insured Claims)



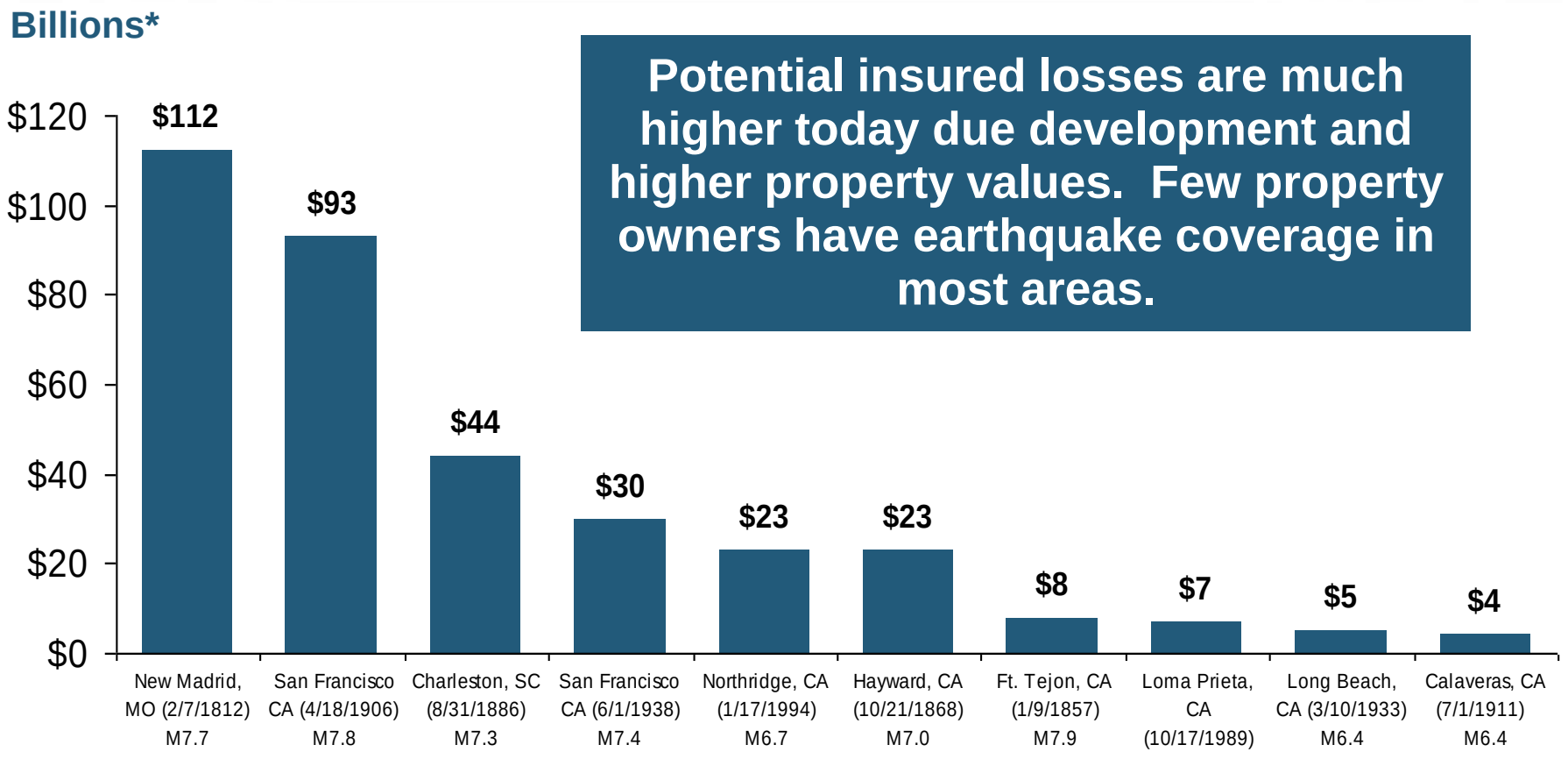
These insured claims arose from exposures that existed at the time of the quake. If the same earthquake occurred today it would cause greater insured claims both because of increased exposures and increased insurance coverage.

Many of these earthquakes caused extensive damage that wasn't insured (and so doesn't show in this chart)

*inflation adjustments to 2013 dollars using the CPI; adjustment for 1906 is based on CPI in 1913—earliest available.

Sources: MunichRe; Insurance Information Institute.

Estimated Insured Losses from the Top 10 Historical Earthquakes in U.S. Based in Current (2011) Exposures



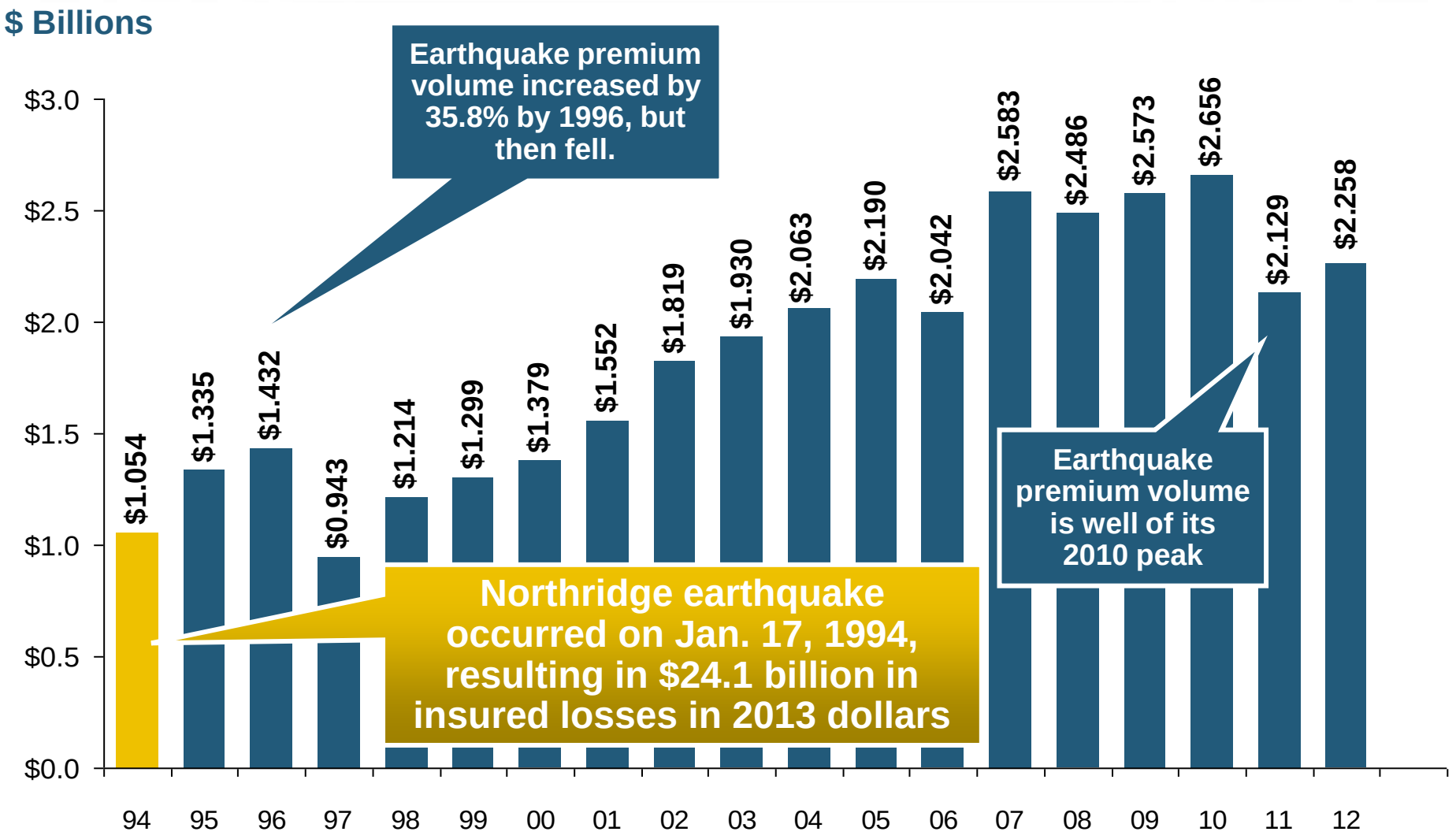
Potential insured losses are much higher today due development and higher property values. Few property owners have earthquake coverage in most areas.

While the Majority of Costly Earthquakes Are Likely to Occur in California, the New Madrid and Charleston, SC, Areas Have Significant Exposure As Well.

*Analysis conducted in 2012 based on exposures as of 12/31/2011.

Sources: AIR Worldwide; Insurance Information Institute.

Earthquake Insurance: Direct Premiums Written,1994–2012 ($ Billions)



Sources: A.M. Best; Insurance Information Institute

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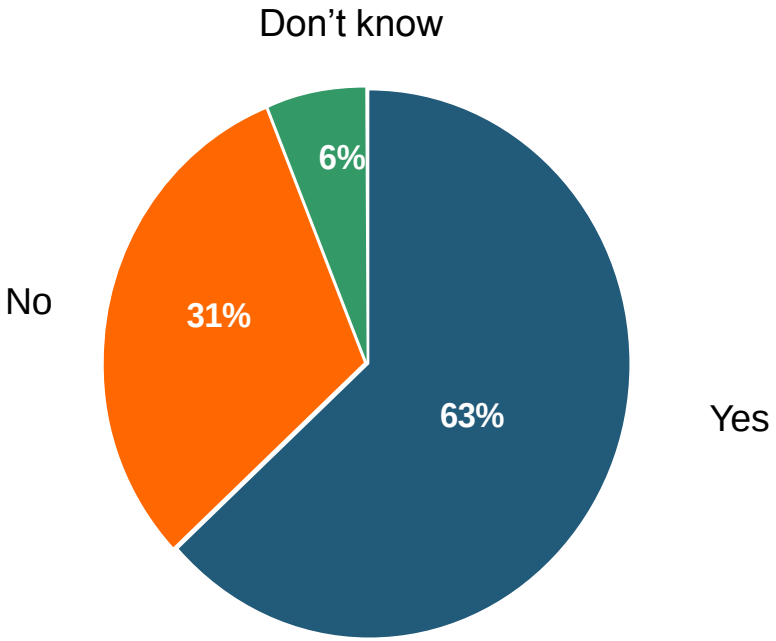
Flood Risk and Public Opinion

Most Americans Believe Flood Premiums Should Reflect Risk

Yet They Are Reluctant to Eliminate Subsidies

I.I.I. Poll: Flood Insurance

Q. Do you think it is fair that flood insurance premium increases are higher if people who live in high flood risk areas and rebuild their homes do not elevate them?

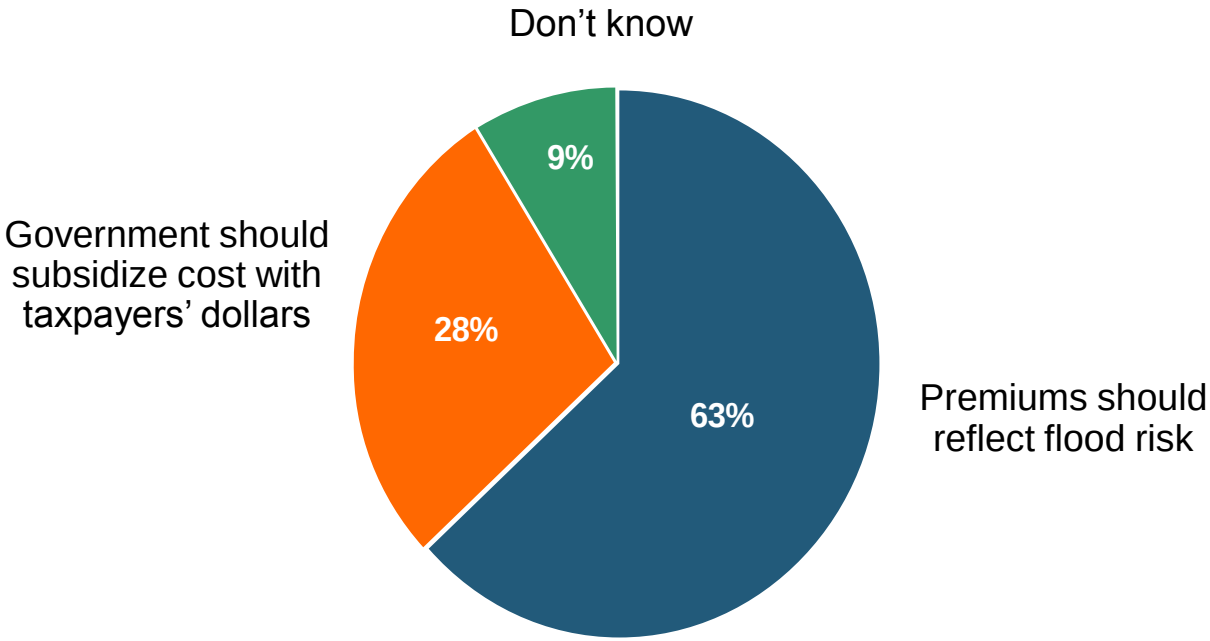


Almost two-thirds of Americans think that it is fair that flood insurance premiums be raised for people who live in high flood risk areas and rebuild their homes after a flood but do not elevate them.

Source: Insurance Information Institute Annual *Pulse* Survey, November 2013.

I.I.I. Poll: Flood Insurance

Q. Do you think flood insurance premiums should reflect the risk of flooding no matter what the cost or do you think the government should subsidize the cost of flood insurance with taxpayers' dollars?

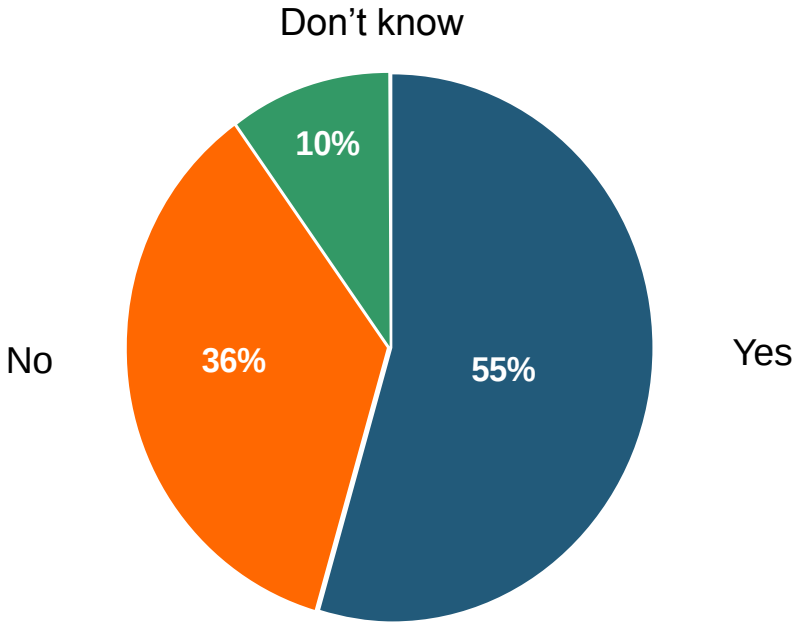


Almost two-thirds of Americans think flood insurance premiums should be raised to reflect the risk of flooding.

Source: Insurance Information Institute Annual *Pulse* Survey, November 2013.

I.I.I. Poll: Flood Insurance

Q. The federal government provides insurance coverage at taxpayer-subsidized rates for damage from floods through the National Flood Insurance Plan. A new law eliminates the subsidy and raises rates. Do you think the rate increase should be repealed?

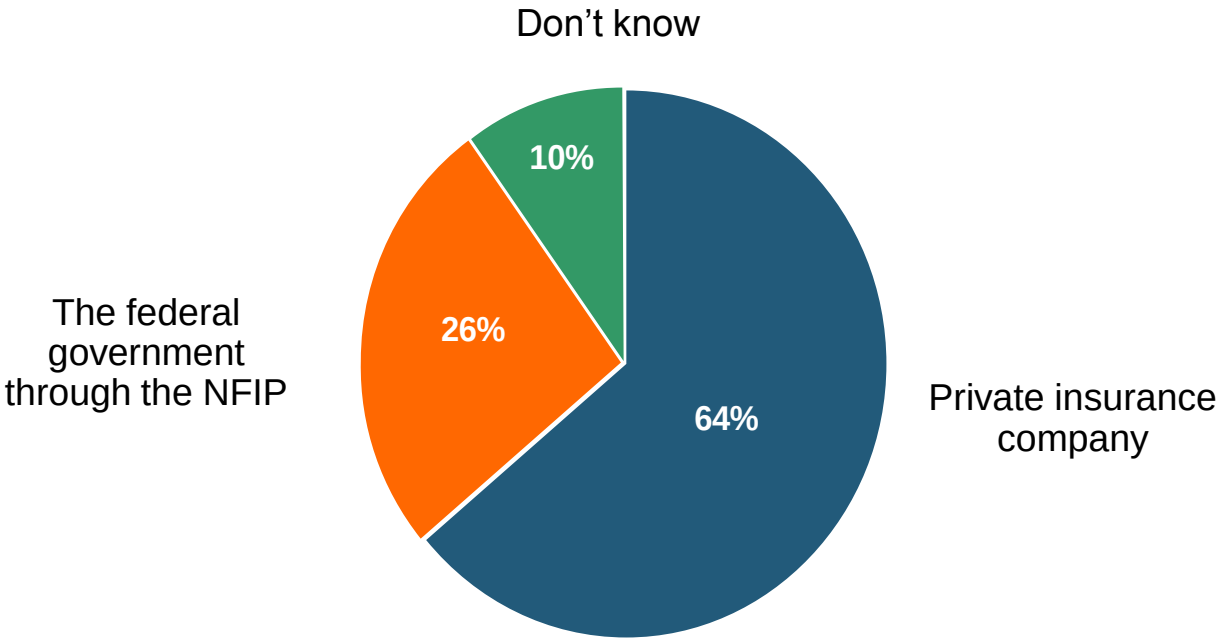


More than half of Americans polled for the November 2013 Pulse thought that hikes in National Flood Insurance premiums should be repealed.

Source: Insurance Information Institute Annual *Pulse* Survey, November 2013.

I.I.I. Poll: Flood Insurance

Q. If the costs were similar, would you prefer to buy flood insurance from a private insurance company or from the federal government through the National Flood Insurance Program?



Six out of ten Americans would prefer to buy flood insurance from a private insurance company as opposed to the federal government, if costs were similar.

Source: Insurance Information Institute Annual *Pulse* Survey, November 2013.

Insurance Information Institute Online:

www.iii.org

Thank you for your time and your attention!

Twitter: twitter.com/bob_hartwig

2013 – A Special Year in Several Respects

Record Hailstorm in Europe – Weak Tornado Season in the US
Less Hurricanes – More Typhoons

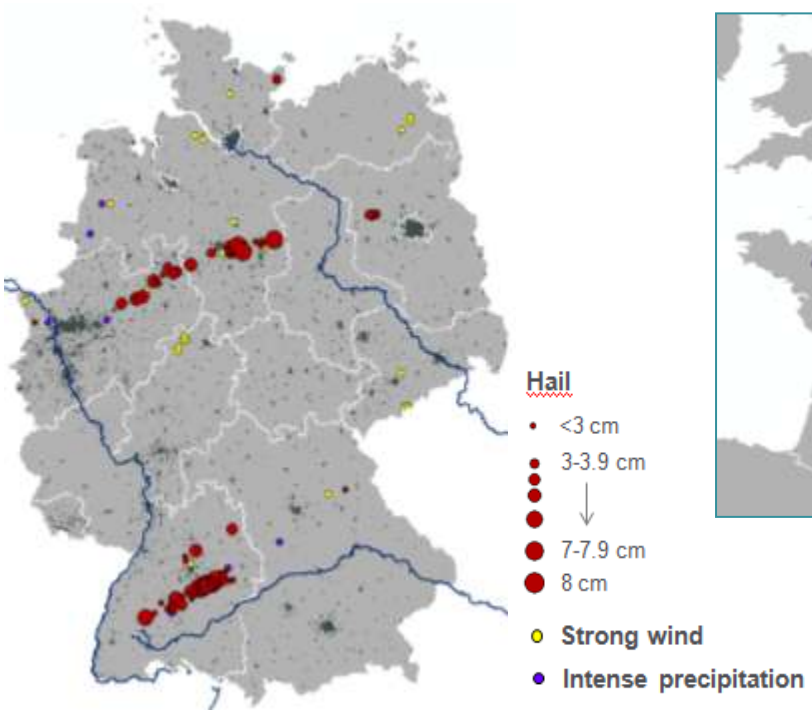
Peter Hoeppe
Munich Re

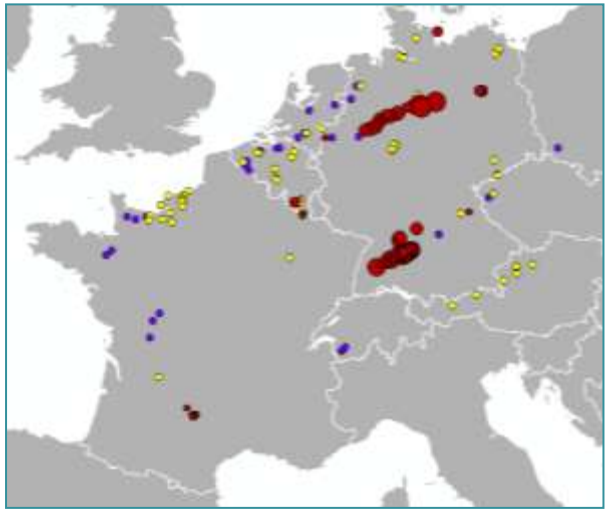
Hailstorm on 27 and 28 July 2013 in Germany

Most expensive loss event caused by hail worldwide!

Most expensive insured nat cat loss in 2013 worldwide!

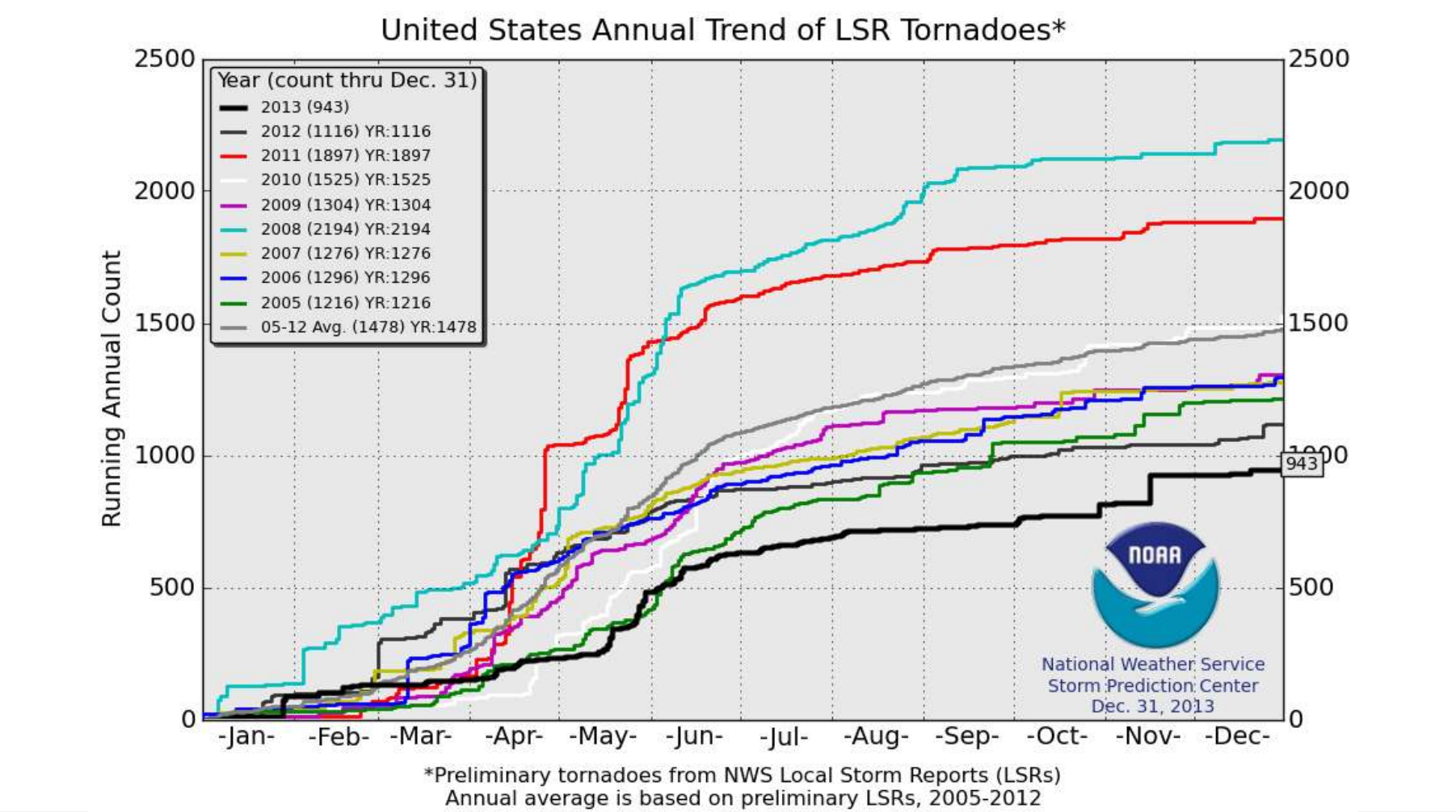
Hailstones with diameters up to 8 cm (tennis ball ≈ 7 cm)





Region	Overall losses	Insured losses	Fatalities
Southwestern and Northern Germany	US$ 4.8bn	US$ 3.7bn	0

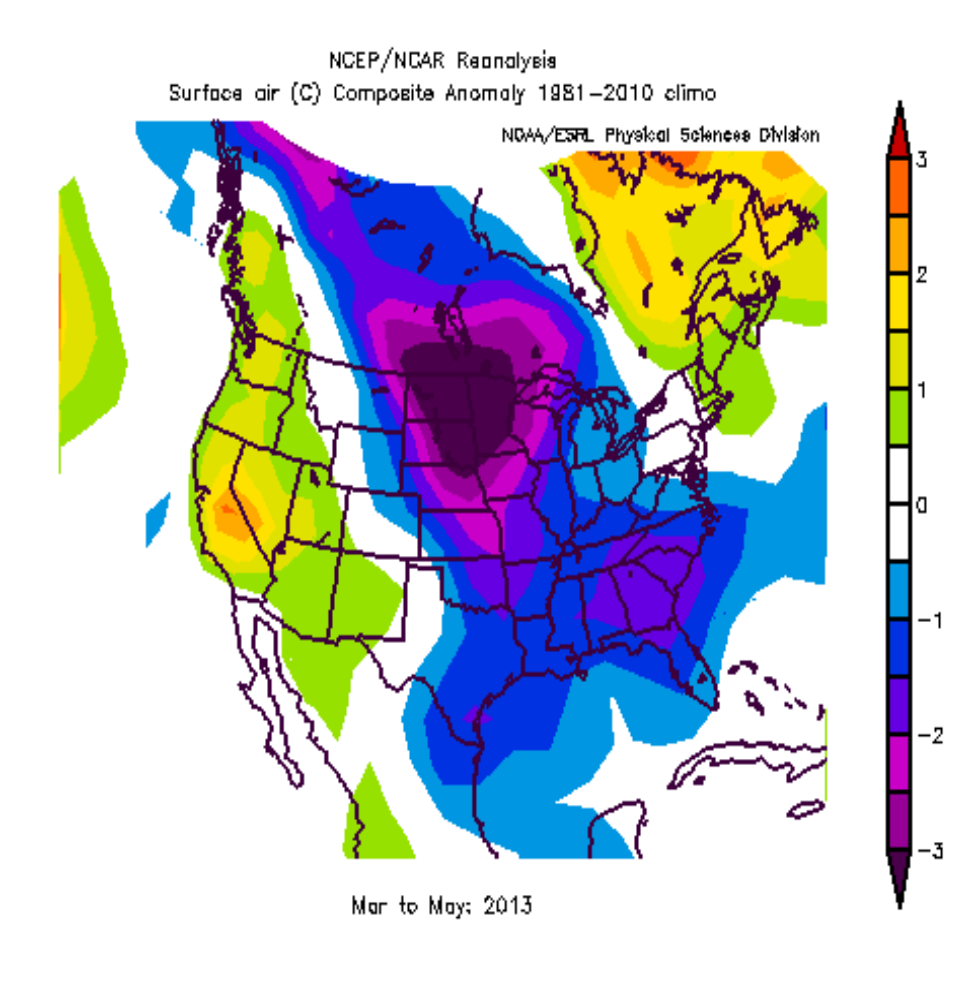
Weak 2013 US Tornado Season



Unusual weather pattern over the US in spring 2013 led to low convective activity

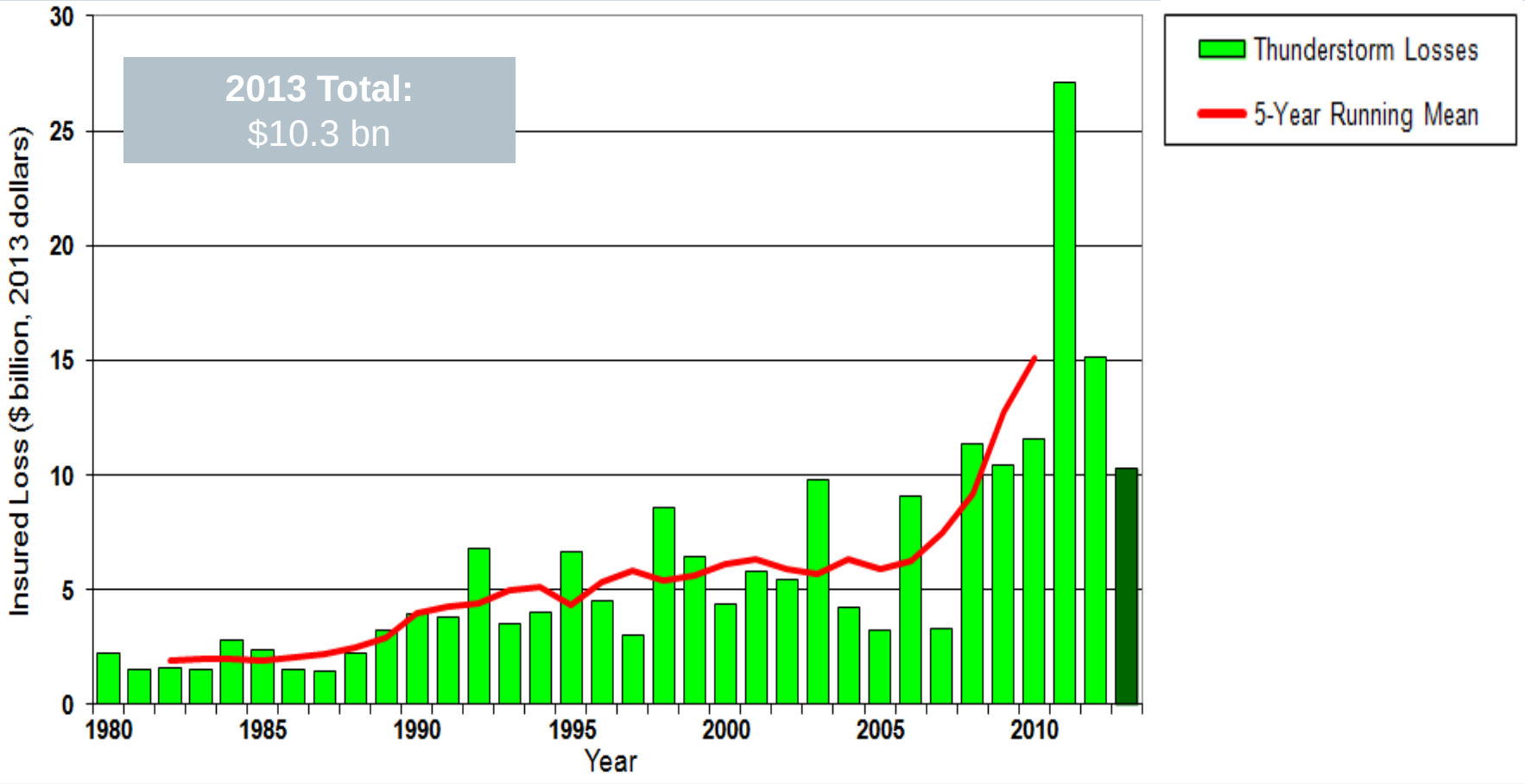
Reasons for lack of tornado activity during spring:

- Strong high pressure anchored over the northeast Pacific Ocean
- Polar jet stream forced much further north than normal into Alaska before diving southward across the eastern United States
- This pattern allowed cool Arctic air masses to dive south over the central United States, keeping the atmosphere stable.



2013 sixth year in a row with insured losses caused by convective storms above US$ 10 bn

Average thunderstorm losses have increased sevenfold since 1980.



Source: Property Claims Service
Munich Re NatCat*SERVICE*

New scientific publication by Munich Re researchers on trends of convective loss events in the US

Rising Variability in Thunderstorm-Related U.S. Losses as a Reflection of Changes in Large-Scale Thunderstorm Forcing*

J. SANDER

German Aerospace Centre, Institute of Atmospheric Physics, Oberpfaffenhofen-Wessling, and Munich Reinsurance Company, Munich, Germany

J. F. EICHNER, E. FAUST, AND M. STEUER

Munich Reinsurance Company, Munich, Germany

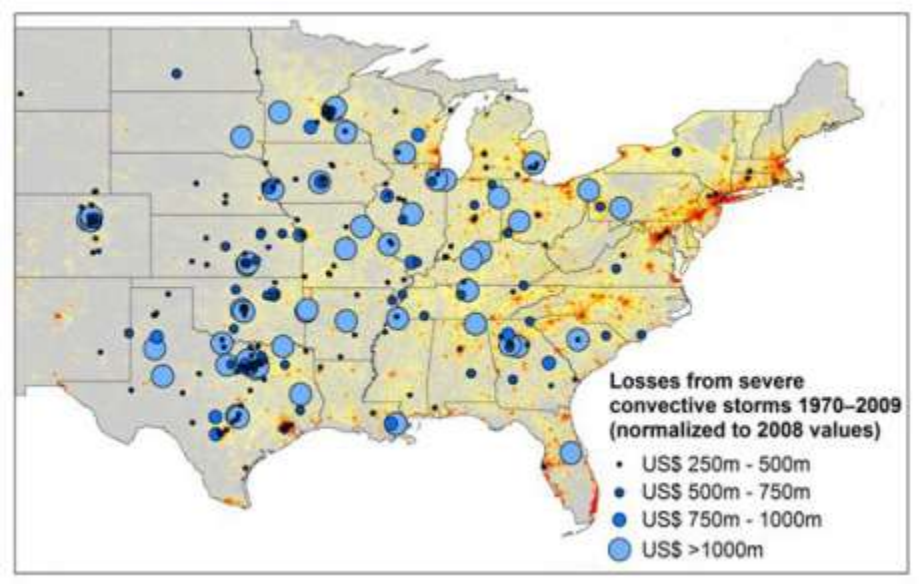
(Manuscript received 17 April 2012, in final form 18 December 2012)

Published in Journal "Weather, Climate and Society" of the American Meteorological Society

Major Results of New Munich Re Convective Storm Study

- The study examines convective (hail, tornado, thundersquall and heavy rainfall) events in the US with losses exceeding US$ 250m in the period 1970–2009 (80% of all losses)
- Past losses are extrapolated to current socio-economic conditions using a normalization technique
- After normalization there are still increases of losses which cannot be explained by changes in exposed values
- They are, however, correlated with the increase in the meteorological potential for severe thunderstorms and its variability

For the first time it could be shown that climatic changes have influenced US thunderstorm losses!



Water content of the atmosphere has already increased

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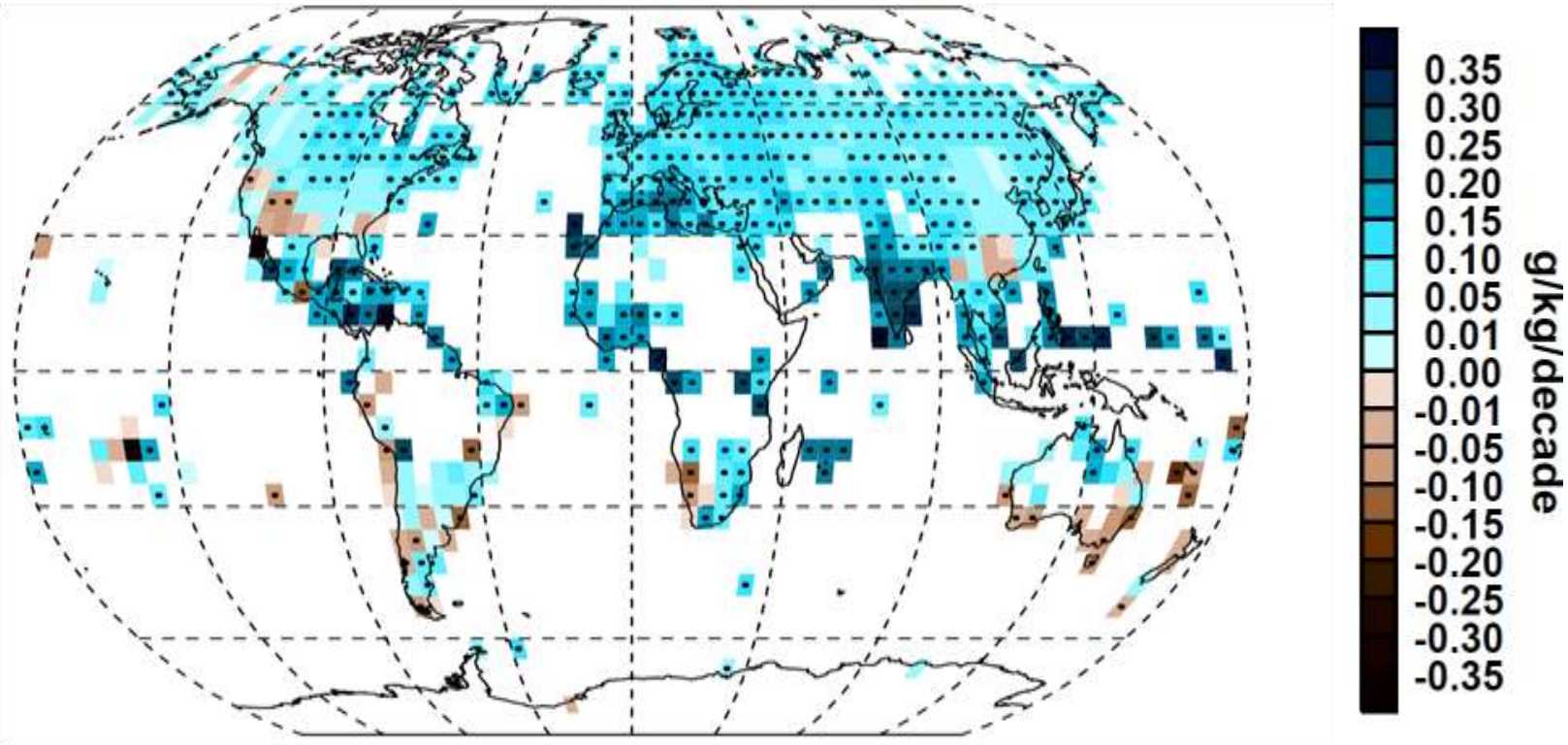
Decadal changes of Specific Humidity of the lower atmosphere between 1973 and 2012



Black dots:
regions with significant trend

Source: Willett et. al. (2013), Clim. Past, 9, 657–677

New study suggests future increases in convective storm risk

Munich RE

Robust increases in severe thunderstorm environments in response to greenhouse forcing

Noah S. Diffenbaugh[a,1], Martin Scherer[a], and Robert J. Trapp[b]

[a]Department of Environmental Earth System Science and Woods Institute for the Environment, Stanford University, Stanford, CA 94305; and [b]Department of Earth, Atmospheric, and Planetary Sciences, Purdue University, West Lafayette, IN 47907

We find that the Coupled Model Intercomparison Project, Phase 5 global climate model ensemble indicates robust increases in the occurrence of severe thunderstorm environments over the eastern United States in response to further global warming.

decreases in shear are in fact concentrated in days with low CAPE and therefore do not decrease the total occurrence of severe environments. Further, we find that the shift toward high CAPE is most concentrated in days with low convective inhibition, increasing the occurrence of high-CAPE/low-convective inhibition days. That the projected increases in severe environments are robust across a suite of climate models, emerge in response to relatively moderate global warming, and result from robust physical changes suggests that continued increases in greenhouse forcing are likely to increase severe thunderstorm occurrence, thereby increasing the risk of thunderstorm-related damage.

derstorm environments in the Coupled Model Intercomparison Project, Phase 5 (CMIP5) global climate model ensemble, which offers a unique multimodel dataset of subdaily 3D atmospheric variables (17). We focus on representative concentration pathway (RCP)8.5, which covers the full range of 21st century radiative forcing and global warming spanned by the illustrative RCPs (18), thereby allowing us to probe the response to both low and high levels of forcing. We define a severe thunderstorm day using the product of vertical wind shear (over a 6-km layer; S06) and CAPE, as suggested by Brooks et al. (15) and modified by Trapp et al. (6, 7) (*Materials and Methods*). Our criteria apply to a generic severe thunderstorm environment that might result in hail, dam-

PNAS Early Edition, September 2013

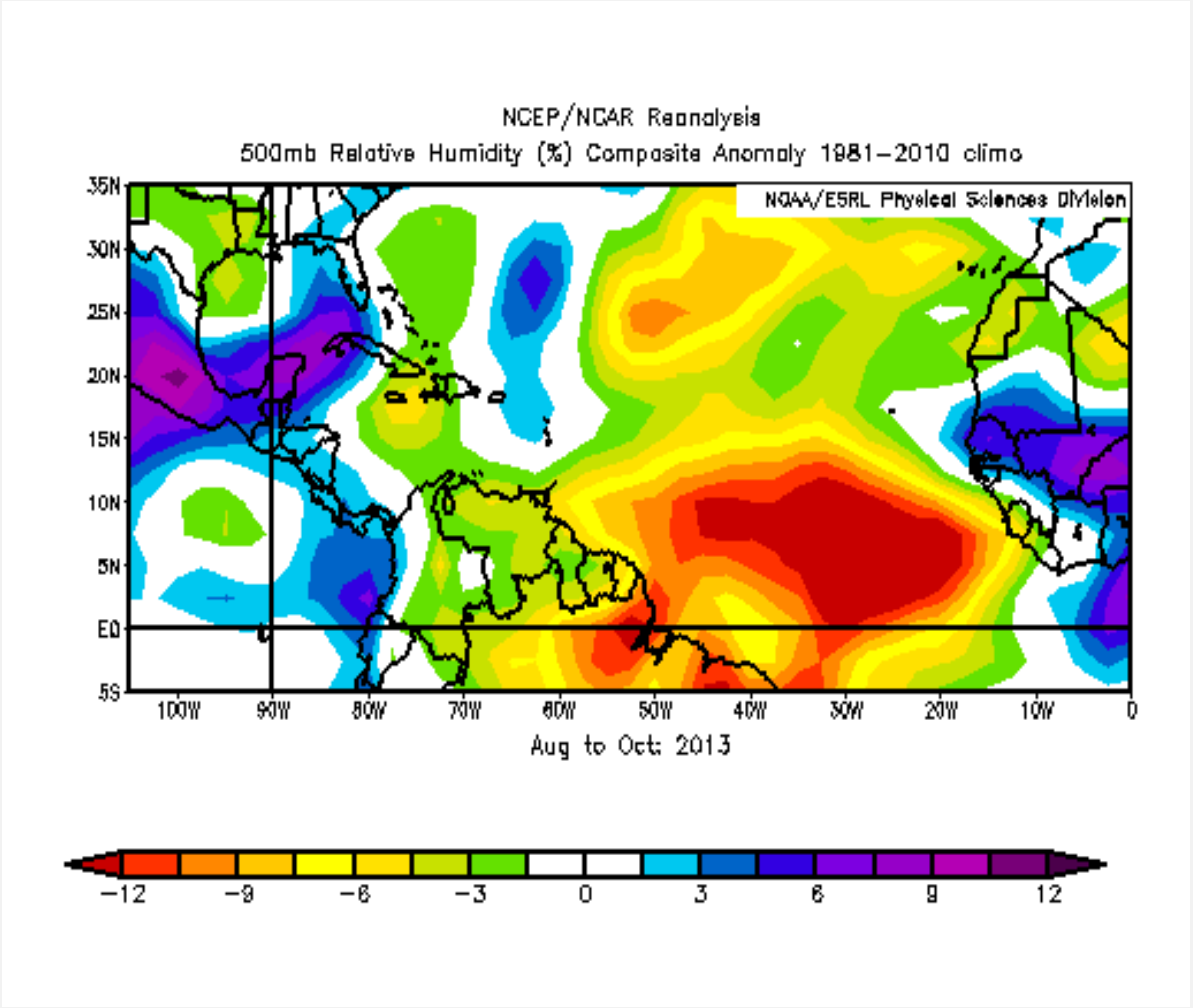
Number of tropical storms in the Northern Atlantic

	Named storms	Hurricanes	Cat 3-5 Hurricanes
2013	**13**	**2**	**0**
2012	**19**	**10**	**2**
2011	**18**	**6**	**3**
2010	**19**	**12**	**5**
2005	**28**	**15**	**7**
Climatology 1950-2012	11.0	6.3	2.7
Warm phase 1995-2012	15.2	8.0	3.7

2013 the first year since 1982 (31 years) with only 2 hurricanes!
2013 the first year without a Cat 2 hurricane since 1968 (45 years)!

Unusual Dry Conditions over Tropical North Atlantic at Peak Hurricane Season

- Abnormally strong high pressure off the coast of Spain drove dry continental European and Saharan air south into the Tropical Atlantic
- Dry environment causes evaporation and cooling within thunderstorms
- Cool air is sinking and thus chokes off the hurricane's source of energy.

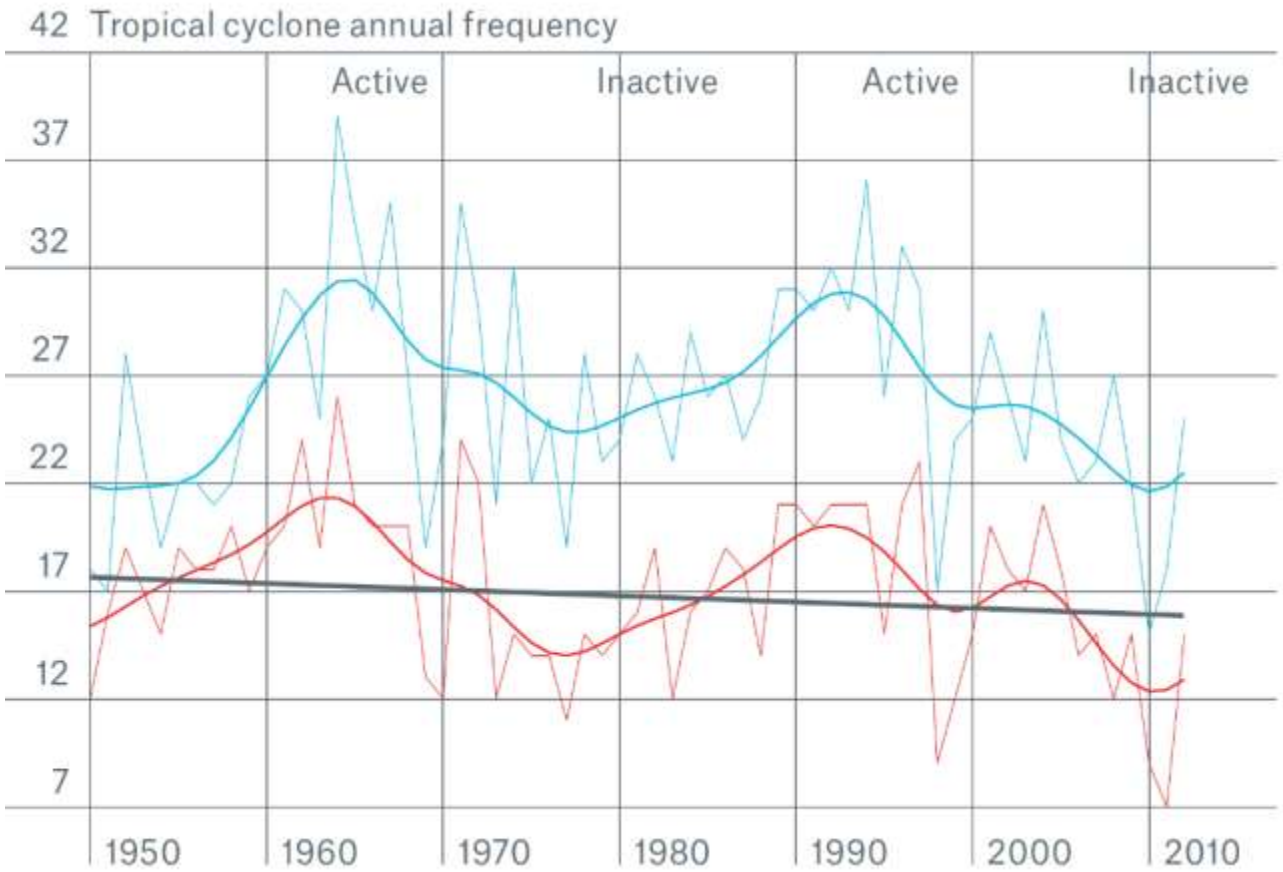


Number of tropical storms in the Northwest Pacific

	Named storms	Typhoons	Super Typhoons*
2013	**29**	**16**	**5**
2012	**25**	**15**	**4**
Climatology 2003 – 2012	22.9	14.3	3.9
Climatology 1960 – 2012	26.8	17.0	4.1

Source: JTWC
*Maximum one-minute wind speed ≥ 235 km/h

Natural decadal variability of typhoon activity



Number of typhoons + tropical storms in the WNP Basin

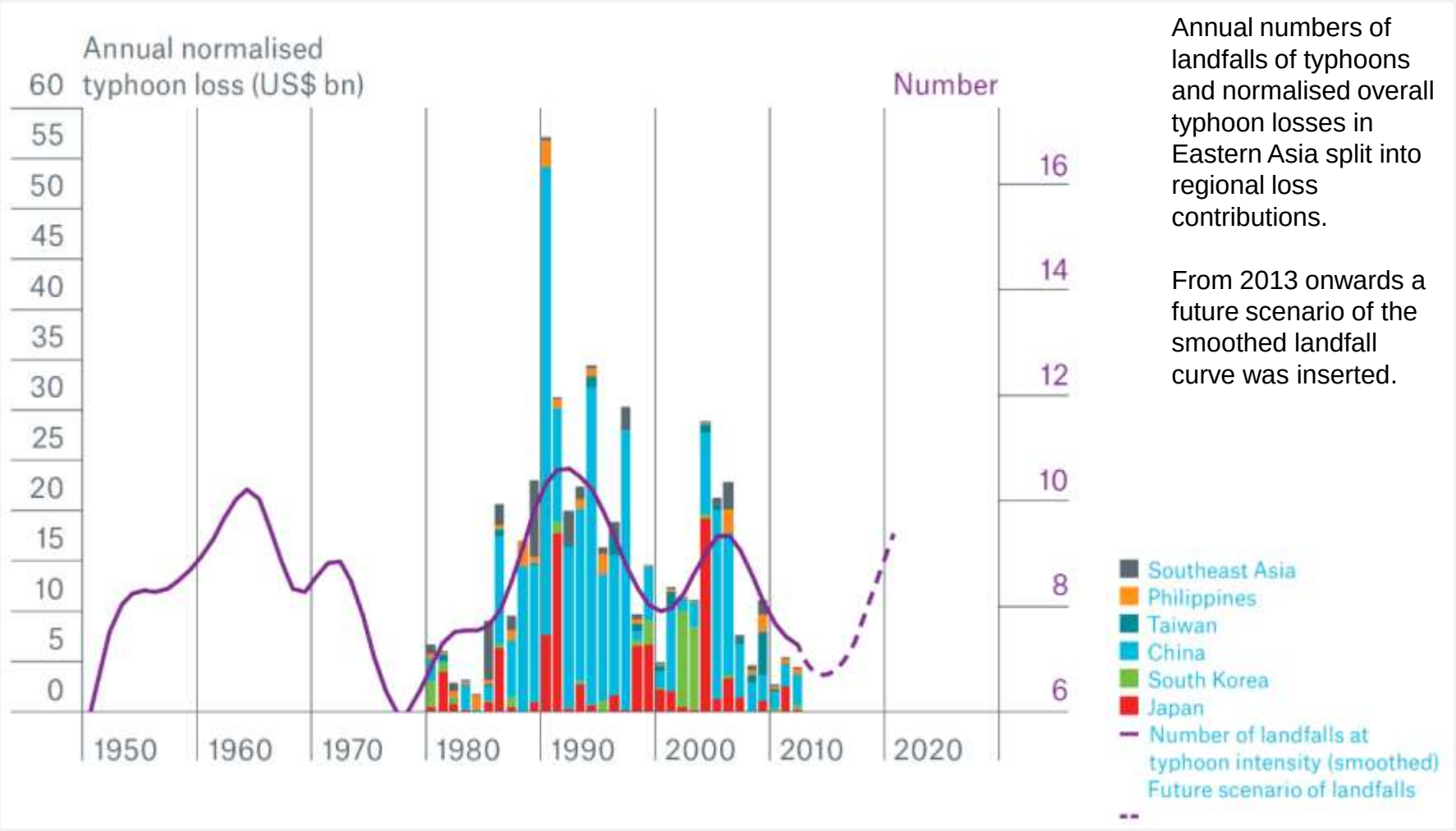
Number of typhoons (red) in the WNP Basin

The linear trend in typhoon frequency.

Source: Munichre, 2013; Data: JTWC

Severe Weather in Eastern Asia

Natural climate decadal variability: Typhoon activity



Annual numbers of landfalls of typhoons and normalised overall typhoon losses in Eastern Asia split into regional loss contributions.

From 2013 onwards a future scenario of the smoothed landfall curve was inserted.

Source: Munich Re NatCatSERVICE, Weinkle et al. (2012): Historical Global Tropical Cyclone Landfalls

First analysis of risk impact of Pacific Decadal Oscillation by Munich Re and DLR

First analysis published in scientific literature:
In active phase mean annual losses have been 46% higher, in inactive phase 39% lower relative to the long-term annual loss average from 1980 to 2012 (US$ 11.2bn).

Assuming the continuation of the approx. 30-year oscillation period found in past observation typhoon data, one might expect a new relative maximum of the oscillation in the early 2020s.

This scenario would translate into a transition to a new positive half-swing of typhoon activity and average loss level within the coming five years.

Natural Hazards and Earth System Sciences

C. Welker, E. Faust, Tropical cyclone-related socio-economic losses in the western North Pacific region. Nat. Hazards Earth Syt. Sci., 13, 115-124, 2013

What do the 2013 tornado and tropical storm anomalies mean for the next years?

Tropical storms

- 2013 hurricane activity dominated by unusual short term effects
  - such short term effects cannot be predicted on a seasonal basis
  - no reason to believe to see a repetition next year
  - 2014 starts again with the odds of the current Atlantic warm phase.
- Typhoon activity will rise in the next years due to a natural oscillation
  2013 a first indicator of this?

Convective storms

- US Tornado season 2013 dominated by short term air pressures patterns
- No reason to expect another season like 2013 in 2014
- On the long term climate change most probably will increase activity of convective storms, events like in Germany 2013 may become more frequent.

Question and Answer

Press Question and Answer Process

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

An operator will facilitate your participation.

Press Inquiries

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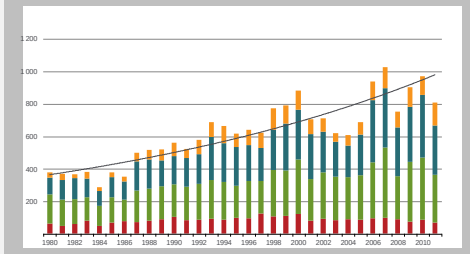
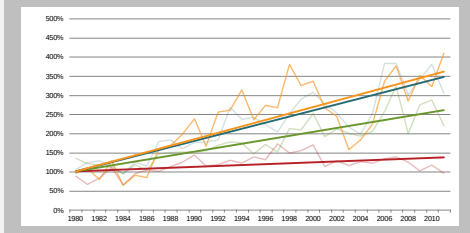
Phone: +1 (609) 243-4339
E-mail: trosenthal@munichreamerica.com

Bill Fellows
Phone: +1 (609) 243-4264
E-mail: wfellows@munichreamerica.com

NatCatSERVICE Downloadcenter
for statistics and analyses on natural disasters





The downloadcenter provides **free** access:

- Annual statistics
- Long-term statistics
- Information on significant natural disasters
- Focus analyses
- NatCatSERVICE methodology, info brochure
- Publication Topics Geo

www.munichre.com/natcatservice/downloadcenter/en

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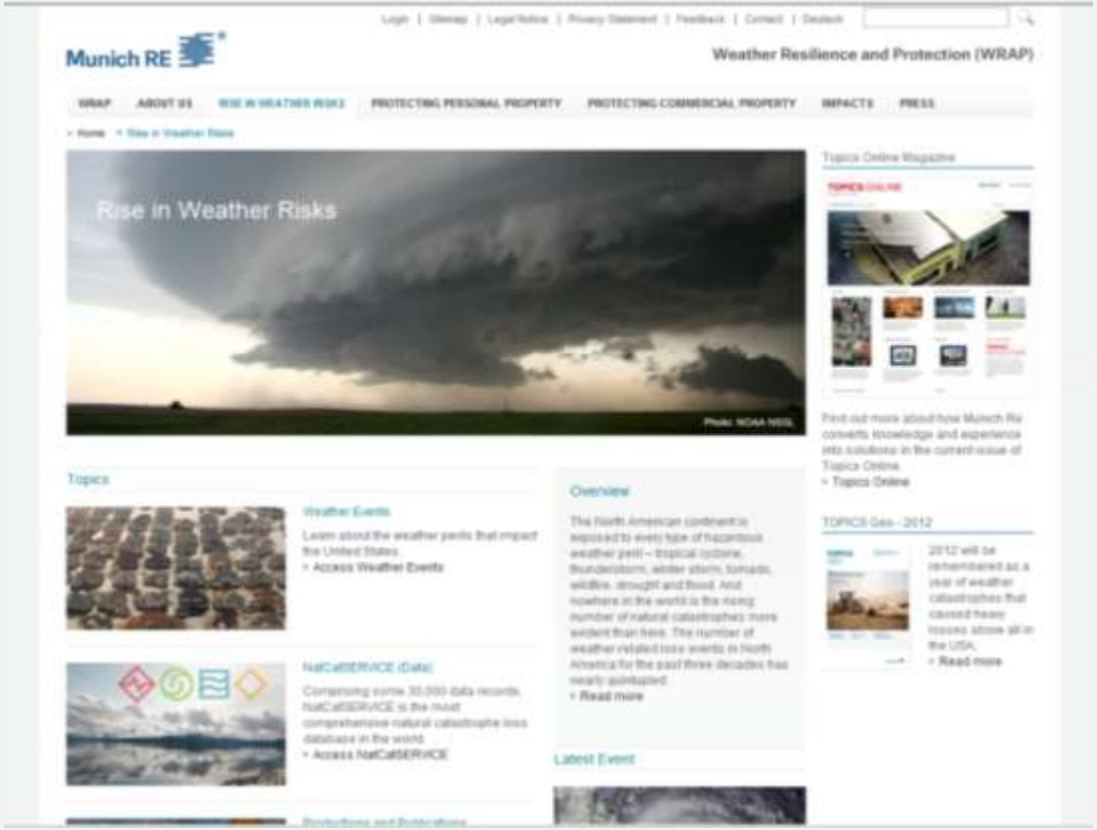
YouTube	MunichReUs MunichReVideo	iiivideo
Facebook	Munichreus1 Munichre	InsuranceInformationInstitute
Flickr		iiiorg

Weather Resilience and Protection (WRAP)

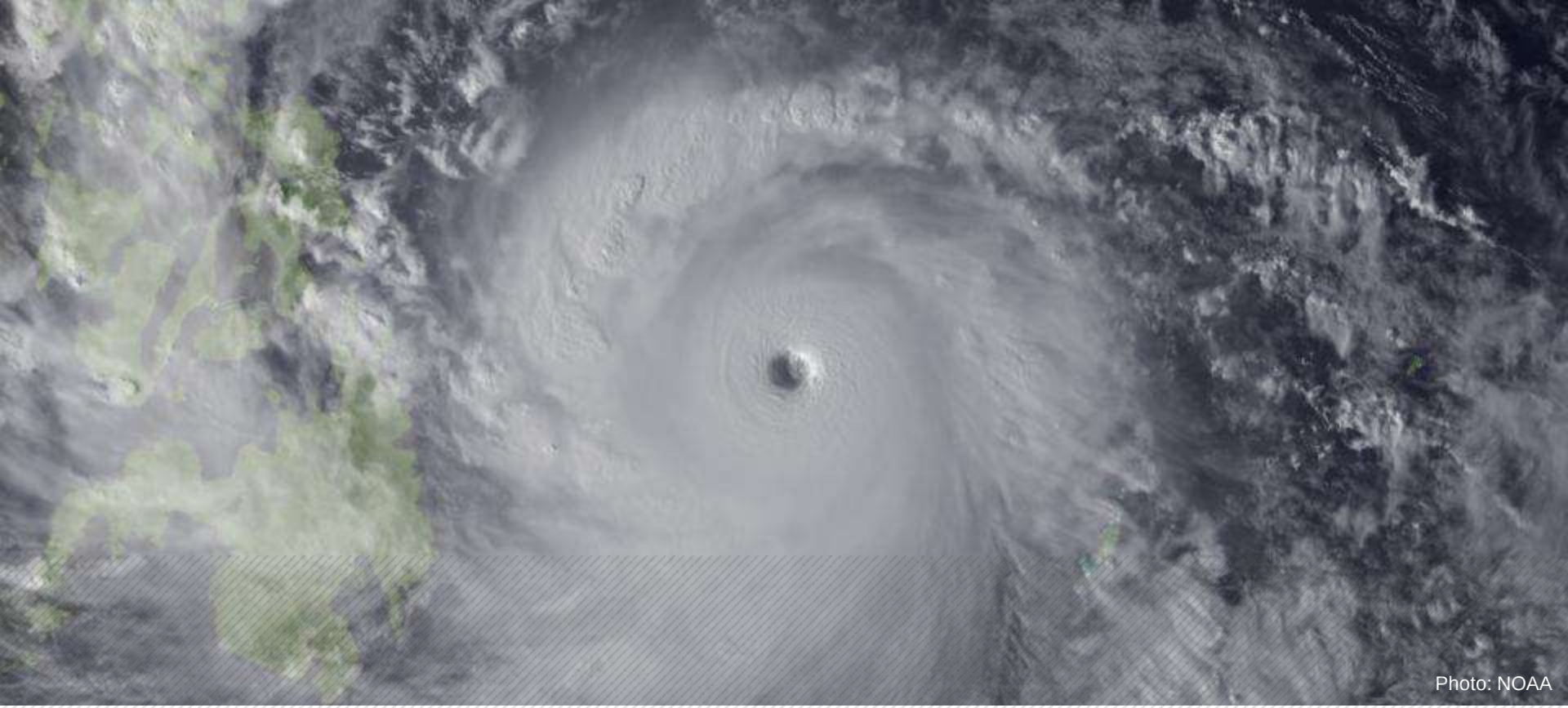
Website

Describe the impact of severe weather and how individuals, businesses, government, and insurers can work together to prepare for and mitigate weather risks.

Will include data, publications, preparation tips and other useful information for the press.



Available in First Quarter 2014

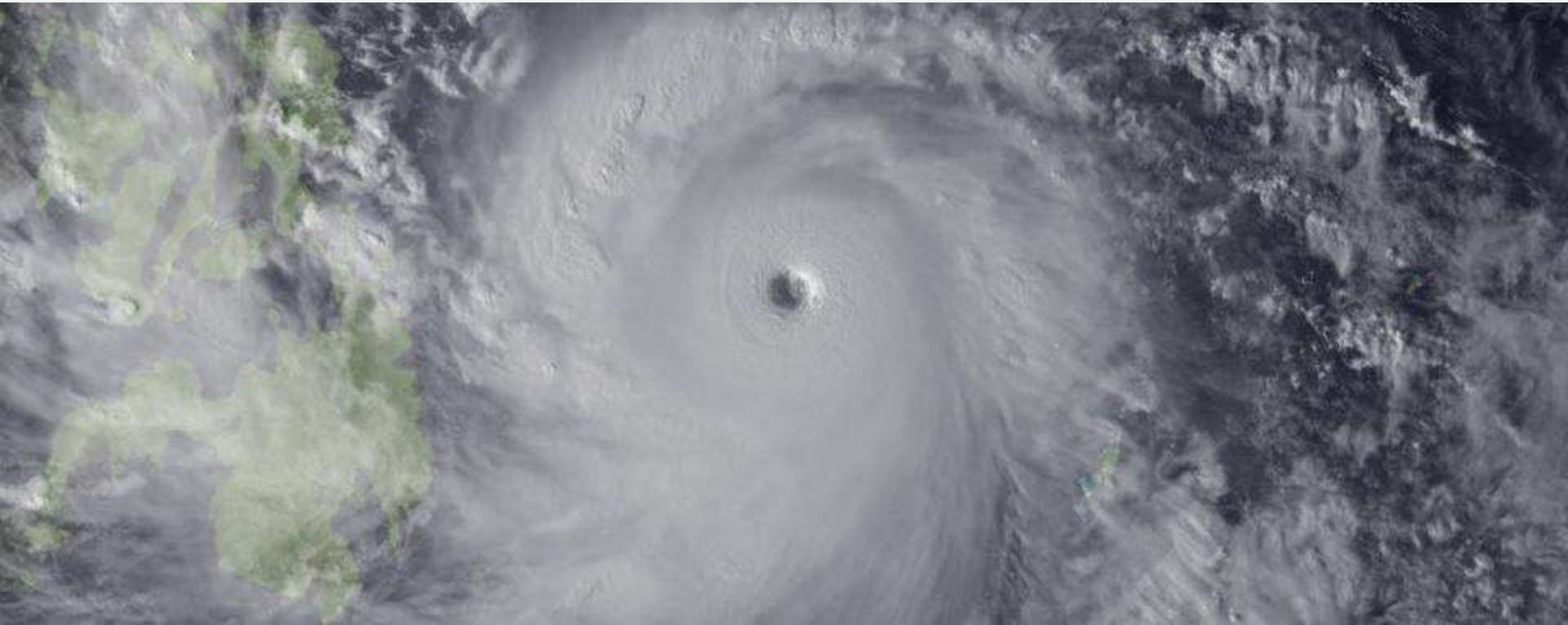


Thank you very much for attending

January 7, 2014

Munich RE

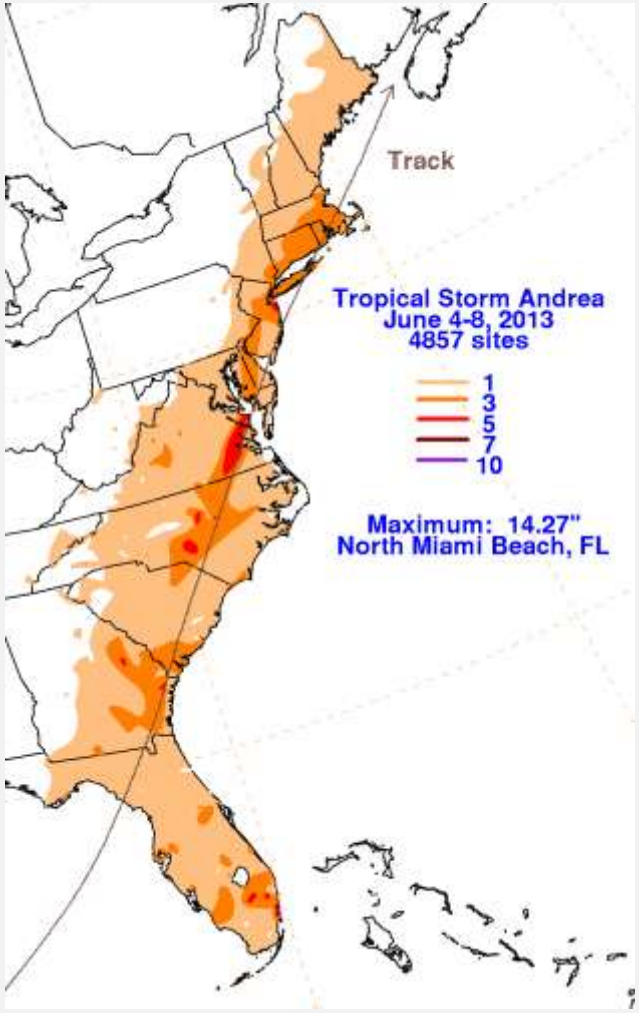
APPENDIX



US Tropical Cyclones in 2013

Tropical Storm Andrea

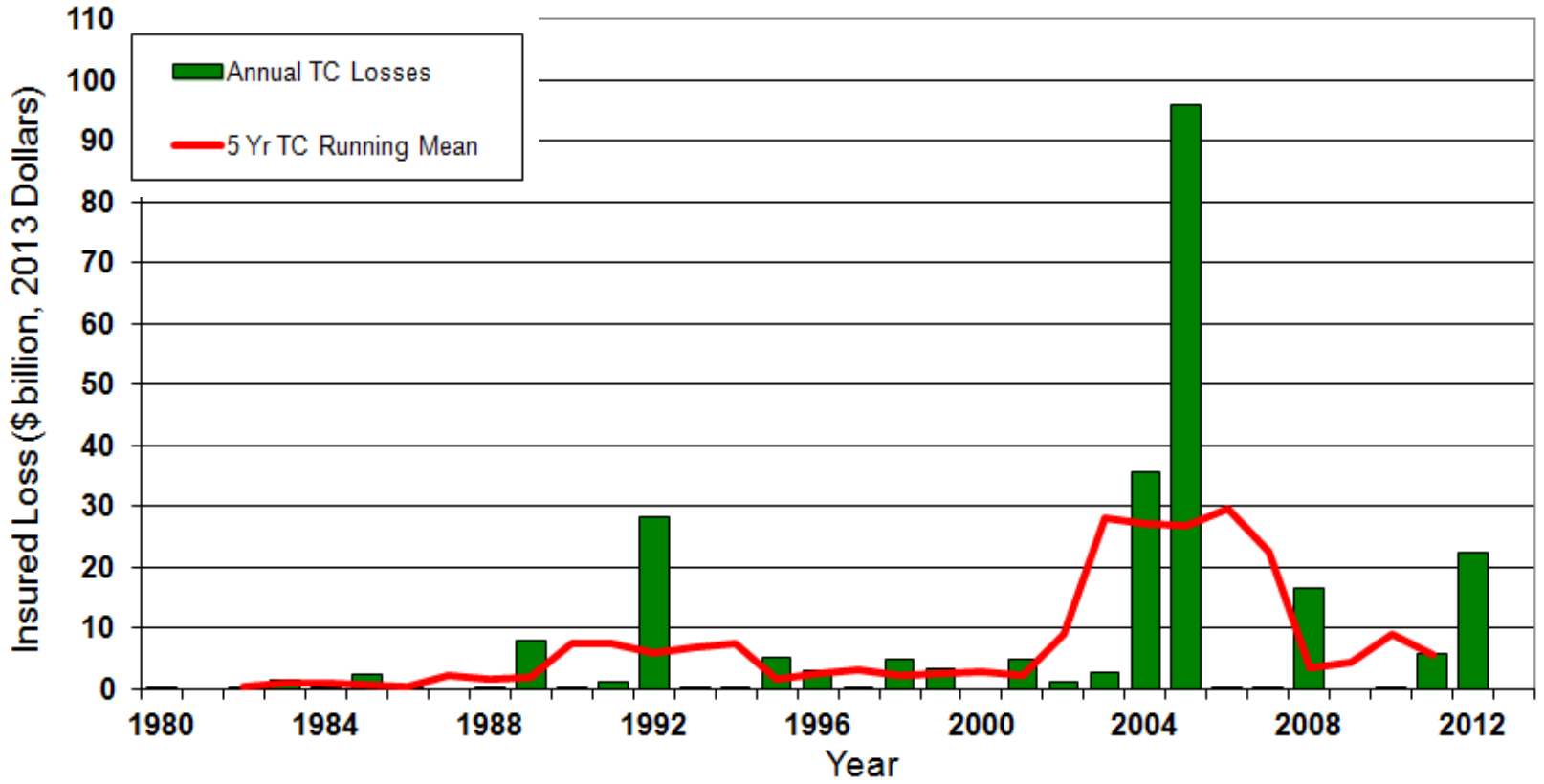
- Landfall on June 6 near Cedar Key, Florida as a tropical storm with sustained winds of 65 mph.
- Minor wind damage in Florida, storm and its remnants causes localized flooding along length of eastern seaboard.



Source: NOAA

Insured US Tropical Cyclone Losses, 1980 - 2013

The current 5-year average (2008 - 2013) insured tropical cyclone loss is $5.6 billion per year.



Sources: Property Claims Service, Munich Re NatCat*SERVICE*, NFIP

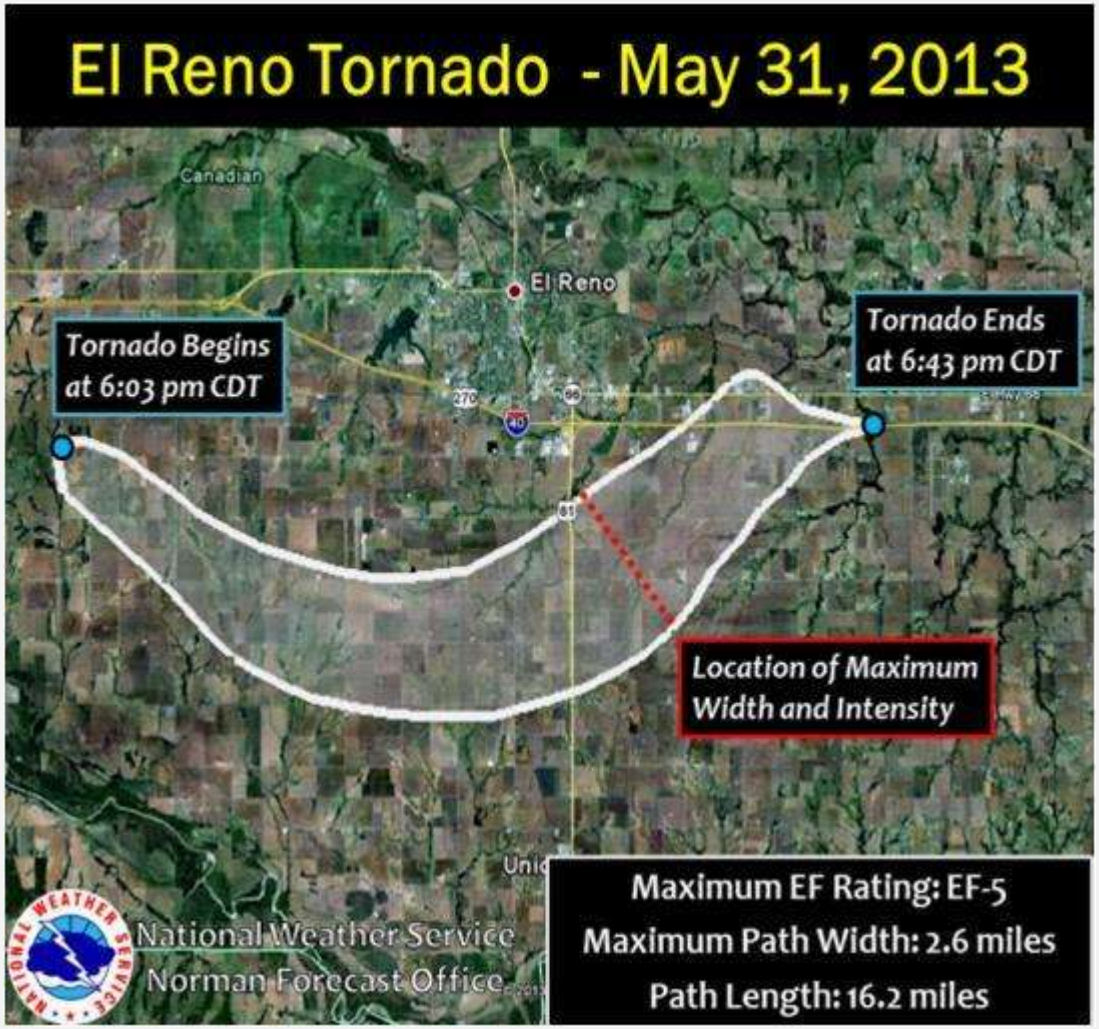
Notable Thunderstorm Events 2013

May 18-20: Large outbreak of over 60 tornadoes across the Midwest and southern Great Plains. Moore, Oklahoma, was hit by an EF5 tornado (5th tornado strike of EF2 or above in the town since 1998). Thousands of homes, 2 schools, and a hospital destroyed. Overall insured losses from the outbreak are estimated at US$ 1.8 billion.

Source: Property Claims Service
Munich Re NatCat*SERVICE*

Notable Thunderstorm Events 2013

May 28-31: Another large outbreak occurred over the southern Plains. The area near El Reno, Oklahoma, was hit by an EF3 tornado (downgraded post-survey from EF5) that possessed the largest diameter ever observed in a tornado, over 2.6 miles. Overall insured losses from the outbreak are estimated at US$ 1.4 billion.



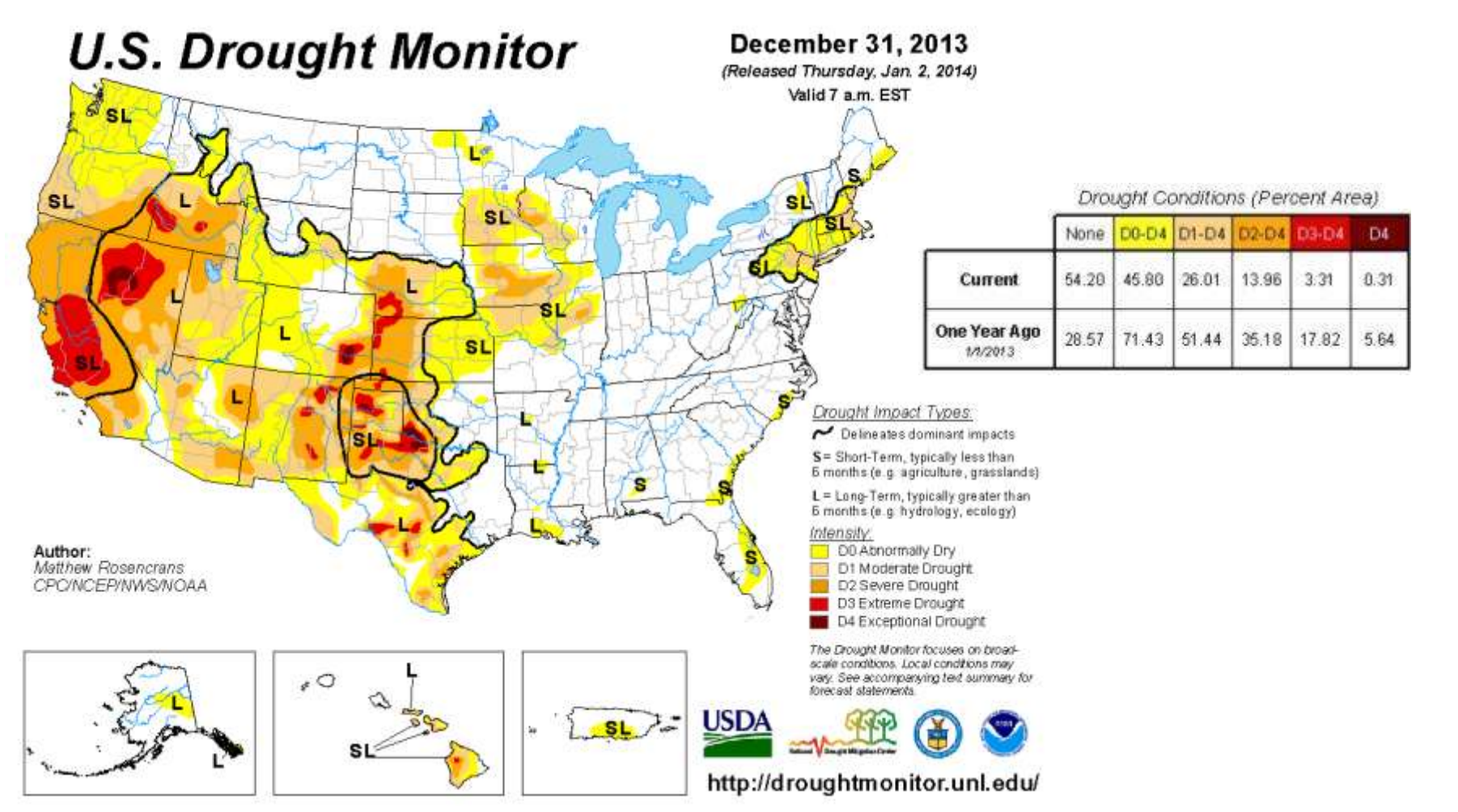
Source: NWS

Notable Thunderstorm Events 2013

November 16-17: The largest tornado outbreak ever observed in November (136, based on preliminary counts) caused extensive damage in Illinois, Indiana, and neighboring states. Fall tornado outbreaks are not uncommon, but usually occur further south. Estimated insured losses from the event are US$ 900 million.

Source: NWS

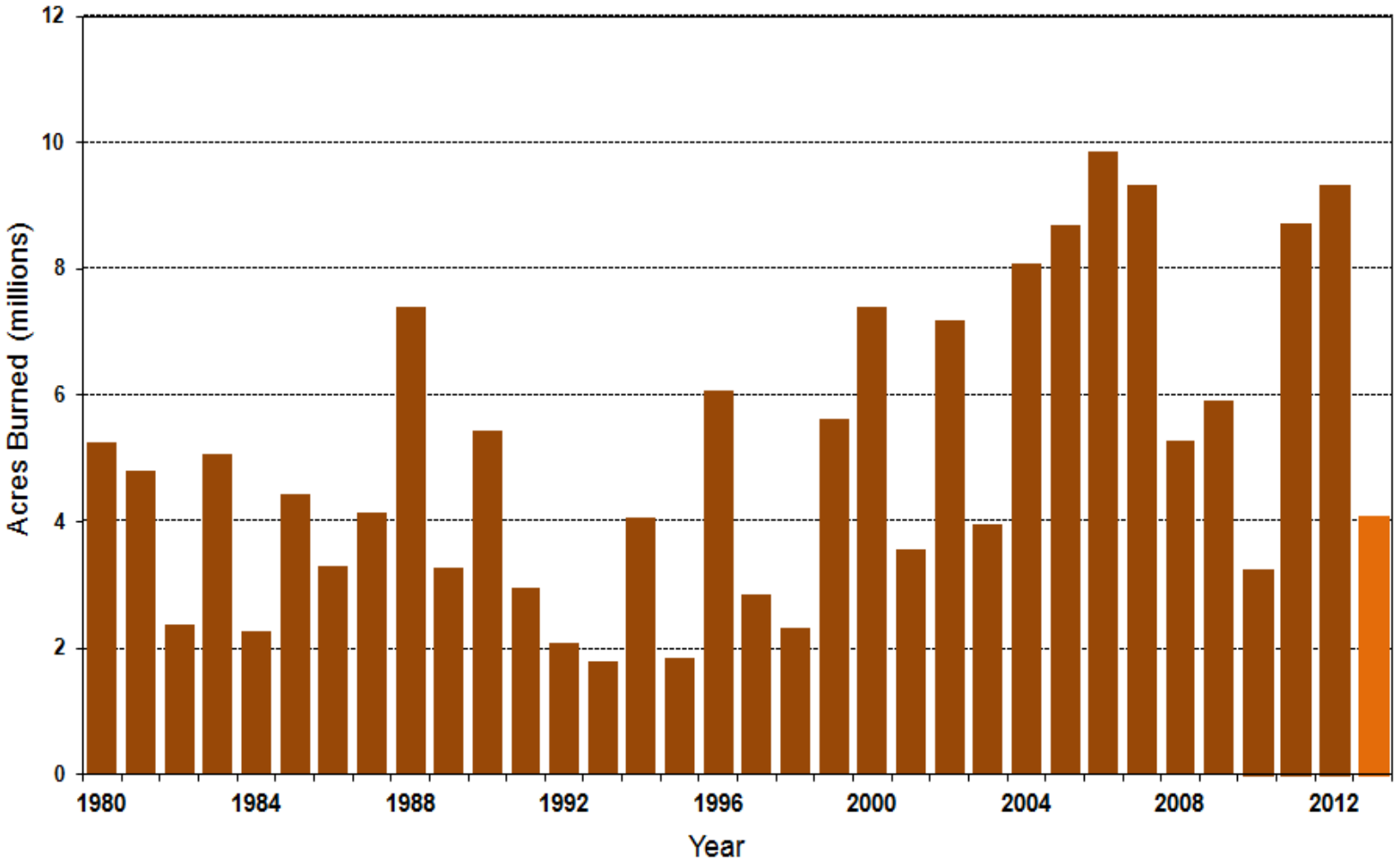
Current US Drought Conditions



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	54.20	45.80	26.01	13.96	3.31	0.31
One Year Ago 1/1/2013	28.57	71.43	51.44	35.18	17.82	5.64

Number of Acres Burned in Wildfires, 1980 – 2013



Source: National Interagency Fire Center

Notable Wildfires in 2013

- **Colorado:** “High Park” fire near Fort Collins destroyed 257 homes and “Waldo Canyon” fire near Colorado Springs destroyed over 300 homes, becoming the most damaging fire in state history. Insured losses from both fires are estimated at $450 million.
- **California:** “Rim” fire near Yosemite National Park lasted nine weeks over August to October, scorching 257,000 acres and destroying 111 buildings. Due to remote location, insurance impacts were minimal.


Source: USFS

Colorado Floods – September 2013

- Stalled frontal system and ample moisture combined to produce up to 17” of rain over parts of the Colorado Front Range over a 4 day period, almost the region’s expected annual rainfall total.
- Heaviest rainfall event ever observed in Colorado.
- 1,500 houses were destroyed, and another 19,000 damaged.
- Economic Losses are estimated at $1.5 billion; insured losses (excluding NFIP) of $160 million.

Typhoon Haiyan, Philippines
8 – 12 November 2013

Region	Philippines, Vietnam, China
Overall losses	US$ 10bn
Insured losses	US$ 700m
Fatalities	6,095

Deadliest event of 2013

Source: Geo Risks Research, NatCat*SERVICE* – As at January 2014

Hailstorms, Germany

27 – 28 July 2013

Region	Southwestern and Northern Germany
Overall losses	US$ 4.8bn
Insured losses	US$ 3.7bn
Fatalities	0

Costliest insured loss of 2013

Source: Geo Risks Research, NatCat*SERVICE* – As at January 2014

River Floods in Europe

30 May – 19 June 2013

Region	Central Europe
Overall losses	US$ 15.2bn
Insured losses	US$ 3bn
Fatalities	25

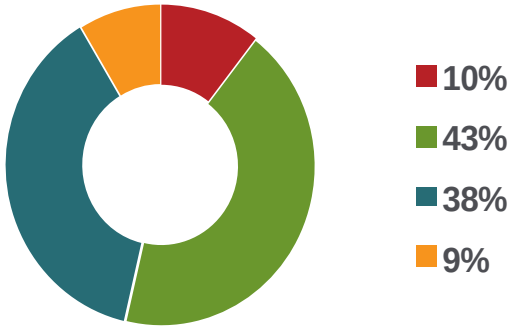
Costliest direct economic loss of 2013

Source: Geo Risks Research, NatCat*SERVICE* – As at January 2014

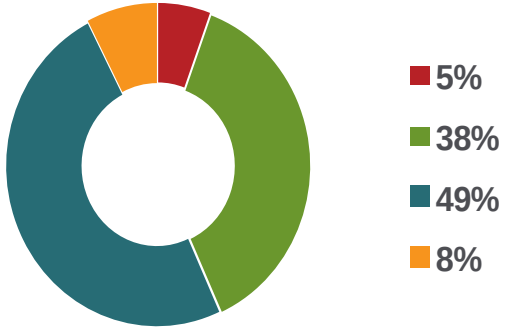
Loss Events Worldwide 2013

Percentage distribution

880 Loss events

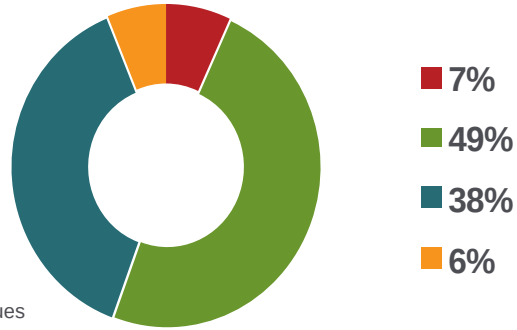


20,000 Fatalities*



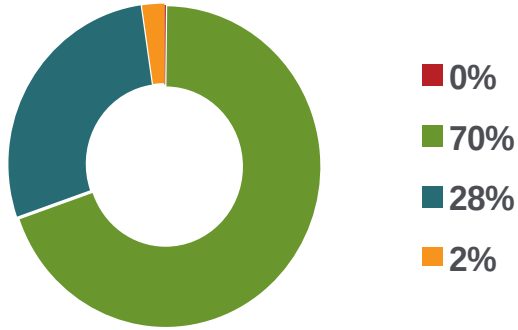
*Number of fatalities without famine.

Overall losses** US$ 125bn



**in 2013 values

Insured losses** US$ 31bn



**in 2013 values

Geophysical events
(Earthquake, tsunami, volcanic eruption)

Meteorological events
(Tropical storm, extratropical storm, convective storm, local storm)

Hydrological events
(Flood, mass movement)

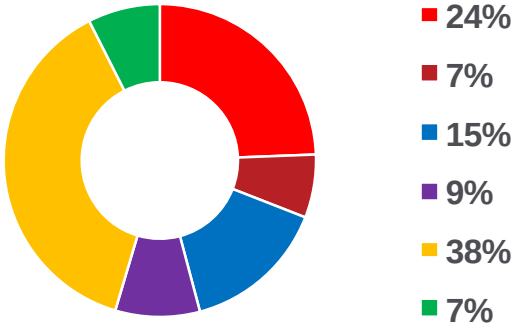
Climatological events
(Extreme temperature, drought, forest fire)

Source: Geo Risks Research, NatCat*SERVICE* – As at January 2014

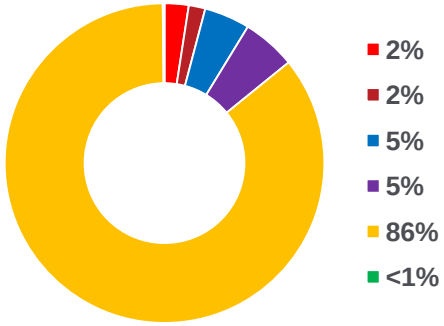
Loss Events Worldwide 2013

Percentage distribution – ordered by continent

880 Loss events

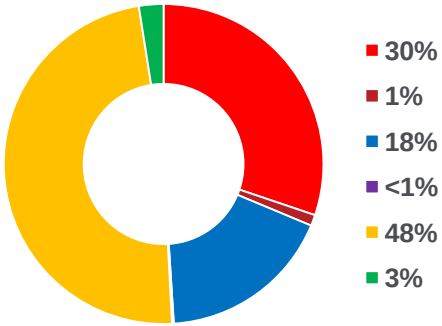


20,000 Fatalities*



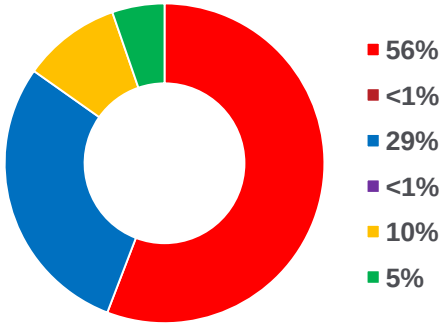
*Number of fatalities without famine.

Overall losses** US$ 125bn



**in 2013 values

Insured losses** US$ 31bn



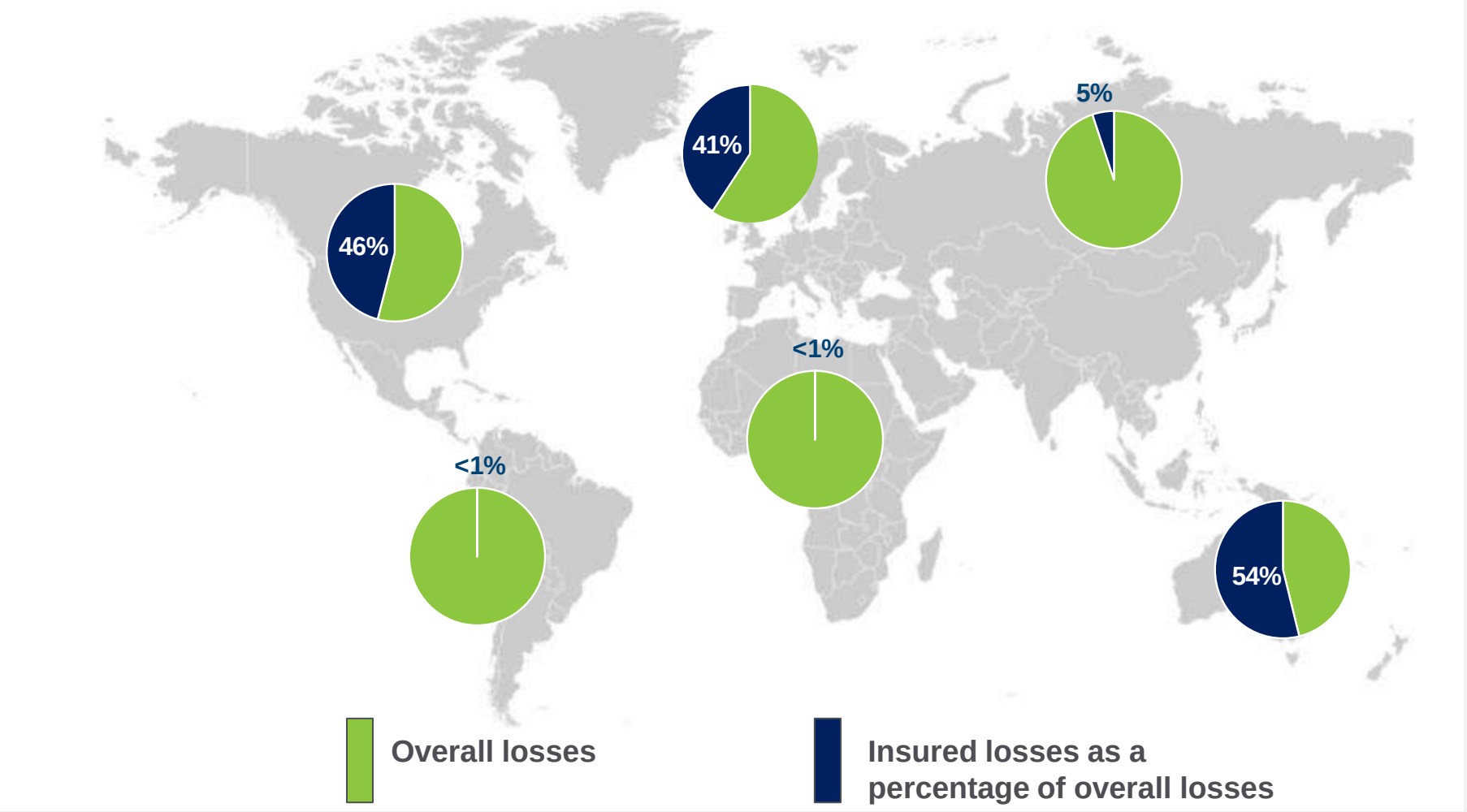
**in 2013 values

North America, incl. Central America and Caribbean | South America | Europe | Africa | Asia | Australia/Oceania

Source: Geo Risks Research, NatCat*SERVICE* – As at January 2014

Loss Events Worldwide 2013

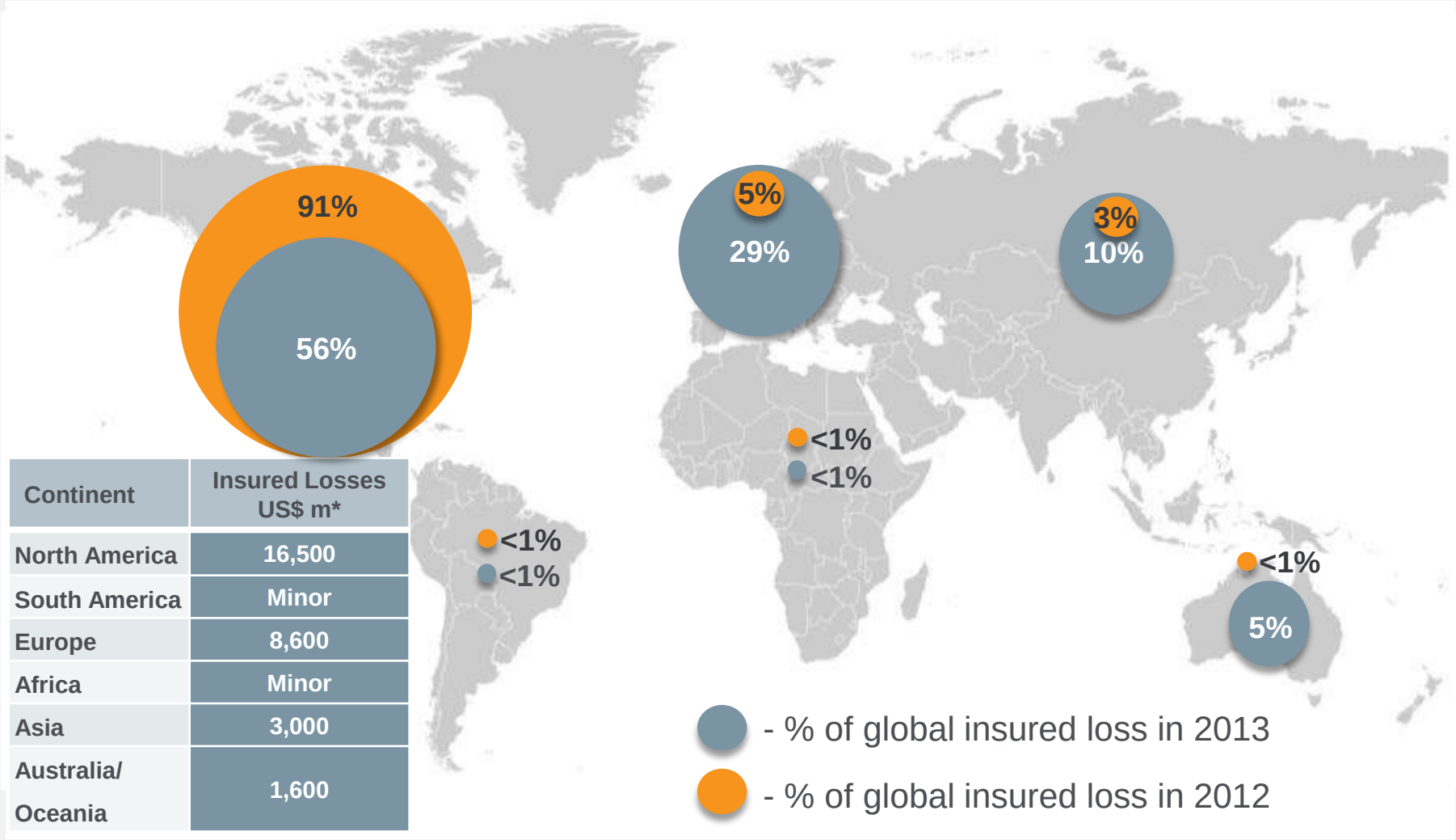
Overall and insured losses per continent



Source: Munich Re, NatCatSERVICE, 2014

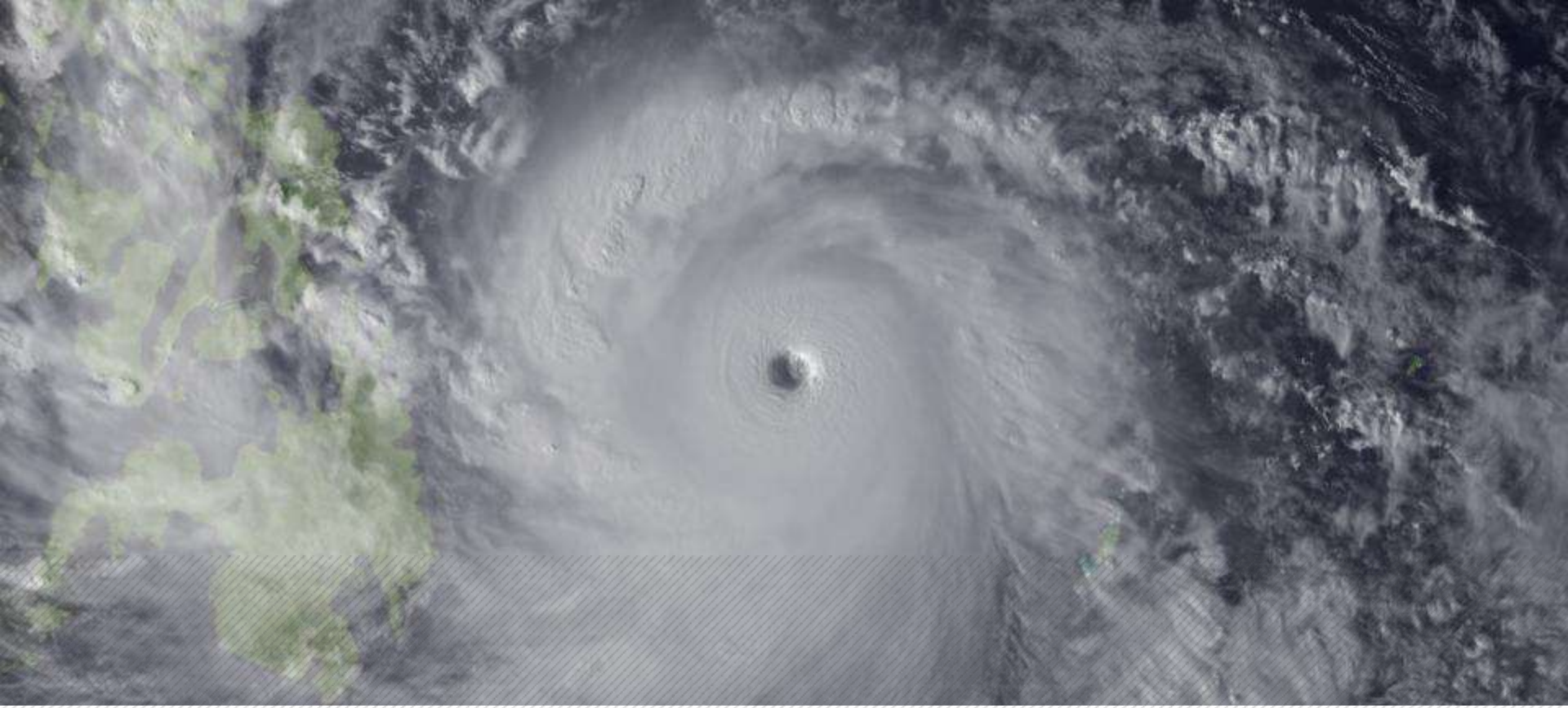
Loss Events Worldwide 2013

Insured losses 2013 vs. 2012 – percentage distribution per continent



Continent	Insured Losses US$ m*
North America	16,500
South America	Minor
Europe	8,600
Africa	Minor
Asia	3,000
Australia/ Oceania	1,600

Source: Munich Re, NatCatSERVICE, 2014



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