First-half 2008 Natural Catastrophe Update

Tuesday, July 8, 2008

Munich Re
Insurance Information Institute

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Agenda

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12:00 Introduction

Steve Morello, Head of Underwriting Services, Munich Re America

12:05 US Catastrophe Update

Carl Hedde, Head of Risk Accumulation, Munich Re America

12:15 Global Catastrophe Update

Dr. Peter Hoppe, Head of GeoRisk Research and Corporate Climate Center, Munich Re

12:25 Economic Implications

Dr. Robert Hartwig, President, Insurance Information Institute

12:35 Q+As

Speakers

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Carl Hedde
Head of Risk Accumulation
Munich Re America

chedde@munichreamerica.com

Responsibilities include oversight of corporate accumulation issues at Munich Re America; including the use of catastrophe risk models, client cat risk consulting services, and portfolio management and optimization. Additionally, he manages a group of scientists that provide seismological and meteorological expertise and research capabilities to Munich Re America and its' clients.

Mr. Hedde received a Bachelor of Science Degree from the State University of New York – Albany, and holds the CPCU Designation. He has 25 years experience at Munich Re America, holding various positions within the company.

Speakers

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Prof. Dr. Peter Höppe
Head Geo Risks Research Department
Munich Reinsurance Company, Munich, Germany

phoeppe@munichre.com

Prof. Höppe joined the Munich Reinsurance Company in 2004. He was appointed Head of the Geo Risks Research Department in January 2005.

Before joining Munich Re Prof. Höppe has worked in different institutes at the Ludwig-Maximilians-University in Munich and as a post doc at Yale University (USA). Most of his university career Prof. Höppe spent at the Institute of Bioclimatology and Applied Meteorology and the Institute of Occupational and Environmental Medicine. His academic education is in meteorology (Masters and PhD) and human biology (PhD).

His main areas of research are effects of atmospheric processes (heat/cold, UV radiation, air pressure fluctuations) and air pollutants (ozone, particles) on humans and the general assessment of environmental risks.

Prof. Höppe is scientific member of many scientific societies, from 1999 to 2002 he has been the President of the International Society of Biometeorology. He has held different expert functions in WHO and WMO. In 2007 Dr. Höppe has been appointed member of the Global Warming Advisory Board of the Bavarian State Government and Chair of the Finance-Forum of the high tech strategy for climate protection of the federal German government.

Speakers

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Robert P. Hartwig
President
Insurance Information Institute

bobh@iii.org

Since joining the I.I.I. in 1998 as an economist and becoming chief economist in 2000, Dr. Hartwig has focused his work on improving understanding of key insurance issues across all industry stakeholders including media, consumers, insurers, producers, regulators, legislators and investors. Dr. Hartwig previously served as director of economic research and senior economist with the National Council on Compensation Insurance (NCCI) in Boca Raton, Florida. He has also worked as senior economist for the Swiss Reinsurance Group in New York and as senior statistician for the United States Consumer Product Safety Commission in Washington, D.C. He is a member of the American Economic Association, the American Risk and Insurance Association, the National Association of Business Economics and the CPCU Society and serves on the board of directors of the Independent Insurance Agents and Brokers Association of New York. In 2005 and 2006 Dr. Hartwig served on the state of Florida's Task Force for Long-Term Homeowners Insurance Solutions.

Dr. Hartwig received his Ph.D. and Master of Science degrees in economics from the University of Illinois at Urbana-Champaign. He also received a Bachelor of Arts degree in economics cum laude from the University of Massachusetts at Amherst. He has served as an instructor at the University of Illinois and at Florida Atlantic University. Dr. Hartwig also holds the Chartered Property Casualty Underwriter (CPCU) credential.

Dr. Hartwig has authored and co-authored papers that have appeared in numerous publications, including the Journal of Health Economics, the Proceedings of the Casualty Actuarial Society, the John Liner Review (where he also serves on the editorial board), Dossiers et Etudes (Geneva Association), the Journal of Workers' Compensation, Global Reinsurance, Risk & Insurance, Insurance Day, Compensation and Benefits Review. He is also a regular contributor to National Underwriter and many other industry trade publications.

US Natural Catastrophe Update

Carl Hedde
Head of Risk Accumulation

Munich Reinsurance America
July 8, 2008

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Munich Re NatCatSERVICE

One of the world‘s largest global databases on natural catastrophes

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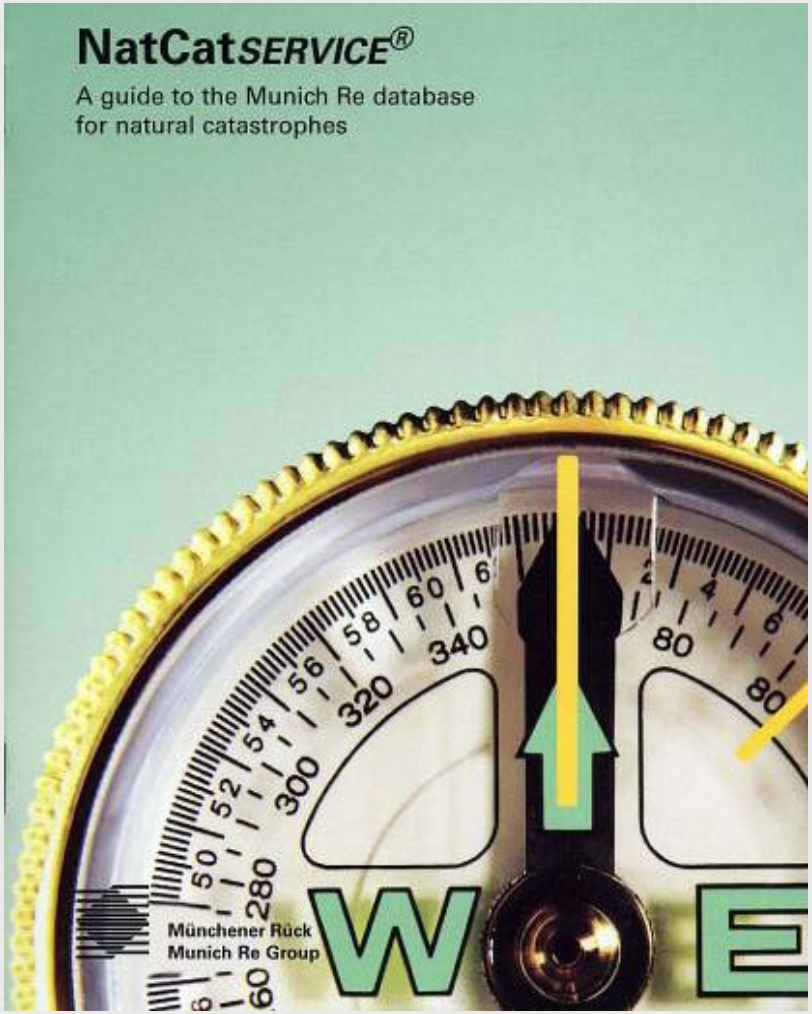

- **> 25,000 events**
- **All loss events: from 1970**
- **All major historical events: from 0079 AD (eruption of Mt. Vesuvio, Naples)**

Statistics, analyses freely available to download:

www.munichre.com/geo

Natural Catastrophes in the US in 2008: Headlines

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- Exceptional tornado season
- Floods in the Midwest break historic river level records
- Drought and associated wildfire threat in California and Intermountain West continuing
- Seasonal forecasts indicate above average hurricane season

Insured Natural Disaster Losses in the United States, First Six Months of 2008

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	Fatalities	Estimated Overall Losses (US $m)	Estimated Insured Losses (US $m)
Severe Thunderstorms	118	**9,250**	**8,140†**
Flood	24	Up to 10,000	Up to 1,000
Winter Storm	12	1,000	745†
Wildland Fire	0	50	30

Records in red

As of 30 June 2008

Sources: (unmarked) - MR NatCat*SERVICE*, † - Property Claims Services (PCS)

Natural Disasters in the United States, 1980 - 2008

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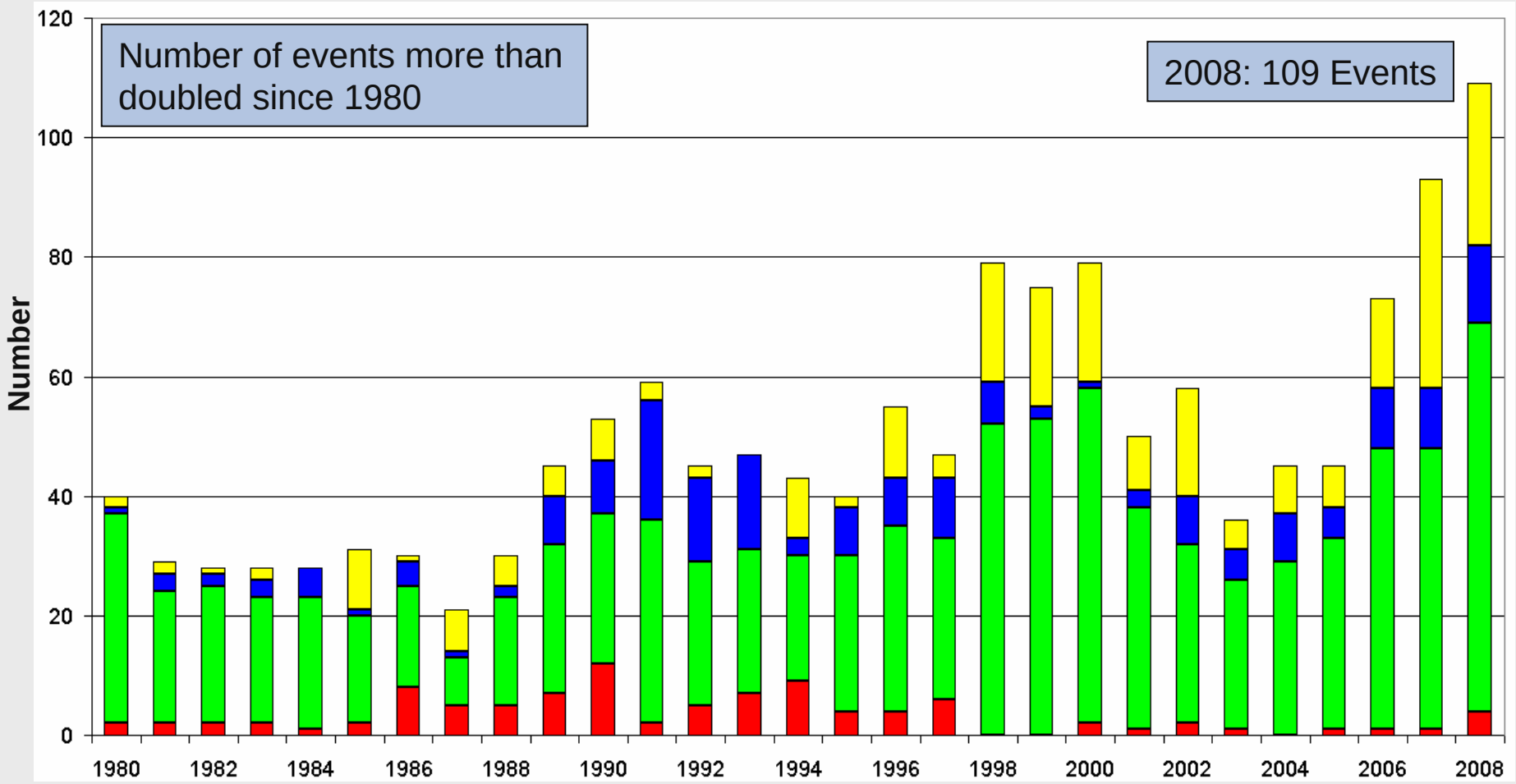
Number of events (January – June only)



Source: MR NatCat*SERVICE*

Natural Disasters in the United States, 1980 - 2008

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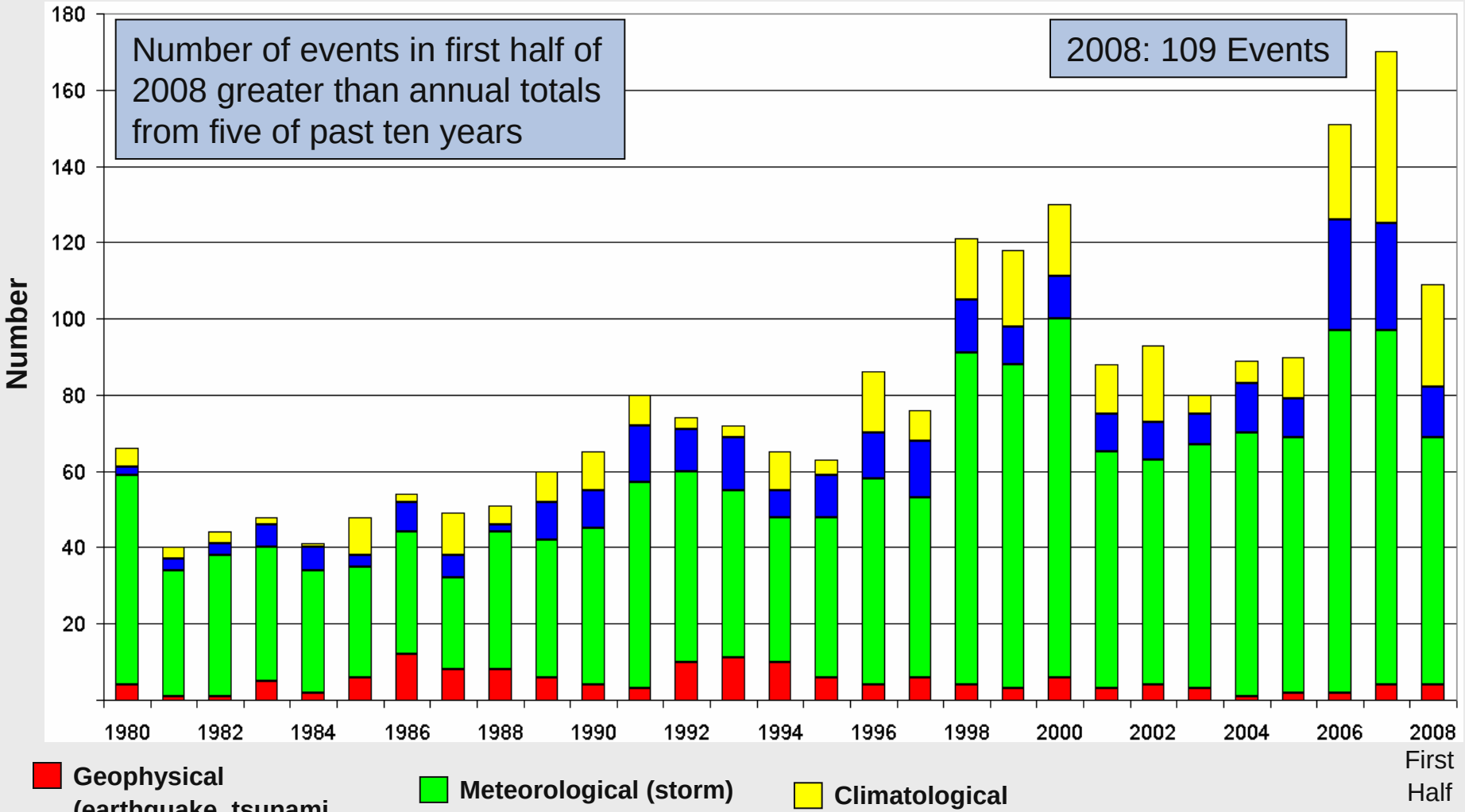
Number of events (Annual Totals 1980 – 2007 vs. First Half 2008)



Source: MR NatCat*SERVICE*

US Thunderstorm Loss Trends
January – June only, 1980 - 2008

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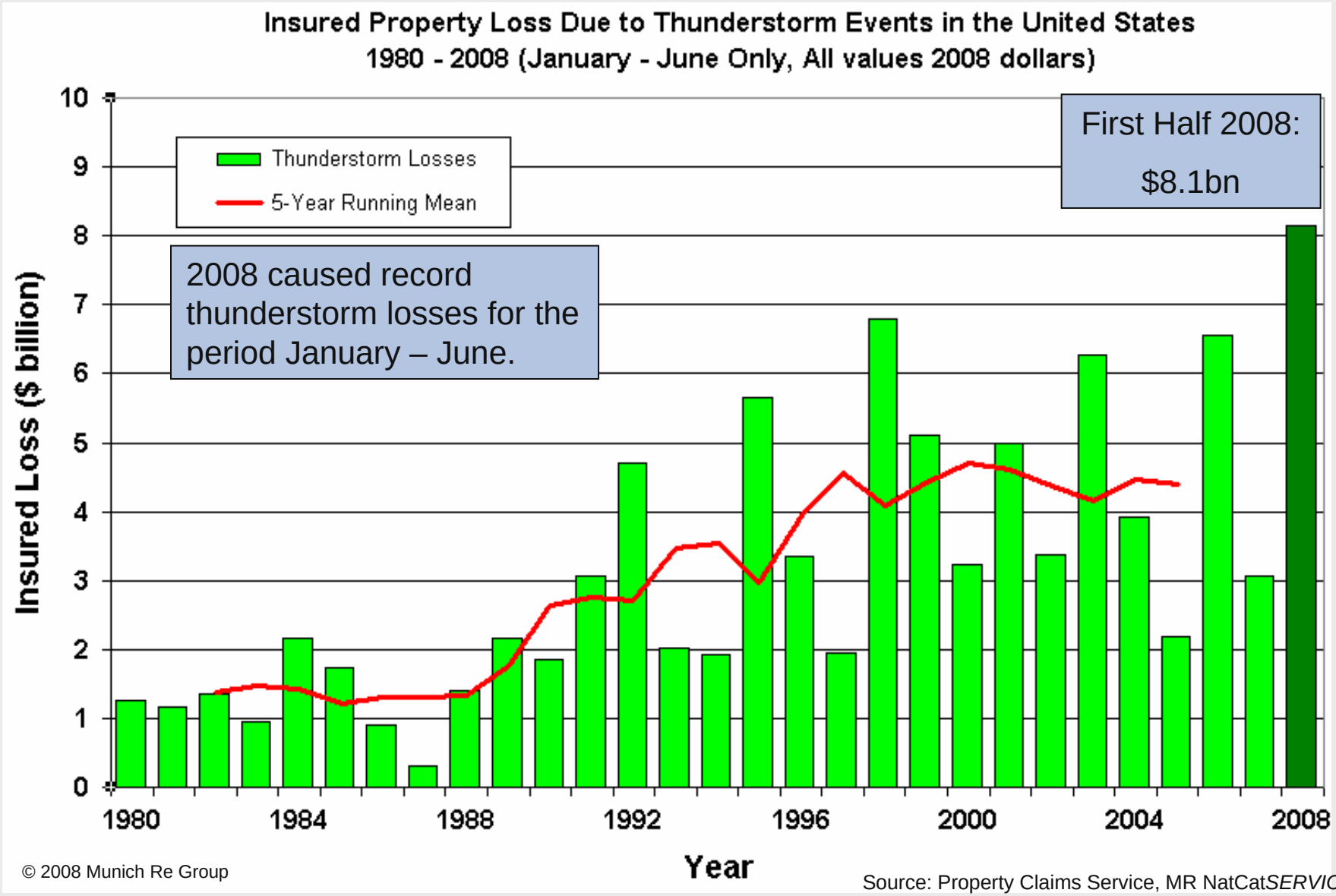

Source: Property Claims Service, MR NatCat*SERVICE*

US Thunderstorm Loss Trends
Annual totals 1980 – 2007 vs. First Half 2008

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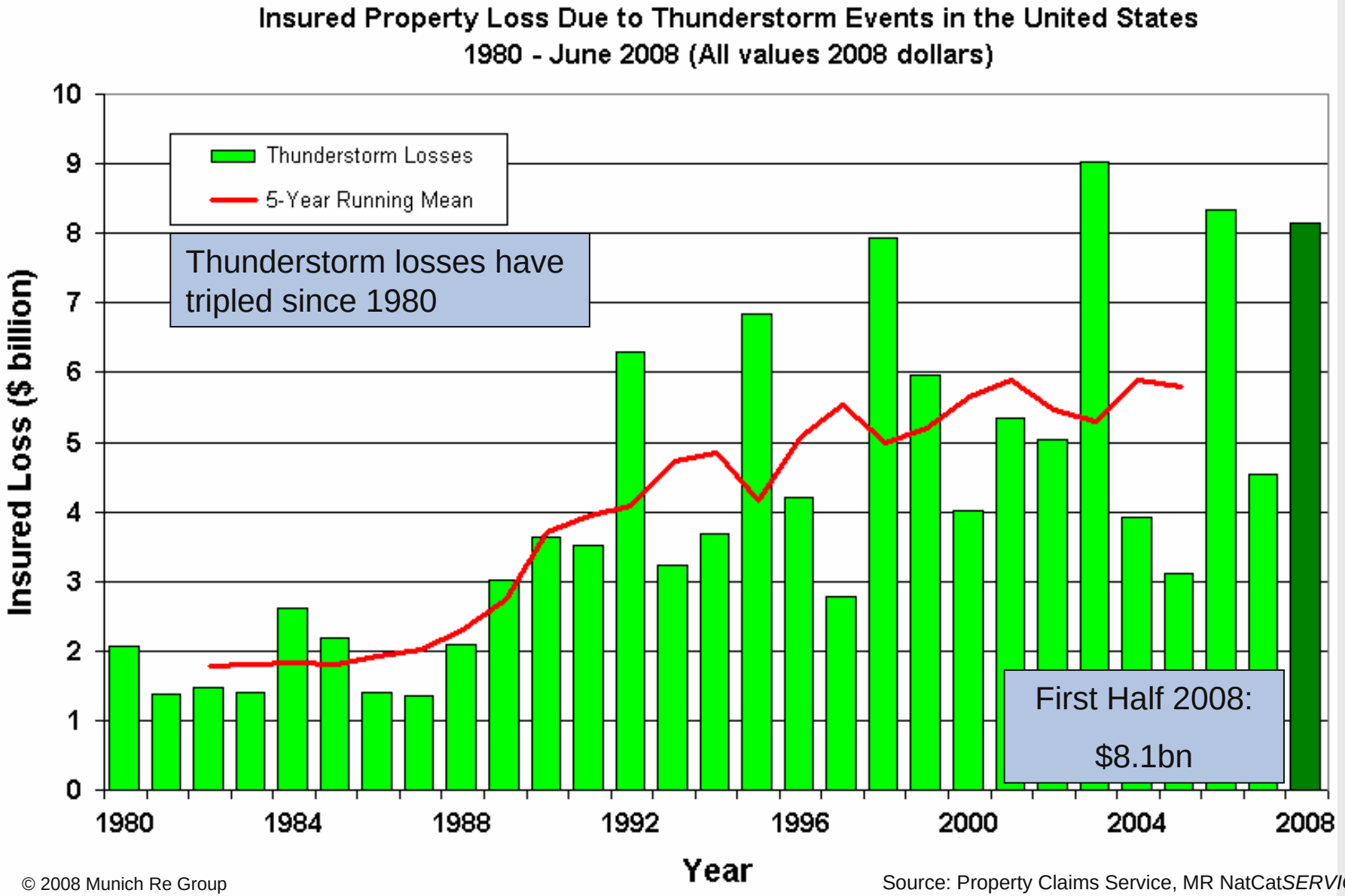

Source: Property Claims Service, MR NatCat*SERVICE*

2008 US Tornado Count

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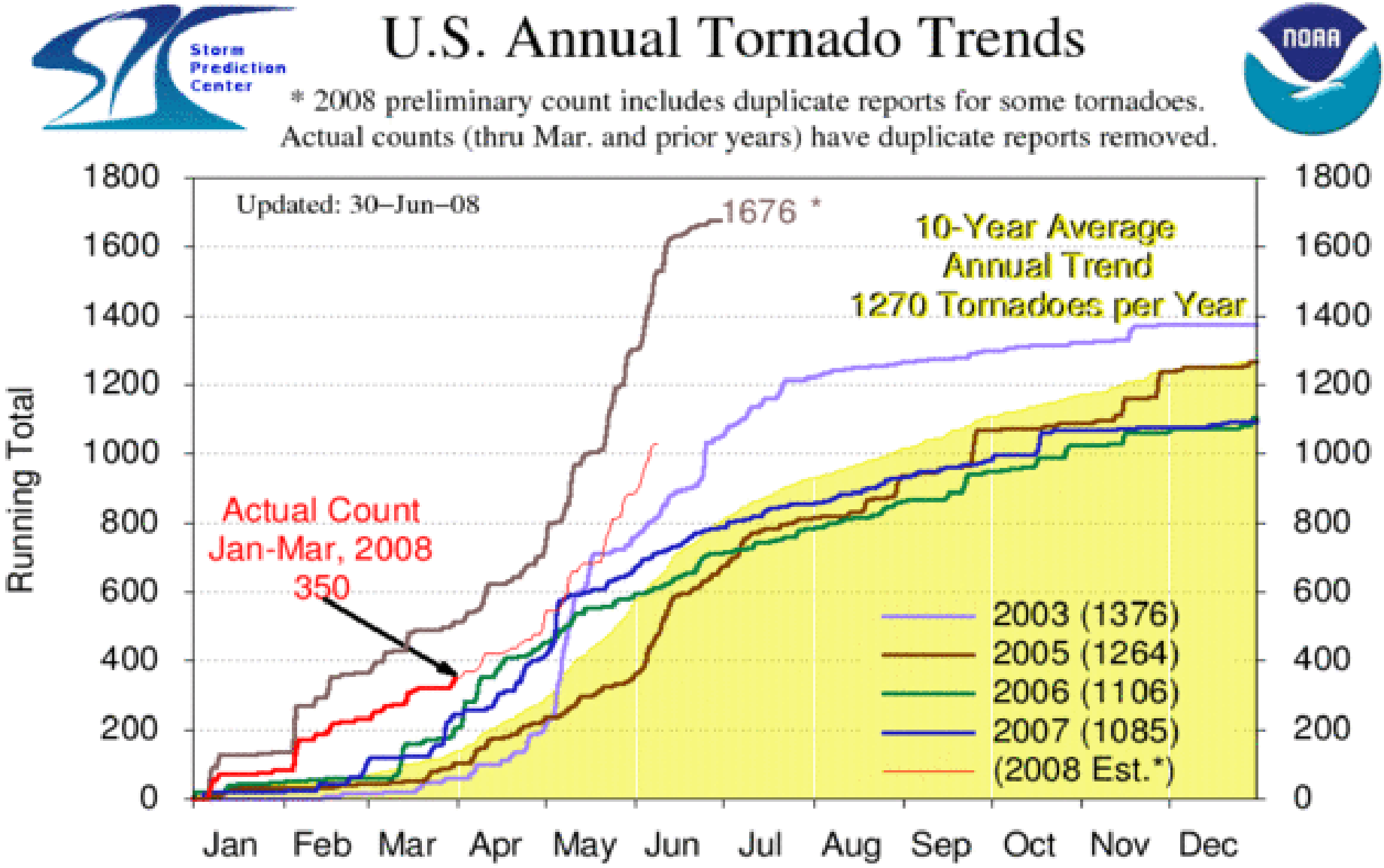

The Midwest Floods of June 2008

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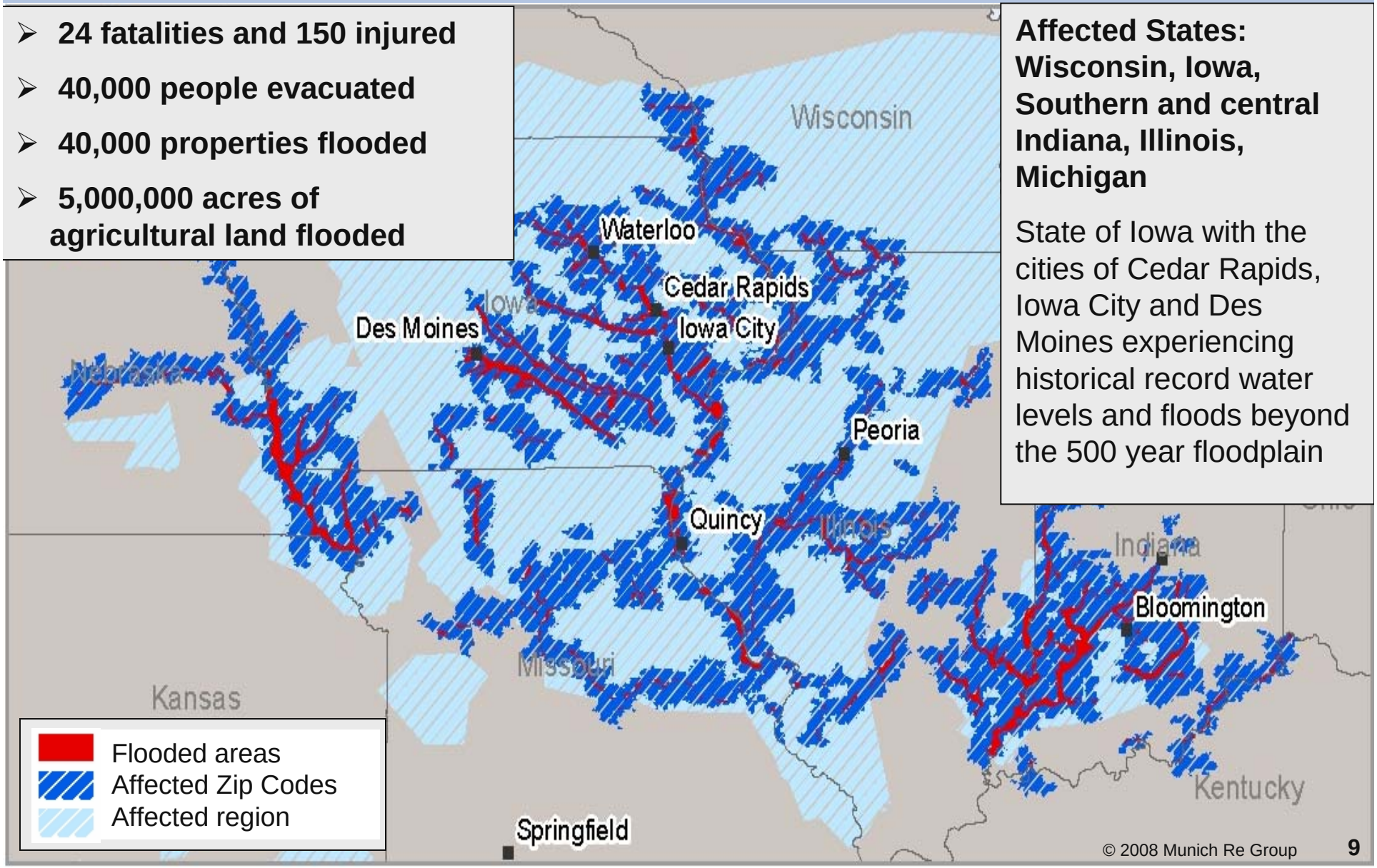
- **24 fatalities and 150 injured**
- **40,000 people evacuated**
- **40,000 properties flooded**
- **5,000,000 acres of agricultural land flooded**



Affected States: Wisconsin, Iowa, Southern and central Indiana, Illinois, Michigan

State of Iowa with the cities of Cedar Rapids, Iowa City and Des Moines experiencing historical record water levels and floods beyond the 500 year floodplain

California Wildland Fire Loss Trends

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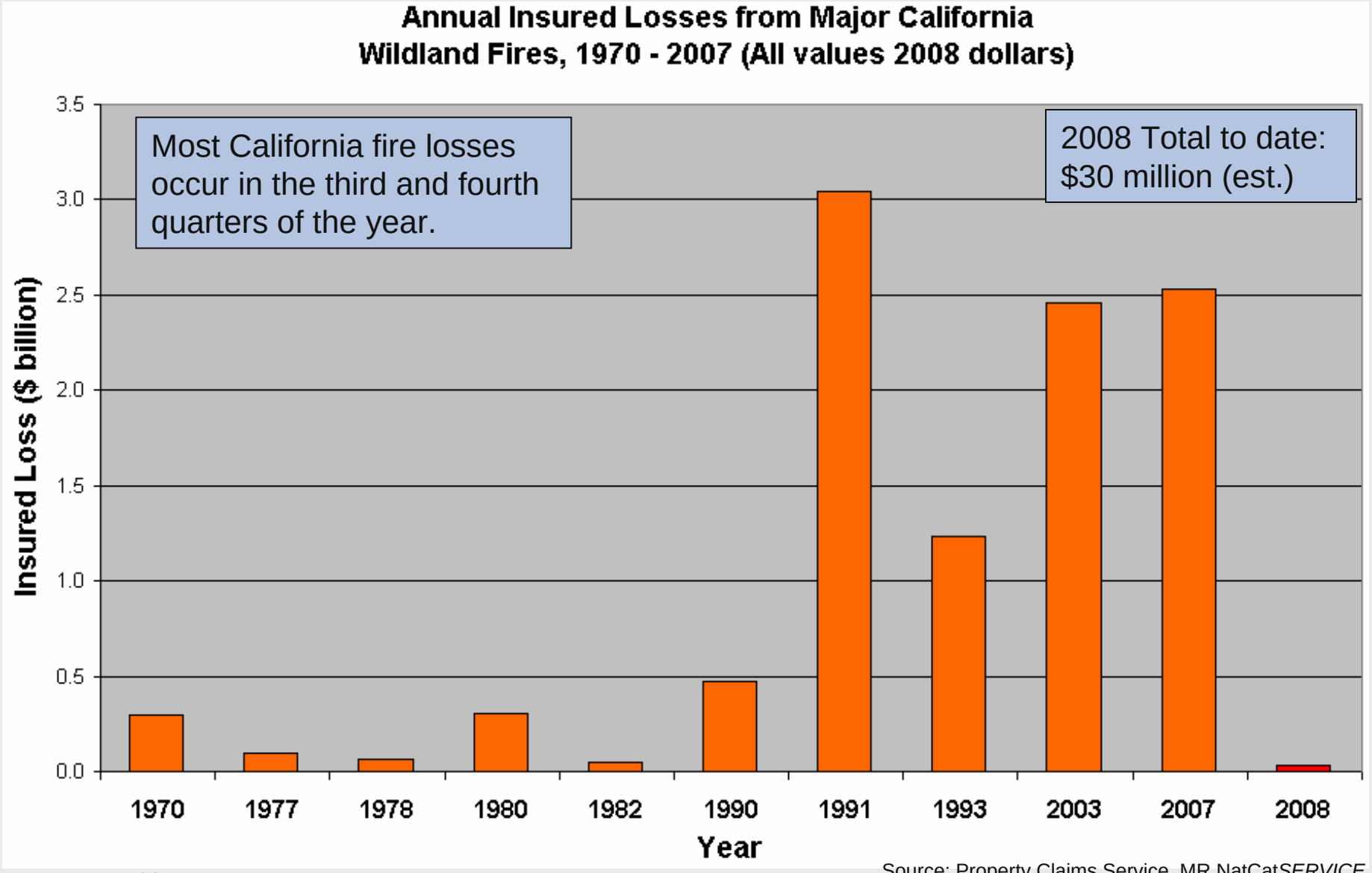

Source: Property Claims Service, MR NatCat*SERVICE*

US Wildland Fires

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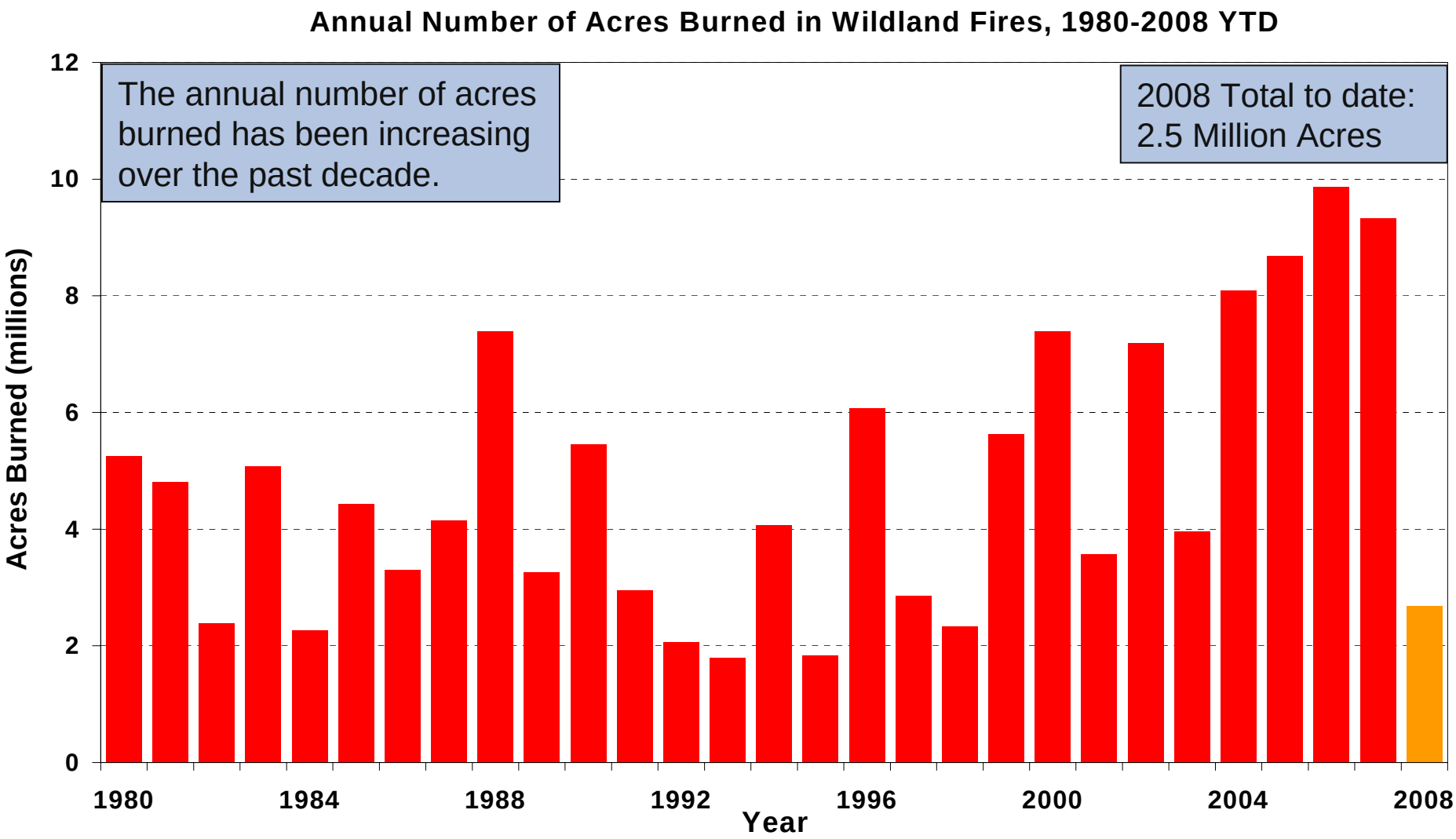

Source: National Interagency Fire Center (http://www.nifc.gov)

US Winter Storm Loss Trends

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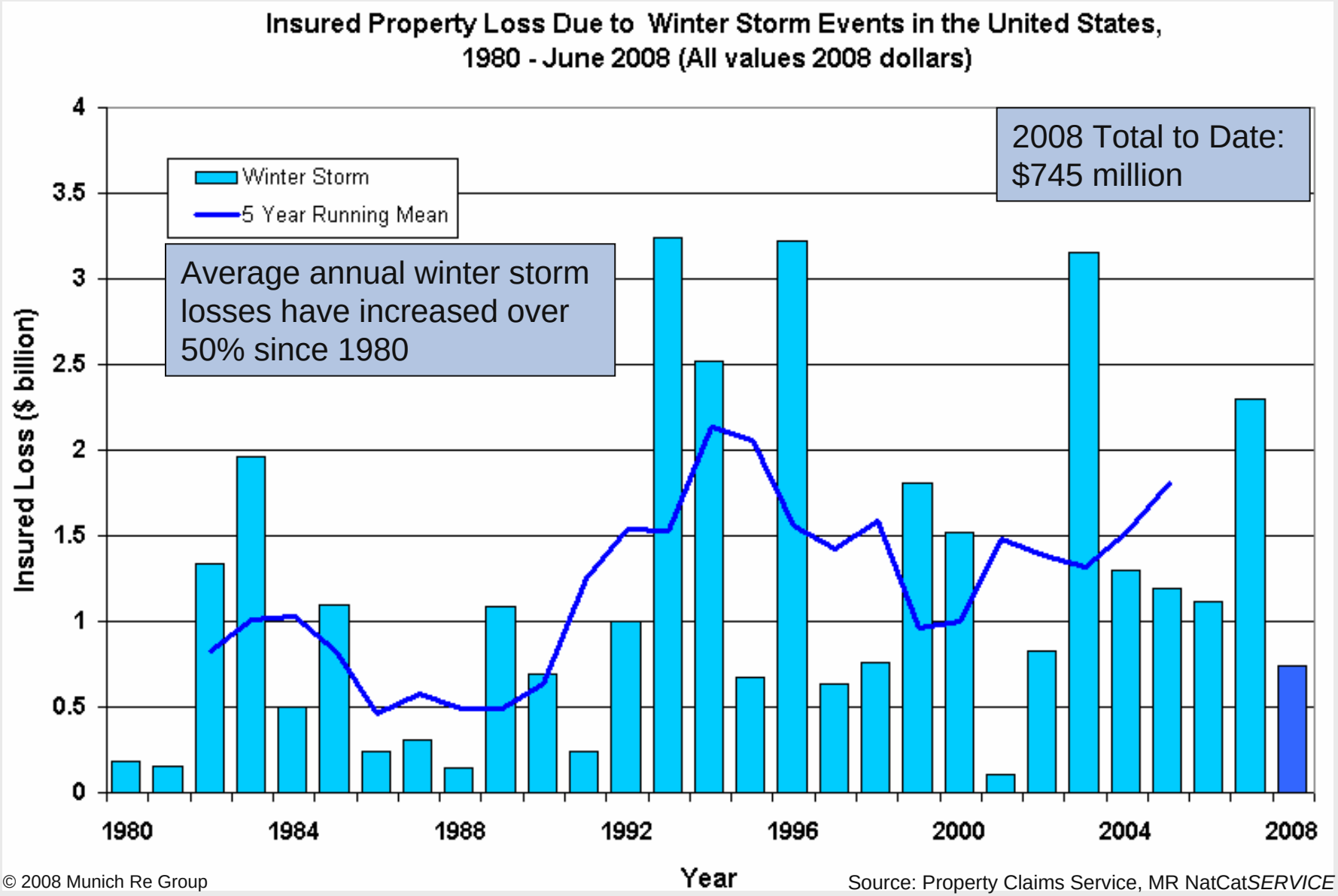

Source: Property Claims Service, MR NatCat*SERVICE*

US Tropical Cyclone Loss Trends

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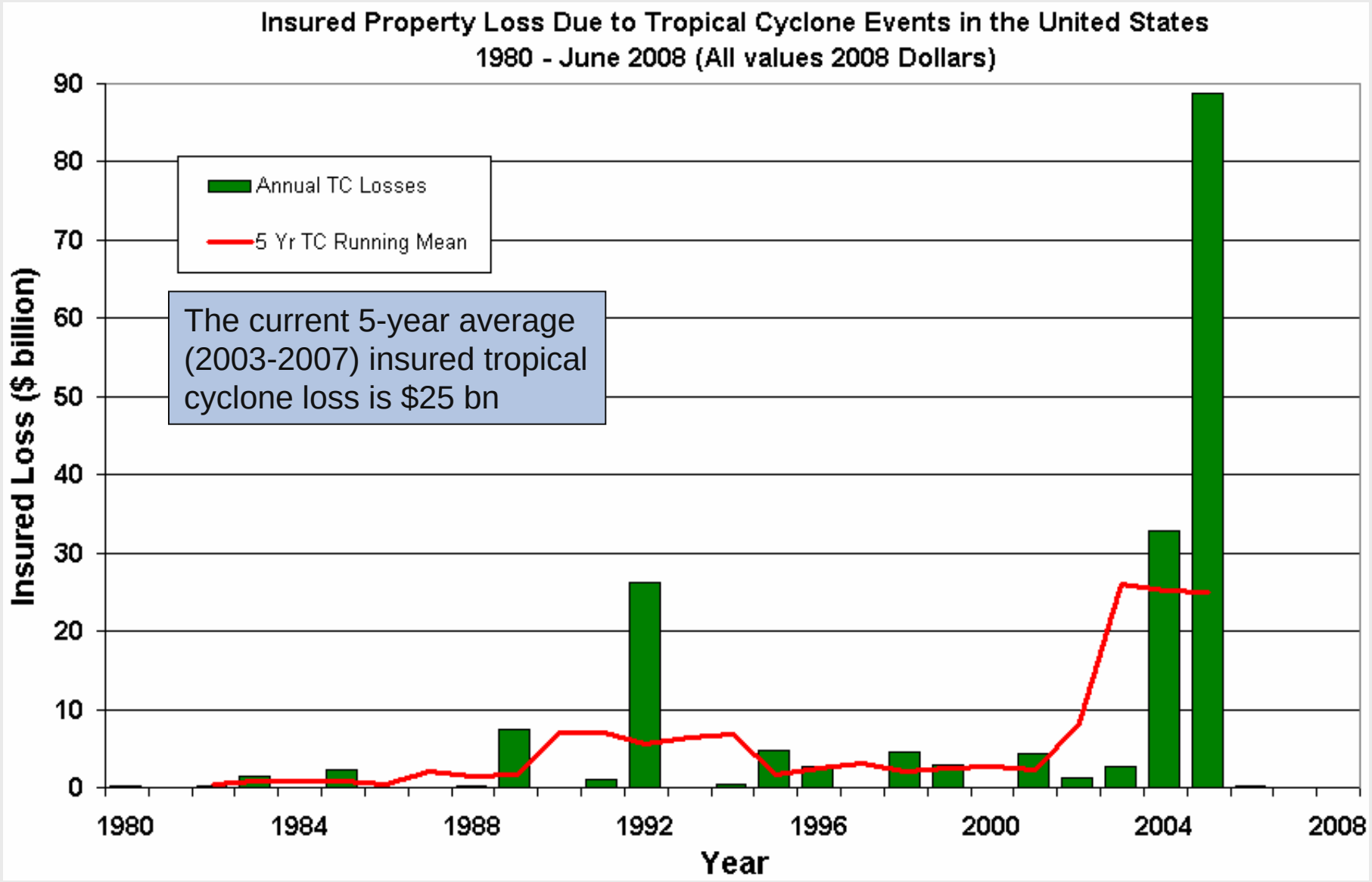

Source: Property Claims Service, MR NatCat*SERVICE,* NFIP

Global Catastrophe Update

Peter Höppe
Head of Geo Risks Research/Corporate Climate Centre

MR Webinar, July 8th

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Natural disasters in the World

January – June 2008

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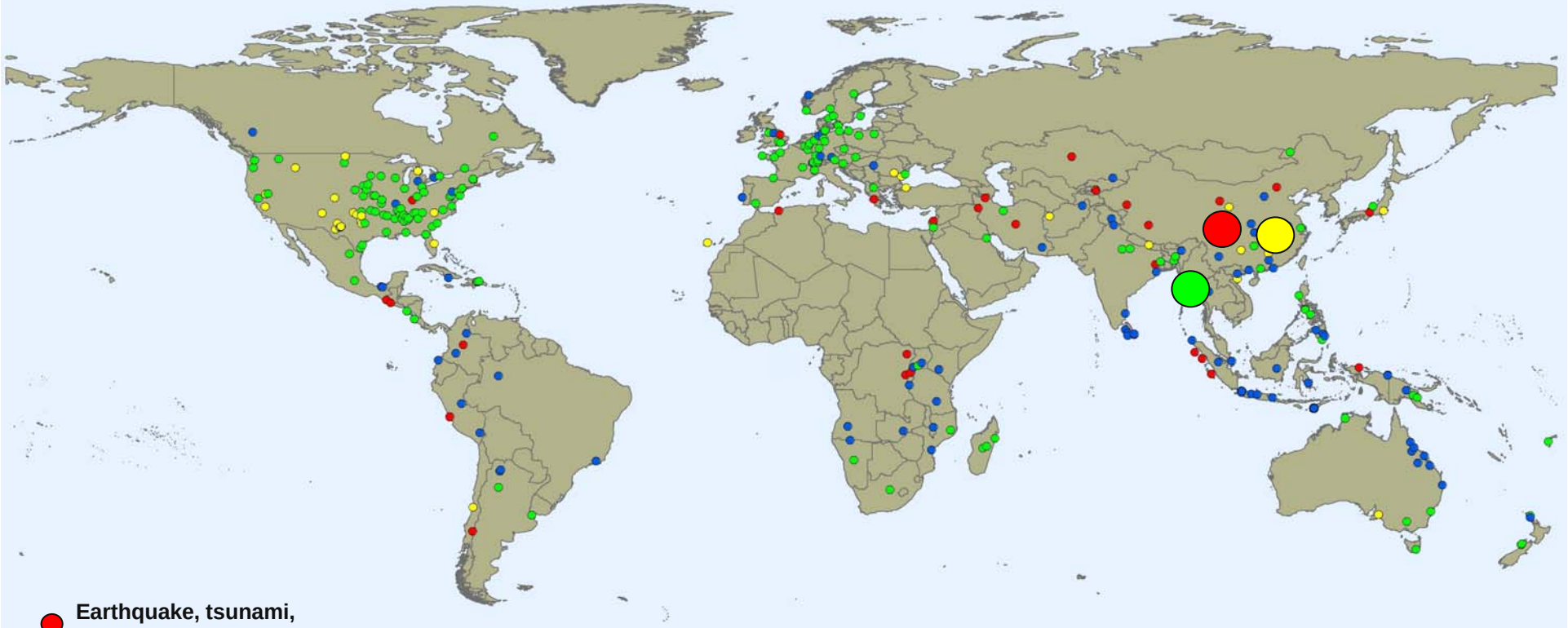

- **Earthquake, tsunami, volcanic activity**
- **Storm**
- **Flood, mass movement wet**
- **Extreme temperature (e.g. heat wave, wildfire), mass movement dry**

As at: June 2008

Global natural disasters 1st half years 1980 – 2008

Number of events

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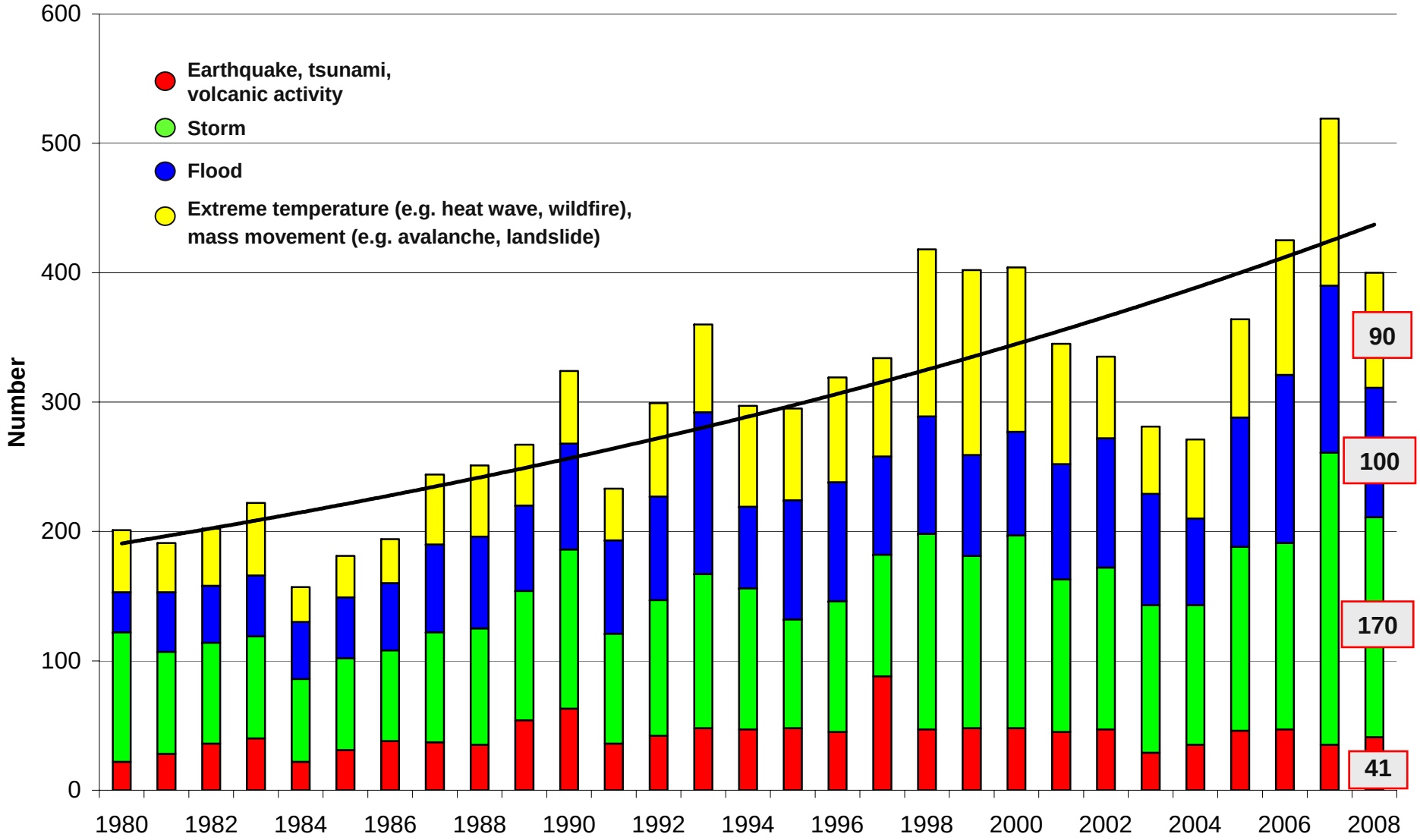

As at: June 2008

Global natural disasters 1980 – 2007 and 1st half years

Overall and insured losses

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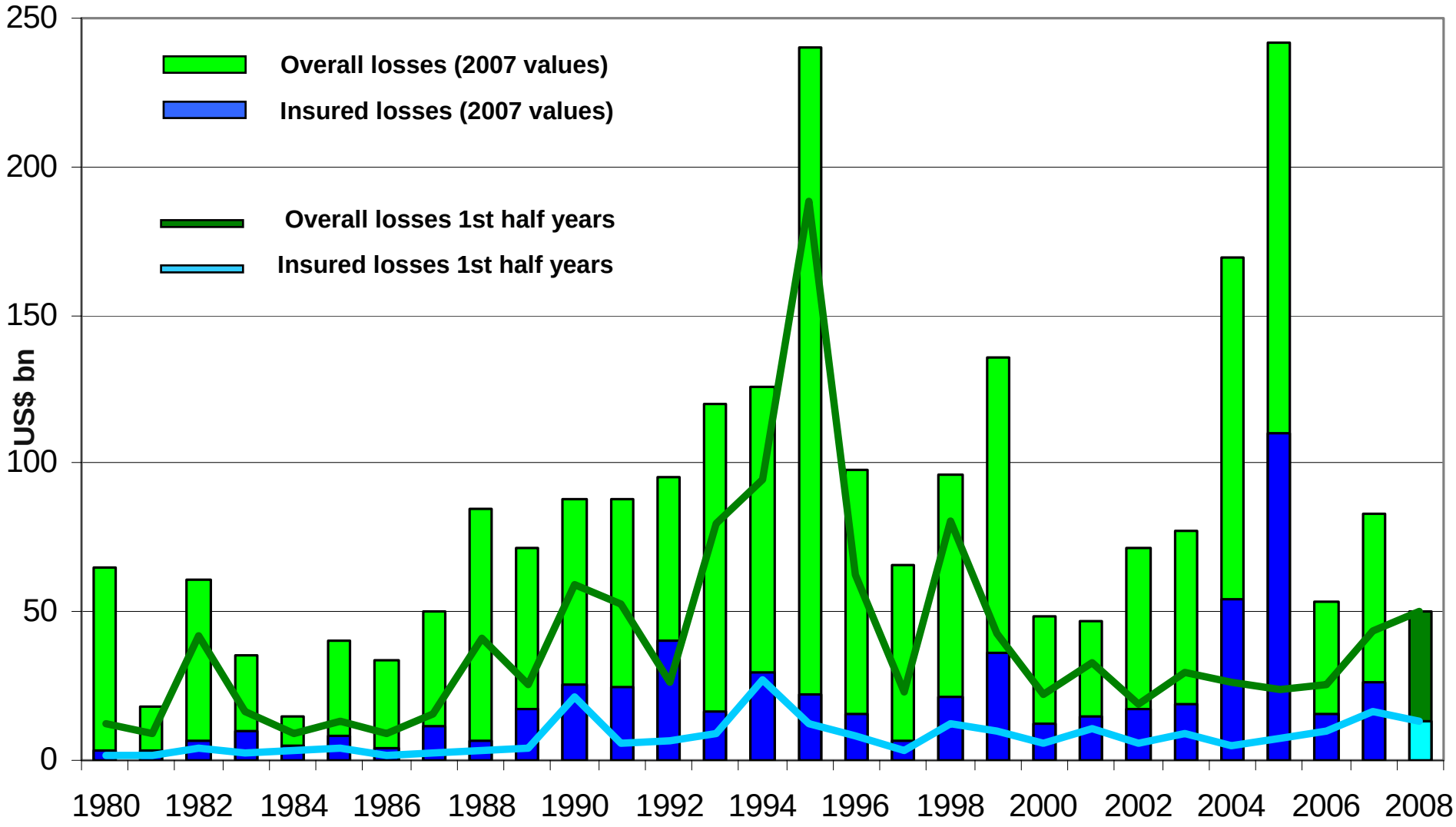

As at: June 2008

Significant natural disasters 2008

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Deadliest disasters			
Date	**Event**	**Area**	**Deaths/Missing**
January	Cold wave	Afghanistan, Kyrgistan, Tajikistan	1,000
May	Cyclone Nargis, storm surge	Myanmar	138,000
May	Earthquake	China	69,200

Costliest disasters (overall losses)			US$m
January/February	Winter damage	China	10,000
May	Earthquake	China	20,000
June	Floods, severe storms	USA	10,000

Costliest disasters (insured losses)			US$m
January/February	Winter damage	China	1,600
February	Severe storms, tornadoes	USA	955
March	Winter storm Emma	Europe	1,500
June	Tornadoes, Midwest Floods	USA	**not yet assessed**

As at: June 2008

Global natural catastrophes January – June: Comparison 2008 with average of last 10 years

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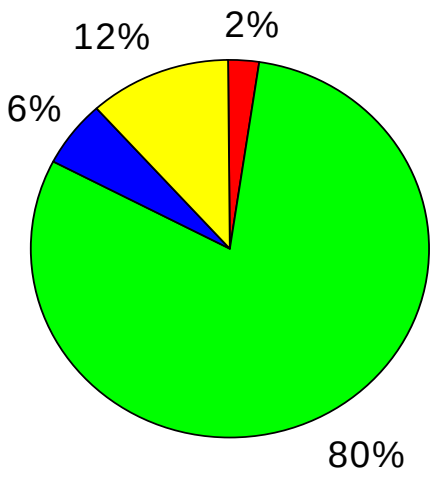
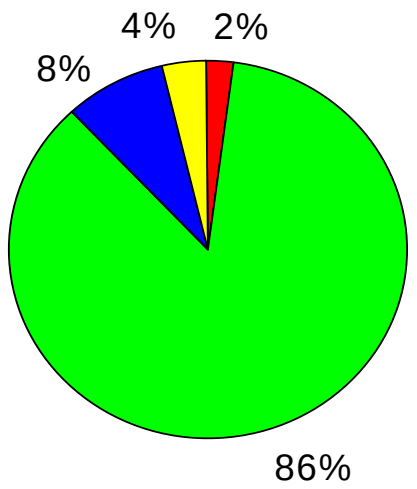
	2008	10-year-average 1998-2007
Events	400	380
Fatalities	152 000	11 000
Overall losses: US$bn	50	35
Insured losses: US$bn	13	9

Insured losses by peril:

- Earthquake, tsunami, volcanic activity
- Storm
- Flood
- Extreme temperature (e.g. heat wave, wildfire), mass movement (e.g. avalanche, landslide)





As at: June 2008

Climate Change and Extreme Weather in the US

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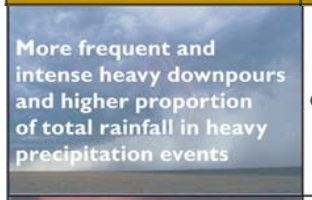
Observed changes in North American extreme events, assessment of human influence for the observed changes, and likelihood that the changes will continue through the 21st century[1].

Phenomenon and direction of change	Where and when these changes occurred in past 50 years	Linkage of human activity to observed changes	Likelihood of continued future changes in this century
 More frequent and intense heavy downpours and higher proportion of total rainfall in heavy precipitation events	Over many areas	Linked indirectly through increased water vapor, a critical factor for heavy precipitation events[3]	Very likely[4]
 Increases in area affected by drought	No overall average change for North America, but regional changes are evident	Likely, Southwest USA.[3] Evidence that 1930's & 1950's droughts were linked to natural patterns of sea surface temperature variability	Likely in Southwest U.S.A., parts of Mexico and Carribean[4]
 More intense hurricanes	Substantial increase in Atlantic since 1970; Likely increase in Atlantic since 1950s; increasing tendency in W. Pacific and decreasing tendency in E. Pacific (Mexico West Coast) since 1980[5]	Linked indirectly through increasing sea surface temperature, a critical factor for intense hurricanes[5]; a confident assessment requires further study[3]	Likely[4]

[1]Based on frequently used family of IPCC emission scenarios
[2]Based on formal attribution studies and expert judgment
[3]Based on expert judgment
[4]Based on model projections and expert judgment
[5]As measured by the Power Dissipation Index (which combines storm intensity, duration and frequency)

Source: The U.S. Climate Change Science Program and the Subcommittee on Global Change Research, NOAA, June 19, 2008

Mid-Year 2008 Catastrophe Update

Economic Implications

Natural Catastrophe Webinar

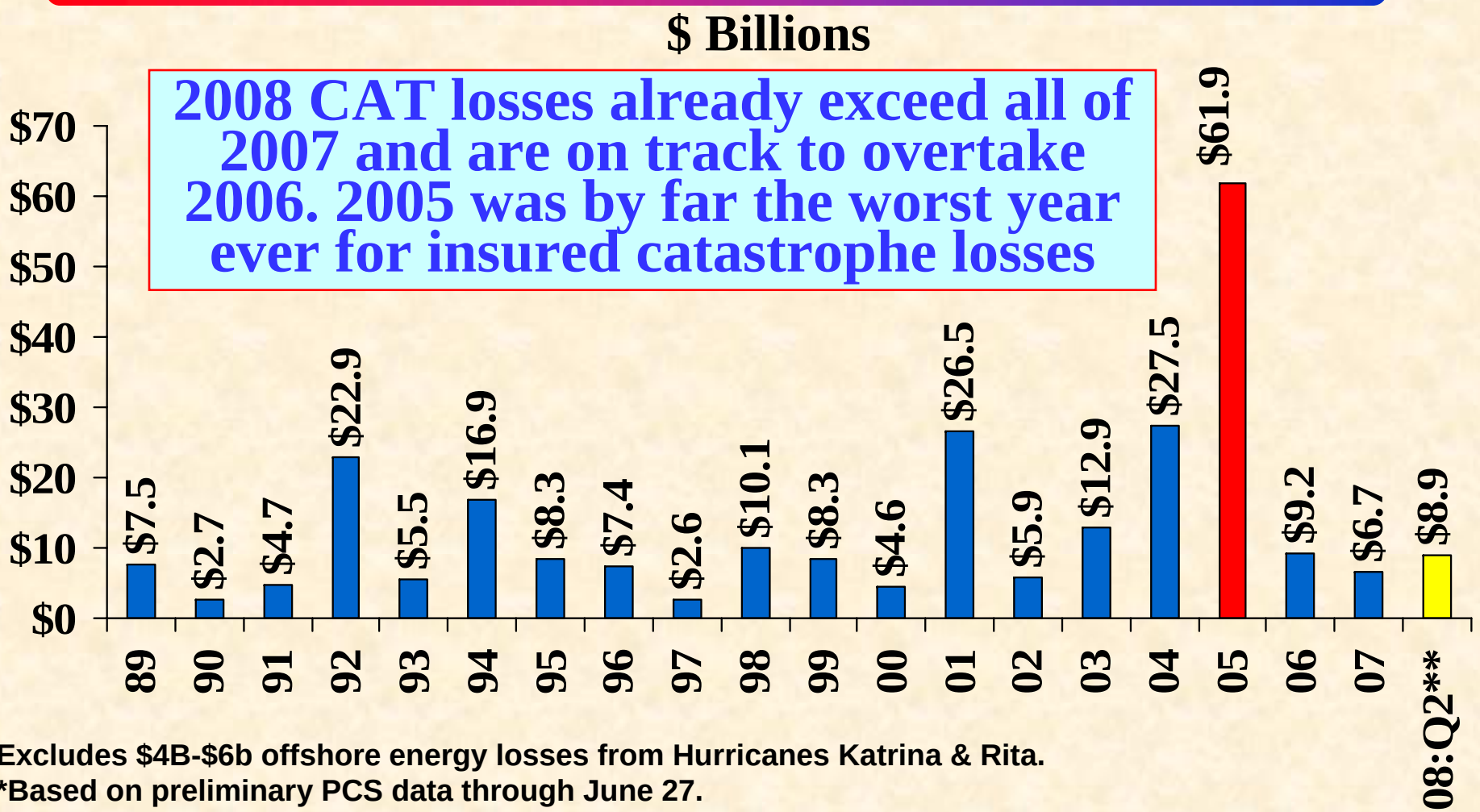
July 8, 2008

Robert P. Hartwig, Ph.D., CPCU, President
Insurance Information Institute ♦ 110 William Street ♦ New York, NY 10038
Tel: (212) 346-5520 ♦ Fax: (212) 732-1916 ♦ bobh@iii.org ♦ www.iii.org

CATASTROPHIC LOSS

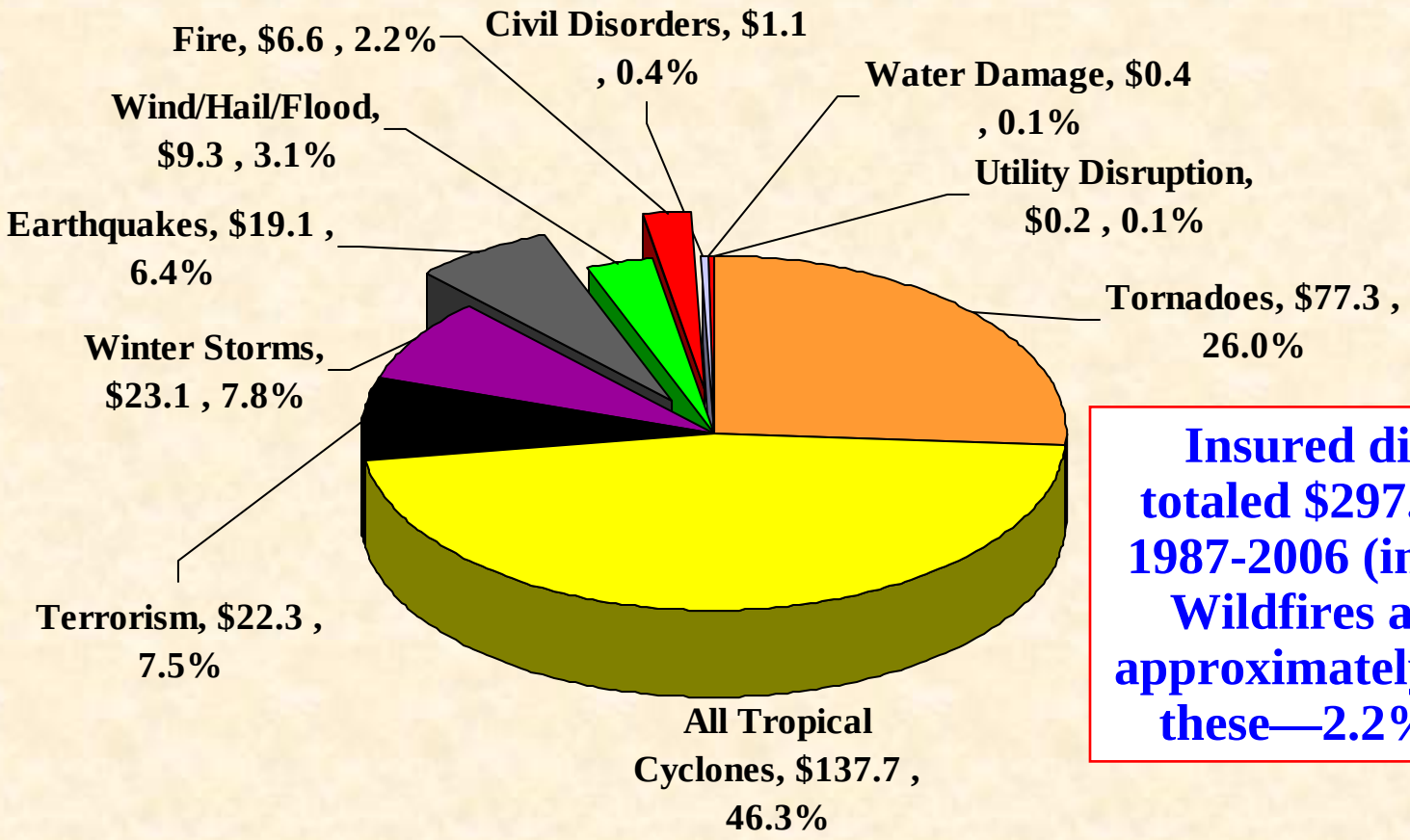
2008 Losses are Running Well Ahead of 2006/07

U.S. Insured Catastrophe Losses*



*Excludes $4B-$6b offshore energy losses from Hurricanes Katrina & Rita.
**Based on preliminary PCS data through June 27.
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.
Source: Property Claims Service/ISO.

Inflation-Adjusted U.S. Insured Catastrophe Losses By Cause of Loss, 1987-2006[1]

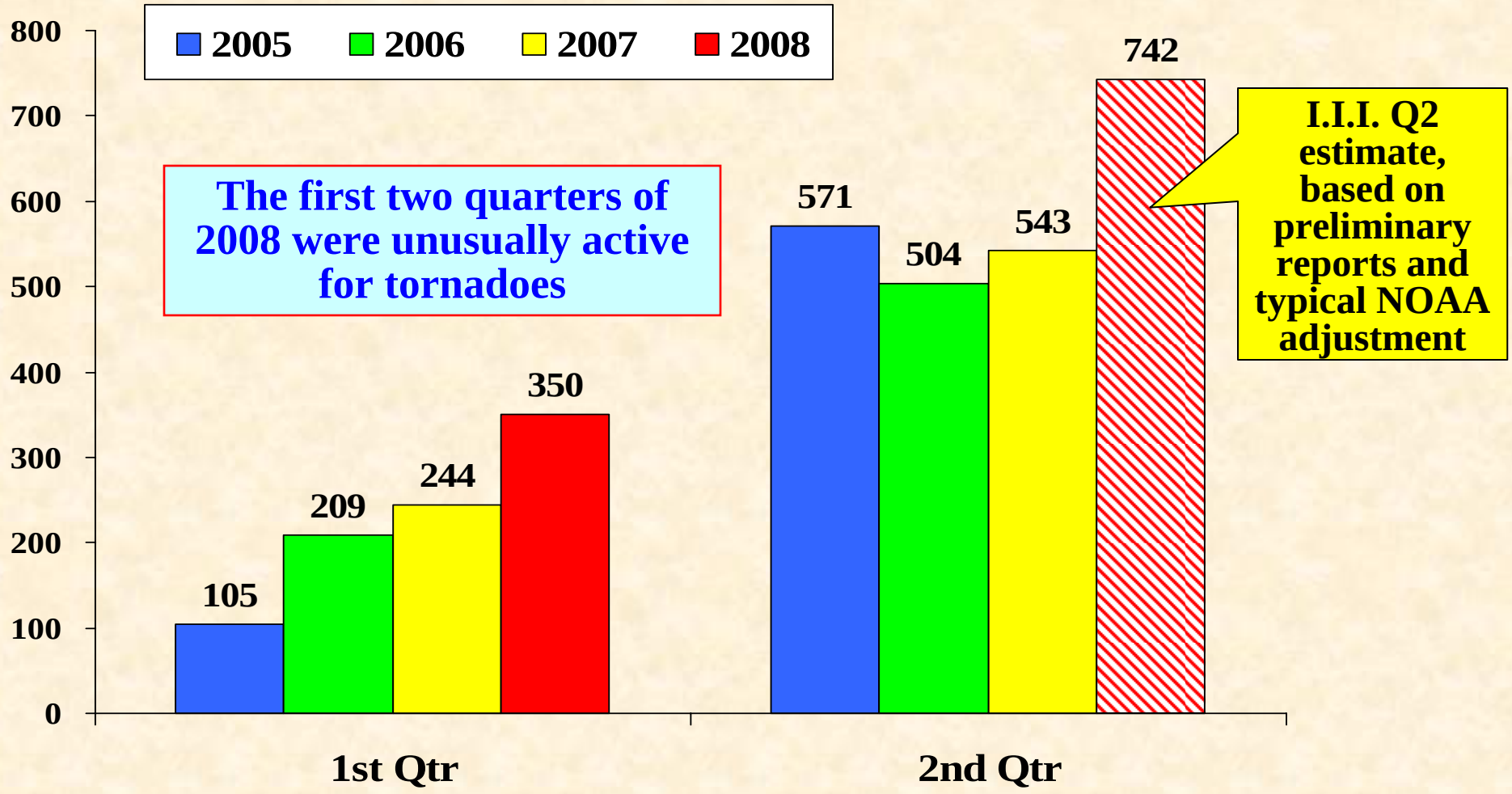


Insured disaster losses totaled $297.3 billion from 1987-2006 (in 2006 dollars). Wildfires accounted for approximately $6.6 billion of these—2.2% of the total.

[1] Catastrophes are all events causing direct insured losses to property of $25 million or more in 2006 dollars. Catastrophe threshold changed from $5 million to $25 million beginning in 1997. Adjusted for inflation by the III.
[2] Excludes snow. [3] Includes hurricanes and tropical storms. [4] Includes other geologic events such as volcanic eruptions and other earth movement. [5] Does not include flood damage covered by the federally administered National Flood Insurance Program. [6] Includes wildland fires.

Source: Insurance Services Office (ISO)..

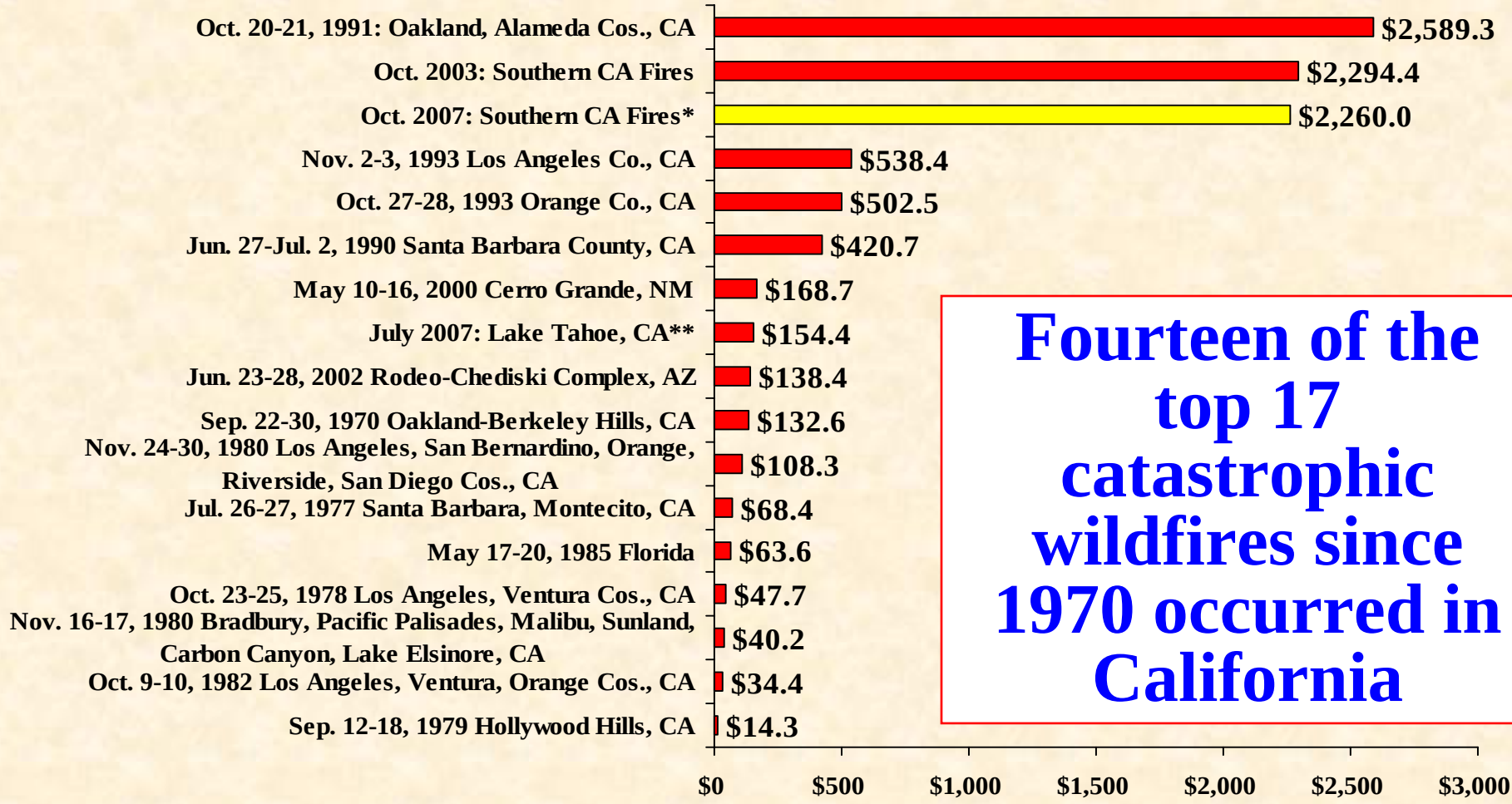
Number of Tornadoes in 1st & 2nd Calendar Quarters, 2005–2008



Sources: US Dept. of Commerce, Storm Prediction Center, National Weather Service, at http://www.spc.noaa.gov/climo/torn/monthlytornstats.pdf

Top Catastrophic Wildland Fires In The United States, 1970-2007

Insured Losses (Millions 2007 $)



Fourteen of the top 17 catastrophic wildfires since 1970 occurred in California

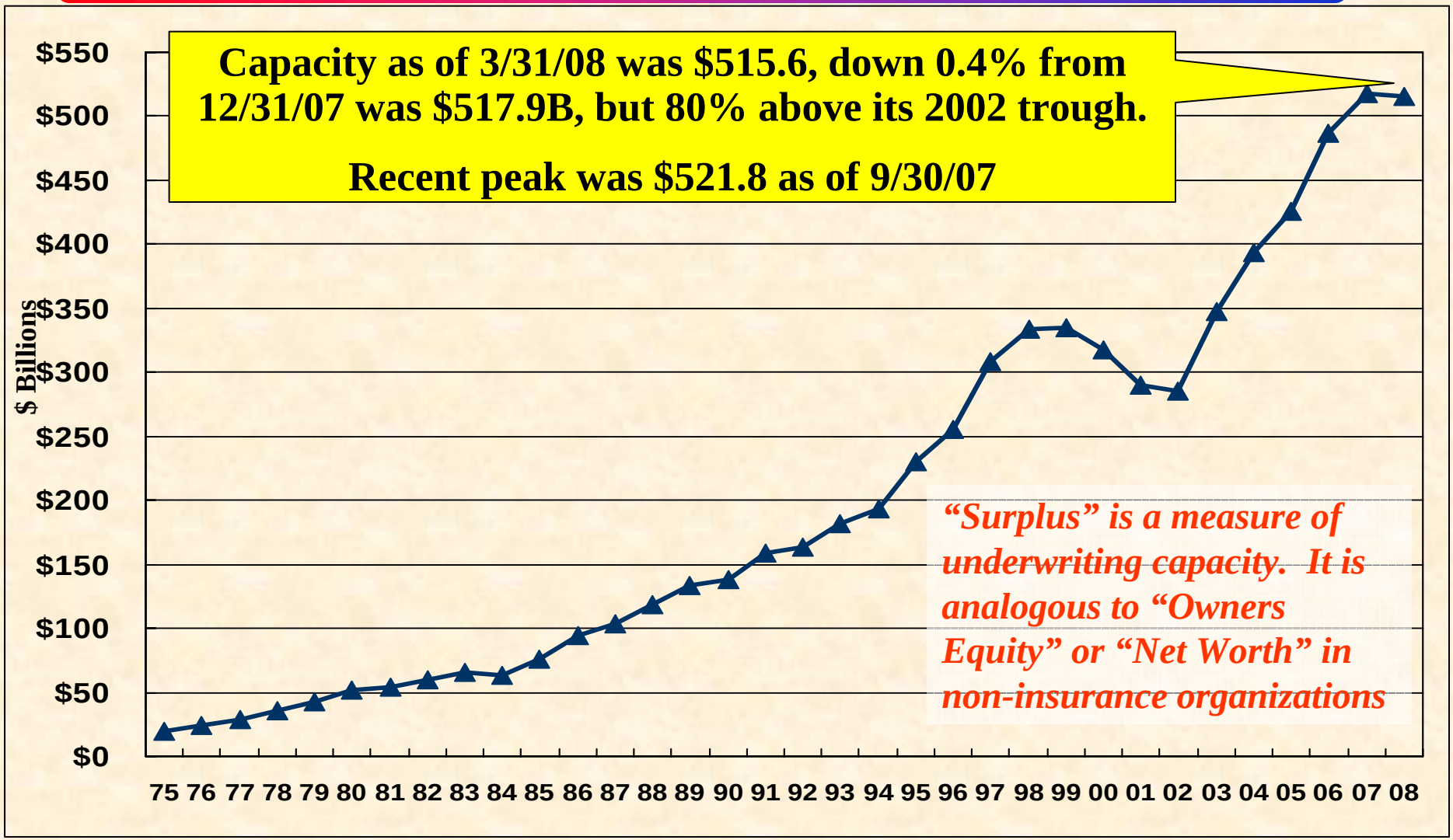
*Estimate from CA Insurance Dept., Jan. 10, 2008.

Source: ISO's Property Claim Services Unit; California Department of Insurance; Insurance Information Institute.

CAPACITY/ SURPLUS

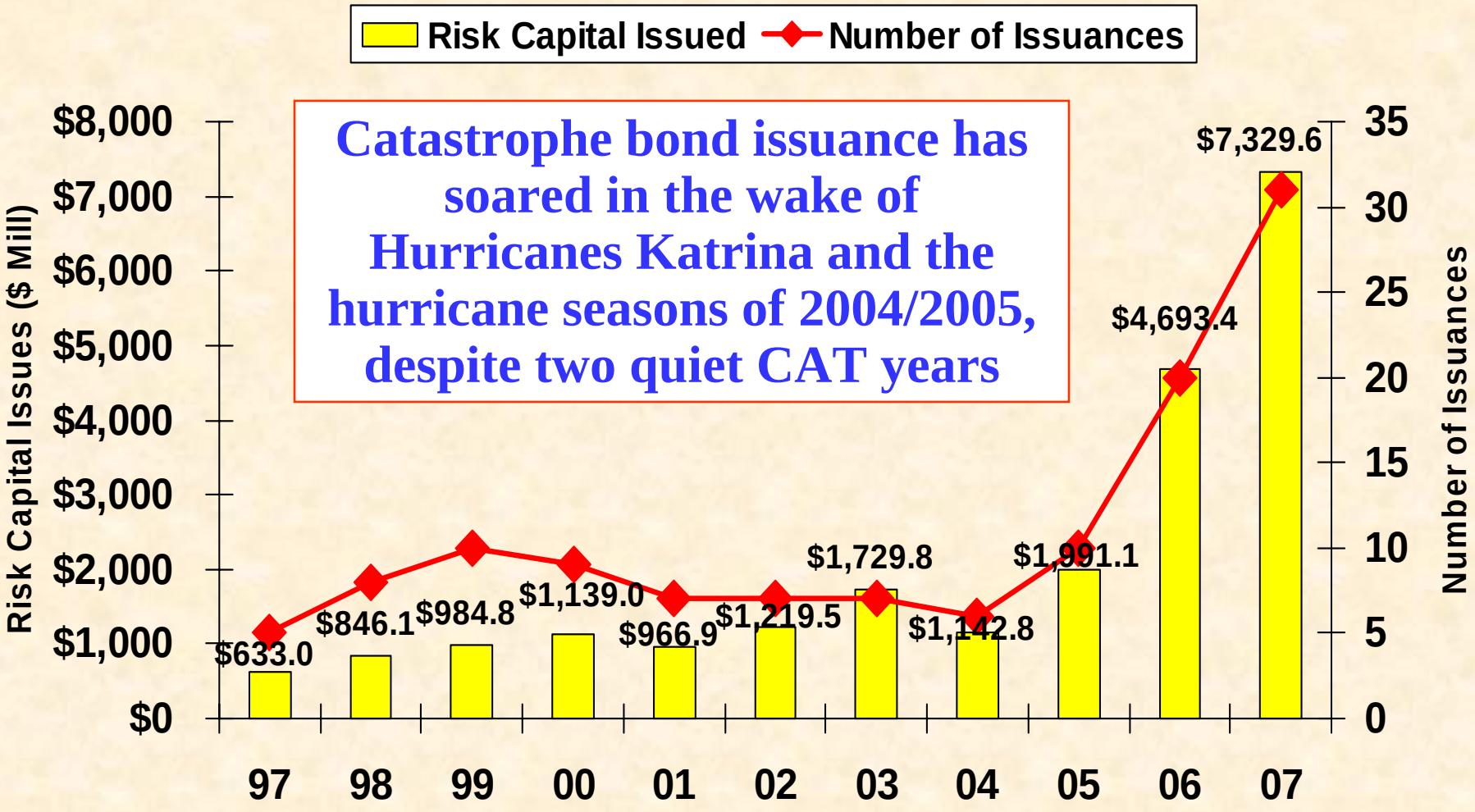
The Insurance Industry is Financially Strong

U.S. Policyholder Surplus: 1975-2008:Q1*



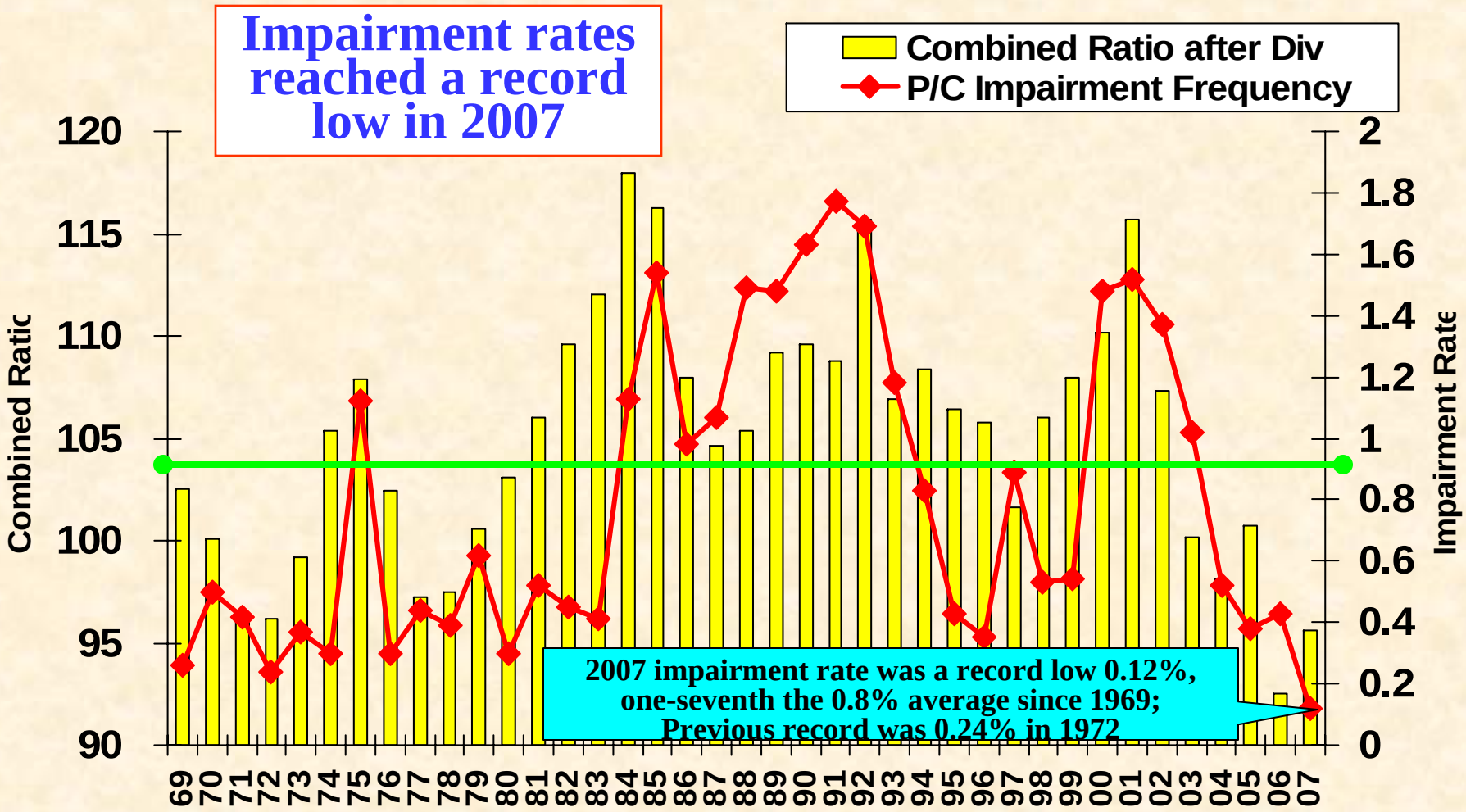
Source: A.M. Best, ISO, Insurance Information Institute. *As of March 31, 2008

Annual Catastrophe Bond Transactions Volume, 1997-2007



Source: MMC Securities Guy Carpenter, A.M. Best; Insurance Information Institute.

P/C Insurer Impairment Frequency vs. Combined Ratio, 1969-2007



Source: A.M. Best; Insurance Information Institute

The 2008 Hurricane Season:

Preview to Disaster?

*Outlook for 2008 Hurricane Season: 60% **Worse Than Average***

	Average*	2005	2008F
Named Storms	9.6	28	15
Named Storm Days	49.1	115.5	80
Hurricanes	5.9	14	8
Hurricane Days	24.5	47.5	40
Intense Hurricanes	2.3	7	4
Intense Hurricane Days	5	7	9
Accumulated Cyclone Energy	96.2	NA	150
Net Tropical Cyclone Activity	100%	275%	**160%**

*Average over the period 1950-2000.

Source: Philip Klotzbach and Dr. William Gray, Colorado State University, June 3, 2008.

Landfall Probabilities for 2008 Hurricane Season: ***Above Average***

	Average*	2008F
Entire US East & Gulf Coasts	52%	69%
US East Coast Including Florida Peninsula	31%	45%
Gulf Coast from Florida Panhandle to Brownsville	30%	44%
Caribbean	NA	Above Average

*Average over the past century.

Source: Dr. Philip Klotzbach and Dr. William Gray, Colorado State University, June 3, 2008.

ECONOMIC IMPLICATIONS

Recovery Depends on Extent of Insurance Protection

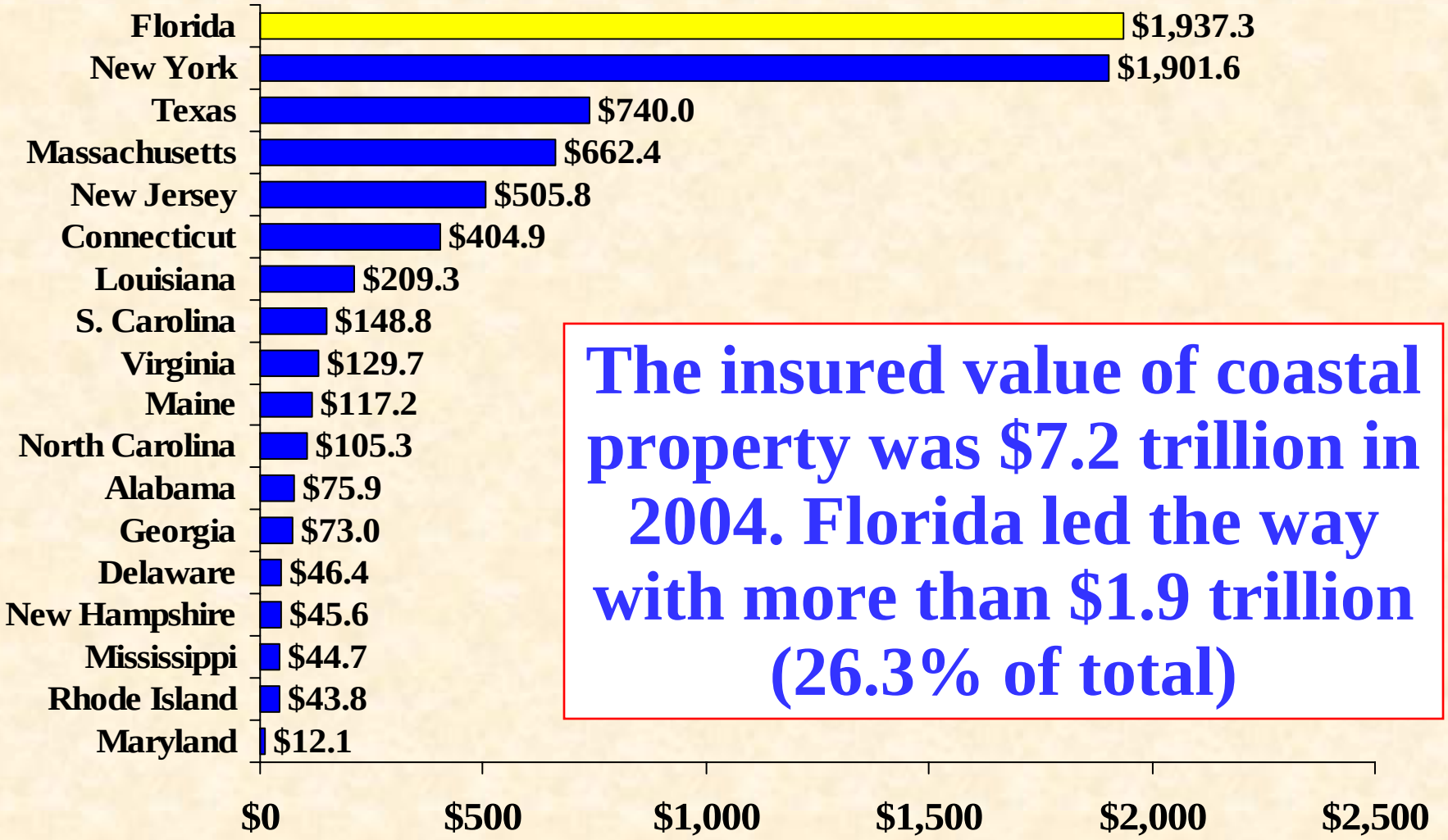
Facts About Economic Recovery from Major Catastrophes

- **Insurance is By Far the Most Efficient Means of Economic Recovery from a Catastrophic Loss for Property Owners and Entire Communities**
- **Majority of Tornado and Wildfire Losses Are Covered by Private Insurance**
  - **Approximately 96% of homeowners and most businesses carry property coverage. Wind/fire damage are covered causes of loss.**
  - **The average home insurance policy costs about $870/year.**
- **Flood Losses are Typically Not Covered Under Standard Homeowners Insurance Policies**
  - **Flood coverage is available at subsidized rates through the National Flood Insurance Program (NFIP)**
  - **The average flood policy costs about $500/year**
  - **Only 17% of homeowners in the Midwest buy flood coverage**
  - **This means that economic recovery in flood effected areas will generally be slower than in tornado effected areas.**
  - **Flood victims are more dependent on government aid**

Facts About Economic Recovery from Major Catastrophes

- **Government is Under No Obligation to Provide Aid**
  - **Aid could be nominal amount and could be in the form of a grant that must be repaid**
- **Private Insurance Will Stimulate Employment, Retail Sales and Tax Receipts in Impacted Areas**
  - **Ultimate amount of local income generated will be 2 to 3 times the amount paid by insurers through so-called "multiplier effect"**
- **In Countries Such as Myanmar and China, Private Insurance is Much Less Commonly Purchased**
  - **Recovery in these areas is hurt by lack of insurance protection, large loss of life and in the case of Myanmar an uncooperative government**
- **2008 Hurricane Season is Expected to be 60% Above Normal (Colorado State Univ)**
  - **Insured value of coastal property rose approximately 24% between 2004 ($7.2 trillion) and 2007 ($8.9 trillion)**
  - **Recovery would be financed primarily by private insurance**

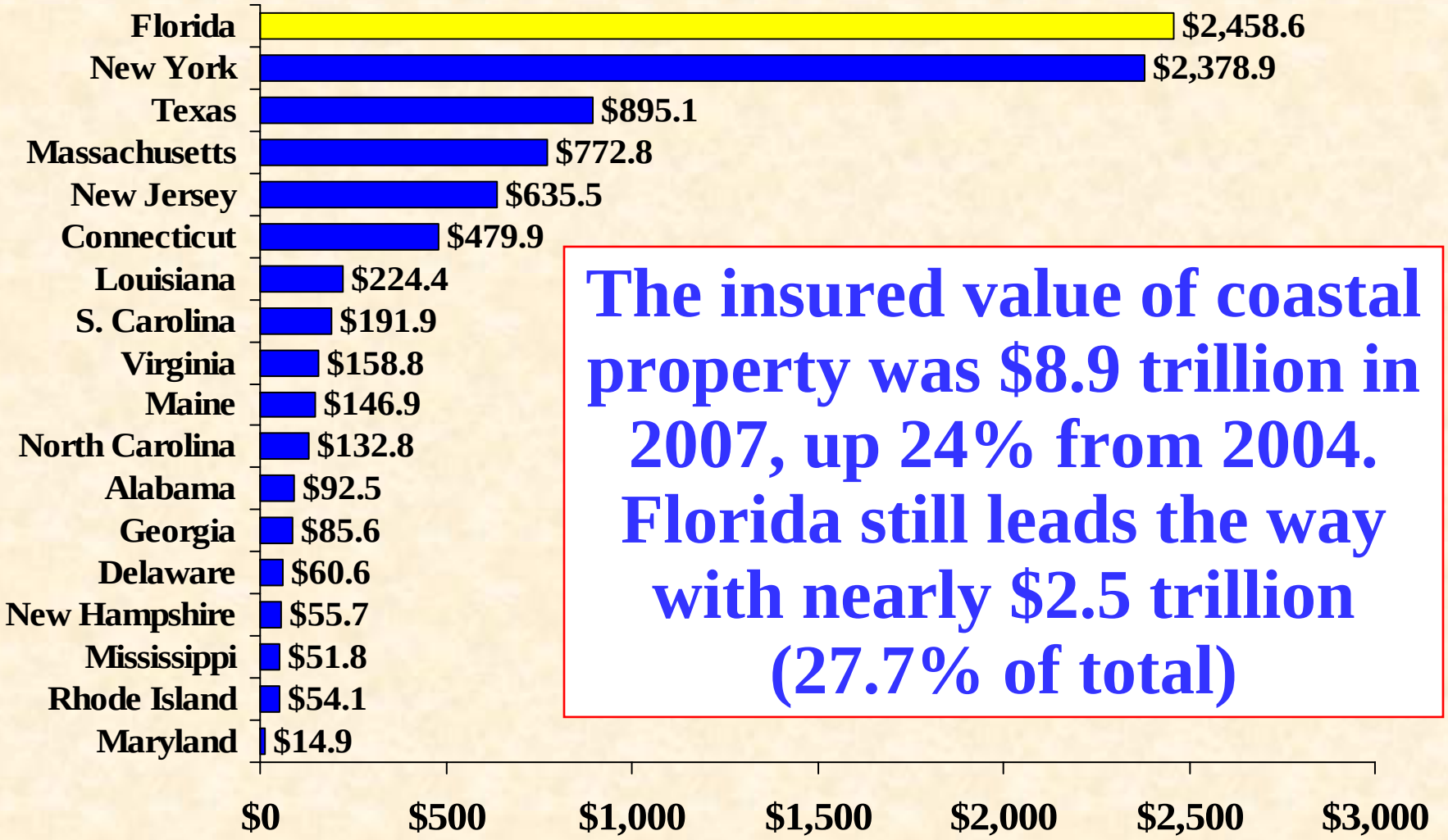
Total Value of Insured Coastal Exposure (2004, $ Billions)



The insured value of coastal property was $7.2 trillion in 2004. Florida led the way with more than $1.9 trillion (26.3% of total)

Source: AIR Worldwide

Total Value of Insured Coastal Exposure (2007, $ Billions)



The insured value of coastal property was $8.9 trillion in 2007, up 24% from 2004. Florida still leads the way with nearly $2.5 trillion (27.7% of total)

Source: AIR Worldwide

Questions & Answers

To ask a question, please dial 14 on your phone.

Please limit questions to 1-2 per person.

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Thank you for your time.

A copy of this presentation will be e-mailed to you shortly.

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