



Has global warming increased the toll of disasters?

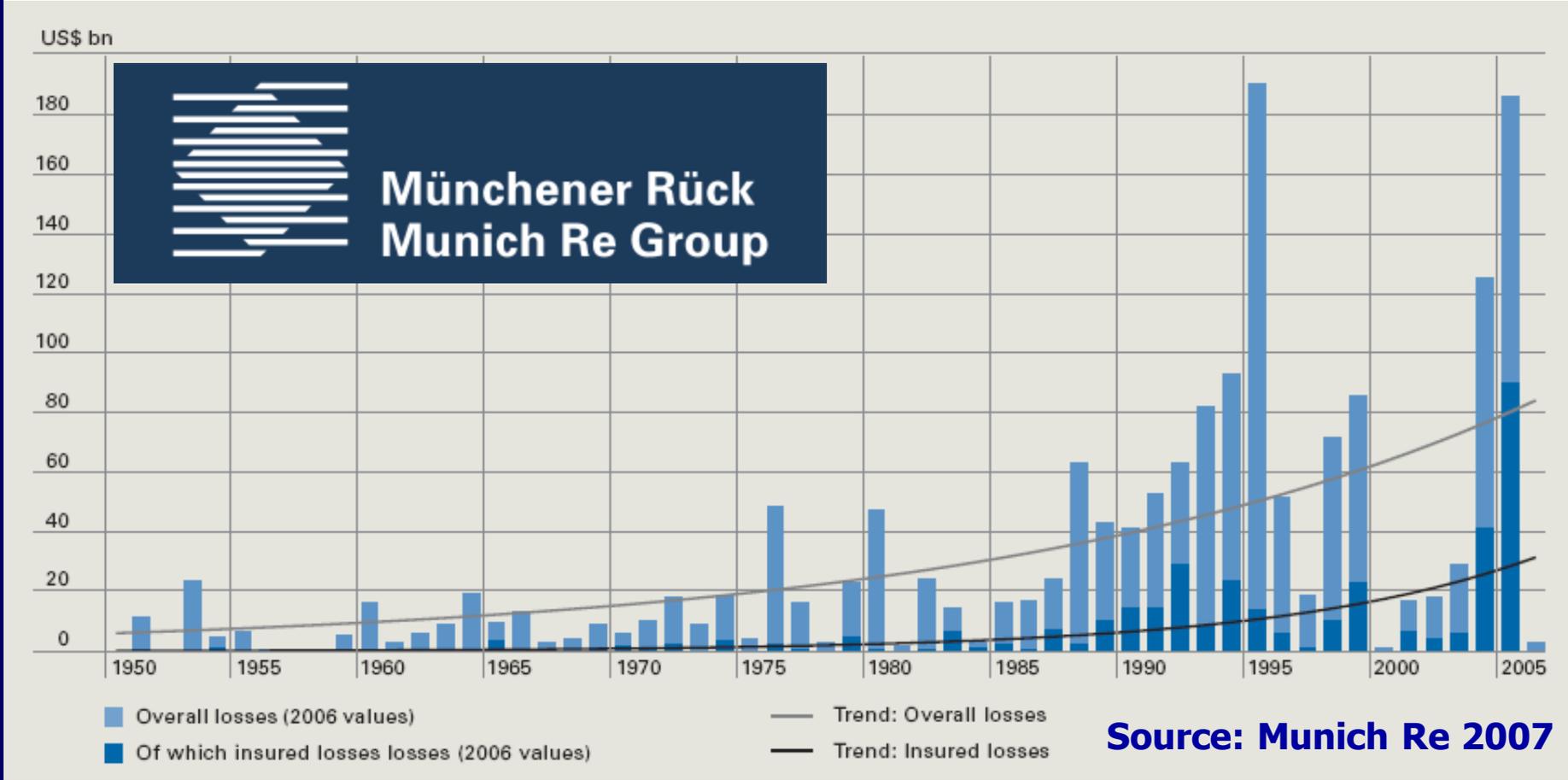
Roger A. Pielke, Jr.
University of Colorado

Royal Institution of Great Britain
5 February 2010
London, United Kingdom

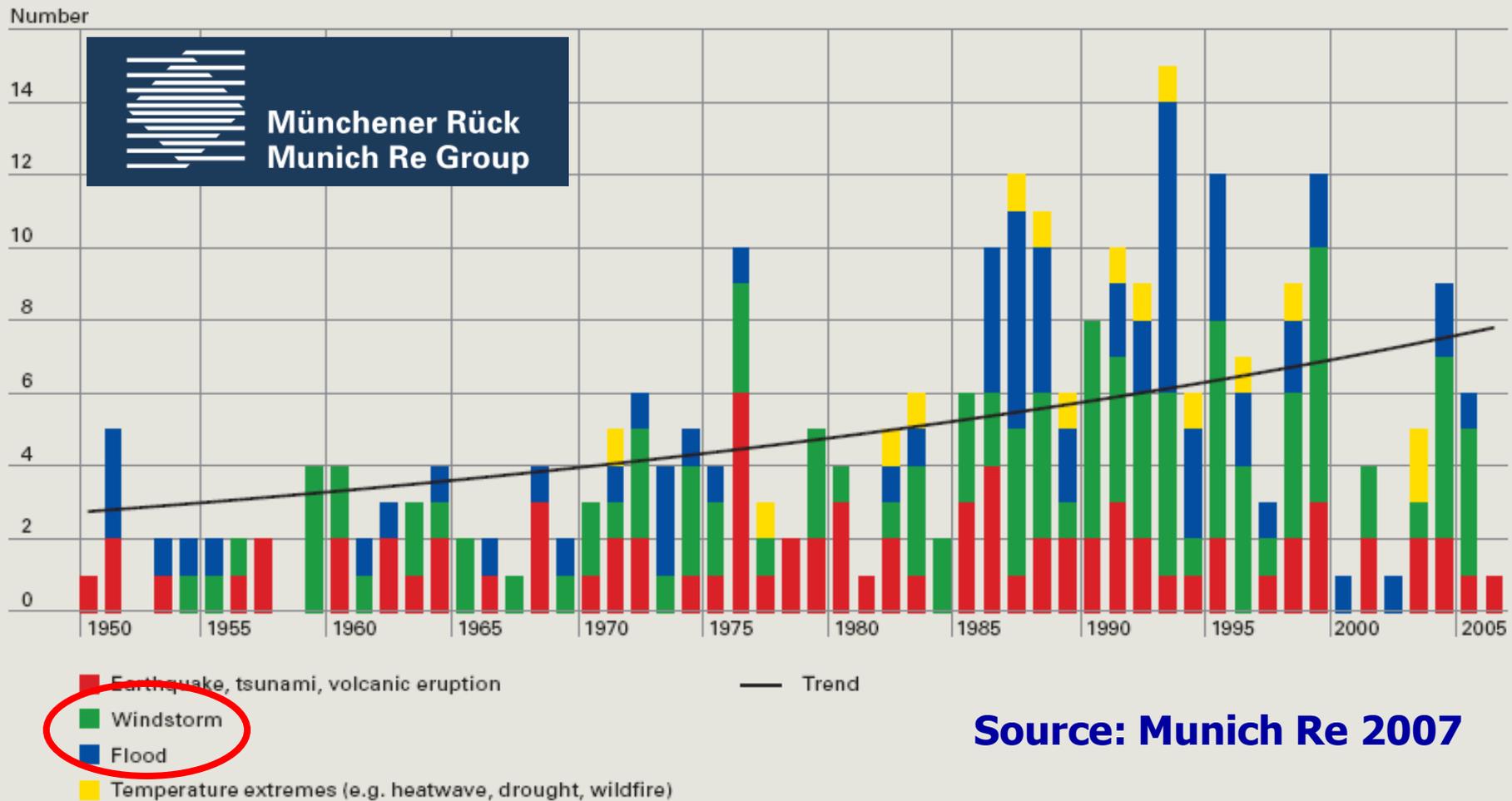
Conclusions

- There is as yet no signal of increasing greenhouse gases or temperatures in the rising toll of disasters
- Societal factors alone are sufficient to explain the long-term increases in disaster losses
- Humans influence the climate system – including, crucially, through greenhouse gas emissions, especially carbon dioxide
- Scientists expect a greater frequency of extreme events in the future
- I am a strong advocate for decarbonizing the global economy and improving adaptation
- The policy imperative does not justify misrepresenting or exaggerating the science

Disaster losses have been increasing



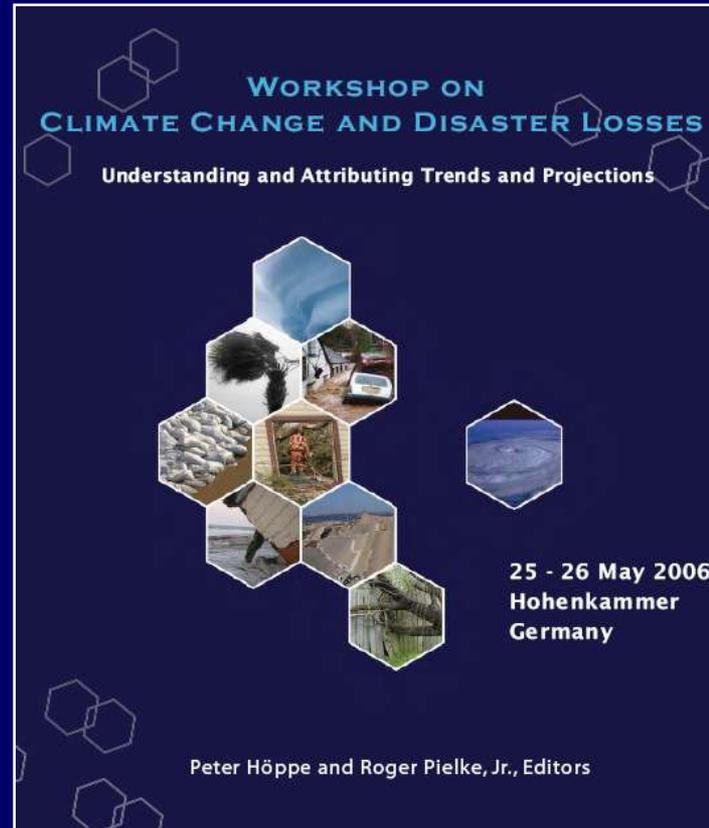
Flood and Wind Disasters Have Been Increasing Most



Source: Munich Re 2007

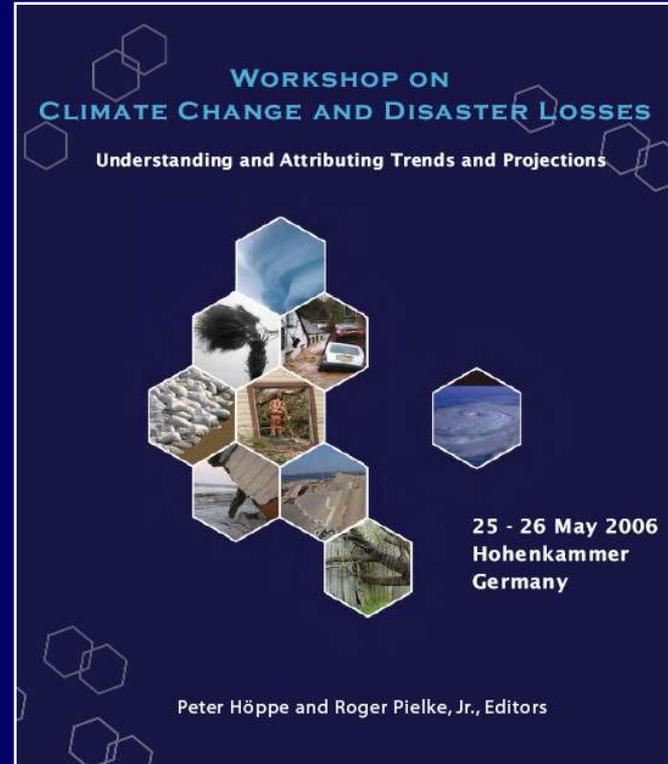
Hohenkammer Workshop May, 2006

- Co-sponsors: US NSF, Munich Re, GKSS Institute for Coastal Research, Tyndall Centre for Climate Change Research
- 32 participants from 16 countries
- 24 background “white papers”
- Summary consensus report
- Consistent with IPCC WGI



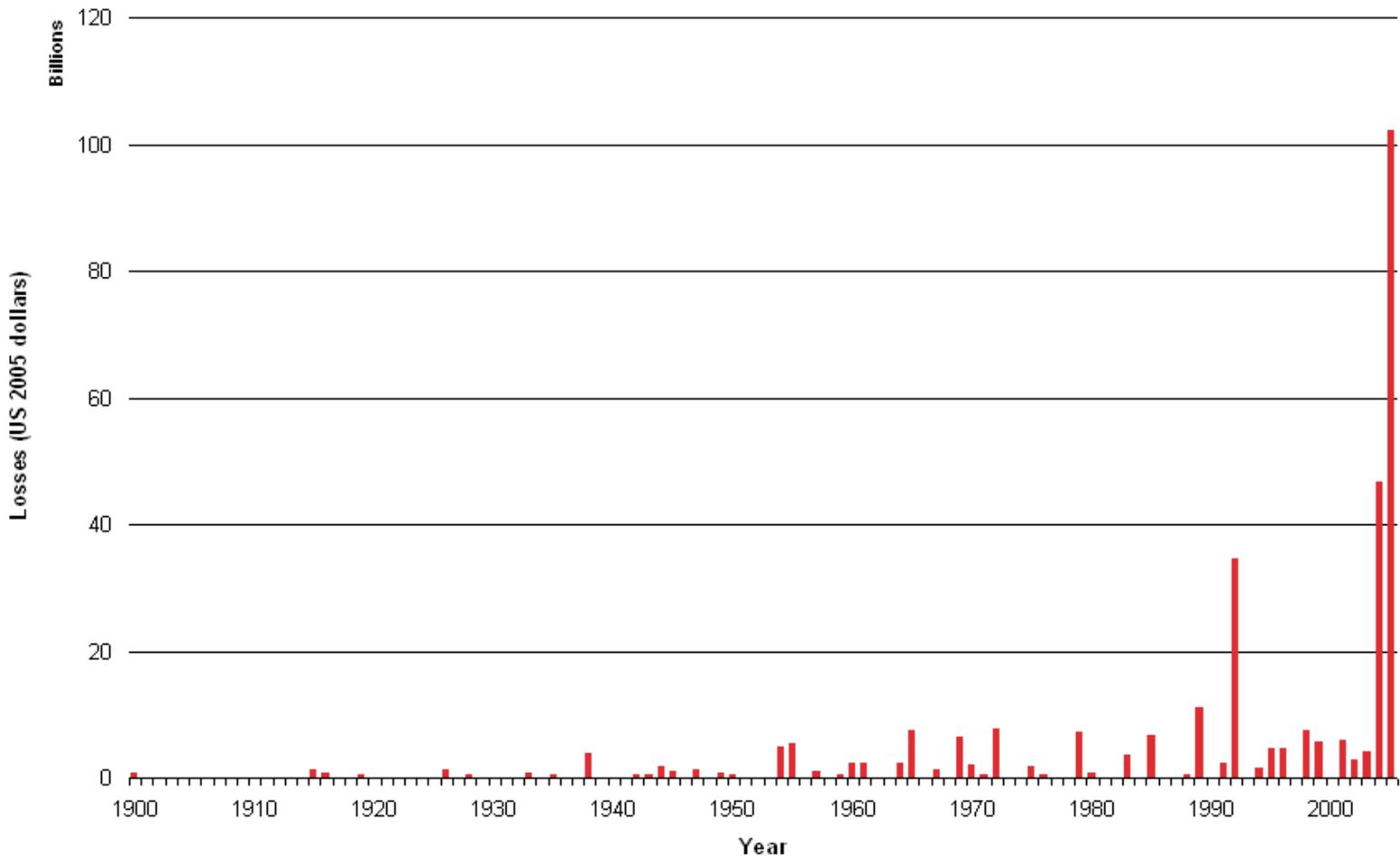
Hohenkammer Workshop May, 2006

- Analyses of long-term records of disaster losses indicate that societal change and economic development are the principal factors responsible for the documented increasing losses to date.
- Because of issues related to data quality, the stochastic nature of extreme event impacts, length of time series, and various societal factors present in the disaster loss record, it is still not possible to determine the portion of the increase in damages that might be attributed to climate change due to GHG emissions
- In the near future the quantitative link (attribution) of trends in storm and flood losses to climate changes related to GHG emissions is unlikely to be answered unequivocally.

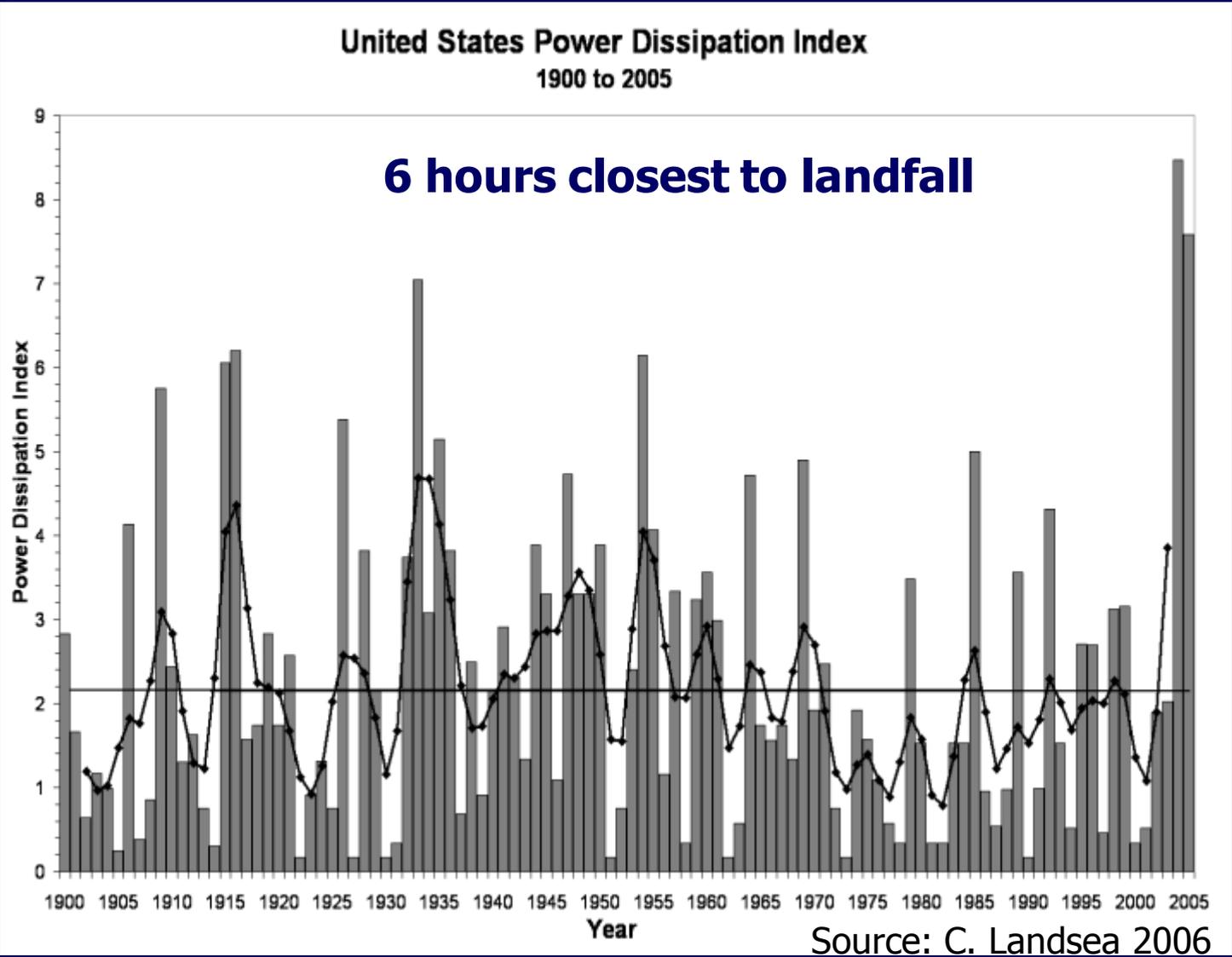


Rapidly increasing U.S. hurricane losses

Total Losses per Year from Atlantic Tropical Cyclones in 2005 Dollars



Damage trend can't be due to storm behavior alone

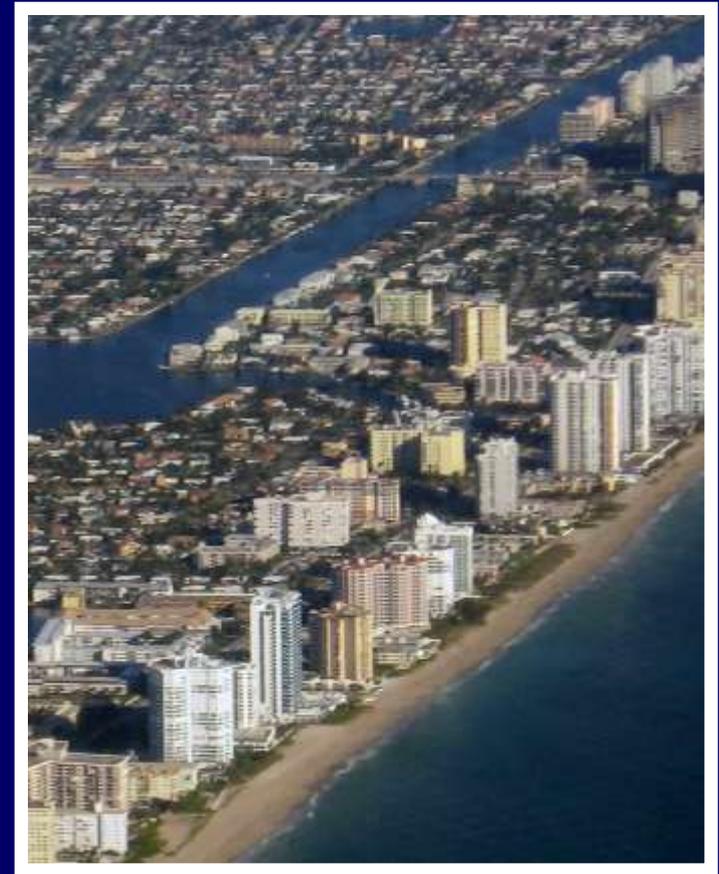


USA: Coastal development

Miami Beach 1926



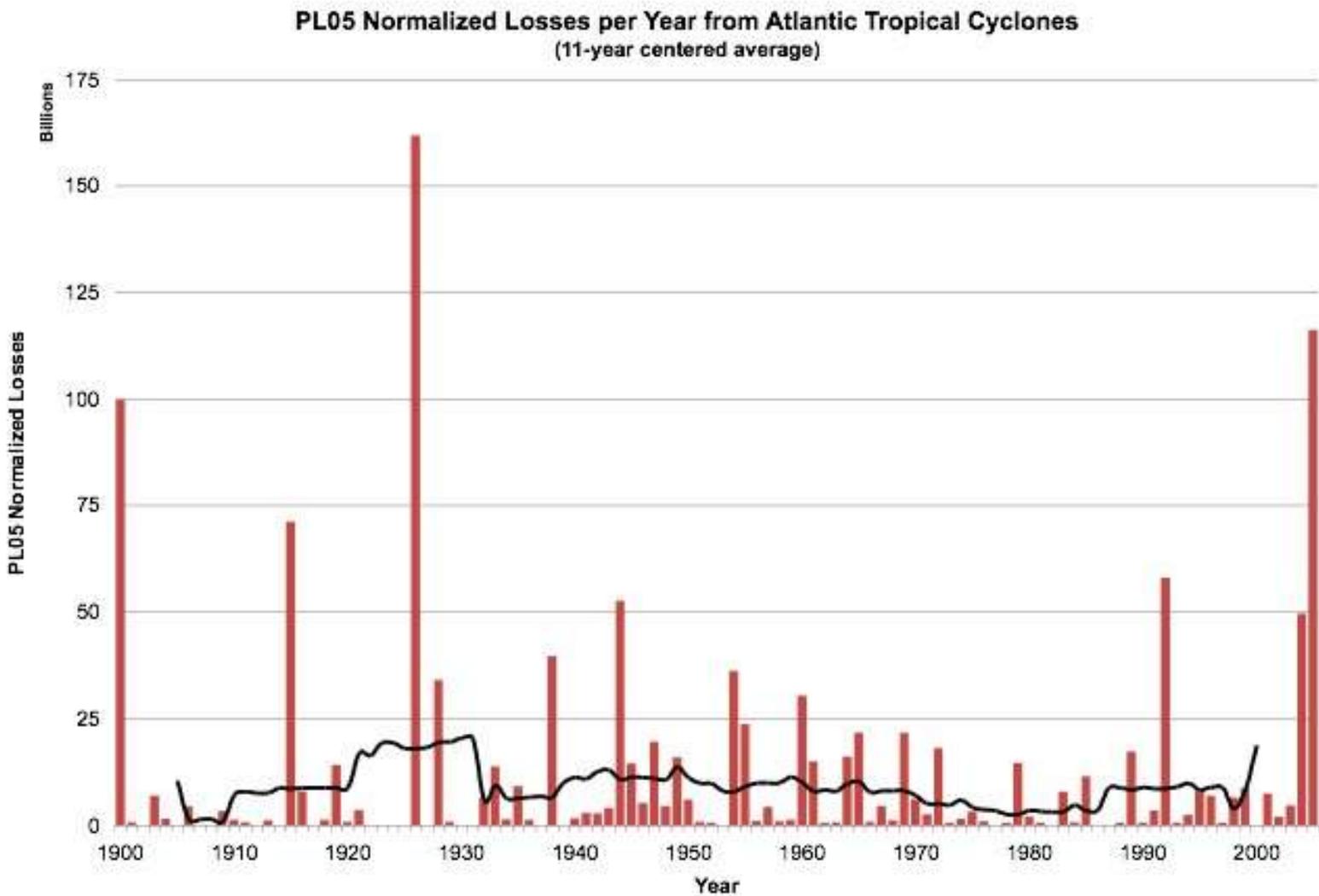
Miami Beach 2006



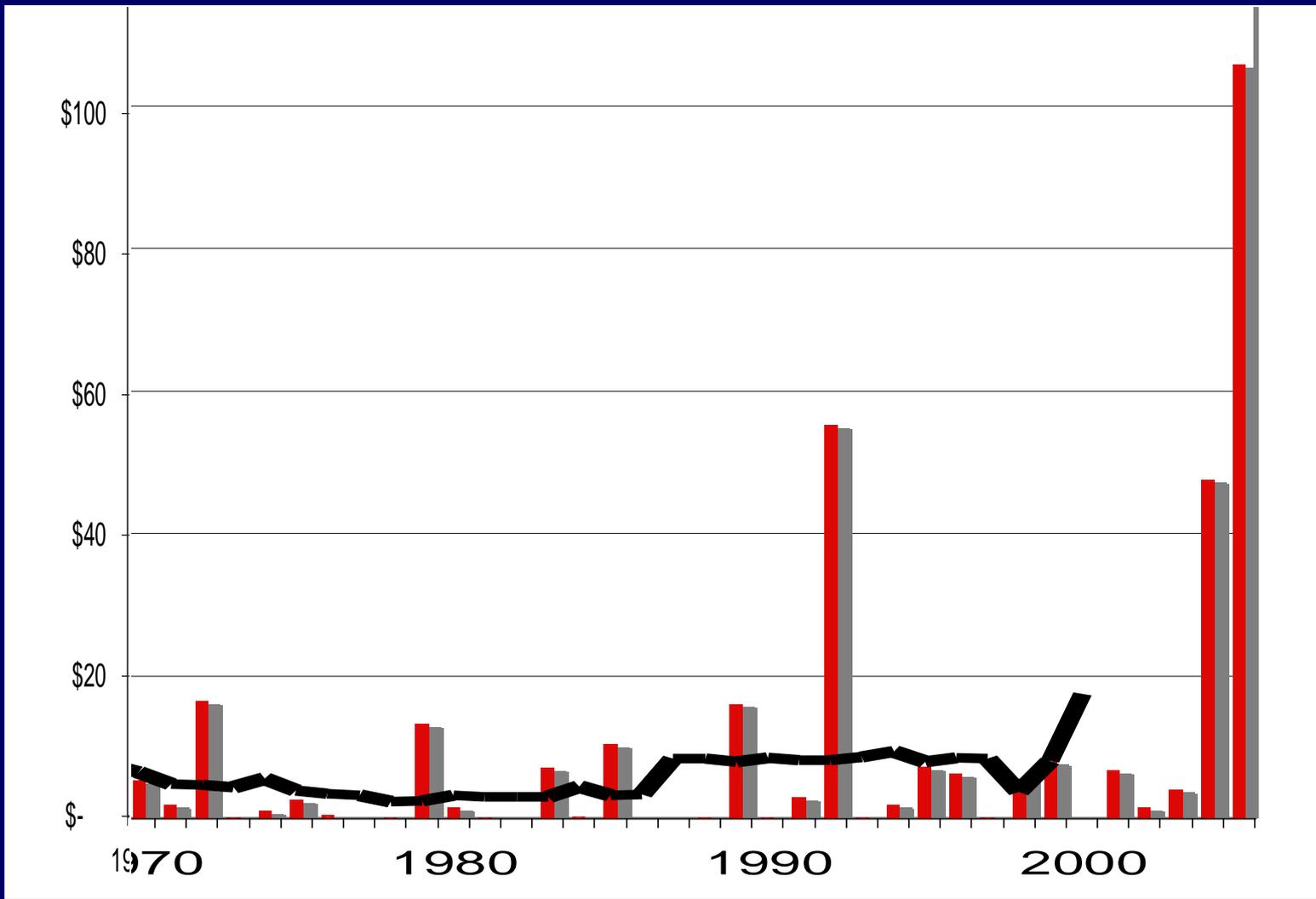
Wendler Collection

Joel Gratz © 2006

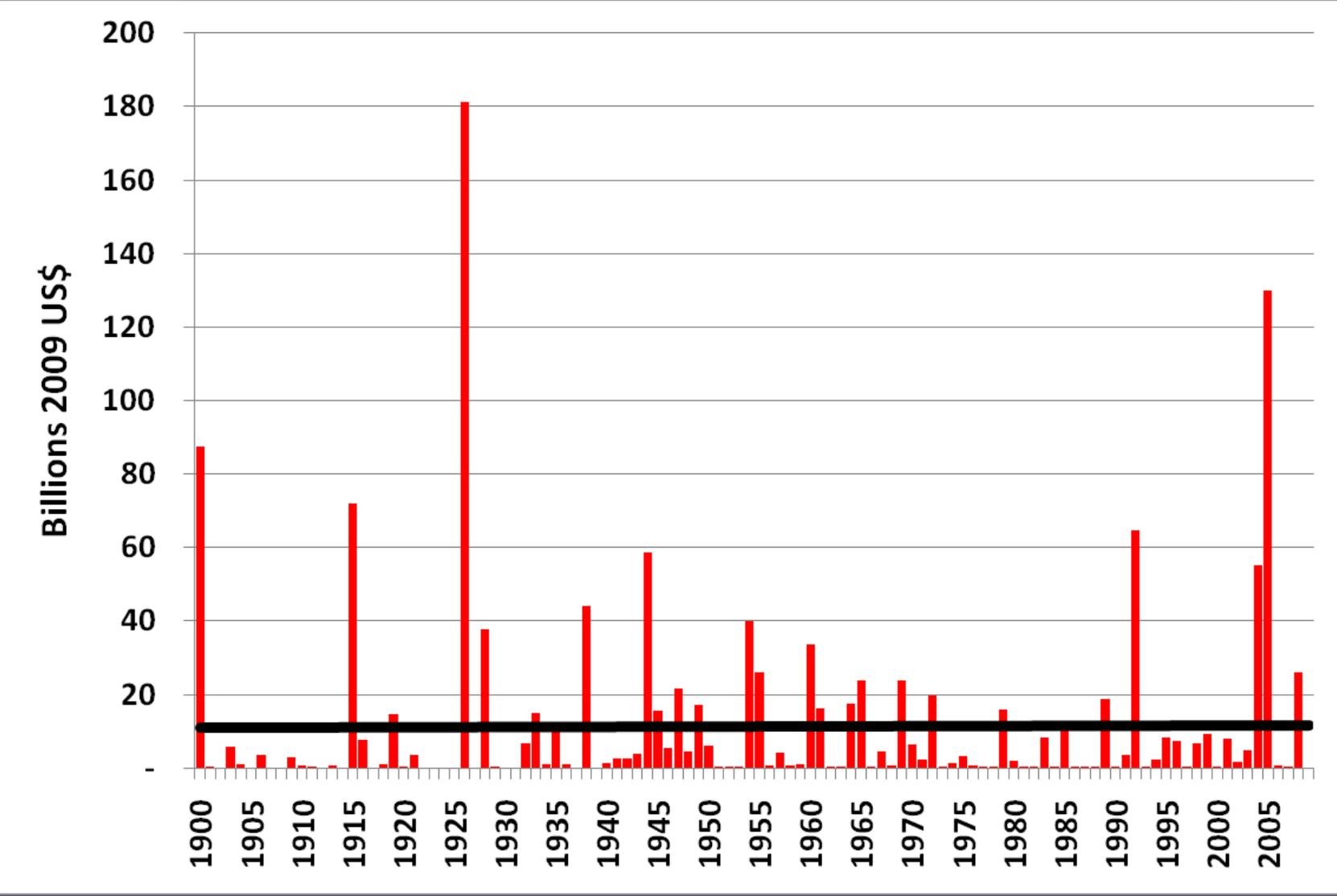
US damage if every hurricane season occurred in 2005



Normalized Losses 1970-2005



Updated, 1900-2009 and with trendline



Our work has been replicated (several times)

“There is no evidence yet of any trend in tropical cyclone losses that can be attributed directly to anthropogenic climate change.”

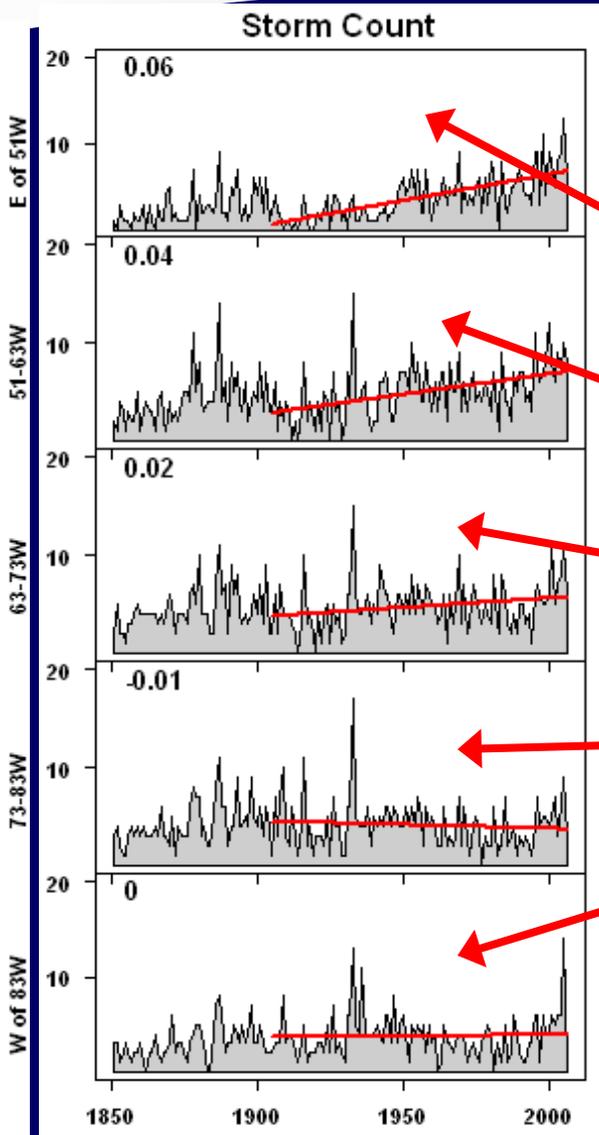
Schmidt et al. 2009



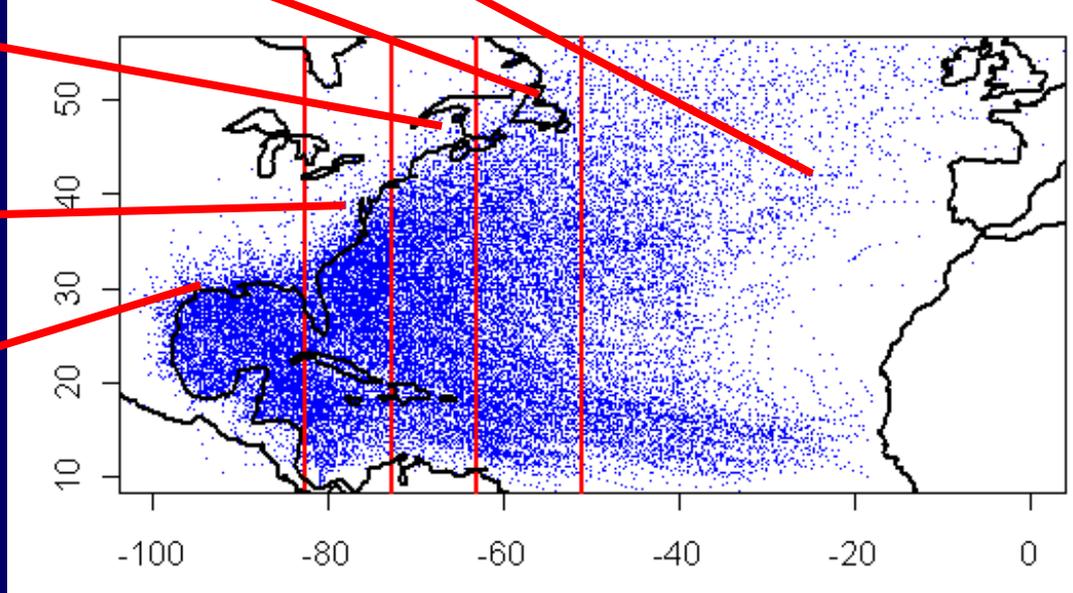
**Münchener Rück
Munich Re Group**

Where are trends observed?

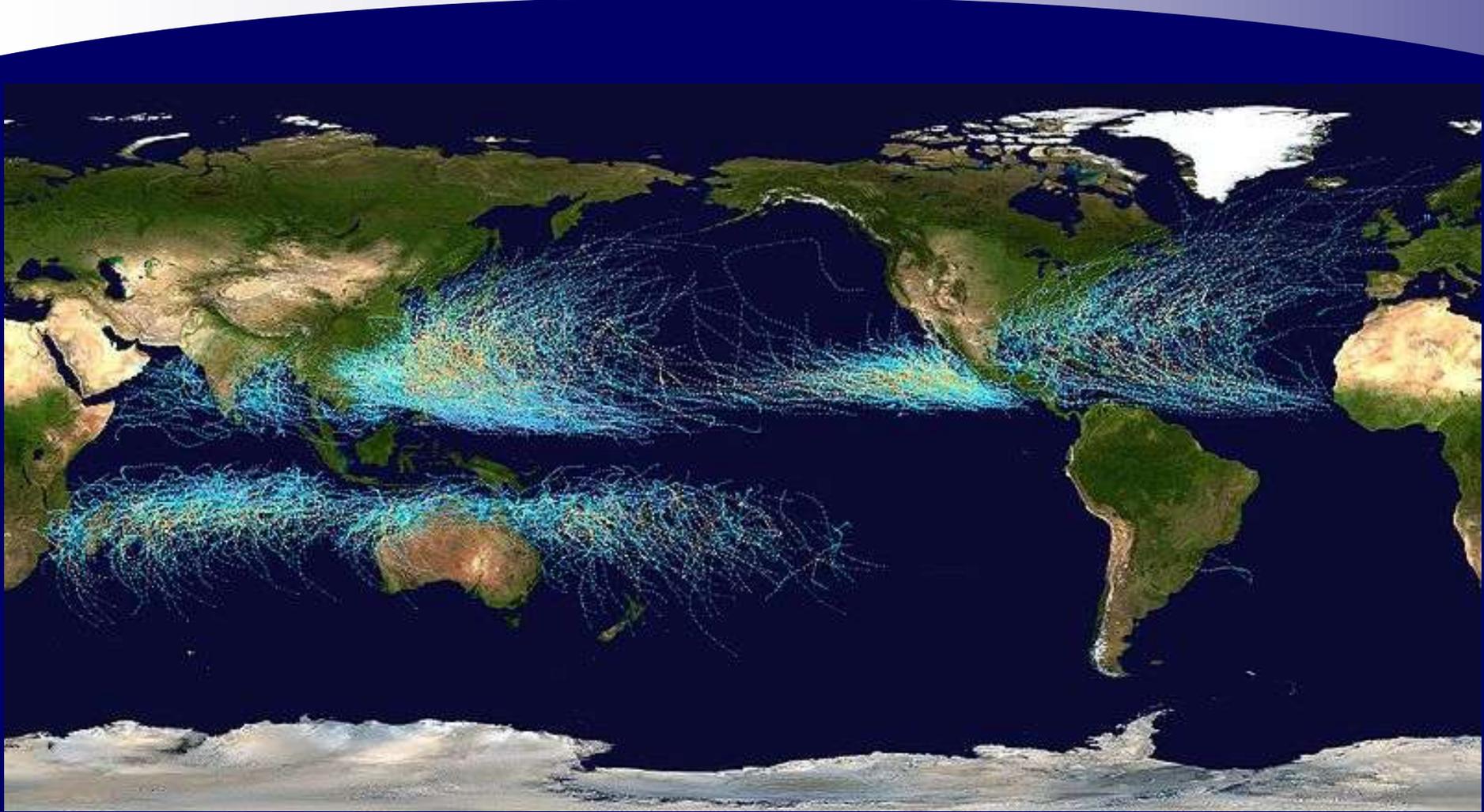
Trends in North Atlantic storms occur in the eastern part of the basin



Source: Pielke (2009)



No trends in tropical cyclone landfalls!!

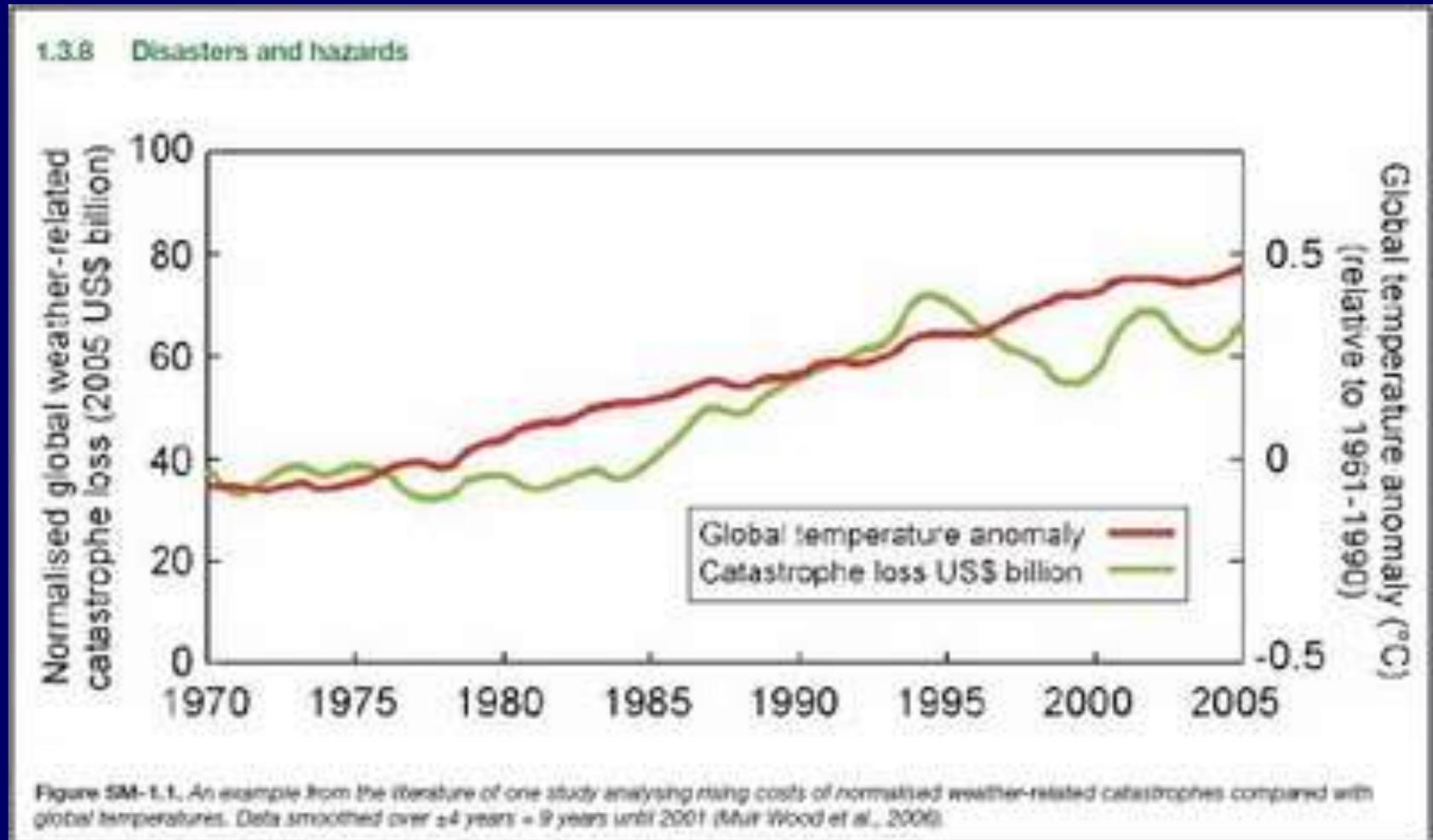


Peer reviewed studies – normalized losses

| Hazard | Region | Period | Normalization | Normalized loss | Reference |
|-----------|---------------|-----------|--------------------|-----------------|-----------------------------|
| Bushfire | Australia | 1900-2009 | Wealth, population | No trend | McAneney et al. (in review) |
| Flood | Europe | 1970-2006 | Wealth, population | No trend | Barredo 2009 |
| Windstorm | Europe | 1970-2008 | Wealth, Population | No trend | Barredo 2009 |
| Flood | USA | 1926-2000 | Wealth, population | No trend | Downton et al. 2005 |
| Hurricane | Latin America | 1944-1999 | Wealth, population | No trend | Pielke et al. 2003 |
| Hurricane | USA | 1900-2005 | Wealth, population | No trend | Pielke et al. 2008 |
| Hurricane | USA | 1950-2005 | GDP, population | No trend | Schmidt et al. 2009 |
| Tornado | USA | 1890-1999 | Wealth | No trend | Brooks and Doswell 2001 |
| Typhoon | China | 1983-2006 | GDP | No trend | Zhang et al. 2009 |
| Typhoon | India | 1977-1998 | Income, population | No trend | Raghavan and Rajesh 2003 |
| Weather | Australia | 1967-2006 | Wealth, population | No trend | Crompton and McAneney 2008 |
| Weather | USA | 1951-1997 | Wealth, population | No trend | Choi and Fisher 2003 |
| Weather | World | 1950-2005 | GDP, population | No trend | Miller et al. 2008 |

Source: adapted from Bouwer, (in review)

What about IPCC 2007?



IPCC expert reviewer comment

IPCC 2007 Expert reviewer

I propose "Since 1970 the global normalized results do not show any statically significant correlation with global temperatures." and to remove the end of the paragraph and the figure 1,5 because **it can mislead a reader** not familiar with correlation.

Another expert comment and IPCC response

IPCC 2007 Expert reviewer:

“I think this is inappropriate. It leads the reader into interpreting recent events in a particular way without providing supporting information. This suggestion, that the losses in 2004 and 2005 draw Pielke's results into question, needs to be supported with a reference or a solid in chapter assessment. What does Pielke think about this?”

(Francis Zwiers, Canadian Centre for Climate Modelling and Analysis)

IPCC response:

I believe Pielke agrees that adding 2004 and 2005 has the potential to change his earlier conclusions – at least about the absence of a trend in US Cat losses.

IPCC's dodgy disaster dossier

- The IPCC included a “misleading” graph
 - That graph does not appear in the literature (grey or otherwise)
- The IPCC violated its procedures
- The IPCC ignored its reviewers
- The IPCC made up a misleading response about my views

- The bottom line? There is no signal (yet) of rising temperatures in the rising toll of disasters

The IPCC failed comprehensively on this issue. Seeking to argue otherwise flies in the face of science, common science and what is abundantly obvious.

This issue is not characterized by nuance or ambiguity.

What the (data) source of the IPCC graph actually says

“We find insufficient evidence to claim a statistical relationship between global temperature increase and normalized catastrophe losses.”

Miller et al. 2008



Last Words

"[I]t is difficult to tell to what extent, if any, climate change has also already affected past disaster losses around the world. Extreme weather events are rare, so identifying small trends is difficult when losses vary so much from year to year, creating a lot of "noise" in the dataset, and many competing factors contribute to the overall pattern."



Bob Ward, 26 January 2010
The Guardian

How to learn more and provide feedback!

- pielke@colorado.edu
- Papers etc. can be downloaded from:
<http://sciencepolicy.colorado.edu>
- Weblog:
<http://rogerpielkejr.blogspot.com>

Thank you!