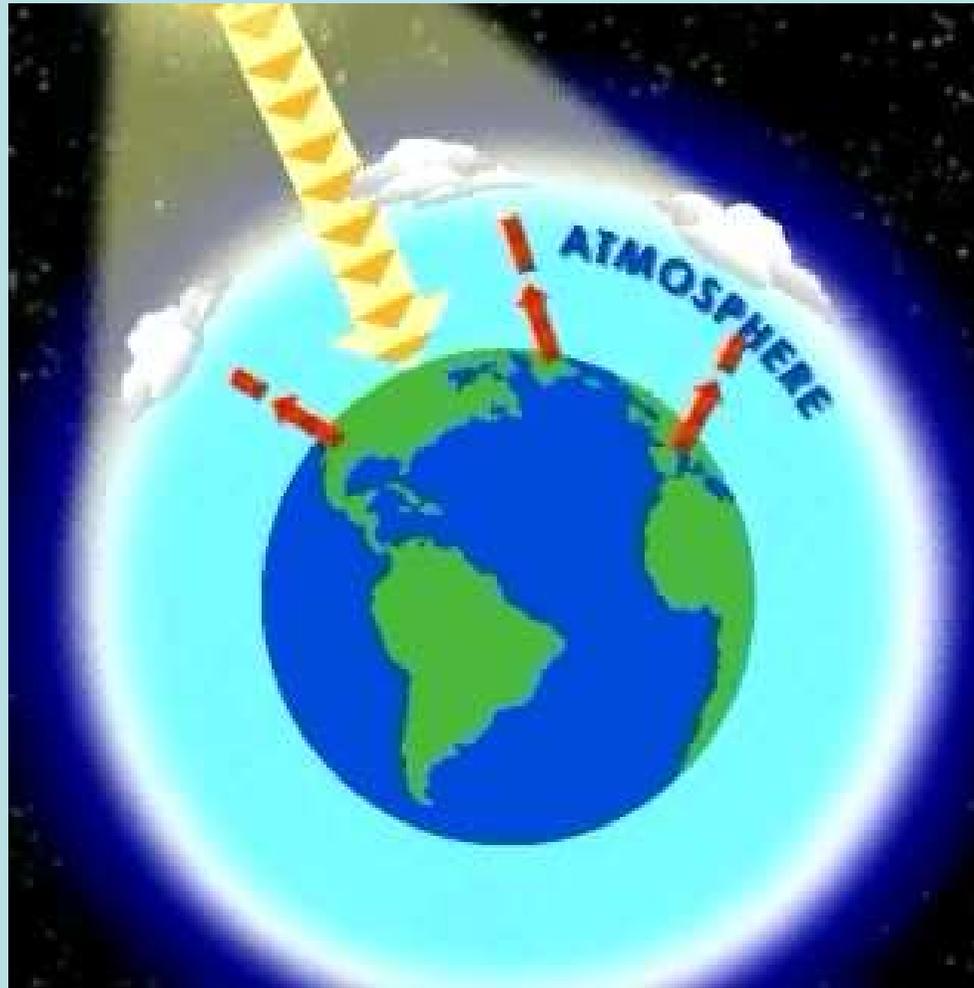


# Wacky Weather?

## **Extreme Weather Events and How they might impact your Community...**

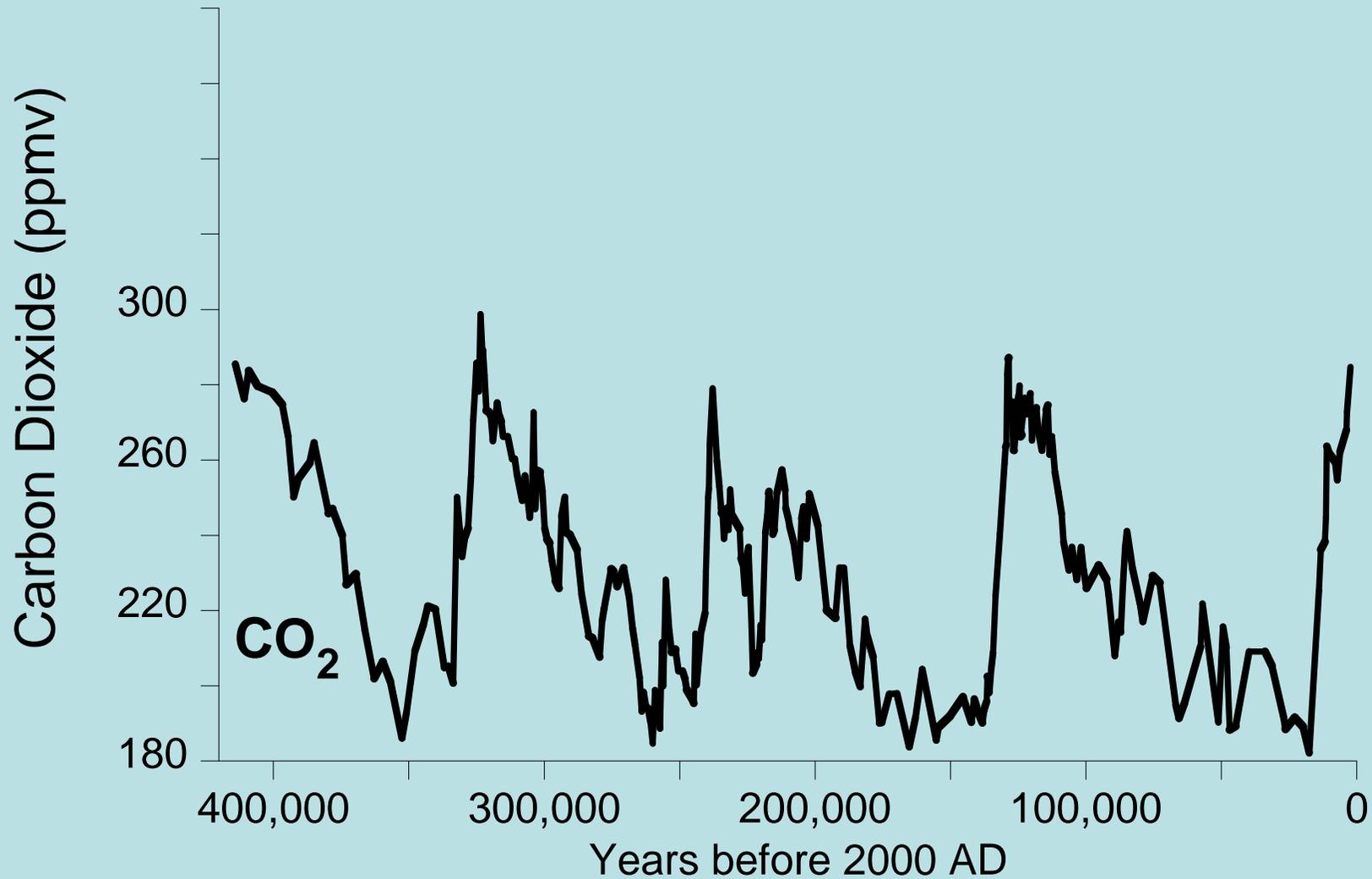
Sherry Godlewski  
NH Department of Environmental Services

# Our Planet Has a “CO<sub>2</sub>-Blanket”



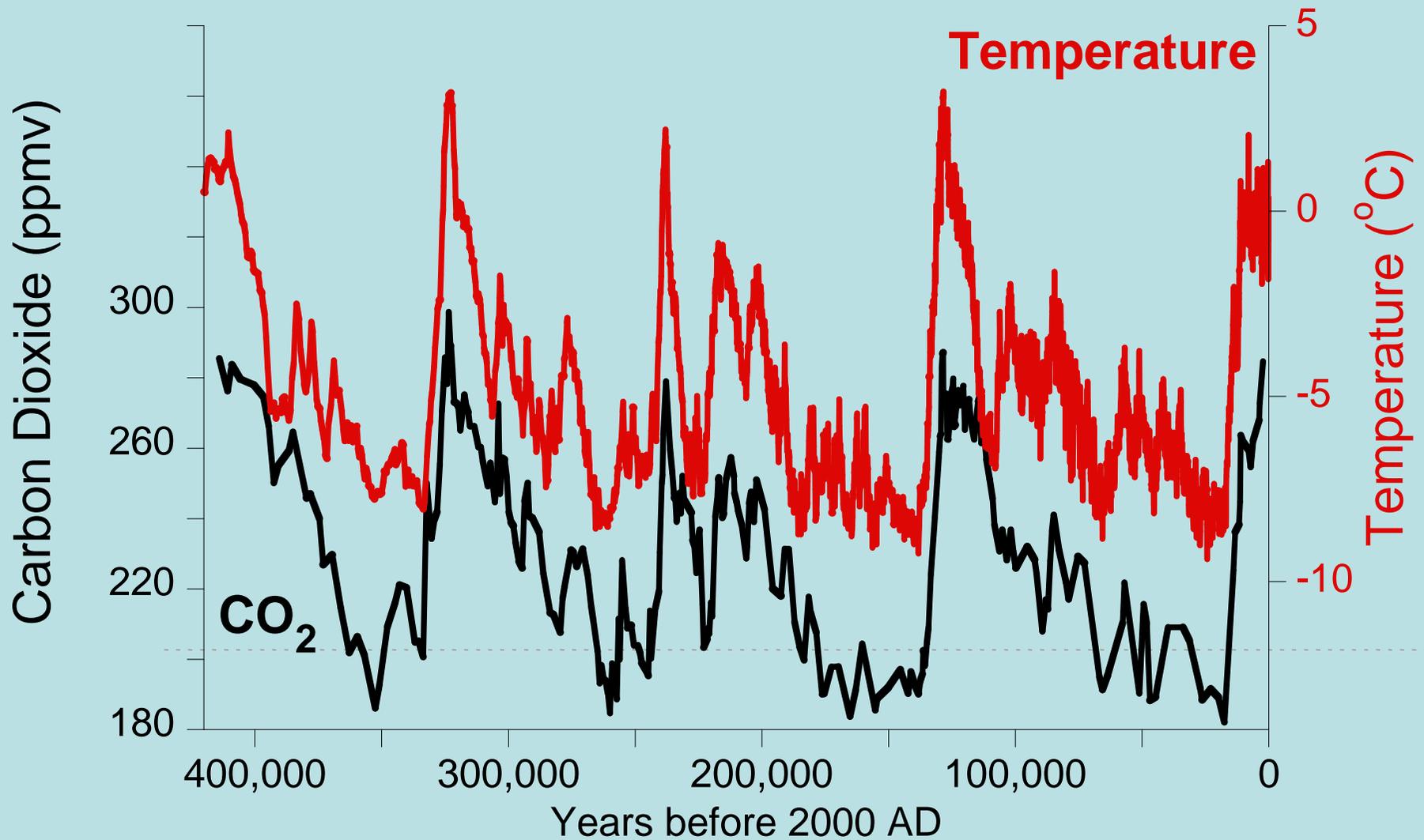
[http://earth.rice.edu/mtpe/atmo/atmosphere/hot/anom\\_99/0Greenhouse\\_Effect.html](http://earth.rice.edu/mtpe/atmo/atmosphere/hot/anom_99/0Greenhouse_Effect.html)

# Atmospheric Carbon Dioxide Record



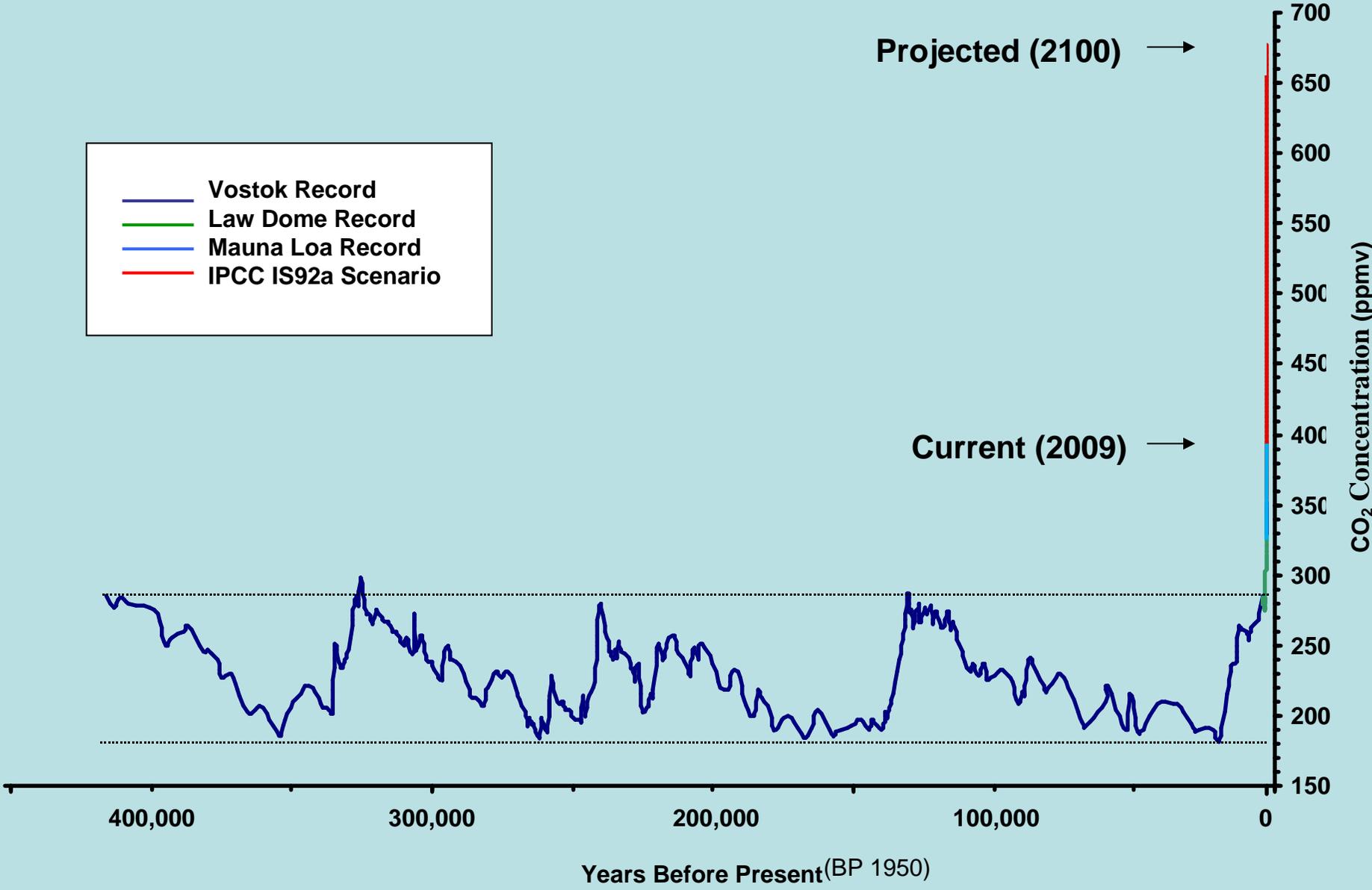
Petit et al., 1999

# Atmospheric Carbon Dioxide & Temperature Record



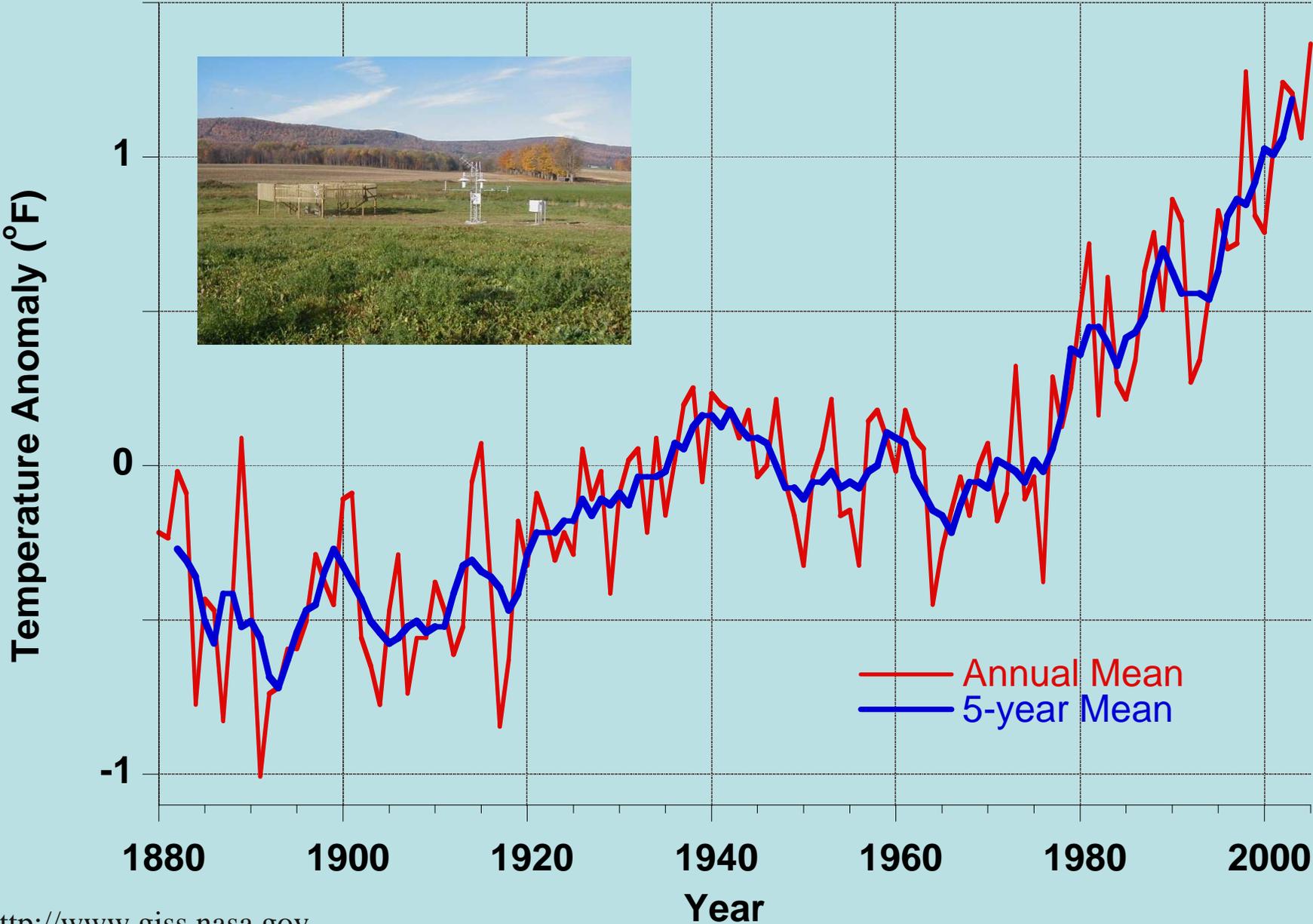
Petit et al., 1999

# Historical and Future Carbon Dioxide Levels

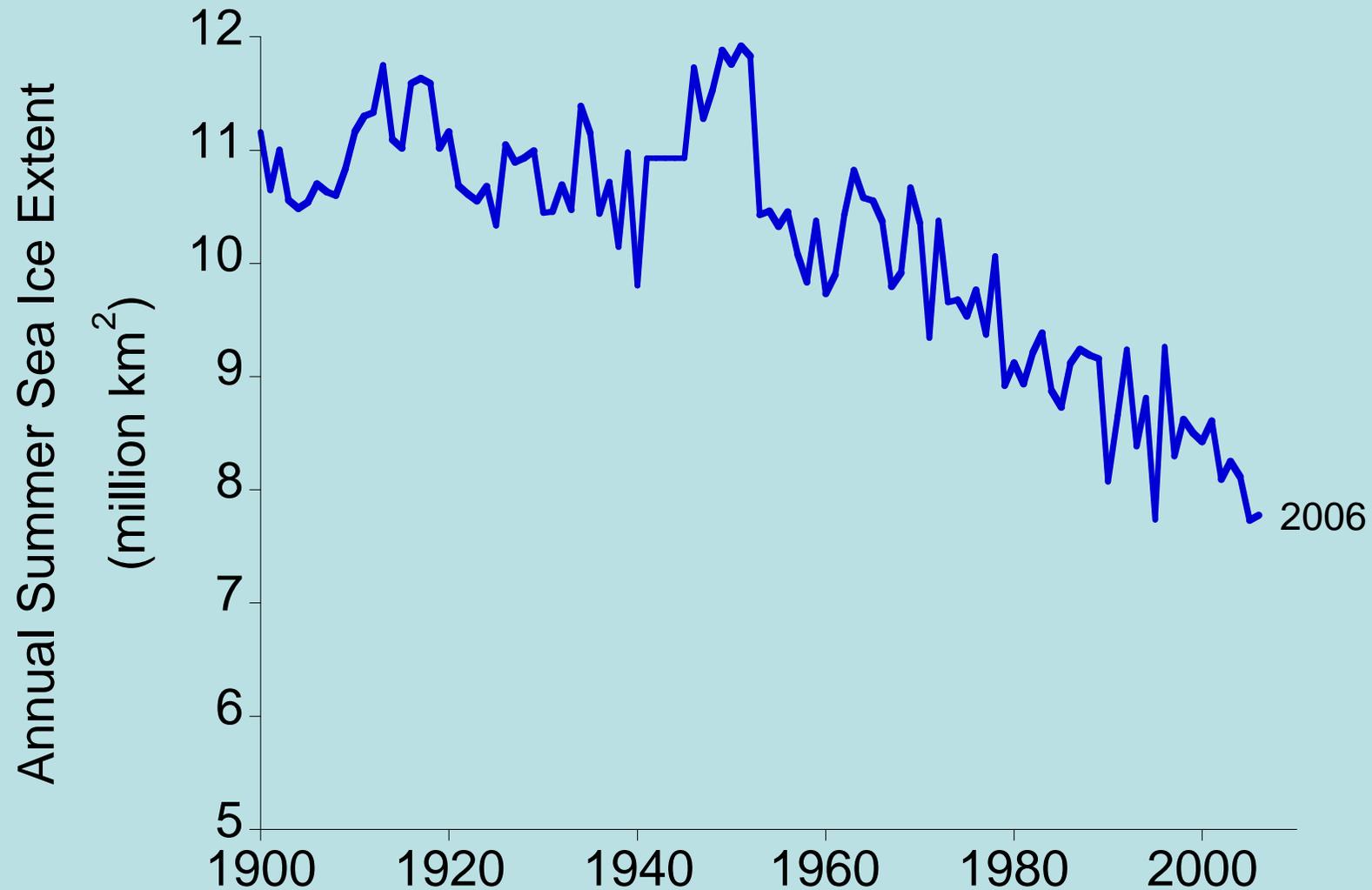


Source: C. D. Keeling and T. P. Whorf; Etheridge *et.al.*; Barnola *et.al.*; (PAGES / IGBP); IPCC

# Global Temperature 1880-2005



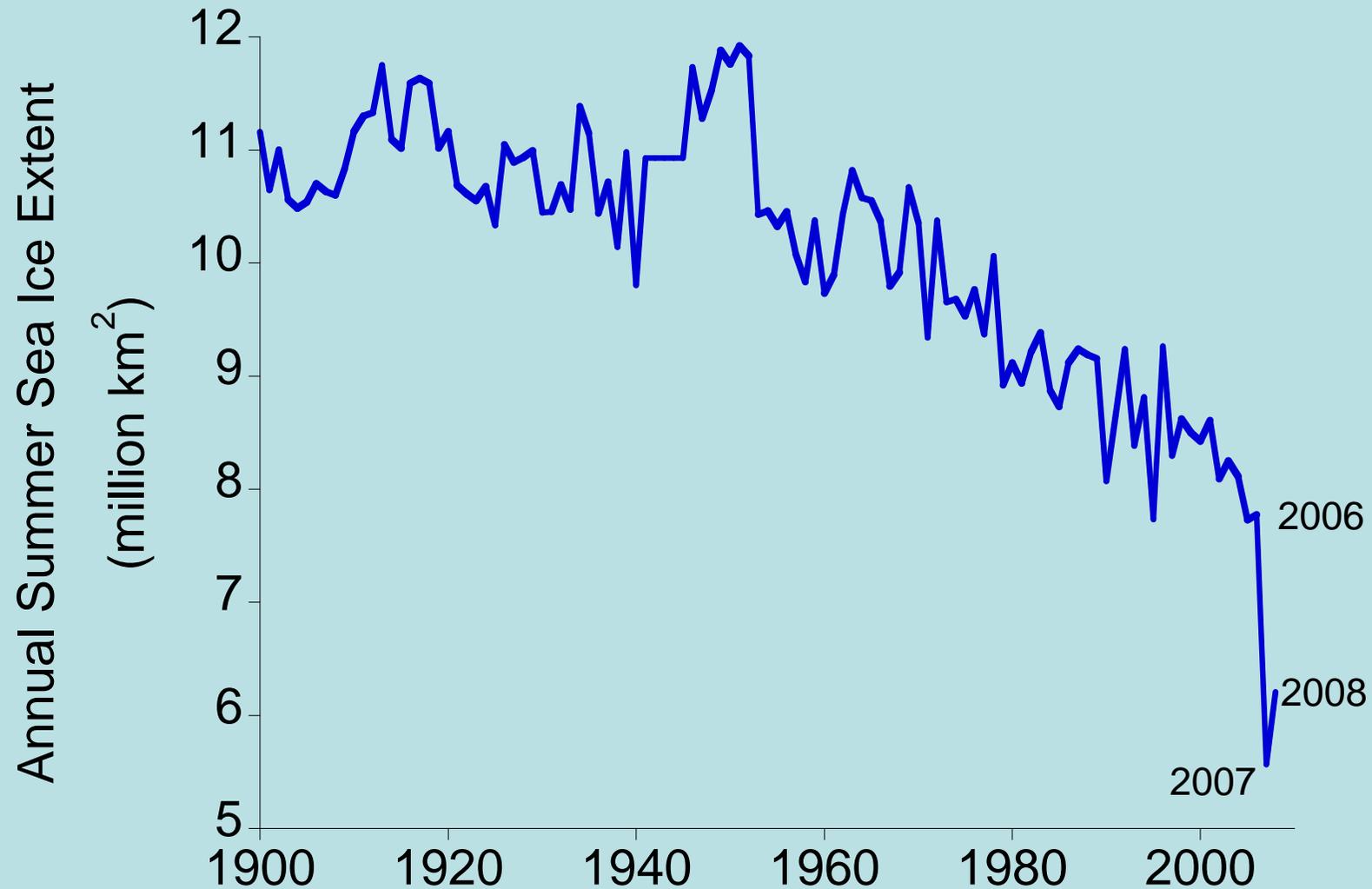
# Summer (JJA) Arctic Sea Ice Extent



University of Illinois

The Cryosphere Today <http://arctic.atmos.uiuc.edu/cryosphere/>

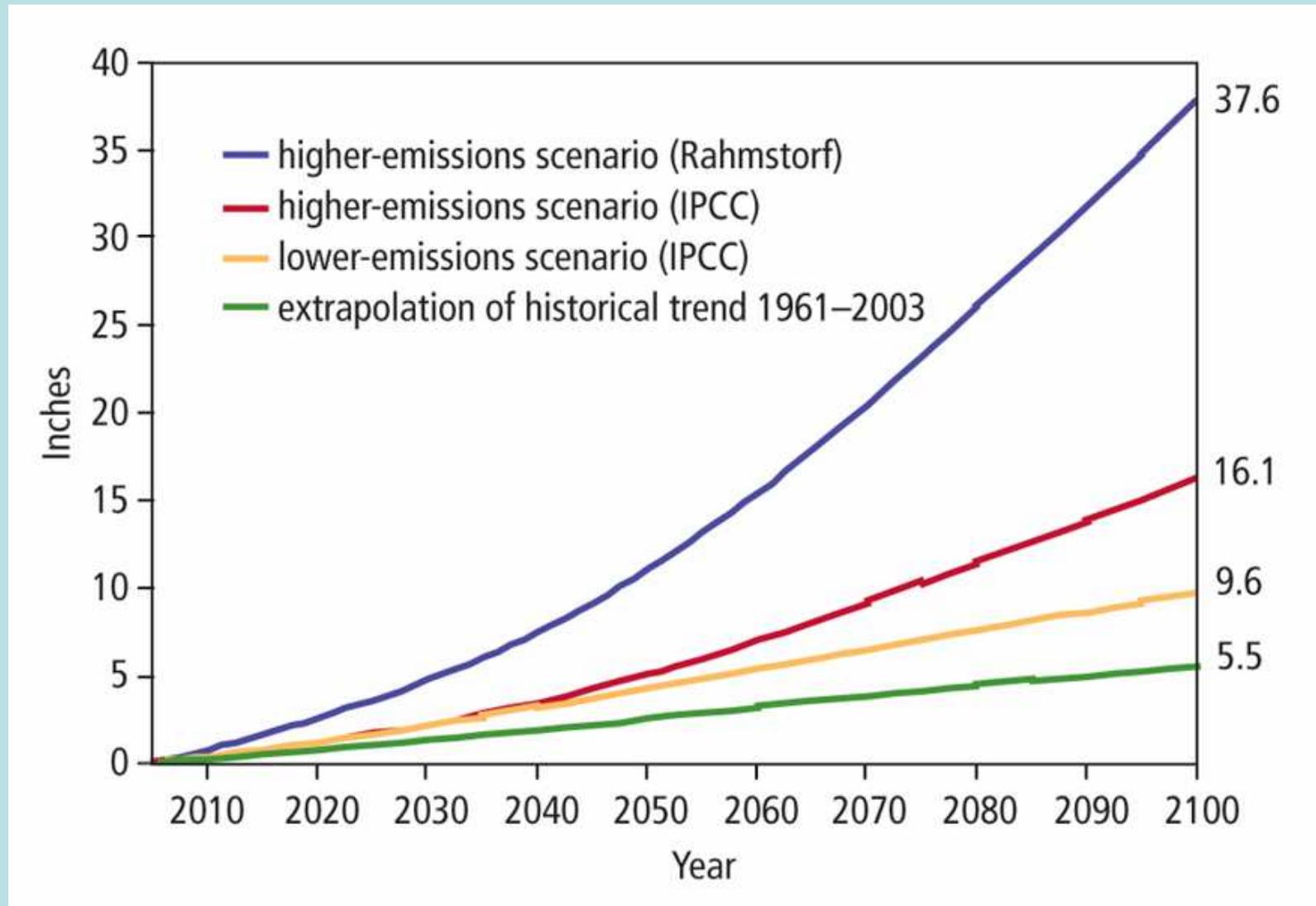
# Summer (JJA) Arctic Sea Ice Extent



University of Illinois

The Cryosphere Today <http://arctic.atmos.uiuc.edu/cryosphere/>

# Projected Rise in Global Sea Level



<http://www.northeastclimateimpacts.org/pdf/confronting-climate-change-in-the-u-s-northeast.pdf>

# Indicators of Climate Change in the Northeast

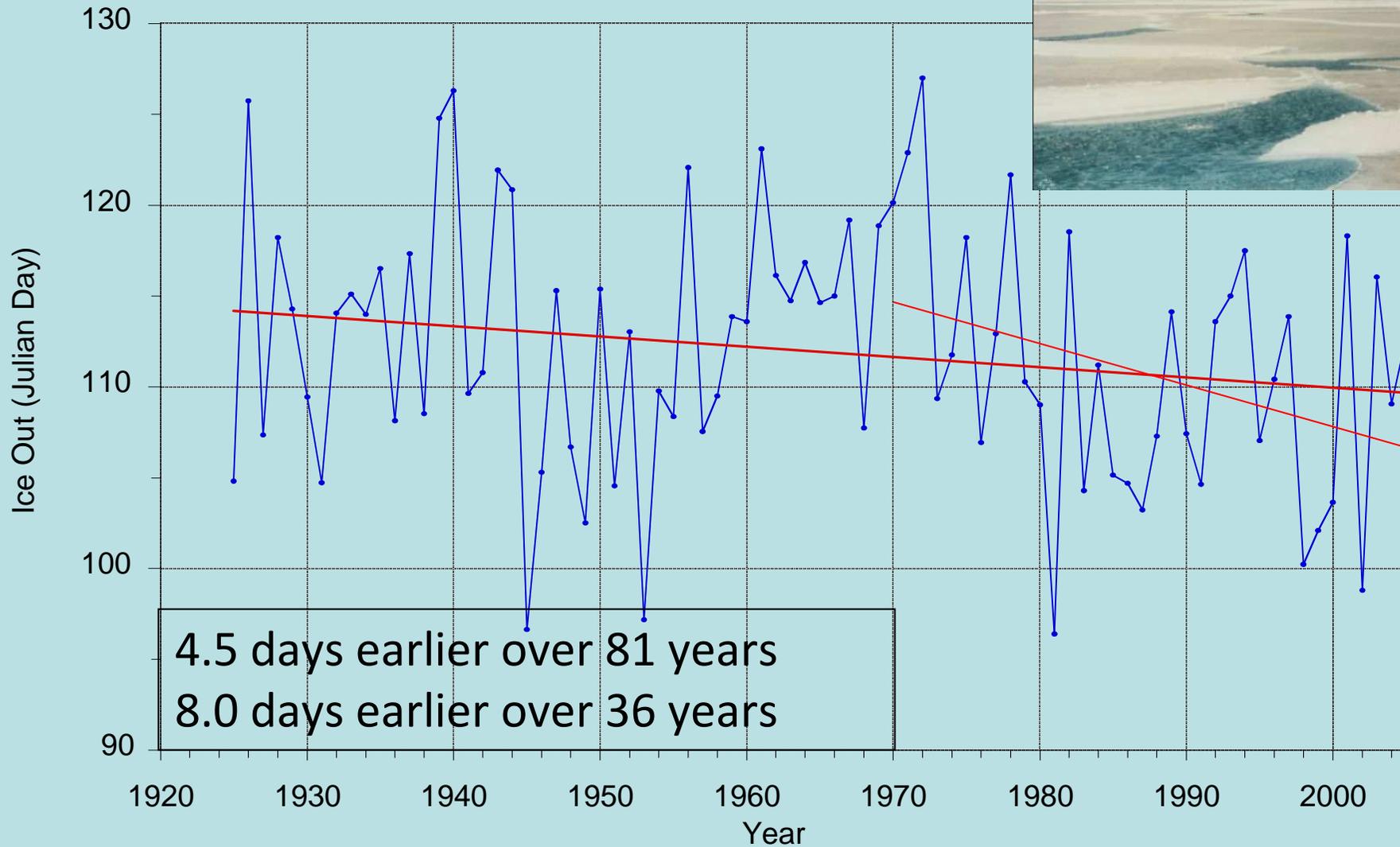
---

- More precipitation
- More frequent extreme precipitation
- Winter warming
- Decreased snowfall
- Fewer days with snow on ground
- Lake ice out dates earlier
- Earlier spring runoff
- Extended growing season
- Sea-level rise
- Drought

Hodgkins et al., 2002; 2003; Wolfe et al., 2005; Wake and Markham, 2005; Wake et al., 2006

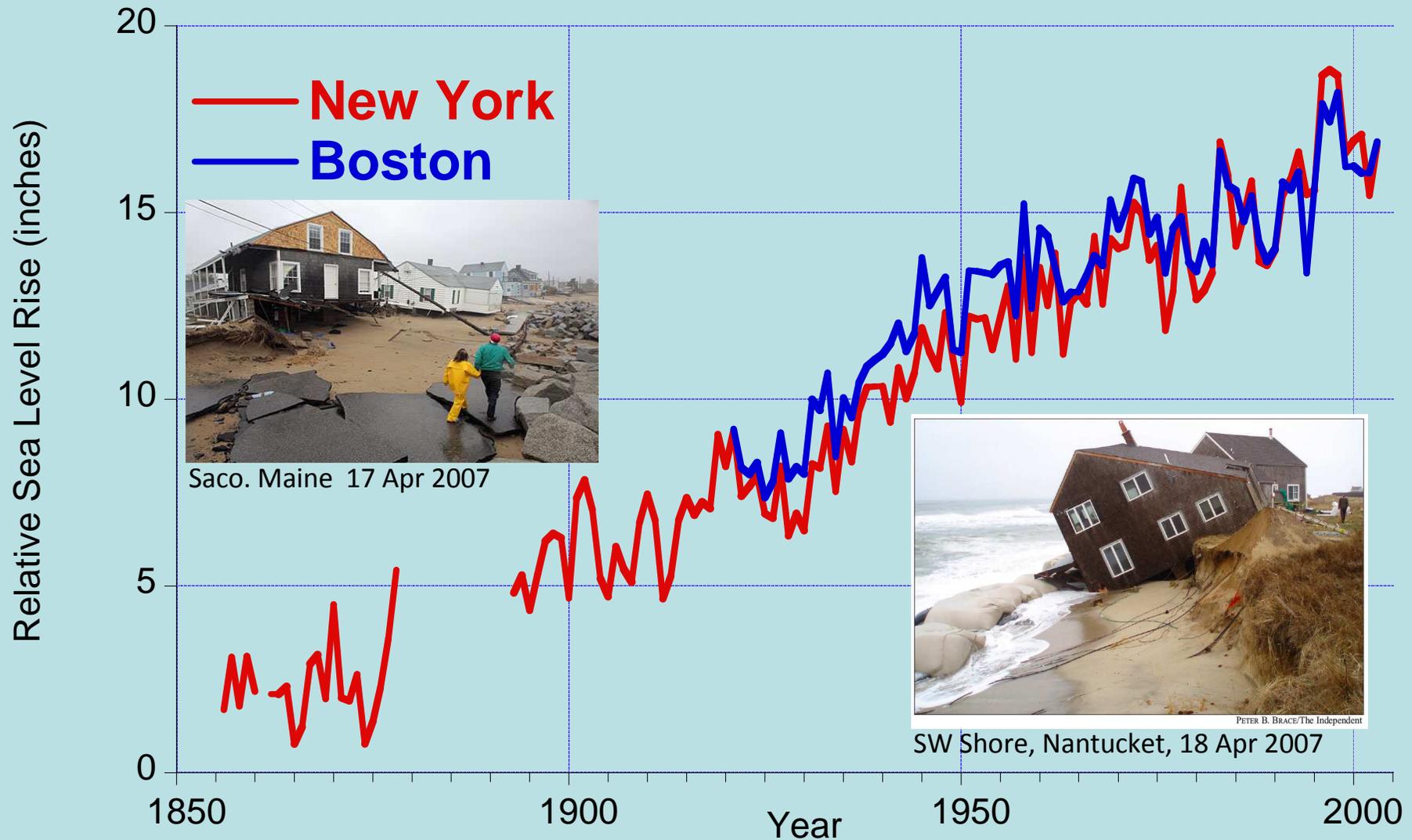
# Average Ice Out Day Trend

## 1925-2005 (27 Lakes)



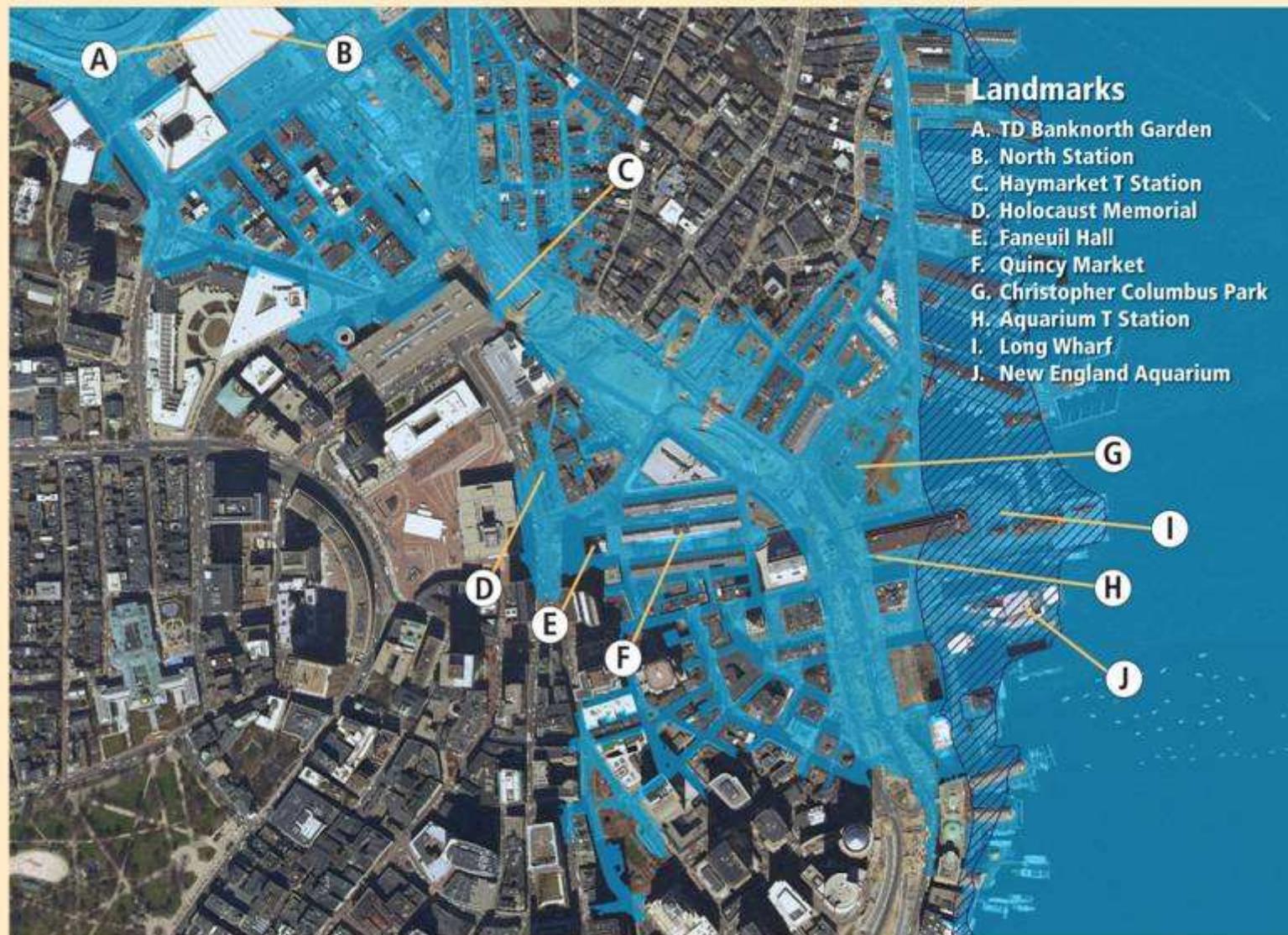
Ice Out data from Hodgkins et al., 2002 and at: <http://me.water.usgs.gov/iceout.html>

# Relative Sea Level Rise 1856 - 2005



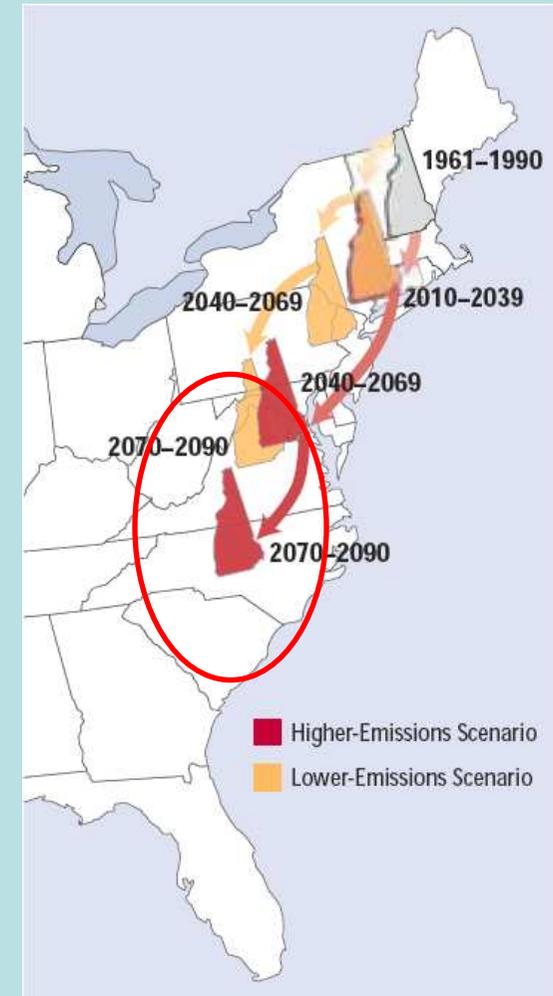
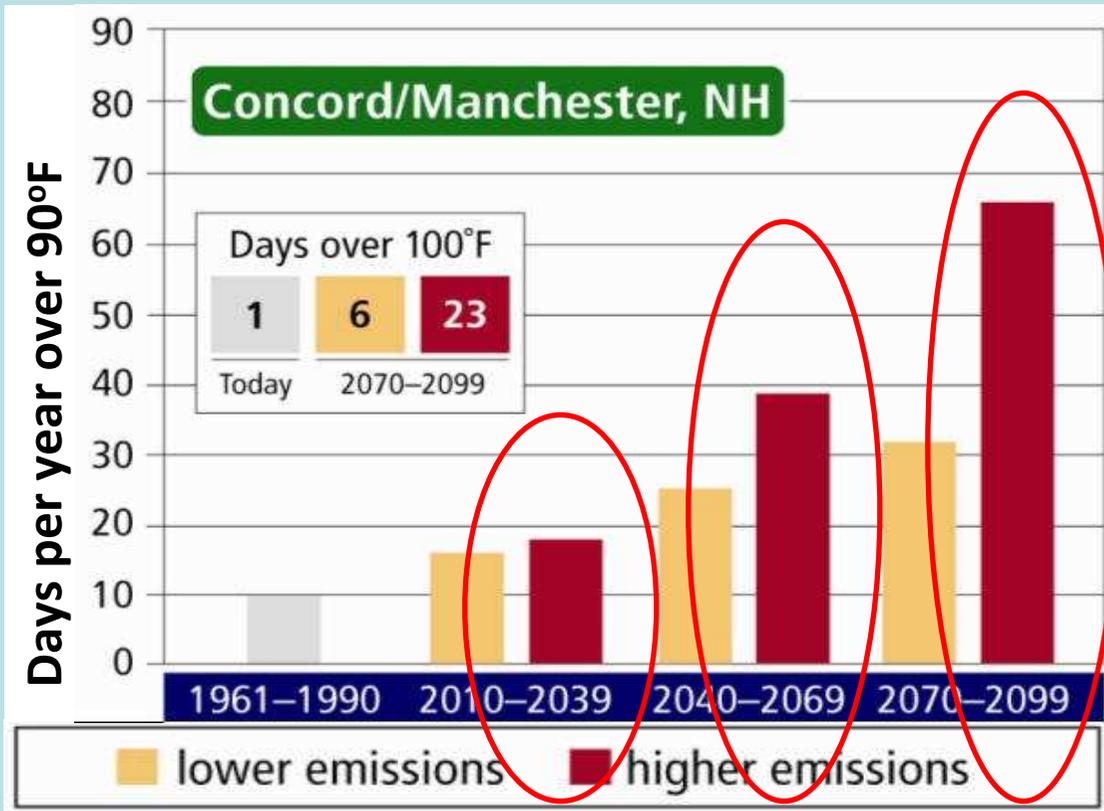
Data from Permanent Service for Mean Sea Level <http://www.pol.ac.uk/psmsl/>

# Boston: The Future 100-Year Flood under the Higher-Emissions Scenario



■ Current 100-year flood zone  
■ Projected 100-year flooded area (higher-emissions scenario)

# Projections of Climate Change in New Hampshire



So how do we know if this is  
happening in  
New Hampshire?



# Upper Connecticut River Valley - June 2005



# Southwestern NH – October 2005



# Central NH - May 2006



# Eastern NH - April 2007



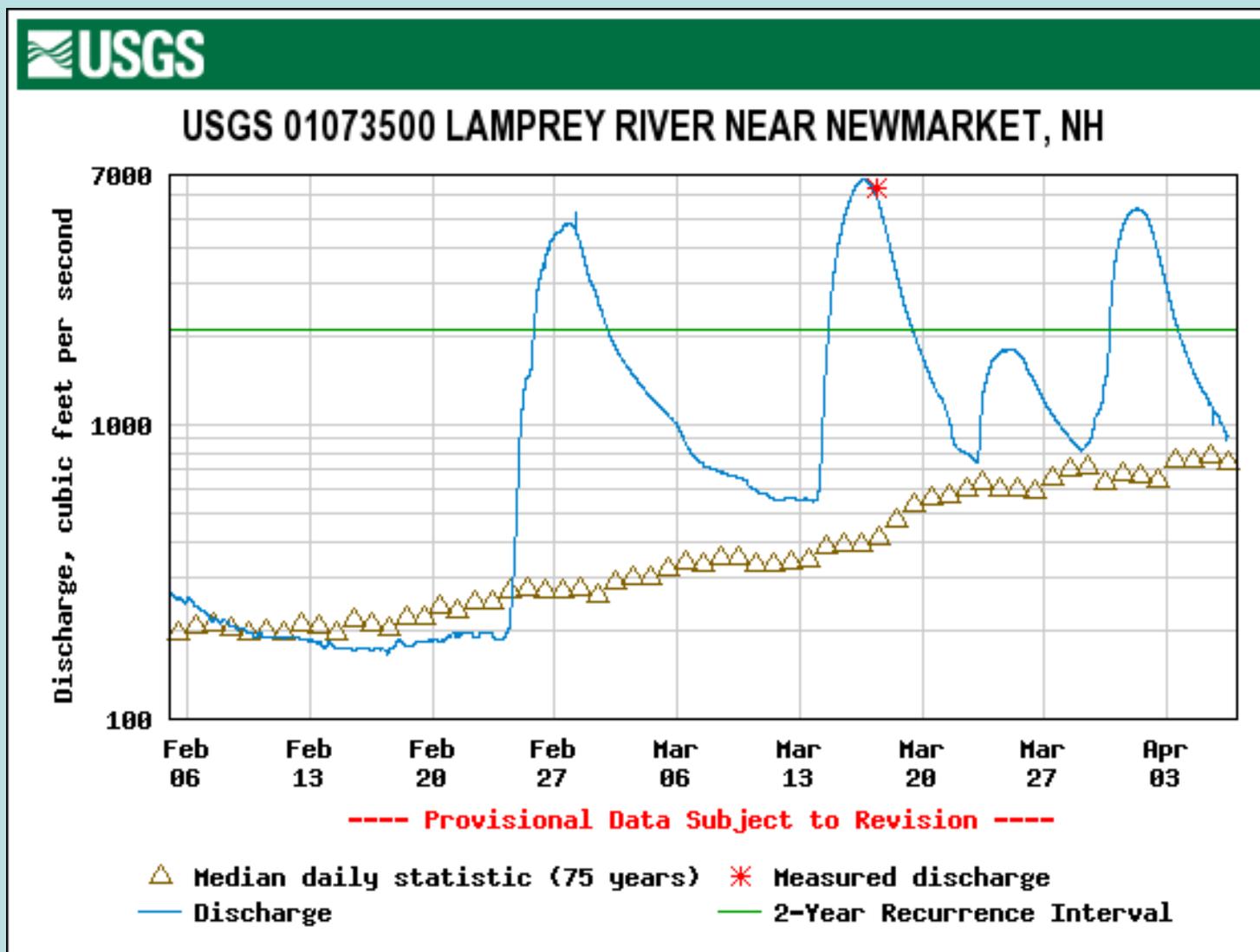
# Deerfield Flooding April 2007



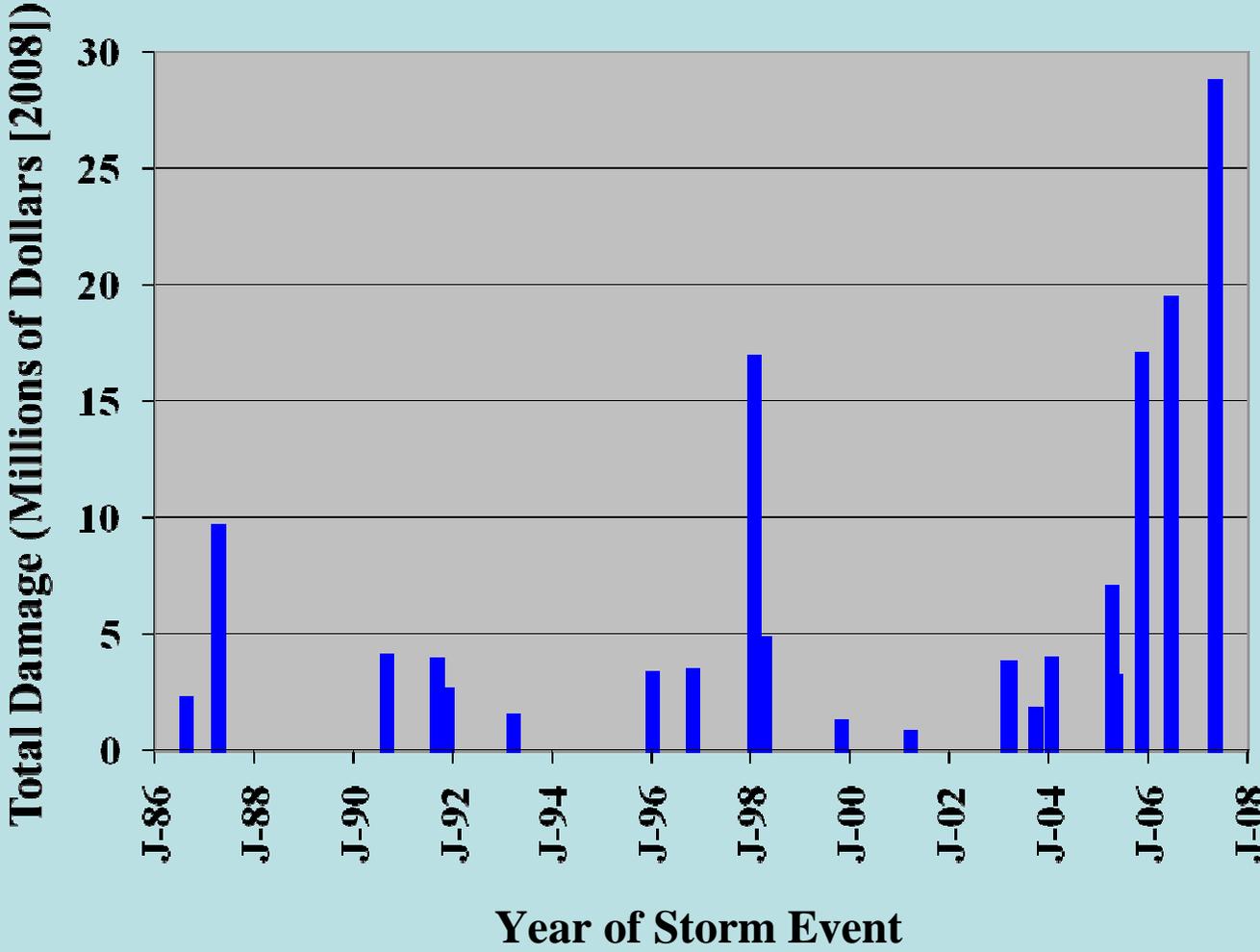
# VT and Upper Valley July 2007



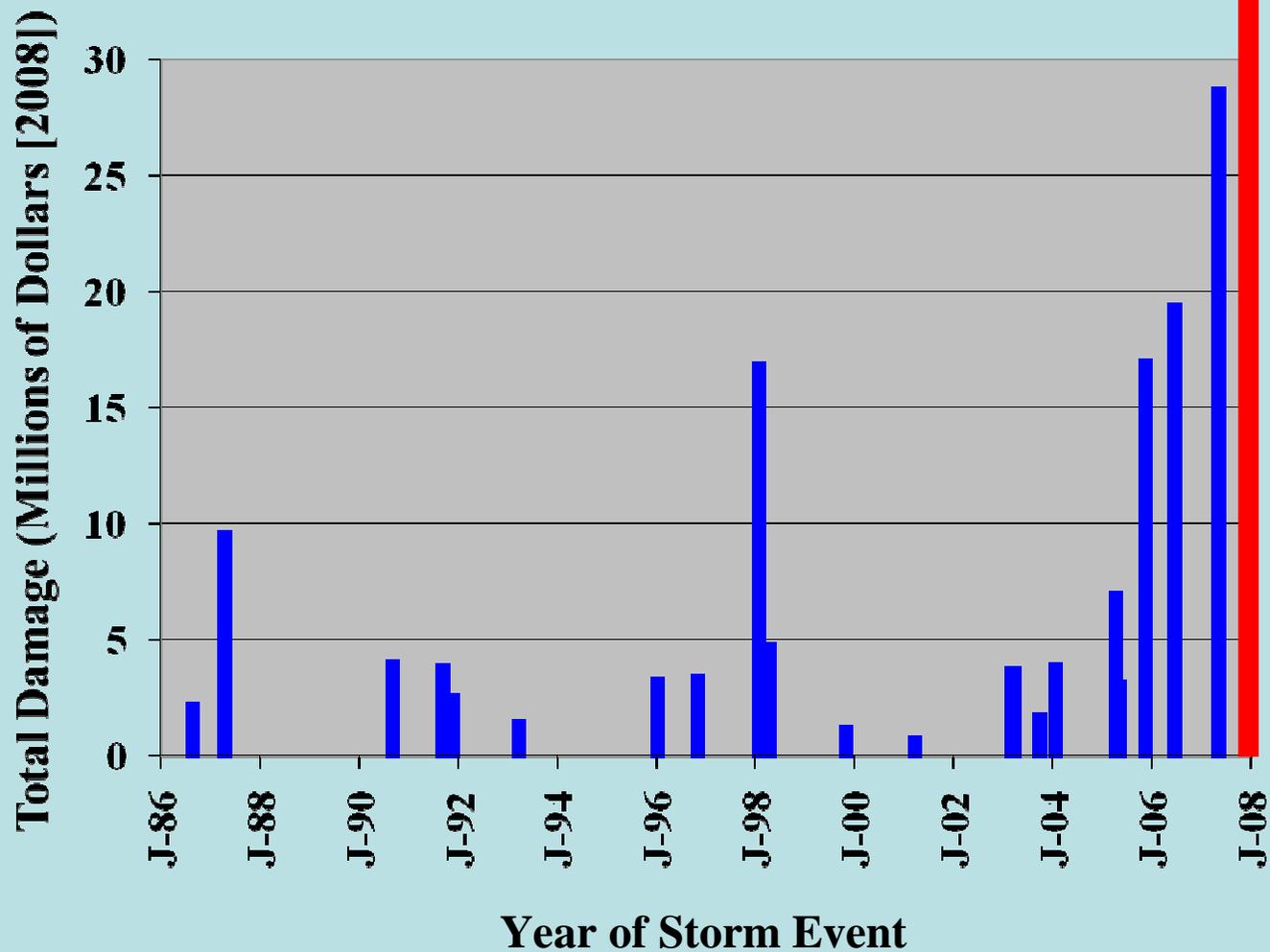
# Lamprey River Instantaneous Discharge



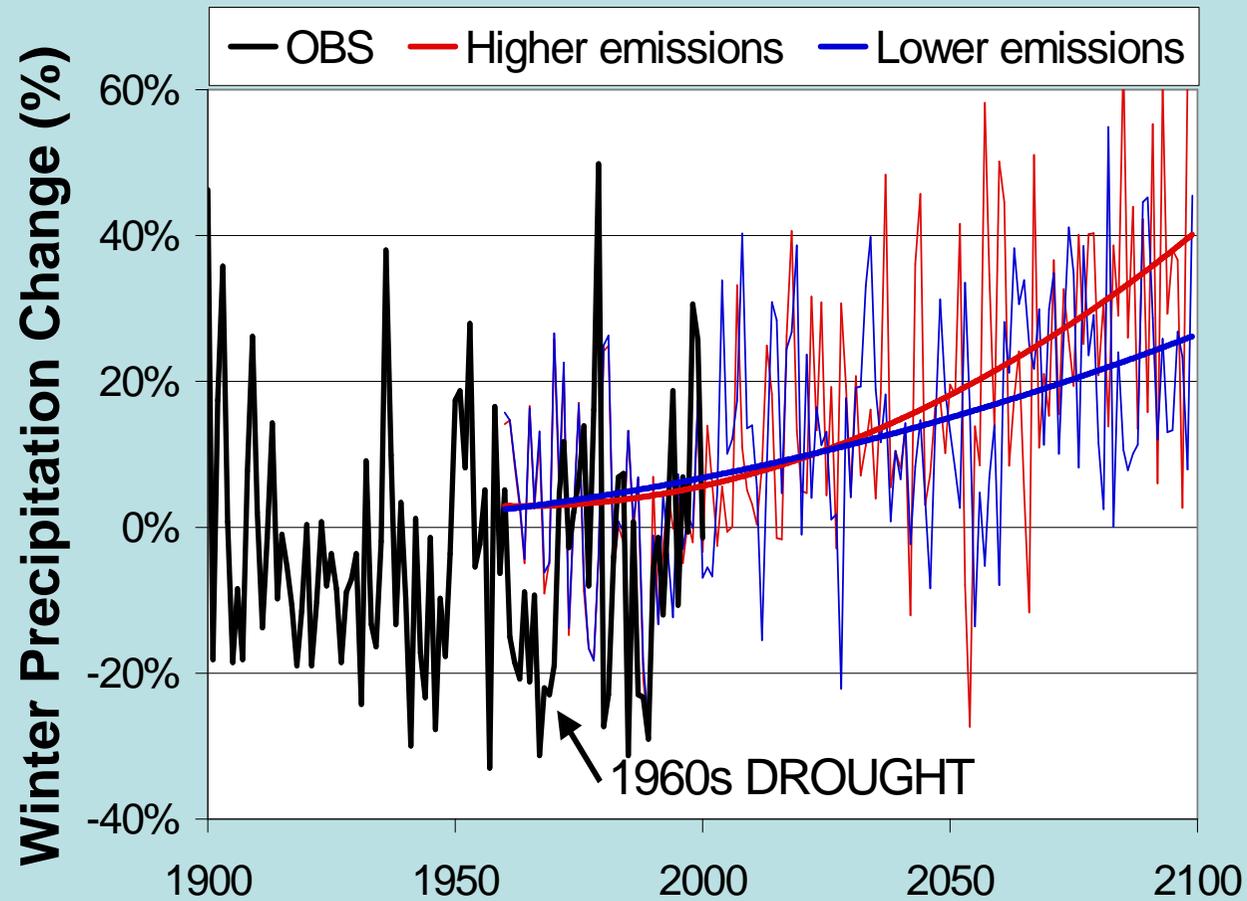
# Presidentially Declared Storm-Related Disasters



# Presidentially Declared Storm-Related Disasters

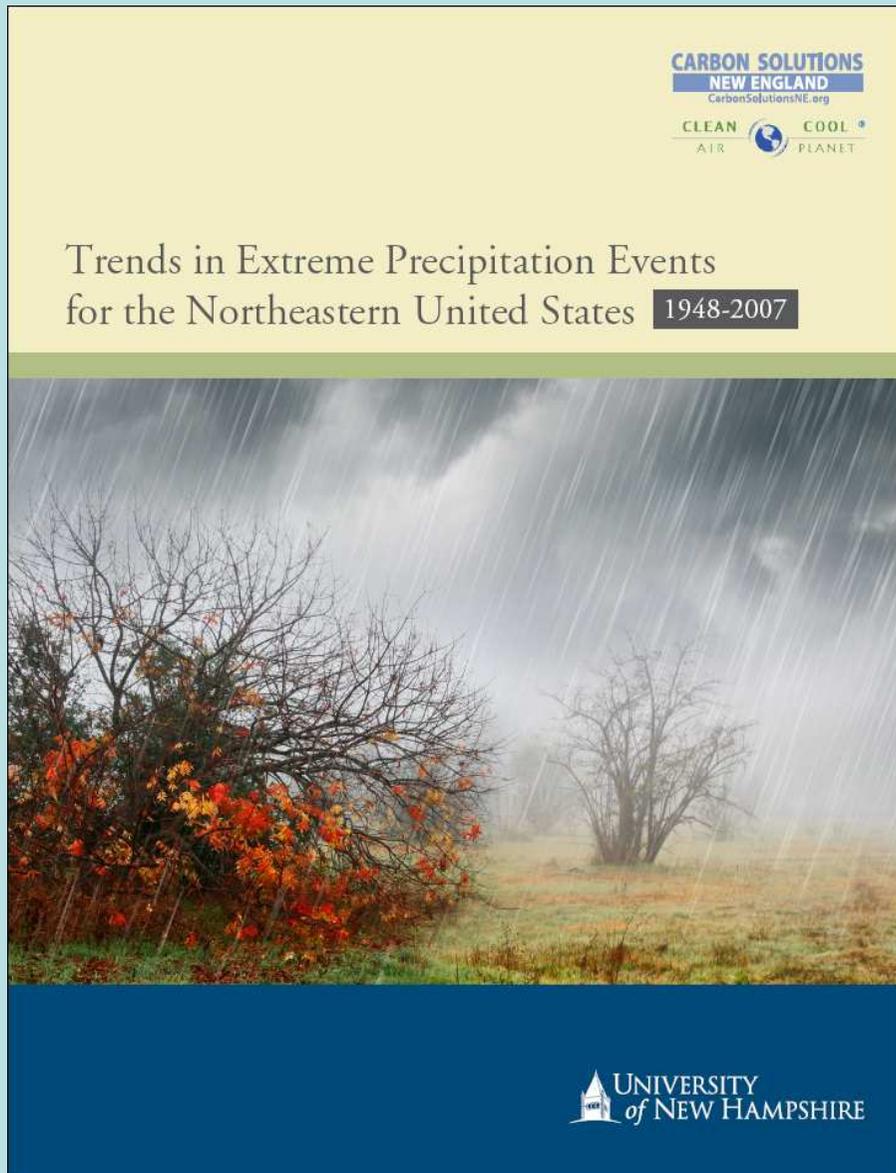


# Increasing Winter Precipitation



As temperatures rise, more falling as rain, less as snow

# New 2010 Report

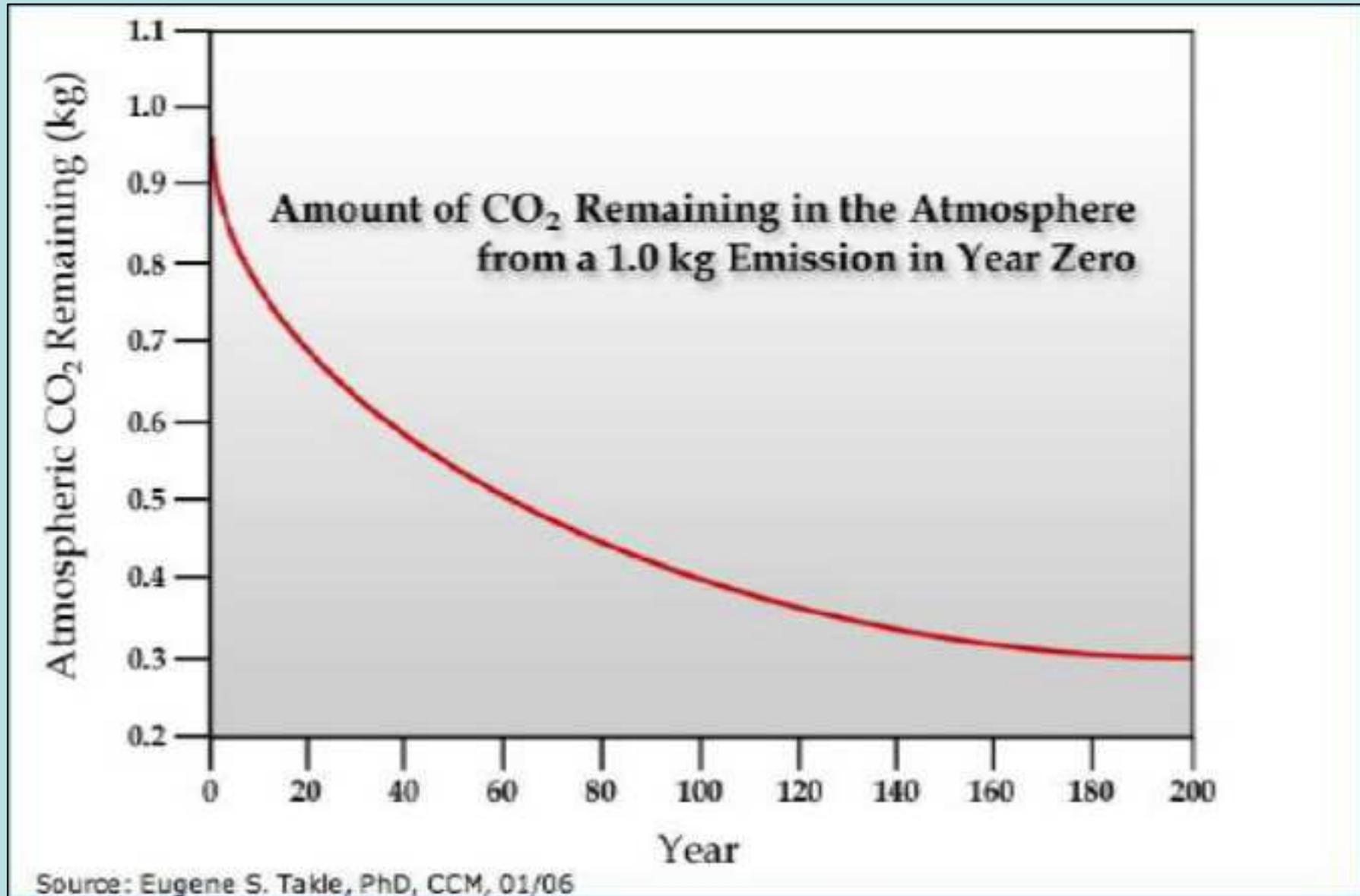


## Conclusions

- Historical trends of increasing extreme precipitation are connected to greenhouse gas-enhanced climate change...
- Driven primarily by the burning of fossil fuels and land use changes...
- More likely than not that human influence contributed to the trend toward more extreme precipitation events...
- Future increases in extreme precipitation are very likely.

<http://www.carbonsolutionsne.org/>

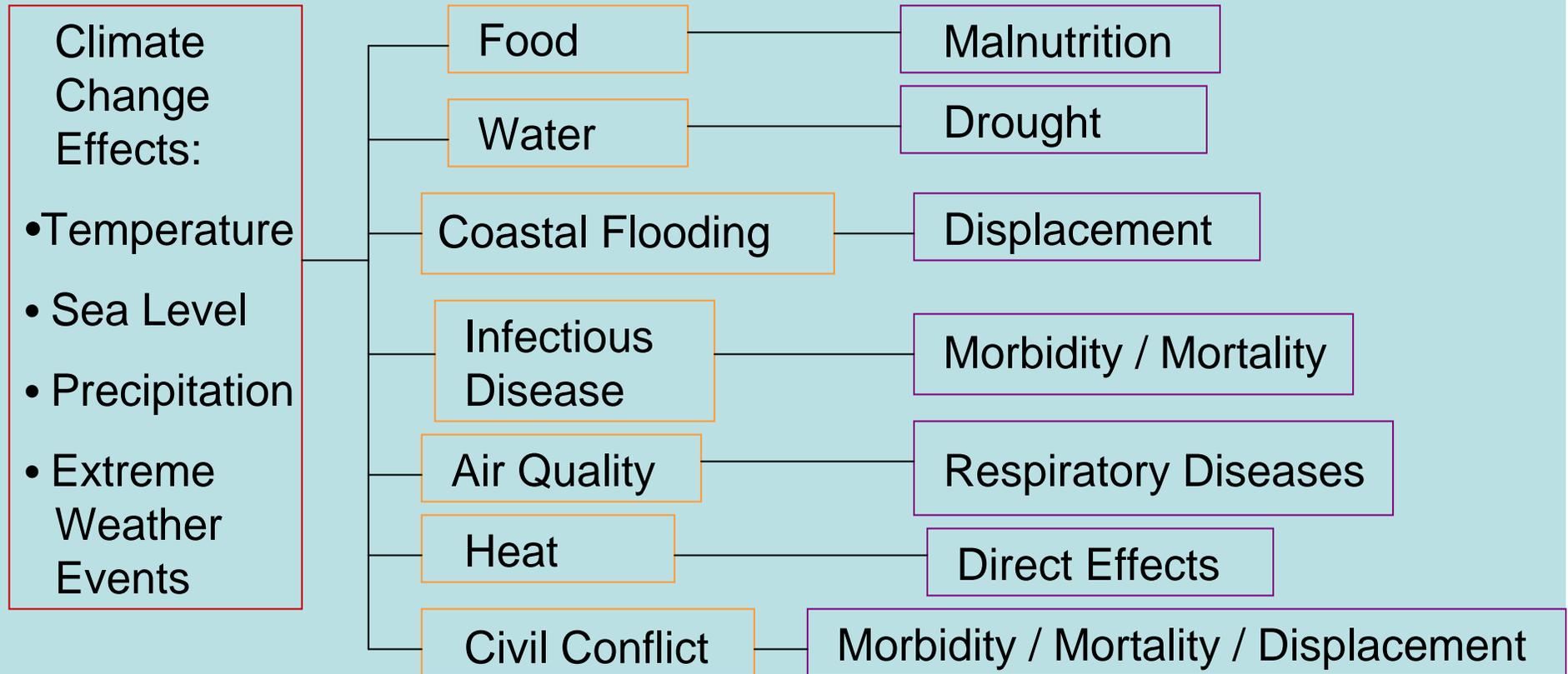
# CO<sub>2</sub> Persists in the Atmosphere



# So what can we do about all of this?

- Climate Change *Mitigation*
  - Efforts to slow, stabilize, reverse climate change by reducing green house gas emissions
- Climate Change *Adaptation*
  - Efforts to prepare for, and minimize impacts of, climate change

# Potential Impacts of Climate Change on Human Health



# Adaptation = Sustainability

- Working to help communities to prepare for the impacts of a changing climate.
  - Making sure municipalities have the planning tools in place to assist them, including:
    - Gathering Data
    - Developing Capacity – talking to people you never talked to
    - Developing plans and policies
    - Considering current conditions and projected impacts
  - Tap into our emergency preparedness efforts with Climate Change in mind
- Educate people about their role in both mitigation and adaptation efforts.





# CLIMATE SUMMIT

WHAT IF IT'S  
A BIG HOAX AND  
WE CREATE A BETTER  
WORLD FOR NOTHING?

- ENERGY INDEPENDENCE
- PRESERVE RAINFORESTS
- SUSTAINABILITY
- GREEN JOBS
- LIVABLE CITIES
- RENEWABLES
- CLEAN WATER, AIR
- HEALTHY CHILDREN
- ETC. ETC.

