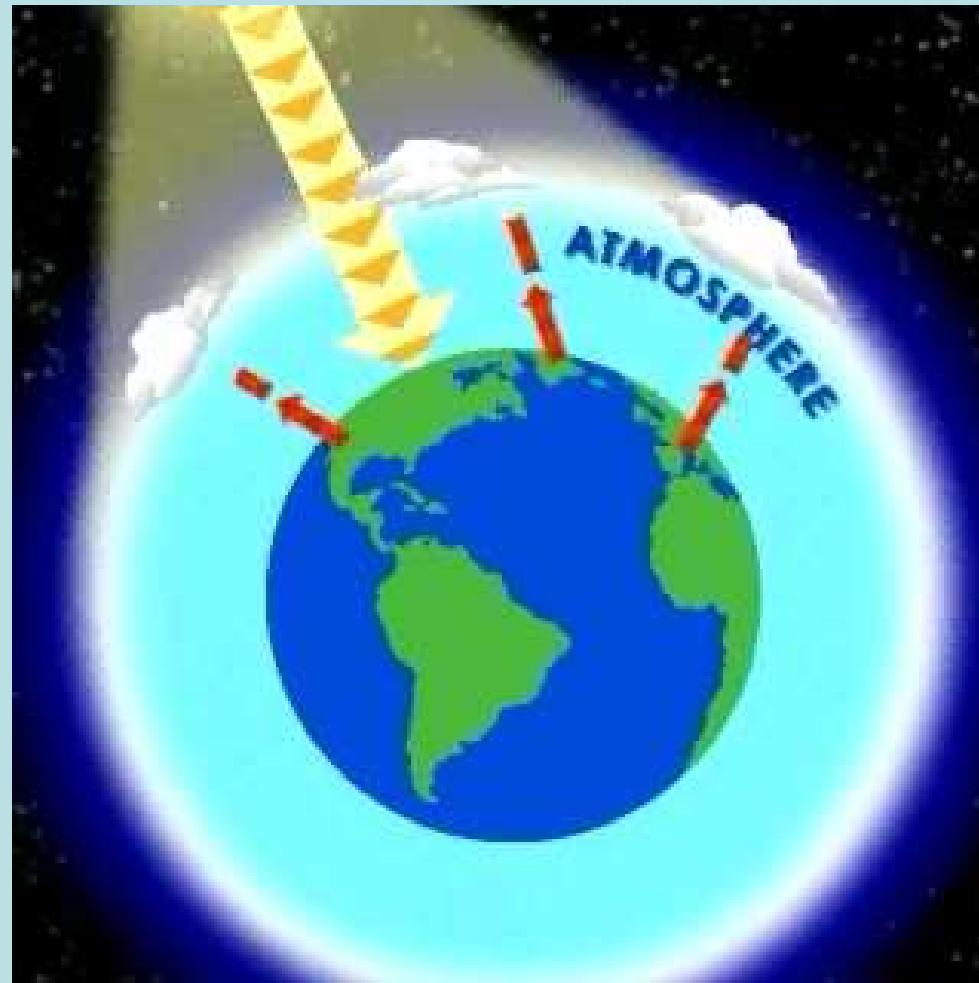


Wacky Weather?

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

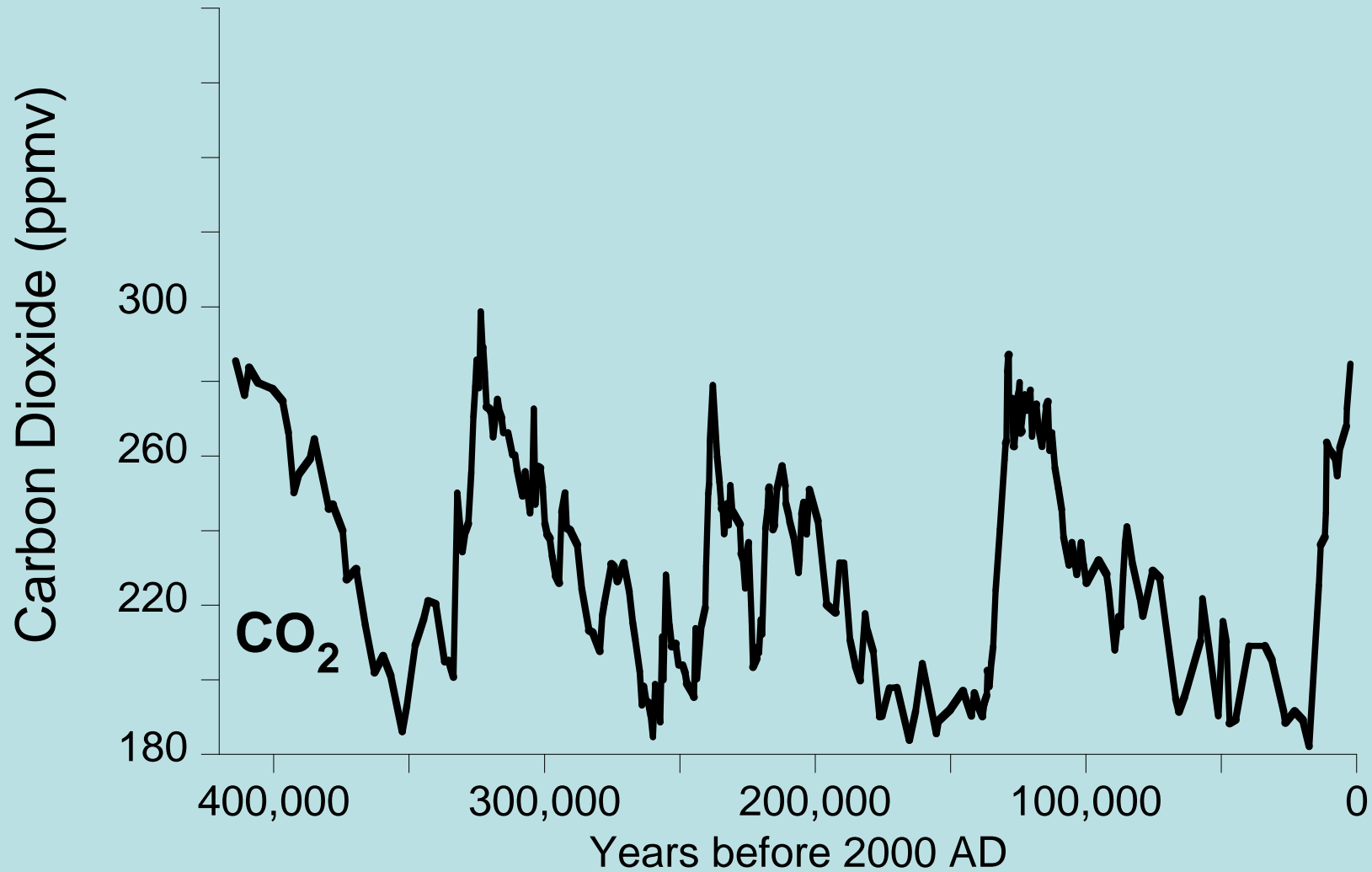
Sherry Godlewski
NH Department of Environmental Services

Our Planet Has a “CO₂-Blanket”



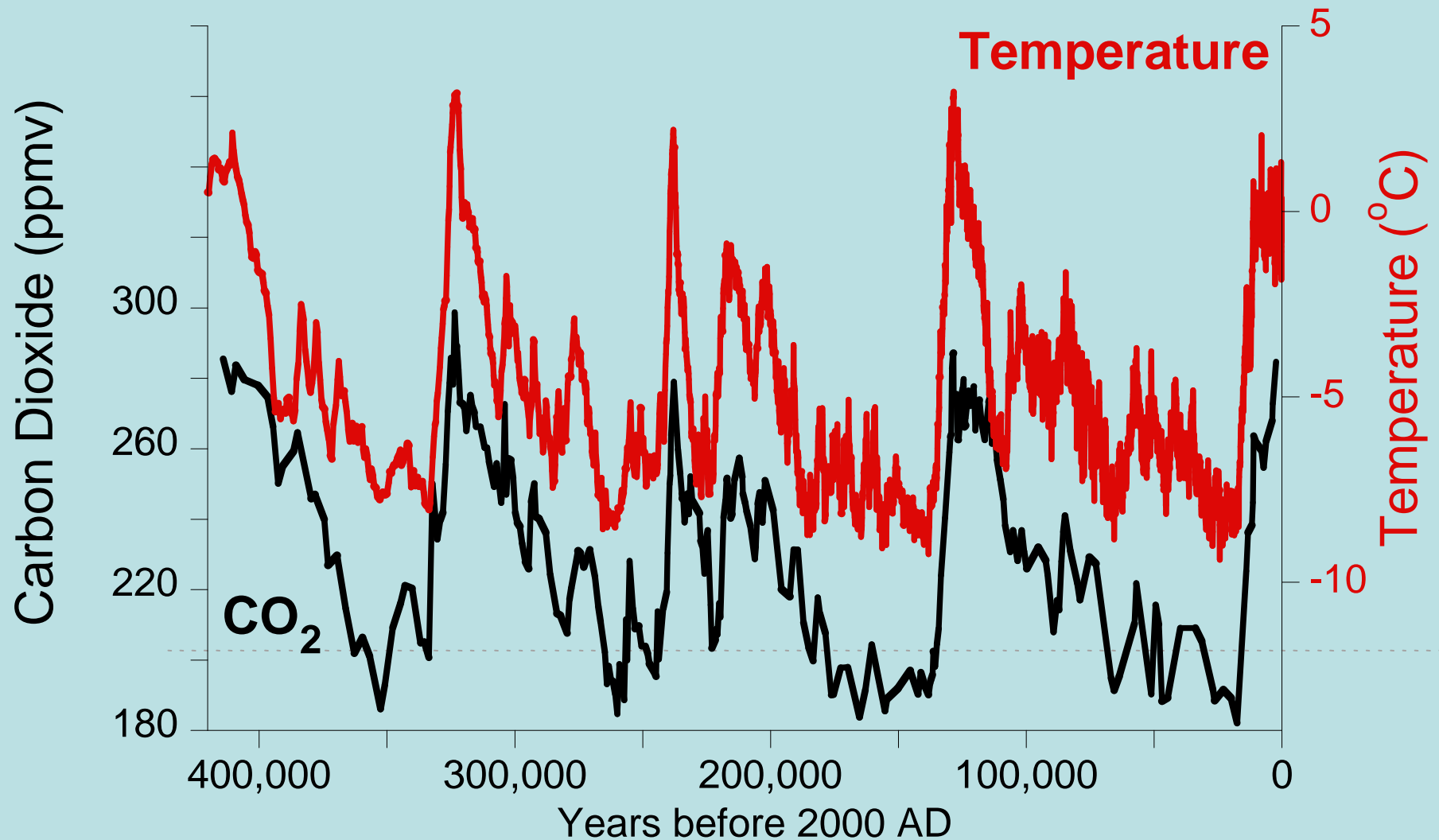
http://earth.rice.edu/mtpe/atmo/atmosphere/hot/anom_99/0Greenhouse_Effect.html

Atmospheric Carbon Dioxide Record



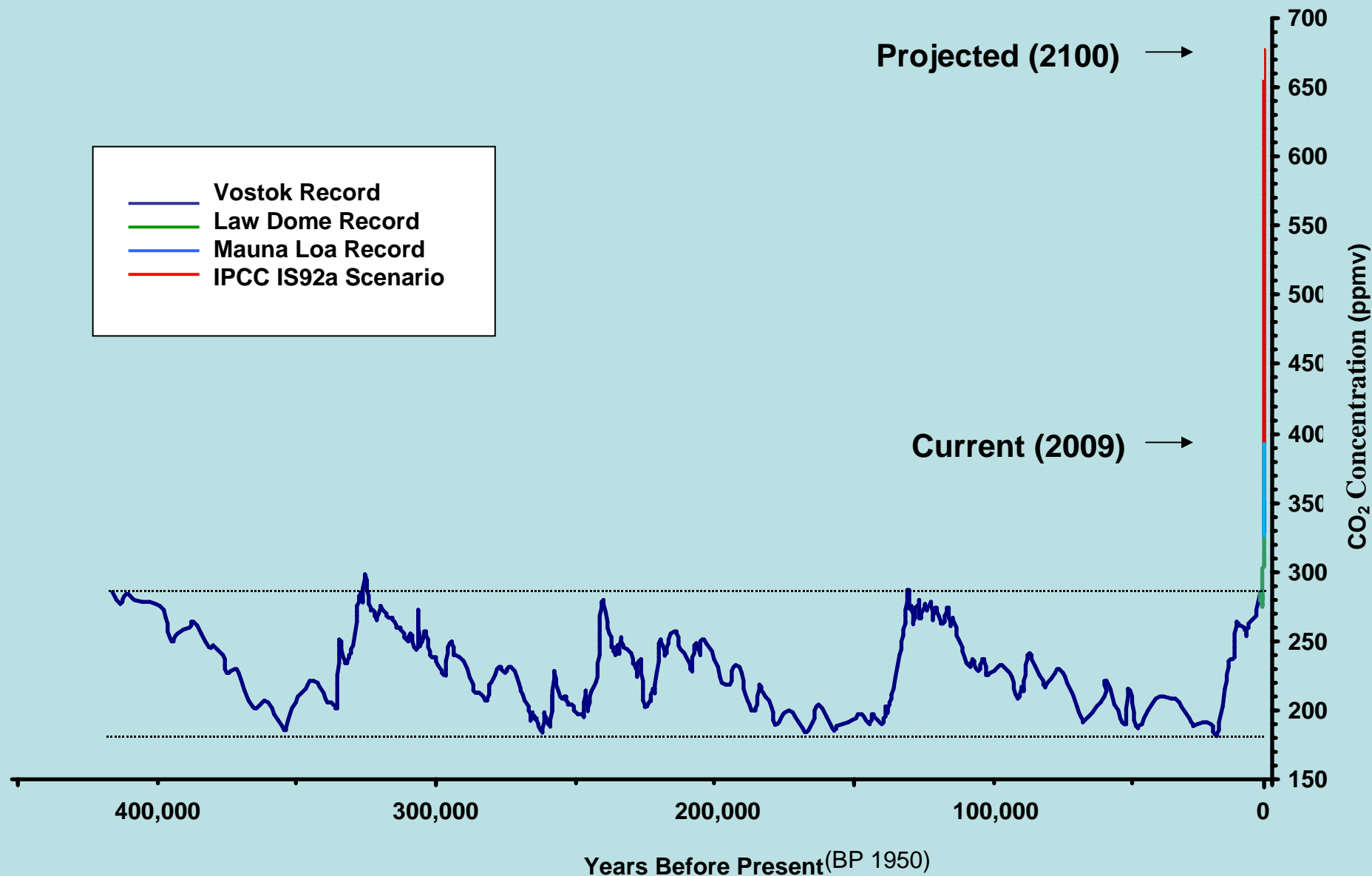
Petit et al., 1999

Atmospheric Carbon Dioxide & Temperature Record



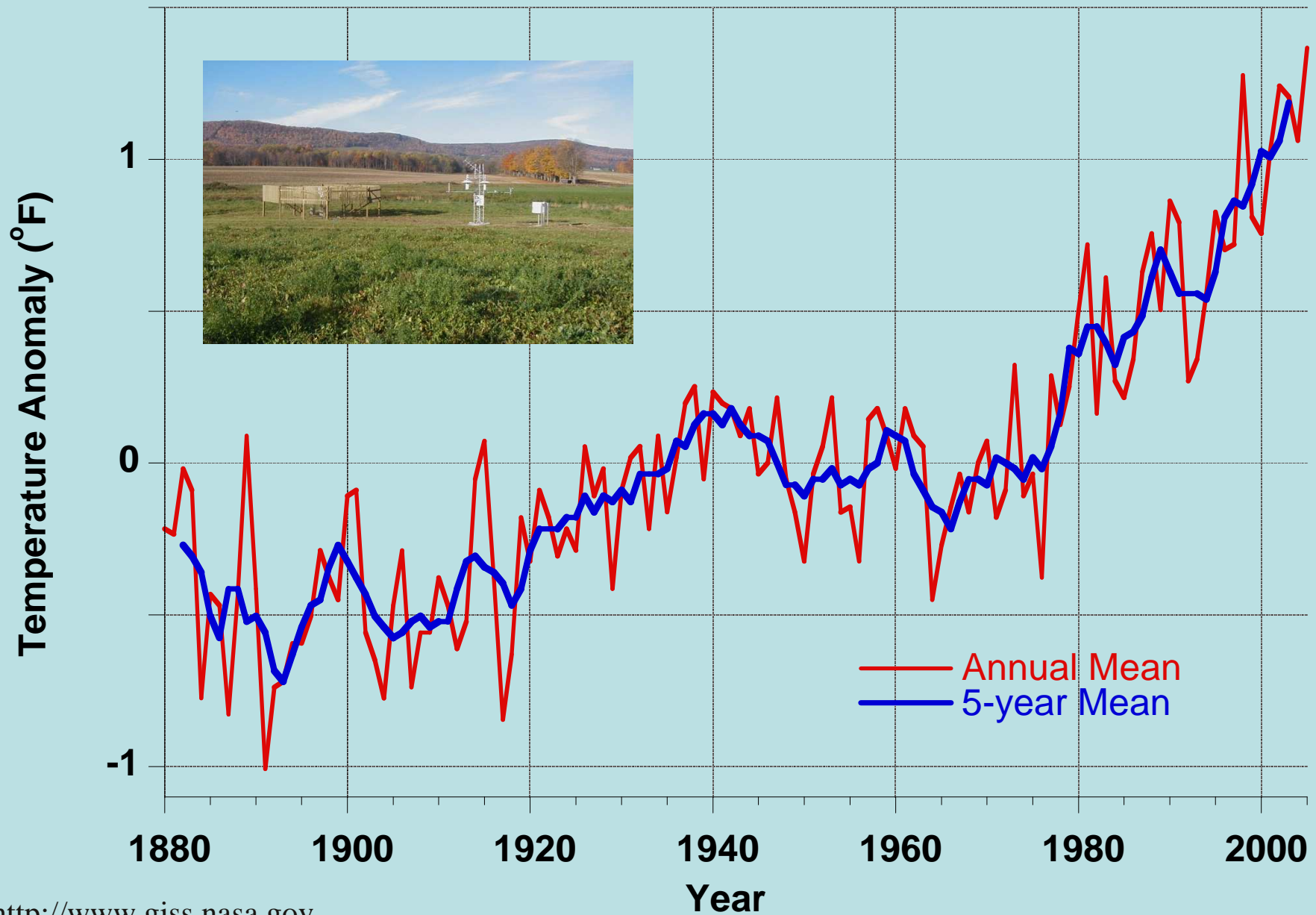
Petit et al., 1999

Historical and Future Carbon Dioxide Levels

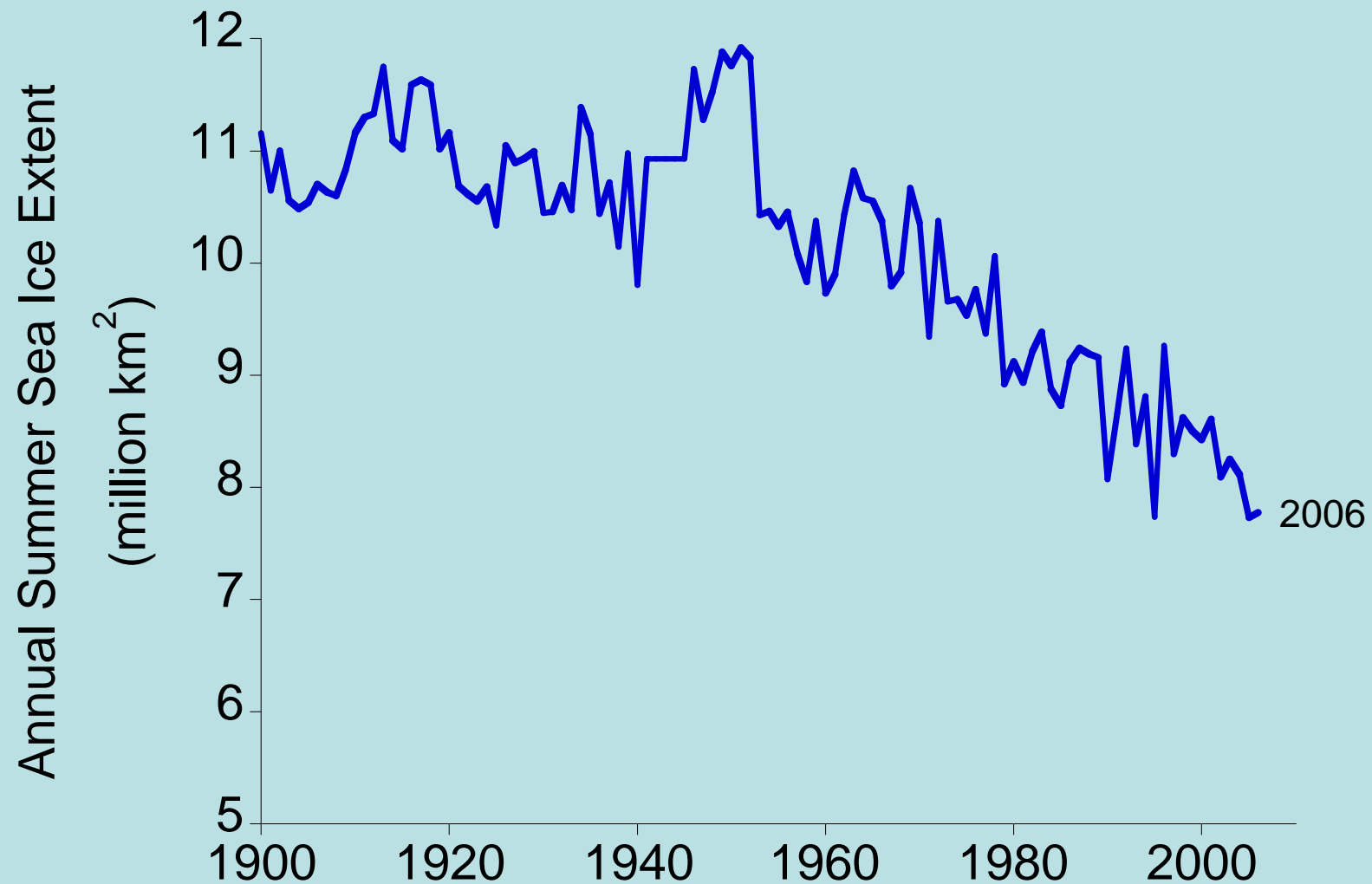


Source: C. D. Keeling and T. P. Whorf; Etheridge *et.al.*; Barnola *et.al.*; (PAGES / IGBP); IPCC

Global Temperature 1880-2005



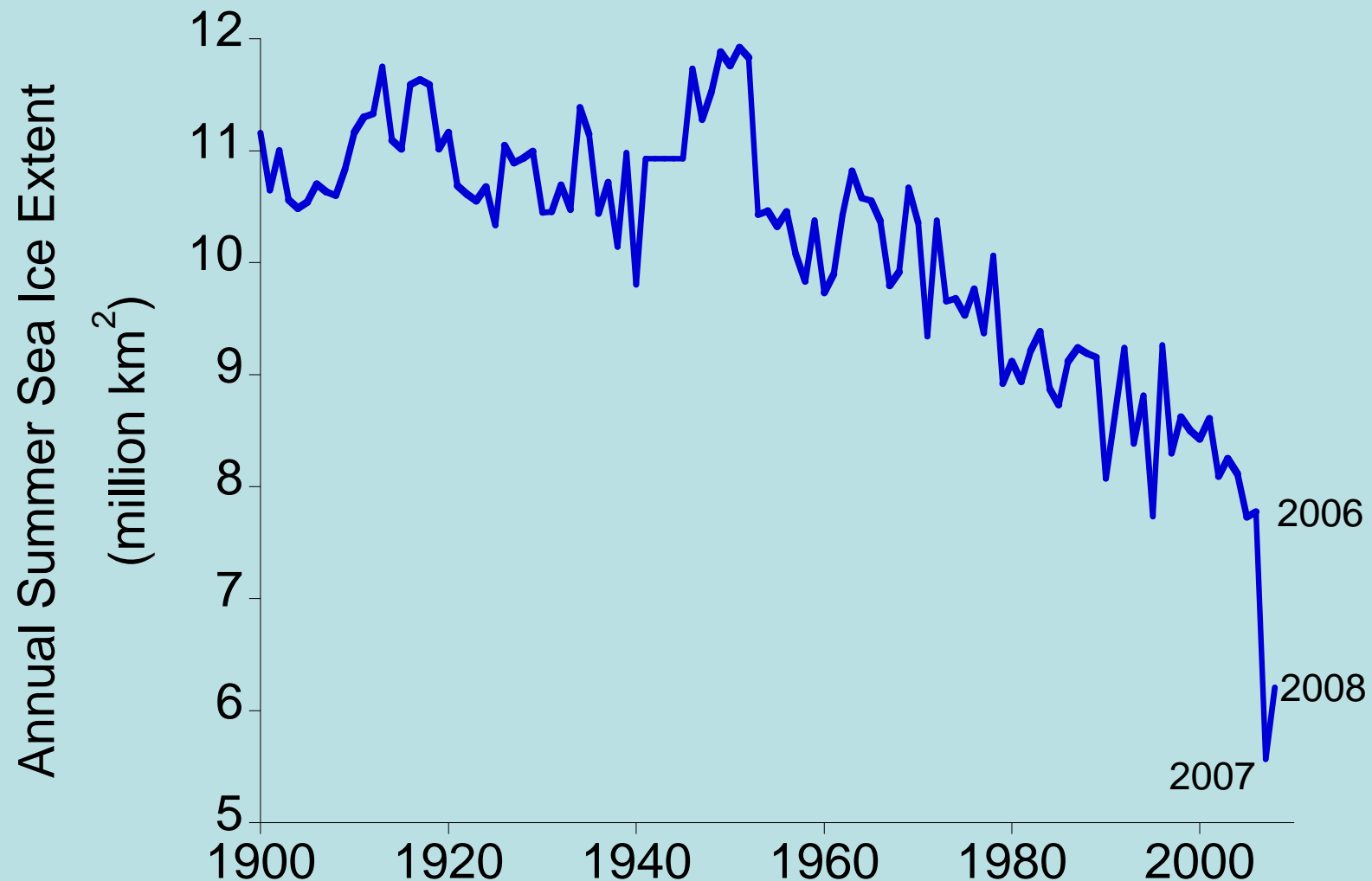
Summer (JJA) Arctic Sea Ice Extent



University of Illinois

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

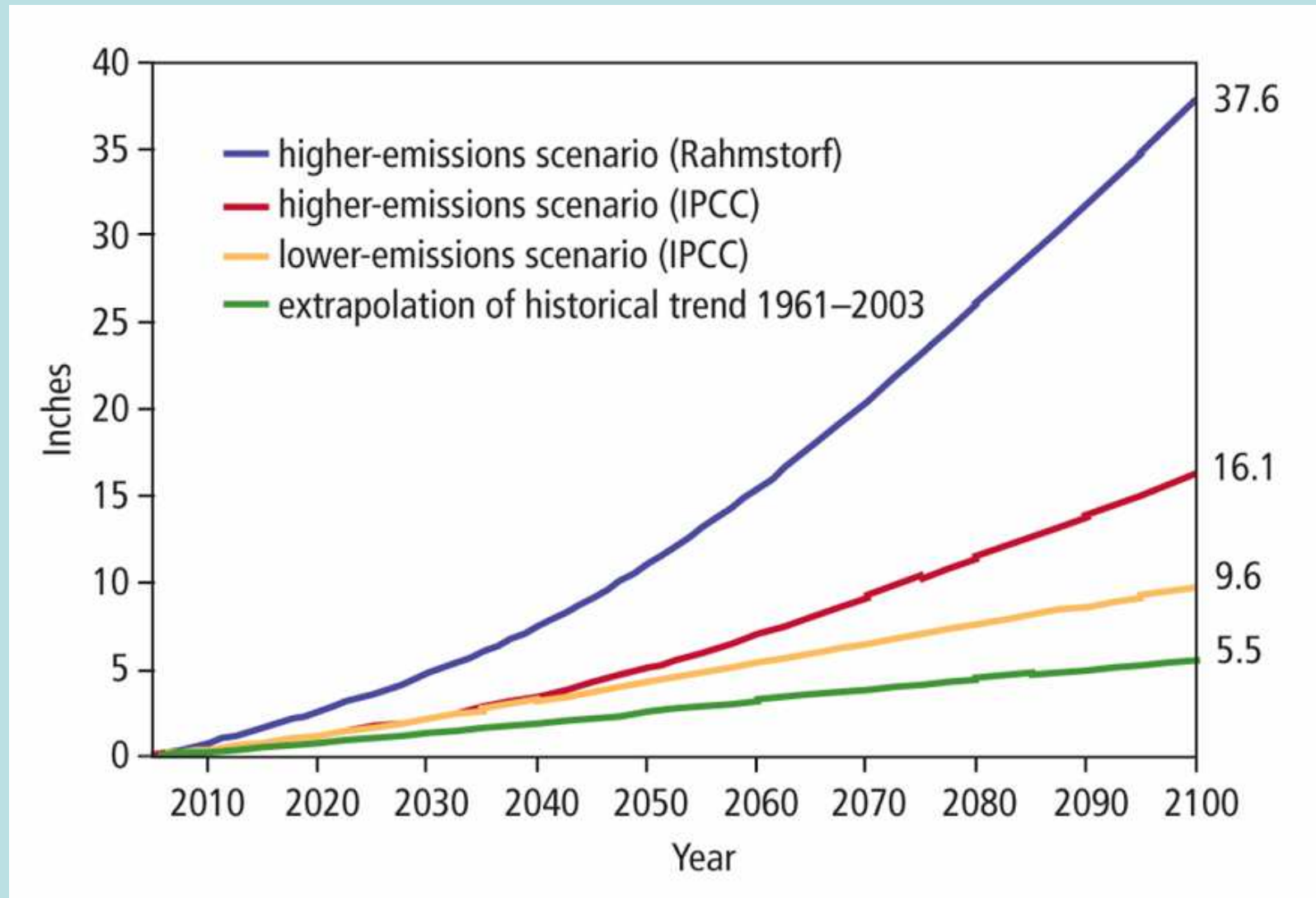
Summer (JJA) Arctic Sea Ice Extent



University of Illinois

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Projected Rise in Global Sea Level



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

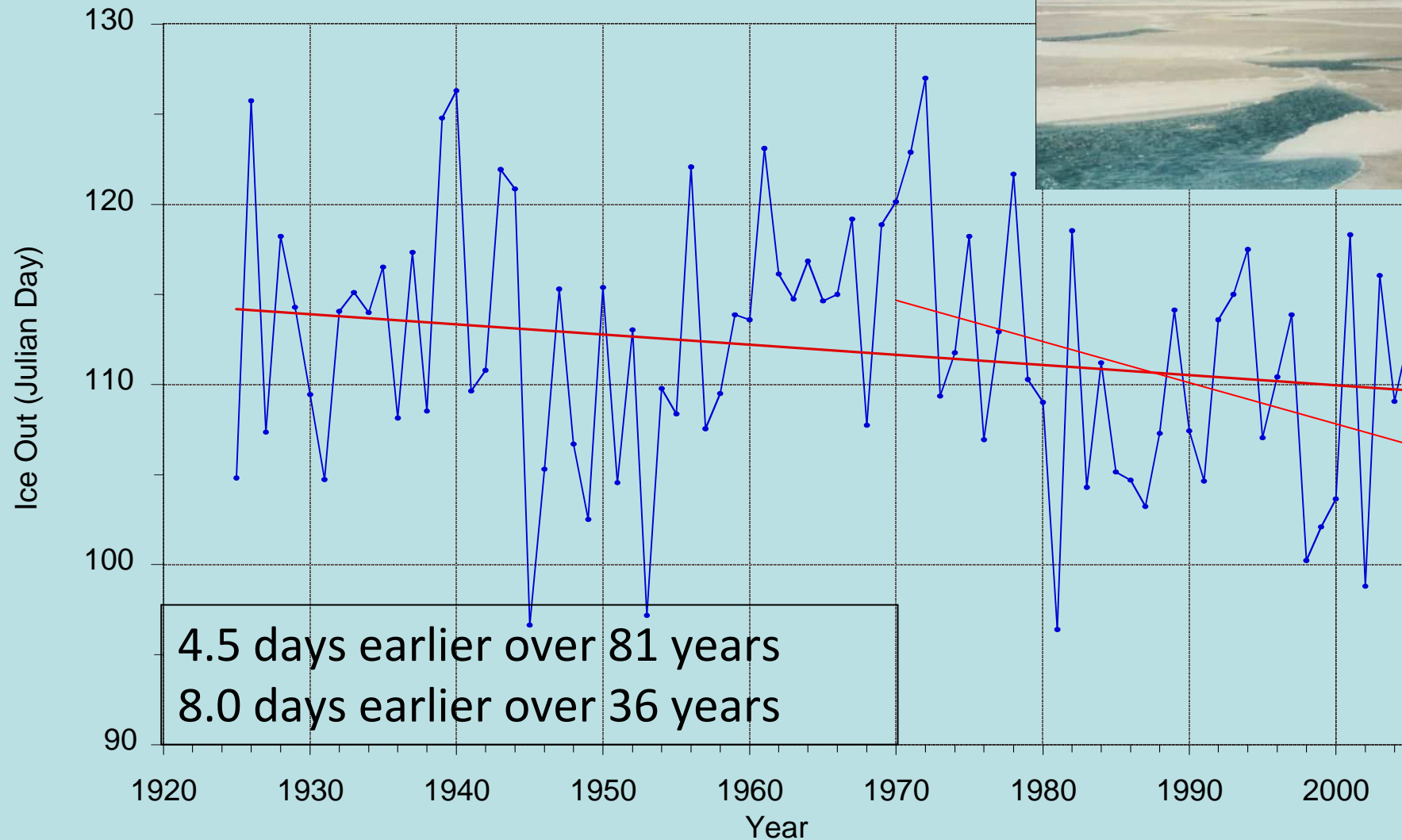
Indicators of Climate Change in the Northeast

- 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

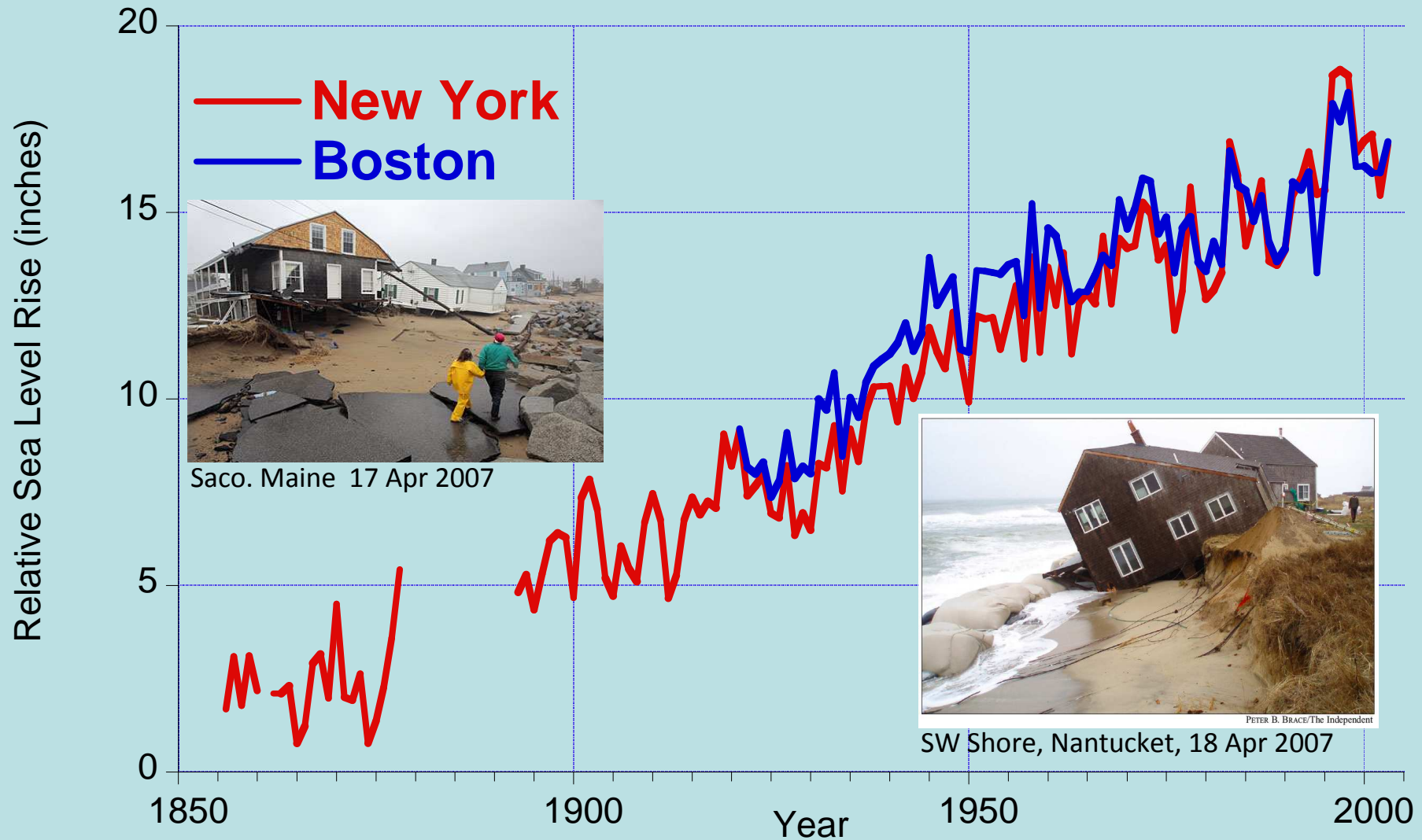
Average Ice Out Day Trend

1925-2005 (27 Lakes)



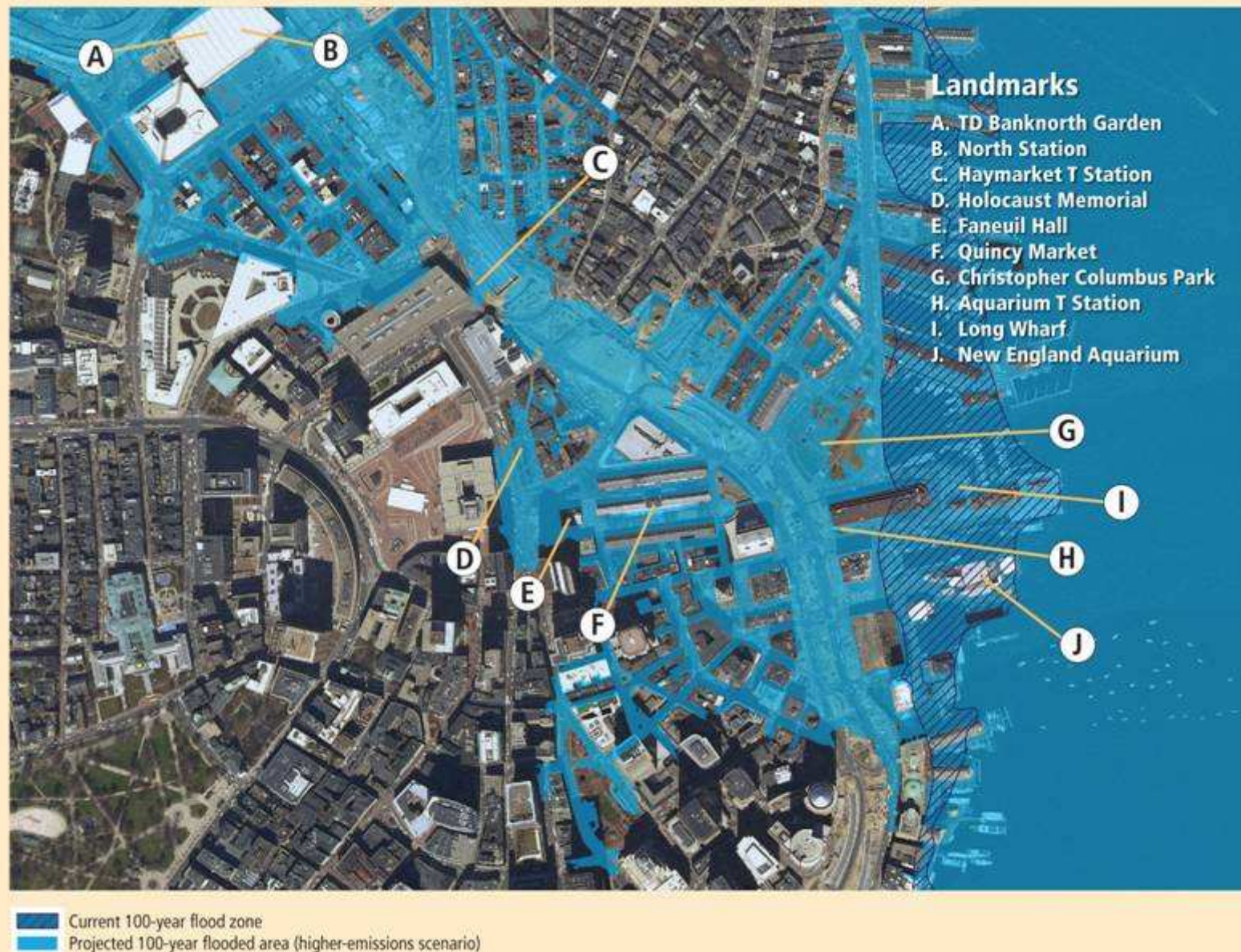
Ice Out data from Hodgkins et al., 2002 and at: <http://me.water.usgs.gov/iceout.html>

Relative Sea Level Rise 1856 - 2005

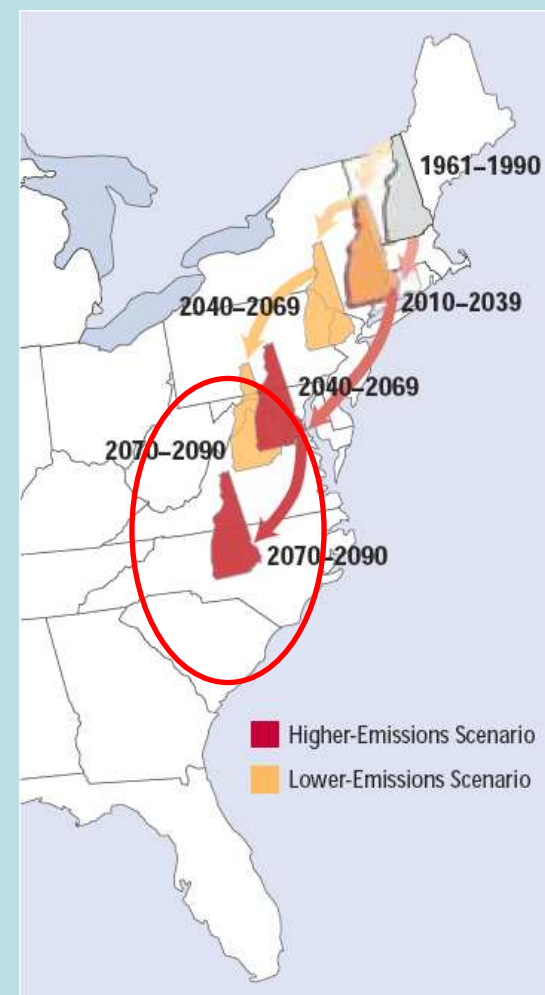
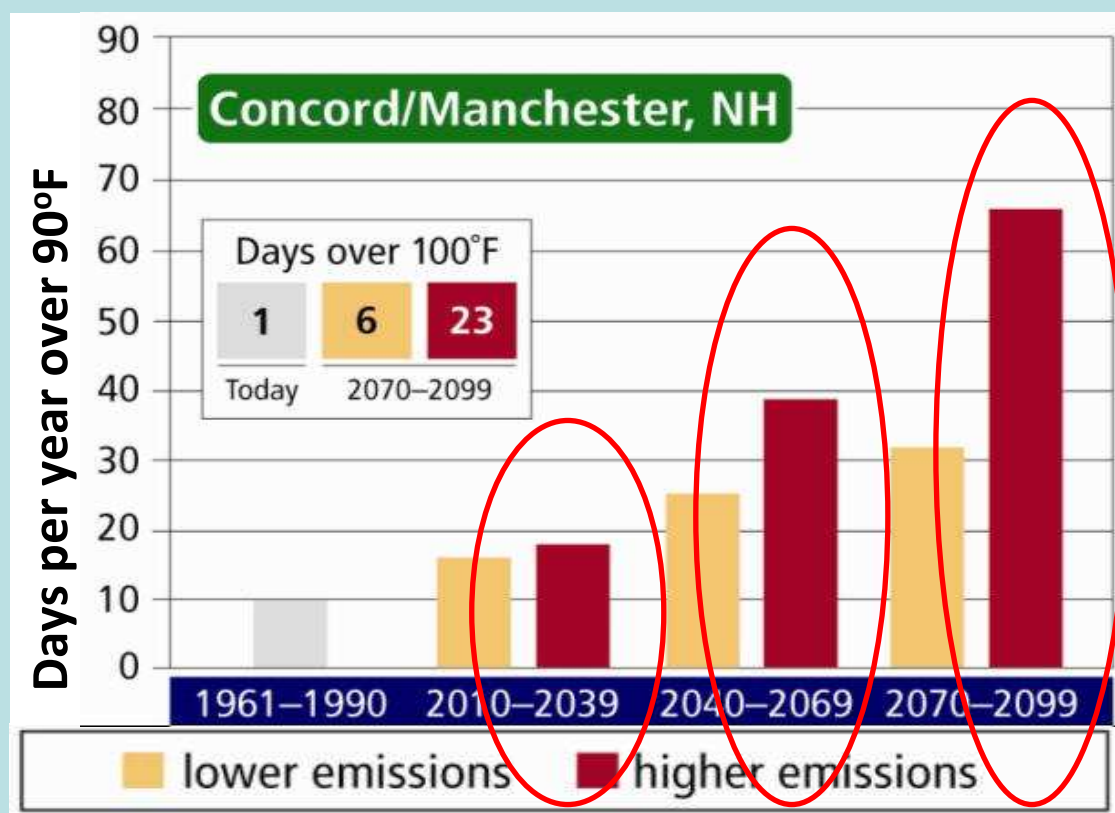


Data from Permanent Service for Mean Sea Level <http://www.pol.ac.uk/psmsl/>

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



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

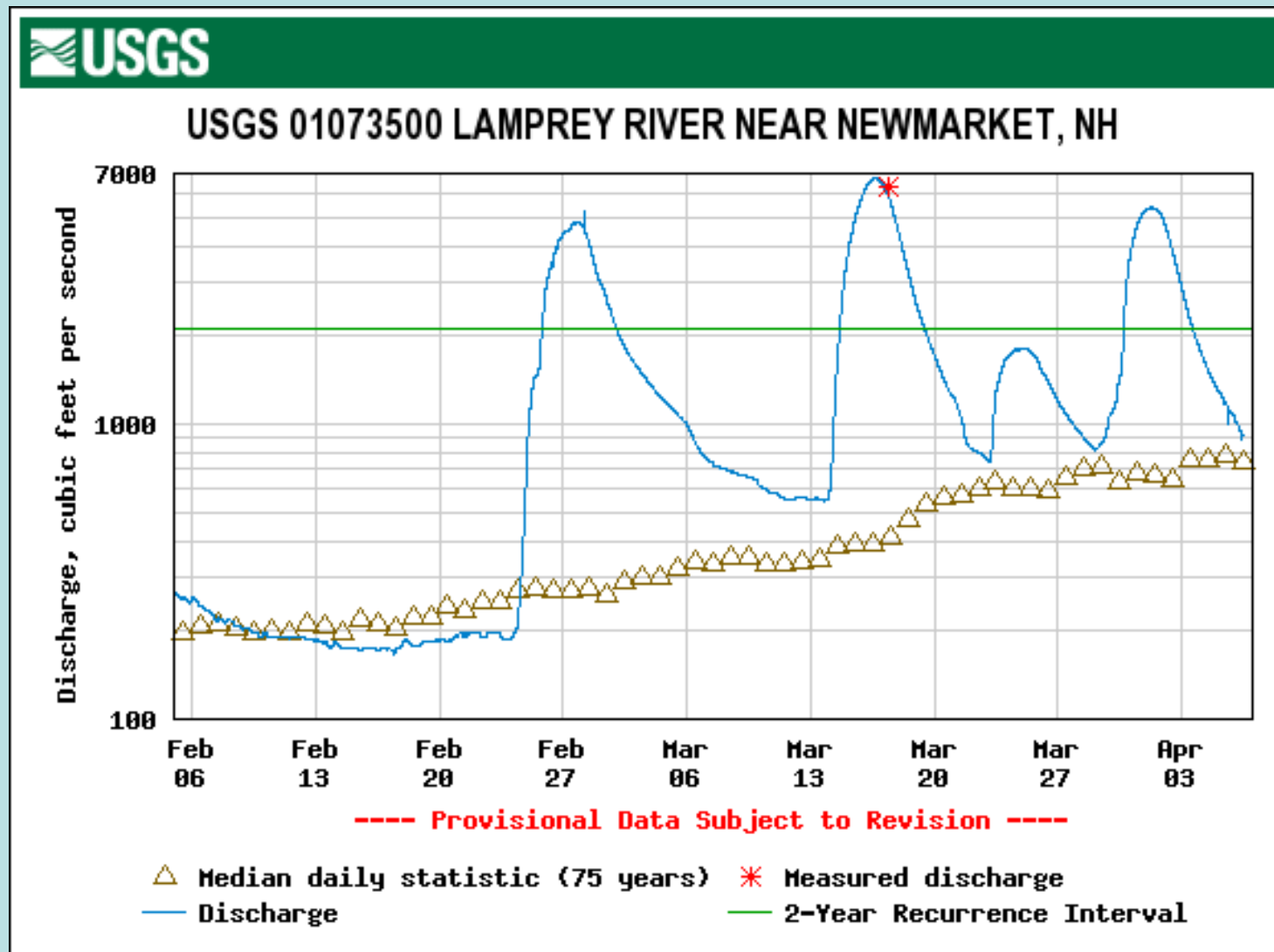


VT and Upper Valley July 2007

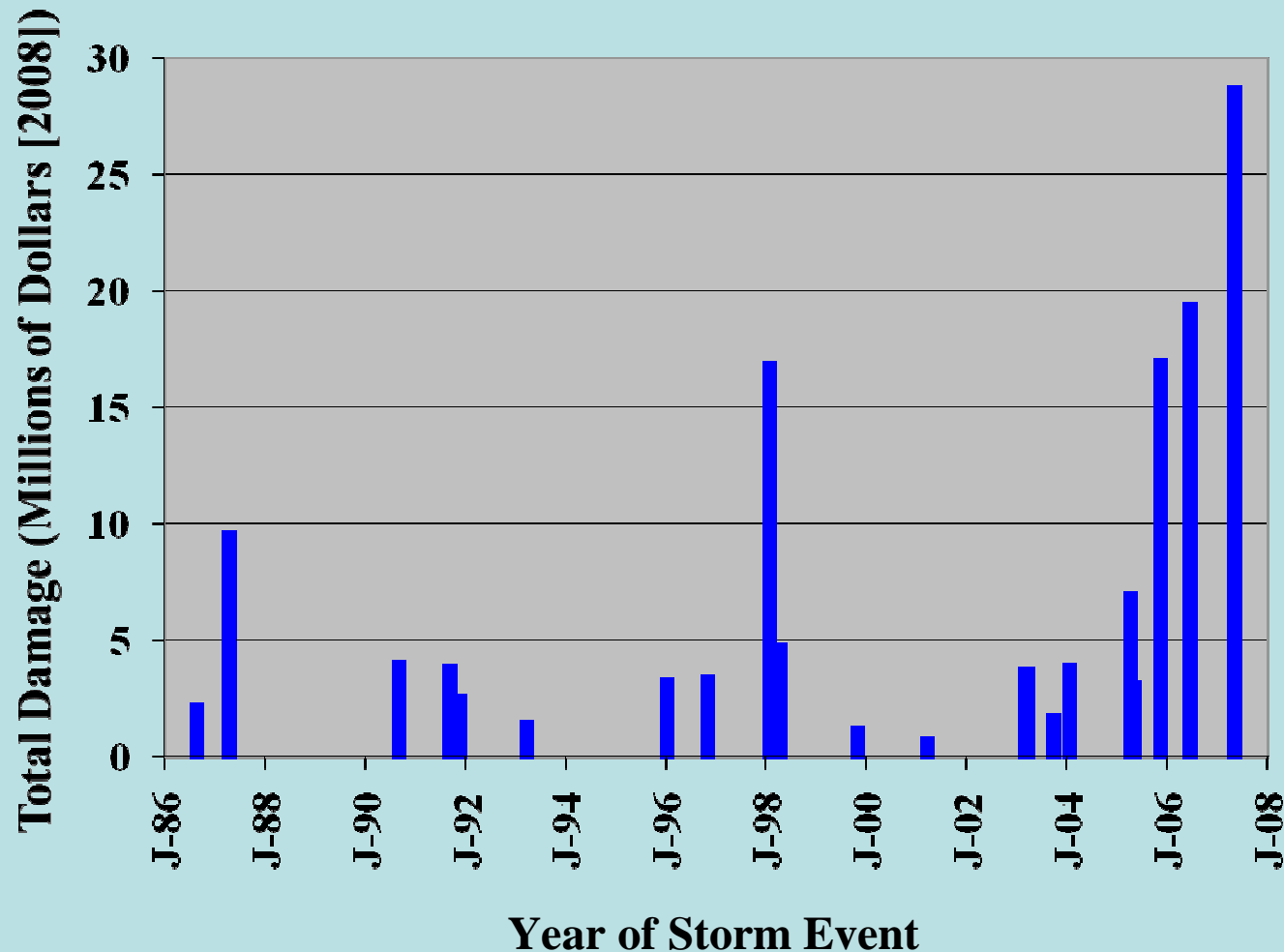


Lamprey River

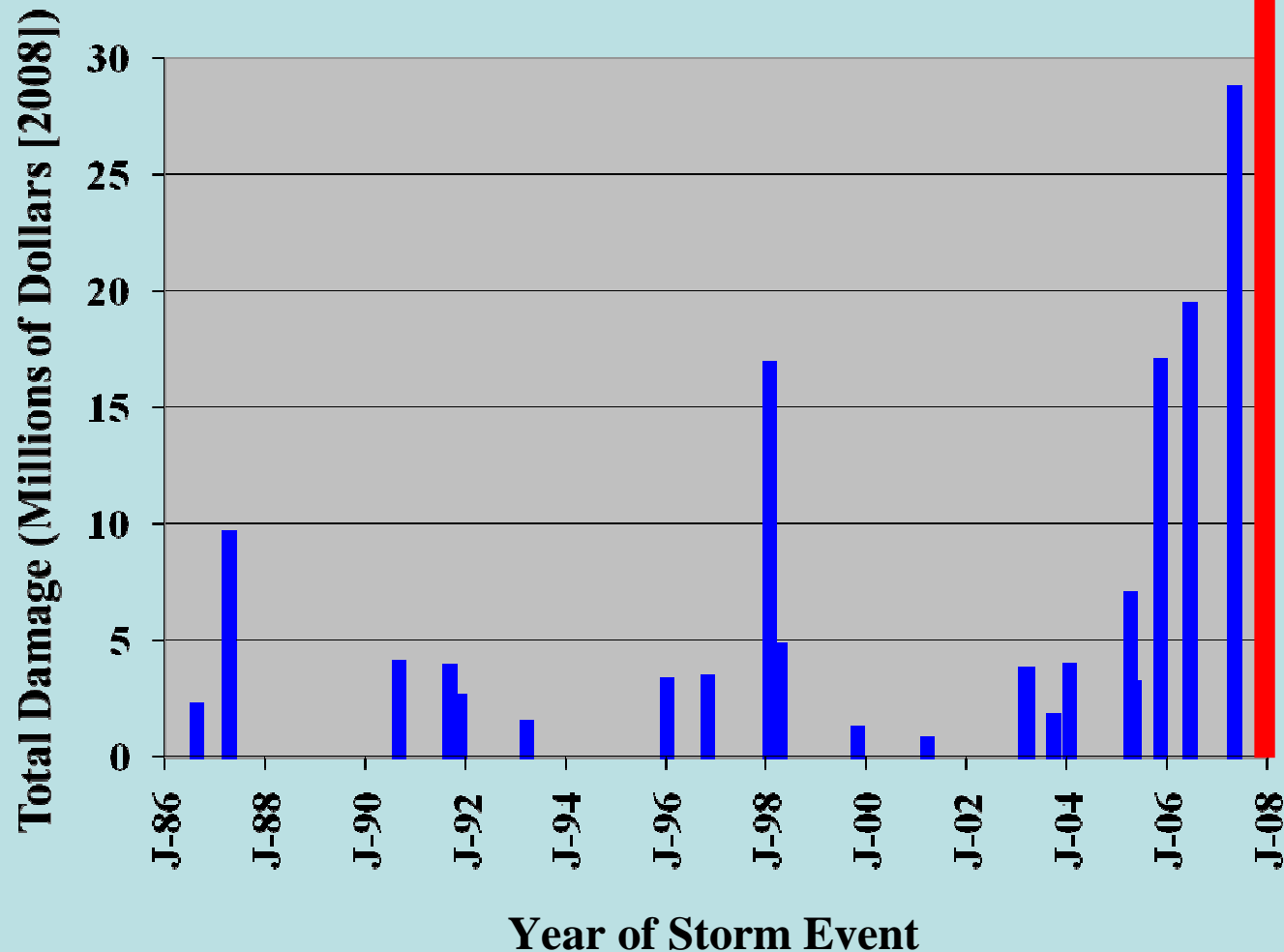
Instantaneous Discharge



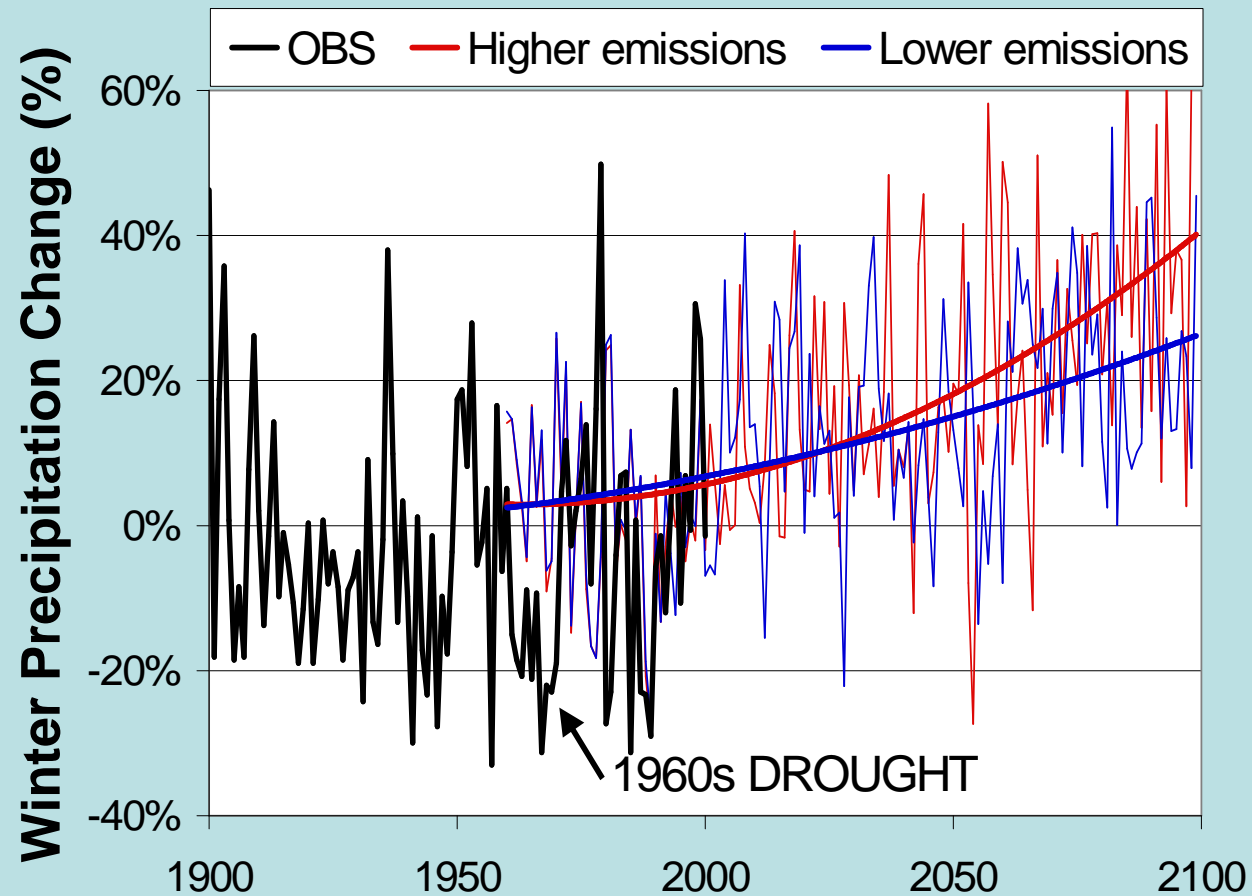
Presidentially Declared Storm-Related Disasters



Presidentially Declared Storm-Related Disasters

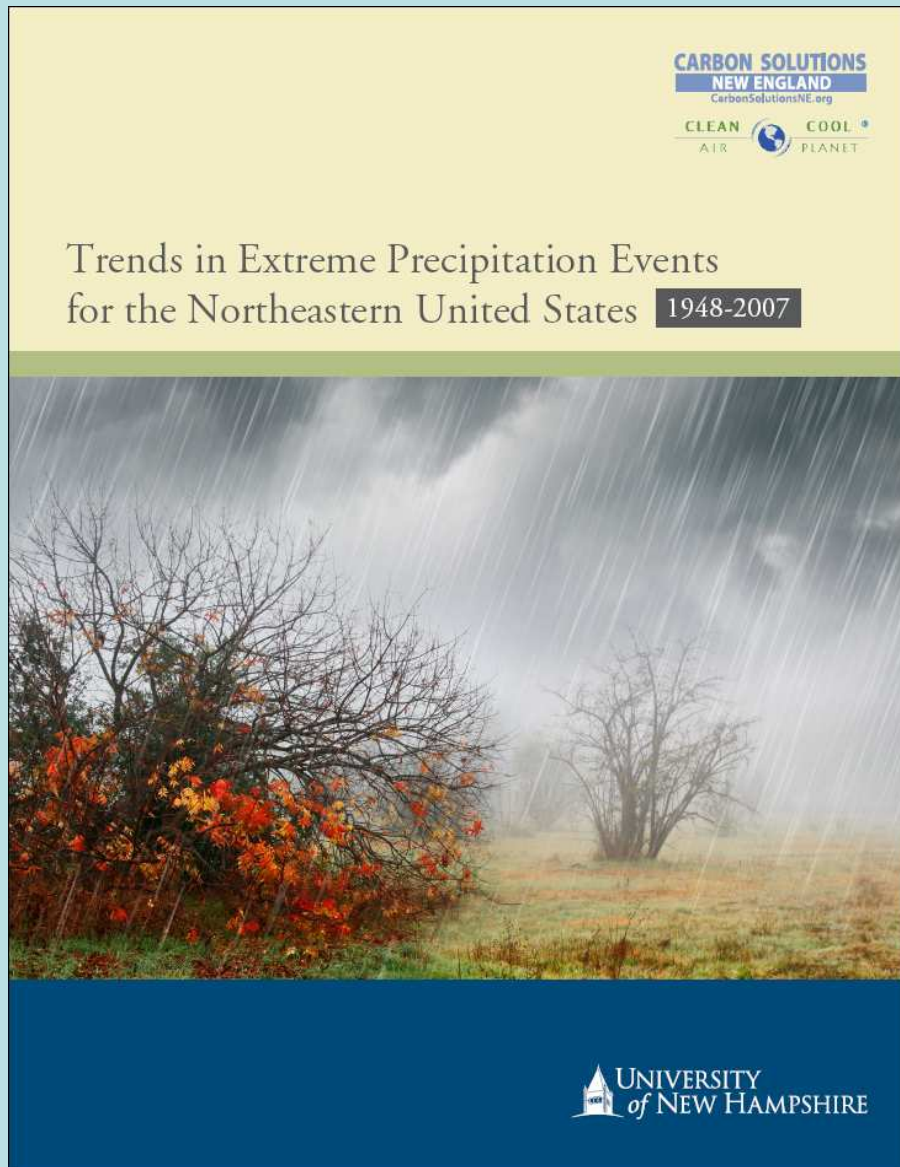


Increasing Winter Precipitation



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

New 2010 Report

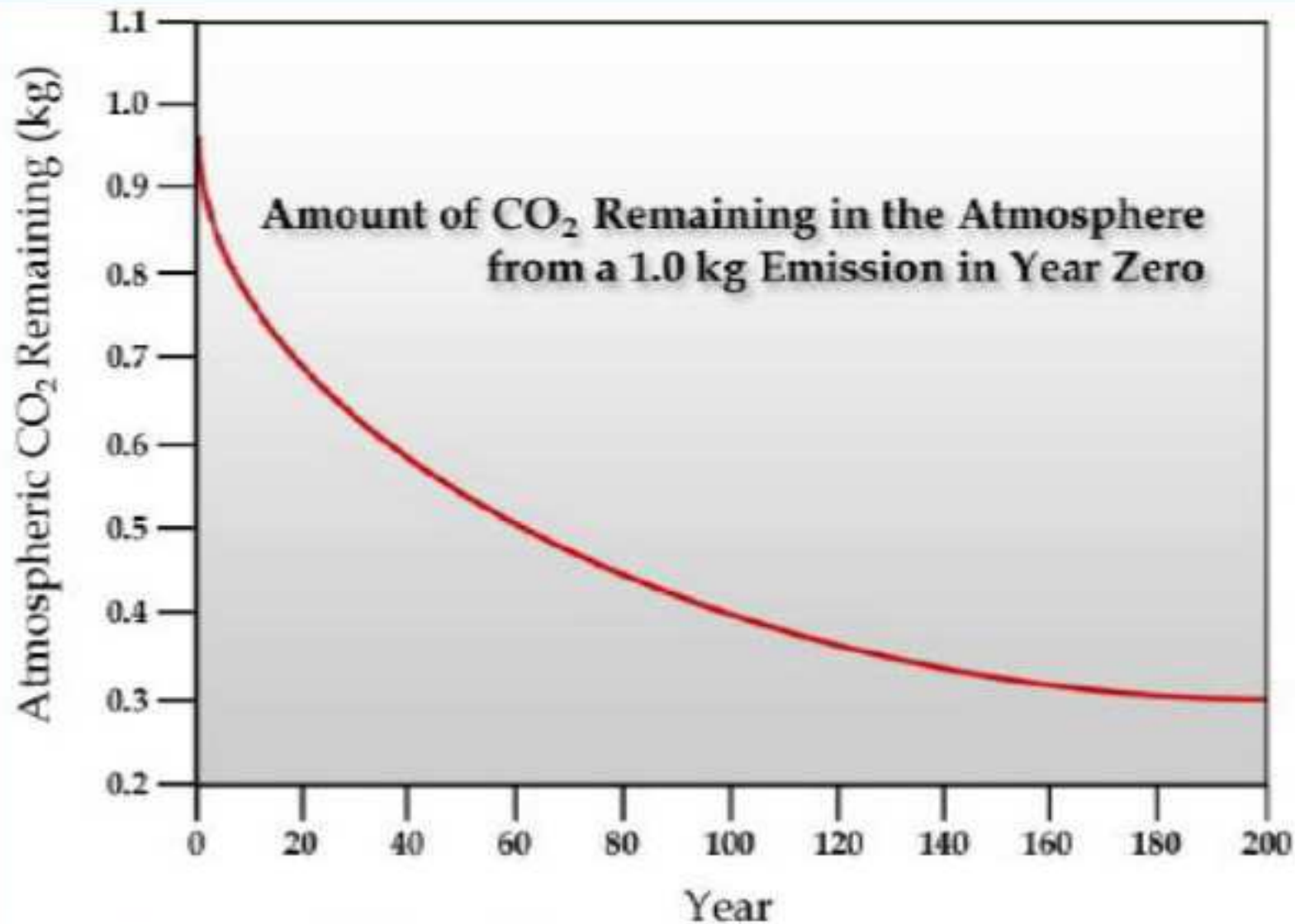


Conclusions

- 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/>

CO₂ Persists in the Atmosphere

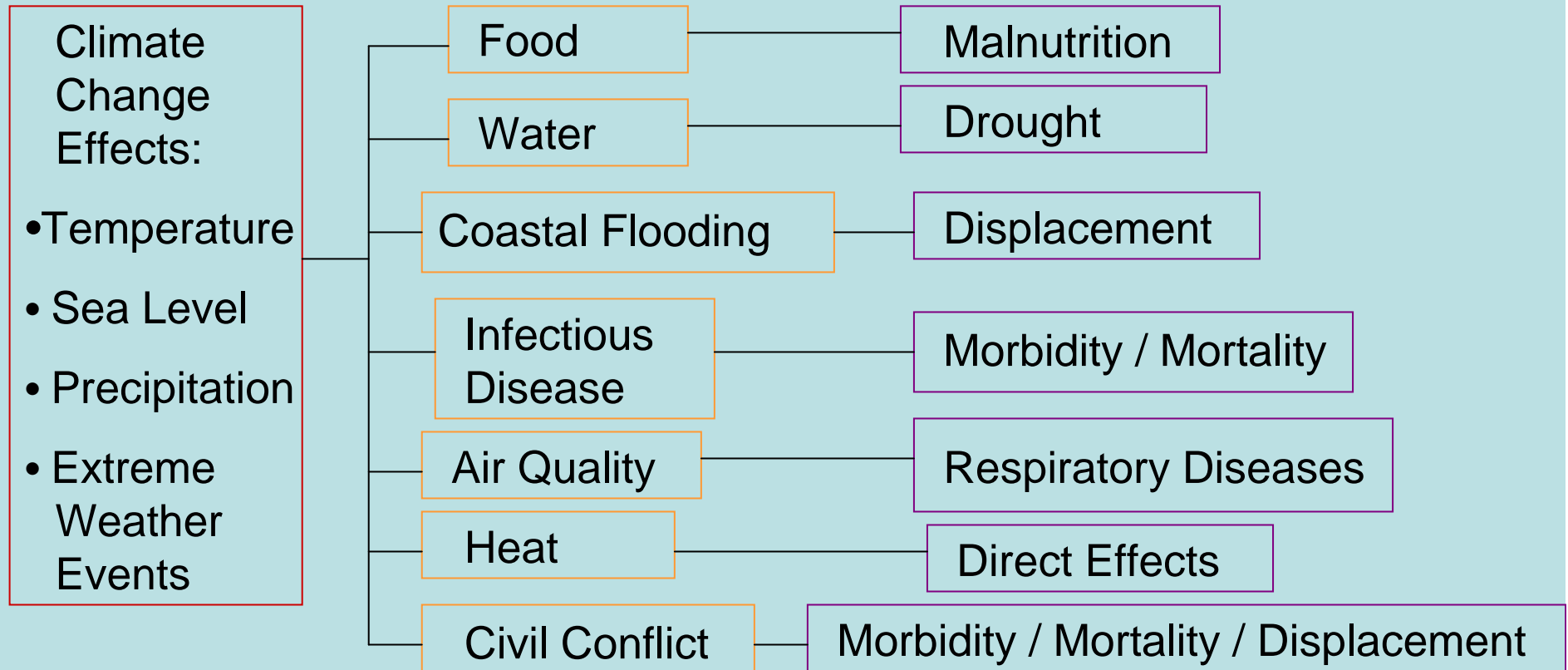


Source: Eugene S. Takle, PhD, CCM, 01/06

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.



