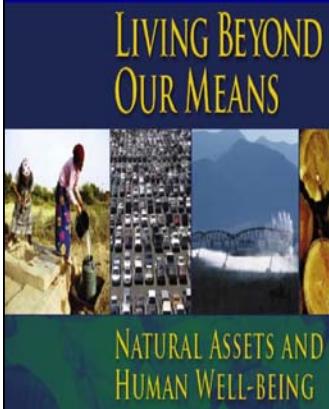
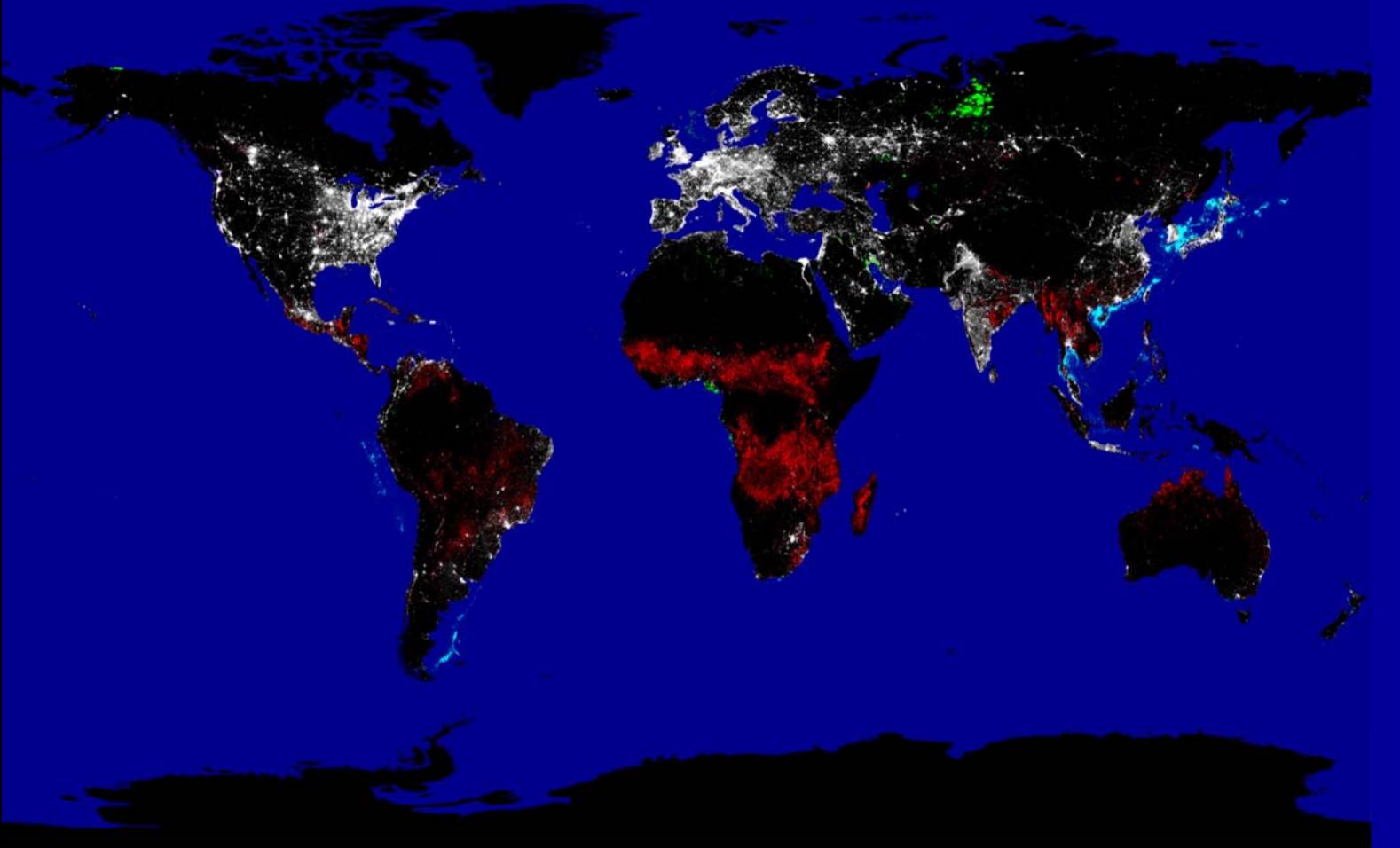


Achieving Millennium Development Goals

In the face of Global Climate Change



Population and Energy on Earth





UN Millennium
Development Goals



How can 9 - 12 billion people live safely and happily on Earth?



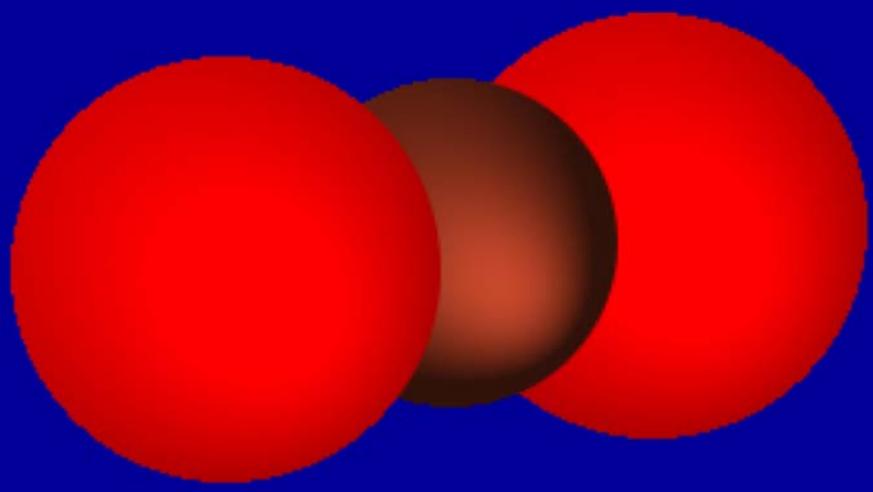


- Eradicate extreme poverty and hunger
- Promote gender equality; empower women
- Reduce child mortality
- Improve maternal health
- Achieve universal primary education
- Combat HIV/AIDS, malaria, other diseases
- Ensure environmental sustainability



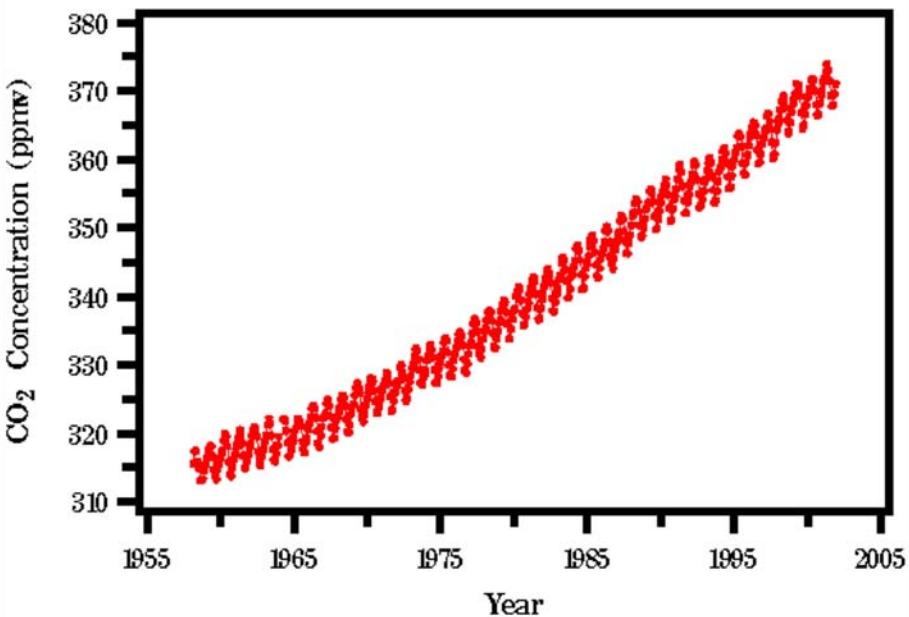
Millennium Development Goals

- Focus on human needs for better living standards
- Progress slowed by degraded and stressed ecosystems and natural resources
- Progress slowed by onset of global climate change





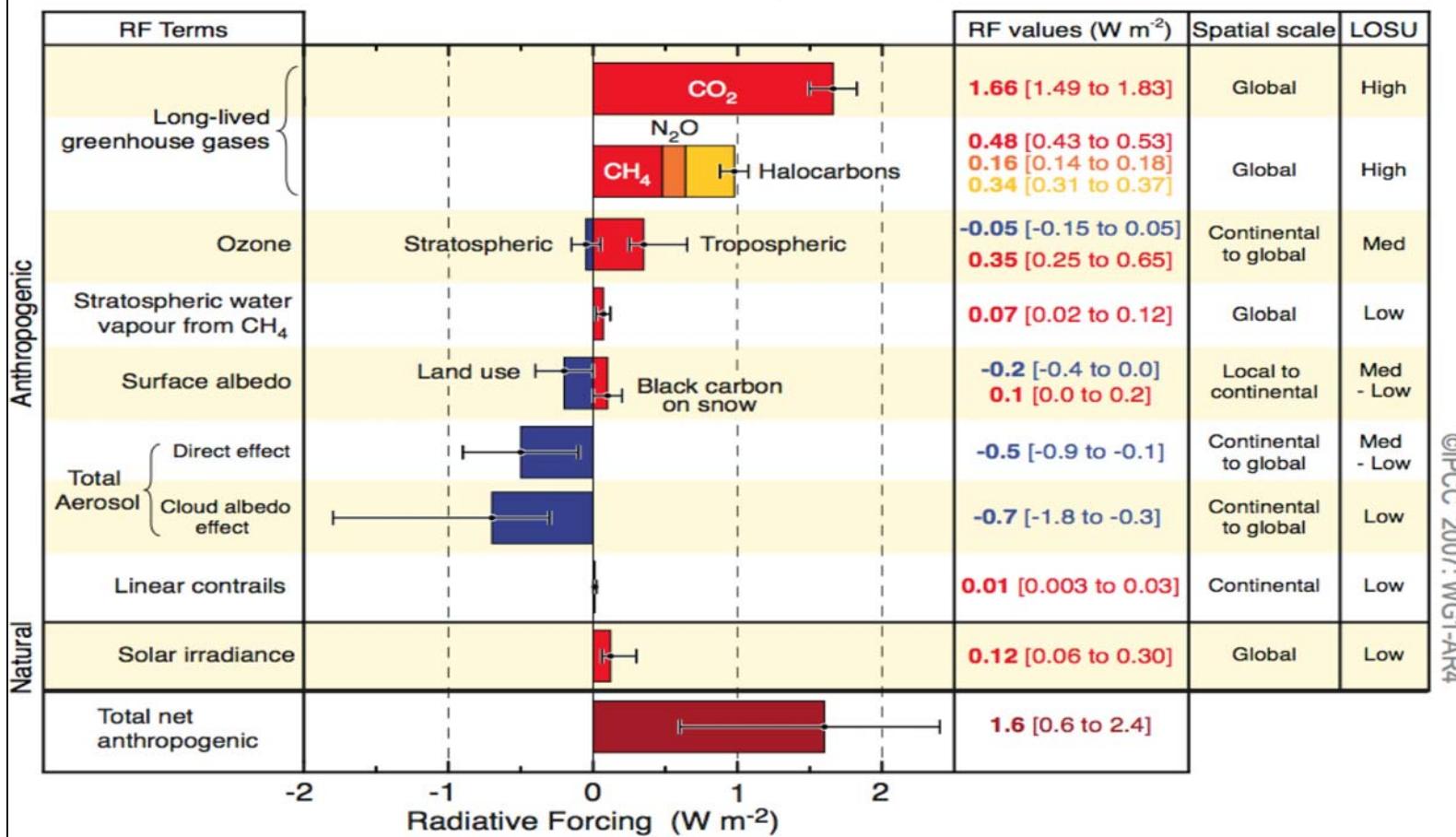
Carbon dioxide concentration as measured at Mauna Loa, Hawaii. These measurements represent the globally mixed concentration.



Source: Dave Keeling and Tim Whorf (Scripps Institution of Oceanography)

Global-average radiative forcing estimates and ranges

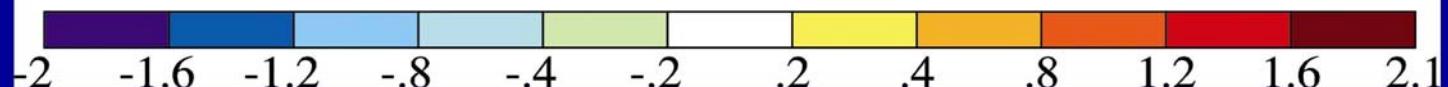
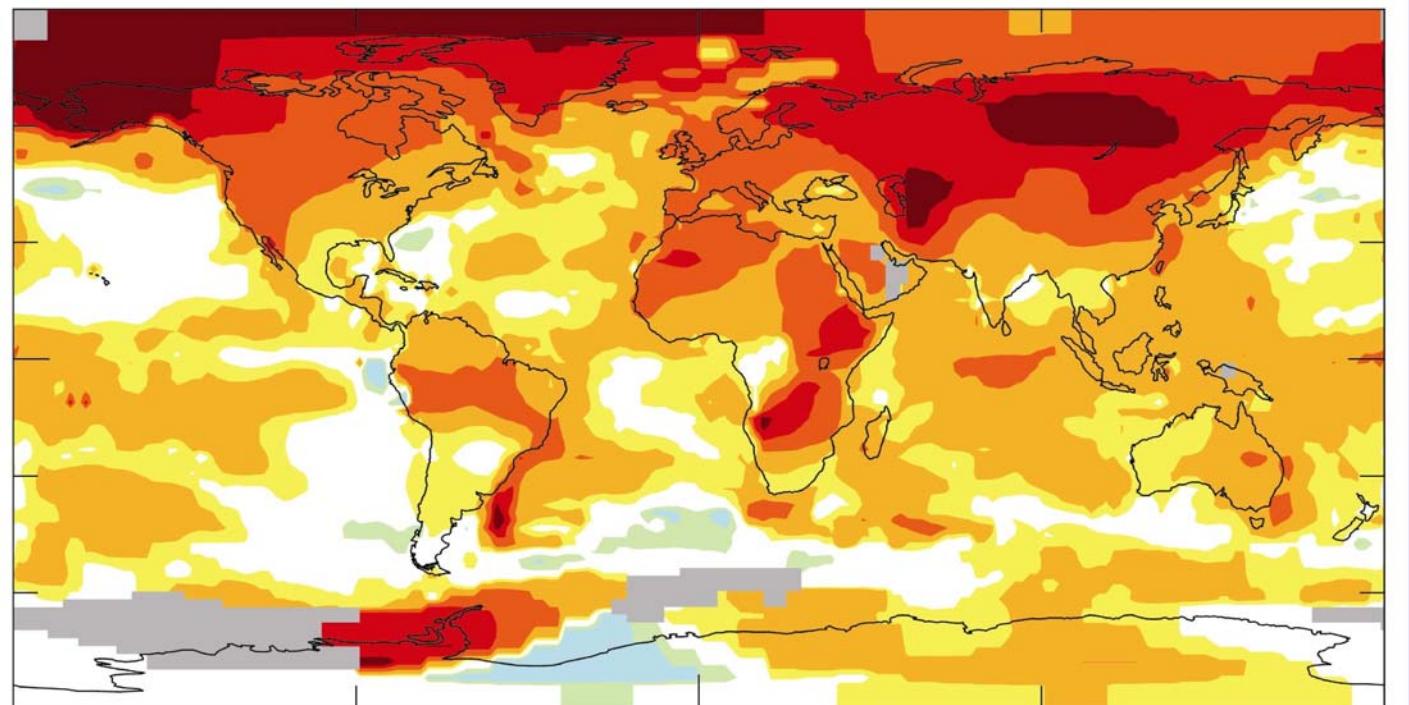
Radiative Forcing Components



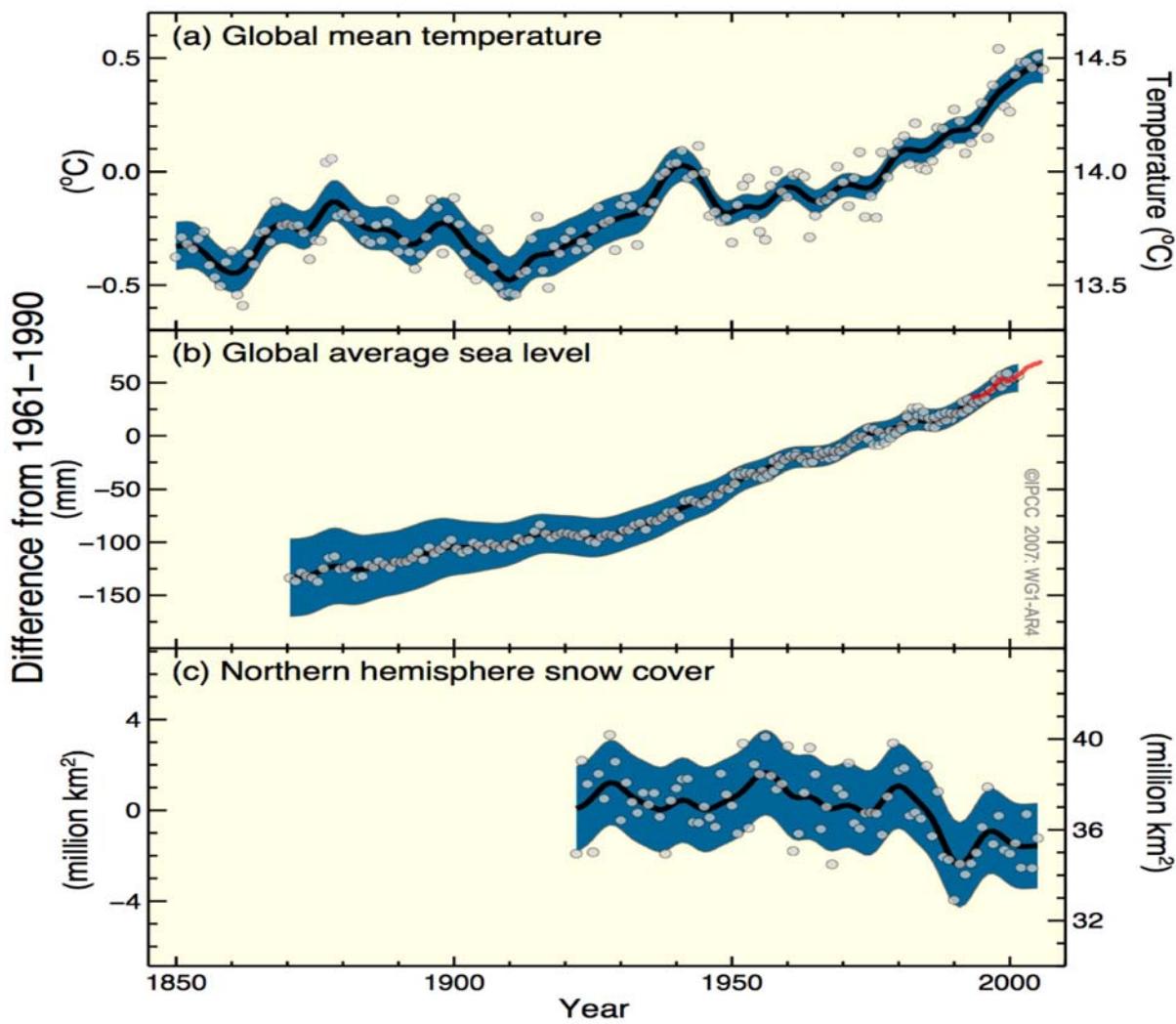
2001-2005 Mean Surface Temperature Anomaly (°C)

Base Period = 1951-1980

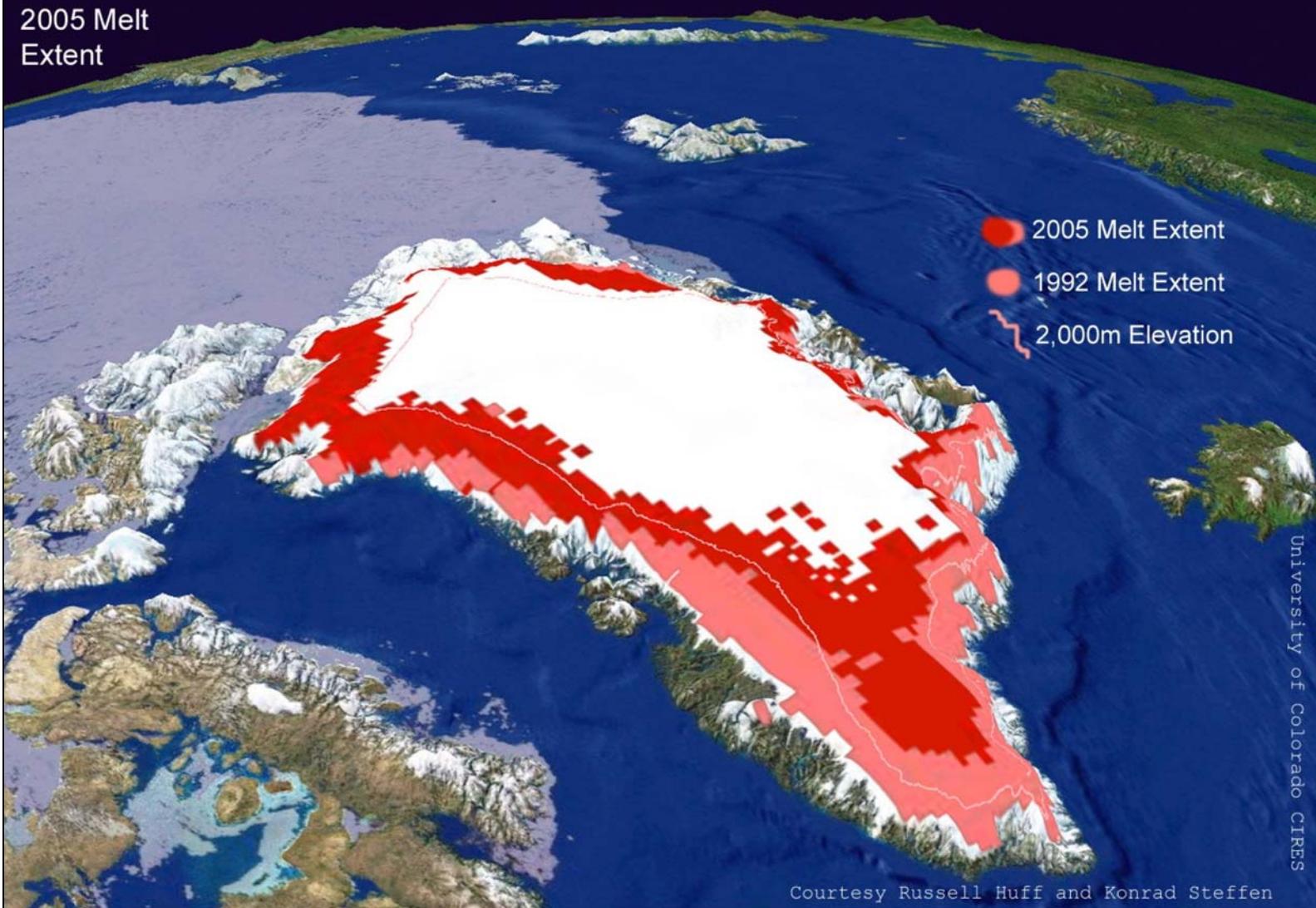
Global Mean = 0.53



Changes in Temperature , Sea Level and Northern Hemisphere Snow Cover



2005 Melt Extent

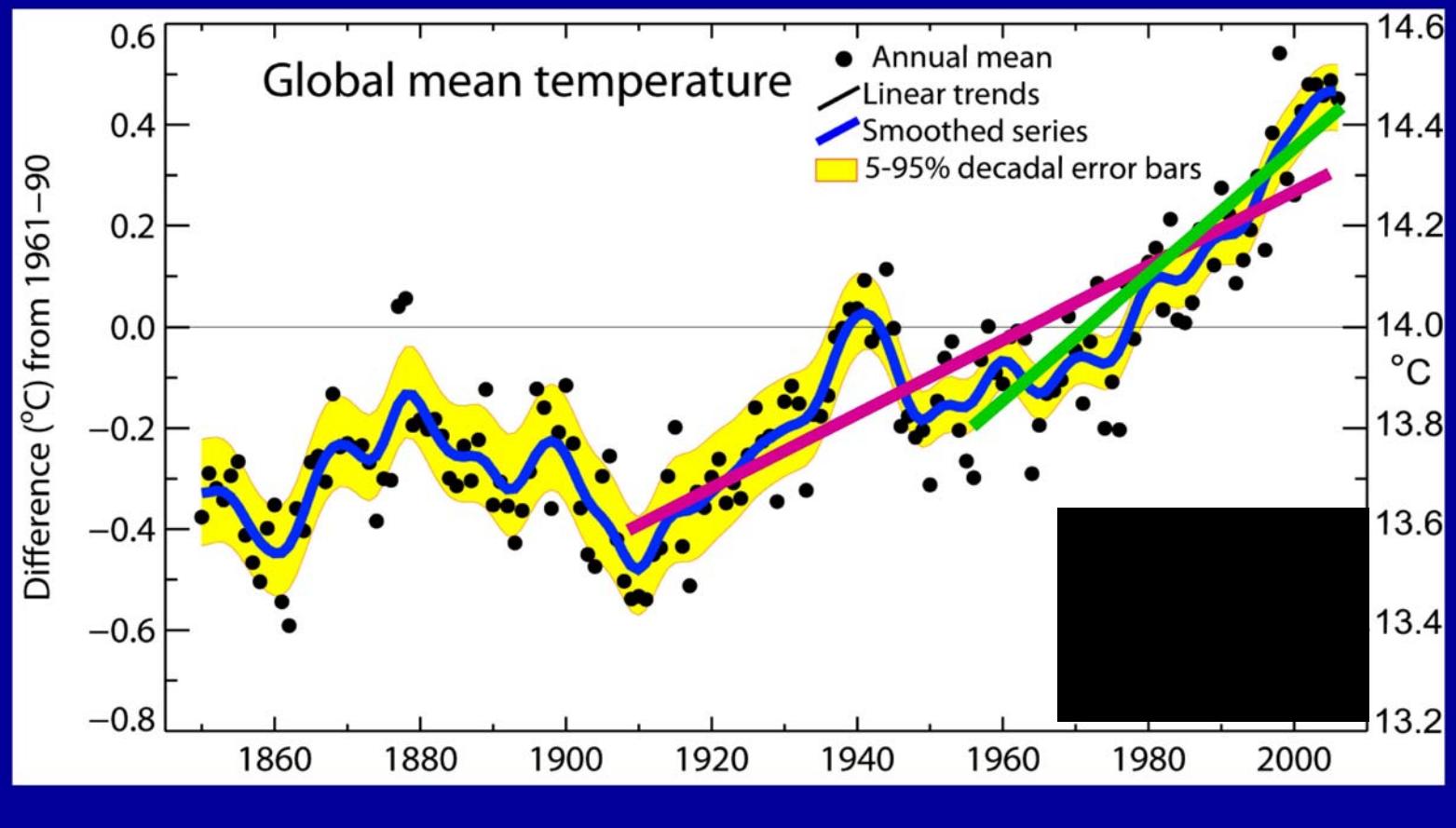


Courtesy Russell Huff and Konrad Steffen

Source: Abdalati, W., and K. Steffen, 2001. *J. Geophys. Res.*, 106(D24), 33,983–33,988.

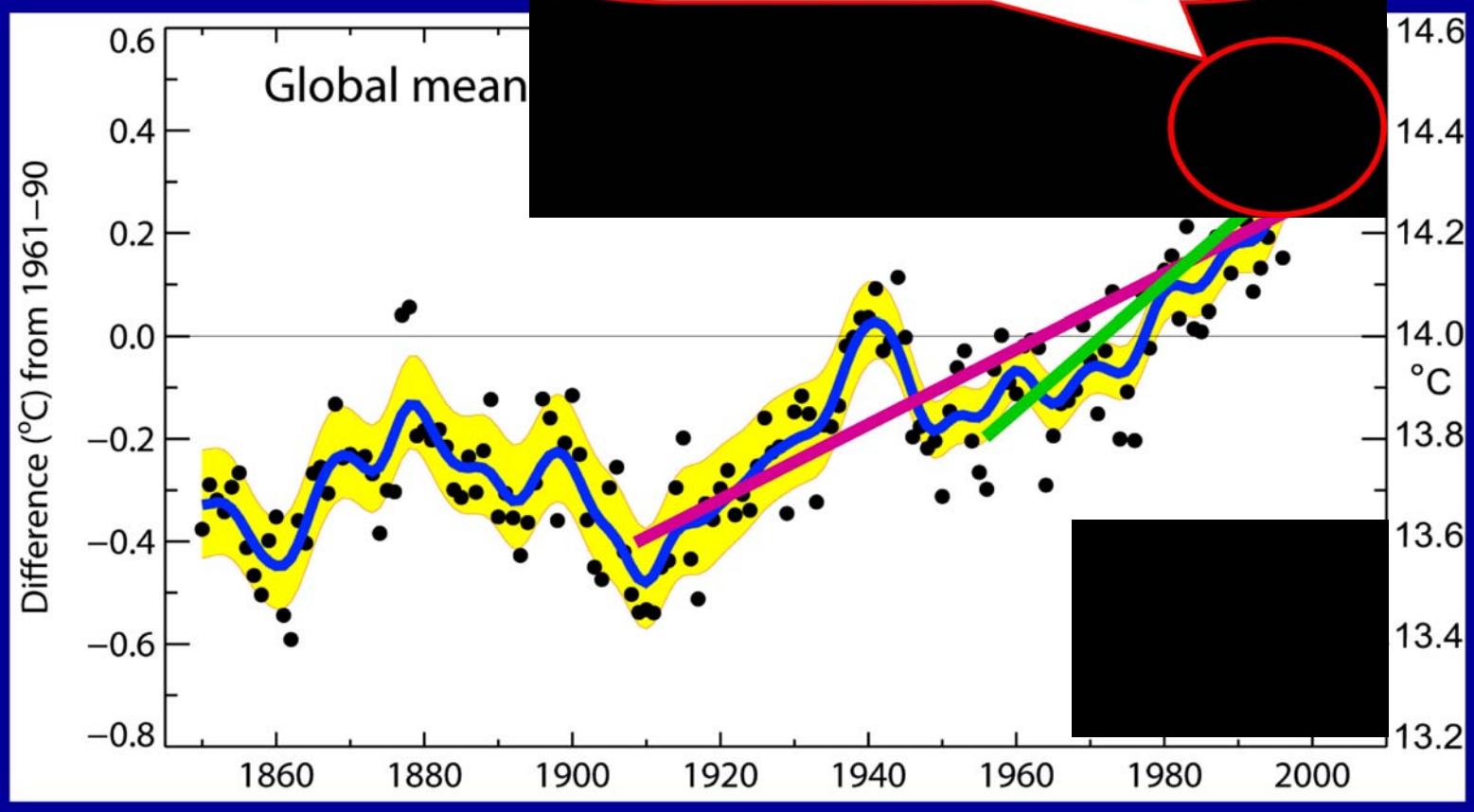
Updated at: <http://cires.colorado.edu/science/groups/steffen/greenland/melt2005/>

Global mean temperatures are rising faster with time



Global mean temperature

Warmest 12 years:
1998, 2005, 2003, 2002, 2004, 2006,
2001, 1997, 1995, 1999, 1990, 2000



WBGU

German Advisory Council on Global Change
(WBGU)



The Future Oceans – Warming Up, Rising High, Turning Sour

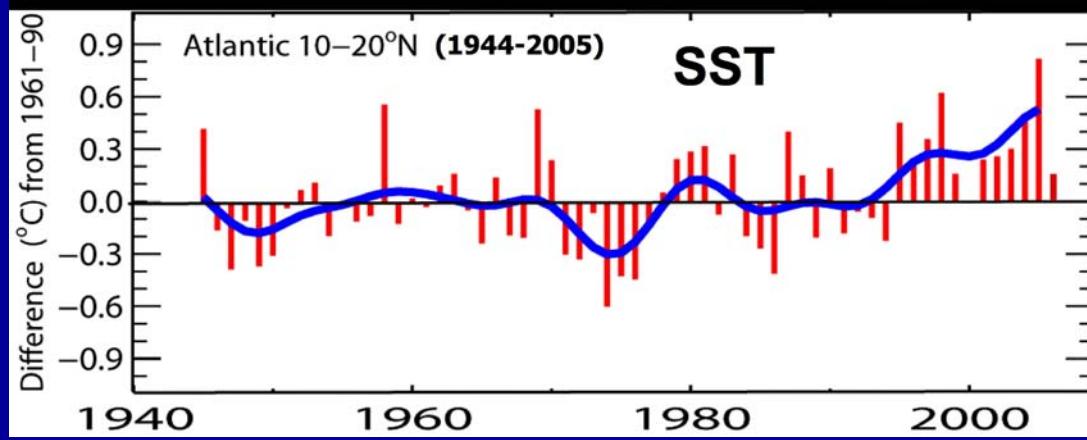
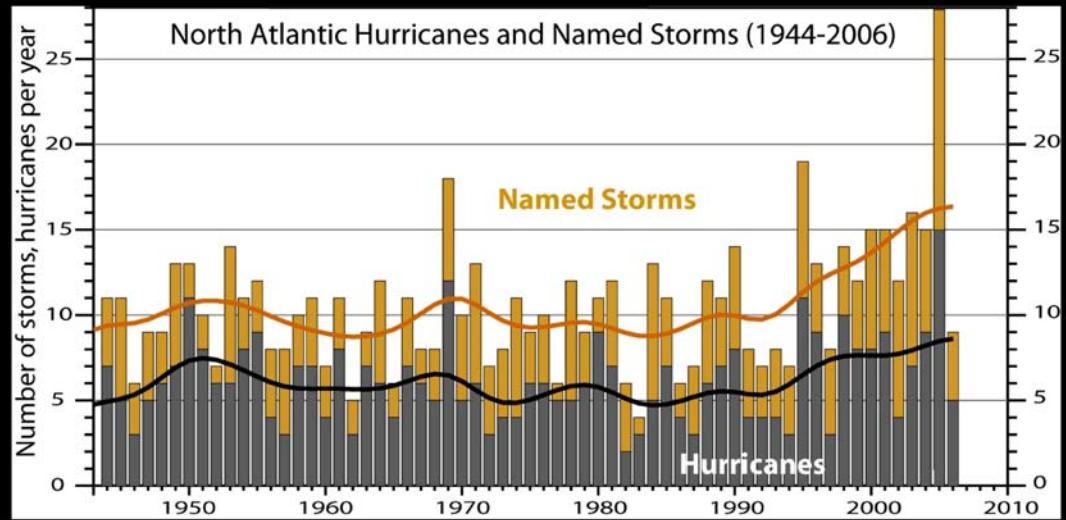
Special Report



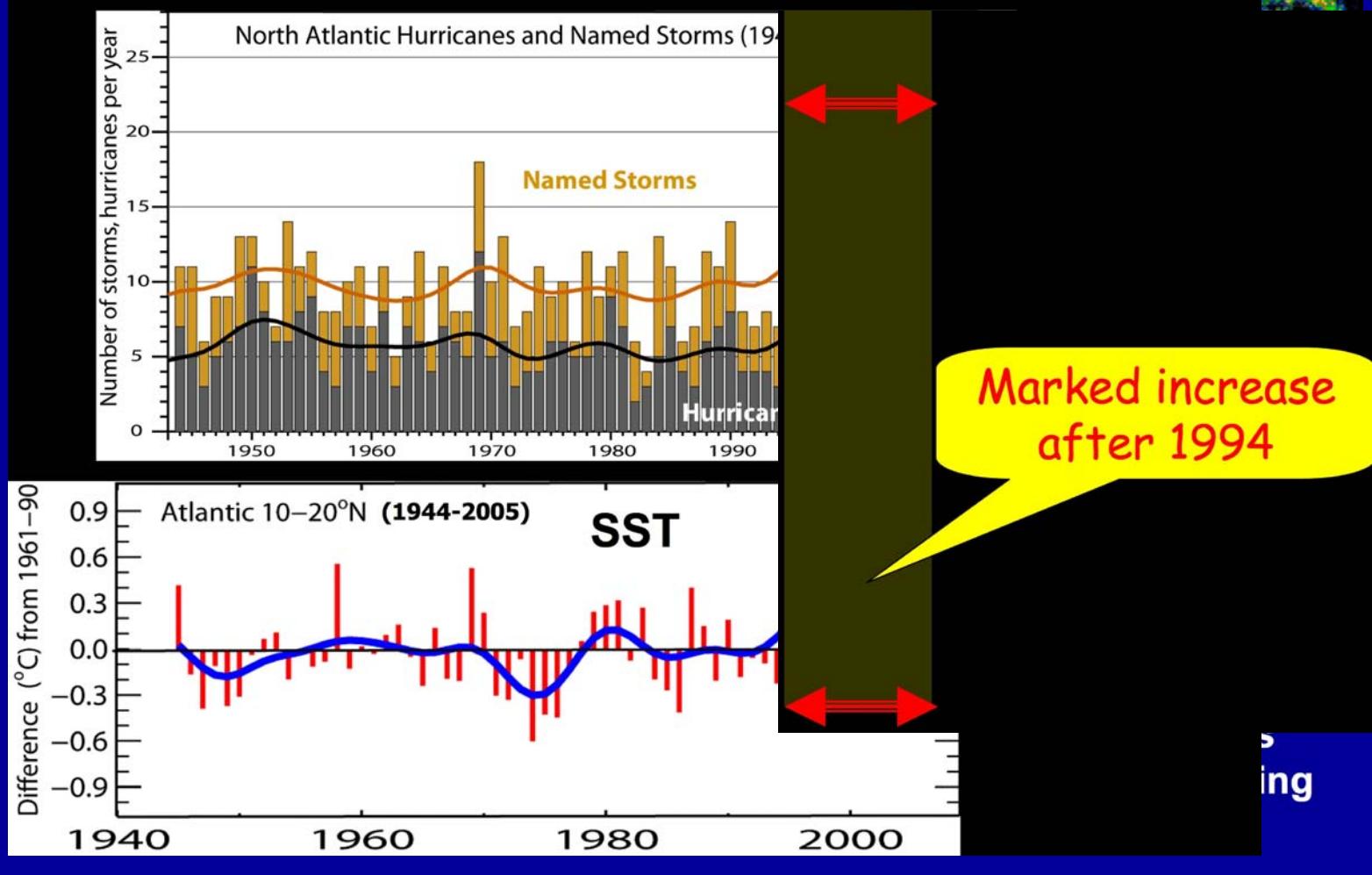
MDG1. Eradicate extreme poverty and hunger

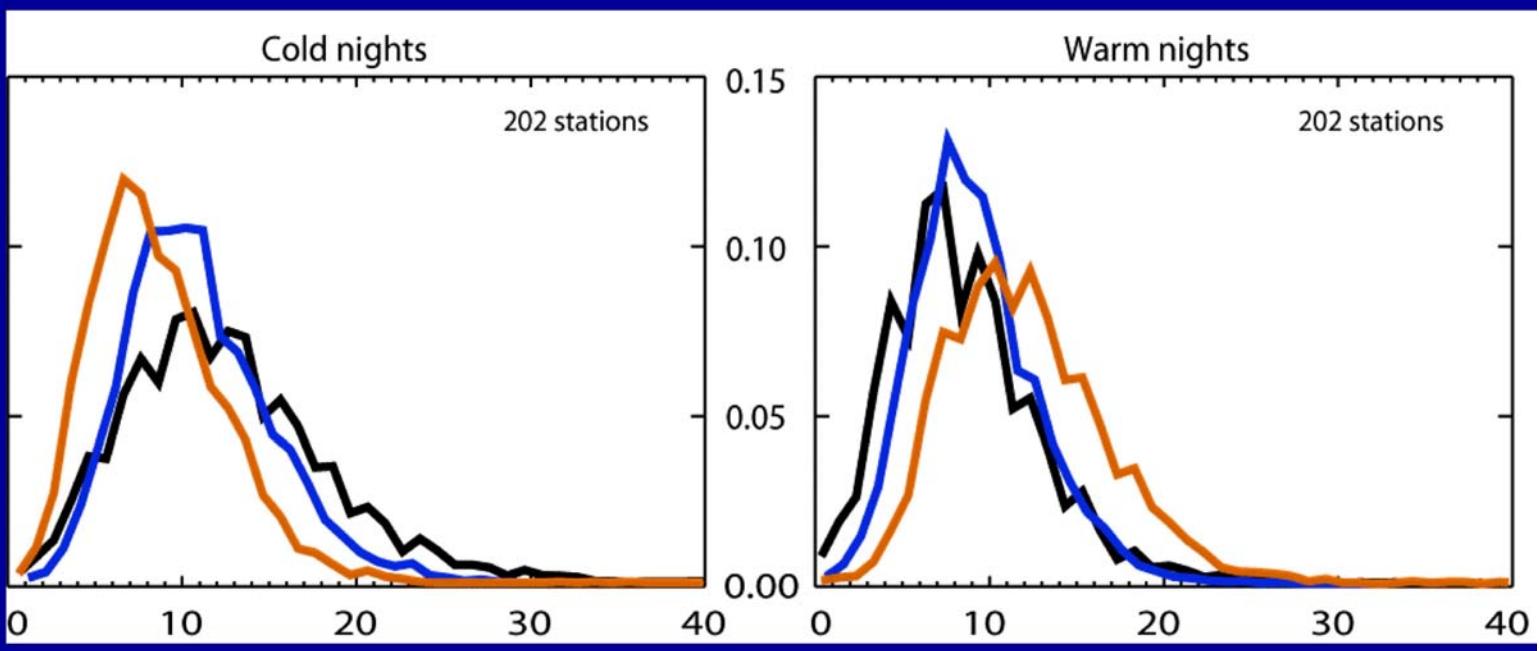
- Economic security given increase in weather extremes
- Diminishing bio-diversity and access to natural resources
 - Diminished crop yields
 - Reduced fisheries due to coral bleaching and increased calcification of coral
 - Increasing soil salinity

North Atlantic hurricanes have increased with SSTs



North Atlantic hurricanes have increased with SSTs





Frequency of occurrence of cold or warm temperatures for 202 global stations for 3 time periods:
1901 to 1950 (black), 1951 to 1978 (blue) and 1979 to 2003 (red).