

Global Warming: Implications for Human Health



PSR[®]



**Physicians
for Social
Responsibility**

U.S. Affiliate of International Physicians for the Prevention of Nuclear War

The Precautionary Principle

The Wingspread Statement

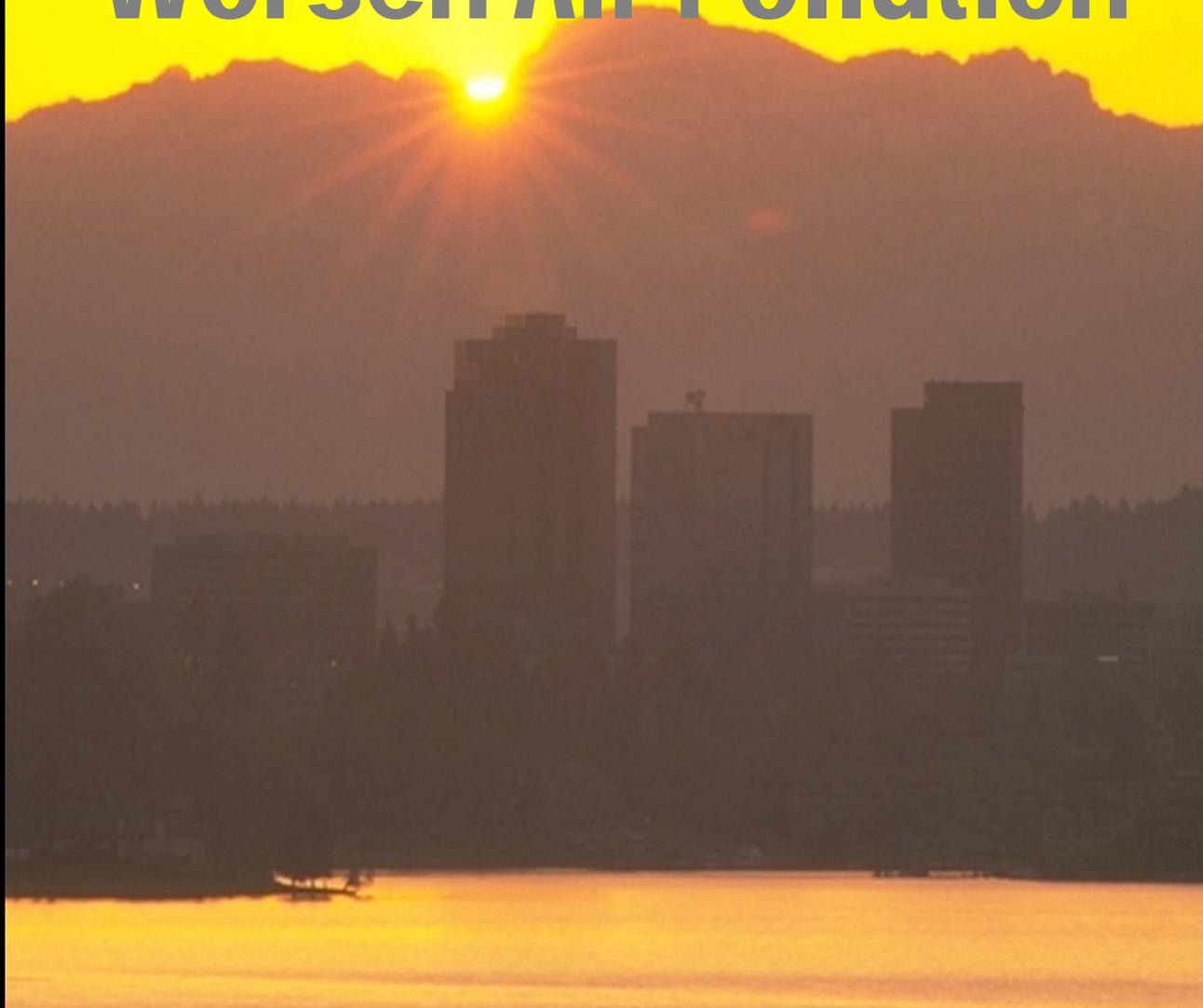
“When an activity raises threats of harm to human health or the environment, *precautionary measures should be taken* even if some cause and effect relationships are not fully established scientifically.”

“The Stone Age did not end because we ran out of stones; the Oil Age will not end because the world runs out of oil.”

**Don Huberts- Shell H₂ CEO
Sheik Yamani- ex Saudi Oil minister
Geoffrey Ballard- fuel cell pioneer**

Air Quality

Rising Temperatures Worsen Air Pollution



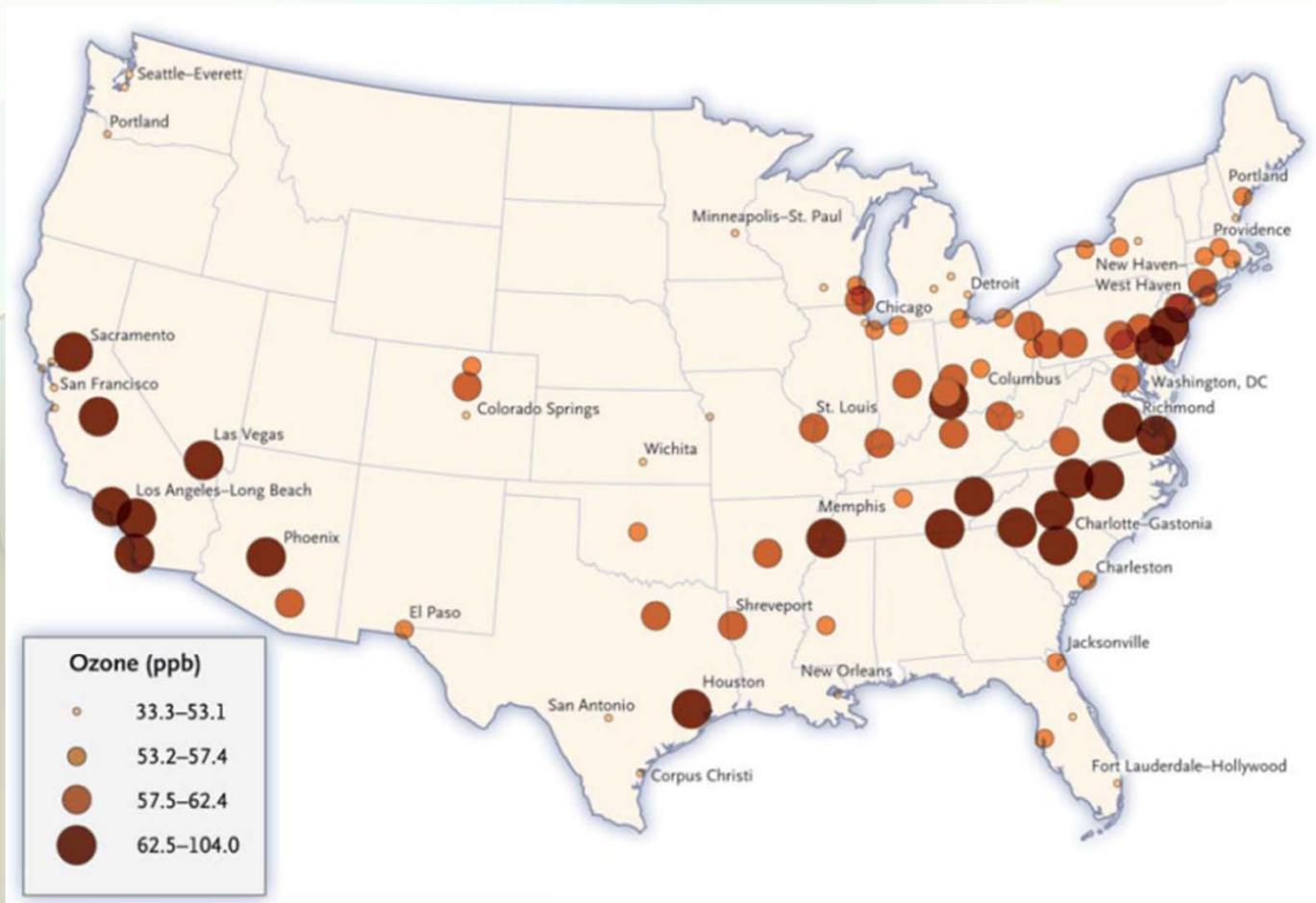
Heat Worsens Ozone Air Pollution

- **Ozone- 1^o component of smog**
- **Formed when NO_x and VOC's (vehicles, powerplants) interact in presence of heat & light**
- **Warmer temps increase ozone formation**
- **Temp. increase of 4°F could increase ozone conc. by 5%**

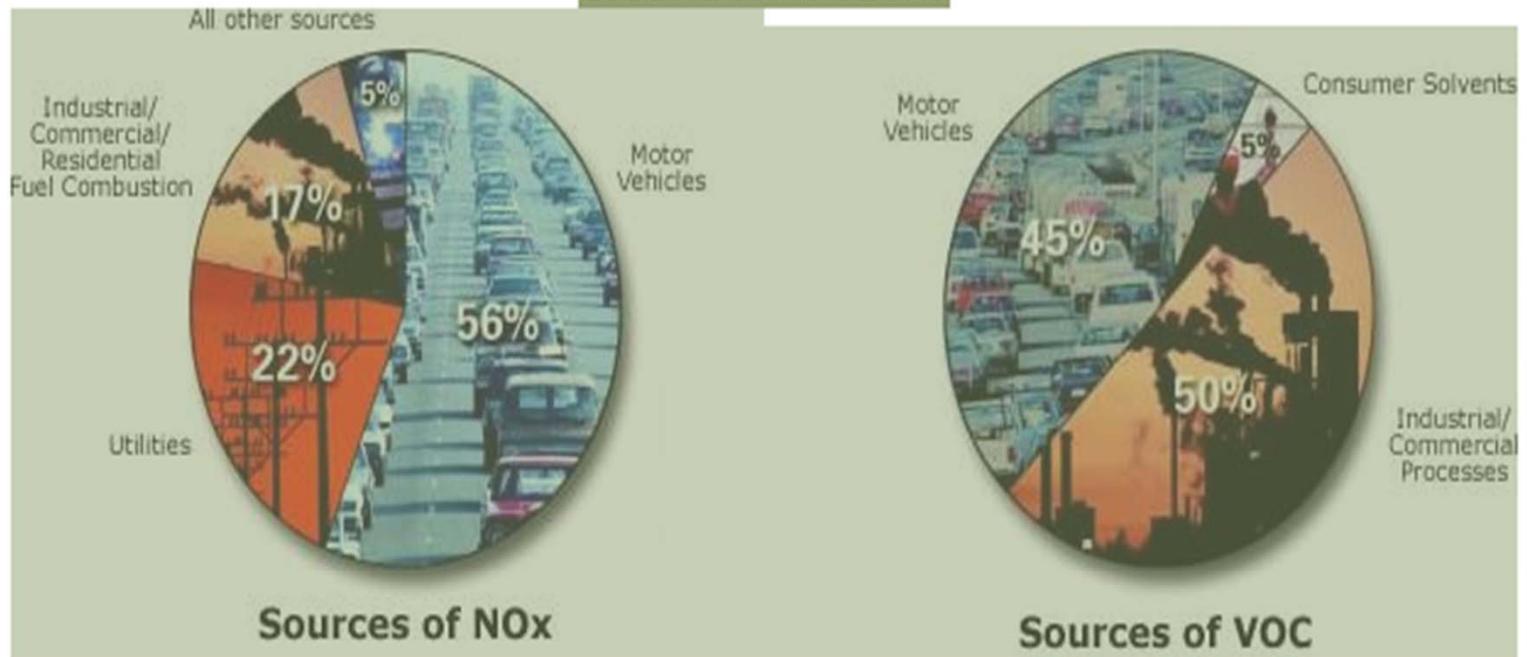
Health Effects of Ground-Level Ozone

- **Impaired lung function**
- **Severe coughing, SOB, pain when breathing**
- **Lung, eye irritation**
- **Susceptibility to bronchitis, pneumonia**
- **Increased risk of hospital admissions & ER visits for asthma**
- **Increased risk of cardiovascular complications in at-risk populations**

Ozone (O₃)



Ground-level Ozone



EPA Graphic

Pollution from ports and goods movement will cost California residents **\$200 billion** over the next 15 years in **health costs**

Health Effects of PM



- Increases asthma attacks (*Harvard Six Cities Studies*)
- Aggravates bronchitis (*McConnell et al 1999*)
- Slows lung growth in children (*Gauderman et al 2000,2002*)
- Lower birth weight and increased number of premature births (*Ritz et al 2001,2002*)
- Contributes to premature deaths (*Pope et al 2002*)



Reproductive Health

Hispanic, African-American, and Asian/Pacific Islander mothers experienced higher mean levels of air pollution and were more than twice as likely to live in the most polluted counties compared with white mothers after controlling for maternal risk factors, region, and educational status



Declining Reproductive Health

Low Birth Weight

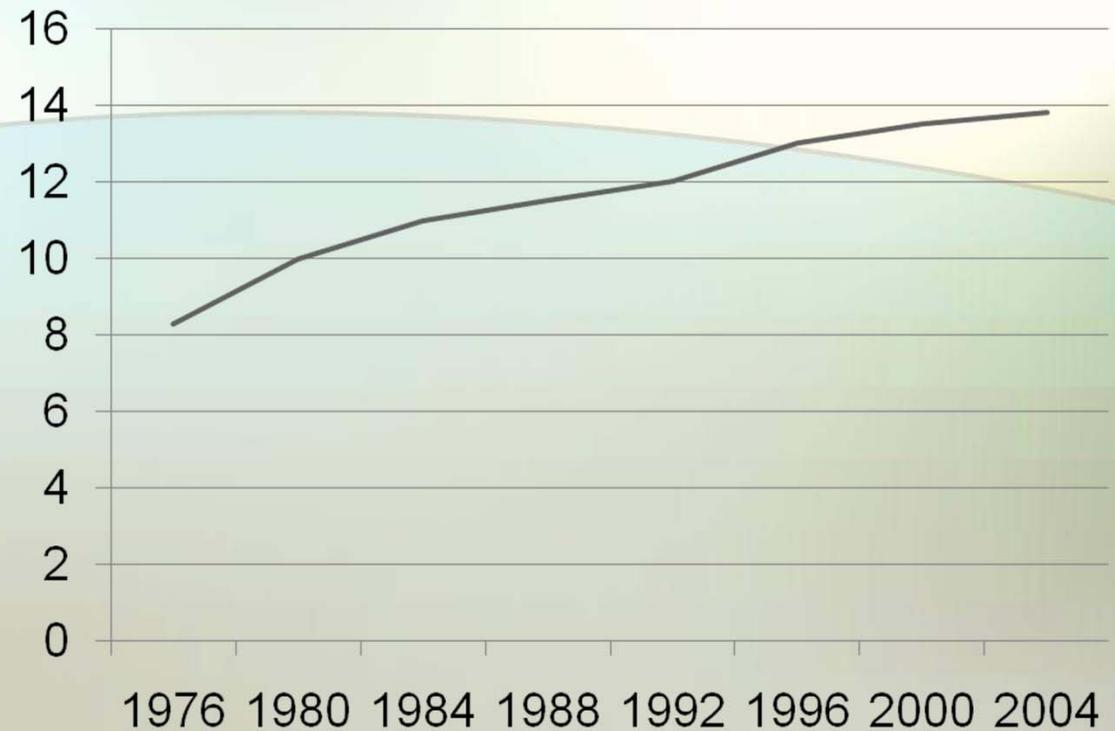
- The number of infants born with low birth weight (under 6.6 lbs) increased almost 1% from 1994-2004. (Center for American Progress)
- African American low birth weights are rising faster and remain significantly higher.



Declining Reproductive Health Learning Disabilities

- The percent of U.S. students treated for a learning disability has increased from 8.3% in 1976 to 13.8% in 2005. (Center for American Progress)
- Children of color suffer disproportionately from learning disabilities.

Percent of Students





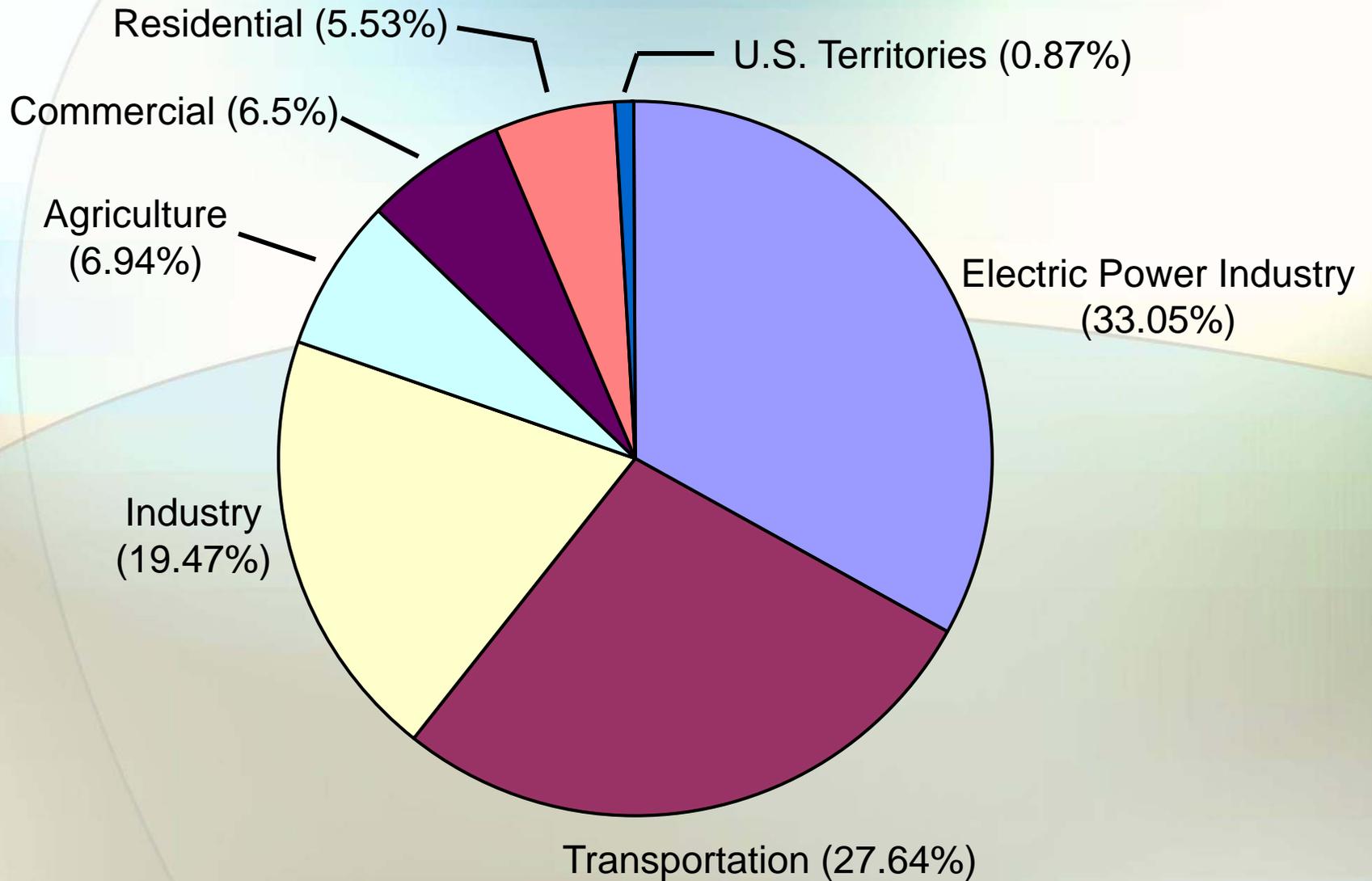
“There is new and stronger evidence that most of the observed warming over the past 50 years is attributable to human activities.”

- Intergovernmental Panel on Climate Change, TAR 2001

“The understanding of anthropogenic warming and cooling influences on climate has improved since the Third Assessment Report (TAR), leading to *very high confidence* that the globally averaged net effect of human activities since 1750 has been one of warming...”

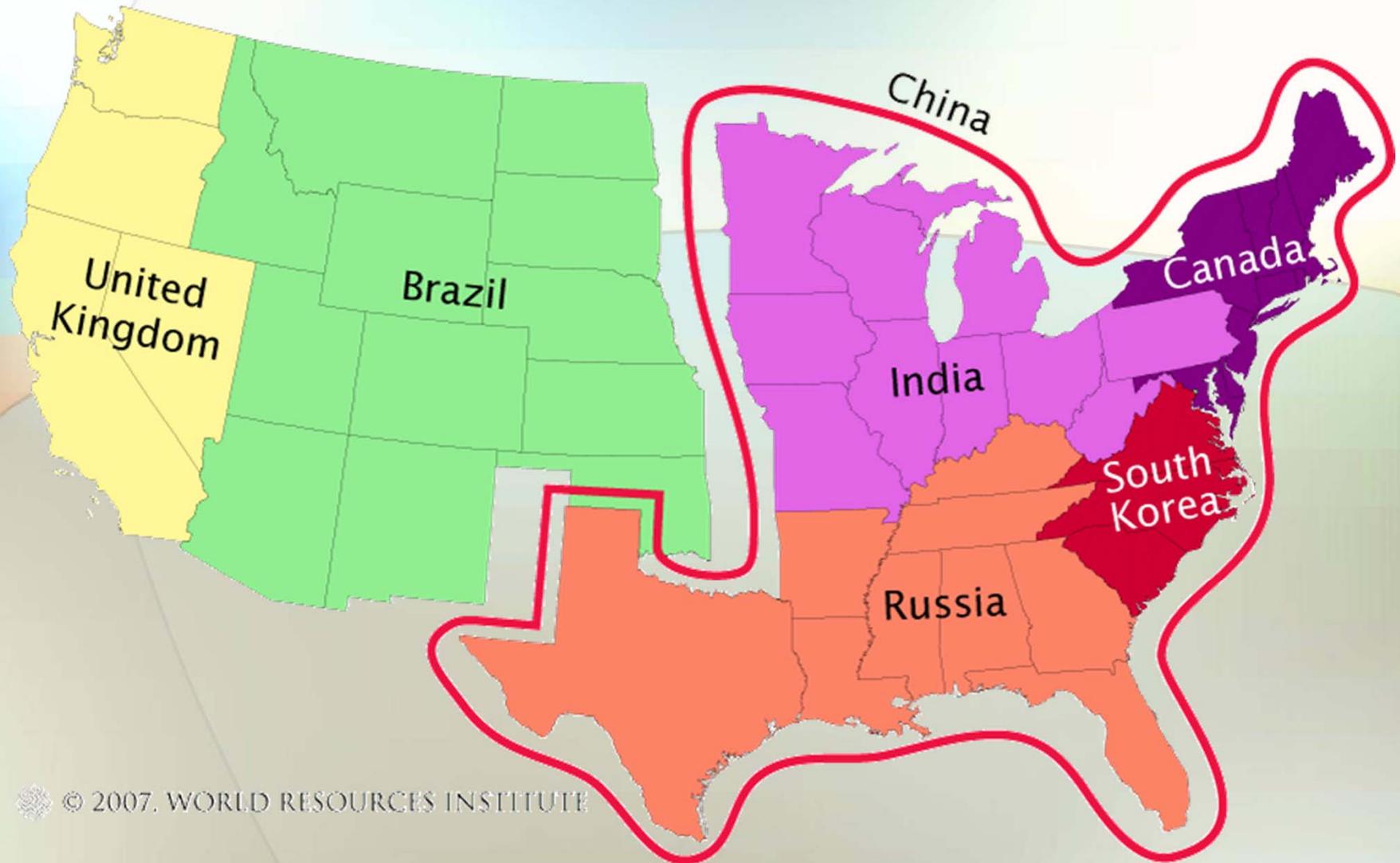
- Intergovernmental Panel on Climate Change, AR4 2007

U.S. Greenhouse Gas Emissions (2004)



Source: EPA. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2004.

The World's LARGEST Contributor



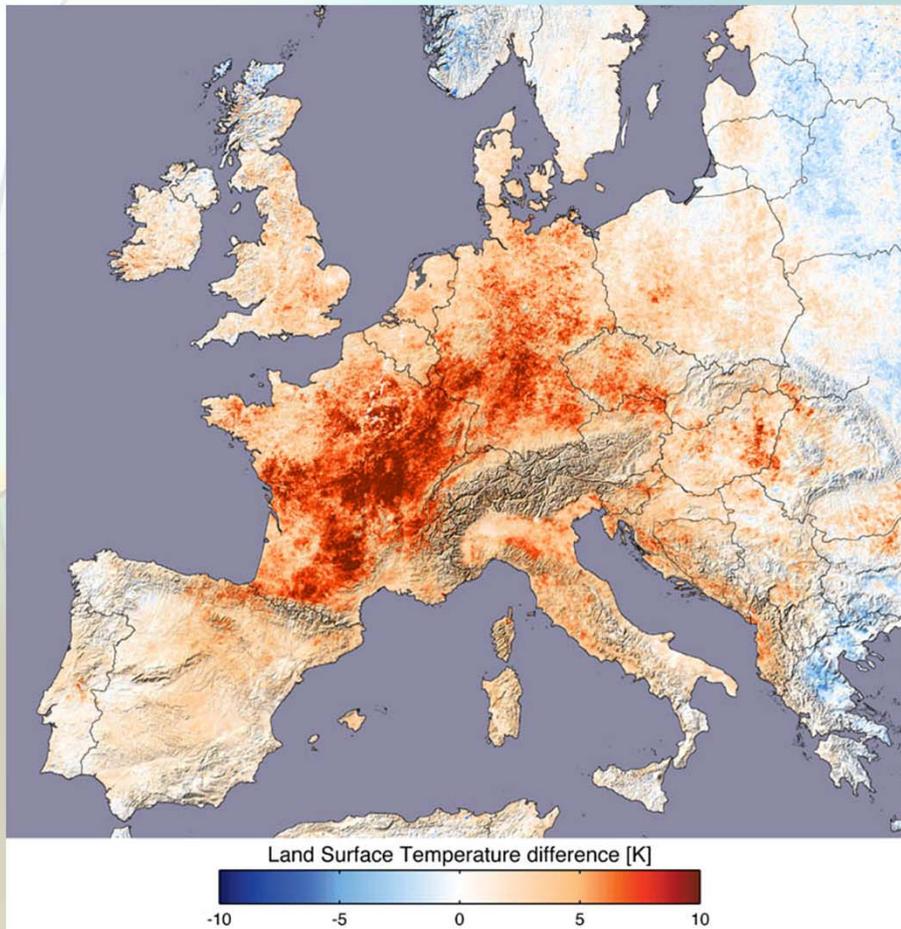


“Overall...the health effects of a rapidly changing climate are likely to be overwhelmingly negative.”

– World Health Organization

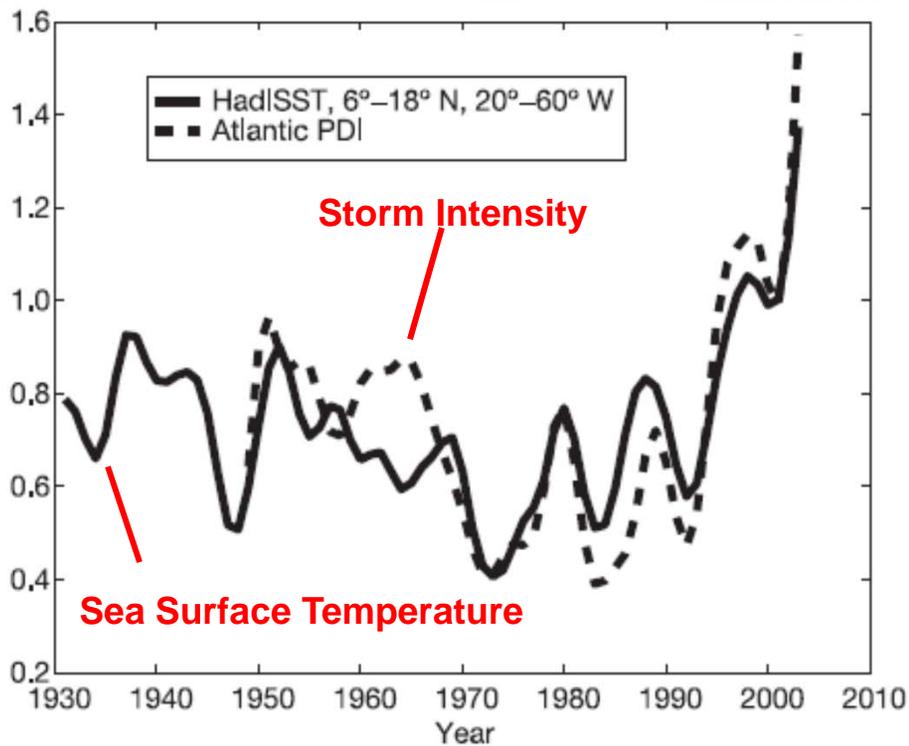


European Heat Wave of 2003

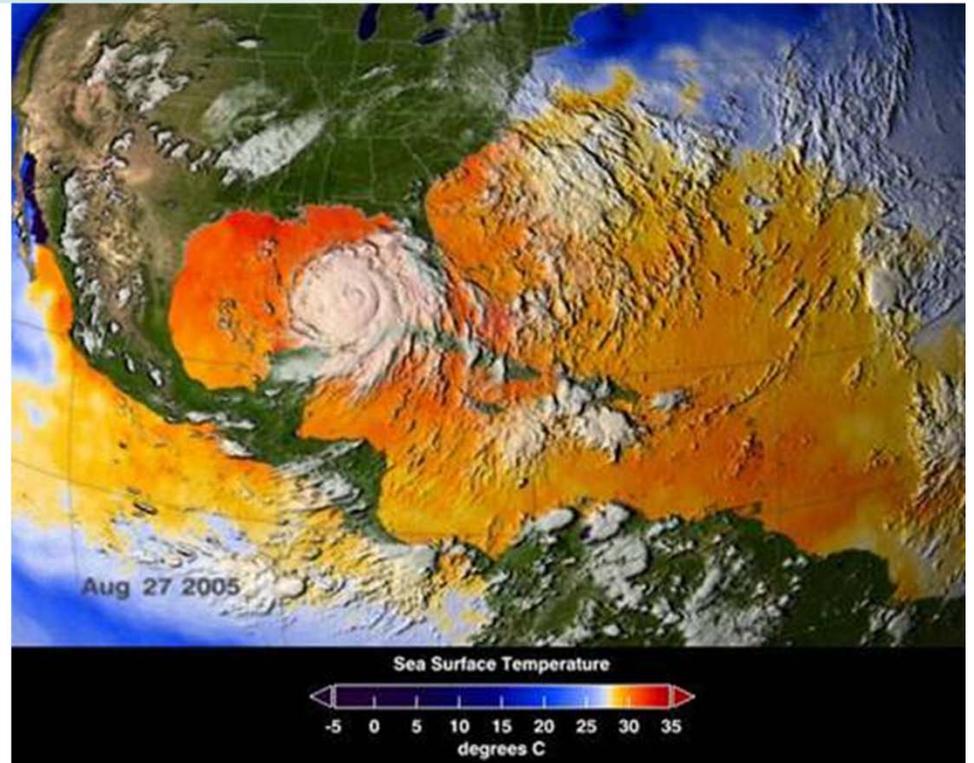


Source: NASA

Stronger Hurricanes



Source: Emanuel K. Nature (2005); 436: 686-688.



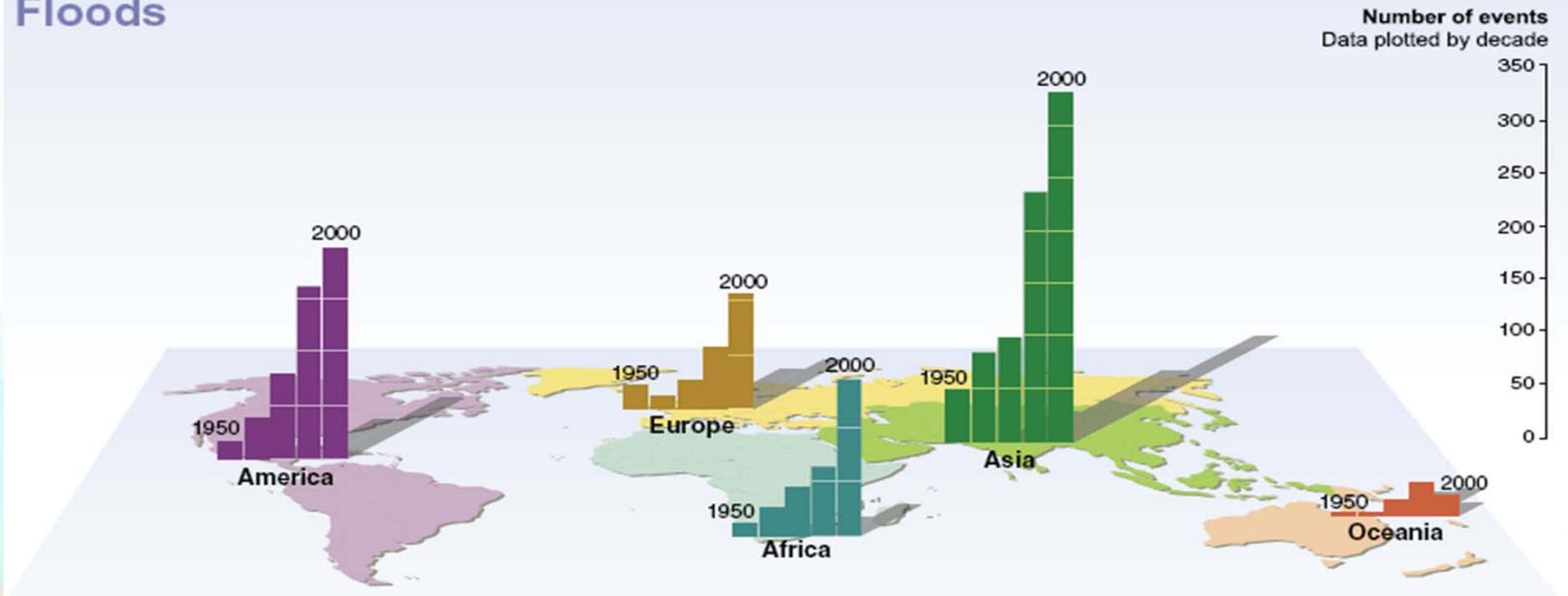
Source: NASA

Hurricane Katrina



AP

Floods



Source: Millennium Ecosystem Assessment

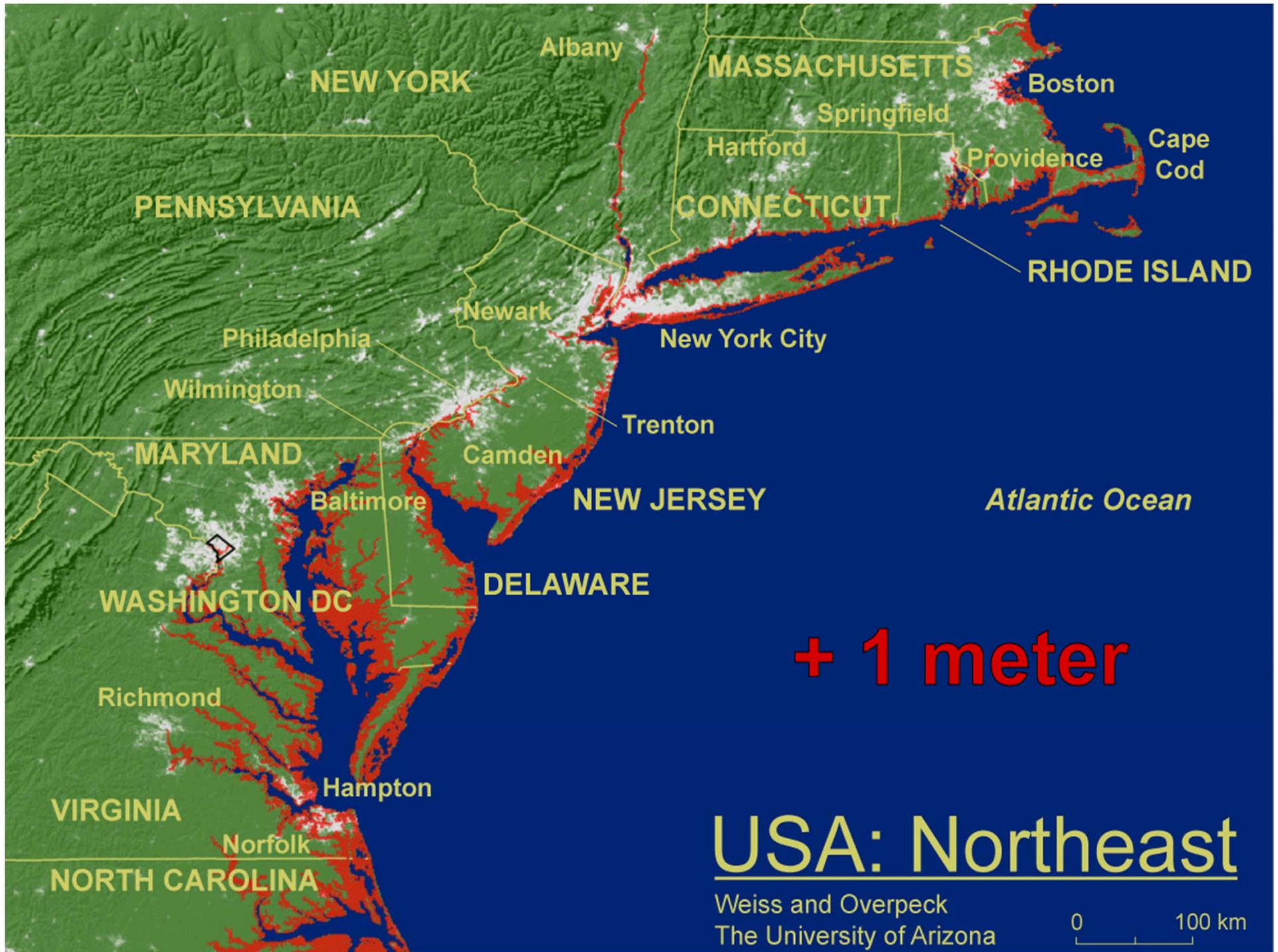


Rising Seas

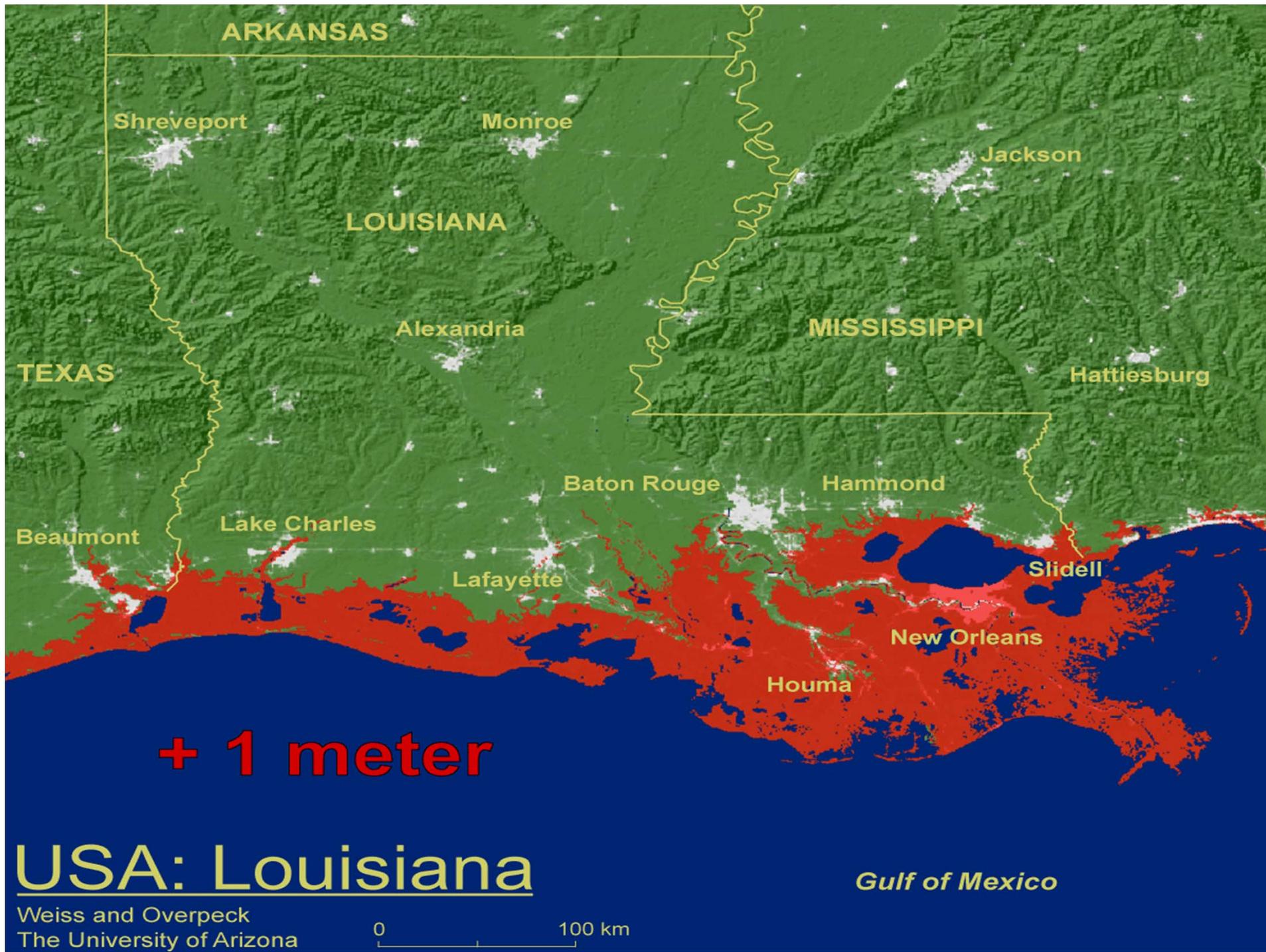


AP Photo/Michael Dwyer







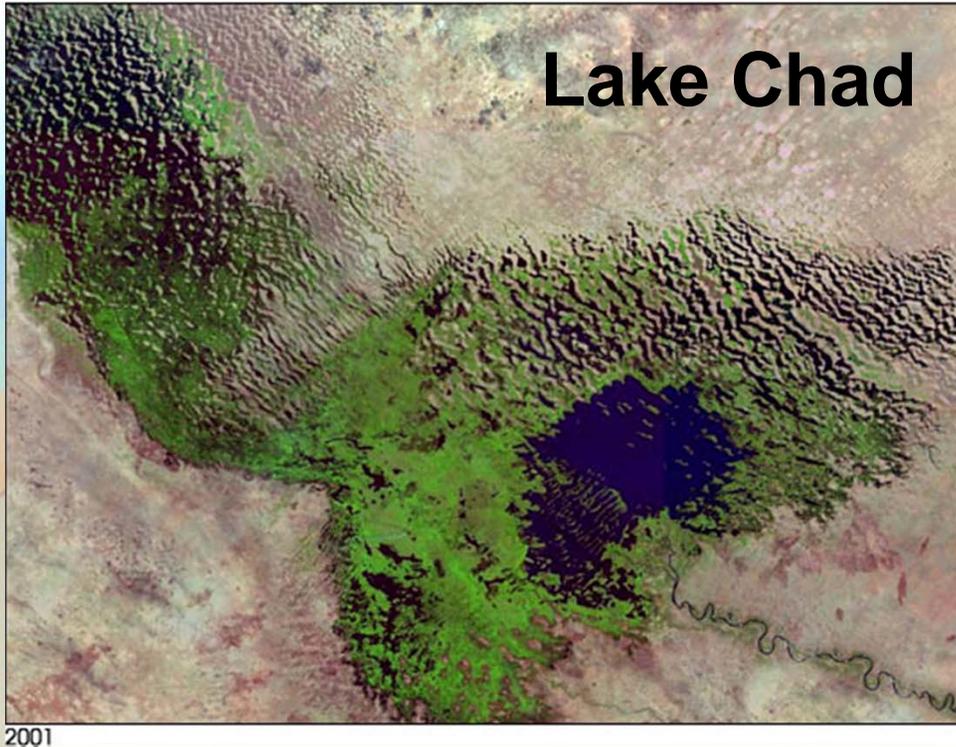
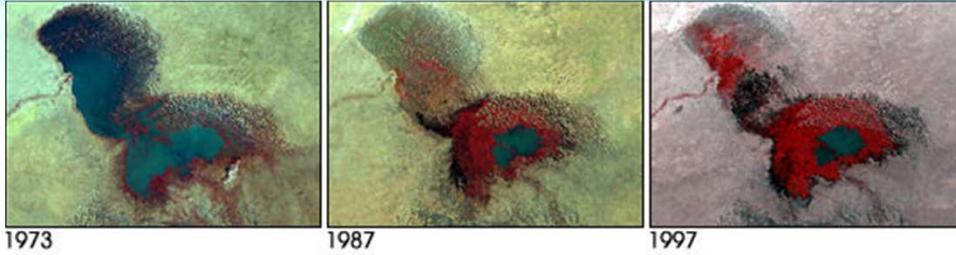


Drought



Global Warming Refugees



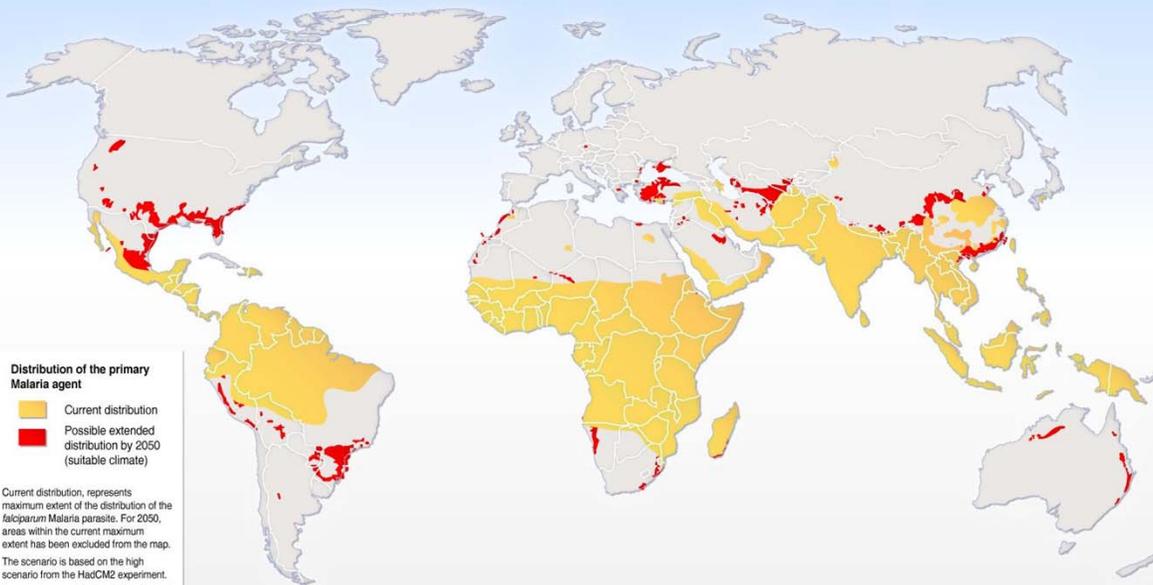


“[Climate] changes make the emergence of conflict more rather than less likely. The blunt truth is that the lack of water and agricultural land is a significant contributory factor to the tragic conflict we see unfolding in Darfur. We should see this as a warning sign.”

- John Reid, British Home Secretary

Spreading Infectious Disease: Malaria

Climate Change and Malaria



Distribution of the primary Malaria agent

- Current distribution
- Possible extended distribution by 2050 (suitable climate)

Current distribution, represents maximum extent of the distribution of the *falciparum* Malaria parasite. For 2050, areas within the current maximum extent has been excluded from the map. The scenario is based on the high scenario from the HadCM2 experiment. Source: Rogers, Randolph. *The Global Spread of Malaria in a Future, Warmer World*. Science (2000:1763-1766).

UNEP/GRID-Arendal

MONTANE REGIONS

BEFORE 1970
Cold temperatures caused freezing at high elevations and limited mosquitoes, mosquito-borne diseases and many plants to low altitudes

TODAY
Increased warmth has caused mountain glaciers to shrink in the tropics and temperate zones

DENGUE FEVER OR MALARIA

MOSQUITOES

PLANTS

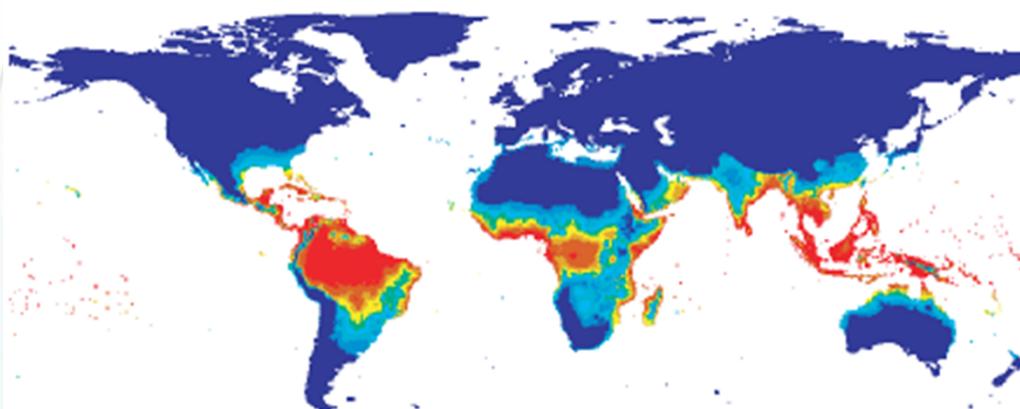
Some mosquitoes, mosquito-borne diseases and plants have migrated upward



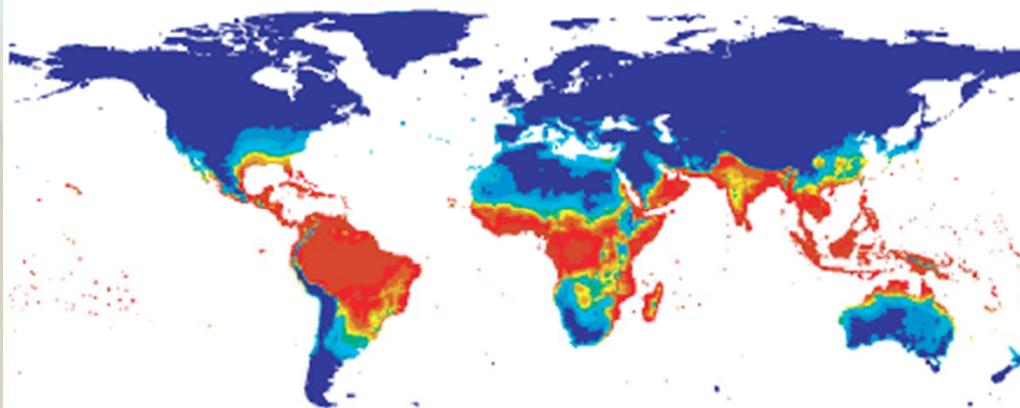
Center for Health and the Global Environment,
Harvard Medical School

Spreading Infectious Disease: Dengue

1990



2085



Source: Hales et al. *Lancet*. 2002; 360: 830-834.

Spreading Infectious Disease: West Nile Virus

States with cases of West Nile virus in humans



* Year of extreme drought may have increased West Nile virus cases in the U.S. and Canada.

** Preliminary count.

1999



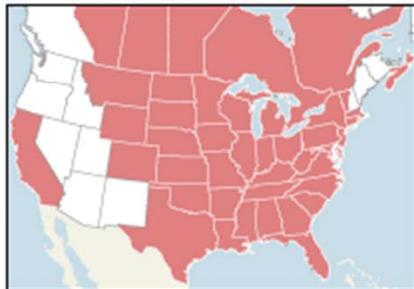
2000



2001



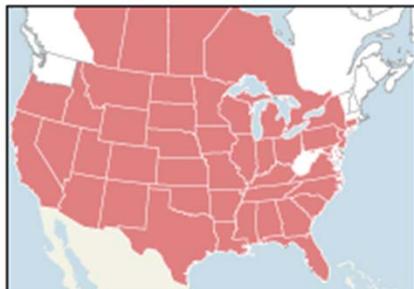
2002



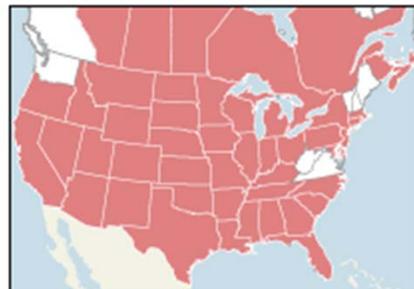
2003*



2004



2005



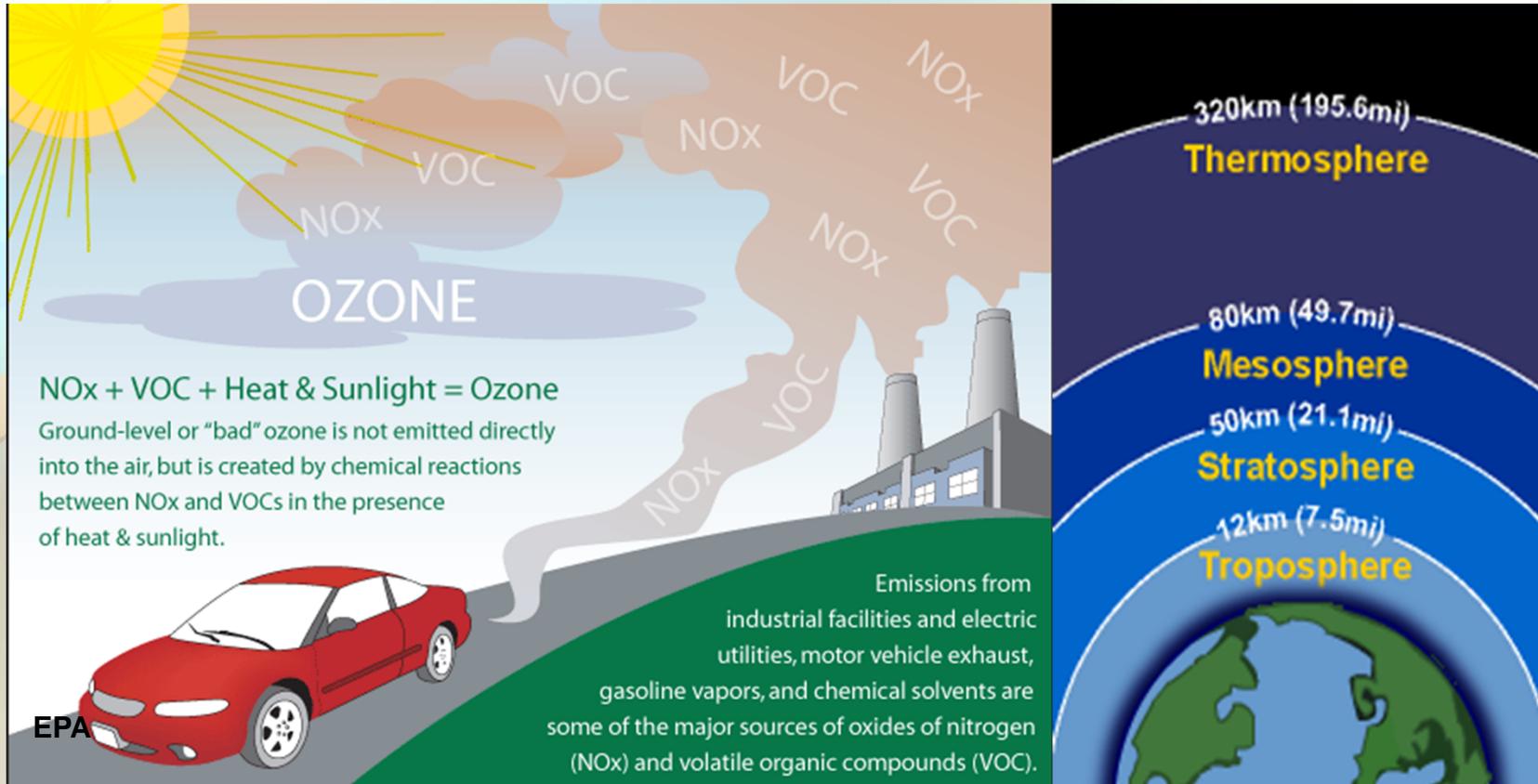
2006: One case in Mississippi so far

Number of West Nile virus cases and deaths in the U.S. and Canada

UNITED STATES			CANADA		
Year	Number of cases	Deaths	Year	Number of cases	Deaths
1999	62	7	1999	No cases	
2000	21	2	2000	No cases	
2001	66	9	2001	No cases	
2002	4,156	284	2002	426	20
2003*	9,862	264	2003*	1,478	12
2004	2,539	100	2004	25	2
2005	2,949 **	116	2005	224	12
TOTAL	19,655	782	TOTAL	2,153	46

Source: World Health Organization, Washington Post – May 03, 2006

Deteriorating Air Quality: Ozone Pollution



Health Effects of Ground Level Ozone



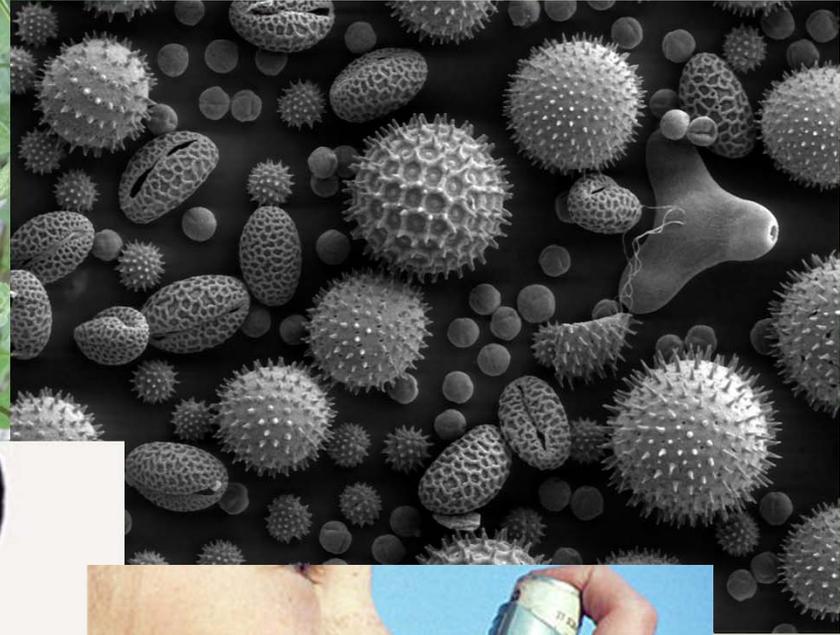
Healthy Airway

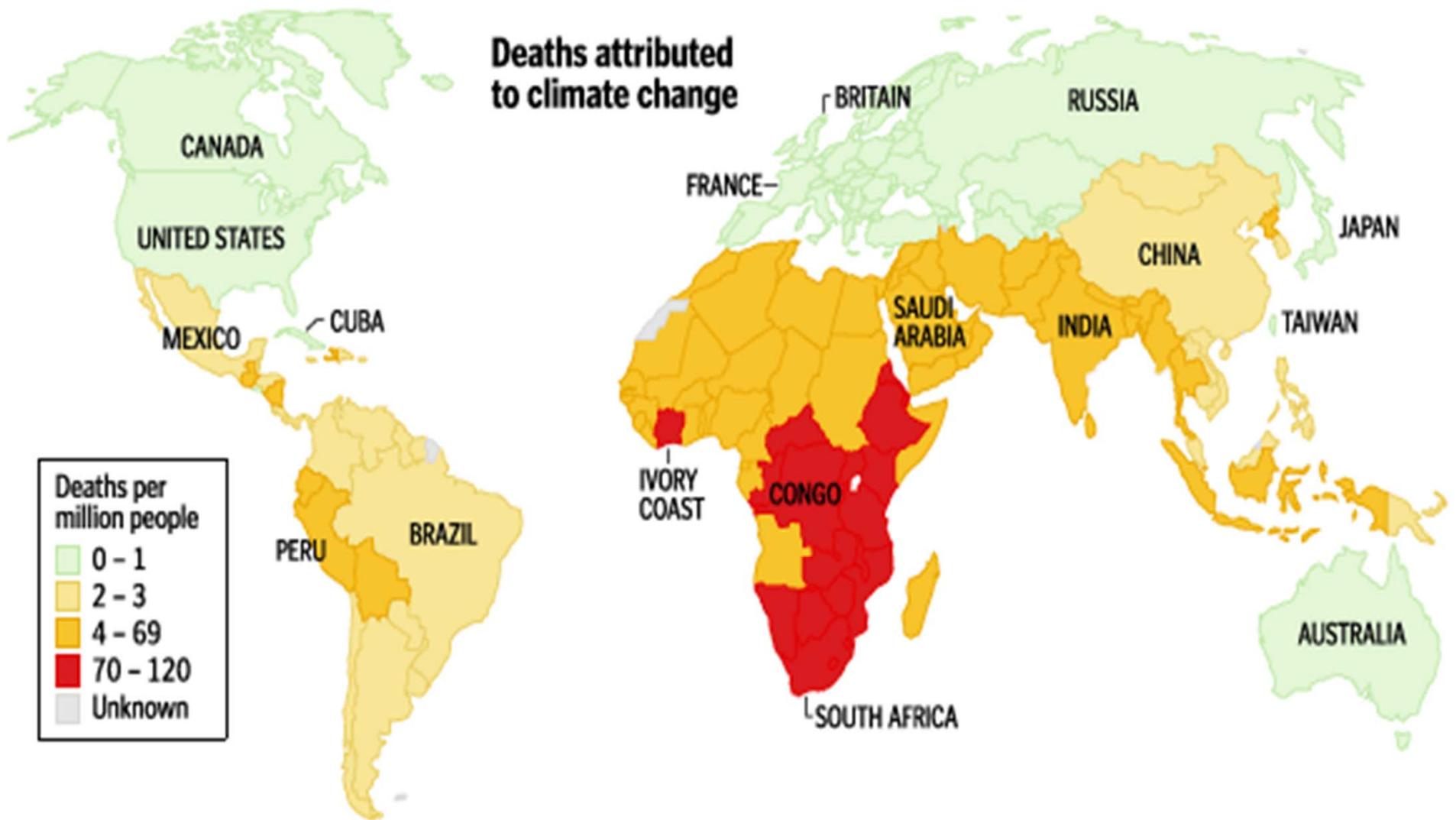


Inflamed Airway



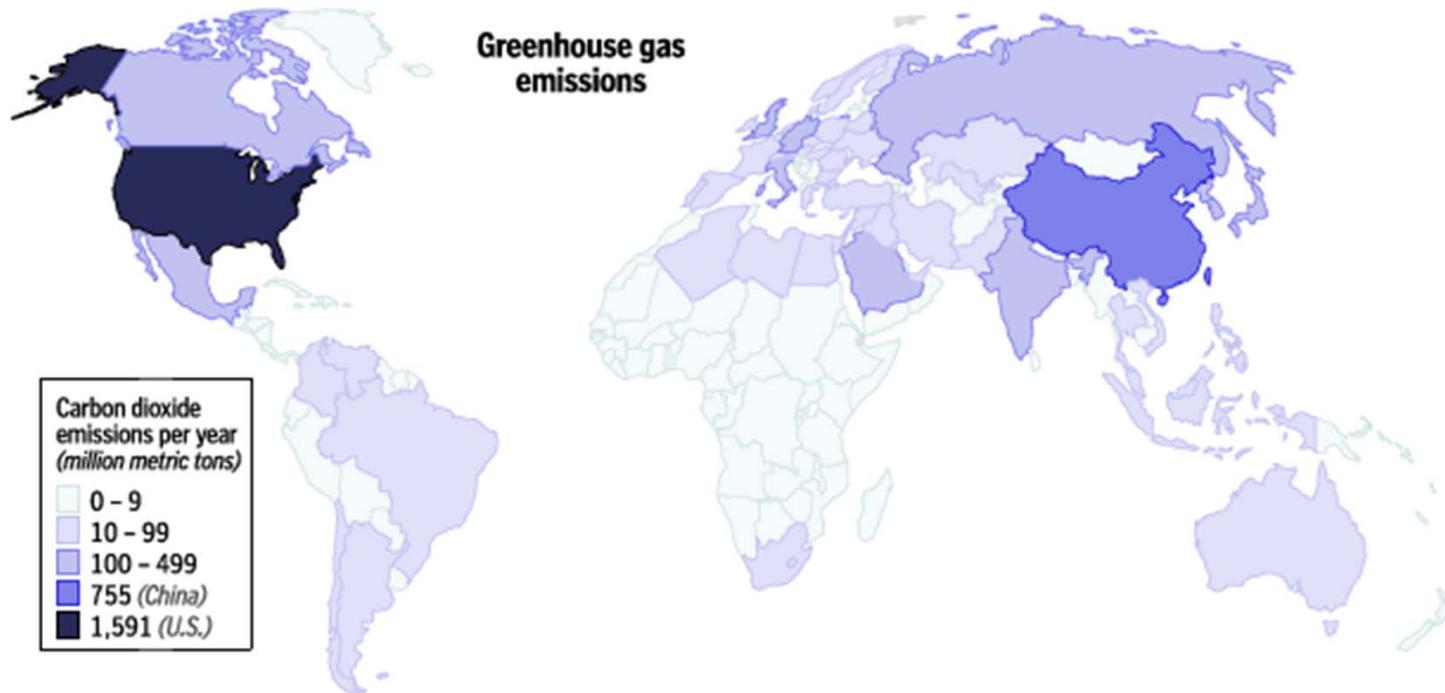
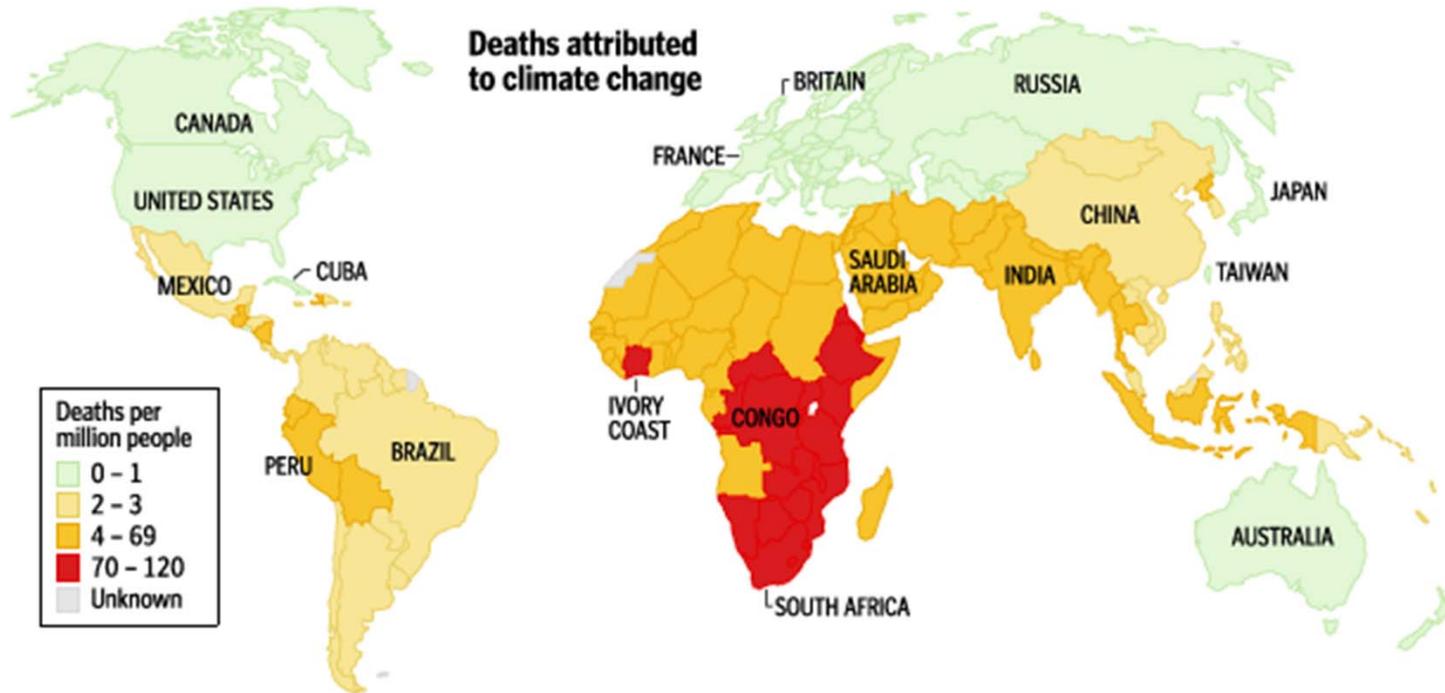
Natural Air Pollutants





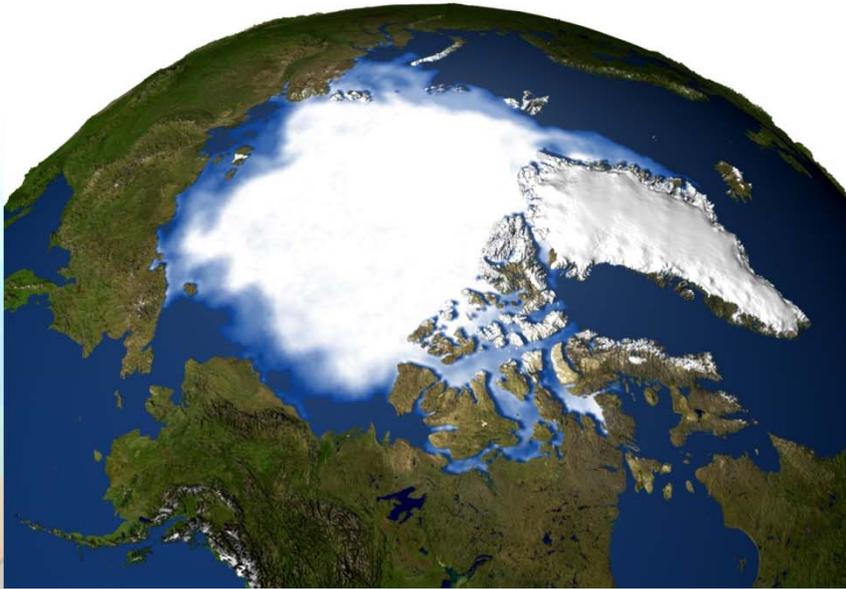
Global Total: **150,000 Deaths Annually**

Source: Patz JA, et al. Impact of Regional Climate Change on Human Health. *Nature*. 2005; 438: 310-317.

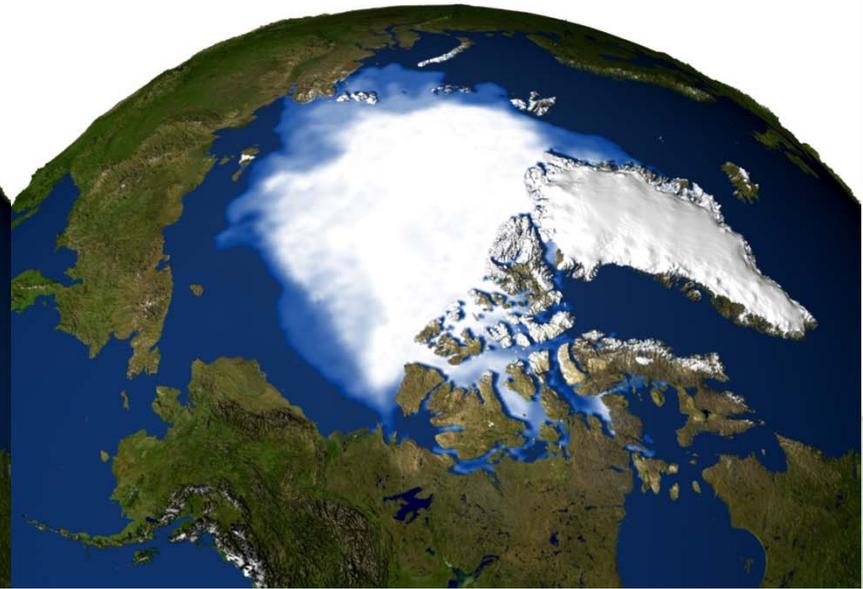


A Challenge to Global Equity

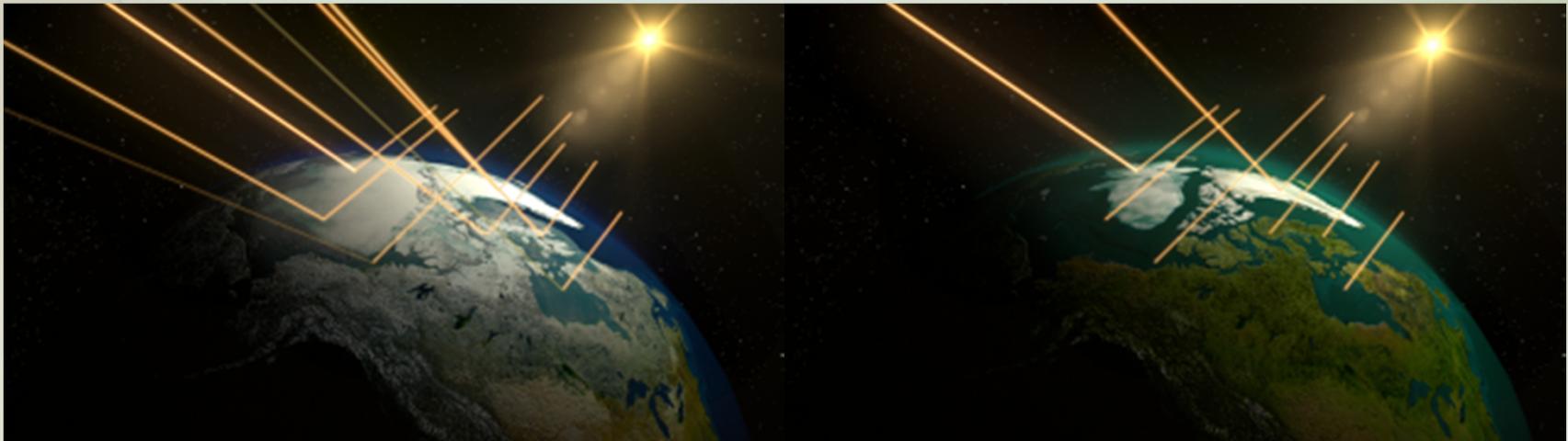
Positive Feedbacks: The Ice-Albedo Effect



1979



2003



Source: NASA

Positive Feedbacks: Melting Permafrost



Creating a New Energy Future



Energy Efficiency



Based on standard U.S. Government tests

ENERGYGUIDE

Refrigerator-Freezer
With Automatic Defrost
With Side-Mounted Freezer
With Through-the-Door-Ice Service

XYZ Corporation
Model ABC-W
Capacity: 23 Cubic Feet

Compare the Energy Use of this Refrigerator with Others Before You Buy.

This Model Uses
644 kWh/year

Energy use (kWh/year) range of all similar models

Uses Least Energy	617
Uses Most Energy	698

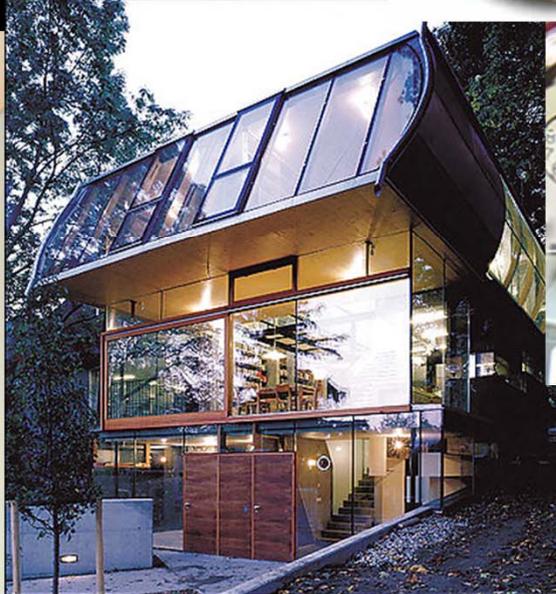
kWh/year (kilowatt-hours per year) is a measure of energy (electricity) use. Your utility company uses it to compute your bill. Only models with 22.5 or more cubic feet and the above features are used in this scale.

Refrigerators using more energy cost more to operate. This model's estimated yearly operating cost is:

\$53

Based on a 2001 U.S. Government national average cost of 8.294 per kWh for electric. Actual operating cost will vary depending on your local utility rates and your use of the refrigerator.

Important: Removal of this informative consumer purchase-related label violates the Federal Trade Commission's Appliance Labeling Rule (16 CFR 232.10).



***“There’s no cheaper, cleaner power than power you don’t have to produce.”
- Gary Zarker, Seattle City Light***

Building Efficiency



Easy Ways to Save Energy



Transportation Efficiency



Vs.



Driving Smart, Driving Less



Vs.



SPRAWL



Vs.

smart growth



