

# The IPCC

## Impressions From a Foot Soldier

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Nobel Laureate 2007

At the 0.02% level



The IPCC is a scientific intergovernmental body set up by the World Meteorological Organization (WMO) and by the United Nations Environment Programme (UNEP) in 1988.

- The IPCC is open to all member countries of WMO and UNEP. Governments of participate in plenary sessions where main decisions about the work programme are taken and reports are accepted, adopted and approved. They also participate in the review of IPCC Reports.
- Hundreds of scientists all over the world contribute to the work as authors, contributors, and reviewers.
- As a United Nations body, the IPCC aims to promote the United Nations human development goals

The IPCC was established to provide the decision-makers ...with an objective source of information about climate change.

- The IPCC does not conduct any research nor does it monitor climate related data or parameters.
- Its role is to assess on a comprehensive, objective, open and transparent basis the latest scientific, technical and socio-economic literature produced worldwide relevant to the understanding of the risk of human-induced climate change, its observed and projected impacts and options for adaptation and mitigation.
- IPCC reports should be neutral with respect to policy, although they need to deal objectively with policy relevant scientific, technical and socio economic factors.
- They should be of high scientific and technical standards, and aim to reflect a range of views, expertise and wide geographical coverage.

# Three Main Working Groups



WMO



UNEP

IPCC Plenary

IPCC Bureau

IPCC Secretariat

Working  
Group 1

The Scientific  
Basis

TSU

Working  
Group 2  
Impacts  
Vulnerability  
Adaptation

TSU

Working  
Group 3  
Mitigation

TSU

Task Force  
on  
National  
Greenhouse  
Gas Inventories

TSU

# IPCC Reports

- The findings of the IPCC **First Assessment Report** of 1990 played a decisive role in leading to the United Nations Framework Convention on Climate Change (UNFCCC), which was opened for signature in the Rio de Janeiro (Earth) Summit in 1992 and entered into force in 1994. It provides the overall policy framework for addressing the climate change issue.
- The IPCC **Second Assessment Report** of 1995 provided key input for the negotiations of the Kyoto Protocol in 1997, which came into force in 2005.
- The **Third Assessment Report** of 2001 provided further information relevant for the development of the UNFCCC and the Kyoto Protocol.
- The **Fourth Assessment Report** of 2007 (AR4) will be the major scientific input into the post-Kyoto negotiations beginning in 2008/09 under the UNFCCC.

# Funding

- IPCC activities, in particular the participation of developing country experts and publication and translation of reports, are supported by the IPCC Trust Fund to which Governments, provide voluntary contributions.
- Governments provide further substantial support for activities of the IPCC, in particular through hosting Technical Support Units, supporting the participation of experts in IPCC activities and organizing meetings.
- WMO, UNEP and the UNFCCC provide also financial support and WMO hosts the IPCC Secretariat and WMO and UNEP provide one staff member each for the IPCC Secretariat. – budget ~\$30 million/year

# 2007 Nobel Peace Prize

Dec. 10, 2007

- Was awarded jointly to the IPCC and Mr. Al Gore "for their efforts to build up and disseminate greater knowledge about man-made climate change, and to lay the foundations for the measures that are needed to counteract such change"
- The IPCC received \$760,000 as its share of the award.
- Consistent with the spirit and purpose of the prize, the funds will be used to support
  - Dissemination of IPCC knowledge and collection of further knowledge on current vulnerabilities and coping capacities
  - Support for scientists in developing countries
  - Preparation of a special report on climate change and peace

# One of the IPCC's Contributions

## Consistent Use of Terminology

The standard terms used in this report to define the likelihood of an outcome or result where this can be estimated probabilistically are:

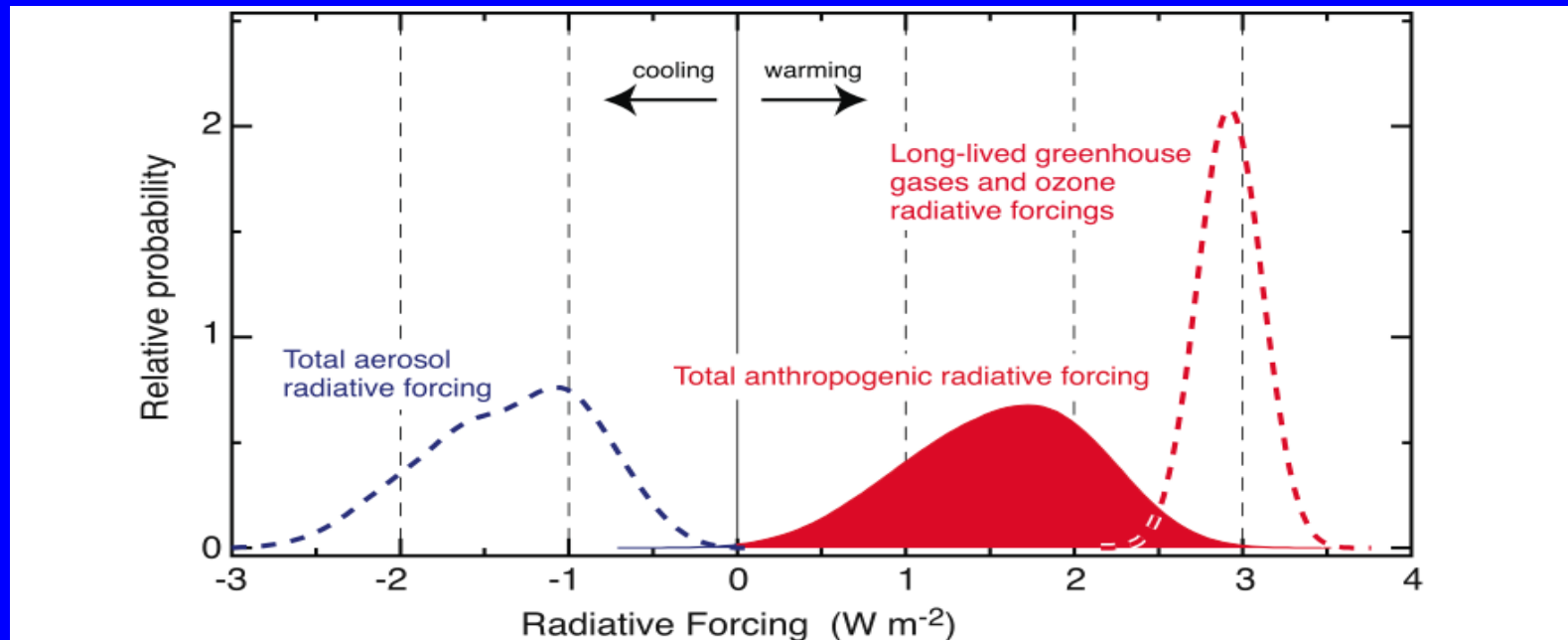
<b>Likelihood Terminology</b>	<b>Likelihood of the occurrence/ outcome</b>
<i>Virtually certain</i>	> 99% probability
<i>Extremely likely</i>	> 95% probability
<i>Very likely</i>	> 90% probability
<i>Likely</i>	> 66% probability
<i>More likely than not</i>	> 50% probability
<i>About as likely as not</i>	33 to 66% probability
<i>Unlikely</i>	< 33% probability
<i>Very unlikely</i>	< 10% probability
<i>Extremely unlikely</i>	< 5% probability
<i>Exceptionally unlikely</i>	< 1% probability



# Recent & future trends in warming-related phenomena

Phenomenon <sup>a</sup> and direction of trend	Likelihood that trend occurred in late 20th century (typically post 1960)	Likelihood of a human contribution to observed trend <sup>b</sup>	Likelihood of future trends based on projections for 21st century using SRES scenarios
Warmer and fewer cold days and nights over most land areas	<i>Very likely<sup>c</sup></i>	<i>Likely<sup>e</sup></i>	<i>Virtually certain<sup>e</sup></i>
Warmer and more frequent hot days and nights over most land areas	<i>Very likely<sup>d</sup></i>	<i>Likely (nights)<sup>e</sup></i>	<i>Virtually certain<sup>e</sup></i>
Warm spells / heat waves. Frequency increases over most land areas	<i>Likely</i>	<i>More likely than not<sup>f</sup></i>	<i>Very likely</i>
Heavy precipitation events. Frequency (or proportion of total rainfall from heavy falls) increases over most areas	<i>Likely</i>	<i>More likely than not<sup>f</sup></i>	<i>Very likely</i>
Area affected by droughts increases	<i>Likely in many regions since 1970s</i>	<i>More likely than not</i>	<i>Likely</i>
Intense tropical cyclone activity increases	<i>Likely in some regions since 1970</i>	<i>More likely than not<sup>f</sup></i>	<i>Likely</i>
Increased incidence of extreme high sea level (excludes tsunamis) <sup>g</sup>	<i>Likely</i>	<i>More likely than not<sup>f, h</sup></i>	<i>Likely<sup>i</sup></i>

# Exploring Ways to Convey the Extent of Uncertainty in Global Warming Estimates



# Other Major International Assessments this Decade

- Millennium Development Goals
- Millennium Ecosystem Assessment
- Millennium Project and the Commission on Macro-Economics and Health
- International Assessment of Agricultural Science & Technology
- Global Energy Assessment\*
- Global Comparative Risk Assessment\*

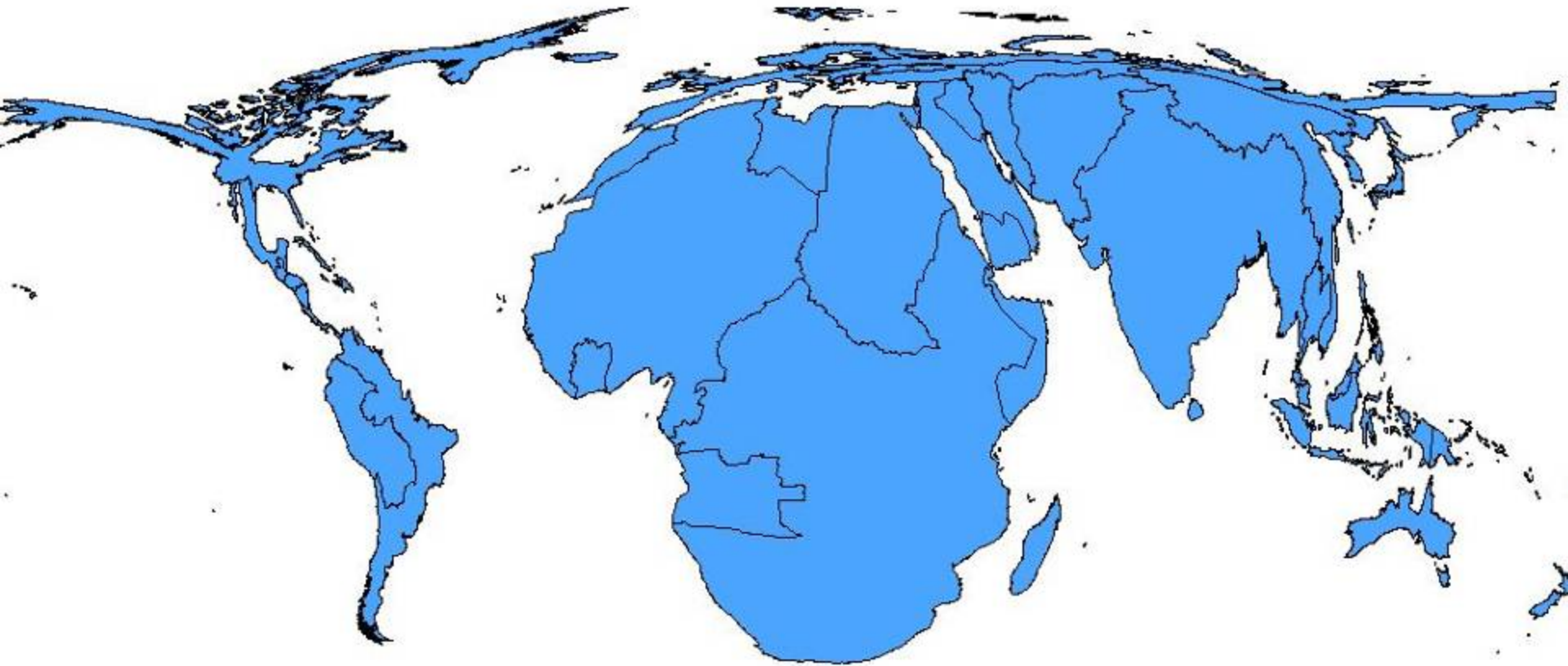
# Climate Change and Health

- Climate change adds to the age-old challenges of public health due to
  - poverty
  - inequity
  - ignorance
  - complacency
  - counterproductive personal behavior
  - conflict
  - infection, and
  - environmental stress
- It threatens to enhance existing risks at every level of development, from
  - heat stress in Berkeley
  - malaria in Botswana.

# CC and Health (cont.)

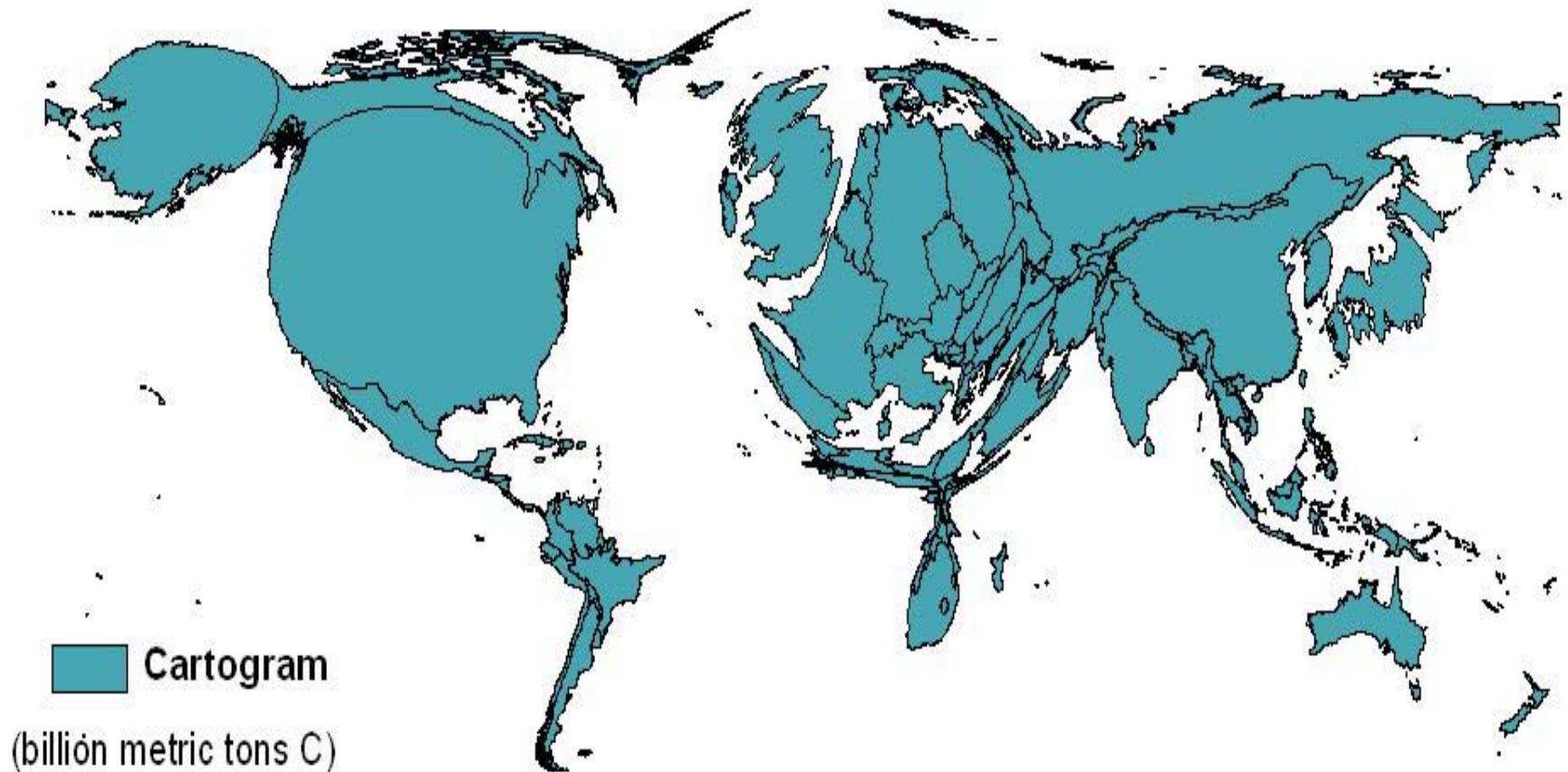
- In terms of absolute burden of disease, however, it most threatens the poorest and most vulnerable in all societies, closely in inverse proportion to income, wealth, and power.
- The rich will find their world to be more expensive, inconvenient, uncomfortable, disrupted, and colorless;
  - in general more unpleasant and unpredictable, perhaps greatly so.
- The poor will die.

# Cartogram of Climate-related Mortality (per million pop) yr. 2000



Patz JA, Gibbs HK, Foley JA, Rogers JV, Smith KR, 2007, **Climate change and global health: Quantifying a growing ethical crisis**, EcoHealth 4(4): 397–405, 2007.

## Total CUMULATIVE Greenhouse Gas Emissions in the Year 2002, by Country



Patz JA, Gibbs HK, Foley JA, Rogers JV, Smith KR, 2007, **Climate change and global health: Quantifying a growing ethical crisis**, EcoHealth 4(4): 397–405, 2007.

# Health Impacts: Just One Example

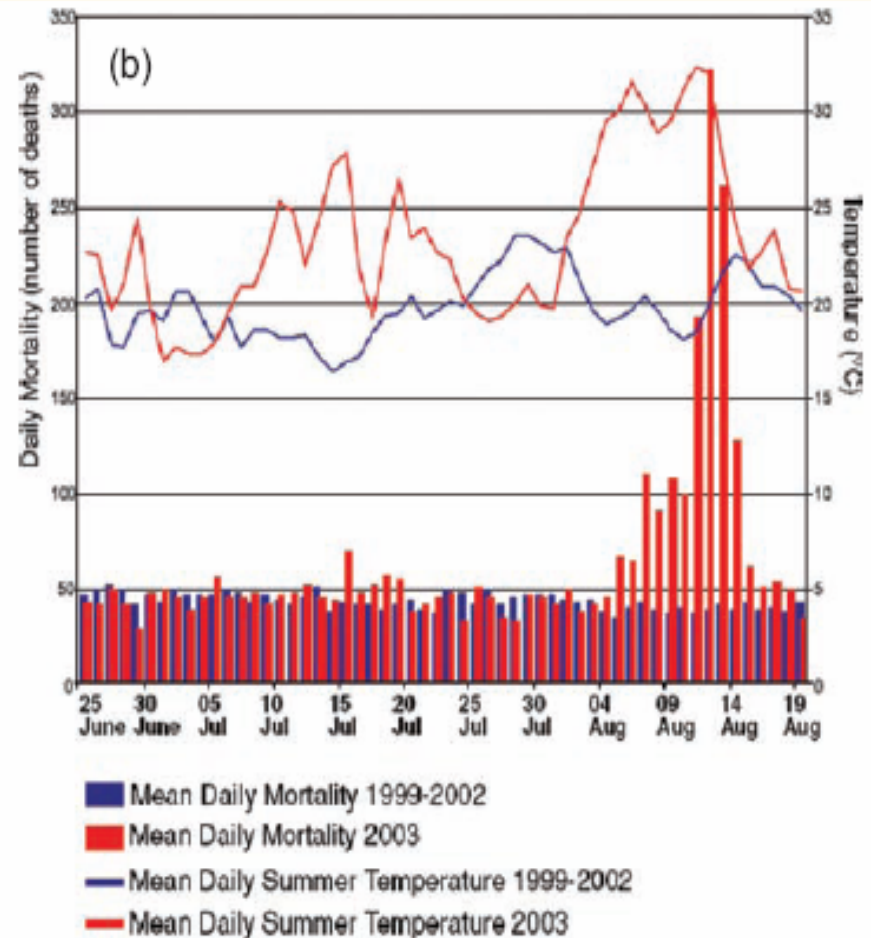
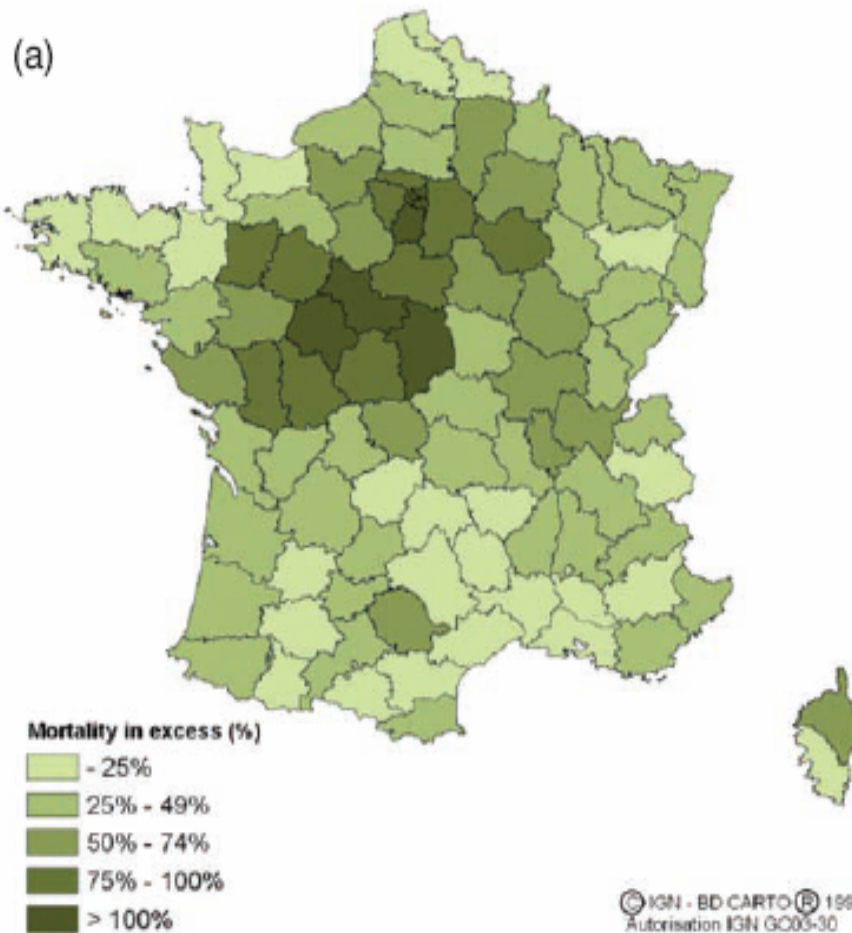


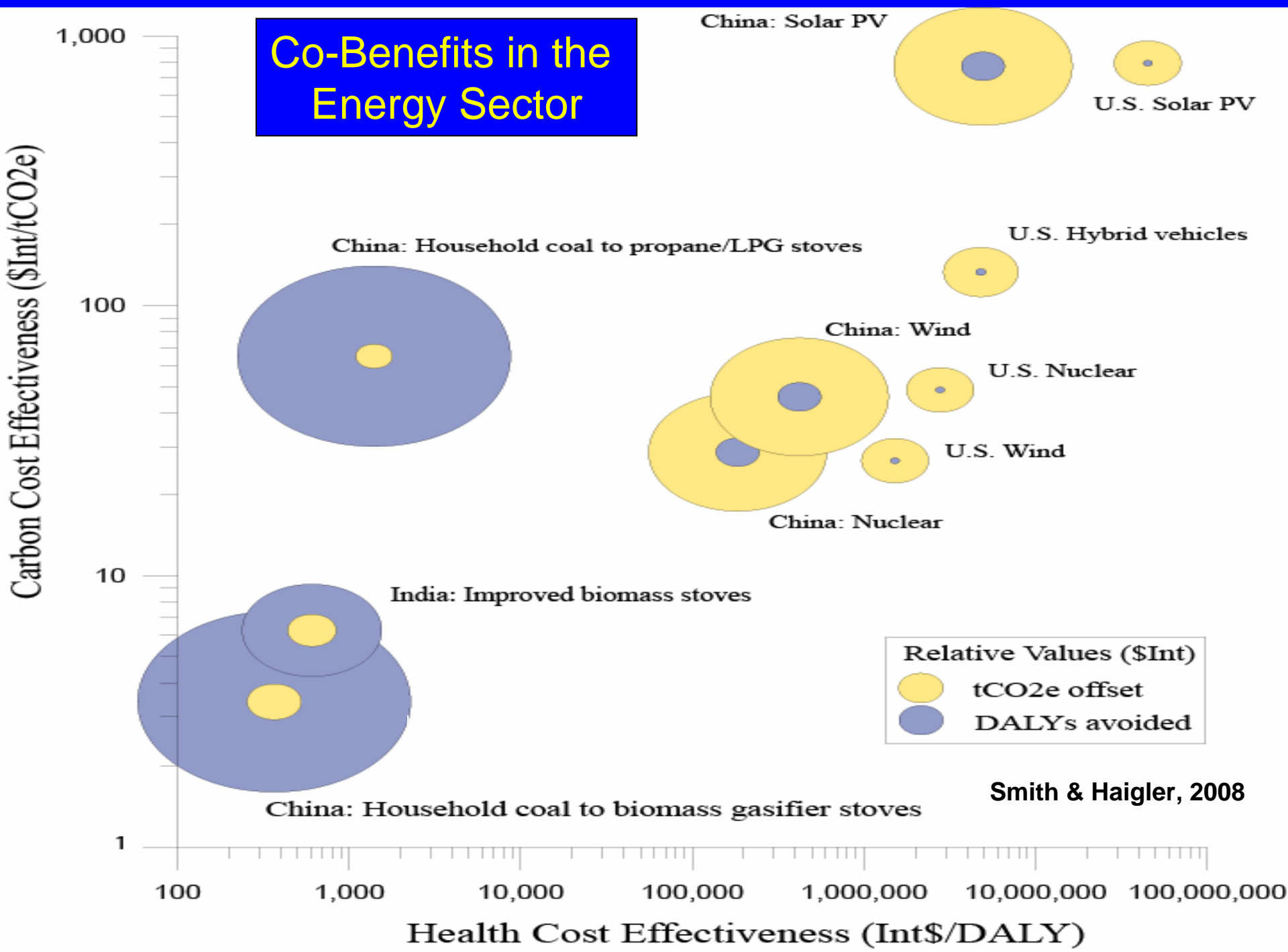
Figure 8.2. (a) The distribution of excess mortality in France from 1 to 15 August 2003, by region, compared with the previous three years (INVS, 2003); (b) the increase in daily mortality in Paris during the heatwave in early August (Vandentorren and Empeureur-Bissonnet, 2005).



# Categories of Health Impacts

- 1) **Direct impacts** through changing weather patterns (e.g., storms, floods, temperature extremes)
- 2) **Indirect impacts** through changes in water supply and quality, air pollution, and in ecosystems leading to shifts in disease vectors.
- 3) **Systemic impacts** through shifts in food supplies, refugee patterns, coastal and agricultural livelihoods, and the health impacts of society's responses to climate change, such as geo-engineering, carbon taxes, biofuel production, etc.
- 4) **Low-probability high-consequence impacts** such as extremely rapid climate change or sea level rise due to threshold phenomena in Earth's systems, e.g., runaway methane emissions from the tundra or rapid loss of parts of the Antarctic ice sheet.

# Co-Benefits in the Energy Sector



Smith & Haigler, 2008

# Society has three basic options for responding to human-caused climate change

- **Mitigate** by working to reduce greenhouse gas (GHG) emissions from energy and land use or to capture them from the atmosphere in order to slow or, perhaps, reverse warming
- **Adapt** by reducing the negative effects of climate change through protecting coastlines, moving populations away from impacted areas, increasing efforts to control climate-related vectorborne diseases, insulating cities from heat stress, and so on.
- **Suffer**, i.e., given that efforts in the first two arenas above are moving slowly, there is very likely to be suffering, perhaps considerable in poorer parts of the world, because of the climate change committed already
- We will be doing all three, but can reduce the third if we put more effort into the first two.

Publications and presentations available at  
<http://ehs.sph.berkeley.edu/krsmith/>

Thank you