



**NIEHS**

National Institute of  
Environmental Health Sciences



# FRAMING THE NIEHS AGENDA ON CLIMATE CHANGE

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“NIEHS Before and After Climate Change”



## Intergovernmental Panel on Climate Change, 1990 onward

- Temperatures rise
- Sea level rise
- Glacier, snow melts
- Greater frequency of extreme weather events, longer duration
- Migration, conflict



# Climate Change and Health Impacts

- Temperatures rise
  - Spread of vectors, microbes
  - Urban heat islands, heat waves
  - Air pollution
  - Growing season changes, allergens
- Sea level rise
- Glacier, snow melts
- Greater frequency of extreme weather events, longer duration

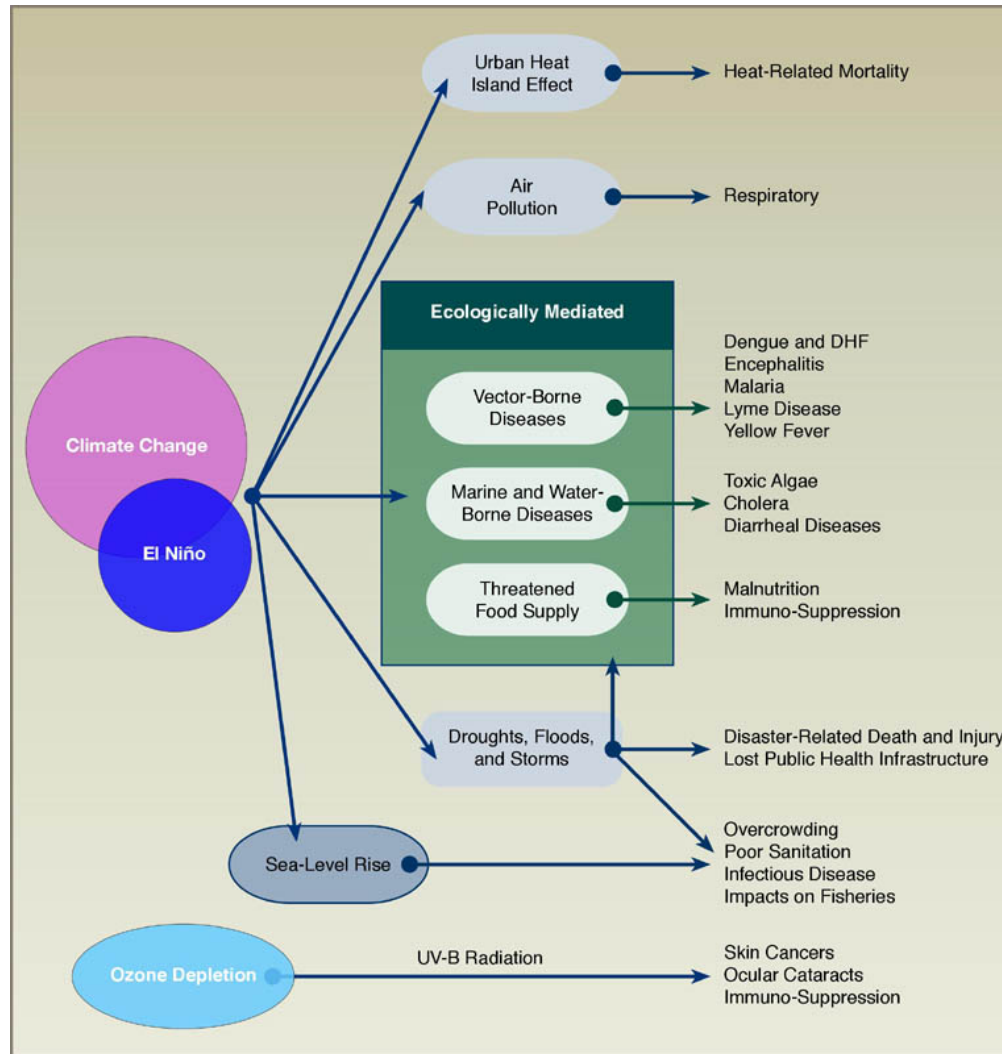


## Climate Change

- Temperatures rise
- Sea level rise
  - Coastal flooding
- Glacier, snow melts
  - Drinking water implications
- Greater frequency of extreme weather events, longer duration
  - Droughts, hurricanes
- Migration, conflict







Possible pathways of public health impacts from climate change. Source: Adapted from Patz and Balbus, 1996: Methods for assessing public health vulnerability to climate change. *Climate Research*, 6, 113-125.

## Before Climate Change Was CLIMATE CHANGE....

- NIEHS staff and grantees involved in IPCC efforts dating back to early 90's
- NIEHS co-sponsored 1995 NAS study on health impacts of climate change
  - 300 people, including Vice President Gore and many of the people in this room
  - Focus on Climate Change and Ozone Depletion, led to recommendations for action

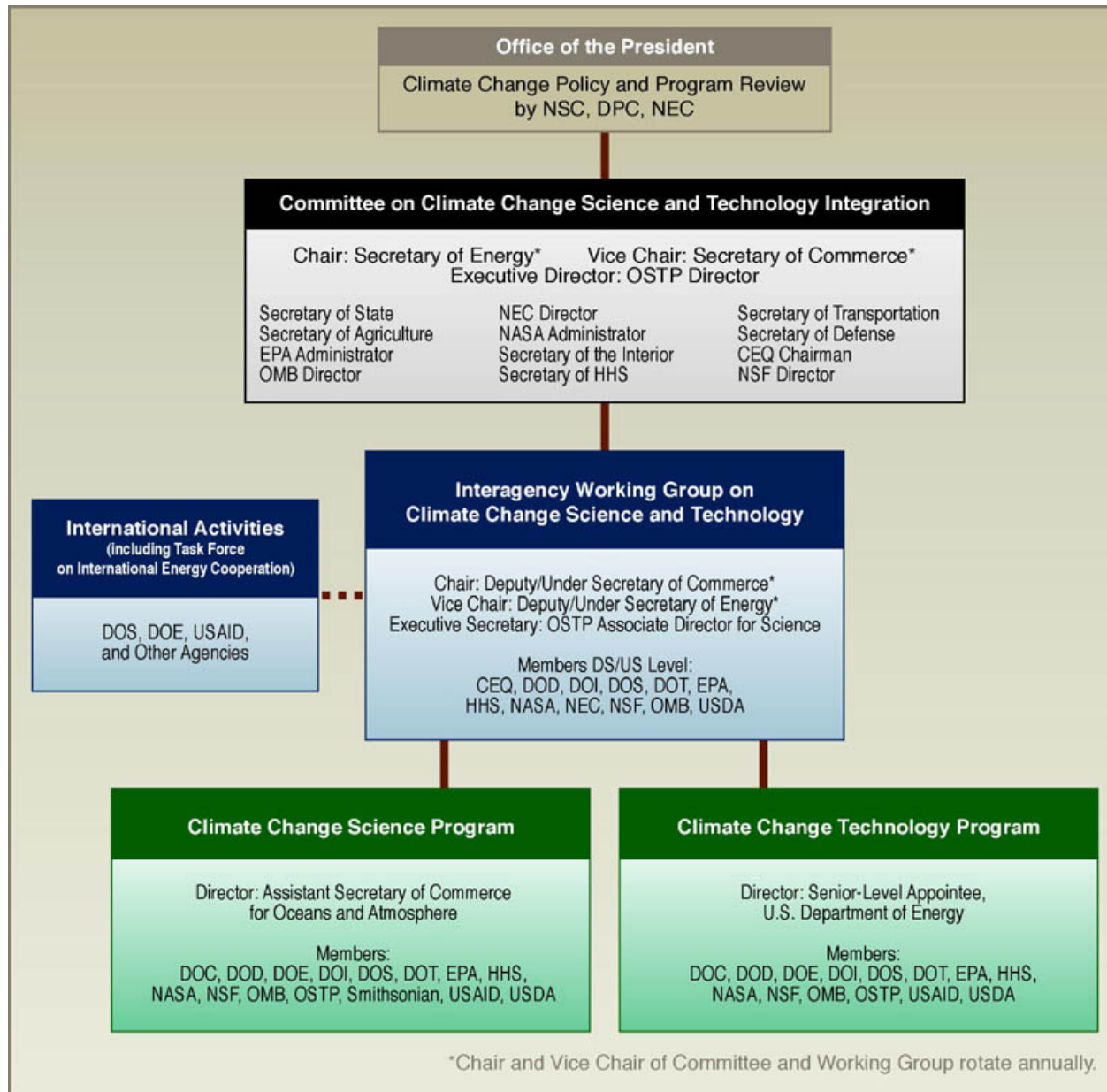
## Areas of import in 1995 NAS study

- Heat stress
- *Skin cancer, cataracts, immune suppression*
- Vector- and non-vector borne diseases
- Food production, nutritional status
- Water quality and quantity
- Air pollution and allergens
- Weather disasters and rising sea levels
- Social and demographic dislocations

## Recommendations/ 1995 NAS study

- Global surveillance and response
- Disease prevention (related to remote sensing data and strengthening public health infrastructure)
- Education for health professionals to include global environmental health, and worker safety related to sun exposure
- International cooperation
- R & D needs: create interdisciplinary program that would undertake pilot efforts on a) infectious and other diseases b) mechanisms of susceptibility and c) global change drivers
- Public outreach





## Climate Change Science Program – Coordination of federal research

- NSF, NOAA, NASA, DoD, DOE, DHHS....
- Key questions on health research
  1. How do humans and human societies drive changes in the global environment?
  2. How do humans prepare for and respond to global environmental change?
    - Focus on development of decision-support tools related to adaptation (what info most useful and at what stage)
    - Calls for interdisciplinary research

## FY2010 priorities for CCSP and health

- Research linking ecosystem changes and health outcomes
- Research to better understand and forecast how climate change affects morbidity and mortality in the US and globally
- Development of a climate change and human health risk assessment to better quantify and predict health outcomes on a regional scale. Emphasis on development of tools related to decision support.
- Exploring the concept of health communities (green/smart/sustainable) as an adaptive framework to protect from the impacts of climate change.

## Report to the Climate Change Science Program\*

- Goal 4.2 Identify and provide scientific inputs for evaluating adaptation options, in cooperation with mission-oriented agencies and other resource managers.
- Various Intramural and Grant projects at the NCI, NIEHS, and NIAMS aimed at understanding how exposure to UV radiation affects biological systems and human health and disease
- FY 07 \$50M -- approximately \$14M from NIEHS
- This lens is imperfect – likely understates investment



## 4<sup>th</sup> Assessment – Scientific Understanding Has Led to Sense of Urgency





## Climate Change – Center Stage

- Some of the Drivers
  - IPCC – consensus that climate change is real, and that there are or will be implications for public health
  - But..
  - Growing recognition that health and health research have not been included in the broad, current climate change discourse (focus on mitigation) – a disconnect.

## Notable, Recent Exceptions

- WHO Director – General Margaret Chan
  - Address at NIH, December on Climate Change and Health
  - Climate change as the “Fifth Horseman”
  - Emphasized impact on women
  - Resolution to be considered at World Health Assembly, May, on climate change. Calls for development of a health research agenda as part of national action plans.
  - WHO’s reorganization prioritizes climate change agenda



## Notable, Recent Exceptions

- Testimony of CDC, Patz et al to Select Committee on Energy and Global Warming 4/9/08
- Adaptation focus.

## Which Brings Us To Today...

- The environmental health implications of climate change are under-recognized
- Understanding of the health impacts of climate change not complete
- NIEHS has a unique role to play in climate change discussions, given our mission, longstanding interest, firm foundation of relevant research and training, and ability to partner with many groups

## Challenges – Definitions, Language

- NIEHS does not have a targeted Climate Change Program
- What we do have is a body of research investment that demonstrates state-of-the-art expertise in the range of health endpoints that are likely to be affected by climate change, and that could be deployed to understand those changes as necessary.

## **Second Lens on NIEHS on Portfolio: Health Effects of Climate Change -- \$100M**

Search terms:

- Heat-related illness
- Injuries related to extreme weather events diseases causes by vectors that might change
- Diseases precipitated by altered local ecology
- Injuries and disorders worsened by damaged infrastructure
- Asthma or other respiratory diseases
- Health effects from ozone depleting chemicals
- Health effects from production and use of alternative fuels
- Health consequences from loss of biodiversity
- UV radiation effects health effects related to the use of pesticides
- Health effects to changing patterns of agricultural chemicals
- Health consequences due to change in agr. productivity or food supplies
- Health consequences of new technologies regarding climate change



## NIEHS Venues for Climate Change Input/Discourse

- Federal – CCSP
- Institute of Medicine Roundtable on Environmental Health Sciences, Research and Medicine
  - September 2007 Roundtable on Climate Change and Health
  - November 2007 Roundtable on Transport Fuel and Health
- NAS Scoping Committee – “ to establish the Climate Change Study Committee to investigate and study the serious and sweeping issues relating to global climate change and make recommendations regarding what steps should be taken and what strategies should be adopted in response to global climate change, including the science and technology challenges thereof.”
- World Health Organization, via DHHS





## Goals For Today

- Update you on current NIEHS efforts related to climate change
- Gain your views on key issues and opportunities that would strengthen NIEHS efforts on climate change -- Framing:
  - Are there other venues in which NIEHS should be involved?
  - Are there issues that should receive more emphasis, e.g. energy-climate/health
- In a flat budget scenario, what should NIEHS' identity be on climate change? Should we focus on raising awareness of environmental health and climate change, or go further?

## Our charge

- Active participation
- Think beyond individual agencies and discipline
- Comments on the agenda?