EPA
United States
Environmental Protection
Agency

EPA's Air, Climate, & Energy Research Program

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Office of Research and Development
Air, Climate, & Energy Research Program

Who and where we are in EPA: an illustration

Office of Research and Development

- Comprises six research programs, including ACE
- Intramural and extramural components
- Funds grants to develop science that enables smart policy design and implementation

Office of Air and Radiation

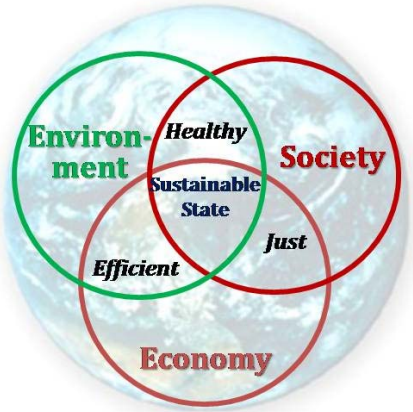
- Enacts policies that ORD-funded and other science may inform
- OTAQ (located within OAR) regulates air pollution from motor vehicles, engines, and fuel, to protect public health

ORD National Research Programs: Building Sustainability and Systems Thinking into EPA Research

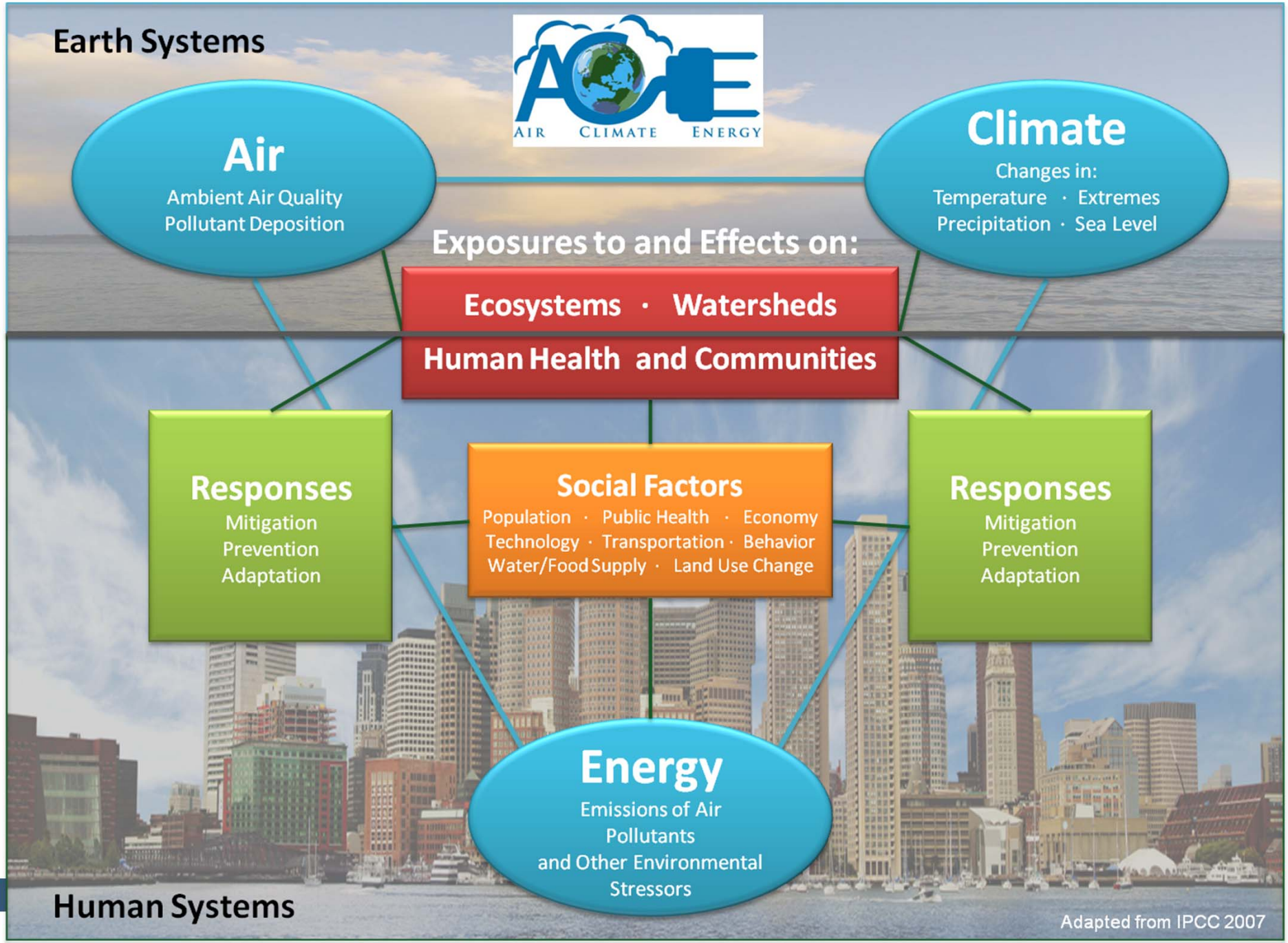
United States Environmental Protection Agency

Previous ORD Research Programs

Air	Global
Drinking Water	Water Quality
Human Health	Ecosystems
Mercury	Land
Homeland Security	Human Health Risk Assmt
Endocrine Disruptors	Safe Pesticides/Products
Sustainability	Computational Toxicology



New ORD Research Programs


Earth Systems
AIR CLIMATE ENERGY
Air
Ambient Air Quality
Pollutant Deposition
Climate
Changes in:
Temperature · Extremes
Precipitation · Sea Level
Exposures to and Effects on:
Ecosystems · Watersheds
Human Health and Communities
Responses
Mitigation
Prevention
Adaptation
Social Factors
Population · Public Health · Economy
Technology · Transportation · Behavior
Water/Food Supply · Land Use Change
Responses
Mitigation
Prevention
Adaptation
Energy
Emissions of Air Pollutants and Other Environmental Stressors
Human Systems
Adapted from IPCC 2007

How ACE responds to policy office research needs

- Administrator Priorities
- OAR AA communications
- OAR topic discussions with staff and science advisor
- ACE programmatic and project reviews
- Science community exchanges
- One-on-one communications
- Unanticipated issues that arise

ACE Research Themes

United States Environmental Protection Agency

Theme 1: Assess Impacts

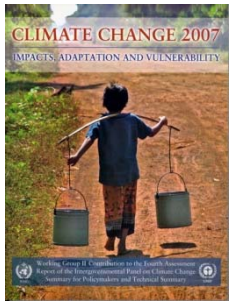
Assess human and ecosystem exposures and effects associated with air pollutants and climate change at individual, community, regional, and global scales

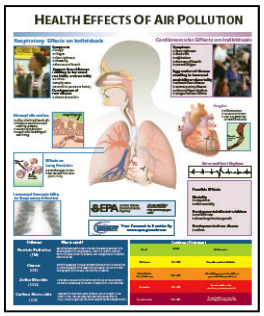
Theme 2: Prevent and Reduce Emissions

Provide data & tools to develop and evaluate approaches to prevent and reduce emissions of pollutants to the atmosphere, particularly environmentally sustainable, cost effective, and innovative multipollutant and sector-based approaches

Theme 3: Respond to Changes in Climate & Air Quality

Provide human exposure and environmental modeling, monitoring, metrics and information needed by individuals, communities, and governmental agencies to adapt to the impacts of climate change and make informed public health decisions regarding air quality





AQI AIR QUALITY INDEX

ACE Themes and Research Topics

United States Environmental Protection Agency

ACE Themes

- Theme 1: Assess Impacts
- Theme 2: Prevent / Reduce Emissions
- Theme 3: Respond to Changes

Research Topics for ACE Partner Needs

- Climate Impacts Mitigation and Adaptation
- Emissions and Measurements
- NAAQS and Multipollutant
- Modeling/Decision Support Tools
- Sustainable Energy Evaluation

Key Issues for ACE

- Implementation science – solving problems
- The multipollutant nature of air pollution
- The impacts of climate change and the development and evaluation of sustainable adaptation and mitigation options
- The human health and environmental impacts of current and future energy alternatives
- The expanding and contracting scales of environmental problems that range from global to local
- The social, behavioral, and economic factors that influence the effectiveness of air quality and climate policies

About ACE: Both intramural and extramural

Intramural science

- RTP, DC, Cincinnati, and several smaller sites
- Some major topics of research:
  - Health impacts of air pollution
  - Air quality modeling
  - Measurement and characterization (ambient + emissions)
  - Decision analysis
  - Control technologies
  - Life-cycle assessment
  - Climate-ecosystem interactions
  - Climate change impacts

ACE Research Themes

How ACE responds to policy office research needs

- STAR program
  - Science needs beyond intramural expertise
  - Forward looking science
  - Complimentary expertise
  - Proposal for upcoming solicitations
  - Participation in RFA writing teams
  - Relevancy review of STAR proposals
- STAR program is designed to complement the intramural program

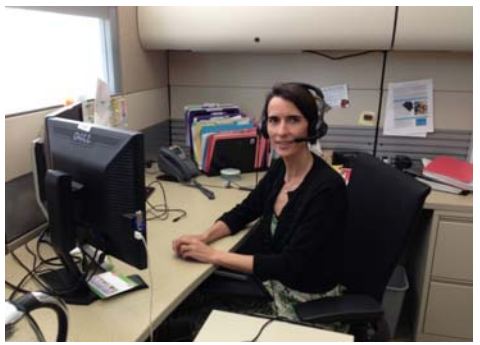
About ACE: Both intramural and extramural

Extramural science

- STAR Grants
- Cooperative agreements
- Health Effects Institute

Information exchange: How ACE gets the results out

- Journal articles
- Scientific conferences
- Newsletters
- Webinars
- Product delivery
- Meetings (with intramural scientists and grantees)
- One-on-one interactions with program office staff



Goals

- High-quality science
- Relevant for policy and decision making

- But not in a vacuum: always looking for new ideas
  - Communication
  - Research ideas
  - Partnerships

SCIENCE

Agenda – Wednesday, March 5th

9:20 am	**Christopher Frey,** North Carolina State University *Framework for Context-Sensitive Spatially- and Temporally-Resolved Onroad Mobile Source Emissions Inventories*
9:45 am	**Rich Baldauf,** US EPA *Transportation Research in EPA's Air, Climate, & Energy and Sustainable and Health Communities Research Programs*
10:15 am	**Break**
10:40 am	**K. Max Zhang,** Cornell University *Quantifying the Effects of the Mixing Process in Fabricated Dilution Systems on Particulate Emission Measurements via an Integrated Experimental and Modeling Approach*
11:05 am	**Lab Tour**
12:05 pm	**Lunch**
12:50 pm	**Gunnar Schade,** Texas A & M University *Improving Emission Inventories Using Direct Flux Measurements and Modeling*
1:15pm	**Tami Bond and Yanfeng Ouyang,** University of Illinois at Urbana-Champaign *Global-to-Urban Models for Minimizing Air Quality and Climate Impacts of Freight Choice*
1:40pm	**Ed Nam,** US EPA *MOVES Update*
2:05 pm	**Jesse Kroll,** Massachusetts Institute of Technology *Investigating the Effects of Atmospheric Aging on the Radiative Properties and Climate Impacts of Black Carbon Aerosol*
2:30 pm	**Jamie Schauer,** University of Wisconsin-Madison *Development of a Quantitative Accounting Framework for Black Carbon and Brown Carbon from Emissions Inventory to Impacts*
2:55 pm	**Rich Cook,** US EPA, Office of Transportation and Air Quality *Concluding Remarks*