

# **USEPA Office of Research and Development (ORD)**

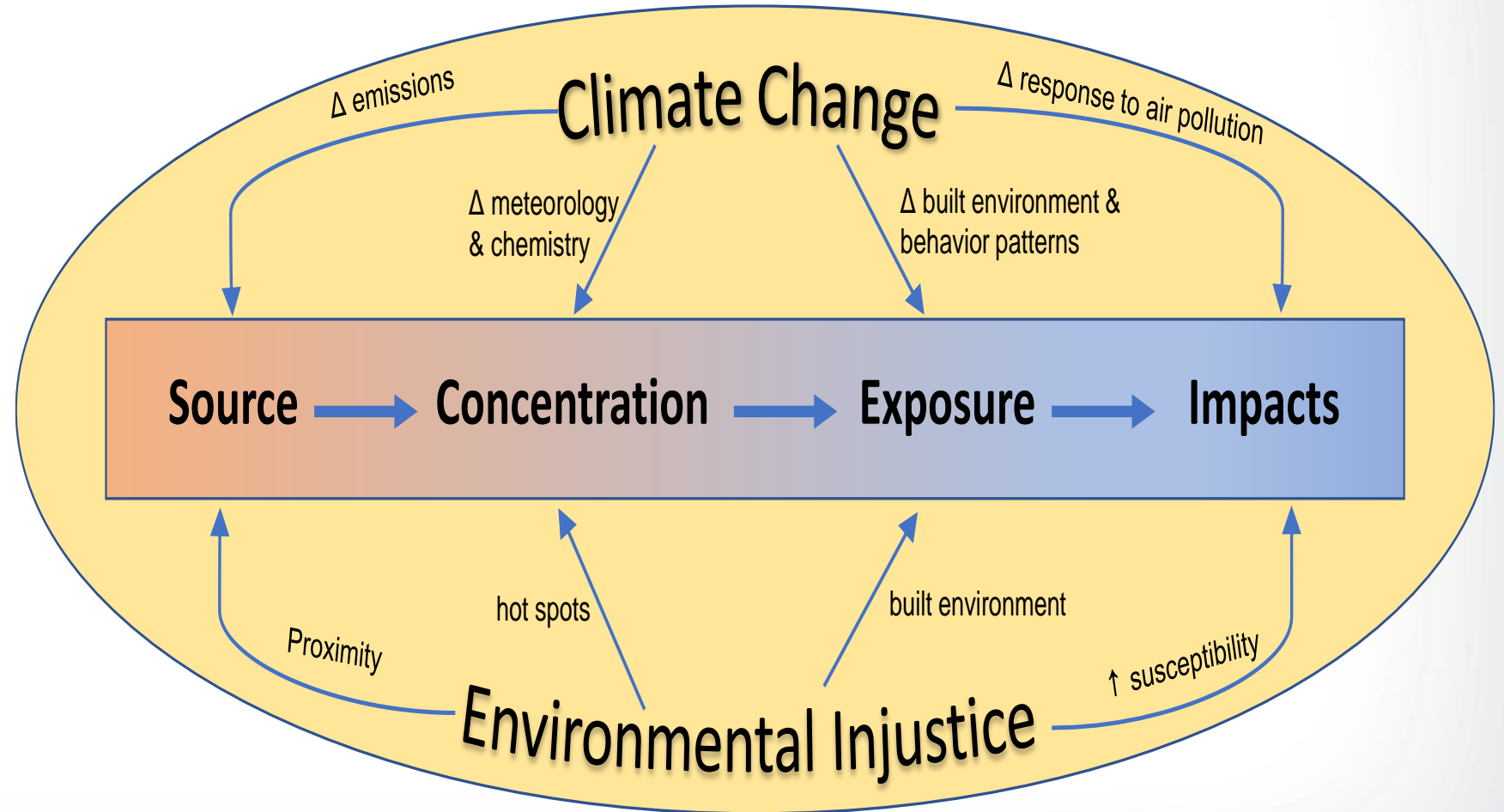
## **Research Program Planning:**

### *Air, Climate and Energy (ACE)*

**Revitalizing Research to Address the Challenge of Climate Change**  
**October 14, 2021**

## Key Challenges:

- Climate Change
- Environmental and Climate Injustice
- Criteria and Toxic Air Pollution
- Wildfires
- Indoor Air Quality
- Energy and Transportation Transformations



# Air, Climate and Energy (ACE) Program Planned Structure FY23-26

## Topic 1: UNDERSTANDING Air Pollution and Climate Change and Their Impacts on Human Health and Ecosystems

**Research Area 1:**  
Sources and Sinks of  
Air Pollution and  
Climate Forcers

**Research Area 2:**  
Air Quality  
Concentrations and  
Exposure  
Characterization:  
Measurements

**Research Area 3:**  
Air Quality  
Concentrations and  
Exposure  
Characterization:  
Modeling

**Research Area 4:**  
Health Impacts of  
Air Pollution and  
Climate Change

**Research Area 5:**  
Ecosystem Impacts  
of Air Pollution and  
Climate Change

## Topic 2: RESPONDING to Risks and Impacts and Preparing for the Future

**Research Area 6:**  
Scientific Support for  
Climate Change and Air  
Quality Policy Solutions

**Research Area 7:**  
Empowering communities  
and individuals to improve  
public health

**Research Area 8:**  
Responding to Risks  
of Fires, Floods, and  
Other Extreme  
Events

**Research Area 9:**  
Transitions to a  
Sustainable Future

**Provide scientific support for actions that address climate change impacts on public health and welfare especially in frontline communities, including:**

- Protecting public health in the face of immediate threats created by fires, floods, droughts, permafrost melt, and other extreme events
- Informing preparedness, adaptation, and long-term resilience for public health and well-being
- Identifying and quantifying the public health and environmental benefits of reducing greenhouse gas emissions and sustainably reshaping our energy system

- Research into the impacts of climate on human health and ecosystems will be continued with an expanded emphasis on climate adaptation, resilience, and mitigation of greenhouse gas (GHG) emissions
- In addition to continued research related to air pollution exposures, health research will be extended to address human health impacts related to climate change with an increased focus on addressing health disparities in communities with environmental justice concerns
- Focus will be on systems science approaches that prioritize research that is inherently cross-media, cross-scale, and cross-discipline, reflective of the climate challenge itself
- Research projects will emphasize integration of social and natural sciences to address complex climate challenges and solutions
- A key goal is to provide actionable, locally-relevant information and data that is accessible to non-expert decision makers

- State and tribal climate research listening sessions
  - To provide an opportunity for state, tribal, and local environment and public health agencies to share their input on challenges and research needs to inform the FY23-FY26 research planning process
  - ACE conducted two state/local and two tribal listening sessions in July
  - Participation from 35 states, 1 territory, 49 tribes -- 40 different state agencies, 13 Tribes + National Tribal Toxics Council provided comments
  - Developed thematic summaries for based on analysis of detailed notes
- Program and regional partner research area dialogues
  - 8 sessions to hear perspectives on priority research needs
- Climate research workshop
  - 3-day workshop to hear perspectives on climate change, discuss priorities, and consider how to effectively collaborate across ORD and EPA

# State/Tribal Listening Sessions Key Themes (1)

- **Air Quality:** Ozone; pollen; indoor air quality (mold); wildfires
- **Ecosystems:** Impacts of increasing water temperatures on cold-water fish species and kelp, agriculture and wildlife; impacts of federal land management on water systems
- **Energy:** Impacts of energy transitions on communities; electrification of buildings and transportation, and building efficiency; life cycle of clean energy technology
- **Exposures and Health:** Cost of inaction to agriculture and food systems; population migration; heat impacts (urban and rural communities); chemical exposures; disease vectors (i.e., ticks), COVID
- **Extreme Events:** Drought; effects on planning and preparedness (emergency response); changing precipitation patterns (water availability, physical and mental impacts on disadvantaged communities)

- **Government and Policy:** Need for increased collaboration between federal agencies
- **Land Management:** Concern about contaminated sites; more information on carbon sequestration; design of built environment for future conditions; permafrost changes
- **Modeling and Monitoring:** Data consolidation and models/tools (e.g., environmental justice and community-centered; predicting climate migration; water system management)
- **Water Quality:** Dust deposition; combined sewer systems; harmful algal blooms; residential water and private wells; impacts of permafrost melt
- **Unique Tribal Concerns:** Cultural impacts to important species and resources; importance of traditional and indigenous knowledge; inequitable burden of costs for adaptation measures
- **Working with Communities:** Need for communication resources; sharing information about effective approaches; resource needs for implementing climate action plans





## Key Themes from Climate Workshop

- **Full agreement on the need to conduct research on response, resilience, and adaptation to climate impacts and mitigation and intervention to reduce impacts**
- **ORD and Program/Regional Office partners are in good alignment concerning research topics**
  - ORD emphasized systems perspectives, interconnections, and complexities
  - Partners emphasized actionable information at local scales and local capacity building
- **Both recognized the need to adjust how we do research to provide data and information for decision makers**
  - ORD is being intentional about building capability to design and implement translational science approaches
- **Strong support for expanding cross-EPA, cross-ORD engagement and collaboration**