Key Takeaways and Opportunities

The theme of the ORAU 2023 Annual Meeting of the Council of Sponsoring Institutions was on Climate Security and Environmental Justice—Pathways to Achieving the 2050 Carbon Net-Zero Goal. Key takeaways from the keynote addresses and panel discussions, along with opportunities for engagement for members of the ORAU University Consortium, are outlined below.

OPENING KEYNOTE ADDRESS: SANAH BAIG
DEPUTY UNDERSECRETARY FOR RESEARCH EDUCATION AND ECONOMICS AT THE UNITED STATES DEPARTMENT OF AGRICULTURE

KEY TAKEAWAYS

• Climate change and the COVID-19 pandemic put a spotlight on how the U.S. agriculture system responds to shocks in the system.

• Agricultural innovation is required for the nation to meet the 2050 Carbon Net-Zero Goal. “We cannot meet our climate change goals without changing how we do agriculture.”

• Strategic investment and knowledge-sharing among agencies and academia can be a game-changer in impacting climate change goals.

OPPORTUNITIES

• The nation's land-grant universities are the chief partners of the USDA's National Institute of Food and Agriculture, which provides leadership and funding for programs that advance agriculture-related sciences. Opportunities exist for non-land-grant institutions as well. More at https://www.nifa.usda.gov/

• The Agriculture and Food Research Initiative is the nation's flagship agricultural competitive grants research program. AFRI supports scientists, researchers, and other stakeholders in pursuit of solutions to the nation's most pressing agricultural issues. Requests for application focus on fundamental and applied sciences, education and workforce development, and sustainable agriculture systems. More at https://www.nifa.usda.gov/grants/programs/agriculture-food-research-initiative-afri

• Agriculture in the Classroom provides opportunities for students and teachers with lessons and opportunities to advance mathematics, science and arts education related to agriculture. More at: https://www.nifa.usda.gov/grants/programs/k-12-higher-education-programs/agriculture-classroom-aitc-program
Panel Discussion: Technology Innovation and Transformation. The goal of the session was to identify best practices, lessons learned, and research gaps and barriers related to how technology can enable us to achieve the 2050 carbon net-zero goal.

Speakers for this session were: Katherine Smith, Director, Southeast Climate Adaptation Science Center, U.S. Geological Survey; Eric Svendsen, Director, Office of the Deputy Director for Non-Infectious Diseases, CDC; Kimber Bogard, Deputy Executive Officer for Programs, National Academy of Medicine; and Allen Walker, Senior Advisor, Technology, Innovation and Partnerships Directorate, NSF

The discussion was facilitated by Rick Farnsworth, PhD, PMP, ORAU senior science advisor.

KEY TAKEAWAYS:
- Drivers of climate change-related health impacts are local. Weather-related morbidity and mortality are increasing. Local solutions will be required to improve these impacts. What we don't know on the adaptation side is how mitigation strategies will impact public health.
- Data exchange and data access across agencies and disciplines is critical to connecting communities and regions. The National Science Foundation is building a platform that will allow different regions and stakeholders to take advantage of the exchange of information.
- Educational opportunities for the healthcare and public health workforce will continue to be imperative because these are the people doing the work on the ground.

OPPORTUNITIES:
- The National Science Foundation offers hundreds of funding opportunities — including grants, cooperative agreements and fellowships — that support research and education across science and engineering, including a vast number of opportunities related to climate change. More here: [https://beta.nsf.gov/funding](https://beta.nsf.gov/funding).

KEYNOTE ADDRESS: CHRISTOPHER FREY
Science Advisor and Assistant Administrator, Office of Research and Development, Environmental Protection Agency

KEY TAKEAWAYS:
- Three factors drive workforce development initiatives and hiring practices for the EPA, including the ongoing and growing focus on climate change research; the continuing need to build relationships with Minority Serving Institutions and Historically Black Colleges and Universities; and the growth of interdisciplinary and transdisciplinary research, resulting in the hiring of more social scientists.
- The impacts of climate change on health are complex, often indirect, and dependent on multiple societal and environmental factors. Mitigation requires working with communities to achieve buy-in and overcome barriers and objections to potential solutions.
OPPORTUNITIES:

• The EPA has several research grant award programs, including the Science to Achieve Results (STAR) Program, which supports scientific and engineering research that advances EPA’s mission to protect health and the environment. More here: https://www.epa.gov/research-grants/research-funding-opportunities

Panel Discussion: Science-Based Models for an Environmentally Equitable Society. The goal of the session was to identify best practices, lessons learned, and research gaps and barriers related to science-based models.

Speakers for the session were: Jeanne Herb, Executive Director, Environmental Analysis and Communications Group, Rutgers University; Ann Marie Chischilly, Executive Director, Institute for Tribal Environmental Professionals, Northern Arizona University; Hunter Jones, Program Manager, National Integrated Heat Health Information System, National Oceanographic and Atmospheric Administration; and LaToya Miles, Deputy Director, Air Resources Laboratory, NOAA.

The discussion was facilitated by Kathy Rollow, ORAU program manager for ATDD.

KEY TAKEAWAYS:

• No single entity, governmental or otherwise, has the full mission and mandate to address climate change comprehensively, so agencies, academia, and all stakeholders must work together to solve the problem.

• The risks and burdens related to climate change and health are not equally shared and opportunities to reduce climate injustice is not shared equally.

• The citizen scientist approach to climate change, wherein everyday people with an interest in science may design experiments, collect data, analyze results, and solve problems, is a really good way to give everyone a seat at the table.

OPPORTUNITIES:

• NOAA has a number of climate grants and research funding opportunities available. More here: https://cpo.noaa.gov/Funding-Opportunities

• The Justice 40 Initiative is a White House whole of government effort to confront decades of underinvestment in disadvantaged communities. The initiative will bring resources most impacted by climate change, pollution, and environmental hazards. More here: https://www.whitehouse.gov/environmentaljustice/justice40/
KEYNOTE ADDRESS: **GAVIN SCHMIDT**

*Director, Goddard Institute for Space Studies, NASA*

**KEY TAKEAWAYS:**

- We don’t have the right to expect that imperfect and incomplete models of complex phenomena, like climate change, should provide skillful predictions. However, over time, models have become more capable, and we can ask more complex questions.

- Current climate models are problematic because of systemic bias, the inability to predict local or regional changes, and incomplete structural data.

- The faster we can get to Net Zero Carbon emissions, the faster the climate will stabilize.

**OPPORTUNITIES:**

- Machine learning can help us better understand climate impacts on public health locally, as well as with policy-specific scenarios.

- We must partner with other agencies (Department of Transportation, Federal Aviation Administration, etc.), foundations, academia, and other stakeholders to make changes.

- Opinions about climate change are changing because people are seeing the impacts in their personal lives.

**Panel Discussion: Growing Future Thought Leaders through Strategic Alliances.** The goal of the session is to identify best practices, lessons learned, and research gaps and barriers related to strategic alliances.

**Speakers for the session were:** Shalanda Baker, Director, Office of Economic Impact and Diversity, U.S. Department of Energy; Edward Maibach, Director, Center for Climate Change Communication, George Mason University; Simon Malcomber, Acting Assistant Director for Biological Sciences, National Science Foundation; and Lisa Greenwood, Assistant Professor, Rochester Institute of Technology.

The discussion was facilitated by Laura Kopp, ORAU business development capture manager.

**KEY TAKEAWAYS:**

- We need to design research programs that intentionally engage communities and do a better job of engaging emerging and minority serving institutions. One of the best but least explored opportunities is reaching out to detractors of climate change.
• University partnerships with federal government agencies, through their various funding mechanisms, are the best place where decisions can be made about spending funds equitably and bringing people to the table, like community members, community leaders, etc.

• We must change the scientific and research culture to move faster from research to solutions. Federal government agencies cannot do this in a vacuum; it will take the work of everyone to move the needle. Additionally, we must increase diversity in STEM (science, technology, engineering, and mathematics).

OPPORTUNITIES:

• The U.S. Department of Energy has many programs and mechanisms through which research is funded every year, including on the subject of advanced and sustainable energy. More here: https://www.energy.gov/science/office-science-funding-opportunities

• The National Science Foundation GRANTED Program focuses on addressing systemic barriers within the nation's research enterprise by improving research support and service capacity at emerging research institutions. More here: https://beta.nsf.gov/funding/initiatives/broadening-participation/granted

DISCUSSION TOPICS

Building a Future-Resilient Workforce
Equitable Access for an Innovation Economy
Strategic Alliances to Advance the K-16 Education Ecosystem