AGENDA

Leveraging Advances in Remote Geospatial Technologies to Inform Precision Environmental Health Decisions

APRIL 14-15, 2021

THE NATIONAL ACADEMIES OF SCIENCES, ENGINEERING, AND MEDICINE

A Virtual Workshop of
The Standing Committee on the Use of Emerging Science For Environmental Health Decisions

ALL TIMES LISTED ARE IN EASTERN TIME AND ARE SUBJECT TO CHANGE

BY PRESENTING ENVIRONMENTAL HEALTH DATA IN A SPATIAL CONTEXT, geospatial technologies can provide insight on the spread of pollution and disease, help to identify at-risk populations, and monitor environmental health trends.

This workshop will bring together experts in remote sensing and experts in environmental health to explore how advances in the resolution of geospatial technologies could inform "precision environmental health"—targeted public health interventions that reach the right populations at the right time.

Invited speakers and panelists will highlight the breadth of available geospatial technologies, and how they can be applied to understanding environmental health risk. Workshop participants will also discuss the use of geospatial advances to address environmental justice and direct responses to environmental disasters.

PRE-WORKSHOP

Three video primers providing background information pertinent to the workshop's presentations and discussions will be posted online for viewing in advance of the workshop.

- Primer 1: An Introduction to Environmental Health— **Melissa Perry**[*]**,** The George Washington University

- Primer 2: Satellite Data for Environmental Health: What is Available and Possible—**Yang Liu,** Emory University

- Primer 3: Applications of Geospatial Methods in Environmental Science—**Eun-Hye Enki Yoo,** University at Buffalo, The State University of New York

[*] Member of the Standing Committee on the Use of Emerging Science for Environmental Health Decisions
[†] Member of the Workshop Organizing Committee

WEDNESDAY, APRIL 14, 11:00 AM - 3:45 PM

11:00 Welcome and Opening Remarks

- **Melissa Perry**[*]**,** The George Washington University

- **Rick Woychik,** National Institute of Environmental Health Sciences

- **Susan Anenberg**[†]**,** The George Washington University

11:30 Keynote Presentation—**Cecilia Martinez,** White House Center for Environmental Quality

11:50 Q&A

12:00 Break

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More information at:
http://nationalacademies.org/envirohealth-decisions

1:00 SESSION 1 LEVERAGING GEOSPATIAL TECHNOLOGIES TO ADVANCE ENVIRONMENTAL JUSTICE AND HEALTH EQUITY

Moderator: **Sacoby Wilson†,** University of Maryland

Place matters: from quality education to clean air and water, from employment opportunities to health care access, from prenatal health to life expectancy, where a person lives has a profound effect on one's well-being. Recent advances in geospatial sciences may enable us to understand with unprecedented detail the wide scope of these geographic disparities, but translating such data into knowledge and action remains a challenge. This session will highlight how geospatial technologies, data, and tools can not only be used to better characterize place-based inequities, but also be leveraged to advance justice and equity in environmental health.

Speakers:

- Environmental Justice—**Charles Lee,** United States Environmental Protection Agency

- Using Geospatial Techniques and Technologies to Improve Environmental Justice Mapping and Analysis—**Jayajit Chakraborty,** University of Texas, El Paso

- HGB Enviroscreen: Identification and Prioritization of Neighborhood Level Environmental Justice Drivers—**P. Grace Tee Lewis,** Environmental Defense Fund

Discussant:

- **Kristi Pullen Fedinick*,** Natural Resources Defense Council

1:30   Q&A

2:00   Break

2:30   SESSION 2 PERSONALIZING EXPOSURE SCIENCE TO IMPROVE ENVIRONMENTAL HEALTH

Moderator: **Jing Li†,** University of Denver

Quantifying personal health effects resulting from exposure to environmental factors is critical for advancing precision health science and supporting further research on various environmental health problems. This session highlights innovations in geospatial data, technologies, and methods that enable personalized exposure measurements and assessments to enhance our understanding of environmental factors and their varying impacts on human health, particularly at community and individual levels.

Speakers:

- Personal Air Pollution Exposure and Geolocation Monitoring for Precision Environmental Health—**Rima Habre,** University of Southern California

- Embedding Mobile Health and Deep Learning into Geospatial Epidemiology—**Peter James,** Harvard Medical School and Harvard Pilgrim Healthcare Institute

- It's Nothing Personal: Leveraging Earth Observations to Estimate Climate Exposures Across Scales—**Benjamin Zaitchik,** Johns Hopkins University

Discussant:

- **Erik Svendsen,** Centers for Disease Control and Prevention/National Center for Environmental Health

3:00   Q&A

3:30   Day 1 Closing Remarks—Weihsueh Chiu†, Texas A&M University

3:45   Adjourn Day 1

THURSDAY, APRIL 15, 10:30 AM - 3:45 PM

10:30 Welcome and Opening Remarks—Susan Anenberg†, The George Washington University

10:35 Keynote Presentation: Thinking Broadly about Remotely Sensed Data and Environmental Health—Marie Lynn Miranda, University of Notre Dame

10:55 Q&A

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11:05 Recap of Day 1–**Weihsueh Chiu[†],** Texas A&M University

11:15 **SESSION 3 GEOSPATIAL SCIENCE FOR PREPARING FOR AND RESPONDING TO ENVIRONMENTAL DISASTERS**

Moderator: **Kevin Elliott[*†],** Michigan State University

Advances in geospatial science and technology provide significant opportunities to predict and alleviate environment-related disasters (natural and human-caused) and their health impacts. This session will highlight the role that these advances can play in empowering communities to foster resilience, collect data on environment-related disasters, and address disparities in their impacts.

Speakers:

- Designing a transdisciplinary network of Geospatial Technology, Public Health and the Environment: Using Earth Observation Data to protect Human Health from air pollution in Puerto Rico–**Pablo Méndez-Lázaro,** University of Puerto Rico-Medical Sciences Campus

- Quantifying Health Effects of Wildland Fire Smoke: The Geospatial Toolbox–**Sheryl Magzamen,** Colorado State University

- Unequal Protection Revisited: Planning for Environmental Justice, Hazard Vulnerability, and Critical Infrastructure in Communities of Color–**Marccus Hendricks,** University of Maryland

11:45 Q&A

12:15 Break

12:45 Overview of Breakout Sessions–**Yuxia Cui[†],** National Institute of Environmental Health Sciences

1:00 **SESSION 4 BREAKOUT SESSIONS: REFLECTION ON EMERGING OPPORTUNITIES FOR THE PATH AHEAD**

The breakout discussions will focus on cross-cutting issues in the utilization of geospatial technologies to inform precision environmental health decisions including data availability, data integration, training, and privacy and ethics. The goal is to bridge the gap between science and decision-making by identifying opportunities and barriers, current best practices, and potential solutions as well as the role agencies can play to help advance the field.

Breakout Group 1: Data Availability
Chair:

- **Susan Anenberg[†],** The George Washington University

Rapporteur:

- **Aubrey Miller,** National Institute of Environmental Health Sciences

Breakout Group 2: Data Integration
Chair:

- **Weihsueh Chiu[†],** Texas A&M University

Rapporteur:

- **John Balbus,** National Institute of Environmental Health Sciences

Breakout Group 3: Training and Capacity Building
Chair:

- **Yuxia Cui[†],** National Institute of Environmental Health Sciences

Rapporteur:

- **Ana Prados,** NASA and University of Maryland, Baltimore County

Breakout Group 4: Privacy and Ethics
Chair:

- **Kevin Elliott[*†],** Michigan State University

Rapporteur:

- **Lisa Rasmussen,** University of North Carolina, Charlotte

2:00 Break

2:15 Breakout groups report back

Breakout Group 1: Data Availability

- **Aubrey Miller,** National Institute of Environmental Health Sciences

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Breakout Group 2: Data Integration
- **John Balbus,** National Institute of Environmental Health Sciences

Breakout Group 3: Training and Capacity Building
- **Ana Prados,** NASA and University of Maryland, Baltimore County

Breakout Group 4: Privacy and Ethics
- **Lisa Rasmussen,** University of North Carolina, Charlotte

2:55   Q&A

3:30   Closing Remarks—**Susan Anenberg**[†]**,** The George Washington University

3:45   Adjourn Workshop[‡]

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* Member of the Standing Committee on the Use of Emerging Science for Environmental Health Decisions
[†] Member of the Workshop Organizing Committee
[‡] The Standing Committee on the Use of Emerging Science for Environmental Health Decisions Business Meeting will follow immediately after the workshop.

Workshop Organizing Committee

This workshop was organized by the following experts: **Susan Anenberg** (chair), The George Washington University; **Weihsueh Chiu**, Texas A&M University; **Yuxia Cui**, National Institute of Environmental Health Sciences; **Kevin Elliott*****,** Michigan State University; **Jing Li**, University of Denver; **Sacoby Wilson**, University of Maryland.

About the Standing Committee on the Use of Emerging Science for Environmental Health Decisions

The National Academies' Standing Committee on the Use of Emerging Science for Environmental Health Decisions (ESEHD) examines and discusses issues on the use of new science, tools, and research methodologies for environmental health decisions. The ESEHD committee is organized under the auspices of Board on Life Sciences and the Board on Environmental Studies and Toxicology of the National Academies of Sciences, Engineering, and Medicine, and sponsored by the National Institute of Environmental Health Sciences.

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