



Environmental
Innovations Initiative

UNIVERSITY *of* PENNSYLVANIA

PENN ACTION CAFE
EXTREME HEAT

NOVEMBER 26, 2024



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OUR GOAL

The Environmental Innovations Initiative, EII, hosts a new Penn Action CAFE (Convene, Accelerate, Foster, and Expand research) focused on extreme heat challenges and solutions.

Penn Action CAFE aims to convene experts from different disciplines to catalyze new research addressing environmental crises and institutionalized inequities. The goal is to identify potential partners and opportunities to apply collectively to research grant opportunities in funding agencies.

TOPICS

Experts and principal investigators (PIs) from all corners of campus have expressed their interest in extreme heat. We are sharing snapshots of their scholarly expertise classified by topics, including heat exposure, infrastructure, and policy, justice, and institutions.

Heat Exposure



Infrastructure



Policy, Justice & Institutions





HEAT EXPOSURE



JANE DMOCHOWSKI

SAS, Earth and Environmental Science

Expertise: Geophysics

Seeking to work with experts in plant ecology, air pollution & heat effects on recreation, urban planning, and education. See some undergraduate student projects:

- [1. Examining Cooling and Urban Heat Risk of Philadelphia Public Schools](#)
- [2. Mapping Transportation-Related Air Pollution Along the Schuylkill River Trail](#)



SUNNI MUMFORD

PSOM, Biostatistics, Epidemiology & Informatics

Expertise: Epidemiology

PI of new ECHO pregnancy cohorts (Environmental influences on Child Health Outcomes).

Data sets on climate change and heat exposures:

- [ECHO](#)
- [ECHO-Children](#)

ORCID: [0000-0003-0133-3176](#)



KYLE JACKSON

PSOM, Surgery

Expertise: Heat exposure and health outcomes

Studying heat exposure and health outcomes (e.g., infections, CVD, mortality). He is a clinically active transplant surgeon.

Data sets: EHR and claims-based data, ranging from single-center Penn data to national datasets such as EPIC Cosmos, USRDS, SRTR/OPTN

ORCID: [0000-0002-8135-5377](#)

HEAT EXPOSURE



BLANCA HIMES

PSOM, Biostatistics, Epidemiology & Informatics

Expertise: Biomedical informatics

Over the past ten years she has focused on using biomedical informatics approaches to study pulmonary diseases. She intends to focus her health data skills to heat.

ORCID: [0000-0002-2868-1333](https://orcid.org/0000-0002-2868-1333)



DORIS WAGNER

SAS, Biology, PlantARC and Epigenetics Institute

Expertise: Plant response to heat

Studying plant response to heat in agriculture and urban farms and gardens, plants for mitigation of heat island effects. Data sets on drought available. Most recent grant awarded: 2022- 2025 National Science Foundation MCB 2224729: Role and activity of PRC2 and SWI/SNF in plant adaptability to changing environments.

Seeking to collaborations in the urban setting in Philadelphia.

ORCID: [0000-0003-4656-2490](https://orcid.org/0000-0003-4656-2490)



ERICK GAGNE

PennVet, Assistant Professor of Wildlife

Ecology, Pathobiology

Expertise: Wildlife diseases

My work does not focus on extreme heat but relates to how a changing climate will alter infectious diseases in wildlife.

ORCID: [0000-0002-4901-5081](https://orcid.org/0000-0002-4901-5081)

HEAT EXPOSURE



AMRITHA MALLIKARJUN

PennVet, Working Dog Center

Expertise: Behavioral research

She is a behavioral researcher and statistician who has worked on two studies involving the best methods to cool working dogs experiencing exercise-induced hyperthermia
ORCID: [0000-0003-3845-1694](https://orcid.org/0000-0003-3845-1694)



CINDY OTTO

PennVet, Working Dog Center

Expertise: Working dogs

Studying canine sports medicine, working dogs, and disaster response. Relevant grants include SOCOM - related to hydration of dogs in extreme environments, AKC-CHF - cooling of working dogs, and DOD - SBIR/STTR - cooling. Seeking collaborations in Human-environment geography, Political ecology, Rural sociology, Sustainable agriculture/farmer livelihoods, Biodiversity conservation, Feminist methodologies (mixed methods), Ethnography and Complex Systems Dynamics modeling.
ORCID: [0000-0003-0846-2114](https://orcid.org/0000-0003-0846-2114)



INFRASTRUCTURE



EUGENIE L. BIRCH

Weitzman School of Design

Expertise: City planning

Interested in working with health experts. See some publications:

- [Vormittag/Albuquerque/Birch, Urban Sustainable Development, Governance, Finance, Politics](#)
- [Cheshmehzangi/You/ Siri/Birch, Harnessing Urban Innovation to Unlock the Sustainable Development Goals](#)

ORCID: [0000-0002-3735-5230](#)



JONIQUEA CEASAR

Perelman School of Medicine

Expertise: Internal Medicine and Pediatrics

She is a primary care physician with training in internal medicine and pediatrics. She is interested in using mixed methods to explore the relationship between neighborhoods and health, especially as it relates to the built environment, structural racism, environmental justice, and climate change. Seeking support with GIS.



RUSSELL COMPOSTO

School of Engineering & Applied Science

Expertise: Coatings

Expert on cool roof coatings (EII funded) as well as cool seal to reduce the temperature of asphalt to mitigate urban heat. In the latter case, Russell and others have a pilot program in Hunting Park with the Office of Sustainability of Philadelphia in partnership with SOD faculty (Dorit Aviv). Temperature data sets available in spring. Seeking to collaborate with policy experts.



INFRASTRUCTURE



COLBY SNYDER

School of Engineering & Applied Science

Expertise: Coatings

Studying cool coating materials for pavement and roofs.

ORCID: [0009-0005-0956-7403](https://orcid.org/0009-0005-0956-7403)



MARK YIM

School of Engineering & Applied Science

Expertise: Robotics

Robotics potentially used for deploying technologies such as digging for ground source heat pumps, or flying vehicles to deploy moisture collection, deploying sensors in the ocean etc.



BRIANNA PARSONS

PennVet

Expertise: Nature-based solutions for climate resilience

Expert on silvopasture, agroforestry, agroecology / sustainable agricultural systems. PI of a Penn Global Holman Africa Research and Engagement Fund, awarded in 2022 to support FAIR Farms Gambia, under a Climate Change theme. Seeking for expertise in law, economics, social work, anthropologists, soil scientists.

ORCID: [0000-0001-8481-1975](https://orcid.org/0000-0001-8481-1975)



INFRASTRUCTURE



JENNIFER LUKES

School of Engineering & Applied Science

Expertise: Material design

Her research focuses on understanding thermal transport processes at microscopic scales, with particular interest in material design for better thermal properties and control of water condensation. She teaches an undergraduate class entirely focused on heat transfer.

ORCID:[0000-0002-7763-6141](https://orcid.org/0000-0002-7763-6141)



KRISTIN FIELD

School of Engineering & Applied Science,

IoT4Ag Engineering Research Center

Expertise: STEM Education and Outreach

Co-PI of EII research community on "Adapting to Extreme Heat in Philadelphia to Increase Human Vitality"



JULIA CHIANG

Vagelos Integrated Program for Energy

Research

Expertise: Cool pavement coating

Studying cool pavement coating in collaboration with Philadelphia Office of Sustainability.

Penn Action CAFE



INFRASTRUCTURE



DORIT AVIV

Weitzman School of Design, Director, Thermal Architecture Lab

Expertise: Urban heat sensing and simulation, architectural and urban sustainable cooling technologies

Received NSF grant; Climate Action and Resilience for Extreme Urban Heat (CLIMATE-CARE) NRT

Received Kleinman Center grant on urban heat policy

Received Ramboll Foundation grant to develop urban cooling solutions

ORCID:[0000-0002-9306-9845](https://orcid.org/0000-0002-9306-9845)

POLICY, JUSTICE & INSTITUTIONS



EMILY HANNUM

SAS, Sociology

Expertise: Children's welfare

Interested to meet others working on a) climate and children and b) building climate resilience.

ORCID: [0000-0003-2011-9984](https://orcid.org/0000-0003-2011-9984)



THABO LENNEIYE

Kleinman Center for Energy Policy (staff)

Expertise: Agriculture and Energy Policy

Lecturer for graduate-level Urban Planning studios at the Weitzman School of Design, focused on the global south.



LAUREN ANDERSON

Perry World House

Expertise: Global Policy

Expert on multidisciplinary programming that raises awareness on campus and globally on extreme heat. (Climate change conference, World Urban Forum, Innovate4Cities Forum, Penn Programming)

POLICY, JUSTICE & INSTITUTIONS



CORY BOWMAN

Netter Center

Expertise: Community Engaged Scholarship

Expert on Community Engaged Scholarship and ABCS courses working in partnership with local communities and their schools. Leading various school and public space improvement partnership projects to improve climate resiliency.



ZACHARY HERRMANN

Penn Graduate School of Education

Expertise: Climate Education

PI of EII research communities and Penn Global grants on Project-Based Learning for Global Climate Justice. Learn more [here](#)



MANUEL DE LA CRUZ GUTIÉRREZ

Penn Libraries

Expertise: Information Science

Expert on information science, data visualization (storytelling and communication), scholarly communications, and research impact metrics

ORCID: [0000-0001-8796-941X](#)

POLICY, JUSTICE & INSTITUTIONS



ANDREW E. HUEMMLER

SEAS and Board Member, Energy Coordinating Agency of Philadelphia

Expertise: Energy & weatherization

Senior Lecturer and expert on low-income energy assistance and weatherization programs, and workforce development.



MALLIKA SARMA

SAS, Anthropology; Penn Museum

Expertise: Adaptation to extreme environments

She studies human biological and behavioral acclimatization and adaptation to extreme environments (including extreme heat), in particular understanding the stress response system and methods of buffering stress and building resilience in these settings. Seeking collaborations in urban infrastructure. Data set: Health and Aging in Africa: Longitudinal Studies in South Africa (HAALSA)



R. JISUNG PARK

Social Policy & Practice

Expertise: Environmental Economics

Economist specializing in quantifying climate impacts. Currently conducting work evaluating policies aimed at adapting to extreme heat, including the California Heat Safety Standard, and have been working together with policymakers in the department of labor, OSHA, and the California state government to inform their work in this area. He is also working on a project looking at heat and homeless mortality, and the role that policies play in mitigating these effects.

PARTNERS

Here is a list of all partners that have expressed interest in extreme heat research.

[Aimin Chen](#)

[Akira D Rodriguez](#)

[Amy L. Montgomery](#)

[Andrew E. Huemmler](#)

[Blanca Himes](#)

[Brianna E Parsons](#)

[Colby Snyder](#)

[Cory M Bowman](#)

[Doris Wagner](#)

[Dorit Aviv](#)

[Emily Falk](#)

[Emily Hannum](#)

[Erick B Gagne](#)

[Eugenia C South](#)

[Eugenie L. Birch](#)

[George Demiris](#)

[Harvey Rubin](#)

[Heather H. Burris](#)

[Heidi T Wunder](#)

[Hillary Nelson](#)

[Hugo N Ulloa](#)

[Irina Marinov](#)

[Jane E Dmochowski](#)

[Jennifer A. Punt](#)

[Jennifer R Lukes](#)

[Jessica Jones Gupta](#)

[Joniqua N Ceasar](#)

[Joeun Shim](#)

[Julia Shiau Chiang](#)

[Julie Carol Ellis](#)

[Kate L La Spina](#)

[Kathleen D. Morrison](#)

[Kristin Field](#)

[Kyle R Jackson](#)

[Lauren Elizabeth Anderson](#)

[Mallika Sarma](#)

[Manuel de la Cruz Gutierrez PhD](#)

[Maria Trujillo](#)

[Marilyn Howarth](#)

[Mark H. Yim](#)

[Meghann K Pierdon](#)

[Nina Morris](#)

[Paulo E. Arratia](#)

[R. Jisung Park](#)

[Rebecca A. Simmons](#)

[Russell J Composto](#)

[Sameed Khatana](#)

[Sara F Jacoby](#)

[Shu Yang](#)

[Sunni Mumford](#)

[Susan A Yoon](#)

[Susan M Wachter](#)

[Thomas D Parsons](#)

[Thabo Lenneiye](#)

[William W Braham](#)

[Zachary Herrmann](#)

FUNDING OPPORTUNITIES

01 NSF – CENTER FOR RESEARCH AND INNOVATION IN SCIENCE, THE ENVIRONMENT AND SOCIETY

Synopsis and Objective: The U.S. National Science Foundation seeks to build research capacity and infrastructure to address complex and compounding national and global crises whose solutions require a human-centered approach. To help generate effective and long-lasting solutions that benefit the entire U.S. public, NSF is providing this funding opportunity to inform possible future Centers for Research and Innovation in Science, the Environment and Society (CRISES).

Deadline: TBC

Award: up to \$100K for planning proposals

02 BURROUGHS WELLCOME FUND: CLIMATE + HEALTH EXCELLENCE (CHEX) CENTERS

Synopsis and Objective: New institutional awards of up to \$10,000,000 to stimulate the development of strong research, education, and public communications connections between fields that aim to understand and mitigate the impact of climate change on human health. In general, this award will support institutions or consortia that are already moving toward establishing themselves as centers of excellence for understanding climate change's impact on human health and for leadership in climate education OR public communication around climate and health. Applications from institutions just starting to integrate Climate + Health into their planning are expected to be uncompetitive. Up to three awards will be made over two rounds of competition.

Deadline: August 7, 2025

Award: Up to \$10M

FUNDING OPPORTUNITIES

03 DOE - CLIMATE RESILIENCE CENTERS

Synopsis and Objective: The DOE SC program in Biological and Environmental Research (BER) hereby announces its interest in applications from the scientific community for Climate Resilience Centers (CRCs) that will improve the availability and utility of BER research, data, models, and capabilities to address climate resiliency, particularly by underrepresented or vulnerable communities.

Deadline: Pre-application- December 12, 2024

Award floor/ceiling: \$100K-\$1M

04 DOE - ATMOSPHERIC SYSTEM RESEARCH (ASR)

Synopsis and Objective: SR supports research on key cloud, aerosol, precipitation, and radiative transfer processes that affect the Earth's radiative balance and hydrological cycle, especially processes that limit the predictive ability of regional and global models.

Deadline: Pre-application - January 7, 2025

Award floor/ceiling: \$200K - \$975K

05 DOE- ENVIRONMENTAL SYSTEM SCIENCES

Synopsis and Objective: The DOE SC program in Biological and Environmental Research (BER) hereby announces its interest in receiving applications for research in Environmental System Science (ESS). The goal of the ESS program in BER is to advance an integrated, robust, and scale-aware predictive understanding of terrestrial systems and their interdependent microbial, biogeochemical, ecological, hydrological, and physical processes.

Deadline: Pre-application - December 11, 2024

Award floor/ceiling: \$300K - \$1M

FUNDING OPPORTUNITIES

06 NSF - FUTURE MANUFACTURING

Synopsis and Objectives: The goal of Future Manufacturing is to support fundamental research, education, and training of a future workforce to overcome scientific, technological, educational, economic, and social barriers in order to catalyze new manufacturing capabilities that do not exist today. Future Manufacturing seeks inventive approaches to invigorate the manufacturing ecosystem and seed nascent future industries that can only be imagined today. Future Manufacturing supports research and education that will enhance U.S. leadership in manufacturing by providing new capabilities for companies and entrepreneurs, by improving our health, quality of life, and national security, by expanding job opportunities to a diverse STEM workforce, and by reducing adverse impacts of manufacturing on the environment. At the same time, Future Manufacturing enables new manufacturing that will address urgent social challenges arising from climate change, global pandemics and health disparities, social and economic divides, infrastructure deficits of marginalized populations and communities, and environmental sustainability.

Deadline: January 13, 2025

Awards: Research grant – 4 years, \$750K/yr; Seed grant – 2 years, \$250K/yr

07 WELLCOME - CLIMATE AND MENTAL HEALTH AWARD: UNCOVERING THE MECHANISMS BETWEEN HEAT AND MENTAL HEALTH

Synopsis and Objective: The DOE SC program in Biological and Environmental Research (BER) hereby announces its interest in receiving applications for research in Environmental System Science (ESS). The goal of the ESS program in BER is to advance an integrated, robust, and scale-aware predictive understanding of terrestrial systems and their interdependent microbial, biogeochemical, ecological, hydrological, and physical processes.

Deadline: Pre-application – December 11, 2024

Award floor/ceiling: \$300K - \$1M

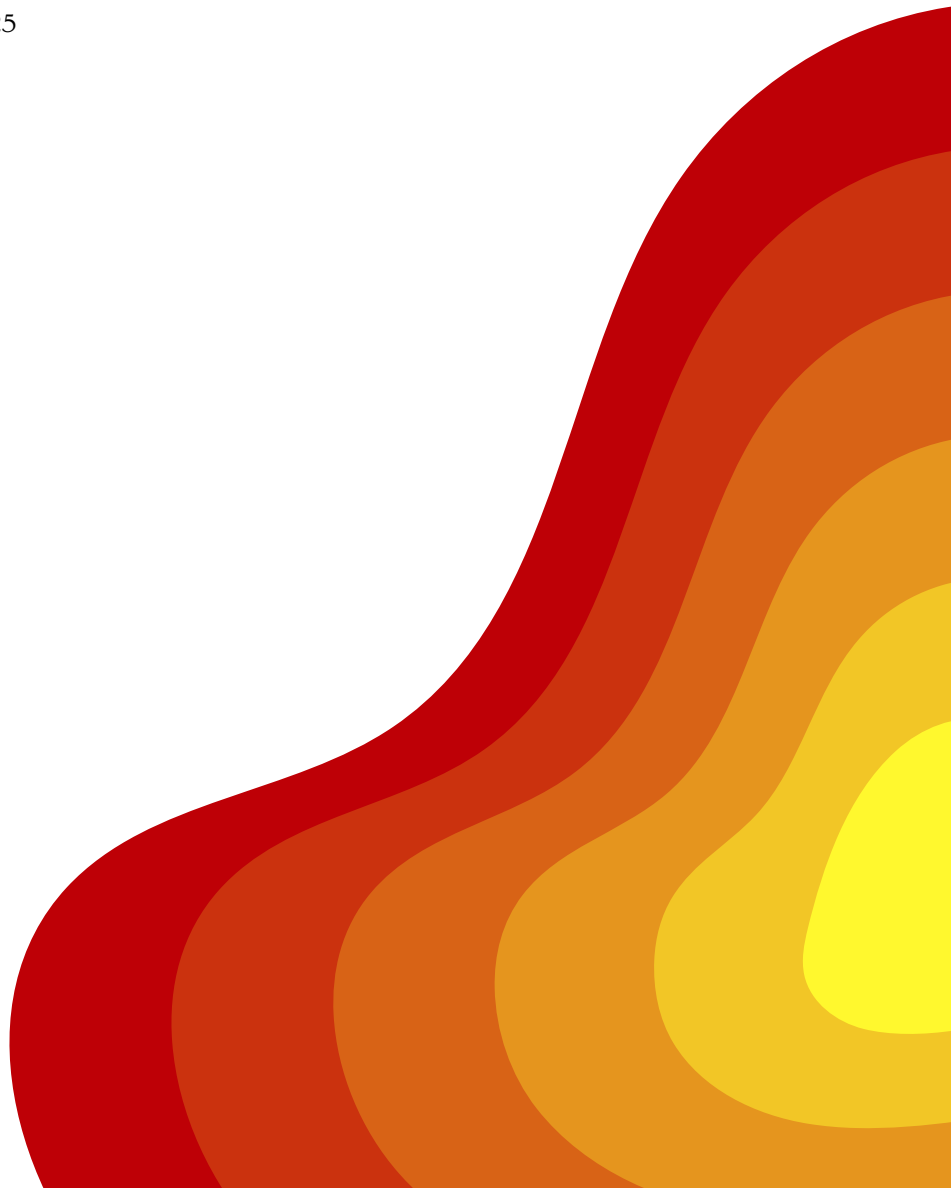
FUNDING OPPORTUNITIES

08 NOTICE OF SPECIAL INTEREST (NOSI): IMPLEMENTATION SCIENCE FOR CLIMATE CHANGE AND HEALTH

Synopsis and Objectives: The purpose of this Notice is to inform potential applicants of the interest of the NIH Climate Change and Health Initiative (CCHI) in supporting implementation science related to climate change and health. The CCHI seeks to reduce the health threats posed by climate change across the lifespan, improve the health of people who are at increased risk from or disproportionately impacted by climate change, and build health resilience among individuals, organizations, communities, Tribal Nations, and nations around the world. This NOSI encourages applications that propose implementation studies to understand and address barriers and facilitators to the adoption, implementation, scale-up, and sustainment of effective interventions to prevent or mitigate the health effects of climate change in the United States and globally.

First Available Due Date: February 05, 2025

Award: TBC





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