



NEWSLETTER

Spring 2023

The **Climate and Health Program**, launched in 2008, has a mission to foster innovative scholarship on the human health dimensions of climate change impacts and vulnerabilities, and to provide information of direct value in climate adaptation and mitigation planning. We train PhD and DrPH students, and postdoctoral scientists in the design and conduct of cutting-edge research on mechanisms linking climate to ill-health as well as on methods for assessing health impacts and benefits of future climate policy scenarios. We also offer the first ever MPH certificate in climate and health.

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PROGRAM NEWS

Faculty and staff in the news

[Teaching Climate Change in Med School Gains Momentum](#) – MEDPAGE

Sep 22, 2022 - “There are tons of medical student groups who want this, but one of the big problems is that faculty don't have the expertise to teach it,” said Professor Cecilia Sorensen. “This is not something that is recognized as a universal competency for medical students.”

[This Florida woman survived her 'biggest mistake' in Hurricane Ian. Why experts say many others didn't](#) – USA TODAY

Oct 4, 2022 - People have “a strong sense of home and place,” said **Dr. Robbie Parks**, postdoctoral research scientist. “If their evacuation prospects are a shelter and lying down with strangers, they may not want to evacuate.”

[Are the unvaccinated still a danger to the rest of us?](#) – Los Angeles Times

Nov 3, 2022 - “Clearly, the unvaccinated are a threat to themselves,” said **Professor Jeffrey Shaman**. “The danger to the rest of us is a more debatable issue.”

[Undocumented farmworkers face disaster discrimination](#) – Axios

Nov 3, 2022 - The inequitable impact on outdoor workers is “two-fold” because they face more exposure while having a lack of health care, said **Professor Lewis Ziska**.

[Nursing Home Cited 7 Times by Inspectors Before Legionnaires' Outbreak](#) – The New York Times

Nov 12, 2022 - But overall, outbreaks associated with cooling towers have been decreasing over the past 20 years, said **Dr. Victoria Lynch**, postdoctoral research scientist.

[After Hurricanes, Program Aims to Help Alleviate Stress](#) – Associated Press

Nov 13, 2022 - Another study published earlier this year looked at mortality rates for counties that experienced a tropical cyclone over a 30-year period, from 1988 to 2018. The study's lead author, **Dr. Robbie Parks**, said while major hurricanes such as this year's Ian get a lot of attention, his research suggested repeated strikes with weaker cyclones also take a toll.

[Exposure to Lead Linked to Risk of CVD Mortality: Strong Heart Study](#) – tctMD

Nov 18, 2022 - Using blood DNA-based biomarkers “we were able to capture some risk from lead with cardiovascular disease mortality in this way,” said **Wil Lieberman-Cribbin**, PhD candidate.

[What Climate Change Is Already Doing to Children's Brains](#) – TIME

Nov 18, 2022 - Research has now linked prenatal as well as postnatal air pollution exposure to reduced IQ and other cognitive problems, developmental disorders such as ADHD and autism, depression and anxiety, and even structural changes in the brains of children. Research has also shown how climate-related displacement results in disruption of education and mental health problems such as post-traumatic stress disorder, anxiety, and depression in children. – **Professor Frederica Perera**

[Fetuses can be vulnerable to climate change, air pollution exposure, says researcher](#) – ABC News

Dec 14, 2022 - “We used to think the placenta was a perfect barrier and the baby was literally in a cocoon, protecting them from the factors that the mother might experience in her environment,” **Professor Frederica Perera** said. “And that's not true. Air pollution is capable of reversing, moving across the placenta into the fetus.”

PROGRAM NEWS

Faculty and staff in the news

[‘Tripleemic’ Rages On: Fever-Filled Weeks Lie Ahead](#) – The New York Times

Dec 22, 2022 - We had a huge pool of people, compared to what we normally do, who could be infected by R.S.V. and could be infected by flu because we’ve basically missed two seasons of it, said **Professor Jeffrey Shaman**. As a result, he said, the viruses were “able to go to work early and infect a lot of people. And that’s why we’re seeing these very large, marked outbreaks early on.”

[U.S. to Require Negative Covid Tests for Travelers Coming From China](#) – The New York Times

Dec 28, 2022 - “While there is an argument that with more people being infected, there may be more opportunity for mutation and the development of a new variant,” said **Professor Jeffrey Shaman**, “we still don’t know whether new variants predominantly develop during passage from person to person or within persons who experience extended infections.”

[Are Gas Stoves Dangerous to Your Health? Here’s What Science Says](#) – The Wall Street Journal

Jan 25, 2023 - “There’s no uncertainty about the basic premise that burning natural gas is bad for you,” says **Professor Darby Jack**. “The emissions are bad for you.”

[COVID Among Top 10 Causes of Death in Children in US: Study](#) – The Hill

Jan 30, 2023 - “If you look at infectious diseases in children in the US historically, in the period before vaccines became available, hepatitis A, rotavirus, rubella, and measles were all major causes of death,” said author **Dr. Robbie Parks**, postdoctoral research scientist.

[These Homes Replaced Their Gas Stoves – and Saw a Huge Drop in Indoor Pollution](#) – The Guardian

Jan 31, 2023 - “We should always be using the cleanest energy we have access to,” said **Professor Darby Jack**, an author of the report about the program. “For a long time, induction electric was really expensive, but the cost of induction stoves has come way down.”

[EPA proposal would change soot pollution standards for first time in 10 years: What we know](#) – Phys.org

Jan 31, 2023 - The standards must focus on protecting those most vulnerable, said **Professor Frederica Perera**. “We need to go lower.”

[Study Shows Electric Induction Stoves Healthier Than Gas Stoves](#) – Spectrum News: NY1

Feb 1, 2023 - “Better for health, better for the environment, more convenient and easier to use. It’s kind of a no-brainer,” **Professor Darby Jack**.

[Long-term Exposure to Dirtier Air Can Increase Your Risk of Depression or Anxiety, Study Finds](#) – CNN Online

Feb 1, 2023 - “Other studies have found that pollution can affect the onset of anxiety and depression,” **Professor Marianthi-Anna Kioumourtoglou**.

CERTIFICATE NEWS

Meet our new Master's students



Tanaya Ambadkar is from India and holds an MS degree in Wildlife Conservation as well as a BS in Cell and Molecular Biology. She has diverse work experiences, including managing a public health program at ECHO India, teaching subjects in zoology at Maharaja Sayajirao University, and wildlife conservation management at Wildlife Trust of India. Currently, she is interested in learning about climate and environmental impacts on public health, One Health, public health policy, and management. Through the program, she hopes to gain a deeper understanding of the various aspects of public health and how climate plays a role in public health, vulnerability assessments, and steps needed to incorporate climate preparedness into public health.



Catie Eiref grew up in Cambridge, MA. This past spring, she graduated from Northeastern University where she studied health science and environmental and sustainability studies and was also a member of the rowing team. Some of her previous work includes R&D for a rapid antimicrobial susceptibility testing system and mucking around in the soil at an urban farm initiative in Boston. At Columbia, she is excited to learn more about the intersection of climate science, food and water security, and strategies to build community resiliency.



Muhammad Khan was born in Pakistan and lived in a remote village for his first ten years. He then moved to Anchorage, Alaska, where he graduated from the University of Alaska Anchorage with a BA in science and a minor in medical anthropology. He takes pride in helping the less fortunate and has been involved in community outreach projects in Anchorage. Before starting graduate school, Muhammad worked for the State of Alaska's Department of Public Health's Adolescent Health unit. Muhammad is a student in the SMS department and is interested in strengthening and building healthcare infrastructure in low- and middle-income countries (LMIC). He is interested in learning how climate change affects health disparities and designing and leveraging climate-resilient infrastructure in LMICs.



Sarah Tan is from Penang, Malaysia. She received her BS in human biology and society and a minor in food studies from UCLA. After graduating, she began working at CUIMC as a research assistant in Dr. Chin Hur's Healthcare Innovation Research and Evaluation (HIRE) team, focusing on gastrointestinal cancer and cost-effective analysis research. Two years later, she pursued an MPH degree to further apply the skills and knowledge she gained through this role and previous academic experiences specifically to environmental health and climate justice. She is passionate about the intersection of food security and environmental health and how, as a public health professional, she can promote justice and equity by helping vulnerable communities to build resiliency to climate change impacts through sustainable development and urban agriculture and dynamic food systems.



Sophie Yagoda is from Atlanta, Georgia and recently graduated from the University of Michigan with a double major in biopsychology, cognition, and neuroscience (BCN) and environmental science. She is a student in the SMS department and is interested in how various communities are disproportionately impacted by climate change and how it adversely impacts health and resources.

RESEARCH

Awards

Dr. Yanelli Nunez, Adjunct Associate Research Scientist, received the early career Rebecca James Baker Award at the Annual ISEE 2022 Conference in Athens, Greece.

Sabah Usmani, PhD student, and **Dr. Robbie Parks** were selected as Agents of Change Fellow. The Agents of Change in Environmental Justice program is a partnership between Environmental Health News and MSPH. The mission of the program is to empower emerging leaders from historically excluded backgrounds in science and academia to reimagine solutions for a just and healthy planet.

Dr. Robbie Parks was awarded a K99/R00 award from NIEHS for his proposal, titled 'Novel Assessments of the Health Impacts of Tropical Cyclones.'

Professor Sen Pei is a recipient of a pilot grant from the US Department of Agriculture and Research Corporation for Science Advancement to study zoonotic threats. His project focuses on the 'Impact of Climate Variability on Foreign Animal Disease: Forecasting Highly Pathogenic Avian Influenza.' The aim is to use statistical models to understand the impact of environmental variation on the spread of highly pathogenic avian influenza.

Dr. Ilan Cerna-Turoff, postdoctoral fellow, submitted a K99/R00 grant to NIEHS for a project studying 'Spatiotemporal effects and associations between deforestation and alcohol and tobacco use in Indonesia.' The proposed research will examine how deforestation types and complex patterns over time relate to tobacco and alcohol use in Indonesia.

Professor Jeffrey Shaman received an award from Pfizer for his proposal on 'COVID-19 Pandemic and Invasive Meningococcal Disease.'

Recent findings

Climate and health capacity building for health professionals in the Caribbean: A pilot course

Affiliated investigator: Cecilia Sorensen

Journal: Frontiers in Public Health



Climate change is a reality in the Caribbean and its effects are already harming health, yet the health workforce capacity to implement climate mitigation and adaptation measures is lacking. From March-May of 2022, a free, live-virtual, evidence and competency based 10-week climate and health course targeted toward health risks in the Caribbean was deployed to: (1) increase communication about climate and health, (2) equip health professionals with knowledge and skills that could be readily incorporated into practice, and (3) engage health professionals with climate and health initiatives within their communities. Participants in this course came from 37 countries, 10 different health-related fields, and five different general places of work. Longitudinal surveys revealed significant changes in health professional communication, engagement and application of climate and health knowledge and skills. Live-virtual, evidence and competency-based courses, regional-specific courses have the potential to change health professional behaviors toward addressing climate impacts on health.

Recent findings**Heat stress illness outcomes and annual indices of outdoor heat at U.S. Army installations**

Affiliated investigator: Stephen Lewandowski, Marianthi-Anna Kioumourtzoglou, Jeffrey Shaman
Journal: PLOS ONE



This study characterized associations between annually scaled thermal indices and annual heat stress illness (HSI) morbidity outcomes, including heat stroke and heat exhaustion, among active-duty soldiers at ten Continental U.S. (CONUS) Army installations from 1991 to 2018. We fit negative binomial models for 3 types of HSI morbidity outcomes and annual indices for temperature, heat index, and wet-bulb globe temperature (WBGT), adjusting for installation-level effects and long-term trends in the negative binomial regression models using block-bootstrap resampling. Ambulatory (out-patient) and reportable event HSI outcomes displayed predominately positive association patterns with the assessed annual indices of heat, whereas hospitalization associations were mostly null. For example, a one-degree Fahrenheit (°F) (or 0.55°C) increase in mean temperature between May and September was associated with a 1.16 (95% confidence interval [CI]: 1.11, 1.29) times greater rate of ambulatory encounters. The annual-scaled rate ratios and their uncertainties may be applied to climate projections for a wide range of thermal indices to estimate future military and civilian HSI burdens and impacts to medical resources.

Multiple Dimensions of Environmental Justice and Oil and Gas Development in Pennsylvania

Affiliated investigator: Wil Lieberman-Cribbin
Journal: Environmental Justice



Background: Community socioeconomic deprivation (CSD) may be related to higher oil and natural gas development (OGD) exposure. We tested for distributive and benefit-sharing environmental injustice in Pennsylvania's Marcellus Shale by examining (1) whether OGD and waste disposal occurred disproportionately in more deprived communities and (2) discordance between the location of land leased for OGD and where oil and gas rights owners resided. **Materials and Methods:** Analyses took place at the county subdivision level and considered OGD wells, waste disposal, and land lease agreement locations from 2005 to 2019. Using 2005–2009 American Community Survey data, we created a CSD index relevant to community vulnerability in suburban/rural areas. **Results:** In adjusted regression models accounting for spatial dependence, we observed no association between the CSD index and conventional or unconventional drilled well presence. However, a higher CSD index was linearly associated with odds of a subdivision having an OGD waste disposal site and receiving a larger volume of waste. A higher percentage of oil and gas rights owners lived in the same county subdivision as leased land when the community was least versus most deprived (66% vs. 56% in same county subdivision), suggesting that individuals in more deprived communities were less likely to financially benefit from OGD exposure. **Discussion and Conclusions:** We observed distributive environmental injustice with respect to well waste disposal and benefit-sharing environmental injustice related to oil and rights owner's residential locations across Pennsylvania's Marcellus Shale. These results add evidence of a disparity between exposure and benefits resulting from OGD.

Select publications

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Gould CF, Mujtaba MN, Yang Q, Boamah-Kaali E, Quinn AK, Manu G, Lee AG, Ae-Ngibise KA, Carrión D, Kaali S, Kinney PL, **Jack DW**, Chillrud S, Asante KP. Using time-resolved monitor wearing data to study the effect of clean cooking interventions on personal air pollution exposures. *Journal of Exposure Science & Environmental Epidemiology*. 2022 Oct 23:1-0.

Pei S, Kandula S, **Cascante Vega J**, **Yang W**, Foerster S, Thompson C, Baumgartner J, Ahuja SD, Blaney K, Varma JK, Long T, **Shaman J**. Contact tracing reveals community transmission of COVID-19 in New York City. *Nature Communications*. 2022 Oct 23;13(1):6307.

Huang B, Huang Z, Chen C, Lin J, Tam T, Hong Y, **Pei S**. Social vulnerability amplifies the disparate impact of mobility on COVID-19 transmissibility across the United States. *Humanities and Social Sciences Communications*. 2022 Nov 24;9(1):1-3.

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Li Y, Muñoz-Ibañez F, Maldonado-Alcaíno A, **Jack D**, Yan B, Xu L, Acuña M, Leiva-Guzman M, Valdés A, Cáceres DD. Cancer Burden Disease Attributable to PM_{2.5} and Health Risk by PM_{2.5}-bound Toxic Species in Two Urban Chilean Municipalities. *Aerosol and Air Quality Research*. 2022 Dec 1;22:220247.

Kepp KP, Björk J, Kontis V, **Parks RM**, Bæk KT, Emilsson L, Lallukka T. Estimates of excess mortality for the five Nordic countries during the COVID-19 pandemic 2020– 2021. *International Journal of Epidemiology*. 2022 Dec;51(6):1722-32.

Zhang B, Huang W, **Pei S**, Zeng J, Shen W, Wang D, Wang G, Chen T, Yang L, Cheng P, Wang D. Mechanisms for the circulation of influenza A (H3N2) in China: A spatiotemporal modelling study. *PLoS pathogens*. 2022 Dec 16;18(12):e1011046.

Select publications

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PAST EVENTS

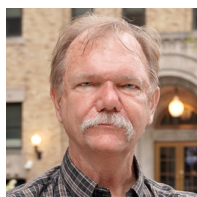


Professor Cecilia Sorensen attended a workshop on ‘Climate & Health for Community and Healthcare Stakeholders in The Bahamas,’ co-hosted by the Global Consortium on Climate and Health Education (GCCHE) from December 13-14th, 2022. She presented an ‘Overview of Climate Change and Extreme Heat.’

Professor Cecilia Sorensen attended the 2023 AK Health Summit, organized by Alaska Public Health Association Conference from January 24-26th, 2023. She gave a keynote presentation on ‘Climate Change and Public Health: Training for 1.5 degrees and Beyond.’



Dr. Robbie Parks was an official Columbia University Delegate, at COP27, Sharm El-Sheikh, Egypt, in November 2022. He hoped to professionally and personally advocate for the importance of focusing on the mental and physical health impacts of climate change, particularly in post-disaster environments, to meet like-minded colleagues and friends, and to understand a little more about how the process of creating climate change mitigation and adaptation policy on the global scale functions.



Professor Lewis Ziska helped organize and attended the FACT (Food and Climate Systems Transformation) Alliance food conference from September 27-29th, 2022 at the Massachusetts Institute of Technology. The goal of the three-day workshop was to catalyze action for food systems transformation through the strengthening of researcher-stakeholder collaboration.

FEEDBACK

Please email the Program Coordinator, Haruka Morita, at hm2487@cumc.columbia.edu with questions or suggestions for future newsletter content. For more information about the Program, please visit our [website](#).