Berkeley Climate Change Network

BERKELEY CLIMATE MAP — HEALTH AND CLIMATE -- JUNE 2025

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Berkeley's health/climate research and action focuses how to build human resilience to heat, wildfires, extreme storms, and floods and other impacts of a hotter planet, particularly among low-income communities and vulnerable populations. This work is being conducted by School of Public Health, School of Engineering, Rausser College of Natural Resources, College of Environmental Design, Innovative Genomics Institute, Berkeley Law, College of Chemistry, L&S Social Sciences and Lawrence Berkeley Lab.

Key problems and solutions include:

- Air pollution
- Extreme heat
- Wildfire smoke impacts on respiratory, cardiovascular and metabolic systems
- Microbiome engineering with CRISPR
- Heat protection strategies in the Bay Area
- Toolkit for Policymakers: Heat in underserved communities (Fresno CA)
- Mental health impacts
- Children's health
- Pollution from extractive industries
- Health disparities
- Litigation, laws, and policies
- Impacts on agriculture/food workers
- Environmental changes impacting infectious diseases
- Climate change and Valley Fever and other pathogens
- Double jeopardy for communities of color (pollution and climate impacts)
- Wildfire smoke impacts on prisoners and prison workers
- Air pollution in low- and middle-income countries
- Improved air conditioning, fans and other heat-reducing tech
- Machine learning for air pollution impacts on health
- Climate and health education
- Urban agroecology

First	Last	Affiliation (primary)	Summary	Selected Projects/Reports/
Charisma	Acey	CED - City & Regional Planning	Faculty Director, Berkeley Food Institute Climate Equity Environmental Justice Core Faculty Acey's work focuses on local and regional environmental sustainability, with special attention to poverty reduction, urban governance, connections between food justice and environmental justice, urban agroecology, and access to basic services. She has worked on participatory re-zoning for local healthy food systems and sustainability planning in the San Francisco East Bay, Columbus, Ohio, and Portland, Oregon. .	PI for UCOP $100M Climate Action Seed LOI -- California Racial Equity Climate Adaptation Plan (RECAP) Toolkit The Intersection of Race and the Environment – Acey, Polsky, Powell in Berkeley Law-hosted discussion. Planning for Sustainability CYPLAN 119 **(FALL 2023)**
Joshua	Apte	Engineering, Public Health	Apte's research focus is air quality engineering and various techniques for air pollution exposure assessment. His research group addresses policy-relevant air pollution challenges related to energy, infrastructure, climate change, and human health. Much of his research is motivated by a desire to identify technologies, policies, and strategies for improving the environmental sustainability of cities and the built environment and to reduce inequities in exposure to environmental contaminants in low-resource communities in the US and around the world.	
John	Balmes	Public Health - Environmental Health Sciences	Emeritus Director, Northern California Center for Occupational and Environment Health (COEH) Physician Member, California Air Resources Board (overall CA GHG planning)	What You Need to Know about Wildfire Smoke and Its Impacts on Health The Changing Nature of Wildfires: Impacts on the Health of the Public (2020

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			Balmes' research is focused on the respiratory, cardiovascular and metabolic health effects of various air pollutants and occupational agents.	Dangers Lurk in the San Joaquin Valley's Dust – Interviewed by PPIC 2022 Children's Health and Air Pollution Study (CHAPS). The overall specific goal of CHAPS is to assess the impact of air pollution on the health of children living in the San Joaquin Valley, including adverse effects on immune and metabolic function.
Jill	Banfield	RCNR - ESPM, Innovative Genomics Institute	Deputy Director, Microbiology, Innovative Genomics Institute. Climate, health and agriculture. Geomicrobiology, environmental biogeochemistry, microbial community ecology and evolution Banfield Lab – Nanogeoscience How do soil microbial communities respond to global climate? Working in a large, long term, well replicated grassland climate change experimental system in the Angelo Coastal Reserve, CA, we are studying how microbial communities respond to predicted changes in rainfall timing and abundance.	"Engineering the Microbiome with CRISPR to Improve our Climate and Health." Led by IGI Founder **Jennifer Doudna** and IGI's Microbiology Director **Jill Banfield**, the project is a collaboration of IGI, UC Davis, and UCSF and is funded by a $70M grant from The Audacious Project. Research Review in Plant and Microbial Biology - **PLANTBI 292 007 (FALL 2023)**
	Bay Area Heat Health & Climate Project	Law	Co-Directors, Louise Bedsworth (CLEE) and Bruce Riordan (BCCN)	Project funded by School of Public Health that brings together campus and LBL researchers with Bay Area heat stakeholders from county health departments and community groups. Zoom workshop February 2025

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	Berkeley Center for Green Chemistry	Chemistry, Public Health	Megan Arnett, Executive Director The mission of the Berkeley Center for Green Chemistry is to bring about a generational transformation toward the design and use of inherently safer chemicals and materials. Embedding the principles of green chemistry into science, markets and public policy will provide the foundation for safeguarding human health and ecosystems and provide a cornerstone for a sustainable, clean energy economy. BCGC collaborates with public and private organizations, offering training and technical advice, advocating for safer products and informed policies, the placement of graduates in the workforce, and informal instruction.	
Silvia	Bunge	L&S Social Sciences - Psychology	Bunge studies abstract reasoning and goal-directed behavior. She is interested in studying how to combat psychological factors like motivated reasoning and fatalism that contribute to apathy with regards to fighting climate change. Bunge was on the working group that developed a proposal for a Climate Change Committee within the Academic Senate.	2023 UCOP Proposal: A School-Based Indoor Air Pollution Intervention Aimed at Improving Cognitive and Brain Health
Brenda	Eskenazi	Public Health - Center for Environmental Research and Children's Health	Director, Center for Environmental Research and Children's Health (CERCH) CERCH works to understand and reduce the risk of environmental threats to children's health, locally and globally.	Youth participatory research on air pollution in Richmond with RYSE
Meghana	Gadgil	Public Health - UC Center for	Professor Department of Medicine, UCSF Director of Innovation The Better Lab, UCSF	Decarbonization of hospital systems

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		Climate, Health and Equity	Co-Director Climate Health & Sustainability Education (CHASE) Initiative, UCSF UC Berkeley Faculty Co-Lead UC Center for Climate, Health & Equity (CCHE)	
Allen	Goldstein	RCNR - ESPM	Goldstein Group research themes include atmospheric chemistry and biogeochemistry. We investigate anthropogenic and natural contributions to the chemical composition of the troposphere, interactions of air pollution with ecosystems, aerosol composition and chemistry, and the biogeochemistry of greenhouse gases and stratospheric ozone depleting gases. A unifying theme is to understand the balance between natural and anthropogenic sources of trace gases and aerosols in earth's atmosphere, and to elucidate the biogeochemical processes which control their budgets. One major focus is to push the forefront of observational capabilities through the development and deployment of novel analytical instrumentation, making possible new avenues of research to address elusive scientific questions.	How Much Wildfire Smoke is Infiltrating our Homes (2021) Understand and Mitigating Wildfire Risk in California (2023) Understanding and Characterizing Emission Factors from Burning Structures in California Due to Wildfires (2023)
David	Gonzalez	Public Health - Environmental Health Sciences	I study how pollution from extractive industries and climate-driven disasters affects reproductive health and contributes to health disparities. I teach courses on epidemiology, environmental justice, geospatial methods, and science communication in Spanish. I serve in several capacities to work towards achieving equity and justice in the sciences, including work with the Diversity and Inclusion Committee of the Society for Epidemiologic Research.	
Rohini	Haar	Law – Human Rights Center	Haar is an emergency physician with expertise in health and human rights. Her work focuses on the protection of human rights in times of complex humanitarian crisis and	Health and social impacts of California wildfires and the deficiencies in current

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			conflict. She is particularly interested in the protection of health workers and health services. She is a research fellow at the Human Rights Center and works clinically at Kaiser Medical Center in Oakland.	recovery resources: An exploratory qualitative study of systems-level issues
	Health Initiative of the Americas	Public Health	Xochitl Castaneda, Director One of the world's leading programs on health and migration. Established in 2001, HIA works binationally with Latin American governments and public and private institutions, and agencies, as well as with grassroots organizations in the U.S. to improve health outcomes, address health inequities, enhance the cultural competency of healthcare personnel, and put innovative strategies into action to address unmet health needs of the migrant population through its diverse programs.	HIA Directory of Berkeley Researchers for Migration and Health
	Human Rights Center	Law	Betsy Popken, Executive Director. Our Climate Justice Program addresses the human impacts of climate change. As the climate changes, the prevalence and ferocity of extreme weather events — severe heat waves, torrential rains, alarming floods, extensive droughts, and destructive wildfires — are increasing. Such events drastically affect peoples' lives — their health, livelihood, housing, access to food and water, and personal security. Our research results in recommendations to create new laws and policies, news articles, health and technology interventions, and industry guidance to better protect the human rights of people in affected communities.	Climate Displacement and Migration Climate Impact of AI Data Centers Climate Wildfires Labor Force in New Orleans After Katrina

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Carly	Hyland	Public Health - Environmental Health Services	Assistant Professor of Cooperative Extension in SPH focused on interventions and research translation to mitigate the health impacts of climate change among agricultural and food systems workers, with a focus on heat, wildfire smoke, and pesticides.	Conducting projects to minimize heat stress among agricultural workers in California
Michael	Lu	Public Health	Dean School of Public Health The School of Public Health includes 7 graduate academic divisions: ● Biostatistics ● Community Health Sciences ● Environmental Health Sciences ● Epidemiology ● Health Policy and Management ● Infectious Diseases and Vaccinology ● Interdisciplinary Division Senior Advisor, California-China Climate Institute Advisory Board, UCSF Center for Climate, Health, and Equity Research: Improving maternal and child health. The development, testing, and translation of a new theory on the origins of maternal and child health disparities.	Community Event (January 2022) : Community-Based Participatory Research (CBPR)
Ayesha	Mahmud	L&S Social Sciences - Demography	Mahmud is a demographer who is broadly interested in the interplay between human population changes, environmental factors, and infectious disease dynamics. Her research draws on theory and methods from demography and disease ecology, to answer questions	The Impact Of Current And Future Climates On Spatiotemporal Dynamics Of Influenza In A Tropical Setting (2023)

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			such as - why do outbreaks occur at certain times of the year? How and why does the mortality burden of infectious diseases vary over time? How do population travel patterns drive the spatial dynamics of outbreaks? How will global environmental and demographic changes alter the landscape of infectious disease burden in the future?	Infectious Disease in an Era of Global Change (2021) The Impact of Climate Change on Vaccine-Preventable Diseases: Insights From Current Research and New Directions (2020) Epidemic Dynamics of Respiratory Syncytial Virus in Current and Future Climates (2019) Dynamic Response of Airborne Infections to Climate Change: Predictions for Varicella (2018)
Baoxia	Mi	Engineering - Civil and Environmental Engineering	Research focuses on membrane separation, transport and interfacial phenomena, physicochemical processes for drinking water purification and wastewater reuse, desalination, environmental nanotechnology, and innovative applications of membrane technology to renewable energy generation, public health protection, and hygiene and sanitation improvement for underdeveloped and disaster-ridden regions.	
Mohammad	Mofrad	Engineering - Mechanical Engineering	Wildfire smoke and health. Multi-scale Biomechanics of Cardiovascular Disease and Brain Injury; Molecular and Cellular Mechanobiology; Mechanics of Integrin-Mediated Focal Adhesions; Mechanics of the Nuclear Pore and Nucleocytoplasmic Transport	PI for UCOP $100M Climate Action LOI lead — Developing Predictive Models to Mitigate Health Impacts of Smoke Downwind of Wildfire
Rachel	Morello-Frosch	RCNR - ESPM	Morello-Frosch's research focuses on environmental health and environmental justice. She is particularly interested in addressing the double jeopardy faced by	**Confronting the Climate Gap**

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			communities of color and the poor who experience high exposures to environmental hazards and who are more vulnerable to the toxic effects of pollution due to poverty, malnutrition, discrimination, and underlying health conditions. CEEJ Advisory Council	**Understanding & Addressing Cumulative Impacts on California Communities** This project develops scientifically valid and publicly transparent analytical methods to identify disparities in environmental hazard exposures and health status for key population groups identified by race/ethnicity, socio-economic status, and other vulnerability indicators to inform regulatory decision-making and environmental policy. **Building a Regional Voice for Environmental Health & Justice in Southern CA** This community-academic collaboration combines economic and environmental health research, policy advocacy, and public education and organizing to improve environmental health in low-income communities of color in Southern California. **Integrating Measures of Cumulative Impact and Community-Level Vulnerability** This project studies the relationship between adverse birth outcomes and traffic density in California and how individual and neighborhood-level measures of vulnerability may amplify the toxic impacts of pollution exposures.

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				Toxic Tides Project looking at sea level rise impact on toxics stored in bayside areas. The Bay Area has at least 400 hazardous facilities including power plants, refineries, industrial facilities, and hazardous waste sites. SLR poses risks for such facilities experiencing flooding events that can potentially expose nearby residents to hazardous pollutants. Because many of these facilities are disproportionately located in poor communities and communities of color, climate resilience strategies must address the disproportionate impacts of SLR and associated flooding threats faced by environmental justice communities. See KQED report on project here. Public Health Oil and Gas Rule-making, 2.3M State of California grant UCOP $100M Climate Action LOI lead – January 2023 Climate justice through decarbonization at the points of extraction, production and consumption -- Matching (Decline)
Mahasin	Mujahid	Public Health	Mujahid's current research examines how features of neighborhood environments impact cardiovascular health and health disparities. Using data from several U.S. based cardiovascular cohorts, Dr. Mujahid seeks to improve the measurement of specific features of neighborhood physical and social environments and use	Neighborhoods and Cardiovascular Risk and Resilience in Rural Communities, $3.0M (www.theruralstudy.org)

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			state of the art statistical methods to estimate "causal" neighborhood health effects.	
Elizabeth	Noth	Public Health - Industrial Hygiene	Director, Industrial Hygiene Program at the Northern California NIOSH Education and Research Center. Wildfire smoke and prisons	2023 UCOP Proposal: Heat and Wildfire Smoke Impacts on Prison Residents and Workers
Emily	Ozer	Public Health - Community Health Services		Community-Based Participatory Research PH219C (Spring 2024)2023 UCOP Proposal: Engaging and Scaling Youth Research and Changemaking to Promote Wellbeing and Climate Resilience
Ajay	Pillaresetti	Public Health - Environmental Health Sciences	Pillarisetti's research focuses on measuring and modeling the health, climate, and economic impacts of air pollution, with a focus on household energy use and related behaviors in low- and middle-income countries. Science-backed, policy-relevant recommendations on the benefits of clean energy transitions at scale. Pillarisetti is committed to inclusive teaching and research environments and to increasing access to environmental health research and mentorship opportunities for high school, undergraduate, and graduate students. Climate Equity Environmental Justice Core Faculty	Indian annual ambient air quality standard is achievable by completely mitigating emissions from household sources

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Claudia	Polsky	Law - Environmental Law Clinic	Founding Director, Environmental Law Clinic The clinic tackles critical environmental health and environmental justice issues through litigation, administrative agency practice, legislation, and policy analysis on behalf of real-world clients. CEEJ Affiliate	The Dark Side of the Sun: How PACE Financing Has Under-Delivered Green Benefits and Harmed Low-Income Homeowners (Feb. 2021)
Justin	Remais	Public Health - Environmental Health Sciences	Chair of the Division of Environmental Health Sciences. His research examines how the transmission of environmental pathogens responds to rapid environmental change. His team advances methods for estimating the dynamics and spread of infectious diseases in changing environments, such as those associated with rapid urbanization, industrialization, changes in water resources, and an increasingly variable climate.	NIH R01 - Climate change and the epidemiology of Valley fever in California (2019-2026; $4.2mil); NIH R01 - Climate change and the expansion of fungal diseases in the U.S. (2023-2028; $3.9mil) PBHLTH 271G – Health Implications of Climate Change; PBHLTH 273 – Environment and Infectious Diseases SPRING 2022
Anne	Rosenthal	Public Health - UC Center for Climate, Health and Equity	Associate Director, CARE Program Health and social impacts of CA wildfires	Health and social impacts of California wildfires and the deficiencies in current recovery resources: An exploratory qualitative study of systems-level issues (Rosenthal, Stover, Haar)
Stefano	Schiavon	CED - Architecture, CEDR	Schiavon's research is focused on finding ways to reduce energy consumption in buildings while improving occupant health, well-being and productivity. He has researched sustainable architecture, air conditioning and occupant satisfaction.	CBE Thermal Comfort Tool is a free online tool for thermal comfort calculations Heat stress — a Python library for thermal comfort and heat stress calculations,

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			Recent research on use of fans to reduce AC demand and cool non-AC building spaces	Building energy use and efficiency — metrics for the design and assessment of resilient buildings, air distribution, radiant systems Building Energy Simulations ARCH 246 001 FALL 2021 Arch 140 Energy and Environment SPRING 2024
Eric	Stover	Law - Human Rights Center	Co-Faculty Director, Human Rights Center, Wildfire evacuations by ag workers	2023 UCOP Proposal: Protecting the Health, Safety, Economic Security of Agricultural Workers During Wildfire Evacuations
Jason	Su	Public Health - Environmental Health Sciences	Air pollution and health outcomes Applying multi-petabyte catalogs of satellite imagery and geospatial datasets for planetary-scale analysis of Earth's surface environments including air pollution, weather and climate, land use and land cover through Google Earth Engine; Developing machine learning land use regression modeling algorithms that incorporate multiple types of measurements into a single modeling frame for the purpose of developing high spatial (e.g., 30m) and temporal (e.g., daily) resolution air pollution surfaces. Developing machine learning algorithms such as Convolutional Neural Networks (CNN) and Recurrent Neural Networks (RNNs) to model wildfire spread.	Impact of Air Pollution Exposure on Metabolic Outcomes for California Residents Impacts of Air Pollution on Life Expectancy across Multiple Generations: Race, Ethnicity, and Preterm Birth, Term Low Birth Weight, Childhood Autism, Parkinson's, and Alzheimer's Disease and Air Pollution – California Studies Participatory design of effective risk communication about wildfire smoke for hard-to-reach populations

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			Applying dispersion modeling techniques such as Stochastic Time-Inverted Lagrangian Transport (STILT) to understand the impact of wildfire, port operations or railway locomotives on air pollution levels at the disadvantaged communities. Investigating associations of environmental exposure (including air pollution, heat, vegetation) on population health through machine learning techniques and biostatistics analyses.	A Scenario Tool for Assessing the Health Benefits of Conserving, Restoring and Managing Natural and Working Lands in California
	UC Center for Climate Health and Equity	Campuswide	Housed at and led by UCSF in partnership with faculty and staff at the other nine UC campuses. Arianne Teherani, Founding Co-Director Sheri Weiser, Founding Co-Director Sapna Thottathil, Managing Director Berkeley campus reps: David Ackerly, Meghana Gadgil, Michael Lu The UCSF CCHE seeks to drive climate action that safeguards health through four pillars - research, education, health system sustainability, and policy: • We will establish a transformational research program to generate a solution-focused body of evidence on climate-health pathways and interventions and encourage multidisciplinary and cross-campus collaborations. • We are building a world-class education hub on climate and health for all health professionals, including community stakeholders.	2023 4th Annual NorCal Symposium Recordings - This year's symposium was focused on how climate change presents a critical challenge to medical education, as future medical professionals will be tasked with treating patients and managing healthcare systems in a constantly changing world. All 5 sessions are now available to watch on our YouTube Channel. Health Care Equity at COP27 How Climate Impacts Health (panel discussion)

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			• We will help make UC health systems responsive to the climate-sensitive needs of patients and communities. • Finally, we aim to make our climate work actionable by translating evidence and best practices into effective policy and patient care.	
Max	Wei	LBNL - Energy Analysis and Environmental Impacts Division	Wei's projects are with the Energy Efficiency Standards Group, as well as with the Sustainable Energy Systems Group.	Wei is conducting a multi-year study of extreme heat in Fresno vulnerable communities. Wei and LBL have developed CAL-THRIVES – A California Toolkit for Heat Resilience in Underserved Environments.