



BERKELEY CLIMATE MAP – Methane and other SLCPs FALL 2025

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Berkeley's work on the important short-lived climate pollutants focuses mostly on methane. This work is being done by a range of individuals and labs, at CLEE @Berkeley Law, Lawrence Berkeley National Lab, the College of Engineering, Rausser College of Natural Resources, the College of Chemistry and more.

Current topics include:

- Robotic and drone methane detection and monitoring
- Subnational Methane Coalition
- Methane policy action frameworks for landfills, oil/gas industry and agriculture
- Methane Resources Library and Methane Times newsletter
- Next generation landfill monitoring
- Microbial processes for methane emissions reduction
- Rice field methane reduction
- Undocumented orphaned wellhead program
- Methane super emitters
- On-road mobile methane surveys
- Capturing wellhead gases
- Solid waste emissions reduction
- Methane emissions from wetland and peatlands
- Residential gas appliances
- Methane dispersion in atmosphere
- Methane emissions offsets
- Non-Co2 GHGs
- Methanogens
- Red seaweed feed supplement
- Observation towers network for intermittent sources
- Boreal and arctic wetlands emissions

First	Last	Affiliation 1	Affiliation 2	Summary	Selected Projects/Reports/Classes
Alice	Agogino	Engineering	Mechanical Engineering	Mechanical Engineering, Intelligent learning systems, informational retrieval and data mining. Early detection wildfires, Squishy Robotics	Advanced Methane emissions detection using drones and other tech – WINNING BCCAP proposal March 2025 NSF INCLUDES Alliance: Broadening Career Pathways in Food, Energy, and Water Systems with and within Native American Communities (Native FEWS Alliance), \$8.1M coop agreement, 8/2021 Applications: Early detection of wildland fires; Early detection, characterization and remediation of methane in industrial plants.
Ken	Alex	Law	Center for Law, Energy and Environment	Director, Project Climate at CLEE	Runs the Subnational Methane Action Coalition (SMAC) on five continents with Gil Damon and Shivani Shukla Developing various workstreams for progressing methane policy and helping scale methane emission reduction at the subnational jurisdiction level for each of the main sources of anthropogenic methane: landfill and waste, agriculture and oil-gas industry Methane Resource Library and Methane Times newsletter 2023 UCOP Proposal: Cutting Climate & Health Super-Pollutant Emissions through Next Generation Landfill Monitoring Project Climate Projects:GrizzlyCorps Methane Climate Break Forging Resilience Climate and Wildfire Institute International Monetary Fund Reform Environmental Enhancements, San Jose Pilot Trump Judges Project EV Infrastructure in Underserved Communities Climate & Wildfire Institute Electric Vehicle Equity Initiative
Lisa	Alvarez- Cohen	Engineering	Civil and Environmental Engineering	Investigates microbial processes that can degrade environmental contaminants including methane	

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Bhavna	Arora	LBNL	Energy Geosciences Division	Bhavna Arora is the Head of the Carbon Removal and Mineralization Program . Her research primarily involves reactive transport modeling to provide a comprehensive and predictive understanding of biogeochemical processes in various types of subsurface environments and at different space-time scales.	1) Increasing carbon storage and persistence in soils (RESTOR-C); 2) Enhanced weathering via soil amendments for negative C emissions; 3) Silicate Rock Amendments for Reduced Methane Emissions and Increased Carbon Storage in Rice Fields. A relevant paper: here
	Berkeley Atmospheric Sciences Center	L&S Physical Sciences	Earth and Planetary Sciences	The Berkeley Atmospheric Sciences Center (BASC) is the hub for UC Berkeley's research on the science of the atmosphere, its interactions with Earth systems, and the future of Earth's climate Christie Boering, Director. Inez Fung, Co-Director. Bill Boos, Co-Director.	
Kristie	Boering	Chemistry		Physical and Analytical Chemistry; Atmospheric Chemistry and Transport -- Chemistry and mass transport in Earth's and extraterrestrial atmospheres are studied through kinetics and photochemistry lab experiments, modeling, and observations from high-altitude aircraft and balloons. Earth and Planetary Sciences	
Jonas	Borgel	Chemistry		Post-Doc in the Long Lab	Capturing Wellhead Gasses for a Profit and a Cleaner Environment
	California-China Climate Institute	Law	CLEE	Fan Dai , Executive Director Jessica Gordon, Senior Climate Policy Fellow Jennifer Perron, Senior Climate Policy Fellow CCCI is led by former California Governor Jerry Brown and Vice Chair Mary Nichols. CCCI is a UC-wide initiative housed jointly at Berkeley Law — through its Center for Law, Energy & the Environment — and Rausser College of Natural Resources and partners with the Institute of Climate Change and Sustainable Development at Tsinghua University — one of China's preeminent research institutions. The Institute also works closely with other University of California campuses, departments and leaders. Launched in September 2019, CCCI was established to spur further climate action through joint research, training and dialogue in	China's Methane Action Update FEB 2025 Reducing Methane Emissions from the Solid Waste Sector: Lessons from California's Experiences (March 2023) This paper provides an overview of California's policies and implementation strategies aimed at mitigating waste methane emissions, and identifies policy gaps and recommendations for future action. “Driving to Zero: California and China’s Critical Partnership on Zero Emission Vehicles” “Electric Vehicle Growth in China: What’s Next?”:

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				California and China. This Institute informs national policy makers, fosters dialogue and cooperation, and promotes the implementation of climate solutions at all levels.	
	Carbon Management Program	LBNL	Earth and Environmental Sciences Area	Multi-faceted program for carbon management. Carbon Monitoring and Measurement Margaret Torn Carbon Sink (soils) Margaret Torn Carbon Removal and Mineralization Bhavna Arora Carbon Storage David Alumbaugh Integrated Emissions Management (methane) Sebastian Biraud	Methane Emissions from Wetlands Increase at Higher Latitudes (Nature) - Qing Zhu and Kunxiaojuan Yuan CARMEC Study: This study measures methane emissions from residential gas appliances to better understand their contribution to California’s greenhouse gas emissions. Led by LBNL’s Indoor Environment Group.
Fotini	Chow	Engineering	Civil and Environmental Engineering	Chow’s research focuses on developing analytical and computational methods that help quantify climate change mitigation strategies, air quality effects, and cloud representation and feedback in regional climate models. Her current research projects include studies of wind turbine interactions with boundary layer dynamics over steep terrain, urban dispersion modeling, improved numerical turbulence techniques, topography representation, and grid nesting.	Research include large-eddy simulations and turbulence modeling to understand methane emissions and their dispersion in the atmosphere.
Gil	Damon	Law	Center for Law, Energy and Environment	Researching the methane policies of California and sub-nationals outside of U.S. with a focus on livestock and waste emissions. Damon contributed to CLEE’s Methane Frameworks — practical guides to help governments develop strong methane strategies.	
Cynthia	Gerlein-Safdi	Engineering	Civil and Environmental Engineering	Water and Carbon Lab leader Water and Carbon Lab is a team of hydrologists and ecohydrologists interested in understanding the links between the water and carbon cycles at various temporal and spatial scales. As ecohydrologists, the team is interested in better understanding the	Projects at UC research stations and other sites.

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				link between carbon (CO2 or CH4) and water in different ecosystems. They do so by combining process-based modeling of vegetation, stable isotopes experiments, field experiments, and analysis of satellite data. They are specifically curious about the influence of climate change-induced shifts in water resources on the ability of plants to uptake carbon dioxide or for wetlands to produce methane.	
Barbara	Haya	Goldman		Director of the Berkeley Carbon Trading Project	Looking at methane emissions offsets
	Innovative Genomics Institute	Campuswide		Jennifer Doudna, Founder and Chair of the IGI Governance Board Brad Ringeisen, Executive Director Climate and Sustainable Agriculture Program Climate change, crop diseases, and hunger are intimately intertwined problems. We are using genome engineering as a tool to address all three. We are developing and deploying genome-editing technology to capture and sequester more greenhouse gases and to develop climate-friendly agricultural solutions for farmers in developing countries. Our focus is on those most vulnerable to a changing climate, and areas in agriculture that are underdeveloped by the commercial sector.	CRISPR for Climate Change Disease Resistant Crops Precision Microbiome Editing 2023 UCOP Proposal: Lab to Land California: Biotechnology for Accelerated Conservation and Climate Resilience Grant: Technology Enabled Biological Carbon Capture and Sequestration- \$21M, 8/2022 Funding kicks off a new era in climate research at the IGI. A gift of \$3 million dollars from an anonymous donor to the Innovative Genomics Institute is kick-starting the next generation of climate change research at IGI. To date, IGI's climate change work has mostly focused on using genome engineering to help agriculture adapt to a changing climate. Building on that strategy, this gift provides initial funding to a series of new IGI projects that are aimed at developing scalable nature-based solutions to mitigate climate change. IGI Scientists Make Progress In Protecting Rice From Drought The Crop of the Future - Sorghum Grant: Technology Enabled Biological Carbon Capture and Sequestration- \$21M, 8/2022
Kris	Niyogi	RCNR	Plant and Microbial Biology, Innovative Genomics Institute	The lab's long-term research goals are to understand how photosynthetic energy conversion works in plants and eukaryotic algae, how it is regulated, and how it might be improved to help meet	Plant Based CDR project Systems Analysis and Engineering of Biofuel Production in Chromochloris Zofingiensis, an Emerging Model Green Alga, \$5.4M grant

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				the world’s needs for food, fuel, and carbon sequestration to fight climate change.	“Technology enabled biological carbon capture and sequestration.” Chan Zuckerberg Initiative Foundation (Co-PI, with PI Brad Ringeisen and several other co-PIs). “Systems engineering of Auxenochlorella protothecoides: from photosynthesis to biofuels and bioproducts.” Co-PI, with PI Sabeeha Merchant “RESTOR-C: RESTORation of soil Carbon by precision biological strategies.” Co-PI, with PI Susannah Tringe
	Red Seaweed Feed Supplement Research	Campuswide		Project led by UC Davis and UC San Diego researchers exploring the use of red seaweed as a feed supplement to reduce methane emissions from livestock. This study will connect with the Berkeley Carbon Trading Project at Goldman	
Shivani	Shukla	Law	Center for Law, Energy and Environment	Researching the methane policies of California and sub-nationals outside of U.S. with a focus on livestock and waste emissions. Damon contributed to CLEE’s Methane Frameworks — practical guides to help governments develop strong methane strategies.	
Whendee	Silver	RCNR	ESPM	Her work seeks to determine the biogeochemical effects of climate change and human impacts on the environment, and the potential for mitigating these effects. The Silver Lab is currently working on drought and hurricane impacts on tropical forests, climate change mitigation potential of grasslands, and greenhouse gas dynamics of peatlands and wetlands. Innovative Genomics Institute	Silver is the lead scientist of the Marin Carbon Project, which is determining the potential for land-based climate change mitigation, particularly by composting high-emission organic waste for soil amendments to sequester atmospheric carbon dioxide. The Silver lab is investigating the potential of ground rock amendments to sequester carbon and lower greenhouse gas emissions via enhanced weathering. The Silver Lab is exploring the use of biochar alone and in combination with ground rock and compost amendments to sequester carbon and lower greenhouse gas emissions. Using machine learning for studies on greenhouse gas emissions and carbon sequestration in forests and on working lands. Global observation gaps of peatland greenhouse gas balances: needs and obstacles - Biogeochemistry Soil carbon sequestration in global working lands as a gateway for negative emission technologies

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					Carbon-sink potential of continuous alfalfa agriculture lowered by short-term nitrous oxide emission events - Nature Communications Compost amendment to enhance carbon sequestration in rangelands Assessing the climate change mitigation potential from food waste composting - Scientific Reports
	SUMMATION PROJECT	LBNL		Initiative aims to reduce climate change by improving the detection and mitigation of methane emissions. . Focuses on pinpointing the locations of super-emitters and addressing intermittent sources using a network of observation towers. Led by Berkeley Lab, with partners at Pacific Gas and Electric, California Resources Corporation, California Air Resources Board, and the U.S. Environmental Protection Agency, the project’s goal is to design a framework for fast, accurate methane emissions identification and monitoring in California’s Southern San Joaquin Valley, a high-emissions hotspot, and then expand it statewide.	
Margaret	Torn	LBNL	Biosphere-Atmosphere Interactions Program	Lead, Biosphere-Atmosphere Interactions Program Domain Her research includes: · Carbon sequestration · Human impacts on the carbon cycle – Climate change mitigation · AmeriFlux Management Project · Belowground Biogeochemistry Scientific Focus Area · Land-Atmosphere Interactions ·	
Susannah	Tringe	LBNL	Environmental Genomics & Systems Biology Division	Tringe is the Division Director, Environmental Genomics & Systems Biology Division Mission: Linking genome biology to ecosystem dynamics. Departments: · BioSystems Data Science · Comparative and Functional Genomics · Molecular EcoSystems Biology	RESTOR-C: Center for the RESTORation of Soil Carbon by Precision Agricultural Strategies RESTOR-C will cultivate ways for plants and microbes to remove carbon dioxide from the atmosphere and stably store it for more than 100 years in the soil. Wetland microbiomes and GHG emissions
Dimitrios	Zekkos	Engineering		Methane emissions from landfills	
Rixin	Zhu	Law		Methane Policy Fellow at California-China Climate Initiative	

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Quin	Zhu	LBNL		Research scientist who has analyzed data indicating a 9% increase in methane emissions from Boreal and Arctic wetlands over the past two decades, highlighting the impact of rising temperatures on these carbon-rich environments.	