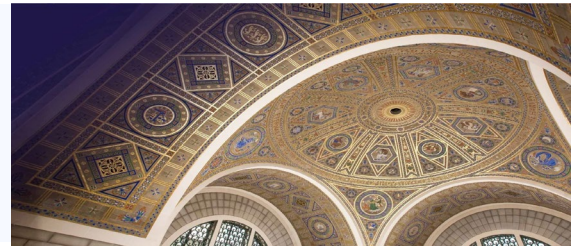


Adapting to Climate Change: Managing Water for Agriculture

June 16, 2023, 11 AM-2 PM

Public Agenda



FRIDAY, JUNE 16, 2023 (ET)

Purpose Gain insights on the state of knowledge of surface and groundwater availability for agriculture in the United States, the impact of climate change on water availability, and shifts in agricultural practices, technologies, and locations in response to these changes.

Open session

Welcome

Jill McCluskey, Chair, Board on Agriculture and Natural Resources (BANR)

Moderator

Jay Famiglietti, Arizona State University, BANR

Panel 1 Water Policy for Agriculture

Michael Hanemann, Professor, University of California, Berkeley, and Arizona State University

Sarah Porter, Director of the Kyl Center for Water Policy, Arizona State University

Felicia Marcus, William C. Landreth Visiting Fellow, Stanford University

Panel 2 Groundwater Monitoring, Scarcity, and Shifts in Agriculture

Deb Perrone, Assistant Professor, University of California, Santa Barbara

Jay Lund, Vice Director and Distinguished Professor, University of California, Davis

Tom Harter, Professor, University of California, Davis

Josh Viers, Professor, University of California, Merced

Panel 3 Technological Approaches for Addressing Water Needs in Agriculture

Adam J (AJ) Purdy, Research Scientist, California State University, Monterey Bay

Michael Roberts, Professor, University of Hawai'i at Manoa

SPEAKER BIOS IN SPEAKING ORDER

MICHAEL HANEMANN, PROFESSOR, UNIVERSITY OF CALIFORNIA, BERKELEY, AND ARIZONA STATE UNIVERSITY

Michael Hanemann is a Chancellor's professor and Professor of environmental and resource economics in the Department of Agricultural and Resources Economics, where he has been on the faculty since 1968. Prior to coming to Berkeley, he earned a B.A. from Oxford University in Philosophy, Politics, and Economics, a M.Sc. in Economics from the London School of Economics, and a Ph.D. in Economics from Harvard University.

SARA PORTER, DIRECTOR OF THE KYL CENTER FOR WATER POLICY, ARIZONA STATE UNIVERSITY

Sarah Porter is Director of the Kyl Center for Water Policy at Arizona State University's Morrison Institute for Public Policy and Professor of Practice in ASU's College of Global Futures. Established in 2014, the Kyl Center promotes research, analysis, collaboration, and open dialogue to build consensus in support of sound water stewardship solutions for Arizona and the West. The Kyl Center's cornerstone project is the award-winning Arizona Water Blueprint, a comprehensive online hub of information about Arizona water resources and policy.

Sarah came to the Kyl Center from the National Audubon Society, where she served as the Arizona state director and led Audubon's Western Rivers Project, a multistate initiative to protect and restore important river habitats in the Intermountain West. As deputy director of Audubon Arizona, Sarah was a key team member in the effort to launch the Nina Mason Pulliam Rio Salado Audubon Center, a nature education center located in a restored riparian habitat in South Phoenix. Before joining the staff of Audubon in 2006, Sarah spent fourteen years as an attorney in private practice, specializing in complex commercial litigation.

Sarah serves on Senator Kirsten Sinema's Water Advisory Council, the Arizona Governor's Water Policy Council, University of Arizona's Water Resources Research Center's External Advisory Council, Phoenix's Environmental Quality and Sustainability Commission, and other community boards.

A native of Phoenix, Sarah received her bachelor's degree with honors from Harvard College and her J.D. magna cum laude from Arizona State University College of Law, where she was a John S. Armstrong Award recipient. She clerked for Hon. William C. Canby, Ninth Circuit Court of Appeals.

FELICIA MARCUS, WILLIAM C. LANDRETH VISITING FELLOW, STANFORD UNIVERSITY

Felicia Marcus is the William C. Landreth Visiting Fellow at Stanford University's Water in the West Program and is a Fellow at the National Academy of Public Administration. She most recently served as chair of the California State Water Resources Control Board during the state's drought years of the mid-teens. Before her appointment to the Water Board, Marcus served in positions in government, the non-profit and private sector. In government, Felicia was regional administrator of the Environmental Protection Agency's Pacific Southwest region during the Clinton Administration. She also headed the City of Los Angeles' Department during its transformation into an award winning institution. In the non-profit world, she was the western director for the Natural Resources Defense Council, and prior to that the executive vice president and chief operating officer of the Trust for Public Land. Marcus also has an extensive background as a private sector and public interest lawyer. She serves on a number of non-profit boards, including the Daugherty Global Water for Food Institute at the University of Nebraska and the advisory council for Sustainable Conservation. She has a Bachelor of Arts in East Asian Studies from Harvard College, and Juris Doctor degree from New York University School of Law.

JAY LUND, VICE DIRECTOR AND DISTINGUISHED PROFESSOR, UNIVERSITY OF CALIFORNIA, DAVIS

As Director of the Center for Watershed Sciences, Lund has research and teaching interests in the application of systems analysis, economic, and management methods to infrastructure and public works problems. His recent work is primarily in water resources and environmental system engineering, but with substantial work in solid and hazardous waste management, dredging and coastal zone management, and some dabbling in urban, regional, and transportation planning. Lund has led development and application of a large-scale optimization modeling for California's water supply, as well as various other modeling studies for the management of flood control and environmental purposes. Climate warming, water marketing, conjunctive use, and integrated water resources management problems have been examined using this model.

Lund has co-authored of several books and reports on the Sacramento-San Joaquin Delta, as well as co-authored an analysis of economical water supply alternatives to Hetch Hetchy Dam. In 2016, Lund was elected to the grade of

Distinguished Fellow in the American Society Civil Engineers (ASCE), one of only nine Distinguished Members inducted that year, the highest honor ASCE can bestow.

DEB PERRONE, ASSISTANT PROFESSOR, UNIVERSITY OF CALIFORNIA, SANTA BARBARA

Debra Perrone is an Assistant Professor of UCSB's Environmental Studies Program. Prior to joining the faculty at the University of California, Debra was a postdoctoral research scholar at Stanford University with a dual appointment in the Department of Civil and Environmental Engineering and the Woods Institute for the Environment. She received her PhD in Environmental Engineering at Vanderbilt University in 2014 and was awarded first honors as the Graduate School's Founder's Medalist. Debra has been awarded fellowships from the Environmental Protection Agency and National Science Foundation for her work studying the growing water scarcity challenges and tradeoffs facing society. Deb integrates research methods from engineering, physical science, and law to inform water sustainability and policy; she uses a wide spectrum of outlets to disseminate her research, including peer-reviewed journals, policy briefs, and interactive-online dashboards. Debra is a co-author of a textbook for undergraduate students that focuses on the challenges and opportunities surrounding our global water resources by providing a foundation in water science and policy.

TOM HARTER, PROFESSOR, UNIVERSITY OF CALIFORNIA, DAVIS

Dr. Harter's research focuses on flow and transport processes in groundwater and in the vadose zone; non-point source pollution of groundwater; groundwater remediation; groundwater resources management; geostatistics; stochastic analysis; numerical modeling. Projects: groundwater quality impacts from confined animal facilities; nitrogen fluxes in a deep heterogeneous vadose zone; transport of *Cryptosporidium parvum* in unconsolidated sediments; stochastic analysis of salinity migration in deep aquifer systems; conjunctive management of surface water and groundwater resources; fate and transport of emerging contaminants.

JOSH VIERS, PROFESSOR, CALIFORNIA STATE UNIVERSITY, MERCED

Dr. Joshua Viers is a Professor of Water Resources Management at the University of California, Merced, and specializes in technology-driven environmental decision making. As the inaugural Faculty Director of Food Farms Future Innovate at the University of California, Merced, Dr. Viers has crafted a vision for higher education to support economic mobility and pathways to prosperity in the San Joaquin Valley, a region of challenges and opportunities. Serving as the Director of the Center for Information Technology Research in the Interest of Society (CITRIS), Dr. Viers launched the UC Merced Experimental Smart Farm and helped the campus achieve Agricultural Experiment Station designation. As Associate Dean for Research, he has developed UC Merced's emerging presence in Agrifood Technology research and secured over \$125M in federal and state funding since 2020. Dr. Viers is also actively involved in entrepreneurship, serving as CEO and managing partner of Pacific Agroecology LLC and as former Chief Science Officer for FrootBot Inc. Dr. Viers' research spans multiple areas, including agroecology, climate change adaptation, geospatial analysis, and water resources management.

AJ PURDY, RESEARCH SCIENTIST, CALIFORNIA STATE UNIVERSITY, MONTEREY BAY

Dr. A.J. Purdy is a research scientist in the Department of Applied Environmental Science at CSU Monterey Bay and NASA Ames. He is a science team member for OpenET and serves as a technical expert on evapotranspiration for NASA's Western Water Applications Office. He supports satellite-driven evapotranspiration model development, ground evaluations, and applications of evapotranspiration data related to agriculture, water, and land management. Prior to joining CSU Monterey Bay and NASA Ames, AJ was an assistant professor in the Geospatial Analysis Lab at University of San Francisco and a postdoctoral fellow at the Jet Propulsion Laboratory. He holds a MS in Watershed Science and Policy from CSU Monterey Bay and a PhD in Earth System Science from UC Irvine.

MICHAEL ROBERTS, PROFESSOR, UNIVERSITY OF HAWAI'I AT MANOA

Michael Roberts is a Professor in the Department of Economics, University of Hawaii Economic Research Organization (UHERO), and Sea Grant at UH Manoa. Dr. Roberts' research focuses on the effects of agricultural policies, the impacts of climate change on agriculture, commodity pricing, renewable energy, water, and experimental economics. He enjoys interdisciplinary research and publishes in both science and economics journals. He has served on several other editorial boards for leading agricultural, environmental, and resource economics journals, and is currently a Co-Editor at the Journal of Association of Environmental and Resource Economics.

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