

Water Science and Technology Board

Committee

David L. Sedlak

Chair

DAVID L. SEDLAK, NAE, Chair, is the Plato Malozemoff Distinguished Professor in the Department of Civil & Environmental Engineering at the University of California, Berkeley where he is also the Director of the Berkeley Water Center and the lead cartographer for the National Alliance for Water Innovation. His areas of research include advanced water treatment systems, water recycling and the use of nature-based systems to improve water quality. He has received several notable awards including the Fulbright Senior Scholar Award in 2003, Paul Busch Award for Innovation in Water Quality Engineering in 2003 and the Clarke Prize for excellence in Water Research in 2014. Dr. Sedlak received a B.S. in environmental science from Cornell University and a Ph.D. in water chemistry from the University of Wisconsin, Madison.

Pedro J. Alvarez

Member

PEDRO J.J. ALVAREZ, NAE, is the George R. Brown Professor of Civil and Environmental Engineering at Rice University, where he also serves as founding Director of the NSF Engineering Research Center on Nanotechnology-Enabled Water Treatment (NEWT) and the Rice Water Institute. His research interests include environmental implications and applications of nanotechnology, bioremediation, fate and transport of toxic chemicals, water footprint of biofuels, water treatment and reuse, and antibiotic resistance control. He is the 2012 Clarke Prize laureate and also won the AAES Grand Prize for Excellence in Environmental Engineering and Science. Past honors include President of the Association of Environmental Engineering and Science Professors (AEESP), the Perry McCarty AEESP Founders' Award for Outstanding Contributions to Environmental Engineering Education and Practice, the AEESP Frontiers in Research Award, the WEF McKee Medal for Groundwater Protection, the SERDP cleanup project of the year award, the Brown and Caldwell lifetime Achievement Award for Site Remediation, the ASCE Simon Freese Award, and various best paper awards with his students. He is Executive Editor of Environmental Science and Technology and previously served on the scientific advisory board of the EPA and on the advisory committee of the NSF Engineering Directorate. Prof. Alvarez was elected to the National Academy of Engineering for outstanding contributions to the practice and pedagogy of bioremediation and environmental nanotechnology. Professor Alvarez received the B. Eng. Degree in Civil Engineering from McGill University and MS and Ph.D. degrees in Environmental Engineering from the University of Michigan.

Martin Doyle

Member

MARTIN DOYLE is professor of water science and policy at Duke University; he was previously a professor at UNC-Chapel Hill. Beyond academic positions, he has served in the Office of the Assistant Secretary of the Army (Senior Advisor, Civil Works), Department of Interior (Senior Conservation Finance Fellow), and US Army Corps of Engineers (Frederick Clarke Scholar). His research is focused on the hydraulics and geomorphology of river systems, but also spans into infrastructure finance and federal water policy. He is a Guggenheim Fellow, Walton Family Foundation Fellow, and was selected as a Kavli Fellow for the Frontiers of Science by the National Academy of Sciences. He has an MS in Engineering from University of Mississippi and a PhD from Purdue University.

James J. Elser

Member

JAMES J. ELSEER, NAS, is Bierman Professor of Ecology of the University of Montana (UM) and since March 2016 has been director of UM's Flathead Lake Biological Station at Yellow Bay. He also serves as research faculty emeritus in the School of Sustainability at Arizona State University where he directs the Sustainable Phosphorus Alliance. Trained as a limnologist, Elser is best known for his work in developing and testing the theory of ecological stoichiometry, the study of the balance of energy and multiple chemical elements in ecological systems, and for his work on phosphorus sustainability. Currently, his research focuses most intensively on Flathead Lake as well as mountain lakes of western Montana along with work on phosphorus sustainability via the STEPS Science & Technology Center. He has been named a fellow of the American Association for the Advancement of Science and a foreign member of the Norwegian Academy of Arts and Sciences. In 2019, Elser was elected to the National Academy of Sciences. Elser holds a Ph.D. from the University of California Davis, an M.S. degree from the University of Tennessee, and a B.S. degree from the University of Notre Dame. Elser currently serves as a member on the National Academies' committee on Review of the draft United by Nature assessment and previously as a member of the committee on the Future of Water Quality in Coeur d'Alene Lake.

Jordan R. Fischbach

Member

JORDAN R. FISCHBACH is the director of planning and policy research at The Water Institute. At the Institute, he oversees an applied research department and leads policy research projects focused on climate adaptation, urban resilience, coastal planning, flood risk analysis, and post-disaster recovery. His expertise includes robust decision making and other methods for decision making under deep uncertainty (DMDU). Before joining the Institute, Dr. Fischbach was codirector of the RAND Climate Resilience Center, a senior policy researcher at the RAND Corporation, and an affiliate faculty member at the Pardee RAND Graduate School. Since 2010 he has been a principal investigator for the Coastal Louisiana Risk Assessment (CLARA) modeling effort, which provides next-level modeling capabilities for Louisiana's Coastal Protection and Restoration Authority to estimate flood risk under a wide range of future environmental, operational, and growth uncertainties and with various proposed projects in place. He has also led recent Institute work evaluating the economic, environmental, and social benefits of Nature Based Solutions and investigating present and future flood risk from heavy rainfall in New Orleans. Dr. Fischbach's other work includes serving as a co-investigator for the NOAA MARISA Climate Adaptation Partnership (CAP) program, which has the goal to support the effective utilization of climate science and the building of adaptive capacity and resilience to climate variability and change in the Mid-Atlantic region. He received his M.Phil. and Ph.D. in policy analysis from the Pardee RAND Graduate School and a B.A. in history from Columbia University.

Shemin Ge

Member

SHEMIN GE is a distinguished professor in the Department of Geological Sciences at the University of Colorado Boulder. She was the department Chair from 2015-2019 and served for two years as a program director for the Hydrologic Sciences Program at the National Science Foundation. Dr. Ge studies groundwater in Earth's crust. Her research expertise includes water resource dynamics under a changing climate and permafrost hydrology in cold regions. Dr. Ge also explores fluid induced earthquakes associated with geo-energy (geothermal and oil/gas) development. In recognition of her pioneering research and leadership in the field, the Hydrogeology Division of the Geological Society of America awarded Dr. Ge the 2018 Meinzer Award and named her as the 2016 Birdsall-Dreiss Lecturer for excellence in research and ability to communicate effectively. She is a fellow of American Geophysical Union and Geological Society of America. Dr. Ge received her Ph.D. in hydrogeology from Johns Hopkins University in 1990. She holds an M.S. from the University of British Columbia and a B.E. from the Wuhan University of Technology. She was a member of the Academies Committee on Catalyzing Opportunities for Research in the Earth Sciences (CORES): A Decadal Survey for NSF's Division of Earth Sciences.

Ellen Gilinsky

Member

ELLEN GILINSKY is president of Ellen Gilinsky, LLC, which she started in 2017 to work with government, industry, and the private sector on finding environmental solutions to water challenges. As part of the Obama Administration from 2011 through 2016, she was the associate deputy assistant administrator for water at the Environmental Protection Agency where she played a key role in water programs at the federal, state, and local levels working closely with diverse stakeholders in the water quality, quantity, and agriculture sectors and serving as co-chair of the Mississippi River/Gulf of Mexico Hypoxia Task Force. Prior to this appointment, Dr. Gilinsky served as director of the Water Division at the Virginia Department of Environmental Quality, and in the early 1980s she was part of Virginia's Chesapeake Bay Program staff. In addition, she has 12 years of experience as an environmental consultant at several regional and national environmental engineering firms. She has been a past president of the Association of Clean Water Administrators and held a past gubernatorial appointment to the State Advisory Board of the Virginia Water Resources Research Center. She currently serves as a board member of River Network and the Soil and Water Conservation Society and holds a gubernatorial appointment to the Science and Technical Advisory Committee of the Chesapeake Bay Program. Dr. Gilinsky received her B.A. in biology from the University of Pennsylvania and her Ph.D. in zoology with a concentration in aquatic ecology from the University of North Carolina at Chapel Hill.

Branko Kerkez

Member

BRANKO KERKEZ is the Arthur F. Thurnau Associate Professor of Civil and Environmental Engineering at the University of Michigan, where he directs the Digital Water Lab. He is also the Chief Technical Officer of Hyfi, steering research and development of sensing and AI technologies for urban water management. His research interests include water, data, and sensors. His group is working to enable smart water systems, which autonomously adapt themselves to changing conditions using real-time data and controls. His research projects have spanned wireless sensing of large mountain basins, real-time flood response, robotics, and control algorithms for water systems. He is the founder of Open-Storm.org, an open-source consortium dedicated to freely sharing hardware, software, and case studies on smart water systems. He was recognized as a Gilbreth Lecturer by the US National Academy of Engineering in 2018 for his contributions to smart water systems. Other honors include the National Science Foundation's CAREER Award, Verizon Climate Resilience Prize, the Grand Prize for the WEF/WRF Intelligent Water Challenge, UM's 1938E Award, as well as numerous teaching and research paper awards. Dr. Kerkez holds a Ph.D. and M.S. in Civil and Environmental Engineering, as well as an M.S. in Electrical Engineering and Computer Science from UC Berkeley.

Yusuke Kuwayama

Member

YUSUKE KUWAYAMA is the Director of the Economic Analysis Hub at the Environmental Defense Fund (EDF). He studies the economics of water resource and ecosystem management, with a focus on federal and state regulation of ambient water pollution, water management to protect aquatic species habitats, and sustainable water use in agriculture. Previously, he was Associate Professor in the School of Public Policy at the University of Maryland, Baltimore County, and a Fellow at Resources for the Future (RFF). He also previously served on the Chesapeake Bay Program's Scientific and Technical Advisory Committee and on the steering committee of AquaWatch, a water quality initiative within the Group on Earth Observations. Between 2016 and 2022, he was the Director of the Consortium for the Valuation of Applications Benefits Linked with Earth Science (VALUABLES), a cooperative agreement between RFF and the National Aeronautics and Space Administration. He received his Ph.D. in agricultural and applied economics and an M.S. in economics from the University of Illinois Urbana-Champaign and an A.B. in economics from Amherst College.

Venkataraman Lakshmi

Member

VENKATARAMAN LAKSHMI is currently the Benjamin Howell Griswold Professor of Geography and International Affairs in the Department of Environmental Health and Engineering in the Whiting School of Engineering at Johns Hopkins University. Dr. Lakshmi graduated from University of Roorkee in 1987 with a bachelor's degree in civil engineering and a Doctorate in Civil and Environmental Engineering in 1996 from Princeton. He worked at NASA Goddard Space Flight Center 1996-1999 as a research scientist in the Laboratory for the Atmospheres. His areas of research interest are catchment hydrology, satellite data validation and assimilation, field experiments, land-atmosphere interactions, satellite data downscaling, vadose zone and water resources and linkage between environmental variability and disease. He uses a combination of earth observations, physical models and AI/ML methods. From 2019-2026, He served as the John L Newcomb Professor of Engineering in the Department of Civil and Environmental Engineering at the University of Virginia. He has served as Cox Visiting Professor at Stanford University 2006-2007 and 2015-2016 and Program Director for Hydrologic Sciences at the National Science Foundation (2017-2018). Dr. Lakshmi is a fellow of the American Society of Civil Engineers (ASCE), Geological Society of America (GSA), American Society of Agronomy (ASA), American Association for the Advancement of Science (AAAS), and he has over 250 peer-reviewed articles and around 600 presentations and thesis supervisor for 25 graduate students. He is currently serving as editor for Vadose Zone Journal and the founding editor-in-chief of Remote Sensing in Earth System Science (Springer Journals). He has served on the National Academies Panel for the Decadal Survey of Earth Observations from Space (NASA) and as chair of the planning committee for Groundwater Recharge and Flow: Approaches and Challenges for Monitoring and Modeling Using Remotely Sensed Data (NGA). He is currently serving as a member of the Water Science and Technology Board, National Academy of Sciences and past Vice-Chair of the Earth Science Advisory Committee for NASA. He is the President of the Hydrology Section of the American Geophysical Union.

Camille Pannu

Member

CAMILLE PANNU is director of the Environmental and Climate Justice Clinic and an associate clinical professor of law at Columbia Law School. Prior to joining Columbia Law, Pannu served as the inaugural director of the Aoki Water Justice Clinic at the University of California, Davis, School of Law where she combined transactional law, policy advocacy, and strategic research to ensure low-income communities receive clean, safe, and affordable drinking water. She additionally served as a visiting assistant clinical professor of law at the University of California, Irvine, School of Law's Community and Economic Development Clinic. Professor Pannu's legal services advocacy focuses on partnering with low-income communities of color to address poverty and racial and environmental inequality. Her research focuses on structural racism, poverty, and environmental inequality in low-income, rural, and unincorporated communities. Her work interrogates how groups leverage power through corporate law and local government to assert control over shared environmental resources and essential infrastructure. Pannu received her B.A. in international political economy and J.D. with a certificate in environmental law from the University of California, Berkeley.

Amy Pruden

Member

AMY PRUDEN is the W. Thomas Rice Professor and University Distinguished Professor in the Department of Civil and Environmental Engineering at Virginia Tech. Her research and teaching focus on bringing a microbial ecological perspective to advancing control of pathogens and antibiotic resistance in the design and management of water, wastewater, and recycled water systems. Pruden is widely known for her research on antibiotic resistance genes (ARGs) as environmental contaminants and is currently engaged in research aimed at advancing metagenomic approaches for surveillance of pathogens and antimicrobial resistance in sewage and affected aquatic environments. Pruden is a co-lead author of the 2023 Quadripartite spotlight report on the Environmental Dimensions of antimicrobial resistance. Pruden is the recipient of several awards, including the Presidential Early Career Award in Science and Engineering, the Paul L. Busch Award for innovation in water research, the Water Research Foundation Research Innovation Award, and the Recipharm International Environmental Award, and is a fellow of the International Water Association. She earned her B.S. in Biological Sciences and her PhD in Environmental Science, both at the University of Cincinnati. Pruden previously served on the National Academies' Committee on Management of Legionella in Building Water Systems, the Environmental Health Matters Initiative, and the NASEM One Health Action Collaborative.

Julia Rockwell

Member

JULIA ROCKWELL is Manager of Climate Adaptation and Watershed Protection at the Philadelphia Water Department (PWD), an integrated drinking water, wastewater, and stormwater utility. She has more than 15 years of experience leading planning, policy, and technical initiatives focused on climate adaptation, watershed protection, water resources management, and utility resilience. In her current role, Rockwell oversees the integration of climate science into utility planning and decision-making. She also advances multi-barrier, science-based watershed protection strategies to help ensure a safe and reliable drinking water supply. Her previous roles at PWD include serving as a project engineer for the nationally recognized Source Water Protection Program, leading development of a department-wide capital planning process, and developing and implementing PWD's award-winning Climate Change Adaptation Program. She also participates in local, regional, and national water resource and resilience initiatives and previously served as Staff Vice Chair of the Water Utility Climate Alliance (WUCA). Rockwell holds a bachelor's degree in Civil and Environmental Engineering from Bucknell University and a Master of Environmental Management degree from Duke University.

Bridget R. Scanlon

Member

BRIDGET R. SCANLON is a research professor at the Bureau of Economic Geology in the Jackson School of Geosciences at the University of Texas at Austin. Her current research focuses on various aspects of water resources, including assessments using satellite data and modeling, management related to climate extremes, and water energy interdependence. Much of her research has involved groundwater resources, including water quantity and quality related to energy, agriculture, and drinking water within the US and globally. Scanlon serves on the Editorial Board for Environmental Research Letters. She was elected to the National Academy of Engineering for her contributions to the evaluation of groundwater recharge and aquifer depletion. She received the Charles V. Theis Award from the American Institute of Hydrology in 2019, the O.E. Meinzer Award from Geological Society of America, and the Peter S Egelson Hydrologic Sciences Award from AGU in 2018. Scanlon received a B.S. in geology from Trinity College, Dublin, an M.S. in geology from the University of Alabama, and a Ph.D. in geology with a focus on hydrogeology from the University of Kentucky. She recently served as a member of the National Academies' committee on the Future Directions for the U.S. Geological Survey's Energy Resources Program.

Jennifer Tank

Member

JENNIFER TANK is the Galla Professor of Biological Sciences at the University of Notre Dame and Director of the Notre Dame Environmental Change Initiative (ND-ECI). Dr. Tank is an ecosystem ecologist and biogeochemist who studies how nutrients and particles move through streams and rivers. Her research informs management and policy of freshwaters especially around water quality in agricultural landscapes and the impacts of climate change. Her federally-funded research program includes grants from the U.S. Department of Agriculture, National Science Foundation, Department of Defense, and the Environmental Protection Agency. She is a longstanding member of two editorial boards: Biogeochemistry and Limnology and Oceanography Letters. Dr. Tank is a Fellow of the American Association for the Advancement of Science and a Fellow and past-President of the Society for Freshwater Science (SFS), an international society of aquatic ecologists. Her achievements have also been recognized through the Environmental Stewardship Award from SFS, the Ruth Patrick Award from the Association for Sciences of Limnology and Oceanography (ASLO), and the Hoosier Resilience Hero Award recognizing Indiana residents who are working to make the state more resilient in the face of environmental change. Dr. Tank is also committed to science leadership and translation, which grew out of her participation as a 2013 Leopold Leadership Fellow. For the National Academies of Sciences, Engineering, and Medicine, she served on the consensus study Future Water Priorities for the Nation: Directions for the U.S. Geological Survey Water Mission Area. She earned her Ph.D. in Ecology from Virginia Tech, and a B.S. in Zoology from Michigan State University.

Crystal L. Tulley-Cordova

Member

CRYSTAL TULLEY-CORDOVA is a Principal Hydrologist in the Navajo Nation Department of Water Resources – Water Management Branch. She was employed at Los Alamos National Laboratory, Lawrence Livermore National Laboratory, National Energy Technology Laboratory, and the Pacific Northwest National Laboratory. She has worked collaboratively with tribal partners on water-related research since 2013. In 2021, she received the American Indian Science and Engineering Society Professional of the Year Award and the University of Arizona Agnese Nelms Haury Tribal Resilience Leadership Award. She's received numerous awards, fellowships, and scholarships during her academic journey. She received a Ph.D. in Geology and an Interdisciplinary Graduate Certificate in Sustainability from the University of Utah. She has received a Master of Water Resources in Hydrosience and a B.S. in Earth and Planetary Sciences from the University of New Mexico.

David R. Wunsch

Member

DAVID R. WUNSCH is a professor and director emeritus of the Delaware Geological Survey at the University of Delaware, where he served as Delaware's state geologist. He previously served as the state geologist of New Hampshire, and as the director of science and technology for the National Ground Water Association. Dr. Wunsch served as an AAAS Congressional Science Fellow in 1998-99 and advised the U.S. House of Representative's Subcommittee on Energy and Minerals. His research interests include the geochemical evolution of groundwater, groundwater monitoring design, mine hydrology, water supply exploration, and watershed management. Dr. Wunsch served as the decree party principal and represented the state of Delaware in interstate water management negotiations for the Delaware River Basin as a member of the advisory committee to the Delaware River Master. Dr. Wunsch served in executive leadership for several scientific societies and associations, and was the recipient of several awards, including the Ian Campbell Medal for Superlative Service to the Geosciences in 2024 from the American Geosciences Institute, and the Henry P. Caulfield Jr. Medal from the American Water Resources Association in 2024 for exemplary contributions to national water policy. He is a fellow of the Geological Society of America. Dr. Wunsch received a B.A. in geology with a minor in chemistry from SUNY Oneonta, an M.S. from the University of Akron, and a Ph.D. in geology with an emphasis in hydrogeology from the University of Kentucky. He held joint faculty appointments at the Universities of Delaware, New Hampshire, and Kentucky respectively, and was a visiting scholar at Dartmouth College. He has served on a National Academies' committee on Coal Waste Impoundments: Risks, Responses, and Alternatives, as well as provided information and peer review service for other National Academies' reports.