

Owens Lake Scientific Advisory Panel: Off-Lake Sources of Airborne Dust in Owens Valley, California

Committee

Armistead G. Russell

Chair

Armistead (Ted) Russell is the Howard T. Tellepsen Chair and Regents' Professor of Civil and Environmental Engineering at Georgia Tech, where his research is aimed at better understanding the dynamics of air pollutants across scales and assessing their impacts on health and the environment to develop approaches to design strategies to effectively improve air quality. Among Dr. Russell's honors are the FHWA Environmental Excellence Award for work on near-road impact and being elected to the Canadian Academy of Engineering. Dr. Russell was a member of EPA's Clean Air Science Advisory Committee (CASAC) and a member of the National Research Council's Board on Environmental Studies and Toxicology. He chaired the CASAC NO_x-SO_x, Secondary NAAQS review panel, the Ambient Air Monitoring Methods Subcommittee and the Council on Clean Air Compliance Analysis' Air Quality Modeling Subcommittee. He earned his B.S. from Washington State University and his M.S. and Ph.D. degrees at the California Institute of Technology, conducting his research at Caltech's Environmental Quality Laboratory. He has served on and chaired multiple NASEM committees, including the committee for Assessing Causality from a Multidisciplinary Evidence Base for National Ambient Air Quality Standards and the first task of the Owens Lake Scientific Advisory Panel.

Sarah Aarons

Member

Sarah Aarons is an Assistant Professor at Scripps Institution of Oceanography. Her research focuses on the relationship between climate and the Earth's surface through the lens of isotope geochemistry, with a strong focus on the mineral dust cycle. Her research tracks variations in the sources of dust to the cryosphere and mountain ecosystems both in the past and the modern. She is a recipient of the F.W. Clarke Award from the Geochemical Society and the Doris M. Curtis Award from the Geological Society of America. She received her B.S. degree in Geological and Environmental Sciences from Stanford University and her Ph.D. in Geology from the University of Michigan.

Roya Bahreini

Member

Roya Bahreini is a Professor of Atmospheric Science in the Department of Environmental Sciences at University of California, Riverside. She specializes in airborne, ground-based, and laboratory measurements of aerosol composition and microphysical properties to understand aerosol sources and formation process, influence on air quality, and direct- and indirect-effects on climate. Before joining UC- Riverside, she was a CIRES Visiting Postdoctoral Fellow at University of Colorado- Boulder (2005-2007), a Research Scientist at CIRES and NOAA- ESRL (2007-2012), and University of Denver (2012). She is a recipient of the National Science Foundation CAREER award, the Thomson Reuters Highly Cited Researchers award (2014), as well as The World's Most Influential Scientific Minds award (2014). Bahreini received her B.S. in Chemical Engineering from University of Maryland, College Park (1999), and M.S. (2003) and Ph.D. (2005) degrees in Environmental Science and Engineering from California Institute of Technology. She served on the National Academies of Sciences, Engineering, and Medicine's first task for the Owens Lake Scientific Advisory Panel. She currently serves on the South Coast Air Quality Management District's Technical Advisory Group for the Multiple Air Toxics Exposure Study VI (MATES VI) and California Air Resources Board's Research Screening Committee.

David W. Dubois

Member

David DuBois is the State Climatologist and an Associate College Professor at the Department of Plant and Environmental Sciences, New Mexico State University. Prior to 2010, he was employed as a scientist and a graduate student at the Desert Research Institute and was manager at New Mexico's Air Quality Bureau. Dr. DuBois is the first contact person for climatic information in New Mexico and oversees the operations, maintenance, and data delivery from the state-wide ZiaMet mesonet. Dr. DuBois is involved in STEM outreach, citizen science, and climate literacy programs. He chairs the New Mexico Drought Monitoring Workgroup that tracks the status of the drought in NM. Dr. DuBois conducts research in air quality and climate. In 2023 DuBois shared the John C. Frye Memorial Award in Environmental Geology for Bulletin 164 with 11 other colleagues. Dr. DuBois was awarded Community Leader Public Health Hero Award, and the Climate Direct Action Award by the Climate Change Leadership Institute. Dr DuBois holds a B.S. and M.S. in physics, and a Ph.D. in Atmospheric Sciences from the University of Nevada Reno.

Valerie Eviner

Member

Valerie Eviner is a professor of Ecosystem Management and Restoration in the Department of Plant Sciences and an ecologist in the Agriculture Experiment Station at the University of California, Davis. Her research focuses on developing a mechanistic understanding of plant-soil interactions to increase the understanding, restoration, and effective management of ecosystem services, plant invasions, plant communities, and ecosystem resilience in response to multiple environmental changes. Her current projects include understanding the building blocks of resilience in California's ecosystems, how those vary in relation to multiple changes (including drought, wildfire, and invasion), and how those can be managed under changing conditions. Dr. Eviner is a fellow of the Ecological Society of America, American Association for the Advancement of Science, and the Earth Leadership Program. She is on the scientific advisory boards of California Climate and Agriculture Network, Point Blue Conservation Science, and the California Native Grasslands Association, and is on the editorial board of Ecosystems. She received a B.A. in biology from Rutgers University and a Ph.D. in integrative biology from the University of California at Berkeley. She served on the National Academies of Sciences, Engineering, and Medicine's first task for the Owens Lake Scientific Advisory Panel.

Shannon A. Mahan

Member

Shannon Mahan is the director the USGS Luminescence Geochronology Lab. She began work for the USGS in Denver, Colorado in 1987 and eventually wound her way through four teams/branches/science centers before landing with Environmental and Geosciences Science Center in 2015. She has been working in the science of luminescence geochronology and radiation dosimetry since 1990. Shannon has presented >300 diverse studies relating to luminescence dating at national and international scientific forums, authored or co-authored >200 peer-reviewed articles or maps, and supervised the luminescence studies for >50 graduate and post-graduate students. She is frequently asked to review papers for prestigious Quaternary science journals, perform guest editor duties, review NSF grants, and provide dating control for important archeological, paleontological, and geological sites. Shannon is a Fellow of the Geological Society of America, and a member of the Association for Women Geoscientists and Federally Employed Women. She received her B.S. from Adams State University in Colorado.

Gregory S. Okin

Member

Gregory Okin currently serves as the Chair of Geography at UCLA and hold an additional appointment in UCLA's Institute of Environment and Sustainability. His research interests center on drylands including plant-soil interactions, surface-atmosphere interactions, aeolian processes and dust production, and remote sensing. He is a Fellow of the American Geophysical Union. He received a B.A. with a double major in philosophy and chemistry from Middlebury College and a Ph.D. from Caltech in Geological and Planetary Sciences. He served on the National Academies of Sciences, Engineering, and Medicine's first task for the Owens Lake Scientific Advisory Panel.

Dani Or

Member

Dani Or holds the Nevada Engineering Distinguished Professor position with the department of Civil and Environmental Engineering Department at the University of Nevada Reno. Previously he was a Professor of Terrestrial Environmental Physics at the Swiss Institute of Technology (ETH) Zurich. Dr. Or's research focuses on mass and energy transport in porous media; mechanics of landslides and avalanches; evaporation from porous surfaces, biophysical processes and biological activity in soil, and more recently on the physical impacts of wildfire on soil properties and functioning. He also works on surface evaporation from complex surfaces, turbulences and mechanics of boundary layers, capillary forces in porous media, and development of biocrusts. Dr. Or is the recipient of the Kirkham Soil Physics Award (2001), 2004 Fellow of the Soil Science Society of America, chair of the 2008 Gordon Research Conference on Flow and Transport (Oxford, UK), 2010 Fellow of the American Geophysical Union, recipient of the 2013 Helmholtz International Fellow Award, elected 2014 Fellow of the Geological Society of America, the 2017 European Geosciences Union John Dalton Medal; 2018 Langbein lecture of the AGU; elected to the National Academy of Engineering in 2022 and selected Caltech Moore Scholar 2023. Dr. Or holds bachelor's and master's degrees from the Hebrew University of Jerusalem and a Ph.D. in Soil and Biometeorology (Soil Physics) from Utah State University.

Robert S. Van Pelt

Member

Robert Scott Van Pelt is currently and has been for 24 years employed as a Research Soil Scientist with USDA-ARS Wind Erosion and Water Conservation Research Unit in Big Spring, Texas. Prior to his current position, he was employed as a consultant with AgPro LLC. of Carlsbad, NM, INTERA, Inc. of Austin, TX, and Soil and Water West, LLC. of Rio Rancho, NM. He is most noted for his expertise in wind erosion processes, dust generation, dust physical, chemical, and microbiological characteristics, and dust transport. Dr. Van Pelt is a member of Phi Kappa Phi National Honor Society, Soil and Water Conservation Society for which he serves as an Associate Editor of the Journal of Soil and Water Conservation, received the Conservation Research Award in 2015, and the Associate Editor Award of Excellence in 2018, is a founding member of the International Society for Aeolian Research for which he has served on the Board of Directors and as an Associate Editor of Aeolian Research, is a Past President of the International Soil Conservation Organization and serves on the Board of Directors, and is a founding member of the Dust Alliance for North America, currently serving as a member of the Executive Committee and President. Dr. Van Pelt received his B.S. in Biology from the University of New Mexico in 1978, his M.S. in Floristics and Plant Ecology from the University of New Mexico in 1984, and his Ph.D. in Soil Physics from New Mexico State University in 1990. He served on the National Academies of Sciences, Engineering, and Medicine's first task for the Owens Lake Scientific Advisory Panel.

Akula Venkatram

Member

Akula Venkatram is a Professor of Mechanical Engineering at the University of California, Riverside, California, USA. His research is focused on the development and the application of models for the transport and dispersion of air pollutants over urban and regional scales. Dr. Venkatram co-edited and contributed to the "Lectures on Air Pollution Modeling" published by the American Meteorological Society. He was member of the team that developed AERMOD, the primary regulatory model recommended by the USEPA for estimating the impact of pollution sources. He is the recipient of the inaugural award from the AMS Committee on Meteorological Aspects of Air Pollution for "contributions to the field of air pollution meteorology through the development of simple models in acid deposition, ozone photochemistry and urban dispersion". His research on small scale dispersion modeling is summarized in the monograph "Urban Transportation and Air Pollution", Elsevier. Dr. Venkatram received his Ph.D. in Mechanical Engineering from Purdue University. He served on the National Academies of Sciences, Engineering, and Medicine's first task for the Owens Lake Scientific Advisory Panel.

Ian Walker

Member

Ian Walker is a Professor of Geography at the University of California Santa Barbara. Dr. Walker's expertise includes aeolian and coastal geomorphology, sediment transport and erosion processes, environmental fluid dynamics, sand dune systems, dune restoration, and dust mitigation strategy development. His research uses close range remote sensing (LiDAR, UAS), sedimentology, modeling, and field experiments to better understand and manage dynamic landscapes. Dr. Walker is also experienced with ecosystem restoration and mitigation of dust emissions and sand drift hazards in aeolian landscapes. He has engaged in several dune restoration projects and is an appointed member of the Oceano Dunes Scientific Advisory Group (SAG), established in 2018 per a Stipulated Order of Abatement (SOA) issued by the San Luis Obispo County Air Pollution Control District against the California Department of Parks & Recreation. As such, Dr. Walker has appreciable experience working within environmental management and air quality regulatory frameworks, and with Air Quality Regulators at county and state levels, to understand and help address regulatory issues, exceptional events, and dust mitigation strategies toward achieving standards while balancing competing interests. He obtained his B.S. in Physical Geography from the University of Toronto and Ph.D. from the University of Guelph in Canada.