

Remote Sensing Workshop
Sponsored by Environmental Defense Fund, NASA,
California Water Foundation and Water Education Foundation

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Speaker Biographies (in alphabetical order)

Rick Allen

Rick Allen, Ph.D., leads the Water Resources Research Program at the Kimberly Research and Extension Center. He specializes in evapotranspiration, irrigation water requirements and hydrologic systems. His research focuses on developing physics-based approaches and tools to quantify and solve water-related problems, including water consumption over large areas using satellite-based energy balance. He was lead author of the United Nation's Food and Agriculture Organization publication "Crop Evapotranspiration" that serves as an international practice standard. He was co-editor of the American Society of Civil Engineers Practices Manual *Evapotranspiration and Irrigation Water Requirements*. He has served as a consultant to the UN, the World Meteorological Organization, US-AID and governments of Portugal, Spain and Australia with missions to India, Pakistan, Jordan, Yemen, Morocco, Egypt, South Africa, Turkey and Brazil. He is a member of the NASA/USGS Landsat Science Team.

Bruce Aylward

Bruce Aylward is a Director at Ecosystem Economics LLC, a firm specializing in the application of economics to ecosystem management and restoration. Mr. Aylward has 19 years of U.S. and overseas experience in research, policy analysis and project implementation across a range of ecosystems, topical areas and socio-economic conditions. While at the Deschutes River Conservancy he led the establishment of a successful water acquisitions program, as well as water banking facilities that continue to meet environmental, municipal and agricultural needs in the Deschutes for water rights reallocation. Recently, he launched a series of exchanges of experiences and lessons learned on water reallocation with international stakeholders in Australia and South Africa. In addition to his consulting work he teaches Natural Resource Economics at Oregon State University, holds an annual training course on water transactions for practitioners in the Columbia Basin, and participates on committees for master's and doctoral candidates.

Anne Castle

Anne Castle became Assistant Secretary for Water and Science with the Department of the Interior in 2009. Ms. Castle spearheaded the WaterSMART Program, which provides federal leadership on the path toward sustainable water supplies. She provides hands-on leadership on Colorado River issues and is the Secretary's designee to, and Chair of, the Glen Canyon Dam Adaptive Management Work Group. Prior to this, Ms. Castle practiced law for 28 years in Colorado with the firm of Holland & Hart LLP, specializing in water issues. In 2007 she was appointed to the South Platte River Basin Task Force, which examined the water crisis in the northeastern Colorado River Basin and its challenges for water users and provided recommendations for legislative changes that continue to be explored. She received a Bachelor of Science degree in applied mathematics from the University of Colorado, College of Engineering in 1973. She also received her Juris Doctorate degree in 1981 from the University of Colorado.

Bonnie Colby

Bonnie Colby is a professor at the University of Arizona, where she has been a faculty member since 1983 in the departments of Resource Economics, Geography, and Hydrology and Water Resources. She has authored more than 100 journal articles and eight books, including *Risk And Resilience: The Economics Of Climate, Water and Energy In The Arid Southwest* (2011). She has provided invited testimony on these matters to state legislatures, state and federal courts and the U.S. Congress. She has taught at Harvard's Kennedy School of Government, in continuing education programs for U.S. judges and in an intensive leadership training program for conservation professionals from over 30 countries. Over the past 20 years, she has developed dozens of water and habitat acquisition programs and climate change adaptation plans for cities, states, tribes, private firms and non-profit advocacy groups.

Bradley Doorn

Bradley Doorn is the Program Manager for Water Resources in the Applied Science Program of the Earth Science Division of NASA. With more than 25 years of experience in applying remote sensing data to earth application issues, he now manages more than 50 applied projects. Previously, he was the Division Director of the International Production Assessment Division in the Office of Global Analysis, Foreign Agricultural Service (FAS), USDA. In this position for 12 years, he worked extensively with universities and other government agencies to improve operational access to existing satellite information. He also served on active duty as a U.S. Army Corps of Engineers Topographic Officer. He received his doctorate and master's degrees from The Ohio State University in Geodetic Science and Surveying and his bachelor's degree in Geological Engineering from South Dakota School of Mines and Technology.

Jeff Dozier

Jeff Dozier is a Professor of Snow Hydrology, Earth System Science and Remote Sensing at University of California, Santa Barbara (UCSB). He has been on the UCSB faculty since 1974 and was the founding dean of the Bren School. He has led interdisciplinary studies in two areas: one addresses hydrologic science, environmental engineering, and social science in the water environment; the other is in the integration of environmental science and remote sensing with computer science and technology. From 1990 to 1992, he was the senior project scientist for NASA's Earth Observing System, when the configuration for the system was established. In 2009 he received the Jim Gray Award from Microsoft for his achievements in data-intensive science. He received his Ph.D. and Master of Science degrees in Geography from the University of Michigan and his Bachelor of Arts degree in Geography from California State University, Hayward.

Jay Famiglietti

Jay Famiglietti has been a professor at the University of California, Irvine since 2001, where he teaches in the Earth System Science and Civil Engineering departments. As the founder of the UC Center for Hydrologic Modeling, he and his research team use satellites to track water availability and groundwater depletion on land, and have been working for many years towards improving hydrological prediction in climate models like those used in the Intergovernmental Panel on Climate Change. Previously, he was a faculty member in Geological Sciences at the University of Texas at Austin. He is the past Chair of the Board of the Consortium of Universities for the Advancement of Hydrologic Science, Inc. (CUAHSI), the past Editor-in-Chief of Geophysical Research Letters, and he has been a Visiting Professor at Stanford University. He is a Fellow of the American Geophysical Union and has briefed U.S. and world leaders on global water issues. He is the 2012 Birdsall-Dreiss Distinguished Lecturer of the Geological Society of America.

Kent Frame

Kent Frame is currently a Program Manager II with the California Department of Water Resources (DWR), Division of Statewide Integrated Water Management, Water Use and Efficiency Branch. In 1993 he began working for DWR in the San Joaquin District Office managing the District's California Irrigation Management Information System (CIMIS) program and participating in other agricultural and urban water use programs. In 2001 he became the Senior Land and Water Use Scientist managing the statewide CIMIS program. Since 2010, he has been managing numerous SB X7-7 water use efficiency projects. He also continues to sit on the steering committees for the development of new CIMIS tools and the rewriting of the Model Efficient Water Landscape Ordinance. He is a 1977 graduate of California State University, Chico with a Bachelor of Science degree in Plant and Soil Sciences.

Frank Gehrke

Frank Gehrke is Chief of California Cooperative Snow Surveys for the Department of Water Resources. He joined the snow surveys section in 1987. Prior to this he worked for the U.S. Army Corps of Engineers, Los Angeles District and in private consulting. He previously was General Chair of the Western Snow Conference. Mr. Gehrke became interested in snow surveys and water supply forecasting while working as the district engineer for the Big Bear Municipal Water District and subsequently reactivated snow surveys on the Santa Ana River.

Richard E. Howitt

Richard E. Howitt is a Professor Emeritus of Agricultural and Resource Economics at the University of California, Davis. His current research interests are in disaggregated economic modeling methods, testing market mechanisms for the allocation of natural resources, experimental economics, and implementing empirical dynamic stochastic methods. He recently co-authored two books on the Sacramento Delta and a third book on the future of California water management. He serves on advisory boards for the California Department of Water Resources and U.S. Academy of Sciences. He is a fellow of the American Applied Economics Association and recipient of several research awards from different societies.

Justin Huntington

Justin Huntington is an assistant research professor of Hydrology at the Desert Research Institute (DRI) in Reno, Nevada. Mr. Huntington's interests include estimation of basin and field scale water and energy budgets, groundwater recharge, consumptive water use via evapotranspiration (ET) and open water evaporation, remote sensing, integrated modeling, and surface and groundwater interactions. He is currently the research lead at DRI on satellite-based ET determination, soil water balance modeling of current and future agricultural ET and net irrigation water requirements, and open water evaporation. Many of his projects are being funded through the Bureau of Reclamation, NASA, and the U.S. Geological Survey. He received his Ph.D. in Hydrology from the University of Nevada, Reno in 2011.

Jeanine Jones

Jeanine Jones serves as Interstate Resources Manager for the California Department of Water Resources (DWR). She was previously DWR's Drought Preparedness Manager. Her more than 25 years of experience with DWR includes directing DWR's statewide planning program and working on varied interstate water negotiations. She has published numerous technical articles, taught water-related courses for UC Berkeley Extension, and serves on the Western States Water Council, Colorado River Board of California, and Border Governors' Conference Water Worktable. She is a registered professional engineer in California and Nevada.

Shruti Khanna

Shruti Khanna is a post-doctoral researcher at University of California, Davis. Her research interests include the use of remote sensing tools to map, monitor and inform the resolution of ecological problems such as invasive species spread and plant stress due to oil contamination in wetland plant communities. She is currently working on detection of plant stress and recovery in Louisiana marshes after the 2010 Macondo Oil Spill. She received her degree in Computer Science in Baroda, India in 1997 from Maharaja Sayajirao University. She completed her Master of Science degree in Ecology in 2006 and her Ph.D. in Ecology from University of California, Davis in 2010.

Paula J. Landis

Paula J. Landis is the Chief of the Division of Integrated Regional Water Management for the California Department of Water Resources. The Division provides planning and implementation grant awards as well as local assistance, river restoration design and construction, environmental compliance expertise, land and water use analysis, flood management and emergency response, water quality and quantity data collection, groundwater management, water transfers management and water master services. Ms. Landis is a registered Civil Engineer with 25 years of experience in water management. She is recognized for her knowledge of the San Joaquin River system. She holds a Bachelor of Science degree in Civil Engineering, Bachelor of Arts degrees in Art and French and a Master of Arts degree in Art History.

Leanne Lestak

Leanne Lestak is a GIS/Remote Sensing Specialist for the Institute of Arctic and Alpine Research at the University of Colorado, Boulder. Ms. Lestak has over 20 years of GIS and Remote Sensing (RS) experience including extensive geospatial analysis, data acquisition and database management expertise and has been the lead GIS/RS specialist on a number of research projects at the University of Colorado, including a NASA/JPL collaboration with the Department of Water Resources in California to distribute snow estimates for forecasting decision support (research-to-operations), snow and hydrology modeling in the Colorado River Basin with the NOAA/CIRES Western Water Assessment at the University of Colorado, a five year multidisciplinary NSF-funded climate change and adaptation community collaboration project in Barrow, Alaska, and an eight-state satellite calibration study of drought, irrigation and agriculture over the Ogallala Aquifer in the High Plains of the United States.

Zhen Liu

Zhen Liu is a Research Scientist at the Jet Propulsion Laboratory, California Institute of Technology. His current research focuses on imaging time variable plate boundary deformation using InSAR and GPS, and monitoring ground subsidence using space-borne geodesy. He received his Ph.D. in Geophysics and Space Physics from University of California, Los Angeles.

Forrest Melton

Forrest Melton is a Senior Research Scientist in the Division of Science and Environmental Policy at California State University, Monterey Bay. Since 2003, he has worked in the Ecological Forecasting Lab at NASA Ames Research Center on the development of the Terrestrial Observation and Prediction System (TOPS) and the NASA Earth Exchange (NEX). He was the recipient of the NASA Ames Honor Awards in 2009 and 2010 and received an honor award from the California Department of Water Resources in 2010 for his work on applications of satellite data for water management. Mr. Melton holds Bachelor of Science and Master of Science degrees in Earth Systems Science from Stanford University, and has co-authored more than 25 papers and book chapters on applications of remote sensing.

Tony Morse

Tony Morse began his remote sensing career as an aerial photo interpreter in the U.S. Air Force. After working in various remote sensing positions at Bendix Aerospace Systems, the Environmental Research Institute of Michigan and NASA/Ames Research Center, he worked at the Idaho Department of Water Resources simultaneously as the manager of the Geospatial Technology Section from 1988 to 2009 and the Idaho Geographic Information Center from 1998 to 2000 before retiring from the state of Idaho in 2009. Since 2009 he has been the managing partner at the Spatial Analysis Group. He earned a Bachelor of Science degree from the University of Massachusetts in an interdisciplinary program in Remote Sensing, and a Master of Science degree in the Remote Sensing program at Colorado State University Department of Earth Resources.

David Orth

David Orth is the General Manager of Kings River Conservation District (KRCD), a resources management agency encompassing 1.2 million acres in the central San Joaquin Valley. Mr. Orth has nearly 25 years of water and energy policy experience. He also serves as the General Manager of the San Joaquin Valley Power Authority, formed to implement a Community Choice Aggregation program in the greater Fresno region. He is Coordinator of the Southern San Joaquin Valley Water Quality Coalition. He also serves on the Board of Directors for the Water Education Foundation and the Association of California Water Agencies' Groundwater and Energy committees. He is a graduate of California State University, Fresno with a Bachelor of Science degree in Business Administration.

Thomas Painter

Thomas Painter is a Scientist at the Jet Propulsion Laboratory/California Institute of Technology and a Research Professor at the University of California, Los Angeles. He has pioneered our understanding of the impacts of dust emission from land use change on snow and ice cover in mountain systems and the hydrologic response. He has also developed cutting edge remote sensing and field models for snow properties from multispectral to imaging spectrometer sensors. He is the Vice-Chair of the Cryosphere Focus Group of the American Geophysical Union and member of the AGU Eos Editorial Advisory Board. He received his Ph.D. and Master of Arts degrees in Geography from the University of California, Santa Barbara and his Bachelor of Science degree in Mathematics from Colorado State University.

David Palumbo

David Palumbo is the Deputy Regional Director for the Bureau of Reclamation's Lower Colorado Region. He provides leadership and critical management decisions for Reclamation's water and power programs and facilitates maintaining the delicate partnerships in the Lower Colorado Region, including those with the country of Mexico and the Region's 67 Native American tribes. He holds a Bachelor of Science degree in Civil and Environmental Engineering from the University of Nevada, Las Vegas, and a Master of Science degree in Civil Engineering and Engineering Mechanics from Columbia University. He also holds Bachelor and Master of Arts degrees in English Literature from the University of Notre Dame and the University of Nevada, Las Vegas, respectively. He is a registered professional engineer in the state of California.

Jennifer Pitt

Jennifer Pitt joined Environmental Defense Fund in 2009, where she is currently the Colorado River Project Director. She works with water users throughout the Colorado River Basin to develop practical programs to restore river habitats, and critically, to dedicate water to environmental resources. Her expertise includes the U.S.-Mexico border environmental issues, the legal and policy framework for Colorado River management, the economics of water use and water transfers, and the science of river restoration. Previously, she worked on river restoration for the National Park Service and as a legislative aide to Congressman Mike Kopetski. She has also worked as a ranger at Mesa Verde and Sequoia National Parks. She holds a Master's degree in Environmental Science from Yale University.

Rebecca Shaw

Rebecca Shaw, Ph.D., is a scientist and a recognized thought leader in the field of conservation and climate change. She joined Environmental Defense Fund in 2011 following nine years with The Nature Conservancy of California, most recently as the associate state director. She has 15 years of experience in the environmental arena, specializing in cutting edge research and policy solutions that address climate change impacts on biodiversity, ecosystems and ecosystem services.

Stephen Smith

Stephen Smith manages engineering and technical process development at Regenes Management Group. He also serves on the board of the Loudon Irrigating Canal and Reservoir Company in northeastern Colorado. He has spent 35 years in the irrigation engineering and water resources arena, beginning with the founding of Aqua Engineering in Colorado in 1975, where he served as President and Chief Executive Officer. He served on the faculty at Colorado State University where he taught irrigation design for almost 20 years. He has been an active professional member and past national president of the American Society of Irrigation Consultants. From 2001 to 2009, he served on the board of directors of the Irrigation Association and served as President in 2008. He holds a Ph.D. in Civil Engineering and a Master of Science degree in Irrigation Engineering, both from Colorado State University. He also holds a Bachelor's degree in Agricultural Engineering from New Mexico State University.

Lester Snow

Lester Snow is the Integrated Resource Management Director for Resources Law Group, LLP. He has served as Secretary of the California Natural Resources Agency, Director of the California Department of Water Resources, Regional Director of Bureau of Reclamation, Executive Director of the CALFED Bay-Delta Program and General Manager of the San Diego County Water Authority. He currently serves on the Board of Directors for the Water Education Foundation and California Water Services Group. He holds a Master of Science degree in Water Resources Administration from the University of Arizona and a Bachelor of Science degree in Earth Sciences from Pennsylvania State University, University Park.

James P. Verdin

James P. Verdin is a Physical Scientist with the U.S. Geological Survey (USGS), Earth Resources Observation and Science (EROS) Center. He is currently assigned to work in the National Integrated Drought Information System (NIDIS) Program Office at National Oceanic and Atmospheric Administration in Colorado. His research interests lie with the use of remote sensing and modeling to address questions of agriculture, hydrology, and hydro-climatic hazards. Prior to joining USGS, he worked for the Bureau of Reclamation for 11 years, including a three-year assignment in Brazil. He holds a Bachelor of Science degree from the University of Wisconsin, Madison and a Master of Science degree from Colorado State University, both in Civil and Environmental Engineering, and a Ph.D. from the University of California, Santa Barbara in Geography.

Brian Wardlow

Brian Wardlow joined University of Nebraska, Lincoln as a research assistant professor in 2006 and led the GIScience Program at the National Drought Mitigation Center (NDMC) for six years. Previously, he was a faculty fellow with the Center for Advanced Land Management Information Technologies (CALMIT). He worked on a range of research projects that analyzed satellite-based Earth observations to incorporate information about vegetation health, soil moisture, and evapotranspiration into drought monitoring, both in the United States and internationally. Earlier this year, he became an assistant professor in the School of Natural Resources (SNR), where he teaches remote sensing courses. He holds a Bachelor of Science degree in Geography from Northwest Missouri State University, a Master of Science degree in Geography from Kansas State University and a Ph.D. in Geography from the University of Kansas.

Tony Willardson

Tony Willardson has been Executive Director of the Western States Water Council since 2009. Formerly the Deputy Director, he has been with the Council since 1979. He oversees publication of a weekly newsletter, *Western States Water*, which he edited for many years. He is the author of numerous articles and reports covering a wide range of water resource issues, including water project financing and cost sharing, ground water management and recharge, and water conservation. He holds a Bachelor of Arts degree in Political Science from Brigham Young University, and a Master of Science degree in Public Administration from the University of Utah.

Steve Wolff

Steve Wolff is Program Manager for Wyoming's Colorado River Compact Administration Program, located in the Interstate Streams Division of the Wyoming State Engineer's Office. The program was initiated in 2006 and is responsible for the development, implementation and operation of the consumptive use accounting and compact compliance needs for Wyoming's Colorado River interstate activities. Mr. Wolff attended school at the University of Montana, University of Wyoming and Virginia Tech, where he studied natural resource management and policy.