

Making Decisions in Dry Times: Science and Strategies for Dealing with Drought

SACRAMENTO CONVENTION CENTER, MAY 15-16, 2014

Presenters



MICHAEL ANDERSON

Plenary Session: Drought Conditions and Forecasts // Current Conditions and Recent Changes

Dr. Anderson works for the California Department of Water Resources and is currently serving as State Climatologist for California. Michael began working in the Department of Water Resources Division of

Flood Management (DWR-DFM) Forecasting Section in July 2005. He came to DWR after extensive graduate and post-graduate work with Prof. M. Levent Kavvas of U.C. Davis in the area of hydroclimate modeling and monitoring. Michael received his Ph.D. in 1998 in Civil and Environmental Engineering at UC Davis with a minor in Atmospheric Science. He received his M.S. in 1993 in Civil and Environmental Engineering from UC Davis. He received his Bachelor's degree in Civil Engineering from Colorado State University in 1991.



JARED BLUMENFELD

Welcoming Remarks, Friday

Jared Blumenfeld was appointed by President Obama to serve as EPA Regional Administrator for the Pacific Southwest in November 2009. His priorities at EPA include strong enforcement, environmental justice, protecting and restoring our air, land and waters, building strong federal, state, local

and tribal partnerships, and taking action on climate change.

Before becoming Regional Administrator, Mr. Blumenfeld was the Director of the San Francisco Department of the Environment. He helped to initiate landmark environmental laws that became part of the municipal Environment Code. These included San Francisco's ban of plastic bags, a 2020 zero waste goal, LEED Gold building standards, and an overarching precautionary principle framework.

Mr. Blumenfeld chaired the first United Nations World Environment Day hosted by the United States - Green Cities: Where the Future Lives (2005), oversaw the Treasure Island Redevelopment Authority, and directed international initiatives to protect wildlife habitat. He is a founder of the Business Council on Climate Change. Mr. Blumenfeld has worked for the Natural Resources Defense Council (NRDC), the Sierra Club Legal Defense Fund, and the International Fund for Animal Welfare. He received his law degrees at the University of London and the University of California, Berkeley.



DR. TIMOTHY BROWN

Plenary Session: Drought Conditions and Forecasts // Seasonal Wildfire Outlook

Dr. Brown conducts research and applications development in applied climatology and meteorology, with an emphasis on the application of data analysis, statistical methods and scientific visualization to atmospheric

sciences and wildland fire related data. His primary academic interests include analysis of wildland fire-climate and fire-weather

relationships and applications product development for wildland fire management planning, decision-making and policy, the interface between science and decision-making, and co-production of knowledge. Dr. Brown is Director of the Western Regional Climate Center, and established and directs the Program for Climate, Ecosystem and Fire Applications (CEFA) at the Desert Research Institute in Reno, Nevada. He is graduate faculty in the Atmospheric Sciences Program at the University of Nevada, Reno.



DR. DANIEL R. CAYAN

Plenary Session: Current Drought-Related Science // Climate Change Effects on Water in California

Dr. Dan Cayan is a Research Meteorologist, US Geological Survey and Scripps Institution of Oceanography, University of California San Diego. His work is aimed at understanding climate variability and

changes over the Pacific Ocean and North America and how they affect the water cycle and related sectors over western North America. Cayan has specific interests in regional climate in California and has played a leading role in programs to deliver improved climate information to decision makers: the California Nevada Applications Program (CNAP), sponsored by the NOAA RISA Program and the Southwest Climate Science Center, sponsored by the US Geological Survey, Department of Interior, and the State of California in a series of climate vulnerability and adaptation assessments.

Cayan holds masters degrees from the University of Michigan and UC Davis, and a PhD (Oceanography) from Scripps Institution of Oceanography, UC San Diego. He is a Fellow of the American Geophysical Union.



GRANT DAVIS

Panel Discussions: Sectorial Drought Impacts, Information Uses and Needs, and Decisions // Municipal & Industrial Water Utilities

Mr. Davis is General Manager of the Sonoma County Water Agency, responsible for management activities related to the Water Agency's core functions of

water delivery, wastewater management, flood protection, and environmental sustainability. An emerging focus of the agency's operations is developing a secure, clean and renewable energy portfolio to insulate the region's water supply from outside supply and price shocks, ensuring reliability.

Prior to joining the Agency, Mr. Davis was Executive Director of The Bay Institute, a nonprofit dedicated to protecting the San Francisco Bay-Delta Watershed and improving water management. He worked for Congresswoman Lynn Woolsey and was an aide to State Senator Milton Marks of San Francisco and to Assemblywoman Lucy Killea of San Diego. He also operated a successful small business, specializing in strategic planning, public relations and campaign management.

Mr. Davis currently serves on the University of California President's Advisory Commission, for the Division of Agriculture and Natural

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Resources. He is a board member of the California Utility Executives and Managers Association, Water Reuse California, and the Bay Planning Coalition. Mr. Davis received his BA in political science from the University of California at Berkeley.



KATHIE DELLO

Panel Discussions: Sectorial Drought Impacts, Information Uses and Needs, and Decisions // Natural Resources – Environment, Energy, & Recreation

Kathie Dello is the Associate Director of OCCRI, and Deputy Director of the Oregon Climate Service (OCS) at Oregon State University. She works on climate impacts analysis, climate adaptation, and public

outreach for OCCRI and the Pacific Northwest RISA, the Climate Impacts Research Consortium (CIRC). Kathie coordinated Oregon's first climate assessment report, which is required under the legislation that created OCCRI and had a significant role in Oregon's Climate Adaptation Framework. She is one of the most quoted OSU experts in the media. Kathie has a Bachelors in Atmospheric Science, Masters in Geography from SUNY Albany, and is a part-time PhD student in Environmental Sciences at Oregon State University.



MIKE DETTINGER

Plenary Session: Current Drought-Related Science // Atmospheric Rivers as Drought Makers and Breakers

Dr. Dettinger is a research hydrologist for the U.S. Geological Survey, Branch of Western Regional Research, and a research associate of the Climate, Atmospheric Sciences and Physical Oceanography

Division at Scripps Institution of Oceanography, La Jolla, California. Dettinger has monitored and researched water resources of the West for over 30 years, focusing on regional surface water and groundwater resources, watershed modeling, causes of hydroclimatic variability, and climatic-change influences on western water resources. He has degrees in Civil Engineering from MIT and atmospheric sciences from UCLA.



DAVE DEWALT

Panel Discussion: Sectorial Drought Impacts, Information Uses and Needs, and Decisions // Agriculture

I've been with USDA NASS – Pacific Region for 27 years, with tours in Boise, Idaho; Phoenix, Arizona; Washington D.C.; Phoenix again as Deputy Director. Currently in Sacramento less than a year as one of two

Deputy Directors of the Pacific Region which covers California, Nevada and Hawaii. A graduate of the University of Arizona.



NOLAN DOESKEN

Lessons from Other Regions: Experiences from the NIDIS Upper Colorado River Basin Drought Early Warning System

Nolan grew up in rural Illinois with a fascination in weather from a very early age. After graduating from the University of Michigan and the University of Illinois, he moved to Colorado in 1977 for an

opportunity to work at the Colorado Climate Center at Colorado

State University. He was appointed State Climatologist in 2006 and continues in that position. He is responsible for monitoring the climate of Colorado and providing climate data and expertise to support planning and decision making. Nolan is especially interested in engaging local communities and volunteers in tracking precipitation, drought conditions and impacts.



KEITH FREITAS

Panel Discussion: Sectorial Drought Impacts, Information Uses and Needs, and Decisions // Agriculture

Keith Freitas is Central Valley Territory Representative at The Global Organics Group. Global Organics is an OMRI- and CDFA-certified organic fertilizer manufacturer. He is a sustainable small

family farmer and commercial lemon grower.



JON GOTTSCHALCK

Plenary Session: Drought Conditions and Forecasts // CPC operational climate outlooks relevant to California drought awareness

Jon Gottschalck works at the Climate Prediction Center (CPC) within NOAA's National Weather Service. He was recently named Acting Chief of the Operations

Branch and is now responsible for outlining the overall direction of operational forecast-related activities. Mr. Gottschalck has served as CPC Head of Forecast Operations, overseeing routine production and dissemination of CPC's operational forecast products. He also served as the MJO operational lead at CPC and was responsible for coordinating production of the Global Tropics Hazards and Benefits Outlook. He earned both B.S. and M.S. degrees in meteorology from Pennsylvania State in 1994 and 1996 respectively. After graduation, he worked at the University of Miami Rosenstiel School of Marine and Atmospheric Science (RSMAS) from 1997-2001 and NASA's Goddard Space Flight Center (GSFC) in Maryland.



RICHARD W. HARRIS

Panel Discussion: Sectorial Drought Impacts, Information Uses and Needs, and Decisions // Municipal and Industrial Water and Utilities

As Manager of Water Conservation at the East Bay Municipal Utility District, Richard Harris oversees the development and implementation of EBMUD's water

conservation master planning efforts in support of long term water supply and demand management goals. Richard has been at EBMUD for more than 23 years, and previously managed EBMUD's Water Recycling Program. He has more than 27 years of experience in water and energy resource management, civil engineering and environmental systems planning. Richard serves as a board member of the California Urban Water Conservation Council and the Alliance for Water Efficiency, based in Chicago, Illinois, two non-profit organizations dedicated to advancing water-use efficiency. Richard is a licensed Civil Engineer and he holds a Masters in Civil Engineering from the University of California at Los Angeles, and Bachelor's degrees in Business Economics and Environmental Studies from the University of California at Santa Barbara.

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BILL HASENCAMP

Panel Discussion: Sectorial Drought Impacts, Information Uses and Needs, and Decisions // Municipal and Industrial Water and Utilities

Bill Hasencamp is the Manager of Colorado River Resources for the Metropolitan Water District of Southern California, where he develops and manages water supply programs to augment Metropolitan's Colorado River supplies. He has been with Metropolitan for 12 years, negotiating transfer agreements with irrigations districts, exchange agreements with municipal agencies, and funding new water supply projects which have more than doubled Metropolitan's Colorado River water supplies since 2003. Bill is one of California's representatives to the Colorado River Salinity Control Forum.

Bill's hobbies include long distance bicycle touring, which led him on a three-month bicycle ride across the United States.



ALAN HAYNES

Moderator, Plenary Session: Drought Conditions and Forecasts

Alan Haynes is the Service Coordination Hydrologist for the National Weather Service's California Nevada River Forecast Center (CNRFC) in Sacramento. He serves as the primary external liaison for the CNRFC, connecting partner agencies and other customers to the CNRFC's products

and services and gathering feedback to improve the effectiveness of these products and services. Mr. Haynes has nearly 25 years of experience with the National Weather Service, including 13 years with the CNRFC. He holds both B.S. and M.S. degrees in Meteorology from the University of Utah.



JEANINE JONES

Welcoming remarks

Jeanine Jones is the California Department of Water Resources' Interstate Resources Manager. She was previously CDWR's Drought Preparedness Manager, and still serves as Deputy Drought Manager. Her more than 30 years experience with CDWR includes participating in interstate water

negotiations, managing planning programs, and working on climate change adaptation programs. She serves on the Western States Water Council, Colorado River Board of California, NOAA's Climate Working Group, and the Climate Adaptation Workgroup of the federal Advisory Committee on Water Information. She is a registered professional engineer in California and Nevada, has a BS and MS in civil engineering.



KAROLA KENNEDY

Moderator, Panel Discussions: Sectorial Drought Impacts, Information Uses and Needs, and Decisions // Tribal Communities

Karola Kennedy works for the Elem Indian Colony of Pomo Indians as the Environmental Director. She is new to the area of Lake County, California, but is very passionate about the environmental issues.

In her previous career she gained extensive experience in developing

constructive and cooperative working relationships with others as well as maintain them over time. She attended the University of Nevada, Reno and obtained a Bachelor of Science in Environmental Engineering and received designation as an Engineer in Training.



KARISSA KRUSE

Panel Discussions: Sectorial Drought Impacts, Information Uses and Needs, and Decisions // Agriculture

Karissa Kruse is President of the Sonoma County Winegrowers, a non-profit marketing and educational organization dedicated to the promotion and preservation of Sonoma County as one of the world's premier grape growing regions. Karissa joined Sonoma

County Winegrowers as Director of Marketing in September 2012 and was named President for the organization in 2013. Karissa earned a BS in Economics and an MBA in Marketing from Wharton School of Business at University of Pennsylvania. She has worked in marketing, brand management and business development for General Mills, Universal Studios, Mattel and Dairy Management. She is the owner of a 25 acre parcel in Bennett Valley, with five acres planted to grapes and is partner in a small winery, Argot Wines. Kruse is on the board of the Sonoma County Harvest Fair, Sonoma County Grape Growers Foundation, Sonoma County Tourism, Santa Rosa Chamber of Commerce, Wharton's Initiative for Global Environmental Leadership Alumni Advisory Group, Santa Rosa Junior College Viticulture Advisory Committee and a member of Leadership Santa Rosa Class 29.



GABRIELE LUDWIG

Panel Discussions: Sectorial Drought Impacts, Information Uses and Needs, and Decisions // Agriculture

Gabriele Ludwig is responsible for environmental and related issues at the Almond Board of California (ABC). She is staff liaison to the ABC's Environmental Committee which funds research projects

in air quality, water quality, environmental stewardship, and sustainability in relation to almond production. Gabriele is a member of EPA's Pesticide Program Dialogue Committee and its Pollinator Taskforce, and is Board Chair of the non-profit Coalition for Urban Rural Environmental Stewardship (CURES). She has worked for the consulting firm Schramm, Williams & Associates in Washington, DC on pesticide, food safety, and phytosanitary issues for a range of specialty crops. She received her Ph.D. in plant physiology from the University of California, Davis and her B.A. from Wellesley College.



EMILY LUSCOMBE

Panel Discussions: Sectorial Drought Impacts, Information Uses and Needs, and Decisions // Tribal Communities

Emily Luscombe is Environmental Specialist II for the Coyote Valley Band of Pomo Indians. She grew up in Mendocino County with a passion for environmental issues with a focus on the bioregions of

Northern California. She attended Connecticut College and obtained a B.A. in Environmental Studies and Anthropology in 2000. In 2005 she earned a Masters of Environmental Management from Flinders University of South Australia. In Australia she worked as an Environmental Project Officer for a large packaging company and did field work on invasive species.

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DAVID MEKO

Plenary Session: Current Drought-Related Science // Tree-ring Perspective

David Meko is a Research Professor in the Laboratory of Tree-Ring Research and a Professor in the School of Natural Resources at the University of Arizona. He uses tree-ring data and instrumental data to study the natural variability of climatic and hydrologic

systems on spatial scales from small watersheds to continents. A special research interest is the improvement of quantitative methods of reconstruction of streamflow from tree rings. He has developed extended records of streamflow for water resources agencies in the western U.S., and has published streamflow reconstructions for the Gila, Colorado and Sacramento Rivers. Recent research projects include riparian dendrohydrology of the Little Missouri River, tree-



PAT MULLEN

Panel Discussions: Sectorial Drought Impacts, Information Uses and Needs, and Decisions // Natural Resources – Environment, Energy, & Recreation

Pat Mullen is Pacific Gas and Electric Company's (PG&E) Central Coast Region Director and lead for the Los Padres Division. Mullen also leads the company's Agriculture

Task Force. Prior to this position, Mullen served as the chief of staff for the Chief Operating Officer and before that represented the company as the director of government relations for Power Generation, where he was responsible for supporting the company's permitting and governmental relations efforts for existing and new generation sources, including new power plants and renewable power resources.

A twenty year veteran of PG&E, Mullen brings his prior knowledge of the company, its service territory and its generation assets along with five years of experience with Duke Energy as western US Public Affairs Director. While at Duke, Mullen's responsibilities also included all public affairs, as well as assisting in developing and permitting new, natural gas fired combustion turbine power plants throughout the Western United States.

A 1986 graduate of California Polytechnic State University, San Luis Obispo, Pat holds both a Bachelor's and Master's degree in business administration from Cal Poly.



DAVID MURILLO

Keynote Speaker, Thursday lunch

David Murillo was named the director of the Mid-Pacific Region in December 2012. He oversees management of the Region's 11 water projects in the northern two-thirds of California, most of western Nevada and part of southern Oregon.

The Region's headquarters is located in Sacramento, Calif. Five area offices are located in Redding, Folsom, and Fresno, all in California; Klamath Falls, Ore.; and Carson City, Nev. Three specialized offices are the Mid-Pacific Construction Office in Willows, Calif.; and the Bay-Delta Office and Central Valley Operations Office, both in Sacramento.

The Region includes the multi-purpose Central Valley Project, one of the nation's most complex and highest-profile networks of dams, reservoirs, canals and hydroelectric powerplants. Extending 400 miles through northern and central California, the CVP provides

an average of about 5.5 million acre-feet of water annually for agriculture, municipal and environmental uses in the Sacramento and San Joaquin valleys, California's central coast region, and San Francisco Bay area. The CVP's 11 hydropower plants generate an average of about 4.5 billion kilowatt-hours a year.

Beginning in September 2010, Murillo served as Reclamation's deputy commissioner for operations, overseeing operations in five regions across 17 western states; the Native American and International Affairs Office; and Technical Resources, which includes the Technical Service Center, Research and Development Office, Power Liaison, and Dam Safety Office/Design, Estimating and Construction.

Murillo is originally from Yakima and graduated from Washington State University with a Bachelor of Science degree in mechanical engineering in 1984. He and his wife, Terri, have three adult children.



JUSTIN OLDFIELD

Panel Discussions: Sectorial Drought Impacts, Information Uses and Needs, and Decisions // Agriculture

Justin Oldfield is the California Cattlemen's Association's Vice President of Government Relations. The well-rounded agriculture experience that Justin adds to CCA is vital to the cattle industry, as his job provides

California ranchers, feeders and public lands permittees a clear voice in local, state and regulatory affairs. Beginning his work with CCA in April of 2007, Justin manages CCA's legislative and regulatory portfolio.

Justin and his wife, Julia, and son, Jackson, live on their family farm in Elk Grove, where they raise cattle, thoroughbred racehorses, nursery stock, wine grapes and hay.

Justin is a California State University, Sacramento, graduate. With a bachelors of arts in Government and International Relations, his past experience includes working for a large federal and state contractor, specializing in environmental remediation, water resources and public works projects. Justin has also worked on various high-profile government projects that taught him the regulatory process and about the many rules and regulations found in state and federal law.



STEPHEN H. OTTEMOELLER

Panel Discussion: Sectorial Drought Impacts, Information Uses and Needs, and Decisions // Municipal and Industrial Water and Utilities

Steve Ottemoeller has been the Water Resources Manager of the Friant Water Authority since 2008. His responsibilities include implementation of the Water

Management Goal of the San Joaquin River Settlement, representing Authority interests on Bay Delta issues and working on water policy issues that affect the water resources of the member agencies.

Ottemoeller is a graduate of California State University, Fresno where he earned a Bachelor of Science degree in civil engineering in 1980, and is a registered Professional Civil Engineer in California. Prior to moving to Friant Water Authority, Steve spent 23 years working for public water agencies in the central San Joaquin Valley. As General Manager of Madera Irrigation District, he was involved in early stages of the San Joaquin River Restoration litigation settlement negotiations. At Westlands Water District, he was involved in statewide water policy issues and was responsible for the district's water supply resources and water transfers. Before joining Friant, he worked as Director of Central Valley Water Resources for

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URS Corporation, an international engineering and consulting firm. Ottemoeller has been actively involved in numerous California water policy issues including the CalFed Bay-Delta process, implementation of the CVP Improvement Act, development of state-wide water transfer policies and negotiations of regional water rights settlements.



F. MARTIN RALPH

Moderator, Current Drought-related Science

Dr. F. Martin Ralph is a research meteorologist focused on understanding the physical processes that create extremes in precipitation ranging from flood to drought, and on advancing associated observations, predictions, climate projections and decision support

tools. A primary topic has been atmospheric rivers and their role in precipitation. From 2001 - 2013 he was Chief of the Water Cycle Branch at NOAA's Earth System Research Laboratory in Colorado where he led the development of the Hydrometeorology Testbed. He also managed NOAA's Science, Technology and Infusion Program, Chaired NOAA's US Weather Research Program Executive Committee, and led the creation of NOAA's Unmanned Aircraft Systems Program. In 2013 he moved to the University of California San Diego/Scripps Institution of Oceanography where he is Director of the "Center for Western Weather and Water Extremes" (CW3E).

Dr. Ralph has published more than 75 peer-reviewed scientific articles and championed the establishment of testbeds as a method to accelerate the development and infusion of new science and technology into weather and climate forecasting operations. He is an Elected Fellow of the American Meteorological Society.

He earned a B. S. (Meteorology) from the University of Arizona, Tucson, in 1984; M. S. and Ph.D. (Atmospheric Sciences) from the University of California at Los Angeles in 1987 and 1991 respectively.



KELLY REDMOND

Integrated Information Systems and Resources – Lessons from Other Regions: A Klamath Basin Integrated Drought Information System

Kelly T. Redmond was born in Wausau Wisconsin, raised in southwest Montana, received a B.S. degree in Physics from the Massachusetts Institute of Technology (1974), and M.S. (1977) and Ph.D. (1982)

degrees in Meteorology from the University of Wisconsin in Madison. He worked in the Atmospheric Sciences Department at Oregon State University from 1982-1989, the last 6 years as State Climatologist for Oregon, and served as President of the American Association of State Climatologists in 1989-90. In 2008 Dr. Redmond received the Applied Climatology Award from the American Meteorological Society (AMS), and was also elected a Fellow of AMS. Since 1989 he has been the Regional Climatologist at the Western Regional Climate Center located at the Desert Research Institute in Reno, and is also deputy Director.

His research and professional interests span every facet of climate and climate behavior, its physical causes and variability, how climate interacts with other human and natural processes, and how such information is acquired, used, communicated, and perceived.



KRISTA REGER

Panel Discussions: Sectorial Drought Impacts, Information Uses and Needs, and Decisions // Municipal & Industrial Water Utilities

Krista Reger, California Rural Water Association Trainer, has many years of experience training managers and utility operators. She has extensive knowledge in water conservation, groundwater protection, and source water protection. She has her B.S. in Natural Resources from Cornell University and her M.S. in Environmental Engineering from the University of Florida. She worked as a hydrogeologist for the South Florida Water Management District for six years focusing on water use, drought, and water conservation. She has been working for the California Rural Water Association for four years.



SARAH RYAN

Panel Discussions: Sectorial Drought Impacts, Information Uses and Needs, and Decisions // Tribal Communities

Sarah Ryan is the Environmental Director for the Big Valley Band of Pomo Indians and has worked for them since 2001. She is a graduate of the College of William and Mary in Virginia and is currently a resident

of Kelseyville. On behalf of the Tribe, she develops and manages its environmental protection programs which include lake water quality monitoring and evaluation of the trends, environmental information exchange, pesticide monitoring in native plants and support of native species. She also participates in local committees and workgroups including the TMDL stakeholders group, the Clear Lake Integrated Watershed Management Plan, and was until recently Chair of the Clear Lake Advisory Committee. She works closely with state and federal agencies on Tribal issues and leads a California Issues Workgroup for the US EPA Region 9 Tribal Operations Committee, working on policy issues having to do with environmental and cultural resource protection. Sarah is a grantwriter for her department and has brought in funding from various federal and state agencies including US Fish and Wildlife and CalEPA to address issues of environmental importance to the Tribe.



RICHARD SEAGER

Plenary Session: Drought Conditions and Forecasts // Update on Large-scale Dynamics of Current Drought

Richard Seager is the Palisades Geophysical Institute/Lamont Research Professor at Lamont Doherty Earth Observatory of Columbia University in Palisades, New York. After undergraduate studies at Liverpool

University in England he came to the United States in 1983 as a graduate student at Columbia. In his Ph. D work, completed in 1990, he used tropical atmosphere and ocean models to understand key features of the tropical climate. In 1991-92 he completed a postdoctoral appointment at the University of Washington before returning to Lamont, this time to stay. Professor Seager studies climate variability and change on seasonal to glacial-interglacial timescales. Using climate models, instrumental records and proxy reconstructions, he has studied the causes of droughts, floods and pluvials in recent decades and throughout the past millennium, the physical processes that couple the atmosphere to the ocean and

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land surface and the impact of agricultural practices on climate. Much of his current work aims to determine how hydroclimate will change in the near term future across the planet as a consequence of rising greenhouse gases, with a special focus on dry regions such as southwest North America, the Mediterranean region and the Middle East.



JAVIER SILVA

Panel Discussions: Sectorial Drought Impacts, Information Uses and Needs, and Decisions // Tribal Communities

Javier Silva served as the Tribal Environmental Director for the Sherwood Valley Rancheria's Tribal Environmental Program located in Willits, California. He was responsible for developing a

tribal environmental program through a grant provided by the Environmental Protection Agency. He worked on cross-media issues such as water, air, solid waste, emergency preparedness, forestry management, land management, utility management, archeology and cultural resource management.

He served as the Water/Air Technician for the Cortina Rancheria's Wintun Environmental Protection Agency, and as a Project Manager in the Building Sciences Division at ATC Associates in Sacramento. He was the Water Technician for the Sherwood Valley Rancheria.

Last year, he was the Transportation Director for the Potter Valley Tribe, responsible for transportation planning, project management and oversight, and addressing tribal concerns with local transportation entities.

In 2013, he returned to work for his tribe as the Environmental Director for Sherwood Valley Rancheria. He has been working on continuing the development of the Tribe's environmental program and building capacity for the Tribe to assert and exercise its sovereignty. This includes ensuring the protection of the Tribe's Traditional Ecological Knowledge through environmental protection. Silva studied Environmental Management at Mendocino College.



ANNE STEINEMANN

Forum Coordinator

Dr. Anne Steinemann is Program Manager at the Scripps Institution of Oceanography, U.C. San Diego, and Senior Research Scientist with the Cooperative Institute for Research in Environmental Sciences (CIRES) and NIDIS. Before coming to Scripps, she was Professor of Civil and Environmental Engineering, Professor of Public Affairs, and

Director of the Water Center at the University of Washington. She was a professor at the Georgia Institute of Technology, and a visiting professor at Stanford University, Florida Institute of Technology, and Linköping University in Sweden. Dr. Steinemann specializes in drought and water management, and has directed drought research and programs for more than 30 years throughout California. She received her B.S. in Civil and Environmental Engineering from U.C. Irvine, M.S. in Civil and Environmental Engineering from UCLA, and Ph.D. in Civil and Environmental Engineering from Stanford.



PETER ANTHONY STINE

Panel Discussions: Sectorial Drought Impacts, Information Uses and Needs, and Decisions // Natural Resources – Environment, Energy, & Recreation

Peter Stine spent the last 14 years within the USDA Forest Service Pacific Southwest Research Station executing long-range natural resources research programs in the

Sierra Nevada, more recently in guiding the Experimental Forest and Range network, and currently directing partnership projects with National Forest System, universities, tribes, and other parties engaged in our research activities. Research programs under his guidance and supervision involved multiple scientific disciplines and tended to span time frames of more than five years, many as long as ten or more. All of these programs included, as an integral component of the total research program, technology transfer programs. Each facet of the research program involved relevant management and policy issues and results were intended to contribute to these objectives.

As the Program Manager, National Coordinator, or Director of Partnerships he lead a team of scientists and collaborators in fashioning the research agenda for each major project. These activities included defining the research objectives and their attending management applications, setting project timelines and participation, setting budgets and personnel needs, and delivering scientific outcomes and other outreach products. Prior to working with the Forest Service he spent 5 years with the US Geological Survey and 13 years with the Fish and Wildlife Service.

Stine earned his Ph.D. in Geography at the University of California at Santa Barbara, 1995; M.S. in Wildland Resources Science, University of California, Berkeley, 1977; and B.S. in Forestry and Conservation University of California, Berkeley, 1975.

REBECCA SMYTH

Facilitator // Recommendations, Next Steps, and Action Items

Rebecca (Becky) Smyth is the West Coast Regional Director for the National Oceanic and Atmospheric Administration's (NOAA) Coastal Services Center and Office of Ocean and Coastal Resource Management, working to link information and technology with the people managing the west coast's ocean and coastal resources. Her projects with NOAA include building capacity of local and state managers along the west coast in order to plan for and mitigate coastal hazards and risks associated with climate change, and to improve coastal and ocean data and tools for ocean planning.

She is a contributing author for the coastal chapter of the recently published "Assessment of Climate Change in the Southwest United States: a Report Prepared for the National Climate Assessment" and co-author of the Southwest Chapter of the National Climate Assessment.

In her work supporting regional ocean partnership efforts along the west coast and nationally, Becky is a member of Executive Committee for the West Coast Governors' Alliance on Ocean Health.

Becky spent 7 years in Washington, DC as senior program analyst at the NOAA Ocean Service, responsible for legislative issues, agency strategic planning, policy development, and budget formulation. She started her career there as a John A. Knauss Sea Grant Fellow.

Becky has an M.S. in environmental coastal ocean science from the University of Massachusetts – Boston and bachelor's of science from Boston College.

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KIRSTEN THORNE

Panel Discussions: Sectorial Drought Impacts, Information Uses and Needs, and Decisions // Environment, Energy, & Recreation

Kirsten Thorne is the Manager of Environmental Strategy for Chevron, one of the world's largest integrated energy companies. Located at the company's headquarters in San Ramon, California, Kirsten is responsible for developing corporate-level environmental policy and enterprise strategy. Her focus areas include sustainability, environmental stewardship, freshwater management and corporate reporting.

Her past previous experience includes a Senior Advisor role with Chevron in Washington, DC. Working with external policy stakeholders, including think tanks, NGOs and academic and international institutions, Kirsten managed long-term environmental and energy policy trends as they related to Chevron's global operations.

In addition, Kirsten has a decade of policy, communications and public affairs work for Chevron's wholly-owned mining subsidiaries. Her responsibilities included working extensively on mine safety, environmental stewardship and community development issues.

Kirsten has a BA in art from Whittier College and a JD with an emphasis in environmental and land use law from Chapman University School of Law.

She lives with her husband and two daughters in Danville, California.



KEVIN V. WERNER

Moderator: Lessons from Other Regions; NOAA Drought Services California Assessment

Kevin Werner is NOAA Regional Climate Services Director, Western Region, in Seattle, Washington. He works to connect climate science to application and decision makers in the western United States. In the past, Kevin has worked in other parts of NOAA including the National Weather Service and the NOAA commissioned officer corps. In the NWS, Kevin worked primarily at the Colorado Basin River Forecast Center where he worked to connect water predictions and science with people and organizations that benefit from forecasts and understanding of the region's hydrology. Kevin has also worked to infuse new science and technology into river forecast operational procedures and methodologies. Kevin holds degrees in atmospheric science, mathematics, and public administration from the Universities of Washington and Utah. Kevin has also been active in his communities, most recently serving on the library board in Salt Lake City.



CARL WILCOX

Panel Discussions: Sectorial Drought Impacts, Information Uses and Needs, and Decisions // Environment, Energy, & Recreation

Carl G. Wilcox is Policy Advisor to the Director for the Delta at the California Department of Fish and Wildlife. He is responsible for water planning and policy formulation related to the Sacramento-San Joaquin Delta including being lead for DFW involvement in development of the Bay Delta Conservation Plan. He was formerly Bay-Delta Regional Manager and Water Branch Chief.

Wilcox has extensive experience implementing DFW regulatory and conservation planning programs. He managed DFW implementation of CALFED Bay-Delta Ecosystem Restoration Program, and has been responsible for numerous coastal wetland acquisition and restoration projects, as well as co-chair for the development of San Francisco Baylands Ecosystem Goals Project.