

Warren M. Washington is a senior scientist and head of the Climate Change Research Section in the Climate and Global Dynamics Division at the National Center for Atmospheric Research (NCAR). Born in Portland, Oregon, Washington earned a bachelor's degree in physics and a master's degree in meteorology from Oregon State University. After completing his doctorate in meteorology at Pennsylvania State University, he joined NCAR in 1963 as a research scientist. Washington's areas of expertise are atmospheric science and climate research, and he specializes in computer modeling of the earth's climate. He has published more than 100 papers in professional journals, is a consultant and advisor to a number of government officials and committees on climate system modeling, and a recipient of numerous awards. In May of 1995, he was appointed by President Clinton to a six-year term on the National Science Board, which helps oversee the National Science Foundation and advises the Executive Branch and Congress on science related matters. In 2002, he was appointed to the Science Advisory Panel of the U.S. Commission on Ocean Policy and the National Academies of Science Coordinating Committee on Global Change. Washington received a Lifetime Achievement Award from Raymond L. Orbach of the U.S. Department of Energy in August 2007. Warren's current research involves use of the Parallel Climate Model (PCM) and the Community Climate System Model (CCSM) to study the impacts of climate change in the 21st century.

Connie Woodhouse is an associate professor in the Department of Geography and Regional Development at the University of Arizona with a joint appointment at the Laboratory of Tree-Ring Research. I received a B.A. from Prescott College, an M.S. in geography from the University of Utah, and a Ph.D. in geosciences from the University of Arizona.

Gerald North is a Distinguished Professor at Texas A&M University's Department of Atmospheric Sciences and is Holder of the Harold J. Haynes Endowed Chair in Geosciences. His research interests include Climate analysis, hydrological modeling, Satellite remote sensing, mission planning and Statistical methods in atmospheric science. He holds a Ph.D. in Physics, University of Wisconsin, 1966

Dr. L. Ruby Leung is a Laboratory Fellow at the Pacific Northwest National Laboratory and an Affiliate Scientist at the National Center for Atmospheric Research. Dr. Leung's primary research focus is in regional climate modeling. She has led several multi-disciplinary projects to examine the impacts of climate variability and change and the effects of aerosols on the regional hydrological cycle.

Katharine Hayhoe has led a number of regional assessments examining climate impacts on energy and water supply, agricultural and natural ecosystems, and infrastructure and public health. She is currently serving as Lead Author for a National Synthesis commissioned by the White House. Her work has been presented before the U.S. Congress, cited by the IPCC Fourth Assessment Report, and highlighted by state and federal agencies as motivation for the development and implementation of climate-related policies.

Kathy Jacobs is the Executive Director of the Arizona Water Institute, a consortium of three Arizona universities focused on water-related research, education, and technology transfer related to water supply sustainability. She is also the Deputy Director of the

NSF Center for Sustainability of Arid Region Hydrology and Riparian Areas (SAHRA), and a professor in the University of Arizona's Soil, Water and Environmental Science Department. She has more than twenty years of experience as a water manager for the state of Arizona, including 14 years as the director of the Tucson Active Management Area. Her research interests include groundwater management, water policy, connecting science and decision-making, stakeholder engagement, and use of climate change and climate variability information for water management applications. She has served on five National Academy panels and wrote the water sector chapter for the U.S. National Assessment of the Impacts of Climate Change.

Dr. Robert M. Hirsch is the Associate Director for Water, US Geological Survey. In this capacity he is responsible for the USGS water science programs nationwide. These include the collection and management of basic hydrologic data, studies of hydrologic systems, and basic research on hydrologic processes. Dr. Hirsch was born in Highland Park, Illinois. He received his BA in Geology from Earlham College, an MS in Geology from the University of Washington, and Ph. D. in Geography and Environmental Engineering from Johns Hopkins University. Hirsch began his career with the USGS in 1976 as a hydrologist. He conducted and directed research leading to methods for analysis of: the risk of water-supply shortages, water-quality trends, transport of pollutants in rivers, and flood frequency. He has published numerous journal articles, USGS reports, book chapters and a text book. He also was instrumental in the design and initiation of USGS programs including the National Water-Quality Assessment Program, Global Change Hydrology Program, and Watershed Modeling Systems Program. In addition to his role as Associate Director of the USGS he also serves as co-chairman of the Subcommittee on Water Availability and Quality, of the Committee on Environment and Natural Resources of the National Science and Technology Council. He is a recipient of the Department of the Interior's Distinguished Service Award, has twice been conferred the rank of Meritorious Executive by the President of the United States, the 2006 recipient of the AWRA William C. Ackermann Medal for Excellence in Water Management and was elected a Fellow of the American Association for the Advancement of Science.

Robert Harriss is President and CEO of the Houston Advanced Research Center. He was formerly Senior Scientist and Director of the Institute for the Study of Society and the Environment at the National Center for Atmospheric Research, Boulder, CO. Previous appointments include a Harvard University postdoctoral fellowship and faculty appointments at McMaster University (Canada), Florida State University, the University of New Hampshire, and Texas A&M University. He also served as a Senior Scientist at the NASA Langley Research Center and as Science Director of the Mission to Planet Earth Program at NASA Headquarters. Dr. Harriss obtained a B.S. in Geology from Florida State University and a Ph.D. in Geochemistry from Rice University and has primary professional interests in sustainability science, engineering, and policy.

Bruce A. McCarl is Regents Professor of Agricultural Economics at Texas A&M University, a Fellow of the American Agricultural Economics Association plus a part of the IPCC team receiving the 2007 Nobel Peace Prize. Dr. McCarl works on the economic implications of global climate change and greenhouse gas emission reduction including aspects related to biofuels, as well as environmental, forestry and agricultural policy design.

Andrew Dessler is an atmospheric scientist with interests in both the science and politics of climate change. His scientific research revolves around climate feedbacks, in particular how water vapor and clouds act to amplify warming from the carbon dioxide that humans emit. His interest in the politics of climate change comes from spending the last year of the Clinton Administration as a Senior Policy Analyst in the White House Office of Science and Technology Policy. Based on that experience, he coauthored a book, *The science and politics of global climate change: A guide to the debate*. He is presently a professor in the Dept. of Atmospheric Sciences at Texas A&M University. His educational background includes a BA in physics from Rice University and a Ph.D. in chemistry from Harvard University. He did postdoctoral work at NASA Goddard Space Flight Center and spent nine years on the faculty of the University of Maryland.

Camille Parmesan is an associate professor with UT of Austin's Department of Integrative Biology. She holds a Ph.D. from UT's Department of Biology and conducted post-doctorate work at the National Center for Ecological Analysis and Synthesis (NCEAS), University of California at Santa Barbara (1996-1999). Parmesan's early research focused on multiple aspects of population biology, including the ecology, evolution and behaviors of insect/plant interactions. For the past several years, the focus of her work has been on current impacts of climate change in the 20th century on wildlife. Her work on butterfly range shifts has been highlighted in many scientific and popular press reports, such as in *Science*, *Science News*, *New York Times*, *London Times*, *National Public Radio*, and the recent BBC film series "State of the Planet" with David Attenborough. The intensification of global warming as an international issue led her into the interface of policy and science. Parmesan has given seminars in DC for the White House, government agencies, and NGOs (e.g., IUCN and WWF). As a lead author, she was involved in multiple aspects of the Third Assessment Report of the IPCC (Intergovernmental Panel on Climate Change, United Nations).

David J. Eaton received his Ph.D. in environmental engineering and geography from The Johns Hopkins University. Eaton teaches courses on systems analysis, environmental and energy policy, and nonprofit management in the LBJ School. He has lectured in twenty countries and conducted field research in fifteen nations. Eaton has written on rural water supply, international water resource conflicts, energy management, environmental problems of industries, management of emergency medical services, applications of mathematical programming to resource problems, insurance, and agriculture. His research focuses on sustainable development in international river basins, evaluation of energy and water conservation programs, and prevention of pollution. Among his recent publications are the *NAFTA Handbook for Water Resource Managers and Engineers*, *Emergency Medical Services in Travis County, Texas* and *The Impacts of Trade Agreements on State Provincial Laws*. Eaton's current research concerns U.S.-Mexico environmental cooperation, new methods for evaluation of air pollution emissions, joint management by Palestinians and Israelis of shared groundwater, and water conservation in Texas.

Jim Norwine is a professor of geography in the Department of Physics & Geosciences at Texas A&M where he teaches and conducts research in the fields of meteorology and climatology; natural resources and environment and the climatology of South Texas. He is the co-editor of *The Changing Climate of South Texas 1900-2100: Problems and*

Perspectives, Impacts and Implications. He holds a Ph.D. from the Indiana State University.

John Nielsen-Gammon holds a Ph.D. from the Massachusetts Institute of Technology. After a brief period as a researcher at the State University of New York at Albany, he joined the faculty at Texas A&M University in 1991. He was appointed Texas State Climatologist by then-Governor George W. Bush in 2000. Dr. Nielsen-Gammon's weather-related research involves studies of such phenomena as jet streams, extreme rainfall events, and coastal circulation systems. His air quality research includes field forecasting support, numerical simulation, and diagnostic analysis of ozone events in Houston and Dallas for the Texas Air Quality Studies (TexAQS) in 2000 and 2005-2006. Since becoming Texas State Climatologist in 2000, Dr. Nielsen-Gammon has worked on drought monitoring and forecasting, air pollution climatology, and improvements to the climate data record. He teaches courses in weather analysis, weather forecasting, and atmospheric dynamics. Dr. Nielsen-Gammon was named a Presidential Faculty Fellow by the National Science Foundation and the White House in 1996, and has also received a Distinguished Achievement Award in Teaching at Texas A&M University from the Association of Former Students.

Malcolm Cleaveland holds a MS in Forestry from Clemson University and a PhD in Geosciences at the University of Arizona where he conducted doctoral work at the Laboratory of Tree-Ring Research. He currently is professor at the University of Arkansas at Fayetteville. His work includes conducting research in dendroclimatology, the application of tree rings to the study of paleoclimate and numerous publications in the reviewed literature on dendrochronology and dendroclimatology.

Vijay Singh is professor in the Department of Civil Engineering and the Department of Biological and Agricultural Engineering at Texas A&M. His research interests include Surface-water Hydrology, Groundwater Hydrology, Hydraulics, Irrigation Engineering, Environmental Quality and Water Resources.

Dr. Morris is the Director of the Belle W. Baruch Institute for Marine and Coastal Sciences, Professor of Biological Sciences and Distinguished Professor of Marine Studies at the University of South Carolina. He served as a Program Officer at the National Science Foundation in the Division of Environmental Biology from 2003-2005 and was a visiting professor at Aarhus University, Denmark in 1990. His academic background includes degrees from the Dept. of Environmental Sciences, Univ. Virginia (BA); Yale Biology (MS); and the Yale School of Forestry and Environmental Studies (PhD). Prior to joining the faculty at USC in 1981, he worked as a student and a postdoctoral fellow at the Marine Biological Laboratory, Woods Hole, MA. Morris has authored 70 peer reviewed publications and has served on numerous committees and panels for various agencies, including the Irish National science foundation, and the IndoFlux committee for establishing a biogeochemical monitoring network for India. He is currently a member of a National Research Council Committee for the review of the Louisiana Coastal Protection Restoration Program and a Dept. of Energy climate change steering committee. Dr. Morris has been continuously funded by the National Science Foundation for his research at North Inlet, SC, and he is principal investigator of a National Oceanographic and Atmospheric Administration project focused on the effects of sea-level rise in Pamlico Sound, NC. He is a co-principal investigator of the NSF, Plum Island Long Term Ecological Research site in Massachusetts and of a Dept. of

Defense-funded environmental management study of the coastal environment of Camp Lejeune, NC.

Dr. Twilley is professor in the Department of Oceanography and Coastal Sciences and serves as Associate Vice Chancellor of Research and Economic Development to develop the 'Coastal Sustainability Agenda' at LSU. Most of Dr. Twilley's research has focused on coastal wetlands both in the Gulf of Mexico, throughout Latin America, and in the Pacific Islands. Dr. Twilley has published over 100 articles including several documents on global climate change, coastal restoration, and ecosystem ecology. He is Distinguished Professor in Louisiana Environmental Studies at LSU and directs the Shell Coastal Environmental Modeling Laboratory. Dr. Twilley received his PhD in 1982 in plant and systems ecology from the University of Florida, and performed his post-doc studies at University of Maryland on the Chesapeake Bay. Presently Dr. Twilley heads up the Coastal Louisiana Ecosystem Assessment and Restoration program sponsored by DNR that is developing ecosystem models coupled with engineering designs to forecast the rehabilitation of coastal and wetland ecosystems.

Dr. James Tolan is a Fisheries Ecologist with Texas Parks and Wildlife Department, in the Coastal Fisheries Division. He is also an Adjunct Professor in the Physical and Life Sciences Department at Texas A&M University-Corpus Christi. His academic background includes degrees from Corpus Christi State University (BA in Biology); Texas A&M University – Corpus Christi (MS in Marine Science); and the Oceanography and Coastal Sciences Department at Louisiana State University (PhD). Prior to joining TPWD in 1998, Dr. Tolan's research interests focused primarily on the early-life history of marine fish larvae, fisheries reproduction, fisheries oceanography, and understanding the relationships between early survival of fishes and their planktonic environment. His current research seeks to integrate fisheries-dependent harvest information and fisheries-independent monitoring data with long-term hydrologic data sets in order to determine the amounts of freshwater inflow necessary to support "ecologically sound environments" within each of the 8 major estuaries along the Texas coast. Dr. Tolan currently serves on numerous boards and oversight panels tasked with quantifying the effects of freshwater inflow into coastal environments, and the biological implications of human-induced modifications to freshwater inflow.

Dr. Denise Reed is a Professor in the Department of Earth and Environmental Sciences at the University of New Orleans. Her research interests include coastal marsh response to sea-level rise, the contributions of fine sediments and organic material to marsh soil development, and how these are affected by human alterations to marsh hydrology. She has worked on coastal issues in northwest Europe, southern Chile and the Atlantic, Pacific and Gulf coasts of the US and has published the results in numerous papers and reports. She is involved in restoration planning both in Louisiana and in California, and in scientifically evaluating the results of restoration projects. Dr. Reed has served on numerous boards and panels concerning the effects of human alterations on coastal environments and the role of science in guiding ecosystem restoration.

Dr. Hugo A. Loaiciga is a consulting hydrologist and Professor of Geography, UCSB. His research over the last 30 years has covered the areas of surface water and ground water interactions at regional scales, including climatic forcing and its effect on regional aquifers, river basins, and water resources management.

Dr. Dries began her career as a biologist by obtaining a B.S. in Zoology and Ph.D. in Behavioral and Evolutionary Ecology at the University of Texas at Austin under Drs. Mike Ryan, David Hillis, and Jim Bull. Her research there focused on the effects of sexual and natural selection on evolution and extinction of freshwater fishes. Her first postdoctoral project lured her into experimental evolution of *Drosophila melanogaster* under Dr. Bill Rice. Her second postdoctoral project was studying the systematics of spring and stream dwelling *Xiphophorus* fishes under Dr. Molly Morris. She currently manages the protection and recovery of the Barton Springs Salamander, *Eurycea sosorum*.

Dr. Robert Mace is the director of the Groundwater Resources Division at the Texas Water Development Board and has over 15 years of experience working with Texas's groundwater resources. Dr. Shirley Wade is a hydrogeologist in the Groundwater Resources Division at the Texas Water Development Board and works with modeling the state's groundwater resources.

Dr. David Yoskowitz is Associate Professor of Economics in the College of Business. His research and policy work centers on environmental, ecological, and natural resource economics as well as microeconomic development and border economics. He has conducted extensive work in the area of water markets and allocation mechanisms. He is currently co-leading an effort to inventory and value ecosystem services in the Gulf of Mexico region as well as develop a better understanding of the interaction of the Gulf of Mexico economies.

J. T. Andrew is the Executive Manager for Climate Change at the California Department of Water Resources. His previous management positions include Water Quality Manager and Southern California Regional Coordinator for the CALFED Bay-Delta Program. He holds degrees in civil engineering and public policy from the University of California at Berkeley.

Ken Rainwater is the Director of the Texas Tech University Water Resources Center and a Professor in the Department of Civil and Environmental Engineering. He is a registered Professional Engineer in Texas and has a B.S. in Civil Engineering from Rice University (1979), and M.S. (1982) and Ph.D. (1985) in Civil Engineering from the University of Texas at Austin. Ken has 22 years of experience in water resources and environmental engineering. He teaches courses in environmental engineering, engineering hydrology, water systems design, groundwater hydrology, groundwater contaminant transport, and water resources management. His research expertise is in problems of groundwater quantity and quality, remediation of soil and groundwater contamination, and water resources management. His research has been funded by the Environmental Protection Agency, Department of Energy, Department of Defense, Bureau of Reclamation, Texas Department of Transportation, Texas Commission on Environmental Quality, and Texas Water Development Board. He has been honored with several teaching award at Texas Tech, including with the Abell Faculty Teaching Award and the President's Excellence in Teaching Award.

Dr. Arnold Vedlitz holds the Bob Bullock Chair in Government and Public Policy and is Director of the Institute for Science, Technology and Public Policy at the George Bush

School of Government and Public Service. He holds joint appointments as a professor in the Department of Political Science and as a research professor in the College of Medicine at the Texas A&M Health Sciences Center. He is Director of the Technology and Policy Division of the Texas Engineering Experiment Station and Director of the Policy Division of the Texas Transportation Institute. He is principal investigator, co-principle investigator and senior research scientist on externally funded research projects totaling more than \$8 million. His teaching and research focuses on science and technology policy, minority politics, public policy, inter-group conflict, American political behavior, urban politics, and political psychology.

Ken Kramer is the Director of the Lone Star Chapter of the Sierra Club. In his capacity as Chapter Director, Dr. Kramer is responsible for coordinating the state level activities of the Sierra Club, and he serves as a liaison between the Sierra Club and Texas state officials whose actions shape environmental and natural resources policies. Dr. Kramer received a B.A. in History with a minor in Government from Texas Lutheran College (now Texas Lutheran University) in Seguin. He was awarded an M.A. in Political Science from Stephen F. Austin State University in Nacogdoches, Texas and then served in the United States Army. He received his Ph.D. in Political Science in 1979 from Rice University. His dissertation focused on the implementation of federal air and water pollution control policy in Texas.

Following his doctoral work at Rice, Dr. Kramer served on the government faculty at Angelo State University in San Angelo and later as a Visiting Assistant Professor of Political Science at Texas A&M University. He worked as a public policy consultant in Austin, serving as a lobbyist for the Sierra Club and as an environmental policy researcher, from 1982 until 1989 - at which time he became the Club's first Lone Star Chapter Director.

Dr. Kramer has served on numerous advisory committees to state and local agencies and officials, including the Governor's Task Force on Hazardous Waste Management (1984), the Municipal Solid Waste Management and Resource Recovery Advisory Council (1983-1991), and the Joint Select Committee on Toxic Air Emissions and the Greenhouse Effect (a 1989-1990 interim legislative study committee to which he was appointed by House Speaker Gib Lewis). He co-chaired the Texas Natural Resource Conservation Commission's Task Force 21, the primary committee advising the TNRCC (now called the Texas Commission on Environmental Quality or TCEQ) on industrial air quality, water quality, and waste management issues, until 1995. He was also the co-chair of the TNRCC's Waste Reduction Advisory Committee, which helped to guide the pollution prevention efforts of that agency. Dr. Kramer also served on the state's 2003-2004 Water Conservation Implementation Task Force.

Carter Smith was named executive director of the Texas Parks and Wildlife Department on Dec. 5, 2007. Prior to this, Smith had been with The Nature Conservancy of Texas since 1998 and has been the state director since 2004. Prior to his promotion to state director, Smith served as Director of Conservation Programs where he was responsible for conservation, external affairs and science programs. Before working at the Nature Conservancy, he was the first executive director of the Katy Prairie Conservancy and continues to serve on their Advisory Board. Smith is a

native of Central Texas and began his career in 1992 at the Texas Parks and Wildlife Department as a management intern, assisting in the Private Lands and Public Hunting programs. He has a wildlife management degree from Texas Tech and a master's degree in conservation biology from Yale University. Smith has served on numerous science, conservation, land trust and advisory councils. Besides the Katy Prairie Conservancy, he has served on the Texas Land Trust Council and advisory boards for Texas Tech, Texas A&M and Texas State University. Most recently, he served on TPWD's State Parks Advisory Committee.