

*The Ethics of Communicating Scientific Uncertainty:  
Understanding How Scientists, Environmental Lawyers, and Journalists Treat Uncertainty*

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**Participant Biographies**

**Jay Austin** is a Senior Attorney at the Environmental Law Institute, directing ELI's Program on the Constitution, Courts, and Legislation. In that role, he produces scholarly research and commentary on environmental litigation; key areas of constitutional law, including the Commerce Clause, Fifth Amendment takings, and Article III standing; and on proposals to amend major federal laws like the National Environmental Policy Act and Endangered Species Act. Based in Portland, Oregon, he has local expertise on environmental issues in the Pacific Northwest, and also maintains specialties in water pollution law, ocean and coastal law, EIA and other procedures for public participation in environmental decision-making. Jay holds a B.A. in political philosophy from James Madison College at Michigan State University, and a J.D. from the University of Virginia School of Law.

**Mona Behl** is the Research Coordinator at Texas Sea Grant. At Texas Sea Grant, she leads the program's research grant, scholarship and fellowship opportunities, while also contributing to the program's state and general reporting efforts. Her research interests include air-sea interaction, thermohaline circulation and its role in global climate change, ocean policy, coastal restoration and management, decision making under uncertainty, climate change risk communication, mitigation and adaptation, water resources management, and science policy and education. Before joining Texas Sea Grant, she was a visiting fellow with the American Meteorological Society Policy Program in Washington D.C. and an adjunct professor with the American Public University, WV. Behl secured her Ph.D. in Physical Oceanography from Florida State University, and her bachelor and master degrees in Physics (Honors) from the Center of Advanced Studies in Physics from Panjab University in India.

**Seth Borenstein** is a science writer who covers climate change for the Associated Press and is an adjunct professor at New York University. He was a member of an AP Gulf of Mexico oil spill reporting team that won the 2010 George Polk Award for Environment Reporting and also was part of a team of finalists for the 2004 Pulitzer Prize for his coverage of the Columbia space shuttle disaster. A science and environmental journalist for more than 20 years, covering everything from hurricanes to space shuttle launches, Borenstein has also worked for Knight Ridder Newspapers' Washington Bureau, The Orlando Sentinel, and the Sun-Sentinel in Fort Lauderdale. He has co-authored books on hurricanes and popular science. Borenstein received a B.S. in Journalism from Boston University.

**James Bruggers** is an environmental news reporter at *The Courier-Journal*. For over 15 years, he has covered a variety of environmental issues for *The Courier-Journal*, including air quality, water quality, energy, climate change and natural resources. Bruggers served for 13 years as a board member for the Society of Environmental Journalists and lead as board president for two years. Bruggers has won numerous reporting awards. In 2013, his work was honored by the Society of Environmental Journalists Annual Awards for Excellence in the large market, beat reporting category, and by the Society of Professional Journalists Pro Chapter. His work on railroad workers and brain damage was a finalist for the 2001 AP Managing Editor's Public Service Award. In 2004, he won the Thomas Stokes Award, the Renewable Natural Resources Foundation's Excellence in Journalism Award, and the two Best-of-Gannett Awards for the series, "Toxic Air: Linger Health Menace." Bruggers is a graduate of the Forestry and Journalism programs at the University of Montana, where he also earned an M.S. in Environmental Studies.

**David Bussard** is a senior executive in the U.S. Environmental Protection Agency (EPA). He is the Director of the Washington Division of the National Center for Environmental Assessment (NCEA) in EPA's Office of Research and Development (ORD). His Division develops reviews of the toxicity and dose-response of chemicals of concern to EPA, systematically reviewing the available data from animal bioassays, human epidemiology studies, and related studies of the biochemical or other mechanisms by which the chemicals being assessed may cause toxic effects. Examples include trichloroethylene, tetrachloroethylene and diesel engine exhaust. His Division also develops methods for such assessments and methods for EPA exposure analysis. Bussard was co-chair of the group under the World Health Organization that just released a document on how uncertainty could be characterized in the analysis of toxicity data. David was previously the Director of EPA's Hazardous Waste Identification Division, Director of the Waste Management Division, a regulatory project manager in the Office of Toxic Substance and a policy analyst in EPA's Office of Policy and Evaluation. He was closely involved in the development of most aspects of the regulatory structure for ongoing hazardous waste generation and management. He also represented EPA in negotiations over international movements of hazardous waste. Bussard attended Harvard's Kennedy School of Government and received his Bachelors of Arts in Biochemistry from Harvard University. He was also on the staff of the Harvard Faculty Project on Regulation.

**Edward Carney** is the Scientific Director for Toxicology Research at The Dow Chemical Company (Midland, MI), and also leads Dow's Predictive Safety Assessment program. His research interests include in vitro developmental toxicity, developmental toxicokinetics, and integrated approaches to predict toxicity using in vitro and in silico methods. He has published over 90 peer-reviewed papers to date and holds numerous external positions, including current memberships on EPA's Chartered Science Advisory Board and Board of Scientific Counselors, the European Center for the Validation of Alternative Methods (ECVAM) Science Advisory Committee, and The Hamner Institutes Board of Directors. He is a Past President of the Teratology Society and the Society of Toxicology's Reproductive & Developmental Toxicology Specialty Section, and previously served on the Board of Scientific Counselors for the US National Toxicology Program. He is also an adjunct professor in the University of Michigan School of Public Health, and regularly lectures in the University of Surrey (UK) Master's Programme in Toxicology. He obtained his Ph.D. in reproductive physiology from Cornell

University and conducted postdoctoral research in molecular developmental biology at the Samuel Lunenfeld Research Institute in Toronto.

**Leslie Carothers** is a Visiting Scholar at the Environmental Law Institute, following three years as a scholar-in-residence at Pace Law School. Carothers served as President of the Environmental Law Institute from 2003 to July, 2011. During her tenure, ELI increased its focus on emerging issues such as water supply, energy and climate policy, oceans governance, and the challenge of emerging technologies such as nanomaterials. She also served for 11 years as Vice President, Environment, Health, and Safety at United Technologies Corporation, Commissioner of Environment for the State of Connecticut, and Senior Counsel for PPG Industries, Inc. She began her environmental career at the U.S. EPA in Washington and held policy and management positions at headquarters and in the New England regional office. She holds degrees from Smith College, Harvard Law School (LLB) and George Washington University Law School (LLM). She is a member of the Board of Directors of the Center on Climate and Energy Solutions.

**Joe Casola** is the Staff Scientist and Program Director of Science and Impacts at the Center for Climate and Energy Solutions. For the past 12 years, Casola has worked with C2ES to help assess and communicate the current state of knowledge regarding climate change and its associated impacts, as well as promote actions that strengthen climate resilience. Before C2ES, Casola completed a postdoctoral fellowship at the National Research Council, contributing to the America's Climate Choices reports. He also spent extensive time working with ICF International, working with a range of local, federal, and international clients to assess and manage risks arising from climate variability and change. Additionally, Casola has contributed to several science education, outreach, and training projects, including the EPA's climate change website, lectures for the American Bar Association, and training sessions for the Nuclear Regulatory Commission. He earned a Ph.D. and a Master of Science degree in atmospheric sciences from the University of Washington, and he holds a Bachelor of Science in chemistry from Duke University.

**Joe S. Cecil** is a Senior Research Associate and Project Director in the Division of Research at the Federal Judicial Center. Currently he is directing the Center's Program on Scientific and Technical Evidence. As part of this program he served as principal editor of the first two editions of the Center's Reference Manual on Scientific Evidence, a third edition of which was recently published in collaboration with the National Academies. He has served as a member of several panels of the National Academy of Sciences, including the Committee on Identifying the Needs of the Forensic Science Community, and presently is serving as a member of the Committee on Science, Technology & Law. He is currently directing a research project that examines the difficulties that arise with expert testimony in federal courts, with an emphasis on clinical medical testimony and forensic science evidence. Other areas of research interest include access to federal courts, federal civil and appellate procedure, jury competence in complex civil litigation, and assessment of rule of law in emerging democracies. Dr. Cecil received his J.D. and a Ph.D. in psychology from Northwestern University.

**Gail Charnley** is an internationally recognized scientist working for HealthRisk Strategies. She has over 30 years of experience in chemical, biological, and social policy aspects of environmental and public health protection. Charnley's areas of focus include safety of

chemicals in food, environmental media, work environments, and consumer products. She serves on the National Academy of Sciences Board on Environmental Studies and Toxicology and has an appointment as a Lecturer at the Yale School of Public Health. She has served on numerous peer review panels convened by the Environmental Protection Agency, the Food and Drug Administration, and Health and Welfare Canada. She was previously the executive director of the Presidential/Congressional Commission on Risk Assessment, and she served as the director of the Toxicology and Risk Assessment Program at the National Academy of Science/National Research Council. She received her A.B. in Biochemistry from Wellesley College and a Ph.D. in Toxicology from MIT.

**John Cruden** is the fourth President of the Environmental Law Institute (ELI). Mr. Cruden joins ELI from the U.S. Department of Justice, where he served as the Deputy Assistant Attorney General, Environment and Natural Resources Division, a position he had held since 1995. He is a member of the bars of the District of Columbia and California, a number of federal courts, and the U.S. Supreme Court. At the Department of Justice, Mr. Cruden supervised all federal civil environmental litigation involving agencies of the United States, and oversaw the Environmental Enforcement Section and Environmental Defense Section. He has personally litigated and led settlement negotiations in numerous environmental cases, many with reported decisions. Prior to becoming Deputy Assistant Attorney General, Mr. Cruden was Chief, Environmental Enforcement Section. Mr. Cruden has served as the President of the District of Columbia Bar, the second largest bar in the nation, and Chairman of the ABA Section of the Environment, Energy, and Natural Resources. He has also served on the Board of the National Conference of Bar Presidents and is a current member of the Judicial Conference of the District of Columbia Circuit's Standing Committee on Pro Bono Legal Services. In 2007 he was listed by a national magazine as one of the top 500 lawyers in America. He was raised in Michigan and is a graduate of the United States Military Academy, University of Santa Clara (summa cum laude, 2006 Alumni Special Achievement Award), and University of Virginia (honors).

**Judith Curry** is a professor and former Chair of the School of Earth and Atmospheric Sciences at the Georgia Institute of Technology. Her research interests include hurricanes, remote sensing, atmospheric modeling, polar climates, air-sea interactions, and the use of unmanned aerial vehicles for atmospheric research. She is a member of the National Research Council's Climate Research Committee. Curry is the co-author of *Thermodynamics of Atmospheres and Oceans* (1999), and co-editor of *Encyclopedia of Atmospheric Sciences* (2002), as well as over 140 scientific papers. Among her awards are the Henry G. Houghton Research Award from the American Meteorological Society and the Presidential Young Investigator Award from the National Science Foundation. Curry graduated cum laude from Northern Illinois University with a Bachelor of Science degree in Geography. She earned her Ph.D. in Geophysical Sciences from the University of Chicago.

**Michael Dworkin** is a Professor of Law at Vermont Law School and Director of the Institute for Energy and the Environment. He began his legal career as a law clerk for Judge Catherine Kelly of the District of Columbia Court of Appeals. After his clerkship, he spent five years in the EPA's Office of General Counsel, where he focused on the development and appellate defense of standards that reduced air and water pollution, including appellate defense of the rules that removed most toxic metals from U.S. waste streams. In 1984, he joined the Vermont Public

Service Board, where he represented the Board in litigation before the Federal Communications Commission and as a hearing officer. From 1988 to 1995, he served as general counsel of the Vermont Public Service Board. In 1995, he became general counsel and a managing partner in Riser Management Systems, LP, an engineering and consulting firm. He returned to public service in 1999 as the chair of the Vermont Public Service Board, before joining the faculty at VLS. He is a director of the Vermont Energy Investment Corporation and a former director for the American Council for an Energy Efficient Economy and of the Electric Power Research Institute. He also serves on the Board of Directors of VELCO, which manages all electric transmission facilities in Vermont. Professor Dworkin earned his BA degree, *summa cum laude*, from Middlebury College and his J.D., *cum laude*, from the Harvard Law School. Michael Dworkin, with Benjamin Sovacool, has authored *Global Energy Justice* which is expected to be released by Cambridge University Press in approximately two weeks.

***E. Donald Elliott*** is Professor (Adjunct) of Law at Yale Law School and a leading academic scholar, as well as practitioner, in the fields of administrative and environmental law. He is also senior of counsel in the Washington D.C. office of Covington & Burling LLP, and co-chair of the firm's Environmental Practice Group. From 2003 until he joined Covington in 2013, he was a partner in Willkie Farr & Gallagher LLP, chairing the firm's worldwide Environment, Health and Safety Department. Elliott is a Senior Fellow of the Administrative Conference of the United States (ACUS) and an elected member of the American College of Environmental Lawyers, as well as a member of the boards of the Environmental Law Institute, the Center for Clean Air Policy, and NYU's Institute for Policy Integrity. From 1989 to 1991, Elliott served as Assistant Administrator and General Counsel of the U.S. Environmental Protection Agency (EPA). In 1993, he was named to the first endowed chair in environmental law and policy at any major American law school, the Julien and Virginia Cornell Chair in Environmental Law and Litigation at Yale Law School. From 2003-2009, he was a member of the National Academy of Sciences Board on Environmental Studies and Toxicology, which advises the federal government on environmental issues. He is the author or co-author of seven books and has published more than 70 articles in professional journals. He earned both his B.A., *summa cum laude* and Phi Beta Kappa, and his J.D. from Yale.

***Eric Falquero*** is the managing editor for Street Sense, DC's homeless newspaper. He reports on environmental justice issues and other intersections of conservation and poverty. He is pursuing independent research on the cultural impact of the relationship between energy and the environment in his home state of West Virginia. Mr. Falquero received his BFA in Graphic Design from Marshall University and volunteers with ELI's communications department.

***John Fialka*** is the Editor of ClimateWire, a section of Environment & Energy Publishing which provides top-tier coverage of national and global climate issues. His main areas of focus include US state programs, US federal legislation, the development of a post-Kyoto climate regime, Kyoto protocol implementation issues, natural resource effects from a changing climate and how corporations are adapting to a greenhouse gas constrained world. ClimateWire also reports on: alternative energy finance, research and deployment; US federal agency programs, and the science of climate change. Fialka previously worked for the *Wall Street Journal* as an energy and environment reporter.

**Nancy Gaarder**, a print reporter her entire career, began at her hometown paper, The St. Joseph, Missouri *News-Press & Gazette*, as a high school copy clerk in the 1970s. She worked her way up to become the first female City Editor, News Editor and, eventually, Interim Executive Editor. In 1995, Gaarder was recruited by *The Omaha World-Herald* to join their City Desk. In 2001, Gaarder became a reporter, covering energy, the environment and weather. Today, she serves as *The World-Herald's* full-time weather reporter, a focused beat created in response to high reader interest in weather. Gaarder has served as member of the Society of Environmental Journalists since 2003 and as the president of the Northwest Missouri Press Association. A graduate of the University of Missouri School of Journalism, Gaarder also served as a Peace Corps volunteer in Cameroon.

**George Gray** is a Professor at the George Washington University Milken Institute School of Public Health. In both academic and policymaking settings, Professor Gray has long been committed to the effective use of science to inform public health choices, and emphasizes the importance of communicating those choices effectively to citizens, journalists, and lawmakers. Risk analysis, including the tradeoffs that must be made when risks exist on both sides of a decision, has been a core component of that work. Prior to joining the Milken Institute SPH in 2010, Professor Gray served as assistant administrator for the EPA's Office of Research and Development and as the agency science advisor, promoting scientific excellence in EPA research, advocating for the continuing evolution of the agency's approach to analysis, and encouraging programs that provide academic research to support EPA's mission. His areas of focus included nanotechnology, ecosystem research, the influence of toxicology advances on testing and risk assessment, and sustainability. From 2001 to 2005, Professor Gray was executive director of the Harvard Center for Risk Analysis, and a member of the faculty at the Harvard School of Public Health. Gray received his B.S. in Biology from the University of Michigan, and his M.S. (Toxicology) and Ph.D. from the University of Rochester School of Medicine and Dentistry.

**Mark Hertsgaard** has written about global warming for twenty years for outlets including the *New Yorker*, *Vanity Fair*, *Time*, *NPR*, the *BBC* and *The Nation*. Called "one of America's finest reporters" by Barbara Ehrenreich, Hertsgaard is the author of six books that have been translated into sixteen languages, including *HOT: Living through the Next Fifty Years on Earth*, *On Bended Knee: The Press and the Reagan Presidency* and *Earth Odyssey: Around the World In Search of Our Environmental Future*. He is a Fellow of the New America Foundation, the environment correspondent for *The Nation*, and a co-founder of the group, Climate Parents. Hertsgaard received a B.A. from The Johns Hopkins University.

**Jim Hilbert** is founder and executive director of the Center for Negotiation & Justice at the William Mitchell College of Law. He has served as a consultant and advisor to community organizations, civil rights groups, government agencies, and Fortune 500 companies throughout the world. Hilbert currently teaches Negotiation, Transactions & Settlements, International Negotiation & Dispute Resolution, and Advanced ADR at William Mitchell, and has been a Guest Lecturer at the University of Minnesota Carlson School of Management, where he taught negotiation. He is a former Legal Fellow at the Institute on Race and Poverty at the University of Minnesota. Professor Hilbert is also the co-director of the Expert Witness Training Academy, which is funded by the National Science Foundation and provides training to climatologists on

communicating in courtrooms and legislative hearings, and is co-director of the LL.M. Program at William Mitchell. In addition, he is the vice president of professional services for Alignor, an international negotiation firm with offices in the United States and India.

**Cheryl Hogue** serves as the Assistant Managing Editor Chemical & Engineering News. Her areas of expertise include U.S. EPA regulation of chemicals, international climate change policy, global environmental treaties, governance of geoengineering, EPA research, and federal regulatory policies. Hogue served as the vice president for membership for the Society of Environmental Journalist from 2006-2009 and was named a Carnegie Mellon University Steinbrenner Institute media fellow in 2008. She previously was named an environmental media fellow by Vermont Law School and a science writing fellow by Woods Hole Marine Biological Laboratory. Hogue received an M.S. in environmental sciences and policy from Johns Hopkins University and a B.S. in biology from the College of William and Mary.

**Don Hopey** has covered the environment for the Pittsburgh Post-Gazette since 1993. He's written about through-hiking the Appalachian Trail; an 80-mile canoe trip on the federal Wild and Scenic section of the Allegheny River; baseball and politics in Sandanista Nicaragua; post-Soviet era pollution in Eastern Europe; and in southwestern Pennsylvania the destruction of historic homes due to subsidence caused by longwall mining, increased mortality downwind from coal-burning power plants and other industrial facilities, and water, air and radiation issues related to Marcellus Shale gas drilling and fracking. He spent 1995 as a Ted Scripps Fellow at the University of Colorado at Boulder, and has been a member of the Society of Environmental Journalists since 2000, on the board of directors since 2004 and board president in 2013 and 2014. Hopey is co-author of "Exploring the Appalachian Trail: Mid-Atlantic States," one of five guidebooks in a series that highlights the trail's social and natural history. He has taught an environmental issues and policy class with a writing component at the University of Pittsburgh for 15 years, and for the last six summers has been an instructor for the public lands issues and fly-fishing segment of the Pitt Honors College Yellowstone Field Course.

**James Hurrell** is currently the Director of The National Center for Atmospheric Research (NCAR). He is also a Senior Scientist in the Climate and Global Dynamics Division (CGD). He is the former head of the NCAR Earth System Laboratory, Chief Scientist of Community Climate Projects in CGD, the former Director of CGD, and he is currently Co-Chair of the World Climate Research Programme Project on Climate Variability and Predictability. Hurrell's research has centered on empirical and modeling studies and diagnostic analyses to better understand climate, climate variability and climate change. He has authored more than 85 peer-reviewed journal articles and book chapters and has given more than 130 professional invited and keynote talks. He is a Highly Cited Researcher (Thomson-ISI), a Fellow of the American Geophysical Union (AGU), the American Meteorological Society (AMS), and the Royal Meteorological Society (RMetS). He is the recipient of the AMS's prestigious Clarence Leroy Meisinger Award, and currently serves on the AMS Council as well as numerous other national and international scientific committees. Hurrell received his M.S. and Ph.D. in Atmospheric Science from Purdue University, and his B.S. in Mathematics and Earth/Space Science from the University of Indianapolis.

**Paul Huttner** is chief meteorologist for Minnesota Public Radio since 2007. Huttner has worked as a broadcast meteorologist for 25 years at TV and radio stations including WCCO-TV in Minneapolis, WGN-TV in Chicago, and KGUN-TV in Tucson. Paul covered the great Halloween Mega-Storm of 1991 in the Twin Cities and the deadly Chicago heat wave of 1995. Paul is a graduate of Macalester College in St. Paul and holds a BA in Geography with an emphasis in meteorology. Paul is a member of the American Meteorological Society (AMS) and has been awarded the AMS Television Seal of Approval. In 2008 Huttner earned AMS's Certified Broadcast Meteorologist (CBM) designation, the highest AMS professional certification for weather broadcasters. Huttner presented on The Great Duluth Flood of June 19-20, 2012 at the 2013 AMS Annual Conference. Also in early 2013 Huttner launched MPR's Climate Cast, a regular weekly radio segment featuring reporting and analysis on evolving climate science. Huttner is featured as a "Scientist in Focus" in the Guardian in August 2014.

**Gregory Jaffe** is the Director of the Project on Biotechnology for CSPI. Jaffe came to CSPI after serving as a Trial Attorney for the U.S. Department of Justice's Environmental and Natural Resources Division and as Senior Counsel with the U.S. EPA, Air Enforcement Division. He is a recognized international expert on agricultural biotechnology and biosafety, and has published numerous articles and reports on those topics. He has worked on biosafety regulatory issues in the U.S. and throughout the world, including the African countries of Kenya, Uganda, Tanzania, Mali, Ghana, Malawi, South Africa, Burkina Faso, and Nigeria. He was a member of the Secretary of Agriculture's Advisory Committee on Agricultural Biotechnology and 21st Century Agriculture from 2003-2008 and was reappointed to a new term in 2011. He was also a member of FDA's Veterinary Medicine Advisory Committee from 2004-2008. In addition, he has provided his biosafety expertise for projects involving the International Food Policy Research Institute, the World Bank, and the UNEP-GEF Biosafety Project. Jaffe earned his BA with High Honors from Wesleyan University in Biology and Government and received a J.D. from Harvard Law School.

**Michael Kavanaugh**, Ph.D., P.E., BCEE, WEF Fellow, is a principal environmental engineer based in California with more than 35 years of consulting experience in the areas of water quality, water treatment, and groundwater remediation. He currently serves as a consultant with Geosyntec. He has served a highly diverse group of private and public sector clients directly, through industry associations, and through attorneys. Dr. Kavanaugh has contributed to over 80 technical publications and more than 150 presentations to audiences that included congressional and state committees. Currently, he is an instructor for the Princeton Groundwater Course and a consulting professor in the Stanford University Civil and Environmental Engineering Department. He also serves on the Board of Directors for the Environmental Law Institute and as the chair of the National Research Council's Committee on Future Options for the Nation's Subsurface Remediation Efforts. Dr. Kavanaugh received his B.S. in Chemical Engineering (*cum laude*) from Stanford University. He received an M.S. in Chemical Engineering and a Ph.D. in Civil/Sanitary Engineering from the University of California, Berkeley.

**Dana Kochnower** is interested in working toward the integration of marine science in decision-making and community engagement for coastal resilience. She combines an interdisciplinary Master's degree in Marine Biodiversity and Conservation from Scripps Institution of Oceanography and an Executive Certificate in Environmental Sustainability from Columbia

University with a background in media. An award winning broadcast journalist, Dana has more than 15 years of experience writing and producing for CNN, FOX Business Network and ABC News Radio. In 2010, she started Kochnow.com Consulting, working with non-profit organizations on strategic communications, public outreach messaging and citizen science initiatives. At Scripps, Dana's research focused on the behavioral science of conservation decisions specifically, the influence of cultural and institutional factors on local government investments in natural infrastructure (e.g. living shorelines) for coastal protection.

**Marcia McNutt** is an American geophysicist who is editor-in-chief of the journal *Science*. McNutt holds a visiting appointment at the Scripps Institution of Oceanography and she is the chair of the Geoengineering Climate Report committee of the National Research Council of the National Academy of Sciences. McNutt was previously the director of the United States Geological Survey (USGS) and science adviser to the United States Secretary of the Interior. McNutt has received numerous awards and accolades, including the U.S. Coast Guard's Meritorious Service Medal for her work responding to the *Deepwater Horizon* oil spill. McNutt served as president of the American Geophysical Union (AGU), chair of the Board of Governors for Joint Oceanographic Institutions, and is a fellow of AGU, the Geological Society of America, AAAS, and the International Association of Geodesy. McNutt's honors and awards include membership in the National Academy of Sciences, the American Philosophical Society, and the American Academy of Arts and Sciences. She was awarded the Macelwane Medal by AGU in 1988 for research accomplishments by a young scientist and the Maurice Ewing Medal in 2007 for her significant contributions to deep-sea exploration. She received a bachelor's degree in physics *summa cum laude*, Phi Beta Kappa, from Colorado College. As a National Science Foundation Graduate Fellow, she studied geophysics at the Scripps Institution of Oceanography, where she earned a Ph.D. in Earth sciences.

**Kathryn Mengerink**, Senior Attorney and Co-Director of the Ocean Program at the Environmental Law Institute, brings her marine biology and legal expertise to bear on Ocean Program projects. She has led the Program since founding it in 2006. Under her leadership, the Program has launched law and policy projects related to regional ocean management, fisheries management and enforcement, aquaculture, ocean and coastal restoration, offshore energy development, marine protection, and more. Her work focuses on supporting healthy oceans by working with communities, scientists, policy-makers, and other stakeholders to improve laws and policies, and their implementation. She regularly convenes and facilitates working groups, panels, and meetings. She has led a number of projects, including evaluating the legal ramifications of, opportunities for, and obstacles to coastal and marine spatial planning; assessing state and local authority for marine protection; supporting the role of subsistence communities in ocean management in the U.S. Arctic; and examining the legal framework for deep ocean stewardship, among others. In addition to her role at ELI, she is a Lecturer and Academic Coordinator at Scripps Institution of Oceanography, where she teaches ocean law and policy, deep sea policy, and runs a 9-week graduate summer course on marine biodiversity, conservation and global change. Dr. Mengerink holds a B.S. in Zoology (Texas A&M University), Ph.D. in Marine Biology from SIO (UC San Diego) and a J.D. with a certificate of specialization in environmental law from Boalt Hall, School of Law (UC Berkeley).

**Bruce Myers** is a senior attorney at the Environmental Law Institute, where he works on the Institute's U.S. and international programs. His domestic legal and policy research centers on industrial agriculture, constitutional environmental law in the courts, and protection of water resources. He has examined constitutional challenges to environmental statutes, cooperative federalism, and citizen participation. He has researched federal jurisdiction under the Clean Water Act and technical aspects of the federal pollution permitting and TMDL programs. His international focus is in Africa, where he has played a key role in the Liberia Forest Initiative, which is working to reform that post-conflict nation's forest sector through implementation of a comprehensive program of legal and institutional reforms. He previously practiced law at a large Washington, DC, law firm, and he served as a law clerk to Senior Judge Edward Rafeedie of the U.S. District Court for the Central District of California, at Los Angeles. Myers received his J.D. and a B.A. in International Relations and French from the University of Virginia.

**Margaret Peloso** is a lawyer at Vinson & Elkins, with a primary focus on environmental law and climate change. She handles a variety of litigation and regulatory matters, including compliance with the Mandatory Reporting of Greenhouse Gases Rule, and greenhouse gas permitting. Peloso has experience assisting in advising clients regarding compliance with 1-hour SO<sub>2</sub> NAAQS and modeled demonstrations of attainment, advising clients on compliance with Subpart W of the Mandatory Reporting of Greenhouse Gases, and preparing of legal analyses regarding CERCLA and common law theories of liability for contaminated sediment sites. She has served as the Co-chair of the Climate Change, Sustainable Development, and Ecosystems Committee of the American Bar Association's Section of Environment, Energy, and Resources and a member of the *Law360* Environmental Editorial Advisory Board. Peloso earned a J.D. with distinction from Stanford Law School and a Ph.D. in Environment from Duke University.

**Trevor Penning** is the Director of the Center of Excellence in Environmental Toxicology at the University of Pennsylvania's Perelman School of Medicine. His research on mechanisms of hormonal and chemical carcinogenesis has led to the elucidation of the role of aldo-keto reductases in steroid, drug and xenobiotic metabolism. His group is credited for the discovery of a novel pathway of PAH activation involving the formation of reactive and redox-active ortho-quinones. He has published over 150 peer-reviewed papers. He has been the recipient of The Albert Ethelbert Ebert Prize and Medal from the American Pharmaceutical Association, a Career Development Award from the National Cancer Institute, and election to The Johns Hopkins Society of Scholars. He is a member of the Editorial Boards of the *Journal of Biological Chemistry*, *The Biochemical Journal*, and *Steroids*, and he is a full-member of the Cancer Etiology Study Section at the National Institutes of Health. He previously served on the Editorial Board of *Chemical Research in Toxicology*. He received his Ph.D. in Biochemistry from Southampton University, U.K. and conducted postdoctoral studies at The Johns Hopkins School of Medicine.

**Dave Poulson** is the Senior Associate Director of the Knight Center for Environmental Journalism at Michigan State University. He teaches environmental, investigative, computer-assisted, science and public affairs reporting to graduate and undergraduate students and organizes workshops for professional journalists. Before teaching at Michigan State, Poulson was a reporter and editor for more than 20 years, mostly reporting on the environment. He is the founder and the editor of GreatLakesEcho.org, a 5-year-old nonprofit regional environmental

news service. His research interests include non-traditional methods of gathering and delivering news, reader engagement, climate change communications and nonprofit journalism. Poulson received his B.A. in Journalism from Michigan State University.

**Robert W. Rickard** is a DuPont Distinguished Scientist for Health and Environmental Sciences in the DuPont SHE & Sustainable Growth Center. DuPont Distinguished Scientist is the highest honor accorded by DuPont to a technical professional. In this role, Robert has oversight for DuPont's global scientific competencies, policies and standards in health and environmental sciences. Robert has over 30 years of experience in various research and management positions at DuPont Haskell Global Center for Health and Environmental Sciences with emphasis on biochemical toxicology and chemical carcinogenesis and recent emphasis on the risk assessment of biopersistent chemicals in the environment. He received his Ph.D. in Toxicology from the University of Kentucky and a M.S. in Microbiology and a B.S. in Zoology from Clemson University. He has been certified as a Diplomat of the American Board of Toxicology since 1983 and he is a member of the Society of Toxicology. He currently serves on the Executive Committee and Board of Directors of The Hamner Institutes for Health Research, the Board of Trustees of the International Life Sciences Institute – Health and Environmental Science Institute (HESI) and the Board of Directors of the European Centre for Ecotoxicology and Toxicology of Chemicals (ECETOC).

**Carol L. Rogers** recently retired as Professor of the Practice in the Philip Merrill College of Journalism, University of Maryland, where she specialized in science journalism, in particular media coverage of climate change, and in women in the media. She is on the Editorial Advisory Board of the international social science journal *Science Communication*, for which she served as editor for nine years. She has co-edited two books, *Communicating Uncertainty: Media Coverage of New and Controversial Science* and *Scientists and Journalists: Reporting Science as News*. A fellow of the American Association for the Advancement of Science, she has served on its Committee on the Public Understanding of Science and Technology and as chair and council delegate for the AAAS Section on General Interest in Science and Engineering. She has served on the boards of the Council for the Advancement of Science Writing and of the National Association of Science Writers, of which she is a life member. She was formerly head of the AAAS Office of Communications. Dr. Rogers has a Bachelor's degree in Chemistry from Tusculum College, Master's degree in Women's Studies from George Washington University and Ph.D. in Mass Communication from the University of Maryland.

**Andrew Rosenberg** is the Director of the Center for Science and Democracy at the Union of Concerned Scientists. He has more than 25 years of experience in government service and academic and non-profit leadership. He is the author of scores of peer-reviewed studies and reports on fisheries and ocean management and has published on the intersection between science and policy making. Previously, Dr. Rosenberg worked at Conservation International, where he served for two years as the organization's senior vice president for science and knowledge. Additionally, he served as the northeast regional administrator of the National Marine Fisheries Service at the National Oceanic and Atmospheric Administration, where he negotiated recovery plans for New England and mid-Atlantic fishery resources, endangered species protections and habitat conservation programs. Dr. Rosenberg is also the convening lead author of the oceans chapter of the U.S. Climate Impacts Advisory Panel. He is a member of the

National Academy of Sciences' Ocean Studies Board and the U.S. Commission on Ocean Policy. Dr. Rosenberg received his Ph.D. in biology from Dalhousie University in Halifax, Canada and previously studied oceanography at Oregon State University and fisheries biology at the University of Massachusetts.

**Irma Russell** served as Dean of The University of Montana School of Law from 2009 to 2014. Prior to coming to Montana, Russell was the NELPI Professor and Director of the National Energy-Environment Law & Policy Institute at the University of Tulsa College of Law. Professor Russell is past chair of the ABA Section of Environment, Energy and Resources and the past chair of the AALS Section of Natural Resources and Energy Law. She is member of the Board of Dividing the Waters, an organization of judges and lawyers focused on issues of water adjudication in the Western United States. She has served as the chair of the Professionalism Committee of the ABA Section of Legal Education and Admission to the Bar and as a member of the ABA Standing Committee on Professionalism and the ABA Standing Committee on Ethics and Professional Responsibility. She also has served as chair of the following AALS Sections: Natural Resources & Energy, Professional Responsibility, and Socio-Economics, and as a member of the Publications Committee of the Center for Professional Responsibility. Professor Russell earned undergraduate degrees in liberal arts and education, a master's degree in English literature, and her law degree at the University of Kansas.

**Jason Samenow** is the *Washington Post's* weather editor. Prior to working at the *Washington Post*, he spent ten years working as a climate change analyst for the federal government, monitoring, analyzing and communicating the science of climate change. He is the founder of CapitalWeather.com, which was incepted by Washington Post in 2008. Jason is a past chairman of the D.C. Chapter of the American Meteorological Society and a Weather and Society Integrated Studies Fellow. At the University of Virginia, he earned a degree in environmental science, focusing in atmospheric science. He went on to earn a Master of Science degree in atmospheric science at the University of Wisconsin-Madison.

**Dan Satterfield** is the Chief Meteorologist for the CBS affiliate WBOC-TV in Salisbury, MD. Prior to his work in Salisbury, he has worked as an on air meteorologist for over 32 years in Oklahoma, Florida and Alabama. Satterfield writes a popular Earth science blog, the *Wild Wild Science Journal* for the American Geophysical Union and also developed the *Wild Wild Weather* page to explain the science of weather to students in grades 2-7. He's a full member of the American Meteorological Society, a member of the AMS Committee on Station Science, and the International Association of Broadcast Meteorologists. Satterfield also holds the Certified Broadcast Meteorologist seal from the AMS. As a guest of the National Science Foundation on a tour of the science under way in Antarctica, he became one of only about 4,000 or 5,000 humans to have ever stood at the South Pole. Seven months later, he spent two weeks on top of the Greenland ice sheet where scientists were recovering an ice core that will provide climate change information back 130,000 years. Satterfield is a graduate of the University of Oklahoma with a degree in meteorology (atmospheric physics) and has a master's degree in Earth science.

**Eileen Scallen** is the Associate Dean of Curriculum and Academic Affairs at the UCLA School of Law Adjunct Professor of Law at UCLA School of Law. Ms. Scallen received her M.A. from the University of Minnesota, Twin Cities and her J.D. *magna cum laude* from the University of

Minnesota Law School. Following law school, she clerked for the Honorable A. Wallace Tashima of the U.S. District Court in the Central District of California, and then became an associate with Latham & Watkins. Scallen began her academic career at the University of California, Hastings College of Law. She received an “Outstanding Faculty Member Award” in 1992, and served as Associate Academic Dean from 1996-98. In 2000, Scallen returned to Minnesota for family reasons, joining the faculty at William Mitchell College of Law as Professor of Law.

**Scott Schang** is the Executive Vice President of the Environmental Law Institute and Editor-in-Chief of the *Environmental Law Reporter*. He directs the Institute’s publications and education programming and serves as a climate and energy expert. Scott was previously Vice President, Climate & Sustainability and Co-Director of ELI’s Africa Program. Prior to joining ELI in 2003, Scott practiced environmental law for ten years with Cleary, Gottlieb, Steen & Hamilton and with Latham & Watkins. His private practice encompassed most areas of environmental law and policy, with an emphasis on chemical and pesticide regulation, federal rulemaking, and environmental due diligence. Scott received his B.A. from Yale University, and his J.D. from Georgetown University.

**Kate Sheppard** is a senior reporter and the Environmental and Energy Editor at the Huffington Post. She previously reported for *Mother Jones*, *Grist*, and the *American Prospect*. Her writing has also been featured in the *New York Times*' *Room for Debate* blog, the *Guardian*, *Foreign Policy*, *High Country News*, and The Center for Public Integrity. Her reporting has been recognized with awards from the Society of Environmental Journalists, the Online News Association, and Planned Parenthood. Ms. Sheppard received her B.A. in Politics and Journalism from Ithaca College, and she received her Masters in Media Entrepreneurship at American University.

**Michael Svoboda** is an Asst. Professor of Writing in the University Writing Program at George Washington University, where his classes alternate between the related themes of communicating climate change and political psychology. Since 2010, he has also been a regular contributor to *Yale Climate Connections* (formerly *The Yale Forum on Climate Change and the Media*), for which he has examined how climate change has been treated—or neglected—in advertising, movies, news media, political cartoons, political speeches, and TV dramas. Michael holds a B.S. in Communication Arts from Cornell University and an MA in Speech Communication and a Ph.D. in Hermeneutics from Penn State. In between his M.A. and Ph.D., which both focused on rhetorical theory in ancient Greece, he owned and operated a bookstore and, from 1992–1998, produced and hosted a weekly radio book revue on WPSU, the NPR affiliate operated by Penn State.

**Michael Traynor** is an attorney at Cobalt LLC. Michael is President Emeritus of the American Law Institute, an adviser to Restatement Fourth of the Foreign Relations Law of the United States: Jurisdiction, and the recipient of the Institute’s Distinguished Service Award. He is a Fellow of the American Academy of Arts & Sciences, the American Academy of Appellate Lawyers, the California Academy of Appellate Lawyers, and the American Association for the Advancement of Science. The U.S. Court of Appeals for the Ninth Circuit honored him with its John P. Frank Award, which recognizes a lawyer who has “demonstrated outstanding character

and integrity; dedication to the rule of law; proficiency as a trial and appellate lawyer; success in promoting collegiality among members of the bench and bar; and a lifetime of service to the federal courts of the Ninth Circuit.” He co-chaired (with Jamie Gorelick) the ABA Commission on Ethics 20/20 (2009-2013). He holds an honorary LL.D from the University of South Carolina. He received his B.A. in Economics from the University of California at Berkeley, and his J.D. from Harvard Law School.

**David J. Verardo** is the Director of the Paleoclimate Program at the National Science Foundation. Since 2000, he has led the Paleoclimate Program and has been involved in a number of cross-divisional and cross-directorate research activities at the NSF including, most recently, the annual competition in Paleo Perspectives on Climate Change (P2C2). Dr. Verardo has also served in the NSF Office of Equal Opportunity Programs (OEOP). In 2008, he received the NSF Director's Award for Collaborative Integration. Dr. Verardo has served as a Congressional Science Fellow in the Office of U.S. Senator Ron Wyden of Oregon working on science-based carbon sequestration strategies and nuclear waste contamination and disposal issues. The fellowship was organized by the American Association for the Advancement of Science (AAAS) and sponsored by from the Geological Society of America (GSA) and the U.S. Geological Survey (USGS). Dr. Verardo holds a Ph.D. in Earth and Environmental Sciences from the Graduate School and University Center of the City University of New York, J.D. from Concord Law School, and B.A. in Geology from C.W. Post College of Long Island University.

**Wendy Wagner** is the Joe A. Worsham Centennial Professor at the UT School of Law, with research focuses on the intersection of law and science. Before teaching at the University of Texas, she practiced for four years, first as an Honors Attorney in the Enforcement Division of the Department of Justice's Environment and Natural Resources Division, and then as Pollution Control Coordinator with the Department of Agriculture's Office of the General Counsel. Prior to joining the faculty at the University of Texas, Professor Wagner taught at Case Western Law School and was a visiting professor at Columbia and Vanderbilt Law Schools. Prof. Wagner has served on two National Academies of Science Committees, the Bipartisan Policy Center Committee on Regulatory Science, and currently serves a consultant to the Administrative Conference of the U.S. (ACUS) on a project on the agencies' use of science. Wagner is a Member Scholar of the Center for Progressive Reform. She received a Masters of Environmental Studies in 1984 and her law degree in 1987, both from Yale.

**Charles Weiss** is a retired Distinguished Professor at the Edmund A. Walsh School of Foreign Service at Georgetown University, and directed its program in Science, Technology and International Affairs from 1997-2006. He holds a B.A., summa cum laude, in chemistry and physics, and a Ph.D. in biochemistry and chemical physics, both from Harvard University. He was the first Science and Technology Adviser to the World Bank, and served in that capacity from 1971-86. He taught and helped launch the program in science and technology policy at the Woodrow Wilson School at Princeton University, and has been Visiting Professor at the University of Pennsylvania, Visiting Scholar at the University of California (Berkeley), Course Director at the Foreign Service Institute of the U.S. Department of State, and Professorial Lecturer at the Nitze School of Advanced International Studies at Johns Hopkins University. He is the author of numerous publications on international science and technology policy, and edited *Technology, Finance and Development* (Lexington MA: Lexington Press, 1984), a book-length

account of the Bank's support to science and technology during the 1970s and early 1980s. He is the author of numerous publications on scientific uncertainty, innovation, international science and technology policy, and science, technology and development, and is co-author (with William Bonvillian) of *Structuring an Energy Technology Revolution* (Cambridge MA: MIT Press, 2009) and *Introducing Innovation into Legacy Sectors* (New York: Oxford University Press, 2015).