

Guidance for NSF on National Ocean Science Research Priorities: Decadal Survey for Ocean Sciences

Committee

Shirley A. Pomponi

Co-Chair

Dr. Pomponi is Research Professor and Executive Director of the NOAA Cooperative Institute for Ocean Exploration, Research, and Technology at Harbor Branch Oceanographic Institute at Florida Atlantic University, and Professor in Marine Biotechnology at Wageningen University, Netherlands. Her research focuses on evolutionary biology, systematics, and ecology of sponges, and marine biotechnology approaches to sustainable use of marine resources. Dr. Pomponi was a member of the the Ocean Studies Board from 2003 to 2009, serving as the chair from 2005 to 2008. She participated in multiple National Research Council committees, including as vice-chair of the Committee on Exploration of the Seas, and as a member of the Committees on Future Needs in Deep Submergence Science, Marine Biotechnology: Development of Marine Natural Products, and the Ocean's Role in Human Health. She also served on the U.S. National Scientific Committee on Oceanic Research, the Science Advisory Board for the U.S. Commission on Ocean Policy, and the Ocean Research Advisory Panel. She was the President of the Southern Association of Marine Laboratories in 2010 and 2011, and chaired the Consortium for Ocean Leadership from 2008 to 2010. Dr. Pomponi received her Ph.D. in Biological Oceanography from the University of Miami.

David W. Titley, USN (Ret.)

Co-Chair

Dr. Titley is a Senior Scientist and Director of the Center for Solutions to Weather and Climate Risk at Pennsylvania State University. Dr. Titley's career included duties as Oceanographer and Navigator of the Navy and Deputy Assistant Chief of Naval Operations for Information Dominance. Dr. Titley initiated and led the US Navy's Task Force on Climate Change, and also served on the staff of the U.S. Commission on Ocean Policy. After retiring from the Navy, Dr. Titley served as the Deputy Undersecretary of Commerce for Operations, the Chief Operating Officer position at the National Oceanic and Atmospheric Administration. He was invited to present on behalf of the Department of Defense at both Congressional Hearings and the Intergovernmental Panel on Climate Change meetings from 2009 to 2011. He speaks regularly on the topic of climate at universities across the country. He currently serves on the Advisory Board of the Center of Climate and Security based in Washington, D.C., is a member of the National Research Council Committee on Geoengineering Climate: Technical Evaluation and Discussion Impacts, and is a Fellow of the American Meteorological Society. He earned a Ph.D. in Meteorology from the Naval Postgraduate School.

Edward A. Boyle

Member

Dr. Boyle is a professor of Ocean Geochemistry at the Massachusetts Institute of Technology and MIT Director of the Massachusetts Institute of Technology-Woods Hole Oceanographic Institution Joint Program in Oceanography. His research interests include a focus on ocean trace metal chemistry in relation to biogeochemical cycling, anthropogenic inputs, and as a tool for understanding the geological history of the ocean. He has worked on lead and other anthropogenic trace metals in Greenland ice cores and on trace metals in estuaries. Dr. Boyle discovered that iron in the deep southwest Pacific derives from distant hydrothermal vents. Additionally, he has shown that cadmium in some species of benthic foraminifera tracks the cadmium content of the bottom water they grow in, and has applied this finding to sediment cores to trace past changes in ocean deepwater chemistry which are influenced by changing ocean circulation patterns and changes in biogeochemical cycling within the ocean, including mechanisms that influence atmospheric carbon dioxide levels. He is a member of the National Academy of Sciences. He has served on the National Research Council's Ocean Studies Board, the Alexander Agassiz Medal Selection Committee, the Committee on an Ocean Infrastructure Strategy for U.S. Ocean Research, and the Marine Chemistry Study Panel. Dr. Boyle received his Ph.D. from the MIT/Woods Hole Oceanographic Institution Joint Program in Chemical Oceanography.

Melbourne G. Briscoe

Member

Dr. Briscoe is the President of OceanGeeks, LLC, an environmental consulting company and information provider specializing in information on ocean policy issues, advice on forming and maintaining ocean partnerships and collaborations, and best-practices in the translation of ocean research results to practical applications. Prior to his consulting work, Dr. Briscoe was Director, Ocean, Atmosphere, and Space Research Division with the Office of Naval Research; Director, U.S. Global Ocean Observing System with the National Oceanic and Atmospheric Administration; and Vice President and Director, Research and Education with the Consortium for Ocean Leadership. He is a member of multiple professional associations: the American Geophysical Union, The Oceanography Society, and the American Meteorological Society. His National Research Council experience includes membership of the Panel on Peer Review of the Army Corps of Engineers. Dr. Briscoe has received his Ph.D. in Mechanical Engineering (Fluid Dynamics) from Northwestern University, and holds certifications in aspects of group dynamics and meeting facilitation.

Russ E. Davis

Member

Dr. Davis is a Research Professor at the Scripps Institution of Oceanography. Dr. Davis' contribution to oceanography is a balance between observation and theory. Using current meters, surface and deep drifters, he has studied ocean circulation, mixed layer dynamics, and the diffusion of particles. He has applied methods of objective analysis to such diverse problems as the design of the MODE array, and the predictability of climate from observations of ocean surface temperature. He is a member of the National Academy of Sciences and chaired the Ocean Studies Board from 1988 to 1991. He has served on multiple committees including the 1992, 2001, and 2013 Alexander Agassiz Medal Selection Committees, the Climate Research Committee, and the Committee to Review the Global Ocean Observing System. He received the 2007 Prince Albert I Gold Medal from the International Association for the Physical Sciences of the Oceans. Dr. Davis received his Ph.D. in Chemical Engineering from Stanford University.

Margo H. Edwards

Member

Dr. Edwards is a Senior Research Scientist and former Director of the National Center for Island, Maritime, and Extreme Environment Security at the University of Hawaii. Her current scientific research focuses on using mapping skills to search for disposed military munitions south of Pearl Harbor Hawaii in water depths from 300-550m to determine whether they pose a threat to people and the environment. Dr. Edwards was part of the Scientific Ice Expedition Science Advisory Committee, a collaborative project between the U.S. Navy and civilian scientists for geological and environmental research in the Arctic Ocean. She has served on NRC committees including the Committee on an Ocean Infrastructure Strategy for U.S. Ocean Research in 2030, the Committee on Evolution of the National Oceanographic Research Fleet and the Committee on Designing an Arctic Observing Network. Dr. Edwards earned her Ph.D. in Marine Geology and Geophysics from Columbia University.

Mary H. Feeley

Member

Dr. Feeley retired as Chief Geoscientist from ExxonMobil Exploration Company in 2014. While with ExxonMobil, she has been involved in oil and gas exploration activities in Africa, Asia, and Europe. Her responsibilities include advising senior ExxonMobil Upstream management on strategic geoscience matters and identifying global geoscience opportunities for ExxonMobil. Dr. Feeley is a member of the American Association of Petroleum Geologists, the Society of Exploration Geophysicists, and the American Geophysical Union. Her National Research Council experience includes membership of the Ocean Studies Board from 2005 to 2010 and serving on committees including the U.S. National Scientific Committee on Oceanic Research and the Committee on International Capacity Building for the Protection and Sustainable Use of Oceans and Coasts. Dr. Feeley earned her Ph.D. in Oceanography from Texas A&M University.

Donald W. Forsyth

Member

Dr. Forsyth is the James L. Manning Professor of Geological Sciences at Brown University. He is interested in the physical properties of the Earth's tectonic plates, the nature of convection in the upper mantle, and the processes that form new oceanic crust at mid-ocean ridges. Using arrays of seismometers on the seafloor and on land, he studies the seismic velocity structure and anisotropy of the lithosphere and asthenosphere as a means of revealing variations in temperature, composition, and flow patterns associated with convection and the aging of the plates. In the oceans, he has concentrated on mapping out variations in crustal thickness and the structure of the underlying mantle, in order to understand the pattern of melt generation and migration that supplies the magma that forms new crust. He is a member of the National Academy of Sciences, a Fellow of the American Geophysical Union, and was the recipient of the Arthur L. Day Medal from the Geological Society of America. Dr. Forsyth earned a Ph.D. in Marine Geology and Geophysics from the Massachusetts Institute of Technology and Woods Hole Oceanographic Institution.

Peter Liss

Member

Dr. Liss is a Professorial Fellow at the University of East Anglia in the School of Environmental Sciences, and in 2013/14 was a Faculty Fellow at the Texas A&M University Institute for Advanced Study. His research has focused on the biogeochemical interactions between the ocean and the atmosphere, specializing in the processes of air-sea gas exchange, the mechanisms of trace gas formation in the oceans, and their reactivity and role in the atmosphere. Dr. Liss is a Fellow of the Royal Society, and other recognitions received include the Challenger Society Medal, the Plymouth Marine Sciences Medal, and the John Jeyes Medal of the Royal Society of Chemistry. He served on the Natural Environment Research Council, was Chair of the Scientific Committee of the International Geosphere-Biosphere Programme, and Chair of the Scientific Steering Committee for the International Surface Ocean-Lower Atmosphere Study. He is a member of the Department for Environment, Food and Rural Affairs Science Advisory Council and chairs the UK Marine Environmental and Data Information Network, the International Advisory Board for the Marine Alliance for Science and Technology in Scotland, and the UK National Oceanography Centre's Association Board, and is a member of its Science Advisory Council. He is currently Interim Executive Director of the International Council for Science (ICSU). Dr. Liss received his Ph.D. from the University of Wales.

Susan Lozier

Member

Dr. Lozier is the Ronie-Richele Garcia-Johnson Professor of Physical Oceanography and Bass Fellow in the Nicholas School of the Environment at Duke University. Her research focuses on the ocean's role in climate variability and climate change. She is interested in the large-scale meridional overturning circulation of the ocean and how that circulation impacts the transfer of heat, salt, and anthropogenic carbon dioxide from one part of the ocean to another. Dr. Lozier was the recipient of a National Science Foundation Early Career Award in 1996 and is a Fellow of the American Meteorological Society. She is currently serving on the National Research Council Committee on Understanding and Monitoring Abrupt Climate Change and its Impacts. Dr. Lozier received her Ph.D. in Physical Oceanography from the University of Washington.

Roberta Marinelli

Member

Dr. Marinelli is the Executive Director of the University of Southern California, Wrigley Institute for Environmental Studies. She plays a leadership role in planning and implementing an expansion of academic and research programs in environmental studies at USC's University Park Campus and at the Philip K. Wrigley Marine Science Center on Santa Catalina Island. Her research interests include the ecology and geochemistry of seafloor communities, and coupled human-natural interactions in marine environments. Dr. Marinelli was a program officer for the National Science Foundation's Antarctic Sciences section, where she contributed to building collaborative programs across the Foundation, including the International Polar Year, Climate Research Investments, and SEES (Science, Engineering and Education for Sustainability). She was previously on the faculty of the University of Maryland's Center for Environmental Science, and the Skidway Institute of Oceanography, where she received a National Science Foundation Early Career Award. She is a member of the American Geophysical Union and the American Society for Limnology and Oceanography. Dr. Marinelli received her Ph.D. in Marine Science from the University of South Carolina.

James J. McCarthy

Member

Dr. McCarthy is the Alexander Agassiz Professor of Biological Oceanography and acting Curator of the Malacology Department in the Museum of Comparative Zoology at Harvard University. His research interests focus on the regulation of plankton productivity in the sea, and the upper ocean nitrogen cycle, especially in mixing processes, monsoonal cycles, and the El Nino Southern Oscillation system. He participated in the early planning phases of the International Geosphere-Biosphere Programme and served as its chair for the first six years of the program. He was involved in the first Intergovernmental Panel on Climate Change assessment, co-authoring the concluding chapter of Working Group I. In the third Intergovernmental Panel on Climate Change assessment he co-chaired Working Group II, whose task it was to assess impacts of and vulnerabilities to global climate change, with an intensified focus on adaptation. Dr. McCarthy has served on numerous scientific advisory boards and committees, including the National Research Council Ecosystems Panel to review the U.S. Global Change Research Program, the Committee on Global Change Research, and the Committee to Review the Global Ocean Observing System, and was a member of the Ocean Studies Board from 1980 to 1988. Dr. McCarthy has received his Ph.D. from the Scripps Institution of Oceanography.

Alan Mix

Member

Dr. Mix is a Professor of in the Ocean Ecology and Biogeochemistry division of the College of Earth, Ocean, and Atmospheric Sciences at Oregon State University, where he has also served as Associate Dean. His research includes paleoceanography and paleoclimatology, using micropaleontological and geochemical tracers, ecology and paleoecology. He is the director of the CEOAS/OSU Stable Isotope Laboratory and the OSU Mass Spectrometry Consortium. He has been a member of the Climate: Long Range Mapping and Prediction (CLIMAP) project, Mapping Spectral Variability in Global Climate (SPECMAP) Project, Joint Global Ocean Flux Studies (JGOFS), and Environmental Processes of the Ice Age: Land, Oceans, and Glaciers (EPILOG), and Paleoclimate Variability (PALEOVAR). He is currently Co-chair of the Past Global Changes project of the International Geosphere-Biosphere Program (IGBP/PAGES) and serves as chair of the Board of Scientific Advisors for MARUM, Univ. Bremen, Germany. Some recent honors include Joint Oceanographic Institutions/U.S. Science Advisory Committee Distinguished Lecturer, Chapman Lectureship, University of Alaska, Fairbanks. He is a Fellow of the American Geophysical Union, and a member of the Geological Society of America and the Oceanography Society. Dr. Mix received his Ph.D. in Geology from Columbia University.

Steven A. Murawski

Member

Dr. Murawski is Professor and Peter Betzer Endowed Chair of Biological Oceanography at the University of South Florida. He is a fisheries biologist and marine ecologist involved in understanding the impacts of human activities on the sustainability of ocean ecosystems. He is the Director of the Center for Integrated Analysis and Modeling of Gulf Ecosystems (C-IMAGE), a consortium funded by the Gulf of Mexico Research Initiative. He has developed approaches for understanding the impacts of fishing on marine fish complexes exploited in mixed-species aggregations. Additionally, his work on impacts of marine protected areas and other management options has formed the scientific basis for regulation. In addition to his science activities, Dr. Murawski is a USA Delegate and past vice-president of the International Council for the Exploration of the Sea. As former chief fisheries scientist with the National Oceanic and Atmospheric Administration, Dr. Murawski was responsible for overseeing all fisheries research supported by NOAA. He is a current Ocean Studies Board member and a member of the U.S. National Committee for the International Institute for Advanced Systems Analysis (IIASA). Dr. Murawski received his Ph.D. in Wildlife and Fisheries Biology from University of Massachusetts, Amherst.

Robert T. Paine

Member

Dr. Paine is an emeritus Professor of Biology at the University of Washington. His research includes investigating the ecological processes producing structure in marine communities. His primary study system is the biologically diverse assemblage characterizing rocky shores exposed to heavy wave action along western North America. Basic questions involve the factors promoting coexistence and biodiversity, especially predation and disturbance. Dr. Paine is a member of the National Academy of Sciences and received the 2013 International Cosmos Prize. He was a member of the Ocean Studies Board from 2004 to 2006 and served on the National Research Council's Committee on Best Practices for Shellfish Mariculture and the Effects of Commercial Activities in Drake's Estero and Committee on Ecosystem Effects of Fishing: Phase II—Assessments of the Extent of Ecosystem Change and the Implications for Policy. Dr. Paine received his Ph.D. from the University of Michigan.

Charles Paull

Member

Dr. Paull is a Senior Scientist at the Monterey Bay Aquarium Research Institute. His research interests include the frequency, distribution, and environmental significance of continental margin pore water seeps; the establishment of in situ characteristics of marine gas hydrates; and understanding of the diverse processes that form and subsequently erode continental margins. He is a member of the American Association of Petroleum Geologists, the American Geophysical Union, and the Society of Economic Paleontologists and Mineralogists. He was the Chair of the NRC Committee on the Assessment of DOE's Methane Hydrate Research and Development Program. Dr. Paull received his Ph.D. in Oceanography from the Scripps Institution of Oceanography.

Don Walsh

Member

Dr. Walsh is the President of International Maritime Incorporated. He has worked on a wide variety of marine-related projects, ranging from ocean remote sensing from spacecraft to deep seafloor explorations by submersible, as well as from urban coastlines to remote polar regions. Some examples of his work are ocean remote sensing from aircraft and earth-orbiting satellites, research ship development and operations, ocean law and policy questions related to national and international uses of the World Ocean and non-nuclear military submarine development. Notably, he made a record maximum descent to the Mariana Trench in 1960 to a depth of 35,798 feet. Dr. Walsh is a member of the National Academy of Engineering, a current Ocean Studies Board member, and has been on National Research Council committees including the NAE's Special Fields and Interdisciplinary Engineering Peer Committee, the Committee on the Arctic Research Vessel, and the Committee on the Review of NOAA's Fleet Replacement and Modernization Plan. Dr. Walsh received his Ph.D. in Physical Oceanography from Texas A&M University.

Bess B. Ward

Member

Dr. Ward is the William J. Sinclair Professor of Geosciences, and chair of the Department of Geosciences, at Princeton University. Her main areas of research are the marine and global nitrogen cycle, using stable isotopes and molecular biological methods to study marine bacteria/archaea and microbial processes (especially nitrification and denitrification) and nitrogen utilization by phytoplankton. She has been honored in multiple science advisory positions, as a Fellow of the American Academy of Microbiology, as a Fellow of the American Geophysical Union, and as a Fellow of the American Academy of Arts and Sciences. Dr. Ward received her Ph.D. in Biological Oceanography from the University of Washington.

James A. Yoder

Member

Dr. Yoder is the Vice President for Academic Programs and Dean at the Woods Hole Oceanographic Institution. He was a Professor at the Graduate School of Oceanography, University of Rhode Island, where he conducted research, taught graduate courses and advised M.S. and Ph.D. students. He served 5 years as Graduate School of Oceanography Associate Dean in charge of the graduate program in oceanography and 1.5 years as Interim Dean of the School. Dr. Yoder has also held temporary positions in the Federal Government as a Program Manager at National Aeronautics and Space Administration Headquarters from 1986 to 1988 and 1996 to 1997 and as Director of the National Science Foundation's Division of Ocean Sciences from 2001 to 2004. Dr. Yoder has served on several National Research Council committees. He was the chair of the Committee on Assessing Requirements for Sustained Ocean Color Research and Operations, a member of the Committee on Scientific Accomplishments of Earth Observations from Space, and is a current member of the Ocean Studies Board. Dr. Yoder received his Ph.D. in Oceanography from the University of Rhode Island.

William R. Young

Member

Dr. Young is a Professor of Physical Oceanography at the Scripps Institution of Oceanography. His research on geophysical fluid dynamics and dynamical oceanography has led to broad advances in understanding oceanic mixing, eddy generation, and other key features of oceanic dynamics with strong implications for the Earth's climate system. Young has recently been working on the generation of ocean surface waves and atmospheric water vapor distributions. He is a member of the National Academy of Sciences and a Fellow of the American Meteorological Society and the American Geophysical Union. Dr. Young received his Ph.D. in Physical Oceanography from the Woods Hole Oceanographic Institution and the Massachusetts Institute of Technology.