

Scientific Ocean Drilling: Accomplishments and Challenges

Committee

Robert A. Duce

Co-Chair

Robert A. Duce is presently Distinguished Professor Emeritus of Oceanography and Atmospheric Sciences at Texas A&M University. From 1991 to 1997 he was Dean of the College of Geosciences at Texas A&M. From 1987 to 1991 he was Dean of the Graduate School of Oceanography and Vice Provost for Marine Affairs at the University of Rhode Island. His research interests include the chemistry of the atmosphere and ocean, focusing on the chemical cycles of pollutant and natural substances in the global atmosphere, their transport from the continents and their deposition to and impact on coastal and remote ocean regions. He is the past President of SCOR (ICSU Scientific Committee on Oceanic Research), the International Association of Meteorology and Atmospheric Sciences, and the Oceanography Society, and he is past Chair of the U.N. Group of Experts on the Scientific Aspects of Marine Environmental Protection. He has been a member of the NRC Ocean Studies Board and Board on Atmospheric Sciences and Climate. He is a Fellow of the American Geophysical Union, the Oceanography Society, the American Meteorological Society, and the AAAS. Dr. Duce earned a B.A. in chemistry from Baylor University in 1957 a Ph.D. in inorganic and nuclear chemistry from the Massachusetts Institute of Technology in 1964.

Arthur Goldstein

Co-Chair

Arthur Goldstein has served as the Dean of the College of Arts and Sciences at the University of New England since January 1, 2008. At the University of New England he has been active in revisions of the Core Curriculum, final construction phase of a new building for Biology, Chemistry and Physics, development of a Writing Program, fund raising for various college initiatives, study abroad, student learning outcomes assessment, revision of promotion and tenure policies and development of an undergraduate research program. Prior to joining the University of New England he worked at the National Science Foundation in the Division of Earth Sciences as a Program Director, Section Head and, eventually, Division Director. At NSF Dr. Goldstein had responsibility for grants programs in excess of \$150M annually and also had oversight responsibility for the construction of EarthScope, a \$200M project aimed at developing a comprehensive understanding of the plate boundary processes active in western North America and the structure and evolution of the North American continent. At NSF he was also involved in developing funding for Geoinformatics projects and a variety of new initiatives including GeoTeach, a program that addresses development of pre-service and in-service secondary school teachers, and the Critical Zone Observatory Program that invested \$8.5M in integrated studies of the Earth's near surface environments. Prior to his appointment at NSF he was a Professor of Geology at Colgate University and served as Department Chair for five years. Dr. Goldstein received his B.S. in geology from Kent State University and M.S. and Ph.D. degrees from University of Massachusetts, Amherst.

Subir K. Banerjee

Member

Subir K. Banerjee is Distinguished Professor Emeritus and Founding Director of the Institute for Rock Magnetism at the University of Minnesota, a national facility for state-of-the-art instrumentation and research in rock magnetism. Dr. Banerjee earned a Sc.D. in 1983 from Cambridge University. Banerjee and his students and postdoctoral colleagues have studied many drill cores from the ocean crust and ophiolite complexes on land. Their research led to models of very deepseated crustal sources of marine magnetic anomalies. He is a fellow of both the American Geophysical Union and the American Academy of Arts and Sciences. Dr. Banerjee has received many awards, including the 2006 John Adam Fleming Medal from the American Geophysical Union, the 2004 Louis Néel Medal from the European Geosciences Union, and the 2003 William Gilbert Award from the American Geophysical Union, Geomagnetism and Paleomagnetism. Dr. Banerjee was the President of American Geophysical Union's Geomagnetism and Paleomagnetism section and a member of the Council of Officers of the American Geophysical Union from 1984 to 1988. At the NSF, Dr. Banerjee has participated in many ad hoc panels to (a) review research grant proposals, (b) help select Presidential Young Investigators and (c) served in the review of multiple research programs.

William B. Curry

Member

William B. Curry is a Senior Scientist at Woods Hole Oceanographic Institution. He received a B.S. in geology from the University of Delaware in 1974 and a Ph.D. in geology from Brown University in 1980. Dr. Curry studies the history of earth's climate and carbon cycle using geological records of ocean chemistry and physical properties. His detailed research interests are quantitative paleoclimatology and paleoceanography, sedimentation dynamics of marine particulates, and stable isotopic fractionation in carbonate-secreting organisms. Dr. Curry is actively involved with sea going expeditions to collect deep sea sediments and uses the chemistry of fossils in the sediments to determine how climate has changed on decadal to millennial time scales. He has been a member of the Scientific Staff at WHOI since 1981. He is a former Ocean Studies Board member and has served on three National Research Council Committees.

Magnus Friberg

Member

Magnus Friberg is a research officer at the Swedish Research Council with special responsibilities for large scale infrastructures for earth and environmental research, Polar research and the Research Council's program for investments in research equipment in all areas of science. As such, he represents Sweden in international research co-operations in earth and environmental sciences and Polar research. He has a Ph.D. in applied geophysics from Uppsala University. His research was on geophysical exploration techniques and to combine them with geological observations. The main focus was on the Ural Mountains in the area around the deep drilling site in the Middle Urals, but also included applying geophysics to archeology, environmental, and geothermal exploration, as well as characterizing sites for nuclear waste repositories. Dr. Friberg also serves on several national and international organizations, including the EU Joint Programming Initiative on Climate Research, the European Science Forum for Research Infrastructures (EU Commission) Thematic Working Group on Environmental Research Infrastructures, and chairs the IASC Medal Committee.

Julie Huber

Member

Julie Huber is a microbial oceanographer interested in the ecology of bacteria and archaea in the deep sea, especially at underwater volcanoes. Most of her research focuses on the oceanic crust as a microbial habitat and the distribution, diversity, and evolutionary and community dynamics of microbial groups in the seafloor. Currently, Dr. Huber is using phylogenetic, metagenomic, cultivation-based, and geochemical measurements of deep-sea crustal fluids to link microbial groups with their metabolic and physiological functions in seafloor habitats. She is broadly interested in marine microbial ecosystems of all types, from coral reefs to marine sediments, and the methods and approaches that unite microbial scientists. As a sea-going scientist, Dr. Huber is also interested in technology development for deep-sea exploration and in-situ experimentation. Dr. Huber has a Ph.D. and M.S. in oceanography from the University of Washington, and is a winner of the Loreal Women in Science award.

Michael E. Jackson

Member

Michael E. Jackson is the P.I. and Director of EarthScope Plate Boundary and SAFOD

Observatories, UNAVCO Inc. Dr. Jackson specializes in the geodesy, paleoseismology, and physics of tectonically active parts of the Earth with an emphasis on the installation, operations, and management of remote, geographically distributed instrumentation networks. As part of his duties as a National Science Foundation Major Equipment and Facilities Construction Project Manager, Dr. Jackson provides advice to the NSF on whether other large facility projects are well proposed, ready to begin construction/implementation, and he provides ongoing guidance to NSF during the construction and operations phases. Dr. Jackson was the chair of the Ocean Observatories Initiatives Preliminary Design Review panel and a member of the NEON Conceptual Design and Preliminary Design review panels. Dr. Jackson has also served as a member of the U.S. Geological Survey's National Volcano Early Warning System (NVEWS) advisory panel. He has a B.S. in geology from the University of New Mexico, and a M.S. in geological sciences and a Ph.D. in geophysics from the University of Colorado.

Keith K. Millheim

Member

Keith K. Millheim is President of Strategic Worldwide, LLC. Dr. Millheim received his Ph.D. in mining engineering from the University of Leoben in 1992. He also earned a M.Sc. in petroleum engineering from the University of Oklahoma in 1964 and a B.Sc. in petroleum science from Marietta College in 1963. Dr. Millheim is a member of many professional societies, including the Society of Petroleum Engineers (SPE) and the Society of Systems Thinking; he is also a member of many other organizations, which included the Texas Academy of Science, Engineering and Medicine Member, the National Academy of Engineering (NAE), and former Member of the Ocean Drilling Program committee. His research interest focuses on the implementation of new technology in petroleum drilling. Dr. Millheim is currently serving on the NAE Committee on Membership.

Samuel B. Mukasa

Member

Samuel Mukasa is Chair and Eric J. Essene Collegiate Professor of Geological Sciences at the University of Michigan in Ann Arbor, Michigan. Dr. Mukasa earned a Ph.D. from the University of California, Santa Barbara in geology in 1984. His field of study focuses on integrated use of trace elements and Pb, Nd, Sr, Hf, and Os isotopes to model the petrogenesis of ultramafic xenoliths, arc lavas, layered mafic intrusions, and continental flood basalts, the application of U/Pb and $^{40}\text{Ar}/^{39}\text{Ar}$ geochronology to providing constraints on the evolution of continental and oceanic arcs, the kinematic evolution of orogenic belts, and the mantle and lower crust chemical geodynamics. Dr. Mukasa is a member of the National Research Council's Polar Research Board and recently served on the Committee on Principles of Environmental and Scientific Stewardship for the Exploration and Study of Subglacial Lake Environments.

Timothy Naish

Member

Tim Naish is Professor and Director of the Antarctic Research Centre at Victoria University of Wellington in New Zealand. Dr. Naish's current research projects include understanding of how continental margin sedimentation responds to climate and sea-level change over long (orbital timescales); specifically focusing on the role of ice sheets and Antarctica in the global climate system. From 1990 his research has focused on documenting the physical evidence in shallow-marine sedimentary basins of climatic and sea-level variability inferred from deep ocean drill cores (e.g. oxygen isotope records). More recently his research interest has been concerned with documenting past variability of the Antarctic Ice Sheets and their contribution to global sea-level change and climate variability. Over the last 10 years he participated on the Cape Roberts Drilling Project, and led the recently completed ANDRILL McMurdo Ice Shelf Drilling Project. He is the Chair of the International ANDRILL Science Planning Committee. He is a member of Executive Committee of the Scientific Committee on Antarctic Research's Antarctic Climate Evolution Project. He is also a member of the Royal Society of New Zealand Marsden Fund Council. Dr. Naish earned a B.Sc. in 1988, M.Sc. (1st Class Hons.) in 1989, and a Ph.D. in 1996 from the University of Waikato, all in Earth Sciences.

Paul E. Olsen

Member

Paul E. Olsen is the Arthur D. Storke Memorial Professor in the Department of Earth and Environmental Sciences at Columbia University. He earned his Ph.D. in biology from Yale University in 1984. Dr. Olsen's research interests include ecosystem evolution; especially aspects of external forcing and intrinsic biological innovations, and also Triassic and Jurassic continental ecosystems, paleobiology, climate, tectonics, and stratigraphy. Dr. Olsen's overall area of interest is the evolution of continental ecosystems, including their external and internal controls and their biological and physical components. Furthermore, he is especially interested in the pattern, causes, and effects of climate change on geological time scales, mass extinctions, and the effects of evolutionary innovations on global biogeochemical cycles. Dr. Olsen became a member of the National Academy of Sciences in 2008.

Lori L. Summa

Member

Lori Summa is Senior Technical Consultant with the ExxonMobil Upstream Research Company. In this position, she advises corporate management on strategic geoscience issues to ensure appropriate research is performed in support of business objectives. Her background is in basin analysis and numerical modeling, but has done much applied research with exploration and drilling. She currently serves as a member of the TXESS Advisory Board and on the IODP USSAC Panel, which advises the U.S. Science Support Program on supporting drill ship operations. Dr. Summa earned a B.S. in geology with honors from the University of Rochester in 1979 and a Ph.D. in geology from the University of California, Davis in 1985.

Anne M. Trehu

Member

Anne M. Tréhu is a professor of geophysics in Oregon State University's College of Oceanic and Atmospheric Administration. She earned her Ph.D. from the Massachusetts Institute of Technology in 1982 and her B.A. from Princeton University in 1975. Dr. Tréhu's research interests focus on the influence of crustal structure on earthquake processes and on the distribution and dynamics of gas hydrates on continental margins. Dr. Tréhu is a current member of the Ocean Studies Board; she has also served on the NRC Committee to Review the Activities Authorized under the Methane Hydrate Research and Development Act of 2000 (2003-2004) and the Committee on Seismology (1990-1996). Dr. Tréhu is a Fellow of the American Geophysical Union.