Committee on Solid Earth Geophysics

Committee

Jessica M. Warren

Chair

JESSICA M. WARREN is a Professor of Geochemistry and Geophysics in the Department of Earth Sciences at the University of Delaware, and a Research Associate at the National Museum of Natural History, Smithsonian Institution. Her research focuses on processes in the Earth's mantle through a combination of field work and laboratory analyses. Warren has led field expeditions to the western United States and Oman Ophiolite and seagoing expeditions in the Pacific and Atlantic Oceans. She also works, through outreach activities, to improve the quality and accessibility of Earth science education with a focus on field learning and the graduate experience. Warren is a fellow of the Mineralogical Society of America and is a recipient of a National Science Foundation CAREER award, Stanford Terman Fellowship, and Carnegie Postdoctoral Fellowship. Warren received a B.A./M.A. and M.Sci. from the University of Cambridge and a Ph.D. in geochemistry and geophysics from the Massachusetts Institute of Technology/Woods Hole Oceanographic Institution Joint Program. She currently serves as a member of the National Academies' Board on Earth Sciences and Resources.

Jeffrey T. Freymueller

Ex Officio Member

JEFFREY T. FREYMUELLER is the Endowed Chair for Geology of the Solid Earth in the Department of Earth and Environmental Sciences at Michigan State University. Dr. Freymueller is an internationally recognized leader in the field of geodesy and utilizes satellites from the Global Positioning System (GPS) to make highly precise measurements of movement on the Earth's surface. In his far-reaching research activities, he has made discoveries in a wide range of topics including plate tectonics and plate boundary zones, faults dynamics, the continuing rebound of the Earth's surface from the melting of ice-age glaciers, inflation and deflation of volcanoes, and interpreting how changing water and ice levels deform the Earth. He is particularly well-cited for his work on using GPS to understand the crustal deformation in China related to the formation of the Himalayas and the Tibetan Plateau. In addition to his research, Dr. Freymueller is the director of the EarthScope National Office. EarthScope is a long-term, large-scale program funded by the National Science Foundation to study the structure and evolution of North America and associated hazards through the deployment of thousands of geophysical instruments throughout the country. Dr. Freymueller also has served the scientific community as the U.S. National Correspondent to the International Association of Geodesy and its representative to the International Union of Geodesy and Geophysics, has served terms as an associate editor for the Journal of Geophysical Research and the Journal of Geodesy, and is currently Editor in Chief of the International Association of Geodesy Symposia Series. Dr. Freymueller received his M.S. and Ph.D. in geophysics from the University of South Carolina.

Wendy Bohon

Member

WENDY BOHON is the Seismic Hazards & Earthquake Engineering Branch Chief for the California Geological Survey. In the past, she has worked as the Strategic Communication Specialist for the Earth Sciences Division at NASA Goddard, the Education and Outreach Coordinator for the U.S. Geological Survey Earthquake Hazards Program, and the Senior Science Communication Specialist for the Incorporated Research Institutions for Seismology. Bohon is an earthquake geologist whose research interests span active fault systems, landscape evolution, thermochronology/geochronology, paleoseismology, and science education. She also specializes in science communication with a focus on communication skill-building and rapid onset geologic hazards communication response. She is also an American Association for the Advancement of Science If/Then Science Ambassador. Bohon received a B.A. in theatre and geology from James Madison University, an M.Sc. in geology from Ohio State University, and a Ph.D. in geology from Arizona State University. She completed a postdoc in science communication with the EarthScope National Office.

Rengin Gok

Member

RENGIN GOK is a research seismologist at the Lawrence Livermore National Laboratory where she manages the Seismic Cooperation Program for the DOE/NNSA Office of Nuclear Verification. She is an expert in the development and improvement of seismic monitoring in international communities. Her interests include: seismic source behavior, Comprehensive Nuclear-Test-Ban Treaty verification technologies, velocity and attenuation structure of the Earth, and seismic hazard assessment and its engineering applications. She has published more than 35 peer-reviewed scientific papers. Dr. Gok earned her B.Sc. in geophysical engineering from Istanbul Technical University, and her M.Sc. and Ph.D. in geophysics from Bogazici University in Istanbul, Turkey.

Marc M. Hirschmann

Member

MARC M. HIRSCHMANN is a Professor of Earth and Environmental Sciences at the University of Minnesota. His research interests relate to high temperature processes in Earth and other planetary interiors, including the processes of melting and magma formation, the cycling of volatiles (hydrogen, carbon, nitrogen, sulfur) between planetary interiors and surfaces, and accretion and differentiation of rocky planets, including especially the role of magma oceans. Principal research approaches include high temperature high pressure experiments, microbeam analyses, and geochemical modeling. His honors include the Bowen Award from the American Geophysical Union (AGU) and the Dana Medal from the Mineralogical Society of America (MSA). He is a fellow of AGU, MSA, a Geochemical Fellow (Geochemical Society & European Association of Geochemists), and the American Academy of Arts and Sciences, and he is an elected member of the National Academy of Sciences. Hirschmann received an A.B., M.S., and Ph.D. in geology from, respectively, the University of California, Berkeley, the University of Oregon, and the University of Washington and was a post-doctoral fellow at Caltech.

Mong-Han Huang

Member

MONG-HAN HUANG is an Associate Professor in the Department of Geology at the University of Maryland, College Park. His main research interests are active tectonics, geomorphology, critical zone science, and cryosphere seismology. He is interested in understanding the viscoelastic structure of the crust and upper mantle using long-term geodetic measurements such as Interferometric Synthetic Aperture Radar (InSAR) and Global Positioning System (GPS). He uses the same tools and other remote sensing datasets to study interseismic and volcanic deformation, landslides, and other natural hazard mapping. In addition to solid earth research, he uses near-surface geophysics tools to image Earth’s critical zone structure and subsurface hydrology across different landscapes. More recently, he studies tidally driven brittle and ductile deformation of ice shelf rift zones on the Ross Ice Shelf, Antarctica. Huang received a B.S. in Geology and Physics and M.S. in Applied Geology from National Taiwan University, and a Ph.D. in Earth and Planetary Science from the University of California, Berkeley. He was a NASA Postdoc Program (NPP) fellow at NASA Jet Propulsion Laboratory.

R. Steven Nerem

Member

R. STEVEN NEREM is a professor in the Department of Aerospace Engineering Sciences and associate director of the Colorado Center for Astrodynamics Research at the University of Colorado at Boulder. Dr. Nerem's research interests include sea-level change, satellite altimetry, Earth's gravity field, planetary geodesy, precision orbit determination, and astrodynamics. He has served on two previous committees for the National Academies of Sciences, Engineering, and Medicine - the Committee on Earth Science and Applications from Space and the Committee on Evolving the Geodetic Infrastructure to Meet New Scientific Needs. Dr. Nerem is the recipient of numerous awards including the American Astronautical Society's Earth Science and Applications Award and the American Geophysical Union's (AGU) Geodesy Section Award. He is a fellow of the AGU. Dr. Nerem earned a B.S. in geology from Colorado State University and an M.S. and Ph.D. in aerospace engineering from the University of Texas, Austin.

Barbara A. Romanowicz

Member

BARBARA A. ROMANOWICZ is a professor of the Graduate School at the University of California, Berkeley and professor emeritus at the Collège de France. She was previously the chair of Physics of the Earth Interior at Collège de France in Paris and the Director of the Berkeley Seismological Laboratory, where she helped establish a real-time earthquake notification system for northern California. Her research interests include the study of deep earth structure and dynamics using seismic data analysis and modeling, developing new methodologies and implementing numerical seismic wavefield computations in seismic imaging at the continental and global scales. She is also interested in earthquake processes and scaling laws, the development of modern broadband seismic and geophysical observatories on land and in the oceans, Earth's normal modes and low frequency "hum." She is a member of the U.S. National Academy of Sciences and French Academy of Sciences and has served on the Scientific Council for the European Research Council. She received the American Geophysical Union's William Bowie medal in 2019 and the International Association of Seismology and Physics of the Earth's Interior medal in 2021. Romanowicz received a Ph.D. in geophysics from the University of Paris 7, France. She previously served on NASEM's Board on Earth Sciences and Resources.

Donna J. Shillington

Member

DONNA J. SHILLINGTON is an associate professor in the School of Earth and Sustainability at Northern Arizona University. Her research focuses on deformation, magmatism, and sedimentation at plate tectonic boundaries and in other interesting geological settings, which she studies using active-source seismology together with other geophysical, geological, and geochemical approaches. An important component of her research is the acquisition and analysis of novel geophysical data on land and at sea; she has sailed on 18 research cruises around the world and also led major seismic data collection efforts on land. Her prior community service and leadership includes serving on the IRIS Board of Directors, the steering committees of GeoPRISMS and EarthScope and the Marine Seismic Research Oversight Committee; she currently serves on the steering committee of the SZ4D Research Coordination Network. Prior to joining Northern Arizona University, she was a research scientist and professor at Lamont-Doherty Earth Observatory of Columbia University and a postdoctoral research scientist and lecturer at the National Oceanography Centre in Southampton, UK. Dr. Shillington earned her B.S. in geology and A.B.J. in journalism from the University of Georgia and her Ph.D. in geophysics from the University of Wyoming.

Frederik J. Simons

Member

FREDERIK J. SIMONS is a Professor of Geophysics, the Associate Chair of the Department of Geosciences, and an Associated Faculty Member with the Program in Applied and Computational Mathematics at Princeton University. Previously, he was a Lecturer at University College London, a Princeton Council of Science & Technology Beck Fellow, and a Department of Geosciences Hess Post-doctoral Fellow. He has held visiting appointments at the Institute for Advanced Study in Princeton, University College London, KU Leuven, and the universities of Brussels, Cambridge, ETH Zurich, and IPG Paris. Simons is interested in the seismic, mechanical, thermal, and magnetic properties of the Earth’s lithosphere and of the terrestrial planets and moons. He designs theoretical and computational inverse methods, tomographic, and statistical techniques to analyze complex, large, and heterogeneous geophysical data sets for seismology, space-based, and terrestrial geodesy. He has furthered the design of mid-column floating hydrophones to open up the sparsely instrumented oceanic domains for global tomography and environmental sensing, and of deep-ocean instrumentation to conduct long-term seafloor geodesy. He received the Vladimir Keilis-Borok Medal for Mathematical Geophysics from the IUGG, served as a Distinguished Lecturer for the Seismological Society of America and the IRIS Consortium, received a National Science Foundation CAREER Award, and the quadrennial Charles Lagrange Prize from the Royal Belgian Academy. Simons received an M.Sc. in geology from KU Leuven, Belgium and a Ph.D. in geophysics from the Massachusetts Institute of Technology.