

Evolving the Geodetic Infrastructure to Meet New Scientific Needs

Committee

David T. Sandwell

Chair

DAVID T. SANDWELL (NAS), Chair, is a professor of geophysics at Scripps Institution of Oceanography at the University of California, San Diego. Dr. Sandwell's research interests are focused on mapping large-scale topographic features beneath the ocean using data collected by remote-sensing instruments on satellites orbiting the earth and sonars on research vessels. He co-chaired the 2017 Decadal Survey Panel on Earth Surface and Interior and was a member of the Committee on National Requirements for Precise Geodetic Infrastructure. Dr. Sandwell is a fellow of the American Academy of Arts and Sciences, the American Geophysical Union (AGU) and the Geological Society of America, and is a member of the National Academy of Sciences. He earned a B.S. in physics from the University of Connecticut, and an M.S. and Ph.D. in geophysics and space physics from the University of California, Los Angeles.

Srinivas Bettadpur

Member

SRINIVAS BETTADPUR is an associate professor in the Department of Aerospace Engineering and Engineering Mechanics and director of the Center for Space Research at the University of Texas at Austin. Dr. Bettadpur's area of expertise is orbital mechanics, perturbations, and orbit determination; space geodesy including multitechnique space-geodetic methods for precision global reference frames; and determination and interpretation of Earth's gravity field. He is a recipient of the Vening Meinesz Medal from the EGU and several NASA awards for his work determining the time-variable gravity field from space. Dr. Bettadpur is a fellow of the IAG. He received a B.E. in mechanical engineering from Punjab University, India, an M.Tech. in aeronautical engineering from IIT-Kanpur, India, an M.S. in aerospace engineering from the University of Oklahoma, and a Ph.D. in aerospace engineering from the University of Texas, Austin.

Geoffrey Blewitt

Member

GEOFFREY BLEWITT is a professor with joint appointments in the Department of Physics and the Nevada Bureau of Mines and Geology at the University of Nevada, Reno. Dr. Blewitt's research focuses on geodesy, global reference frames, and the application of very high precision GPS to earth science including geodynamics, plate tectonics, earthquake cycle, surface mass loading, glacial isostatic adjustment, sea-level change, and atmospheric science. His contributions in these areas earned him the Vening Meinesz Medal from the EGU, as well as several NASA awards. He is co-inventor on three patents on GPS data analysis techniques. He is also a fellow of the AGU and the IAG. Dr. Blewitt served on the Committee on National Requirements for Precise Geodetic Infrastructure. He received a B.Sc. in physics from Queen Mary's College of the University of London, and a PhD in physics from the California Institute of Technology.

John J. Braun

Member

JOHN J. BRAUN is the project scientist for the Constellation Observing System for Meteorology Ionosphere and Climate (COSMIC) Program at the University Corporation for Atmospheric Research (UCAR). Dr. Braun's research interests are focused on using Global Navigation Satellite System (GNSS) signals to remotely sense the atmosphere and land surface to support water cycle research. He holds a patent on a high-resolution ionospheric technique for regional area high-accuracy GPS applications. Dr. Braun is a member of the International GNSS Service Tropospheric Working Group. He received a B.A. in physics and mathematics and an M.S. and Ph.D. in aerospace engineering all from the University of Colorado, Boulder.

Anny Cazenave

Member

ANNY CAZENAVE (NAS) is a senior scientist at the Laboratoire d'Etudes en Géophysique et Océanographie Spatiale at the Centre National d'Etudes Spatiales (CNES) in Toulouse, France. She is also Director for Earth Science at the International Space Science Institute in Bern, Switzerland. Dr. Cazenave's research deals with the applications of space techniques to geosciences (geodesy, gravity and solid Earth geophysics; sea-level variations and study of climatic causes; global water cycle and land hydrology from space; climate research). She has served on several National Academies committees including the Committee on National Requirements for Precise Geodetic Infrastructure. Dr. Cazenave is a fellow of the AGU and the American Association for the Advancement of Science, a member of the French Academy of Sciences, and a foreign member of the American, Indian, and Belgian Academies of Sciences. She earned a Ph.D. in geophysics from the University of Toulouse.

Nancy Glenn

Member

NANCY GLENN is a professor in the Department of Geosciences and director of the Boise Center Aerospace Laboratory at Boise State University. She is an expert in imaging spectroscopy and lidar of terrestrial ecosystems and is particularly interested in the structure and function of dryland ecosystems and understanding how these ecosystems respond to changes in climate and disturbance. In addition to her research, Dr. Glenn enjoys organizing community workshops to advance training and use of spectroscopy and point cloud analysis in earth system science. Dr. Glenn serves on several advisory committees related to remote sensing, including NASA's Earth Science Advisory Committee and UNAVCO's Board of Directors. She received a B.S. in geological engineering from the University of Nevada, Reno, an M.S. in civil engineering from the University of California, Berkeley, and a Ph.D. in geoenvironmental engineering from the University of Nevada, Reno.

Kristine M. Larson

Member

KRISTINE M. LARSON is a professor emerita in the Department of Aerospace Engineering Sciences at the University of Colorado, Boulder. Dr. Larson's research interests are focused on developing new applications for GPS instruments including measuring seismic displacement, ice sheet speed, firn density, soil moisture, vegetation water content, snow depth, volcanic ash, and water levels. She served on both the 2017 Decadal Survey Panel on Earth Surface and Interior and the Committee on National Requirements for Precise Geodetic Infrastructure. Dr. Larson is a fellow of the AGU and a recipient of the Christiaan Huygens Medal from the EGU. She earned a B.A. in engineering sciences from Harvard University and a Ph.D. in geophysics from the Scripps Institution of Oceanography at the University of California, San Diego.

R. S. Nerem

Member

R. STEVEN NEREM is a professor in the Smead Aerospace Engineering Sciences department 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 is a member of the National Academies of Sciences, Engineering, and Medicine's Committee on Earth Science and Applications from Space and is a former member of a UNAVCO study on grand challenges in geodesy. Dr. Nerem is the recipient of numerous awards including the American Astronautical Society's Earth Science and Applications Award and the AGU's 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.

Michelle Sneed

Member

MICHELLE SNEED is a hydrologist at the U.S. Geological Survey. Her research focuses on land subsidence related to fluid-pressure changes in the western United States, using measurements of land-surface elevation and elevation change including spirit leveling, GPS, extensometry, and Interferometric Synthetic Aperture Radar. Ms. Sneed is a member of the UNESCO Land Subsidence International Initiative and was a participant in a recent NSF-sponsored workshop on hydrological applications of geodetic techniques. She received a B.S. and M.S. in geology from California State University, Sacramento, where she also periodically teaches geology classes.

Isabella Velicogna

Member

ISABELLA VELICOGNA is a professor in the Department of Earth System Sciences at the University of California, Irvine. She is also a scientist faculty part time at the NASA/Caltech Jet Propulsion Laboratory. Dr. Velicogna uses novel geophysical methods and satellite remote sensing techniques to understand the physical processes governing ice sheet and high mountain mass balance and the hydrologic cycle of high latitude regions. She uses data from a variety of sensors, especially time-variable gravity and altimetry, but also passive microwave, GPS, and in situ data. Dr. Velicogna is a recipient of the EGU's Vening Meinesz Medal for distinguished research in geodesy and is a Kavli Fellow of the National Academy of Sciences, Engineering, and Medicine. She earned a B.S. and M.S. in physics and a Ph.D. in engineering (geodynamics) all from the University of Trieste, Italy.