

Decadal Survey for Earth Science and Applications from Space - Panel on Earth Surface and Interior: Dynamics and Hazards

Committee

Douglas W. Burbank

Co-Chair

DOUGLAS W. BURBANK (NAS) is a professor at the University of California, Santa Barbara in the Department of Earth Science. Dr. Burbank's research in tectonic geomorphology synthesizes surface processes, modern and past climate history, sedimentology, stratigraphy, structure, and diverse dating approaches in order to quantify the growth and decay of topography through time. Previously, Dr. Burbank was a professor at the Pennsylvania State University and at the University of Southern California. He has been elected a fellow of the American Geophysical Union (AGU), the American Association for the Advancement of Science (AAAS), and the Geological Society of America. Dr. Burbank earned his Ph.D. from Dartmouth College. He is a member of the National Academy of Sciences, but has not previously served on any committees of the Academies.

David T. Sandwell

Co-Chair

DAVID T. SANDWELL (NAS) is professor of geophysics at Scripps Institution of Oceanography in the Institute for Geophysics and Planetary Physics. Dr. Sandwell's research activities 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. Dr. Sandwell worked as a research geodesist at the National Geodetic Survey and as a research geophysicist at the University of Texas, Austin before taking a faculty position at Scripps Institution of Oceanography. He is the president of AGU's Geodesy Section. Dr. Sandwell earned his Ph.D. in geophysics and space physics from the University of California, Los Angeles. He is a member of the National Academy of Sciences and has served on the Academies' Board on Earth Sciences and Resources, the Committee on Seismology and Geodynamics, and the Committee on National Requirements for Precision Geodetic Infrastructure.

Robin E. Bell

Member

ROBIN E. BELL is a senior research scientist at Columbia University (CU) in the Lamont-Doherty Earth Observatory. At CU, she directs major research programs on the Hudson River and in Antarctica. Dr. Bell has studied the mechanisms of ice sheet collapse and the chilly environments beneath the Antarctic ice sheet, including Lake Vostok, and she has led seven major aero-geophysical expeditions to Antarctica. She received the Columbia University Department of Geological Sciences Storke Award in 1992. Dr. Bell earned her Ph.D. in geology from Columbia University. She served on the Academies' Committee on the Development of a Strategic Vision and Implementation Plan for the U.S. Antarctic Program, the Committee on Antarctic and Southern Ocean Service Review, and on the Polar Research Board.

Emily E. Brodsky

Member

EMILY BRODSKY is a professor at the University of California, Santa Cruz. She is an earthquake physicist whose research primarily focuses on identifying the processes that trigger earthquakes and constraining the forces and processes that occur inside a fault zone during slip. These studies require tools from a number of fields including seismology, rheology, hydrogeology and structural geology. She is the recipient of the inaugural Charles Richter Early Career award from the Seismological Society of America, the James Macelwane Medal from the AGU and is an AGU fellow. She was selected as a distinguished lecturer for the National Science Foundation Earthscope program, the Geo-Prisms program and the National Science Board. She has served on the Board of Directors of the Southern California Earthquake Center (SCEC) and Incorporated Research Institutes for Seismology (IRIS). She has published over 80 peer-reviewed articles and presented over 75 invited lectures or keynote talks in 11 countries. Her work has been featured in major press outlets such as the BBC, NPR, Time Magazine, NY Times, Nature, Reuters, LA Times and The Wall Street Journal. She was a 2001 Miller Fellow at the University of California, Berkeley. Dr. Brodsky earned her Ph.D. from the California Institute of Technology. She has served on the Academies' Committee on Seismology and Geodynamics.

Donald P. Chambers

Member

DON P. CHAMBERS is an associate professor at the University of South Florida in the College of Marine Science. Dr. Chambers specializes in using satellite observations such as radar altimetry and satellite gravimetry to better understand ocean dynamics and sea level variability. Previously, Dr. Chambers was a research scientist at the Center for Space Research at the University of Texas at Austin. He is a recipient of the AGU Geodesy section award. He earned his Ph.D. in aerospace engineering from the University of Texas at Austin. He has not previously served on a committee of the Academies.

Lucy Flesch

Member

LUCY M. FLESCH is a professor of geophysics at Purdue University (PU) in the Department of Earth, Atmospheric, and Planetary Sciences in the College of Science. At PU, Dr. Flesch has addressed fundamental questions in geophysics relating to: quantifying forces driving continental deformation, especially far inboard from the plate edge; determination of role of the convecting mantle in driving surface motions; assessing the level of crust/mantle and lithosphere/asthenosphere coupling; and determining the strength of the continental lithosphere. Her research is done through observationally based numerical simulations that integrate data from geology, geodesy and seismology. Previously, Dr. Flesch was a post-doctoral fellow at the Carnegie Institution of Washington, Department of Terrestrial Magnetism. She was a member of the writing team Dynamics of Continents: Geodynamics Grand Challenges White Paper commissioned by NSF for Academies use. She earned her Ph.D. in geophysics from Stony Brook University. She has not previously served on a committee of the Academies.

George E. Hilley

Member

GEORGE E. HILLEY is an associate professor at Stanford University in the Department of Geological Sciences. At Stanford University, Dr. Hilley leads the Tectonic Geomorphology Laboratory, which uses geologic observations, remote-sensing data, laboratory analyses, and physically-based models to understand landscape change along active plate margins. Specifically, he has combined geologic mapping, InSAR measures of ground deformation, GPS motions, SRTM topography, high-resolution Airborne Lidar, cosmogenic radionuclide abundances, and numerical models to understand landscape change over a range of time-scales. Previously, Dr. Hilley was an Alexander von Humboldt Fellow at the Universität Potsdam, Germany, and a postdoctoral researcher at the University of California, Berkeley. Dr. Hilley earned his Ph.D. in geology from Arizona State University. He has not previously served on a committee of the Academies.

Kristine M. Larson

Member

KRISTINE M. LARSON is a professor at the University of Colorado, Boulder in the Department of Aerospace Engineering Sciences. Dr. Larson's research interests are focused on developing new applications for GPS instruments, including measuring seismic displacements, ice sheet speeds and firn density, soil moisture, vegetation water content, snow depth, volcanic ash, and water levels. She is an AGU fellow, Huygens Medalist, and the recipient of the Prince Sultan Bin Abdulaziz Creativity Award for Water. Dr. Larson earned her Ph.D. in geophysics from the Scripps Institution of Oceanography at the University of California, San Diego. She has served as a member on the Academies' Committee on New Research Opportunities in the Earth Sciences at the National Science Foundation, and the Committee on National Requirements for Precision Geodetic Infrastructure.

Stefan Maus

Member

STEFAN MAUS is a senior scientist at the University of Colorado, Boulder at the Cooperative Institute for Research in Environmental Sciences (CIRES). At CIRES, Dr. Maus has analyzed satellite, airborne, marine and ground magnetic data to model contributions to the geomagnetic field originating in the Earth's core, mantle, crust, oceans and space. He supported the Department of Defense (DoD), National Oceanic and Atmospheric Administration (NOAA), Coast Guard, Federal Aviation Association (FAA), NASA and other agencies to meet their needs for accurate geomagnetic reference information for navigation and pointing. He led the development and release of the World Magnetic Model WMM2005 and WMM2010, led the production and release of the International Geomagnetic Reference Field (IGRF2005 and IGRF2010), and developed the Enhanced Magnetic Model (EMM2010), the Earth Magnetic Anomaly Grid (EMAG2) and the Global Acceleration Reference Model (GARM). He also contributed significantly in an official advisory role to the Swarm triple-satellite constellation mission, launched successfully in November 2013. Previously, Dr. Maus was a mission scientist at Helmholtz Center Potsdam as a specialist for lithospheric magnetic anomalies on the CHAMP satellite team. He was the NOAA Team Member of the Month in June, 2008, received the NOAA/NGDC Director's Award for Enhancing the Reputation of the National Geophysical Data Center in 2007, and was awarded Habilitation Fellow of the German Research Foundation in 1998. He earned his Ph.D. in geophysics from the Osmania University and his Habilitation in geophysics from the University of Braunschweig. He has not previously served on a committee of the Academies.

Michael S. Ramsey

Member

MICHAEL S. RAMSEY is a professor at the University of Pittsburgh (UP) in the Department of Geology and Environmental Science. At UP, Dr. Ramsey formed the Image Visualization and Infrared Spectroscopy (IVIS) Laboratory, which is a state-of-the-art image analysis, infrared spectroscopy, and GPS facility. His research interests are quite varied but focus on physical volcanology, the impact of volcanic emissions on the atmosphere, hazard mitigation, planetary surface processes, and eolian dynamics primarily using thermal infrared (TIR) imaging analysis, spectroscopy, and satellite remote sensing. Ramsey also serves as a science team member on three thermal infrared NASA instruments: The Earth-orbiting Advanced Spaceborne Thermal Emission and Reflectance Radiometer (ASTER), the Mars-orbiting Thermal Emission Imaging System (THEMIS), and the airborne Mineral and Gas Identifier (MAGI). Prior to coming to the UP, he was a post-doctoral researcher and visiting faculty member in the Department of Geology (now the School of Earth and Space Exploration) at Arizona State University (ASU). Ramsey was appointed by the NASA Administrator as an inaugural member of the Earth Science Subcommittee from 2006-2009. He earned his Ph.D. in geology from Arizona State University. He has not previously served on a committee of the Academies.

Jeanne Sauber

Member

JEANNE SAUBER is a geophysicist in the Planetary Geodynamics Laboratory at NASA's Goddard Space Flight Center. At NASA, Dr. Sauber has led research using numerical modeling techniques constrained by gravity change, crustal deformation, high-resolution topography and other data to study the mechanics of subduction zones, to constrain earthquake source processes and to determine the crust-mantle rheological structure. She has been a team member on the SRTM, ICESat, DESDynI, GRACE, GRACE-FO and LIST satellite missions; her contribution to these missions includes leading science studies of lithosphere-cryosphere interaction and earthquakes physics, calibration and validation of early data products and mission design. Dr. Sauber co-led a comparative cryosphere's study group formed to take advantage of the joint expertise of Earth & Planetary scientists to address common scientific questions and to design needed space observations to provide constraints on cryospheric processes on Europa, Earth, and Mars. She has served as a Journal of Geophysical Research - Solid Earth Associate Editor and on numerous Geodesy advisory committees. Dr. Sauber earned her Ph.D. in geophysics at the Massachusetts Institute of Technology. She has not previously served on a committee of the Academies.

Khalid A. Soofi

Member

KHALID A. SOOFI is a science fellow at ConocoPhillips. Prior to joining ConocoPhillips, He worked at CRINC (a NASA research group at University of Kansas) as project engineer where he designed the FM-CW Radar for various research projects. He was the project lead in designing antenna calibration algorithms for the SEASAT satellite and Radar background-clutter model for US Air Force. Since joining ConocoPhillips, Dr. Soofi has worked on full spectrum of remote sensing projects ranging from geological and geomorphological analysis of images, image processing for logistics, mapping and engineering applications as well as environmental baseline studies. Dr. Soofi earned his Ph.D. in electrical engineering from the University of Kansas. He has not previously served on a committee of the Academies.

Howard A. Zebker

Member

HOWARD A. ZEBKER is professor and chair at Stanford University in the Department of Geophysics. He also serves as associate chair of the Department of Electrical Engineering at Stanford University. His research group specializes in interferometric radar remote sensing applications and technique development. Originally a microwave engineer, he built support equipment for the SEASAT satellite synthetic aperture radar and designed airborne radar systems. He later developed imaging radar polarimetry, a technique for measurement of the radar scattering matrix of a surface. He is best known for the development of radar interferometry, leading to spaceborne and airborne sensors capable of measuring topography to meter scale accuracy and surface deformation to mm scale. More recently he has been participating in the NASA Cassini Mission to Saturn, concentrating on analysis of data acquired by the radar/radiometer instrument. He is a fellow of the Institute of Electrical and Electronics Engineers (IEEE). Dr. Zebker earned his Ph.D. from Stanford University. He served as a member of the Academies' Committee on the Implementation of a Sustained Land Imaging Program, the Panel on Solid-Earth Hazards, Resources, and Dynamics, and the Advanced Radar Technology Panel.