

MARIA T. ZUBER

Research Interests

Theoretical modeling of geophysical processes; analysis of altimetry, gravity and tectonics to determine the structure and dynamics of the Earth and solid planets; development and implementation of spacecraft laser and radio tracking experiments.

Education

Ph.D. Geophysics, Brown University, 1986.

Ph.D. Thesis: Unstable Deformation in Layered Media: Application to Planetary Lithospheres

Thesis Advisor: E.M. Parmentier

Sc.M. Geophysics, Brown University, 1983.

B.A. Astronomy (honors) and Geology, University of Pennsylvania, 1980.

Senior Thesis: Velocity-Inclination Correlations in Galactic Clusters

Employment

Vice President for Research, Massachusetts Institute of Technology, 2013-Present.

E.A. Griswold Professor of Geophysics, Massachusetts Institute of Technology, 1998-Present.

Head of the Department of Earth, Atmospheric and Planetary Sciences, Massachusetts Institute of Technology, 2003-2011.

Consultant, Aerospace Division, MIT Lincoln Laboratory, 2002-2015.

Professor of Geophysics and Planetary Science, Massachusetts Institute of Technology, 1995-1998.

Professor of Geophysics, Johns Hopkins University, 1995.

Senior Research Scientist, Laboratory for Terrestrial Physics, NASA/Goddard Space Flight Center, 1994-2010.

Second Decade Society Associate Professor of Geophysics, Johns Hopkins University, 1993-1995.

Adjunct Research Scientist, Geodynamics Branch, NASA/Goddard Space Flight Center, 1993.

Associate Research Professor of Geophysics, Department of Earth and Planetary Sciences, Johns Hopkins University, 1991-1992.

Geophysicist, Geodynamics Branch, NASA/Goddard Space Flight Center, 1986-1992.

National Research Council Research Associate, Geodynamics Branch, NASA/Goddard Space Flight Center, 1985-1986.

Research Assistant, Department of Geological Sciences, Brown University, 1980-1985.

Visiting Appointments

Guest Investigator, Woods Hole Oceanographic Institution, Summers, 1996-2010.

Visiting Scholar, Department of Earth and Planetary Sciences, and Senior Science Fellow, Radcliffe Institute for Advanced Study, Harvard University, 2002-2003.

Visiting Assistant Professor of Geophysics, Department of Earth and Planetary Sciences, Johns Hopkins University, 1990.

Honors and Awards

Eugene Shoemaker Distinguished Scientist Medal, NASA Solar System Exploration Virtual Institute, 2017.
Honorary Fellowship in Geophysics, Royal Astronomical Society, 2017.
MIT Lincoln Laboratory Facilities Modernization Plan Team Award, 2016.
Best Referee Award, *Nature* Publishing Group, 2015.
MIT Freshman Advising Student Champion Award, 2015.
Elected Member, Johns Hopkins Society of Scholars, 2015.
Buzz Aldrin Space Exploration Award, The Explorers Club, 2014.
NASA Group Achievement Award for the Dawn Science Team, 2013.
NASA Group Achievement Award for the Lunar Reconnaissance Orbiter-Laser Ranger Optical Communication Experiment, 2013.
National Space Society, Space Pioneer Award in Science and Engineering, GRAIL Team, 2013.
MIT James R. Killian, Jr. Faculty Achievement Award, 2012-2013.
International Academy of Astronautics Laurel for Team Achievement to MESSENGER Team, 2012.
American Geophysical Union Harry H. Hess Medal, 2012.
NASA Outstanding Public Leadership Medal, 2012.
NASA Group Achievement Award for the GRAIL Science Team, 2012.
NASA Group Achievement Award for the GRAIL Project Office Team, 2012.
NASA Group Achievement Award for the GRAIL Mission Formulation Team, 2012.
NASA Group Achievement Award for the Lunar Reconnaissance Orbiter Team, 2010.
NASA Group Achievement Award for the Lunar Reconnaissance Orbiter Laser Ranging Team, 2009.
U.S. News & World Report/Harvard Kennedy School Center for Public Leadership List of America's Best Leaders, 2008.
Doctor of Science, *Honoris Causa*, Brown University, 2008.
Fellow, Geological Society of America, 2008.
Fellow, American Association for the Advancement of Science, 2007.
American Astronautical Society/Planetary Society Carl Sagan Memorial Award, 2007.
Geological Society of America G.K. Gilbert Award, 2007.
NASA Goddard Space Flight Center Outstanding Teamwork Award for the Earth-Mars Laser Ranging Experiment, 2006.
Brown University Horace Mann Medal, 2005.
NASA Group Achievement Award for the Jupiter Icy Moons Orbiter Science Definition Team, 2005.
Member, American Philosophical Society, 2005.
NASA Group Achievement Award for the Mercury Laser Altimeter Instrument Team, 2004.
NASA Distinguished Public Service Medal, 2004.
Member, National Academy of Sciences, 2004.
Fellow, American Academy of Arts and Sciences, 2004.
NASA Group Achievement Award for the Mars Global Surveyor Project Science Team, 2003.
List of 50 Most Important Women in Science, *Discover Magazine*, November, 2002.
Scientific Achievement Award, American Institute of Aeronautics and Astronautics, New England Section, 2002.
NASA Group Achievement Award for the Near Earth Asteroid Rendezvous Shoemaker Mission Team, 2002.
Fellow, American Geophysical Union, 2001.
NASA Group Achievement Award for the Mars Program Independent Assessment Team, 2000.
NASA Group Achievement Award for the Mars Global Surveyor Science Team, 2000.
Asteroid 6635 Zuber, discovered by Carolyn and Eugene Shoemaker at Palomar Observatory, 1987; approved by the IAU, 1998.
NASA Group Achievement Award for the Near Earth Asteroid Rendezvous spacecraft encounter of Asteroid 253 Mathilde, 1998.
NASA Exceptional Scientific Achievement Medal, 1995.
Johns Hopkins University David S. Olton Award for Outstanding Contributions to Undergraduate Student Research, 1995.

NASA Group Achievement Award for the Deep Space Program Science Experiment Lunar Orbit Mission Operations Support Team, 1994.
Johns Hopkins University Oraculum Award for Excellence in Undergraduate Teaching, 1994.
Johns Hopkins University Second Decade Society Faculty Development Chair, 1993-1995.
NASA Group Achievement Award for the Mars Observer Payload Development Team, 1993.
NASA Group Achievement Award for the Mars Observer Laser Altimeter Project, 1991.
NASA Outstanding Performance Award, 1988, 1989, 1990, 1991, 1992.
NASA Peer Award, 1988.
Sigma Xi, 1983, 1985.

Spacecraft Mission Involvement

Gravity Investigation Lead & Co-investigator, NASA Psyche Mission, 2016-Present.
Principal Investigator, NASA Gravity Recovery and Interior Laboratory (GRAIL) Mission, 2008-2017.
Investigation Lead, Laser Ranger, NASA Lunar Reconnaissance Orbiter Mission, 2006-2016.
Deputy Principal Investigator, Lunar Orbiter Laser Altimeter, NASA Lunar Reconnaissance Orbiter Mission, 2004-Present.
Co-investigator, NASA Dawn Mission to Vesta and Ceres, 2001-Present.
Team Leader, Radio Science Gravity Investigation, Mars Reconnaissance Orbiter Mission, 2001-Present.
Co-investigator & Lead of the Geophysics Investigation, NASA MESSENGER Mission to Mercury, 1999-2016.
Team Leader, Laser Ranging Investigation, NASA Near Earth Asteroid Rendezvous Mission, 1994-2001.
Deputy Principal Investigator, Mars Orbiter Laser Altimeter, Mars Global Surveyor Mission, 1994-2007.
Gravity and Altimetry Team, Ballistic Missile Defense Organization/NASA Clementine Mission, 1993-1995.
Co-investigator, Mars Observer Laser Altimeter, 1990-1993.

Presidential Appointments

National Science Board, by President Donald J. Trump, 2018-Present.
National Science Board, by President Barak Obama, 2013-2018 (Chair, 2016-2018).
Commission on Implementation of United States Space Exploration Policy, by President George W. Bush, 2004.

Professional Societies

American Geophysical Union -- Fellow
American Association for the Advancement of Science -- Fellow
American Astronomical Society, Division for Planetary Sciences
American Astronautical Society
The Explorers Club – Fellow National
Geological Society of America – Fellow
Royal Astronomical Society – Honorary Fellow in Geophysics

Corporate Boards

Bank of America, 2018-Present.
Textron, Inc., 2017-Present.

Professional Involvement

Member, Harvard Kennedy School Belfer Center for Science and International Affairs-Bank of America Council on the Responsible Use of Artificial Intelligence, 2018-Present.

Member, NASA James Webb Space Telescope Independent Review Board, 2018.

Chair, Jet Propulsion Laboratory Advisory Council, 2017-Present; Member, 2000-2016.

Selection Committee, MIT Media Lab Disobedience Award, 2017, 2018.

International Advisory Council, Saudi Aramco EXPEC ARC, 2017-2018.

Selection Committee, American Association for the Advancement of Science Newcomb Cleveland Prize, 2016.

Science Advisory Board, Gordon and Betty Moore Foundation, 2016-Present.

Chair, National Academy of Sciences Nominating Committee, 2016.

Advisor, NASA/WGBH Bringing the Universe to America's Classrooms Initiative, 2016-2017.

NASA Europa Gravity Study Group, 2015-2016.

Planning Committee, Association of American Universities Senior Research Officers Meeting, 2016; 2018.

Participant, National Academy of Sciences -- Annenberg Retreat at Sunnylands Working Group on Scientific Integrity, February, 2015.

Executive Committee, Center for Integration of Medicine and Innovative Technology (CIMIT), 2013-2015.

Co-convener, Session on "Spaceborne Remote Sensing of Gravity: GRACE, GRAIL, GOCE, GRACE-FO, and Beyond", American Geophysical Union Fall Meeting, San Francisco, CA, 2014.

Chair, External Review Committee, Harvard University Center for the Environment, 2013.

Alliance Board of Directors, National Renewable Energy Laboratory, 2013-Present.

Co-convener, Session on "Spaceborne Remote Sensing of Gravity: GRACE, GRAIL and GOCE", American Geophysical Union Fall Meeting, San Francisco, CA, 2013.

Visiting Committee, Radcliffe Institute for Advanced Study, Harvard University, 2013.

Member, National Research Council Governing Board, 2013-2015.

Executive Committee and Board of Directors, Massachusetts Green High Performance Computing Center, 2013-Present.

Co-convener, Session on "GRAIL Explores the Moon's Interior", Lunar and Planetary Science Conference XLIV, Houston, TX, 2013.

Council of the National Academy of Sciences, 2012-2015.

Co-convener, Session on "Initial Results of the GRAIL Mission", American Geophysical Union Fall Meeting, San Francisco, CA, 2012.

Co-chair, MIT Execution Planning Committee on the Environment, 2012.

Chair, Faculty Search Committee on Space, MIT-Skolkovo Initiative, 2012.

Scientific Organizing Committee, BepiColombo-MESSENGER Joint Workshop on the Internal Constitution of Mercury, 2012.

Member, President's Council of Advisors on Science and Technology (PCAST) Study on the Future of the U.S. Science and Technology Enterprise, 2011-2012.

Member, Draper Laboratory Space Systems Review Board, 2011.

Co-chair, MIT Center for Global Change Science Advisory Board, 2011-2013.

Co-organizer, Exploration Symposium, celebrating MIT's 150th Anniversary, 2011.

Scientific Organizing Committee, Brown-Vernadsky Microsymposium, The Woodlands, TX, March 2011, 2012, 2013, 2014, 2015.

Member, Advisory Board, Search for MIT Dean of Engineering, 2010.

Scientific Organizing Committee, Fifth International Conference on Mars Polar Science and Exploration, Fairbanks, AK, 2011.

Organizing Committee, Climate and Economics Symposium, Radcliffe Institute for Advanced Study, Harvard University, 2010-2011.

Member, NASA OSIRIS-REX Red Team Review, NASA New Frontiers Program, 2010.

Co-convener, MIT Gulf of Mexico Oil Spill Forum, 2010.

Member, Advisory Board, Search for MIT Dean of Graduate Studies, 2010.

Member, MIT Energy and Environment Advisory Board, 2010-2012.

Member, NASA/Artemis Mission Senior Review, 2010.

Scientific Organizing Committee, NASA Lunar Science Institute Symposium, 2010.

Co-convener, MIT Climategate Forum, 2009.

Chair, Committee on the Recruitment and Professional Development of Women, King Abdullah University of Science and Technology, Saudi Arabia, 2009-2011.

Board of Fellows, Brown University Corporation, 2009-Present.

MIT News Office Advisory Group, 2009-2011.

Co-chair, Research Working Group, MIT Institute-wide Planning Task Force, 2009-2011.

Co-convenor, MIT Women in Aerospace Symposium, 2009, 2010, 2011.

National Academy of Sciences J. Lawrence Smith Medal Selection Committee, 2005, 2008.

Co-convenor, Union Session on "MESSENGER at Mercury: The Second Flyby", American Geophysical Union Fall Meeting, San Francisco, CA, 2008.

Program Committee, MIT Darwin Bicentennial Conference, 2008-2009.

Co-convenor, Session on "Mars Exploration", 37th Scientific Assembly, COmmittee on SPACe Research (COSPAR), Montreal, Canada, 2008.

Co-convenor, Session on "Lunar Science and Exploration", Asia Oceania Geosciences Society (AOGS) Meeting, Busan, Korea, 2008.

Advisory Board, Kuwait-MIT Center for Natural Resources and the Environment, 2007-Present.

External Advisory Board, Brown University ADVANCE Program, 2007-2009.

Advisory Panel, *Minding the Gap* study on women in science at NASA, 2007.

Chair, MIT Environmental Assessment Committee, 2007.

Co-convenor, National Academy of Sciences Sackler Colloquium on "Evolution and Exploration of Solar Systems", January 5-6, 2007.

External Reviewer, University of Colorado Laboratory for Atmospheric and Space Science, 2006.

American Geophysical Union Fellows Committee, 2006-2010.

Chair, Advisory Committee on the Lincoln Laboratory Director Search, 2006.

National Academy of Sciences Committee on Women in Academic Science and Engineering, 2005-2006.

Screening Committee, Lemelson-MIT Prize, 2005-2006.

National Academy of Sciences Earth Science and Applications from Space Panel on Solid Earth Hazards, Resources and Dynamics, 2005-2007.

Co-chair, NASA Science Instruments and Sensor Capability Roadmap Team, 2004-2005.

JPL Cassini Orbit Insertion Review Board, 2004.

Mars Exploration Rover Independent Status Review Board, 2003-2004.

Visiting Committee, Radcliffe Institute for Advanced Study, Harvard University, 2003-2009.

Review Board, NASA Mars Exploration Rover, Landing Site Selection Review, 2003.

NASA Jupiter Icy Moons Orbiter Science Definition Team, 2003-2004.

Review Board, Mars Gravity Biosatellite Mission Concept Preliminary Design Review, 2003.

Chair, Planetary Sciences Section Nominating Committee, American Geophysical Union, 2003.

Chair, American Geophysical Union Honors and Recognition Committee, 2002-2004.

Prize Committee, Division of Planetary Sciences of the American Astronomical Society, 2001-2004.

Visiting Committee, Jet Propulsion Laboratory, 2000-2004.

Board of Reviewing Editors, *Science*, 2000-Present.

Board of Directors, The Planetary Society, 2000-2004.

Mars Program Independent Assessment Team, 2000.

American Geophysical Union Edward A. Flinn Medal Selection Committee, 1996-1998; 2000-2002.

Co-convenor, Session on "NEAR at Eros: Latest Results from Low-Altitude Orbits", American Geophysical Union Fall Meeting, December, 2000.

NASA Space Science Advisory Committee, 1999-2002.

Chair, American Geophysical Union Audit and Legal Affairs Committee, 1998-2000; Member, 1996-2000.

President, Planetary Sciences Section, American Geophysical Union, 1998-2000; President-elect, 1996-1998.

Judge, Siemens-Westinghouse Science and Technology Competition, 1999.

Co-convenor, Session on "Highlights of Planetary Exploration", American Geophysical Union Spring Meeting, May, 1999.

Co-convenor, Session on "Results of Mars Global Surveyor Elliptical Orbit Mapping", American Geophysical Union Spring Meeting, May, 1998.

NASA Europa Orbiter Science Definition Team, 1997-1999.

Local Organizing Committee, AAS Division for Planetary Sciences Meeting, Cambridge, 1997.
 Chair, American Geophysical Union Best Student Paper Award in Planetary Sciences Selection Committee, Fall Meeting, 1996; Spring Meeting, 1997.
 Co-author, National Academy of Sciences/NASA "Nature of Origins" Report, 1996.
 Chair, American Geophysical Union, *Eos* Editor Search Committee, 1997.
 Co-Convener, Session on "A Tribute to S.K. Runcorn", American Geophysical Union Fall Meeting, San Francisco, December, 1996.
 NASA Europa Orbiter Study Team, 1996.
 NASA Mars Exploration Working Group, 1996-1997.
 National Academy of Sciences Committee on Earth Gravity from Space, 1996-1997.
 Co-Convener, Session on "Deformation of Thick Lithospheres on Earth and Venus", Western Pacific Geophysics Meeting, Brisbane, Australia, July, 1996.
 Guest Editor, *Odyssey Magazine*, "Mapping the Planets" issue, November, 1995.
 Chair, NASA/Mars Surveyor 1998 Lander Science Payload Selection Panel, 1995.
 NASA/Near Earth Asteroid Rendezvous Mission Science Data Center Review Board, 1995.
 Chair, NASA/Mars Global Surveyor Mission Geodesy and Geophysics Working Group, 1995-1996.
 Space Studies Board Review Committee on the NASA Space Science Research and Analysis Program, 1994.
 National Academy of Sciences Committee on Planetary and Lunar Exploration, 1994-1996.
 Chair, Mars Observer Geodesy and Geophysics Working Group, 1993.
 NASA Planetary Geology and Geophysics Program Review Panel, 1993-1995.
 NASA Mars Science Working Group, 1993-1996.
 NASA Planetary Geology and Geophysics Management and Operations Working Group, 1993-1995.
 American Geophysical Union Bucher Medal Selection Committee, 1992-1995.
 NASA Venus Data Analysis Program Review Panel, 1992.
 Tectonophysics Section Nominating Committee, American Geophysical Union, 1991.
 NASA Dynamics of the Solid Earth Program Review Panel, 1991.
 NASA Planetary Geology Speakers' Bureau, 1991-1992.
 Editor, *Planetary Geosciences* – 1988; 1989-90.
 NASA Solid Earth Science Coolfont Report Panel, 1989.
 Program Committee, Geological Society of America Annual Meeting, 1989.
 Associate Editor, *Journal of Geophysical Research*, 1989-1992.
 Consultant, NASA Education Office National High School Mission to Mars Course, 1988-1992.
 Associate Editor, *Geophysical Research Letters*, 1988-1991.
 NASA Planetary Geology and Geophysics Working Group, 1987-1990.
 Planetology Program Committee, American Geophysical Union Spring Meeting, 1985.

Selected Lectureships/Panels

Keynote Speaker, "Investing in a Sustainable Planet", UBS Greater China Conference, Shanghai, China, January 2019.
 American Geophysical Union, "Great Debate: How to Support and Develop the Modern Digital Research Ecosystem to Maximize Benefits of Science for Society and the Research Community", with Marcia McNutt, Alberto Montanari, Yasuhiro Murayama, Florian Pappenberger and Maria Uhle, Washington, DC, December 2018.
 MIT Communications Forum, "The Consequences of America's Miracle Machine", with Seth Mnookin and Eric Lander, Cambridge, MA, November, 2018.
 University of Colorado/National Oceanic and Atmospheric Administration Cooperative Institute for Research in Environmental Sciences (CIRES) Distinguished Lecturer, Boulder, CO, November 2018.
Boston Globe HubWeek Conversation, "Science, Technology and the Future of America", with Eric Lander, and Ash Carter, Boston, MA, October 2018.
 Invited Speaker, Jim Watson's 90th Birthday Symposium, Cold Spring Harbor Laboratory, NY, April 2018.

Keynote Speaker, Holy See Seminar on Exploration and Development of Space Opportunities and Issues in the Context of UN Sustainable Development Goals, Castel Gandolfo, Italy, March 2018.

Fireside Chat, with Rusty Justice, Co-founder of BitSource, a software development company in Eastern Kentucky that employs re-trained coal miners, MIT CSAIL-Sloan Symposium on *AI and the Future of Work*, Cambridge, MA, November 2017.

Keynote Speaker, Golden Goose Awards Ceremony, Kennedy Caucus Room, Russell Senate Office Building, Washington, DC, September 2017.

Conversation on “Defying Faith”, with Father Eric Salobir and Jonathan Zittrain, MIT Media Lab *Defiance* Conference, Cambridge, MA, July, 2017.

Maurice and Yetta Glicksman Forum, Brown University, Providence, RI, May 2017.

Keynote Address, Council on Government Relations, Washington, DC, February 2017.

CERAWeek Panel on Climate and Energy Strategies Post-Paris, with Carlos Pasqual, Mohammed Jameel Al Ramahi, Rachel Kyte and Laurence Tubiana, Houston, 2017.

Keynote Speaker, 31st International Union of Geodesy and Geophysics Conference on Mathematical Geophysics, Paris, 2016.

Keynote Speaker, UNAVCO Science Workshop, Broomfield, CO, 2016.

COP21, Panel on “Sustainable Cities and Green Buildings”, Paris, 2015.

Distinguished Lecture in Planetary Science, Asia-Oceania Geosciences Society, Singapore, 2015.

Center for American Progress, Panel on “Human Exploration of Space, Looking Back 50 Years, Getting Ready for the Next 50”, with Rudy deLeon, Deborah Lee James, Wes Bush and Peter Juul, Washington, DC, 2015.

Commencement Speaker, University of Pennsylvania College of Arts and Sciences, Philadelphia, PA, 2015.

US Naval Academy Leadership Conference, *Leading in an Interconnected World*, Panel on “The Conscientious Leader: Operating within the Realm of Perception”, Annapolis, MD, 2015.

Thomas A. Mutch Lecture, Department of Earth, Environmental and Planetary Sciences, Brown University, Providence, RI, 2014.

Fifth Annual Public Lecture, Center for Interdisciplinary Exploration and Research in Astrophysics (CIERA) Northwestern University, Evanston, IL, 2014.

Robert M. Walker Distinguished Lecture, McDonnell Center for the Space Sciences, Washington University, St. Louis, MO, 2012.

William H. Pickering Lecture, American Institute of Aeronautics and Astronautics, Pasadena, CA, 2012.

Neekeyfar Lecture in Science and Mathematics for Undergraduates, Harvard University, Cambridge, MA, 2012.

Tommy Gold Lecturer, Department of Astronomy, Cornell University, Ithaca, NY, 2012.

School of Earth Sciences Distinguished Speaker, Stanford University, 2012.

Distinctive Voices Lecturer, National Academy of Sciences, Woods Hole, MA, 2010.

Welsh Lecturer, Department of Physics, University of Toronto, Toronto, Ontario, 2010.

Women in Science and Engineering System Transformation (WISEST) Visiting Scholar, University of Illinois-Chicago, Chicago, Ill, 2010.

Keynote Speaker, *Giant Leaps* 40th Anniversary of Apollo Symposium, Cambridge, MA, 2009.

Krumbein Lecturer, University of Chicago & Northwestern University, Chicago, IL, 2009.

StatoilHydro Plenary Lecture, International Geological Congress, Oslo, 2008.

Distinguished Lecturer, National Space Science and Technology Center, NASA/Marshall Space Flight Center & University of Alabama, Huntsville, AL, 2008.

Centennial Lecturer, School of Science, Purdue University, West Lafayette, IN, 2008.

Plenary Speaker, 50th Anniversary of Sputnik Celebration, Russian Academy of Sciences, Moscow, 2007.

Crafoord Jubilee Plenary Lecturer, Royal Swedish Academy of Sciences, Lund, 2007.

Special Lecture, Kuwait Foundation for the Advancement of Sciences, Kuwait City, 2007.

Carnegie Evening Lecturer, Carnegie Institution of Washington, Washington, DC, 2004.

Pappalardo Distinguished Lecturer, MIT Department of Physics, Cambridge, MA, 2004.

Niels Bohr Lecture in Physics, Niels Bohr Institute, University of Copenhagen, 2003.

Speaker, Crafoord Prize Symposium, Royal Swedish Academy of Sciences, Stockholm, 2002.

Academic Master, Chien-Shiung Wu Education Foundation Science Camp, National Central University, Republic of Taiwan, 2002.

Sverdrup Visiting Scholar, Department of Physics, Augsburg College, Minneapolis, MN, 2002.
Plenary Speaker, MIT Technology Day, Cambridge, MA, 2001.
Inaugural Carl Sagan Lecture, American Geophysical Union, San Francisco, CA, 2000.
Distinguished Leaders in Science Lecture, National Academy of Sciences, Washington, DC, 1999.
Harold S. Masursky Lecture, Twenty-fourth Lunar and Planetary Science Conference, Houston, TX, 1993.

Congressional Testimonies

Committee on Science, Space and Technology of the U.S. House of Representatives, Testimony on “An Overview of the National Science Foundation Budget Proposal for Fiscal Year 2019”, with France Cordova, March 15, 2018.
Subcommittee on Research and Technology, Committee on Science, Space and Technology of the U.S. House of Representatives, “National Science Foundation Part II: Future Opportunities and Challenges for Science”, with Joan Ferrini-Mundy, Jeffrey Spies and Keith Yamamoto, March 21, 2017.
Committee on Science, Space and Technology of the U.S. House of Representatives, Testimony on Lessons for Future Human Spaceflight from the Robotic Exploration Program, Hearing on “Human Spaceflight Past, Present and Future”, with Neil Armstrong, Eugene Cernan and Michael Griffin, September 22, 2011.
Democratic Steering and Policy Committee of the U.S. House of Representatives, Testimony on “The Role of Science as an Economic Stimulus and Key to U.S. Competitiveness”, Hearing on “The Need for an Economic Recovery Package”, with Norman Augustine, Martin Feldstein, Robert Reich and Mark Zandi, January 7, 2009.
Committee on Science and Technology of the U.S. House of Representatives, Testimony on Achievements by NASA in Space Science, Earth Science and Education, Hearing on “NASA at 50 – Past Accomplishments and Future Opportunities and Challenges”, with Norman Augustine, John Glenn and Stephen Hawking, July 30, 2008.

Op-eds

“Support for Education and Research is a Wise Investment”, *Arab News*, July 4, 2018.
“A New Approach to Fusion Energy Starts Today”, *Boston Globe*, March 9, 2018.
“Falling Short on Science”, *New York Times*, January 26, 2018.
“Neglecting Research Today Threatens U.S. Innovation Tomorrow”, with Rush Holt, *The Hill*, February 22, 2017.
“How to Declare War on Coal’s Emissions Without Declaring War on Coal Communities”, *The Washington Post*, February 4, 2017.
“Congressional Leadership and Vision Propels U.S. Leadership in Science”, *The Hill*, January 17, 2017.

Engineering Certifications (for those who think I have no practical skills)

- Laser Safety
- Clean Room Procedures
- Electrostatic Discharge Control

MARIA T. ZUBER

Refereed Publications

- Genova, A., S. Goossens, E. Mazarico, F.G. Lemoine, G.A. Neumann, W. Kuang, T.J. Sabaka, S.A. Hauck II, D.E. Smith and M.T. Zuber, Geodetic evidence that Mercury has a solid inner core, submitted to *Geophys. Res. Lett.*, 2018.
- Bhattaru, S.A., J. Tani, K. Saboda, J. Borowsky, G. Ruvkun, M.T. Zuber and C.E. Carr. Development of a Nucleic Acid-Based Life Detection Instrument Testbed, submitted to *IEEE Aerospace Conference*, 2019 March 2-9, Big Sky, MT, 2018.
- Carr C.E., K. Saboda, A. Mojarro, J. Hachey, S.A. Bhattaru, G. Ruvkun and M.T. Zuber. Nucleic Acid Sequencing Under Mars-Like Conditions submitted to *IEEE Aerospace Conference*, 2019 March 2-9, Big Sky, MT, 2018.
- Ding, M., J. Lin, M.T. Zuber and C. Gu, Constraints on Martian lithospheric strength from localized gravity/topography admittance and correlation analysis, submitted to *J. Geophys. Res. Planets.*, 2018.
- Mojarro, A., J. Hachey, R. Bailey, M. Brown, R. Doebler, G. Ruvkun, M.T. Zuber and C.E. Carr, Nucleic acid extraction and sequencing from low-biomass synthetic Mars analog soils for *in situ* life detection, *bioRxiv*, doi: <https://www.biorxiv.org/content/early/2018/06/29/358218>, and *Astrobiology*, in press, 2018.
- Johnson, B.C., J.C. Andrews-Hanna, Gareth S. Collins, A.M. Freed, H.J. Melosh and M.T. Zuber, Controls on the formation of lunar multiring basins, *J. Geophys. Res. Planets*, 123, 3035-3050, doi: 10.1029/2018JE005765, 2018.
- Park, R.S., A.T. Vaughan, A.S. Konopliv, A.I. Ermakov, N. Mastrodemos, J.C. Castillo-Rogez, S.P. Joy, A. Nathues, C.P. Polansky, J.E. Riedel, C.A. Raymond, C.T. Russell and M.T. Zuber, High-resolution shape model of Ceres from stereophotoclinometry using Dawn imaging data, *Icarus*, 319, 812-827, doi: 10.1016/j.icarus.2018.10.024, 2018.
- Jansen, J.J., J.C. Andrews-Hanna, C. Milbury, J.W. Head III, Y. Li, H.J. Melosh and M.T. Zuber, Radial gravity anomalies associated with the ejecta of the Orientale Basin, *Icarus*, 319, 444-458, doi: 10.1016/j.icarus.2018.09.034, 2018.
- Pontefract, A., J. Hachey, M.T. Zuber, G. Ruvkun and C.E. Carr, Sequencing nothing: Exploring failure modes of nanopore sensing and implications for life detection, *Life Sci. in Space Res.*, 18, 80-86, doi: 10.1016/j.lssr.2018.05.004, 2018.
- Barker, M.K., X. Sun, D. Mao, E. Mazarico, G.A. Neumann, M.T. Zuber, D.E. Smith, J.F. McGarry and E.D. Hoffman, In-flight characterization of the Lunar Orbiter Laser Altimeter instrument pointing and far-field pattern, *Appl. Optics*, 37, doi: 10.1364/AO.57.0077022018, 2018.
- Ding, M., Soderblom, J.M., C.J. Bierson, F. Nimmo, C. Milbury and M.T. Zuber, Constraints on lunar crustal porosity from the gravitational signature of impact craters, *J. Geophys. Res.*, 123, doi: 10.1029/2018JE005654, 2018.
- Carr, C.E., N.C. Bryan, K. Saboda, S.A. Bhattaru, G. Ruvkun and M.T. Zuber, Acceleration profiles and processing methods for parabolic flight, *Nature Micrograv.*, doi: 10.1038/s41526-018-0050-3, 2018.
- Sori, M.M., P.B. James, B.C. Johnson, J.M. Soderblom, S.C. Solomon, M.A. Wieczorek and M.T. Zuber, Isostatic compensation of the lunar highlands, *J. Geophys. Res. Planets*, 123, 646-665, doi:

19.1002/2017JE005362, 2018.

Evans, A.J., J.C. Andrews-Hanna, J.W. Head III, J.M. Soderblom, S.C. Solomon and M.T. Zuber, Re-examination of early lunar chronology with GRAIL data: Terranes, basins, and impact fluxes, *J. Geophys. Res. Planets*, doi: 10.1029/2017JE005421, 2018.

Zuber, M.T., Oceans on Mars formed early, *Nature*, 555, 590-591, doi: 10.1038/d41586-018-03415-x, 2018.

Mojarro, A., J. Hatchey, G. Ruvkun, M.T. Zuber and C.E. Carr, CarrierSeq: A sequence analysis workflow for low-input nanopore sequencing, *BMC Bioinform.*, <https://doi.org/10.1186/s12859-018-2124-3>, 2018.

Andrews-Hanna, J.C., W.S. Kiefer, G.A. Neumann, M.A. Wieczorek and M.T. Zuber, Ring faults and ring dikes around the Orientale basin on the Moon, *Icarus*, 310, 1-20, doi: 10.1016/j.icarus.2017.12.012, 2018.

Genova, A., E. Mazarico, S. Goossens, F.G. Lemoine, G.A. Neumann, D.E. Smith and M.T. Zuber, Solar system expansion and strong equivalence principle as seen by the NASA MESSENGER mission, *Nature Comm.*, 9, doi: 10.1038/s41467-02558-1, 2018.

Smith, D.E., M.T. Zuber, E. Mazarico, A. Genova, G.A. Neumann, X. Sun, M.H. Torrence and D. Mao, Trilogy, a planetary geodesy mission concept for measuring the expansion of the solar system, *Planet. Space Sci.*, 152, 127-133, doi: 10.1016/j.pss.2018.02.003, 2018.

Ermakov, A.I., R.R. Fu, J.C. Castillo-Rogez, C.A. Raymond, R.S. Park, F. Preusker, C.T. Russell, D.E. Smith and M.T. Zuber, Constraints on Ceres' internal structure and evolution from its shape and gravity measured by the Dawn spacecraft, *J. Geophys. Res. Planets*, doi: 10.1002/2017JE005302, 2017.

Pontefract, A., T.F. Zhu, V.K. Walker, H. Hepburn, C. Lui, M.T. Zuber, G. Ruvkun and C.E. Carr, Microbial diversity in a hypersaline sulfacte lake: A terrestrial analog of ancient Mars, *Front. Microbiol.*, 26, doi: 10.3389/fmicb.2017.01819, 2017.

Mazarico, E., G.A. Neumann, M.K. Barker, S. Goossens, D.E. Smith and M.T. Zuber, Orbit determination of the Lunar Reconnaissance Orbiter: Status after seven years, *Planet. Space Sci.*, doi: 10.1016/j.pss.2017.10.004, 2017.

Mojarro A., G. Ruvkun, M.T. Zuber and C.E. Carr, Nucleic acid extraction from synthetic Mars analog soils for *in situ* life detection, *Astrobiology*, 17, 747-760, doi: 10.1089/ast.2016.1535, 2017.

Smith, D.E. and M.T. Zuber, The transfer of Earth-time to the planets, 20 pp., *The Science of Time*, Astrophysics and Space Science Proceedings 50, pp. 319-328, doi: 10.1007/978-3-319-59909-0_35, ed. E.F. Arias, L. Cornbrinck, P. Gabor, C. Hohenkerk & P.K. Seidelmann, 5-9 June 2016, Cambridge, MA, 2017.

Konopliv, A.S., R.S. Park, A.T. Vaughan, B.G. Bills, S.W. Asmar, A.I. Ermakov, N. Rambaux, C.A. Raymond, J.C. Castillo-Rogez, C.T. Russell, D.E. Smith and M.T. Zuber, The Ceres gravity field spin pole, rotation period and orbit from the Dawn radiometric tracking and optical data, *Icarus*, 299, 411-429, doi: 10.1016/j.icarus.2017.08.005, 2017.

Corley, L.M., P.J. McGovern, G.Y. Kramer, M. Lemelin, D. Trang, J.J. Gillis-Davis, G. J. Taylor, K.E. Powell, W. S. Kiefer, M. Wieczorek and M.T. Zuber, Olivine-bearing lithologies on the Moon: Constraints on origins and transport mechanisms from M³ spectroscopy, radiative transfer modeling, and GRAIL crustal thickness, *Icarus*, 300, 287-304, doi: 10.1016/j.icarus.2017.09.012, 2018.

- Fu, R.R., A.I. Ermakov, S. Marchi, J.C. Castillo-Rogez, C.A. Raymond, B.H. Hager, M.T. Zuber, S.D. King, M.T. Bland, M.C. De Sanctis, F. Preusker, R.S. Park, C.T. Russell, The interior structure of Ceres as revealed by surface topography, *Earth Planet. Sci. Lett.*, 476, 153-164, doi: 10.1016/j.epsl.2017.07.053, 2017.
- Fisher, E.A., P.G. Lucey, M. Lemelin, B.T. Greenhagen, M.A. Siegler, E. Mazarico, O. Aharonson, J.-P. Williams, P.O. Hayne, G.A. Neumann, D. Paige, D.E. Smith and M.T. Zuber, Evidence for surface water ice in the lunar polar regions using reflectance measurements from the Lunar Orbiter Laser Altimeter and temperature measurements from the Diviner Lunar Radiometer Experiment, *Icarus*, 292, doi: 10.1016/j.icarus.2017.03.023, 2017.
- Jansen, J.C., J.C. Andrews-Hanna, Y. Li, P.G. Lucey, S. Goossens, F.G. Lemoine, E. Mazarico, J.W. Head III, C. Milbury, W.S. Kiefer, J.M. Soderblom and M.T. Zuber, Small-scale density variations in the lunar crust as seen by GRAIL, *Icarus*, 291, doi:10.1016/j.icarus.2013.06.025, 2017.
- Paull, L., J. Tani, H. Ahn, J. Alonso-Mora, L. Carlone, M. Cap, Y. F. Chen, C. Choi, J. Dusek, Y. Fang, I. Franzoni, D. Hoehener, S.-Y. Liu, M. Novitsky, J. Pazis, G. Rosman, V. Varrichio, H.-C. Wang, D. Yershov, H. Zhao, M. Benjamin, C. Carr, M. Zuber, S. Karaman, E. Frazzoli, D. DelVecchio, D. Rus, J. How, J. Leonard and A. Censi, Duckietown, *IEEE Int. Conf. on Robotics and Automation (ICRA)*, Singapore, 2017.
- Carr, C.E., A. Mojarro, J. Hachey, K. Saboda, J. Tani, S.A. Bhattaru, A. Smith, A. Pontefract, M.T. Zuber, R. Doeblner, M. Brown, K. Herrington, R. Talbot, V. Nguyen, R. Baily, T. Ferguson, G. Churcg, G. Ruvkum, Towards *in situ* sequencing for life detection, *IEEE Aerospace*, Big Sky, MT, 2017.
- Ermakov, A.I., E. Mazarico, S. E. Schröder, U. Carsenty, N. Schorghofer, F. Preusker, C.A. Raymond, C.T. Russell, and M.T. Zuber, Ceres' obliquity history and its implications for permanently shadowed regions, *Geophys. Res. Lett.*, 44, doi:10.1002/2016GL072250, 2017.
- Baker, D.M.H., J.W. Head, R.J. Phillips, G.A. Neumann, C.J. Bierson, D.E. Smith and M.T. Zuber, GRAIL gravity observations of the transition from complex crater to peak-ring basin on the Moon: Implications for crustal structure and impact basin formation, *Icarus*, 292, 54-73, doi: 10.1016/j.icarus.2017.03.024, 2017.
- Sood, R., L. Chappex, H.J. Melosh, K.C. Howell, C. Milbury, D.M. Blair and M.T. Zuber, Detection and characterization of buried lunar craters with GRAIL data *Icarus*, 289, 157-172, doi: 10.1016/j.icarus.2017.02.013, 2017.
- Park, R.S., W.M. Folkner, A.S. Konopliv, D.E. Smith and M.T. Zuber, Precession of Mercury's perihelion from ranging to the MESSENGER spacecraft, *Astronom. Jour.*, 153, doi: 10.3847/1538-3881/aa5be2, 2017.
- Chappex, L., R. Sood, H.J. Melosh, K.C. Howell, D.M. Blair, C. Milbury and M.T. Zuber, Evidence of large, empty lava tubes on the Moon using GRAIL gravity, *Geophys. Res. Lett.*, doi: 10.1002/2016GL071588, 2017.
- Bauer, S., H. Hussman, J. Oberst, D. Dirkx, D. Mao, G.A. Neumann, E. Mazarico, M.H. Torrence, J.F. McGarry, D.E. Smith and M.T. Zuber, Analysis of one-way laser ranging data to LRO, time transfer and clock characterization, *Icarus*, 283, 38-54, doi: 10.1016/j.icarus.2016.09.026, 2017.
- McGarry, J.R., D.-d. Mao, E. Mazarico, G.A. Neumann, Z. Sun, M.H. Torrence, M.K. Barker, E. Hoffman, J. Horvath, D.E. Smith and M.T. Zuber, The contributions of ILRS laser ranging to the Lunar Reconnaissance Orbiter Mission, Inter, Workshop on Laser Ranging, 20th, Potsdam, 10-14 October, 2016.

- Tani, J., L. Paull, M. Zuber, D. Rus, J. How, J. Leonard and A. Censi, Duckietown: An innovative way to teach autonomy, 15 pp., *Edurobotics*, 25 November 2016, Athens, Greece, 2016.
- Smith, D.E. and M.T. Zuber, High-accuracy gravity acceleration measurements at the Moon from the GRAIL mission, *IEEE Workshop on Metrology for Aerospace*, doi: 10.1109/MetroAeroSpace.2016.7573271, 22-23 June 2016, Florence, Italy, 2016.
- Zuber, M.T., D.E. Smith, G.A. Neumann, S. Goossens, J.C. Andrews-Hanna, J.W. Head, W.S. Kiefer, S.W. Asmar, A.S. Konopliv, F.G. Lemoine, I. Matsuyama, H.J. Melosh, P.J. McGovern, F. Nimmo, R.J. Phillips, S.C. Solomon, S.C. Solomon, G.J. Taylor, M.M. Watkins, M.A. Wieczorek, J.G. Williams, J.C. Jansen, B.C. Johnson, J.T. Keane, E. Mazarico, K. Miljković, R.S. Park, J.M. Soderblom, D.-N. Yuan, Gravity field of the Orientale Basin from the Gravity Recovery and Interior Laboratory (GRAIL) mission, *Science*, 354,438-441, doi: 10.1126/science.aag0519, 2016.
- Johnson, B.C., D.M. Blair, G.S. Collins, H.J. Melosh, A.M. Freed, G.J. Taylor, J.W. Head, M.A. Wieczorek, J.C. Andrews-Hanna, J.T. Keane, J., K. Miljković, J.M. Soderblom and M.T. Zuber, Formation of the Orientale multi-ring basin, *Science*, 354, 441-444, doi: 10.1126/science.aag0518, 2016.
- Russell, C.T., C.A. Raymond, E. Ammannito, D.L. Buczkowski, M.C. De Sanctis, H. Hiesinger, R. Jaumann, A. S. Konopliv, H.Y. McSween, A. Nathues, R.S. Park, C.M. Pieters, T.H. Prettyman, T.B. McCord, L. McFadden, S. Mottola, M.T. Zuber, S.P. Joy, C. Polanskey, M.D. Rayman, J.C. Castillo-Rogez, P.J. Chi, J.P. Combe, A. Ermakov, M. Hoffmann, Y.D. Jia, S. King, J.-Y. Li, S. Marchi, F. Preusker, T. Roatsch, O. Ruesch, P. Schenk, M.N. Villarreal, N. Yamashita, Dawn arrives at Ceres: Exploration of a small volatile-rich world, *Science*, 353, 1008-1010, doi: 10.1126/science.aaf4219, 2016.
- Carr, C.E. A. Mojarro, J. Tani, S.A. Bhattara, M.T. Zuber, R. Dohler, M. Brown, K. Jerrington, R. Talbot, C.W. Fuller, M. Finney, G. Church, and G. Ruvkun, Advancing the search for extra-Terrestrial genomes, *IEEE Aerospace*, 5-12 March, Big Sky, MT, doi: 10.1109/AERO.2016, 2016.
- Miljković, K., G.S. Collins, M.A. Wieczorek, B.C. Johnson and M.T. Zuber, Subsurface morphology and scaling of lunar impact basins, *J. Geophys. Res. Planets*, 121, doi: 10.1002/2016JE005038, 2016.
- Smith, D.E., M.T. Zuber, G.A. Neumann, E. Mazarico, F.G. Lemoine, J.W. Head III, P.G. Lucey, O. Aharonson, M.S. Robinson, X. Sun, M.H. Torrence, M.K. Barker, J. Oberst, T.C. Duxbury, D.-d. Mao, O.S. Barmouin, K. Jha, D.D. Rowlands, S. Goossens, D. Baker, S. Bauer, P. Gläser, M. Lemelin, M. Rosenburg, M.M. Sori, J. Whitten, T. McClanahan, Summary of the results from the Lunar Orbiter Laser Altimeter after seven years in orbit, *Icarus*, 283,70-91, doi: 10.1016/j.icarus.2016.06.006, 2016.
- Mao, D.-d., J.F. McGarry, E. Mazarico, G.A. Neumann, X. Sun, M.H. Torrence, T.W. Zagwodzki, D.D. Rowlands, E.D. Hoffman, J.E. Horvath, J.E. Golder, M.K. Barker, D.E. Smith and M.T. Zuber, The laser ranging experiment of the Lunar Reconnaissance Orbiter: Five years of operations and data analysis, *Icarus*, 283, 55-69, doi: 10.1016/j.icarus.2016.07.003, 2016.
- Bauer, S., H. Hussman, J. Oberst, D. Dirkx, D. Mao, G.A. Neumann, D. Mao, D.E. Smith, E. Mazarico, M.H. Torrence, E. Mazarico, M.H. Torrence, J.F. McGarry, D.E. Smith and M.T. Zuber, Demonstration of orbit determination for the Lunar Reconnaissance Orbiter using one-way laser ranging data, *Planet. Space Sci.*, doi: 10.1016/j.pss.2016.06.005, 2016.
- Park, R.S., A.S. Konopliv, B.G. Bills, A.T. Vaughan, N. Rambaux, J.C. Castillo-Rogez, C.A. Raymond, C.T. Russell, M.J. Toplis, A. Ermakov and M.T. Zuber, A partially differentiated interior for (1) Ceres deduced from its gravity field and shape, *Nature*, doi:10.1038/nature18955, 2016.

- Gong, S., M.A. Wieczorek, F. Nimmo, W.S. Kiefer, J.W. Head, C. Huang, D.E. Smith and M.T. Zuber, Thickness of mare basalts on the Moon from gravity and topography, *J. Geophys. Res. Planets*, 121, doi: 10.1002/2016JE005008, 854-870, 2016.
- Genova, A., S. Goossens, F.G. Lemoine, E. Mazarico, G.A. Neumann, D.E. Smith and M.T. Zuber, Seasonal and static gravity field of Mars from MGS, Mars Odyssey and MRO radio science, *Icarus*, 272, 228-245, doi: 10.1016/j.icarus.2016.02.050, 2016.
- Barker, M.K., X. Sun, E. Mazarico, G.A. Neumann, M.T. Zuber and D.E. Smith, Lunar phase function at 1064 nm from Lunar Orbiter Laser Altimeter passive and active radiometry, *Icarus*, 273, doi:10.1016/j.icarus.2016.02.008, 96-113, 2016.
- Evans, A.J., J.M. Soderblom, J.C. Andrews-Hanna, S.C. Solomon and M.T. Zuber, Identification of buried lunar impact craters from GRAIL data and implications for nearside maria, *Geophys. Res., Lett.*, 43, doi: 10.1002/2015GL067394, 2445-2455, 2016.
- Sori, M.M., M.T. Zuber, J.W. Head and W.S. Kiefer, Gravitational search for cryptovolcanism on the Moon: Constraints on early igneous activity, *Icarus*, 273, doi: 10.1016/j.icarus.2016.02.009, 284-295, 2016.
- Johnson, B.C., G.S. Collins, D.A. Minton, T.J. Bowling, B.M. Simonson and M.T. Zuber, Spherule layers, crater scaling laws and the population of ancient terrestrial impactors, *Icarus*, 271, doi:10.1016/j.icarus.2016.02.023, 350-359, 2016.
- Lemelin, M., Lucey, P.G., G.A. Neumann, E.M. Mazarico, A. Kakazu, D. Trang, D. E. Smith and M.T. Zuber, Improved calibration of reflectance data from Lunar Reconnaissance Orbiter's Lunar Orbiter Laser Altimeter (LOLA) and implications for space weathering, *Icarus*, 273, doi:10.1016/j.icarus.2016.02.006, 315-328, 2016.
- Bauer, S., H. Hussman, J. Oberst, D. Dirkx, G.A. Neumann, E. Mazarico, M.H. Torrence, J.F. McGarry, D.E. Smith and M.T. Zuber, Processing of one-way Laser Ranging data from ILRS ground stations to LRO and analysis of the experiment and station performance as well as the LRO and the ground station clocks, *ILRS Conference Paper*, 25 pp., Matera, 2015.
- Neumann, G.A., M.T. Zuber, M.A. Wieczorek, J.W. Head, D.M.H. Baker, S. C Solomon, D.E. Smith, F.G. Lemoine, E. Mazarico, T.J. Sabaka, S. Goossens, H.J. Melosh, R.J. Phillips, S.W. Asmar, A.S. Konopliv, J.G. Williams, M.M. Sori, J.M. Soderblom, K. Miljković, J.C. Andrews-Hanna, F. Nimmo and W.S. Kiefer, Lunar impact basins revealed by Gravity Recovery and Interior Laboratory measurements, *Science Advances*, 1, doi: 10.1126/sciadv.1500852, 2015.
- Perry, M.E., G.A. Neumann, R.J. Phillips, O.S. Barnouin, C.M. Ernst, D.S. Jahan, S.C. Solomon, M.T. Zuber, D.E. Smith, S.A. Hauck II, S.J. Peale, J.-L. Margot, E. Mazarico, C.L. Johnson, R.W. Gaskell, J.H. Roberts, R.L. McNutt, Jr. and J. Oberst, The low-degree shape of Mercury, *Geophys. Res. Lett.*, 42, doi: 10.1002/2015GL065101, 6951-6958, 2015.
- Genova, A., S. Goossens, F.G. Lemoine, E. Mazarico, S.K. Fricke, D.E. Smith, M.T. Zuber, Long-term variability of CO₂ and O in the Mars upper atmosphere from MRO radio science data, *J. Geophys. Res. Planets*, 120, doi: 10.1002/2014JE004770, 849-868, 2015.
- Stark, A., J. Oberst, F. Preusker, K. Gwinner, S.J. Peale, J. L. Margot, M.T. Zuber and S.C. Solomon, Mercury's rotational parameters from MESSENGER image and laser altimetry data: A feasibility study, *Planet. Space Sci.*, 117, doi:10.1016/j.pss.2015.05.006, 2015.
- Milbury, D., B.C. Johnson, H.J. Melosh, G.S. Collins, D.M. Blair, J.M. Soderblom, F. Nimmo, C.J. Bierson,

- R.J. Phillips and M.T. Zuber, Pre-impact porosity controls the gravity signature of lunar craters, submitted to *Geophys. Res. Lett.*, 42, doi: 10.1002/2015GL066198, 64-72, 2015.
- Tian, Z.L., M.T. Zuber and S. Stanley, Magnetic field modeling for Mercury using dynamo models with stable layers and laterally variable heat flux, *Icarus*, 260, 263-268, 0/2015; 260.
DOI: 10.1016/j.icarus.2015.07.019, 2015.
- Stark, A., J. Oberst, F. Preusker, S.J. Peale, J.-L. Margot, R.J. Phillips, G.A. Neumann, D.E. Smith, M.T. Zuber and S.C. Solomon, First MESSENGER orbital observations of Mercury's librations, *Geophys. Res. Lett.*, doi: 10.1002/2015GL065152, 2015.
- Soderblom, J.M., A.J. Evans, B.C. Johnson, H.J. Melosh, K. Miljković, R.J. Phillips, J.C. Andrews-Hanna, J.W. Head III, C. Milbury, G.A. Neumann, F. Nimmo, D.E. Smith, S.C. Solomon, M.M. Sori, C.J. Thomason, M.A. Wieczorek and M.T. Zuber, The fractured Moon: Production and saturation of porosity in the lunar highlands from impact cratering, *Geophys. Res. Lett.*, doi: 10.1002/2015GL065022, 2015.
- Centinello, F.J., E. Mazarico and M.T. Zuber, Orbit determination of the Dawn spacecraft with image constraints using GEODYN, *J. Spacecraft Rockets*, 52, doi: 10.2514/1.A33224, 1331-1337, 2015.
- Barker, M.K., E. Mazarico, G.A. Neumann, M.T. Zuber, J. Haruyama and D.E. Smith, Lunar digital elevation model from the Lunar Orbiter Laser Altimeter and SELENE Terrain Camera, *Icarus*, doi: 10.1016/j.icarus.2015.07.039, 2015.
- Byrne, P.K., C. Klimczak, P.J. McGovern, E. Mazarico, P.B. James, G.A. Neumann, M.T. Zuber, S.C. Solomon, Deep-seated thrust faults bound the Mare Crisium lunar mascon, *Earth Planet. Sci. Lett.*, 426, doi: 10.1016/j.epsl.2015.06.022, 2015.
- Alberts, B., R.J. Cicerone, S.E. Fienberg, A. Kamb, M. McNutt, R.M. Nerem, R. Scheckman, R. Shriffrin, V. Stodden, S. Suresh, M.T. Zuber, B. Kline Pope, K. Hall Jamieson, Self-correction in science at work, *Science*, 349, doi: 10.1126/science.aab3847, 1420-1422, 2015.
- Mazarico, E., A. Genova, G.A. Neumann, D.E. Smith and M.T. Zuber, Simulated recovery of Europa's global shape and tidal Love numbers from altimetry and radio tracking during a dedicated flyby tour, *Geophys. Res. Lett.*, 42, 3166-3173, doi: 10.1002/2015GL063224, 2015.
- Tye, A.R., C.I. Fassett, J.W. Head, E. Mazarico, A.T. Basilevsky, G.A. Neumann, D.E. Smith and M.T. Zuber, The age of lunar south circum-polar craters Haworth, Shoemaker, Faustini and Shackleton: Implications for regional geology, surface processes and volatile sequestration, *Icarus*, doi: 10.1016/j.icarus.2015.03.016, 2015.
- Johnson, B.C., D.A. Minton, H.J. Melosh and M.T. Zuber, Impact jetting as the origin of chondrules, *Nature*, 417, 339-341, doi:10.1038/nature14105, 2015.
- Miljković, K., M.A. Wieczorek, G.S. Collins, S.C. Solomon, D.E. Smith and M.T. Zuber, Excavation of the lunar mantle by basin-forming events on the Moon, *Earth Planet. Sci. Lett.*, 409, 243-251, doi: 10.1016/j.epsl.2014.10.041, 2015.
- James, P.B., M.T. Zuber, R.J. Phillips and S.C. Solomon, Support of long-wavelength topography on Mercury inferred from MESSENGER measurements of gravity and topography, *J. Geophys. Res. Planets*, doi: 10.1002/2014JE004713, 2015.
- Bauer, S., D., Dirx, H. Hussman, J. Oberst, D. Mao, G.A. Neumann, E. Mazarico, M.H. Torrence, J.F. McGarry, D.E. Smith and M.T. Zuber, Implementation of one-way laser ranging observations into LRO

orbit determination, *ILRS Conf. Paper*, 9 pp., Annapolis, 2014.

Mazarico, E., A. Genova, S. Goossens, F.G. Lemoine, G.A. Neumann, M.T. Zuber, D.E. Smith and S.C. Solomon, The gravity field, orientation, and ephemeris of Mercury from MESSENGER observations after three years in orbit, *J. Geophys. Res. Planets*, 119, 2417-2436, doi: 10.1002/2014JE004675, 2014.

Kreslavsky, M.A., J.W. Head, G.A. Neumann, M.T. Zuber, D.E. Smith, Kilometer-scale topographic roughness on Mercury: Correlation with geologic features and units, *Geophys. Res. Lett.*, 41, 8245-8251, doi: 10.1002/2014GL062162, 2014.

Freed, A.M., B.C. Johnson, D.M. Blair, H.J. Melosh, R.J. Phillips, S.C. Solomon, M.A. Wieczorek and M.T. Zuber, The formation of lunar mascon basins from impact to contemporary form, *J. Geophys. Res. Planets*, 119, 2378-2397, doi: 10.1002/2014JE004657, 2014.

Eigner, S., A. Stark, J. Oberst, M.E. Perry, M.T. Zuber, M.S. Robinson and S.C. Solomon, Mercury's global shape and topography from MESSENGER limb images, *Planet. Space Sci.* in press, doi: 10.1016/j.pss.2014.07.019, 2014.

Besserer, J., F. Nimmo, M.A. Wieczorek, R.C. Weber, W.S. Kiefer, P.J. McGovern, J.C. Andrews-Hanna, D.E. Smith and M.T. Zuber, GRAIL gravity constraints on the vertical density structure of the lunar crust, *Geophys. Res. Lett.*, 41 doi: 10.1002/2014GL060240, 2014.

Garrick-Bethell, I., V. Perera, F. Nimmo and M.T. Zuber, The tidal-rotational shape of the Moon and evidence for polar wander, *Nature*, doi:10.1038/nature13639, 2014.

Lucey, P.G., G.A. Neumann, M.A. Riner, E. Mazarico, D.E. Smith, M.T. Zuber, D.A. Paige, D.B. Bussey, J.T. Cahill, A. McGovern, P. Isaacson, L.M. Corley, M.H. Torrence, H.J. Melosh, J.W. Head, E. Song, The Global Albedo of the Moon at 1064-nm from the Lunar Orbiter Laser Altimeter (LOLA), *J. Geophys. Res. Planets*, 119, doi: 10.1002/2013JE004592, 1665–1679, 2014.

Konopliv, A.S., S.W. Asmar, R.S. Park, B.G. Bills, F. Centinello, A. Chamberlin, A. Ermakov, G. Gaskell, N. Rambaux, C.A. Raymond, C.T. Russell, D.E. Smith, P. Tricarico and M.T. Zuber, The Vesta gravity field, spin pole and rotation, landmark positions and ephemeris from the Dawn tracking and optical data, *Icarus*, doi: 10.1016/j.icarus.2013.09.005, 2014.

Ermakov, A.I., M.T. Zuber, D.E. Smith, C.A. Raymond, G. Balmino, R.R. Fu and B.A. Ivanov, Constraints on Vesta's interior structure using gravity and shape models from the Dawn mission, *Icarus*, 240, doi: 10.1016/j.icarus.2014.05.015, 146-160, 2014.

Fu, R.R., B.H. Hager, A.I. Ermakov and M.T. Zuber, Efficient early global relaxation of asteroid Vesta, *Icarus*, 240, doi: 10.1016/j.icarus.2014.01.023, 133-145, 2014.

Park, R.S., A.S. Konopliv, S.W. Asmar, B.G. Bills, R. Gaskell, C.A. Raymond, D.E. Smith, M.J. Toplis and M.T. Zuber, Gravity field expansion in ellipsoidal harmonic and alternate internal representations applied to Vesta, *Icarus*, 240, doi: 10.1016/j.icarus.2013.12.005, 118-132, 2014.

Andrews-Hanna, J.C., J. Besserer, J.W. Head III, C.J.A. Howett, W.S. Kiefer, P.J. Lucey, P.J. McGovern, H.J. Melosh, G.A. Neumann, P.M. Schenk, R.J. Phillips, D.E. Smith, S.C. Solomon and M.T. Zuber, Structure and evolution of the Procellarum region of the Moon as revealed by GRAIL gravity data, *Nature*, 514, 68-71, doi:10.1038/nature13697, 2014.

Winslow, R.M., C.L. Johnson, B.J. Anderson, D.J. Gershman, J.M. Raines, R.J. Lillis, H. Korth, J.A. Slavin, S.C. Solomon, T.H. Zurbuchen and M.T. Zuber, Mercury's surface magnetic field determined from proton-reflection magnetometry, *Geophys. Res. Lett.*, 41, doi: 10.1002/2014GL060258, 4463–4470,

2014.

- Williams, J.G., A.S. Konopliv, D.H. Boggs, R.S. Park, D.-N. Yuan, F.G. Lemoine, S.J. Goossens, E. Mazarico, F. Nimmo, R.C. Weber, S.W. Asmar, H.J. Melosh, G.A. Neumann, R.J. Phillips, D.E. Smith, S.C. Solomon, M.M. Watkins, M.A. Wieczorek, J.C. Andrews-Hanna, J.W. Head, W.S. Kiefer, I. Matsuyama, P.J. McGovern, G.J. Taylor and M.T. Zuber, Lunar interior properties from the GRAIL mission, *J. Geophys. Res. Planets*, 119, doi: 10.1002/2013JE004559, 1546–1578, 2014.
- Goossens, S., T.J. Sabaka, J.B. Nicholas, F.G. Lemoine, D.D. Rowlands, E. Mazarico, G.A. Neumann, D.E. Smith and M.T. Zuber, High-resolution local gravity model of the south pole of the Moon from GRAIL extended mission data, *Geophys. Res. Lett.*, 41, doi: 10.1002/2014GL060178, 3367–3374, 2014.
- Lemoine, F.G., S. Goossens, T.J. Sabaka, J.B. Nicholas, E. Mazarico, D.D. Rowlands, B.D. Loomis, D.S. Chinn, G.A. Neumann, D.E. Smith and M.T. Zuber, GRGM900C: A degree-900 lunar gravity model from GRAIL primary and extended mission data, *Geophys. Res. Lett.*, 41, doi: 10.1002/2014GL060027, 3382–3389, 2014.
- Konopliv, A.S., R.S. Park, D.-Y. Yuan, S.W. Asmar, M.M. Watkins, J.G. Williams, E. Fahnestock, G. Kruizinga, M. Paik, D. Strelakov, N. Harvey, D.E. Smith, and M.T. Zuber, JPL high resolution lunar gravity fields from the GRAIL Primary and Extended missions, *Geophys. Res., 41, Lett.*, doi: 10.1002/2013GL059066, 1452-1458, 2014.
- Evans, A.J., M.T. Zuber, B.P. Weiss and S.M. Tikoo, A wet, heterogeneous lunar interior: Lower mantle and core dynamo evolution, *J. Geophys. Res. Planets*, 119, doi: 10.1002/2013JE004494, 2014.
- Mao, D., X. Sun, J. McGarry, E. Mazarico, M. Torrence, D. Rowlands, G. Neumann, M. Barker, J. Golder, D. Smith and M. Zuber, LRO orbit determination with Laser Ranging data, *18th Int. Laser Ranging Workshop*, 13-0405, Fujiyoshida, Japan, 2014.
- McGarry, J.F., X. Sun, D. Mao, J. Horvath, H. Donovan, C. Clarke, E. Hoffman, J. Cheek, T.W. Zagwodski, M.H. Torrence, M.K. Barker, E. Mazarico, G.A. Neumann, D.E. Smith and M.T. Zuber. LRO-LR: Four years of history-making laser ranging, *18th Int. Laser Ranging Workshop*, 13-0405, Fujiyoshida, Japan, 2014.
- Mazarico, E., M.K. Barker, G.A. Neumann, M.T. Zuber and D.E. Smith, Detection of the lunar body tide by the Lunar Orbiter Laser Altimeter, *Geophys. Res. Lett.*, 41, doi: 10.1002/2013GL059085, 2282–2288, 2014.
- Goudge, T.A., J.W. Head, L. Kerber, D.T. Blewett, B.W. Denevi, D.L. Domingue, J.J. Gillis-Davis, K. Gwinner, J. Helbert, G.M. Holsclaw, N.R. Izenberg, R.L. Klima, W.E. McClintock, S.L. Murchie, G.A. Neumann, D.E. Smith, R.G. Strom, Z. Xiao, M.T. Zuber and S.C. Solomon, Global inventory and characterization of pyroclastic deposits on Mercury: New insights into pyroclastic activity from MESSENGER orbital data, *J. Geophys. Res.*, doi: 10.1002/2013JE004480, 2282–2288, 2013.
- Bauer, S., J. Oberst, H. Hussmann, P. Gläser, U. Schreiber, D. Mao, G.A. Neumann, E. Mazarico, M.H. Torrence, J.F. McGarry, D.E. Smith, and M.T. Zuber, Reduction and analysis of one-way laser ranging data from ILRS ground stations to LRO, *Sixth ESA Int. Workshop on Tracking, Telemetry and Command Systems for Space Applications*, 10-13 September 2013, Darmstadt, 2013.
- Miljković, K., M.A. Wieczorek, G.S. Collins, M. Laneuville, G.A. Neumann, H.J. Melosh, S.C. Solomon, R.J. Phillips, D.E. Smith and M.T. Zuber, Asymmetric distribution of lunar impact basins caused by variations in target properties, *Science*, 342, doi: 10.1126/science.1243224, 2013.
- McNutt, R.L. Jr., S.C. Solomon, P.D. Bedini, B.J. Anderson, D.T. Blewitt, L.G. Evans, R.E. Gold, S.M.

- Krimigis, S.L. Murchie, L.R. Nittler, R.J. Phillips, L.M. Prockter, J.A. Slavin, M.T. Zuber, E.J. Finnegan, D.G. Grant and the MESSENGER Team, MESSENGER at Mercury: Early orbital observations, *Acta Astronaut.*, *93*, 509-514, 2014.
- Lemoine, F.G., S. Goossens, T.J. Sabaka, J.B. Nicholas, E. Mazarico, D.D. Rowlands, B.D. Loomis, D.S. Chin, D.S. Caprette, G.A. Neumann, D.E. Smith and M.T. Zuber, High-degree gravity models from GRAIL primary mission data, *J. Geophys. Res.*, *118*, doi: 10.1002/jgre.20118, 2013.
- Konopliv, A.S., R.S. Park, D.-N. Yuan, S.W. Asmar, M.M. Watkins, J.G. Williams, E. Fahnestock, G. Kruizinga, M. Paik, S. Strelakov, N. Harvey, D.E. Smith and M.T. Zuber, The JPL lunar gravity field to spherical harmonic degree 660 from the GRAIL primary mission, *J. Geophys. Res.*, *118*, 1-20, doi: 10.1002/jgre.20097, 2013.
- Sun, X., J.B. Abshire, J.F. McGarry, G.A. Neumann, J.F. Cavanaugh, J.C. Smith, D. Harding, H.J. Zwally, D.E. Smith and M.T. Zuber, Space lidars developed at NASA Goddard Space Flight Center – The first 20 years, *IEEE JSTARS*, *6*, doi: 10.1109/JSTARS.2013.2259578, 2013.
- Kreslavsky, M.A., J.W. Head, G.A. Neumann, M.A. Rosenburg, O. Aharonson, D.E. Smith and M.T. Zuber, Lunar topographic roughness maps from Lunar Orbiter Laser Altimeter (LOLA) data: Scale dependence and correlation with geologic features and units, *Icarus*, *226*, 52-66, doi:10.1016/j.icarus.2013.04.027, 2013.
- Hauck, S.A. II, J.-L. Margot, S.C. Solomon, F.G. Lemoine, E. Mazarico, S.J. Peale, M.E. Perry, R.J. Phillips, D.E. Smith and M.T. Zuber, The curious case of Mercury's Internal structure, *J. Geophys. Res.*, *118*, 1303-1322, doi:10.1002/jgre.20052, 2013.
- Charlier, B., T.L. Grove and M.T. Zuber, Phase equilibria of ultramafic compositions on Mercury and the origin of the compositional dichotomy, *Earth Planet. Sci. Lett.*, *363*, doi.org/10.1016/j.epsl.2012.12.021, 50-60, 2013.
- Michel, N.C., S.A. Hauck II, S.C. Solomon, R.J. Phillips, J. Roberts and M.T. Zuber, Implications of MESSENGER observations for thermal evolution of Mercury, *J. Geophys. Res.*, *118*, 1033-1044, doi:10.1002/jgre.20049, 2013.
- Melosh, H.J., A.M. Freed, B.C. Johnson, D.M. Blair, J.C. Andrews-Hanna, G.A. Neumann, R.J. Phillips, D.E. Smith, S.C. Solomon, M.A. Wieczorek and M.T. Zuber, The origin of lunar mascon basins, *Science*, *340*, 1552-1555, doi: 10.1126/science.1235768, 2013.
- Carr, C.E., M.T. Zuber and G. Ruvkun, Life detection with the Enceladus orbiting sequencer, *IEEE Aerospace Conf.*, doi:10.1109/AERO.2013.6497129, 02-09 March 2013, Big Sky, MT, 2013.
- Taylor, R.L., M.T. Zuber, D.H. Lehman and T.L. Hoffman, GRAIL Project Management: Launching on cost, schedule, and spec and achieving full mission success, *IEEE Aerospace Conf.*, 11 pp., doi: 10.1109/AERO.2013.6496871, 02-09 March 2013, Big Sky, MT, 2013.
- Carr, C.E., H. Rowedder, C. Vafadari, C.S. Liu, E. Cascio, M.T. Zuber and G. Ruvkun, Radiation resistance of biological reagents for in-situ life detection, *Astrobiol.*, *13*, 68-78, doi: 10.1089/ast.2012.0923, 2013.
- Park, R.S., A.S. Konopliv, D.-N. Yuan, S.W. Asmar, E.G. Fahnestock, G.L. Kruizinga, M. Paik, M.M. Watkins, D.E. Smith and M.T. Zuber, High-resolution gravity from the Gravity Recovery and Interior Laboratory Mission, *23rd AIAA Space Flight Mechanics Meeting*, 13-272, 10-14 February 2013, Kauai, HI, 2013.
- Lemoine, F., S. Goossens, T. Sabaka, J. Nicholas, D. Rowlands, E. Mazarico, B. Loomis, D. Chinn, D. Caprette, F. Neumann, D. Smith and M. Zuber, Modeling and precise orbit determination in support of

gravity model development for the GRAIL mission, *23rd AIAA Space Flight Mechanics Meeting*, 13-273, 10-14 February 2013, Kauai, HI, 2013.

Mazarico, E., F. Lemoine, S. Goossens, D. Rowlands, G. Neumann, M. Torrence, D. Smith and M. Zuber, Improved precision orbit determination of lunar orbiters from the GRAIL-derived lunar gravity models, *23rd AIAA Space Flight Mechanics Meeting*, 13-274, 10-14 February 2013, Kauai, HI, 2013.

Asmar, S.W., A.S. Konopliv, R.S. Park, M.M. Watkins, G. Kruizinga, J.G. Williams, M. Paik, S.-N. Yuan, E. Fahnestock, D. Strelakov, N. Harvey, D.S. Kahan, W. Lu, D.E. Smith and M.T. Zuber, The scientific measurement system of the Gravity Recovery and Interior Laboratory (GRAIL) mission, *Space Sci. Rev.*, *178*, doi: 10.1007/s11214-013-9962-0, 2013.

Hurwitz, D.M., J.W. Head, P.K. Byrne, Z. Xiao, S.C. Solomon, M.T. Zuber, D.E. Smith and G.A. Neumann, Investigating the origin of candidate lava channels on Mercury with MESSENGER data: Theory and observations, *J. Geophys. Res.*, *118*, doi: 10.1029/2012JE004103, 2013.

James, P.B., M.T. Zuber and R.J. Phillips, Crustal thickness and support of topography on Venus, *J. Geophys. Res.*, *118*, 68-78, doi: 10.1089/ast.2012.0869, 2013.

Carr, C.E., H. Rowedder, C.S. Lui, I. Zlatkovsky, C.W. Papalias, J. Bolander, J.W. Myers, J. Bustillo, J.M. Rothberg, M.T. Zuber and G. Ruvkun, Radiation resistance of sequencing chips for *in situ* life detection, *Astrobiol.* *13*, 68-78, doi: 10.1089/ast.2012.0869, 2013.

Blair, D.M., A.M. Freed, P.K. Byrne, C. Klimczak, L.M. Prockter, S.C. Solomon, H.J. Melosh and M.T. Zuber, The origin of graben and ridges in Rachmaninoff, Raditladi and Mozart basins, *J. Geophys. Res.*, *118*, doi: 10.1029/2012JE004198, 2013.

Zuber, M.T., D.E. Smith, M.M. Watkins, S.W. Asmar, A.S. Konopliv, F.G. Lemoine, H.J. Melosh, G.A. Neumann, R.J. Phillips, S.C. Solomon, M.A. Wieczorek, J.G. Williams, S.J. Goossens, G. Kruizinga, E. Mazarico, R.S. Park and D.-N. Yuan, Gravity field of the Moon from the Gravity Recovery and Interior Laboratory (GRAIL) mission, *Science*, *339*, doi: 10.1126/science.1231507, 2013.

Wieczorek, M.A., G.A. Neumann, F. Nimmo, W.S. Kiefer, G.J. Taylor, H.J. Melosh, R.J. Phillips, S.C. Solomon, J.C. Andrews-Hanna, S.W. Asmar, A.S. Konopliv, F.G. Lemoine, D.E. Smith, M.M. Watkins, J.G. Williams and M.T. Zuber, The crust of the Moon as seen by GRAIL, *Science*, *339*, doi: 10.1126/science.1231530, 2013.

Andrews-Hanna, J.C., F. Nimmo, J.W. Head, M.A. Wieczorek, W.S. Kiefer, G.J. Taylor, S.W. Asmar, A.S. Konopliv, F.G. Lemoine, E. Mazarico, P.J. McGovern, H.J. Melosh, G.A. Neumann, R.J. Phillips, D.E. Smith, S.C. Solomon, J.G. Williams and M.T. Zuber, Ancient igneous intrusions and the early expansion of the Moon revealed by GRAIL gravity gradiometry, *Science*, *339*, doi: 10.1126/science.1231753, 2013.

Zuber, M.T., D.E. Smith, D.H. Lehman, T.L. Hoffman, S.W. Asmar and M.M. Watkins, Gravity Recovery and Interior Laboratory (GRAIL): Mapping the lunar interior from crust to core, *Space Sci. Rev.*, *178*, doi: 10.1007/s11214-012-9952-7, 2013.

Neumann, G.A., J.F. Cavanaugh, X. Sun, E.M. Mazarico, D.E. Smith, M.T. Zuber, D. Mao, D.A. Paige, S.C. Solomon, C.M. Ernst and O.S. Barnouin, Bright and dark polar deposits on Mercury: Evidence for surface volatiles, *Science*, *339*, 296-300, doi: 10.1126/science.1229764, 2013.

Paige, D.A., M.A. Siegler, J.K. Harmon, G.A. Neumann, E.M. Mazarico, D.E. Smith, M.T. Zuber, E. Harju, M.L. Delitsky and S.C. Solomon, The thermal stability of volatiles in the north polar region of Mercury, *Science*, *339*, 300-303, doi: 10.1126/science.1231106, 2013.

- Sun, X., D.R. Skillman, E.D. Hoffman, D. Mao, J.F. McGarry, L.McIntire, R.S. Zellas, F.M. Davidson, W.H. Fong, M.A. Krainak, G.A. Neumann, M.T. Zuber and D.E. Smith, Free space laser communication experiment from Earth to the Lunar Reconnaissance Orbiter in lunar orbit, *Optics Express*, 21, 1865-1871, 2013.
- Talpe, M.J., M.T. Zuber, D. Yang, G.A. Neumann, S.C. Solomon, E. Mazarico and F. Vilas, Characterization of the morphometry of impact craters hosting polar deposits in Mercury's north polar region, *J. Geophys. Res.*, 117, doi:10.1029/2012JE004155, 2012.
- Johnson, C.J., M.E. Purucker, H. Korth, B.J. Anderson, R.M. Winslow, M.M.H. Al Asad, J.A. Slavin, I.I. Alexeev, R.J. Phillips, M.T. Zuber and S.C. Solomon, MESSENGER observations of Mercury's magnetic field structure, *J. Geophys. Res.*, 117, doi:10.1029/2012JE004217, 2012.
- Anderson, B.J., C.L. Johnson, H. Korth, R.M. Winslow, J.E. Borovsky, M.E. Purucker, J.A. Slavin, S.C. Solomon, M.T. Zuber and R.L. McNutt, Jr., Low-degree structure in Mercury's planetary magnetic field, *J. Geophys. Res.*, 117, doi:10.1029/2012JE004159, 2012.
- Jozwiak, L.M., J.W. Head, M.T. Zuber, D.E. Smith and G.A. Neumann, Lunar floor-fractured craters: Classification, distribution, origin and implications for magmatism and shallow crustal structure, *J. Geophys. Res.*, 117, E11005, doi:10.1029/2012JE004134, 2012.
- Zuber, M. T., Smith, D. E., Lehman, D. H., and Watkins, M. M.: 2012, Gravity Recovery and Interior Laboratory mission: Facilitating future exploration to the Moon, *Int. Astronaut. Congress*, Naples, Italy, 7 pp., 2012.
- Fassett, C.I., J.W. Head, D.M.H. Baker, M.T. Zuber, D.E. Smith, G.A. Neumann, S.C. Solomon, C. Klimczak, R.G. Strom, C.R. Chapman, L.M. Prockter, R.J. Phillips, J. Oberst and F. Preusker, Large impact basins on Mercury: Global distribution, characteristics, and modification history from MESSENGER orbital data, submitted to *J. Geophys. Res.*, 117, E00L08, 15 pp., doi:10.1029/2012JE004154, 2012.
- Freed, A.M., D.M. Blair, T.R. Watters, C. Klimczak, P.K. Byrne, S.C. Solomon, M.T. Zuber and H.J. Melosh, On the origin of graben and ridges within and near volcanically buried craters and basins in Mercury's northern plains, *J. Geophys. Res.*, 117, E00L06, doi:10.1029/2012JE004119, 2012.
- Zuber, M.T., J.W. Head, D.E. Smith, G.A. Neumann, E. Mazarico, M.H. Torrence, O. Aharonson, A.R. Tye, C.I. Fassett, M.A. Rosenburg and H.J. Melosh, Constraints on the volatile distribution within Shackleton crater at the lunar south pole, *Nature*, 486, 378-381, doi:10.1038/nature11216, 2012.
- Hu, R., K. Cahoy and M.T. Zuber, Mars CO₂ condensation above the north and south poles as revealed by radio occultation, climate sounder, and laser ranging observations, *J. Geophys. Res.*, 117, doi:10.1029/2012JE004087, 2012.
- R. Jaumann, D.A. Williams, D.L. Buczkowski, F. Preusker, H. Hiesinger, N. Schmedemann, T. Kneissl, R.A. Yingst, J.B. Vincent, D.T. Blewett, B. Buratti, U. Carsenty, B. Denevi, C.M. DeSanctis, B. Garry, H.U. Keller, E. Kersten, K. Krohn, J.-Y. Li, S. Marchi, K.D. Matz, T.B. McCord, G. Neukum, H.Y. McSween, D. Mittlefehldt, S. Mottola, A. Nathues, C. Pieters, T.H. Prettyman, C.A. Raymond, T. Roatsch, C.T. Russell, P. Schenk, B. Schmidt, F. Scholten, K. Stephan, M. Sykes, R. Wagner and M. T. Zuber, Vesta's shape and morphology, *Science*, 336, 687-690, doi: 10.1126/science.1219122, 2012.
- Russell, C.T., C.A. Raymond, A. Coradini, H.Y. McSween, M.T. Zuber, A. Nathues, M.C. De Sanctis, R. Jaumann, A.S. Konopliv, F. Preusker, S.W. Asmar, R.S. Park, R. Gaskell, S. Mottola, T. Roatsch, J.E.C. Scully, D.E. Smith, P. Tricarico, M.J. Toplis, U.R. Christensen, W.C. Feldman, D.J. Lawrence, T.H. Prettyman, R.C. Reedy, M.E. Sykes and T.N. Titus, Dawn at Vesta: Testing the protoplanetary paradigm, *Science*, 336, 684-686, doi: 0.1126/science.1219381, 2012.

- Li, J., J.C. Andrews-Hanna, Y. Sun, R.J. Phillips, J.J. Plaut and M.T. Zuber, Density variations within the south polar layered deposits of Mars, *J. Geophys. Res.*, *117*, doi:10.1029/2011JE003937, 2012.
- Barnouin, O.S., M.T. Zuber, D.E. Smith, G.A. Neumann, R.R. Herrick, J.E. Chappelow, S.L. Murchie, L.M. Prockter, The morphology of craters on Mercury: Results from MESSENGER flybys, *Icarus*, *219*, doi:10.1016/j.icarus.2012.02.029, 414-427, 2012.
- Zuber, M.T., D.E. Smith, R.J. Phillips, S.C. Solomon, G.A. Neumann, S.A. Hauck, II, S.J. Peale, O.S. Barnouin, J.W. Head, C.L. Johnson, F.G. Lemoine, E. Mazarico, X. Sun, M.H. Torrence, A.M. Freed, C. Klimczak, J.-L. Margot, J. Oberst, M.E. Perry, R.L. McNutt, Jr., J.A. Balcerski, N. Michel, M.J. Talpe and D. Yang, Topography of the northern hemisphere of Mercury from MESSENGER laser altimetry, *Science*, *335*, doi:10.1126/science.1218805, 2012.
- Smith, D.E., M.T. Zuber, R.J. Phillips, S.C. Solomon, S.A. Hauck, II, F.G. Lemoine, E. Mazarico, G.A. Neumann, S.J. Peale, J.-L. Margot, C.L. Johnson, M.H. Torrence, M.E. Perry, D.D. Rowlands, S. Goossens, A.H. Taylor, Gravity field and internal structure of Mercury from MESSENGER *Science*, *335*, doi:10.1126/science.1218809, 2012.
- Mazarico, E., D.D. Rowlands, G.A. Neumann, D.E. Smith, M.H. Torrence, F.G. Lemoine and M.T. Zuber, Orbit determination of the Lunar Reconnaissance Orbiter, 193-207, *J. Geodesy*, *86*, doi:10.1007/s00190-011-0509-4, 2012.
- Taylor, R.L., M.T. Zuber, D.H. Lehman and T.L. Hoffman, Managing GRAIL: Getting to launch on cost, on schedule and on spec, *IEEE Aerospace Conference*, 978-1-4577-0557-1/12, Big Sky, MT, March 7, 10 pp., 2012.
- Baker, D.M.H., J.W. Head, G.A. Neumann, D.E. Smith and M.T. Zuber, The transition from complex craters to multiring basins on the Moon: Quantitative geometric properties from Lunar Reconnaissance Orbiter Lunar Laser Altimeter (LOLA) data, *J. Geophys. Res.*, *117*, doi:10.1029/2011JE004021, 2012.
- Fassett, C.I., J.W. Head, S.J. Kadish, E. Mazarico, G.A. Neumann, D.E. Smith and M.T. Zuber, Lunar impact basins: Stratigraphy, sequence and ages from superposed impact crater populations measured from Lunar Orbiter Laser Altimeter (LOLA) data, *J. Geophys. Res.*, *117*, E00H06, 13 PP., doi:10.1029/2011JE003951, 2012.
- Raymond, C.A., R. Jaumann, A. Nathues, H. Sierks, T. Roatsch, F. Preusker, F. Scholten, R. Gaskell, L. Jorda, H.-U. Keller, M.T. Zuber, D.E. Smith, N. Mastrodimos and S. Mottola, The Dawn topography investigation, *Space Sci. Rev.*, *163*, doi: 10.1007/s11214-011-9863-z, 2011.
- Zuber, M.T., H.Y. McSween, Jr., R.P. Binzel, L.T. Elkins-Tanton, A.S. Konopliv, C.M. Pieters and D.E. Smith, Origin, internal structure and evolution of 4 Vesta, *Space Sci. Rev.*, *163*, 77-93, doi: 10.1007/s11214-011-9806-8, 2011.
- Konopliv, A.S., S.W. Asmar, B.G. Bills, N. Mastrodemus, R.S. Park, C.A. Raymond, D.E. Smith and M.T. Zuber, The Dawn gravity investigation at Vesta and Ceres, *Space Sci. Rev.*, *163*, 461-486, doi: 10.1007/s11214-011-9794-8, 2011.
- Perry, M.E., D.S. Kahan, O.S. Barnouin, C.M. Ernst, S.C. Solomon, M.T. Zuber D.E. Smith, R.J. Phillips, D. Srinivasan, J. Oberst and S.W. Asmar, Measurement of the radius of Mercury by radio occultation during the MESSENGER flybys, *Planet Space Sci.*, *59*, doi:10.1016/j.pss.2011.07.022, 2011.
- Lui, C., C.E. Carr, H. Rowedder, G. Ruvkun, and M. Zuber, SETG: An instrument for detection of life on

Mars ancestrally related to life on Earth, *IEEE Aerospace, Conf.*, doi: 10.1109/AERO.2011.5747299, 5-12 March, 2011.

Oberst, J., S. Elgner, F.S. Turner, M.E. Perry, R.W. Gaskell, M.T. Zuber, M.S. Robinson and S.C. Solomon, Radius and limb topography of Mercury obtained from images acquired during the MESSENGER flybys, *Planet. Space Sci.* 59,, doi:10.1016/j.pss.2011.07.003, 2011.

Preusker, F., J. Oberst, J.W. Head, T.R. Watters, M.T. Zuber and S.C. Solomon, Stereo topographic models from three MESSENGER Mercury flybys, *Planet. Space Sci.*, 59, doi:10.1016/j.pss.2011.07.005, 2011.

Lu, J., Y. Sun, M.N. Toksoz, Y. Zheng and M.T. Zuber, Seismic effects of the Caloris basin impact, Mercury, *Planet. Space Sci.*, doi:10.1016/j.pss.2011.07.013, 2011.

Fassett, C., J.W. Head, D.E. Smith, M.T. Zuber, G.A. Neumann, The thickness of proximal ejecta of the Orientale Basin: New estimates from the Lunar Orbiter Laser Altimeter (LOLA), *Geophys. Res. Lett.*, 38, L17201, doi:10.1029/2011GL048502, 2011.

Baker, D.M.H., J.W. Head, C.I. Fassett, S.J. Kadish, D.E. Smith, M.T. Zuber and G.A. Neumann, The transition from complex crater to peak-ring basin on the Moon: New observations from the Lunar Orbiter Laser Altimeter (LOLA) instrument, *Icarus*, 214, 377-393, doi: 10.1016/j.icarus.2011.05.030, 2011.

Elkins-Tanton, L., B.P. Weiss and M.T. Zuber, Chondrites as samples of differentiated planetesimals, *Earth Planet. Sci. Lett.*, 305, 1-10, doi:10.1016/j.epsl.2011.03.010, 2011.

Mazarico, E., G.A. Neumann, D.E. Smith, M.T. Zuber and M.H. Torrence, Illumination conditions of the lunar polar regions using LOLA topography, *Icarus*, 211, doi:10.1016/j.icarus.2010.10.030, 2011.

Konopliv, A.S., S. Asmar, W.M. Folkner, Ö. Karatekin, D. Nunes, S. Smrekar, C.F. Yoder and M.T. Zuber, Mars high resolution gravity fields from MRO, Mars seasonal gravity, and other dynamical parameters, *Icarus*, 211, doi: 10.1016/j.icarus.2010.10.004, 401-428, 2011.

Rosenberg, M.A., O. Aharonson, J.W. Head, M.A. Kreslavsky, G.A. Neumann, D.E. Smith and M.T. Zuber, Global surface slopes and roughness of the Moon from the Lunar Orbiter Laser Altimeter, *J. Geophys. Res.*, 116, E02001, doi:10.1029/2010JE003716, 2011.

Watters, W.A., J.P. Grotzinger, J. Bell III, J. Grant, A.G. Hayes, R. Li, S.W. Squyres and M.T. Zuber. Origin of the structure and planform of small impact craters in fractured targets: Endurance Crater at Meridiani Planum, Mars, *Icarus*, 211, doi:10.1016/j.icarus.2010.08.030, 472-297, 2011.

Andrews-Hanna, J.C., and M.T. Zuber, Elliptical craters and basins on the terrestrial planets, *Geol. Soc. Am. SP, Large Meteorite Impacts and Planetary Evolution*, 465, pp. 1-13, doi: 10.1130/2010.2465(01), 2010.

Mitrofanov, I.G., A.B. Sanin, W.V. Boynton, G. Chin, N. Demidov, J.B. Garvin, D. Golovin, L.G. Evans, K. Harshman, A.S. Kozyrev, M.L. Litvak, A. Malakhov, E. Mazarico, T. McClanahan, G. Milikh, M. Mokrousov, G. Nandikotkur, G.A. Neumann, I. Nuzhdin, R. Sagdeev, V. Shevchenko, V. Shvetsov, D.E. Smith, R. Starr, V.I. Tretyakov, J. Trombka, D. Usikov, A. Varennikov, A. Vostrukhin and M.T. Zuber, Hydrogen mapping of the lunar south pole using the LRO neutron detector experiment LEND, *Science*, 330, doi: 10.1126/science.1185696, 483-486, 2010.

Head, J.W. III, C.I. Fassett, S. Kadish, D.E. Smith, M.T. Zuber, G.A. Neumann and E. Mazarico, Global distribution of large lunar craters: Implications for resurfacing and impactor populations, *Science*, 329, doi:10.1126/science.1195050, 1504-1507 2010.

- Smith, D.E., M.T. Zuber, G.A. Neumann, F.G. Lemoine, E. Mazarico, M.H. Torrence, J.F. McGarry, D.D. Rowlands, J.W. Head III, T.H. Duxbury, O. Aharonson, P.G. Lucey, M.S. Robinson, O.S. Barnouin, J.F. Cavanaugh, X. Sun, P. Liiva, D.-d. Mao, J.C. Smith and A.E. Bartels, Initial observations from the Lunar Orbiter Laser Altimeter, *Geophys. Res. Lett.*, *37*, L18204, doi:10.1029/2010GL043751, 2010.
- Smith, D.E., M.T. Zuber, R.J. Phillips, S.C. Solomon, G.A. Neumann, F.G. Lemoine, S.J. Peale, J.-L. Margot, M.H. Torrence, M.J. Talpe, J.W. Head III, S.A. Hauck II, C.L. Johnson, M.E. Perry, O.S. Barmouin-Jha, R.L. McNutt, Jr. and J. Oberst, The equatorial shape and gravity field of Mercury from MESSENGER flybys 1 and 2, *Icarus*, *209*, doi:10.1016/j.icarus.2010.02.026, 247-255, 2010.
- Oberst, J., F. Preusker, R.J. Phillips, T.R. Watters, J.W. Head, M.T. Zuber and S.C. Solomon, The morphology of Mercury's Caloris Basin as seen in MESSENGER stereo topographic models, *Icarus*, *209*, doi:10.1016/j.icarus.2010.03.009, 230-238, 2010.
- Zuber, M.T., L.G.J. Montési, G.T. Farmer, S.A. Hauck II, J. Andreas Ritzer, R.J. Phillips, S.C. Solomon, D.E. Smith, M.J. Talpe, J. W. Head III, G. A. Neumann, T.R. Watters and C.L. Johnson, Lithospheric strain accommodation on Mercury from altimetric profiles of ridges and lobate scarps measured during MESSENGER flybys 1 and 2, *Icarus*, *209*, doi:10.1016/j.icarus.2010.04.007, 88-100, 2010.
- Andrews-Hanna, J.C., M.T. Zuber, R.E. Arvidson and S.J. Wiseman, Early Mars hydrology: 1. The Meridiani playa deposits and the sedimentary record of Arabia Terra, *J. Geophys. Res.*, *115*, E06002, doi:10.1029/2009JE003485, 2010.
- Evans, A.T., J.C. Andrews-Hanna and M.T. Zuber, Geophysical limitations on the erosion history within Arabia Terra, *J. Geophys. Res.*, *115*, E05007, doi:10.1029/2009JE003469, 2010.
- Sun, X., J.F. McGarry, G.A. Neumann, M.N. Ott, L.A. Ramos-Izquierdo, R.B. Katz, T.W. Zagwodzki, M.T. Zuber and D.E. Smith, The laser ranging subsystem on the Lunar Reconnaissance Orbiter, *NASA New Technology Report*, GSC-15884-1, 2009.
- Smith, D.E., M.T. Zuber, G.B. Jackson, J.F. Cavanaugh, G.A. Neumann, H. Riris, X. Sun, R.S. Zellar, C. Coltharp, J. Connelly, R.B. Katz, I. Kleyner, P. Liiva, A. Matuszeski, E.M. Mazarico, J.F. McGarry, A.M. Novo-Gradac, M.N. Ott, C. Peters, L.A. Ramos-Izquierdo, L. Ramsey, D.D. Rowlands, S. Schmidt, V.S. Scott III, G.B. Shaw, J.C. Smith, J.-P. Swinski, M.H. Torrence, G. Unger, A.W. Yu and T.W. Zagwodzki, The Lunar Orbiter Laser Altimeter investigation on the Lunar Reconnaissance Orbiter mission, *Space Sci. Rev.*, *150*, doi:10.1007/s11214-009-9512-y, 209-241, 2010.
- Zuber, M.T., D.E. Smith, R.S. Zellar, G.A. Neumann, X. Sun, R.B. Katz, I. Kleyner, A. Matuszeski, J.F. McGarry, M.N. Ott, L.A. Ramos-Izquierdo, D.D. Rowlands, M.H. Torrence and T.W. Zagwodzki, The Lunar Reconnaissance Orbiter laser ranging investigation, *Space Sci. Rev.*, *150*, doi:10.1007/s11214-009-9511-z, 63-80, 2010.
- Garrick-Bethell, I., and M.T. Zuber, Elliptical structure of the lunar South Pole-Aitken basin, *Icarus*, *204*, 399-408, doi:10.1016/j.icarus.2009.05.032, 2009.
- Mohit, P.S., C.L. Johnson, O. Barnouin-Jha and M.T. Zuber, Shallow basins on Mercury: Evidence of relaxation, *Earth Planet. Sci. Lett.*, *285*, doi:10.1016/j.epsl.2009.04.023, 355-363, 2009.
- Sun, X. G.A. Neumann, J.F. Cavanaugh, J.F. McGarry, D.E. Smith and M.T. Zuber, Laser altimeter measurements from MESSENGER's recent Mercury flybys, *Conference on Lasers and Electro-Optics*, Optical Society of America, 978-1-55752-869-8/09, 2009.

- Freed, A.M., S.C. Solomon, T.R. Watters, R.J. Phillips and M.T. Zuber, Could Pantheon Fossae be the result of the Apollodorus crater-forming impact within the Caloris Basin, Mercury?, *Earth Planet. Sci. Lett.*, 285, doi:10.1016/j.epsl.2009.02.038, 320-327, 2009.
- Purucker, M.E., T.J. Sabaka, S.C. Solomon, B.J. Anderson, H. Korth, M.T. Zuber and G.A. Neumann, Mercury's internal magnetic field: Constraints on large- and small-scale fields of crustal origin, *Earth Planet. Sci. Lett.*, 285, doi:10.1016/j.epsl.2008.12.017, 340-346, 2009.
- Demidov, N.E., W.V. Boynton, D.A. Gilichinsky, M.T. Zuber, A.S. Kozyrev, M.L. Litvak, I.G. Mitrofanov, A.B. Sanin, R.S. Saunders, D.E. Smith, V.I. Tretyakov and D. Hamara, Water distribution in the permafrost areas of Mars according to combine analysis of HEND (Mars Odyssey) and MOLA (Mars Global Surveyor) data, *Pisma v Astronomicheskii Zhurnal.*, 34, 713-723, doi: 10.1134/S1063773708100071. 2008.
- Mazarico, E.M., M.T. Zuber, F.G. Lemoine and D.E. Smith, Effects of self-shadowing on nonconservative force modeling for Mars-orbiting spacecraft, *J. Spacecraft Rockets*, 46, 662-669, doi: 10.2514/1.41679, 2009.
- Smith, D.E., M.T. Zuber, M.H. Torrence, P.J. Dunn, G.A. Neumann, F.G. Lemoine and S.K. Fricke, Time variations of Mars' gravitational field and seasonal changes in the polar ice caps, *J. Geophys. Res.*, 114, E05002, doi:10.1029/2008JE003267, 2009.
- Watters, W.A.F., M.T. Zuber and B.H. Hager, Thermal perturbations caused by large impacts and consequences for mantle convection, *J. Geophys. Res.*, 114, E02001, doi:10.1029/2007JE002964, 2009.
- Jaumann, R., C.T. Russell, A. Coradini, M.C. De Sanctis, W.C. Feldman, H.U. Keller, T.B. McCord, L.A. McFadden, S. Mottola, C.M. Pieters, T.H. Prettyman, C.A. Raymond, H. Sirks, D.E. Smith, M.V. Sykes, M.T. Zuber und das Dawn Science Team, Dawn: Eine Reise zu den Anfängen des Sonnensystems, *Proc. Deutsche Gesellschaft für Luft- und Raumfahrt* (in German), 2008.
- Isenbarger, T.A., C.E. Carr, S.S. Johnson, M. Finney, G.M. Church, W. Gilbert, M.T. Zuber and G. Ruvkun, The most conserved genome segments for life detection on Earth and other planets, *Origins of Life and Evolution of Biospheres*, 38, 517-533, doi: 10.1007/s11084-008-9148-z, 2008.
- Johnson, S.S., M.T. Zuber, T.L. Grove and M.A. Mischna, Sulfur-related greenhouse warming on early Mars, *J. Geophys. Res.*, 113, E08005, doi:10.1029/2007JE002962, 2008.
- Stanley, S., L.T. Elkins-Tanton, M.T. Zuber and E.M. Parmentier, Mars' paleomagnetic field as the result of a single-hemisphere dynamo, *Science*, 321, doi: 10.1126/science.1161119, 1822-1825, 2008.
- Andrews-Hanna, J.C., and M.T. Zuber, Tectonic and geodynamic evolution of Mars: Evidence from strike-slip faults, *J. Geophys. Res.*, 113, E08002, doi:10.1029/2007JE002980, 2008.
- Zuber, M.T., D.E. Smith, S.C. Solomon, R.J. Phillips, S.J. Peale, J.W. Head III, S.A. Hauck II, R.L. McNutt Jr., J. Oberst, G.A. Neumann, F.G. Lemoine, X. Sun, O. Barnouin-Jha and J.K. Harmon, Laser altimeter observations from MESSENGER's first Mercury flyby, *Science*, 321, doi: 10.1026/science.1159086, 2008.
- Solomon, S.C., R.L. McNutt, Jr., T.R. Watters, D.J. Lawrence, W.C. Feldman, J.W. Head, S.M. Krimigis, S.L. Murchie, R.J. Phillips, J.A. Slavin and M.T. Zuber, Return to Mercury: A global perspective on MESSENGER's first Mercury flyby, *Science*, 321, 59-62, doi: 10.1126/science.1159706, 2008.

- Andrews-Hanna, J.C., M.T. Zuber and W.B. Banerdt, The Borealis basin and the origin of the Martian crustal dichotomy, *Nature*, 453, 1212-1215, doi:10.1038/nature07011, 2008.
- Phillips, R.J., M.T. Zuber, S.E. Smrekar, M.T. Mellon, J.W. Head, K.L. Tanaka, N.E. Putzig, S.M. Milkovich, B.A. Campbell, J.J. Plaut, A. Safaeinili, R. Seu, D. Biccari, L. Carter, G. Picardi, R. Orosei, P.S. Mohit, E. Heggy, R.W. Zurek, A.F. Egan, E. Giacomoni, F. Russo, M. Cutigni, E. Pettinelli, J.W. Holt, C.J. Leuschen and L. Marinangeli, Mars north polar deposits: Stratigraphy, age and geodynamical response, *Science*, 320, 1182-1185, doi:10.1126/science.1157546, 2008.
- Mazarico, E., M.T. Zuber, F.G. Lemoine and D.E. Smith, Observation of atmospheric waves in the Martian exosphere using Mars Reconnaissance Orbiter radio tracking data, *Geophys. Res. Lett.*, 35, doi:10.1029/2008GL03388, 2008.
- Byrne, S., M.T. Zuber and G.A. Neumann, Interannual and seasonal behavior of Martian residual ice-cap albedo, *Planet. Space. Sci.*, 56, 194-2111, 2008.
- Zuber, M.T., Mars at the tipping point, *Nature*, 447, 785-786, doi:10.1038/447785a, 2007.
- Halevy, I., M.T. Zuber and D.P. Schrag, A sulfur dioxide climate feedback on early Mars, *Science*, 318, 1903-1906. doi: 10.1126/science.1147039, 2007.
- Zuber, M.T., R.J. Phillips, J.C. Andrews-Hanna, S.W. Asmar, A.S. Konopliv, F.G. Lemoine, J.J. Plaut, D.E. Smith and S.E. Smrekar, Density of Mars' south polar layered deposits, *Science*, 317, 1718-1719, doi:10.1126/science.1146995, 2007.
- Russell, C.T., M.A. Barucci, R.P. Binzel, U. Christensen, W.C. Feldman, R. Jaumann, H.U. Keller, A.S. Konopliv, T.B. McCord, L.A. McFadden, K.D. McKeegan, H.Y. McSween, S. Mottola, A. Nathues, G. Neukum, C.M. Pieters, T.H. Prettyman, C.A. Raymond, H. Sierks, D.E. Smith, M.V. Sykes, F. Vilas and M.T. Zuber, Exploring the asteroid belt with ion propulsion: Past, present and future, *Adv. Space Res.*, 40, 193-201, doi:10.1016/j.asr.2007.05.083, 2007.
- Mitrofanov, I.G., M.T. Zuber, M.L. Litvak, N.E. Demidov, A.B. Sanin, W.V. Boynton, D.A. Gilichinsky, D. Hamara, A.S. Kozyrev, R.S. Saunders, D.E. Smith and V.I. Tretyakov, Water ice permafrost on Mars: Layering structure and surface distribution according to HEND/Odyssey and MOLA/MGS data, *Geophys. Res. Lett.*, 34, L18102, doi:10.1029/2007GL030030, 2007.
- Zuber, M.T., O. Aharonson, J.M. Aurnou, A.F. Cheng, S.A. Hauck II, M.H. Heimpel, G.A. Neumann, S.J. Peale, R.J. Phillips, D.E. Smith, S.C. Solomon and S. Stanley, The geophysics of Mercury: Current knowledge and future opportunities, *Space Sci. Rev.*, 131, 105-132, doi: 10.1007/s11214-007-9265-4, 2007.
- Srinivasan, D.K., M.E. Perry, K.B. Fielhauer, D.E. Smith and M.T. Zuber, The MESSENGER radio frequency tracking system, *Space Sci. Rev.*, 131, 557-571, doi: 10.1007/s11214-007-9270-7, 2007.
- Cavanaugh, J.F., J.C. Smith, X. Sun, A.E. Bartels, L. Ramos-Izquierdo, D.J. Krebs, J.F. McGarry, R. Trunzo, A.M. Novo-Gradac, J.L. Britt, J. Karsh, R.B. Katz, A. Lukemire, R. Szymkiewicz, D.L. Berry, J.P. Swinski, G.A. Neumann, M.T. Zuber and D.E. Smith, The Mercury Laser Altimeter instrument for the MESSENGER mission, *Space Sci. Rev.*, 131, 451-480, doi: 10.1007/s11214-007-9273-4, 2007.
- Stanley, S., M.T. Zuber and J. Bloxham, Using reversed magnetic flux spots to determine a planet's inner core size, *Geophys. Res. Lett.*, 34, doi: 10.1029/2007GL030892, 2007.
- Mazarico, E.M., M.T. Zuber, F.G. Lemoine and D.E. Smith, Atmospheric density during the aerobraking of Mars Odyssey from radio tracking data, *J. Spacecraft Rockets*, 44, 1165-1171, 2007.

- Russell, C.T., F. Capaccioni, A. Coradini, M.C. De Sanctis, W.C. Feldman, R. Jaumann, H.U. Keller, T.B. McCord, L.A. McFadden, S. Mottola, C.M. Pieters, T.H. Prettyman, C.A. Raymond, M.V. Sykes, D.E. Smith and M.T. Zuber, Dawn Mission to Vesta and Ceres: Symbiosis between terrestrial observations and robotic exploration, *Earth Moon Planets*, *101*, 65-91, doi: 10.1007/s11038-007-9151-9, 2007.
- Johnson, S.S., M.B. Hebsgaard, T.R. Christensen, M. Mastepanov, M.T. Zuber, R. Nielsen, T. Brand, M.T.P. Gilbert, M. Bunce, R. Ronn, D. Gilchinsky, D. Froese, K. Oliver and E. Willerslev, DNA repair and metabolic activity in ancient bacteria, *Proc. Nat. Acad. Sci.*, *104*, 14,401-14,405, 2007.
- Andrews-Hanna, J.C., R.J. Phillips and M.T. Zuber, Meridiani Planum and the global hydrology of Mars, *Nature*, *446*, 163-166, 2007.
- Chin, G., S. Brylow, M. Foote, J. Garvin, J. Kaspar, J. Keller, I. Mitrofanov, D.A. Paige, K. Raney, M. Robinson, D. Smith, H. Spence, A. Stern and M.T. Zuber, Lunar Reconnaissance Orbiter overview: The instrument suite and mission, *Space Sci. Rev.*, *129*, doi:10.1007/s11214-007-9153-y, 2007.
- Zuber, M.T., F.G. Lemoine, D.E. Smith, A.S. Konopliv, S. E. Smrekar and S.W. Asmar, Mars Reconnaissance Orbiter Radio Science Gravity Investigation, *J. Geophys. Res.*, *112*, E05S07, doi:10.1029/2006JE002833, 2007.
- Mazarico, E., M.T. Zuber, F.G. Lemoine and D.E. Smith, Martian exospheric density using Mars Odyssey radio tracking data, *J. Geophys. Res.*, *112*, E05014, doi:10.1029/2006JE002734, 2007.
- Parmentier, E.M., and M.T. Zuber, Early evolution of Mars: Mantle compositional stratification and hydrothermal crustal cooling, *J. Geophys. Res.*, *112*, E02007, doi:10.1029/2005JE002626, 2007.
- Abshire, J.B., X. Sun, G. Neumann, J. McGarry, T. Zagwodski, P. Jester, H. Riris, M. Zuber and D. Smith, Laser pulses from Earth detected at Mars, *Conference on Laser Electro-Optics (CLEO)*, Long Beach, CA, May 2006, doi: 0.1109/CLEO.2006.4628090, 2006.
- Rondanelli, R., V. Thayalan, R.S. Lindzen and M.T. Zuber, Atmospheric contribution to the dissipation of the gravitational tide of Phobos on Mars, *Geophys. Res. Lett.*, *33*, doi:10.1029/2006GL026222, 2006.
- Wahr, J.M., M.T. Zuber, D.E. Smith and J.I. Lunine, Tides on Europa, and the thickness of Europa's icy shell, *J. Geophys. Res.*, *111*, doi:10.1029/2006JE002729, 2006.
- Russell, C.T., F. Capaccioni, A. Coradini, U. Christensen, M.C. DeSanctis, W.C. Feldman, R. Jaumann, H.U. Keller, A. Konopliv, T.B. McCord, L.A. McFadden, H.Y. McSween, S. Mottola, G. Neukum, C.M. Pieters, T.H. Prettyman, C.A. Raymond, D.E. Smith, M.V. Sykes, B. Williams and M.T. Zuber, Dawn Discovery mission to Vesta and Ceres: Present status, *Adv. Space Res.*, *38*, 2043-2048, 2006.
- Garrick-Bethell, E., J. Wisdom and M.T. Zuber, Evidence for a past high-eccentricity lunar orbit, *Science*, *313*, 652-655, 2006.
- Sun, X., G.A. Neumann, J.B. Abshire and M.T. Zuber, Mars 1064-nm spectral radiance measurements from the receiver noise response of the Mars Orbiter Laser Altimeter, *Appl. Optics*, *45*, 3960-3971, 2006.
- Ng, F.S.L., and M.T. Zuber, Patterning instability on the Mars polar caps, *J. Geophys. Res.*, *111*, doi:10.1029/2005JE002533, 2006.
- Smith, D.E., M.T. Zuber, X. Sun, G.A. Neumann, J.F. Cavanaugh, J.F. McGarry and T.W. Zagwodzki, Two-way laser link over interplanetary distance, *Science*, *311*, 53, doi: 10.1126/science.1120091, 2006.

- Zuber, M.T., and I. Garrick-Bethell, What do we need to know to land on the Moon again?, *Science*, 310, 983-985, 2005.
- Bills, B.G., G.A. Neumann, D.E. Smith and M.T. Zuber, Improved estimate of tidal dissipation within Mars from MOLA observations of the shadow of Phobos, *J. Geophys. Res.*, 110, doi: 10.1029/2004JE002376, 2005.
- Garrick-Bethell, I., and M.T. Zuber, An indigenous origin for the South Pole-Aitken thorium anomaly, *Geophys. Res. Lett.*, 32, doi:10.1029/2005GL023142, 2005.
- Solomon, S.C., O. Aharonson, J.M. Aurnou, W.B. Banerdt, M.H. Carr, A.J. Dombard, H.V. Frey, M.P. Golombek, S.A. Hauck II, J.W. Head III, B.M. Jakosky, C.L. Johnson, P.J. McGovern, G.A. Neumann, R.J. Phillips, D.E. Smith and M.T. Zuber, New perspectives on ancient Mars, *Science*, 307, 1214-1220, 2005.
- Stanley, S., J. Bloxham, W.E. Hutchison and M.T. Zuber, Thin shell dynamo models consistent with Mercury's weak magnetic field, *Earth Planet. Sci. Lett.*, 234, 27-38, 2005.
- Jerolmack, D.J., D. Mohrig, M.T. Zuber and S. Byrne, A minimum time for the formation of the Holden Northeast fan, Mars, *Geophys. Res. Lett.*, 31, doi:10.1029/2004GL021326, 2004.
- Neumann, G.A., M.T. Zuber, M.A. Wieczorek, P.J. McGovern, F.G. Lemoine and D.E. Smith, The crustal structure of Mars from gravity and topography, *J. Geophys. Res.*, 109, doi: 10.1029/2004JE002262, 2004.
- Aharonson, O., M.T. Zuber, D.E. Smith, G.A. Neumann, W.C. Feldman and T.H. Prettyman, Depth, distribution, and density of CO₂ deposits on Mars, *J. Geophys. Res.*, 109, doi: 10.1029/2003JE002223, 2004.
- McGovern, P.J., S.C. Solomon, D.E. Smith, M.T. Zuber, M. Simons, M.A. Wieczorek, R.J. Phillips, G.A. Neumann, O. Aharonson and J.W. Head, Correction to "Localized gravity/topography admittances and correlation spectra on Mars: Implications for regional and global evolution", *J. Geophys. Res.*, 109, doi: 10.1029/2004JE002286, 2004.
- Litvak, M.L., I.G. Mitrofanov, A.S. Kozyrev, A.B. Sanin, V.L. Tret'yakov, W.V. Boynton, C. Shinohara, D. Hamara, S. Saunders, D. Drake, M.T. Zuber and D.E. Smith, Carbon dioxide depositions on the Martian surface as revealed from neutron measurements by the HEND instrument onboard the 2001 Mars Odyssey spacecraft, *Solar System Research*, 38, 167-177, 2004.
- Wieczorek, M.A., and M.T. Zuber, The thickness of the Martian crust: Improved constraints from geoid-topography ratios, *J. Geophys. Res.*, 109, doi:10.1029/2003JE002153, 2004.
- Behn, M.D., J. Lin and M.T. Zuber, Effects of hydrothermal cooling and magma injection on mid-ocean ridge temperature structure, deformation, and axial morphology, in *Mid-Ocean Ridges: Hydrothermal Interactions Between the Lithosphere and Oceans*, *Geophys. Monogr. Ser.*, 148, ed. C.R. German, J. Lin, and L.M. Parson, pp. 151-166, AGU, Washington, DC, 2004.
- Russell, C.T., A. Coradini, M.C. DeSanctis, W.C. Feldman, R. Jaumann, A.S. Konopliv, T.B. McCord, L.A. McFadden, H.Y. McSween, S. Mottola, C.M. Pieters, T.H. Prettyman, C.A. Raymond, D.E. Smith, M.V. Sykes, B.G. Williams, J. Wise and M.T. Zuber, Dawn: A journey in space and time, *Planet. Space Sci.*, 52, 465-489, 2004.

- Aharonson, O., M.T. Zuber and S.C. Solomon, Crustal remanence as a source for Mercury's magnetic field, *Earth Planet. Sci. Lett.*, 218, 261-268, doi: 10.1016/j.epsl.2003.11.020, 2003.
- Zuber, M.T., Learning to think like Martians, *Science*, 302, 1694-1695, 2003.
- Mitrofanov, I., M.T. Zuber, M.L. Litvak, W.V. Boynton, D.E. Smith, D. Drake, D. Hamara, A.S. Kozyrev, A.B. Sanin, C. Shinohara, R.S. Saunders and V. Tretyakov, CO₂ snow depth and subsurface water ice abundance in the north hemisphere of Mars, *Science*, 300, 2081-2084, 2003.
- Neumann, G.A., J.B. Abshire, O. Aharonson, J.B. Garvin, X. Sun and M.T. Zuber, Mars Orbiter Laser Altimeter measurements of pulse width and footprint-scale roughness, *Geophys. Res. Lett.*, 30, doi:10.1029/2003GL017048, 2003.
- Montési, L.G.J. and M.T. Zuber, Clues to the lithospheric structure of Mars from wrinkle ridge sets and localization instability, *J. Geophys. Res.*, 108, doi:10.1029/2002JE001974, 2003.
- Simons, F.J., R.D. van der Hilst and M.T. Zuber, On the measurement of non-stationary anisotropic coherence functions: Application to the isostatic response of Australia, *J. Geophys. Res.*, 108, doi:10.1029/2001JB000704, 2003.
- Binzel, R.P., M. A'Hearn, E. Asphaug, M.A. Barucci, M. Belton, W. Benz, A. Cellino, M. Festou, M. Fulchignoni, A.W. Harris and M.T. Zuber, Interiors of small bodies: Foundations and perspectives, *Planet. Space Sci.*, 51, 443-454, 2003.
- Litvak, M.L., I.G. Mitrofanov, A.S. Kozyrev, A.B. Sanin, V.L. Tretyakov, W.V. Boynton, C. Shinohara, D. Hamara, S. Saunders, D. Drake, M.T. Zuber and D.E. Smith, Seasonal neutron-flux variations in the polar caps of Mars as revealed by the Russian HEND instrument onboard the NASA 2001 Mars Odyssey spacecraft, *Solar System Research*, 37, 378-386, 2003.
- Neumann, G.A., D.E. Smith and M.T. Zuber, Two Mars years of clouds detected by the Mars Orbiter Laser Altimeter, *J. Geophys. Res.*, 108, 10.1029/2002JE001849, 2003.
- Montési, L.G.J., and M.T. Zuber, Spacing of Faults at the Scale of the Lithosphere and Localization Instability 1: Theory, *J. Geophys. Res.*, 108, 10.1029/2002JB001923, 2003.
- Montési, L.G.J., and M.T. Zuber, Spacing of Faults at the Scale of the Lithosphere and Localization Instability 2: Application to the Central Indian Basin, *J. Geophys. Res.*, 108, 10.1029/2002JB001924, 2003.
- Asphaug, E., E.V. Ryan and M.T. Zuber, Asteroid Interiors, in *Asteroids III*, ed. W.F. Bottke, Jr., A. Cellino, P. Paolicchi, and R.P. Binzel, pp. 463-484, Univ. Ariz. Press, Tucson, 2003.
- Zuber, M.T., Model for magnetic mystery, *Nature*, 421, 119-120, 2003.
- Cheng, A.F., N. Izenberg, C.R. Chapman and M.T. Zuber, Ponded deposits on asteroid 433 Eros, *Planet. Space Sci.*, 37, 1095-1106, 2002.
- McGovern, P.J., S.C. Solomon, D.E. Smith, M.T. Zuber, M. Simons, M.A. Wieczorek, R.J. Phillips, G.A. Neumann, O. Aharonson and J.W. Head, Localized gravity/shape admittance and correlation spectra on Mars: Implications for regional and global evolution, *J. Geophys. Res.*, 107, doi:10.1029/2002JE001854, 2002.
- Behn, M.D., J. Lin and M.T. Zuber, Evidence for weak oceanic transform faults, *Geophys. Res. Lett.*, 29, doi:10.1029/2002GL015612, 2002.

- Peale, S.J., R.J. Phillips, S.C. Solomon, D.E. Smith and M.T. Zuber, A procedure for determining the nature of Mercury's core, *Meteoritics Planet. Sci.*, *37*, 1269-1283, 2002.
- Behn, M.D., J. Lin and M.T. Zuber, A continuum mechanics model for normal faulting using a strain-rate softening rheology: Implications for thermal and rheological controls on continental and oceanic rifting, *Earth Planet. Sci. Lett.*, *202*, 725-740, 2002.
- Parmentier, E.M., S. Zhong and M.T. Zuber, Gravitational differentiation due to initial chemical stratification: Origin of lunar asymmetry by the creep of dense KREEP, *Earth Planet. Sci. Lett.*, *201*, 473-480, 2002.
- Russell, C.T., A. Coradini, W.C. Feldman, R. Jaumann, A.S. Konopliv, T.B. McCord, L.A. McFadden, H.Y. McSween, S. Mottola, G. Neukum, C.M. Pieters, C.A. Raymond, D.E. Smith, M.V. Sykes, B.G. Williams and M.T. Zuber, Dawn: A journey to the beginning of the solar system, *Proc. of Asteroids, Comets Meteors, ESA-SP-500*, 63-66, 29 July – 2 August 2002, Technical Univ. Berlin, Berlin, 2002.
- Behn, M.D., J. Lin and M.T. Zuber, Mechanisms of normal fault initiation at mid-ocean ridges, *J. Geophys. Res.*, *107*, 10.129/2001JB000503, 2002.
- Montési, L.G.J., and M.T. Zuber, A unified description of localization for application to large-scale tectonics, *J. Geophys. Res.*, *107*, 10.1029/2001JB000465, 2002.
- Aharonson, O., M.T. Zuber, D.H. Rothman, K.X. Whipple and N. Schorghofer, Drainage and channel incision processes on Mars, *Proc. Nat. Acad. Sci.*, *99*, 1780-1783, 2002.
- Cheng, A.F., O. Barnouin-Jha, L. Prockter, M.T. Zuber, G. Neumann, D.E. Smith, J. Garvin, M. Robinson, J. Veverka and P. Thomas, Small-scale topography of 433 Eros from laser altimetry and imaging, *Icarus*, *155*, 51-74, 2002.
- Smith, D.E., M.T. Zuber and G.A. Neumann, Seasonal variation of snow depth on Mars, *Science*, *294*, 2141-2146, 2001.
- Wieczorek, M.A., and M.T. Zuber, The composition of the lunar crust as inferred from central peaks and geophysical crustal thickness modeling, *Geophys. Res. Lett.*, *28*, 4023-4026, 2001.
- Zuber, M.T., The crust and mantle of Mars, *Nature*, *412*, 237-244, 2001.
- Solomon, S.C., R.L. McNutt, R.E. Gold, M.H. Acuna, D.N. Baker, W.V. Boynton, C.R. Chapman, A.F. Cheng, G. Gloeckler, J.W. Head III, S.M. Krimigis, W.E. McClintock, S.L. Murchie, S.J. Peale, R.J. Phillips, M.S. Robinson, J.A. Slavin, D.E. Smith, R.G. Strom, J.I. Trombka and M.T. Zuber, The MESSENGER mission to Mercury: Scientific objectives and implementation, *Planet. Space Sci.*, *49*, 1445-1465, 2001.
- Wieczorek, M.A., and M.T. Zuber, A Serenitatis origin for the Imbrium grooves and South Pole-Aitken thorium anomaly, *J. Geophys. Res.* *106*, 27,853-27,864, 2001.
- Lemoine, F.G., D.E. Smith, D.D. Rowlands, M.T. Zuber, G.A. Neumann, D.S. Chinn and D.E. Pavlis, An improved solution of the gravity field of Mars (GMM-2B) from Mars Global Surveyor, *J. Geophys. Res.*, *106*, 23,359-23,376, 2001.
- Tracadas, P.W., M.T. Zuber, D.E. Smith and F.G. Lemoine, Density structure of the upper thermosphere of Mars from measurements of air drag on the Mars Global Surveyor spacecraft, *J. Geophys. Res.*, *106*, 23,349-23,357, 2001.

- Neumann, G.A., D.D. Rowlands, F.G. Lemoine, D.E. Smith and M.T. Zuber, The crossover analysis of MOLA altimetric data, *J. Geophys. Res.*, *106*, 23,753-23,768, 2001.
- Smith, D.E., M.T. Zuber, H.V. Frey, J.B. Garvin, J.W. Head, D.O. Muhleman, G.H. Pettengill, R.J. Phillips, S.C. Solomon, H.J. Zwally, W.B. Banerdt, T.C. Duxbury, M.P. Golombek, F.G. Lemoine, G.A. Neumann, D.D. Rowlands, O. Aharonson, P.G. Ford, A.B. Ivanov, P.J. McGovern, J.B. Abshire, R.S. Afzal and X. Sun, Mars Orbiter Laser Altimeter (MOLA): Experiment summary after the first year of global mapping of Mars, *J. Geophys. Res.*, *106*, 23,689-23,722, 2001.
- Aharonson, O., M.T. Zuber and D.H. Rothman, Statistics of Mars' topography from MOLA: Slopes, correlations and physical models, *J. Geophys. Res.*, *106*, 23,723-23,735, 2001.
- Golombek, M.P., F.S. Anderson and M.T. Zuber, Martian wrinkle ridge topography: Evidence for subsurface faults from MOLA, *J. Geophys. Res.*, *106*, 23,811-23,821, 2001.
- Zhong, S., and M.T. Zuber, Degree-1 mantle convection and the crustal dichotomy on Mars, *Earth Planet. Sci. Lett.*, *189*, 75-84, 2001.
- Wieczorek, M.A., M.T. Zuber and R.J. Phillips, The control of magma buoyancy on the eruption of lunar basalts, *Earth Planet. Sci. Lett.*, *185*, 71-83, 2001.
- Cheng, A.F., O. Barnouin-Jha, M.T. Zuber, J. Veverka, D.E. Smith, G.A. Neumann, M. Robinson, P. Thomas, J.B. Garvin, S. Murchie, C. Chapman and L. Prockter, Small-scale topography of 433 Eros from laser altimetry and imaging, *Science*, *292*, 488-491, 2001.
- McGovern, P.J., S.C. Solomon, J.W. Head, D.E. Smith and M.T. Zuber, Extension and uplift at Alba Patera, Mars: MOLA observations and loading models, *J. Geophys. Res.*, *23*, 769-23,809, 2001.
- Cole, T.D., A.F. Cheng, Y. Guo, M.T. Zuber and D.E. Smith, Post-launch characterization of the NEAR laser Rangefinder, *IAA Proceedings*, 2001.
- Cheng, A.F., T.D. Cole, M.T. Zuber, D.E. Smith, Y. Guo and F. Davidson, In-flight calibration of the Near Earth Asteroid Rendezvous laser rangefinder, *Icarus*, *48*, 572-586, 2001.
- Phillips, R.J., M.T. Zuber, S.C. Solomon, M.P. Golombek, B.M. Jakosky, W.B. Banerdt, D.E. Smith, R.M.E. Williams, B.M. Hynek, O. Aharonson and S.A. Hauck, II, Ancient geodynamics and global-scale hydrology on Mars, *Science*, *291*, 2587-2591, 2001.
- Cheng, A.F., O. Barnouin-Jha, M.T. Zuber, G. Neumann, J. Veverka, D.E. Smith G.A. Neumann, M. Robinson, P. Thomas, J.B. Garvin, C. Chapman and L. Prockter, Laser altimetry of small-scale features on 433 Eros from NEAR Shoemaker, *Science*, *292*, 488-491, 2001.
- Zuber, M.T., D.E. Smith, A.F. Cheng, J.B. Garvin, O. Aharonson, T.D. Cole, P.J. Dunn, Y. Guo, F.G. Lemoine, G.A. Neumann, D.D. Rowlands and M.H. Torrence, The Shape of 433 Eros from the NEAR Laser Rangefinder, *Science*, *289*, 2097-2101, 2000.
- Hood, L., and M.T. Zuber, Recent refinements in geophysical constraints on lunar origin and evolution, *Origin of the Earth and Moon*, ed. R. Canup and K. Righter, Univ. of Ariz. Press, Tucson, 397-409, 2000.
- Zhong, S. and M.T. Zuber, Crustal compensation during mountain building, *Geophys. Res. Lett.*, *27*, 3009-1012, 2000.

- Simons, F.J., M.T. Zuber and J. Korenaga, Isostatic response of the Australian lithosphere: Estimation of effective elastic thickness and anisotropy using multitaper spectral analysis, *J. Geophys. Res.*, *105*, 19,163-19,184, 2000.
- Behn, M.D., and M.T. Zuber, A comparison of ocean topography derived from Shuttle Laser Altimeter-01 and TOPEX/POSEIDON, *IEEE Remote Sensing*, *38*, 1425-1438, 2000.
- Zhong, S., M.T. Zuber, L. Moresi and M. Gurnis, The role of temperature-dependent viscosity and surface plates in spherical shell models of mantle convection, *J. Geophys. Res.*, *105*, 11,063-11,082, 2000.
- Johnson, C.L., S.C. Solomon, J.W. Head, R.J. Phillips, D.E. Smith and M.T. Zuber, Lithospheric loading by the north polar cap of Mars, *Icarus*, *144*, 313-328, 2000.
- Clifford, S.M., D. Crisp, D.A. Fisher, K.E. Herkenhoff, S.E. Smrekar, P.C. Thomas, D.D. Wynn-Williams, R.W. Zurek, J.R. Barnes, B.G. Bills, E.W. Blake, W.M. Calvin, J.M. Cameron, M.H. Carr, P.R. Christensen, B.C. Clark, G.D. Clow, J.A. Cutts, D. Dahl-Jensen, W.B. Durham, F.P. Fanale, J.D. Farmer, F. Forget, K. Gotto-Azuma, R. Grard, R.M. Haberle, W. Harrison, R. Harvey, A. D. Howard, A.P. Ingersoll, P.B. James, J.S. Kargel, H. H. Kieffer, J. Larsen, K. Lepper, M.C. Malin, D.J. McCleese, B. Murray, J.F. Nye, D.A. Paige, S.R. Platt, J.J. Plaut, N. Reeh, J.W. Rice, Jr., D.E. Smith, C. R. Stoker, K.L. Tanaka, E. Mosley-Thompson, T. Thorsteinsson, S.E. Wood, A. Zent, M. T. Zuber and H.J. Zwally. The state and future of Mars polar science and exploration, *Icarus*, *144*, 210-242, 2000
- Zhong, S., M.T. Zuber and E.M. Parmentier, A dynamic origin for the global asymmetry of mare basalts, *Earth Planet. Sci. Lett.*, *177*, 131-140, 2000.
- Zuber, M.T., S.C. Solomon, R.J. Phillips, D.E. Smith, G.L. Tyler, O. Aharonson, G. Balmino, W.B. Banerdt, J.W. Head, F.G. Lemoine, P.J. McGovern, G.A. Neumann, D.D. Rowlands and S. Zhong, Internal structure and early thermal evolution of Mars from Mars Global Surveyor topography and gravity, *Science*, *287*, 1788-1793, 2000.
- Zhong, S., and M.T. Zuber, Long wavelength topographic relaxation for self-gravitating planets with multilayer viscoelastic rheology, *J. Geophys. Res.*, *105*, 4153-4164, 2000.
- Lemoine, F.G., D.D. Rowlands, D.E. Smith, D.S. Chinn, D.E. Pavlis, S.B. Luthcke, G.A. Neumann and M.T. Zuber, Orbit determination for Mars Global Surveyor during mapping, *AIAA*, *99-328*, Girdwood Alaska, August 16-19, 1999.
- Dickey, J.O., C.R. Bentley, R. Bilham, J.A. Carton, R.J. Eanes, T.A. Herring, W.M. Kaula, G.S.E. Lagerloef, S. Rojstaczer, W.H.F. Smith, H.M. van den Dool, J.M. Wahr and M.T. Zuber, Gravity and the geosphere: New frontier, *Hydrolog. Sci. Jour.*, *44*, 407-415, 1999.
- Smith, D.E., M.T. Zuber, S.C. Solomon, R.J. Phillips, J.W. Head, J.B. Garvin, W.B. Banerdt, D.O. Muhleman, G.H. Pettengill, G.A. Neumann, F.G. Lemoine, J.B. Abshire, O. Aharonson, C.D. Brown, S.A. Hauck, A.B. Ivanov, P.J. McGovern, H.J. Zwally and T.C. Duxbury, The global topography of Mars and implications for surface evolution, *Science*, *284*, 1495-1503, 1999.
- Zuber, M.T., Snapshots of an ancient coverup, *Nature*, *397*, 560-561, 1999.
- Smith, D.E., M.T. Zuber, R.M. Haberle, D.D. Rowlands and J.R. Murphy, The Mars seasonal CO₂ cycle and the time variation of the gravity field: A General Circulation Model simulation, *J. Geophys. Res.*, *104*, 1885-1896, 1999.
- Aharonson, O., M.T. Zuber, G.A. Neumann and J.W. Head, Mars: Northern hemisphere slope distributions and stochastic properties of topography, *Geophys. Res. Lett.*, *25*, 4413-4416, 1998.

- Head, J.W. III, M. Kreslavsky, H. Hiesinger, M. Ivanov, S. Pratt, N. Seibert, D.E. Smith and M.T. Zuber, Oceans in the past history of Mars: Tests for their presence using Mars Orbiter Laser Altimeter (MOLA) data, *Geophys. Res. Lett.*, 25, 4401-4404, 1998.
- Smith, D.E. and M.T. Zuber, The relationship between MOLA northern hemisphere topography and the 6.1-mbar atmospheric pressure surface of Mars, *Geophys. Res. Lett.*, 25, 4397-4400, 1998.
- Cole, T.D., M.T. Boise, A.S. El-Dinary, A. Cheng, M.T. Zuber D.E. Smith, The Near Earth Asteroid laser altimeter, *Space Sci. Rev.*, 82, 217-253, 1998.
- Dickey, J.O., C.R. Bentley, R. Bilham, J.A. Carton, R.J. Eanes, T.A. Herring, W.M. Kaula, G.S.E. Lagerloef, S. Rojstaczer, W.H.F. Smith, H.M. van den Dool, J.M. Wahr and M.T. Zuber, Satellite gravity and the geosphere: Contributions to the study of the solid Earth and its fluid envelope, *Eos Trans. Am. Geophys. Un.*, 79, 237-243, 1998.
- Rogers, P.G., and M.T. Zuber, Tectonic evolution of Bell Regio, Venus: Regional stress, lithospheric flexure, and edifice stresses, *J. Geophys. Res.*, 103, 16,841-16,853, 1998.
- Smith, D.E., M.T. Zuber and H.V. Frey and J.B. Garvin and D.O. Muhleman and G.H. Pettengill and R.J. Phillips and S.C. Solomon, H.J. Zwally, W.B. Banerdt and T.C. Duxbury, Topography of the northern hemisphere of Mars from the Mars Orbiter Laser Altimeter, *Science*, 279, 1686-1692, 1998.
- Sakimoto, S.E.H., and M.T. Zuber, Flow and convective cooling in lava tubes, *J. Geophys. Res.*, 103, 27,465-27,487, 1998.
- Williams, K.K., and M.T. Zuber, Measurement and analysis of lunar basin depths from Clementine altimetry, *Icarus*, 131, 107-122, 1998.
- Zuber, M.T., Smith, D.E., S.C. Solomon, J.B. Abshire, R.S. Afzal, O. Aharonson, K. Fishbaugh, P.G. Ford, , H.V. Frey, J.B. Garvin, J.W. Head, A.B. Ivanov, C.L. Johnson, D.O. Muhleman, G.A. Neumann, G.H. Pettengill, R.J. Phillips, X. Sun, H.J. Zwally, W.B. Banerdt and T.C. Duxbury, Observations of the north polar region of Mars from the Mars Orbiter Laser Altimeter, *Science*, 282, 2053-2060, 1998.
- Zuber, M.T., D.E. Smith, R.J. Phillips, S.C. Solomon, W.B. Banerdt, G.A. Neumann and O. Aharonson, Shape of the northern hemisphere of Mars from the Mars Orbiter Laser Altimeter (MOLA), *Geophys. Res. Lett.*, 25, 4393-4396, 1998.
- Banerdt, W.B., G.E. McGill and M.T. Zuber, Plains Tectonism on Venus, *Venus II*, ed. D. Hunten, R. Phillips and S. Bougher, Univ. Ariz. Press, Tucson, 901-930, 1997.
- Lemoine, F.G., D.E. Smith, M.T. Zuber, G.A. Neumann and D.D. Rowlands, A 70th degree lunar gravity model from Clementine and other tracking data, *J. Geophys. Res.*, 102, 16,339-16,359, 1997.
- Phillips, R.J., C.L. Johnson, S.J. Mackwell, P. Morgan, D.T. Sandwell and M.T. Zuber, Lithospheric Mechanics and Dynamics on Venus, *Venus II*, ed. D. Hunten, R. Phillips and S. Bougher, 1163-1204, Univ. Ariz. Press, Tucson, 1163-1204, 1997.
- Smith, D.E., M.T. Zuber, G.A. Neumann and F.G. Lemoine, Topography of the Moon from the Clementine LIDAR, *J. Geophys. Res.*, 102, 1591-1611, 1997.
- Zuber, M.T., and D.E. Smith, Topography of the lunar south polar region: Implications for the size and distribution of permanently shaded areas, *Geophys. Res. Lett.*, 24, 2183-2186, 1997.

- Zuber, M.T., D.E. Smith, A.F. Cheng and T.D. Cole, The NEAR laser ranging investigation, *J. Geophys. Res.*, 102, 23,761-23,773, 1997.
- Zuber, M.T., and D.E. Smith, Mars without Tharsis, *J. Geophys. Res.*, 102, 28,673-28,685, 1997.
- Cole, T.D., A.F. Cheng, M.T. Zuber and D.E. Smith, The laser rangefinder on the Near Earth Rendezvous spacecraft, *Acta Astronaut.*, 39, 303-313, 1996.
- Lemoine, F.G., D.E. Smith, M.T. Zuber and G.A. Neumann, High Degree and Order Spherical Harmonic Gravity Modeling of the Moon from Clementine and historical S-Band Data, in *Global Gravity Field and its Temporal Variations*, ed. R. Rapp, A. Cazenave, and R. Nerem, 11th IAG Symposium, 116, Springer-Verlag, Berlin, 1996.
- Neumann, G.A., M.T. Zuber, D.E. Smith and F.G. Lemoine, The lunar crust: Global signature and structure of major basins, *J. Geophys. Res.*, 101, 16,841-16,863, 1996.
- Smith, D.E., and M.T. Zuber, The shape of Mars and the topographic signature of the hemispheric dichotomy, *Science*, 271, 184-188, 1996.
- Zuber, M.T., and E.M. Parmentier, Finite amplitude folding of a continuously viscosity-stratified lithosphere, *J. Geophys. Res.*, 101, 5489-5498, 1996.
- Lemoine, F.G., D.E. Smith, M.T. Zuber, D.D. Rowlands and G.A. Neumann, Results from the Clementine lunar geodesy investigation, *Astrodynamics*, 90, 201-213, 1995.
- Neumann, G.A., and M.T. Zuber, A continuum approach to the development of normal faults, *Proc. 35th US Symposium on Rock Mechanics*, ed. J.J.K. Daemen and R.A. Schultz, 191-198, 1995.
- Richardson, W.P., S. Stein, C. Stein and M.T. Zuber, Fracture zone geoid data and the thermal structure of oceanic lithosphere, *Geophys. Res. Lett.*, 22, 1913-1916, 1995.
- Sakimoto, S.E.H. and M.T. Zuber, Effects of planetary thermal structure on the ascent and cooling of magma on Venus, *J. Volcanol. Geotherm. Res.*, 64, 53-60, 1995.
- Sakimoto, S.E.H., and M.T. Zuber, The spreading of variable viscosity axisymmetric radial gravity currents: Applications to the emplacement of Venus "Pancake" domes, *J. Fluid Mech.*, 301, 65-77, 1995.
- Smith, D.E., F.G. Lemoine and M.T. Zuber, Simultaneous estimation of the masses of Mars, Phobos, and Deimos from spacecraft distant encounters, *Geophys. Res. Lett.*, 22, 2171-2174, 1995.
- Williams, K.K., and M.T. Zuber, An experimental study of incremental surface loading of an elastic plate: Application to volcano tectonics, *Geophys. Res. Lett.*, 22, 1981-1984, 1995.
- Zuber, M.T., Wrinkle ridges, reverse faulting, and the depth penetration of lithospheric strain in Lunae Planum, Mars, *Icarus*, 114, 80-92, 1995.
- Zuber, M.T., and E.M. Parmentier, Formation of fold and thrust belts on Venus by thick-skinned deformation, *Nature*, 377, 704-707, 1995.
- Nozette, S., L.P. Plesance, P.L. Rustan, D.M. Horan, E.M. Shoemaker, P.D. Spudis, C.H. Acton, D.N. Baker, J.E. Blamont, B.J. Buratti, M.E. Davies, T.C. Duxbury, E.M. Eliason, B.M. Jakosky, J.F. Kordas, I.T. Lewis, C. Lichtenberg, P.G. Lucey, E. Malaret, M.A. Massie, H.S. Park, A.S. McEwen, R.E. Priest, C.M. Pieters, R.A. Riese, M.A. Robinson, R. Simpson, D.E. Smith, T. Sorensen, R.W. Vorder Bruegge

- and M.T. Zuber, The Clementine mission to the Moon: Scientific overview, *Science*, 266, 1835-1839, 1994.
- Lucey, P.G., P.D. Spudis, M.T. Zuber, D.E. Smith and E.R. Malaret, Compositional-topographic units on the Moon and the early evolution of the lunar crust, *Science*, 266, 1855-1858, 1994.
- Zuber, M.T., D.E. Smith, F.G. Lemoine and G.A. Neumann, The shape and internal structure of the Moon from the Clementine mission, *Science*, 266, 1839-1843, 1994.
- Smith, D.E., and M.T. Zuber, New gravity field for Mars fuels new research, *EOS Trans. Am. Geophys. Un.*, 75, 97, 1994.
- Schultz, R.A., and M.T. Zuber, Observations, models and mechanisms of failure of surface rocks surrounding planetary surface loads, *J. Geophys. Res.*, 99, 14,691-14,702, 1994.
- Zuber, M.T., Folding a jelly sandwich, *Nature*, 371, 650-651, 1994.
- Smith, D.E., F.J. Lerch, R.S. Nerem, M.T. Zuber, G.B. Patel, S.K. Fricke and F.G. Lemoine, An improved gravity model for Mars: Goddard Mars Model-1 (GMM-1), *J. Geophys. Res.*, 98, 20,871-20,899, 1993.
- Mouginis-Mark, P.J., L. Wilson and M.T. Zuber, The Physical Volcanology of Mars, in *Mars*, ed. B.J. Jakosky, H.H. Kieffer, and M.S. Matthews, pp. 424-452, Univ. Ariz. Press, Tucson, 1992.
- Zuber, M.T., Venus: Geology and Geophysics, *The Astronomy and Astrophysics Encyclopedia*, ed. S.P. Maran, 944-948, Van Nostrand Reinhold, Inc., New York, 1992.
- Zuber, M.T., and P.J. Mouginis-Mark, Caldera subsidence and magma chamber depth of the Olympus Mons Volcano, Mars, *J. Geophys. Res.*, 97, 18,295-18,307, 1992.
- Zuber, M.T., D.E. Smith, S.C. Solomon, D.O. Muhleman, J.W. Head, J.B. Garvin, J.B. Abshire and J.L. Bufton, The Mars Observer Laser Altimeter investigation, *J. Geophys. Res.*, 97, 7781-7798, 1992.
- Black, M.T., M.T. Zuber and D.C. McAdoo, Comparison of observed and predicted gravity over Aphrodite Terra, Venus, *J. Geophys. Res.*, 96, 301-315, 1991.
- Zuber, M.T., and L.L. Aist, The shallow structure of the Martian lithosphere in the vicinity of the ridged plains, *J. Geophys. Res.*, 95, 14,215-14,230, 1990.
- Zuber, M.T., Ridge belts: Evidence for regional- and local-scale deformation on the surface of Venus, *Geophys. Res. Lett.*, 17, 1369-1372, 1990.
- Zuber, M.T., and E.M. Parmentier, On the relationship between isostatic elevation and the wavelengths of tectonic surface features on Venus, *Icarus*, 85, 290-308, 1990.
- Zuber, M.T., T.D. Bechtel and D.W. Forsyth, Effective elastic thicknesses of the lithosphere and mechanisms of isostatic compensation in Australia, *J. Geophys. Res.*, 94, 9353-9367, 1989.
- Zuber, M.T., Compression of oceanic lithosphere: An analysis of intraplate deformation in the Central Indian Basin, *J. Geophys. Res.*, 92, 4817-4826, 1987.
- Zuber, M.T., Constraints on the Lithospheric structure of Venus from mechanical models and tectonic surface features, *J. Geophys. Res.*, 92, E541-E551, 1987.

- Zuber, M.T., and E.M. Parmentier, Lithospheric necking: A dynamic model for rift morphology, *Earth Planet. Sci. Lett.*, 77, 373-383, 1986.
- Zuber, M.T., E.M. Parmentier and R.C. Fletcher, Extension of continental lithosphere: A model for two scales of Basin and Range deformation, *J. Geophys. Res.*, 91, 4826-4838, 1986.
- Garvin, J.B., J.W. Head, M.T. Zuber and P. Helfenstein, Reply to Comment on 'Venus: The nature of the surface from Venera panoramas', *J. Geophys. Res.*, 90, 6895-6896, 1985.
- Zuber, M.T., and E.M. Parmentier, Lithospheric stresses due to radiogenic heating of an ice-silicate planetary body: Implications for the tectonic evolution of Ganymede, *J. Geophys. Res.*, 89, B429-B437, 1984.
- Garvin, J.B., J.W. Head, M.T. Zuber and P. Helfenstein, Venus: The nature of the surface from Venera panoramas, *J. Geophys. Res.*, 89, 3381-3399, 1984.
- Zuber, M.T., and E.M. Parmentier, A geometric analysis of surface deformation: Implications for the tectonic evolution of Ganymede, *Icarus*, 60, 200-210, 1984.
- Ftaclas, C., M.N. Fanelli, M.F. Struble and M.T. Zuber, Velocity-inclination correlation in the Virgo Cluster, *Astrophys. J.*, 245, L5-L8, 1981.