Michael T. Bland, Ph. D.

Curriculum Vitae
1/13/14

Department of Earth and Planetary Sciences
Washington University in Saint Louis
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APPOINTMENTS

09/2012 – present	Research Scientist, Washington University
08/2013 – present	Adjunct Faculty, Lindenwood University, St. Charles, MO
08/2008 – 08/2012	Postdoctoral Associate, Washington University

EDUCATION

05/2008	Ph.D., Planetary Science	University of Arizona
06/2002	B.A., Physics, Geology	Gustavus Adolphus College

PEER-REVIEWED PUBLICATIONS

Bland, M. T. and McKinnon, W. B., 2014. Forming Ganymede's grooves at smaller strain: Toward a self-consistent local and global strain history for Ganymede. *Icarus*, submitted.

Bland, M. T. 2013. Predicted crater morphologies on Ceres: Probing internal structure and evolution. *Icarus*, 226, 510-521.

Bland, M. T. and McKinnon, W. B., 2013. Does folding accommodate Europa's contractional strain? The effect of surface temperature on fold formation in ice lithospheres. *Geophys. Res. Lett.*, 40, 2534-2538, doi:10.1002/grl.50506.

Bland, M. T., and McKinnon, W. B., 2012. Forming Europa's folds: Strain requirements for the production of large-amplitude deformation. *Icarus,* 221, 694-709.

Bland, M. T., Singer, K. S., McKinnon, W. B., and Schenk, P. M. 2012. Enceladus' extreme heat flux as revealed by its relaxed craters. *Geo. Res. Lett.,* 39, L17204, doi:10.1029/2012GL052736.

Bland, M. T., McKinnon, W. B., and Showman, A. P., 2010. The effects of strain localization on the formation of Ganymede's grooved terrain. *Icarus*, 210, 396-410.

Mitri, G., Bland, M. T., Showman, A. P., Radebaugh, J., Stiles, B., Lopes, R. M. C., Lunine, J. I., and Pappalardo, J. I., 2010. Mountains on Titan: Modeling and observations. *J. Geophys. Res.*, 115, E10002, doi:10.1029/2010JE003592.

Bland, M. T., Showman, A. P., and Tobie, G., 2009. The orbital-thermal evolution and global expansion of Ganymede. *Icarus*, 200, 207-221.

Bland, M. T., Showman, A. P., and Tobie, G., 2008. The production of Ganymede's magnetic field. *Icarus,* 198, 384-399.
Bland, M. T. 2008. The tectonic, thermal, and magnetic evolution of icy satellites. Ph.D. Dissertation, University of Arizona.
Bland, M. T., Beyer, R. A., and Showman, A. P., 2007. Unstable extensional of Enceladus' lithosphere. *Icarus*, 192, 92-105.
Bland, M. T.**,** and Showman, A. P., 2007. The formation of Ganymede's grooved terrain: Numerical modeling of extensional necking instabilities. *Icarus*, 189, 439-456.

AWARDS, FELLOWSHIPS, AND SCHOLARSHIPS

2012 First Decade Award, Gustavus Adolphus College
2008 U. of Arizona College of Science Outstanding Scholar Nominee
2007 NASA Earth and Space Science Fellowship
2007 Gerard P. Kuiper Award, University of Arizona
2005 Galileo Circle Scholarship, University of Arizona

INVITED SEMINARS

2013 University of Tennessee, Knoxville, TN
Georgia Institute of Technology, GA
2012 University of Minnesota, MN
2011 Virginia Institute of Technology, VA
University of Southern Illinois, Carbondale, IL
Lunar and Planetary Institute, Houston, TX
University of Illinois at Chicago, IL
2010 Stony Brook University, NY
Gustavus Adolphus College, MN
2009 Southwest Research Institute, Boulder, CO
2008 Washington University, St. Louis, MO
Jet Propulsion Laboratory, Pasadena, CA
2007 Planetary Science Institute, Tucson, AZ

FUNDED GRANT PROPOSALS

PENDING

Title: Testing the tectonic resurfacing hypothesis: 2D and 3D numerical modeling of extending ice lithospheres
Role: PI
Program: NASA Outer Planets Research
Period: 6/1/2014-5/30/2017
Effort: 0.5 FTE

2011

Title: Structure, Evolution, and Tectonics of Outer Planet Satellites
Role: Postdoctoral Associate
Program: NASA Planetary Geology and Geophysics
Period: 8/9/2011-8/8/2014
Effort: 0.5 FTE

2010

Title: Using Topography Data to Constrain Enceladus' Tectonic and Thermal Evolution
Role: Science PI
Program: NASA Cassini Data Analysis
Period: 06/23/2011 – 06/22/2014
Effort: 0.5 FTE

2008

Title: Numerical Studies of Convection and Tectonics in Icy Satellites
Role: Postdoctoral Associate
Program: NASA Outer Planets Research
Period: 7/13/2009 – 7/12/2012
Effort: 0.5 FTE

PROFESSIONAL SERVICE

2013 NASA ROSES proposal review panel chair (Planetary Geology and Geophysics)
Reviewer for NASA Postdoctoral Program
Peer Reviewer (book chapter: *Treatise on Geophysics*)
NASA ROSES external review (Origins of Solar System)
Journal peer reviewer (Icarus, Planetary and Space Sci., Nature Geoscience)

2012 NASA ROSES proposal review panel chair (Outer Planets Research)
NASA ROSES external reviewer (Cassini Data Analysis)
Journal peer reviewer (Icarus, Adv. Space. Res.)
Session chair (Lunar and Planetary Science Conference)

2011 Scientific programming committee (Lunar and Planetary Science Conference)
NASA ROSES proposal review panel (Planetary Geology and Geophysics)
NASA ROSES external reviewer (Outer Planets Research)
Journal peer reviewer (Icarus)
Session chair (Lunar and Planetary Science Conference)

2010 Scientific programming committee (Lunar and Planetary Science Conference)
NASA ROSES external reviewer (Outer Planets Res., Dawn Participating Scientist)
Peer reviewer (book chapter: *Science of Solar System Ices*)

Journal peer reviewer (Icarus, JGR-Planets)
Judge of "Outstanding Student Papers Award", Fall AGU meeting

2009 NASA ROSES external reviewer (Outer Planets Research)
Peer reviewer (book chapter: *Titan from Cassini-Huygens*)
Journal peer reviewer (Icarus, JGR-Planets),
Session chair (Lunar and Planetary Science Conference)

2008 NASA ROSES proposal review panel (Jupiter/Cassini Data Analysis Program)
NASA ROSES proposal review panel (Outer Planets Research)
Peer reviewer (book chapter: *Saturn from Cassini-Huygens*)

2007 NASA ROSES external reviewer (Cassini Data Analysis Program)

PROFESSIONAL MEMBERSHIPS

2006-present American Astronomical Society: Division for Planetary Science
2005-present American Geophysical Union

CONFERENCE PRESENTATIONS

2014

Bland, M. T., McKinnon, W. B. (2014). Deep faulting, stress release, and mountain formation on Io. *Lunar Planet. Sci. Conf.* Pending.

Bland, M. T., McKinnon, W. B. (2014). Constraining the heat flux between Enceladus' Tiger Stripes: Numerical modeling of funiscular plains formation. *Lunar Planet. Sci. Conf.* Pending.

McKinnon, W. B., Mohit, P. S., Greenhagen, B. T., Bland, M. T. (2014). Polar wander on Ganymede and Callisto – a solution to the apex-antapex cratering conundrum. *Lunar Planet. Sci. Conf.* Pending.

2013

Bland, M. T., McKinnon, W. B. (2013). Clues to the formation of Enceladus' south-polar terrain from simulations of funiscular plains formation. *Fall AGU conf.*, P53B-1866.

Bland, M. T., McKinnon, W. B. (2013). Forming Ganymede's grooves at smaller strains: Toward a consistent local- and global-scale strain history for Ganymede. *AAS Div. Planet. Sci. Conf.,* 501.08.

McKinnon, W. B., Kirchoff, M., Bland, M. T. (2013). Does Extension Play a Role in Ionian Tectonics? Potential Effects of Preexisting Bounding Faults, Local Brittle Failure, and Sulfur Pore Pressure on Crustal Stresses. *AAS Div. Planet. Sci. Conf.,* 501.06.

Bland, M. T., Singer, K. N., McKinnon, W. B. (2013). The surface topography of Ceres: Pre-Dawn predictions for extensive viscous relaxation. *Lunar Planet. Sci. Conf. 44,* #1655.

Bland, M. T., McKinnon, W. B. (2013). Reevaluating groove formation on Ganymede: Forming larger amplitude grooves at smaller extensional strain. *Lunar Planet. Sci. Conf. 44,* 2176.

McKinnon, W. B., and Bland, M. T. (2013). Differentiation of large outer Solar System satellites: Implications for core chemistry, internal structure, and non-hydrostatic gravity. *Lunar Planet. Sci. Conf. 44,* 2983.

2012

Bland, M. T., McKinnon, W. B. (2012). Can folding take up large contraction strains on Europa? *Geo. Soc. Am.,* 131-4.

Bland, M. T., McKinnon, W. B. (2012). Thermal and structural evolution of a partially differentiated Titan. *AAS Div. Planet. Sci. Conf.,* 201.04.

Singer, K. N., Bland, M. T., McKinnon, W. B., Schenk, P. M. (2012). Relaxed Craters Across Enceladus Signal Widespread High Heat Flows. *AAS Div. Planet. Sci. Conf.,* 112.11.

Bland, M. T., McKinnon, W. B. (2012). Thermal and compositional evolution of a three-layer Titan. *Titan Through Time 2 Workshop,* 1.1.2.

Bland, M. T., Singer, K., McKinnon, W. B., Schenk, P. M. (2012). Crater relaxation on Enceladus: Tales of high heat fluxes in unexpected places. *Lunar Planet. Sci. Conf. 43,* 2168.

Singer, K. N., Bland, M. T., McKinnon, W. B., Schenk, P. M. (2012). Relaxed Impact Craters on Ganymede: Not All Sulci Are Created Equal. *Lunar Planet. Sci. Conf. 43,* 1659.

2011

McKinnon, W. B., Bland, M. T. (2011). Interior of Titan: 2-Layer or 3-Layer and Does It Matter? *Fall AGU Conf.*, P33F-04.

Bland, M. T., Singer, K., McKinnon, W. B. (2011). Enceladus' ancient heat flux: Clues from numerical simulations of crater relaxation. *Europlanet/DPS meeting v. 6*, 1050-2.

Singer, K. N., Bland, M. T., McKinnon, W. B., Schenk, P. M. (2011). Topographic Analysis of Impact Craters on Enceladus and Ganymede: Evidence for Viscous Relaxation. *Europlanet/DPS meeting v. 6*, 1161.

Bland, M. T., Singer, K., McKinnon, W. B., and Schenk, P. M. (2011). Constraints on Ganymede's thermal evolution from models of crater relaxation. *Lunar Planet. Sci. Conf. 42,* 1814.

Bland, M. T., and McKinnon W. B. (2011). The importance of brittle deformation in models of icy satellite tectonics. *Lunar Planet. Sci. Conf. 42,* 2482.

McKinnon, W. B., Bland, M. T. (2011). Core Evolution in Icy Satellites and Kuiper Belt Objects. *Lunar Planet. Sci. Conf. 42,* 2768.

2010

Bland, M. T., and McKinnon, W. B. (2010). Generating topography through tectonic deformation of ice lithospheres: Simulating the formation of Ganymede's grooves (Invited). *Fall AGU Conf.*, P31D-03.

Tobie, G., Showman, A. P., Bland, M. T. (2010). Geophysical modeling of Ganymede. *COSPAR Scientific Assembly*, B03-0036-10.

Bland, M. T., McKinnon, W. B. (2010). Folding on Europa: Clues to the mechanical behavior of ice lithospheres. *Lunar Planet. Sci. Conf. 41*, 2298.

2009

Bland, M. T., McKinnon, W. B. (2009). Numerical models of folding on Europa and the mystery of Europa's surface area balance. *AAS Div. Planet. Sci. Conf.*, 66.06.

Bland, M. T., Showman, A. P., and Tobie, G. (2009). The generation of Ganymede's magnetic field (Invited). *Europ. Planet. Sci. Cong.,* 556.

Bland, M. T., McKinnon, W. B. (2009). The formation of Ganymede's grooved terrain. *Europ. Planet. Sci. Cong.,* 525.

McKinnon, M. T., Bland, M. T. (2009). The Ganymede-Callisto dichotomy: Constraints from Galileo and Cassini. *Europ. Planet. Sci. Cong.,* 673.

Bland, M, T., McKinnon, W. B., and Showman, A. P. (2009). Forming Ganymede's grooves: Producing large-amplitude, complex deformation. *Lunar Planet. Sci. Conf. 40,* 1690.

2008

Bland, M, T., McKinnon, W. B., and Showman, A. P. (2008). The formation of Ganymede's grooved terrain: The importance of strain weakening. *Fall AGU conf.,* P23A-1358.

Bland, M. T., Showman, A. P., and Tobie, G. (2008). The production of Ganymede's magnetic field. *AAS Div. Planet. Sci. Conf.,* 59.02.

Mitri, G., Bland, M. T., Lopes, R. M. C., Radebaugh, J., Showman, A. P., Lunine, J. I., Cassini RADAR Team (2008). Mountains on Titan. *AAS Div. Planet. Sci. Conf.,* 34.02.

Mitri, G., Bland, M. T., Lopes, R. M. C. (2008). Mountains on Titan. *Lunar Planet. Sci. Conf. 39,* 1391.

2007

Bland, M. T., Showman, A. P., and Tobie, G. (2007). The global expansion and resurfacing of Ganymede. *Fall AGU conf.,* P13F-02.

Bland, M. T., Showman, A. P., and Tobie, G. (2007). Ganymede's thermal and orbital evolution. *AAS Div. Planet. Sci. Conf.,* 11.02.

Bland, M. T., and Showman, A. P. (2007). Coupled orbital and thermal evolution of Ganymede: Implications for resurfacing and magnetic field generation. *Workshop on Ices, Oceans, and Fire: Satellites of the Outer Solar System.* 1609.

Bland, M. T., Beyer, R. A., and Showman, A. P. (2007). The ancient heat flow and elastic thickness on Enceladus: Constraints from photoclinometry and numerical modeling. *Lunar Planet Sci. Conf. 38*, 1653.

2006

Bland, M. T. and Showman, A. P. (2006). Unstable extensional tectonics on Enceladus. *AAS Div. Planet. Sci. Conf.,* 24.04.

Bland, M. T. and Showman, A. P. (2006). Tectonic resurfacing of icy satellites: Application to Ganymede and Enceladus. *Lunar Planet. Sci. Conf. 37*, 1417.

2005

Bland, M. T. and Showman, A. P. (2005). Tectonic resurfacing of icy satellites via extensional necking instabilities: application to Ganymede's grooved terrain. *Fall AGU conf.,* P11B-0108.

2004

Bland, M. T. and Showman, A. P. (2004). Numerical modeling of extensional necking instabilities: application to Ganymede's grooved terrain. *AAS Div. Planet. Sci. Conf.*, 16.13.

2001

Bland, M. T., Dehn, J. and Dean, K (2001). Thermal time series of the 2000 eruption of Bezymianny volcano, an attempt at thermal interferometry. *Fall AGU conf.*, V42C-103.

TEACHING EXPERIENCE AND TRAINING

2013 Adjunct Faculty, Lindenwood University, St. Charles, MO

- Taught Introduction to Astronomy
  Non-traditional students (14-16 per class) from diverse background
  12 credit hours teaching
- Taught Introduction to Astronomy Lab
  Non-traditional students (~5 per class) from diverse background
  3 credit hours teaching

2012 Intro to STEM pedagogies workshop: Increasing Diversity and Improving Learning in STEM (participant).

2006 Teaching Assistant, "The Golden Age of Planetary Exploration", University of Arizona.

2003 Teaching Assistant, "The Universe and Humanity: Origin and Destiny", University of Arizona.

2002 Teaching Assistant, "The Universe and Humanity: Origin and Destiny", University of Arizona.