

MARK DIETRICH BEHN

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Research Interests

My research seeks to understand the dynamics of Earth deformation in glacial, marine, and terrestrial environments. In particular, I develop geodynamic models and test them using quantitative constraints from geological, geophysical, and geodetic observations.

Education

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| 2002 | Ph.D., MIT/WHOI Joint Program in Oceanography and Applied Ocean Science and Engineering |
| 1996 | B.S., Bates College, <i>summa cum laude</i> (Majors: Physics, Geology & Mathematics) |

Appointments

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| 2016– | Senior Scientist, Department of Geology and Geophysics, Woods Hole Oceanographic Institution |
| 2011–2016 | Associate Scientist w/ Tenure, Department of Geology and Geophysics, Woods Hole Oceanographic Institution |
| 2008–2011 | Associate Scientist w/o Tenure, Department of Geology and Geophysics, Woods Hole Oceanographic Institution |
| 2004–2008 | Assistant Scientist, Department of Geology and Geophysics, Woods Hole Oceanographic Institution |
| 2005–2012 | Visiting Investigator, Department of Terrestrial Magnetism, Carnegie Institution of Washington |
| 2002–2004 | Carnegie Postdoctoral Fellow, Department of Terrestrial Magnetism, Carnegie Institution of Washington |
| 2002 | Postdoctoral Associate, MIT |
| 1996–2002 | Research and Teaching Assistant, MIT/WHOI |
| 1994–1996 | Teaching Assistant, Bates College |

Honors & Awards

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| 2010–2013 | Fellow, WHOI Deep Ocean Exploration Institute |
| 2002–2004 | Postdoctoral Fellow, Department of Terrestrial Magnetism, Carnegie Institution of Washington |
| 2000 | AGU Outstanding Student Paper Award |
| 1997–2000 | Department of Defense Graduate Fellowship |
| 1995 | Phi Beta Kappa, Gamma of Maine Chapter |
| 1996 | Sigma Xi, Southern Maine Chapter |
| 1996 | Louis Jordan Jr. Award (awarded for the most outstanding senior thesis of a graduating geology major) |

- 1996 Milton L. Lindholm Scholar-Athlete Award (awarded to best graduating male student-athlete)
- 1996 Bates College Key (organization of men and women who have served Bates College in an exemplary manner as students or alumni)
- 1994,1995 Howard Hughes Medical Institute Research Grants
- 1993 Charles A. Dana Award Scholar, Bates College
- 1992 Eagle Scout, Boy Scouts of America

Professional Societies

- 2009– Geochemical Society
- 2000– American Association for the Advancement of Science
- 1997– American Geophysical Union
- 1995– Geological Society of America

Service to Community

- 2017– Committee on Seismology and Geodynamics, National Academy of Sciences
- 2013– Co-Chair, Geodynamics Focus Research Group, CSMDS
- 2011– Associate Editor, Journal of Geophysical Research (Solid Earth)
- 2011– Magma Dynamics Working Group, Computational Infrastructure for Geodynamics
- 2011–2014 AGU Tectonophysics Section Nominating Committee
- 2013 Co-Convener, GeoPRISMS Mini-Workshop, *Exploring the interplay between solid Earth tectonics and surface processes using community codes*, San Francisco, CA, December 13, 2013.
- 2013 NSF-OPP Arctic Natural Sciences Panel Member
- 2008–2010 MARGINS/GeoPRISMS Steering Committee
- 2010 Co-writer, MARGINS Successor Draft Science Plan
- 2010 Co-convener, MARGINS Successor Planning Workshop, San Antonio, TX
- 2009 Co-convener, MARGINS RCL Planning Workshop, Charleston, SC
- 2008–2009 AGU Fall Meeting Planning Committee, Tectonophysics Representative
- 2007 Geodynamics Group Leader, NSF Marine Heatflow Workshop, Salt Lake City, UT.
- 2004–2009 Falmouth Academy Science Fair Judge
- 2000 Massachusetts Science Fair Judge
- Manuscript Reviewer: *Science*, *Nature*, *Nature Geoscience*, *Journal of Geophysical Research*, *Earth and Planetary Science Letters*, *Geophysical Research Letters*, *Geophysical Journal International*, *Geology*, *Geofluids*, *Marine Geophysical Researches*, *Chemical Geology*, *Science Advances*, *Tectonics*, *Tectonophysics*, *Annals of Glaciology*, and *AGU Geophysical Monograph Series*
- Proposal Reviewer: *National Science Foundation*, *IODP*, *NASA*, *NERC*, *Petroleum Research Fund*, *Swiss NSF*, and *InterRidge Student Fellowship Program*

Service to WHOI

- 2017– Chair, Joint Committee for Marine Geology & Geophysics (Education Program)
- 2017– Promotion/Mentoring Committee for Yang Liao

2015–	WHOI High Performance Computing (Scylla) Advisory Council
2013–	Promotion/Mentoring Committee for Veronique Le Roux
2017	G&G Staff Position (Petrology & Geochemistry) Search Committee
2015–2017	Joint Committee for Marine Geology & Geophysics (Education Program)
2016	G&G Staff Position (Fluid Flow) Search Committee
2014–2015	Promotion/Mentoring Committee for Horst Marschall
2013	Dalio Explore Fund Panel Reviewer
2012–2014	Defined Contribution Retirement Plan Advisory Committee
2009–2011	Joint Committee for Marine Geology & Geophysics (Education Program)
2009–2011	Promotion/Mentoring Committee for Yajing Liu
2010	G&G Staff Position (Metamorphic Petrology) Search Committee
2009–2010	Office of Applied Oceanography Advisory Committee
2009	Promotion Committee for Alison Shaw
2008	G&G Staff Position (Fluid Flow) Search Committee
2008	G&G Department Chair Search Committee

Educational Activities

Advising: Gina Applebee (WHOI Summer Student Fellow, 2007), Jennifer Barry (WHOI Summer Student Fellow, 2005), Robert Bialas (Ph.D., 2009, External Examiner; LDEO), Stephanie Brown (Ph.D. committee member; MIT), Claire Bucholz (Generals Project co-advisor, Ph.D. committee member; MIT/WHOI), Fiona Clerc (WHOI Guest Student, 2016; MIT/WHOI Joint Program Student, primary advisor), Min Ding (Ph.D. 2015, committee member; MIT/WHOI), Jimmy Elsenbeck (M.Sc., 2007, co-advisor; MIT/WHOI), Patricia Gregg (Ph.D., 2008, co-advisor; MIT/WHOI), Yoshi Kaneko (WHOI Postdoctoral Investigator, co-advisor), Ben Klein (Ph.D. committee member; MIT), Michael Krawczynski (Ph.D., 2011, Generals Project advisor and committee member; MIT/WHOI), Ben Mandler (Ph.D., 2016, committee member; MIT), Hannah Mark (Ph.D. co-advisor; MIT/WHOI), Nathan Miller (Ph.D. 2013, Generals Project advisor and committee member; MIT/WHOI), Jean-Arthur Olive (Ph.D. 2015, Primary Advisor; MIT/WHOI), Emily Roland (Ph.D. 2011, Generals Project advisor and committee member; MIT/WHOI), Gilles Seropian (WHOI Summer Student Fellow, 2015), William Shinevar (WHOI Summer Student Fellow, 2014; MIT/WHOI Joint Program Student, primary advisor), Paris Smalls (MIT/WHOI Joint Program Student, co-advisor), Laura Stevens (Ph.D. 2017, co-advisor; MIT/WHOI), Christy Till (Ph.D. 2011, committee member; MIT), Ikuko Wada (MARGINS Postdoctoral Fellow, co-advisor), Dorsey Wanless (WHOI Postdoctoral Scholar, co-advisor), Nan Zhang (WHOI Postdoctoral Investigator, advisor)

Teaching: 12.521 *Computational Geodynamics* (2009, 2011, 2014, 2016), 12.718 *Kinetics and Mass Transport* (2015), 12.751/12.754 *Seminar in Presenting Scientific Research* (Fall 2006–2014), 12.753 *Geodynamics Seminar* (2006, 2010, 2017), GEOL2910G *Dynamics of Ice Sheets & Glaciers* (co-taught at Brown University, Spring 2013)

Funded Research

Southern California Earthquake Center (SCEC) Award #17202, 5/1/2017–4/30/2018, \$14,500, *Integrating Seismic Velocity Data and Experimental Flow Laws into the Community Rheology Model*, co-Principal Investigator.

NSF EAR-17-14909, 8/1/2017–7/31/2021, \$1,751,580, *Collaborative Research: Interactions Between Incipient Continental Rifting, Fluvial Systems, and Regional Climate in Southern Africa: The Okavango-Makgadikgadi Complex, Botswana*, co-Principal Investigator.

NSF EAR-17-22932, 7/15/2017–6/30/2020, \$124,557, *Collaborative Research: Relating Bulk Composition to Seismic Properties in Crustal Rocks*, Principal Investigator.

Deep Carbon Observatory, Sloan Foundation, \$46,250, *Modeling global carbon fluxes between Earth's upper and lower mantle*, Principal Investigator.

WHOI IR&D Award, 4/15/2017–9/30/2017, \$79,683, *Characterizing the Seismic Behavior of Oceanic Normal Faults*, Principal Investigator.

NSF EAR-16-50244, 2/1/2017–1/31/2019, \$218,477, *Collaborative Research: Quantifying the Sensitivity of Rifting Processes to Erosion and Sedimentation*, Principal Investigator.

WHOI Ocean and Climate Change Institute, 8/1/2016–7/31/2018, \$74,947, *Turning Greenland upside down: A coupled observational-modeling approach to understanding the puzzling response of ice sheet flow to meltwater variability*, co-Principal Investigator.

NSF EAR-16-24109, 8/1/2016–7/31/2018, \$121,877, *Collaborative Research: The Role of Rock Composition and Microstructural Evolution on Strain Localization and the Effective Viscosity of the Crust*, Principal Investigator.

WHOI IR&D Award, 5/1/2016–9/15/2016, \$95,047, *Grain Size Evolution in Ice Sheets and Glaciers*, Principal Investigator.

Southern California Earthquake Center (SCEC) Award #16106, 2/1/2016–1/31/2017, \$12,000, *Rheological mixing laws for application to the community rheology model*, co-Principal Investigator.

NSF EAR-15-51023, 2/1/2016–1/31/2019, \$79,019, *Collaborative Research: Characterizing and Modeling Crustal Recycling*, Principal Investigator.

WHOI IR&D Award, 5/1/2015–9/15/2015, \$96,329, *Does Seafloor Bathymetry Record Sea Level Changes?*, Principal Investigator.

NSF OCE-14-58201, 9/1/2015–8/31/2018, \$221,359, *Collaborative Research: Developing a New Model to Investigate the Dynamics of Melt Generation beneath Mid-Ocean Ridges*, Principal Investigator.

Deep Carbon Observatory, Sloan Foundation, \$40,000, *Deriving global mid-ocean ridge CO₂ fluxes from coupled petrologic-geodynamic models of MORB melting*, Principal Investigator.

NSF EAR-13-16333, 8/1/2013–7/31/2016, \$240,000, *Collaborative Research: 3D Dynamics of Buoyant Diapirs in Subduction Zones*, Principal Investigator.

NSF OCE-11-54238, 4/1/2012–3/30/2015, \$276,368, *Collaborative Research: 3D geodynamic models of tectono-magmatic extension at mid-ocean ridges: Variations in magmatism, faulting, and morphology at the segment scale*, Principal Investigator.

WHOI Deep Ocean Exploration Institute, 9/15/2011–9/30/2013, \$63,578, *Ridge Jumps in 3D – Developing a New Numerical Tool to Examine the Dynamics of Mantle-Lithosphere Interaction*, Co-Principal Investigator.

NSF OCE-10-61203, 3/1/2011–2/28/2013, \$258,077, *Frictional behavior of oceanic transform faults and influence on earthquake characteristics*, Co-Principal Investigator.

NSF EAR-10-10432, 5/1/11–4/30/2018, \$2,812,076, *Collaborative Research: Integrated studies of early stages of continental extension: From incipient (Okavango) to young (Malawi) rifts*, Co-Principal Investigator.

- WHOI Ocean and Climate Change Institute, 9/1/2010–8/31/2012, \$58,413, *Influence of basal meltwater on the time-integrated sliding behavior of the Greenland Ice Sheet*, Principal Investigator.
- NSF ARC-10-23364, 9/1/2010–8/31/2013, \$794,583, *Collaborative Research: The influence of hydrofracture and surface melt variability on Greenland Ice Sheet flow*, Co-Principal Investigator.
- NSF EAR-09-48666, 5/1/2010–4/30/2013, \$477,066, *Experimental investigation of the link between water loss and oxygen fugacity in olivine-hosted melt inclusions*, Co-Principal Investigator.
- WHOI Ocean Ridge Initiative, 9/1/2009–8/31/2010, \$3,937, *Effects of magma supply on normal fault evolution and eruption dynamics along the Galápagos Spreading Center*, Principal Investigator.
- NSF EAR-08-54673, 8/1/2009–7/31/2012, \$265,876, *CSEDI Collaborative Research: Influence of grain-size evolution on global and regional mantle flow and upper mantle seismic structure*, Principal Investigator.
- NSF OCE-08-40800, 6/15/2009–6/14/2011, \$166,739, *MARGINS Postdoctoral Fellowship: A synthesis of the physical state of the mantle wedge in Costa Rica-Nicaragua and Izu-Bonin-Mariana*, Principal Investigator (Postdoctoral Fellow is Ikuko Wada).
- WHOI Deep Ocean Exploration Institute, 6/1/2008–5/31/2010, \$58,762, *Shallow melt migration and the creation of crustal thickness variations at mid-ocean ridges*, Co-Principal Investigator.
- WHOI Interdisciplinary Award, 7/1/2007–6/30/2009, \$59,344, *The effect of water on volcanic arc magmagenesis: Integrating geochemical data with geodynamic models*, Co-Principal Investigator.
- NSF OCE-06-49103, 4/1/2007–3/31/2009, \$315,045, *Geodynamics and melting at ultraslow and oblique spreading centers*, Co-Principal Investigator.
- NSF EAR-06-52707, 6/1/2007–5/31/2009, \$365,233, *Collaborative Research: CSEDI—The dynamics of plume-trench interaction: Samoa-Tonga*, Co-Principal Investigator.
- NSF OCE-07-05964, 3/1/2007–2/28/2009, \$578,663, *Acquisition of gyro-stabilized BGM-3 gravimeters for academic science and implementation on UNOLS vessels*, Co-Principal Investigator.
- WHOI Ocean and Climate Institute, 2/1/07–1/31/09, \$180,244, *Feedbacks between Arctic climate change and glacial ice discharge*, Co-Principal Investigator.
- NSF OCE-06-23188, 8/1/06–7/31/08, \$150,310, *Thermo-mechanical behavior of oceanic transform faults*, Principal Investigator.
- NSF OCE-MARGINS-05-48672, 3/15/06–3/14/08, \$83,000, *Collaborative Research: The influence of magmatism on the evolution of continental rifts*, Principal Investigator.
- NSF EAR-05-09882, 6/1/2005–12/31/2006, \$81,482, *Mantle flow and the development of sub-lithospheric seismic anisotropy*, Principal Investigator.
- NSF OCE-03-27018, 1/1/2004–12/31/2005, \$40,224, *Collaborative Research: Integrated petrological, geophysical, and numerical modeling constraints on crustal and mantle processes along the Galápagos Spreading Center*, Co-Principal Investigator.
- WHOI Deep Ocean Exploration Institute, 7/1/2005–6/30/2007, *A seafloor geodetic experiment to monitor deformation on the slope of Kilauea Volcano, Hawai'i*, \$69,995, Co-Principal Investigator.

WHOI Interdisciplinary Award, 7/1/2005–6/30/2007, \$49,600, Water-filled fracture propagation in subfreezing ice: New insights from rock mechanics and implications for rapid ice sheet response to climate change, Co-Principal Investigator.

Sea and Field Experience

- 2017 Chief Scientist, Seafloor mapping across the N. Mid-Atlantic Ridge
- 2013–2014 Controlled source seismic experiment across the Okavango Delta, Botswana.
- 2007–2014 Deployment of geophysical instruments (GPS, seismometers, pressure sensors) to monitor seasonal drainage of two lakes around Jakobshavn Isbrae in western Greenland, 8 spring/summer field seasons.
- 2010 Shipboard scientist, Seafloor mapping along the western Galapagos spreading center (92–95°W) using Alvin, AUV Sentry, and CameraTow systems, R/V Atlantis.
- 2005 Shipboard geophysicist, Deployment of an acoustic extensometer array on the southeast flank of Kilauea volcano, Hawai'i, R/V Kilo Moana.
- 2000 Shipboard geophysicist, Ocean-bottom seismic refraction and multi-channel seismic reflection study of the interactions between the Galápagos hotspot and Cocos-Nazca spreading center.
- 1997 Shipboard geophysicist, NOBEL towed-source seismic refraction experiment of the shallow crustal structure of the Mid-Atlantic Ridge, R/V Ewing.

Invited Keynote and Plenary Talks

(Titles listed in “Presented Papers with Published Abstracts”)

- 2015 Keynote speaker, SERC/Mathworks Workshop: *Teaching Geoscience with MATLAB®*, Carleton College, Northfields, MN
- 2015 Invited speaker, DCO Workshop: *Toward a 4D Planetary Carbon Model*, Smithsonian Institute, Washington, DC
- 2014 Invited speaker, Deep Carbon Observatory Workshop, DTM, Washington, DC
- 2014 Keynote speaker, Continental Rifting and the Corinth Rift Workshop, Athens, Greece
- 2013 Keynote speaker, *Understanding the Lower Continental Crust: Where we are now*, Goldschmidt Conference, Florence, Italy
- 2012 Invited Session Chair, Rock Deformation Gordon Research Conference, Proctor Academy, NH
- 2011 Invited talk, American Mathematical Society, College of the Holy Cross, MA
- 2010 Invited talk, Margins Successor Planning Workshop, San Antonio, TX
- 2009 2 Invited talks, Fall AGU, San Francisco, CA
- 2009 Keynote speaker, MARGINS RCL Synthesis Workshop, Charleston, SC
- 2007 Invited talk, Fall AGU, San Francisco, CA
- 2006 Keynote speaker, GSA Penrose Conference, *Arc Genesis and Crustal Evolution*, Valdez, Alaska
- 2005 Invited talk, Fall AGU, San Francisco, CA
- 2005 Invited talk, Earthscope National Meeting, Santa Ana Pueblo, New Mexico
- 2004 Invited talk, Fall AGU, San Francisco, CA

Invited Departmental Talks

- 2017 Department of Earth & Environmental Sciences, Boston College
- 2017 COG3, Massachusetts Institute of Technology
- 2017 Solid Earth Geophysics Seminar, Harvard University
- 2017 GSO Speaker Series, University of Rhode Island
- 2016 Department of Earth & Planetary Sciences, Washington University, St. Louis
- 2016 Department of Geosciences, Boise State University
- 2016 University of Texas Institute for Geophysics, Jackson School for Geophysics
- 2016 ERL-FISH Seminar, Massachusetts Institute of Technology
- 2015 Department of Earth Science, University of Minnesota
- 2015 Department of Earth and Environmental Sciences, University of Pennsylvania
- 2014 GSO Speaker Series, University of Rhode Island
- 2014 Department of Geological Science, Brown University
- 2014 Department of Physics, University of Colorado Boulder
- 2014 Department of Earth Science, University of California, Santa Barbara
- 2013 Department of Earth Sciences Lecture Series, Oxford University
- 2013 Departmental Seminar, National Oceanography Centre, University of Southampton
- 2012 Department of Earth Sciences Colloquium, University of New Hampshire
- 2011 Colloquium to the Department of Geological Sciences, Brown University
- 2010 EPS Colloquium, Harvard University
- 2010 Geodynamics Seminar Series, LDEO, Columbia University
- 2009 Department of Earth & Ocean Sciences Lecture, Univ. South Carolina, Columbia
- 2009 COAS MG&G Seminar, Oregon State University
- 2009 Department of Terrestrial Magnetism, Carnegie Institution of Washington
- 2009 EAPS Distinguished Lecture Series, Massachusetts Institute of Technology
- 2008 DES Colloquium, Boston University
- 2008 SOEST, University of Hawaii
- 2008 Department of Geology, Bates College
- 2006 Department of Terrestrial Magnetism, Carnegie Institution of Washington.
- 2006 Geophysics Brown Bag Seminar, Brown University
- 2004 Graduate School of Oceanography, University of Rhode Island
- 2004 Department of Geophysical Sciences, University of Chicago

Manuscripts Currently Submitted or In Press

(*denotes student advisee first author; + denotes post-doc advisee first author)

- *Shinevar, W.J., **M.D. Behn**, G. Hirth, and O. Jagoutz, Inferring Crustal Viscosity from Seismic Velocity: Application to the Lower Crust of Southern California, *Earth Planet. Sci. Lett.* (submitted February 2018).
- *Mark, H.F., **M.D. Behn**, J.-A. Olive, and Y. Liu, Geometric and thermal controls on normal fault seismicity from rate-and-state friction models, *J. Geophys. Res.* (submitted January 2018).
- *Stevens, L.A., I.J. Hewitt, S.B. Das, and **M.D. Behn**, Relationship between Greenland Ice Sheet surface speed and modeled effective pressure, *J. Geophys. Res. – Earth Surface* (submitted December 2018).

Publications in Refereed Journals or Books

(*denotes student first author; + denotes post-doc first author)

- Turner, A.J., R.F. Katz, **M.D. Behn**, and T. Keller, 2017, Magmatic focusing to mid-ocean ridges: the role of grain size variability and non-Newtonian viscosity, *Geochem., Geophys., Geosys.*, v. 18, 4342–4355, doi:10.1002/2017GC007048.
- Wolfson-Schwehr, M., M.S. Boettcher, and **M.D. Behn**, 2017, Thermal segmentation of mid-ocean ridge transform faults, *Geochem., Geophys., Geosys.*, v. 18, 3405–3418, doi:10.1002/2017GC006967.
- Wanless, V.D. and **M.D. Behn**, 2017, Spreading rate-dependent variations in crystallization beneath mid-ocean ridges, *Geochem., Geophys., Geosys.*, v. 18, 3016–3033, doi:10.1002/2017GC006924.
- Klein, B.Z., O. Jagoutz, and **M.D. Behn**, 2017, Archean crustal compositions promote full mantle convection, *Earth Planet Sci. Lett.*, v. 474, 516–526, doi:10.1016/j.epsl.2017.07.003.
- Bai, H., L.G.J. Montési, and **M.D. Behn**, 2017, MeltMigrator: a MATLAB-based Software for Modeling Three-dimensional Melt Migration and Crustal Thickness Variations at Mid-Ocean Ridges Following a Rules-Based Approach, *Geochem., Geophys., Geosys.*, v. 18, 445–456, doi:10.1002/2016GC006686.
- *Stevens, L.A., **M.D. Behn**, S.B. Das, I. Joughin, B.P.Y. Noël, M.R. van den Broeke, and T. Herring, 2016, Greenland Ice Sheet flow response to runoff variability, *Geophys. Res. Lett.* v. 43, 11,295–11,303, doi:10.1002/2016GL070414.
- Howell, S.M., G. Ito, **M.D. Behn**, F. Martinez, J.-A. Olive, and J. Escartín, 2016, Magmatic and tectonic extension at the Chile Ridge: Evidence for mantle controls on ridge segmentation, *Geochem., Geophys., Geosys.*, v. 17, 2354–2373, doi:10.1002/2016GC006380.
- *Olive, J.-A., **M.D. Behn**, G. Ito, W.R. Buck, J. Escartín, and S. Howell, 2016, Response to Comment on “Sensitivity of seafloor bathymetry to climate-driven fluctuations in mid-ocean ridge magma supply” by Tolstoy, *Science*, v. 353, 229 doi: 10.1126/science.aaf2022.
- *Olive, J.-A., **M.D. Behn**, G. Ito, W.R. Buck, J. Escartín, and S. Howell, 2016, Response to Comment on “Sensitivity of seafloor bathymetry to climate-driven fluctuations in mid-ocean ridge magma supply” by Huybers et al., *Science*, v. 352, 1405 doi: 10.1126/science.aaf2021.
- *Olive, J.-A., **M.D. Behn**, E. Mittelstaedt, G. Ito, and B.Z. Klein, 2016, The role of elasticity in simulating long-term tectonic extension, *Geophys. J. Int.*, v. 205, 728–743, doi:10.1093/gji/ggw044.

- Kelemen, P.B. and **M.D. Behn**, 2016, Formation of lower continental crust by relamination of buoyant arc lavas and plutons, *Nature Geosci.*, v. 9, 197–205, doi:10.1038/NGEO2662.
- +Wada, I. and **M.D. Behn**, 2015, Focusing of upward fluid migration beneath the arc: Effect of mineral grain size variation in the mantle wedge, *Geochem., Geophys., Geosys.*, v. 16, 3905–3923, doi:10.1002/2015GC005950.
- *Shinevar, W.J., **M.D. Behn**, and G. Hirth, 2015, Compositional dependence of lower crustal viscosity, *Geophys. Res. Lett.*, v. 42, 8333–8340, doi:10.1002/2015GL065459.
- *Olive, J.-A., **M.D. Behn**, G. Ito, W.R. Buck, J. Escartín, and S. Howell, 2015, Sensitivity of seafloor bathymetry to climate-driven fluctuations in mid-ocean ridge magma supply, *Science*, v. 350, 310–313, doi:10.1126/science.aado715.
- Behn, M.D.** and T.L. Grove, 2015, Melting systematics in mid-ocean ridge basalts: Application of a plagioclase-spinel melting model to global variations in major element chemistry and crustal thickness, *J. Geophys. Res.*, v. 120, 4863–4886, doi:10.1002/2015JB011885.
- *Stevens, L.A., **M.D. Behn**, J.J. McGuire, S.B. Das, I. Joughin, T. Herring, D.E. Shean, M.A. King, 2015, Hydrologically Induced Basal Slip Triggers Greenland Supraglacial Lake Drainages, *Nature*, v. 522, 73–76, doi:10.1038/nature14480.
- *Zhou, Z., J. Lin, **M.D. Behn**, and J.-A. Olive, 2015, Mechanism for normal faulting in the subducting plate at the Mariana trench, *Geophys. Res. Lett.*, v. 42, 4309–4317, doi:10.1002/2015GL063917.
- Whitehead, J.A., and **M.D. Behn**, 2015, The continental drift convection cell, *Geophys. Res. Lett.*, v. 42, 4301–4308, doi:10.1002/2015GL064480.
- Carmichael, J.D., I. Joughin, **M.D. Behn**, S. Das, M.A. King, L. Stevens, D. Lizarralde, 2015, Seismicity on the Western Greenland Ice Sheet: Surface Fracture in the Vicinity of Active Moulins, *J. Geophys. Res., Earth Surf.*, v. 120, 1082–1106, doi:10.1002/2014JF003398.
- Hacker, B.R., P.B. Kelemen, **M.D. Behn**, 2015, Continental lower crust, *Ann. Rev. Earth Planet. Sci.*, v. 43, 6.1–6.39, doi:10.1146/annurev-earth-050212-124117.
- Turner, A.J., R.F. Katz, and **M.D. Behn**, 2015, Grain-size dynamics beneath mid-ocean ridges: Implications for permeability and melt extraction, *Geochem., Geophys., Geosys.* v. 16, 925–946, doi:10.1002/2014GC005692.
- +Wanless, V.D., A.M. Shaw, **M.D. Behn**, S.A., Soule, J. Escartin, and C. Hamelin, 2015, Magmatic plumbing at Lucky Strike Volcano based on the composition of olivine-hosted melt inclusion compositions, *Geochem., Geophys., Geosys.*, v. 16, 126–147, doi:10.1002/2014GC005517.
- Poinar, K., I. Joughin, S.B. Das, **M.D. Behn**, J.T.M. Lenaerts, and M.R. van den Broeke, 2015, Limits to future expansion of surface-melt-enhanced ice flow into the interior of western Greenland, *Geophys. Res. Lett.*, v. 42, 1800–1807, doi:10.1002/2015GL063192.
- Nielsen, S.G., N. Shimizu, C.-T.A. Lee, and **M.D. Behn**, 2014, Chalcophile behavior of thallium during MORB melting and implications for the sulfur content of the mantle, *Geochem., Geophys., Geosys.*, v. 15, doi:10.1002/2014GC005536.
- *Olive, J.-A., **M.D. Behn**, and L.C. Malatesa, 2014, Modes of extensional faulting controlled by surface processes, *Geophys. Res. Lett.*, v. 41, 6725–6733, doi:10.1002/2014GL061507.
- +Wanless, V.D., **M.D. Behn**, A.M. Shaw, and T. Plank, 2014, Variations in melting dynamics and mantle composition in the Eastern Volcanic Zone of the Gakkel Ridge: insights from olivine-hosted melt inclusions, *Contrib. Min. Petrol.*, v. 167, 1005, doi:10.1007/s00410-014-1005-7.

- *Olive, J.-A., and **M.D. Behn**, 2014, Rapid rotation of normal faults due to flexural stresses: An explanation for the global distribution of normal fault dips, *J. Geophys. Res.*, v. 119, 3722–3739, doi:10.1002/2013JB010512.
- *Olive, J.-A., F. Pearce, S. Rondenay, and **M.D. Behn**, 2014, Pronounced zonation of seismic anisotropy in the Western Hellenic subduction zone and its geodynamic significance, *Earth Planet. Sci. Lett.*, v. 391, 100–109.
- Jagoutz, O. and **M.D. Behn**, 2013, Foundering of lower island-arc crust as an explanation for the origin of the continental Moho, *Nature*, v. 504, 131–134, doi:10.1038/nature12758.
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