

David Bercovici — *Curriculum Vitae*

Contact information

Yale University
Department of Earth & Planetary Sciences
PO Box 208109
New Haven, Connecticut 06520-8109
Phone: (203) 432-3168; email: david.bercovici@yale.edu

Education

1989 Ph.D. Geophysics and Space Physics, University of California, Los Angeles
1987 M.S. in Geophysics and Space Physics University of California, Los Angeles
1982 B.S. in Physics (Minor in History), Harvey Mudd College Claremont, California

Professional Appointments:

2011-present Frederick William Beinecke Professor of Geophysics
2018-2021 Chair (again), Dept. Geology & Geophysics / Earth & Planetary Sciences, Yale University
2006-2012 Chair, Dept. Geology and Geophysics, Yale University
2015-2017 Director of Undergraduate Studies, Dept. Geology & Geophysics, Yale University
2002-2006 Director of Graduate Studies, Dept. Geology & Geophysics, Yale University
2015-2016 Co-Director, Yale Climate and Energy Institute, Yale University
2008-2012 Deputy Director, Yale Climate and Energy Institute, Yale University
2001-present Professor, Yale University
1998-2001 Professor, University of Hawaii
1999-2000 Chair, Department of Geology and Geophysics, University of Hawaii
1995-1998 Associate Professor, University of Hawaii
1997-1998 Associate Chair and Graduate Chair, Department of Geology and Geophysics, University of Hawaii
1994-1997 Head, Division of Marine Geology and Geophysics, Department of Geology and Geophysics, University of Hawaii Honolulu,
1990-1995 Assistant Professor, University of Hawaii
1989-1990 Postdoctoral Fellow, Woods Hole Oceanographic Institution, Woods Hole, MA.
1985-1989 Research Assistant, University of California, Los Angeles

Awards & Honors

2018 Member, National Academy of Sciences
2015 Member, American Academy of Arts & Sciences
2019 Member, Connecticut Academy of Science & Engineering
2014 Francis Birch Lecturer, American Geophysical Union
1996 James B. Macelwane Medal, American Geophysical Union
1996 Fellow, American Geophysical Union

1994-1999	NSF (Presidential) Young Investigator, National Science Foundation
1996	Board of Regents Medal for Excellence in Research, University of Hawaii
1999	ARCS (Achievement Rewards for College Scientists, Honolulu Chapter), Scientist of the Year Award
1989-1990	W. M. Keck Marine Geodynamics Postdoctoral Fellow, Woods Hole Oceanographic Institution

Visiting Positions

2018	EPSS Distinguished Alumni Lecturer, UCLA
2016	Thomas J. and Earleen Ahrens Lecturer, CalTech
2014	Visiting Professor, Università Roma TRE
2014	Visiting Researcher, University de Lyon 1
2013, 2014	Visiting Professor, Trinity College, Cambridge University
2013-2015	DTM Visiting Investigator, Carnegie Institution for Science
2012-2013	Merle A. Tuve Senior Fellow, DTM, Carnegie Institution for Science
2012	Visiting Professor, Institut de Physique du Globe de Paris
2008	Zatman Memorial Lecturer, Washington University in St. Louis
2004	Caswell-Silver Distinguished Lecturer, University of New Mexico
1998	Visiting Researcher (Directeur de Recherche Associé), Centre National de la Recherche Scientifique (CNRS), Ecole Normal Supérieure de Lyon, France

Professional Activities

2019-	AGU College of Fellows Committee
2018-	AGU Tectonophysics Fellows Selection Committee
2011-2019	External Review Committees for Columbia Univ. (2011, 2018); Brown Univ. (2011); Johns Hopkins Univ. (2014); USC (2017); Univ. Penn. (2018); Univ. Hawaii (2019); Univ. Maryland (2019).
2014-2015	Vetlesen Prize Selection Committee, LDEO, Columbia University
2014-2018	CEED Science Advisory Board, University of Oslo, Norway
2016-2017	NSF EAR Integrated Earth Systems Panel Member
2013-2016	CIG Executive Committee
2013-2016	Isaac Newton Institute for Mathematical Sciences, Melt in the Mantle Programme, Scientific Advisory Committee
2015	Co-convenor of special session AAAS 2015 Meeting, entitled “Modeling Earth’s interior from atomic to global scale”
2010-2015	Senior Editor, <i>Treatise on Geophysics, 2nd edition</i> , Elsevier
2005-2006	NSF EarthScope Science and Education Committee
2004-2007	Senior Editor, <i>Treatise on Geophysics</i> , Elsevier
1998-2000	Associate Editor, <i>Journal of Geophysical Research</i>
1999-2001	NSF EAR Geophysics Program Panel Member
1992-1993	NASA Venus Data Analysis Program (VDAP) Panel Member

1993 NSF Grand Challenge Applications Group and High Performance Computing and Communications Program (GCAG/HPCC) Panel Member

Yale Activities

2020- Provost's Organizing Committee on the Planetary Solutions Project
2020- University Carbon Offsets Oversight Committee
2019-2020 Chair, Science and Engineering Chairs Council (again)
2019-2021 Elected Member of Faculty of Arts & Sciences Senate (again)
2008-2012 Co-Founder, and Deputy Director (and various incarnations of same), Yale Climate & Energy Institute
2015-2017 Elected Member of inaugural Faculty of Arts & Sciences Senate; member of Senate Executive Council
2013-2014 Social Sciences Divisional and Tenure & Promotions Committee
2013-2014 Faculty Steering on Provosts Committee for Teaching Initiatives
2007-2012 Board of Faculty Advisors, Yale New Haven Teachers Institute
2011-2012 Science Hill Planning Committee
2010-2011 Yale West Campus Science, Medicine, and Engineering Advisory Council
2008-2009 Chair, Science and Engineering Chairs Council
2007,2008 Seminar Coordinator, Yale New Haven Teachers Institute
2002 Chair subcommittee on Energy and Water Management for the Yale Advisory Committee on Environmental Management

Advisors

Graduate advisor: Professor Gerald Schubert, University of California, Los Angeles.
Postdoctoral sponsors: Drs. John A. Whitehead & Henry J. B. Dick, Woods Hole Oceanographic Institution.

Postdoctoral Scholars Supervised

1994-1997 Stuart Weinstein, University of Hawaii (now Senior Geophysicist and Assistant Director at Pacific Tsunami Warning Center)
1998-2000 Garrett Ito, University of Hawaii (presently Professor at University of Hawaii)
2004-2006 Henri Samuel, Yale University (now CNRS Scientist at University of Toulouse)
2004-2006 Saswata Hier-Majumder, Yale University (now Lecturer at Royal Holloway University London)
2004-2006 Guillaume Richard, Yale University (now Assistant Professor at Université d'Orleans)
2007-2008 Bryony Youngs, Yale University (now Geophysicist at Schlumberger)
2006-2008 Chloé Michaut, Yale University (now Professor at ENS-Lyon)
2008 John Rudge, Yale University (now Lecturer, Cambridge University)
2010-2013 Peter Driscoll, Yale University (now Staff Scientist at DTM, Carnegie Inst. of Washington)
2011-2012 Viktoriya Yarushina, Yale University (now Research Scientist, Institute for Energy Technology, Norway).
2015-2017 Yang Liao, Yale University (now Assistant Scientist, WHOI)

2015-present Elvira Mulyukova, Yale University (now Research Scientist, Yale EPS)
 2017-2019 Jake Jordan, Yale University. (later Postdoc at Rice Univ.)

Graduate Students Advised

1991-1994 William Bruce Paulk, University of Hawaii, MSc
 1993-1999 Christoph Heironymus, University of Hawaii and Danish Lithosphere Center, PhD; presently Professor at Uppsala University, Sweden
 1996 Caroline Dumoulin, Intern from ENS-Paris; currently Professor at Université de Nantes
 1997-1999 Susannah Mistr, University of Hawaii, MSc; presently a physician (in ophthalmology)
 1999-2000 Christian Auth, University of Goettingen, PhD.
 2002-2007 Garrett Leahy, Yale University, PhD; presently managing scientist Roxar Inc., Stavanger, Norway
 2002-2008 William Landuyt, Yale University, PhD; presently research scientist ExxonMobil.
 2004-2008 Ondrej Sramek, Yale University, PhD; presently faculty member Charles University, Prague, Czech Republic.
 2007 Marine Denolle, Intern from ENS-Paris; graduate Student at Stanford Univ.; later postdoc at SIO; now Asst. Prof. Harvard Univ.
 2008-2012 Karen Paczkowski, (co-adviser) Yale University PhD; currently Science and Technology Policy Fellow, NSF
 2008-2014 Brad Foley, Yale University PhD, Postdoctoral Fellow, DTM, Carnegie Inst. Wash; Asst. Prof. Penn State Univ.
 2008-2014 Zhengyu Cai, Yale University PhD, Postdoc at University of Maryland; now at COMSOL
 2017-present Zhongtian Zhang, Yale University

Grants and Awards

- **National Science Foundation (NSF)**

- Collaborative Research: Theoretical and Experimental Investigation of Grain Damage and the Formation of Plate Boundaries (PI), 2019-2021
- Magma waves, magma wagging and volcanic oscillations (PI), 2017-2020.
- Two-Phase Grain Damage and Geochemical Interactions: From Early Tectonic Evolution to Climate and Energy Transitions, (PI) 2014-2017
- Open Earth Systems: Whole planet models for global processes and major events in Earth's history. NSF *Frontiers in Earth System Dynamics* initiative, (co-PI; Johns Hopkins Univ. lead institution), 2011-2014.
- Two-Phase Damage and the Interactions between Earth's Mantle and Climate: From Plate Tectonic Feedbacks to Carbon Capture, (PI) 2010-2013
- Two-phase damage theory and the generation of plate tectonics, (PI) 2006-2009
- Whole-mantle convection and the transition-zone water filter, (lead PI) 2003-2008
- PLUME: Imaging the Hawaiian Hotspot and Swell (co-PI), 2003-2007
- Two-phase model of damage, shear-localization and plate boundary formation, (PI) 2001-2004
- NSF (Presidential) Young Investigator Award, 1994-1999
- The Dynamics of Basalt Eruptions in the Deep Sea: Detailed Study of Eruptive Hyaloclastite Deposits with Alvin (co-PI), 1994-1995
- Mantle Plume-Lithosphere Interaction: An Interdisciplinary Study of the Dynamics of the Hawaiian Hotspot (lead PI), 1994 - 1996

- Distribution and geodynamic implications of intermediate wavelength geoid undulations (Co-PI), 1992 – 1994
- **Department of Energy (NETL)**
 - Integrated experimental and modeling studies of mineral carbonation as a mechanism for permanent carbon sequestration in mafic/ultramafic rocks, (co-PI), 2010-2013
- **Sloan Foundation**
 - Deep Carbon Observatory, Workshop on modeling of deep carbon circulation, June 2014
- **National Aeronautics and Space Administration (NASA)**
 - Discovery Mission: Psyche: Journey to a Metal World. Co-PI (L. Elkins-Tanton, ASU, PI/PD); 2017-2028.
 - Grand Challenge Applications: Three-dimensional spherical simulations of Earth’s core and mantle dynamics (co-PI) 1996–1999
 - Plastic Deformation of Venus’ Lithosphere Over a Dynamic Mantle: Synthesis of Satellite Data Analysis with Laboratory and Theoretical Modelling, (PI) 1993–1995
 - Present Day Plate Motions and the Rheology of the Plate Mantle System (PI) 1992–1994

Invited Lectures Venues (since 2010 only)

- 2021** Cambridge University [zoom lecture]; Meeting on “Venus: Evolution through Time” at the International Space Science Institute (zoom meeting probably).
- 2020** Pennsylvania State University, Dept. Colloquium, January.
- 2019** University of Oregon, April; Gordon Research Conference (Discussion Leader), June; University of Minnesota, June; Goldschmidt Conference (involuntary, uninvited Keynote speaker), August.
- 2018** Royal Society Meeting on “Earth dynamics and development of plate tectonics”, discussion leader, London (March 2018). ETH Geophysical Fluid Dynamics Speaker, Zurich, Switzerland (May 2018); Center for Space & Habitability, University of Bern (May 2018); College de France meeting on “50 years of plate tectonics” invited speaker, Paris (June 2018); invited speaker Center for Earth’s Evolution and Dynamics (CEED), Univ. of Oslo (October 2018); EPSS Distinguished Alumni Lecturer, UCLA (October 2018).
- 2017** Stanford University lectures on future directions in geoscience (May 2017); Gordon Research Seminar Keynote Speaker (June 2017); Colby College “Origins” Speaker (Sept, 2017).
- 2016** Newton Inst. lecturer, Cambridge UK (Feb); Yale Model United Nations speaker (Jan); Univ. Arizona *Geodaze* keynote speaker (March), DTM Carnegie speaker (May); AYA (Yale Alumni) (May); GRC Rock Deformation invited lecture (Aug); Berkeley College Fellows Lecture (Sept); Virginia Tech lecturer (October); Thomas and Earleen Ahrens Lecturer, Caltech (October); AGU Invited Talk (December).
- 2015** CSEDI Workshop (Scripps Inst. Ocean.) keynote lecture (Jan), Colgate University lecture (Feb), Princeton lecture (Feb), AAAS Meeting keynote lecture (Feb), Wash. Univ. St. Louis lecture (April), EGU invited talk (April), CalTech workshop invited lecture (May), AYA (Yale Alumni) Lecture (May); CIDER (UC Berkeley) senior fellow and lecturer (July); GeoBerlin Conference key-note lecture (October); Fall AGU invited speaker (Origin of Plate Tectonics).
- 2014** University College London (Feb), Oxford University (March), Branford College Fellows Lecture (Feb), CEED University of Oslo (October), Institute for Energy Technology, Oslo (October), Università Roma TRE (short-course; October), Université Toulouse III (November), INGV-Roma (November), Birch Lecture, Fall AGU (December)

- 2013** Rice Univ.; Scripps Inst. Oceanography; Cambridge Univ. (Bullard and BPI Lectures); PGP, Univ. Oslo; Kongsberg Conference (Norway); Merle Tuve Lecture DTM Carnegie, Science Saturdays at Yale lecture (on natural disasters)
- 2012** Carnegie Inst. of Wash (DTM); Euro. Geophys. Union (EGU); Studies Earth Deep Int. (SEDI) Conference; Johns Hopkins Univ; IPG-Paris; Univ. Grenoble; Univ. Lyon; Bayreuth Geophys. Inst (BGI); Georgia Tech; Univ. Colorado Boulder; AGU Fall 2012 (special session)
- 2011** USC; Boston Univ; Harvard; Yale Science Forum; American Geophys. Union (AGU).
- 2010** Columbia Univ.; GLADE Conf (San Diego); Univ. British Columbia; EGU; YIBS Seminar; Yale Alumni Lecture; AGU.

Publications

Books

1. Bercovici, D., *The Origins of Everything in 100 Pages (More or Less)*, Yale University Press, 2016. <http://yalebooks.com/book/9780300215137/origins-everything-100-pages-more-or-less>.
2. Bercovici, D., editor, *Treatise on Geophysics 2ed, vol 7, Mantle Dynamics*; G. Schubert, editor in chief, Elsevier, New York, ISBN: 978-0-444-53803-1, 2015.
3. Bercovici, D., editor, *Treatise on Geophysics, vol 7, Mantle Dynamics*; G. Schubert, editor in chief, Elsevier, New York, 2007.

Articles: Submitted

1. Mulyukova, E. and D. Bercovici, On the co-evolution of dislocations and grains in deforming rocks, submitted to *Phys. Earth Planet. int.*, 2021.
2. Bercovici D. and E. Mulyukova, Magnetization of partially solidified sinking diapirs in planetesimal cores, submitted to *Phys. Earth Planet. Int.*, 2020.
3. Gerya, T., D. Bercovici, T. Becker, Subducting slabs segmentation in the outer rise, submitted to *Nature*, 2020.
4. Zhang, Z., D. Bercovici and J. Jordan, A two-phase model for mantle differentiation in accreting protoplanets: Implications for early Mars, submitted and in minor revision *J. Geophys. Res.*, 2020.

Articles: Published or in-press

1. Bercovici D. and E. Mulyukova, Evolution and demise of passive margins through grain mixing and damage, *Proc. Nat. Acad. Sci.* **118** (4), e2011247118, 2021. <https://doi.org/10.1073/pnas.2011247118>
2. Ricard, Y., S. Labrosse, H. Terasaki, and D. Bercovici, Thermocapillary effects in two phase medium and applications to metal-silicate separation, *Phys. Earth Planet. Int.*, **211**, 106640, 2021. <https://doi.org/10.1016/j.pepi.2020.106640>
3. Jordan, J., D. Bercovici, Y. Liao, C. Michaut, The effects of degassing on magmatic gas waves and long period eruptive precursors at silicic volcanoes, *J. Geophys. Res.: Solid Earth*, **125**, e2020JB019755, <https://doi.org/10.1029/2020JB019755>, 2020.
4. Mulyukova, E. and D. Bercovici, D., Mantle convection in the terrestrial planets, in *Oxford Research Encyclopedia of Planetary Science*, 2020 <http://dx.doi.org/10.1093/acrefore/9780190647926.013.109>
5. Bercovici D. and E. Mulyukova, Two-phase magnetohydrodynamics: Theory and applications to planetesimal cores, *Phys. Earth Planet. Int.* 2020. <https://doi.org/10.1016/j.pepi.2020.106432>
6. Bercovici D. and E. Mulyukova, Mantle Convection. In: H. Gupta (ed) *Encyclopedia of Solid Earth Geophysics*, 2nd edition, Encyclopedia of Earth Sciences Series. Springer, Cham, 2020, https://doi.org/10.1007/978-3-030-10475-7_130-1

7. Mulyukova, E. and D. Bercovici, The generation of of plate tectonics from grains to global scales: A brief review, for special “50th Annivesary of Plate Tectonics” volume of *Tectonics* **38**, 4058–4076, 2019. <https://doi.org/10.1029/2018TC005447>
8. Bercovici D, and S. Nicolescu, In Memoriam: Brian John Skinner (1928–2019), *Rocks & Minerals*, **95:1**, 100-101, DOI: 10.1080/00357529.2020.1681250
9. Bercovici, D, E. Mulyukova and M.D. Long, A simple toy model for coupled retreat and detachment of subducting slabs, *J. Geodynamics*, **129**, 275-289, 2019. <https://doi.org/10.1016/j.jog.2018.03.002>
10. Mulyukova, E. and D. Bercovici, A theoretical model for the evolution of microstructure in lithospheric shear zones, *Geophys. J. Int.* **216**, 803-819, 2018. <https://doi.org/10.1093/gji/ggy467>
11. Bercovici, D, and E. Mulyukova, A continuum model for phase mixing and grain-damage relevant to tectonic plate boundary evolution, *Phys. Earth Planet. Int.* **285**, 23–44, 2018. <https://doi.org/10.1016/j.pepi.2018.10.005>
12. Bellas, A., S. Zhong, D. Bercovici and E. Mulyukova, Dynamic weakening with grain-damage and implications for slab detachment, *Phys. Earth. Planet Int.* **285**, 76-90, 2018. <https://doi.org/10.1016/j.pepi.2018.09.001>
13. Liao, Y. and D. Bercovici, Magma wagging and whirling: excitation by gas flux, *Geophys. J. Int.* **215**, 713-735, 2018. <https://doi.org/10.1093/gji/ggy313>
14. Mulyukova, E. and D. Bercovici, Collapse of passive margins by lithospheric damage and plunging grain size, *Earth. Planet. Sci. Lett.* **484**, 341-352, 2018. <https://doi.org/10.1016/j.epsl.2017.12.022>.
15. Liao, Y., D. Bercovici, and M. Jellinek, Magma wagging and whirling in volcanic conduits, *J. Volc. Geotherm. Res.* **351**, 57-74, 2018. <https://doi.org/10.1016/j.jvolgeores.2017.12.016>
16. Mulyukova, E. and D. Bercovici, Formation of lithospheric shear zones: effect of temperature on two-phase grain damage, *Phys. Earth. Planet. Int.* **270**, 195-212, 2017. <http://dx.doi.org/10.1016/j.pepi.2017.07.011>
17. Bercovici, D. and P. Skemer, Grain damage, phase mixing and plate-boundary formation, *Journal of Geodynamics* **108**, 40–55, 2017. <http://dx.doi.org/10.1016/j.jog.2017.05.002>.
18. Ricard, Y, D. Bercovici and F. Albarède, Thermal evolution of planetesimals during accretion, *Icarus* **285**, 103-117, 2017. <http://dx.doi.org/10.1016/j.icarus.2016.12.020>.
19. Bercovici, D., Finding solace in the cosmos, *Yale University Press Blog*, December 23, 2016. <http://blog.yupnet.org/2016/12/23/finding-solace-in-the-cosmos>
20. Bercovici, D., How did plate tectonics begin?, *Speaking of Geoscience Blog*, Geol. Soc. America, May 2016 <https://speakingofgeoscience.org/2016/05/18/how-did-plate-tectonics-begin>
21. Bercovici, D., and Y. Ricard, Grain-damage hysteresis and plate-tectonic states, *Phys. Earth Planet. Int.*, **253**, 31-47, 2016. <http://dx.doi.org/10.1016/j.pepi.2016.01.005>.
22. Cai, Z., and D. Bercovici, Two-dimensional magmons with damage and the transition to magma-fracturing, *PEPI*, **256**, 13-25, 2016. <http://dx.doi.org/10.1016/j.pepi.2016.03.002>.
23. Bercovici, D. and J. Rudge, A mechanism for mode selection in melt band instabilities, *Earth Planet Sci. Lett* **433**, 139–145, 2016. <http://dx.doi.org/10.1016/j.epsl.2015.10.051> Open Access Link: <http://www.sciencedirect.com/science/article/pii/S0012821X15006871>
24. Scheinberg, A., L.T. Elkins-Tanton, G. Schubert, D. Bercovici, Core solidification and dynamo evolution in a mantle-stripped planetesimal, *J. Geophys. Res. Planets*, **121**, 2–20, 2016 <http://dx.doi.org/10.1002/2015JE004843>.
25. Bercovici D., G. Schubert, Y. Ricard, Abrupt tectonics and rapid slab detachment with grain-damage, *PNAS*, **112** (no.5), 1287-1291, 2015, <http://dx.doi.org/10.1073/pnas.1415473112>.

26. Bercovici, D. Mantle dynamics, Past, Present and Future: An Overview, in *Treatise on Geophysics, 2ed, vol. 7, Mantle Dynamics*, D. Bercovici editor; G. Schubert, editor in chief, Elsevier, New York; Ch. 1, pp1-22, 2015. <http://dx.doi.org/10.1016/B978-0-444-53802-4.00125-1>
27. Bercovici, D., P. Tackley, Y. Ricard, The Generation of Plate Tectonics from Mantle Convection, in *Treatise on Geophysics, 2ed, vol. 7, Mantle Dynamics*, D. Bercovici editor; G. Schubert, editor in chief, Elsevier, New York; Ch.7, pp271-318, 2015. <http://dx.doi.org/10.1016/B978-0-444-53802-4.00135-4>
28. Yarushina, V.M., D. Bercovici, and C. Michaut, Two-phase dynamics of volcanic eruptions: Particle size distribution and the conditions for choking, *J. Geophys. Res.* **120**, 1503-1522, 2015. <http://dx.doi.org/10.1002/2014JB011195>
29. Rudge, J.F. and D. Bercovici, Melt-band instabilities with two-phase grain-damage, *Geophys. J. Int.* **201**, 640-651, 2015. <http://dx.doi.org/10.1093/gji/ggv040>
30. Foley, B.J., D. Bercovici and L.T. Elkins-Tanton, Initiation of plate tectonics from post-magma ocean thermochemical convection, *J. Geophys. Res.* **119**, 8538–8561, 2014. <http://dx.doi.org/10.1002/2014JB011121>
31. Bercovici, D. and M.D. Long, Slab rollback instability and super-continent dispersal, *Geophys. Res. Lett.* **41**, 6659–6666, 2014. <http://dx.doi.org/10.1002/2014GL061251>
32. Cai, Z., and D. Bercovici, Two-phase visco-elastic damage theory, with applications to subsurface fluid injection, *Geophys. J. Int.*, **199**, 1481-1496, <http://dx.doi.org/10.1093/gji/ggu344>, 2014.
33. Driscoll, P. and D. Bercovici, On the thermal and magnetic histories of Earth and Venus: Influences of melting, radioactivity, and conductivity, *Phys. Earth. Planet. Int.* **236**, 36–51, <http://dx.doi.org/10.1016/j.pepi.2014.08.004>, 2014.
34. Bercovici, D. and Y. Ricard, Plate tectonics, damage and inheritance, *Nature*, **508**, 513-516 <http://dx.doi.org/10.1038/nature13072>, 2014.
35. Foley, B.J. and D. Bercovici, Scaling laws for convection with temperature-dependent viscosity and grain-damage, *Geophys. J. Int.* **199**, 580-603, <http://dx.doi.org/10.1093/gji/ggu275>, 2014.
36. Elkins-Tanton, L.T., and D. Bercovici, Contraction or expansion of the Moon's crust during magma ocean freezing?, *Phil. Trans. Roy. Soc. A*, **372**, 20130240, <http://dx.doi.org/10.1098/rsta.2013.0240>, 2014.
37. Driscoll, P. and D. Bercovici, Divergent evolution of Earth and Venus: Influence of degassing, tectonics, and magnetic fields, *Icarus*, **226**, 1447-1464, <http://dx.doi.org/10.1016/j.icarus.2013.07.025>, 2013.
38. Bercovici, D., A. M. Jellinek, C. Michaut, D.C. Roman and R. Morse, Volcanic tremors and magma wagging: Gas flux interactions and forcing mechanism, *Geophys. J. Int.* **195**, 1001-1022, <http://dx.doi.org/10.1093/gji/ggt277> 2013.
39. Michaut, C., Y. Ricard, D. Bercovici, and R.S.J. Sparks, Eruption cyclicity at silicic volcanoes potentially caused by magmatic gas waves, *Nature Geosciences* **6**, 856-860, <http://dx.doi.org/10.1038/ngeo1928>, 2013.
40. Yarushina, V.M., D. Bercovici, and M.L. Oristaglio, Effect of rock rheology on fluid leak-off during hydraulic fracturing, *Geophys. J. Int.* **194**, 1514-1526, <http://dx.doi.org/10.1093/gji/ggt199>, 2013
41. Cai, Z., and D. Bercovici, Two-phase damage models of magma-fracturing, *Earth Planet. Sci. Lett.* **368**, 1-8, <http://dx.doi.org/10.1016/j.epsl.2013.02.023>, 2013.
42. Bercovici, D. and Y. Ricard, Plate generation with two-phase grain-damage and pinning: Source-sink model and toroidal Flow, *Earth Planet Sci. Lett.* **365**, 275-288, <http://dx.doi.org/10.1016/j.epsl.2013.02.002>, 2013
43. Yarushina, V.M. and D. Bercovici, Mineral carbon sequestration and induced seismicity, *Geophys. Res. Lett.* **40**, 1-5, <http://dx.doi.org/10.1002/grl.50196>, 2013.
44. Bercovici, D. and Y. Ricard, Mechanisms for the generation of plate tectonics by two-phase grain-damage and pinning, *Phys. Earth Planet. Int.* **202-203**, 27-55, <http://dx.doi.org/10.1016/j.pepi.2012.05.003>, 2012.

45. Paczkowski, K., D. Bercovici, W. Landuyt, M. Brandon, Drip instabilities of continental lithosphere: acceleration and entrainment by damage, *Geophys. J. Int.* **189**, 717–729, 2012. ([PUBLISHER LINK](#))
46. Foley, B.J., D. Bercovici and W. Landuyt, The conditions for plate tectonics on super-Earths: Inferences from convection models with damage, *Earth Planet. Sci. Lett.* **331-332**, 281-290, 2012. ([PUBLISHER LINK](#))
47. Laske, G., A. Markee, J.A. Orcutt, C.J. Wolfe, J.A. Collins, S.C. Solomon, R.S. Detrick, D. Bercovici, E.H. Hauri Asymmetric Shallow Mantle Structure beneath the Hawaiian Swell - Evidence from Rayleigh Waves recorded by the PLUME network, *Geophys. J. Int.* **187** 1725-1742, 2011. ([PUBLISHER LINK](#))
48. Bercovici, D., Mantle Convection, in *Encyclopedia of Solid Earth Geophysics*, H.K. Gupta, ed., Springer, pp.832-851, 2011. ([AUTHOR PREPRINT](#))
49. Jellinek, A.M. and D. Bercovici, Seismic tremors and magma wagging during explosive volcanism, *Nature* **470**, 522–525, 2011. ([PUBLISHER LINK](#))
50. Rozel, A., Y. Ricard, and D. Bercovici, A thermodynamically self-consistent damage equation for grain size evolution during dynamic recrystallization, *Geophys. J. Int.* **184**, 719–728, 2011. ([PUBLISHER LINK](#))
51. C.J. Wolfe, S.C. Solomon, G. Laske, J.A. Collins, R.S. Detrick, J.A. Orcutt, D. Bercovici, E.H. Hauri Mantle P-wave Velocity Structure beneath the Hawaiian Hotspot, *Earth Planet Sci. Lett.*, **303**, 267-280, 2011.
52. Rudge, J., D. Bercovici and M. Spiegelman, Disequilibrium melting of a two phase multicomponent mantle, *Geophys. J. Int.*, **184**, 699–718, 2011. ([PUBLISHER LINK](#))
53. Bercovici, D. and C. Michaut, Two-phase dynamics of volcanic eruptions: Compaction, compression, and the conditions for choking, *Geophys. J. Int.*, **182**, 843–864, 2010. ([PDF](#))*
54. Leahy, G. M., and D. Bercovici, Reactive infiltration of hydrous melt above the mantle transition zone, *J. Geophys. Res.*, **115**, B08406, doi:10.1029/2009JB006757, 2010. ([PDF](#))
55. Olson, P., D. Bercovici, B. Buffett, R. Carlson, L. Flesch, J. Phipps Morgan, M. Roy D. Valencia, *Grand Challenges in Geodynamics: Outstanding geodynamics problems and emerging research opportunities for the Earth Sciences*, white paper prepared for the National Science Foundation, March 2010. ([CIG LINK](#))
56. Pagani, M., D. Bercovici, J.S. Wettlaufer, and J.J. Park, Perspectives on Climate Change, *Yale Daily News*, December 10, 2009. ([YDN LINK](#))
57. Laske, G., J.A. Collins, C.J. Wolfe, S.C. Solomon, R.S. Detrick, J.A. Orcutt, D. Bercovici, and E.H. Hauri, Probing the Hawaiian Hotspot with New Broadband Ocean Bottom Instruments, *Eos* **90**(41), pp362-363, Oct 13, 2009. ([PDF](#))
58. C.J. Wolfe, S.C. Solomon, G. Laske, J.A. Collins, R.S. Detrick, J.A. Orcutt, D. Bercovici, E.H. Hauri Mantle Shear-wave Velocity Structure Beneath the Hawaiian Hotspot, *Science*, **326**, 1388–1390, 2009. ([PDF](#))
59. Landuyt, W., D. Bercovici, Formation and structure of lithospheric shear zones with damage. *Phys. Earth Planet. Int.*, **175**, 115-126, 2009. ([PDF](#))
60. Michaut, C. and D. Bercovici, A model for the spreading and compaction of two-phase viscous gravity currents, *J. Fluid Mech.*, **630** 299-329, 2009. ([PDF](#))
61. Michaut, C., D. Bercovici and R.S.J. Sparks, Ascent and compaction of gas-rich magma and the effects of hysteretic permeability, *Earth Planet. Sci. Lett.* **282**, 258-267, 2009. ([PDF](#))
62. Youngs, B.A.R. and D. Bercovici, Stability of a compressible hydrous melt layer above the transition zone, *Earth Planet. Sci. Lett.*, **278**, 78–86 doi:10.1016/j.epsl.2008.11.024, 2009. ([PDF](#))
63. Richard, G. and D. Bercovici, Water induced convection in the Earth's mantle transition zone, *J. Geophys. Res.* **114**, B01205, doi:10.1029/2008JB005734, 2009 ([PDF](#))

64. Landuyt, W. and D. Bercovici, Variations in planetary convection via the effect of climate on damage, *Earth Planet. Sci. Lett.* **277**, 29-37, 2009. (PDF)
65. Ricard, Y. and D. Bercovici, A continuum theory of grain size evolution and damage, *J. Geophys. Res.*, **114**, B01204, doi:10.1029/2007JB005491, 2009. (PDF)
66. Landuyt, W., D. Bercovici and Y. Ricard, Plate generation and two-phase damage theory in a model of mantle convection, *Geophys. J. Int.* **174**, Number 3, September 2008, pp. 1065-1080, 2008. (PDF)*
67. Bercovici, D. Mantle dynamics, Past, Present and Future: An Overview, in *Treatise on Geophysics*, vol. 7, *Mantle Dynamics*, D. Bercovici editor; G. Schubert, editor in chief, Elsevier, New York; Ch. 1 pp. 1-30, 2007. (PDF PREPRINT)
68. Leahy, G.M., and D. Bercovici, On the dynamics of a hydrous melt layer above the transition zone, *J. Geophys. Res.*, **112**, B07401, doi:10.1029/2006JB004631, 2007 (PDF)
69. Sramek, O., Y. Ricard and D. Bercovici, Simultaneous melting and compaction in deformable two-phase media, *Geophys. J. Int.*, **168**(3), 964–982, doi:10.1111/j.1365-246X.2006.03269.x, 2007. (PDF)*
70. S. Karato, D. Bercovici, G. Leahy, G. Richard, Z. Jing, The transition zone water filter model for global material circulation: where do we stand? *Earth's Deep Water Cycle, AGU Monograph Series*, **168**, pp289-313, edited by S.D. Jacobsen and S. van der Lee, 2006. (PDF)
71. Richard, G., D. Bercovici and S.-i. Karato, Slab dehydration in the Earth's mantle transition zone, *Earth Planet Sci. Lett.* **251**, 156–167, 2006. (PDF)
72. Hier-Majumder, S., Y. Ricard and D. Bercovici, Role of grain boundaries in magma migration and storage, *Earth Planet Sci. Lett.* **248**, 735-749, 2006. (PDF)
73. Samuel, H. and D. Bercovici, Oscillating and stagnating plumes in the Earth's lower mantle *Earth Planet Sci. Lett.* **248**, 90-105, 2006. (PDF)
74. Bercovici, D. and S.-i. Karato, Mantle transition zone water filter, in *McGraw-Hill Yearbook of Science and Technology*, pp193-196, McGraw-Hill, New York, 2005.
75. Bercovici, D. and Y. Ricard, Tectonic plate generation and two-phase damage: void growth versus grain size reduction, *J. Geophys. Res.*, **110**, B03401, doi:10.1029/2004JB003181, 2005. (PDF)
76. Leahy, G.M. and D. Bercovici, The influence of the transition-zone water filter on convective circulation in the mantle, *Geophys. Res. Lett.* **31**, L23605, doi:10.1029/2004GL021206, 2004 (PDF)
77. Bercovici, D. and S.-i. Karato, Whole mantle convection and the transition-zone water filter, *Nature* **425**, 39-44, 2003a. reprint (PDF), supplementary information (PDF), News & Views by A. Hofmann (PDF)
78. Ricard, Y. and D. Bercovici, Two-phase damage theory and crustal rock failure: the theoretical 'void' limit, and the prediction of experimental data, *Geophysical J. Int.* **155**(3), 1057-1064, 2003. [doi: 10.1111/j.1365-246X.2003.02112.x] (PDF)*
79. Auth, C., D. Bercovici and U. Christensen, Two-dimensional convection with self-lubricating, simple damage rheology, *Geophys. J. Int.* **154** 783-800, 2003. (PDF)*
80. Bercovici, D. and S.-i. Karato, Theoretical Analysis of Shear Localization in the Lithosphere, in *Reviews in Mineralogy and Geochemistry: Plastic Deformation of Minerals and Rocks*, S.-i. Karato and H.-R. Wenk, eds, vol.51, ch.13, pp.387-420, Mineralogical Society of America, Washington DC, 2003b. (PDF)
81. Bercovici, D., The generation of plate tectonics from mantle convection, *Earth Planet. Sci. Lett.*, (Frontiers) **205**, 107-121, 2003. (PDF)
82. Bercovici, D. and Y. Ricard, Energetics of a two-phase model of lithospheric damage, shear localization and plate boundary formation, *Geophys. J. Int.*, **152**, 581-596, 2003. (PDF)*

83. Mistr, S.K. and D. Bercovici, A theoretical model of pattern formation in coral reefs, *Ecosystems*, **6**, 61–74, 2003. [\(PDF\)](#)
84. D. Bercovici and G. Schubert, Schubert Receives the 2002 Harry H. Hess Medal, *EOS, Trans. AGU*, **84**, no.9, p.80, 2003 [\(PDF\)](#)
85. Bercovici, D., Y. Ricard and G. Schubert, A two-phase model for compaction and damage, 1. General theory, *J. Geophys. Res.*, **106**, 8887–8906, 2001. [\(PDF\)](#)
86. Ricard, Y. Bercovici, D., and G. Schubert, A two-phase model for compaction and damage, 2. Applications to compaction, deformation and the role of interfacial surface tension, *J. Geophys. Res.*, **106**, 8907–8924, 2001. [\(PDF\)](#)
87. Bercovici, D., Y. Ricard and G. Schubert, A two-phase model for compaction and damage, 3. Applications to shear localization and plate boundary formation, *J. Geophys. Res.*, **106**, 8925–8940, 2001. [\(PDF\)](#)
88. Becker, J.M. and D. Bercovici, Pattern formation on the interface of a two-layer fluid: bi-viscous lower layer, *Wave Motion*, **34**, 431-452, 2001.
89. Hieronymus, C.F., and D. Bercovici, Focussing of eruptions by fracture wall erosion, *Geophys. Res. Lett.*, **28**, 1823–1826, 2001a. [\(PDF\)](#)
90. Becker, J.M. and D. Bercovici, Long waves over a bi-viscous sea-bed: Transverse patterns, *Nonlinear Processes in Geophysics*, **9**, 1-8, 2001. [\(PDF\)](#)
91. Hieronymus, C.F., and D. Bercovici, A theoretical model of hotspot volcanism: Control on volcanic spacing and patterns via magma dynamics and lithospheric stresses, *J. Geophys. Res.*, **106**, 683–702, 2001b. [\(PDF\)](#)
92. Bercovici, D., Stopping the tectonic conveyor belt: Review of “Dynamic Earth: Plates, Plumes and Mantle Convection” by G.F. Davies, *Nature*, **405**, 396, 2000. [\(PDF\)](#)
93. Becker, J.M. and D. Bercovici, Permanent bedforms in a theoretical model of wave-sea-bed interactions, *Nonlinear Processes in Geophysics*, **7**, 31–35, 2000. [\(PDF\)](#)
94. Hieronymus, C.F., and D. Bercovici, Non-hotspot formation of volcanic chains: control of tectonic and flexural stresses on magma transport, *Earth Planet. Sci. Lett.*, **181**, 539–554, 2000. [\(PDF\)](#)
95. Bercovici, D., Y. Ricard, and M.A. Richards, The relation between mantle dynamics and plate tectonics: A primer, *The History and Dynamics of Global Plate Motions*, M.A. Richards, R. Gordon and R. Van der Hilst, editors, AGU Geophysical Monograph 21, pp 5-46, 2000. [\(PDF\)](#)
96. Hieronymus, C.F., and D. Bercovici, Discrete, alternating hotspot islands formed by the interaction of magma transport and lithospheric flexure, *Nature* **397**, 604–607, 1999. [\(PDF\)](#)
97. Bercovici, D., Generation of plate tectonics from lithosphere-mantle flow and void-volatile self-lubrication, *Earth Planet. Sci. Lett.* **154**, 139–151, 1998. [\(PDF\)](#)
98. Ratcliff, J.T., D. Bercovici, G. Schubert, and L. Kroenke Mantle plume heads and the initiation of plate-tectonic reorganizations, *Earth Planet. Sci. Lett.* **156**, 195-207, 1998. [\(PDF\)](#)
99. Dumoulin, C., D. Bercovici, and P. Wessel, A continuous plate-tectonic model using geophysical data to estimate plate margin widths, with a seismicity based example, *Geophys. J. Int.* **133**, 379–389, 1998. [\(PDF\)](#)
100. Wessel, P., and D. Bercovici, Interpolation with splines in tension: A Green’s function approach, *Math. Geol.* **30**, 77–93, 1998. [\(PDF\)](#)
101. Bercovici, D. and A. Kelly, Nonlinear initiation of diapirs and plume heads, *Phys. Earth Planet. Int.* **101**, 119-130, 1997. [\(PDF\)](#)
102. Bercovici, D., Review of *Fluid Physics in Geology* by D.J. Furbish, *GSA Today*, **7**, no.11, p.24, November 1997.

103. Kelly, A. and D. Bercovici, The clustering of rising diapirs and plume heads, *Geophys. Res. Lett.* **24**, 201-204, 1997. [\(PDF\)](#)
104. Bercovici, D., “Macelwane Medal: Response”, *Eos, Trans. AGU*, **78** no. 10, pages 108 & 113, March 11, 1997.
105. Bercovici, D., Plate generation in a simple model of lithosphere-mantle flow with dynamic self-lubrication, *Earth Planet. Sci. Lett.* **144**, 41–51, 1996. [\(PDF\)](#)
106. Wessel, P., L. Kroenke, and D. Bercovici Pacific plate motions and undulations in geoid and bathymetry, *Earth Planet. Sci. Lett.* **140**, 53–66, 1996.
107. Bercovici, D. and J. Lin, A gravity-current model of cooling mantle plume-heads with temperature-dependent buoyancy and viscosity, *J. Geophys. Res.*, **101**, 3291–3309, 1996. [\(PDF\)](#)
108. Bercovici, D., The unpredictable Earth, *Nature*, **377**, 272, (New Journal Review) 1995c.
109. Bercovici, D., On the purpose of toroidal flow in a convecting mantle, *Geophys. Res. Lett.* **22**, 3107–3110, 1995b. [\(PDF\)](#)
110. Bercovici, D., A source-sink model of the generation of plate tectonics from non-Newtonian mantle flow, *J. Geophys. Res.* **100**, 2013–2030, 1995a. [\(PDF\)](#)
111. Bercovici, D. and J. Mahoney, Double flood basalts and plume head separation at the 660 kilometer discontinuity, *Science* **266**, 1367–1369, 1994. [\(PDF\)](#)
112. Bercovici, D. and P. Wessel, A continuous kinematic model of plate tectonic motions, *Geophys. J. Int.* **119**, 595–610, 1994. [\(PDF\)](#)
113. Wessel, P., D. Bercovici and L. Kroenke, The possible reflection of mantle discontinuities in Pacific geoid and bathymetry, *Geophys. Res. Lett.* **21**, 1943–1946, 1994. [\(PDF\)](#)
114. Bercovici, D., A theoretical model of cooling viscous gravity currents with temperature-dependent viscosity, *Geophys. Res. Lett.* **21**, 1177–1180, 1994. [\(PDF\)](#)
115. Bercovici, D., G. Schubert, and P.J. Tackley, On the penetration of the 660 km phase change by mantle downflows, *Geophys. Res. Lett.* **20**, 2599-2602, 1993. [\(PDF\)](#)
116. Bercovici, D., A simple model of plate generation from mantle flow, *Geophys. J. Int.* **114**, 635–650, 1993. [\(PDF\)](#)
117. Lozier, M.S. and D. Bercovici, Particle exchange in an unstable jet, *J. Phys. Oceanography*, **22**, 1506–1516, 1992.
118. Bercovici, D., H.J.B. Dick and T.P. Wagner, Nonlinear viscoelasticity and the formation of transverse ridges, *J. Geophys. Res.*, **97**, 14195-14206, 1992. [\(PDF\)](#)
119. Bercovici, D., Wave dynamics in mantle plume heads and hotspot swells, *Geophys. Res. Lett.*, **19**, 1791–1794, 1992. [\(PDF\)](#)
120. Bercovici, D., G. Schubert and G. A. Glatzmaier, Three-dimensional, infinite Prandtl number, compressible convection in a basally heated spherical shell, *J. Fluid Mech.* **239**, 683–719, 1992. [\(PDF\)](#)
121. Bercovici, D., G. Schubert and G.A. Glatzmaier, Modal growth and coupling in three-dimensional spherical convection, *Geophys. Astrophys. Fluid Dyn.* **61**, 149-159, 1991. [\(PDF\)](#)
122. Olson, P. and D. Bercovici, On the equipartitioning of kinetic energy in plate tectonics, *Geophys. Res. Lett.* **18**, 1751-1754, 1991.
123. Glatzmaier, G.A., G. Schubert and D. Bercovici, Chaotic subduction-like downflows in a spherical model of convection in the Earth’s mantle, *Nature*, **347**, 274–277, 1990. [\(PDF\)](#)

124. Schubert, G., D. Bercovici and G. A. Glatzmaier, Mantle dynamics in Mars and Venus: Influence of an immobile lithosphere on three-dimensional mantle convection, *J. Geophys. Res.* **95**, 14105–14129, 1990. ([PDF](#))
125. Bercovici, D., *A Numerical Investigation of Thermal Convection in Highly Viscous Spherical Shells with Applications to Mantle Dynamics in the Earth and Other Terrestrial Planets*, Ph.D. Dissertation, University of California, Los Angeles, 1989.
126. Bercovici, D., G. Schubert and G. A. Glatzmaier, Influence of heating mode on three-dimensional mantle convection, *Geophys. Res. Lett.* **16**, 617–620, 1989. ([PDF](#))
127. Bercovici, D., G. Schubert and G. A. Glatzmaier, Three-dimensional, spherical models of convection in the Earth's mantle, *Science* **244**, 950–955, 1989. ([PDF](#))
128. Bercovici, D., G. Schubert, G. A. Glatzmaier, and A. Zebib, Three-dimensional thermal convection in a spherical shell, *J. Fluid Mech.* **206**, 75–104, 1989. ([PDF](#))
129. Bercovici, D., G. Schubert, and A. Zebib, Geoid and topography for infinite Prandtl number convection in a spherical shell, *J. Geophys. Res.* **93**, 6430–6436, 1988. ([PDF](#))
130. Bercovici, D., and G. Schubert, Jovian seismology, *Icarus* **69**, 557–565, 1987. ([PDF](#))
131. Bercovici, D., G. Schubert and R. T. Reynolds, Phase transitions and convection in icy satellites, *Geophys. Res. Lett.* **13**, 448–451, 1986. ([PDF](#))

January 20, 2021