

Robert C. Viesca (March 2021)

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Medford, Massachusetts, 02155, USA *e-mail:* robert.viesca@tufts.edu
- ACADEMIC POSITIONS** **Tufts University**, *Department of Civil and Environmental Engineering*, Medford, MA
Research Assistant Professor, 09/11–08/12; Assistant Professor, 09/12–08/18;
Associate Professor, 09/18–present
- Dalhousie University**, *Department of Civil and Resource Engineering*, Halifax, NS, Canada
Postdoctoral Fellow with Prof. Dmitry I. Garagash, 09/11–08/12
- Institut de Physique du Globe**, *Tectonique et Mécanique de la Lithosphère*, Paris, France
Professeur Invité, 06/14–07/14; Visitor, 06/13–07/13, 07/15, hosts: Harsha Bhat, Yann Klinger
- MINES ParisTech**, *Centre de Géosciences (Géophysique)*, Fontainebleau, France
Professeur Invité, 06/16–07/16, host: Pierre Dublanchet
- GeoAzur**, *Observatoire de la Côte d’Azur*, Sophia Antipolis, France
Chercheur Invité, 06/19–07/19, hosts: Frederic Cappa, Jean-Paul Ampuero
- EDUCATION** **Harvard University**, *School of Engineering and Applied Sciences*, Cambridge, MA
Engineering Sciences: S.M. 06/06, Ph.D. 11/11 with Prof. James R. Rice
- Tufts University**, *Department of Civil and Environmental Engineering*, Medford, MA
B.S., Civil Engineering, *summa cum laude*, 05/05
- PUBLICATIONS** **R. C. Viesca** (2021), Self-similar fault slip in response to fluid injection,
<https://arxiv.org/abs/2102.03123>
- R. C. Viesca** (2020), On the existence of a nucleation length for dynamic shear rupture,
<https://arxiv.org/abs/2008.11854>
- Ray, S., and **R. C. Viesca** (2019), Homogenization of fault frictional properties, *Geophys. J. Int.*, 219, 1203–1211, doi:10.1093/gji/ggz327
- Viesca, R. C.**, and P. Dublanchet (2019), The slow slip of viscous faults, *J. Geophys. Res.*, 124, 4959–4983, doi:10.1029/2018JB016294
- Bhattacharya, P. and **R. C. Viesca** (2019), Fluid-induced aseismic fault slip outpaces pore-fluid migration, *Science*, 364(6439), 464–468, doi:10.1126/science.aaw7354
- Viesca, R. C.**, and D. I. Garagash (2018), Numerical methods for coupled fracture problems, *J. Mech. Phys. Solids*, 113, 13–34. doi:10.1016/j.jmps.2018.01.008
- Ray, S., and **R. C. Viesca** (2017), Earthquake nucleation on faults with heterogeneous frictional properties, normal stress, *J. Geophys. Res.*, 122. doi: 10.1002/2017JB014521
- Brantut, N., and **R. C. Viesca** (2017), The fracture energy of ruptures driven by flash heating, *Geophys. Res. Lett.*, 44. doi:10.1002/2017GL074110
- Viesca, R. C.** (2016), Self-similar slip instability on interfaces with rate- and state-dependent friction, *Proc. Roy. Soc. A*, 472(2192), 20160254. doi:10.1098/rspa.2016.0254
- Viesca, R. C.** (2016), Stable and unstable development of an interfacial sliding instability, *Phys. Rev. E*, 93(6), 060202(R). doi:10.1103/PhysRevE.93.060202
- Platt, J. D., **R. C. Viesca**, and D. I. Garagash (2015), Steadily propagating slip pulses driven by thermal decomposition, *J. Geophys. Res.*, 120, B12200. doi:10.1002/2015JB012200
- Viesca, R. C.**, and D. I. Garagash (2015), Ubiquitous weakening of faults by thermal pressurization, *Nature Geoscience*, 8(11), 875–879. doi:10.1038/ngeo2554

Brantut, N., and **R. C. Viesca** (2015), Earthquake nucleation in intact or healed rocks, *J. Geophys. Res.*, 119, B11518. doi:10.1002/2014JB011518

Viesca, R. C., and J. R. Rice (2012), Nucleation of slip-weakening rupture instability in landslides by localized increase of pore pressure, *J. Geophys. Res.*, 117, B03104. doi:10.1029/2011JB008866

Viesca, R. C. (2011), The near and far of pore pressure during landslide and earthquake ruptures, *Ph.D. thesis* Harvard University, 165 pp.

Viesca, R. C., and J. R. Rice (2011), Elastic reciprocity and symmetry constraints on the stress field due to a surface-parallel distribution of dislocations, *J. Mech. & Phys. Solids*, 59, 753–757. doi:10.1016/j.jmps.2011.01.011

Viesca, R. C., and J. R. Rice (2010), Modeling slope instability as shear rupture propagation in a saturated porous medium, in *Submarine Mass Movements and Their Consequences IV* (proceedings of the 4th Int'l. Symp. on Submarine Mass Movements and Their Consequences, Austin, Texas, 8-11 November 2009), eds. D. C. Mosher et al., R.C. Shipp, L. Moscardelli, J. D. Chaytor, C. D. P. Baxter, H. J. Lee, and R. Urgeles, Springer. doi:10.1007/978-90-481-3071-9_18

Viesca, R. C., E. L. Templeton, and J. R. Rice (2008), Off-fault plasticity and earthquake rupture dynamics, 2. Effects of fluid saturation, *J. Geophys. Res.*, 113, B09307. doi:10.1029/2007JB005530

SELECTED
ABSTRACTS

Aubin, P. W., and **R. C. Viesca** (2017), Aseismic slip of a thin slab due to a fluid source, *AGU Fall Meeting*, Abstract T52C-03.

Viesca, R. C. and P. Dublanche (2016), Slow slip and self-similar asymptotics of rate-strengthening faults, *AGU Fall Meeting*, S43D-04.

Viesca, R. C. (2015), Elastic stress transfer as a diffusive process due to aseismic fault slip in response to fluid injection, *AGU Fall Meeting*, MR41E-02.

PROFESSIONAL
SERVICE &
CONSULTING

Manuscript reviews for 20+ journals: *Acta Geotechnica, Bulletin of the Seismological Society of America, Earth and Planetary Science Letters, Earth Planets and Space, Geology, Geomechanics for Energy and the Environment, Geophysical Journal International, Geophysical Research Letters, International Journal of Engineering Science, International Journal of Greenhouse Gas Control, International Journal of Numerical and Analytical Methods in Geomechanics, Journal of Geophysical Research, Journal of Seismology, Nature Communications, Nature Geoscience, Nature Physics, Physical Review Letters, Proceedings of the National Academy of Science, Proceedings of the Royal Society of London A, Pure and Applied Geophysics, Solid Earth, Science, and Tectonophysics*

Ad hoc and panel reviews for publishers, funding agencies, and companies: *American Geophysical Union Books, BP America Production Co., Comisión Nacional de Investigación Científica y Tecnológica, Elsevier Science and Technology Books, Israel Science Foundation, National Science Foundation, and United States Geological Survey*

Scientific or selection committee for:

MITES summer program, MIT (2014–2017)

6th Intl. Conf. on Coupled THMC Processes in Geosystems (GeoProc), 5-7 Jul. 2017, Paris
Engineering Mechanics Institute Conference 2019, 18-21 Jun. 2019, Pasadena, CA

PROFESSIONAL
& HONORARY
SOCIETIES

American Geophysical Union, member since 2006.
Tau Beta Pi, member since 2004.

INVITED
TALKS

07/20: Gordon Research Conference, Flow and Transport in Permeable Media (postponed)
04/20: MIT, Earth Resources Laboratory, FISH Seminar (postponed)
06/19: GéoAzur, Université Nice Sophia Antipolis and Observatoire de la Côte d'Azur
06/19: Centre International des Sciences Mécaniques (CISM), Advanced School

04/19: Columbia University, Lamont-Doherty Earth Observatory, Geodynamics Seminar
 09/18: APEC Cooperation for Earthquake Science (ACES), International Workshop
 06/18: GèòAzur, Université Nice Sophia Antipolis and Observatoire de la Côte d'Azur
 06/18: Banff International Research Station (BIRS), Workshop on Hydraulic Fracturing
 11/16: Weizmann Institute of Science, COST Workshop on Dynamics of Frictional Interfaces
 10/16: Harvard University, School of Eng. and Applied Sci., Applied Mechanics Colloquium
 09/16: Southern California Earthquake Center, Annual Meeting Workshop
 06/16: MINES ParisTech, Centre de Géosciences
 04/16: MIT, Earth Resources Laboratory, FISH Seminar
 12/15: Georgia Tech, Sigma Xi, Monie Ferst Award Symposium in honor of James R. Rice
 11/15: Tufts University, Department of Physics and Astronomy, Condensed Matter Seminar
 09/15: Utrecht University, Exp. Rock Def. Laboratory, Modeling Fault Friction Workshop
 06/15: ETH Zurich, Institute for Geotechnical Engineering
 02/15: Tufts University, Dept. of Mathematics, Computational and Applied Math Seminar
 09/14: Princeton University, Department of Geosciences, Solid Earth Brown Bag Series
 06/14: École Normale Supérieure, Laboratoire de Géologie
 06/14: International Hydraulic Fracturing Summit XI, Schlumberger-Doll, Cambridge, MA
 10/13: Brown University, Department of Geological Sciences, Solid Earth Dynamics Seminar
 10/13: Caltech, Seismolab, Dix Seminar
 10/13: Stanford University, Department of Geophysics, Quake Seminar
 07/13: Institut de Physique du Globe de Paris, Séminaires communs Tectonique-Sismologie
 05/11: GèòAzur, Université Nice Sophia Antipolis and Observatoire de la Côte d'Azur
 04/11: Dalhousie University, Faculty of Engineering
 03/11: Tufts University, Department of Civil and Environmental Engineering
 03/11: Stanford University, Department of Geophysics
 02/11: Northwestern University, Department of Civil and Environmental Engineering
 12/10: DUSEL Workshop on Earthquake Rupture Experiments in the Homestake Mine
 10/09: Rice University, Department of Earth Science
 07/09: U.S. Advisory Committee Meeting for Scientific Ocean Drilling
 06/09: Numerical Modeling of Crustal Deformation and Earthquake Faulting Workshop
 06/09; 04, 09/10; 4/11: Total S.A. meetings for North American sponsored researchers

HONORS & AWARDS	<p>2018: Tufts University Center for STEM Diversity Faculty Award 2017–2022: National Science Foundation CAREER Award (Geophysics) 2008–9: Schlanger Ocean Drilling Fellowship 2008: Outstanding Student Paper, Seismology Section, American Geophysical Union 2005: Tufts University Lt. Cmdr. Robert J. Manning Memorial Prize 2005: Tufts University Dept. of Civil and Env. Eng. Earle F. Littleton Scholarship 2004: Tufts University Dept. of Civil and Env. Eng. Cataldo Research Fellowship 2004: Boston Society of Civil Engineers Section/ASCE William P. Morse Award 2003: Society of American Military Engineers Max O. Urbahn Scholarship 2001–10: Bill and Melinda Gates Millennium Scholar (deferred during doctorate)</p>
EXTERNAL SUPPORT	<p>National Science Foundation, Geophysics program, 01/14–01/17, 04/19–04/22 National Science Foundation, CAREER program, 04/17–04/22 Southern California Earthquake Center, 02/13–01/16, 05/17–04/19 United States Geological Survey, Earthquake Hazards program, 01/17–12/17</p>
GRADUATE STUDENTS	<p>Graduate students in geosystems engineering: <i>Parker Aubin</i>, B.S., Mathematics, Boston College; M.S., Tufts University (May 2018) Currently: Geotechnical Engineer, GEI Consultants, Chicago, IL <i>Sohom Ray</i>, B.S., Physics, University of Delhi; M.S., Applied Geophysics, IIT, Roorkee Ph.D. thesis: Earthquake nucleation with heterogeneous physical properties (August 2019) Currently: Assistant Professor, Dept. Earthquake Engineering, IIT Roorkee <i>Lichen Wang</i>, B.Eng, Geotechnical Engineering, China University of Geosciences, Wuhan; M.S., Tufts University (May 2019) Currently: Geotechnical Engineer, Kleinfelder, Boston, MA</p>

POSTDOC. *Pathikrit Bhattacharya*, Ph.D., Geophysics, Princeton University
FELLOWS Currently: Assistant Professor, School of Earth and Planetary Sciences, NISER
Antoine Jacuqey, Ph.D., GFZ German Research Center for Geosciences, RWTH Aachen University

TEACHING ES 5: Statics and Dynamics (fall: 2012, 2013, 2014, 2016, 2017)
ES 8: Fluid Mechanics (fall: 2019, 2020)
CEE 12: Introduction to Hydraulic Engineering (spring: 2015, 2016, 2017, 2018, 2020, 2021)
CEE 142: Advanced Soil Mechanics (spring: 2014, 2016)
CEE 194E: Mechanics of the Natural Environment (spring: 2013)
CEE 245: Geomechanics (spring: 2017, 2020)

UNIVERSITY & *School of Engineering committees:*
DEPARTMENT academic standing: 09/12–08/14, 09/15–present; chair 09/18–present
SERVICE & graduate studies and research: 09/14–05/15, 09/19–present
COMMITTEES *Department of Civil and Environmental Engineering committees:*
graduate program: 09/14–present; interim chair 09/14–01/15; chair 09/19–present
undergraduate curriculum: 09/12–08/14
undergraduate advising: 03/13–05/17, 09/19–present