

Robert C. Viesca

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Medford, MA, 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
- École des Mines de Paris**, *Centre de Géosciences (Géophysique)*, Fontainebleau, France
Professeur Invité, 06/16–07/16
- 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** **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.

Bhattacharya, P., and **R. C. Viesca** (2017), Data-driven fault mechanics: Inferring fault hydro-mechanical properties from in situ observations of injection-induced aseismic slip, *AGU Fall Meeting*, S43C-0876.

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 Reviewer for the following journals: *Bulletin of the Seismological Society of America*, *Earth and Planetary Science Letters*, *Earth Planets and Space*, *Geology*, *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*, *Landslides*, *Nature Geoscience*, *Nature Physics*, *Proceedings of the Royal Society of London A*, *Pure and Applied Geophysics*, and *Science*

Reviewer for the following 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*, *National Science Foundation*, and *United States Geological Survey*

Selection committee for MITES program, MIT (2014, 2015, 2016, 2017)

Member of the scientific committee for the following meetings:

Engineering Mechanics Institute Conference 2019, 18-21 Jun. 2019, Pasadena, CA

6th International Conference on Coupled THMC Processes in Geosystems (GeoProc2017), 5-7 Jul. 2017 Paris, France

PROFESSIONAL & HONORARY SOCIETIES American Geophysical Union, member since 2006.
Tau Beta Pi, member since 2004.

INVITED TALKS 06/19: Centre International des Sciences Mécaniques (CISM), Advanced School
09/18: APEC Cooperation for Earthquake Science (ACES), International Workshop
06/18: GéoAzur, 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: École Normale Supérieure des Mines de Paris, 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 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)

EXTERNAL SUPPORT National Science Foundation, Geophysics program, 01/14–01/17
 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

GRADUATE STUDENTS Graduate students in geosystems engineering:
Sohom Ray, B. S., Physics, University of Delhi; M.S., Applied Geophysics, IIT, Roorkee;
 Earthquake nucleation under rate- and state-dependent friction
Lichen Wang B. Eng., Geotechnical Engineering, China University of Geosciences, Wuhan;
 Fracture mechanics and applications to slope stability, soil liquefaction
Parker Aubin B. S., Mathematics, minor Geological Sciences, Boston College;
 Applied mathematics for geological and geophysical problems

POSTDOC. FELLOWS *Pathikrit Bhattacharya*, Ph.D., Geophysics, Princeton University
 Thesis area: Fault friction and the earthquake cycle

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

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

undergraduate curriculum: 09/12-08/14
undergraduate advising: 03/13-05/17