

Danica L. Roth

NSF Postdoctoral Fellow
Department of Earth Sciences
University of Oregon

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EDUCATION

2008 B.A., Physics, University of California Berkeley
2008 B.A., Astronomy, University of California Berkeley
2016 Ph.D., Earth Sciences, University of California Santa Cruz
"Deciphering the seismic signal of sediment transport in rivers"
Advisors: Prof. Noah J. Finnegan and Prof. Emily E. Brodsky

PROFESSIONAL POSITIONS

2016 - present *NSF Postdoctoral Fellow*, University of Oregon
"Evaluating the controls of hillslope morphology on nonlocal sediment transport: analytical and experimental approaches"
Advisors: Prof. Joshua J. Roering and Prof. David J. Furbish
2009 - 2016 *Research & Teaching Assistant*, UC Santa Cruz
2008 *Undergraduate Student Instructor*, UC Berkeley
2008 *NSF REU Summer Intern*, Carl Sagan Center for the Study of Life in the Universe, Search for Extra-Terrestrial Intelligence (SETI) Institute
2006 - 2008 *Workleader*, Moffitt Undergraduate Library Circulation Services, UC Berkeley
2004 - 2005 *Tutor*, Writing Center, San Diego Mesa College

PUBLICATIONS

Roth, DL, Finnegan, NJ, Brodsky, EE, Rickenmann, D, Turowski, JM, Badoux, A and Gimbert, F. (2017). *Bedload transport and boundary roughness changes as competing causes of hysteresis in the relationship between river discharge and seismic amplitude recorded near a steep mountain stream.* *Journal of Geophysical Research: Earth Surface*, doi: 10.1002/2016JF004062.

Roth, DL, Brodsky, EE, Finnegan, NJ, Rickenmann, D, Turowski, JM, and Badoux, A. (2016). *Bedload sediment transport inferred from seismic signals near a river.* *Journal of Geophysical Research: Earth Surface*, 121(4): 725-747, doi: 10.1002/2015JF003782.

Roth, DL, Finnegan, NJ, Brodsky, EE, Cook, KL, Stark, CP, and Wang, HW. (2014). *Migration of a coarse fluvial sediment pulse detected by hysteresis in bedload generated seismic waves.* *Earth and Planetary Science Letters*, 404: 144-153, doi: 10.1016/j.epsl.2014.07.019.

Burr, DM, Jacobsen, RE, **Roth, DL**, Phillips, CB, Mitchell, KL, and Viola, D. (2009). *Fluvial network analysis on Titan: Evidence for subsurface structures and west-to-east wind flow, southwestern Xanadu.* *Geophysical Research Letters*, 36: 22, doi: 10.1029/2009GL040909.

CONFERENCE ABSTRACTS

Roth, DL (2017). *Deciphering the seismic signal of bedload sediment transport in rivers.* Talk presented at the EGU Galileo Conference: From process to signal—advancing environmental seismology, Ohlstadt, Germany, 6-9 June, 2017. **INVITED**

Roth, DL (2017). *Deciphering the seismic signal of sediment transport in rivers.* Talk presented at the University of Oregon Department of Earth Sciences Seminar, 5 April, 2017. **INVITED**

Roth, DL, Finnegan, NJ, Brodsky, EE, Rickenmann, DM, Turowski, JM, Badoux, A, and Gimbert, F. (2016). *Hysteresis in both sediment transport and water turbulence contribute to seismic hysteresis in a steep mountain stream.* Poster EP33D-1013, 2016 Fall Meeting, AGU, San Francisco, CA.

Roth, DL, Finnegan, NJ, Brodsky, EE, Turowski, JM, Wyss, CR, Badoux, A, and Schneider, J. (2015). *Bedload sediment transport embedded in seismic signals generated from a mountain stream.* Talk EP51D-06, 2015 Fall Meeting, AGU, San Francisco, CA.

Finnegan, NJ, **Roth, DL, Brodsky, EE, Hsu, L. (2015).** *Hydrograph Asymmetry Drives Bedload Transport Hysteresis: Evidence from Fluvial Seismology.* Talk EP54A-04, 2015 Fall Meeting, AGU, San Francisco, CA.

Roth, DL, Brodsky, EE, Finnegan, NJ, Turowski, JM, Wyss, CR and Badoux, A. (2014). *The Seismic Signal of Sediment Transport in Rivers.* Talk S43C-07, 2014 Fall Meeting, AGU, San Francisco, CA. **INVITED**

Roth, DL, Brodsky, EE, Finnegan, NJ, Turowski, JM, Wyss, CR and Badoux, A. (2014). *Seismic Monitoring of Bedload Transport in a Steep Mountain Catchment.* Poster EP53B-3662, 2014 Fall Meeting, AGU, San Francisco, CA.

Roth, DL. (2014). *Rocks go boink: how much does river bedload shake the bed?* Talk presented at 10th Annual UCSC Graduate Research Symposium, 9 May, 2014.

Roth, DL, Brodsky, EE, Finnegan, NJ, Cook, KL, Wang, HW, and Stark, CP. (2013). *Interpretations of bedload generated seismic waves on the Chijiawan River, Taiwan.* Poster EP53D-0857, 2013 Fall Meeting, AGU, San Francisco, CA.

Roth, DL, Brodsky, EE, Finnegan, NJ, Cook, KL, Wang, HW, and Stark, CP. (2013). *Interpretations of bedload generated seismic waves on the Chijiawan River, Taiwan.* Talk presented at the International Workshop of Acoustic and Seismic Monitoring of Bedload and Mass Movements, Birmensdorf, Switzerland, Swiss Federal Research Institute WSL, 4-7 Sept., 2013. **INVITED**

Roth, DL, Brodsky, EE, Finnegan, NJ, and Stark, CP. (2011). *A collision-based model for measuring bedload transport from the seismic waves generated by rivers.* Talk EP22A-05, 2011 Fall Meeting, AGU, San Francisco, CA.

Jacobsen, RE, **Roth, DL, Burr, DM, Phillips, CB, Mitchell, KL. (2008).** *Identification, Mapping, and Measurement of Titan Fluvial Features.* Poster P21A-1315, 2008 Fall Meeting, AGU, San Francisco, CA.

AWARDS • HONORS • FELLOWSHIPS • GRANTS

2017	Early Career Scientist Travel Grant, EGU Galileo Conference
2017	Pilot Study UAS Support, Center for Transformative Environmental Monitoring Programs
2016	NSF Earth Sciences Postdoctoral Fellowship
2016	Chancellor's Achievement Award for Diversity, GEODES Founding Members, UCSC
2015	EPS Department's Nominee for President's Dissertation Year Fellowship, UCSC
2014	Dean's Award (Physical & Biological Sciences), Graduate Research Symposium, UCSC
2014	EPS Department Award for Best Presentation, Graduate Research Symposium, UCSC
2011	Honorable Mention, NSF Graduate Research Fellowships Program
2009	Eugene Cota-Robles Fellowship, UCSC
2002	Golden State Governor's Scholars Award for Math

TEACHING EXPERIENCE

Teaching Assistant

2016	Climate Change and Policy (EART-191), UC Santa Cruz
2012, 2015, 2016	Geomorphology (EART-140), UC Santa Cruz
2015	Geophysics (EART-110C), UC Santa Cruz
2015	Geology of National Parks (EART-15, online course), UC Santa Cruz
2012, 2014	California Geology (EART-5), UC Santa Cruz
2013	Geologic Principles (EART-10), UC Santa Cruz
2011	Earth Science and the Cinema (EART-4), UC Santa Cruz
2010	Overview of the Universe (ASTR-2), UC Santa Cruz
2008	Introduction to General Astronomy (ASTRON-C10), UC Berkeley

Guest Lectures

2015	<i>"Sediment transport and seismic geomorphology,"</i> Geomorphology (EART-140), UCSC
2013	<i>"Glaciers and Glacial Morphology,"</i> Geologic Principles (EART-10), UCSC

SELECTED PROFESSIONAL DEVELOPMENT

2017	Summer Institutes on Scientific Teaching (Northwest Division), Yale Center for Teaching and Learning
2011, 2012, 2014	Professional Development Program, Institute for Scientist & Engineer Educators, UCSC
2012	Joint USGS-CUAHSI Sediment Hydroacoustics Workshop
2011	Short course 519A: <i>Teaching Students How to Learn</i> , Geological Society of America
2011	Short course 519C: <i>Retooling Your Geosciences Class: Strategies to Assess Learning and Improve Student Success</i> , Geological Society of America

PROFESSIONAL & PUBLIC SERVICE

Leadership Positions

2015 - 2016	<i>Vice President</i> , Women in Science and Engineering (WiSE), UCSC
2015 - 2016	<i>Co-Founder & Officer</i> , Geoscientists Encouraging Openness and Diversity in the Earth Sciences (GEODES), UCSC
2015 - 2016	<i>Co-Founder</i> , WiSE Up: reading and discussion group for equity in STEM, UCSC
2014 - 2015	<i>Outreach Coordinator</i> , Women in Science and Engineering (WiSE), UCSC
2014 - 2015	<i>WiSE Representative</i> , Advisory Council on Campus Climate, Culture and Inclusion (ACCCCI), UCSC

Conference Proceedings

2014	<i>Co-Chair</i> , AGU Session S41A: "Ambient Seismic Investigations: Oceans, Ice, Environment, and Climate"
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Selected Community & Pedagogic Outreach

- 2017 *Instructor/Volunteer, STEMposium Workshop, Arts & Technology Academy, Eugene, OR*
- 2016 *Instructor, "STEAM: STEM Meets Art Through WiSE" Session, Expanding Potential Workshop, UC Berkeley*
- 2016 *Event Coordinator (GEODES), Growth Mindset Workshop, UCSC*
- 2016 *Event Coordinator (GEODES), Standing Up to Bias Workshop, UCSC*
- 2015 - 2016 *Planning Committee (WiSE), Women in STEM Pop-up Museum Project, Santa Cruz, CA*
- 2015 *Event Coordinator/Speaker (GEODES), Science Communication Workshop, UCSC*
- 2015 *Event Coordinator (GEODES), Camping Skills Workshop, UCSC*
- 2015 *Event Coordinator (GEODES), Careers in Geosciences Panel and Discussion, UCSC*
- 2015 *Event Coordinator (GEODES), Imposter Syndrome Workshop, UCSC*
- 2014 *Event Coordinator/Volunteer (WiSE), Science Outreach Visit, Elkhorn Elementary School, CA*
- 2014 *Volunteer (WiSE), Science Outreach Visit, African American Resource Center, UCSC*
- 2014 *Event Coordinator (WiSE), Science Outreach Visits, Seaside High School, CA*
- 2014 *Recruiter (WiSE), PBSci Fall Welcome Fair, Physical & Biological Sciences Division, UCSC*
- 2014 *Event Coordinator/Volunteer (WiSE), UCSC EPS Department and Campus Geology Tour for visiting 6th-8th grade students, Advancement Via Individual Determination (AVID) Program, Mount Pleasant Elementary School District, CA*
- 2014 *Lead Volunteer (WiSE), Science Outreach Visits, Cesar Chavez Middle School, CA*
- 2013 *Judge, K-5th Grade Science Faire, Westlake Elementary School, CA*
- 2013 *Volunteer (WiSE), Science Outreach Visit, IRIS Science Academy Open House, CA*
- 2012 - 2014 *Instructor, "3-Kinds of Learning: Comparing Approaches" Workshop, EDUC 221 (Science Learning and Teaching in Elementary Classrooms) and EDUC 185C (Intro to Teaching Science), UCSC*
- 2011, 2014 *Instructor & Activity Design Team Member (2011) / Leader (2014), Workshops for Engineering and Science Transfer Students (WEST), UCSC*
- 2012 *Instructor & Activity Design Team Leader, Preparation for Research Experiences Program (PREP) Short Course, Institute for Astronomy, UH Manoa, HI*
- 2012 *Lead Volunteer (WiSE), Science Outreach Visits, Watsonville High School, CA*
- 2011 - 2014 *Lead Volunteer (WiSE), Science Outreach Visits, Edward A. Hall Middle School, CA*
- 2012 *Instructor, Center for Microbial Oceanography: Research and Education (CMORE) Workshop for Summer Math and Science Honors Academy (SMASH) Students, Monterey Bay Aquarium Research Institute*
- 2012 *Instructor, "Science Alive" Workshop, Gavilan College, CA*
- 2008 *Volunteer, "Celebrating Science" Family Science Faire, SETI Institute, CA*