Joshua J. Roering

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APPOINTMENTS

2012-	Professor, Department of Earth Sciences, University of Oregon
2019-2022	Head, Department of Earth Sciences, University of Oregon
2015-2019	Associate Head, Department of Earth Sciences, University of Oregon
2006-2012	Associate Professor, Department of Earth Sciences, University of Oregon
2004-2024	Core Faculty, Environmental Studies Program, University of Oregon
2001-2006	Assistant Professor, Department of Earth Sciences, University of Oregon
2000-2001	Postdoctoral Fellow, University of Canterbury, Christchurch, New Zealand
1995-2000	Graduate Student Researcher and Instructor, University of California, Berkeley
1994-1995	Graduate Student Researcher, Stanford University
1993	Wilderness Technician, National Park Service, Yosemite National Park
1992	Legislative Research Internship, Sierra Club, Washington D.C.

EDUCATION

Ph.D University of California, Berkeley, Geology, 2000
supervisors: Dr. William E. Dietrich and Dr. James W. Kirchner
Dissertation: "Topographic, experimental, and numerical investigations of nonlinear sediment transport and hillslope evolution"

M.S. Stanford University, Geological and Environmental Science, 1995
supervisors: Dr. David D. Pollard and Dr. J Ramon Arrowsmith
Thesis: "Near-surface and secondary deformation associated with blind thrust faults"

B.S. Stanford University, Geological and Environmental Science, 1994

RESEARCH INTERESTS

geomorphology, landslides, landscape evolution, critical zone processes, soil organic carbon

HONORS AND RECOGNITION

Fellow, American Geophysical Union, 2018
Distinguished Lecturer, NSF GeoPRISMS Program, 2013-2014, 2014-2015
Exceptional Reviewer, *GEOLOGY*, Geological Society of America, 2014
Fund for Faculty Excellence Award, University of Oregon, 2012
G.K. Gilbert Award for Excellence in Geomorphic Research, American Assoc. of Geog., 2011
Ersted Award for Distinguished Teaching, University of Oregon, 2005
Outstanding Student Paper, Hydrology Section, American Geophysical Union, 1998

GRANTS

Pending

- "*Development of Community-based Natural Hazard Observing Network for Tribal and Rural Alaska Coastal Communities*", **National Science Foundation, Regional Resilience Innovation Incubator (R2I2)**, 2025-2027, $500k ($34k to UO), Co-PI with Lead PI Raymond Paddock (Central Council of Tlingit & Haida Indian Tribes of Alaska).

- "*Track 2 – Center Operations: Center for Land-Surface Hazards (CLaSH)*" **National Science Foundation, Centers for Innovation and Community Engagement in Solid Earth Geohazards**, 2024-2029, $15,000,000 ($431k to UO)**,** Co-PI with Lead PI M. Clark (Michigan) and co-PIs J. West (USC), B. Yanites (Indiana), and D. Zekkos (Berkeley).

Funded proposals

- *"RAPID: Investigating the triggers of the 2023 Wrangell, Alaska landslides"*, **National Science Foundation, Geomorphology and Land-use Dynamics**, 2024, $50k ($10.5k to UO), Co-PI with Lead PI M. Darrow (Univ Alaska-Fairbanks) and Co-PI A. Patton (Sitka Sound Science Center).

- "*Track I – Center Catalyst: Center for Land Surface Hazards (CLaSH),*" **National Science Foundation, Centers for Innovation and Community Engagement in Solid Earth Geohazards,** 2022-2024, $300k (UO portion $15k), Co-PI with Lead PI M. Clark (Michigan), and Co-PIs D. Zekkos (Berkeley), J. West (USC).

- *"Knowledge and Understanding, Technology and Innovation (KUTI): Building community sensor networks for coastal hazards and climate change impacts in Southeast Alaska,"* **National Science Foundation, Coasts and People**, RISE-2052972, 2022-2026, $4,943,847 (UO portion $544k), Co-PI w/ R. Lempert (RAND Corporation), N. Oakley (Scripps/UCSD), R. Heintz (Sitka Sound Science Center), J. Selker (Oregon State Univ).

- *"Geomorphic controls on soil organic carbon in fire-prone landscapes",* **National Science Foundation, Geomorphology and Land-use Dynamics (GLD)**, EAR-2136934, 2022-2025, $392k, Lead PI w/ L. Silva (UO Biology/Environmental Studies).

- *"Evaluating Landslide Debris Flow Impacts along ODOT Corridors",* **Oregon Department of Transportation**, 2021-2025, $300k ($54k to UO), Co-PI w/ B. Leshchinsky and K. Bladon (Oregon State Univ), B. Burns (DOGAMI), and F. Rengers (USGS).

- *"Rapid data acquisition for the investigation of post-fire landslide hazards in the Pacific Northwest",* **Geotechnical Extreme Event Reconnaissance (GEER)**, 2020, $15,748, Lead PI w/ K. Moffett (WSU-Vancouver), J. Kean (USGS), F. Rengers (USGS), A. Booth (PSU), W. Burns (DOGAMI), P. Robichaud (USFS).

- *"Building a high-resolution landslide chronology for Cascadia megathrust earthquakes: Collaborative Research with University of Oregon and University of Arizona",* **National Earthquake Hazards Reduction Program (NEHRP), USGS,** 2020, $76,958 (UO portion). Lead PI (w/ Co-PI Bryan Black, Univ of Arizona).

- *"Modern importance of shear on crustal faults in the Cascadia forearc: Examining tectonics and seismic hazard in the southern Willamette Valley, Oregon"*, **USGS EDMAP Program**, 2019-2020, $17,473, Co-PI w/ W. Struble.

- *"Landslide Risk Management in Remote Communities: Integrating Geoscience, Data Science, and Social Science in Local Context"*, **NSF: Smart and Connected Cities** (CNS-1831770)**,** 2018-2022, $2,962,572 (UO portion $500k), Co-PI with R. Lempert (RAND Corporation).
- *"RAPID: Post-fire lidar change detection, Eagle Creek fire, Columbia River Gorge, Oregon",* **NSF: Geomorphology and Land-use Dynamics** (EAR-1829442), 2018, $13k, Lead-PI.
- *"Using landslide-dammed lakes to identify coseismic slope instability in Cascadia"*, collaborative w/ University of Texas and Department of Geology and Mineral Industries (DOGAMI), **National Earthquake Hazards Reduction Program (NEHRP), USGS,** 2018, $64k (UO portion). Lead PI (with Co-PIs Bryan Black, Univ of Texas, and Bill Burns, DOGAMI).
- "Form, process, and evolution of carbonate hillslopes in semi-arid climate", **US-Israel Binational Science Foundation (BSF)**, 2017-2021, $10,552 (UO portion), Co-PI w/ I. Haviv (Ben Gurion Univ, Israel).
- *"Investigation of Cascadia Earthquake Triggered Landslides"*, collaborative w/ Department of Geology and Mineral Industries (DOGAMI), **National Earthquake Hazards Reduction Program (NEHRP), USGS,** 2016, $62,541 (UO portion). Lead PI (with Co-PI Bill Burns, DOGAMI).
- "*Collaborative Research:* Clarifying the ingredients and significance of nonlocal versus local sediment transport on steepland hillslopes", **NSF: Geomorphology and Land-use Dynamics** (EAR-1420898), 2014-2017, $113,000 (UO portion), Co-PI w/ D. Furbish and D. Morgan (Vanderbilt).
- "*Understanding oceanic and terrestrial controls on dissolved oxygen variability in the Coos Bay estuary*", **Oregon Sea Grant**, 2014-2016, $170,000. Co-PI w/ D. Sutherland (UO) and D. Gavin (UO).
- *"Incorporating hillslope transport into landscape evolution experiments"*, **NSF: Geomorphology and Land-use Dynamics** (EAR-1252177), 2013-2015, $184,000. Sole PI.
- "*Geomorphic change and hazard potential from landslides in a tectonically active landscape: Integrated investigations using InSAR, LiDAR, air photos, and ground-based studies",* **NASA: Earth Surface and Interior** (NNX15AR59G), 2012-2015, $489,952. Lead PI w/ Co-Is D. Schmidt (UW) and W. Schulz (US Geological Survey).
- *"Oregon: A cultural and natural history"*, a new, one-term block of integrated courses (Geology, Biology, and History), **Williams Fund for Undergraduate Education, University of Oregon**, 2011, $31,000, Co-PI w/ Bitty Roy (UO Biology) and Matt Dennis (UO History).
- *"Collaborative Research: Climatic and biotic controls on Late Quaternary erosion in the Oregon Coast Range"*, **NSF: Geomorphology and Land-use Dynamics** (EAR-0952186), 2010-2013, $324,535. Lead PI w/ Co-PI D. Gavin (UO) and Co-PI D. Granger (Purdue Univ).
- *"Sediment production via landsliding: Estimating temporal and spatial variability in the Waipaoa drainage basin, New Zealand, using InSAR, airborne LiDAR, and cosmogenic radionuclides"*, **NSF: MARGINS** (OCE-0841111), 2009-2012, $340,000. Lead PI w/ Co-PI D. Schmidt (UO).
- *"Quantifying landslide movement over seasonal to millenial timescales: Coupled analyses using InSAR, LiDAR, and cosmogenic radionuclides"*, **NASA: Earth Surface and Interior** (NNX08AF95G), 2008-2010, $263,000. Lead PI w/ Co-I. D. Schmidt (UO).

- *"Acquisition of a Computational Facility, Geological Sciences, University of Oregon",* **NSF: Instrumentation and Facilities**, 2007, $75,000, Co-I w/ D. Toomey (UO).
- *"Landsliding and the evolution of mountainous landscapes",* **NSF: Geomorphology and Land Use Dynamics** (EAR-0447190), 2005-2008, $154,010. Sole-PI.
- *"Quantifying climatic controls on sediment production and hillslope evolution"*, **NSF: Geology and Paleontology** (EAR-0309975), 2003-2006, $240,000. Sole-PI.

PUBLICATIONS (* denotes student or postdoc advisee as first author)

Google Scholar: https://scholar.google.com/citations?user=VrTlLJ0AAAAJ

Manuscripts

- Roering, J.J., M. Darrow, A.I. Patton, and A. Jacobs, (in review), **Bedrock ledges, colluvial wedges, and ridgetop water towers: Characterizing geomorphic and atmospheric controls on the 2023 Wrangell landslide to inform landslide assessment in Southeast Alaska, USA**, EGUsphere [preprint].
- Johnson, A., J.J. Roering, K.K. Prussian, P. Wilcox, R. Heintz, L. Pierce, S. Tobey, Z. Danielson, C. Udall, Q. Aboudara, S. O'Neil, A. Jacobs, J. Isaacs, and A. Thoms, (in review), **Participatory science for landslide community awareness: Development of a protocol for Southeast Alaska**, *Community Science*.
- *Hunter, B.D., J.J. Roering, L.C.R. Silva, L.R. Wetherell, and S. Lahusen, (in revision), **Widespread ancient bedrock landslide deposits facilitate deep and abundant storage of organic carbon**, *Science Advances.*
- Sousa, D.F.M, B.A. Leschinsky, E. Fulmer, M.A. Sanders, N.W. Mathews, J.J. Roering, F.K. Rengers, B.B. Mirus, W.J. Burns, and M.J. Olsen, (in revision), **Dynamics of postfire root strength and ductility and implications towards shallow landsliding in Western Oregon**, *Landslides*.
- *Wachino, I.D., J.J. Roering, A. Patton, and R. Cash, (in revision), **Characterizing geologic and climatic controls on rockfall hazards using an inventory and integrated kinematic and runout model: Skagway, Alaska, USA**, *EGUsphere* [preprint], https://doi.org/10.5194/egusphere-2025-1168.
- Mathews, N., B. Mirus, B. Leshchinsky, F. Rengers, J. Kean, D. Sousa, W.J. Burns, and J.J. Roering, (in revision), **Modeling the impacts of postfire disturbance and forest recovery on landsliding in the Pacific Northwest, USA**, *Journal of Geophysical Research-Earth Surface.*

Peer-reviewed contributions

121. Reed, M., K.L. Ferrier, J.A. Marshall, J.J. Roering, and J.T. Perron, (in press), **Climatic controls on soil production, transport, and chemical erosion: Insights from modeling topography, soils, and cosmogenic nuclides at Little Lake, Oregon**, *Earth Surface Processes and Landforms*.

120. *Sanders, M.A., J.J. Roering, W.J. Burns, N.C. Calhoun, and B.A. Leshchinsky, (2025), **The influence of wildfire on debris flows in a landscape of persistent disequilibrium: Columbia River Gorge, OR, USA**, *Science Advances*, https://www.science.org/doi/10.1126/sciadv.adw8633

119. Yanites, B.J., M.K. Clark, J.J. Roering, A.J. West, D. Zekkos, J.W. Baldwin, C. Cerovski-Darriau, S.F. Gallen, D.E. Horton, E. Kirby, B.A. Leshchinsky, H.B. Mason, S. Moon, K. Barnhart, A. Booth, J.A. Czuba, S. McCoy, L. McGuire, A. Pfeiffer, and J. Pierce, (2025),

Cascading land surface hazards as a nexus in the Earth system, *Science*, https://www.science.org/doi/10.1126/science.adp9559.

118. Burns, W.J., N.C. Calhoun, J.J. Roering, M.A. Sanders, B. Leshchinsky, D. DeSousa, M. Olsen, F. Rengers, and N. Mathews, (2025), **Multitemporal Lidar Analysis of Pre- and Post- Eagle Creek Fire Debris Flows, Western Columbia River Gorge, Hood River and Multnomah Counties, Oregon**, *Oregon Department of Geology and Mineral Industries (DOGAMI) Special Paper 55,* https://www.oregon.gov/dogami/pubs/Pages/sp/SP-55.aspx.

117. *Struble, W.T., F. Clubb, and J.J. Roering, (2024), **Regional-scale, high-resolution measurements of hilltop curvature reveal tectonic, climatic, and lithologic controls on hillslope morphology**, *Earth and Planetary Science Letters,* https://doi.org/10.1016/j.epsl.2024.119044.

116. Balco, G., A. Hidy, W.T. Struble, and J.J. Roering, (2024), **Cosmogenic noble gas depletion in soils by wildfire heating**, *Geochronology*, https://doi.org/10.5194/gchron-6-71-2024.

115. *Hunter, B.D, J.J. Roering, L.C.R. Silva, and K. Moreland, (2024), **Geomorphic controls on the abundance and persistence of soil organic carbon pools in erosional landscapes***,* *Nature Geoscience,* https://doi.org/10.1038/s41561-023-01365-2.

114. *Patton, A., L. Luna, J.J. Roering, A. Jacobs, O. Korup, and B. Mirus, (2023), **Landslide initiation thresholds in data sparse regions: Application to landslide early warning criteria in Sitka, Alaska,** *Natural Hazards and Earth System Sciences (NHESS),* https://nhess.copernicus.org/articles/23/3261/2023/.

113. Roering, J.J., B. D. Hunter, K. L. Ferrier, O. A. Chadwick, K. Yoo, A. A. Wackett, P. C. Almond, L.C.R. Silva, and A. M. Jellinek, (2023), **Quantifying erosion rates and weathering pathways that maximize soil organic carbon storage,** *Biogeochemistry*, https://doi.org/10.1007/s10533-023-01054-7, full access link.

112. *Hunter, B.D, J.J. Roering, P.C. Almond, O.A. Chadwick, M.L. Polizzotto, and L.C.R. Silva, (2023), **Pedogenic pathways and deep weathering controls on soil organic carbon in Pacific Northwest forest soils**, *Geoderma*, https://doi.org/10.1016/j.geoderma.2023.116531.

111. Dixon, L., M. Izenberg, R. J. Lempert, A. Patton, and J.J. Roering, **Residential landslide insurance in Sitka, Alaska: Market conditions and options for improving availability**, (2023), *RAND: Perspectives*, https://www.rand.org/pubs/perspectives/PEA223-1.html.

110. Alberti, S., B. Leshchinsky, M.J. Olsen, J.J. Roering, and J.P. Perkins, (2022), **Distributions of landslide size controlled by patterns in hillslope strength**, *Nature Communications,* https://doi.org/10.1038/s41467-022-33798-5.

109. *Patton, A., J.J. Roering, and E. Orland, (2022), **Debris flow initiation in postglacial terrain: Insights from shallow landslide initiation models and geomorphic mapping in Southeast Alaska**, *Earth Surface Processes and Landforms*, https://doi.org/10.1002/esp.5336.

108. *Struble, W.T. and J.J. Roering, (2021), **Hilltop curvature as a proxy for erosion rate: Wavelets enable rapid computation and reveal systematic underestimation,** *Earth Surface Dynamics***,** 9, 1279–1300, https://doi.org/10.5194/esurf-9-1279-2021.

107. *Lai, “Larry” Syu-Heng, J.J. Roering, N. Finnegan, R. Dorsey, and J.Y-Yee Yen, (2021), **Coarse sediment supply sets the slope of bedrock channels in rapidly uplifting terrain,** *Earth Surface Processes and Landforms,* https://doi.org/10.1002/esp.5200.

106. Furbish, D. J., S.G.W. Williams, D.L. Roth, T.H. Doane, and J.J. Roering, (2021), **Rarefied particle motions on hillslopes: 2. Analysis,** *Earth Surface Dynamics,* https://doi.org/10.5194/esurf-9-577-2021.

105. Furbish, D.J., J.J. Roering, T.H. Doane, D.L. Roth, S.G. Williams, and A.M. Abbott, (2021), **Rarefied particle motions on hillslopes: 1. Theory**, *Earth Surface Dynamics,* https://doi.org/10.5194/esurf-9-539-2021.

104. Wetherell, L.R., L.L. Ely, M.K. Walsh, J.J. Roering , M.J. Burchfield, K.E. Nace, M.M. Wetherell, W.T. Struble, and B.A. Black, (2021), **Quantifying sedimentation patterns of small landslide-dammed lakes in the Central Oregon Coast Range**, *Earth Surface Processes and Landforms*, https://doi.org/10.1002/esp.5106.

103. Chu, M., A. Patton, J.J. Roering, C. Siebert, J. Selker, C. Walter, and C. Udell, (2021), **SitkaNet: A low-cost, distributed sensor network for landslide monitoring and study**, *HardwareX*, https://doi.org/10.1016/j.ohx.2021.e00191.

102. *Struble, W.T., Roering, J.J., Black, B.A., Burns, W.J., Calhoun, N.C., and Wetherell, L.R. (2021), **The preservation of climate-driven landslide dams in Western Oregon**, *Journal of Geophysical Research: Earth Surface,* https://doi.org/10.1029/2020JF005908.

101. Ben-Asher, M., I. Haviv, O. Crouvi, J.J. Roering, and A. Matmon, (2021), **The convexity of carbonate hilltops: 36Cl constraints on denudation and chemical weathering rates and implications for hillslope curvature**, *Geological Society of American Bulletin,* https://doi.org/10.1130/B35658.1.

100. *Marshall, J.A., J.J. Roering, P.J. Bartlein, and A.W. Rempel, (2021), **Frost weathering across unglaciated North America during the Last Glacial Maximum**, *Geophysical Research Letters*, https://doi.org/10.1029/2020GL090305.

99. O'Connor, J.E., J. Mangano, D. Wise, and J.J. Roering, (2021), **Eroding Cascadia: Sediment and solute transport and landscape denudation in Western Oregon and Northwestern California**, *Geological Society of America Bulletin,* https://doi.org/10.1130/B35710.1.

98. *Struble, W.T., J.J. Roering, R.J. Dorsey, and R. Bendick, (2020), **Characteristic scales of drainage reorganization in Cascadia**, *Geophysical Research Letters*, https://doi.org/10.1029/2020GL091413.

97. *Roth, D.L., T.H. Doane, J.J. Roering, D.J. Furbish, and A. Zettler-Mann, (2020), **Particle motion on burned and vegetated hillslopes,** *Proceedings of the National Academy of Science***,** https://doi.org/10.1073/pnas.1922495117.

96. *Sweeney, K.E., J.J. Roering, and D.J. Furbish, (2020), **Linking geomorphic process dominance and the persistence of local elevation,** *Journal of Geophysical Research-Earth Surface*, https://doi.org/10.1029/2020JF005525.

95. LaHusen, S.R., A.R. Duval, A.M. Booth, A. Grant, B.A. Mishkin, D.R. Montgomery, W. Struble, J.J. Roering, & J. Wartman, (2020), **Rainfall triggers more deep-seated landslides than Cascadia earthquakes in the Oregon Coast Range, USA**, *Science Advances*, https://doi.org/10.1126/sciadv.aba6790.

94. Shobe, C.M., G. L. Bennett, G. E. Tucker, K. Roback, S. R. Miller, and J.J. Roering, (2020), **Boulders as a lithologic control on river and landscape evolution response to tectonics at the Mendocino Triple Junction, California,** *Geological Society of America Bulletin,* https://doi.org/10.1130/B35385.1.

93. *Orland, E., J.J. Roering, B. Mirus, and M. Thomas, (2020), **Deep Learning as a tool to forecast hydrologic response for landslide-prone hillslopes**, *Geophysical Research Letters,* https://doi.org/10.1029/2020GL088731.

92. *Wall, S., J.J. Roering, and F. Rengers, (2020), **Runoff-initiated post-fire debris flow in the Western Cascades, Oregon**, *Landslides*, https://doi.org/10.1007/s10346-020-01376-9.

91. *Struble, W., J.J. Roering, B. Black, W. Burns, N. Calhoun, and L. Wetherell, (2020), **Dendrochronological dating of landslides in western Oregon: Searching for signals of the Cascadia 1700 AD earthquake**, *Geological Society of America Bulletin*, https://doi.org/10.1130/B35269.1.

90. Thomas, A.M, Z. Spica, M. Bodmer, W. Schulz, and J.J. Roering, (2020), **Using a dense seismic array to determine resonances, structure, and ground motions at the Two Towers earthflow in northern California**, *Seismological Research Letters,* https://doi.org/10.1785/0220190206.

89. *Schachtman, N.S., J.J. Roering, J.A. Marshall, D.G. Gavin, and D.E. Granger, (2019), **The interplay between physical and chemical erosion fluxes over interglacial-glacial cycles**, *GEOLOGY*, https://doi.org/10.1130/G45940.1

88. Ben-Asher, M., I. Haviv, J.J. Roering, and O. Crouvi, (2019), **The potential influence of dust flux and chemical weathering on hillslope morphology: convex soil-mantled carbonate hillslopes in the East Mediterranean**, *Geomorphology*, https://doi.org/10.1016/j.geomorph.2019.05.021.

87. Heimsath, A.M., O.A. Chadwick, J.J. Roering, and S.R. Levick, (2019), **Quantifying erosional equilibrium across a slowly eroding, soil mantled landscape,** *Earth Surface Processes and Landforms,* https://doi.org/10.1002/esp.4725.

86. Bodmer, M., D.R. Toomey, J.J. Roering, and L. Karlstrom, (2019), **Asthenospheric buoyancy and the origin of high-relief topography along the Cascadia forearc**, *Earth and Planetary Science Letters*, https://doi.org/10.1016/j.epsl.2019.115965.

85. Johnson, G.M., D. A. Sutherland, J.J. Roering, N. Mathabane, and D.G. Gavin, (2019), **Estuarine dissolved oxygen inferred from sedimentary trace metal and organic matter preservation**, *Estuaries and Coasts, v.* 42, p. 1211-1225, doi.org/10.1007/s12237-019-00580-8.

84. Finnegan, N., K. Broudy, A. Nereson, J.J. Roering, G.L. Bennett, and A. Handwerger, (2019), **Fluvial boulder transport controls valley blocking by earthflows in the California Coast Range, USA**, *Earth Surface Dynamics (ESURF)*, doi.org/10.5194/esurf-2018-75.

83. O'Hara, D.O., L. Karlstrom, and J.J. Roering, (2019), **Distributed landscape response to localized uplift and the fragility of steady states**, *Earth and Planetary Science Letters*, doi.org/10.1016/j.epsl.2018.11.006.

82. Emery-Wetherell, M.M., C. Matthew, C. Church, E. Dellard, E.B. Davis, and J.J. Roering, (2019), **The correlation of topographically-derived relative wetness with terrestrial mollusk presence and abundance**, *Malacologia*, 62, p. 225-236, https://doi.org/10.4002/040.062.0203.

81. Leshchinsky, B. A., A. M. Booth, K. M. Glover-Cutter, C. Mohney, M. J. Olsen, & J. J. Roering, (2018), **Prepare for Cascadia's next earthquake**, *Science*, 362(6418), p. 1007, doi:10.1126/science.aav5615.

80. Beeson, H.W, R.L. Flitcroft, M.A. Fonstad, and J.J. Roering, (2018), **Deep-Seated Landslides Drive Variability in Valley Width and Increase Connectivity of Salmon Habitat in the**

Oregon Coast Range, *Journal of the American Water Resources Association,* doi:10.1111/1752-1688.12693.

79. Perkins, J., J.J. Roering, W. Burns, W. Struble, B. Black, K. Schmidt, A. Duvall, and N. Calhoun, (2018), **Hunting for the legacy of landslides from Cascadia's great earthquakes**, Eos (AGU), v. 99, https://doi.org/10.1029/2018EO103689.

78. Doane, T., D. Roth, J.J. Roering, and D. Furbish, (2018), **Compression and decay of hillslope topographic variance in Fourier wavenumber domain**, *Journal of Geophysical Research-Earth Surface*, doi.org/10.1029/2018JF004724.

77. Furbish, D.J., J.J. Roering, A. Keen-Zebert, P.C. Almond, T. Doane, and R. Schumer, (2018), **Soil particle transport and mixing near a hillslope crest: 2. Cosmogenic nuclide and optically stimulated luminescence tracers**, *Journal of Geophysical Research-Earth Surface,* doi.org/10.1029/2017JF004316.

76. Furbish, D.J., J.J. Roering, P.C. Almond, and T. Doane, (2018), **Soil particle transport and mixing near a hillslope crest: 1. Particle ages and residence times**, *Journal of Geophysical Research-Earth Surface,* doi.org/10.1029/2017JF004315.

75. Schulz, W.H., J.B. Smith, G. Wang, Y. Jiang, and J.J. Roering, (2018)**, Clayey landslide initiation and acceleration strongly modulated by soil swelling**, *Geophysical Research Letters,* doi: 10.1002/2017GL076807.

74. Doane, T.H., D.J. Furbish, J.J. Roering, R. Schumer, and D.J. Morgan, (2018), **Nonlocal sediment transport on steep lateral moraines, eastern Sierra Nevada Mountains, California, USA**, *Journal of Geophysical Research-Earth Surface,* doi:10.1002/2017JF004325.

73. Ben-Asher, M., I. Haviv, J.J. Roering, and O. Crouvi, (2017), **The influence of climate and micro-climate (aspect) on soil creep efficiency: cinder cone morphology and evolution along the eastern Mediterranean Golan Heights**, *Earth Surface Processes and Landforms*, doi: 10.1002/esp.4214.

72. Brantley, S.L., D.M. Eissenstat, J.A. Marshall, S.E. Godsey, Z. Balogh-Brunstad, D.L. Karwan, S.A. Papuga, J.J. Roering, T.E. Dawson, J. Evaristo, O.A. Chadwick, J.J. McDonnell, and K.C. Weathers, (2017), **Reviews and syntheses: On the roles trees play in building and plumbing the Critical Zone,** *Biogeosciences,* doi:10.5194/bg-14-5115-2017.

71. *Penserini, B., J.J. Roering, and A. Streig, (2017), **A morphologic proxy for debris flow erosion with application to the earthquake deformation cycle, Pacific Northwest, USA**, *Geomorphology*, doi:10.1016/j.geomorph.2017.01.018.

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1. Roering, J.J., M.L. Cooke, and D.D. Pollard, (1997), **Why blind thrust faults do not propagate to the Earth's surface: Numerical modeling of coseismic deformation associated with thrust-related anticlines**, *Journal of Geophysical Research,* v. 102, p. 11,901-11,912.

Data releases and other contributions

- Selander, B.D., Calhoun, N.C., Burns, W.J., Rengers, F.K., Kean, J.W., Moffett, K.B., Patton, A.I., Quinn, D.S., and Roering, J.J., (2024), **Inventory of debris flows in burned (2020-2022) and unburned (1995-2020) areas in the western Cascade Range of Oregon**: U.S. Geological Survey data release, https://doi.org/10.5066/P13TPP8J.
- Roering, J.J., J R. Arrowsmith, and D.D. Pollard, (1996), **Characterizing the deformation and seismic hazard of a blind thrust fault near Stanford, California: Coseismic elastic modeling**, in: *Toward assessing the risk associated with blind faults, San Francisco Bay region*, edited by: A.S. Jayko, United States Geological Survey Open File Report 96-0267, p. 41-44.

INVITED TALKS

2025: Stanford University, Hoonah Stewardship Council, SE Alaska,
2024: University of Utah; Chilkat Indian Village (Klukwan, AK); University of Canterbury (NZ)
2022: Penn State University; Geological Society of Oregon Country (Portland, OR); Worthy Ideas, UO Alumni Association (Bend, OR)
2020: Central Oregon Geological Society (Bend, OR)
2019: Tulane University; Natural History Society, SE Alaska University; University of Oregon Presidential Speaker Series (WINGS), Portland, Oregon
2018: Oregon State University; Quack Chats (University of Oregon Pub Talk); Southwest Oregon Community College
2017: University of Arizona; Oregon Museum of Science and Industry (OMSI) Science Pub
2016: Cornell University; University of Southern California; Washington State University-Vancouver; California Forest Soils Council; NSF Earthscope Workshop on Mendocino Triple Junction, Humboldt, CA
2015: U.C. Berkeley; University of Pennsylvania; Rutgers University; Portland State University; Colorado State University; NSF Critical Zone Tree Workshop, Penn State University; National Academy of Sciences Landslide Workshop, Washington, D.C.; Eugene Rotary Club
2014: Lamont Doherty Earth Observatory/Columbia University; Lawrence University; Queens College (CUNY); University of Lausanne (Switzerland); ISTERRE, Universite Joseph Fourier (Grenoble, France); Universite Nancy (France); Obsidians Mountaineering Club (Eugene, OR); City Club of Eugene (w/ KLCC radio re-broadcast)
2013: Wesleyan University; Kent State University; Science Pub (Oregon Museum of Science and Industry); Environmental Studies Colloquium (UO)
2012: Northwestern University; Binghamton Geomorphology Symposium (Jackson, WY); Eugene Natural History Society; American Geophysical Union, Fall Mtg.
2011: University of Nevada, Las Vegas; NSF "Stochastic Transport and Emergent Scaling" STRESS workshop, Lake Tahoe, CA; Bureau of Land Management, Soils Meeting, Springfield, OR; AGU Chapman Conference, "Source to Sink Around the World and Through Time" (Oxnard, CA); American Geophysical Union, Fall Mtg.
2010: University of Washington; Washington State University; University of Idaho; Keck Institute for Space Science Workshop: "Monitoring Earth Surface Changes from Space", Calif. Institute of Technology; UNAVCO Science Meeting, Boulder, CO.
2009: American Geophysical Union, Fall Mtg, San Francisco, CA; Geological Society of America, Annual Mtg., Portland, OR; Dept. of Geology and Mineral Industry (DOGAMI), Portland, OR; Lane County Council of Governments, LiDAR-GIS Workshop, Eugene, OR; Society of American Foresters, Mary's Peak Chapter, Salem, OR.
2007: Stanford University; Gilbert Club, Berkeley Geomorphology Group, Berkeley, CA; University of Oregon (Geography); "Dynamic Interactions of Life and its Landscape", NSF-sponsored MYRES Workshop, New Orleans, LA; "Studying Earth Surface Processes with High-resolution Topographic Data", NSF Workshop, Boulder, CO.
2006: Yale University; University of California, Santa Barbara; Pennsylvania State University; Pardee Symposium "Erosion: Processes, Rates, and New Measuring Techniques", Geological Society of America, Philadelphia, PA; Society of American Foresters, Coos Chapter, Coos Bay, OR; Quaternary Research Center, University of Washington.
2005: University of California, Santa Cruz; Society of American Foresters, Emerald Chapter, Eugene, OR; National Center for Airborne Laser Mapping Annual Meeting, Gainesville, FL; Oregon State University.

2004: University of Washington; University of Colorado; American Geophysical Union, Fall Meeting; Pardee Symposium "Weathering, Slopes, Climate, and Late-Quaternary Geomorphic Change in Arid and Semi-Arid Landscapes", Geological Society of America, Denver, CO; Humboldt State University; University of Oregon (Center for Ecology and Evolutionary Biology); University of Oregon (Geography); University of Calgary (Biogeosciences Seminar); U.S. Forest Service, Regional Geology/Geotechnical Conference, Portland, OR.

2003: Penrose Conference "Tectonics, Climate, and Landscape Evolution," Taroko National Park, Hualien, Taiwan; National Center for Airborne Laser Mapping Workshop, Gainesville, FL.

2002: Purdue University; Portland State University; Oregon State University; University of Oregon; University of Canterbury, New Zealand.

2001: Lincoln University, New Zealand.

2000: Calif. Institute of Technology; University of Michigan; University of Minnesota; University of New Mexico; University of Oregon; University of Virginia; University of Canterbury, New Zealand.

TEACHING

Courses taught (University of Oregon)

Earth Surface and Environment (ERTH 202: 2019, 2021, 2024) 40+ student lecture and lab course that introduces students to human interactions with the surface environment, sedimentary rocks and environments, chemical and physical weathering, hydrogeology, landslides, flooding.

Environmental Geology and Landscape Development (ERTH 102: 2002-2007, 2010, 2012, 2015) 400+ student lecture that provides an introduction to surface processes and environmental geology. Coordinated discussion sections that expose students to geological and topographic maps and solutions to geological problems. Developed and built in-class physical demonstrations to illustrate hydrologic response, pore pressure effects on landsliding, contaminant transport in aquifers, and earthquake-induced landsliding.

Data Analysis for Earth and Environmental Sciences (ERTH 418/518: 2004, 2006, 2007, 2009-2011, 2013, 2014, 2016, 2018, 2022, W2023, F2023, 2025) 40+ student (undergraduate and graduate) lecture and laboratory course surveying methods of data analysis, including descriptive statistics and data visualization, uncertainty analysis and error propagation, power analysis and hypothesis testing, regression and multiple regression, directional data analysis, and other topics. Implemented weekly computer-based laboratory exercises and problem sets that reflect a tools-based approach to statistical analysis.

Hillslope Geomorphology (ERTH 441/541, Spring 2003, 2005; Fall 2008, 2010, 2012, 2015, 2017, 2019, 2022, 2024) 20+ student (undergraduate and graduate) lecture and laboratory course exploring hillslope processes, including hillslope hydrology, mechanics of mass movements, weathering and soil formation, and overland flow erosion. Developed three field-based projects for which students wrote scientific reports summarizing their field data, analyses, and interpretations. Developed a series of laboratory exercises involving air photos, maps, and computer simulations.

Tectonic Geomorphology (ERTH 410/510, Spring 2008, 2013, Win 2019) 12+ student (undergraduate and graduate) lecture and laboratory course exploring landform evolution in response to tectonic forcing. Topics included: erosional controls on rock uplift, thermochronology, bedrock river incision models, and marine terraces. Developed three field-based projects for which students wrote scientific reports summarizing their field data,

analyses, and interpretations. Developed a series of laboratory exercises involving air photos, maps, and computer simulations.

River Mechanics (ERTH 410/510, 2011) 20 student lecture and lab based course on the physics of rivers, including hydraulics, sediment transport, and bedrock incision. Topics included: derivation of fluid momentum equations, velocity profiles, hydraulic modeling using energy equation, and theories for bedrock incision. The course included a field trip with collection and analysis of velocity profile data and a final project using airborne lidar data to reconstruct discharge history, sediment transport, and bedrock incision for a Cascade stream channel.

Oregon Environmental Geology (ERTH 308) and Oregon: A cultural and natural history (ENVS 399) (2011, 2014, 2017) 20+ student lecture and seminar, part of a 4-course, one-term block of integrated courses including Biology (taught by Prof. Bitty Roy) and History (taught by Prof. Matthew Dennis). Lectures and weekly fieldtrips introduced environmental geologic problems relevant to the Willamette Valley, Oregon Coast and Coastal Ranges, and Eastern Oregon. Seminar included diverse weekly reading and discussion. The block of courses also included a 7+ day field trip based at the Malheur field station and independent student research presentations and reports. Funded by the UO Williams Council, $31,000.

Field Geology (ERTH 406, Summer 2002, 2003, 2006) 20+ student course that introduces students to geological field methods. Co-taught 10-day project including: 1) mapping volcanic features using air photos and field data, and 2) detailed surveying of wave-cut benches and re-construction of paleo-lake levels at Fort Rock, Central Oregon using GPS, total station, and plane table methods.

Student mentoring and collaboration (University of Oregon)

Postdoctoral mentoring

Annette Patton, 2019-2022, Landslide warning in remote communities, SE Alaska
Danica Roth, 2016-2018, (co-advised w/ D. Furbish) Nonlocal transport on steepland landscapes
Georgina Bennett, 2014-2015, Remote sensing, landslide inventories, and stream network analysis

Graduate students advised

Henry Chandler, MS, current, Geophysical sensing of debris flows
Ries Plescher, MS, current, Rainfall thresholds for landslide triggering
Selina Davila Olivera, PhD, current, Shallow landslide recurrence and carbon cycling
Maryn Sanders, PhD, current, Shallow landslide initiation and hillslope hydrology
Ian Wachino, MS, 2024, Rockfall susceptibility and runout modeling and mapping
Jon Sheppard, M.S., 2023, Machine learning and landslide hydrology
Nate Klema, PhD, 2023, (primary advisor Leif Karlstrom), Topography and surface theory
Brooke Hunter, PhD., 2023, Soil organic carbon and erosion in fire-prone steeplands
Syu-Heng “Larry” Lai, PhD., 2022, (primary advisor R. Dorsey), Rapid uplift and incision of the Taiwan Coastal Ranges.
William Struble, PhD., 2020, Landslide chronology and steepland landscape evolution
Elijah Orland, M.S., 2020, Deep Learning for hydrology and landslide warning
Nathan Schachtman, M.S., 2017, Paleo-perspective on climate-driven weathering

Samuel Shaw, M.S., 2017, The evolution of gully networks on slow-moving landslides.

Brian Penserini, M.S., 2015, Debris flow network morphometry and earthquake deformation cycle.

Nathan Mathabane, M.S., 2015, Historical sedimentation in Coos Bay estuary, Oregon.

Corina Cerovski-Darriau, PhD., 2015, Landsliding in the Waipaoa catchment, New Zealand.

Kristin Sweeney, PhD., 2015, Experimental landscape evolution and bedrock channel incision modeling.

Jill Marshall, PhD., 2015, Climate and biotic controls on soil production and sediment transport.

Alex Handwerger, PhD., 2015, (co-advised w/ A. Rempel and D. Schmidt) Satellite interferometry for landsliding.

Adam Booth, PhD., 2012, Modeling slope instability and landscape evolution.

Benjamin Mackey, PhD., 2009, The contribution of slow-moving landslides to landscape evolution.

Laura Stimely, M.S., 2009, Quantifying Landslide Movement at the Boulder Creek Earthflow Using L-band InSAR (co-advised with D. Schmidt).

Max Calabro, M.S., 2008, An examination of surface displacement at the Portuguese Bend landslide, Southern California, using radar interferometry (co-advised with D. Schmidt).

T.C. Hales, Ph.D., 2006, Climatic controls on scree production and erosion of the Southern Alps, New Zealand.

Amanda MacLeod, M.S., 2006, Coupling meteorological data with hydrologic and slope stability models to constrain controls on shallow landsliding.

Suzanne Walther, M.S., 2006, Using soil stratigraphy and tephra chronology to constrain climatic controls on sediment production and landscape evolution, Eastern Washington.

Molly Gerber, M.S., 2004, Post-fire erosional response in the Oregon Coast Range.

Michelle Mort, M.S., 2003, Quantifying rates of bedrock erosion by tree throw and root action in the Oregon Coast Range.

Undergraduate thesis supervision

Hannah Neuman, B.S., 2024, Hilltop soils and soil organic carbon in Oregon Coast Range

Eliza Lawrence, B.S. Honors, 2024, Controls on landsliding, Prince of Wales, SE Alaska

Leah Youngquist, B.S honors thesis, 2018, Mapping the critical zone using portable XRF, Oregon Coast Range

Noah A Paoa Kannegiesser, B.S honors thesis, 2018, Controls of badland erosion, Painted Hills, Central Oregon.

Logan Wetherell, B.S., thesis, 2014, Lichenometry for exposure dating along the Oregon Coast.

Adam Schreiner-McGraw, B.S. honors thesis, 2012, Soil spectroscopy for landslide chronology in the Oregon Coast Range.

Colgan Smith, B.S. honors thesis, 2009, Post-glacial river incision and gorge formation in Southern Alps, New Zealand.

Jacob Selander, B.S. honors thesis, 2004, Characterizing knickpoints and their tectonic implications in the Siuslaw River, Oregon Coast Range.

Jeremy Sierra Kobor, B.S., honors thesis, 2002, Using the stream power model and topographic data to quantify differential uplift in the Oregon Coast Range, (co-advised with Becky Dorsey).

Sarah Chylek, undergraduate honors thesis, 2002, Quantifying the signature of captured streams in the Oregon Coast Range using digital elevation models, (co-advised with Becky Dorsey).

SERVICE

Institutional (University of Oregon)

Department Head (acting), promotion case, 2024-2025.
Member, Faculty Advisory Committee, Undergraduate Research Opportunity Program, 2024-2025.
Member, Environmental Resilience Committee, College of Arts and Sciences, 2024
Advisory Committee, Science and Communication Center, School of Journalism, 2022-2025
Member, Sponsored Research Advisory Council, Office of Research and Innovation, 2022-2025
Chair, Faculty search committee, Environmental Studies/Environment Initiative, 2022-2023.
Faculty Advisory Committee, Environment Initiative*,* 2021-2023
Heads Council, College of Arts and Sciences, 2020-2022
Department Head, Department of Earth Sciences*,* 2019-2022
Chair, Curriculum Committee, Earth Sciences, 2015-2019
Associate Department Head, Earth Sciences, 2015-2019
Chair, Geodesy faculty search committee, Earth Sciences, 2016-2017
Departmental Merit Review Committee, Earth Sciences, University of Oregon, 2014, 2016, 2018.
General Science Major review committee, College of Arts and Sciences, University of Oregon, 2014-2015.
Departmental promotion and tenure committee, Earth Sciences, UO, 2013-2014, 2014-2015.
Chair, Earth Surface Process Modeling Search Committee, Earth Sciences, UO, 2012-2013.
Chair, Departmental 10-yr review committee, Earth Sciences, University of Oregon, 2011-2012.
Undergraduate Council member, University of Oregon, 2009-2010.
Curriculum Committee member, College of Arts and Sciences, University of Oregon, 2008-2010.
Graduate Admissions Committee, Environmental Studies Program, University of Oregon, 2007, 2009, 2011, 2014, 2015 (chair in 2009 and 2011).
Scholarships and Awards Committee, Environmental Studies Program, University of Oregon, 2006-present.
Diversity Committee, Environmental Studies Program, University of Oregon, 2006-2009.
Curriculum Committee, Department of Earth Sciences, University of Oregon: 2004-2009.
Awards and Admissions Committee, Earth Sciences, University of Oregon, 2009-2014.
Ambassador, Teaching Effectiveness Program, University of Oregon, 2004-2006.
Comprehensive Ph.D. Examination Coordinator, Department of Earth Sciences, University of Oregon: 2001-2006.
Library Representative, 2001-2003, Department of Earth Sciences, University of Oregon
Seminar Coordinator, Spring 2003, Fall 2008, Department of Earth Sciences, University of Oregon

Physical Processes Faculty Search Committee, 2002-2004, Department of Earth Sciences, University of Oregon.

IntroDucktion Academic Advisor, 2003-present, Department of Earth Sciences, University of Oregon

Guest Lecturer, Biology 310: Forest Biology, University of Oregon, Fall 2004.

Guest Lecturer, General Science Freshman Seminar Series, University of Oregon, 2002, 2003.

Professional

Independent Science and Research Team, Institute for Natural Resources, State of Oregon, 2025-2029

Advisory Council on Landslides, U.S. Dept of the Interior, 2025-2028

Science Advisory Committee, Sitka Sound Science Center, Sitka, AK, 2021-2026

Departmental Review Committee, Earth and Environmental Science, Wesleyan University, 2016

Member, Committee of Visitors, EAR Division, National Science Foundation, June 2017

Panel member, PREEVENTS program, National Science Foundation, January 2017, 2018

Chair, Organizing Committee, UNAVCO Science Workshop, Boulder, CO, March 2016

Member, Board of Directors, UNAVCO (110+ employee, non-profit, NSF-funded geodesy consortium), Boulder, CO, 2014-2016.

Panel Member, NSF Program: Frontiers in Earth Surface Dynamics Program (FESD), 2013.

Associate Editor, Earth Surface Processes and Landforms, 2012-2016.

Convener, GeoPRISMS-Earthscope Cascadia Workshop, Portland, OR, April 2012.

Organizer/Convener, Bretz Club: Meeting of Oregon Geomorphologists, Charleston, OR, 2012, 2013.

Panel Member, NASA Earth Surface and Interior program, 2011.

Panel Member, NSF Geomorphology and Land-use Dynamics, 2007-2009.

Editorial Board member, GEOLOGY*,* Geological Society of America, 2006-2008.

Associate Editor, Journal of Geophysical Research – Earth Surface, American Geophysical Union, 2006-2008.

Associate Editor (with Kelin Whipple), Special Volume, Journal of Geophysical Research – Earth Surface, "Beyond Steady State: The Dynamics of Transient Landscapes", American Geophysical Union, 2006-2007.

Chair, Steering Committee, National Center for Airborne Laser Mapping (NCALM), 2007-2008, NSF-sponsored facility, University of Florida and University of California, Berkeley.

Steering Committee Member, National Center for Airborne Laser Mapping (NCALM), 2005-2008, NSF-sponsored facility, University of Florida and University of California, Berkeley.

Convener, *Hydrology Section, American Geophysical Union,* Fall Meeting, 2006, "Earth Surface: Processes and Landscapes", with Elizabeth Safran and Daniel Malmon.

Convener, *Hydrology Section, American Geophysical Union,* Fall Meeting, 2005, "Earth Surface: Processes and Landscapes", with Elizabeth Safran.

Convener, *Hydrology Section, American Geophysical Union,* Fall Meeting, 2005, "Advances in Airborne Laser Swath Mapping: Data Analysis and Discoveries in the Earth Sciences", with Michael Oskin and Clint Slatton.

Convener, Hydrology Section, American Geophysical Union, Fall Meeting, 2002, "Climatic and Tectonic Controls on Hillslope Processes and Sediment Production", with Andrew Meigs and Stephen Lancaster.

Gilbert Club Conference Co-coordinator, 1999-2000, Dept. of Earth and Planetary Science, University of California, Berkeley (informal conference of geomorphologists attended by 100+ participants each year in December following AGU meeting).

Publications reviewed for: Nature, Science, Geology, Proceedings of the National Academy of Sciences, Geophysical Research Letters, Icarus, Earth and Planetary Science Letters, Water Resources Research, American Journal of Science, Journal of Geophysical Research, Geomorphology, Earth Surface Processes and Landforms, Remote Sensing of the Environment, Ecological Engineering, Tectonophysics, and Journal of Geoscience Education.

Proposals reviewed for: NSF-Integrated Earth Systems, NSF-Critical Zone Observatory, NSF-Frontiers in Earth Surface Dynamics, NSF - Geology and Paleontology, NSF - Geomorphology and Land-use Dynamics, NSF-Tectonics, NSF - EarthScope, NSF - MARGINS, NSF – Antarctic Geology and Geophysics, NSF - Instrumentation and Facilities, NASA-Earth Surface and Interior.

Number of publications and proposals reviewed/edited by year: 1999:1, 2000:3, 2001:5, 2002:7, 2003: 10, 2004: 14, 2005: 17, 2006: 28, 2007: 48, 2008: 32, 2009: 21, 2010: 18, 2011: 19, 2012: 24, 2013: 28, 2014: 35, 2015: 30, 2016: 28, 2017: 14, 2018: 21, 2019: 17, 2020: 15, 2021: 12, 2022: 14, 2023: 10, 2024: 12.