

Katie Biegel, Ph.D.

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Davis, California, USA

PROFESSIONAL APPOINTMENTS

- | | |
|---|---|
| • NSF Earth Sciences (EAR) Postdoctoral Fellow
<i>Department of Earth and Planetary Sciences, University of California Davis</i> | <i>Davis, CA, USA</i>
Aug. 2026 - Present |
| • Postdoctoral Scholar
<i>Department of Earth and Planetary Sciences, University of California Davis</i>
<i>Department of Earth Sciences, University of Oregon</i> | <i>Eugene, OR & Davis, CA, USA</i>
March 2025 – July 2026
Aug. 2024 – Feb. 2025 |
| • Alberta Innovates Graduate Fellow
<i>Department of Earth, Energy, and Environment, University of Calgary</i> | <i>Calgary, AB, Canada</i>
Sep. 2017 – Aug. 2024 |
| • USGS Pathways Intern - Landslide Hazards
<i>Geologic Hazards Science Center, United States Geological Survey (USGS)</i> | <i>Golden, CO, USA</i>
June 2016 – Aug. 2017 |

RESEARCH INTERESTS

- | | |
|--|---|
| • Environmental Seismology | • Natural Hazards and Cascading Climate Hazards |
| • Surface Processes and Geomorphology | • Induced and Industrial Seismicity |
| • Debris Flows, Landslides, and Other Mass Movements | • Earthquake Source Studies and Fault Imaging |

EDUCATION

- | | |
|--|---|
| • PhD in Geoscience
<i>University of Calgary</i> | <i>Calgary, AB, Canada</i>
Nov. 2024 |
| • BSc in Geophysical Engineering
<i>Colorado School of Mines</i> | <i>Golden, CO, USA</i>
May 2017 |

PUBLICATIONS

Peer-Reviewed Journal Articles

- [1] Conner, A.E., Thomas, A.M., Allstadt, K.E., Thelen, W.A., Collins, E., Farin, M., Stephenson, W.J., Iezzi, A.M., and **K.M. Biegel**, 2026, Quantifying Seismic Properties of a River Channel at Mount Rainier for Use in Debris Flow Monitoring and Analysis, *Seismological Research Letters*, doi: [10.1785/0220250071](https://doi.org/10.1785/0220250071).
- [2] **Biegel, K.M.**, Dettmer, J., Igonin, N., and D. Eaton, 2025, Double-pair information improves depth relocation precision and highlights detailed 3D fault geometry for induced seismicity in Alberta, Canada, *Seismological Research Letters*, doi: [10.1785/0220240194](https://doi.org/10.1785/0220240194).
- [3] Gosselin, J., **Biegel, K.M.**, Dettmer, J., Gilbert, H., Colpron, M., and E. Enkelmann, 2024, Crustal stress in southwestern Yukon from probabilistic earthquake focal mechanisms, *Canadian Journal for Earth Sciences*, doi: [10.1139/cjes-2024-0095](https://doi.org/10.1139/cjes-2024-0095).
- [4] **Biegel, K.M.**, Gosselin, J., Dettmer, J., Colpron, M., Enkelmann, E., and J.S. Caine, 2024, Regional active deformation on discrete shallow faults throughout Southeast Alaska and Southwest Yukon, *Tectonics*, 43, e2023TC008140, doi: [10.1029/2023TC008140](https://doi.org/10.1029/2023TC008140).
- [5] Vasyura-Bathke, H., Dettmer, J., **Biegel, K.M.**, Salvage, R.O., Eaton, D., Ackerley, N., and S. Samsonov, 2023, Bayesian inference elucidates fault-system anatomy and resurgent earthquakes induced by continuing saltwater disposal, *Communications Earth and Environment*, 4, 407, doi: [10.1038/s43247-023-01064-1](https://doi.org/10.1038/s43247-023-01064-1)

Journal Articles in Review

- [1] **Biegel, K.M.**, Collins, E., Allstadt, K.E., Conners, A.E., Thomas, A.M., Iezzi, A., Thelen, W.A., and S. Beason, 2026, Near-field Seismic Characteristics of the Transition from Debris Flow to Hyperconcentrated Flow at Mount Rainier, Washington, *Seismological Research Letters*, *In Review*.

Journal Articles in Prep

- [1] **Biegel, K.M.**, Farin, M., Conners, A.E., Thomas, A.M., Allstadt, K., Obryk, M., and R. Iverson, 2026, Validation of a granular flow model at the USGS Experimental Debris Flow Flume, *Journal of Geophysical Research: Earth Surface*, *In Prep*.
- [2] Conner, A., Thomas, A.M., **Biegel, K.M.**, Allstadt, K., Thelen, W., Iezzi, A., Collins, E.A., Beason, S., Todd, C., and M. Farin, 2026, Seismic Analysis and Numerical Modeling of Surges in a Debris Flow at Mount Rainier, *Journal of Geophysical Research: Earth Surface*, *In Prep*.
- [3] **Biegel, K.M.**, Schaeffer, A., Gosselin, J., and A.M. Thomas, 2026, Arctic warming and permafrost retreat induce long-term debris mass movement in the Canadian Arctic, *Geophysical Research Letters*, *In Prep*.

Reviewed Government Reports

- [1] Finley, T., Gosselin, J., **Biegel, K.**, Lipovsky, P., Cronmiller, D., Schaeffer, A., and J. Dettmer, 2026, The 6 December 2025 Mw 7.0 earthquake in Yukon, Canada: Tectonic significance and observations of ground failure, in: *Yukon Exploration and Geology 2025*, A. Stuart, L.H. Weston and S.K. Schultz (eds.), Yukon Geological Survey, Government of Yukon, p. 131–148.
- [2] Han, J., Dettmer, J., Gosselin, J., Gilbert, H., **Biegel, K.**, and S. Kim, 2024, Seismicity near the Eastern Denali fault from a temporary seismic deployment, in: *Yukon Exploration and Geology 2023*, L.H. Weston and Purple Rock Inc. (ed.), Yukon Geological Survey, Government of Yukon, p. 37–50.
- [3] **Biegel, K.**, Gosselin, J., and J. Dettmer, 2023, Preliminary double-difference relocation earthquake catalogue for southwestern Yukon centred along the Denali fault zone, in: *Yukon Exploration and Geology 2022*, K.E. MacFarlane (ed.), Yukon Geological Survey, Government of Yukon, p. 63–76 plus digital appendices.
- [4] Gosselin, J., **Biegel, K.**, Hamidbeygi, M., and J. Dettmer, 2023, Improvements in the regional earthquake focal mechanism catalogue for southwestern Yukon, in: *Yukon Exploration and Geology 2022*, K.E. MacFarlane (ed.), Yukon Geological Survey, Government of Yukon, p. 1–18 plus digital appendices.
- [5] Schmitt, R.G., Tanyas, Hakan, Nowicki Jessee, M.A., Zhu, Jing, **Biegel, K.M.**, Allstadt, K.E., Jibson, R.W., Thompson, E.M., van Westen, C.J., Sato, H.P., Wald, D.J., Godt, J.W., Gorum, Tolga, Xu, Chong, Rathje, E.M., Knudsen, K.L., 2017, An Open Repository of Earthquake-Triggered Ground-Failure Inventories: *U.S. Geological Survey Data Series 1064*, 17 p. doi: [10.3133/ds1064](https://doi.org/10.3133/ds1064).
- [6] Schmitt, R.G., Tanyas, Hakan, Nowicki Jessee, M.A., Zhu, Jing, **Biegel, K.M.**, Allstadt, K.E., Jibson, R.W., Thompson, E.M., van Westen, C.J., Sato, H.P., Wald, D.J., Godt, J.W., Gorum, Tolga, Xu, Chong, Rathje, E.M., Knudsen, K.L., 2017, An Open Repository of Earthquake-Triggered Ground-Failure Inventories: *U.S. Geological Survey data release collection*, doi: [10.5066/F7H70DB4](https://doi.org/10.5066/F7H70DB4).

Code and Software Releases

- [1] **Biegel, K.M.**, and J. Dettmer, 2024, relocDD-py (v1.0) Zenodo. doi: [10.5281/zenodo.10607406](https://doi.org/10.5281/zenodo.10607406).
- [2] Allstadt, K. E., Thompson, E. M., Hearne, M., and **Biegel, K.M.**, 2018, groundfailure, USGS software release. doi: [10.5066/P91G4NS4](https://doi.org/10.5066/P91G4NS4).
- [3] **Biegel, K.M.** and Allstadt, K.E., 2017, landslides-metadata version 1.0.0: USGS Software Release, doi: [10.5066/F7DN43Z6](https://doi.org/10.5066/F7DN43Z6).

TEACHING

- **Sessional Instructor** Calgary, AB, Canada
University of Calgary Jan. – Apr. 2024
 - **GOPH 375** - Natural Disasters and Critical Earth Phenomena (*Winter 2024 Term*)
- **Graduate Teaching Assistant** Calgary, AB, Canada
University of Calgary Sep. 2017 – Apr. 2024
 - **GLGY 297** - Science of Climate Change (*Winter 2024, Winter 2023, Winter 2022 Terms*)
 - **SCIE 699** - Communication and Effectiveness for Graduate Students (*Fall 2022 Term*)
 - **GLGY 705** - Graduate Skills in Science (*Fall 2018 Term*)
 - **GOPH 419/619** - Advanced Computational Methods for Geophysicists (*Winter 2018 Term*)
 - **GOPH 371** - Introduction to Geophysics (*Fall 2017 Term*)
- **Guest Lecturer** 2018, 2019, 2024, 2026
Various Locations
 - **UCalgary GOPH 671** - Inverse Theory (*Lectures on linear least squares inversion and iterative methods*)
 - **UCalgary GOPH 375** - Natural Disasters and Critical Earth Phenomena (*Replacement lecturer on various occasions to cover lecturer absences*)
 - **UOregon EARTH 201** - Dynamic Planet Earth (*Lectures on the evidence for plate tectonic theory and hotspot volcanism*)
 - **UCDavis EPS 164** - Introduction to Seismology (*Lectures on seismic velocity inversion and environmental seismology applications*)

FIELD EXPERIENCE

- **Nodal Seismic Network Installation** Mt. St. Helens National Volcanic Monument, WA, USA
University of California, Davis Sep. 2025
 - **Equipment Installation:** Installation of temporary nodal seismometer network; helicopter-only access; Additional installation of game cameras and infrasound near permanent broadband stations
- **Nodal Seismic Network Installation** Mt. Rainier National Park, WA, USA
University of California, Davis July & Sep. 2025
 - **Equipment Installation:** Installation and removal of a nodal seismometer network along the drainage system

- **Geophysical Instrumentation at Mt. Meager, BC** Pemberton, BC, Canada
University of Calgary Sep. 2019
 - **Equipment Installation:** DAS fibre optic cable installation including partial installation on glacier; movement of generator and fuel supply to the mountain top; installation of nodal seismometers; installation of broadband seismometer and solar panel; helicopter-only access
- **Nodal Seismometer Installation at CaMI Monitoring Site** Brooks, AB, Canada
University of Calgary Feb. 2019
 - **Equipment Installation:** Installation of nodal seismometer array at horizontal drilling site; installation into frozen ground using auger

FUNDING AND AWARDS

Fellowship Funding

- NSF Division of Earth Sciences (EAR) Postdoctoral Fellowship - Title: "Extension and validation of a robust global seismic debris flow model" (2 years; total 373,948 USD) 2026

Scholarship Awards

- **Society of Exploration Geophysicists (SEG) Scholarship Award** (2 years; total 20,000 USD) 2022, 2021
- **University of Calgary (UCalgary) Robert T.D. Wickenden Memorial Scholarship** (1,900 CAD) 2022
- **Alberta Innovates Technology Graduate Fellowship** (4 years; total 124,000 CAD) 2021–2018
- **SEG/EAGE Thomsen/BP Scholarship** (6,000 USD) 2020
- **SEG Scholarship Award** (3 years; total 22,000 USD) 2019–2017
- **UCalgary Faculty of Graduate Studies Scholarship** (declined for another award; 10,000 CAD) 2018
- **Colorado School of Mines Harvey Scholarship** (5 years; 120,000 USD) 2017–2013
- **Newmont Mining Scholarship** (10,000 USD) 2016

Teaching Awards

- **UCalgary Jim and Josie Gray Award - Faculty of Science Teaching Assistant Award** 2021

Conference Awards

- **Seismological Society of America Annual Conference - Student Presentation Award** 2024

PROFESSIONAL SERVICE

Committee Service

- **Geoscience Education & Mentoring Support (GEMS) Steering Committee** University of California, Davis
Steering Committee Representative 2025–Present
- **Equity, Diversity, and Inclusion (EDI) Committee** Department of Geoscience, University of Calgary
Graduate Student Representative 2020–2022
- **Geoscience Research Exchange (GeoREX) Organizing Committee** Department of Geoscience, University of Calgary
Committee President and Fundraising Director 2021
Communications Director 2019–2020
- **Hazards Equity Working Group (HEWG)** American Geophysical Union (AGU)
Science Communication and Outreach Subcommittee Chair 2020
- **Gender and Sexuality Alliance Committee (GSA²)** Graduate Student Union, University of Calgary
Faculty of Science Graduate Student Representative 2018–2020

Other Professional Service

- **GeoGirls at the Mt. St. Helens Institute** University of California, Davis
Science Volunteer; Taught and guided research project on environmental seismology in volcanic settings 2025
- **Geoscience Education & Mentoring Support (GEMS)** University of Oregon
Mentor to two undergraduate students 2024
- **Unlearning Racism in Geoscience (URGE)** University of Calgary
Working Group Member 2023

PRESENTATIONS

Invited Talks and Seminars

- [1] **Biegel, K.**, 2026, A Brief Look at the Seismology of Debris Flows, UC Davis Geotechnical Engineering Seminar, University of California Davis.
- [2] **Biegel, K.**, 2026, New Insights into the Totschunda-Fairweather Connector: Lessons from the 6 December 2025 M_w 7.0 Hubbard Glacier Earthquake, UAA Geological Sciences Seminar, University of Alaska - Anchorage.
- [3] **Biegel, K.**, 2026, A Brief Look at the Seismology of Debris Flows, UC Davis Earth and Planetary Sciences Departmental Seminar, University of California Davis.
- [4] **Biegel, K.** and S. Fasola, 2025, Addressing Geologic Hazards and Planning for the Future in the Pacific Northwest, LCC Science Seminar, Lane Community College.

- [5] **Biegel, K.**, 2024, Whose Fault? Source Studies of Induced Seismicity in Western Canada, Earth Sciences Department Seminar, *University of Oregon*.
- [6] **Biegel, K.**, 2024, RelocDD-py: A Python Tool for Precision Double-Difference Relocations for Small to Medium-sized Datasets, Seminar on Small Earthquake Location, *Korea University*.

Conference Presentations

- [1] **Biegel, K.**, Finley, T., Gosselin, J., Lipovsky, P., Cronmiller, D., Schaeffer, A., and J. Dettmer, 2026, Tectonic Significance and Observations of Ground Failure from the 6 December 2025 M_w 7.0 Earthquake in Yukon, Canada, Seismological Society of America Meeting 2026, Pasadena, California, *Oral Presentation*.
- [2] **Biegel, K.**, Conner, A., Thomas, A., Allstadt, K., Obryk, M., and M. Farin, 2026, Adapting a Granular Flow Model to the U.S. Geological Survey Experimental Debris-Flow Flume, Seismological Society of America Meeting 2026, Pasadena, California, *Poster Presentation*.
- [3] **Biegel, K.**, Conner, A., Thomas, A., Allstadt, K., Obryk, M., Farin, M., and R. Iverson, 2025, Toward a Seismic Model of a Debris Flow: Applying and Adapting a Granular Flow Model to the U.S. Geological Survey Experimental Debris-Flow Flume, Seismological Society of America - Environmental Seismology Meeting 2025, Denver, Colorado. *Poster Presentation*.
- [4] **Biegel, K.**, Conner, A., Thomas, A., Iezzi, A., Thelen, W., Allstadt, K., Collins, E., Beason, S., and C. Todd, 2025, Seismic Characteristics of the Transition from Debris Flow to Hyperconcentrated Flow, Tahoma Creek, Washington, Seismological Society of America - Environmental Seismology Meeting 2025, Denver, Colorado. *Poster Presentation*.
- [5] **Biegel, K.**, Dettmer, J., Igonin, N. and D. Eaton, 2024, Double-pair double-difference relocation for dense network improves depth precision of induced seismicity, leading to a detailed 3D fault geometry model, Seismological Society of America Meeting 2024, Anchorage, Alaska. *Oral Presentation*.
- [6] **Biegel, K.**, Gosselin, J., Dettmer, J., Colpron, M., Enkelmann, E., and J. Caine, 2024, Refining the nature of distributed and localized slip-partitioning of the Totschunda-Fairweather to Denali Corridor Using Earthquake Relocations and Focal Mechanisms, Seismological Society of America Meeting 2024, Anchorage, Alaska. *Poster Presentation*.
- [7] **Biegel, K.**, Gosselin, J., and J. Dettmer, 2023, Studying catalogue completeness and earthquake relocations to understand tectonic deformation in Southwest Yukon, Canadian Geophysical Union Meeting 2023, Banff, Alberta. *Poster Presentation*.
- [8] **Biegel, K.**, Gosselin, J., and J. Dettmer, 2023, Interpretation of tectonic deformation in SW Yukon from relocation of earthquakes, Cordilleran Tectonics Workshop 2023, Whitehorse, Yukon. *Poster Presentation*.
- [9] **Biegel, K.M.** and Dettmer, J., 2019, Location uncertainty for induced events: A comparison of fully nonlinear Bayesian estimates to double-pair double difference relocations for large datasets, American Geophysical Union Fall Meeting 2019. *Oral Presentation*.
- [10] **Biegel, K.M.**, Dettmer, J., and Igonin, N., 2019, Double-Pair Double Difference Location of Microseismicity with Dense-Station Microseismic Arrays, International Union of Geodesy and Geophysics (IUGG) General Conference 2019. *Oral Presentation*.