

James Atterholt

PhD Candidate in Geophysics, California Institute of Technology

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Education

- 2019-present California Institute of Technology (Caltech), Pasadena, CA
PhD (in progress), Geophysics
Advisors: Zhongwen Zhan & Zachary E. Ross
Thesis: In progress
- 2015-2019 Indiana University (IU), Bloomington, IN
BS Mathematics & BS Geological Sciences
Advisor: Gary L. Pavlis
Thesis: Measurements of P-wave anisotropy in the Homestake Mine

Appointments

- 2019-present Graduate Student Researcher, Caltech Seismological Laboratory
- 2019 NAGT Summer Intern, United States Geological Survey, Golden, CO
- 2015-2019 STARS Undergraduate Research Assistant, IU Geophysics Laboratory
- 2017 IRIS Intern, Los Alamos National Laboratory, Los Alamos, NM

Awards and Honors

- 2024 AGU Annual Meeting Outstanding Student Presentation Award
- 2023 SSA Annual Meeting Student Presentation Award
- 2020 NSF Graduate Research Fellowship
- 2019 Faculty Senior Award, IU Geological Sciences
- 2019 Cora B. Hennel Memorial Scholarship, IU Mathematics
- 2019 Margaret Russell Edmondson Award, IU Phi Beta Kappa Chapter

2017 Undergraduate Prize, Mineralogical Society of America

Teaching Experience

2023 Teaching Assistant, GE 161 – Plate Tectonics, Caltech
 2022-2023 Instructor/Mentor, Caltech Earthquake Fellows Program
 2022 Teaching Assistant, GE 165 – Geophysical Data Analysis, Caltech
 2021 Teaching Assistant, GE 162 - Seismology, Caltech

Service

2022-present Manuscript Reviewer, *Seismological Research Letters*, *Journal of Geophysical Research – Solid Earth*, *Communications Earth & Environment*
 2023-present High school student research project mentor, Caltech
 2022-2023 Curriculum Developer / Instructor, Caltech Earthquake Fellows Program
 2021-2022 Organizer, Caltech Seismological Laboratory Seminar
 2016-2019 Editorial Board Member, *IU Journal of Undergraduate Research*

Journal Publications

- [10] Bird, E., **Atterholt, J.**, Biondi, E., Yang, Y., Zhan, Z. (*in review*). Imaging the North Bishop Block with Converted Phases Observed through Fiber-Optic Seismology
- [9] **Atterholt, J.**, Zhan, Z., Yang, Y., Zhu, W. (*in review*). Imaging the Garlock Fault Zone with a Fiber: A Missing Damage Zone and Hidden Bimaterial Contrast.
- [8] Guo, H., **Atterholt, J.**, McGuire, J.J., Thurber, C. (*in review*). Evidence for low effective stress within the crust of the subducted Gorda plate from the 2022 December M_w 6.4 Ferndale Earthquake Sequence.
- [7] **Atterholt, J.**, Ross, Z.E. (2023). Finite Source Properties of Large Strike-Slip Earthquakes. *Geophysical Journal International*, doi: 10.1093/gji/ggad459
- [6] **Atterholt, J.**, Zhan, Z., and Yang, Y. (2022). Fault zone imaging with distributed acoustic sensing: body-to-surface wave scattering. *Journal of Geophysical Research: Solid Earth*, doi: 10.1029/2022JB025052
- [5] Yang, Y., Zhan, Z., Shen, Z., and **Atterholt, J.** (2022). Fault zone imaging with distributed acoustic sensing: surface-to-surface wave scattering. *Journal of Geophysical Research: Solid Earth*, doi: 10.1029/2022JB024329.

- [4] **Atterholt, J.** and Ross, Z. E. (2022) Bayesian framework for inversion of second-order stress glut moments: application to the 2019 Ridgecrest sequence mainshock. *Journal of Geophysical Research: Solid Earth*, doi: 10.1029/2021JB023780
- [3] **Atterholt, J.**, Zhan, Z., Shen, Z., and Li, Z. (2021) A unified wavefield partitioning approach for distributed acoustic sensing. *Geophysical Journal International*, doi: 10.1093/gji/ggab407
- [2] Yang Y., **Atterholt, J.**, Shen, Z., Muir, J.B., Williams, W.F., Zhan, Z. (2021) Sub-kilometer correlation between near-surface structure and ground motion measured with distributed acoustic sensing. *Geophysical Research Letters*, doi: 10.1029/2021GL096503
- [1] **Atterholt, J.**, Brownlee, S.J., and Pavlis, G.L. (2021). Direct P-wave anisotropy measurements at Homestake Mine: implications for wave propagation in the continental crust. *Geophysical Journal International*, doi: 10.1093/gji/ggaa416

Seminars

- [3] **John Wesley Powell Center for Analysis and Synthesis**, Invited Talk, 2024
Title: Fault Zone Imaging with DAS: A Case Study at the Garlock Fault
- [2] **California Institute of Technology**, Brown Bag Seminar, 2024
Title: Exploring Fine-Scale Crustal Structure with Fiber Optic Seismology
- [1] **Lawrence Livermore National Laboratory**, GMP Guest Seminar, 2023
Title: Illuminating the Multiscale Structure of the Garlock Fault Zone with Distributed Acoustic Sensing

Select Oral Presentations

- [4] **Atterholt, J.**, Zhan, Z. (2023) Illuminating Moho Variability Across the Garlock Fault with Distributed Acoustic Sensing. AGU Fall Meeting, San Francisco.
- [5] **Atterholt, J.**, Zhan, Z., Yang, Y., Zhu, W. (2023) The Top-to-Bottom Structure of the Garlock Fault Zone Uncovered with Fiber Sensing. AGU Fall Meeting, San Francisco.
- [3] **Atterholt, J.**, Zhan, Z., Yang, Y., and Zhu, W. (2023) High-Resolution Fault Zone Imaging with Distributed Acoustic Sensing. SSA Annual Meeting, Puerto Rico. **Invited.**
- [2] **Atterholt, J.**, Zhan, Z., Yang, Y., and Zhu, W. (2022) Imaging the Garlock Fault Zone using distributed acoustic sensing. AGU Fall Meeting, Chicago.
- [1] **Atterholt, J.** and Ross, Z.E. (2022). Global evaluation of large strike-slip ruptures using a Bayesian estimation of stress glut second moments. AGU Fall Meeting, Chicago.

Select Poster Presentations

- [10] Bird, E., **Atterholt, J.**, Yang, Y., Biondi E., and Zhan, Z. (2023). Joint Inversion for Shallow Subsurface Velocity Structure near Bishop, CA. AGU Fall Meeting, San Francisco.
- [9] Barbour, A., McGuire, J., and **Atterholt, J.** (2023) Site effects at the meter scale from fiber optic and nodal seismic sensing. AGU Fall Meeting, San Francisco.
- [8] **Atterholt, J.** and Ross, Z.E. (2023). Finite Source Properties of Large Strike-Slip Earthquakes. SSA Annual Meeting, Puerto Rico.
- [7] **Atterholt, J.** and Ross, Z.E. (2021). Bayesian framework for inversion of second-order stress glut moments: application to the 2019 Ridgecrest sequence mainshock. AGU Fall Meeting, New Orleans.
- [6] **Atterholt, J.**, and Zhan, Z. (2021). Fault zone mapping at intermediate scales using scattered waves recorded by distributed acoustic sensing. AGU Fall Meeting, New Orleans.
- [5] Yang, Y., **Atterholt, J.**, Shen, Z., Muir, J.B., Williams, E.F., and Zhan, Z. (2021). Urban seismic hazard mapping with distributed acoustic sensing. AGU Fall Meeting, New Orleans.
- [4] **Atterholt, J.**, Zhan, Z., Shen, Z., and Li, Z. (2020). A unified wavefield partitioning approach for distributed acoustic sensing. AGU Fall Meeting, Online.
- [3] Williams, E.F., Martins, H.F., Fernandez-Ruiz, M.R., **Atterholt, J.**, Shen, Z., Martin-Lopez, S., Gonzalez-Herraez, M., Callies, J., and Zhan, Z. (2020). Ocean surface gravity wave interferometry with seafloor DAS. AGU Fall Meeting, Online.
- [2] **Atterholt, J.** and Pavlis, G.L. (2018). Measurements of P wave anisotropy using active source seismic data in the Homestake Mine. GSA Annual Meeting, Indianapolis.
- [1] **Atterholt, J.**, Chen, T., Snelson, and C.M., Mellors, R.J. (2017). Attenuation model using the large-N array from the Source Physics Experiment. AGU Fall Meeting, New Orleans.

Field Experience

2023	Contributor, Nodal deployment in Los Angeles County, Caltech
2022	Designer and organizer, Seismic survey across Garlock Fault, Caltech
2019	Contributor, Seismic survey across Seattle Fault, USGS
2019	Contributor, Seismic survey in Wabash Valley Fault Zone, USGS
2018	Student, Field mapping in the Tobacco Root Mountains, IU