

George Brencher

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Education

- 2021 – 2025 **Ph.D., University of Washington, Seattle, WA**, Civil and Environmental Engineering.
Thesis: Improving synthetic aperture radar measurements of surface movement and snow depth in mountain environments
Advisor: Dr. David Shean
Honors: Tau Beta Pi
- 2016 – 2020 **B.A., Middlebury College, Middlebury, VT**, Geology and Biology.
Thesis: Using InSAR to characterize rock glacier movement in the Uinta Mountains, Utah
Advisors: Dr. Jeffrey Munroe and Dr. Alexander Handwerker
Honors: Geology Highest Honors, *summa cum laude*, Phi Beta Kappa

Research experience

- 2026 **UW Data Science Postdoctoral Fellow**, University of Washington, *Supervisor: Dr. Scott Henderson*
- 2026 **Gordon and Betty Moore Foundation Postdoctoral Fellow**, University of Washington, *Supervisor: Dr. David Shean*
- 2024 **Data Science Incubator Program**, eScience Institute, University of Washington, *Supervisor: Dr. Scott Henderson*
- 2022 – 2025 **NSF Graduate Research Fellow**, University of Washington, *Supervisor: Dr. David Shean*
- 2021 **Burges Endowed Presidential Fellow**, University of Washington, *Supervisor: Dr. David Shean*
- 2018 – 2019 **Student Researcher**, Middlebury College, *Supervisor: Dr. Kirsten Coe*
- 2019 **Student Researcher**, Middlebury College, *Supervisor: Dr. Jeffrey Munroe*

Teaching experience

- 2026 **Instructor**, University of Washington, *Course: Geospatial Data Analysis*
- 2026 **Guest Lecturer**, University of Washington, *Course: Advanced Remote Sensing*
- 2024, 2025 **Teaching Assistant**, University of Washington, *Course: Geospatial Data Analysis*
- 2017, 2018 **Teaching Assistant**, Middlebury College, *Course: Ecology and Evolution*

Industry experience

- 2020 **Environmental Scientist I**, GSI Service Group, Boulder, CO

Publications

- Brencher, G.**, Henderson, S. T., & Shean, D. E. (2026). Mapping buried ice and quantifying degradation rates for the most dangerous moraine dams in Nepal using Sentinel-1 InSAR. Manuscript in preparation.
- Brencher, G.**, Gagliano, E., Henderson, S. T., & Shean, D. E. (2026). Improving snow depth estimates over the Western United States with convolutional neural networks for data fusion. Manuscript in preparation.

- Brencher, G.**, Henderson, S. T., & Shean, D. E. (2026). Quantifying degradation of the Imja Lake moraine dam with fused InSAR and SAR feature tracking time series. *The Cryosphere*, 20(1), 67-86.
- Brencher, G.**, Henderson, S. T., & Shean, D. E. (2025). Removing atmospheric noise from InSAR interferograms in mountainous regions with a convolutional neural network. *Computers & Geosciences*, 194, 105771.
- Hoppinen, Z., Palomaki, R. T., **Brencher, G.**, Dunmire, D., Gagliano, E., Marziliano, A., ... & Marshall, H. P. (2024). Evaluating snow depth retrievals from Sentinel-1 volume scattering over NASA SnowEx sites. *The Cryosphere*, 18(11), 5407-5430.
- Morriss, M., Lehmann, B., Campforts, B., **Brencher, G.**, Rick, B., Anderson, L., ... & Moore, J. (2023). Alpine hillslope failure in the western US: insights from the Chaos Canyon landslide, Rocky Mountain National Park, USA. *Earth Surface Dynamics*, 11(6), 1251-1274.
- Brencher, G.**, Handwerger, A. L., & Munroe, J. S. (2021). InSAR-based characterization of rock glacier movement in the Uinta Mountains, Utah, USA. *The Cryosphere*, 15(10), 4823-4844.
- Munroe, J. S., & **Brencher, G.** (2019). Holocene carbon burial in lakes of the Uinta Mountains, Utah, USA. *Quaternary*, 2(1), 13.

Invited presentations

University of Washington Civil and Environmental Engineering Water Seminar (January 2026)
United States Geological Survey, Geologic Hazards Science Center, Seminar Series (September 2025)

Selected presentations

*oral presentations

- ***Brencher, G.**, Henderson, S. T., & Shean, D. E. (December 2025). Mapping buried ice and quantifying degradation rates for the most dangerous moraine dams in Nepal using fused Sentinel-1 InSAR and feature tracking. American Geophysical Union Fall Meeting.
- ***Brencher, G.**, Gagliano, E., Shean, D. E., & Henderson, S. T. (December 2025). Accurate snow depth predictions across the Western U.S. using a deep learning model trained on 7 years of airborne lidar snow depth measurements. American Geophysical Union Fall Meeting.
- Brencher, G.**, Gagliano, E., Shean, D. E., & Henderson, S. T. (December 2024). Improving snow depth retrievals from spaceborne remote sensing data over the Western United States with a convolutional neural network. American Geophysical Union Fall Meeting.
- ***Brencher, G.**, Henderson, S. T., & Shean, D. E. (March 2024). Characterizing glacial lake outburst flood hazard using satellite radar surface displacement time series. University of Washington eScience Data Science Seminar.
- Brencher, G.**, Shean, D. E., & Henderson, S. T. (December 2023). An automated InSAR-feature tracking fusion workflow for spatially continuous measurements of surface displacement. American Geophysical Union Fall Meeting.
- ***Brencher, G.**, Henderson, S. T., & Shean, D. E. (April 2023). Removing atmospheric noise in mountainous regions with a convolutional neural network. European Geosciences Union General Assembly.
- Brencher, G.** & Shean, D. E. (December 2022). Removing atmospheric noise in mountainous regions with a deep convolutional neural network. American Geophysical Union Fall Meeting.
- Brencher, G.**, Henderson, S. T., & Shean, D. E. (August 2022). Removing atmospheric noise in mountainous regions with a convolutional neural network. 2022 NISAR Science Community Workshop.
- ***Brencher, G.**, Handwerger, A., & Munroe, J. S. (May 2020). Using InSAR to characterize rock glacier movement in the Uinta Mountains, Utah. European Geosciences Union General Assembly.

Selected software

Brencher, G. (2025). deep-snow: Machine learning models for remote sensing snow depth retrieval. <https://github.com/geo-smart/deep-snow>

Shean, D. E., Gagliano, E., **Brencher, G.**, Henderson, S. T., Knuth, F., & Binjolkar, M. (2025). GDA_Wi25_jupyterbook: UW Geospatial Data Analysis course. <https://gda-wi25-jupyterbook.readthedocs.io/en/latest/intro.html>

Staneva, V., & **Brencher, G.** (2024). SciPy2024-GitHubActionsTutorial: GitHub Actions for scientific data workflows. <https://github.com/uwescience/SciPy2024-GitHubActionsTutorial>

Henderson, S. T., & **Brencher, G.** (2024). fufiters: A combined InSAR, pixel-offsets workflow for measuring elevation change. <https://github.com/relativeorbit/fufiters>

Brencher, G. (2023). indennt: Interferogram denoising neural network. <https://github.com/gbrencher/indennt>

Keskinen, Z., Palomaki, R., Marziliano, A., Bonnell, R., **Brencher, G.**, Marshall, E., Gagliano, E., & Marshall, H. P. (2023). spicy-snow: Use Sentinel-1 volumetric scattering at C-band to retrieve snow depths. <https://github.com/SnowEx/spicy-snow>

Brencher, G., & Knuth, F. (2023). finn: Neural Net detection for fiducial markers in scanned historical aerial images, <https://github.com/friedrichknuth/finn>

Selected workshops and short courses

GitHub Actions for Scientific Data Workflows, Conference of the US Research Software Engineer Association. (October 2024). **Tutorial Lead.** Albuquerque, USA. <https://us-rse.org/usrse24/program/tutorials/>

GitHub Actions for Scientific Data Workflows, SciPy 2024. (July 2024). **Tutorial Lead.** Tacoma, USA. <https://cfp.scipy.org/2024/talk/KDWCUY/>

NASA Earth Sciences and University of Washington Hackweek. (July 2024). **Project Lead.** Seattle, USA. <https://2024.hackweek.io/>

GeoSmart Hackweek. (July 2023). **Project Lead.** Seattle, USA. <https://geosmart-2023.hackweek.io/>

Machine Learning in Glaciology Workshop. (April 2023). **Participant.** Finse, Norway. <https://machine-learning-in-glaciology-workshop.github.io/>

SnowEx Hack Week. (July 2022). **Participant.** Seattle, USA. <https://snowex-2022.hackweek.io/>

InSAR Processing and Time-Series Analysis for Geophysical Applications: ISCE, ARIA-Tools, and MintPy Short Course. (August 2021). **Participant.** Online. <https://www.unavco.org/event/2021-short-course-insar-processing-analysis-isce/>

Press

Rock glacier inventory (Brencher et al., 2021) featured in *National Geographic Atlas of Wild America*.
Satellite Remote Sensing of Water Resources course project featured in *International Waterpower and Dam Construction*.

Professional service

2026 – present Organizer for the Intermountain West Rock Glacier Group

Reviewer for *Nature Communications*, *International Journal of Digital Earth*, *Remote Sensing Applications: Society and Environment*

Awards and honors

2025	Gordon and Betty Moore Foundation Postdoctoral Fellowship , \$162,500
2023	Graduate Student Conference Presentation Award , \$1000 travel award
2023	Graduate and Professional Student Senate Travel Grant , \$1000 travel award
2022	National Science Foundation Graduate Research Fellowship , three years of PhD funding
2021	Burges Endowed Presidential Fellowship , one year of PhD funding
2019	Senior research project supplement , \$1200 research award
2019	Student academic conference travel fund , \$1000 travel award

2016 – 2020 **College Scholar**, Middlebury College, seven semesters

Additional experience

2017 **Apprentice**, Mahoosuc Guide Service, Newry, ME.