William Floyd Hoover, PhD

Department of Earth and Space Sciences
University of Washington
4000 15th Ave NE
Seattle, WA 98195
unceded land of the Coast Salish Peoples
wfhoover@uw.edu | (717) 462-0055
willhoover.weebly.com

NSF Postdoctoral Fellow 2021-present
Department of Earth and Space Sciences
University of Washington, Seattle, WA

Graduate and **Teaching Assistant** 2016-2021
Department of Geology
University of Maryland, College Park, MD

Program Manager 2018-2020
Kids Excelling in Math and Science
Hyattsville Middle School, Hyattsville, MD

Geotechnical Field Technician 2014-2015
ECS Mid-Atlantic LLC
Moorestown, NJ

Core Library Intern Summer 2012 & 2013
Pennsylvania Bureau of Topographic and Geologic Survey
Middletown, PA

Education:

PhD Geology | University of Maryland 2016-2021
Advisor: S. Penniston-Dorland
Selected Coursework: economic geology, geostatistics, thermodynamics, geochemistry

BA Geology, *summa cum laude* | Oberlin College 2010-2014
Advisors: F.Z. Page and S. Wojtal

Selected Coursework: resource geology, sedimentology, petrology, structural geology

Field Camp Geology | Indiana University Geologic Field Station 2014

Publications

* mentee

Lindquist, P.*, Condit, C., **Hoover, W.,** Hernández-Uribe, D., Guevara, V., (2023), Metasomatism and Slow Slip: Talc Production Along the Flat Subduction Plate Interface Beneath Mexico (Guerrero), *Geochemistry, Geophysics, Geosystems* **24** (8), e2023GC010981. https://doi.org/10.1029/2023GC010981

Hoover, W., Penniston-Dorland, S., Piccoli, P. and Kylander-Clark, A., (2023a), Reaction-induced porosity in an eclogite-facies vein selvage (Monviso Ophiolite, W. Alps): Textural evidence and *in situ* trace elements and Sr isotopes in apatite, *Journal of Petrology* **64** (1), egac128. https://doi.org/10.1093/petrology/egac128

Hoover, W., Condit, C., Lindquist, P., Moser, A and Guevara, V., (2022a), Episodic slow slip hosted by talc-bearing metasomatic rocks: High strain rates and stress amplification in a chemically reacting shear zone, *Geophysical Research Letters* **49** (21), e2022GL101083. https://doi.org/10.1029/2022GL101083

Hoover, W., Penniston-Dorland, S., Baumgartner, L., Bouvier, A.-S. and Dragovic, B., (2022b), Episodic fluid flow in an eclogite-facies shear zone: Insights from Li isotope zoning in garnet, *Geology* **50** (6), 746-750. https://doi.org/10.1130/G49737.1

Hoover, W., Penniston-Dorland, S., Baumgartner, L., Bouvier, A.-S., Baker, D., Dragovic, B. and Gion, A., (2021a), A method for SIMS analysis of lithium isotopes in garnet: The utility of glass reference materials, *Geostandards and Geoanalytical Research* **45**, 477-499. https://doi.org/10.1111/ggr.12383

Hoover, W., Page, F.Z., Schulze, D., Kitajima, K. and Valley, J. (2020a), Massive fluid influx beneath the Colorado Plateau (USA) related to slab removal and diatreme emplacement: Evidence from oxygen isotope zoning in eclogite xenoliths, *Journal of Petrology* **61**. https://doi.org/10.1093/petrology/egaa102

Barnes, J., Penniston-Dorland, S., Bebout, G., **Hoover, W.**, Beaudoin, G. and Agard, P. (2019), Chlorine and lithium behavior in metasedimentary rocks during prograde metamorphism: A comparative study of exhumed subduction complexes (Catalina

Schist and Schistes Lustrés), *Lithos* **336-337**, 40-53. https://doi.org/10.1016/j.lithos.2019.03.028

Hoover, W., Condit, C., Teng, F.-Z., Moser, A, Schaen, A., Mulcahy, S., Easthouse, G.*, Pike, C.*, Lindquist, P.*, and Guevara, V., (in prep), Forming a slow slipping subduction interface: P-T-t-X history of metasomatic rocks.

Easthouse, G.*, **Hoover, W.**, Teng, F.-Z., Condit, C., Berg, A., Wynn, P., Pike, C.*, and Wang, Z.-Z., (in prep), Subduction interface talc forms by Mg loss, not Si addition: Insights from Mg isotopes.

Hoover, W., Penniston-Dorland, S., Teng, F.-Z., (in prep), Fault-valve-style fluid flow at the subduction interface: Lithium diffusion chronometry of amphibolite-facies mélange blocks (Catalina Schist, CA).

Conference Abstracts

* mentee

Hoover, W., Condit, C., Teng, F.-Z., Moser, A, Schaen, A., Mulcahy, S., Easthouse, G.*, Pike, C.*, Lindquist, P.*, and Guevara, V., (2023b), Forming a slow slipping subduction interface: P-T-t-X history of metasomatic rocks, *Goldschmidt Conference, Lyon, France*, July 2023.

Easthouse, G.*, **Hoover, W.**, Teng, F., Condit, C., Berg, A., and Pike, C.* (2023), Tracing the formation of talc rich mélange rocks with magnesium isotopes, *GSA Cordilleran Section Meeting, Reno, NV*, May 2023.

Hoover, W., Condit, C., Moser, A, Mulcahy, S., Pike, C.*, Lindquist, P.*, and Guevara, V., (2023c), Forming a slow slipping subduction interface: P-T-t-X history of metasomatic rocks, *GSA Cordilleran Section Meeting, Reno, NV*, May 2023.

Aikin, N.*, **Hoover, W.** ,and Condit, C. (2022), Boots on the Ground: Going Beyond Land Acknowledgements with the Heron's Nest Land Back Project, *AGU Fall Meeting, Chicago, IL*, December 2022.

Pike, C.*, **Hoover, W.,** and Condit, C. (2022), Metasomatism and Fluid Infiltration of Actinolite, Talc-, and Chlorite-Actinolite Schist during Subduction on Santa Catalina Island, California: An Isocon Analysis, *AGU Fall Meeting, Chicago, IL*, December 2022.

Hoover, W., Condit, C., Moser, A., Lindquist, P.*, and Guevara, V., (2022c), The role of metasomatism in episodic tremor and slow slip: stress and strain rate variations in a chemically reacting shear zone, *GSA Annual Meeting, Denver, CO*, October 2022

Lindquist, P.*, Condit, C., Guevara, V., Hernández Uribe, D. and **Hoover, W.**, (2022), Fluid release and silica metasomatism near the plate interface beneath Guerrero, Mexico: predicting talc production at the conditions of episodic tremor and slow slip, *GSA Annual Meeting, Denver, CO*, October 2022

Hoover, W., Condit, C., Moser, A., Lindquist, P. and Guevara, V., (2022d), Stress and strain rate variations in a chemically reacting shear zone: the role of metasomatism in producing slow slip and tremor, *Goldschmidt Conference, Honolulu, HI*, July 2022.

Hoover, W. and Penniston-Dorland, S. (2021c), Rapid, uniform fluid flow at the subduction interface: Lithium chronometry of amphibolite-facies mélange blocks (Catalina Schist, CA), *AGU Fall Meeting, New Orleans, LA*, December 2021.

Hoover, W., Penniston-Dorland, S., Baumgartner, L., Bouvier, A.-S. and Dragovic, B. (2020b), Cyclic fluid flow in a high-pressure shear zone: Insights from Li isotope zoning in garnet, *AGU Fall Meeting*, December 2020.

Boak, A.*, **Hoover, W.**, Penniston-Dorland, S., Piccoli, P. and Ash, R. (2019), Understanding fluid behavior in Monviso using chlorite-bearing altered eclogites from the Lower Shear Zone, *AGU Fall Meeting, San Francisco, CA*, December 2019.

Hoover, W., Penniston-Dorland, S. and Piccoli, P. (2019a), Multiple fluid compositions preserved in an eclogite-facies apatite vein (Monviso Ophiolite, Western Alps), *Emile Argand Conference on Alpine Geological Studies, Sion, Switzerland*, September 2019.

Hoover, W., Penniston-Dorland, S., and Piccoli, P. (2019b), Low-salinity fluids in an intra-slab shear zone: Insights into fluid salinity from apatite in the Monviso Ophiolite, *GeoPRISMS TEI, San Antonio, TX*, February 2019.

Goltz, A., **Hoover, W.,** Page, F. Z., Moreira, H., Storey, C., Kitajima, K. and Valley, J. (2017), Microanalyzing Metasomatism: Correlative Microanalysis of Trace Elements and Oxygen Isotopes in the Franciscan, *AGU Fall Meeting, New Orleans, LA*, December 2017.

Hoover, W., Penniston-Dorland, S., Bebout, G. (2017), Lithium mobility during dehydration, fact or fiction?: Insights from Li isotopes in Alpine metasedimentary rocks, *GSA Annual Meeting, Seattle, WA*, October 2017.

Hoover, W., Page, F.Z., Schulze, D., Kitajima, K. and Valley, J. (2014b), Are Colorado Plateau Eclogite Xenoliths Franciscan?: Oxygen Isotope Evidence From Zoned Garnet, *AGU Fall Meeting, San Francisco, CA*, December 2014.

Invited Talks

"Subduction zone seismicity hosted by chemically-reacting rocks", University of Illinois, Chicago, Department of Earth and Environmental Science, March 2023.

"Subduction zone seismicity hosted by chemically-altered rocks", Occidental College, Department of Geology Seminar, November 2022.

"Chemically-reacting shear zones and subduction zone seismicity", Central Washington University, Geology Seminar Series, November 2022.
Over 18k views on YouTube:
https://www.youtube.com/watch?v=93YO_IJi7YQ&t=1052s

"Chemo-mechanical interactions at the subduction interface: Insights from the rock record on Pimu/Catalina Island, CA", University of Washington, Seismolunch, March 2022.

"Episodic fluid transport in a subduction shear zone: Insights from Li isotope zoning in garnet", University of Washington, Earth and Space Sciences Colloquium, October 2021.

"Episodic fluid transport in a subduction shear zone: Application of a novel in situ method for Li isotope measurement", University of Southern California Lithospheric Dynamics Seminar, September 2021.

"Episodic fluid transport in a subduction shear zone: Application of a novel in situ method for Li isotope measurement", E-FIRE Research Showcase, April 2021.

"Fluid history of an eclogite-facies apatite vein: Evolving fluid composition or multiple sources", University of Lausanne, Petrology Seminar, November 2019.

Theses

Hoover, W. (2021b), Characterizing the duration, periodicity and chemical impact of fluid transport in the subducting slab: Insights from isotope geochemistry of high-pressure metamorphosed oceanic crust, University of Maryland PhD dissertation, p. 306.

Hoover, W. (2014a), Eclogites and eclogites: Oxygen isotope evidence of a shared subduction origin for Franciscan eclogites and Moses Rock eclogite xenoliths, Oberlin College Undergraduate Honors Thesis, p. 68.

Grants

2023 NSF Petrology & Geochemistry - *How does water move through the subducting slab? Slab-scale fluid pathways and deformation-fluid flow feedbacks at eclogite* facies. PI: W. Hoover **($397,722)**

2021 NSF EAR Postdoctoral Fellowship - *What is the role of metasomatic alteration in subduction zone episodic tremor and slip?* PI: W. Hoover **($174,000)**

2018 Geological Society of America - Graduate Research Grant **($2100)**

2018 Sigma Xi - Grants-in-Aid of Research **($800)**

Honors and Awards

2021 Graduate Award for Excellence in Outreach - Department of Geology, University of Maryland

2020 Green Fellowship in Global Climate Change - Department of Geology, University of Maryland

2019 Earth System Science Interdisciplinary Center Travel Grant - University of Maryland

2018 Best Talk Award, PhD Candidate - Dept. of Geology Graduate Seminar, University of Maryland

2017 Dean's Fellowship - College of Natural Sciences, University of Maryland

2017 Petrochronology Short Course Travel Grant - Mineralogical Society of America

2017 Northeast Section Travel Grant - Geological Society of America

2017 Jacob K. Goldhaber Travel Grant - University of Maryland

2017 Earth System Science Interdisciplinary Center Travel Grant - University of Maryland

2015 Geologist-in-Training Certification – Association of State Boards of Geology

2014 Wharton Prize – Oberlin College

2014 Rick and Robin Black Field Camp Scholarship - Oberlin College

2014 Anadarko Field Camp Scholarship - Indiana University

Teaching

Acting Assistant Professor | University of Washington
Earth Materials — Spring 2024

Lecturer | University of Washington
Special Topics Reading Seminar: Metamorphic Petrology — Spring 2023

Teaching Assistant | University of Maryland
Physical Geology Laboratory (GEOL 110) — Spring 2019 and Spring 2020
Sedimentation and Stratigraphy (GEOL 342) — Fall 2017

Teaching Assistant | Oberlin College
Earth's Environments (GEO 120) — Fall 2013

Mentoring

Peter Lindquist* – PhD student, 2021-present
Nicole Aikin* – PhD student, 2022-present
Lauren Woods* – undergraduate researcher, "Timescales of fluid transport in subduction shear zones from Li isotopes", 2023-present
Leigh Tucker* – undergraduate researcher, "Provenance of garnet sand in the Puget Sound", 2023-present
Griffin Easthouse* – undergraduate/post-bac researcher, "Mg isotope geochemistry of seismogenic and metasomatic subduction interface rocks", 2022-2023
Marquis Richardson* – undergraduate researcher, "Provenance of garnet sand in the Olympic Peninsula", 2022-2023
Courteney Pike* – UNAVCO RESESS undergraduate intern, "Mass balance modeling of subduction interface metasomatism", Summer 2022
Justine Grabiec – University of Southern California PhD student, Spring 2022
Nicole Ferrie* – undergraduate researcher, 2021-2022
Zexing Zheng[+] – "Investigating oxygen fugacity changes during subduction metamorphism", undergraduate thesis, 2020.
Sona Chaudhary[+] – "Metasomatism in Monviso eclogites: Birth of the reaction rind", undergraduate thesis, 2020.
Abigail Boak[+] – ExTerra Field Institute and Research Endeavor REU, Summer 2019
Tyler Hicks[+] – "P-T conditions and chemical changes of a vein and associated alteration in Monviso eclogites", undergraduate thesis, 2018.

*University of Washington; [+]University of Maryland

Outreach

University of Washington, Seattle, WA

Diversity, Equity and Inclusion Committee Member
Dept. of Earth and Spaces Sciences 2023
Rockin' Out Educator 2023-present
Geology Field Trip Leader, Issaquah Alps Trail Club 2023-present
Visiting Educator, Villa Academy 2023-present

Kids Excelling in Math and Science, Hyattsville Middle School, Hyattsville, MD

Executive Board Member 2020-2022
Program Manager 2018-2020
Member, Curriculum Committee 2017-2018
Mentor 2017-2020

University of Maryland, College Park, MD

Outreach Committee Member, Dept. of Geology 2020-2021
Maret School Field Trip Coordinator 2019
Two Rivers Public Charter School Outreach Coordinator 2018-2020
Interpretive Volunteer, Maryland Day 2017-2019

Professional Service

Convener, Petrolunch Seminar Series, University of Washington, 2022-2023
Session Convener, Goldschmidt Conference, 2023
Old and new, light and heavy: stable isotopes in magmatic and metamorphic processes
Session Convener, Goldschmidt Conference, 2022
Fluid-rock interactions along plate margins and metamorphic belts
Session Convener, AGU Annual Meeting, 2021
Fluids in subduction zones: transport, behavior and consequences
Reviewer
Journals - *Geology, American Mineralogist, Contributions to Mineralogy and Petrology, Geosphere*, *Geochimica et Cosmochimica Acta*
National Science Foundation – Petrology & Geochemistry, Geophysics
Co-convener, Geochemistry Seminar Series, University of Maryland, 2017-2018
Intern, Oahu Resource Conservation and Development Council, 2011

Workshops and Short Courses

ExTerra Field Institute and Research Endeavor Workshop, Lyon, France, 2023
SZ4D Community Meeting, Fall 2022
Second National Conference: Justice in the Geosciences, Summer 2022
Penrose Conference: The Geological Fingerprints of Slow Earthquakes, Spring 2022

Earth Educators' Rendezvous, Summer 2020
ExTerra Field Institute, Western Alps and Cycladic Islands, Summer 2019
Partial melting and magma transport, University of Lausanne Field Course, Pyrenees, Summer 2019
GeoPRISMS Theoretical and Experimental Institute, Houston, TX, 2019
DMG-MSA Diffusion Short Course, Ruhr-Universität Bochum, 2018
ExTerra Field Institute and Research Endeavor Workshop, Boston, MA, 2018
Petrochronology Workshop, GSA Annual Meeting, Seattle, WA, 2017
ExTerra Field Institute, Western Alps, 2017
Deep Earth Water Model Course, Johns Hopkins University, 2017
Ion Microprobe Workshop, University of California, Los Angeles, 2017
ExTerra Field Institute and Research Endeavor Workshop, San Francisco, CA, 2016
Study Abroad, Geology and Maori Studies, Victoria University, Wellington, NZ, 2013