

- FOCUS AREAS** Seafloor geodesy, tectonic margins, slow slip events, mesoscale ocean circulation
- EDUCATION** University of Washington, School of Oceanography, **Ph.D.** 2023
Advisor: William S.D. Wilcock
Dissertation: [Circulation-Informed Seafloor Geodetic Techniques for Understanding Plate Boundary Processes](#)
University of Washington, School of Oceanography, **M.S.** 2019
University of Washington, Physics, Earth & Space Sciences, **B.S.** 2012
Double Major, Magna cum laude, Advisor: [Caroline A.E. Stromberg](#)
- EMPLOYMENT** Postdoctoral Research Scholar, University of Texas at Austin May 2023–present
[UT Institute for Geophysics Distinguished Postdoctoral Fellow](#)
Advisors: [Laura Wallace](#), [Demian Saffer](#), [Patrick Heimbach](#)
- PUBLICATIONS** Cook, M.J., **Fredrickson, E.K.**, Roland, E.C., Sasagawa, G.S., Schmidt, D.A., Wilcock, W.S.D., Zumberge, M.A. (2023). Calibrated absolute seafloor pressure measurements for geodesy in Cascadia, *Journal of Geophysical Research: Solid Earth* (accepted).
Fredrickson, E.K., Gomberg J., Wilcock, W.S.D., Hermann, A.J., Hautala S.L., Johnson, H.P. (2023). Slow slip detectability in seafloor pressure records offshore Alaska. *Journal of Geophysical Research: Solid Earth*, 128 (2). <https://doi.org/10.1029/2022JB024767>
Wilcock, W.S.D., Manalang, D.A., **Fredrickson, E.K.**, Harrington, M.J., Cram, G., Tilley, J., Burnett, J., Martin, D., Kobayashi, T., Paros, J.M. (2021). A Thirty-Month Seafloor Test of the A-0-A Method for Calibrating Pressure Gauges, *Frontiers in Earth Science*, 8. <https://doi.org/10.3389/feart.2020.600671>
Fredrickson, E.K., Wilcock, W.S.D., Schmidt, D.A., MacCready, P., Roland, E.C., Kurapov, A.L., Zumberge, M.A., & Sasagawa, G.S. (2019). Optimizing sensor configurations for the detection of slow slip earthquakes in seafloor pressure records, using the Cascadia Subduction Zone as a case study, *Journal of Geophysical Research: Solid Earth*, 124. <https://doi.org/10.1029/2019JB018053>
Wilcock, W.S.D., Manalang, D.A., Harrington, M.J., **Fredrickson, E.K.**, Cram, G., Tilley, J., et al. (2018). New Approaches to In Situ Calibration for Seafloor Geodetic Measurements, *2018 OCEANS - MTS/IEEE Kobe Techno-Oceans (OTO)*, Kobe, 2018, pp. 1-8. <https://doi.org/10.1109/OCEANSKOBE.2018.8559178>
Lee, H., Vilches, O.E., Wang, Z., **Fredrickson, E.K.**, Morse, P., Roy, R., Dzyubenko, B., and Cobden, D.H. (2012). Kr and He-4 Adsorption on Individual Suspended Single-Walled Carbon Nanotubes. *Journal of Low Temperature Physics*, v. 169, p. 338-349. <https://doi.org/10.1007/s10909-012-0642-3>
- INVITED TALKS** Seafloor Pressure Geodetic Experiments in the Hikurangi Subduction Zone. *Joint International Earthquake Science Symposium*, UT Institute for Geophysics, Austin, TX. (2024)
Pressure Processing Techniques for Detecting Slow Slip Events. *Pressure Seafloor Geodesy Workshop*, University of Rhode Island Bay Campus, Narragansett, RI. (2023)
Seafloor Geodesy for Tectonic Studies. *Coastal College of Georgia Department of Natural Sciences Seminar*, virtual. (2023)

INVITED TALKS (cont.)	<p>Exploring proxies for correcting oceanographic seafloor pressure signals and improving slow slip detectability. <i>Seafloor Pressure Workshop</i>, virtual. (2022)</p> <p>Seafloor pressure geodesy: challenges and opportunities. <i>Future Directions in Seafloor Geodesy 2021 Workshop</i>, virtual. (2021)</p> <p>Seafloor pressure geodesy in Cascadia and Alaska: network geometry matters for reducing non-tidal oceanographic noise. <i>University of Texas Institute for Geophysics Seminar</i>, virtual. (2020)</p> <p>Optimizing seafloor pressure sensor networks for the detection of slow slip earthquakes in Cascadia and beyond. <i>SAGE/GAGE Workshop</i>, Portland, OR. (2019)</p> <p>The detectability of offshore slow slip earthquakes with seafloor pressure sensors: A sensitivity analysis for the Cascadia Subduction Zone. <i>AGU Fall Meeting</i>, Washington D.C. (2018)</p>	
WHITEPAPERS	<p>Fredrickson, E.K., Newman, A., Soule, D.C. (2021). Towards a seafloor geodetic instrument pool for the expanded study of spreading ridge, continental rift, and backarc rift systems. <i>2021 Rift2Ridge Workshop</i>.</p> <p>Byrnes, J.S., Janiszewski, H.A., Eilon, Z.C., Rollins, C., Lynner, C., Wei, S.S., Fredrickson, E.K., Naif, S., Shuck, B.D., Bartlow, N.M., Bodmer, M. (2020). An early career investigator vision for shoreline-crossing geophysics at the NSF future geophysical facility. <i>2020 Early Career Investigator Virtual Workshop on Community Vision for the Future NSF Geophysical Facility</i></p>	
AWARDS	<p>McDuff Family Endowment in Honor of Mary Landsteiner For community building, as voted by the graduate student body 2021</p> <p>Dean A. McManus Excellence in Teaching Award For quality in education, as nominated by undergraduates 2021</p> <p>Paros Scholarship in Geophysical Instrumentation For research in geophysical instrumentation and field measurements 2021</p> <p>Paros Scholarship in Geophysical Instrumentation, Honorable Mention 2020</p> <p>AGU Outstanding Student Paper Award 2018</p> <p>DoD NDSEG, Alternate Selectee 2016</p> <p>NSF GRFP, Honorable Mention 2016</p> <p>Mary Gates Research Scholarship To support and enhance undergraduates research projects 2012</p>	
REVIEWS	<p>Journal of Geodesy 2024</p> <p>Marine Geodesy 2023</p> <p>Earth and Space Science 2022</p> <p>Journal of Geophysical Research: Solid Earth 2022</p> <p>Progress in Earth and Planetary Science 2021</p> <p>Geophysical Research Letters 2020</p> <p>Frontiers in Geodesy 2020</p>	
COMMITTEES	<p>School of Oceanography (SoO) Faculty Search Committee Search for Assistant Professor in Active Margins research area 2021–2022</p> <p>SoO Early Career Scientist Seminar Organizing Committee Revamped department seminar series to focus on early career researchers 2021–2022</p> <p>SoO Director’s Advisory Committee Represent student body in regular meetings with department chair 2020–2021</p> <p>College of the Environment Anti-Discrimination Working Group Multidisciplinary group working towards shared DEI goals 2020–2022</p>	

COMMITTEES (cont.)	School of Oceanography Communications Committee Tasked to increase communication and transparency within the department	2020–2021
TEACHING EXPERIENCE	Oceanography of the Pacific Northwest (101; TA)	2020
	Global Oceans Human Culture (480; TA)	2020
	Global Oceans Human Culture (480; TA)	2019
	Global Oceans Human Culture (480; TA)	2018
	Marine Geology and Geophysics (340; TA)	2017
	Seattle Public Library K-12 tutor	2016-2018
SERVICE AND ENGAGEMENT	Workshop Co-Organizer Merging Oceanographic and Geophysical Interests to Study Shelf and Slope Processes, <i>Ocean Sciences Meeting Sunday session</i>	2024
	Conference Session Co-Convener/Chair AGU Fall Meeting, <i>Recent Developments in Seafloor Geodesy</i>	2023
	Seismological Society of America Meeting, <i>Adv. in Geo. Sensing</i>	2022
	Ocean Sciences Meeting, <i>Seafloor Geodesy</i>	2022
	OCEANS'18 MTS/IEEE, <i>Ocean Natural Hazards Monitoring</i>	2018
	Graduate Application Mentorship Program, mentor Support program for interested applicants to increase transparency	2021
	Open letters to administration, co-organizer & co-author Calls to action to address DEI issues at the department and college level	2020-2021
	Students Explore Aquatic Sciences Open House, volunteer Annual Oceanography and Fisheries public outreach event	2020
	Oceanography Graduate and Postdoc Symposium, founder Annual opportunity for trainees to present work in low-stakes environment	2019–2022
	Academic and Recreational Graduate Oceanographers, founder Organization for increasing engagement in the graduate program	2019–2022
	The Touch Tank (graduate student quarterly publication), editor Newsletter aimed at community building through shared experiential humor	2018–2022
ADDITIONAL RESEARCH EXPERIENCE	Research Technician, Univ. of WA, Dept. of Oceanography Advisor: William S.D. Wilcock Acoustic detection and tracking of whales on ocean-bottom seismometer data	2015–2016
	Field Assistant, Univ. of FL & Smithsonian Advisors: Aaron R. Wood & Jorge Velez-Juarbe Site stratigraphic description and fossil collection and identification	2013–2014
	Undergraduate Research Assistant, Univ. of WA, Dept. of Biology Advisor: Caroline A.E. Stromberg Paleoclimatic reconstruction from isotopes and fossil plant cells and soils	2011–2013
	Undergraduate Research Assistant, Univ. of WA, Dept. of Physics Advisor: David H. Cobden Phase transitions of monatomic gases in quasi one-dimensional systems	2009–2011
FIELD EXPERIENCE	Deployment of seafloor geodetic network in Hikurangi, R/V Tangaroa	2023
	Recovery of seafloor geodetic network in Hikurangi, R/V Tangaroa	2023
	Deployment of novel tilt instrument on Axial Seamount, R/V Revelle	2018
	In-situ data collection from seafloor instruments, R/V Sikuliaq	2017
	Deployment of seafloor pressure gauges, R/V Sikuliaq	2016
	Cascadia Initiative OBS recovery, R/V Thompson	2015
	Paleontology: site stratigraphy and fossil collection in Panama	2013
	Paleontology: site stratigraphy and fossil collection in Montana	2012

CONFERENCES	Ocean Sciences Meeting, New Orleans, LA (poster) <i>Observations of along-isobath correlation in seafloor pressure records from multiple margins in the Pacific</i>	2024
	AGU Fall Meeting, San Francisco, CA (poster) <i>Seafloor observations of a 2022 shallow slow slip event in the Hikurangi Subduction Zone offshore Gisborne</i>	2023
	SSA Annual Meeting, Bellevue, WA (poster) <i>Results from a novel self-calibrating tiltmeter at Axial Seamount</i>	2022
	Ocean Sciences Meeting, virtual (oral) <i>Methods for predicting and correcting oceanographic seafloor pressure signals and the impact on slow slip detectability</i>	2022
	AGU Fall Meeting, New Orleans, LA (oral) <i>Seafloor pressure geodesy on the Alaska margin – methods for predicting and correcting oceanographic signals and their effects on slow slip detectability</i>	2021
	Marine Seismology Symposium, virtual (poster) <i>Using observations from the AACSE and predictions from a regional oceanographic model to predict and correct non-tectonic signals on ocean bottom pressure recorders</i>	2021
	AGU Fall Meeting, virtual (lightning talk) <i>Tilt and pressure records of short-term deflation events at Axial Seamount</i>	2020
	AGU Fall Meeting, San Francisco, CA (poster) <i>Observing and interpreting seafloor tilt at Axial Seamount</i>	2019
	Pacific Northwest Earthquake Science Workshop, Seattle, WA (poster) <i>Optimizing seafloor pressure sensor networks in Cascadia for the detection of shallow slow slip earthquakes</i>	2019
	SSA Annual Meeting, Seattle, WA (poster) <i>A sensitivity analysis of seafloor pressure sensors for the detection of offshore slow slip earthquakes in the Cascadia Subduction Zone</i>	2019
	OCEANS/Techno-Ocean Symposium, Kobe, Japan (oral) <i>New approaches to in situ calibration for seafloor geodetic instruments</i>	2018
	AGU Fall Meeting, New Orleans, LA (poster) <i>Evaluating the use of seafloor pressure data for the study of slow slip earthquakes; insights from the 2011-2015 Cascadia Initiative deployment</i>	2017
	GSA Annual Meeting, Charlotte, NC (oral) <i>Vegetation response to the Late Oligocene Warming Event in southwestern Montana based on a combined phytolith-carbon isotope record</i>	2012