

Elizabeth E. Webb

National Science Foundation Postdoctoral Research Fellow
Nicholas School of the Environment, Duke University
webb.e@duke.edu | 207-649-2387

RESEARCH SPECIALIZATION

Climate-ecosystem feedbacks, Arctic land surface change, ecosystem ecology, big data
Tools: machine learning, statistical modeling and analysis, remote sensing, R, Google Earth Engine

EDUCATION

2022	Ph.D.	University of Florida, Interdisciplinary Ecology Geospatial Analysis Graduate Certificate
2014	M.S.	University of Florida, Biology
2009	B.A.	Carleton College, Geology (Environmental Studies concentration)

PROFESSIONAL EXPERIENCE

2024-	NSF Postdoctoral Research Fellow , Duke University, Nicholas School of the Environment
2022-2023	Postdoctoral Research Associate , University of Florida, Department of Biology
2022	Adjunct Lecturer , University of Florida, School of Natural Resources and Environment
2015-2018	Research Coordinator , University of Florida, National High Magnetic Field Lab
2016-2017	Consulting Scientist , Woods Hole Research Center
2010-2015	Field Research Manager and Assistant (multiple positions, including in Siberia, Alaska, and Florida)

AWARDS AND GRANTS

2024-2025	NSF-OPP Postdoctoral Research Fellowship (\$354,026)
2019-2022	NASA FINESST Graduate Fellowship (\$135,000)
2019	Sharon Fitz-Coy Memorial Award (\$1,000)
2019	NASA Terrestrial Ecology Science Team Meeting Best Student Presentation
2018-2021	Grinter Fellowship, UF Graduate School (\$9,000)
2013	UF I-Cubed Graduate Student Mentoring Award (\$500)
2013	U.S. Permafrost Association Travel Grant (\$500)
2013	UF College of Liberal Arts and Sciences Graduate Travel Award (\$300)
2013	UF Department of Biology Graduate Travel Award (\$150)
2013	UF Graduate Student Council Travel Grant (\$350)

PUBLICATIONS

h-index: 12 | 18 publications (8 first-author) | 1099 citations | [Google Scholar page](#)

- Levenson, E. S., Cooley, S., Mullen, A., **Webb, E. E.**, and Watts, J. (2025), Glacial history modifies permafrost controls on the distribution of lakes and ponds. *Geophysical Research Letters*, 52, e2024GL112771. <https://doi.org/10.1029/2024GL112771>
- Webb, E.E.**, Alexander, H.D., Loranty, M.M., Talucci, A.C., and Lichstein, J.W. (2024), Controls Over Fire Characteristics in Siberian Larch Forests. *Ecosystems*. <https://doi.org/10.1007/s10021-024-00927-8>
- Webb, E.E.**, Alexander, H.D., Paulson, A.D., Loranty, M.M., Demarco, J., Talucci, A.C., Spektor, V., Zimov, N., Lichstein, J.W. (2024), Fire-induced Carbon Loss and Tree Mortality in Siberian Larch Forests. *Geophysical Research Letters* 51(1), e2023GL105216 <https://doi.org/10.1029/2023GL105216>
- Webb, E.E.**, Liljedahl, A.L., Loranty, M.M., Witharana, C., and Lichstein, J.W. (2023), Reply to: Detection of long-term Arctic surface water changes. *Nature Climate Change*. <http://doi.org/10.1038/s41558-023-01837-8>
- Rodenhizer, H., Natali, S.M., Mauritz, M., Taylor, M.A., Celis, G.,..., **Webb, E.E.**, et al., (2023), Abrupt permafrost thaw drives spatially heterogeneous soil moisture and carbon dioxide fluxes in upland tundra. *Global Change Biology*. <http://doi.org/10.1111/gcb.16936>
- Webb, E.E.** and Liljedahl, A.L. (2023), Diminishing Lake Area Across the Northern Permafrost Zone, *Nature Geoscience*. 16, pp. 202–209 <https://doi.org/10.1038/s41561-023-01128-z>
- Webb, E.E.**, Liljedahl, A.L., Cordeiro, J.A., Loranty, M.M., Witharana, C., and Lichstein, J.W. (2022), Permafrost thaw drives surface water decline across lake-rich regions of the Arctic, *Nature Climate Change*. 12, pp. 841–846 <https://doi.org/10.1038/s41558-022-01455-w>
- Loranty, M. M., Alexander, H. D., Kropp, H., Talucci, A.C., and **Webb, E.E.** (2021), Siberian Ecosystems as Drivers of Cryospheric Climate Feedbacks in the Terrestrial Arctic, *Frontiers in Climate*, 3(141). <https://doi.org/10.3389/fclim.2021.730943>
- Webb, E. E.**, Loranty, M. M., & Lichstein, J. W. (2021). Surface water, vegetation, and fire as drivers of the terrestrial Arctic-boreal albedo feedback. *Environmental Research Letters*, 16(8), 084046. <https://doi.org/10.1088/1748-9326/ac14ea>
- Schuur, T., Bracho, R., Celis, G., Belshe, F., Ebert, C.,..., **Webb, E.E.**, et al. (2021). Tundra underlain by thawing permafrost persistently emits carbon to the atmosphere over fifteen years of measurements. *Journal of Geophysical Research: Biogeosciences*, 1–23. <https://doi.org/10.1029/2020jg006044>
- Plaza, C., Pegoraro, E., Bracho, R., Celis, G., Crummer, K.G., Hutchings, J.A.,..., **Webb, E.E.**, et al., (2019). Direct observation of permafrost degradation and rapid soil carbon loss in tundra. *Nature Geoscience*, 12(8), pp. 627–631.
- Schädel, C., Koven, C. D., Lawrence, D. M., Celis, G., Garnello, A. J., Hutchings, J.A.,..., **Webb, E.E.**, et al. (2018). Divergent patterns of experimental and model-derived permafrost ecosystem carbon dynamics in response to Arctic warming. *Environmental Research Letters*, 13(10).
- Webb, E. E.**, Heard, K., Natali, S. M., Bunn, A. G., Alexander, H. D., Berner, L. T., et al. (2017). Variability in above- and belowground carbon stocks in a Siberian larch watershed. *Biogeosciences*, 14(18), 4279–4294.
- Mauritz, M., Bracho, R., Celis, G., Hutchings, J., Natali, S. M., Pegoraro, E., Salmon, V.G., Schädel, C, **Webb, E.E.**, Schurr, E.A.G. (2017). Nonlinear CO₂ flux response to 7 years of experimentally induced permafrost thaw. *Global Change Biology*, 23(9), 3646–3666.

- Celis, G., Mauritz, M., Bracho, R., Salmon, V. G., **Webb, E. E.**, Hutchings, J., et al. (2017). Tundra is a consistent source of CO₂ at a site with progressive permafrost thaw during 6 years of chamber and eddy covariance measurements. *Journal of Geophysical Research: Biogeosciences*, 122(6), 1471–1485.
- Webb, E. E.**, Schuur, E. A. G., Natali, S. M., Oken, K. L., Bracho, R., Krapek, J. P., et al. (2016). Increased wintertime CO₂ loss as a result of sustained tundra warming. *Journal of Geophysical Research: Biogeosciences*, 249–265.
- Natali, S. M., Schuur, E. A. G., Mauritz, M., Schade, J. D., Celis, G., Crummer, K. G., et al. (2015). Permafrost thaw and soil moisture driving CO₂ and CH₄ release from upland tundra. *Journal of Geophysical Research: Biogeosciences*, 120, 1–13.
- Natali, S. M., Schuur, E. A. G., **Webb, E. E.**, Hicks Pries, C. E., & Crummer, K. G. (2014). Permafrost degradation stimulates carbon loss from experimentally warmed tundra. *Ecology*, 95(3), 602–608.

TEACHING AND PEDAGOGICAL TRAINING

Undergraduate courses at University of Florida (instructor of record)

2022 EVR 2001 Introduction to Environmental Science (3 credit hours)

Undergraduate courses at Carleton College (teaching assistant)

2009 BIOL 210 Global Change Biology (6 credit hours)

2009 GEOL 110 Introduction to Geology Lab (0 credit hours)

Middle school lessons at W. A. Jones Environmental Education Center (field instructor)

2009-2010 Outdoor lessons in leadership, Ecology, Social Science, Adventure, and evening programs for 5th through 7th grade school groups.

Certificates

2022 Center for the Integration of Research, Teaching, and Learning (CIRTL)
Associate Certificate

2022 Preparing Future Faculty participant, UF

2021 Certificate in Multicultural Mentoring, UF

MENTORING

2020-2022 **Jada Cordeiro**, undergraduate student and post-baccalaureate researcher
Under my supervision, Jada used high resolution satellite imagery to validate coarser-scale satellite products; research outputs lead to co-authorship

2013 **Tom Lane**, high school science teacher

2011-2012 **John Wood**, middle school science teacher
Mentored, conducted field research, and discussed research-specific classroom activities with a middle school and high school teacher for five to six weeks at Alaska field site; collaboration with teachers continued to presentations at state-wide and national conferences

SCIENCE OUTREACH

2023- **Research Fellow**, PolarSTEAM
Working in collaboration with a high school science teacher to develop lesson plans related to Arctic hydrology and remote sensing of Arctic lakes

2021	Lesson plan development for local middle school teacher using Arctic sea ice satellite images
2019	Participant , Teachers and Arctic Scientists Collaborative Workshop, St. Augustine, FL
2015-2018	Guest speaker , Alachua County public schools (K-8), Florida Offered lessons on the nature of science, magnetism, and light to ~100 classrooms annually
2016-2018	Science club organizer , Fort Clarke Middle School, Gainesville, FL
2017-2020	Organizer , Talk Science with Her event at local brewery, Gainesville, FL
2017-2019	Co-Organizer , Women in Science and Engineering spring break camp for middle school girls
2013	Guest teacher , Bellows Free Academy, Fairfax VT
2013	Workshop leader , Alaska Math and Science Conference for teachers, Anchorage, AK
2012	Guest teacher , Talbert Middle School, Long Beach, CA

PROFESSIONAL TRAINING

2023	CORE Institute Fellow Program designed to build networks and skills to address climate change issues using AI; sponsored by the NSF Convergence Accelerator
2023	Arctic Research is Relationship – Exploring the Foundations of Collaborative, Community, and Indigenous-Centered Arctic Research Professional development course offered through the NSF Navigating the New Arctic Community office and Alaska Pacific University; the goal is to provide a comprehensive understanding of challenges and the foundations of knowledge co-production, participatory research, and Indigenous-led scientific research.
2023	Scalable and Computationally Reproducible Approaches to Arctic Research Workshop, Arctic Data Center, National Center for Ecological Synthesis

PROFESSIONAL SERVICE AND MEMBERSHIP

2022-	Author team for the Arctic Monitoring and Assessment Program (AMAP) report, hydrology chapter
2022	Member of International Permafrost Association working group on retrogressive thaw slumps
2014	Committee for selecting 2014-2015 PolarTREC teacher cohort

Ad-hoc reviewer for the National Science Foundation

Arctic Natural Sciences and Arctic Observing Network Programs

Reviewer for the following journals:

Nature, Nature Climate Change, Nature Geoscience, Nature Communications, Geophysical Research Letters, Earth's Future, Environmental Research Letters, Journal of Geophysical Research - Biogeosciences, Journal of Geophysical Research - Earth Surface, Surveys in Geophysics, Hydrology, Forests, Permafrost and Periglacial Processes, Earth System Science Data, Cantena, Applied Soil Ecology, Land, Inland Waters

Professional membership:

American Geophysical Union, U.S. Permafrost Association

SELECTED PRESENTATIONS

Only presentations where I was the presenting scientist are included

- 2024 **Invited Speaker**, American Geophysical Union Meeting, Washington, DC (oral)
- 2023 American Geophysical Union Meeting, San Francisco, CA
- 2022 International Circumpolar Remote Sensing Symposium, Fairbanks, AK (oral)
- 2021 American Geophysical Union Meeting, New Orleans, LA (oral)
- 2021 **Invited Speaker**, Permafrost Discovery Gateway Seminar (online)
- 2021 **Invited Speaker**, NASA Artificial Intelligence Center of Excellence (AICOE) Seminar (online)
- 2019 American Geophysical Union Meeting, San Francisco, CA (poster)
- 2019 NASA Terrestrial Ecology Science Team Meeting, College Park, MD (poster)
- 2013 American Geophysical Union Meeting, San Francisco, CA (two oral presentations)
- 2013 **Invited Speaker**, St. Francis Xavier University, Antigonish, Canada
- 2013 **Keynote Speaker**, Alaska Math and Science Conference for teachers, Anchorage, AK
- 2012 American Geophysical Union Meeting, San Francisco, California (poster)
- 2012 Webinar for a Cyber-based Interdisciplinary Science Educator Physical Science professional development course

DATA PRODUCTS

- Webb, E.E.**, Alexander, H., Lichstein, J., Paulson, A. (2023). Fire influences on above- and belowground carbon stocks in Siberian larch forests. Arctic Data Center. doi:10.18739/A21Z41V27.
- Webb, E.E.** (2022). Pan-Arctic surface water (yearly and trend over time) 2000-2022. Arctic Data Center. doi:10.18739/A2NK3665N.
- Garnello, A.J., Mauritz, M., Taylor, M., Ledman, J., **Webb, E. E.**, Schuur, E.A.G (2019). Eight Mile Lake Research Watershed, Carbon in Permafrost Experimental Heating Research (CiPEHR): Winter ecosystem respiration measurements using soda lime, 2010-2019, Bonanza Creek LTER - University of Alaska Fairbanks. BNZ:568, <http://www.lter.uaf.edu/data/data-detail/id/568>. doi:10.6073/pasta/c2b7a30546d2698c8b058444bec41ef6
- Ledman, J., Schuur, E.A.G., Mauritz, M., **Webb, E. E.** (2018). Eight Mile Lake Research Watershed, Carbon in Permafrost Experimental Heating Research (CiPEHR): Fall ecosystem respiration chamber measurements, 2014 - 2017, Bonanza Creek LTER - University of Alaska Fairbanks. BNZ:652, <http://www.lter.uaf.edu/data/data-detail/id/652>. doi:10.6073/pasta/c74002db1ff5be8083273295e0e72cd2
- Ledman, J., Natali, S.M., Schuur, E.A.G., Mauritz, M., **Webb, E. E.** (2018). *Eight Mile Lake Research Watershed, Carbon in Permafrost Experimental Heating and Drying Research (DryPEHR): Fall ecosystem respiration chamber measurements, 2014 - 2017*, Bonanza Creek LTER - University of Alaska Fairbanks. BNZ:653, <http://www.lter.uaf.edu/data/data-detail/id/653>. doi:10.6073/pasta/8ba8476899f18208391f1a1ec8779d5c
- Webb, E. E.**, Schuur, E.A.G., Natali, S.M. (2014). Eight Mile Lake Research Watershed, Carbon in Permafrost Experimental Heating and Drying Research (DryPEHR): Fall ecosystem respiration chamber measurements, 2011,2013, Bonanza Creek LTER - University of Alaska Fairbanks. BNZ:573, <http://www.lter.uaf.edu/data/data-detail/id/573>. doi:10.6073/pasta/97f40ecc413d19fdd754209167ac71aa
- Webb, E. E.**, Schuur, E.A.G (2014). Monitoring permafrost thaw in Denali National Park and Preserve: year one of data collection 2013, Bonanza Creek LTER - University of Alaska Fairbanks. BNZ:577, <http://www.lter.uaf.edu/data/data-detail/id/577>. doi:10.6073/pasta/31811dc109183ea9779bd1ad787c62f3

- Webb, E. E., Schuur, E.A.G., Natali, S.M. (2014).** Eight Mile Lake Research Watershed, Carbon in Permafrost Experimental Heating and Drying Research (DryPEHR): Winter ecosystem respiration chamber measurements using on-plot method, Oct 2012-May 2013, Bonanza Creek LTER - University of Alaska Fairbanks. BNZ:575, <http://www.lter.uaf.edu/data/data-detail/id/575>. doi:10.6073/pasta/cdee04ed2656f5915015b7f21188644a
- Webb, E. E., Schuur, E.A.G., Natali, S.M. (2014).** Eight Mile Lake Research Watershed, Carbon in Permafrost Experimental Heating Research (CiPEHR): Fall ecosystem respiration chamber measurements, 2009; 2011-2013, Bonanza Creek LTER - University of Alaska Fairbanks. BNZ:572, <http://www.lter.uaf.edu/data/data-detail/id/572>. doi:10.6073/pasta/5f97eadcff0b815e6cf18894bd7d0899
- Webb, E. E., Schuur, E.A.G., Natali, S.M. (2014).** Eight Mile Lake Research Watershed, Carbon in Permafrost Experimental Heating Research (CiPEHR): Winter ecosystem respiration chamber measurements using on-plot method, Oct 2012-May 2013, Bonanza Creek LTER - University of Alaska Fairbanks. BNZ:574, <http://www.lter.uaf.edu/data/data-detail/id/574>. doi:10.6073/pasta/4e46fa3b6824b0c70410519149098dbe
- Webb, E. E., Schuur, E.A.G., Natali, S.M. (2013)** Eight Mile Lake Research Watershed, Carbon in Permafrost Experimental Heating Research (CiPEHR) Extended sites: winter ecosystem respiration chamber measurements using snow removal method, Bonanza Creek LTER - University of Alaska Fairbanks. BNZ:553, <http://www.lter.uaf.edu/data/data-detail/id/553>. doi:10.6073/pasta/8a092d8928fc140535c990222f59ba83