

MEGAN I. BEHNKE

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APPOINTMENTS:

Assistant Professor of Chemistry, University of Alaska Southeast 2024-present

EDUCATION:

Ph.D.	2022	Chemical Oceanography, Florida State University	Advisor: Robert G.M. Spencer
M.S.	2020	Oceanography, Florida State University	Advisor: Robert G.M. Spencer
B.A.	2016	Chemistry, Saint Olaf College	

PROFESSIONAL EXPERIENCE:

2023-2024	Climate Adaptation Postdoctoral Fellow, Alaska Climate Adaptation Science Center, University of Alaska Southeast
2022-2023	Coastal Margins Research Coordination Network Postdoctoral Researcher, Alaska Coastal Rainforest Center, University of Alaska Southeast
2017-2022	NSF Graduate Research Doctoral Fellow, Florida State University
2016-2017	Research Assistant, Alaska Coastal Rainforest Center, University of Alaska Southeast
2015	Semester at WHOI Student, Woods Hole Oceanographic Institution
2014-2015	Research Student, The Polaris Project, Woodwell Climate Research Center

PUBLICATIONS:

11. Bristol, E. M., **Behnke, M. I.**, Spencer, R. G., McKenna, A., Jones, B. M., Bull, D. L., McClelland, J. W. Eroding Permafrost Coastlines Release Biodegradable Dissolved Organic Carbon to the Arctic Ocean. *Journal of Geophysical Research: Biogeosciences*. (2024). 129(7), e2024JG008233.
10. **Behnke, M.I.**, J.B. Fellman, S. Nagorski, R.G.M. Spencer, E. Hood. The role of glacier erosion in riverine particulate organic carbon export. *Global Biogeochemical Cycles*. (2023). doi.org/10.1029/2023GB007721
9. **Behnke, M.I.**, J.B. Fellman, D.V. D'Amore, R.G.M. Spencer. Trees in the stream: Determining patterns of terrestrial dissolved organic matter contributions to the Northeast Pacific Coastal Temperate Rainforest. *Journal of Geophysical Research: Biogeosciences*. (2023). doi.org/10.1029/2022JG007027

8. **Behnke, M.I.**, S. Tank, J. McClelland, R. Holmes, N. Haghypour, T. Eglinton, P. Raymond, A. Suslova, A. Zhulidov, T. Gurtovaya, N. Zimov, S. Zimov, E.A. Mutter, E. Amos, R.G.M. Spencer. Aquatic biomass is a major source to particulate organic matter export in large Arctic rivers. *Proceedings of the National Academy of Sciences*. (2023). doi.org/10.1073/pnas.2209883120
7. McDonough, L. K., M. S. Andersen, **M. I. Behnke**, H. Rutledge, P. Oudone, K. Meredith, ... A. Baker. A new conceptual framework for the transformation of groundwater dissolved organic matter. *Nature Communications*. (2022). doi.org/10.1038/s41467-022-29711-9
6. **Behnke, M.I.**, J.B. Fellman, D.V. D'Amore, S.M. Gomez*, R.G.M. Spencer. From canopy to consumer: What makes and modifies terrestrial DOM in a temperate forest. *Biogeochemistry*. (2022). doi.org/10.1007/s10533-022-00906-y
5. **Behnke, M.I.**, J. McClelland, S. Tank, A. Kellerman, R. Holmes, N. Haghypour, T. Eglinton, P. Raymond, A. Suslova, A. Zhulidov, T. Gurtovaya, N. Zimov, S. Zimov, E.A. Mutter, E. Amos, R.G.M. Spencer. Pan-Arctic riverine dissolved organic matter: Synchronous molecular stability, shifting sources and subsidies. *Global Biogeochemical Cycles*. (2021). doi.org/10.1029/2020GB006871
4. **Behnke, M.I.**, J.B. Fellman, A. Stubbins, E. Hood, R.G.M. Spencer. Seasonal changes in the source and molecular composition of dissolved organic matter in glacial and forested streams in Southeast Alaska. *Limnology and Oceanography*. (2020) doi.org/10.1002/lno.11615
3. Fellman, J.B., E. Hood, **M.I. Behnke**, J. Welker, R.G.M. Spencer. Stormflows drive stream carbon export, form and dissolved organic matter composition in coastal temperate rainforest watersheds. *Journal of Geophysical Research: Biogeosciences*. (2020) doi.org/10.1029/2020JG005804
2. McDonough, L.K., H. Rutledge, D.M. O'Carroll, M.S. Andersen, K. Meredith, **M.I. Behnke**, R.G.M. Spencer, A. McKenna, C.E. Mario, P. Oudone, A. Baker. Characterisation of shallow groundwater dissolved organic matter in aeolian, alluvial and fractured rock aquifers. *Geochimica et Cosmochimica Acta*. 273 (2020) 163-176. doi.org/10.1016/j.gca.2020.01.022
1. McDonough, L.K., D.M. O'Carroll, K. Meredith, M.S. Andersen, C. Brügger, H. Huang, H. Rutledge, **M.I. Behnke**, R.G.M. Spencer, A. McKenna, C.E. Mario, P. Oudone, A. Baker. Changes in groundwater dissolved organic matter character in a coastal sand aquifer due to rainfall recharge. *Water Research*. 169 (2020) 115201. doi.org/10.1016/j.watres.2019.115201

*indicates undergraduate mentee

GRANTS AND AWARDS:

M.I. Behnke. Arctic Leadership Initiative early career fellow. University of Alaska (**\$80,000**; 2024-present)

M.I. Behnke. P.E.O. Scholar Award. International Chapter of the P.E.O. Sisterhood (**\$20,000**; 2021-22)

M.I. Behnke and R. Spencer. Non-Academic Research Internships for Graduate Students (INTERN) Supplemental Funding Opportunity. National Science Foundation (**\$54,863**; 2020–21)

M.I. Behnke. COVID-19 Grant Support. National Geographic Society. (**\$3,240**; 2020–21)

M.I. Behnke, J. Fellman, B. Carney, R. Spencer. Early Career Grant: Smoky ice: Is tourism feeding fossil fuel to glacial and coastal ecosystems? National Geographic Society (**\$9,999**; 2019–20)

M.I. Behnke. Research Grant. American Alpine Club. (**\$1,500**; 2019)

M.I. Behnke. Graduate Research Fellowship. National Science Foundation. (**\$138,000**; 2017–22)

M.I. Behnke. Winchester Fund for Excellence in Earth, Ocean & Atmospheric Geochemistry. Florida State University (**\$1,000**; 2017)

INVITED SEMINARS:

- St. Olaf College Chemistry Department: *Pan-Arctic Molecular Fingerprints: Multi-year FT-ICR MS Data from the Major Arctic Rivers Reveal Unique Seasonal- and River-Specific Molecular Formulae* (2019)
- Eglinton Lab Group, ETH Zurich: *Arctic Rivers and Rainforest Trees: Sources and Characteristics of Terrestrial DOM* (2019)
- Baker Lab Group, University of New South Wales: *Carbon Fingerprinting: Fourier-Transform Ion Cyclotron Resonance Mass Spectrometry (FT-ICR MS) of DOM* (2019)

TEACHING ACTIVITIES:

- *Instructor of Record*, Organic Chemistry I; University of Alaska Southeast, fall 2024
- *Instructor of Record*, Biogeochemistry; University of Alaska Southeast, spring 2023
- *Teaching Assistant*, Introduction to Environmental Science; Florida State University, fall 2021
- *Teaching Assistant*, Introduction to Environmental Science; Florida State University, fall 2020
- *Teaching Assistant*, Introduction to Environmental Science virtual lab; Florida State University, fall 2020

SYNERGISTIC ACTIVITIES:

- *Invited Participant*, National Climate Adaptation Science Center Future of Aquatic Flows Climate Adaptation Postdoctoral Fellows workshop #2; (<https://www.usgs.gov/programs/climate-adaptation-science-centers/science/2022-24-future-aquatic-flows>); Santa Barbara, CA, 2024

- *Invited Participant*, National Climate Adaptation Science Center Future of Aquatic Flows Climate Adaptation Postdoctoral Fellows workshop #1; (<https://www.usgs.gov/programs/climate-adaptation-science-centers/science/2022-24-future-aquatic-flows>); Santa Barbara, CA, 2023
- *Invited Participant*, Arctic Rivers Summit; (<https://www.colorado.edu/research/arctic-rivers/events>); Anchorage, AK, 2022
- *Invited Participant*, NSF Coastal Rainforest Margins Research Network Final Workshop; (<https://coastalmarginsnetwork.org/>); Arcata, CA, 2022
- *Invited Participant*, NSF Coastal Rainforest Margins Research Network Workshop: Transformation and transport of elements and compounds from terrestrial to aquatic systems; Juneau, AK, 2019
- *Invited Participant*, Global Rivers Observatory Columbia and Snake Rivers Expedition; (<https://globalrivers.org/>); 2017
- *Participant*, NSF Coastal Rainforest Margins Research Network Workshop: Aquatic carbon biogeochemistry of coastal temperate rainforests; Seattle, WA, 2017

SCIENTIFIC PRESENTATIONS:

Oral Presentations:

9. Nusrat, F., C. Lee, J. Wilmhurst, Y. Aryal, **M.I. Behnke**, Pensky, J.L. (2024). Future of Aquatic Flows: An Interdisciplinary Cohort Approach to Enhance Research Capacity and Professional Development. WaterSciCon24, St. Paul, MN.
8. McDonough, L., M. S. Andersen, **M. I. Behnke**, H. Rutledge, P. Oudone, K. Meredith, ... A. Baker. (2022). The unique degradation trajectory of groundwater dissolved organic matter. Australasian Groundwater Conference, Perth.
7. **Behnke, M.I.**, S. Tank, J. McClelland, R.M. Holmes, P. Raymond, T. Eglinton, N. Haghipour, R.G.M. Spencer. (2021). Delineating Particulate Organic Matter Sources in the Major Arctic Rivers: The Importance of Contemporary Autochthony. American Geophysical Union Fall Meeting, online.
6. Bristol, E., C. Connolly, **M.I. Behnke**, S. Bosman, R.G.M. Spencer, J. Chanton, B. Jones, D. Bull, J. McClelland. (2021). Biodegradability of Organic Matter Eroding Along the Alaska Beaufort Sea Coast. American Geophysical Union Fall Meeting, online.
5. McDonough, L., **M.I. Behnke**, R.G.M. Spencer, C. Marjo, M. Andersen, K. Meredith, H. Rutledge, P. Oudone, D. O'Carroll, A. McKenna, and A. Baker. (2021). Molecular insights into the unique degradation trajectory of natural dissolved organic matter from surface to groundwater, European Geophysical Union General Assembly, online, <https://doi.org/10.5194/egusphere-egu21-1845>.
4. **Behnke, M.I.**, R.M. Holmes, J.W. McClelland, S. Tank, R.G.M. Spencer. (2019). Pan-Arctic Molecular Fingerprints: Multi-Year FT-ICR MS Data from the Major Arctic Rivers Reveal Unique Seasonal- and River-Specific Molecular Formulae. American Geophysical Union Fall Meeting, San Francisco, CA.

3. Hood, E.W., **M.I. Behnke**, J.B. Fellman, A. Stubbins, T. Dittmar, R.G.M. Spencer. (2019). Molecular and Isotopic Characterization Elucidate Shifts in the Composition and Functional Role of DOM in Watersheds Undergoing Glacier Loss. American Geophysical Union Fall Meeting, San Francisco, CA.
2. **Behnke, M.I.**, J.D. Schade, K.A. Whittinghill, P. Mann, N. Zimov. (2015). Patterns in DOC Absorbance with Photodegradation and Microbial Processing in Tundra Watersheds in the Kolyma River Basin. American Chemical Society National Meeting, Denver, CO.
1. Wood, J., S. Natali, J.D. Schade, G.J. Fiske, **M.I. Behnke**, N. Golden, E. Ramos. (2014). Polaris Undergraduates Connecting With K-12 Students Through Story Telling-Learning About Climate Change Using Web-Mapping Based Investigations. American Geophysical Union Fall Meeting, San Francisco, CA.

Poster Presentations:

8. **Behnke, M.I.**, J.R. Bellmore, R. Toohey, J. O'Donnell, J. Koch, M. Carey, J.B. Fellman. (2024). Modeled impacts of permafrost thaw and glacier melt on energy availability for fluvial fish across Alaska. 12th International Conference on Permafrost, Whitehorse, Yukon.
7. Pensky, J.L., C. Lee, J. Wimhurst, **M.I. Behnke**, F. Nusrat, Y. Aryal. (2024). What Goes with the Flow: A Review of Linkages between Climate Change, Low-Flows, Water Quality, and Instream Flow Management Response across the United States. WaterSciCon24, St. Paul, MN.
6. Pensky, J.L., C. Lee, J. Wimhurst, **M.I. Behnke**, Y. Aryal, A. Price, F. Nusrat. (2023). USGS CASC Network Climate Adaptation Postdoctoral Fellows Program: National Synthesis on the Future of Aquatic Flows. American Geophysical Union Fall Meeting, San Francisco.
5. Spencer, R.G.M., S. Tank, J. McClelland, R. Holmes, N. Haghypour, T. Eglinton, P. Raymond, A. Suslova, A. Zhulidov, T. Gurtovaya, N. Zimov, S. Zimov, E.A. Mutter, E. Amos, **M.I. Behnke**. (2022). Aquatic Biomass is a Major Overlooked Source to Particulate Organic Matter Export in Large Arctic Rivers. American Geophysical Union Fall Meeting, online.
4. Spencer, R.G.M., **M.I. Behnke**, J. McClelland, S. Tank, A. Kellerman, R.M. Holmes, N. Haghypour, T. Eglinton, P. Raymond, A. Suslova, A. Zhulidov, T. Gurtovaya, N. Zimov, S. Zimov, E. Mutter, E. Amos. (2021). Pan-Arctic Riverine Dissolved Organic Matter: Synchronous Molecular Stability, Shifting Sources and Subsidies. American Geophysical Union Fall Meeting, online.
3. McDonough, L., P. Oudone, H. Rutledge, K. Meredith, M. Andersen, D. O'Carroll, **M.I. Behnke**, R.G.M. Spencer, A. Baker. (2019). Using radioactive and stable carbon isotopes, LC-OCD and FT-ICR MS to understand groundwater organic carbon sources and processing. European Geophysical Union General Assembly, Vienna, Austria.
2. **Behnke, M.I.**, P.J. Mann, J.D. Schade, S. Spawn, N. Zimov. (2015). Photooxidation and Microbial Processing of Ancient and Modern Dissolved Organic Carbon in the Kolyma River, Siberia. American Geophysical Union Fall Meeting, San Francisco, CA, USA.

1. Behnke, M.I., J.D. Schade, G.J. Fiske, K.A. Whittinghill, N. Zimov. (2014). Patterns in DOC Concentration and Composition in Tundra Watersheds in the Kolyma River Basin. American Geophysical Union Fall Meeting, San Francisco, CA, USA.

SPECIALIZED TRAINING AND CONTINUING EDUCATION:

- Tlingit I (Fall 2023) and Tlingit II (Spring 2024; ongoing)
- Florida State University Program for Instructional Excellence: *Inclusive & Equitable Teaching; Appreciating Student Diversity & Creating an Equitable and Inclusive Classroom; Providing Student Feedback: Grading Concerns and Practices; Discrimination-Sexual Misconduct-Title IX-Retaliation Awareness and Prevention Training*; 2020
- Kognito: *At-Risk for Faculty and Staff: building awareness, knowledge, and skills about mental health and suicide prevention*, 2020

SERVICE ACTIVITIES:

- Journal peer-review: *Limnology & Oceanography, Hydrology and Earth System Sciences, Journal of the American Water Resources Association; Earth Surface Processes and Landforms; Biogeochemistry; Aquatic Sciences; Biogeosciences; Freshwater Sciences; Geophysical Research Letters; Journal of Geophysical Research: Biogeosciences*; ongoing
- Juneau Mountain Rescue, member: participating in search and rescue operations and trainings (2021-present)