

ALEXANDER B. MICHAUD, PH.D.

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Pronouns: he/him

RESEARCH SUMMARY

Dr. Michaud is an early-career microbial biogeochemist that conducts research at the intersection of microbial ecology, biogeochemistry, and glaciology. He uses both geochemical and microbiological methods to measure rates of microbial activity in climate-sensitive regions of the Alpine, Arctic, and Antarctic with the ultimate goal of understanding how the loss of ice impacts the role of microorganisms in globally relevant element cycles (C, Fe, S).

EDUCATION

Montana State University, Bozeman, MT	Ecology	Ph.D., 2016
Coe College, Cedar Rapids, IA	Biology	B.A. <i>Cum Laude</i> , 2009

PROFESSIONAL EXPERIENCE

2024 – Current	Assistant Professor School of Earth Sciences and Byrd Polar and Climate Research Center Ohio State University, Columbus, OH, USA
2021 – 2024	Research Scientist Bigelow Laboratory for Ocean Sciences, East Boothbay, ME, USA
2019 – 2021	Postdoctoral Research Scientist Bigelow Laboratory for Ocean Sciences, East Boothbay, ME, USA
2016 – 2019	Postdoctoral Research Scientist Center for Geomicrobiology, Aarhus University, Aarhus, Denmark
March – May 2014	Visiting PhD Student Center for Geomicrobiology, Aarhus University, Aarhus, Denmark
2009 – 2016	Graduate Research Assistant Montana State University, Bozeman, MT, USA
Summer 2008	NSF Research Experience for Undergraduates Desert Research Institute, Las Vegas, NV, USA

RESEARCH AND EDUCATION FUNDING

\$950,000 USD raised through grants and fellowships in support of research and education

ACTIVE GRANTS

2023 – 2026	Collaborative Research: IDEAS Lab: Light in the Dark: Fiber optic sensing of climate-critical carbon cycle components at water/ice-air interfaces
Agency	US National Science Foundation – Division of Ocean Sciences
Role	Principal Investigator
Collaborators	Miao Yu (co-PI) University of Maryland; Roger Wang (co-PI) Rutgers University; Alexander Forrest (co-PI) University of California, Davis; David Schmale (co-PI)

Funding	Technological University of Virginia \$1,499,564 total; \$224,655 to ABM
2023 – 2026	<i>Collaborative Research: IDEAS Lab: BLUES: Boundary Layer Under-ice Environmental Sensing</i>
Agency	US National Science Foundation – Division of Electrical, Communication, and Cyber Systems
Role	Co-Principal Investigator
Collaborators	Alexander Forrest (lead PI) University of California, Davis; Miao Yu (co-PI) University of Maryland; Roger Wang (co-PI) Rutgers University
Funding	\$1,499,225 total; \$223,002 to ABM
2022 – 2023	Ecology and adaptation of microorganisms immured in the West Antarctic Ice Sheet
Agency	US Department of Energy, Joint Genome Institute
Role	Principal Investigator
Collaborators	Melody Lindsay (co-PI) Bigelow Laboratory for Ocean Sciences
Funding	In-kind support for 2Tbp of sequencing (~\$24,000)
2022 – 2023	Permafrost thaw as an ecological driver
Agency	Bigelow Laboratory for Ocean Sciences Seed Fund
Role	Principal Investigator
Funding	\$32,583
2022 – 2024	EAGER: Persist or Perish: Records of microbial survival and long-term persistence from the West Antarctic Ice Sheet
Agency	US National Science Foundation, Office of Polar Programs (Award # 2228257)
Role	Principal Investigator
Collaborators	Dominic Winski (co-PI) University of Maine
Funding	\$263,000 total; \$229,895 to ABM
2022	Are There Perennial and Light-Independent Microbial Processes on Supraglacial Ecosystems?
Agency	National Environmental Research Council of the United Kingdom
Role	Project Partner
Funding	\$6500 to ABM for Svalbard field work and sample analysis

PAST GRANTS AND FELLOWSHIPS

Summer 2022	University of Alaska, Fairbanks – Toolik Field Station, TUNDRA Award, PI, Summer 2022 (In kind support for 10 User Days at Toolik Field Station to ABM)
2017 – 2019	US National Science Foundation – Earth Sciences Postdoctoral Fellowship, PI #1625158 (\$184,000 to ABM)
2017	Alfred Wegener Institute-Institute Paul Emile Victor Arctic Research Station Access Grant, Co-PI: “Biogeochemistry of carbon, iron and sulfur cycles of West-Svalbard fjords” (In kind support for 20 days lodging for 14 scientists at AWI-IPEV station - 2017, Ny Ålesund, Svalbard; ~140,000 NOK)
2014 – 2016	US National Science Foundation – Center for Dark Energy Biosphere Investigations Graduate Fellowship, \$64,000 to ABM
2014	Deep Carbon Observatory – Census of Deep Life, Co-PI, In-kind support for funding sequencing of 3 metagenomes
2012	NASA Montana Space Grant Consortium Fellowship, Montana State University (6 months), \$7,500 to ABM
2009 – 2011	US National Science Foundation – Integrative Graduate Education and Research Traineeship, Montana State University, \$75,000 to ABM

SCIENTIFIC LITERATURE

PEER-REVIEWED JOURNAL ARTICLES (#Undergraduate Advisee; *Co-first authorship)

38. Turetta, C, E Barbaro, ML Skidmore, A Gambaro, **AB Michaud**, AC Mitchell, TJ Vick-Majors, JC Priscu, C Barbante. 2023. Trace element, rare earth element and trace carbon compounds in Subglacial Lake Whillans, West Antarctica. *Science of the Total Environment*. 892:164480. doi: 10.1016/j.scitotenv.2023.164480
37. **Michaud, AB** and JC Priscu. 2023. Sediment oxygen consumption in Antarctic subglacial environments. *Limnology and Oceanography*. 68:1557-1566. doi: 10.1002/lno.12366
36. Rosenheim, BE*, **AB Michaud***, J Broda, A Gagnon, A Leventer, RA Venturelli, MO Patterson, TD Campbell, JE Dore, M Tranter, ML Skidmore. 2023. Sediment coring operations during clean access of Mercer Subglacial Lake, Antarctica. *Limnology and Oceanography: Methods*. 21:279-294. doi: 10.1002/lom3.10545
35. Venturelli, RA, B Boehman, C Davis, JR Hawkings, SE Johnston, CD Gustafson, **AB Michaud**, C Mosbeux, MR Siegfried, TJ Vick-Majors, V Galy, RGM Spencer, S Warny, BC Christner, JE Dore, HA Fricker, DM Harwood, A Leventer, JC Priscu, ML Skidmore, BE Rosenheim, SALSA Science Team. 2023. Constraints on the timing and extent of deglacial grounding line retreat in West Antarctica from subglacial sediments. *AGU: Advances*. 4:32022AV000846. doi: 10.1029/2022AV000846
34. **Michaud, AB**, RO Masse[#], D Emerson. 2023. Iron cycling is prevalent in water-logged habitats of the Alaskan Arctic tundra, but sensitive to disturbance. *FEMS Microbiology Ecology*. 99:1-12. doi: 10.1093/femsec/fiad013
33. Davis, C, RA Venturelli, **AB Michaud**, J Hawkings, AM Achberger, TJ Vick-Majors, BE Rosenheim, JE Dore, A Steigmeyer, ML Skidmore, J Barker, L Benning, MR Siegfried, JC Priscu, BC Christner, and The SALSA Science Team. 2023. Biogeochemical and historical drivers of microbial community composition and structure in sediments from Mercer Subglacial Lake, West Antarctica. *ISME Communications*. 3:8 doi: 10.1038/s43705-023-00216-w
32. Siegfried*, MR, RA Venturelli*, MO Patterson, W Arnuik, TD Campbell, CD Gustafson, **AB Michaud**, B Galton-Fenzi, MB Hausner, SN Holzschuh, B Huner, KD Mankoff, DM Schroeder, P Summers, S Tyler, SP Carter, HA Fricker, DM Harwood, A Leventer, BE Rosenheim, ML Skidmore, JC Priscu, and The SALSA Science Team. 2023. The life and death of a subglacial lake in West Antarctica. *Geology*. 51:434-438. doi: 10.1130/G50995.1
31. Beam*, JP, **AB Michaud***, DT Johnston, PR Girguis, D Emerson. 2022. Impacts of bioturbation on iron biogeochemistry and microbial communities in a coastal marine sediment under varying degrees of hypoxia. *Estuarine, Coastal, and Shelf Science*. 276:108032. doi: 10.1016/j.ecss.2022.108032
30. **Michaud, AB** and S Appollonio. 2022. Silicate and oxygen dynamics throughout the winter in an Arctic lake (Immerk Lake, Devon Island, Canada). *Inland Waters*. 12:418-426. doi: 10.1080/20442041.2022.2063623
29. Gustafson, CG, K Key, MR Siegfried, JP Winberry, HA Fricker, RA Venturelli, **AB Michaud**. 2022. A dynamic saline groundwater system mapped beneath an Antarctic ice stream. *Science*. 376:640-644. doi: 10.1126/science.abm3301
28. Hudson, JM, **AB Michaud**, D Emerson, and Y-P Chin. 2022. High-resolution spatial distribution of redox-active species in Arctic porewaters. *Environmental Science: Processes & Impacts*. 24: 426-438. doi: 10.1039/D1EM00505G
27. Herbert, LC, **AB Michaud**, K Laufer-Meiser, CJM Hoppe, Q Zhu, RC Aller, BB Jørgensen, and LM Wehrmann. 2022. Seasonal carbon export drives changes in coupled Fe-S cycling dynamics in an Arctic fjord (Kongsfjorden, Svalbard). *Journal of Marine Systems*. 225, Article #:103645. doi: 10.1016/j.jmarsys.2021.103645
26. Priscu, JC, J Kalin, J Winans, T Campbell, MR Siegfried, M Skidmore, JE Dore, A Leventer, DM Harwood, D Duling, R Zook, J Burnett, D Gibson, E Krula, A Mironov, J McManis, G Roberts, BE Rosenheim, BC Christner, K Kasic, HA Fricker, WB Lyons, J Barker, M Bowling, B Collins, C Davis, A Gagnon, C Gardner, C Gustafson, O-S Kim, W Li, **AB Michaud**, MO Patterson, M

- Tranter, R Venturelli, TJ Vick-Majors, C Elsworth, and The SALSA Science Team. 2021. Scientific access into Mercer Subglacial Lake: Scientific objectives, drilling operations and initial observations. *Annals of Glaciology*. 62:340-352. doi: 10.1017/aog.2021.10
25. Herbert, LC, Q Zhu, **AB Michaud**, K Laufer-Meiser, CK Jones, N Riedinger, ZS Stooksbury, I Klingensmith, RC Aller, BB Jørgensen, and LM Wehrmann. 2021. Benthic iron flux influenced by climate-sensitive interplay between organic carbon availability and diagenetic mineral formation in Arctic fjords. *Limnology and Oceanography*. 66:3374-3392. doi: 10.1002/lno.11885
24. Laufer-Meiser, K, **AB Michaud**, M Maisch, JM Byrne, A Kappler, MO Patterson, H Røy, and BB Jørgensen. 2021. Potentially bioavailable iron produced through benthic cycling in glaciated Arctic fjords of Svalbard. *Nature Communications*. 12, Article #:1349. doi: 10.1038/s41467-021-21558-w
23. Jørgensen, BB, K Laufer, **AB Michaud**, LM Wehrmann. 2021. Biogeochemistry and microbiology of high Arctic marine sediment ecosystems – case study Svalbard fjords. *Limnology and Oceanography*. 66:S273-S292. doi: 10.1002/lno.11551
22. **Michaud, AB**, TJ Vick-Majors, AM Achberger, ML Skidmore, BC Christner, M Tranter, JC Priscu. 2020. Environmentally clean access to three Antarctic subglacial aquatic environments. *Antarctic Science*. 32:329-340. doi: 10.1017/S0954102020000231
21. **Michaud, AB**, K Laufer, A Findlay, A Pellerin, G Antler, AV Turchyn, H Røy, LM Wehrmann, BB Jørgensen. 2020. Glacial influences on the iron and sulfur cycles in Arctic fjord sediments (Svalbard). *Geochimica et Cosmochimica Acta*. 280:423-440. doi:10.1016/j.gca.2019.12.033
20. Vick-Majors, TJ, **AB Michaud**, ML Skidmore, C Turetta, C Barbante, BC Christner, JE Dore, K Christianson, AC Mitchell, AM Achberger, JA Mikucki, JC Priscu. 2020. Biogeochemical connectivity between freshwater ecosystems beneath the West Antarctic Ice Sheet and the sub-ice marine coastal environment. *Global Biogeochemical Cycles*. 34: e2019GB006446 doi:10.1029/2019GB006446
19. Laufer, K, **AB Michaud**, H Røy, BB Jørgensen. 2020. Reactivity of iron minerals in the seabed towards microbial reduction – a comparison of different extraction techniques. *Geomicrobiology Journal*. 37:170-189. doi:10.1080/01490451.2019.1679291
18. Herbert, LC, N Riedinger, **AB Michaud**, K Laufer, H Røy, BB Jørgensen, C Heilbrun, RC Aller, JK Cochran, LM Wehrmann. 2020. Glacial controls on redox-sensitive trace element cycling in Arctic fjord sediments (Spitsbergen, Svalbard). *Geochimica et Cosmochimica Acta*. 271:33-60. doi:10.1016/j.gca.2019.12.005
17. Buongiorno, J, LC Herbert, LM Wehrmann, **AB Michaud**, K Laufer, H Røy, BB Jørgensen, A Szyrkiewicz, A Faiia, KM Yeager, K Schindler, KG Lloyd. 2019. Complex Microbial Communities Drive Iron and Sulfur Cycling in Arctic Fjords Sediments. *Applied and Environmental Microbiology*. 85:e00949-19
16. Santibáñez, PA, **AB Michaud**, TJ Vick-Majors, J D’Andrilli, A Chiuchiolo, KP Hand, JC Priscu. 2019. Differential incorporation of bacteria, organic matter, and inorganic ions into lake ice during ice formation. *Journal of Geophysical Research: Biogeosciences*. 124:585-600. doi:10.1029/2018JG004825
15. Liu, Y, JC Priscu, T Yao, TJ Vick-Majors, **AB Michaud**, L Sheng. 2019. Culturable bacteria isolated from seven high altitude Tibetan ice cores. *Journal of Glaciology*. 65:29-38. doi:10.1017/jog.2018.86
14. **Michaud, AB**, JE Dore, AM Achberger, BC Christner, AC Mitchell, ML Skidmore, TJ Vick-Majors, and JC Priscu. 2017. Microbial oxidation as a methane sink beneath the West Antarctic Ice Sheet. *Nature Geoscience*. 10:582-586. doi:10.1038/ngeo2992
13. Vick-Majors, TJ, AC Mitchell, AM Achberger, BC Christner, JE Dore, **AB Michaud**, JA Mikucki, AM Purcell, ML Skidmore, JC Priscu. 2016. Physiological ecology of microorganisms in Subglacial Lake Whillans. *Frontiers in Microbiology*. 7:1705. doi:10.3389/fmicb.2016.01705
12. Achberger, AM, BC Christner, **AB Michaud**, JC Priscu, ML Skidmore, TJ Vick-Majors, the WISSARD Science Team. 2016. Microbial community structure of Subglacial Lake Whillans, West Antarctica. *Frontiers in Microbiology*. 7:1457. doi:10.3389/fmicb.2016.01457

11. **Michaud, AB**, ML Skidmore, AC Michell, TJ Vick-Majors, JC Priscu, C Barbante, C Turetta, W VanGelder. 2016. Solute sources and geochemical processes in Subglacial Lake Whillans, West Antarctica. *Geology*. 44:347-350. doi:10.1130/G37639.1
10. Liu, Y, JC Priscu, T Yao, TJ Vick-Majors, B Xu, N Jiao, P Santibáñez, S Huang, N Wang, M Greenwood, **AB Michaud**, S Kang, J Wang, Y Yang. 2016. Bacterial responses to environmental change in the Tibetan Plateau over the past half century. *Environmental Microbiology*. 18:1930-1941. doi:10.1111/1462-2920.13115
9. Vick-Majors, TJ, AM Achberger, P Santibáñez, JE Dore, T Hodson, **AB Michaud**, BC Christner, J Mikucki, ML Skidmore, R Powell, WP Adkins, C Barbante, A Mitchell, R Scherer, JC Priscu. 2016. Microbial diversity and biogeochemistry of the marine cavity beneath the McMurdo Ice Shelf, Antarctica. *Limnology and Oceanography*. 61:572-586. doi:10.1002/lno.10234
8. Lever, MA, A Torti, P Eickenbusch, **AB Michaud**, T Šantl-Temkiv, BB Jørgensen. 2015. A modular method for the extraction of DNA and RNA, and the separation of DNA pools from diverse environmental sample types. *Frontiers in Microbiology*, 6:476. doi:10.3389/fmicb.2015.00476
7. Matheus-Carnevali, P, M Rohrsen, MR Williams, **AB Michaud**, H Adams, D Berisford, GD Love, JC Priscu, KP Hand, AE Murray. 2015. Methane sources in Arctic thermokarst lake sediments on the North Slope of Alaska. *Geobiology*, 13:181-197. doi:10.1111/gbi.12124
6. Purcel, AM, JA Mikucki, AM Achberger, IA Alekhina, C Barbante, BC Christner, D Ghosh, **AB Michaud**, AC Mitchell, R Scherer, JC Priscu, ML Skidmore, TJ Vick-Majors and the WISSARD Science Team. 2014. Microbial sulfur transformations in sediments from Subglacial Lake Whillans. *Frontiers in Microbiology*, 5:594. doi:10.3389/fmicb.2014.00594
5. **Michaud, AB**, JE Dore, D Leslie, WB Lyons, DC Sands, JC Priscu. 2014. Biological ice nucleation initiates hailstone formation. *Journal of Geophysical Research: Atmospheres*, 119:12,186-12197. doi:10.1002/2014JD022004
4. Christner, BC, JC Priscu, AM Achberger, C Barbante, SP Carter, K Christianson, **AB Michaud**, JA Mikucki, AC Mitchell, ML Skidmore, TJ Vick-Majors and the WISSARD Science Team. 2014. A microbial ecosystem beneath the West Antarctic Ice Sheet. *Nature*, 512:310-313. doi:10.1038/nature13667
3. Liu, Y, T Yao, JC Priscu, TJ Vick-Majors, **AB Michaud**, N Jiao, J Hou, L Tian, A Hu, Z-Q Chen. 2014. A comparison of pelagic, littoral, and riverine bacterial assemblages in Lake Bangongco, Tibetan Plateau. *FEMS Microbiology Ecology*, 89:211-221. doi:10.1111/1574-6941.12278
2. Priscu, JC, AM Achberger, JE Cahoon, BC Christner, RL Edwards, WL Jones, **AB Michaud**, MR Siegfried, ML Skidmore, RH Spigel, GW Switzer, S Tulaczyk, TJ Vick-Majors. 2013. A microbiologically clean strategy for access to the Whillans Ice Stream subglacial environment. *Antarctic Science*, 25:637-647. doi:10.1017/S0954102013000035
1. **Michaud, AB**, M Šabacka, JC Priscu. 2012. Cyanobacterial diversity across landscape units in a polar desert: Taylor Valley, Antarctica. *FEMS Microbiology Ecology*. 82:268-278. doi:10.1111/j.1574-6941.2012.01297.x

BOOK CHAPTERS

2. Vick-Majors, TJ, AM Achberger, **AB Michaud**, JC Priscu. 2020. Metabolic and taxonomic diversity in Antarctic subglacial environments. in *Life in Extreme Environments: Insights in Biological Capability*. (ed. G diPrisco, HGM Edwards, J Elster, AHL Huiskes) Cambridge University Press.
1. Achberger, AM, **AB Michaud**, TJ Vick-Majors, BC Christner, ML Skidmore, JC Priscu, and M Tranter. 2017. Microbiology of Subglacial Environments. in *Psychrophiles: From Biodiversity to Biotechnology*. (Ed. R Margesin) Springer.

TECHNICAL REPORTS

1. Vick-Majors, TJ, MO Patterson, B Schmidt, K Makinson, T Hewagama, JA Mikucki, D Harwood, D Winebrenner, MR Siegfried, **AB Michaud**, S Tulaczyk. 2019. Subglacial Access Working Group: Access Drilling Priorities in the Ross Ice Shelf Region. Ice Drilling Program Subglacial Access Working Group Science Planning Workshop, March 29-30, 2019, Herndon, Virginia, USA, 1-8.

MANUSCRIPTS IN PREPARATION/REVIEW/REVISION

1. Berens, MJ, **AB Michaud**, EH Herndon. Landscape disturbance modifies phosphorus retention in Arctic tundra soils. *Environmental Science and Technology: Letters* (In preparation).
2. Vick-Majors, TJ, **AB Michaud**, PA Santibáñez. Ice Core Methods: Biological Material. In: Elias, SA. (ed.) *Encyclopedia of quaternary science*. Elsevier. (In Review).

TEACHING EXPERIENCE

INSTRUCTOR OF RECORD

2010 Environmental Microbiology (Bio535) – Coe College Wilderness Field Station
Developed, taught, led field work, and evaluated the class

LECTURES

2023 Microbial Ecology (BIO415) – University of Southern Maine
2022 Transport, Mixing, and Water Quality in Rivers and Lakes (ECI264A) – University of California, Davis
2020 Microbial Ecology – Michigan Technological University
2017 Prospects for Planet Earth (ENS101) – Stony Brook University
2016 Microbial Diversity, Ecology and Evolution (BIOM415) – Montana State University
2016 Topics in Earth Sciences: Cool Life! (ERTH102) – Montana State University
2015 Principles of Living Systems (BIOB160) – Montana State University
2015 Introduction to Land Resources and Environmental Sciences (ENSC110) – Montana State University
2013, 2014 Introduction to Biotechnology (BIOB106) – Montana State University

MENTORING

2022 Amy Doiron – Southern Maine Community College, NSF Research Experience for Undergraduates, Co-advised with Dr. Melody Lindsay
2021 Kenneth Lai – Bachelors student, University of Washington, Colby-Bigelow Sea Change Semester
2019 Madeline Michaud – Bachelors student, Wheaton College, Winter internship
2019, 2020 Rémi Massé – Bachelors student, University of Michigan, NSF Research Experience for Undergraduates
2016 – 2018 Kim Roush – Masters Student, Montana State University, Bozeman, MT
2013 Tyler Subatsch – MSU American Indian Research Opportunity Advisee
2012 Stephin Littleshield – MSU American Indian Research Opportunity Advisee
2012 Paloma Lopez – Bachelors student, University of California, Santa Cruz, Maximizing Access to Research Careers Fellow
2011 Chase Jordan – Chief Joseph Middle School, Bozeman, MT
2010 Chase Jordan and Hans Swenson – Chief Joseph Middle School, Bozeman, MT
2009 Fritz Kalakay – Chief Joseph Middle School, Bozeman, MT

PROFESSIONAL SERVICE

2023 *Science Definition Team Member*, NASA Arctic-COastal Land Ocean inteRactionS (Arctic-COLORS) field campaign
2022 *Co-convener*, B039: Redox Biogeochemistry in the Thawing Arctic: Impacts on Carbon Cycling across Physical and Chemical Gradients, AGU 2022 Fall Meeting, Chicago, IL.
2021 – 2023 *Guest Associate Editor* for Global Biogeochemical Cycles, Special Collection “Fjords: Estuaries at the front line of climate change”.
2021 *Co-convener*, SS49: Limnological Processes Beneath Ice Cover, ASLO-Aquatic Science Meeting, Virtual

- 2019 *Competitively selected for Next Generation Polar Researcher Symposium, Catalina Island, CA*
- 2019 *Lead convener, Session 9C: Biogeochemical cycling in changing glacial habitats and downstream ecosystems, Goldschmidt, Barcelona, Spain*
- 2010 – 2012 *Social Chair, Montana State University LRES Graduate Student Organization*
- 2008 *Student Body Vice President, Coe College Student, Cedar Rapids, IA*
- Ongoing *Reviewer (See Web of Science ResearcherID: AAC-4890-2020):*
FEMS Microbiology Ecology, Scientific Reports, Frontiers in Earth Science, Biogeosciences Discussions, Environmental Science: Process and Impacts, Geobiology, Journal of Geophysical Research: Oceans, Limnology and Oceanography, Geomicrobiology Journal, Cryosphere, Nature Climate Change, Journal of Marine Systems, Biology Letters, Science of the Total Environment, Applied Geochemistry, Biogeochemistry, Biology Letters, Earth and Planetary Science Letters, Environmental Microbiology, Limnologica. *Funding agencies:* Chilean Antarctic Research Program, US-National Science Foundation, Czech Science Foundation

FIELD WORK EXPERIENCE

~19 months of Arctic, Alpine, or Antarctic field work in support of research

- 2023 – 2024 Sensitivity of the West Antarctic Ice Sheet to 2°C warming (SWAIS2C) Project, Ross Ice Shelf, Antarctica (2 months)
*Lead Microbiologist
- 2022 Foxfonna Glacier, Spitsbergen, Svalbard; NERC/Aberystwyth University-led project (2 weeks)
- 2022 Toolik Lake Field Station, North Slope Borough, Alaska, USA (2 weeks)
- 2021 Toolik Lake Field Station, North Slope Borough, Alaska, USA (7 weeks)
- 2019 Toolik Lake Field Station, North Slope Borough, Alaska, USA (6 weeks)
- 2018 – 2019 Subglacial Antarctic Lakes Scientific Access (SALSA) Project, Mercer Ice Stream, Mercer Subglacial Lake, West Antarctica (2 months)
- Aug 2018 Dicksonfjorden, Czech Research Station, Longyearbyen, Svalbard (1 week)
*Expedition coordinator and leader (3 participants from Aarhus University)
- Apr 2018 Kongsfjorden, Svalbard, AWIPEV Research Station, Ny-Ålesund, Svalbard (2 weeks)
*Expedition coordinator and leader (6 participants, 3 Institutions, 3 countries represented)
- 2017 Western fjords of Spitsbergen, Svalbard, AWIPEV Research Station, Ny-Ålesund, Svalbard (2 weeks)
*Expedition coordinator (13 participants, 6 Institutions, 5 countries represented)
- 2016 Western fjords of Spitsbergen, Svalbard, AWIPEV Research Station, Ny-Ålesund, Svalbard (3 weeks)
*Expedition coordinator (13 participants, 7 Institutions, 5 countries represented)
- 2016 Bornholm Basin Cruise, Baltic Sea, R/V Aurora (1 week)
- 2015 Beartooth Mountains, Alpine lake limnology and glacier runoff biogeochemistry, Carbon County, MT, USA (1 week)
- 2014 – 2015 Whillans Ice Stream Subglacial Access Research Drilling (WISSARD) Project, Whillans Ice Stream Grounding Zone, Antarctica (2.5 months)
- 2013 NASA Icy Worlds Project, Thermokarst Lakes near Barrow, AK (1 week)
- 2012 – 2013 Whillans Ice Stream Subglacial Access Research Drilling (WISSARD) Project, Subglacial Lake Whillans, Antarctica (3 months)
- 2011 Robertson Glacier – Alberta, Canada (1 week)
- 2010, 2012 American Dipper (*Cinclus mexicanus*) survey, Gallatin Gateway, MT, USA (1 week/yr)
- 2009 – 2010 McMurdo Long Term Ecological Research Site – Limnology Team, McMurdo Dry Valleys, Antarctica (2.5 months)
- 2008, 2009 Keane Wonder Spring, Death Valley National Park, CA, USA (1 day/yr)

DIVERSITY, EQUITY, AND INCLUSIVITY TRAINING AND EXPERIENCE

Unlearning Racism in Geosciences, Bigelow Pod Member, 2020 - 2024

Bystander Intervention, Green Dot Training Program for Toolik Field Station, 1.5 hours, Spring 2021

Bystander Intervention, Green Dot Training Program for Bigelow Laboratory, 1.5 hours, Winter 2021
(Organizer)

Trans Ally Training, MaineTransNet, 1.5 hours, Summer 2022

CONFERENCE ABSTRACTS AND INVITED LECTURES

(*Talk, >50 total conference abstracts, only showing presenting author abstracts)

*Michaud, AB, D Winski, P Santibáñez, J McConnell, N Chellman. (2023) Towards an effective method for melting ice cores for microbiology. Ice Core Open Science Workshop. Seattle, WA.

*Michaud, AB, D Winski, P Santibáñez, J McConnell, N Chellman. (2022) Persist or perish: What happens when microorganisms are buried in glacial ice? Ice Core Open Science Workshop. San Diego, CA.

*Michaud, AB. (2021) The Life of Ice: The Global Influence of Microbes in the Polar Regions. Bigelow Laboratory Cafe Sci Summer Lecture Series. (<https://youtu.be/SayvoV9Axwg>)

*Michaud, AB, R Masse, NR Record, D Emerson. (2021) Microbial iron cycling dection, ecology, and role in the Arctic tundra. American Society for Limnology and Oceanography: Aquatic Sciences Meeting. Virtual

*Michaud, AB, R Masse, NR Record, D Emerson. (2021) Microbial iron cycling dection, ecology, and role in the Arctic tundra. Arctic Science Summit Week. Virtual

Michaud, AB, K Laufer, H Røy, BB Jørgensen. (2019) Glacial influences on the iron and sulfur cycle in Arctic fjord sediments (Svalbard). Goldschmidt. Barcelona, Spain.

*Michaud, AB, K Laufer, H Røy, BB Jørgensen. (2019) Glaciological influences on competition between iron and sulfate reducing microorganisms. 8th International Polar and Alpine Microbiology Conference. Auckland, New Zealand.

Michaud, AB, K Laufer, H Røy, BB Jørgensen. (2018) Microbial competition in glacially-influenced Arctic fjord sediments. International Society for Microbial Ecology Conference. Leipzig, Germany.

*Michaud, AB, K Laufer, H Røy, BB Jørgensen. (2017) Glaciological controls on iron and sulfate reduction in Arctic fjords. 7th International Polar and Alpine Microbiology Conference. Nuuk, Greenland.

*Michaud, AB, AC Mitchell, TJ Vick-Majors, AM Achberger, C Barbante, BC Christner, JE Dore, JA Mikucki, JC Priscu, AM Purcell, ML Skidmore, C Turreta. (2017) Linking biogeochemistry, energetics and microbial community function in an Antarctic subglacial ecosystem. Goldschmidt. Paris, France. (Invited)

*Michaud, AB. (2015) Where penguins don't roam: Biogeochemistry of Subglacial Lake Whillans, West Antarctica. Montana Tech, Butte, MT. Chemistry and Biochemistry Seminar Series.

*Michaud, AB. (2015) Relict marine influences on contemporary microbial processes in Subglacial Lake Whillans, West Antarctica. Scripps Institute of Oceanography, San Diego, CA. Polar Seminar Series.

Michaud, AB, JE Dore, AM Achberger, BC Christner, ML Skidmore, TJ Vick-Majors, JC Priscu. (2015) Microbial methane cycling beneath the West Antarctic Ice Sheet. Center for Dark Energy Biosphere Investigations Annual Meeting 2015, Marina, CA, USA.

Michaud, AB, JE Dore, AM Achberger, BC Christner, ML Skidmore, TJ Vick-Majors, JC Priscu. (2015) Microbial methane cycling beneath the West Antarctic Ice Sheet. Microenergy Workshop 2015, Sandbjerg, DK.

*Michaud, AB, AM Achberger, BC Christner, ML Skidmore, TJ Vick-Majors, JC Priscu. (2013) Geomicrobiology of Subglacial Lake Whillans Sediments. 5th International Polar and Alpine Microbiology Conference. Big Sky, MT.

Michaud, AB, P Sañtibáñez, TJ Vick-Majors, AC Chiuchiolo, JA Dandrilli, JC Priscu. (2013) Biogeochemical partitioning between the liquid water and ice phases during freeze-down in

Antarctic and Arctic lakes. 5th International Polar and Alpine Microbiology Conference. Big Sky, MT.

*Michaud, AB. (2013) Exposing an ecosystem below the West Antarctic Ice Sheet. Coe College Research Symposium, Plenary Lecture. (Invited)

*Michaud, AB. (2012) Microbial ecology of Subglacial Lake Whillans, West Antarctica. Coe College Biology Department Seminar Series.

Michaud, AB, M Šabacka, JC Priscu. (2010) A comparative method for elucidating Cyanobacterial diversity in Taylor Valley, Antarctica. NSF-LTER McMurdo Dry Valleys Meeting. Ft. Collins, CO.

*Michaud, AB, JE Dore, D Leslie, WB Lyons, DC Sands, JC Priscu. (2011) The Role of Ice Nucleation Active Bacteria in Hailstone Formation. American Society for Microbiology – General Meeting. New Orleans, LA.

Michaud, AB, ML Leonardo, DP Moser. (2009) *Shewanella* sp. diversity and abundance in Keane Wonder Spring, Death Valley National Park, Inyo CA. American Society for Microbiology, General Meeting, Philadelphia, PA.

PUBLIC EDUCATION AND OUTREACH

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| 2023 | Rise Up Boston: A Climate Event. Museum of Science, Boston, MA, Apr 2023.
Educational table on ice core science, (~125 adults and children engaged)
Public lecture on life in ice, (~80 adults and children attendees) |
| 2021 | Antarctic scientists (virtually) in the classroom. Marion Elementary School, Marion, Iowa, (25 students) |
| 2019 | Art Exhibition Opening Talk for 0°C, -3°C at The 410 Project, Mankato, MN (30 attendees) |
| 2019 | Arctic and Antarctic Polar Explorers, Solbjergskolen, Solbjerg, Denmark (~125 students) |
| 2018 | Arctic and Antarctic Day, Pinewood Community School, Eagan, MN. 5 – 2 nd grade classes, 1 – 5 th grade enhanced learning program (~125 students) |
| 2015 | Antarctic Science Day at the Montana State University Sub-Zero Research Facility. Bozeman Montessori School (20 elementary students) |
| 2013, 2014 | Colorado Springs Science Festival
Public Lecture; (20 – 25 attendees/yr)
K-12 classroom presentations and activities focused on glacial ice dynamics. (~150 – 250 students/yr) |
| 2010 – 2014 | Crow Nation Science Education Partnership, Crow Agency, MT. Classroom presentations and activities focused on polar biology (~100 students per year) |
| 2005 – 2009 | Science for Kids Night, Coe College, Cedar Rapids, IA. (~1000 K-12 students each year) |