

SARAH E. CRUMP

Assistant Professor

Department of Geology and Geophysics

University of California Santa Cruz

sarah.crump@utah.edu | sarahcrumpscience.com

EDUCATION

2019 | **PhD** in Geological Sciences, University of Colorado Boulder

2010 | **BA** in Geology (Environmental Studies concentration), Carleton College, *Magna cum Laude*

APPOINTMENTS

2022–present | Assistant Professor, Dept. of Geology and Geophysics, University of Utah

2021–present | NSF Postdoctoral Fellow, UC Santa Cruz

2019–2020 | Postdoctoral Research Associate, INSTAAR, CU Boulder

2016–2021 | Visiting Research Associate, Trace and Environmental DNA Lab, Curtin University

2014–2019 | Graduate Research Assistant, INSTAAR, CU Boulder

HONORS & FELLOWSHIPS

2021–2023 | NSF EAR Postdoctoral Fellowship (co-funded by BIO)

2014–2019 | NSF Graduate Research Fellowship

2017 | J. Hoover Mackin Award, Quaternary Geology & Geomorphology, GSA

2014–2015 | Geological Sciences Graduate Student Fellowship, CU Boulder

2013 | Dean's Fellowship, CU Boulder

2010 | Phi Beta Kappa, Carleton College chapter

2010 | Distinction in Major, Carleton College

2010 | Distinction in Senior Integrative Exercise, Carleton College Geology Department

2010 | Jefferson Natural Sciences Teaching Award, Carleton College

2009–2010 | Duncan Stewart Fellow, Carleton College Geology Department

2009 | Patricia V. Damon Scholar, Carleton College

PUBLICATIONS

Manuscripts in Review or in Revision

Raberg, J.H., Flores, E., **Crump, S.E.**, de Wet, G., Dildar, N., Miller, G.H., Geirsdóttir, Sepúlveda, J., *in review*, Intact polar brGDGTs in Arctic lake catchments: Implications for lipid sources and paleoclimate applications. *Journal of Geophysical Research: Biogeosciences*.

Publications

Wang, M., Murray, G.G.R., Mann, D., Groves, P., Vershinina, A.O., Supple, M., Kapp, J.D., Corbett-Detig, R., **Crump, S.E.**, Stirling, I., Laidre, K.L., Kunz, M., Dalén, L., Green, R.E.,

- Shapiro, B., 2022, A polar bear paleogenome reveals extensive ancient gene flow from polar bears into brown bears, *Nature Ecology and Evolution*. DOI:10.1038/s41559-022-01753-8
- Evans, S.E., Raberg, J.H., **Crump, S.E.**, Raynolds, M.K., Sugg, M.M., Brodie, A.R., Miller, G.H., 2022, Control of short-stature vegetation type on shallow ground temperature in permafrost across the eastern Canadian Arctic, *Journal of Geophysical Research: Biogeosciences*. DOI:10.1029/2022JG006941
- Gorbey, D.B., Thomas, E.K., Sauer, P.E., Raynolds, M.K., Miller, G.H., Corcoran, M.C., Cowling, O.C., Crump, S.E., Lovell, K., Raberg, J.H., 2022, Modern eastern Canadian Arctic lake water isotopes exhibit latitudinal patterns in inflow seasonality and minimal evaporative enrichment, *Paleoceanography and Paleoclimatology*. DOI:10.1029/2021PA004384
- Miller, G.H., Wolfe, A., Axford, Y., Briner, J.B., Bueltmann, H., **Crump, S.E.**, Francis, D., Fréchette, B., Gorbey, D.B., Kelly, M., McFarlin, J., Osterberg, E., Raberg, J.H., Raynolds, M.K., Sepúlveda, J., Thomas, E.K., de Wet, G., 2022, Last interglacial lake sediments preserved beneath Laurentide and Greenland ice sheets provide insights into Arctic climate amplification and constrain 130 ka of ice-sheet history, *Journal of Quaternary Science*. DOI:10.1002/jqs.3433
- Gorbey, D.B., Thomas, E.K., **Crump, S.E.**, Hollister, K.V., Raynolds, M.K., Raberg, J.H., de Wet, G., Sepúlveda, J., Miller, G.H., 2021, Southern Baffin Island precipitation isotopes modulated by summer and fall precipitation during the past 5,800 years, *Journal of Quaternary Science*. DOI:10.1002/jqs.3390
- Young, N.E., Briner, J.P., Miller, G.H., Lesnek, A.J., **Crump, S.E.**, Pendleton, S.L., Schwartz, R., Schaefer, J.M., 2021, Pulsebeat of early Holocene glaciation in Baffin Bay from high-resolution beryllium-10 moraine chronologies, *Quaternary Science Reviews*. DOI:10.1016/j.quascirev.2021.107179
- Raberg, J., Harning, D.J., **Crump, S.E.**, de Wet, G., Blumm, A., Kopf, S., Geirsdóttir, A., Miller, G.H., Sepúlveda, J., 2021, Revised fractional abundances and warm-season temperatures substantially improve brGDGT calibrations in lake sediments, *Biogeosciences*. DOI:10.5194/bg-18-3579-2021
- Crump, S.E.**, Fréchette, B., Power, M., Cutler, S., de Wet, G., Raynolds, M.K., Raberg, J., Briner, J.P., Thomas, E.K., Sepúlveda, J., Shapiro, B., Bunce, M., and Miller, G.H., 2021, Ancient plant DNA reveals High Arctic greening during the Last Interglacial: *Proceedings of the National Academy of Sciences*. DOI:10.1073/pnas.2019069118
- Crump, S.E.**, 2021, Sedimentary ancient DNA as a tool in paleoecology: *Nature Reviews Earth and Environment*. DOI:10.1038/s43017-021-00158-8
- Capo, E., Giguet-Covex, C., Rouillard, A., Nota, K., Heintzman, P., Vuillemin, A.... **Crump, S.E.** ...Coolen, M.J.L., Epp, L.S., Domaizon, I., Alsos, I.G., Parducci, L., 2021, Lake sedimentary DNA research on past terrestrial and aquatic biodiversity: Overview and recommendations: *Quaternary*, v. 3. DOI:10.3390/quat4010006
- Larsen, D.J., **Crump, S.E.**, and Blumm, A., 2020, Alpine glacier resilience and Neoglacial fluctuations linked to Holocene snowfall trends in the western US: *Science Advances*, v. 6, no. 47. DOI:10.1126/sciadv.abc7661
- Crump, S.E.**, Miller, G.H., Young, N.E., Briner, J.P., and Pendleton, S.L., 2020, Glacier expansion

- on Baffin Island during Early Holocene cold reversals: *Quaternary Science Reviews*, v. 241. DOI:10.1016/j.quascirev.2020.106419
- Young, N.E., Briner, J.P., Schaefer, J.M., Miller, G.H., Lesnek, A.J., **Crump, S.E.**, Thomas, E.K., Pendleton, S.L., Cuzzone, J., Lamp, J., Zimmerman, S., and Caffee, M., 2020, Reply to Carlson (2020) comment on “Deglaciation of the Greenland and Laurentide ice sheets interrupted by glacier advance during abrupt coolings”: *Quaternary Science Reviews*, v. 240. DOI: 10.1016/j.quascirev.2020.106329
- Young, N.E., Briner, J.P., Miller, G.H., Lesnek, A.J., **Crump, S.E.**, Thomas, E.K., Pendleton, S.L., Cuzzone, J., Lamp, J., Zimmerman, S., Caffee, M., and Schaefer, J.M., 2020, Deglaciation of the Greenland and Laurentide ice sheets interrupted by glacier advance during abrupt coolings: *Quaternary Science Reviews*, v. 229. DOI:10.1016/j.quascirev.2019.106091
- Larsen, D.J., **Crump, S.E.**, Abbott, M.B., Harbert, W., Blumm, A., Wattrus, N.J., and Heberger, J.J., 2019, Paleoseismic evidence for climatic and magmatic controls on the Teton fault, WY: *Geophysical Research Letters*. DOI:10.1029/2019GL085475
- Crump, S.E.**, Miller, G.H., Power, M., Sepúlveda, J., Dildar, N., Coghlan, M., and Bunce, M., 2019, Arctic shrub colonization lagged peak postglacial warmth: Molecular evidence in lake sediment from Arctic Canada: *Global Change Biology*, v. 25, p. 4244-4256. DOI:10.1111/gcb.14836
- Pendleton, S.L., Miller, G.H., Lifton, N., Lehman, S.J., Southon, J., **Crump, S.E.**, Anderson, R.S., 2019, Rapidly receding Arctic Canada glaciers revealing landscapes continuously ice-covered for more than 40,000 years: *Nature Communications*, v. 10. DOI:10.1038/s41467-019-08307-w
- Anderson, R.S., Anderson, L.S., Armstrong, W.H., Rossi, M.W., **Crump, S.E.**, 2018, Glaciation of alpine valleys: the glacier–debris-covered glacier–rock glacier continuum: *Geomorphology*, v. 311, p. 127–142. DOI:10.1016/j.geomorph.2018.03.015
- Crump, S.E.**, Anderson, L. S., Miller, G. H. and Anderson, R. S., 2017, Interpreting exposure ages from ice-cored moraines: a Neoglacial case study on Baffin Island, Arctic Canada: *Journal of Quaternary Science*, v. 32, p. 1049–1062. DOI:10.1002/jqs.2979
- Pendleton, S.L., Miller, G.H., Anderson, R.S., **Crump, S.E.**, 2017, Episodic Neoglacial expansion and rapid 20th century retreat of a small ice cap on Baffin Island, Arctic Canada, and modeled temperature change: *Climate of the Past*, v. 13, p. 1527–1537. DOI:10.5194/cp-13-1527-2017
- Titus, S.J., **Crump, S.**, McGuire, Z., Horsman, E., and Housen, B., 2011, Using vertical axis rotations to characterize off-fault deformation across the San Andreas fault system, central California: *Geology*, v. 39, p. 711–714. DOI:10.1130/G31802.1

RESEARCH GRANTS

- 2022 | NSF Geomorphology and Land-Use Dynamics #2223354: Investigating the past, present, and future of glaciated alpine landscapes using an integrated data-model approach (co-PI; \$318,233 to U of U)
- 2019 | National Geographic Society: Support for Women & Dependent Care grant (\$3,980)
- 2018 | CU Nature, Environment, Science & Technology Studio for the Arts grant (\$2,500)
- 2017 | NSF Arctic System Science grant #1737712 (proposal co-author and named Postdoc; \$2,290,769 total budget)

2017 | National Geographic Society: Early Career Grant (\$5,000)

2017 | Charles A. & June R.P. Ross Research Fund, Geological Society of America (\$3,643)

2016 | NSF Geography & Spatial Sciences Doctoral Dissertation Research Improvement grant (\$15,999)

2016 | NSF GRFP Graduate Research Opportunities Worldwide – Australia (\$5,000 + \$12,000AUD)

2015 | Dean's Graduate Student Research Grant, University of Colorado (\$9,995)

2015, 2016 | Spetzler Research Grant, CU Geological Sciences (\$4,000)

2015 | Geological Society of America graduate student grant (\$1,875)

2014, 2017 | Beverly Sears Student Research Grant, University of Colorado (\$2,000)

2014 | Arctic Institute of North America Grant-in-Aid (\$1,000)

2014 | Sigma Xi Grant-in-Aid of Research (\$1,000)

2013 | Mentorship Grant, CU Geological Sciences (\$1,000)

TEACHING EXPERIENCE

Fall 2020 | Instructor, *Global Change: An Earth Science Perspective* (GEOL 1060), CU Boulder

2014–2017 | Tutor, Geology tutoring room, CU Boulder

2013–2014 | Instructor, *Introduction to Geology Laboratory* (GEOL 1030), CU Boulder

Spring 2015 | Field trip teaching assistant, *Principles of Geomorphology* (GEOL 4241), CU Boulder

Summer 2014, 2015 | Field Geology Instructor, CU Science Discovery Summer Camp

2010–2011 | Naturalist Instructor, Widjiwagan Outdoor Learning Program, Ely, MN

Fall 2009 | Teaching Assistant, Plate Tectonics, Carleton College

Spring 2009 | Teaching Assistant, Geology in the Field, Carleton College

Spring 2008 | Teaching Assistant, Introduction to Geology, Carleton College

Guest Lectures:

- Abrupt events in early Earth history (GEOL 1060, CU Boulder), November 2019
- Indirect evidence of global warming (GEOL 1060, CU Boulder), September 2019
- Greenhouse gases and Earth's Climate (GEOL 1010, CU Boulder), June 2018
- Forests and Climate in the Earth System (GEOL 1060, CU Boulder), November 2017
- Ancient DNA in lake sediment (GEOL 4070, CU Boulder), November 2017
- Ozone 101 (GEOL 1060, CU Boulder), December 2015
- Cosmogenic radionuclide dating lecture and lab, Geomorphology (GEOL 4241, CU Boulder), January 2015

MENTORING EXPERIENCE

Graduate student mentees:

- Matthew Power, MSc Student, Curtin University, Australia (committee member, *seadaDNA*)

Undergraduate research student mentees:

- Halle Bender, BSc student, UC Santa Cruz (*sedaDNA*)
- Aria Blumm, BA student, Occidental College (lake sediment coring, FTIRs analyses)
- Maanav Jhatakia, BA student, CU Boulder (FTIRs sediment analyses)
- Anna Todd, BA student, CU Boulder (cosmogenic radionuclide lab prep)
- Sara Constantine, BA student, CU Boulder (cosmogenic radionuclide lab prep)

UNIVERSITY AND PROFESSIONAL SERVICE

2020 | Justice, Equity, Diversity, & Inclusion (JEDI) Committee member, INSTAAR, CU Boulder

2020 | Seminar committee member, INSTAAR, CU Boulder

2019 | Postdoctoral representative, INSTAAR Directorate, CU Boulder

2018–2019 | Graduate student representative, INSTAAR Directorate, CU Boulder

2017–2019 | Values & Ethics Committee member, CU Boulder Office of the Chancellor

2017–2019 | Student Representative, Geological Society of America (GSA) Quaternary Geology & Geomorphology Division

2017–2019 | Student Advisory Committee member, Geological Society of America

Fall 2013 | Annual Meeting Student Committee member, Geological Society of America

Conference session organizer for: AGU 2019 (“B530: Mapping Biodiversity Through Space and Time”); GSA 2018 (“T56: From Alpine Glaciers to Ice Sheets”)

Reviewer for: NSF; GSA graduate student grants; *Nature Communications*, *Scientific Reports*, *Geophysical Research Letters*, *Scientific Data*, *Environmental DNA*, *Arctic*, *Antarctic*, and *Alpine Research*, *Thalassas*, *Journal of Mountain Science*, *Biodiversity Data Journal*.

SELECTED OUTREACH ACTIVITIES

2020–present | Skype a Scientist volunteer (virtual)

2017–2019 | Social media co-manager, GSA Quaternary Geology & Geomorphology Division

2016–2018 | President, Women in Science and Engineering (WiSE), CU Boulder

December 2018 | Team Leader, AGU Congressional Visits Day, Washington, D.C.

October 2018 | Career Center invited speaker (topic: Student and Early Career Research Grants), GSA Annual Meeting

July 2018 | Volunteer, Girls on Rock outdoor science program, Gore Range, Colorado.

April 2018 | Guest instructor, Limnology field camp, Nunavut Arctic College Environmental Technology Program, Iqaluit, Baffin Island, Canada

March 2017 | Volunteer scientist, Science Teen Café, CU Science Discovery, Boulder, CO

2015–2016 | Grant committee member, WiSE, CU Boulder

Spring & Fall 2014 | Volunteer scientist, Earth Explorers 501(c)3 nonprofit, Boulder, CO

2006–2010 | Volunteer teacher and Program Director, Kids for Conservation environmental

education program, Carleton College

2009–2010 | Volunteer tutor and Program Director, Northfield Middle School English Language Learner STEM tutoring program, Northfield, MN

INVITED TALKS

Feb 2022 | “Abrupt climate change in the alpine: Latest Pleistocene glacial and ecological records from the Teton Range, Wyoming,” University of Utah Geography Dept. (virtual)

Nov 2021 | “Ecological impacts of Late Quaternary climate change: New insights from ancient DNA in lake sediment,” North Carolina State University (virtual)

April 2021 | “Lessons for a warming world: Late Quaternary insights from sedimentary ancient DNA and glacial history,” University of Utah Geology & Geophysics Dept. (virtual)

April 2021 | “Ancient DNA in lake sediment reveals High Arctic greening during the Last Interglacial,” University of Wyoming Quaternary Conversations (virtual)

Dec 2020 | “Lessons from the past: What alpine rocks and sediments can tell us about the future of the western high country,” Science Writers Association of the Rocky Mountains meeting (virtual)

June 2020 | “Ancient DNA in lake sediment reveals High Arctic greening during the Last Interglacial,” AMQUA 2020 (virtual)

Nov 2019 | “Back to the (warmer) future: Insights from ancient plant DNA in lake sediment,” Appalachian State University, Boone, NC

Jan 2019 | “Climate-driven changes to the Arctic landscape during the early Holocene,” Carleton College, Northfield, MN

SELECTED CONFERENCE ABSTRACTS

Crump, S.E., Larsen, D.J., Muscott, A., Wang, L., 2021, Younger Dryas glacier readvance in the Teton Range, Wyoming, USA: AGU Fall Meeting, New Orleans, LA.

Crump, S.E., Power, M., Fréchette, B., de Wet, G., Raynolds, M.K., Raberg, J.H., Allentoft, M., Bunce, M., Miller, G.H., 2021, Patterns of postglacial vegetation establishment clarified by lacustrine sedaDNA from Baffin Island, Arctic Canada: EGU General Assembly, virtual.

Crump, S.E., Fréchette, B., Miller, G.H., Power, M., de Wet, G., Thomas, E.K., Sepúlveda, J., Briner, J.P., and Bunce, M., 2020, Ancient DNA in lake sediment reveals High Arctic greening during the Last Interglacial: AGU Fall Meeting, virtual.

Crump, S.E., Fréchette, B., Miller, G.H., Power, M., de Wet, G., Thomas, E.K., Sepúlveda, J., Briner, J.P., and Bunce, M., 2019, Vegetation response to climate warming across multiple interglacials inferred from High Arctic lake sediment: AGU Fall Meeting, San Francisco, CA.

Crump, S.E., Young, N.E., Pendleton, S.L., Miller, G.H., Anderson, R.S., and Briner, J.P., 2019, Expansion of Baffin Island glaciers during early Holocene cold events: GSA Annual Meeting, Phoenix, AZ.

Crump, S.E., Gorbey, D., Raberg, J., Power, M., de Wet, G., Florian, C.R., Thomas, E.K., Miller, G.H., Sepúlveda, J., and Bunce, M., 2019, Deciphering dynamic vegetation histories by

- integrating bulk geochemistry, leaf wax compounds, and ancient DNA in lake sediment from Arctic Canada: INQUA Congress, Dublin, Ireland.
- Crump, S.E.**, Montes, Z., and de Saillan, N., 2018, Engaging the public in climate research through multi-media communication efforts: An example from the Canadian Arctic: AGU Fall Meeting, Washington, D.C.
- Crump, S.E.**, Power, M., Miller, G.H., Sepúlveda, J., Dildar, N., Coghlan, M., and Bunce, M., 2018, Arctic shrub colonization lagged postglacial climatic optimum: Molecular evidence in lake sediment from Baffin Island, Arctic Canada: International Paleolimnology Association–International Association of Limnogeologists Joint Meeting, Stockholm, Sweden.
- Crump, S.E.**, Power, Matthew, Miller, G.H., Sepúlveda, J., Coghlan, Megan, and Bunce, M., 2018, The paleoecological potential of ancient DNA in lake sediment: Preliminary results from Baffin Island: 48th International Arctic Workshop, Boulder, CO.
- Crump, S.E.**, Sepúlveda, J., Bunce, M., de Wet, G.A., Walker, D., Thomas, E., Reynolds, M., Raberg, J., Miller, G.H., 2017, The PACEMAP project – Predicting Arctic Change through Ecosystem Molecular Proxies: Arctic Change Meeting, Quebec City, Canada
- Crump, S.E.**, Sepúlveda, J., Bunce, M., and Miller, G.H., 2017, Molecules in the mud: Combining ancient DNA and lipid biomarkers to reconstruct vegetation response to climate variability during the Last Interglacial and the Holocene on Baffin Island, Arctic Canada: AGU Fall Meeting, New Orleans, LA.
- Crump, S.E.** and Larsen, D.J., 2017, Evidence of Younger Dryas glacier activity in the Teton Mountain Range, Wyoming: GSA Annual Meeting, Seattle, WA.
- Crump, S.E.**, Miller, G.H., Young, N.E., Briner, J.P., Pendleton, S.L., 2017, Early Holocene glacier chronologies from Baffin Island, Arctic Canada: 47th International Arctic Workshop, Buffalo, NY.
- Crump, S.E.**, Miller, G.H., Bunce, M., 2016, A Holocene paleoecological record from ancient DNA preserved in lake sediments on Baffin Island, Arctic Canada: AGU Fall Meeting, San Francisco, CA.
- Crump, S.E.** and Larsen, D.J., 2016, Exposure dating of major landslides along the Teton fault, WY: Preliminary results and implications for paleoseismicity: GSA Annual Meeting, Denver, CO.
- Crump, S.E.**, Miller, G.H., Bunce, M., 2016, Envisioning a warmer Arctic: Exploring the use of ancient DNA preserved in interglacial lake sediments on Baffin Island: 46th International Arctic Workshop, Boulder, CO.
- Crump, S.E.**, Florian, C.R., Miller, G.H., Geirsdottir, A., Zalzal, K., 2015, A tale of two lakes: Catchment-specific responses to Late Holocene cooling in northwest Iceland: AGU Fall Meeting, San Francisco, CA.
- Crump, S.E.**, Anderson, L.S., Miller, G.H., and Anderson, R.S., 2015, Interpreting the moraine record of debris-covered glaciers: A Neoglacial case study on Baffin Island, Arctic Canada: 45th International Arctic Workshop, Bergen, Norway.
- Crump, S.E.**, and Miller, G.H., 2014, Constraining the Timing of Neoglaciation: Moraine Exposure Ages from Baffin Island, Arctic Canada: AGU Fall meeting, San Francisco, CA.
- Crump, S.E.**, and Miller, G.M., 2014, Constraining the timing and duration of early Holocene and early Neoglacial advances on Baffin Island, Arctic Canada: 44th International Arctic Workshop, Boulder, CO.

OTHER PUBLICATIONS

Crump, S.E., 2019, Deconvolving climatic and non-climatic controls on Holocene glacier and ecological change on Baffin Island, Arctic Canada. CU Boulder PhD Thesis. 230 pp.

Crump, S.E., 2018, A Quest for Old, Cold Mud: Sediments from frigid lakes on Baffin Island tell the story of climate change over the past 10,000 years. *Scientific American*:
<https://blogs.scientificamerican.com/observations/a-quest-for-old-cold-mud/>

Crump, S.E., 2010, Paleomagnetic data from the Rinconada fault in central California: Evidence for off-fault deformation. Carleton College Undergraduate Thesis. 49 pp.

MEDIA COVERAGE

April 2021 | *Arctic Today / Nunatsiaq News* article on Crump et al., 2021 (PNAS):
<https://www.arctictoday.com/ancient-plant-dna-and-pollen-found-under-baffin-island-lake-show-a-greener-arctic/>

April 2021 | *l'Aquilon* article on Crump et al., 2021 (PNAS):
<https://www.aquilon.nt.ca/Article/Faire-parler-l-ADN-des-plantes-prehistoriques-202104151638/default.aspx#article>

December 2020 | *Jackson Hole News and Guide* article on our study of glacier history in the Teton Range: https://www.jhnewsandguide.com/news/environmental/sediment-suggests-teton-glacier-longer-lived-than-thought/article_7a68193a-36aa-5a10-ac66-b331790a964f.html

December 2019 | *Science Magazine* article on sedimentary ancient DNA featuring our Baffin Island work: <https://www.sciencemag.org/news/2019/12/dna-recovered-arctic-lakes-holds-clues-our-future-world>

February 2019 | *Colorado Arts & Sciences Magazine* piece on ancient DNA and other Arctic research: <https://www.colorado.edu/asmagazine/2019/02/05/cu-boulders-geoscientists-ranked-worlds-best-showcase-rock-it-science>

October 2018 | Colorado Public Radio segment on CU NEST art/science collaborations:
<http://www.cpr.org/news/story/forget-stem-at-cu-boulder-the-nest-program-bridges-painters-and-petri-dishes>

September 2018 | USAPECS Polar Film Festival featuring our Baffin Island field film:
<http://usapecs.wixsite.com/usapecs/polar-research>

April 2018 | Curtin University piece on Baffin Island ancient DNA research:
<https://research.curtin.edu.au/story/?postid=46856>

December 2017 | Association for Women in Science Magazine feature on CU WiSE leadership:
http://magazine.awis.org/publication/?m=46591&l=1#{%22issue_id%22:%22482829%22,%22page%22:0}

October 2017 | *CU Boulder Today* feature on Baffin Island fieldwork:
<https://www.colorado.edu/today/2017/10/18/beyond-boulder-digging-arctic-mud-answers-climate-change>

October 2017 | *GlacierHub* story on ice-cored moraine research (Crump et al., 2017, JQS):
<http://glacierhub.org/2017/10/31/aging-ice-cored-moraines-canadian-arctic/>

SHORT COURSES, WORKSHOPS, & CERTIFICATIONS

2022 | GeochronR PaleoHackathon (virtual)
2021 | Diversity and Inclusion Certification Program (in progress; UC Santa Cruz)
2021 | Preparing for an Academic Career, Earth Educators Rendezvous (virtual)
2020 | Arctic Data Center Training (National Center for Ecological Analysis & Synthesis; virtual)
2020 | Sedimentary Ancient DNA Cyberinfrastructure Workshop (NSF-funded; virtual)
2019 | Engaged Scientist Workshop: Communication tools for effective outreach (CU Boulder)
2019 | CU WiSE SciComm Symposium Writing Workshop
2019 | Paleo to Policy Workshop (UC Davis Bodega Marine Laboratory)
2017 | Communicating Science Conference (ComSciCon) Rocky Mountain West
2016 & 2017 | CU WiSE Science Communication Symposium (organizer & participant)
2014 | Urbino Summer School in Paleoclimatology (Urbino, Italy)
2007–2015 | Wilderness First Responder (Wilderness Medical Institute/NOLS)
2013 | NSF Arctic Field Training (CH2Mhill Polar Services)
2013 | Polar Bears: A Guide to Safety (CH2Mhill Polar Services)

PROFESSIONAL ORGANIZATIONS

American Geophysical Union (2014–present)
Geological Society of America (2014–present)
National Association of Geoscience Teachers (2021–present)
Association for Women in Science (2016–2019)

FIELD EXPERIENCE

2014–2021 | Nine field campaigns in Grand Teton National Park, WY; lake sediment coring, landslide and moraine boulder sampling for exposure dating.
2013–2019 | Seven field seasons on Baffin Island, Arctic Canada; lake sediment coring, instrumenting lake catchments, moraine boulder sampling for exposure dating, glaciological data collection.
2007–2009 | Various field trips in MN, WI, MI, and CA; Carleton College.
2007–2010 | Wilderness canoe guide in northern MN and Canada; YMCA Camp Menogyn

COMPUTER AND LABORATORY SKILLS

- Lake sediment analyses: (ancient) environmental DNA, bulk geochemistry, algal pigments, lipid biomarkers (brGDGTs)
- Experience with PCR, qPCR, high-throughput sequencing, HPLC, mass spectrometry, FTIRS
- Cosmogenic ¹⁰Be sample prep and wet chemistry (lab co-manager, 2014–2019)
- Programming languages: R, Matlab, Bash
- Adobe Creative Suite (Illustrator, Photoshop)