

Matthew R. Siegfried [he/him]

CONTACT INFORMATION	Department of Geophysics Colorado School of Mines 1500 Illinois St Golden, CO 80401 USA	Tel: 303.384.2004 Mobile: 847.525.8487 siegfried@mines.edu https://glaciology.mines.edu/
ACADEMIC APPOINTMENTS	Associate Professor Assistant Professor Department of Geophysics Hydrologic Science and Engineering, Affiliated Faculty Space Resources Program, Affiliated Faculty Payne Institute for Public Policy, Faculty Fellow Colorado School of Mines	April 2024 to present January 2019 to April 2024
	Thompson Postdoctoral Fellow Department of Geophysics School of Earth, Energy, and Environmental Sciences Stanford University Mentor: Dr. Dustin M. Schroeder	May 2017 to December 2018
	Postdoctoral Scholar Institute of Geophysics and Planetary Physics Scripps Institution of Oceanography University of California, San Diego Supervisor: Dr. Helen A. Fricker	October 2015 to April 2017
EDUCATION	PhD in Earth Sciences Institute of Geophysics and Planetary Physics Scripps Institution of Oceanography, La Jolla, CA Dissertation: <i>Investigating Antarctic ice sheet subglacial processes beneath the Whillans Ice Plain, West Antarctica, using satellite altimetry and GPS</i> Adviser: Dr. Helen A. Fricker	October 2015
	Master of Science in Earth Sciences Dartmouth College, Hanover, NH Thesis: <i>On the use of high-precision GPS surveys for validation of ICESat altimetry measurements and investigation of seasonal ice-surface fluctuations</i> Adviser: Dr. Robert L. Hawley	July 2010
	Bachelor of Arts in Earth Sciences Dartmouth College, Hanover, NH <i>Magna cum Laude, Phi Beta Kappa</i> Senior Thesis for High Honors: <i>Hydrothermal Waters of Ischia, Italy: A revisit of groundwater mixing and the ramifications for environmental arsenic contamination</i> Adviser: Dr. Benjamin Bostick	June 2008
MANUSCRIPTS IN REVIEW	[94] *Follingstad, V. M., R. J. Michaelides*, M. R. Siegfried , T. M. Meng, J. Bradford, K. H. Hughson, A. R. Kubas, A. Mullen, E. Quartini, A. Routt, H. G. Sizemore, A. Swidinsky and B. E. Schmidt, in review. Quantifying the Surface Deformation of Pingos on the Alaskan North Slope using Interferometric Synthetic Aperture Radar (InSAR), <i>Permafrost and Periglacial Processes</i> .	* indicates student or postdoctoral advisee ^ indicates student on whose dissertation committee I served † indicates co-first authors

- [93] *Garvey, S., **M. R. Siegfried**, J. Shragge, L. Zoet, D. Hansen and N. Stevens, in review. Multi-component Rayleigh wave dispersion analysis, *Journal of Glaciology*.
- [92] ^Peter, I. C., E. J. Anderson, **M. R. Siegfried**, A. B. Villas Bôas and N. T. Kurtz, in review. Advancing Large Lake Ice Observations: Water Surface Representation from ICESat-2 Altimetry, Operational Hydrodynamic Models, and Shoreline Gauges, *Water Resources Research*.
- [91] *Snow, T., A. Harris, S. Grigsby, E. Abrahams, E. Savidge*, T. Scambos, F. Pérez, C. Shuman, W. Abdalati and **M. R. Siegfried**, in review. Application of a new Landsat sea surface temperature algorithm to the Amundsen Sea, West Antarctica, *IEEE Transactions on Geoscience and Remote Sensing*.
- [90] *Verboncoeur, H., B. H. Hills*, **M. R. Siegfried**, E. Abrahams* and N. Holschuh, in review. Subglacial conditions estimated from unsupervised clustering analysis of radar bed-echo shape, *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*
- [89] Doran, P. T., **M. R. Siegfried**, H. Dugan, K. Hubbard and J. Lawrence, in review. Glacier surface lowering and subglacial outflow coincide with Blood Falls discharge event in the McMurdo Dry Valleys, *Antarctic Science*.
- [88] Matsuoka, K., G. Moholdt, J. F. Arthur, J. A. Bodart, X. Cui, F. Ferraccioli, R. Forsberg, V. Goel, T. A. Jordan, F. S. McCormack, R. Mottram, H. D. Pritchard, C. Shackleton, K. Tinto, F. Boberg, M. G. P. Cavitte, R. Drews, P. Dutrieux, J. Ebbing, O. Eisen, H. Eisermann, A. S. Gardner, C. A. Greene, N. Holschuh, S. S. R. Jamieson, B.-H. Kim, N. Krauzig, B. Kulessa, C. Leuschen, J. Li, L. Li, J. Liebsch, J. A. MacGregor, E. MacKie, A. Mahagaonkar, J. Maton, M. Morlighem, F. Navarro, P. Neff, I. N. Otosaka, F. Pattyn, A. Ruppel, R. J. Sanderson, H. Seroussi, A. Shepherd, **M. R. Siegfried**, T. Slater, A. P. Stroeven, M. Studinger, T. Teisberg, R. A. Venturelli, P. J. Winberry, C. Zhao, L. An, J. L. Bamber, R. E. Bell, R. G. Bingham, J. Brehmer-Moltmann, G. Eagles, J. Greenbaum, J. Gronset, W. S. Lee, E. L. Meur, L. M. Jon, K. Lindbäck, S. Lidström, M. Lösing, M. Minowa, M. Pandey, Y. Ray, M. Scheinert, D. M. Schroeder, T. Seehaus, K. Shahateet, D. Steinhage, X. Tang, D. Taylor, H. Verboncoeur*, J. Yang and D. A. Young, in review. Towards an improved understanding of the Antarctic coastal zone and its contribution to future global sea level, *Reviews of Geophysics*.
- [87] Meng, T. M., R. J. Michaelides, S. Vivero, A. Nguyen and **M. R. Siegfried**, in review. Fusion of InSAR and stereophotogrammetry improves 3D alpine permafrost surface displacement measurements, *Earth and Space Science*.
- [86] Ross, N., R. J. Sanderson, B. Kulessa, M. Siegert, G. J. G. Paxman, K. A. Nichols, **M. R. Siegfried**, S. S. R. Jamieson, M. J. Bentley, T. A. Jordan, C. L. Batchelor, D. Small, O. Eisen, K. Winter, R. G. Bingham, S. L. Callard, R. Carr, C. F. Dow, H. A. Fricker, E. Hill, B. H. Hills*, C. Hofstede, H. Jeofry, F. Napoleoni and W. Sauthoff*, in review. Review Article: The Foundation-Patuxent-Academy ice stream system, Antarctica, *The Cryosphere*, doi:10.5194/egusphere-2025-3625.
- [85] Smith, B., T. C. Sutterley, H. A. Fricker, L. Padman, **M. R. Siegfried**, T. Black, D. Felikson, B. I. D. Freer, A. Gibbons, S. L. Howard, B. Jolley, M. King, B. Medley, M. Morlighem, C. Sadlik and W. Sauthoff*, in review. ICESat-2 land ice products resolve Greenland and Antarctic ice-sheet height changes on seasonal to multiyear time scales, *Journal of Glaciology*, doi:10.22541/essoar.175882970.07697715/v1.
- REFEREED JOURNAL PUBLICATIONS**
- [84] *Hills, B., **M. R. Siegfried**, N. Holschuh, H. Verboncoeur* and D. Schroeder, 2026. Resolving radiostratigraphy with squinted synthetic aperture radar focusing, *Journal of Glaciology*, **72**(e10), 1–11, doi:10.1017/jog.2025.10122.
- [83] *Katz, Z. S., **M. R. Siegfried** and L. Padman, 2026. Slip-Event Timing and Ice Velocity Vary at Long-Period Ocean Tidal Frequencies at Whillans Ice Plain, West Antarctica,

- Journal of Geophysical Research: Earth Surface*, **131**(1), e2025JF008770, doi:10.1029/2025JF008770.
- [82] *Sauthoff, W., **M. R. Siegfried**, R. A. Venturelli and B. E. Smith, 2026. Dynamic Boundaries of Antarctic Active Subglacial Lakes Reveal Underestimated Water Fluxes and Overestimated Lakebed Active Areas, *Geophysical Research Letters*, **53**(2), e2025GL117121, doi:10.1029/2025GL117121.
- [81] *Willis, R., J. Grimm, F. Stanek, P. Edme, A. Fichtner, B. P. Lipovsky, P. Paitz, F. Walter, **M. R. Siegfried** and E. R. Martin, 2026. Creating a Comprehensive Cryoseismic Catalog at Rhonegletscher: A Scalable Approach Using Distributed Acoustic Sensing and Machine Learning, *Machine Learning: Earth*, accepted.
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- 2025 [79] *Hills[†], B. H., T. J. Young[†], D. A. Lilien[†], E. Babcock, N. Bienert, D. Blankenship, J. Bradford, G. Brighi, A. Brisbourne, J. Dall, R. Drews, O. Eisen, M. R. Ershadi, T. A. Gerber, N. Holschuh, D. Jansen, T. M. Jordan, N. B. Karlsson, J. Li, C. Martín, K. Matsuoka, D. May, F. M. Oraschewski, J. Paden, N. M. Rathmann, N. Ross, D. M. Schroeder, M. Siegert, **M. R. Siegfried**, E. Smith and O. Zeising, 2025. Radar Polarimetry in Glaciology: Theory, Measurement Techniques, and Scientific Applications for Investigating the Anisotropy of Ice Masses, *Reviews of Geophysics*, **63**(4), e2024RG000842, doi:10.1029/2024RG000842.
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- [77] ^Sartore, N. B., T. J. Wagner, **M. R. Siegfried**, N. Pujara and L. K. Zoet, 2025. Wave erosion, frontal bending, and calving at Ross Ice Shelf, *The Cryosphere*, **19**, 249–265, doi:10.5194/tc-19-249-2025.
- [76] *Savidge, E., J. Millstein*, T. Snow*, **M. R. Siegfried**, C. Bézu, K. Alley and B. Riel, 2025. Deteriorating Structural Integrity of Pine Island Glacier's Southern Ice Shelf (2017–23) Identified with Satellite-Derived Surface Deformation, Ice Velocity, and Strain Rates, *Journal of Glaciology*, **71**(e116), 1–9, doi:10.1017/jog.2025.10076.
- [75] *Verboncoeur, H., **M. R. Siegfried**, J. P. Winberry, N. Holschuh, D. Byrne*, W. Sauthoff*, T. C. Sutterley and B. Medley, 2025. Multi-decadal evolution of Crary Ice Rise region, West Antarctica, amid modern ice-stream deceleration, *Journal of Glaciology*, **71**(e3), 1–11, doi:10.1017/jog.2024.79.
- [74] Bingham[†], R. G., J. A. Bodart[†], M. G. P. Cavitte[†], A. Chung[†], R. J. Sanderson[†], J. C. R. Sutter[†], O. Eisen, N. B. Karlsson, J. A. MacGregor, N. Ross, D. A. Young, D. W. Ashmore, A. Born, W. Chu, R. Drews, S. Franke, V. Goel, J. W. Goode, A. C. J. Henry, A. Hermant, B. H. Hills*, N. Holschuh, M. R. Koutnik, G. J.-M. C. Leysinger Vieli, E. J. MacKie, E. Mantelli, C. Martín, F. S. L. Ng, F. M. Oraschewski, F. Napoleoni, F. Parrenin, S. V. Popov, T. Rieckh, R. Schlegel, D. M. Schroeder, M. J. Siegert, T. O. Teisberg, K. Winter, X. Cui, X. Tang, S. Yan, H. Davis, C. F. Dow, T. J. Fudge, T. A. Jordan, B. Kulessa, K. Matsuoka, C. J. Nyqvist, M. Rahmehoonfar, **M. R. Siegfried**, S. Singh, V. Višnjević, R. Zamora and A. Zuhr, 2025. Review article: AntArchitecture – building an age–depth model from Antarctica's radiostratigraphy to explore ice-sheet evolution, *The Cryosphere*, **19**(10), 4611–4655, doi:10.5194/tc-19-4611-2025.
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- 2023 [65] *Savidge, E., T. Snow*, **M. R. Siegfried**, Y. Zheng, A. B. Villas Bôas, G. A. Bortolotto, L. Boehme and K. E. Alley, 2023. Wintertime Polynya Structure and Variability From Thermal Remote Sensing and Seal-Borne Observations at Pine Island Glacier, West Antarctica, *IEEE Transactions on Geoscience and Remote Sensing*, **61**, 1–13, doi:10.1109/tgrs.2023.3271453.
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- [63] **Siegfried[†]**, **M. R.**, R. A. Venturelli[†], M. O. Patterson, W. Arnuk, T. D. Campbell, C. D. Gustafson[‡], A. B. Michaud, B. K. Galton-Fenzi, M. B. Hausner, S. N. Holzschuh*, B. Huber, K. D. Mankoff, D. M. Schroeder, P. Summers, S. Tyler, S. P. Carter, H. A. Fricker, D. M. Harwood, A. Leventer, B. E. Rosenheim, M. L. Skidmore, J. C. Priscu and the SALSA Science Team, 2023. The life and death of a subglacial lake in West Antarctica, *Geology*, **51**(5), 434–438, doi:10.1130/G50995.1.
- [62] *Snow, T., W. Zhang, E. Schreiber, **M. R. Siegfried**, W. Abdalati and T. Scambos, 2023. Alongshore Winds Force Warm Atlantic Water Toward Helheim Glacier in Southeast Greenland, *Journal of Geophysical Research: Oceans*, **128**, doi:10.1029/2023JC019953.
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- Team, 2023. Biogeochemical and historical drivers of microbial community composition and structure in sediments from Mercer Subglacial Lake, West Antarctica, *ISME Communications*, **3**(1), doi:10.1038/s43705-023-00216-w.
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Arendt, A., B. Smith, D. Shean, A. Steiker, Alek Petty, F. Perez, S. Henderson, F. Paolo, J. Nilsson, M. Becker, Susheel Adusumilli, D. Shapero, B. Wallin, J. Meyer, A. Schweiger, S. Dickinson, N. Hoschuh, **M. R. Siegfried** and T. Neumann, 2019. ICESAT-2HackWeek/ICESat2_hackweek_tutorials (Version 0.1), Zenodo, doi: [10.5281/ZENODO.3360994](https://doi.org/10.5281/ZENODO.3360994).

EXPANDED ABSTRACTS

* indicates student or postdoctoral advisee

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 - [5] Michalides, R. and **M. R. Siegfried**, 2023. Studying permafrost-wildfire interactions in the age of NISAR, *IGARSS 2023: 2023 IEEE International Geoscience and Remote Sensing Symposium*.
- 2021
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 - [3] *Klemm, J. and **M. R. Siegfried**, 2021. Open Source Visualization for Radar Altimetry Waveforms, /textit{IEEE International Symposium on Antenna Technology and Applied Electromagnetics}.
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Winner of the IEEE GRSS Symposium Prize Paper Award

MENTORING

Postdoctoral Scholars

Shane Grigsby, 2019–2021

(post Mines: R&D Scientist, National Geospatial Intelligence Agency)

Roger Michaelides, 2020–2022

(post Mines: Asst. Professor, Washington University in St. Louis)

Tasha Snow, 2021–2024

(post Mines: Asst. Researcher, NASA Goddard/U. Maryland)

Benjamin Hills, 2023–2025

(post Mines: Senior Geophysicist, Vista Clara, Inc.)

Joanna Millstein, 2023–present

Graduate Students

Jared Klemm (PhD), Geophysics, 2020–2021

(post Mines: Software Engineer II, Atmospheric and Environmental Research)

Kayla Hubbard (MS-NT), Hydrologic Science & Engineering, 2020–2021

(post Mines: Science Assistant, Arctic Sciences Section, National Science Foundation)

Elena Savidge (PhD), Geophysics, 2020–2024
(post Mines: Trottier Space Institute Postdoctoral Fellow, McGill University)
Wilson Sauthoff (PhD), Hydrologic Science & Engineering, 2020–present
Hannah Verboncoeur (PhD), Geophysics, 2021–present
Bailey Mullett (MS-NT), Hydrologic Science & Engineering, 2022–2024
(post Mines: Project Hydrogeologist, Flo Americas Ltd.)
Gabriel Thomas (MS), Hydrologic Science & Engineering, 2022–2024
co-advised with Kamini Singha
Rachel Willis(PhD), Geophysics, 2023–2025
Zachary Katz (PhD), Geophysics, 2023–present
Samara Omar (PhD), Geophysics, 2024–present
co-advised with Jeff Shragge
Rohaiz Haris, Geophysics, 2024–present
Marianna Marquardt, Geophysics, 2024–present

Undergraduate Research

Matt Oleszko, Geophysics, 2019–2021
(post-Mines step: Radar Processing Engineer, The Aerospace Corporation)
Anna Valentine, Geophysics, 2020–2021
(post-Mines step: PhD student at Dartmouth College)
Becca Prentice, Geophysics, 2020–2022
(post-Mines step: PhD student at Stanford University)
Stephanie Holzschuh, Applied Math and Statistics, 2020–2021
(post-Mines step: Data Engineer at Chevron)
Michael Field, Geophysics, 2021–2022
(post-Mines step: PhD student at University of Florida)
Cash Koning, Geophysics, 2020–2023
(post-Mines step: Polar Engineer, Earthscope Consortium)
Venezia Follingstad, Geophysics, 2021–2023
(post-Mines step: PhD student at University of Oregon)
Ashleigh Miller, Geophysics, 2022–2023
(post-Mines step: PhD student at Georgia Tech)
Mia Jungman, Geophysics, 2023–2024
Duncan Byrne, Geophysics, 2023–2025
(post-Mines step: PhD student at University of Colorado, Boulder)
Anastasia Horne, Applied Math & Statistics, 2023–2025
(post-Mines step: Research Mathematician, Army Corps of Engineers)
Lucas Holt, Geophysics, 2024–2025
Jack Logan, Geophysics, 2024–present

Senior Design

Hannah Haugen, 2021 *(post-Mines: M.S. student at U. Arizona)*
Bailey Mullett, 2022 *(post-Mines: M.S. student at Colorado School of Mines)*
Venezia Follingstad, 2022 *(post-Mines: PhD student at U. Oregon)*
Cash Koning, 2022 *(post-Mines: Polar Engineer, Earthscope Cosortium)*
Dawn Lipfert, 2024 *(post-Mines: Geophysicist, Collier Geophysics)*

Visiting Students

Emma Pearce (PhD), University of Leeds, 2019
Joanna Millstein (PhD), MIT, 2021–2023
Ellie Abrahams (PhD), University of California Berkeley, 2022
Eojin Lee (UG), Columbia University, 2022–2023
Sawyer Kaarto (UG), Red Rocks Community College, 2022

Dissertation Committee Membership

Colin Beyers (2025–present) Mines, Department of Geophysics
Joe Ruggiero (2025–present) Mines, Department of Geology & Geological Engineering

Jason Drebber (2024–present) Mines, Department of Geology & Geological Engineering
 Kate Huelse (2024–present) Mines, Department of Civil & Environmental Engineering
 Ellie Longar (2024–present) Mines, Department of Geology & Geological Engineering
 Ellie Miller (2024–present) Mines, Department of Geology & Geological Engineering
 Nicolas Sartore (2024–present) U. Wisconsin, Dept. of Atmospheric & Oceanic Sciences
 Isabelle Peter (2024–present) Mines, Department of Civil & Environmental Engineering
 Ryan Peterson (2024–present) Mines, Department of Applied Mathematics
 Nicholas Dorogy (2023–present) Mines, Department of Geophysics
 Ari Koshkin (2023–2025) Mines, Hydrologic Science & Engineering
 Ahmad Tourei (2023–2025) Mines, Hydrologic Science & Engineering
 Melody Zhang (2021–present) Mines, Department of Geology & Geological Engineering
 Devon Dunmire (2020–2022) U. Colorado Boulder, Atmospheric & Ocean Sciences
 Chloe Gustafson (2020) Columbia U., Lamont-Doherty Earth Observatory

Masters Thesis Committee Membership

Rishi Banerjee (2023–2024) U. Manitoba, Earth Observation Science

TEACHING EXPERIENCE**Colorado School of Mines**, Golden, CO*Instructor of Record*

GPGN486: Geophysics Field Camp	Summer 2026
GPGN470/570: Applications of Remote Sensing	Spring 2026
CSCI303: Data Science	Spring 2026
GPGN486: Geophysics Field Camp	Summer 2025
GPGN470/570: Applications of Remote Sensing	Spring 2025
GPGN573: Polar Cryosphere in the Earth System	Fall 2024
GPGN486: Geophysics Field Camp	Summer 2024
GPGN470/570: Applications of Remote Sensing	Spring 2024
CSCI303: Data Science	Spring 2024
GPGN486: Geophysics Field Camp	Summer 2023
GPGN470/570: Applications of Remote Sensing	Spring 2023
GPGN598b: Polar Cryosphere in the Earth System	Fall 2022
GPGN486: Geophysics Field Camp	Summer 2022
GPGN470/570: Applications of Remote Sensing	Spring 2022
GPGN599: Ice Dynamics at Whillans Ice Stream	Spring 2022
GPGN470/570: Applications of Remote Sensing	Spring 2021
GPGN101: Geophysics & Society	Spring 2021
GPGN599: Antarctic groundwater modeling	Spring 2021
GPGN470/570: Applications of Remote Sensing	Spring 2020
GPGN101: Geophysics & Society	Spring 2020
GPGN498A/C: Geophysical Remote Sensing	Spring 2019

Co-Instructor

GEGN584: Field Methods in Hydrology	Fall 2023
GEGN584: Field Methods in Hydrology	Fall 2022
GPGN498: Electrical & Electromagnetic Methods & Applications	Spring 2022
GPGN486: Geophysics Field Camp	Summer 2021
GPGN486: Geophysics Field Camp	Summer 2019
Cryospheric Science with ICESat-2 Hackweek 2019, U. Washington	July 2019

Scripps Institution of Oceanography, La Jolla, CA*Co-Instructor*

SIO115: Ice and the Climate System	Winter 2017
GMT Workshop for geodynamics REU students	June 2016

<i>Teaching Assistant</i>		
Remote Sensing		Spring 2013
Instructors: Dr. David Sandwell, Dr. Helen Fricker		
Dartmouth College , Hanover, NH		
<i>Teaching Assistant</i>		
Dartmouth College Field Program		Fall 2009
<i>Glaciology, Quaternary Geology, Structure and Geologic Mapping</i>		
Instructors: Dr. Bob Hawley, Dr. Erich Osterberg, Dr. Meredith Kelly		
Ecological Agriculture		Summer 2009
Instructors: Dr. Jill Mikucki, Dr. Sarah Smith		
Glaciology		Spring 2009
Instructor: Dr. Robert Hawley		
Polar Geobiology		Fall 2009
Instructor: Dr. Jill Mikucki		
Introduction to Computer Science		Spring 2006
Instructor: Dr. Thomas Cormen		
<i>Laboratory Teaching Assistant</i>		
Mineralogy		Summer 2007
Instructor: Dr. Ed Meyer		
<i>Grader</i>		
Differential Equations		Winter 2008
INVITED TALKS		
Approaches and Capabilities for International Polar Year 5		
<i>National Academies' Exploring Key Research Topics for IPY5</i>		20 May 2025
New insights into ice-sheet change from six years of high resolution ICESat-2 laser altimetry		
<i>AGU Fall Meeting</i>		11 Dec. 2024
Past/ongoing en- and subglacial work: Glaciology		
<i>US Ice Drilling Program En- and Subglacial Access Working Group Meeting</i>		8 Dec. 2024
Big Data, meet Long Data: Examining decadal-scale variability of ice-ocean-freshwater processes in Antarctica		
<i>Mines Research Council Seminar</i>		13 Mar. 2024
Big Data, meet Long Data: Examining decadal-scale variability of ice-ocean-freshwater processes in Antarctica		
<i>Caltech Division of Geological and Planetary Sciences Seminar</i>		4 Mar. 2024
Centering community at scientific meetings: 30 years of the West Antarctic Ice Sheet Workshop		
<i>AGU Fall Meeting 2023</i>		11 Dec. 2023
Cryosphere@Mines		
<i>Finnish Ambassador Visit to Colorado School of Mines</i>		13 Jun. 2023
Subglacial Secrets: What drilling holes through the Antarctic ice sheet can teach us about the past, present, and future of ice		
<i>Osher Lifelong Learning Institute, University of Denver</i>		4 May 2023
Source to sink: Tracing freshwater beneath the Antarctic ice sheet		
<i>Colorado School of Mines Department of Geophysics Heiland Lecture</i>		7 Mar. 2023
Technology at the coast: Probing for ice-water-ocean-Earth processes		
<i>National Academies's Future Directions for Southern Ocean and Antarctic Nearshore and Coastal Research Community Workshop</i>		9 Feb. 2023
Glaciology at Mines		
<i>Colorado School of Mines Student Society of Geophysicists</i>		16 Sep. 2022
Glaciology at Mines		
<i>Tulane University Research Experiences for Undergraduates</i>		15 Jul. 2022

Twelve years of exploring subglacial Antarctica <i>Dartmouth College Journeys</i>	18 Jun. 2022
Process2Paleo: Connecting modern observations to the geologic record to explore the life and death of a subglacial lake <i>Scripps Polar Hour</i>	28 Oct. 2021
Slippery when wet: Exploring the hydrosphere beneath the Antarctic ice sheet <i>Colorado State Antarctic Lecture Series</i>	19 Oct. 2021
Glaciology data volumes and data rates in Antarctica <i>2021 Antarctic Subsea Cable Workshop</i>	28 Jun. 2021
What lies beneath: Exploring the hydrosphere beneath the Antarctic ice sheet <i>Delaware County Institute of Science</i>	8 Feb. 2021
(Seminar on SALSA subglacial lake results) <i>British Antarctic Survey</i>	Jun. 2020
[seminar canceled due to COVID19]	
(Seminar on ICESat-2 results) <i>Newcastle University</i>	Jun. 2020
[fellowship delayed to COVID19; seminar canceled]	
(Seminar declined due to COVID) <i>Stanford Geophysics Seminar</i>	4 Jun. 2020
Antarctica at Depth: New observations of subglacial water beneath ice streams <i>CU Boulder INSTAAR Noon Seminar</i>	16 Mar. 2020
[canceled due to COVID19]	
U.S. work in the Ross Sea Sector <i>International Ross Sea Region Collaboration Workshop, Korea</i>	21 Jul. 2019
Antarctica at Depth: Drilling for Subglacial Access <i>U.S. Ice Drilling Program's School of Ice</i>	24 June 2019
SALSA – A Field Debrief <i>Stanford University Cryospheric Scientists</i>	12 Feb. 2019
Slippery When Wet: Dynamic subglacial hydrology and the Antarctic ice sheet <i>Department of Geosciences Research Seminar, Boise State University</i>	26 Apr. 2018
Building a "Long Data" perspective to examine decadal-scale variability in Antarctica <i>Geophysics Seminar, Colorado School of Mines</i>	4 Apr. 2018
Deep, Dark, and Wet: Dynamic subglacial hydrology in Antarctica <i>Earth & Planetary Science Seminar, Washington University in St. Louis</i>	1 Feb. 2018
Piecing together a "Long Data" perspective to examine Antarctic ice-sheet variability <i>Earth and Climate Seminar, University of Maine</i>	25 Oct. 2017
Piecing together a "Long Data" perspective in Antarctica to understand ice-sheet variability <i>SIO Research Seminar, Scripps Institution of Oceanography</i>	31 Aug. 2017
Subglacial hydrology, basal processes, and velocity transients in Antarctica <i>Ice Sheet System Model Workshop</i>	23 Jun. 2016
Antarctic subglacial hydrology: A review <i>IDPO Subglacial Access Working Group Workshop</i>	21 May 2016
Episodic hydrology, episodic ice streams: Unraveling the impact of active subglacial lakes in Antarctica <i>Earth Section Seminar, University of California, Santa Cruz</i>	10 May 2016
Unraveling the impact of dynamic subglacial lake drainage in Antarctic <i>Geophysics Seminar, Scripps Institution of Oceanography</i>	22 Apr. 2016
Planes, penguins, and cookies: Scientific outreach from Antarctica <i>GPS and the Cyrosphere, 2016 UNAVCO Science Workshop</i>	29 Mar. 2016
Dynamic subglacial hydrology in Antarctica: timescales, evolution, and impacts <i>Geophysics Seminar, Stanford University</i>	1 Mar. 2016
Extending the episodic hydrology record across Antarctica <i>West Antarctic Ice Sheet Workshop</i>	19 Sep. 2015

Peering under the ice to the Antarctic Slip 'n' Slide		
<i>UCSD Extension: Environmental Leadership & Sustainability</i>		06 Jul. 2015
Investigating coupled subglacial hydrologic and ice dynamic evolution using ground- and satellite-based observations		
<i>Center for Climate Sciences Research Seminar, NASA-JPL</i>	19 Jun. 2015	
Using CryoSat-2 to retrieve dynamic surface changes (& observations of stick-slip motion)		
<i>IGPP Geodesy Seminar, Scripps Institution of Oceanography</i>	22 Apr. 2015	
A decade of progress observing and modeling Antarctic subglacial water systems		
<i>Subglacial Antarctic lake exploration: first results and future plans, The Royal Society [H. Fricker invited; M.R.S. presented]</i>	30 Mar. 2015	
Understanding the Antarctic Slip 'n' Slide		
<i>Scripps Donor Brunch, Scripps Institution of Oceanography</i>	1 Mar. 2015	
Highlights and reflections on The Workshop and beyond		
<i>CMBC Brown Bag, Scripps Institution of Oceanography</i>	3 Jun. 2014	
Instability of the Amundsen Sea Embayment		
<i>Climate Journal Club, Scripps Institution of Oceanography</i>	22 May 2014	
WISSARD: Progress, Pictures, and Prospects		
<i>Scripps Polar Seminar, Scripps Institution of Oceanography</i>	4 Jun. 2013	
GLAS accuracy and elevation change at Summit, Greenland		
<i>Geolunch Brown Bag Series, Dartmouth College</i>	11 May 2010	

PROFESSIONAL SERVICE Committee Service

- NASA SWOT Mission, Science Team, Member, 2024–present
- EDGE Mission Science Team (in Phase A of NASA's ESE competition), 2023–present
- Ice Drilling Program Science Advisory Board, Member, 2023–present
- NASA Surface Topography and Vegetation Mission Incubation, Science Team, 2023–2025
- NASA ICESat-2 Mission, Science Team, Member, 2021–present
- IRIS/UNAVCO, Polar Science Technology, Co-Chair, 2021–present
- IRIS/UNAVCO, Polar Science Technology Committee, Member, 2018–2020
- NASA IceBridge Mission, Science Team, Member, 2017–2020
- American Meteorological Society Committee on Polar Meteorology and Oceanography, Member, Jan. 2017–2020
- OpenAltimetry User Working Group, Member, Jun. 2017–present
- NASA ICESat-2 Science Definition Team, Participant, 2011–2020

Editorial Service

- Scientific Editor, *Journal of Glaciology*, 2019–present
- Section Editor for Cryosphere, *Encyclopedia of Ocean Sciences*, 3rd Ed.

Referee Service

- Journals: *Nature*, *Nature Geoscience*, *Nature Communications*, *Geophysical Research Letters*, *Journal of Glaciology*, *Annals of Glaciology*, *The Cryosphere*, *IEEE Transactions on Geoscience and Remote Sensing*, *IEEE Geoscience and Remote Sensing Letters*, *Remote Sensing of Environment*, *International Journal of Remote Sensing*, *Journal of Applied Remote Sensing*
- Proposals: *NASA Earth Science* (panel member, ad hoc), *NASA Earth Science Data Systems* (panel member), *NASA Planetary Science* (panel member), *NASA Science Mission Directorate* (panel member), *NSF Antarctic Sciences* (ad hoc), *Royal Society of New Zealand* (ad hoc), *UK Natural Environment Research Council* (ad hoc), *Netherlands Space Office* (ad hoc)

Conference Service

- Organizing Committee: *West Antarctic Ice Sheet Workshop*, 2019–present.
- Local Organizing Committee: *International Symposium on Five Decades of Radioglaciology*

(International Glaciological Society, Stanford, CA, 24–28 Jun. 2019); *International Symposium on Interactions of Ice Sheet and Glaciers with the Ocean* (IGS/FRISP, La Jolla, CA, 10–15 Jul. 2016); *Ice Sheet System Model Workshop* (JPL/ NASA, La Jolla, CA, May 2016), *Scripps Student Symposium* (SIO, La Jolla, CA, 24 Sep. 2015); *ICESat-2 Science Definition Team Meeting* (NASA, La Jolla, CA, 24–25 Feb. 2015); *Sea Level Change Team PI Meeting* (NASA, La Jolla, CA, 14–16 Oct. 2014), *West Antarctic Ice Sheet Workshop* (NSF/NASA, Julian, CA, 24–27 Sep. 2014); *International Symposium on Interactions of Ice Sheet and Glaciers with the Ocean* (IGS/FRISP, La Jolla, CA 5–10 Jun. 2011)

- Session Chair: *Archives and Observations From Sub-Ice Environments* (AGU Fall Meeting 2021, 2022, 2023, 2024); *Sub-Ice-Sheet and Sub-Ice-Shelf Environments: Bridging the Gap Between Modern Observations and Geologic Records* (AGU Fall Meeting 2019, 2020); *Cryosphere/Sea-Level* (2018 UNAVCO Science Workshop); *Advances in understanding processes at the beds of glaciers and ice sheets* (AGU Fall Meeting 2015, 2016, 2017); *IgniteIGS—Early career perspectives on the future of ice-ocean research* (IGS La Jolla 2016); *Greenland Run-off* (IGS La Jolla 2016)
- Judging: *Flash Freeze Cryosphere Innovation Award for Students* (AGU Fall Meeting 2017); *Outstanding Student Presentation Award* (AGU Fall Meeting 2017)

White Papers

- *CryoCloud: Accelerating Discovery for NASA Cryosphere Communities with Open-Cloud Infrastructure*, submitted to NASA NNH23ZDA005L: Request for Information: Scientific Data and Computing Architecture to Support Open Science, 2023. [available [here](#)]
- *2021 Antarctic Subsea Cable Workshop Report: High-Speed Connectivity Needs to Advance US Antarctic Science*, submitted to National Science Foundation Office of Polar Programs, 2021.
- *Dive, Dive, Dive: Accessing the Subsurface of Ocean Worlds*, submitted to the NASA Planetary Science Decadal Survey, 2020.
- *Early Career Community Vision For Future Magnetotelluric Facility*, submitted to the National Science Foundation in preparation for a competition for a future unified geophysical facility, 2020.
- *An Early Career Investigator Community Vision for the Future NSF Geophysical Facility: Instrumentation Services Needs*, submitted to the National Science Foundation in preparation for a competition for a future unified geophysical facility, 2020.
- *Assessment of East Antarctic Ice Sheet sensitivity to warming and its potential for contributions to sea level rise*, submitted to U.S. Ice Drilling Program Subglacial Access Working Group, 2019.
- *Access Drilling Priorities in the Ross Ice Shelf Region*, submitted to U.S. Ice Drilling Program Subglacial Access Working Group, 2019.
- *How much, how fast? A decadal science plan quantifying the rate of change of the West Antarctic Ice Sheet now and in the future*, submitted to NSF Office of Polar Programs, 2016.

UNIVERSITY
SERVICE

Colorado School of Mines

- Mines Finance, Administration, and Operations Roundtable, 2025–present
Mines University Handbook Committee, 2024–present
Mines Geophysics Undergraduate Advisory Committee, 2022–present (chair, 2025–present)
Mines Geophysics Field Camp Director, 2021–present
Mines Geophysics ReImagine Committee, 2021–present
Mines Geophysics Safety Committee, 2021–present
Geophysics GP100@100 Fundraising , 2021–present
Geophysics Diversity, Inclusion, & Access Committee, committee chair, 2019–2025
Mines Diversity Council, 2019–2025
Mines Field Session Compensation Task Force, 2022, 2025

Geophysics Graduate Advisory Committee, member, 2019–2022
 Faculty Search Committee: Computational Science & Data Analytics Cluster, 2020–21
 Applied Data Science & Machine Learning, subcommittee chair
 Computation Hydrology, subcommittee member
 #idigmines, department representative, 2019–2020
 Faculty Search Committee: Geophysical Data Science, 2019–2020

Stanford University

Postdoctoral Scholar Committee for School of Earth Strategic Plan, member, 2017

Scripps Institution of Oceanography

Leadership Committee for Peer Mentor Program, founding student member, 2014–2016
 Scripps Polar Seminar, lead organizer, 2013–2016
 Scripps Earth Section Seminar, co-organizer 2012–2013

Dartmouth College

Faculty Search Committee: Geomorphology, student representative, 2008
 Faculty Search Committee: Remote Sensing student representative, 2007

SIGNIFICANT FIELD EXPERIENCE	Pingo Canadian Landmark, Surface Geophysics <i>Mines Lead</i> Alaskan North Slope, Surface Geophysics <i>Mines Lead</i> Whillans Ice Plain, West Antarctica, Surface Geophysics <i>Expedition Lead, Field Medic</i> Greenland, Airborne Geophysics (Operation IceBridge) <i>Mission Science Team member visit</i> Whillans Ice Plain, West Antarctica, Surface Geophysics <i>Expedition Lead, Field Medic</i> Whillans Ice Plain, West Antarctica, Surface Geophysics <i>Expedition Lead, Field Medic</i> Whillans Ice Plain, West Antarctica, Surface Geophysics <i>Expedition Lead, Field Medic</i> Ross Ice Shelf, Antarctica, Airborne Geophysics <i>Flight Scientist, Data Engineer</i> Whillans Ice Plain, West Antarctica, Surface Geophysics <i>Expedition Lead, Field Medic</i> Whillans Ice Plain, West Antarctica, Surface Geophysics <i>GPS Team Leader, Field Medic</i> Whillans Ice Plain, West Antarctica, Surface Geophysics <i>Surface Geophysics Team Leader, Field Medic</i> Whillans Ice Plain, West Antarctica, Surface Geophysics Northern New Mexico, Southern Colorado, Geology and Geomorphology <i>Field Trip Organizer and Leader</i> Cherryfield, Maine, Fluvial Geomorphology & Riparian Habitat Surveying Banff National Park, Alberta, Canada, Glaciology Montana, Idaho, Eastern Washington, Geology Ischia Island, Italy, in situ Geochemical Analysis Puerto Rico, Soil and Water Sampling Western United States, Dartmouth Earth Sciences Field Camp Hawaii, Volcanology and Remote Sensing	2023 2021 2019–2020 2019 2018–2019 2017–2018 2016–2017 2015 2014–2015 2013–2014 2012–2013 2011–2012 2010 2009 2008 2008 2008 2007 2006 2006
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HONORS AND AWARDS**Colorado School of Mines**

Diversity Progress Report President's Choice Award, 2023

Mines Research Council's Excellence in Research Award (Junior Faculty), 2022–2023
Mines Earth & Society Programs Outstanding Assistant Professor Award, 2022–2023
University Public Policy Fellow, inaugural cohort, 2022–2023
Outstanding Mines Faculty Award, 2021–2022
Department of Geophysics T.K. Young Geophysics Leadership Award, 2021

National Science Foundation

Mentor for NSF-OPP Postdoctoral Research Fellow, 2023

NSF CAREER Award recipient, 2022

Mentor for NSF Graduate Research Fellowship Program recipient (H. Verboncoeur), 2022

National Aeronautics and Space Administration

Mentor for NASA FINESST Graduate Fellowship Program recipient (Z. Katz), 2025

Robert H. Goddard Award as part of the Operation IceBridge Science Team, 2020

Group Achievement Award as part of the ICESat-2 Mission Science Team, 2020

National Sciences and Engineering Research Council of Canada

Mentor for NSERC Graduate Scholarship–Doctoral Recipient (E. Savidge), 2021

American Geophysical Union

Editors' Citation for Excellence in Refereeing, Geophysical Research Letters, 2019

West Antarctic Ice Sheet Workshop

Mentor for Best Student Presentation recipient (H. Verboncoeur), 2021

Best Student Presentation recipient, 2013

Scripps Institution of Oceanography

Student Video Challenge award winner, 2014

Director's Cabinet Quarterly Meeting invited presenter, May 2014

Pontifical Academy of Sciences/Pontifical Academy of Social Sciences

Sustainable Humanity, Sustainable Nature: Our Responsibility

Joint Workshop invited observer, May 2014

United States Congress

Antarctic Service Medal recipient, 2012

Dartmouth College

NASA Space Grant Graduate Student Award, 2010

Assistant Curator for Dana Collection of Minerals, 2007–2008

PROFESSIONAL American Geophysical Union, 2008–present

MEMBERSHIPS International Glaciological Society, 2010–present

Society for Advancement of Chicanos/Hispanics and Native Americans in Science

2019–present

Institute of Electrical and Electronics Engineers, 2020–present

American Meteorological Society, 2017–2019

Sigma Xi, 2023–present