

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://www.mines.edu/glaciology
ACADEMIC APPOINTMENTS	Assistant Professor Department of Geophysics Hydrologic Science and Engineering, Affiliated Faculty Humanitarian Engineering, Affiliated Faculty Colorado School of Mines	January 2019 to present
	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 revisitation of groundwater mixing and the ramifications for environmental arsenic contamination</i> Adviser: Dr. Benjamin Bostick	June 2008
MANUSCRIPTS IN REVIEW		* indicates student or postdoctoral advisee † indicates co-first authors
	[46] Grigsby ^{*,†} , S. P., G. M. Lewis [†] , M. R. Siegfried and R. L. Hawley, in review. Automated Extraction of Crevasse Locations from Optical Imagery using Edge Detection, <i>Geoscience and Remote Sensing Letters</i> .	

- [45] Barcheck, C. G., E. E. Brodsky, P. M. Fulton, M. A. King, **M. R. Siegfried** and S. Tulaczyk, in review. Migratory earthquake precursors are dominant on a strain-energy limited ice stream fault, *Science Advances*.
- [44] Priscu, J. C., J. Kalin, J. Winans, T. Campbell, **M. R. Siegfried**, M. Skidmore, J. E. Dore, A. Leventer, D. Harwood, D. Duling, R. Zook, J. Burnett, D. Gibson, E. Krula, A. Mironov, J. McManis, G. Roberts, B. E. Rosenheim, B. C. Christner, K. Kasic, H. A. Fricker, W. B. Lyons and the SALSA Science Team, in review. Scientific Access into Mercer Subglacial Lake: Scientific Objectives, Drilling Operations and Initial Observations, *Annals of Glaciology*.
- REFEREED
JOURNAL
PUBLICATIONS
- [43] Adusumilli, S., H. A. Fricker, B. Medley, L. Padman and **M. R. Siegfried**, 2020. Ocean-driven melting of Antarctica’s ice shelves varies on multi-year timescales, *Nature Geoscience*, accepted.
- [42] Begeman, C., S. Tulaczyk, L. Padman, M. King, **M. R. Siegfried**, T. Hodson and H. A. Fricker, 2020. Tidal pressurization of the ocean cavity near an Antarctic ice shelf grounding line, *Journal of Geophysical Research – Oceans*, **125**(4), doi:10.1029/2019JC015562.
- [41] Das, I., L. Padman, R. E. Bell, H. A. Fricker, K. J. Tinto, C. L. Hulbe, C. S. Siddoway, T. Dhakal, N. P. Frearson, C. Mosbeux, S. I. Cordero and **M. R. Siegfried**, 2020. Multidecadal Basal Melt Rates and Structure of the Ross Ice Shelf, Antarctica, Using Airborne Ice Penetrating Radar, *Journal of Geophysical Research – Earth Surface*, **125**(3), doi:10.1029/2019JF005241.
- [40] Elsworth, C., D. M. Schroeder and **M. R. Siegfried**, 2020. Interpreting englacial layer deformation in the presence of complex ice flow history with synthetic radar-grams, *Annals of Glaciology*, doi:10.1017/aog.2019.41, in press.
- [39] Jordan, T., D. Schroeder, C. Elsworth and **M. R. Siegfried**, 2020. Estimation of ice fabric within Whillans Ice Stream using polarimetric phase-sensitive radar sounding, *Annals of Glaciology*, doi:10.1017/aog.2020.6, in press.
- [38] MacKie, E. J., D. M. Schroeder, J. Caers, **M. R. Siegfried** and C. Scheidt, 2020. Antarctic topographic realizations and geostatistical modeling used to map subglacial lakes, *Journal of Geophysical Research – Earth Surface*, **125**(3), doi:10.1029/2019JF005420.
- [37] Smith, B., H. A. Fricker, A. S. Gardner, B. Medley, J. Nilsson, F. S. Paolo, N. Holschuh, S. Adusumilli, K. Brunt, B. Castho, K. Harbeck, T. Markus, T. Neumann, **M. R. Siegfried** and H. J. Zwally, 2020. Pervasive ice sheet mass loss reflects competing ocean and atmosphere processes, *Science*, **368**, 1239–1242, doi:10.1126/science.aaz5845.
- [36] Venturelli, R. A., **M. R. Siegfried**, K. Roush, W. Li, J. Burnett, R. Zook, H. A. Fricker, J. Priscu, A. Leventer and B. Rosenheim, 2020. Mid-Holocene grounding line variability in the southern Ross Embayment, *Geophysical Research Letters*, doi:10.1029/2020GL088476, accepted.
- 2019
- [35] Schroeder, D. M., J. A. Dowdeswell, M. J. Siegert, R. G. Bingham, W. Chu, E. J. MacKie, **M. R. Siegfried**, K. I. Vega, J. R. Emmons and K. Winstein, 2019. Multidecadal observations of the Antarctic ice sheet from restored analog radar

- records, *Proceedings of the National Academy of Sciences*, **116**(38), 18867–18873, doi:10.1073/pnas.1821646116.
- [34] Smith, B. E., N. Holschuh, A. S. Gardner, S. Adusumili, K. M. Brunt, B. Csatho, H. A. Fricker, K. Harbeck, A. Huth, T. Neumann, J. Nilsson and **M. R. Siegfried**, 2019. Land ice height-retrieval algorithm for NASA’s ICESat-2 photon-counting laser altimeter, *Remote Sensing of Environment*, **233**, 111352, doi:10.1016/j.rse.2019.111352.
- [33] Tinto, K., L. Padman, C. Siddoway, S. Springer, H. A. Fricker, I. Das, F. C. Tontini, D. Porter, N. Frearson, S. Howard, **M. R. Siegfried** and et al., 2019. Ross Ice Shelf response to climate driven by the tectonic imprint on seafloor bathymetry, *Nature Geoscience*, **12**, 441–449, doi:10.1038/s41561-019-0370-2.
- 2018
- [32] **Siegfried, M. R.** and H. A. Fricker, 2018. Thirteen years of subglacial lake activity in Antarctica from multi-mission altimetry, *Annals of Glaciology*, **59**(76), 42–55, doi:10.1017/aog.2017.36.
- [31] Chu, W., D. M. Schroeder and **M. R. Siegfried**, 2018. Retrieval of Englacial Firn Aquifer Thickness from Ice-Penetrating Radar Sounding in Southeast Greenland, *Geophysical Research Letters*, **45**(21), 11,770–11,778, doi:10.1029/2018GL079751.
- [30] Begeman, C. M., S. M. Tulaczyk, O. J. Marsh, J. A. Mikucki, T. P. Stanton, T. O. Hodson, **M. R. Siegfried**, R. D. Powell, K. Christianson and M. A. King, 2018. Ocean stratification and low melt rates at the Ross Ice Shelf grounding zone, *Journal of Geophysical Research – Oceans*, **123**(10), 7438–7452, doi:10.1029/2018JC013987.
- [29] *Adusumilli, S., H. A. Fricker, **M. R. Siegfried**, L. Padman, F. Paolo and S. Ligtenberg, 2018. Variable basal melt rates of Antarctic Peninsula ice shelves, 1994–2016, *Geophysical Research Letters*, **45**(9), 4086–4095, doi:10.1002/2017GL076652.
- [28] Padman, L., **M. R. Siegfried** and H. A. Fricker, 2018. Ocean tide influences on ice sheet processes, *Reviews of Geophysics*, **56**(1), 142–184, doi:10.1002/2016RG000546.
- [27] Paolo, F. S., L. Padman, H. A. Fricker, S. Adusumilli, S. Howard and **M. R. Siegfried**, 2018. Response of Pacific-sector Antarctic ice shelves to the El Niño/Southern Oscillation, *Nature Geoscience*, **11**, 121–126, doi:10.1038/s41561-017-0033-0.
- 2017
- [26] **Siegfried, M. R.**, B. Medley, K. Larson, H. A. Fricker and S. Tulaczyk, 2017. Snow accumulation variability on a West Antarctic ice stream observed with GPS reflectometry, 2007–2017, *Geophysical Research Letters*, **44**(15), 7808–7816, doi:10.1002/2017GL074039.
- [25] Damsgaard, A., J. Suckale, J. Piotrowski, M. Houssais, **M. R. Siegfried** and H. A. Fricker, 2017. Sediment behavior controls equilibrium width of subglacial channels, *Journal of Glaciology*, **63**(242), 1034–1048, doi:10.1017/jog.2017.71.
- [24] Kerry, K. and **M. R. Siegfried**, 2017. The feasibility of ground-based electromagnetic methods for mapping the subglacial hydrological structure beneath ice streams, *Journal of Glaciology*, **63**(241), 755–771, doi:10.1017/jog.2017.36.
- [23] Scambos, T. A., R. E. Bell, A. M. Smith, D. G. Vaughan, R. B. Alley, S. Anandakrishnan, D. H. Bromwich, K. M. Brunt, K. Christianson, T. T. Creyts, S. B. Das,

- R. DeConto, P. Dutrieux, H. A. Fricker, D. Holland, J. MacGregor, B. Medley, D. Pollard, **M. R. Siegfried**, E. J. Steig and P. Yager, 2017. How Much, How Fast? A Review and Science Plan for Research on the Instability of Antarctica's Thwaites Glacier in the 21st Century, *Global and Planetary Change*, **153**, 16–34, doi:10.1016/j.gloplacha.2017.04.008.
- [22] Carter, S. P., H. A. Fricker and **M. R. Siegfried**, 2017. Antarctic subglacial lakes drain through sediment-floored canals: Theory and model testing on real and idealized domains, *The Cryosphere*, **11**, 381–405, doi:10.5194/tc-11-381-2017.
- 2016
- [21] **Siegfried, M. R.**, H. A. Fricker, S. P. Carter and S. Tulaczyk, 2016. Episodic ice velocity fluctuations triggered by a subglacial flood in West Antarctica, *Geophysical Research Letters*, **43**(6), 2640–2648, doi:10.1002/2016GL067758.
- [20] Alley, K. E., T. A. Scambos, **M. R. Siegfried** and H. A. Fricker, 2016. Impacts of warm water on Antarctic ice shelf stability through basal channel formation, *Nature Geoscience*, **9**(4), 290–293, doi:10.1038/ngeo2675.
- [19] Achberger, A. M., B. C. Christner, A. B. Michaud, J. C. Priscu, M. L. Skidmore, T. J. Vick-Majors and the WISSARD Science Team (incl. **M. R. Siegfried**), 2016. Microbial Community Structure of Subglacial Lake Whillans, West Antarctica, *Frontiers in Microbiology*, **7**, 1457, doi:10.3389/fmicb.2016.01457.
- [18] Damsgaard, A., D. L. Eghold, L. H. Beem, S. Tulaczyk, N. K. Larsen, J. A. Piotrowski and **M. R. Siegfried**, 2016. Ice flow dynamics forced by rapid water-pressure variations in subglacial granular beds, *Geophysical Research Letters*, **43**(23), 165–173, doi:10.1002/2016GL071579.
- [17] Hodson, T., R. Powell, S. Brachfeld, S. Tulaczyk, R. Scherer and the WISSARD Science Team (incl. **M. R. Siegfried**), 2016. Physical processes in Subglacial Lake Whillans, West Antarctica: inferences from sediment cores, *Earth and Planetary Science Letters*, **444**, 56–63, doi:10.1016/j.epsl.2016.03.036.
- [16] Marsh, O. J., H. A. Fricker, **M. R. Siegfried**, K. Christianson, K. W. Nicholls, H. F. J. Corr and G. Catania, 2016. High basal melting forming a channel at the grounding line of Ross Ice Shelf, Antarctica, *Geophysical Research Letters*, **43**(1), 250–255, doi:10.1002/2015gl066612.
- [15] Vick-Majors, T. J., A. C. Mitchell, A. M. Achberger, B. C. Christner, J. E. Dore, A. B. Michaud, J. A. Mikucki, A. M. Purcell, M. L. Skidmore, J. C. Priscu and the WISSARD Science Team (incl. **M. R. Siegfried**), 2016. Physiological ecology of microorganisms in Subglacial Lake Whillans, *Frontiers in Microbiology*, **7**, 1705, doi:10.3389/fmicb.2016.01705.
- 2015
- [14] Fisher, A. T., K. D. Mankoff, S. M. Tulaczyk, S. W. Tyler, N. Foley and the WISSARD Science Team (incl. **M. R. Siegfried**), 2015. High geothermal heat flux measured below the West Antarctic Ice Sheet, *Science Advances*, **1**(6), e1500093–e1500093, doi:10.1126/sciadv.1500093.
- [13] Fricker, H. A., **M. R. Siegfried**, S. P. Carter and T. A. Scambos, 2015. A decade of progress in observing and modeling Antarctic subglacial water systems, *Philosophical Transactions of the Royal Society A*, **374**(2059), 20140294, doi:10.1098/rsta.2014.0294.

- [12] Mikucki, J., P. Lee, D. Ghosh, A. Purcell, A. Mitchell, K. Mankoff, A. T. Fisher, S. Tulaczyk, S. P. Carter, **M. R. Siegfried**, H. A. Fricker, T. Hodson, J. Coenen, R. Powell, R. P. Scherer, T. Vick-Majors, A. M. Achberger, B. C. Christner and M. Tranter, 2015. Subglacial Lake Whillans biogeochemistry: a synthesis of current knowledge, *Philosophical Transactions of the Royal Society A*, **374**(2059), 20140290, doi:10.1098/rsta.2014.0290.
- 2014
- [11] **Siegfried, M. R.**, H. A. Fricker, M. Roberts, T. A. Scambos and S. Tulaczyk, 2014. A decade of West Antarctic subglacial lake interactions from combined ICESat and CryoSat-2 altimetry, *Geophysical Research Letters*, **41**(3), 891–898, doi:10.1002/2013GL058616.
- [10] Christner, B. C., J. C. Priscu, A. M. Achberger, C. Barbante, S. P. Carter, K. Christianson, A. B. Michaud, J. A. Mikucki, A. C. Mitchell, M. L. Skidmore, T. J. Vick-Majors and the WISSARD Science Team (incl. **M. R. Siegfried**), 2014. A microbial ecosystem beneath the West Antarctic ice sheet, *Nature*, **512**(7514), 310–313, doi:10.1038/nature13667.
- [9] Holt, T. O., N. F. Glasser, H. A. Fricker, L. Padman, A. Luckman, O. King, D. J. Quincey and **M. R. Siegfried**, 2014. The structural and dynamic responses of Stange Ice Shelf to recent environmental change, *Antarctic Science*, **26**(06), 646–660, doi:10.1017/S095410201400039X.
- [8] Purcell, A. M., J. A. Mikucki, A. M. Achberger, I. A. Alekhina, C. Barbante, B. C. Christner, D. Ghosh, A. B. Michaud, A. C. Mitchell, J. C. Priscu, R. Scherer, M. L. Skidmore, T. J. Vick-Majors and the WISSARD Science Team (incl. **M. R. Siegfried**), 2014. Microbial sulfur transformations in sediments from Subglacial Lake Whillans, *Frontiers in Microbiology*, **5**, 594, doi:10.3389/fmicb.2014.00594.
- [7] Tulaczyk, S., J. A. Mikucki, **M. R. Siegfried**, J. C. Priscu, C. G. Barcheck, L. H. Beem, A. Behar, J. Burnett, B. C. Christner, A. T. Fisher, F. H. A., K. D. Mankoff, R. D. Powell, F. Rack, D. Sampson, R. P. Scherer, S. Y. Schwartz and the WISSARD Science Team, 2014. WISSARD at Subglacial Lake Whillans, West Antarctica: scientific operations and initial observations, *Annals of Glaciology*, **55**(65), 51–58, doi:10.3189/2014AoG65A009.
- 2013
- [6] Carter, S. P., H. A. Fricker and **M. R. Siegfried**, 2013. Evidence of rapid subglacial water piracy under Whillans Ice Stream, West Antarctica, *Journal of Glaciology*, **59**(218), 1147–1162, doi:10.3189/2013JoG13J085.
- [5] Holt, T. O., N. F. Glasser, D. J. Quincey and **M. R. Siegfried**, 2013. Speedup and fracturing of George VI Ice Shelf, Antarctic Peninsula, *The Cryosphere*, **7**(3), 797–816, doi:10.5194/tc-7-797-2013.
- [4] Horgan, H. J., R. B. Alley, K. Christianson, R. W. Jacobel, S. Anandakrishnan, A. Muto, L. H. Beem and **M. R. Siegfried**, 2013. Estuaries beneath ice sheets, *Geology*, **41**(11), 1159–1162, doi:10.1130/G34654.1.
- [3] Priscu, J. C., A. M. Achberger, J. E. Cahoon, B. C. Christner, R. L. Edwards, W. L. Jones, A. B. Michaud, **M. R. Siegfried**, M. L. Skidmore, R. H. Spigel, G. W. Switzer, S. Tulaczyk and T. J. Vick-Majors, 2013. A microbiologically clean strategy for access to the Whillans Ice Stream subglacial environment, *Antarctic Science*, **25**(5), 637–647, doi:10.1017/s0954102013000035.

- 2012
- [2] Taylor, V. F., B. P. Jackson, **M. R. Siegfried**, J. Navratilova, K. A. Francesconi, J. Kirshtein and M. Voytek, 2012. Arsenic speciation in food chains from mid-Atlantic hydrothermal vents, *Environmental Chemistry*, **9**(2), 130–138, doi:10.1071/EN11134.
- 2011
- [1] **Siegfried, M. R.**, R. L. Hawley and J. F. Burkhart, 2011. High-Resolution Ground-Based GPS Measurements Show Intercampaign Bias in ICESat Elevation Data Near Summit, Greenland, *IEEE Transactions on Geosciences and Remote Sensing*, **49**(10), 3393–3400, doi:10.1109/TGRS.2011.2127483.
- OTHER PUBLICATIONS
- Padman, L., and **M. R. Siegfried**, 2018. Ocean Tides Affect Ice Loss from Large Polar Ice Sheets, *EOS: Earth & Space Science News*, **99**, doi:10.1029/2018EO092835.
- Fricker, H. A., F. Paolo, **M. R. Siegfried**, and S. Adusumilli, 2018. Short-term changes in Antarctica’s ice shelves are key to predicting their long-term fate, *The Conversation*, <https://theconversation.com/short-term-changes-in-antarcticas-ice-shelves-are-key-to-predicting-their-long-term-fate-95207>.
- DATA SETS
- Smith, B., H. A. Fricker, A. Gardner, **M. R. Siegfried**, S. Adusumilli, B. M. Csathó, N. Holschuh, J. Nilsson, F. S. Paolo and the ICESat-2 Science Team, 2019. ATLAS/ICESat-2 L3A Land Ice Height, Version 1, NSDIC: National Snow and Ice Data Center, Boulder, Colorado USA, doi:10.5067/ATLAS/ATL06.001.
- FUNDED GRANTS
- National Aeronautics and Space Administration**
- Solicitation: NASA Unsolicited Proposals
 Title: *Long-term validation of ICESat-2 range measurements with ground, air, and satellite surveys of salar de Uyuni, Bolivia* Period: 6/2020–5/2021
 PI: M. Siegfried
 Co-Is: Shane Grigsby (Mines), Gabriel Walton (Mines), Mike Willis (University of Colorado, Boulder)
 Funded Amount: \$149,917
 - Solicitation: Topical Workshops, Symposia, and Conferences
 Title: *WAIS Workshops 2020 and 2021: A transdisciplinary forum to accelerate NASA-funded research of marine-based ice sheet systems*
 Period: 9/2020–8/2022
 PI: M. Siegfried
 Funded Amount: \$77,245
 - Solicitation: Planetary Science and Technology from Analog Research (PSTAR)
 Title: *Pingo SubTerranean Aquifer Reconnaissance and Reconstruction (Pingo STARR)*
 Period: 7/2020–6/2024
 PI: B. Schmidt (Georgia Tech); Science PI: K. Hughson (Georgia Tech)
 Lead Mines PI: M. Siegfried
 Co-Is: H. Sizemore (Planetary Science Institute), J. Bradford (Mines), A. Swidinsky (Mines)
 Funded Amount: \$2,071,221 (\$665,614 to Mines)
 - Solicitation: IceBridge Science Team
 Title: *Quantifying the error distribution of Operation IceBridge swath altimetry to generate robust, long-duration time series of height-changes over dynamic features in Antarctica*

Period: 4/2017–3/2020
Science PI/Science Team Member: M. Siegfried (Institutional PI: H. Fricker)
Funded Amount: \$334,080

- Solicitation: Studies with ICESat and CryoSat-2
Title: *Understanding the climate drivers of Antarctic ice shelf changes through analyses of multi-mission satellite altimetry, airborne remote sensing and models*
Period: 1/2017–12/2019
PI: L. Padman (ESR)
Co-I: H. Fricker (SIO)
Funded Amount: \$863,849 (\$384,955 to UCSD)

National Science Foundation

- Program: Antarctic Antarctic Integrated System Science
Period: 7/2019–6/2022
Title: *WAIS Workshops 2019-2021: An annual transdisciplinary forum for studies of the West Antarctic Ice Sheet by the next generation of polar scientists*
PI: M. Siegfried
Funded Amount: \$123,524
- Program: Antarctic Antarctic Integrated System Science
(supplement to *Collaborative Research: Subglacial Antarctica Lake Scientific Access*)
Period: 5/2018–5/2019
Title: *Subglacial Lake Mercer temperature time series for quantifying lake dynamics*
Science PI: M. Siegfried (Institutional PI: H. Fricker)
Funded Amount: \$39,917
- Program: Antarctic Glaciology
Period: 12/2017–11/2020
Title: *Mapping Antarctic subglacial water in three dimensions with novel electromagnetic techniques*
Science PI: M. Siegfried (Institutional PI: H. Fricker)
Co-I: K. Key
Funded Amount: \$448,933
- Program: Antarctic Integrated System Science
Title: *Collaborative Research: Subglacial Antarctica Lake Scientific Access (SALSA)*
Period: 9/2016–8/2019
PI: J. Priscu (MSU)
Co-Is: M. Skidmore (MSU), A. Leventer (Colgate), E. Domack (U. South Florida), Brad Rosenheim (U. South Florida), Brent Christner (U. Florida), W.B. Lyons (OSU), H. Fricker (SIO)
Funded Amount: \$2,900,162 (\$349,732 to UCSD)

Stanford University Department of Geophysics

- Thompson Postdoctoral Fellowship, 2017–2019 \$135,000

National Aeronautics and Space Administration

- Earth and Space Science Fellowship, 2011-2014 \$90,000

MENTORING

Postdoctoral Scholar Advising

Roger Michaelides, 2020–present

Shane Grigsby, 2019–present

Graduate Student Advising

Jared Klemm, Geophysics, 2020–present
 Wilson Sauthoff, Hydrologic Science & Engineering, 2020–present
 Elena Savidge, Geophysics, 2020–present

Visiting Graduate Student Mentorship

Emma Pearce, University of Leeds, School of Earth and Environment, 2019

Undergraduate Student Mentorship

Matt Oleszko, Geophysics, 2019–present
 Anna Valentine, Geophysics, 2020–present
 Becca Prentice, Geophysics, 2020–present

Dissertation Committee Membership

Devon Dunmire, University of Colorado Boulder, Atmospheric & Ocean Sciences,
 2020–present

TEACHING
 EXPERIENCE

Colorado School of Mines, Golden, CO

Instructor

GPGN470/570: Applications of Remote Sensing Spring 2020
 GPGN101: Geophysics & Society Spring 2020
 GPGN498A/C: Geophysical Remote Sensing Spring 2019

Co-Instructor

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

Guest Lecturer

The basal rheology knob
SIO209: Ice Sheet Seminar 3 Feb. 2017
 Antarctic Estuary Dynamics
SIO219: Estuarine and Coastal Processes 6 Jun. 2016
 Ice Dynamics
SIO115: Ice and the Climate System 25 Feb. 2015
 Joint Workshop at the Vatican
SIO209: Lectures in Sustainable Science 6 Jun. 2014

Teaching Assistant

Remote Sensing Spring 2013
 Instructors: Dr. David Sandwell, Dr. Helen Fricker

Dartmouth College, Hanover, NH

Teaching Assistant

Dartmouth College Field Program Fall 2009
Glaciology, Quaternary Geology, Structure and Geologic Mapping
 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

Laboratory Teaching Assistant
 Mineralogy Summer 2007
 Instructor: Dr. Ed Meyer

Guest Lecturer
 Data analysis and scientific writing
ENVS25: Ecological Agriculture 25 Aug. 2009
 Paleoclimate and ice ages
EARS70: Glaciology 19 May 2009
 Life through a Snowball
EARS86: Polar Geobiology 9 Dec. 2008

Grader
 Differential Equations Winter 2008

INVITED TALKS

Slippery When Wet: Dynamic subglacial hydrology and the Antarctic ice sheet
Department of Geosciences Research Seminar, Boise State University 26 Apr. 2018

Building a “Long Data” perspective to examine decadal-scale variability in Antarctica
Geophysics Seminar, Colorado School of Mines 4 Apr. 2018

Deep, Dark, and Wet: Dynamic subglacial hydrology in Antarctica
Earth & Planetary Science Seminar, Washington University in St. Louis 1 Feb. 2018

Piecing together a "Long Data" perspective to examine Antarctic ice-sheet variability
Earth and Climate Seminar, University of Maine 25 Oct. 2017

Piecing together a “Long Data” perspective in Antarctica to understand ice-sheet variability
SIO Research Seminar, Scripps Institution of Oceanography 31 Aug. 2017

Subglacial hydrology, basal processes, and velocity transients in Antarctica
Ice Sheet System Model Workshop 23 Jun. 2016

Antarctic subglacial hydrology: A review
IDPO Subglacial Access Working Group Workshop 21 May 2016

Episodic hydrology, episodic ice streams: Unraveling the impact of active subglacial lakes in Antarctica
Earth Section Seminar, University of California, Santa Cruz 10 May 2016

Unraveling the impact of dynamic subglacial lake drainage in Antarctic
Geophysics Seminar, Scripps Institution of Oceanography 22 Apr. 2016

Planes, penguins, and cookies: Scientific outreach from Antarctica
GPS and the Cyrosphere, 2016 UNAVCO Science Workshop 29 Mar. 2016

Dynamic subglacial hydrology in Antarctica: timescales, evolution, and impacts
Geophysics Seminar, Stanford University 1 Mar. 2016

Extending the episodic hydrology record across Antarctica
West Antarctic Ice Sheet Workshop 19 Sep. 2015

Peering under the ice to the Antarctic Slip 'n' Slide
UCSD Extension: Environmental Leadership & Sustainability 06 Jul. 2015

Investigating coupled subglacial hydrologic and ice dynamic evolution using ground- and satellite-based observations
Center for Climate Sciences Research Seminar, NASA-JPL 19 Jun. 2015

Using CryoSat-2 to retrieve dynamic surface changes (& observations of stick-slip motion)

IGPP Geodesy Seminar, Scripps Institution of Oceanography	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

- IRIS/UNAVCO, Polar Networks Science Committee, Member, 2018–present
- NASA IceBridge Mission, Science Team, Member, Jan. 2017–present
- American Meteorological Society Committee on Polar Meteorology and Oceanography, Member, Jan. 2017–present
- 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 Cryospheric Sciences (panel member, ad hoc)*, *NSF Antarctic Glaciology (ad hoc)*, *NSF Antarctic Earth Sciences (ad hoc)*, *NSF Antarctic Integrated System Science (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: *Cryosphere/Sea-Level* (2018 UNAVCO Science Workshop); *Advances in understanding processes at the beds of glaciers and ice sheets* (AGU Fall Meeting 2017); *Advances in understanding processes at the beds of glaciers and ice sheets* (AGU

Fall Meeting 2016); *IgniteIGS—Early career perspectives on the future of ice-ocean research* (IGS La Jolla 2016); *Greenland Run-off* (IGS La Jolla 2016); *Advances in Our Understanding of Processes at the Beds of Glaciers and Ice Sheets* (AGU Fall Meeting 2015)

- Judging: *Flash Freeze Cryosphere Innovation Award for Students* (AGU Fall Meeting 2017); *Outstanding Student Presentation Award* (AGU Fall Meeting 2017)

Workshops

- Rapid Access Ice Drill (RAID) Science Workshop 2017, 2–3 Mar. 2017, La Jolla, California.
Helped develop and write Science and Implementation Plan for the future use of RAID.
- Subglacial Access Drilling: An Ice Drilling Program Office science planing workshop, 22–23 May 2016, Herndon, Virginia.
Invited participant to discuss community scientific goals, potential drilling targets, and proposed dates for major science projects to be included in the IDPO Long Range Science Plan.
- West Antarctica Ice Sheet science plan development, 13–15 Jan. 2016, University of Colorado, Boulder.
Co-authored white paper submitted to the National Science Foundation Antarctic Program entitled, How much, how fast? A decadal science plan quantifying the rate of change of the West Antarctic Ice Sheet now and in the future.

Outreach

- Research highlighted in press releases from multiple institutions, including the National Science Foundation, University of Colorado, Boulder, and Scripps Institution of Oceanography.
- Quoted in “Scientists Just Melted a Hole Through 3,500 Feet of Ice to Reach a Mysterious Antarctic Lake” (Earther, 31 Dec. 2018)
- Featured in “The Machines That Spy on Antarctica’s Hidden Lakes” (Earther, 19 Dec. 2018)
- Measuring the Earth with Space Lasers: ICESat-2, NASA’s newest mission, Clarence Ruth Elementary School, Lompoc, CA (13 Sept. 2018)
- Developed exhibit “Understanding Ice: Antarctica in 360” for Stanford Library’s Earth Day 2018 symposium (24 Apr. 2018)
- Worked with U.S. Senator Lisa Murkowski’s DC staff to highlight Operation Ice-Bridge’s work in her home state of Alaska (Facebook, 17 Mar. 2017)
- Featured in “Science fest at South Pole: Scripps Institution of Oceanography participating in eight studies, leading seven, in Antarctica this winter” (San Diego Union Tribune, Page B1, 16 Oct. 2016)
- Featured in “What Are You Doing This (Austral) Summer?” (UC San Diego News, 6 Oct. 2016)
- Invited panelist for “A Deep Dive in Ocean and Climate Science”, hosted by U.S. Department of State at the COP21 Summit, Paris, France; available on YouTube (9 Dec. 2015)
- Live Q&A on nature.com: “Life on the ice” (13 Nov. 2015)
- Fieldwork weblog: “Antarctic Journal” (*Nature News*, Oct.–Dec. 2015)
- Participated in briefing for Congressman Scott Peters (CA-52) on current climate change research (18 Feb. 2015)
- Featured in “Scripps Grad Students Attend Sustainability Conference at the Vatican” (*explorations now*, 3 Jul. 2014)
- Radio interview: “Maybe Next Year? Antarctic Research Suspended Under Government Shutdown” (KPBS News, 10 Oct. 2013)

- TV interview: “Government Shutdown’s Impact on San Diegans” (NBC7 San Diego Evening News, 1 Oct. 2013)
- Ocean Beach Elementary, 3rd and 4th Grade, 7 Jun. 2013
- Featured in “At the Ends of the Earth” (*Triton Magazine*, May 2013)
- Featured in “Drilling into the Unknown” (*explorations now*, 11 Jan. 2013)
- Ocean Beach Elementary, 3rd and 4th Grade, 26 Mar. 2012

UNIVERSITY
SERVICE

Colorado School of Mines

Geophysics Diversity, Inclusion, & Access Committee, committee chair, 2019–present
#idigmines, department representative, 2019–present
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, 2007

SIGNIFICANT
FIELD
EXPERIENCE

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

HONORS AND AWARDS	National Aeronautics and Space Administration	
	Operation IceBridge Science Team, 2020	Robert H. Goddard Award
	ICESat-2 Mission, 2020	Group Achievement Award
	Scripps Institution of Oceanography	
	Student Video Challenge, 2014	Award Winner
	Director’s Cabinet Quarterly Meeting, May 2014	Invited Presenter
	Pontifical Academy of Sciences/Pontifical Academy of Social Sciences	
	<i>Sustainable Humanity, Sustainable Nature: Our Responsibility</i>	
	Joint Workshop, May 2014	Invited Observer
	West Antarctic Ice Sheet Workshop	
	Best Student Presentation, 2013	Award Winner
	United States Congress	
Antarctic Service Medal, 2012	Medal Recipient	
Dartmouth College		
NASA Space Grant Graduate Student Award, 2010	Award Winner	
Dana Collection of Minerals, 2007-2008	Assistant Curator	

PROFESSIONAL MEMBERSHIPS	American Geophysical Union, 2008–present
	International Glaciological Society, 2010–present
	American Meteorological Society, 2017–2019
	Society for Advancement of Chicanos/Hispanics and Native Americans in Science 2019–present

CONFERENCE ABSTRACTS

* indicates student presentation

† indicates M.R.S. presenting author

- [111] **Siegfried, M. R.**, H. A. Fricker, C. Gustafson, K. Key, A. Leventer, J. E. Dore, B. A. Huber, K. Mankoff, J. C. Priscu, B. E. Rosenheim and the SALSA Science Team, 2019. Anatomy of a draining subglacial lake in West Antarctica, *AGU Fall Meeting*.
- [110] Adusumilli, S., H. A. Fricker, B. Medley, L. Padman and **M. R. Siegfried**, 2019. Time-dependent freshwater fluxes from deep and shallow meltwater sources under Antarctica’s large ice shelves, *AGU Fall Meeting*.
- [109] Becker, M. K., H. A. Fricker, L. Padman, **M. R. Siegfried**, B. Medley, I. Das, S. I. Cordero, R. E. Bell and the ROSETTA-Ice Team, 2019. Mapping Marine Ice Beneath Ross Ice Shelf, Antarctica, with ROSETTA-Ice Radar Sounding and ICESat-2 Laser Altimetry, *AGU Fall Meeting*.
- [108] Bienert, N. L., D. M. Schroeder, S. T. Peters, E. Dawson, E. Mackie and **M. R. Siegfried**, 2019. Inferring Temperature Distribution in Shear Margins from Large-Offset Bistatic Radar Sounding, *AGU Fall Meeting*.
- [107] Gustafson, C., K. Key, **M. R. Siegfried** and H. A. Fricker, 2019. Electromagnetic imaging of subglacial hydrogeology of Whillans Ice Plain, West Antarctica, *AGU Fall Meeting*.
- [106] Jordan, T. M., D. M. Schroeder, A. Brisbourne, C. Martin, C. W. Elsworth, **M. R. Siegfried**, R. Schlegel and A. Smith, 2019. Measurement of Ice Fabric within Ice Streams using Polarimetric Phase-Sensitive Radar Sounding, *AGU Fall Meeting*.

- [105] Priscu, J. C., J. D. Barker, T. Campbell, B. C. Christner, C. Davis, J. E. Dore, H. A. Fricker, C. B. Gardner, D. M. Harwood, A. Leventer, W. Li, W. B. Lyons, A. B. Michaud, M. Patterson, B. E. Rosenheim, **M. R. Siegfried**, M. L. Skidmore, M. Tranter, R. Venturelli, T. Vick-Majors, B. Zook and the SALSA Science Team, 2019. SALSA: An Integrated Program Focusing on Carbon Transformations in Mercer Subglacial Lake located \sim 1100 m beneath the West Antarctic Ice Sheet, *AGU Fall Meeting*.
- [104] Skidmore, M. L., C. B. Gardner, A. Steigmeyer, **M. R. Siegfried**, J. D. Barker, J. E. Dore, B. G. Olivas, J. Hawkings, W. B. Lyons, M. Tranter, J. C. Priscu and the SALSA Science Team, 2019. A tale of two lakes — contrasting weathering regimes in proximal subglacial Antarctic systems, *AGU Fall Meeting*.
- [103] Smith, B. E., B. Medley, F. S. Paolo, J. Nilsson, N. Holschuh, S. Adusumilli, **M. R. Siegfried** and the ICESat-2 Land-Ice Team, 2019. Sixteen Years of Ice-Sheet Change from ICESat to ICESat-2, *AGU Fall Meeting*.
- [102] Venturelli, R., B. E. Rosenheim, A. Leventer, D. M. Harwood, M. O. Patterson, T. Campbell, **M. R. Siegfried**, H. A. Fricker and the SALSA and WISSARD Science Teams, 2019. A Dynamic Holocene Grounding Line: In situ sedimentary evidence from Whillans and Mercer ice streams, West Antarctica, *AGU Fall Meeting*.
- [101] Barcheck, G., E. Brodsky, P. Fulton, M. King, **M. R. Siegfried** and S. Tulaczyk, 2019. Insights into earthquake initiation from ice stream stick-slip dynamics, *International Antarctic Earth Science Workshop*.
- [100] Derby, L., N. Ross, F. Ferraccioli, R. Carr, T. Jordan, **M. R. Siegfried**, G. Paxman, K. Matsuoka, R. Forsberg and T. Casal, 2019. Active subglacial lakes of the Foundation Ice Stream, Antarctica, *International Glaciological Society British Branch Meeting*.
- [99] *Becker, M. K., H. A. Fricker, L. Padman, **M. R. Siegfried**, C. Mosbeaux and T. J. W. Wagner, 2019. An overlooked ice-shelf calving process for accelerating Antarctic Ice Sheet loss, *Forum for Research into Ice Shelf Processes*.
- [98] *Adusumilli, S., H. A. Fricker, B. Medley, L. Padman and **M. R. Siegfried**, 2019. Partitioning time-varying meltwater fluxes from Antarctica’s large ice shelves into the intermediate and upper ocean, *Forum for Research into Ice Shelf Processes*.
- [97] **Siegfried, M. R.**, H. A. Fricker, C. Gustafson, K. Key, A. Leventer, J. E. Dore, B. Huber, K. Mankoff, J. Priscu, B. Rosenheim and the SALSA Science Team, 2019. Physical properties of a draining subglacial lake, *International Symposium on Antarctic Earth Science*.
- [96] **Siegfried, M. R.** and D. M. Schroeder, 2019. Interpreting radar bed-echo power from active subglacial lakes on lower Mercer and Whillans ice streams, West Antarctica, *IGS Symposium on Radioglaciology*.
- [95] Bienert, N., D. Schroeder, S. Peters and **M. R. Siegfried**, 2019. Improving constraints on englacial temperature and water distribution using an autonomous phase-sensitive radio echo sounder (ApRES) and a bistatic software defined receiver, *IGS Symposium on Radioglaciology*.
- [94] Chu, W., D. Schroeder and **M. R. Siegfried**, 2019. Retrieval of firn aquifer thickness and englacial water volume using ice-penetrating radar sounding, *IGS Symposium on Radioglaciology*.

- [93] Jordan, T., D. Schroeder, C. Elsworth, D. Jørgen and **M. R. Siegfried**, 2019. Estimation of ice fabric within the Whillans Ice Stream using polarimetric phase-sensitive radar sounding, *IGS Symposium on Radioglaciology*.
- [92] Davis, C., W. Li, T. Vick-Majors, J. D. Barker, A. Michaud, J. E. Dore, **M. R. Siegfried**, M. Tranter, M. S. an dChris Gardner, R. Venturelli, T. Campbell, M. O. Patterson, A. Leventer, D. M. Harwood, B. E. Rosenheim, J. C. Priscu and B. C. Christner, 2019. Life Below an Ice Sheet: Mercer Subglacial Lake, West Antarctica, *Astrobiology Science Conference*.
- [91] Jordan, T. M., D. M. Schroeder, C. W. Elsworth, D. Castelletti, J. Li, **M. R. Siegfried** and J. Dall, 2019. Polarimetric coherence: a data analysis method to determine ice fabric from phase-sensitive radar sounding, *EGU General Assembly*.
- 2018
- [90] *Adusumilli, S., H. A. Fricker, L. Padman and **M. R. Siegfried**, 2018. Time-varying freshwater fluxes from Antarctic ice shelves, *AGU Fall Meeting*.
- [89] *Becker, M. K., H. A. Fricker, L. Padman, **M. R. Siegfried**, C. Mosbeux and T. J. Wagner, 2018. Dynamic small-scale morphology and mass-loss processes near the fronts of Antarctica's large ice shelves, *AGU Fall Meeting*.
- [88] Chu, W., D. Schroeder and **M. R. Siegfried**, 2018. Retrieval of Englacial Firn Aquifer Thickness from Ice-Penetrating Radar Sounding in Southeastern Greenland, *AGU Fall Meeting*.
- [87] Das, I., L. Padman, R. E. Bell, K. J. Tinto, H. A. Fricker, N. Frearson, C. S. Siddoway and **M. R. Siegfried**, 2018. Airborne Radar Reveals Multi-Decadal Basal Melt Rates for Ross Ice Shelf, Antarctica, *AGU Fall Meeting*.
- [86] Padman, L., R. E. Bell, I. Das, C. Mosbeux, D. Porter, C. S. Siddoway, **M. R. Siegfried**, S. R. Springer, K. J. Tinto and the ROSETTA-Ice Team, 2018. Ice Shelf Vulnerability to Seasonal Upper Ocean Warming, *AGU Fall Meeting*.
- [85] Smith, B. E., A. S. Gardner, N. Holschuh, **M. R. Siegfried**, B. M. Csatho, A. F. Schenk, S. Adusumilli, T. Neumann, K. M. Brunt and K. Harbeck, 2018. ICESat-2 Over Antarctica and Greenland: First Evaluation of Land-Ice Elevation Products, *AGU Fall Meeting*.
- [84] Tinto, K. J., R. E. Bell, I. Das, H. A. Fricker, L. Padman, D. Porter, C. Siddoway, **M. R. Siegfried**, S. R. Springer and the ROSETTA-Ice Team, 2018. Tectonic setting controls long term stability of Ross Ice Shelf, *AGU Fall Meeting*.
- [83] **Siegfried, M. R.** and D. M. Schroeder, 2018. Reconciling conflicting observations of active subglacial lakes: A case study on lower Mercer and Whillans ice streams, *WAIS Workshop*.
- [82] *Adusumilli, S., H. A. Fricker, L. Padman and **M. R. Siegfried**, 2018. Time-varying freshwater fluxes from Antarctic ice shelves, *WAIS Workshop*.
- [81] *Becker, M. K., H. A. Fricker, L. Padman, **M. R. Siegfried**, C. Mosbeux and T. J. Wagner, 2018. Dynamic small-scale morphology and mass-loss processes near the front of Ross Ice Shelf, *WAIS Workshop*.
- [80] Das, I., L. Padman, R. E. Bell, K. J. Tinto, H. A. Fricker, N. Frearson, C. S. Siddoway and **M. R. Siegfried**, 2018. Multi-Decadal Basal Melt Rates from Airborne Radar for Ross Ice Shelf, Antarctica, *WAIS Workshop*.

- [79] Schroeder, D. M., J. A. Dowdeswell, M. J. Siegert, R. G. Bingham, W. Chu, E. J. MacKie, **M. R. Siegfried**, K. I. Vega, J. R. Emmons and K. Winstein, 2018. Multi-Decadal Observations of the Antarctic Ice Sheet from Archival Radar Film, *WAIS Workshop*.
- [78] **Siegfried, M. R.** and D. M. Schroeder, 2018. Radar sounding of active subglacial lakes on the Siple Coast, *Bay Area Glaciology Meeting*.
- [77] Mosbeux, C., T. Wagner, M. Becker, H. A. Fricker and **M. R. Siegfried**, 2018. Buoyancy stresses as drivers of ice-shelf calving, *IGS Symposium on Timescales, Processes, and Glacier Dynamics*.
- [76] **Siegfried, M. R.**, D. M. Schroeder and D. Castelletti, 2018. Looking forward and backward: New techniques for quantifying dynamic surface-height changes with radar altimetry in Antarctica, *European Space Agency's 25 Years of Progress in Radar Altimetry*.
- [75] **Siegfried, M. R.**, S. Adusumilli, H. A. Fricker, T. Scambos, D. Schroeder and B. Smith, 2018. Investigating Large Active Subglacial Lake Drainages in East Antarctica, *Scientific Committee on Antarctica Research Open Science Conference*.
- [74] *Becker, M. K., H. A. Fricker, R. E. Bell, C. Mosbeux, L. Padman, D. F. Porter, **M. R. Siegfried** and T. J. Wagner, 2018. Ross Ice Shelf front morphology from airborne and satellite laser altimetry, *Workshop on Antarctic Surface Hydrology and Future Ice Shelf Stability*.
- [73] Begeman, C. B., S. M. Tulaczyk, O. J. Marsh, J. A. Mikucki, T. P. Stanton, T. O. Hodson, **M. R. Siegfried**, R. D. Powell, K. Christianson and M. A. King, 2018. Ocean stratification reduces melt rates at the grounding zone of Ross Ice Shelf, *WAIS Workshop*.
- 2017
- [72] **Siegfried, M. R.**, S. Adusumilli, H. A. Fricker, T. A. Scambos, D. M. Schroeder and B. E. Smith, 2017. Unraveling the cause of large surface-height anomalies on Slessor and Recovery glaciers, East Antarctica, with multi-mission data integration, *AGU Fall Meeting*.
- [71] *Adusumilli, S., **M. R. Siegfried**, F. S. Paolo, H. A. Fricker and L. Padman, 2017. Twenty-three years of height changes on Antarctic Peninsula ice shelves, *AGU Fall Meeting*.
- [70] *Becker, M. K., H. A. Fricker, L. Padman, R. E. Bell, **M. R. Siegfried**, C. C. M. Dieck and the ROSETTA-Ice Team, 2017. Mapping Ross Ice Shelf with ROSETTA-Ice airborne laser altimetry, *AGU Fall Meeting*.
- [69] Begeman, C. B., S. M. Tulaczyk, O. Marsh, J. Mikucki, T. P. Stanton, T. O. Hodson, **M. R. Siegfried**, R. D. Powell, K. Christianson and M. A. King, 2017. Ocean stratification reduces melt rates at the grounding zone of Ross Ice Shelf, *AGU Fall Meeting*.
- [68] †Key, K. and **M. R. Siegfried**, 2017. The feasibility of imaging subglacial hydrology beneath ice streams with ground-based electromagnetics, *AGU Fall Meeting*.
- [67] Tinto, K. J., C. S. Siddoway, L. Padman, H. A. Padman, I. Das, D. F. Porter, S. R. Springer, **M. R. Siegfried**, F. C. Tontini, R. E. Bell and the ROSETTA-Ice Team, 2017. Duality of Ross Ice Shelf systems: crustal boundary, ice-sheet processes, and ocean circulation from ROSETTA-Ice surveys, *AGU Fall Meeting*.

- [66] **Siegfried, M. R.**, 2017. Six years of variable height-changes of Siple Coast ice streams from CryoSat-2 altimetry, *WAIS Workshop*.
- [65] *Adusumilli, S., **M. R. Siegfried**, F. S. Paolo, H. A. Fricker and L. Padman, 2017. Contrasting causes of decadal-scale variability of ice-shelf height changes across the Antarctic Peninsula, *WAIS Workshop*.
- [64] *Becker, M. K., H. A. Fricker, L. Padman, R. E. Bell, **M. R. Siegfried**, C. C. M. Dieck and the ROSETTA-Ice Team, 2017. Mapping Ross Ice Shelf with ROSETTA-Ice airborne laser altimetry, *WAIS Workshop*.
- [63] Begeman, C. B., S. M. Tulaczyk, O. J. Marsh, J. A. Mikucki, T. P. Stanton, T. O. Hodson, **M. R. Siegfried**, R. D. Powell, K. Christianson and M. A. King, 2017. Ocean stratification reduces melt rates at the grounding zone of Ross Ice Shelf, *WAIS Workshop*.
- [62] *Elsworth, C. W., D. M. Schroeder and **M. R. Siegfried**, 2017. Internal layer deformation reveals past ice flow over the central sticky spot of Whillans Ice Stream, West Antarctica, *WAIS Workshop*.
- [61] Padman, L., **M. R. Siegfried** and H. A. Fricker, 2017. Tides on Antarctic Ice Shelves from Cryosat-2 Radar Altimetry, *WAIS Workshop*.
- [60] *Vega, K. I., D. M. Schroeder, E. J. MacKie, **M. R. Siegfried**, J. R. Emmons, K. Winstein, R. G. Bingham and J. A. Dowdeswell, 2017. Initial Analysis of High-Resolution Digitized Radar Sounding Data Recovered from the SPRI/NSF/TUD Film Archive of Antarctic Ice Sheet, *WAIS Workshop*.
- [59] Damsgaard, A., J. Suckale, J. A. Piotrowski, M. Houssais, **M. R. Siegfried** and H. A. Fricker, 2017. Discrete-element simulation of subglacial sediments: Grounding-line proximate till mechanics and soft-bed channel dynamics, *GSA Annual Meeting*.
- [58] **Siegfried, M. R.**, 2017. What's happening at the bed: Radar sounding of dynamic surface-height anomalies in East Antarctica, *Bay Area Glaciology Meeting 2017*.
- [57] *Adusumilli, S., **M. R. Siegfried**, F. S. Paolo, H. A. Fricker and L. Padman, 2017. Twenty-three years of satellite radar altimetry over Antarctic ice shelves, *Forum for Research into Ice Shelf Processes Workshop*.
- [56] *Becker, M., H. A. Fricker, L. Padman, **M. R. Siegfried**, R. E. Bell, C. D. Locke, S. Adusumilli, C. Bertinato, K. J. Tinto and the ROSETTA-Ice Team, 2017. High-Resolution Mapping of Ross Ice Shelf Thickness from ROSETTA-Ice Airborne LiDAR Surveys, *Forum for Research into Ice Shelf Processes Workshop*.
- [55] *Adusumilli, S., **M. R. Siegfried**, F. S. Paolo, H. A. Fricker and L. Padman, 2017. Twenty-two years of radar-derived height changes over Antarctic ice shelves, *European Geosciences Union General Assembly 2017*.
- [54] **Siegfried, M. R.** and H. A. Fricker, 2017. Fourteen years of subglacial lake activity in Antarctica from multi-mission altimetry, *North American CryoSat Science Meeting*.
- [53] *Adusumilli, S., **M. R. Siegfried**, F. S. Paolo, H. A. Fricker and L. Padman, 2017. Extending Antarctic ice shelf height change time series using CryoSat-2, *North American CryoSat Science Meeting*.
- [52] **Siegfried, M. R.**, 2017. SALSA Surface Geophysics Update: Current state at Subglacial Lake Mercer, *SALSA Project Planning Meeting*.

2016

- [51] Damsgaard, A., D. L. Egholm, L. H. Beem, S. Tulaczyk, N. K. Larsen, J. A. Piotrowski and **M. R. Siegfried**, 2016. Subglacial sediment mechanics investigated by computer simulation of granular material, *AGU Fall Meeting*.
- [50] Meyer, C. R., B. P. Lipovsky and **M. R. Siegfried**, 2016. Inferring subglacial lake water pressure from a bending model of surface displacement observations, *AGU Fall Meeting*.
- [49] **Siegfried, M. R.**, B. C. Medley, K. M. Larson, H. A. Fricker and S. Tulaczyk, 2016. Detection of variability in surface processes with GPS interferometric reflectometry: application on Whillans Ice Plain, *WAIS Workshop*.
- [48] Damsgaard, A., D. L. Egholm, L. H. Beem, S. Tulaczyk, N. K. Larsen, J. A. Piotrowski and **M. R. Siegfried**, 2016. Creep and stick-slip in subglacial granular beds forced by variations in water pressure, *WAIS Workshop*.
- [47] Das, I., J. Millstein, W. Chu, **M. R. Siegfried**, L. Padman, R. Bell, K. Tinto, H. A. Fricker and the ROSETTA-ICE Team, 2016. Basal reflectivity, mass balance and structure of the Ross Ice Shelf, *WAIS Workshop*.
- [46] Meyer, C. R., B. P. Lipovsky and **M. R. Siegfried**, 2016. Pressure changes in Subglacial Lakes, *WAIS Workshop*.
- [45] **Siegfried, M. R.**, D. M. Schroeder, T. Scambos, S. P. Carter and H. A. Fricker, 2016. A large, rapid subglacial lake drainage beneath Slessor Glacier, East Antarctica, and its potential impact in the Filchner Trough, *IGS Symposium on Ice-Ocean Interaction*.
- [44] Damsgaard, A., D. L. Egholm, L. H. Beem, S. Tulaczyk, N. K. Larsen, J. A. Piotrowski and **M. R. Siegfried**, 2016. Creep and stick-slip in subglacial granular beds forced by ocean tides, *IGS Symposium on Ice-Ocean Interaction*.
- [43] Key, K. and **M. R. Siegfried**, 2016. The feasibility of imaging subglacial water systems near the grounding zone using electromagnetic soundings, *IGS Symposium on Ice-Ocean Interaction*.

2015

- [42] **Siegfried, M. R.**, H. A. Fricker, S. P. Carter and S. Tulaczyk, 2015. Rapid subglacial water system evolution triggered by subglacial floods in West Antarctica, *AGU Fall Meeting*.
- [41] Carter, S. P., H. A. Fricker and **M. R. Siegfried**, 2015. Antarctic subglacial lake drainage via canals incised into sediment: Progress from modelling and observations, *AGU Fall Meeting*.
- [40] Tulaczyk, S., S. Y. Schwartz, A. Fisher, R. Powell, H. A. Fricker, S. Anandakrishnan, H. Horgan, R. Scherer, J. I. Walter, **M. R. Siegfried**, J. Mikucki, K. Christianson, L. Beem, K. Mankoff, S. P. Carter, T. Hodson, O. Marsh, C. Barcheck, S. Neuhaus, R. Jacobel and the WISSARD Science Team, 2015. Grounding Zones, Subglacial Lakes, and Dynamics of an Antarctic Ice Stream: The WISSARD Glaciological Experiment, *AGU Fall Meeting*.
- [39] **Siegfried, M. R.**, H. A. Fricker and S. P. Carter, 2015. Extending the active subglacial lake record across Antarctica, *WAIS Workshop*.

- [38] Tulaczyk, S., R. D. Powell, J. C. Priscu, B. C. Christner, A. T. Fisher, H. A. Fricker, J. A. Mikucki, F. Rack, R. P. Scherer, S. Y. Schwartz, M. Skidmore, C. Branecky, J. Burnett, S. U. Neuhaus, D. Sampson, **M. R. Siegfried**, R. Zook and the WISSARD Science Team, 2015. WISSARD at the Grounding Zone of Whillans Ice Stream: Scientific Operations and Initial Observations, *WAIS Workshop*.
- [37] **Siegfried, M. R.**, H. A. Fricker, S. P. Carter and S. Tulaczyk, 2015. Rapid subglacial water system evolution triggered by a subglacial flood in West Antarctica, *IGS Symposium on Contemporary Ice-Sheet Dynamics*.
- [36] Alley, K. A., T. A. Scambos, **M. R. Siegfried** and H. A. Fricker, 2015. Observations of basal melt channels on Antarctic ice shelves, *IGS Symposium on Contemporary Ice-Sheet Dynamics*.
- [35] Fricker, H. A., F. S. Paolo, A. Luckman, **M. R. Siegfried**, T. A. Scambos, P. R. Holland and L. Padman, 2015. Is Larsen-C ice shelf ungrounding from Bawden Ice Rise?, *IGS Symposium on Contemporary Ice-Sheet Dynamics*.
- [34] Marsh, O., H. A. Fricker, **M. R. Siegfried**, K. Nicholls, H. F. J. Corr and G. Catania, 2015. Highly concentrated melting and channel formation at the grounding line of the southern Ross Ice Shelf, *IGS Symposium on Contemporary Ice-Sheet Dynamics*.
- [33] **Siegfried, M. R.**, H. A. Fricker, S. P. Carter and T. A. Scambos, 2015. A decade of progress observing and modeling of Antarctic subglacial water systems, *Subglacial Antarctic lake exploration: first results & future plans*.
- 2014
- [32] Carter, S. P., H. A. Fricker and **M. R. Siegfried**, 2014. On siphons and sediments: A new model for draining active subglacial lakes in Antarctica informed with satellite radar and laser altimeter observations, *AGU Fall Meeting*.
- [31] Tulaczyk, S. M., J. Mikucki, **M. R. Siegfried**, J. Priscu, C. G. Barcheck, L. Beem, A. Behar, J. Burnett, B. Christner, A. Fisher, H. A. Fricker, K. Mankoff, R. Powell, F. Rack, D. Sampson, R. Scherer and S. Schwartz, 2014. WISSARD at Subglacial Lake Whillans, West Antarctica: Scientific operations and first observations, *AGU Fall Meeting*.
- [30] **Siegfried, M. R.**, 2014. The trials and tribulations of monitoring subglacial hydrology with CryoSat-2, *LDEO Subglacial Hydrology Workshop*.
- [29] **Siegfried, M. R.**, H. A. Fricker, S. P. Carter and S. M. Tulaczyk, 2014. Interruption of the Whillans Ice Stream stick-slip cycle by a subglacial lake discharge event, *WAIS Workshop*.
- [28] Carter, S. P., H. A. Fricker and **M. R. Siegfried**, 2014. Half-full or half-empty? Informing a model of subglacial lake drainage with observations of surface motion, *WAIS Workshop*.
- [27] **Siegfried, M. R.**, H. A. Fricker, S. P. Carter and the WISSARD Science Team, 2014. Explorations of the Antarctic subglacial environment from space, from the ice-sheet surface, and by direct sampling, *Scripps Student Symposium*.
- [26] **Siegfried, M. R.**, H. A. Fricker, S. P. Carter, M. W. Roberts, T. A. Scambos and S. M. Tulaczyk, 2014. A decade of West Antarctic subglacial lake interactions from combined ICESat & CryoSat-2 altimetry, *EGU General Assembly*.

2013

- [25] **Siegfried, M. R.**, H. A. Fricker, M. W. Roberts and T. A. Scambos, 2013. Subglacial flood event observed using in situ GPS data, CryoSat-2 altimetry, and MODIS image differencing on the Whillans Ice Plain, West Antarctica, *AGU Fall Meeting*.
- [24] Carter, S. P., **M. R. Siegfried** and H. A. Fricker, 2013. A subglacial lake flood model for Antarctic lakes based on high resolution radar sounding and validated with satellite altimetry and GPS, *AGU Fall Meeting*.
- [23] Glasser, N. F., T. O. Holt, D. J. Quincey, H. A. Fricker and **M. R. Siegfried**, 2013. Changing structures and dynamics of western Antarctic Peninsula ice shelves, *AGU Fall Meeting*.
- [22] **Siegfried, M. R.**, H. A. Fricker, M. W. Roberts and T. A. Scambos, 2013. Subglacial flood event observed using in situ GPS data, CryoSat-2 altimetry, and MODIS image differencing on the Whillans Ice Plain, West Antarctica, *WAIS Workshop*.
- [21] Carter, S. P., **M. R. Siegfried** and H. A. Fricker, 2013. Evidence of rapid subglacial water piracy under Whillans Ice Stream, *WAIS Workshop*.
- [20] **Siegfried, M. R.**, H. A. Fricker, M. W. Roberts, L. H. Beem and S. M. Tulaczyk, 2013. Results from the vertical signals of the WISSARD GPS array, 2008–present, *WISSARD Science Meeting*.

2012

- [19] **Siegfried, M. R.**, H. A. Fricker, L. H. Beem, K. A. Christianson, H. J. Horgan and S. M. Tulaczyk, 2012. A comparison of grounding zone features and flexure dynamics in two geometries over a 12-hour tidal range, *AGU Fall Meeting*.
- [18] Carter, S. P., H. A. Fricker and **M. R. Siegfried**, 2012. Concerning the co-occurrence of subglacial lakes and flow bifurcations of water and ice in Antarctica, *AGU Fall Meeting*.
- [17] Urban, T. J., A. A. Borsa, K. M. Brunt, D. Felikson, H. A. Fricker, R. L. Hawley, M. A. Hofton, S. B. Luthcke, N. Pie, B. E. Schutz, C. A. Shuman, **M. R. Siegfried**, D. Yi and J. Zwally, 2012. Summary of ICESat-1 inter-campaign elevation bias and detection methods, *AGU Fall Meeting*.
- [16] **Siegfried, M. R.**, H. A. Fricker, L. H. Beem, K. A. Christianson, H. J. Horgan and S. M. Tulaczyk, 2012. A comparison of grounding zone features and flexure in two geometries over a 12-hour tidal cycle, *WAIS Workshop*.
- [15] Carter, S. P., H. A. Fricker and **M. R. Siegfried**, 2012. Subglacial lakes and logical extensions thereof, *WAIS Workshop*.
- [14] **Siegfried, M. R.**, H. A. Fricker, L. H. Beem, K. A. Christianson, H. J. Horgan and S. M. Tulaczyk, 2012. A comparison of grounding zone flexure in two geometries over a 12-hour tidal cycle, *SCAR Open Science Conference*.
- [13] Carter, S. P., **M. R. Siegfried** and H. A. Fricker, 2012. Modeling hydrologic connections between subglacial lake in Kamb and Whillans ice streams, *SCAR Open Science Conference*.

- 2011
- [12] **Siegfried, M. R.**, K. A. Christianson, H. A. Fricker and S. M. Tulaczyk, 2011. Continuing the Whillans Ice Stream subglacial lake record with GPS, *AGU Fall Meeting*.
 - [11] **Siegfried, M. R.**, K. A. Christianson, H. A. Fricker and S. M. Tulaczyk, 2011. Continuing the Whillans Ice Stream subglacial lake record with GPS, *WAIS Workshop*.
 - [10] Carter, S. P., H. A. Fricker, **M. R. Siegfried**, D. D. Blankenship and W. Liscomb, 2011. Balancing the water budget of the Whillans Ice Plain: Implications for the nature of the subglacial hydrologic system, *WAIS Workshop*.
 - [9] **Siegfried, M. R.**, R. L. Hawley and J. F. Burkhart, 2011. Inter-campaign bias in ICESat elevation data near Summit, Greenland, *PARCA/IceBridge Workshop*.
- 2010
- [8] **Siegfried, M. R.**, R. L. Hawley and J. F. Burkhart, 2010. High-resolution ground-based GPS measurements show inter-campaign bias in ICESat elevation data, *AGU Fall Meeting*.
 - [7] Jackson, B. P., **M. R. Siegfried**, V. F. Taylor and M. A. Voytek, 2010. Multiple chromatographic approaches to arsenic speciation in hydrothermal vent organisms, *Winter Conference on Plasma Spectrochemistry*.
 - [6] **Siegfried, M. R.**, R. L. Hawley and J. F. Burkhart, 2010. Inter-campaign ICESat accuracy at Summit, Greenland, *Dartmouth Graduate Student Poster Competition*.
- 2009
- [5] **Siegfried, M. R.**, R. L. Hawley, J. F. Burkhart and S. O'Neel, 2009. A first-order accuracy assessment of GLAS elevation data near Summit, Greenland, *AGU Fall Meeting*.
 - [4] **Siegfried, M. R.**, V. F. Taylor, M. A. Voytek and B. P. Jackson, 2009. Aresenic Concentration and Speciation in Three mid-Atlantic Ridge Hydrothermal Vent Organisms, *GSA Annual Meeting*.
- 2008
- [3] Quicksall, A. N., B. C. Bostick and **M. R. Siegfried**, 2008. Quantifying Mineralogical Transformations of Ferrihydrite Sulfidization in Microcapillary Columns by Rietveld Refinements using In Situ Synchrotron-Based WAXS, *GSA Annual Meeting*.
- 2007
- [2] Quicksall, A. N., B. C. Bostick, S. M. Webb and **M. R. Siegfried**, 2007. Real-Time, In-Situ, WAXS Analysis of Mineralogical Transformations from Iron (Oxy)Hydroxide Sulfidization, *SSRL/LCLS Users Meeting*.
 - [1] Quicksall, A. N., B. C. Bostick and **M. R. Siegfried**, 2007. Reductive Mineralogical Transformations in the Fe-S-H₂O System, *Northeast GSA*.