

Robert L. Hawley

Professor

Department of Earth Sciences
Fairchild Hall, Dartmouth College

Hanover, NH, 03755

robert.l.hawley@dartmouth.edu

ORCID: <https://orcid.org/0000-0001-8466-0839>

Appointments:

- Professor, Dartmouth College, 07/2021 – present
- Program Director, Arctic System Science, National Science Foundation, 10/2024 – 10/2025
- Department Chair, Earth Sciences, 07/2020 – 07/2023
- Associate Professor, Dartmouth College, 07/2014 – 07/2021
- Affiliate Associate Professor, University of Washington, 09/2016 – 11/2024
- Assistant Professor, Dartmouth College, 07/2008 – 07/2014
- Affiliate Assistant Professor, University of Washington, 06/2008 – 09/2016
- Institute Associate, Scott Polar Research Institute, 06/2008 – 05/2016
- Research Associate, Scott Polar Research Institute, 03/2005 – 06/2008
- Visiting Scientist, University of Washington, 03/2005 – 06/2008
- Research Assistant, University of Washington, 08/1999 – 02/2005

Education:

- Ph.D., Geophysics, University of Washington, February 2005.
Thesis title: “Borehole Investigations of Firn Processes”
Advisor: Edwin D. Waddington
- B.S. Geological Sciences, University of Washington, 1997

Professional Interests:

Research: Remote sensing of snow and ice, glacier, ice sheet, and ice stream dynamics, firn processes, mass balance of glaciers and ice sheets, ice cores and borehole logging, borehole instrumentation, ice physics, subglacial hydrology.

Teaching: Ice and Climate, physical glaciology, scientific computing, science writing, experiential learning, innovative pedagogy.

Service: transparency in governance, faculty mentoring, increasing accessibility, diversity, equity, and inclusion

Funding History:

Current total of **\$5,544,135 to Dartmouth** from **19** grants as a Dartmouth PI (66% success rate):

- **05/15/2023 – 04/30/2026: NSF-OPP-2242895** - Collaborative Research: Greenland Dry-snow Ice-sheet Science Coordination Office - \$375,005. Lead PI, 30% effort
- **12/15/2021 - 11/30/2024: NSF-GEO-NERC-2137098**: Collaborative Research: Integrated Characterization of Energy, Clouds, Atmospheric state, and Precipitation at Summit: Measurements along Lagrangian Transects - \$363,617. Co-PI, 15% effort
- **10/1/2021 - 9/30/2024: NASA-80NSSC21K1876** - SLIVER: Summit Land-Ice Validation of Elevation Retrievals in Greenland - \$363,618. Sole PI, 100% effort
- **3/1/2021 - 2/28/2023: NSF-OPP-2028421**- EAGER: An On-ice GNSS Research Experimental Network for Greenland- \$258,525. Sole PI, 100% effort
- **6/1/2019 - 6/1/2022: NSF-OPP-1917597**- Collaborative Research: Improving Research Coordination for Summit Station and the Dry-Snow Zone of Greenland- \$299,540. Lead PI, 30% effort
- **11/1/2018 - 11/1/2021: NSF-PLR-1831116**- Collaborative Research: Greenland Geodetic Network (GNET) Research Networking Activity- \$140,847. Co-PI, 50% effort
- **1/1/2017 - 1/1/2018: NSF-PLR-1712031**- Workshop proposal: The Future Shape of a Greenland GNSS Observation Network- \$43,342. Sole PI, 100% effort
- **12/1/2016 - 12/1/2018: NSF-PLR-1637003**- Collaborative Research: Science Coordination Office for Summit Station/ISI Observatory and the Greenland Traverse- \$147,911. Lead PI, 25% effort
- **8/1/2015 - 8/1/2020: NSF-PLR-1443341**- Collaborative research: Characterization of upstream ice and firn dynamics affecting the South Pole Ice Core (SPICE) - \$619,086. Co-PI, 20% effort

- **6/1/2015 - 2/1/2018: NSF-PLR-1503653**- Collaborative research: Influence of natural ice microstructure on rheology in general shear: in-situ studies in the Alaska Range - \$218,882. Co-PI, 25% effort
- **8/1/2014 - 8/1/2017: NSF-PLR-1417678**- Collaborative Research: GreenTrACS: a Greenland Traverse for Accumulation and Climate Studies - \$596,737. Co-PI, 30% effort
- **1/1/2012 - 1/1/2015: NASA NNX12AB73G**- A Unique Opportunity to Link Icebridge Measurements with Existing Ground Data - \$233,364. Sole PI, 50% effort
- **9/1/2011 - 9/1/2016: NSF-ARC-1042358**- Collaborative Research: Science Coordination Office for Summit Station and the Greenland Traverse - \$219,173. Co-PI, 30% effort
- **9/1/2010 - 9/1/2014: NSF-OPP 0943466**- Collaborative Research: Deglaciation of the Ross Sea Embayment – constraints from Roosevelt Island - \$170,610. Co-PI, 30% effort
- **6/1/2010 - 6/1/2013: NASA NNX10AP04G**- Ground-based validation of unique CryoSat-2 data products - \$298,392. Sole PI, 100% effort (NASA New Investigator Program)
- **3/1/2010 - 3/1/2013: NASA NNX10AG22G**- Across-track elevation profiles and sub-surface layering in CryoSat-2 altimeter waveforms - \$169,951. Sole PI, 100% effort
- **10/1/2009 - 10/1/2012: NSF-OPP 0908156**- Collaborative Research: Subglacial controls on Greenland Ice Sheet marginal acceleration, - \$300,448. Co-PI, 20% effort
- **9/1/2009 - 9/1/2012: NSF-OPP 0909265**- Understanding the Physical Properties of Northern Greenland Near-surface Snow - \$485,959. Lead PI, 50% effort
- **6/1/2008 - 6/1/2011: NASA JNNX08AO32G**- Elevation change, accumulation, and firn compaction at Summit, Greenland: a satellite altimetry validation study - \$233,656. Sole PI, 100% effort

Author of 3 successful National Science Foundation grants totaling almost \$500,000 as a graduate student (PI: Edwin D. Waddington)

- NSF-OPP 0087521 - Borehole Fingerprinting: Vertical Strain, Firn Compaction, and Firn Depth-Age Scales - \$67,148
- NSF-OPP 0335330 - Borehole Optical Stratigraphy: Ice Microphysics, Climate Change, and the Optical Properties of Firn - \$195,883
- NSF-OPP 0352584 - Collaborative Research: A Unique Opportunity for In-Situ Measurement of Seasonally-Varying firn densification at Summit, Greenland - \$217,526

Peer Reviewed Publications: (Direct mentoring of authors: * grad student, ** undergrad student, *** post-doc)

[64] * Derek J. Pickell, **Robert Hawley**, Denis Felikson, and Jamie C. Good. 2026. ICESat-2 surface elevation assessment with kinematic GPS and static GNSS near the ice divide in Greenland. *The Cryosphere*, doi.org/10.5194/tc-20-483-2026

[63] Ian Raphael, Donald K. Perovich, Christopher M. Polashenski, Robert L. Hawley. 2025. A low-cost, autonomous system for distributed snow depth measurements on sea ice. *The Cryosphere*, doi.org/10.5194/tc-19-6059-2025

[62] * Derek J. Pickell, **Robert Hawley**, and Adam LeWinter. 2025. Spatio-temporal patterns of accumulation and surface roughness in interior Greenland with a GNSS-IR network. *The Cryosphere*. doi.org/10.5194/tc-19-1013-2025

[61] * Alexander Ronan, **Robert Hawley**, and Jonathan Chipman. 2024. Impacts of Differing Melt Regimes on Satellite Radar Waveforms and Elevation Retrievals. *The Cryosphere*. doi.org/10.5194/tc-18-5673-2024

[60] Ian E. McDowell, Kaitlin M. Keegan, S. McKenzie Skiles, Christopher P. Donahue, Erich C. Osterberg, **Robert L. Hawley**, and Hans-Peter Marshall. 2024. A cold laboratory hyperspectral imaging system to map grain size and ice layer distributions in firn cores. *The Cryosphere*. doi.org/10.5194/tc-18-1925-2024

[59] * Katherine A. Lutz, **Robert L. Hawley**, Marisa C. Palucis. 2024. Investigating the Linkage Between Spiral Trough Morphology and Cloud Coverage on the Martian North Polar Layered Deposits. *Journal of Geophysical Research – Planets*. doi.org/10.1029/2023JE008015

[58] * Derek Pickell and **Robert Hawley**. 2023. Performance characterization of a new, low-cost multi-GNSS instrument for the cryosphere. *Journal of Glaciology*. doi.org/10.1017/jog.2023.97

[57] Ian E. McDowell1, Kaitlin M. Keegan, Nander Wever, Erich C. Osterberg, **Robert L. Hawley**, Hans-Peter

Marshall. 2023. Firn core evidence of two-way feedback mechanisms between meltwater percolation and firn microstructure from the western percolation zone of the Greenland Ice Sheet. *Journal of Geophysical Research: Earth Surface*. doi.org/10.1029/2022JF006752

[56] William H. Armstrong, David Polashenski, Martin Truffer, Greg Horne, Jacob B. Hanson, **Robert L. Hawley**, Anthony M. Hengst, Lily Vowels, Brian Menounos, Wesley Van Wychen. 2022. Declining Basal Motion Dominates the Long-Term Slowing of Athabasca Glacier, Canada. *Journal of Geophysical Research: Earth Surface*. 1 – 22. doi.org/10.1029/2021JF006439

[55] Gerbi, C, S. Mills, R. Clavette, S. Campbell, S. Bernsen, *D. Clemens-Sewall, *I. Lee, **R. Hawley**, K. Kreutz, K. Hruby. 2021. Microstructures in a shear margin: Jarvis Glacier, Alaska. *Journal glaciology*. 1 – 14 doi.org/10.1017/jog.2021.62.

[54] * Giese, A., S. Arcone, **R. L. Hawley**, G. Lewis, and P. Wagnon. 2021. Detecting supraglacial debris thickness with GPR under suboptimal conditions *Journal of Glaciology*. 1-- 13. doi.org/10.1017/jog.2021.59.

[53] Lewis, G., E. Osterberg, **R. Hawley**, H.-P. Marshall, T. Meehan, K. Graeter, F. McCarthy, *T. Overly, Z. Thundercloud, D. Ferris, B. Koffman, J. Dibb. 2021. Atmospheric Blocking Drives Recent Albedo Change Across the Western Greenland Ice Sheet Percolation Zone. *Geophysical Research Letters*. doi.org/10.1029/2021GL092814.

[52] **Hawley, R. L.**, T. A. Neumann, C. M. Stevens, K. M. Brunt, and T. C. Sutterly. 2020. Greenland Ice Sheet Elevation Change: Direct Observation of Process and Attribution at Summit. *Geophysical Research Letters* 47(22). doi.org/10.1029/2020GL088864

[51] Meehan, T., H-P. Marshall, J.H. Bradford, **R.L. Hawley**, *T. Overly G,M. Lewis, K. Graeter, E. Osterberg, F. McCarthy. 2020. Historical surface mass balance reconstruction 1984 – 2017 from GreenTrACS multi-offset ground-penetrating radar. *Journal of Glaciology*. 1–10. doi.org/10.1017/jog.2020.91

[50] Hruby, K., C. Gerbi, P. Koons, S. Campbell, C. Martín, and **R.L. Hawley**. 2020. The impact of temperature and crystal orientation fabric on the dynamics of mountain glaciers and ice streams. *Journal of Glaciology*. 66 1– 11. doi.org/10.1017/jog.2020.44

[49] * Giese, A., A. Boone, P. Wagnon, and **R. L. Hawley**. 2020. Incorporating moisture content in surface energy balance modeling of a debris-covered glacier. *The Cryosphere* 14, 1555-1577. doi.org/10.5194/tc-14-1555-2020

[48] Meyer, C. R., K. M. Keegan, I. Baker, and **R. L. Hawley**. 2020. A model for French-press experiments of dry snow compaction. *The Cryosphere* 14, 1449–1458. doi.org/10.5194/tc-14-1449-2020

[47] **Liu, J, D. E. Lawson, **R. L. Hawley**, J. W. Chipman, B. T. Tracy, Xun Shi, Yaning Chen. 2020. Estimating the longevity of glaciers in the Tian Shan in Xinjiang, China through remote sensing observations of glacier area change. *Journal of Glaciology*. 1-14. doi:10.1017/jog.2020.24.

[46] *Lee, I., **R.L Hawley**, S. Bernsen, S.W. Campbell, *D Clemens-Sewall, C.C. Gerbi and K. Hruby. 2019. A Novel Borehole Tilt Sensor for Studying Ice Deformation: Application to streaming ice on Jarvis Glacier, Alaska. *Journal of Glaciology* 66(255), pp 74-82. doi:10.1017/jog.2019.84

[45] Lewis, G. M., E. Osterberg, **R.L. Hawley**, H-P. Marshall, T. Meehan, K. Graeter, F. McCarthy, *T. Overly, Z. Thundercloud, Ferris, D. 2019. Recent Precipitation Decrease Across the Western Greenland Ice Sheet Percolation Zone. *The Cryosphere* 13, pp 2797-2815. doi:10.5194/tc-13-1-2019.

[44] Fudge, T.J., S. Biyani, *D. Clemens-Sewall, and **R.L. Hawley**. 2019. Constraining geothermal flux at coastal domes of the Ross Ice Sheet, Antarctica. *Geophysical Research Letters* 46(22), pp 13090-13098. doi:10.1029/2019GL084332

[43] **R. L. Hawley** and **J. D. Millstein. 2018. Quantifying the cost of snow drift on Arctic structures: a case study at Summit, Greenland, using UAV-based Structure-from-Motion photogrammetry. *Cold Regions Science and Technology*. 167 pp. 163-170 doi: 10.1016/j.coldregions.2018.10.007

[42] *Schild, K. M., C. E. Renshaw, D. I. Benn, A. Luckman, **R. L. Hawley**, P. How, N. R. J. Hulton, L. Trusel.

2018. Calving Rates due to Subglacial Discharge and Fjord Circulation. *Journal of Geophysical Research*. doi:10.1029/2017JF004520

[41] Andrews, L.C., M. J. Hoffman, T. A. Neumann, G. A. Catania, M. P. Lüthi, **R. L. Hawley**, *K. M. Schild, C. Ryser, *B. F. Morriss. 2018. Seasonal evolution of the subglacial hydrologic system modified by supraglacial lake drainage in western Greenland. *Journal of Geophysical Research*. 123(6) doi:10.1029/2017JF004585

[40] Graeter, K. A., E. C. Osterberg, D. G. Ferris, **R. L. Hawley**, H. P. Marshall, G. Lewis, T. Meehan, F. McCarthy, and S. D. Birkel. 2018. Ice Core Records of West Greenland Melt and Climate Forcing. *Geophysical Research Letters*. 45 doi:10.1002/2017GL076641

[39] Bertler, N. A. N., and 70 others including **Hawley, R. L.** 2018. The Ross Sea Dipole - Temperature, Snow Accumulation and Sea Ice Variability in the Ross Sea Region, Antarctica, over the Past 2,700 Years, *Climate of the Past*, 14, 193-214, doi:10.5194/cp-14-193-2018

[38] Winski, D., Osterberg, E., Ferris, D., Kreutz, K., Wake, C., Campbell, S., **Hawley, R.**, Roy, S., Birkel, S., Introne, D., and Handley, M. 2017. Industrial-age doubling of snow accumulation in the Alaska Range linked to tropical ocean warming. *Nature Scientific Reports*. doi:10.1038/s41598-017-18022-5

[37] *Schild, K, **R. L. Hawley**, J. W. Chipman, and D. I Benn. 2017. Quantifying suspended sediment concentration in subglacial sediment plumes discharging from two Svalbard tidewater glaciers using Landsat-8 and in situ measurements. *International Journal of Remote Sensing* 38:23, 6865-6881, doi:10.1080/01431161.2017.1365388

[36] Brunt, K. M., **R. L. Hawley**, ***Eric R. Lutz, M. Studinger, J. G. Sonntag, M. A. Hofton, L. C. Andrews, and T. A. Neumann. 2017. Assessment of NASA airborne laser altimetry data using ground-based GPS data near Summit Station, Greenland, *The Cryosphere*, 11, 681-692, doi:10.5194/tc-11-681-2017

[35] Lewis, Gabriel, Osterberg, Erich, **Hawley, Robert**, **Whitmore, Brian, Marshall, Hans Peter, Box, Jason. 2016. Regional Greenland Accumulation Variability from Operation IceBridge Airborne Accumulation Radar. *The Cryosphere*. doi:10.5194/tc-2016-248

[34] Hoffman, M, L. Andrews, S. Price, G. Catania, T. Neumann, M. Lüthi, J. Gulley, C. Ryser, **R. L. Hawley**, and *B. Morriss. 2016. Greenland subglacial drainage evolution regulated by weakly-connected regions of the bed. *Nature Communications* 7 doi:10.1038/ncomms13903.

[33] *Overly, T. B, **R. L. Hawley**, V. Helm, E. M. Morris, and **R. N. Chaudhary. 2016. Greenland annual accumulation along the EGIG line, 1959–2004, from ASIRAS airborne radar and neutron-probe density measurements. *The Cryosphere*, doi:10.5194/tc-10-1679-2016.

[32] * Schild, K. M., **R. L. Hawley**, and *B. F. Morriss. 2016. Subglacial hydrology at Rink Isbrae, West Greenland inferred from sediment plume emergence. *Annals of Glaciology* 57(72) doi:10.1017/aog.2016.1

[31] *G J Wong, E C Osterberg, **R L Hawley**, Z R Courville, D G Ferris and J A Howley. 2015. Coast-to-interior gradient in recent northwest Greenland precipitation trends (1952-2012). *Environmental Research Letters* (10) doi:10.1088/1748-9326/10/11/114008

[30] Osterberg, E. C., **R. L. Hawley**, *G. Wong, Ben Kopec, David Ferris, Jennifer Howley. 2015. Coastal Ice Core Record of Recent Northwest Greenland Temperature and Sea Ice Concentration. *Journal of Glaciology* 61(230) 1137-1146 doi:10.3189/2015JoG15J054

[29] * Geise, A., **R. L. Hawley** 2015. Thermal diffusivity in the shallow firn at Summit, Greenland, inferred from subsurface temperature profiles. *Journal of Glaciology* 61(227) 503-510 doi:10.3189/2015JoG14J204.

[28] Martin P. Lüthi, Claudia Ryser, Lauren C. Andrews, Ginny A. Catania, Martin Funk, **Robert L. Hawley**, Matt J. Hoffman, and Thomas A. Neuman. 2015. Excess heat in the Greenland Ice Sheet: Dissipation, temperate paleo-firn and cryo-hydrologic warming. *The Cryosphere* 9 doi:10.5194/tc-9-245-2015

[27] Ryser, C., M. P. Lüthi, L. C. Andrews, G. A. Catania, M. Funk, **R. Hawley**, M. Hoffman, T. A. Neumann.

2014. Caterpillar-like ice motion in the ablation zone of the Greenland Ice Sheet. *Journal of Geophysical Research* 119(10), 2258-2271, doi:10.1002/2013JF003067
- [26] Andrews, L. C., G. A. Catania, M. J. Hoffman, J. D. Gulley, M. P. Lüthi, C. Ryser, **R. L. Hawley** & T. A. Neumann. 2014. Direct observations of evolving subglacial drainage beneath the Greenland Ice Sheet. *Nature* 514, 80-83, doi:10.1038/nature13796
- [25] Reyser, C., M.P. Lüthi, L.C. Andrews, M.J. Homan, G.A. Catania, **R.L. Hawley**, T. A. Neumann. 2014. Sustained high sliding motion under the Greenland Ice Sheet revealed by borehole deformation. *Journal of Glaciology* 60(220) 647-660, doi: 0.3189/2014JoG13J196
- [24] Polashenski, C., Z. Courville, C. Benson, A. Wagner, J. Chen, *G. Wong, **R. Hawley** & D. Hall. 2014. Observations of Pronounced Greenland Ice Sheet Firn Warming and Implications for Runoff Production. *Geophysical Research Letters*. DOI: 10.1002/2014GL059806
- [23] **Hawley, R. L.**, Z. R. Courville, **L. M. Kehrl, ***E. R. Lutz, E. C. Osterberg, T. B. Overly, *G. J. Wong. 2014. Recent Accumulation Variability in Northwest Greenland from GPR and Shallow Cores Along the Greenland Inland Traverse. *Journal of Glaciology*. 60(220), 60, doi: 10.3189/2014JoG13J141
- [22] ** Kehrl, L. M., **R. L. Hawley**, E.C. Osterberg, **D.A. Winski, and **A.P. Lee. 2014. 25 years of volumetric change on lower Peyto Glacier, Alberta, Canada. *Journal of Glaciology* 60(219)
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- [20] *Morriss, B. F., **R. L. Hawley**, J. W. Chipman, L. C. Andrews, G. A. Catania, M. J. Hoffman, M. P. Lüthi, and T. A. Neumann. 2013. A ten-year record of supraglacial lake evolution and rapid drainage in West Greenland using an automated processing algorithm for multispectral imagery. *The Cryosphere* 7 1767-1877. doi:10.5194/tc-7-1869-2013
- [19] Arthern, R, H. F. J. Corr, F. Gillet-Chaulet, **R.L. Hawley**, Elizabeth M. Morris. 2013. Inversion for the density-depth profile of polar firn using a stepped-frequency radar. *Journal of Geophysical Research* 118(3) 1257-1263, doi: 10.1002/jgrf.20089
- [18] **Hawley R. L.**, O. Brandt, T. Dunse J.-O. Hagen V. Helm, J. Kohler, K. Langley, E. Malnes K.-A. Hogda. 2013. Using airborne Ku-band altimeter waveforms to investigate winter accumulation and glacier facies on Austfonna, Svalbard. *Journal of Glaciology* 59(217), doi: 10.3189/2013JoG13J051.
- [16] *Wong, G. J., **R. L. Hawley**, ***E. R. Lutz, and E. C. Osterberg. 2013. Trace-element and physical response to melt percolation in Summit (Greenland) snow. *Annals of Glaciology*, 54(63), doi:10.3189/2013AoG63A602.
- [15] **Kehrl, L. M., **R. L. Hawley**, R. D. Powell, and J. B-Grette. 2011. Glacimarine sedimentation processes at Kronebreen and Kongsvegen Glaciers, Svalbard. *Journal of Glaciology*, 57(205), 841-847.
- [14] **Hawley, R.L.**, E.D. Waddington. 2011. In-Situ Measurements of Firn Compaction Profiles Using Borehole Optical Stratigraphy. *Journal of Glaciology*, 57(202), 289-294.
- [13] *Siegfried, M. R., **R. L. Hawley**, and J. F. Burkhart. 2011. High-resolution ground-based GPS measurements show inter-campaign bias in ICESat elevation data. *IEEE Transactions on Geoscience and Remote Sensing*, 49(10).
- [12] **Hawley, R.L.**, A.P. Shepherd, R. Cullen, V. Helm, and D. Wingham. 2009. Ice-Sheet elevations from across-track processing of airborne interferometric radar altimetry. *Geophysical Research Letters*, 36, L22501, doi:10.1029/2009GL040416.
- [11] **Hawley, R.L.**, E.M. Morris, and J. R. McConnell. 2008. Rapid techniques for determining annual accumulation applied at Summit, Greenland. *Journal of Glaciology*. 54(188), 839-846.
- [10] Brandt, O., **R.L. Hawley**, J. Kohler, J. O. Hagen, E. M. Morris, T. Dunse, J. B. T. Scott, and T. Eiken. 2008. Comparison of airborne radar altimeter and ground-based Ku-band radar measurements on the ice cap Austfonna, Svalbard. *The Cryosphere Discussions*. 2, 777-810.

- [9] **Hawley, R.L.**, Ola Brandt, E.M. Morris, Jack Kohler, Andrew P. Shepherd, Duncan J. Wingham. 2008. Techniques for measuring high-resolution firn density profiles: case study from Kongsvegen, Svalbard. *Journal of Glaciology*. 54(186), 463-468.
- [8] **Hawley, R.L.**, E.M. Morris. 2006. Borehole Optical Stratigraphy and neutron-scattering density measurements at Summit, Greenland. *Journal of Glaciology*. 52(179), 491-496.
- [7] Bay, R. C., N. Bramall, P. B. Price, G. D. Clow, R. L. **Hawley, R.** Udisti, E. Castellano. 2006. Globally-synchronous ice core volcanic tracers and abrupt cooling during the Last Glacial Period. *Journal of Geophysical Research* 111(D11108).
- [6] **Hawley, R.L.**, E.M. Morris, R. Cullen, U. Nixdorf, A.P. Shepherd, and D. Wingham. 2005. ASIRAS airborne radar resolves internal annual layers in the dry-snow zone of Greenland. *Geophysical Research Letters* 33(L04502), doi:10.1029/2005GL025147.
- [5] **Hawley, R.L.**, E.D. Waddington, G.L. Lamorey, and K.C. Taylor. 2004. Vertical-strain measurements in firn at Siple Dome, Antarctica. *Journal of Glaciology*. 50(170). 447 - 452.
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- [3] **Hawley, R.L.**, E.D. Waddington, D.L. Morse, N.W. Dunbar, and G.A. Zielinski. 2002. Dating firn cores by vertical strain measurements. *Journal of Glaciology*, 48(162), 401 - 406.
- [2] Albert, M.R. and **R.L. Hawley**. 2002. Seasonal changes in surface roughness characteristics at Summit, Greenland: implications for snow and firn ventilation. *Annals of Glaciology* 35, 510-514.
- [1] Albert, M.R. and **R.L. Hawley**. 2000. Seasonal differences in surface energy exchange and accumulation at Summit, Greenland. *Annals of Glaciology* 31, 387-390.

Invited Book Chapter:

Marshall, H.-P., **R. L. Hawley**, and M. Tedesco. 2014. Field measurements for remote sensing of the cryosphere. In *Remote Sensing of the Cryosphere*, M. Tedesco, ed.

Technical Reports/Whitepapers (not peer reviewed):

Hawley, R. L. and 23 others. 2017. *GNET 2017 Forward: the future shape of a Greenland GNSS observation network*.

Koenig, L, and 28 others including **R. L. Hawley**. 2017. *Sustaining the science impact of Summit Station, Greenland*.

Teaching:

As Dartmouth Faculty:

- 2019 (Spring) – EARS 270, Topics in Ice and Climate. This seminar uses primary literature to examine topics in ice and climate including glaciology, glacial geology, Quaternary geology as well as present and past climate systems.
- 2010, 2011, 2013, 2014, 2015, 2016, 2017, 2018, 2019 (Spring) – EARS 203, Advanced Surface Processes/Science Communication. Writing-intensive graduate core course, emphasizing presentation skills and proposal writing.
- 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022 (Fall) – EARS 06, Environmental Change. Intro course on change in the environment. Course re-engineered in fall 2016 as part of the Gateway Initiative to include more Active Learning components.
- 2009, 2010, 2014, 2018, 2020, 2022, 2024 (Spring) – EARS 70/170, Glaciology. Advanced Undergraduate course on the Principles of Glaciology, with an extra graduate-only section for 170.

- 2009, 2011, 2015, 2017 (Winter) - EARS 65/165 (was EARS 55), crosslisted with GEOG 51, Remote sensing. Advanced undergraduate course in remote sensing techniques, with an extra graduate-only section for 165.
- 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2022-spring, 2022, 2023, 2024, 2025 (Normally Fall) - EARS 45/46/47, Earth Sciences FSP. Field course in glaciology and glacial geology.

As SPRI Post-Doctoral Scholar:

- 2006 – Supervisor for 3rd year course Glacial Environments. Lead Instructor: I. Willis. In-depth tutorials for students in small groups, giving individual attention. Grading and class administration.

As UW Graduate Student:

- 2003 – Teaching assistant for Earth and Space Sciences 203, Glaciers and Climate. Lead Instructor: E.D. Waddington. Taught lab section of class, including pre-lab lectures, grading, and class administration.
- 2001 – Teaching assistant for Geophysics 203, Glaciers and Climate. Lead Instructor: E.D. Waddington. Taught lab section of class, including pre-lab lectures, grading, and class administration.

Senior Honors Theses Advised:

Dominic Winski '09: “Quantitative Measurements of Spatial and Volumetric Recession of the Ablation Zone of Peyto Glacier, Alberta, Canada”

Laura Kehrl '10: “Quantifying Sedimentation Processes And Rates Through Repeat Bathymetry At Kronebreen And Kongsvegen Glaciers, Svalbard, Norway”

Julia Kelson '12: “Temporal Patterns Of Snow Accumulation And The Effect Of Nearby Summit, Greenland”

Joanna Millstein '17: “Observations of Ice Thickness and Elevation on the Ross Ice Shelf, Antarctica, from Airborne Radar and Satellite Altimetry”

Julia Liu '18: “Monitoring Glacier Changes in the Tian Shan of Xinjiang, China using Remote Sensing Data”

Ian Raphael '18: “Quantifying Volumetric Change of Athabasca Glacier in the 20th and 21st Centuries”

Chris Picard '23: “Measuring Accumulation on the Greenland Ice Sheet using ICESat-2 laser altimetry”

Evan Barrett '24: “Driving Forces of Spatial and Temporal Variations of the Snow Surface at Summit, Greenland”

MS Theses Advised:

Matt Siegfried, MS 2010: “On The Use Of High-Precision Gps Surveys For Validation Of Icesat Altimetry Measurements And Investigation Of Seasonal Ice-Surface Fluctuations”

Blaine Morriss, MS 2013: “On The Detection And Evolution Of Supraglacial Lakes And Catastrophic Drainage Events On The Greenland Ice Sheet”

Ian Lee MS 2018: “Flow Dynamics of Streaming Ice: Borehole Deformation Investigations with Self-Developed Tilt Sensors”

Alex Ronan MS 2023: “Parameterization of CryoSat-2 Radar Waveforms Across the Greenland Ice Sheet”

Victoria Halvorson MS 2024: “Automated Glacier Classification in High Mountain Asia using Machine Learning and a Random Forest Classifier”

Jamie Good MS 2024: “On Spatiotemporal Trends In Meter-Scale Ice Surface Roughness And The Development Of An On-Ice Laser Distance Meter”

PhD Theses Advised:

Gifford Wong, PhD 2015: “Environmental and Climatic Controls on Glaciochemistry of Near-Surface Snow in

Greenland”

Kristin Schild, PhD 2017: “The Influence Of Subglacial Hydrology On Arctic Tidewater Glaciers And Fjords”

Thomas Overly, PhD 2018: “Snow Accumulation, Surface Elevation, And Surface Roughness Across The Greenland Ice Sheet From Remote Sensing”

Alexandra Giese, PhD 2019: “Heat Flow, Energy Balance, And Radar Propagation: Porous Media Studies Applied To The Melt Of Changri Nup Glacier, Nepal Himalaya”

Derek Pickell, PhD 2025: “Old, Flat, And Slow: Interior Greenland Snow And Ice Dynamics Revealed With GNSS”

Mentoring- Undergraduate:

WISP:

Blythe Butler '13: W10, S10
Kellie McPhee '14: W11, S11
Tracy Wang '15: W12, S12
Cailey McVey '23: W20, S20
Laura Wilson '25: W22

Sophomore Scholar:

Cailey McVey '23: F20, W21

Presidential Scholar:

Laura Kehrl '10: F10
Ian Raphael '17: W17, S17
Kyle Bretherton '20: S18, S19
Laura Wilson '25: X23, S24

Junior Research Scholar:

Mahnoor Maqsood '17: W17, S17
Andrew Crutchfield '17: W17, S17

Senior Research Project:

Alex Lee '10: W10
Blaine Morriss '08: W10

Mentoring- Graduate:

MS, primary advisor:

Matt Siegfried, MS 2010
Blaine Morriss, MS 2013
Ian Lee, MS 2018
Alex Ronan, MS 2023
Jamie Good, MS 2024
Victoria Halvorson, MS 2024

MS, committee member:

Alan Kasprak, MS 2010
Erik Bell, MS 2010
Margaret Baber, MS 2013
Lauren Farnsworth, MS 2016
David Clemens-Sewall, MS (transitioned to PhD)
Katherine Lutz, MS (transitioned to PhD)
Noemi Ortega Dominguez, MS 2023

Mentoring- Post-doctoral Scholar:

Eric R. Lutz, 2011—2014
Allen Pope, 2014

Ben Bramhall '11: W11
Rohan Chaudhary '12: W12
Matt Pickart '13: W13
Scott Lacy '13: W13
Isabella Jacoby '20: W20
Anne Ballard '24: S24

Honors Theses:

Dominic Winski '09: S09
Laura Kehrl '10: W10
Julia Kelson '12: W12, S12
David Clemens-Sewall '14: F14, S15
Joanna Millstein '17: W17, S17
Andrew Crutchfield '18: W18, S18
Ian Raphael '18: W18, S18
Julia Liu '18, W18
Chris Picard '23, F22, W23, S23
Evan Barrett '24, F23, S24
Laura Wilson '25, W25, S25, X25

PhD, primary advisor:

Gifford Wong, PhD 2015
Kristin Schild, PhD 2017
Thomas Overly, PhD 2018
Alexandara Giese, PhD 2019
Derek Pickell, PhD 2025

PhD, Committee member:

Laura Levy, PhD 2014
Kaitlin Keegan, PhD (Thayer) 2013
Rebecca Williams, PhD (Thayer) 2013
Gabriel Lewis, PhD 2019
Dominic Winski, PhD 2018
Alden Adolph, PhD (Thayer) 2017
Ben Walker, PhD (Thayer) 2019
Amber Whelsky, PhD (Thayer) 2017
Ian Raphael, PhD (Thayer) 2025
Hugh Schields, PhD expected 2029
Katherine Lutz, PhD expected 2028
Logan Mann, PhD expected 2026

Awards:

- Jacobus Family Fellow, 2021-2022
- Dean of the Faculty Scholarly Innovation and Advancement Award, 2020
- Dartmouth Center for the Advancement of Learning Teaching Science Fellow, 2017-2018
- Douglas C. Floren Fellow, 2014-2015
- Karen E. Wetterhahn Memorial Award for Distinguished Scholarly Achievement, 2014
- Dartmouth Graduate Faculty Mentor of the Year Award, 2013
- Dartmouth Junior Faculty Fellowship, 2011
- NASA New Investigator Program, 2009
- 1st. place David A. Johnston Award for Outstanding Research, 2002
- 3rd. place David A. Johnston Award for Outstanding Research, 2001
- Mary Gates Research Training Award, 1996

Invited Seminars:

- Oregon department of geology and mineral industries, February 2021
- University of Ottawa, October 2019
- University of Washington, April 2015
- Brown University, October 2010
- Scott Polar Research Institute, February 2008
- Dartmouth College, February 2007

Outreach:

- Zoom Webinar for CUNY and Bronx Community College- Mass balance of the great ice sheets. Over 350 remote participants, 24 Sept 2020
- Originator, convener, and facilitator of Dartmouth Science Pubs – a monthly formal/informal discussion between Dartmouth scientists and the public in a local pub setting (started in 2012, still running)
- Film discussion panel member: “Antarctica: a year on ice” – Dartmouth College, January 2015
- Research presentation and film discussion of “Chasing Ice”- Endicott College, 5 Dec 2013
- Film discussion panel member, “Chasing Ice”- Dartmouth College, Spring 2013
- Featured in Dartmouth Now youtube video, publicizing research and teaching:
<http://www.youtube.com/watch?v=pDC2Ub1AFmo>
- Invited general audience lecture on ice sheets and sea level, Sandy Bay Yacht Club, Rockport MA (30 July 2009)
- General Audience lecture: “Close Encounters: Life as a polar Glaciologist” - Peabody Essex Museum, Salem, MA (21 February 2009)
- Invited lecture: “The Frozen Time Machine”- University of Cambridge Science Week
- Invited lecture: “Ice Cores, Ice Sheets, and Sea level- the rising tide of climate change”- Cambridge University International Summer Science School, 1 August 2007
- Invited lecture: “Science MasterClass”- University of Cambridge Science Week
- Featured in American Museum of Natural History short documentary for “Science Bulletins” shown on the main screen in the “Hall of planet Earth”
- Collaborate with Teachers Experiencing Antarctica participant Rolf Tremblay, appearing as a guest in his classroom
- Classroom interaction with Woodstock Middle School, Woodstock, VT- satellite phone call from the field, follow-up classroom visit.
- Invited lectures at (among others):
 - o Teachers Experiencing Antarctica workshop, Poulsbo, WA.
 - o Poulsbo Marine Science Center, WA
 - o Port Townsend Marine Science Center, WA
 - o Sandy Bay Yacht Club, Rockport, MA
 - o Peabody Essex Museum, Salem, MA
 - o Weston Observatory, Boston College, Boston, MA
- Maintain an active ‘web log’ of field experiences, oriented to the lay audience, where students can follow my field work and ask questions. <http://coldclimes.blogspot.com>

Professional Memberships

- Member, International Glaciological Society (IGS)

- Member, American Geophysical Union
- Member, Institute of Electrical and Electronics Engineers (IEEE) Geoscience and Remote sensing Society

Professional Service:

- President, American Geophysical Union Cryospheric Section (2023-2025)
- Delegate, International Arctic Science Committee (IASC), Cryosphere Working Group (2016-2024)
- Workshop Convener, *GNET 2017 Workshop*, Goddard Space Flight Center, 2016.
- Keynote Speaker, University of Washington Earth and Space Sciences Research Gala, April 2015
- Invited committee member, National Academy of Sciences/National Research Council study: “Emerging research questions in the Arctic”, 2013
- Panelist, “Getting out into the field as a skill” workshop for early-career scientists, AGU fall meeting December 2013.
- Meeting Organizer
 - Midwest Glaciology Meeting, Hanover, NH 12-13 May 2011
 - 13th Int’l conference on the Physics and Chemistry of Ice, Hanover, NH 17-20 March 2014
- Session Convener
 - AGU fall meeting 2009 -- 2016 (San Francisco)
- Session Chair
 - International Geoscience and Remote Sensing Symposium 2007 (Barcelona, Spain)
 - AGU fall meeting 2009 -- 2016 (San Francisco)
- Reviewer of journal articles
 - Journal of Geophysical Research
 - Journal of Glaciology
 - Annals of Glaciology
 - Antarctic Science
 - Journal of Environmental & Engineering Geophysics
 - International Journal of Remote Sensing
 - The Cryosphere
- Reviewer of proposals
 - National Science Foundation Arctic Natural Science program
 - NASA Cryospheric Sciences program
 - NASA Instrument Incubator program
 - Norwegian Research Council
 - Netherlands Science Council
 - Italian Antarctic Committee
 - US Army Basic Research program
- Member of Ice Core Working Group, Borehole Access Committee.
- Member of the Rapid Access Ice Drill (RAID) project science advisory group
- Member of the Science Coordination Office (SCO) for Greenland Ice Sheet science (2011 -- present)
- Member of the Greenland Geodetic Network (GNET) Advisory Board 2018 – present)

Conference Presentations and Abstracts: (Direct mentoring of authors: * grad student, ** undergrad student, *** post-doc)

[145] (invited panelist) **Robert L Hawley**. 2025. Turbulent times- a perspective from a former "Official". EOS, Trans. AGU, fall meeting supplement, Abstract C12A-02

[144] * Derek Pickell, **Robert L Hawley**, Denis Felikson, and Jamie Good. 2025. Improving ICESat-2 Surface Mass Balance and Surface Roughness Estimates with GNSS Interferometric Reflectometry in Central Greenland. EOS, Trans. AGU, fall meeting supplement, Abstract C14B-01

[143] **Laura Wilson, Michael Gallagher, Heather Guy, **Robert L Hawley**, Hans-Peter Marshall, Catherine Heb-son, Andrew Martin, Ryan Neely, Erik Olson, Matthew Shupe, Michael S Town, Von Patrick Walden and Anne Sledd. 2024. Autonomous GPR Observations of Melt, Percolation, and Refreeze in the Percolation Zone of the Greenland Ice Sheet. EOS, Trans. AGU, fall meeting supplement, Abstract NS33A-1210

[142] Michael Gallagher, Von Patrick Walden, Matthew Shupe, Heather Guy, Andrew Martin, Anne Sledd, Claire Pettersen, Ryan Neely, Hans-Peter Marshall, Robert L Hawley, Erik Olson, Kyle Stephen Mattingly, Catherine Hebron, William D Neff, Derek Pickell and Michael S Town. 2024. How Greenland melts: high fidelity observations of the coupled climate system in Southwestern Greenland from summer 2024. EOS, Trans. AGU, fall meeting supplement, Abstract C11C-0461

[141] **Robert L Hawley** and Derek Pickell. 2024. ICESat-2 Surface Elevation Validation in the Summit Vicinity of Greenland with Kinematic & Static GNSS. EOS, Trans. AGU, fall meeting supplement, Abstract C21E-0401

[140] *Derek Pickell and **Robert L Hawley**. 2024. Spatio-Temporal Patterns of Surface Accumulation and Surface Roughness in the Interior Region of Greenland with a Novel GNSS Network. EOS, Trans. AGU, fall meeting supplement, Abstract C21E-0401

[139] *Derek Pickell, and **Robert L Hawley**. 2023. Surface Mass Balance and Elevation Change in Greenland with a Network of Low-Cost GNSS Stations. EOS, Trans. AGU, fall meeting supplement, Abstract C43D-1643

[139] Ian McDowell, Kaitlin M Keegan, McKenzie Skiles, Christopher Donahue, Erich C Osterberg, **Robert L Hawley** and Hans-Peter Marshall. 2023. A Cold Laboratory Hyperspectral Imaging System Mapping Firn Core Grain Size and Ice Layer Stratigraphy. EOS, Trans. AGU, fall meeting supplement, Abstract C43D-1631

[138] Michael Gallagher, Von Patrick Walden, Christopher Cox, Matthew Shupe, Hans-Peter Marshall, Claire Pettersen, **Robert L Hawley**, Heather Guy, Ryan Neely, and Erik Olson. 2023. Greenland 2023 Melt Events Measured by a New Autonomous Research Platform Observing the Complete Coupled Climate Hydrologic System. EOS, Trans. AGU, fall meeting supplement, Abstract C31D-1380

[137] *Victoria E Halvorson, Robert L Hawley, and Jonathan W Chipman. 2023. Automated Glacier Classification in High Mountain Asia using a Random Forest Classifier Model. EOS, Trans. AGU, fall meeting supplement, Abstract C11E-1081

[136] *Jamie Good, **Robert L Hawley** and *Derek Pickell. 2023. Advancing Snow Surface Roughness Observations of the Greenland Ice Sheet Using Down-Looking Laser Distance Meters. EOS, Trans. AGU, fall meeting supplement, Abstract C51E-0990

[135] *Ian Lee, **Robert Hawley**, and several others. 2023. Improving the Accessibility of Borehole Geophysics: A Cost-Efficient, Highly Modifiable Borehole Tilt Sensor. European Geophysical Union presentation EGU23-1679

[134] Ian McDowell and several others including **Robert Hawley**. 2023. Unique insights into firn structure across western Greenland's percolation zone from hyperspectral images of shallow firn cores. European Geophysical Union presentation EGU23-10501

[133] *Derek Pickell and **Robert Hawley**. 2022. Altimetry Validation and Snow Surface Monitoring with an On-Ice Array of Open Source Multi-GNSS Instruments EOS, Trans. AGU, fall meeting supplement, Abstract G31A-03

[132] Ian McDowell, Kaitlin Keegan, Nander Wever, Erich Osterberg, **Robert Hawley**, and Hans-Peter Marshall. 2022. The Complex Relationship Between Grain Size Transitions and Ice Layer Formation in the Shallow Firn Column of Western Greenland EOS, Trans. AGU, fall meeting supplement, Abstract C15F-0648

[131] *Katherine Lutz, Marisa Palucis, and **Robert Hawley**. 2022. A Comprehensive Investigation into Modern-Day Surface Processes Across the Martian North Polar Layered Deposit Spiral Troughs EOS, Trans. AGU, fall meeting supplement, Abstract EP35B-05

[130] Ian McDowell, McKenzie Skiles, Christopher Donahue, Kaitlin Keegan, Erich Osterberg, **Robert Hawley**, and Hans-Peter Marshall. 2022. Revealing Grain Size Variability Across the Percolation Zone of the Greenland Ice Sheet through Hyperspectral Imaging of Shallow Firn Cores EOS, Trans. AGU, fall meeting supplement, Abstract C22F-0820

- [129] *Ian Lee, **Robert Hawley**, David Collins, Joshua Elliott. 2022. A Cost-Efficient, Highly Modifiable Borehole Tilt Sensor for Borehole Geophysical Studies. EOS, Trans. AGU, fall meeting supplement, Abstract IN32B-0392
- [128] **Robert L Hawley**, Shane Grigsby, Gabriel Lewis, Matthew Siegfried. 2021. CrackMap: Automated Extraction of Crevasses from High-Resolution Optical Imagery using Edge Detection. EOS, Trans. AGU, fall meeting supplement, Abstract NS15A-0369
- [127] *Derek Pickell and **Robert L Hawley**. 2021. An On-ice GNSS Research Experimental Network for Greenland (OGRENet). EOS, Trans. AGU, fall meeting supplement, Abstract G32B-05
- [126] *Katherine Lutz, **Robert L Hawley**, and Marisa C Palucis. 2021. Investigating Lateral Ice Transport Mechanisms Across Troughs on the Martian North Polar Layered Deposits. EOS, Trans. AGU, fall meeting supplement, Abstract EP25H-1412
- [125] Ian McDowell, Kaitlin M Keegan, Erich C Osterberg, **Robert L Hawley** and Hans-Peter Marshall. 2021. Firn Microstructure Influences the Frequency of Ice Layer Formation in the Shallow Firn Column in Western Greenland. EOS, Trans. AGU, fall meeting supplement, Abstract C35E-0920
- [124] Peter D Neff, Kiya L Riverman, **Robert L Hawley**, and Michele N Koppes. 2021. Cryosphere Sciences Section Community Health: Update from May 2021 Early Career Researcher Survey and Forum. EOS, Trans. AGU, fall meeting supplement, Abstract C21A-02
- [123] Kelly M Brunt and **Robert L Hawley**. 2020. Greenland Geodetic Network (GNET): Access to Datasets and an Understanding of the Infrastructure Potential. EOS, Trans. AGU, fall meeting supplement, Abstract C032-04
- [122] William H Armstrong Jr, David Polashenski, Martin Truffer, Greg Horne, **Robert L Hawley**, Jacob Hanson and Brian Menounos. 2020. Daily to multi-decadal velocity variations at Athabasca Glacier, Alberta, Canada. EOS, Trans. AGU, fall meeting supplement, Abstract C042-06
- [121] Christopher C Gerbi, Stephanie G Mills, Renee Clavette, Seth W Campbell, Steven Bernsen, David Clemens-Sewall, *Ian Lee, **Robert L Hawley**, Karl J Kreutz and Kate Hruby. 2020. Microstructures in a glacial shear margin. EOS, Trans. AGU, fall meeting supplement, Abstract C010-0008
- [120] Kelly Brunt and **Robert Hawley**. 2020. The Greenland Geodetic Network (GNET). EGU general assembly, Vienna Austria, 3-8 May 2020, abstract EGU2020-1785.
- [119] *Ian Lee, **Robert Hawley**, Chris Gerbi, Seth Campbell, *David Clemens-Sewall. 2020. Streaming flow on polythermal mountain glaciers: In-situ observations on Jarvis Glacier, Alaska. EGU general assembly, Vienna Austria, 3-8 May 2020, abstract EGU2020-1844.
- [118] Shane Grigsby, Matt Siegfried, Gabe Lewis, **Robert Hawley**. 2020. High Elevation Crevasses Coincide with Low-permeability Ice Slabs. NASA-PARCA meeting, Greenbelt MD, 20 Feb 2020
- [117] Malte Weber, Kelly Brunt, Robert Hawley. 2020. Greenland GNSS Network (GNET). NASA-PARCA meeting, Greenbelt MD, 20 Feb 2020.
- [116] Surabhi Biyani, T. J. Fudge, **David Clemens-Sewall, **Robert L Hawley** and Elizabeth K Urban. 2019. Constraints of Geothermal Flux from Coastal Domes of the Ross Ice Sheet, Antarctica EOS, Trans. AGU, fall meeting supplement, Abstract C21F-1510
- [115] **Robert L Hawley**, Tom Neumann, Kelly M Brunt, C. Max Stevens and Tyler C Sutterly. 2019. Process-based attribution of elevation change over the dry-snow zone of Greenland. EOS, Trans. AGU, fall meeting supplement, Abstract C31C-1535
- [114] Gabriel Lewis, Erich C Osterberg, **Robert L Hawley**, Hans-Peter Marshall, Tate Meehan, Karina Graeter, Forrest McCarthy, *Thomas B Overly, Zayta Renay Thundercloud, David G Ferris, Sean D Birkel, Jack E Dibb,

- Bess G Koffman and Marco Tedesco. 2019. Climatic controls on albedo across the Western Greenland Ice Sheet Percolation Zone EOS, Trans. AGU, fall meeting supplement, Abstract C33A-05
- [113] Kaitlin Keegan, Colin R. Meyer, Ian Baker and **Robert L Hawley**. 2019. Dry snow compaction: theory and French-press experiments. EOS, Trans. AGU, fall meeting supplement, Abstract C33C-1598
- [112] Erich C Osterberg, Gabriel Lewis, **Robert L Hawley**, Hans-Peter Marshall, David G Ferris, Zayta Renay Thundercloud, Karina Graeter, Julianne DeAngelo, Tate Meehan, *Thomas B Overly, Sean D Birkel and Forrest McCarthy. 2019. Atmospheric Blocking is a Critical but Poorly Understood Driver of Summertime Greenland Surface Mass Balance. EOS, Trans. AGU, fall meeting supplement, Abstract C34A-03
- [111] Christopher C Gerbi, Kate Hruby, Peter Ortquist Koons, Seth W Campbell, Carlos Martin and **Robert L Hawley**. 2019. Rheological impact of crystallographic fabric in the margin of streaming ice. EOS, Trans. AGU, fall meeting supplement, Abstract C51C-1305
- [110] Kelly M Brunt and **Robert L Hawley**. 2019. New directions and innovative uses for the Greenland Geodetic Network (GNET). EOS, Trans. AGU, fall meeting supplement, Abstract G53C-0636
- [109] Organizing Research and Fieldwork at Summit Station and in Greenland Zoe Courville, Von Patrick Walden, Jack E Dibb, and **Robert L Hawley**. 2019. EOS, Trans. AGU, fall meeting supplement, Abstract PA51D-0907
- [108] Kim Derry, Sally Alexander, Catherine Lark, and **Robert Hawley**. 2019. Risk Management for Field Research in Remote Regions. URMIA annual meeting 15-18 September 2019, Boston, MA, USA.
- [107] Edwin D. Waddington, C. Max Stevens, Brita I. Horlings, Annika N. Horlings, Knut Christianson, Howard Conway, David A. Lilien, T J Fudge, Michelle R. Koutnik, Kaitlin Keegan, Mary R. Albert, Zoe Courville, Erich C. Osterberg, **Robert L. Hawley**, *David Clemens-Sewall, and Carlos Martin. 2019. A new look at calibration of densification models for dry firn. EGU general assembly, Vienna Austria, 6-12 April 2019.
- [106] **Robert L Hawley**, Kelly M Brunt, Tom Neumann, Jack L Saba, Tyler C Sutterley. 2018. Closing the loop on elevation change at Summit, Greenland. EOS, Trans. AGU, fall meeting supplement, Abstract C13B-1147
- [105] *David Clemens-Sewall, **Robert L Hawley**, Mary R Albert, *Alexandra L Giese. 2018. Bulk Diffusivity of Polar Firn Derived from In-Situ Temperature Propagation at 15 Sites. EOS, Trans. AGU, fall meeting supplement, Abstract C13I-1240.
- [104] *Alexandra L Giese, Steven A Arcone, **Robert L Hawley**. 2018. High frequency GPR signal interaction with supraglacial debris: Domination by volumetric backscatter. EOS, Trans. AGU, fall meeting supplement, Abstract C21E-1397
- [103] Gabriel Lewis, Erich C Osterberg, Robert L Hawley, Hans-Peter Marshall, Sean D Birkel, Jack E Dibb, Bess G Koffman, David G Ferris, Marco Tedesco. 2018. Effects of Mineral Dust and Black Carbon on Albedo in the Western Greenland Ice Sheet Percolation Zone. EOS, Trans. AGU, fall meeting supplement, Abstract C31A-05.
- [102] Kate Hruby, Christopher C Gerbi, Peter Ortquist Koons, Carlos Martin, Seth W Campbell, **Robert L Hawley**. 2018. Determining the Influence of Lateral Margin Mechanical Properties on Glacial Flow. EOS, Trans. AGU, fall meeting supplement, Abstract C31C-1543
- [101] *Ian R. Lee, **Robert L Hawley**, Steven Bernsen, Christopher C Gerbi, *David Clemens-Sewall, Seth W Campbell, Mike Waszkiewicz, Karl J Kreutz. 2018. Collection and Analysis of Shear Strain Data of Polythermal Ice from Jarvis Glacier, Alaska EOS, Trans. AGU, fall meeting supplement, Abstract C31C-1548.
- [100] **Julia Liu, Daniel E Lawson, **Robert L Hawley**, Brian Tracy, Jonathan W Chipman, Xun Shi, Yaning Chen. 2018. Estimating the longevity of glaciers in the Tian Shan in Xinjiang, China through remote sensing observations of glacier area change. EOS, Trans. AGU, fall meeting supplement, Abstract C33D-1588

- [99] *Thomas B Overly, **Robert L Hawley**, Erich C Osterberg, Brooke Medley, Michael Studinger, Tate Meehan, Jeffrey Kerby, Gabriel Lewis, Hans-Peter Marshall, Forrest McCarthy. 2018. Greenland Ice Sheet Surface Roughness from Kite Aerial Photography and Structure-from-Motion Photogrammetry. EOS, Trans. AGU, fall meeting supplement, Abstract C43D-1824.
- [98] Julianne DeAngelo, Erich C Osterberg, Gabriel Lewis, David G Ferris, Robert L Hawley, Hans-Peter Marshall, Sean D Birkel, Karina Graeter. Surface Melt Changes and Climate Forcing in the Western Greenland Percolation Zone. 2018. EOS, Trans. AGU, fall meeting supplement, Abstract C43E-1842
- [97] Christopher C Gerbi, Stephanie G Mills, Steven Bernsen, *Ian R. Lee, *David Clemens-Sewall, Kate Hruby, Seth W Campbell, **Robert L Hawley**, Renée Clavette, Jacquelyn Bellefontaine, Karl J Kreutz. 2018. Crystallographic Orientations in the Lateral Margin of Jarvis Glacier, Eastern Alaska Range. EOS, Trans. AGU, fall meeting supplement, Abstract C44A-07
- [96] **Robert L Hawley**, John F. Burkhart, Zoe Courville, Jack E Dibb, Lora Koenig, and Bruce H Vaughn. 2017. Impacts and societal benefits of research activities at Summit Station, Greenland. EOS, Trans. AGU, fall meeting supplement, Abstract C11C-0931
- [95] Erich C Osterberg, Karina Graeter, **Robert L Hawley**, Hans-Peter Marshall, David G Ferris, Gabriel Lewis, Sean D Birkel, Tate Meehan, and Forrest McCarthy. 2017. Recent Rise in West Greenland Surface Melt and Firn Density Driven by North Atlantic SSTs and Blocking Events. EOS, Trans. AGU, fall meeting supplement, Abstract C24C-08
- [94] Tate Meehan, Hans-Peter Marshall, John Bradford, **Robert L Hawley**, Erich C Osterberg, Forrest McCarthy, Gabriel Lewis, and Karina Graeter. 2017. Continuous Estimates of Surface Density and Annual Snow Accumulation with Multi-Channel Snow/Firn Penetrating Radar in the Percolation Zone, Western Greenland Ice Sheet. EOS, Trans. AGU, fall meeting supplement, Abstract C53B-1037
- [93] Gabriel Lewis, Erich C Osterberg, **Robert L Hawley**, Hans-Peter Marshall, Sean D Birkel, Karina Graeter, *Thomas B Overly, and Forrest McCarthy. 2017. Spatial Variability of accumulation across the Western Greenland Ice Sheet Percolation Zone from ground-penetrating-radar and shallow firn cores. EOS, Trans. AGU, fall meeting supplement, Abstract C53B-1038
- [92] *Ian R. Lee, **Robert L Hawley**, *David Clemens-Sewall, Seth W Campbell, Mike Waszkiewicz, Steven Bernsen, Christopher C Gerbi, Karl J Kreutz, and Peter Ortquist Koons. 2017. Construction and Deployment of Tilt Sensors along the Lateral Margins of Jarvis Glacier, Alaska to improve understanding of the Deformation Regime of Wet-Based Polythermal Glaciers. EOS, Trans. AGU, fall meeting supplement, Abstract H41J-1588
- [91] Jeff Auger, Sean D Birkel, Kirk Allen Maasch, Keah C Schuenemann, Paul Andrew Mayewski, Erich C Osterberg, **Robert L Hawley**, Hans-Peter Marshall. 2016. Atmospheric Circulation and West Greenland Precipitation. EOS, Trans. AGU, fall meeting supplement, Abstract A53B-0286
- [90] Kelly M Brunt, Tom Neumann, Michael Studinger, **Robert L Hawley**, Thorsten Markus 2016. NASA airborne laser altimetry and ICESat-2 post-launch data validation. EOS, Trans. AGU, fall meeting supplement, Abstract C14A-08
- [89] * Kristin M Schild, **Robert L Hawley**, Jonathan W Chipman, Doug Benn. 2016. Quantifying Suspended Sediment Concentration from Subglacial Sediment Plumes Discharging from Two Svalbard Tidewater Glaciers using Landsat 8 and In Situ Measurements. EOS, Trans. AGU, fall meeting supplement, Abstract C33B-0796
- [89] Lauren C Andrews, Matthew J Hoffman, Tom Neumann, Ginny A Catania, Martin P Luethi, **Robert L Hawley**. 2016. Regional Patterns of Stress Transfer in the Ablation Zone of the Western Greenland Ice Sheet. EOS, Trans. AGU, fall meeting supplement, Abstract C41D-0706
- [88] Gabriel Lewis, Erich C Osterberg, **Robert L Hawley**, Bess G Koffman, Hans-Peter Marshall, Sean D Birkel, Jack E Dibb. 2016. Albedo Spatial Variability and Causes on the Western Greenland Ice Sheet Percolation Zone. EOS, Trans. AGU, fall meeting supplement, Abstract C41E-0717

[87] Karina Graeter, Erich C Osterberg, **Robert L Hawley**, Zayta Renay Thundercloud, Hans-Peter Marshall, David G Ferris, Gabriel Lewis. 2016. Surface Melt and Firn Density Evolution in the Western Greenland Percolation Zone Over the Past 50 Years. EOS, Trans. AGU, fall meeting supplement, Abstract C41E-0719

[86] Tate Meehan, Erich C Osterberg, Gabriel Lewis, *Thomas B Overly, **Robert L Hawley**, John Bradford, Hans-Peter Marshall 2016. Multi-channel Ice Penetrating Radar Traverse for Estimates of Firn Density in the Percolation Zone, Western Greenland Ice Sheet. EOS, Trans. AGU, fall meeting supplement, Abstract C53A-0693

[85] Ed Waddington, C. Max Stevens, Alex Le, Michelle Koutnik, T.J. Fudge, Howard Conway, **Bob Hawley**, Erich Osterberg, and Mary Albert (2016). Toward a process-based firn-compaction model: simultaneous measurements of compaction rate, firn temperature, overburden load and microstructure, upstream from SPICE Core. SPICE core science meeting. La Jolla, CA.

[84] * Alexandra Giese, Aaron Boone, Samuel Morin, Yves Lejeune, Patrick Wagnon, Marie Dumont, and **Robert Hawley** Incorporating moisture content in modeling the surface energy balance of debris-covered Changri Nup Glacier, Nepal. European Geosciences Union General Assembly 2016, Abstract EGU2016-7931

[83] Fudge, T.J., M. Koutnik, H. Conway, E. Waddington. M. Stevens, **B. Hawley**, E. Osterberg, M. Albert. 2015. Characterization of upstream ice and firn dynamics affecting the South Pole Ice Core. South Pole Ice (SPICE) core science meeting. La Jolla, CA.

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