CURRICULUM VITAE

Sarah W. Cooley

Division of Earth and Climate Sciences
Nicholas School of the Environment
Duke University
sarah.cooley@duke.edu | COOL Lab Website

Professional Appointments

Assistant Professor 2024-present
Division of Earth and Climate Sciences **maternity leave Fall 2025*
Nicholas School of the Environment, Duke University

Assistant Professor 2021-2024
Department of Geography, University of Oregon **maternity leave Fall 2023*

Postdoctoral Scholar and Stanford Science Fellow 2020-2021
Department of Earth System Science, Stanford University

Education

2020 **PhD in Earth, Environmental and Planetary Sciences, Brown University**
Graduate Affiliate of the Institute at Brown for Environment and Society
PhD Student in Geography at UCLA, 2016-2017. Advisor: Prof. Laurence C. Smith.
Thesis: *New insights into Arctic environmental change from high-temporal resolution satellite remote sensing*

2016 **MPhil in Polar Studies, University of Cambridge**
Awarded with Distinction. Advisor: Dr. Poul Christoffersen. Thesis: *A 16-year record of supraglacial lake extent in West Greenland: analysis of inland expansion and rapid drainage events*

2015 **BS in Geological Sciences, University of North Carolina at Chapel Hill**
Awarded with Highest Honors and Highest Distinction. Concentration in Geophysics, Minor in Mathematics. Thesis: *Observing spatial and temporal patterns in Arctic river ice breakup using MODIS imagery*

Awards

2021 **NASA New Investigators Program in Earth Science Awardee**

2020-2021 **Stanford Science Fellowship** – member of inaugural cohort of Stanford Science Fellows, a postdoctoral fellowship program across the natural sciences at Stanford

2017 **AGU Outstanding Student Paper Award** – Cryosphere Division

2017-2020 **Planet Labs Research Ambassador**

2017 **UCLA Canadian Studies Fellowship**

2015-2020	**National Science Foundation Graduate Research Fellowship**
2015-2016	**Gates Cambridge Scholarship**
2015	**Op White Award** – UNC Chancellor's Award for the outstanding student in Geological Sciences
2015	**First Prize Undergraduate Presentation** – UNC Geoscience Research Symposium
2014	**Phi Beta Kappa**
2011-2015	**Morehead-Cain Scholarship** – the US's oldest full merit scholarship and funded summer enrichment program
2011-2015	**National Merit Scholar**

Peer-Reviewed Publications

ORCID - Google Scholar

*Graduate Student Author +Postdoc Author **Undergraduate Student Author

In Review or In Revision:

47. Malik, I.H., J.D. Ford, S. Clerici, D. Baker, A. Muckpah, S.N. Oulkar, J. Gibbons, S. Tagalik, K Baker, J. Muckpah, R.I. Woolway, S. Cooley, J. Ryan, K. Minor, L. Owlijoot, J. Shan, A. Stringer*, N. Mallenson (in review), An ethnoclimatology of decadal shifts in Arctic mobility driven by climate warming

46. Webb, E.+, **S.W. Cooley,** S. N. Ashraf**, H. B. O'Neill, S. Wolfe, E. S. Levenson*, and J. Wang (in review), The current and future distribution of permafrost lakes, *Earth's Future*

45. Simpson, A., E. Levenson*, L. Karlstrom, and **S. Cooley** (in review), Hydrologic Implications of Seasonally Draining Lakes in the Central Oregon Cascades, *Water Resources Research*

44. Levenson, E.*, **S.W. Cooley,** J. Wang, and M. Trudel (in revision), Assessing SWOT's capabilities for monitoring water storage in lakes, *Water Resources Research*

43. **Cooley, S.W.**, E. Webb+, E. Levenson, and J.C. Ryan (in revision), Lakes modify the magnitude and timing of the Northern Hemisphere Cryosphere Radiative Effect, *Geophysical Research Letters*

42. Ford, J.D., S. Clerici, M. Banuet-Martinez, K. Minor, I. Malik, R. Biesbroek, **S. Cooley**, S. Harper, J.A. Lowe, N. Mallenson, J. Ryan, S. Sandiford, A. Stringer*, R.I. Woolway, W.W.L. Cheung (in revision), Redesigning climate risk modelling from the bottom-up: Creating enthnoclimatologies of climate risk, *Nature Climate Change*

Published:

41. Chen, Tan, **S.W. Cooley,** A. Madson, L. Ke, J. Wang, Y. Zhang, N. Xu, K. Liu, F. Zeng, P. Zhan, C. Fan and C. Song (2026), Satellites reveal contrasting seasonal buffering patterns of global lakes and reservoirs, *Science Bulletin,* doi.org/10.1016/j.scib.2026.06.024

40. Feng, D., X. Yang, T. Pavelsky, G.H. Allen, P. Bates, C. Gleason, J. Gardner, B. Lehner, J. Wang, **S. Cooley,** A. Tarpanelli, T. Yamazaki, M. Durand, P. Raymond, R. Boothroyd, P. Lin, and K. Andreadis (2026), Remote Sensing and the New Global River Science, *Nature Water,* doi.org/10.1038/s44221-026-00665-2

39. Li, F., Q. Zhu, K. Yuan, E. Fluet-Chouinard, X. Zhang, J. Wang, S.H. Knox, H. You, M. Chen, M. Li, R. Stern, A.M. Hoyt, G. McNicol, W. Riley, S. Peng, B. Poulter, A. Malhotra, **S. Cooley,** Z. Zhang, S. Hong, Z. Chen, Z. Zhu, P.A. Raymond, P. Ciais, and R. B. Jackson (2026), The underappreciated importance of small wetlands in global methane emissions, *Nature Climate Change,* doi.org/10.1038/s41558-026-02609-w

38. Ryan, J.C., **S. Cooley,** and E. Webb[+] (2026), Revisiting trends in Greenland Ice Sheet albedo using the combined MODIS and VIIRS record, *Earth and Space Science,* doi.org/10.1029/2025EA004731

37. Ryan, J.C., R. Datta, and **S.W. Cooley** (2026), Mechanisms of surface meltwater ponding and drainage on the Greenland Ice Sheet revealed using SkySat imagery and deep learning, *AGU Advances,* doi.org/10.1029/2025AV002030
    - Featured in EOS as an Editor's Highlight

36. Webb, E.[+], **S.W. Cooley,** E. Levenson*, J. Maze* (2026), Discrepancies in Arctic-Boreal lake area trends driven by sensitivity to dry conditions, *Scientific Reports,* doi.org/10.1038/s41598-026-35981-w

35. Pletcher, A*, **S.W. Cooley,** and E. Levenson* (2025), Observing fine-scale lake ice breakup dynamics in the Lower Kuskokwim River Basin, Alaska, *Hydrological Processes,* doi.org/10.1002/hyp.70309

34. Ryan, J. C., M. G. Cooper, **S.W. Cooley**, A. Rennermalm, and L.C. Smith (2025), Meltwater ponding is an underestimated source of radiative forcing on the Greenland Ice Sheet, *Nature Communications,* doi.org/10.1038/s41467-025-62503-5

33. Cooper, M., L.C. Smith, A.K. Rennermalm, J. C. Ryan, L.H Pitcher, G.E. Liston, C. Miege, **S.W. Cooley**, D. van As (2025), Greenland Ice Sheet runoff reduced by meltwater refreezing in bare ice, *Nature Communications,* doi.org/10.1038/s41467-025-62281-0

32. **Cooley, S.W**., J. Wang, H. Gao, F. Yao, B. Livneh, Y. Li, J. Hou, Z. Hao, X. Cai, and F. Ling, Global Intercomparison of Satellite-Derived Variability in Reservoir Storage (2025), *Environmental Research Letters,* doi.org/10.1088/1748-9326/ade903

31. Culpepper, J., S. Sharm, G. Gunn, M. Magee, M. Meyer, E.J. Anderson, C. Arp, **S.W. Cooley,** W. Dolan, H. Dugan, C.R. Duguay, B.M. Jones, G. Kirillin, R. Ladwig, M. Lepparanta, D. Long, J.J. Magnuson, T. Pavelsky, S. Piccolroaz, D. Roberston, B.G. Steele, M. Tom, G.A.

Weyhenmeyer, R.I. Woolway, M.A. Xenopoulos, X.Yang (2025), One-Hundred Fundamental, Open Questions to Integrate Methodological Approaches in Lake Ice Research, *Water Resources Research,* doi.org/10.1029/2024WR039042

30. Levenson, E.,*, **S.W. Cooley,** A. Mullen, E. Webb+, and J. Watts (2025), Glacial history modifies permafrost controls on the distribution of lakes and ponds, *Geophysical Research Letters,* doi.org/10.1029/2024GL112771
    - Featured in EOS as an AGU Research Spotlight

29. Karlstrom, L, N. Klema, G. Grant, C. Finn, **S. Cooley,** P. Sullivan, A. Simpson, B. Fasth, K. Cashman, K. Ferrier, L. Ball, and D. McKay (2025), State shifts in the deep Critical Zone drive landscape evolution in volcanic terrains, *Proceedings of the National Academy of Sciences,* doi.org/10.1073/pnas.2415155122
    - University of Oregon press release: Atop the Oregon Cascades, a UO team finds a huge buried aquifer
    - Coverage in Oregon Public Broadcasting, Newsweek, The Oregonian

28. Ryan, J.C., T. Ross, **S.W. Cooley,** N. Abib, V. Benson, D. Fahrner and D. Sutherland (2024), Greenland Ice Sheet retreat leads to divergent reconfiguration of its freshwater and oceanic margins, *Journal of Glaciology,* doi.org/10.1017/jog.2024.61

27. **Cooley, S.W.** and J.C. Ryan (2024), Community-scale changes to landfast ice along the coast of Alaska over 2000-2022, *Environmental Research Letters,* doi.org/10.1088/1748-9326/ad1c7b

26. Mullen, A., J. Watts, B. Rogers, M. Carroll, C. Elder, J. Noomah, Z. Williams, J. Caraballo-Vega, A. Bredder, E. Rickenbaugh, *E. Levenson, **S. Cooley**, J. Hung, G. Fiske, S. Potter, Y. Yang, C. Miller, S. Natali, T. Douglas and E. Kyzivat (2023), Using High-resolution Satellite Imagery and Deep Learning to Track Dynamic Seasonality in Small Water Bodies, *Geophysical Research Letters,* doi.org/10.1029/2022GL102327

25. Yang, Z., R.B. Jackson, G. McNicol, and 34 others including **S.W. Cooley** (2023), Paddy rice methane emissions across Monsoon Asia, *Remote Sensing of Environment,* doi.org/10.1016/j.rse.2022.113335

24. Ryan, J.C., L.C. Smith, **S.W. Cooley** and B. Pearson (2022), Decreasing surface albedo signifies a growing importance of clouds for Greenland Ice Sheet meltwater production, *Nature Communications,* doi.org/10.1038/s41467-022-31434-w

23. Muthyala, R., A.K. Rennermalm, S.Z. Leidman, M.G. Cooper, **S.W. Cooley,** L.C. Smith and D. van As (2022), Seasonal Variability in In-Situ Supraglacial Streamflow and Drivers in Southwest Greenland in 2016, *The Cryosphere,* doi.org/10.5194/tc-16-2245-2022

22. Wratten, E.E., **S.W. Cooley**, P. Mann, D. Whalen, P. Fraser, and M. Lim (2022), Physiographic controls on landfast ice variability from 20 years of maximum extents across the Northwest Canadian Arctic, *Remote Sensing,* doi.org/10.3390/rs14092175

21. Allgaier, M., M G. Cooper, A.E. Carlson, **S.W. Cooley**, J.C. Ryan, and B. J. Smith (2022), Direct measurement of optical properties of glacier ice using a photon-counting diffuse LiDAR, *Journal of Glaciology,* doi.org/10.1017/jog.2022.34

20. Durand, M., A. Barros, J. Dozier, R. Adler, **S. Cooley**, E. Dara, B. Forman, A. Konings, J. Lundquist, T. Pavelsky, M. Rodell, and S. Steele-Dunne (2021), Achieving Breakthroughs in Global Hydrologic Science by Unlocking the Power of Multisensor, Multidisciplinary Earth Observations, *AGU Advances,* doi.org/10.1029/2021AV000455

19. Steiro, V.D., J.C. Ryan, **S.W. Cooley,** L.C. Smith, A.H. Lynch, S. Veland, Changes in sea ice travel conditions in Uummannaq Fjord, Greenland (1985-2019) assessed through remote sensing and transportation accessibility modeling (2021), *Polar Geography,* doi.org/10.1080/1088937X.2021.1938271

18. Smith, L.C., L.C. Andrews, L.H Pitcher, B.T. Overstreet, A.K. Rennermalm, M.G. Cooper, **S.W. Cooley**, J.C. Ryan, C. Miege, C. Kershner and C.E. Simpson (2021), Supraglacial river forcing of subglacial water storage and diurnal ice sheet motion, *Geophysical Research Letters,* doi.org/10.1029/2020GL091418
    - NASA press release: What a Glacial River Reveals About the Greenland Ice Sheet
    - AGU press release: Greenland Ice Sheet Surges in Daily Melt Cycles
    - NASA Video: Field Study Sheds New Light on Melt Zone

17. Harlan, M., C. Gleason, E. Altenau, D. Butman, T. Carter, V. Chu, **S. Cooley,** W. Dolan, M. Durand, E. Eidam, J. Fayne, D. Feng, Y. Ishitsuka, C. Kuhn, E. Kyzivat, T. Langhorst, J.T. Minear, T. Pavelsky, D. Peters, A. Pietroniero, L. Pitcher and L. Smith (2021), Discharge Estimation from Dense Arrays of Pressure Transducers, *Water Resources Research,* doi.org/10.1029/2020WR028714

16. **Cooley, S.W.,** J.C. Ryan and L.C. Smith (2021), Human alteration of global surface water storage variability, *Nature,* doi.org/10.1038/s41586-021-03262-3
    - NASA press release: NASA Scientists Complete 1st Global Survey of Freshwater Fluctuation
    - NASA Video: NASA Satellite Measures Human Impact in Water Storage
    - Stanford University press release: How much do humans influence Earth's water levels?
    - Brown University press release: Humans control majority of freshwater ebb and flow on Earth, study finds
    - Coverage in UPI, Gizmodo, World Economic Forum

15. Nitze, I., **S.W. Cooley,** C. Duguay, B. Jones and G. Grosse (2020), The catastrophic thermokarst lake drainage events of 2018 in northern Alaska: Fast-forward into the future, *The Cryosphere,* doi.org/10.5194/tc-14-4279-2020
    - AWI press release: Watching the Arctic Thaw in Fast-Forward
    - Coverage in CTVNews

14. Pitcher, L.H., L.C. Smith, **S.W. Cooley,** A. Zaino, R. Carlson, J. Pettit, C.J. Gleason, T. Minear, J.V. Fayne, M.J. Willis, J.S. Hansen, K.J. Easterday, M. Harlan, T. Langhorst, S.N. Topp, W. Dolan, E. Kyzivat, A. Pietroniro, D. Yang, T. Carter, C. Onclin, D. Moreira, M. Berge-Nguyen, J.-F. Cretaux and T.M. Pavelsky (2020), Advancing field-based GPS surveying for validation of remotely sensed water surface elevation products, *Frontiers in Earth Science – Hydrosphere,* doi.org/10.3389/feart.2020.00278

13. Ryan, J.C., L.C. Smith, **S.W. Cooley**, L.H. Pitcher, and T.M. Pavelsky (2020), Toward global characterization of inland water reservoirs using ICESat-2 altimetry and climate reanalysis, *Geophysical Research Letters,* doi.org/10.1029/2020GL088543

12. Fayne, J.V., L.C. Smith, L.H. Pitcher, E.D. Kyzivat, **S.W. Cooley**, M.G. Cooper, M. Denbina, A. Chen, C. Chen and T.M. Pavelsky (2020), First Airborne Observations of Arctic-Boreal Water Surface Elevations from AirSWOT Ka-Band InSAR and LVIS LiDAR, *Environmental Research Letters,* doi.org/10.1088/1748-9326/abadcc

11. **Cooley, S.W.,** J.C. Ryan, L.C. Smith, C. Horvat, B. Pearson, B. Dale and A. Lynch (2020), Coldest Canadian Arctic communities face greatest reductions in shorefast sea ice, *Nature Climate Change,* https://doi.org/10.1038/s41558-020-0757-5
    - Brown University press release: Arctic shorefast sea ice threatened by climate change, study finds
    - Coverage in Gizmodo, Oceanographic Magazine

10. Ryan, J.C., L.C. Smith, M. Wu, **S.W. Cooley,** C. Miege, L. Montgomery, L. Koenig, X. Fettweis, B. Noel and M. van den Broeke (2020), Evaluation of CloudSat's cloud-profiling radar for mapping snowfall rates across the Greenland Ice Sheet, *Journal of Geophysical Research – Atmospheres,* doi.org/10.1029/2019JD031411

9. Kyzivat, E.D., L.C. Smith, L.H. Pitcher, J.V. Fayne, **S.W. Cooley**, M.G. Cooper, S.N. Topp, T. Langhorst, M. Harlan, C. Horvat, C.J. Gleason and T.M. Pavelsky (2019), A high-resolution airborne color-infrared camera water mask for the NASA ABoVE campaign, *Remote Sensing.* doi.org/10.3390/rs11182163

8. Ryan, J.C., L.C. Smith, D. Van As, **S.W. Cooley**, M.G. Cooper, L.H. Pitcher and A. Hubbard (2019), Greenland Ice Sheet surface melt amplified by snowline migration and bare ice exposure, *Science Advances.* doi.org/10.1126/sciadv.aav3738
    - Brown University press release: Migrating snowline plays outsized role in setting pace of Greenland ice melt
    - Coverage in Nature, Quartz

7. **Cooley, S.W.,** L.C. Smith, J.C. Ryan, L.H. Pitcher and T.M. Pavelsky (2019), Arctic-Boreal lake dynamics revealed using CubeSat imagery, *Geophysical Research Letters.* doi.org/10.1029/2018GL081584
    - Brown University press release: Tiny satellites reveal water dynamics in thousands of northern lakes

6. Pitcher, L., T. Pavelsky, L. Smith, D. Moller, E. Altenau, G. Allen, C. Lion, D. Butman, **S. Cooley**, J. Fayne, and M. Bertram (2018), AirSWOT InSAR mapping of surface water elevations and hydraulic gradients across the Yukon Flats Basin, Alaska, *Water Resources Research*. doi.org/10.1029/2018WR023274

5. Cooper, M.G., J. Schaperow, **S.W. Cooley**, S. Alam, L.C. Smith, and D. Lettenmaier (2018), Climate elasticity of low flows in the maritime western US mountains, *Water Resources Research, 54*. doi.org/10.1029/2018WR022816

4. Cooper, M.G., L.C. Smith, A.K. Rennermalm, C. Miege, L.H. Pitcher, J.C. Ryan, K. Yang and **S.W. Cooley** (2018), Near surface meltwater storage in low-density bare ice of the Greenland ice sheet ablation zone, *The Cryosphere 12,* 955 – 970. doi.org/10.5194/tc-12-955-2018

3. **Cooley, S.W.**, L.C. Smith, L. Stepan and J. Mascaro (2017), Tracking dynamic northern surface water changes with high frequency Planet CubeSat imagery, *Remote Sensing 9,* 1309. doi.org/10.3390/rs9121306

2. **Cooley, S.W.** and P. Christoffersen (2017), Observation bias correction reveals more rapidly draining lakes on the Greenland Ice Sheet, *Journal of Geophysical Research – Earth Surface 122.* doi.org/10.1002/2017JF004255

1. **Cooley, S.W.** and T.M. Pavelsky (2016), Spatial and temporal patterns in Arctic river ice breakup revealed by automated ice detection using MODIS imagery, *Remote Sensing of Environment 175,* 310-322. doi.org/10.1016/j.rse.2016.01.004

Other Publications

1. **Cooley, S.W.** (2023), Global loss of lake water storage, *Science 380,* 693. doi.org/10.1126/science.adi0992

Funding

Total Awarded as Institutional PI: $3,187,172

Current Grants:

2026-2030 **National Aeronautics and Space Administration (NASA), FORTE Science Team,** *Understanding linkages between river, ice and coastal ocean processes in Northern Alaska*
PI: Tamlin Pavelsky (UNC), Co-PI: Sarah Cooley (Duke)
Total Award: $425,000 ($212,830 to Duke)

2025-2027 **National Aeronautics and Space Administration (NASA), Commercial Satellite Data Earth Science Research and Applications,** *Constraining surface water radiative feedbacks on the Greenland Ice Sheet using very high resolution imagery*
PI: Sarah Cooley (Duke), Co-I: Jonathan Ryan (Duke)
Total Award: $327,866 (327,866 to Duke)

2024-2029 **European Research Council, Advanced Grants:** *Reconceptualising climate impacts from the bottom-up: An ethnoclimatology of climate risk in a rapidly warming Arctic (ETHNO-CLIM)*
PI: James Ford (University of Leeds, UK), Co-Is: Sarah Cooley (Duke), Iestyn Woolway (University of Bangor, UK)
Total Award: €2.5 million ($209,888 to Duke)

2024-2028 **National Aeronautics and Space Administration (NASA), Surface Water and Ocean Topography (SWOT) Science Team:** *Resolving Key Outstanding Questions in Arctic Surface Water Dynamics using SWOT*
PI: Sarah Cooley (Duke)
Total Award: $909,347 ($909,347 to Duke)

2024-2026 **British Academy, Knowledge Frontiers: International Interdisciplinary Research:** *From the floe edge: Understanding and visualising local sea ice conditions in Kinngait, Nunavut*
PI: Isabelle Gapp (Aberdeen), Co-PI: Sarah Cooley (Duke),
Total Award: $331,112 ($88,514 to Duke)

2024-2026 **National Aeronautics and Space Administration (NASA), Commercial SmallSat Data Analysis:** *New insights into high resolution lake ice phenology in Arctic wetlands using Planet imagery*
PI: Sarah Cooley (Duke)
Total Award: $253,909 ($253,909 to Duke)

2024-2026 **National Science Foundation (NSF), Office of Polar Programs Postdoctoral Fellowship:** *Long-term Arctic lake area change: reducing uncertainty and paving a new path forward*
PI: Elizabeth Webb (postdoc), Mentor: Sarah Cooley (UO/Duke)
Total Award: $354,026 ($354,026 to UO/Duke)

Completed Grants:

2023-2026 **National Aeronautics and Space Administration (NASA), Future Investigators in Earth and Space Science and Technology (FINESST):** *Harmonizing satellite sensors to improve the temporal resolution of SWOT river observations*
PI: Sarah Cooley (UO), Future Investigator: Eric Levenson.
Total Award: $150,000 ($150,000 to UO)

2023-2025 **National Aeronautics and Space Administration (NASA), Commercial SmallSat Data Analysis:** *Evaluating the capabilities of ICEYE radar imagery for high-resolution mapping of surface water dynamics*
PI: Sarah Cooley (UO), Co-PI: Jessica Fayne (Michigan).
Total Award: $101,288 ($75,673 to UO)

2023-2025 **National Aeronautics and Space Administration (NASA), Commercial SmallSat Data Analysis:** *Evaluating the capabilities of Capella Space radar imagery for high-resolution mapping of surface water dynamics*
PI: Sarah Cooley (UO), Co-PI: Jessica Fayne (Michigan).
Total Award: $101,288 ($75,673 to UO)

2021-2025 **National Aeronautics and Space Administration (NASA), New (Early Career) Investigator Program in Earth Science:** *Leveraging new satellite technologies to constrain feedbacks between surface water, permafrost and carbon emissions in the Arctic*
PI: Sarah Cooley (UO).
Total Award: $386,092 ($386,092 to UO)

2021-2022 **National Aeronautics and Space Administration (NASA), Commercial SmallSat Data Analysis:** *Evaluation of SmallSat data for mapping surface water resources*
PI: Lincoln Pitcher (Colorado), Co-PIs: Sarah Cooley (UO), T. Pavelsky (UNC-Chapel Hill)
Total Award: $193,974 ($90,451 to UO)

2021-2022 **University of Oregon, Renee James Seed Grant:** *Non-invasive diffuse optical imaging for characterization of glacier properties in the Cascades,*
Team: Brian Smith, Markus Allgaier (Physics), Sarah Cooley, Jonathan Ryan (Geography).
Total Award: $40,000

2020-2023 **National Aeronautics and Space Administration (NASA), Studies with ICESat-2:** *Towards global characterization of inland water reservoir use from space*
PI: Jonathan Ryan (UO), Co-PI: Laurence Smith (Brown), Co-I: Sarah Cooley (UO)
Total Award: $363,554 ($231,283 to UO)

Selected Conference Presentations

**Invited +Graduate Student Presenter*

2026 **Cooley, S.W.,** Landfast ice at the community-scale: 20+ years of ice dynamics in 66 communities across Alaska, Canada and Greenland, *Multi-Disciplinary Sea Ice Workshop, Aberdeen, Scotland*

2025 +Stringer, A. and **S.W. Cooley**, Automated mapping of landfast sea ice and polynyas around Arctic coastal communities using deep learning, *AGU Fall Meeting, New Orleans, LA*

2025 +Jacobs, N. and **S.W. Cooley**, Investigating lake ice phenology in Arctic wetlands using Planet and Sentinel-2 imagery, *AGU Fall Meeting, New Orleans, LA*

2025 +Levenson, E., **S.W. Cooley**, E. Webb and C. Kluetmeier, Improved SWOT surface water storage monitoring through multi-sensor harmonization, *SWOT Science Team Meeting, Archaon, France*

2024 +Huelbig, M., **S.W. Cooley**, and E. Levenson, Investigating Environmental Controls on Seasonal Lake Occurrence in Alaska, *AGU Fall Meeting, Washington, DC*

2024 +Levenson, E., and **S.W. Cooley**, The Timing and Magnitude of Pan-Arctic Seasonal Lake Area Fluctuations from 2016-2023, *AGU Fall Meeting, Washington, DC*

2024 +Maze, J., **S.W. Cooley,** E. Webb, E. Levenson, and J. Ryan, Investigating spatial patterns of seasonal variability in water level and area using ICESat-2, Sentinel-2 and Landsat, *AGU Fall Meeting, Washington, DC*

2024 **Cooley, S.W.**, A. Pletcher and E. Levenson, Tracking Lake Ice Phenology in Complex Arctic-Boreal Wetlands Using High Resolution Optical Imagery, *AGU Fall Meeting, Washington, DC*

2024 +Bonnville-Sexton, K., **S. Cooley,** J. Fayne, E. Levenson, and A. Pletcher, Evaluating the Capabilities of ICEYE and Capella Space X-band Satellites for High Resolution Wetland Observations Across Diverse Climate Zones, *AGU Fall Meeting, Washington, DC*

2024 **Cooley, S.W.,** J. Wang, H. Gao, F. Yao, B. Livneh, Y. Li, J. Hou, Z. Hao, X. Cai, and F. Ling, Global Intercomparison of Satellite-Derived Trends in Reservoir Storage, *AGU Fall Meeting, Washington, DC*

2024 +Levenson, E., **S. Cooley,** A. Mullen, E. Webb, and J. Watts, Glacial History Modifies Permafrost Controls on the Distribution of Arctic-Boreal Lakes and Ponds, *AGU Fall Meeting, Washington, DC*

2023 **Cooley, S.W.** and J.C. Ryan, Changes to Landfast Ice in Alaskan Communities over 2000-2022, *AGU Fall Meeting, San Francisco, CA.*

2023 +Pletcher, A., **S. Cooley** and E. Levenson, Remote Sensing of Ice Dynamics in the Yukon-Kuskokwim River Delta, AK, *AGU Fall Meeting, San Francisco, CA.*

2023 +Levenson, E., **S. Cooley**, A. Mullen, I. Van Dusen, K. Bonnville-Sexton, and A. Pletcher, Analyzing local to regional scale patterns in surface water variability and their interaction with permafrost using a new high resolution Alaska lake database, *AGU Fall Meeting, San Francisco, CA.*

2022 ***Cooley, S.W.,** E. Levenson and I. Van Dusen, Leveraging novel satellite technologies to better understand permafrost surface-water feedbacks (invited), *AGU Fall Meeting, Chicago, Illinois.*

2022 +Van Dusen, I., **S. Cooley**, E. Levenson, T. Langhorst, L. Pitcher and T. Pavelsky, Assessing the Accuracy of Planet and Sentinel-2 Derived Water Maps through in situ GNSS Validation, *AGU Fall Meeting, Chicago, Illinois.*

2022 +Levenson, E., **S. Cooley**, A. Mullen, I. Van Dusen, Arctic Lake Volume Variability Quantified Using Satellite Altimetry and Optical Remote Sensing, *AGU Fall Meeting, Chicago, Illinois.*

2021 **Cooley, S.W.,** J.C. Ryan and L.C. Smith, Tracking global surface water variability and the influence of human management using ICESat-2, *AGU Fall Meeting, New Orleans, Louisiana.*

2021 ***Cooley, S.W.,** Tracking dynamic hydrologic processes from space (invited panelist for session "Using Space to Benefit Life on Earth: Climate Change Research Utilizing Commercial Space Data"), *AIAA Ascend (virtual)*

2021 ***Cooley, S.W.,** Leveraging new satellite technologies to better understand permafrost-surface water interactions in the Arctic (invited), *2021 Regional Conference on Permafrost & 19th International Conference on Cold Regions Engineering (virtual).*

2021 ***Cooley, S.W.,** Observing Northern Hydrology with Planet (invited), *Planet Explore 2021 (virtual).*

2021 ***Cooley, S.W.,** J.C. Ryan and L.C. Smith, Observing global water level variability using ICESat-2 (invited), *Fourth Space for Hydrology Workshop (virtual).*

2020 **Cooley, S.W.,** J.C. Ryan, L.C. Smith, C.H. Horvat, B. Pearson, B. Dale and A. Lynch, New insights into community-scale changes in shorefast sea ice from satellite remote sensing, *AGU Fall Meeting (virtual).*

2019 **Cooley, S.W.,** J.C. Ryan, L.C. Smith, C.H. Horvat, B. Pearson, B. Dale and A. Lynch, Sensitivity of shorefast ice breakup to a warming climate in Arctic communities, *AGU Fall Meeting, San Francisco, California.*

2019 ***Cooley, S.W.,** L.C. Smith, J.C. Ryan, L.H. Pitcher and T.M. Pavelsky, Tracking fine-scale changes in surface water using CubeSat imagery (invited panelist for Centennial Session "Past and Future of Remote Sensing of Hydrology"), *AGU Fall Meeting, San Francisco, California.*

2019 **Cooley, S.W.,** J.C. Ryan, B. Dale, C.H. Horvat, L.C. Smith, N. Cuba and A. Lynch, Combining satellite remote sensing and traditional knowledge to understand mechanisms of shorefast ice breakup in the Arctic, *Arctic Futures 2050, Washington, D.C.*

2019 ***Cooley, S.W.,** L.C. Smith, J.C. Ryan, L.H. Pitcher and T.M. Pavelsky, Arctic-Boreal lake dynamics revealed using CubeSat imagery (invited), *IUGG General Assembly, Montreal, Canada.*

2018 **Cooley, S.W.,** L.C. Smith, J.C. Ryan, L.H. Pitcher and T.M. Pavelsky, Arctic-Boreal surface water dynamics tracked using CubeSat imagery, *AGU Fall Meeting, Washington, D.C.*

2018 **Cooley, S.W.**, L.C. Smith, L.H. Pitcher, T.M. Pavelsky and S.N. Topp, Tracking seasonal evolution of surface water extent in the Yukon Flats, Alaska and the Canadian Shield, *NASA Arctic Boreal Vulnerability Experiment (ABoVE) Science Team Meeting, Seattle, Washington.*

2017 **Cooley, S.W.**, L.C. Smith, L.H. Pitcher, T.M. Pavelsky and S.N. Topp, Tracking seasonal evolution of surface water extent in Central Alaska and the Canadian Shield, *AGU Fall Meeting, New Orleans, Louisiana.*

2016 **Cooley, S.W.** and P. Christoffersen, Characterizing the frequency and elevational extent of rapid drainage events in West Greenland, *AGU Fall Meeting, San Francisco, California.*

2016 **Cooley, S.W.** and T.M. Pavelsky, Spatial and temporal patterns in Arctic river ice breakup revealed by automated ice detection from MODIS imagery, *EGU General Assembly, Vienna, Austria.*

Invited Colloquia and Seminars

Total: 26 Invited Colloquia and Seminars

Mar 2026 **Princeton University,** "Resolving key outstanding questions in Arctic surface water research using new satellite technologies", Department of Geosciences, Princeton, NJ

Nov 2024 **University of North Carolina at Chapel Hill,** "Investigating climate-driven changes to sea ice at the community scale", Department of Earth, Marine and Environmental Sciences, Chapel Hill, NC

Apr 2024 **Duke University,** "From global to local: investigating climate-driven changes to sea ice at the community scale", Nicholas School of the Environment, Durham, NC

Mar 2023 **Georgetown University,** "New directions in observing surface water from space", Earth Commons Program, Washington, DC

Mar 2023 **University of Virginia,** "New directions in observing surface water from space", Department of Environmental Sciences, Charlottesville, VA

Mar 2023 **Permafrost Discovery Gateway Seminar,** "Leveraging novel satellite technologies to better understand permafrost surface-water feedbacks", Virtual Talk

Feb 2023 **Duquesne University,** "New directions in observing surface water from space", Environmental Science Seminar, Virtual Talk

Nov 2022 **University of Oregon,** "The SWOT Satellite Mission: from the Willamette Basin to Global Hydrology", Department of Geography, Eugene, OR

Oct 2022 **Oregon State University,** "New directions in observing surface water from space", Water Resources Program Seminar, Corvallis, OR

May 2022 **Stanford University,** "New directions in observing surface water from space", Seminar, Department of Geophysics, Palo Alto, CA (virtual talk due to COVID-19)

May 2022 **Oregon State University,** "New insights into community-scale changes in shorefast sea ice from satellite remote sensing", Physics of Oceans and Atmospheres Seminar, Corvallis, OR

Apr 2022 **University of Colorado Boulder,** "New directions in observing surface water from space", Colloquium, Department of Geological Sciences, Boulder, CO

Mar 2022 **University of Washington,** "New directions in observing surface water from space", Colloquium, Department of Earth and Space Sciences, Seattle, WA

Oct 2021 **Texas A&M University,** "New directions in observing surface water from space", Colloquium, Department of Geography, College Station, TX

Oct 2021 **University of Oregon,** "New directions in observing surface water from space", Colloquium, Department of Earth Science, Eugene, OR

Mar 2021 **Stanford University,** "New directions in observing surface water from space", Seminar, Department of Earth System Science, Palo Alto, CA (virtual talk due to COVID-19)

Oct 2020 **University of Manitoba,** "New insights into community-scale changes in shorefast sea ice from satellite remote sensing", Center for Earth Observation Science Seminar, Winnipeg, Canada (virtual talk due to COVID-19)

Feb 2020 **University of Illinois,** "Tracking high latitude hydrology from space: how advancing technologies allow us to see more than ever before", Seminar, Department of Geology, Champaign-Urbana, IL

Feb 2020 **University of Washington,** "Tracking high latitude surface water dynamics using CubeSat imagery and machine learning", Satellite Image Analysis Seminar, eScience Institute, Seattle, WA

Feb 2020 **University of Washington,** "New insights into community-scale changes in shorefast sea ice from satellite remote sensing", Environmental Fluid Mechanics Seminar, Applied Physics Laboratory, Seattle, WA

Jan 2020 **University of Oregon,** "Tracking high latitude hydrology from space: how advancing technologies allow us to see more than ever before", Colloquium, Department of Geography, Eugene, OR

Jan 2020 **University of Pittsburgh,** "Tracking high latitude hydrology from space: how advancing technologies allow us to see more than ever before", Colloquium, Department of Geology and Environmental Science, Pittsburgh, PA

Nov 2018 **NASA Surface Water Ocean Topography (SWOT) Cal/Val Workshop,** "Mapping Inundation Extent for SWOT Cal/Val", Pasadena, CA

Nov 2018 **Planet Labs**, "Tracking Arctic-Boreal Surface Water Dynamics using Planet Imagery", San Francisco, CA

May 2018 **NASA Inundation Extent Workshop**, "Mapping inundation extent using optical imagery", Boulder, CO

Apr 2017 **NASA Earth-to-Sky Climate Change Science Communication Conference**, "Draining lakes and melting ice: Changes in the hydrology of the Northwest Territories", Yellowknife, NWT, Canada

Fieldwork

July 2026 **Utqiagvik, Alaska** – Conducted interviews with local hunters and whalers to examine climate controls on trail access and safety. Funded by ERC Advanced Grant (PI J. Ford, Co-PI Cooley)

June 2026 **Central and Northern Alaska** – Performed lake surveys in 40+ lakes across Alaska to validate SWOT retrievals of water level and examine the relationship between precipitation minus evaporation and seasonal lake drawdown. Funded by NASA Grant #80NSSC25K7230 (PI Cooley)

Sept 2024 **Kinngait, Nunavut, Canada** – Community consultation visit to Kinngait to initiate research into the relationship between sea ice loss and Inuit art. Visited the art studio, met with community stakeholders, explored the local environment, and developed research plans in consultation with the local art co-op. Funded by British Academy Knowledge Frontiers Grant (PI I. Gapp, Co-PI Cooley)

August 2022 **Willamette Valley, Oregon** – Instructor for the inaugural Surface Water Field School. Taught 19 graduate students from across the country about surface water measurements on lakes and rivers and how to conduct safe and inclusive field campaigns. Funded by CUAHSI and NASA.

July 2022 **Willamette River, Oregon** – Participant in NASA SWOT calibration and validation test campaign measuring water survey elevation, slope and discharge on the Willamette River. Funded by NASA.

June 2022 **Fairbanks, Alaska** – Led a field team performing GPS surveys of shorelines on the Tanana River and nearby lakes and deploying pressure transducers to validate SmallSat-derived water maps. Funded by NASA Grants #80NSSC21K0920 (PI Cooley) and 80NSSC21K1153 (PI Lincoln Pitcher, Co-PI Cooley).

July 2021 **Fairbanks, Alaska** – Performed GPS surveys of shorelines on the Tanana River to validate SmallSat-derived water maps. Funded by Stanford Science Fellowship and NASA Grant #80NSSC21K115 (PI Lincoln Pitcher, Co-PI Cooley)

Apr-May 2019 **Uummannaq, Greenland** – Part of an interdisciplinary team working on co-production of shorefast ice knowledge in Uummannaq Fjord, North Greenland. Funded by NSF Navigating the New Arctic Grant #1835473 (PI Jonathan Ryan) and a GSA Graduate Student Research Grant.

March 2018 **Nunavut, Canada** – Participant in the inaugural Sentinel North International Arctic Field School in Iqaluit, Nunavut, Canada. Funded by an Institute at Brown for Environment and Society Graduate Travel and Training Grant.

Jun-Aug 2017 **Northern Canada and Alaska** – Six weeks studying northern surface water as part of NASA's Arctic Boreal Vulnerability Experiment (ABoVE). Performed ground validation for NASA AirSWOT and surveyed 50+ lakes across Saskatchewan, the Northwest Territories and Alaska. Funded by NASA Grants #NNX17AC60A and #NNX16AH83G (PI Laurence Smith).

Jun-Aug 2016 **Kangerlussuaq, Greenland** – Six weeks studying the seasonal evolution of the surface hydrology of the ice sheet margin. Funded by NASA Grant #NNX14AH93G (PI Laurence Smith).

Jun-Aug 2013 **Juneau Icefield, Alaska and Canada** – Participant in the Juneau Icefield Research Program. Traversed the Juneau Icefield in Southeast Alaska and British Columbia and conducted independent research on surface strain rates on Taku Glacier. Funded by the Morehead-Cain Scholarship Program.

Additional field campaigns led by my lab group members and funded by our grants include:

Utqiagvik, Alaska, two trips in August 2025 and January 2026 – interviews with local residents about sea ice usage (1 PhD student)

Yukon Delta, Alaska, one trip in September 2025 – surface water surveys, collaboration with Woodwell Climate (1 Postdoc)

Central Alaska, three trips in August 2022, June and August 2023 – surface water surveys, (1 PhD student, 3 MS students)

Teaching

Duke University, Durham, NC

Spring 2026 Instructor, ECS 206, Water and Climate (16 students)
Spring 2025 Instructor, ECS 206, Water and Climate (10 students)

University of Oregon, Eugene, OR

Spring 2024 Instructor, GEOG 425/525, Hydrology (16 students)
Spring 2023 Instructor, GEOG 425/525, Hydrology (22 students)
Fall 2022 Instructor, GEOG 607, Critical Remote Sensing Seminar (8 students)
Fall 2022 Instructor, GEOG 485/585, Remote Sensing I (27 students)

Summer 2022 Instructor, NASA/CUAHSI Surface Water Field School (20 students)
Spring 2022 Instructor, GEOG 425/525, Hydrology (21 students)
Winter 2022 Instructor, GEOG 485, Remote Sensing I (28 students)
Fall 2021 Instructor, GEOG 181, Our Digital Earth (90 students)

Mentoring

Postdoctoral Scholar Advised:
Elizabeth Webb – 2024-present
Awards: NSF Office of Polar Programs Postdoctoral Fellow

PhD Students Advised:
Key Hatch – 2026-present
Awards: NSF GRFP Honorable Mention
Camryn Kluetmeier – 2025-present
Awards: NSF Graduate Research Fellow, Duke Centennial Fellowship
Ana Stringer – 2024-present
Awards: NSF Graduate Research Fellow
Noah Jacobs – 2024-present
Awards: NSF Graduate Research Fellow
Eric Levenson (University of Oregon) – 2021-2026
Awards: NASA FINESST Fellow, AGU OSPA – Biogeosciences Division (2024), AGU OSPA – Hydrology Division (2024)

MS Students Advised:
James Maze (University of Oregon) – 2023-2025
Maddie Huelbig (University of Oregon) – 2023-2025
Addison Pletcher (University of Oregon) – 2022-2024
Ian Van Dusen (University of Oregon) – 2021-2023

Undergraduate Students Advised:
Tsvetelina Milkova, 2026-present
Lauren Coleman, 2026-present
Annie Cushman, 2024-present
Chloe Schueller, 2024-2025
Catherine Fleming (Honors Thesis, University of Oregon), 2023-2024
Riley Chambers (Honors Thesis, University of Oregon), 2022-2023
Kelly Bonneville-Sexton (University of Oregon), 2022-2023

Graduate Student Committee Member:
Elizabeth Weyl (PhD, Environmental Sciences, Duke University) – 2025-present
Marissa Hughes (PhD, Earth Sciences, University of North Carolina at Chapel Hill) – 2025-present
Ningjie Hu (PhD, Earth and Climate Sciences, Duke University) – 2025-2026
Alex Simpson (PhD, Earth Sciences, University of Oregon) – 2023-2025
Maxim Shapovalov (MS, Geography, University of Oregon) – 2022-2024
Devlin Rutherford (MS, Geography, University of Oregon) – 2022-2024
Chelsea Obeidy (PhD, Earth Sciences, University of Oregon) – 2022-2024

Nicole Abib (PhD, Earth Sciences, University of Oregon) – 2021-2024
Gui Aksit (PhD, Earth Sciences, University of Oregon) – 2021-2024
Becca Bussard (PhD, Earth Sciences, University of Oregon) – 2021-2024
Emily Hayden, (PhD, Earth and Ocean Sciences, Oregon State University) – 2021-2025
Renee Nassif (MS, Earth Sciences, University of Oregon) – 2021-2023
Nate Klema (PhD, Earth Sciences, University of Oregon) – 2020-2023

Media

Vox, *How 7 scientists feel after the hottest year on record,* Dec. 27, 2023

Nature, *Billion-dollar NASA satellite will track Earth's water,* Dec. 14, 2022

Los Angeles Times, *Why NASA's new mission will study Earth's surface water from space,* Dec. 14, 2022

KVAL, *University of Oregon to open new School of Computer and Data Sciences in 2023,* Dec. 6, 2022

NASA JPL, *SWOT: Earth Science Satellite Will Help Communities Plan for a Better Future* (video), Oct. 27, 2022

World Economic Forum, *Scientists looked at more than 200,000 bodies of water from space. This is why.,* Mar. 22, 2021

Gizmodo, *Humans Have Completely Transformed How Water Is Stored on Earth,* Mar. 3, 2021

UPI, *Earth's water cycle is increasingly dictated by humans,* Mar. 3, 2021

NASA Goddard, *NASA Satellite Measures Human Impact in Water Storage* (video), Mar. 3, 2021

The Atlantic, *A Pandemic Journey that puts Odysseus to Shame,* Aug. 10, 2020

Gizmodo, *The Sea Ice Arctic Communities Rely on Could Disappear Three Weeks Earlier,* May 4, 2020

Oceanographic Magazine, *Arctic 'shorefast' sea ice used by residents for hunting and fishing will be reduced by global heating,* May 10, 2020

Planet Pulse, *More Sats. More Science.,* Dec. 19, 2017

AGU Eos, *Airborne surveys examine water levels of lakes perched on permafrost*, Dec. 14, 2017

Service

Service to University

UO School of Computer and Data Science Strategic Implementation Committee (2023)
UO School of Computer and Data Science Strategic Planning Committee (2022)
UO Geography Graduate Admissions Committee (2022-2023)
UO Geography Colloquium Committee (2021-2023)
UO Geography Ad Hoc PhD Program Committee (2021-2022)

Service to Discipline

Peer Review

Research funding agencies:

NSF Arctic Natural Sciences Program Panelist
NSF Arctic Natural Sciences Program Reviewer
NSF Cyberinfrastructure for Sustained Scientific Innovation Program Reviewer
NSERC (Canada) Discovery Program Reviewer

Journals:

Nature
Science
Science Advances
Proceedings of the National Academy of Sciences
Nature Geoscience
Nature Climate Change
Nature Cities
Geophysical Research Letters
Environmental Research Letters
Water Resources Research
The Cryosphere
Journal of Geophysical Research – Earth Surface
Remote Sensing of Environment
Hydrology and Earth System Sciences
Earth System Science Data
Earth and Space Science
Journal of Glaciology
Remote Sensing
Permafrost and Periglacial Processes
Scientific Data
International Journal of Applied Earth Observation and Geoinformation

Conference Sessions Convened

1. "Remote Sensing of the Earth's Northern Landscapes", *AGU Fall Meeting 2022*
2. "Remote Sensing, Modeling and Data Assimilation of the Terrestrial Water Cycle", *AGU Fall Meeting 2022*
3. "Advances in Active Remote Sensing for Hydrology and Terrestrial Ecosystems", *AGU Fall Meeting 2022*
4. "Surface Water Hydrology From SWOT, NISAR and ICESat-2", *AGU Fall Meeting 2021*
5. "Remote Sensing of Hydrology and Environmental Change in the Cryosphere", *AGU Fall Meeting 2019*

Workshops and Other Activities

- Co-organizer for the 'Multi-Disciplinary Sea Ice Workshop' held at the University of Aberdeen, February 2026
- Invited Panelist for IEEE-GRSS Women Mentoring Women Program Proposal Writing Workshop, March 2024

- Participant in NSF-funded workshop "Integrating Remote Sensing, In Situ, And Physically-Based Modeling Approaches To Understand Global Lake Ice Dynamics" in Madison, WI, February 2023
- Organizer and Instructor, NASA-funded CUAHSI Surface Water Field School, Eugene, OR, August 2022
- Faculty mentor for the Karakoram International University, Pakistan - University of Oregon Cryosphere Research and Teaching Partnership (funded by the US State Department), mentoring Dr. Garee Khan of KIU, 2022-2023

Professional Memberships and Affiliations

American Geophysical Union (2016-present)
Geological Society of America (2019-present)
Association of Early Career Polar Scientists (2015-present)
US Permafrost Association (2021-present)