

LIZZ ULTEE, PHD

RESEARCH ROLES

2024 –	NASA Goddard Space Flight Center Associate Research Scientist, Cryospheric Sciences Lab. GESTAR-II Cooperative Agreement with Morgan State University.
2021–2024	Middlebury College Assistant Professor, Department of Earth & Climate Sciences.
2021	Georgia Tech Postdoctoral Fellow, School of Earth & Atmospheric Sciences.
2018–2021	Massachusetts Institute of Technology Postdoctoral Associate, Dept. of Earth, Atmospheric, & Planetary Sciences.
2014–2018	University of Michigan Ph.D., Climate & Space Sciences. <i>Dissertation:</i> Constraints on the dynamic contribution to 21st-century sea level rise from Greenland outlet glaciers
2009–2013	Queen's University B.Sc.Hons., Specialist in Mathematical Physics. <i>Thesis:</i> Energy conditions with nonzero cosmological constant λ
2011	University of Toronto Summer researcher, Centre for Global Change Science.

PEER-REVIEWED RESEARCH

Student and undergraduate student[†] coauthors indicated.*

20. Jenson, A. J.*, Amundson, J. M., Truffer, M., Pohle, A.*, and **Ultee, L.** (2026). ‘Capturing runoff-driven seasonal velocity variations of fast-flowing outlet glaciers in coupled ice-hydrology simulations.’ *Geophysical Research Letters*, 53, e2026GL124023. doi: 10.1029/2026GL124023
19. **Ultee, L.**, Wimberly, F.[†], Coats, S., Mackay, J. and Holmgren, E.* (2026). ‘CMIP6 climate model spread outweighs glacier model spread in 21st-century drought buffering projections.’ *The Cryosphere* 20: 1339-1361. doi: 10.5194/tc-20-1339-2026
18. Verjans, V., Robel, A.A., **Ultee, L.**, Seroussi, H., Thompson, A., Ackerman, L., Choi, Y., and Krebs-Kanzow, U. (2025). ‘The Greenland Ice Sheet Large Ensemble (GrISLENS): Simulating the future of Greenland under climate variability.’ *The Cryosphere* 19: 3749-3789. doi: 10.5194/tc-19-3749-2025
17. Schuster, L.*, Maussion, F., Rounce, D., **Ultee, L.**, Schmitt, P*, Lacroix, P., Frölicher, T., and Schleussner, C.-F. (2025). ‘Irreversible glacier change and trough water for centuries after overshooting 1.5° C.’ *Nature Climate Change*. doi: 10.1038/s41558-025-02318-w

16. Wimberly, F.[†], **Ultee, L.**, Schuster, L.*^{*}, Huss, M., Rounce, D. R., Maussion, F., Coats, S., Mackay, J., and Holmgren, E.* (2025). 'Inter-model differences in 21st Century glacier runoff for the world's major river basins.' *The Cryosphere*. doi: 10.5194/tc-19-1491-2025
15. Aguayo, R.*^{*}, Maussion, F., Schuster, L.*^{*}, Schaefer, M., Caro, A., Schmitt, P.*^{*}, Mackay, J., **Ultee, L.**, Leon-Muñoz, J., and Aguayo, M. (2024). 'Unravelling the sources of uncertainty in glacier runoff projections in the Patagonian Andes (40–56° S)'. *The Cryosphere* 18: 5383–5406. doi: 10.5194/tc-18-5383-2024
14. Robel, A., **Ultee, L.**, Ranganathan, M., and Nash, M. (2024). 'For whom and by whom is glaciology?' *Journal of Glaciology*. doi: 10.1017/jog.2024.29
13. Hanna, E., Topál, D., ..., and **Ultee, L.** (2024). 'Short- and long-term variability of the Antarctic and Greenland ice sheets.' *Nature Reviews Earth & Environment*. doi: 10.1038/s43017-023-00509-7
12. **Ultee, L.**, Robel, A., and Castruccio, S. (2024). 'A stochastic parameterization of ice sheet surface mass balance for the Stochastic Ice-Sheet and Sea-Level System Model (StISSM v1.0).' *Geoscientific Model Development* 17: 1041-1057. doi: 10.5194/gmd-17-1041-2024
11. Malles, J.-H.*^{*}, Maussion, F., **Ultee, L.**, Kochtitzky, W.*^{*}, Copland, L., and Marzeion, B. (2023). 'Exploring the impact of a frontal ablation parameterization on projected 21st-century mass change for Northern Hemisphere glaciers.' *Journal of Glaciology* 69(277): 1317-1332. doi: 10.1017/jog.2023.19.
10. Verjans, V., Robel, A., Seroussi, H., **Ultee, L.**, and Thompson, A. (2022). 'The Stochastic Ice-Sheet and Sea-Level System Model v1.0 (StISSM v1.0).' *Geoscientific Model Development* 15: 8269–8293. doi: 10.5194/egusphere-2022-699
9. **Ultee, L.**, Felikson, D., Minchew, B., Stearns, L. A., and Riel, B. (2022). 'Helheim Glacier ice velocity variability responds to runoff and terminus position change at different timescales.' *Nature Communications* 13: 6022. doi: 10.1038/s41467-022-33292-y
8. **Ultee, L.**, Coats, S., and Mackay, J. (2022) 'Glacial runoff buffers drought through the 21st century.' *Earth System Dynamics* 13: 935-959. doi: 10.5194/esd-13-935-2022
7. **Ultee, L.** and Bassis, J. N. (2020). 'SERMeQ model produces a realistic upper bound on calving retreat for 155 Greenland outlet glaciers.' *Geophysical Research Letters* 47(21). doi: 10.1029/2020GL090213
6. **Ultee, L.**, Meyer, C.R., and Minchew, B. M (2020). 'Tensile strength of glacial ice deduced from observations of 2015 collapse of Eastern Skaftá Cauldron, Vatnajökull Ice Cap, Iceland.' *Journal of Glaciology* 66(260): 1024–1033. doi: 10.1017/jog.2020.65
5. Bassis, J. N. and **Ultee, L.** (2019). 'A thin film viscoplastic model for calving glaciers: an upper bound on calving retreat.' *Journal of Geophysical Research: Earth Surface*. 124: 2036–2055. doi: 10.1029/2019JF005160
4. **Ultee, L.**, Arnott, J. C., Bassis, J. N., and Lemos, M. C. (2018). 'From ice sheets to main streets: Intermediaries connect climate scientists to coastal adaptation.' *Earth's Future* 6(3): 299–304. doi: 10.1002/2018EF000827
3. Boone, L., **Ultee, L.**, Waisanen, E., Newell, J., Thorne, J. A.[†], and Hardin, R. (2018). 'Collaborative creation and implementation of a Michigan Sustainability Case on urban farming in Detroit.' *Case Studies in the Environment* 2(1): 1–13. doi: 10.1525/cse.2017.000703
2. **Ultee, L.** and Bassis, J. N. (2017). 'A plastic network approach to model calving glacier advance and retreat.' *Frontiers in Earth Sciences* 5(24). doi:10.3389/feart.2017.00024.

1. **Ultee, L.** and Bassis, J. N. (2016). ‘The future is Nye: an extension of the perfect plastic approximation to tidewater glaciers.’ *Journal of Glaciology* 62(236): 1143–1152. doi:10.1017/jog.2016.108.

IN REVIEW

Yang, R., **Ultee, L.**, Aalstad, K., Debolskiy, M. V., Hock, R., Schmitt, P., Rounce, D., and Li, T. (in review for *Geoscientific Model Development*, 2026). ‘Joint Bayesian Calibration of Frontal Ablation and Surface Mass Balance in Global Glacier Models.’ *EGUsphere* preprint: doi: 10.5194/egusphere-2026-1081

Aguayo, R., Zekollari, H., Bolibar, J., van Tiel, M., Ayala, A., van Tricht, L., and **Ultee, L.** (in review for *Nature Water*, 2026). ‘Glacier loss amplifies streamflow droughts and water stress in the Andes’.

INVITED WORKS

Ultee, L. (2025). ‘How does glacier flow vary by season?’ *Science* 390 (6776): 886. doi: 10.1126/science.aec7025

Ultee, L., Carey, M., Sugiyama, S., and Young, T. J. (in review). ‘A framework for modern glaciology.’ In R. Carr and C. Batchelor (Eds.), *Handbook for Glacial Environments*. Routledge: forthcoming.

AWARDS & HONOURS

Research awards	NASA HBG Scientific Achievement Award (2026)
	International Glaciological Society - Early Career Scientist Award (2021)
	Michigan Sustainability Cases IMPACT Award (2018)
Service awards	MIT School of Science Spot Award (2020)

FUNDING

Funded, Lead PI	‘Collaborative Research: Disentangling runoff- and terminus-driven velocity variations of fast flowing outlet glaciers’, NSF OPP, \$944,000 (\$227,000 to Middlebury/Morgan State). <i>Inst. PIs: Martin Truffer (UAF) & Jason Amundson (U Alaska Southeast).</i>
Funded, Inst. PI	‘Collaborative Research: Constraining Greenland Glacier Dynamics using 1940s Historical Aerial Photography’, NSF OPP, \$745,000 (\$188,000 to Morgan State). <i>Lead PI: Sarah Child (U. Albany).</i>
Funded Collaborator	‘Global glacier modeling: Do non-linear feedbacks matter for century-scale projections?’, Research Council of Norway. <i>PI: Regine Hock (U. Oslo).</i>
Internal support	NASA Sea Level Change Team (ongoing task at GESTAR) NASA Cryosphere program (pilot project at GESTAR) Middlebury student research grants (Total \$24,000) UMich conference organizing funds (Total \$20,000)

SELECT INVITED PRESENTATIONS

- ‘Future glacial water resources in a changing climate.’ Earth & Environmental Sciences Seminar at University of Pennsylvania, Philadelphia, PA, USA. (2025)
- ‘Greenland ice sheet variability and its implications for sea-level projections.’ Geophysics Seminar at UT Institute for Geophysics, Austin, TX, USA. (2025)
- ‘Glacier effects on future water resources at local to global scale.’ Geosciences Seminar at University of Arizona, Tucson, AZ, USA. (2025)
- ‘Global glacier models agree on 21st century runoff and drought metrics at river basin scale.’ *American Geophysical Union Fall Meeting 2024*, Washington, DC, USA. (2024)
- ‘Evidence-based practices for community-oriented cryospheric science.’ *American Geophysical Union Fall Meeting 2024*, Washington, DC, USA. (2024)
- ‘Can we count on glacial runoff through the 21st century?’ *International Union of Geodesy and Geophysics*, Berlin, Germany. (2023)
- ‘A global analysis of glacial drought buffering through the 21st century.’ Geoscience Seminar at Williams College, Williamstown, MA. (2023)
- " " CryoHydro Seminar at University of Oslo, Oslo, Norway. (2023)
- " " Earth & Atmospheric Sciences Seminar at Georgia Tech, Atlanta, GA. (2022)
- ‘Mathematical avenues to climate science.’ Mathematics Colloquium at Queen’s University, Kingston, ON, Canada. (2022)
- ‘A stochastic approach to ice sheet surface mass balance for sea-level forecasting.’ *American Geophysical Union Fall Meeting 2021*, New Orleans, LA, USA. (2021).
- " " Utrecht University IMAU Colloquium, Utrecht, Netherlands. (2021)
- " " NASA GISS Sea Level Seminar. (2021)
- ‘An upper bound on 21st century outlet glacier retreat.’ IceFlow Seminar at University of Copenhagen. (2020)
- ‘Simulating 21st century iceberg calving from the Greenland Ice Sheet with SERMeQ.’ Interagency Arctic Research Policy Committee’s Glaciers and Sea Level Team meeting. (2019)
- ‘Fractura del hielo glaciar y su contribución al nivel del mar (*Fracture of glacier ice and how it contributes to global sea level*).’ Public lecture given in Spanish at Universidad Nacional de Ingeniería, Lima, Peru. (2019)

FIELD EXPERIENCE & RELEVANT TRAINING

2024-2026	Sermeq Kujalleq dynamic drivers US National Science Foundation Ilulissat, Greenland Five field deployments total, April 2024-Sept 2026. Helicopter-based installation (spring) and recovery (fall) of GNSS and meteorological instruments at 12 sites on the surface of the Greenland Ice Sheet. Installed time-lapse cameras to observe glacier calving front and ice melange in fjord. Worked around crevasse hazard in roped team. Packed instruments for return to the USA. Managed entire project including team configuration, site selection, helicopter route planning, contingency plans, cargo, safety planning, permitting, winter storage, and shipping. <i>PI: Lizz Ultee.</i>
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AUG. 2023	Sholes Glacier mass balance North Cascade Glacier Climate Project Mt. Baker, WA Surveyed snowpack with hand-held probe, installed ablation stakes using hand-powered Kovacs ice auger, measured proglacial streamflow with dye tracing and depth cross-sections. Practiced mountaineering skills. Self-supported camp in a wilderness area — backpacked in all supplies for 6 days. <i>PI: Mauri Pelto (Nichols College).</i>
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SEPT. 2022	Project COEBELI Swiss National Science Foundation Ilulissat, Greenland Recovered seismic and GNSS instruments from the Greenland Ice Sheet by helicopter. Serviced ice-adjacent instruments including tide gauge and broadband seismometer. Maintained, inventoried, and packed instruments for shipping to Switzerland. Received training in Greenland field logistics. <i>PI: Martin Lütthi (U. Zurich).</i>
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Wilderness First Responder Mental Health First Aid Polar risk management Crevasse rescue Ice rescue	SOLO (certified through 2029) MHFA USA (certified through 2025) US National Science Foundation (<i>workshop co-organizer</i> , 2021); Polar Field Services (2024-present) Ice Journey, Iceland (2022); Petra Cliffs, Vermont (2025) Petra Cliffs, Vermont (2026)
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PROFESSIONAL ENGAGEMENT & SERVICE

Model intercomparison UNFCCC Observer NOAA Climate Process Team Open Science support Reviewer	Ice Sheet Model Intercomparison Project phase 7 (2024 -) Civil society delegate, COP21 Paris climate negotiations (2015) Iceberg calving in climate models (2014-2016) AGU session convener, ‘Community tools and products for cryosphere discovery and application’ (2021-2023) Hackathon advisor, GeoLatinas ‘GeoHackeo’ (2020) IPCC Special Report on Oceans & Cryosphere in a Changing Climate; NASA Cryosphere & Physical Oceanography sections; NSF Office of Polar Programs; Natural Sciences and Engineering Research Council (Canada); Natural Environment Research Council (UK); Journals inc. <i>Nature</i> , <i>Geophysical Research Letters</i> , <i>Global Environmental Change</i> , <i>The Cryosphere</i> , <i>Frontiers in Earth Sciences</i> , <i>Geoscientific Model Development</i> , <i>Journal of Advances in Modeling of the Earth System</i> , <i>Water Resources Research</i> , <i>Journal of Hydrology</i>
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PEER-REVIEWED PUBLIC TEACHING MATERIALS

Ultee, L. and Maussion, F. (2022). ‘OGGM-Edu Glaciology Lab 1: What Makes a Glacier?’ In: *On the Cutting Edge Exemplary Teaching Activities* collection, Science Education Resource Center (SERC), Carleton, MN. serc.carleton.edu/teachearth/activities/250452.html

Ultee, L. and Maussion, F. (2022). ‘OGGM-Edu Glaciology Lab 2: Exploring glacier data.’
SERC, Carleton, MN. serc.carleton.edu/teachearth/activities/250446.html

Ultee, L. and Maussion, F. (2024). ‘OGGM-Edu Glaciology Lab 3: Simulating glacier flow.’
SERC, Carleton, MN. serc.carleton.edu/teachearth/activities/281855.html

TEACHING & SUPERVISION EXPERIENCE

Research advising	1 University of Oslo postdoctoral scholar 1 University of Alaska Fairbanks Ph.D. student 1 University of Maryland Baltimore County Ph.D. intern 1 Technical University of Denmark M.Sc. intern 10 Middlebury College undergraduate students (2 thesis + 8 assistant) 2 MIT undergraduate students 1 Universidad Nacional Federico Villarreal undergraduate (bachillerato)
Thesis examiner	1 Simon Fraser University M.Sc.
Course instructor	<i>ECSC 392 - Modern Climate Seminar</i> Undergrad seminar focused on current climate lit., esp. National Climate Assessment. Middlebury, 3 hr weekly seminar. <i>ECSC 362 - Glaciology</i> Upper-level undergrad elective in ice dynamics & consequences of glacier change. Middlebury, 3 hr lecture + 3 hr lab weekly. <i>ECSC 202 - Climate Dynamics</i> Undergrad course on energy balance, circulation, and quant. methods of Earth Science. Middlebury, 3 hr lecture + 3 hr lab weekly. <i>ECSC 111 - Natural Hazards</i> Introductory course on mechanisms & social considerations behind hazard phenomena. Middlebury, 3 hr weekly lecture. <i>CLIMATE 405 - Knowing Climate Change</i> Community-engaged course for climate literacy. Partner org: EDGI. UMich Residential College, 3 hr weekly seminar. <i>Clubes de Ciencia - Glaciología y recursos hídricos</i> Spanish-language glaciology research workshop (40 hr) in Lima, Peru.

PUBLIC ENGAGEMENT & MEDIA

2025	• “Calif. scientists just discovered a mesmerizing trait in earth’s glaciers.” SFGate article • Museum residency at ILLU Science & Art Hub, Ilulissat • School visits at Atuarfik Matthias Storch and Atuarfik Jørgen Brønlund, Ilulissat • Career development talk for Young Water Professionals Perú
2024	• “The world’s glaciers are melting faster than we thought.” <i>National Geographic</i> article • “Antarctic ice loss is significant, contrary to claims.” FactCheck article • “For whom, and by whom, is glaciology?” AntarcticGlaciers guest post
2023-	• Lead investigator, Museum of the North special exhibit development
2022	• Academic partner, National Weather Service Burlington office
2021	• “Defining climate leadership” workshop leader for AIESEC UK
2019	• International instructor, Clubes de Ciencia Peru

- 2018**
 - “Web Monitoring in the Classroom Builds Information Literacy, Civic Engagement.” Environmental Data & Governance Initiative [blog post](#)
 - “Knowing Climate Change: A Student Panel on Accountability and Accessibility.” Student radio broadcast ([archived](#))
 - Panelist, Michigan Institute for Social Change
- 2017**
 - Participant, APECS Polar Science Communication workshop
- 2016**
 - “What is Community-Engaged Glaciology?” Guest workshop facilitated at International Summer School in Glaciology
 - Developed instructional case study and podcast about Detroit urban farming (related [radio broadcast](#))
 - “Good COP, Bad COP: Bringing the Paris Climate Talks Back to Ann Arbor.” Event organizer and presenter
- 2015**
 - “City Limits To Climate Change: Climate Justice from Neighborhoods to Negotiations.” *It’s Hot in Here* [podcast](#).
 - Fellow, Michigan Engaged Pedagogy Initiative

FURTHER SKILLS

Languages English (*fluent*), Dutch (*fluent*), Spanish (*good*), German (*fair*), French (*fair*)