Joel A. Wilner

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Education

Dartmouth College, Hanover, NH — *2021 – present*
Ph.D. in Earth Sciences (expected May 2026)
- Advisors: Dr. Mathieu Morlighem, Dr. Meredith A. Kelly

Brown University, Providence, RI — *2018 – 2021*
M.Sc. in Earth, Environmental and Planetary Sciences
- Advisors: Dr. Alexander J. Evans, Dr. Christian Huber

Middlebury College, Middlebury, VT — *2014 – 2018*
B.A. in Geology (magna cum laude)
Minors: Mathematics and African Studies
- Thesis: *Low-Temperature Thermochronology of the Moodus Deep Core, Connecticut: Spatio-Temporal Mechanisms of Passive Margin Rejuvenation*
- Advisor: Dr. William H. Amidon

University Centre in Svalbard, Longyearbyen, Svalbard — *2017*
Semester abroad, Arctic Geophysics curriculum

Professional Experience

Graduate Research Assistant — *Hanover, NH*
Dartmouth College — *2021 – present*

National Science Foundation Joint Science Education Project (JSEP) Fellow — *Kangerlussuaq, Greenland & Hanover, NH*
Dartmouth College — *2021 – 2023*

Graduate Research Assistant — *Providence, RI*
Brown University — *2018 – 2020*

Summer Research Intern — *Pasadena, CA*
NASA Jet Propulsion Laboratory (JPL) - Advisors: Dr. Kevin Hand, Dr. Amy Hofmann — *2017*

National Science Foundation Research Experience for Undergraduates (REU) Intern — *Palisades, NY*
Lamont-Doherty Earth Observatory (LDEO), Columbia University - Advisors: Dr. Robin Bell, Dr. Kirsty Tinto — *2016*

Peer-Reviewed Publications

In Review

1. **J. A. Wilner**, A. M. Doughty, M. A. Kelly, and M. Morlighem, Disentangling topographic and climatic controls on glacier length: A case study in tropical alpine Colombia, Earth and Planetary Science Letters. In review.

Published

1. **J. A. Wilner**, B. J. Nordin, A. Getraer, R. M. Gregoire, M. Krishna, J. Li, D. J. Pickell, E. R. Rogers, K. T. McDannell, M. C. Palucis, and C. B. Keller, Limits to timescale dependence in erosion rates: Quantifying glacial and fluvial erosion across timescales, *Science Advances*, vol. 10, no. 51, eadr2009, 2024. 10.1126/sciadv.adr2009

2. **J. A. Wilner**, M. Morlighem, and G. Cheng, Evaluation of four calving laws for Antarctic ice shelves, *The Cryosphere*, vol. 17, no. 11, pp. 4889–4901, 2023. 10.5194/tc-17-4889-2023

3. A. M. Palumbo, A. N. Deutsch, M. S. Bramble, J. D. Tarnas, B. D. Boatwright, L. H. Lark, E. M. Nathan, **J. A. Wilner**, Y. Chen, B. A. Anzures, C. A. Denton, L. Tokle, G. Casey, A. G. Pimentel, J. W. Head, K. R. Ramsley, U. Shah, A. Kothandhapani, H. P. Gokul, J. Mehta, and V. Vatsal, Scientific exploration of Mare Imbrium with OrbitBeyond, Inc.: Characterizing the regional volcanic history of the Moon, *New Space*, vol. 7, no. 3, pp. 137–150, 2019. 10.1089/space.2019.0016

4. S. W. Campbell, Z. R. Courville, S. N. Sinclair, and **J. A. Wilner**, Brine, englacial structure and basal properties near the terminus of McMurdo Ice Shelf, Antarctica, *Annals of Glaciology*, vol. 58, no. 74, pp. 1–11, 2017. 10.1017/aog.2017.26

Conference Presentations

[O] = oral (10), [P] = poster (7), * = invited (1), ** = presentation award (1)

1. **J. A. Wilner**, B. J. Nordin, A. Getraer, R. M. Gregoire, M. Krishna, J. Li, D. J. Pickell, E. R. Rogers, K. T. McDannell, M. C. Palucis, and C. B. Keller, "Erosion showdown: glacial vs. fluvial erosion rates and the limits to timescale-dependence," Landscapes Live webinar series, 2025. [O] *

2. **J. A. Wilner**, B. J. Nordin, A. Getraer, R. M. Gregoire, M. Krishna, J. Li, D. J. Pickell, E. R. Rogers, K. T. McDannell, M. C. Palucis, and C. B. Keller, "Global quantification of glacial versus fluvial erosion rates: Limits to timescale dependence," European Geosciences Union (EGU) General Assembly, Vienna, Austria, 2025. [O]

3. **J. A. Wilner**, "Linking glacier velocity and erosion: Insights from ITS_LIVE and suspended sediment," Northeast Glaciology Meeting, Ithaca, NY, 2025. [O]

4. **J. A. Wilner**, M. A. Kelly, A. A. Doughty, M. Morlighem, S. Restrepo-Moreno, Noriega-Londoño, P. B. Galloway, and G. Bromley, "Last Glacial Maximum climate reconstructions from glacier evolution modeling in the Colombian Andes," American Geophysical Union (AGU) Annual Meeting, Washington, DC, 2024. [P]

5. **J. A. Wilner**, B. J. Nordin, A. Getraer, R. M. Gregoire, M. Krishna, J. Li, D. J. Pickell, E. R. Rogers, K. T. McDannell, M. C. Palucis, and C. B. Keller, "Quantifying the global importance of glacial versus fluvial erosion rates over different timescales," AGU Annual Meeting, Washington, DC, 2024. [O]

6. **J. A. Wilner**, M. A. Kelly, A. M. Doughty, and M. Morlighem, "Disentangling topographic and climatic controls on tropical moraine distribution," Northeast Glaciology Meeting, Cambridge, MA, 2024. [O]

7. **J. A. Wilner**, M. A. Kelly, A. M. Doughty, and M. Morlighem, "Topographic controls on tropical moraine distribution: A synthetic glacier modeling approach," eLightning presentation, American Geophysical Union Annual Meeting, San Francisco, CA, 2023. [P]

8. **J. A. Wilner**, M. Morlighem, and G. Cheng, "Evaluating and comparing calving laws in Antarctica," Northeast Glaciology Meeting, Orono, ME, 2023. [O]

9. **J. A. Wilner** and M. Morlighem, "Understanding calving dynamics through explainable machine learning," Northeast Glaciology Meeting, Hanover, NH, 2022. [P]

10. **J. A. Wilner**, M. Morlighem, and G. Cheng, "Evaluating and comparing calving laws in Antarctica," AGU Fall Meeting, Chicago, IL, 2022. [O] **

11. **J. A. Wilner**, A. J. Evans, R. E. Milliken, and M. M. Sori, "Spectroscopy of domes on Ceres and implications for emplacement," Lunar and Planetary Science Conference (conference cancelled due to COVID-19 pandemic), The Woodlands, TX, 2020. [O]

12. **J. A. Wilner** and W. H. Amidon, "Low-temperature thermochronology of the Moodus Deep Core, Connecticut: Understanding spatio-temporal patterns of passive margin rejuvenation in New England," AGU Fall Meeting, Washington, DC, 2018. [P]

13. **J. A. Wilner** and W. H. Amidon, "Preliminary results: Deep drill core thermochronology, southeastern Connecticut," Geological Society of America Northeastern Section Meeting, Burlington, VT, 2018. [O]

14. **J. A. Wilner**, W. H. Amidon, and S. N. Thomson, "Timing and rate of exhumation in the northeastern U.S. determined from drill core thermochronology," North Atlantic Margins Workshop, Dublin, Ireland, 2018. [O]

15. **J. A. Wilner**, A. E. Hofmann, K. P. Hand, and 2016 Polarstern (PS101) Science Team, "Sea ice as a sink for CO2 and biogeochemical material: A novel sampling method and astrobiological applications," poster presentation, AGU Fall Meeting, New Orleans, LA, 2017. [P]

16. **J. A. Wilner**, K. J. Tinto, R. E. Bell, and C. S. Siddoway, "Distribution of sediments beneath the Ross Ice Shelf, Antarctica, from airborne magnetic data," AGU Fall Meeting, San Francisco, CA, 2016. [P]

17. **J. A. Wilner**, B. Smith, T. Moore, S. W. Campbell, B. V. Slavin, J. Hollander, and J. Wolf, "Estimating temporal redistribution of surface melt water into upper stratigraphy of the Juneau Icefield, Alaska," poster presentation, AGU Fall Meeting, San Francisco, CA, 2015. [P]

Fellowships and Awards

Earth Sciences Dept. Gift Award for Outstanding Publication by a Graduate Student, Dartmouth College — *2025*

Irving Institute Student Grant, Dartmouth College — *2023*

Conference Travel Award, Guarini School of Graduate and Advanced Studies, Dartmouth College — *2023*

National Science Foundation Joint Science Education Project (JSEP) Graduate Fellowship — *2021 – 2023*

Outstanding Student Presentation Award (OSPA), AGU Fall Meeting — *2022*

Conference Travel Award, Brown University Graduate School — *2018*

College Scholar, Middlebury College *(highest per-semester academic honor, all semesters)* — *2014 – 2018*

Senior Research Project Supplement Award, Middlebury College Undergraduate Research Office — *2017*

Highpointers Club Scholarship — *2017*

Academic Conference Travel Fund Award, Middlebury College Undergraduate Research Office (x3) — *2015 – 2017*

First-Year Explore Grant, Middlebury College Center for Careers and Internships — *2015*

Fieldwork Experience

Páramo de Frontino, Colombia — *2023*
Moraine and boulder sampling for cosmogenic surface exposure dating and paleoglacier reconstruction.

Russell Glacier, Greenland — *2023*
Time-lapse photography to investigate fluvially induced calving.

Summit Station, Greenland — *2022 – 2023*
Autonomous phase-sensitive Radio-Echo Sounder (ApRES) deployment for firn densification and dynamic strain components of surface elevation change.

Kennicott Glacier, Alaska — *2022*
Monitoring ice cliff dynamics and mass balance of a debris-covered glacier.

Nisyros, Greece — *2019*
Graduate field course in geologic mapping of volcanic deposits.

Guanacaste Province, Costa Rica — *2018*
Undergraduate field course in arsenic geochemistry in soils and geologic mapping.

Fram Strait, Svalbard *2017*
Oceanographic research cruise on M/S Polarsyssel with in situ sea ice permeability experiments.

Tellbreen and Blekumbreen Glaciers, Svalbard *2017*
Structure-from-motion photogrammetry for glacial clast provenance.

Jarvis Glacier, Alaska *2016*
Ice-penetrating radar for glacier shear rheology and microstructure.

Juneau Icefield Research Program, Alaska *2015*
2-month research ski traverse with ice-penetrating radar and GPS for englacial hydrology and glacier mass balance.

Teaching & Mentorship

Teaching Assistant and Grader, Dartmouth College, EARS 013: "Introduction to Computational Methods in Earth Science *2025*

NSF Joint Science Education Project (JSEP) Fellow *2021 – 2023*
Developed and led interactive remote and field modules on iceberg calving and photogrammetry for high school students in the United States, Denmark, and Greenland

Teaching Assistant and Grader, Dartmouth College, EARS 014: "Meteorology" *2021*

Teaching Assistant, Grader, and Guest Lecturer, Brown University, EEPS 0050: "Mars, Moon, and the Earth" *2020*
Guest lecturer in icy satellite geodynamics

Teaching Assistant and Grader, Middlebury College, MATH 0116: "Introduction to Statistical Science" *2018*

Guest Lecturer in Thermochronology, Middlebury College, GEOL 0301: "Plate Tectonics and World Geology" *2018*

Peer Writing Tutor, Middlebury College *2017 – 2018*
Writing tutor for students in various science and humanities courses

Teaching Assistant and Film Production Tutor, Middlebury College, CRWR 1005: "Adventure Writing and Digital Storytelling" *2016*

Skills

Programming/Computational Experience: MATLAB, R, Python, Julia, LaTeX, shell scripting, Vim, Slurm high performance parallel computing

Software Packages: Ice-sheet and Sea-level System Model (ISSM), Open Global Glacier Model (OGGM), COMSOL Multiphysics, ArcGIS, QTQt, Agisoft Metashape, Microsoft Office

Professional Workshops Attended

Informal Cosmogenic-nuclide Exposure-age Database (ICE-D) workshop, University of Massachusetts Amherst, Amherst, MA *2024*

7th Open Global Glacier Model (OGGM) workshop, University of Edinburgh, Edinburgh, Scotland, UK *2023*

Autonomous Phase-Sensitive Radio Echo-Sounder (ApRES) workshop, Lamont-Doherty Earth Observatory, Columbia University, Palisades, NY *2022*