

# Eliza J. Dawson

ejdawson@ucar.edu  
elizadawson.github.io

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**EDUCATION**      **Stanford University, Stanford CA**      2018 - 2024  
Ph.D. in Geophysics  
Advised by Dr. Dustin Schroeder  
Thesis title: *Models and Observations of the Antarctic Ice Sheet Thermal State and Implications for Ice Sheet Dynamics*

**University of Washington, Seattle WA**      2014 - 2018  
Bachelor of Science in Atmospheric Science: Climate, with honors  
Honors thesis advisors: Dr. David Battisti and Dr. Abigail Swan  
Minor: Applied Mathematics

**APPOINTMENTS**      **NOAA Climate and Global Change Postdoctoral Fellow**      2024 - present  
Principle investigator on NOAA funded research focused on integrating radar observations into numerical ice flow models to improve future ice sheet and sea level rise projections.  
Hosted by Dr. Winnie Chu, Polar Geophysical Simulation Lab  
Georgia Institute of Technology, Atlanta GA

## **PUBLICATIONS**      **Journal Articles in Review**

- [1] **Dawson, E. J.**, W. Chu, M. Christoffersen, D. Yang, S. Farris, J. MacGregor. (2026) Ice sheet attenuation from radar sounding in the frequency domain. *J. Glaciol.* Accepted.
- [2] Schroeder, D. M., E. Abrahams, A. L. Broome, W. Chu, R. Culberg, **E. J. Dawson**, E. J. Mackie, D. F. May, M. R. Siegfried, T. O. Teisberg, S. Zhao. (2026) Time-series radar sounding as the next key ice-sheet observable. *Proceedings of the Royal Society A*. Accepted.
- [3] **Dawson, E. J.**, N. Wolfenbarger, W. Chu, D. M. Schroeder. (2026) Radar Attenuation through Ice on Earth and Across the Solar System. *Rev. Geophys. (Invited)*. In Review.
- [4] Tran, K.\*, W. Chu, D. Yang, **E. J. Dawson**, L. Padman, I. Cordero, R. Bell. (2026) Radar-derived Basal Melt Rates of Ross Ice Shelf, Antarctica. *JGR: Earth Surface*. In Prep.
- [5] Mackie, E., S. Jamieson, A. R. A. Aitken, L. Li, **E. J. Dawson**, S. Nowicki, E. Schwans, G. Paxman, A. Halberstadt, J. Halpin, K. Tinto, J. Ely, X. Huang. (2026) Towards bridging the gap between Antarctic subglacial boundary conditions and ice-sheet model parameterization. *The Cryosphere*. In Prep.
- [6] Yang, D.\*, W. Chu, L. Liu, **E. J. Dawson** (2026) Inferring Ice Sheet Basal Temperature with Radar Echo-Sounding and Ice Sheet Modeling. *JGR: Machine Learning and Computation*. In Prep.

\* indicates student advisee

## **Published Journal Articles**

- [7] Nicola, L., *et al.* (including **E. J. Dawson**) (2025). Where do we want the glaciology community to be in 2073? Equality, diversity, and inclusion challenges and visions from the 2023 Karthaus Summer School. *J. Glaciol.*, 71, e68. [doi.org/10.1017/jog.2025.18](https://doi.org/10.1017/jog.2025.18).
- [8] **Dawson, E. J.**, D. M. Schroeder, W. Chu, E. Mantelli, and H. Seroussi. (2024). Heterogeneous basal thermal conditions underpinning the Adélie–George V Coast, East Antarctica. *Geophys. Res. Lett.*, 51, e2023GL105450. doi: [10.1029/2023GL105450](https://doi.org/10.1029/2023GL105450)

- [9] Aitken, A. R. A., L. Li, B. Kulessa, D. M. Schroeder, T. A. Jordan, J. M. Whittaker, S. Anandakrishnan, **E. J. Dawson**, D. A. Wiens, O. Eisen, and M. J. Siegert. (2023). Antarctic sedimentary basins and their influence on ice-sheet dynamics. *Rev. Geophys.*, 61(3). doi: [10.1029/2021RG000767](https://doi.org/10.1029/2021RG000767)
- [10] **Dawson, E. J.**, D. M. Schroeder, W. Chu, E. Mantelli, and H. Seroussi. (2022). Ice mass loss sensitivity to the Antarctic ice sheet basal thermal state. *Nature Communications*, 13, 4957. doi: [10.1038/s41467-022-32632-2](https://doi.org/10.1038/s41467-022-32632-2)
- [11] Bienert, N. L., D. M. Schroeder, S. T. Peters, E. J. MacKie, **E. J. Dawson**, M. R. Siegfried, R. Sanda, and P. Christoffersen. (2022). Post-processing synchronized bistatic radar for long-offset glacier sounding. *IEEE Trans. Geosci. Remote Sens.*, 60, 1–17. doi: [10.1109/TGRS.2022.3147172](https://doi.org/10.1109/TGRS.2022.3147172)
- [12] Young, T. J., C. Martín, P. Christoffersen, D. M. Schroeder, S. M. Tulaczyk, and **E. J. Dawson**. (2021). Rapid and accurate polarimetric radar measurements of ice crystal fabric orientation at the WAIS Divide ice core site. *The Cryosphere*, 15(8), 4117–4133. doi: [10.5194/tc-15-4117-2021](https://doi.org/10.5194/tc-15-4117-2021)
- [13] Evans, S., **E. J. Dawson**, and P. Ginoux. (2020). Linear relation between shifting ITCZ and dust hemispheric asymmetry. *Geophys. Res. Lett.*, 47(22). doi: [10.1029/2020GL090499](https://doi.org/10.1029/2020GL090499)
- [14] Kim, J. E., M. Lague, S. Pennypacker, **E. J. Dawson**, and A. L. S. Swann. (2020). Evaporative resistance is of equal importance as surface albedo in high-latitude surface temperatures due to cloud feedbacks. *Geophys. Res. Lett.*, 47(4). doi: [10.1029/2019GL085663](https://doi.org/10.1029/2019GL085663)
- [15] Donohue, A., **E. J. Dawson**, L. McMurdie, D. S. Battisti, and A. Rhines. (2019). Seasonal asymmetries in the lag between insolation and surface temperature. *J. Climate*, 30, 10117–10137. doi: [10.1175/JCLI-D-19-0329.1](https://doi.org/10.1175/JCLI-D-19-0329.1)
- [16] Potter, S. F., **E. J. Dawson**, and D. M. W. Frierson. (2017). Southern African orography impacts on low clouds and the Atlantic ITCZ in a coupled model. *Geophys. Res. Lett.*, 44. doi: [10.1002/2017GL073098](https://doi.org/10.1002/2017GL073098)

FELLOWSHIPS AND GRANTS	<b>Astera Foundation, Living data products for ice sheet models</b>	2026
	Total value of award: \$57,750	
	<b>NOAA Climate and Global Change Postdoctoral Fellowship</b>	2024–2026
	Total value of award: \$172,000	
	<b>NSF Office of Polar Programs Postdoctoral Fellowship</b>	Awarded but declined
	Total value of award: \$167,800	
	<b>NSF Graduate Research Fellowship Program Recipient</b>	2019–2022
	National Science Foundation	
	<b>Joshua L. Soske Fellowship</b>	2018–2019
	Stanford University	
	<b>Atmospheric Sciences Reed Caldwell Scholarship</b>	2017–2018
	University of Washington	
	<b>Ernest F. Hollings Undergraduate Scholarship</b>	2015–2017
	National Oceanic and Atmospheric Administration	

HONORS AND AWARDS	Outstanding Student Presentation Award American Geophysical Union, Cryosphere Section	2023
	Outstanding Student Presentation Award American Geophysical Union, Atmospheric Sciences Section	2016
	Antarctic Service Medal National Science Foundation	2019–2020
INVITED TALKS	Dawson, E. J., From radar sounding data to the ice sheet basal thermal state. <i>INSTANT Geothermal Heat Flow Seminar, Virtual</i> , May, 2024.	
	Dawson, E. J., Closing Gaps in Polar Geophysics: How Combining Models and Observations Rewrites the Story of Mass Loss from Antarctica. <i>University of California Los Angeles, Los Angeles, CA</i> . April, 2024.	
	Dawson, E. J., Icy insights by bridging models and observations: Antarctic mass loss sensitivity to the thermal state. <i>University of California Santa Cruz, Santa Cruz, CA</i> . Dec, 2023.	
	Dawson, E. J., Icy insights by bridging models and observations: Antarctic mass loss sensitivity to the thermal state. <i>California Institute of Technology, Pasadena, CA</i> . Nov, 2023.	
	Dawson, E. J., Is Antarctica vulnerable to basal thawing? Evidence from modeling and observations. <i>Ludwig Maximilian University, Munich, Germany</i> . June, 2023.	
	Dawson, E. J., Investigating the role of basal thawing in Antarctica. <i>Georgia Institute of Technology, Atlanta, GA</i> . March, 2023.	
	Dawson, E. J., Investigating basal thawing in Antarctica with ice sheet modeling and ice-penetrating radar. <i>International Glaciological Society Global Seminar, online</i> . December 2022.	
	Dawson, E. J., Investigating the Antarctic Ice Sheet's response to basal thaw. <i>University of Colorado, Boulder, virtual</i> . June, 2020	
SELECTED CONFERENCE ABSTRACTS	Dawson, E. J., The next instability? Modeling basal thermal transitions of ice sheets. <i>NASA Jet Propulsion Laboratory, CA</i> . September, 2019	
	Dawson, E. J., W. Chu, M. Christoffersen, D. Yang. Advancing Radar Sounding Attenuation Estimates with Frequency-Based Techniques. European Geophysical Union General Assembly. Vienna, Austria, May, 2025	
	Dawson, E. J., W. Chu, D. Yang, M. Christoffersen. Subsurface insights from new radar sounding attenuation estimates across Antarctica. American Geophysical Union Fall Meeting, Washington DC, December, 2024	
	Dawson, E. J., D. M. Schroeder, W. Chu, E. Mantelli, H. L. Seroussi. Evidence for heterogeneous basal thermal conditions along the Adelie-George V Coast, East Antarctica. American Geophysical Union Fall Meeting, San Francisco, CA, December, 2023	

Dawson, E. J., D. M. Schroeder, W. Chu, E. Mantelli, H. L. Seroussi. Evidence for heterogeneous basal thermal conditions underpinning the Adelie-George V Coast, East Antarctica. SCAR INSTANT Conference. Trieste, Italy, September, 2023

Dawson, E. J., E. Wilson. Exploring oceanic heat pathways along the George V Land continental shelf. European Geophysical Union General Assembly. Vienna, Austria, April, 2023

Dawson, E. J., D. M. Schroeder, W. Chu, E. Mantelli, H. L. Seroussi. Towards the integration of radar subglacial constraints into ice sheet models. FOGGS Conference. Atlanta, GA. March 2023

Dawson, E. J., D. M. Schroeder, W. Chu, E. Mantelli, H. L. Seroussi. Deciphering the Basal Conditions of Wilkes Basin, East Antarctica, with Ice-Penetrating Radar and Ice Sheet Modeling. American Geophysical Union Fall Meeting. Chicago, IL. December, 2022

Dawson, E. J., D. M. Schroeder, W. Chu, E. Mantelli, H. L. Seroussi. Deciphering basal thermal conditions with ice-penetrating radar and ice sheet modeling. West Antarctic Ice Sheet Workshop, Estes Park, CO. September, 2022

Dawson, E. J., D. M. Schroeder, W. Chu, E. Mantelli, H. L. Seroussi. Utilizing radar sounding to constrain the basal thermal state in parts of East Antarctica. IGS Conference, Reykjavik, Iceland. August, 2022

Dawson, E. J., D. M. Schroeder, W. Chu, E. Mantelli, H. L. Seroussi. Investigating basal thaw as a driver of mass loss from the Antarctic ice sheet. European Geophysical Union General Assembly, Vienna, Austria, May, 2022

Dawson, E. J., D. M. Schroeder, W. Chu, E. Mantelli, H. L. Seroussi. Investigating basal thaw as a driver of mass loss across Antarctica. American Geophysical Union Fall Meeting, New Orleans, LA, December, 2021

Dawson, E. J., D. M. Schroeder, W. Chu, E. Mantelli, H. L. Seroussi. Investigating basal thaw as a driver of mass loss across Antarctica. West Antarctic Ice Sheet Workshop, Sterling, VA, October, 2021

Dawson, E. J., D. M. Schroeder, W. Chu, E. Mantelli, H. L. Seroussi. Investigating Basal Thaw as a Mechanism of Ice Mass Loss in Antarctica. American Geophysical Union Fall Meeting, Virtual, December, 2020

Dawson, E. J., D. M. Schroeder, W. Chu, E. Mantelli, H. L. Seroussi. Assessing the potential for basal thermal regime change to accelerate mass loss from the Antarctic Ice Sheet. West Antarctic Ice Sheet Workshop, Virtual, September, 2020

Dawson, E. J., D. M. Schroeder, W. Chu, E. Mantelli, H. L. Seroussi. Investigating basal thaw as a potential driver of ice flow acceleration in Antarctica. European Geophysical Union General Assembly, Virtual, May, 2020

Dawson, E. J., D. M. Schroeder, W. Chu, E. Mantelli, H. L. Seroussi. Vulnerability of the Antarctic Ice Sheet to basal thermal regime change. West Antarctic Ice Sheet Workshop, Julian, CA, October, 2019

Dawson, E. J., D. M. Schroeder, A. Miltenberger, W. Chu, H. Seroussi. A Comparison of Radar-inferred Temperature Characterization Techniques to Investigate Thermal Regime Changes in Antarctica. International Glaciological Society Symposium, Stanford, CA, July 2019

TEACHING EXPERIENCE	<i>Guest Instructor</i>	
	<ul style="list-style-type: none"> <li>Arctic Geophysics, University Centre in Svalbard, Norway</li> </ul>	2023
	<i>Teaching Assistant, Stanford University</i>	
	<ul style="list-style-type: none"> <li>Introduction to the Foundations of Contemporary Geophysics</li> </ul>	2020
	<ul style="list-style-type: none"> <li>Introduction to the Foundations of Contemporary Geophysics</li> </ul>	2019
FIELD EXPERIENCE	<b>Helheim Glacier, Greenland (supported by the Heising–Simons Foundation)</b>	June–July 2025
	<ul style="list-style-type: none"> <li>Coordinated logistics and scientific operations for radar surveys targeting firn aquifer and bed structure.</li> <li>Supported complementary geophysical programs, including water sampling, noble gas analysis, and supraglacial lake monitoring.</li> <li>Maintained and reinstalled GPS stations to track glacier motion.</li> </ul>	
	<b>Longyearbyen, Svalbard (supported by The University Centre in Svalbard)</b>	March 2023
	<ul style="list-style-type: none"> <li>Coordinated ground-based radar field operations to investigate polythermal glacier structure.</li> <li>Instructed students in ground-based and UAV-borne radar surveying techniques.</li> <li>Supported active seismic surveys along the glacier flowline.</li> </ul>	
	<b>Vatnajökull Ice Cap, Iceland (supported by Stanford University)</b>	Aug.–Sept. 2022
	<ul style="list-style-type: none"> <li>Tested and validated new ground-based and UAV-borne radar systems in highly attenuating ice.</li> <li>Coordinated multi-system radar field operations and set survey priorities.</li> </ul>	
	<b>Thwaites Glacier, Antarctica (supported by NSF ITGC TIME project)</b>	Dec. 2019 – Feb. 2020
	<ul style="list-style-type: none"> <li>Led ground-based multi-offset radar surveys across the Thwaites Eastern Shear Margin.</li> <li>Collected polarimetric radar profiles to investigate englacial structure and basal conditions.</li> </ul>	
	<b>Store Glacier, Greenland (supported by Cambridge University RESPONDER)</b>	July–Aug. 2019
	<ul style="list-style-type: none"> <li>Conducted ground-based radar surveys in collaboration with project scientists.</li> <li>Assisted with borehole drilling and instrumentation to support subglacial hydrology studies.</li> </ul>	
SUMMER SCHOOLS	Summer school on ice sheets and glaciers in the climate system, Karthaus, Italy	May 2023
	International Summer School in Glaciology, McCarthy, Alaska.	Cancelled b/c COVID-19
STUDENT MENTORING	Mandala Pham, PhD Student, Radar geophysics and subglacial geology, Georgia Tech	2025 - present
	Donglai Yang, PhD Student, Ice sheet modeling and AI methods, Georgia Tech	2024 - present
	Rowan Ray, Undergraduate Student, Ice core and borehole data analysis, Georgia Tech	2024-present
	Kiera Tran, PhD Student, Ice sheet modeling and radar geophysics, Georgia Tech	2022 - present
	Chloe Cheng, Undergraduate Student, Ice-ocean interactions, Stanford University	2023
	Lena Schwebs, Undergraduate Student, Radar sounding data analysis, Summer intern	2021
SERVICE	<b>Professional Service</b>	
	<ul style="list-style-type: none"> <li>AGU Section Leadership</li> </ul>	
	<ul style="list-style-type: none"> <li>AGU Cryosphere OSPA Coordinator</li> </ul>	
	<ul style="list-style-type: none"> <li>Member of SCAR Antarctic Geological Boundary Conditions Steering Committee</li> </ul>	
	<ul style="list-style-type: none"> <li>Reviewer: NSF proposals</li> </ul>	

- Reviewer: The Cryosphere, Geophysical Research Letters, Journal of Glaciology, IEEE, Nature Communications, Earth and Environment.
- Session Chair: Improving Predictability, West Antarctic Ice Sheet Workshop, 2022

### University Service

- Student committee to Hire Tenure-Track Geophysics Faculty, Stanford University 2023-present
- Co-Creator, Stanford Ice Seminar: School-wide seminar series for polar researchers 2023-present
- Graduate Advisor to the Department of Geophysics Chair, Stanford University 2023-present
- Graduate Teaching Liaison, Stanford University 2020-2022
- Organizer of Mentors in Teaching Workshops, Stanford University 2020-2022
- Member of Graduate Student Advisory Committee, Stanford University 2019-2020

### Community Outreach

- Featured in climate change book
- Invited speaker for Peninsula Community College public seminar
- Exhibit organizer for Port Townsend Natural History Museum
- Invited Speaker, Northwest Maritime Center

PROFESSIONAL AFFILIATIONS	International Association of Cryospheric Scientists, Member	2022 - Present
	Early-career Glaciologists Group, Member	2022 - Present
	European Geosciences Union, Member	2020 - Present
	International Glaciological Society, Member	2020 - Present
	American Geophysical Union, Member	2015 - Present