

Megan Thompson-Munson

PhD Candidate at the University of Colorado Boulder

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Education

University of Colorado

Boulder, CO

PhD in Atmospheric and Oceanic Sciences (ATOC) (GPA: 3.9/4.0)

May 2024 (expected)

Student of the Cooperative Institute for Research in Environmental Sciences (CIRES)

- Dissertation research: Ice-atmosphere interactions and ice-sheet firn processes
- Co-advisors: Jennifer Kay and Bradley Markle; previous advisor: Jan Lenaerts

University of Wyoming

Laramie, WY

MS in Geology (GPA: 4.0/4.0)

May 2020

- Thesis: *Observations and Implications of Three-Dimensional Deformation in the Greenland Ice Sheet*
- Advisor: Neil Humphrey

University of Massachusetts

Amherst, MA

BS in Geology; BS in Environmental Science (GPA: 3.8/4.0)

May 2017

Commonwealth Honors College Scholar with Greatest Distinction, *cum laude*

- Thesis: *Understanding the Environments in which Early Humans Lived: Insights from Organic Geochemical Analyses of East African Rift Valley Paleolakes*
- Advisor: Isla Castañeda

Fellowships

Graduate Student Research Award, CIRES, 1-year stipend

2023–2024

Women in Quaternary Science Award, Shlemon Center for Quaternary Sciences, 1-semester stipend

2019

Publications and Presentations

Peer-Reviewed Publications

- [3] MacLennan, M.L., Lenaerts, J.T.M., Shields, C.A., Hoffman, A.O., Wever, N., **Thompson-Munson, M.**, Winters, A.C., Pettit, E.C., Scambos, T.A., Wille, J.D. (2023). Climatology and Surface Impacts of Atmospheric Rivers on West Antarctica. *The Cryosphere*. <https://doi.org/10.5194/tc-17-865-2023>
- [2] **Thompson-Munson, M.**, Wever, N., Stevens, C.M., Lenaerts, J.T.M., and Medley, B. (2022). Observed and modeled Greenland firn properties (1980–2020). *The Cryosphere Discussions*. <https://doi.org/10.5194/tc-2022-223>
- [1] Lam, A., Bauer, J.E., Fraass, S., Sheffield, S., Limbeck, M.R., Borden, R.M., **Thompson-Munson, M.**, Fraass, A.J., Hills, J.M., Muskelly, C.E., Hartshorn, K.R., and Bryant, R. (2019). Time Scavengers: An Educational Website to Communicate Climate Change and Evolutionary Theory to the Public through Blogs, Web Pages, and Social Media Platforms. *The Journal of STEM Outreach*, 2(1). <https://doi.org/10.15695/jstem/v2i1.05>

Theses

- [2] **Thompson-Munson, M.** (2020). Observations and implications of three-dimensional deformation in the Greenland Ice Sheet. Master's thesis, University of Wyoming.
- [1] **Thompson-Munson, M.** (2017). Understanding the Environments in which Early Humans Lived: Insights from Organic Geochemical Analyses of East African Rift Valley Paleolakes. Bachelor's thesis, University of Massachusetts.

Datasets and Tools

- [3] **Thompson-Munson, M.**, Wever, N., Stevens, C.M., Lenaerts, J.T.M., and Medley, B. (2023). Greenland Ice Sheet modeled firn properties from SNOWPACK and the Community Firn Model (1980–2020). Zenodo. <https://doi.org/10.5281/zenodo.7671892>.
- [2] **Thompson-Munson, M.** SUMMEDup 2022: The SUMup Dataset Explorer. <https://github.com/MeganTM/SUMMEDup2022>.
- [1] **Thompson-Munson, M.**, Montgomery, L., Lenaerts, J.T.M., and Koenig, L. (2022). Surface Mass Balance and Snow Depth on Sea Ice Working Group (SUMup) snow density, accumulation on land ice, and snow depth on sea ice datasets 1952-2019. Arctic Data Center. doi:10.18739/A24Q7QR58.

Conference Abstracts and Presentations

* indicates invited talk

- [13] Dunmire, D.R., Wever, N., Banwell, A.F., Lenaerts, J.T.M., **Thompson-Munson, M.** (2022). Future (2015-2100) Ice-Shelf Firn Air Depletion from a Statistical Firn Emulator. AGU Fall Meeting, Chicago, IL.
- [12] ***Thompson-Munson, M.** (5 October 2022). Greenland Data Management: The Firn Community's Perspective. Greenland Data Workshop, Boulder, CO.
- [11] **Thompson-Munson, M.**, Wever, N., Lenaerts, J.T.M., Stevens, C.M., Medley, B., and Keenan, E. (2021). Simulated and Observed Firn Properties Across the Greenland Ice Sheet. AGU Fall Meeting, online.
- [10] **Thompson-Munson, M.**, Humphrey, N.F., Harper, J.T., and Meierbachtol, T.W. (2020). In-Situ Measurements of Three-Dimensional Deformation in the Greenland Ice Sheet. AGU Fall Meeting, online.
- [9] Dunmire, D.R., **Thompson-Munson, M.**, Lenaerts, J., Wever, N., Keenan, E., Banwell, A.F., and Datta, R. (2020). Improving Understanding of Future Antarctic Ice-Shelf Vulnerability to Atmospheric Warming. AGU Fall Meeting, online.
- [8] **Thompson-Munson, M.**, Humphrey, N.F., Harper, J.T., and Meierbachtol, T.W. (2019). Multi-day summer speed-up events in western Greenland's ablation zone driven by non-local ice sheet motion. AGU Fall Meeting, San Francisco, CA.
- [7] **Thompson-Munson, M.** (2019). Evidence of cross-flow deformation in the Greenland Ice Sheet's ablation zone. Northwest Glaciologists Conference, Corvallis, OR.
- [6] Castañeda, I.S., **Thompson-Munson, M.**, Gilchrist, S., Lupien, R., Russell, J.M., Salacup, J., Feibel, C.S., and Cohen, A.S. (2018). Early Pleistocene temperature history of Paleolake Lorenyang, West Turkana Basin (Kenya). AGU Fall Meeting, Washington, D.C.
- [5] Lam, A.R., Bauer, J., Sheffield, S.L., Muskelly, C.E., **Thompson-Munson, M.**, Limbeck, M., Hils, J.M., Hartshorn, K.R., Fraass, A., Fraass, S., Borden, R. (2018). Time Scavengers: A Website to Disseminate Climate Change and Evolutionary Principles to Increase Public Literacy. AGU Fall Meeting, Washington, D.C.
- [4] **Thompson-Munson, M.** and Castañeda, I.S. (2017). Understanding the Environments in which early humans lived: Insights from organic geochemical analyses of East African Rift Valley paleolakes. Massachusetts Undergraduate Research Conference, Amherst, MA.
- [3] **Thompson-Munson, M.**, Castañeda, I.S., Lupien, R., and Russell, J.M. (2017). Evaluation the potential for isoprenoid and branched GDGT temperature reconstructions in West Turkana and Northern Awash Basin sediments. Hominin Sites and Paleolakes Drilling Project Annual Meeting, Tempe, AZ.
- [2] **Thompson-Munson, M.** and Castañeda, I.S. (2015). Late Pliocene and Early Pleistocene temperature reconstructions from paleolakes of the West Turkana and North Awash basins, East Africa. GSA Annual Meeting, Baltimore, MD.
- [1] Castañeda, I.S., **Thompson-Munson, M.**, Lupien, R., Russell, J.M. (2015). Late Pliocene and Early Pleistocene temperature reconstructions from paleolakes of the West Turkana and North Awash Basins, East Africa. AGU Fall Meeting, San Francisco, CA.

Reviews Performed

Earth System Science Data (1), Journal of Climate (1), Journal of Glaciology (1)

Teaching and Mentorship Experience

Teaching Positions

ATOC 1060: Our Changing Climate Teaching Assistant (32 students)	University of Colorado Jan 2023–present
Lead Graduate Teacher Program ATOC Lead TA	University of Colorado May 2022–present
ATOC REU Python Bootcamp Lesson Developer and Instructor (17 students, 9 students)	University of Colorado Jun 2021, Jun 2022
ATOC 1070: Weather and Atmosphere Lab Teaching Assistant (64 students)	University of Colorado Aug–Dec 2020
GEOG 1010: Physical Geography Teaching Assistant (60 students, 45 students)	University of Wyoming Aug–Dec 2019, Jan–May 2020
GEOG 3600 Earth and Mineral Resources Teaching Assistant (31 students)	University of Wyoming Aug–Dec 2018

Research Mentorship

Beth Mason , BS Student in ATOC at University of Colorado	Jul 2021–Apr 2022
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Teaching Workshops Developed

Holistic Collaboration: How to Make Networking Less Awkward , University of Colorado	6 Feb 2023
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Teaching Workshops Attended

The Universal Classroom: Designing Your Course for Diverse Learners , University of Colorado	9 May 2022
The Hidden Curriculum , University of Colorado	9 May 2022
Teaching About Our Changing Climate , GETSI	26 Jan 2021
Teaching in the Era of COVID-19 , University of Colorado	9 Sep 2020
Universal Design for Learning , University of Colorado	20 Aug 2020
Using Dialogue in the Classroom , University of Colorado	20 Aug 2020
How to Be an Anti-Racist in the Classroom , University of Colorado	19 Aug 2020

Outreach, Service, and Other Employment

Interviews and Articles

- [3] **Thompson-Munson, M.** 29 March 2021. *Icebergs*. AntarcticGlaciers.org.
<http://www.antarcticglaciers.org/glacier-processes/glacier-types/icebergs/>
- [2] Interviewed for the article: Amos-Landgraf, I. 12 March 2021. *How Does an Iceberg Really Float?* GlacierHub.
<https://blogs.ei.columbia.edu/2021/03/12/iceberg-really-float/>
- [1] Interviewed about icebergs for *Breakfast with Sammy J* on ABC Radio Melbourne. 2 March 2021.

Outreach

Eagle Crest Elementary School , Visiting Scientist	22, 27 Apr 2021
Colorado STEM Academy , Visiting Scientist	9 Apr 2021
Laramie Middle School , Visiting Scientist	5 Mar 2020
Time Scavengers Science Outreach Blog , Collaborator, Writer	2017–2019
University of Minnesota Paleoclimate Class , Virtual Presenter	Apr 2019
Girls Inc. Eureka! STEM Career Development , Activity Developer	Jun 2015

Service

International Firn Workshop , Developer, Organizer, Junior Coordinator	Jan–Jun 2022
University of Colorado Graduate Mentorship Program , Mentor	Aug 2021–May 2022
ATOC First-Year Graduate Student Mentorship Program , Mentor	Aug 2021–May 2022
Colorado State Science Fair , Judge	9 Apr 2021
ATOC Outreach Committee , Member, Lead	Aug 2020–May 2021
ATOC Justice, Equity, Diversity, and Inclusion Committee , Member	Aug 2020–May 2021
ATOC Forum Committee , Member	Aug 2020–May 2021
AGU Flash Freeze Competition , Judge	Dec 2010
ATOC Graduate Application Mentorship Program , Mentor, Developer	Aug–Dec 2020
Research Lunch Seminar Series , Lead and Co-Organizer	Jan 2018–Dec 2019
Wyoming State Science Fair , Judge	Mar 2018, Mar 2019
Virtual Climate Scientist Project , Ice Sheet Consultant	Dec 2018

Other Relevant Employment

Mount Rainier National Park , Geoscientists-in-the-Park Interpretative Ranger	May–Sep 2016
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Field and Laboratory Experience

CIRES Snow Science Project	Boulder, CO
Lab Technician and Mentor	Oct–Nov 2022
– Mentored three undergraduate students in building a wind-shielded observation tower for measuring snow accumulation as part of a CIRES-funded project with Dr. Mark Seefeldt	
Niwot Ridge Snow Science Field Work	Nederland, CO
Field Assistant (2 days)	Summer 2021
– Set up a field station containing instruments for measuring snow height and snow water equivalent	
Lake Agnes Rock Glacier Field Work	State Forest State Park, CO
Field Assistant (1 day)	Oct 2019
– Hiked equipment up to a rock glacier to collect seismic refraction data in the active region of the glacier	
Southern Sierra Nevada Critical Zone Observatory Field Work	Sierra Nevada, CA
Field Assistant (14 days, 11 days)	Jul 2018, Jul 2019
– Collected seismic refraction data and assisted with soil and saprolite core recovery from a Geoprobe	
– Surveyed vegetation while mentoring high school students in the Hands on the Land program	
Greenland Ice Sheet Field Work	Kangerlussuaq and Ilulissat, Greenland
Field Team Member (32 days, 31 days)	May–Jun 2018, May–Jun 2019
– Established first two years of a new firn project in the Greenland Ice Sheet percolation zone	
– Hot-water drilled 100-m boreholes, extracted 30-m firn cores, and traveled by ski and snowmobile	
University of Massachusetts Biogeochemistry Laboratory	Amherst, MA
Undergraduate Research Technician	May 2015–May 2017

- Used geochemical analyses to quantify biomarker abundances in East African Rift Valley paleolake sediments

University of Massachusetts Soil Science Laboratory

Amherst, MA

Undergraduate Research Technician

Sep–Dec 2013

- Evaluated the role of biochar in sustainable agriculture by monitoring crop yield in fields and greenhouses

Technical Skills

- **Programming Languages:** Python (excellent), Matlab (proficient), JavaScript (proficient)
- **Systems:** MacOS, Windows, Unix/Linux, high-performance computing
- **Software:** Microsoft Office, Adobe, Inkscape, \LaTeX , QGIS, ArcGIS, ENVI, JMP, Git/GitHub, Jupyter Lab/Notebook, Google Colab, Google Earth Engine
- **Field Skills:** Firn coring, hot-water drilling, ground-penetrating radar, seismic refraction, rock drilling, Trimble GPS surveying, snow sampling

Awards and Scholarships

Flash Freeze Cryosphere Innovation Award for Students , AGU, \$1000	2021
Best Graduate Student ESSS Poster , University of Colorado, \$50	2021
AntClimNow Dataset Development and Stewardship Grant , SCAR, \$2500	2021
EarthCube Learning Communities Fellow , EarthCube, \$1000	2021
Fall 2020 Lab Teaching Assistant Award , University of Colorado ATOC, \$250	2021
2020 Outstanding Master's Student , University of Wyoming Geology & Geophysics, \$100	2021
Outstanding Student Award , Association for Women Geoscientists	2019
Anne Kirtland Selden Lowe Scholarship , University of Wyoming, \$1,500	2019
Page Jenkins Memorial Scholarship , University of Wyoming, \$2,200	2019
Geology & Geophysics Meritorious Graduate Research Grant , University of Wyoming, \$1,260	2018
Walter Harrison and Constance Chatterton Spears Fellowship , University of Wyoming, \$2,500	2018
Bozanic Student Support , University of Wyoming, \$1,000	2018
S H Knight Geology Scholarship , University of Wyoming, \$900	2018
Outstanding Geology Senior Award , University of Massachusetts	2017
Linda G. Lockwood Environmental Science Scholarship , University of Massachusetts	2017
Education Award , AmeriCorps, \$1,500	2016
New York Farmers Scholarship , University of Massachusetts, \$1,000	2016
Angelo Tagliacozzo Memorial Geological Scholarship , NEAIPG, \$2,000	2016
Ascension Farms Scholarship , University of Massachusetts, \$1,000, \$7,000	2014, 2016
Dean's Award , University of Massachusetts, \$2,000	2013–2016
John & Abigail Adams Tuition Waiver , University of Massachusetts	2013–2016

Organizations

European Geophysical Union , Student Member	2022–present
American Geophysical Union , Student Member	2019–2021
Association for Women Geoscientists , Student Member	2019
American Institute of Professional Geologists , Student Member	2017
Phi Kappa Phi , Student Member	2017
University of Massachusetts Geosciences Club , Vice President	2015–2017
Phi Sigma Pi , Student Member, Education Chair, Regional Delegate	2014–2017
Geological Society of America , Student Member	2014–2017