MARGARET MURAKAMI

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Department of Earth and Planetary Sciences
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The University of Texas at Austin
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EDUCATION

Ph.D. Geological Sciences, The University of Texas at Austin expected May 2028
M.Sc. Atmospheric Sciences, University of Helsinki May 2023
Thesis: Water Mass Transformations Within Prydz Bay Coastal Polynyas from Clustered Drifters
B.Sc. Geosciences with honors, The University of Texas at Austin May 2021

ACADEMIC APPOINTMENTS

Graduate Research Assistant, The University of Texas at Austin 2023–present
Oden Institute for Computational Engineering and Sciences
Graduate Research Assistant, University of Helsinki 2022–2023
Institute for Atmospheric and Earth System Research
Undergraduate Research Assistant, The University of Texas at Austin 2018–2021
The Bureau of Economic Geology

RESEARCH EXPERIENCE

Graduate Research Assistant, The University of Texas at Austin
Oden Institute for Computational Engineering and Sciences | Advisor: Patrick Heimbach

- Performed data analyses using the MITgcm and collaborated with 3 team members to utilize a novel package in the model
- Built tools to account for water budgeting and mass conservation in the MITgcm output

Graduate Research Assistant, University of Helsinki
Institute for Atmospheric and Earth System Research | Advisors: Petteri Uotila and Aleksi Nummelin

- Conducted a targeted case study within the Southern Ocean using a regional ocean modeling system
- Implemented a unique Lagrangian particle package in the model and applied a novel clustering method to analyze simulation output
- Demonstrated proficiency in both working with a climate model and post-processing the output from it using effective data visualization strategies

This work resulted in two accepted abstracts at scientific conferences and one first-authored manuscript pending review, funded by the Academy of Finland.

Undergraduate Research Assistant, The University of Texas at Austin
Bureau of Economic Geology | Advisors: Sahar Bakhshian and Susan Hovorka

- Utilized high performance and parallel computing to model and visualize pore-scale two-phase fluid dynamics in sandstone
- Employed applications to visualize and animate high-resolution output from a scientific model
- Contributed to a dynamic programming package to automatically correlate well-logs using Python, and managed large datasets necessary for this task

This appointment resulted in one second-authored publication in Geophysical Research Letters (GRL) and

two scientific poster presentations.

PUBLICATIONS

Peer-Reviewed Research Articles

- Bakhshian, S., **Murakami, M.**, Hosseini, S.A., and Kang, Q. (2020). Scaling of Imbibition Front Dynamics in Heterogenous Porous Media. *Geophysical Research Letters*, 47(14), https://doi.org/10.1029/2020GL087914

Submitted Research Articles

- **Murakami, M.**, Nummelin, A., Galton-Fenzi, B.K., Uotila, P. (2023). Water Mass Transformations Within Antarctic Coastal Polynyas of Prydz Bay from Clustered Drifters. DOI: 10.22541/essoar.169228932.20068035/v2

Accepted Abstracts

- **Murakami, M**., Nummelin, A., Galton-Fenzi, B.K., Uotila, P. (2023). Interactions with Meltwater in East Antarctica Influence Antarctic Bottom Water Formation: A Study Using Clustered Lagrangian Drifters. *Ocean Sciences Meeting Abstracts.*
- **Murakami, M.**, Nummelin, A., Galton-Fenzi, B.K., Uotila, P. (2023). Clustered Drifters Show that Interaction with the Ice Shelf Meltwater Controls Antarctic Bottom Water Formation in East Antarctica, *AGU Fall Meeting Abstracts*.
- Bakhshian, S., **Murakami, M.**, Hosseini, S.A. (2019). Pore-scale study of spontaneous imbibition in fractured rocks using the lattice Boltzmann method. *AGU Fall Meeting Abstracts*.

PRESENTATIONS

Invited Talks

- **Murakami, M**., Nummelin, A., Galton-Fenzi, B.K., Uotila, P. Interactions with Meltwater in East Antarctica Influence Antarctic Bottom Water Formation: A Study Using Clustered Lagrangian Drifters. Ocean Sciences Meeting. New Orleans, LA. February 2024.
- **Murakami, M**., Nummelin, A., Galton-Fenzi, B.K., Uotila, P. Clustered Drifters Show that Interaction with the Ice Shelf Meltwater Controls Antarctic Bottom Water Formation in East Antarctica. AGU Fall Meeting. San Francisco, CA. December 2023.

Poster Presentations

- **TACC Symposium for Texas Researchers.** September 2019 Scientific Poster Session. “A high-performance lattice Boltzmann solver with applications to multiphase flow in porous media” **Murakami, M.**, Bakhshian, S., and Hosseini, S.A.

HONORS AND AWARDS

Best Undergraduate Poster, UT Energy Week (2020)
Best Poster Award, Bureau of Economic Geology Research Symposium (2019)

REFERENCES

Patrick Heimbach
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