Logan Knudsen
Physical Oceanographer and Mathematical Physicist

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Experienced researcher with an extensive background in geophysical fluid dynamics, mathematics, and oceanograpy.

EDUCATION

August 2023- May 2025	**University of Maryland, COLLEGE PARK, Maryland** > Masters of Science in Atmospheric and Oceanic Science. GPA : 3.78 > Advised by Dr. Jacob Wenegrat > Courses : Atmospheric and Oceanic Dynamics, Physical Oceanography, Partial Differential Equations, Climate Dynamics, Earth Systems Science, Atmospheric Physics and Chemistry

August 2019-
May 2023
	Texas A&M University, COLLEGE STATION, Texas
	> Texas A& M University. GPA : 3.94
	> Mathematics B.S. with minors in Meteorology and Oceanography
	> Courses : Calculus and Differential Equations, Linear and Abstract Algebra, Real Analysis, Physical Oceanography, and Atmospheric Dynamics.
	> Notable Courses :
	  > Mathematical Modeling of Ocean Climate
	  > Theory of Partial Differential Equations
	  > Numerical Analysis (Graduate Level)
	  > Undergraduate Research Projects
	  > Student Research Seminar : Watch presentations on student research topics, my topic is the Euclidean Group.
	  > Directed Reading Program : Learn more about Group Actions and Discrete Dynamics.

SKILLS

Programming	Python,Julia, GitHub, Oceananigans.jl, Dedalus, Jupyter Notebook, Google Colab, H.P.C., Matlab, Maple, Latex, HTML
Languages	English(Native), **French** (Basic)
Writing	Research Papers, Microsoft Office, Mathematics Lecture, Mathematics Activity

MEMBERSHIPS

Pi Mu Epsilon	National Math Honor Society Member
Texas A&M Math Club	*Member *President (2022-23) Organize meetings and lead the organization. *Former Vice-President *Vice President (2021-22)- Help to run meetings and the Problem Solving Contest.
KANM : Student Radio	DJ and Member (2019-2023)

AWARDS

2023-2025	University of Maryland Flagship Fellowship
2023	George & Barbara Bush Foundation Undergraduate Student Travel Grant

PUBLICATIONS

July 2025	**Parametric Subharmonic Instability in the Oceanic Bottom Boundary Layer** > L. P. Knudsen, J. Hilditch, J. O. Wenegrat, L. N. Thomas, 2025, Parametric Subharmonic Instability in the Oceanic Bottom Boundary Layer; In preparation for submission in November 2025
July 2024	**Ensemble Kalman Filtering for Glacier Modeling** > Corcoran, E., Knudsen, L., Mayo, T., Park-Kaufmann, H. and Robel, A., 2024 : Ensemble Kalman Filtering for Glacier Modeling, La Matematica Pre-Print : https://link.springer.com/article/10.1007/s44007-024-00116-y

EXPERIENCE

August 2023 - July 2025	**Parametric Subharmonic Instability in the Bottom Boundary Layer** › Working with Dr. Jacob Wenegrat on exploring the possible presence of Parametric Subharmonic Instability in the oceanic Bottom Boundary Layer.
August 2022 - May 2023	**Large Scale Ocean Modeling Research** › Worked with Dr. Spencer Jones to explain deep ocean upwelling near equator in the MITgcm.
June 2022 - August 2022	**Emory REU/RET Computational Mathematics for Data Science** › Worked on incorporating Data Assimilation(specifically the Ensemble Kalman Filter) into a simplified Glacier Model. Used output data in order to run Storm Surge Simulations using the ADCIRC Model.
January 2021 - May 2023	**Undergraduate Teaching Assistant** › TA for Calculus I Fall 2021, Spring 2021 and Fall 2022, Calculus II Spring 2022 and Calculus III Spring 2023 at Texas A&M.
October 2020 -May 2023	**TAMU Math Circle** › Facilitator- Helped students Grades 5 to 12 to learn math problem solving and to complete activities. › Host- Hosted Zoom meetings and helped to manage breakout rooms. › Instructor- Lead sessions relating to a Virus Pool Testing Activity, Double Latin Squares, Towers of Hanoi and more.
June 2022 - November 2022	**Student Cluster Competition Team Advisor** › Helped students on team learn about fluid dynamics and computational fluid dynamics so they could work better with PHASTA model.
July 2020, 2021, 2023	**Summer Education Enrichment in Math** › Senior Counselor- Worked with students between Grades 6 and 9 to help them learn math problem solving, special topics, and programming in Maple. › Host- Helped to manage Zoom rooms so that meetings ran smoothly.
April 2019 -August 2020	**Partner at H-E-B** › Helped to bag groceries at a H-E-B grocery store.

VOLUNTEERING

April 2024	**Maryland Day** › Worked as a volunteer for the Department of Atmospheric and Oceanic Sciences at Maryland Day celebration helping with displays.
May 2020 - June 2023	**MYMathApps- Assistant Author** › Wrote Calculus problems and solutions, as well as wrote programs to generate graphics. › Link : https://mymathapps.com/mymacalc-sample/Credits.html
February 2020, February 2022	**TAMU Mathematics and Statistics Fair** › Helped with outreach activities that taught mathematics to participants from the local community.
February 2022	**Math Club : Family STEAM Event** › Ran outreach in which I worked with students at River Bend Elementary to do Math Games as part of a STEM night.
May 2017 -August 2018	**Texas Wildlife Rehabilitation Coalition Center** › Worked as a volunteer helping to clean cages, feed animals and generally maintain the center.

RECENT PRESENTATIONS

April 2025 | Student Seminar
> Presented research from master of science thesis at a departmental student seminar.

June 2024 | Gordan Research Conference on Ocean Mixing
> Poster presentation early simulations and results from Parametric Subharmonic Instability in the oceanic bottom boundary layer project.

January 2023 | Joint Mathematics Meetings
> Present Summer 2022 Research at the Joint Mathematics Meetings Pi Mu Epsilon Poster Session and AMS-SIAM Special Session on Research in Mathematics by Undergraduates.

October 2022 | Department of Mathematics Undergraduate Research Expo
> Presented poster on Summer 2022 REU Research at Texas A&M University Department of Mathematics Undergraduate Research Expo.

June 2022 | Emory REU Presentation
> Presented with group mates on research project progress and future direction to Emory Math Department and REU.

February 2022 | Math Club : Gerrymandering
> Was co-presenter of a Math Club Lecture on a Gerrymandering Activity.

January 2022 | Student Research Seminar
> Rewrote my Real Analysis Lecture on the Euclidean Group using norm spaces and presented in front of the class.