

Anthony Meza

Ph.D. Candidate

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Education

Massachusetts Institute of Technology & Woods Hole Oceanographic Institution

Ph.D. in Physical Oceanography

Cambridge, MA

Expected 2026

University of California, Irvine

B.S. in Mathematics - Concentration in Data Science

Irvine, CA

2018–2021

Fullerton College

A.S. in Mathematics

Fullerton, CA

2016–2018

Publications

- **Meza, A.,** & Gebbie, G. (2025). Wind-driven mid-depth Pacific cooling in a dynamically consistent ocean state estimate. *Journal of Geophysical Research: Oceans*. doi.org/10.1029/2025JC022462

Experience

Woods Hole Oceanographic Institution

Graduate Research Assistant

Sep 2021–Present

Woods Hole, MA

- Designed and ran global ocean simulations using the MIT General Circulation Model (MITgcm) to test mechanisms controlling deep ocean heat content and circulation
- Evaluated high-resolution coupled climate models to quantify the impacts of Antarctic sea ice melt on global ocean circulation and tracer distributions
- Analyzed ocean reanalysis data and found a statistical relationship between near-shore sea surface temperature variability and extreme California precipitation events
- Developed Python and Julia tools for processing and analysis of ocean model and observational data in high-performance computing (HPC) environments

Foundation for Resilient Societies

Technical Consultant

Jan 2025

Cambridge, MA

- Ran and debugged Strategic Energy & Risk Valuation Model (SERVM) simulations to assess U.S. electrical grid capacity adequacy under varying generation scenarios (e.g., solar adoption).
- Led a team of 12 undergraduate electric grid modeling interns to develop an internal user guide for running SERVM experiments and interpreting model output.

Los Alamos National Laboratory

Research Intern

Jun 2021–Aug 2021

Los Alamos, NM

- Implemented and evaluated reduced-precision in the Energy Exascale Earth System Model (E3SM) to reduce computational cost and energy consumption in global simulations

Institute for Pure and Applied Mathematics & The Aerospace Corporation

Research Intern

Jun 2020–Sep 2020

Los Angeles, CA

- Designed and implemented reinforcement learning-based methods for adaptive packet routing in satellite network simulations, implemented in Python using PyTorch

Teaching Experience

- Co-organizer and Instructor 2024
High Performance Computing and Data Analysis Workshop
- Calculus Instructor 2024
MIT-WHOI Joint Program Summer Math Refresher
- Partial Differential Equations Instructor 2023
MIT-WHOI Joint Program Summer Math Refresher

Professional Activities

- Committee Member 2024–Present
AMS Committee on Climate Variability and Change
- Graduate Application Mentor 2023–Present
Joint Program Applicant Support & Knowledgebase
- Physical Oceanography Representative 2023–2024
WHOI Joint Program Student Representative
- Conference Co-Organizer 2023
2023 Graduate Climate Conference
- At-Large Representative 2022–2023
WHOI Joint Program Student Representative
- Conference Co-Organizer 2022
2022 First Generation Summit
- Committee Member 2020–2021
UC Irvine Mathematics Inclusive Excellence Committee

Workshops and Summer Schools Attended

- CESM/MOM6 Regional Modeling Workshop May 2025
NCAR Mesa Laboratory, Boulder, CO
- ECCO Summer School May 2025
Asilomar Conference Center, Monterey, CA
- Tracer Mixing in Fluids Across Planetary Scales Summer School Jul 2024
Brin Mathematics Research Center, College Park, MD

Awards and Honors Received

- GEM Fellowship 2021
National Consortium of Graduate Degrees for Minorities in Engineers, MIT
- Rose Hills Scholarship 2020
Rose Hills Foundation, UC Irvine
- Rose Hills Scholarship 2019
Rose Hills Foundation, UC Irvine
- Bellettini Scholarship 2019
Maria Rebecca and Maureen Bellettini Fund, UC Irvine
- SCE STEM Scholarship 2019
Southern California Edison, UC Irvine

Presentations

- **A. Meza**, G. Gebbie. “Wind-driven mid-depth Pacific cooling in a dynamically consistent ocean state estimate” ECCO Summer School, 19–30 May 2025, Asilomar Conference Center, Monterey, CA. *Poster*.
- **A. Meza**, P. Bhuyan, Z. Zheng, G. Gebbie., M. Linz, J. Wenegrat. “Surface to Bottom Connections in Earth’s Ocean” Tracer Mixing in Fluids Across Planetary Scales Summer School, 8–19 Jul 2024, Brin Mathematics Research Center, College Park, MD. *Talk*.
- **A. Meza**, H. Seo. “Associations Between Coastally Trapped Waves and Wintertime Precipitation in California” Ocean Sciences Meeting, 18–23 Feb 2024, New Orleans, LA. *Poster*.
- **A. Meza**, H. Seo. “Associations Between Coastally Trapped Waves and Wintertime Precipitation in California” Graduate Climate Conference, 1–3 Nov 2023, Marine Biological Laboratory, Woods Hole, MA. *Poster*.

- **A. Meza**, G. Gebbie. "Drivers of subsurface Pacific cooling in ECCOv4r4" ECCO Annual Meeting 2023, 25 Jan 2023, University of Washington, Seattle, WA. *Virtual Talk*.
- **A. Meza**, G. Gebbie. "Drivers of mid-depth Pacific cooling trends in an ocean reanalysis" AGU Fall Meeting 2022, 2–4 Nov 2023, Chicago, IL. *Poster*.
- **A. Meza**, G. Gebbie. "Drivers of mid-depth Pacific cooling trends in an ocean reanalysis" Graduate Climate Conference, 31 Oct 2022, University of Washington, Seattle, WA. *Poster*.
- C. Tran, **A. Meza**, H.L. Tung, H. Liu. "A Reinforcement Learning Approach to Packet Routing on a Dynamic Network" Joint Mathematics Meeting, 6–9 Jan 2021, Virtual. *Virtual Talk*.

Skills

Languages: *Programming:* Python, Julia, MATLAB; *Human:* English, Spanish

Scientific Computing: NumPy, SciPy, xarray, Pandas, Optimization.jl, JuMP.jl, scikit-learn, PyTorch

HPC & Dev Tools: Unix/Linux, OpenMPI, HPC job schedulers (e.g., Slurm), Dask, Git, GitHub

Professional References

Geoffrey Gebbie (ggebbie@whoi.edu)

Henri Drake (hdrake@uci.edu)

Christopher Piecuch (cpiecuch@whoi.edu)