

Anthony Meza

Ph.D. Candidate

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Education

Massachusetts Institute of Technology	Cambridge, MA
<i>Ph.D. in Physical Oceanography</i>	Expected 2026
University of California, Irvine	Irvine, CA
<i>B.S. in Mathematics - Concentration in Data Science</i>	2018-2021
Fullerton College	Fullerton, CA
<i>A.S. in Mathematics</i>	2016-2018

Experience

Woods Hole Oceanographic Institution	Sep 2021-Present
<i>Graduate Research Assistant</i>	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	Jan 2025
<i>Technical Consultant</i>	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	Jun 2021-Aug 2021
<i>Research Intern</i>	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 climate simulations	
Institute for Pure and Applied Mathematics & The Aerospace Corporation	Jun 2020-Sep 2020
<i>Research Intern</i>	Los Angeles, CA
• Designed and implemented reinforcement learning-based methods for adaptive packet routing in satellite network simulations, implemented in Python using PyTorch	

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

Personal Projects

xbuoy

- Developed *xbuoy*, a Python workflow to query National Data Buoy Center (NDBC) and aggregate irregularly sampled data into commonly used Earth science data formats (e.g., NetCDF).

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