Anthony Meza

Ph.D. Candidate
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Education

Massachusetts Institute of Technology — Cambridge, MA
Ph.D. in Physical Oceanography — *Expected 2026*

University of California, Irvine — Irvine, CA
B.S. in Mathematics - Concentration in Data Science — *2018–2021*

Fullerton College — Fullerton, CA
A.S. in Mathematics — *2016–2018*

Experience

Woods Hole Oceanographic Institution — Sep 2021–Present
Graduate Research Assistant — *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
Technical Consultant — *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
Research Intern — *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
Research Intern — *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