

# Anthony Meza

Ph.D. Candidate

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## Education

### Massachusetts Institute of Technology

*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*

## 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 climate 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

## 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