

# Anthony Meza

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## EDUCATION

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**Massachusetts Institute of Technology &  
Woods Hole Oceanographic Institution**  
Ph.D. in Physical Oceanography and Climate Science

Cambridge, MA

September 2021 – Present

**University of California, Irvine**  
B.S. in Mathematics, Concentration in Data Science

Irvine, CA

September 2018 – June 2021

## RESEARCH EXPERIENCE

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**Woods Hole Oceanographic Institution**

Sep. 2021 – Present

Advisor: Geoffrey Gebbie

Woods Hole, MA

- Explored causes of deep ocean cooling using MITgcm simulations, supporting NASA efforts of global ocean modeling and data assimilation.
- Analyzed 15TB+ of next-generation high-resolution coupled climate model output to understand the connections between ocean circulation and dissolved chemicals in the ocean
- Produced written reports, posters and presentations to communicate findings to broader communities

**Woods Hole Oceanographic Institution**

Sep. 2021 – Sep. 2023

Advisor: Hyodae Seo

Woods Hole, MA

- Processed and analyzed 3TB+ of high-resolution climate data and found significant connections between near-shore sea surface temperature and extreme California precipitation events
- Developed tools to analyze big climate data using Python and Julia

**Los Alamos National Laboratory**

Jun. 2021 – Aug. 2021

Advisor: Mark Petersen

Los Alamos, NM

- Implemented parallel reduced-precision capabilities within the ocean component of the Energy Exascale Earth System Model
- Found that reduced precision marginally reduced compute time (i.e. energy consumption), but at the cost of model skill

**Institute for Pure and Applied Mathematics**

Jun. 2020 – Sep. 2020

Advisor: Thomas Merkh

Los Angeles, CA

- Co-developed Q-learning and Deep Q-learning algorithms to improve satellite network communication efficiency for the Aerospace Corporation
- Empirical models were built in Python primarily using PyTorch and NetworkX

## PUBLICATIONS

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**A., Meza**, G. Gebbie, (In Prep). *Wind-Driven Mid-depth Cooling in a Dynamically Consistent Ocean State Estimate*. Journal of Geophysical Research. Oceans,.

## PRESENTATIONS

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**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 July 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 February 2024, New Orleans, LA. *Poster*.

**A. Meza**, H. Seo. “Associations Between Coastally Trapped Waves and Wintertime Precipitation in California” Graduate Climate Conference, 1–3 November 2023, Marine Biological Laboratory, Woods Hole, MA. *Poster*.

**A. Meza**, G. Gebbie. “Drivers of subsurface Pacific cooling in ECCOv4r4” ECCO Annual Meeting 2023, 25 January 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 November 2023, Chicago, IL. *Poster*.

**A. Meza**, G. Gebbie. “Drivers of mid-depth Pacific cooling trends in an ocean reanalysis” Graduate Climate Conference, 31 October 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 January 2021, Virtual. *Virtual Talk*.

## SERVICE AND LEADERSHIP

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AMS Committee on Climate Variability and Change. *Committee Member*. Nov. 2024–Present  
High Performance Computing and Data Analysis Workshop. *Co-organizer and instructor*. Oct. 2024  
Joint Program Applicant Support & Knowledgebase. *Graduate Application Mentor*. Aug. 2023–Present  
2023 Graduate Climate Conference. *Conference Co-Organizer*. Jan. 2023–Nov. 2023  
MIT-WHOI Joint Program Summer Math Refresher. *Calculus Instructor*. July 2024  
WHOI Joint Program Student Representative. *Physical Oceanography Department Representative*. 2023–2024  
MIT-WHOI Joint Program Summer Math Refresher. *Partial Differential Equations Instructor*. July 2023  
WHOI Joint Program Student Representative. *At-Large Program Representative*. 2022–2023  
2022 First Generation Summit. *Conference Co-Organizer*. 2022  
UC Irvine Mathematics Inclusive Excellence Committee. *Committee Member*. 2020–2021

## AWARDS AND HONORS

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National Consortium of Graduate Degrees for Minorities in Engineers Graduate Fellowship, MIT, 2021  
Rose Hills Foundation Undergraduate Science & Engineering Scholarship, UC Irvine, 2020  
Rose Hills Foundation Undergraduate Science & Engineering Scholarship, UC Irvine, 2019  
Maria Rebecca and Maureen Bellettini Scholarship, UC Irvine, 2019  
Southern California Edison STEM Transfer Scholarship, UC Irvine, 2019

## TECHNICAL SKILLS

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**Languages:** Python, Julia, MATLAB

**Developer Tools:** Linux/Unix, Git, Github, VS Code, Google Colab