Anthony Meza

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EDUCATION

Massachusetts Institute of Technology &

Cambridge, MA

Woods Hole Oceanographic Institution Ph.D. in Physical Oceanography and Climate Science

September 2021 - Present

University of California, Irvine

Irvine, CA

B.S. in Mathematics, Concentration in Data Science

September 2018 – June 2021

RESEARCH EXPERIENCE

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

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

PRESENTATIONS

- **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

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

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

Languages: Python, Julia, MATLAB

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