Anthony Meza

714-552-2396 | ameza@mit.edu | github.com/anthony-meza

Education

Massachusetts Institute of Technology & Woods Hole Oceanographic Institution — Cambridge, MA
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