Anthony Meza

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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

Experience

Deep Ocean Modeling Research Assistant — Sep. 2021 – Present
Woods Hole Oceanographic Institution, Gebbie Lab — Woods Hole, MA

- Ran several global ocean simulations using the MITgcm to diagnose the causes of deep ocean cooling in an global data assimilation effort by NASA
- Analyzed 15TB+ of next-generation high-resolution coupled climate model output to understand the connections between ocean circulation and dissolved compounds in the ocean
- Produced written reports, posters and presentations to communicate findings to broader communities

Electric Grid Modeling Technical Consultant Intern — Jan. 2025
Foundation for Resilient Societies — Cambridge, MA

- Ran and debugged simulation cases for generating capacity adequacy
- In-person training by Astrape Consulting in SERVM modeling package
- Co-led a team of 12 Electric Grid Modeling Interns to create a comprehensive internal user guide for SERVM modeling and output analysis

Coastal Dynamics Research Assistant — Sep. 2021 – Sep. 2023
Woods Hole Oceanographic Institution, Seo Lab — Woods Hole, MA

- Processed and analyzed 3TB+ of 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

Parallel Computing Summer Fellow — Jun. 2021 – Aug. 2021
Los Alamos National Laboratory — 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

Research Assistant – ML for Satellite Networks — Jun. 2020 – Sep. 2020
Institute for Pure and Applied Mathematics & The Aerospace Corporation — Los Angeles, CA

- Co-developed Q-learning and Deep Q-learning algorithms to improve satellite network communication efficiency
- Created Monte Carlo simulations to measure efficacy of algorithms using the PyTorch and NetworkX Python packages

Side Projects

xbuoy | *Python, Xarray, multiprocessing, HTML, Pandas* — Sep. 2024 – Present

- Developed a system to query the National Data Buoy Center and aggregate data into daily, monthly and yearly NetCDFs
- Python package can already be downloaded from *https:// github.com/ anthony-meza/ xbuoy*
- Future goals include using buoy, satellite and model data to improve coverage and projections of coastal regions

Technical Skills

Languages: Python, Julia, MATLAB
Developer Tools: Linux/Unix, Git, Github, VS Code, Google Colab