

KATHLEEN ABBOTT

MIT Earth, Atmospheric and Planetary Sciences
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EDUCATION

MIT-WHOI Joint Program in Oceanography <i>Ph.D. Candidate in Physical Oceanography</i> <i>Thesis title:</i> Biogeochemical cycling and microbial dynamics at the submesoscale	Cambridge, MA 2020 - 2025 (anticipated)
University of California, Berkeley <i>B.A. in Geophysics, Applied Mathematics with high honors</i>	Berkeley, CA 2013 - 2017

RESEARCH EXPERIENCE/EMPLOYMENT

MIT-WHOI Joint Program in Oceanography <i>Graduate Student Researcher advised by Dr. Amala Mahadevan</i>	Cambridge, MA 2020 - present
Big Bend National Park <i>GIS Technician</i>	Big Bend, TX 2019 - 2020
American Museum of Natural History <i>Helen Fellow</i>	New York, NY 2018 - 2019
North Coast Regional Water Quality Control Board <i>AmeriCorps Member</i>	Santa Rosa, CA 2017 - 2018

FELLOWSHIPS & GRANTS

Ocean Ventures Fund	2024-2025
National Science Foundation Graduate Research Fellowship	2020-2025
MIT Ida M. Green Fellowship	2020-2021
American Meteorological Society Graduate Student Fellowship	2020-2021

PUBLICATIONS

Pre-prints

- Abbott K.**, Matantseva, O., Spezzano, R., Wittmers, F., Van Mooy, B., Worden, A.Z., Mahadevan, A. (in prep). *Microbial respiration of the mesopelagic modulated by submesoscale ventilation.*
- Middleton L.**, Wu, W., Johnston, T.M.S., Rudnick. D., Berta, M. (and 26 additional authors, including **Abbott K.** (under review). *Ocean cyclone splitting ventilates the upper ocean.*

Peer-reviewed journal publications

- Abbott K.**, Mahadevan, A. (2024). *Why is the monsoon coastal upwelling signal subdued in the Bay of Bengal?* Journal of Geophysical Research: Oceans, 129(12).
<https://doi.org/10.1029/2024JC022023>
- Grone, J., Poirier, C., **Abbott K.**, Wittmers, F., Jaeger, G.S., Mahadevan, A., Worden, A.Z. (2024). *A single Prochlorococcus ecotype dominates the tropical Bay of Bengal with ultradian growth.* Environmental Microbiology, 26(3). <https://doi.org/10.1111/1462-2920.16605>

3. **Abbott, K.**, Richards, M. (2020). *Elastic flexure of young, overlapping basaltic lava flows offshore the Galápagos and Hawaiian islands: Observations, modeling, and thermal/chronological analysis*. *Geophysics, Geochemistry, Geosystems*, 21(3). <https://doi.org/10.1029/2019GC008864>

SELECTED PRESENTATIONS

* indicates authors contributed equally

1. **Abbott, K.**, Mahadevan, A. (2025) *Why is the monsoon coastal upwelling signal subdued in the Bay of Bengal?*. Invited seminar for EKAMSAT Science Seminar Series, virtual.
2. **Abbott, K.**, Matantseva, O., Spezzano, R., Wittmers, F., Van Mooy, B., Worden, A.Z., Mahadevan, A. (2024) *Biological Transformations During Submesoscale Subduction*. Talk at the Ocean Sciences Meeting; New Orleans, LA.
3. Mahadevan A., **Abbott, K.**, He, J. (2024) *Suppression of coastal upwelling*. Talk at the Ocean Sciences Meeting; New Orleans, LA.
4. **Abbott, K.**, Mahadevan, A. (2024) *Why is the monsoon coastal upwelling signal subdued in the Bay of Bengal?* Poster at the Graduate Climate Conference; Woods Hole, MA.
5. **Abbott, K.**, Matantseva, O., Spezzano, R., Van Mooy, B., Worden, A., Mahadevan, A. (2023) *Observations of microbial community respiration in the Balearic Sea*. Poster at the Ocean Twilight Zone Symposium; Woods Hole, MA.
6. **Abbott, K.**, Matantseva, O., Spezzano, R., Worden, A., Mahadevan, A. (2023) *Phytoplankton community composition and response to submesoscale subduction in the Balearic Sea*. Poster at the Ocean Carbon & Biogeochemistry Summer Workshop; Woods Hole, MA.
7. **Abbott, K.**, Mahadevan, A., Matantseva, O., Spezzano, R., Worden, A. (2023) *Shifts in the microbial community during dark incubations on board CALYPSO 2022*. Talk at the CALYPSO DRI spring meeting; Padua, Italy.
8. **Abbott, K.**, Mahadevan, A., Pachiadaki, M., Freilich, M. (2022) *Microbial community composition and response to subduction in the Mediterranean Sea*. Talk at the CALYPSO DRI fall meeting; Boston, MA.
9. Middleton L.*, **Abbott K.***, Mahadevan A. (2022). *CALYPSO: Initial insights on the role of submesoscale subduction for biogeochemical cycling in the Balearic Sea*. Poster at the Ocean Carbon & Biogeochemistry Summer Workshop; Woods Hole, MA.

TEACHING

WHOI high-performance computing workshop Fall 2024
(co-organized with Anthony Meza)

MIT 12.800 Fluid Dynamics of the Atmosphere and Ocean Fall 2023
Teaching assistant for Drs Amala Mahadevan and Claudia Cenedese
• Overall rating 7.0/7.0, 14 respondents

WHOI summer math review lecturer Summer 2021, 2022, 2023
Multivariable Calculus, Ordinary Differential Equations

The Carpentries workshop teaching assistant 2020 - 2024

- Summer 2024 (2-day workshop): Taught incoming WHOI summer student fellows and PhD students introductory programming in Bash and Python
- Summer 2021 (4-day workshop): Taught incoming WHOI summer student fellows and PhD students introductory programming in Bash and Python
- Fall 2020 (1-day workshop): Taught WHOI technical and scientific staff how to use Python to analyze geospatial data

American Museum of Natural History instructor, BridgeUP STEM

2018 - 2019

- Curriculum available at <https://github.com/amnh/BridgeUP-STEM-Oceans-Six>

LEADERSHIP AND SERVICE

- Reviewer for Geophysical Research Letters

Seminars and meetings

- Co-organizer, MIT Program in Atmospheres, Oceans and Climate Colloquium 2022-23
- Co-organizer, CALYPSO DRI fall meeting September 2022
- Co-lead for CALYPSO DRI biology working group October 2022 - present

Diversity, Equity and Inclusion

- Joint Program Applicant Support & Knowledgebase (JP ASK) board member August 2022 - present

OUTREACH

- MIT Ocean Science and Engineering Systems Forum panelist 2024
- Penikese Island School Science + Nature Summer Camp July 2022, '23, '24
- Ocean HackWeek, virtual August 2020
- NYC Astronomy on Tap talk on detecting ocean carbon from space 2019
- Watershed Stewards Program (AmeriCorps) 2017-2018
- Taught three classrooms (more than 60 students) a six-week curriculum about environmental science and conservation
- Led outdoor education activities for local elementary and middle schools in Klamath-Trinity River and Humboldt communities

MENTORING

- Peer mentor for MIT-WHOI PhD student Ashley Scheffler 2023 - present
- JP ASK student mentor (10) Fall 2020 - present
- Peer mentor for MIT EAPS undergraduate students (2) 2021 - 2023
- Peer mentor for WHOI Summer Student Fellow (2) 2022, 2024

FIELDWORK

- AR-80 Joint Program student cruise (New England shelf break) Nov. 17 - 19, 2023
- Student technical lead, biological sampling

CALYPSO ONR DRI cruise (Balearic Sea)

Feb. 17 - March 11, 2022

- Biogeochemical sampling co-lead

NASA Sub-Mesoscale Ocean Dynamics Experiment pilot cruise (San Francisco coast)

Oct. 19 - Nov. 8, 2021

- Biogeochemical sampling and underway CTD operations

AWARDS AND HONORS

MIT EAPS Award for Excellence in Teaching

2024

NASA group achievement award (awarded to S-MODE science team)

2024

AMNH Hackathon “Most innovative solution”

2019

Society of Professional Journalists finalist for news reporting

2017

Phi Beta Kappa

2017

Summer of Applied Geophysical Experience

2016