

Lilian (Lily) Dove

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Education

California Institute of Technology

Ph.D. in Environmental Science and Engineering

Thesis title: *Impacts of Zonal Asymmetry on Southern Ocean Dynamics and Biogeochemistry*

Pasadena, CA

June 2023

California Institute of Technology

M.S. in Environmental Science and Engineering

Pasadena, CA

June 2021

Massachusetts Institute of Technology

B.S. in Earth, Atmospheric and Planetary Science

Cambridge, MA

June 2018

Professional Appointments

Brown University

NOAA Climate & Global Change Postdoctoral Fellow

Providence, RI

September 2023 - present

Publications

- Balwada, D., Gray, A.R., **Dove, L.A.**, Thompson, A.F. (2024). Tracer Ventilation, Stirring, and Variability in the Antarctic Circumpolar Current near the Southwest Indian Ridge. *Journal of Geophysical Research: Oceans*, 129, 1.
- Erickson, Z.K., Fields, E., Johnson, L., Thompson, A.F., **Dove, L.A.**, D'Asaro, E.A., Siegel, D.A. (2023). Eddy Tracking from *in situ* and Satellite Observations. *Journal of Geophysical Research: Oceans*, 128, 8.
- Swart, S., du Plessis, M.D., Nicholson, S-A., **Dove, L.A.**, Thomalla, S., Thompson, A.F., Biddle, L., Edholm, J.M., Giddy, I., Heywood, K.J., Lee, C., Mahadevan, A., Monteiro, P.M.S., Shilling, G., de Souza, R.B. (2023). The Southern Ocean Mixed Layer and its Boundary Fluxes: Fine-scale Observational Progress and Future Research Priorities. *Philosophical Transactions of the Royal Society A*, 381, 2249.
- **Dove, L.A.**, Viglione, G.A., Thompson, A.F., Flexas, M.M., *Cason, T.R., Sprintall, J. (2023). Controls on Wintertime Ventilation in Southern Drake Passage. *Geophysical Research Letters*, 50, 5.
- **Dove, L.A.**, Balwada, D., Thompson, A.F., Gray, A.R. (2022). Enhanced Ventilation in Energetic Regions of the Antarctic Circumpolar Current, *Geophysical Research Letters*, 49, 13.
- **Dove, L.A.**, Thompson, A.F., Balwada, D., Gray, A.R. (2021). Observational Evidence of Ventilation Hotspots in the Southern Ocean, *Journal of Geophysical Research: Oceans*, 126, 7.
- Wolf, M.J., Goodell, M., Dong, E., **Dove, L.A.**, Zhang, C., Franco, L.J., Shen, C., Rutkowski, E.G., Narducci, D.N., Mullen, S., Babbitt, A.R., and Cziczo, D.J. (2020). A Link between the Ice Nucleation Activity of Sea Spray Aerosol and the Biogeochemistry of Seawater, *Atmospheric Chemistry and Physics* 20, 23, 15341-15356.
- Wolf, M.J., Coe, A., **Dove, L.A.**, Zawadowicz, M.A., Dooley, K., Biller, S.J., Zhang, Y., Chisholm, S.W., Cziczo, D.J. (2019). Investigating the Heterogeneous Ice Nucleation of Sea Spray Aerosols Using *Prochlorococcus* as a Model Source of Marine Organic Matter. *Environmental Science and Technology* 53, 3, 1139-1149.

Submitted Publications

- Thompson, A.F., **Dove, L.A.**, *Flint, E., Lacour, L., Boyd, P.W. Interactions between Multiple Physical Particle Injection Pumps in the Southern Ocean. In revision at *Global Biogeochemical Cycles*.
- **Dove, L.A.**, Singer, C.E., Murphy, S.E. Bringing a Lens of Equity to Geoscience Qualifying Examinations. In revision at *AGU Advances*.

Publications in Preparation (submission within 2 months)

- Larson, A., **Dove, L.A.**, Pradhanang, S.M., Boving, T., Shafqat Akanda, A. Holistic Water Cycle Analysis of Two Transboundary River Watersheds: Leveraging the Confluence of Climate Model, Satellite, Ground Truth, and Machine Learning Signal Processing Technologies. In preparation for submission to *Water Resources Research*.
- Song, S., Nachod, Z., Lavin, P.D., **Dove, L.A.**, Balwada, D., Thompson, A.F., Gray, A.R. Random Forest Regression on multi-platform, *in-situ* ocean observations: Investigating high-frequency nutrient dynamics in the Southern Ocean. In review at *Artificial Intelligence for the Earth Systems*.
- **Dove, L.A.** & Freilich, M.A. The Biogeochemical Transition Layer. In preparation for submission to *Communications Earth & Environment*.

* denotes student advisees

Honors and Awards

- Polar Science Early Career Community Office BAJEDI Grant (2023)
- NOAA Climate & Global Change Postdoctoral Fellowship (2023-2025)
- Linde Center Community Building Award (2023)
- Caltech Certificate of Practice in Effective Teaching (2023)
- Richard H. Jahns Teaching Award (2022)
- Caltech Inclusion, Diversity, Equity, and Accessibility (IDEA) Advocate Award (2022)
- Resnick Sustainability Institute Scholar (2020)
- National Science Foundation Graduate Research Fellowship (2019-2022)
- American Meteorological Society First-Year Graduate Fellowship (2018)
- MIT Department of Earth, Atmospheric, and Planetary Science Excellence Award (2017)

Presentations

- Stanford University Atmosphere & Ocean Science Seminar, Palo Alto, CA. April 2024. Talk.
- University of Rhode Island Physical Oceanography Seminar, Kingston, RI. April 2024. Talk.
- Boston College Earth & Environmental Science Seminar, Boston, MA. March 2024. Talk.
- Ocean Sciences Meeting, New Orleans, LA. February 2024. Talk and poster.
- Boston University Earth & Environment Seminar, Boston, MA. December 2023. Talk.
- Brown DEEPS Climate & Environment Seminar, Providence, RI. October 2023. Talk.
- Ocean Twilight Zone Symposium, Woods Hole, MA. September 2023. Poster.
- Southern Ocean Observing System Symposium, Hobart, Australia. August 2023. Talk.
- Polar Marine Science Gordon Research Conference, Ventura, CA. March 2023. Poster.
- GO-BGC Webinar, virtual. February 2023. Talk.
- University of Washington Physical Oceanography Seminar, Seattle, WA. October 2022. Talk.

- FilaChange Workshop, Providence, RI. August 2022. Talk.
- AMS Conference on Polar Meteorology and Oceanography, Madison, WI. August 2022. Talk.
- SOCCOM Annual Meeting, virtual. June 2022. Talk.
- Caltech Environmental Science & Engineering Seminar, Pasadena, CA. May 2022. Talk.
- Royal Society Southern Ocean Meeting, virtual. May 2022. Poster.
- Ocean Sciences Meeting, virtual. March 2022. Talk.
- Caltech Environmental Science and Engineering Seminar, Pasadena, CA. December 2021. Talk.
- Caltech Science and Society Seminar, Pasadena, CA. October 2021. Talk.
- Ocean Carbon & Biogeochemistry Summer Workshop, virtual. June 2021. Poster.
- Graduate Climate Conference, virtual. October 2020. Talk.
- Caltech FUTURE Ignited, virtual. October 2020. Talk for a general audience.
- SOCCOM Annual Meeting, virtual. June 2020. Talk.
- Explore Caltech, virtual. May 2020. Talk for a general audience.
- Ocean Sciences Meeting, San Diego, CA. February 2020. Poster.
- EAPS Student Achievement Seminar, Cambridge, MA. May 2018. Talk.
- Technion Environmental Engineering Seminar, Haifa, Israel. August 2017. Talk.
- MIT Environmental Engineering Seminar, Cambridge, MA. May 2017. Talk.

Media and Work for a General Audience

- Here's what makes the Drake Passage one of the deadliest places on Earth (2024). Quoted in *National Geographic*.
- Exploring Our Blue Planet with Underwater Robots (2023). *Caltech Science Journey* on YouTube.
- In the turbulent Drake Passage, scientists find a rare window where carbon sinks quickly into the deep ocean (2023). Article in *The Conversation*.
- How Oceanographers Explore our Blue Planet (2020). *Explore Caltech* on YouTube.

Academic and University Service

Scientific Community Service:

- **Peer Reviewer for:** Nature Communications, Geophysical Research Letters, Journal of Geophysical Research: Oceans, Frontiers in Marine Science, Progress in Oceanography
- **Session Organizer for:** AMS Conference on Polar Meteorology and Oceanography, Gordon Research Seminar on Polar Marine Science, AGU Ocean Sciences
- **Co-organizer** of the Polar Oceans Early Career Discussion Hour
- **Moderator** for the Town Hall on Supporting Early Career Researchers in Polar Oceanography

University Service:

- Caltech Teaching Conference panelist September 2022
- Caltech Equity and Title IX Advocate September 2021-June 2023
- Environmental Science & Engineering student representative June 2021-June 2022
- Unlearning Racism in Geoscience (URGE) participant January 2021-present

Teaching

Introduction to Atmospheric Dynamics (EEPS 1510) Instructor of Modules 1 and 2, Brown University	Spring 2024
Caltech Teaching Conference Facilitator for the Workshop on Effective Teaching	September 2021 & 2022
Earth's Climate (ESE 1) Teaching Assistant and Guest Lecturer, Caltech	Spring 2022
Earth's Oceans (ESE 102) Teaching Assistant, Caltech	Fall 2019 & 2020

Mentoring

Ayushman Choudhury Brown University UTRA Fellow Observations of Carbon Fluxes at the Submesoscale from Ocean Gliders and NASA SWOT	Spring 2024
Taylor Cason Caltech WAVE Fellow Wintertime Ventilation in Drake Passage from Underwater Autonomous Vehicles and Satellites	Summer 2022
Ellie Flint Caltech WAVE Fellow Quantifying Carbon Export in the Southern Ocean: Observations from Ocean Gliders	Summer 2021

Research Cruises

GO-SHIP P02 Leg 2 <i>RV Roger Revelle</i> Lowered Acoustic Doppler Current Profiler (LADCP) operations and outreach coordination along a decadal hydrographic survey line. 34 days.	June-July 2022
NBP 20-02: Thwaites Glacier <i>RVIB Nathaniel B. Palmer</i> Seaglider and BGC-Argo float deployment and hydrographic survey in the Bellingshausen and Amundsen Seas. 60 days.	January-March 2020
Florida Straits <i>SSV Corwith Cramer</i> Study of the production and dispersion of sea spray aerosol at air-sea interface. 5 days.	March 2018

Outreach

· Letters to a Pre-Scientist	September 2023-present
· Creative Tuition Collective & British Antarctic Survey career speaker	June 2023
· <i>Project Scientist</i> STEM Superstar (2x yearly)	April 2021-present
· Caltech FUTURE Ignited science presenter	October 2020
· Pasadena Unified School District science night presenter (6x yearly)	September 2020-June 2023
· <i>Adopt-a-Float</i> SOCCOM representative	September 2019-September 2021
· Los Angeles County Science Fair judge	April 2019 & 2022
· MIT undergraduate admissions alumni interviewer	2019-present