

Lilian (Lily) Dove

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Education

California Institute of Technology Ph.D. in Environmental Science and Engineering Thesis title: <i>Impacts of Zonal Asymmetry on Southern Ocean Dynamics and Biogeochemistry</i>	Pasadena, CA 2023
California Institute of Technology M.S. in Environmental Science and Engineering	Pasadena, CA 2021
Massachusetts Institute of Technology B.S. in Earth, Atmospheric and Planetary Science	Cambridge, MA 2018

Professional Appointments

Assistant Professor in Earth & Atmospheric Sciences Georgia Institute of Technology	Atlanta, GA 2025 - present
NOAA Climate & Global Change Postdoctoral Fellow hosted by Mara Freilich (Brown University)	Providence, RI 2023 - 2025

Honors and Awards

- NOAA Climate & Global Change Postdoctoral Fellowship (2023-2025)
- Caltech 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)
- NSF Graduate Research Fellowship (2019-2022)
- American Meteorological Society First-Year Graduate Fellowship (2018)
- MIT Department of Earth, Atmospheric, and Planetary Science Excellence Award (2017)

Publications

* denotes student advisees

- *Gonzalez, M.E., **Dove, L.A.**, Freilich, M.A. (2025). Distribution and Transport of Antarctic Winter Water Biogeochemical Properties. *Geophysical Research Letters*.
- **Dove, L.A.** (2025). Observing Transient Ocean Currents from Space with Radar Interferometry. *Nature Reviews Earth & Environment*.
- Thompson, A.F., **Dove, L.A.**, *Flint, E., Lacour, L., Boyd, P.W. (2024). Interactions between Multiple Physical Particle Injection Pumps in the Southern Ocean. *Global Biogeochemical Cycles*, 38.
- Wilson, E.A., **Dove, L.A.**, Gray, A.R., MacGilchrist, G., Purkey, S., Thompson, A.F., Youngs, M.K., Diggs, S., Balwada, D., Campbell, E.C., Talley, L.D. (2024). Future Priorities for Observing the Dynamics of the Southern Ocean. *Bulletin of the American Meteorological Society*.
- **Dove, L.A.**, Singer, C.E., Murphy, S.E. (2024). Bringing a Lens of Equity to Geoscience Qualifying Examinations. *AGU Advances*, 5.

- 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

- Song, S., Lavin, P.D., Gray, A.R., Nachod, Z., Balwada, D., **Dove, L.A.**, Thompson, A.F. (in revision at *Artificial Intelligence for the Earth Systems*). Random Forest Regression on Multi-platform, *in-situ* Ocean Observations: Investigating High-frequency Nutrient Dynamics in the Southern Ocean.
- **Dove, L.A.**, Freilich, M.A., Siegelman, L., Fox-Kemper, B., Hall, P. (in revision at *Journal of Physical Oceanography*). Pycnocline Stratification Shapes Submesoscale Vertical Tracer Transport.
- Freilich, M.A. & **Dove, L.A.** (in revision at *Communications Earth & Environment*). Perspective: Physical Drivers of Heterogeneous Mesopelagic Biogeochemistry.

Publications in Preparation (submission within 2 months)

- Thompson, A.F., **Dove, L.A.**, Tranchant, Y-T., Klein, P., Peña-Molino, B., Herraiz-Borreguero, L., Legresy, B., Carli, E., Siegelman, L. (in preparation for submission to *Nature Communications*). The Dynamics of Southern Ocean Deep Subduction Events from Coincident SWOT and Glider Observations.
- Lacour, L., Briggs, N., Petiteau, L., Bressac, M., Guidi, L., Fernandez Castro, B., Thompson, A.F., **Dove, L.A.**, Picheral, M., Catalano, C., Schmechtig, C., Leymarie, E., Poteau, A., Claustre, H., Boyd, P.W. (in preparation for submission to *Proceedings of the National Academy of Sciences*). Particle Size Sets Carbon Penetration Depth in the Subantarctic Ocean.
- **Dove, L.A.**, Wood, M., Pickart, R. S., et al. (in preparation for submission to *Journal of Geophysical Research: Oceans*). Anomalously Fresh Autumn in the Chukchi Sea Driven by Sea Ice and Storms.

Presentations

* denotes invited talks

- US CLIVAR Summit, Boulder, CO. July 2025. *
- WHOI Physical Oceanography Seminar, Falmouth, MA. May 2025. *
- EGU General Assembly, virtual. April 2025.
- UMass Amherst Environmental Engineering Seminar, Amherst, MA. February 2025. *
- AGU Annual Fall Meeting, Washington DC. December 2024. *
- NASA JPL Ocean & Cryosphere Seminar, Pasadena, CA. October 2024. *
- Rutgers University Marine & Coastal Science Seminar, New Brunswick, NJ. October 2024. *
- Georgia Tech Earth & Atmospheric Sciences Seminar, Atlanta, GA. September 2024. *
- Ocean Transport and Eddy Energy Climate Process Team, Providence, RI. August 2024.
- Ocean Mixing Gordon Research Seminar, South Hadley, MA. June 2024.
- Stanford University Atmosphere & Ocean Science Seminar, Palo Alto, CA. April 2024. *
- University of Rhode Island Physical Oceanography Seminar, Narragansett, RI. April 2024. *
- Boston College Earth & Environmental Science Seminar, Boston, MA. March 2024. *
- Ocean Sciences Meeting, New Orleans, LA. February 2024.
- Boston University Earth & Environment Seminar, Boston, MA. December 2023. *
- Brown University Climate & Environment Seminar, Providence, RI. October 2023.
- Southern Ocean Observing System Symposium, Hobart, Australia. August 2023.
- GO-BGC Webinar, virtual. * February 2023.
- University of Washington Physical Oceanography Seminar, Seattle, WA. October 2022. *
- FilaChange Workshop, Providence, RI. August 2022.
- SOCCOM Annual Meeting, virtual. June 2022.
- Ocean Sciences Meeting, virtual. March 2022.
- Caltech Environmental Science & Engineering Seminar, Pasadena, CA. December 2021.
- Graduate Climate Conference, virtual. October 2020.
- SOCCOM Annual Meeting, virtual. June 2020.
- Ocean Sciences Meeting, San Diego, CA. February 2020.
- MIT EAPS Student Achievement Seminar, Cambridge, MA. May 2018.
- Technion Environmental Engineering Seminar, Haifa, Israel. August 2017.
- MIT Environmental Engineering Seminar, Cambridge, MA. May 2017.

Media and Work for a General Audience

- Tagging seals with sensors helps scientists track ocean currents and climate change (2024). Article in *The Conversation*. Interviewed on KCBS Radio (San Francisco) and CKNW Radio (Vancouver).
- 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 Service

- **Peer Reviewer** for Science Advances, Nature Communications, AGU Advances, Journal of Physical Oceanography, Geophysical Research Letters, Journal of Geophysical Research: Oceans, Frontiers in Marine Science, Progress in Oceanography, Earth System Science Data
- **Session Organizer** of Gordon Research Seminar on Polar Marine Science, AGU Ocean Sciences, Future of Southern Ocean Dynamics meeting
- **Moderator** of the Transitioning into, out of, and around Climate Research panel (2025) and Supporting Early Career Researchers in Polar Oceanography town hall (2023)
- **Steering Committee Member** of Mentoring Women in Physical Oceanography to Increase Retention (MPOWIR; 2024-2027)
- **Panel Member** of US CLIVAR Phenomena, Observations, and Synthesis Panel (2025-2029)

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

Maggie Gonzalez Student at Loyola University Chicago	Summer 2024
Ayushman Choudhury Now a Ph.D. student at University of Chicago	Spring 2024 - Spring 2025
Taylor Cason Now a Ph.D. student at University of Colorado Boulder	Summer 2022
Ellie Flint Now a Senior Project Engineer at Swinerton Builders	Summer 2021

Research Cruises

NSF/UNOLS Polar Chief Scientist Training Cruise USCGC <i>Healy</i> , 12 days. Chief scientist education, shoreside logistics, and CTD operations in the Chukchi Sea.	October 2024
GO-SHIP P02 RV <i>Roger Revelle</i> , 34 days. LADCP operations and outreach coordination along a North Pacific decadal hydrographic survey line.	June-July 2022
NBP 20-02: Thwaites Glacier RVIB <i>Nathaniel B. Palmer</i> , 60 days. Seaglider and BGC-Argo deployment and hydrographic survey in the Bellingshausen and Amundsen Seas.	January-March 2020
Introduction to Field Oceanography SSV <i>Corwith Cramer</i> , 5 days. Study of the production and dispersion of sea spray aerosol at air-sea interface in the Florida Straits.	March 2018

Outreach

- Letters to a Pre-Scientist September 2023-present
- Creative Tuition Collective & British Antarctic Survey career speaker June 2023
- *Project Scientist* STEM Superstar (2x yearly) April 2021-present
- Pasadena Unified School District science night presenter (6x yearly) September 2020-June 2023
- *Adopt-a-Float* SOCCOM representative September 2019-September 2021
- Los Angeles County Science Fair judge April 2019 & 2022