

STEPHANIE M. LIM

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NASA Jet Propulsion Laboratory, California Institute of Technology
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EDUCATION

Stanford University

Ph.D. Earth System Science

Sep 2025

Dissertation: “Primary producers in the changing polar oceans”

Scripps College

B.A. Biology with honors, *summa cum laude*

May 2018

Minor in Dance

Thesis: “Assessing loss rates of a developing red tide at a population level”

RESEARCH EXPERIENCE

Jet Propulsion Laboratory

Sep 2026 – Present

Postdoctoral Fellow

Pasadena, CA

- Polar marine biogeochemistry
- Methods: data assimilative modeling
- Advisor: Dr. Michelle Gierach

Stanford University

Nov 2025 – Sep 2026

Postdoctoral Scholar

Stanford, CA

- Polar marine biogeochemistry
- Methods: satellite remote sensing
- Advisor: Dr. Kevin Arrigo

Stanford University

Sep 2019 – Sep 2025

Graduate Student Researcher

Stanford, CA

- Polar marine biogeochemistry
- Methods: satellite remote sensing, 1D radiative transfer and algal growth model, 3D sea ice growth model, research vessel-based sampling and experiments, NanoSIMS
- Advisor: Dr. Kevin Arrigo

Woods Hole Oceanographic Institution

Jul 2018 – Jun 2019

Research Assistant I

Woods Hole, MA

- Harmful algal bloom ecophysiology
- Methods: high resolution in situ instruments (e.g., CTD, IFCB), laboratory algal culture experiments, small boat sampling, microscopy and imaging, molecular techniques (e.g., DNA extraction, PCR, qPCR)
- Advisor: Dr. Michael Brosnahan

The Claremont Colleges
Undergraduate Research Assistant

Jan 2015 – May 2018
Claremont, CA

- Marine intertidal ecophysiology
- Methods: laboratory metabolic experiments, tide pool specimen collection
- Advisor: Dr. Sarah Gilman

Woods Hole Oceanographic Institution
Summer Student Fellow

Jun – Aug 2017
Woods Hole, MA

- Harmful algal bloom ecophysiology
- Methods: high resolution in situ instruments (e.g., CTD, IFCB)
- Advisors: Dr. Donald Anderson and Dr. Michael Brosnahan

University of Tasmania
Undergraduate Research Assistant

Apr – May 2017
Hobart, Tasmania, Australia

- Sea ice biogeochemistry
- Methods: 1D sea ice ecosystem model (LIM1D)
- Advisors: Dr. Delphine Lannuzel and Dr. Sébastien Moreau

GRANTS AND FELLOWSHIPS

NASA Postdoctoral Program Fellowship

Sep 2026 – Sep 2028
2 years of stipend and travel support

Climate and Global Change Postdoctoral Fellowship (Declined)

UCAR CPAESS

2026
2 years of stipend and travel support

International Postdoctoral Fellowship (Declined)

Ocean Frontiers Institute

2026
2 years of stipend and travel support

ARCS Foundation Scholar Award

Stanford University

Sep 2024 – Jun 2025
3 quarters of stipend and tuition

Stanford Graduate Fellowship

Stanford University

Sep 2019 – Aug 2024
3 years of stipend and tuition

NSF Graduate Research Fellowship

Sep 2019 – Aug 2024
3 years of stipend and tuition

NSF Research Grant for Doctoral Dissertation Research

“Dissolved organic nitrogen uptake by harmful algal blooms in the Chukchi Sea”

Sep 2021 – Aug 2024
\$40,000

Stanford Doerr School of Sustainability Graduate Research Grant

“Dissolved organic nitrogen uptake by harmful algal blooms in the Chukchi Sea”

May 2024
\$2,500

James E. Scripps Scholarship

Scripps College

Sep 2014 – May 2018
\$80,000 merit scholarship

Summer Student Fellowship (REU)

Woods Hole Oceanographic Institution

Jun – Aug 2017
Summer stipend

Bechtel Summer Research Fellowship

The Claremont Colleges

Jun – Aug 2017
Summer stipend

AWARDS

Earth System Science Award for DEI Leadership

Jun 2024

Stanford University

Sigma Xi Member

May 2018

Scripps College

Scientific research honor society

Phi Beta Kappa Member

May 2018

Scripps College

Academic honor society

PUBLICATIONS

1. **Lim, SM**, MM Mills, CM Payne, E Fachon, DM Anderson, RS Pickart, LS Lago, KR Arrigo. In press. Urea dominates summer nitrogen uptake in the Pacific Arctic Ocean during a harmful dinoflagellate bloom. *Harmful Algae*. DOI:[10.1016/j.hal.2026.103230](https://doi.org/10.1016/j.hal.2026.103230)
2. Proctor, C, MM Mills, GL van Dijken, JA Lauer, **SM Lim**, A Palm, CM Payne, RS Pickart, CW Mordy, E Li, M Prakash, KR Arrigo. 2026. Evolution of an extensive under-ice phytoplankton bloom in the Chukchi Sea. *Journal of Geophysical Research: Oceans*, 131(9): e2025JC023528. DOI:[10.1029/2025JC023528](https://doi.org/10.1029/2025JC023528)
3. Lauer, JA, GL van Dijken, MM Mills, RS Pickart, L Arlen, **SM Lim**, E Li, CM Payne, C Proctor, G Zhong, M Prakash, C Michel, KR Arrigo. 2026. Particle interceptor trap deployments demonstrate enhanced export driven by frontal dynamics in the Chukchi Sea. *Journal of Geophysical Research: Oceans*, 131(9): e2025JC023507. DOI:[10.1029/2025JC023507](https://doi.org/10.1029/2025JC023507)
4. Fachon, E, KR Schrage, LS Lago, M Pathare, **SM Lim**, CL Goethel. 2025. A high-density multi-species bivalve spawning event in the southern Chukchi Sea. *Marine Ecology Progress Series*, 773: 43–59. DOI:[10.3354/meps14981](https://doi.org/10.3354/meps14981)
5. **Lim, SM**, K Campbell, KR Arrigo. 2025. Primary production associated with sea ice. In DN Thomas (Ed.), *Sea Ice* (4th ed.). John Wiley & Sons, Ltd. DOI:[10.1002/9781394213764.ch12](https://doi.org/10.1002/9781394213764.ch12)
6. **Lim, SM**, GL van Dijken, KR Arrigo. 2023. Spatial and interannual variability of Antarctic sea ice bottom algal habitat, 2004–2019. *Journal of Geophysical Research: Oceans*, 128(9), e2023JC020055. DOI:[10.1029/2023JC020055](https://doi.org/10.1029/2023JC020055)
7. **Lim, SM**, CM Payne, GL van Dijken, KR Arrigo. 2022. Increases in Arctic ice algal habitat, 1985–2018. *Elementa: Science of the Anthropocene*, 10(1): 00008. DOI:[10.1525/elementa.2022.00008](https://doi.org/10.1525/elementa.2022.00008)
8. **Lim, SM**, S Moreau, M Vancoppenolle, F Deman, A Roukaerts, KM Meiners, J Janssens, D Lannuzel. 2019. Field observations and physical-biogeochemical modeling suggest low silicon affinity for Antarctic fast ice diatoms. *Journal of Geophysical Research: Oceans*, 124: 7837–7853. DOI:[10.1029/2018JC014458](https://doi.org/10.1029/2018JC014458)

TEACHING EXPERIENCE

The Oceans: An Introduction to the Marine Environment

Spring 2022, Spring 2024

Co-Instructor of Record

Stanford University

Remote Sensing of the Oceans

Winter 2023

Teaching Assistant

Stanford University

Basic Principles of Chemistry

Spring 2016, Fall 2017, Spring 2018

Course Tutor

The Claremont Colleges

MENTORING EXPERIENCE

Future Advancers of Science and Technology (FAST)

Oct 2019 – Mar 2023

Mentor

San Jose, CA

- Mentored high school students from under-resourced schools on a biweekly basis in developing and implementing an original, self-designed scientific research project over 7 months
- Served as primary mentor for 4 students (one per year)

Stanford University

Jun – Aug 2022

Mentor

Stanford, CA

- Mentored undergraduate intern (Kainani Tacazon, Chapman University) through an REU program for students from diverse backgrounds in a research project using satellite remote sensing to analyze the environmental conditions enabling harmful algal blooms in the Alaskan Arctic

Woods Hole Oceanographic Institution

Jan 2019

Mentor

Woods Hole, MA

- Supervised undergraduate intern (Margaret Libby, MIT) in a research project using molecular techniques to detect and quantify parasitic infection of a harmful algal blooms species on Cape Cod

Pomona Hope Community Center

Jun 2016 – May 2018

Volunteer and LA Urban Project Summer Intern

Pomona, CA

- Designed curriculum for, led workshops for, mentored, and tutored students of all grades (age 5-18) and ability levels from an under-resourced community in reading, writing, math, science, arts, gym, and garden activities

PRESENTATIONS

*denotes equal contributions

1. **Lim, SM**, GL van Dijken, CM Payne, KR Arrigo. Changes in light-based estimates of sea ice algal habitat in the Arctic and Antarctic. Geophysical Fluid Dynamics Laboratory, Princeton, NJ. May 2026. (Invited talk)
2. **Lim, SM**, CM Payne, GL van Dijken, KR Arrigo. Pan-Arctic increases in ice algal habitat, 1985-2018. Consortium for the Advancement of Marine Arctic Science Workshop, Monterey, CA. Apr 2026. (Talk)
3. **Lim, SM**, P Vyas*, Q Zhang*, G Zhong, JA Lauer, MM Mills, GL van Dijken, R Chajwa, C Proctor, M Prakash, KR Arrigo. Bridging scales from cell-level sinking dynamics to large-scale export in the Chukchi Sea. Consortium for the Advancement of Marine Arctic Science Workshop, Monterey, CA. Apr 2026. (Poster)
4. **Lim, SM**, P Vyas*, Q Zhang*, G Zhong, JA Lauer, MM Mills, GL van Dijken, R Chajwa, C Proctor, M Prakash, KR Arrigo. Bridging scales from cell-level sinking dynamics to large-scale export on an Arctic shelf. Ocean Sciences Meeting, Glasgow, Scotland. Feb 2026. (Talk)
5. **Lim, SM**, P Vyas*, Q Zhang*, G Zhong, JA Lauer, MM Mills, GL van Dijken, R Chajwa, C Proctor, M Prakash, KR Arrigo. Bridging scales from cell-level sinking dynamics to large-scale Arctic export. Monterey Bay Aquarium Research Institute, Monterey, CA. Feb 2026. (Invited talk)

6. **Lim, SM**, P Vyas*, Q Zhang*, G Zhong, JA Lauer, J Kaya, MM Mills, CM Payne, GL van Dijken, M Prakash, KR Arrigo. Sinking dynamics of phytoplankton and sea ice algae in the Chukchi Sea at the cellular level. Polar Marine Science Gordon Research Seminar and Conference, Lucca, Italy. Mar 2025. (Poster)
7. **Lim, SM**. Studying the polar oceans in the face of climate change. Scripps Presents @Noon STEM Series, Claremont, CA. Mar 2024. (Invited talk)
8. **Lim, SM**, MM Mills, CM Payne, E Fachon, RS Pickart, EG Muhlbach, DM Anderson, KR Arrigo. Dissolved nitrogen uptake by phytoplankton communities in the Western Arctic Ocean. Ocean Sciences Meeting, New Orleans, LA. Mar 2024. (Poster)
9. **Lim, SM**, GL van Dijken, CM Payne, KR Arrigo. Changes in light-based estimates of sea ice algal habitat in the Arctic and Antarctic. International Glaciological Society Global Seminar Series, Virtual. Apr 2023. (Invited talk)
10. **Lim, SM**, GL van Dijken, KR Arrigo. Melt date drives variability in Antarctic ice algal habitat. Polar Marine Science Gordon Research Seminar, Ventura, CA. Mar 2023. (Talk)
11. **Lim, SM**, GL van Dijken, KR Arrigo. Melt date drives variability in Antarctic ice algal habitat. Polar Marine Science Gordon Research Conference, Ventura, CA. Mar 2023. (Poster)
12. **Lim, SM**, CM Payne, GL van Dijken, KR Arrigo. Increases in Arctic ice algal habitat, 1985-2018. Ocean Sciences Meeting, Virtual. Mar 2022. (Talk)
13. **Lim, SM**, S Moreau, M Vancoppenolle, F Deman, A Roukaerts, KM Meiners, J Janssens, D Lannuzel. Field observations and physical-biogeochemical modeling suggest low silicon affinity for Antarctic fast ice diatoms. Ocean Sciences Meeting, San Diego, CA. Feb 2020. (Poster)

FIELD EXPERIENCE

Oceanographic Cruise, R/V Sikuliaq

Jun – Jul 2023 (45 days)

Bering & Chukchi Seas, Arctic Ocean

- Water samples, multi-core sediment samples, and cellular observations with the Gravity Machine

Oceanographic Cruise, R/V Norseman II

Aug – Sep 2022 (21 days)

Bering, Chukchi, & Beaufort Seas, Arctic Ocean

- Dissolved organic nitrogen samples and ^{15}N uptake rate incubations

Coastal Fieldwork

Mar – May 2019 (day trips)

Cape Cod, MA

- Instrument deployment and recovery, water samples, sediment cores, CTD surveys in a small salt-water kettle pond

Oceanographic Cruise, R/V Tioga

Jul 2017 (day trips)

Gulf of Maine & Bay of Fundy, Atlantic Ocean

- Water samples for harmful algal bloom detection

SERVICE

Reviewer for *Elementa: Science of the Anthropocene*, *Journal of Geophysical Research: Oceans*, *The Cryosphere*, *Biogeosciences*

Future Advancers of Science and Technology (FAST)

May 2022 – Present

Co-Director of Scholarships, formerly Development Officer

- FAST connects graduate student mentors with high school students from under-resourced schools in pursuing original, self-designed science and engineering projects
- Sought, applied to, and developed relationships with funding partners
- Led a team that proposed and established a [new college scholarship](#) (\$10k over 2 years to each recipient) beginning in 2023 and awarded annually to seniors graduating from FAST in partnership with the Grant Imahara STEAM Foundation. Currently managing the scholarship, including the yearly application design and selection process

Future Advancers of Science and Technology (FAST)

May 2020 – May 2022

Financial Officer

- Managed \$32,000/yr budget, processed and tracked expenses and reimbursements, and assisted with writing grant applications to fund the program

National Geographic Society Convening

Mar 2022

Scientist Participant (by invitation)

- Participated in six hour virtual convening of scientists and leaders to advise National Geographic and Rolex's Perpetual Planet program on "Systems Change in the Arctic Ocean Ecosystem"
- Identified major gaps and questions in our knowledge of the Arctic Ocean; advised National Geographic on future research programs focii

SCIENTIFIC OUTREACH

Public outreach talks (high school, undergraduates, retirement home)

Sep 2018 – Present

*Various: San Francisco, CA; Claremont, CA; Falmouth, MA***Letters to a Pre-Scientist (penpal)**

Aug 2019 – May 2020

Woods Hole Science Stroll (open house) booth

Aug 2017

*Woods Hole, MA***SKILLS**

Computer	Python (preferred), R (basic), MATLAB (basic), Fortran (basic), Git/GitHub, LaTeX, Microsoft Office, Google Drive, Adobe Photoshop, Adobe Illustrator, ImageJ, EcoTaxa
Instrumentation	NanoSIMS, FlowCam, Imaging FlowCytobot (familiar), Gravity Machine (familiar), high-speed microscale imaging system (familiar)
Laboratory	algal culture maintenance, DNA extraction, PCR, qPCR, light microscopy
Language	French (basic)
Certifications	PADI open water diver, basic small boat operations (Ocean Rescue Systems training)