

Megan R. Sullivan

S.T.E.M. Analyst; U.S. National Science Foundation, Directorate for Geosciences
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[Google Scholar](#)

RESEARCH INTERESTS

I am a biogeochemical oceanographer interested in how biological and physical processes together regulate ocean carbon and nutrient cycling. My research combines global biogeochemical inverse modeling, cellular-scale trait-based models, and satellite remote sensing to understand the mechanisms driving variability in organic matter production, export, and recycling. I am particularly interested in how phytoplankton physiology and stoichiometric flexibility influence the efficiency of the biological carbon pump and the long-term potential of ocean-based carbon dioxide removal strategies.

EDUCATION

PhD	University of California Irvine Earth System Science <i>Global Biogeochemical Impacts of Phytoplankton Stoichiometry</i> Doctoral Advisors: Dr. François Primeau & Dr. Adam Martiny	Nov. 2024
MS	University of California Irvine Earth System Science	Dec. 2021
BA	Johns Hopkins University Earth and Planetary Science (Honors) <i>Thesis: A 1-D Model of Biogeochemical Cycling at BATs</i> Thesis Advisors: Dr. Anand Gnanadesikan & Dr. Thomas Haine	May 2018

PUBLICATIONS

2026	Sullivan, M. , Primeau, F., Seo, H. Camps-Castella, J., Inomura, K., & Martiny, A. (2026) Decoupled timescales of organic carbon and phosphorus recycling in the global ocean. <i>Proceedings of the National Academy of Sciences</i> , 123 (8) e2514991123. https://doi.org/10.1073/pnas.2514991123
	Curry, R. Lomas, M., Sullivan, M. , Grundle, D. (2026) Annual net community production and carbon exports in the central Sargasso Sea from autonomous underwater glider observations. <i>Progress in Oceanography</i> , 240, 103619. https://doi.org/10.1016/j.pocean.2025.103619
2024	Sullivan, M. , Primeau, F., Hagstrom, G., Wang, W., & Martiny, A. (2024). Integrating Trait-Based Stoichiometry in a Biogeochemical Inverse Model Reveals Links Between Phytoplankton Physiology and Global Carbon Export. <i>Global Biogeochemical Cycles</i> , 38, e2023GB007986. https://doi.org/10.1029/2023GB007986
2021	Stanley, J. A., Van Parijs, S. M., Davis, G. E., Sullivan, M. , & Hatch, L. T. (2021). Monitoring spatial and temporal soundscape features within ecologically significant U.S. National Marine Sanctuaries. <i>Ecological Applications</i> 31(8):e02439. https://doi.org/10.1002/eap.2439

FELLOWSHIPS & AWARDS

Brython Davis Fellowship, UC Irvine	Spring 2024
Jenkins Family First Year Fellowship, UC Irvine Earth System Science	2019 – 2020
NOAA Ernest F. Hollings Undergraduate Scholarship	2016 – 2018

RESEARCH EXPERIENCE

S.T.E.M. Analyst U.S. National Science Foundation; Directorate for Geosciences Alexandria, VA	Sep. 2026 – Present
Postdoctoral Research Fellow University of Rhode Island; Graduate School of Oceanography Narragansett, RI	Dec. 2024 – Sep. 2026
Graduate Student Researcher University of California Irvine; Earth System Science Irvine, CA	Sep. 2019 – Dec. 2024
Mid-Atlantic Glider Initiative and Collaboration Intern Bermuda Institute of Ocean Sciences St. George's, Bermuda	Apr. – Aug. 2019
NOAA Hollings Undergraduate Research Intern NOAA Northeast Fisheries Science Center Woods Hole, MA	Jun. – Aug. 2017

TEACHING EXPERIENCE

Teaching Assistant University of California Irvine; Earth System Science Department	
– EARTHSS 3 – Oceanography	Winter 2024
– EARTHSS 116 – Environmental Data Analysis in MATLAB	Fall 2021; Fall 2023
– EARTHSS H30B & H30C – Honors Environmental Sustainability	Winter 2021; Spring 2021
– EARTHSS 7 – Physical Geology	Fall 2020; Spring 2022
S.T.E.M. Coordinator and Marine Science Teacher Pleasant Bay Community Boating Orleans, MA	Jun. – Aug. 2018
– Developed and instructed youth science courses (ages 10-17) based on U.S. sailing REACH science curriculum.	
Undergraduate Teaching Assistant Johns Hopkins University, Department of Physics and Astronomy	
– AS.PHYS.171.103 – General Physics I for Physical Science Majors	Sep. – Dec. 2015
High School Math and Science Tutor Math Geeks and Science Freaks Tutoring Houston, TX	Sep. 2018 – Mar. 2019
– Algebra I & II, geometry, calculus, pre-calculus, chemistry & physics	

SERVICE & COMMUNITY OUTREACH

Graduate Student Leadership Council UCI Earth System Science	Sep. 2022 – Sep. 2024
Graduate Student Peer Mentor UCI Earth System Science	Sep. 2020 – Aug. 2021
Stage Harbor Sailing School Science Education Volunteer Lesson on Phytoplankton Ecology (Ages 8-12) Chatham, MA	Aug. 2025
Marine Science Curriculum Consultant Crystal Cove Conservancy Newport Beach, CA	Sep. 2021 – Aug. 2023
Middle School Climate Science Education Volunteer CLEAN (Climate, Literacy, Empowerment And iNquiry) Orange County, CA	Jan. 2023 – Apr. 2023
Science Olympiad Volunteer Event Supervisor/ Exam Writer Orange County, CA	2022 – 2023
Student Mentor, Event Supervisor/ Exam Writer Baltimore, MD	2015 – 2018

CONFERENCE PRESENTATIONS & WORKSHOPS

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| 2026 | <p><i>Invited Talk</i>, Bohlen Seminar Series, Dept. of Marine Sciences, University of Connecticut: Elemental Ratios and the Ocean Carbon Sink</p> <p>Ocean Sciences Meeting 2026 (eLightning presentation): Linking Phytoplankton Physiology to Ocean Biogeochemistry via Macromolecular Resource Allocation Modeling</p> |
| 2025 | <p>Gordon Research Conference: Chemical Oceanography (Talk/Poster): Differential Cycling of Organic Carbon and Phosphorus Affects the Global Ocean Response to Perturbed Surface Production</p> <p>Eco-DAS (Ecological Dissertations in the Aquatic Sciences) Symposium: Perspectives on Artificial Intelligence in the Aquatic Sciences</p> |
| 2024 | <p>Ocean Sciences Meeting 2024 (Talk): Integrating Trait-Based Stoichiometry in a Biogeochemical Inverse Model Reveals Links Between Phytoplankton Physiology and Global Carbon Export</p> <p>3rd Annual SoCal BOOM (Poster): Integrating Trait-Based Stoichiometry in a Biogeochemical Inverse Model Reveals Links Between Phytoplankton Physiology and Global Carbon Export</p> |
| 2023 | <p>ASLO Aquatic Sciences Meeting 2023 (Talk): Bridging the Gap: Integrating Mechanistic Phytoplankton Stoichiometry with Global-Scale Inverse Modelling</p> <p>2nd Annual SoCal BOOM 2023 (Talk): Optimizing a Biogeochemical Inverse Model with Mechanistic Phytoplankton Stoichiometry</p> |
| 2022 | <p>1st Annual SoCal BOOM 2022 (Poster): Integrating Cellular-Level Mechanisms Controlling Phytoplankton Stoichiometry into a Global Biogeochemical Inverse Model</p> <p>Ocean Sciences Meeting 2022 (Poster): Integrating Cellular-Level Mechanisms Controlling Phytoplankton Stoichiometry into a Global Biogeochemical Inverse Model</p> |
| 2020 | <p>Ocean Sciences Meeting 2020 (Poster): Assessing Net Community Production in the Sargasso Sea Using Autonomous Underwater Glider Observations</p> |
| 2018 | <p>Ocean Sciences Meeting 2018 (Poster): Acoustic Stressors in National Marine Sanctuaries: Highlighting the Vessel Contribution to the Soundscape</p> |
| 2017 | <p>Gulf Coast Undergraduate Research Symposium 2017 (Talk): Highlighting the Vessel Contribution to the Soundscapes of National Marine Sanctuaries</p> <p>NOAA Hollings Undergraduate Research Symposium 2017 (Poster): Acoustic Stressors in National Marine Sanctuaries: Highlighting the Vessel Contribution to the Soundscape</p> |