

Hilde Oliver

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Updated 2023-11-15

EDUCATION

- 2019 **Ph.D.**, Marine Sciences
University of Georgia
- 2014 **B.S.**, Mathematics (emphasis in Applied Mathematics, minor in French)
University of South Carolina
Honors from the South Carolina Honors College, *magna cum laude*

APPOINTMENTS

- 2021 — **Assistant Scientist**
Woods Hole Oceanographic Institution
Department of Applied Ocean Physics and Engineering
Tenure-track position
- 2019 — 2021 **Postdoctoral Scholar**
Woods Hole Oceanographic Institution
Department of Applied Ocean Physics and Engineering
- 2014 — 2019 **Graduate Research Assistant**
University of Georgia
Department of Marine Sciences

RESEARCH INTERESTS

Physical-biological interactions. Ice melt effects on upper ocean physics and biogeochemistry. Fjord dynamics. Deep ocean-shelf interactions. Frontal systems. Iron cycling. Coupled physical-biogeochemical numerical modeling. Plankton imaging.

REFEREED PUBLICATIONS

Published

- [17] **Oliver, H.**, McGillicuddy, D. J., Krumhardt, K. M., Long, M. C., Bates, N. R., Bowler, B. C., Drapeau, D. T., & Balch, W. M. (2023). Environmental drivers of coccolithophore growth in the Pacific sector of the Southern Ocean. *Global Biogeochemical Cycles*, 37, e2023GB007751. <https://doi.org/10.1029/2023GB007751>
- [16] Hirzel, A. J., Alatalo, P., **Oliver, H.**, Petitpas, C. M., Turner, J. T., Zhang, W. G., & McGillicuddy, D. J. (2023). High Resolution Analysis of Plankton Distributions at the Middle Atlantic Bight Shelf-Break Front. *Continental Shelf Research*, 267, 105113. <https://doi.org/10.1016/j.csr.2023.105113>
- [15] **Oliver, H.**, Slater, D., Carroll, D., Wood, M., Morlighem, M., Hopwood, M. J. (2023). Greenland subglacial discharge as a driver of hotspots of increasing coastal chlorophyll since the early 2000s. *Geophysical Research Letters*, 50, e2022GL102689. <https://doi.org/10.1029/2022GL102689>
- [14] Zhang, W. G., Alatalo, P., Crockford, E.T., Hirzel, A. J., Meyer, M. G., **Oliver, H.**, Peacock, E., Petitpas, C. M., Sandwith, Z., Smith, W. O., Sosik, H. M., Stanley, R. H. R., Stevens, B. L. F., Turner, J. T., & McGillicuddy, D. J. (2023). Cross-shelf Exchange Associated with a Shelf-Water Streamer at the Mid-Atlantic Bight Shelf Edge. *Progress in Oceanography*, 210, 102931. <https://doi.org/10.1016/j.pocean.2022.102931>
- [13] Slater, D. A., Carroll, D., **Oliver, H.**, Hopwood, M. J., Straneo, F., Wood, M., Willis, J. K., & Morlighem, M. (2022). Characteristic depths, fluxes, and timescales for Greenland's tidewater glacier

- fjords from subglacial discharge-driven upwelling during summer. *Geophysical Research Letters*, 49, e2021GL097081. <https://doi.org/10.1029/2021GL097081>
- [12] **Oliver, H.**, Zhang, W. G., Archibald, K. M., Hirzel, A. J., Smith, W. O., Sosik, H. M., Stanley, R. H. R., & McGillicuddy, D. J. (2022). Ephemeral surface chlorophyll enhancement at the New England shelf break driven by Ekman restratification. *Journal of Geophysical Research: Oceans*, 127, e2021JC017715. <https://doi.org/10.1029/2021JC017715>
- [11] **Oliver, H.**, Zhang, W. G., Smith, W. O., Alatalo, P., Chappell, P. D., Hirzel, A. J., Selden, C. R., Sosik, H. M., Stanley, R. H. R., Zhu, Y., & McGillicuddy, D. J. (2021). Diatom Hotspots Driven by Western Boundary Current Instability. *Geophysical Research Letters*, 48, e2020GL091943. <https://doi.org/10.1029/2020GL091943> **Eos highlight.**
- [10] Smith, W. O., Zhang, W. G., Hirzel, A., Stanley, R. H. R., Meyer, M., Sosik, H. M., Alatalo, P., **Oliver, H.**, Sandwith, Z., Crockford, T., Peacock, E., Mehta, A., & McGillicuddy, D. J. (2021). A regional, early spring bloom of *Phaeocystis pouchetii* on the New England continental shelf. A Regional, Early Spring Bloom of *Phaeocystis pouchetii* on the New England Continental Shelf. *Journal of Geophysical Research: Oceans*, 126(2), 2020JC016856. <https://doi.org/10.1029/2020JC016856>
- [9] **Oliver, H.**, Castelao, R. M., Wang, C., & Yager, P. L. (2020). Meltwater-Enhanced Nutrient Export from Greenland's Glacial Fjords: A Sensitivity Analysis. *Journal of Geophysical Research: Oceans*, 125(7), 1–18. <https://doi.org/10.1029/2020JC016185>
- [8] Castelao, R. M., Luo, H., **Oliver, H.**, Rennermalm, Å. K., Tedesco, M., Bracco, A., Yager, P. L., Mote, T. L., & Medeiros, P. M. (2019). Controls on the transport of meltwater from the southern Greenland ice sheet in the Labrador Sea. *Journal of Geophysical Research: Oceans*, 124, 3551–3560. <https://doi.org/10.1029/2019JC015159>
- [7] **Oliver H.**, St-Laurent, P., Sherrell, R. M., & Yager, P. L. (2019). Modeling iron and light controls on the summer *Phaeocystis antarctica* bloom in the Amundsen Sea Polynya. *Global Biogeochemical Cycles*, 33, 570–596. <https://doi.org/10.1029/2018GB006168>
- [6] St-Laurent, P., Yager, P. L., Sherrell, R. M., **Oliver, H.**, Dinniman, M. S., & Stammerjohn, S. E. (2019). Modeling the Seasonal Cycle of Iron and Carbon Fluxes in the Amundsen Sea Polynya, Antarctica. *Journal of Geophysical Research: Oceans*, 124(3), 1544–1565. <https://doi.org/10.1029/2018JC014773>
- [5] Rognstad, R. L., Wethey, D. S., **Oliver, H.**, & Hilbish, T. J. (2018). Connectivity modeling and graph theory analysis predict recolonization in transient populations. *Journal of Marine Systems*, 183, 13–22. <https://doi.org/10.1016/j.jmarsys.2018.03.002>
- [4] **Oliver, H.**, Luo, H., Castelao, R. M., van Dijken, G. L., Mattingly, K. S., Rosen, J. J., Mote, T. L., Arrigo, K. R., Rennermalm, Å. K., Tedesco M., & Yager, P. L. (2018). Exploring the Potential Impact of Greenland Meltwater on Stratification, Photosynthetically Active Radiation, and Primary Production in the Labrador Sea. *Journal of Geophysical Research: Oceans*, 123, 2570–2591. <https://doi.org/10.1002/2018JC013802>
- [3] Arrigo, K. R., van Dijken, G. L., Castelao, R. M., Luo, H., Rennermalm, Å. K., Tedesco, M., Mote, T. L., **Oliver H.**, & Yager, P. L. (2017). Melting glaciers stimulate large summer phytoplankton blooms in southwest Greenland waters. *Geophysical Research Letters*, 44, 6278–6285. <https://doi.org/10.1002/2017GL073583>
- [2] **Oliver, H.**, Rognstad, R., & Wethey, D. (2015). Using meteorological reanalysis data for multi-decadal hindcasts of larval connectivity in the coastal ocean. *Marine Ecology Progress Series*, 530, 47–62. <https://doi.org/10.3354/meps11300>
- [1] Deiterding, R., Glowinski, R., **Oliver, H.**, & Poole, S. (2013). A Reliable Split-Step Fourier Method for the Propagation Equation of Ultra-Fast Pulses in Single-Mode Optical Fibers. *Journal of Lightwave Technology*, 31(12), 2008–2017. <https://doi.org/10.1109/JLT.2013.2262654>

Submitted/In Revision

- [3] Castelao, R. M., **Oliver, H.**, & Medeiros, P. M. (In Revision). Satellite-derived Lagrangian transport pathways in the Labrador Sea.
- [2] Gifford, I., Gangopadhyay, A., Andres, M., Gawarkiewicz, G., **Oliver, H.**, & Silver, A. (Submitted). The Synchronicity between the Gulf Stream Path and the Region of Maximum Wind Stress Curl.

- [1] Zhu, Y., Selden, C. R., McGillicuddy, D. J., Chappell, P. D., Zhang, W. G., Meyer, M. G., Crider, K., **Oliver, H.**, & Clayton, S. (In Revision). Contrasting Nitrogen and Nitrifier Dynamics in the Euphotic Zone across the Mid-Atlantic Bight Shelfbreak Front.

OTHER PUBLICATIONS

Palevsky, H.I., Clayton, S., Atamanchuk, D., Battisti, R., Batryn, J., Bourbonnais, A., Briggs, E. M., Carvalho, F., Chase, A. P., Eveleth, R., Fatland, R., Fogaren, K. E., Fram, J. P., Hartman, S. E., Le Bras, I., Manning, C. C. M., Needoba, J. A., Neely, M. B., **Oliver, H.**, Reed, A. C., Rheuban, J. E., Schallenberg, C., Vardaro, M. F., Walsh, I., Wingard, C. (2022) OOI Biogeochemical Sensor Data: Best Practices User Guide, Version 1.0.0. Ocean Observatories Initiative, Biogeochemical Sensor Data Working Group, 134pp. <http://dx.doi.org/10.25607/OBP-1865>

Oliver, H. (2019). Physical controls on light and nutrients in coastal regions receiving large fluxes of glacial meltwater. Doctoral Dissertation, University of Georgia.

Clarke, A., Peck, L. S. & **Oliver, H.** (2019), Polar Ecosystems, in Encyclopedia of Ocean Sciences (Third Edition), edited by J. K. Cochran, H. J. Bokuniewicz, and P. L. Yager, pp. 771–777, Academic Press, Oxford.

SELECTED AWARDS AND FELLOWSHIPS

| | |
|-------------|---|
| 2019 — 2021 | WHOI Weston Howland Jr. Postdoctoral Scholar Award |
| 2019 | UGA Marine Sciences Departmental Graduate Research Award |
| 2019 | AGU Outstanding Student Presentation Award |
| 2015 — 2019 | NSF Graduate Research Fellowship |
| 2014 — 2019 | UGA Presidential Graduate Fellowship |
| 2013, 2014 | Jeong S. Yang Award for Excellence in Undergraduate Mathematics |
| 2013 | Phi Beta Kappa |

SEMINARS

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| Oct. 2022 | Rutgers University Department of Marine and Coastal Sciences "Subsurface diatom hotspots in the Middle Atlantic Bight Slope Sea driven by Gulf Stream Intrusions." |
| Oct. 2022 | UConn Department of Marine Sciences "Subsurface diatom hotspots driven by Gulf Stream meandering." |
| Oct. 2021 | WHOI Coastal Ocean Fluid Dynamics Laboratory (COFDL) "What drives enhanced surface chlorophyll detected at the New England shelf break?" |
| Oct. 2021 | UMass Dartmouth School for Marine Science & Technology (SMAST) "Subsurface Diatom Hotspots in the Middle-Atlantic Bight Slope Sea Driven by Gulf Stream Meandering." |
| Aug. 2021 | WHOI Shelf and Slope Processes Seminar Series "Ephemeral surface chlorophyll enhancement at the New England shelf break driven by Ekman restratification." |
| Apr. 2021 | WHOI Department of Applied Ocean Physics & Engineering "Diatom Hotspots Driven by Western Boundary Current Instability." |
| Nov. 2020 | WHOI Polar Ecology Group "How does discharge from the Greenland Ice Sheet affect coastal primary productivity?" |
| Feb. 2020 | WHOI Department of Applied Ocean Physics & Engineering "Modeling the impacts of Greenland glacial runoff on phytoplankton light and nutrient limitation." |

Jun. 2019 UGA Department of Marine Sciences
"Physical controls on light and nutrients in coastal regions receiving large fluxes of glacial meltwater."

SERVICE

WHOI Committees: Women's Committee (2019-present), Committee on Diversity and Inclusion (2020-present), AOPE Seminar Coordinator (2022)

Community Committees and Working Groups: OCB Scoping Workshop: Building a Cost-effective Coastal Biogeochemical Observing Network in Collaboration with the Commercial Fishing Community (2023), Ocean Observatories Initiative BGC Sensor Working Group (2021-2022), Ocean Observatories Initiative Innovations Lab, Phase II (2021)

Co-convener: Ocean Sciences Meeting session "Shelf-break frontal dynamics: integrating biological, biogeochemical and physical observations for a holistic view of ecosystem function" (2022), Southeastern Biogeochemistry Symposium (SBS) Graduate Student Steering Committee (2016-2017)

Reviewer: Nature Climate Change, Frontiers in Marine Science, Geophysical Research Letters, Biogeosciences, Journal of Plankton Research, Journal of Geophysical Research: Oceans, Nature Geoscience, Journal of Advances in Modeling Earth Systems (JAMES), Communications Earth and Environment, Journal of Geophysical Research: Biogeosciences

Proposal Reviewer: National Science Foundation (NSF), The National Fund for Scientific and Technological Development (FONDECYT, Government of Chile)

MENTORING AND SUPERVISION

Students: Jan Śliwiński (2023—, Göteborgs Universitet Master in Marine Science, coadvised with Bastien Queste)

Postdocs: Adrienne Silver (2023—, WHOI Postdoctoral Investigator, coadvised with Glen Gawarkiewicz)

Technicians: Phoebe Oehmig (2021, WHOI Engineering Assistant III)

TEACHING

Guest lectures

Spring 2019 Primary productivity, Marine Biology (undergraduate), UGA
Spring 2019 Antarctic Ecosystems (Virtual), Intro. to the Marine Environment (undergraduate), UGA
Spring 2019 Low frequency variability, Migrations in the Sea (undergraduate), UGA
Fall 2018 Trace metals in the sea, Chemical and Biological Oceanography (undergraduate), UGA
Fall 2018 El Niño, Introduction to the Marine Environment (undergraduate), UGA

OCEANOGRAPHIC FIELDWORK

2022 R/V Nathaniel B. Palmer, 63 days, Amundsen Sea/Dotson and Getz Ice Shelves
Pigment and nutrient sampling; ASD, IFCB, miniFIRe, PicoLiF operations
Project: Accelerating Thwaites Ecosystem Impacts for the Southern Ocean (ARTEMIS)
Chief Scientists: Patricia Yager (UGA), Rob Hall (University of East Anglia)

2020-2021 R/V Roger Revelle, 60 days, Pacific Sector of the Southern Ocean
Video Plankton Recorder operations
Project: Biogeochemical and Physical Conditioning of Sub-Antarctic Mode Water
Chief Scientist: Barney Balch (Bigelow)

2019 R/V Thomas G. Thompson, 13 days, New England Shelfbreak
CTD profiling and real-time data analysis
Project: Shelfbreak Productivity Interdisciplinary Research Operation at the Pioneer Array

- (SPIROPA)
Chief Scientist: Dennis McGillicuddy (WHOI)
- 2019 R/V Ronald H. Brown, 13 days, New England Shelfbreak
CTD profiling and real-time data analysis
Project: Shelfbreak Productivity Interdisciplinary Research Operation at the Pioneer Array (SPIROPA)
Chief Scientist: Dennis McGillicuddy (WHOI)
- 2014 R/V Nathaniel B. Palmer, 32 days, West Antarctic Peninsula
Pigments, nutrients, and microscopy
Project: Adaptive Responses of Phaeocystis populations in Antarctic ecosystems (Phantastic II)
Chief Scientist: Kevin Arrigo (Stanford)

CONTRIBUTED ABSTRACTS (FIRST-AUTHORED ONLY)

- Feb. 2023 **Oliver, H.**, Slater, D., Carroll, D., Wood, M., Morlighem, M., & Hopwood, M. J. "Biogeochemical impacts of subglacial discharge released from Greenland tidewater glaciers." Oral Presentation, Ocean Sciences Meeting, New Orleans, LA.
- Sep. 2023 **Oliver, H.**, McGillicuddy, D. J., Krumhardt, K. M., Long, M. C., Bates, N. R., Bowler, B. C., Drapeau, D. T., & Balch, W. M. "The dynamics controlling Southern Ocean coccolithophore growth: observations and models." Advances in Coccolithophore Research Workshop, Norway.
- Jun. 2023 **Oliver, H.**, Slater, D., Carroll, D., Wood, M., Morlighem, M., & Hopwood, M. J. "Pan-Greenland impacts of subglacial discharge on nutrients and coastal chlorophyll." Poster Presentation, Gordon Research Conference for Coastal Ocean Dynamics, Bryant University, RI.
- Jun. 2023 **Oliver, H.**, McGillicuddy, D. J., Krumhardt, K. M., Long, M. C., Bates, N. R., Bowler, B. C., Drapeau, D. T., & Balch, W. M. "Controls on coccolithophore growth in the Pacific sector of the Southern Ocean." Oral Presentation, ASLO 2023 Aquatic Sciences Meeting, Palma de Mallorca, Spain.
- Jan. 2023 **Oliver, H.** "Slope sea diatom hotspots driven by western boundary current instability." Oral Presentation (Virtual), The Sixth Xiamen Symposium on Marine Environmental Sciences (XMAS-VI), Xiamen, China.
- Jun. 2022 **Oliver, H.**, Zhang, W. G., Archibald, K. M., Hirzel, A. J., Smith, W. O., Sosik, H. M., Stanley, R. H. R., & McGillicuddy, D. J. "Ephemeral surface chlorophyll enhancement at the New England shelf break driven by Ekman restratification." Poster Presentation, Ocean Carbon and Biogeochemistry Summer Workshop, Woods Hole, MA.
- Feb. 2022 **Oliver, H.**, Zhang, W. G., Archibald, K. M., Hirzel, A. J., Smith, W. O., Sosik, H. M., Stanley, R. H. R., & McGillicuddy, D. J. "Ekman restratification drives ephemeral surface chlorophyll enhancements at the New England shelf break." Oral presentation (presented by Dennis McGillicuddy), Ocean Sciences Meeting, Virtual.
- Dec. 2020 **Oliver, H.**, Zhang, W. G., Smith, W. O., Alatalo, P., Chappell, P. D., Hirzel, A., Packard, G., Poole, J., Selden, C. R., Sosik, H. M., Stanley, R. H. R., Zhu, Y., & McGillicuddy, D. J. "Western boundary current instability gives rise to extraordinary subsurface diatom blooms in the Middle Atlantic Bight slope sea." Poster presentation, Abstract #714713. American Geophysical Union, Annual Meeting, Virtual.
- Feb. 2020 **Oliver, H.**, Castelao, R. M., Wang, C., Yager, P. L. "A sensitivity analysis to determine conditions necessary for meltwater-enhanced nutrient export from Greenland's glacial fjords." Oral presentation. Ocean Sciences Meeting, San Diego, CA.
- Mar. 2019 **Oliver, H.**, Castelao, R. M., Yager, P. L. "Modeling meltwater-enhanced nutrient export from Greenland's glacial fjords." Poster. Gordon Research Conference for Polar Marine Science, Tuscany, Italy.

- Dec. 2018 **Oliver, H.**, St-Laurent, P., Sherrell, R. M., Yager, P. L. "Controls on summer phytoplankton blooms in a highly productive Antarctic coastal polynya." Oral presentation, Abstract #OS34B-06. American Geophysical Union, Annual Meeting, Washington D.C. **Outstanding Student Presentation Award winner, Ocean Sciences section.**
- Jun. 2018 **Oliver, H.**, St-Laurent, P., Sherrell, R. M., Yager, P. L. "Does light or iron control the Amundsen Sea Polynya phytoplankton bloom?" Poster. Ocean Carbon and Biogeochemistry Summer Workshop, Woods Hole, MA.
- Feb. 2018 **Oliver, H.**, St-Laurent, P., Sherrell, R. M., Yager, P. L. "What controls the massive phytoplankton bloom in the Amundsen Sea Polynya?" Poster, Abstract #HE14B-2850. Ocean Sciences Meeting, Portland, OR.
- Aug. 2017 **Oliver, H.**, St-Laurent, P., Sherrell, R. M., Yager, P. L. "Modeling physical and biological controls on phytoplankton blooms in the Amundsen Sea Polynya." Poster. Goldschmidt Conference, Paris, France.
- Mar. 2017 **Oliver, H.**, St-Laurent, P., Sherrell, R. M., Yager, P. L. "Controls on phytoplankton blooms in an Antarctic coastal polynya." Poster. Southeastern Biogeochemistry Symposium, Athens, GA.
- Mar. 2017 **Oliver, H.**, St-Laurent, P., Sherrell, R. M., Yager, P. L. "What makes a bloom in the Amundsen Sea Polynya? A 1-D biogeochemical modeling perspective." Poster. Gordon Research Conference for Polar Marine Science, Ventura, CA.
- Dec. 2016 **Oliver, H.**, Luo, H., Castelao, R. M., van Dijken, G., Mattingly, K., Rosen, J., Mote, T., Arrigo, K. R., Rennermalm, A., Tedesco, M., Yager, P. L. "Extreme surface melting of the Greenland Ice Sheet increases growth potential for light-limited phytoplankton in the Labrador Sea." Oral presentation. American Geophysical Union, Annual Meeting, San Francisco, CA.
- Feb. 2016 **Oliver, H.**, Luo, H., Mattingly, K., Rosen, J., Yager, P. L. "Modeling the sensitivity of coastal ocean Primary Production to Extreme Melting of the Greenland Ice Sheet." Poster. Ocean Sciences Meeting, New Orleans, LA.
- Nov. 2015 **Oliver, H.**, Castelao, R. M., Luo, H., Mattingly, K., Rosen, J., Yager, P. L. "Coastal Ocean Primary Production Sensitivities to Extreme Melting of the Greenland Ice Sheet." Poster. Rutgers Regional Climate Symposium, New Brunswick, NJ.
- Mar. 2015 **Oliver, H.**, Castelao, R., Luo, H., Mote, T., Yager P. L. "Modeling the responses of primary production to extreme melting of the Greenland Ice Sheet." Poster. Gordon Research Conference for Polar Marine Science, Tuscany, Italy.
- March 2014 **Oliver, H.**, Wethey, D. S. "Multi-decadal hindcasts of larval connectivity." Oral presentation. Benthic Ecology Meeting, University of North Florida, Jacksonville, FL.
- March 2013 **Oliver, H.**, Wethey, D. S. "Larval transport modeling – how to choose the ocean model." Poster. Benthic Ecology Meeting, Georgia Southern University, Savannah, GA.

PROFESSIONAL SOCIETIES

- 2015 — present American Geophysical Union
- 2016 — present The Oceanography Society