

## Daniel Clements

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Bigelow Laboratory for Ocean Science  
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## Education

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- PhD, Jan 2023**      **University of California, Los Angeles**  
Atmospheric and Oceanic Science  
Dissertation Advisor: Daniele Bianchi  
Dissertation title: Analysis of Particulate Carbon Flux in the Global Ocean, with in situ Observations and Machine Learning
- M.Sc. 2020**      **University of California, Los Angeles**  
Atmospheric and Oceanic Science  
Advisor: Daniele Bianchi
- B.A 2015**      **University of California, Berkeley**  
Marine Science, Earth and Planetary Science  
Advisor: James Bishop

## Professional Experience

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- 2024-present**      Postdoctoral Scientist,  
**Bigelow Laboratory for Ocean Science**, East Boothbay ME, USA
- 2023-2024**      Postdoctoral investigator, Geology and Geophysics Department  
**Woods Hole Oceanographic Institution**, Falmouth Ma, USA
- 2023**      Postdoctoral Scholar, Ocean Sciences Department  
**University of California, Santa Cruz**, Santa Cruz CA, USA
- 2017-2023**      Graduate Student Researcher, Atmospheric and Oceanic Sciences  
**University of California, Los Angeles**, Los Angeles CA, USA
- 2014-2015**      Undergraduate Research Assistant, Integrative Biology  
**University of California, Berkeley**, Berkeley CA, USA

## Peer-reviewed Publications

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**Clements, D. J.,** Stamieszkin, K., Bianchi, D., Blanco-Bercial, L., Record, N. R., Rodriguez-Perez, R. B., & Maas, A. E. (2025). Active Carbon Transport by Diel Vertical Migrating Zooplankton: Calculated and Modeled, but Never Measured. *Annual Review of Marine Science*. <https://doi.org/10.1146/annurev-marine-121422-015330>

McCoy, D., Damien, P., **Clements, D.**, Yang, S., & Bianchi, D. (2023). Pathways of nitrous oxide production in the eastern tropical south pacific oxygen minimum zone. *Global Biogeochemical Cycles*, 37(7), e2022GB007670. <https://doi.org/10.1029/2022GB007670>

**Clements, D. J., Yang, S., Weber, T., McDonnell, A. M. P., Kiko, R., Stemmann, L., & Bianchi, D. (2023). New estimate of organic carbon export from optical measurements reveals the role of particle size distribution and export horizon. *Global Biogeochemical Cycles*, 37, e2022GB007633. <https://doi.org/10.1029/2022GB007633>**

**Clements, D. J.,** Yang, S., Weber, T., McDonnell, A. M. P., Kiko, R., Stemmann, L., & Bianchi, D. (2022). Constraining the particle size distribution of large marine particles in the global ocean with in situ optical observations and supervised learning. *Global Biogeochemical Cycles*, 36, e2021GB007276. <https://doi.org/10.1029/2021GB007276>

## Forthcoming Publications

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**Clements, D.J,** Lam, P.J., and Marchal, O. Time-varying Cycling Rates of Particulate Organic Carbon during the Decay of a North Atlantic Spring Bloom *in review at Global Biogeochemical Cycles* [doi.org/10.22541/essoar.175138840.05852941/v1](https://doi.org/10.22541/essoar.175138840.05852941/v1)

**Clements, D. J.,** Bianchi, D Weber, T., Kiko, R., Stemmann, L., Particle production by mesopelagic fauna enhances deep-ocean carbon. sequestration. *in review at Nature Geosciences* <https://doi.org/10.21203/rs.3.rs-6465812/v1>

Borer, B., **Clements, D. J.,** Bianchi, D. and Babbín, A. Plumes from sinking particles support most heterotrophic bacteria below the export horizon *in prep for Nature Microbiology*

**Clements, D. J.,** Marchetti C., Resplandy, L., Babbín, A. and Bianchi, D. Historical reconstructions of Nitrous Oxide emissions reveal drivers of natural variability *in prep for Nature Geoscience*

**Clements, D.J.,** Babbín, A.R., Kelly, C., Chang, B., Bianchi., D. Global reconstructions of dissolved inorganic nitrogen intermediates in the ocean. *In prep for biogeosciences*

AR Moreno, J Guiet, **D. Clements,** and D Bianchi. Predicting domoic acid events along the US West Coast. *in prep*

## Teaching Experience

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2018 - 2022      AOS M105: *Chemical Oceanography* University of California, Los Angeles.  
Undergraduate upper division course (~100 students per quarter)

2020 - 2022	AOS 107: <b><i>Biological Oceanography</i></b> University of California, Los Angeles. Undergraduate upper division course (~100 students per quarter)
2020-2021	AOS C111: <b><i>Machine learning for the physical sciences</i></b> University of California, Los Angeles. Upper division undergraduate and graduate course (~30 students)
2014-2015	<b>Scientific SCUBA diving</b> , University of California, Berkeley. TA/divemaster for teaching principles of scientific SCUBA
2015	<b><i>Intro to oceans</i></b> , SY Academy. Summer school instructor for UC Berkeley exchange program.
2015	<b><i>Environmental earth science</i></b> , SY Academy. Summer school instructor for UC Berkeley exchange program.
2015	<b><i>Earthquakes</i></b> , SY Academy. Summer school instructor for UC Berkeley exchange program.
2015	<b><i>English tutor</i></b> , SY Academy.

## Student Mentored Projects

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2025	<b><i>Kique Ruiz</i></b> , <i>Evaluating Tradeoffs Between Chlorophyll Shading and Zooplankton Migration Depth in Ocean Carbon Sequestration</i> , Bigelow Laboratory for Ocean Sciences, REU.
2021 – 2024	<b><i>Calla Marchetti</i></b> , Timeseries analysis of Nitrous Oxide outgassing, UCLA. Now at Princeton University (Ph.D. Student)
2022	<b><i>Varun Patro</i></b> Analysis of the global Ammonia concentration, UCLA. Now at UC San Diego (Masters Student)
2021-2022	<b><i>Frankie Lopez</i></b> Biogeochemistry of the Santa Monica Basin, UCLA. Now at University of Rhode Island (Ph.D. Student)
2021	<b><i>Cecile Decker</i></b>   Estimating the ocean carbon pump, UCLA Master's intern. Summer Master's Internship for ENSTA Paris
2020-2021	<b><i>Lexuan Ye</i></b> Machine learning reconstructions of nitrogen species

Internship for Honors thesis at Zhejiang University  
Now at University of Illinois (Ph.D. Student)

- 2020      **Lauren Holdridge** Validate in situ chlorophyll observations with satellites
- 2020      **Braden McCan** Santa Monica Bay biogeochemistry observations
- 2019      **Jackie Panaro** Ocean Circulation Inverse Model of gasses  
Now at University of Miami ()

## Invited talks and Conference

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- 2025      **Bigelow Laboratory for Ocean Sciences, ME – Seminar**  
*“Multi-scale modeling of the biological carbon pump”*
- 2025      **Joint Exploration of the Twilight Zone Ocean Network Meeting, virtual – Seminar**  
*“Particle production by mesopelagic fauna enhances deep-ocean carbon sequestration”*
- 2025      **ARPA-E Ocean Week – Talk**  
*“ZTRACE: Zooplankton - technology for reporting active carbon export”*
- 2024      **Make Our Planet Great Again symposia, LOV, France (virtual) – Plenary**  
*“Global reconstructions of particle size distribution and sinking flux from imaging observations reveal particle injection by mesopelagic fauna”*
- 2023      **UC Santa Cruz Ocean Science department, Santa Cruz CA – Seminar**  
*“Analysis of Particulate Carbon Export in the Global Ocean, using in situ Observations and Machine Learning.”*
- 2022      **UCLA Atmospheric and Oceanic Science department, Los Angeles, CA – Seminar**  
*“Estimates of Global Carbon Flux Using In-Situ Optical Observations of POC and Supervised Learning”*
- 2022      **Dissertations Symposium in Chemical Oceanography, Kailua-Kona HI**  
*“Analysis of Particulate Carbon Export in the Global Ocean using in situ observations and machine learning”*

- 2019 **Gordon Research Conference Chemical Oceanography NH**  
*“Estimates of Global Carbon Flux Using in situ Optical Observations of POC and Supervised Learning”*

### Select Conference Abstracts

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\* indicates undergraduate student

- 2025 **Trait-based approaches to Ocean life | Pacific Grove CA**  
**Clements, D. J.**, Stamieszkin, K., Record N.R., Maas A.E., Blanco-Bercial L., Rodriguez-Perez R. *“Diagnosing the Impact of Migrating Zooplankton on the Inventory and Sequestration of Carbon in the Ocean Interior”*. **Talk**
- 2025 **Trait-based approaches to Ocean life | Pacific Grove CA**  
 K.Stamieszkin, N.R. Record, **D. J. Clements**, A.E. Maas, L. Blanco-Bercial, R. Rodriguez-Perez. *“To be seen: The pelagic spectrum of visibility”* **Poster**
- 2025 **Gordon Research Conference Chemical Oceanography | Manchester, NH**  
 D. Bianchi, **D.J. Clements**, T. Weber, L. Stemmann, R. Kiko. *“Particle production by mesopelagic fauna enhances deep-ocean carbon sequestration”* **Talk**
- 2025 **Gordon Research Conference Chemical Oceanography | Manchester, NH**  
**Clements, D. J.**, Stamieszkin, K., Record N.R., Maas A.E., Blanco-Bercial L., Rodriguez-Perez R. *“Diagnosing the Impact of Migrating Zooplankton on the Inventory and Sequestration of Carbon in the Ocean Interior”*. **Poster**
- 2025 **Xiamen Symposium on Marine Environmental Science | Xiamen, China,**  
 Bianchi, D., Weber, T., **Clements, D. J.**, McCoy, D., *“Nitrous oxide production in expanding oxygen minimum zones Atlantic bloom from the inversion of in situ observations”* **Talk**
- 2024 **Ocean Carbon Biogeochemistry Workshop | WoodsHole, MA**  
**Clements, D. J.**, Stamieszkin, K., Record N.R., Maas A.E., Blanco-Bercial L. *“ZTRACE: Developing a trait-based model of zooplankton mediated carbon fluxes during iron fertilization experiments”* **Poster**

- 2024 **Ocean Science meeting, Louisiana,**  
**Clements, D. J.,** Lam, P. J. Marchal, O. “Estimates of time-varying particle cycling rates during a North Atlantic bloom from the inversion of in situ observations” *Talk*
- 2024 **Ocean Science meeting, Louisiana,**  
 Marchetti, C. \*, **Clements, D. J.,** Bianchi, D. “Decadal Variability and Trends in Oceanic N<sub>2</sub>O Emissions to the Atmosphere” *Poster*
- 2023 **OTZ JETZON symposium | Woods Hole, MA,**  
**Clements, D. J.,** Lam, P. J., Marchal, O. “*Estimates of time-varying particle cycling rates during a North Atlantic bloom from the inversion of in situ observations*” *Poster*
- 2023 **Gordon Research Conference Chemical Oceanography | Manchester, NH**  
**Clements, D. J.,** Lam, P. J., Marchal, O. “*Estimates of time-varying particle cycling rates during a North Atlantic bloom from the inversion of in situ observations*” *Poster*
- 2023 **Gordon Research Seminar Chemical Oceanography | Manchester, NH**  
**Clements, D. J.,** Lam, P. J., Marchal, O. “*Estimates of time-varying particle cycling rates during a North Atlantic bloom from the inversion of in situ observations*” *Poster*
- 2022 **Eastern Pacific Ocean Conference, | Portland OR**  
 A. Moreno, J. Guet, **D. Clements,** D. Bianchi. “*Predicting domoic acid events along the U.S. West Coast.*” *Poster*
- 2022 **UCLA Undergraduate Research Week | Los Angeles CA**  
 F. Lopez\*, **D. Clements,** D. Bianchi. “*Understanding the Biogeochemistry of the Santa Monica Basin Using in situ and Satellite Data.*” *Talk*
- 2022 **UCLA Undergraduate Research Week, | Los Angeles CA**  
 C. Marchetti\*, **D. Clements,** D. Bianchi. “*Using machine learning to reconstruct historic nitrous oxide emissions from the ocean.*” *Talk*
- 2022 **Ocean Science meeting | virtual**  
**Clements, D. J.,** Yang, S., Weber, T., McDonnell, A. M. P., Kiko, R., Stemmann, L., & Bianchi, D. “*Interior Ocean Particulate Carbon Flux Using in situ Optical Observations of POC and Supervised Learning*” *Poster*

- 2020 **Ocean Science meeting | San Diego CA**  
**Clements, D. J.**, Yang, S., Weber, T., Bianchi, D. *“Estimates of Global Carbon Flux Using in situ Optical Observations of POC and Supervised Learning” Talk*
- 2019 **Gordon Research Seminar Chemical Oceanography | Holderness NH**  
**Clements, D. J.**, Yang, S., Weber, T., Bianchi, D. *“Estimates of Global Carbon Flux Using in situ Optical Observations of POC and Supervised Learning” Poster*

## Field Experience

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- 2023 **R/V Gordon Sproul | Chanel Islands, CA – 7 days**  
 Led all CTD casts; Mentor and train 4 undergraduates and 1 master student on optics deployments

## Service and Outreach

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- Reviewer**
- *National Science Foundation*
  - *Limnology and Oceanography Methods*
  - *Limnology and Oceanography Letters*
  - *AGU Journal of Geophysical Research - Oceans*
  - *AGU Journal of Geophysical Research – Biogeosciences*
  - *Nature Communication*
- Outreach**
- Explore your Universe, UCLA, 2017, 2018, 2019
  - Children’s Water Education Festival, UC Irvine, 2018, 2019
  - El Marino Elementry School, Culver City, CA, 2018, 2019
  - The Bruin Experiment science fair, UCLA, 2019
  - Skype a scientist Virtual (Iowa, Virginia), 2020-2023
- Leadership**
- SoCal Biogeochemical Ocean Observations and Models symposium**  
 Organizer 2020; 2022; 2023
- Chi Epsilon Pi, UCLA, 2018-2020**  
 Student Recruitment Co-chair, President

## Select awards

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- 2023 **Morris Neiburger award for teaching excellence**
- 2022 **DISCO XXVIII – Selected participant**

