

NICHOLAS BAETGE

Microbial oceanographer that collects and synthesizes biogeochemical, bio-optical, and experimental data to address questions in plankton ecology and carbon cycling.



EDUCATION

2014
|
21

● **Ph.D., Marine Science**
University of California, Santa Barbara

Thesis: *The bioavailability of seasonally accumulated dissolved organic carbon and its contribution to export in the western North Atlantic*

Committee: Dr. Craig Carlson (Chair), Dr. Alyson Santoro, Dr. Dave Siegel

2009
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13

● **B.S., Aquatic Biology (Distinction in the Major)**
University of California, Santa Barbara

Thesis: *Mucosal microbial assemblages of wild and cultured intertidal finfish*

Advisors : Dr. Peter Collins and Dr. Craig Carlson



RESEARCH EXPERIENCE

2023
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Present

● **Postdoctoral Research Fellow**
Oregon State University

2021
|
23

● **Postdoctoral Scholar**
Oregon State University

2013
|
14

● **Junior Research Specialist**
University of California, Santa Barbara



FELLOWSHIPS AND AWARDS

2024
|
25

● **American Geophysical Union**
Leadership Academy Network for Diversity and Inclusion in the Geosciences (LANDInG) Fellow

2023
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25

● **National Science Foundation Ocean Science Postdoctoral Research Fellowship**
Smoke on the water: the impacts of wildfire ash deposition on surface ocean biology (\$300K)

CONTACT INFO

Oregon State University

Depts. Botany and Plant Pathology,
Microbiology

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TRAINING

Cornell Satellite Remote Sensing Program (2023) – OCB travel award

Calibration and Validation for Ocean Color Remote Sensing (2021) – NASA and OCB travel award

Bermuda Institute of Ocean Sciences Microbial Oceanography (2014) – The Starr Foundation travel award

- 2017 ● **University of California Ship Funds Program**
Ship time aboard *R/V Sally Ride* (AGOR-28)
Co-I: Dr. Kelsey Bisson (\$250K)
- 2019 ● **NASA**
Group Achievement Award, *North Atlantic Aerosols and Marine Ecosystems Study (NAAMES)*
- 2017 ● **University of California, Santa Barbara Coastal Fund**
Across the Channel: Investigating Diel Dynamics (\$12K)
- 2017 ● **Bermuda Institute of Ocean Sciences**
Sydney L Wright Fellowship (\$1K)
- 2017 ● **University of California, Santa Barbara Coastal Fund**
Across the Channel: Investigating Diel Dynamics (\$12K)
- 2014 ● **United States Congress**
Antarctic Service Medal
- 2013 ● **University of California, Santa Barbara Department of Geography**
Leal Ann Kerry Mertes Scholarship (\$1.5K)
- 2013 ● **University of California, Santa Barbara Coastal Fund**
Growth, bacterial resilience, and mucosal microbial assemblages of wild and cultured intertidal finfish along the California coast (\$3.5K)
- 2011, 2012 ● **University of California, Santa Barbara**
Undergraduate Research and Creative Activities Award (\$1K)



PUBLICATIONS IN PEER-REVIEWED JOURNALS

- in review ● **Pre-existing in situ conditions shape coastal plankton response to fire-generated ash leachate**
Baetge, N., Halsey, K.H., Hanan, E.J., Behrenfeld, M.J., Milligan, A.J., Graff, J.R., Hansen, P., Carlson, C.A., Boiteau, R.B., Arrington, E.A., Comstock, J., Halewood, E.R., Harvey, E.L., Nelson, N.B., Opalk, K., Very Wey, B. in review. *Limnology and Oceanography*
- in prep ● **Molecular delineation and fertilization of dissolved organic matter of Santa Barbara coastal waters during the Thomas Fire (California, USA)**
Goranov, A.I., Schmitt, N., Agar, J., Harvey, E., **Baetge, N.**, McNair, H., Arrington, E., Stubbins, A., Wagner, S. in prep.
- 2024 ● **Physiological and interspecific factors determine diel changes in phytoplankton bio-optical properties**
Baetge, N., Halsey, K.H., Graff, J.R., Ver Wey, B., Westberry, T.K., Appel, A.E., Bourdin, G., Begouen Demeaux, C., Boss, E., Behrenfeld, M.J. (2024) *Limnology and Oceanography*, (69)2, 390-407.
- 2023 ● **Altered growth and death in dilution-based viral predation assays**
Knowles, B., Bonachela, J.A., Cieslik, N., Della Penna, A., Diaz, B., **Baetge, N.**, Behrenfeld, M.J., Naumovitz, K., Boss, E., Graff, J.R., Halsey, K.H., Haramaty, L., Karp-Boss, L., Bidle, K.D. (2023) *Plos one*, 18(7), e0288114.

2022

- **Bacterioplankton Response to Physical Stratification following Deep Convection**
Baetge, N., Bolaños, L., Della Penna, A., Gaube, P., Liu, S., Opalk, K., Graff, J., Giovannoni, S., Behrenfeld, M., Carlson, C. (2022) *Elementa: Science of the Anthropocene*. 10(1), 00078.
- **Bacterioplankton communities reveal horizontal and vertical influence of an Island Mass Effect**
Comstock, J., Nelson, C., James, A., Wear, E., Baetge, N., Juknavorian, A., Carlson, C. (2022) *Environmental Microbiology*. 24(9), 4193-4208.
- **Characterization of Sea Surface Microlayer and Marine Aerosol Organic Composition using STXM-NEXAFS Microscopy and FTIR Spectroscopy.**
Lewis, S., Russel, L., Saliba, G., Quinn, P., Baters, T., Carlson, C., Baetge, N., Aluwihare, L., Boss, E., Haetjens, N., Frossard, A., Bell, T., Behrenfeld, M. (2022). *ACS Earth and Space Chemistry*. 6(7), 1899-1913.

2021












- **Seasonal mixed layer dynamics shape phytoplankton physiology, viral infection, and accumulation in the North Atlantic.**
Diaz, B., Knowles, B., Johns, C., Laber, C., Bondoc, K.G.V, Harvey, E., Lowenstein, D., Fredricks, J., Haramaty, L., Natale, F., Graff, J., Haentjens, N., Westberry, T., Baetge, N., Mojica, K., Gaube, P., Boss, E., Carlson, C., Behrenfeld, M., Van Mooy, B., Bidle, K. (2021). *Nature Communications*. 12(1), 6634.
- **Investigating atmospheric inputs of dissolved black carbon to the Santa Barbara Channel during the Thomas Fire (California, USA).**
Wagner, S., Harvey, E., Baetge, N., McNair, H., Arrington, E., Stubbins, A. (2021). *Journal of Geophysical Research: Biogeosciences*. 126(8), e2021JG006442.
- **The Seasonal Flux and Fate of Dissolved Organic Carbon through the Food Web in the Western North Atlantic.**
Baetge, N., Behrenfeld, M., Fox, J., Halsey, K., Mojica, K., Novoa, A., Stephens, B., Carlson, C. (2021). *Frontiers in Microbiology*. 12, 669883.
- **Seasonality of the microbial community composition in the western North Atlantic.**
Bolaños, L., Choi, C.J., Worden, A., Baetge, N., Carlson, C., Giovannoni, S. (2021). *Frontiers in Marine Science*. 8, 624164.
- **Role of Sea Surface Microlayer Properties in Cloud Formation.**
Hendrickson, B., Brooks, S., Thornton, D., Moore, R., Crosbie, E., Ziemba, L., Carlson, C., Baetge, N., Mirrielees, J., and Alsante, A. (2020). *Frontiers in Marine Science*. 7, 596225.

2020

- **Net Community Production, Dissolved Organic Carbon Accumulation, and Vertical Export in the Western North Atlantic.**
Baetge, N., Graff, J. R., Behrenfeld, M. J., & Carlson, C. A. (2020). *Frontiers in Marine Science*. 7, 227.
- **California Wildfire Burns Boundaries Between Science and Art.**
Bisson, K. M., Baetge, N., Kramer, S. J., Catlett, D., Girling, G., McNair, H., Arrington, E., Hayes, D., Jacobs, C., James, A., Closset, I., Fischer, A., Wagner, S., Reading, M., Comstock, J., Amiri, S., Harvey, E., Carlson, C., Gaube, P., Drushka, K., Valentine, D. (2020). *Oceanography*. 33(1), 16-19.
- **Different carboxyl-rich alicyclic molecules proxy compounds select distinct bacterioplankton for oxidation of dissolved organic matter in the mesopelagic Sargasso Sea.**
Liu, S., Parsons, R., Opalk, K., Baetge, N., Giovannoni, S., Bolaños, L. M., Kujawinski, E.B., Longnecker, K., Lu, Y., Halewood, E., Carlson, C. A. (2020). *Limnology and Oceanography*. 65(7), 1532-1553.

- **Stable isotope probing identifies bacterioplankton lineages capable of utilizing dissolved organic matter across a range of bioavailability.**
Liu, S., **Baetge, N.**, Comstock, J., Opalk, K., Parsons, R., Halewood, E., English, C., Giovannoni, S., Bolanos, L., Nelson, C., Vergin, K., Carlson, C. (2020) *Frontiers in Microbiology*. 11, 2364.
- **Seasonal Differences and Variability of Concentrations, Chemical Composition, and Cloud Condensation Nuclei of Marine Aerosol over the North Atlantic.**
Saliba, G., Chen, C., Lewis, S., Russell, L., Quinn, P., Bates, T., Bell, T., Lawler, M., Saltzman, E., Sanchez, K., Moore, R., Shook, M., Rivellini, L., Lee, A., **Baetge, N.**, Carlson, C., Behrenfeld, M. (2020). *Journal of Geophysical Research: Atmospheres*. 125(19).
- 2019 ● **Factors driving the seasonal and hourly variability of sea-spray aerosol number in the North Atlantic.**
Saliba, G., Chen, C. L., Lewis, S., Russell, L. M., Rivellini, L. H., Lee, A. K., Quinn, P.K., Bates, T.S., Haëntjens, N., Boss, E.S., Karp-Boss, L., **Baetge, N.**, Carlson, C., Behrenfeld, M. (2019). *Proceedings of the National Academy of Sciences*. 116(41), 20309-20314.
- **The North Atlantic aerosol and marine ecosystem study (NAAMES): science motive and mission overview.**
Behrenfeld, M. J., Moore, R. H., Hostetler, C. A., Graff, J., Gaube, P., Russell, L. M., Chen, G., Doney, S.C., Giovannoni, S., Liu, H., Proctor, C., Bolaños, **Baetge, N.**, Davie-Martin, C., Westberry, T.K., Bates, T.S., Bell, T.G., Bidle, K.D., Boss, E.S., Brooks, S.D., Cairns, B., Carlson, C., Halsey, K., Harvey, E.L., Hu, Chuanmin, Karp-Boss, L., Kleb, M., Menden-Deuer, S., Morison, F., Quinn, P.K., Scarino, A.J., Anderson, B., Chowdhary, J., Crosbie, E., Ferrare, R., Hair, J.W., Hu, Y., Janz, S., Redemann, J., Saltzman, E., Shook, M., Siegel, D.A., Wisthaler, A., Marting, M.Y., Ziemba, L. (2019). *Frontiers in Marine Science*. 6, 122.


FIELD AND SEA EXPERIENCE

- 2023 ● **Redfield Ratio**
Oregon State University  31° - 36°N, 117° - 123°W
 *R/V Robert Gordon Sproul*, 28 days
- 2017 ● **Across the Channel: Investigating Diel Dynamics (ACIDD)**
University of California  32°N, 119°W
 *R/V Sally Ride (AGOR-28)*, 6 days
 Served as Co-Chief Scientist
- 2016 | 17 ● **BIOS-SCOPE**
Simons Foundation International  31°N, 64°W
 *R/V Atlantic Explorer*, 2 expeditions x 4 days each
- 2015 | 18 ● **North Atlantic Aerosols and Marine Ecosystems Study (NAAMES)**
NASA  39°N - 57°N, 40°W
 *R/V Atlantis (AGOR-25)*, 3 expeditions x 26 days each
- 2014 ● **KM14-16**
Moorea Coral Reef-Long Term Ecological Research Network  17°S, 150°W
 *R/V Kilo Moana (T-AGOR-26)*, 11 days

2014



P16S

US Global Ship-based Hydrographic Investigations Program
 *R/V Nathaniel B. Palmer* (icebreaker), 46 days

 17°S - 67°S, 149°W




CONFERENCE PRESENTATIONS

Oct 2022



(Poster) Diel variability in phytoplankton backscattering and cell composition
TOS Ocean Optics

 Quy Nhon, Vietnam

Feb 2020




(Lightning poster) Dissolved organic carbon accumulation and export potential in the Western North Atlantic
AGU/ASLO/TOS Sciences Meeting

 San Diego, CA

Feb 2018




(Talk) DOC bioavailability and evidence of priming effect in the western North Atlantic
AGU/ASLO/TOS Ocean Sciences Meeting, student travel award

 Portland, OR

Feb 2017



(Talk) Estimating DOC bioavailability with marine bioreactors
ASLO Aquatic Science Meeting, student travel award

 Honolulu, HI




DEPARTMENTAL PRESENTATIONS

Feb 2024



(Talk) Smoke on the water: the impacts of wildfire ash deposition on surface ocean biology
Department of Microbiology Seminar

 Oregon State University

May 2023



(Talk) Illuminating the path: phytoplankton production and its vertical fate
Department of Microbiology Seminar

 Oregon State University

Nov 2019



(Talk) Net community production, dissolved organic carbon and export in the Western North Atlantic
Department of Geography Biogeosciences Group Seminar

 University of California, Santa Barbara

Jan 2019



(Talk) ROAM-ing on ACIDD
Department of Geography 264 Seminar

 University of California, Santa Barbara



SCIENCE TEAM MEETING PRESENTATIONS

Jun 2019



(Talk) DOM accumulation driven by ecosystem state
NAAMES All-Scientists Meeting (50+ participants)

 NASA Langley Research Center, VA

Jun 2018



(Talk) DOC bioavailability, bacterial production and carbon demand
NAAMES All-Scientists Meeting (74 participants)

 Oregon State University

Jun 2018



(Poster) Bacterial remineralization of DOM
NAAMES All-Scientists Meeting

 Oregon State University (74 participants)

May 2017



(Poster) Bacterial carbon and growth efficiencies in the North Atlantic
NAAMES All-Scientists Meeting (67 participants)

 NASA Langley Research Center

- Oct 2016 ● **(Poster) Bioavailability and fate of DOM**
NAAMES All-Scientists Meeting (58 participants) 📍 Oregon State University
- Oct 2015 ● **(Poster) NAAMES DOM dynamics, characterization, and bioavailability**
NAAMES All-Scientists Meeting (60+ participants) 📍 NASA Langley Research Center



STUDENT TRAINEES

- 2023
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Present ● **Parker Hansen (BSc)**
📍 Oregon State University
- 2021
|
22 ● **Amanda Appel (BSc, Thesis)**
📍 Oregon State University
- 2018
|
19 ● **Ruby Korpics (BSc, Thesis)**
📍 University of California, Santa Barbara



TEACHING

- May 2024 ● **Guest Lecture (Measuring photosynthesis)**
Botany and Plant Pathology 480/580 📍 Oregon State University
- Jul 2022
|
23 ● **Mentor and Co-Coordinator**
Pernot Microbiology High School Summer Camp 📍 Oregon State University
- Fall 2018
|
20 ● **Lead Teaching Assistant**
Marine Microbiology Laboratory (EEMB 144L) 📍 University of California, Santa Barbara
- Fall 2015
|
16 ● **Teaching Assistant**
Introductory Biology Laboratory (EEMB 3L) 📍 University of California, Santa Barbara
- Jul
|
Aug 2012 ● **Mentor**
UCSB Summer Sessions: Research Mentorship Program 📍 University of California, Santa Barbara







PROFESSIONAL SERVICE

- 2021 ● **Field Support**
NASA EXPORTS (EXport Processes in the Ocean from Remote Sensing) Expeditionary Alternate 📍 North Atlantic
- **Ad-hoc Peer Review**
Science Advances (1), Aquatic Microbial Ecology (1), ISME (1), mbio (1), Marine Chemistry (1), JGR Biogeosciences (1)







DEPARTMENTAL SERVICE

- 2020
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21 • **Graduate Student Representative Election Working Group**
Marine Science Institute Search Committee  University of California, Santa Barbara
- 2016
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18 • **Committee Member**
Graduate Student Advisory Committee  University of California, Santa Barbara
- 2016
|
17 • **Coordinator**
Interdepartmental Graduate Program in Marine Science Seminar Series  University of California, Santa Barbara
- 2014
|
17 • **Social Chair**
Interdepartmental Graduate Program in Marine Science  University of California, Santa Barbara




ACCESSIBILITY, JUSTICE, EQUITY, DIVERSITY, AND INCLUSION

- 2024
|
25 • **Fellow**
[Leadership Academy Network for Diversity and Inclusion in the Geosciences \(LANDInG\)](#)  American Geophysical Union
- 2022
|
23 • **Member**
Core Values Committee  Oregon State University
- 2020
|
21 • **Member**
Marine Science DEI Working Group  University of California, Santa Barbara
- 2020
|
21 • **Participant**
[Unlearning Racism in the Geosciences \(URGE\)](#)  University of California, Santa Barbara



PUBLIC OUTREACH

- Jul 2019 • **Smithsonian Institution Contributor**
[A Microbial World](#)
- Mar 2019 • **University of California Graduate Student Delegate to California State Assembly**  Sacramento, CA
- Nov 2017 • **Sisters of the Blue Interviewee**
[Plankton from Outer Space](#)
- 2016
|
18 • **NASA Earth Observatory Notes from the Field Contributor**
[North Atlantic Aerosols and Marine Ecosystems Study \(NAAMES\)](#)
- 2017 • **National Academies Keck Futures Initiative Contributor**
[Magazine](#) and [Documentary](#)