

# Una Kim Miller

University of Rhode Island  
Graduate School of Oceanography  
Postdoctoral Researcher

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<https://unamiller.github.io/>

## Education

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<b>Ph.D.</b> Columbia University, Earth and Environmental Sciences <i>Advisor: Christopher J. Zappa</i>	2023
<b>B.S.</b> University of Washington, Oceanography	2015

## Professional Appointments

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<b>Postdoctoral Fellow</b> University of Rhode Island	2023 – present
<b>Graduate Research Fellow</b> Columbia University	2016 - 2023
<b>Teaching Assistant</b> Columbia University	2017, 2019
<b>Research Assistant</b> University of Washington	2012 - 2016

## Research Interests

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- Air-sea interaction physics
- Upper ocean turbulence
- High-latitude environments
- Ocean carbon and oxygen
- Moorings and uncrewed systems
- Model-observation comparisons

## Peer-Reviewed Publications

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2024

1. **Miller, U. K.**, K. E. Fogaren, D. Atamanchuk, C. Johnson, J. Koelling, I. Le Bras, M. Lindeman, H. Nagao, D. P. Nicholson, H. Palevsky, E. Park, M. Yoder, J. Palter, 2024; Oxygen optodes on oceanographic moorings: recommendations for deployment and in-situ calibration. *Frontiers in Marine Science*. [doi:10.3389/fmars.2024.1441976](https://doi.org/10.3389/fmars.2024.1441976)
2. **Miller, U. K.**, C.J. Zappa, A.L. Gordon, S.T. Yoon, C. Stevens, L. Cornelissen, S.K. Yun, W.S. Lee, 2024; The coupling of winds, ocean turbulence, and High Salinity Shelf Water in the Terra Nova Bay Polynya. *Deep Sea Res. Part II*. [doi:10.1016/j.dsr2.2024.105412](https://doi.org/10.1016/j.dsr2.2024.105412)
3. Stevens, C., S.T. Yoon, C.J. Zappa, **U.K. Miller**, X. Wang, F. Elliot, L. Cornelissen, C.K. Lee, S.K. Yun, W.S. Lee, 2024; Ocean processes south of the Drygalski Ice Tongue, western Ross Sea. *Deep Sea Res. Part II*. [doi:10.1016/j.dsr2.2024.105411](https://doi.org/10.1016/j.dsr2.2024.105411)
4. **Miller, U. K.**, C.J. Zappa, A.L. Gordon, S.T. Yoon, C. Stevens, W.S. Lee; High Salinity Shelf Water production rates in Terra Nova Bay, Ross Sea from high-resolution salinity observations, 2024; *Nat. Commun.* [doi:10.1038/s41467-023-43880-1](https://doi.org/10.1038/s41467-023-43880-1)

2023

5. **Miller, U. K.**, C. J. Zappa, S. Zippel, J. T. Farrar, R. A. Weller; Scaling of moored surface ocean turbulence measurements in the Southeast Pacific Ocean, 2023; *J. Geophys. Res. Oceans*, [doi:10.1029/2022JC018901](https://doi.org/10.1029/2022JC018901)

2021

6. Zippel, S., J. T. Farrar, C. J. Zappa; **U. K. Miller**, L. St. Laurent, T. Ijichi, R. A. Weller, L. McRaven, D. Le Bel, 2021; TKE Dissipation Rate Estimates from Pulse-Coherent ADCPs on Moorings. *J. of Atmos. Ocean. Technol.*, [doi:10.1175/JTECH-D-21-0005.1](https://doi.org/10.1175/JTECH-D-21-0005.1)

2014 – 2018

7. Wurl, O., K. Bird, M. Cunliffe, W.M. Landing, **U. K. Miller**, N. I. H. Mustaffa, et al., 2018. Warming and inhibition of salinization at the ocean's surface by cyanobacteria. *Geophys. Res. Lett.*, [doi:10.1029/2018GL077946](https://doi.org/10.1029/2018GL077946)
8. Johnson, H. P., **U. K. Miller**, M. S. Salmi, and E. A. Solomon, 2015; Analysis of bubble plume distributions to evaluate methane hydrate decomposition on the continental slope. *Geochem. Geophys. Geosyst.*, [doi:10.1002/2015GC005955](https://doi.org/10.1002/2015GC005955).
9. Hautala, S. L., E. A. Solomon, H. P. Johnson, R. N. Harris, **U. K. Miller**, 2014; Dissociation of Cascadia margin gas hydrates in response to contemporary ocean warming. *Geophys. Res. Lett.*, [doi:10.1002/2014GL061606](https://doi.org/10.1002/2014GL061606)

## Awards and Grants

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<b>Early Career Poster Award</b> , International Symposium on Polar Sciences	2021
<b>Future Investigators in NASA Earth and Space Science and Technology (FINESST) grant</b>	2019

## Professional Service

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<b>Early career member</b> Ocean Carbon & Biogeochemistry (OCB) Ocean-Atmosphere Interaction Steering Committee	2024 - present
<b>Invited Reviewer</b> Nature Communications, Journal of Remote Sensing	2021 - present
<b>Seminar Coordinator</b> Ocean and Climate Physics Seminar Series <i>Invited speakers and managed logistics for a divisional seminar series at the Lamont-Doherty Earth Observatory</i>	2019 - 2020
<b>Seminar Coordinator</b> Earth Science Colloquium <i>Invited speakers and managed logistics for an institution-wide seminar series at the Lamont-Doherty Earth Observatory</i>	2018 – 2020
<b>Student Representative</b> Executive Committee <i>Advocated for graduate student matters in monthly meetings with the Lamont-Doherty Earth Observatory directorate</i>	2019 - 2020

## Teaching Experience

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<b>Climate and Oceans</b> University of Rhode Island	Fall 2024
<i>Guest lecturer; created and taught two 80-minute lectures on paleoclimate and IPCC model simulations to an undergraduate-level introductory climate course</i>	
<b>Physical Oceanography</b> University of Rhode Island	Fall 2023
<i>Guest lecturer; created and taught two 80-minute lectures on gravity and internal waves to a graduate-level introductory physical oceanography class</i>	
<b>PyClub</b> Online	Spring 2021
<i>Teacher; Co-created and co-taught lessons introducing the use of the Pandas package in Python to a group of high school students</i>	
<b>Introduction to Physical Oceanography</b> Columbia University	Fall 2018
<i>Teaching Assistant; led weekly office hour sessions, graded homework</i>	
<b>Dynamics of Climate Variability and Change</b> Columbia University	Fall 2017
<i>Teaching Assistant; led weekly office hour sessions, graded homework</i>	
<b>Oceanography of the Pacific Northwest</b> University of Washington	Fall 2015
<i>Teaching Assistant; assisted in lab demonstrations, graded homework</i>	

## Mentoring

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<b>The Summer Undergraduate Research Fellowship in Oceanography (SURFO) program</b>	Summer 2024
<i>Worked closely with undergraduate student Nathaniel Nowel on his project entitled, "Exploring the Role of the Gulf Stream in Wintertime Surface Wind Convergence Using Saildrone Vehicles"</i>	

## Professional Membership

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Mentoring Physical Oceanography Women to Increase Retention (MPOWIR)  
Ocean Carbon and Biogeochemistry (OCB)  
American Geophysical Union (AGU)

## Invited Talks

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<b>Climate &amp; Environment Lunch Bunch Series</b>	23 September 2024
Brown University, Providence, RI <i>Boundary Layer Scaling of Upper Ocean Turbulence</i>	
<b>Physical Oceanography Seminar Series</b>	2 February 2024
University of Rhode Island, Kingston, RI <i>High Salinity Shelf Water production and turbulent mixing in an Antarctic polynya</i>	
<b>Physical Oceanography Seminar Series</b>	30 April 2021
University of Rhode Island, Online <i>A high-resolution process study of High Salinity Shelf Water formation in the Terra Nova Bay Polynya, Ross Sea, Antarctica</i>	
<b>Antarctic Sea Ice and Southern Ocean Discussions Seminar</b>	7 December 2022

University of Texas at San Antonio, Online  
*High Salinity Shelf Water production in Terra Nova Bay, Ross Sea  
from high-resolution near-surface salinity observations*

**Antarctic Sea Ice and Southern Ocean Discussions Seminar** 17 February 2021

University of Texas at San Antonio, Online  
*The Lamont-Doherty Earth Observatory Mooring*

## Conference and Workshop Presentations

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**2024 OCB Summer Workshop** 10 – 13 June 2024

Ocean Carbon and Biogeochemistry, Woods Hole, MA  
LIGHTNING TALK and POSTER: *Oxygen uptake and transport in the  
Labrador Sea, as told by the OSNAP array*

**2024 Gordon Research Seminar on Ocean Mixing** 8 – 9 June 2024

Gordon Research Conferences, Mount Holyoke, MA  
POSTER: *Upper ocean turbulence scaling: Year-long  $\epsilon$  time series in two very different wind-  
forced settings*

**2024 Ocean Sciences Meeting** 19 - 23 February 2024

American Geophysical Union, New Orleans, LA  
TALK: (Abstract - PL13A-05): *Oxygen transport and variability in the  
Labrador Sea: First insights from the new sensors on the OSNAP array*

**2022 Ocean Sciences Meeting** 24 February – 4 March 2022

American Geophysical Union, Online  
TALK (Abstract - 2181-A): *High Salinity Shelf Water production rates  
from near-surface mooring data*

**26<sup>th</sup> International Symposium on Polar Sciences** 27-29 September 2021

Korea Polar Research Institute, Online,  
POSTER: *A high-resolution process study of High Salinity Shelf Water  
formation in the Terra Nova Bay Polynya, Ross Sea, Antarctica*

**2020 AGU Fall Meeting** 1-17 December 2021

American Geophysical Union, Online  
POSTER (Abstract GC116-0001): *A high-resolution process study of High  
Salinity Shelf Water formation in the Terra Nova Bay Polynya, Ross Sea,  
Antarctica*

**Land-Ice-Ocean Network Exploration with Semiautonomous Systems  
(LIONESS) Workshop**

13-15 May 2020

Korea Polar Research Institute, Online,  
TALK: *Investigation of High Salinity Shelf Water in the Terra Nova Bay  
Polynya, Ross Sea*

**2020 Ocean Sciences Meeting** 16-20 February 2020

American Geophysical Union, San Diego, CA  
TALK (Abstract PS11A-03): *Scaling turbulence in the ocean boundary layer  
of the Southeast Pacific Ocean stratus region*

**2015 AGU Fall Meeting** 14-18 December 2015

American Geophysical Union, San Francisco, CA  
POSTER (Abstract OS23B-1990): *Analysis of Bubble Plume Distributions  
to Evaluate Methane Hydrate Decomposition on the Continental Slope*

## Outreach Activities

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- PyClub** 2020-2021  
*Co-created and co-taught lessons introducing the use of the Pandas package in Python to a group of students from underserved high schools*
- Girls Who Code at Columbia University** 2016 – 2019, 2021  
*Managed and participated in weekly coding classes for local high school girls, contributed to weekly organizational meetings, and supervised field trips. Developed a lesson on the NumPy, Pandas, and Matplotlib packages*
- Girls' Science Day at Columbia University** 2016 – 2018  
*Assisted with science demonstrations in an annual science fair that engages local middle and high school girls in scientific research occurring at Columbia University*
- Lamont-Doherty Earth Observatory Open House** 2016, 2017, 2018, 2020  
*Assisted annually in the development and demonstration of various oceanography-related exhibits for the general public*

## Research Cruise Experience

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- Southwest Pacific Ocean** 6 weeks, 2019, R/V Falkor  
*Observations of biological and physical processes occurring in the sea surface microlayer*
- Ross Sea, Antarctica** 6 weeks, 2018, R/V Araon  
*Retrieval and deployment of various physical oceanographic moorings*
- Nootka Sound, British Columbia** 10 days, 2014, R/V Thompson  
*Thesis data collection for senior undergraduates in the University of Washington Department of Oceanography*
- Washington and Oregon coasts** 10 days, 2014, R/V Thompson  
*Geochemical and geophysical observation of methane plumes on the continental margin*
- Washington and Oregon coasts** 2 weeks, 2014, R/V Thompson  
*Retrieval of Ocean Bottom Seismometers monitoring seismic activity on the Cascadia Subduction Zone*
- Washington and Oregon coasts** 4 weeks, 2013, R/V Atlantis  
*Investigation of the thermal and fluid environment of the Cascadia Subduction Zone*