

# 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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- Ph.D.** Columbia University, Earth and Environmental Sciences 2023  
*Advisor: Christopher J. Zappa*
- B.S.** University of Washington, Oceanography 2015  
*Advisor: H. Paul Johnson*

## Professional Appointments

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- Postdoctoral Research Fellow** University of Rhode Island 2023 - present
- Research Assistant** University of Washington 2012 - 2016

## Research Interests

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- Air-sea interaction physics
- Upper ocean turbulence
- Polynya processes
- Moorings and uncrewed systems
- High-latitude environments
- Ocean ventilation and deoxygenation

## Peer-Reviewed Publications

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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; Oxygen optodes on oceanographic moorings: recommendations for deployment and in-situ calibration. [Under review.](#)
- 2024
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 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 the weekly Ocean and Climate Physics seminar series at the Lamont-Doherty Earth Observatory</i>	2019 - 2020
<b>Seminar Coordinator</b> Lamont-Doherty Earth Observatory Earth Science Colloquium <i>Invited speakers and managed logistics for institution-wide seminar series</i>	2018 – 2020
<b>Student Representative</b> Lamont-Doherty Earth Observatory 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>Physical Oceanography</b> University of Rhode Island <i>Guest lecturer; created and taught two 80-minute lectures on gravity and internal waves to a graduate-level introductory physical oceanography class</i>	Fall 2023
<b>PyClub</b> Online <i>Teacher; Created and led a lesson introducing the use of the Pandas package in Python to a group of high school students</i>	Spring 2021
<b>Introduction to Physical Oceanography</b> Columbia University <i>Teaching Assistant; led weekly office hour sessions, graded homework</i>	Fall 2018
<b>Dynamics of Climate Variability and Change</b> Columbia University <i>Teaching Assistant; led weekly office hour sessions, graded homework</i>	Fall 2017
<b>Oceanography of the Pacific Northwest</b> University of Washington <i>Teaching Assistant; assisted in lab demonstrations, graded homework</i>	Fall 2015

## Mentoring

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**The Summer Undergraduate Research Fellowship in Oceanography (SURFO) program** Summer 2024  
*Worked closely with undergraduate Nathaniel Nowel on his project entitled,  
“Exploring the Role of the Gulf Stream in Wintertime Surface Wind Convergence  
Using Saildrone Vehicles”*

## Professional Membership

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**Mentoring Physical Oceanography Women to Increase Retention (MPOWIR)** 2021 - present

## Invited Talks

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**University of Rhode Island Physical Oceanography Seminar Series** 2 February 2024  
University of Rhode Island  
*High Salinity Shelf Water production and turbulent mixing in an  
Antarctic polynya*

**University of Rhode Island Physical Oceanography Seminar Series** 30 April 2021  
University of Rhode Island, Online  
*A high-resolution process study of High Salinity Shelf Water formation  
in the Terra Nova Bay Polynya, Ross Sea, Antarctica*

## 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*

**Antarctic Sea Ice and Southern Ocean Discussions Seminar** 7 December 2022  
University of Texas at San Antonio, Online  
TALK: *High Salinity Shelf Water production in Terra Nova Bay, Ross Sea  
from high-resolution near-surface salinity observations*

**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*  
**Antarctic Sea Ice and Southern Ocean Discussions Seminar** 17 February 2021  
 University of Texas at San Antonio, Online  
 TALK: *The Lamont-Doherty Earth Observatory Mooring*
- 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-developed and co-taught 8-lesson course to introduce oceanography and python coding to NYC high school students*
- Girls Who Code at Columbia University** 2016 – 2019, 2021  
*Managed and participated in weekly coding classes for NYC high school girls, participated in weekly organizational meetings, 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 NYC 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 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  
*Observation of biological and physical processes occurring at 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*