Una Kim Miller

University of Rhode Island
Graduate School of Oceanography
Postdoctoral Researcher

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Education

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

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

Research Interests

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

Peer-Reviewed Publications

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

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

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

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

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

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

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.

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

Awards and Grants

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

Professional Service

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

Teaching Experience

Physical Oceanography University of Rhode Island Fall 2023
Guest lecturer; created and taught two 80-minute lectures on gravity and internal waves to a graduate-level introductory physical oceanography class
PyClub Online Spring 2021
Teacher; Created and led a lesson introducing the use of the Pandas package in Python to a group of high school students
Introduction to Physical Oceanography Columbia University Fall 2018
Teaching Assistant; led weekly office hour sessions, graded homework
Dynamics of Climate Variability and Change Columbia University Fall 2017
Teaching Assistant; led weekly office hour sessions, graded homework
Oceanography of the Pacific Northwest University of Washington Fall 2015
Teaching Assistant; assisted in lab demonstrations, graded homework

Mentoring

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

Mentoring Physical Oceanography Women to Increase Retention (MPOWIR)
American Geophysical Union

Conference Presentations

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 ε 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*

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

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*

26th 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*

University of Rhode Island Physical Oceanography Seminar Series 30 April 2021
University of Rhode Island, Online
TALK: *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

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

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