

Una Kim Miller

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Education

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

Interests

- Air-sea interaction
- Upper-ocean turbulence
- Regions of ocean ventilation
- Antarctic polynya dynamics
- Ocean oxygen uptake and transport

Appointments

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

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

Peer-Reviewed Publications

1. High Salinity Shelf Water production rates in Terra Nova Bay, Ross Sea from high-resolution salinity observations
Miller, U.K., C.J. Zappa, A.L. Gordon, Seung-Tae Yoon, Craig Stevens, Won Sang Lee
Nat. Commun., [doi:10.1038/s41467-023-43880-1](https://doi.org/10.1038/s41467-023-43880-1)
2. Scaling of moored surface ocean turbulence measurements in the Southeast Pacific Ocean
Miller, U.K., C. J. Zappa, S. Zippel, J. T. Farrar, R. A. Weller (2023)
J. Geophys. Res. Oceans, [doi:10.1029/2022JC018901](https://doi.org/10.1029/2022JC018901)
3. TKE Dissipation Rate Estimates from Pulse-Coherent ADCPs on Moorings
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)
J. of Atmos. Ocean. Technol., [doi:10.1175/JTECH-D-21-0005.1](https://doi.org/10.1175/JTECH-D-21-0005.1)
4. Warming and inhibition of salinization at the ocean's surface by cyanobacteria
Wurl, O., K. Bird, M. Cunliffe, W.M. Landing, **U. K. Miller**, N. I. H. Mustaffa, et al. (2018)
Geophys. Res. Lett., [doi:10.1029/2018GL077946](https://doi.org/10.1029/2018GL077946)

5. Analysis of bubble plume distributions to evaluate methane hydrate decomposition on the continental slope
Johnson, H. P., **U. K. Miller**, M. S. Salmi, and E. A. Solomon (2015)
Geochem. Geophys. Geosyst., doi:[10.1002/2015GC005955](https://doi.org/10.1002/2015GC005955).
6. Dissociation of Cascadia margin gas hydrates in response to contemporary ocean warming
Hautala, S. L., E. A. Solomon, H. P. Johnson, R. N. Harris, **U. K. Miller** (2014)
Geophys. Res. Lett., doi:[10.1002/2014GL061606](https://doi.org/10.1002/2014GL061606).

Presentations

2024 Ocean Sciences Meeting

American Geophysical Union, New Orleans, LA, 19 February – 23 February 2024
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

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

Antarctic Sea Ice and Southern Ocean Discussions Seminar

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

2022 Ocean Sciences Meeting

American Geophysical Union, Online, 24 February – 4 March 2022
TALK (Abstract - 2181-A): *High Salinity Shelf Water production rates from near-surface mooring data*

26th International Symposium on Polar Sciences

Korea Polar Research Institute, Online, 27-29 September 2021
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

University of Rhode Island, Online, 30 April 2021
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

University of Texas at San Antonio, Online, 17 February 2021
TALK: *The Lamont-Doherty Earth Observatory Mooring*

2020 AGU Fall Meeting

American Geophysical Union, Online, 1-17 December 2021
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

Korea Polar Research Institute, Online, 13-15 May 2020
TALK: *Investigation of High Salinity Shelf Water in the Terra Nova Bay Polynya, Ross Sea*

2020 Ocean Sciences Meeting AGU, San Diego, CA, 16-20 February 2020

TALK (Abstract PS11A-03): *Scaling turbulence in the ocean boundary layer of the Southeast Pacific Ocean stratus region*

2015 AGU Fall Meeting American Geophysical Union, San Francisco, CA, 14-18 December 2015

POSTER (Abstract OS23B-1990): *Analysis of Bubble Plume Distributions to Evaluate Methane Hydrate Decomposition on the Continental Slope.*

Outreach and Mentoring 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 to be taught in a new data analysis course.

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

Professional Service

Peer Reviewer Nature Communications, Journal of Remote Sensing, 2020 - 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 Fall 2023, University of Rhode Island

Guest lecturer; created and taught two 80-minute lectures on gravity and internal waves to a graduate-level introductory physical oceanography class.

PyClub Spring 2021, Online

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* Fall 2018, Columbia University

Teaching Assistant; led weekly office hour sessions, graded homework

Dynamics of Climate Variability and Change Fall 2017, Columbia University

Teaching Assistant; led weekly office hour sessions, graded homework

Oceanography of the Pacific Northwest* Fall 2015, University of Washington

Teaching Assistant; assisted in lab demonstrations, graded homework

*Student evaluation available upon request

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