Una Kim Miller

University of Rhode Island · una.miller@uri.edu · https://unamiller.github.io/

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

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

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

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

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

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.

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.

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

Professional Membership

Mentoring Physical Oceanography Women to Increase Retention (MPOWIR)

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