Una Kim Miller

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Education

Ph.D. Columbia University, Earth and Environmental Sciences, Expected 2022
Thesis: High Salinity Shelf Water formation in the Terra Nova Bay Polynya, Ross Sea, Antarctica
M.A. Columbia University, Earth and Environmental Sciences, 2018
Thesis: Similarity Scaling of Turbulence Kinetic Energy Dissipation in the Surface Ocean
B.S. University of Washington, Oceanography, 2015
Thesis: Surface water alkalinity in Nootka Sound, British Columbia

Appointments

Graduate Research Fellow Columbia University, Lamont-Doherty Earth Observatory, 2016 - present
Research Assistant University of Washington, Department of Oceanography, 2012-2016

Awards

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

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.* Journal of Atmospheric and Oceanic Technology, doi:10.1175/JTECH-D-21-0005.1

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.* Geophysical Research Letters, 45, 4230–4237. doi:10.1029/2018GL077946

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.*, 16, 3825–3839, doi:10.1002/2015GC005955.

Hautala, S. L., E. A. Solomon, H. P. Johnson, R. N. Harris, and **U. K. Miller** (2014), *Dissociation of Cascadia margin gas hydrates in response to contemporary ocean warming*, *Geophys. Res. Lett.*, 41, 8486–8494, doi:10.1002/2014GL061606.

Submitted and In Review

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.* Submitted to Journal of Geophysical Research: Oceans

In-Preparation

Miller, U.K., C.J. Zappa, A. L. Gordon, S. Yoon, C.L. Stevens, W. Lee. *Estimates of High Salinity Shelf Water production rate from near-surface mooring data in the Terra Nova Bay polynya*

Presentations

2022 Ocean Sciences Meeting AGU, 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

Physical Oceanography Seminar* 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: Lamont-Doherty Earth Observatory Mooring Update

2020 Fall Meeting AGU, 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, 14-15 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 Fall Meeting AGU, 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.

*Invited

Outreach and Mentoring Activities

PyClub 2020-2021
Co-developed and 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

Seminar Coordinator Ocean and Climate Physics Seminar Series, Lamont-Doherty Earth Observatory, 2019 - 2020
Invited speakers and managed logistics for weekly divisional seminar series

Seminar Coordinator Earth Science Colloquium, Lamont-Doherty Earth Observatory, 2018 – 2020
Invited two speakers per semester and managed logistics for institution-wide seminar series

Student Representative Executive Committee, Lamont-Doherty Earth Observatory, 2019 - 2020
Advocated for graduate student matters in monthly meetings with the LDEO directorate

Computational and Data Analysis Skills

Languages: Python, MATLAB

Frequently-Used Analytical & Visualization Tools: Python packages (Pandas, xarray, Matplotlib, NumPy, SciPy, Rasterio), JupyterLab, QGIS

Other: Command line Git, GitHub

Teaching Experience

PyClub Spring 2021, Online
Developed and taught a lesson introducing the use of the Pandas package in Python

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

**S*tudent evaluation available upon request

Other Scientific Writing

"The Ocean Skin." *Cruise Log: Studying the Sea-Surface Microlayer 2,* December 18, 2019, https://schmidtocean.org/cruise-log-post/the-ocean-skin/

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