

Una Kim Miller

Columbia University · Lamont-Doherty Earth Observatory · umiller@ldeo.columbia.edu · <https://unamiller.github.io/>

Education

Ph.D., Earth and Environmental Sciences Columbia University, New York, NY <i>Thesis: High Salinity Shelf Water formation in the Terra Nova Bay Polynya, Ross Sea, Antarctica</i> <i>Advised by Christopher J. Zappa</i>	Expected 2022
M.Phil., Earth and Environmental Sciences Columbia University, New York, NY	2020
M.A., Earth and Environmental Sciences Columbia University, New York, NY <i>Thesis: Similarity Scaling of Turbulence Kinetic Energy Dissipation in the Surface Ocean</i> <i>Advised by Christopher J. Zappa</i>	2018
B.S., Oceanography University of Washington, Seattle, WA <i>Thesis: Surface water alkalinity in Nootka Sound, British Columbia</i> <i>Advised by H. Paul Johnson, Julian Sachs</i>	2015

Research Interests

Antarctic polynyas, Southern Ocean water masses, sea ice in satellite imagery, air-sea interaction, boundary layer turbulence, instrumented moorings

Appointments

Graduate Researcher Columbia University, Department of Earth and Environmental Sciences <i>Advised by Christopher J. Zappa. Conducted research and fieldwork towards Masters and Ph.D. Theses</i>	2016 – present
Research Assistant, full-time University of Washington, Department of Oceanography <i>Advised by Dr. H. Paul Johnson. Assisted with data collection on research cruises, data analysis, and manuscript writing</i>	2015 - 2016
Undergraduate Research Assistant University of Washington, Department of Oceanography <i>Advised by Dr. H. Paul Johnson. Assisted with data collection on research cruises, data analysis, and manuscript writing</i>	2012 - 2015

Awards

Future Investigators in NASA Earth and Space Science and Technology
([FINESST](#)) grant 2019

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

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](#).

Presentations

Miller, U. K., C. J. Zappa (2021), 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 (Invited)**

Miller, U. K., C. J. Zappa (2021), LDEO Mooring Update. *Antarctic Sea Ice and Southern Ocean Discussions Seminar*, University of Texas at San Antonio, Online, 17 February 2021, **Talk**

Miller, U. K., C. J. Zappa, S.T. Yoon, C. Stevens, W.S. Lee, A. Gordon (2020), A high-resolution process study of High Salinity Shelf Water formation in the Terra Nova Bay Polynya, Ross Sea, Antarctica, Abstract GC116-0001 presented at *2020 Fall Meeting*, AGU, Online, 1-17 Dec, **Poster**

Miller, U. K., C. J. Zappa (2020), Investigation of High Salinity Shelf Water in the Terra Nova Bay Polynya, Ross Sea. *Land-Ice-Ocean Network Exploration with Semiautonomous Systems (LIONESS) Workshop*, Korea Polar Research Institute, Online, 14-15 May 2020, **Talk**

Miller, U. K., C. J. Zappa, J. T. Farrar, D. LeBel, R. A. Weller (2020), Scaling turbulence in the ocean boundary layer of the Southeast Pacific Ocean stratus region, Abstract PS11A-03 presented at *2020 Ocean Sciences Meeting*, AGU, San Diego, CA, 16-20 Feb, **Talk**

Miller, U. K., H.P. Johnson, M.S. Salmi, E.A. Solomon (2015), Analysis of Bubble Plume Distributions to Evaluate Methane Hydrate Decomposition on the Continental Slope. Abstract OS23B-1990 presented at *2015 Fall Meeting, AGU*, San Francisco, CA, 14-18 Dec, **Poster**

Teaching Experience

PyClub: Introducing high school students to Python through oceanography Spring 2021
Online

Teacher; Developed and lead class introducing the use of the Pandas package in Python, co-taught/-developed remaining 7 classes

Introduction to Physical Oceanography Fall 2018

Columbia University, New York, NY

Teaching Assistant; Led weekly office hour sessions, graded homework
Student evaluation available upon request

Dynamics of Climate Variability and Change Fall 2017

Columbia University, New York, NY

Teaching Assistant; Led weekly office hour sessions, graded homework

Oceanography of the Pacific Northwest Fall 2015

University of Washington, Seattle, WA

Teaching Assistant; Assisted in lab classes, graded homework
Student evaluation available upon request

Volunteer Outreach Service

Curriculum Co-developer, Teacher 2020 – 2021

PyClub

Co-developed and taught 8-lesson course to introduce oceanography and python coding to NYC high school students

Classroom Health Chair

Girls Who Code at Columbia University

2016 – 2019

Managed and participated in weekly coding classes for NYC high school girls

Experiment Assistant, Group Leader, Photographer

2016 - 2018

Girls' Science Day at Columbia University

Assisted in an annual science fair that engages NYC middle and high school girls in scientific research occurring at Columbia University

Science Demonstrator

Lamont-Doherty Earth Observatory Open House

2016 - 18, 2020

Assisted annually in development and demonstration of various oceanography-related exhibits for the general public

Professional Service

Ocean and Climate Physics Seminar Coordinator 2019 - 2020

Lamont-Doherty Earth Observatory, Palisades, NY

Invited speakers and managed logistics for weekly divisional seminar series

Executive Committee Graduate Student Representative 2019 - 2020

Lamont-Doherty Earth Observatory, Palisades, NY

Advocated for graduate student matters in monthly meetings of the LDEO directorate with institutional representatives

Earth Science Colloquium Coordinator 2018 - 2020

Lamont-Doherty Earth Observatory, Palisades, NY

Invited speakers and managed logistics for institution-wide seminar series

Graduate Student Committee 2018 - 2019

Columbia University, New York, NY

Organized orientation activities and trips for graduate students

Research Cruise Experience

R/V Falkor 2019

Southwest Pacific Ocean, 6 weeks

Observation of biological and physical processes occurring at the sea surface microlayer

R/V Araon 2018

Ross Sea, Antarctica, 6 weeks

Retrieval and deployment of various physical oceanographic moorings

R/V Thompson 2014

Nootka Sound, British Columbia, 10 days

Thesis data collection for senior undergraduates in the University of Washington Department of Oceanography

R/V Thompson

Washington and Oregon coasts, 10 days

Geochemical and geophysical observation of methane plumes on the continental margin

R/V Thompson

Washington and Oregon coasts, 2 weeks

Retrieval of Ocean Bottom Seismometers monitoring seismic activity on the Cascadia Subduction Zone

R/V Atlantis,

Washington and Oregon coasts, 4 weeks

2013

Investigation of the thermal and fluid environment of the Cascadia Subduction Zone