

Una Kim Miller

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

Education

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| 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 Arthur Nowell, Julian Sachs, H. Paul Johnson</i> | 2015 |

Research Interests

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

Professional Experience

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| Scientific 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 |
| Scientific research assistant, part-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 as an undergraduate student.</i> | 2012 - 2015 |

Awards

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| Future Investigators in NASA Earth and Space Science and Technology (FINESST) grant | 2019 |
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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. (Submitted 2020). *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](https://doi.org/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](https://doi.org/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](https://doi.org/10.1002/2014GL061606).

Presentations

- 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*, 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

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|---|-----------|
| Teaching Assistant Columbia University, New York, NY <i>Introduction to Physical Oceanography</i> | Fall 2018 |
| Teaching Assistant Columbia University, New York, NY <i>Dynamics of Climate Variability and Change</i> | Fall 2017 |

Teaching Assistant

University of Washington, Seattle, WA
Oceanography of the Pacific Northwest

Fall 2015

Volunteer Outreach Service

Curriculum Co-developer

PyClub

Co-developed 8-week course to introduce oceanography and python coding to NYC high schoolers

2020 – present

Classroom Health Chair

Girls Who Code at Columbia University

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

2016 – 2019

Experiment Assistant, Group Leader, Photographer

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

2016 - 2018

Science Demonstrator

Lamont-Doherty Earth Observatory Open House

Assisted in development and demonstration of various oceanography-related exhibits for the general public as part of the annual LDEO Open House

2016 - 18, 2020

Professional Service

Ocean and Climate Physics Seminar Coordinator

Lamont-Doherty Earth Observatory, Palisades, NY

Invited speakers and managed logistics for weekly divisional seminar series

2019 - 2020

Executive Committee Graduate Student Representative

Lamont-Doherty Earth Observatory, Palisades, NY

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

2019 - 2020

Earth Science Colloquium Coordinator

Lamont-Doherty Earth Observatory, Palisades, NY

Invited speakers and managed logistics for weekly institution-wide seminar series

2018 - 2020

Graduate Student Committee

Columbia University, New York, NY

Organized orientation activities and trips for graduate students

2018 - 2019

Research Cruise Experience

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| R/V Falkor Southwest Pacific Ocean, 6 weeks <i>Observation of biological and physical processes occurring at the sea surface microlayer</i> | 2019 |
| R/V Araon Ross Sea, Antarctica, 6 weeks <i>Retrieval and deployment of various physical oceanographic moorings</i> | 2018 |
| R/V Thompson Nootka Sound, British Columbia, 10 days <i>Thesis data collection for senior undergraduates in the University of Washington Department of Oceanography</i> | 2014 |
| R/V Thompson Washington and Oregon coasts, 10 days <i>Geochemical and geophysical observation of methane plumes on the continental margin</i> | |
| R/V Thompson Washington and Oregon coasts, 2 weeks <i>Retrieval of Ocean Bottom Seismometers monitoring seismic activity on the Cascadia Subduction Zone</i> | |
| R/V Atlantis, Washington and Oregon coasts, 4 weeks <i>Investigation of the thermal and fluid environment of the Cascadia Subduction Zone</i> | 2013 |