Ruby Yee

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Education

2021 - present **PhD Oceanography** | Dalhousie University Advisor: Ruth Musgrave
Thesis: *Ocean tracers and mixing: observational and modelling studies of heat, dye, and alkalinity*

2016 - 2020 **BSc Integrated Science (Physics)** | McMaster University
Thesis: *Gravity fingering in heterogeneous porous media*, supervised by Robin Zhao

Publications

R. Yee, R. Musgrave, J. Nash, L. St. Laurent, E. Fine, R. Pickart. 2024. "Diffusivity profiles inferred from temperature microstructure at the southern edge of the Canada Basin". Journal of Geophysical Research. *129*(3). doi:10.1029/2023JC019932

D. Kelley, C. Richards, **R. Yee**, A. Hay, K. Klingbeil, P. MacAulay, R. Musgrave. 2025. "Two-hour sea level oscillations in Halifax Harbour". Journal of Marine Science and Engineering. *13*(7). doi:10.3390/jmse13071366

*__R. Yee__, 2025. "Basin-sized approaches to a global problem". Current Tides: Dalhousie Oceanography Research Magazine. Vol. 6. https://currenttides.ocean.dal.ca/journal-volumes/

** denotes non-peer reviewed.*

Research Experience

Graduate student researcher | Dalhousie Ocean Dynamics Group Jan 2021 - present
Observations and modelling of mixing processes in the Arctic Ocean and Halifax Harbour/Bedford Basin.

Visiting researcher | Leibniz Institute for Baltic Sea Reasearch Oct - Dec 2024
Developing a realistic numerical model for tracers in Halifax Harbour using the General Estuarine Transport Model. Advisors: Hans Burchard and Knut Klingbeil.

Research assistant | Dalhousie University Department of Oceanography May - Dec 2020
Estimating turbulent mixing in the Canada Basin (advisor: Ruth Musgrave), and coastal Labrador data recovery project (advisor: Eric Oliver).

Thermal specialist | McMaster Interdisciplinary Satellite Team Oct 2018 - Oct 2020
Neutron Dosimetry and Exploration CubeSat. PIs: A. Hanu, S. H. Byun, E. Johnston, F. McNeill.

Teaching

Guest lecture | Dalhousie University Jul 2024
OCEA 3003 (Field Oceanography). "Observational methods in Halifax Harbour & Bedford Basin".

Teaching Assistant | Dalhousie University Sep 2021/22/23 - Apr 2022/23/24
OCEA 1001 (Conversations with Ocean Scientists; first-year science writing)

Guest lecture | Dalhousie University Jul 2023
OCEA 3003 (Field Oceanography). "The physical dynamics of Bedford Basin". With R. Musgrave.

Teaching Assistant | McMaster University Sep 2019 - Apr 2020

ISCI 3A12 (Level III Integrated Science projects)

Teaching Assistant | McMaster University Sep 2018 - Apr 2019

ISCI 1A24 (Level I Physics)

Honours and Awards

- NSERC Postgraduate Scholarship - Doctoral. 40000 CAD/year (May 2024-May 2027)
- Mitacs Globalink Research Award. 6000 CAD for travel to the Leibniz Institute for Baltic Sea Research, Germany (Oct-Dec 2024)
- Keith Thompson Memorial Prize from Dalhousie University. 500 CAD (Dec 2023)
- Kathy Ellis Award from Dalhousie University. 300 CAD (Oct 2022)
- Nova Scotia Graduate Scholarship. 10000 CAD/year (Apr 2021-Dec 2022)
- First place in Dalhousie Faculty of Science's summer research contest for a three-minute project summary video aimed at a general audience (Sep 2020)
- NSERC Undergraduate Summer Research Award at Dalhousie University. 4500 CAD (Feb 2020)
- University Senate Scholarship from McMaster University. 800 CAD (Aug 2019)
- A. B. McLay Scholarship in Physics from McMaster University. 500 CAD (Jul 2018)
- McMaster President's Award. 2500 CAD (Sep 2016)
- Governor General's Bronze Academic Medal (Jun 2016)

Presentations

- **R. Yee**, K. Klingbeil, H. Burchard, X. Li, D. Atamanchuk, A. Laurent, B. Wang, K. Fennel, R. Musgrave. "Considerations for accurately representing ocean physics in coastal models used for quantifying marine carbon dioxide removal". Poster: Ocean Sciences Meeting. Glasgow, UK. 2026 (upcoming).
- E. Johnson, J. Ostiguy, **R. Yee**, R. Musgrave. "Ocean physics in mCDR". Poster: Marine Carbon Dioxide Removal in Canada Forum. Halifax, CA. 2025.
- **R. Yee**. "The importance of accurately capturing ocean physics in models used for quantifying marine carbon dioxide removal". Oral presentation: Liège Colloquium on Ocean Dynamics: Marine CDR emerging views and challenges. Liège, BE (attended virtually). 2025.
- **R. Yee**, R. Musgrave, D. Atamanchuk, M. Dever. "We're dyeing to characterize mixing in Halifax Harbour!". Poster: Ocean Mixing GRC. Mount Holyoke, US. 2024.
- **R. Yee**, R. Musgrave, J. Nash, L. St. Laurent, E. Fine, R. Pickart. "Turbulent diffusivity profiles inferred from temperature microstructure at the southern edge of the Canada Basin". Oral presentation: Ocean Sciences Meeting. New Orleans, US. 2024.
- D. Atamanchuk, S. Morgan, A. Laurent, B. Wang, K. Fennel, R. Izett, W. Burt, C. Sonnichsen, **R. Yee**, R.-J. Kalyani-Janssen, R. Musgrave. "Detecting and Quantifying OAE Signal and Associated Carbon Removal in the Bedford Basin Field Trials". Goldschmidt. 2024.
- **R. Yee**, R. Musgrave, S. Rackley. "The role of ocean mixing in carbon dioxide removal via ocean alkalinity enhancement". Oral presentation: Graduate Climate Conference. Woods Hole, US. 2023.
- **R. Yee**, R. Musgrave, S. Rackley. "Simple models for carbon dioxide removal via ocean alkalinity enhancement in coastal environments". Poster: CMOS Congress. St. John's, NL. 2023.

- **R. Yee**, R. Musgrave, J. Nash, L. St. Laurent, E. Fine, R. Pickart. "Turbulent diffusivity and heat flux at the southern edge of the Canada Basin". Poster: Ocean Mixing GRC. Mount Holyoke, US. 2022.
- R. Musgrave, **R. Yee**, M. Dever, A. ten Doeschate. "Measuring and quantifying ocean carbon dioxide removal by ocean alkalinity enhancement in coastal areas". Poster: Ocean Frontier. Halifax, CA. 2022.
- **R. Yee**, R. Musgrave, M. Dever, R. Davis. "The physical dynamics of Bedford Basin: recent observations". Oral presentation: Conference of Dalhousie Oceanography Graduate Students. Halifax, CA. 2022.
- **R. Yee**, R. Musgrave, J. Nash, L. St. Laurent, E. Fine, R. Pickart. "Quantifying turbulence in the Arctic Ocean at the southern edge of the Canada Basin". Poster: CMOS Congress. Virtual. 2021.
- **R. Yee**, R. Musgrave, J. Nash, L. St. Laurent, R. Pickart. "Estimating turbulence in the Arctic Ocean at the Canada Basin shelf break". Oral presentation: Conference of Dalhousie Oceanography Graduate Students. Halifax, CA. 2021.

Technical Skills

Proficient	MATLAB, LaTeX.
Intermediate proficiency	Git, Python
Basic experience	C, R, NetLogo, QGIS, COMSOL, Solidworks

Current certifications

- Commercial marine radio operation (ROC-MC)
- Marine Emergency Duties (MED) A3
- Small Vessel Operator Proficiency (SVOP)
- Rigid Hull Inflatable Operator Training (RHIOT)

Other Employment

Contract copy editor | Isometric Mar 2024
For the Ocean Alkalinity Enhancement from Coastal Outfalls protocol.

Inshore Rescue Boat Coxswain | Canadian Coast Guard Apr - Sep 2019
Leader of three-person search and rescue crew at CCG Station Long Point.

Inshore Rescue Boat Crewmember | Canadian Coast Guard Apr - Sep 2017/18
Member of three-person search and rescue crew at CCG Stations Long Point and Port Lambton.

Tripper | YMCA Camp Waabanaki Jul - Aug 2016
Leader for youth canoe, hiking, and kayak trips.

Service and volunteering

Equity, Diversity, Inclusion, and Accessibility committee Jun 2023 - present
Student representative for the Department of Oceanography.

Dalhousie Oceanography Student Association Jan 2021 - present
Various roles on social committee, weekly coffee meeting organizer, and peer support committee member.

United for Literacy Jan 2022 - present

One-on-one tutor for elementary-level reading and high school math.

Canadian Meteorological and Oceanographic Society Sep 2022 - Sep 2025

Student representative for Halifax.

Mentor for high school interns Jul - Aug 2023

Mentor to four high school interns with Dalhousie University and Imhotep's Legacy Academy.