

# Ruby Yee

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## EDUCATION

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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

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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**, 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

\***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

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**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 Research** 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

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**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

## HONOURS AND AWARDS

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- 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

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- **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.
- 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.
- **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

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

## CURRENT CERTIFICATIONS

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

## OTHER EMPLOYMENT

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<b>Contract copy editor   Isometric</b>	Mar 2024
For the Ocean Alkalinity Enhancement from Coastal Outfalls protocol.	
<b>Inshore Rescue Boat Coxswain   Canadian Coast Guard</b>	Apr - Sep 2019
Leader of three-person search and rescue crew at CCG Station Long Point.	
<b>Inshore Rescue Boat Crewmember   Canadian Coast Guard</b>	Apr - Sep 2017/18
Member of three-person search and rescue crew at CCG Stations Long Point and Port Lambton.	
<b>Trippler   YMCA Camp Waabanaki</b>	Jul - Aug 2016
Leader for youth canoe, hiking, and kayak trips.	

## SERVICE AND VOLUNTEERING

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<b>Equity, Diversity, Inclusion, and Accessibility committee</b>	Jun 2023 - present
Student representative for the Department of Oceanography.	
<b>Dalhousie Oceanography Student Association</b>	Jan 2021 - present
Various roles on social committee, weekly coffee meeting organizer, and peer support committee member.	
<b>United for Literacy</b>	Jan 2022 - present
One-on-one tutor for elementary-level reading and high school math.	
<b>Canadian Meteorological and Oceanographic Society</b>	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.