Samuel D. Brenner

PhD Candidate at the University of Washington, School of Oceanography
Graduate Research Assistant at the Applied Physics Laboratory

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Research summary

I use in-situ observations and simple theory to understand the dynamic links between sea ice and the upper ocean, with a specific focus on atmosphere-ice-ocean momentum transfer in the changing Arctic.

Education

University of Washington *Seattle, WA, USA*

PhD in Oceanography *expected: Summer 2022*
- Advisors: Luc Rainville and Jim Thomson
- Dissertation topic: *The role of sea ice in mediating atmosphere-ice-ocean momentum transfer*

Estuarine & Coastal Fluid Dynamics Summer School Jul. – Aug. 2019

Masters of Science in Oceanography May 2019

University of British Columbia *Vancouver, BC, Canada*

Masters of Applied Science in Civil Engineering Aug. 2017
- Advisor: Bernard Laval
- Thesis: *The free oscillatory response of fjord-type multi-armed lakes.* doi:10.14288/1.0353196

Bachelors of Applied Science in Civil Engineering Jun. 2015

Camosun College *Victoria, BC, Canada*

Advanced Diploma in Civil Engineering Technology Bridge Jun. 2013

Diploma in Civil Engineering Technology Jun. 2010

Publications

MacKinnon, J., et. al, [including **Brenner**, **S.**], 2021. A warm jet in a cold ocean. Nat. Comm., 12(1) p. 12 doi:10.1038/s41467-021-22505-5

Brenner, **S.**, Rainville, L., Thomson, J., Cole, S. and Lee, C., 2021. Comparing observations and parameterizations of ice-ocean drag through an annual cycle across the Beaufort Sea. J. Geophys. Res. Oceans. 126(4), p. 29. doi:10.1029/2020JC016977

Brenner, **S.**, Rainville, L., Thomson, J., and Lee, C., 2020. The evolution of a shallow front in the Arctic marginal ice zone. Elem. Sci. Anth., 8(1), p. 17. doi:10.1525/elementa.413/

Brenner, **S.**, and Laval., B. 2018. Seiche modes in multi-armed lakes. Limnol. Oceanogr., 63: 2717-2726 doi:10.1002/lno.11001

Conference presentations

Brenner S., L. Rainville, J. Thomson, C. Lee. In-situ observations to validate (and invalidate) model parameterizations of the ice-ocean drag coefficient. Presented at: 10th IICWG-DA Workshop 2021 Oct. 26-28; virtual.

Cooper, V., L. Roach, C. Bitz, **S. Brenner**, J. Thomson. Towards Validating Wave-Ice Interactions in Climate Models Using In Situ Observations. Poster presented at: AGU Fall Meeting 2020 Dec. 01-17; virtual. doi:10.1002/essoar.10506174.1

Brenner S., L. Rainville, J. Thomson, C. Lee. Distributed and year-long observations of ice-ocean drag across a range of ice morphologies in the Beaufort Sea. Presented at: AGU Fall Meeting 2020 Dec. 01-17; virtual.

MacKinnon, J., et. al, [including **Brenner**, **S.**]. Subduction of Pacific Summer Water into sub-surface eddies; coordinated observations from late summer Presented at: Ocean Sciences Meeting; 2020 Feb. 17-21; San Diego, CA.

Brenner S., L. Rainville, J. Thomson, J. MacKinnon, C. Lee. Momentum fluxes across the air-ice-ocean interface in the Beaufort Sea. Poster presented at: Ocean Sciences Meeting; 2020 Feb. 17-21; San Diego, CA. doi:10.1002/essoar.10502273.2

Brenner S., L. Rainville, J. Thomson, C. Lee. The evolution of an Arctic meltwater front. Poster presented at: Liège Colloquium on Ocean Dynamics; 2019 May. 6-9; Liège, Belgium

Brenner S., L. Rainville, J. Thomson, C. Lee. Small scale upper-ocean variability in the Arctic. Poster presented at: Ocean Sciences Meeting; 2018 Feb. 11-16; Portland, OR

Brenner S., B. Laval, J. Shore, S. Vagle. Surface Seiching in Quesnel Lake, British Columbia. Poster presented at: Canadian Meteorological and Oceanographic Society Congress; 2017 June 4-8; Toronto, ON

Fieldwork

Research cruises

Norwegian Sea: NORSE pilot/process cruise (R/V Neil Armstrong; 35 days at sea)	Sep. – Oct. 2021
Beaufort Sea: SODA recovery cruise (USCGC Healy; 42 days at sea)	Sep. – Oct. 2019
Beaufort Sea: SODA deployment cruise (USCGC Healy; 36 days at sea)	Sep. – Oct. 2018

Other oceanography/limnology fieldwork

San Juan Channel, WA (mooring deployment/recovery and CTD sections)	Aug. 2019
Cultus Lake, BC (CTD sections)	various dates, 2015–2017
Deeks Lake, BC (mooring deployment and CTD sections)	various dates, 2015–2017
Quesnel Lake, BC (mooring recovery/servicing and CTD sections)	Sep. 26 – 30, 2016
Resolute Bay, NU (water sample collection and CTDs)	Aug. 2014

Field camps

Milne ice shelf, NU (ice shelf GPR, CTDs, mooring service, glacier ablation stakes)	Jul. – Aug. 2014

Diversity, equity, and inclusion service

Mentor for Graduate Applications Mentorship Program 2021
- Worked with a prospective graduate student to provide advice and help through the graduate school application

DEI subcommittee: Graduate Applications Mentorship Program development 2020 – 2021
- Assisted in the development and roll-out of the School of Oceanography Graduate Applications Mentorship Program, which pairs prospective students with current graduate students to help demystify the graduate application process
- https://www.ocean.washington.edu/story/Graduate_Application_Mentorship_Program

Environmental Fluid Mechanics website expansion 2020
- Developed a resource page on the Environmental Fluid Mechanics group website to explain the graduate school application process in order to make it more equitable
- https://depts.washington.edu/uwefm/wordpress/join-us/

Research experience

University of Washington, Applied Physics Lab

Graduate Research Assistant 2017–Present

University of British Columbia, Environmental Fluid Mechanics

Graduate Research Assistant 2015–2017
Undergraduate Research Assistant 2013–2014

Teaching experience

University of Washington

Teaching Assistant
- Coastal Engineering (CEE473/CEWA573) Spring 2021
- Foundations of Ocean Sensors (OCEAN351) Winter 2019

University of British Columbia

Teaching Assistant
- Fluid Mechanics I (CIVL215) Spring 2016
- Environmental Hydraulics (CIVL416) Fall 2016
- Fluid Mechanics II (CIVL315) Fall 2015 & Fall 2016

Non-academic work experience

AECOM *Burnaby, BC, Canada*
Civil Engineering Student Intern May – Sep. 2015

Canadian Sewage Solutions Inc. *Langford, BC, Canada*
Junior Engineering Technologist Dec. 2011 – Nov. 2012

Kiewit Construction *Kearl Lake Oilsands, AB, Canada*
Purchasing Engineer (co-op student) Aug. 2010 – Jan. 2011
Field Engineer (co-op student) Aug. – Dec. 2009

District of North Saanich *North Saanich, BC, Canada*
Drafting Assistant (co-op student) Dec. 2008 – Mar. 2009