

Rebecca H. Jackson

Assistant Professor

Department of Marine & Coastal Sciences
Rutgers, the State University of New Jersey
rjackson@marine.rutgers.edu

EDUCATION

Massachusetts Institute of Technology & Woods Hole Oceanographic Institution Ph.D. in physical oceanography.	2010-2016
Yale University B.S. in physics, with honors, <i>magna cum laude</i> .	2006-2010

POSITIONS

Assistant Professor , Department of Marine & Coastal Sciences, Rutgers University	2019-present
Postdoctoral Fellow , Oregon State University	2016-2018
Graduate Research Assistant , MIT & WHOI	2010-2016
Undergraduate Research Assistant , Yale University	2009-2010

AWARDS & FELLOWSHIPS

AGU Outstanding Reviewer	2021
NOAA Climate & Global Change Postdoctoral Fellowship.	2016-2018
Postdoctoral Scientist Award, Phi Kappa Phi, Oregon State University.	2018
Coastal Ocean Institute Student Research Award, WHOI.	2014
Outstanding Student Talk Award, 2014 Ocean Sciences Meeting.	2014
Outstanding Student Talk Award, 2012 Ocean Sciences Meeting.	2012
Howard L. Schultz Prize, Yale University: undergrad award in experimental physics.	2010
O'Connor Award, Yale University: for contributions to community & residential life.	2010
Yale Dean's Research Fellowship in the Sciences, Yale University.	2009

PUBLICATIONS

_* indicates student or postdoc advisee

In review/revision

Cusack, J.*, **R.H. Jackson**, J. Nash, E. Skillingstad, E. Pettit, D. Sutherland, R. Motyka, J. Amundson, D. Winters, (*in review*): "Internal waves excited by subglacial discharge plumes: an energy source for glacier melt."

Wengrove, M., E. Pettit, J. Nash, **R.H. Jackson**, E. Skillingstad (*in review*): "Are bubble bursts a cause of enhanced melting of tidewater glaciers?"

Published

Jackson, R.H., R. Motyka, J. Amundson, N. Abib, D. Sutherland, J. Nash, C. Kienholz (2022): "The relationship between submarine melt and subglacial discharge from observations at a tidewater glacier." doi:[10.1029/2021JC018204](https://doi.org/10.1029/2021JC018204)

- Hager, A., D. Sutherland, J. Amundson, **R.H. Jackson**, R. Motyka, J. Nash (2022): “Subglacial discharge reflux and buoyancy forcing drive seasonality in a silled glacial fjord.” *Journal of Geophysical Research – Ocean*, 127, doi:[10.1029/2021JC018355](https://doi.org/10.1029/2021JC018355)
- Catania, G.A., L.A. Stearns, T.A. Moon, E.M. Enderlin, **R.H. Jackson** (2020): “Future Evolution of Greenland’s Marine-Terminating Outlet Glaciers.” *Journal of Geophysical Research - Earth Surface*. doi: [10.1029/2018JF004873](https://doi.org/10.1029/2018JF004873)
- Jackson, R.H.**, J.D. Nash, C. Kienholz, D.A. Sutherland, J.M. Amundson, R.J. Motyka, D. Winters, E. Skillingstad, E. Pettit (2020), “Meltwater intrusions reveal mechanisms for rapid submarine melt at a tidewater glacier.” *Geophysical Research Letters*, doi:[10.1029/2019GL085335](https://doi.org/10.1029/2019GL085335)
- Sutherland, D.A., **R.H. Jackson**, C. Kienholz, J.M. Amundson, W.P. Dryer, D. Duncan, E.F. Eidam, R. Motyka (2019), “Direct observations of submarine melt and subsurface geometry at a tidewater glacier.” *Science*, 26. doi:[10.1126/science.aax3528](https://doi.org/10.1126/science.aax3528).
- Jackson, R. H.** (2019): “Ocean fingerprints on glacier motion.” *Nature Geoscience*, 12, 224–225. doi:[10.1038/s41561-019-0343-5](https://doi.org/10.1038/s41561-019-0343-5)
- Kienholz, C., J.M. Amundson, R.J. Motyka, **R.H. Jackson**, J.B. Mickett, D.A. Sutherland, J.D. Nash, D.S. Winters, W.P. Dryer, and M. Truffer (2019). “Tracking icebergs with oblique time-lapse photography and sparse optical flow, LeConte Bay, Alaska.” *Journal of Glaciology*, 11, doi:[10.1017/jog.2018.105](https://doi.org/10.1017/jog.2018.105)
- Jackson, R.H.**, S.J. Lentz, and F. Straneo (2018): “The dynamics of shelf forcing in Greenlandic fjords.” *Journal of Physical Oceanography*, 46, doi:[10.1175/JPO-D-18-0057.1](https://doi.org/10.1175/JPO-D-18-0057.1)
- Spall, M., **R. H. Jackson**, and F. Straneo (2017): “Katabatic wind driven exchange in fjords.” *Journal of Geophysical Research: Oceans*, 122. doi:[10.1002/2017JC013026](https://doi.org/10.1002/2017JC013026)
- Jackson, R. H.**, E. L. Shroyer, J. D. Nash, D. A. Sutherland, D. Carroll, M. J. Fried, G. A. Catania, T. C. Bartholomaeus, L. A. Stearns (2017): “Near-glacier surveying of a subglacial discharge plume: Implications for plume parameterizations” *Geophysical Research Letters*, 44, doi:[10.1002/2017GL073602](https://doi.org/10.1002/2017GL073602).
- Nash, J.D., J. Marion, N. McComb, J.S. Nahorniak, **R. H. Jackson**, C. Perren, D. Winters, A. Pickering, J. Bruslind, O.L. Yong, and S.J.K. Lee (2017): “Autonomous CTD profiling from the Robotic Oceanographic Surface Sampler.” *Oceanography*, 30(2), doi:[10.5670/oceanog.2017.229](https://doi.org/10.5670/oceanog.2017.229).
- Jackson, R.H.**, and Straneo, F., (2016): "Heat, salt and freshwater budgets for a glacial fjord in Greenland." *Journal of Physical Oceanography*, 46, doi:[10.1175/JPO-D-15-0134.1](https://doi.org/10.1175/JPO-D-15-0134.1)
- Jackson, R.H.**, Straneo, F., and Sutherland, D.A. (2014). "Externally forced fluctuations in ocean temperature at Greenland glaciers in non-summer months." *Nature Geoscience*, 7, 503–508, doi:[10.1038/ngeo2186](https://doi.org/10.1038/ngeo2186)

REPORTS

- Sutherland, D.A., F. Straneo, T. Moon, I. Le Bras, E. Frajka-Williams, J.L. Bamber, G.A. Catania, P. Heimbach, **R.H. Jackson**, L.A. Stearns (2019): “Freshwater fluxes from the Greenland Ice Sheet: Report from an international workshop.” *CLIVAR GRISO-NSF*, pages 1–38, doi:[10.18739/A24M9198B](https://doi.org/10.18739/A24M9198B).

GRANTS

NSF Polar Programs, Arctic Natural Sciences, “Collaborative Research: GLACIOME: Developing a comprehensive model of the coupled glacier-ocean-melange system.”

Rutgers Budget: \$293K; Total Budget: \$975K

PIs: A. Robel (lead), J. Amundson, **R.H. Jackson**, J. Burton.

Period: June 2021 – May 2024

NSF Ocean Sciences, Physical Oceanography: “Investigating the exchange flow in glacial fjords through an estuarine lens.”

Rutgers / Total Budget: \$617K

PIs: **R.H. Jackson** (lead), R. Chant, J. Wilkin

Period: Sept 2020 – Aug 2023

NSF Polar Programs, Arctic Natural Sciences: “Collaborative Research: How fast do tidewater glaciers melt? Quantifying the processes that control boundary layer transport across the ice-ocean interface.”

Rutgers Budget: \$485K; Total Budget: \$2,631K;

PIs: J. Nash (lead), **R.H. Jackson**, E. Wengrove, E. Skyllinstad, E. Pettit, D. Sutherland

Period: Sept 2020 – Aug 2024

Rutgers Vice Chancellor for Research and Innovation Development Grant: “Objective Driven Experimental Design under Uncertainty for Earth Science Observational Systems.”

Rutgers / Total Budget: \$60K

PIs: S. Jha (lead), R. Kopp, T. Miles, **R.H. Jackson**, O. Schofield

Period: Aug 2019- Aug 2020

INVITED SEMINARS

University of Maryland, Atmospheric and Oceanic Science Seminar.	2021
University of Delaware, School of Marine Science and Policy seminar.	2021
University of Cambridge, British Antarctic Survey, Polar Oceans seminar	2020
NASA Goddard Institute for Space Studies, Sea Level Rise seminar	2020
Rutgers University, Department of Marine & Coastal Sciences seminar.	2018
University of North Carolina at Wilmington, Physics & Physical Oceanography seminar.	2018
Woods Hole Oceanographic Institution, joint Physical Oceanography & AOPE seminar.	2018
University of Chicago, Department of Geophysical Sciences seminar.	2018
NASA Jet Propulsion Lab, Earth Science seminar.	2017
Oregon State University, Physics of Oceans & Atmospheres seminar.	2017
University of Bergen, Norway, Geophysical Institute seminar.	2017
Harvard University, ClimaTea seminar in Department of Earth & Planetary Sciences.	2016
Massachusetts Institute of Technology, Program in Ocean Atmosphere & Climate seminar.	2015
Scripps Institute of Oceanography, joint Polar-CASPO seminar.	2015
Oregon State University, Physics of Oceans & Atmospheres seminar.	2015
University of Washington, Physical Oceanography seminar.	2015

WORKSHOPS & SHORT COURSES

Summer School on Estimating the Circulation & Climate of the Ocean (ECCO) at Friday Harbor Laboratory, invited lecturer .	2019
CLIVAR/GRISO Workshop on Greenland Freshwater Fluxes, invited speaker .	2018
Geophysical Fluid Dynamics Program at WHOI, invited staff .	2017
Interagency Arctic Research Policy Committee, invited presenter .	2016
Physical Oceanography Dissertation Symposium, sponsored by NSF, NASA, NOAA, ONR.	2016
Greenland Ice-sheet Ocean Observing System Workshop.	2015
Advanced Climate Dynamics Course (ACDC): “Dynamics of the Greenland Ice Sheet.”	2014
Greenland Ice Sheet-Ocean workshop, US CLIVAR-sponsored.	2013
Communicating Science Course, WHOI (semester-long training in science communication).	2013
Coastal and Estuarine Fluid Dynamics Summer School, Friday Harbor Laboratory, University of Washington (5 weeks).	2012

PRESENTATIONS AT MEETINGS (FIRST AUTHOR ONLY)

<i>Talk (invited)</i> , American Physics Society Meeting: “Melting and mixing at the ocean-glacier interface”	2021
<i>Talk (invited)</i> , AGU Fall Meeting: “Exploring the relationship between submarine melt and subglacial discharge with observations from LeConte Glacier, Alaska.”	2020
<i>Poster</i> , Ocean Sciences Meeting: “Discharge plume dynamics at a tidewater glacier: linking upwelling plumes to the downstream exchange flow.”	2020
<i>Talk</i> , AGU Fall Meeting: “Variability in submarine melt and subglacial discharge from ocean budgets at LeConte Glacier.”	2019
<i>Talk (invited)</i> , Gordon Research Conference on Coastal Ocean Dynamics: “Melting and mixing at the ocean-glacier boundary: dynamics of meltwater plumes.”	2019
<i>Talk</i> , AGU Fall Meeting: “Elevated ambient melting and large melt intrusions at a tidewater glacier.”	2018
<i>Talk</i> , Ocean Sciences Meeting: “Turbulent plume dynamics at the ocean-glacier interface: buoyancy forcing from subglacial discharge versus submarine melting.”	2018
<i>Poster</i> , Gordon Research Conference on Coastal Dynamics. “Plume dynamics at the ocean-glacier interface.”	2017
<i>Poster</i> , AGU Fall Meeting: “Investigating near-glacier circulation and plume theory with high-resolution fjord surveys in West Greenland.”	2016
<i>Talk</i> , International Glaciology Society Symposium on Interactions of Ice Sheets & Glaciers with the Ocean: “Shelf versus local wind forcing in Greenland’s glacial fjords.”	2016
<i>Talk (invited)</i> : AGU Fall Meeting: “Heat, salt, and freshwater budgets for a glacial fjord in Greenland.”	2015
<i>Talk</i> , International Glaciology Society Symposium on Ice Sheet Dynamics & Ocean Interaction: “Glacial fjord circulation: how is heat imported and meltwater exported?”	2015

<i>Poster</i> , AGU Fall Meeting: “How and when can submarine melting be inferred from measurements of ocean heat transport?”	2014
<i>Talk</i> , Ocean Sciences Meeting: “The competition between buoyancy forcing from a glacier and remote forcing from shelf winds in a Greenlandic fjord.”	2014
<i>Talk</i> , Graduate Climate Conference: “Fjord circulation and heat transport at the terminus of a major outlet glacier.”	2013
<i>Poster</i> , Gordon Research Conference on Coastal Ocean Circulation: “Shelf-forced fjord circulation and heat transport at the terminus of a major outlet glacier.”	2013
<i>Poster</i> , U.S. CLIVAR International Workshop on Greenland Ice Sheet Ocean Interactions: “Shelf-forced fjord circulation and heat transport at the terminus of a major outlet glacier.”	2013
<i>Poster</i> , AGU Fall Meeting: “Transport and circulation driven by remote shelf winds in a glacial fjord of East Greenland.”	2012
<i>Talk</i> , Ocean Sciences Meeting: “Circulation and mixing in Greenland’s glacial fjords inferred from pathways and transformation of glacially modified water.”	2012
<i>Poster</i> , International Glaciology Society Symposium on Interactions of Ice Sheets and Glaciers with the Ocean: “Hydrographic variability in Kangerdglussauq Fjord, East Greenland: a crossroads of Atlantic-water.”	2011

FIELDWORK

<i>ongoing</i> : LeConte Fjord/Glacier, Alaska : intensive surveying at ice-ocean boundary layer; ship, remote surface vessels & ROV operations	2022-2024
LeConte Fjord/Glacier, Alaska (M/V Amber Ann): near-glacier surveying and mooring deployments from autonomous kayaks, turbulence profiling, multi-beam surveying.	2018
LeConte Fjord/Glacier, Alaska (M/V Steller): co-chief scientist of cruise , near-glacier operations with autonomous boats, turbulence profiling, hydrographic surveys, moorings.	2017
LeConte Fjord/Glacier, Alaska (M/V Pelican): chief scientist of cruise ; hydrographic surveying, turbulence profiling and water sampling.	2017
LeConte Fjord/Glacier, Alaska (M/V Steller): co-chief scientist of cruise ; near-glacier operations with autonomous boats, turbulence profiling, hydrographic surveys, moorings.	2017
LeConte Fjord/Glacier, Alaska (M/V Steller): near-glacier operations with autonomous boats, turbulence profiling, hydrographic surveys, mooring recovery and deployment.	2016
Sermilik Fjord, Greenland (M/V Adolf Jensen): mooring recovery and deployment; noble gas sampling; hydrographic surveys.	2015
Disko Bay, Eqip Sermia, Kang. Sermia & Ilulissat Icefjord, Greenland (R/V Porsild): noble gas sampling, hydrographic surveys, mooring recovery, XCTDs & iceberg trackers from helicopter.	2014
Sermilik Fjord & southeast shelf, Greenland (R/V Viking Mads Alex): mooring recovery and deployment, oxygen isotope sampling, hydrographic fjord and shelf surveys.	2013
Kangerdlugssuaq & Sermilik Fjords, Greenland (M/V Fox): hydrographic fjord surveys, mooring recovery and deployment, sediment coring.	2012
Sarqardleq Fjord, Greenland : small boat operations to run AUV (REMUS) near glacier, bathymetric & hydrographic fjord surveys, mooring deployments; helicopter operations.	2012

Sermilik Fjord, Greenland (R/V Viking Mads Alex): hydrographic fjord survey, mooring recovery and deployment, helicopter work at glacier front.	2011
Continental shelf, New England (SSV Corwith Cramer): variety of chemical, physical & biological oceanography instrument deployments.	2011
Sargasso Sea (R/V Atlantic Explorer): hydrography for Bermuda Atlantic Time Series; phytoplankton tows.	2009
Other short research cruises:	2009-present
R/V Robertson, Applied Physics Lab, University of Washington (Puget Sound, WA)	
R/V Elakha, Oregon State University (Yaquina Bay & Oregon shelf, OR)	
R/V Centennial, Friday Harbor Labs, University of Washington (Puget Sound, WA)	
R/V Tioga, Woods Hole Oceanographic Institution (Cape Cod, MA)	
R/V Aegaeo, Hellenic Center for Marine Research (Saronic Gulf, Greece)	
R/V Stommel, Bermuda Institute of Ocean Sciences (Harrington Sound, Bermuda)	

TEACHING (RUTGERS)

Introduction to Physical Oceanography (grad & senior undergrad)	Fall 2019, 2020, 2022
Integrative Ocean Observing: Software Bootcamp (graduate level)	Fall 2021
The Role of Polar Regions in the Earth System (graduate & senior undergrad)	Spring 2021, 2022
The Water Planet (undergrad)	Spring 2020

TEACHING (EXTERNAL TO RUTGERS)

Guest lecturer/instructor for:	
Yale University: Climate Change	2021
University of Alaska: Oceanography seminar	2021
Oregon State University: Physical Oceanography	2016
MIT-WHOI: Data Analysis in Physical Oceanography	2016
Instructor for WHOI undergrad course (Survey of Oceanography)	2014
Teaching assistant for MIT undergrad course (Atmosphere, Ocean and Climate Dynamics)	2013
Teaching Certificate Program , semester-long program at MIT	2013

ADVISING & STUDENT COMMITTEES

PhD students:	
Lois Andersen	2021-present
Bridget Oval	2020-present
Postdocs:	
Jesse Cusack	2020-present
Thesis Committee:	
Joe Gradone, Rutgers University	2022-present
Jacquelyn Veatch, Rutgers University	2021-present
Chuning Wang, Rutgers University	2019-2021
Undergraduate students:	
Gabrielle Ricche, REU student	Summer 2021

SERVICE (RUTGERS)

Lead for Qualify Exam Committee, Graduate Program in Oceanography	2021
Member of Qualifying Exam Committee, Graduate Program in Oceanography	2020
Admissions Committee, Graduate Program in Oceanography	2020, 2021
Rutgers REU Selection Committee	2019, 2020, 2022

SERVICE (EXTERNAL)

Co-lead of Working Group on “Ice Sheet Forcing Ocean” of the Greenland Ice Sheet Ocean Science Network (GRISO)	2021-present
Session Co-Chair , Ocean Sciences Meeting: “Buoyancy-Driven Flows in Estuaries, Continental Shelves, and Polar Regions” (9 sessions).	2022
Session/Discussion Leader , Gordon Conference on Coastal Ocean Dynamics, “High-latitude Shelf Dynamics”	<i>canceled</i> 2021 <i>rescheduled</i> 2023
Session Co-Chair , Ocean Sciences Meeting: “The Dynamics of Buoyancy-Driven Flows in Estuaries, Continental Shelves, and Polar Seas” (5 sessions).	2020
Session Co-Chair , Ocean Sciences Meeting: “The Dynamics of Estuaries and Coastal Buoyancy-driven Flows” (6 sessions).	2018
Seminar coordinator for Physics of Oceans & Atmospheres seminar at OSU.	2016-2017
Coordinator of weekly Polar Group meetings, WHOI.	2013-2016
Coordinator of Student Seminar in Physical Oceanography, MIT & WHOI.	2013-2014
Student representative in MIT-WHOI Joint Committee in Physical Oceanography & MIT-WHOI Student Organization.	2013-2014

OUTREACH

Interview with NOAA featured on climate.gov	2021
Media interviews and coverage in numerous international outlets (Time, Scientific American, The Independent, Deutschlandfunk, Daily Mail, MSNBC, Vice, National Geographic) on results from Sutherland, Jackson et al. (2019) and Jackson et al. (2020)	2019-2020
Presentations to non-science audiences:	
Morristown-Beard High School, Morristown, NJ	2021
Petersburg High School, Petersburg, AK	2018
Petersburg Public Library, Petersburg, AK (twice)	2017
Shady Hill School, Cambridge, MA	2016
Norman Williams Public Library, Woodstock, VT.	2015
Waquoit Bay National Estuarine Research Reserve, East Falmouth, MA.	2014
Falmouth High School, Falmouth, MA.	2013
Castine Yacht Club, Castine, ME.	2012
Articles for the general public:	
“A mooring in iceberg alley” in Oceanus Magazine	2015
“Where ice and ocean meet” in Imagine Magazine	2014
Blog posts for polardispatches.com	2013-2015

- Roundtable discussion** with U.S. Senator Ed Markey on climate & coastal issues, invited participant. 2014
- Demonstrations** at Geophysical Fluid Dynamics Lab Open Days, WHOI: ran fluid dynamics tank experiments for variety of audiences (K-12 students, graduate students, general public). 2013, 2014
- Tutor** at Cambridgeport Elementary School, Cambridge, MA; Community Center, New Haven, CT; and Books, Basketball & Neighbors, Cambridge, MA. 2005-2011
- Guest lecturer** at InSTEP, science program for middle-school girls in Chicago. 2008

OTHER

Reviewer for 14 scientific journals:

Geophysical Research Letters	Journal of Physical Oceanography
Science	Journal of Fluid Mechanics
Nature	Estuarine, Coastal and Shelf Science
Nature Geoscience	Progress in Oceanography
Journal of Geophysical Research: Oceans	Annals of Glaciology
Journal of Glaciology	Science Advances
Proceedings of National Academy of Sciences	Proceedings of the Royal Society A

Reviewer for funding agencies:

- National Science Foundation, Office of Polar Programs
- National Science Foundation, Division of Ocean Sciences

Field training: Marine Safety Training, CH2M HILL Polar Services (2012). Arctic Field Training, Polar Field Services (2012).