

Nicholas L. Beard

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EDUCATION

University of Washington Ph.D. Oceanography Dissertation: "Meridional Exchanges and Mixing at the Iceland-Faroe Ridge"	Nov. 2013
University of Washington M.Sc. Oceanography	Jan. 2010
Colby College B.A. double major in Physics, Mathematical Sciences – <i>cum laude</i>	May 2006

POSITIONS

Technical Staff MIT Lincoln Laboratory	Sep. 2021 – present
Assistant Teaching Professor Rutgers University	Jan. 2019 – Jul. 2021
Postdoctoral Research Associate Oregon State University	Dec. 2017 – 2018
Postdoctoral Scholar Woods Hole Oceanographic Institution	Dec. 2013 – Dec. 2017
Graduate Research Assistant University of Washington	2006 – 2013
Guest Researcher Geophysical Institute, University of Bergen	Fall 2010

PUBLICATIONS

- [13] **Beard, N.L.**, F. Straneo, I.A.A. Le Bras, R. Pickart, and W. Jenkins, 2023. Glacial Meltwater in the Current System of Southern Greenland. *Journal of Geophysical Research - Oceans*, 128, e2023JC019658. <https://doi.org/10.1029/2023JC019658>
- [12] Juranek, L.W., Hales, B., **Beard, N.L.**, Goni, M.A., Shroyer, E., Allen, J.G. and White, A.E., 2023. The Importance of Subsurface Productivity in the Pacific Arctic Gateway as Revealed by High-Resolution Biogeochemical Surveys. *Journal of Geophysical Research: Oceans*, 128(2), p.e2022JC019292.
- [11] **Beard, N.L.**, E.L. Shroyer, J.W. Juranek, B. Hales, M. Goni, 2020: Nutrient-rich gravity current formed by upwelling in Barrow Canyon: high resolution observations. *Journal of Geophysical Research - Oceans*. 125(7). DOI: 10.1029/2020JC016160
- [10] Lindeman, M.R., Straneo, F., Wilson, N.J., Toole, J.M., Krishfeld, R.A., **Beard, N.L.**, Kanzow, T. and Schaffer, J., 2020: Ocean circulation and variability beneath Nioghalvfjerdsbrae (79 North Glacier) ice tongue. *Journal of Geophysical Research: Oceans*, e2020JC016091. 10.1029/2020JC016091
- [9] M. Cape, F. Straneo, **Beard, N.L.**, R. Bundy, M. Charette, 2019: Nutrient release to oceans from buoyancy-driven upwelling at Greenland tidewater glaciers. *Nature Geoscience*, doi: 10.1038/s41561-018-0268-4
- [8] Testor, P., DeYoung, B., Rudnick, D., Glenn, S., Hayes, D., Lee, C., Pattiaratchi, C., Turpin, V., Heslop, E., **Beard, N.L.**, and 88 others, 2019: OceanGliders: A Component of the Integrated Global Ocean Observing System (GOOS). *Frontiers in Marine Science*, doi: 10.3389/fmars.2019.00422

- [7] **Beaird, N.L.**, F. Straneo, W. Jenkins, 2018: Export of strongly diluted Greenland meltwater from a major glacial fjord. *Geophysical Research Letters*, doi: 10.1029/2018GL077000
- [6] **Beaird, N.L.**, F. Straneo, W. Jenkins, 2017: Characteristics of meltwater export from Jakobshavn Isbræ and Ilulissat Icefjord. *Annals of Glaciology* <https://doi.org/10.1017/aog.2017.19>
- [5] **Beaird, N.L.**, P.B. Rhines, C.C. Eriksen, 2016: Observations of Seasonal Subduction at the Iceland-Faroe Front. *Journal of Geophysical Research: Oceans*, 121, doi:10.1002/2015JC011501
- [4] **Beaird, N.L.**, F. Straneo, W. Jenkins, 2015: Spreading of Greenland meltwaters in the ocean revealed by noble gases. *Geophysical Research Letters*, 42, doi: 10.1002/2015GL065003
- [3] Ullgren, J.E., I. Fer, E. Darelius, **Beaird, N.L.**, 2014: Interaction of the Faroe Bank Channel overflow with Iceland Basin intermediate waters. *Journal of Geophysical Research: Oceans*, 119, doi:10.1002/2013JC009437
- [2] **Beaird, N.L.**, P.B. Rhines, C.C. Eriksen, 2013: Overflow waters at the Iceland-Faroe Ridge observed in multi-year Seaglider surveys. *Journal of Physical Oceanography*, 43, doi: 0.1175/JPO-D-13-029.1
- [1] **Beaird, N.L.**, I. Fer, P.B. Rhines, C.C. Eriksen, 2012: Dissipation of Turbulent Kinetic Energy inferred from Seagliders: An application to the eastern Nordic Seas overflows. *Journal of Physical Oceanography*, 42, doi: 10.1175/JPO-D-12-094.1

CONFERENCE PAPERS

- [6] **N. L. Beaird** R. Chapurin, D. Le Sage, T. Carlson, J. B. Ashcom, A. Mangognia, P. F. Moulton, A. March, M. C. Stowe "Brillouin Lidar: Towards a High Coverage Rate Remote Subsurface Hydrographic Capability," OCEANS 2025 - Great Lakes, Chicago, IL, USA, 2025, pp. 1-8, doi: 10.23919/OCEANS59106.2025.11244932.
- [5] Miller, M. D., **Beaird, N.L.**, Wawrzynek, E. (2024, September). Ocean state estimation via interior-plus-surface quasigeostrophy integrated with measurements onboard an autonomous underwater vehicle. In 2024 IEEE/OES Autonomous Underwater Vehicles Symposium (AUV) (pp. 1-6). IEEE. doi: 10.1109/AUV61864.2024.11030790
- [4] Book, J.W., Miller, M.D., **Beaird, N.L.**, Barron, C., Edwards, C.R., Edwards, J.R., Gong, D., Lawrence, A., Lynch, S.D., Miles, T. and Osborne, J., 2023, September. Predictions of AcousticS with Smart Experimental Networks of GlidERS (PASSENGERS). In OCEANS 2023-MTS/IEEE US Gulf Coast (pp. 1-7). IEEE. doi: 10.23919/OCEANS52994.2023.10337217
- [3] Lynch, S. D., Brown, D., Cohen, B., DeVoe, C., Liu, A., **Beaird, N.L.** (2023, September). A High-Performance, Fully Encapsulated, Optics-Based Ocean Salinometer. In OCEANS 2023-MTS/IEEE US Gulf Coast (pp. 1-6). IEEE. doi: 10.23919/OCEANS52994.2023.10336984
- [2] Sheehan, A., Saba, G. K., Nardelli, S., **Beaird, N.L.** (2021, September). Developing an Open-Source Analysis Pipeline for a Glider-Based Acoustic Zooplankton Fish Profiler (AZFP). In OCEANS 2021: San Diego–Porto (pp. 1-6). IEEE. doi: 10.23919/OCEANS44145.2021.9706028
- [1] Anarumo, J., Miles, T., Roarty, H., Kohut, J., **Beaird, N.L.** (2020, October). An Open-Source Software Application for Drifter Trajectory Prediction in the Mid-Atlantic Bight. In Global Oceans 2020: Singapore–US Gulf Coast (pp. 1-8). IEEE. doi: 10.1109/IEEECONF38699.2020.9389124

GRANTS

NSF OPP-1734777, (09/01/2017 - 09/01/2020). Physical Impacts on late Season Productivity in Changing Arctic. Co-PIs: Emily Shroyer, **N.L. Beaird**.

NSF OCE-1536856, (12/01/2015 - 11/30/2018). Tracking Greenland Melt in the Ocean Using Noble Gas Fingerprints. Co-PIs: Fiamma Straneo, **N.L. Beaird**.

WHOI Ocean and Climate Change Institute, (7/01/2014 - 7/01/2016). Using Noble Gases to Distinguish Glacial Freshwater Sources from Greenland. Co-PIs: **N.L. Beaird**, F. Straneo, W. Jenkins.

FELLOWSHIPS & AWARDS

Ocean Outlook Fellowship, University of Bergen	2017
Doherty Postdoctoral Scholarship, Woods Hole Oceanographic Institution	2013
S.S. & I.M.F. Marsden Prize in Earth Sciences, Colby College	2006
National Physics Honor Society	2006

CONFERENCE PRESENTATIONS (FIRST AUTHOR ONLY)

Beaird, N., Miller, M.D., Book, J.W., Edwards, C.R., Edwards, J., Gong, D., Lynch, S., Miles, T.N. and Osborne, J., 2025, May. Subtropical Mode Water as an acoustic waveguide at the Gulf Stream. Meeting of the American Acoustical Society.

Beaird, N.L., Miller, M.D., Book, J.W., Edwards, C.R., Edwards, J., Gong, D., Lynch, S., Miles, T.N. and Osborne, J. (2024), Distributed observations of mode waters at the southern flank of the Gulf Stream. Ocean Sciences Meeting 2024.

Beaird, N.L., Straneo, F., Le Bras, I.A.A., Pickart, R.S. and Jenkins, W.J., (2020), Greenland Meltwater in the Coastal Current System of Southern Greenland. Ocean Sciences Meeting 2020.

Beaird, N.L., E. Shroyer, L. Juranek, B. Hales (2018), Late Summer Observations of Turbulent Nutrient Flux in the Chukchi Sea. **Poster Presentation**, Eastern Pacific Ocean Conference, Timberline, OR.

Beaird, N.L., F. Straneo (2018), Seasonal Cycle of Greenland Meltwater Influence on Sermilik Fjord, Greenland. **Poster Presentation**, Ocean Sciences Meeting, Portland, OR.

Beaird, N.L., F. Straneo (2017), Tracking Greenland's Meltwater. **Oral Presentation**, Ocean Outlook, Bergen, Norway.

Beaird, N.L., F. Straneo, W. Jenkins (**invited** 2016), Meltwater Influence and Pathways in Coastal Greenland **Oral Presentation**, AGU Fall Meeting, San Francisco, CA.

Beaird, N.L., F. Straneo (2016), Seasonality of glacier-driven water mass transformation in Greenland's fjords **Oral Presentation**, International Glaciology Society Symposium, La Jolla, CA.

Beaird, N.L., F. Straneo, W. Jenkins (2016), Noble Gases Reveal Ocean-Glacier Interaction in Shallow and Deep-Silled Greenland Fjords. **Oral Presentation**, Ocean Sciences Meeting, New Orleans, LA.

Beaird, N.L., F. Straneo, W. Jenkins (2015), Noble gases quantify meltwater distribution in a West Greenland fjord. **Oral Presentation**, International Glaciology Society Meeting, Cambridge, UK.

Beaird, N.L., F. Straneo (2015), Signature of ice sheet melt in the waters around Greenland. **Oral Presentation**, Ocean Outlook, Bergen, Norway.

Beaird, N.L., F. Straneo (2014), Greenland Freshwater Input to the North Atlantic. **Poster**, AGU Fall meeting, San Francisco, USA.

Beaird, N.L., F. Straneo, R.H. Jackson (2014), Glacier driven water mass transformation in an East Greenland fjord: Implications for ocean shelf properties and boundary currents. **Oral Presentation**, International Forum for Research into Ice Shelf Processes, Köln, Germany.

Beaird, N.L., C.C. Eriksen, P.B. Rhines (2014), Evidence of Direct Exchange of Low Salinity Intermediate Waters Across the Iceland-Faroe Ridge in Winter. **Oral Presentation**, Ocean Sciences Meeting, Honolulu, USA.

Beaird, N.L., I. Fer, P.B. Rhines, C.C. Eriksen (2013). Vertical Velocity and turbulent dissipation in the Nordic Seas overflows. **Poster**, CNLS-LANL Ocean Turbulence, Santa Fe, USA.

Beaird, N.L., I. Fer, P.B. Rhines, C.C. Eriksen (2012). Dissipation Rate and Vertical Mixing Inferred from Seagliders: An Application to the Nordic Seas Overflows. **Poster**, Ocean Sciences Meeting, Salt Lake City, USA.

Beaird, N.L., I. Fer, P.B. Rhines (2011). Dissipation rate and vertical mixing inferred from Seagliders. **Oral presentation**, delivered by I. Fer, European Geophysical Union General Assembly, Vienna, Austria.

Beaird, N.L., C.C. Eriksen, P.B. Rhines (2010), Vertical Velocity Inferred from Seaglider. **Oral presentation**, BIAC-POCAHONTAS Symposium, Rosendal, Norway.

Beaird, N.L., C.C. Eriksen, P.B. Rhines (2010), Overflow Waters at the Iceland-Faroe Ridge from Seaglider Repeat Surveys. **Poster**, AOSTA Alpine Summer School: Buoyancy Driven Flows. Valsavarenche, Italy.

Beaird, N.L., C.C. Eriksen, P.B. Rhines (2010), Overflow and Entrainment Along the Iceland-Faroe Ridge Observed in Seaglider Repeat Surveys. **Oral Presentation**, Ocean Sciences Meeting, Portland, USA.

SEMINARS

Rutgers University, DMCS Seminar	2019
University of North Carolina Wilmington, Physics & Physical Oceanography Seminar	2018
Scripps Institution of Oceanography, PO seminar	2017
Woods Hole Oceanographic Institution, PO seminar	2017
Woods Hole Oceanographic Institution, PO seminar	2016
University of Washington, PO seminar	2016
Oregon State University, POA Seminar	2015
Colby College, Physics Seminar	2014
Woods Hole Oceanographic Institution, PO seminar	2014
University of Rhode Island, GSO PO seminar	2014
Bjerknes Center-GFI Colloquium, Bergen, Norway	2010
University of East Anglia Atmosphere, Ocean & Climate Seminar, Norwich, UK	2010
National Oceanography Center Seminar, Southampton, UK	2010

TEACHING & OUTREACH

New courses designed and taught at Rutgers:

oceanography 16:712:509: Software Bootcamp	2019
oceanography 16:712:505: Integrated Ocean Observing 1	2019
oceanography 16:712:507: Field Methods 1	2019
oceanography 16:712:506: Integrated Ocean Observing 2	2020
oceanography 16:712:508: Field Methods 2	2020

Students advised:

Ailey Sheehan (MSc)	2020-21
Theodore Thompson (MSc)	2020-21
Joe Anarumo (MSc)	2019-20
Julia Engdahl (MSc)	2019-20

Student thesis committees:

Sam Coakley (PhD)

2021

OSU ‘Mathcamp’

Guest lecturer for graduate student math bootcamp.

OMSI Science communication Fellowship

Fellowship with the Oregon Museum of Science and Industry to learn best practices in informal science education. Developed hands-on activity at the museum to convey work on biophysical interaction in the Arctic.

Media:

Dynamic Arctic blog: Follow the Flow: Turbulence and biology in the Chukchi
<https://thedynamicarctic.com/2017/08/20/follow-the-flow/>

PRI’s The World: Looking small for big answers in Greenland
<http://www.pri.org/stories/2016-01-19/looking-small-big-answers-greenland>

Vermont Standard: Scientists Explore Why Greenland’s Glaciers Are Melting
<http://www.thevermontstandard.com/2015/11/scientists-explore-why-greenlands-glaciers-are-melting/>

NOVA: Waging Science on the High Seas
<http://www.pbs.org/wgbh/nova/earth/waging-science-at-sea.html>

Norman Williams Public Library

Lecture: Ocean-Glacier Interactions in a Warming World
Available via Woodstock Community Television: <https://vimeo.com/146278778>

WHOI Partnership Education Program

Guest lecturer for undergraduate research program.

Waquoit Bay National Estuarine Research Reserve

Chasing Ice film discussion leader.

PolarDispatches Blog

Blog describing fieldwork in Greenland: <http://polardispatches.org/airborne-oceanography/>

Falmouth Academy Science Fair

Judge

Ocean Inquiry Project

Volunteer instructor on educational citizen science cruises in the Puget Sound for high school, college students and community groups.

Teaching Assistant, Introduction to Oceanography, University of Washington

Conducted weekly review sessions for a section of students, and created and graded exams and out-of-class assignments.

Seaglider Laboratory Tours, University of Washington

Led semi-regular tours of the Seaglider engineering laboratory and give presentations on oceanographic field work to visiting student groups ranging from primary school students to undergraduates.

Teaching Assistant, ‘Math After Hours’, Colby College

Assisted running weekly problem solving sessions for undergraduate students in lower level Math courses, typically Calculus and Linear Algebra.

Teaching Assistant, Linear Algebra, Colby College

Graded assignments and led review sessions for an undergraduate Linear Algebra course.

WORKSHOPS & INVITED SHORT COURSES

Geophysical Fluid Dynamics Program at WHOI - invited staff	2017
UNOLS Chief Scientist Training Cruise	2016
Physical Oceanography Dissertation Symposium (PODS VIII), Hawaii, USA	2014
Advanced Climate Dynamics Course: Dynamics of the Greenland Ice Sheet, Greenland	2014
International Forum for Research into Ice Shelf Processes (FRISP), Köln, Germany	2014
Coordination of Irminger Sea Region Science, Boston, USA	2013
BIAC-POCAHONTAS Symposium, Rosendal, Norway	2010
Alpine Summer School: Buoyancy Driven Flows, Valsavarenche, Italy	2010

FIELDWORK

PS109: Greenland Ice Sheet- Ocean Interactions	2017
Northeast Greenland Shelf, 79N Glacier	
Planned deployment of Ice Tethered Profiler, hydrographic work.	
The Dynamic Arctic	2017
Region: Chukchi Sea, Alaska, 15 days	
Led turbulence data acquisition using towed platforms and CTDs.	
OSNAP	2016
Southern Greenland, Irminger & Labrador Seas	
Collected noble gas and Tritium measurements to trace glacial meltwater.	
Atâ Sund	2016
West Greenland	
Led the oceanographic component of a joint glaciology-oceanography field campaign: hydrographic survey; mooring recovery.	
California Borderlands/Cherry Bank	2016
Southern California Bight	
Participated in Chief Scientist training cruise held by UNOLS. Deployed autonomous glider to investigate vertical kinetic energy over steep topography and its relation to enhanced biological production.	
Sermilik Fjord	2015
East Greenland	
Hydrographic survey; mooring deployments. Collected noble gas tracer measurements.	
Atâ Sund	2015
West Greenland	
Led the oceanographic component of a joint glaciology-oceanography field campaign: hydrographic survey; mooring deployments.	
Disko Bay	2014
West Greenland	
Hydrographic survey; helicopter XCTDs. Obtained the first noble gas measurements of glacial meltwater in Greenland.	
Sermilik Fjord	2013
East Greenland	
Hydrographic survey; mooring deployments; helicopter XCTDs.	

Salish Sea Seaglider deployments	2006–2013
Puget Sound, WA / WA Coast / British Columbia	
Numerous deployments, tests, and searches involving Seagliders in Puget Sound, off the Washington continental shelf, and off the central British Columbia coast.	
Faroe Seaglider Project	2006–2009
Faroe Islands / Seattle, WA	
Piloted, deployed, and helped plan a nearly continuous Seaglider survey (31 gliders total) in the North Atlantic.	
CLIVAR P18 South	2008
South Pacific - Southern Ocean	
Collected and analyzed the tracers CFC11/12 and SF6 using a gas chromatograph.	

SCIENTIFIC SERVICE

Reviewer

Nature Geoscience
 Nature Communications
 Journal of Physical Oceanography
 Geophysical Research Letters
 Journal of Atmospheric and Oceanic Technology
 Ocean Science
 Oceanography Magazine
 National Science Foundation OCE & OPP proposals

Committee Membership

WHOI Postdoctoral Association Representative (Treasurer): 2014-2015
 WHOI Educational Council: 2014-2015

PROFESSIONAL SOCIETY MEMBERSHIP

American Geophysical Union
 International Glaciological Society
 American Association for the Advancement of Science
 Marine Technology Society