

EDUCATION

- University of Washington** Seattle, WA
Ph.D. in Physical Oceanography, Advisor: Charles Eriksen 2013–2020
– Thesis: “Eddy Vertical Structure and Variability: vortex evolution and the geography of geostrophic turbulence”
- University of Washington** Seattle, WA
M.S. in Applied Mathematics 2016
- University of Washington** Seattle, WA
M.S. in Physical Oceanography 2016
- University of Maryland** College Park, MD
B.S. in Civil and Environmental Engineering, Magna Cum Laude (minor: project management) 2009–2013

PUBLICATIONS

- [1] **Steinberg, J.M.**, S. Cole, K. Drushka, and R. Abernathey, “Seasonality of the Mesoscale Inverse Cascade as Inferred from Global Scale-Dependent Eddy Energy Observations”, *in preparation*,
- [2] **Steinberg, J.M.** and C. Eriksen, “Eddy Vertical Structure and Variability: Deepglider Observations in the North Atlantic”, *submitted to Journal of Physical Oceanography, under revision*, 2021.
- [3] I. Grooms, N. Loose, R. Abernathey, **Steinberg, J.M.**, S. Bachman, G. Marques, A. Guillaumin, E. Yankovsky, and L. Zanna, “Diffusion-based smoothers for spatial filtering of gridded geophysical data”, *Journal of Advances in Modeling Earth Systems*, 2021. DOI: <https://doi.org/10.1029/2021MS002552>.
- [4] **Steinberg, J.M.** and C. Eriksen, “Glider Sampling Simulations in High-Resolution Ocean Models”, *Journal of Atmospheric and Oceanic Technology*, vol. 37, pp. 975–992, 2020. DOI: <https://doi.org/10.1175/JTECH-D-19-0200.1>.
- [5] **Steinberg, J.M.** and C. Eriksen, “Observed Evolution of a California Undercurrent Eddy”, *Journal of Physical Oceanography*, vol. 49, pp. 649–674, 2019. DOI: <https://doi.org/10.1175/JPO-D-18-0033.1>.
- [6] N. Pelland, J. Bennett, **Steinberg, J.M.**, and C. Eriksen, “Automated Glider Tracking of a California Undercurrent Eddy Using the Extended Kalman Filter”, *Journal of Atmospheric and Oceanic Technology*, vol. 35, pp. 2241–2264, 2018. DOI: <https://doi.org/10.1175/JTECH-D-18-0126.1>.

Prior Work

Bricker, S.B. and Grizzle, R. and Trowbridge, P. and Rose, J.M. and Ferreira, J.G. and Wellman, K. and Zhu, C. and Galimany, E. and Saurel, C. and Landeck-Miller, R. and Wands, J. and Rheault, R. and **Steinberg, J.M.** and Jacob, A. and Davenport, E.D. and Ayvazian, S. and Chintala, M. and Tedesco, M.A.. “Bioextractive Removal of Nitrogen by Oysters in Great Bay Piscataqua River Estuary, New Hampshire, USA”. *Estuaries and Coasts*, 43:23, 2020.

Bricker, S.B. and Ferreira, J.G. and Zhu, C. and Rose, J.M. and Galimany, E. and Wikfors, G. and Saurel, C. and Landeck-Miller, R. and Wands, J. and Trowbridge, P. and Grizzle, R. and Wellman, K. and Rheault, R. and **Steinberg, J.M.** and Jacob, A. and Davenport, E.D. and Ayvazian, S. and Chintala, M. and Tedesco, M.A.. “Role of Shellfish Aquaculture in the Reduction of Eutrophication in an Urban Estuary” *Environmental Science and Technology*, 52:173–183, 2018.

RESEARCH EXPERIENCE

current research interests: mesoscale turbulence, energy cascades, observations below 2000 m, altimeter derived surface eddy kinetic energy, autonomous platforms

Woods Hole Oceanographic Institution

Postdoctoral Investigator

Woods Hole, MA

May 2020 – present

- Analyze and synthesize observations of eddy kinetic and potential energy in a scale-aware consistent manner to improve mesoscale eddy representation and parameterization in global climate models. This work also considers large scale temperature and salinity structure as related to eddy mixing. A main focus is the joint analysis of observational and model data. (Ocean Transport and Eddy Energy Climate Process Team w/ Sylvia Cole)
- Investigate global and regional patterns in sea level rise and identify physical drivers of these observed trends using current ocean state estimates (ECCO). Space borne gravimetric measurements of ocean bottom pressure are also employed to explore ocean heat content changes. (Oct. 2021 - present; NASA-OSTST w/ Christopher Piecuch)

University of Washington

Graduate Research Assistant

Seattle, WA

September 2013–March 2020

- Studied ocean eddy radial-vertical structure, evolution, and decay with a specific focus on geostrophic turbulence, energy cascades, and the surface expression of interior motions.

University of Delaware

Research Experience for Undergraduates: Intern

Lewes, DE

Summer 2012

- project summary: “Laboratory Investigation of Sea Spray as Produced by Wind and Breaking Waves”

N.O.A.A.

Data Analyst/Intern for East Coast eutrophication study

Silver Spring, MD

2011-2013

FIELDWORK

Seaglider and Deepglider Operations

Graduate Research Assistant

UW

2013–2020

- Participated in the preparation, deployment, piloting, and recovery of Seaglider and Deepglider autonomous underwater vehicles. Completed over a dozen small boat operations on university, chartered, and private vessels at the starts and ends of multi-month missions in the Northeastern Pacific and North Atlantic.

Ocean Inquiry Project

Field instructor - Diver

Seattle, WA

2014–2019

- Led education-based one-day research cruises on Puget Sound focused on mini CTD operations, net tows, and water samples.

TEACHING

- **Teaching Assistant** at the University Washington
Geophysical Fluid Dynamics (OCN 512)

Winter 2018-2019, 2019-2020

Lectured as well as organized and carried out experiments in the UW GFD lab.

- **Teaching Assistant** at the University Washington
Physics Across Oceanography: Fluid Mechanics and Waves (OCN 285)
- **Teaching Assistant** at the University Washington
Introduction to Fluid Mechanics (OCN 511)

Fall 2017

Fall 2015

CONFERENCES & PRESENTATIONS

- Aspen Center for Physics: Transport and Mixing of Tracers in Geophysics and Astrophysics June 2021
Meeting Participant
- NOAA Monster Jam Seminar: Invited Talk May 2021
Talk: Using Deepglider AUVs to explore the structure of large ocean eddies and the role they play in the redistribution of energy and tracers
- UCLA: Biogeochemistry Group: Invited Talk Mar. 2021
Talk: Eddy Vertical Structure and Variability: Deepglider Observations of Geostrophic Turbulence in the North Atlantic
- NCAR-CESM: Ocean Model Working Group / CPT: Ocean Transport and Eddy Energy Annual Meeting Feb. 2021
Talk: Scale Aware Eddy Kinetic Energy from Along-Track Sea Surface Height Measurements
- Woods Hole Oceanographic Institution: Department Seminar Woods Hole, Jul. 2020
Talk: Eddy Vertical Structure and Variability: Deepglider Observations of Geostrophic Turbulence in the North Atlantic
- Ocean Sciences Meeting San Diego, Feb. 2020
Talk: Observations of Eddy Vertical Structure Variability in the North Atlantic and Energy Partitioning Across Vertical Modes
- Bermuda Institute of Ocean Sciences Bermuda, Aug. 2019
Talk: Geostrophic Turbulence and Eddy Vertical Structure
- Oregon State University Corvallis, Jun. 2019
Invited Talk: Geostrophic Turbulence and Eddy Vertical Structure
- University of Washington Seattle, Jun. 2019
Talk: Geostrophic Turbulence and Eddy Vertical Structure
- US CLIVAR Workshop: Sources and Sinks of Mesoscale Eddy Energy Tallahassee, Mar. 2019
Poster: Interpreting Geostrophic Turbulence from Eddy Vertical Structure and Variability
- Ocean Sciences Meeting Portland, Feb. 2018
Poster: Geostrophic Turbulence Observed in Eddy Vertical Structure
- GHER: Liege Colloquium Liege, Belgium, Jun. 2016
Poster: The Evolution of a California Undercurrent Submesoscale Eddy (Cuddy)
- Ocean Sciences Meeting New Orleans, Feb. 2016
Poster: The Evolution of a California Undercurrent Submesoscale Eddy (Cuddy)

OUTREACH & VOLUNTEERING

- Letters to a Pre-Scientist 2020 –
Pen-pal/mentor for letter-writing non-profit with the goal of exposing middle school STEM students to new career pathways
- MIT: EAPS Mentoring Program 2020 –
Mentor to graduate students in the Joint MIT-WHOI Program
- Orca Bowl: Science Judge 2014–2019
High School STEM quiz-bowl competition
- Pacific Science Center: Polar Science Weekend 2014–2019
Annual expo showing ocean exploring instruments to the public
- Hazel Wolf Elementary 2016–2019
STEM career 'advisor' to middle school students

PROFESSIONAL ACTIVITIES

- Member of the OceanGliders community 2021–present
Focused on the development and publication of glider best practice procedures (specifically depth average current considerations)
- Postdoctoral Association: At-Large Member 2020–2021
Elected member of the WHOI postdoctoral association responsible for organizing and engaging with the WHOI postdoc community. Including organizing seminars, workshops, panels, and happy-hours.
- Reviewer for the Journal of Physical Oceanography
- Reviewer for the Journal of Geophysical Research: Oceans
- Reviewer for the Journal of Marine Systems
- UW College of the Environment: Student Advisory Committee Member 2017–2018
Oceanography graduate student representative in the council serving as liaison between students and faculty/administration

AWARDS

- Liege Colloquium: Jacques Nihoul Poster Award (2016)