Elizabeth Yankovsky

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EDUCATION

Princeton University, Princeton, NJ
Ph.D., Atmospheric and Oceanic Sciences, *2015 – 2020.*
Thesis: Modeling & parameterizing submesoscale turbulence in dense Arctic flows
Advisor: Dr. Sonya Legg

University of South Carolina Honors College, Columbia, SC
Thesis: Methane hydrates and cellular convection in the Central Aleutian Basin
B.S., Physics and Geophysics, *2011-2015*
Advisors: Drs. Camelia Knapp and Darrell Terry

RESEARCH EXPERIENCE

[C]Worthy, Boulder, CO
Postdoctoral Researcher, 2023-2024
Mentors: Drs. Matthew Long, Alicia Karspeck, Scott Bachman

Courant Institute, New York University, New York, NY
Postdoctoral Associate, Center for Atmosphere Ocean Science, *2020-present*
Mentors: Drs. Laure Zanna and Shafer Smith

NOAA Geophysical Fluid Dynamics Laboratory, Princeton University
Graduate Research Assistant, Ocean & Ice Processes Group, *2015-2020*
Mentors: Drs. Sonya Legg, Robert Hallberg, Rong Zhang

Geophysical Exploration Laboratory, University of South Carolina
Undergraduate Research Assistant, *2012-2015*
Mentors: Drs. Camelia Knapp, Darrell Terry

Oregon State University, College of Earth, Ocean, & Atmospheric Sciences
NSF-REU program intern, *June-August 2014*
"Response of the Length and Stratification of the North River Estuary to Changes in Forcing", Mentor: Dr. James Lerczak

Rutgers University, Department of Marine and Coastal Sciences
NSF-REU program intern, *June-August 2013*
"Quantifying Turbulent Dissipation in a Shallow Estuarine Environment"
Mentor: Dr. Robert Chant

AWARDS

2024 Council of the American Meteorological Society Editor's Award – JPO

2017 National Science Foundation Graduate Research Fellowship

2011 National Merit Scholarship

TEACHING EXPERIENCE

Instructor Assistant: Introduction to Ocean Physics for Climate (GEO-MAE 425). Taught by Gabriel Vecchi, Fall 2018.

Teaching Transcript Program, Princeton McGraw Center, completed 2020.

PUBLICATIONS

Zhou, M., M. Tyka, D. Ho, **E. Yankovsky**, S. Bachman, T. Nicholas, A. Karspeck, M. Long, 2024: Mapping the global variation in the efficiency of ocean alkalinity enhancement for carbon dioxide removal. [Under review, *Nature Portfolio*.]

Yankovsky, E., S. Bachman, K. S. Smith, L. Zanna, 2023: Backscatter parameterization of ocean mesoscale eddies informed by vertical structure. [Under review, *Journal of Advances in Modeling Earth Systems.]*

Yankovsky, E., A. Yankovsky, 2023: The cross-shelf regime of a wind-driven supercritical river plume. *Journal of Physical Oceanography.*

Yankovsky, E., L. Zanna, K. S. Smith, 2022: Influences of mesoscale ocean eddies on flow vertical structure in a resolution-based model hierarchy. *Journal of Advances in Modeling Earth Systems.*

Marques, G., N. Loose, **E. Yankovsky**, J. Steinberg, C. Chang, N. Bhamidipati, A. Adcroft, B. Fox-Kemper, S. Griffies, R. Hallberg, M. Jansen, H. Khatri, L. Zanna, 2022: NeverWorld2: An idealized model hierarchy to investigate ocean mesoscale eddies across resolutions. *Geoscientific Model Development.*

N. Loose, R. Abernathey, I. Grooms, J. Busecke, A. Guillaumin, **E. Yankovsky**, G. Marques, J. Steinberg, A. S. Ross, H. Khatri, S. Bachman, L. Zanna, P. Martin, 2022: GCM-Filters: A Python package for diffusion-based spatial filtering of gridded data. *Journal of Open Source Software.*

I. Grooms, N. Loose, R. Abernathey, J. Steinberg, S. Bachman, G. Marques, A. Guillaumin, **E. Yankovsky**, 2021: Diffusion-based smoothers for spatial filtering of gridded geophysical data. *Journal of Advances in Modeling Earth Systems.*

Yankovsky, E., S. Legg, R. Hallberg, 2021: Parameterizing submesoscale symmetric instability and frontal mixing in dense flows along topography. *Journal of Advances in Modeling Earth Systems.*

Yankovsky, E., S. Legg, 2019: Symmetric and baroclinic instability in dense shelf overflows. *Journal of Physical Oceanography*.

Yankovsky, E. A., D. A. Terry, C. C. Knapp, 2015: Seismic and gravity evidence for methane-hydrate systems in the central Aleutian Basin. *International Journal of Earth Science and Geophysics.*

SELECTED SEMINARS AND TALKS

INVITED TALKS

Impulse response functions as a framework for quantifying carbon uptake associated with ocean alkalinity enhancement. **Enhanced Rock Weathering Conference, Yale University**, 2024.

A backscatter-only parameterization for mesoscale eddies. **IUGG 2023 General Assembly,** Berlin, Germany, 2023.

Improving ocean models across scales: techniques, progress, and open questions. ***AOCD Spring Seminar Series***, **Yale University**, 2023.

The role of ocean turbulence in climate. ***The Department of Earth and Planetary Sciences Colloquium***, **Yale University**, 2023.

Modeling & parameterizing mesoscale eddies in the Arctic Ocean. ***US Interagency Arctic Research Policy Committee*** modeling team meeting, 2022.

Parameterizing mesoscale eddy energetics and vertical structure at eddy-permitting resolutions. ***NCAR Oceanography Seminar***, Boulder, CO, 2022.

Influences of mesoscale ocean eddies on flow vertical structure. ***Oceans Research Group Seminar*****, University of Oxford**, 2022.

Modeling and parameterizing submesoscale turbulence in dense Arctic overflows. ***Atmosphere, Ocean and Climate Sack Lunch Seminar Series,*** **MIT EAPS**, 2021.

Constraining water mass transformation and overflow dynamics on the Arctic shelves. ***Polar Oceans Seminar Series,*** **British Antarctic Survey**, 2021.

Symmetric instability in Arctic dense gravity currents. ***Seminar in Applied and Computational Mathematics*****, University of Edinburgh**, Scotland, 2019.

Modeling baroclinic and submesoscale instabilities in the Arctic Ocean. ***AOCD Fall Seminar Series*****, Yale University**, 2018.

CONFERENCE PRESENTATIONS

Evaluation of "Impulse Response Functions" as a Framework for Quantifying Carbon Uptake Associated with Ocean Alkalinity Enhancement. ***Ocean Sciences Meeting****,* New Orleans, LA, 2024 *and* ***Ocean Model Working Group Meeting****,* ***NCAR****,* Boulder ,CO, 2024.

Exploring Mesoscale Eddy Vertical Structure Regimes in the Global Ocean. ***AGU Fall Meeting****,* 2022.

Influences of mesoscale ocean eddies on flow vertical structure. ***Ocean Sciences Meeting****,* 2022*; **Climate Process Team Annual Meeting: Ocean Transport and Eddy Energy,*** Boulder, CO, 2022.

Effects of eddy representation on vertical structure and energetics. ***CESM Ocean Model Working Group Meeting****,* 2021.

Constraining Arctic water mass transformation and ventilation pathways in the GFDL-OM4.0. ***AGU Fall Meeting****,* 2020.

Modeling vertical transport and submesoscale frontal mixing in dense flows along topography. ***Ocean Sciences Meeting***, San Diego, CA, 2020.

Symmetric and baroclinic instability in dense shelf overflows. ***EGU General Assembly***, Vienna, Austria, 2019.

Symmetric instability in dense shelf overflows. ***Ocean Sciences Meeting***, Portland, OR, 2018.

Dense water formation and transport on the Arctic continental shelves. ***Forum for Arctic Ocean Modeling and Observational Synthesis (FAMOS)*****, Woods Hole Oceanographic Institution**, MA, 2017.

Response of the length and stratification of the North River estuary to changes in forcing. ***AGU Fall Meeting***, San Francisco, CA, 2014.

WORKSHOPS

Machine Learning and Climate Modeling: Princeton AOS, July 2019.

Convection in Nature: Princeton Center for Theoretical Science, Feb. 2018.

Forum for Arctic Modeling and Observational Synthesis (FAMOS): Woods Hole Oceanographic Institution, Oct. 2017.

Les Houches Summer School on Fundamental Aspects of Turbulent Flows in Climate Dynamics: Les Houches Physics School, Aug. 2017.

COMPUTER EXPERIENCE

Regional Ocean Modeling System (ROMS): high-resolution, realistic simulations aimed at studying ocean alkalinity enhancement for carbon removal.

MIT General Circulation Model (MITgcm): idealized non-hydrostatic simulations of dense gravity currents, coastal buoyant plume dynamics, LES.

GFDL Modular Ocean Model (MOM6): idealized and regional simulations; analysis of global models including CM2.6 and OM4, model development.

Other: Python, MATLAB, GitHub, Jupyter, LaTeX, Fortran, shell scripting.

SERVICE

Convener and chair for the session "Multiscale Eddy Dynamics and Tracer Transport: Bridging Observations, Theory, and Modeling" at Ocean Sciences Meeting, 2024.

Convener and chair for the session "Mesoscale Eddy Energy and Ocean Transport" at Ocean Sciences Meeting, 2022.

Reviewer for: Journal of Physical Oceanography, Ocean Modelling, Journal of Advances in Modeling Earth Systems, Geophysical Research Letters, Environmental Fluid Mechanics, NASA NSPIRES program.

NYU-CAOS Colloquium Organizing Committee (2022), **Planning Committee** for the yearly Princeton AOS Program Orientation and Retreat (2018), AOS Program **Student-Faculty Representative** (2017-18).

OUTREACH

STEM Professionals Day at PS154 in Brooklyn – volunteer, 2022.

NJ Ocean Fun Days, Estuary Day, Environment Day – volunteer, 2017-19.

Young Women's Conference in Science, Technology, Engineering & Mathematics (Princeton Plasma Physics Laboratory) – volunteer, 2018-19.

Plainsboro Library – developed youth program "Motion in the Ocean", 2017.

Future City – member of local nonprofit organization aimed at educating communities about environmental issues, working with policy-makers, and developing environmental initiatives, 2016-18.

Environmental Protection Agency: Trash Free Waters – attended meetings to discuss pollution issues facing New York and New Jersey waterways, 2017.