Jacob O. Wenegrat

Updated: February 25, 2025

CONTACT INFORMATION

Jacob O. Wenegrat
Assistant Professor
Department of Atmospheric and Oceanic Science
University of Maryland, College Park, MD

wenegrat@umd.edu
http://wenegrat.github.io

RESEARCH INTERESTS

Geophysical fluid dynamics, atmosphere and ocean dynamics, submesoscale processes, boundary-layer processes

EDUCATION

Ph.D., Oceanography — 2015
School of Oceanography
University of Washington, Seattle, WA.

M.S., Applied Mathematics — 2014
Department of Applied Mathematics
University of Washington, Seattle, WA.

M.S., Oceanography — 2013
Department of Oceanography
University of Washington, Seattle, WA.

B.S., Symbolic Systems — 2006
Stanford University, Stanford, CA.

APPOINTMENTS

Assistant Professor, University of Maryland, College Park — 2020 - present
Department of Atmospheric and Oceanic Science
Burgers Program for Fluid Dynamics (affiliate)
Applied Mathematics & Statistics, and Scientific Computation (affiliate)

Postdoctoral Fellow, Stanford University — 2016 - 2019
Department of Earth System Science
- Supervisor: Leif Thomas

Graduate Research Assistant, University of Washington — 2010 - 2015
School of Oceanography
- Advisor: Michael J. McPhaden

REFEREED PUBLICATIONS
(GROUP MEMBERS IN BOLD)

[21] **Whitley, V.**, and **J.O. Wenegrat**, 2025: Breaking internal waves on sloping topography: connecting parcel displacements to overturn size, interior-boundary exchange, and mixing. *J. Phys. Oceanogr.* in press.

[20] Farrar, J.T., and 37 coauthors (alphabetical), 2025: S-MODE: the Sub-Mesoscale Ocean Dynamics Experiment. *BAMS*. in press. doi:10.1175/BAMS-D-23-0178.1

[19] Renault, L., M. Contreras, P. Marchesiello, C. Conejero, **I. Uchoa**, and **J.O. Wenegrat**, 2024: Unraveling the impacts of submesoscale thermal and current feedbacks on the low level winds and oceanic submesoscale currents. *J. Phys. Oceanogr.* 54, 12, 2463-2486. doi:10.1175/JPO-D-24-0097.1

[18] Dong, J., B. Fox-Kemper, **J.O. Wenegrat**, A. Bodner, X. Yu, S. Belcher, and C. Dong, 2024: Submesoscales are a significant turbulence source in global ocean surface boundary layer. *Nature Comms.* 15, 9566. doi:10.1038/s41467-024-53959-y

[17] Farrar, J.T., and 27 coauthors, 2024: Ocean surface current measurements in the Sub-Mesoscale Ocean Dynamics Experiment. *2024 IEEE International Geoscience and Remote Sensing Symposium Conference Proceedings*, 5795-5798. doi:10.1109/IGARSS53475.2024.10642950

[16] **Wenegrat, J.O.**, 2023: The current feedback on stress modifies the Ekman buoyancy flux at fronts. *J. Phys. Oceanogr.*, 53, 12, 2737-2749. doi:10.1175/JPO-D-23-0005.1

[15] **Chor, T.**, **J.O. Wenegrat**, and J.R. Taylor, 2022: Insights into the mixing efficiency of submesoscale centrifugal-symmetric instabilities *J. Phys. Oceanogr.*, 52, 10, 2273-2287. doi:10.1175/JPO-D-21-0259.1

[14] **Wenegrat, J.O., E. Bonanno**, U. Rack, and G. Gebbie, 2022: A century of observed temperature change in the Indian Ocean. *Geophys. Res. Lett.* 49, e2022GL098217. doi:10.1029/2022GL098217

[13] Ruan, X., **J.O. Wenegrat**, and J. Gula, 2021: Slippery bottom boundary layers: The loss of energy from the general circulation by bottom drag. *Geophys. Res. Lett.*, 48, 19. doi:10.1029/2021GL094434

[12] Farrar, J.T., and 33 coauthors, 2020: S-MODE: the Sub-Mesoscale Ocean Dynamics Experiment. *2020 IEEE International Geoscience and Remote Sensing Symposium Conference Proceedings*, 3533-3536. doi:10.1109/IGARSS39084.2020.9323112

[11] **Wenegrat, J.O.**, L.N. Thomas, M.A. Sundermeyer, J.R. Taylor, E.A. D'Asaro, J. Klymak, R.K. Shearman, and C.M. Lee, 2020: Enhanced mixing across the gyre boundary at the Gulf Stream front. *Proc. Nat. Acad. Sci. (PNAS)*, 117, 30, 17607-17614. doi:10.1073/pnas.2005558117

[10] **Wenegrat, J.O.**, and L.N. Thomas, 2020: Centrifugal and symmetric instability during Ekman adjustment of the bottom boundary layer. *J. Phys. Oceanogr.*, 50, 6, 1793-1812. doi:10.1175/JPO-D-020-0027.1

[9] Johnson, L., C.M. Lee, E.A. D'Asaro, **J.O. Wenegrat**, and L.N. Thomas, 2020: Restratification at a California Current Upwelling Front, Part II: Dynamics. *J. Phys. Oceanogr.* 50, 5, 1473-1487. doi:10.1175/JPO-D-19-0204.1

[8] **Wenegrat, J.O.**, and R.S. Arthur, 2018c: Response of the atmospheric boundary layer to submesoscale sea surface temperature fronts. *Geophys. Res. Lett.* 45, 24, 13505-13512. doi:10.1029/2018GL081034

[7] **Wenegrat, J.O.**, J. Callies, and L.N. Thomas, 2018b: Submesoscale baroclinic instability in the bottom boundary layer. *J. Phys. Oceanogr.* 48, 11, 2571-2592. doi:10.1175/JPO-D-17-0264.1

[6] **Wenegrat, J.O.**, L.N. Thomas, J. Gula, and J.C. McWilliams, 2018a: Effects of the submesoscale on the potential vorticity budget of ocean mode waters. *J. Phys. Oceanogr.* 48, 9, 2141-2165. doi:10.1175/JPO-D-17-0219.1

[5] **Wenegrat, J.O.**, and L.N. Thomas, 2017: Ekman transport in balanced currents with curvature. *J. Phys. Oceanogr.*, 47, 5, 1189-1203. doi:10.1175/JPO-D-16-0239.1

[4] **Wenegrat, J.O.**, and M.J. McPhaden, 2016a: A simple analytical model of the diurnal Ekman layer. *J. Phys Oceanogr.*, 46, 9, 2877-2894. doi:10.1175/JPO-D-16-0031.1

[3] **Wenegrat, J.O.**, and M.J. McPhaden, 2016b: Wind, waves, and fronts: Frictional effects in a generalized Ekman model. *J. Phys. Oceanogr.*, 46, 2, 371-394. doi:10.1175/JPO-D-15-0162.1

[2] **Wenegrat, J.O.**, and M.J. McPhaden 2015: Dynamics of the surface layer diurnal cycle in the equatorial Atlantic Ocean (0°, 23°W). *J. Geophys. Res. Oceans*, 120, 563-581. doi:10.1002/2014JC010504

[1] **Wenegrat, J.O.**, M.J. McPhaden, and R.-C. Lien, 2014: Wind stress and near-surface shear in the equatorial Atlantic Ocean. *Geophys. Res. Lett.*, 141, 1226-1231. doi:10.1002/2013GL059149

MANUSCRIPTS IN REVIEW

Uchoa, I., **J.O. Wenegrat**, Lionel Renault, 2024: Sink of eddy energy by submesoscale sea surface temperature variability in a coupled regional model. *J. Phys. Oceanogr.*

Wegener, R., **J.O. Wenegrat**, V. Lance, and **S. Lama**, 2024: Spatial variability of marine heatwaves in the Chesapeake Bay. *Estuaries and Coasts*

Chor, T., and **J.O. Wenegrat**: The turbulent dynamics of anticylonic headland wakes. *J. Phys. Oceanogr.*

Zheng, Z., **J.O. Wenegrat**, B. Fox-Kemper, and G.J. Brett: Wind-catalyzed energy exchanges between fronts and boundary layer turbulence. *J. Phys. Oceanogr.*

OTHER PUBLICATIONS

Nuijens, L., **J.O. Wenegrat**, P. Lopez Dekker, C. Pasquero, L.W. O'Neill, and 45 coauthors (alphabetical) 2024: The air-sea interaction (ASI) submesoscale: Physics and impact. *Lorentz Center Workshop Whitepaper*. doi:10.5065/78ac-qd31

Elipot, S., and **J.O. Wenegrat**, 2021: Vertical structure of near-surface currents: Importance, state of knowledge, and measurement challenges. *CLIVAR Variations*, 19, 1, 1-9, doi:10.5065/ybca-0s03

Wenegrat, J.O., 2015: Ocean Boundary Layer Dynamics and Air-Sea Interaction. Ph.D. Thesis, University of Washington, Seattle, WA, http://hdl.handle.net/1773/35286

Benedek, Z., J.W.J. Liang, and **J.O. Wenegrat**, 2014: System for providing strategies to reduce the carbon output and operating costs of a workplace. U.S. Patent 8812971.

Tung, T.S., and **J.O. Wenegrat**, 2013: System for providing strategies for increasing efficiency of data centers. U.S. Patent 8395621.

EXTERNAL FUNDING

Lagrangian evolution of bottom-boundary generated potential vorticity anomalies and their controls on submesoscale flows and mixing in the interior. Thomas, **Wenegrat**. ONR, $562k to UMD, 2024-2029.

Collaborative Research: Interactions of internal waves with submesoscale currents in the bottom boundary layer. **Wenegrat**, Thomas. NSF, $985k, $418k to UMD, 2024-2027.

Submesoscale air-sea coupling during S-MODE. **Wenegrat**. NASA, $53k, 2021-2024.

Atmosphere-Ocean coupling on (sub)mesoscales: US participant travel support. **Wenegrat.** NASA, $25k, 2023.

Submesoscale instabilities and the forward energy cascade in seamount wakes. **Chor, Wenegrat.** NSF, $314k, 2023-2025.

Collaborative Research: The Internal Wave Spectrum and Boundary Mixing in the Sub-Tropical South Atlantic. Polzin, Bracco, Kuehl, **Wenegrat**, Blain. NOPP/NSF, $5.4 mil., $340k to UMD, 2022-2025.

CISESS: AOSC: A Global Census of Coastal Marine Heatwave Evolution and Drivers Using High-Resolution Satellite Data and Computer Vision. **Wenegrat**. NOAA, $90k, 2022-2023.

Collaborative Research: Tracing the physics of submesoscale entrainment and subduction. **Wenegrat**, Fox-Kemper, Brett. NSF, $1.1 mil., $568k to UMD, 2022-2025.

Collaborative Research: EarthCube Capabilities: ICESpark: An Open-Source Big Data Platform for Science Discoveries in the New Arctic and Beyond. Xie, Yu, Farrell, Hurtt, **Wenegrat**. NSF, $1.2 mil., $956k to UMD, 2021-2024.

Air-sea interaction and coupling at the ocean submesoscale. **Wenegrat**. NASA, $361k, 2021-2024.

Submesoscale instabilities in the ocean bottom boundary layer: A new pathway for energy dissipation.**Wenegrat**. NSF, $383k, 2020-2023.

Submesoscale instabilities near the sea-floor and their effects on the ocean circulation and mixing. Thomas, **Wenegrat**. NSF, $325k, 2018-2020.

COMPUTATIONAL GRANTS

Realistic Nested LES of Ocean Mixing in the Gulf of Mexico, **Wenegrat**. UCAR CISL-CHAP, 13.75 mil core-hours, 2024-2026.

High-performance computing for Tracing the Physics of Submesoscale Entrainment and Subduction. **Wenegrat**, Fox-Kemper, Brett. UCAR CISL-CHAP, 26.5 mil core-hours, 2022-2026.

INVITED TALKS

The Gulf Stream: Barrier, blender...or breadmaker? *DEEPS colloquium, Brown University*, Providence, RI, 2024.

From fronts to turbulence: mechanisms and global impact of forward energy transfers at the submesoscale, *Ocean Transport and Eddy Energy Climate Process Team Annual Meeting, Brown University*, Providence, RI, 2024.

Geostrophic turbulence, *Burgers Program Summer School on Turbulence*, College Park, MD, 2024.

Submesoscale symmetric instability: a pathway to turbulence at the surface and in the abyss, *CICESE*, Ensenada, MX, virtual, 2024.

Getting to the bottom of the submesoscale, *NOAA Coastal Ocean Modeling Seminar*, virtual, 2024.

Effects of Air-Sea Interaction on Submesoscale Processes, *OASIS air-sea flux from space webinar series*, virtual, 2024.

The Gulf Stream—Barrier, blender, or...Breadmaker?, *University of Delaware*, Lewes, DE, 2023.

Submesoscale pathways to turbulence at the surface and in the abyss, *Rutgers University*, New Bruinswick, NJ, 2023.

Submesoscale symmetric instability: a pathway to turbulence in the Gulf Stream and abyss, *Old Dominion University*, Norfolk, VA, 2023.

The Gulf Stream—Barrier, Blender, or...Breadmaker?, *Science on Tap*, College Park, MD, 2022.

Submesoscale instabilities and mixing at the bottom. *Gordon Research Conference on Ocean Mixing*, Mount Holyoke, MA, 2022.

Submesoscale instabilities in the bottom boundary layer: A new frontier for ocean dynamics. *Scripps Institution of Oceanography*, La Jolla, CA, 2022.

The Gulf Stream—Barrier, Blender, or...Breadmaker? Enhanced Mixing at Sharp Ocean Fronts. *Johns Hopkins Center for Environmental & Applied Fluid Mechanics*, Baltimore, MD, 2022.

The Gulf Stream—Barrier, Blender, or...Breadmaker? Enhanced Mixing at Sharp Ocean Fronts. *Horn Point Laboratories*, Cambridge, MD, 2021.

The Gulf Stream—Barrier, Blender, or...Breadmaker? Enhanced Mixing at Sharp Ocean Fronts. *George Mason University AOES Department Seminar*, Fairfax, VA, 2021.

The Deep Ocean, Menagerie of Instabilities? *Burgers Symposium Lecture, University of Maryland*, College Park, MD, 2020.

From the surface to the abyss: Effects of the submesoscale on the large-scale circulation. *SOEST, University of Hawaii*, Honolulu, HI. 2019.

Submesoscale turbulence in the bottom boundary layer: A new frontier for oceanography. *AOSC, University of Maryland*, College Park, MD, 2019.

Air-sea interaction at the ocean submesoscale: Ekman transport and surface winds. *NASA Jet Propulsion Laboratory*, Pasadena, CA, 2019.

Into the deep: Submesoscale turbulence in the ocean bottom boundary layer. *Climate and Global Dynamics Seminar, NCAR*, Boulder, CO, 2018.

Submesoscale processes in the abyss: A new frontier for ocean dynamics. *Research School for Earth Sciences, Australian National University*, Canberra, AUS, 2018.

From the submesoscale to the gyre scale: How small-scale fronts modify the properties of ocean gyres. *Mechanical Engineering Department Seminar, University of California, Santa Barbara*, Santa Barbara, CA, 2018.

From the submesoscale to the gyre scale: How small-scale fronts modify ocean mode waters. *Oceanography Department Seminar, Dalhousie University*, Halifax NS, Canada, 2017.

Mixed layer dynamics and the diurnal cycle in the equatorial Atlantic Ocean. *Equatorial Dynamics of the Atmosphere and Oceans, AGU Fall Meeting*, San Francisco, CA, 2014.

Mixed layer dynamics and the diurnal cycle in the equatorial Atlantic Ocean. *Physics of Oceans and Atmospheres Seminar, Oregon State University*, Corvallis, OR, 2014.

SELECTED PRESENTATIONS

Submesoscale processes in the high and low potential vorticity bottom boundary layer *AGU Fall Meeting*, Washington DC, 2024. Talk.

Submesoscales are a significant turbulence source in the global ocean surface boundary layer *Gordon Research Conference on Ocean Mixing*, Mount Holyoke, MA, 2024. Poster.

Submesoscale currents modify internal wave reflection off topography *Ocean Sciences Meeting*, New Orleans, LA, 2024. Talk.

Submesoscale currents modify internal wave reflection off topography *NOPP Internal Waves Workshop*, Gulfport, LA, 2024. Talk.

More than a length scale: air-sea interaction at the submesoscale, *US CLIVAR Mesoscale and Frontal Scale Air-Sea Interaction Workshop*, Boulder, CO, 2023. Talk.

Cross-scale interactions and prediction *US CLIVAR Process Study and Model Improvement annual panel meeting*, Norfolk, VA, 2022. Talk.

The current feedback on stress modifies the Ekman buoyancy flux at submesoscale fronts *Ocean Sciences Meeting*, virtual, 2022. Talk.

It's fronts all the way down: Response of the atmosphere to a submesoscale front. *CLIVAR Surface Currents Workshop*, San Diego, CA, 2020. Poster.

Forced symmetric and centrifugal instability in the bottom boundary layer *Ocean Sciences Meeting*, San Diego, CA, 2020. Poster.

Enhanced mixing across the gyre boundary at the Gulf Stream front. *Environmental Fluid Mechanics and Hydrology Seminar, Stanford University*, Stanford, CA, 2019. Talk.

Symmetric instability in the ocean bottom boundary layer: A new pathway for energy dissipation? *California Geophysical Fluid Dynamic Symposium*, Pasadena, CA, 2019. Talk.

Submesoscale turbulence in the ocean bottom boundary layer: Baroclinic, symmetric, and centrifugal instabilities. 22^{nd} *Conference on Atmospheric and Oceanic Fluid Dynamics*, Portland, ME, 2019. Talk.

Submesoscale instabilities in the bottom boundary layer. *Workshop on BBL turbulence and the Ocean Overturning Circulation, MIT*, Boston, MA, 2018. Talk.

Into the deep: Submesoscale turbulence in the bottom boundary layer. *SLS, MIT*, Boston, MA, 2018. Talk.

Into the deep: Submesoscale turbulence in the bottom boundary layer. *PO Seminar, WHOI*, Woods Hole, MA, 2018. Talk.

Submesoscale baroclinic instability in the bottom boundary layer. *Ocean Mixing Conference*, Gordon Research Conference, Andover, NH, 2018. Poster.

PV dynamics in the turbulent boundary layer. *Program on Planetary Boundary Layers*, Kavli Institute for Theoretical Physics, Santa Barbara, CA, 2018. Talk.

Submesoscale baroclinic instability in the bottom boundary layer. *Frontiers in Oceanic, Atmospheric, and Cryospheric Boundary Layers* , Kavli Institute for Theoretical Physics, Santa Barbara, CA, 2018. Poster.

Submesoscale baroclinic instability in the bottom boundary layer: A mechanism for enhanced vertical buoyancy fluxes. *Ocean Sciences Meeting*, Portland, OR, 2018. Talk.

From the submesoscale to the gyre scale: How small-scale fronts modify ocean mode waters. *Climate, Atmospheric Sciences, and Physical Oceanography Seminar, Scripps Institution of Oceanography*, San Diego, CA, 2018. Talk.

Submesoscale symmetric instability and observed rapid horizontal dispersion across the Gulf Stream. *CLIVAR Ocean Carbon Hotspots Workshop*, Monterey, CA, 2017. Poster.

Ekman transport in balanced currents with curvature. 21^{st} *Conference on Atmospheric and Oceanic Fluid Dynamics*, Portland, OR, 2017. Talk.

Effects of the submesoscale on the potential vorticity budget of ocean mode waters. 21^{st} *Conference on Atmospheric and Oceanic Fluid Dynamics*, Portland, OR, 2017. Poster.

Submesoscale dynamics in the turbulent boundary layer. *Oceanography Department Seminar, Dalhousie University*, Halifax NS, Canada, 2017. Talk.

Competing frictional and diabatic potential vorticity fluxes at ocean fronts. *AGU Fall Meeting*, San Francisco, CA, 2016. Talk.

Ocean boundary layer dynamics and air-sea interaction. *Physical Oceanography Dissertation Symposium (PODS) IX*, Honolulu, HI, 2016. Talk.

Dynamics of the diurnal cycle in the upper ocean: Theory, observations, and future challenges. *Environmental Fluid Mechanics and Hydrology Seminar, Stanford University*, Stanford, CA, 2016. Talk.

Implications of spatially varying boundary layer turbulence at a frontal system. *48^{th} International Liège Colloquium on Ocean Dynamics*, Liège, Belgium, 2016. Talk.

The time-dependent vertical structure of mixed layer currents. *Ocean Sciences Meeting*, New Orleans, LA, 2016. Poster.

On the influence of winds, waves, and fronts on ocean currents. *School of Oceanography, University of Washington*, Seattle, WA, 2015. Talk.

Wind, waves, and fronts: An analytic solution to the generalized Ekman model. *20^{th} Conference on Atmospheric and Oceanic Fluid Dynamics*, Minneapolis, MN, 2015. Talk.

Dynamics of the surface layer diurnal cycle in the equatorial Atlantic Ocean. *Physical Oceanography Seminar, University of Washington*, Seattle, WA, 2014. Talk.

A WKB approximation to the generalized Ekman equation, with application to the diurnal cycle. *Applied Mathematics MS Symposium, University of Washington*, Seattle, WA, 2014. Talk.

The diurnal cycle of near-surface stratified shear flow at $0°$N, $23°$W. *Ocean Sciences Meeting*, Honolulu, HI, 2014. Poster.

Near-surface shear flow on the Equator. *Physical Oceanography Seminar, University of Washington*, Seattle, WA, 2013. Talk.

Near-surface shear, stratification, and the mixed layer momentum budget at $0°$N, $23°$W. *Tropical Atlantic Variability Conference*, Kiel, Germany, 2012. Poster.

Near-surface eddy viscosity at $0°$N, $23°$W inferred from ADCP and wind stress data. *Ocean Sciences Meeting*, Salt Lake City, UT, 2012. Poster.

ADVISING

Postdoctoral researchers:

Tomás Chor **2020 - present**
Postdoctoral Researcher, Atmospheric and Oceanic Science

Zhihua Zheng **2023 - present**
Postdoctoral Researcher, Atmospheric and Oceanic Science

Graduate students:

Victoria Whitley **2020 - present**
PhD Candidate, Applied Mathematics & Statistics, and Scientific Computing

Igor Uchôa Farias **2021 - present**
PhD Student, Atmospheric and Oceanic Science

Zihan Chen **2023 - present**
PhD Student, Atmospheric and Oceanic Science

Logan Knudsen **2023 - present**
PhD Student, Atmospheric and Oceanic Science

Katharina Gallmeier **2024 - present**
PhD Student, Atmospheric and Oceanic Science
Co-advised with Ivan Savelyev

Rachel Wegener **2021 - 2023**
MS, Atmospheric and Oceanic Science

Benjamin Johnson PhD **2020**
PhD, Atmospheric and Oceanic Science
Co-advised with Eugenia Kalnay

Undergraduate students:

Megan Brown **2023 - 2024**
Undergraduate research project, Atmospheric and Oceanic Science

Madison Magaha **2023**
Undergraduate summer researcher, Atmospheric and Oceanic Science

Jennifer Salerno **2023**
Undergraduate research project, Atmospheric and Oceanic Science

Skylar Lama **2021 - 2022**
Undergraduate capstone project, Atmospheric and Oceanic Science
Bernice and Susan Tannenbaum Prize in Climate Science,
for outstanding research achievements

George Campe **2021-2022**
Undergraduate capstone project, Atmospheric and Oceanic Science

Daniel Levy **2021**
Undergraduate Researcher, Mathematics & Physics
UMD Goldwater Scholarship nominee

Emma Bonnano **2020-2021**
Undergraduate capstone project, Atmospheric and Oceanic Science
Bernice and Susan Tannenbaum Prize in Climate Science,
for outstanding research achievements

PHD COMMITTEES

Tim Boyer PhD **2024**

Nikhil Oberei PhD **2023**

Craig Schwartz PhD **2021**

Austin Hope PhD **2020**

Benjamin Johnson PhD **2020**
Committee Co-Chair with Eugenia Kalnay

TEACHING

University of Maryland, College Park, MD

Instructor, *Oceanography of the Chesapeake and Mid-Atlantic* **Spring 2022-2024**

Instructor, *Physical Oceanography* **Fall 2020-2024**

Stanford University, Stanford, CA

Project Mentor, *SURGE Undergraduate Summer Research* **Summer 2018**

University of Washington, Seattle, WA

Instructor, *Physics across Oceanography* **Winter 2015**

Course Development, *Huckabay Teaching Fellow* **Autumn 2014**

SERVICE AND LEADERSHIP

Science

- Co-Chair US CLIVAR Working Group on Small-scale processes in the upper ocean and their interaction with the Earth's climate (2024 - present)
- Steering Committee, ONR Researching Interior Ocean Trajectories (RIOT) DRI (2024 - present)
- Science Team, NASA Sub-Mesoscale Ocean Dynamics Experiment (S-MODE, 2020 - present)
- Co-Chair US CLIVAR Process Study and Model Improvement Panel (2024 - present)
- Panelist US CLIVAR Process Study and Model Improvement Panel (2021 - 2024)

Conferences and Workshops

- Co-Chair: *Summer School on Tracer mixing in fluids across planetary scales* Brin Mathematics Research Center,UMD 2024
- Co-Chair: *Atmosphere-ocean coupling at (sub)mesoscales*, Lorentz Center, Netherlands, 2023
- Co-Chair: *Turbulent Mixing of the Ocean Surface Boundary Layer: Observation, Simulation, and Parameterization*, Ocean Sciences Meeting 2022
- Moderator: *Turbulent Mixing of the Ocean Surface Boundary Layer: Observation, Simulation, and Parameterization*, Ocean Sciences Meeting 2020
- Chair: *Air-Sea Interaction at the Mesoscale and Submesoscale*, Ocean Sciences Meeting 2018

Reviewing

- Editor, *Journal of Physical Oceanography* (2023 - present)
- Associate Editor, *Journal of Physical Oceanography* (2020-2022)
- 2020 AMS Editor's award, *Journal of Physical Oceanography*
- *Journal of Physical Oceanography, Journal of Fluid Mechanics, Geophysical Research Letters, Journal of Geophysical Research, Nature, Quarterly Journal of the Royal Meteorological Society, BAMS, Ocean Dynamics, Ocean Sciences, TOS, Scientific Reports, Journal of Atmospheric and Oceanic Technology, JAMES, Continental Shelf Research, Journal of Climate*
- *NASA Physical Oceanography* proposal review panels, *NSF Physical Oceanography* panelist and ad hoc proposal reviewer, *NERC* proposal reviewer, *US-Israel Binational Science Foundation* reviewer
- Pre-publication chapters of: *Atmospheric and Oceanic Fluid Dynamics II,* G.H. Vallis.
- *NOAA Ernest F. Hollings Undergraduate Scholarship program*.

University

- Graduate Admissions Chair (2024 - present)

- Graduate Admissions Co-Chair (2020 - 2024)
- Lead for AOSC-AGU Bridge Program Partnership (2020 - present)
- Faculty search committee AOSC (2024)
- Seminar Committee Chair (2020 - 2022)
- DMV Oceans Lunch Seminars organizer (2020 - 2022)