

Education

2006	Ph.D.	Physical Oceanography, Oregon State University
2001	M.S.	Physics, Indiana University
1999	B.S.	Physics and Mathematics, The Evergreen State University

Positions

2019–present	Associate Professor of Marine Science
2013–2019	Assistant Professor of Marine Science School of Marine and Atmospheric Science Stony Brook University, NY
2018–present	Affiliate Faculty Institute for Advanced Computational Science Stony Brook University, NY
2012–2013	Assistant Research Oceanographer Scripps Institution of Oceanography University of California, San Diego, CA
2006–2012	Postdoctoral Researcher Scripps Institution of Oceanography University of California, San Diego, CA

Research Interests

Large-scale ocean circulation, overturning circulation, and deep stratification; role of the ocean in climate; idealized models; mesoscale eddies, boundary currents, and their effect on the large-scale circulation; nonlinear dynamics and predictability of geophysical flows.

Publications

Student author underlined.

Refereed

1. Chang, E. K., **C. L. P. Wolfe**, A. L. Stewart, and J. C. McWilliams, 2023: Comments on “Horizontal gravity disturbance vector in atmospheric dynamics” by Peter C. Chu. *Dyn. Atmos. Oceans*, **103**, 101–138, doi:10.1016/j.dynatmoce.2023.101382.
2. Chi, L., **C. L. P. Wolfe**, and S. Hameed, 2023: Reconsidering the relationship between Gulf Stream transport and dynamic sea level at U.S. East Coast. *Geophys. Res. Lett.*, **50** (9), e2022GL102018, doi:10.1029/2022GL102018.
3. Chang, E.K.M., and **C.L.P. Wolfe**, 2022: The “horizontal” components of the real gravity are not relevant to ocean dynamics. *Sci. Rep. Matters Arising*, **12** (1), 6027, doi:10.1038/s41598-022-09967-3.
4. Zhang, W., and **C.L.P. Wolfe**, 2022: On the vertical structure of oceanic mesoscale tracer diffusivities. *J. Adv. Model. Earth Sys.*, **14**, e2021MS002891, doi:10.1029/2021MS002891.

5. [Wu, X.](#), K.A. Reed, **C.L.P. Wolfe**, G.M. Marques, S.D. Bachman, and F.O. Bryan, 2021: The dependence of tropical modes of variability on zonal asymmetry. *Geophys. Res. Lett.*, **48** (17), e2021GL093966, doi:10.1029/2021GL093966.
6. Hameed, S., **C.L.P. Wolfe**, and L. Chi, 2021: Icelandic Low and Azores High migrations impact Florida Current transport in winter. *J. Phys. Oceanogr.*, **51** (10), 3135–3147, doi:10.1175/JPO-D-20-0108.1.
7. [Chi, L.](#), **C.L.P. Wolfe**, and S. Hameed, 2021: Has the Gulf Stream slowed or shifted in the altime-try era?, *Geophys. Res. Lett.*, **48** (14), e2021GL093113, doi:10.1029/2021GL093113.
8. [Wu, X.](#), K.A. Reed, **C.L.P. Wolfe**, G.M. Marques, S.D. Bachman, and F.O. Bryan, 2021: Coupled Aqua and Ridge planets in the Community Earth System Model. *J. Adv. Model. Earth Sys.*, e2020MS002418, doi:10.1029/2020MS002418.
9. [Bire, S.](#), and **C.L.P. Wolfe**, 2021: The role of eddies in the zonal and meridional overturning cir-culations of buoyancy-forced basins. *J. Phys. Oceanogr.*, **51** (2), 575–590, doi:10.1175/JPO-D-20-0025.1.
10. Adamczak, S.K., W.A. McLellan, A.J. Read, **C.L.P. Wolfe**, and L. H. Thorne, 2020: The impact of temperature at depth on estimates of thermal habitat of short-finned pilot whales. *Marine Mammal Science*, **37** (1). 193–206, doi:10.1111/mms.12737.
11. Huang, Y., **C. L. P. Wolfe**, J. Zhang, and J.-Q. Zhong, 2020: Streaming controlled by meniscus shape. *J. Fluid Mech.*, **895**, A1, doi:10.1017/jfm.2020.281.
12. [Zhang, W.](#), **C.L.P. Wolfe**, and R. Abernathy, 2020: Role of surface-layer coherent eddies in po-tential vorticity transport in quasigeostrophic turbulence driven by eastward shear. *Fluids*, **5**, 2, doi:10.3390/fluids5010002.
13. [Chi, L.](#), S. Hameed, and **C.L.P. Wolfe**, 2019: Comments on “Reconstruction of the Gulf Stream from 1940 to the Present and Correlation with the North Atlantic Oscillation”, *J. Phys. Oceanogr.*, **49** (10), 2731–2734.
14. [Chi, L.](#), **C.L.P. Wolfe**, and S. Hameed, 2019: The distinction between the Gulf Stream and its North Wall, *Geophys. Res. Lett.*, **46**, doi:10.1029/2019GL083775.
15. Pinaridi, N., P. Cessi, F. Borile, and **C.L.P. Wolfe**, 2019: The Mediterranean Sea overturning cir-culation. *J. Phys. Oceanogr.*, **49** (7), 1699–1721.
16. **Wolfe, C.L.P.**, and S. Hameed, and [L. Chi](#), 2019: On the drivers of decadal variability of the Gulf Stream North Wall. *J. Climate*. **32** (4), 1235–1249.
17. [Bire, S.](#), and **C.L.P. Wolfe**, 2018: The role of eddies in buoyancy-driven eastern boundary cur-rents. *J. Phys. Oceanogr.*, **48** (12), 2829–2850.
18. Hameed, S., **C.L.P. Wolfe**, and [L. Chi](#), 2018: Impact of the Atlantic Meridional Mode on Gulf Stream North Wall position. *J. Climate*, **31** (21), 8875–8894.
19. [Chi, L.](#), **C.L.P. Wolfe**, and S. Hameed, 2018: Intercomparison of the Gulf Stream in ocean re-analyses: 1993–2010. *Ocean Modell.*, **125**, 1–21.
20. **Wolfe, C.L.**, P. Cessi, and B. D. Cornuelle, 2017: An intrinsic mode of interannual variability in the Indian Ocean. *J. Phys. Oceanogr.*, **47** (3), 701–719.
21. **Wolfe, C.L.**, and P. Cessi, 2015: Multiple regimes and low-frequency variability in the quasi-adi-atic overturning circulation. *J. Phys. Oceanogr.*, **45** (6), 1690–1708.
22. **Wolfe, C.L.**, and P. Cessi, 2014: Salt feedback in the adiabatic overturning circulation. *J. Phys. Oceanogr.*, **44** (4), 1175–1194.
23. **Wolfe, C.L.**, 2014: Approximations to the ocean’s residual circulation in arbitrary tracer coordi-nates. *Ocean Modell.*, **75**, 20–35.

24. Young, W.R., and **C.L. Wolfe**, 2014: Generation of ripples by shear-flow instability. *J. Fluid Mech.*, **739**, 276-307.
25. Norwood, A., E. Kalnay, K. Ide, S.-C. Yang, and **C. Wolfe**, 2013: Lyapunov, singular and bred vectors in a multi-scale system: an empirical exploration of vectors related to instabilities. *J. Phys. A: Math. Theor.*, **46** (25), 254021.
26. Cessi, P., and **C.L. Wolfe**, 2013: Adiabatic eastern boundary currents. *J. Phys. Oceanogr.*, **43** (6), 1127-1149.
27. **Wolfe, C.L.**, and P. Cessi, 2011: The adiabatic pole-to-pole overturning circulation. **41** (9), 1795-1810.
28. Cessi, P., **C.L. Wolfe**, and B. C. Ludka, 2010: Eastern-boundary contribution to the residual and meridional overturning circulation. *J. Phys. Oceanogr.*, **40** (9), 2075-2090.
29. **Wolfe, C.L.**, and P. Cessi, 2010: What sets the strength of the mid-depth stratification and overturning circulation in eddying ocean models? *J. Phys. Oceanogr.*, **40** (7), 1520-1538.
30. Cessi, P., and **C.L. Wolfe**, 2009: Eddy-driven buoyancy gradient on eastern boundaries and their role in the thermocline. *J. Phys. Oceanogr.*, **39** (7), 1595-1614.
31. **Wolfe, C.L.**, and P. Cessi, 2009: Overturning in an eddy-resolving model: The effect of the pole-to-pole temperature gradient. *J. Phys. Oceanogr.*, **39** (1), 125-142.
32. **Wolfe, C.L.**, P. Cessi, J.L. McClean, and M.E. Maltrud, 2008: Vertical heat flux in eddying ocean models. *Geophys. Res. Lett.*, **35**, L23605.
33. **Wolfe, C.L.**, and R.M. Samelson, 2008: Singular vectors and time-dependent normal modes of a baroclinic wave-mean oscillation. *J. Atmos. Sci.*, **65** (3), 875-894.
34. **Wolfe, C.L.**, and R.M. Samelson, 2007: An efficient method for recovering Lyapunov vectors from singular vectors. *Tellus A*, **59** (3), 355-366.
35. **Wolfe, C.L.**, and R.M. Samelson, 2006: Normal-mode analysis of a baroclinic wave-mean oscillation. *J. Atmos. Sci.*, **63** (11), 2795-2812.
36. **Wolfe, C.L.**, and C. Cenedese, 2006: Laboratory experiments on eddy generation by a buoyant coastal current flowing over variable bathymetry. *J. Phys. Oceanogr.*, **36** (3), 395-411.
37. Samelson, R.M., and **C.L. Wolfe**, 2003: A nonlinear baroclinic wave-mean oscillations with multiple normal-mode instabilities. *J. Atmos. Sci.*, **60** (9), 1186-1199.

Submitted/In Prep.

38. Zhang, W., and **C.L.P. Wolfe**, 2023: Inferring tracer diffusivity from coherent mesoscale eddies. In advanced prep.
39. Bire, S., and **C.L.P. Wolfe**, 2023: Bottom topography is responsible for barotropic subpolar gyres in buoyancy-forced basins. In prep.

Proposals Funded

1. NSF-OCE "Mixing Inferred from Coherent Mesoscale Eddies (MICME)," Pitt Wolfe, C. L., (PI), 2021-2023, \$169,702.
2. Minghua Zhang Early Career Faculty Innovation Award "Quantifying transport by coherent ocean eddies," Wolfe, C.L.P. (PI), 2018-2019, \$38,981.
3. NSF-XSEDE Renewal of "A study of the adiabatic dynamics of buoyancy-driven eastern boundary currents in an ocean with eddies," Wolfe, C. L. (PI), 2017-2018, \$12,847⁺.
4. NSF-OCE "Interannual variability of the Gulf Stream position: The role of atmospheric forcing," Wolfe, C. L. (PI), and S. Hameed (Co-PI), 2016-2020, \$349,629.

5. NSF-XSEDE "A study of the adiabatic dynamics of buoyancy-driven eastern boundary currents in an ocean with eddies," Wolfe, C. L. (PI), \$97,441[†].
6. NSF-OCE "A study of the adiabatic dynamics of buoyancy-driven eastern boundary currents in an ocean with eddies," Wolfe, C. L. (PI), 2016–2019: \$263,864.
7. NSF-XSEDE Renewal of "Decadal and multi-decadal ocean memory in the eddying regime," Cessi, P., (PI), C.L. Wolfe (CoPI), and B. Cornuelle (CoPI), 2016–2020, \$626,668[†].
8. NSF-XSEDE "Decadal and multi-decadal ocean memory in the eddying regime," Cessi, P., (PI), C.L. Wolfe (CoPI), and B. Cornuelle (CoPI), 2013–2014, \$692,450[†].
9. Cessi, P., (PI), C.L. Wolfe (CoPI), and B. Cornuelle (CoPI), 2013–2017: Decadal and multi-decadal ocean memory in the eddying regime. XSEDE, 20,900,000 CPU-hours.
10. NSF-OCE "Decadal and multi-decadal ocean memory in the eddying regime," Cessi, P., (PI), C.L. Wolfe (CoPI), and B. Cornuelle (CoPI), 2013–2017, \$858,707.

[†]Monetary value of computational resources awarded.

Honors and Awards

2022	Outstanding reviewer for <i>J. Adv. Model. Earth Sys.</i>
2021	Member Sigma Xi, The Scientific Research Honor Society
2020	J.R. Schubel Fellowship (to student Xiaoning Wu)
2019	Maze-Landau travel award (to student Wenda Zhang)
2019/20	IACS Junior Researcher Award (to student Xiaoning Wu)
2018	IACS Travel Scholarship (to students Lequan Chi and Wenda Zhang)
2017	Maze-Landau travel award (to student Suyash Bire)
2004	Wayne V. Burt Award for academic excellence in physics oceanography, Oregon State University (2004)
2003	Phi Kappa Phi Honor Society

Fellowships

Geophysical Fluid Dynamics Fellowship, Woods Hole Oceanographic Institution (2003)
 NASA Space Grant Fellowship, Oregon Space Grant (2001–2004)
 Indiana University Graduate Fellowship (1999–2001)

Invited Presentations (Last 5 years)

"Mixing Inferred from Coherent Mesoscale Eddies"

- Eddy Energy Climate Processes Team meeting, Woods Hole, MA, May 2023

"Role of Ocean Basins in Shaping Tropical Climate"

- Dept. of Earth, Atmospheric, and Planetary Sciences, MIT, Cambridge, MA, September 2022
- Keynote presentation at Institute for Advanced Computational Sciences Research Day, Stony Brook University, NY, April 2022

"Gulf Stream variability and trends: from the Florida Current to past Cape Hatteras"

- NOAA's Atlantic Oceanographic and Meteorological Laboratory, Miami, FL, November 2021

"Representing eddy mixing of tracers for ocean models"

- Institute for Advanced Computational Sciences, Stony Brook University, NY, April 2021

"Stranger than friction: How eddy form drag confines eastern boundary currents"

- NCAR, Boulder, CO, August 2019

Conference and Student Presentations (Last 5 years)

Student author underlined. *Postdoc author in italics.*

Bishop, S.P., and **C.L.P. Wolfe**: An investigation of the stability properties of layered models of the Gulf Stream with asymmetric lateral shear. AMS Atmosphere-Ocean Fluid Dynamics Meeting, June 2022 (poster)

Wolfe, C.L.P., Wu, X., K. Reed, and S. Bachman: Effect of zonal asymmetry on global climate and tropical variability in an idealized coupled climate model. AMS Atmosphere-Ocean Fluid Dynamics Meeting, June 2022 (oral)

Zhang, W., and **C.L.P. Wolfe**: Inferring tracer diffusivity from coherent mesoscale eddies. AMS Atmosphere-Ocean Fluid Dynamics Meeting, June 2022 (poster)

Zhang, W., and **C. Wolfe**: What determines the vertical structure of mesoscale tracer diffusivity? AGU Ocean Sciences Meeting (virtual), March 2022 (oral)

Wu, X., K. Reed, **C. Wolfe**, G. Marques, S. Bachman, F. Bryan: Exploring the impact of tropical cyclones on ocean heat transport in coupled atmosphere-ocean aquaplanets, AGU Fall Meeting (virtual), December 2021 (eLightning)

Wu, X., K. Reed, **C. Wolfe**, S. Bachman, F. Bryan, G. Marques: Ingredients for ENSO and MJO: Tropical variability of coupled CESM Aqua and Ridge planets. CESM Climate Variability & Change Working Group Meeting, Boulder, CO (virtual), February 2021 (oral presentation) (Winner of Outstanding Student Presentation Award)

Zhang, W., and **C.L.P. Wolfe**: Vertical structure of tracer diffusivity in an idealized basin circulation model. CESM Ocean Model Working Group Meeting, Joint with Ocean Transport and Eddy Energy Climate Process Team, Boulder, CO (virtual), February 2021 (oral)

Wu, X., K. Reed, **C. Wolfe**, F. Bryan, S. Bachman, G. Marques, P.N. DiNezio: Tropical variability of idealized coupled Aqua and Ridge planets using the Community Earth System Model. AGU Fall Meeting, Virtual, December 2020 (poster—winner of Outstanding Student Presentation)

Wu, X., K. Reed, **C. Wolfe**, S. Bachman, F. Bryan, G. Marques: CESM coupled idealized modes: Aqua and Ridge planets. MOM6 Webinar Series, Boulder, CO (virtual), July 2020 (oral)

Pinardi, N., P. Cessi, F. Borile, and **C. Wolfe**: The Mediterranean Sea overturning circulation. Ocean Sciences Meeting, San Diego, CA, February 2020 (poster)

Wolfe, C., and X. Liu: Local winds drive interannual variability of the Gulf Stream North Wall: Results from an adjoint sensitivity analysis. Ocean Sciences Meeting, San Diego, CA, February 2020 (poster)

Zhang, W., and **C. Wolfe**: Diffusive versus non-diffusive properties of coherent ocean eddies. Ocean Sciences Meeting, San Diego, CA, February 2020 (e-lightning)

Wu, X., K. Reed, S.D. Bachman, F. Bryan, **C. Wolfe**, and G.M. Marques: Tropical cyclone-induced energy exchange in an idealized, coupled atmosphere-ocean climate model. Ocean Sciences Meeting, San Diego, CA, February 2020 (poster)

Zhang, W., and **C.L.P. Wolfe**: Role of coherent eddies in potential vorticity transport in two-layer quasi-geostrophic turbulence. AMS Atmosphere-Ocean Fluid Dynamics Meeting, Portland, ME, June 2019 (oral)

Bire, S., and **C.L.P. Wolfe**: Stranger than friction: How eddy form drag confines eastern boundary currents. AMS Atmosphere-Ocean Fluid Dynamics Meeting, Portland, ME, June 2019 (poster)

Wolfe, C.L.P., and S. Bire: Eastern boundary currents and overturning in buoyancy-driven basins. AMS Atmosphere-Ocean Fluid Dynamics Meeting, Portland, ME, June 2019 (oral)

Chi, L., **C.L.P. Wolfe**, and S. Hameed: A stable Gulf Stream in the altimeter era. AGU Fall Meeting, Washington, DC, January 2018 (oral)

Liu, X., and **C.L.P. Wolfe**: Sensitivities of Gulf Stream latitude in ECCOv4. ECCO Project Meeting, Austin, TX, October 2018 (oral)

Wolfe, C.L.P., S. Hameed, L. Chi, and X. Liu: Atmospheric influences on Gulf Stream position. Mid-Atlantic Bight Physical Oceanography and Meteorology Meeting, Woods Hole, MA, October 2018 (oral)

Wolfe, C.L.P., S. Hameed, and L. Chi: Decadal variability of the Gulf Stream North Wall: The role of low latitude atmospheric forcing. Ocean Sciences Meeting, Portland, OR, February 2018 (oral)

Bire, S., and **C.L.P. Wolfe**: Eddy-mean flow interaction in an idealized poleward eastern boundary current. Ocean Sciences Meeting, Portland, OR, February 2018 (poster)

Chi, L., **C.L.P. Wolfe**, and S. Hameed: Intercomparison of the Gulf Stream in ocean reanalyses: 1993-2010. Ocean Sciences Meeting, Portland, OR, February 2018 (poster)

Service

- SoMAS Committees
 - Comprehensive Examination: 2014-2017, 2019-2021
 - Graduate Admissions: 2014-2016
 - Graduate Curriculum Committee: 2019-2021
 - Graduate Program Committee: 2021-2022 (chair), 2022-present (member)
 - Graduate Recruitment, Admissions, and Diversity Committee 2022-present (chair)
 - Marine Sciences IDC Policy Committee (ad hoc): 2021 (chair)
 - Physical Oceanography Faculty Search Committee (ad hoc): 2021
 - Undergraduate Programs Committee: 2014-2020
 - Ad hoc committee to revise Environmental Studies majors: 2016 (chair)
- Manuscripts Reviewed (past 5 years): 37 total. *CEMEMS Ocean State Report* (1), *Climate* (1), *Climate Dynamics* (3), *EGUSphere* (1), *Fisheries Oceanography* (1), *Fluids* (1), *Geophysical Research Letters* (1), *Journal of Advances in Modeling Earth Systems* (2), *Journal of Climate* (5), *Journal of Fluid Mechanics* (3), *Journal of Geophysical Research* (2), *Journal of Physical Oceanography* (10), *Nature* (1), *Nature Geosci.* (1), *Nonlinear Processes in Geophysics* (1), *Ocean Modelling* (1), *PNAS* (1), *Scientific Reports* (1)
- Grant Proposals Reviewed (past 5 years, not counting panels): 8 total. National Science Foundation (7), Natural Environmental Research Council (1)
- Panels served on (past 5 years):
 - NOAA/NSF Climate Process Team: 2019

- CLIVAR Surface Currents Workshop: 2020
- DOE SciDAC: 2022
- National Science Foundation OCE-PO: 2022
- Other
 - WAC Lighting Foundation Invitational Science Fair Judge: 2016, 2020, 2022, 2023
 - Bay Scallop Bowl, Science Judge and Moderator: 2014–2020, 2022
 - Speaker for SoMAS graduate student recruitment weekend: 2014, 2017
 - Demonstrator for Discover Stony Brook Day: 2019

Mentoring

- Summer 2023: Génesis Pérez-Gonzales, REU student from the University of Puerto Rico at Humacao, statistical downscaling models of tropical cyclones in idealized climate models.
- 2021–present: Youwei Ma (Ph.D., Atmospheric Science) Third year student studying climate dynamics.
- 2017–2022: Wenda Zhang (Ph.D., Marine Science) “Transport and mixing by coherent mesoscale eddies,” Now a postdoc at Princeton.
- 2016–2021: Xiaoning Wu (Ph.D., Marine Science) “Dynamics of tropical cyclones on aquaplanets.” Co-advisor with Kevin Reed, SoMAS. Now at Risk Management Solutions.
- 2014–2019: Lequan Chi (Ph.D., Marine Science) “Interannual variability of the Gulf Stream.” Now faculty at the Ocean University of China, Qingdao.
- 2014–2019: Suyash Bire (Ph.D., Marine Science) “Eddy dynamics of eastern boundary currents.” Now a postdoc at MIT.
- 2018–2019: Xiaohui Liu (postdoc) Adjoint studies of ocean circulation, 2018–2019
- Served/serving on nine Ph.D. dissertation committees and one MS committee.
- Undergraduate advisor: 2015–2019.

Courses Taught

- School of Marine and Atmospheric Science, Stony Brook University
 - ENS 119 (Physics for Environmental Science Majors Lab): Spring 2020
 - MAR 501 (Physical Oceanography): Spring 2015
 - MAR 509: (Foundations of Marine Science 2: Physics of Oceans, Atmosphere, and Climate): Fall 2014–2022
 - MAR 527 (Contemporary Topics in Climate Change): Fall 2022
 - MAR 547 (Dynamical Oceanography I/Geophysical Fluid Dynamics I): Spring 2014, 2016–2019, 2021–2023.
 - MAR 548 (Geophysical Fluid Dynamics II): Fall 2016, 2018
 - MAR 552 (Directed Study in Geophysical Fluid Dynamics): Spring 2020
 - MAR 574 (Special topics in Marine Science–Ocean Dynamics): Spring 2015
 - MAR 576: (Special Topics in Biological Oceanography–Atlantic Meridional Overturning Circulation): Fall 2016
 - MAR 580 (Topics in Atmospheric and Oceanic Science): Fall and Spring 2014–2023
 - MAR 601 (Dynamical Modeling with MatLab): Spring 2015
 - MAR 603 (Ocean Physics Seminar): Fall and Spring 2015–2023