

ELIZABETH (EFFIE) COOMBS FINE

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EDUCATION

Ph.D. in Oceanography, Scripps Institution of Oceanography	2019
M.S. in Physics, University of Colorado, Boulder	2014
B.S. in Physics, Minor in Philosophy, Stanford University	2011

PROFESSIONAL APPOINTMENTS

Postdoctoral Investigator/Scholar Split Appointment Woods Hole Oceanographic Institution Scripps Institution of Oceanography Advisors: John Toole and Julie McClean	2021-present
Postdoctoral Scholar Woods Hole Oceanographic Institution Advisor: Sylvia Cole	2019-2021
Graduate Student Researcher Scripps Institution of Oceanography Advisors: Jennifer MacKinnon and Matthew Alford	2015-2019
Summer Research Assistant Scripps Institution of Oceanography Advisors: Robert Pinkel and Andrew Lucas	2012, 2013, 2014
Graduate Research Assistant National Center for Atmospheric Research Advisor: Frank Bryan	2013-2014
Graduate Research Assistant University of Colorado, Boulder Advisor: Murray Holland	2013

AWARDS AND FELLOWSHIPS

Weston Howland Jr. Postdoctoral Scholar Appointment, 18 months	2019
NSF Graduate Research Fellowship, 3 years	2014

PUBLICATIONS

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- Middleton, L., **E. C. Fine**, J. A. MacKinnon, M. H. Alford, J. R. Taylor (2021). Estimating Dissipation Rates Associated with Double Diffusion. *Geophys. Res. Lett.*, 48 e2021GL092779. <https://doi.org/10.1029/2021GL092779>
- MacKinnon, J. A., H. L. Simmons, J. Hargrove, J. Thomson, T. Peacock, M. H. Alford, B. I. Barton, S. Boury, S. D. Brenner, N. Couto, S. L. Danielson, **E. C. Fine**, H. C. Graber, J. Guthrie, J. E. Hopkins, S. R. Jayne, T. Klenz, C. M. Lee, Y.-D. Lenn, A. J. Lucas, B. Lund, C. Mahaffey, L. Norman, L. Rainville, M. M. Smith, S. Torres-Valdés, K. R. Wood (2021). A warm jet in a cold ocean. *Nature Comms.*, 12, 2418. <https://doi.org/10.1038/s41467-021-22505-5>
- Fine, E. C.**, J. A. MacKinnon, M. H. Alford, J. B. Mickett (2021). Microstructure mixing observations and finescale parameterizations in the Beaufort Sea. *J. Phys. Oceanogr.* 51, 19-35 <https://doi.org/10.1175/JPO-D-19-0233.1>
- Boury, S., R. S. Pickart, P. Odier, P. Lin, M. Li, **E. C. Fine**, H. L. Simmons, J. A. MacKinnon, T. Peacock (2020). Whither the Chukchi Slope Current? *J. Phys. Oceanogr.* 50, 1717-1732. <https://doi.org/10.1175/JPO-D-19-0273.1>
- Fine, E. C.**, J. A. MacKinnon, M. H. Alford, J. B. Mickett (2018). Microstructure observations of turbulent heat fluxes in a warm-core Canada Basin eddy. *J. Phys. Oceanogr.* 48, 2397-2418. <https://doi.org/10.1175/JPO-D-18-0028.1>
- MacKinnon, J. A., J. D. Nash, M. H. Alford, A. J. Lucas, J. B. Mickett, E. Shroyer, A. F. Waterhouse, A. Tandon, D. Sengupta, A. Mahadevan, M. Ravichandran, R. Pinkel, D. Rudnick, C. B. Whalen, M. S. Albery, J. Sreelehka, **E. C. Fine**, D. Chaudhuri, G. L. Wagner (2015). A tale of two spicy seas. *Oceanography* 29, 50–61. <http://www.jstor.org/stable/24862669>.
- Fine, E. C.**, F. O. Bryan, W. G. Large, D. A. Bailey (2015). An initial estimate of the global distribution of diurnal variation in sea surface salinity. *J. Geophys. Res. Oceans* 120, 3211-3228. <https://doi.org/10.1002/2014JC010483>
- Xu, Minghui, D. A. Tieri, **E. C. Fine**, J. K. Thompson, and M. J. Holland (2014). Synchronization of Two Ensembles of Atoms. *Phys. Rev. Lett.*, 113, 154101-154106. <https://doi.org/10.1103/PhysRevLett.113.154101>

Fine, E. C., J. A. MacKinnon, M. H. Alford, L. Middleton, J. Taylor, S. Cole, J. B. Mickett, N. Couto, A. le Boyer, T. Peacock. Microstructure observations of Pacific Summer Water in the western Arctic. *J. Phys. Oceanogr.*, *in revision*.

Fine, E. C., S. T. Cole. Decadal observations of internal wave energy and shear in the western Arctic. *J. Geophys. Res. Oceans*, *submitted*.

PRESENTATIONS

E. C. Fine and S. T. Cole, "Decadal observations of internal wave energy, shear, and mixing in the western Arctic Ocean." Ocean Circulation and Climate Dynamics Colloquium, GEOMAR June 2021, invited.

E. C. Fine and S. T. Cole, "Decadal observations of internal wave energy, shear, and mixing in the western Arctic Ocean." Canadian Meteorological and Oceanographic Society Congress, June 2021.

E. C. Fine, J. A. MacKinnon, M. H. Alford, J. B. Mickett, T. Peacock, N. Couto, A. le Boyer, "Warm eddies, mixing, and turbulent heat fluxes in the western Arctic." Physical Oceanography Seminar, UAF January 2021, invited.

E. C. Fine, J. A. MacKinnon, M. H. Alford, J. B. Mickett, T. Peacock, N. Couto, A. le Boyer, "Microstructure observations of mixing and turbulent heat fluxes in the western Arctic." Physical Oceanography Seminar, WHOI August 2020.

E. C. Fine, M. H. Alford, J. A. MacKinnon, J. B. Mickett, "Near-inertial waves and microstructure mixing observations in the Beaufort Sea." Ocean Sciences Meeting, San Diego February 2020, poster.

E. C. Fine, M. H. Alford, J. A. MacKinnon, J. B. Mickett, "Near-inertial waves and mixing observations in the Beaufort Sea." Arctic Dynamics Workshop, MIT November 2019.

E. C. Fine, J. A. MacKinnon, M. H. Alford, J. B. Mickett, "Microstructure observations of upwards turbulent heat fluxes in a warm-core Canada Basin eddy." Polar Marine Science Gordon Research Conference, Tuscany March 2019, poster.

E. C. Fine, J. A. MacKinnon, M. H. Alford, J. B. Mickett, "Microstructure observations of heat fluxes in the western Arctic Ocean." Physical Oceanography Seminar, WHOI August 2018.

E. C. Fine, J. A. MacKinnon, M. H. Alford, J. B. Mickett, "Microstructure observations of upwards turbulent heat fluxes in a warm-core Canada Basin eddy." Ocean Mixing Gordon Research Conference, New Hampshire June 2018, poster.

E. C. Fine, J. A. MacKinnon, M. H. Alford, J. B. Mickett, "Microstructure observations of upwards turbulent heat fluxes in a warm-core Canada Basin eddy." Ocean Sciences Meeting, Portland February 2018, poster.

E. C. Fine, J. A. MacKinnon, M. H. Alford, J. B. Mickett, "Microstructure observations of turbulent heat fluxes in a Beaufort Gyre eddy." Ocean Mixing Meeting, Bangor University July 2017.

E. C. Fine, J. A. MacKinnon, M. H. Alford, J. B. Mickett, "Microstructure observations of upward turbulent heat fluxes in the Beaufort Gyre." Liege Colloquium, May 2016, poster.

E. C. Fine, J. A. MacKinnon, M. H. Alford, J. B. Mickett, M. M. Hamann, O. B. Marques, G. Voet, G. L. Wagner, M. Albery, A. Peterson, "Microstructure observations of upward turbulent heat fluxes in the Beaufort Gyre." Ocean Sciences Meeting, New Orleans February 2016, poster.

E. C. Fine, J. A. MacKinnon, M. H. Alford, J. B. Mickett, M. M. Hamann, O. B. Marques, G. Voet, G. L. Wagner, M. Albery, A. Peterson, "Microstructure observations of upward turbulent heat fluxes in the Beaufort Gyre." Forum for Arctic Modeling and Observational Synthesis Meeting, Falmouth November 2015, poster.

E. C. Fine, F. O. Bryan, W. G. Large, D. Bailey, "Diurnal Sea Surface Salinity Variation Detection in Aquarius Data." Ocean Sciences Meeting, Honolulu February 2014, poster.

TEACHING EXPERIENCE

Instructor, SIO 90: Perspectives on Ocean Sciences	2019
Taught an undergraduate course of 61 students	
Invited speakers to give 9 science seminars	
University of California, San Diego - Scripps Institution of Oceanography	
Teaching Assistant, Introductory Mechanics Course	2012
Led 4 weekly tutorial sections of 20 students	
University of Colorado, Boulder - Physics Department	
Tutor	2011-2012
Individual tutoring for AP Physics and AP History	
Revolution Prep	

Math Instructor	2011-2012
Tutored 3-4 student groups for grades 2-6	
Mathnasium Learning Center	

Teaching Assistant, Introductory Electricity and Magnetism Course	2011
Led 2 weekly tutorial sections of 20 students	
Stanford University	

RESEARCH CRUISES

<i>USCGC Healy</i> . Chukchi and Beaufort Seas, Beaufort Shelf. Microstructure measurements from CTD rosette, CTD. 25 days.	2019
<i>R/V Sikuliaq</i> . Chukchi and Beaufort Seas. CTD, FastCTD, MMP, Epsilometer, bow chain, Wirewalker, swift buoys. 30 days.	2019
<i>R/V Sally Ride</i> . La Jolla Canyon. CTD. 3 days.	2017
<i>R/V Sproul</i> . La Jolla Canyon. CTD, SWIMS. 5 days	2016
<i>R/V Revelle</i> . Palau. CTD, LADCP, SWIMS, MMP, bowchain, mooring deployments and recoveries. 23 days.	2016
<i>R/V Sproul</i> . La Jolla Canyon. CTD, bottom lander recovery. 2 days.	2016
<i>R/V Sproul</i> . La Jolla Canyon. CTD to-yos. Co-Chief Scientist . 2 days.	2016
<i>R/V Sproul</i> . La Jolla/Del Mar. CTD, mooring recovery, bottom lander deployment. 4 days.	2016
<i>R/V Sikuliaq</i> . Chukchi and Beaufort Seas. CTD, SWIMS, MMP, LADCP, mooring deployment and recovery. 34 days.	2015
<i>R/V Revelle</i> . Bay of Bengal. CTD, uCTD, LADCP. 10 days.	2014

SERVICE

External

Review Panelist, National Aeronautics and Space Administration, Physical Oceanography Reviewer, National Science Foundation, Arctic System Science Reviewer, National Science Foundation, Arctic Observing Network Reviewer, *Journal of Physical Oceanography*, *Journal of Climate*, *Journal of Geophysics Research*, *Geophysical Research Letters*, *Journal of Atmospheric and Oceanic Technology*, and *Progress in Oceanography*

Internal

Committee for Diversity, Equity & Inclusion at WHOI	2020-present
▶ Postdoctoral Representative, Academic Recruitment	
▶ Working group member, Messaging & Implementation	
Mentor for MIT-WHOI Joint Program Students	2020-present
WHOI PO Department Seminar Organizer	2020-2021

WHOI Unlearning Racism in the Geosciences Participant	2020-2021
Steering Committee, Broader Impacts Group at WHOI	2020-2021
Panelist, Summer Interns at SIO	2019
Scripps Graduate Student Council Representative	2018-2019
▸ Physical Oceanography Student Representative	
▸ Graduate Student Council/Diversity Advisory Committee Liaison	
Peer Mentor at Scripps Institution of Oceanography	2016-2017

Outreach

Scripps Day Polar Ocean Outreach Booth	2019
Sally Ride Public Tour Wirewalker Demonstration	2016

Membership

American Geophysical Union
The Oceanography Society