

## ELIZABETH (EFFIE) COOMBS FINE

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### EDUCATION

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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

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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

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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**

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**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

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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. <b>Co-Chief Scientist</b> . 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*, and *Journal of Atmospheric and Oceanic Technology*

### 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