

Gregory LeClaire Wagner



Contact

✉ gregory.leclaire.wagner@gmail.com
📧 glwagner.github.io
☎ +1 781 710 0871

77 Massachusetts Avenue
Building 54-1622
Cambridge, Massachusetts 02142

Interests

Geophysical fluid dynamics; mixing and dispersion; parameterization; applied mathematics

Education

2010–2016 **PhD in Engineering Sciences (Aerospace Engineering)**
Department of Mechanical and Aerospace Engineering
University of California, San Diego
Advisors—William Young and Eric Lauga

2009–2010 **MSE in Aerospace Engineering**
2005–2009 **BSE in Aerospace Engineering**, *magna cum laude*
Department of Aerospace Engineering
University of Michigan, Ann Arbor

Work

2018–present **Postdoctoral Associate**
Department of Earth, Atmospheric, and Planetary Sciences
Massachusetts Institute of Technology
Ocean parameterization with the [Climate Modeling Alliance](#)
Funded by a consortium led by [Schmidt Futures](#)

2016–2018 **NOAA Climate and Global Change Postdoctoral Fellow**
Department of Earth, Atmospheric, and Planetary Sciences, MIT
Massachusetts Institute of Technology

2013–2014, 2016 **Graduate Research Assistant**
Scripps Institution of Oceanography
University of California, San Diego

2014–2015 **Teaching Assistant**
2010–2013 **Focht-Powell Graduate Fellow**
Department of Mechanical and Aerospace Engineering
University of California, San Diego

2009–2010 **Product Engineer**
Accio Energy, Ann Arbor, Michigan
Wind energy technology research and development

Publications

in review or prep

Oceanic internal waves beneath surface gravity waves

Gregory L Wagner and Greg Chini

in preparation

Squeeze dispersion and the effective diapycnal diffusivity of oceanic tracers

Gregory L Wagner, Glenn Flierl, Raffaele Ferrari, Gunnar Voet, Glenn S Carter, Matthew H Alford, and James B Girtton

in preparation for Geophysical Review Letters

2018 **Stimulated generation: extraction of energy from balanced flow by near-inertial waves**

Cesar B Rocha, **Gregory L Wagner**, and William R Young

Journal of Fluid Mechanics 847, 417-451

2017 **An asymptotic model for the propagation of oceanic internal tides through quasi-geostrophic flow**

Gregory L Wagner, Gwenäel Ferrando, and William R Young

Journal of Fluid Mechanics 828, 779-811

2016 **A three-component model for the coupled evolution of near-inertial waves, quasi-geostrophic flow, and the near-inertial second harmonic**

Gregory L Wagner and William R Young

Journal of Fluid Mechanics 802, 806-837

A tale of two spicy seas

Jennifer A MacKinnon, Jonathan D Nash, Matthew H Alford, Andrew J Lucas, John B Mickett, Emily L Shroyer, Amy F Waterhouse, Amit Tandon, D Sengupta, Amala Mahadevan, M Ravichandran, Robert Pinkel, Daniel L Rudnick, Caitlin B Whalen, Marion S Alberty, J Sreelekha, Elizabeth C Fine, D Chaudhuri, and **Gregory L Wagner**

Oceanography 29 (2), 50-61

Acoustically propelled nanoshells

Fernando Soto, **Gregory L Wagner**, Victor Garcia-Gradilla, Kyle T Gillespie, Deepak R Lakshminpathy, Emil Karshalev, Chava Angell, Yi Chen, and Joseph Wang

Nanoscale 8 (41), 17788-17793

2015 **Available potential vorticity and wave-averaged quasi-geostrophic flow**

Gregory L Wagner and William R Young

Journal of Fluid Mechanics 785, 401-424

2014 **Mixing by microorganisms in stratified fluids**

Gregory L Wagner, William R Young, and Eric Lauga

Journal of Marine Research 72 (2), 47-72

Bubble-Propelled Micromotors for Enhanced Transport of Passive Tracers

Jahir Orozco, Beatriz Jurado-Sanchez, **Gregory Wagner**, Wei Gao, Rafael Vazquez-Duhalt, Sirilak Sattayasamitsathit, Michael Galarnyk, Allan Cortes, David Santillan, and Joseph Wang

Langmuir 30 (18), 5082-5087

Publications <i>continued—2013</i>		Crawling scallop: Friction-based locomotion with one degree of freedom Gregory L Wagner and Eric Lauga Journal of Theoretical Biology, 324, 42-51
	2009	Specific Charge Control for Micro/Nano-Particle Electrostatic Propulsion T Liu, G L Wagner , A Gallimore, B Gilchrist, and P Peterson 45th AIAA/ASME/SAE/ASEE Joint Propulsion Conference, AIAA-2009-5090
Teaching <i>ug: undergrad</i> <i>g: grad</i>	Fall 2015	Teaching Assistant , Introduction to Mathematical Physics (<i>ug</i>) <i>with Prof David Santillan, Mech and Aero Engineering (MAE), UCSD</i> <i>Recieved MAE Outstanding Teaching Assistant Award</i>
	Spring 2015	Teaching Assistant , Introduction to Mathematical Physics (<i>ug</i>) <i>with Prof Stefan Llewellyn Smith, MAE, UCSD</i>
	Fall 2014	Teaching Assistant , Fluid Dynamics II (<i>g</i>) <i>with Prof Geno Pawlak, MAE, UCSD</i>
	Spring 2014	Teaching Assistant , Applied Mathematics III (<i>g</i>) <i>with Prof William R. Young, Scripps Institution of Oceanography, UCSD</i>
Seminars and invited research talks	Aug 2018	Woods Hole Program in Geophysical Fluid Dynamics
	Jan 2018	Department of Physical Oceanography, WHOI <i>Physical Oceanography Seminar</i>
	Nov 2017	Department of Atmospheric & Oceanic Sciences, McGill University <i>Departmental Seminar</i>
	Nov 2017	Earth, Atmospheric, and Planetary Sciences, MIT <i>Sack Lunch Seminar</i>
	Sep 2017	Earth, Environmental, and Planetary Sciences, Brown University <i>Lunch Bunch Seminar</i>
	May 2016	College of Atmospheric and Ocean Sciences, NYU <i>Atmospheric Ocean Sciences Colloquium</i>
	March 2016	Department of Mechanical Engineering, MIT <i>MSEAS Seminar</i>
	Feb 2016	College of Earth, Ocean and Atmospheric Sciences, Oregon State University <i>Physics of Oceans and Atmospheres Seminar Series</i>
	July 2015	Woods Hole Program in Geophysical Fluid Dynamics
	March 2013	Theory Seminar, Scripps Institution of Oceanography, UCSD

Conference and workshop talks	Nov 2018	APS Division of Fluid Dynamics <i>Atlanta, Georgia, USA</i>
	Feb 2018	BIRS Workshop <i>Banff, Alberta, Canada</i>
	Feb 2018	AGU Ocean Sciences <i>Portland, Oregon, USA</i>
	June 2017	Atmospheric and Oceanic Fluid Dynamics <i>Portland, Oregon, USA</i>
	Feb 2016	AGU Ocean Sciences <i>New Orleans, Louisiana, USA</i>
	July 2016	Liege Colloquium <i>Liège, Belgium</i>
	Nov 2015	APS Division of Fluid Dynamics <i>Boston, Massachusetts, USA</i>
	Feb 2014	AGU Ocean Sciences <i>Honolulu, Hawaii, USA</i>
	Nov 2013	APS Division of Fluid Dynamics <i>Pittsburgh, Pennsylvania, USA</i>
	April 2013	SoCal Fluids VII <i>Pasadena, California, USA</i>
Research cruises	June 2016	“Flow Encountering Abrupt Topography (FLEAT)” —Western Pacific off Palau <i>With PI's Matthew Alford, Jennifer Mackinnon, Gunnar Voet</i>
	Sep 2015	“Arctic Mix” —Beaufort Sea, Chukchi Sea, and Bering Strait, Arctic Ocean <i>With PI's Jennifer Mackinnon, Matthew Alford, John Mickett</i>
Service and workshop participation	Since 2016	Reviewer — Geophysical Research Letters, Journal of Advances in Modeling of Earth Systems, Journal of Physical Oceanography, Journal of Fluid Mechanics, Quarterly Journal of the Royal Meteorological Society
	Since 2015	Participant — Woods Hole Program in Geophysical Fluid Dynamics, USA
	Feb 2018	Participant — Banff International Research Station Workshop, Canada <i>Modeling imbalance in the atmosphere and ocean</i>
	Aug 2017	Participant — École de Physique des Houches summer school, France <i>Fundamental aspects of turbulent flows in climate dynamics</i>
	2013	Fellow — Woods Hole Program in Geophysical Fluid Dynamics, USA
	2012	Participant — Cargèse Summer School, France <i>Softflow: Biological Complex Fluids</i>
Software	FourierFlows.jl Ecosystem for solving partial differential equations with spectral methods on CPUs and GPUs using the julia language for high-level, high-performance computing github.com/FourierFlows	
	dedaLES Large Eddy Simulation with spectral methods using the dedalus framework github.com/glwagner/dedaLES	

Accolades	2016–2018	Postdoctoral Fellowship —NOAA Climate and Global Change Program
	2016	Award —Outstanding Teaching Assistant, Department of Mechanical and Aerospace Engineering, UCSD
	2013	Fellow —Woods Hole Program in Geophysical Fluid Dynamics
	2010–2013	Graduate Fellowship —Focht-Powell Fellowship, Department of Mechanical and Aerospace Engineering, UCSD
	2009	James B. Angell Scholar —University of Michigan

References

Raffaele Ferrari

Professor, Department of Earth, Atmospheric, and Planetary Sciences
 Massachusetts Institute of Technology
 ✉ rferrari@mit.edu | 🌐 ferrari.mit.edu

William R. Young

Professor, Scripps Institution of Oceanography
 University of California, San Diego
 ✉ wryoung@ucsd.edu | 🌐 www-pord.ucsd.edu/wryoung

Jennifer A. MacKinnon

Professor, Scripps Institution of Oceanography
 University of California, San Diego
 ✉ jmackinnon@ucsd.edu | 🌐 www-pord.ucsd.edu/jen

Glenn Flierl

Professor, Department of Earth, Atmospheric, and Planetary Sciences
 Massachusetts Institute of Technology
 ✉ glenn@lake.mit.edu | 🌐 eapsweb.mit.edu/people/grflierl