Gregory LeClaire Wagner

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Cambridge, Massachusetts 02142

Interests

Geophysical fluid dynamics; mixing and dispersion; applied mathematics

Education

2016–present **NOAA Climate and Global Change Postdoctoral Fellow**
Department of Earth, Atmospheric, and Planetary Sciences
Massachusetts Institute of Technology
Advisor—Raffaele Ferrari
Project—'Abyssal rising: ocean upwelling on rough and sloping boundaries'

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
Thesis—'On the coupled evolution of oceanic internal waves and quasi-geostrophic flow'

2009–2010 **MSE in Aerospace Engineering**
Department of Aerospace Engineering
University of Michigan, Ann Arbor

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

Publications
in review or prep

Squeeze dispersion and the enhancement of diapycnal mixing by large-scale strain
Gregory L Wagner, Glenn Flierl, and Raffaele Ferrari
in preparation for Geophysical Review Letters

Stimulated generation: extraction of energy from balanced flow by near-inertial waves
Cesar B Rocha, **Gregory L Wagner**, and William R Young
submitted to the Journal of Fluid Mechanics

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

Publications
continued—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 Lakshmipathy, 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

2013 **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
ug: undergrad
g: grad

Fall 2015	**Teaching Assistant**, Introduction to Mathematical Physics *(ug)* *with Prof David Santillian, Mech and Aero Engineering (MAE), UCSD* *Recieved MAE Outstanding Teaching Assistant Award*
Spring 2015	**Teaching Assistant**, Introduction to Mathematical Physics *(ug)* *with Prof Stefan Llewellyn Smith, MAE, UCSD*
Spring 2014	**Teaching Assistant**, Applied Mathematics III *(g)* *with Prof William R. Young, Scripps Institution of Oceanography, UCSD*
Fall 2014	**Teaching Assistant**, Fluid Dynamics II *(g)* *with Prof Geno Pawlak, MAE, UCSD*

Seminars and invited research talks

Jan 2018	Department of Physical Oceanography, WHOI *Physical Oceanography Seminar*
Nov 2017	Department of Atmospheric & Oceanic Sciences, McGill University *Departmental Seminar*
Nov 2017	Earth, Atmospheric, and Planetary Sciences, MIT *Sack Lunch Seminar*
Sep 2017	Earth, Environmental, and Planetary Sciences, Brown University *Lunch Bunch Seminar*
May 2016	College of Atmospheric and Ocean Sciences, NYU *Atmospheric Ocean Sciences Colloquium*
March 2016	Department of Mechanical Engineering, MIT *MSEAS Seminar*
Feb 2016	College of Earth, Ocean and Atmospheric Sciences, Oregon State University *Physics of Oceans and Atmospheres Seminar Series*
July 2015	Woods Hole Program in Geophysical Fluid Dynamics
March 2013	Theory Seminar, Scripps Institution of Oceanography, UCSD

Conference and workshop talks

Feb 2018	BIRS Workshop, Alberta, Canada
Feb 2018	AGU Ocean Sciences, Portland, Oregon, USA
June 2017	Atmospheric and Oceanic Fluid Dynamics, Portland, Oregon, USA
Feb 2016	AGU Ocean Sciences, New Orleans, Louisiana, USA
July 2016	Liege Colliquium, Liège, Belgium
Feb 2014	AGU Ocean Sciences, Honolulu, Hawaii, USA
Nov 2013	APS Division of Fluid Dynamics, Pittsburgh, Pennsylvania, USA
April 2013	SoCal Fluids VII, Pasadena, California, USA

Research cruises

June 2016 — "Flow Encountering Abrupt Topography (FLEAT)"—Western Pacific off Palau
With PI's Matthew Alford, Jennifer Mackinnon, Gunnar Voet

Sep 2015 — "Arctic Mix"—Beaufort Sea, Chukchi Sea, and Bering Strait, Arctic Ocean
With PI's Jennifer Mackinnon, Matthew Alford, John Mickett

Service and workshop participation

Since 2016 — **Reviewer**—Journal of Physical Oceanography, Journal of Fluid Mechanics, Quarterly Journal of the Royal Meterological Society

Feb 2018 — **Participant**—Banff International Research Station Workshop, Canada
Modeling imbalance in the atmosphere and ocean

Aug 2017 — **Participant**—École de Physique des Houches summer school, France
Fundamental aspects of turbulent flows in climate dynamics

2015, 2017 — **Participant**—Woods Hole Program in Geophysical Fluid Dynamics, USA

2013 — **Fellow**—Woods Hole Program in Geophysical Fluid Dynamics, USA

2012 — **Participant**—Cargèse Summer School, France
Softflow: Biological Complex Fluids

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, MIT
✉ rferrari@mit.edu | ferrari.mit.edu

William R. Young
Professor, Scripps Institution of Oceanography, UCSD
✉ wryoung@ucsd.edu | www-pord.ucsd.edu/ wryoung

Jennifer A. MacKinnon
Associate Professor, Scripps Institution of Oceanography, UCSD
✉ jmackinnon@ucsd.edu | www-pord.ucsd.edu/ jen

Glenn Flierl
Professor, Department of Earth, Atmospheric, and Planetary Sciences, MIT
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