

# Matthew H. Alford

## Professor of Oceanography

### Curriculum vita

Marine Physical Laboratory  
Scripps Institution of Oceanography  
University of California, San Diego  
La Jolla, California 92037-0213

Phone: (858) 246-1646  
Email: malford@ucsd.edu  
Web: <http://mod.ucsd.edu>

Born: January 7, 1971

### Honors and Awards

Member, JASON advisory group	2017
Ernst Froelich Fellowship, CSIRO, Tasmania, Australia	2015
AGU Research Spotlight	2014
First place winner, COSEE video abstract contest	2014
Distinguished Research Award, University of Washington College of Ocean and Fishery Sciences	2009
Editor's Award, American Meteorological Society	2004
Young Investigator Award, Office of Naval Research	2002 - 2005
Sigma Xi	1993
National Merit Scholarship	1989

### Education

<b><i>Doctor of Philosophy, Oceanography</i></b>	<b><i>1993-1998</i></b>
Scripps Institution of Oceanography University of California San Diego, La Jolla, California.	

Professor Robert Pinkel, Advisor

Dissertation Title: "Observations of Overturning and Double-Diffusive Processes in the Thermocline: the Context of Ocean Mixing"

<b><i>Bachelor of Arts, Astrophysics</i></b>	<b><i>1989-1993</i></b>
Swarthmore College Swarthmore, Pennsylvania.	

Professor John Gaustad, Advisor

Dissertation Title: "Numerical Solutions of Stellar Interior Model Equations"

### Positions Held

<b>Associate Director, Marine Physical Laboratory</b>	<i>July 2015-present</i>
<b>Full Professor</b> Scripps Institution of Oceanography, University of California San Diego	<i>July 2014-present</i>
<b>Principal Oceanographer</b> Applied Physics Laboratory, University of Washington	<i>July 2011-June 2014</i>
<b>Associate Professor of Oceanography</b> School of Oceanography, University of Washington	<i>June 2010-present</i>
<b>Affiliate Associate Professor of Oceanography</b> School of Oceanography, University of Washington	<i>June 2008-June 2010</i>
<b>Senior Oceanographer</b> Applied Physics Laboratory, University of Washington Seattle, Washington	<i>July 2007-present</i>
<b>Chair, Ocean Physics Department</b> Applied Physics Laboratory, University of Washington Seattle, Washington	<i>June 2005-September 2006</i>
<b>Affiliate Assistant Professor of Oceanography</b> School of Oceanography, University of Washington Seattle, Washington	<i>February 2001-present</i>
<b>Oceanographer</b> Applied Physics Laboratory, University of Washington Seattle, Washington	<i>July 1999-present</i>
<b>Postdoctoral Research Associate</b> Professor Michael Gregg, Advisor Applied Physics Laboratory, University of Washington Seattle, Washington	<i>November 1998-July 1999</i>
<b>Chief Scientist, Postdoctoral Research Associate</b> Marine Physical Laboratory, Scripps Institution of Oceanography R/P FLIP, Eastern Pacific Ocean	<i>August 1998-October 1998</i>
<b>Ph.D. Candidate, Research Assistant</b> Marine Physical Laboratory, Scripps Institution of Oceanography La Jolla, California	<i>September 1993-August 1998</i>
<b>Research Assistant</b> Swarthmore College Department of Chemistry Swarthmore, Pennsylvania	<i>August-December 1992</i>

**Software Engineer**

University of Virginia Medical Center  
Charlottesville, Virginia

*July-August 1992*

**Data Analyst**

Swarthmore College Department of Astronomy  
Swarthmore, Pennsylvania

*November 1989-May 1992*

**Invited Talks and Presentations**

***PIMS workshop, Banff***

Observing breaking internal waves in the ocean

*February 2018*

***University of Cambridge***

Observing breaking internal waves in the ocean

*March 2018*

***Oxford University***

Observing breaking internal waves in the ocean

*March 2018*

***Imperial College, London***

Observing breaking internal waves in the ocean

*March 2018*

***University of North Carolina***

Observing breaking internal waves in the ocean

*March 2018*

***University of Michigan Smith Lecture***

Observing the generation, propagation and dissipation of internal waves in the ocean

*March 2017*

***UCSD Structural Engineering***

Observing the generation, propagation and dissipation of internal waves in the ocean

*May 2016*

***Massachusetts Institution of Technology***

Observing the generation, propagation and dissipation of internal waves in the ocean

*April 2016*

***Woods Hole Oceanographic Institution***

Observing the generation, propagation and dissipation of internal waves in the ocean

*April 2016*

***IUGG Prague***

Observing the generation, propagation and dissipation of internal waves in the ocean

*July 2015 (invited, talk not given due to family emergency)*

***University of Texas Austin***

*February 2016 (invited, talk not given due to travel conflicts)*

Internal tide reflection at a continental slope

**Stanford University**

*November 2015*

Observing the generation, propagation and dissipation of internal waves in the ocean

**University of New South Wales**

*March 2015*

Observing the generation, propagation and dissipation of internal waves in the ocean

**Swinburne University of Technology**

*March 2015 (invited, talk not given due to travel conflicts)*

Observing the generation, propagation and dissipation of internal waves in the ocean

**University of Tasmania**

*March 2015*

Observing the generation, propagation and dissipation of internal waves in the ocean

**CSIRO Hobart, Tasmania**

*February 2015*

Observing the generation, propagation and dissipation of internal waves in the ocean

**UC San Diego Founders Symposium**

*October 2014*

Chasing Waves: Measuring skyscraper-high waves beneath the sea and their importance for submarines, coastal ecosystems and climate

**Gordon Conference on nonlinear coastal internal waves** *June 2013*

Internal waves and turbulence on the Washington Continental Shelf

**Scripps Institution of Oceanography Dept. Seminar**

*March 2012*

Recent observational examples of deep mixing by internal tides, near-inertial waves and overflows

**Woods Hole Coastal Ocean Fluid Dynamics Seminar**

*July 2011*

Recent observational examples of deep mixing by internal tides, near-inertial waves and overflows

**Geophysical & Astrophysical Internal Waves Workshop,** *February 2011*

**Ecole de Physique des Houches**

Observations of internal tides and dissipation in Luzon Strait: a tale of two ridges

**Cargese School on Topographic Internal Waves**

*November 2010*

Generation, Propagation and Dissipation of Internal Tides

**Ocean Sciences Meeting**

*February 2010*

Are near-inertial waves important for mixing the deep ocean?

**Plumes and Gravity Currents Symposium, U. Alberta**

*October 2007*

Mixing, Evolution and Morphology of Thermohaline Intrusions

- Spontaneous Imbalance Symposium*** *August 2006*  
 Spatial and seasonal patterns of near-inertial kinetic energy
- European Geophysical Union*** *May 2004*  
 Internal Swell: What do we know? Why do we care?
- Estuarine Research Federation Conference*** *September 2003*  
 3-D Mapping of a thermohaline intrusion in Puget Sound, WA
- 'Aha Hulikoa Winter Workshop*** *January 2003*  
 Internal Swell: near-inertial and tidal internal-wave energy flux measured from historical moored records
- University of Victoria*** *May 2000*  
 Internal Swell Generation: The spatial distribution of energy flux from the wind to mixed-layer near-inertial motions
- University of Victoria*** *February 1999*  
 Patterns of turbulent and double diffusive phenomena: observations from a rapid profiling microconductivity probe
- 'Aha Hulikoa Winter Workshop*** *January 1999*  
 Observations of fine-scale Richardson number, strain, and effective strain rate conditions accompanying overturning events in the thermocline

## **Teaching and Advising**

### ***Students Advised (and Degrees Completed)***

Maya Whitmont (MS), Kim Martini (MS/PhD), Andrew Pickering (MS), Brian Chinn (MS oceanography, MS Applied Mathematics), Shaung Zhang (MS), Tyler Hennon (MS), Benjamin Bloss (MS), Effie Fine (PhD est. 2019), Madeleine Hamann (PhD est. 2019), Olavo Marques (PhD est. 2019), Noel Gutierrez-Brizuela (PhD est. 2022).

### ***Postdocs Advised***

Zhongxiang Zhao, Phil Hosegood, Andrey Shcherbina, John Mickett, Danielle Wain, Gunnar Voet, Tyler Hennon, Arnaud Le Boyer, Nicole Couto, Ali Mashayek, Jess Cusack

### ***PhD Committees***

Glenn Carter, John Mickett, Sally Warner, Wayne Martin, Samantha Brody, Kevin Tempest, Samantha Terker, Jamie Shutta, Kristin Fitzmorris, Masoud Jalali, Alisa Beaubien, Kelly Pearson, Rohit Supekar (MIT), Caroline Lowcher, Jessica Garwood

### ***Undergraduates Advised***

Eva Loeser, Irene Globus, Peter Braun, Ben Ryan, Hannah Sadler, Maxwell Sun, Eli Simmons, Louise Xu, Alex Mendel, Casey Schneider-Mitzner, Jake Shoudy, Sam Fletcher, Derek Martin.

**Graduate Course: Data Analysis Laboratory** Fall 2016, Fall 2017

**Graduate Course: Proposal Writing and Experiment Design**  
Fall 2014, Winter 2016, Winter 2018

**Graduate Course: Observations of Ocean Circulation** Winter 2007, Winter 2011,  
Winter 2013

Evaluations: median 4.2 out of 5.0

**Graduate Course: Methods and Measurements in Physical Oceanography**  
Winter 2010, Winter 2012

Evaluations: median 3.8 out of 5.0

**Graduate Course: Internal Waves** Spring 2004  
Guest lecturer

**Undergraduate Course: Field Methods in Oceanography** Spring 2003  
Team teaching

## Professional Activities

### Peer Reviews

Nature, Journal of Physical Oceanography, Journal of Geophysical Research, Geophysical Research Letters, National Science Foundation, Continental Shelf Research, Deep-Sea Research, Oceanography, Schmidt Ocean Institute, Netherlands Science Foundation

### Community Engagement

Guest Editor, Methods in Oceanography (2016)  
Invited Participant, White House Office of Science and Technology Policy (OSTP) Earth Observations Assessment (EOA 2016)  
Participant, CLIVAR Translating process studies to climate models workshop, Princeton (2015)  
Steering Committee, Mentoring Physical Oceanography Women to Increase Retention (MPOWIR; 2005-2006)  
School of Oceanography Faculty Council representative (2012-2013)  
Organizer, physical oceanography student recruitment (2012-2013)  
Gathered student feedback on advising in UW School of Oceanography (2012-2013)  
Swath Altimeter Science Team (NASA; 2012-present)  
Ocean Surface Topography Science Team (NASA; 2012-present)  
Science Steering Committee, Internal Waves in Straits Experiment (Office of Naval Research; 2009-present)

Guest Editor, The Oceanography Society (TOS) volume on internal waves (2012)  
 Staff, Woods Hole Summer Geophysical Fluid Dynamics series (2011)  
 Member, Internal Waves and Mixing Climate Processes Team (2010-present)  
 Invited Participant, Oceanography in 2025, National Academy of Sciences (2009)  
 Project Scientist, Regional Scale Nodes component of the Ocean Observing Initiative  
 (2008-2009)  
 Convener, Pacific Institute for the Mathematical Sciences (PIMS): “Oceanic gravity  
 Waves” (October 2008)  
 Chair, Ocean Physics Department (2005-2006)

### **Outreach**

Creator, “Oceanographer for a day” – sending elementary school children out on local  
 research vessels for hands-on experience  
 Volunteer, Applied Physics Laboratory K-12 Educational Outreach Program  
 Guest Scientist, Salish Sea Expeditions  
 Creator, “Crush Cam” video, blog and K-8 auction: children see items being sent to the  
 depths and crushed as demonstration of pressure and hook into ocean research  
 Speaker and tour guide, University of Samoa and US Embassy in Samoa

## **Selected Seagoing Experience**

<b><i>PI/chief scientist: Flow Encountering Abrupt</i></b>	<i>R/V Revelle 6/2016</i>
<b><i>Topography</i></b>	
<b><i>Principal Investigator: Arctic Mixing</i></b>	<i>R/V Sikuliaq 9/15</i>
<b><i>PI/chief scientist: Tasman Tidal Dissipation Experiment</i></b>	<i>R/V Revelle 1/15, 3/15</i>
<b><i>Principal Investigator: Samoan Passage</i></b>	<i>R/V Kilo Moana, 10/11, R/V Revelle, 7-8/12, 1-2/14</i>
<b><i>Principal Investigator: The HOT profiler</i></b>	<i>R/V Kilo Moana, 6/10, 10/10, 4/11, 1/12, 6/12</i>
<b><i>Principal Investigator: NEMO deployment</i></b>	<i>R/V Thompson, 4/11, 8/11, 4/13</i>
<b><i>Principal Investigator: Internal Waves in Straits</i></b>	<i>R/V Revelle, 8/10, 6/11</i>
<b><i>Principal Investigator: Monterey Canyon</i></b>	<i>R/V Wecoma, 2-4/09</i>
<b><i>Principal Investigator: Philippines Experiment</i></b>	<i>R/V Melville, 3/08</i>
<b><i>Principal Investigator: Internal Waves Across the Pacific</i></b>	<i>R/V Revelle, 4-6/06</i>
<b><i>Principal Investigator: Mixed Layer Restratification</i></b>	<i>R/V Wecoma, 3/05</i>
<b><i>Principal Investigator: Oregon Slope Internal Tides</i></b>	<i>R/V Wecoma, 9-10/05</i>

<b>Principal Investigator: Aegean Mixing Experiment</b>	R/V <i>Oceanus</i> , 10-11/04
<b>Principal Investigator: Mamala Bay Tide Experiment</b>	R/V <i>Revelle</i> , 9/02
<b>Hawaii Ocean Mixing Experiment: Nearfield Cruise</b>	R/V <i>Revelle</i> , 9/02
<b>Principal Investigator: Ocean Refractometer Test Cruise</b>	R/V <i>Henderson</i> , 7/01
<b>Principal Investigator: Intrusion Evolution Experiment</b>	R/V <i>C. E. Miller</i> , 3/01
<b>Hawaii Ocean Mixing Experiment: Survey Cruise</b>	R/V <i>Roger Revelle</i> , 10/00
<b>Kinetic Energy Dissipation in Shallow Tidal Flows</b>	R/V <i>Turning Tide</i> , 10/99
<b>Microstructure Test Cruise/Thermohaline Intrusions</b>	R/V <i>Henderson</i> , 8/99
<b>Chief Scientist: Topographic Internal Waves</b>	R/P <i>FLIP</i> , 9/98
<b>Student Cruise</b>	R/V <i>Sproul</i> , 10/97
<b>Marine Boundary Layer Experiment</b>	R/P <i>FLIP</i> , 5/95
<b>Marine Boundary Layer Experiment</b>	R/P <i>FLIP</i> , 2/95
<b>Student Cruise</b>	R/V <i>New Horizon</i> , 8/94

## Refereed Publications

*Google Scholar h-index: 33*

- [1] Jody M Klymak, Harper Simmons, Dmitry Brazhnikov, Samuel Kelly, Jennifer A MacKinnon, Matthew H Alford, Rob Pinkel, and Jonathan Nash. Reflection of linear internal tides from realistic topography: The Tasman continental slope. *J. Phys. Oceanogr.*, in press, 2016.
- [2] Jennifer A. MacKinnon, Jonathan D. Nash, Matthew H. Alford, Andrew J. Lucas, John B. Mickett, Emily L. Shroyer, Amy F. Waterhouse, Amit Tandon, Debasis Sengupta, Amala Mahadevan, M. Ravichandran, Robert Pinkel, Daniel L. Rudnick, Caitlin B. Whalen, Marion S. Albery, J. Sreelekha, Elizabeth C. Fine, Dipanjan Chaudhuri, and Gregory L. Wagner. A tale of two spicy seas. *Oceanography*, in press, 2016.
- [3] G. Voet, M. H. Alford, J. B. Girton, G. S. Carter, J. B. Mickett, and J. M. Klymak. Warming and weakening of the abyssal flow through Samoan Passage. *J. Phys. Oceanogr.*, 46(8):2389–2401, 2016.
- [4] Z X Zhao, M H Alford, Harper L Simmons, and Luc Rainville. Global Observations of Open-Ocean Mode-1 M2 Internal Tides. *J. Phys. Ocean.*, in press, 2016.
- [5] M H Alford, Tim McGinnis, and B M Howe. An inductive charging and real-time communications system for profiling moorings. *J. Atmos. Ocean. Tech.*, 32(12):2243–2252, 2015.
- [6] Matthew H Alford, Jennifer A MacKinnon, Harper L Simmons, and Jonathan D Nash. Near-inertial internal waves in the ocean. *Annual Reviews of Marine Science*, 8:95–123, 2015.
- [7] Matthew H Alford, Tom Peacock, Jennifer A MacKinnon, Jonathan D Nash, Maarten Buijsman, Luca Centurioni, Ming-Huei Chang, David M Farmer, Oliver Fringer, Ke-Hsien Fu, Patrick Gallacher, Hans C Graber, Karl R. Helfrich, Chris Jackson, Steven Jachec, Sen Jan, Shaun T M Johnston, Ren-Chieh Lien, Jody M Klymak, Sonya M Legg, Ruth Musgrave, James N Moum, Jae-Hun Park, Andy I Pickering, Rob Pinkel, Luc Rainville, Steven R Ramp, Daniel L Rudnick, Sutanu Sarkar, Alberto Scotti, Harper L Simmons, Lou St. Laurent, Yu-Huai Wang, Y-J Yang, Theresa Paluszkiwicz, and T-Y Tang. The formation and fate of internal waves in the South China Sea. *Nature*, 521:65–73, 2015.
- [8] B. S. Chinn, J B Girton, and Matthew H Alford. Aspects of wavenumber-frequency spectra of internal wave shear and strain. *J. Phys. Oceanogr.*, in press, 2015.
- [9] Jody M. Klymak, William Crawford, Matthew H. Alford, Jennifer A. MacKinnon, and Robert Pinkel. Along-



- isopycnal variability of spice in the North Pacific. *Journal of Geophysical Research: Oceans*, 120:2287–2307, 2015.
- [10] Andy I Pickering, Matthew H Alford, Luc Rainville, Jonathan D Nash, Dong Shan Ko, Maarten Buijsman, and Byungho Lim. Structure and variability of internal tides in Luzon Strait. *J. Phys. Oceanogr.*, 45(6):1574–1594, 2015.
- [11] G Voet, J B Girton, M H Alford, G S Carter, J M Klymak, and J B Mickett. Pathways, Volume Transport and Mixing of Abyssal Water in the Samoan Passage. *J. Phys. Oceanogr.*, 45(2):562–588, 2015.
- [12] Shuang Zhang and Matthew H. Alford. Instabilities in nonlinear internal waves on the Washington continental shelf. 120:5272–5283, 2015.
- [13] Shuang Zhang, Matthew H. Alford, and John B. Mickett. Characteristics of Nonlinear Internal Waves on the Washington Continental Shelf. *Journal of Geophysical Research: Oceans*, 120(doi:10.1002/2014JC010393), 2015.
- [14] Amy F Waterhouse, Jennifer A MacKinnon, Jonathan D Nash, Matthew H Alford, Eric Kunze, Harper L Simmons, Kurt L Polzin, Louis C St Laurent, Oliver M Sun, Robert Pinkel, Lynne D. Talley, C B Whalen, Tycho N. Huussen, Glenn S Carter, Ilker Fer, Stephanie Waterman, Alberto C Naveira Garabato, T B Sanford, and Craig M Lee. Global patterns of diapycnal mixing from measurements of the turbulent dissipation rate. *J. Phys. Oceanogr.*, 44(7):1854–1872, November 2014.
- [15] Maarten Buijsman, Jody M Klymak, Sonya M. Legg, Matthew H Alford, David M. Farmer, Jennifer A MacKinnon, Jonathan D Nash, JaHun Park, Andrew I Pickering, and Harper Simmons. Three- Dimensional Double-Ridge Internal Tide Resonance in Luzon Strait. *J. Phys. Oceanogr.*, 44(3):850–869, March 2014.
- [16] Matthew H. Alford, Jody M. Klymak, and Glenn S. Carter. Breaking internal lee waves at Kaena Ridge, Hawaii. *Geophys. Res. Lett.*, 41:906–912, 2014.
- [17] Matthew H Alford and Parker MacCready. Flow and mixing in Juan de Fuca Canyon, Washington. *Geophys. Res. Lett.*, 41:1–8, 2014.
- [18] Tyler D. Hennon, Stephen C. Riser, and Matthew H. Alford. Observations of Internal Gravity Waves by Argo Floats. *Journal of Physical Oceanography*, 44(9):2370–2386, 2014/09/22 2014.
- [19] M H Alford, J B Girton, Gunnar Voet, Glenn S Carter, John B Mickett, and Jody M Klymak. Turbulent mixing and hydraulic control of abyssal water in the Samoan Passage. *Geophys. Res. Lett.*, 40(17):4668–4674, 2013.
- [20] Matthew H Alford, A Y Shcherbina, and M C Gregg. Observations of near-inertial internal gravity waves radiating from a frontal jet. *J. Phys. Oceanogr.*, 43(6):1225–1239, 2013.
- [21] Rob A Hall, Matthew H Alford, Glenn S Carter, Michael C Gregg, Ren-Chieh Lien, Danielle J Wain, and Zhongxiang Zhao. Transition from partly standing to progressive internal tides in Monterey Submarine Canyon. *Deep-Sea Res II*, 104:164–173, 2013.
- [22] Phil J Hosegood, Michael C Gregg, and Matthew H Alford. Wind-driven submesoscale subduction at the North Pacific subtropical front. *J. Geophys. Res.*, 118, 2013.
- [23] T. M. Shaun Johnston, Daniel L. Rudnick, Matthew H. Alford, Andy I Pickering, and Harper L. Simmons. Internal tidal energy fluxes in the South China Sea from density and velocity measurements by gliders. *J. Geophys. Res.*, 118(8):1–11, 2013.
- [24] J. A. MacKinnon, Matthew H. Alford, O. Sun, R. Pinkel, Zhongxiang Zhao, and Jody Klymak. Parametric Subharmonic Instability of the internal tide at 29N. *J. Phys. Oceanogr.*, 43(1):17–28, 2013.
- [25] Jennifer A. MacKinnon, Matthew H. Alford, Rob Pinkel, Jody Klymak, and Zhongxiang Zhao. The latitudinal dependence of shear and mixing in the Pacific transiting the critical latitude for PSI. *J. Phys. Oceanogr.*, 43(1):3–16, 2013.
- [26] Kim I. Martini, Matthew H. Alford, E. Kunze, Sam M. Kelly, and Jonathan D. Nash. Internal bores and breaking internal tides on the Oregon continental slope. *Journal of Physical Oceanography*, 43(1):120– 141, 2013.
- [27] D J Wain, M C Gregg, Matthew H Alford, R C Lien, G S Carter, and R A Hall. Propagation and dissipation of the internal tide in upper Monterey Canyon. *J. Geophys. Res.*, 118:4855–4877, 2013.
- [28] Matthew H. Alford, Meghan F Cronin, and Jody M Klymak. Annual Cycle and Depth Penetration of Wind-Generated Near-Inertial Internal Waves at Ocean Station Papa in the Northeast Pacific. *J. Phys. Oceanogr.*, 42(6):889–909, 2012.
- [29] Matthew H. Alford, M. C. Gregg, Vassilis Zervakis, and Harilaos Kontoyiannis. Internal wave measurements on the Cycladic Plateau of the Aegean Sea. *Journal of Geophysical Research*, 117(C1), 2012.
- [30] Matthew H Alford, John B Mickett, Shuang Zhang, Zhongxiang Zhao, and Jan Newton. Internal waves on the Washington continental shelf. *Oceanography*, 25(2):66–79, 2012.

- [31] Brian Chinn, Matthew H Alford, and James B Girton. Observations of internal waves and parametric subharmonic instability in the Philippines archipelago. *J. Geophys. Res.*, 117(C05019):1–12, 2012.
- [32] M. C. Gregg, Matthew H. Alford, Harilaos Kontoyiannis, and Vassilis Zervakis. Mixing over the steep side of the Cycladic Plateau in the Aegean Sea. *Journal of Marine Systems*, 89(1):30–47, 2012.
- [33] Markus Jochum, B P Briegleb, Gokhan Danabasoglu, W G Large, S R Jayne, Matthew H Alford, and F O Bryan. On the impact of oceanic near-inertial waves on climate. *J. Climate*, 26(9):2833–2844, 2012.
- [34] Sam Kelly, Jonathan D Nash, Matthew H Alford, and Kim I Martini. The cascade of tidal energy from low to high modes on a continental slope. *J. Phys. Oceanogr.*, 42(7):1217–1232, 2012.
- [35] Jody M Klymak, Sonya Legg, Matthew H Alford, Maarten Buijsman, Robert Pinkel, and Jonathan D Nash. The direct breaking of internal waves at steep topography. *Oceanography*, 25(2):150–159, 2012.
- [36] Andrew I Pickering and Matthew H Alford. Velocity structure of internal tide beams emanating from Kaena Ridge, Hawaii. *J. Phys. Oceanogr.*, 42(6):1039–1044, 2012.
- [37] Harper L. Simmons and Matthew H Alford. Simulating the long range swell of internal waves generated by ocean storms. *Oceanography*, 25(2):30–41, 2012.
- [38] Zhongxiang Zhao, Matthew H Alford, and James B Girton. Mapping low-mode internal tides from multisatellite altimetry. *Oceanography*, 25(2):42–51, 2012.
- [39] Zhongxiang Zhao, Matthew H. Alford, Ren-Chieh Lien, Michael C. Gregg, and Glenn S. Carter. Internal tides and mixing in a submarine canyon with time-varying stratification. *J. Phys. Oceanogr.*, 42:2121–2142, 2012.
- [40] Matthew H Alford, Roger Lukas, Bruce Howe, Andrew Pickering, and Fernando Santiago-Mandujano. Moored observations of episodic abyssal flow and mixing at station ALOHA. *Geophys. Res. Lett.*, 38(L15606):1–6, 2011.
- [41] Matthew H. Alford, Jennifer A MacKinnon, Jonathan D Nash, Harper L Simmons, Andrew Pickering, Jody M Klymak, Robert Pinkel, Oliver Sun, Luc Rainville, Ruth Musgrave, Tamara Beitzel, Ke-Hsien Fu, and Chung-Wei Lu. Energy flux and dissipation in Luzon Strait: Two tales of two ridges. *J. Phys. Oceanogr.*, 41(11):2211–2222, 2011.
- [42] David M Farmer, Matthew H Alford, Y-J Yang, Ming Huei Chang, and Qiang Li. From Luzon Strait to Dongsha plateau: stages in the life of an internal wave. *Oceanography*, 24(4):64–77, 2011.
- [43] James B Girton, Brian Chinn, and Matthew H Alford. Internal Wave Climates of the Philippine Seas. *Oceanography*, 24(1):100–111, 2011.
- [44] M C Gregg, R A Hall, G S Carter, Matthew H Alford, R-C Lien, D P Winkel, and D J Wain. Flow and mixing in Ascension, a steep, narrow canyon. *J. Geophys. Res.*, 116(C07016), 2011.
- [45] Jody M Klymak, M. H. Alford, R Pinkel, R C Lien, and Y J Yang. The breaking and scattering of the internal tide on a continental slope. *Journal of Physical Oceanography*, 41(5):926–945, 2011.
- [46] K I Martini, Matthew H Alford, Sam Kelly, and Jonathan D Nash. Observations of internal tides on the Oregon Continental Slope. *J. Phys. Oceanogr.*, 41(9):1772–1794, 2011.
- [47] Julie Pullen, Arnold L Gordon, Janet Sprintall, Craig M Lee, Matthew H Alford, James D Doyle, and Paul May. Atmospheric and oceanic processes in the vicinity of an island strait. *Oceanography*, 24(1):112–121, 2011.
- [48] Zhongxiang Zhao, Matthew H Alford, James Girton, Shaun T M Johnston, and Glenn S Carter. Internal Tides around the Hawaiian Ridge estimated from Multi-Satellite Altimetry. *J. Geophys. Res.*, 116(C12039):1–15, 2011.
- [49] Matthew H. Alford, Ren-Chieh Lien, Harper Simmons, Jody M Klymak, Y-J Yang, David Tang, and Ming-Huei Chang. Speed and evolution of nonlinear internal waves transiting the South China Sea. *J. Phys. Oceanogr.*, 40(6):1338–1355, 2010.
- [50] Matthew H Alford. Sustained, full-water-column observations of internal waves and mixing near Mendocino Escarpment. *J. Phys. Oceanogr.*, 40(12):2643–2660, 2010.
- [51] John B Mickett, Y L Serra, Meghan F Cronin, and Matthew H Alford. Resonant forcing of mixed layer inertial motions by atmospheric easterly waves in the Northeast tropical Pacific. *J. Phys. Oceanogr.*, 40(2):401–416, 2010.
- [52] Andrey Y Shcherbina, Michael C Gregg, Matthew H Alford, and R R Harcourt. Three-dimensional structure and temporal evolution of submesoscale thermohaline intrusions in the North Pacific subtropical frontal zone. *J. Phys. Oceanogr.*, 40(8):1669–1689, 2010.
- [53] Zhongxiang Zhao, Matthew H. Alford, Jennifer A. MacKinnon, and Rob Pinkel. Long-range propagation of the semidiurnal internal tide from the Hawaiian Ridge. *J. Phys. Oceanogr.*, 40(4):713–736, 2010.
- [54] Andrey Y Shcherbina, Michael C Gregg, Matthew H Alford, and Ramsey Harcourt. Characterizing

thermohaline intrusions in the North Pacific subtropical frontal zone. *J. Phys. Oceanogr.*, 39(11):2735–2756, 2009.

[55] Zhongxiang Zhao and Matthew H Alford. New altimetric estimates of mode-one M2 internal tides in the Central North Pacific Ocean. *J. Phys. Oceanogr.*, 39:1669–1684, 2009.

[56] Matthew H Alford. Observations of parametric subharmonic instability of the diurnal internal tide in the South China Sea. *Geophys. Res. Lett.*, 35(L15602):doi:10.1029/2008GL034720, 2008.

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