Matthew Alford

Curriculum Vitae

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Summary

Current titles **Professor of Physical Oceanography**, *Scripps Institution of Oceanography*, University of California, San Diego.

Section Head, *Oceans and Atmospheres Section*, Scripps/UC San Diego.

Associate Director, *Marine Physical Laboratory*, Scripps/UC San Diego.

Co-founder and Engineering group lead, *Multiscale Ocean Dynamics Group*, a vibrant and diverse observational group of 36 scientists, engineers, students and postdocs.

Member, *JASON advisory group*, an elite group of academics advising the US government on national security issues.

Research Interests **novel ocean instrumentation, small-scale ocean physics**.

Impact **125 peer-reviewed publications**, *6160 citations*, Google scholar h-index 41.

Education

1998-1999 **Postdoc**, *The University of Washington*, Seattle, *Advisor: Michael Gregg*.

1993-1998 **Ph.D.**, *The University of California*, San Diego, *Advisor: Robert Pinkel*.
Dissertation title: "Observations of overturning in the thermocline: the context of ocean mixing"

1989-1993 **Bachelor of Science, Astrophysics**, *Swarthmore College*, Swarthmore, PA, *Advisor: John Gaustad*.
Dissertation title: "Numerical solutions of stellar interior model equations"

Professional history

2020–Present **Co-founder**, ATDEPTH, LLC, Provider of scientific advice to stakeholders on deep-sea mining impacts..

2015–Present **Associate Director**, Marine Physical Laboratory, Scripps Institution of Oceanography, UC San Diego.

2014–Present **Full Professor**, Marine Physical Laboratory, Scripps Institution of Oceanography, UC San Diego.

2011–2014 **Principal Oceanographer**, Applied Physics Laboratory, University of Washington, Seattle, WA.

2010–2014 **Associate Professor**, School of Oceanography, University of Washington, Seattle, WA.

2008-2010 **Affiliate Associate Professor**, School of Oceanography, University of Washington, Seattle, WA.

2007-2011 **Senior Oceanographer**, Applied Physics Laboratory, University of Washington, Seattle, WA.

2001-2008 **Affiliate Assistant Professor**, School of Oceanography, University of Washington, Seattle, WA.

1999-2007 **Oceanographer**, Applied Physics Laboratory, University of Washington, Seattle, WA.

Awards and Honors

2019 UC San Diego, Faculty Leadership Academy

2018 San Diego Fire and Rescue Citizen Hero award

2017 Selected, JASON advisory group

2015 Ernst Froelich Fellowship, CSIRO, Tasmania, Australia

2014 AGU Research Spotlight

2014 First place winner, Consortium for Ocean Science Education and Engagement (COSEE) video abstract contest - 45,000 views

2009 Distinguished Research Award, University of Washington College of Ocean and Fishery Sciences

2004 Editor's Award, American Meteorological Society

2001 Young Investigator's award, Office of Naval Research

1993 Sigma Xi

1989 National Merit Scholarship

Selected Invited Talks

2022 **Gordon Research Conference on Ocean Mixing**, *Observing Ocean Turbulence: Why and How*.

2022 **Jason Spring Meeting**, *Observing Ocean Turbulence: Why and How*.

2021 **Woods Hole Oceanographic Institution**, *Revisiting Mixed-layer Deepening*.

2021 **University of Southern Mississippi**, *Revisiting Mixed-layer Deepening*.

2020 **Gordon Research Conference on Ocean Mixing**, *Limitations of and Possibilities for Ocean Turbulence Observations*.

2019 **Woods Hole Geophysical Fluid Dynamics Lecture**, *Ocean turbulence: Importance, techniques and case studies*.

2019 **Argo workshop, Tokyo**, *ArgoMix: the concept and case*, Keynote speaker.

2019 **Grand Challenges in Fluid Mechanics, Les Houches**, *Measuring Turbulence worldwide*.

2019 **Pacific Institute for the Mathematical Sciences (PIMS) workshop, Banff, Canada**, *Observing breaking internal waves in the ocean*.

2018 **Cambridge University**, *Observing breaking internal waves in the ocean*, invitation declined.

2018 **Oxford University**, *Observing breaking internal waves in the ocean*, invitation declined.

2018 **Imperial College, London**, *Observing breaking internal waves in the ocean*, invitation declined.

2018 **University of North Carolina Chapel Hill**, *Observing breaking internal waves in the ocean*, invitation declined.

2017 **Smith Lecture, University of Michigan**, *Observing the generation, propagation and dissipation of internal waves in the ocean*.

2017 **UC San Diego Structural Engineering Department**, *Observing the generation, propagation and dissipation of internal waves in the ocean*.

2016 **Massachusetts Institute of Technology**, *Observing the generation, propagation and dissipation of internal waves in the ocean*.

2016 **Woods Hole Oceanographic Institution**, *Observing the generation, propagation and dissipation of internal waves in the ocean*.

2015 **IUGG Prague**, *Observing the generation, propagation and dissipation of internal waves in the ocean*.

2016 **University of Texas Austin**, *Internal tide reflection at a continental slope*, invitation declined.

2015 **Stanford University**, *Observing the generation, propagation and dissipation of internal waves in the ocean*.

2015 **University of new South Wales**, *Observing the generation, propagation and dissipation of internal waves in the ocean*.

2015 **Swinburne University of Technology**, *Observing the generation, propagation and dissipation of internal waves in the ocean*, invitation declined.

2015 **University of Tasmania**, *Observing the generation, propagation and dissipation of internal waves in the ocean*.

2014 **UC San Diego Founders' Symposium**, *Chasing Waves: Measuring skyscraper-high waves beneath the sea and their importance for submarines, coastal ecosystems and climate*.

2013 **Gordon Conference on nonlinear coastal internal waves**, *Internal waves and turbulence on the Washington Continental Shelf*.

2012 **Scripps Institution of Oceanography**, *Recent observational examples of deep mixing by internal tides, near-inertial waves and overflows*.

2011 **Woods Hole Coastal Ocean Fluid Dynamics Seminar**, *Recent observational examples of deep mixing by internal tides, near-inertial waves and overflows*.

2011 **Geophysical & Astrophysical Internal Waves Workshop, Ecole de Physique des Houches**, *Observations of internal tides and dissipation in Luzon Strait: a tale of two ridges*.

2010 **Cargese School on Topographic Internal Waves, Corsica**, *Generation, Propagation and Dissipation of Internal Tides*.

2010 **Ocean Sciences Meeting**, *Are near-inertial waves important for mixing the deep ocean?*.

2007 **Plumes and Gravity Currents Symposium, U. Alberta**, *Mixing, Evolution and Morphology of Thermohaline Intrusions*.

2006 **Spontaneous Imbalance Symposium**, *Spatial and seasonal patterns of near-inertial kinetic energy*.

2004 **European Geophysical Union**, *Internal Swell: What do we know? Why do we care?*.

2003 **Estuarine Research Federation Conference September**, *3-D Mapping of a thermohaline intrusion in Puget Sound, WA*.

2003 **'Aha Hulikoa Winter Workshop**, *Internal Swell: near-inertial and tidal internal-wave energy flux measured from historical moored records*.

2000 **University of Victoria**, *Internal Swell Generation: The spatial distribution of energy flux from the wind to mixed-layer near-inertial motions*.

1999 **University of Victoria**, *Patterns of turbulent and double diffusive phenomena: observations from a rapid profiling microconductivity probe*.

1999 **'Aha Hulikoa Winter Workshop**, *Observations of fine-scale Richardson number, strain, and effective strain rate conditions accompanying overturning events in the thermocline*.

Teaching and Mentoring

Instruction

2016, 2017, 2018, 2019, 2021 **SIO221c: Data Analysis Laboratory**, *Advanced hands-on data analysis for upper-level graduate students*, Evaluations: 87.5% excellent instructor rating.

2014, 2016, 2018, 2020, 2022 **SIO223: Proposal writing and experiment design**, *I created this interactive course wherein students research topics, design observational experiments and write real proposals, which are then executed on Research vessel Sproul.*, 80% excellent instructor rating.

2018, 2020, 2022 **SIO218b: Seagoing practicum**, *Students develop experiment plans and go to sea, learning all the techniques along the way*.

2010, 2012 **OOCN515: Observations of ocean circulation**, *Interactive literature review course*, Evaluations: 4.2/5.0.

2010, 2012 **OOCN517: Methods and measurements in physical oceanography**, *Interactive course on seagoing techniques and experiment design*, Evaluations: 3.8/5.0.

Advising

PhD students	Kim Martini, Andrew Pickering, Brian Chinn, Shaung Zhang, Tyler Hennon, Effie Fine, Madeleine Hamann, Olavo Marques, Noel Gutierriez-Brizuela (PhD est. 2022), Alexander Andriatis, Andrew Parlier, Bethan Wynne-Cattanach (PhD est. 2024), Andrea Rodriguez-Marin Freudmann, Charlotte Bellerjeau (PhD est. 2025).
Masters students	Maya Whitmont, Benjamin Bloss (MS)
Postdocs	Zhongxiang Zhao, Phil Hosegood, Andrey Shcherbina, John Mickett, Danielle Wain, Gunnar Voet, Tyler Hennon, Arnaud Le Boyer, Nicole Couto, Ali Mashayek, Jesse Cusack, Madeleine Hamann
Undergrads	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, Nathan Berls, Eva Loeser, Irene Globus, Peter Braun, Ben Ryan, Hannah Sadler, Maxwell Sun, Eli Simmons, Nathan Burdick, Jason Escalera, Chelwei Jang, Kerstin Bergentz
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, Conrad Luecke (U. Mich.), Paul Chamberlain, Alex Hamel, Kelly Pearson (UH), Coline Popeschi, Masoud Jalali, Oscar Rios, Carlos Muñoz Royo, Hayden Johnson, Pranav Suresh

Service

Peer reviews

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

Professional service

2021	Long stay lecturer, UC Santa Barbara Kavli Institute for Theoretical Physics (invited)
2019	Lecturer, Woods Hole Oceanographic Institute Geophysical Fluid Dynamics
2019	Co-Organizer, Walter Munk memorial (2019)
2018	Author, with co-author Walter Munk, of the Encyclopedia of Ocean Sciences entry on Ocean Mixing
2018	Creator and Chair, first Gordon Conference on Ocean Mixing
2018	Co-Chair, Ocean Sciences 2018 session on deep ocean observations
2018	Diversity Admissions Committee
2017-2020	Science Steering Committee, Near-inertial Shear and Kinetic Energy in the North Atlantic Experiment (NISKINE; Office of Naval Research)
2017	Organizer, Walter Munk 100th birthday symposium

2018,2019 Participant, Task Force Ocean symposium

2019 Participant, Task Force Ocean Scientist at Sea program

2016 Guest Editor, Methods in Oceanography

2016 Invited Participant, White House Office of Science and Technology Policy (OSTP) Earth Observations Assessment (EOA)

2015 Participant, CLIVAR Translating process studies to climate models workshop, Princeton

2013 Senior Scientist, Mentoring Physical Oceanography Women to Increase Retention (MPOWIR) Patullo conference

2015-2016 Steering Committee, Mentoring Physical Oceanography Women to Increase Retention MPOWIR)

2012-2013 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

2012-2015 Swath Altimeter Science Team (NASA)

2012-2016 Ocean Surface Topography Science Team (NASA)

2009-2013 Science Steering Committee, Internal Waves in Straits Experiment (Office of Naval Research)

2012 Guest Editor, The Oceanography Society (TOS) volume on internal waves

2011 Staff, Woods Hole Summer Geophysical Fluid Dynamics series

2012-2016 PI, Internal Waves and Mixing Climate Processes Team

2009 Invited Participant, Oceanography in 2025, National Academy of Sciences

2008-2009 Project Scientist, Regional Scale Nodes component of the Ocean Observing Initiative

2008 Convener, Pacific Institute for the Mathematical Sciences (PIMS): "Oceanic gravity Waves"

2005-2006 Chair, Ocean Physics Department

Community engagement

2016 Office of Naval Research STEM panel

2018 With my daughter and 2016 World Kindness Award recipient Tristaca McRae, co-created the "Kids actually" kids action summit - hosted by SIO/UCSD. `kidsactually.org`

2019 Ocean dance - dance visualization of ocean flows

2018 Participant, ocean tunnel - 200' long art project featured at Burning Man and Youtopia led by my student Madeleine Hamann

2013 Creator, "Oceanographer for a day" – sending elementary school children out on local research vessels for hands-on experience

1999-2013 Volunteer, Applied Physics Laboratory K-12 Educational Outreach Program

2003 Guest Scientist, Salish Sea Expeditions

2011 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

2012 Speaker and tour guide, Samoa battered children?s shelter, University of Samoa and US Embassy in Samoa

Languages

English **Native**

Spanish **Conversationally fluent**

Security Clearance

- TS/SCI

Selected seagoing experience

–**Total time at sea**, *over 2 years*.

2022 **Boundary Layer Turbulence process and mooring cruise 2**, *RRS Discovery*, PI, Southampton, 16 days.

2021 **Boundary Layer Turbulence process and mooring cruise 1**, *RRS Discovery*, PI, Southampton, 47 days.

2021 **Task Force Ocean**, *R/V Sally Ride*, PI, San Diego, 25 days.

2019 **BLT test cruise and student cruise**, *R/V Sproul*, PI, San Diego, 5 days.

2018 **Near-inertial gravity waves in the North Atlantic**, *R/V Armstrong*, PI & chief scientist, Iceland, 23 days.

2018 **Turbulence in the Sargasso Sea**, *R/V Red Rock*, PI, Sargasso Sea, 7 days.

2018 **Deep-sea mining Dewatering Plumes experiment** , *R/V Sally Ride*, PI & chief scientist, San Diego, 8 days.

2016,2017 **Flow Encountering Abrupt Topography**, *R/V Roger Revelle*, PI & chief scientist, Palau, 25 days, 16 days.

2015 **Arctic Mixing**, *R/V Siquliak*, PI, Arctic Ocean, 31 days.

2015 **Tasman Tidal Dissipation Experiment**, *R/V Roger Revelle*, PI & chief scientist, Tasmania, 28 days, 16 days.

2014 **Samoan Passage Process cruise**, *R/V Thomas G. Thompson*, PI & chief scientist, Samoa, 41 days.

2012 **Samoan Passage Mathways cruise**, *R/V Roger Revelle*, PI & chief scientist, Samoa, 42 days.

2011 **Samoan Passage Mapping cruise**, *R/V Kilo Moana*, PI & chief scientist, Samoa, 11 days.

2011-2012 **The HOT Profiler**, *R/V Kilo Moana*, PI & chief scientist, Honolulu, 5 cruises totaling 32 days.

2011-2013 **NEMO deployment**, *R/V Thomas G. Thompson*, PI & chief scientist, Washington coast, 3 cruises totaling 6 days.

2010-2011 **Internal Waves in Straits**, *R/V Roger Revelle*, PI & chief scientist, Taiwan, 30 days, 25 days.

2009 **Internal tides in Monterey Canyon**, *R/V Wecoma*, PI, Monterey, 30 days, 9 days.

2008 **Philippines Internal Waves**, *R/V Melville*, PI, Philippines, 25 days.

2007 **Nonlinear Internal Waves initiative**, *Taiwanese R/V OR1*, PI, Taiwan, 14 days.

2006 **Internal Waves across the Pacific**, *R/V Roger Revelle*, PI & chief scientist, Honolulu, 35 days, 25 days.

2007 **Mixed-layer restratification**, *R/V Wecoma*, PI, Honolulu, 31 days.

2005 **Oregon Slope Internal Tides**, *R/V Wecoma*, PI, Newport, OR, 30 days, 9 days.

2004 **Aegean Mixing Experiment**, *R/V Oceanus, Greek R/V Aegaio*, PI, Santorini, Greece, 9 days, 30 days.

2000-2002 **Hawaii Ocean Mixing Experiment**, *R/V Roger Revelle*, scientist, Honolulu, 25 days, 24 days.

2002 **Mamala Bay internal tides cruise**, *R/V Roger Revelle*, PI, Honolulu, 4 days.

2001 **Ocean refractometer test cruise**, *R/V Henderson*, PI, Seattle, 2 days.

2000 **Intrusion evolution experiment**, *R/V Miller*, PI, Seattle, 7 days.

1999 **Kinetic Energy Dissipation in Shallow Tidal Flows**, *R/V Turning Tide*, scientist, San Francisco Bay, 7 days.

1998 **Topographic Internal Waves**, *R/P FLIP*, Chief Scientist, San Diego, 32 days.

1995 **Marine Boundary Layer Experiment**, *R/P FLIP*, student, San Diego, 30 days, 15 days.

1994 **Student Cruise**, *R/V New Horizon*, student, Point Conception, CA, 7 days.

Funding received

–**Total funding received**, *over $56M*, $35.8M as lead PI.

2019-2022 **Turbulence in La Jolla Canyon**, *ONR*, $1.3M, w/ A. Lucas, Geno Pawlak (SIO).

2019-2022 **Platform Centric ASW Processing with Through-the-Sensor Data Assimilation and Fusion**, *ONR*, $5.4M, w/ W. Kuperman, W. Hodgkiss, L. Lenain, B. Cornuelle, R. Pinkel, A. Lucas (SIO).

2019-2024 **Instrumentation And Analysis Support For The Applied Navy**, *ONR*, $7,918,632.

2019-2020 **Microstructure Floats for Autonomous Ocean Turbulence Measurements**, *ONR*, $413,624.

2018-2023 **Installation of the Upgraded Hydrographic Sonar System on the RV Roger Revelle**, *ONR*, $388,120, w. R. Pinkel (SIO).

2018-2020 **Collaborative Research: Bottom Boundary Layer Turbulence and Abyssal Recipes**, *NSF*, $1,963,060, w. G. Voet (SIO).

2018-2023 **Near-Inertial Mixing in NISKINE: Time Series of Shear, Microstructure and Air-Sea Fluxes from Wave-Powered Wirewalkers**, *ONR*, $738,068, w. A. Lucas (SIO).

2018-2020 **Collaborative Research: Hydraulic Control and Mixing of the Deep Ocean Flow Through the Samoan Passage**, *NSF*, $714,202, w. G. Voet (SIO).

2018-2019 **A Travel Time Velocimeter and Microstructure System for Direct Covariance Flux Measurements from Autonomous and Towed Vehicles**, *ONR*, $382,435, w/ A. Lucas (SIO).

2018-2020 **Improved Environmental Characterization and New Instrumentation for Navy Security Programs**, *ONR*, $2,891,793.

2018-2020 **Expansion of Improved Environmental Characterization and New Instrumentation for Navy Security Programs**, *ONR*, $454,982.

2017-2020 **Ocean turbulence measurements in PISTON**, *ONR*, $1,017,954.

2015-2019 **Rapid Autonomous Profiling of Mixed Layer Dynamics in the Northern Arabian Sea**, *ONR*, $461,290, w/ A. Lucas (SIO).

2015-2019 **Shear Microstructure and Towed Body Measurements of Internal Waves and Turbulence in the Beaufort Sea (SODA)**, *ONR*, $835,780, w. J. MacKinnon (SIO).

2015-2019 **Lowered ADCP Measurements Near the West Mariana Ridge**, *ONR*, $636,354, w. J. MacKinnon (SIO).

2015-2019 **Moored Measurements of the Lee Waves at West Mariana Ridge**, *ONR*, $511,488, w. G. Voet (SIO).

2015-2019 **Expansion of Moored Measurements of the Lee Waves at West Mariana Ridge**, *ONR*, $247,000, w. G. Voet (SIO).

2014-2015 **Moored oceanographic instrumentation for complex, 3-D- plus time studies of internal waves and turbulence**, *ONR*, $240,863.

2013-2017 **Collaborative Research: Observing turbulent fluxes in the upper Arctic Ocean**, *NSF*, $1,309,139, w/ J. MacKinnon, J. Mickett (APL/UW).

2013-2015 **Internal Tides from Space: High Resolution Mapping, Regional Characterization, and Developing a Correction for Wide-Swath Altimetry**, *NASA*, $488,021, w/ J. Girton, Z. Zhao (APL/UW).

2013-2015 **High-resolution measurements of nonlinear internal waves**, *ONR*, $360,000.

2012-2015 **Collaborative Research: Tasmanian Tidal Dissipation Experiment (T-TIDE)**, *NSF*, $1,790,197, w/ L. Rainville (APL/UW.

2011-2015 **Collaborative Research: Transport, Internal Waves and Mixing in the Samoan Passage**, *NSF*, $2,296,063, w. J. Girton (APL/UW).

2011-2014 **The Origins of the Internal Wave Continuum: Wavenumber -frequency spectral diagnostics of forcing and energy transfer from new profiling platforms**, *NSF*, $448,316, w/ J. Girton (APL/UW).

2011 **Emergency mooring deployment cruise necessitated by Kilo Moana hull incident** , *NSF*, $63,418.

2010-2014 **Next-generation Global Altimetric Maps of Internal Tide Energy Flux**, *NSF*, $586,523, w/Z.Zhao, L. Rainville (APL/UW), H. Simmons (UAF).

2008-2010 **Near Inertial Wave Studies using Historical Mooring Records and a High-Resolution General Circulation Model**, *ONR*, $149,987, w/ H. Simmons.

2008-2011 **Early Student Support: Moored Observations of Internal Wave Beams in Luzon Strait (IWISE)**, *ONR*, $206,831.

2008-2013 **Moored Observations of Internal Wave Beams in Luzon Strait (IWISE)**, *ONR*, $1,417,031.

2008-2012 **Collaborative Research: The Internal Tide and Mixing in Monterey and Ascension Canyons**, *NSF*, $1,649,976, w/ M. Gregg and R. Lien (APL/UW).

2007-2010 **The HOT profiler.**, *NSF*, $1,379,454, w/ B. Howe, T. MacGinnis (APL/UW).

2006-2010 **Lagrangian Mapping and Modeling of Thermohaline Intrusions in the Subtropical Front**, *NSF*, $1,659,667, w/ M. Gregg and R. Harcourt (APL/UW).

2006-2010 **Enhancing the Regional Coastal Ocean Observing Systems (RCOOS) of NANOOS**, *NOAA*, $8,500,000, w/ D. Martin and J. Newton (APL/UW).

2005-2010 **Hood Canal Low Dissolved Oxygen Program-Integrated Assessment and Modeling Study**, *NAVSEA*, $7,262,000, w/ D. Martin and J. Newton (APL/UW).

2004-2010 **Collaborative Research: Internal Waves and Mixing on the Near-critical Oregon Continental Slope**, *NSF*, $963,517, w/ J. Nash (OSU), E. Kunze (U. Vic).

2001-2004 **A Fiber-optic refractometer**, *NSF*, $360,000.

2001-2003 **Thermohaline intrusions in Puget Sound, WA**, *NSF*, est. $430,000, w. M. Gregg (APL/UW).

Publications

Peter JS Franks, Bryce G Inman, Jennifer A MacKinnon, Matthew H Alford, and Amy F Waterhouse. Oceanic turbulence from a planktonic perspective. *Limnology and Oceanography*, 67(2):348–363, 2022.

Jennifer A. MacKinnon, Harper L. Simmons, John Hargrove, Jim Thomson, Thomas Peacock, Matthew H. Alford, Benjamin I. Barton, Samuel Boury, Samuel D. Brenner, Nicole Couto, Seth L. Danielson, Elizabeth C. Fine, Hans C. Graber, John Guthrie, Joanne E. Hopkins, Steven R. Jayne, Chanhyung Jeon, Thilo Klenz, Craig M. Lee, Yueng-Djern Lenn, Andrew J. Lucas, Björn Lund, Claire Mahaffey, Louisa Norman, Luc Rainville, Madison M. Smith, Leif N. Thomas, Sinhué Torres-Valdés, and Kevin R. Wood. A warm jet in a cold ocean. *Nature Communications*, 12(1), apr 2021.

Madeleine M. Hamann, Matthew H. Alford, Andrew J. Lucas, Amy F. Waterhouse, and Gunnar Voet. Turbulence driven by reflected internal tides in a supercritical submarine canyon. *J. Phys. Oceanogr.*, 51:591–609, February 2021.

Miles MP Couchman, Bethan Wynne-Cattanach, Matthew H Alford, Colm-cille P Caulfield, Rich R Kerswell, Jennifer A MacKinnon, and Gunnar Voet. Data-driven identification of turbulent oceanic mixing from observational microstructure data. *Geophysical Research Letters*, 48(23):e2021GL094978, 2021.

Olavo B Marques, Matthew H Alford, Robert Pinkel, Jennifer A MacKinnon, Jody M Klymak, Jonathan D Nash, Amy F Waterhouse, Samuel M Kelly, Harper L Simmons, and Dmitry Braznikov. Internal tide structure and temporal variability on the reflective continental slope of southeastern tasmania. *Journal of Physical Oceanography*, 51(2):611–631, 2021.

A Mashayek, CP Caulfield, and MH Alford. Goldilocks mixing in oceanic shear-induced turbulent overturns. *Journal of Fluid Mechanics*, 928, 2021.

L Middleton, EC Fine, JA MacKinnon, MH Alford, and JR Taylor. Estimating dissipation rates associated with double diffusion. *Geophysical Research Letters*, 48(15):e2021GL092779, 2021.

Carlos Muñoz-Royo, Thomas Peacock, Matthew H Alford, Jerome A Smith, Arnaud Le Boyer, Chinmay S Kulkarni, Pierre FJ Lermusiaux, Patrick J Haley, Chris Mirabito, Dayang Wang, et al. Extent of impact of deep-sea nodule mining midwater plumes is influenced by sediment loading, turbulence and thresholds. *Nature Communications Earth & Environment*, 2(1):1–16, 2021.

Thomas B Sanford, Barry Ma, and Matthew H Alford. Stalling and dissipation of a near-inertial wave (niw) in an anticyclonic ocean eddy: Direct determination of group velocity and comparison with theory. *J. Geophys. Res. Oceans*, 126:e2020JC016742, 2021.

Dayang Wang, E Eric Adams, Carlos Munoz-Royo, Thomas Peacock, and Matthew H Alford. Effect of crossflow on trapping depths of particle plumes: laboratory experiments and application to the plumex field experiment. *Environmental Fluid Mechanics*, 21(4):741–757, 2021.

Kristin L Zeiden, Jennifer A MacKinnon, Matthew H Alford, Daniel L Rudnick, Gunnar Voet, and Hemantha Wijesekera. Broadband submesoscale vorticity generated by flow around an island. *Journal of Physical Oceanography*, 51(4):1301–1317, 2021.

Matthew H Alford. Global calculations of local and remote near-inertial-wave dissipation. *J. Phys. Oceanogr.*, 50(11):3157–3164, 2020.

Matthew H Alford. Revisiting near-inertial wind work: slab models, relative stress and mixed-layer deepening. *J. Phys. Oceanogr.*, 50(11):3141–3156, 2020.

Nicole Couto, Matthew H. Alford, Jennifer MacKinnon, and John B. Mickett. Mixing Rates and Bottom Drag in Bering Strait. *Journal of Physical Oceanography*, 50(3):809–825, 2020.

E. C. Fine, Matthew H Alford, Jennifer A MacKinnon, and John B Mickett. Microstructure mixing observations and finescale parameterizations in the Beaufort Sea. *J. Phys. Oceanogr.*, in press:1–20, 2020.

Jessica C Garwood, Andrew J Lucas, Perry Naughton, Matthew H Alford, Paul LD Roberts, Jules S Jaffe, Laura DeGelleke, and Peter JS Franks. A novel cross-shore transport mechanism revealed by subsurface, robotic larval mimics: Internal wave deformation of the background velocity field. *Limnology and Oceanography*, 65(7):1456–1470, 2020.

Arnaud Le Boyer and Matthew H Alford. Variability and sources of the internal wave continuum examined from global moored velocity records. *J. Phys. Oceanogr.*, in review:1–20, 2020.

Arnaud Le Boyer, Matthew H Alford, Nicole Couto, Michael Goldin, Sean Lastuka, Sara Goheen, San Nguyen, and Andrew J Lucas. Modular, flexible, low-cost microstructure measurements: the Epsilometer. *J. Atmos. Ocean. Tech.*, in review:1–12, 2020.

Arnaud Le Boyer, Matthew H Alford, Robert Pinkel, Tyler D Hennon, Yiing J Yang, Dong Ko, and Jonathan Nash. Frequency shift of near-inertial waves in the south china sea. *Journal of Physical Oceanography*, 50:1121–1135, 2020.

AD Nelson, BK Arbic, D Menemenlis, WR Peltier, MH Alford, N Grisouard, and JM Klymak. Improved internal wave spectral continuum in a regional ocean model. *Journal of Geophysical Research: Oceans*, 125(5):e2019JC015974, 2020.

Wayne Homer Slade, Thomas Peacock, and Matthew Alford. Monitoring deep-sea mining's effects new instrument to measure sediment properties in mining plumes. *SEA TECHNOLOGY*, 61(9):13–16, 2020.

Gunnar Voet, Matthew H. Alford, Jennifer A. MacKinnon, and Jonathan D. Nash. Topographic Form Drag on Tides and Low-Frequency Flow: Observations of Nonlinear Lee Waves over a Tall Submarine Ridge near Palau. *J. Phys. Oceanogr.*, 50(5):1489–1507, 2020.

Robert Pinkel, Andrew J. Lucas, Michael A. Goldin, Matthew H. Alford, and Jennifer MacKinnon. Ocean current measurement in a density following reference frame. *2019 IEEE/OES Twelfth Current, Waves and Turbulence Measurement (CWTM)*, Mar 2019.

M H Alford, James Girton, Olavo Marques, and Harper L Simmons. Internal tide refraction and attenuation in the North Pacific. *Geophys. Res. Lett.*, 46, 8205–8213 2019.

Magdalena Andres, Mika Siegelman, Verena Hormann, Ruth C. Musgrave, Sophia T. Merrifield, Daniel L. Rudnick, Mark A. Merrifield, Matthew H. Alford, Gunnar Voet, Hemantha W. Wijesekera, Jennifer A. MacKinnon, Luca Centurioni, Jonathan D. Nash, and Eric J. Terrill. Eddies, Topography, And The Abyssal Flow: By The Kyushu-Palau Ridge Near Velasco Reef. *Oceanography*, 32(4):46–55, 2019.

Noel Brizuela, Anatoliy Filonov, and Matthew H Alford. Internal tsunami waves transport sediment released by underwater landslides. *Sci. Adv.*, 9(1):1–9, 2019.

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