

# J. Thomas Farrar | Curriculum Vitae

Woods Hole Oceanographic Institution  
Associate Scientist - Physical Oceanography Department

📞 +1 (508) 524 0501 • 📞 +1 (508) 289 2691 • ✉ jfarrar@whoi.edu  
Mail Stop #29, Clark 212A, Woods Hole, MA 02534 USA

## Research Interests

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Atmosphere-ocean exchange of heat and freshwater; dynamics and thermodynamics of the upper ocean; tropical dynamics and equatorial waves; oceanic internal waves and eddies; satellite oceanography; ocean observing and instrumentation.

These interests are pursued using in situ observations, satellite observations, and, in some cases, laboratory and numerical models to test hypotheses and test or formulate simplified physical models that aid understanding of ocean dynamics, air-sea interaction, and the earth system.

## Education

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**Ph.D.:** Physical Oceanography, Massachusetts Institute of Technology-Woods Hole Oceanographic Institution, 2007

**S.M.:** Physical Oceanography, Massachusetts Institute of Technology, 2003

**B.S.:** Physics, University of Oklahoma, 2000

**B.A.:** Philosophy, University of Oklahoma, 2000

## Positions Held

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**2016-present: Associate Scientist with tenure** Woods Hole Oceanographic Institution, Physical Oceanography Department.

**2012-2016: Associate Scientist without tenure** Woods Hole Oceanographic Institution, Physical Oceanography Department.

**2008-2012: Assistant Scientist** Woods Hole Oceanographic Institution, Physical Oceanography Department.

**2007-2008: Postdoctoral Investigator** Woods Hole Oceanographic Institution, Physical Oceanography Department.

**2004-2007: Graduate Research Assistant** Woods Hole Oceanographic Institution, Physical Oceanography Department.

**2003-2004: Research Associate I** Woods Hole Oceanographic Institution, Physical Oceanography Department.

**2000-2003: Graduate Research Assistant** Woods Hole Oceanographic Institution, Physical Oceanography Department.

**1998-2000: Student Laboratory Assistant** Magneto-optical trapping laboratory (atomic-molecular physics), Physics Department, University of Oklahoma.

## Selected Academic and Professional Honors

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**2018:** Principal Investigator of the Sub-Mesoscale Ocean Dynamics Experiment (S-MODE), a \$30M NASA Earth Venture Suborbital Mission with 21 co-investigators, remote sensing measurements from three aircraft, and three research cruises that will take place in 2020-2021.

**2017:** American Meteorological Society Nicholas P. Fofonoff Award in recognition of research achievement in physical oceanography, for “insightful analysis of observations yielding a deeper understanding of tropical and upper ocean dynamics, and for generous collaboration and leadership in major field experiments”

**2012:** Editors’ Citation for Excellence in Refereeing, Journal of Geophysical Research-Oceans

**2006:** Outstanding Student Paper Award, AGU Ocean Sciences meeting

**2000-2001:** MIT Presidential Fellowship

**2000:** Most Outstanding Physics Student, University of Oklahoma

**1999:** Phi Beta Kappa

**1999:** Golden Key National Honor Society

**1998:** Sigma Pi Sigma (physics honor society)

**1994:** National Merit Scholar

## Publications

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### Peer-reviewed articles.....

- [1] **J.T. Farrar** and R. A. Weller. Intraseasonal variability near 10°N in the eastern tropical Pacific Ocean. *J. Geophys. Res.*, 111(C05015):doi: 10.1029/2005JC002989, 2006.
- [2] A. J. Plueddemann and **J.T. Farrar**. Observations and models of the energy flux from the wind to mixed-layer inertial currents. *Deep Sea Res. II*, 53:5–30, 2006.
- [3] **J.T. Farrar**, C. J. Zappa, R. A. Weller, and A. T. Jessup. Sea surface temperature signatures of oceanic internal waves in low winds. *J. Geophys. Res.*, 112(C06014):doi:10.1029/2006JC003947, 2007.
- [4] J. Edson, T. Crawford, J. Crescenti, **J.T. Farrar**, N. Frew, G. Gerbi, C. Helmis, T. Hristov, D. Khelif, A. Jessup, et al. The Coupled Boundary Layers and Air-Sea Transfer experiment in low winds (CBLAST-LOW). *Bull. Am. Met. Soc.*, 2007.
- [5] **J.T. Farrar**. Observations of the dispersion characteristics and meridional sea level structure of equatorial waves in the Pacific Ocean. *J. Phys. Oceanogr.*, 38:1669–1689, 2008.
- [6] H. Jiang, **J.T. Farrar**, R. C. Beardsley, R. Chen, and C. Chen. Zonal surface wind jets across the Red Sea due to mountain gap forcing along both sides of the Red Sea. *Geophys. Res. Lett.*, 36(L19605):doi:10.1029/2009GL040008, 2009.
- [7] A. J. Wells, C. Cenedese, **J.T. Farrar**, and C. J. Zappa. Variations in ocean surface temperature due to near-surface flow: straining the cool skin layer. *Journal of physical oceanography*, 39(11):2685–2710, 2009.
- [8] N. K. Ganju, S. J. Lentz, A. R. Kirincich, and **J.T. Farrar**. Complex mean circulation over the inner shelf south of martha’s vineyard revealed by observations and a high-resolution model. *Journal of Geophysical Research: Oceans*, 116(C10), 2011.
- [9] K. A. Davis, S. J. Lentz, J. Pineda, **J.T. Farrar**, V. R. Starczak, and J. H. Churchill. Observations of the thermal environment on Red Sea platform reefs: a heat budget analysis. *Coral Reefs*, 30(1):25–36, 2011.

- [10] **J.T. Farrar**. Barotropic Rossby waves radiating from tropical instability waves in the Pacific Ocean. *J. Phys. Oceanogr.*, 41:1160–1181, 2011.
- [11] P. Berloff, S Karabasov, **J.T. Farrar**, and I. Kamenkovich. On latency of multiple zonal jets in the oceans. *Journal of Fluid Mechanics*, 686:534–567, 2011.
- [12] T. S. Durland and **J.T. Farrar**. The wavenumber-frequency content of resonantly excited equatorial waves. *Journal of Physical Oceanography*, 42(11):1859–1881, 2012.
- [13] **J.T. Farrar** and T. Durland. Wavenumber-frequency spectra of inertia-gravity and mixed rossby-gravity waves in the equatorial Pacific Ocean. *Journal of Physical Oceanography*, 42(11):1834–1858, 2012.
- [14] J. Pineda, V. R. Starczak, A. M. Tarrant, J. N. Blythe, K. A. Davis, **J.T. Farrar**, M. L. Berumen, and J. da Silva. Two spatial scales in a bleaching event: Corals from the mildest and the most extreme thermal environments escape mortality. *Limnology and Oceanography*, 58:1531–1545, 2013.
- [15] M. F. Cronin, N. A. Bond, **J.T. Farrar**, H. Ichikawa, S. R. Jayne, Y. Kawai, M. Konda, B. Qiu, L. Rainville, and H. Tomita. Formation and erosion of the seasonal thermocline in the Kuroshio Extension Recirculation Gyre. *Deep Sea Research Part II: Topical Studies in Oceanography*, 85:62–74, 2013.
- [16] J. Holte, F. Straneo, C. Moffat, R. Weller, and **J.T. Farrar**. Structure and surface properties of eddies in the southeast Pacific Ocean. *Journal of Geophysical Research: Oceans*, 118(5):2295–2309, 2013.
- [17] D. K. Ralston, H. Jiang, and **J.T. Farrar**. Waves in the Red Sea: response to monsoonal and mountain gap winds. *Continental Shelf Research*, 65:1–13, 2013.
- [18] A. R. Kirincich, S. J. Lentz, **J.T. Farrar**, and N. K. Ganju. The spatial structure of tidal and mean circulation over the inner shelf south of Martha's Vineyard, Massachusetts. *Journal of Physical Oceanography*, 43(9):1940–1958, 2013.
- [19] J. Prytherch, **J.T. Farrar**, and R. A. Weller. Moored surface buoy observations of the diurnal warm layer. *Journal of Geophysical Research: Oceans*, 118(9):4553–4569, 2013.
- [20] C. R. Mechoso, R. Wood, R. Weller, C. S. Bretherton, A. D. Clarke, H. Coe, C. Fairall, **J.T. Farrar**, G. Feingold, R. Garreaud, et al. Ocean-cloud-atmosphere-land interactions in the southeastern Pacific: The VOCALS program. *Bulletin of the American Meteorological Society*, 95(3):357–375, 2014.
- [21] J. H. Churchill, S. J. Lentz, **J.T. Farrar**, and Y. Abualnaja. Properties of Red Sea coastal currents. *Continental Shelf Research*, 78:51–61, 2014.
- [22] J. Holte, F. Straneo, **J.T. Farrar**, and R. A. Weller. Heat and salinity budgets at the stratus mooring in the southeast Pacific. *Journal of Geophysical Research: Oceans*, 119(11):8162–8176, 2014.
- [23] A. S. Bower and **J.T. Farrar**. Air–sea interaction and horizontal circulation in the Red Sea. In *The Red Sea*, pages 329–342. Springer Berlin Heidelberg, 2015.
- [24] **J.T. Farrar**, L. Rainville, A. J. Plueddemann, W. S. Kessler, C. M. Lee, B. A. Hodges, R. W. Schmitt, J. B. Edson, S. C. Riser, C. C. Eriksen, et al. Salinity and temperature balances at the SPURS central mooring during fall and winter. *Oceanography*, 28(1):56–65, 2015.

- [25] R. W. Schmitt, W. Asher, F. Bingham, J. A. Carton, L. R. Centurioni, **J.T. Farrar**, A. L. Gordon, B. A. Hodges, A. T. Jessup, W. S. Kessler, et al. From salty to fresh-Salinity Processes in the Upper-ocean Regional Study-2 (SPURS-2): diagnosing the physics of a rainfall-dominated salinity minimum. *Oceanography*, 28(1):150–159, 2015.
- [26] S. Majumder, A. Tandon, D. Rudnick, and **J.T. Farrar**. Near-inertial kinetic energy budget of the mixed layer and shear evolution in the transition layer in the Arabian Sea during the monsoons. *Journal of Geophysical Research: Oceans*, 120(9):6492–6507, 2015.
- [27] S. J. Lentz, J. H. Churchill, K. A. Davis, and **J.T. Farrar**. Surface gravity wave transformation across a platform coral reef in the Red Sea. *Journal of Geophysical Research: Oceans*, 2016.
- [28] S. J. Lentz, J. H. Churchill, K. A. Davis, **J.T. Farrar**, J. Pineda, and V. Starczak. The characteristics and dynamics of wave-driven flow across a platform coral reef in the Red Sea. *Journal of Geophysical Research: Oceans*, 2016.
- [29] H.W. Wijesekera, E. Shroyer, A. Tandon, M. Ravichandran, D. Sengupta, S. U. P. Jinadasa, H. J. S. Fernando, N. Agrawal, K. Arulananthan, G. S. Bhat, M. Baumgartner, J. Buckley, L. Centurioni, P. Conry, **J.T. Farrar**, A. L. Gordon, V. Hormann, E. Jarosz, T. Jensen, S. Johnston, M. Lankhorst, C. M. Lee, L. S. Leo, I. Lozovatsky, A. Lucas, J. Mackinnon, A. Mahadevan, J. Nash, M. O. Omand, H. Pham, R. Pinkel, L. Rainville, S. Ramachandran, D. L. Rudnick, S. Sarkar, U. Send, R. Sharma, H. Simmons, K. Stafford, L. St. Laurent, K. Venayagamoorthy, R. Venkatesan, W. J. Teague, D. W. Wang, A. F. Waterhouse, R. Weller, and C. B. Whalen. ASIRI: An ocean-atmosphere initiative for Bay of Bengal. *Bulletin of the American Meteorological Society*, 97:1859–1884, 2016.
- [30] P. Zuidema, P. Chang, B. Medeiros, B. Kirtman, R. Mechoso, E. Schneider, T. Toniazzo, I. Richter, R. J. Small, K. Bellomo, P. Brandt, S. de Szoeko, **J.T. Farrar**, E. Jung, S. Kato, M. Li, C. Patricola, Z. Wang, R. Wood, and Z. Xu. Challenges and prospects for reducing coupled climate model sst biases in the eastern tropical Atlantic and Pacific Oceans: The US CLIVAR Eastern Tropical Oceans Synthesis Working Group. *Bulletin of the American Meteorological Society*, 97(12):DOI: <http://dx.doi.org/10.1175/BAMS-D-15-00274.1>, 2016.
- [31] R. A. Weller, **J.T. Farrar**, J. Buckley, S. Mathew, R. Venkatesan, J. S. Lekha, D. Chaudhuri, N. S. Kumar, and B. P. Kumar. Air-sea interaction in the Bay of Bengal. *Oceanography*, 29(2):28–37, 2016.
- [32] E. L. Shroyer, D. L. Rudnick, **J.T. Farrar**, B. Lim, S. K. Venayagamoorthy, L. C. St Laurent, A. Garanaik, and J. N. Moum. Modification of upper-ocean temperature structure by subsurface mixing in the presence of strong salinity stratification. *Oceanography*, 29(2):62–71, 2016.
- [33] V. P. Thangaprakash, M. S. Girishkumar, A. Suprit, N. S. Kumar, D. Chaudhuri, K. Dinesh, A. Kumar, S. Shivaprasad, M. Ravichandran, **J.T. Farrar**, R. Sundar, and R. A. Weller. What controls seasonal evolution of sea surface temperature in the Bay of Bengal? *Oceanography*, 29(2):202–213, 2016.
- [34] F.J. Wentz, L. Ricciardulli, E. Rodriguez, B. Stiles, M. Bourassa, D. David Long, R. Hoffman, A. Stoffelen, A. Verhoef, L. O'Neill, **T. Farrar**, D. Vandemark, A. Fore, S.H. Veleva, J. Turk, R. Gaston, and D. Tyler. Evaluating and extending the ocean wind climate data record. *IEEE J. Selected Topics in Applied Earth Observations and Remote Sensing*, PP(99):1–21, 2017.
- [35] A. C. Savage, B. K. Arbic, J. G. Richman, J. F. Shriver, M. H. Alford, M. C. Buijsman, **J.T. Farrar**, H. Sharma, G. Voet, A. J. Wallcraft, and L. Zamudio. Frequency content of sea surface height variability from

- internal gravity waves to mesoscale eddies. *Journal of Geophysical Research: Oceans*, 122(3):2169–9291, 2017.
- [36] A.C. Savage, B. K. Arbic, M. H. Alford, J. K. Ansong, **J.T. Farrar**, D. Menemenlis, A. K. O'Rourke, J. G. Richman, J. F. Shriver, G. Voet, A. J. Wallcraft, and L. Zamudio. Spectral decomposition of internal gravity wave sea surface height in global models. *Journal of Geophysical Research: Oceans*, 122(10):2169–9291, 2017.
- [37] Lindstrom E. J., A. Y. Shcherbina, L. Rainville, **J.T. Farrar**, L. R. Centurioni, S. Dong, E. A. D'Asaro, C. Eriksen, D. M. Fratantoni, B. A. Hodges, V. Hormann, W. S. Kessler, C. M. Lee, S. C. Riser, L. St. Laurent, and D. L. Volkov. Autonomous multi-platform observations during the Salinity Processes in the Upper-ocean Regional Study. *Oceanography*, 30(2):38–48, 2017.
- [38] T. Lee, **J.T. Farrar**, S. Arnault, D. Meyssignac, W. Han, and T. Durland. Monitoring and interpreting the tropical oceans by satellite altimetry. In D. Stammer and A. Cazenave, editors, *Satellite Altimetry Over Ocean and Land Surfaces*. CRC Press, Taylor and Francis Group, 2018.
- [39] R. Morrow, L.-L. Fu, **J.T. Farrar**, H. Seo, and P.-Y. Le Traon. Ocean eddies and mesoscale variability. In D. Stammer and A. Cazenave, editors, *Satellite Altimetry Over Ocean and Land Surfaces*. CRC Press, Taylor and Francis Group, 2018.
- [40] R. J. Greatbatch, M. Claus, P. Brandt, J.-D. Matthießen, F. P. Tuchen, F. Ascani, M. Dengler, J. Toole, C. Roth, and **J.T. Farrar**. Evidence for the maintenance of slowly varying equatorial currents by intraseasonal variability. *Geophysical Research Letters*, 45, 2018.
- [41] S. Ramachandran, A. Tandon, J. Mackinnon, A.J. Lucas, R. Pinkel, A.F. Waterhouse, J. Nash, E. Shroyer, A. Mahadevan, R.A. Weller, and **J.T. Farrar**. Submesoscale processes at shallow salinity fronts in the Bay of Bengal: Observations during the winter monsoon. *Journal of Physical Oceanography*, 48:479–509, 2018.
- [42] J. Wang, L. Fu, B. Qiu, D. Menemenlis, **J.T. Farrar**, Y. Chao, A.F. Thompson, and M.M. Flexas. An observing system simulation experiment for the calibration and validation of the surface water ocean topography sea surface height measurement using in situ platforms. *Journal of Atmospheric and Oceanic Technology*, 35(2):281–297, 2018.
- [43] V.V. Menezes, **J.T. Farrar**, and A.S. Bower. Westward mountain-gap wind jets of the northern Red Sea as seen by QuikSCAT. *Remote Sensing of Environment*, 209:677–699, 2019.
- [44] D. B. Chelton, M. G. Schlax, R. M. Samelson, **J.T. Farrar**, M. J. Molemaker, J. C. McWilliams, and J. Gula. Prospects for future satellite estimation of small-scale variability of ocean surface velocity and vorticity (accepted). *Progress in Oceanography*, 2018.
- [45] B. K. Arbic and coauthors. A primer on global internal tide and internal gravity wave continuum modeling in hycom and mitgcm. In E. Chassignet, A. Pascual, J. Tintore, and J. Verron, editors, *New Frontiers in Operational Oceanography*, pages 307–391. GODAE OceanView, 2018.
- [46] C. J. Prend, H. Seo, R. A. Weller, and **J.T. Farrar**. Impact of freshwater plumes on intraseasonal upper ocean variability in the Bay of Bengal (in press). *Deep-Sea Research II*, 2018.
- [47] R. A. Weller, **J.T. Farrar**, H. Seo, C. Prend, D. Sengupta, J. Sree Lekha, M. Ravichandran, and R. Venkatesen. Moored observations of the surface meteorology and air-sea fluxes in the northern Bay of Bengal in 2015. *Journal of Climate*, 32(2):549–573, 2019.

## Manuscripts in review.....

- [48] **J.T. Farrar** and A. J. Plueddemann. On the factors driving upper-ocean salinity variability at the western edge of the Eastern Pacific Fresh Pool (submitted). *Oceanography*, 2019.
- [49] V.V. Menezes, **J.T. Farrar**, and A.S. Bower. Dry-air outbreaks over the Red Sea: Impacts of westward mountain-gap wind jet events on evaporation (submitted). *J. Geophys. Res.*, 2019.
- [50] A. Hasson, **J.T. Farrar**, J. Boutin, F. Bingham, and T. Lee. Intraseasonal variability of surface salinity in the eastern tropical Pacific associated with mesoscale eddies (submitted). *J. Geophys. Res.*, 2019.
- [51] S.P. Bryan, K.A. Hughen, K.B. Karnauskas, and **J.T. Farrar**. 250 years of reconstructed South Asian summer monsoon intensity and decadal-scale variability (submitted). *Geophys. Res. Lett.*, 2019.
- [52] R. Thakur, E. Shroyer, R. Govindarajan, **J.T. Farrar**, R.A. Weller, and J. Moum. Seasonality and buoyancy suppression of turbulence in the Bay of Bengal (submitted). *Geophys. Res. Lett.*, 2019.
- [53] E. Rodriguez, M. A. Bourassa, D. B. Chelton, **J.T. Farrar**, D. Long, D. Perkovic-Martin, and R. M. Samelson. The winds and currents mission concept (submitted). *Frontiers in Marine Science*, 2019.
- [54] M.F. Cronin, C.L. Gentemann, J.B. Edson, I. Ueki, M. Bourassa, S. Brown, C.A. Clayson, C. Fairall, **J.T. Farrar**, S.T. Gille, S. Gulev, S. Josey, S. Kato, M. Katsumata, E.C. Kent, M. Krug, P.J. Minnett, R. Parfitt, R.T. Pinker, P.W. Stackhouse, S. Swart, H. Tomita, D. Vandemark, R.A. Weller, K. Yoneyama, L. Yu, and D. Zhang. Air-sea fluxes with a focus on heat and momentum (submitted). *Frontiers in Marine Science*, 2019.
- [55] R. Morrow, L. Fu, F. Ardhuin, M. Benkiran, B. Chapron, E. Cosme, F. D'Ovidio, **J.T. Farrar**, S.T. Gille, G. Lapeyre, P.Y. Le Traon, A. Pascual, A. Ponte, B. Qiu, N. Raschle, C. Ubelmann, J. Wang, and E. Zaron. Global observations of fine-scale ocean surface topography with the Surface Water and Ocean Topography (SWOT) mission (submitted). *Frontiers in Marine Science*, 2019.
- [56] A.B.A. Boas, F. Ardhuin, A. Ayet, M. Bourassa, B. Chapron, P. Brandt, B.D. Cornuelle, **J.T. Farrar**, M.R. Fewings, B. Fox-Kemper, S.T. Gille, C. Gommenginger, P. Heimbach, M.C. Hell, Q. Li, M. Mazloff, S.T. Merrifield, A. Mouche, M. Rio, E. Rodriguez, J.D. Shutler, A.C. Subramanian, E.J. Terrill, M. Tsamados, C. Ubelmann, and E. van Sebille. Integrated observations and modeling of winds, currents, and waves: requirements and challenges for the next decade (submitted). *Frontiers in Marine Science*, 2019.
- [57] L. Rainville, L.R. Centurioni, W.E. Asher, C.A. Clayson, K. Drushka, J.B. Edson, B.A. Hodges, V. Hormann, **J.T. Farrar**, J.J. Schanze, A.Y. Shcherbina, and E.J. Thompson. Novel and flexible approach to access the open ocean: Uses of the Research Vessel Lady Amber during SPURS-2 (submitted). *Oceanography*, 2019.
- [58] D. Zhang, M.F. Cronin, C. Meinig, **J.T. Farrar**, R. Jenkins, D. Peacock, J. Keene, and A. Sutton. Saildrone measurements in SPURS-2 (submitted). *Oceanography*, 2019.

## Other publications.....

- [59] J. Sprintall, M. Cronin, and **J.T. Farrar**. Upper ocean vertical structure. In J. K. Cochran, H. Boku-niewicz, and P. Yager, editors, *Encyclopedia of Ocean Sciences, Third Edition*. Elsevier, 2019.
- [60] R. Trask and **J.T. Farrar**. Near real-time data recovery from oceanographic moorings. In R. Venkatesan, A. Tandon, E. D'Asaro, and M. Atmanand, editors, *Observing the Oceans in Real Time*. Springer, 2018.

- [61] **J Thomas Farrar**, Benjamin A Hodges, Sebastien P Bigorre, Nancy R Galbraith, James B Girton, and Yi Chao. UCTD and EM/APEX measurements in support of the April 2015 AirSWOT Campaign: cruise and data report. Technical report, Woods Hole Oceanographic Institution, WHOI-2015-04, 2015.
- [62] N.R. Smith, A. Kumar, K. Takahashi, H. Hendon, S. Cravatte, D. Chen, **T. Farrar**, M. Cronin, K. Ando, W. Yu, , and W.S. Kessler. Heat and salinity budgets at the stratus mooring in the southeast Pacific. *CLIVAR Exchanges*, 19(2):12–17, 2015.
- [63] P. Zuidema, P. Chang, B. Medeiros, B. Kirtman, E. Schneider, J. Small, I. Richter, **T. Farrar**, S. de Szoeko, R. Wood, R. Mechoso, K. Bellomo, E. Jung, S. Kato, M. Li, C. Patricola, T. Toniazzo, Z. Xu, and Z. Wang. Challenges and future prospects for resolving coupled climate model sst biases in the eastern tropical atlantic and pacific oceans. Technical report, US CLIVAR, 2015.
- [64] **J.T. Farrar**, R. Schmitt, L. Rainville, W. Asher, B. Hodges, A. Jessup, F. Bingham, A. Shcherbina, W.S. Kessler, L. Centurioni, A. Gordon, and J. Carton. Spurs-2: Diagnosing the physics of a rainfall–dominated salinity minimum. Technical report, Workshop report available at <http://spurs.jpl.nasa.gov/>, 2014.
- [65] E. Lindstrom, M. Bourassa, D. Chelton, G. Corlett, T. Durland, **T. Farrar**, P. Janssen, G. Lagerloef, T. Lee, P. Minnett, L. O’Neill, , and J. Willis. White Paper #9 – Satellite views of the tropical Pacific. In *Report of the Tropical Pacific Observing System 2020 Workshop (TPOS 2020), VOLUME II – White Papers*, pages available at <http://www.ioc--goos.org/tpos2020>. TPOS 2020, 2014.
- [66] A. Lucas, E. Shroyer, H. Wijesekera, H. Fernando, E. D’Asarso, M. Ravichandran, S.U.P. Jinadasa, J. MacKinnon, J. Nash, R. Sharma, L. Centurioni, **J. Farrar**, R. Weller, R. Pinkel, A. Mahadevan, D. Sengupta, and A. Tandon. Mixing to monsoons: Air-sea interactions in the Bay of Bengal. *Eos, Transactions American Geophysical Union*, 95(30):269–270, 2014.
- [67] Marc Emond, Doug Vandemark, James Forsythe, Albert J Plueddemann, and **J Thomas Farrar**. Flow distortion investigation of wind velocity perturbations for two ocean meteorological platforms. Technical report, Woods Hole Oceanographic Institution, WHOI-2012-02-02, 2012.
- [68] **J.T. Farrar**. Moored turbulence measurements in the open ocean using pulse-coherent doppler sonar. *The Journal of Ocean Technology*, 6(2):66–67, 2011.
- [69] **J.T. Farrar**, S. Lentz, J. Chruchill, P. Bouchard, J. Smith, J. Kemp, J. Lord, G. Allsup, and D. Hosom. King Abdullah University of Science and Technology (KAUST) mooring deployment cruise and fieldwork report, Fall 2008, R/V Oceanus Voyage 449-5. Technical report, WHOI-KAUST-CTR-2009-02, Woods Hole Oceanographic Institution and King Abdullah University of Science and Technology, Woods Hole, Massachusetts, USA, 2009.
- [70] S. Whelan, Lord J., N. Galbraith, R. Weller, **J.T. Farrar**, D. Grant, C. Grados, S. deSoeke, C. Moffat, C. Zappa, M. Yang, F. Straneo, C. Fairall, P. Zuidema, D. Wolfe, M. Miller, , and D. Covert. Stratus 9/vocals ninth setting of the stratus ocean reference station & vocals regional experiment. Technical report, Woods Hole Oceanographic Institution, 2009-03, 2009.
- [71] S. Whelan, J. Lord, C. Grados, L. Yu, L. Morales, N. Galbraith, S. deSoeke, M. O’Leary, R. Weller, P. Bouchard, **J.T. Farrar**, , and F. Bradley. Stratus ocean reference station (20 s, 85 w) mooring recovery and deployment cruise stratus 8 r/v ronald h. brown cruise 07-09 october 9, 2007–november 6, 2007. Technical report, Woods Hole Oceanographic Institution, 2008-01, 2007.

- [72] **Farrar, J.T.** *Air-sea interaction at contrasting sites in the eastern tropical Pacific: Mesoscale variability and atmospheric convection at 10°N*. PhD thesis, Massachusetts Institute of Technology and Woods Hole Oceanographic Institution, Cambridge, MA, 2007.
- [73] Lara Hutto, **Farrar, J Thomas**, and Robert A Weller. Cblast 2003 field work report. Technical report, Woods Hole Oceanographic Institution, 2005.
- [74] **Farrar, J.T.** The evolution of upper ocean thermal structure at 10°N, 125°W during 1997-1998. Master's thesis, Massachusetts Institute of Technology, 2003.

## Conference & Workshop Presentations (presenting author only)

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- Farrar, J.T.**, R. Weller, and J. Edson. Observations of the coupled air-sea boundary layers during the 2003 CBLAST-Low field program. *Eos Trans. AGU*, 84(52), Ocean Sci. Meet. Suppl., Abstract OS51G-02, 2004. (Invited)
- Farrar, J.T.** and Weller, R.A. The evolution of upper ocean thermal structure at 10°N, 125°W during 1997-98. *Eos Trans. AGU*, 84(52), Ocean Sci. Meet. Suppl., Abstract OS22E-12, 2004.
- Farrar, J.T.**, Plueddemann, A J, and Weller, R.A. Evaluation of a kinetic energy budget for inertial motions in the oceanic mixed layer: theory and observations. *Eos Trans. AGU*, 84(52), Ocean Sci. Meet. Suppl., Abstract OS22E-01, 2004.
- Farrar, J.T.**, Weller, R.A., and Huang, K. Comparison of NWP model/reanalysis air-sea fluxes of heat and momentum to in situ observations at several sites in the tropical Pacific. 1st International CLIVAR Science Conference. Baltimore, MD. 2004.
- Farrar, J.T.**, Weller, R.A., Zappa, C., and Jessup, A.T. Subsurface expressions of sea surface temperature variability under low winds, in *16<sup>th</sup> Symposium on Boundary Layers and Turbulence (AMS)*, Ref. P8.1, Portland, ME. 2004.
- Farrar, J.T.** and Weller, R.A. Air-sea heat fluxes and SST at two sites in the eastern tropical Pacific during 1997-98. *Eos Trans. AGU*, 86(52), Fall Meet. Suppl., Abstract A53B-06, 2005.
- Farrar, J.T.** and Weller, R.A. Intraseasonal variability near 10°N in the eastern tropical Pacific Ocean. *Eos Trans. AGU*, 87(36), Ocean Sci. Meet. Suppl., Abstract OS35H-13, 2006.
- Plueddemann, A.J. and **Farrar, J.T.** Observations and models of the energy flux from the wind to mixed layer inertial currents. *Eos Trans. AGU*, 87(36), Ocean Sci. Meet. Suppl., Abstract OS36A-28, 2006.
- Farrar, J.T.**, Zappa, C.J., Weller, R.A., and Jessup, A.T. Sea surface temperature signatures of oceanic internal waves in low winds, in *27<sup>th</sup> Conference on Hurricanes and Tropical Meteorology (AMS)*, Ref. P11.2, Monterey, CA. 2006.
- Farrar, J.T.** and Weller, R.A. Oceanic mesoscale variability and atmospheric convection on 10°N in the eastern Pacific. NOAA Climate Prediction Program for the Americas PI Meeting, August 2006, Tucson, AZ.
- Farrar, J.T.** and Weller, R.A. The relationship between oceanic mesoscale motions and atmospheric convection on 10°N in the eastern tropical Pacific Ocean. *EOS Trans. AGU*, 87(52), Fall Meet. Suppl., Abstract OS51E-06. 2006.
- Weller, R.A., **Farrar, J.T.**, Zappa, C.J., and Jessup, A.T. Sea surface temperature signatures of oceanic internal waves in low winds. *EOS Trans. AGU*, 87(52), Fall Meet. Suppl., Abstract OS43D-07. 2006.
- Farrar, J.T.** Observations of the dispersion characteristics and meridional sea-level structure of Pacific equatorial waves. Ocean Sciences Meeting Abstract Book, p. 121. 2008.
- Farrar, J.T.** Air-sea exchange in the Red Sea: the role of coastal processes. Gordon Research Conference on



Coastal Ocean Circulation, New London, NH. 2009. (Invited)

**Farrar, J.T.** Barotropic Rossby waves seen radiating from tropical instability waves in the Pacific Ocean. NASA Ocean Surface Topography Science Team Meeting, Seattle, WA. 2009.

**Farrar, J.T.** Air-sea exchange and surface salinity. NASA Sea Surface Salinity Workshop, Pasadena, CA. 2009. (Invited)

**Farrar, J.T.** Barotropic Rossby waves seen radiating from tropical instability waves in the Pacific Ocean. Ocean Sciences Meeting, Portland, OR. 2010. (Invited)

**Farrar, J.T.**, Zappa, C.J., Weller, R.A., Bigorre, S.P., Moffat, C.F., and Straneo, F. Upper-ocean turbulence beneath the stratus cloud deck of the Southeast Pacific. Meeting of the Americas, Foz do Iguassu, Brazil. 2010. (Invited)

**Farrar, J.T.** and Durland, T.S. New observations of Yanai waves and equatorial inertia-gravity waves in the Pacific Ocean. Fall AGU Meeting, San Francisco, CA. 2011.

**Farrar, J.T.** and Durland, T.S. A survey of waves on subseasonal time scales in the tropical Pacific Ocean. Ocean Sciences Meeting, Salt Lake City, UT. 2012.

**Farrar, J.T.**, Chelton, D.B., Samelson, R. and Durland, T.S. How will oceanic internal waves appear in SWOT data? SWOT Science Definition Team Meeting, Pasadena, CA, 2013.

**Farrar, J.T.** Using AirSWOT to assess the expression of oceanic internal waves in SWOT data. AirSWOT meeting, Pasadena, CA, 2013.

**Farrar, J.T.**, Plueddemann, A., Kessler, W., Rainville, L., Hodges, B., Riser, S., Edson, J., Eriksen, C., Lee, C., Schmitt, R., Fratantoni, D. A preliminary evaluation of upper-ocean heat and salt budgets during the SPURS campaign. Ocean Sciences Meeting, Honolulu, HI. 2014.

**Farrar, J.T.**, Durland, T.S., and Jayne, S. Long-range Radiation of Barotropic Rossby Waves from the Equatorial Pacific Ocean. NASA Ocean Surface Topography Science Team meeting, Oct 2015, Reston, VA.

**Farrar, J.T.** and Durland, T.S. Time-space variability of weekly to monthly period equatorial waves in the Pacific Ocean. Fall AGU meeting Dec 2015, San Francisco.

**Farrar, J.T.**, Durland, T.S., and Jayne, S. Long-range Radiation of Barotropic Rossby Waves from an Unstable Current. Ocean Science Meeting, Feb 2016, New Orleans.

**Farrar, J.T.**, Chelton, D.B., and Samelson, R.M. The Prospects for Future Estimation of Mesoscale and Submesoscale Vorticity by Doppler Scatterometry. NASA Ocean Vector Wind Science Team Meeting, Sapporo, Japan, May 2016.

**Farrar, J.T.**, Chao, Y., Andres, M., and Girton, J. In situ techniques for inferring SSH. NASA SWOT Cal/Val Workshop, June 2016, Pasadena, CA.

**Farrar, J.T.**, Wang, J., Fu, L.-L., Savage, A., and Arbic, B. Challenges for in situ cal/val from time-space variability. NASA SWOT Cal/Val Workshop, June 2016, Pasadena, CA.

**Farrar, J.T.**, O'Neill, L., Schneider, N. Seo, H., and Durland, T. Scale dependence of air-sea interaction: what are we missing?, NASA Ocean Vector Wind Science Team Meeting, La Jolla, CA, May 2017.

**Farrar, J.T.**, Weller, R., Mathew, S. Buckley, J., Venkatesan, R., Sree Lekha, Dipanjan Chaudhuri, Suresh Kumar, Praveen Kumar, Thangaprakash, V.P., Ravichandran, M., and Sengupta, D. Mooring measurements of air-sea interaction in northern Bay of Bengal. July 2016, Indian Institute of Tropical Meteorology, Pune, India, at "Discussion Meeting on Probable Collaborations on BoB Air-Sea interactions".

**Farrar, J.T.**, Samelson, R.M., Savage, A., Arbic, B., and Chelton, D.B. Moored time series and frequency-wavenumber spectra. NASA SWOT Science Team Meeting, July 2017, Toulouse, France.

**Farrar, J.T.**, Fu, L., Morrow, R., Drushka, K., Rainville, L., d'Ovidio, F., Chao, Y., and Girton, J. SWOT

science oceanographic field campaigns. NASA SWOT Cal/Val Workshop, July 2017, Toulouse, France.

**Farrar, J.T.**, T. Durland, S. Jayne. Long-distance radiation of barotropic Rossby waves from tropical instability waves. NASA Ocean Surface Topography Science Team Meeting, October 2017, talk/plenary session.

**Farrar, J.T.**, L. Fu, R. Morrow, F. d'Ovidio. A pair of notional SWOT science campaigns. SWOT Science Team Meeting, Montreal, Quebec, June 2018 (Invited).

**Farrar, J.T.**, M. Cronin, Planetary Boundary Layer Task Team Status report. TPOS2020 Steering Committee Meeting, Seattle, WA, Oct 2017.

**Farrar, J.T.**, Do internal waves affect our science goals in ways other than aliasing? Workshop for the Winds and Currents Mission, La Jolla, CA, April 2018.

**Farrar, J.T.**, S-P. Xie, R. Samelson, T. Durland, R. Holmes. Tropical Pacific Circulation. Workshop for the Winds and Currents Mission, La Jolla, CA, April 2018.

**Farrar, J.T.**, and 10 coauthors. Contrasting upper-ocean heat and salt balances and dynamics in SPURS 1 and 2. Ocean Sciences Meeting, Portland, OR, Feb 2018.

**Farrar, J.T.**, Introduction to WHOI and Ocean Remote Sensing. Meeting of National Academies of Science, Engineering, and Medicine Committee on Radio Frequencies, Woods Hole, MA, October 2018 (Invited).

**Farrar, J.T.**, SWOT Science Campaigns: Notional campaigns and science goals. SWOT Science Campaign Workshop, Crystal City, VA, October 2018.

**Farrar, J.T.**, S-MODE Earth Venture Suborbital Mission. SWOT Science Campaign Workshop, Crystal City, VA, October 2018.

## Lectures & Seminars

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**September 2006:** Massachusetts Institute of Technology, Oceanography and Climate Sack Lunch Seminar. *Oceanic mesoscale variability and atmospheric convection on 10° N in the eastern Pacific.*

**February 2007 (Invited):** National Data Buoy Center. *Buoys and wave-measurement requirements of the WHOI Upper Ocean Processes Group.*

**April 2007 (Invited):** Lamont-Doherty Earth Observatory, Ocean and Climate Physics Seminar. *Oceanic mesoscale variability and atmospheric convection on 10° N in the eastern Pacific.*

**June 2007 (Invited):** Geophysical Fluid Dynamics Program Staff Lecture, Woods Hole Oceanographic Institution. *Modulation of the cool skin of the ocean by internal waves* (with C.J. Zappa and C. Cenedese).

**July 2007 (Invited):** Geophysical Fluid Dynamics Program, Mini-Symposium on "Ocean Bottom and Surface Boundary Layers", Woods Hole Oceanographic Institution. *The ocean's diurnal boundary layer: observations and models.*

**October 2007:** University of Oklahoma, Department of Meteorology, Seminar series in convection and numerical weather prediction. *Oceanic mesoscale variability and atmospheric convection on 10° N in the eastern Pacific.*

**October 2007 (Invited):** University of Oklahoma, Department of Physics Colloquium Series. *Planetary-scale equatorial waves in the Pacific Ocean and mathematical analogy to the quantum simple harmonic oscillator.*

**November 2007:** Woods Hole Oceanographic Institution, Physical Oceanography Seminar. *Observations of equatorial waves in the Pacific Ocean: Dispersion characteristics, meridional sea-level structures, and a previously unobserved wave mode.*

**November 2007 (Invited):** Oregon State University, Physical Oceanography Seminar. *Observations of the*

*dispersion characteristics and meridional sea-level structure of equatorial waves in the Pacific Ocean.*

**November 2007:** Oregon State University, Joint Physical Oceanography and Atmospheric Sciences Seminar. *Oceanic mesoscale variability and atmospheric convection on 10° N in the eastern Pacific.*

**April 2008:** Woods Hole Oceanographic Institution, Physical Oceanography Seminar. *Equatorial and tropical instability waves: synthesis and new observations.*

**June 2008:** Oregon State University, Physical Oceanography Seminar. *Equatorial and tropical instability waves: synthesis and new observations.*

**September 2009:** Texas A&M University, Department of Atmospheric Sciences Seminar. *Oceanic mesoscale variability and atmospheric convection on 10° N in the eastern Pacific.*

**September 2009 (Invited):** Texas A&M University, Department of Oceanography Seminar. *Observations of the dispersion relation and meridional structure of equatorial waves and tropical instability waves.*

**October 2009 (Invited):** Woods Hole Oceanographic Institution, Applied Ocean Physics and Engineering Coastal Ocean Fluid Dynamics Laboratory Seminar. *Air-sea exchange in the Red Sea and the role of coastal processes.*

**December 2009 (Invited):** University of Rhode Island, Graduate School of Oceanography Seminar. *Observations of the dispersion relation and meridional structure of equatorial waves and tropical instability waves.*

**February 2011 (Invited):** Rensselaer Polytechnic Institute, Mathematics Colloquium. *Observations of planetary-scale ocean waves in the equatorial waveguide.*

**April 2011 (Invited):** University of Massachusetts, Dartmouth, School for Marine Science and Technology. *New observations of equatorial waves and tropical instability waves in the Pacific Ocean.*

**June 2011:** Woods Hole Oceanographic Institution, Physical Oceanography Seminar. *On the spectrum of equatorial inertia-gravity waves and the significance of zero group velocity (co-delivered with Ted Durland).*

**April 2012:** Oregon State University, Physical Oceanography Seminar. *Sea-level variability in the tropical Pacific: from inertia-gravity waves to Rossby waves.*

**April 2012:** University of South Florida, Oceanography Seminar. *New observations of equatorial waves and tropical instability waves.*

**May 2012:** Woods Hole Oceanographic Institution, Physical Oceanography Seminar. *Sea-level variability in the tropical Pacific: from inertia-gravity waves to Rossby waves.*

**April 2013 (Invited):** Lamont-Doherty Earth Observatory, Ocean and Climate Physics Seminar. *Sea-level variability in the tropical Pacific: from inertia-gravity waves to Rossby waves.*

**March 2016:** Woods Hole Oceanographic Institution, Physical Oceanography Seminar. *Long-range teleconnections in the ocean eddy field.*

**July 2016 (Invited):** National Institute of Ocean Technology, Chennai, India. *Mooring measurements of air-sea interaction at WHOI.*

**July 2016 (Invited lectures):** International Training Course on Emerging trends in Ocean Observations and Ocean Data Analysis (58 students); Hyderabad, India, Indian National Centre for Ocean Information Services. *Fourier analysis, spectral analysis, and filtering.*

**May 2017:** Woods Hole Oceanographic Institution, Physical Oceanography Seminar. *Surface velocity measurements from air and space (Doppler scatterometry).*

**October 2018:** Cornell University, Atmospheric Sciences Seminar. *Ocean-atmosphere interaction and ocean dynamics using measurements from water, air, and space.*

## Fieldwork Experience

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- 2017:** IRENE cruise, BO *SOCIB*, Palma, Mallorca to Palma, Mallorca. Led WHOI drogued surface buoy effort and Underway CTD sampling. Chief Scientist: Simon Ruiz.
- 2016:** SPURS-2 deployment cruise in-port work; Honolulu. Worked with group members to assemble surface mooring buoy, prepare instruments and equipment, and load ship.
- 2012:** SPURS deployment cruise, RV *Knorr*; Woods Hole to Azores. Led WHOI mooring effort and Underway CTD sampling. Chief Scientist: Ray Schmitt.
- 2010:** Chief Scientist for King Abdullah University for Science and Technology mooring recovery cruise, SETE3 (tug) and SETE30 (barge); Durrat (Saudi Arabia) to Durrat (Red Sea).
- 2009:** Chief Scientist for King Abdullah University for Science and Technology mooring recovery/redeployment cruise, SETE3 (tug) and SETE30 (barge); Durrat (Saudi Arabia) to Durrat (Red Sea).
- 2008:** Chief Scientist for King Abdullah University for Science and Technology mooring deployment cruise, RV *Oceanus*; Jeddah (Saudi Arabia) to Jeddah.
- 2008:** Northern Tropical Atlantic Station mooring turnaround cruise, RV *Oceanus*; Woods Hole, MA to Barbados. Chief Scientist: Al Plueddemann.
- 2007:** CLIMODE and wave-measurement test mooring recovery cruise, RV *Oceanus* (Co-PI with Robert Weller). Participation in planning and execution of a dragging operation to retrieve remnants of a mooring that had previously failed in the Gulf Stream. Chief scientist: Robert Weller.
- 2007:** Chief Scientist for Wave-measurement Test Mooring deployment cruise, RV *Oceanus*; coastal waters south of Martha's Vineyard, MA.
- 2003:** Chief Scientist for 3 of 5 cruise legs of Coupled Boundary Layers and Air-Sea Transfer Experiment, Low Winds, FV *Nobska* (PI, Robert Weller).
- 2001:** Salt Finger Tracer Release Experiment, RV *Oceanus*; Barbados to Barbados. SF<sub>6</sub> tracer release and microstructure sampling, Chief Scientist: Raymond Schmitt.

## Service

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- Co-chair, TPOS-2020 (Tropical Pacific Observing System) Task Team on Planetary Boundary Layers, 2015-present
- Co-chair, SPURS-2 (Salinity Processes in the Upper-ocean Regional Study) Science Steering Committee, 2015-present
- Co-chair, US CLIVAR Process Study and Model Improvement Panel, 2013-2014
- Organizer of SWOT Science Campaign Workshop, October 2018.
- Organizer of SPURS-2 (Salinity Processes in the Upper-ocean Regional Study) Planning Workshop, April 2014.
- Member of International CLIVAR Atlantic Implementation Panel, 2011-2015
- Member of US CLIVAR Process Study and Model Improvement Panel, 2012-2016
- Member of TPOS-2020 (Tropical Pacific Observing System) Scientific Steering Committee, 2014-present
- Member of NASA Surface Water Ocean Topography Algorithm Development Team steering committee, 2014-2016
- Member of Science Committee of the European Space Agency's Ocean Salinity Science and Salinity Remote Sensing Workshop, 2014
- Member of ASIRI (Air-Sea Interaction Regional Initiative) Steering Committee, 2012-2017
- Member of NASA Ocean Surface Topography Science Team, 2012-present

- Member of NASA Ocean Vector Wind Science Team, 2010-2018
- Member of MISO-BoB (Monsoon Intraseasonal Oscillations in the Bay of Bengal) Steering Committee, 2016-present
- Member of SPURS (Salinity Processes in the Upper-ocean Regional Study) Science Steering Committee, 2011-2015
- Member of WHOI Search Committee for Physical Oceanography Department Chair, 2010
- Member of WHOI Search Committee for Vice President of Marine Operations, 2008-2009
- Member of WHOI Diversity Committee, 2008-2010
- WHOI Postdoctoral Association (Secretary), elected representative of the physical oceanography department, 2007-2008
- Member of WHOI's Gender Equity Program Advisory Committee, 2004-2006
- President, Sigma Pi Sigma (physics honor society), U. Oklahoma Chapter, 1999-2000
- Reviewer for *Science*, *Geophysical Research Letters*, *Journal of Physical Oceanography*, *Journal of Geophysical Research*, *Ocean Science*, *Journal of Atmospheric and Oceanic Technology*, *Climate Dynamics*, *Journal of Climate*, *Dynamics of Atmospheres and Oceans*, *Monthly Weather Review*, *Deep Sea Research*, *Journal of Earth System Science*, *Weather and Forecasting*, *Oceanologia*, *Atmospheric Science Letters*, *Ocean Dynamics*, *Journal of Operational Oceanography*, *Remote Sensing of Environment*, *Oceanography*, *Scientific Reports*, *Journal of Atmospheric Sciences*, and *Journal of Climate*.
- Proposal reviewer for US National Science Foundation, UK Natural Environment Research Council, NASA
- Panel reviewer for National Science Foundation (2010) and National Oceanic and Atmospheric Administration (2010)

## Educational Activities

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**Thesis committee member for:** Ping Zhai (MIT-WHOI, S.M. awarded 2011), Ping Zhai (MIT-WHOI, Ph.D. awarded 2014), Sudip Majumder (U. Mass., Ph.D. awarded 2014), Neeti Neeti (Clark Univ., Ph.D. awarded 2012), Sophia Merrifield (MIT-WHOI, Ph.D. awarded 2016), Gualtiero Spiro Jaeger (MIT-WHOI, Ph.D.), Samuel Levang (MIT-WHOI, Ph.D.), Julie Jakoboski (MIT-WHOI, Ph.D. proposal fall 2016).

**Ph.D. advisor for:** Alec Bogdanoff (MIT-WHOI, Ph.D. awarded 2017; co-advised with Carol Anne Clayson).

**Postdoctoral advisor for:** Shannon Davis (2015-2016), Viviane Menezes (2016-2017), Uriel Zajaczkovski (2017-present), Michael Schlundt (2017-present), Cesar Rocha (2018-present).

**Teaching:** MIT graduate class 12.805, *Data Analysis in Physical Oceanography* (2016 and 2017; co-taught with Jake Gebbie). Guest lecturer for MIT graduate class 12.808 *Introduction to Physical Oceanography* on measurement of surface meteorology and air-sea fluxes at sea (2006-2014).

**Member:** MIT-WHOI Joint Committee for Physical Oceanography (a graduate program oversight committee), 2011-2015.

**Member:** WHOI Joint Program Admissions Committee, 2010-2013.

**Summer advisor:** WHOI Geophysical Fluid Dynamics Program Fellow Andrew Wells (2007, co-advised with Claudia Cenedese); visiting graduate student John Prytherch (2010, co-advised with Bob Weller); WHOI summer students (Erica Rosenblum and Sourajit Das); MIT-WHOI Joint Program student Deepak Cherian (2012).