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ADDRESS:

University of Massachusetts
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COMMUNICATIONS:

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HIGHER EDUCATION:

1990-1992 Cornell University, Ph.D., Mechanical Engineering, 1992
1987-1990 Cornell University, M.S., Mechanical Engineering, 1990
1983-1987, IIT Kanpur, India, B. Tech., Mechanical Engineering Class of 1987

Academic Appointments:

University of Massachusetts Dartmouth: September 2010-Present. *Professor*, College of Engineering, 2004- August 2010, *Associate Professor with Tenure*, 1999-2004, *Assistant Professor*. Joint faculty with School of Marine Sciences (SMS) University of Massachusetts (intercampus), 1999-Present; Mechanical Engineering Graduate Program Director 2015-16.

Woods Hole Oceanographic Institution, 2013-present *Adjunct Scientist*.

University of California, Santa Cruz , January 1997 - June 1999. *Assistant Researcher*, Institute for Nonlinear Sciences.

University of Victoria (UVic): 1992-1996,UCAR postdoctoral fellowships

Awards:

Principal Scientist MISO-Bob 2017-2021, ASIRI- 2013-2017: Coordinating scientist and one of the Chief Scientists for the U.S. Office of Naval Research Air-Sea Interactions in the Northern Indian Ocean – Regional Initiative (ASIRI Departmental Research Initiative), as well as Oceanic Control of Monsoon Intra-seasonal Oscillations in the Tropical Indian Ocean and the Bay of Bengal (MISO-BOB) Air-Sea interaction initiative. Both ONR DRIs collaborate with Ocean Mixing and Monsoons (OMM) program of India supported by their Ministry of Earth Sciences. These DRIs bring together the ocean community from ten major US research institutions and nine Indian institutions.

Co-Chair, Second International Indian Ocean Expedition (IIOE-2, 2015-2020), Theme 4: Circulation, climate variability and ecosystem response.

Fulbright-Nehru Scholar award, 2017-2018: This award is tenable in the coming academic year to work with multiple scientists and institutions in India, while mainly hosted at the Indian Institute of Science, Bangalore.

Fulbright Specialist Scholar, July 2014: Organized and taught workshop on Upper Ocean Physics with applications to the Bay of Bengal at Indian Institute of Science Bangalore.

University Corporation for Atmospheric Research (UCAR) Climate System Modeling Fellowship, 01/1995 - 12/1996: UVic Canada. Only two fellowships awarded.

UCAR Ocean Modeling Postdoctoral Fellowship, 11/1992 - 10/1994: UVic,

Canada. Only two fellowships awarded, on the basis of proposed research and past performance.

REFEREED PUBLICATIONS

Student advisees and **postdoc** co-authors appear in bold font.

The impact of vertical eddy viscosity parameterizations on forced submesoscale eddy-resolving simulations, **Sonaljit Mukherjee**, **Sanjiv Ramachandran**, Amit Tandon and Amala Mahadevan. Ocean Modelling, September 2016. <http://www.sciencedirect.com/science/article/pii/S1463500316300737>

Introduction to the Special Issue on the Bay of Bengal: From Monsoons to Mixing. Mahadevan, A., T. Paluszkiwicz, M. Ravichandran, D. Sengupta, and A. Tandon. 2016. Oceanography 29(2):14–17, <http://dx.doi.org/10.5670/oceanog.2016.34>.

A Tale of Two Spicy Seas, MacKinnon, J.A., J.D. Nash, M.H. Alford, A.J. Lucas, J.B. Mickett, E.L. Shroyer, A.F. Waterhouse, A. Tandon, D. Sengupta, A. Mahadevan, M. Ravichandran, R. Pinkel, D.L. Rudnick, C.B. Whalen, M.S. Albery, **J. Sreelekha**, E.C. Fine, **D. Chaudhuri**, and G.L. Wagner. 2016. Oceanography 29(2):50–61, <http://dx.doi.org/10.5670/oceanog.2016.38>.

Adrift Upon a Salinity-Stratified Sea: A View of Upper-Ocean Processes in the Bay of Bengal During the Southwest Monsoon. Lucas, A.J., J.D. Nash, R. Pinkel, J.A. MacKinnon, A. Tandon, A. Mahadevan, M.M. Omand, **M. Freilich**, D. Sengupta, M. Ravichandran, and A. Le Boyer. 2016. Oceanography 29(2):134–145, <http://dx.doi.org/10.5670/oceanog.2016.46>.

The Interplay Between Submesoscale Instabilities and Turbulence in the Surface Layer of the Bay of Bengal. Sarkar, S., H.T. Pham, S. Ramachandran, J.D. Nash, A. Tandon, **J. Buckley**, A.A. Lotliker, and M.M. Omand. 2016. Oceanography 29(2):146–157, <http://dx.doi.org/10.5670/oceanog.2016.47>.

Decay Mechanisms of Near-Inertial Mixed Layer Oscillations in the Bay of Bengal. Johnston, T.M.S., **D. Chaudhuri**, M. Mathur, D.L. Rudnick, D. Sengupta, H.L. Simmons, A. Tandon, and R. Venkatesan. 2016. Oceanography 29(2):180–191, <http://dx.doi.org/10.5670/oceanog.2016.50>.

Large-Scale Air-Sea Coupling Processes in the Bay of Bengal Using Space-Borne Observations. Sharma, R., N. Agarwal, A. Chakraborty, **S. Mallick**, **J. Buckley**, V. Shesu, and A. Tandon. 2016. Oceanography 29(2):192–201, <http://dx.doi.org/10.5670/oceanog.2016.51>.

Technological Advancements in Observing the Upper Ocean in the Bay of Bengal: Education and Capacity Building. Tandon, A., E.A. D’Asaro, K.M. Stafford, D. Sengupta, M. Ravichandran, M. Baumgartner, R. Venkatesan, and T. Paluszkiwicz. 2016. Oceanography 29(2):242–253, <http://dx.doi.org/10.5670/oceanog.2016.56>.

ASIRI: An Ocean-Atmosphere Initiative for Bay of Bengal, by Hemantha W. Wijesekera, Emily Shroyer, Amit Tandon, M. Ravichandran, Debasis Sengupta and co-authors including **Sanjiv Ramachandran** and **Sonaljit Mukherjee**. Bulletin of American Meteorological Society, DOI: <http://dx.doi.org/10.1175/BAMS-D-14-00197.1> March, 2016

Evidence of enhanced double-diffusive convection below the main stream of the Kuroshio Extension by Takeyoshi Nagai, Ryuichiro Inoue, Amit Tandon, Hidekatsu Yamazaki, Volume 120, Issue 12 December 2015, Pages 8402–8421, Journal Of Geophysical Research Oceans. <http://onlinelibrary.wiley.com/doi/10.1002/2015JC011288/full>

Majumder, S., A. Tandon, D. L. Rudnick, and J. Thomas Farrar, 2015, 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, <http://dx.doi.org/10.1002/2014JC010198>.

Takeyoshi Nagai, Amit Tandon, Eric Kunze, and Amala Mahadevan, 2015: Spontaneous Generation of Near-Inertial Waves by the Kuroshio Front. *J. Phys. Oceanogr.*, 45, 2381–2406. doi: <http://dx.doi.org/10.1175/JPO-D-14-0086.1>

Sanjiv Ramachandran, Amit Tandon and Amala Mahadevan, Enhancement in vertical fluxes at a front by mesoscale-submesoscale coupling, Journal of Geophysical Research: Oceans, Volume 119, Issue 12 (December 2014), pages 8495–8511, <http://onlinelibrary.wiley.com/doi/10.1002/2014JC010211>

Robert A. Weller, **Sudip Majumder**, Amit Tandon, Diurnal Restratification Events in the Southeast Pacific Trade Wind Regime, 2569-2587, Journal of Physical Oceanography, Volume 44, Issue 9 (September 2014). <http://journals.ametsoc.org/doi/abs/10.1175/JPO-D-14-0026.1>

A. J. Lucas, E. L. Shroyer, H. W. Wijesekera, H. J. S. Fernando, E. D'Asaro, M. Ravichandran, S. U. P. Jinadasa, J. A. MacKinnon, J. D. Nash, R. Sharma, L. Centurioni, J. T. 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* Volume 95, Issue 30, pages 269–270, 29 July 2014. <http://onlinelibrary.wiley.com/doi/10.1002/2014EO300001>

Rocha, Cesar B., A. Tandon, I. C. A. da Silveira, and J. A. M. Lima. Traditional quasi-geostrophic modes and surface Quasi-geostrophic solutions in the Southwestern Atlantic. Journal of Geophysical Research: Oceans, 2013, DOI: 10.1002/jgrc.20214.

Ramachandran, S., A. Tandon and A. Mahadevan, 2013, Effect of subgrid-scale mixing on the evolution of forced submesoscale instabilities, *Ocean Modelling*, Vol. 66, 45-63, <http://dx.doi.org/10.1016/j.ocemod.2013.03.001>

Nagai, T., Tandon, A., Yamazaki, H., Doubell M. J., and Gallagher S., Direct Observations of Microscale Turbulence, Subduction and Upwelling in the Kuroshio Front, *Journal of Geophysical Research, Oceans*, Vol. 117, No. C8, C08013, 2012 <http://onlinelibrary.wiley.com/doi/10.1029/2011JC007228/abstract>

G. Badin, A. Tandon, A. Mahadevan, 2011. Lateral mixing in the pycnocline by baroclinic mixed layer eddies, *Journal of Physical Oceanography*, 41, 2080-2101. <http://journals.ametsoc.org/doi/pdf/10.1175/JPO-D-11-05.1>

Tandon, A. and J. Marshall, Einstein's Tea Leaves and Pressure Systems in the Atmosphere, *The Physics Teacher*, Vol. 48, 5, p292-295, May 2010. (online at http://scitation.aip.org/journals/doc/PHTEAH-ft/vol_48/iss_5/292_1.html?bypassSSO=1)

Mahadevan, A., A. Tandon and R. Ferrari (2010) Rapid changes in mixed layer stratification driven by submesoscale instabilities and winds, *Journal of Geophysical Research-Oceans*, 115, C03017, <http://dx.doi.org/10.1029/2008JC005203>

Illari, L., J. Marshall, A. Tandon, S. Lee, P. Bannon, R. Najjar, G. McKiley, M. Morgan, T. Haine, R. Clark, T. Sikora, J. Mackin, 'Weather in a Tank': Exploiting laboratory experiments in the teaching of meteorology, oceanography and climate, *Cover story in the November 2009 issue of Bulletin of American Meteorological Society*, 2009. <http://journals.ametsoc.org/doi/abs/10.1175/2009BAMS2658.1?>

Nagai, T., A. Tandon, H. Yamazaki, and M. J. Doubell (2009), Evidence of enhanced turbulent dissipation in the frontogenetic Kuroshio Front thermocline, *Geophys. Res. Lett.*, 36, L12609, <http://dx.doi.org/10.1029/2009GL038832>

Beesley, D., J. Olejarz J., A. Tandon and J. Marshall, A laboratory demonstration of Coriolis effects on wind-driven ocean currents, *Oceanography*, 21, Issue 2, 72-76, June 2008. (http://www.tos.org/oceanography/issues/issue_archive/21_2.html)

Mahadevan, A., Thomas, L.N., & Tandon, A. Technical comment: Eddy/wind interactions stimulate extraordinary mid-ocean plankton blooms. *Science*, Technical Comment, *Science* 320, 448b, <http://dx.doi.org/10.1126/science.1152111>

Thomas, L. N., A. Tandon, and A. Mahadevan, Submesoscale processes and dynamics. In Hecht, M. and Hasumi, H., editors, *Ocean Modeling in an Eddying Regime*, (AGU Monograph), American Geophysical Union, Washington DC, pages 17-38, 2008.

Nagai, T., A. Tandon, N. Gruber, J. C. McWilliams, Biological and physical impacts of ageostrophic frontal circulations driven by confluent flow and vertical mixing, *Dynamics of Atmospheres and Oceans*, 45, Issue 3-4, Pages 229-251, 2008. <http://dx.doi.org/10.1016/j.dynatmoce.2007.12.001>

Mahadevan, A. and A. Tandon, An Analysis of Mechanisms for Submesoscale Vertical Motion at Ocean Fronts, *Ocean Modelling*, 14, Issue 3-4 , 2006, Pages 241-256, 2006. doi:10.1016/j.ocemod.2006.05.006

Nagai, T., A. Tandon and D. L. Rudnick, Two dimensional Ageostrophic Secondary Circulation at Ocean Fronts due to Vertical Mixing and Large Scale Deformation. *JGR-Oceans*, 111, C09038, 2006, doi:10.1029/2005JC002964.

Tandon, A. and **L. Zhao**. Mixed Layer Transformation for the North Atlantic for 1990-2000. *Journal of Geophys. Res.*, Vol. 109, No. C5, C05018 doi 10.1029/2003JC002059, 2004.

Tandon, A. and **K. Zahariev**. Quantifying the Role of Mixed Layer Entrainment for Water Mass Transformation in the North Atlantic. *Journal of Physical Oceanography*, 31, 1120-1131, 2001.

Garrett, Chris and Amit Tandon. The Effects on Water Mass Formation of Surface Mixed Layer Time-dependence and Entrainment Fluxes. *Deep Sea Research*, 44/12, 1991-2006, 1997.

Tandon, Amit and Chris Garrett. On a Recent Parameterization of Mesoscale Eddies. *Journal of Physical Oceanography*, 26, 406-411, 1996.

Tandon, Amit and Chris Garrett. Geostrophic Adjustment and Restratification of a Mixed Layer with Horizontal Buoyancy Gradients Above a Stratified Layer. *Journal of Physical Oceanography*, 25, 2229-2241, 1995.

Tandon, Amit and Chris Garrett. Mixed Layer Re-stratification due to a Horizontal Density Gradient. *Journal of Physical Oceanography*, 24, 1419-1424, 1994.

Tandon, Amit and Sidney Leibovich. Simulations of Three-dimensional Langmuir Circulation in Water of Constant Density, *Journal of Geophysical Research*, 100, 22,613-22,623, 1995.

Tandon, Amit and Sidney Leibovich. Secondary Instabilities of Langmuir Circulations. *Journal of Physical Oceanography*, 25, 1206-1217, 1995.

Leibovich, Sidney and Amit Tandon. Three-dimensional Langmuir Circulation Instability in a Stratified Layer *Journal of Geophysical Research*, 98, 16501-16507, 1993.

Cox, Steve M., Sidney Leibovich, Irene M. Moroz and Amit Tandon. Nonlinear dynamics in Langmuir circulations with $O(2)$ symmetry. *Journal of Fluid Mechanics*, 241, 669-704, 1992.

Cox, Steve M., Sidney Leibovich, Irene M. Moroz and Amit Tandon. Hopf bifurcations in Langmuir circulations. *Physica D*, 59, 226-254, 1992.

Thesis:

Tandon, A. 1992. Ph.D. Thesis, Cornell University, Direct Numerical Simulations and Hydrodynamic Stability Problems in the Upper Oceanic Mixed Layer, 127 pp. (Professor S. Leibovich, Major Advisor)

Conference and non-refereed publications not listed (numerous, available on request)

EXTRAMURALLY FUNDED RESEARCH AWARDS (amounts listed awarded to Tandon):

- 2017-2021: Understanding the ocean-atmosphere coupling in the Northern Indian Ocean, ONR, \$753,841
- 2016-2019: Competition between mixed-layer instabilities in shallow fronts at subtropical latitudes in the ocean, NSF, \$223,297.
- 2014-2018: Collaborative Research: Role of mixed layer eddies on phytoplankton productivity in seasonally variable regimes, NSF, \$324,615.
- 2013-2017: Coastal and Submesoscale Process Studies for ASIRI, ONR \$647,173.
- 2014-2017: Data serving for ASIRI participants, ONR, \$149,988.00.
- 2012-2013: Interpreting the ocean's interior from surface data, NASA, \$129,318.
- 2010-2011: Interpreting the ocean's interior from surface data, NASA, \$155,538.
- 2009-2013: On the importance of submesoscale processes for ocean productivity, NSF, \$328,384.
- 2008-2013: Submesoscale routes to lateral mixing in the ocean (LATMIX), ONR, \$349,641.
- 2012: MOPE: Multi-scale Ocean Modeling in Support of the Pioneer Array, MGHPC Seed Fund, UMass President's Office. \$20,000.
- 2008-2009: From Stirring to Mixing: Submesoscale Routes to Lateral Dispersal of Tracers in Upper Ocean. ONR, \$21,369.
- 2006-2010: The effect of submesoscale processes on property fluxes and distributions in the upper ocean, NSF, \$177,110.
- 2006-2010: Exploiting laboratory experiments in the teaching of Meteorology, Oceanography and Climate: Phase II (MIT), NSF, \$31,745.
- 2006-2008: Interaction of Eddies with Mixed Layers, NSF, \$32,800.
- 2003-2006: Interaction of Eddies with Mixed Layers, NSF, \$47,446.
- 2002-2005: Diapycnal fluxes in the Southern Ocean, NSF, \$173,782.
- 1999-2003: Large scale property fluxes in the North Atlantic, NSF, \$140,000.
- 2001-2002: REU Supplement to Large Scale fluxes, NSF, \$20,000.
- 1997-2001: The Significance of time dependence and entrainment fluxes to water mass formation, NSF, \$168,713.

Recent invited and contributed presentations (2014-current only)

2016: Submesoscale Processes: Mechanisms, Implications and new Frontiers, University of Liège, Belgium, May 23-27, 2016. Seven presentations by myself or collaborators on which I am a co-author. **Ocean Sciences Meeting AGU/ASLO/TOS,**

New Orleans, LA, 21-27 Feb. Seven presentations by myself or collaborators on which I am a co-author.

2015: Dynamics of the Indian Ocean: Perspective and Retrospective, International Symposium on the Indian Ocean, Nov 30-Dec 4, 2015, Goa India. Session-14 (Mixing to Monsoons: Many scales in the Bay of Bengal Nine presentations by myself or collaborators on which I am a co-author. Also presented at the 20th Conference on Atmospheric and Oceanic Fluid Dynamics, 15-19 June 2015, Minneapolis, MN

2014: Ocean Sciences Meeting: Invited Panelist for Dual Careers: Challenges and Opportunities, an evening workshop hosted by the MPOWIR (Mentoring Physical Oceanography Women to Increase Retention), Feb 24, 2014 at the International Ocean Sciences Meeting 2014. Also, five presentations by myself or collaborators on which I am a co-author.

GRADUATE STUDENTS ADVISED: More than 15 MS and PhD students advised. Additionally co-advised or served on committees of about 12 graduate students.

POSTDOCTORAL MENTOR: Dr. Takeyoshi Nagai (now Asst Prof. Tokyo Univ.), Dr. Liuzhi Zhao (now Research Associate at School of Marine Science and Technology, UMass), Dr. Jorge Mesias.(now in Chile), Dr. Sanjiv Ramachandran (now Research Associate with PI privileges), Dr. Farid Karimpour (current).

TEACHING: Two to four courses per year, 6 new courses introduced: EGR 301 Advanced Engineering Mathematics (with lab), MNE 101 Introduction to Mechanical Engineering, MNE 504 Advanced Fluid Mechanics, MAE 557/PHY557/MAR 557 Geophysical Fluid Dynamics, PHY 234 Mathematical Physics, PHY 515 Physics of Ocean boundary layers (graduate), PHY 554 Physics of Fluids (graduate), PHY 182 An Introduction to Weather, PHY 183 Climate Change (General education, undergraduate), PHY 111 Freshman Engineering course in Mechanics (in the Integrated Studio mode), PHY 115 Freshman Physics course in Waves, Thermodynamics and Optics, SUS 201-Topics in Sustainability: Coastal Zone (team taught), PHY 421 Physics Senior Lab (team taught).

OTHER PROFESSIONAL ACTIVITIES AND HONORS:

Panel reviewer, Physical Oceanography panel, NASA. November 2016. National Science Foundation Physical Oceanography Panel (5 times), National Ocean Partnership Program, Panel Reviewer, NSF Arctic Natural Sciences – Arctic System Science panel.

Editor for the Oceanography Special Issue: Bay of Bengal: From Monsoons to Mixing June 2016 issue. Solicited articles and conducted the editorial process for the articles for which I did not have any conflicts of interest.

Associate Editor, Limnology, 2005-2011; Reviewer for more than ten professional

journals; Proposal Reviewer for all major federal funding agencies (multiple programs).

Membership in Professional Societies: American Geophysical Union, 1992-Present; American Meteorological Society, 1992-Present; The Oceanography Society, 1992-Present; Sigma Xi, 1999-2007; American Association of Physics Teachers 2002-2011; Association for the Sciences of Limnology and Oceanography 2011-2015.

2014-2016: MPOWIR Steering Committee member. (Mentoring Physical Oceanography Women to Increase Retention). Primary Chair, Session organizer, PO43C: From Monsoons to Mixing: Coupled Ocean-Atmosphere Processes and Biogeochemical Response in the Indian Ocean I, 2016 Ocean Sciences Meeting, February 2016. Conference session Chair and member of the Organizing committee, Submesoscale Processes: Mechanisms, Implications And New Frontiers, May 2016, 48th Liege Colloquium, Belgium.

2015: Presenter at the Office of Naval Research, at the Basic Research Forum, October 2015. Attended by the ONR, ARO, AFOSR program managers, organized by Dr. Richard Ames, AAAS S&T Policy Fellow; Research presentation to the Department of State, US Embassy in Chennai, August 2015. Speaker, Dean's Advisory Board Fall 2015, Fall 2014. University Research Committee Chair 2015-2016.

Chancellor's Lecture, *From Stirring Physics to Blooming Biology: Life on a Rotating Planet*, April 2009.

Recipient of **Outstanding Teaching Assistant awards at Cornell University** for 1990, 1991.

Third position in the country in the Indian School Certificate Exam 1982-1983.

Recent Service to UMass Dartmouth (Examples only, full list available on request).

AY 2016-17: Member Faculty Senate Steering committee, Member Faculty Senate, Member College Academic Council, Member Graduate Committee.

AY 2015-16: Chair, University Research Committee; Member Faculty Senate Steering committee; Graduate Program Director Mechanical Engineering; Presentation to College of Engineering Dean's Advisory Board; Presenter to Interagency workshop at ONR.

COE Member for MSACC (Marine Science Admission and Curriculum Committee) AY 12-Present; Member COE College Academic Council (AY 11-Present).

College of Engineering Coordinator for the Honors Program AY 13-14;

Chair Research Scholarship and Innovation Committee UMassD Transform 2020 – coordinated many meetings with the members, helped prepare the presentation to Faculty Senate and the final RSI document for the strategic plan (AY 2013-2014).

Chair, RSI subcommittee on Faculty retention and workloads 2013-2014. Presented RSI report and recommendations to Faculty Senate, and held subsequent discussions with administrative leadership, Senate and Faculty federation leaders.

PUBLIC OUTREACH : Many demonstrations at the New Bedford Waterfront Festival (2008-Present), and with the New Bedford Ocean Explorium (closed 2015). Tandon and

students have demonstrated many concepts about atmosphere and ocean flows using the rotating tank which they setup “live” at the Waterfront over the past many years. Demonstrations to High school student groups at the High School Marine Science Symposium organized by the Massachusetts Marine Educators, each year, 2002-2014.

Other Public Outreach, University Service, Honors during 1983-2014 are omitted for brevity, available on request.