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EDUCATION:

Postdoctoral, 1990-1995. Harvard University, Cambridge, MA.

Ph.D., Ocean Engineering, 1990.
University of Rhode Island, Kingston, RI.
Thesis: "Wind-forcing of the Gulf Stream - A Space-Time Analysis"

M.Tech. Applied Mechanics (Structure-Fluid interactions), 1981.
Indian Institute of Technology, New Delhi, India.
Thesis: "Dynamic Analysis of a Submerged Plate using Finite Element Method"

B.Tech. Naval Architecture, 1979.
Indian Institute of Technology, Kharagpur, India.

EXPERIENCE:

June 2012 – Present:	Professor, SMAST, UMass Dartmouth
September 2007 – May 2012:	Professor and Associate Dean, SMAST, UMass Dartmouth
September 2006 –August 2007:	Interim Dean and Professor, SMAST, UMass Dartmouth;
September 2005 – July 2006:	Interim Associate Dean, SMAST, UMass Dartmouth
September 2003 – August 2004:	Chair, Department of Physics, UMass Dartmouth
November -December, 2004:	Visiting Professor, Univ of Sao Paulo, Brazil (on sabbatical)
August-September, 2004:	Visiting Professor, IISc, Bangalore, India (on sabbatical)
September 1999 -- August 2006:	Associate Professor (Tenured), Physics and SMAST, UMassD
June 1997 -- August 1999:	Assistant Professor, Physics and CMAST, UMassD
March 1995 -- June 1997:	Scientist, Jet Propulsion Lab (NASA/CalTech), Pasadena, CA.
August 1990 -- February 1995:	Research Associate, Harvard University.
August 1993 – July 1994:	Consultant, Applied Mathematics, CT.
August 1992 – July 1993:	Consultant, Applied Physics Lab, Johns Hopkins University.
August 1985 -- July 1990:	Graduate Research Assistant, GSO, URI.
August 1981 -- August 1985:	Engineer, Ocean Engg Div, EIL, New Delhi, India.

Honors:

Honorary Research Associate, Harvard University, 1997—2006.
Distinguished Professor, Indian Institute of Technology, Kharagpur, 2007-2012.
MOES SG Chair Professor, Indian Institute of Technology, Kharagpur, 2012-2015.
Honorary Institute Professor, Indian Institute of Technology, Bhubaneswar, 2012-2017.
Adjunct Professor, Institute of Oceanography, Univ of Sao Paulo, Brazil, 2012-2015.
US Fulbright-Nehru Scholar in Teaching and Research (US) 2013-2014.
Distinguished International Visiting Professor, Univ of Sao Paulo, Brazil, 2014.
International Visiting Professor, IIT Kharagpur, 2016-2021.
ANRF-VAJRA Faculty, IITBBS, Dept of Science and Tech., Govt. of India, 2020-2025.

A FEW EXAMPLES OF RELEVANT SYNERGISTIC ACTIVITIES:

1. Dr. Gangopadhyay's research interests and contributions include dynamics of western boundary currents (WBC), operational ocean modeling and data assimilation, basin-scale climate-related modeling and multiscale multidisciplinary data-model synthesis studies. He has made significant contributions towards understanding the response of the Gulf Stream to large-scale forcing from the NAO, the formation of the Brazil Current System, and the meandering nature of the WBC in the Bay of Bengal.

2. Dr. Gangopadhyay has led the development of feature-oriented regional modeling systems in many oceanic regions around the world, including the western North Atlantic (Gulf Stream, Gulf of Maine, Georges Bank, Mid-Atlantic Bight), Brazil Current System (Brazil Current and its eddies and subsurface flows), North Brazil Current rings, California Current system, Kuroshio, Strait of Sicily and Arabian Sea.

3. He was awarded the US Fulbright Scholar Fellowship to India during 2013-2014. He has helped initiate multiple international collaborative research partnerships between faculty from UMass, WHOI, MIT and both IITBBS and IITKGP on Bay of Bengal and Arabian Sea.

4. Current teaching duties included one or two graduate and/or one undergraduate course per year among the following: Graduate Courses: 1) Ocean Circulation and Modeling, 2) Ocean Atmosphere Dynamics; Undergraduate Courses: 1) Classical Mechanics, 2) Wave Motions, 3) Natural Hazards and the Oceans, 4) Introduction to Climate (a University Studies Course for Non-Science majors).

5. Over the past two decades, Dr. Gangopadhyay initiated a number of oceanography-related activities in India. Specifically, his leadership contributions include helping to: (i) set up the Center for Oceans, Rivers, Atmosphere and Land Sciences (CORAL) at IIT Kharagpur in 2004; (ii) help develop the School of Earth, Ocean and Climate Sciences at IIT Bhubaneswar; (iii) assist in acquiring a 50-acre land parcel on the coast for a future marine campus for IIT. Incidentally, the first tsunami atlas for the Indian Ocean was prepared under his leadership at UMass Dartmouth and published by CORAL, IITKGP.

6. As the Dean and Associate Dean of SMAST, Dr. Gangopadhyay had initiated the establishment of the first dual-degree PhD program between SMAST and the Institute of Oceanography at the University of São Paulo (IOUSP) in 2011. Having spent two sabbaticals and multiple short-term visits there, facilitating the Brazilian students to come to UMass Dartmouth.

7. Dr. Gangopadhyay has successfully completed a comprehensive “Big Data and Social Analytics” online certificate course offered by MIT with a goal to develop linkage between climate, ocean, ecosystem and societal responses for sustainable development.

8. Member of NSF Panel Reviewer, Member of NERACOOS Board, Member of BP Research Oversight Committee on Deep Water Horizon, Reviewer of Fulbright Applicants.

9. Awarded the VAJRA (Visiting Advanced Joint Research) SERB/GOI for 2020-2022.

10. Awarded the ANRF-VAJRA Faculty for 2024-2025 to IITBBS.

11. Editor, Ocean Dynamics (2023 --). Awarded Editor of Distinction from Springer Nature; Upcoming (2025) special issue on Indian Ocean.

PUBLICATIONS

Google Scholar h-index: 34. i10-index: 73; Since 2019: h-index: 26; i10: 53.

Books:

Gangopadhyay, Avijit, *Introduction to Ocean Circulation and Modeling*, Taylor and Francis, 15 February 2022 (Hardcover and Kindle). ISBN: 9780367365974, 0367366258. Available from Amazon, B&N, T&F. https://www.routledge.com/Introduction-to-Ocean-Circulation-and-Modeling/Gangopadhyay/p/book/9780367365974#

Gangopadhyay, Avijit, Enhanced eTextbook *Introduction to Ocean Circulation and Modeling*, March, 2022. (Enhanced color pdf with audio and video components). ISBN: 9781032201856, 1032201851. https://www.vitalsource.com/products/introduction-to-ocean-circulation-and-modeling-avijit-gangopadhyay-v9781032201856?duration=180.

Journal Articles:

Jensen, G.G., Gangopadhyay, A., Gawarkiewicz, G.G. *et al*. Observational evidence of a new type of cyclonic eddy of the Gulf Stream. *Sci Rep* 15, 27660 (2025). https://doi.org/10.1038/s41598-025-10796-3.

Silver, A., Gangopadhyay, A., Andres, M., & Gawarkiewicz, G. G. (2025). Seasonal variability observed in the Gulf Stream east of Cape Hatteras. *Journal of Geophysical Research: Oceans*, 130, e2024JC021543. https://doi.org/10.1029/2024JC021543.

Calado, L., Gangopadhyay, A., Watanabe, W.B. and I. da Silveira, (2025). Mushroom-Like Eddy Dipoles in the Brazil Current: Formation and Mesoscale Dynamics, Regional Studies in Marine Sciences, 90 (15), https://doi.org/10.1016/j.rsma.2025.104414.

Gawarkiewicz, G. G., Taenzer, L. L., Silver, A., Ryan, S., Green, E., **Gangopadhyay, A**., et al. (2025). Mapping of a mid-depth Salinity Maximum Intrusion south of New England in June 2021 and implications for cross-shelf exchange. Journal of Geophysical Research: Oceans, 130, e2024JC021536. https://doi.org/10.1029/2024JC021536.

Shee, A., S. Sil, **A. Gangopadhyay**, N. Agarwal, and K. K. Sandeep, (2025). Upper Ocean Biophysical Budget Analysis during Cyclone using Regional Ocean Modeling System. Ocean Modeling. 195, 102524. https://doi.org/10.1016/j.ocemod.2025.102524.

Gifford, I., **Gangopadhyay, A**., Andres, M., Oliver, H., Gawarkiewicz, G., & Silver, A. (2024). Synchronicity of the Gulf Stream path downstream of Cape Hatteras and the region of maximum wind stress curl. *Scientific Reports*, *14*(1), 18479.

Friedland, K.D., Hubert du Pontavice, Jaime Palter, David W. Townsend, Paula Fratantoni, Adrienne Silver, **Avijit Gangopadhyay**, Regime change in northwest Atlantic sea surface temperatures revealed using a quantile approach. 2024. Regional Studies in Marine Sciences, 71, April, 2024. 103398.

Friedland, Kevin, D., Paula Fratantoni, Adrienne Silver, Damian C Brady, Avijit Gangopadhyay, Scott I Large, Ryan E Morse, David W Townsend, Marjorie AM Friedrichs, D Christopher Melrose, 2024. Changing source waters on the Northeast US Continental Shelf: Variation in nutrient supply and phytoplankton biomass, Continental Shelf Research, 281, Oct 2024, 105319.

Deogharia, R., Gupta, H., Sil, S., **Gangopadhyay, Avijit** and Shee, A., On the evidence of helico-spiralling recirculation within coherent cores of eddies using Lagrangian approach, *Scientific Reports*, **14** (1) 11014, 2024. https://doi.org/10.1038/s41598-024-61744-6

Aouni, El. A., Ismail Bessa, Karim Hilmi, Hassan Moustahfid, Avijit Gangopadhyay, Enhanced coastal upwelling indices for Moroccan Atlantic Coast, their force–response variability and sensitivity to extreme events between 1993 and 2021, Regional Studies in Marine Science, Volume 77, 2024, 103611, https://doi.org/10.1016/j.rsma.2024.103611.

Shee, A., Sil, S. & **Gangopadhyay, A**. Recent changes in the upper oceanic water masses over the Indian Ocean using Argo data. *Sci Rep* **13**, 20252 (2023). https://doi.org/10.1038/s41598-023-47658-9.

Gupta, Hitesh, Sourav Sil, **Avijit Gangopadhyay**, Glen Gawarkiewicz, Marine Heat Waves in the Bay of Bengal and their possible links to IOD and ENSO (2008–2018). 2023. Climate Dynamics (2023): 1-19.

Gifford, Ian, Silver, Adrienne, **Gangopadhyay, Avijit**, Andres, Magdalena, Gawarkiewicz, Glen, & Oliver, Hilde. 2023. Monthly and Annual contour lines of the zero and the positive maximum of the Wind Stress Curl over Western North Atlantic during 1980-2019 and the Gulf Stream path during 1993-2019. https://doi.org/10.5281/zenodo.8217388

Gifford, Ian, **Gangopadhyay, Avijit**, Andres, Magdalena, Gawarkiewicz, Glen, Oliver, Hilde, & Silver, Adrienne. 2023. Wind Stress, Wind Stress Curl, and Upwelling Velocities in the Northwest Atlantic (80-45W, 30-45N) during 1980-2019. https://doi.org/10.5281/zenodo.8200832

Hendrickson, Lisa, **Avijit Gangopadhyay** and Hassan Moustahfid, Cyclical trends in the biomass and mean body weight indices of two Northwest Atlantic squid species and their synchronies with Gulf Stream latitudinal positions, 2023 (Marine Biology, May 2023).

Brandini, F B, Adrienne Silver and **Avijit Gangopadhyay**, Wind-driven advection across temperature gradients enhances iron-induced phytoplankton blooms in the Antarctic Polar Front, 2023 (Journal of Marine Systems, May 2023).

Vilela-Silva, F., Silveira, I.C., Napolitano, D.C., Souza-Neto, P.W., Biló, T.C. and **Gangopadhyay, A**., 2023. On the Deep Western Boundary Current Separation and Anticyclone Genesis off Northeast Brazil. *Journal of Geophysical Research: Oceans*, *128*(1), p.e2022JC019168.

Silver, A., **Gangopadhyay, A.**, Gawarkiewicz, G., Fratantoni, P. and Clark, J., 2023. Increased gulf stream warm core ring formations contributes to an observed increase in salinity maximum intrusions on the Northeast Shelf. *Scientific Reports*, *13*(1), pp.1-9.

Salois, S.L., Hyde, K.J., Silver, A., Lowman, B.A., **Gangopadhyay, A**., Gawarkiewicz, G., Mercer, A.J., Manderson, J.P., Gaichas, S.K., Hocking, D.J. and Galuardi, B., 2023. Shelf break exchange processes influence the availability of the northern shortfin squid, Illex illecebrosus, in the Northwest Atlantic. *Fisheries Oceanography*. https://doi.org/10.1111/fog.12640

Porter, N., Silver, A. & **Gangopadhyay, A**. Warm core ring trajectories in the Northwest Atlantic slope sea (2000–2010) *Zenodo*. 1.0.0 (2022) https://doi.org/10.5281/zenodo.7406675.

Silver, Adrienne, **Avijit Gangopadhyay**, Glen Gawarkiewicz, & Paula Fratantoni. (2023). Monthly maps of Warm Core Ring Occupancy and occurrences of Salinity Maximum Intrusions in the Slope Sea (1990-2019) (1.0.0). Zenodo. https://doi.org/10.5281/zenodo.7859078.

Silver, Adrienne, **Avijit Gangopadhyay**, Glen Gawarkiewicz, Magdalena Andres and Jenifer Clark, 2022. Spatial variability of movement, structure, and formation of Warm Core Rings in the Northwest Atlantic Slope Sea, Journal of Geophysical Research: Oceans, DOI: 10.1029/2022JC018737.

Mandal, Samiran, **Avijit Gangopadhyay**, R. Balaji, and Sourav Sil, , 2022. Evolution of a Sub-mesoscale Eddy Leeward of Andaman Islands from HF Radars, IEEE-Geoscience and Remote Sensing Letters, https://doi.org/ 10.1109/LGRS.2022.3156288.

Silver, Adrienne, **Avijit Gangopadhyay** and Glen Gawarkiewicz. (2022). Warm Core Ring Trajectories in the Northwest Atlantic Slope Sea (2011-2020) (1.0.0) [Data set]. Zenodo. https://doi.org/10.5281/zenodo.6436380

Sil, S., **Gangopadhyay, A.,** Gawarkiewicz, G. and Pramanik, S., 2021. Shifting seasonality of cyclones and western boundary current interactions in Bay of Bengal as observed during Amphan and Fani. Nature - Scientific Reports, Nov, 2021, 11(1), 22052 (2021). https://doi.org/10.1038/s41598-021-01607-6.

Silver, A., **Gangopadhyay, A**., Gawarkiewicz, G., Taylor, A. and Sanchez-Franks, A., 2021. Forecasting the Gulf Stream Path using Buoyancy and Wind Forcing over the North Atlantic. Journal of Geophysical Research: Oceans, 126(8), p.e2021JC017614.

Lambhate, D., Sharma, R., Clark, J., **Gangopadhyay, A**. and Subramani, D., 2021. W-Net: A Deep Network for Simultaneous Identification of Gulf Stream and Rings from Concurrent Satellite Images of Sea Surface Temperature and Height. IEEE Transactions on Geoscience and Remote Sensing. 10.1109/TGRS.2021.3096202.

Mandal, S., Behera, N., **Gangopadhyay, A**., Susanto, R.D. and Pandey, P.C., 2021. Evidence of a chlorophyll "tongue" in the Malacca Strait from satellite observations. Journal of Marine Systems, 223, p.103610.

Silver, A., **Gangopadhyay, A**., Gawarkiewicz, G., Silva, E.N.S. and Clark, J., 2021: Interannual and seasonal asymmetries in Gulf Stream Ring Formations from 1980 to 2019. *Sci Rep* **11,** 2207 (2021). https://doi.org/10.1038/s41598-021-81827-y.

Moustahfid, H., Lisa C. Hendrickson, Alexander Arkhipkin, Graham J. Pierce, **Avijit Gangopadhyay**, Hideaki Kidokoro, Unai Markaida, Chingiz Nigmatullin, Warwick H. Sauer, Patrizia Jereb, Gretta Pecl, Thibaut de la Chesnais, Luca Ceriola, Najih Lazar, Christopher J. Firmin & Vladimir Laptikhovsky, 2021: Ecological-Fishery Forecasting of Squid Stock Dynamics under Climate Variability and Change: Review, Challenges, and Recommendations, Reviews in Fisheries Science & Aquaculture, DOI: 10.1080/23308249.2020.1864720.

Silva, E.N.S., **A. Gangopadhyay,** G. Fay, M. Welandawe, G. Gawarkiewicz, A. M. Silver, and J. Clark, 2020: A survival analysis of the warm core rings of the Gulf Stream. Journal of Geophysical Research: Oceans, 125, e2020JC016507. https://doi.org/10.1029/2020JC016507.

Krelling, Ana Paula Morais, Ilson C. A. da Silveira, Paulo S. Polito, **Avijit Gangopadhyay**, Renato Parkinson Martins, Jose Antonio M. Lima, Fernando de Oliveira Marin, (2020): A Newly Observed Quasi-stationary subsurface anticyclone of the North Brazil Undercurrent at 4°S: The Potiguar Eddy, *Journal of Geophysical Research: Oceans,* 125, e2020JC016268. https://doi.org/10.1029/2020JC016268.

Mandal, S., Sil, S., **Gangopadhyay, A**., Jena, B.K., Venkatesan, R. and Gawarkiewicz, G., 2020. Seasonal and Tidal Variability of Surface Currents in the Western Andaman Sea Using HF Radars and Buoy Observations During 2016-2017. IEEE Transactions on Geoscience and Remote Sensing. 10.1109/TGRS.2020.3032885

Gangopadhyay, A., & Gawarkiewicz, G. (2020). Yearly census of Gulf Stream Warm Core Ring formation from 1980 to 2017. Biological and Chemical oceanography data management office (BCO-DMO). Dataset version 2020-05-06. https://doi.org/10.26008/1912/bco-dmo.810182.1

Gangopadhyay, A., N. Etige, G. Gawarkiewicz, A. M. Silver, M. Monim and J. Clark, 2020. A Census of the Warm Core Rings of the Gulf Stream (1980-2017). *Journal of Geophysical Research, Oceans,* 125, e2019JC016033. https://doi.org/10.1029/2019JC016033.

Krelling, A.P. M., **Gangopadhyay, A.,** da Silveira, I. and Vilela-Silva, F., 2020. Development of a feature-oriented regional modelling system for the North Brazil Undercurrent region (1°–11° S) and its application to a process study on the genesis of the Potiguar Eddy. *Journal of Operational Oceanography*, pp.1-18. https://doi.org/10.1080/1755876X.2020.1743049.

Pramanik, S., S. Sil, **A. Gangopadhyay**, M. K. Singh, and N. Behera, 2020. Interannual Variability of the Chlorophyll-a Concentration over Sri Lankan Dome in the Bay of Bengal, *International Journal of Remote Sensing,* 41:15, 5974-5991, https://doi.org/10.1080/01431161.2020.1727057.

Mandal, S., Sil, S., **Gangopadhyay, A**., Jena, B.K. and Venkatesan, R., 2020. On the nature of tidal asymmetry in the Gulf of Khambhat, Arabian Sea using HF radar surface currents. *Estuarine, Coastal and Shelf Science*, 232, p.106481.

Mandal, S., Sil, S. and **Gangopadhyay, A**., 2020. Tide-current-eddy interaction: A seasonal study using high frequency radar observations along the western Bay of Bengal near 16° N. *Estuarine, Coastal and Shelf Science*, 232, p.106523.

Gangopadhyay, A., G. Gawarkiewicz, N. Etige, M. Monim and J. Clark, 2019. An Observed Regime Shift in the Formation of Warm Core Rings from the Gulf Stream, *Nature - Scientific Reports,* https://doi.org/10.1038/s41598-019-48661-9. www.nature.com/articles/s41598-019-48661-9.

Shee, A., Sil, S., **Gangopadhyay, A**., Gawarkiewicz, G., & Ravichandran, M. (2019). Seasonal evolution of oceanic upper layer processes in the northern Bay of Bengal following a single Argo float. *Geophysical Research Letters*, 46. 5369-5377. https://doi.org/10.1029/2019GL082078.

Jana, S., **A. Gangopadhyay**, P. Lermusiaux, A. Chakraborty, A., S. Sil, and P.J. Haley, (2018): High-resolution simulations for the Bay of Bengal: Sensitivity to River Input and Wind Forcing, Journal of Marine Systems, 187, 206-222, https://doi.org/10.1016/j.jmarsys.2018.08.001.

Mandal, S., S. Sil, **A. Gangopadhyay**, T. Murty and D. Swain, (2018): On Extracting High Frequency Tidal Variability from HF Radar data in the Northwestern Bay of Bengal, J. of Operational Oceanography, 2018-6:1-17, https://doi.org/10.1080/1755876X.2018.1479571

Gawarkiewicz, G., R.E. Todd, W. Zhang, J. Partida, **A. Gangopadhyay**, M.-U.-H. Monim, P. Fratantoni, A. Malek Mercer, and M. Dent. 2018. The changing nature of shelf-break exchange revealed by the OOI Pioneer Array. Oceanography 31(1):60–70, https://doi.org/10.5670/oceanog.2018.110

Lermusiaux, P.F.J., P.J. Haley Jr., S. Jana, A. Gupta, C.S. Kulkarni, C. Mirabito, W.H. Ali, D.N. Subramani, A. Dutt, J. Lin, A.Y. Shcherbina, C.M. Lee, and **A. Gangopadhyay**, 2017: Optimal Planning and Sampling Predictions for Autonomous and Lagrangian Platforms and Sensors in the Northern Arabian Sea, Oceanography, 30(2):172–185, https://doi.org/10.5670/oceanog.2017.242

Bisagni, J.J., **A. Gangopadhyay**, and A. Sanchez-Franks, 2017: Secular change and inter-annual variability of the Gulf Stream position, 1993–2013, 70°−55°W. Deep Sea Research. Part I (2017), http://dx.doi.org/10.1016/j.dsr.2017.04.001.

Gangopadhyay, A., A. H. Chaudhuri, and A. H. Taylor, 2016: On the nature of temporal variability along the Gulf Stream path from 75°W to 55°W. Earth Interactions. Vol 20 (2016), doi: 10.1175/EI-D-15-0025.1.

Chakraborty, A. and **Gangopadhyay, A**., 2016. Development of a high-resolution multiscale modeling and prediction system for Bay of Bengal, Part I: Climatology-based simulations. Open Journal of Marine Science, 6(1).

Chakraborty, A. and **Gangopadhyay, A.,** 2016. Development of a High-Resolution Multiscale Modeling and Prediction System for Bay of Bengal, Part II: An Application to October 2008. Open Journal of Marine Science, 6, pp.125-144.

Gangopadhyay, A., Jeffrey A. Rezendes, Kevin C. Lydon, Ramprasad Balasubramanian and Iren Valova, 2015: Towards an automated detection of the Gulf Stream North Wall from concurrent satellite images, MTS/IEEE Proceedings. Oceans'15. Washington DC. October, 2015.

Jana, S., **A. Gangopadhyay** and A. Chakraborty, 2015: Impact of Seasonal River Input on the Bay of Bengal simulation, Continental Shelf Research, doi:10.1016/j.csr.2015.05.001.

Warn-Varnas, A., D.S. Ko, and **A. Gangopadhyay**, 2015. Signatures of Tidal interference patterns in South China Sea, Journal of Oceanography, DOI 10.1007/s10872-015-0282-8.

Soutelino, R.G., **A. Gangopadhyay**, and I. C. A. da Silveira, 2013: The roles of topography and vertical shear on the eddy formation near the site of origin of the Brazil Current Continental Shelf Research, 70 (2013), 46-60. http://dx.doi.org/10.1016/j.csr.2013.10.001.

Gangopadhyay, A., N. Bharath Raj, A. Chaudhuri, M.T. Babu and D. Sengupta, 2013: On the nature of meandering od the springtime western boundary current in the Bay of Bengal, Geophysical Research Letters, VOL. 40, 1–6, doi:10.1002/grl.50412, 2013.

Schmidt, A. C. K., **Gangopadhyay, A**., 2012: An operational Circulation Ocean Prediction System for the Northwest Atlantic: hindcasting during July-September of 2006. Continental Shelf Research, http://dx.doi.org/10.1016/j.csr.2012.08.017.

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Brown, W, Boicourt, W., C. Flagg, **A. Gangopadhyay**, O. Schofield, S. Glenn and J. Kohut, 2012. Mapping the Mid-Atlantic Cold Pool Evolution and Variability with Ocean Gliders and Numerical Models, MTS/IEEE Proceedings, http:/dx.doi.org/10.1109/OCEANS.2012.6404970.

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Gangopadhyay, A., P.F.J. Lermusiaux, L. K. Rosenfeld, A.R. Robinson, L. Calado, H.S. Kim, W.G. Leslie, and P.J. Haley, Jr., 2011: California Current System: A Multiscale Overview and the Development of a Feature-Oriented Regional Modeling System (FORMS), (Dyn. of Atmosphere and Oceans). DOI information: 10.1016/j.dynatmoce.2011.04.003. Volume 52, Issues 1–2, September 2011, Pages 131–169.

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Hendrickson, L. and A. Gangopadhyay, 2017. Using oceanographic and climatic indices to forecast *Illex illecebrosus* abundance on the USA fishing grounds, Presented at the International workshop on 'Improving our knowledge on the effects of climate variability and change on the population dynamics of short-lived species to inform fisheries management', UN FAO Viale delle Terme di Caracalla, 00153 Roma, Italy. Nov. 21-23, 2017.

Moustahfid, H., A. Gangopadhyay, and L. Hendrickson, 2017. Advances in forecasting physics and ecology/biology: lessons learned, challenges and opportunities for fisheries. Presented at the International workshop on 'Improving our knowledge on the effects of climate variability and change on the population dynamics of short-lived species to inform fisheries management', UN FAO Viale delle Terme di Caracalla, 00153 Roma, Italy. Nov. 21-23, 2017.

Monim, M., A. Gangopadhyay, J. Bisagni and G. Gawarkiewicz. 2018. Seasonal and Inter-annual Variability of the Gulf Stream Warm Core Rings (2000-2016); Ocean Sciences, 2018, Portland, OR, USA.

Gangopadhyay, A. 2018. An Overview of Western and Eastern Boundary Currents and their changing character with Climate Change, FAO-UN Workshop on "Improving our knowledge on the effects of climate change and variability on short-lived species population dynamics to inform fisheries management decisions," Rome, Nov 21-23, 2017.

Bisagni, James J., Avijit Gangopadhyay, Owen Nichols, Lisa Hendrickson and Roger Pettipas, 2018. Inter-annual variability of Gulf Stream warm-core ring/continental shelf encounters and longfin squid (Doryteuthis pealeii) abundance fluctuations, 4th International Symposium on the effects of Climate Change on the World's Oceans, June 4-8, 2018, Washington DC.

Glen Gawarkiewicz, G., Anna Malek Mercer, Paula Fratantoni, Robert Todd, and Avijit Gangopadhyay, Recent changes in shelfbreak exchange processes in the Middle Atlantic Bight, 4th International Symposium on the effects of Climate Change on the World's Oceans, June 4-8, 2018, Washington DC.

Moustahfid, H. and Avijit Gangopadhyay, The Changing Character of Western Boundary Currents with Climate Change and the Implications for Fisheries, 4th International Symposium on the effects of Climate Change on the World's Oceans, June 4-8, 2018, Washington DC.

Hendrickson, Lisa C. and Avijit Gangopadhyay, 2018. Boom or bust: oceanographic factors that influence Illex illecebrosus (Northern shortfin squid) abundance on the U.S. fishing grounds, Cephalopod International Advisory Council Conference, St Petersburg, FL, Nov. 12 - 16, 2018.

Singh, Manmeet, Saikat Pramanik, Sourav Sil and Avijit Gangopadhyay, Interannual Variability of the Southwest Monsoon Current (SMC) and its impact on the Chlorophyll Concentration: A study using MODIS data and ROMS simulations, WA2-1 P00138, PORSEC, 2018 South Korea.

Mandal, S., S. Sil and A. Gangopadhyay. Validation and Tidal Analysis of HF Radar Derived Ocean Surface Currents along the Odisha Coast, northwestern Bay of Bengal, AGU Fall Meeting, 10-14 Dec, Washington DC, 2018. OS21D-1597.

Mandal, S., Sil, S. and Gangopadhyay, A., 2018. Validation and Tidal Analysis of HF Radar Derived Ocean Surface Currents along the Odisha Coast, northwestern Bay of Bengal (352217). In *2018 Fall AGU Meeting*.

E. Nishchitha S. Silva, Avijit Gangopadhyay, Glen Gawarkiewicz, M. Monim , 2019. A Study to Understand 38 Years of Gulf Stream's Warm Core Rings: Variability, Regimes and Survival. IMS Student Symposium at SMAST, UMass Dartmouth. March 2019.

Vilela-Silva, F., da Silveira, I. C. A., Gangopadhyay, A., 2019. Characterizing the destabilization of Deep Western Boundary Current along the Pernambuco Plateau, IMS Student Symposium at SMAST, UMass Dartmouth. March 2019.

Braga, Ágata, Ilson C. A. da Silveira, Avijit Gangopadhyay, 2019. Description and Dynamics of the Santos Bifurcation, IMS Student Symposium at SMAST, UMass Dartmouth. March 2019.

Luko, Caique Dias, Ilson Carlos Almeida da Silveira and Avijit Gangopadhyay, 2019. Mesoscale structures of the South Equatorial Current Bifurcation northern branch, IMS Student Symposium at SMAST, UMass Dartmouth. March 2019. (Awarded Best Poster).

Gangopadhyay, A., Moustahfid, H. and Marsac, F., 2020, February. Climate Change Impacts, Vulnerabilities and Adaptations of Western Indian Ocean Marine Fisheries. In *Ocean Sciences Meeting 2020*. AGU.

Mandal, S., Sil, S., Gangopadhyay, A. and Jena, B.K., 2020, February. Evolution of a Coastal Mesoscale Cyclonic Eddy along the Western Bay of Bengal using HF Radar Observations. In *Ocean Sciences Meeting 2020*. AGU.

Subramani, D., Sharma, R. and Gangopadhyay, A., 2020, February. Deep Learning for Detecting Gulf Stream and Eddies from Satellite Images. In *Ocean Sciences Meeting 2020*. AGU.

Silver, A., Gangopadhyay, A., Etige, N.S., Gawarkiewicz, G., Bisagni, J.J., Monim, M. and Clark, J., 2020, February. A Census of Gulf Stream Warm and Cold Core Rings (1980-2017). In *Ocean Sciences Meeting 2020*. AGU.

El Aouni, Anass, Hassan Moustahfid, Karim Hilmi, Avijit Gangopadhyay, Ismail Bessa, 2021, A retrospective multi-scale, multi-parameter study of the upwelling dynamics along the North-West African Margin, B34A-07A, Fall AGU, Dec 2021.

Mandal, Samiran, Sourav Sil, and Avijit Gangopadhyay, 2021, Surface Circulation Features on the Western Andaman Sea: Observations from HF Radar, Ocean Society Of India, Osicon-202.

Hendrickson, Lisa. C., Avijit Gangopadhyay, and Hassan Moustahfid, 2022, Synchrony between inter-annual cycles of the Gulf Stream's mean latitudinal position and the abundance and mean body size indices of two fished squid species, Illex illecebrosus and Doryteuthis (Amerigo) pealeii. CIAC meeting, April 4-8, 2022, Sesimbra, Portugal.

Jana, S. and A. Gangopadhyay, 2022, Sound Speed variability over Bay of Bengal from Argo observations (2011-2020), OCEANS 2022, Feb 21-24, 2022, Chennai, India.

Silver, A., Gangopadhyay, A., Gawarkiewicz, G., Andres, M., and Clark, J., The Ring Corridor in the Western North Atlantic Slope Sea (2011-2020), Ocean Sciences Meeting, 2022. USA.

Porter, N., Avijit Gangopadhyay, Adrienne Silver and Jenifer Clark; The influence of the New England Seamount Chain on Warm Core Rings, IMS 2023 symposium, March 2023.

Gifford, Ian and Avijit Gangopadhyay, Wind Stress Curl and the Gulf Stream Path, IMS 2023 symposium, March 2023.

Hassan Moustahfid, Anass El Aouni, Karim Hilmi, Ismail Bessa, Jilali Bensbai, Avijit Gangopadhyay, Sensitivity of the upwelling system along the North-West African margin to extreme climatic events and ecological consequences. ECCOW-5, Session S5-P1. 17-21 April 2023. Page # 112 of Book of Abstracts of ECCOW5. https://meetings.pices.int/publications/book-of-abstracts/2023-ECCWO5-Book-of-Abstracts.pdf.

Silver, A., A. Gangopadhyay et al. (2025) PL42-A. Increased gulf stream warm core ring formations contributes to an observed increase in salinity maximum intrusions on the Northeast Shelf, Ocean Sciences Meeting 2024 in New Orleans, Feb 18-23, 2024.

Gawarkiewicz, G. et al. (2025) CP44D-1971. Mapping of a Salinity Maximum Intrusion South of New England, Ocean Sciences Meeting 2024 in New Orleans, Feb 18-23, 2024.

Jensen G. et al., (2025) PL44B-2289. A 2000-2022 Census of Cold Eddies in the Sargasso Sea south of the Gulf Stream, Ocean Sciences Meeting 2024 in New Orleans, Feb 18-23, 2024.

Wang, E. et al. (2025) PL44B-2293. Characteristics and Environmental Effects of a Warm Core Ring Crossing the New England Seamount Chain, Ocean Sciences Meeting 2024 in New Orleans, Feb 18-23, 2024.

Bhattacharjee, A., Gupta, H., Karmakar, N., Sil, S., and Gangopadhyay, A. (2025). Impact of Ocean Warming on Marine Heatwaves Characteristics in the Bay of Bengal, EGU General Assembly 2025, Vienna, Austria, 27 Apr–2 May 2025, EGU25-15182, https://doi.org/10.5194/egusphere-egu25-15182.

S Sil, S., Gangopadhyay, A., Das, S., Gupta, H., Shee, A., and Pramanik, S. (2025). Exploring Upper Layer Bio-Physical Processes in the Bay of Bengal using BGC-Argos, EGU General Assembly 2025, Vienna, Austria, 27 Apr–2 May 2025, EGU25-17322, https://doi.org/10.5194/egusphere-egu25-17322.

S Sil, S., Gangopadhyay, A., Shee, A., Das, S., (2025). Twenty years of Argo in the Bay of Bengal: Unique observations for studying the diurnal to interannual ocean processes. Ninth National Conference of Ocean Society of India (OSICON-25), pp. 5 – 7 February, Goa.

Jana, S., Gangopadhyay, A., Lermusiaux, P., and Chakraborty, A. (2025). New insights into the sonic layer depth in the Bay of Bengal from ARGO observations. Ninth National Conference of Ocean Society of India (OSICON-25), pp. 5 – 7 February, Goa.

Avijit Gangopadhyay. Invited Talk (2025). New insights on the Gulf Stream and its eddies from four decades of synoptic observations: (1980-2023). Ninth National Conference of Ocean Society of India (OSICON-25), pp. 5 – 7 February, Goa.

Sil, S., and Gangopadhyay, A., Gupta, H., and Bhattacharjee, A. (2025). Marine Heatwaves in the Bay of Bengal – Possible Mechanisms and Impacts (OS15-A011). 27 Jul – 01 Aug 2025, AOGS-25, Singapore.

Gupta, H., Bhattacharjee, A., Sil, S., and Gangopadhyay, A. (2025). A Hybrid Threshold-machine Learning Algorithm for Detection and Interannual Variability Characterization of the Springtime Western Boundary Current in the Bay of Bengal (OS03-A011), 27 Jul – 01 Aug 2025, AOGS-25, Singapore.

Invited Speaker Presentations (Selected Few):

MIT Club of New Bedford, 2002; AGU Ocean Sciences, 2004; IIT Kharagpur; Ecuador Numerical Modeling Workshop; Chile, UCV; Brazil – IEAPM MODOCEANO I Keynote Speaker 2008; MARACOOS Annual Meeting – Data Assimilation Panel 2011**;** Brazil –IEAPM MODOCEANO II Keynote Speaker 2012; Multiple Lectures during 2005-2014 at IITKGP, IITBBS and IOUSP; Fulbright Invited Lectures at IIT Guwahati, (Sept, 2013), Dhaka University, Bangladesh (February, 2014). Amity University, Kolkata, 2016. IITKGP Regional Ocean Modeling Conference, 2016. Raytheon, MA, 2016. IITBBS and IIT Kanpur in 2018; WHOI PO Seminar 2020; URI PO Seminar 2021. Invited Talk on National Science Day (28 February 2022) on the occasion of Sir C V Raman's birthday on 'Future of Our Earth' at the Indian Institute of Science, Education and Research (IISER), Bhubaneswar.

Session Chairs (Selected Few):

Ocean Sciences Meeting 2008: Feature models – Processes and Methods for Forecasting
Meeting of the Americas in Brazil: 2010: Dynamics and Processes in Southwestern Atlantic. Fulbright Selection Committee Chair for Indian Scholars coming to US (2013-2014). IITKGP Recent Advances in Regional Modeling (2016). MABPOM, Session 4, October, 2016. Western Boundary Currents, FAO-UN Workshop on "Improving our knowledge on the effects of climate change and variability on short-lived species population dynamics to inform fisheries management decisions," Rome, Nov 21-23, 2018. Co-Convener of Session 8: Understanding the impact of Abrupt Ocean Warming and Continental Scale Connections on marine productivity and food security via Western Boundary Currents, 4th International Symposium on the effects of Climate Change on the World's Oceans, June 4-8, 2018, Washington DC.

Other Notable Activities: Member, Center for Ocean Leadership (2006-2008); NERACOOS Board Member (2007-2008). Dale Carnegie Leadership Program (2007). Alternate Member NERACOOS Board (2009-2017).

Reviews (Selected Few):

Book Review on Mechanics (1998); NSF Panel Reviewer (PO), 2015, 2019, 2021; NASA-ROSES; BP-GOM Research Initiative Proposals (2013); Fulbright Reviewer for US Scholars to India, 2014, 2015, 2016.

Current and Past Research Grants:

Current Funding:

1. **Collaborative Research:** Recent Changes in Shelfbreak Exchange on the New England Shelf: Process-Oriented Observations of Salinity Maximum Intrusions, Funded by NSF, for a total budget of $241,229 for 3 years. (8/1/19 – 7/31/22). NCE granted till 7/31/23.

2. **Collaborative Research:** Investigating the Asymmetries and Temporally Varying Nature of Gulf Stream Ring Formation. Funded by NSF. $316,901 for 3 years. (9/1/21 – 8/31/24).

Past Research Grants:

NSF/GLOBEC Pan Regional Synthesis: Collaborative Research: The Effect of Varying Freshwater Inputs On Regional Ecosystems in the North Atlantic (Gangopadhyay, PI, with Rutgers and UMaine); US$ 600,000; 9/1/08 – 6/30/13 (4 years)

Phased Deployment Operation of the Mid-Atlantic Regional Coastal Ocean Observing System (MARACOOS); (Scott Glenn, PI; Gangopadhyay: $80K/year for 10 years starting 10/07); NOAA Award.

Operational Forecasting of the North Brazil Current Rings, (Gangopadhyay, PI), Horizon Marine Inc., Marion, MA, US$50,000; 07/1/12 – 06/30/13.

Development of a Shelf-flow Feature Model for Operational Forecasting of the North Brazil Current Rings, (Gangopadhyay, PI), Horizon Marine Inc., Marion, MA, US$50,000; 07/1/11 – 06/30/12.

Development of a Dynamic Numerical Model for North Brazil Current Region (Gangopadhyay, PI) Horizon Marine Inc., Marion, MA, Total Award amount: US$250,000**;** 06/01/08 – 06/30/11**.**

U.S. GLOBEC: NWA Georges Bank: Impacts of Climate and Basin-Scale Variability on Seeding and Production of *Calanus finmarchicus* in the GOMGB Region ((Gangopadhyay, PI) $452,245 – 01/01/2006—12/31/09.

John Adams Innovative Institution: A Proposal to establish a Center for Excellence in Advanced Ocean Observation System, (Awarded February 2006) (Gangopadhyay, PI) $300,000 –15 months.

Integrating Feature Oriented High-resolution Synoptic Observations for MODAS. $283,142. ONR Award # N000140310411 (Gangopadhyay PI:) Period: 2/1/2003 to 12/31/2005.

Development of a Monterey Bay Forecasting System Using The Regional Ocean Modeling System (ROMS) $45,000. ONR Award. (Gangopadhyay PI) Period: 12/1/2002 to 11/30/2004.

Climate-Related Interannual Variability of Potential New Production Over the Western North Atlantic Ocean, NASA $661,000; (Co-PI, with J. Bisagni (PI) and J. Goes). 09/01/03- 08/31/06 (3 years)

Biophysical modeling of the Northern Humboldt Current System. $10,000. IAI Award. (Gangopadhyay PI) Period: 12/1/2002 to 11/30/2003.

Monitoring system for the Buzzards Bay Natural Laboratory, UMass Award, $150,000. PIs: Brown, Gangopadhyay, Gordon, 6/1/01-12/31/02.

HPNC: Internet2 Connection for the University of Massachusetts Dartmouth's SMAST, $150,000, NSF, PIs: Brown, Gangopadhyay, Rothschild and Bisagni, 10/1/01-9/30/03.

Development of Regional Fisheries/Oceanography Application Centers for Alaska and Massachusetts, $2,000,000. NASA Award. PI: Brown, Co-I: Gangopadhyay, 3/1/02-9/30/03.

President Wilson's S&T initiative: $300K. (Jointly with UMB)

Multiple other grants in collaboration with Indian and Brazilian Colleagues in India and Brazil.

Professional Activities:

Members of American Geophysical Union, American Meteorological Society, The Oceanography Society and Sigma XI; Reviewer for the National Science Foundation, NASA, Chilean National Science Foundation (CONCEIT), Journal of Physical Oceanography, Continental Shelf Research, Journal of Geophysical Research, Geophysical Research Letters, Journal of Marine Systems, Dynamics of Atmosphere and Oceans, Ocean Modeling, Ocean Dynamics, IEEE, Oceanography, Journal of Operational Oceanography, Journal of Estuarine Coastal and Shelf Sciences.

Collaborators in past 48 months:

Glen Gawarkiewicz (WHOI); Arnold Taylor (PML, UK); Pierre Lermusiaux (MIT); Glenn Flierl (MIT); H. Moustahfid (NOAA); Deepak Subramani (IISc, Bangalore); Arun Chakraborty (IITKGP); S. Sil (IITBBS), S. Mandal (IITB), PC Pandey (IITGN); S. Tripathy (IITKGP); Ilson da Silveira (USP, Sao Paulo, Brazil); Oscar Schofield (Rutgers), Magdalena Andres (WHOI); Leslie Rosenfeld (NPS); Fei Chai (UMaine), Enrique Curchister (Rutgers), Scott Glenn (Rutgers); Dale Haidvogel (Rutgers); Lisa Hendrickson (NEFSC, Woods Hole, MA); Yi Chao (JPL/SeaTrec). Many others.

Students/Postdoctoral Scholars:

Recent Staff members at the Ocean Analysis Lab at SMAST, UMass Dartmouth:

Mr. Nicholas Porter, Graduated with MS, January 2024, SMAST UMass Dartmouth.
Ms. Grace Jensen, Graduated with MS, August 2024 SMAST, UMass Dartmouth.

Recent Undergraduate Students (WHOI-UMass Blue Economy Interns):

Mr. Nicholas Carvalho (Physics)
Mr. Zachary Pereira (Physics)

Past staff members at UMD and at JPL/Caltech:

Dr. Zhangfan Xing (JPL/CalTech PDF) 1996-97, Presently at JPL. Kalman Filter Assimilation.
Dr. Hyun-Sook Kim (UMD/CMAST PDF) 97-98; 2003-06; Now at NCEP, Silver Spring, MD..
Dr. Lyon Lanarolle (UMD/CMAST PDF) 1998-2002; Now at Rutgers.
Mr. Andrew Smart (UMD/Comp. Sc.) 1998-99 Presently at UMD.
Mr. Anselm Gademann (UMD/Physics MS) 1997-98; Cod and Climate; PhD (Trinity College).
Mr. Marcus Stollsteimer (UMD/Physics MS) 1997-98 – t-s-chla model for GOMGB.
Mr. Frank Deppe (UMD/Physics MS) 1998-99 -. Chlorophyll in Mass Bay.
Mr. Thomas Bierweiler (UMD/Physics MS) 1998-99 - Feature models for Gulf of Maine.
Ms. Jessica Hauser (UMD/Physics UG Commonwealth Scholar) 1998-99.
Mr. John McCarthy (UMD Maths MS) 2000-2001 –Physics MS- Presently at NUWC.
Dr. Ann-Marie Brunner, (UMD/Physics MS) 2001-2002. Later – SMAST PhD.

Dr. Jorge Mesias, Research Associate, OMAL/SMAST.
Dr. Leandro Calado, Ph.D. Student (2006, USP, Brazil), FORMS for Brazil Current system.
Dr. Chithra Bhanu Shaji, PDF, Now Professor at IITKGP, FORMS for Arabian Sea.
Dr. Fatima Borges, PDF, now in Portugal.
Professor Abhijit Mitra, Visiting Scholar, Faculty of Calcutta University (May-June, 2007)
Dr. Anumeha Dube, Postdoctoral Scholar, UMass, OMAL/SMAST (11/07 – 9/08).
Professor Arun Chakraborty, Visiting Professor from IITKGP. Summers of (2009, 2011, 2012)
Dr. Ayan Chaudhuri, PhD Student and PDF, UMass, OMAL/SMAST (Now with AER, MA)
Ms. Carolina Nobre, MS student, SMS (Graduated, 7/2009; Now with WHOI)
Ms. Laurie Agel, MS, UMass SMS (Now at UMass Lowell for PhD)
Mr. Mithun Mullick, MS, UMass SMS (Completed)
Mr. Rafael Soutelino, PhD Student from IOUSP, USP, Brazil (Completed).
Mr. Jan-Kristian Jensen, FFI, Norway, University of Bergen (PhD student).
Mr. Sudip Jana, Fulbright PhD, 2014) (Now Asst Professor at Adamas Univ., Kolkata, India).
Dr. Ana Paula Krelling, First UMassD-USP Dual-Degree PhD (February, 2015).
Dr. Andre Schmidt, Postdoctoral Associate (From Nov, 2007 to November, 2014).
Mr. Monim Mahmud, MS, UMass IMS (Graduated May 2017; Now at RPS, RI, USA)
Ms. Agata Braga, BS. Senior Thesis from USP, Brazil. 2016-17. (Completed MS, Co-Advisor).
Mr. Nish Etige Silva (MS, UMass Dartmouth), Defended May 2018. Now at AER (Scientist).
Mr. Felipe vilela da Silva, (BS, senior) from USP (2019).
Mr. Pedro Sueza Neto (BS, senior) from USP (2019).
Ms. Vanessa Charles, BS Senior Intern, UMass Dartmouth, 2019-2020.
Mr. Arthur Grizotti, BS-MS Student, ECE, UMass Dartmouth, 2021.
Ms. Adrienne Silver, PhD Completed. SMAST UMass Dartmouth, 2018-2023. (Now at AER)
Mr. Ian Hunter Gifford, BS-MS, Physics, UMass Dartmouth, 2021-2023. (Now at UMiami)
Ms. Grace Jensen, MS. Completed (2024), UMass Dartmouth, 2022-2024. (Now at MIT-WHOI)

Teaching activities include designing of multiple new courses for SMAST and UMass Dartmouth including Graduate level courses in (i) Ocean Circulation and Modeling, (ii) Ocean Atmosphere Dynamics. Undergraduate Courses for University-wide Non-Science Majors in (i) Introduction to Climate, and (ii) Co-teaching another undergraduate course on Ocean Hazards. Also taught senior undergraduate courses on (i) Waves and (ii) Vibrations in the Physics Department. 2-3 lectures almost every year to students at IITBBS in their MS and PhD programs in Oceanography and Climate related courses.