

Siddhant Kerhalkar

POSTDOCTORAL RESEARCHER · DEPARTMENT OF OCEANOGRAPHY

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Education

University of Massachusetts Dartmouth (UMassD)

North Dartmouth, USA

PHD IN MARINE AND ATMOSPHERIC SYSTEM MODELING AND ANALYSIS

2019 - 2025

• Advisor: Dr. Amit Tandon

GPA: **3.99/4.0**

Indian Institute of Technology Bhubaneswar

Bhubaneswar, India

B.TECH(HONS) IN MECHANICAL ENGINEERING

2015 - 2019

• Undergraduate thesis advisor: Dr. Sourav Sil and Dr. Yogesh Bhumkar

GPA: **9.15/10.0**

Professional Experience

- 2025-present **Postdoc.**, Department of Oceanography, University of Hawai'i Mānoa (UHM). Advisor: Dr. Hyodae Seo
- 2019-2025 **Research Assistant**, School for Marine Science and Technology (SMST), UMassD.
- 2018-2019 **Research Assistant**, Indian Institute of Technology Bhubaneswar.
- 2018 **Summer Fellow**, Indian National Centre for Ocean Information Services. Advisor: Dr Francis P.A.

Field Experience

- 2024 **R/V Thomas G Thompson, Bay of Bengal** (29 days)
Fast-CTD watch team and processing WaMoS data as a part of ASTraL (Office of Naval Research)
- 2023 **R/V Roger Revelle, Arabian Sea** (17 days)
uCTD watch team and processing ship MET, TSG and WaMoS data as a part of ASTraL (Office of Naval Research)
- 2020 **R/V Sally Ride, Eastern Tropical North Pacific** (21 days)
Collecting water samples, deploying CTD casts, process CTD data and shore support using remote sensing to study N-loss in ODZs (National Science Foundation)
- 2019 **R/V Lucky Lady, Buzzards Bay** (1 day)
Training cruise to collect water samples and deploy CTD casts (UMassD).
- R/V Sally Ride, Bay of Bengal** (28 days)
Fast-CTD Deployment, Watch and Recovery Team as a part of MISO-BoB (Office of Naval Research)

Publications

PEER-REVIEWED ARTICLES

- Pham, H.T., Sarkar, S., **Kerhalkar, S.**, & Tandon, A. (in review). Wind-Front Interactions Drive Intense Turbulence at the Oceanic Submesoscale. *Geophysical Research Letters* 53.11, e2026GL121719.
doi: <https://doi.org/10.1029/2026GL121719>
- Kerhalkar, S.**, Tandon, A., & MacKinnon, J. A. (2026). Impacts of Salinity Stratification on sub-seasonal SST warming in the Northern Indian Ocean. *Journal of Geophysical Research: Oceans*. doi: <https://doi.org/10.1029/2025JC023486>
- Kerhalkar, S.**, Tandon, A., Farrar, J. T., MacKinnon, J. A., Schlosser, T., Johnson, L., Lucas, A.J., Hormann, V., & Centurioni, L. (2026) Modulation of Diurnal SST and Diurnal Warm Layer Variability by Salinity-Driven Stratification in the Bay of Bengal. *Journal of Physical Oceanography*. doi: <https://doi.org/10.1175/JPO-D-25-0134.1>
- Kerhalkar, S.**, Kannad, A., Kinsella, A., Tandon, A., Sprintall, J., & Lee, C.M. (2025). Monsoon-Frontal Interactions Drive Cyclone Biparjoy's Wake Recovery in the Arabian Sea. *Geophysical Research Letters*. doi: 10.1029/2024GL112413
- Sarkar, D., **Kerhalkar, S.**, & Tandon, A. (in prep). Inaccuracies in reanalysis products: A case study of the Arabian Sea from 2017 to 2018. *Journal of Climate*.
- Kokkiralala, A., **Kerhalkar, S.**, Zavala-Garay J., & Tandon, A. (in prep). Comparison of Cruise Hydrographic measurements with high resolution Reanalysis models. *Journal TBD*

Kerhalkar, S., Tandon, A., Hormann, V., & Centurioni, L. (2022). Using drifter observations to unearth the mysteries of Monsoons in the Bay of Bengal. In OCEANS 2022-Chennai (pp. 1-7). IEEE.
doi: 10.1109/OCEANSSChennai45887.2022.9775481

GRAY LITERATURE

Kerhalkar, S., & Tandon, A. Impacts of Salinity Stratification on Diurnal and Sub-seasonal SST warming in the Northern Indian Ocean, Newsletter, The Indian Ocean Bubble, Issue 23, June 2026

Kerhalkar, S., Salinity Stratification and Lateral Variability in the Northern Indian Ocean: From Calm Diurnal Cycles to Cyclone-Induced Recovery, PhD Thesis, 2025

Kerhalkar, S., Applications of Computational Aero-Acoustics in understanding acoustic properties of oceans. Undergraduate Thesis, 2019

Kerhalkar, S., Francis, P.A., Studying the Vertical Ocean Mixing in Bay of Bengal and Arabian Sea using the KPP Boundary Layer scheme Summer Fellowship Report, 2018

DATASETS

Kerhalkar, S., Tandon, A., Farrar, J. T., MacKinnon, J. A., Schlosser, T., Johnson, L., Lucas, A.J., Hormann, V., & Centurioni, L.(2025) Dataset for Modulation of Diurnal SST and Diurnal Warm Layer Variability by Salinity-Driven Stratification in the Bay of Bengal” (Version v1) [Dataset]. Zenodo. doi: <https://doi.org/10.5281/zenodo.15507276>

Awards, Fellowships, & Grants

- 2026 **Registration Support Award**, Gordon Research Conference on Ocean Mixing
- 2023 **Travel Support Award**, CLIVAR
- 2022 **Travel Support Award**, ICERM
 Travel Support Award, Gordon Research Student Meeting
- 2019 **Distinguished Doctoral Fellowship**, Provost’s office, UMass Dartmouth (Support for 4 years)
- 2019 **Multiple Travel Grants**, UMassD- Graduate Students Office, Graduate Student Senate, IMS program,
to
2024 SMAST, MechE (capped at \$ 2250 a year)
- 2018 **Summer Research Fellowship (2 month fellowship)**, Indian Academy of Sciences

Presentations

* *presenting author*; + *mentored students*

INVITED TALKS

February 10 2026. *Modulation of Diurnal SST and Diurnal Warm Layer Variability by Salinity-Driven Stratification in the Bay of Bengal.* Air-Sea Flux from Space Webinar Series

February 04 2026. *Physics of Cyclone Wake Recovery: Submesoscale Turbulence Driven by Wind-Front Interactions.* CASPO Seminar, Scripps Institution of Oceanography, UCSD

January 15 2026. *Physics of Cyclone Wake Recovery: Submesoscale Turbulence Driven by Wind-Front Interactions.* Oceanography Seminar, UHM

March 25 2025. *Physics of Hurricanes.* Second Half Lifelong Learning Institute , New Bedford

February 26 2025. *Impacts of Salinity Stratification on SST in the Northern Indian Ocean Warm Pool.* DEOS Departmental Seminar, SMAST, UMassD

December 02 2024. *How does the salinity stratification impact SST warming over short/long timescales?.* EKAMSAT Seminar Series

August 20 2024. *Lateral Gradients in Salinity Stratification driving differences in Diurnal Warm Layer evolution in the Bay of Bengal.* PO Departmental Seminar, Woods Hole Oceanographic Institution

July 10 2024. *Diurnal Warm Layers and its lateral gradients in the Bay of Bengal.* SEOCS Departmental Seminar, IIT Bhubaneswar

- April 01 2024. *Air-sea flux parameterization development using EKAMSAT and other field campaign observations.*** EKAMSAT Seminar Series (co-presented with Dr. Hyodae Seo)
- March 27 2024. *Physics of Hurricane wake evolution: A case study in the Arabian Sea.*** Plenary talk at 2024 IMS Symposium, SMAST, UMassD
- January 31 2024. *Physics of Diurnal Warm Layers and its lateral gradients in the Bay of Bengal.*** DEOS Departmental Seminar, SMAST, UMassD
- July 11 2023. *Lateral Gradients in Diurnal Warm Layers in the Bay of Bengal.*** Seminar at Indian Institute of Tropical Meteorology, Pune, India
- November 04 2021. *Diurnal Warm Layers in the Bay of Bengal during Monsoon 2019.*** Seminar at Monsoon Meeting, Woods Hole Oceanographic Institution
- October 06 2021. *Diurnal Warm Layers in the Bay of Bengal during Monsoon 2019.*** Seminar at Geophysical Flows Lab, Indian Institute of Technology, Madras, India
- August 23 2021. *On the Diurnal Warm Layers in the Bay of Bengal.*** PhD proposal defense, SMAST, UMassD
- February 25 2021. *Monsoons in the Bay of Bengal and Ocean Spring Blooms.*** Mechanical Engineering Departmental Seminar at UMassD (co-presented with Dr. Iury Simoes-Sousa)

CONFERENCE PRESENTATIONS

- Sauvage, C.*, Barr, B. W., Seo, H., Reyes, C. C., Pauly, W., **Kerhalkar, S.**, Yoshida, S., Bhirawa, T., Wu, H., Mitarai, S.: Wave-Wind Misalignment and Drag Coefficient Rolloff in High-Wind Tropical Cyclones, AMS 37th Conference on Hurricanes and Tropical Meteorology, San Diego, March 30-April 3, 2026
- Seo, H.*, **Kerhalkar, S.**, Sauvage, C., Tandon, A.: Seasonal Variability of Wave States and Their Influence on Air-Sea Fluxes in the Northern Indian Ocean, IIOSC-2025, Hyderabad, India, December 01-05 2025
- Kerhalkar, S.**, Tandon, A., MacKinnon, J. A., Seo, H.: Impacts of Salinity Stratification and wave-based formulation on SST within the Indian Ocean mini-warm pool, EKAMSAT Science Meeting, Herndon, September 10-11 2025
- Kerhalkar, S.**, Tandon, A., Farrar, J. T., MacKinnon, J., Schlosser, T., Johnson, L., Lucas, A.J.: Impacts of Salinity Stratification on SST in the Northern Indian Ocean Warm Pool, EKAMSAT Science Meeting, Boulder, March 6-7 2025
- Kerhalkar, S.**, Tandon, A., Farrar, J. T., MacKinnon, J., Schlosser, T., Johnson, L., Lucas, A.J.: How does the salinity stratification impact SST warming over short/long timescales? EKAMSAT Science Meeting, Seattle, September 12-13 2024
- Kerhalkar, S.**, Kannad, A., Kinsella, A., Tandon, A., Sprintall, J., Lee, C.: Observations of the cyclone Biparjoy's cold wake decay. Ocean Sciences Meeting, New Orleans, February 18-23 2024
- Tandon, A.*, **Kerhalkar, S.**, Kannad, A., Kinsella, A., Sprintall, J., Lee, C.: Observations of the cyclone Biparjoy's cold wake decay. Geophysical Flows: From the Field to the Lab Discussion meeting, IIT Madras, January 10-12 2024
- Seo, H.*, **Kerhalkar, S.**, Sauvage, C., Tandon, A.: Improving wave-mediated air-sea flux parameterizations in mixed seas: Observational and modeling for improved monsoon predictions. Geophysical Flows: From the Field to the Lab Discussion meeting, IIT Madras, January 10-12 2024
- Bonfils, A., Ramana, P., **Kerhalkar, S.***, Athulya, K., Abhilash, K.: Near-inertial Oscillations in the North Indian Ocean: A case study. Geophysical Flows: From the Field to the Lab Discussion meeting, IIT Madras, January 10-12 2024
- Kerhalkar, S.**, Tandon, A., Schlosser, T., Farrar, J. T., Lucas, A., Johnson, L., Hormann, V., Centurioni, L.: Observing and Modeling the variability of DWLs during the summer Monsoon in the Northern Indian Ocean. EGU Meeting, Vienna, April 23-28 2023 (virtual)
- Monroe, N.*+, **Kerhalkar, S.**, Tandon, A.: Biases in the Air-Sea Interaction during the Year 2017-18 in the Arabian Sea. MassURC, April 28 2023 (virtual)
- Balabanova, V.*+, **Kerhalkar, S.**, Farrar, J. T., Tandon, A.: Validating Geostrophic Balances in the North Atlantic Ocean. MassURC, April 28 2023 (virtual)
- Joseph, E.*+, **Kerhalkar, S.**, Farrar, J. T., Tandon, A.: Studying the Ocean Surface Variables using Satellite imagery and Numerical Modeling. MassURC, April 21 2022 (virtual)
- Kerhalkar, S.**, Tandon, A., Farrar, J. T., Lucas, A., Hormann, V., Centurioni, L., St. Laurent, L.: Diurnal Warm Layers in the Bay of Bengal during Monsoon 2019. Ocean Sciences Meeting, February 27- March 04 2022(virtual)
- Kerhalkar, S.**, Tandon, A., Hormann, V., Centurioni, L.: Using drifter observations to unearth the mysteries of Monsoons in the Bay of Bengal. IEEE-MTS OCEANS 2022-Chennai, February 21-24 2022

- Kerhalkar, S.,** Tandon, A., Farrar, J. T., Lucas, A., Hormann, V., Centurioni, L., St. Laurent, L.: Diurnal Warm Layers in the Bay of Bengal during Monsoon 2019. MISO-BoB All-PI meeting, October 02 2021(virtual)
- Kerhalkar, S.,** Tandon, A., Farrar, J. T., Lucas, A., Hormann, V., Centurioni, L., St. Laurent, L.: Diurnal Warm Layers in the Bay of Bengal during Monsoon 2019. MISO-BoB All-PI meeting, October 02 2021(virtual)
- Kerhalkar, S.,** Tandon, A., Farrar, J. T., Lucas, A., Hormann, V., Centurioni, L.: Observations of Diurnal Warm Layers Mixing in the Central Bay of Bengal-2019 IOP. MISO-BoB All-PI meeting, December 01 2020(virtual)

POSTERS

- Kerhalkar, S.,** Kannad, A., Kinsella, A., Sauvage, C., Tandon, A., Sprintall, J., Seo, H., Lee, C. M.: Monsoon-Frontal-Wave Interactions Drive Cyclone Biparjoy's Wake Recovery in the Arabian Sea, AMS 37th Conference on Hurricanes and Tropical Meteorology, San Diego, March 30–April 3, 2026
- Kerhalkar, S.,** Seo, H., Sauvage, C., Tandon, A.: Seasonal Variability of Wave States and Their Influence on Air-Sea Fluxes in the Northern Indian Ocean, 2026 Breakthroughs: Uehiro and Oceanography Yearly Symposium, UHM, March 12-13 2026
- Kerhalkar, S.,** Kannad, A., Kinsella, A., Tandon, A., Sprintall, J., & Lee, C.M. (2025). Monsoon-Frontal Interactions Drive Cyclone Biparjoy's Wake Recovery in the Arabian Sea. IMS Symposium, SMAST, UMassD, March 26 2025
- Sarkar, D.*+, **Kerhalkar, S.,** Tandon, A., Joseph, J.: Inaccuracies in reanalysis products: A case study of the Arabian Sea from 2017 to 2018. Sigma-Xi Research Exhibit, UMassD, April 17 2024
- Sarkar, D.*+, **Kerhalkar, S.,** Tandon, A., Joseph, J.: Inaccuracies in reanalysis products: A case study of the Arabian Sea from 2017 to 2018. IMS Symposium, SMAST, UMassD, March 27 2024
- Tandon, A.* , **Kerhalkar, S.,** Sarkar, D., Joseph, J.: On the Air-sea reanalyses flux biases in the Arabian Sea: A case study from 2017-2018. Ocean Sciences Meeting, New Orleans, February 18-23 2024
- Sarkar, D.* , **Kerhalkar, S.,** Tandon, A., Joseph, J.: On the Air-sea reanalyses flux biases in the Arabian Sea: A case study from 2017-2018. Geophysical Flows: From the Field to the Lab Discussion meeting, IIT Madras, January 10-12 2024
- Kerhalkar, S.,** Tandon, A., Farrar, J. T., Schlosser, T., Johnson, L., Lucas, A., Hormann, V., Centurioni, L., MacKinnon, J.: Lateral Gradients in Diurnal Warm Layers in the Bay of Bengal. Geophysical Flows: From the Field to the Lab Discussion meeting, IIT Madras, January 10-12 2024
- Monroe, N.*+, **Kerhalkar, S.,** Tandon, A.: Biases in the Air-Sea Interaction during the Year 2017-18 in the Arabian Sea. Sigma Xi Research Exhibit, UMassD, April 21 2023
- Balabanova, V.*+, **Kerhalkar, S.,** Farrar, J. T., Tandon, A.: Validating Geostrophic Balances in the North Atlantic Ocean. Sigma Xi Research Exhibit, UMassD, April 21 2023
- Kerhalkar, S.,** Tandon, A., Schlosser, T., Farrar, J. T., Johnson, L., Lucas, A., Hormann, V., Centurioni, L., MacKinnon, J.: Observing and Modeling the variability of DWLs during the Summer IMS Symposium, SMAST, UMassD, March 22 2023
- Kerhalkar, S.,** Tandon, A., Schlosser, T., Farrar, J. T., Johnson, L., Lucas, A., Hormann, V., Centurioni, L., MacKinnon, J.: Observing and Modeling the variability of DWLs during the Summer Monsoon in the Northern Indian Ocean. CLIVAR Mesoscale and Frontal Scale Air-Sea Interaction Workshop, Boulder, March 6-8 2023
- Kerhalkar, S.,** Tandon, A., Farrar, J. T., Lucas, A., Johnson, L., Hormann, V., Centurioni, L., St. Laurent, L.: Diurnal Warm Layers in the Bay of Bengal during Monsoon 2019. FILACHANGE-SWOT workshop, Providence, August 27-31 2022
- Kerhalkar, S.,** Tandon, A., Farrar, J. T., Lucas, A., Johnson, L., Hormann, V., Centurioni, L., St. Laurent, L.: Diurnal Warm Layers in the Bay of Bengal during Monsoon 2019. Gordon Research Meeting on Ocean Mixing, June 05-10 2022
- Joseph, E.*+, **Kerhalkar, S.,** Farrar, J. T., Tandon, A.: Studying the Ocean Surface Variables using Satellite imagery and Numerical Modeling. Sigma Xi Research Exhibit, UMassD, April 21 2022
- Kerhalkar, S.,** Tandon, A., Farrar, J. T., Lucas, A., Johnson, L., Hormann, V., Centurioni, L., St. Laurent, L.: Diurnal Warm Layers in the Bay of Bengal during Monsoon 2019. Sigma Xi Research Exhibit, UMassD, April 21 2022
- Kerhalkar, S.,** Tandon, A., Farrar, J. T., Lucas, A., Johnson, L., Hormann, V., Centurioni, L., St. Laurent, L.: Diurnal Warm Layers in the Bay of Bengal during Monsoon 2019. IMS Symposium, SMAST, UMassD, March 23 2022
- Kerhalkar, S.,** Tandon, A., Farrar, J. T., Hormann, V., Centurioni, L., Lucas, A.: High Resolution Observations of Diurnal Warm Layers in the Bay of Bengal during the Indian Summer Monsoon 2019. IMS Symposium, SMAST, UMassD, March 24-25 2021
- Kerhalkar, S.,** Tandon, A., Shroyer, E., Centurioni, L., Nash, J., MacKinnon, J., Farrar, J. T., Johnson, L.: On the Sea Surface Temperature variability and mesoscale dispersion in the Bay of Bengal during 2015 and 2019 monsoon as tracked by drifters. Ocean Sciences Meeting, San Diego, February 16-21 2020

Kerhalkar, S., Francis, P.A.: Studying the Vertical Ocean Mixing in Bay of Bengal and Arabian Sea using the KPP Boundary Layer scheme. National Oceanography Workshop, Hyderabad, India, Novemebr 14-16 2018

Teaching Experience

Spring
2026 **OCN665: Small-Scale Air-Sea Interaction**, Contributor: 1D ocean mixing UHM

Mentoring

2023-2024	Debarshi Sarkar , 1st Year PhD Student, Engineering and Applied Sciences Working on comparing observations of observed and derived air-sea interaction parameters at OMNI moorings in the Arabian Sea with popular reanalysis products to report biases, which are detrimental for Indian Monsoons.	UMassD
2023	Viktoriya Balabanova , UMassD-WHOI Blue Economy Internship Focused on validating geostrophic balance by comparing the observations from a mooring deployed in North Atlantic to the Satellite altimetry	
2022-2023	Nicholas Monroe , APEX Thesis (Honors College), UMassD Focused on intercomparing parameters of air-sea interaction from reanalysis products to observations from one mooring in the Arabian Sea, with a goal to quantify the biases	
2021-2022	Ersen'S Joseph , REU Student and UMassD-WHOI Blue Economy Internship His project involved analyzing RAMA mooring data in the Bay of Bengal, developing a numerical particle tracking model and comparing with observed particle motion in open ocean as well as using powerful computation resources to analyze remote sensing datasets in order to uncover the seasonality in the Bay of Bengal	

Outreach & Professional Development

DEVELOPMENT

2024-2025	Life Skills for Young Scientists (LiSYS) by Dr. Jonathan Lilly, Participant	Virtual
2024	Ocean/Atmosphere Time Series Analysis by Dr. Jonathan Lilly, Participant	Virtual
	Geophysical Flows: From the Field to the Lab- Hands on Workshop , Participant	IIT Madras
2023	ONR Code 322 Graduate Student and Postdoc Workshop , Participant	Arlington, VA
2022	ICERM: Prediction and Variability of Air-Sea Interactions , Participant	Brown Univ.
	NASA Openscapes , Participant	Virtual
2021	ICERM: Prediction and Variability of Air-Sea Interactions , Participant	Virtual

SKILLS

- Application Software: MATLAB, NOAA Ferret, GRADS, SolidWorks, Ansys (Beginner), Inkscape, SeaBird Processing
- Programming Languages: Python, Fortran
- Languages: English (fluent), Hindi (Native), Marathi (Native)

PEER REVIEWER

- Geophysical Research Letters
- Journal of Physical Oceanography
- Journal of Geophysical Research: Oceans
- Journal of Climate
- AGU Earth and Space Science
- T & F Marine Geodesy
- Oceanological & Hydrobiological Studies

- RMetS Weather

POSITIONS OF RESPONSIBILITY

- 2024-2025 **EKAMSAT Waves Working group**, Co-ordinator
- SMAST Curriculum committee**, Student Representative
- 2020-2022 **SMAST Graduate Student Association**, Student Representative
- 2021 **Indian Students Association (ISA)**, Graduate Student Advisor
- Graduate Student Senate**, Webmaster
- 2019-2025 **Tandon Laboratory, UMassD**, Webmaster

SERVICE AND OUTREACH

- 2026 **Gordon Research Seminar on Ocean Mixing**, Discussion Leader *South Hadley, MA*
- EKAMSAT Webinar Series-Spring 2026**, Organizer *Online*
- 2025 **Second Half Lifelong Learning Institute**, Guest Lecturer *New Bedford, MA*
- 2024 **Party for the Planet**, Exhibitor *New Bedford, MA*
- Junior Science and Humanities Symposium Regionals**, Judge *RWU, Bristol*
- 2022 **Weekly Summer Tours for Tabor Academy High School Students**, Co-ordinator *SMAST, UMassD*
- IMS Symposium**, Co-organizer *SMAST, UMassD*
- 2021 **Graduate School Fair**, Exhibitor *UMass Dartmouth*
- ISA Pre-arrival orientation**, Co-organizer *Virtual*
- IMS Symposium**, Co-organizer *Virtual*

MEMBERSHIPS

- American Geophysical Union
- American Meteorological Society
- The Oceanography Society
- Society for Industrial and Applied Mathematics
- European Geosciences Union
- Marine Technology Society