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RESEARCH INTERESTS

Air-sea interaction, land-sea exchanges, ocean salinity and hydrological cycle, inter-basin interactions, tropical cyclones

RESEARCH SUMMARY

My research is primarily focused on understanding the processes contributing to the variability of near-surface salinity in the tropical oceans across various spatio-temporal scales. I use combination of data from several platforms such as moorings, satellites, research ships and reanalyses to study the tropical ocean basins influenced by major river plumes, land-sea exchanges with linkages to the monsoon hydrological cycle and further implications of these processes for the changing climate system.

PROFESSIONAL EXPERIENCE

NASA Jet Propulsion Laboratory JPL Postdoctoral Fellow Supervisor: Dr. Severine Fournier	Pasadena, CA, USA March 2023-present
NOAA Pacific Marine Environmental Laboratory NRC Postdoctoral Fellow Supervisor: Dr. Michael McPhaden	Seattle, WA, USA May 2021-March 2023
Indian Institute of Science Research Associate Supervisor: Prof. Debasis Sengupta	Bangalore, KA, India August 2012-August 2013

EDUCATION

Indian Institute of Science PhD. Physical Oceanography Thesis title: Space-time variability of near-surface salinity in the Bay of Bengal	Bangalore, KA, India 2020
Indian Institute of Science M.Tech. Climate Sciences Thesis title: Intraseasonal Variability of Sea Level Pressure in the Indian Ocean	Bangalore, KA, India 2012
Vellore Institute of Technology B.Tech. Chemical Engineering	Vellore, TN, India 2010

PUBLICATIONS

- **Jarugula, S.**, Sengupta, D., Shroyer, E., & Papa, F. (2024). Mixing of rain and river water in the Bay of Bengal from basin-scale freshwater balance. *Geophysical Research Letters*, 51, e2023GL106451.
- Fournier, S., Reager, J. T., Chandanpurkar, H. A., Pascolini-Campbell, M., & **Jarugula, S.** (2023). The salinity of coastal waters as a bellwether for global water cycle changes. *Geophysical Research Letters*, 50, e2023GL106684.

- **Jarugula, S.**, & McPhaden, M. J. (2023). Indian Ocean Dipole affects eastern tropical Atlantic salinity through Congo River Basin hydrology. *Communications Earth & Environment*, 4(1), 366.
- Simoes-Sousa, I. T., A. Tandon, J. Buckley, D. Sengupta, **Sree Lekha, J.**, E. Shroyer, & S. P. d. Szoeké, 2022: Atmospheric Cold Pools in the Bay of Bengal. *J. Atmos. Sci.*, 80, 167–180.
- **Jarugula, S. L.**, & McPhaden, M. J. (2022). Ocean mixed layer response to two post-monsoon cyclones in the Bay of Bengal in 2018. *Journal of Geophysical Research: Oceans*, 127, e2022JC018874.
- **Sree Lekha, J.**, Lucas, A. J., Sukhatme, J., Joseph, J. K., Ravichandran, M. & Suresh Kumar, N., et al. (2020). Quasi-biweekly mode of the Asian summer monsoon revealed in Bay of Bengal surface observations. *Journal of Geophysical Research: Oceans*, 125, e2020JC016271.
- Ratheesh, S., Agarwal, N., Chaudhary, A., Lijin, J., **Sree Lekha, J.**, Mathur, M., ... & Kumar, R. (2020). Response of a high-resolution ocean circulation model to winds from different sources in simulating summer monsoon freshening in the North Bay of Bengal: A case study. *Deep Sea Research Part II: Topical Studies in Oceanography*, 172, 104727.
- Weller, R. A., Farrar, J. T., Seo, H., Prend, C., Sengupta, D., **Sree Lekha, J.**, ... & Venkatesan, R. (2019). 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.
- Jampana, V., Ravichandran, M., Sengupta, D., D’Asaro, E.A., Rahaman, H., Joseph, S., **Sree Lekha, J.** & Chaudhuri, D. (2018). Shear flow instabilities and unstable events over the North Bay of Bengal. *Journal of Geophysical Research: Oceans*, 123(12), 8958-8969.
- **Sree Lekha, J.**, Buckley, J. M., Tandon, A., & Sengupta, D. (2018). Subseasonal dispersal of freshwater in the northern Bay of Bengal in the 2013 summer monsoon season. *Journal of Geophysical Research: Oceans*, 123(9), 6330-6348.
- Chakrabarti, R., Mondal, S., Acharya, S. S., **Sree Lekha, J.**, & Sengupta, D. (2018). Submarine groundwater discharge derived strontium from the Bengal Basin traced in Bay of Bengal water samples. *Scientific reports*, 8(1), 4383.
- MacKinnon, J. A., Nash, J. D., Alford, M. H., Lucas, A. J., Mickett, J. B., Shroyer, E. L., Waterhouse, A. F., Tandon, A., Sengupta, D., Mahadevan, A., Ravichandran, M., Pinkel, R., Rudnick, D. L., Whalen, C. B., Albery, M. S., **Sree Lekha, J.**, Fine, E. C., Chaudhuri, D., & Wagner, G. L. (2016). A Tale of Two Spicy Seas. *Oceanography*, 29(2), 50–61.
- Weller, R. A., Farrar, J. T., Buckley, J., Mathew, S., Venkatesan, R., **Sree Lekha, J.**, Chaudhuri, D., Kumar, N. S., & Kumar, B. P. (2016). Air-Sea Interaction in the Bay of Bengal. *Oceanography*, 29(2), 28–37.
- Sengupta, D., Bharath Raj, G. N., Ravichandran, M., **Sree Lekha, J.**, & Papa, F. (2016), Near-surface salinity and stratification in the north Bay of Bengal from moored observations, *Geophysical Research Letters*, 43, 4448–4456.

IN REVIEW:

- **Jarugula, S.**, Fournier, S., Reager, J. T., Pascolini-Campbell, M., (2024), Evaluation of the available in situ and remote sensing surface salinity products for global coastal ocean studies.

RESEARCH HIGHLIGHTS

“Dispersal of River Water by Ocean Eddies and Shallow Ekman Flow” - highlighted on Eos science magazine published by American Geophysical Union - September Issue 2018.

TEACHING

Certificate of Interest in University Teaching - Ongoing California Institute of Technology, Pasadena, CA	Spring 2024
Workshop on “Effective teaching strategies and improving student feedback” CalTech Annual Teaching conference	Fall 2023
Lecture series on the “Refresher course on Water” Mangalore University and Indian Academy of Sciences	Fall 2015
Workshop on “Introduction to ocean data and analysis” Centre for Ecological Sciences, IISc Bangalore	Winter 2014

Introduction to Climate system

Teaching Assistant, IISc Bangalore

Fall 2014

MENTORING

Connor Delaune

NOAA Hollings Undergraduate Scholar

Summer 2022

AWARDS

National Research Council Postdoctoral Fellowship

2021-2023

Best Student Poster Award at National Climate Science Conference,
Divecha Center for Climate Change, IISc Bangalore

July 2015

Ministry of Human Resource and Development Graduate Scholarship

2013-2017

Ministry of Human Resource and Development Graduate Scholarship

2010-2012

Travel grants from National Oceanic and Atmospheric Administration [NOAA], National Science Foundation [NSF], Office of Naval Research [ONR] and National Aeronautics and Space Administration [NASA] to participate in 2024 Ocean Salinity Conference, Netherlands [May 2024], Pattullo Conference, VA, USA [September 2023], Gordon Research Conference on Ocean Mixing, MA, USA [June 2022], ICERM workshop on South Asian Monsoon at Brown University, RI, USA [June 2022], Physical Oceanography Dissertation Symposium at Hawaii, USA [October 2021].

ACADEMIC AND VOLUNTEER SERVICE

Scientific Community Service

2021- present

- Peer Reviewer for Journal of Physical Oceanography, Journal of Marine Systems, Marine Geodesy, Ocean Dynamics, Natural Hazards and Earth System Sciences, Journal of Operational Oceanography, IEEE Transactions on Geoscience and Remote Sensing Journal.
- Served on the NASA FINESST Proposal Panel Review 2023
- Session co-chair for "The Indian Ocean: Mean State, Natural Variability, and Climate Change" at AGU Ocean Sciences 2024.
- Session moderator for the student poster session at AGU Ocean Sciences 2024.
- Reviewer for the Student Presentation Evaluation Program at AGU Ocean Sciences 2024.

Volunteer Service

- Coastal cleanup drive at Channel Islands National Park visitor center, Ventura, CA - 2023
- Meadow rover at Mt Rainier National Park, WA to protect the subalpine meadows, assist and educate the visitors about the importance of preserving these meadows - Summer 2022
- eVidyaloka (NGO) volunteer to teach government school kids in rural India about basics of earth system - 2019

FIELD EXPERIENCE

Ocean Mixing and Monsoon cruise SK326

January-February 2016

ORV Sagar Kanya - 16 days

- Real-time planning of ship survey to sample across a sharp salinity-dominated submesoscale front in the northern Bay of Bengal
- Underway-CTD (uCTD) operation, data collection and transfer.
- Conducted real-time analysis of the uCTD, Acoustic Doppler Current Profiler (ADCP) and ship-mounted Automatic Weather Station (AWS) data.
- Assisted the chief scientist in writing the cruise report.

Ocean Mixing and Monsoon cruise SN100

August-September 2015

ORV Sagar Nidhi - 24 days

- Real-time planning of a two-ship experiment working alongside RV *Roger Revelle* to sample across a sharp salinity-dominated submesoscale front in the northern Bay of Bengal
- Underway-CTD (uCTD) operation, data collection and transfer.
- Conducted real-time analysis of the moorings, uCTD, Acoustic Doppler Current Profiler (ADCP) and ship-mounted Automatic Weather Station (AWS) data.
- Contributed to the cruise report.

Ocean Mixing and Monsoon cruise SN88

August-September 2014

ORV Sagar Nidhi - 23 days

- Real-time planning of the ship track to sample salty/freshwater fronts and filaments in the northern Bay of Bengal
- Underway-CTD (uCTD) operation, data collection and transfer.
- Conducted real-time analysis of the moorings, uCTD, Acoustic Doppler Current Profiler (ADCP) and ship-mounted Automatic Weather Station (AWS) data.
- Contributed to the cruise report.

Ocean Mixing and Monsoon cruise SN82

November-December 2013

ORV Sagar Nidhi - 18 days

- Pilot cruise to sample hydrography and currents in the northern Bay of Bengal during winter monsoon.
- Underway-CTD (uCTD) operation, data collection and transfer.
- Contributed to the cruise report.

CONFERENCE PRESENTATIONS

- **Jarugula, S.**, Fournier, S., Reager, J. T., Pascolini-Campbell, M., Intercomparison of in situ and remote sensing surface salinity products in the global coastal ocean. AGU Ocean Sciences Meeting 2024. [Oral]
- **Jarugula, S.** & McPhaden, M., Ocean mixed layer response to two post-monsoon cyclones in the Bay of Bengal in 2018. AGU Fall Meeting 2022. [Poster]
- **Jarugula, S.**, Diapycnal mixing estimates of freshwater in the Bay of Bengal from basin-scale volume balance. Gordon Research Conference on Ocean Mixing, June 2022. [Poster]
- **Jarugula, S.**, D. Sengupta, A. Lucas, J. Sukhatme, T. J. Farrar, J. K. Joseph & S. Kumar, Quasi-Biweekly Mode of the Asian Summer Monsoon Revealed in Bay of Bengal Surface Observations, Discussion Meeting on Waves, Instabilities and Mixing In Rotating And Stratified Flows [Virtual], International Centre for Theoretical Sciences, India, April 2022. [Oral]
- **Jarugula, S.** & McPhaden, M., Mixed layer temperature and salinity evolution in the Bay of Bengal during two post-monsoon cyclones in 2018. AGU Ocean Sciences Meeting 2022. [Oral]
- **Jarugula, S.**, Space-time variability of near-surface salinity in the Bay of Bengal at Physical Oceanography Dissertation Symposium (PODS), Kauai HI, October 2021. [Oral]
- **Jarugula, S.**, D. Sengupta, E. Shroyer and A. Tandon. Basin-scale Diapycnal Mixing Rates in the Bay of Bengal Inferred from Fresh water Balance. AGU Ocean Sciences Meeting 2020. [Oral]
- **Jarugula, S.**, D. Sengupta, A. J. Lucas and J. Farrar. Subseasonal variability of sea surface salinity in observations. AGU Ocean Sciences Meeting 2018. [Oral]
- **Jarugula, S.**, E. D'Asaro, S. Shivaprasad, D. Chaudhuri, A. Lucas, R. Weller & D. Sengupta. Ship-based Observations of a Salinity-dominated Density Front in the Bay of Bengal during August-September 2015. AGU Ocean Sciences Meeting 2016. [Oral]
- **Jarugula, S.**, J. Buckley, A. Tandon, R. Venkatesan, M. Ravichandran, F. Papa, E. D'Asaro & D. Sengupta. Pathways of river water in the Bay of Bengal from moored observations and satellite data. International Indian Ocean Expedition 2015. [Oral]
- **Jarugula, S.**, Shiva Prasad. S., Ravichandran. M., Sengupta. D. Near-surface stratification and submesoscale fronts in the north Bay of Bengal in August-September 2014. OSICON 2015. [Oral]

INVITED TALKS/SEMINARS

- **Jarugula, S.** Near-surface salinity and freshwater in the tropical oceans. California Institute of Technology, CA, October 2023.
- **Jarugula, S.** Ocean response to post-monsoon cyclones in the Bay of Bengal. Oregon State University, Corvallis, OR, October 2022.
- **Jarugula, S.** What did we learn about salinity and near-surface stratification in the Bay of Bengal during the OMM-ASIRI campaign? - Workshop on Prediction and Variability of Air-Sea Interactions: South Asian Monsoon at ICERM, Brown University, RI, June 2022.
- **Jarugula, S.** Near-surface salinity and freshwater in the Bay of Bengal. University of Washington, Seattle, WA, November 2021.

PROFESSIONAL AFFILIATIONS

Member of Oceanography Society, American Geophysical Union

2021-present

SKILLS

Experienced in analyzing large geoscience datasets. Scientific computer programming in Matlab, Python and FORTRAN. Proficient with LaTeX, Microsoft Office, Open Office, Windows, Linux/Unix, Mac OS.