

TAMOGHNA ACHARYYA (MSc, Ph.D.)

Associate Professor (Oceanography)
PG Department of Marine Sciences
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EDUCATION

- Ph.D., in Chemical Oceanography, School of Chemistry, Andhra University, India; 15th April 2013.
Dissertation title: “*Variability of Phytoplankton Pigment Composition in a Tropical Monsoon Driven Estuary (Godavari, India): Natural and Anthropogenic Influences.*”
- Post-doctoral research at Plymouth Marine Laboratory (PML, UK)
Project: “*Global optical and pigment database generation for the validation of Indian Ocean Colour Sensor OCM – II*”
- One year Pre-PhD course work in School of Environmental Sciences, Jawaharlal Nehru University (JNU), New Delhi, India: CGPA 7.84/9.00 , 2006 – July 2007
- M.Sc. in Environmental Science, University of Kalyani, India: First class (Aggregate 70.3%); 2004 – 2006

PROFESSIONAL CAREER

- Associate Professor (Oceanography), PG Department of Marine Sciences, Berhampur University; Odisha, India: November 2022 – till date (teaching interest -- Marine Geochemistry, Marine Biogeochemical Cycles, Earth processes, Introduction to Oceanography)
- Associate Professor, School of Sustainability, XIM University; Odisha, India: July 2022 – November 2022 (teaching interest -- Natural Resource Management, Climate Change – Mitigation Modelling)
- Assistant Professor, School of Sustainability, XIM University (erstwhile Xavier University); Odisha, India: May 2015 – June 2022
- Subject Matter Expert (Marine Geospatial Solutions) IIC Technologies, Visakhapatnam, AP, India: 3rd Jan 2015 – 27th April 2015

RESEARCH EXPERIENCE

Extensive work experience on water quality and biodiversity aspects of Indian water bodies, esp. river, estuary, and coastal ocean. My investigation integrates field studies, laboratory-based perturbation experiments, and remote sensing data analysis.

Timeline:

2007 Sep – 2009 Sep: CSIR-NET-JRF at National Institute of Oceanography, RC, Vizag

- Trophic shift mechanism in Godavari estuary

2009 Sep – 2011 Sep: CSIR-NET-SPM-JRF at National Institute of Oceanography, RC, Vizag

- Impact of dredging induced salinity and pH change on phytoplankton in Godavari River
- Role of heavy metal as nutrient and toxicant for the inhabiting phytoplankton in Godavari River
- Phytoplankton community shift for the predicted future high CO₂ world scenario

2011 Sep – 2013 Mar: CSIR-NET-SPM-SRF at National Institute of Oceanography, RC, Vizag

- Formation of hypoxia (low-oxygen area) in the coastal Bay of Bengal
- Impact of phytoplankton size structure on the light absorption character of SW western Bay of Bengal
- Drought-induced phytoplankton bloom in Godavari estuary, ‘minimum discharge’ concept for the health and sustainable management of Indian estuaries
- Mechanism of high CO₂ emission from Godavari estuary

2013 Aug– 2014 Aug: ***Project Associate –1 at National Institute of Oceanography, RC, Vizag

- Decadal time series analysis of phytoplankton biomass at the Equatorial Indian Ocean to understand the likely impact of climate change applying remote sensing data
- Role of El-Nino, La-Nina and Indian Ocean Dipole in regulating river run-off in Indian rivers; the Godavari a case study

2012 Oct-Mar 2013: *** Academic visitor at Remote sensing group, Plymouth Marine Laboratory, UK

- Global Database generation for ocean pigment and optical measurement

- Validation of Indian remote sensing satellite sensor OCM-2

*** Post-doctoral research conducted after submission of Ph.D. thesis

2017 Sep – Present: Principal Investigator of various funded R&D Projects

- Phytoplankton functional types, size classes and micro-zooplankton grazing dynamics at Chilika Lagoon
- Hydro-chemical budgeting at Mahanadi estuary
- Deciphering phytoplankton size classes during recurrent bloom events

TRAINING/ FDP ATTENDED

- 1) 'Advanced ICT tools for teaching and research', online FDP jointly offered by Association of Indian Universities and Berhampur University, Feb 14 – 21, 2023
- 2) 'Sustainable Environment Management', online certificate course, jointly offered by CII-ITC Center of Excellence and IISWBM, Aug 05 – Aug 27, 2022
- 3) Water, water purification and sustainability (WWPS) workshop, IISER Kolkata; 19 Nov 2019
- 4) FDP on 'Case pedagogy as a learning tool', Xavier Institute of Management, XIM University; 08-09 Nov 2019
- 5) 'Case Method Teaching Seminar' coordinated by Prof. VG Narayanan, Faculty Harvard Business School, Xavier University; April 05, 2018
- 6) 'Structure, Analysis and usefulness of NSS data in Health', Indian Institute of Public Health, Bhubaneswar, Feb 20 – Feb 22, 2017
- 7) Certificate course on 'Life Cycle Assessment (LCA) using GaBi Software, School of Sustainability, Xavier University; 18-19 Nov 2016
- 8) Multibeam Hydrographic Surveyor training course, IIC Academy, Visakhapatnam; 9-13 February 2015
- 9) Two weeks' hands-on training on Oceansat-2 OCM data processing, INCOIS, Hyderabad; 13-24 August 2012
- 10) Nippon Foundation – Partnership for Observation of the Global Oceans (NF – POGO) training on "The Application of Ocean Colour Remote Sensing in Primary Productivity and Ecosystem Modelling" INCOIS, Hyderabad; 5-26 February 2012

- 11) Attended SOLAS (Surface Ocean Lower Atmosphere Study) Summer School, Corsica, France; August 2009

TRAINING CONDUCTED

- 1) Took a session on ‘Data visualization and preparation of dashboard through advanced excel’, was delivered as a part of the Faculty Development Program on ‘Research Methodology and Data analysis’ at Fakir Mohan University, Balasore; 01 Nov 2022.
- 2) Conducted 04 days National online workshop on ‘Advanced Microsoft Excel Techniques’, organized jointly School of commerce and management, Gangadhar Meher University, Sambalpur; 3-7th Mar 2022
- 3) Conducted session on ‘Mastering data analysis by using Advanced MS Excel and VBA macro’, held at Gangadhar Meher University, Samablpur; 05-06 May 2018.
- 4) Conducted session on ‘Citing and referencing, What/ Where and How?’, held at Gangadhar Meher University, Sambalpur; 18-19 Nov 2017.
- 5) Took sessions on global cases and various actors of innovation in Government, moderated round table discussion to draft innovation policies of Govt. of Odisha during 4 phase training programs called ‘Innovation in Government’; sponsored by Planning and Convergence Department, Government of Odisha (28-30 Jan,18-20 Feb,13-15 Jul, 25-27 Aug 2016 at Xavier Institute of Management Bhubaneswar)
- 6) Conducted sessions on sustainability issues of waste and water management during ‘Certificate Course in Infrastructure Management (Specialization in waste and water management)’; sponsored by Department of Housing and Urban Development, Government of Odisha (09-11 May 2016 at Xavier School of Rural Management, Xavier University Bhubaneswar)
- 7) Acted as a resource person for ‘Capacity Building Training Program on Leadership for Principals’; Sponsored by RUSA (Rashtriya Uchchatar Shiksha Abhiyan - MHRD) at Gopalpur-On -Sea, organized by Regional Directorate of Education, Berhampur, Odisha

LIST OF PUBLICATIONS

● **Peer-reviewed journals:**

1. Mishra, M., **Acharyya, T.**, Santos, C. A. G., da Silva, R. M., Kar, P. K., Mohanty, P. K., ... & Mahapatra, S. (2023). Impact assessment of severe cyclonic storm Asani on the nesting grounds of Olive Ridley turtle, Rushikulya Estuary and spit in Odisha state, India. *Ocean & Coastal Management*, 238, 106572.
2. Mishra, M., Kar, P. K., Chand, P., Mohanty, P. K., **Acharyya, T.**, Santos, C. A. G., ... & Behera, B. (2023). Deciphering the impact of anthropogenic coastal infrastructure on shoreline dynamicity along Gopalpur coast of Odisha (India): An integrated assessment with geospatial and field-based approaches. *Science of The Total Environment*, 858, 159625.
3. Sahoo, C. K., Raulo, S., Singh, S., Srichandan, S., Baliarsingh, S. K., **Acharyya, T.**, & Barik, K. K. (2022). Environmental–Economical Aspects of *Protonibea diacanthus*: A Heavily Priced Marine Fish of India. *Proceedings of the National Academy of Sciences, India Section B: Biological Sciences*, 1-10.
4. Srichandan, S., Baliarsingh, S. K., Samanta, A., Jena, A. K., Lotliker, A. A., Nair, T. M., ... & **Acharyya, T.** (2022). Satellite-Based Characterization of Phytoplankton Blooms in Coastal Waters of the Northwestern Bay of Bengal. *Journal of the Indian Society of Remote Sensing*, 50(11), 2221-2228.
5. Mishra, M., Kar, P. K., Chand, P., Mohanty, P. K., **Acharyya, T.**, Santos, C. A. G., ... & Behera, B. (2022). Deciphering the impact of anthropogenic coastal infrastructure on shoreline dynamicity along Gopalpur coast of Odisha (India): An integrated assessment with geospatial and field-based approaches. *Science of The Total Environment*, 159625.
6. **Acharyya, T.**, Sudatta, B. P., Srichandan, S., Baliarsingh, S. K., Lotliker, A. A., Raulo, S., ... & Samanta, A. (2021). Deciphering long-term seasonal and tidal water quality trends in the Mahanadi estuary. *Journal of Coastal Conservation*, 25(6), 1-16.
7. Mishra, M., Santos, C. A. G., do Nascimento, T. V. M., Dash, M. K., da Silva, R. M., Kar, D., & **Acharyya, T.** (2022). Mining impacts on forest cover change in a tropical forest using remote sensing and spatial information from 2001–2019: A case study of Odisha (India). *Journal of Environmental Management*, 302, 114067.
8. Mishra, M., **Acharyya, T.**, Santos, C. A. G., Da Silva, R. M., Chand, P., Bhattacharyya, D., ... & Singh, O. (2022). Mapping main risk areas of lightning fatalities between 2000 and 2020 over Odisha state (India): A diagnostic approach to reduce lightning fatalities using statistical and spatiotemporal analyses. *International Journal of Disaster Risk Reduction*, 79, 103145.

9. Mishra, M., **Acharyya, T.**, Pattnaik, N., Dash, M. K., Das, P. P., & Mishra, S. K. (2022). The long-term frequency and intensity of cyclonic storms and associated losses in Odisha, India. *Environmental Hazards*, 1-14.
10. Mishra, M., **Acharyya, T.**, Chand, P., Santos, C. A. G., da Silva, R. M., dos Santos, C. A. C., ... Kar, D. (2022). Response of long- to short-term tidal inlet morphodynamics on the ecological ramification of Chilika lake, the tropical Ramsar wetland in India. *Science of The Total Environment*, 807, 150769.
11. Mishra, M., **Acharyya, T.**, Kar, D., Debanath, M., Santos, C. A. G., da Silva, R. M., ... Idris, M. H. (2021). Geo-ecological cues for mass nesting synchronization of Olive Ridley turtles along Rushikulya estuary in Odisha, east coast of India. *Marine Pollution Bulletin*, 172, 112881
12. Baliarsingh, S. K., Lotliker, A. A., Srichandan, S., Roy, R., Sahu, B. K., Samanta, A., ... Jena, A. K. (2021). Evaluation of hydro-biological parameters in response to semi-diurnal tides in a tropical estuary. *Ecohydrology & Hydrobiology*.
13. **Acharyya, T.**, Mishra, M., & Kar, D. (2020). Rapid impact assessment of extremely severe cyclonic storm Fani on morpho-dynamics & ecology of Chilika Lake, Odisha, India. *Journal of Coastal Conservation* 2020 24:3, 24(3), 1–5.
14. Mishra, D. R., Kumar, A., Muduli, P. R., Acharyya, **T.**, **Acharya, P.**, Singh, S., & Rastogi, G. (2021). Landfall season is critical to the impact of a cyclone on a monsoon-regulated tropical coastal lagoon. *Science of The Total Environment*, 770, 145235
15. Mishra, D. R., Kumar, A., Muduli, P. R., Equeenuddin, S. M., Rastogi, G., **Acharyya, T.**, & Swain, D. (2020). Decline in Phytoplankton Biomass along Indian Coastal Waters due to COVID-19 Lockdown. *Remote Sensing* 2020, Vol. 12, Page 2584, 12(16), 2584.
16. Mishra, M., **Acharyya, T.**, Chand, P., Guimarães Santos, C. A., Kar, D., Das, P. P., ... Nascimento, T. V. M. do. (2021). Analyzing the shoreline dynamicity and associated socio-ecological risk along southern Odisha coast, India, using remote sensing and statistics. *Geocarto International*, 1–32
17. Mishra, M., **Acharyya, T.**, & Kar, D. (2021). Vulnerability of nesting ground of Olive ridley turtle to severe cyclonic storm Fani: A case study from Rushikulya rookery, East coast of India. *Journal of Coastal Conservation* 2021 25:4, 25(4), 1–8.

18. Mishra, M., **Acharyya, T.**, & Pattnaik, N. (2021). Characterizing shifting pattern of disaster-induced death and disaster management policies: a regional analysis from Odisha, India. *Current Science*, 120(11), 1721–1727.
19. Mishra, M., **Acharyya, T.**, Santos, C. A. G., Silva, R. M. da, Kar, D., Mustafa Kamal, A. H., & Raulo, S. (2021). Geo-ecological impact assessment of severe cyclonic storm Amphan on Sundarban mangrove forest using geospatial technology. *Estuarine, Coastal and Shelf Science*, 260, 107486.
20. **Acharyya, T.**, Sarma, V.V.S.S., Sridevi, B., Venkataramana, V., Bharathi, M.D., Naidu, S.A., Kumar, B.S.K., Prasad, V.R., Bandyopadhyay, D., Reddy, N.P.C., Kumar, M.D., 2012. Reduced river discharge intensifies phytoplankton bloom in Godavari estuary, India. *Marine Chemistry* 132-133, 15-22
21. Chakraborty, P., Raghunadh Babu, P.V., **Acharyya, T.**, Bandyopadhyay, D., 2010. Stress and toxicity of biologically important transition metals (Co, Ni, Cu and Zn) on phytoplankton in a tropical freshwater system: An investigation with pigment analysis by HPLC. *Chemosphere* 80, 548-553
22. Chakraborty, P., **Acharyya, T.**, Raghunadh Babu, P.V., Bandyopadhyay, D., 2011. Impact of salinity and pH on phytoplankton communities in a tropical freshwater system: An investigation with pigment analysis by HPLC. *Journal of Environmental Monitoring* 13, 614-620
23. Biswas, H., Cros, A., Yadav, K., Ramana, V.V., Prasad, V.R., **Acharyya, T.**, Babu, P.V.R., 2011. The response of a natural phytoplankton community from the Godavari River Estuary to increasing CO₂ concentration during the pre-monsoon period. *Journal of Experimental Marine Biology and Ecology* 407, 284-293 (IF 1.875)
24. Sarma, V.V.S.S., Gupta, S.N.M., Babu, P.V.R., **Acharya, T.**, Harikrishnachari, N., Vishnuvardhan, K., Rao, N.S., Reddy, N.P.C., Sarma, V.V., Sadhuram, Y., Murty, T.V.R., Kumar, M.D., 2009. Influence of river discharge on plankton metabolic rates in the tropical monsoon driven Godavari estuary, India. *Estuarine, Coastal and Shelf Science* 85, 515-524 (IF:2.247)
25. Sarma, V.V.S.S., Kumar, N.A., Prasad, V.R., Venkataramana, V., Appalanaidu, S., Sridevi, B., Kumar, B.S.K., Bharati, M.D., Subbaiah, C.V., **Acharyya, T.**, Rao, G.D., Viswanadham, R., Gawade, L., Manjary, D.T., Kumar, P.P., Rajeev, K., Reddy, N.P.C., Sarma, V.V., Kumar, M.D., Sadhuram, Y., Murty, T.V.R., 2011. High CO₂ emissions from the tropical Godavari

estuary (India) associated with monsoon river discharges. *Geophys. Res. Lett.* 38, L08601 (IF: 3.505)

26. Pandi, S., Kiran, R., Sarma, N., Srikanth, A.S., Sarma, V.V.S.S., Krishna, M.S., Bandyopadhyay, D., Prasad, V.R., **Acharyya, T.**, Reddy, K.G., 2014. Contrasting phytoplankton community structure and associated light absorption characteristics of the western Bay of Bengal. *64*, 89-101 (IF : 1.761)
27. Sarma, V., Krishna, M., Viswanadham, R., Rao, G., Rao, V., Sridevi, B., Kumar, B., Prasad, V., Subbaiah, C.V., **Acharyya, T.**, 2013. Intensified oxygen minimum zone on the western shelf of Bay of Bengal during summer monsoon: influence of river discharge. *Journal of oceanography* 69, 45-55 (IF: 1.232)
28. Sarma, V.V.S.S., Sridevi, B., Maneesha, K., Sridevi, T., Naidu, S.A., Prasad, V.R., Venkataramana, V., **Acharyya, T.**, Bharati, M.D., Subbaiah, C.V., Kiran, B.S., Reddy, N.P.C., Sarma, V.V., Sadhuram, Y., Murty, T.V.R., 2013. Impact of atmospheric and physical forcings on biogeochemical cycling of dissolved oxygen and nutrients in the coastal Bay of Bengal. *Journal of Oceanography* 69, 1-15 (IF: 1.232)

- **Book chapters:**

1. Singh, S., **Acharyya, T.**, & Gopinath, A. (2022). Phytoplankton Ecology in Indian Coastal Lagoons: A Review. *Coastal Ecosystems*, 91-115.
2. **Acharyya, T.**, Sudatta, B.P., Raulo, S., Singh, S., Srichandan, S., Baliarsingh, S.K., Samanta, A., Lotliker, A.A., 2021. A Systematic Review of Biogeochemistry of Mahanadi River Estuary: Insights and Future Research Direction, in: Das S., G.T. (eds) (Ed.), *Estuarine Biogeochemical Dynamics of the East Coast of India*. Springer, Cham, pp. 57–80. https://doi.org/10.1007/978-3-030-68980-3_5
3. Banerjee, R., **Acharyya, T.**, Agarwal, P., 2021. Case Study on Exploring Suitability of Sustainable Agriculture in Western Rajasthan, in: Mishra, M., Dash, M.K., Upadhyay, D.K., Kampa, R.K. (Eds.), *Resource Efficiency, Sustainability, and Globalization: Exploring India-European Union Cooperation*. Apple Academic Press, p. In Press.
4. Gupta, I., **Acharyya, T.**, Agarwal, P., 2021. A Sustainable Business Assessment Plan for Setting Up a Dye Plant, in: Mishra, M., Dash, M.K., Upadhyay, D.K., Kampa, R.K. (Eds.), *Resource Efficiency, Sustainability, and Globalization Exploring India-European Union Cooperation*. Apple Academic Press, p. In press.

- **Technical Reports:**

1. Acharyya, T., 2021. Photosynthetic and photoprotective pigment profiling of six abundant species of seagrasses in Chilika lagoon, XIM University Seed Grant

- **Abstracts published in conference proceedings:**

1. **Acharyya, T., 2016.** Black carbon, the other global warming agent, Berhampur City College, Trends of Climate, Challenges for Humanity, Sponsored by UGC
2. **Acharyya, T., 2016.** Convergence for mitigation and adaptation to climate change; Case studies from coastal Odisha, Xavier University Bhubaneswar Sustainability Summit 2016 on the theme Energy, Peace and Global Governance***
3. **Acharyya, T., Shaik, A., 2012.** Impact of Fresh Water Discharge on the Seasonal and inter-annual Variation of Chlorophyll a in the Godavari River Plume, PORSEC (Pan Ocean Remote Sensing Conference, Kochi, India.
4. **Acharyya, T., Sarma, V.V.S.S., 2011.** Impact of variations in rainfall and river discharge on intensification of phytoplankton bloom in Indian monsoonal estuaries: Godavari – A case study TROPMET (Meteorology for Socio-economic Development), Hyderabad, India***.
5. **Acharyya, T., Sarma, V.V.S.S., 2010.** Phytoplankton community succession in a tropical Godavari River estuary: Influence of salinity, Asia Oceania Geosciences Society, HICC, Hyderabad, India.
6. Biswas, H., Cros, A., **Acharyya, T., Bandopadhyay, D., Sarma, V.V.S.S., 2010.** Effect of increasing CO₂ on the natural phytoplankton community from Bay of Bengal, Visakhapatnam Coast, India, Asia Oceania Geosciences Society, HICC, Hyderabad, India.
7. **Acharyya, T., Kumar, B.S.K., Bharathi, M.D., Venkataramana, V., Sarma, V.V.S.S., 2009.** Phytoplankton Dynamics in Godavari Estuary, Ocean Society of India Conference (OSICON), Andhra University, Visakhapatnam, India***.

*** **Best paper presentation award**

EXTERNAL GRANTS

1. Satellite detection and evaluation of phytoplankton size classes during recurring bloom events in coastal waters of the north-western Bay of Bengal (Role: CA), SAC, ISRO (Indian Space Research Centre, Department of Space, Govt. of India.
2. Hydro-chemical budgeting at river-sea interface: role of tide and river runoff in Mahanadi estuary (Role: PI), INCOIS (Indian National Centre for Ocean Information Services), Ministry of Earth Science, Govt. of India.
3. Phyto-health - An investigation of phytoplankton functional type, photo-acclimation and grazing dynamics in the Chilika lagoon: A pigment chemotaxonomy approach (Role: PI), Science and Engineering Research Board (SERB), Govt. of India.

INTERNAL GRANTS

1. Photosynthetic and photoprotective pigment profiling of six abundant species of seagrasses in Chilika lagoon, XIM University Seed Grant (Role: PI), XIM University Seed Grant, ₹ 1.0 Lakh (Report submitted)

STUDENTS ADVISED

Current PhD Students

- Sambit Singh (PhD, Oceanography, KUFOS [Kerala University of Fisheries and Ocean Studies], Dissertation title: *TBD*).

MERITS, AWARDS AND FELLOWSHIPS

- 1) Qualified National Eligibility Test – NET (A National level competitive examination for the selection of potential Ph.D. candidates from all over India) **six times** in the following subjects
 - **Environmental Science** NET conducted by ICAR – Indian Council of Agricultural Research, March 2007
 - **Atmospheric, Oceanic and Planetary science** NET-JRF conducted by Council of Scientific and Industrial Research - CSIR, India (qualified 3 times and ranked among the first 20s in all the exams); June and December 2008 and December 2006
 - **Environmental science** NET conducted by University Grants Commission – UGC, India; June 2007

- **Biological Science** NET-JRF conducted by Indian Council of Medical Research - ICMR, India; June 2007
- 2) Qualified highly competitive and prestigious Shyama Prasad Mukherjee Fellowship, a special fellowship scheme of CSIR (<http://csirhrdg.res.in/SPMF09result.htm>), India which is awarded only two candidates in a year among the toppers of CSIR- NET in the subject area of **Atmospheric, Oceanic and Planetary science**: September 2009.
- 3) Selected as Dr. Kothari Post – Doctoral fellow, a fellowship scheme of UGC in the subject category of Earth and Ocean Sciences; February 2015
- 4) Received best paper presentation award in:
- Wipro – XUB best paper competition, XUB Sustainability Summit 2016 on the theme Energy, Peace, and Global Governance; 11-13 Aug 2016
 - TROPMET – Indian Meteorological Society conference, Hyderabad, India; Dec 2011
 - Ocean society of India conference (OSICON), Andhra University, India; Feb 2009

Date: 28-03-2023
Place: BERHAMPUR

Tamoghna Acharyya