

CURRICULUM VITAE

Dr. Aурpita Saha

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EDUCATIONAL QUALIFICATIONS					
Duration (from mm/yy to mm/yy)	Examination/ Degree	University/ Board	Institute/ College/ School	Subjects studied/ Specialization	Percentage/ CGPA
11/2016- 10/2020	Doctor of Philosophy (PhD)	Universität Hamburg, Germany	Institute of Oceanography	Physical Oceanography	with distinction US: 3.5 Germany: 1.5
07/2014- 05/2016	Master of Science (MSc)	Public technical and research university, Government of India, India	Indian Institute of Technology (IIT) Bhubaneswar	Atmosphere and Ocean Sciences	US: 3.6 8.94/10
05/2011- 05/2014	Bachelor of Science (BSc)	University of Mumbai, India	St. Xavier's College - Autonomous, Mumbai	Geology, Physics, Mathematics, Computer Science	3.14
05/2009- 05/2011	Higher Secondary School Certificate (HSC) 11 th and 12 th std.	Maharashtra State Board, India	St. Mary's Junior College, Vashi	Computer Science, Mathematics, Physics, Chemistry, English	US: 3.7 90.83%
05/2008- 05/2009	Secondary School Certificate (SSC) 10 th std.	Maharashtra State Board, India	Fr. Agnel Multipurpose School, Vashi	Mathematics, Science, History, Geography, English, Sanskrit, Marathi	US: 3.7 90.61%

PUBLICATIONS

- 2021 Saha, A., Serra, N., and Stammer, D. (2021). Growth and decay of northwestern tropical Atlantic barrier layers. *Journal of Geophysical Research: Oceans*, 126, e2020JC016956. <https://doi.org/10.1029/2020JC016956>
- 2020 Saha, A. (2020). Barrier layers in the tropical Atlantic Ocean: Growth and decay mechanisms and impact of Amazon river runoff, **PhD Dissertation**, Institute of

Oceanography, Universität Hamburg, Hamburg, Germany. <https://ediss.sub.uni-hamburg.de/handle/ediss/8722>

I investigated the freshwater changes and the underlying processes in the northern tropical and subtropical Atlantic Ocean by using high-resolution eddy-resolving numerical simulations at 8 km and 4 km resolutions (forced by atmospheric reanalysis) using Massachusetts Institute of Technology General Circulation Model (MITgcm). The simulations were validated against observational data: in-situ profiles (Argo floats, CTD, XBT, etc.) (on which I performed quality control checks), objective analysis fields and satellite data (Aquarius and SMOS missions). The impacts of small-scale ocean processes (eddies and fronts) embedded in the regional circulation on the evolution of barrier layers were quantified by analysis of the 4 km resolution daily model outputs. Moreover, to understand the impacts of the Amazon river discharge on the northern tropical Atlantic upper ocean salinity, temperature and circulation, a set of sensitivity experiments were analyzed using the 8 km resolution version of the numerical model, including realistic (based on observed runoff data) and extreme idealized changes in the forced Amazon runoff. Overall, in my PhD work, the short-term, seasonal, and inter-annual variabilities of stratification and ocean circulation were addressed.

Advisors: Prof. Dr. Detlef Stammer and Dr. Nuno Serra. This work was developed in the frame of the German project “Atlantic Freshwater Cycle” FOR1740, funded by the Deutsche Forschungsgemeinschaft (DFG).

2018 Arbic, B.K., et al. (2018). A primer on global internal tide and internal gravity wave continuum modeling in HYCOM and MITgcm. In “*New Frontiers in Operational Oceanography*”, Chassignet, E. P., Pascual, A., Tintoré, J. and Verron, J., Eds., GODAE OceanView, ISBN 9781720549970, pp. 307-392, doi:10.17125/gov2018.ch13. Provided helpful comments.

2016 Saha, A. (2016). Investigations on the short-term variability of barrier layer thickness (BLT) in northern Indian Ocean, **MSc Dissertation**, IIT Bhubaneswar, Bhubaneswar, India.

Study of short-term variability of BLT and its sensitivity to surface forcings in the northern Indian Ocean, at two point locations, one in north Bay of Bengal and the other in north Arabian Sea. Comparative study of the ocean dynamics and meteorology in relation to the BLT variability at the two locations. I used large data sets (hourly) of ocean surface, sub-surface and meteorological parameters from ocean moored buoys, to investigate the seasonal and diurnal variation in upper ocean stratification and its sensitivity to surface forcings (wind speed, insolation, precipitation and river runoff). Fast Fourier Transform and Wavelet Transform were performed for the time series analysis.

Advisor: Dr. Debadatta Swain.

2015 Saha, A. and Suprit, K. (2015). The Barrier Riddle: Exploring the Barrier Layer Thickness in the Bay of Bengal, First Cruise - International Indian Ocean Expedition 2, The Indian Ocean Bubble 2, Issue 04, pp. 20-21.

https://www.oceandocs.org/bitstream/handle/1834/9670/IndianOceanBubble2_4th.pdf?sequence=1&isAllowed=y#page=20 ;
https://iioe-2.incois.gov.in/documents/IIOE-2/Publications/IIOE-2-DOC_OM_70.pdf#page=20.

- 2013 Saha, A. (2013). The Indian Glowrider (on the fluorescence of minerals), Terra: Department of Geology Annual Magazine, ISSN 2320-298X, Vol 01, Issue 02, pp. 40-43. (St. Xavier's College, Mumbai, India).
- 2012 Saha, A. (2012). No Stone Unturned (on gemology and gemstones), Terra: Department of Geology Annual Magazine, ISSN 2320-298X, Vol 01, Issue 01, pp.15-17.
- 2012 Saha, A. (2012). The Badlands (on the geology and geomorphology of badlands in USA and India), Terra: Department of Geology Annual Magazine, ISSN 2320-298X, Vol 01, Issue 01, pp. 37-39.

CONFERENCES

- 12-16/12/2022 Saha, A., Foltz, G., and Schmid, C. (2022). Investigation of the surface and subsurface salinity wakes of tropical cyclones. American Geophysical Union-AGU Fall Meeting 2022, Chicago, USA. Poster presentation.
- 5-12/10/2022 Saha, A., Foltz, G., and Schmid, C. (2022). Investigation of the surface and subsurface salinity wakes of tropical cyclones. Mentoring Physical Oceanography Women to Increase Retention (MPOWIR) Virtual Pattullo Conference honoring Dr. Susan Lozier. Poster presentation.
- 2-5/10/2022 Saha, A., Foltz, G., and Schmid, C. (2022). Investigation of the surface and subsurface salinity wakes of tropical cyclones. Prediction and Research Moored Array in the Tropical Atlantic /Tropical Atlantic Variability (PIRATA/TAV) meeting, Brazil. Poster presentation.
- 10-14/05/2021 Saha, A., Serra, N., and Stammer, D. (2021). Growth and decay of northwestern tropical Atlantic barrier layers. PIRATA-24/TAV Meeting. Miami, USA. By (National Oceanic and Atmospheric Administration) NOAA's Global Ocean Monitoring and Observation (GOMO) program, with logistics support from University Corporation for Atmospheric Research (UCAR). Oral presentation.
- 13-16/10/2020 YOUMARES 11 The conference for young marine researchers, German Society for Marine Research (DGM), Hamburg, Germany. Participation.
- 26-27/09/2019 Salinity Science Seminar, Hamburg, Germany. Participation and help with organization.
- 24-26/04/2019 Saha, A. (2019). Freshwater changes and underlying processes in the tropical Atlantic Ocean: Generation and evolution of tropical Atlantic barrier layers, School of integrated Climate System Sciences (SICSS) retreat, Lüneburg, Germany. Oral presentation.
- 7-12/04/2019 Saha, A., Serra, N., and Stammer, D. (2019). Generation and evolution of tropical Atlantic barrier layers, Geophysical Research Abstracts, Vol. 21,

	EGU2019-10253. https://meetingorganizer.copernicus.org/EGU2019/EGU2019-10253.pdf . European Geophysical Union- EGU General Assembly 2019, Vienna, Austria. Poster presentation.
06-09/11/2018	Saha, A., Serra, N., and Stammer, D. (2018). Generation, evolution and fate of tropical Atlantic barrier layers and their large-scale impact. Ocean Salinity Science Conference, Paris, France. Poster presentation.
25-26/05/2018	I Scientist: Gender Equality, Career Paths and Networking Conference, Berlin, Germany. Participation. It is geared towards empowering women in Science Technology Mathematics and Engineering (STEM) fields.
01-13/10/2017	Saha, A. (2017). Freshwater changes and underlying processes in the tropical Atlantic Ocean. GODAE Ocean View International Summer School on New Frontiers in Operational Oceanography, Mallorca, Spain. Poster presentation.

SKILLS

- Programming Languages & Software Programs:
 - Very good knowledge: MATLAB
 - Extended knowledge: Python, Shell scripting, NCO, CDO, FORTRAN, C++, FERRET, Avizo, GrADS, ArcGIS, ERDAS IMAGINE, TASK-2000 Tidal Data Analysis Software, Ocean Data View (ODV) Software
- Computer Knowledge: Unix/Linux and Windows based operating systems
Microsoft Office, Open Office, LaTeX
- Numerical Models: Eddy-resolving high-resolution simulation of Massachusetts Institute of Technology General Circulation Model (MITgcm), Weather Research and Forecasting (WRF) model, numerical weather prediction (NWP) model, cyclone prediction simulation, Price-Weller-Pinkel (PWP) ocean model, Regional Ocean Modeling System (ROMS)
- Spoken Languages: Fluent: English, Hindi, Marathi, Bengali
Basic level: German (Certified B1 level)

HONORS and AWARDS

05/2022	The international Argo Program, which includes the US Argo Data Assembly Team at NOAA/AOML), was awarded the Institute for Electrical and Electronics Engineers (IEEE) Corporate Innovation Award “for innovation in large-scale autonomous observations in oceanography with global impacts in marine and climate science and technology.”
05-07/2015	Summer Research Fellowship by Indian Academy of Sciences (IAS), Bangalore, India.
2014	AIR-109 in Joint Admission Test (IIT- JAM), National Entrance for MSc in IIT.

- 2012 Team, under my leadership, won 1st Prize for demonstration of the Milankovitch Cycle in National Inter-college Science Exhibition “Paradigm” held in Mumbai, India. The principles of planetary physics were explored.
- 2011 Holder of the INSPIRE SCHOLARSHIP by the Government of India, for graduation (BSc and MSc; awarded on the basis of (HSC) 12th grade result (Rank in top 0.5%) and on the basis of my performance throughout my BSc and MSc.
- 2009 Acquired 1st position and a gold medal in the class, secured 43 (Maharashtra) state rank and achieved 797 Olympiad rank in the International Informatics Olympiad, organized by Computer Literacy Foundation, New Delhi, India.
- 2002-2006 Holder of the Academic Excellence Award for the academic years 2002, 2003, 2004, 2005 and 2006 at Fr. Agnel Multipurpose School, Vashi, Navi Mumbai, India.

PROFESSIONAL EXPERIENCE, TRAINING WORKSHOPS, EXPIDITIONS

- 1/08/2021-present Postdoctoral Research Associate, CIMAS, NOAA/AOML-PhOD, Miami, USA.
- 11/2016-10/2020 Research Associate, Institute of Oceanography, Universität Hamburg, Hamburg, Germany. Project “Atlantic Freshwater Cycle” FOR1740, funded by the Deutsche Forschungsgemeinschaft (DFG). Identification and investigation of the mechanisms governing the growth and decay of upper ocean barrier layers in the tropical Atlantic Ocean at seasonal and short timescales and study of the response of the tropical Atlantic Ocean to changes in the Amazon river freshwater discharge. Used high resolution eddy-resolving numerical model simulations, eddy-resolving numerical experiments and observational data: in situ profiles and objective analysis fields.
- 2021-present **Manuscript Reviewer:**
Journal of Geophysical Research- Oceans (1)
Journal of Physical Oceanography (1)
Deep-Sea Research Part I (1)
- 31/10-09/12/2022 Prediction and Research Moored Array in the Tropical Atlantic, PIRATA Northeast Extension (PNE) **cruise crossing equator aboard the NOAA ship R/V Ronald H. Brown**. 40 days of sea-going oceanography. Start port: Bridgetown, Barbados - End port: Newport, Rhode Island, USA.
Responsibilities: CTD measurements and console operation, salinity calibration, Argo floats deployment, mooring recovery and deployment, sargassum collection and sampling, meteorological measurements.
- 07-09/06/2022 The Global Ocean Observing System (GOOS)/United Nations (UN) Ocean Decade Programme Ocean Observing Co-Design workshop. Tropical Cyclone Co-Design Exemplar. Virtual.
- 21/06/2022 Tropical Analysis and Forecast Branch, TAFB/PhOD Workshop, Miami, USA.
- 2022-present Member of Mentoring Physical Oceanography Women to Increase Retention (MPOWIR) mentoring group.
- 2022-present Member of American Geophysical Union (AGU).

12-14/10/2020 Training course on “Understanding Sea Level: data analysis and applications” by International Training Centre for Operational Oceanography (ITCOcean), at Indian National Centre for Ocean Information Services (INCOIS), Hyderabad, India.

14-18/09/2020 Advanced Programming in Python, by Remon Sadikni, Universität Hamburg, Hamburg, Germany.

31/08-04/09/2020 Training course on “Discovery and Use of Operational Ocean Data Products and Services” by ITCOcean, at INCOIS, Hyderabad, India.

2018-2019 Presentation Skills, and Conflict Management, SICSS courses by Sabine Lerch, Universität Hamburg.

10-11/09/2018 Paraview workshop, German Climate Computing Centre (Deutsches Klimarechenzentrum) (DKRZ), Hamburg., Germany.

19-23/03/2018 Advanced Scientific Writing course, by Dallas Murphy, Universität Hamburg, Hamburg, Germany.

26/10, 16/11/2017 Writing course, by Kimberly Crow, Universität Hamburg, Hamburg, Germany.

10-14/07/2017 Statistical Tools in Climate Science course, by Prof. Jin-Song von Storch, Max Planck Institute for Meteorology and Universität Hamburg, Hamburg, Germany.

27-28/03/2017 3D Visualization with Avizo, DKRZ, Hamburg, Germany.

2016 Training course on “Tides and Tidal Data Analysis” by ITCOcean, at INCOIS, Hyderabad, India.

05-07/2015 Worked on my research project entitled “Examination of seasonal and diurnal variability of ocean surface layer and SST using moored buoy data”, with Summer Research Fellowship by Indian Academy of Science (IAS), Bangalore. Carried out at INCOIS, Hyderabad, India.

2015 Training course on “Applications of Remote Sensing & GIS for Natural Resources” at Indian Institute of Remote Sensing (IIRS), Dehradun, India.

2015 Training at Indian Institute of Tropical Meteorology (IITM), Pune and at Indian Meteorological Department (IMD), Pune, India. Attained knowledge of the functions and on-going research work, knowledge of the working principles of all the meteorological instruments.

2015 Participated in a research boat excursion in Chilika Lake, a brackish water lagoon, India, to collect and analyse upper ocean data using portable hand-held Conductivity Temperature Depth (CTD) profiling instrument.

2014 Training course on “Ocean Data utilization and Ocean Observation Systems” by ITCOcean, at INCOIS, Hyderabad, India.

2014 Industrial training at National Institute of Ocean Technology (NIOT), Chennai, India.

2014 Practical hands-on lab-work conducted at Indian Meteorological Department (IMD) and Orissa Space Applications Center (ORSAC), Orissa, India.

2013 Summer project in Remote Sensing and Geographic Information System (GIS), under the mentorship of Dr. Hrishikesh Samant, at Department of Geology, St. Xavier’s College, Mumbai, India. Understanding the trend of changes in an area selected in a coastal suburb - Bandra, Mumbai, India by time series analysis, using

- hand-held Global Positioning System (GPS), remote sensing techniques, satellite imagery and GIS.
- 2013 Workshop on “Remote Sensing through Topographic Maps” conducted by Prof. V. Subramanyan (Professor Emeritus of Geomorphology, IIT Bombay) in St. Xavier's College, Mumbai, India.
- 2011-2013 Four Geological Field Trips which included intensive geological study of the regions, on-field mapping, and exercises, maintaining field-diary, study of the observations on field, preparing and analysing thin-sections of the rock samples collected on field. [Regions: Bhuj, Gujarat (12 days); Uttan (2 days), Malvan (12 days), Elephanta Island and Caves, Lonavla (3 days), Deccan Traps, Maharashtra, India].
- 2011-2012 Secured Grade A in Honors Credit Program in Problem Solving in Mechanics, by Department of Physics, at St. Xavier’s College, Mumbai, India.
- 2009 Acquired the Maharashtra State Certificate in Information Technology (MS-CIT) on completing a course on Information Technology and securing 82% in the examination, accredited by the Government of Maharashtra, India.

TEACHING, OUTREACH, SERVICE and EXTRACURRICULAR ACTIVITIES

- 2014-present **Mentoring:** Mentored PhD, MSc and BSc students from IIT Bhubaneswar, India and University of Hamburg, Germany in their research projects and career.
- 19-20/02/2022 Served as KICK Plastic Ambassador Volunteer at the Miami International Boat Show. Informed people about how plastic waste physically disperses in the ocean and how it harms sea life, and encouraged them to live plastic-free and use substitutes.
- 08/2021-present Member of the US Argo Data Assembly Team at NOAA/AOML.
- 2022-present Member of Early Career Scientist affinity group, NOAA.
- 24-26/04/2019 SICSS Retreat. Leuneburg, Germany.
- 31-01/05/2018 SICSS Retreat. Hamburg, Germany.
- 15-17/05/2017 SICSS Retreat. Lübeck-Travemunde, Germany.
In the retreats gave oral presentation, participated and organized various group activities related to Climate Science, and honed soft skills.
- 20/09/2018 SICSS Intercultural Training, Hamburg, Germany.
- 06-10/11/2017 SICSS Introductory Course on Climate System Sciences, Blankenese, Hamburg, Germany.
- 2016-present Member of School of Integrated Climate System Sciences (SICSS), KlimaCampus, Universität Hamburg, Hamburg, Germany.
- 2016-present Member of Scientific Writing Group, Institute of Oceanography, Universität Hamburg, Hamburg, Germany.
- 2007, 2013, 2015 Cleared GRE (2013), TOEFL (2015) and Graded Examination in Spoken English with Distinction, accredited by the Trinity College London (2007).
- 2014-2016 **Mentoring:** Assistant Coordinator at Counselling Service Team (CST), the core student representative body, at IIT Bhubaneswar.
- 2014-2016 Member of “Clix” Photography Society, at IIT Bhubaneswar.

- 2012-2014 **Co-Editor and then Editor** of “Terra”, Department of Geology Annual Magazine, St. Xavier’s College, Mumbai. It features articles related to the various spheres of Geology, written by students, professors, and professionals.
- 2012-2014 Core organizer at “Malhar” annual fest of St. Xavier’s College, Mumbai, India.
- 2012-2016 **Teaching:** Taught and guided under-privileged students (11th and 12th standard Higher Secondary Science and for engineering entrance exams; those students are now doing well as Engineers) and orphans at “Children of the World”, NGO in Nerul, Navi Mumbai, India. Taught school students Science and English.
- 2011 Certified on completion of the Dale Carnegie Leadership Training Program, attested by Dale Carnegie & Associates, Inc. Trainer.
- 2015 First Prize winner of a painting competition with the theme “Woman Empowerment”, at an event organized for the empowerment of women, at IIT Bhubaneswar.
- 2013 Attend the address by His Holiness the Dalai Lama, during his visit to St. Xavier’s College, Mumbai, India.
- 2011-2012 Awarded Certificate of Merit for completion of a course on Zen Buddhism and submitting my project “On Zen and Fine Arts”, with Grade A, by the Department of Inter-Religious Studies, St. Xavier’s College, Mumbai, India.
- 2004 Made efforts by creating awareness and raising funds for the care of the elderly, working with the HelpAge India Organization, an All-India Secular, Social Service Society.
- 1997-2009 Participated in National and International Science Olympiad and Quiz Contests while at Fr. Agnel Multipurpose School, Vashi, Navi Mumbai.
- 1997-present Trained swimmer. Have done Himalayan treks up to 4000 m altitude, and Himalayan glacier river-rafting. Trained classical singer (approved with examination after 5 years training). Trained in Bharat Natyam and ballroom dance. Represented my school and college in fine arts (painting) and crafts, Certified grade A on completing Elementary and Intermediate Examinations in fine arts. I am passionate about Ocean, Climate, Extreme Weather and Earth Sciences, Operational Oceanography, teaching, painting/drawing, photography, swimming, cycling, writing, performing arts, and travelling.

-last updated: 1st January 2023-