

(A basin-wide research program co-sponsored by IOC-UNESCO, SCOR and IOGOOS)

To advance our understanding of interactions between geologic, oceanic and atmospheric processes that give rise to the complex physical dynamics of the Indian Ocean region, and to determine how those dynamics affect climate, extreme events, marine biogeochemical cycles, ecosystems and human populations.

Report from the Special Scientific Session (OSO6) at the Asia Oceania Geoscience Society (AOGS) 21st Annual Meeting

A special session on multidisciplinary science focused on the Indian Ocean, titled "Physics, Biogeochemistry, and Climate Dynamics of the Indian Ocean," was held on the 26 and 27 June 2024, in Pyeongchang, Gangwon-do, Republic of Korea, during the 21 Annual Meeting of the Asia Oceania Geoscience Society. The session provided a detailed exploration of the Indian Ocean, covering areas from the coastal upwelling zone off Java to the open ocean upwelling zone known as the Seychelles Chagos Thermocline Ridge and the entire basin. Several attendees including the four convenors (Professor SungHyun Nam; Seoul National University, Korea, Dr. Nicolino (Nick) D'Adamo: University of Western Australia, Australia, Dr. Dong-Jin Kang; Korea Institute of Ocean Science & Technology, Korea, and Professor Yukio Masumoto; University of Tokyo, Japan) took part in the session, discussing recent discoveries and future research directions. The session included 7 oral presentations and 7 poster presentations, encompassing a broad range of topics in physics, biogeochemistry, and climate dynamics from Japan, China, and Korea. It highlighted findings from projects associated with IIOE-2.



Figure-1: Oral Presentation of Session-OSO6, Physics, Biogeochemistry, and Climate Dynamics of the Indian Ocean during AOGS2024 21th Annual Meeting

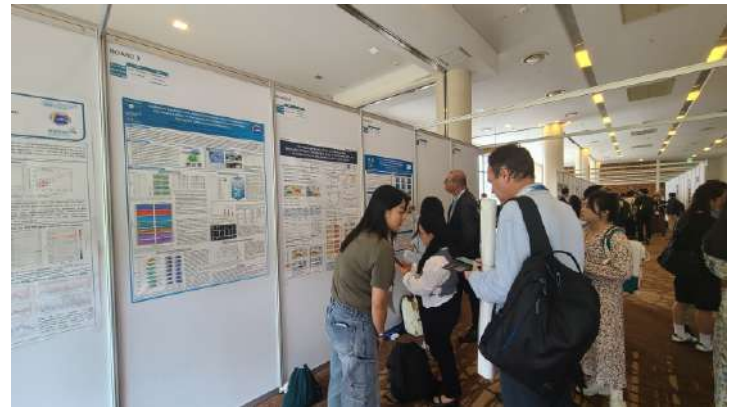


Figure-2: Poster Presentation of Session-OSO6, Physics, Biogeochemistry, and Climate Dynamics of the Indian Ocean during AOGS2024 21th Annual Meeting

[Report Courtesy: Prof. SungHyun Nam (namsh@snu.ac.kr), Seoul National University, Seoul, Korea and Dr. Dong-Jin Kang (djocean@kiost.ac.kr), Korea Institute of Ocean Science & Technology, Busan, Korea.]

Understanding Jellyfish Aggregations: Insights from Recent Expeditions in the Western Bay of Bengal

Jellyfish aggregations have been garnering increasing attention due to their impact on various sectors. On one hand, they cause nuisances by clogging fishing nets, blocking water intake pipes of atomic power plants, and affecting tourism. On the other hand, jellyfish fishing and exports hold economic and livelihood significance. Therefore, prior information on jellyfish aggregations is essential for all these sectors. To address this, the Indian National Centre for Ocean Information Services (INCOIS) has been developing Jellyfish Aggregation Advisory Services (JAAS). INCOIS has studied and published several reports on jellyfish swarming and stranding events, analyzing their plausible causes. The aim is to develop satellite data-based jellyfish advisory services for fisheries management and ecosystem conservation.

Based on historical aggregation reports along the Indian coast from 1980 to 2024, jellyfish aggregation hotspots have been identified. The Western Bay of Bengal, with numerous instances of jellyfish aggregations and its large fisheries, is a key area of interest. INCOIS has planned exploratory surveys along the East coast of India, from Chennai to Kakinada, during the presence of jellyfish aggregations (February to July) and their absence (November to January) to determine the factors influencing these aggregations. The first phase of the study was completed in November 2023 when jellyfish aggregations were absent. The second phase was conducted from June 14 to 25, 2024, onboard ORV Sagar Manjusha (cruise ID: SAMA 34/2023-24) during the presence of jellyfish aggregations. Sampling was carried out in the waters of Chennai, Nellore, Bapatla, Nizampatnam, Hamsaladevi, Machilipatnam, and Uppada (Figure-1). Jellyfish aggregations were found near the shore in Nizampatnam and Uppada during the second phase of the survey (Photo-1).

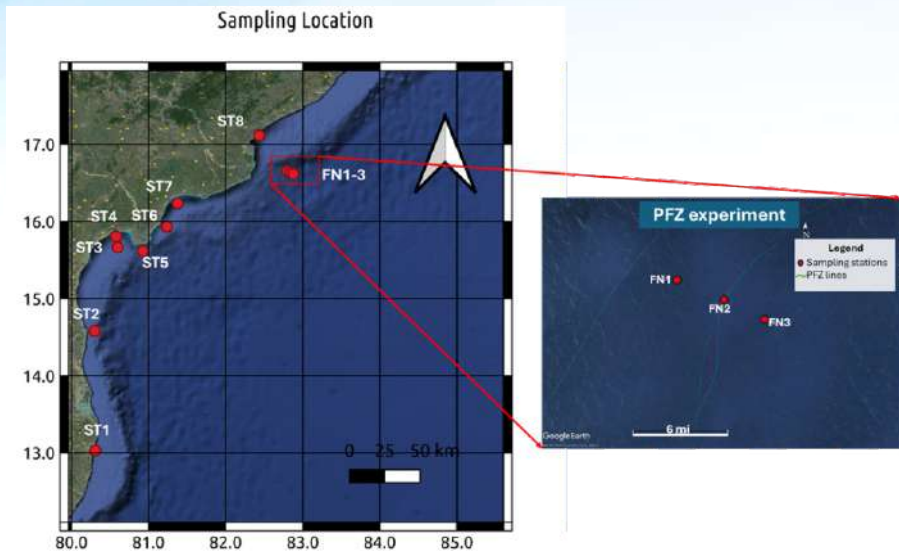


Figure-1: Sampling stations along the Western Bay of Bengal, location of PFZ experiment has been shown in the right



Photo-1: Ongoing jellyfish hauling operation in nearshore waters of Uppada on 21st June near the time-series station

A time series sampling was conducted at Uppada, a hotspot for jellyfish aggregations, to understand the possible reasons for the aggregation and how they interact with tides and day-night cycles. Various environmental parameters such as water temperature, salinity, pH, dissolved oxygen, biological oxygen demand, dissolved inorganic carbon, and total suspended matter were collected throughout the water column. Biological parameters, including the abundance and diversity of phytoplankton and zooplankton, were collected from the surface waters at all stations to study their relation to jellyfish aggregations. Additionally, optical parameters were measured with a radiometer, colour of the water was estimated with a Forel-ule scale-based water colour measuring device, and meteorological parameters like rainfall and wind were measured with an Automatic Weather Station (make: Aurassure Pvt. Ltd.) (Photo-2). The detailed ongoing analysis of all these parameters from both survey phases aims to provide a scientific basis for understanding jellyfish aggregations along Western Bay of Bengal. Alongside, an experimental zooplankton grazing experiment was also conducted onboard to understand the trophodynamics.



Photo-2: Sampling and operation of various equipment at various sampling stations onboard ORV Sagar Manjusha

Additionally, water samples and bio-optical data were collected along the PFZ front during this cruise. Surveys were conducted at two stations on the periphery of the PFZ front and one at the center to estimate and analyze various parameters related to the front. This study in Indian waters aims to pave the way for further in-situ characterization of PFZ front properties, enhancing our understanding of the associated oceanic processes.



From left: Dr. Sathish Chennuri, Mr. Sumit Kumar, Ms. Suchismita, Dr. Sneha Jha, Ms. Susmita Raulo, Dr. Dhanya M Lal, Mr. Alakes Samanta, Dr. Sanjiba kumar Baliarsingh, Dr. Prem Kumar

Report Source: Samanta et al (2024): Expedition Report: ORV Sagar Manjusha [ID: SAMA-34/2023-2024; 14-25 June 2024]

[Report Courtesy: Sathish Chennuri (s.chennuri-p@incois.gov.in), Sneha Jha (s.jha-p@incois.gov.in), Dhanya M Lal (dhanya.ml@incois.gov.in), Susmita Raulo (s.raulo-p@incois.gov.in), Premkumar R. (pr.kumar-p@incois.gov.in), Baliarsingh S.K. (baliarsingh.s@incois.gov.in), Indian National Centre for Ocean Information Services, Hyderabad, India.]

IIOE-2 ECSN & SOLAS ECS Indian Ocean Seminar

The IIOE-2 Early Career Scientist Network invites you all to the Indian Ocean Seminar co-hosted by the Surface Ocean-Lower Atmosphere Study (SOLAS) Early Career Scientist Committee and the International Indian Ocean Expedition Early Career Scientists Network (IIOE-2 ECSN), to highlight the research in Indian Ocean sciences conducted by early career scientists from Indian Ocean-rim countries.

Please mark your calendar and join us on:

2nd August 2024 (Friday)

at

13:30 -14:45 IST (10:00-11:10 SAST; 16:00-17:15 AWST)

Register for zoom link:

<https://bit.ly/4c8Yiog>



Speakers:

1. Zahor Khalfan : "Seaweed industry evolution, status and recent development"
2. Apurva P. Joshi : "Sea-surface pCO₂ maps for the Bay of Bengal based on advanced machine learning algorithms"

If you are enthusiastic about sharing your contributions in the Indian Ocean Sciences, please reach out to us at ecsn.iioe@gmail.com



INDIAN OCEAN SEMINAR

Co-hosted by the International Indian Ocean Expedition Early Career Scientists Network (IIOE-2 ECSN) and the Surface Ocean-Lower Atmosphere Study (SOLAS) Early Career Scientist Committee highlighting the Indian Ocean science conducted by early career scientists from Indian Ocean-rim countries.

2nd August 2024 (Friday) at 13:30 -14:45 IST (UTC+5:30), online

Seaweed industry evolution, status and recent development

Zahor Khalfan
Zanzibar Fisheries and Marine Resources Research Institute (ZAFIRI), Tanzania



Sea-surface pCO₂ maps for the Bay of Bengal based on advanced machine learning algorithms

Apurva P. Joshi
Indian National Centre for Ocean Information Services (INCOIS),
Ministry of Earth Sciences, Hyderabad, India



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DEEP-SEA RESEARCH PART II



Special Issue



The 2nd International Indian Ocean Expedition (IIOE-2): Motivating New Exploration in a Poorly Understood Basin (Volume 7)
Deep Sea Research Part II: Topical Studies in Oceanography

Edited by
Raleigh Hood, Birgit Gaye, Lynnath Beckley, VVSS Sarma, Laure Resplandy, P.N. Vinayachandran

Submit your paper >

THE SUBMISSION PORTAL FOR VOL. 7 OF THE DEEP-SEA RESEARCH II SPECIAL ISSUE SERIES ON THE IIOE-2 IS NOW OPEN

Submission of manuscripts that describe the results of studies related to the physical, chemical, biological, and/or ecological variability and dynamics of the Indian Ocean (including higher trophic levels) is encouraged.

Submission of manuscripts from students and early career scientists is also encouraged.

If you are interested in submitting a manuscript, please contact Raleigh Hood (rhoo@umces.edu).

Important Dates:

Manuscript Submission Deadline: **August 15, 2024**; Editorial Acceptance Deadline: **February 15, 2025**

For more details please visit

<https://www.sciencedirect.com/journal/deep-sea-research-part-ii-topical-studies-in-oceanography/about/call-for-papers#the-2nd-international-indian-ocean-expedition-iioe-2-motivating-new-exploration-in-a-poorly-understood-basin-volume-7>

Endorse your projects in IIOE-2

Don't miss the opportunity to network, collaborate, flesh out your research project and participate in IIOE-2 cruises!!

The endorsement of your scientific proposal or a scientific activity focusing on the Indian Ocean region is a recognition of the proposal's or activity's alignment with the mission and objectives of IIOE-2, of its potential for contributing to an increased multi-disciplinary understanding of the dynamics of the Indian Ocean, and of its contribution to the achievement of societal objectives within the Indian Ocean region. Over 55 international, multi-disciplinary scientific projects have already been endorsed to date by the IIOE-2. Yours could be the next one!

Visit <https://iioe-2.incois.gov.in/IIOE-2/EndorsementForm.jsp> for further details and for projects already endorsed by IIOE-2 https://iioe-2.incois.gov.in/IIOE-2/Endorsed_Projects.jsp.

Call for Contributions

Informal articles/short notes of general interest to the IIOE-2 community are invited for the next (August-end) issue of the IIOE-2 Newsletter. Contributions referring IIOE-2 endorsed projects, cruises, conferences, workshops, "plain language summary" of published papers focused on the Indian Ocean etc. are welcome. Articles may be up to 500 words in length (Word files) accompanied by suitable figures, photos.(separate.jpg files).

Deadline: **25 August, 2024**

The IIOE-2 Newsletter is published online by:



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