

(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.

Study of acoustic variability affected by upper ocean dynamics in South Eastern Arabian Sea

Marine acoustics is vital for underwater navigation, communication, sonar-based detection systems and in identifying marine mammals like whales. Acoustic field in the upper ocean is complex due to the high degree of environmental variability and the presence of mixed layer acoustic duct (MLAD), where the sound of a given frequency will be trapped and propagated with less loss. Numerous processes in the ocean result in short-term changes to sound propagation, both in shallow and deep water. Environmental factors affecting acoustic propagation are rough sea surface, ocean bottom, topographical features, sound speed structure in the water column, oceanic fronts, small-scale turbulence etc.

The present study evaluated the influence of upper ocean dynamics on acoustic fields in the South Eastern Arabian Sea (SEAS)(Figure-1), using in-situ oceanographic /acoustic measurements

from a moored, buoy along with satellite-derived and climatological datasets. Upper-ocean variability at the site was quantified using Mixed Layer Depth, Isothermal Layer Depth (ILD), Barrier Layer Thickness (BLT), Maximum Spice Depth (MSD), and Sonic Layer Depth (SLD), along with temperature, salinity, Sea Level Anomaly and ocean spice. The ILD shows a good correlation with SLD compared to MLD when BLT is thick due to the intrusion of low saline waters into the SEAS. Ambient noise measurement system observations show the seasonal variation in the sound pressure level (SPL) relative to the SLD. The Acoustic model simulations show that during winter, acoustic leakage is minimal, with more frequencies (> 250 Hz) trapped in the Acoustic Duct (Figure-2) when a deep SLD (80 m) is present. In the southwest monsoon season, fewer frequencies (> 500 Hz) are trapped in the surface Acoustic Duct, and duct leakage is

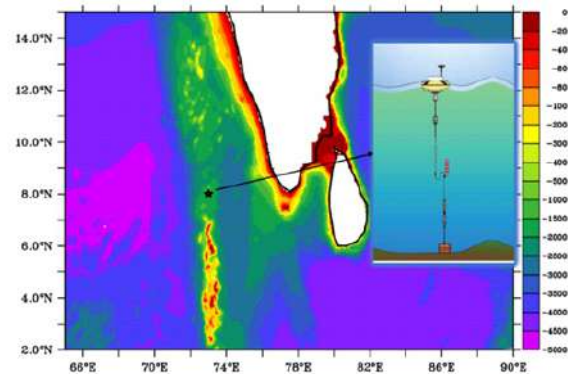


Figure -1: Bathymetry of southern part of eastern Arabian Sea, star shows the buoy location (~ 2200 m) along with schematic diagram of OMNI buoy.

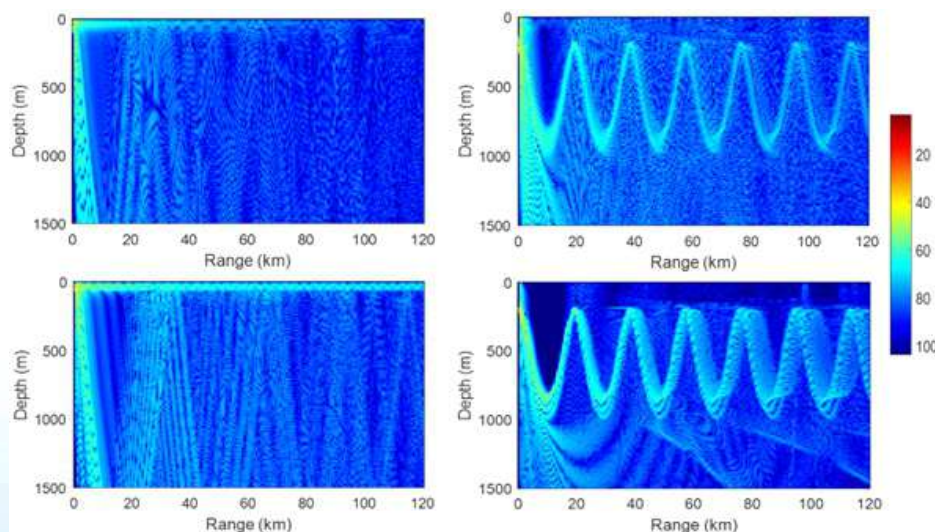


Figure -2: Acoustic simulation carried out for SSP with SLD of 80 m during Jan-Mar for source depths of 40 m – left panel (inside the MLAD) and 140 m –right panel (outside the MLAD) for frequencies 250 Hz and 1000 Hz (top to bottom) respectively. Colour bar shows Transmission loss in dB

higher(Figure-3) when the SLD is shallower (50 m). The model simulations are conducted in two ways: with the sound source located within the MLAD and below the MLAD. The results clearly show sound propagation and transmission loss (TL) (Figure- 2, 3) with respect to the seasons. To the best of our knowledge, this is the first study on the influence of upper ocean dynamics and its impact on acoustic variability using oceanographic/acoustic measurements and simulations in the SEAS.

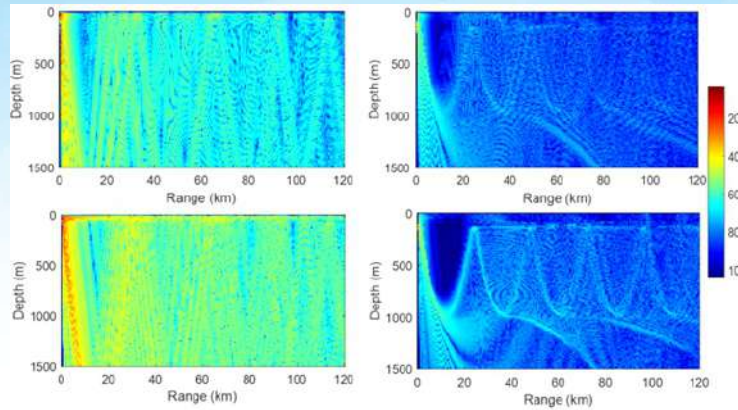


Figure -3: Acoustic simulation carried out for SSP with SLD of 50 m during Jul-Sep for source depths of 40 m – left panel (inside the MLAD) and 140m –right panel (outside the MLAD) for frequencies 250Hz & 1000Hz (top to bottom) respectively. Colour bar shows Transmission loss in dB.

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14th International Conference on Southern Hemisphere Meteorology and Oceanography

The NRF-SAEON, along with partner institutions in South Africa, are hosting the 14th International Conference on Southern Hemisphere Meteorology and Oceanography (ICSHMO) from 31 March to 4 April 2025. The conference will take place at the Cape Town International Convention Centre (CTICC). The Conference Theme is "Interconnected Earth System and Society". For details visit the website: <https://icshmo2025.com/>

We are encouraging the submission of abstracts and early bird registrations at this stage. We have a number of oceanography sessions that may be of interest to you and your networks, including Southern Hemisphere Boundary Currents, Air-Sea interactions, Marine Heatwaves, Emerging Technologies, Ocean and Cryosphere interactions, Mesoscale and Submesoscale processes, ocean and ecosystem modelling and prediction. In addition, a number of sessions dedicated to atmospheric interactions are planned including extreme events, extratropical processes, and climate change to list only a few.

Should you have any further questions, please contact the local organising team: icshmo2025@saeon.nrf.ac.za.

Registrations Open:

The deadline for abstract review has been extended! If you are still interested in presenting, please ensure you submit your abstract for review before midnight SAST on 6th December 2024.

For Registration Assistance Contact: thandeka@confco.co.za

2025 ASI & IPFC 12 Annual Meeting

2025 Joint Conference of the Asian Society of Ichthyologists Annual Meeting and the 12th Indo-Pacific Fish Conference
2025 亞洲魚類學會年會暨第十二屆印度-太平洋魚類會議聯合會議

09-13 June 2025
Taipei, Taiwan
National Tsing Hua University & Taipei Zoo

Call for Abstracts

DEADLINE **January 20, 2025**

There will be Themed and Special Sessions. For **Themed Sessions**, there are

- Systematics (covering evolution, taxonomy, and biogeography)
- Ecology (including larval fish ecology)
- Sustainable Fisheries
- General Fish Biology (encomp)

Whereas for **Special Sessions**, there will be 8 sessions:

1. Investigating the biogeography of freshwater fishes of Asia
2. Exploring the diverse roles of fish parasites in taxonomy, evolution and ecological interactions
3. Coral reefs: fish communication
4. Diadromous fishes: biodiversity, life traits and conservation
5. Resilience and sensitivity of fishes to climate change and environmental stressors: from genes to ecosystems
6. Charting the Future of Indo-Pacific Shark and Ray Research and Conservation: Emerging Trends, Critical Needs, Practical Solutions
7. Gateway to the Past: Fish fossils and otoliths of the Indo-Pacific and their relation to fish biodiversity in time and space
8. Coral Reef Fishes as models for Eco-Evo-Devo

Please submit your abstract [here](#).

The Call for Abstracts has opened on **November 8, 2024**, and will close on **January 20, 2025**. Should you have any further questions, please contact e-mail 2025.asiipfc12@gmail.com

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The 2nd International Indian Ocean Expedition (IIOE-2): Motivating New Exploration in a Poorly Understood Basin (Volume 7)
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Raleigh Hood, Birgit Gaye, Lynnath Beckley, VVSS Sarma, Laure Resplandy, P.N. Vinayachandran

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 (rhoon@umces.edu).

Important Dates:

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>

The Indian Ocean Bubble, Issue No. 19 is now available online



Web Link: https://iioe-2.incois.gov.in/IIOE-2/pdfviewer_pub.jsp?docname=IIOE-2-DOC_OM_301.pdf

Informal articles are invited for the next issue. Contributions referring Indian Ocean studies, cruises, conferences, workshops, tributes to other oceanographers etc. are welcome.

Articles may be up to 1500 words in length (MS-Word) accompanied by suitable figures, photos (separate .jpeg files).

Deadline extended upto: **15 December, 2024**

Send your contributions as usual to iioe-2@incois.gov.in

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 57 international, multi-disciplinary scientific projects have already been endorsed to date by the IIOE-2. Yours could be the next one!

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Call for Contributions

Informal articles/short notes of general interest to the IIOE-2 community are invited for the next (December-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 December, 2024**

Send your contributions to iioe-2@incois.gov.in



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