2nd International Indian Ocean Expedition 2015-2025

IIOE-2

Newsletter

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

Volume-8, Issue-3
March, 2024

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.

Clean Ocean: Advancing Indian Coastal Monitoring with INCOIS' Water Quality Nowcasting System

The fragility of India's coastal waters is no secret, bearing the brunt of industrial effluents, urbanization, agricultural runoff, and river discharge. In a recent breakthrough, a new Water Quality Nowcasting System (WQNS) has been operationalised to combat these challenges head-on. Developed by the Indian National Centre for Ocean Information Services (INCOIS), this groundbreaking system aims to revolutionize water quality monitoring along the eastern and western seaboard of India. A recently published research paper titled "An integrated Buoy-Satellite based coastal Water Quality Nowcasting System: India's pioneering efforts towards addressing UN Ocean Decade challenges" discusses the development and implementation of this Water Quality Nowcasting System (WQNS).

Strategically positioned at key locations in Visakhapatnam and Kochi, the WQNS is equipped with an array of cutting-edge sensors, data telemetry systems, and integration with satellite observations. These observatories serve as sentinels of the sea, continuously measuring a suite of vital water quality parameters in real-time. From surface currents to dissolved methane, the system leaves no stone unturned in its quest to safeguard coastal ecosystems and the safety of tourists. Initial findings from the WQNS offer a glimmer of hope in the face of mounting challenges. In the monsoon-laden waters off Kochi, the system swiftly detects short-term fluctuations in oxygen levels, crucial for understanding the health of marine ecosystems. Similarly, in the coastal waters off Visakhapatnam, the WQNS reveals the intricacies of CO_2 efflux into the atmosphere, shedding light on local depression-driven phenomena.

Schematic showing a detailed overview of INCOIS's Water Quality Nowcasting System

Beyond its immediate applications, the WQNS holds immense promise for research, management, and policy development. By providing a wealth of real-time data, it empowers stakeholders to make informed decisions for the sustainable management of coastal resources. Moreover, its role in bolstering the regional blue economy cannot be overstated, offering invaluable insights into the nexus between environmental conservation and economic prosperity. With continued R&D, WQNS promises to chart a course towards a brighter, more sustainable future for India's coastal water monitoring.

Citation: Nair et al. (2024). An integrated buoy-satellite based coastal water quality nowcasting system: India's pioneering efforts towards addressing UN ocean decade challenges. Journal of Environmental Management, 354, 120477.

[Report Courtesy: Ms. Susmita Raulo (s.raulo-p@incois.gov.in) & Dr. T.M. Balakrishnan Nair (bala@incois.gov.in), INCOIS, Hyderabad, India.]

The International Indian Ocean Science Conference (IIOSC) - 2024 at Lombok, Indonesia during March 04 – 08, 2024

The International Indian Ocean Science Conference (IIOSC) - 2024 comprised the integrated annual meetings of the (1) International Indian Ocean the Expedition-2 (IIOE-2) Steering Committee (7 major meeting) (2) Indian Ocean Region Panel of the CLIVAR/IOC-GOOS (IORP) (20 major meeting) (3) Sustained Indian Ocean Biogeochemistry and Ecosystem Research of IMBeR and the IOGOOS (SIBER) (15 major meeting), (4) Indian Ocean Observing System Resources Forum of IOGOOS (IRF) (16th major meeting) and (5) The Indian Ocean Global Ocean Observing System (IOGOOS) (19 major meeting). In addition, the conference also included the meeting of the IOC Regional Committee for the Central Indian Ocean (IOCINDIO) and Scientific Workshop of the Korea-US Indian Ocean Scientific Research Program (KUDOS).

The IIOSC-2024 was hosted by Kawasan Sains Kurnaen Sumadiharga, Badan Riset dan Inovasi Nasional (BRIN), Lombok, Indonesia from March 04 – 08, 2024. These integrated meetings reviewed the progress and scientific knowledge gained due to the concerted efforts of these regional bodies and discussed the action plans to address the issues leading to the UN Decade of Ocean Science for Sustainable Development (2021-2030). Participation comprised about 45 delegates from 10 countries. The week-long event was a successful gathering of complementary alliances covering equally complementary topics and fostering the strengthening of existing and building of new scientific relationships across individuals and institutions. One of the highlights of the Conference was a Session led and moderated exclusively by early-career scientists. Besides an overview and update of the activities of the Early Career Scientists Network, this Session also included a series of interesting "flash talks" by the youngsters. There was the added merit of bringing an international ocean science community into touch with leading scientists and practitioners from the Indian Ocean Region.

Participants of the IIOSC-2024

The representatives of various national committees of IIOE-2 presented the progress and upcoming research activities in the Indian Ocean. The IIOE-2 Steering Committee also endorsed two new projects "WILL NITROGEN FIXATION OFFSET NITROGEN DEPLETION IN EXPANDING OCEAN DESERTS? (EXPAND)" led by Mar Benavides, Institut de Recherche pour le Développement, Mediterranean Institute of Oceanography, France and "Enhancing knowledge of the Arabian Sea Marine environment through Science and Advanced Training [Indian Component] (EKAMSAT)" led by Dr. Girishkumar MS, Indian National Centre for Ocean Information Services (INCOIS), Hyderabad, India. There was also an additional representation from China & Indonesia as part of major national initiatives under IIOE-2 and the conference was concluded by the Scientific Workshop of the Korea-US Indian Ocean Scientific Research Program (KUDOS).

[Report Courtesy: IIOE-2 Project Office ; E-mail:iioe-2@incois.gov.in]

The Scientific Workshop of the Korea-US Indian Ocean Scientific Research Program (KUDOS), BRIN, Lombok, Indonesia

The scientific workshop of the KUDOS (KUDOS Workshop 2024) took place at the BRIN in Lombok, Indonesia on 08 March 2024 under the banner of the International Indian Ocean Science Conference (IIOSC) 2024, which included annual meetings of IIOE-2, Indian Ocean GOOS (IOGOOS), the Indian Ocean Regional Panel (IORP), the Sustained Indian Ocean Biogeochemistry and Ecosystem Research Program (SIBER) and the IndOOS Resource Forum (IRF). KUDOS Workshop 2024 was convened by Dr. Dong-Jin Kang of the Korean Institute of Ocean Science and Technology (KIOST) and Dr. Michael McPhaden of the US National Atmospheric and Oceanic Organization (NOAA), with Chair Dr. Dong-Jin Kang of KIOST and Prof. Raleigh Hood of University of Maryland. About 30 participants from eight countries (Korea, USA, Australia, India, France, Morocco, South Africa, and Indonesia) attended the workshop.

Six notable presentations highlighted the latest advancements in Indian Ocean research.

1. Observations on Physical Properties and their Spatial and Temporal Variability in the Southwest Indian Ocean by Ms. Somang Song (Seoul National University)
2. Tidal Mixing Signature from Satellite-Derived Sea Surface Temperature and Internal Tides induced mixing by Prof. Dwi Susanto (University of Maryland)
3. Characteristics of water masses and their distribution near 67°E in the western tropical Indian Ocean by Dr. Suyun Noh (KIOST)
4. Indian Ocean Dipole affects eastern tropical Atlantic salinity through Congo River Basin hydrology by Dr. Michael McPhaden (NOAA)
5. Nitrate dynamics from high frequency nitrate profiles in the western Indian Ocean by Dr. TaeKeun Rho (KIOST)
6. Insights from the IO7 GO-SHIP Line by Prof. Victoria Coles (University of Maryland)

Participants of KUDOS Workshop

Significantly, in a presentation given by Prof. Raleigh Hood on behalf of Dr. McPhaden existing research findings were introduced. These results show that changes in the Indian Ocean have influenced rainfall on the African continent, leading to changes in the Atlantic Ocean. Based on this, the presentation highlighted the possibility that changes in the Indian Ocean could also affect rainfall in the Asian continent. This may cause significant changes in the Northeast Asian oceans, including the East China Sea, emphasizing the need for further research on this topic.

Plans for the upcoming 2024 cruise on the RV ISABU from Mauritius to the Maldives were also reviewed. This cruise aims to finalize the RAMA-K initiative by relocating Station K to 65°E, thereby initiating a new observational strategy. Specifically, the Research Anchorage Array for the Africa-Asia-Australia Monsoon Analysis and Forecast (RAMA) mooring, which was positioned along 67°E (at latitudes 4°S, 8°S, 12°S) during the 2023 ISABU cruise, has been adjusted to align with 65°E. Station K, which observed from a depth of 300 m to the bottom was previously at 8°S, 61°E, and will be located at 8°S, 65°E in this expedition. This adjustment in the mooring array will facilitate the collection of novel data regarding the Seychelles-Chagos Thermocline Ridge (SCTR), enabling comprehensive observations from the atmosphere all the way down to the bottom.

The meeting concluded with an affirmation that the next KUDOS workshop in 2025 should be convened in conjunction with IIOE-2, IOGOOS, IORP, SIBER, and IRF in the same manner as KUDOS Workshop in Lombok. Participants of KUDOS Workshop extended their gratitude to BRIN and the local hosts for their generous support of the workshop. The Scientific Committee on Ocean Research (SCOR)'s support for the IIOSC 2024 meetings is also greatly appreciated.

[Report Courtesy: Dr. Sujin Kang (sjkang@kioat.ac.kr), and Dr. Dong-Jin Kang (djocean@kiost.ac.kr), Korea Institute of Ocean Science & Technology, Busan, Korea]

Oceanography Society's Mentoring Award presented to Charitha Pattiaratchi in biannual ceremony

IIOE-2 Science Theme-5 Co-Chair and Coastal Oceanography Professor Charitha Pattiaratchi has received The Oceanography Society's biannual Mentoring Award, presented at the February ceremony in New Orleans.

Professor Pattiaratchi has made significant contributions to the field of oceanography and his expert opinion is frequently sought on issues from ocean circulation, to tsunamis and coastal hazards, rising sea levels and marine infrastructure.

Chari was honoured for mentoring hundreds of students and early career scientists – largely through the world-renowned research and training program he developed at UWA. Leading the Coastal Oceanography Group within the UWA Oceans Graduate School, he has supervised more than 300 people so far, including the direct supervision of 277 dissertations.

Prof Chari Pattiaratchi has been awarded The Oceanography Society's biannual Mentoring Award [Photo credit: The University of Western Australia Media]

"My goal was to educate and share knowledge with as many people as I can, and this is a wonderful acknowledgement of that" said Chari. "I'm honoured to be recognised by The Oceanography Society." - Professor Chari Pattiaratchi

Prof Pattiaratchi believes the key to mentoring is to treat students and others as equals who could speak and discuss any subject with their supervisor.

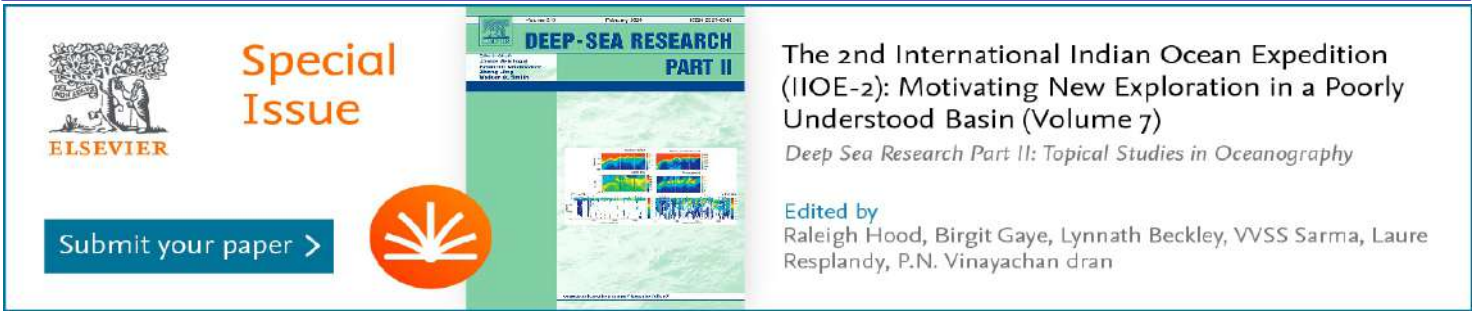
"If you are a teacher, that should be what you're doing – developing young scientists and imparting knowledge, but in a friendly way."

"There are many of my students who have achieved a lot – when someone asks me if I know an oceanographer and I say 'Yes, they're my student', it gives me great satisfaction if people recognise my student more than they do me."

IIOE-2 congratulates Chari for this achievement.

Chari was recently interviewed as part of the UWA Research on the Record podcast. Listen in as he reflects on an extraordinary career, speaks about his legacy of mentoring, and the importance of being a role model to aspiring ocean scientists. LISTEN NOW

DEEP-SEA RESEARCH PART II



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 (rhood@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

Bridging billions to Barcelona: The Indian Ocean event during 2024 Ocean Decade Conference at Barcelona, Spain

Bridging Billions to Barcelona

The Indian Ocean Event

10 April 2024, 1:15pm to 2:45pm CET (local)

Indian Ocean Room (127+128), CCIB, Barcelona

For more information

Scan QR or visit:
bit.ly/IOR-at-2024ODC

Objectives of the session:

- Present the outcomes of the Indian Ocean Regional Decade Conference 2024 organized by the DCC-IOR as a prelude to the Barcelona Conference.
- Deliberate on the future priorities for the Ocean Decade Challenges that are emerging via the Vision 2030 process with focus on the Indian Ocean Region
- Network among stake holders pursuing Ocean Decade Actions in the Indian Ocean Region including DCCs, NDC, ECOPS, Researchers, Academicians, Industries, Social Scientists, NGOs, etc.

Speakers:

Asia Oceania Geosciences Society (AOGS) - 21st Annual Meeting
Pyeongchang, Ganwon-do, Home to Winter Olympics during 23 - 28 June 2024

Asia Oceania Geosciences Society (AOGS) was established in 2003 to promote geosciences and its application for the benefit of humanity, specifically in Asia and Oceania and with an overarching approach to global issues. Asia Oceania region is particularly vulnerable to natural hazards, accounting for almost 80% human lives lost globally. AOGS is deeply involved in addressing hazard related issues through improving our understanding of the genesis of hazards through scientific, social and technical approaches. AOGS holds annual conventions providing a unique opportunity of exchanging scientific knowledge and discussion to address important geo-scientific issues among academia, research institution and public. Recognizing the need of global collaboration, AOGS has developed good co-operation with other international geo-science societies and unions such as the European Geosciences Union (EGU), American Geophysical Union (AGU), International Union of Geodesy and Geophysics (IUGG), Japan Geo-science Union (JpGU), and Science Council of Asia (SCA).

The website may be accessed here: https://www.asiaoceania.org/aogs2024/public.asp?page=home.asp

Session-OS06: Physics, Biogeochemistry, and Climate Dynamics of the Indian Ocean

Session Details

Section(s):
OS - Ocean Sciences (Primary)
AS - Atmospheric Sciences

Announcements

SUBMIT ABSTRACTS	APPLY FUNDING SUPPORT	2024 AWARD NOMINATIONS
17 Oct 2023 – 02 Jan 2024	17 Oct 2023 – 02 Jan 2024	17 Oct 2023 – 02 Jan 2024
Instructions | Submit Now	Instructions | Apply Now	Guidelines

Conveners

* Prof SungHyun Nam (Seoul National University)
Dr Nicolino (Nick) D'Adamo (Adjunct Research Fellow, Oceans Institute of the University of Western Australia)
Dr Dong-Jin Kang (Korea Institute Of Ocean Science And Technology)
Dr Yukio Masumoto (The University of Tokyo)

Session-OS06: Description

Recent increases in extreme events such as flooding, droughts, heatwaves, and tropical cyclones have a large impact on the population living in the Asia and Oceania countries. Increasing evidence on the roles of Indian Ocean in impacting climate extremes, climate variability, and climate change via changes in energy, hydrological and biogeochemical cycles has been reported. The Indian Ocean is of particular interest, for example, as influenced by the seasonally reversing monsoon forcing and upwelling centers in the Indian Ocean are found in the off-equatorial regions unlike in the easterly wind-forced Pacific and Atlantic Oceans. The northern region is dominated by the monsoons whereas the seasonal reversal is less pronounced in the southern region. This session invites contribution of physics, biogeochemistry, and climate dynamics of Indian Ocean based on in-situ and remotely-sensed observations, models, theories, and paleo proxies that reveal processes, variability, and projected changes within the Indian Ocean. This includes, but not limited to 1) Indian Ocean variability such as Indian Ocean Basin Mode, Indian Ocean Dipole Mode, Madden-Jullian Oscillations, 2) Upwelling in the Indian Ocean such as open-ocean upwellings or thermocline ridge/dome (e.g., Seychelles-Chagos Thermocline Ridge) and coastal upwellings at both western and eastern sides, 3) Processes underlying basin-scale or regional circulation, 4) Ocean-atmosphere interaction processes (heat, freshwater, momentum, carbon, etc.), 5) Biogeochemistry of the Indian Ocean water masses, 6) Links between ocean sciences and socio-economic requirements in the Indian Ocean, and 7) Interactions and exchanges between the Indian Ocean and other basins. Abstracts on related activities, such as capacity building, education, outreach, project development in the Indian Ocean, contributing to the UN Decade of Ocean Science for Sustainable Development and to the Second International Indian Ocean Expedition are also welcome.

Keyword(s): Indian Ocean; Physics; Biogeochemistry

Short-deadline call for applications:
Shipboard training opportunity on the R/V Belgica cruise to the Porcupine Seabight

The Ocean Training Partnership, Nippon Foundation, POGO, @SeaNetwork & UGent offer a shipboard training opportunity for two fellows on the R/V Belgica cruise to the Porcupine Seabight this Summer. Activities onboard will include coring, multibeam and subbottom profiling.

What does the fellowship consist of?

Participation in the 12-day (27 June - 9 July 2024) cruise departing and returning to Zeebrugge (Belgium)

What is covered?

» POGO will cover the round-trip from home countries to Belgium and domestic travel within Belgium
» UGent will cover accommodation for the night before and after the survey

What is NOT covered?

» Domestic travel in home country
» Visa costs and insurance
» COVID tests or vaccinations
» Salary

Who can apply?

» Scientists, technicians, postgraduate students (PhD/MSc), post-doctoral fellows (with priority to early-career scientists) with a background in sedimentology;

» Nationals of and involved in oceanographic work at centres in developing countries and countries with economies in transition (eligible countries here)

(qualified candidates from any country, see below for an additional self-funded opportunity to participate in the cruise) *

Where to apply?

Two fellows will be selected from applications submitted by 12 April 2024 to the 2024 Open Call for NF-POGO Visiting Fellowships for Shipboard Training.

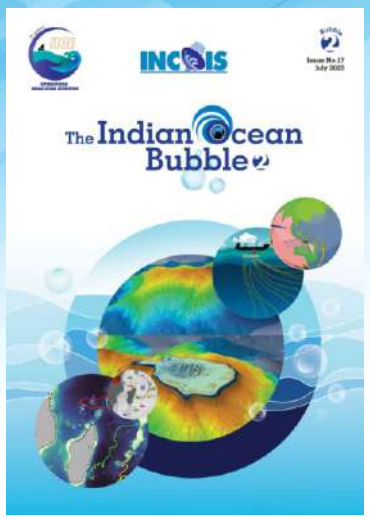
APPLY NOW

*If you can secure your own funding for travel, you can also apply for the training by emailing the cruise PI, Dr David Van Rooji (David.VanRooij@UGent.be), with a copy to (lmp@ua.pt), with your name and contacts, a short CV and a motivation letter explaining why you want to participate.

For further more details Contact:

Dr. Lilian A. Krug
Scientific Coordinator
Partnership for Observation of the Global Ocean (POGO)
E-mail: lakrug@ualg.pt
Website: pogo-ocean.org

The Indian Ocean Bubble, Issue No.17 is now available online



Web Link: https://iioe-2.incois.gov.in/IIOE-2/pdfviewer_pub.jsp?docname=IIOE-2-DOC_OM_260.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 (Word files) accompanied by suitable figures, photos (separate .jpg files)

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 54 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 (April-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 April, 2024**

The Indian Ocean Bubble-2

Access the latest issue of Indian Ocean Bubble-2
https://iioe-2.incois.gov.in/IIOE-2/Bubble.jsp

Join IIOE-2 Community

Enroll yourself with IIOE-2 Community
https://iioe-2.incois.gov.in/IIOE-2/Signup.jsp

Follow us:

iioe-2.incois.gov.in

@IIOE2

@iioe_2

Feedback? iioe-2@incois.gov.in

The IIOE-2 Newsletter is published online by:

INCOIS

2nd International Indian Ocean Expedition 2015-2025