

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.

How does freshwater impact a major inflow passage to the Indian Ocean on decadal timescales?

The Indian Ocean circulation is influenced by the Indonesian Throughflow (ITF), the only low-latitude connection between two ocean basins. On average the ITF transports ~ 15 Sverdrups of warm, fresh waters from the western Pacific to the eastern Indian Ocean. The Makassar Strait is the main passageway of the ITF and constraining its variability is critical for understanding Indo-Pacific heat and freshwater redistribution. Previous studies utilizing in-situ observations have found that Makassar Strait surface flow (\sim upper 150m) varies on seasonal and interannual timescales in response to the advection of freshwater from marginal seas and local precipitation, known as the freshwater plug (Figure-1a). However, direct measurements are too short (< 15 years) to resolve mechanisms of Makassar Strait transport on decadal timescales.

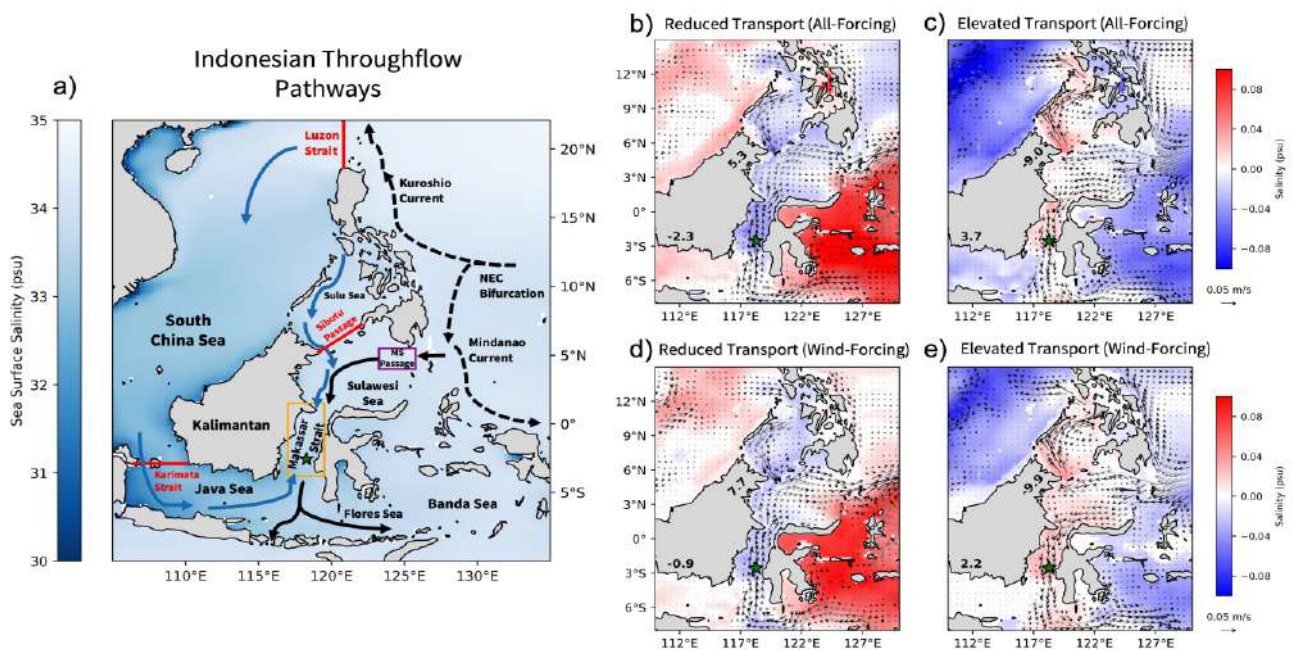


Figure-1: Average SSS in the Indonesian Seas (blue shading). Arrows indicate the main ITF pathway through Makassar (black solid arrows), freshwater pathways of South China Sea and Java Sea surface waters (blue arrows), and North Equatorial Current bifurcating into the Kuroshio and Mindanao boundary currents (black dashed arrows) (a). Composite maps of upper 130m average salinity (in color) and velocity (vectors) anomalies during periods of reduced (b,d) and elevated (c,e) Makassar Strait transport in the all-forcing simulation (b,c) and the wind-forcing simulation (d,e). Figure adapted from Wang et al. (2023).

In Wang et al. (2023), we utilize a series of eddy-permitting global ocean simulations (ORCAO25) forced by historical atmospheric boundary conditions from 1958-2017 (JRA-55 do) to assess the drivers of Makassar Strait surface transport on decadal timescales. We first show that the ocean model skillfully simulates the freshwater dynamics that modulate Makassar Strait surface flow on seasonal and interannual timescales suggested by previous studies. On decadal timescales, we find that freshwater input from the South China Sea contributes to decadal variability of Makassar

Strait surface flow (Figure-1b-c). Specifically, increased (decreased) freshwater transport across the Sibutu Passage weakens (strengthens) the local ITF pressure gradient and therefore reduces (elevates) Makassar Strait transport. To assess the relative contributions of wind and buoyancy (heat and freshwater flux) forcings, we analyze complementary sensitivity simulations where only one type of forcing (winds/buoyancy) is allowed to vary interannually while the other is kept at an annual cycle. We find that wind-forcings dominate the South China Sea freshwater plug on decadal timescales (Figure-1d-e).

From a broad-scale perspective, we suggest that this wind-driven freshwater input is regulated by wind-stress curl anomalies in the western North Pacific associated with Pacific decadal variability. We propose that these wind-stress curl anomalies affect the latitude of the North Equatorial Current bifurcation position, which modulates the strength of the Kuroshio Current and consequently the magnitude of South China Sea freshwater input to the Makassar Strait. Our study, which identifies a mechanism that relates North Pacific surface winds with decadal variability of a critical low-latitude inflow passage to the Indian Ocean, provides insights into the drivers of Indian Ocean heat and freshwater content variability on longer timescales. For more details see Wang et al., Freshwater Contributions to Decadal Variability of the Indonesian Throughflow. *Geophysical Research Letters* <https://doi.org/10.1029/2023GL103906> (2023).

[Report Courtesy: Shouyi Wang, Woods Hole Oceanographic Institution, USA; E-mail: syiwang@mit.edu]

Inaugural of the UN Ocean Decade Collaborative Centre for the Indian Ocean Region

Since 2009, the Ocean Society of India (OSI) started organizing biennial conferences named OSICON hosted by leading academic/research institutes across India. OSICON-2023 was hosted by INCOIS, Hyderabad. One of the prime feature of the OSICON-23 was the special session dedicated to the inaugural of the UN Ocean Decade Collaborative Centre for the Indian Ocean Region (DCC-IOR), endorsed by Decade Coordination Unit (DCU) of IOC-UNESCO, Paris and hosted by INCOIS, Hyderabad.

The Indian Ocean Region is home to over one fifth of humanity and DCC-IOR is to have a regional focus for the entire Indian Ocean Region. It will deliver the resources, skills and expertise to work with a diverse international community to help them deliver Decade Actions, create new ones, and catalyse the change that is needed to address the challenges in this very significant part of the global ocean. DCC-IOR contributes to all ten thematic Ocean Challenges in the Indian Ocean Region, with a particular focus on the following Challenges that have been identified as priorities for the region: 3 – Sustainably feed the global population, 6 – Increase community resilience to ocean hazards, 7 – Expand the global ocean observing system and 9 – Skills, knowledge and technology for all.

Launched in January 2021, the United Nations Decade of Ocean Science for Sustainable Development (2021-2030), the 'Ocean Decade', provides a convening framework for a wide range of stakeholders across the world to engage and collaborate outside their traditional communities to trigger nothing less than a revolution in ocean science. Decade Collaborative Centres (DCCs) and Decade Coordination Offices (DCOs) provide dedicated long-term support to coordinate Decade Actions at the regional (i.e. around major Ocean basins) or thematic (i.e. around Decade Challenges) levels.

The inaugural event was presided by Dr. M. Ravichandran, Secretary, Ministry of Earth Sciences who also chaired a panel discussion in the later half of the session. Dr. Vladimir Ryabinin (Executive Secretary, IOC-UNESCO) and colleague Dr. Alison Clauesen (Programme Specialist) provided their remarks in pre-recorded messages, laying out the expectation from DCC-IOR in achieving the Ocean Decade objectives. Dr. T. Srinivasa Kumar (Head, DCC-IOR and Director, INCOIS) presented a brief on DCC-IOR inception and roadmap. The event also witnessed release of DCC-IOR logo and website (<https://incois.gov.in/dcc-ior/>).



Release of DCC-IOR logo and website



Panel Discussions

The panel that participated was diverse in terms of subjects, gender, generation and geography and included Dr. Enrique Alvarez Fanjul (Technical coordinator, Ocean Prediction-DCC, Mercator Ocean International), Mr. Louis Demargne (Data & Knowledge Management Officer, DCU, IOC-UNESCO), Dr. Fehmi Dilmahamod (IIOE-2 ECSN Chair, GEOMAR), Prof. Heather Koldewey (Senior Marine Technical Advisor & Lead, Bertarelli Foundation's Marine Science Programme), Rear Admiral (Retd) Khurshed Alam (Chair, IOCINDIO), Dr. Kentaro Ando (Chairperson, IOC-WESTPAC), Prof. Nadia Pinardi (Director, DCC-CR, Bologna University), and Dr. Shailesh Nayak (Director, NIAS & Former Sec., MoES).

[Report Courtesy: DCC-IOR Team, INCOIS, Hyderabad, India; E-mail: dcc-ior@incois.gov.in]

Eighth National Conference of Ocean Society of India (OSICON-23) during August 23- 25, 2023, Hyderabad, India

The 8th edition of the Biennial National Conference of the Ocean Society of India (OSICON-23), was held at INCOIS, Hyderabad, India from August 23 - 25, 2023.

The conference website can be accessed at: <https://osicon23.incois.gov.in/>

The focal theme for OSICON-23 was 'Operational Oceanography - Science to Services,' which is a critical topic for the oceanographic community. The conference brought together experts and researchers from around the world to discuss the latest advancements in operational oceanography, share knowledge, and promote collaboration among the ocean community. OSICON-23 showcased a diverse range of sessions, presentations, and workshops covering a wide array of topics related to Ocean Information and Advisory Services, Ocean Observations, Ocean and Climate Change, Ocean Modelling and Data Assimilation, Coastal and Ocean Processes, Biogeochemistry, Ocean Engineering and Technology, Biodiversity and Ecology, Polar Science, Blue Economy and Marine Resource Management.

OSICON-23

August 23-25, 2023



Focal Theme

Operational Oceanography - Science to Services

In addition, the conference hosted two special sessions of the Indian Meteorological Society (IMS) and Federation of Indian Geosciences Associations (FIGA). The UN Ocean Decade Collaborative Centre for the Indian Ocean Region was also launched during the conference.



We are thrilled to host OSICON-23, which turned out to be a dynamic platform for the exchange of ideas and knowledge in the realm of ocean science," said Dr Srinivasa Kumar Tummala, Director, INCOIS. "We have received over 600 participants and we hope that the conference would have provided an opportunity for the participants to collaborate and contribute to the global efforts in understanding our oceans."

“Our objective should be to translate Science to Services to Society,” said Chief Guest Dr. M. Ravichandran, Secretary, Ministry of Earth Sciences during the Inaugural Address. He encouraged the young researchers to develop new technologies to harness resources from the Ocean. “We have an ocean of opportunities and a sea of challenges. OSICON-23 provides an opportunity to come together to address the challenges”, he added.



As a part of the Inaugural session, Prof. Harsh K Gupta, Former Secretary, DoD delivered an Invited Plenary Talk on “Three Great Tsunamis: Lisbon (1755), Sumatra-Andaman (2004) and Japan (2011).”



The Dr. Srinivasan Endowment Award was presented to Dr. A. D. Rao from IIT, Delhi, during the Conference.



In addition to the academic and technical sessions, OSICON-23 featured an exhibition showcasing cutting-edge marine technologies, new instruments, etc.

Launch of New INCOIS Products/Services:

Dr. M. Ravichandran, Secretary, Ministry of Earth Sciences inaugurated the following new INCOIS Products/ Services during the OSICON-23 Conference:



Coastal Water Quality Buoy at Visakhapatnam



Ocean Information Portal for South Pacific Region



WMO-RSMC for Numerical Ocean Wave Prediction & Global Numerical Ocean Prediction

Join us for the Ocean Insights – Indian Ocean Seminar Series feat. ECRs. !

The IIOE-2 Early Career Scientist Network is thrilled to present yet another exciting talk of "Ocean Insights – Indian Ocean Seminar Series feat. ECRs", designed especially for early career scientists focusing on the Indian Ocean to share about their research. This captivating seminar series offers a unique opportunity for the Early Career Researchers to showcase their work, build connections, and explore collaborations within the marine sciences community.

Whether you are an early career researcher, an experienced scientist, or simply an enthusiast seeking to broaden your knowledge of marine science in the Indian Ocean, **ALL ARE INVITED!**

Why Should You Join?

- Engaging presentations from early career marine scientists.
- Interactive Q&A sessions to delve deeper into research topics and foster innovative ideas.
- A platform to connect with like-minded researchers and experienced scientists.

Don't miss out on the opportunity to enhance your understanding of marine science in the Indian Ocean and connect with fellow researchers. [Register now](#) and mark your calendars!

Details on the first talk are given below:

Key Details:

Title: Ocean Insights – Indian Ocean Seminar Series feat. ECRs

Region: Indian Ocean

Format: Online

Link: https://zoom.us/meeting/register/tjUudOGsrzkiHNzP_5mFljstUxIUQBhS6Z-

Date: Every first Friday of the month, starting on **01st September 2023**

Time: 10:30-11:30 SAST
14:00-15:00 IST
16:30-17:30 AWST

We look forward to your participation in this exciting Seminar Series.

If you are enthusiastic about sharing your contributions, please reach out to us at the email address: ecsn.iioe@gmail.com



ICES - PICES 7th International Zooplankton Production Symposium during Autumn 17-22 March 2024, Hobart, Australia

SCOPE

We are living in the Anthropocene. Our oceans are warmer, more acidic, have widespread plastic and other pollution, and are subjected to increasing exploitation including overfishing. Zooplankton play a pivotal role in our oceans, as grazers of primary production, as drivers of carbon and nutrient cycles, and as prey for higher trophic level consumers including both harvested fish species and iconic marine mammals and seabirds. How zooplankton will respond to the dramatic changes in our marine ecosystems will impact the health and productivity of our oceans and our planet.



To better understand zooplankton in a changing world, ICES and PICES are holding the 7th International Zooplankton Production Symposium as a forum to discuss the latest zooplankton research. The ICES/PICES Zooplankton Production Symposium will bring together the top zooplankton researchers globally, showcasing recent advances. Understanding the current and evolving role of zooplankton will require new insights provided by:

- Assessing the impact on zooplankton of climate change, fishing, and pollution such as microplastics
- State-of-the-art sampling techniques such as DNA, imaging, and bioacoustics
- Biochemical methods applied to unravelling complex trophic ecology
- The application of cutting-edge approaches in zooplankton modelling, including size and trait-based biogeochemical and ecosystem models
- Revealing the role of microzooplankton in biogeochemical cycling and food webs
- Exploring the structure and functioning of macrozooplankton communities and their impact on carbon sequestration and trophic ecology
- Examining zooplankton in fisheries science, including dynamics of fish larvae, the impact of zooplankton on fish larval mortality and growth, and the commercial harvest of zooplankton
- Elucidating the vital role of zooplankton in polar environments
- Understanding the role of gelatinous filter feeders and jellyfish in carbon sequestration and trophic ecology
- The use of zooplankton as ecosystem indicators in a changing ocean

Our Symposium will be held over five days in the historic waterfront district of Hobart, Australia, during Autumn, from 17-22 March 2024. This event will be held in-person and provide the first opportunity since 2016 for zooplankton researchers to meet, build networks, and hear the latest science. We are monitoring the COVID-19 situation closely and will adapt our plans as needed.

The Organizing Committee invites proposals for sessions to be held during the Symposium. Proposals are welcome for sessions incorporating talks and posters, panel discussions and/or workshops. Sessions could cover, but are not limited to, the key areas listed above.

The symposium website may be accessed here: <https://meetings.pices.int/meetings/international/2024/zps7/scope>

Proposals may be submitted here: <https://meetings.pices.int/meetings/international/2024/zps7/proposals>

12th International Conference and Workshop on Lobster and crabs 22-27 October 2023 in Fremantle, Western Australia



The Organising Committee of the 12th International Conference and Workshop on Lobster and crab is pleased to announce the go ahead of this workshop that was originally planned for October 2020, for **22-27 October 2023**. Please check the website (<https://icwl2023.com.au>) for updates on the conference. This will be updated over the next month with more details on the program. We will be accepting abstracts and registrations from the 24 January 2023. This workshop is being planned as a face-to-face meeting.

The overall theme for the 2023 workshop is '**Ecosystem-based fisheries management (EBFM)**' as this generally represents best practice for fisheries management and reflects that fisheries research and management focus is now broader than just sustainability. Therefore we hope to attract presentations that cover a wide array of subjects under the EBFM banner including biology, stock assessment, management, ecosystem effects of fishing such as interaction with whales, habitat, economics, social, governance and management compliance.

We will be holding a **2-day EBFM workshop** which will be sponsored by the OECD Co-operative Research Programme: Biological Resource Management for Sustainable Agricultural Systems. This will occur on the first two days of the 5-day conference.

While this conference comes back to Western Australia where the 1st International Lobster Workshop was held in 1978, we have adopted the approach of the 2nd lobster conference in St Andrews in 1985 where **crab presentations** were welcome. We look forward to their participation in this conference.

An **industry day** is also planned for Thursday 26 October and this is an important component of the program so we are looking forward to strong support from lobster and crab industry participants around the world. We are also keen to attract papers on **lobster and crab aquaculture** as this has been an important developing industry in Asia.

Students can apply for the **Paul Kanciruk Student award** for financial support to attend the conference.

The Department of Primary Industry and Regional Development (DPIRD) and the Western Rock Lobster (WRL) council are looking forward to hosting scientists, managers and industry participants in Western Australia in 2023. Don't hesitate to contact us or the conference organisers, Arinex, if you have any questions.

Co-hosts of the workshop Nick Caputi, DPIRD (nick.caputi@dpird.wa.gov.au) & Nic Sofoulis, WRL (sofs1@bigpond.com).

DEEP-SEA RESEARCH PART II



THE SUBMISSION PORTAL FOR VOL. 6 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).

XI Indo-Pacific Fish Conference to be held in Auckland, New Zealand during 20-24 November 2023

A session entitled Larval fishes - solving phylogenetic, life-cycle and ecological questions will be part of the XI Indo-Pacific Fish Conference to be held in Auckland, New Zealand from 20-24 November 2023.

Most marine bony fishes have a two-phase life history with pelagic larvae that differ in morphology, ecology and habitat from the adults. These phases operate in separate evolutionary theatres, and ecologically, effectively function as separate species. Larval morphological features provide characters for phylogenetic analysis and aspects of life history are determined during the larval phase, including recruitment and scale of genetic and demographic connectivity. Although larval survival is necessary for persistence of species, larvae are often neglected by researchers and managers focused on adults. This session will address many of the unanswered questions about the pelagic larval phase of Indo-Pacific fishes.



The session will be co-chaired by

- Jeff Leis (University of Tasmania; jeffrey.leis@utas.edu.au)
- Lynnaeth Beckley (Murdoch University; L.Beckley@murdoch.edu.au) and
- Ainhua Bernal (Institut de Ciències del Mar; bernal@icm.csic.es)

Those interested in contributing to the larval fish session should contact one of the session co-chairs.

Early bird registrations closes on **12 September 2023**

The conference website is <https://www.ipfc11-asfb.ac.nz/>

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 51 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.

CLIVAR August 2023 Bulletin is available online



The International CLIVAR Project Office distributes a monthly bulletin with announcements, funding opportunities, meeting notifications relevant to the ocean/climate science community.

The latest CLIVAR Bulletin August, 2023 is available at:

<https://mailchi.mp/clivar.org/april-2023-bulletin-17061792?e=526ed2c9ae>

Call for Contributions

Informal articles/short notes of general interest to the IIOE-2 community are invited for the next (September-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 September, 2023**



Access the latest issue of Indian Ocean Bubble-2

<https://iioe-2.incois.gov.in/IIOE-2/Bubble.jsp>



Enroll yourself with IIOE-2 Community

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