



2nd International
Indian Ocean
Expedition
2015-2020

Newsletter

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

Volume-3, Issue-12
December, 2019

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 in the Indian Ocean provides clue on the possible fate of Yellowfin Tuna in the global oceans

Yellowfin tuna (YFT, *Thunnus albacares*; Bonnaterre, 1788) are highly sought after species with a lucrative market. The YFT population in the Indian seas is however, among the least studied species. This has kept many questions related to the migration and movement of YFT in this region, open ended. The Indian National Centre for Ocean Information Services (INCOIS) has of late, initiated a collaborative study with the Central Marine Fisheries Research Institute (CMFRI) and the Fishery Survey of India (FSI) to bridge this gap through satellite telemetry technology. PSATs (Pop-up Satellite Archival Tags) were used to study the behaviour of YFTs in relation to the oceanographic conditions. All the movements recorded were around the Indian peninsula and the fishes did not undergo basin-wide migrations, as believed previously. While the affinity of YFT to the islands, reefs or even FADs (Fish Aggregation Devices) have been reported earlier, the population we studied appeared to be resident within Indian EEZ regardless of the presence of such features. Study of the YFT movements with the help of remote sensing data showed that tagged fishes spent 60% of the time in waters with sea surface temperatures ranging between 26-29 °C and 70% of the time within the sea surface height-anomaly of ± 6 cm. The latter would explain why the YFTs tend to swim in the periphery of eddies rather than in the centre of cold core eddies (negative sea level anomalies) where high productivity may lead to aggregation of more forage fishes. The tagged fishes were not found to often dive deep (depths of over 300m) as reported from the other oceans. Similarly, there was no distinct diurnal behaviour. The tag data showed preferred ambient temperatures for the YFT movement to be in the range of 25-30 °C, which is much higher than reports from other ocean basins.

The deeper dives were found to be restricted beyond the depth of oxycline (purple line, see Figure below).

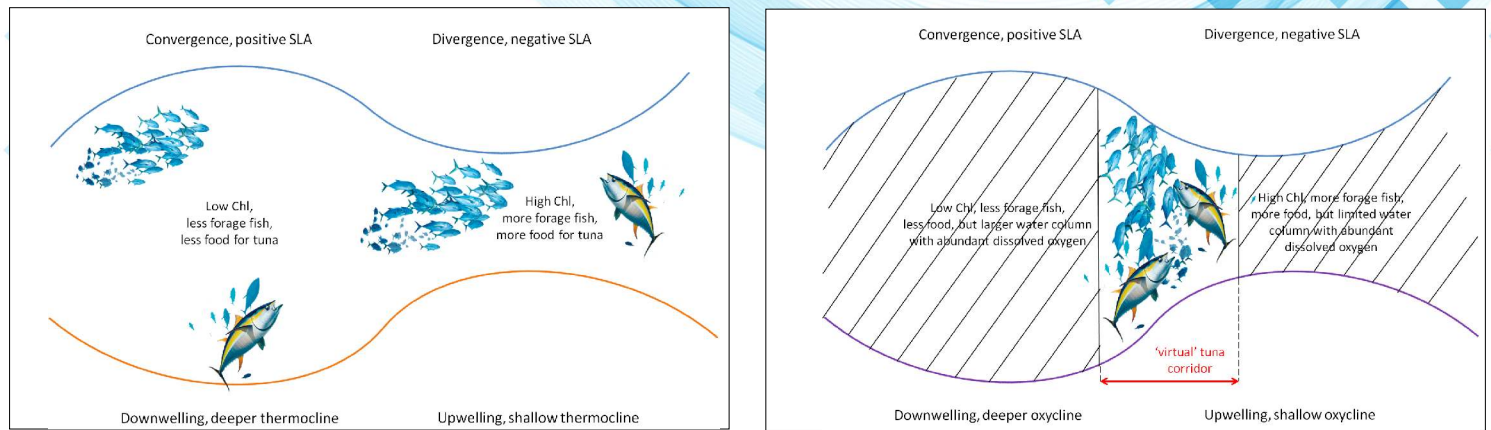


Figure: (Left panel) previous knowledge on Yellowfin Tuna (YFT) movements in the ocean informed us that tuna prefer to stay above or around thermocline depth (orange line). (Right panel) the YFT movement in the northern IO studies with PSATs and remote sensing data reveals that YFTs may have to accommodate themselves in (and undergo migration through) virtual tunnels or corridors in the ocean. This allows far less of an area than previously believed to be available for tuna habitat and increases their catchability significantly.

When it comes to stratified warm oceans, the northern Indian Ocean (IO) can serve as a live-simulation of future global oceans as predicted by various climate projections. As shown in the schematic, the tuna habitat is not most of the region above the thermocline, but actually comprises three-dimensional corridors. This exposes the YFTs to high fishing pressure in far smaller regions than previously thought. With the expansion of oxygen minimum zones, the habitat may further shrink spatially as well as vertically. These findings will help improve future fishery management policies in the region. This is the gist of a peer-reviewed paper recently accepted and expected to be available shortly at <https://doi.org/10.1080/01431161.2019.1707903>

[Report Courtesy: Dr. Nimit Kumar, INCOIS, Hyderabad, India. E-mail: nimitkumar.j@incois.gov.in]

DEADLINE EXTENDED: 31st January, 2020

**Tutorial Capacity Building in the 15th Pan Ocean Remote Sensing Conference(PORSEC)
15-19 September, 2020**

The PORSEC Association would like to invite you to participate in the upcoming Tutorial Capacity Building in conjunction with the PORSEC 2020 conference from 15th to 19th September, 2020 which will be held at Faculty of Built Environment and Surveying, Universiti Teknologi Malaysia, Johor Bahru, Malaysia. The five-day tutorial offers expert training for students, and young scientists. The tutorial would focus on existing instruments in space and on methods of analysis and visualization. One of the unique aspects of the PORSEC tutorial is that most of the instructors are current or past PORSEC officers, who are experienced remote sensing scientists, which would give the participants a valuable networking experience, in addition to the knowledge and skills taught during the tutorial. Participants will be given exposure in the following areas.

- ☞ Theoretical information as well as practical exercises along with a variety of data and software.
- ☞ Fundamentals of visible, thermal and microwave remote sensing, satellite wind and wave data, satellite altimetry, ocean color data, fisheries applications, and data assimilation.
- ☞ Demonstrations on how to access all of these datasets from a variety of different software.
- ☞ How to write scientific manuscript
- ☞ Giving a scientific presentation in English to an international audience.
- ☞ Experience live field data collection and sampling at the ocean facilitated by the experienced local facilitators.
- ☞ Related instruments used for ocean water sampling would be demonstrated and students will get opportunities to operate them.

Trainers:

- Gad Levy (NWRA, USA)
- Cara Wilson (NOAA, USA)
- MingAn Lee (NTOU, Taiwan)
- Stefano Vignudelli (CNR, Italy)
- Abderrahim Bentamy (Ifremer, France)
- Jim Gower (IOS, Canada)
- Nurul Hazrina Idris (UTM, Malaysia)
- Mazlan Hashim (UTM, Malaysia)
- Aidy Dr. Aidy @ Mohamed Shawal M. Muslim (INOS UMT, Malaysia)
- Mohd Nadzri Md Reba (UTM, Malaysia)

Following are some important dates for the tutorial:

- ☞ 1st September 2019 – 31 January 2020 - Capacity building student tutorial application.
- ☞ Mid February 2020 – Result of the selection process for the capacity building student tutorial.

Further details regarding the tutorial, registration process, availability of scholarship, accommodation etc. are available at the PORSEC website. (<https://www.geoinfo.utm.my/porsec/>).

Sponsors:

PORSEC Association, UTM, UMT, IGRSM and Malaysia Space Agency

Looking forward to see you in Johor Bahru!

International Indian Ocean Science Conference-2020 (IIOSC-2020)

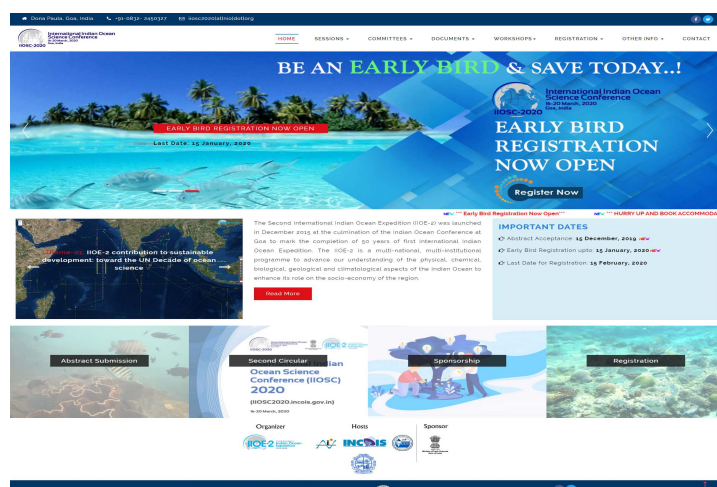
The "International Indian Ocean Science Conference 2020 (IIOSC-2020)" sponsored by Ministry of Earth Sciences (MoES), Govt. of India, will be held during 16-20 March 2020 at Goa India co-hosted by National Institute of Oceanography (NIO) Goa, National Centre for Polar Ocean Research (NCPOR) Goa, Goa University and Indian National Centre for Ocean Information Services (INCOIS) Hyderabad, India. The conference aims at assessing the progress and scientific knowledge gained during the last 4 years of IIOE-2 (during 2016-2020). It is also an opportunity for scientists working on different facets of the Indian Ocean to present their ideas and discuss the outstanding issues, identify the knowledge gaps and plan a way forward to address such issues.

Scientists and colleagues who are interested in the Indian Ocean may kindly take note of this and freeze their dates for the conference. More details on the Conference are available at the website <https://iiosc2020.incois.gov.in/>

***** HURRY UP AND BOOK ACCOMMODATION NOW- The hotels running out of available rooms..!!! *****

IMPORTANT DATES

- ☞ Early Bird Registration: 15 January, 2020
- ☞ Last Date for Registration: 15 February, 2020



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

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

Some Upcoming Events

- ☞ 36th International Geological Congress during 2-8 March, 2020, India EXPO Centre, Delhi, India. The call for Abstracts and Registration is now open and the deadline for online submission of the Abstracts is 31st October, 2019. <https://www.36igc.org>
- ☞ 14th International Conference on Copepoda (ICOC) during 14-19 June, 2020 at Kruger Park, South Africa. http://abevents.co.za/WEB_ICOC2020/index.php

CLIVAR December 2019 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 December, 2019 is available at:

<https://mailchi.mp/clivar.org/clivar-december-2019-bulletin?e=7f5a74dc93>

Call for Contributions

Informal articles/short notes of general interest to the IIOE-2 community are invited for the next (January-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 January, 2020**



Access the latest issue of Indian Ocean Bubble-2

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



Enroll yourself with IIOE-2 Community

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

Follow us:



www.iioe-2.incois.gov.in

The IIOE-2 Newsletter is published online by:



2nd International
Indian Ocean
Expedition
2015-2020



@IIOE2

Feedback? iioe-2@incois.gov.in



@iioe_2

