

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.

## Response of coastal phytoplankton pigment composition to seasonal patterns

Phytoplankton are the major primary producers in the ocean and coastal waters. They quickly respond to any alteration of surrounding environmental setup. Seasonal succession/shift in the phytoplankton community sometimes leads to water quality - deteriorating algal blooms. The estuarine and lagoonal ecosystems are uniquely characterized by contrasting hydro-biological parameters principally due to the influx of both fresh and marine waters. The coastal domains of north-western Bay of Bengal exhibit several ecologically - significant habitats, the most important of which are the Mahanadi estuary, Chilika lagoon, and coastal waters off Gopalpur. An inter-seasonal High-Performance Liquid Chromatography (HPLC)-based marker pigment-aided phyletic taxonomy of algal assemblages from these three habitats showed a contrasting seasonal pattern during the period 2017-18. The studies show a good agreement between HPLC-analyzed pigments and microscopic counts. The Chilika lagoon was found to have higher pigment diversity with an upsurge of picocyanobacteria characterized by the high concentration of zeaxanthin, irrespective of the seasons. The cryptophytes, prymnesiophytes, and picocyanobacteria identified by HPLC added a new dimension to the phytoplankton diversity of the studied habitats, which would not have been possible through conventional microscopy. Fucoxanthin, zeaxanthin, diadinoxanthin, diatoxanthin, and  $\beta$ -carotene emerged as important accessory pigments. A summer mixed diatom-dinoflagellate bloom was chromatographically detected in near-coastal waters off Gopalpur. The pigment composition revealed photoacclimation by the phytoplankton community of Chilika lagoon to reduce the photo-damage. This studies highlights the efficacy of HPLC for the qualitative and quantitative studies of the entire phytoplankton floral spectrum in the coastal ecosystems of western Bay of Bengal.

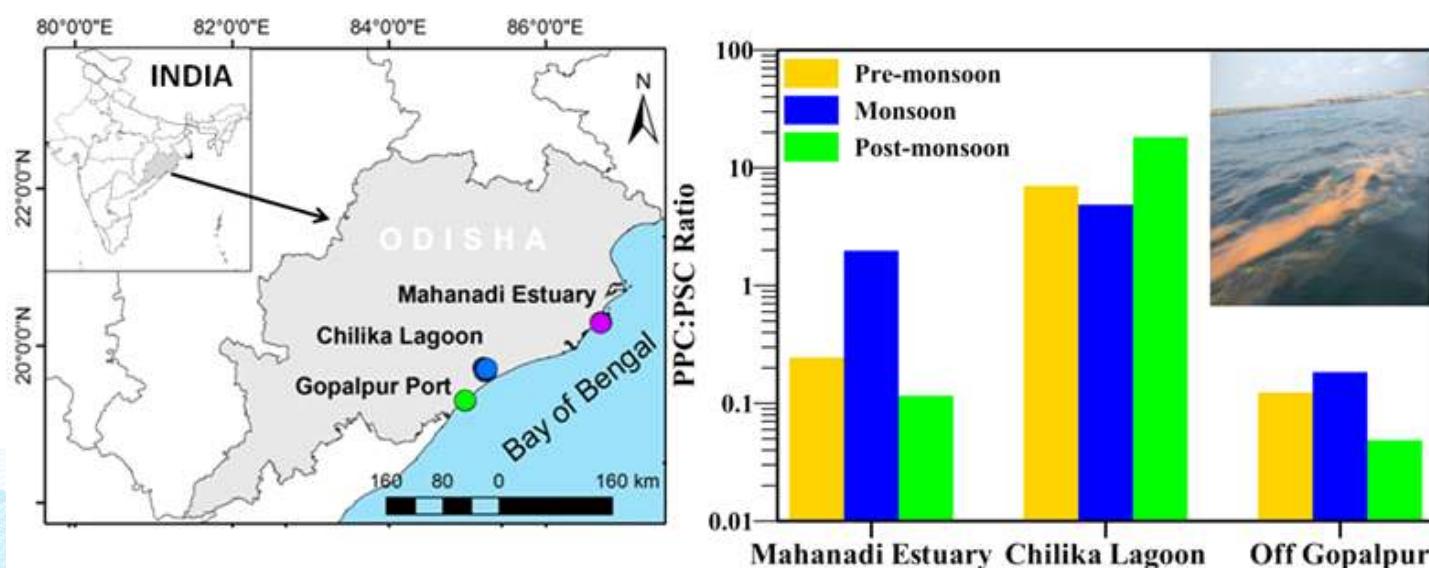


Figure: Left panel illustrates the study regions along the east coast of India. (Image reprinted with permission from Springer Nature, Srichandan et al. 2019). Right panel illustrates seasonal Photoprotective Carotenoids (PPC) to Photosynthetic Carotenoids (PSC) ratio (Image reprinted with permission from Elsevier, Srichandan et al. 2020). The inset in the right panel shows summer red tide off Gopalpur.



Citation: Srichandan, S., Baliarsingh, S.K., Lotliker, A.A., Prakash, S., Samanta, A., & Sahu, K.C. (2020). A baseline investigation of phytoplankton pigment composition in contrasting coastal ecosystems of north-western Bay of Bengal. *Marine Pollution Bulletin*, 160, 111708., doi: <https://doi.org/10.1175/JPO-D-19-0077.1>  
 Srichandan, S., Baliarsingh, S. K., Prakash, S., Lotliker, A. A., Parida, C., & Sahu, K. C. (2019). Seasonal dynamics of phytoplankton in response to environmental variables in contrasting coastal ecosystems. *Environmental Science and Pollution Research*, 26, 12025-12041.

[Report Courtesy: S K Baliar Singh, INCOIS, Hyderabad, India, E-mail: [baliarsingh.s@incois.gov.in](mailto:baliarsingh.s@incois.gov.in)]

## The Impact of the Madden-Julian Oscillation on Cyclone Amphan (2020) and Southwest Monsoon Onset

Cyclone Amphan (2020) was a devastating storm in the Bay of Bengal from May 15-21, 2020 that rapidly intensified to a minimum central pressure of 907 hPa (equivalent of category 5 on the Saffir-Simpson scale) and devastated parts of India and Bangladesh. This storm occurred at a unique time, following the 2019 strong positive Indian Ocean Dipole (pIOD) and strong monsoon. We used, we used satellite observations in conjunction with ocean model simulations and reanalysis in order to understand (i) what oceanic factors contributed to Amphan's cyclogenesis, (ii) how the Bay of Bengal responded to this storm, and (iii) how the storm and associated ocean processes impacted the 2002 southwest monsoon onset.

Our studies demonstrates that MJO not only contributed to Amphan's cyclogenesis, but also to southwest monsoon onset (Figure-1). Prior to its arrival in the Bay, the MJO's northward propagation through the Arabian Sea established low-level westerlies and added atmospheric moisture necessary for southwest monsoon onset. Amphan further helped to establish the conditions for onset by transporting further moisture into the region, with the fluxes associated with Amphan actually exceeding those associated with monsoon onset (Figure 1J). Monsoon onsets following strong pIODs tend to be delayed, but the 2020 monsoon onset occurred with climatology due in no small part to the massive influx of associated with both the MJO and Amphan.

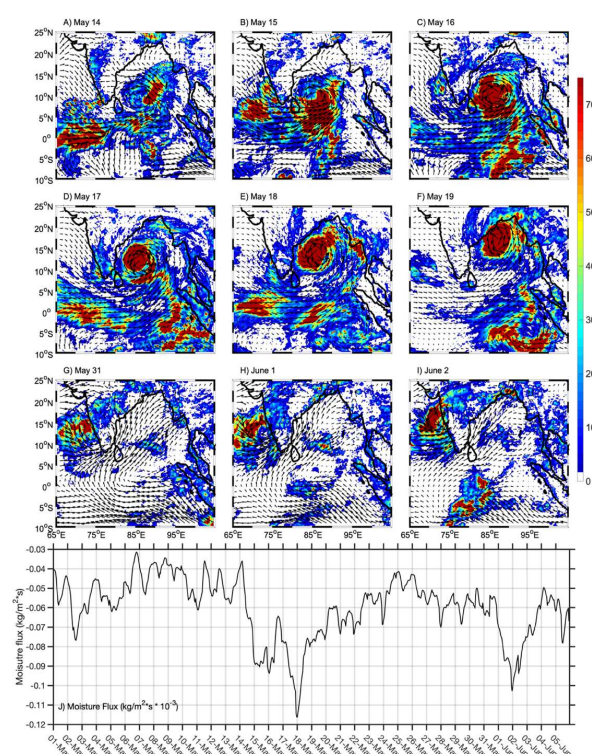


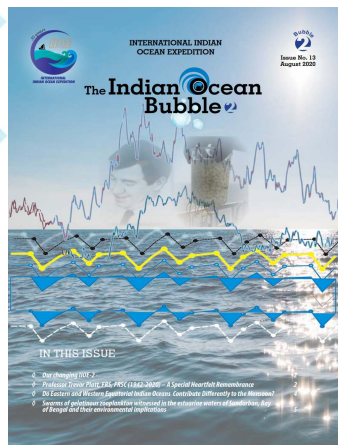
Figure-1. Spatial plots of GPM precipitation rate (shaded; mm/day) for: (a) May 14, (b) May 15, (c) May 16, (d) May 17, (e) May 18, (f) May 19, (g) May 31, (h) June 1, and (i) June 2, with (j) a box-averaged time series of ERA5 instantaneous moisture flux data (kg/m<sup>2</sup>\*s\*10<sup>-3</sup>) in the southeastern Arabian Sea (65–70°E, 6–13°N) from May 1 to June 5, 2020.

Citation: Roman-Stork, H.L., and B. Subrahmanyam (2020). The Impact of the Madden-Julian Oscillation on Cyclone Sensing, 12, 3011, Amphan (2020) and Southwest Monsoon Onset, *Remote Sensing*, 12, 3011, doi:<https://doi.org/10.3390/rs12183011>

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## The Indian Ocean Bubble, Issue No.13 is now available online



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### Call for Contributions

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)

Deadline: **30<sup>th</sup> November, 2020**

Send your contributions as usual to [iioe@incois.gov.in](mailto:iioe@incois.gov.in)

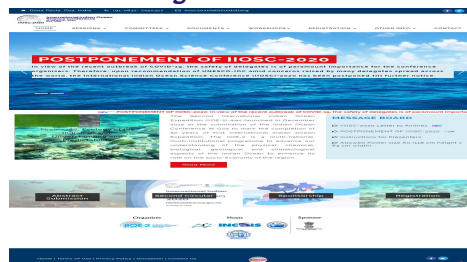
## POSTPONEMENT of International Indian Ocean Science Conference (IIOSC)-2020

In view of the recent outbreak of COVID-19, the safety of delegates is of paramount importance for the conference organisers. Therefore, upon recommendation of UNESCO-IOC amid concerns raised by many delegates spread across the world, the International Indian Ocean Science Conference (IIOSC)-2020 has been postponed till further notice.

More details on the Conference are available at the website <https://iiosc2020.incois.gov.in/>

### MESSAGE BOARD

- ☞ IIOSC-2020 Letter to Airlines
- ☞ Instructions for Presenters
- ☞ Allowed Poster size AO (118 cm height x 84 cm width)



## POSTPONEMENT of the 15<sup>th</sup> Pan Ocean Remote Sensing Conference (PORSEC-2020) and Capacity Building Tutorial to year 2021

It is with regret that we announce that the 15<sup>th</sup> Pan Ocean Remote Sensing Conference (PORSEC2020) and capacity building tutorial, scheduled for 15-22 September 2020, have unfortunately been postponed to 2021 over Coronavirus (COVID-19) concerns. We continue to monitor the situation and will decide and announce the new dates sometime around September of this year, or when the situation becomes normal again.

In the meantime, we are continuing accepting new abstracts and registrations, which will remain open until 15 September 2020. The Committee has decided to publish the first volume of abstract proceedings (with ISBN) by December 2020, prior to the conference. At that time we will also consider the preparation of and call for papers for a first volume of a Special Issue of the International Journal of Remote Sensing (IJRS), prior to the conference. We will send out the details to all participants once we have made the decision.

The Committee has arrived at this decision after realizing our capacity to keep an audience sufficiently “distanced” and considering the current uncertainty around gatherings and people’s justifiable precautions regarding their own health.

Our sincere apologies for any inconvenience that the postponement may have caused. We wish to thank all speakers, sponsors, exhibitors and participants for their continued support of the event, and we look forward to seeing you at the new date that we will announce.

[Report Courtesy: Nurul Hazrina Idris, Chair of PORSEC2020 LOC, Universiti Teknologi Malaysia, Skudai, Johor, MALAYSIA. E-mail: [nurulhazrina@utm.my](mailto:nurulhazrina@utm.my)]

# POSTPONEMENT of 14<sup>th</sup> International Conference on Copepoda (ICOC 2020) to 2021

Due to the COVID-19 virus, the ICOC 2020 and pre-conference workshop scheduled to take place in June 2020, have been postponed by one year. The new dates will be 31 May – 4 June 2021 for the preconference workshop at the University of Limpopo in Polokwane, and 6 – 12 June for the conference in Skukuza, Kruger Park, South Africa. The conference will still be referred to as the ICOC2020 and not the ICOC2021.



Unfortunately, increase in prices and costs can be expected, with an increase in the accommodation costs and probably also in the registration fees. These can only be calculated at a later date. The registration website will stay open for new participants to register and book, while the list of people who already registered will be saved, together with all the payments already received, and transferred to the bookings for June 2021.

Abstract submissions for the ICOC 2020 in June 2021 have re-opened. Please go to <https://app.oxfordabstracts.com/dashboard/events/1160> where you can decide whether you want to keep your abstract as submitted for June 2020 or whether you want to change it for June 2021. Note that there is no deadline yet, and this will be determined at a later stage, probably 30 December 2020.

Visit <https://www.abevents.co.za/web/icoc2020/> for further details.

## 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 41 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](https://iioe-2.incois.gov.in/IIOE-2/Endorsed_Projects.jsp).

## CLIVAR September 2020 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 September, 2020 is available at:

<https://mailchi.mp/clivar.org/clivar-september-2020-bulletin>

## Call for Contributions

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

*The IIOE-2 Newsletter is published online by:*



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