IIOE-2 2nd International Indian Ocean Expedition 2015-2020

Newsletter

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

Volume-4, Issue-4
April, 2020

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.

Reminiscence: Trevor Platt, FRS, FRSC (1942-2020)

Prof. Trevor Charles Platt (born 12 Aug 1942 at Salford, England) was one of the pioneering researchers in the fields of ocean color remote sensing and primary productivity modelling and has contributed to a never-ending list of topics related to ecology, plankton and climate through 320 publications cited over 22,000 times. His professional career began at the Bedford Institute of Oceanography (BIO) in Dartmouth, Nova Scotia. He was a Professional Fellow at Plymouth Marine Laboratory, UK since 2008 until his demise. Other notable honours include APICS-Fraser Gold Medal, Rosenstiel Award, G. Evelyn Hutchinson Award, Fellow of the Royal Society of Canada (FRCS), A.G. Huntsman Award, Fellow of the Royal Society, UK (FRS), Timothy R. Parsons medal, Prix de Distinction and Prix d'Excellence. He contributed to the Fourth Assessment of the Intergovernmental Panel on Climate Change (IPCC) that shared the 2007 Nobel Peace Prize with US Vice-President Al Gore. His deep association with influential groups such as ASLO, Scientific Committee on Oceanic Research (SCOR), NATO and the International Council for the Exploration of the Seas (ICES), the International Ocean Colour Coordinating Group (IOCCG), and the Partnership for Observation of the Global Ocean (POGO), Bermuda Institute of Ocean Sciences, and Alfred Wegener Institute (AWI, Germany) through the Nippon Foundation-POGO collaboration, add to his credits. He cultivated a great strength of researchers especially in India and other Indian Ocean Rim-countries.

Prof. Trevor Platt doing what he loved most. Engaging students to deep discussions in India (February, 2012), during one of the numerous capacity building programmes that he helmed across the planet.

Some of the highlights of his efforts in India are a unique 3-month capacity building programme on regional primary productivity modelling during 2004-2005, as well as SAFARI (Societal Applications in Fisheries and Aquaculture using Remote Sensing Imagery) and SAFARI-2 symposiums in 2010 and 2018, respectively. He was awarded the Jawaharlal Nehru Science fellowship in 2014. After a short illness, he passed away on 6 April 2020 in Plymouth, UK. He is survived by his wife, Dr. Shubha Sathyendranath, who has been a pillar of strength in all his endeavours. They travelled together through the length and breadth of this planet to train young minds.

Biodiversity assessment of Australia's Indian Ocean Territories

We know almost nothing about the biodiversity values of Australia's Indian Ocean Exclusive Economic Zones ("Indian Ocean Territories", IOT) around the remote Cocos (Keeling) and Christmas Islands. This has impeded conservation management and there are no marine parks proposed or designated across these regions. The fauna around the seamounts and islands of the IOT are likely to be different from anything else that occurs in Australia's marine estate. The seamounts occur in the path of the Indonesian Through Flow (ITF) carrying water

from the Pacific to the Indian Oceans. The seamounts are mostly of late Cretaceous age (65-80 my) and may also harbour ancient endemic communities. Seamount communities worldwide are highly vulnerable to disturbance by fish trawling, demersal longlining or mining for cobalt-rich ferromanganese crusts, particularly if they harbour vulnerable coral communities. Against this backdrop it is proposed to conduct a 45-day expedition to the IOT in June-July 2021 carrying 30 scientists on board Australia's Research ship "Investigator". The Expedition focused on mapping the seamounts and surveying the benthic fauna through sleds and towed video will assess the endemicity of the fauna, testing whether the selected fauna of the Indian Ocean are endemic or are connected to the western Pacific. This work will also assess the conservation significance of the seamount fields, including the presence of vulnerable marine ecosystems (VMEs) such as mesophotic and cold-water coral beds. An important focus of the voyage will be the communication of the biodiversity values of the area to the broader community through an extensive media program. This project has been endorsed by IIOE-2 (IIOE2-EP40).

[Report Courtesy: Tim O'Hara, *Museums Victoria, Melbourne, Australia, E-mail: tohara@museum.vic.gov.au]*

High levels of isoprene in the marine boundary layer of the Arabian Sea during spring inter-monsoon: Role of phytoplankton blooms

Isoprene is one of the most abundant biogenic volatile organic compounds (BVOCs) in the earth's atmosphere with estimated global emissions of 500–750 Tg C yr^{-1}. The emission of isoprene and its transformation in the atmosphere lead to the production of ozone and secondary organic aerosols. Overall, BVOCs have a profound effect on the atmospheric chemistry, radiative balance and carbon cycle over the oceans. Photosynthetic organisms are known to be an important source of the isoprene over the oceanic region. Measurements of isoprene, micro-organisms and chlorophyll-a over the Arabian Sea were made onboard FORV Sagar Sampda (SS#359) during the inter-monsoon period of April-May 2017. In this interdisciplinary approach, seawater parameters have been used to explain the distribution of isoprene in the marine atmosphere over the highly productive and oxygen-deficient region of the Arabian Sea. Time series of isoprene mixing ratio, surface chlorophyll-a concentration, and solar radiation flux over the Arabian Sea are shown in Figure-1. The elevated levels of isoprene (> 0.6 ppbv) were associated with the blooms of *Trichodesmium* and *Thalassiosira* in oligotrophic conditions. In addition to biological parameters, the results also show that the production and emission of isoprene are influenced by the meteorological parameters, i.e. solar flux, wind speed and temperature. We estimated the average sea-air isoprene emission flux of $\sim 4.5 \times 10^7$ molecule cm^{-2} s^{-1}. Levels and fluxes of isoprene presented in this study are in the higher range of values reported for other highly productive oceans. As presented in Figure-2, the production in the seawater and emission in the marine air over the open ocean should be further investigated in order to predict the concentration of isoprene and to estimate its contributions to ozone and secondary organic aerosol over the Arabian Sea. We provide the first integrated dataset on environmental, biological and atmospheric parameters to understand the distribution of isoprene in the marine boundary layer over the Arabian Sea.

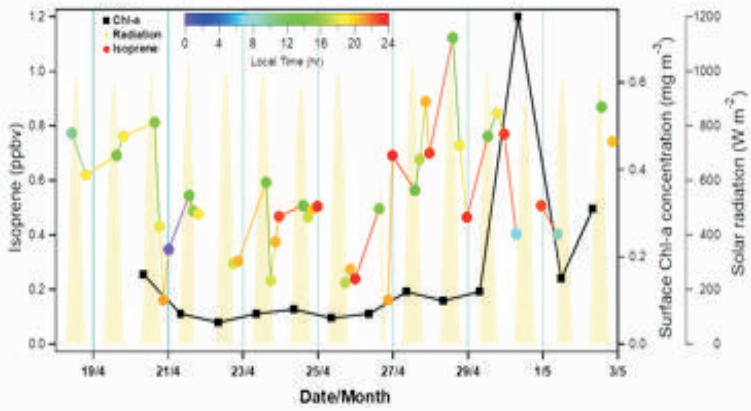


Figure 1: Time series of isoprene mixing ratio, surface Chl-a concentration, and solar radiation over the Arabian Sea.

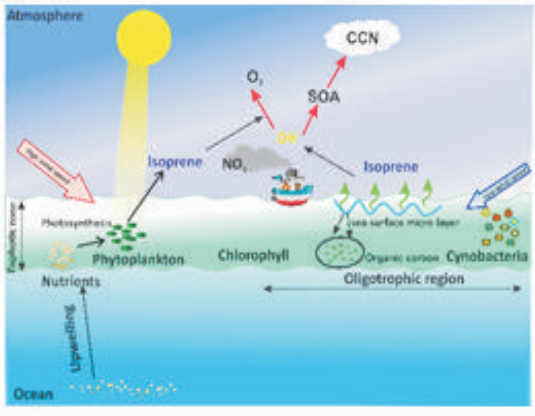


Figure 2: The sea-air exchange of isoprene and its role in atmospheric chemistry over the marine atmosphere.

Full Article is available at: http://dx.doi.org/10.1021/acsearthspacechem.9b00325

[Report Courtesy: Nidhi Tripathi, PRL, *Ahmedabad, Gujarat,* India, *E-mail: nidhi4358@gmail.com]*

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

It is with regret that we announce that the 15th 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]

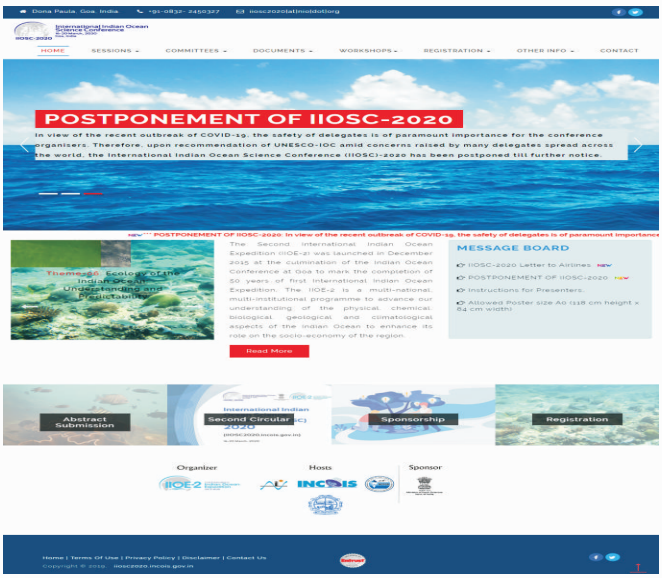
POSTPONEMENT of International Indian Ocean Science Conference (IIOSC)-2020

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 A0 (118 cm height x 84 cm width)



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.

Some Upcoming Events

- 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 April 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 April, 2020 is available at:

https://mailchi.mp/clivar.org/clivar-april-bulletin

Call for Contributions

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

The Indian Ocean Bubble-2

Access the latest issue of Indian Ocean Bubble-2

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

Click Here to 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

The IIOE-2 Newsletter is published online by:

INCOIS

@IIOE2

@iioe_2

Feedback? iioe-2@incois.gov.in

IIOE-2 2nd International Indian Ocean Expedition 2015-2020

IOGOOS Global Ocean Observing System for Indian Ocean

UNESCO United Nations Educational, Scientific and Cultural Organization

Intergovernmental Oceanographic Commission

International Council for Science SCOR Scientific Committee on Oceanic Research