



SIBER

**Sustained Indian Ocean
Biogeochemistry and Ecosystem
Research**

**10th Scientific Steering Committee Meeting, March
24th, via Go To Meeting**

Meeting Proceedings

Attendees:

SIBER SSC Members: Greg Cowie (Chair), Raleigh Hood (co-Chair), Lynnath Beckley, Jerry Wiggert, Mike Landry, Jenny Huggett, Francis Marsac, Birgit Gaye, P. N. Vinayachandran, R. Dwi Susanto, Makio Honda.

SIBER IPO Staff: Satya Prakash

IOC Perth Office: Nick D'Adamo, Sarah Gardener

Mike Roberts and Zainal Arifin could not attend the meeting

10th SIBER SSC meeting was scheduled on 24 March 2020 in conjunction with the 16th IOGOOS, 16th IORP, 10th IRF and 4th IIOE-2 SSC meetings during the week of 22-26 March 2020. Unfortunately, due to outbreak of COVID-19 virus and its spread in many countries, the integrated meetings were postponed till further notice. But all individual groups decided to continue with the planned meeting through electronic means. Accordingly, SIBER 10th SSC was held using GoToMeeting on 24 March 2020.

CONVENE SIBER SSC BUSINESS MEETING

Greg Cowie chaired the 19th SSC meeting of SIBER. He presented an overview of the agenda and briefed the committee on the outcomes, including an update on the financial situation, of the IMBER meeting. He stressed that the IMBER has reduced the funding of all programmes including SIBER. Presently IMBER is supporting upto \$8000USD, which is considerably less than their earlier support. The funding may further decrease in coming years depending on the IMBER funding scenarios.

As noted above the integrated meetings were postponed due to outbreak of COVID - 19 viruses. Satya Prakash updated the committee that the local organising committee (LOC) of International Indian Ocean Science Conference (IIOSC) 2020 has proposed new dates (5-9 October and 12-16 October 2020) to organise the conference at National Institute of Oceanography (NIO) Goa, India. The LOC has sought the opinion of International Science Planning committee (ISPC) of IIOSC-2020. Some of the ISPC members have expressed concerns on the proposed dates and have indicated that it's too early to plan the conference in view of the widespread outbreak of COVID-19. ISPC members have unanimously agreed to wait for at least two months and monitor virus outbreak situation before further deciding on the new dates.

SIBER SSC ROTATIONS: Update on Steering Committee rotations

In view of the IMBER guidelines to rotate off old members and induct new members in the SSC, SIBER has made a good number of rotations in the SSC and many new members have been inducted. SIBER leadership has also been changed during the SSC-09 meeting.

Dr. Jerry Wiggert and Dr. Mike Roberts have offered to step down from the SSC and pave ways for induction of new members from countries that have not yet been represented. They will continue to be on the SSC at least until the next in-person meeting later this year at Goa, and will rotate off after the said meeting if suitable replacements are found. Cowie/Hood emphasized need for self-funding and issues of representation (IO island and rim nations) and gender balance.

Francis Marsac has been entrusted to suggest a member from Seychelles, someone who has expertise on fisheries and environmental science. Though a self-supporting member/nomination would be appreciated, funding support may be explored for exceptional nomination. SIBER is approaching IndOOSResource Forum (IRF) for additional support. Some additional support from Commonwealth, through Nick Hardman-Mountford, may also be explored.

Action item-1: Chair and co-chair to approach IRF and Commonwealth for addition support to SIBER

SIBER UPDATE: Overview of SIBER-9meeting report

Satya Prakash updated the SSC on the progress of SIBER meeting reports, website etc. He noted that SIBER -9 report is published online. SIBER-8 report was finalised but lost due to hard-drive failure. Raleigh Hood and Lynnath Beckley suggested to upload the SIBER 8 agenda. Satya noted that he has the meeting notes and can re-do SIBER 8 report. Raleigh promised to share SSC-8 agenda and suggested Satya to finalise report using his old notes.

SIBER website is being regularly updated. IIOE-2 Newsletters and “Ocean Bubble-2” are also regularly linked to the SIBER website. SSC-9 had suggested to provide list of SIBER related publications on the website. Satya informed the committee that it has been implemented and publication list is now available on the website.

SIBER PRODUCTS I: Deep-Sea Research Special Issues on IIOE-2/SIBER/IORP

The first two volumes of our DSR-II Special Issue series on IIOE-2 are published and available at:

Vol 1: <https://www.sciencedirect.com/journal/deep-sea-research-part-ii-topical-studies-in-oceanography/vol/161/suppl/C>

Vol 2: <https://www.sciencedirect.com/journal/deep-sea-research-part-ii-topical-studies-in-oceanography/vol/166/suppl/C>

Raleigh Hood reported that the 3rd volume is being finalised; the last date of submission for this volume has been extended to 18 April 2020. Manuscripts are now being solicited for publication in the 4th volume of DSR-II Special Issue series on IIOE-2. Greg Cowie offered help with editorial tasks.

Jerry Wiggert suggested compilation of a timeline of events and SIBER-motivated research and publications since the inception of SIBER. Compiling such a list would highlight the role of SIBER in enhancing the understanding on the biogeochemistry of the Indian Ocean. Such a list would also help secure more funding for SIBER activities. One of the major outcomes of SIBER initiative is IIOE-2 and, therefore, linkages of IIOE-2 and SIBER is being highlighted in DSR special issues of IIOE-2. Greg Cowie suggested to prepare a short article on achievements of SIBER (e.g. AGU newsletter).

Action item 2: Cowie/Wiggert to lead compilation and explore article to highlight achievement of SIBER

SIBER PRODUCTS II: Progress on motivating SIBER review papers on the SIBER SPIS themes and other topics

Raleigh Hood outlined the progress on the above listed items. A review paper on contrast between Arabian Sea and Bay of Bengal is accepted and is in production pending some copyright approvals. Birgit Gaye to contact Tim Rixen and provide an update on the status.

Jerry Wiggert is leading a review paper on Theme 2 which focuses on equatorial dynamics. Though, it should be noted that progress on the development of this review paper has been slow.

Mike Roberts has proposed to do a review paper on the Western Indian Ocean Upwelling Research Initiative (WIOURI). This effort has thus far not progressed.

EGU/Copernicus has extended the deadline to submit IIOE-2 synthesis papers to June 30, 2020. Vinayachandran updated on a review paper lead by him on upwelling in the Indian Ocean. An effort will be made to motivate work on this paper with the goal of generating the 1st draft by 30 April 2020.

Francis Marsac is co-leading a special issue in DSR-II on their recent joint French-South African cruises on shallow seamounts in the Southwestern Indian Ocean. The Special Issue will be ready for final publication in July 2020.

Mike Roberts and Katya Popova (NOC) are leading a special issue in DSR-II on the SOLSTICE Agulhas Bank project.

SIBER PRODUCTS III: Motivating IO Bubble-2 and Newsletter Articles

SIBER motivated articles are published regularly in “Ocean Bubble-2” and “IIOE-2 Newsletters”. During 2019-2020 many SIBER related articles were published including articles in the February 2020 Issue 12 of Ocean Bubble-2 by Jenny Huggett et al. on the contribution of the RV *Dr F Nansen* to research in the WIO, and by Lynnath Beckley on Australia’s 110°E IIOE-2 repeat transect in the Indian Ocean, as well as another article by Jenny Huggett in the August 2019 Issue 11 on plankton capacity building activities in the WIO.

Francis Marsac (French cruises), Mike Landry (Bluefin Tuna cruise), Makio Honda (Japanese cruises in Indian Ocean) and Dwi Susanto (Indonesian throughflow related work and planned activities) were encouraged to write short articles on their planned activities in the Indian Ocean for Ocean Bubble-2 forthcoming issues.

Action Item 3: Satya Prakash to pursue with them for Newsletter/Ocean Bubble articles. Cowie to contact Tim Rixen to do an article for Ocean Bubble on Hypoxia contrast (accepted manuscript).

IIOE-2 UPDATES AND REPORTS:

Update on EIOURI

- *Chinese cruises*

Greg Cowie presented on behalf of Weidong Yu. Three cruises have been completed in the Indian Ocean: fall 2016, winter 2017 and winter 2019 (in collaboration with TRIUMPH project) as EIOURI initiative.

- *Japanese cruises*

Makio Honda had sent information on completed/planned Japanese activities: The cruise, planned in September 2020, consists of three legs to capture upwelling systems off Java/Sumatra (during 1st leg), service JAMSTEC ADCP mooring at equatorial Indian Ocean (during 2nd leg) and sample Leeuwin current system to understand physical biological and chemical interactions associated with meso-scale eddies.

- *Indonesian cruises*

Zainal Arafin sent slides on the Indonesian activities in the Indian Ocean. Throughflow Indonesian seas, Upwelling and Mixing PHysics (**TRIUMPH**) project is an international collaborative program: Indonesian Institute of Sciences (LIPI, led by Dr. Nugroho), University of Maryland, USA led by Dr. R. Dwi Susanto, and First Institute Oceanography, China led by Dr. Zexun Wei. This project has two main objectives: (1.) to monitor Indonesian Throughflow (ITF), Upwelling south of Java, understand ocean mixing, air-sea interactions and climate events such as MJO, IOD, ENSO etc., and (2.) to study marine biodiversity of the region in association with the biogeochemical process and marine pollution. Two cruises have been completed in the Indonesian throughflow region during Nov-Dec 2019. Activities onboard included deploying RAMA and Upwelling moorings in the eastern tropical Indian Ocean, and deployment of ITF moorings in the Makassar and Lombok strait.

- *Update on Landry NSF proposal and 2021 voyage*

Mike Landry updated the committee on progress of the BLOOFINZ project (Bluefin Larvae in Oligotrophic Ocean Foodwebs: Investigations of Nutrients to Zooplankton), which will investigate the plankton ecosystem supporting feeding, growth and survival of larval southern bluefin tuna (SBT) in the Indonesian through flow region, their only known spawning area. BLOOFINZ originated as part of EIOURI and is funded by the US National Science Foundation (PI: M. Landry) for a 38-day cruise on R/V REVELLE, currently scheduled for early 2021 (Jan-Feb), the peak SBT spawning season (final dates pending COVID-19 revision of ship schedules). The project involves co-PIs from 4 US institutions as well as international collaborators from Australia, New Zealand, Canada, Spain and China (Hong Kong). The core science will involve sampling across mesoscale features to test hypothesized relationships linking variability in SBT larval feeding and prey preferences, growth rates and trophic position to the environmental conditions of waters selected by adult spawners. Lagrangian experiments will also be conducted in satellite-tracked water parcels for repeat sampling of larval patches and to investigate underlying process rates and relationships through measurements of water-column ¹⁴C productivity, N₂ fixation, ¹⁵NO₃-uptake and nitrification, community biomass and composition, micro- and mesozooplankton grazing, and export. Biogeochemical and food web elements of the study will be linked by compound specific isotopic analyses of amino acids (CSIA-AA), ¹⁵N-constrained budgets and modeling. The study is expected to yield

ecological insights about potential recruitment vulnerabilities to climate change and to enhance international management efforts for southern bluefin tuna.

Update on WIOURI/SOLSTICE

Jenny Huggett provided following updates on activities in the South African region and WIOURI project.

Cruise 1: West Indian Ocean SOLSTICE (Sustainable Oceans, Livelihoods and Food Security Through Increased Capacity in Ecosystem) project: *Agulhas Bank Ecosystem Study*, RV *Ellen Khuzwayo*, March 2019. PIs: Mike Roberts (NMU) & Katya Popova (NOC, UK); Zooplankton abundance, biomass, size spectra, secondary production (AARS) measurements: Margaux Noyon (NMU, South Africa).

Cruise 2: African Coelacanth Ecosystem Programme (ACEP) *Canyon Connections Research*, RV *Angra Pequena*, 19-31 May 2019. Multidisciplinary ecosystem study of submarine canyons off the east coast of South Africa. PI: Mandy Lombard (NMU, South Africa); Phytoplankton & nutrients co-investigator: Thomas Bornman (SAEON); Zooplankton & larval fish co-investigators: Jenny Huggett (DEA), Shael Harris (UniZul).

Cruise 3: *SEAmester IV & ASCA Line, SA Agulhas II*, 1-11 July 2019. Oceanographic sampling including microzooplankton, mesozooplankton & ichthyoplankton along the ASCA transect crossing the Agulhas Current off the SE coast [5th cruise] & CPR tow across the Agulhas Bank. PI: Juliet Hermes (SAEON); Zooplankton PI: Jenny Huggett.

Capacity Building: *Regional Training Workshop on “Identification of zooplankton and fish larvae of the Western Indian Ocean”*, Institute of Marine Sciences & University of Dar es Salaam, Zanzibar, Tanzania, 23 February to 2 March 2019. Zooplankton training provided by Jenny Huggett (DEA, South Africa), Mark Gibbons & Riaan Cedras (UWC, South Africa), Delphine Thibault (Univ Aix-Marseille, France) and Margaux Noyon (NMU, South Africa); Ichthyoplankton training provided by Stamatina Isari (IMR, Norway), Nadine Strydom (NMU, South Africa), Shael Harris (UniZul, South Africa) and James Mwaluma (KMFRI, Kenya).

Forthcoming cruises

SEAmester V & ASCA Line, SA Agulhas II, July 2020. Oceanographic sampling along the ASCA transect crossing the Agulhas Current off the SE coast & CPR tow across the Agulhas Bank. PI: Juliet Hermes (SAEON).

Next regional cruise potentially in 2021, between Madagascar & Mauritius.

Update on proposals submitted and planned for other IIOE-2 activities

- *Indian cruises and programs*

Satya Prahashand Vinay briefed on Indian initiatives, MOSAIC cruises and a new “Deep Sea Mission” programme. Indian Govt may re-appropriate funds in view of corona outbreak.

- *110°E Repeat Line report and other Australian activity*

Lynnath Beckley reported that the 110°E voyage was successfully completed in May/June 2019 with the RV *Investigator*. Results are being compiled by the 10 PIs and their teams. Proposing a special issue in DSR-II on 110°E expedition.

The RV *Falkor* is currently operating in Australian waters with the ROV *Subastian*. The first voyage in February 2020 investigated the Bremer Canyon (CI: Julie Trotter) and the second in March 2020 investigated the Ningaloo canyons (CI: Nerida Wilson). A proposal to investigate the biota of SE Indian Ocean sea mounts using the RV *Investigator* has been successful for 2021 (CI: Tim O’Hara).

IMOS continues to provide valuable monitoring of the SE Indian Ocean. Tim Moltmann has retired and the new IMOS Director is Michelle Huepel.

- *German cruises*

Birgit Gaye presented on planned German cruises in the Indian Ocean. First cruise was completed in Sept-Oct 2019, which focused on carbonate chemistry, sediment samples, microplastics, etc. The 2nd cruise is proposed to study hydrothermal vent regions and deep ocean zooplankton.

- *French cruises*

Francis Marsac presented plans of many French expeditions in the Indian Ocean in 2021:

1. Resources and coastal vulnerability in changing southern Indian Ocean (REACTION) cruise which is part of OceanFrontChange project funded by Belmont Forum, Cruise is proposed for 18 Days onboard RV ANTEA in February 2021.

2. CYCLOPS cruise (Durban Cyclone and Secondary Production) of 18 days onboard RV ANTEA in March 2021 to understand fine-scale physical processes linked to formation, changes and decline of a quasi-permanent cyclonic eddy located off Durban, South Africa. It will also involve characterization of phytoplankton and zooplankton communities depending on age and status of eddies.

3. Saya de Malha Ecosystem Survey (Mascarene Ridge); a two-week cruise onboard RV Pourquoi Pas in June 2021 to collect information on marine environment, fish resources, biodiversity and also to characterize habitats that need special attention for conservation.

4. MAhe Plateau ecosystem Survey (MAPS) cruise to map the Mahe Plateau area, to collect hydrological information, survey and to assess the demersal fish stocks of commercial value to promote management measures for the artisanal fishery, finally to survey the benthic biodiversity and identify hot spots. The data will be compared to

baseline data collected during early 80's. The proposed cruise is for two months onboard RV ANTEA scheduled in Oct-Nov 2021.

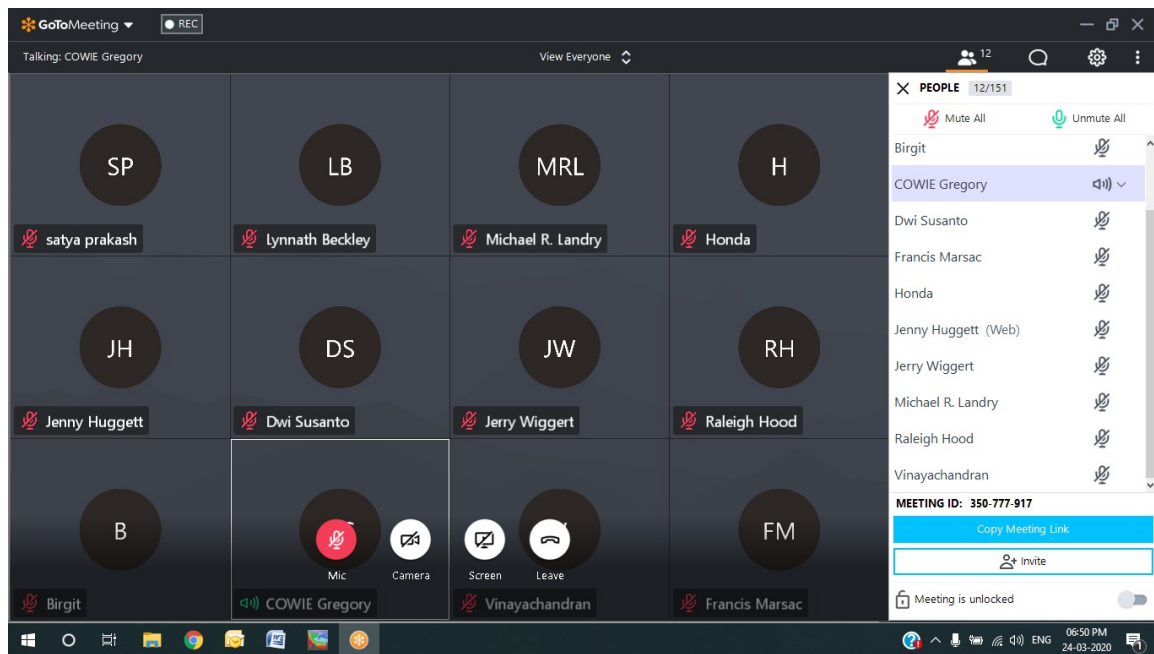
Reports from different countries highlighted extensive international activity on multiple fronts and scientific rationale. SIBER leadership has played pivotal role in many of these completed/planned activities. Some of the proposed activities will stretch though 2021-22 and beyond, and will help forming a firm base for IIOE-2 beyond 2020 (and the UN decade for sustainable development).

Upcoming meetings that present opportunities to advertise IIOE-2 (all SSC)

This item was only briefly addressed due to lack of time and number of members leaving the meeting because of late night time zone for some participants. It will be visited again during the next in-person meeting. All SSC members were requested to identify other possible meeting opportunities.

Other business

This item also could not be discussed due to paucity of time and number of participants leaving the meeting. SSC will discuss it during the next in-person meeting. Greg Cowie, however, briefly elaborated that IMBER has suggested that SIBER revise the science themes/key questions/hot topics and that SSC should consider the suggestion. He proposed to have a detailed discussion on it during the next SSC meeting. Break-out sessions will also be planned to draft write-up of revised science plan/key questions/hot-topics etc. A short write-up will also be developed as a product for IMBER.



Group photo of the 10th SIBER SSC e-meeting 😊