

# IIOE-2 STEERING COMMITTEE MEETING NO. 4

Held virtually, 12 – 15 April 2021

Hosted by the IIOE-2 Joint Project Office (JPO) Nodes  
(respectively at INCOIS India and IOC Perth Programme  
Office Australia)

IIOE-2 JPO contacts:

Satya Prakash: [satyap@incois.gov.in](mailto:satyap@incois.gov.in)

Nick D'Adamo: [nick.dadamo@bom.gov.au](mailto:nick.dadamo@bom.gov.au)

**Draft Meeting Minutes**

**Version: 22 April 2021**

**For review by the IIOE-2 SC4 participants**

A copy of the agenda and the presentations/reports (linked in the agenda) delivered during the meeting can be accessed via the meeting website portal:

**<https://iioe-2.incois.gov.in/IIOE-2/SC4.jsp>**

The minutes are in *italics* throughout the flow of the agenda below.

These minutes present an account of the meeting, reflecting significant and substantive points or issues interpreted to have arisen from associated questions and discussions on the agenda items, including the presentations.

A list of participants is provided in **Appendix 1**. A list of consolidated action items is provided in **Appendix 2**.

Copies of the full presentations/reports are available from <https://iioe-2.incois.gov.in/IIOE-2/SC4.jsp> or through the JPO (India).

## Monday 12 April 2021

Time slot (in UTC)	Agenda Items and Meeting Minutes (minutes in italics)	Action Items
Item 1 11:00-11:05	Welcome on behalf of hosts/ housekeeping. Reviewing the meeting agenda by the IIOE-2 Co-Sponsors' reps.  <i>Sateesh Sheno</i> welcomed everyone to the meeting and introduced Marie-Alexandrine Sicre, the new President	

	<p><i>of SCOR. Marie-Alexandrine assumed the IIOE-2 Co-chair role on behalf of SCOR, following immediate past SCOR President Prof Peter Burkill's retirement. Sateesh outlined the importance of the SC 4 meeting to look at how IIOE-2 will make a difference over the next 5 years for the Indian Ocean and contribute to the UN Decade.</i></p> <p><i>Marie-Alexandrine Sicre thanked Sateesh and gave an outline of her role as President of SCOR until 2024 and her background as a chemical oceanographer based in Paris. Marie-Alexandrine acted as chair for Day 1 of the meeting.</i></p>	
Item 2 11:05-11:10	<p>Report on IIOE-2 SC3 Meeting (Port Elizabeth, March 2019): Nick D'Adamo, (JPO) Australia Node.</p> <p><i>Of the action items arising from IIOE-2 SC 3 one is still pending. Attendees took the minutes as read.</i></p>	
Item 3 11:10-11:20	<p>IIOE-2 Joint Project Office Report</p> <ul style="list-style-type: none"> <li>• Australia JPO Node: Nick D'Adamo</li> <li>• India JPO Node: Satya Prakash</li> </ul> <p><i>The JPO reports were presented.</i></p>	
Item 4 11:20-12:45	<p>IIOE-2 National Committee Reports - delivered by National Committee Chairs/Representatives.</p> <p><i>Each IIOE-2 National Committee Chair/Representative gave a 10-minute progress report on the work of their National Committees.</i></p> <p><i>These included:</i></p> <ul style="list-style-type: none"> <li>• <i>Australia: Lynnath Beckley</i></li> <li>• <i>France: Francis Marsac</i></li> <li>• <i>Germany: Hermann Bange</i></li> <li>• <i>India: Satya Prakash</i></li> <li>• <i>Japan: Yukio Masumoto</i></li> <li>• <i>South Africa: Jenny Huggett</i></li> <li>• <i>UK: Greg Cowie</i></li> <li>• <i>USA: Raleigh Hood</i></li> <li>• <i>Korea: Dong-Jin Kang</i></li> </ul>	
Item 5 12:45-13:00	<p>Comfort Break</p>	
Item 6	<p>Contingency session for any additional talks on IIOE-2 related national programmes.</p> <p><i>There were no additional talks.</i></p>	
Item 7 13:10-13:30	<p>Update on UN Decade of Ocean Science for Sustainable Development 2021-30 and relevancy to IIOE-2 both now and beyond 2021: Vladimir Ryabinin.</p>	

	<p><i>Vladimir's presented an overview on the UN Decade and an update on endorsement-ready standalone programmes. Around 200 submissions were received with a relatively even spread across the ocean basins. Vladimir noted further discussion was required on the IIOE-2 submission for endorsement as a Decade Programme, particularly in clarifying how IIOE-2 will contribute to sustainable development and find transformative solutions.</i></p> <p><i>Key discussion points and comments made during the session included the following:</i></p> <ul style="list-style-type: none"> <li><i>• The Interim Decade Advisory Board is due to meet again in May 2021 so hopefully the IIOE-2 will receive feedback shortly.</i></li> <li><i>• Vladimir noted that the Board was seeking further information on the co-design of IIOE-2 between the sponsors (IOC, SCOR, IOGOOS) and how they will come together to contribute to sustainable development.</i></li> </ul>	
<p>Item 8 13:00-13:10 13:30-13:40</p>	<p>Opportunity for Q &amp; A. Response to IIOE-2 National Committee Reports - are we delivering on the Implementation Strategy and supporting the Science Plan and, in context, how can IIOE-2 integrate with the UN Decade?</p> <p><i>Key discussion points and comments made during the Q &amp; A session included the following:</i></p> <ul style="list-style-type: none"> <li><i>• It would be useful if data as bathymetry data collected during cruises could be made freely available, particularly those bathymetry data that may not have been the primary focus of a cruise and hence likely to be uncontentious in terms of release.</i></li> <li><i>• Lynnath Beckley noted that the bathymetric data from the recent R/V Investigator and R/V Falkor cruises off Australia were available in the Geoscience Australia Seabed Database.</i></li> <li><i>• The importance of opportunities for opportunistic data collection on IIOE-2 cruises such as bathymetry. Nick D'Adamo noted that it was envisaged WG3 Operational Coordination would perform such an integrating function.</i></li> <li><i>• Sateesh ShenoI noted that IIOE-2 has a template (on the website) for recording metadata from cruises and this is a requirement of endorsement - so ideally metadata should be made available immediately, with the data to follow later once researchers have had an opportunity to publish.</i></li> </ul>	
<p>Item 9 13:40-14:25</p>	<p>Status and review of the ST/WG framework structure and leadership.</p>	

	<p><i>WG team leaders each gave a 10-minute progress report on each WG.</i></p> <ul style="list-style-type: none"> <li>• WG1 Science &amp; Research report: Raleigh Hood.</li> <li>• WG2 Operational Coordination report: Rajan Sivaramakrishnan.</li> <li>• WG3 Data &amp; Information Management report: Pattabhi Rama Rao.</li> </ul> <p><i>Key discussion points and comments made during the Q &amp; A session included the following:</i></p> <ul style="list-style-type: none"> <li>• <i>Members acknowledged the positive progress made by WG2 and in that context also noted the active and energetic engagement of new Co-chair Pattabhi Rama Rao from INCOIS, India.</i></li> <li>• <i>Members discussed the difficulty of ensuring data sharing, and the need to be more proactive in engaging with PIs to enable metadata to be shared in a timely manner following cruises.</i></li> <li>• <i>Importance of tracking research resulting from IIOE-2 including in publications such as Deep Sea Research, the IIOE-2 website and newsletters.</i></li> <li>• <i>Relevance of WG3 Operational Coordination (monitoring of cyclones, MJO, IOD etc.) to the IIOE-2 submission to become an endorsed UN Decade Action.</i></li> </ul>	
Item 10 14:25-14:30	<p>Summary and close of Day 1.</p> <p><i>Marie-Alexandrine Sicre summarised the progress made on Day 1, reviewed the Day 2 agenda and closed the meeting.</i></p>	
<b>Tuesday 13 April 2021</b>		
<b>Time slot (in UTC)</b>	<b>Item</b>	<b>Action Items</b>
Item 1 11:00-11:05	<p>Welcome on behalf of hosts/ housekeeping. Reviewing the meeting agenda by the IIOE-2 Co-Sponsors' reps.</p> <p><i>Sateesh Shenoj again welcomed everyone and reviewed the Day 2 agenda. Marie-Alexandrine Sicre chaired Day 2 of the meeting.</i></p>	
Item 2 11:05-12:50	<p>Science Themes. Progress reports - delivered by ST team Chairs. Chaired by Hermann Bange, Science and Research Working Group Chair.</p> <p><i>Hermann gave a brief introduction to the session noting the science themes are the foundation of</i></p>	

	<p><i>IIOE-2. Each ST team chair or co-chair then gave a 15-minute summary on the progress of each ST.</i></p> <p>These included:</p> <ul style="list-style-type: none"> <li>• ST1 Human benefits and impacts: no update given.</li> <li>• ST2 Boundary current dynamics, upwelling variability and ecosystem impacts: PN Vinayachandran.</li> <li>• ST3 Atmospheric and monsoon variability and ecosystem response: Adrian Matthews</li> <li>• ST4 Circulation, climate variability and ecosystem change: Helen Phillips.</li> <li>• ST5 Extreme events and their impacts on ecosystems and human populations: Chari Pattiaratchi.</li> <li>• ST6 Unique geological, physical, biogeochemical and ecological features of the Indian Ocean: Jerome Dymant.</li> </ul>	
Item 3 12:50-13:00	Comfort Break	
Item 4 13:00-13:50	<p>Selected (invited) Endorsed Project presentations – brief.</p> <p>1. Jim Costopulos, Global Oceans: MARV (Modular Adaptive Research Vessel) project and related opportunities for IIOE-2.</p> <ul style="list-style-type: none"> <li>• <i>In an attempt to provide some context for how cost effective the GO model of using sourced vessels for cruises could be, Jim noted that the fully loaded cost (vessel, fuel, labs, mobilisation and equipment etc.) would be somewhere around approx. \$25,000/day for a long duration (&gt; than say 2 weeks) expedition involving say 4-5 research theme groups.</i></li> </ul> <p>2. Nicole Jones, University of Western Australia: Internal tides in the Indian Ocean.</p> <p>3. Amit Tandon, University of Massachusetts: Special volumes of Deep Sea Research.</p> <ul style="list-style-type: none"> <li>• <i>Atmosphere-Ocean Dynamics of Bay of Bengal; Volume 168, Volume 172. 13 articles in Volume-1, and 11 articles in Volume 2.</i></li> </ul>	
Item 5 13:45-13:55	<p>Early Career Scientists Network (ECSN) General status report (ECSN Co-Coordinator): Arvind Singh.</p> <ul style="list-style-type: none"> <li>• <i>Members acknowledged Arvind's excellent work as Co-ordinator. Arvind confirmed the</i></li> </ul>	

	<i>involvement of West Indian Ocean countries in the ECSN.</i>	
Item 6 13:55-14:25	<p>Response to ST &amp; ECSN talks / general discussion—are we delivering on the Science Plan?</p> <p><i>Marie-Alexandrine Sicre facilitated a group discussion reflecting on the ST and ECSN presentations. Key points and comments made during the discussion included the following:</i></p> <ul style="list-style-type: none"> <li>• <i>Sateesh ShenoI noted that the IIOE-2 website does not necessarily represent the extent of IIOE-2 activities undertaken to date. Satya Prakash requested participants notify the Indian Node of the IIOE-2 Joint Project Office of research being published and submit summaries of findings which can be included in newsletters and make the website more active.</i></li> <li>• <i>Jim Costopulos confirmed Global Oceans would provide the required infrastructure/equipment (winches, cranes, power etc.) on the MARVs.</i></li> <li>• <i>Participants noted Global Ocean's MARVs represent cost effective vessels, but impediments to uptake include that countries (e.g. USA) that already have national vessels are unlikely to fund other vessels where their own vessels are available for a task. Less wealthy countries will also struggle to fund MARVs, notwithstanding the relative cost effectiveness of MARV as a model. Wealthier countries without national vessels may be useful to approach.</i></li> <li>• <i>Participants noted that ST6 continues to focused almost exclusively on geology. Jerome Dymont, ST6 Chair, explained that this reflected both his own particular area of expertise and that to date no others from other discipline themes for ST6 have co-opted themselves onto the ST6 group. Jerome reiterated that he would warmly welcome a co-chair and additional members with expertise in the other areas.</i></li> <li>• <i>Participants agreed that given the absence of a report from ST1 Chair Ben Milligan that it was important to reach out to Ben to rejuvenate activity or alternatively identify an alternative chair. This is particularly important in light of the emergence of the UN Decade.</i></li> </ul>	<p><b>Action 1:</b> Jerome Dymont, with support as needed by the IIOE-2 Core Group, to identify a suitable co-chair and additional members for ST6.</p> <p><b>Action 2:</b> WG1 co-chairs Raleigh Hood and Hermann Bange, with support as needed by IIOE-2 Core Group, to contact Ben Milligan to rejuvenate ST1 or identify an alternative chair.</p>
Item 7 14:25-14:30	<p>Summary and close of Day 2.</p> <p><i>Sateesh ShenoI reflected that the day's session was very useful and Marie-Alexandrine Sicre suggested participants think about the discussion with</i></p>	

	Vladimir Ryabinin tomorrow on how IIOE-2 wants to engage with UN Decade.	
<b>Wednesday 14 April 2021</b>		
<b>Time slot (in UTC)</b>	<b>Item</b>	<b>Action Items</b>
Item 1 11:00-11:05	<p>Welcome on behalf of hosts/ housekeeping: Reviewing the meeting agenda by the IIOE-2 Co-Sponsors' reps.</p> <p><i>Sateesh Sheno</i> welcomed everyone and agreed to chair agenda items 1-4. <i>Marie-Alexandrine Sicre</i> agreed to chair agenda items 5-8.</p>	
Item 2 11:05-11:35	<p>Presentations on IIOE-2 related initiatives.</p> <ul style="list-style-type: none"> <li>• “Recent updates on WIOURI” by Dr. Mike Roberts</li> <li>• “GEOTRACES programme and its extension to Bio-GEOTRACES” by Dr. Sunil Singh</li> <li>• “The Role of Synoptic Oscillations in Recent Monsoon Variability” by Dr. Subrahmanyam Bulusu</li> </ul>	
Item 3 11:35-11:55	<p>Major Indian Ocean Science Symposium 2020 (to include a focus on IIOE-2) postponed from original March 2020 plans due to COVID-19.</p> <ul style="list-style-type: none"> <li>• Status report on hosting, planning etc: Srinivasa Kumar</li> <li>• General discussion and provision for Q&amp;A.</li> </ul> <p><i>Srinivasa Kumar (Convenor of IIOSC's ISPC &amp; NOC planning committees, and Vice chair of the LOC) gave an update on status of the rescheduled IIOSC 2020:</i></p> <ul style="list-style-type: none"> <li>• <i>The International Indian Ocean Science Conference 2020 (IIOSC 2020) was originally slated to be run during March 2020, in Goa India. As with previous IIOSC conferences (2017, 2018 and 2019), it would have been run with adjoining meetings of the IIOE-2 Steering Committee, IOGOOS, IRF, IORP, SIBER and would have included again an IOCINDIO side meeting.</i></li> <li>• <i>COVID-19 has of course led to IIOSC 2020's postponement.</i></li> <li>• <i>Large response to IIOSC initially (609 Abstracts, 368 Registrations (India – 278, Foreign – 90)).</i></li> <li>• <i>Sessions reflected the IIOE-2 Science Themes.</i></li> <li>• <i>Plan now is to have an in-person meeting (with online option) in <b>Goa in 14 – 18 March 2022.</b></i> <i>The provision for a 'hybrid' meeting (ie locals in</i></li> </ul>	

	<p><i>person and international participants by virtual means) will be enabled if appropriate. If the Covid situation does not ease sufficiently, the event will then proceed as a fully online event.</i></p> <ul style="list-style-type: none"> <li>• <i>Dates were selected to avoid a clash with the Ocean Sciences meeting (February 27 to March 4, 2022).</i></li> <li>• <i>ISPC, NOC, LOC were reconstituted in 2021.</i></li> <li>• <i>New plan approved by sponsors (MoES, GoI) in March 2021.</i></li> <li>• <i>Approvals from MEA/MHA (underway).</i></li> <li>• <i>New plan will be announced and the registered participants contacted in April 2021.</i></li> <li>• <i>There will be opportunity for complementary meetings of IIOE-2 SC, IOGOOS &amp; IOC subsidiary bodies (eg IOCINDIO), as well as side meetings for aligned groups such as an IIOE-2 ECSN Workshop, UN Decade Event, etc.</i></li> <li>• <i>Plan is to contact current abstract authors to seek confirmation if they would like to revise or withdraw abstracts.</i></li> <li>• <i>Once organisers hear from current abstract authors there may be opportunities for new abstracts.</i></li> </ul> <p><i>Key discussion points and comments made during the Q &amp; A session included the following:</i></p> <ul style="list-style-type: none"> <li>• <i>SC members commented it was important to solicit new abstracts to ensure the latest science is presented.</i></li> <li>• <i>Marie Alexandrine Sicre noted that if it is to be a hybrid (in person plus online) event then there will be a need to reshape the schedule.</i></li> <li>• <i>Faiza Al-Yamani suggested conference proceedings be published with full papers (as opposed to just abstracts).</i></li> </ul>	
Item 4 12:25-12:35	Comfort Break	
Item 5 12:35-13:15	<p>Focus of IIOE-2 beyond 2020 and links to the UN Decade: Vladimir Ryabinin.</p> <p><i>Vladimir Ryabinin provided an overview of the future of the IIOE-2 in relation to the UN Decade:</i></p> <ul style="list-style-type: none"> <li>• <i>The interim Decade Advisory Board is due to meet again in May which presents a chance to progress the IIOE-2 submission.</i></li> <li>• <i>GOOS is planning to submit 3 proposals focusing on co-design, coastal issues, and observing together - all elements that are very significant for sustainable development.</i></li> </ul>	<p><b>Action 3:</b> JPO, with support as needed by the IIOE-2 Core Group, to organise a meeting with the SC, Vladimir Ryabinin &amp; Decade Secretariat to revise the Decade submission.</p>



	<ul style="list-style-type: none"> <li>• <i>Vladimir put to the group - does IIOE-2 want to submit the whole programme, transformative elements or a specific component? He noted that the current composition of IIOE-2 projects is very impressive, but that it is important to integrate outputs that will provide a sustainable development outcome.</i></li> <li>• <i>Vladimir noted his dual roles and hence potential conflict of interest as both Co-Chair of the IIOE-2 SC and Chair of the Decade Advisory Board.</i></li> <li>• <i>Vladimir also noted that IOCINDIO is proposing to change its status to an IOC Sub-commission so it could be important to consider their potential role in the Indian Ocean/Decade in the context of IIOE-2's already developed thematic and mission-related links with IOCINDIO. Vladimir noted that IOCINDIO has a meeting on the blue economy in May 2021.</i></li> </ul> <p><i>Key discussion points and comments made during the session included the following:</i></p> <ul style="list-style-type: none"> <li>• <i>Marie-Alexandrine noted that the IIOE-2 submission was required to address 44 criteria and that while the IIOE-2 clearly addresses all the challenges of the Decade perhaps not all elements are 'in the spirit of the Decade'.</i></li> <li>• <i>Vladimir indicated that rather than waiting for specific feedback from the Advisory Board (given 200 submissions were received) it would be useful for the SC to reconsider the submission in terms of how IIOE-2 co-designs the science such that it is transformative and leads to resolution of sustainability issues (e.g. safety of people, prediction of coastal processes, blue economy).</i></li> <li>• <i>Vladimir recommended that the IIOE-2 SC organise a meeting to progress the submission which Vladimir and members of the Decade Secretariat could attend.</i></li> <li>• <i>Nick D'Adamo commented that the IIOE-2 during its planning years 2012-15 did in fact explore in earnest the 'societal relevancy' of science in terms of societal benefit and is designed as relevant to improving livelihoods and safety. The 6 Science Themes were constructed through community workshops involving without bias a spectrum of scientists, end users, beneficiaries, managers and broader community, and covering all regions of the Indian Ocean's constituency. Nick D'Adamo</i></li> </ul>	
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	<p><i>noted that the original 7 x WG structure (with those seven now all within the new 3 x WG structure) included the original WG6 called Translating Science for Society and that an examination of both the IIOE-2 Science Plan and complementary IIOE-2 Implementation Strategy would be very useful for the DECADE project assessors to undertake in order to provide full context in examining IIOE-2's state of readiness as a UN Decade Action.</i></p> <ul style="list-style-type: none"> <li>• <i>Sateesh ShenoI noted that the Decade would like the IIOE-2 to demonstrate how the science is applied to support sustainable development, noting examples such as application of upwelling biochemistry data to manage water quality/fisheries in the region. Sateesh suggested it may be that only some of IIOE-2's Science Themes will have direct applicability for sustainable development, and these could be the focus of the submission.</i></li> <li>• <i>Raleigh Hood noted it was important to remember that the IIOE-2 is a scientist/PI driven programme. Most of the PIs are getting funding through their national agencies which guide them towards baseline oceanographic science. Therefore, IIOE-2 can recommend a direction but cannot completely control the focus of the science.</i></li> <li>• <i>Nick D'Adamo reiterated that the prior WG Translating Science for Society was focused on interpreting science for societal benefit and recommended the SC needed to look at the objectives of this WG and reevaluate them in the community for the next 5 years.</i></li> <li>• <i>Participants agreed it would be important to edit the submission to emphasise the focus on how IIOE-2 engages beyond the scientists and translates the science for sustainable development. P.N. Vinayachandran gave the example of forecasting of monsoons in India as having a clear socio-economic impact (food supply/safety).</i></li> <li>• <i>Participants agreed it would be useful to organise a meeting with Vladimir Ryabinin and the Decade Secretariat to progress the submission.</i></li> </ul>	
<p>Item 6 13:15-13:25</p>	<p>Provisional. Any other items - to be advised: Marie-Alexandrine Sicre.</p>	<p><b>Action 4:</b> JPO, with support from the IIOE-2 Core Group, to resolve the WG1, WG2 &amp; WG3 memberships and co-</p>

	<p><i>Satya Prakash used this session to provide an overview of an outstanding issue regarding the governance of IIOE-2:</i></p> <ol style="list-style-type: none"> <li><i>1. Though there is broader agreement on the restructuring of the governance structure, a discussion is needed on the membership of newly formed working groups.</i></li> <li><i>2. Dr. Shailesh Nayak wishes to discontinue as a co-chair of WG-3 but will continue until a new co-chair is selected.</i></li> <li><i>3. WG-2 also now includes satellite-based observations. The TOR of WG-2 need to be updated to reflect this.</i></li> <li><i>4. The TOR of newly structured groups also need to be reformulated.</i></li> <li><i>5. The IIOE-2 website needs to be updated with this new governance information.</i></li> </ol> <p><i>Key discussion points and comments made during the session included the following:</i></p> <ul style="list-style-type: none"> <li><i>• Raleigh Hood noted that the functions of WG3 are closely linked to the functions of the JPOs. Raleigh suggested perhaps new leadership could be sourced/embedded with INCOIS.</i></li> <li><i>• Sateesh ShenoI recommended the CG source potential names for a replacement for the WG3 co-chair and members for WG2 and WG3. Sateesh noted that WG3 involves a range of activities in addition to the science institutional support that is needed and in that context suggested INCOIS Director Srinivasa Kumar as a new co-chair.</i></li> <li><i>• Srinivasa Kumar commented that if the IIOE-2 SC &amp; CG identify that support is required from the Indian JPO for WG3, INCOIS will try to provide support as best they can. Similarly, Srinivasa noted that following this meeting's discussions regarding a new co-chair for WG3, if needed INCOIS will be happy to support as much as possible.</i></li> </ul>	<p>chairing and reformulate the ToR of newly structure groups.</p>
<p>Item 7 13:25-13:30</p>	<p>Next IIOE-2 Steering Committee No-5 Meeting – consideration of mode (virtual/ face to face), date, venue etc: Sateesh ShenoI.</p> <p><i>Participants agreed that the IIOE-2 SC5 meeting should be held in the week before or after the IIOSC planned for March 14-18, 2022, either in Goa or virtually or as a hybrid (in-person + virtual) if required.</i></p>	

	<i>Srinivasa Kumar mentioned that the AGU Ocean Sciences meeting is scheduled for 27 February – 4 March 2022, therefore it may be preferable to hold the IIOE-2 SC5 meeting in the week following the IIOSC (ie after 18 March 2022).</i>	
Item 8 13:30-13:35	Summary and close of SC 4 Meeting.  <i>Marie-Alexandrine Sicre closed the IIOE-2 SC 4 Meeting and outlined that the fourth day would be an interesting symposium of science.</i>	
<b>Thursday 15 April 20201</b>		
<b>Time slot (in UTC)</b>	<b>Item</b>	
Item 1 11:00-11:05	Welcome on behalf of hosts/ housekeeping: Reviewing the meeting agenda by the IIOE-2 Co-Sponsors' reps:  <i>Sateesh Shenoi welcomed everyone to the final day, a science symposium relevant to IIOE-2. Sateesh chaired agenda items 1-9 and Marie-Alexandrine Sicre chaired agenda items 10-19.</i>	
Item 2 11:05-11:20	Talk 1: "Features of the Southern Bay of Bengal: BoBBLE results" by <b>Prof. P.N. Vinayachandran</b> , IISc Bangalore, India	
Item 3 11:20-11:35	Talk 2: "Indian Ocean fisheries variability" by <b>Dr. Francis Marsac</b> , Institute for Research and Development, Marseille, France	
Item 4 11:35-11:50	Talk 3: "Biological oceanography / zooplankton" by <b>Dr. Jenny Huggett</b> , Department of Environmental Affairs, South Africa	
Item 5 11:55-12:05	Comfort Break	
Item 6 12:05-12:15	Talk 4: "Climate Change in the Indian Ocean" by <b>Roxy Koll Mathew</b> , Indian Institute of Tropical Meteorology, Pune, India	
Item 7 12:15-12:30	Talk 5: "On the boundary currents in the Indian Ocean" by <b>Dr. Charitha Pattiarthi</b> , University of Western Australia	
Item 8 12:30-12:45	Talk 6: "One Argo in the Indian Ocean" by <b>Dr. Susan Wijffels</b> , Woods Hole Oceanographic Institution, USA	
Item 9 12:45-13:15	Combined Q&A: Sateesh Shenoi.	
Item 10 13:15-13:30	Comfort Break	
Item 11 13:30-13:35	Flash Talk 1: "East Indian ocean upwelling" by <b>Dr. Yukio Masumoto</b> , University of Tokyo, Japan	
Item 12 13:35-13:40	Flash Talk 2: "Modeling coupled physical-biological interactions in the India Ocean" by <b>Dr. Zouhair Lachkar</b> , NYU, Abu Dhabi	
Item 13 13:40-13:45	Flash Talk 3: "Biweekly waves in the Indian Ocean" by <b>Dr. Mike McPhaden</b> , PMEL, NOAA	
Item 14 13:45-13:50	Flash Talk 4: "Oceanic inter-basin connections" by <b>Dr. Janet Sprintall</b> , Scripps Institution of Oceanography, USA	
Item 15 13:50-13:55	Flash Talk 5: "Observing, modelling and developing capacity in the SW Indian Ocean" by <b>Dr. Juliet Hermes</b> , University of Cape Town, South Africa	
Item 16 13:55-14:00	Flash Talk 6: "The biogeochemistry of OMZ in the IO" by <b>Dr. Tim Rixen</b> , University of Hamburg, Germany	

Item 17 14:00-14:05	Flash Talk 7: “Progress on recent observations of Indonesian throughflow” <b>Dr. Dwi Susanto</b> , University of Maryland, USA
Item 18 14:05 -14:25	Combined Q&A: Marie-Alexandrine Sicre.
Item 19 14:25-14:40	<p>Summary and close of Day 4:</p> <p><i>Marie-Alexandrine Sicre summarised the four days of the meeting, highlighting the important reform to WG2 for data sharing, the large number of publications produced by IIOE-2, and that in light of feedback on the Decade submission it would be important to review WG3 membership moving forward. Marie-Alexandrine also noted that more work would be needed on the Decade submission to highlight the transformative and co-design elements, and that the upcoming IOCINDIO meeting (May 6, 2021) may provide more opportunities to partner on topics of interest in the Indian Ocean.</i></p> <p><i>Sidney Thurston, Chair of IRF, reminded participants to ensure their respective groups had a clear IRF representative to attend the now quarterly IRF meetings. Sidney also noted that the Decade submission could be addressed at the next meeting in June/July.</i></p> <p><i>Nick D'Adamo suggested it would be useful for presenters to send a short summary (even as one or two dot points) outlining the societal relevance/transformative elements of their projects to the IIOE-2 JPOs (Nick/Satya/Kiran) to assist with reviewing the Decade submission. He suggested that presenters perhaps simply indicate how they would respond to a question along the lines of: "...<b>why and how do you think what you are doing is societally relevant in the context of the DECADE's (<a href="http://www.oceanedcade.org">www.oceanedcade.org</a>) mission...?</b>"</i></p> <p><i>Sateesh ShenoI thanked the JPO, co-sponsors, associated organisers, speakers and participants for a highly successful and productive meeting, noting the large amount of science being undertaken in the Indian Ocean. Sateesh reiterated the need to clarify the immediate applications of this science to sustainable development to move the Decade submission forward.</i></p> <p><i>Sateesh and Marie-Alexandrine closed the meeting with the sentiment that hopefully the IIOE-2 SC could meet in person in Goa next year.</i></p>
<b>End of meeting: 14:40 UTC, Thursday 15 April 2021</b>	

## Appendix 1: IIOE-2 SC4 List of Participants

No	Participant	Affiliation	Country
1	Admiral Alam of Bangladesh	Council of the International Seabed Authority	Bangladesh
2	Adrian Matthews	University of East Anglia	UK
3	Amit Tandon	University of Massachusetts	USA
4	Arvind Singh	Physical Research Laboratory	India
5	Ashley Johnson	Department of Environmental Affairs	South Africa
6	Birgit Gaye	University of Hamburg	Germany
7	Brett Molony	CSIRO	Australia
8	Charitha Pattiaratchi	University of Western Australia	Australia
9	Commander Ahmad Al Karim	Ministry of Foreign Affairs	Bangladesh
10	D Shankar	CSIR-National Institute of Oceanography	India
11	Dava Amrina	BMKG	Indonesia
12	Dale A Kiefer	University of Southern California	USA
13	Dong-Jin Kang	Korean Institute of Ocean Science and Technology	Korea
14	Dwi Susanto	University of Maryland	USA
15	Enhui Liao	Princeton University	USA
16	Faiza Al-Yamani	Kuwait Institute for Scientific Research	Kuwait
17	Francis Marsac	Institute of Research for Development	France
18	Greg Cowie	University of Edinburgh	UK
19	Helen Phillips	University of Tasmania	Australia
20	Hermann Bange	GEOMAR	Germany
21	Iwao Ueki	JAMSTEC	Japan
22	Janet Sprintall	Scripps Institution of Oceanography	USA
23	Jean-François TERNON	Institute of Research for Development	France
24	Jenna Pearson	Princeton University	USA
25	Jenny Hugett	Department of Environmental Affairs	South Africa
26	Jerome Dymont	Institut de Physique du Globe de Paris & CNRS	France
27	Jim Costopulos	Global Oceans	USA
28	Jing Li	International CLIVAR Project Office	China
29	Joaquim Goes	Columbia University	USA
30	Juliet Hermes	SAEON/University of Cape Town	South Africa
31	Katsuro Katsumata	JAMSTEC	Japan
32	Kentaro Ando	JAMSTEC	Japan
33	Khafid Rizki Pratama	BMKG	Indonesia
34	Kim Picard	Geoscience Australia	Australia
35	Kiran Kumar	INCOIS	India
36	Laure Resplandy	Princeton University	USA
37	Lin Liu	First Institute of Oceanography	China
38	Lynnath Beckley	Murdoch University	Australia
39	Maria Desa	CSIR-National Institute of Oceanography	India
40	Marie-Alexandrine Sicre	LOCEAN, Sorbonne University	France
41	Mathieu Poupon	Department of Geoscience, ENS	France

42	Mike Landry	Scripps Institution of Oceanography	USA
43	Mike McPhaden	PMEL/NOAA	USA
44	Mike Roberts	Nelson Mandela University	South Africa
45	Ming Feng	CSIRO	Australia
46	Nelly Florida Riama	BMKG	Indonesia
47	Nick D'Adamo	UNESCO IOC PPO	Australia
48	Nicole Jones	University of Western Australia	Australia
49	Nimit Kumar	INCOIS	India
50	Patricia Miloslavich	University of Delaware	USA
51	Pattabhi Rama Rao	INCOIS	India
52	PN Vinayachandran	Indian Institute of Science	India
53	Rajan Sivaramakrishnan	INCOIS	India
54	Raleigh Hood	University of Maryland	USA
55	Rena Czeschel	GEOMAR	Germany
56	Roxy Koll	Indian Institute of Tropical Meteorology	India
57	Sarah Gardner	UNESCO IOC PPO	Australia
58	Satheesh Sheno	INCOIS	India
59	Satya Prakash	INCOIS	India
60	Shailesh Nayak	NIAS	India
61	Sidney Thurston	NOAA	USA
62	Srinivas Kumar	INCOIS	India
63	Subra Bulusu	University of South Carolina	USA
64	Sunil Kumar Singh	CSIR-National Institute of Oceanography	India
65	Susan Wijffels	Woods Hole Oceanographic Institution	USA
66	TaeKeun Rho	Korean Institute of Ocean Science and Technology	Korea
67	Tamaryn Morris	South African Weather Service	South Africa
68	Tim Rixen	Leibniz Centre for Tropical Marine Research	Germany
69	Viviane Menezes	Woods Hole Oceanographic Institution	USA
70	Vladimir Ryabin	UNESCO IOC	France
71	Yukio Masumoto	University of Tokyo	Japan
72	Zouhair Lachkar	NYU	UAE

## Appendix 2: IIOE-2 SC-4 Action Items

<b>No</b>	<b>Action Item</b>	<b>Principal Responsibility</b>
<b>1</b>	Jerome Dymont, with support as needed by the IIOE-2 Core Group, to identify a suitable co-chair and additional members for ST6.	Jerome Dymont
<b>2</b>	WG1 co-chairs Raleigh Hood and Hermann Bange, with support as needed by IIOE-2 Core Group, to contact Ben Milligan to rejuvenate ST1 or identify an alternative chair.	WG1 co-chairs (Raleigh Hood and Hermann Bange)
<b>3</b>	JPO, with support as needed by the IIOE-2 Core Group, to organise a meeting with the SC, Vladimir Ryabinin & Decade Secretariat to revise the Decade submission.	JPO (Satya Prakash and Nick D'Adamo)
<b>4</b>	JPO, with support from the IIOE-2 Core Group, to resolve the WG1, WG2 & WG3 memberships and co-chairing and reformulate the ToR of newly structure groups.	JPO (Satya Prakash and Nick D'Adamo)