

Brief Technical Report on

**Integrated meetings of IOGOOS 13 annual meeting and
its allied program meetings at Perth, Australia**

January 30 – February 4, 2017

Introduction

Indian Ocean Global Ocean Observing System (IOGOOS) was formerly established during the Mauritius conference in November 2002 and Indian National Centre for Ocean Information Services (INCOIS), India was recognized as IOGOOS Secretariat. Indian National Centre for Ocean Information Services (INCOIS) has since then acting as IOGOOS Secretariat. 29 Marine Institutions from 17 countries are Members of IOGOOS.

Members of IOGOOS collaborate and work together for developing programmes for the implementation of GOOS in the Indian Ocean and for promoting activities of common interest for the development of operational oceanography in the Indian Ocean region.

IOGOOS has already made significant progress in several areas. IOGOOS has a number of existing ‘projects’ within its portfolio and these projects have been accepted by members as being of relevance to IOGOOS at either a local level (for a specific member nation) or as generically relevant in respect to transferability of the projects outcomes and outputs to some or all member nations.

IOGOOS 13th Annual Meeting:

IOGOOS 13th annual meeting was held under the theme of “International Indian Ocean Science Conference” at The Indian Ocean Marine Research Centre (IOMRC), University of Western Australia, Perth, Australia during January 30 – February 4, 2017. The meeting was held in conjunction with its allied projects Indian Ocean Panel (IOP), Sustained Indian Ocean Biogeochemistry and Ecosystem Research (SIBER), Indian Ocean Observing System (IndOOS) Resources Forum (IRF) and International Indian Ocean Expedition (IIOE-2) Steering Committee meetings. The detailed agenda of these integrated meetings is provided at **Annexure 1**.

The status of the existing IndOOS components were reviewed during the IndOOS Resources Forum (IRF) meeting along with the IOGOOS, IOP and SIBER team and discussed on the possible new observing technologies and the hot science questions that need to be addressed.

The annual meeting of IOGOOS 13 was held on February 2, 2017. Dr. Andreas Schiller, Chair, IOGOOS and IOGOOS Officers welcomed the delegates to the meeting. Dr. Somkiat Khokiattiwong in his welcome address mentioned that SIBER will look for funding to carry out the relevant research to address the hot science questions discussed on the previous day meeting of SIBER Science Steering Committee. Dr. Nick D’Adamo briefed participants

about the strong support of IOC Perth Programme Office towards the activities of IOGOOS and affirmed its support in future IOGOOS activities.

The Chair of IOGOOS presented the status of the action items from the last IOGOOS XII meeting. Most of the items were treated as closed. The major objective of IOGOOS is to maintain the sustained ocean observations. The IIOE-2 is a mechanism through which the IndOOS can be supported and sustained, the new Chair, of IOGOOS was tasked to raise the profile of IOGOOS in the GOOS hierarchy to ensure the strong understanding and advocacy for IIOE-2 at all levels in GOOS.

	Subject	Who	Status
1.	Review of IndOOS: OSSEs?	M. Ravichandran to send email with detailed request to IOGOOS secretariat. Secretariat and IOGOOS chair to take action.	OSSEs acknowledged as a useful tool and as an input to IndOOS, but usage will be addressed by review team. Agreed action item had been addressed and can be closed.
2.	IndOOS data availability?	Rokkam Rao to send email with detailed request to IOGOOS secretariat. Secretariat and IOGOOS chair to take action.	All the processed atmospheric and oceanic data sets collected over/in the Indian Ocean during IIOE-2 are to be made available to the global/regional operational weather and climate prediction agencies for their data assimilation towards improved prediction of the regional monsoons. In response, Rokkam Rao advised that the WMO could assist in this regard.
3.	CLIVAR Monsoon Panel: access to radiosonde data	Rokkam Rao to send email with detailed request to IOGOOS secretariat. Secretariat and IOGOOS chair to take action.	All the Meteorological Departments of the Indian Ocean rim countries and Island nations are to be requested to operate their radio-sonde, Rawin-sonde and Radar systems regularly during IIOE-2 period and provide data to IIOE-2 Data Center. Rokkam Rao advised that the WMO

			could assist in this regard.
4.	IOGOOS support for IOMX section/mooring	Ming Feng to send email with detailed request to IOGOOS secretariat. Secretariat and IOGOOS chair to take action.	Lisa Beal and Ming Feng have prepared a paper on IOMX but haven't taken any further action at this stage. Paper would be considered as background input to IndoOS review however too soon to put specific request / recommendation to IOGOOS. Agreed action item can be closed.
5.	<p>IIOE-2:</p> <p>(a) IOGOOS to raise up to the challenge and opportunity of IIOE-2. Proposed: GOOS to adopt IIOE-2 as Flagship project</p> <p>(b) IOGOOS chair to send strong convincing letter to GOOS Regional Alliance and GOOS Steering Committee. Also mention that the idea for IIOE-2 was born under auspices of IOGOOS</p>	Raleigh Hood and Nick D'Adamo to outline key points in an email to IOGOOS secretariat. Secretariat to draft letter for IOGOOS chair to sign and send.	Raleigh and Nick reflected on discussion at last meeting that led to this action item. It was agreed that the new Chair of IOGOOS could make it a priority to raise IOGOOS' profile in GOOS hierarchy to ensure strong understanding and advocacy for IIOE-2 at all levels in GOOS. Key message in communication – GOOS is concerned with sustained observations – IIOE-2 is a mechanism through which IndoOS can be supported and sustained.
6.	Inform co-chairs of IIOE-2 Steering Committee about IOGOOS \$US 10k p.a.	IOGOOS chair to inform IIOE-2 co-chairs (done).	Action completed

	funding pledge for at least the next 2 years		
7.	IOGOOS members to note upcoming IIOE-2 workshop in Perth, Australia, from Monday 5 December 2016 to Friday 9 December 2016 Note: Bio-Argo workshop to be part of Perth meeting	IOGOOS secretariat to circulate information to IOGOOS community (once more detailed information becomes available) → see email sent by Nick D'Adamo 12/12/15	Action Completed

Dr. Jerome Viallard presented the report on the Indian Ocean Panel (IOP) and IOGOOS annual meeting noted the following as the major observations. (i) Arabian Sea has still gaps in RAMA programme, (ii) Resources and ship time remains as biggest barriers to completing the IndOOS, (iii) XBT lines declined in recent years and posed the query on whether XBT data can be gathered by other technologies? This question will be discussed in the review of IndOOS. (iv) noted that the funding for Argo by USA and China will decline and India will increase deployments by 20% including Bio-Argos. Regarding the sustained observation system, the review process and its recommendations will be specific and likely to push forward some pilot experiments. IOGOOS could assist by identifying the users that should be involved in the review process. Dr. Lisa Beal noted that OOPC would like to avoid specific recommendations about the platforms and the recommendations could be more about regions and types of data required. The discussion on this is still ongoing.

Dr. Raleigh presented the report on the Sustained Indian Ocean Biogeochemistry and Ecosystem Research (SIBER) and the annual meeting noted the following. (i) SIBER is considering renewal of membership and looking for self-funding by the members to participate in the meetings, (ii) India national SIBER program is winding up the project activities and it was noted that India's new project Marine Observation System Along Indian Coast (MOSAIC) starting up by INCOIS has relevance to the SIBER objectives. Ms. Louise Wicks presented the report on the IndOOS Resource Forum (IRF) meeting, where the IOP provided an update on the status of the IndOOS, in terms of physics and coupled climate aspects and SIBER provided an update on IndOOS with respect to the biogeochemistry aspects. Dr. Satheesh Shenoi, India, reported that India's has a proposal to increase the Argo deployments by 20%. Dr. Lin Liu reported on several Chinese cruises in the Indian Ocean over the period of IIOE-2 and invited the PIs to work with NSFC to collaborate on cruises. An update on the NOAA's IndOOS bilateral agreements and the forward plan of maintenance / servicing of the system were provided. Dr. Satheesh enquired about the Korean assistance in RAMA and opined that if Korea gets involved in India's efforts in RAMA, India could focus its efforts in RAMA for Arabian Sea.

Dr. Andreas Schiller read out the report from Dr. Nick D'Adamo regarding MOFPS project which stated that there was no activity for the past 12 months in the project but IOC PPO continues to look for opportunities for funding to take forward the project. Dr. Satheesh Shenoi provided an update on the IOGOOS Pilot Project on Core Remote Sensing and it was mentioned that remote sensing products are being provided continuously but it is unknown how much the users are utilizing the products.

The IOGOOS General Meeting was chaired by Dr. Andreas Schiller. Dr. Andreas has presented the chairman's report. Dr. Andreas thanked all the member institutions for their support. A proposal was raised for the merger of IOGOOS and IRF without altering the separate objectives of each group. It was requested that IRF membership needs to be consulted to obtain their views on this. **Action: Tasked IOGOOS Chair to raise and discuss with IRF Membership.** The Secretariat's report was also presented at the meeting by Dr. Andreas on behalf Secretary, IOGOOS, due to his absence. The Accounts and Financial summary of IOGOOS accounts was presented and Dr. Somkiat Khokiattiwong was nominated to verify the correctness and certify the same. Dr. Somkiat has verified and certified the accounts.

The IOGOOS Officer positions that became vacant after the session were subject of an election process open to the representatives from member institutions. Dr. Andreas ran the process of election of officers. Dr. Satheesh Shenoi was elected unanimously as the new Chair and as officer representing the Central Indian Ocean. There were no nominations received from Western Indian Ocean member institutes and Dr. Rezah Badal has eligibility for extension. The new Chair was tasked to contact Dr. Rezah Badal to inquire his willingness. Secretary, IOGOOS, has contacted Dr. Rezah Badal out of session. Dr. Rezah Badal has conveyed his willingness to continue. Dr. Andreas Schiller representing Eastern Indian Ocean (EIO) has completed his tenure and the position is vacant. Also no nominations were received from the Eastern Indian Ocean (EIO) member institutes prior to meeting as well as at the annual meeting. Secretariat was tasked to seek the nominations out of session for the same. Dr. Somkiat, representing the SIBER Project on the IOGOOS Executive is eligible for a 2 year extension and the same was unanimously agreed. Also Dr. Michael McPhaden representing the IOP is eligible for 2 yrs extension and the meeting unanimously agreed his extension.

Dr. Andreas led the discussions on Ocean Data and Information Network for the Central Indian Ocean (ODINCINDIO) project. The opinion of IOGOOS participants on the reactivation / termination of the ODINCINDIO project was sought. The IOGOOS meeting noted that multiple capability development programs are in existence in the region. The discussions on ODINCINDIO will be held at the IODE meeting scheduled to be held at Malaysia and the IOGOOS executive will re-visit this after the IODE session.

Dr. Andreas led the discussions on the next meeting date and venue. The delegates felt that the next meeting could be held in the WIO region. Indonesia has come forward and offered to

host the next meeting and the same was noted by the annual body. It was decided that the chairs of IOGOOS, IOP, SIBER and IRF would discuss this out of session and finalize the next meeting dates and venue.

Financial Report:

The Indian Ocean Marine Research Centre (IOMRC), University of Western Australia and IOC Perth Programme Office (IOC PPO) jointly hosted these integrated meetings. Most of the delegates found their own source of funding towards their participation. IOC/UNESCO through its Sub-Commission for Africa has agreed to sponsor USD 22,220 towards these integrated meetings. The sponsorship was utilized towards funding of 03 delegates to participate in the integrated meetings of IOGOOS, IOP, SIBER, IRF and IIOE-2 SC. IOGOOS Secretariat, through the host institute INCOIS, has made a contract with IOC/UNESCO Sub-Commission for Africa towards the above. IOGOOS Secretariat has provided the sponsorship amount to the delegates in the form of reimbursements towards their return air tickets, Daily Subsistence Allowance (DSA) and Registration Fees. Few delegates are fully sponsored and few are partially sponsored under these funds. UN Operational Rates for February 2017 available at <http://treasury.un.org/operationalrates/OperationalRates.aspx> were used for conversion of foreign currency. An amount of USD 17776 was transferred by IOC UNESCO as first installment and an amount of USD 6,672.43 was spent towards the reimbursement to the delegates. An unspent balance amount of USD 11103.57 is available and the same is being returned to IOC / UNESCO office.

Acknowledgements

The IOGOOS Secretariat greatly acknowledges IOC/UNESCO for sponsoring the integrated meetings of IOGOOS. We also would like to place on record the great support extended by IOC Perth Programme Office, IOC/UNESCO Sub-Commission for Africa and its staff towards facilitating this sponsorship. The IOGOOS Secretariat also thanks and appreciates IOMRC, University of Western Australia and IOC PPO for hosting this important meeting and for providing the local support.

International Indian Ocean science conference

IOGOOS-13/IOP-13/SIBER-7/IRF-7 Bio-Argo and IIOE-2 SC Integrated Meeting Schedule

Perth, Australia. Mon 30 Jan to Sat 4 Feb, 2017

Co-Hosts: UWA (Ref Chari Pattiaratchi), IOC PPO / BoM (Ref Nick D'Adamo, Louise Wicks)

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Date	Meeting/Event
Mon 30 Jan 2017 0830-1700	IndOOS Review Workshop: IORP/SIBER/IOGOOS/IRF –solicited review talks on IndOOS components, new observing technologies, hot IOP & SIBER science questions <ul style="list-style-type: none"> - Invited expert talks (30 minutes, 10 minutes question/discussion)
Mon 30 Jan 2017 1715-1800	Formal Opening & Welcome Short welcoming speech from: <ul style="list-style-type: none"> - Dignitaries (TBC) - Co-hosts IOC PPO & UWA - Co-sponsors: CSIRO, BoM, WA Government and IOC Traditional welcome to country
Mon 30 Jan 2017 Evening	Ice-breaker Cocktail Function
Tue 31 Jan 2017 0830-1730	IndOOS Review Workshop: IORP/SIBER/IOGOOS/IRF –solicited review talks on IndOOS components, new observing technologies, hot IOP & SIBER science questions <ul style="list-style-type: none"> • Invited expert talks (30 minutes, 10 minutes question/discussion) Inc. Separate SIBER business session (0830-1130)
Tue 31 Jan 2017 1900 -2100	IRF-7 Annual Meeting (incl. leadership of IOGOOS, IOP and SIBER) as Dinner meeting with WebEx/Video conference option
Wed 1 Feb 2017 0835-1530	IOP/ SIBER/IOGOOS joint strategic discussions around IndOOS review
Wed 1 Feb 2017 1600-1730	IOP and SIBER Business meetings
Wed 1 Feb 2017 Evening	Joint Dinner – IOGOOS/IOP/SIBER/IRF & IIOE-2 Steering Committee
Thurs 2 Feb 2017 0800-1100 (includes working tea)	IOGOOS-13 Annual Meeting (to incl. leadership of IOP, SIBER and IRF).
Thurs 2 Feb 2017 0900-1030	IIOE-2 SC Parallel Prep discussions: <ul style="list-style-type: none"> - Science Theme group

	- Working Group group
Thurs 2 Feb 2017 1100-1730	Formal start IIOE-2 Steering Committee meeting
Fri 3 Feb 2017 Full day	<p>Bio-Argo workshop Objective: To collaborate with the IO ocean observing community on the results of the AISRF Bio-Argo project and international developments towards a global Biogeochemical-Argo network in the context of the future development and operation of a Biogeochemical-Argo network as a component of IndoOOS. Participants: Bio-Argo Australia and Indian research team, invited early career researchers and key experts from IO / Biogeochemical Argo observing community (invited participants from SIBER, IOP, IOGOOS, IRF).</p>
Fri 3 Feb 2017 0900-1730	IIOE-2 SC Meeting – cont. from Thursday
Fri 3 Feb 2017 Evening	IIOE-2 SC Dinner - TBC
Sat 4 Feb 2017 0900-1730	IIOE-2 Steering Committee meeting – cont. from Friday