



2nd International
Indian Ocean
Expedition
2015-2020

News Letter

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

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.

SA AGULHAS – II undertakes its first IIOE-2 cruise in the Western Indian Ocean

The South African oceanographic research vessel, the SA Agulhas II undertook its first cruise in the framework of IIOE-2 (<http://www.iioe-2.incois.gov.in/IIOE-2/EP26.jsp>) from Durban, South Africa on 17 October 2017 to Dar es Salaam, Tanzania, and ending in Durban on 13 November 2017. The cruise, which was coordinated by the South African Department of Environmental Affairs (DEA), offered opportunities for oceanographic surveys and training off the coasts of South Africa, Mozambique and Tanzania. The topics covered included physical oceanography, chemical oceanography, biological oceanography, benthic biodiversity, marine top predators (whales, seabirds), marine geology, and social sciences.



The participants and crew on board S.A. Agulhas II before departure

IOC's Sub Commission for Africa (IOCAFRICA) and IOGOOS sponsored the participation of 20 marine scientists and students from Egypt, Kenya, Mozambique, Nigeria, and Tanzania in the cruise. IOCAFRICA in collaboration with DEA and the Western Indian Ocean Marine Science Association (WIOMSA) organized a special session on IIOE-2 at the 10th Scientific Symposium of WIOMSA (30 October – 4 November 2017, Dar es Salaam), and an Open Day on board the SA Agulhas II on 2 November 2017 in order to raise awareness on the expedition and engage marine scientists and resource managers from the region in the expedition.



The DEA Team with the Minister of Environmental Affairs,
Republic of South Africa



School children on the vessel during the Open Day

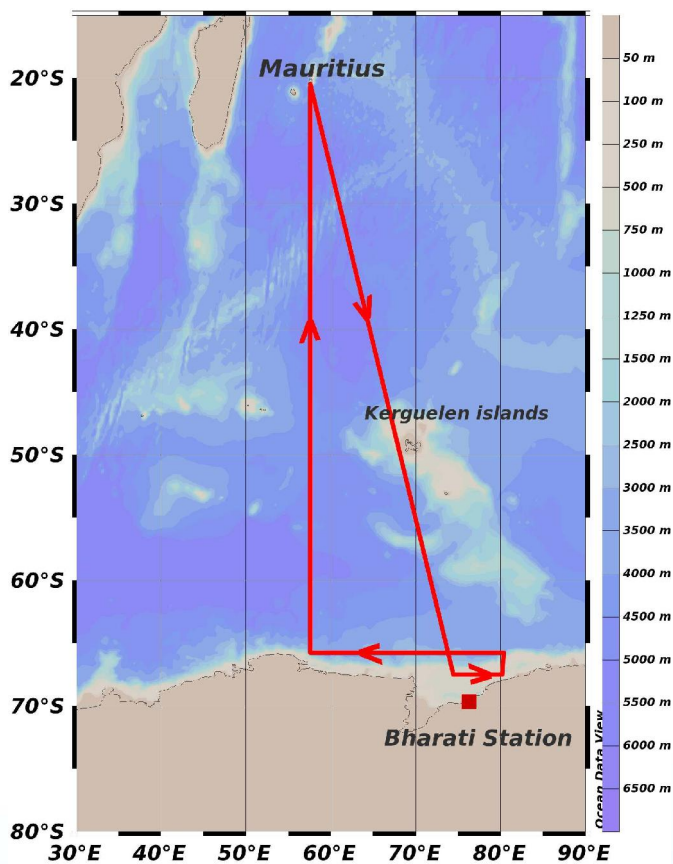
Issues that were highlighted during the special session on IIOE-2 included the need to develop capacity for data assimilation in the region, the possible use of satellite data for areas beyond the ship sampling transects, and the need to clearly define the products that the region should develop in the framework of the expedition. Participants welcomed the

opportunities that will be provided by the research vessels in the region such as the SA Agulhas II (South Africa) and the RV Mtafiti (Kenya). Opportunities for collaboration with other countries from outside the region which are participating in IIOE-2 would be explored. This includes: China, France, India, and United Kingdom. IOCAFRICA should also engage other organizations in the region such as the Indian Ocean Commission and the Indian Ocean Rim Association – IORA on the possibility of jointly implementing IIOE-2 activities.

[Report and photos courtesy: Mika Odido, IOC Coordinator in Africa, Nairobi, Kenya ; m.odido@unesco.org]

India's Expedition to the Southern Ocean launched successfully

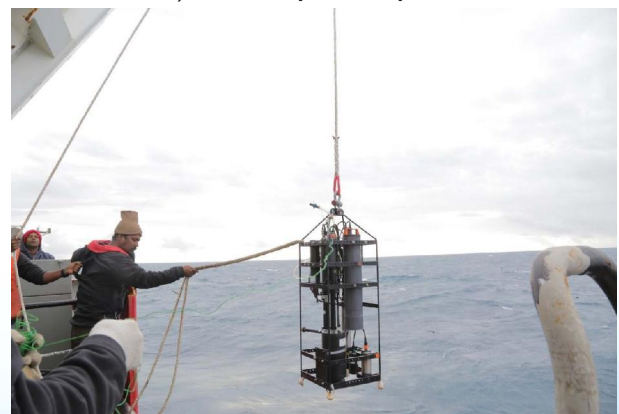
The first IIOE-2 endorsed Scientific Expedition to the Indian sector of the Southern Ocean (<http://www.iioe-2.incois.gov.in/IIOE-2/EP23.jsp>) was launched onboard the ice-class vessel SA Agulhas from Port Louis, Mauritius, on 9th December 2017. This 60-day multi-institutional endeavour is the 10th Expedition to be carried out under the aegis of India's Ministry of Earth Sciences and the National Centre for Antarctic and Ocean Research, since 2004. The present expedition includes meridional and zonal transects within the Antarctic Zone, focusing on data collection and observations related to atmospheric sciences, water column dynamics, biogeochemistry, food-web dynamics and paleoclimatology. Studies on atmospheric sciences are directed towards observations on momentum and turbulent flux, characterization of aerosol and its contribution to radiative forcing as well as studies with special reference to oceanic volatiles and their impact on atmospheric halogens and cloud forming aerosols. The studies on water column dynamics include (i) the thermohaline structure between the Southern Boundary of Antarctic Circumpolar Current and coastal waters of Antarctica, (ii) ocean heat content variability, (iii) current variability, and (iv) physical forcing on biological production. The studies on carbon biogeochemistry are focused on (i) ^{14}C , ^{13}C and Fast Repetition Rate Fluorometry-based primary production, (ii) measurements of coloured dissolved organic matter (CDOM), (iii) phytoplankton pigments and taxonomy, (iv) zooplankton biomass, abundance and taxonomy, (v) macro-nutrients dynamics, (vi) microbial uptake rates of organic carbon, (vii) organic carbon inventory (total organic carbon, particulate organic carbon, carbohydrates) and (viii) p_{CO_2} measurements.



Planned transect for the Indian Expedition to the Southern Ocean, 2017-18



Deployment of ARGO float with CTD, oxygen, nitrate, FLBB bio-optical and pH sensors



IOP operation up to 200m to measure temperature, conductivity, depth, Oxygen, PAR, backscattering and fluorescence

The expedition, during its return, will also retrieve and redeploy the mooring equipment deployed during the 2016-17 Expedition in the subtropical front, enabling continuous time series observations.

[Report courtesy: Dr. M. Ravichandran, Director, NCAOR (m.ravi@ncaor.gov.in) and Dr. N. Anil Kumar, Scientist (anil@ncaor.gov.in)]

Some Upcoming Events

- ☛ The Second face-to-face meeting of the IIOE-2 Steering Committee is scheduled to be held along with the Annual Meetings of Indian Ocean Global Ocean Observing System Regional Alliance (IOGOOS), Indian Ocean Region Panel (IORP), Sustained Indian Ocean Biogeochemistry and Ecosystem Research (SIBER) and Indian Ocean Observing System Resources Forum (IRF) during 19-23 March 2018. The meetings will be hosted by LIPI and BMKG of the Government of Indonesia in concert with UNESCO IOC Perth Programme Office and will take place at the Grand Mercure, Kemayoran, Jakarta.

Registrations are now open via the link [International Indian Ocean Science Conference 2018](#)

Watch out for further details on the IIOE-2 website: www.iioe-2.incois.gov.in

- ☛ “The Indian Ocean's past, present and future”, Session at the European Geosciences Union (EGU) General Assembly, Vienna, Austria, 08-13 April 2018.

<http://meetingorganizer.copernicus.org/EGU2018/session/26749>

- ☛ A Session on “The Eastern Indian ocean Upwelling Research Initiative (EIOURI) and the Second International Indian Ocean Expedition” at the 15th Annual Meeting of the Asia Oceania Geosciences Society, Honolulu, Hawaii, 03-08 June 2018. <http://www.asiaoceania.org/aogs2018/public.asp?page=home.htm>

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!!

Over 25 international, multi-disciplinary scientific projects have already been endorsed to date by the IIOE-2. Yours could be the next one!

Visit <http://www.iioe-2.incois.gov.in/IIOE-2/EndorsementForm.jsp> for further details and for projects already endorsed by IIOE-2.



Access the latest issue of Indian Ocean Bubble-2

<http://www.iioe-2.incois.gov.in/IIOE-2/Bubble.jsp>



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