

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.

## Increase in summer monsoon rainfall over the northeast India during El Niño

El Niño - Southern Oscillation (ENSO) affects Indian Summer Monsoon (ISM). Given the heterogeneity in rainfall patterns over India, we have revisited the linkages between El Niño and ISM for the period 1600-2016 in this study. Our analyses based on the instrumental, paleo-proxy, model and satellite data sets show significant spatiotemporal variation in the ISM in response to El Niño. We observed strengthening of the summer monsoon over the northeast India in conjunction with El Niño events (Figure-1). We observed spatial variation in isoGSM derived rainfall and its oxygen isotopic composition ( $\delta^{18}\text{O}$ ) in response to El Niño events. We further verified our observations from isotope proxy palaeo-records. Two high resolution speleothem (cave deposits) records of reconstructed ISM during 1600-2008 confirmed the inverse relation of rainfall patterns over central India (negative) and northeast India (positive) during moderate to strong El Niño periods. These speleothem records infer a long-term pause in the El Niño (or stronger La Niña) like conditions, which were persisted during 1625–1715 and favored the stronger (weaker) rainfall over the central India (northeast India).

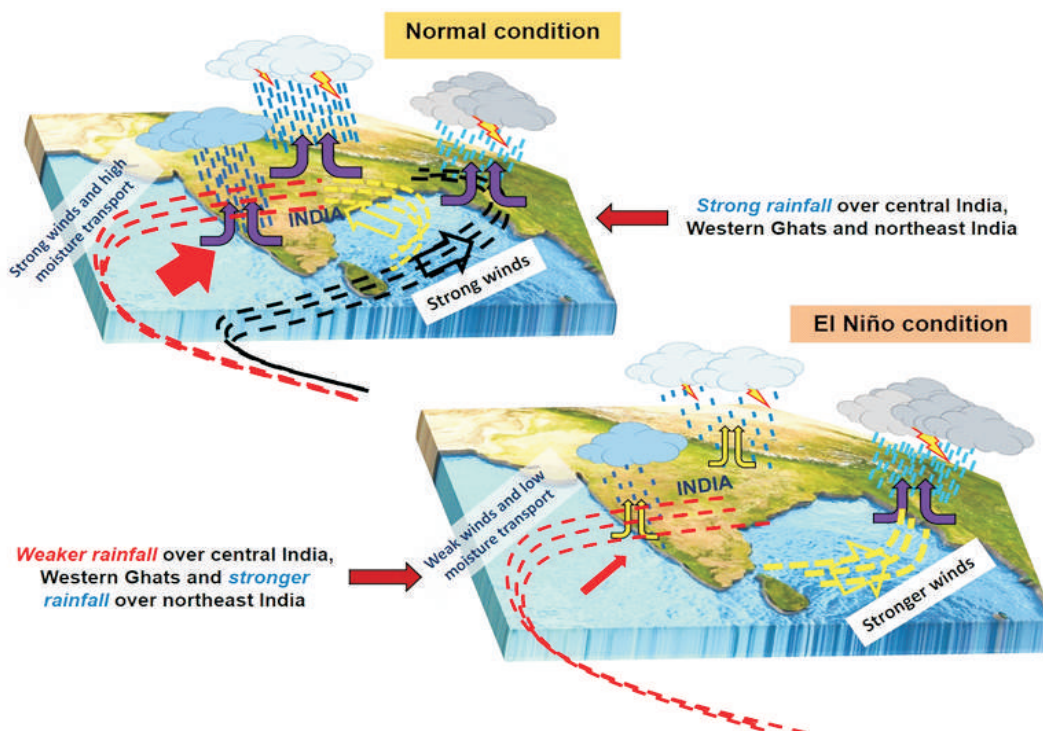


Figure-1. Schematic of winds, convection strength and rainfall pattern over Indian subcontinent during normal (neutral ENSO) and El Niño conditions.

Citation: Kumar, P. K., & Singh, A. (2021). Increase in summer monsoon rainfall over the northeast India during El Niño years since 1600. *Climate Dynamics*, 1–13.

[Report Courtesy: Arvind Singh, Physical Research Laboratory, Ahmedabad, India E-mail: arvinds@prl.res.in]

## Metrics for the Assessment of Quantity and Quality of the data by Argo floats

Argo is a global array of 3,000 free-drifting profiling floats that measures temperature and salinity (T/S) of upper 2000 m water column of the ocean. This allows continuous monitoring of the climatic state of the ocean, with all data being relayed and made publicly available within hours after collection. Conceptually, Argo builds on the existing upper-ocean thermal networks, extending their spatial and temporal coverage, depth range and accuracy, and enhancing them through addition of salinity and velocity measurements. Argo is an international project in operation, with the cooperation of meteorological and oceanographic organizations of many nations, as well as World Meteorological Organization (WMO) and International Oceanographic Commission (IOC). Argo reached its target of building up a global ocean monitoring system consisting of 3,000 Argo floats by Nov 2007. With the completion of the Argo network, over 100,000 T/S profiles of the global ocean are being reported every year.

In general, the observing system or the research initiative's foundation lies on reliable in situ data from the sensors, which accurately tell about the various key parameters that are being measured. Argo floats have brought huge amount of ocean observational in-situ data which are widely used from analysis to modelling. There are many methods of assessing the quality of the data returned by the floats. However there is no method of assessing the performance of a float or set of floats deployed by any country/group based on any single metric. It is for this, a set of new metrics are defined and presented in this work, to assess the overall performance of a float based on the data returned and it's quality. These metrics are based on the quality flags assigned by Real Time Quality Control (RTQC) and Delayed Mode Quality Control (DMQC) during the life time of a float.

A set of new metrics like Total Data Return (TDR), Quality Data Returned (QDR) and Quality Data Expected (QDE) (Figure-1) are proposed including the well-known Half-Life Period utilizing all of the Argo profile data. From the analysis, temperature and salinity sensors performance is found to be more than 80% (Figure-2) and average Half-Life is found to be 1065 days. Along with the quality control flags assigned to individual profiles by all the Data Assembly Centers (DACs), these new metrics provide the overall performance of the floats, and can also be applied to other similar floats as well as any sensors fitted on other oceanic platforms.

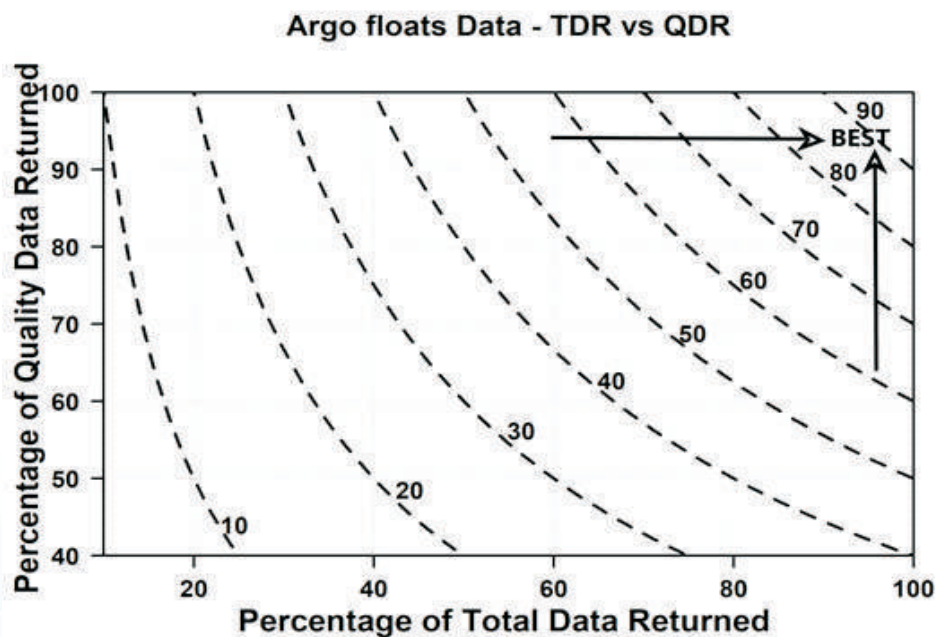


Figure-1: Template for the comparison of sensor performances of Argo floats



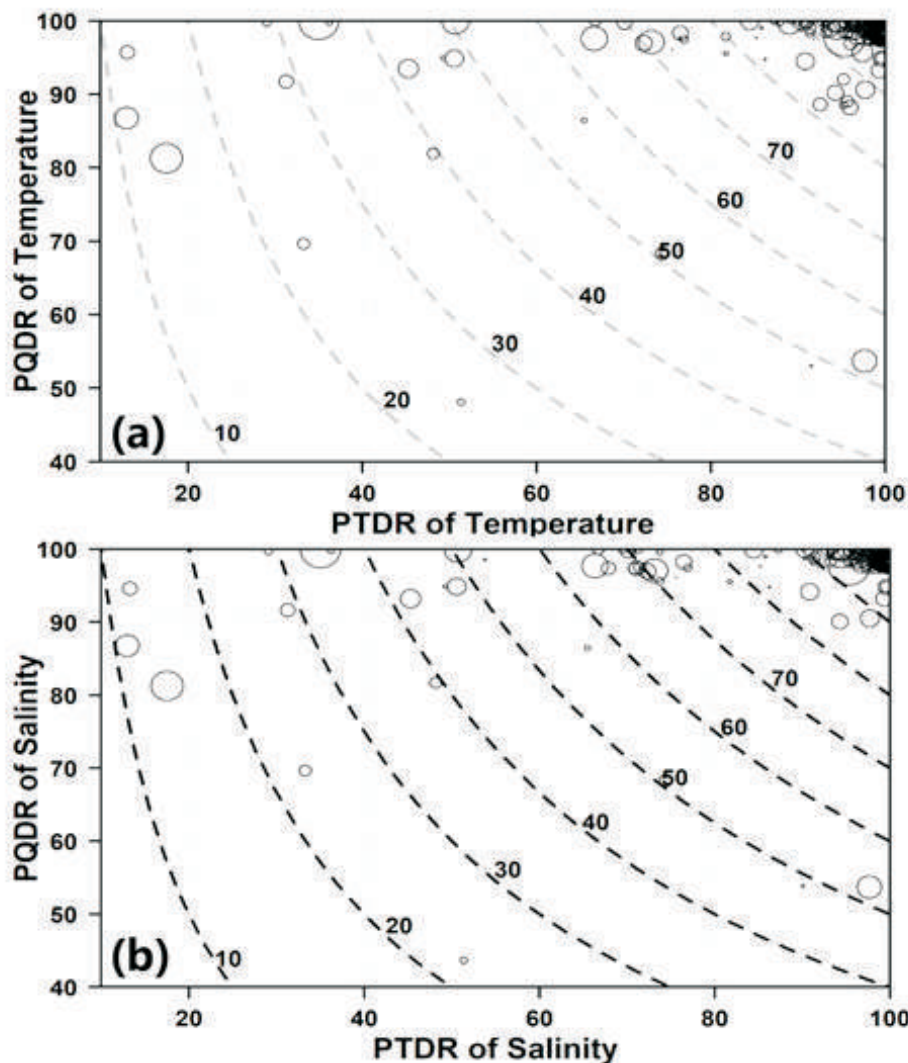


Figure-2: Comparison of sensor performances of floats: (a) temperature, and (b) salinity sensor.

Citation: Satish, RUVN., Udaya Bhaskar, TVS., Metrics for the Assessment of Quantity and Quality of the data by Argo floats, Indian Journal of Geo Marine Sciences, Vol 50 (3), pp 187 – 192, 2021.

[Report Courtesy: Udaya Bhaskar TVS, Indian National Centre for Ocean Information Services(INCOIS), MoES, Hyderabad, India. E-mail: uday@incois.gov.in]

## Announcing publication of a Special Issue of Ocean and Coastal Management on East African Coastal Current ecosystems: at the frontier of climate change and food security



Following completion of major interdisciplinary field campaigns in 2019 covering the coastal zones and shelf waters of Tanzania and Kenya the SOLSTICE-WIO project is now pleased to announce publication of results in a special issue of Ocean and Coastal Management.

This Ocean and Coastal Management special issue draws together observational, model and socioeconomic studies to better understand several key issues facing the East African coastal region. In particular, the studies cover a wide range of topics from environmental factors the controlling functioning of local ecosystems and fisheries, quantification of natural environmental and

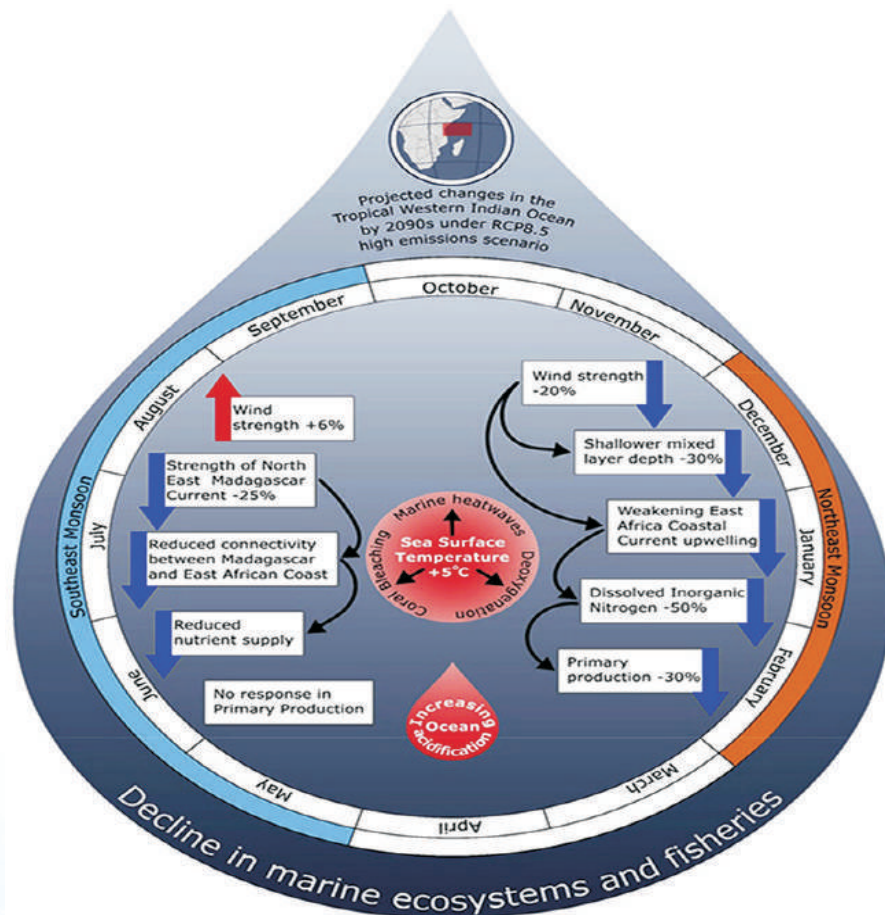
ecosystem variability and the projected impacts of climate change through to socio-economic aspects associated with the sustainable use of living marine resources, food security issues and the adaptive capacity of coastal populations to adjust to climate change.

All studies are united by their focus on the same geographical region and address topics of relevance to improving management and governance of marine resources, thus collectively providing a meaningful body of work on which to build future research collaborations or aid management decision making.

Out of 14 papers published (or soon to be published) in this special issue, 8 are led by Kenyan and Tanzanian scientists, including 4 by African early career researchers. The special issue collection concludes a four-year effort by an international collaborative partnership which includes 44 African co-authors and presents a substantial contribution to achieving objectives of the UN Decade For Ocean Sciences (2021-2030).

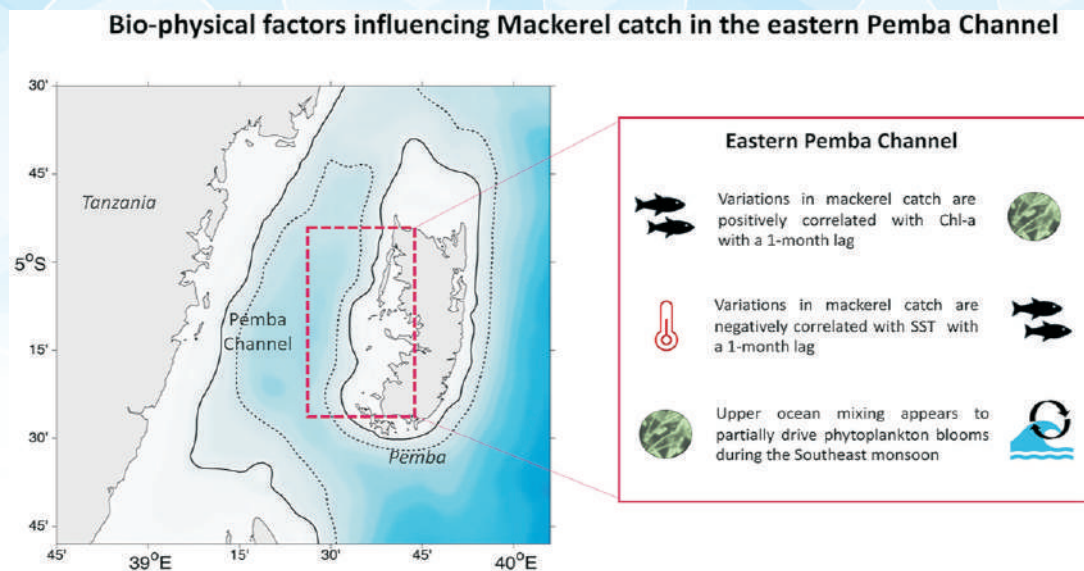
Datasets arising from SOLSTICE-WIO activities are being archived within the British Oceanographic Data Centre ([www.bodc.ac.uk](http://www.bodc.ac.uk)) and will become freely available for reuse after the end of the project which concludes in late 2021.

SOLSTICE-WIO is a four-year collaborative project funded by the UK Global Challenges Research Fund (GCRF) ([www.solstice-wio.org](http://www.solstice-wio.org)). Launched in October 2017, it brings together recent advances in marine technologies, local knowledge and research expertise to address challenges facing the Western Indian Ocean (WIO) region in a cost-effective way via state-of-the-art technology transfer, collaborative environmental and socio-economic research and hands-on training.

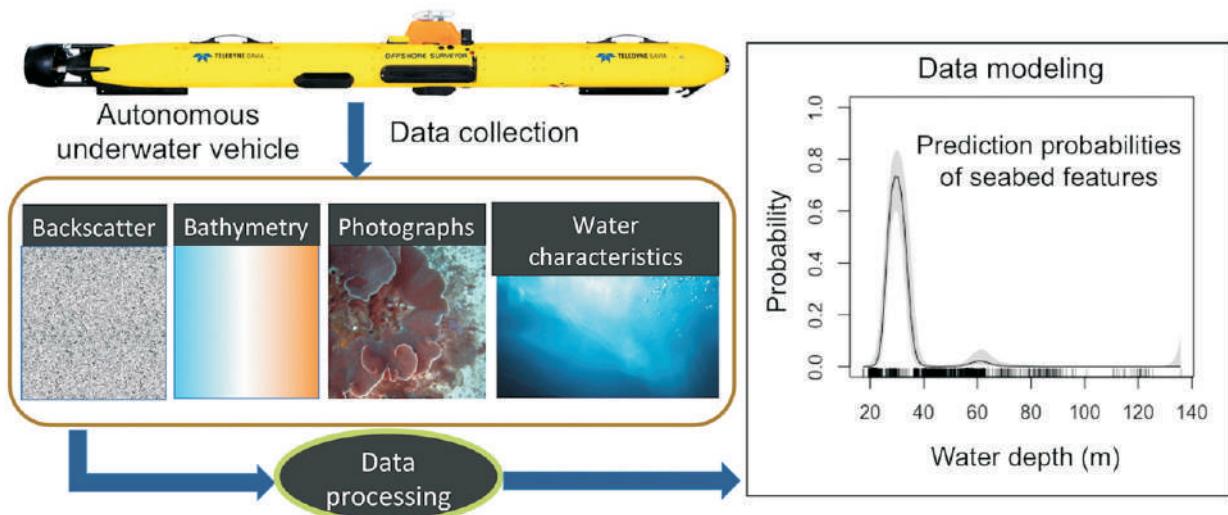


Graphical Abstract, Jacobs Z., et al, (2021) Key climate change stressors of marine ecosystems along the path of the East African coastal current





Graphical abstract, Osuka K.E., et al, (2021) Characteristics of shallow and mesophotic environments of the Pemba Channel, Tanzania: Implications for management and conservation



Graphical abstract, Kizenga H.J., (2021), Variability of mackerel fish catch and remotely-sensed biophysical controls in the eastern Pemba Channel

## The Indian Ocean Bubble, Issue No.14 is now available online



Web Link: [https://iioe-2.incois.gov.in/IIOE-2/pdfviewer\\_pub.jsp?docname=IIOE-2-DOC\\_OM\\_211.pdf](https://iioe-2.incois.gov.in/IIOE-2/pdfviewer_pub.jsp?docname=IIOE-2-DOC_OM_211.pdf)

Informal articles are invited for the next issue. Contributions referring Indian Ocean studies, cruises, conferences, workshops, tributes to other oceanographers etc. are welcome.

Articles may be up to 1500 words in length (Word files) accompanied by suitable figures, photos (separate .jpg files)

Deadline: **30<sup>th</sup> June, 2021**

Send your contributions as usual to [iioe@incois.gov.in](mailto:iioe@incois.gov.in)



## 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 43 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 [https://iioe-2.incois.gov.in/IIOE-2/Endorsed\\_Projects.jsp](https://iioe-2.incois.gov.in/IIOE-2/Endorsed_Projects.jsp).

## CLIVAR May 2021 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 May, 2021 is available at:

<https://mailchi.mp/clivar.org/clivar-may-2021-bulletin>

### Call for Contributions

Informal articles/short notes of general interest to the IIOE-2 community are invited for the next (June-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 June, 2021**

The IIOE-2 Newsletter is published online by:



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