





Project Endorsement Form

1. PROJECT TITLE

Full title	Repercussions of ocean warming on bioluminescent zooplankton of the Indian
	Ocean
Acronym	
Website	
Keywords (up to 10, describing the	Bioluminescence, Zooplankton, Climate Change, Indian Ocean, Luciferin,
project research)	Luciferase, Seasonal Variability
New initiative or continuing	New Initiative
programme?	

2. APPLICANTS

Lead applicant / Project Leader / key research contact person:

Project co-ordinator 1

First name	Kailash
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mattational of personal website	

Project co-ordinator 2

First name	Chelladurai
	Raghunathan
Last name	laist Director / Scientist-F
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Project Leader/ key research contact person

First name

Dr. Jasmine. P

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Other key participants / research team leaders: (repeat as needed)

First name	
Last man	nanna
Last name	Prasad
Role in the project	Junior Research Follow
Affiliation	Sumor Research Fellow
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N.B.: Please note that all these names and contact details will be added to the IIOE-2 membership database.

3. ABSTRACT- Brief description of the project: (1/4 page maximum)

This will be placed on the IIOE-2 Website after endorsement.

Bioluminescence is the production of light by living organisms, usually in the visible range. This occurs due to biological generation of photons resulting from chemiluminescent reaction. The luminous reaction occurs as a result of oxidation of a light emitting compound - luciferin - by either luciferase enzyme or photoprotein. This produces higher energy level oxyluciferin which dissociate to give light. Most of the bioluminescent organisms are marine dwellers, found in all depths, but commonly observed at the surface. The bioluminescent marine community consists of members from various Phyla such as Proteobacteria, Myzozoa, Radiozoa, Cnidaria, Ctenophora, Mollusca, Annelida, Arthropoda, Bryozoa, Chaetognatha, Echinodermata, Hemichordata and Chordata. But there is a distinct lack of studies on the very important aspect of bioluminescence from our seas. Bioluminescent species are widely used in several clinical, environmental, biomedical and biotechnological applications. Bioluminescence will help in tracing the path of various disturbances that originate within the sea. This data is of significant importance in our defence sector since most of the bioluminescent glows are due to the alteration of the physical environment. Furthermore, bioluminescence can be also thought-out as a sign of ocean acidification and hence requires thorough study. In this context, our study aims to delineate the diversity, distribution and abundance of bioluminescent planktons and their importance as indicators of the altered marine environment. Hence this study could be the major baseline data of bioluminescent zooplanktons of the Indian Ocean.

4. LINKS TO IIOE-2 SCIENCE PLAN: (1/2 page maximum)

How do you anticipate your project to contribute to the IIOE-2 strategy and science delivery, with reference to which (either one or more) of the six IIOE-2 Science Plan themes that your project responds. Please state the specific issues and questions addressed by your project in the context of the IIOE-2 Science Plan themes and key issues.

The current study on "Bioluminescence of Zooplankton in Indian Ocean" mainly addresses the following objectives:
To determine the diversity, distribution, biomass and abundance of bioluminescent zooplankton in the Indian

Ocean on a seasonal basis.

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- To compare the coastal and open ocean variability in bioluminescent zooplankton.
- To investigate various hydrographic parameters.
- To carry out phylogenetic studies of selected bioluminescent zooplankton.

In this study, the collected data will reflect seasonal variations in diversity, distribution, biomass and abundance of bioluminescent planktons and also in intensity of emitted light thereby responding to the third IIOE-2 Science Plan theme "Monsoon variability and ecosystem response". Through this study, we will be compiling a comprehensive data about various bioluminescent zooplanktons found in the Indian Ocean, thereby providing potential information to facilitate future research efforts. Delineating information on changes in the intensity of light emission, can be of great importance in the defence sector to locate various disturbances originating within the sea. Furthermore, this study also involves the analysis of various physicochemical parameters of the zooplankton sampling sites. All these outputs respond to the first and sixth IIOE-2 Science Plan themes. Investigation of these environmental parameters will also help in elucidating the relationship between bioluminescence, ocean warming and ocean acidification, if any, thereby addressing the fourth IIOE-2 Science Plan theme.

5. INTERNATIONAL COLLABORATION(S):

Is the project part of a related multi-national activity? NO

If No, would you welcome international collaboration in your project? YES, we would like to welcome international collaborations from universities/researchers working on the field of bioluminescence.

6. REGION(S) OF STUDY

Provide a description of 'where' the research is to be conducted (for field based activities) and/or the region or regions to which the research pertains (you are encouraged to consider providing either the coordinates of the area of studies or the coordinates of the planned cruise tracks, as well as a figure as an addendum to your proposal).

The selected study area of this project is the Arabian Sea (8^{0} - 20^{0} N).

6. TIMETABLE OF THE PROJECT

Start date:16.01.2020	End date:15.01.2025

7. LINKAGES WITH OTHER PROJECTS / PROGRAMMES / INITIATIVES

Is the project part of a related national or multi-national activity? NO If yes, provide the related activity title and website for reference, if available:

Is your project part of, or affiliated to, another SCOR, IOC or IOGOOS activity or project?

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If "yes", please indicate which activity or project:

No

8. DATA MANAGEMENT AND SHARING

1. Will new data be collected as part of this project (yes or no?)

Yes, and we already have five years data on planktonic ostracods of the Indian Ocean.

2. Contact information if any, of the person in charge of the data management from whom the metadata can be accessed by interested IIOE-2 stakeholders.

Please note that for all IIOE-2-endorsed projects, IIOE-2 will have developed its own metadata portal. Once the project is endorsed, the project leader will be asked to provide the metadata information of the project.

Dr. Jasmine P., Scientist E, 9th floor, Protozoology Section, Zoological Survey of India, Prani Vigyan Bhawan, M Block, New Alipore, Kolkata-700053, West Bengal, India. Contact Number: 9874983181, 9447726773 Email Id: jasbose@gmail.com

3. Recognizing the need for an initial period of exclusive data use, would you be willing to provide timely access to all data generated under this project and associated metadata in accordance with relevant national and funding agency data sharing policies?
YES. We are willing to provide access to the data (except PhD work data) collected under this project in accordance.

YES. We are willing to provide access to the data (except PhD work data) collected under this project in accordance with the terms and conditions of our institute.

9. FUNDING

Please note that IIOE-2 strongly encourages funded/resourced projects. However, IIOE-2 may endorse projects yet to receive funding/resourcing if IIOE-2 endorsement can be clearly shown to significantly aid in prospects for funding/resourcing.

Has funding and resources to successfully achieve and undertake the project been obtained? Indicate the sources of funding and resources that have been approached and/or secured.

The current study is not a funded/resourced project. But the Junior Research Fellow in this project is receiving fellowship from UGC (Ref. No.: 983/(CSIR-UGC NET JUNE 2019).

10. BENEFITS FROM IIOE-2 ENDORSEMENT

(1/4 page maximum)

Specify why you are seeking endorsement and how the activity would benefit from endorsement, and how the IIOE-2 SC could assist in the implementation of your project.

Four out of six themes referred by IIOE-2 matches with the major interests of our research work. Hence, pursuing research under IIOE-2 will makes it easier to achieve our objectives. It will help in the development of an inventory of

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research under IIOE-2 will makes it easier to achieve our objectives. It will help in the development of an inventory of bioluminescent zooplanktons of the Indian Ocean and also helps in the estimation of bioluminescent plankton standing crop. In addition to this, it will help to understand the effect of seasonal variability on bioluminescence as well as the influence of altered physical environments on the same. Furthermore, ship timings and cruise participation is of utmost importance for the data collection and also for the successful completion of this project.

11. OPTIONAL: OTHER COMMENTS/INFORMATION/MATERIAL(length and detail may be at the discretion of and as deemed necessary by the applicant)

Please feel free to provide any other comments, information or materials that you feel relevant to your proposal for the IIOE-2 Steering Committee's information and benefit. You may provide this as general information or provide the additional comments/information/materials as relevant to any of the specific Sections above.

Our institute would like to receive intimation on the upcoming expeditions along with details on the cruise track, participating universities and cruise timings. This could provide great opportunity for cruise participation and data collection. We would also request the authority to share the hydrographic data collected during the expedition, and we are also willing to share the biological data collected during the same.

(Signature of the PI)

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