Project Endorsement Form

1. PROJECT TITLE

Full title	Physical Deterministic Sea Surface Temperature from MODIS and VIIRS Radiances
Acronym	SST, NASA, IIOE-2, SCOR, M-AERI
Website	Will be developed
Keywords (up to 10, describing the project research)	
New initiative or continuing programme?	New initiative

2. APPLICANTS

Lead applicant / Project Leader / key research contact person:

First name	Prabhat
Last name	Koner
Affiliation	Asst. research Scientist
Postal address	Earth System Science Interdisciplinary Center; University of Maryland 5825 University Research Court; College Park; MD 20740;
Country	USA
Telephone	+1 301 405 6568
Email address	pkoner@umd.edu
Institutional or personal website	http://essic.umd.edu/joom2/

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

First name	Animesh
Last name	Maitra
Role in the project	
Affiliation	Professor, Institute of Radio Physics and Electronics University of Calcutta
Country	India
Email address	am.rpe@caluniv.ac.in
Institutional or personal website	

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

First name	Raleigh
Last name	Hood
Role in the project	Collaborator and liaison to IIOE-2 Steering Committee and US IIOE-2 National Committee
Affiliation	Professor, Horn Point Laboratory University of Maryland Center for Environmental Science
Country	USA
Email address	rhood@umces.edu

Institutional or personal website	https://www.umces.edu/raleigh-hood

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.

The Indian Ocean is a dynamically complex and highly variable system under monsoonal influence, and contains numerous boundary currents (*e.g.*Leeuwin, East Madagascar, Agulhas*etc.*), Indian Ocean Dipole, upwellings, mesoscale eddies, cold core rings, warm-core and downwelling eddies. Moreover, for the Indian Ocean, there are large dust and aerosol inputs that occur year round. The various dust source regions around northern Indian Ocean include the Arabian Peninsula, the African continent (Somalia) and Asia. A "brown haze" lingers over the Arabian Sea, the Bay of Bengal and the southern tropical Indian Ocean from industrial pollution and biomass burning on surrounding continents. It is well known that current operational MODIS SST data are sensitive to cloud contamination, water vapour and aerosols. Fortunately, our physical deterministic sea surface temperature (PDSST) retrieval method and novel cloud detection scheme offer a substantially improved end product. The unprecedented capability of PDSST is aerosol correction using aerosol as a retrieved vector. The project will focus on the development, validation and provision of high-quality satellite SST retrievals for such dynamic regions and facilitates for using these data in dynamic oceanographic applications. Thus, the proposed project contributes to the IIOE-2 science plan of understanding the complex behaviour of the Indian Ocean by providing improved coverage and high quality satellite observations to run the Indian Ocean model collaborate with other participating research group under umbrella of IIOE-2.

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 main focus of the IIOE-2 science plan is on the Indian Ocean, which is a dynamically complex and highly variable system under monsoonal influence with many boundary currents, upwellings, cold core rings, warm-core, mesoscale and downwelling eddies. Primarily, IIOE-2 intends to make many cruisemeasurements over this ocean. Undoubtedly, it will improveour knowledge by different typesof measurements on ocean surfaces (OS) and profiles, but alone will not suffice to understand the many dynamic features of the Indian Ocean. To achieve a better understanding, vast quantities of available high resolution satellite datamust be used, but there remains the major issue of converting signal from top of the atmosphere measurements to OS.Sea surface temperature (SST) among these measurements is an Essential Climate Variable that defines the physical environment and impacts the marine ecosystems. For instance, water masses defined by marine thermal fronts are often denoted by using SST gradient fields as a proxy for identifying regions of optimal growth-conditions of marine phytoplankton (nutrients, light, mixing, and upwelling). A more accurate satellite infrared (IR) SST retrieval and a better coverage are needed for oceanographic applications and to further improve our understanding of related processes.

5. INTERNATIONAL COLLABORATION(S):

Is the project part of a related multi-national activity? (Please tick) **YES**

If No, would you welcome international collaboration in your project? (Please tick) **YES/NO**

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).

Whole Indian Ocean and will focus on coastal area.

6. TIMETABLE OF THE PROJECT

Start date:March 30, 2018	End date:March 29, 2021

7. LINKAGES WITH OTHER PROJECTS / PROGRAMMES / INITIATIVES

Is the project part of a related national or multi-national activity? YES

If yes, provide the related activity title and website for reference, if available:

This project is part of the US IIOE-2 national committee effort. For more information on the US IIOE-2 national committee and its efforts see: http://www.scor-int.org/US-IIOE2.htm

Is your project part of, or affiliated to, another SCOR, IOC or IOGOOS activity or project? NO

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

8. DATA MANAGEMENT AND SHARING

1. Will new data be collected as part of this project (**YES** or **NO**?)YES

We will provide the satellite derived SST product using PDSST suite around the Indian Ocean through ftp server at UMD with easy data accessibility. We will also explore the mechanism for providing high quality SST data throughSCOR, IOC or IOGOOS server.

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.

Prabhat Koner; pkoner@umd.edu.

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?(Please tick) **YES/~~NO~~**

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.

Funded by Science Mission Directorate's Earth Science Division, in response to NASA Research Announcement (NRA) NNH17ZDA001N-TASNPP: Research Opportunities in Space and Earth Science (ROSES-2017), Program Element A.37: The Science of Terra, Aqua, and Suomi NPP.

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.

Endorsing this project through IIOE-2 secretariat to get access to the measurements from the IIOE-2 cruises and restricted coastal in situ data. This will give a great opportunity for validating the satellite derived products and possibly further improve our algorithms for global and coastal oceans. At the same time, availability of high quality SST data from satellites, particularly in the coastal waters will enhance the accuracies of the simulation and prediction of the ocean parameters through the assimilation of these data to the ocean models and hence will be very useful for the collaboration of other participating group/s.

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.

(Signature of the PI)