

## Project Endorsement Form

### 1. PROJECT TITLE

Full title	Responses of Biological Productivity and Fisheries to Changes in Atmospheric and Oceanographic Conditions in the Upwelling Region Associated with the East African Coastal Current
Acronym	PEACC
Website	<a href="http://www.wiomsa.org/ongoing-project/responses-biological-productivity-fisheries-changes-atmospheric-oceanographic-conditions-upwelling-region-associated-east-african-coastal-current/">http://www.wiomsa.org/ongoing-project/responses-biological-productivity-fisheries-changes-atmospheric-oceanographic-conditions-upwelling-region-associated-east-african-coastal-current/</a>
Keywords (up to 10, describing the project research)	Upwelling, EACC, biological productivity, fisheries, oceanographic modelling, , climate change, resilience and adaptation, remote sensing, ocean governance
New initiative or continuing programme?	Continuing programme

### 2. APPLICANTS

#### Lead applicant / Project Leader / key research contact person:

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

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First name	Louisa
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First name	Marisol
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Role in the project	Upwelling and wind trends

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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.*

This project seeks to investigate the ecosystem impacts of meteorological and oceanographic conditions in the upwelling region associated with the East African Coastal Current (EACC) system. A key aspect of the study is the socio-economic impact, thus emphasis is placed in establishing the vulnerability and resilience of the local communities in view of proposing viable options. The main intervention by this project is the provision of management action points to enhance coastal community resilience to vulnerabilities associated with these changes. The intervention will be informed by two key research studies: 1) Investigations of the upwelling trends and assessment of associated productivity and fisheries changes, and 2) Determination of the socio-economic impact and documentation of associated coastal governance structures. Our linked objectives are designed to illuminate factors leading to societal resilience and to build the capacity of the fisheries dependent communities to develop resilient strategies in the face of changes in biophysical characteristics associated with upwelling.

### **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 PEACC project is consistent with Theme No. 4 of the IIOE-2 Science Plan, which is on “Circulation, climate variability and change”. In this particular theme, the research projects should respond to questions such as: How has the atmospheric and oceanic circulation of the Indian Ocean changed in the past and how will it change in the future? What impact does this have on biological productivity and fisheries? The project outcomes will respond to these questions for the Eastern African coastal system. The PEACC project also aligns with the Western Indian Ocean Upwelling Research Initiative (WIOURI), which is one of several initiatives planned under the IIOE-2. WIOURI is built from Scientific Theme No. 2 of the IIOE-2 Science Plan, which is on boundary current dynamics, upwelling variability and ecosystem impacts.

### **5. INTERNATIONAL COLLABORATION(S):**

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

If No, would you welcome international collaboration in your project? **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

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the area of studies or the coordinates of the planned cruise tracks, as well as a figure as an addendum to your proposal).

The study area encompasses the East African Coastal Current upwelling system off the coasts of Kenya and Tanzania. It basically extends from 38.45°E to 42°E, and from 1.65°S near the Kenyan border with Somalia to 10.45°S near the Tanzanian border with Mozambique. This area encompasses the three major islands of Mafia, Zanzibar (locally known as Unguja) and Pemba.

In terms of in-situ sampling, fisheries and primary productivity data are being collected off the western side of the Pemba Channel in Tanga, Tanzania, and in the North Kenya Bank, Kenya. In socio-economics, data is collected from three coastal village sites in Tanga, Tanzania and three sites in Lamu and Kilifi in Kenya, respectively.

## 6. TIMETABLE OF THE PROJECT

Start date: July 2016	End date: June 2018
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## 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:

The PEACC project has culminated into another initiative, the SOLSTICE Project, which intends to cover the gaps left out by the PEACC Project through the use of high-tech equipment and ocean observation robotics. SOLSTICE: Sustainable Oceans, Livelihoods and food Security Through Increased Capacity in Ecosystem research in the Western Indian Ocean.

The SOLSTICE Project has three case studies:

1. Pemba Channel small pelagic fishery under climate threat
2. Emerging fishery of the North Kenya Bank, an opportunity for coastal populations
3. Environmental drivers and socio-economic consequences of the South African Chokka squid fishery collapsing

Project Start date: October 2017

Project End date: September 2021

Website: <http://www.solstice-wio.org/>

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

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

IOC has supported the PEACC project by supporting two project harmonization workshops:

1. Malindi (Kenya) from 19 to 24 October 2016. The workshop laid a firm foundation for fieldwork and data analysis for the project.
2. Tanga (Tanzania) from 24 to 29 July 2017. The workshop focused on data analysis, reporting format, strategies for information dissemination and publication.

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## 8. DATA MANAGEMENT AND SHARING

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

ROMS Modelling products  
Modelled upwelling and wind trends  
Fisheries biology and catch data  
Chlorophyll, nutrients, zooplankton and other environmental variables  
Socio-economics data

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 Shigalla Mahongo, Tanzania Fisheries Research Institute, P.O. Box 9750, Dar es Salaam, Tanzania. Email: Shigalla@tafiri.go.tz

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/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.

WIOMSA Contribution: US\$ 170 000  
UNESCO/IOC Contribution: US\$ 20 000

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#### **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.

The IIOE-2 Science Plan was used as a justification for conceiving the PEACC Project. The Project therefore seeks IIOE-2 endorsement as we would like it to be formally recognized as one of the contributing projects of the IIOE-2 Science Plan. We also believe that once endorsed by the IIOE-2 SC, the PEACC Project would attract the attention of a wider scientific community with an interest in the western Indian Ocean upwelling. The PEACC Project is already on-going, therefore the IIOE-2 SC may assist in promoting the visibility of the project, and dissemination of the project results after the end of the 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.

The PEACC Project is currently preparing manuscripts that are to be submitted for publication in a special issue of the WIO Journal of Marine Sciences, The draft manuscripts will be uploaded for review in February 2018, and the special issue will be out by July 2018 – arrangements with the Chief Editor have already been made. The tentative titles of the manuscripts are as follows:

- 1) Modelling the influence of the Submesoscale dynamics on the upwelling of the EACC
- 2) Influence of seasonal variation of the ocean circulation to primary productivity over the East African coast
- 3) Inter-annual variability of the ocean circulation in relation to primary productivity in East African coast
- 4) Multivariate analysis to determine the productivity drivers in the Pemba Channel and in the North Kenya Bank
- 5) Investigating the effects of changing monsoonal seasons on the productivity in the North Kenya Bank
- 6) Investigating the effects of changing monsoonal seasons on the productivity in the Pemba Channel
- 7) In-situ and remotely-sensed Chl-a in the Pemba Channel: implications for fisheries management.
- 8) Reproductive biology of the anchovy (*Stolephorus commersonnii*, Lacepède, 1803) and spotted sardine (*Amblygaster sirm*, Walbaum, 1792) from Tanga Region, Tanzania
- 9) Food and feeding dynamics of the anchovy *Stolephorus commersonnii* (Lacepède, 1803) and the Indian mackerel *Rastrelliger kanagaruta* (Cuvier, 1817) from Tanga Region, Tanzania
- 10) Age, growth and mortality parameters of anchovy *Stolephorus commersonnii* (Lacepède, 1803) caught in ringnets operating off the coast of Tanga Region, Tanzania
- 11) Livelihood impacts and adaptation in fishing practices in response to changes in the upwelling region under EACC
- 12) Evolution of governance structures in relation to climate change: a study of the small pelagic fisheries in Kenya and Tanzania

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2015-2020



(Signature of the PI)

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