WESTPAC Ocean Remote Sensing Programme

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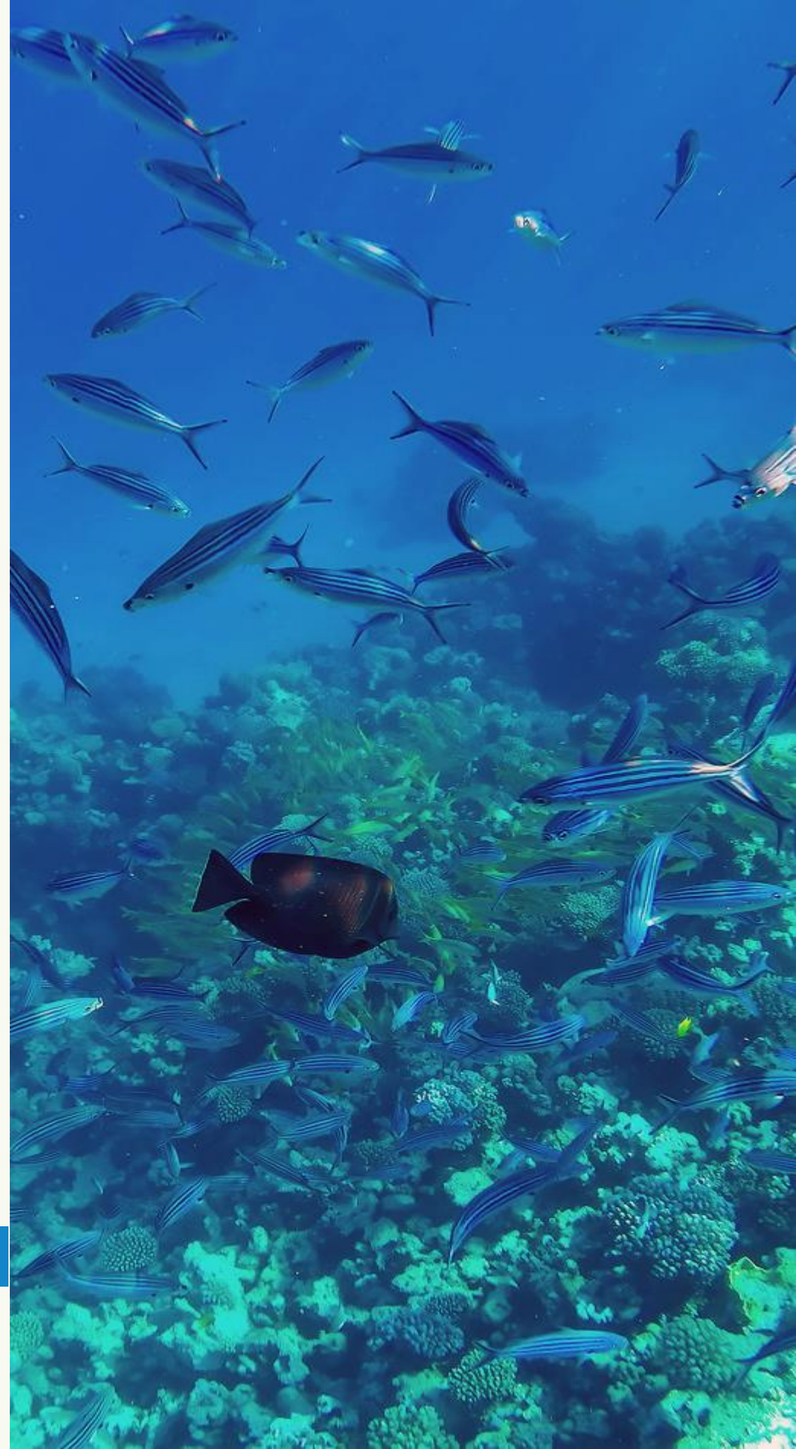

1. Justification

(Why this programme/project/working group is needed for the Sub-Commission)

The marine system provides us a rich source of food and helps stabilize our climate. However, pollution with plastic garbage and rise in water temperature due to global warming are causing serious damage to marine ecosystems. Habitats of many marine creatures, such as coral reefs and seaweed beds has been rapidly decreased in recent decades. In order to maintain or conserve a healthy marine ecosystem, it is essential to have an accurate understanding of the current situation. Remote sensing can quantitatively and efficiently obtain information on marine ecosystems over a wide area, and is expected to make a major contribution to marine ecosystem monitoring.

2. Objectives

In WESTPAC regions, these are still many subjects to be solved using remote sensing. So far, in this region, coastal habitat mapping methods have been intensively developed to cover variable water types. As a result, a fundamental process of habitat mapping by remote sensing was established and have been applied for several areas in each country. As a next step, we need to move more practical stage to solve real social subjects for conservation of coastal habitats. Another hot topic is Blue Carbon. Establishment of the accurate estimation method for storage capacity of CO_2 is essential to clear the potential of Blue Carbon. Pollution is also important topic to be solved. It includes coastal eutrophication and floating plastic debris. Then, in WESTPAC Ocean Remote Sensing Programme, we focus 3 ocean remote sensing fields (Coastal Habitat Mapping, Blue Carbon and Pollution) and will conduct researches.

3. Major activities, outputs & outcomes

Latest accomplishment, particular those during 2023 to 2024

Major activities

- ORSP Steering Committee Online Meeting (30 Aug 2023). Former leader Dr. Komatsu was retired and Dr. Sagawa was elected as new leader.
- Ocean remote sensing session and incubator was held during 2nd UN Ocean Decade Regional Conference &
  11th WESTPAC International Marine Science Conference, Bangkok, Thailand.
- Submission of a proposal about joint research to the fourth Research Announcement on the Earth Observations (EO-RA4) of the Japan Aerospace Exploration Agency (JAXA).

Outputs & Outcomes

- Ocean Remote Sensing Project was developed to Ocean Remote Sensing Programme consisting of 3 projects (Coastal habitat mapping, blue carbon and pollution).
- Sharing the latest research trends and issues about ocean remote sensing among researchers.

Timeframe

Project start year: 2023

4. Problems encountered & recommended actions

Problems encountered

- There are not so many ground truth data open to public about coastal habitat such as position of coral reef and seagrass.
- There are not open habitat maps in the world to estimate and monitoring blue carbon.
- Satellite images by optical sensor are not often available in WESTPAC region due to cloud.
- HAB (Harmful Algal Blooms) warning system was required.

Actions

- Sharing data and case studies about coastal habitats and blue carbon.
- Development of automatic mapping tool for coastal habitat.
- Researches of usage of SAR data.
- The warning system was proposed to develop the HAB warning system.

Timeframe

Project start year: 2023

5. Strategic considerations/thoughts for future development

Currently, the data and technologies possessed by researchers within WESTPAC are not necessarily shared. Then, database about field data and analysis methods will be made for promoting research about ocean remote sensing. In addition, by using the latest satellite data, we can expect to solve conventional problems, so we will conduct joint research and share knowledge.
So far, we don’t have funds to accelerate our activities. Proposals will be made for obtaining funds for each issue.

6. Potential action plans for future implementation

for the period of 2025-2026 and beyond

- Conducting joint research on ocean remote sensing using the latest satellite data.
- Development of database about coastal habitats and blue carbon.
- Development of automatic coastal habitat mapping tool.
- Development of HAB warning system.

Planned activities

Program	Plan				Funding Required		Remark
	Activities	Objectives	Expected outputs/outcomes	Date and place	IOC	Other sources (i.e. from national or international)	
	1. Joint researches	Development of new technology for monitoring coastal area	new technology for ocean remote sensing	from April 2025		Japan Aerospace Exploration Agency (JAXA), Japan Science and Technology Agency (JST)	
	2. Sharing data and case study	Sharing data and case study	database about coastal habitats and blue carbon				
	3. Annual meeting			March 2025 Online			

ThankYou

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