DBCP Capacity Building Workshop on Ocean Observations for Operational Services in the Indian Ocean Region

National Reports - MALAYSIA

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Malaysia

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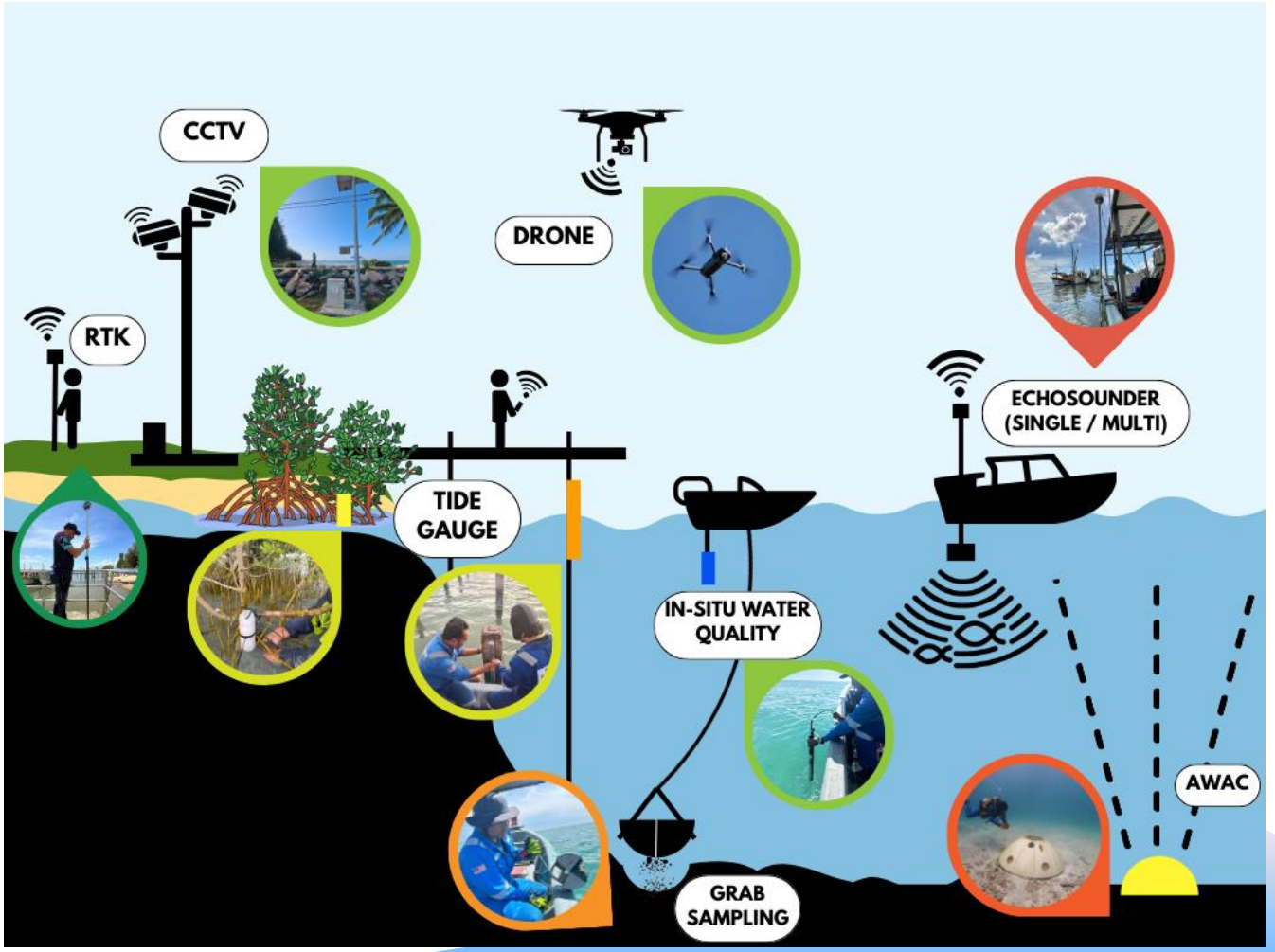
1. Existing Capacities/Activities for Observation /Forecasting

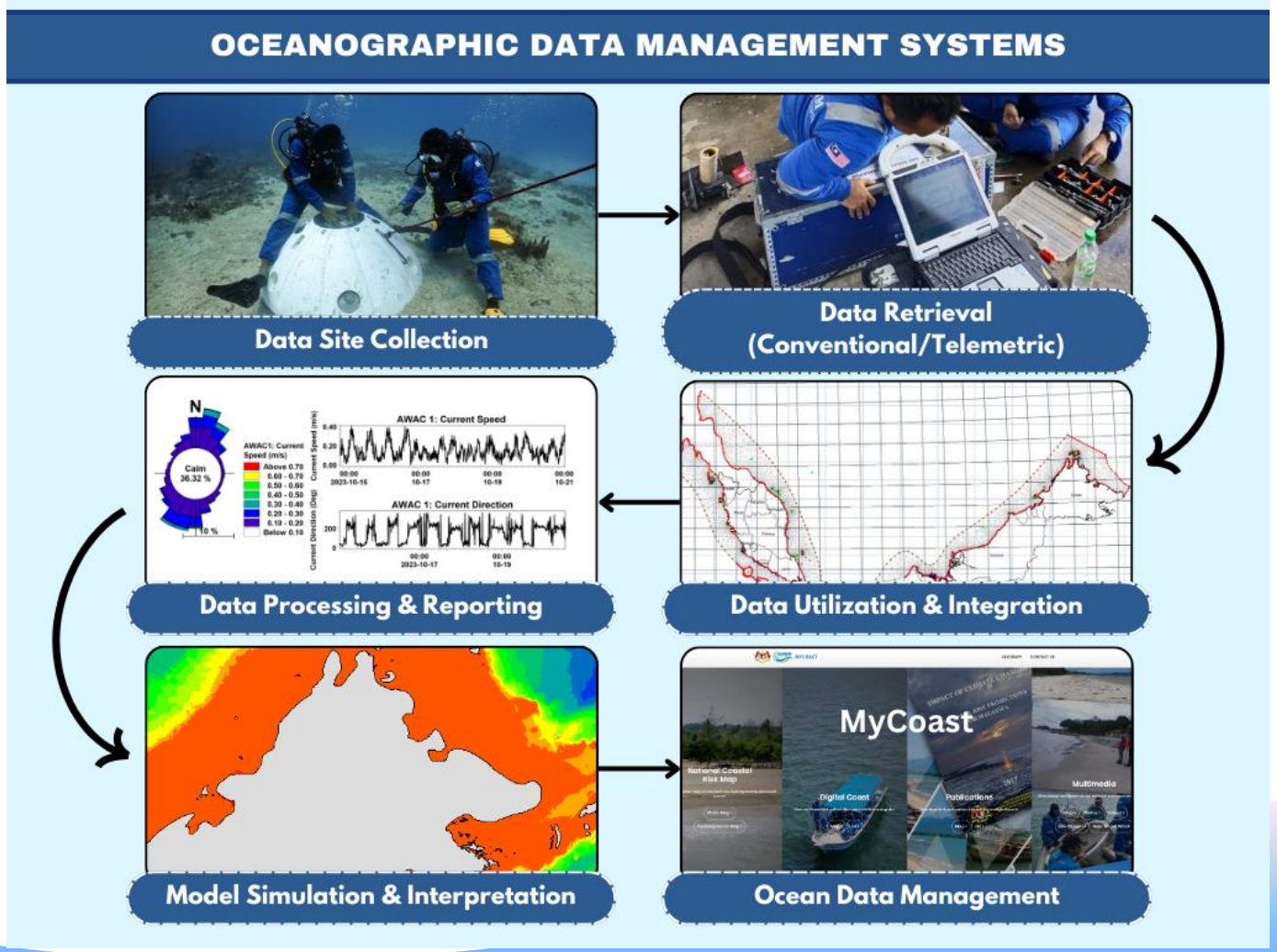
MALAYSIA COASTAL INTEGRATED MONITORING NETWORK



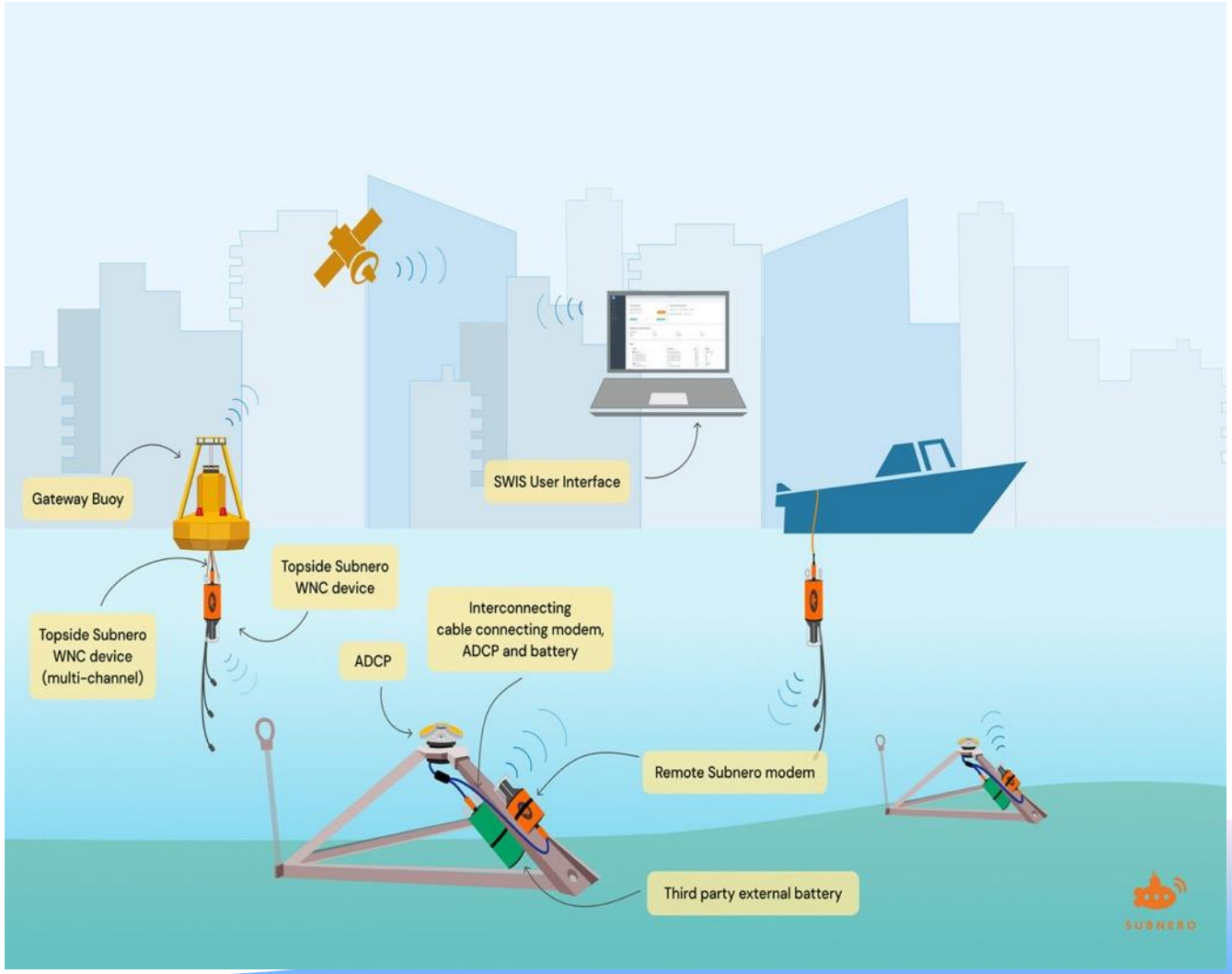
1. Existing Capacities/Activities for Observation /Forecasting

LONGTERM MONITORING STATIONS IN MALAYSIA WATERS

1. Existing Capacities/Activities for Observation /Forecasting



2. Gaps and Needs for Observation /Forecasting



3. Case sharing

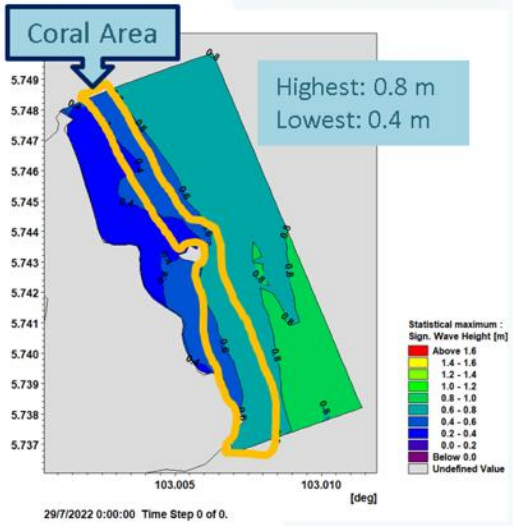
Coral Reefs: Natural Frontline

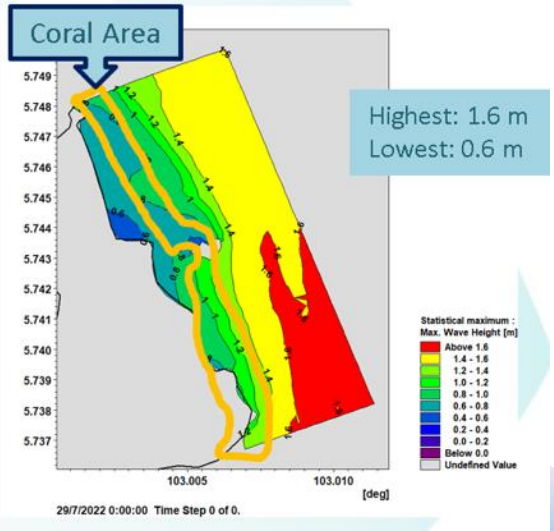
Estimation of coral cover area

The cover map area and percentages value of Pulau Pinang, Redang:

ID	Area (m^2)	Percentages (%)
Sand	923149	78.97
Coral	225613	19.30
Rock	20263	1.73

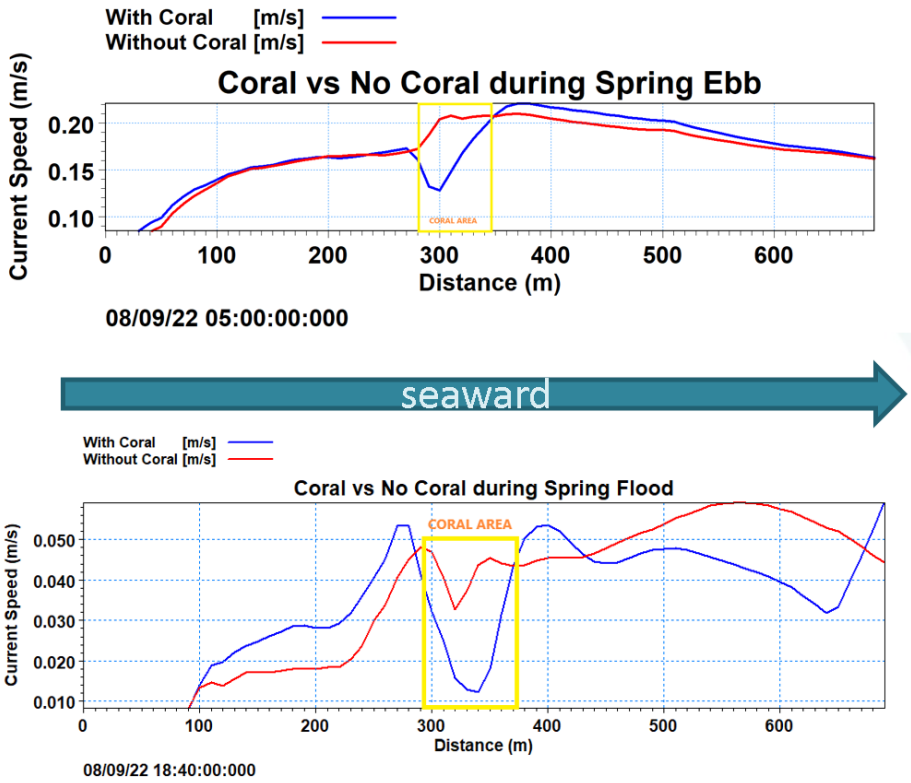
Statistical Maximum of Wave Height coral





pogo Partnership for Observation of the Global Ocean

3. Case sharing



Current Speed during Spring Tides

- The current speed decrease as it flow across the coral reef area.
- During Spring Ebb
  - Current speed (CORAL) decreases by 0.09 m (40.9%), while current speed (NO CORAL) decreases by 0.04 m (19%)
- During Spring Flood
  - Current speed (CORAL) decreases by across the coral area decreases by 0.039 m (78 %) while without coral, the current speed decrease by 0.011 m (25.5%)
- Coral area act as natural absorber/dissipator

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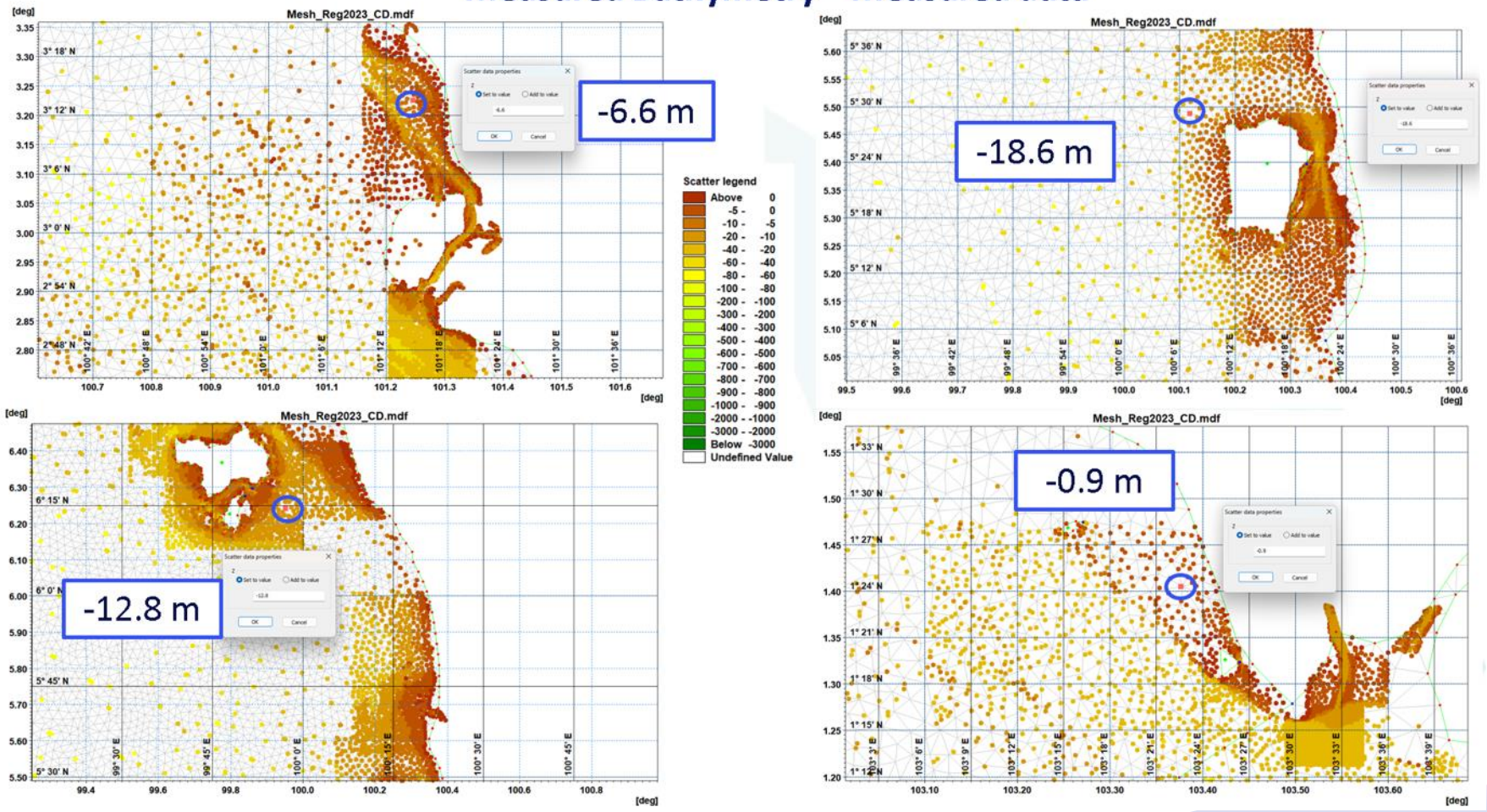
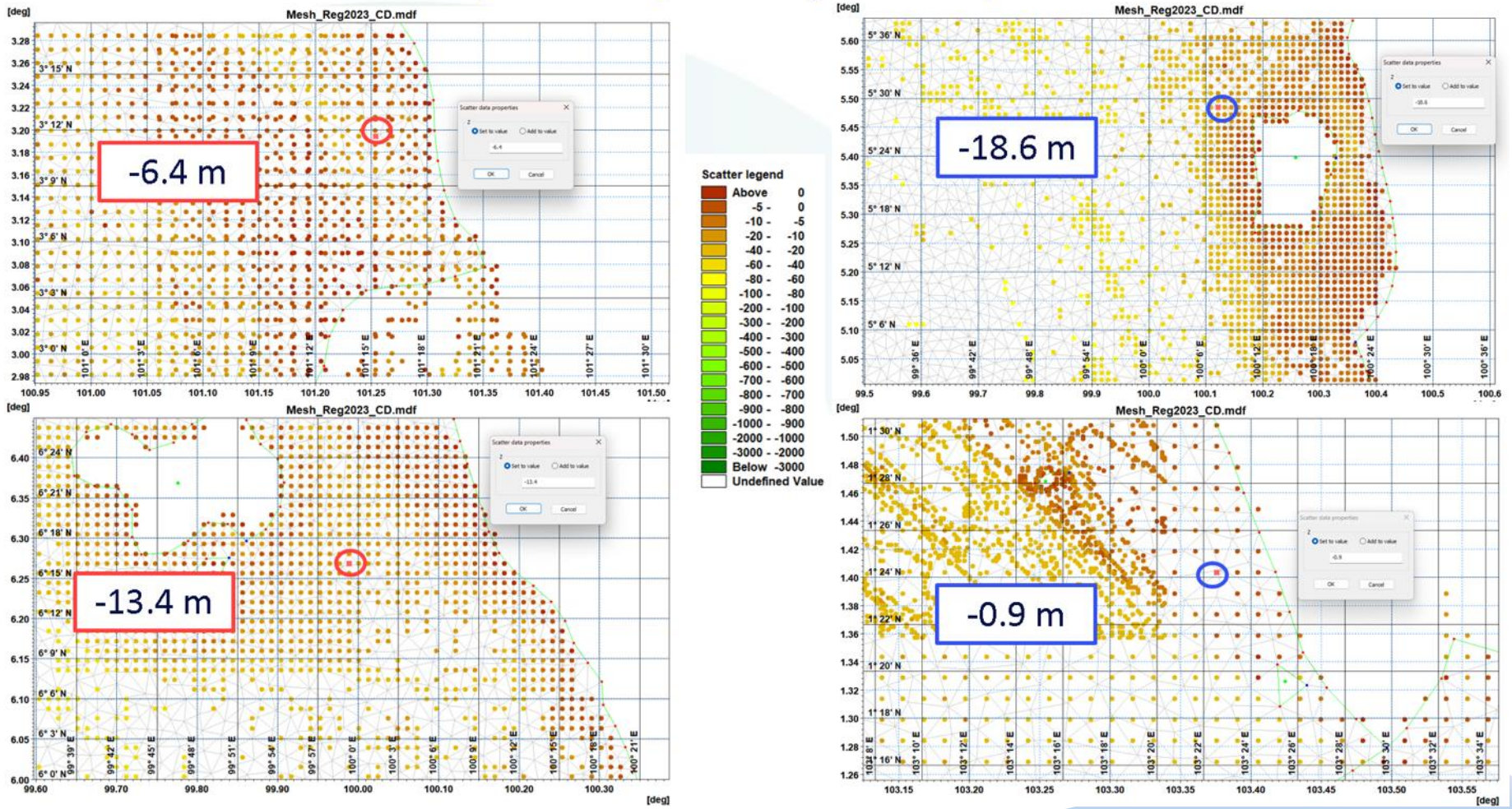
3. Case sharing

Measured Bathymetry – Measured data



3. Case sharing

Open Source / Re-Analysis – C-Map data



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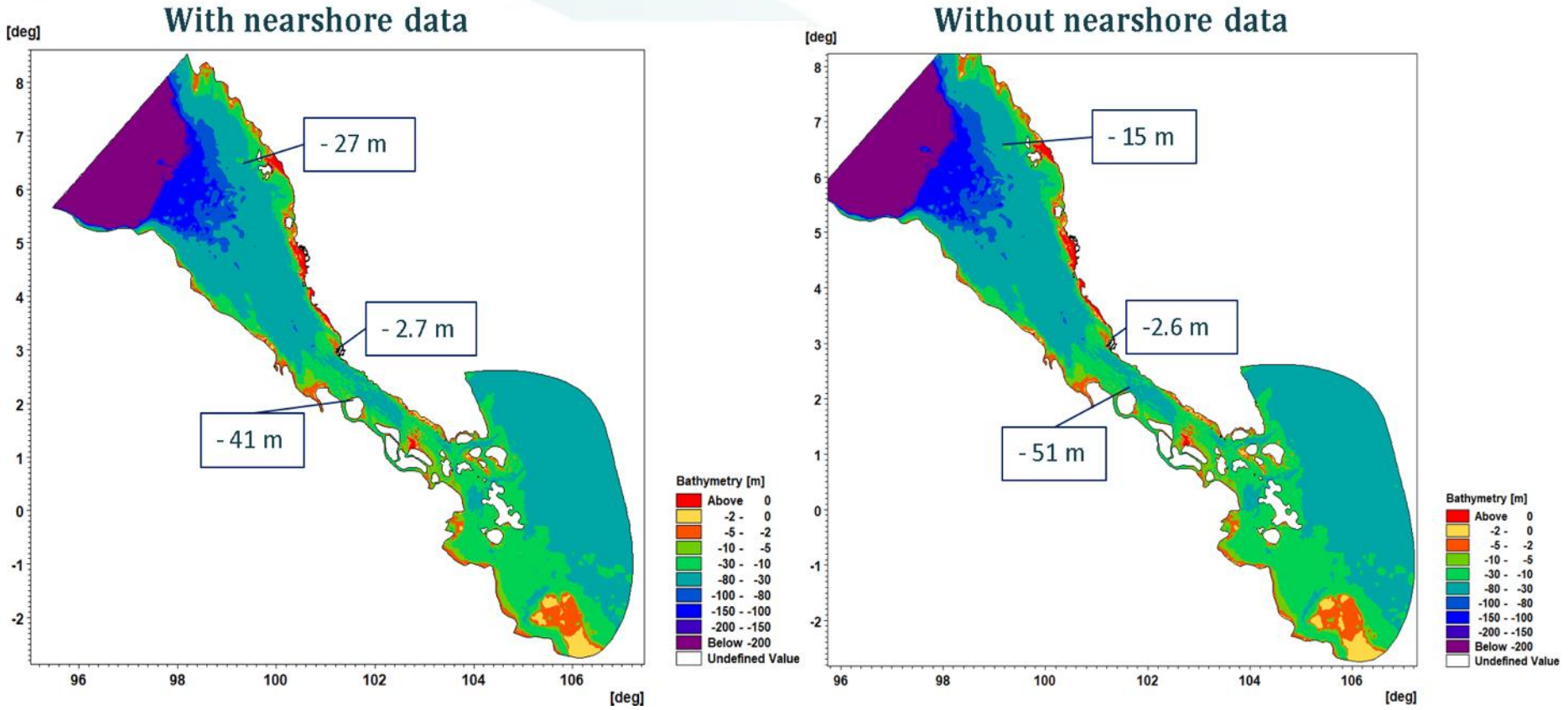


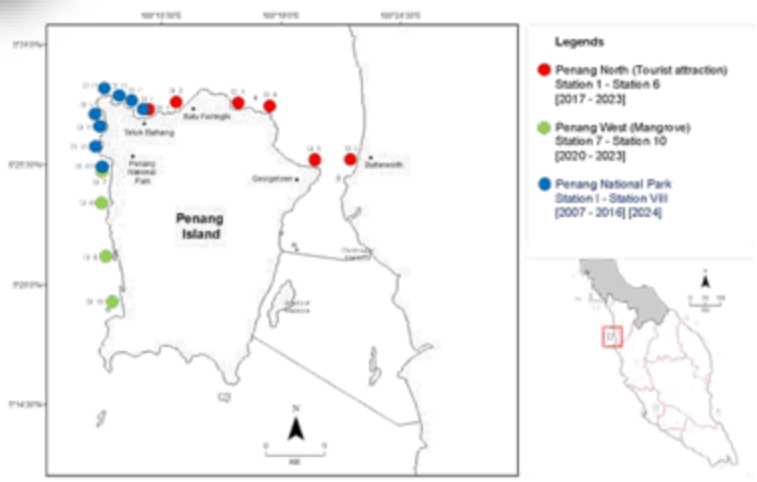
UNIVERSITI SAINS MALAYSIA

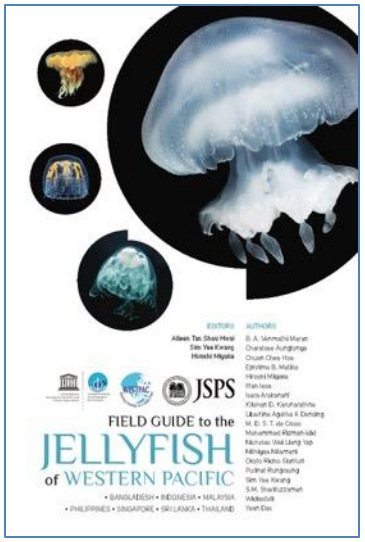
CEMACS
Centre for Marine & Coastal Studies USM

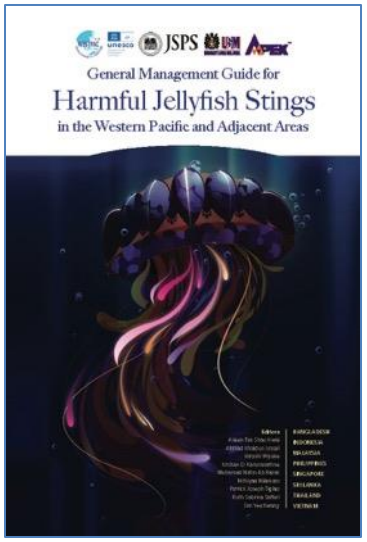
CEMACS location map

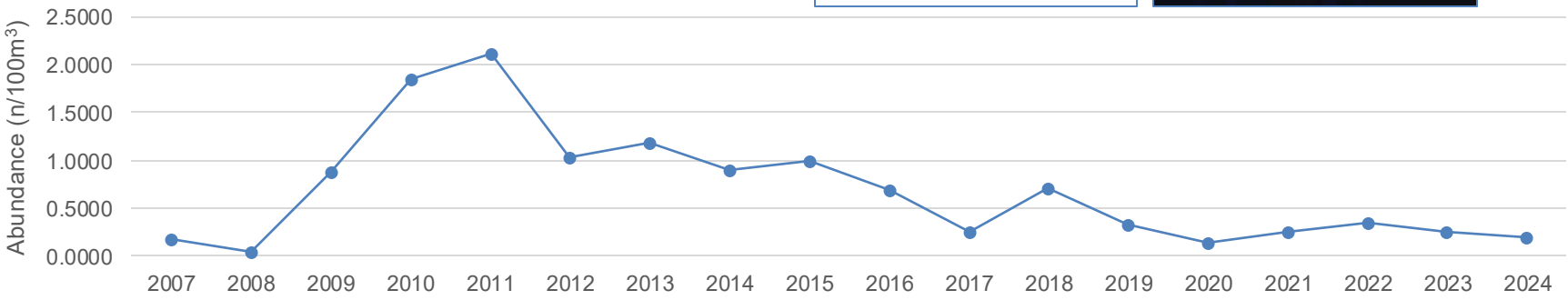
Case sharing

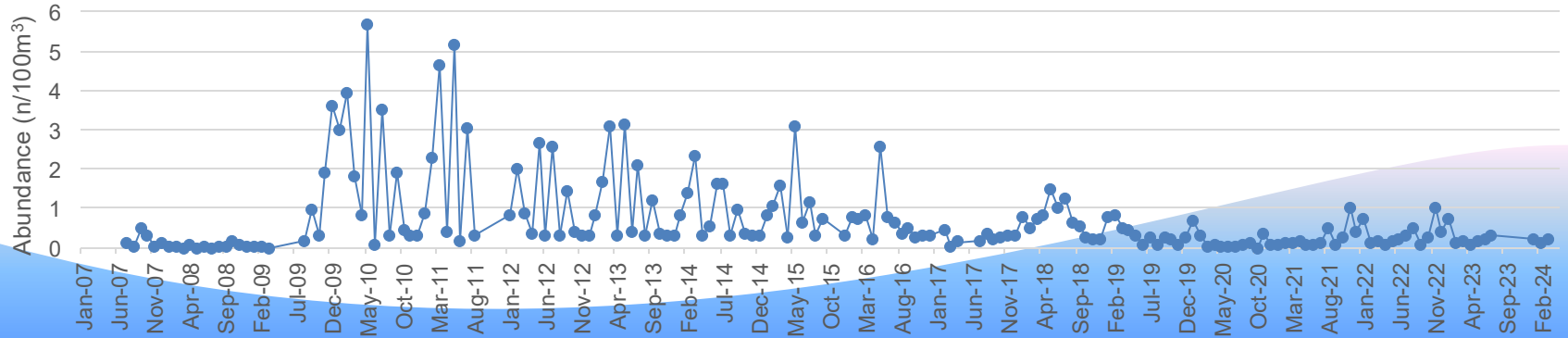
Long-Term Jellyfish Monitoring in Penang Waters (2007 - 2024)





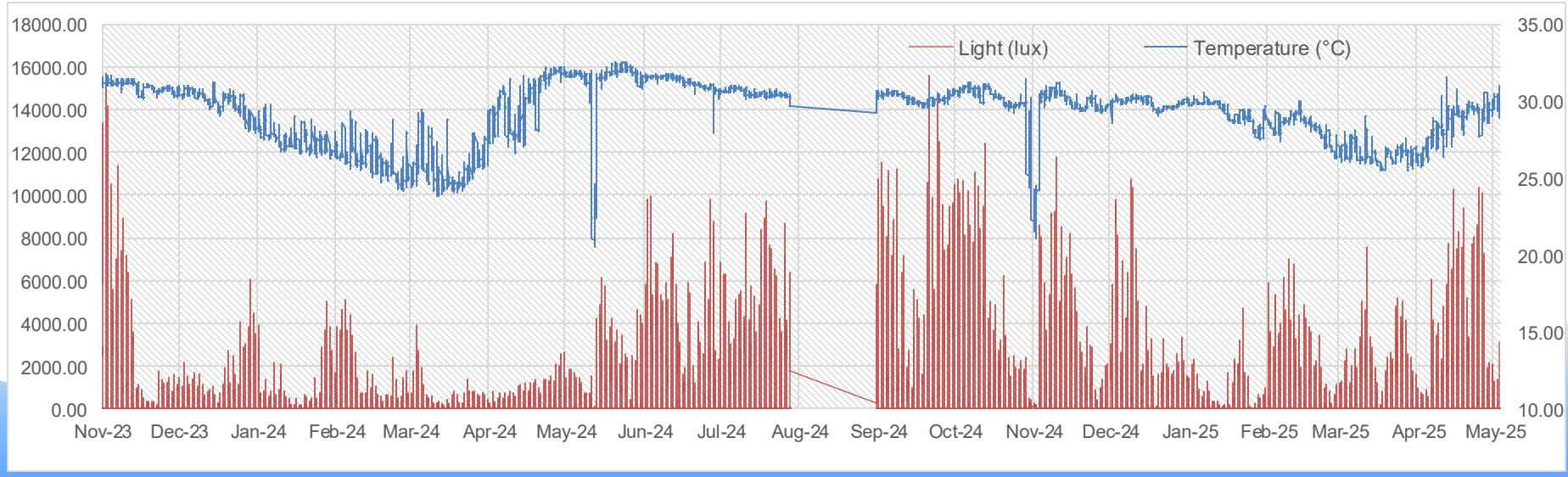






Case sharing

Understanding Marine Biodiversity & Ocean Acidification: ARMS & CAUs Monitoring in the Straits of Malacca and South China Sea (CEMACS, USM)



Case sharing

Malaysia - China Joint Coastal Long-Term Marine Scientific Observation Station (MSOS)

- MYCN MSOS officially launched in May 2025 - a Malaysia-China joint coastal observation initiative.
- Focus on long-term marine monitoring, HABs, & coastal erosion studies.
- Strengthens regional collaboration through joint research, training, & knowledge exchange.

Identifying Gaps, Needs & Collaborative Opportunities

Gaps:

- Fragmented or short-term datasets in nearshore reef & coastal systems
- Limited integration between biological, chemical & physical monitoring
- Insufficient high-resolution forecasting models for marine hazards (e.g., HABs, jellyfish blooms)

Needs:

- Expansion of multi-parameter observation platforms (e.g., sensors, autonomous units)
- Capacity-building in taxonomy, modelling & satellite data interpretation
- More comprehensive coverage in biodiversity hotspots like the South China Sea & northern Borneo

Successful Examples:

- Long-term jellyfish monitoring (2007 - 2024) enhanced early-warning outreach
- ARMS & CAUs deployments with IOC-WESTPAC improved baseline benthic biodiversity records
- MSOS launch with TIO (2025) broadened cross-border technical collaboration

Proposed Path Forward:

- Develop national ocean data portals to integrate research outputs
- Establish routine collaborative field missions & regional calibration workshops
- Co-develop habitat-specific models & risk maps for coastal management

Thank You

National Water Research Institute of Malaysia

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