Preparing, monitoring, and responding to coral bleaching in the Western Indian Ocean Webinar

Additional Questions & Answers | January 16, 2024

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1. **How would you compare NOAA Coral Reef Watch maps with Allan Coral Atlas, which is mostly based on in situ data shared by the collaborators?**

NOAA Coral Reef Watch products (NOAA CRW) and the Allen Coral Reef Atlas (ACA) are complementary. While NOAA focuses on abiotic variables, such as Heat Stress and derived products like Degree Heating Weeks, Temperature anomalies, etc., ACA examines the geomorphology of reefs, providing the location of reef pixels that are useful for NOAA in making precise predictions.

2. **What management or response actions can be taken where significant bleaching is expected?**

In response to significant coral bleaching events, actionable management strategies are essential for mitigating the impacts on coral reefs. Early warning systems, strengthened marine protected areas, and coral restoration initiatives are key components. Water quality management, climate change mitigation efforts, and community engagement play vital roles in reducing stress on coral reefs. Emergency response plans, ongoing research, and international collaboration are crucial for effective conservation. Adaptive management, incorporating flexibility based on real-time monitoring, is essential for addressing evolving challenges. A multidisciplinary and collaborative approach involving governments, local communities, scientists, and NGOs is necessary for the sustainable protection and resilience of coral reef ecosystems.

Ideally, actions that reduce additional stress on reef i.e., controlled fishing, reduced tourism activities, controlled pollution and enforcement of policies are vital for ensuring resilience of bleaching stressed corals.

3. **What are some key indicators and thresholds that can help prioritize response efforts and aid in determining the most effective intervention strategies for different coral species in the affected regions?**

If it is certain that mass bleaching has occurred, focus on reducing local threats. These threats may differ between places, making it important to identify the exact threat in your area. This method will help in the recovery of bleached coral to healthy states if temperatures return to normal. Potential threats may include crown of thorns populations, pollution, over exploitation of resources, etc.

4. **How can one use the coral bleaching monitoring method to monitor coral table nurseries? Will reporting modality be the same?**

We did not cover this in our protocol, but as presented in the webinar, you can use either a high or intermediate level to assess the extent and severity of the bleaching. When reporting observations, we will recommend that you specify that the observation was made from the table nursery. This is a good point to consider in our alert system.

5. **What research projects are there in the region related to response strategies (not monitoring) of coral bleaching?**

To find the most recent and accurate information, I recommend checking websites of organizations such as the Western Indian Ocean Marine Science Association (WIOMSA), the Indian Ocean Commission (IOC), or research institutions in the region. Additionally, reaching out to researchers and experts in coral reef ecology or marine biology in the WIO region may provide insights into ongoing or recent research projects related to coral bleaching response strategies.

6. **When monitoring and collecting coral bleaching metadata, have you studied the relative depth and water chemistry to see if there are better outcomes at deeper, cooler water depths? And how deep does NOAA water surface temperature measure, is this just in the first meter (surface)?**

When collecting coral bleaching observation data or conducting reef surveys, we gather depth profile information as a variable. This data has been utilized to study the variability of depth as a driver in various studies, including the abundance of predatory reef fish in the Western Indian Ocean (WIO) [https://doi.org/10.1016/j.marenvres.2022.105587]. Chemical parameters are complemented using Earth Observation products, including Chlorophyll a and salinity. Regarding NOAA SST products, they measure the skin temperature of water to a few centimeters, usually less than a meter.