Enhancing Coastal and Ocean Observing and Innovation: OAR and IOOS

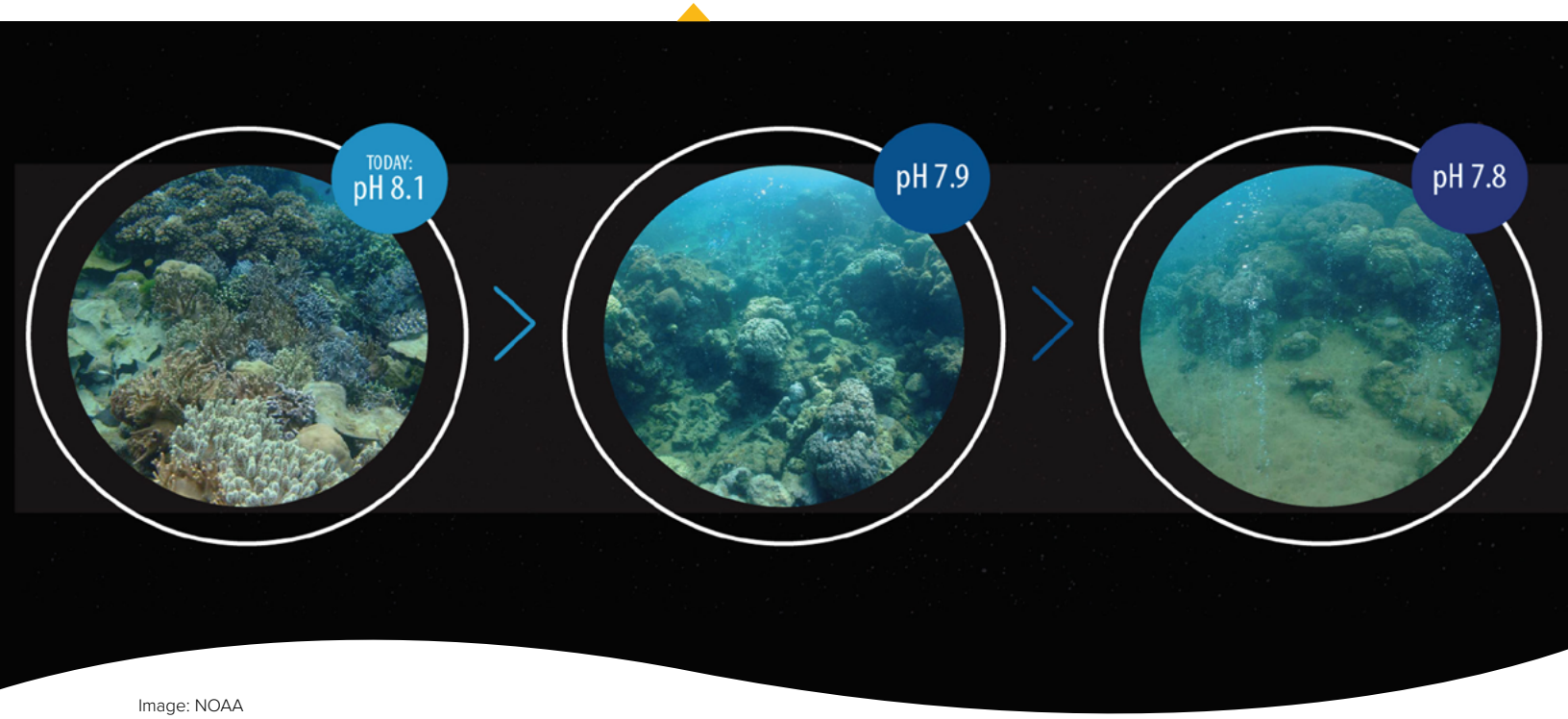

Image: NOAA

Ocean Acidification

OVERVIEW

Ocean Acidification (OA) is resulting in pole-to-pole change in ocean carbonate chemistry that has the potential to impact a range of biological processes and ecosystems. Beyond understanding the chemical impacts of ocean acidification, stakeholders need to understand the biological impacts of an increasingly corrosive environment. Developing an understanding of biological sensitivity is foundational to characterizing species and ecosystem response, as well as adaptive capacity, which are both integral to developing robust ecosystem models and management. Investigating human impacts requires translating environmental change and biological sensitivity knowledge into useful information for studying the implications of OA and specifically the vulnerability of communities and economies to OA. Environmental change research and monitoring is critical to documenting OA and enhancing predictive capabilities. Also needed is the integration of efforts spanning environmental change, biological sensitivity and human dimensions to understand and, ideally, reduce vulnerability to OA at a regional and national level.

OPPORTUNITY

The Integrated Ocean Observing System (IOOS) and OAP (OAR's Ocean Acidification Program) have built a strong community of practice (CoP) which can serve as an example for the other CoPs proposed in this framework. IOOS and the Oceanic and Atmospheric Research (OAR) have collaborated on OA ocean observing, technology development and modeling and community outreach. Representatives from each attend standing meetings of the other on a regular basis.

Image: NOAA's Coral Reef Conservation Program; Source

When either is developing a new notice of funding opportunity, we invite the other to contribute if relevant. The Coastal Acidification Networks which are a critical link with regional scientists, managers and stakeholders are co-led by the OAP in OAR and the IOOS Regional Associations (RA).

NEXT

Priority recommendations:

- Continue to co-develop regional coastal models and high-priority, affordable, easy-to-use observing technologies.
- Continue to coordinate chemical and biological efforts to better fill observational gaps.
- Develop and test technologies to gain competence and confidence in the reliability of parameters on sub-surface measurement, in technical questions, and with carbon variables.
- Develop a comprehensive, global OA dashboard with cross-regional, cross-discpline, oceanographic, and coastal indices based on globally-agreed best practices and standards.
- Develop a Testbed (a platform for conducting rigorous, transparent, and replicable testing of scientific theories, computational tools, and new technologies) Plan to coordinate and facilitate access to testbeds for new instrumentation that utilizes the IOOS regions, where possible.
- Improve understanding of the biological impacts of OA and communicate this information to stakeholders.
- Find more "homes" for model outputs; on some RA platforms now and have seen success bringing these outputs to stakeholders.
- Host an annual meeting between IOOS and OAR to develop and sustain communication processes.
- Develop coral collaborations using autonomous underwater vehicle-based observations.

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