Global Ocean Acidification Observing Network

3rd Science Workshop. 3-6 May 2016. Hobart, AUS.

Workshop Overview

The Global Ocean Acidification Observing Network (GOA-ON) is guiding the development of an integrated system for the detection and attribution of ocean acidification (OA) and ecosystem response. Since 2012, GOA-ON has engaged more than 150 participants from 31 nations to formulate its Requirements and Governance Plan. GOA-ON has also served to focus funding bodies and international research programs to integrate a shared vision that extends from the coastal to open ocean domains. In May 2016, the 3rd GOA-ON Science Workshop brought together 130 scientists from 40 nations to build a stronger, more inclusive network. For more information, please visit http://www.goa-on.org/.

Three high level goals for GOA-ON

1. Improve our understanding of OA conditions
2. Improve our understanding of ecosystem response to OA
3. Acquire and exchange data and knowledge required to optimize forecasts for OA and its impacts

3rd GOA-ON Science Workshop Goals:

- Update status and linkages to other global programs
- Build regional hubs to facilitate capacity building
- Update requirements for biological response measurements
- Discuss observational challenges and opportunities, and connections with model forecasting
- Discuss advances in observing technologies, data management, and data products
- Gain input on data product and information needs
- Gain input on regional implementation needs

Outcomes

Pier2Peer Mentorship Program

Pier2Peer, a new international capacity building program, was launched during the 3rd GOA-ON Science Workshop. Pier2Peer is a science mentorship program which matches senior scientists with OA expertise with new GOA-ON members to support the development of OA monitoring in emerging regions. With 57 mentoring pairs already formed, Pier2Peer will help foster a sense of community and inclusion within GOA-ON membership and provide new members with training and professional development opportunities in the future.

Network Expansion

As a global organization, GOA-ON relies on international collaboration to share data and to understand the global ecological impacts of ocean acidification. Since the 3rd Workshop, GOA-ON has expanded its membership to 354 members representing 66 nations, a marked accomplishment toward achieving global OA observing capacity. Since 2014, country representation has more than doubled and the Network now includes 35 additional nations, many within developing regions and with limited OA observing assets.

The GOA-ON 3rd Science Workshop. 3-6 May 2016.

Emerging Themes

Emerging Theme 1: Scientific questions can guide international partnerships.

GOA-ON has stimulated the development of international partnerships across diverse ecosystems, environments and impacts. Examples of unifying science issues include understanding OA processes in upwelling regions, coral-reef systems, and coastal habitats and in the context of multiple stressors.

Emerging Theme 2: OA must be better communicated to policymakers.

Sound policy to identify, manage, and adapt to OA requires improved science-communication at the local, regional, national, and international level. GOA-ON can support communication of OA science through the production and dissemination of educational materials to target policymakers, students, and the public. Communications materials should be multilingual and easily available on the GOA-ON website (http://www.goa-on.org).

Emerging Theme 3: Consistent and comparable biological measurements are needed.

The organism-environment relationship is complex and is modulated by local adaptation, evolution, ecological interactions, and other factors. Understanding OA effects on organisms will require creative data collection, analysis, and conceptualization. A newly formed GOA-ON Biological Working Group is working to develop theoretical frameworks and research strategies to better understand these complex relationships as well as to identify essential biological observing parameters for monitoring *in situ* effects of OA on marine organisms.

Emerging Theme 4: Regional networks can help to implement the GOA-ON observing strategy.

GOA-ON must be implemented at global through local scales to ensure that regional issues are addressed. The coordination of OA observing efforts within "regional hubs" serves to define regional science and policy needs for GOA-ON data and products, as well as enhancing global coverage.

Pteropod shells have been shown to degrade when exposed to reduced seawater pH. Photo: David Liittschwager/National Geographic Stock.

Emerging Theme 5: Capacity for OA observing is still lacking in many important regions.

GOA-ON is making great progress toward global OA observing capacity, but more growth is needed. Many developing regions lack baseline data on biogeochemical and ecosystem health. Expanding representation in the Arctic, Caribbean, Indian Ocean, South Atlantic, and Southern Ocean can help fill observing gaps.

Emerging Theme 6: The GOA-ON needs an Implementation Strategy and Secretariat.

The need for a coordinated implementation plan to document ocean acidification and its ecological impacts is now widely recognized. A GOA-ON Implementation Strategy and Secretariat will help to ensure that GOA-ON interests are represented in international policymaking and integrated at the local, regional, national, and international levels. The GOA-ON Executive Council is developing an Implementation Strategy to define steps needed to achieve global OA observing and is working to promote the establishment of a GOA-ON Secretariat to help implement and coordinate observing efforts.

The GOA-ON 3rd Science Workshop. 3-6 May 2016.

Regional Highlights

Several regional networks for OA observing were represented at the workshop. These "regional hubs" help to coordinate OA observing efforts and to communicate research findings and gaps to the GOA-ON Executive Council, policymakers, and the public. Regional networks foster capacity and community building and will ensure that local efforts are represented in the GOA-ON.

IOC-WESTPAC Ocean Acidification Group

The Intergovernmental Oceanographic Commission Sub-Commission for the Western Pacific (WESTPAC) established a regional OA research and monitoring network in the Western Pacific and its adjacent regions. The WESTPAC regional program aims to monitor the impacts of OA on coral reef ecosystems through a series of regional trainings and workshops, selection of pilot areas, and to transfer knowledge and technology among experts, and institutions within and outside of the region.

Latin-American Ocean Acidification (LAOCA) Network

The LAOCA Network coordinates OA-focused research efforts that are being developed in the Latin American region and generates information for decision-makers. The LAOCA mission is to share and make available data and protocols, including all information on ocean chemistry, two years after collecting the data. LAOCA is also holding capacity development trainings and regional science conferences for network members.

Ocean Acidification - Africa Network

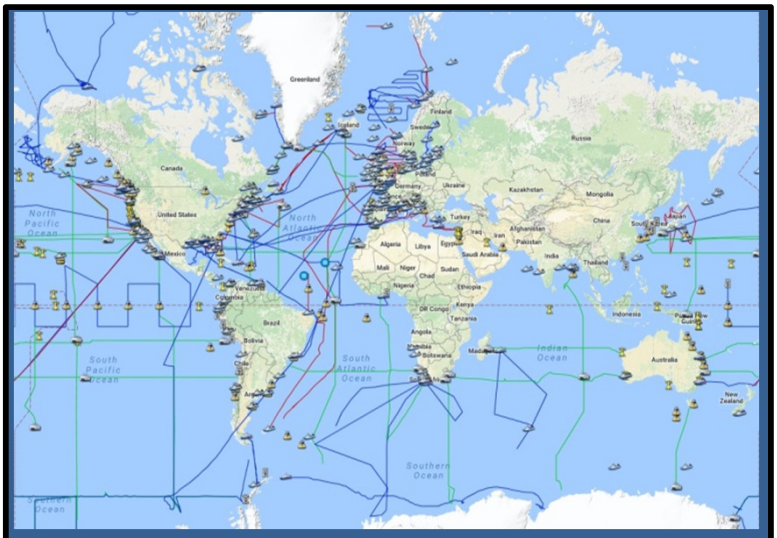
All scientists conducting or interested in conducting OA monitoring and research in Africa are encouraged to join the newly formed OA Africa Network. The Network aims to provide a platform for sharing ideas, designing collaborative research programs, troubleshooting challenges, and facilitating international collaboration and support.

Building Global OA Observing Capacity

GOA-ON is working to achieve global coverage by creating communities of Pier2Peer teams, building capacity, and training members. GOA-ON is committed to providing resources to enhance monitoring, develop capacity-building workshops, facilitate connections to global efforts through the Pier2Peer Network, and provide ongoing capacity building support to scientists for monitoring and data sharing.

The GOA-ON 3rd Science Workshop. 3-6 May 2016.

The New GOA-ON Data Portal



Launched in June 2016, this user-interactive GOA-ON portal features: global OA data measurements, such as pH, pCO_2; derived fields, such as aragonite saturation state; world-wide asset inventory and metadata data; and will feature data synthesis products. The portal was made possible through the vision of GOA-ON and support from the National Oceanic and Atmospheric Administration, the Integrated Ocean Observing System, and the University of Washington. The GOA-ON data portal can be found at: http://portal.goa-on.org.

The Future of GOA-ON

New GOA-ON initiatives spurred through collaboration with the Ocean Acidification-International Coordination Centre, U.S. Department of State, The Ocean Foundation, and Pier2Peer include:

- Development of the requirements for a "GOA-ON Starter Kit" for those interested in participating in OA observing.
- A Capacity Evaluation distributed globally to establish capacity-building needs and designate "Centers of Excellence."
- Pier2Peer collaborations involving pilot observing systems in upwelling regions of West Africa and Latin America.
- Capacity-building workshops in Mauritius, the Pacific Islands, and the Caribbean/Latin America.
- The GOA-ON Implementation Strategy.
- Key Biological Observing Parameters developed by the GOA-ON Biological Working Group.

Workshop organizing committee

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The Global Ocean Acidification Observing Network (GOA-ON) has expanded its membership to 354 members representing 66 nations, demonstrating marked progress toward achieving global OA observing capacity.

For more information or to become an official member visit http://www.goa-on.org or email info@goa-on.org.