

# Three high-level GOA-ON goals

## 1. Improve our understanding of global ocean acidification conditions

- Determine the status of and spatial and temporal patterns in carbon chemistry, assessing the generality of response to OA;
- Document and evaluate variation in carbon chemistry to infer mechanisms (including biological mechanisms) driving OA;
- Quantify rates of change, trends, and identify areas of heightened vulnerability or resilience.

## 2. Improve our understanding of ecosystem response to ocean acidification

- Track biological responses to OA, together with physical and chemical measurements, relevant experimental studies and theoretical frameworks;
- Quantify rates of change and identify areas as well as species of heightened vulnerability or resilience.

## 3. Acquire and exchange data and knowledge necessary to optimize modeling of ocean acidification and its impacts

- Provide spatially and temporally-resolved chemical and biological data to be used in developing models for societally-relevant analyses and projections.

# Regional hubs

**Ocean Acidification** is a "global condition with local effects." The formation of regional hubs under the framework of GOA-ON has facilitated coordination at a regional level, enabling collaboration and research that is better tailored to smaller geographic areas. As of 2018, **six regional hubs** are operational: the Latin American Ocean and Coastal Acidification network (LAOCA); the OA Programme of the IOC Sub-commission for the Western Pacific (WESTPAC); OA-Africa; the North American Hub; the Pacific Islands and Territories Ocean Acidification network (PI-TOA); and the Northeast Atlantic Hub. For more information visit the **GOA-ON website** and look for the **Regional Hubs** tab.

GOA-ON in 2018



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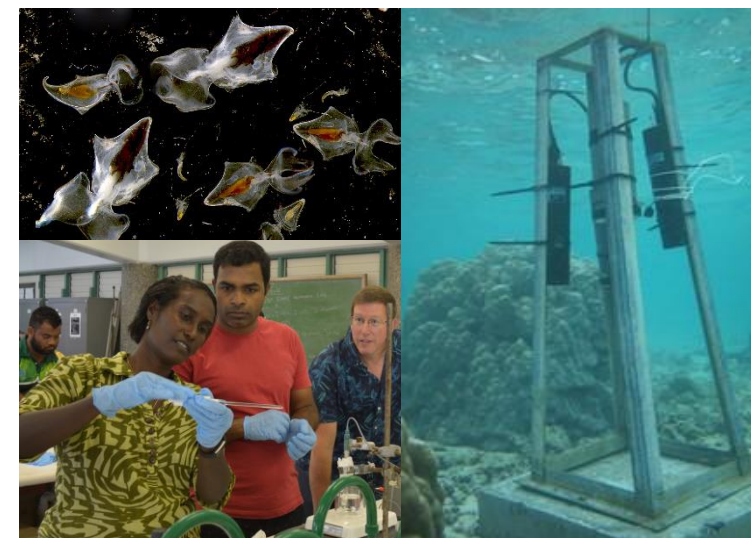
**Dr Bronte Tilbrook** (GOA-ON co-chair)

CSIRO Oceans and Atmosphere, Australia [Bronte.Tilbrook@csiro.au](mailto:Bronte.Tilbrook@csiro.au)

**Dr Libby Jewett** (GOA-ON co-chair)

US National Oceanic and Atmospheric Administration [libby.jewett@noaa.gov](mailto:libby.jewett@noaa.gov)

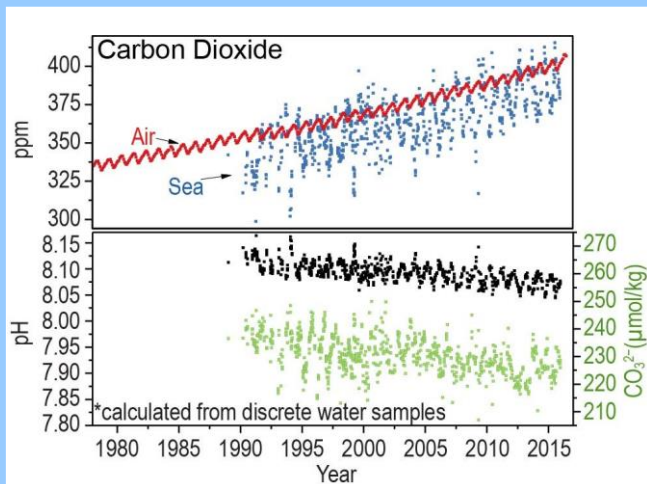
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## What is Ocean Acidification ?

Ocean acidification is the result of the uptake of about one third of human-generated CO<sub>2</sub> emissions by the oceans, leading to changes in seawater chemistry. This «other CO<sub>2</sub> problem» has emerged as a major environmental problem of international concern. Ocean acidification (OA) is already detectable. Regular measurements during the past 25 years at three different stations in the Pacific and the Atlantic Oceans show a clear trend in decreasing oceanic pH.



OA in the surface ocean near Mauna Loa Observatory in Hawaii, USA.  
Adapted from Dore et al. 2009. PNAS 106:12235-12240.

## Capacity Building

Building capacity and strengthening infrastructure are essential in expanding the global coverage of ocean acidification observations and the participation in this scientific undertaking. GOA-ON has two approaches to capacity building: directly, by organising training workshops in collaboration with partners, and through the [Pier2Peer](#) scientific mentorship program. Visit the website to learn more.



## Towards a Global Ocean Acidification Observing Network

### Legend

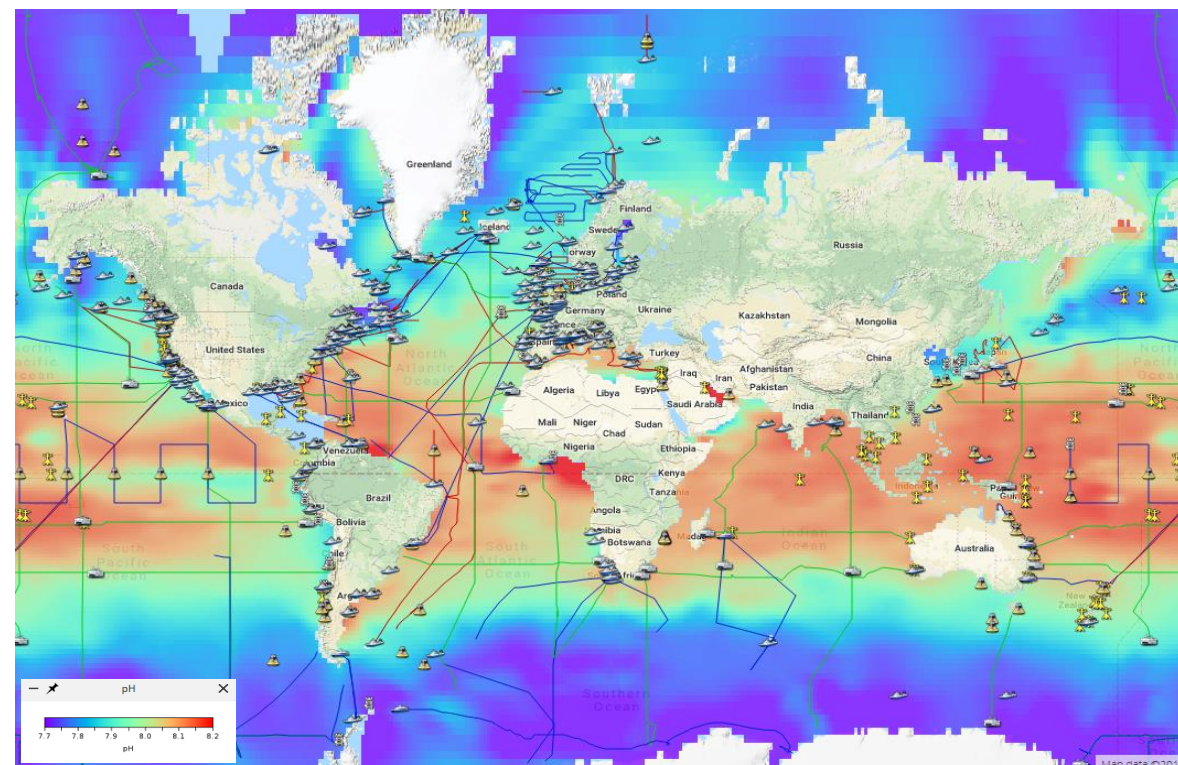
- Fixed Ocean Time Series
- Mooring
- Other Platform
- Repeat Hydrography
- Ship-based Time Series
- Volunteer Observing Ship

### OA Variables

- ☐ Alkalinity 194
- ☐ CO<sub>2</sub> Air 57
- ☐ CO<sub>2</sub> Water 196
- ☐ Omega 2
- ☐ pH 245
- ☐ TCO<sub>2</sub> 166

Explore the portal:

[portal.goa-on.org](http://portal.goa-on.org)



## Ocean Acidification Data Portal

The GOA-ON data portal maps ocean acidification observing assets submitted by GOA-ON members. It provides access and visualization to ocean acidification data and data synthesis products collected around the world from a wide range of sources, including moorings, research cruises, and fixed time series stations. Shown above: global sea surface pH from the Global Ocean Data Analysis Project (GLODAP), as well as observing platforms, including ship based systems. Some platforms display real-time data, and many platforms provide links to accessible data and metadata.



GOA-ON supports the Sustainable Development Goal 14, Life below water, and has committed to expand the spatial and temporal coverage of ocean acidification observations around the world (Voluntary Commitment [#OceanAction16542](#)) in support of the Target 14.3 (“minimize and address the impacts of ocean acidification, including through scientific cooperation at all levels”). The related indicator asks for “average marine acidity (pH) measured at an agreed suite of representative sampling stations”. The implementation and dissemination of the indicator methodology (IOC-UNESCO custodian agency), which provides guidance on how to carry out measurements following the best practices established by experts in the ocean acidification community and explains how to report the collected information, is at the core of GOA-ON and its activities.

