

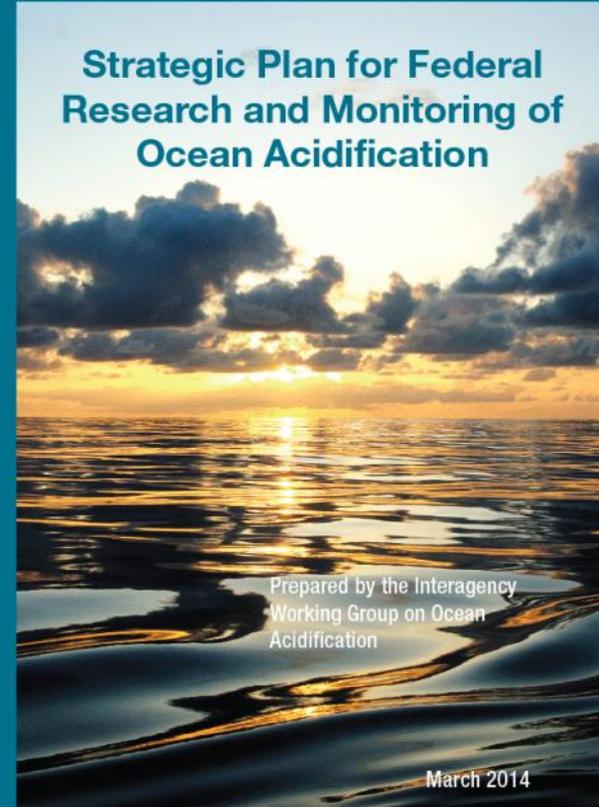


## Interagency Working Group on Ocean Acidification

Libby Jewett (NOAA, Chair)  
David Garrison (NSF, Vice Chair)  
Paula Bontempi (NASA, Vice Chair)

Presented by:  
Dwight Gledhill (NOAA Ocean Acidification Program)

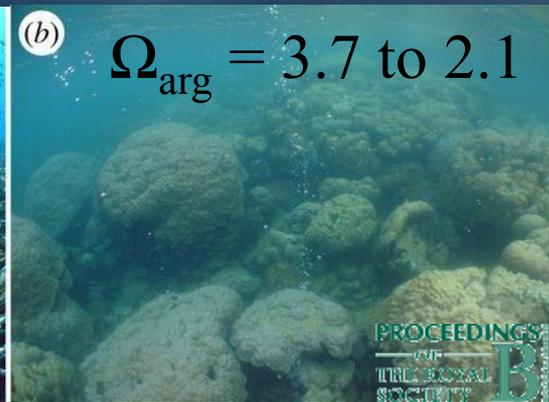
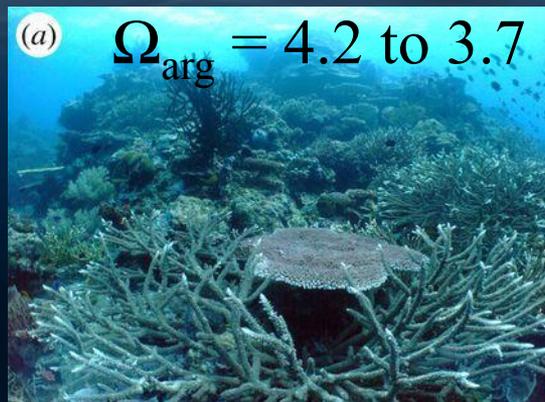
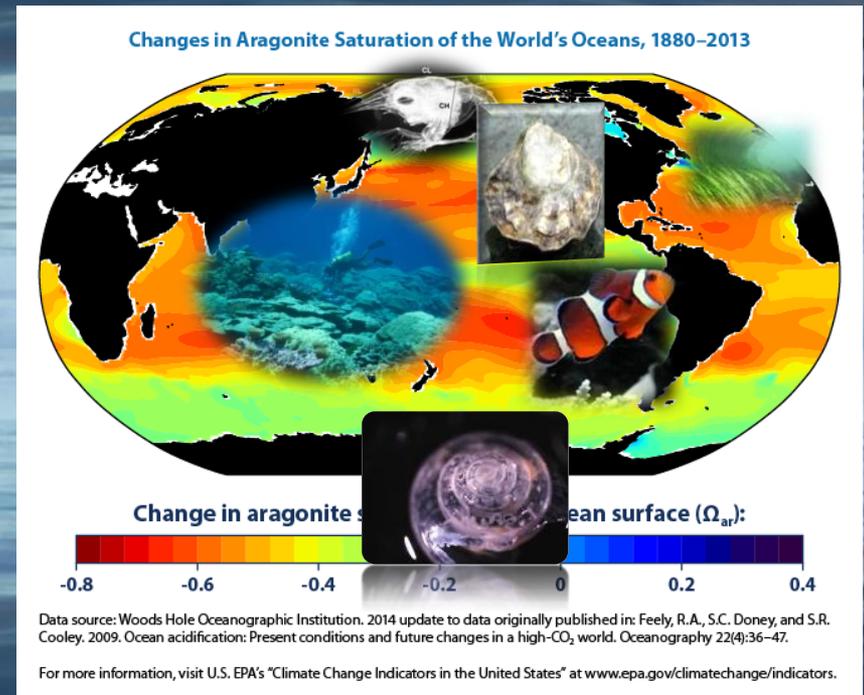
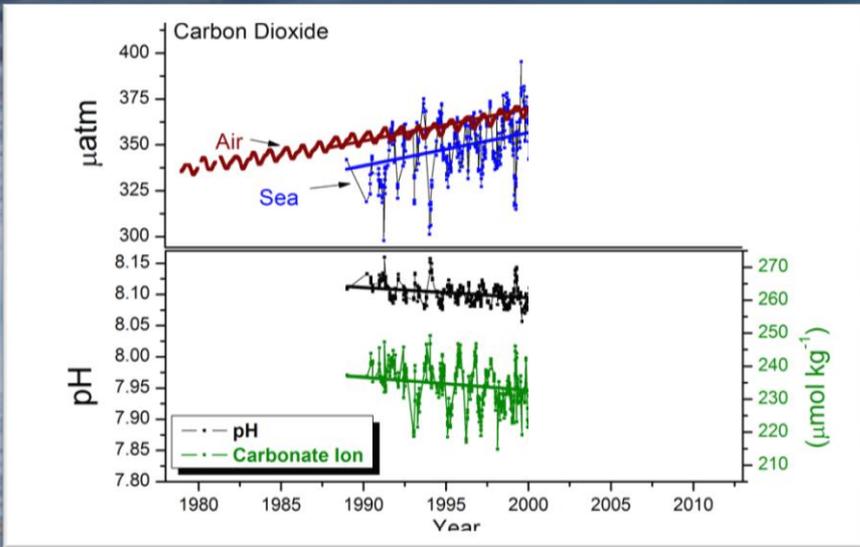
33<sup>rd</sup> U.S. Coral Reef Task Force Meeting  
February 19, 2015, Washington, D.C.



Interagency Working  
Group on Ocean Acidification

<http://www.oceanacidification.noaa.gov/>

[gov/IWGOA.aspx](http://www.oceanacidification.noaa.gov/IWGOA.aspx)

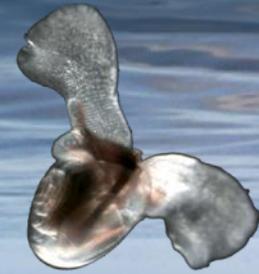


Fabricius K E et al. Proc. R. Soc. B 2014;281:20132479

Interagency Working Group on Ocean Acidification

<http://oceanacidification.noaa.gov/IWG/OA.aspx>

# Federal Ocean Acidification Research and Monitoring (FOARAM) Act of 2009



Interagency Working Group on Ocean Acidification

Home About Agency Activities Documents Links Research Strategy Contact

**IWGOA**  
The Interagency Working Group on Ocean Acidification (IWGOA) includes representatives from the National Oceanic and Atmospheric Administration (NOAA), National Science Foundation (NSF), Bureau of Ocean Energy Management, Regulation, and Enforcement (BOEM), Department of State (DOS), Environmental Protection Agency (EPA), National Aeronautics and Space Administration (NASA), U.S. Fish and Wildlife Service (USFWS), U.S. Geological Survey (USGS), and the U.S. Navy. NOAA chairs the group.

**PARTICIPATING AGENCIES**

**First Federal Ocean Acidification Strategic Plan Released**  
Interagency Working Group on Ocean Acidification outlines multi-disciplinary research on impacts

The Ocean Acidification Strategic Research Plan will guide research and monitoring investments that will improve our understanding of ocean acidification, its potential impacts on marine species and ecosystems, and adaptation and mitigation strategies. The plan was developed by the Interagency Working Group on Ocean Acidification as part of the Federal Ocean Acidification Research and Monitoring Act of 2009 (FOARAM Act).

Some highlights of the plan's research goals include:

- Improve existing observing systems that monitor chemical and biological effects of ocean acidification and document trends.
- Undertake laboratory and field research to examine the physiological, behavioral, and evolutionary adaptive capacities of selected species and complexes of species.
- Develop comprehensive models to predict changes in the ocean carbon cycle and effects on marine ecosystems and organisms.
- Develop vulnerability assessments for various CO<sub>2</sub> emissions scenarios.
- Assess the cultural, subsistence, and economic effects of ocean acidification.

**Strategic Plan for Federal Research and Monitoring of Ocean Acidification**

**Recent OA Documents**  
Strategic Plan for Federal Research and Monitoring of Ocean Acidification  
Ocean Research and Resources Advisory Panel Recommendations to the IWGOA  
NOAA Ocean and Great Lakes Acidification Research Plan

Office of Oceanic and Atmospheric Research NOAA Department of Commerce Disclaimer Privacy Policy Content Advertisements Freedom of Information Act (FOIA) Information Quality



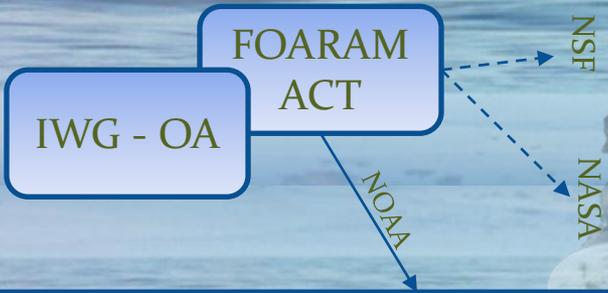
Established by Subcommittee on Ocean Science & Technology (SOST)  
October 2009

Interagency Working Group on Ocean Acidification

<http://oceanacidification.noaa.gov/IWGOA.aspx>

# Federal Ocean Acidification Research and Monitoring (FOARAM) Act of 2009

NOAA NSF  
USGS NASA  
FWS EPA  
BOEM DOS



Defines ocean acidification as “the decrease in pH of the Earth’s oceans and changes in ocean chemistry caused by chemical inputs from the atmosphere, including carbon dioxide.”

NOAA Ocean Acidification Program (SEC. 12406)

The NOAA Ocean Acidification Program (OAP) was established under SEC. 12406. of the Federal Ocean Acidification and Monitoring Act (FOARAM) to oversee and coordinate research, monitoring, and other activities consistent with the strategic research and implementation plan developed by the interagency working group on ocean acidification.



Interagency Working Group on Ocean Acidification

# Strategic Plan for Federal Research and Monitoring of Ocean Acidification

Prepared by the Interagency Working Group on Ocean Acidification

March 2014

March 26, 2014

## Vision

“A nation, globally engaged and guided by science, sustaining healthy marine and coastal ecosystems, communities, and economies through informed response to ocean acidification”

Strategic research plan to guide:

“Federal research and monitoring on ocean acidification that will provide for an assessment of the impacts of ocean acidification on marine organisms and marine ecosystems and the development of adaptation and mitigation strategies to conserve marine organisms and marine ecosystems.”

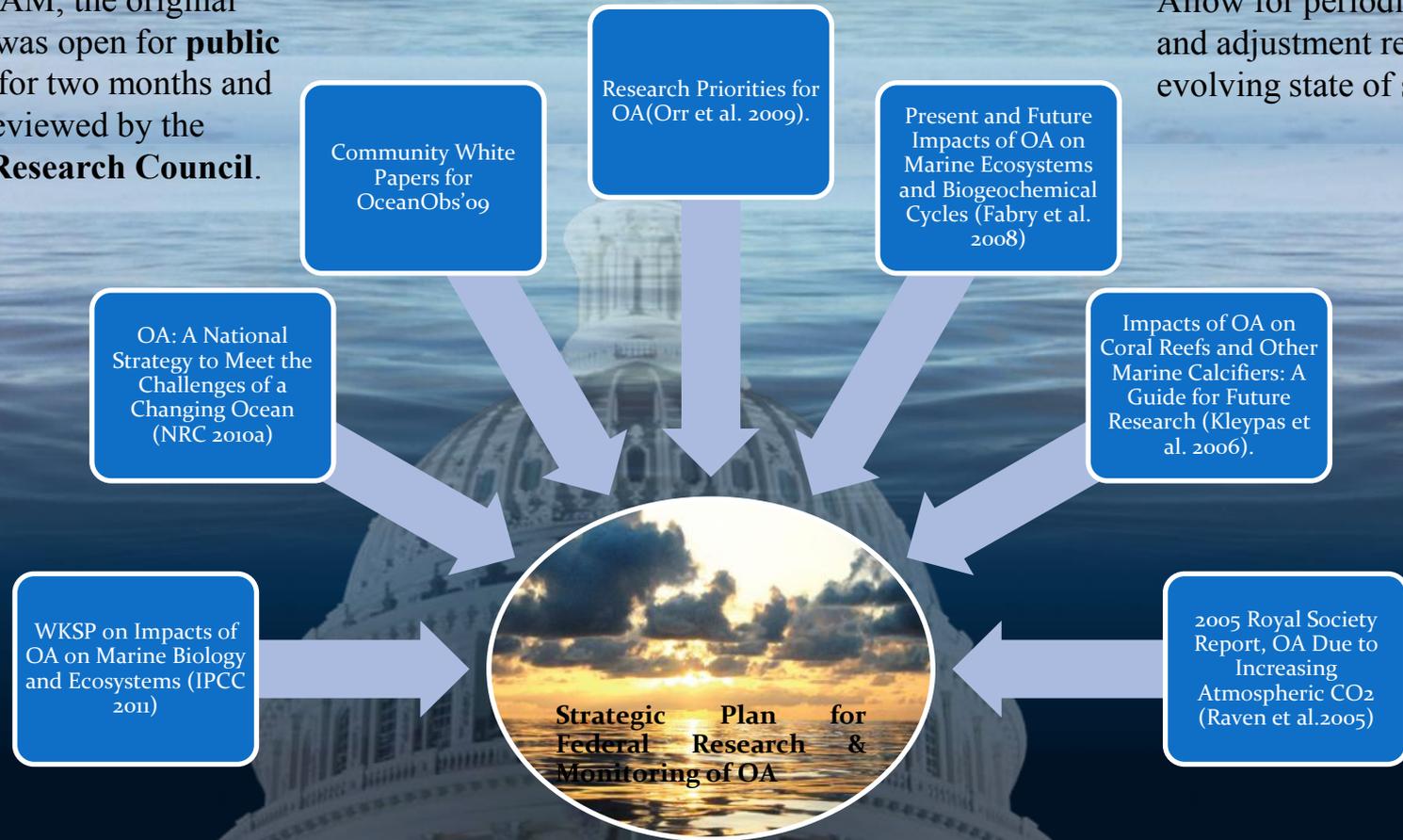
Coastal and estuarine acidification, to the extent that the cause of the acidification can be traced back to anthropogenic atmospheric inputs to the ocean, are assumed to be covered

Interagency Working Group on Ocean Acidification

# Strategic Plan for Federal Research & Monitoring of Ocean Acidification (2014)

Per FOARAM, the original draft plan was open for **public comment** for two months and also was reviewed by the **National Research Council**.

Allow for periodic reevaluation and adjustment response to an evolving state of science.



Interagency Working Group on Ocean Acidification

# Strategic Plan for Federal Research & Monitoring of Ocean Acidification (2014)

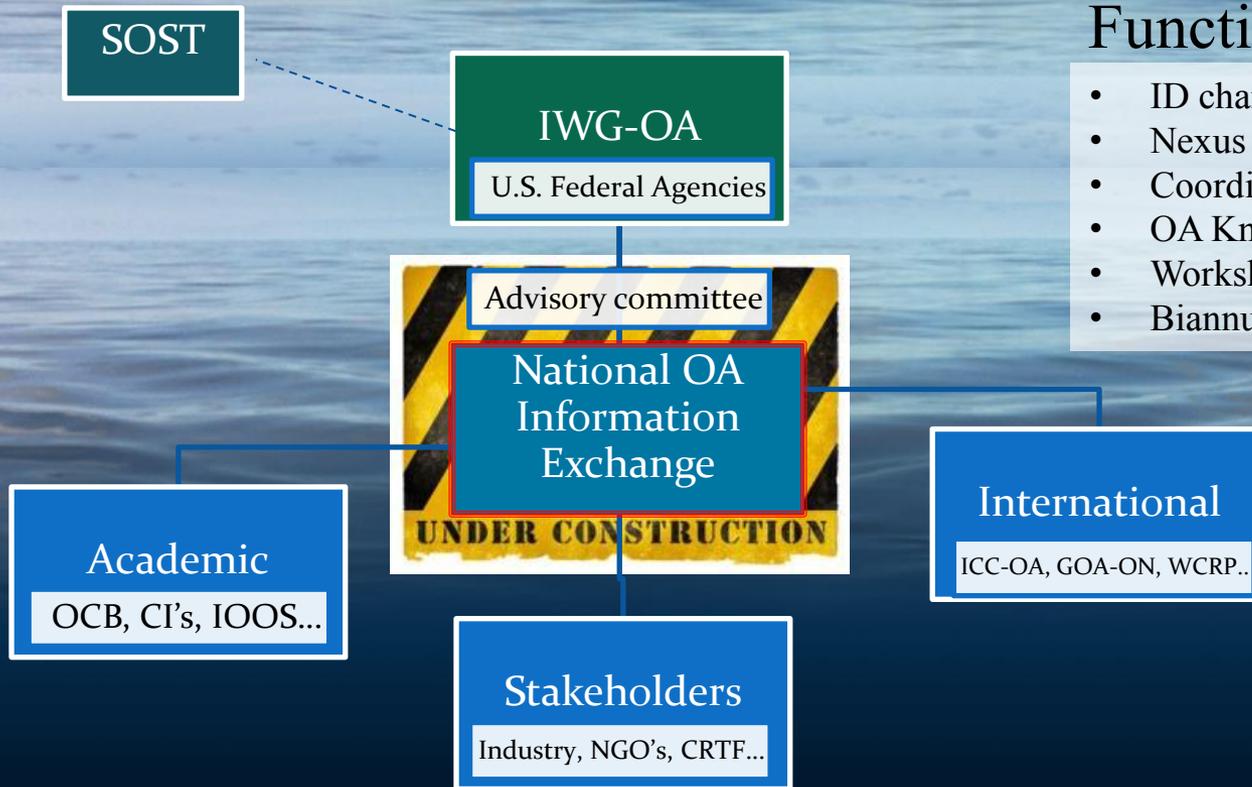


## Highlighted Goals

- Monitoring trends and alert conditions
- Research marine life response
- Predictive modeling
- Ensure data quality
- Link experimental to field
- Vulnerability assessments
- Advance technology
- Devise adaptation strategies
- Foster OA literacy
- Implement engagement strategies
- Translate science for policy
- Ensure integrated and managed data

Interagency Working Group on Ocean Acidification

# Strategic Plan for Federal Research & Monitoring of Ocean Acidification (2014)



## Functions

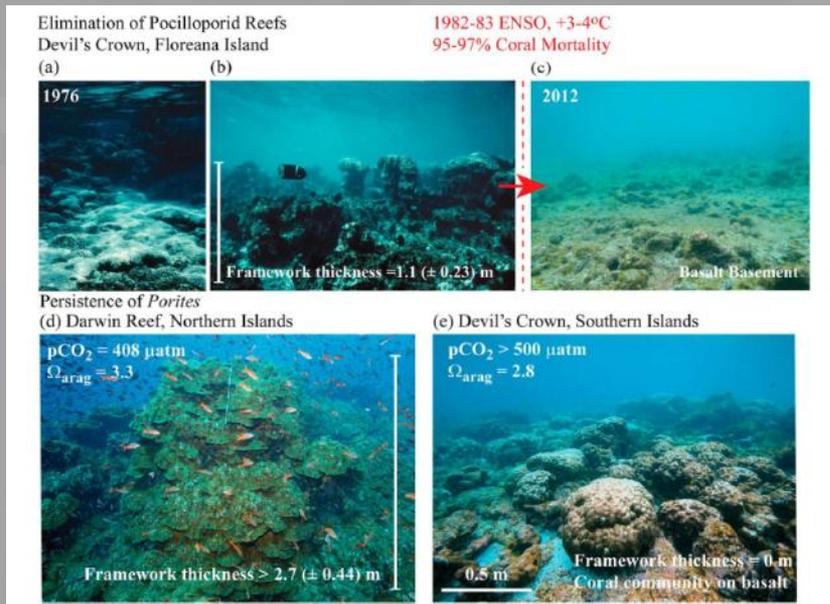
- ID changing community needs
- Nexus for state, local, private partners
- Coordinate with international activities
- OA Knowledge Source
- Workshop and advisory group planning
- Biannual input to IWG-OA

# Theme 1. Research to Understand Responses to Ocean Acidification

## Species-specific



- Adaptive capacity?
- Specific attribution?
- Balance between “expanding list” and discerning physiological basis.
- The issue of time...
- Earth History as a natural experiment



Manzello, D. P., I. C. Enochs, A. Bruckner, P. G. Renaud, G. Kolodziej, D. A. Budd, R. Carlton, and P. W. Glynn (2014), Galápagos coral reef persistence after ENSO warming across an acidification gradient, *Geophys. Res. Lett.*, 41, 9001–9008, doi:10.1002/2014GL062501.



# Theme 2. Monitoring of Ocean Chemistry and Biological Impacts



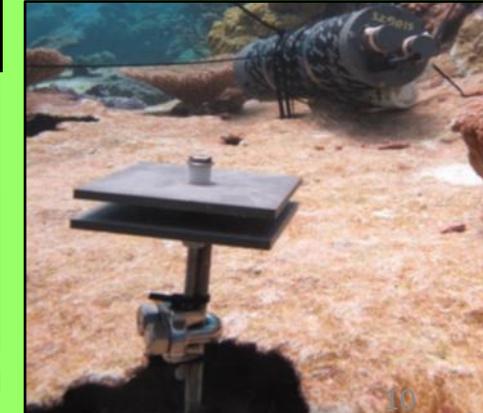
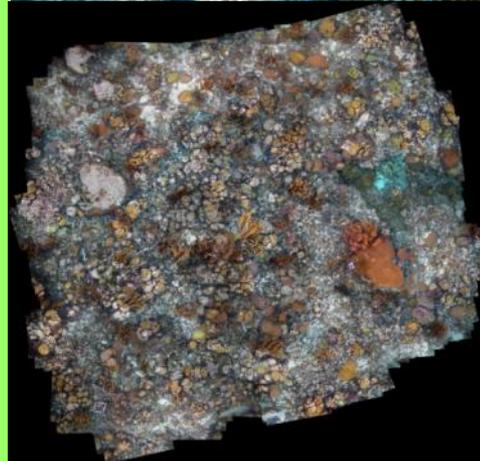
**3 hourly, fixed**



**bi-weekly, fixed**



**Tri-annual, fixed**



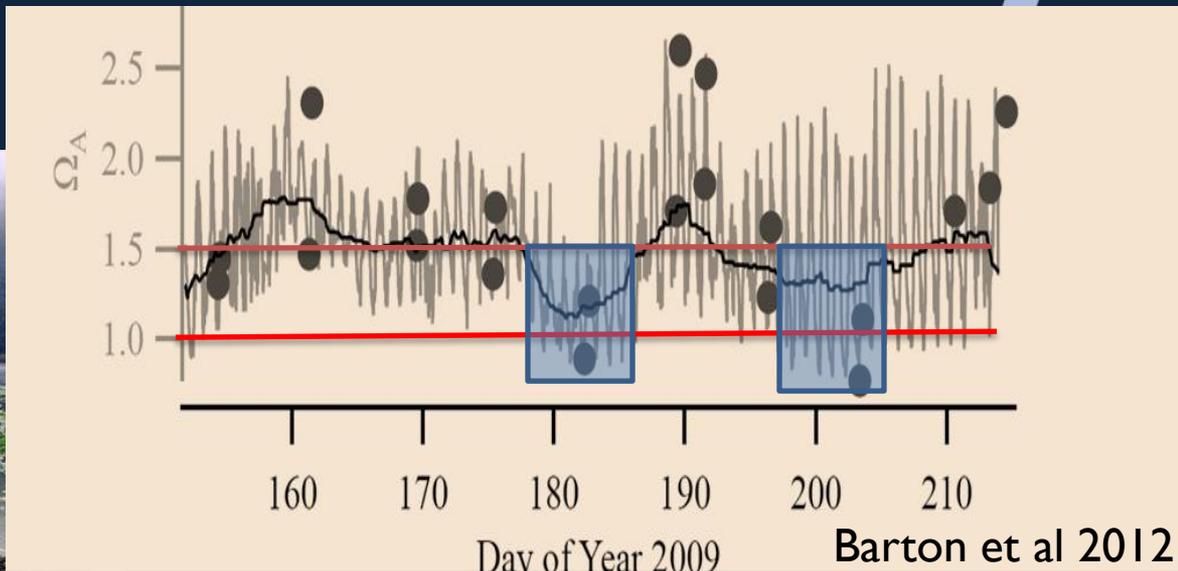
# Theme 5. Assessment of Socioeconomic Impacts and Development of Strategies to Conserve Marine Organisms and Ecosystems



IPCC, 2012: Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation. A Special Report of Working Groups I and II of the Intergovernmental Panel on Climate Change [Field, C.B., V. Barros, T.F. Stocker, D. Qin, D.J. Dokken, K.L. Ebi, M.D. Mastrandrea, K.J. Mach, G.-K. Plattner, S.K. Allen, M. Tignor, and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, UK, and New York, NY, USA, 582 pp.



# Theme 6. Education, Outreach, and Engagement Strategy on Ocean Acidification



## An Oysters Tale....



Whisky Creek Hatchery, Oregon, US



# Theme 7. Data Management and Integration




**NOAA NATIONAL OCEANOGRAPHIC DATA CENTER (NODC)**  
UNITED STATES DEPARTMENT OF COMMERCE

Welcome to NODC | Access Data | Submit Data | Public Outreach | About NODC

NOAA Satellite and Information Service | NODC | All of NOAA | Search | Go

You are here: Home > Ocean Acidification Scientific Data Stewardship (OADS)

**Ocean Acidification Stewardship Project (OADS)**

**Access data**

**Submit data**

**Other Resources**

**Useful Pages**

- [NOAA Ocean Acidification Program](#)
- [Global OA Observing Network](#)

**Ocean Acidification Scientific Data Stewardship (OADS)**

The U.S. NODC serves as the data management focal point for the NOAA [Ocean Acidification Program \(OAP\)](#) through its Ocean Acidification Data Stewardship (OADS) project. The main goal of the OADS project is to serve the broader OA community by providing dedicated online data discovery, access to NODC-hosted and distributed data sources, long-term archival, and scientific stewardship for a diverse range of ocean acidification and other chemical, physical, and biological oceanographic data. OADS builds on a collaborative approach with shared responsibilities among scientists, data managers, [data partners](#), and NODC.

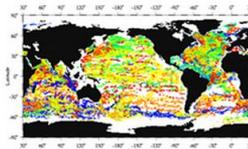
**Access data**

**Submit data**

**Need Help?**

For questions please contact [NODC.Ocean.Acidification@noaa.gov](mailto:NODC.Ocean.Acidification@noaa.gov)

## Discovery and Data Assets



### [Ocean Acidification Data Portal](#)

This portal searches the NODC archive holdings for Ocean Acidification data as they were shared with NODC. To search for profile data in a uniform format use WODSelect, otherwise see other NODC data products.



### [World Ocean Database](#)

The World Ocean Database (WOD) provides access to scientifically quality-controlled global ocean profile and plankton data that includes measured *in situ* variables gathered since 1773.



# Questions....

IWG-OA Members (as of December 2013):  
\* indicates lead member from each agency

National Oceanic and Atmospheric Administration (NOAA)  
Elizabeth Jewett\*, Chair  
Krisa Arzayus  
Ned Cyr  
Richard Feely  
Steve Gittings  
Kenric Osgood  
Christopher Sabine

National Science Foundation (NSF)  
David Garrison\*, Vice-chair

Bureau of Ocean Energy Management (BOEM)  
Jennifer Culbertson\*

Department of State (DOS)  
Kenli Kim\*

Environmental Protection Agency (EPA)  
Jason Gear\*  
Christopher Moore

National Aeronautics and Space Administration (NASA)  
Paula Bontempi\*, Vice-chair  
Kathy Tedesco

U. S. Fish and Wildlife Service (FWS)  
Bret Wolfe\*

U. S. Geological Survey (USGS)  
Lisa Robbins\*  
Kimberly Yates

U. S. Navy  
Justine Kimball\*

U. S. Department of Agriculture  
Maxwell Mayeaux

Interagency Working  
Group on Ocean Acidification

<http://oceanacidification.noaa.gov/IWGOA.aspx>

