

Data Access is KEY

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August 28, 2014
SIDS OA Workshop

Outline

- Why should we share OA data?
- What kinds of data?
- Data management systems....what exists or is planned
- Data declaration in the US
- Discussion: What data mgmt systems exist for SIDS?

NANOOS data portal application

Apps Disclaimer Settings Log In

NVS SHELLFISH GROWERS

Map About Reference Help

Map

Plots

Lat: 50.4631 Lon: -119.7949

Oxygen Percent Sat.

pH

PSI-PCSGA Bay Center - pH - 7 Days
19 June 2014 17:13 PDT

Salinity

PSI-PCSGA Bay Center - Salinity - 7 Days
19 June 2014 17:13 PDT

Google

PCSGA - Bay Center Port mooring, Willapa Bay

Observations Details History Credits

Provider: PSI

PSI-PCSGA Bay Center - Oxygen Conc. - 7 Days
19 June 2014 17:14 PDT

Data Updated: 19 Jun 2014 13:01 PDT

Oxygen Conc. (-1ft):	6.3 mg/L
Oxygen Pct. Sat. (-1ft):	77.8 %
pH (-1ft):	7.9
Salinity (-1ft):	24.2 PSU
Water Temp. (-1ft):	64.8 °F

24 Hours 7 Days 30 Days 60 Days

19 June 2014 5:14 p

Photo: A. Sprenger

Background for Experiments

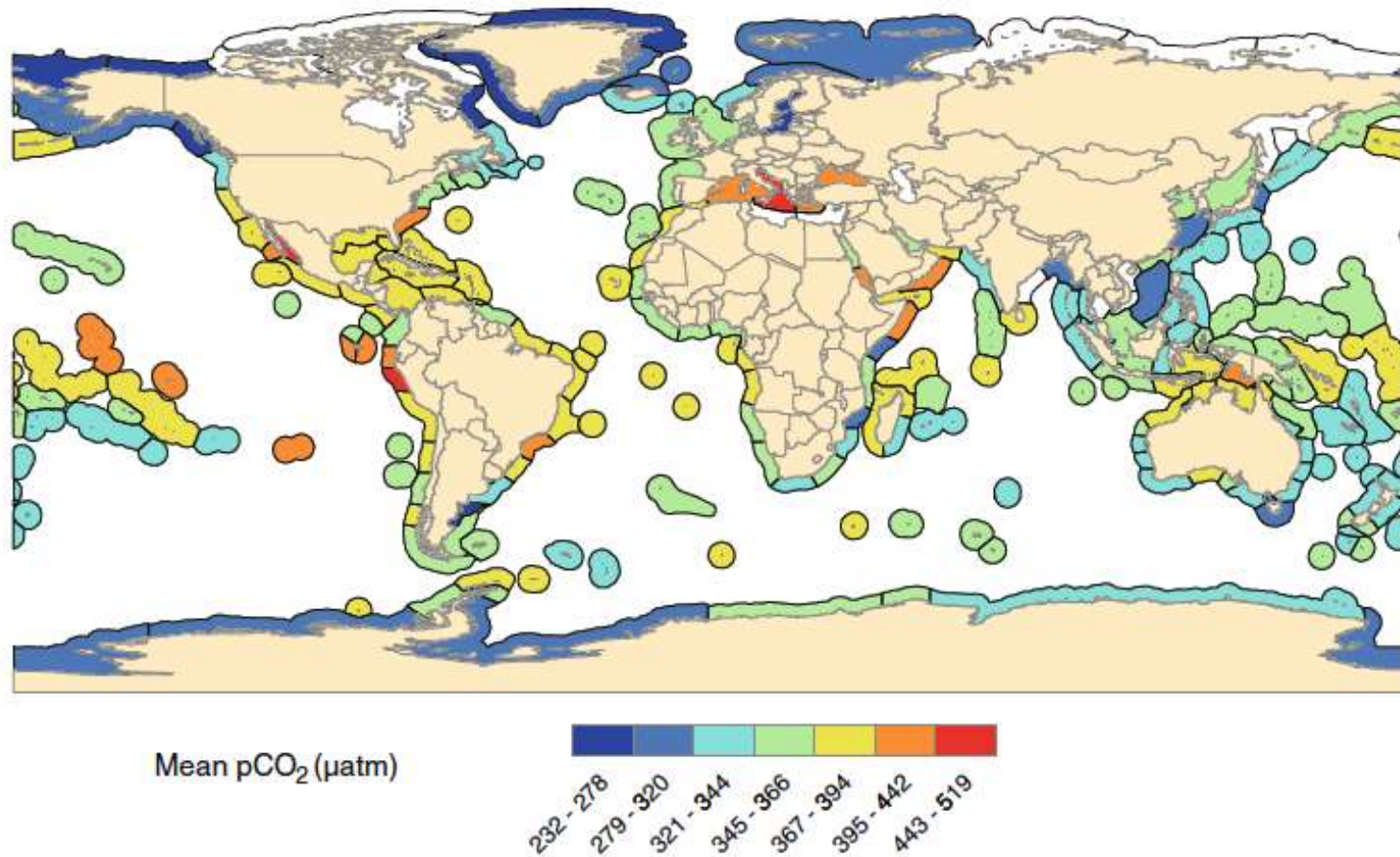
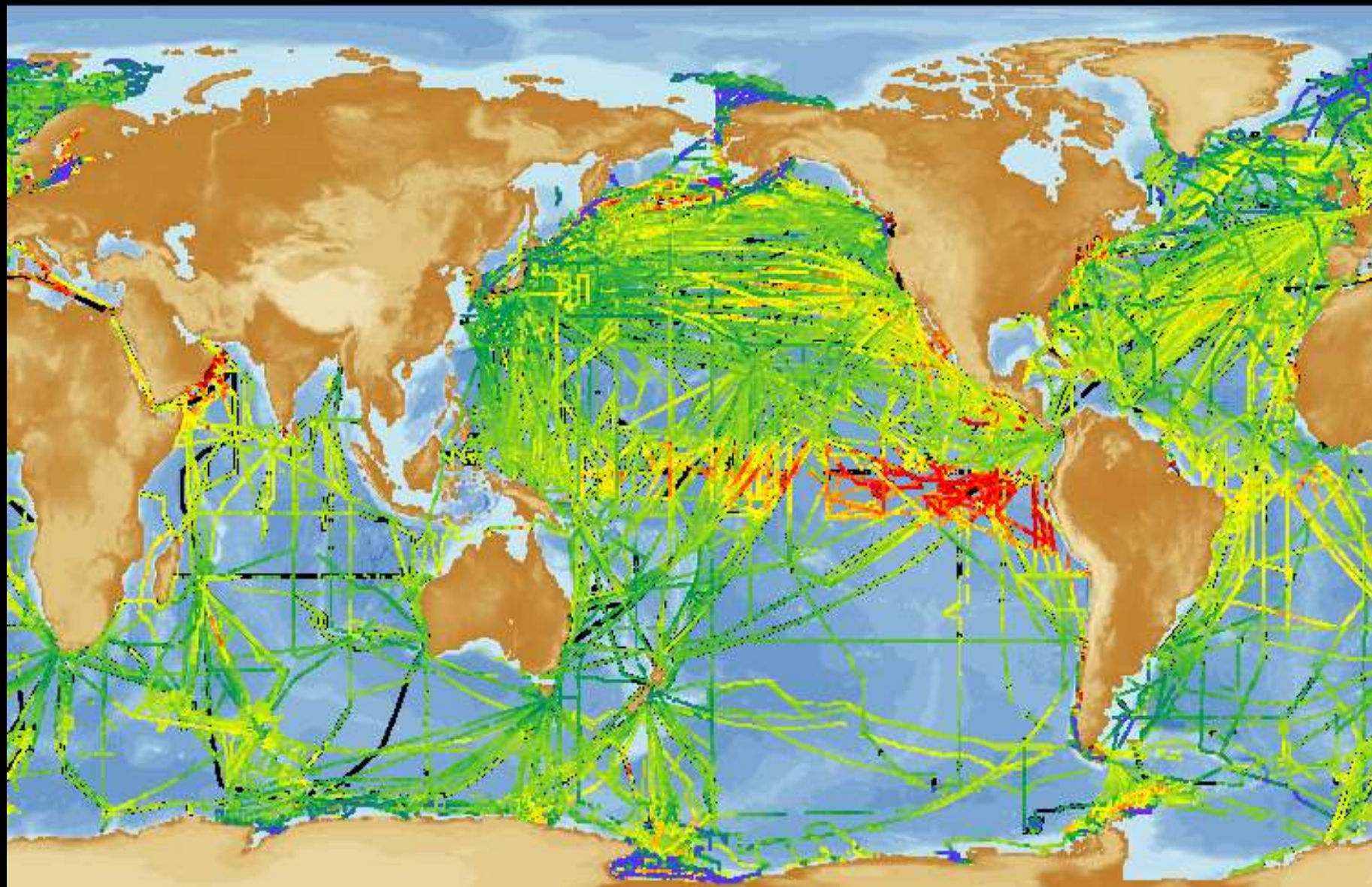


Fig. 1 Ecoregion summary of surface $p\text{CO}_2$ from the LDEO dataset (Takahashi et al. 2011), which compiles all available ship-based surface $p\text{CO}_2$ measurements collected between 1957 and 2010 for a total of 5.3 million data points (3.2 million points fall within the coastal ecoregions)



Surface Ocean CO₂ Atlas; www.socat.info

Goal 1 Level 1 Measurements



- T, S, O, Carbonate-system Constraint (Ω is goal)
- Fluorescence* and Irradiance*

**Except where platform is not appropriate or available for this measurement*

Carbonate-system constraint can be achieved in a number of ways, including combinations of measurements and synthetic, non-collocated estimates of other parameters.

OA Data also is...



- Chemical/physical data from last slide
- Potential biological observing data
 - Phytoplankton abundance/species
 - Pteropods – abundance and dissolution
 - Coral cover
 - Ratio of calcifying vs non-calcifying plankton
 - biodiversity
- Biological data from experiments
 - Growth rates
 - Reproduction
 - survivorship
- Model output

GOA-ON defined two data quality objectives:

- **'Climate data'**: of sufficient and defined quality to assess long term trends with defined level of confidence
Detection of changes in OA state over multi-decadal timescales
- **'Weather data'**: of sufficient and defined quality to identify relative spatial patterns and short-term changes
Mechanistic interpretation of the ecosystem response to local, immediate OA dynamics

International Coordination Centre





<http://www.iaea.org/ocean-acidification/>

- ICC announced at Rio +20
- Focusing data management effort on access to biological impacts findings from experiments.
- Will likely host workshop on moving Global Network forward on integrated access to chemical/physical data

NOAA Data Management



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



Welcome to **NODC**

Access DataSubmit DataPublic OutreachAbout NODC

NOAA Satellite and Information Service

NODCAll of NOAA

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Go

Ocean Acidification (OADS)

Discovery and Data AssetsData PartnersDocumentation and Guidelines

Regional Science Officers

- [NCDDC Regional Science Officers](#)

Explore NODC

Useful Pages

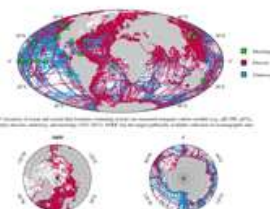
- [Access Data](#)
- [Submit Data](#)
- [Satellite Oceanography](#)

Featured Products

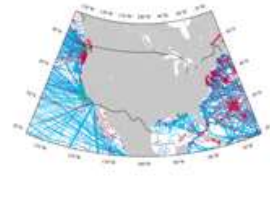
[Home](#) > Ocean Acidification (OADS)

NODC Ocean Acidification Scientific Data Stewardship (OADS)

NODC serves as the data management focal point through its Ocean Acidification Data Stewardship (OADS) project for the NOAA Ocean Acidification Program (OAP). The overarching goal of the OADS project is to serve the broader OA community by providing dedicated online data discovery, access to NODC-hosted and distributed authoritative data sources, long-term archival, coordinated data flow, and scientific stewardship for a diverse range of OA and other chemical, physical, and biological oceanographic data. OADS seeks to manage the observational data from several NOAA OAP funded projects. OADS builds on a highly collaborative approach with shared responsibilities among scientists, data managers, and NODC. The principles for this collaborative data management are articulated in the Declaration of Interdependence of Ocean Acidification Data Management Activities in the U.S., resulting from the first Ocean Acidification Data Management Workshop in March 2012 and in a Draft Integrated Management Plan.

Global carbon data

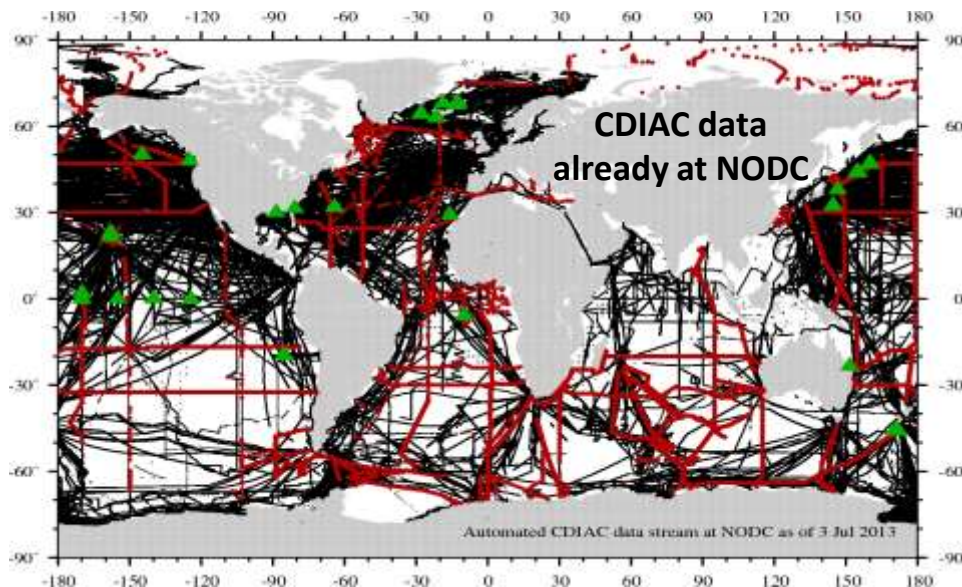
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Coastal US data

[View Larger Image](#)

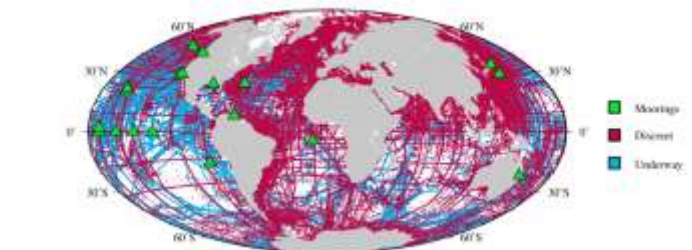
<http://www.nodec.noaa.gov/oceanacidification/>

NODC: Automated Ocean Carbon Data Streams

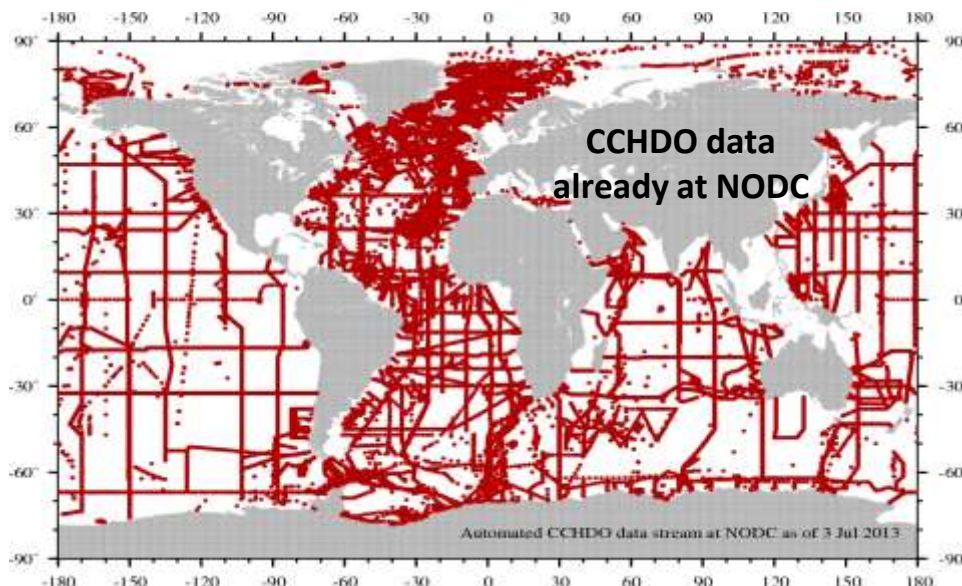
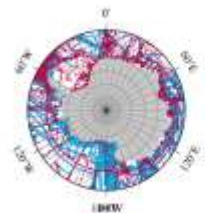
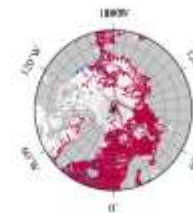


Automated CDIA data stream at NODC
(data stream process updated daily, data version control)

Historical global ocean carbon data at NODC from international and US sources

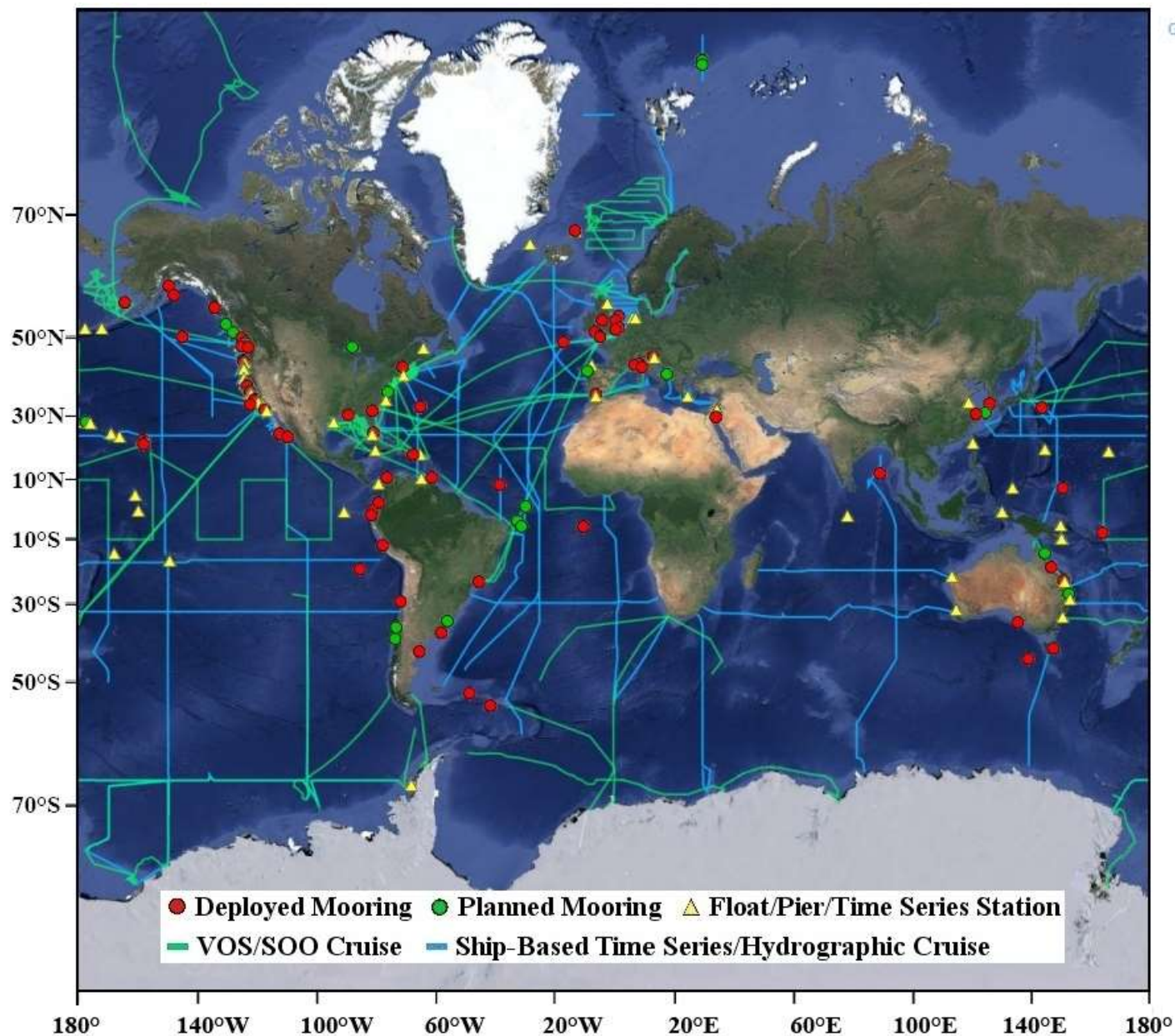


NODC inventory of ocean and coastal data locations containing at least one measured inorganic carbon variable (e.g., pH, DIC, pCO₂, Alkalinity) discrete, underway, and mooring (1921-2012). NODC has the largest publicly available collection of oceanographic data.



Automated CCHDO data stream at NODC
(updated quarterly, data version control)

GOA-ON observing assets:



Interactive map by Cathy Cosca, NOAA



OPEN
DATA
ACCESS IS
KEY

US Interagency Ocean Acidification Data Management Plan: Draft One June 23, 2012

US OA Data
Management
workshop in
Seattle, WA on
13-15 March 2012

“Declaration of Interdependence of Ocean Acidification Data Management Activities in the U.S.”

Whereas Ocean Acidification (OA) is one of the most significant threats to the ocean ecosystem with strong implications for economic, cultural, and natural resources of the world;

Whereas our understanding of OA and our ability to: 1. inform decision makers of status, trends, and impacts, and 2. to research mitigation/adaptation strategies, requires access to data from observations, experiments, and model results spanning physical, chemical and biological research;

Whereas the various agencies, research programs and Principal Investigators that collect the data essential to understanding OA often pursue disparate, uncoordinated data management strategies that collectively impede effective use of this data for synthesis maps and other data products;

Whereas an easily accessible and sustainable data management framework is required that:

i) provides **unified access to OA data for humans and machines**; ii) ensures data are **version-controlled and citable** through globally unique identifiers; iii) documents and communicates understood measures of **data and metadata quality**; iv) is easy to use for submission, discovery, retrieval, and access to the data through a **small number of standardized programming interfaces**;

Whereas urgency requires that short-term actions be taken to improve data integration, while building towards higher levels of success, and noting that immediate value can be found in **the creation of a cross-agency data discovery catalog** of past and present OA-related data sets of a defined quality, including **lists of parameters, access to detailed documentation, and access to data via file transfer services and programming interfaces**;

Whereas this integration will also benefit other users of data for a diverse array of investigations;

Therefore, be it resolved that the 30 participants of an OA Data Management workshop in Seattle, WA on 13-15 March 2012 established themselves as the Consortium for the Integrated Management of Ocean Acidification Data (CIMOAD) and identified three necessary steps forward to achieve this vision:

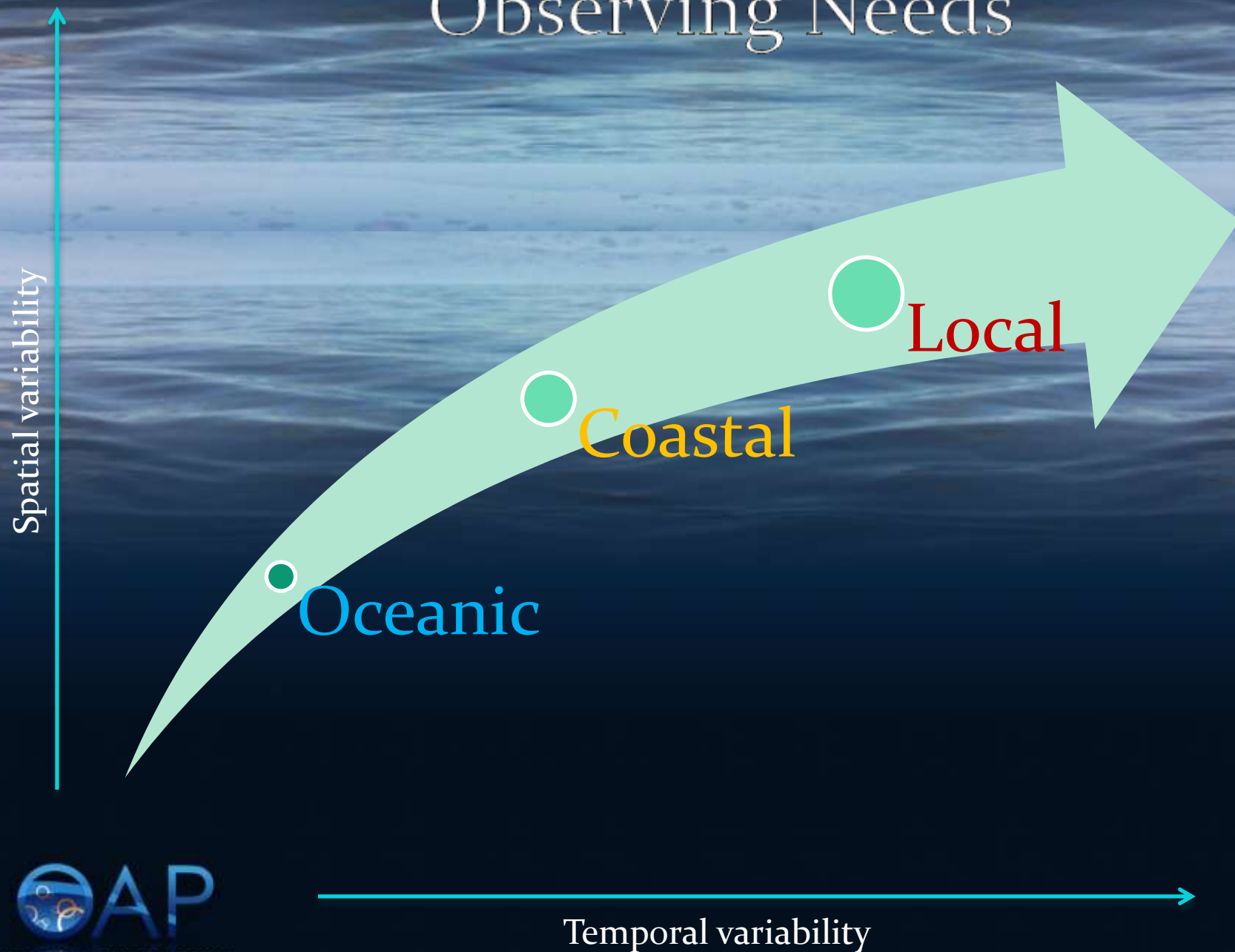
1. The endorsement of agency program directors and managers for collective use of **machine-to-machine cataloging and data retrieval protocols (including THREDDS/OPeNDAP)** by each agency data center to provide synergistic, consolidated mechanisms for scientists to locate and acquire oceanographic data;
2. The commitment of the scientific community to **establish best practices for OA data collection and metadata production**, and the leadership to provide a means of gaining this consensus; and
3. The endorsement of agency program directors and managers to direct data managers to collaborate to develop the system articulated above and **contribute to a single national web portal to provide an access point and visualization products for OA.**

We, the undersigned, request your attention to this matter and commitment to bringing this vision to reality in the next five years for the benefit of our nation and contribution to the global understanding.

Onward...

- www.GOA-ON.org
- <http://www.nodc.noaa.gov/oceanacidification/>
- Oceanacidification.NOAA.gov

Observing Needs



US NODC scientific data management of ocean carbon and OA data

- NODC is the US federal long-term archival data center for chemical, physical, and biological oceanographic data. We serve as NOAA's Ocean Acidification Program (OAP) data management focal point (OADS project). Hosts the World Data Center for Oceanography, Silver Spring. Worldwide scope (WOD/WOA). NODC follows the Open Archival Information System Reference Model.
- OADS is developing rich metadata templates (observational and biological response) using international standards (ISO) and netCDF that facilitate human- and machine-to-machine granular data discovery. Working towards assigning DOIs following international standards (e.g., robust ISO record).
- NODC has an array of online data web services (OPeNDAP, THREDDS, LAS, etc). Enormous amount of effort invested in implementing automated scripts to acquire oceanographic data from CDIAC, CCHDO, BCO-DMO, Argo, etc (data version control). This is a resource limited and labor intensive process because of highly non-standard ways DACs acquire and represent data and metadata online.

Observing systems
and data streams



NODC Standard Online
Web Data Services

