

# NOAA Ocean Acidification Data Stewardship (OADS) Project

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## 1 Abstract

Funded by NOAA's Ocean Acidification Program, the National Centers for Environmental Information (NCEI) serves as the NOAA OA data management focal point under the **Ocean Acidification Data Stewardship (OADS) Project** by providing dedicated long-term archival, online data discovery and access for a diverse range of multi-disciplinary field observations, laboratory and experimental and model OA data for both NOAA and inter-agency OA data partners. The success of OADS lies upon: (a) NCEI's world class infrastructure for long term file storage, controlled vocabularies, stable data citation, and version control; and (b) OADS tailored metadata template (display format), data search portal, and submission interface, etc. A recently developed ocean acidification metadata content template enables us to document biological response OA data, as well as other commonly seen OA data, such as in-situ observation, model output, etc. with the best metadata elements in the community.

## 2 Highlights

NCEI meets all of IOCCP's recommended ocean carbon data management requirements

- Modern standards for data and metadata.
- Controlled vocabularies.
- Easy to use data access tools.
- Stable data citations.
- Automated data ingest.

And more:

- Data are hosted in a long-term archive with sustained federal funding.
- Version control to allow all historical versions to be accessible.
- Federal standard IT security and server stability.

New NOAA requirement:

- NOAA's PARR document (February 2015) requires NOAA intramural data producers to submit data to a National Data Center for long-term preservation.

## 3 Scope of data



Surface underway



CTD/Niskin



Time series



Laboratory experiment



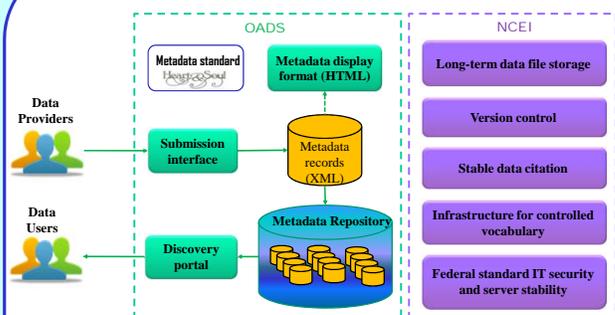
Biological monitoring



Model output

NOAA/NCEI manages a diverse range of multi-disciplinary field observation, laboratory experiment, model output and other types of ocean acidification data.

## 4 Data management components



The success of OADS lies upon two things: (a) NCEI's world class infrastructure for long term file storage, controlled vocabularies, stable data citation, and version control; and (b) OADS tailored metadata template (display format), data search portal, and submission interface, etc.

## Main components of the OADS metadata content standard

- Title
- Investigators
- Abstract
- Data identification and Citation
- Temporal coverage
- Spatial coverage
- Geographic names
- Location of organism collection
- Platforms (e.g., research vessels)
- Variable metadata cluster
- Publications describing the data set
- Supplementary information

\* Jiang, L.-Q., S. A. O'Connor, K. M. Arzayus, and A. R. Parsons (2015). A metadata template for ocean acidification data. *Earth System Science Data*, 7, 117-125.

## 5 Metadata content standard

Table 1. Variable metadata cluster with child metadata elements

Root element	Child elements
Variable/parameter	Variable abbreviation in data files
	Full variable name
	Climate and Forecast standard name
	Observation type
	In-situ / manipulation / response variable
	Variable unit
	Measured or calculated
	Sampling instrument
	Analyzing instrument
	Duration (for settlement/colonization studies)
Method reference	Detailed sampling and analyzing information
	Field replicate information
	Uncertainty
	Data quality flag description
	Method reference (citation)
	Biological subject
	Species Identification ID (if available)
	Researcher who measured this parameter
	Name
	Institution

## 6 Metadata display format

Partial pressure (or fugacity) of carbon dioxide, temperature, salinity and other variables collected from surface underway observations using carbon dioxide gas analyzer, shower head equilibrator and other instruments from R/V Weecoma in the U.S. West Coast California Current System during the 2011 West Coast Ocean Acidification Cruise (WCOA2011) from 2011-08-12 to 2011-08-30 (NODC Accession 0123607)

Alin, Simone R., Feely, Richard A., Juranek, Lauren W., Byrne, Robert, Peterson, William T., Goni, Miguel, Liu, Xuewu, and Greeley, Dana (2015). Dissolved inorganic carbon, total alkalinity, pH, temperature, salinity and other variables collected from profile and discrete sample observations using CTD, Niskin bottle, and other instruments from R/V Weecoma in the U.S. West Coast California Current System during the 2011 West Coast Ocean Acidification Cruise (WCOA2011) from 2011-08-12 to 2011-08-30 (NODC Accession 0123607). Version 1.1. National Oceanic and Atmospheric Administration, Silver Spring, MD. doi:10.7289/V5JQ0XZ1

ABSTRACT: This archival package contains the quality-controlled data of the first dedicated West Coast Ocean Acidification cruise (WCOA2011) from August 12, 2011 to August 30, 2011 aboard the R/V Weecoma. Shallow to surface water samples were collected from surface underway observations using carbon dioxide gas analyzer, shower head equilibrator and other instruments from R/V Weecoma in the U.S. West Coast California Current System during the 2011 West Coast Ocean Acidification Cruise (WCOA2011) from 2011-08-12 to 2011-08-30 (NODC Accession 0123607). Version 1.1. National Oceanic and Atmospheric Administration, Silver Spring, MD. doi:10.7289/V5JQ0XZ1

CFE AS: Alin, Simone R., Feely, Richard A., Juranek, Lauren W., Byrne, Robert, Peterson, William T., Goni, Miguel, Liu, Xuewu, and Greeley, Dana (2015). Partial pressure (or fugacity) of carbon dioxide, temperature, salinity and other variables collected from surface underway observations using carbon dioxide gas analyzer, shower head equilibrator and other instruments from R/V Weecoma in the U.S. West Coast California Current System during the 2011 West Coast Ocean Acidification Cruise (WCOA2011) from 2011-08-12 to 2011-08-30 (NODC Accession 0123607). Version 1.1. National Oceanic and Atmospheric Administration, Silver Spring, MD. doi:10.7289/V5JQ0XZ1

IDENTIFICATION INFO OF THIS DATA PACKAGE:  
 NCEI DOI: 10.7289/V5JQ0XZ1  
 DEPOSITORY: NCEI  
 CURATOR: NCEI  
 COLLECTION: West Coast Ocean Acidification Cruise (WCOA)

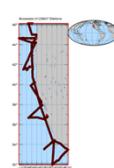
TEMPORAL COVERAGE:  
 START DATE: 8/12/2011  
 END DATE: 8/30/2011

SPATIAL COVERAGE:  
 NORTH BOUND: 46.128  
 WEST BOUND: -127.82  
 EAST BOUND: -117.4  
 SOUTH BOUND: 31.95

GEOGRAPHIC NAMES:  
 U.S. West Coast California Current System, North Pacific

LOCATION OF ORGANISM COLLECTION:  
 NA

PLATFORMS:  
 Weecoma (03-3296)



<http://www.nodc.noaa.gov/oceanacidification/data/0123607.xml>

## 7 Controlled vocabularies

A **controlled vocabulary** is an organized arrangement of words and phrases used to index content and/or to retrieve content through browsing or searching.

NCEI offers infrastructure to manage controlled vocabularies for:

- Variables (or observed properties, e.g., temperature, dissolved oxygen).
- Observation types (e.g., surface underway, time series, profile, laboratory experiment, etc.)
- Instruments
- Platforms (e.g., research vessels, buoys, satellites, etc.)
- Research projects
- Geographic names
- People
- Institutions
- Countries

Example: <http://www.nodc.noaa.gov/General/NODC-Archive/platformlist.txt>

## 8 OA portal

This data access portal allows you to search for individual observation data sets.

Search for the data holdings in the Ocean Acidification Data Stewardship (OADS) metadata data sets (currently version 1.1 of the archive).

[http://www.nodc.noaa.gov/oceanacidification/stewardship/data\\_portal.html](http://www.nodc.noaa.gov/oceanacidification/stewardship/data_portal.html)

## 9 Stable data citation

NCEI citation example:

Feely, Richard A.; Alin, Simone R.; Hales, Burke; Johnson, Gregory C.; Juranek, Lauren W.; Byrne, Robert; Peterson, William T.; Goni, Miguel; Liu, Xuewu; and Greeley, Dana (2015). Dissolved inorganic carbon, total alkalinity, pH, temperature, salinity and other variables collected from profile and discrete sample observations using CTD, Niskin bottle, and other instruments from R/V Weecoma in the U.S. West Coast California Current System during the 2011 West Coast Ocean Acidification Cruise (WCOA2011) from 2011-08-12 to 2011-08-30 (NCEI Accession 0123607). Version 2.2. NOAA National Centers for Environmental Information. Dataset. doi:10.7289/V5JQ0XZ1 [access date].

## 10 Acknowledgements

Funding of the NOAA Ocean Acidification Data Stewardship (OADS) Project is from NOAA's Ocean Acidification Program.

OADS website: <http://www.nodc.noaa.gov/oceanacidification/>