**NOAA Ocean Acidification Data Stewardship (OADS) Project**

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### 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 data for both NOAA and inter-agency NOAA 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.

### Metadata content standard

<table>
<thead>
<tr>
<th>Main components of the OADS metadata content standard</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title</strong></td>
</tr>
<tr>
<td><strong>Investigators</strong></td>
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<td><strong>Variable metadata cluster</strong></td>
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<td><strong>Publications describing the data set</strong></td>
</tr>
<tr>
<td><strong>Supplementary information</strong></td>
</tr>
</tbody>
</table>

### Metadata display format

- **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**

### 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).
- **Observations** (e.g., surface underway, time series, 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](http://www.nodc.noaa.gov/General/NODC-Archive/platformlist.txt)

### OA portal


### Stable data citation

**NCEI citation example:**

Fei, Richard A.; Ali, Simon B.; Bales, Burke; Johnson, Gregory C.; Jumars, Lauren W.; Byrne, Robert; Peterson, William T.; Gons, 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 Wecoma 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 0123467). Version 2.2. NOAA National Centers for Environmental Information. Dataset. doi:10.7289/V5JQ0XZ1 [access date].

### Acknowledgements

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**OADS website:** [http://www.nodc.noaa.gov/oceanacidification/](http://www.nodc.noaa.gov/oceanacidification/)

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### 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.

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### 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.

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### Data management components

- **Data Providers**
- **Data Users**
- **Data Providers**
- **Submission interface**
- **Data repository**
- **NCEI**
- **Long-term file storage**
- **Stable data citation**
- **Version control**
- **Metadata standard (HTML)**
- **Metadata display format (HTML)**
- **Metadata repository**
- **Infrastructure for controlled vocabulary**
- **Federal standard IT security**
- **NCEI**

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.