

Progress Report

Project Title

Ocean Carbon and Acidification Data System OCADS

Period of Activity: 01 October 2022 – 30 September 2023

Principal Investigator

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Budget Summary

FY 2023: \$125,000

Project Title
Ocean Carbon and Acidification Data System (OCADS)
PI: Alex Kozyr, CISESS (UMD), NOAA/NCEI, Silver Spring, MD

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1. Project Summary

The Ocean Carbon and Acidification Data System (OCADS) is a data management project within NCEI in Silver Spring, Maryland, United States. OCADS specializes in the management of ocean carbon and ocean acidification (OA) data and is committed to providing the best data management services to support regional to global ocean carbon cycling and OA research. OCADS values the importance of making all OA data available through one place and welcomes data submissions from around the world.

OCADS is a merger of two former OA data management projects at NCEI: i.e., Ocean Acidification Data Stewardship (OADS, founded in 2012) and the Ocean Carbon Data System (OCADS, founded in 2017). The primary mission of the new OCADS project is to serve the OA research community, and work closely with our data partners to:

- Safeguard their data in a well-supported federal archive to ensure long-term access (>75 years)
- Serve as the world's leading provider of ocean carbon and ocean acidification data, information, and products

- Provide data management support for quality control, synthesis, and data product developments

OCADS services include dedicated support for data acquisition, long-term archiving, management of rich metadata information, application of controlled vocabularies, stable data citation with digital object identifiers (DOIs), online data discovery and access, and data management support for OA product developments. The scope of data we manage includes observational OA data (e.g., chemical, physical, and biological OA data), laboratory experiment-based OA data, model outputs, and socioeconomic OA data. We are committed to bringing scientific expertise from the research community to our data management world and offering customer-centric service.

The OCADS project is funded by the NOAA [Ocean Acidification Program \(OAP\)](#), the [Global Ocean Monitoring and Observing Program \(GOMO\)](#), and NCEI base project.

2. Accomplishments in FY2023

1. Processes and archived 109 new accessions that include 337 repeat hydrography cruises, SOOP cruises and Mooring deployments;
2. Completed 121 revised-major accessions, that include 332 repeat hydrography cruises, SOOP cruises and Mooring deployments;
3. In cooperation with the international community processed and published the new GLODAPv2_2023 database: https://www.ncei.noaa.gov/access/ocean-carbon-acidification-data-system/oceans/GLODAPv2_2023/. The NCEI accession 0283442 metadata page: <https://www.ncei.noaa.gov/data/oceans/ncei/ocads/metadata/0283442.html>. GLODAPv2_2023 data product composed of data from 1108 scientific cruises covering the global ocean between 1972 and 2023.
4. In cooperation with the international community processed and published the new version of SOCATv2023 database: <https://www.ncei.noaa.gov/data/oceans/ncei/ocads/metadata/0278913.html>. SOCAT version 2023 has 35.6 million quality-controlled surface ocean fCO₂ (fugacity of CO₂) observations from 1957 to 2023 for the global oceans and coastal seas.
5. In cooperation with PMEL IT and NCEI coworkers implemented a fully automated Scientific Data Information System (SDIS) and educated the data providers on how to use the SDIS to submit their data to OCADS.

6. Mainlined the new OCADS front web page: <https://www.ncei.noaa.gov/products/ocean-carbon-acidification-data-system>. Created the new pages dedicated to the new cruise data archives.

9. Professional Service:

- Served as a co-chair of North Pacific Marine Science Organization (PICES) Section on Carbon and Climate (SCC) organized and participated in the annual SCC meeting and the PICES Annual Meeting (October 2023) in Seattle WA.
- Organized and served as a co-chair of the PICES Annual Meeting session on “Ocean acidification and deoxygenation in ocean margin ecosystems: causes and consequences for ecosystems and fisheries”.
- Served as a member of the SOOS Data Management Group and participated in the Southern Ocean Observing System (SOOS) meetings.
- Served as a member of the SOCAT Global Group and participated in the SOCAT group meetings.
- Served as a member of the GLODAP Global Group and participated in the GLODAP group meetings.
- Participated in the workshops on surface ocean fCO₂/pCO₂ observations, Ostende, Belgium, November 6–10, 2023.

NOTE: GOMO reports activities of note, including scientific and technological achievements, and outreach and educational activities, to the NOAA leadership on a weekly, quarterly, and annual basis. These activities will inform NOAA leadership and appear on the GOMO and other relevant websites, as well as other NOAA and non-NOAA-related publications. They also raise the visibility of the program and the individual project.

3. Outreach and Education

Communicating and describing GOMO-supported activities and resulting outcomes has received increased attention as ocean climate connections continue making headlines and opportunities arise to educate the public about our activities. Please describe the following:

- Activities to inform (e.g., through websites, articles in mass media) the wider community of your work.

- Efforts working with students, schools, teachers, the general public, museums, aquaria, etc., and ways that you are helping train our next generation scientists to understand and appreciate ocean climate science, either directly or indirectly.

4. Publications and Reports **Please note the FundRef DOI for GOMO**

4.1. *Publications by Principal Investigators*

Lauvset, S. K., Lange, N., Tanhua, T., Bittig, H. C., Olsen, A., **Kozyr, A.**, Alin, S., Álvarez, M., Azetsu-Scott, K., Barbero, L., Becker, S., Brown, P. J., Carter, B. R., da Cunha, L. C., Feely, R. A., Hoppema, M., Humphreys, M. P., Ishii, M., Jeansson, E., Jiang, L.-Q., Jones, S. D., Lo Monaco, C., Murata, A., Müller, J. D., Pérez, F. F., Pfeil, B., Schirnack, C., Steinfeldt, R., Suzuki, T., Tilbrook, B., Ulfsbo, A., Velo, A., Woosley, R. J., and Key, R. M. (2022). GLODAPv2.2022: the latest version of the global interior ocean biogeochemical data product, *Earth Syst. Sci. Data*, *14*, 5543–5572, <https://doi.org/10.5194/essd-14-5543-2022>.

Jiang, L.-Q., **Kozyr, A.**, Relph, J., Ronje, E., Kamb, L., Burger, E., Myer, J., Nguyen, L., Arzayus, K. M., Boyer, T., Cross, S., Garcia, H., Hogan, P., Larsen, K., and Parsons, A. R. (2023). The ocean carbon and acidification data system. *Nature-Scientific Data*, *10*, 136. <https://doi.org/10.1038/s41597-023-02042-0>. Press release: [UMD](#)

Jiang L.-Q., Pierrot, D., Wanninkhof, R., Feely, R. A., Tilbrook, B., Alin, S., Barbero, L., Byrne, R. H., Carter, B. R., Dickson, A. G., Gattuso, J.-P., Greeley, D., Hoppema, M., Humphreys, M. P., Karstensen, J., Lange, N., Lauvset, S. K., Lewis, E. R., Olsen, A., Perez, F. F., Sabine, C., Sharp, J. D., Tanhua, T., Trull, T. W., Velo, A., Allegra, A. J., Barker, P., Burger, E., Cai, W.-J., Chen, C.-T. A., Cross, J., Garcia, H., Hernandez-Ayon, J. M., Hu, X., **Kozyr, A.**, Langdon, C., Lee, K., Salisbury, J., Wang, Z. A., Xue, L. (2022). Best practice data standards for discrete chemical oceanographic observations. *Frontiers in Marine Science*, *8*. <https://doi.org/10.3389/fmars.2021.705638>.

**** Please update your Program Manager throughout the year as papers are accepted for publication and provide 2-3 weeks advance notice prior to the date of publication. We use this information to promote GOMO to NOAA leadership and beyond.**

4.2. *Other Relevant Publications*

Please list other significant publications (published since your last report), including reports, assessments, etc., in which a principal investigator's work (observational data or the project

itself) is cited or the project's data used. Please follow format instructions above and include an electronic copy of two of the most significant citations.

Clearly differentiate between the list of publications by principal investigators and other relevant publications in your report.

5. Data and Publication Sharing

As part of NOAA's Public Access to Research Results (PARR) plan (<https://repository.library.noaa.gov/view/noaa/10169>) new requirements (<https://nosc.noaa.gov/EDMC/PD.DSP.php>) have been implemented to ensure that all NOAA and NOAA-funded data are well-documented, publicly accessible, and preserved.

For projects that collect data, please provide any updates to the Data Management Plan that was included in your FY 2022 Work Plan. The Data Management Plan should describe where your data can be publicly accessed, and what your procedures are (e.g., submission / update schedule with facility, latency of making data public).

If you are delivering data, indicate whether they are accessible in near real time, and where the data are archived. Please identify the users of your data, and for what purpose they require and use these observations.

If data are not currently being made publicly available in a timely fashion (e.g., within 2 years of collection or at time of publication in peer reviewed literature), please address how this will be accomplished.

6. Project Highlight Slides

Please ***attach*** slides using the attached template to show one important highlight from your project's progress (including relevant notes and credits) and one summary slide. The slides will be available to GOMO program managers in this [Google folder](#) also allowing PIs to make updates. *Note:* Information shared on slides may be shared with agency leadership, in interagency discussions, and occasional briefings in public settings.

Style Guide and Progress Report Formatting

Length and Style: Submit your Progress Report in Word (not PDF). Limit your report length to no more than 10 pages, plus figures (which are encouraged) and tables. This is not a firm requirement as highly complex projects containing many components may require more space; if so, please exercise restraint in length. This translates into a request for information at a level of granularity that is appropriate to technical programmatic oversight; please do not simply refer us

to research papers for the concepts, approaches, and findings, but, conversely, please do not repeat the level of detail of research publications either. Use Times New Roman, 12pt font size, left justified for the text in the main body of the report, and blocked paragraphs (no indent) with a blank line between them. Further stylistic details are given below. **Use the Progress Report template in this document; please overwrite the instructions under each heading.**

NOTE: Your progress report will be available on request. The cover/signature page and funding amount, however, will not be distributed. Please be certain, therefore, to include project title/authors/ affiliations at the top of the first page of the report *in the format indicated in the template.*

Please note the following:

1. Please use this FY 2022 report template. **Reports submitted using templates from previous years will be returned, as will documents in PDF.** You will be asked to resubmit using the correct form and format.
2. In order to spare us the task of reformatting your report prior to uploading to the web, please do not change the basic formatting of the report template.
3. Please observe the following style guidelines for the report:
 - a. **Font:** Times New Roman
 - b. **Body text:** 12 point, plain
 - c. **Justification:** Left
 - d. **Paragraphs:**
 - i. Block (no indent)
 - ii. Spacing before and after = 0
 - iii. Insert one blank line between paragraphs
 - e. **Margins:** 1 inch
 - f. **Line Spacing:** Single
 - g. **Sub-section Headers:** If you wish to add subsections that will appear in the Table of Contents, please assign to them a style of “Heading 2,” or “Heading 3.”
 - h. **Title:** 14 point, bold, centered
 - i. **Authors:** 12 point plain, left justified, use superscripts if more than one affiliation
 - j. **Affiliations:** 12 point plain, left justified
4. Please be certain to add the title of your report to the footer, starting on page 2.
5. Please ensure that the Project Summary is as you would like it to appear as a separate, stand-alone document for the website.
6. Please add signatures to the cover sheet and return with your report.