

Environmental Studies Program: Ongoing Study

Field	Study Information
Title	Marine Environmental Data Internet Access and Environmental Study Capability Ecosystem (MEDIASCapE) Phase I (NT-22-x07)
Administered by	Office of Environmental Programs
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Procurement Type(s)	Interagency Agreement
Conducting Organization(s)	National Oceanic and Atmospheric Administration (NOAA) National Centers for Environmental Information
Total BOEM Cost	\$594,444.44
Performance Period	FY 2022–2025
Final Report Due	June 2025
Date Revised	October 17, 2023
Problem	There is a need for greater accessibility of BOEM environmental studies data.
Intervention	Develop or procure a service for taking custody of studies data to enable review and acceptance of environmental studies data deliverables and facilitate the transfer of environmental studies data to corporate systems or long-term repositories. Phase I will focus on Passive Acoustic Monitoring (PAM) and Protected Species Observer (PSO) data collected by BOEM to support Renewable Energy Development in the Atlantic.
Comparison	N/A
Outcome	Improved retention and broader dissemination of environmental studies data.
Context	Open by default, non-sensitive and non-proprietary environmental studies data.

BOEM Information Need(s): Data are the material products of every environmental study, as they are required to collect or create them. Further, data collected by the US government must be made available using open formats, so that it is possible to read and use the data without paying for software or decoding tools to access and reanalyze the data. This study will provide a data service to help Environmental Studies Program (ESP) data comply with Open Government Data Act requirements to facilitate open access and engagement over studies data with Federal agencies, academia, the private sector, industry, and the public.

Phase I of this study will enable more informed interagency consultations on renewable energy construction projects and serve to preserve the data for long-term assessments of BOEM's environmental policy regarding renewable energy leasing in the Atlantic.

Background: ESP-funded environmental studies are typically conducted by leading experts from the ocean sciences research community. Through ESP, BOEM has a broad reach to engage with research

entities from other Federal ocean agencies, academia, the private sector, industry, and the public. Most of these groups operate completely outside of BOEM's IT operational environment, often making environmental study data access and sharing difficult. Inconsistent practices between ESP-funded studies regarding the delivery mechanism, open format, and data stewardship is a critical data management issue that needs to be addressed and standardized at a national level.

Under most circumstances, the "rights in data" clause of the Federal Acquisition Regulations entitles the government to unlimited rights to access and use data that ESP collects under its extramural research activities, and ESP stipulates the "right in data" clause in contracts and agreements, however this may not occur in all cases. Although the government may assert the rights in data from studies, unless the studies data are captured as a requirement under a contract and the government retains a copy of the data deliverable from a study, the government's rights in data is extremely difficult to enforce, and there have been recent concrete examples of the problems this can cause.

Renewable Energy Development in the Atlantic will produce voluminous environmental compliance data that BOEM will need to review in order to ensure that mitigation measures to protect marine mammals such as the North Atlantic Right Whale are effective and sufficient. Without access to environmental compliance data, the bureau is flying blind and cannot fulfil its environmental protection mission. This is an urgent need that ESP can fill by providing a mechanism for submitting, reviewing, analyzing, and archiving these important datasets. While BOEM is not responsible for environmental compliance data that industry collects, it is in BOEM's interests to stipulate to industry how to contribute these data to a shared repository that BOEM can access to review and use for its assessment and consultation activities. Although BOEM's legal mechanisms to require industry data are different from the studies authorities under the Federal Acquisition Regulations, the same guidance and mechanisms that we establish for our studies data can provide a guidance, a community standard, and a viable data pathway that other Federal agencies and sectors could use.

Objectives: This study profile addresses some of the core challenges in managing ESP data.

- The service will be made available to all studies Principal Investigators to provide a mechanism for delivery of interim and final studies data and facilitate evaluation of its compliance with relevant community standards for open formats.
- ESP data submitted to BOEM using this service will come free and clear of any licenses or restrictions and be made available in the public domain.
- Custodianship can also enforce a moratorium period when the data will be held behind a log in but may still be subject to FOIA.
- Once data from studies are in the public domain, data will be disseminated in open formats following community standards. This way it will be easier for BOEM analysts to access and reuse study data for the purpose for which they were collected (the original government requirement), and it will also enable others to reuse the data free of any restrictions or concerns about their license or terms of use.
- Phase I in this study will address the data pathways for Passive Acoustic Monitoring recordings and Protected Species Observer datasets delivered from environmental studies, to ensure that they are readily available for reuse by other Federal ocean agencies, academia, the private sector, industry, and the public.

Methods: The service will include tools for the Principal Investigators to load data and for BOEM regional staff and HQ ESP representatives to review and accept research results, using tools like the Alaska Ocean Observing System's Research Workspace (Turner and Gill 2018).

ESP can procure R&D services to improve ESP data management from any one of several companies that currently provide these services to other Federal agencies. These companies leverage technologies that support open formats and have expertise in using open source software that were developed to support the Federal research enterprise, such as the National Ocean and Atmospheric Administration's Environmental Research Division's Data Access Program (ERRDAP) solution developed by NOAA (Mendelssohn and Simons 2008), which can work directly with other Federal agencies' instances of ERRDAP, and it can automate submission of Archival information packages to their designated repositories. Other examples of open data tools include the MD Toolkit developed by the U.S. Geological Survey and U.S. Fish and Wildlife Service (Bradley 2020), and the Open Data Registry available from Amazon Web Services (<https://registry.opendata.aws/>).

Data will be accessible through web links for data download or data services that are available to the general public, and BOEM staff will be able to access these data securely just like BOEM staff can currently download data from other Federal repositories accessible through the web. The security environment must maintain these statutory requirements. Despite being an external web environment, it will serve as an intermediate step for bringing study data into government owned and operated IT systems.

Phase I of this study will focus on Archiving of Passive Acoustic Monitoring recordings and visual observations from Protected Species Observers, which are complementary methods used to detect the presence of marine mammals. Both datasets are typically collected by environmental studies to address BOEM information needs and industry to address environmental compliance requirements. Data from various sources can be combined to help understanding marine mammal distributions and potential impacts from BOEM's Outer Continental Shelf activities. This study will recommend a common data pathway to guide the data collection, processing, analysis, and Archival. Archiving will entail a centralized database, processed to a standard of data quality that is acceptable to the community, using common tools. National Centers for Environmental Information is the designated long-term repository for PAM and PSO data, and this study will research and document the capacity and tools needed to liaise with industry and lead the interagency to implement scientific data stewardship of these datasets.

Specific Research Question(s): What services or products can ESP best use to support the submission, review, acceptance, and dissemination of BOEM required data to staff scientists and analysts, the public and other Federal partners? How can free and open distribution of PAM and PSO data to the public help BOEM to realize better environmental protection and a better return on its research investments.

Current Status: Funds have been awarded to NOAA NCEI for staff from the University of Colorado cooperative institute to maintain the Passive Acoustic Archive and to lead the associated community with joint funding contributed from funding partners, NOAA NMFS and US Navy LMR. BOEM awarded NCEI funding and planning is underway for staffing the marine mammal data Archive through the Mississippi State University, Northern Gulf Institute.

Publications Completed: None

Affiliated WWW Sites: None

References:

- Bradley J. 2020. Alaska Data Integration Working Group; working on methods to efficiently integrate and share data. [accessed 2022 Jan 14]. <https://github.com/adiwg>.
- Mendelssohn R, Simons RA. 2008. ERDDAP - an easier way for diverse clients to access scientific data from diverse sources. American Geophysical Union Fall Meeting; 2008 Dec 15–19; San Francisco, CA. <https://ui.adsabs.harvard.edu/abs/2008AGUFMIN52A..09M/abstract>
- Turner C, Gill I. 2018. Developing a data management platform for the ocean science community. Marine Technology Society Journal. 52(3):28–32. doi:10.4031/MTSJ.52.3.8