

Environmental Studies Program: Studies Development Plan | FY 2025–2026

Field	Study Information
Title	Coastal Marine and Ecological Classification Standard Application: Offshore Energy and Minerals Development (MM-25-01)
Administered by	Marine Minerals Program
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Procurement Type(s)	TBD
Performance Period	FY 2025 – FY 2027
Final Report Due	TBD
Date Revised	February 7, 2024
Problem	The Coastal and Marine Ecological Classification Standard (CMECS) provides a system for coastal and marine environment characterization, comprising 1) components to define the attributes of environmental units and 2) a framework for synthesizing this information. Codified workflows for applying CMECS to survey data that is tailored to BOEM requirements is needed to overcome complex inconsistencies in data interpretation when classifying seafloor and categorizing habitats for offshore wind and offshore dredging environmental consultations. In practice, developers and scientists largely use expert opinion, rather than a common standard, to interpret research and offer insight. If not provided consistently, data may not be universally understood to support BOEM pre-development baselines and post-development analysis. For example, CMECS uses “mud” as a sediment description which is not a term in geotechnical work.
Intervention	Develop specific protocols (guidance) and crosswalk classifications to help BOEM and its stakeholders to interpret and translate relevant energy and mineral site characterization survey data into the more widely known and defined CMECS units. Doing this will enable geophysical and/or geotechnical engineers standards to better reconcile often competing standards.
Comparison	N/A
Outcome	Guidance documents that support BOEM and its stakeholders in meeting the requirements of consultations with consistent and standardized characterization for our impact assessments. This aids decisions on future sites for wind and dredging events. These may include specific methods analysis, decision-based workflows, an image gallery with examples of CMECS classifications, crosswalk practitioners (e.g., engineers) and scientists' definitions, and training aids.
Context	Atlantic, Pacific, Gulf of Mexico, and Alaska Outer Continental Shelf

BOEM Information Need(s): BOEM, other Federal agencies, and their stakeholders are responsible for developing impact analyses of offshore activities, such as wind energy development, mineral extraction, and dredging. To develop these impact analyses, BOEM needs standardized characterizations of the seafloor that describe benthic habitat consistently across all sites and temporal intervals. BOEM and its stakeholders need the results of site characterization in a consistent description to evaluate the impact

of proposed activities on physical, biological, and socioeconomic resources as well as seafloor and subseafloor settings that could be affected by activities such as infrastructure construction and dredging.

Background: Consistent, characterized, and usable descriptors for offshore resource communities are not a new concept. The CMECS enhances scientific understanding, advances ecosystem-based and place-based resource management and safeguards coastal communities.¹ The purpose of habitat classification is “to provide a language through which data and information regarding habitats can be communicated and managed” (McDougal et al. 2007). In 2021, the White House-approved National Ocean Mapping, Exploration, and Characterization Strategy Implementation Plan Objectives 2.1 (Standard Ocean Mapping Protocol) and 3.2 (Exploration and Characterization Standards and Protocols) further highlight the importance of making data usable and the need for guides to facilitate application. Presently, during some environmental consultations between BOEM and outside agencies, the lack of a consistent language to analyze habitats frequently leads to confusion and time-consuming miscommunication. Furthermore, too often habitat areas are characterized in multiple ways and when communities are not using the same metrics it lends to a pervasive problem of not being able to communicate in a shared language on the amount and quality of habitat. Adequate site-specific information is needed to inform environmental consultations.

Objective(s):

- Develop documents that will assist BOEM in operationally applying mapping standards to classify and categorize habitats, to inform offshore wind and offshore dredging environmental consultations with consistent and standardized characterizations within the substrate and geofom components (water column and biotic components to be included in a follow-on phase). Create crosswalks and explanatory guides to help BOEM bridge the language and methods between planners, development, scientists, and engineers.
- Compile, adapt, and disseminate BOEM-attuned protocols, guidelines and standards to increase efficiencies and improve the status quo in survey mapping and characterization products.
- Embody FAIR Principles (“FAIR Principles” www.go-fair.org/fair-principles/) in the data deliverable review process and enable data serviceability further enabling data to be findable, accessible, interoperable and reusable in the long-term.

Methods:

- Coordinate and leverage with other non-BOEM CMECS venues and/or meetings to increase collaboration opportunities and minimize duplication.
- Convene and facilitate workshops with key stakeholders (e.g., NOAA, USGS, NPS, State, EPA, GARFO, Academia, NGO, National Ocean Mapping, Exploration, and Characterization Interagency Working Groups, and Developers) to 1) identify and bound issues with data interpretation and mapping and 2) gather recommendations for the development and dissemination of protocols and guidance resources (e.g., endorsement of CMECS by NOMECS/IWG, etc.).
- Identify study areas that include offshore energy and mineral sites in the Outer Continental Shelf (Atlantic, Gulf of Mexico, Pacific, Alaska and /or U.S. Territories) as reference sites.

- Describe the geofom and substrate environment in a consistent and repeatable way with NOAA National Marine Fisheries consultations, developers, engineers, and the broader coastal communities to improve discussions and analysis of potential environmental risk discussed.
- Use the existing source data and derived data products for those sites.
- Use CMECS as the classification framework and review existing classification systems and guidelines not limited to the references 1 through 9 to supplement as needed.
- Identify variables to characterize wind energy and marine minerals sites. Establish a crosswalk of geofom and substrate classification scheme structure for offshore wind energy and marine mineral site planning and activities.
- Apply and test scheme within an energy and mineral site with engineers and scientists.
- Provide products: 1) visual aids, such as decision trees, when working within CMECS; 2) a written or graphic aid (such as a sheet of notes) as a reference for help in understanding CMECS application (primary audience developers, scientists, interpreters) to ease the complexity with examples of using substrate variable descriptors (modifiers); 3) map products; 4) a web application (preferably in ArcGIS Online); 5) a hierarchical diagram of CMECS scheme for substrate and geofom components associated with offshore energy and mineral activities; 6) a data sharing protocol; and 7) training aids.
- Verify, validate, and document.

Specific Research Question(s):

1. What are the scientific and engineering setting and/or cross walk within the CMECS geofom and substrate component needed to ensure consistent information for consultation use and assessment?
2. At which scale (e.g., 1:24k, 1:100k, etc.) should features or bodies be mapped to sufficiently meet the needs of a consultation from developers (e.g., infrastructure, energy, critical minerals) and engineers (e.g., marine minerals lease and/or borrow area design)?

Current Status: N/A

Publications Completed: N/A

Affiliated WWW Sites: N/A

References:

- BOEM. 2019. Guidelines for providing benthic habitat survey information for renewable energy development on the Atlantic Outer Continental Shelf pursuant to 30 CFR Part 585. Washington (DC): Bureau of Ocean Energy Management. 9 p. [accessed 2024 Feb 7]; <https://www.boem.gov/sites/default/files/renewable-energy-program/Regulatory-Information/BOEM-Renewable-Benthic-Habitat-Guidelines.pdf>.
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