



OCS Scientific Committee Meeting May 2012

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Modeling of the ecosystem dynamics in the Alaskan Arctic Ocean

Page #	Break-out	Title	Rank
HQ 39		<u>Ecosystem Dynamics and Monitoring of the Alaskan Arctic Ocean</u>	7
<p>**PO = Physical Oceanography FE = Fate & Effect BIO = Biology PS = Protected Species SE = Social & Economic OT = Other</p>			



BOEM Information Need:

BOEM needs to identify the causes leading to environmental changes, including forcing agents and feedback processes. This integrated perspective will aid in identifying sensitive a) processes b) geographical areas c) trophic levels. Identification of these causes and of areas of elevated productivity are important when preparing environmental documents, and regulations.

Continuous monitoring is needed, especially in highly productive areas.

Date Information is Required: FY2013

HQ

Tentative Ranking: 7



Ecosystem Dynamics and Monitoring of the Alaskan Arctic Ocean

Background:

A) Joint Planning

Agencies involved in planning:



BOEM



NOAA



NSF



ONR/Navy



US Coast Guard



US Arctic Research Commission



Marine Mammal Commission

B) Relationship with Previous Work/Efforts

Study consistent and/ or aligned with:

- Past MMS/ BOEM reports,
- IARPC 5-year plan,
- White House's CEQ guidelines
- 2011 USGS report (recommendations)
- National Ocean Policy

Background:

C) Relationship with Concurrent/Future Efforts

- The study will be coordinated with
- Ongoing observational efforts in the region (BOEM, NOAA, NSF, NASA, JAMSTEC). This includes Marine Archaeology.
- Observing systems and networks (AON, AOOS)

D) Study relevant to:

- Ecosystem dynamics (including marine mammals, traditional knowledge)
- Environmental protection
- Climate Change and monitoring
- Oil Spill Risk Analysis
- Exploration and discovery

Tentative Ranking: 7

Study's Objectives:

- Identify areas of high biological productivity,
- Identify sensitivities and resiliencies to changes in environmental conditions both, geographically and in the ecosystem components.
- Provide a qualitative and quantitative description of the biogeochemical-physical interactions and feedbacks.

METHODS

Glider-technology (top-to-bottom and under-ice observations).

Specifically, observe the following variables:

1. Physical: 4D fields of temperature, salinity, pressure, downwelling irradiance, the 3D velocity field, depth, and ice coverage,
2. Biological: 4D fields of chlorophyll, colored dissolved organic matter (CDOM) fluorescence, backscatter, algal bloom presence, acoustic recorder, echosounder.
3. Chemical: 4D fields of pH, O₂, nutrients(*) (nitrates, nitrites, Phosphate, NH₄ and iron), CO₂ and CH₄.

- Questions?