

MMS ENVIRONMENTAL STUDIES PROGRAM: ONGOING STUDIES

Region: Alaska

Planning Area: North Aleutian Basin

Title: Modeling of Circulation in the North Aleutian Basin (AK-07-x14)

MMS Information Need(s) to be Addressed: Oil spill trajectory analysis for impact assessment is needed for the North Aleutian Basin (NAB) Planning Area. The Dept. of Interior's *Final OCS Oil and Gas Leasing Program 2007-2012* considers a North Aleutian Basin (NAB) oil and gas lease sale for 2011. Oil Spill Risk Analysis (OSRA) is a cornerstone foundation for evaluating alternatives in OCS oil and gas leasing EIS preparation and for evaluating mitigation, such as oil spill contingency plans. Development and application of an up-to-date circulation model is essential to future OSRA-based EIS analyses

Total Cost: \$278,000

Period of Performance: FY 2007-2009

Conducting Organization: Rutgers University

MMS Contact: [Chief, Alaska Environmental Studies Section](#)

Description

Background MMS proposes to lease within the North Aleutian Planning Area (NAB). Although MMS expects the leasing process to result in primarily exploration and production of gas for local use, this expectation does not preclude the need for oil spill risk analysis tools. MMS does not have a functional oil spill trajectory model for the North Aleutian Basin Planning Area. Previous MMS contractors (RAND Corporation and Applied Science Associates) did develop circulation and oil spill trajectory models for the northern Bering Sea in the late 1970's through the late 1980's, but these models are no longer functional, available to MMS, or state-of-the art. A phased effort is envisioned in which this study would be a first phase to provide needed EIS-applicable products prior to the next Oil and Gas Lease Sale. A more comprehensive post-sale model development and application would occur as a future second phase.

Objectives Adapt and maximize the skill of an existing, coupled ice-ocean circulation model which includes the Southeastern Bering Sea to represent the physical processes, especially circulation, within the North Aleutian Basin Planning Area. Provide MMS with 10-20 years, gridded wind, surface water, and ice velocity, ice cover; and limited other modeled fields as agreed on between contractor and MMS.

Methods

1. Modify existing coupled ice-ocean circulation model to maximize skill in the NAB.
2. Conduct sensitivity testing and validation of modified model.
3. Provide 3-hour gridded velocity fields (wind, surface water, ice), and ice cover to MMS in agreed format for 10-20 years hindcast simulation.

4. Documentation through model manual, final report, and submittal of a peer-reviewed journal article.

Current Status:

The model grid configuration and bathymetry have been finalized. A new set of boundary conditions for the domain has been extracted from a global ocean model. The model has been tested for one year and the investigators are ready to embark on a multi-decadal simulation. Existing data to be used for model validation is also being collected.

Final Report Due: September 2009

Publications Completed: None

Affiliated WWW Sites: <http://www.mms.gov/alaska/>

Revised Date: March 2008