

ENVIRONMENTAL STUDIES PROGRAM: Ongoing Studies

Region: National

Planning Area(s): Beaufort Sea, Chukchi Sea

Title: Adaptation of Arctic Circulation Model (NT-08-02)

BOEM Cost: \$350,000

Period of Performance: FY 2011-2013

Conducting Organization(s): Rutgers University (M10PC00116)

BOEM Contact: [Dr. Walter Johnson](#)

Description:

Background: The BOEM proposes to lease within the Beaufort and Chukchi Sea Planning Areas. To maintain its state-of-the-art in oil-spill-risk analysis, BOEM seeks to take advantage through time of the increasing skill of circulation models supported by more and better data. A coupled ice-ocean model can be modified and expanded to capture provide multi-year circulation, ice, and forcing fields for use in BOEM NEPA oil-spill-risk analysis and post-sale oil spill response planning.

Objectives: Adapt and maximize the utility of an existing, coupled ice-ocean circulation model to represent the physical processes, especially circulation, within the Chukchi and Beaufort Sea Planning Areas. Provide BOEM with ten-to-twenty years of relevant modeled fields, such as gridded wind, surface water, and ice velocity, ice cover; and limited other modeled fields as agreed on between contractor and BOEM.

Methods: A coupled ice-ocean model will be modified to maximize utility in the Chukchi and Beaufort seas and to capture the agreed upon model fields. Three-hour gridded velocity fields (wind, surface water, ice) and ice cover will be provided to BOEM in agreed format for a ten-to-twenty year hindcast simulation. Sensitivity testing and validation of the model and results will be conducted. The BOEM anticipates providing HF-radar results for Beaufort and Chukchi coasts to aid in validation. Documentation would be through the model manual, final report, and submittal of a peer-reviewed journal article.

Importance to BOEM: Oil spill trajectory analysis for impact assessment is needed for the Beaufort and Chukchi Planning Areas. 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 state-of the-art circulation models are essential to future OSRA-based EIS analyses. This study addresses aspects of USGS Recommendations 3.01, 3.02, 4.01 and 7.04.

Current Status: Ongoing

Final Report Due: June 2013

Publications: None

Affiliated Web Sites: <http://www.boem.gov/akstudies/>

Revised Date: May 16, 2012

ESPIS: Environmental Studies Program Information System

All *completed* ESP studies can be found here:

http://www.data.boem.gov/homepg/data_center/other/espis/espisfront.asp