

ENVIRONMENTAL STUDIES PROGRAM: Ongoing Studies

Region: Headquarters

Planning Area(s): Western, Central and Eastern Gulf of Mexico

Title: Improving Oil-Spill Risk Analysis in the Gulf of Mexico: A Multi-Model Approach - Part A -Data Assimilative Ocean Hindcast for Oil Spill Risk Analysis in the Gulf of Mexico

BOEM Cost: \$149,091.00

Period of Performance: FY 2012-2015

Conducting Organization(s): Florida State University (M12AS00001)

BOEM Contact: [Zhen Li](#)

Description:

Background:

The Bureau of Ocean Energy Management (BOEM) is responsible for analysis of potential oil-spill impact to the environmental resources prior to a lease sale for oil and gas exploration in the Gulf of Mexico Outer Continental Shelf (OCS). To estimate the probability of potential oil spill contacts with environmental resources in the Gulf of Mexico OCS, the high-resolution gridded surface current and wind products in the Gulf of Mexico are needed to drive the oil-spill trajectory model. Currently, the Bureau's Oil Spill Risk Analysis (OSRA) model relies on the surface currents generated by one of the Gulf of Mexico circulation models. The deterministic approach with one set of input to the OSRA model could be improved by incorporating several sets of input from different proven ocean models to run the OSRA model, because the ocean model output might be subject to uncertainties, such as uncertainties related to surface winds from various atmospheric re-analysis products. An ensemble of OSRA model solutions will be generated using the output from these hydrodynamic models, and the solutions will be statistically analyzed to understand the uncertainty in the probability of the potential oil-spill contacts with environmental resources in the GOM.

Objectives:

The objective of this study is to provide more accurate information for the state and local government agencies on oil spill risk management and contingency planning.

Importance to BOEM:

The Florida State University will deliver to BOEM a Hybrid Coordinate Ocean Model (HYCOM)-based data assimilative modeling framework that can be used to accurately hindcast ocean currents and other state variable needed for oil spill risk analysis in the

Gulf of Mexico. The end product will be a high resolution data set (in space and time) from 2003 to 2012 that provides consistent and accurate estimates of the ocean-state variables that are needed for oil spill risk analysis. The data set will be a valuable resource for both operational applications and scientific research. It will be most useful to natural resource managers at the local level who are responsible for stewardship and protection activity.

Current Status: The contract was awarded on 8/17/2012. The post-award meeting was held at Herndon on Sep 13, 2012. The contract is currently under a no-cost extension for 6 months. Draft report was submitted on Sep 1, 2014. The contractor is working on delivering the final product with recently available daily river input data.

Final Report Due: Feb 28, 2015

Publications:

Affiliated Web Sites:

Revised Date: Jan. 23, 2015

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