

**Minerals Management Service
Environmental Studies Program
FY 2010 Research Opportunities**

Characterization and Potential Impacts of Noise Producing Construction and Operation Activities on the OCS

To better understand the cumulative effects of noise from renewable construction and development activities on the OCS, the MMS will conduct a study to characterize all aspects of noise-producing activities such as pile driving during construction and platform installation, and of other common OCS activities. The study will characterize both specific sources of noise from MMS-permitted actions, as well as ambient noise measurements on the OCS.

Year 2011 Gulf-wide Emissions Inventory Study

The EPA significantly strengthened its National Ambient Air Quality Standards (NAAQS) for ground-level ozone. Due to these more stringent NAAQS, it is likely that many of the regions adjacent to the Gulf of Mexico will face great challenges in attaining air quality standards in their respective states and may require state agencies to perform air quality photochemical modeling for ozone and regional haze for use in their State Implementation Plans (SIP). In order to conduct this modeling, emission inventories must be generated as inputs to the models. The objective of this study is to develop a year 2011 air emissions inventory of OCS sources (platform and non-platform), including estimates of carbon monoxide, sulfur dioxide, nitrogen oxides, particulate matter, hydrocarbons, carbon dioxide, methane, and nitrous oxides. This inventory data will be made available to assist states in conducting modeling for additional SIP demonstrations to meet the new requirements. An air emissions inventory will be conducted to assure coordination of air pollution control regulations between OCS offshore sources and state's sources onshore. This emissions inventory will likely be useful for compliance with EPA's Greenhouse Gas Reporting Rule. Finally, MMS will use the 2011 emissions inventory to support the National Environmental Policy Act process when preparing environmental impact statements and assessments and for emissions trends and impacts analysis.

A Lagrangian Approach to Study the Gulf of Mexico's Deep Circulation

This 3-year study will increase the geographical coverage of drifter releases and analyze the resulting data to produce maps of currents and Lagrangian statistics of the current field such as length scales and dispersion of particles. This study will use acoustically tracked deep drifters in the Gulf of Mexico, including possible releases in Mexican waters, which will be submerged for a period of 12 months. The results of this study will provide maps of deep currents that will help with the assessment of accidental pollutant releases and shed light on dispersal of larvae. These improved maps of currents will be used by MMS and Industry to prepare for and avoid high currents, design better biological assessments for regulatory documents, and increase understanding of deep circulation. In addition, the findings may benefit archeologist's investigating of shipwrecks in the deep Gulf of Mexico.

Pilot Study of Aerial High-Definition Video Surveys for Seabirds, Marine Mammals, and Sea Turtles on the Atlantic OCS

This pilot study would test new technology that could provide information on seasonal and annual variation in bird, marine mammal and sea turtle species presence on the OCS of the Mid-Atlantic Region. Once effective and efficient methods are established for both acoustic surveys and for aerial surveys using high definition video, the combination of techniques will render it possible for the first time to document seasonal and annual variability in presence and abundance of birds, marine mammals and sea turtles across wide regions on the OCS and in all weather and lighting conditions.

Exploration and Research of Mid-Atlantic Deepwater Hard Bottom Habitats with Emphasis on Canyons and Coral Communities

Knowledge of the distribution and sensitivity of unique biological habitats in deep water is necessary for management decisions regarding potential oil and gas development in the Atlantic region. The purpose of this study is to focus on exploration and study of selected habitats that will refine the understanding of the distribution and complexity of hard bottom communities in the mid-Atlantic slope area. If patchy distribution of sensitive communities is observed, one objective will be to define environmental conditions that result in the observed distribution of significant high-density hard bottom communities that are sensitive to impacts from oil and gas development activities. (NOPP Flagship Study!)

Socioeconomic Indicators in the North Aleutian Basin

This study will be a key component of environmental studies pertinent to the proposed Lease Sale 214 in the North Aleutian Basin (NAB). The goal of the study is to formulate a nested set of key socioeconomic domains (e.g., economic well-being, housing, health and safety) that will facilitate the monitoring of changes in human well-being in the NAB. The information from this study will be used for NEPA analysis and documentation and long-term monitoring of oil and gas exploration and development in the region. Gathering baseline information from the communities of Cold Bay, False Pass, King Cove, Nelson Lagoon, Sand Point, and related Community Development Quota groups in the region is a high priority.

Renewable Energy Visual Impacts

There are a number of different renewable energy projects and offshore technologies that can capture energy from wind, wave, tidal flow, and/or ocean current. Each of these approaches presents a number of designs that present different views from the coastline. Many people living on the coasts of California, Oregon, and Washington place a high value on the views from their homes and places of recreation and become concerned about any permanent structures that are proposed which might be visible from shore. Studies and analyses that have been done to date have examined the impacts on the view shed from oil and gas platforms on the Pacific Coast. There has also been analysis of view shed impact from the proposed Cape Wind Project on the east coast. To our knowledge, no such analyses are available for wind, wave, or ocean current energy projects. The objective of the study is to assess the potential visual impacts associated

with offshore renewable energy technologies including wave, wind, and ocean current projects.

Establishment of Standardized Monitoring Protocols

Offshore alternative energy is a new activity on the OCS. As such, the environmental effects from these activities will not be fully understood until after development has occurred. The MMS plans to require that industry monitor these effects, at least initially, to determine their magnitude and extent. While it is expected that the environmental consequences will be minimal, these expectations need to be verified. The objective of this study is to create scientifically valid monitoring protocols to collect information about the effects of offshore alternative energy facilities. The development of clear monitoring guidelines requires several steps. First, what will be monitored must be clearly identified. The monitoring data, once collected, must provide useful information to guide future decision making. Second, the monitoring protocols should follow good scientific principles to ensure that valid data is collected, including consistency, background information, and any other applicable data to ensure the quality of the measurements. Third, the monitoring methods must be executable and reproducible. Fourth, the data recording must be consistent and predetermined to allow for comparable data across several projects.

Evaluation of Socio-Economic and Cultural Impacts on Coastal Tribes from Offshore Renewable Energy Development

The Minerals Management Service (MMS) is concerned about potential impacts to Native American tribes from the development of offshore alternative energy projects on the Outer Continental Shelf (OCS). Impacts can be diverse and span social, economic, and cultural concerns including visual impacts, access restrictions to waters, and direct impacts to tribal lands, sacred sites, or other culturally significant areas. The MMS is responsible for identifying these impacts and determining appropriate mitigation measures through the National Environmental Policy Act process and the National Historic Preservation Act (NHPA) Section 106 consultations. The objectives of this study are to identify those coastal Native American tribes that are likely to be impacted due to offshore alternative energy development along areas of the Atlantic and Pacific coastline and summarize the impacts that tribes could incur due to the alteration of the ocean view or construction and operation activities of offshore alternative energy projects. Recommendations will be developed to improve communication strategies between the MMS and coastal tribes, especially for the NEPA and NHPA Section 106 processes, and develop a set of mitigations that the MMS could employ to help avoid, mitigate, or minimize such impacts.

Workshop to Develop Methodologies for Studying the Effects of Seismic Survey Air Guns on Commercial, Recreational and Subsistence Fish and Shell Fish in the Atlantic and Alaska

Scientific uncertainty exists over the effects of seismic survey air guns on fish and shell fish, especially for species harvested commercially, recreationally and through subsistence. This study will hold a workshop which will define a scientifically-sound protocol for assessing impacts to these fisheries and identify key species in the Atlantic

and Alaska on which to conduct future field testing of these methodologies. Results from this study will help address key fishery impact concerns noted in various MMS environmental analyses and also provide new information for use in consultations and assessments under the National Environmental Policy Act, Endangered Species Act, and Magnuson-Stevens Fishery Conservation and Management Act.

Improving Emission Estimates and Understanding of Pollutant Dispersal for Impact Analysis of Beach Nourishment and Coastal Restoration Projects

Objectives for this study include: develop (i) operational characteristics (ii) activity profiles, (iii) loading factors for each activity, and (iv) emission factors for equipment types not accurately or fully parameterized in GOADS or published elsewhere; develop a standardized approach to estimate emissions using a methodology and tool adaptable for use with regional inventories; develop emission inventory templates that can be used in NEPA analyses for proposed projects in attainment areas; and, provide generic information about plume transport and dispersion for use in future environmental analyses.