

Region: Gulf of Mexico

Planning Area: Gulfwide

Title: Meteorological and Wave Measurements for Improving Meteorological and Air Quality Modeling

MMS Information Needs to be Addressed: Meteorological and wave measurements are needed to improve meteorological and air quality modeling and to derive dispersion parameters for use in air quality model and assessment. These field measurements will improve the accuracy of meteorological and air quality models and benefit air quality assessments to be used in environmental impact statements. The data will be used to improve air quality modeling used to predict and assess 8-hour ozone, visibility, and haze in NEPA documents.

Cost Range: (in thousands) \$400-\$600 **Period of Performance:** FY 2008-2010

Description:

Background: Meteorological and wave measurements will be used to characterize the atmospheric boundary structure and air-sea interaction (flux parameterization) and to test theories (e.g., COARE algorithm, flux calculations) such that this information can be used to improve the application of meteorological and air quality models in the offshore environment and the coastal area. The MMS has conducted several meteorological studies in the GOM however, these wind measurements need further updating for offshore meteorological and air quality assessments.

In previous MMS studies, the simultaneous measurements of wind and wave in the lower level of the atmospheric boundary layer offshore were not available and there were data gaps between 10m and 100m. The information gathered from previous studies will help set up a more comprehensive field measurement system to collect more accurate wind and wave data. The proposed study will take advantage of existing boundary layer studies and provide updated data, science and information for improving the accuracy of meteorological, and air quality modeling. Therefore, it is proposed to install a meteorological measurement system offshore to obtain information for atmospheric boundary layer study.

Objectives: The objectives of this study are to characterize the atmospheric boundary layer structure and air-sea interaction for improving meteorological and air quality modeling over coastal transition zone, shallow water and deep water areas. Furthermore, this study is to focus on the data gaps between 10 m to 100 m above the sea surface and the transition zone between land and ocean.

Methods: Conduct field observations and data collection. Plan and install a new wind measurement system using wind profilers, sodar, buoys, and meteorological wind measurement sensors mounted on an offshore platform or a 100 m meteorological tower.

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