

BOEM ENVIRONMENTAL STUDIES PROGRAM: ONGOING STUDIES

BOEM OCS Region: [Gulf of Mexico](#)

Planning Area: Gulfwide

Title: Meteorological and Wave Measurements for Improving Meteorological and Air Quality Modeling (GM-08-04)

Total Cost: \$1,037,470.00

Period of Performance: FY 2009-2011

Conducting Organization: Sonoma Technology, Inc.

BOEM Contact: [Dr. Chester Huang](#)

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 BOEM has conducted several meteorological studies in the GOM; however, these wind measurements need further updating for offshore meteorological and air quality assessments. This study is also needed in the other studies such as wind energy, climate change, and real time weather forecasting. This study is a unique program with historical significance.

In previous BOEM 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 10 m and 100 m. 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 100m 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*, LICOR humidity sensor, float sensor (for measuring near surface temperature), and meteorological wind measurement sensors mounted on an offshore platform or a 100 m meteorological tower*.

*not implemented; unfunded

Products: Annual and final reports and peer reviewed articles.

Importance to BOEM: The collected data will be used to improve meteorological and air quality modeling used to predict and assess 8 hour ozone, visibility, and haze in NEPA document.

Current Status: Kick-off meeting held in January 2009. A new wind-wave measurement system has been deployed to an oil platform and data have been collected. Extension of six months.

Final Report Due: December 2011

Publications: 2010 and 2011 AGU Fall Meetings

Affiliated WWW Sites: None

Revised date: February 2012

ESPIS

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