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Proposed FY13 Physical Sciences Studies

Discipline	Title
AQ	NAAQS Exemption Level Study
AQ	Year 2014 Gulf-wide Emissions Inventory Study
AQ	Enhancing the Capability of a New Meteorological Model for Air Quality and Other BOEM Applications in the Gulf of Mexico
PO	Coral Reef Ocean Acidification Sentinel Site in the Flower Garden Banks National Marine Sanctuary
PO	Testing Chang and Oey's (2011) Gulf of Mexico Oscillator Hypothesis: A Field Program

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Enhancing the Capability of a New Meteorological Model for Air Quality in the Gulf of Mexico

Background

•BOEM has a need for an improved meteorological model for air quality applications in offshore and coastal regions. Include the air-sea flux algorithm developed by NOAA. This will allow us to understand atmospheric boundary layer processes, structure and its interaction with clouds, aerosols, chemistry, air pollutants, and large-scale processes in the offshore and coastal environments. To address climate change for NEPA; help in platform design and alternative energy.

•BOEM can adapt and leverage Weather Research and Forecasting Model, a cost of nearly $50 million under the sponsorship of USAF.

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Enhancing the Capability of a New Meteorological Model for Air Quality in the Gulf of Mexico

Relevance

EPA is concerned with BOEM's OCD short range air quality model, developed three decades ago. This model will update our toolbox as the Weather Research and Forecasting Model is a newer and widely used model. This improved meteorological model can realistically reproduce atmospheric circulation patterns in the costal areas and the basic atmospheric boundary layer parameters needed for air quality modeling.

Objectives

- The improve the capability of the WRF Model for air quality applications in the offshore and coastal environments by including the improved COARE algorithm for air-sea interaction in the coastal areas.
- To improved understanding the Gulf's atmospheric boundary layers over water.
- To assist decision-making and assessing impact of air quality on coastal and Class I areas.

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Items	Cost
Source Code Development	160 K
Computer Time	20 K
Data assimilation and data analysis	160 K
Test Cases	120 K
Final Report	15 K
Travel	10 K
Publications	5 K
Total Cost	490 K