# Physical Oceanography Sciences

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**Preamble**

We are impressed with the quality of the proposed programs and the quality of the presentations.

The presenters were quite knowledgable and generally answered our questions well.

Recognize that our comments are science based and do not account for any political criteria important to BOEM.

The below comments may reflect our incomplete knowledge of the proposed projects.

# Physical Oceanography Sciences

***Cumulative Impacts in the Gulf of Mexico Region***

Air quality jurisdiction in this region falls to BOEM who must follow NAAQS (National Air Quality Standards) standards set by EPA. New 1 and 8 hour standards and lower ozone standards have not yet been reviewed by BOEM.

This study appears to be recommended (demanded?) by EPA and EPA approved models MUST be used.

Are “required” studies like this one part of what a studies program should do? Perhaps yes, but could there be separate funds for “required” studies or model runs that don’t fit “science criteria”?

We recommend that BOEM investigate how well atmospheric models (i.e WRF) represent the atmospheric boundary layer and isolate the modeled boundary layer physics so its role in driving model results is clear.

Our recommendation is to Incorporate the investigation of the atmospheric boundary layer into this proposal.

# Physical Oceanography Sciences

**Trends Analysis of OCS Emissions in the Gulf of Mexico**

Surely the offshore distribution of sources has changed over time and space so this work is important. We speculate that this project is separate from the above program because it is not part of the “EPA required” studies.

We think that this project should be part of the previous effort and wonder whether a combining projects may save money.

It has a relatively high cost and we are curious whether this is to support or acquire an in-house GIS person?

# Physical Oceanography Sciences

**Simulating Planktonic Prey and High-Trophic Habitat Variability in the Gulf of Mexico**

The topic needs further focus on how a model will be selected. Guidelines for the analysis should be developed because many point to point comparisons do not work well.

The product is not quite clear regarding model synthesis and approaches to model validation.

This appears to be “run a model and compare it with observations” which runs the risk of generating ambiguous results and redundancy with other efforts.

# Physical Oceanography Sciences

**Assessment of Mud-Capped Dredge Pit Evolution on the OCS, Peveto and Sand Point SE Borrow Area**

Not an easy problem to address but very likely to be a recurring issue across the Gulf of Mexico and elsewhere.

Results could be quite useful because the time scales of natural filling of the pit are only somewhat known and the type of fill material is poorly known at best.

Plans for measuring waves and currents needs to be further developed because using an ADCP or current meter to get near bottom data is challenging.

Proposed coring is a great idea. Has the Corp of Engineers been asked to leverage this?

There is an important time sensitivity to this because of newly created pits.

This project is well thought out and we recommend funding.

# Physical Oceanography Sciences

**Synthesizing and Quantifying Environmental Effects on the Gulf of Mexico**

This is driven by the need for an updated, quantitative assessment of the different sources and their relevant contributions.

If the purpose is to update the pollutant database, then to be comparable and relative, the database needs to be broader than just oil and gas.

Project needs further justification to address who is end user of the product, scope of work and deliverables.

If BOEM is not the resident expert and the primary source of data then who is?

# Physical Oceanography Sciences

**Workshops on Developing a New, Leveraged Approach to Long-Term Monitoring in the GOM**

Long term thinking is good as is leveraging but this project may duplicate efforts of others. We are told that this project might evolve via the RESTORE money so our review may be moot at this time.

It would be a challenge to host a workshop that produced a priority list for monitoring because of the inherent wide range of opinions on what to monitor.

Perhaps querying stakeholder (industry, recreation, fishers...) could clarify and define the important issues

The NOAA funded Ocean Observing Systems are always asking these types of questions and should be brought into the discussion.

This is likely a series of workshops.

# Physical Oceanography Sciences

**Microclimate Formation within Wind Turbine Arrays and its Effects on Local Weather and Climate**

We are surprised that this has not been addressed previously.

It appears to be a very necessary part of the now certain expansion of offshore wind turbines.

# Physical Oceanography Sciences

**Use of Northeast Coastal Ocean Forecast System in Offshore Wind Energy Resource Planning**

It is important to know what happens to the benthic communities downstream of wind turbines. This project complements the previous program that is focusing on the atmospheric response.

FVCOM (high resolution ocean numerical model) would be used to asses the ocean boundary layer.

Recommend that the deliverables be a list of potential, new observations relevant to the project goals.

# Physical Oceanography Sciences

**Physical and chemical Analyses of Crude and Refined Oils: Laboratory and Mesoscale Oil Weathering**

This probably needs to be done although there may not be an immediate need.

Are samples from hydrocarbon seeps available and representative? Will there be access to industry samples?

We suspect that the role of ice and oil is outside the scope of this project but seems critical.

# Physical Oceanography Sciences

**Cook Inlet Circulation Model Calculations**

Probably driven by new lease issues in Cook Inlet.

Clarify how new models will advance previous results.

Take advantage of existing data for model validation.

Most recent topography is essential.

# Physical Oceanography Sciences

**Ecological Processes in Lower Cook Inlet and Kachemak Bay: A Partnership in Monitoring**

This will expand on an existing observing program focusing on lower Cook Inlet.

Project needs more definition on what is measured and where and how those measurements fit into BOEM's mission.

Leveraging makes this attractive.

# Physical Oceanography Sciences

**Environmentally Benign Oil Simulants to Mimic the Behavior of Oil Droplets in the Ocean**

This looks like a great tool for the future.

Might also directly address the issues of how oil is entrained in ice and the resulting transport and weathering.

We recommend funding.

# Physical Oceanography Sciences

**General remarks.**

1. BOEM should already be the expert and knowledge source for Information on pollutant sources. This means also that you should already know whether your mitigation approaches are working.

2. It surprises us that a number of projects require a funded “literature search”.

    1. A thorough in-house literature review **prior** to many of the proposed programs is essential (although probably not possible for new, highly technical work).

    2. Can funds for “literature reviews” be set aside to help the foundation of the proposal process?

    3. As scientists we rarely if ever “farm out” the literature review. You are paying to educate others instead of yourselves.

    4. It may be worthwhile to develop an internal program that rewards and encourages BOEM individuals to increase reading papers and synthesizing results.

3. Has BOEM done a self-assessment of whether their website, databases and literature are easily and well used internally? Do you have feedback mechanisms to ensure web-based tools are relevant and useful?