

**Forecast Ecosystem Conditions in Gulf of Mexico OCS Habitats
Using Coupled Modeling and Climate Scenarios**

**Quarterly Report (Y3Q3 – Apr 1-Jun 30, 2019)
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This quarterly report is filed per requirements of BOEM-NRL IAA # M16PG00027 with respect to our research project focused on climate-scale ocean model simulations for the Gulf of Mexico. The focus of this study is to forecast, through year 2050, marine ecosystem conditions in the Gulf of Mexico (GoM) using RCP climate scenarios prescribed by the NCAR CESM Large Ensemble (LE) atmospheric forcing.

1. WORK ACCOMPLISHED

Minimal labor hours were spent on technical/scientific tasks this quarter, mainly because the next step in the project is to identify and acquire the NCAR LE and ME atmospheric data products. As such, efforts were focused on preparations for travel to NCAR to finalize the selection of these products and transfer them to NRL servers.

The NAVGEM atmospheric fluxes have been processed (1993 to present) for delivery to NCAR for analyses and comparisons to the LE and ME atmospheric fluxes. Similarly, NCAR processed ERA5 to serve as a “present-day” baseline. NCAR will provide a general assessment of the quality of the various atmospheric products that will be used for the Gulf of Mexico control and climate simulations.

Prepared for BOEM COR visit on May 17, 2019. An overview of the project was presented and project discussions ensued.

Paperwork for Year-4 incremental funding was completed to make the transfer to NRL so the funding becomes effective during fiscal year 2020 (i.e. after October 1, 2019).

2. PROBLEMS

None to report.

3. PLANNED ACTIONS FOR NEXT QUARTER

NCAR will be visited during July 8-12, 2019 to finalize the selection of the atmospheric fields and the exchange of relevant data products. NCAR will be analyzing the forcing products while NRL processes them into ocean-model ready files to run the proposed model simulations.

4. BUDGET

\$280K has been received (Y1:\$80K, Y2:\$80K, Y3:\$120K).

Expenditures to date: ~\$118K

(note: budget sheets now reflect total expenditures from inception of the project).