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

Quarterly Report (Y4Q4 – Jul 1-Sep 30, 2020)
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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

The focus during this quarter was on examination of the two control runs forced with NAVGEM and ERA5. Both of these runs have completed through 2019 and produced large amounts of outputs that are presently being analyzed using trend techniques and monthly means and evaluated against observational data, an important step before running any projections. Additionally, preliminary analyses of these results had revealed that the Gulf of Mexico is retaining more heat energy relative to the rest of the global ocean, and thus further comparisons and quantitative analyses (vs. ERSST, WOA, etc.) are being conducted in an effort to gather enough compelling evidence for a manuscript.

2. PROBLEMS

While IT capacity for teleworking, during the pandemic, continues to improve, there is still significant slowdown when working with the large amounts of data required in this project.

3. PLANNED ACTIONS FOR NEXT QUARTER

Continue analysis of the aforementioned control runs with the goal of submitting a paper publication by the end of the year.

4. BUDGET

$280K has been received (Y1:$80K, Y2:$80K, Y3:$120K).
Expenditures to date: ~$182K.
Y4:$110K increment approved and expected this year.