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

Quarterly Report (Y3Q2 – Jan 1-Mar 31, 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

A project website portal has been designed and made publicly available to centralize information and salient milestones in the project.

https://www7330.nrlssc.navy.mil/derada/GOMCLIM

Quarterly reports will be complemented by figures and analyses therein.

The major milestone through this quarter is the completion of two control runs forced by interannual atmospheric fields from NAVGEM, one that includes data assimilation (Experiment 02.0) and a shorter one that did not include data assimilation (Experiment 02.1), but included the CoSiNE model coupling. Preliminary results from these controls runs are being analyzed and posted on this website, including a long-term animations from Expt. 02.0. All dynamic content, which otherwise cannot be easily disseminated, will be posted to the project website as the project evolves.

Analyses of atmospheric forcing products for the control and projection runs continue, with UC/NCAR leading efforts in the construction and validation of climate projection products suitable for the Gulf of Mexico. ERA5 and CESM-CAM5 are being evaluated. NRL is conducting sensitivity simulations using NAVGEM and MERRA2 in preparation for the atmospheric forcing.

2. PROBLEMS

IT security related issues remain with the NRL webserver where the project website is hosted. IT is actively troubleshooting to resolve any remaining problems.

3. PLANNED ACTIONS FOR NEXT QUARTER

A visit from the new BOEM COR is planned for May 17 to showcase relevant work and discuss the project. Sensitivity simulations will be configured and conducted during a planned visit to NCAR during the summer of 2019.

4. BUDGET

$280K has been received (Y1:$80K, Y2:$80K, Y3:$120K).
Expenditures: ~$53K year to date.