Integration Ocean Observing System (IOOS) CariCOOS: Advancing Coastal Intelligence in the US Caribbean

Funding Agency: NOAA

Partners: University of Puerto Rico, Mayaguez (Lead)

Period of Performance: June 1, 2016 – May 31, 2021

Total Budget: $236,312

Rutgers University Center for Ocean Observing Leadership (RUCOOL) is a global leader in High-Frequency radar (HFR) network implementation and management. Through this proposal, RUCOOL looks to assist CariCOOS in the expansion and operation of their HFR network. The US Coast Guard has identified the ocean surface current data from the four existing HFR stations as an important resource for their search and rescue activities. The real-time surface current information improves the decision-making capabilities during critical life saving search and rescue missions.

The HFR network is part of the observational sensor subsystem for CariCOOS. The other subsystem for CariCOOS is a modeling and forecast component. The subsystem is comprised of wave, storm surge, wind and ocean circulation models. The ocean circulation model is based upon the Regional Ocean Modeling System (ROMS). The goal of this proposal is to compare the surface current measurements of the HF radar network with the output of the circulation model and test the capability of the other models to assimilate the measured ocean surface current data.

The timeline and goals for the project are listed in Table 1. The deliverables for this year of the project are listed in Table 2.

For the upcoming CARICOOS year we will continue to develop data and products that can help with assessing and managing the impact of major Sargasso (SSO) arrivals. We will focus on two initiatives 1) forecasting major SSO arrivals and 2) documenting its impact on ecosystems (hypoxia/acidification/decrease in solar irradiance in La Parguera) .

Enhancements we propose for the product include:

* Additional subregions, including La Parguera, to be identified by our stakeholders
* Incorporate SSO imagery (to be provided by us) as background of subdomains domains (cubesat, merged imagery, drones)
* Incorporate AOML’s warning system depicting areas with significant patches offshore
* Duplicate the product using FVCOM

We have constructed a web site to post project summary and status here: https://rucool.marine.rutgers.edu/research/caricoos/