Caribbean Coastal Ocean Observing System (CariCOOS)
University of the Virgin Islands - Center for Marine and Environmental Studies and University of Puerto Rico Mayaguez Partnership

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LONG-TERM GOALS

Our goals are to build a framework for the Caribbean regional association to sustain an integrated ocean and coastal observing system serving the in the waters surrounding the US Virgin Islands. The Virgin Islands observing system mission parallels that of the CariCOOS mission which is to meet the informational needs of local, regional and federal decision makers, resource managers, entrepreneurs, educators, scientists and general citizenry.

MILESTONES / OBJECTIVES

Reporting period June 1 2016 – May 31 2017

The CARICOOS milestones and objectives to be completed by the University of the Virgin Islands (UVI) as described in the 2016 Scope of work have been impacted due to delays in completing the MOA with the University of Puerto Rico Mayaguez to allow funds to be spent and transferred. Drs. Jobsis and Habtes were not able to access any of the funding until January 17, 2017 following the completion of the MOA between the university and UVI Accounting assigning a fund number. Despite the completed lack of funds Drs. Jobsis and Habtes have worked to complete the specified objectives when possible with no or limited funds. To overcome the reoccurring delays in completing the MOA between the two administrations, Dr. Jobsis has suggested that UVI and UPRM CariCOOS go to a multi-year MOA that would cover this project for the remainder of the NOAA funding cycle with appropriate clauses to insure completion of reporting and objectives

MILESTONES / OBJECTIVES

- June 1 2016 - Dr. Paul Jobsis appointed to manage UVI's projects and observing assets that support CariCOOS goals and with assistance of Dr. Sennai Habtes

will deliver the data or products to CariCOOS managers.

- June 1, 2016 through May 31, 2017 - meet with Roy Watlington bimonthly (6 times per year) to discuss outreach.

- October 31, 2016 or when the funds become available from UPRM, whichever is later - UVI will sign a Personal Service Agreement with Doug Wilson of Caribbean Wind, LLC to provide the maintenance of the St. Thomas Oceanographic buoy (UVI 1) and thermistor string with work to be completed by May 15 2017.

- June 1, 2016 through May 31, 2017 – UVI CMES will display the CariCOOS website's wind, waves and temperature models in the MacLean Marine Science center and provide feedback on its use by CMES personnel. In December 2016 and May of 2017 UVI will provide UPRM feedback on the effectiveness of the CariCOOS website.

- August 2016 – UVI will move the UVI 1 oceanographic buoy into Brewers Bay for replacement of WQM and testing (it is unclear why the WQM has failed). Maintain buoy in Brewers Bay until deployment to Northside of the St Thomas.

- December 1st 2016 or within 6 months of receiving funding for 2016-2017 from UPRM - UVI will move the St Thomas buoy to the A location northwest of St Thomas, 18.47609N, 65.15682W, for the new buoy site has been determined after multiple surveys, see figure 1.

- December 1st 2016 - Permits have been requested and should be in place for the movement of the buoy.

- August 15, 2016 and every two months afterwards - UVI will inspect the ADCP and Weather station on the Crown Bay mooring dolphin to insure it is working correctly.

- March 2017 - UVI will arrange travel of UVI representatives and stakeholders to CariCOOS annual meeting in Puerto Rico.

- December 2016 and May 2017 - UVI will provide data from the thermistor string to UPRM DMAC with our mid-year and final reports.

WORK COMPLETED

- Dr. Jobsis has taken on the responsibilities of Virgin Island CariCOOS coordinator, overseeing the US Virgin Islands CariCOOS observing assets and

Dr. Habtes has worked with UVI employee Andy Breton to create an automated process for QA/QC and data storage so that it can be integrated into CariCOOS DMACS. Mr. Breton has met with UPRM DMAC personnel and continues training on QA/QC procedures.

- Dr. Jobsis and Dr. Roy Watlington have met multiple times to discuss outreach and OCOVI's plans.

- Doug Wilson of Caribbean Wind LLC has traveled three times to the Virgin Islands and takes part in weekly meetings to discuss UVI-CariCOOS projects.

- UVI was inspecting the ADCP and weather station at Crown Bay every two months. This has been done more often as multiple trips were made to adjust the angle of the ADCP and validate the data. The data was not being transmitted correctly by the weather station, and a problem was discovered in the data handling of the Sutron weather station. The ADCP at the Crown Bay site was returned to Teledyne for repair. It is currently at Sutron Inc. to allow testing with the Sutron weather system for the Crown Bay Dock. The testing is complete and the system works well in the lab. Doug Wilson will return with the ADCP in June to reinstall and assist with the deployment of the UVI oceanographic buoy.

- The CariCOOS webpage with wind/wave predictions has been displayed at the MacLean Marine Science Center. The computer has been replaced. Informal surveys of CMES personnel have found that the new website is preferred to the old one. Less than half those surveyed use the display for determining the weather/sea state prediction.

- In August of 2016, the UVI oceanographic buoy was relocated to Brewers Bay for maintenance and to be stored until it can be moved to its new location northwest of St Thomas. In December the WQM was refurbished and is collecting data within Brewers Bay. A new modem was installed and drivers updated. The WQM has been reinstalled, the chain bridle replaced, the buoy cleaned, and a contract with Lighthouse Marine has been signed to deploy the buoy. The buoy awaits redeployment when weather permits.

- UVI has received all necessary permits to move the buoy to the new location northwest of St Thomas, 18.47609N, 65.15682W. Dr. Habtes and oceanographic technician Vanessa Wright, were able to ship the anchor and chain to San Juan, PR and have the NOAA R/V Nancy Foster deploy them along with a temporary float during the 2017 Coral Reef Ecosystems Research (CRER) cruise the participated on in April of 2017. The "as built" coordinates are 18.47653 N, 65.15663 W.

- UVI researchers including Dr. Jobsis, Dr. Habtes, and Dr. Sonaljit Mukerjee, the new physical oceanography and ocean circulation post-doc, met with Dr. Miguel Cannals and aided in his research team's search for appropriate sites for a High

Frequency (HF) radar to be installed on St. Thomas. A new lead on a potential HF radar site on SW point of Water Island will be explored in June 2016 at the former Navy gun emplacement at Flamingo Point.

- UVI-CariCOOS members Andy Breton and Sonaljit Mukherjee traveled to Mayaguez, PR in December, 2016. The purpose was to meet with UPR-M CariCOOS members to establish working relationships and partnerships to enable UVI to participate more in completing CariCOOS objectives.

- Dr. Sennai Habtes has agreed to work with Dr. Miguel Canals Silander on a Caribbean Fisheries Management Council (CFMC) project to investigate fish connectivity between the USVI and PR, if funded. The proposal was submitted in December, 2016.

- UVI-CariCOOS members Paul Jobsis, Sennai Habtes, Sonaljit Mukherjee, Andy Breton and Vanessa McKague attended the CariCOOS regional assembly in Rincon PR. Mukherjee and Breton presented posters.

- The thermistor string permit approval has been received by UVI, the equipment was delivered to Doug Wilson in Annapolis Maryland for assembly and testing. Sound Nine has corrected the bug that caused the inductive modem to be repeatedly signaled to be on alert for data delivery. This was originally was to be deployed in December of 2016, and is now scheduled to arrive in June of 2017 and to be deployed this summer.

MAJOR OUTCOMES

The permits for the thermistor string and northwest buoy have been received. Crown Bay ADCP measurements have been validated and the data transmission problem with the Sutron Weather station has been determined and corrected. Buoy maintenance has been completed. All permits for deployment of the thermistor sting south of St Thomas and deployment of the oceanographic buoy NW or St Thomas are in place. The buoy anchor and chain have been deployed at its new location. The buoy awaits an appropriate weather window for it to be deployed in its new location northwest of St Thomas.

RELATED PROJECTS

Storing the oceanographic buoy in Brewers Bay has allowed the continuous collection of oceanographic conditions in the bay, which will be helpful to UVI's Mare Nostrum project. Funded by VI-EPSCoR, the Mare Nostrum project has been doing monthly

oceanographic measurements within the bay to correlate oceanographic and meteorological conditions to animal movement. An array of 40 Vemco acoustic receivers has been installed in the bay. Fifteen species of fish and two species of sea turtles have been tagged with acoustic transmitters. The movement of these organisms throughout the bay is part of eight graduate student research theses.

VI-EPSCoR marine science related research has hired oceanographer Sennai Habtes, post-doc Sonaljit Mukherjee, and maintained oceanographic technicians Vanessa McKague and Andy Breton on contracts to conduct oceanographic research. Partnering CariCOOS projects and VI-EPSCoR projects will allow for synergy that can promote oceanographic research, and data dissemination in the region.

WORK PLAN FOR UPCOMING PERFORMANCE PERIOD
(Dec. June 1, 2017 – May 31 2018)

Continue bi-monthly meetings with Roy Watlington and OCOVI and assist in OCOVI outreach events. Bi-monthly cleaning and inspection of the Crown Bay ADCP and weather station will also continue. Deployment of the thermistor string and northwest buoy will be completed this summer. UVI will continue the biannual maintenance of the oceanographic buoy and thermistor string. UVI hopes to work more closely with UPRM web designers and DMAC to allow the CariCOOS website to host the wind and currents in Crown Bay and make a product that can aid pilot boat captains. Dr. Sonaljit Mukherjee will travel to PR to participate in a ROMS modeling workshop in August, 2017, and will continue to work with UPRM researchers in developing a ROMS model for the VI. Discussions with UPRM CariCOOS researchers on how to increase our research partnerships and the possibility of hosting the 2018 general assembly will continue. Discussion with UPRM CariCOOS leadership to address reoccurring delays in subaward funding approval between UPRM and UVI must be held.


CARICOOS

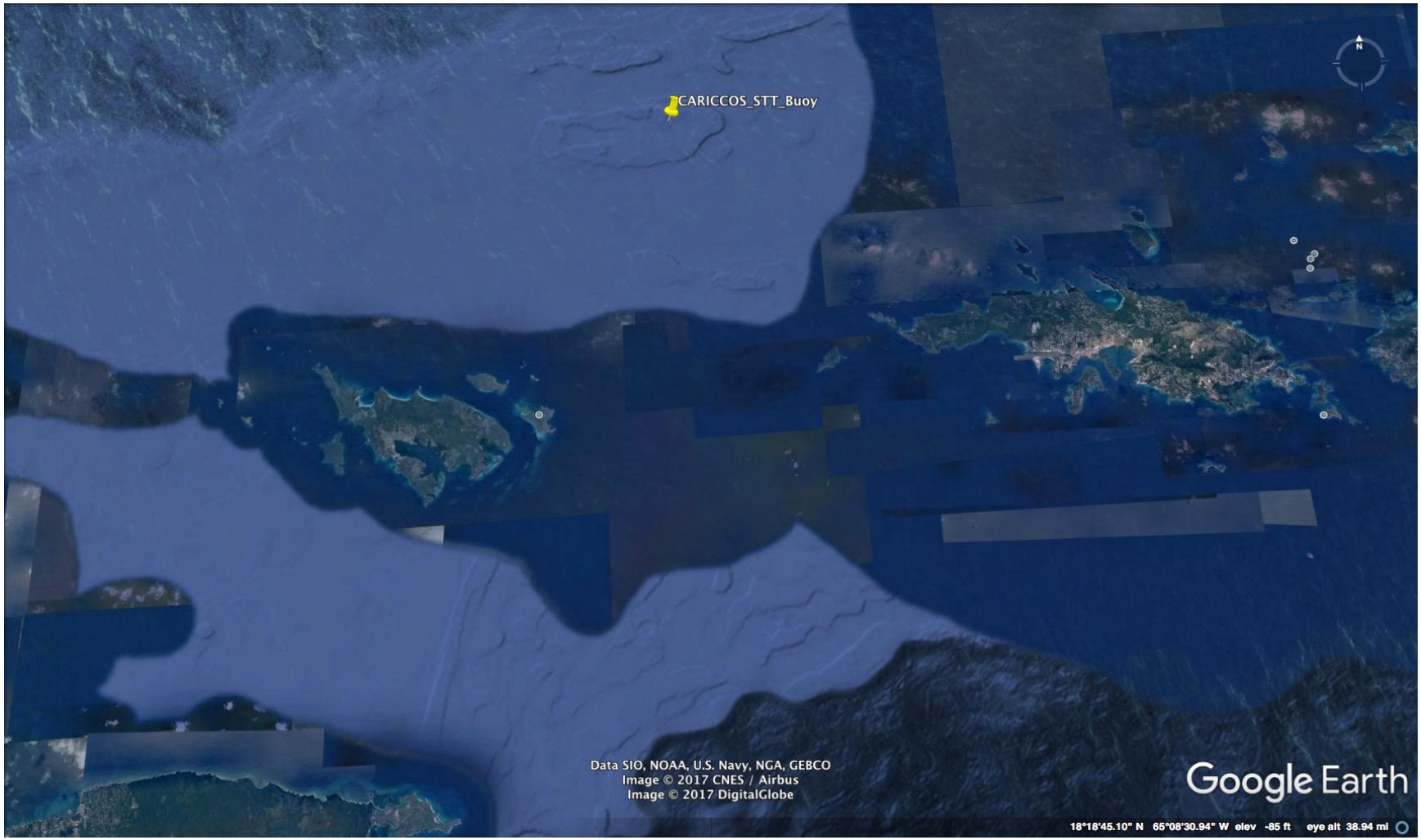

Figure 1. New location of the St. Thomas Oceanographic Data Buoy (UVI 1).