



**Facilitating CARICOOS Goals and Activities
for Coastal Ocean Observing
in the US Virgin Islands**

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LONG-TERM GOALS

Facilitating CARICOOS goals and activities for coastal ocean observing in the US Virgin Islands while promoting understanding and maximum participation of USVI principals in all aspects of ocean, atmosphere and coastal observing and devising specialized approaches to address local needs.

MILESTONES / OBJECTIVES

In accordance with the Scope of Work approved for inclusion under CARICOOS grant # NA16NOS0120026, the following categories of service cover the objectives intended for primary focus during this performance period: (1) Extending education and outreach to the community with emphasis on information about the 2017 hurricane experience and about the restoration of assets to service; (2) Restoration of observational assets; (3) General maintenance of buoys and observational assets; and (4) Introducing new technology to match stakeholders needs and IOOS mission. Implicitly OCOVI commits to assisting CARICOOS Headquarters in interacting with local, regional and federal interactions. The shift in emphases compared to FY 18 goals reflects the necessity to continue returning assets to service in face of the lingering effects of Hurricanes Irma and Maria.

WORK COMPLETED

- Finalized recommendation for locating the first CARICOOS High-frequency station in the USVI;
- Field visitation, review and status assessment of all major CARICOOS observational assets in the USVI (six meteorological stations, two data buoys, one shoreline meteo-hydrographic station);
- Facilitate restoration of Weatherflow® meteorological stations at four previously occupied sites and identification of sites to replace two rendered untenable by the hurricanes;
- Acquisition and distribution of outreach and education tools such as Open ROV kits for clubs and schools, audio-visual equipment for CARICOOS exhibits at the VI Children's Museum, *etc.*;

- Partnering with Rutgers University, NOAA-AOML, CARICOOS Headquarters, the US Navy and other US Government agencies in conducting the 2018 Hurricane Glider project that deployed AUV gliders to evaluate pre-storm thermal structure and sea state in and near the Virgin Islands Basin as a means of understanding regional cyclogenesis and improving hurricane path and strength forecasts;
- Specifically accomplished deployment and recovery of 5 gliders, returning them safely to the US Navy and establishing protocols for similar projects in the future;
- Provision of subject matter expertise for programs for coastal hazard awareness (See Publications and Products below) and responding to the USVI community's request for hurricane facts and data, through discussions and presentations and through the OCOVI web and Facebook pages;
- Achieved progress with the two most advanced of OCOVI's Hands-on ROV clients conducting investigations using Open-ROV models; and extension of Hands-on ROV program by identifying a new participant and providing SeaPerch ROV kits to facilitate Summer 2018 projects for pre-secondary youth;
- Finalized recommendation and gained partial approvals for locating the first CARICOOS High-frequency station in the USVI;
- Trial deployment of Spotter® wave buoy and student analysis of output data;
- Final publication of a paper in *Caribbean Perspectives* (See below)..

MAJOR OUTCOMES

- With regard to restoration of observational assets, OCOVI arranged for and assisted WeatherFlow in the restoration of meteorological stations at Buck Island and Rupert Rocks, St. Thomas, Two Brothers, St. John, and Sandy Point, St. Croix;
- OCOVI assisted UVI and CARICOOS headquarters in consideration actions with regard to the severely hurricane-damaged UVI-EPSCoR buoy (NDBC #41058);
- The acquisition and installation of first precipitation gauge as an accessory to the WeatherFlow meteorological station at Sandy Point, St. Croix utilizing funds recruited from USGS/UVI/WRRI;
- Expanding OCOVI's capabilities by identifying and engaging a cadre of UVI students as OCOVI Interns and as contractors to assist USVI CARICOOS/OCOVI missions;
- Success in engaging previously untapped members of the community, as contractors as necessary for needed help with regard to acquiring permits, accesses and collaborations;
- Publicized the availability of CARICOOS, WeatherFlow and BTST products for wind assessment interesting to observers during the 2018 Carlos Aguilar Regatta;
- Demonstrated effectiveness of synergies obtainable by increasing communication with and offering assistance for the achievement of related goals of existing collaborators, such as the West Indian Company, Caribbean Fast Ferries, the University and the Government of the US Virgin Islands.

RELATED PROJECTS

- OCOVI assisted site visits to UVI by NSF/SEAS and EPSCoR review officials;
- Preparation of a manuscript for presentation at the 2018 Fall Meeting of the AGU;

- OCOVI initiated an experimental project whereby UVI students with skills relevant to ocean observations may organize themselves to accept *ad hoc* work projects relevant to their collective skills from OCOVI and other enterprises.

WORK PLAN FOR UPCOMING PERFORMANCE PERIOD (December 1, 2018 – May 31, 2019)

- Improving OCOVI's effectiveness by reappraising its activity portfolio and by identifying and recruiting personnel for future leadership and staff;
- Continuing to improve and enhance usership of CARICOOS data, products and services in the USVI;
- Prepare for Phase-2 (Summer 2019) of the Hands-on ROV programs at Camp Umoja, Antilles School, UVI, and other sites as well as extension to other stakeholders;
- Finalize installation of CARICOOS High-Frequency Radar station on Water Island;
- Installation of a second rain gauges on a WeatherFlow meteorological station;
- Operationalizing of Northside Spotter® Wave Buoy;
- Enhance CARICOOS/OCOVI exhibits for the VI Children's Museum's return to its original venue and exploring means of supporting equivalent public displays on St. Croix and St. John;
- Assisting acquisition of replacement buoy for NDBC # 41058 under ownership of CARICOOS, yet in harmony with objectives of buoy-assisted University projects;
- Explore the possibility of gaining more buoy coverage of St. Croix's coastal waters by sharing buoy platforms owned by VI Fish and Wildlife or others;
- Continue evaluating process and outputs of Summer 2018 AUV glider deployments with respect to investigating cyclogenesis conditions in/near the Virgin Islands Basin;
- Supporting researchers from UVI and elsewhere in using AUV gliders for projects such as contributing upgrades to Caribbean Basin climatology, accessing heat content in the Main Development Region, or monitoring meridional overturning flow;
- Expanding engagement of UVI and other students in planning, marine operational and computational aspects of ocean observations;
- Continuing to develop new accesses to CARICOOS products for regattas and special maritime events;
- Resuming efforts to recruit funds and in-kind support from stakeholders and collaborators and from external sources for specific stakeholder needs such as measuring precipitation, visual surveys of the seafloor, assessment of aerosols, *etc.*

REFERENCES

- OCOVI web page: www.ocovi.org
- Camp Umoja's web page: <http://climatechangevi.org/our-projects/>
- Virgin Islands Children's Museum web page: www.vichildrensmuseum.org
- BTST web page: <http://beentheresailedthat.com/ocovi/ocovi.html>

PUBLICATIONS & PRODUCTS

- Wilson, W. Douglas and R.A. Watlington (2018) *Irma, Maria and the post-hurricane status of CARICOOS in the US Virgin Islands*, illustrated presentation at CARICOOS General Assembly, San Juan, June 1, 2018
- Watlington, Roy A. (2018) *RESTRT: Irma and Maria One-Year Mark*, St. Thomas Recovery Team Public Meeting, Yacht Haven, St. Thomas, September 15, 2018
- Wilson, W.D., *NAVY/NOAA Hurricane Glider Activities – USVI*, Hot wash, illustrated presentation, Naval Oceanographic Office, Stennis Space Center, MS, November 2, 2018.
- Watlington, Roy A. (2018) Scientific considerations in evaluating impacts of Hurricanes Irma and Maria in 2017, *Caribbean Perspectives*, Eastern Caribbean Center, St. Thomas, pp 42-46.