



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

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Performance Period: June 1, 2017 – May 31, 2018**

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 special emphasis on supporting ocean-related STEM programs; (2) Improving stakeholder service with regard to their use of CARICOOS products focusing on improved access and data presentation and with regard to their requests for subject matter expertise; (3) Improving observations and enhancing observation assets with focus on introducing high-frequency radar, wave buoys and rain gauges, focusing as well on strategies for locating these and other assets; and (4) Assisting CARICOOS Headquarters in interacting with local, regional and federal interactions.

However, the impacts of Hurricane Irma (September 6, 2017) and Hurricane Maria (September 20, 2017), redistributed emphases placed among these categories as recovery and return to service became the overarching goals of the performance period.

WORK COMPLETED

- Finalized recommendation for locating the first USVI High-frequency station;
- Acquisition 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;
- Support for VITEMA emergency managers in developing maritime playbooks advisement in the event of natural coastal hazards;

- Provision of subject matter expertise for private-sector programs for coastal hazard awareness (See Publications and Products below);
- Acquisition of Spoondrift wave buoy and determination of the optimal deployment site, pending approval of USVI DPNR permit.

Then, in the wake of the 2017 hurricanes and in response to hurricane damage to assets, stakeholders and CARICOOS/OCOVI scope of work schedules,

- Assisting the development of an appeal for including CARICOOS in any and all supplemental federal funding for hurricane recovery;
- 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);
- Productive consultation with stakeholders such as fishers and marine transporters to determine prioritizing for the repair and return to service of observational assets;
- Assisting WeatherFlow in identifying and tabulating hurricane data sets – from CARICOOS observational assets, from the BVI, Barbuda, St. Barthelemy, *etc.*;
- Responding to the USVI community’s request for hurricane facts and data, through non-sensationalistic meetings and presentations and through the OCOVI web and Facebook pages;
- Reorientation of outreach/education approaches to accommodate lost or damaged venues (*e.g.*, providing computer tablets to the VI Children’s Museum’s “Mobile Museum” so that CARICOOS exhibits could be taken on the road to schools and programs for youth);
- Reactivation of Hands-on ROV program by identifying Phase-1 participants, providing them with kits and making plans for their Summer 2018 investigative projects;
- Resumption of collaboration with UVI-WRRI for external funding to secure precipitation gauges for select CARICOOS meteorological stations;
- Partnering with Rutgers University, NOAA-AOML, CARICOOS Headquarters and other US Government agencies to advance the project that will deploy AUV gliders in and near the Virgin Islands Basin to enhance understanding of pre-storm thermal structure and sea state along likely hurricane trajectories and to obtain information helpful in refining prediction of storm paths and providing new understandings about regional cyclogenesis in general;
- Authoring a paper on for refereed consideration for publication in *Caribbean Perspectives*.

MAJOR OUTCOMES

- With regard to outreach and education, OCOVI acquired the ability to change strategies to match stakeholders’ changing circumstances after the disruption of the hurricanes; its outreach and education programs may now be more relevant and appreciated than in the pre-hurricane period;

- With regard to acquiring permits, accesses, cooperations and utilities, the inescapable necessity of engaging appropriate members of the community, as contractors as necessary, was demonstrated and successfully applied;
- The hurricanes intensified the scarcity of skilled purveyors, disabled key collaborators (such as the University of the Virgin Islands), and lowered priority of CARICOOS objectives and programs among USVI stakeholders. In this light, OCOVI has explored ways to build and access capabilities and concluded that some synergies can be gained 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, surveys and damage assessment of visiting storm surge and damage survey teams from Oregon State University, Florida State University, Notre Dame University and Kyoto University;
- OCOVI assisted the University of the Virgin Islands and Caribbean Wind, LLC in assessing the status of the VI-EPSCoR data buoy (NDBC # 41058).

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

- Rebuild and enhance usership of CARICOOS data, products and services in the USVI that was diminished after the hurricanes disabled CARICOOS observational assets;
- Completion of Phase-1 (Summer 2018) Hands-on ROV programs at Camp Umoja, Antilles School, and other sites as well as extension to other stakeholders;
- Finalize installation of CARICOOS High-frequency Radar station on Water Island;
- Repair, upgrade or replacement of WeatherFlow meteorological stations at Two Brothers, Sandy Point, Rupert Rocks, and three other locations (subject partly to receipt of supplemental recovery funding via CARICOOS Headquarters);
- Installation of rain gauges on two WeatherFlow meteorological stations;
- Deployment and operationalizing of Northside Wave Buoy;
- Enhance CARICOOS/OCOVI exhibits for the VI Children's Museum's return to its original venue and establishing means of supporting equivalent public displays on St. Croix and St. John;
- Assisting acquisition of replacement buoy for NDBC # 41058 owned by CARICOOS rather than the University of the Virgin Islands, yet in harmony with objectives of University buoy-assisted projects;
- Explore the possibility gaining more coverage of St. Croix's north coast waters by outfitting a bouy owned by VI Fish and Wildlife with instruments for observations of interest to CARICOOS stakeholders;

- Completion, in consort with on-going glider programs at CARICOOS Headquarters, of Summer 2018 trials of AUV glider deployments specifically to intercept cyclogenesis conditions and events in/near the Virgin Islands Basin;
- Intensify efforts to recruit funds and in-kind support from stakeholders and collaborators and external sources for specific stakeholder needs such as precipitation measurements, visual surveys of the seafloor, assessment of local aerosol invasions.

REFERENCES

- OCOVI web page: www.ocovi.org
- Virgin Islands Children's Museum web page: www.vichildrensmuseum.org

PUBLICATIONS & PRODUCTS

- Titlow, J. and W.D. Wilson (2017) The Hurricanes of 2017: Wind Measurements, Power Point presentation at OCOVI Annual Meeting, St. Thomas, December 16, 2017.
- Watlington, R.A. (2017) Natural hazard vulnerability, Tropical Shipping-Caribbean/Central American Action's 2017 Disaster Management Series, Grand Cayman, C.I. (June 21, 2017) and Palm Beach, FL (July 16, 2017).
- Watlington, R.A. (2018) Scientific considerations in evaluating impacts of Hurricanes Irma and Maria in 2017, in press, *Caribbean Perspectives*, Eastern Caribbean Center, St. Thomas.
- Wilson, W.D., R.A. Watlington and J. Titlow (2018) Irma, Maria and post-hurricane status of CARICOOS in the US Virgin Islands, at CARICOOS General Assembly, San Juan, May 31, 2018.