Supporting the Blue Economy - SECOORA 2018 Annual Meeting

SECOORA Principal Investigator Abstracts

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SECOORA High Frequency Radar Sensing of the Florida Current in South Florida

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The University of Miami operates three WERA sites (Virginia Key, Crandon Park, and Dania Beach). The goal is to provide 24/7 surface current coverage across the Florida Straits. Each site provides hourly radial current data at 2.2 km resolution to SECOORA data portal and the US National Network archive hosted by Scripps Institution of Oceanography. In Year 2, all three sites were damaged during the passage of Hurricane Irma, causing extensive damage to Dania Beach and complete destruction of the Virginia Key and Crandon Park sites. In March 2018, the HFR installation at Dania Beach was brought back on-line. Supplemental funding is required to bring Virginia Key and Crandon Park HFR back on-line. We are working on hold harmless agreements at Virginia Key (VK) and Crandon Park prior to redeploying HF radar instrumentation (unclear when funds will arrive). In addition, Dade County Water and Sewage Department (DWASD) requests a fence be installed around the facility housing the radar and computer as part of our agreement. Once supplemental funding is available, the HFR team will purchase two new HF radar/computer units from Helzel as well as new cabling from Talley to begin the installations. In addition, we are submitting an application to the Florida Department of Environmental Protection (DEP) for an HF radar site in Northern Key Largo. This fourth site will support WERA in a direction-finding mode. Once the permit is approved, a copy will be forwarded to SECOORA.

In the northern part of the domain at Dania Beach, we recently conducted a week experiment with the US Naval South Florida Test Facility to measure significant wave heights for their operations. Comparisons were directly made between the WERA and buoy derived wave heights. With the exception of one day of measurements when the buoy was located on the fringe of the radar domain, comparisons were quite good. More recently, a manuscript was accepted (subject to a revision) in Geophysical Research Letters on comparing the Florida Current to the East Australian Current.

In addition, higher resolution surface current measurements close to Port Everglades are being made available to the planned Army Corp of Engineers sponsored dredging pilot study administered through Florida Institute of Technology via a South Florida-Caribbean Cooperative Ecosystems Studies Unit (CESU). The CESU program (http://sfc-cesu.com/events/) is a consortium of the National Park Service, Southeast Marine Fisheries, Army Corps of Engineers, Fish and Wildlife, Coast and Geodetic

Survey, Bureau of Indian Affairs, San Juan Historical Society, and the University of Miami. Finally, our HF radar data are beginning to be used to assess sea level rise along Miami Beach since several years of radial and vector current measurements have been acquired as part of SECOORA, including sea level measurements and high resolution, space-based sea surface height anomaly measurements from satellite missions. Thus, there is interest in our HFR measurements of currents and waves since 2003 as the measurements have direct societal relevance.