Supporting the Blue Economy - SECOORA 2018 Annual Meeting

SECOORA Principal Investigator Abstracts

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Sustaining & Enhancing Coastal Ocean Observing for Regional Applications – HF-RADAR

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Two high-frequency, shore-based WERA radar systems are installed on St. Catherine's and Jekyll Islands, along the coast of Georgia. The WERA provide surface velocity measurements over a shelf area extending approximately 100 miles along the coast and 100 miles out to sea. A dense grid of measurements at ~3.5mile spacing are updated every half hour, and are used for model verification (R. He, NCSU) and continuing scientific analysis of shelf circulation and Gulf Stream variability. The St. Catherine's HFR continues to operate well and tropical systems along the Atlantic coast have not dramatically impacted this station. However, in Year 1, Hurricane Matthew caused significant damage to the Jekyll Island antenna arrays. They sustained considerable physical damage, including dislodging and burial of approximately half the pole/coil/cable assemblages. Because of the nature of the beam-forming equipment, it was possible to restore operation at somewhat reduced range and spatial resolution after several months outage. In Year 2, Hurricanes Irma and Maria destroyed the remaining external components (antennas and cables) of the Jekyll system, and exacerbated ongoing erosion at the Jekyll site. To restore operation of the Jekyll system, SkIO worked with the Jekyll Island Authority to identify a new, less erosion prone site on the island for WERA redeployment. In April 2018, Savidge and Matthais began the permitting process with GA Department of Natural Resources. Once the permits are approved, Matthais will oversee the redeployment of the Jekyll array.

Finally, four additional WERA radars (funded by NSF) were installed by Savidge and Matthais on the Outer Banks of North Carolina in spring 2017. These 13MHz medium range systems provide data every 20 minutes, to approximately 75mile range at 0.5mile spatial resolution. In addition to serving the science goals of the NSF project, reduced temporal (hourly) and spatial resolution (5 mile) quality-controlled data are being provided to Hugh Roarty at Rutgers for inclusion in the Mid-Atlantic Regional Coastal Ocean Observing System (MARCOOS) current mapping.