Supporting the Blue Economy - SECOORA 2018 Annual Meeting

SECOORA Principal Investigator Abstracts

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Integrated Decision Support and Management Tools for Adaptive Public Health Practices: An Early Warning System for Swimming Beach and Shellfish Harvesting Waters

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Bacterial pollution of coastal waters has important public health, economic, and social implications, particularly for tourism and shellfish industries. Bacterial pollution is a major cause of water quality impairments, resulting in a loss of ecosystem services. These losses impact the recreational and commercial fishing and shellfish industries, tourism, and also contribute to public health concerns related to primary contact with bacterial-laden waters and consumption of contaminated shellfish.

This project builds on the PIs existing collaborative community-based research efforts with local and regional decision makers to develop and implement a robust decision-making support system to advance the overarching goals of the Integrated Coastal Ocean Observing Act of 2009 and specifically addresses the SECOORA priority theme areas of: Ecosystems, Living Marine Resources, and Water Quality; Coastal Hazards; and, Climate Change. Members of the project team work with resource managers and public health officials in the FDA, EPA, ISSC and in MD, NC, SC and FL to develop and implement decision support tools which incorporate rainfall, water temperature, wind, and salinity data for beach recreational contact management of SC and FL beaches, and prototype tools for SC and MD shellfish harvest area management.

This project leverages resources, data, and skill sets available from the University of South Carolina, University of Maryland Center for Environmental Science, SECOORA, state and local resource management and public health agencies, and NOAA's National Weather Service (NWS), Center for Coastal Environmental Health and Biomolecular Research, National Integrated Drought Information System, and Office for Coastal Management / National Estuarine Research Reserve System.

User groups, including resource managers, public health officials and representatives of potentially vulnerable populations (e.g. Ad Hoc Water Quality Modeling Work Group, Charleston Waterkeeper, Lowcountry Alliance for Model Communities), are being

convened to provide guidance, input, and review in support of tool development. The anticipated products include nowcast tools that use precipitation, water temperature, wind, and salinity data (provided by the NWS, ocean observing systems, and state management agencies) and historic measures of bacteria concentrations to predict Enteroccocus, fecal coliform and/or Vibrio levels as well as new forecasting products derived by coupling the nowcasting tools and climate change model scenarios.

We continue to maintain the mobile app howsthebeach.org and provide public access to daily estimates of swimming beach bacteria levels for the Myrtle Beach, SC, Sarasota, FL, and now, Charleston, SC. These sites are located at http://howsthebeach.org/ and more specifically: http://howsthebeach.org/myrtlebeach; http://howsthebeach.org/sarasota; and http://howsthebeach.org/charleston. In addition, detailed daily reports are provided to interested beach managers and public health officials in SC and FL. We also worked with the Charleston Waterkeeper to develop a newsletter for distribution via their established communication network.

Extending the work done for the beach water quality projects, our research team provided the app for http://howsmyscriver.org. This came about from the Saluda River Monitoring Coalition, which was formed to monitor sections of the Saluda and Congaree rivers. This project monitors fecal coliform along eleven (11) sampling sites weekly during the recreation season, May to September.

The project team expanded the beach water quality monitoring efforts to include a section of the NC Outer Banks. This location has been identified as critical for water quality monitoring by the Division of Coastal Management, NC Department of Environmental Quality. The project team has begun collecting available historical and real-time water quality data for the Kill Devil Hills beach areas in NC. The team is starting to process data and run MLR models on this area. Due to lack of long-term historical salinity in the area, the project is using modeled salinity data from three models: HYCOM, Rutgers, and Copernicus. We are unable to use any regional models due to lack of easily accessed long-term historical data. Having a THREDDS server with long term, high resolution, local models would be very useful for the modeling process.