



Sentinel Site Quarterly

*North Carolina
Sentinel Site Cooperative*

Summer 2017

In This Issue

Contact [Jennifer Dorton](#) or [Sarah Spiegler](#) if you have articles or events that you would like to include in the next edition. Previous Quarterly Newsletters are on the [NC DEQ](#) website.

[Drones at Duke](#)

[Dredge Sediment](#)

[Citizen Science](#)

[Core Management
Team](#)

[Trainings](#)

Sampling Coastal Environments using Drones

The [Duke University Marine Robotics and Remote Sensing](#) (MARRS) lab is combining unoccupied aerial systems (UAS) and cutting-edge photogrammetry with traditional remote sensing techniques to transform the way researchers and managers look at sandy beach and dune environments. UAS allow for flexible and high frequency sampling of coastal environments, especially at local scales often overlooked by traditional study methods like LIDAR and terrestrial laser scanning.



A fixed wing UAS at Bird Shoal.

Last year, the MARRS lab collected high-resolution imagery and 3D elevation models of Bird and Bulkhead Shoals in Beaufort, NC before and after Hurricane Matthew, documenting the response of this important protective feature to major storms. MARRS partners with the National Park Service at [Cape Lookout National Seashore](#), performing monthly aerial elevation surveys on Core Banks and Shackleford Banks to detect changes in seagrass, maritime forests, dunes, and shoreline. Short-term goals include using innovative flight planning and computer vision to optimize UAS survey methodology for coastal habitats. MARRS is also working to integrate results into existing storm surge and geophysical models to help assess the vulnerability of coastal communities to flooding and SLR.

Applying Dredge Material to Salt Marshes

The NOAA Beaufort Laboratory is conducting and evaluating thin-layer application of dredged material on to salt marshes on Marine Corps Base Camp Lejeune (MCBL). Carolyn Currin ([NOAA NCCOS](#)) notes that this project utilizes and tests an adaptive management option to improve the long-term sustainability and resiliency of salt marsh habitat by building sediment elevation in fragmented and low-lying marshes adjacent to the Atlantic Intracoastal Water Way (AIWW). The project is being done in collaboration with the U.S. Army Corps of Engineers, who will provide assistance with permitting and regulatory compliance in the planning stages, and will assist in the second phase of dredge disposal. The proposed sites are on either side of the AIWW as it traverses MCBCL and are near long-term NOAA research sites with nearby water level stations and elevation benchmarks.

A thin-layer (10-15 cm) application of dredged sediment to three treatment plots was completed in early April 2017. Data on initial plant density, biomass

and surface elevation has been obtained, and site monitoring will continue on a bimonthly basis through the summer of 2017. This project will provide science to support development of state and federal policies on utilization of thin layer disposal of dredged materials on coastal wetlands.



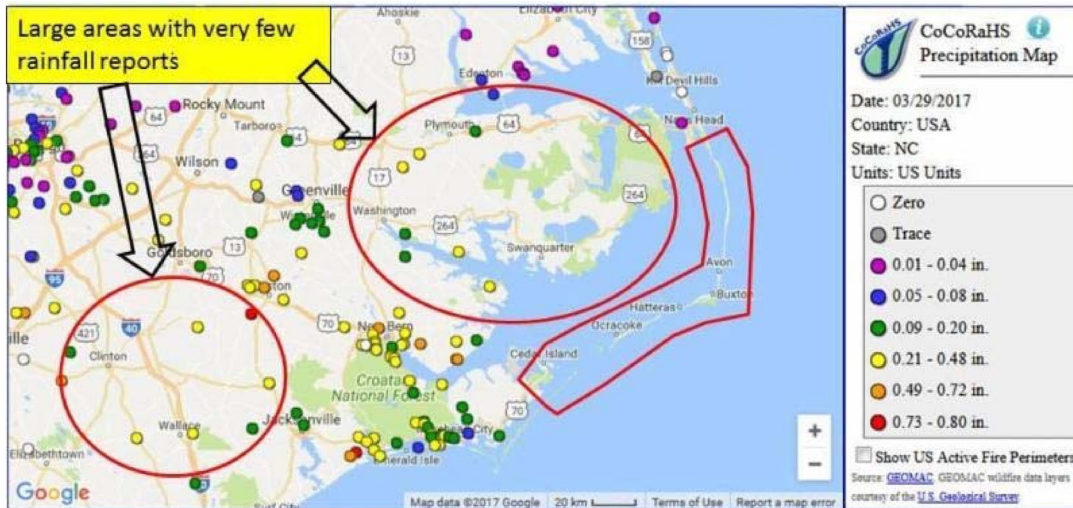
Project team beginning work at field sites.

Citizen Science Program Needs Volunteers to Observe Weather

A citizen science program called the Community Collaborative Rain, Hail, and Snow network ([CoCoRaHS](#)) is seeking new volunteer weather observers across Eastern North Carolina. North Carolina became the 21st state to establish the CoCoRaHS program in 2007, and by 2010, the CoCoRaHS network had reached all 50 states with nearly ten thousand observations being reported daily. Volunteers help obtain a better understanding of local weather and climate patterns by taking weather observations using a simple, low-cost rain gauge.

[David Glenn](#) (meteorologist with the [NWS in Newport/MoreheadCity, NC](#)) is the state Co-Coordinator for CoCoRaHS and says that the data collected is used every day and during big weather events across NC. Volunteers in this program become a part of the official weather history for events like

Hurricane Matthew, winter storms, and flood events. By providing high quality, accurate measurements, the volunteers are able to supplement existing networks and provide useful data to scientists, resource managers, decision makers and other users. A unique user of the CoCoRaHS data is the Shellfish Sanitation and Water Quality division in NCDEQ, which uses the data to assist with temporary shellfish closures.



CoCoRaHS seeks volunteers in Eastern NC to fill rainfall reporting gaps

Volunteers may obtain an official 4" plastic rain gauge through the CoCoRaHS website for about \$30 plus shipping. Volunteers complete a simple online training module and use the CoCoRaHS website to submit their reports. The data collection process is easy and observations are immediately available on maps and reports for the public to view.

If you would like to sign-up as a volunteer observer and become part of the expanding CoCoRaHS network, please click here: [Join the CoCoRaHS Network.](#)

New Members to the NCSSC Core Management Team

The NCSSC is pleased to announce that Paula Farnell from Sturgeon City (City of Jacksonville), Nathan Hall from UNC Institute for Marine Sciences, and Justin Ridge from the Duke University Marine Lab have joined the Core Management Team. The NCSSC is looking forward to working with these

new members and having their interests and expertise shape the future of the Cooperative.

Upcoming Trainings

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- Save the date: NOAA Tools Training, hosted by the NCSSC and NCNERRS (October 19, NOAA Beaufort Lab). An email with registration details will be sent out later this summer.
- Save the date: NOAA OCM [Adaptation Planning for Coastal Communities](#) (January 23-24, 2018, NOAA Beaufort Lab). Registration will be available Fall 2017.

The [NOAA Sentinel Site Program](#) leverages existing research and monitoring resources to ensure resilient coastal communities and ecosystems in the face of changing conditions. The program's place-based approach focuses on issues of local, regional, and national significance that impact habitats and species managed by NOAA as well as surrounding coastal communities.