



Sentinel Site Quarterly

North Carolina

Sentinel Site Cooperative

Fall 2018



Greetings, partners and stakeholders. The [North Carolina Sentinel Site Cooperative](#) (NCSSC) was established in 2012 as part of a [NOAA-wide effort](#) to provide coastal communities and resource managers with information on the potential impacts of sea level rise on coastal habitats and communities.

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

In This Issue

[New coordinator](#)

[SET collaboration](#)

[NCSSC expansion](#)

[Citizen science
water level
monitoring](#)

[NOAA EESLR
FY19](#)

[Info/trainings](#)

Meet Sarah Spiegler, the New NCSSC Coordinator

The North Carolina Sentinel Site Cooperative would like to welcome Sarah Spiegler as the cooperative's new coordinator!

Sarah began her [dual role as NCSSC coordinator and NC Sea Grant marine education specialist](#) in August 2018. She has worked with the cooperative in other roles since 2012, most recently as the cooperative outreach specialist from 2016 to 2017. She's excited to continue working with academic, research and management communities to help North Carolina coastal ecosystems and communities adapt to the impacts of climate change and sea level rise.

Sarah is located at the NC State University Center for Marine Sciences and Technology in Morehead City. Please feel free to contact Sarah and welcome her to this new role with the NCSSC and North Carolina Sea Grant: sespiegl@ncsu.edu



Building a Collaborative Network to Better Understand Changes to North Carolina's Marsh Surface Elevation

Surface Elevation Tables, or SETs, are used to study changes in marsh surface elevation. These devices are attached to a fixed benchmark and measure millimeter changes in elevation. There are over 125 SETs in coastal North Carolina that provide critical information on how marshes are changing as a result of sea level rise, yet the data from these devices are collected by different organizations that are not necessarily coordinating efforts.

In May 2018, the North Carolina National Estuarine Research Reserve ([NCNERR](#)) hosted a SET operator coordination meeting with partners including the U.S. Fish and Wildlife Service, National Park Service, NC State University, Carolina Wetlands Association, UNC Institute of Marine Sciences, East Carolina University, The Nature Conservancy, and Chowan University. The group agreed that the collaboration should start with three goals: [finalize the SET inventory that Jenny Davis and Carolyn Currin began in 2014](#); analyze the existing SET data to look for trends and generate research questions; and create an open forum to help trouble-shoot the management of SET sites.



Research staff from the North Carolina Coastal Reserve use a SET at a reserve site to measure changes in the marsh's surface elevation.

The end goal of this work is to determine what is happening to our coastal marshes. Are they keeping up with sea level rise, or are they drowning? This information will help resources managers make decisions on where to direct efforts to protect these important coastal habitats.

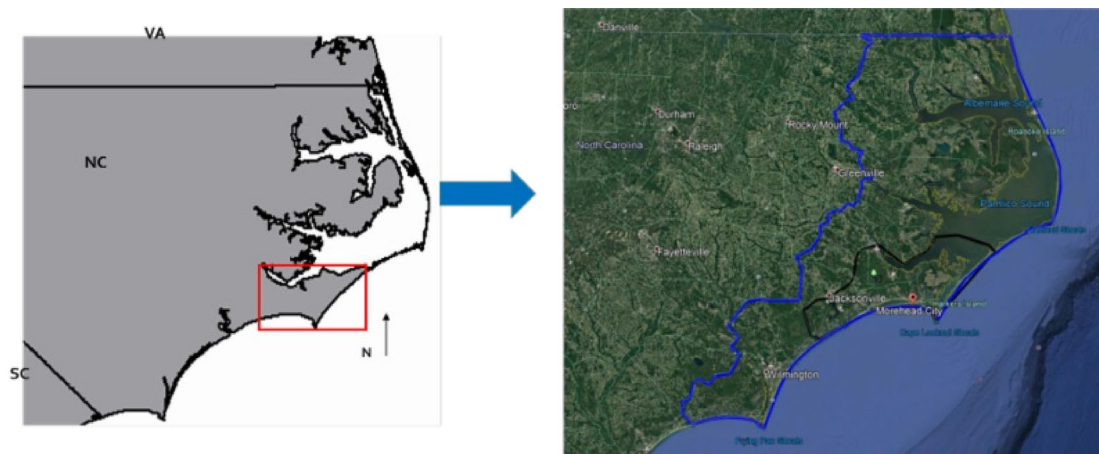
To read the full article about this effort:

<https://oceanservice.noaa.gov/sentinelsites/north-carolina/set.html>

NCSSC Expands to Include the Entire Coast of North Carolina

When the NCSSC was created in 2012, it was originally located in the central coast of North Carolina, including Carteret County and parts of Onslow and Craven counties. The cooperative's original boundary encompassed the Rachel Carson Reserve, a NOAA trust resource; a wealth of academic and research institutions; and Camp Lejeune, the largest Marine Corps Base on the East Coast.

In 2018, the NCSSC core management team voted to expand the cooperative's boundary in order to expand partnership opportunities. The new boundary of the cooperative will include the state's 20 coastal counties, plus Jones and Martin counties. This is an exciting opportunity for the NCSSC to build on past collaborative work with partners outside of the cooperative's boundary, such as Holly White, the principal planner for Nags Head, and to leverage existing resources throughout the state.



The NCSSC is expanding from its original boundary, pictured on the left, to encompass the entire North Carolina coast.

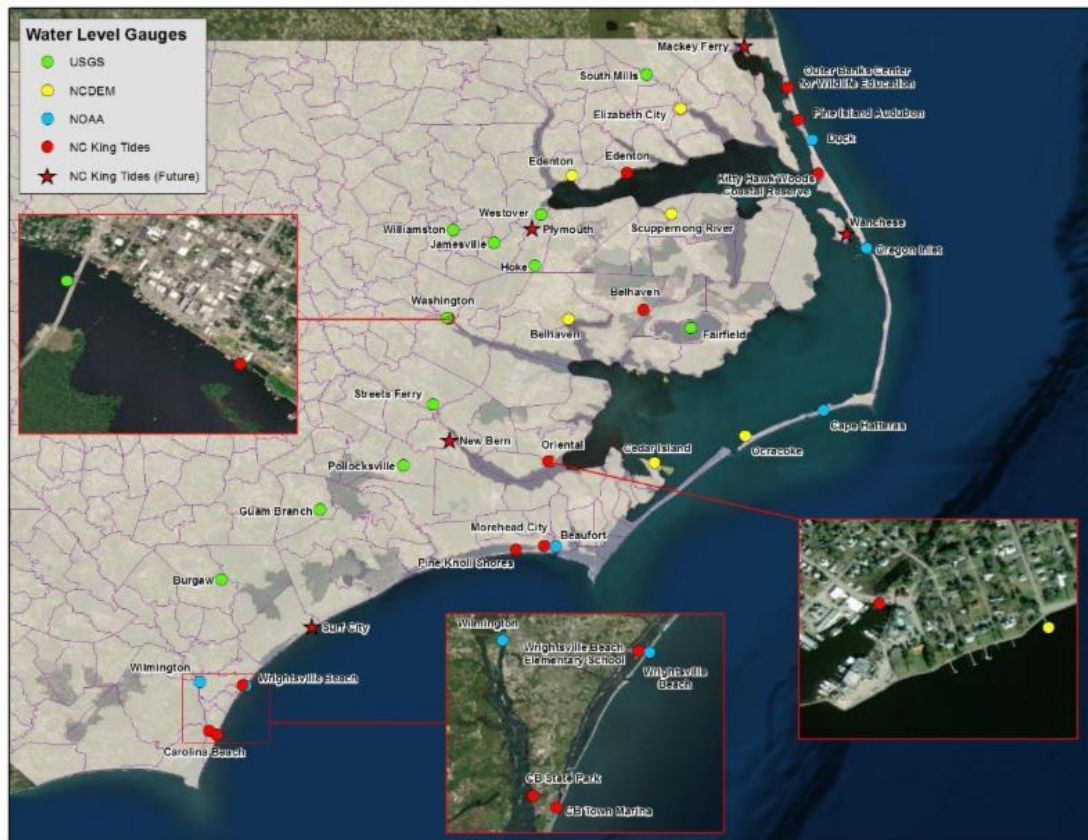
For more information, or to share ideas for collaboration, please contact Sarah Spiegler: sespiegl@ncsu.edu

Documenting Water Levels in Estuaries through the NC King Tides Project

A grant from the [Carolinas Integrated Sciences and Assessments \(CISA\)](#) to Christine Voss (UNC-IMS) and the [North Carolina King Tides \(NCKT\) project](#) has helped to raise awareness and broaden understanding of water level dynamics. Along the North Carolina coast, the intermingling of natural forces—including astronomical tides, meteorological forcing (wind), and sometimes the Gulf Stream—can lead to water levels that deviate significantly from those predicted, making such predictions difficult, especially on a local scale. This grant expanded the NCKT project to include water level monitoring within the 20 North Carolina coastal counties, generally in areas not well represented by USGS stream gauges or NOAA tide gauges.

Water level measurements were recorded by trained citizen scientists using gauging stations that were referenced to a common vertical datum (NAVD88). On the NCKT webpage you can access NOAA's [What's your Water Level?](#) app, which was originally developed for the NCKT project; citizen scientists around the world now use it to report water levels and flooding and to submit photos.

The resulting water level databases are both spatially and temporally specific, with date, time, and GPS coordinates documented. The data and photographs produced are intended for use by scientific, regulatory and management communities, as well as by the public, to gain a better understanding of the forces that drive water levels in North Carolina, as well as to stimulate thinking about the community-level impacts of rising sea levels.

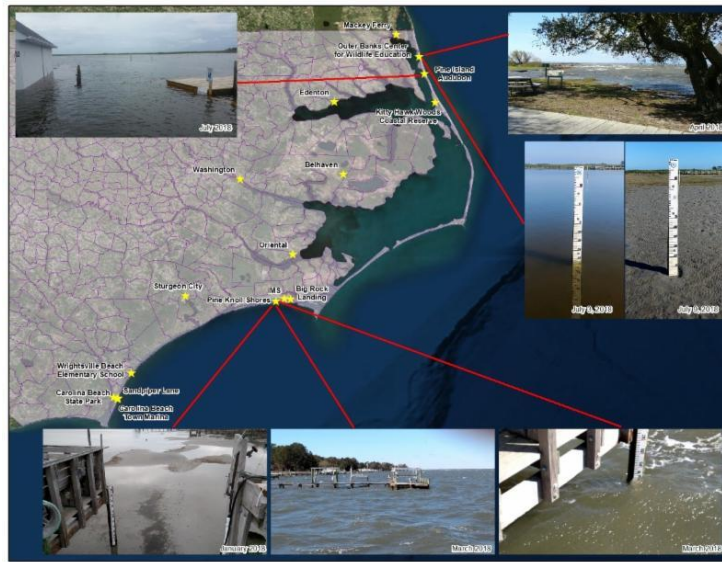


Map showing the location of NCKT gauges, which, along with several North Carolina Division of Emergency Management gauges, span the gap between USGS river and NOAA CO-OPS coastal gauges.

Working with the [NC Association of Floodplain Managers](#), the water level monitoring component of the NCKT project is offering ways in which municipalities and counties can lower their flood insurance rates by obtaining outreach and monitoring credits within the [FEMA Community Rating System](#). Project participants also commented that baseline data on local water levels have resulted in community discussions about more proactive measures related to sea level rise adaptation.

We invite everyone, especially our NCSSC

partners, to report water levels and submit photos from the numerous NCKT gauges installed at sites often visited by the [public](#). Help us "Snap the shore and see the future"!



Map showing locations of NCKT gauges (yellow stars) as of August 2018, with photos from water level monitoring participants.

NOAA Funding Announcement: 2019 Ecological Effects of Sea Level Rise Program

Please see the NOAA funding announcement: [2019 Ecological Effects of Sea Level Rise Program](#).

The [Ecological Effects of Sea Level Rise Program](#) is a multidisciplinary research program focused on providing a suite of science products and tools to inform coastal manager of local coastal vulnerability and solutions to mitigate flood risk.

In 2015, EESLR initiated a suite of projects in support of the [NOAA Sentinel Site Program](#) that focused on improving long-term regional and local ecosystem predictions of sea level rise and coastal inundation effects. These projects occurred in cooperatives in West Hawaii, North Carolina, and San Francisco Bay in California.

For the FY19 funding announcement, EESLR is soliciting proposals for projects that will use integrated field research and predictive modeling to evaluate and quantify the ability of natural and nature-based infrastructure approaches to mitigate the effects of SLR and inundation (storm surge, nuisance flooding, and/or wave run-up) on coastal ecosystems and communities.

Natural features are existing ecosystems, such as forests, wetlands, floodplains, dune systems, seagrasses, barrier islands and reefs, that provide multiple benefits to communities. Examples include storm protection through wave attenuation or flood storage capacity and enhanced water services and security. Nature-based infrastructure (or green/gray infrastructure) incorporates natural features with hard or structural engineering approaches to create a hybrid system, such as in a living shoreline, that also benefits communities.

For additional information and specific research priorities, please see the funding announcement. Letters of intent are due by Nov. 2, while full proposals will be due by Jan. 16, 2019.

If you are interested in submitting a proposal to NOAA and would like to partner with the NCSSC, please contact [Sarah Spiegler](#).

Upcoming Webinars, Conferences, and Trainings

- **Informational webinar: *Ecological Effects of Sea Level Rise FY19 funding opportunity***
 - Go to the [EESLR website](#) for a recording of the webinar
- **Kick-off webinar for NCCOS funded project "[The economic value of natural infrastructure for storm damage reduction in North Carolina's coastal communities](#)"**
 - Friday, Oct. 19, 1-2 p.m. EDT
 - Attend the webinar at the NOAA Beaufort Lab in the NCNERR downstairs classroom, or contact [Sarah Spiegler](#) for call-in details
- **[2018 Carolinas Climate Resilience Conference](#)**
 - Oct. 29-31
 - Columbia Metropolitan Convention Center, Columbia, SC
 - To register, go [here](#)
- **[NOAA Tools Training](#)**
 - Tuesday, Nov. 6, 9 a.m. - 3 p.m.
 - Cape Fear Community College, Wilmington, NC
 - To register, go [here](#)

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.