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Sentinel Site Quarterly

North Carolina

Sentinel Site Cooperative

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Happy 2016! Here's to a great start to the New Year. If you have a story or news item for inclusion in the NCSSC Quarterly, contact Jennifer Dorton. Previous Quarterly Newsletters can be found on the NC DEQ website.

In This Issue

North Carolina King Tides - Get Involved!

The North Carolina coast experiences a wide range of tidal regimes. Water levels

at a given location are influenced by both astronomical and meteorological forces. Astronomical tides (driven by the sun and moon) are impacted by meteorological conditions, such as wind speed, wind direction, and precipitation, which can influence water levels in coastal North Carolina.

While the term 'king tide' is not a scientific term, it is used to describe the highest high tide events of the year, when there is alignment of the gravitational pull between the sun and moon. During these extra high tide events, we can see what average water level event might look like in the future, given projected rates of sea level rise.

When king tides occur during floods or storms, they have the potential to cause significant damage to property and coastlines. However, king tides are natural and predictable.

Front Street Beaufort flooding October 2-6, 2016. The extreme flooding was due to heavy rains and Hurricane Joaquin moving by offshore of NC.

Dr. Christine Voss, UNC-Institute for Marine Sciences, invites you to join the North Carolina King Tides Project. To participate, share your photos of water levels near you on the NC King Tides Flickr site. Visit North Carolina King Tides to learn more about King Tides, how to safely photo-document water levels, find out when the next event will occur, and learn how to share your photos documenting extreme or interesting water-level events.

High School Education Connection with Oregon State University

On October 26, 2015, the North Carolina Sentinel Site Cooperative (NCSSC) hosted a kick off meeting for the 2015 EESLR project, led by Dr. Peter Ruggerio, Oregon State University, titled, "The Coastal Recovery from Storms Tool (CReST): A model for assessing the impact of sea level rise on natural and managed dunes." This project will focus on the morphological changes of coastal dunes from Portsmouth Island to Topsail Beach in an effort to better understand impacts of high water events on dune/beach erosion from extreme storms and increasing sea level rise.

Ms. Gabrielle Elardo, an AP Environmental Sciences student at Croatan High School, is working with David Glenn, from NOAA's National Weather Service and member of the NCSSC Core Management Team, to obtain environmental data such as buoy, tide, wind, and precipitation observations for the EESLR project. These data will be used by Dr. Ruggiero's team within the innovative modeling system to assess beach and dune evolution in both natural and managed systems in response to sea level rise and extreme storms.

NCSSC "Data Corner"

The National Oceanic and Atmospheric Administration's (NOAA) Center for Operational Oceanographic Products and Services' (CO-OPS) manages a permanent observing system, the National Water Level Observation Network (NWLON). NWLON is the foundation of the comprehensive system for observing, communicating, and assessing the impact of changing water levels nationwide. NWLON data-collection platforms also measure other oceanographic parameters in addition to water levels, including meteorological parameters.

NWLON stations such as the one seen here, are reinforced to withstand hurricanes and other major storm events.

With a network of 210 long-term, continuously operating water level stations throughout the US and its territories, NWLON is the "go to" source for government and commercial sector navigation, recreation, and coastal ecosystem management. NWLON provides the national standards for tide and water level reference datums used for nautical charting, coastal engineering, International treaty regulation, and boundary determination. CO-OPS also installs and operates approximately 100 short-term water level stations annually in support of a variety of programs including hydrographic and shoreline mapping projects, marine boundary determination, real time navigation systems, coastal habitat and marsh restoration projects, and NOS VDatum projects.

NWLON provides historical as well as present-day water level information. For example, the long-term records from NWLON are used to compute local relative sea level trends and to understand the patterns of high tide events. Sea Level Trends, based on NWLON data, have been updated for 2014 and are available on the NOAA Tides and Currents website (http://tidesandcurrents.noaa.gov/sltrends/sltrends.html). You can use this website to identify water level trends around the country. For example, monthly mean sea level

data from 1953 to 2014 was used to determine that sea level is rising in Beaufort, NC at a rate of 2.83 mm/year, which is equivalent to a change of 0.93 feet in 100 years.

Citizen Science Workshop - Beaufort, NC

The North Carolina Coastal Training Program is hosting the workshop, "Recruiting Citizens to Conduct Science & Monitoring - A Workshop to Share Experience from the Field". Participants will:

- Learn about citizen science and monitoring projects occurring in coastal NC;
- Discuss what makes a successful citizen science project; and,
- Discuss managing project volunteers.

The workshop will be held February 3, 2016 at the NOAA Beaufort Lab on Pivers Island. This workshop is free but registration is required. Please use the link above to learn more about the workshop and to register. Note that you must register by January 27, 2016.

NC Sea Grant Graduate Student Training Symposium

North Carolina Sea Grant is hosting a Graduate Student Training Symposium, April 6-7, 2016, in New Bern, NC. The focus for this year's Symposium is Communication. Graduate students face the challenge of telling the story of their research to many audiences. The symposium, which is open to all graduate students across the state, will include the following topics:

- Developing and presenting your "elevator message";
- Writing a successful grant proposals;
- Incorporating extension and outreach activities in your work; and,
- Preparing for your interview.

The program opens April 6, with an afternoon plenary and training session before a poster reception. The symposium is free but registration is required. For more details and to register for the event, please visit: https://ncseagrant.ncsu.edu/grad_comm

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.