August 2013 Volume 1, Issue 1

DCERP2 News



Highlights:

- Welcome to the first newsletter for DCERP2.
- Researchers begin research and monitoring activities.
- DCERP2
 Research and
 Monitoring Plans
 are available at
 (<u>http://dcerp.rti.org</u>)

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Welcome

The purpose of this newsletter is to improve communication with stakeholders during the second cycle of the Defense Coastal/ **Estuarine Research** Program (DCERP2). The first cycle of DCERP (referred to as DCERP1) was conducted from July 2006 to January 2013. DCERP2 started in November 2012 with a planning period and is being implemented over 5 years (February 2013 to October 2017).

DCERP2 are climate change, carbon cycle, and translating science into practice. A variety of audiences will receive information from DCERP2. These audiences include the scientific community, U.S. Department of Defense (DoD) installation managers, state and local managers, and the general public.

The greatest challenge for the DCERP researchers is how to communicate complex, scientific ideas and concepts in clear, simple terms. These terms must be easily understood by stakeholders and members of the public who have different levels of scientific training.

In DCERP2, we are trying to improve our communication to all stakeholders. One way to achieve that goal is through this newsletter. To provide outreach and better communicate about DCERP2 activities, we are planning to publish and distribute this newsletter quarterly. Please let us know what you think about this first issue!

The three main themes of

DCERP2 Receives SAB Approval

DCERP2 is sponsored by the DoD's Strategic **Environmental Research** and Development Program (SERDP). During development of DCERP2, SERDP set up a **Technical Advisorv** Committee (TAC). This committee is made up of discipline experts from academia, industry, government, and the military. The purpose of the TAC is to provide scientific and technical review of the program. The TAC reviewed the DCERP2 Research and Monitoring Plans before program implementation.

Each year, the TAC and the DCERP Team participate in a 2- or 3-day workshop to discuss the status of the project and so the TAC can provide technical comments.

In addition, DCERP2 is reviewed annually by SERDP's In-Progress Review Committee. This committee consists of representatives from various military service branches, the U.S. EPA, and the U.S. DOE. The SERDP Scientific Advisory Board (SAB), which consists of various discipline experts, also assesses the program. Each year, the SERDP SAB approves the funding needed to continue the program.

In June 2013, Drs. Patricia Cunningham, Michael Piehler, and Craig Tobias presented a briefing to the SAB. This briefing focused on the three themes of DCERP2 (climate change, carbon cvcle, and translating science into practice) and reviewed the comments from the TAC and the team's responses. The SAB unanimously approved funding DCERP2 for Fiscal Year 2014.

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Coastal Barrier Researchers Study Overwash

By Tony Rodriguez, University of North Carolina at Chapel Hill



Elevation of sand in a washover fan created during Hurricane Irene in 2011.

Links to Video:

Active Washover Fan

Aeolian Sand Transport

Barrier Islands that are migrating landward, like Onslow Beach, do this through overwash processes. Overwash processes occur during a storm or extreme high tide that temporarily submerges a portion of the island. During overwash, sand is transported to the backbarrier marsh and creates washover fans.

Island overwash is important for the carbon cycle, ecological succession (e.g., providing habitat for ground-nesting shorebirds), maintaining island elevation to minimize shoreline erosion and sustaining Onslow Beach as a training ground and recreational area for Camp Leieune, Despite the importance of island overwash, we know little about the processes and rates of morphologic change of the fans from the time a washover fan first forms until it becomes stable. The study of these

washover processes is the focus of Research Project CB-4. Project results will help installation managers better manage washover areas, which are likely to increase in number along the island with climate change.

In summer 2009, Onslow Beach was affected by higher than normal sea level. This high sea level was due to a temporary change in ocean-current circulation. The high sea level increased erosion at Onslow Beach and made the barrier island more vulnerable to overwash. In August 2011, a new washover fan formed as a result of Hurricane Irene (left) and we have been following the morphological and ecological succession of that fan since it formed. Two years later, the fan is still experiencing frequent flooding. The fan has widened to greater than 200 meters due to continued overwash and wind-driven (aeolian) processes. As the fan widens, backbarrier marshes and oyster reefs are continually being buried by sand (see videos). These islandwidening processes will continue until elevations increase and the dunes are formed again. It took the Hurricane Fran washover fan about a decade to become stable after it formed.

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Researchers Determine Coastal Wetlands Health

By Carolyn Currin, National Oceanic and Atmospheric Administration



Vegetation Monitoring at Traps Creek. (Photo credit: C. Currin)

NOAA staff and interns completed peak-biomass marsh vegetation monitoring from July 17– 23, 2013. The purpose of this monitoring is to determine spatial and temporal changes in salt marsh biomass and species composition. Permanent marsh plots (150 total) from eight sites were sampled for marsh plant species composition, percent cover, snail density, and surface elevation. Additional samples were taken to estimate the aboveground biomass of the dominant marsh plants, smooth cordgrass (Spartina alterniflora) and needlerush (Juncus roemerianus).

The work was completed in record time, helped by the installation of over 1,500 feet of new boardwalk. A few unusual species were found during the week of sampling the marshes, including tree frogs, a rattlesnake, and a coyote. Overall, the marshes appear to be healthy. However, the Mile Hammock Bay area in the lower New River Estuary still shows significant marsh dieback. Continued monitoring at these marsh sites will provide us with a long-term record to evaluate wetland health over time.



Juncus marsh at Pollocks Point. (Photo credit: C. Currin)

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We're on the Web! See us at: www.dcerp.rti.org

Recent Publications...

For more information about DCERP activities and findings, please see the following publications:

Anderson, I.A., M.J. Brush, M.F. Piehler, C.C. Currin, J.W. Stanhope, A.R. Smyth, J.D. Maxey, and M.L. Whitehead. 2013. Impacts on climate-related drivers on the benthic nutrient filter in a shallow photic estuary. *Estuaries and Coasts*. [Published Online]

Paerl, H.W., and T.G. Otten. 2013. Harmful cyanobacterial blooms: causes, consequences, and controls. *Environmental Microbiology* 65:995–1010.

Peterson, C.H., S.R. Fegley, C.M. Voss, S.R. Marschauser, and B.M. VanDusen. 2013. Conservation implications of density-dependent predation by ghost crabs on hatchling sea turtles running the gauntlet to the sea. *Marine Biology 160*(3):629–640.

Reynolds-Fleming, J.V., R.A. Luettich, and J.G. Fleming. 2013. Comparative hydrodynamics during events along a barrier island: Explanation for overwash. *Estuaries and Coasts* 36:334–346.

Rodriguez, A.B., S.R. Fegley, J.T. Ridge, B.M. VanDusen, and N. Anderson. 2013. Contribution of aeolian sand to backbarrier marsh sedimentation. *Estuarine, Coastal and Shelf Science* 117:248–259.

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