OLD DOMINION UNIVERSITY
Center for Coastal Physical Oceanography

INSTITUTE FOR COASTAL ADAPTATION & RESILIENCE℠

Fall 2022 Virtual Seminar Series

"RESILIENCE OF COASTAL TRANSPORTATION SYSTEMS IN NORTH CAROLINA"

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Abstract

The North Carolina Department of Transportation (NCDOT) has faced a number of challenges in recent years, including impacts of Hurricanes Matthew (2016), Hurricane Florence (2018), and Hurricane Dorian (2019), which caused extensive service disruptions to the transportation network. Hurricanes Matthew and Florence caused riverine flooding which inundated Interstate 95 and Interstate 40 for up to a week or more (NCDOT 2021). In the case of Hurricane Dorian, impacts caused the need to use the ferry system to remove 9,000 truckloads of storm debris (totaling over 6,650 tons) from Ocracoke Island (Virginian-Pilot 2020). Shoaling caused by inlet processes has also caused delays and interruptions and necessitated frequent dredging along the Hatteras Island to Ocracoke Island ferry route. In addition to hurricanes, longer-duration nor'easter storms regularly cause roadway closures due to overwash and flooding impacts along the coastal highways in the state, as well as suspension of ferry operations due to high winds and wave conditions.

Sea level is currently rising and rates of rise are predicted to increase for the foreseeable future [IPCC 2021 projects sea level rise to 2100], which will amplify storm surge and wave impacts. NCDOT is working to evaluate the vulnerability of the system's facilities across the state, both now and as climate change progresses. This will enable the Division to plan for adaptation projects to ensure that the system operates successfully into the future. The NCDOT Resilience Strategy Report (2021) lays out a road map to guide these efforts. This presentation will provide an overview of ongoing transportation resiliency efforts in North Carolina, including details of two ongoing projects to address barrier island transportation resilience and ferry system resilience.

Biography

Dr. Elizabeth Sciaudone, P.E., is a research assistant professor in the Civil, Construction, and Environmental Engineering department at North Carolina State University. Her current research is focused on coastal transportation systems vulnerability to natural hazards, as well as strategies to promote resilience and adaptation. She has over 20 years of experience in coastal engineering working in the private sector, as well as academia. In addition, she serves as managing editor for the journal of the American Shore & Beach Preservation Association, *Shore & Beach*.