OLD DOMINION UNIVERSITY

Center for Coastal Physical Oceanography

Spring 2023 Virtual Seminar Series

Title "Shallow Groundwater Response to Sea Level Rise: Implications for Onsite Wastewater Treatment in the Coastal Carolinas"

Speaker Michael O'Driscoll, East Carolina University

Date Monday, April 3, 2023

Time 3:30 PM EST

Zoom Info Link
Meeting ID: 920 9663 0434
Passcode: 912672

Abstract Sea level rise and coastal storms can impact the resilience of coastal communities due to their effects on increased flooding and land loss, saltwater intrusion, wetland loss/change, and impacts to local infrastructure. This talk will focus on the influences of rising groundwater levels on decentralized wastewater infrastructure. Onsite wastewater treatment systems (OWTSs or septic systems) rely on unsaturated soils to treat waste and reduce the water quality impacts to surrounding waters. Rising groundwater tables can reduce the vadose zone thickness and a system's capability to effectively treat waste. Groundwater level data from surficial aquifer wells in Dare County, NC were analyzed to evaluate the temporal variations in groundwater levels. The results revealed that groundwater level rise is occurring and positively correlated with sea level rise. This change in surficial aquifer groundwater levels has resulted in a decline in the unsaturated soils available for onsite wastewater treatment. Future regulatory approaches in coastal communities should consider rising groundwater tables and their effects on septic systems to ensure adequate wastewater treatment and protection of public health.

Biography Michael O'Driscoll has been a faculty member at East Carolina University since 2004 and is currently a Professor in the Department of Coastal Studies and the Associate Director of the Water Resources Center. He served in the US Navy on the USS America during the Gulf War as an Aviation Structural Mechanic (1990-1994) and was an environmental consultant in Stamford, CT (1996-1997). He is a first-generation college graduate and earned his B.S. (Cum Laude) in Geology from the University of Connecticut (1996), a Master's in Environmental Pollution Control (1999), an M.S. in Geosciences (2000), and a Ph.D. in Forest Resources (2004) from Pennsylvania State

University. His research focuses on the influence of surface water-groundwater interactions, geological setting, and land-use on contaminant transport. His recent work has focused on quantifying non-point source nutrient inputs in nutrient-sensitive coastal watersheds and estimating onsite wastewater nutrient inputs to surface waters.