ICOAST: A 21ST CENTURY COASTAL MONITORING NETWORK AND FORECASTING SYSTEM

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Water quality degradation at the coast threatens environmental and human health, with impacts through direct exposure (e.g., blue-green algae blooms that create neurotoxins, microbial water-borne diseases, metals, and carcinogens), and through contaminated seafood or deteriorated ecosystems that no longer provide clean air, water, and food. Better understanding the sources, fate, and transport of pollutants to the coast—and how they affect public health and welfare—is critical for maintaining healthy coastal ecosystems and communities, particularly in the context of intensifying storms and sea-level rise. Critically, robust forecasting systems that enable managers and public health officials to anticipate emerging coastal hazards are urgently needed to support proactive control of threats before they become full-blown crises. To meet this challenge, UF researchers across nine academic units and four colleges launched the interdisciplinary *i*Coast initiative in 2019. *i*Coast is aggressively pilot-testing new approaches to resolve critical water quality challenges and building capacity through new collaborations and partnerships. This session highlights progress to-date, including development of smart indicators of human waste contamination, micro-fluidic chip technology for rapid *E. coli* detection, a drone-based water sampling platform, and a high-resolution estuarine hydrodynamic model and forecasting system. By integrating widespread, real-time, multi-scale monitoring with existing and novel public health data streams, we aim to map and predict pressing environmental and human health threats along the coast. Simultaneously, we are developing new training programs in topics such as applied machine learning, ecosystem restoration, microbial source tracking, and 21st-century environmental, public health and infrastructure sensing to create a workforce adept in using the new data streams, technologies, and forecasting tools generated through iCoast.

PRESENTER BIO: Dr. Kaplan is an Associate Professor of Environmental Engineering Sciences and Director of the H.T. Odum Center for Wetlands. Research in Dr. Kaplan's Watershed Ecology Lab (www.watershedecology.org) focuses on linkages among the hydrological cycle, ecosystem processes, and human activities, with the goal of advancing natural resources conservation and management.