

ICOAST-FORECAST: COASTAL HAZARD FORECAST SYSTEM

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Anthropogenic pressures along the coast have been continuously growing in the last decades and are expected to increase in the future. Massive coastal populations have significant impacts on the coastal zone, including excessive nutrient loads, hypoxia, fish kills, and water-borne pathogens. Growing anthropogenic pressures, along with rising sea levels and climate change, are increasing the risk of pollution, erosion and flooding, which reduces the services provided by coastal ecosystems. Increased understanding of the physical processes and complex ecological, societal and economical interactions during coastal disaster is imperative to minimize risk and increase coastal resilience. An important step towards minimizing impacts is the development of reliable coastal hazard forecast systems intended for facilitating and promoting early and efficient decision-making.

Given the current urgency of improved coastal hazard predictions, we are developing a coastal hazard forecast modeling system as part of the UF iCoast initiative. The forecast system is flexible in the sense that it can be applied in different coastal areas and adapted to forecast various types of hazards, such as flooding and erosion during extreme storms, evolution of algae blooms outbreaks and eutrophication development. The current version of the system is being applied and tested in the Guana-Tolomato-Matanzas estuary. As a first step, waves, currents, salinities and temperatures are being forecasted within the GTM estuary. Forecasted time series are being compared to observations and measurements collected within the GTM. Once the hydrodynamic forces are verified, the model components available to predict the fate of pollutants, flooding and erosion will be activated and tested. The end goal of the system development is to create a platform that will be easily deployed and tested in other coastal regions along the United States East and Gulf of Mexico coasts.

PRESENTER BIO: Mr. Luming Shi is a graduate student at the Coastal Engineering graduate program. Luming's research is part of the within Dr. Olabarrieta's coastal morphodynamics lab, which focuses on the improvement of coastal hazard prediction capabilities