Modeling Coastal Hydrodynamics using Neural Operators

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Project Summary: The goal of this project is to develop new, advanced machine learning methods for modeling coupled, multiphysics and multiscale problems to obtain more efficient and accurate forecasting frameworks for a wide variety of critical engineering applications. The key motivation behind this effort is to provide the USACE with rapid storm surge forecasting capabilities for flood risk management during extreme events such as hurricanes. This project will provide rapid response, multiphysics machine learning models for on-the-fly predictions which can impact millions of people who live in coastal regions through adequate emergency evacuation plans, flood protection infrastructure and other flood risk mitigation strategies.
