Environmental and Water Resources Engineering and Center for Water and the Environment Seminar Series Presents:

Thursday, March 6th 2025, 3:30-4:30pm, ECJ 1.324

TEXAS

*Zoom Link: https://utexas.zoom.us/j/94105241294*

Coastal Resilience through Integrated Modeling of Compound Flooding Events

By: Dr. Wonhyun Lee

Ph.D. in Civil Engineering from Texas A&M University, B.S. and M.E. degrees from Seoul National University of Science and Technology
Research Assistant Professor at the Bureau of Economic Geology, University of Texas at Austin

Abstract

Coastal regions face increasing risks from compound flooding driven by the complex interplay of storm surge, riverine discharge, and extreme rainfall events, exacerbated by climate change. This seminar explores an integrated approach to tackle these challenges, leveraging high-fidelity numerical modeling, probabilistic ensemble simulations, and cutting-edge physics-aware neural networks. These modeling frameworks offers enhanced predictive capabilities, enabling accurate flood-inundation mapping and risk assessment under diverse scenarios. This talk will highlight ongoing efforts to address international challenges in compound flood modeling, emphasizing case studies and collaborations aimed at enhancing predictive capabilities and informing adaptive strategies. By bridging the gap between advanced modeling techniques and practical applications, these endeavors contribute to building resilient coastal systems capable of withstanding future environmental extremes.

≤ 1 m above ground
≥ 1 m above ground
≥ 2 m above ground
≥ 3 m above ground

During Hurricane Ike 2008
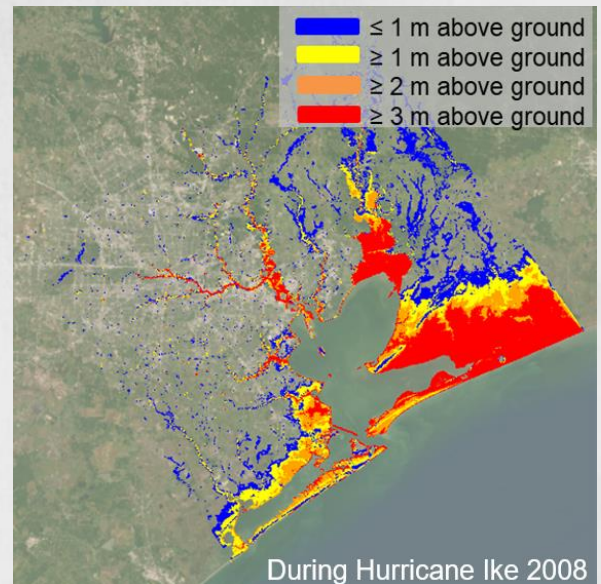
Background

Dr. Wonhyun Lee is currently a Research Assistant Professor at the Bureau of Economic Geology, University of Texas at Austin, specializing in numerical modeling of coastal and ocean processes. His work focuses on storm surge, compound flooding, climate change adaptation, and machine learning-enhanced flood prediction. He has contributed to projects funded by the Department of Energy, Department of Defense, and National Academies, addressing environmental resilience and disaster mitigation. A former NRC postdoctoral associate at the U.S. Naval Research Laboratory, Dr. Lee holds a Ph.D. in Civil Engineering from Texas A&M University and B.S. and M.E. degrees from Seoul National University of Science and Technology.

EWRE Seminar Committee Members: Becky Cantrell, Abby Chapman, Connor Coolidge, Hiromu Koyama, and Azalea Norwood
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