



# HAIQING LIU KACZKOWSKI, PHD PE

PRINCIPAL COASTAL ENGINEER

Email: [hk@coastalscience.com](mailto:hk@coastalscience.com)

## PROFILE

Dr. Kaczowski has over 25 years of experience in coastal erosion assessment, beach restoration, and numerical modeling. She has used state-of-the-art modeling tools in conjunction with engineering experience to design successful coastal development projects located in North America, the Caribbean, the Middle East, and Asia. She serves as the Principal Coastal Engineer at Coastal Science & Engineering (CSE), and has developed plans and supervised construction of beach restoration and coastal structure projects in Georgia, South Carolina, North Carolina, and New York. One of the projects where she served as the Project Engineer is the Nags Head 2011 Beach Nourishment in the Outer Banks, North Carolina. This project is the largest locally funded beach nourishment accomplished to date in the United States and won the 2013 Engineering Excellence Award of American Council of Engineering Companies (ACEC) of South Carolina.

Prior to her work as a coastal engineer, Dr. Kaczowski worked as an Associate Professor at Tianjin University in China and conducted post-doctoral research at the University of Florida.

## RESEARCH EXPERIENCE

**Coastal Erosion Studies** – Served as project engineer on beach monitoring and restoration projects in Georgia, North and South Carolina, and New York. Major projects include Nags Head beach nourishment and renourishment (NC), Buxton beach restoration (NC), Pine Island beach condition monitoring (NC), Folly Beach County Park terminal groin (SC), Isle of Palms shoal management (SC), Captain Sams Inlet relocation (SC), Kiawah Island east-end channel relocation (SC), Myrtle Beach annual monitoring/analyses (SC), Arcadian Shores beach renourishment (SC), Singleton Swash stabilization (SC), Sea Island beach nourishment (GA), Sagaponack and Bridgehampton beach nourishment (NY), and Quogue Village shoreline erosion assessment and beach restoration (NY).

**Hydrodynamic and Sediment Studies** – Used 2D and 3D EFDC and WQMAP hydro-dynamic and sediment transport models to evaluate potential environmental issues of proposed projects. The results were used to support the development of an environmental impact statement. Projects included a marine container terminal for SC State Ports Authority, Charleston (SC); navigation channel deepening and a container terminal for Georgia State Ports Authority, Savannah (GA); and Midnight Pass Inlet reopening, Sarasota (FL).

**Flushing Studies** – Used 2D and 3D hydrodynamic and mass-transport models to evaluate flushing characteristics of proposed marinas and canal systems for more than 50 projects.

## EDUCATION & ACADEMIC TRAINING

Post-Doctoral Fellow – Coastal Engineering,  
University of Florida

PhD. Coastal Engineering, Tianjin University, China

MS. Water Resources, Tianjin University, China

BS. Civil Engineering, Tianjin University, China

## PROFESSIONAL AFFILIATIONS

Registered Professional Engineer (SC, NC, GA, NY)

Certified PADI Scuba Diver

Member – American Society of Civil Engineers

Member – Association of Coastal Engineers

## NUMERICAL MODELING SKILLS

Dr. Kaczowski has demonstrated numerical modeling expertise with the following models:

EFDC, WQMAP, DELFT3D, ADCIRC, GENESIS, SBEACH, XBEACH, SWAN, STWAVE, CGWAVE, BOUSS2D, SSFATE, D-CORMIX, VISUAL PLUMES, WAMVIEW

## SHORELINE EVOLUTION STUDIES

Used USACE- approved longshore sediment transport model GENESIS to evaluate shoreline evolution under normal wave conditions during various stages of design life following the beach nourishment project. Results were used to anticipate the potential occurrence of erosional hot spots and to optimize the nourishment design to increase longevity of the project.

## WAVE STUDIES

Used a larger-scale wave model (SWAN) to capture the transformation of offshore waves to the nearshore region at the project site, and then used a finer-scale wave model (CGWAVE or Bouss2D) nested within the SWAN model grid to assess the local wave refraction and diffraction around a proposed breakwater structure and inside a proposed marina basin.

## STORM SURGE STUDIES

Used ADCIRC model to simulate hurricane storm-surge elevations for historic events. Wind field generated from PBL based on HURDAT storm database was used as an input in the model. Results were analyzed with EST to generate storm-surge level for different return periods.