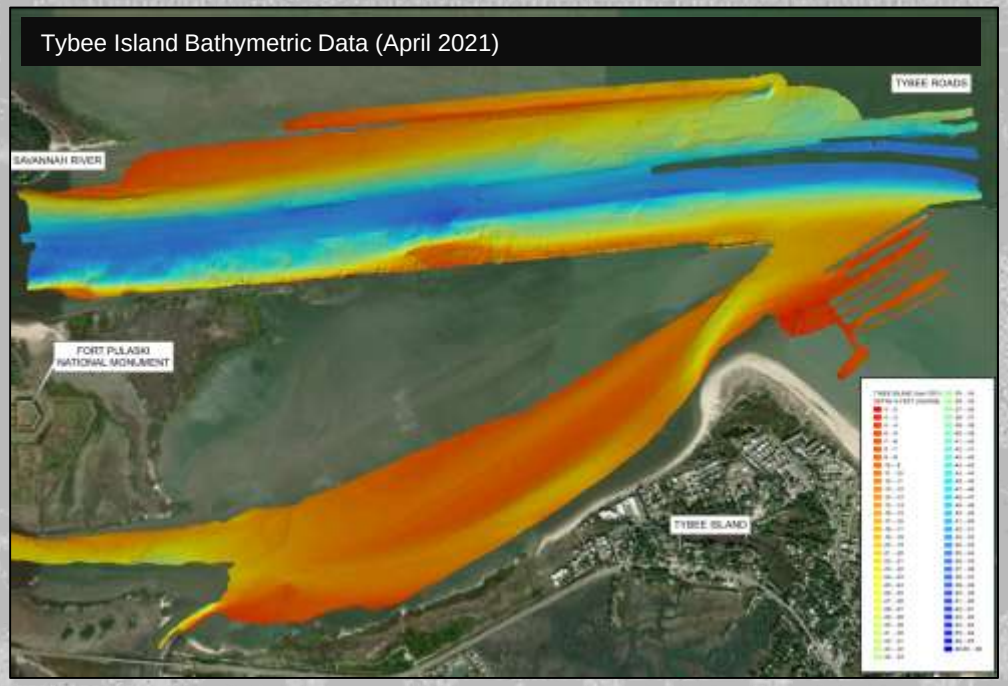
TYBEE ISLAND VESSEL WAKE STUDY - OVERVIEW



U.S. Army Engineer Research and Development Center, Coastal and Hydraulics Laboratory

U.S. Army Corps of Engineers
Savannah District

Date: **26 January 2023**

US Army Corps of Engineers

ERDC

CHL COASTAL & HYDRAULICS LABORATORY

CITY OF TYBEE ISLAND GA
INCORPORATED OCTOBER 15, 1887

TYBEE ISLAND VESSEL WAKE STUDY

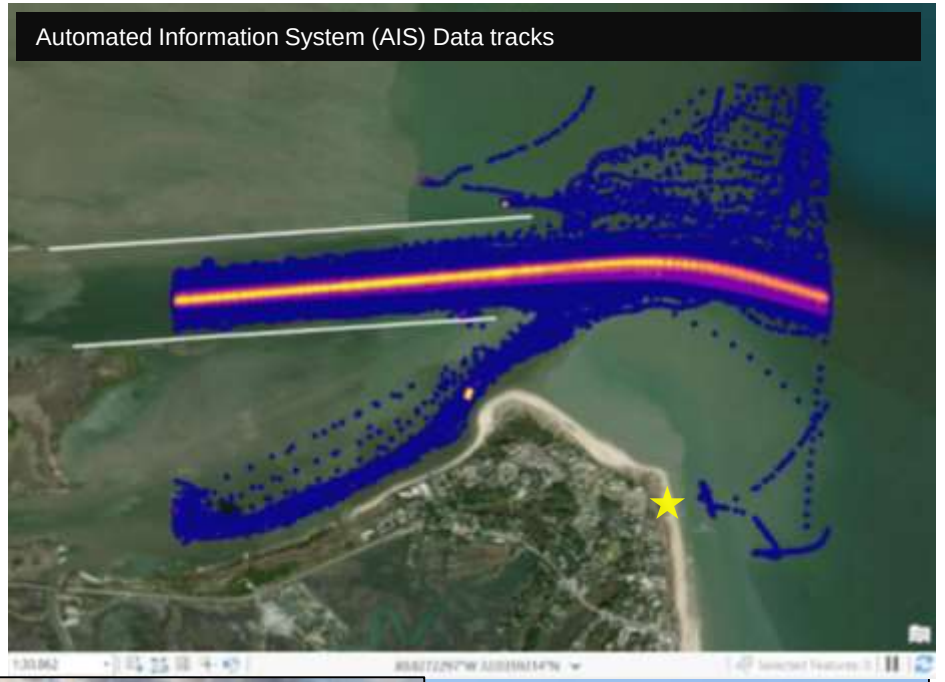
Authority: Section 22 of the Water Resources Development Act of 1974 – Planning Assistance to States (Technical Assistance).

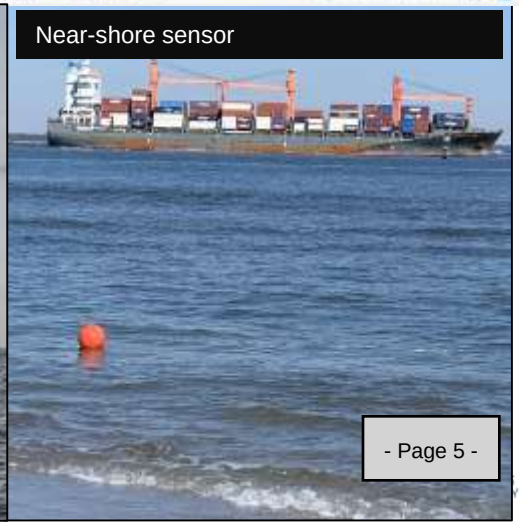
Study Costs: $350,000. Cost-shared (50%) by USACE and the City of Tybee Island.

Problem & Objectives: City of Tybee Island is concerned about the ongoing risk to beachgoers posed by vessel-generated wake on Tybee Island's northern shore. The goal of the study is to develop a better understanding of vessel traffic patterns and associated boat wake generated by large commercial vessels.

Approach: Monitor vessel operations (size, speed, type, heading) and environmental conditions (tides, waves) for a period of approximately 4 months (late July- early December 2021) to better understand the conditions that lead to these large wakes.

Status: The final technical report was published on December 1, 2022. The report can be accessed at: https://erdc-library.erdc.dren.mil/jspui/handle/11681/46140



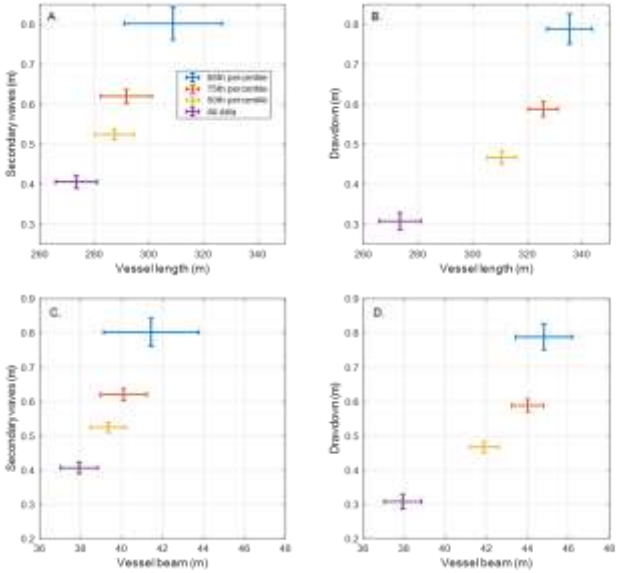


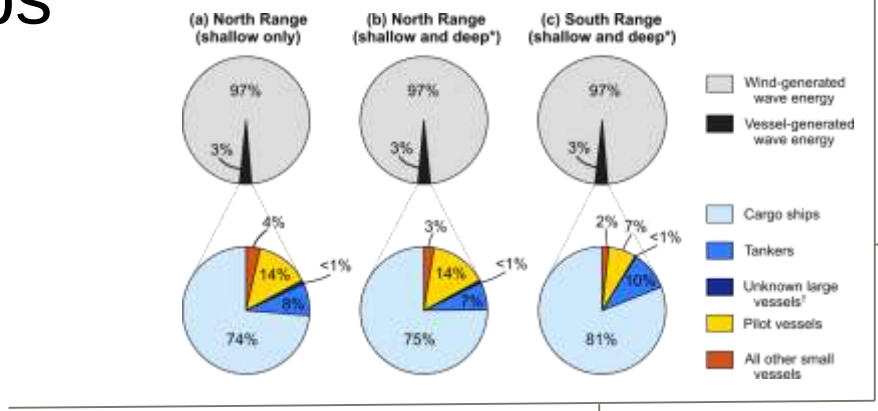
FINDINGS

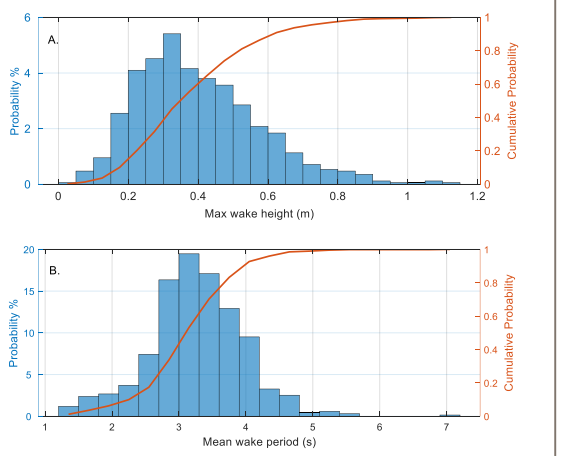
*Data from 1,386 cargo vessel passages and 202 tanker passages

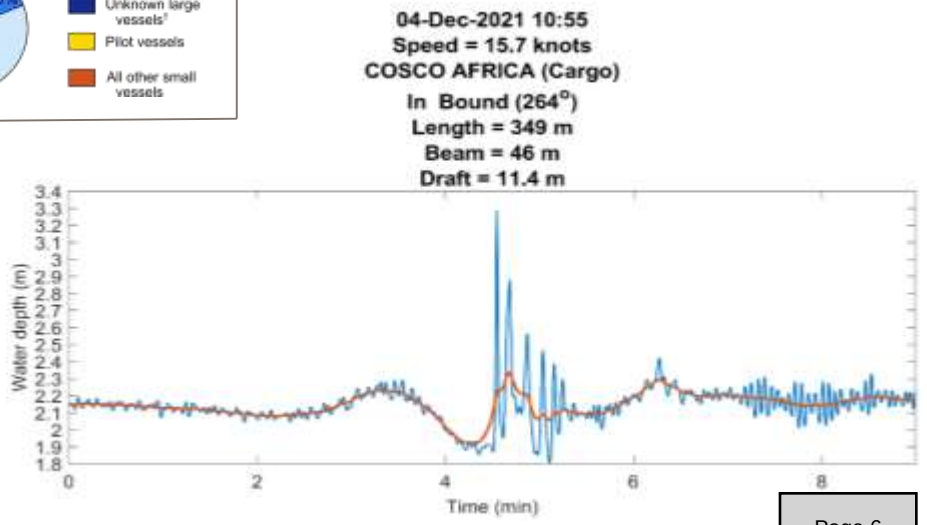
- Largest vessel wake:
  - ✓ Container ships and vehicle carriers
  - ✓ Traveling at higher speeds > 12 knots
  - ✓ Longer and wider ships

- Other influences:
  - ➢ Tidal currents
  - ➢ Wind waves
  - ➢ Vessel direction









NEXT STEPS

Explore feasibility of breakwater option:

- Measure waves and currents at North Beach to determine appropriate breakwater size and placement
- Model waves, tides and currents to determine if the breakwater affects shoreline erosion
- Model commercial vessels to determine the breakwater design to reduce the impact at the beach

Example) A series of breakwaters promoting sediment accretion at Colonial National Historic Park, Virginia.