



## ERDC Dredging Operations Technical Support Program (DOTS)

U.S. ARMY CORPS OF ENGINEERS

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### Response Summary:

This DOTS response was a 3-day in-person hands-on workshop, delivered to the USACE Buffalo District (LRB). Participants had an opportunity to learn about the FUNWAVE model and nonlinear wave modeling, as well as hands-on experience building and applying the FUNWAVE model to real-world applications. The emphasis of this workshop was on the capabilities of the model specific to the Buffalo District needs, in particular the evaluation of emergent breakwater design alternatives on harbor navigation and stability. Examples of troubleshooting recommendations for specific scenarios as well as future collaboration efforts of structure protection and design were discussed, and assistance was provided on the model domain and wavemaker setup of the FUNWAVE model for a project site on Lake Erie.



### Period of Performance:

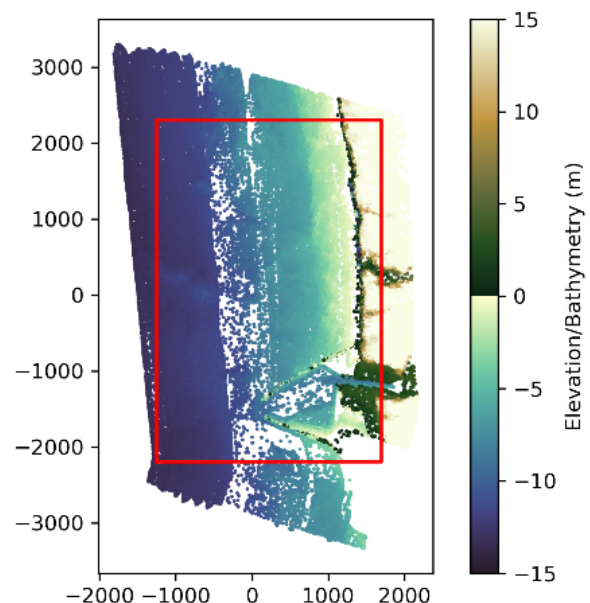
7 November to 9 November 2023

### Benefits of the Response to the USACE Dredging/Navigation Program:

The workshop benefited LRB by providing training on FUNWAVE tailored to the environmental assessment of sites with and without project conditions. “Navigation is the critical reason behind much of [LRB’s] structural design” and being able to adequately determine the “potential impacts of design alternatives on navigation is essential”. Further, “in-house modeling capabilities are crucial to evaluate the short- and long-term benefits and consequences of structure maintenance and rehabilitation efforts on adjacent infrastructure and shorelines”. In addition, “visualization of coastal processes as a result of with and without project conditions, is one of the key-take aways from the workshop. These visualizations will help [LRB] better convey the project impacts to the project delivery teams, leadership and stakeholders.”

### Deliverable:

The primary deliverable of the DOTS response was the workshop itself including all presentation and training materials provided to LRB personnel. The result of the workshop was a preliminary phase-resolving numerical wave model setup of Conneaut Harbor with realistic site conditions (e.g., bathymetry) and hypothetical wave conditions. Post-processing tools (Python) were additionally provided to visualize and compute wave and water level responses of interest to complete environmental assessments with and without project conditions.



Providing environmental and engineering technical support to the U.S. Army Corps of Engineers  
Operations and Maintenance navigation and dredging missions