



# NETWORK FOR **ENGINEERING** WITH **NATURE**

## PROJECT FACT SHEET

Optimal EWN solutions for wetland remediation:  
a FUNWAVE-based numerical framework

### SUMMARY

Testing EWN<sup>®</sup> alternatives is difficult because of the large range of spatio-temporal scales involved. The project will develop a high-resolution, multiscale numerical simulation platform based on the FUNWAVE-TVD model for investigating the effectiveness of wetland EWN<sup>®</sup> solutions. The platform will incorporate all relevant wetland physics, and will be applicable to a wide range of USACE wetland Natural and Nature-Based Feature (NNBF) solutions. It will provide a quick and inexpensive way of screening Thin-Layer Placement (TLP) sites for strategic placement and importance for the local habitat.

### OBJECTIVE

1. Develop and validate new numerical modules for additional capabilities (fine scale hydrodynamics, interaction with vegetation and porous media).
2. Validate new capabilities against field observations.
3. Develop/release a transferrable numerical framework to the USACE community with formal guidance for operational utility.

### APPROACH

The platform will be designed and tested as a direct application to the Thin-Layer Placement (TLP) project (Altieri et al.). The team will gather comprehensive hydrodynamics and sediment transport observations at various sites. All elements of the numerical platform (new modules, bathymetric grids, boundary conditions, etc.) will be validated against field observations. The platform will be used to evaluate the effectiveness of alternative solutions. Numerical simulations will also be used to inform whether dredged sediments can be strategically placed in locations within or near a wetland.

## CONTACT

Dr. Matt Malej (USACE/ERDC/CHL) - [matt.malej@usace.army.mil](mailto:matt.malej@usace.army.mil)  
Dr. Alex Sheremet (University of Florida) - [alex@coastal.ufl.edu](mailto:alex@coastal.ufl.edu)