



## ERDC Dredging Operations Technical Support Program (DOTS)

U.S. ARMY CORPS OF ENGINEERS

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**Response Summary:** This project is to seek DOTS assistance for training and assistance with GENCADE model development for Carolina Beach, NC (Fig. 1) in the USACE Wilmington District. The model is used to determine shoreline change rates for various proposed beach nourishment template/interval combinations and will serve as input information into BEACHFX for coastal storm risk management. The technical assistance was provided through conference calls (WebEx meetings), demonstration of the GENCADE capabilities, model setup, and model validation using the observation data of shoreline positions.

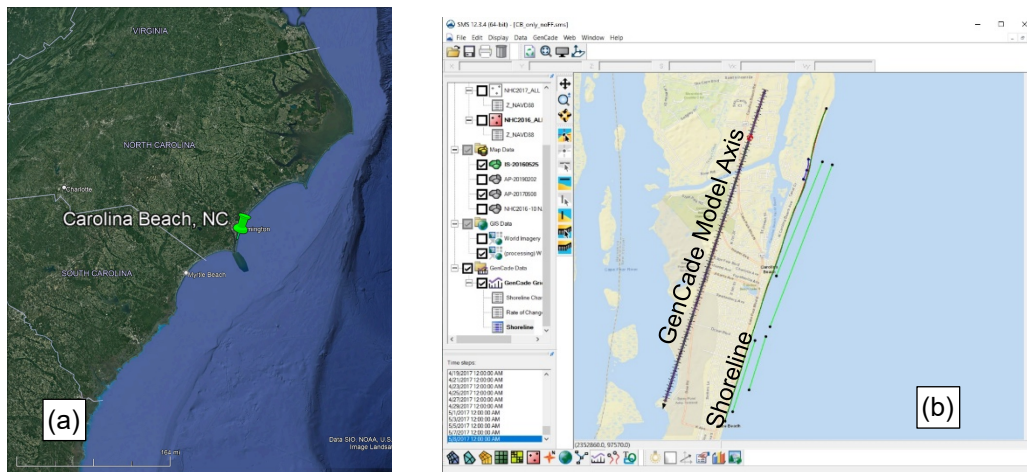


Figure 1. (a) Carolina Beach, NC and (b) a GENCADE shoreline simulation model for the coast on SMS interface

**Period of Performance:** 10/16/2020 - 12/31/2020

**Benefits of the Response to the USACE Dredging/Navigation Program:** The validated GENCADE model can be used to develop the beach erosion rates and to determine the need of sand volumes for periodic beach nourishment. The model results may help optimize dredging operation for developing sand borrow sources near the project area.

**Deliverables:** Through conference calls (WebEx meetings), this DOTS project has delivered demonstration of the GENCADE capabilities, training of model setup, and demonstration of model validation. Three important WebEx meetings were conducted:

1. WebEx Meeting on 10/21/2021, (Carter, Grace, John, Rusty, and Yan): (1) General discussion on user's guide of GenCade for shoreline evolution modeling. (2) Comments and answers on specific questions about shoreline simulation in Carolina Beach. (3) Provided technical reports on GenCade and previous validation examples.
2. WebEx Meeting on 10/29/2021, (Cater, Yan, Rusty): Discussed (1) model setup for Carolina Beach, NC, (2) simulations by including beach nourishment, (3) Methodology to develop planform erosion rate, (4) how to fix wave data gaps; and (5) examples for validation and calibration of the model. We also provided the latest GenCade model.
3. 11/4-5/2021 (Carter and Yan): During the two-day period, we conducted test running the new GenCade model by using the latest model. The model was working and producing some preliminary results. A ppt file for summary of the preliminary results was delivered to SAW.



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

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