

Zachary Cobell

Research Engineer - The Water Institute of the Gulf

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Education

B.S. in Civil Engineering, Environmental Engineering
University of Notre Dame, Notre Dame, Indiana

Professional Experience:

Arcadis U.S., Inc
Highlands Ranch, Colorado

June 2010 - February 2019

- *Project Coastal Engineer*

ADCIRC Model Development Group
Chapel Hill, North Carolina

February 2012 – present

- *Model Developer and Maintainer*

Applicable Skills:

- Hydrodynamic and mass transport model: ADCIRC, SWAN, Delft3D 4 Suite, Flexible Mesh, STWAVE, Flow3D, Aquaveo SMS
- Authored Open Source Software: MetOceanViewer, ADCIRCModules, FigureGen
- Programming Languages: Fortran, C, C++, Qt, Python, LaTeX, Bash, MPI, OpenMP, Matlab, MySQL, Ruby, Autotools, CMake, Perl, R
- Other Tools: Git, SVN, Vim, Microsoft Office Suite, ArcGIS, GDAL, NetCDF, X MDF, Paraview, Fieldview, Linux, Windows, Mac OSX

Publications

1. J.H. Atkinson, H.J. Roberts, S. Zou, P. Bacopoulos, S. Mederos, J. Weishampel, and **Z. Cobell**. Deriving Frictional Parameters and Performing Historical Validation for an ADCIRC Storm Surge Model of the Florida Gulf Coast. Florida Watershed Journal, 4-2:23, 27, 2011
2. J. C. Dietrich, J. J. Westerink, A. B. Kennedy, J. M. Smith, R. E. Jensen, M. Zijlema, L. H. Holthuijsen, C. Dawson, R. A. Luettich, M. D. Powell, V. J. Cardone, A. T. Cox, G. W. Stone, H. Pourtaheri, M. E. Hope, S. Tanaka, L. G. Westerink, H. J. Westerink, and **Z. Cobell**. Hurricane Gustav (2008) Waves and Storm Surge: Hindcast, Synoptic Analysis, and Validation in Southern Louisiana. Monthly Weather Review, 139(8):2488, 2522, August 2011
3. **Z. Cobell**, H. Zhao, H.J. Roberts, F.R. Clark, and S. Zou. Surge and Wave Modeling for the

- Simulate three years of hydrodynamics and salinity using discharge, evaporation, precipitation, astronomic tides, and atmospheric forcing
- Evaluate impacts to water levels due to the construction of various gate designs at Bolivar Roads
- Provide guidance to structural engineers to optimize position of structural elements to minimize environmental impacts

West Shore of Lake Pontchartrain Hurricane Protection Project 2011-2013
 United States Army Corps of Engineers New Orleans, Louisiana

- Update ADCIRC+STWAVE model geometries for use in study area
- Implement protection features and efficiently simulate hurricanes using Department of Defense resources
- Project vegetation and sea level rise conditions for 20 and 50 years into the future

Living Breakwaters Hydrodynamics and Sediment Transport Analysis 2016-2018
 New York Governor's Office of Storm Recovery Staten Island, New York

- Develop a Delft3D model using multibeam LIDAR and validate hydrodynamic and wave quantities to deployed ADCP gages at project site
- Support 30, 60, and 95% phases of design for a proposed group of breakwaters near Staten Island, New York using the Delft3D modeling suite
- Simulate impacts to retention time, sediment transport, wave parameters, and currents

Simulations of Dynamic Levee Breaching During Hurricane Katrina 2012-2013
 United States Department of Justice New Orleans, Louisiana

- Develop new modules for the ADCIRC+SWAN model to allow simulation of wave overtopping volumes and dynamic levee breaching for simulation of Hurricane Katrina
- Demonstrate that the new modules accurately reproduced water level elevation and time of food arrival throughout the Central Wetlands and Lower 9th Ward
- Support DOJ expert witness through deposition and trial

Support for Flood Mapping at Newark International Airport 2014-2015
 Port Authority of New York and New Jersey (PANYNJ) Newark, New Jersey

- Lead hydrodynamic modeling efforts to develop a Delft3D model of Newark Airport and surrounding areas
- Validate model performance on PANYNJ property
- Use modeling to support revision of FEMA Flood Insurance Rate Maps (FIRMs)