

## Jennifer Berlinghoff, B.S.

*Coastal GIS Specialist*

Coastal GIS analyses  
Analysis of regional geomorphic change  
Dredging record summaries  
Present and compile bathymetric maps

### EDUCATION

Bachelor of Science, Environmental Studies, University at Buffalo, 2009

Professional Science Master's; Coastal & Ocean Administration, Science, & Technology; UMass Dartmouth School for Marine Science & Technology; in progress

### PROFILE

Ms. Berlinghoff graduated from the University at Buffalo with a Bachelor in Environmental Studies and a minor in Geography: Earth Systems Science. Her coursework included Geographic Information Systems, Maps & Mapping, Water Quality, Climatic Geomorphology, Soil Science, Field & Lab Techniques, Field Ecology, and Environmental Chemistry. Her internship with the Erie County Soil & Water Conservation District in East Aurora, NY (fall 2008) provided experience with erosion control projects and database management. Since joining Applied Coastal Research and Engineering (Mashpee, MA) in September 2009, Ms. Berlinghoff has provided technical support for geographic information system (GIS) applications, as well as research and writing for coastal science and engineering projects. A majority of her work has been related to wetland change and sediment transport in the Gulf of Mexico. In addition to working full time for Applied Coastal, she is working towards a Professional Science Master's Degree in Coastal & Ocean Administration, Science, and Technology from UMass Dartmouth School for Marine Science & Technology. Her graduate coursework thus far has included Geological Oceanography.

### PROJECT EXPERIENCE

**Development of a Sediment Budget for Mississippi Sound Barrier Islands.** Dredging data, including quantities and placement areas, were researched and compiled for Federal navigation channels within Mississippi Sound. This information was used to help track the movement of sand within the littoral system of the Mississippi Sound Barrier Islands and aid in the development of a comprehensive sediment budget. Support also was provided in the organization of source data and creation of figures using GIS.

**Shoreline and Marsh Transect Surveys in Southeastern Louisiana.** Fifty-seven sites that were classified as having varying degrees of oiling were visited in Terrebonne and Barataria Bays. Using geodetic global positioning system (GPS) instrumentation, the precise location of marsh shoreline position and transect poles was collected. This information was later compiled in GIS and used to document changes in shoreline position and influence of oiling. In addition, assistance was provided for recording and documenting marsh vegetation.

**Mapping Marsh Edge in Southeastern Louisiana.** Historical and recent orthorectified aerial imagery was used to map and document net changes in marsh shoreline position using GIS. Shoreline change was calculated for various segments of coast, and historical erosion rates were compared with rates determined for oiled marsh shorelines.

**Restoration Projects in the Gulf of Mexico.** Case studies were evaluated for 11 habitat restoration projects throughout the Gulf of Mexico. Emphasis was placed on the application of regional sediment management (RSM) principles. By documenting lessons learned from past restoration projects, better sediment management decisions can be applied towards future projects. The report was written to be included in the Technical Framework for the Gulf Regional Sediment Management Master Plan (GRSMMP).

**Development of a Sediment Budget for Mobile Bay, Alabama.** Historical bathymetric and shoreline datasets were used to document the elevation and shoreline position changes that have taken place in Mobile Bay. Two new shoreline datasets were produced using GIS; a shoreline for 1847-50 was created by georeferencing and digitizing United States Coast and Geodetic Survey (USC&GS) T-Sheets and a shoreline for 2010-11 was interpreted and digitized from high-resolution orthoimagery. In addition, dredging data were researched to assemble a detailed history of the development of the Mobile Bay Ship Channel.

**Shoreline Compilation and Change Assessment for Open-Coast Shorelines of South Louisiana.** As part of the Louisiana Barrier Island Comprehensive Monitoring (BICM) Program, historical shoreline positions between the 1850s and 2012 were provided in a database for the purpose of quantifying shoreline change, as well as producing shoreline change maps. Techniques employed for evaluating existing data and creating new datasets included georeferencing and digitizing historical USC&GS T-sheets, interpreting and digitizing shorelines from orthoimagery, and utilizing shoreline change analysis software to quantify changes between different time periods. Areas of focus include the Mississippi River Deltaic Plain, the Chenier Plain of southwest Louisiana, the Lake Pontchartrain Basin, and the Acadiana Bays. These data will be used to aid in the planning, design, evaluation, and maintenance of current and future barrier island/coastal restoration projects.

## PUBLICATIONS

Byrnes, M.R. and Berlinghoff, J.L., 2012. Gulf Regional Sediment Management Master Plan: Case Study Compilation. *In: Khalil, S.M., Parson, L.E., and Waters, J.P. (eds.), Technical Framework for the Gulf Regional Sediment Management Master Plan (GRSMMP)*, Journal of Coastal Research, Special Issue, No. 60. West Palm Beach (Florida), ISSN 0749-0208, pp. 72-124.

Byrnes, M.R.; Rosati, J.D.; Griffee, S.F., and Berlinghoff, J.L., 2012. Littoral Sediment Budget for the Mississippi Sound Barrier Islands. Vicksburg, Mississippi: U.S. Army Engineering Research and Development Center, *Technical Report ERDC/CHL TR-12-9*, 171p.

Byrnes, M.R.; Berlinghoff, J.L., and Griffee, S.F., 2013. Sediment Dynamics in Mobile Bay, Alabama: Development of an Operational Sediment Budget. Mobile, Alabama: Technical Report to the Mobile Bay National Estuary Program, 134 p.

Byrnes, M.R.; Rosati, J.D.; Griffee, S.F., and Berlinghoff, J.L., 2013. Historical Sediment Transport Pathways and Quantities for Determining an Operational Sediment Budget: Mississippi Sound Barrier Islands. *In: Brock, J.C., Williams, S.J., and Barras, J. (eds.), Understanding and Predicting change in Coastal Ecosystems of the Northern Gulf of Mexico*, Journal of Coastal Research, Special Issue, No. 63. West Palm Beach (Florida), ISSN 0749-0208, pp. 166-183.