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**Research Associate, The Water Institute of the Gulf**

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**Education**

**M.S., Geology, May 2005**  
The University of South Carolina, Columbia, SC

**B.S., Geology, May 1996**  
The University of the South, Sewanee, TN

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**Research Interests:**

Morphology and hydrodynamics of tidal inlets, tidal networks, and fluvial systems. Coastal and inner shelf processes. Sediment transport and sequestration in coastal environments.

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**Professional Experience:**

<b>The Water Institute of the Gulf</b> <ul style="list-style-type: none"><li>• <i>Research Associate</i></li></ul>	<b>2013-Present</b>
<b>Pontchartrain Institute for Environmental Sciences, The University of New Orleans</b> <ul style="list-style-type: none"><li>• <i>Research Associate</i></li></ul>	<b>2006-2013</b>
<b>Research Planning, Inc.</b> <ul style="list-style-type: none"><li>• <i>Coastal Geologist</i></li></ul>	<b>2004-2006</b>

**Recent Projects:**

**Barrier Island and Tidal Inlet Change Modeling for Louisiana's 2012 Master Plan for a Sustainable Coast**

*Pontchartrain Institute for Environmental Sciences, University of New Orleans*

Worked with team members to develop and code a decadal scale model to predict barrier-island and tidal inlet evolution under a suite of potential sea level rise and regional subsidence scenarios. Integrated LiDAR and bathymetric data to build digital elevation models (DEM) of barrier island environments for input to the model. Developed a digital restoration algorithm that updates barrier island DEMs to include planned shoreline and marsh restoration projects. Managed model runs for the Barrier Island and Tidal Inlet modules. Generated and QAQC'd outputs that included DEMs for 50 years at 5 year intervals. Coordinated with other teams from academic, state, and federal agencies as well as private industry to facilitate data exchange between model modules.

**Sapelo Estuary Tidal Point Bar Study (2010-2011)**

*Pontchartrain Institute for Environmental Sciences, University of New Orleans*

Designed and managed hydrographic and geophysical surveys at tidal point bars in the Sapelo Sound Estuary to investigate point bar structure and processes governing sedimentary architecture and morphology. Deployed in-situ tide and current instruments at point bar study sites. Conducted surveys that collected single beam, Chirp seismic, and side scan sonar data. Collected vibra-cores from point bars and surrounding marsh. Surveyed core elevations with dual frequency GPS. Captained the vessel on a return Boomer seismic survey. Processed single beam data into elevations for point bar DEM generation. Generated seismic profiles using SeismicUnix and developed an algorithm to rewrite Chirp and Boomer SEG Y data files to be compatible with oil industry software.

### **Regional Sediment Dynamics. (2010)**

*Pontchartrain Institute for Environmental Sciences, University of New Orleans for USACE*

Investigated sandy sediment distribution and transport pathways in the Barataria Bight. Developed a methodology and model code in GIS that employed geoprocessing tasks and SQL queries through Visual Basic. Integrated data from a sediment core database and bathymetric change over time. Calculated volume of sand release into the Barataria Bight system. Quantified the spatial distribution and volume of sands residing in the regional system.

### **Barrier Island Comprehensive Monitoring Program – Sediment Characterization Component**

*Pontchartrain Institute for Environmental Sciences, University of New Orleans*

Designed a sediment sampling program for the sandy shorelines of Louisiana. Developed custom field data collection software in ArcPad, along with sediment cataloging system. Managed daily field operations and data from several teams, both land based and vessel based. Created a database and custom logging software for lab description and analysis of samples. Compiled field and lab sediment sample data in GIS to produce regional sediment distribution maps.

### **Barrier Island Comprehensive Monitoring Program - Seafloor Change Study.**

*Pontchartrain Institute for Environmental Sciences, University of New Orleans*

Conducted single beam surveys of the inner continental shelf along the sandy shorelines of Louisiana. Processed bathymetry and GPS data into seafloor elevation maps. Wrote in-house software to aid with data QAQC. Developed custom QAQC algorithms to automate detection of data drift and apply corrections such that survey data from four boats collected over several weeks were in the correct and matching horizontal and vertical datums (NAD 83 and NAVD). Supervised geo-referencing historical NOS H-sheets from scanned sounding maps and converting them to raster DEMs. Generated DEMs of single beam survey data and digitized survey data from historical charts. Conducted sea floor change analysis using DEMs from different time periods.

### **Training Courses:**

- Hypack Hydrographic Training Conference - 2011- New Orleans, LA.
- Applied Fluvial Geomorphology – 2005 - Fayetteville, AR.

### **PEER REVIEWED PUBLICATIONS**

1. Kolker, A.S., Miner, M.D., and Weathers, H.D., 2012, Depositional Dynamics in a River-Diversion Receiving Basin: The Case of the West Bay Mississippi River Diversion: *Estuarine, Coast, and Shelf Science*, v. 106, p. 1-12.
2. Miner, M.D., Kulp, M.A., FitzGerald, D.M., Flocks, J.G., and Weathers, H.D., 2009, Delta lobe degradation and hurricane impacts governing large scale coastal behavior, south-central Louisiana, USA: *Geo-Marine Letters*, v. 29, no. 5- 6, p. 441-454.
3. Weathers, H.D., Hayes, M.O., and Michel, J., 2009, Reach Sensitivity Index Mapping of the Amite River Watershed in the Lake Pontchartrain Basin: A Tool for Watershed Restoration. *Journal of Coastal Research*. Special Issue-54, Fall. pp. 141-151.

4. Weathers, H. D., Hayes, M.O., and Murphy, R., 2005, Reach Sensitivity Index Classification of Louisiana Coastal Rivers: A Tool for Watershed Restoration, Transactions of the Gulf Coast Association of Geological Societies Vol. 55 (2005), Pages 854-866.

#### CONFERENCE PROCEEDINGS AND PRESENTATIONS

1. February 6, 2013: USGS Workshop on Long-term Coastal Monitoring: The 2006-2010 Louisiana Barrier Island Comprehensive Monitoring (BICM) Program, The Energy, Coast and Environment Building, Louisiana State University. February, 2013
2. Georgiou I.Y., Hughes, Z.J., Weathers, H.D., Kulp, M.A., and FitzGerald, D.M., 2012, Short-Term Modeling of Coastal Response to Wave Climate and Relative Sea Level Rise. Abstract with presentation. 9th INTECOL

#### TECHNICAL REPORTS

1. Georgiou, I., Weathers, H.D., Kulp, M.A., Miner, M., and Reed, D.J., 2011, Interpretation of Regional Sediment Transport Pathways Using Subsurface Geologic Data, Final Report submitted to U.S. Army Corps of Engineers, Cooperative Ecosystems Studies Unit Contract W912HX-09-2-0027, 18 p.
2. Miner, M.D., Weathers, D., Rafferty, R., Fischer, D., Ranson, A., McCarty, P. and Brown, M., 2010, Bathymetry and 1871 to 2009 Seafloor Change for Southeastern Lake Pontchartrain, Louisiana: Pontchartrain Institute for Environmental Sciences, University of New Orleans, New Orleans, Louisiana, 14 p. with 6 digital appendices.
3. Weathers, D., Miner, M., Rafferty, R., and Ranson, A., 2009, Bathymetric Survey and Seafloor Mapping of the Mississippi River-Gulf Outlet (MRGO): New Orleans, Louisiana, Pontchartrain Institute for Environmental Sciences, University of New Orleans. (Report prepared for Lake Pontchartrain Basin Foundation)
4. Miner, M.D., Kulp, M., Weathers, H.D., and Flocks, J., 2009, Chapter D. Historical (1869–2007) sea floor evolution and sediment dynamics along the Chandeleur Islands, in Lavoie, D. (ed.), Sand resources, regional geology, and coastal processes of the Chandeleur Islands coastal system—an evaluation of the Breton National Wildlife Refuge: U.S. Geological Survey Scientific Investigations Report 2009–5252, p. 47–74.
5. Miner, M.D., Kulp, M., Flocks, J., Twichell, D., Penland, S., Martinez, L., Motti, J., Weathers, D., DeWitt, N., Reynolds, B.J., Baldwin, W., Danforth, B., Worley, C., Bergeron, E., Ferina, N., McCarty, P., Brown, M. and Torres, J., 2009, Louisiana Barrier Island Comprehensive Monitoring Program, Volume 3: South-Central Louisiana and Northern Chandeleur Islands, Bathymetry and Historical Seafloor Change 1873- 2006, Part 1: Methods and Error Analysis for Bathymetry, University of New Orleans - Pontchartrain Institute for Environmental Sciences and US Geological Survey, Submitted to Louisiana Department of Natural Resources, 44 p.
6. Miner, M.D., Kulp, M., Flocks, J., Twichell, D., Martinez, L., Motti, J., Weathers, D., DeWitt, N., Reynolds, B.J., Baldwin, W., Danforth, B., Worley, C., Bergeron, E., Ferina, N., McCarty, P., Brown, M. and Torres, J., 2009, Louisiana Barrier Island Comprehensive Monitoring Program, Volume 3: South-Central Louisiana and Northern Chandeleur Islands, Bathymetry and Historical Seafloor Change 1873- 2006, Part 2: Bathymetry Maps, University of New Orleans - Pontchartrain Institute for Environmental Sciences and US Geological Survey, Submitted to Louisiana Department of Natural Resources, 26 p.

7. Miner, M.D., Kulp, M., Flocks, J., Twichell, D., Penland, S., Martinez, L., Motti, J., Weathers, D., DeWitt, N., Reynolds, B.J., Baldwin, W., Danforth, B., Worley, C., Bergeron, E., Ferina, N., McCarty, P., Brown, M. and Torres, J., 2009, Louisiana Barrier Island Comprehensive Monitoring Program, Volume 3: Bathymetry and Historical Seafloor Change 1869 – 2007, Part 3: Southern Chandeleur Islands and Western Chenier Beaches, Bathymetry Maps, University of New Orleans – Pontchartrain Institute for Environmental Sciences submitted to Louisiana Department of Natural Resources, 16 p.
8. Miner, M.D., Kulp, M., Flocks, J., Twichell, D., Penland, S., Martinez, L., Motti, J., Weathers, D., DeWitt, N., Reynolds, B.J., Baldwin, W., Danforth, B., Worley, C., Bergeron, E., Ferina, N., McCarty, P., Brown, M. and Torres, J., 2008, Louisiana Barrier Island Comprehensive Monitoring Program, Tasks 5 and 6: South-Central Louisiana and Northern Chandeleur Islands, Bathymetry and Historical Seafloor Change 1873-2006, vol. 1: Methods and Error Analysis for Bathymetry, Pontchartrain Institute for Environmental Sciences, Technical Report 002-1-2008, Submitted to Louisiana Department of Natural Resources, 44 p.
9. Brown, M., Weathers, D., Miner, M., McCarty, P. and Kulp, M., 2006, Core Descriptions and Grain-Size Analyses for the Whiskey Island Back-Barrier Marsh Creation: LDNR Project No. TE-50: Coastal Research Laboratory, University of New Orleans, Pontchartrain Institute for Environmental Sciences, Technical Report 06-003, Prepared for Ocean Surveys Inc., 151 p.