

Seismic and Sedimentary Facies Distribution of the St. Bernard Lobe, Mississippi Delta, D. Brent Wilhelm and Paul Howell, University of Kentucky, Lexington, KY 40506, brent.wilhelm@uky.edu, phowell@uky.edu

The St. Bernard is the easternmost of seven recognized delta lobes in the Quaternary Mississippi Delta. The St. Bernard was active between 4,000–1,000 years ago and is located in the inner-shelf area of the Gulf of Mexico along the eastern Louisiana, Mississippi, and Alabama coast. Acquisition of more than 6,700 line-km of seismic reflection data and 77 vibrocore samples at a maximum depth of 12 m provides a strong database to explore the depositional and erosional record of the St. Bernard lobe.

We employed a GIS database to construct facies maps where seismic profiles and vibrocore reports were available. Seismic profiles provide spatial control of geometries associated with depositional environments. The aerial extent of the prodelta, delta front, and delta plain seismic facies of the St. Bernard lobe were mapped. Vibrocore logs and core photos provided lithology, percent sand, stratification, bed thickness, color, and average grain-size from which the database was prepared. Lithofacies maps created from the database were compared to seismic facies to better constrain correlations of depositional environments. The data reveal significant spatial variations on the amount of transgressive erosion during the destructive phase of delta abandonment. Prodelta muds are overlain by transgressive sand sheets, then vertically stacked units of deltaic successions, and surficial sands and muds as noted by previous authors.

The resulting data provides constraints on facies distributions and relative fluctuations in Quaternary sea-level. Moreover, as coastal awareness and the efforts to restore storm damaged coastlines in Louisiana increases, sand becomes an important resource. Preparation of digital databases will aid in providing this necessary information.