of the stratigraphic successions and sedimentation events will be made that will be compared to the known history of river-sediment discharge over the past century. Although the study area is over 100 km west of the Atchafalaya River outlets, we anticipate that periods of most rapid progradation will follow highest river-sediment discharge, and that periods of low sediment discharge may be primarily erosional.

Mud accumulation on the open coast: a sedimentological puzzle

Justin Dawe and Samuel J. Bentley
Department of Earth Sciences, Memorial University, St. John's, Newfoundland A1B 3X5

Mud accumulation along open coastlines occurs near many major river deltas, yet it remains a sedimentological puzzle, due to the low settling velocities of mud particles, compared to the relatively intense turbulence created by waves and currents on open coasts. The conceptual model for muddy coast sedimentation suggests that high rates of sediment supply may dampen turbulence from waves and currents in the coastal zone, resulting in reduced bed shear stresses and increased deposition. However, the exact interactions among sediment supply, waves, currents, and associated sediment deposition are not quantitatively understood. The goal of this study is to evaluate the sediment supply component of this model, and its impact on long-term accumulation, along a rapidly prograding portion of the western Atchafalaya/Mississippi River delta.

In order to understand the dynamic morphology and sediment accumulation along the inner continental shelf of the Chenier Plain of Louisiana (fed by the Atchafalaya River, a distributary of the Mississippi River), chirp subbottom sonar profiles and piston cores were collected along gridded survey lines. The chirp data and piston cores will be analyzed using seismic visualization tools and $^{210}Pb/^{137}Cs$ geochronological analysis of cores to provide pictures of temporal and spatial variations of sediment accumulation in the study area. Through this, a map

Atlantic Geology, 2009, Volume 45, Number 1