

**Origin of the Texas Mud Blanket, Central Texas Shelf: Implications for Fine Grain Sediment Flux and Redistribution During Transgression**  
Weight, Robert W.<sup>1</sup>; Anderson, John B.<sup>1</sup> (1) Earth Science Department, Rice University, Houston, TX.

The Texas Mud Blanket is a volumetrically significant (300 km<sup>3</sup>) Late Pleistocene to Holocene sedimentary unit, on the central Texas shelf, deposited during the transgression, which followed the last glacial maximum (LGM). The evolution and source of the Texas Mud Blanket is determined from 26 new radiocarbon dates and from ~3000 km of 2D seismic data. Sediment flux (km<sup>3</sup>/ka) was calculated from this combined dataset. XRD analysis reveals that the origin of sediments accumulated in the mud blanket are local, coming mostly from the Colorado and Brazos Rivers.

Elevation differences between MIS (marine isotope stage) 3 and MIS 2 shorelines created accommodation on the central Texas shelf. Between LGM and 17 ka, reefs formed on MIS 2 paleo-highs, which accentuated the topography of the eastern margin of the shelf depocenter. During this time terrestrial to marine sediments filled the deepest parts of the depocenter. 17-9 ka was a time of rapid eustatic rise (~7 mm/year) and low sedimentation in the mud blanket (flux= 0.4 km<sup>3</sup>/ka). By ~12 ka, the Brazos and Colorado rivers had formed deltas on the shelf, but sediment flux to the mud blanket remained low (0.4 km<sup>3</sup>/ka). At 9 ka, sediment flux to the mud blanket increased to 41 km<sup>3</sup>/ka. At the same time, the Brazos and Colorado deltas were being ravined, producing an estimated 61 km<sup>3</sup> of sediment. Of this an estimated 58.3 km<sup>3</sup> of fine-grained sediments contributed to growth of the mud blanket. By ~5 ka, Texas was experiencing maximum temperature and minimum precipitation for the Holocene, which led to a significant reduction in sediment accumulation in the mud blanket. During the last 3.5 ka the mud blanket received 172 km<sup>3</sup> (57% of total volume) of fine-grained Colorado and Brazos sediments transported to the south by longshore coastal currents and transported offshore by wind-driven currents. This final phase of Mud Blanket growth is caused by climate-driven increase in fluvial sediment delivery, slowing rate of eustatic rise, and filling of onshore accommodation within the lower fluvial valley.