

**AAPG Annual Convention
Salt Lake City, Utah
May 11-14, 2003**

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The Effects of Antecedent Topography on Incised Valley Incision and Fill, Nueces River, Central Texas

As more incised valleys are studied, they appear to be increasingly complex in their incision pattern and fill. One example of this complexity can be found within the incised valley of the Nueces River, located in central Texas and currently occupied by Corpus Christi and Nueces Bays. Approximately 18,000 years bp, sea level was 120 m lower than present. At that time, the rivers of the gulf coast cut deep incised valleys to accommodate the change in base level. The rivers of central Texas, however, did not cut their valleys to the same extent as most other rivers along the Texas coast. Although the depth of incision at the present shoreline is the same as other rivers along the Texas Coast (35m), their valleys disappear approximately 30 km offshore. The disappearance of these valleys corresponds to the location of a topographic break associated with late highstand shoreline progradation. This is one example of the importance of antecedent topography on the incision of rivers. In addition, the transgressive deposits that filled the Nueces Incised Valley were strongly influenced by antecedent topography. Mapping of flooding surfaces within Corpus Christi and Nueces Bays has revealed that some of these surfaces correspond to fluvial terraces formed during the last deglaciation (120,000 - 20,000 yrs bp). These same flooding surfaces mark the onset and abrupt termination of deposition associated with bayhead deltas, flood and ebb tidal deltas, and oyster reefs.