

## **Recent Deformation in the Mississippi Embayment Imaged by High Resolution Reflection Data**

**Leah M. Mitchell, M. Beatrice Magnani, Kirk D. McIntosh, Brian Waldron, Stephan Sastrup,  
and Michael W. Towle**

*University of Memphis*

The New Madrid seismic zone (NMSZ), located in the Mississippi embayment (Central United States), is known for the highest rate of seismic activity east of the rocky mountains as well as the destructive sequence of earthquakes ( $>7.5M$ ) that occurred in New Madrid, Missouri during a three month period in 1811-1812. A 300 km long high-resolution marine seismic reflection survey was conducted in June 2008 along the Mississippi River from Caruthersville, Missouri, to Helena, Arkansas. Our acquisition program was designed to image the shallow sedimentary sequences with the goal to identify and characterize the stratigraphy and the faults of the acquisition area. A simple processing flow has been applied to the seismic data for a complete 2D/3D interpretation of the entire 300 km river survey. The Paleozoic, Cretaceous, Tertiary and Quaternary sequences have been mapped throughout most of the profile, revealing that deformation is accommodated within discrete zones where unconsolidated sediments are folded and faulted. At least two areas show recent deformation where the faults displace the sedimentary sequences from the Paleozoic to the Eocene/Quaternary unconformity, suggesting that there has been recent deformation not associated to the NMSZ.