Mississippi embayment, Reelfoot rift, New Madrid seismic zone, and Shelby County, Tennessee
DEM of Mississippi River Valley with underlying top of Paleozoic and Precambrian.
Red column = Memphis, yellow = Dyersburg = blue Jonesboro (Csontos)
Faulting along eastern margin of the Reelfoot rift. Blue = basement faults and red = shallow faults (Parrish and Van Arsdale, 2004)
Dow seismic line 143E.
Faulting along the eastern Reelfoot rift margin and bluff line at Porter’s Gap, TN (Cox et al., 2001)
10 m of post 20,000 yr right lateral strike slip faulting at Porter’s Gap
Top of Precambrian illustrating the Reelfoot Rift and eastern rift margin faults (Csontos and Martin)
New Madrid seismic zone, Shelby County, and earthquake liquefaction deposits along the Loosahatchie and Wolf Rivers (Broughton et al., 2001)

Quaternary faulting identified near letter B (Cox et al., 2006)
Looking for Earthquake Liquefaction (Sand Dikes) Along the Wolf River in Collierville
Large sand dike in bank of Wolf River in Memphis formed during earthquake liquefaction
Knife points to where the liquefied sand broke through the dark soil onto the Wolf River flood plain.
Shelby County faults and cross sections A-A' and B-B' (Deen, 2006)
Top of Eocene
Lower Claiborne
(Deen, 2006)
Top of Eocene
Upper Claiborne
Top of Pliocene Upland Complex
West-east cross section A-A’ and north-south cross section B-B’ (Deen, 2006)
Digital Elevation Model

- Meters
  - 135
  - 55

- Interstate
- FedEx Forum
- Pyramid
- U of M Campus
- James Rd. Study Area
- Shelby Farms Study Area
- Cross-section Location
- Inferred fault
- Fault

Shelby County faults and cross sections A-A’ and B-B’
Anticline in north bank of Wolf River projected into seismic line to north (Velasco et al., 2005)
1 = 4000 ±60 BP
2 = 2130 ±50 BP
3 = 1610 ±60 BP
4 = 1550 ±40 BP

Folding/faulting occurred ~400 AD
(Velasco et al., 2005)
Faults and seismic reflection line locations
Shallow P-wave reflection line (Woolery)
Geologic interpretation of seismic reflection data across the Ellendale and Shelby Farms faults (from Deen, 2006)
Electrical conductivity and drilling survey
Geologic cross sections from Giddings rig cores
Shelby Farms trench across area of Ellendale fault
Trench across a portion of the Ellendale fault zone along Giddings rig cores BB-DD line (Deen, 2006)
Digital Elevation Model

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Shelby County faults and remainder of county to be mapped
References Cited


Csontos, R., Ph.D. dissertation in progress.


Woolery, E., seismic reflection line acquisition and processing