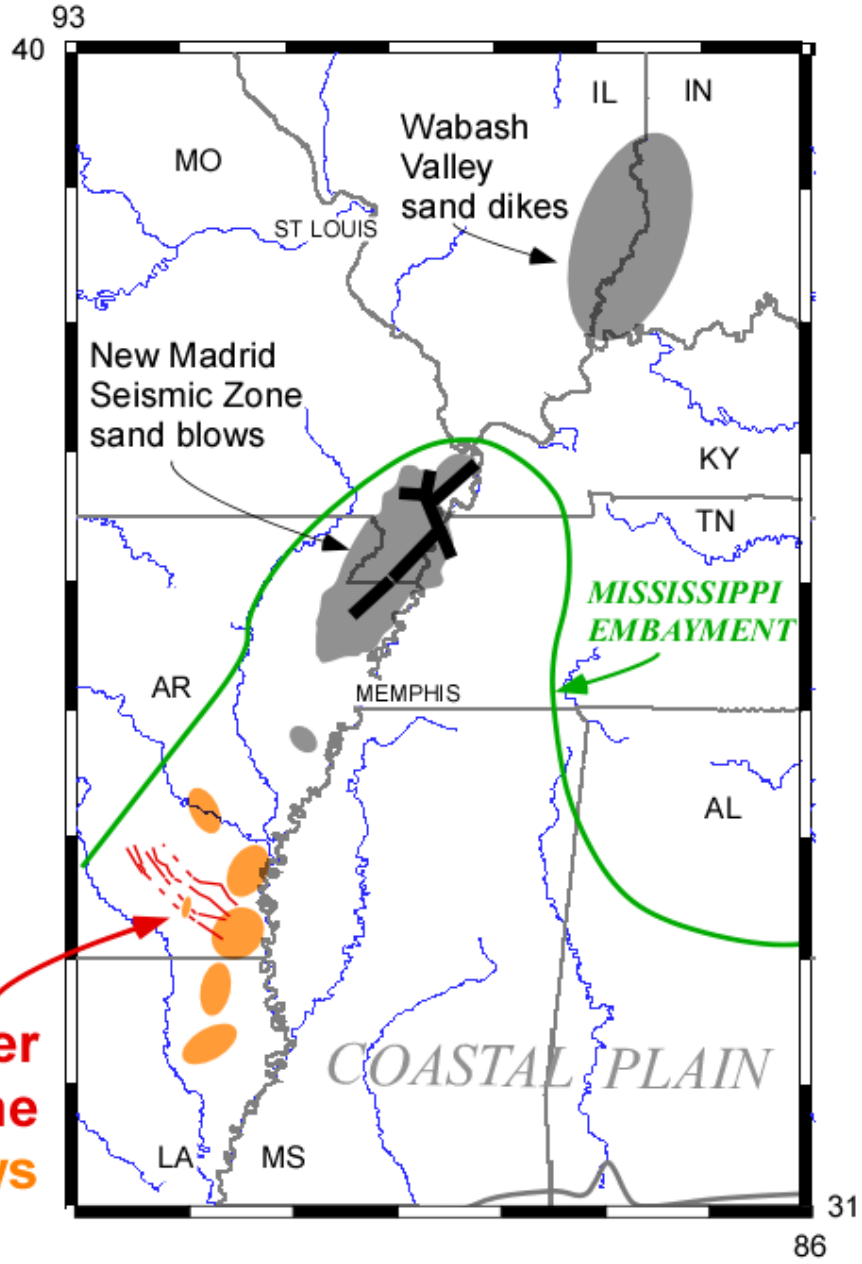
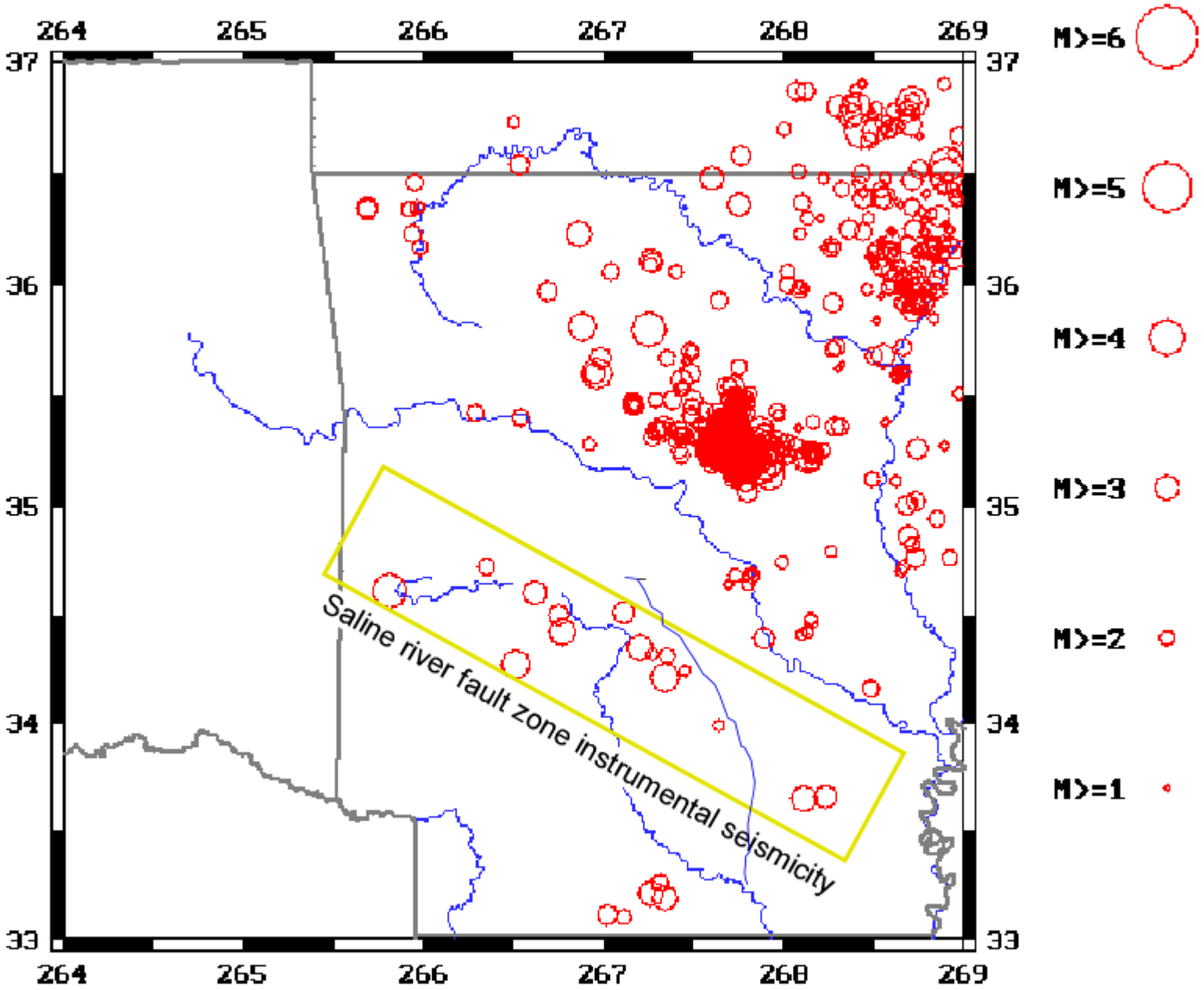
"SOUTHERN MISSISSIPPI EMBAYMENT"

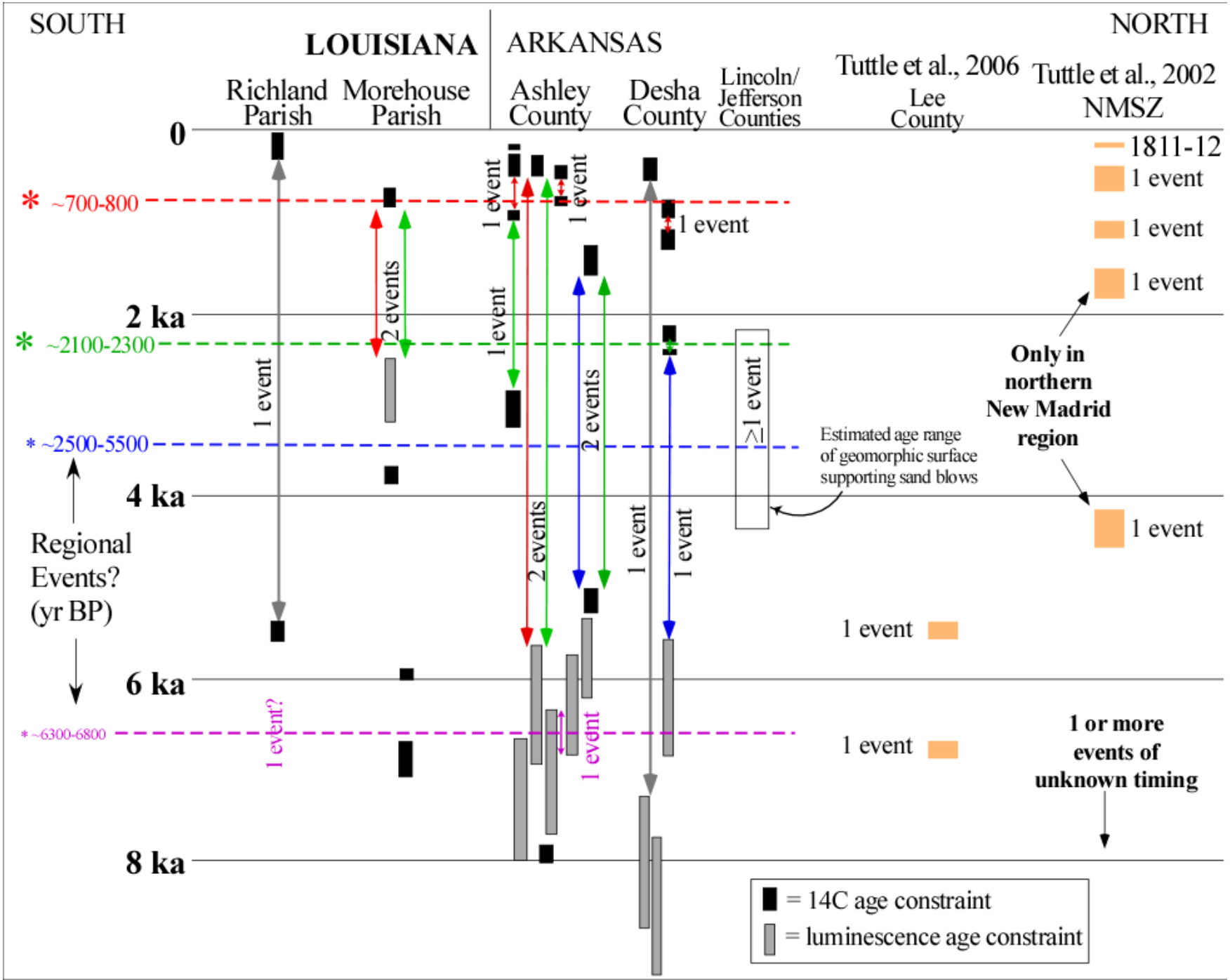
CEUS Earthquake Sources Workshop
Memphis, TN, Feb 2012

Randy Cox
University of Memphis

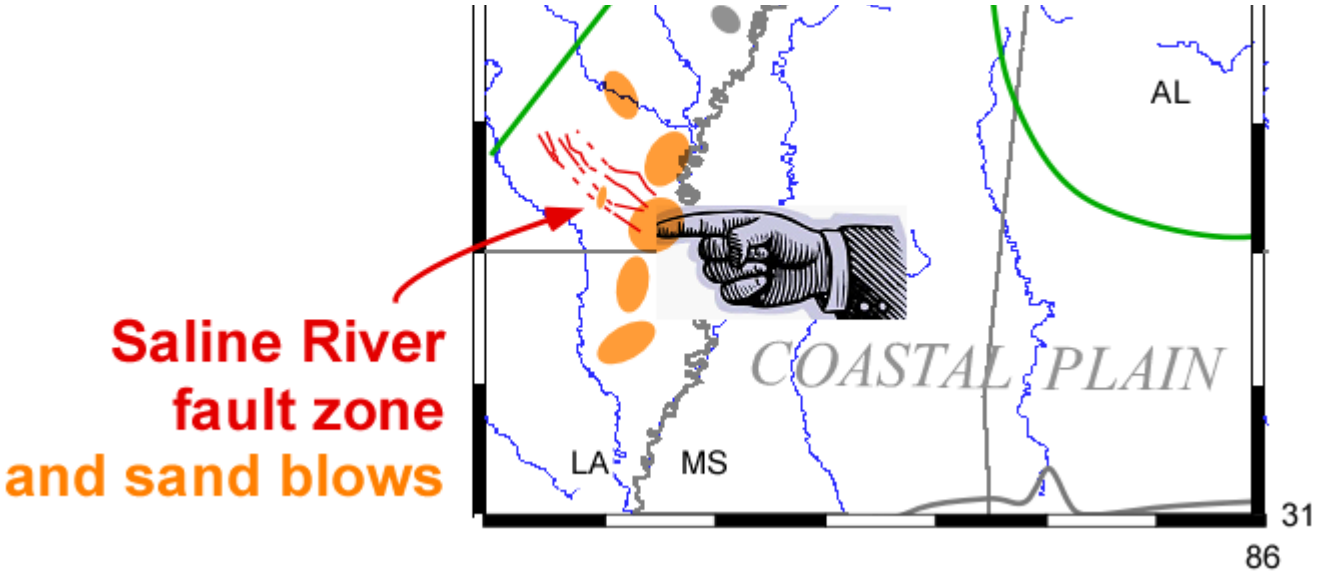


Saline River fault zone and sand blows

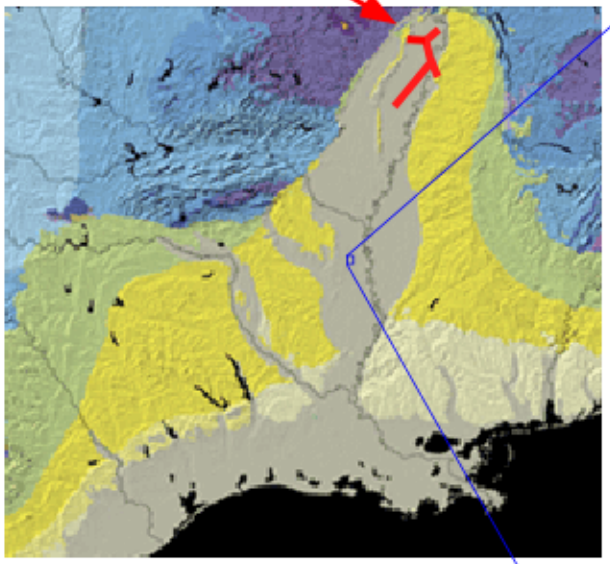

264
265
266
267
268
269
37
36
35
34
33
M>=6
M>=5
M>=4
M>=3
M>=2
M>=1
Saline river fault zone instrumental seismicity

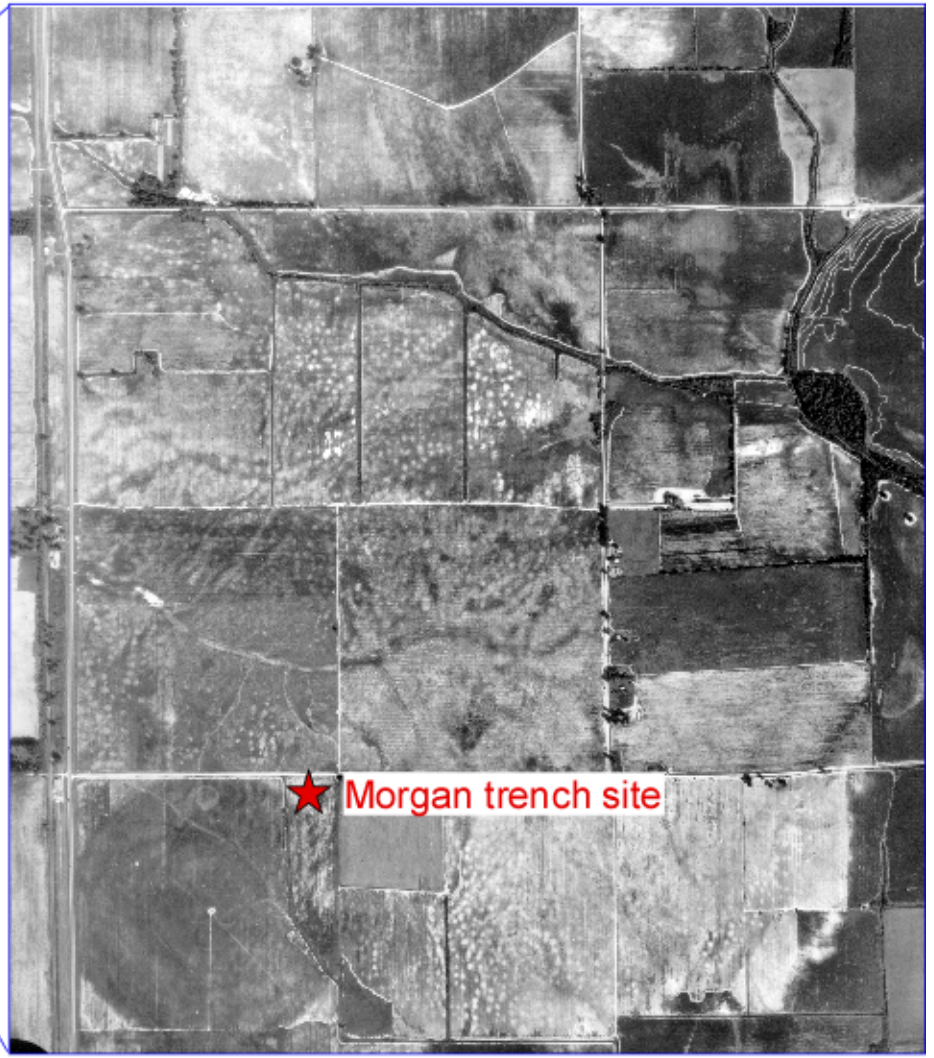

SOUTH
LOUISIANA
ARKANSAS
NORTH
Richland Parish
Morehouse Parish
Ashley County
Desha County
Lincoln/ Jefferson Counties
Tuttle et al., 2006
Lee County
Tuttle et al., 2002
NMSZ
0
2 ka
4 ka
6 ka
8 ka
* ~700-800
* ~2100-2300
* ~2500-5500
* ~6300-6800
Regional Events? (yr BP)
1 event
2 events
1 event?
>1 event
Estimated age range of geomorphic surface supporting sand blows
1811-12
1 event
Only in northern New Madrid region
1 or more events of unknown timing
= 14C age constraint
= luminescence age constraint

Sand Blow example



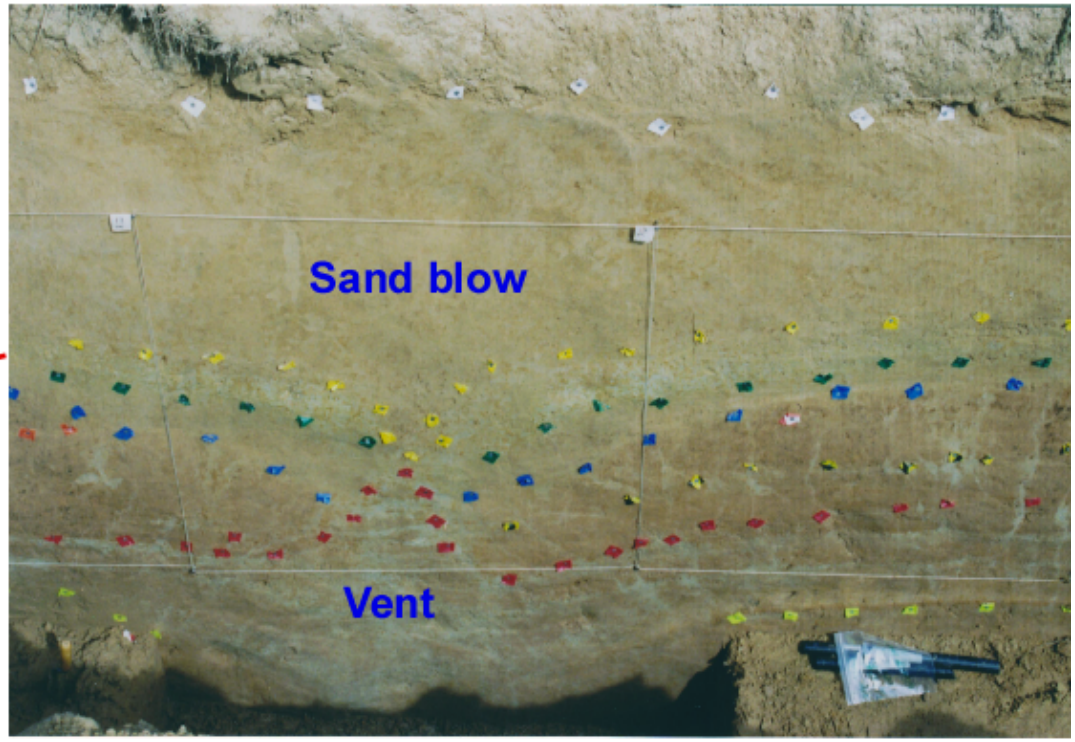
New Madrid
seismic zone



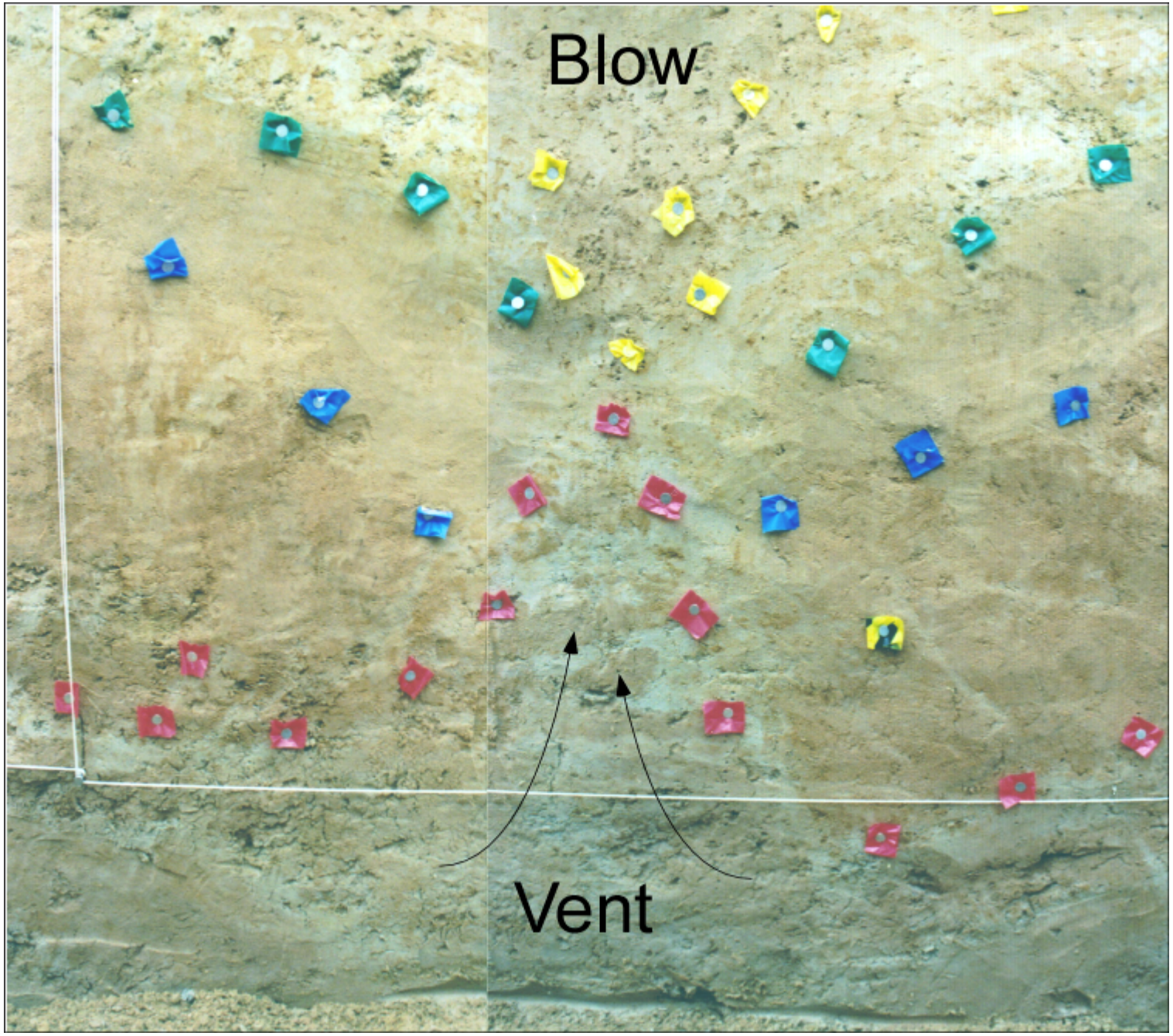


Montrose, Arkansas
sand blows

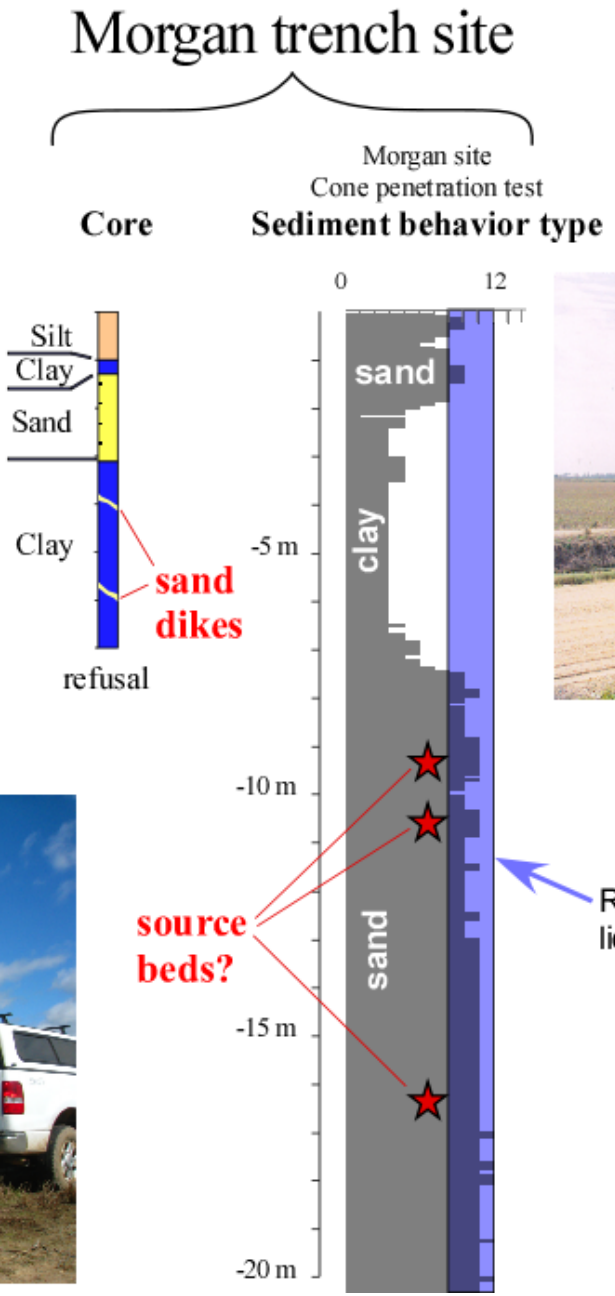
Morgan farm



Morgan trench site


Blow
Vent

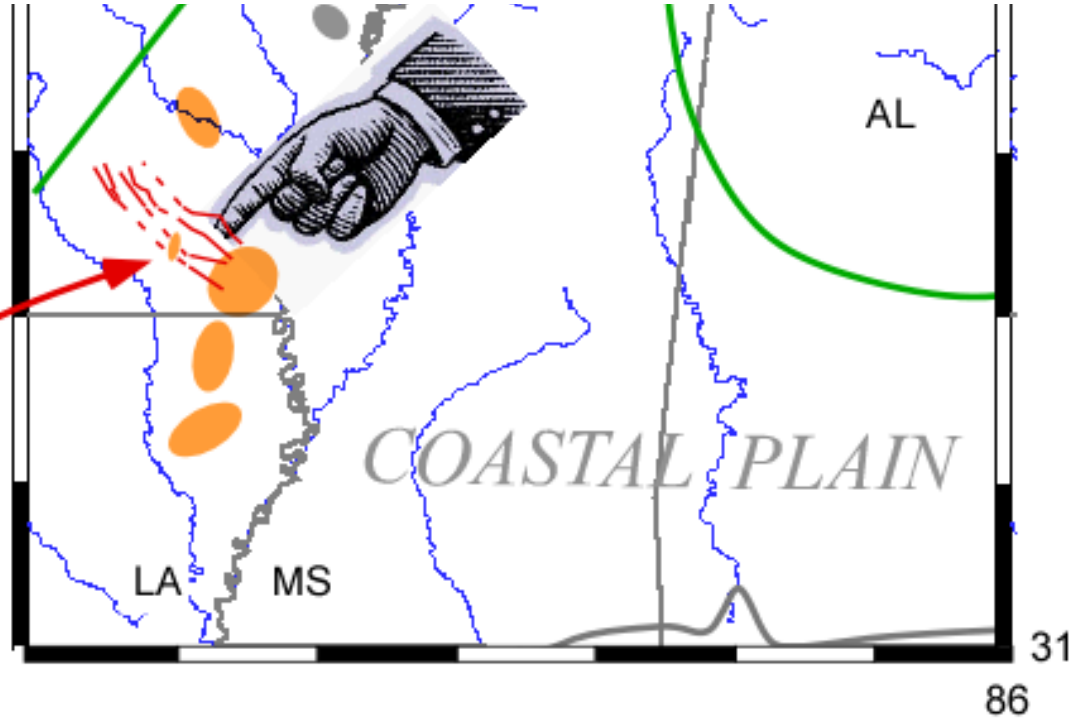
Source bed of sand blows



Cone Penetration Test truck

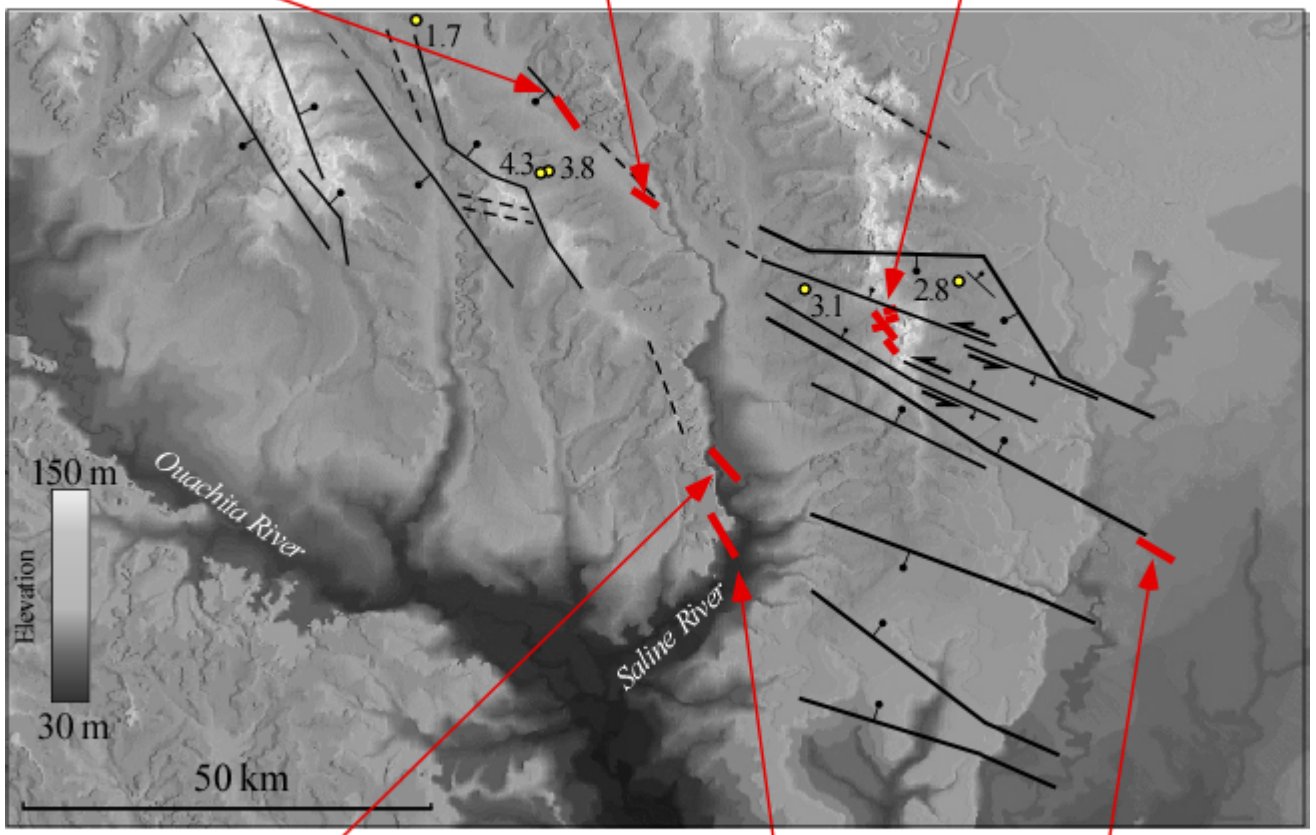
Giddings hydraulic coring

Surface faulting/folding examples

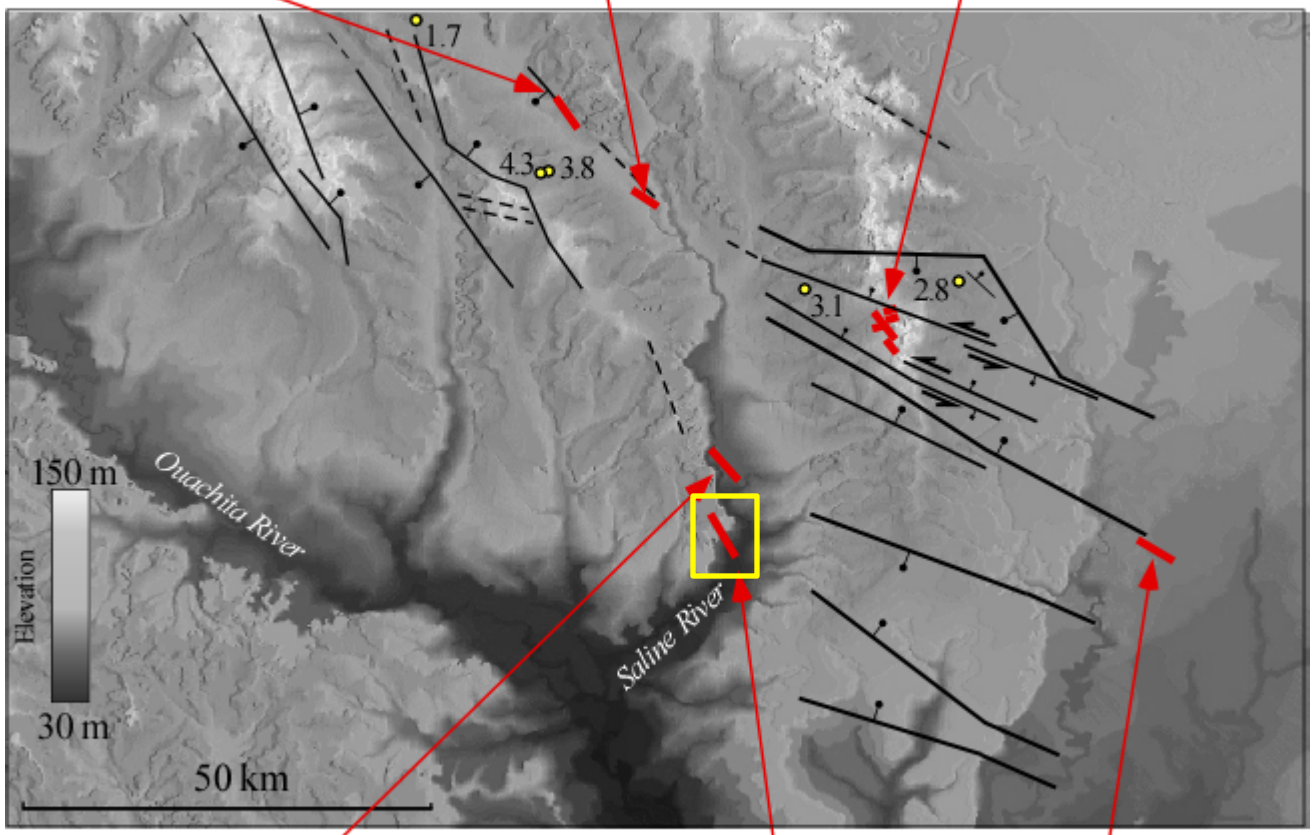


Saline River fault zone and sand blows

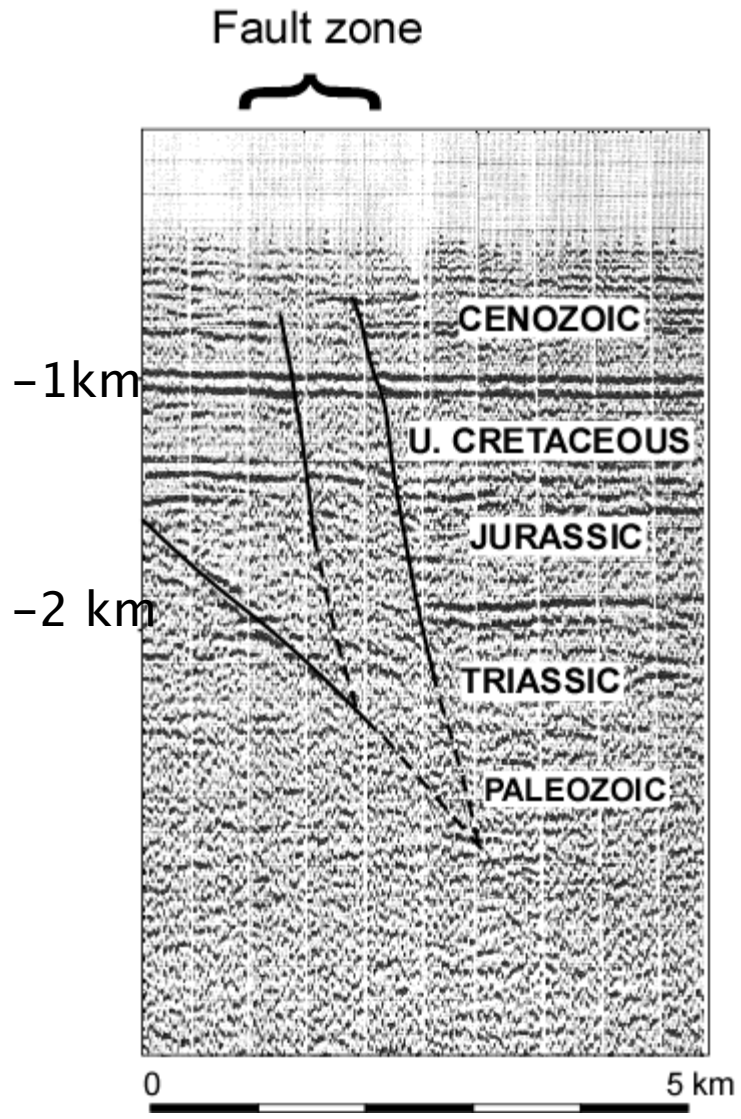
Summary of surface deformation

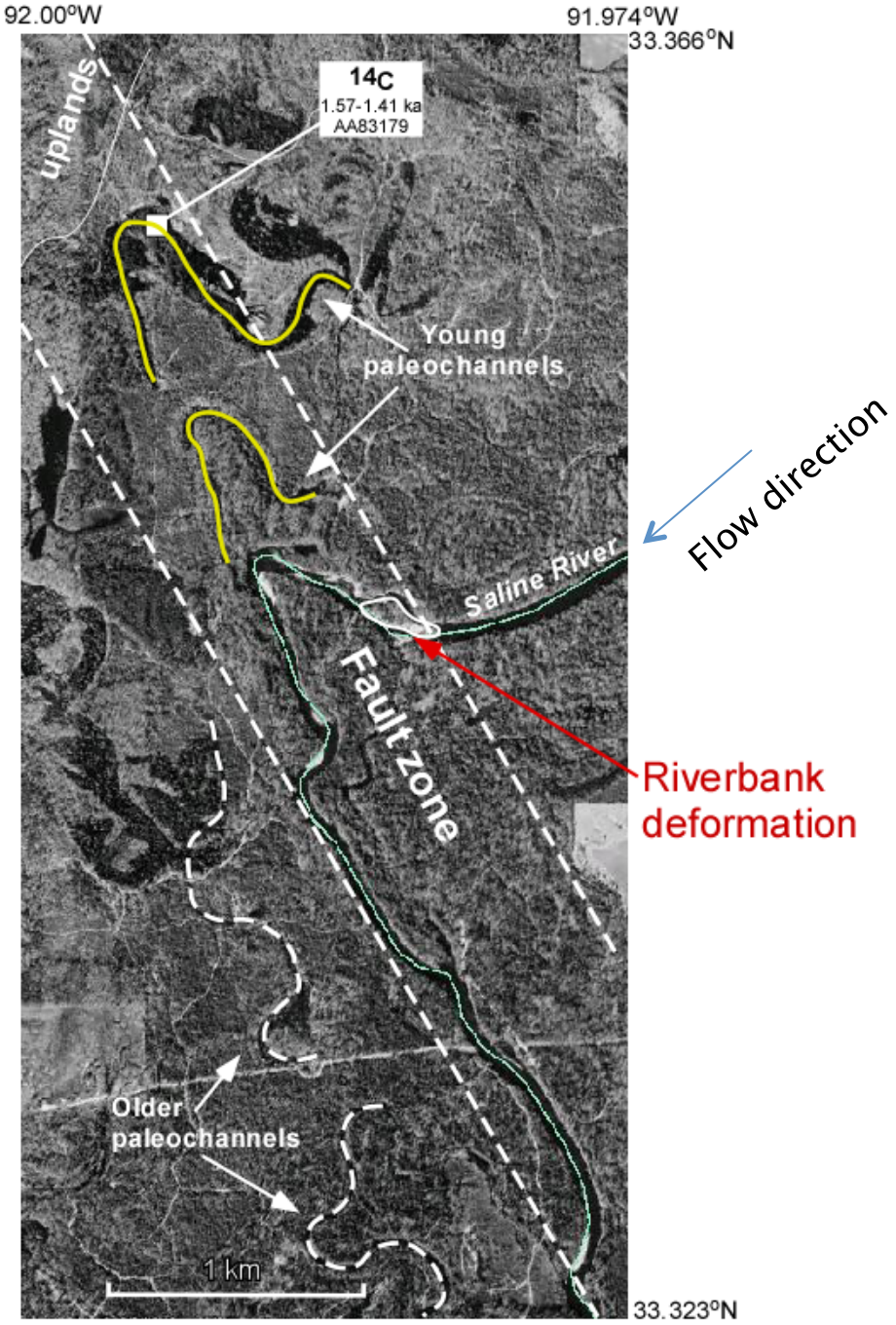


Summary of surface deformation

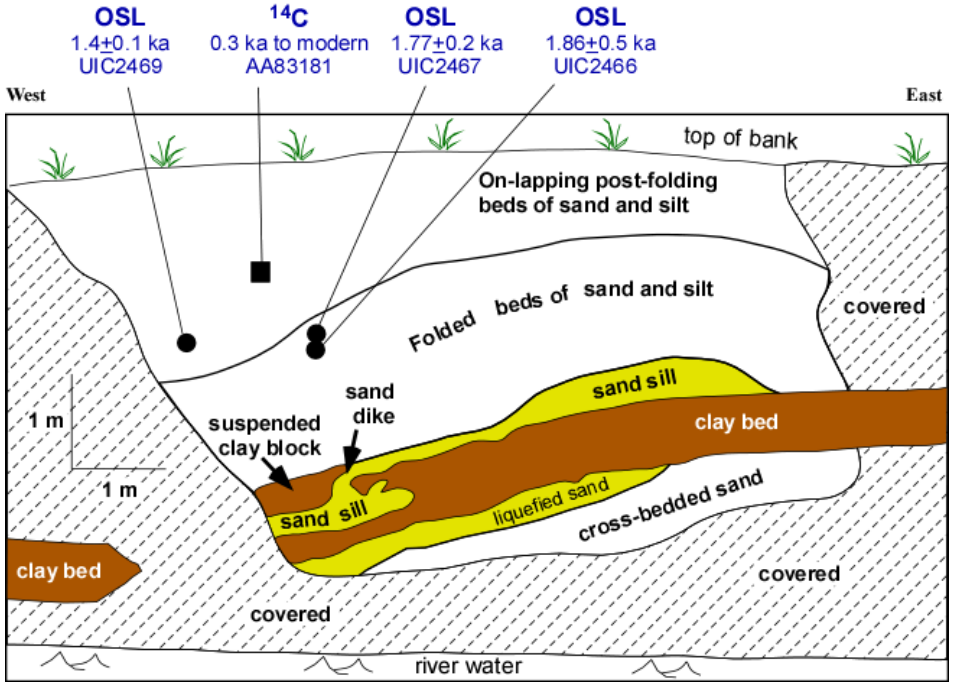


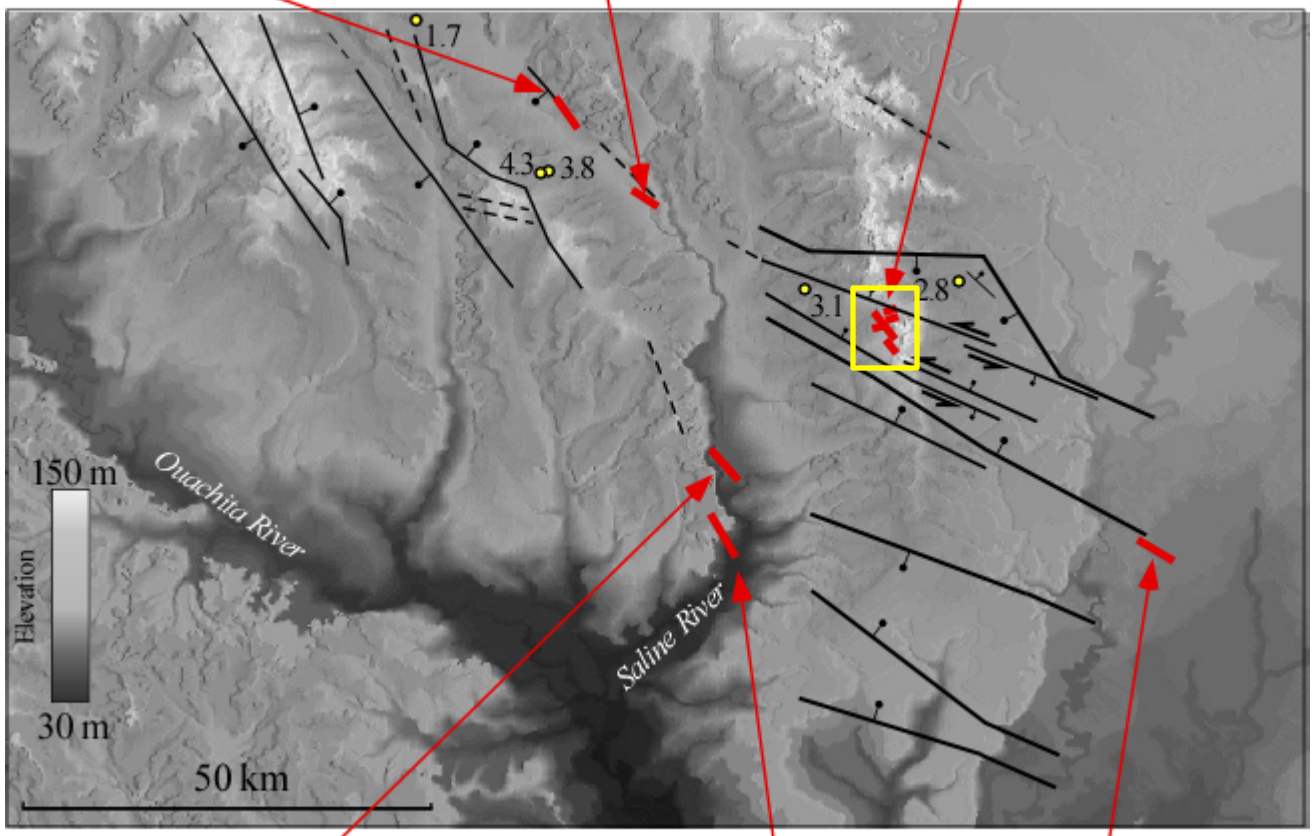
River Diversion near Longview, Arkansas

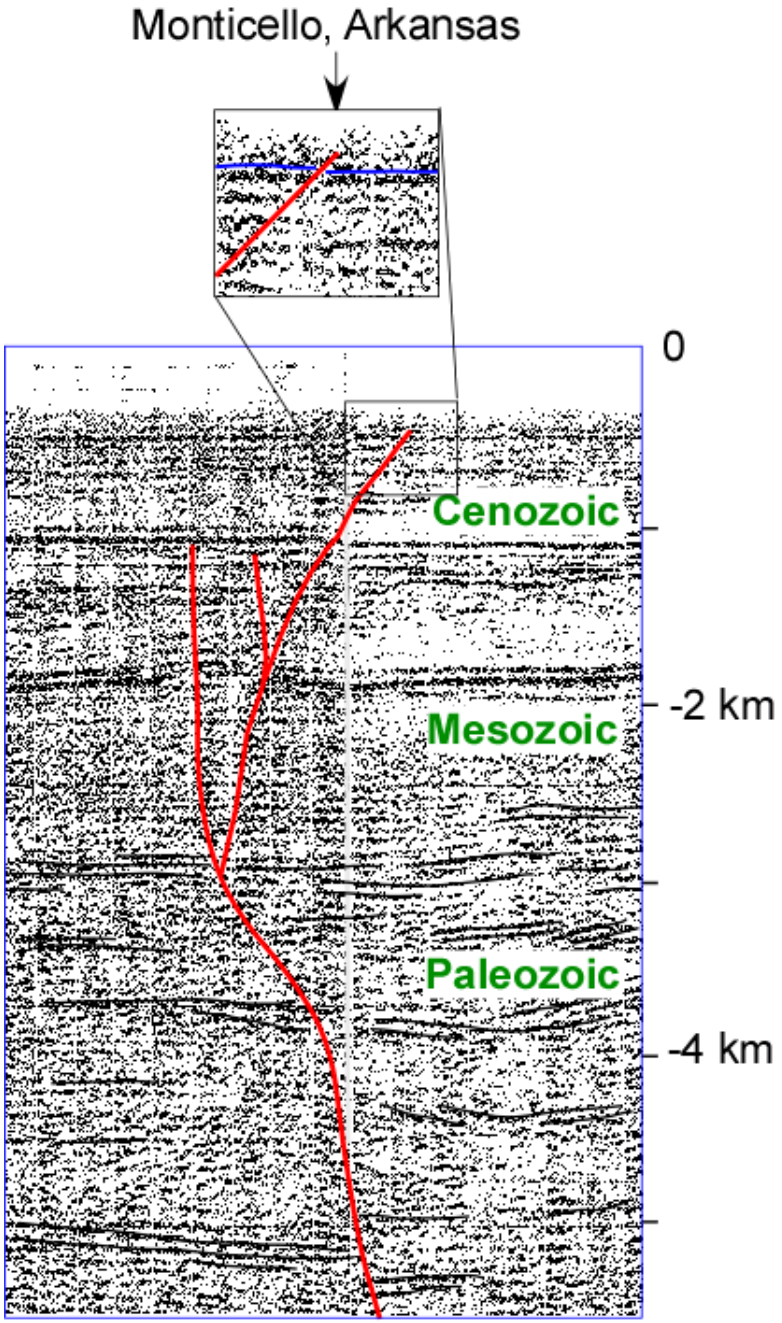




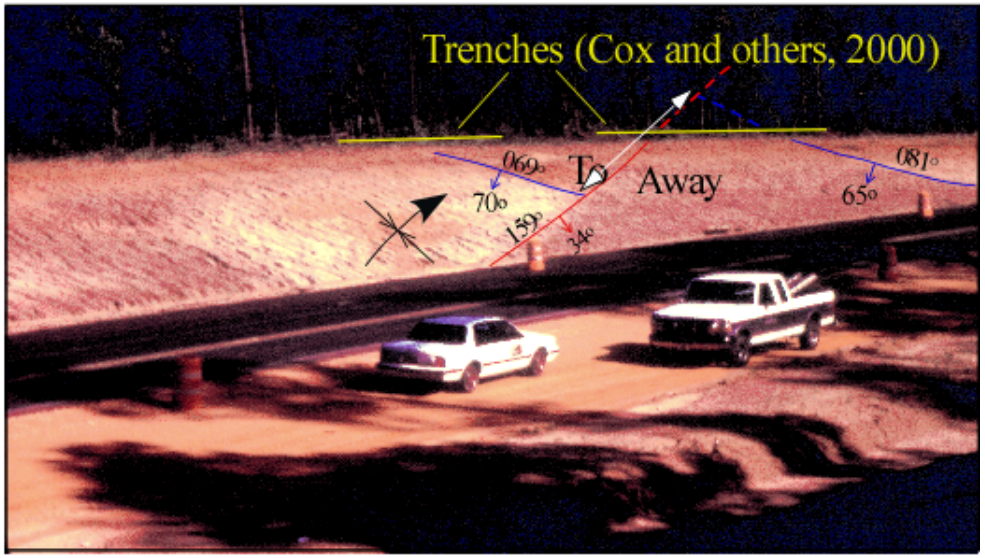
Deformation in late Holocene alluvium in bank of Saline River near Longview, Arkansas



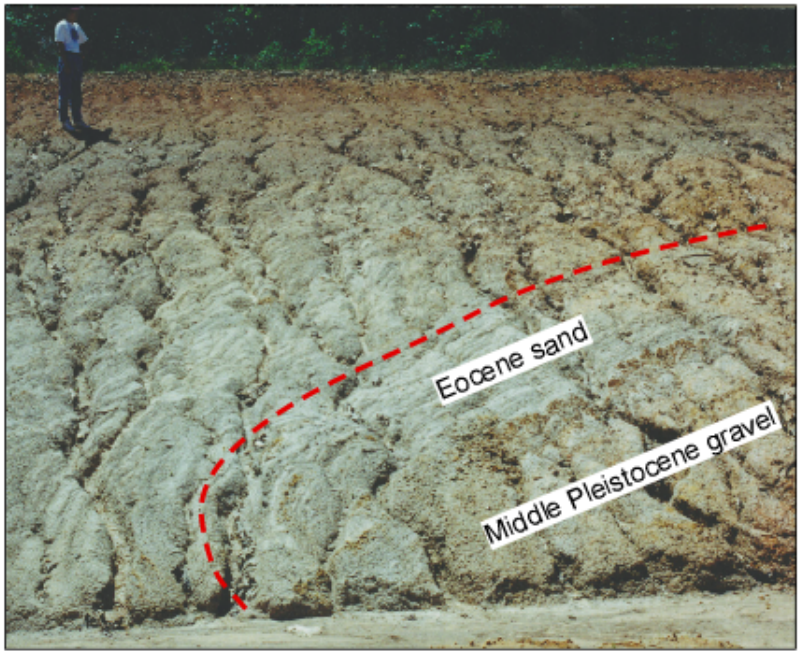

Monticello
(Cox et al., 2000)
(Post mid-Pleistocene gravel)
(23.6-5.1 ka)
(5.1-3.6 ka)
Rison
(0.8-0.6 ka)
Vince Bluff
(~5 ka)
1.7
4.3
3.8
3.1
2.8
150 m
Elevation
30 m
Ouachita River
Saline River
50 km
Gee's Landing
(13.4-9 ka)
(2.7-1.3 ka)
(1.2-1.1 ka)
Horsehead Island
(1.9-1.4 ka)
Boydell
(~5 ka)



Seismic reflection profile



Fault exposed in a roadcut at Monticello, Arkansas



Syncline in roadcut above.

End