



CENTER FOR EARTHQUAKE RESEARCH AND INFORMATION UNIVERSITY OF MEMPHIS

CHUCK LANGSTON, DIRECTOR

NOVEMBER 4, 2019 NETOPS MEETING

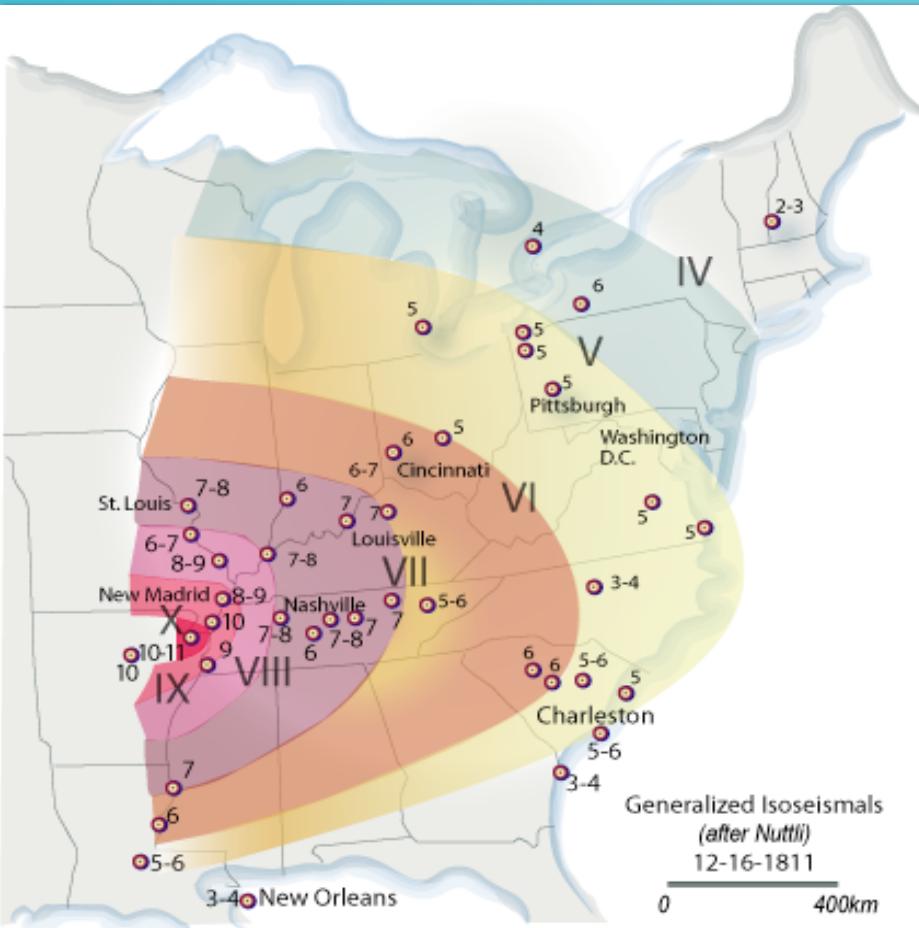


- ◆ *State Agency*
- ◆ *Research “Project” at University of Memphis*
- ◆ *Research/Education/Outreach*
- Tennessee Earthquake Information Center 1977 - 1984 (State Agency)
 - Tennessee Center of Excellence 1984
 - “Accomplished Center” 1988
 - Reauthorized under TN Sunset Law March 2016 for 6 years
 - SCEC Board Member 2019

TCA 49-8-602: Center for Earthquake Research and Information.

- (a) There is established the Tennessee Center for Earthquake Research and Information, which shall operate as a division of the University of Memphis, to provide services such as the following:
 - (1) Accurate, immediate reports for individuals, governmental agencies and the news media on the occurrence of earthquakes;
 - (2) Background information on earthquakes for individuals, civic groups, schools, governmental agencies, the news media and others.
 - (3) Research related to the causes and consequences of local earthquakes, to develop the information as the precise locations of earthquakes, magnitude-frequency relationships, magnitude-duration relationships, source spectra studies, attenuation studies, bedrock structures studies and behavior of foundation materials studies.
 - (4) Studies of the desirability of earthquake resistant construction.
 - (5) Advice to governmental bodies, insurance groups and others on the methods and feasibility of reducing earthquake damage; and
 - (6) Earthquake prediction.
- (b) The university is authorized to accept for the establishment, maintenance or operation of the center gifts, grants, funds and other assistance from any agency of state, federal or local governments, or private entities and individuals, and to use or spend the same on behalf of the center.

200 Years Ago



N. Kent Moran
T. Broadbent Graphic

16 Dec 1811

17 Dec 1811

16 Jan 1812

23 Jan 1812

27 Jan 1812

04 Feb 1812

07 Feb 1812

10 Feb 1812

11 Feb 1812

7.9

6.2

5.8

7.4

6.0

7.0

5.8

7.6

5.8

5.8

8.0

5.8

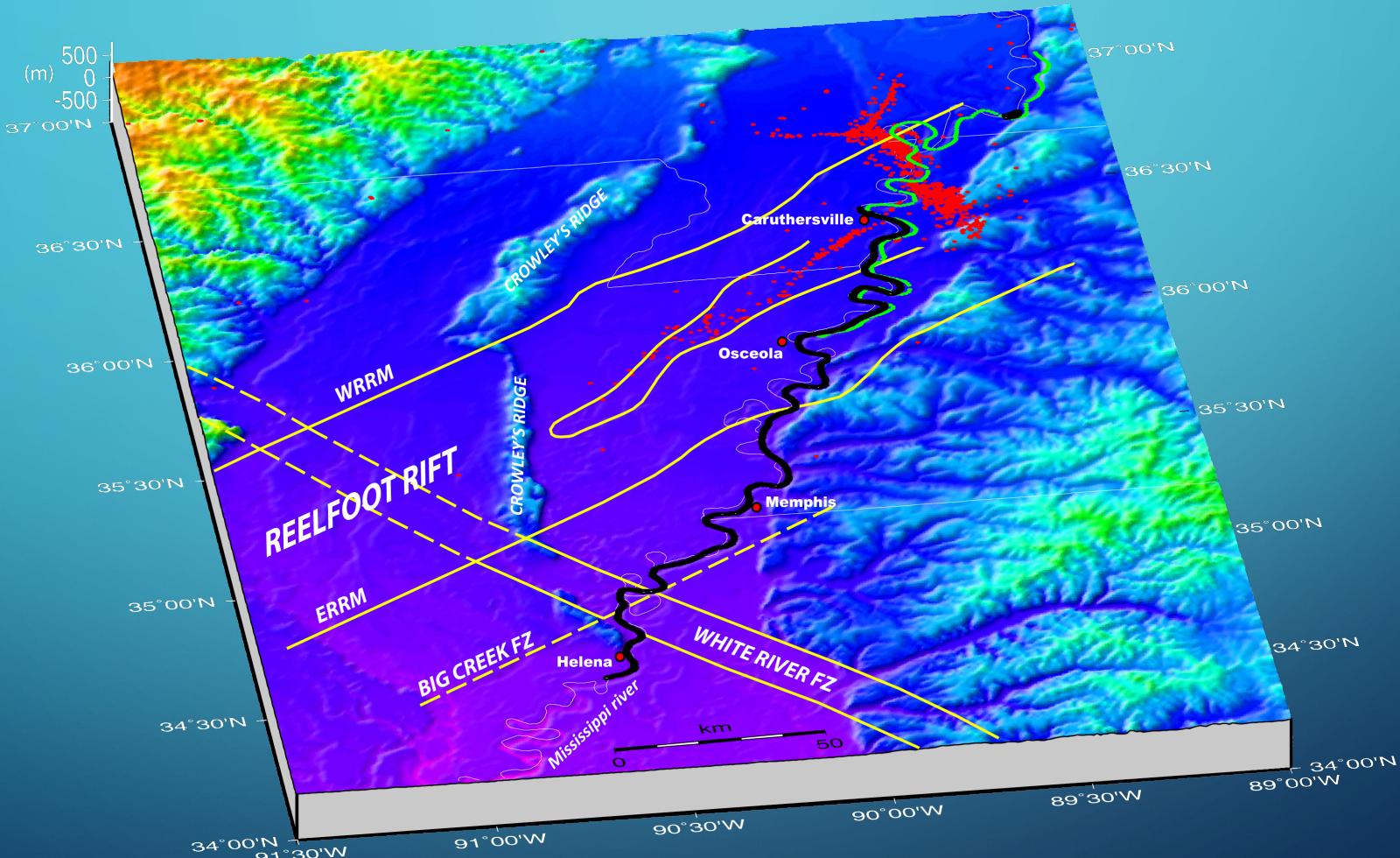
7.0

6.2

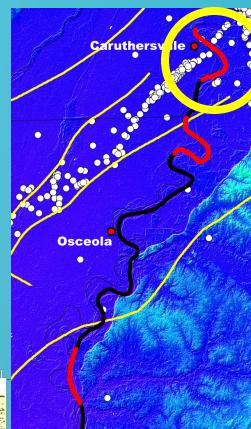
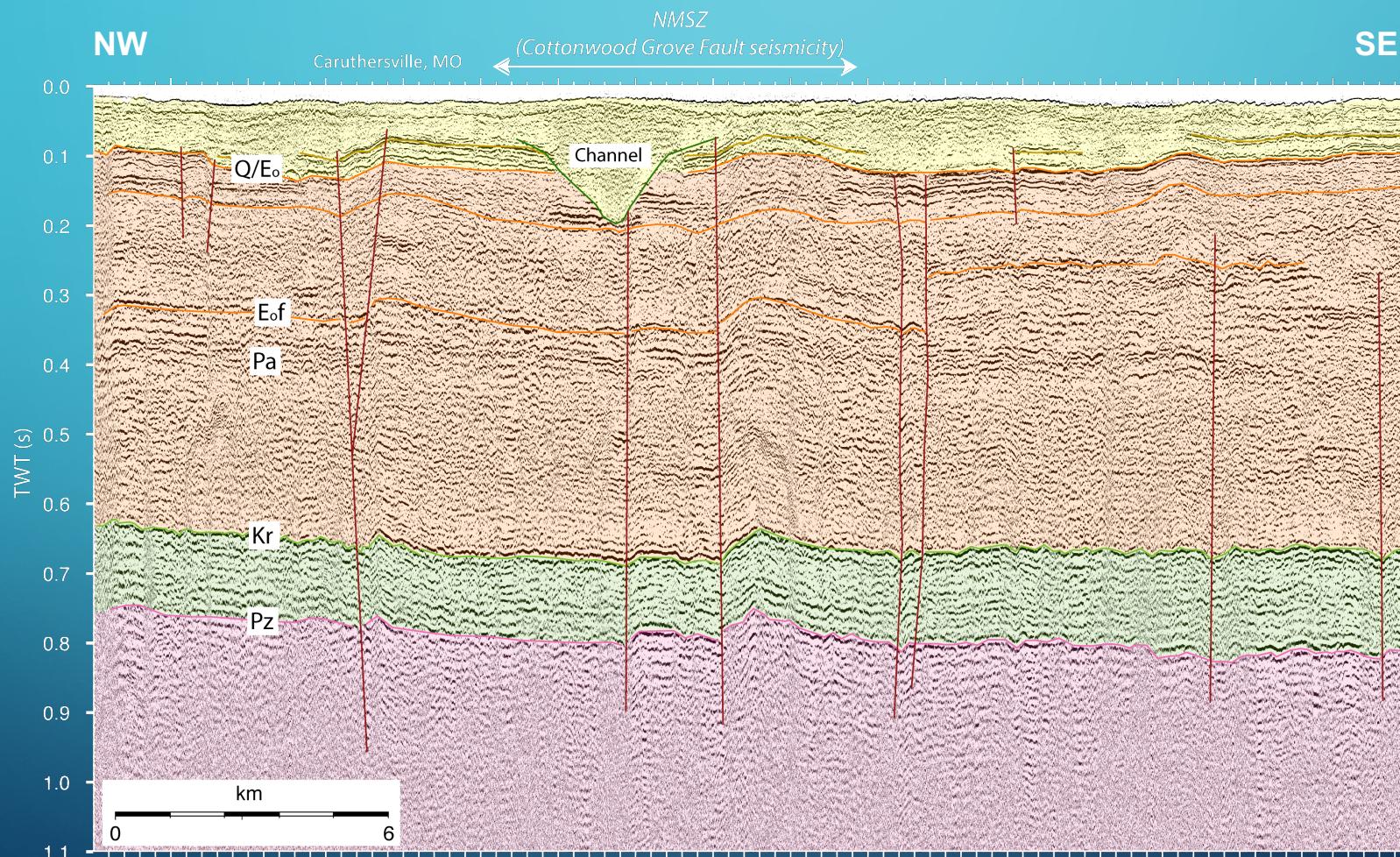
6.2

The Mississippi river project - 2008

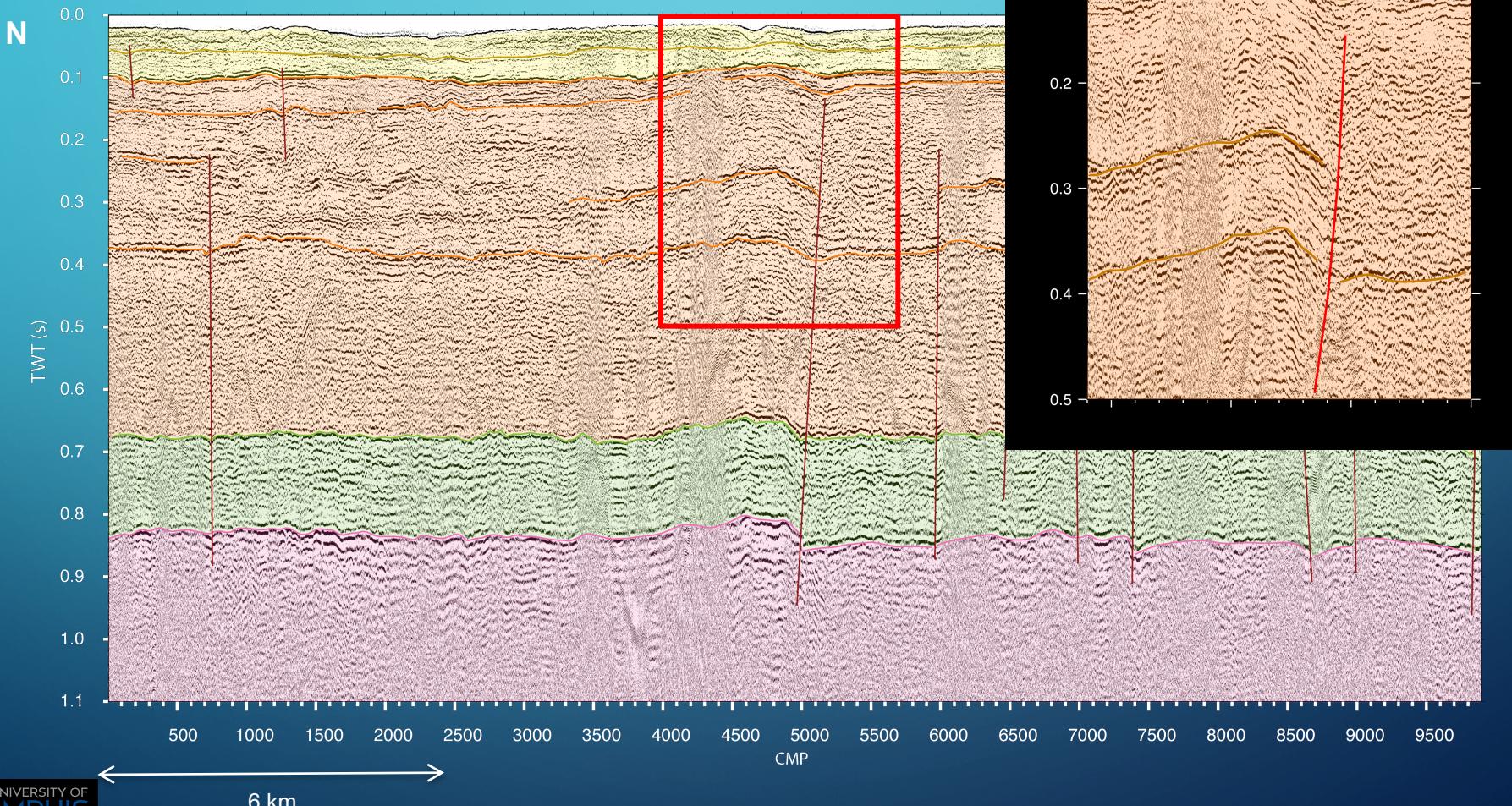
Facilitated by USACE



The river across the NM seismic zone

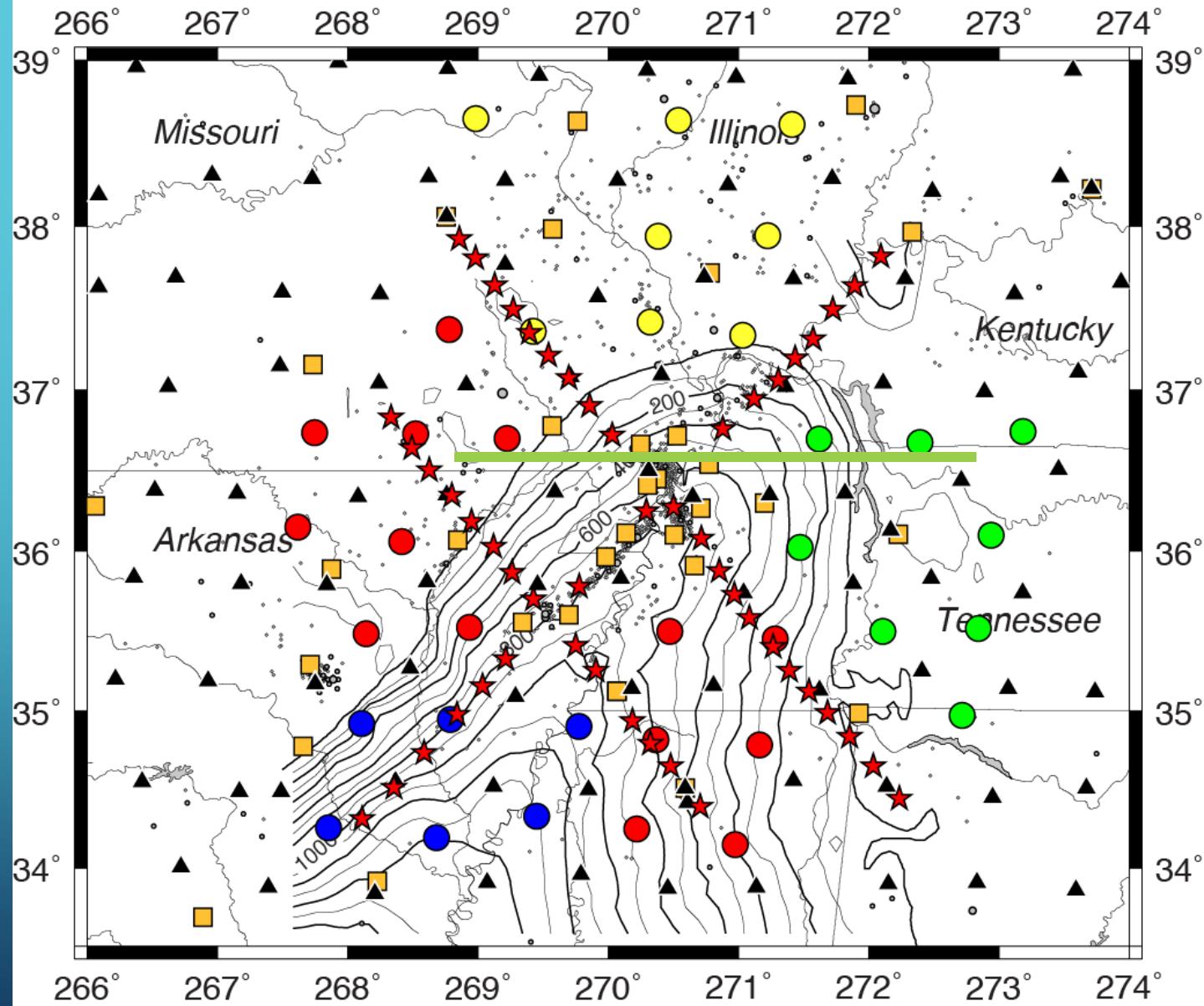


RECENT DEFORMATION OUTSIDE THE NMSZ

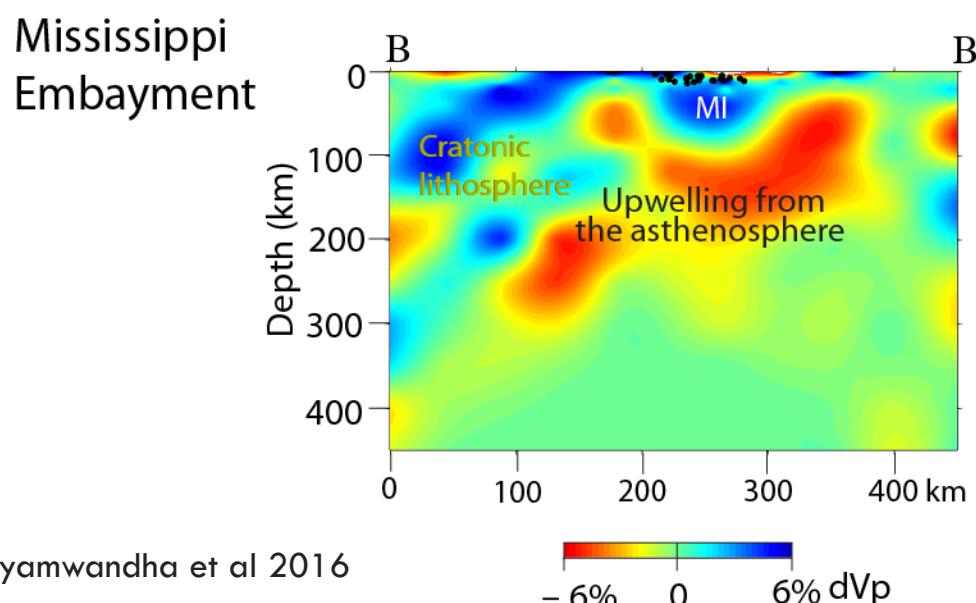
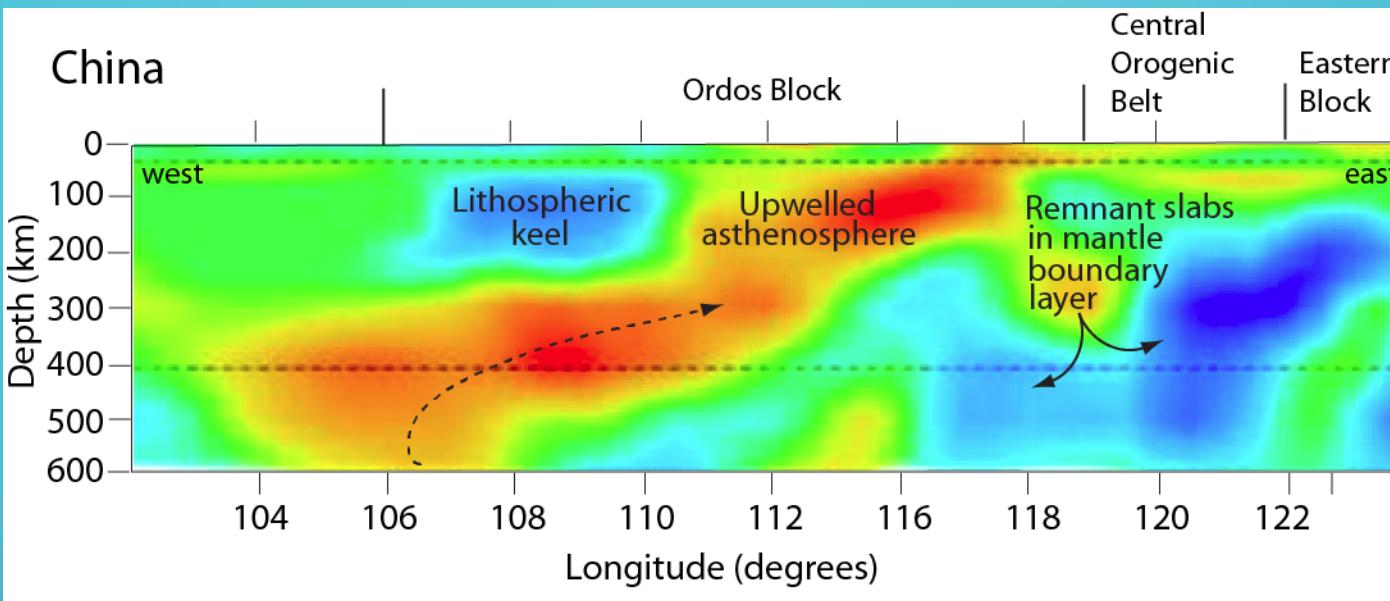


Northern Embayment Lithosphere Experiment

2011-2015

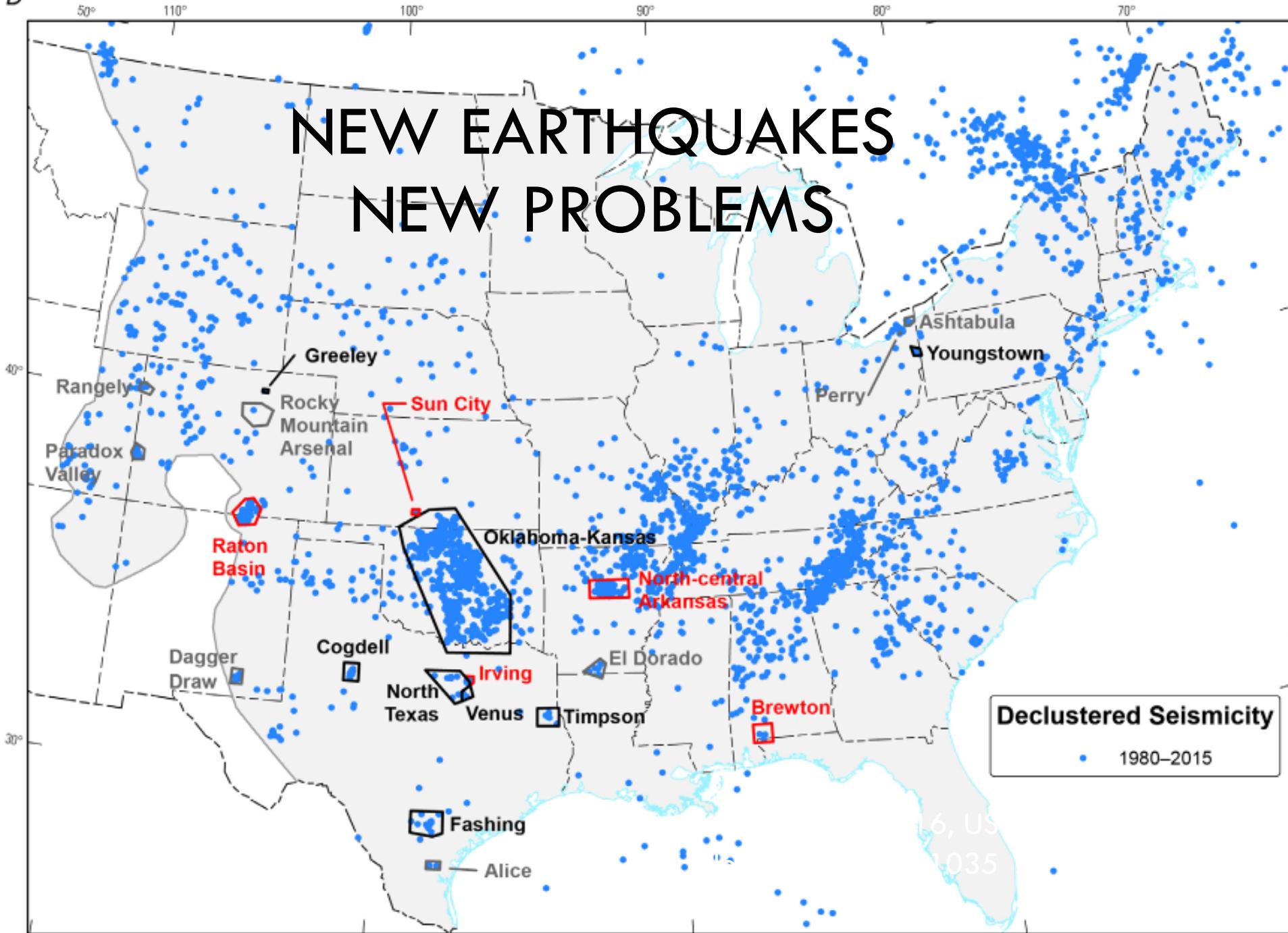


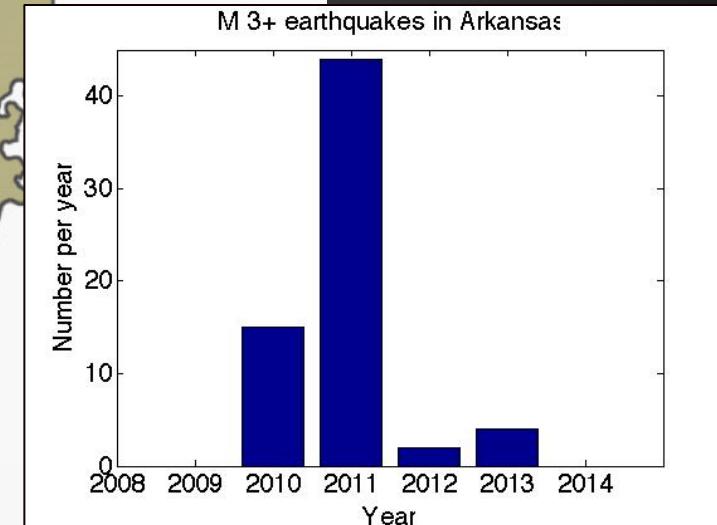
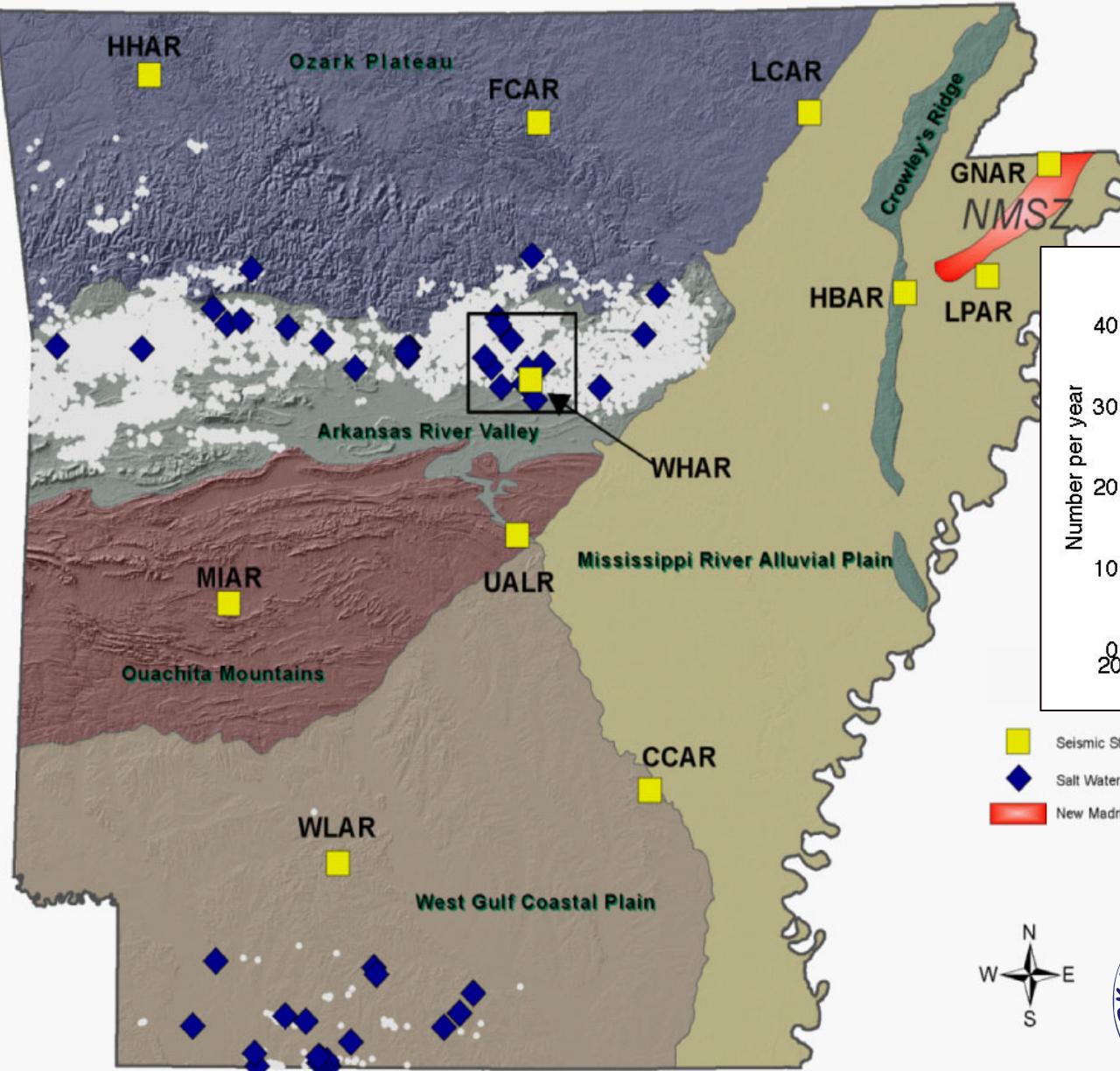
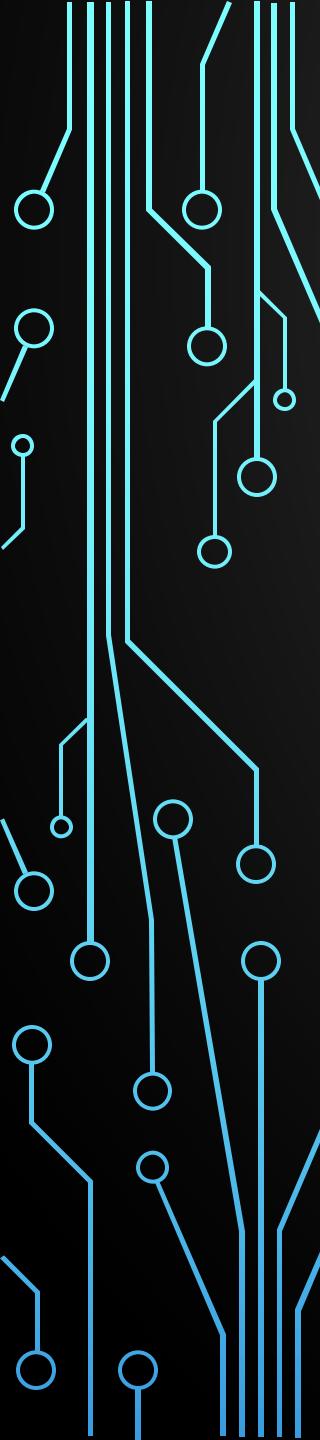
- University of Memphis
- Saint Louis University
- Penn State University
- University of Kentucky



Nyamwanda et al 2016

D

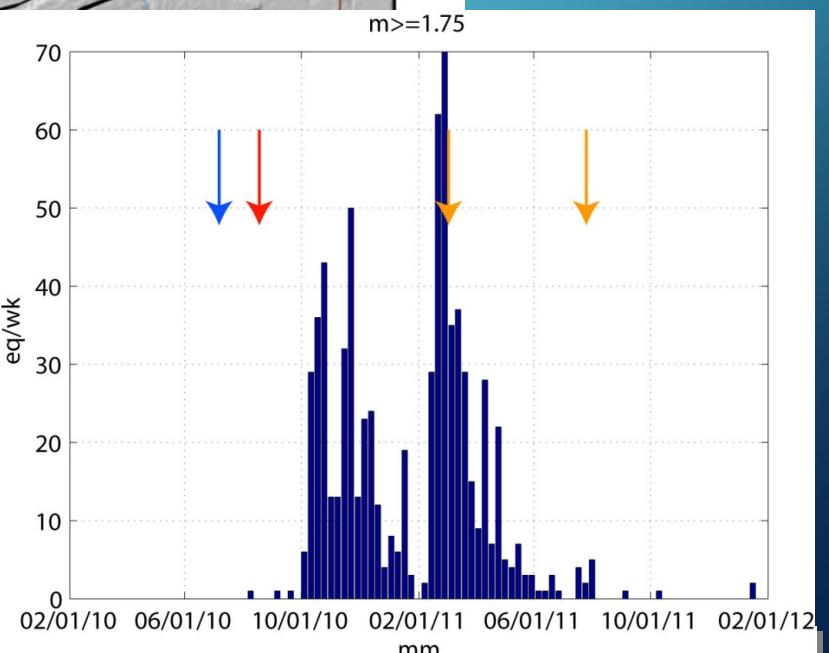
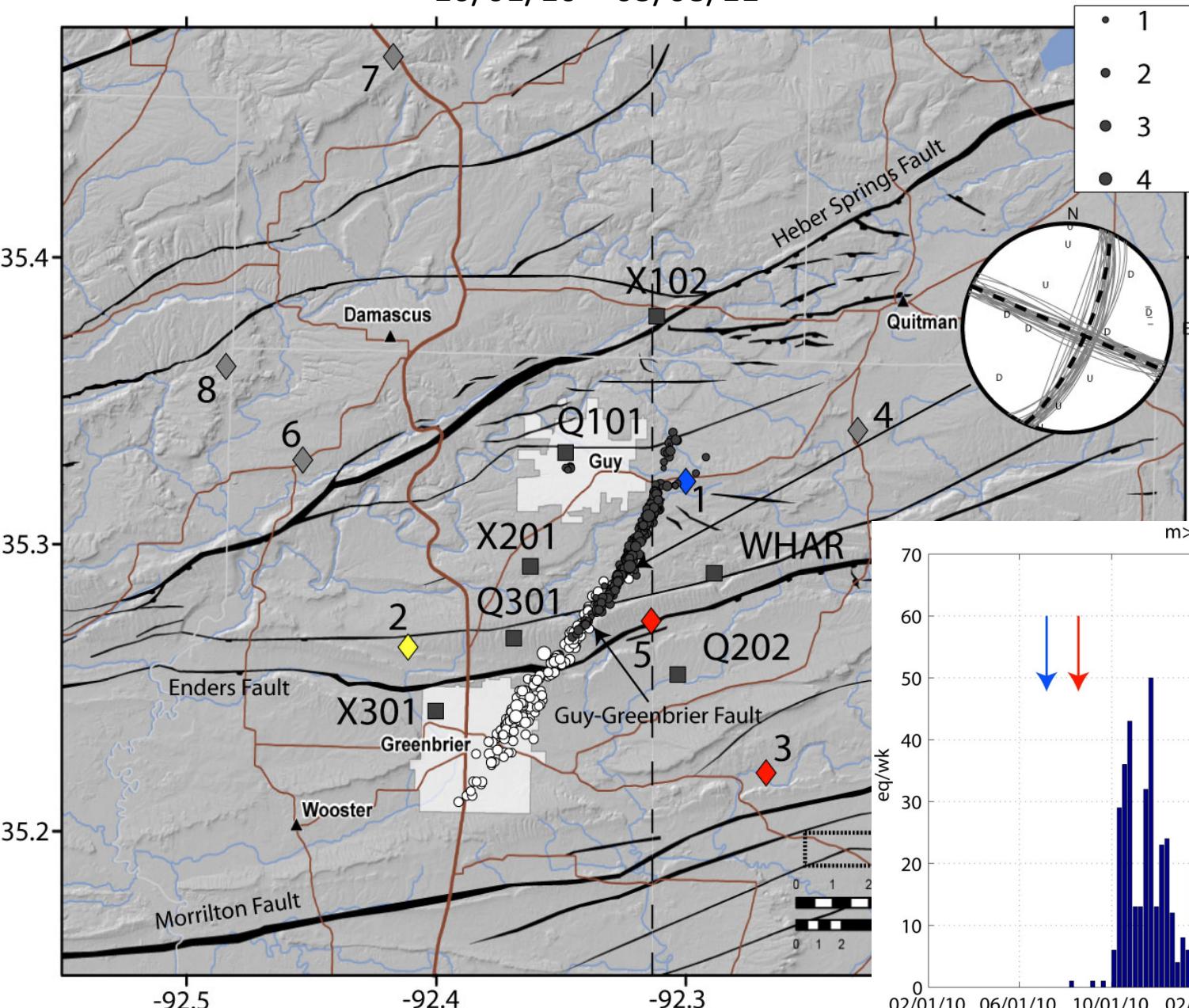




- Seismic Stations
- Salt Water Disposal
- New Madrid Seismic Zone



10/01/10 – 03/08/11

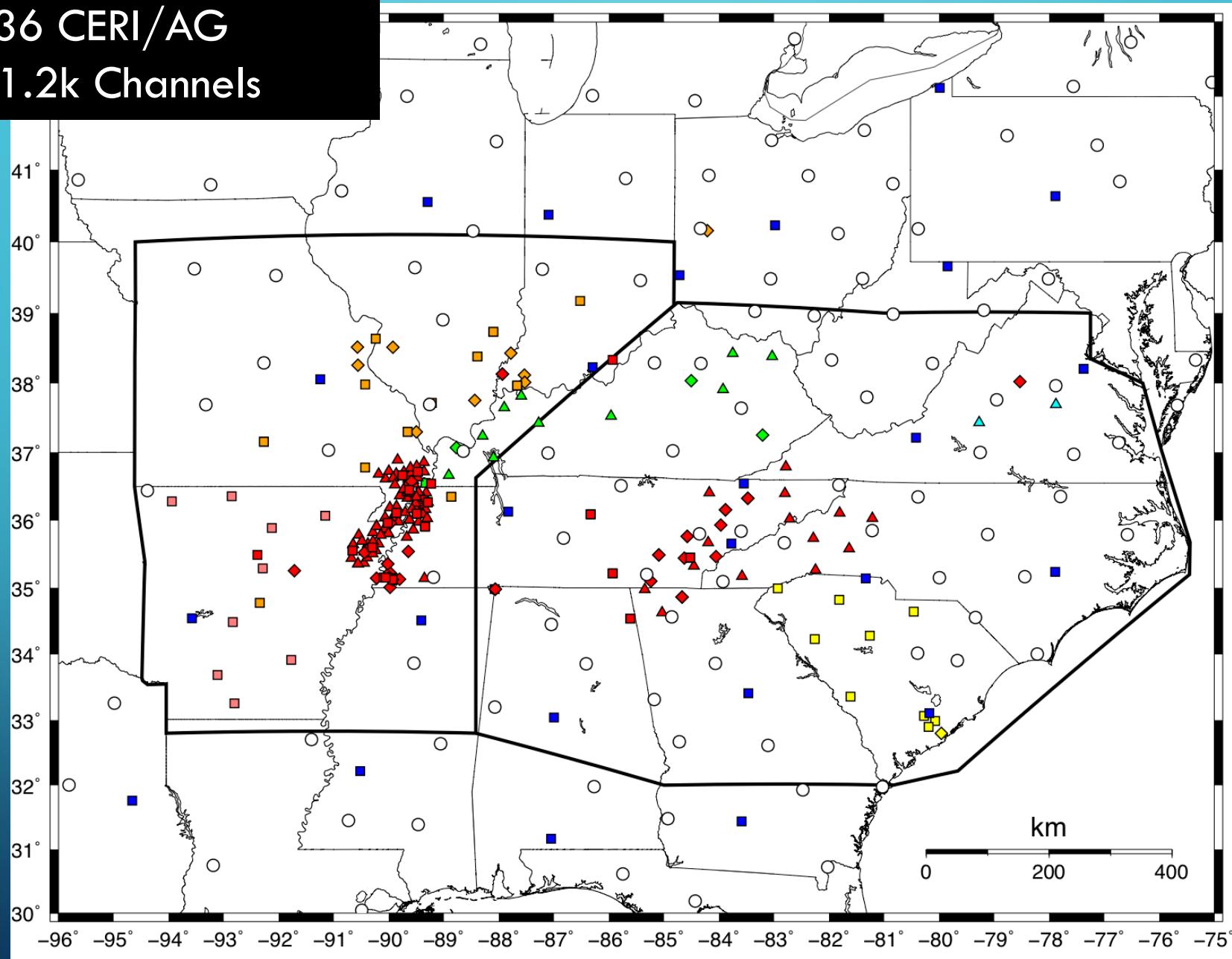


Hazards

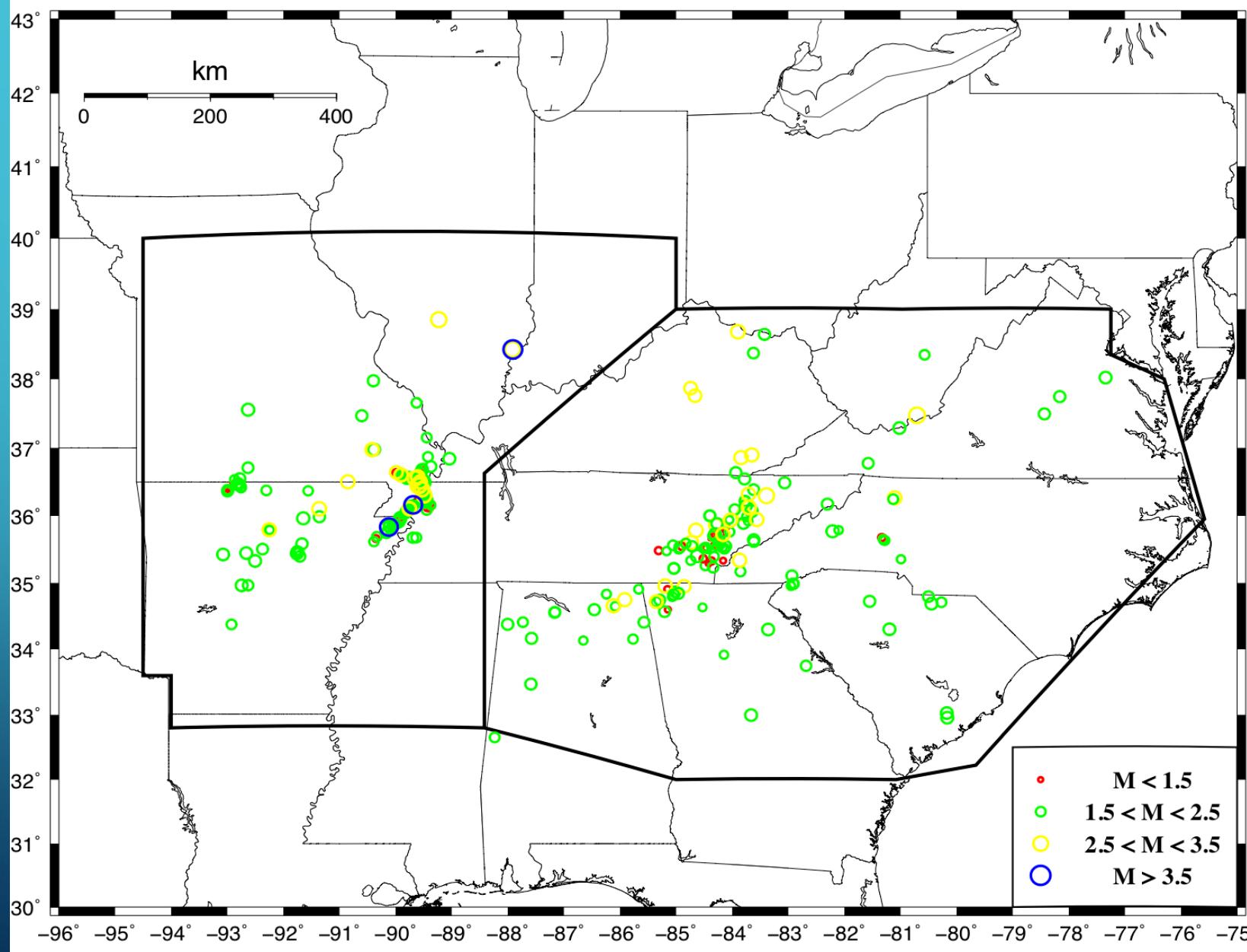
Probabilistic
Seismic
Hazards
Assessment
PGA 10% in 50
years



328 Stations
136 CERI/AG
~1.2k Channels



511 Earthquakes in FYE 6/30/2018





California Launches Nation's First Earthquake Early Warning System



The country's first publicly available, statewide warning system could give California residents crucial seconds to duck and cover before a quake.



The Cypress Freeway collapsed from the Loma Prieta earthquake in the San Francisco Bay Area in 1989, killing 42 people. Credit: Jim Sugar/Corbis Historical/Corbis via Getty Images



Thank You
And
Welcome to UofM!