

Plenary 7 – Central US Earthquake Scenarios & their Implications for Mitigation, Response & Recovery

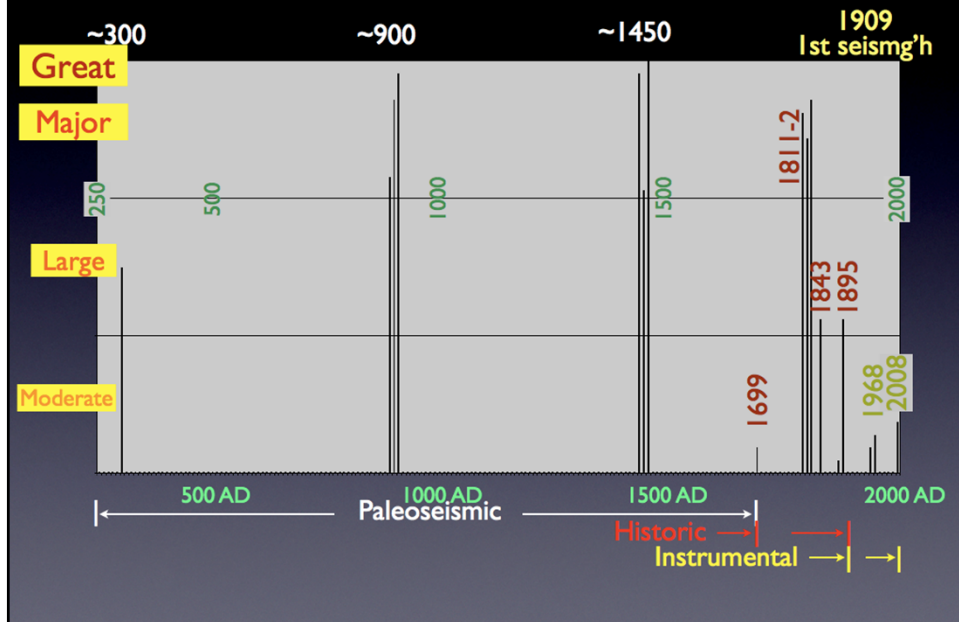
National Earthquake Conference
& EERI Annual Meeting
April 10, 2012



Central US Earthquake Scenarios

- Several studies have been developed to deal with the earthquake hazards of the Central US.
- The risk is significantly due to the New Madrid Seismic Zone, being commemorated by its Bicentennial this year.

PALEO- & HISTORIC EVENTS



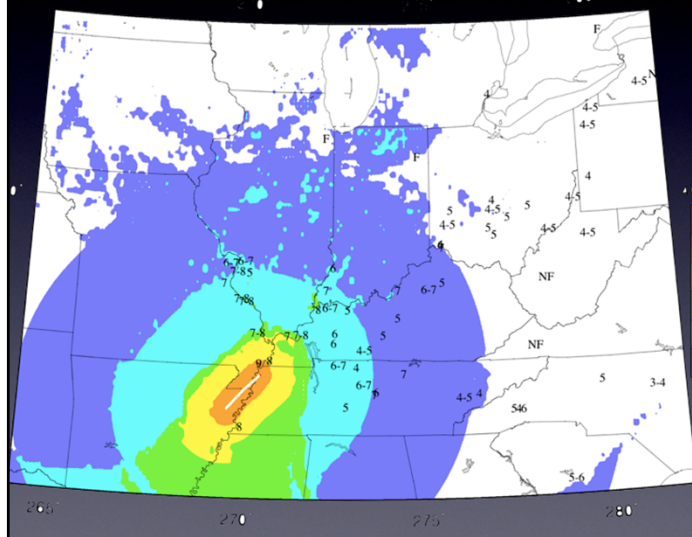
DECEMBER 16, 1811

Principal Event

First

Sequence

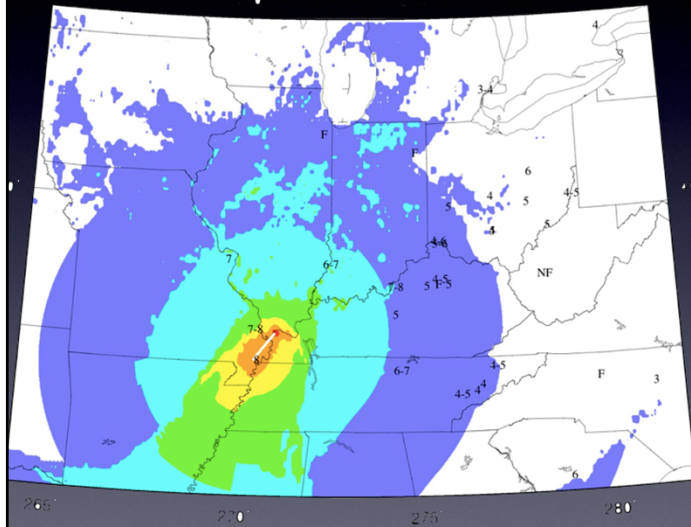
Number of events since DEC 16, 1811



Mw	No.
~7.7	1
>6.7	2
6-6.7	
5-6	1
4-5	
2.5-4	16

JANUARY 23, 1812

Principal Event



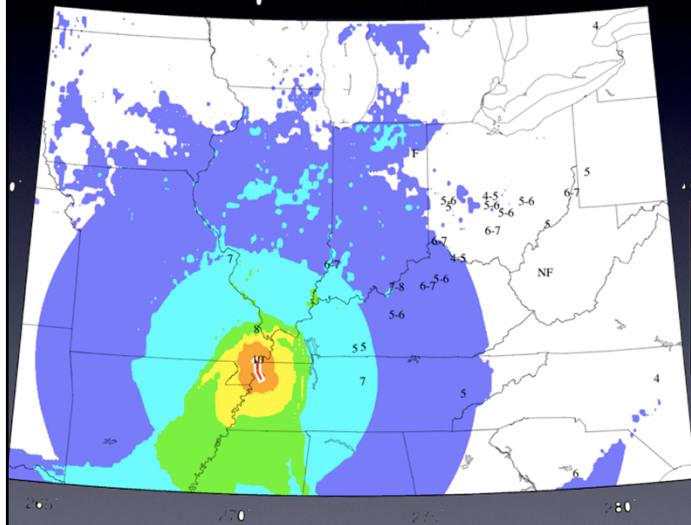
Second Sequence

Number of events since JAN 23, 1812

Mw	No.
~7.5	1
>6.7	
6-6.7	
5-6	4
4-5	
2.5-4	13

FEBRUARY 7, 1812

Principal Event



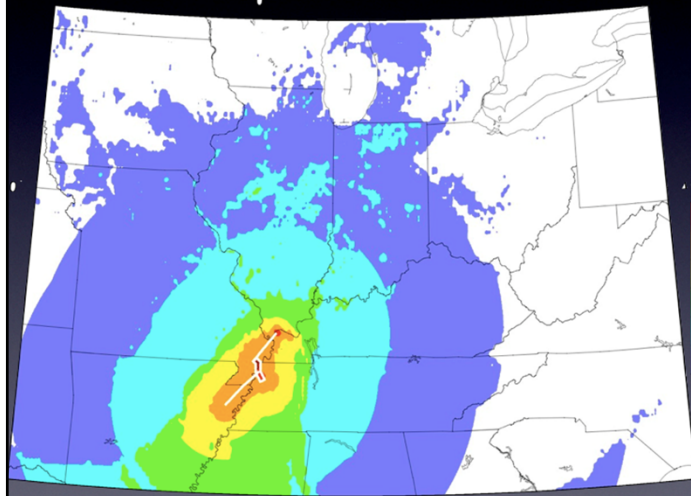
Third Sequence

Number of events since FEB 7, 1812

Mw	No.
~7.8	1
>6.7	1
6-6.7	4
5-6	4
4-5	3
2.5-4	90

1811-12 NM Series' Events

Cumulative Iseisimal for 1811-12 Events



All
Sequences
Total number
of events over
91 days

Mw	No.
≥7.5	3
6.8-7.4	5
6-6.7	10
5-6	35
4-5	65
2.5-4	1,756
ALL	1,874

50+ YEARS OF EVENTS

DATE	Mw	LOCATION	ZONE
NOV 7, 1958	4.0	Southern IL	WVSZ
MAR 3, 1963	4.4	Near Poplar Bluff, MO	NMSZ
OCT 20, 1965	4.5	Centreville, MO	C US Random
NOV 9, 1968	5.1	Southern IL	WVSZ
MAR 25, 1976	4.5	Marked Tree, AR	NMSZ
JUN 10, 1987	4.8	Southeastern IL	WVSZ
JUN 18, 2002	4.6	Evansville, IN	WVSZ
APR 18, 2008	5.2	Mount Carmel, IL	WVSZ

Four Important Studies/Actions

- *Evaluating Earthquake Risk in Mid-American Communities*. Olshansky, R., Y. Wu, and S. French (2003). Mid-America Earthquake Center, Final Report, Project SE-5 (Earthquake Loss Estimate Methods for Essential Facilities), 131 pp.
- *Impact of New Madrid Seismic Zone Earthquakes on Central USA*. Elnashai, A.S., T. Jefferson, F. Fiedrich, L.J. Cleveland and T. Gress (2009). Mid-America Earthquake Center Report, No. 09-03, Vol. I, 153 pp. & Vol. II, 784 pp.
- National Level Exercise 2011. Federal Emergency Management Agency developed exercise for the Central US.
- *Risk Implications of Alternative Views of New Madrid Seismic Hazard*. Zoback, M.L., P. Grossi, and C. Williams (2011). Risk Management Solutions, Inc., RMS Special Report, www.rms.com, 26 pp.

New Madrid Earthquake Scenarios

- Development Phase of the NMES will be completed with placement of a report on the EERI website. This will be a "living" report that may be revised for, and in, the next phase.
- Six different study areas and six different scenario earthquakes make the NMES plural.
- The NMES Team hopes to transition from customers to partners in the Implementation Phase. The interest will be to put into practice "all-hazard" planning, preparedness, response and recovery for various sectors.
- The NMES will be developed by last three speakers of this session.

Plenary 7's Presentations

Impact of New Madrid Seismic Zone Earthquakes on Central USA

– Douglas Bausch, Federal Emergency Management Agency

Risk Implications of Alternative Views of the New Madrid Seismic

Hazard – Patricia Grossi, PhD, PE, Research Director, Risk Management Solutions

Magnitude 6 Earthquake Scenarios for the New Madrid-Wabash Valley region – Oliver Boyd, PhD, Research Geophysicist, US Geological Survey

Comparing Scenarios' Losses to Assess Resilience –

Robert A. Bauer, PG, Engineering Geologist, Illinois State Geological Survey

Beyond Impacts: The Use and Benefits of the EERI New Madrid Earthquake Scenarios – Greg Hempen, PhD, PE, RG, Geophysicist, URS Corporation