The 2005 Arkansas New Madrid Earthquakes

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A pair of magnitude 4.1 earthquakes occurred during the first half of 2005 along the New Madrid seismic zone (NMSZ) in Mississippi County, Arkansas. The first earthquake with a magnitude of 4.1 occurred February 10th at 8:05AM CST (14:04:54 UTC) in Mississippi County, near the community of Caraway (Lat. 35.760N, Long. -90.250W). The second earthquake with a magnitude of 4.1 occurred May 1st at 7:37AM CDT (12:37:32 UTC) in Mississippi County, near the community of Manila (Lat. 35.830N, Long. -90.150W).

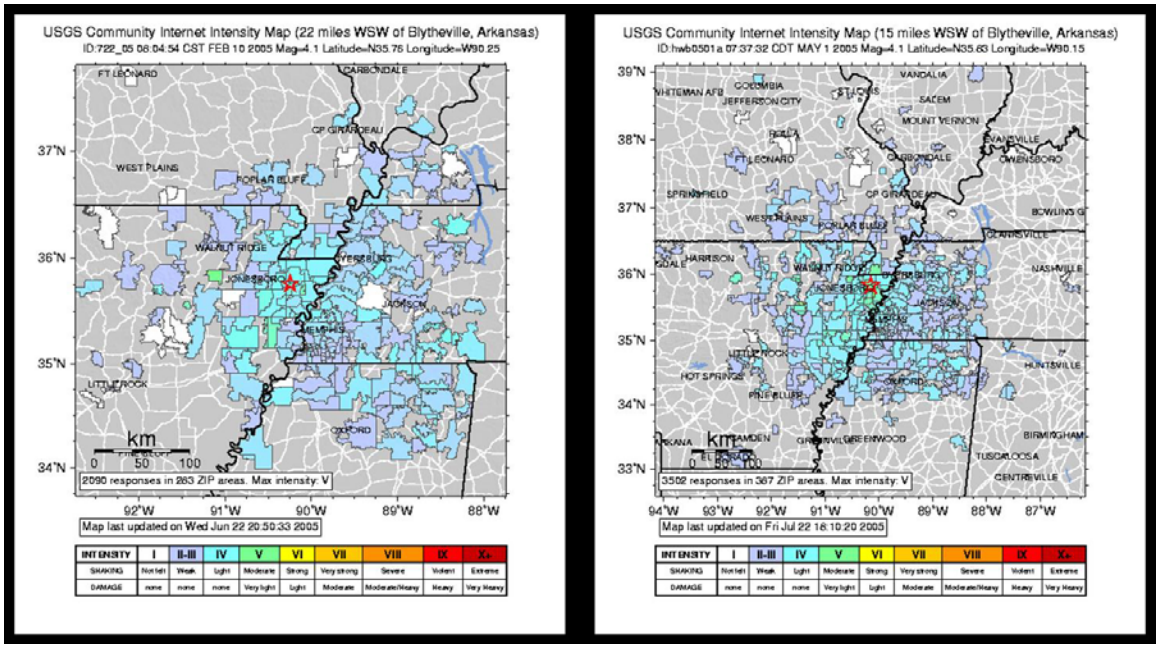

Figure 1. USGS DYFI Community Intensity Maps for the 2005 Magnitude 4.1 New Madrid Earthquakes

The earthquakes were lightly felt over a wide area of the Mississippi Embayment from northern Mississippi to southern Illinois (Figure 1). In the epicentral region (the epicenter is the point at the earth's surface directly over the earthquake) they cracked plaster, rattled dishes and made hanging objects sway; however, no significant damage was reported. Both earthquakes occurred midway along on the southwest extension of the New Madrid seismic zone (NMSZ) which extends from the boot heel of Missouri near the Mississippi River south to the vicinity of Marked Tree in Poinsett County. Earthquakes of this size occur on the southwest segment of the NMSZ every few years (Figure 2).

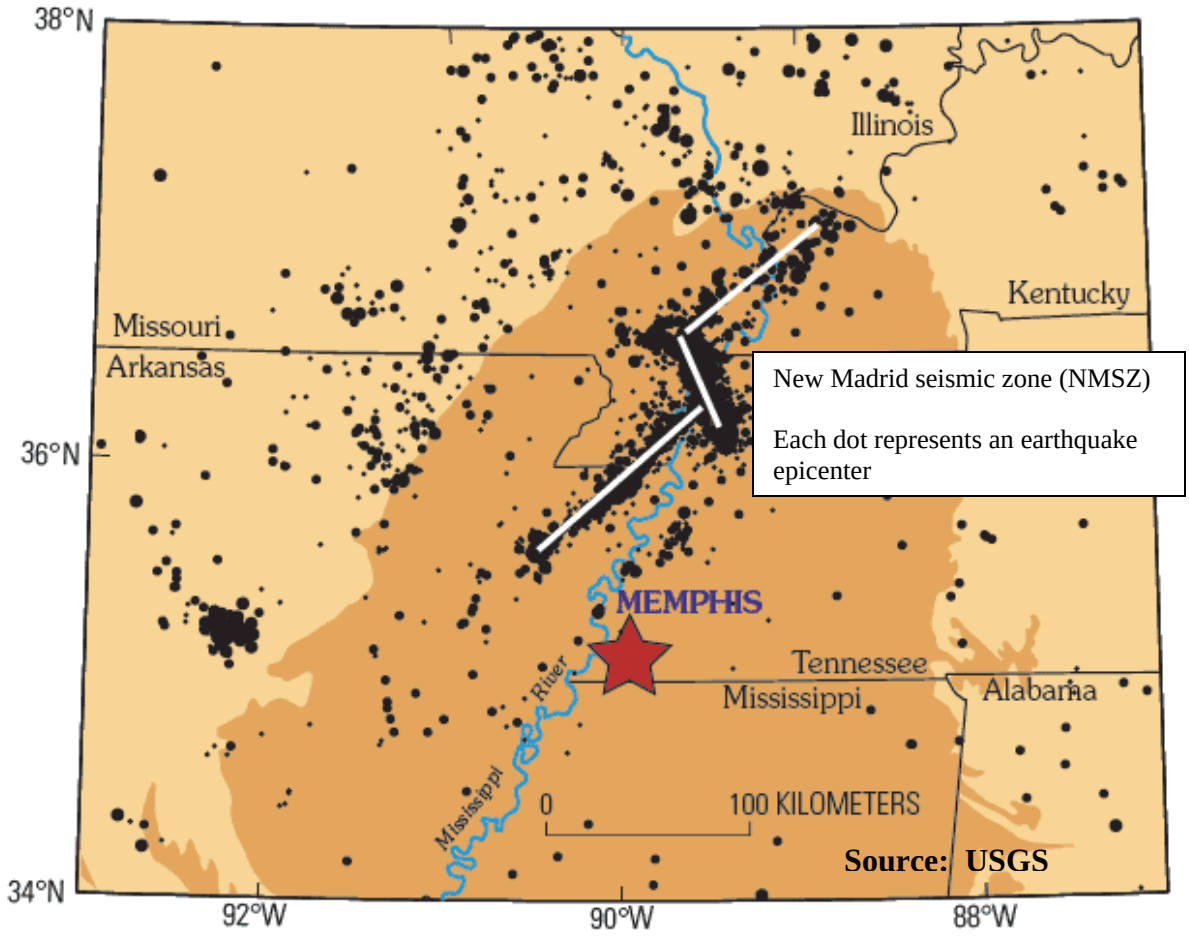

Figure 2. Map of the three recognized segments of New Madrid seismic zone (NMSZ)

The table below lists other similar size earthquakes that have occurred along the NMSZ in the last twenty years.

Date	Magnitude	Location
April 29, 2003	4.0	Blytheville
September 17, 1997	3.8	Trumann
November 29, 1996	4.3	Blytheville

Similar sized earthquakes have occurred in other places in Arkansas during this same time interval.

Date	Magnitude	Location
May 4, 2001	4.4	Enola
June 26, 2000	3.9	Alread
August 22, 2000	3.9	Warm Springs
October 21, 1999	3.9	Warm Springs

For 2004, thirteen (13) events over magnitude 1.5 were documented. Only the largest* of these was felt, and then by just a few people in very favorable locations and circumstances.

Magnitude	Events
1.6	4
1.7	3
1.9	1
2.1	1
2.2	1
2.3	1
2.5	1
2.9*	1

2004 earthquakes by counties:

County	Events
Mississippi	6
Randolph	3
Craighead	2
Lawrence	1
Cleburne	1

Although some activity has been observed from faults outside the NMSZ, it is not expected that any of these other faults will generate earthquakes large enough to cause significant damage. The NMSZ is the most hazardous fault zone east of the Rocky Mountains. Large to great earthquakes have occurred along the NMSZ in the past and will occur again. Based on current understanding of the activity documented and associated with the NMSZ over the last 30 years, a magnitude 6 or greater earthquake has a 25% to 40% probability of occurring someplace on the NMSZ in the next 50 years. There is a 7% to 10% probability of a magnitude 7.5 or greater earthquake occurring in the same time frame. Typically, magnitude 6 earthquakes will concentrate considerable damage in its epicentral region but damage will diminish fairly quickly further away. Larger earthquakes will spread the destruction to a much wider area. A magnitude 7.5 event along the southwest segment of the NMSZ will cause damage throughout Arkansas, though the most serious damage will be in the northeast portion of the state.

Just remember that “it’s usually not the earthquake that hurts you: it’s the building that falls on you”. Earthquakes are a natural hazard that no one can stop or, at this time, predict. Only by studying the earthquakes, locating the active faults, and developing the seismic characteristics of each of the active areas can we properly advise the public of the true nature of the risks. Through this research, society can develop and bring about preparedness and mitigation measures that reduce the risk to life and property.

For more information on earthquakes in Arkansas:

http://www.geology.ar.gov/geohazards/earthquakes.htm

To report a “felt” earthquake:

http://earthquake.usgs.gov/eqcenter/dyfi.php

For information about what you can do to prepare and make your home, school, or business more earthquake resistant contact the Arkansas Department of Emergency Management:

http://www.adem.arkansas.gov/documents/Earthquake/index.aspx

Acknowledgments

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