

STATE OF MISSOURI  
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# NEWS

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**NEW MADRID SEISMIC ZONE DEBATE CAUSING  
RUMBLES IN SCIENTIFIC COMMUNITY**  
Despite Debate, Earthquake Preparedness Still Urged

ROLLA, MO, JAN. 12, 2007 -- Differing opinions about the causes of earthquakes in southeast Missouri are stirring debate among scientists, but are not diminishing the importance of earthquake preparedness, according to the Missouri Department of Natural Resources' Division of Geology and Land Survey.

"Not all scientists are in agreement on how to interpret data or extrapolate what is observed," said Mimi Garstang, state geologist and Division of Geology and Land Survey director.

Debate intensified recently when Dr. Seth Stein, Northwestern University, and colleagues recently reported that the New Madrid Seismic Zone (NMSZ) is no more susceptible to earthquakes than eastern North American areas that do not have earthquakes. Stein bases his position on the theory that the underground rocks along the New Madrid Fault are hotter and therefore weaker -- and when the continent deforms, it is likely to take place at New Madrid. However, Stein contends that thermal readings underground for the last 20 to 30 years do not show hotter rocks, and therefore no greater risk of earthquake.

A number of scientists have stepped up to question Stein's contention.

"As far as I know, the hot weak rocks theory for NMSZ earthquakes is only one of several proposed ideas about why earthquakes occur in the NMSZ," said David Hoffman, an associate research engineer at the University of Missouri-Rolla. "I don't believe that there has yet been widespread agreement among scientists as to the physical mechanism causing the New Madrid earthquakes."

While the debate continues, Hoffman urges communities and individuals to continue to work on preparing for a major earthquake somewhere within the NMSZ. "Without creditable

scientific evidence, which does not appear to currently exist, I do not think it is a wise public safety strategy to create a new policy to be less prepared," he said.

Eugene Schweig, U.S. Geological Survey geologist in Memphis, Tenn., echoed the call for vigilance. "Regardless of whether or not the New Madrid Seismic Zone is dying, we have no idea where we are in the cycle," Schweig said. "It would be irresponsible of us to assume that the rate of large earthquakes is any different now than it has been over the past 2,000 years."

The zone averages one major earthquake or sequence of large-scale earthquakes about every 500 years. The epicenter of one of the largest earthquakes in history occurred near New Madrid on Feb. 7, 1812. This earthquake exceeded the magnitude of California's Great 1906 San Francisco earthquake. Scientists believe it would have registered close to 8 on the modern Richter scale. The Center for Earthquake Research and Information in Memphis registered a magnitude 3.4 earthquake on Oct. 18, which was felt in the New Madrid-Portageville area and in northwestern Tennessee. More than 200 small earthquakes occur each year along the NMSZ.

Nearly 200 years of population growth in the region -- which includes metropolitan areas such as St. Louis and Memphis -- means a repeat of the 1812 earthquake could cause considerably more damage, according to Jim Palmer, geo-hazards geologist with the Division of Geology and Land Survey. "A similar size earthquake occurring along the zone in this century has the potential to significantly impact the states of Missouri, Arkansas, Illinois, Kentucky Tennessee and to some extent, Mississippi."

Although many disagree with Stein's findings, Garstang acknowledges that the resulting debate has been good.

"The beauty of the scientific process is that after a scientist collects and interprets the data, creates a scientific hypothesis and publishes a paper; other scientists can then review the information and offer supporting information or ask questions," she said. "That process is just starting with the new information collected by Dr. Stein, so we must not be too quick to criticize, but we must be careful to consider all the facts."

February 1-11 is Earthquake Awareness Week in Missouri. More information can be found on division's Web site: [www.dnr.mo.gov/geology](http://www.dnr.mo.gov/geology), and at the State Emergency Management Web site: <http://sema.dps.mo.gov/semapage.htm>. Department of Natural Resources news releases are on the Web at [www.dnr.mo.gov/newsrel](http://www.dnr.mo.gov/newsrel).

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