

**DEVELOPMENT OF EDUCATIONAL DISPLAYS AND WEBPAGES ON
PALEOSEISMOLOGY AND EARTHQUAKE HAZARD OF
THE NEW MADRID SEISMIC ZONE**

Final Technical Report

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Abstract

Educational posters and webpages were developed and produced in order to transfer information on paleoseismology and earthquake hazard of the New Madrid seismic zone to local residents who will play important roles in reducing risks from future earthquakes. The posters have been mailed to several libraries and museums in the New Madrid region including Blytheville Public Library, Sikeston Public Library, Chucalissa Museum, and the New Madrid Historical Museum. The webpages, accessible at URL <http://www.mptuttle.com>, provide additional information and make the information available to national and international audiences as well as to residents of the New Madrid region.

Introduction

Paleoseismology has greatly improved understanding of the earthquake history and potential of the New Madrid seismic zone. Studies of earthquake-induced liquefaction features, in particular, have led to development of a paleoearthquake chronology and estimation of recurrence intervals for large New Madrid earthquakes. These results have been incorporated into the 2002 and 2008 National Seismic Hazard Maps, which are affecting building codes and insurance rates in the region. Yet, these results have affected few changes in local communities that could reduce their risk from New Madrid earthquakes. Although a few new structures have been designed to withstand strong ground shaking, almost nothing has been done to reinforce old structures or to remove unnecessary hazards in the building stock.

Investigation

The primary goal of this project is to transfer information on the earthquake potential and hazard of the New Madrid seismic zone to local residents who can play an important role in reducing the risk from future earthquakes. The information transfer is accomplished through the development and production of educational posters and webpages that will be displayed at libraries and museums in the New Madrid region. The posters and webpages will help to inform local residents of the geological record of prehistoric earthquakes being used in assessments of the hazard posed by the New Madrid seismic zone.

The principal Investigator, M. Tuttle, visited Blytheville Public Library, Chucalissa Museum, New Madrid Historical Museum, and Sikeston Public Library and met with the directors of those facilities. The Blytheville and Sikeston libraries were selected for displays because they are two of the largest libraries in the region and serve surrounding towns as well as the small cities where they are located. About 100,000 people visit the Blytheville library every year and elementary and high school students routinely use the library. About 17,000 people use the Sikeston library annually and it hosts numerous programs including family night. Chucalissa is a popular archeological museum located in Memphis. It was chosen because of its location in the largest city of the New Madrid region and because archeology has played an important role in dating of liquefaction features and prehistoric earthquakes. The museum hosts tours and special events for the public including the annual Choctaw Indian Heritage Festival. The New Madrid museum receives about 9,000 visitors per year, representing all 50 states and about 23 foreign countries. Many of the visitors to the museum come because of their interest in the New Madrid earthquakes. The museum hosts groups from colleges as well as elementary and high schools. We had hoped to develop a display for Big Oak/Towosahgy State Park but the Park Manager there transferred to a different park. It may be possible to develop such a display in the future but it will require considerable planning and collaboration with the Missouri Department of Natural Resources.

During visits to the libraries and museums, the goal of the project was discussed with the various facility directors who all had good ideas about how to solicit as broad a local audience as possible. For example, Jo Ziolk of the Blytheville Public Library suggested that key science teachers in the local high school and community college be contacted regarding the poster at the library. Suzanne Tangeman of the Sikeston Public Library suggested a talk on the New Madrid seismic zone be given during evening hours. Also during the site visits, the display spaces in the facilities were considered and measurements made for the posters.

Two posters, a larger one (62" x 44") and a smaller (47" x 44") less comprehensive one, have been designed and completed that summarize information on the New Madrid seismic zone, earthquake-induced liquefaction, paleoseismology of the New Madrid seismic zone, and seismic hazard mapping. The posters were made in Adobe Illustrator CS3 and a portable document format (pdf) version saved for printing purposes. Depending on the display space available, one of the two posters has been disseminated to the Blytheville Public Library, Sikeston Public Library, Chucalissa Museum, the New Madrid Historical Museum, and the U.S. Geological Survey office in Memphis for display.

The webpages were designed and constructed by C. Moseley, with guidance from M. Tuttle, using HTML 4.0.1 with Macromedia Dreamweaver 4. The webpages cover the following topics:

- (1) The New Madrid Seismic Zone
- (2) Geology of the New Madrid Seismic Zone
- (3) Paleoseismology or Earthquake Geology
- (4) Earthquake-Induced Liquefaction
- (5) Paleoseismology of the New Madrid Seismic Zone
- (6) Archeology
- (7) Radiocarbon Dating
- (8) Selecting Samples for Dating Liquefaction Features

- (9) Seismic Hazard Maps
- (10) Bibliography

The webpages are simply structured and file sizes kept small to ensure ease of access for all internet users, independent of platform, browser, and connection speed. The text is well illustrated with maps, figures and photographs and PDF files of the larger maps are available for downloading. The webpages provide links to other sites on related topics such as the 1811-1812 earthquakes, seismicity of the New Madrid region, the U.S. Geological Survey's fact sheets on earthquake hazards, and the National Seismic Hazard Maps. The webpages are currently hosted through M. Tuttle & Associates' Earthlink account but eventually will be transferred to the Public Earthquake Resource Center (PERC) website at CERL.

Results of Investigation

During this project the following tasks were completed (1) meetings with facility directors at the Blytheville Public Library, Chucalissa Museum, New Madrid Historical Museum, and Sikeston Public Library, (2) selection and editing of earthquake information to be included in educational posters and webpages, (3) design, construction, review, and revision of the webpages, (4) launching of webpages on URL <http://www.mptuttle.com>, (5) construction of two sizes of posters, and (6) dissemination of the posters to several libraries and museums in the New Madrid region.

The posters have been mailed to the Blytheville and Sikeston Public Libraries, Chucalissa Museum, the New Madrid Historical Museum, and the U.S. Geological Survey office in Memphis and will soon be on display. A limited number of additional copies of the posters can be printed as requested. The posters reference the webpages currently accessible at URL <http://www.mptuttle.com>. The webpages include additional background information on paleoseismology and earthquake hazards as well as links to other related sites.

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Contact Information and Data Availability

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