Cause of historic New Madrid quake found

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A Canadian-led study of major 1811-12 central U.S. earthquakes has identified a possible driving mechanism for intraplate seismicity.

The New Madrid Earthquake, the third in a series of large tremors at the time, was the largest quake recorded in the lower 48 United States. Records indicate it was felt over some 1 million square miles and destroyed about half of the southeastern Missouri town of New Madrid.

Legend has it that the Mississippi River flowed backward for a time as a result of the quake.

The earthquakes were unprecedented in the historical record within stable continental plate interiors. Researchers led by Alessandro Forte of the University of Quebec analyzed viscous flow models of the mantle based on high-resolution seismic tomography.

They found remnants of the ancient Farallon plate -- a slab of crust swallowed beneath the western North American continental margin nearly 70 million years ago -- continues to descend into the deep mantle under central North America -- possibly producing modern seismic hazards in the central Mississippi River Valley.

The research by Forte and Martin Moucha at the University of Quebec, Jerry Mitrovica of the University of Toronto, and Nathan Simmons and Stephen Grand of the Jackson School of Geological Sciences at the University of Texas at Austin, appears in the journal *Geophysical Research Letters*.