

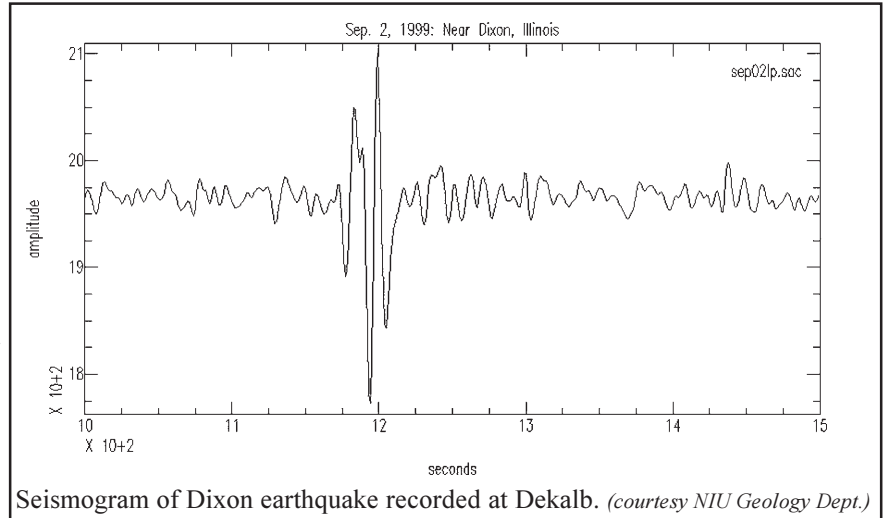
NORTHERN ILLINOIS EARTHQUAKES

Small Quake Shakes the Area

A magnitude 3.5 earthquake shook northern Illinois at 11:17 am Tuesday September 2, 1999. Centered near Dixon in central Lee County, it was felt over a several county area, but there have been no reports of damage. Many residents in the Dixon area felt the ground shaking and mistook it for a quarry blast. In Sterling a few miles further away, residents said that the shaking felt like a large truck passing by outside.

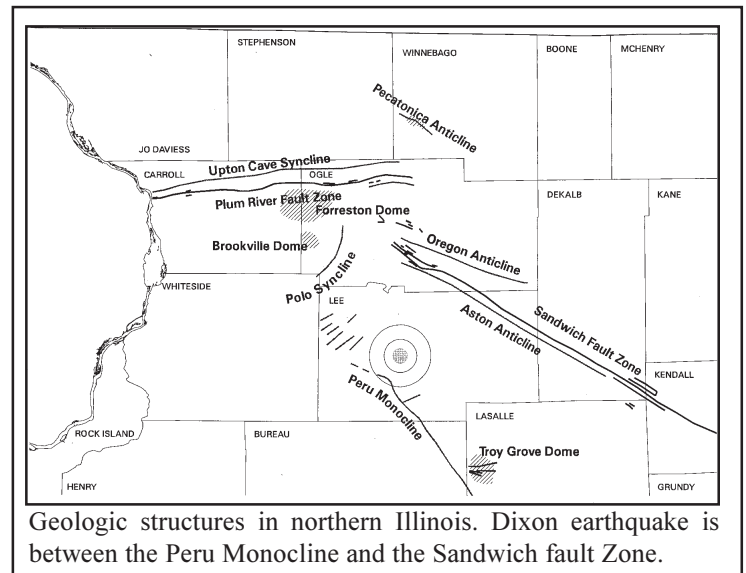
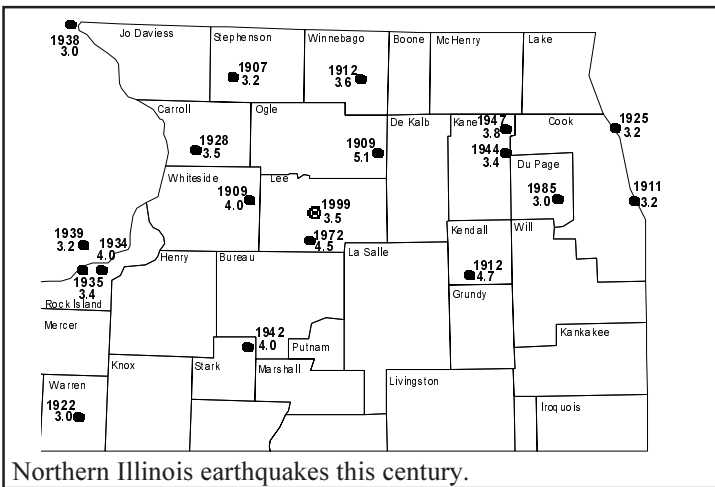
This earthquake was typical of the dozen or so which have occurred in northern Illinois this century, none of them greater than about magnitude 5 on the Richter Scale. Magnitude 5 earthquakes frequently cause minor damage within 10 to 20 miles of the epicenter. Larger earthquakes are not expected in this region.

The Dixon earthquake was located near two earlier earthquakes which did cause minor damage. Many people may still remember the earthquake of September 15, 1972. This magnitude 4.5 earthquake was felt in most of northern Illinois. It caused minor damage such as cracks in chimneys and plaster. An even larger earthquake, estimated to have been at least magnitude 5 on the Richter Scale, occurred in the area in 1909. It was felt in Iowa, Wisconsin, Indiana and Michigan and it caused sidewalks to crack in several Chicago suburbs. Several fires started in Aurora when chimneys fell and gas lines broke.



structure, the Peru Monocline passes about 5 to 10 miles southwest of the epicenter. A monocline is a fold in rocks of the earth's crust. In the Peru Monocline, the rocks bend down toward the southwest, toward the coal and oil fields of the Illinois Basin.

The Dixon earthquake was not related to the New Madrid Fault Zone in southern Illinois, Missouri and Arkansas. The New Madrid Fault Zone has been known to produce very large and damaging earthquakes including a magnitude 6+ earthquake in 1895 just across the Mississippi River from Cairo, Illinois in Charleston, Missouri. That earthquake caused major damage in southern Illinois. In northern Illinois, it was felt by many people, but caused no damage. A similar earthquake in the New Madrid region, with similar effects, might be expected within the next several decades.

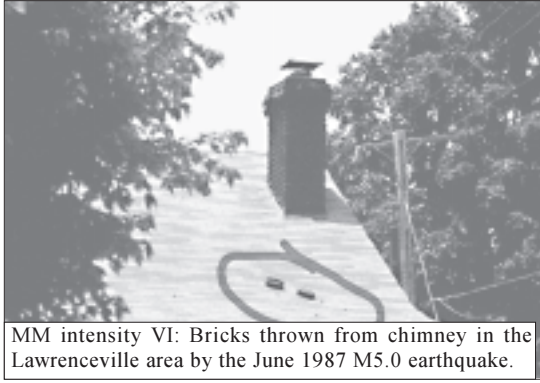


Dixon Unrelated to New Madrid The Dixon earthquake was not directly linked to any known faults in Northern Illinois. There has been no measurable movement on any faults in northern Illinois since at least the beginning of the last Ice Age about 1 million years ago.

Several ancient faults are known in the area of this earthquake, including the Sandwich Fault Zone which is about 15 miles northeast of the earthquake epicenter. Another geologic

Sources — St. Louis University Earthquake database;
 Dr. Philip Carpenter, Northern Illinois University
 For further information contact:
 Illinois State Geological Survey, 615 E. Peabody Dr.
 Champaign, IL 61820, phone 217-244-2414

ON A SCALE OF 1 TO 12, WHAT DID YOU FEEL?



MM intensity VI: Bricks thrown from chimney in the Lawrenceville area by the June 1987 M5.0 earthquake.

Usually, when there is an earthquake, the media reports the size using the Richter Magnitude Scale. This number is a measure of the energy produced by the earthquake. It is very useful in comparing earthquakes, because one number can be used to characterize the size of each earthquake. Unfortunately, that number doesn't help us much in understanding the effects of the quake. And the magnitude scale, with its logarithmic divisions, is confusing to many people.

In 1931, American seismologists Harry Wood and Frank Neumann developed Modified Mercalli (MM) Intensity Scale. It can be used to measure the *intensity* or the effect of an earthquake on people and buildings. This scale, composed of 12 increasing levels of intensity that range from imperceptible shaking to catastrophic destruction, is designated by Roman numerals. The lower numbers of the intensity scale generally deal with the manner in which the earthquake is felt by people, while the higher numbers are based on observed structural damage.

The Modified Mercalli Intensity Scale

INTENSITY LEVEL

DESCRIPTION OF EFFECTS

- I.** **Not Felt.** Rare reports of doors slowly swinging. Rare reports of slight swaying of trees and bodies of water.
- II.** **Felt indoors by few**, especially those on upper floors, seated or lying down. Hanging objects may swing, especially if delicately suspended. Some birds, animals reported uneasy or disturbed.
- III.** **Commonly felt indoors**, particularly by those seated or lying down, although often not recognized immediately as an earthquake. Frequent reports of swaying or swinging objects. **Vibrations similar to the passing of light or lightly loaded trucks.** May hear slight rattle or creaking. Duration may be estimated in some cases.
- IV.** **Felt indoors by almost all, felt outdoors by some.** Frightens some, particularly those not accustomed to earthquakes. Hanging objects often swing. **Distinctive rattling of dishes, glassware, windows, doors** and creaking of walls frequently noted by those indoors. BUT, nothing is knocked over or falls from shelves. Vibration like that resulting from the passing of heavy trucks; or **sensation of a jolt like a heavy object striking the building or falling of heavy objects inside.** Liquids in open vessels such as aquariums and toilet bowls disturbed slightly but do not spill. Standing cars rocked noticeably. Average peak velocity 0.2 - 0.8 inch/second.
- V.** Felt indoors by all, felt outdoors by most. **Frightens many**, some run outdoors or seek cover. Some report difficulty in moving or standing. Frequent reports of buildings trembling/groaning and swinging objects, moving doors and shutters. **A FEW items knocked over or fall from shelves** and some objects displaced, occasional broken glassware and crockery but not generally. **RARE reports of cracked windows and cracked plaster.** Trees and bushes shaken slightly but fruit and limb fall from trees very rare. Average peak velocity 0.8 - 2 inch/second.
- VI.** Felt by all; **frightens most or all.** Furniture moved. Objects upset. **Many report some glassware and crockery broken. Damage to some chimneys.** Trees and bushes shake moderately to strongly. Occasional rock falls. Average peak velocity 2 - 3 inch/second.
- VII.** **Everyone runs outdoors.** Felt in moving cars. Some people fall. Weak chimneys broken at roof. **Fall of plaster, loose bricks, etc.** Rock falls common, ground cracks may be observed. Average peak velocity 3 - 5 inch/second.
- VIII.** Frightens all, many panic, all report difficulty in standing. Major damage to unreinforced masonry. Most chimneys fall. Virtually all cabinet doors thrown open and items ejected. Average peak velocity 8 - 12 inch/second.
- IX.** **Panic is general.** Total destruction of weak structures. **Considerable damage to well built structures.** Underground pipes may break. Ground cracks conspicuously. Average peak velocity 18 - 22 inch/second.
- X.** Panic is general. Well-built wooden structures and bridges are severely damaged, some collapse. **Most masonry structures destroyed.** Railroad tracks bend slightly. Cracking and failure in wet ground ubiquitous. Water slopped over banks. Average peak velocity more than 24 inch/second.
- XI.** Panic is general. **Few buildings survive. Railroad rails bend greatly.** Broad fissures in ground.
- XII.** Panic is general. **Total destruction.** Objects thrown upward into the air.