EARTHQUAKE BASICS

Midwest Earthquake Seminar 3-20-2010

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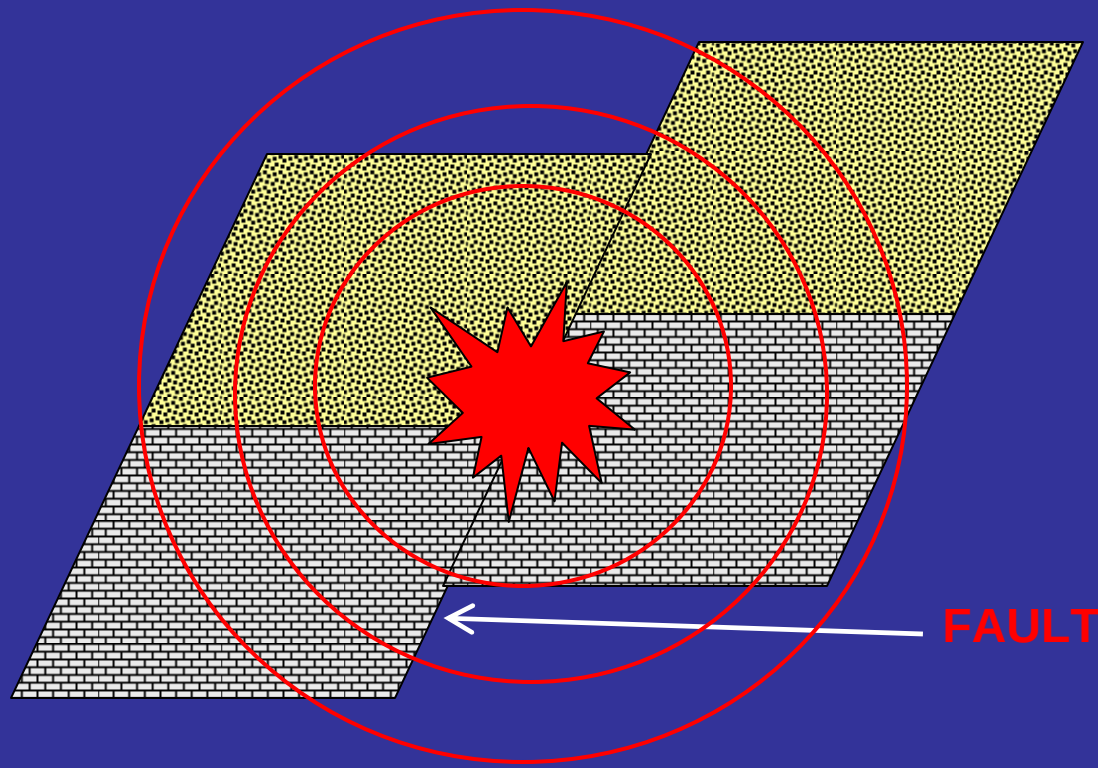
What is an Earthquake?

An earthquake is a rapid movement (release of stored energy) in the Earth's crust that generates seismic waves.

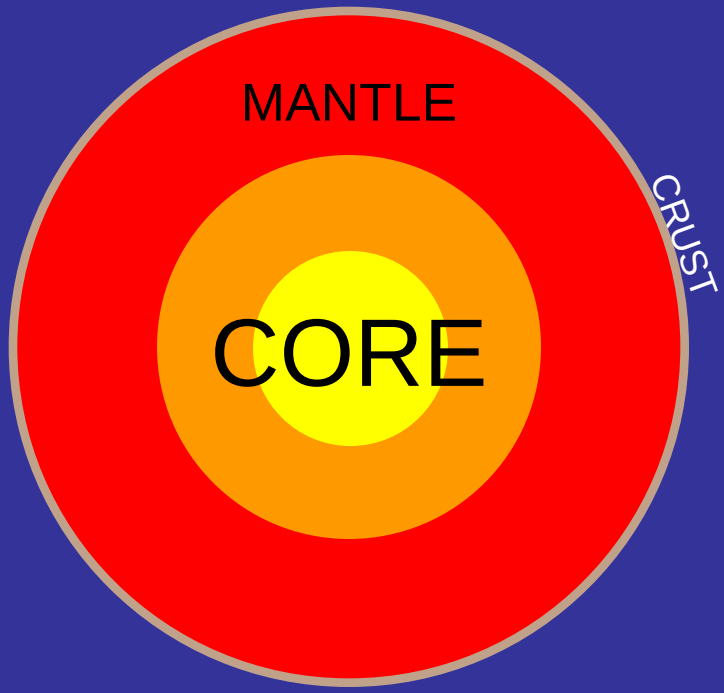
(Also known as a tremor or quake.)



Why do earthquakes occur?

Earthquakes happen because the earth is not a static body of rock, it is slowly, yet constantly changing.

Earthquakes are felt by humans and other creatures because of the shifts in the Earth's crust, which is the outer "skin" of the planet on which we all live. The crust is divided into plates.

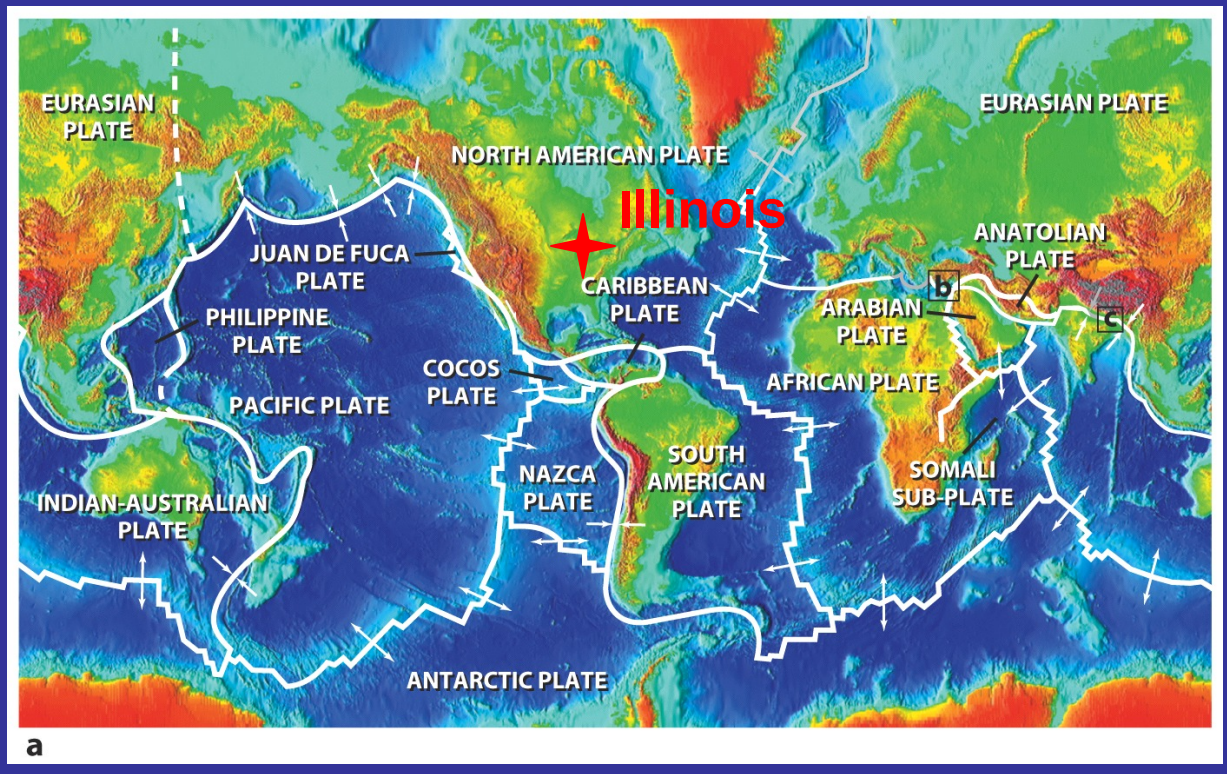


Can earthquakes happen anywhere?

Yes. Most earthquakes happen along faults (cracks in the Earth's crust).

Faults are not just in California. Faults exist everywhere on the planet. No one lives more than 80 miles from a fault.

Most highly active faults are found along plate boundaries.



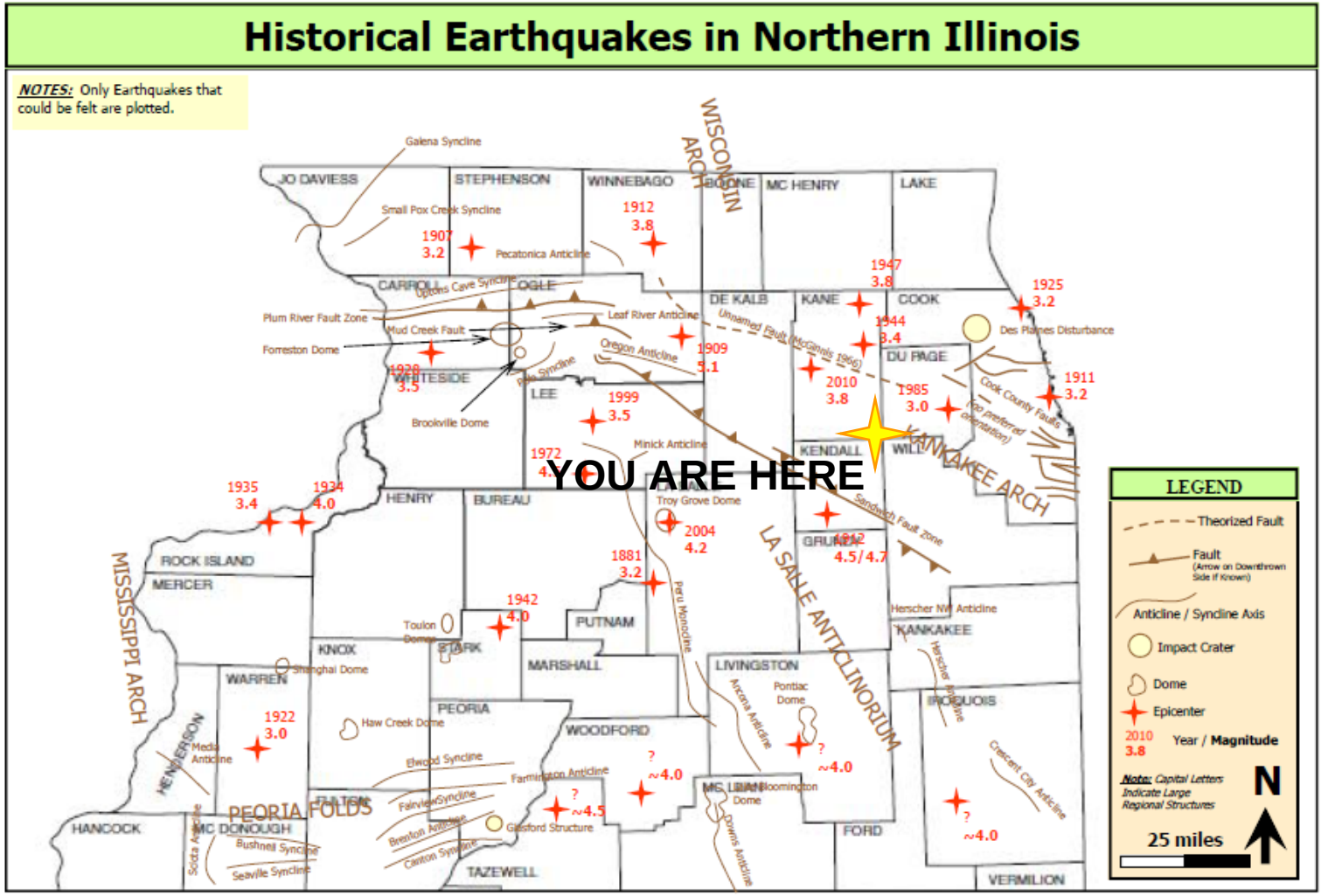
If most earthquakes happen along plate boundaries why do they occur in Illinois?

Not all faults are located along plate boundaries. Faults are located throughout the world. Some are deeply buried and have been inactive for millions of years. Some of these "dormant" faults can become reactivated or new faults can form nearby.

Faults not located near plate boundaries are located near geologic structures where rock units are folded (anticlines and monoclines), warped (synclines), or pushed up (domes).

Illinois has many of these geologic features.

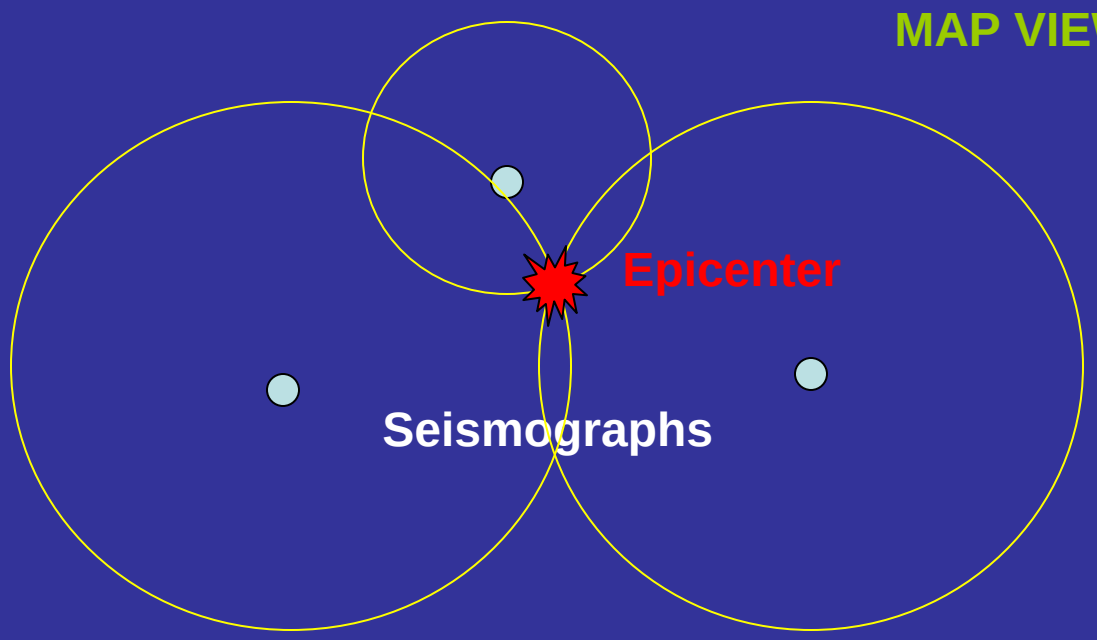
Where are the structures located in Northern Illinois?



How do we know where earthquakes actually occur?

A device called a “seismograph” is used to pick up the seismic waves generated by an earthquake.

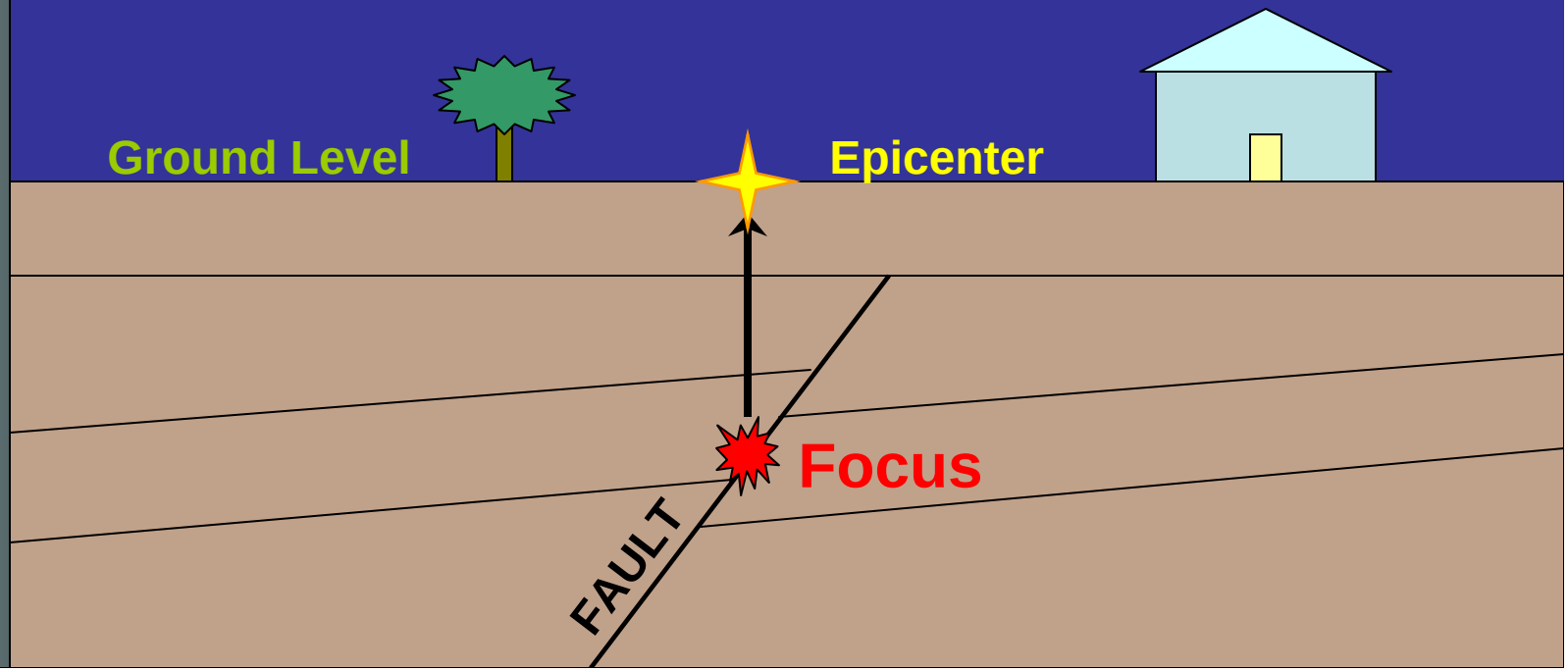
A seismograph can tell you how far away an Earthquake is but not in which direction. Two more are needed to locate the “epicenter”.



Is the “epicenter” where the earthquake occurred?

No. The epicenter is the point on the surface directly above the “focus”.

The focus is the actual point within the Earth where the seismic waves, or earthquake, were generated.



How is earthquake intensity measured?

There are several methods used to measure earthquake intensity.

The most common is the “Richter Scale”.

The Richter Scale is a logarithmic measurement. What this means is the previous numerical increment is ten times greater than the previous.

A **5.0** on the Richter Scale is 10X stronger than a **4.0**

Generally anything less than a **3.0** is not felt by humans.

Any Questions?

Trivia: The first seismograph was invented the Chinese astronomer Chang Hang. He called it the "Earthquake Weathercock".