**IRIS Earthquake Browser—Thinking about earthquakes**

Watch the tutorial on the following page then click the “Open Resource” link:  
 <https://www.iris.edu/hq/inclass/software-web-app/169>

What is an earthquake\*?

When do they happen?

Where do they happen?

A scientist begins by asking simple questions, based on what is already known about a phenomenon, and then looking at the data to see how well it agrees with the scientist’s answers. When the data disagrees with the scientist, the scientist is wrong and must re-think the questions. When the data agrees with the scientist's predictions, then the theory is strengthened.

Please give your best guesses to these questions before we go further:

* How many earthquakes happen in a year, around the U.S.?
* Where do earthquakes happen? Are they randomly distributed, or are they more
* likely to happen in some places than others? Why?
* How deep can earthquakes happen? Would you guess their depth depends on
* where they happen? Why?
* How many small earthquakes are there in a year? How many large earthquakes?
* Is there any relationship? Why?

**\* Earthquake**—shaking or trembling of the earth that accompanies rock movements extending anywhere from the crust to 680 km below the Earth’s surface. It is the release of stored elastic energy caused by sudden fracture and movement of rocks inside the Earth. Part of the energy released produces seismic waves, like P, S, and surface waves, that travel outward in all directions from the point of initial rupture. These waves shake the ground as they pass by. An earthquake is felt if the shaking is strong enough to cause ground accelerations exceeding approximately 1.0 centimeter/second squared.   
***Types of earthquakes*** include:

**A) Tectonic Earthquake**: occurs when the earth’s crust breaks due to geological forces on rocks and

adjoining plates that cause physical and chemical changes.

**B) Volcanic Earthquakes:** result from tectonic forces which occur in conjunction with volcanic activity.

**C) Collapse Earthquakes:** occur in underground caverns and mines during roof collapse.

**D) Explosion Earthquakes**: result from the detonation of nuclear and chemical devices.