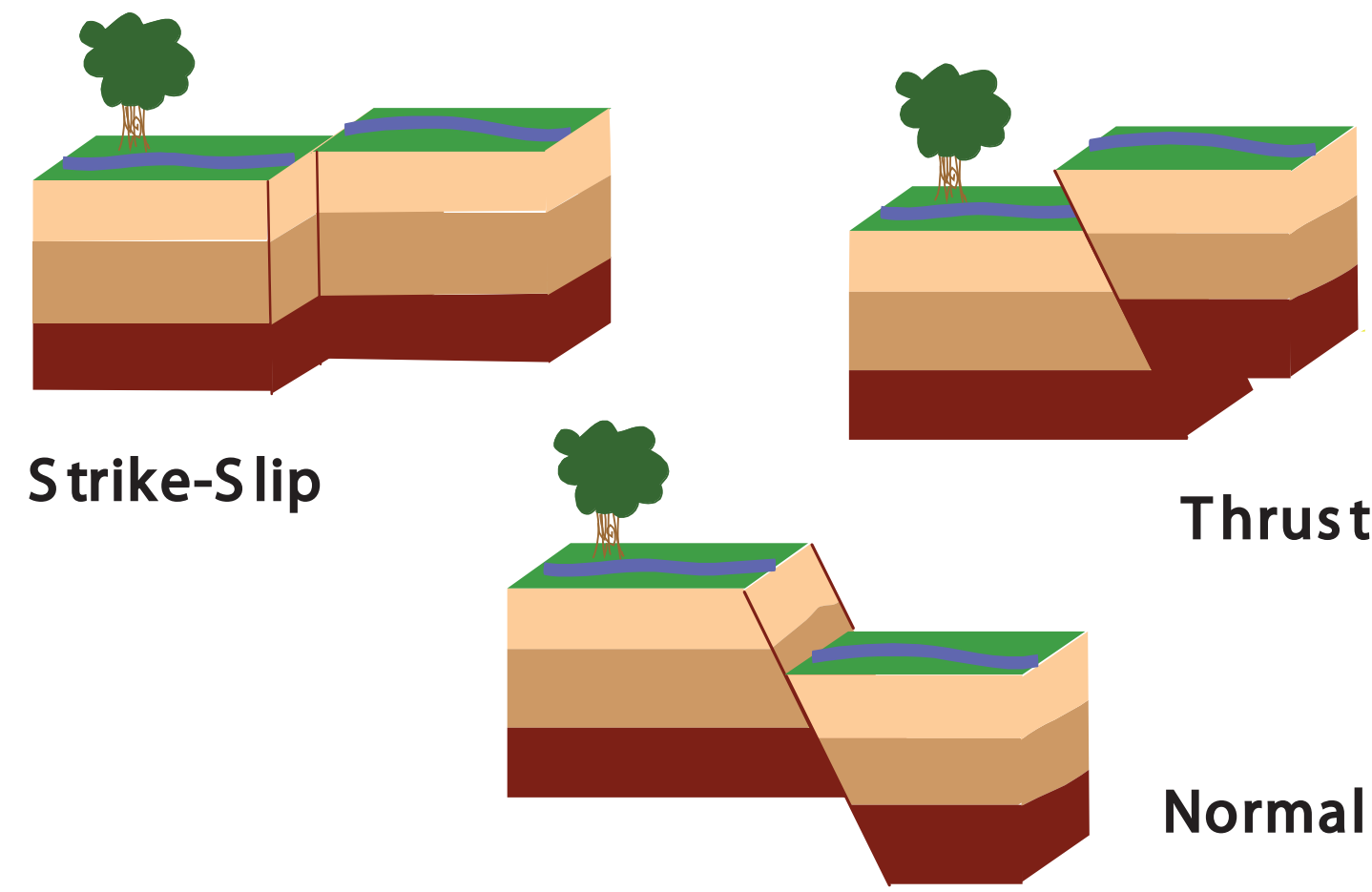


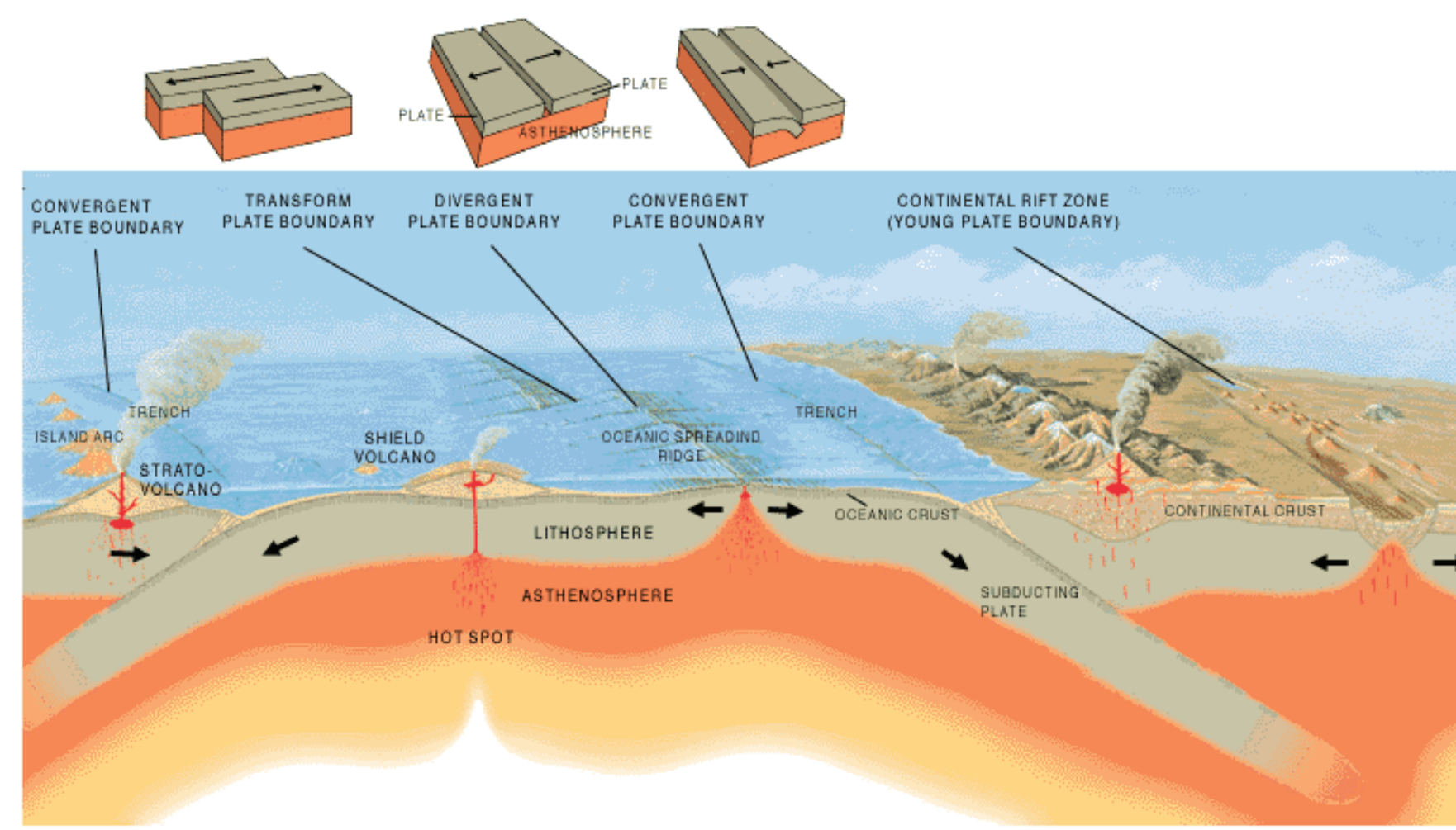
# Where Do Earthquakes come from? How do we know?



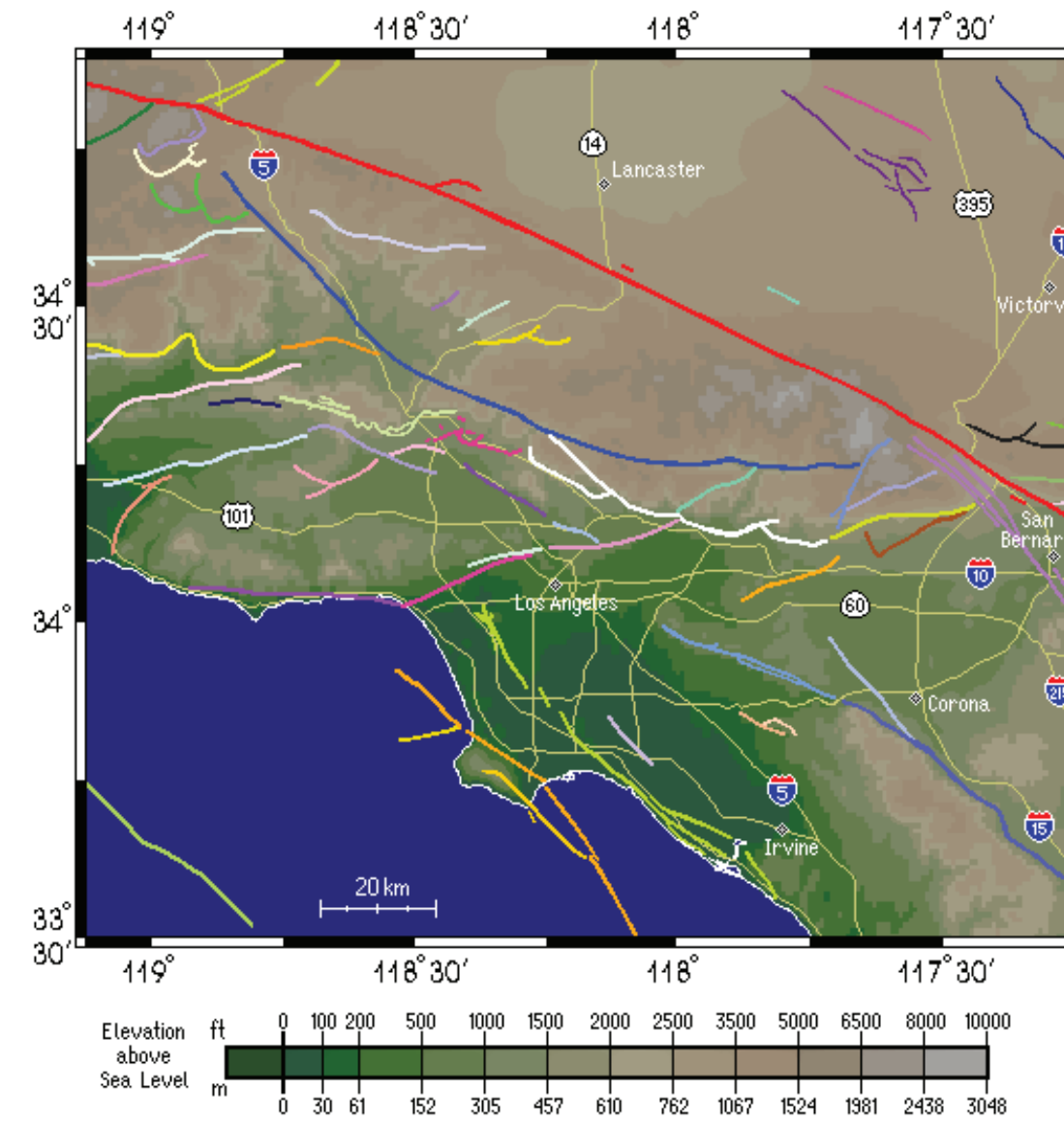
Earthquakes occur when two pieces of earth's crust slip past each other on a "fault". There are three types of faults:



Faults are often found near the boundaries of tectonic plates:



We have many earthquake faults in the Los Angeles Area.



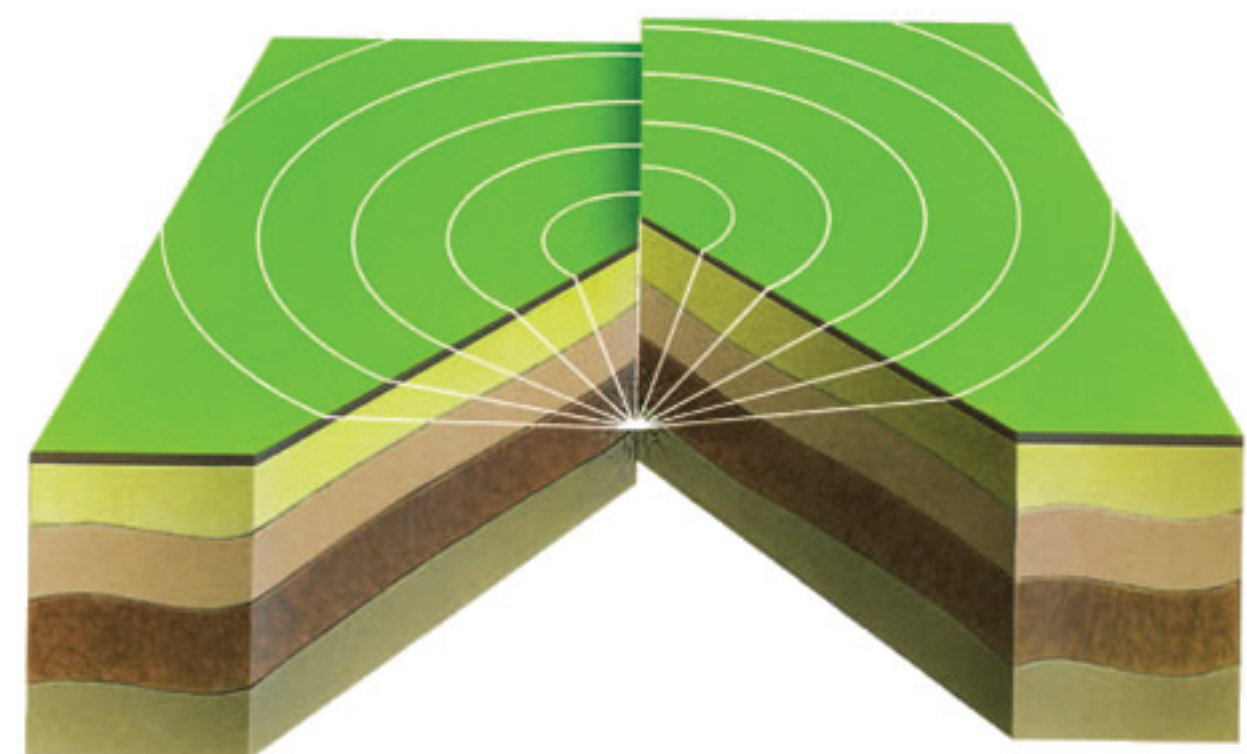
Here are two examples very nearby:

**Raymond Fault**  
 STRIKE-SLIP fault  
 26 KM long  
 Last ruptured in last 10,000 YEARS  
 SLIP RATE: between 0.10 and 0.22 mm/yr  
 PROBABLE MAGNITUDES: MW6.0 - 7.0  
 Dips to the north  
 At least eight surface-rupturing events have occurred along this fault in the last 36,000 years

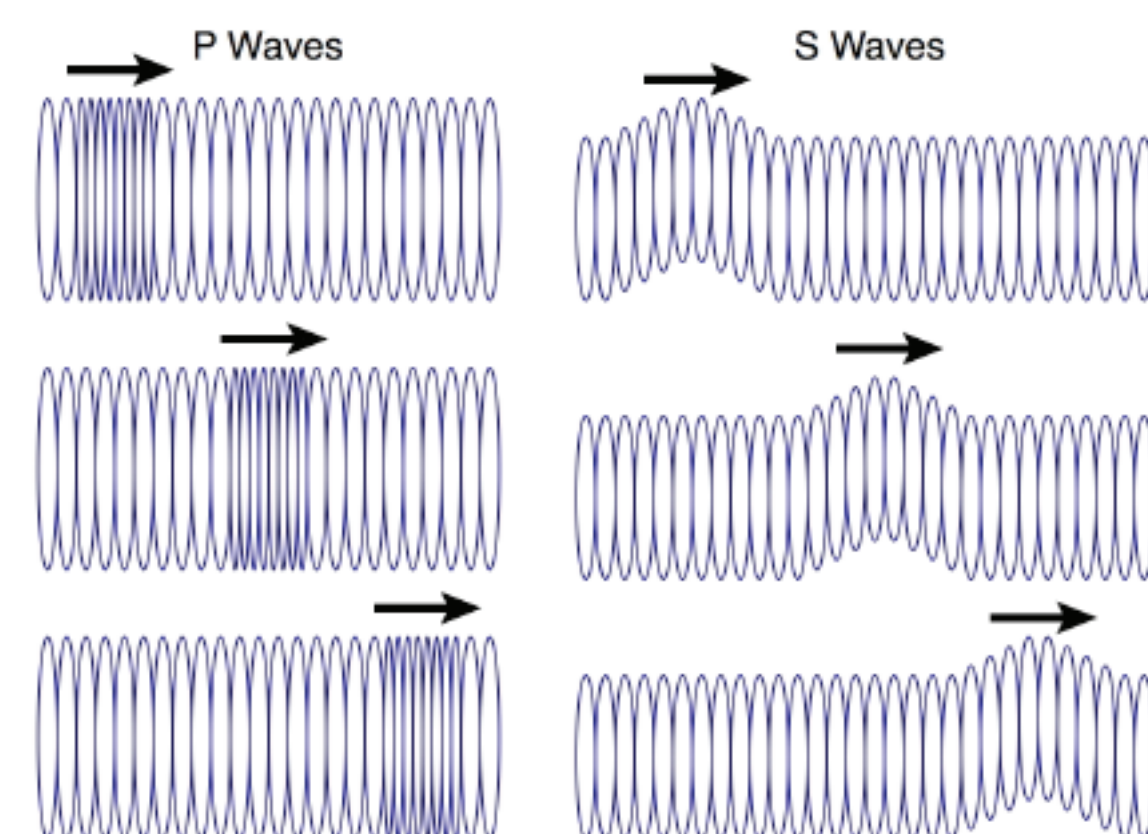
**Sierra Madre Fault Zone**  
 THRUST fault  
 55 KM long  
 Last ruptured in last 10,000 YEARS  
 SLIP RATE: between 0.36 and 4 mm/yr  
 PROBABLE MAGNITUDES: MW6.0 - 7.0 (?)  
 Dips to the north



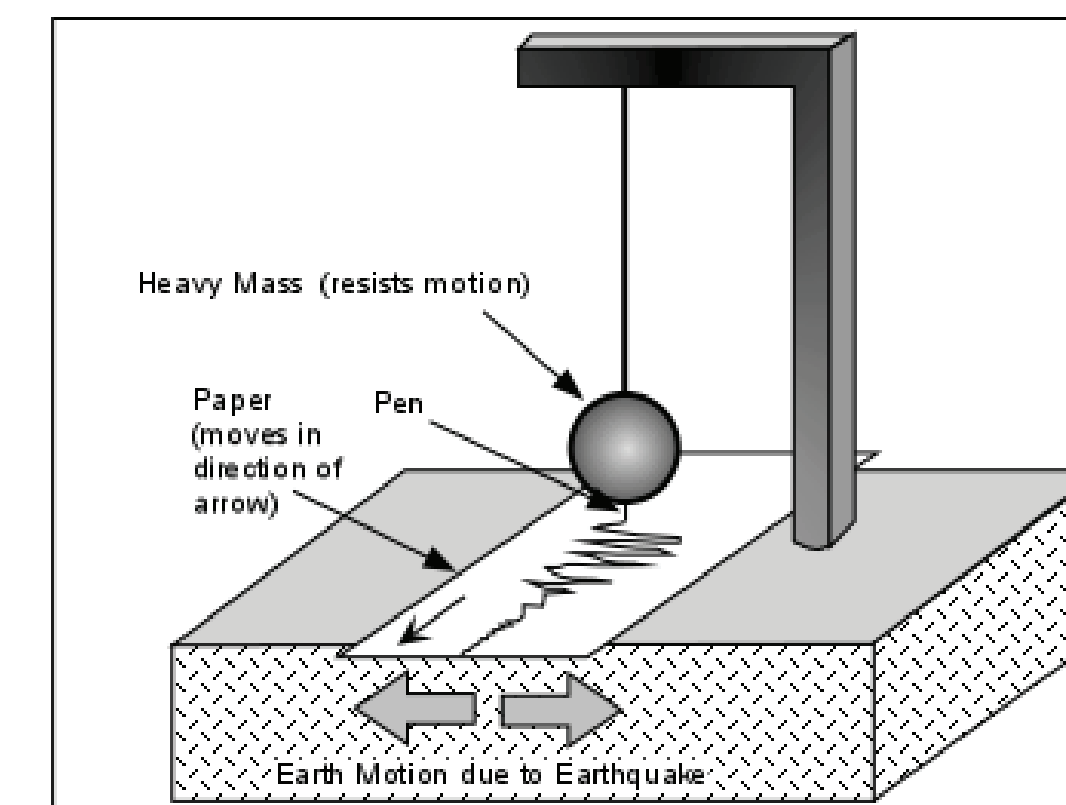
During an earthquake, energy in the form of seismic waves radiates in a circular pattern away from the epicenter.



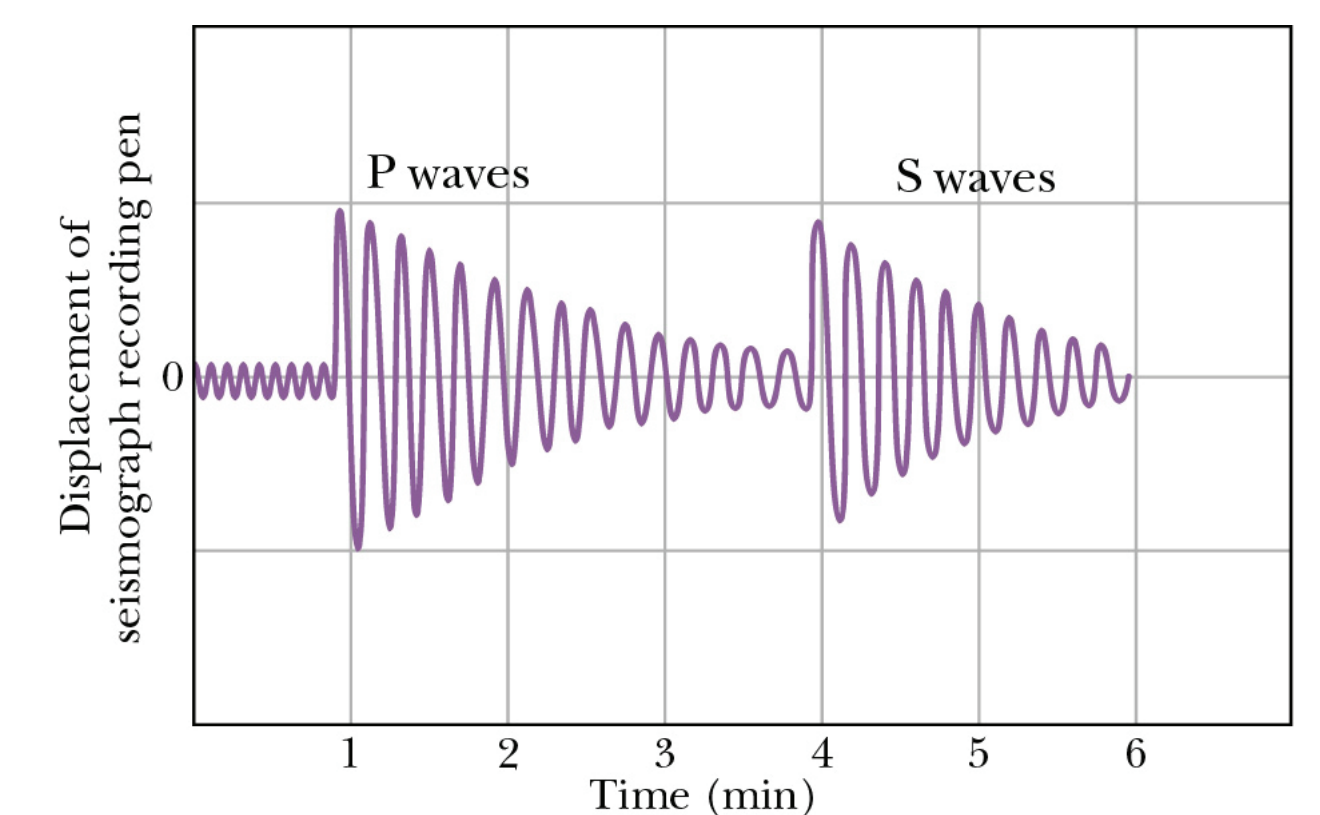
Two types of seismic waves are compressional waves (P-waves) and shear waves (S-waves)



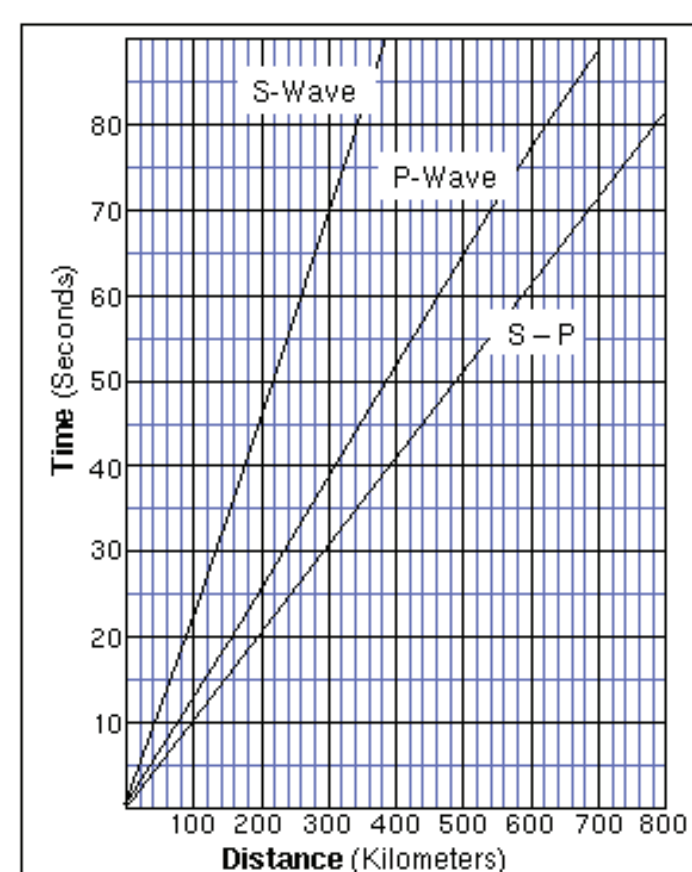
Seismic waves are recorded at stations around the world on a machine called a seismograph



Because P-waves travel faster, they arrive before the S-wave. Both are recorded on a seismogram.



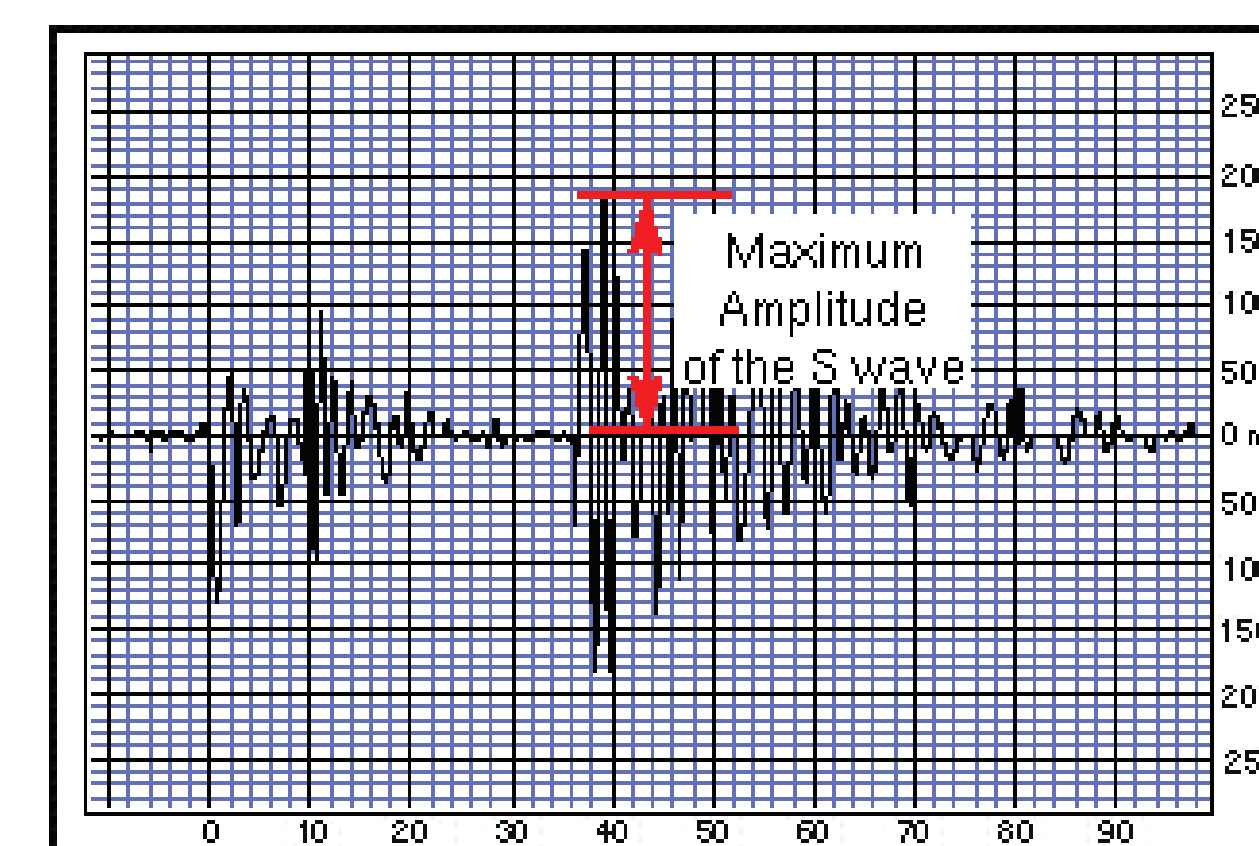
The time it takes for the wave to arrive, and the time difference between the P and S waves, tells us how far away the earthquake occurred



By tracing circles around each station, with a radius equal to the distance from the earthquake, we can find the location of the earthquake where the circles intersect.



The strength of the earthquake can be determined by looking at how far up and down the earth moved, or the "amplitude" just like jumping on a trampoline.



The bigger the amplitude of shaking, the more damage is done to buildings and roads by the earthquake.

