Earthquakes

What are the causes of earthquakes and how do seismic waves cause so much damage?


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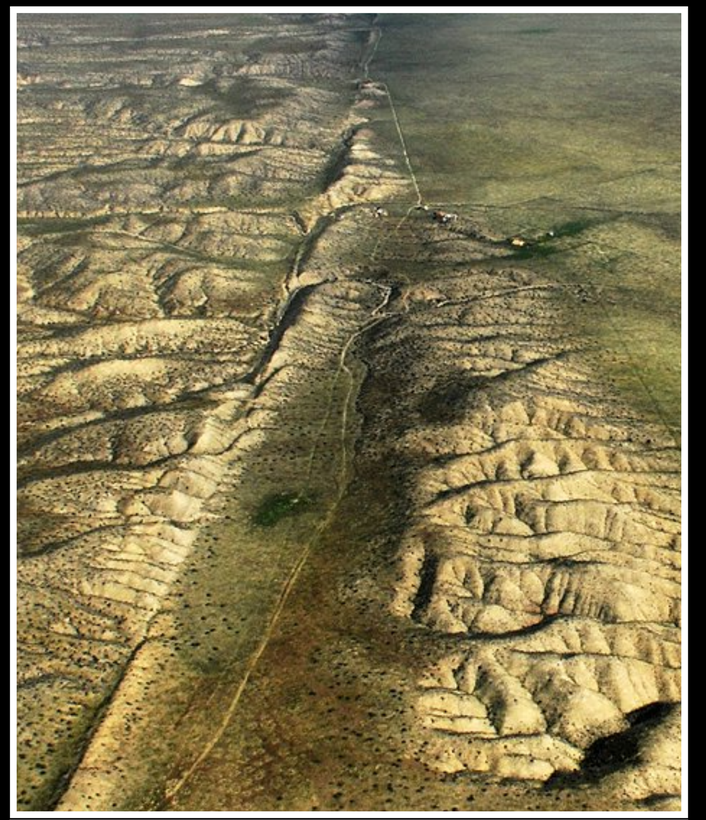
EARTHQUAKES

Earthquakes

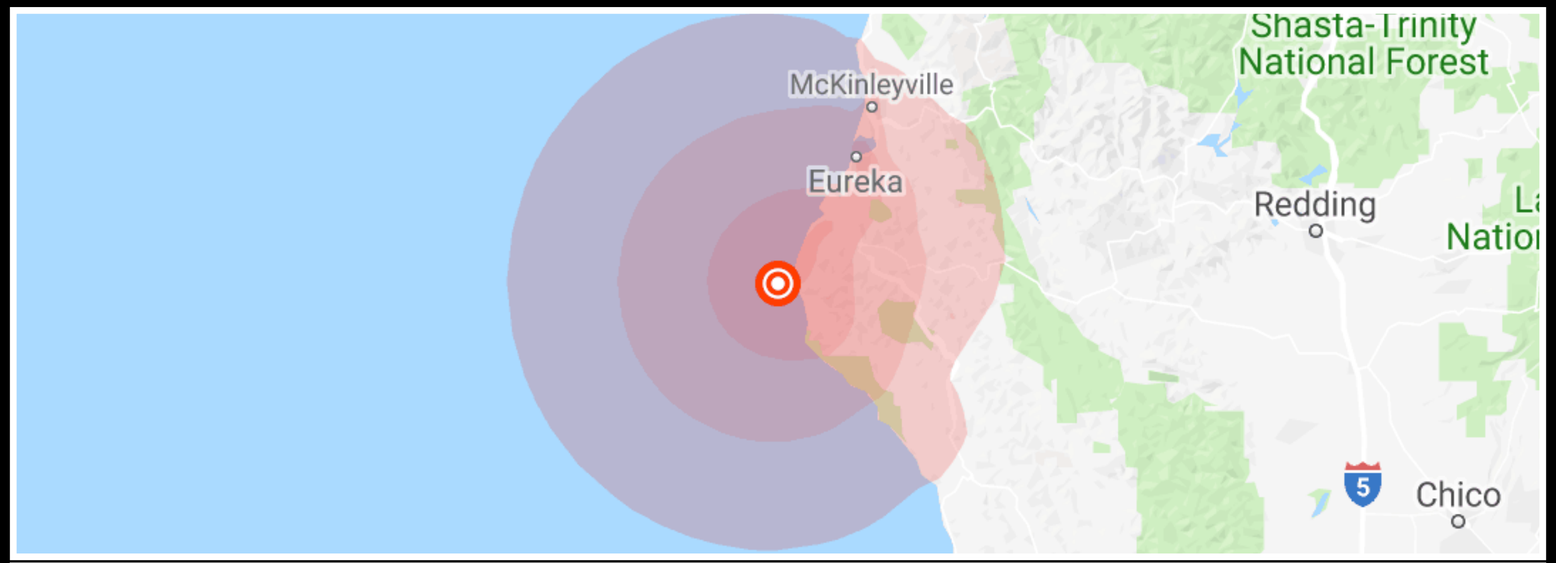
- Earthquake - a natural shaking of the lithosphere caused by a release of energy stored in rocks



San Andreas Fault

Earthquakes

- Most earthquakes are caused by a movement along a fault where potential energy is given off as a seismic wave



4.2 Earthquake, California

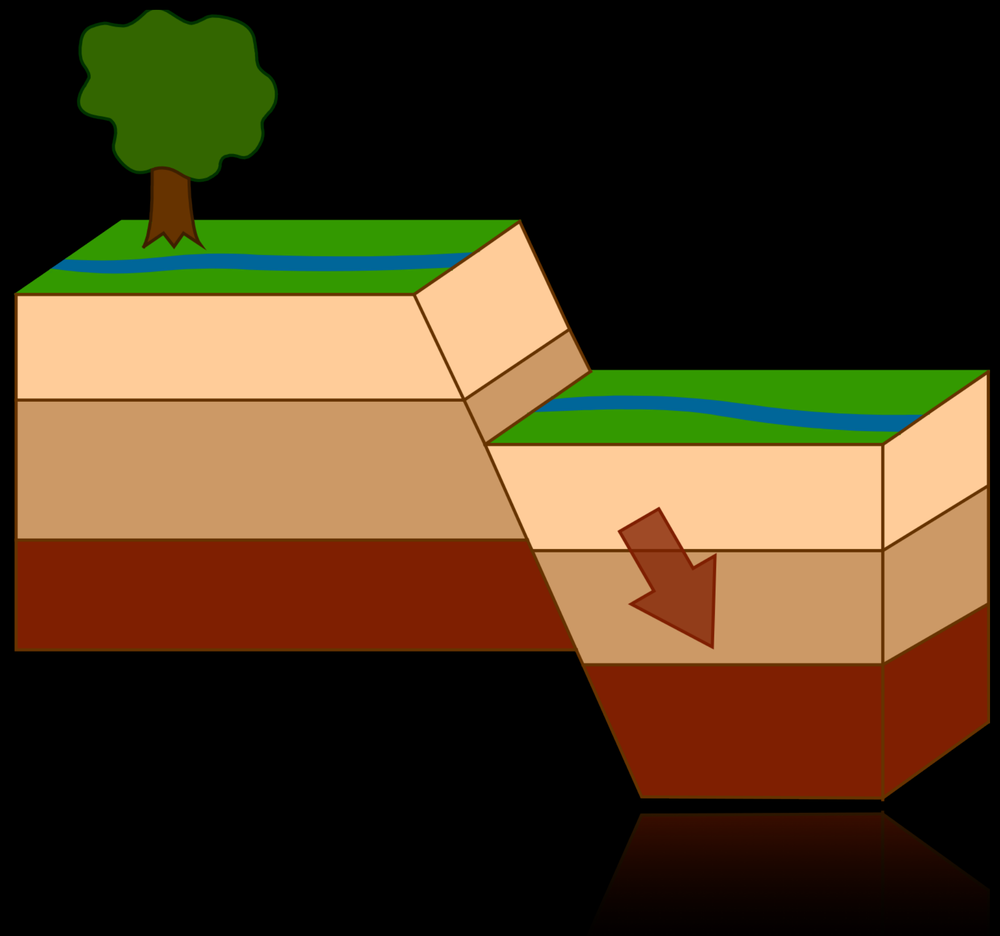
Earthquakes

- Fault - crack in the Earth's crust caused by forces displacing rocks on the opposite sides of the fracture

Madrid, Spain

Earthquakes

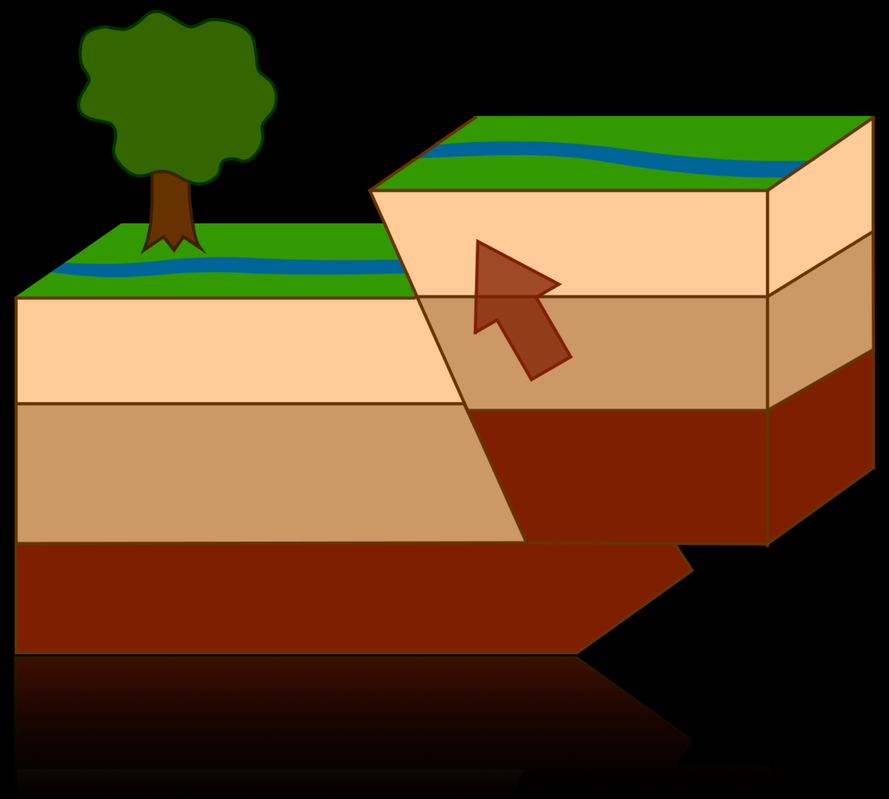
- Normal Fault - faults that form when the hanging wall drops down

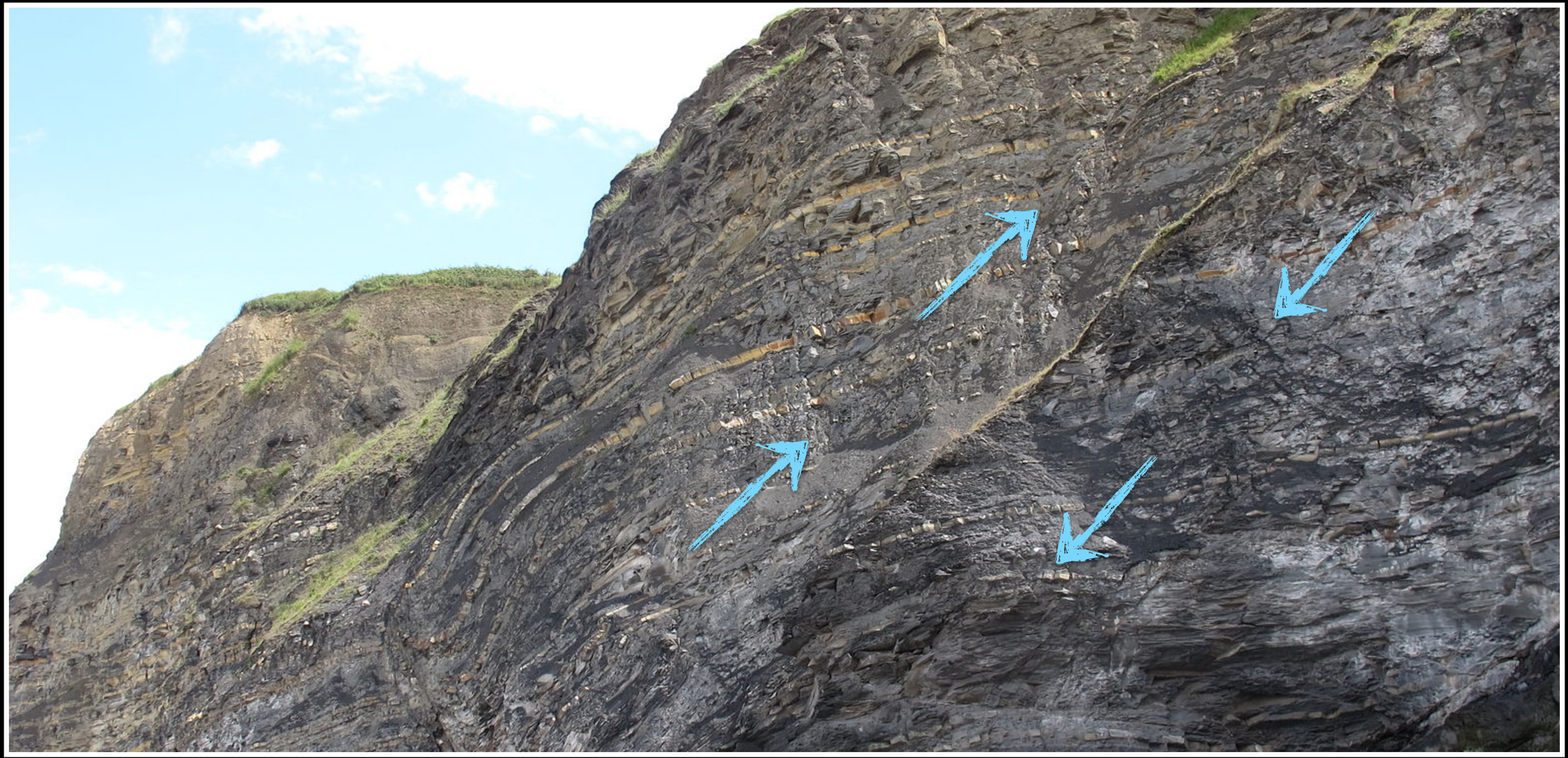


Normal Fault

Earthquakes

- Reverse Fault - faults that form when the hanging wall moves up

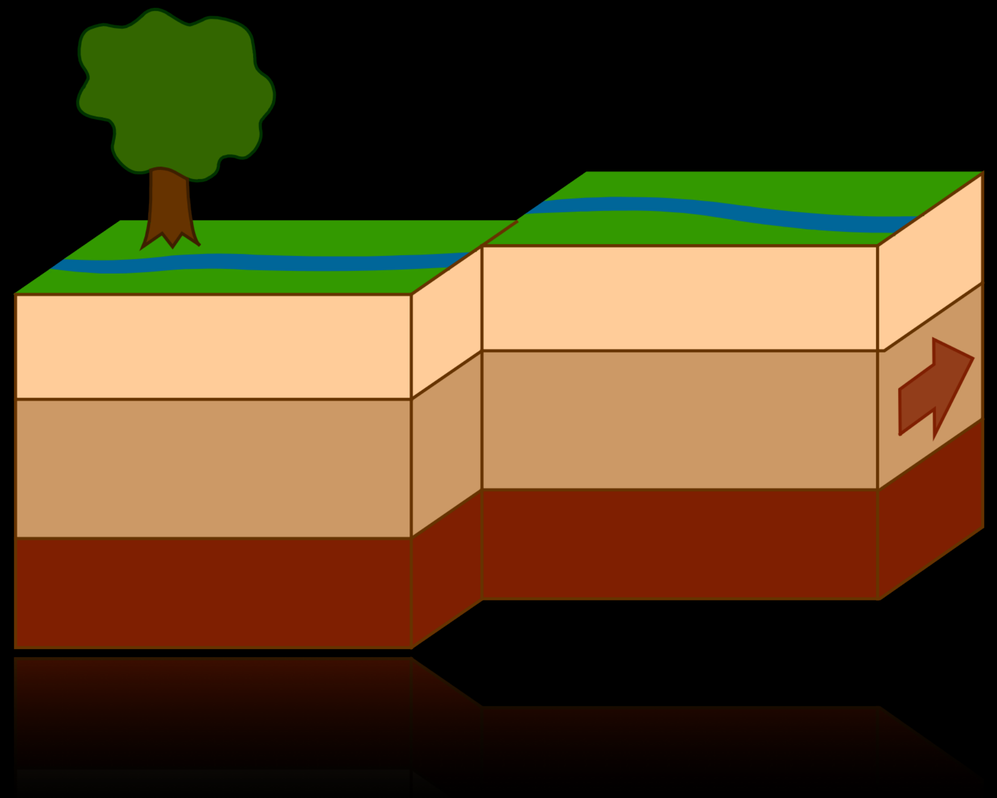


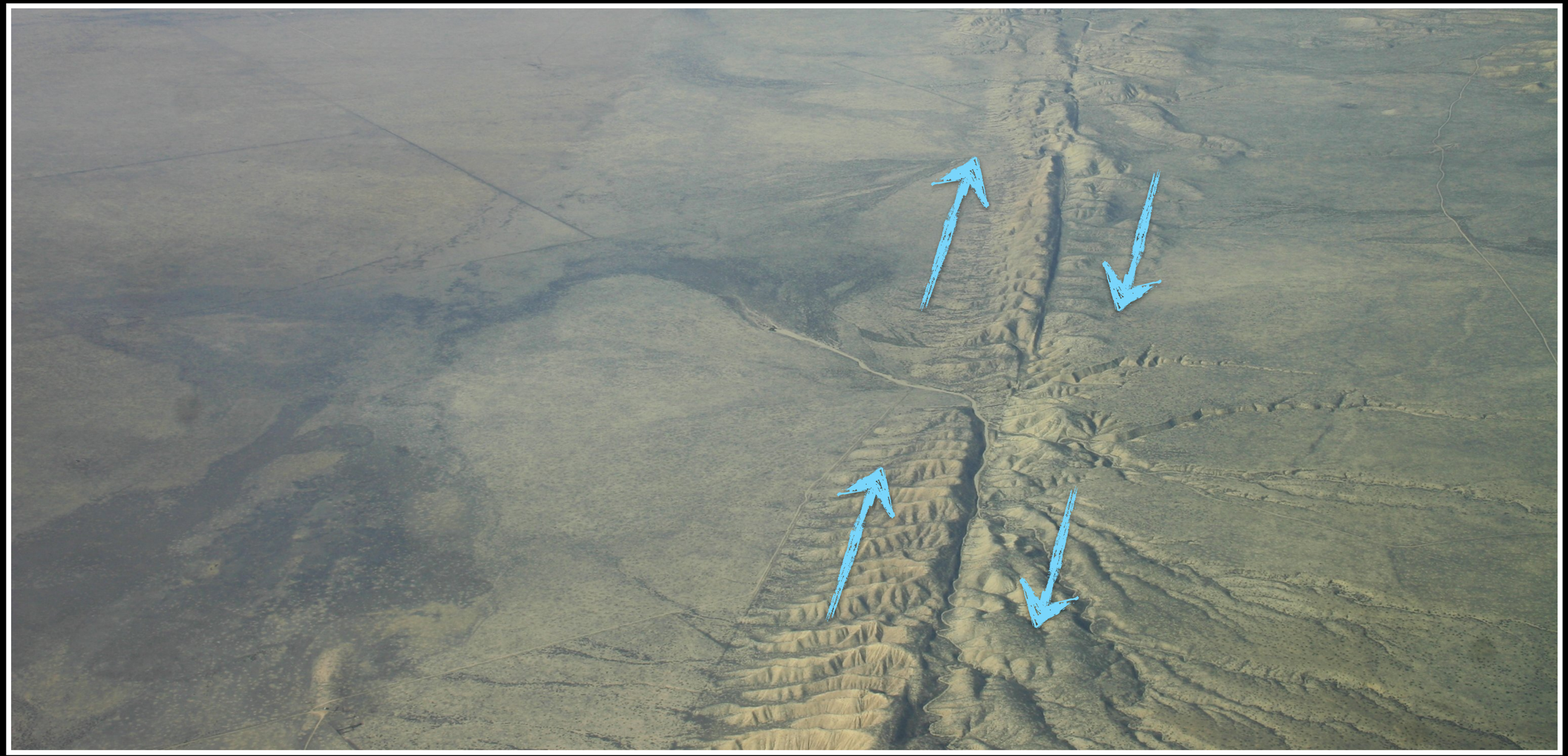


Reverse Fault

Earthquakes

- Strike-slip Fault - faults that form when two plates are sliding past one another

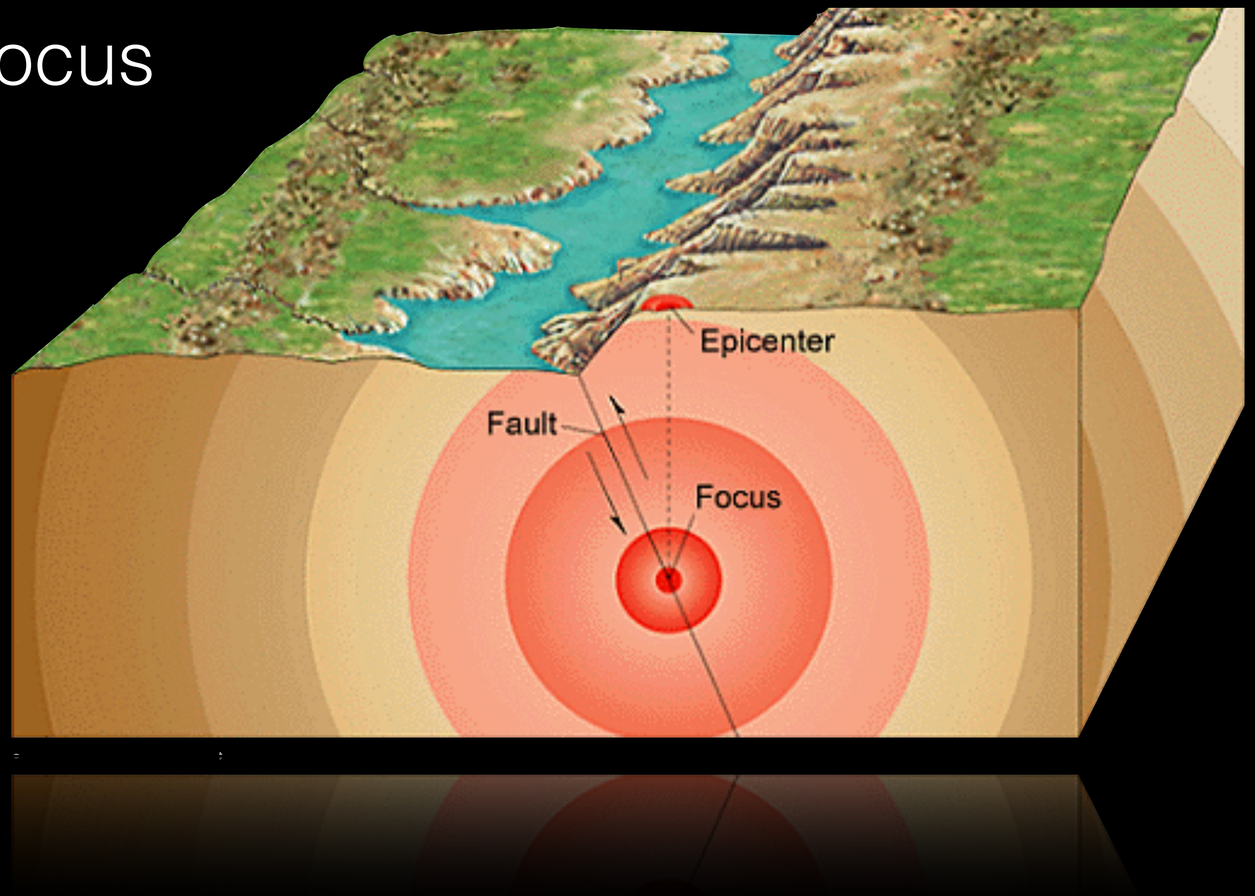




Strike-slip Fault

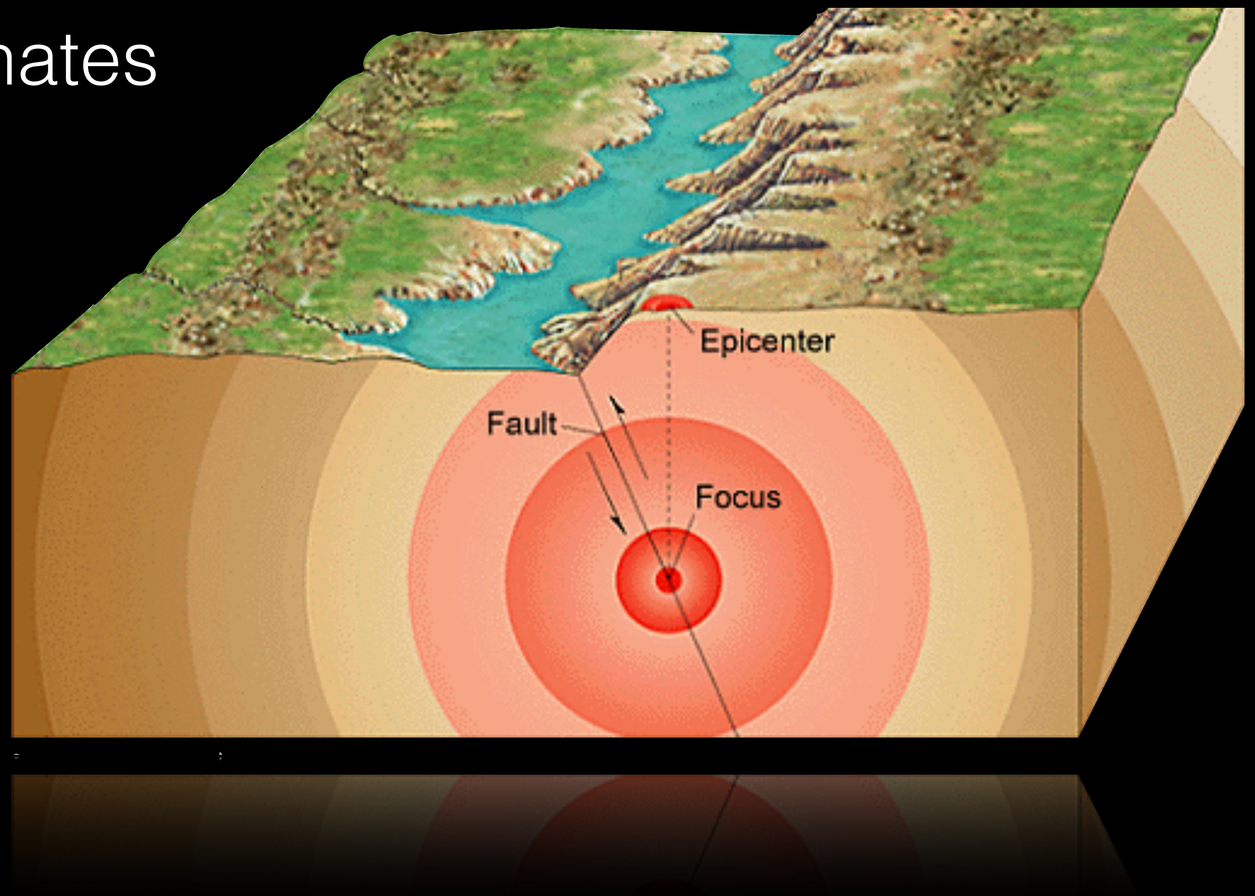
Earthquakes

- Epicenter - the location on Earth's surface directly above the focus



Earthquakes

- Focus - the point inside the Earth where the earthquake originates

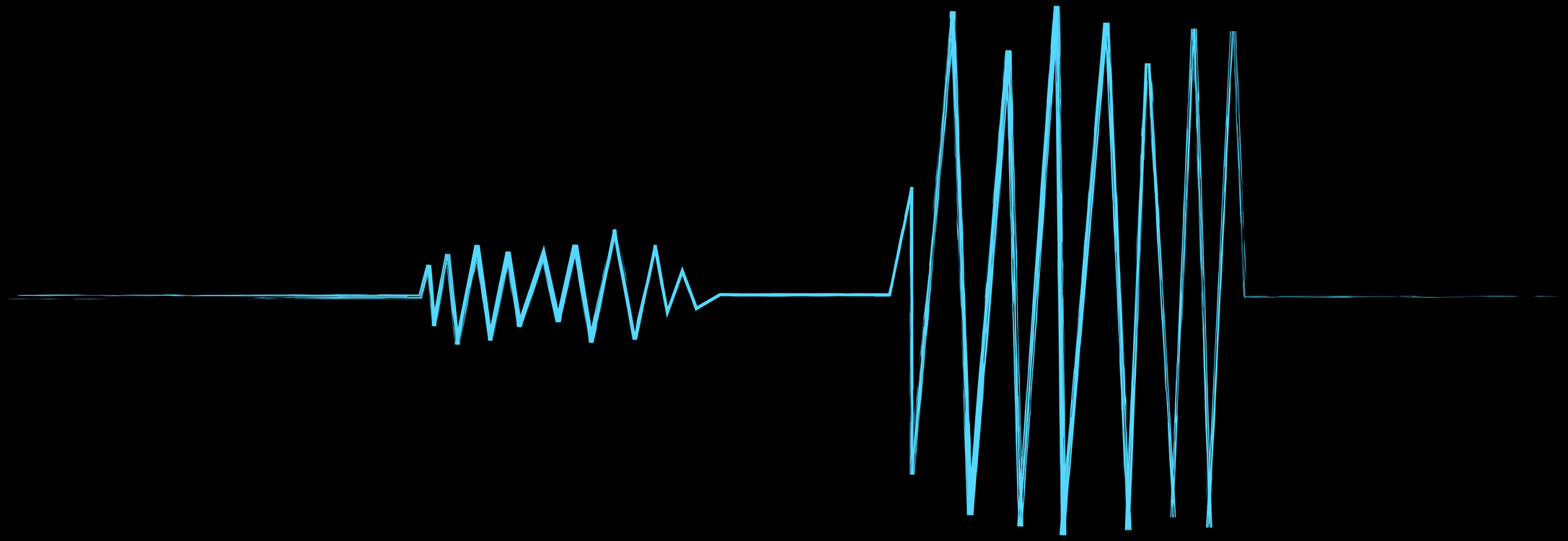


Earthquakes

- Seismograph - an instrument used to measure and record movements in the ground

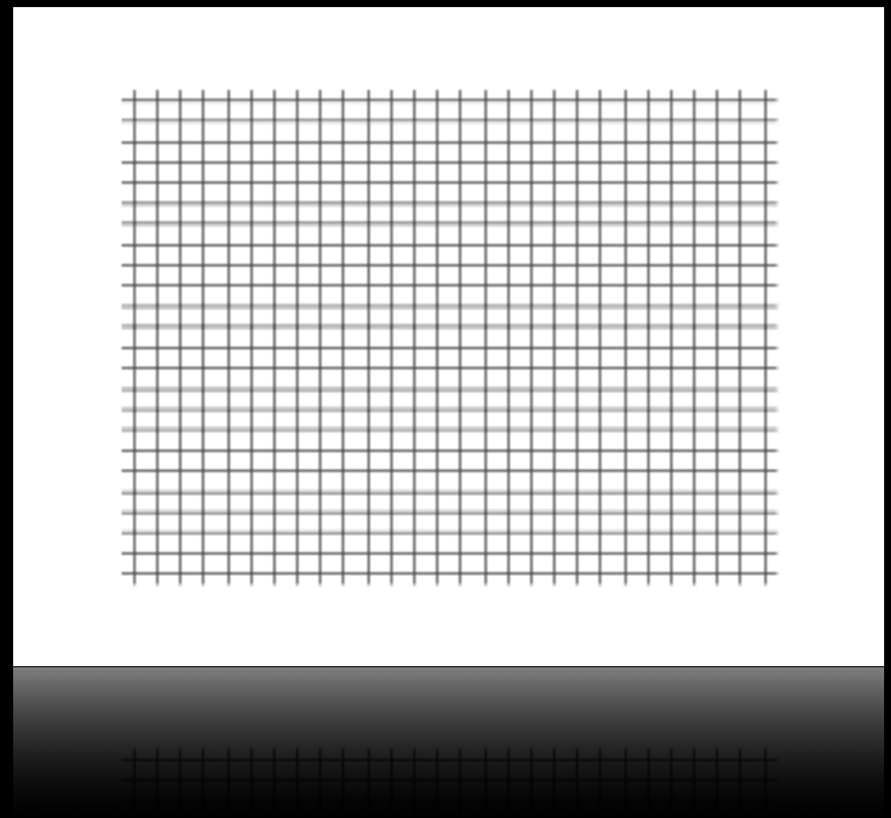
Earthquakes

- Seismogram - record of the seismometer



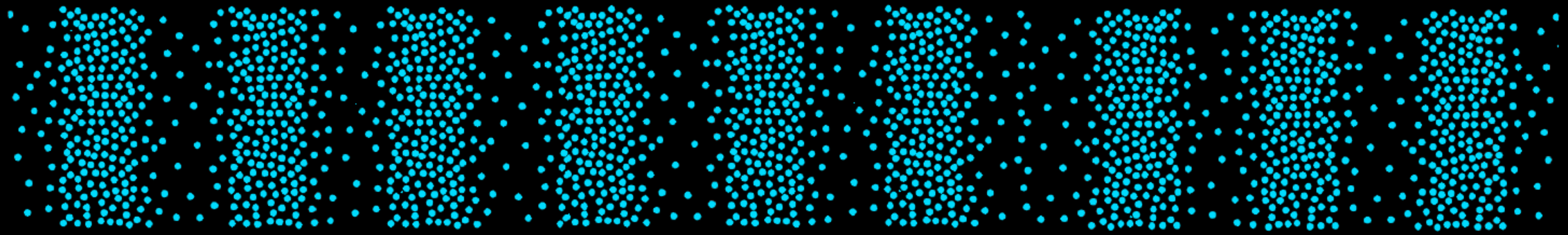
Earthquakes

- Primary Wave [P-wave]
    - P-waves are the fastest waves
    - Travels through solids, liquids, and gases
    - Compressional - particles travel in the direction of wave movement



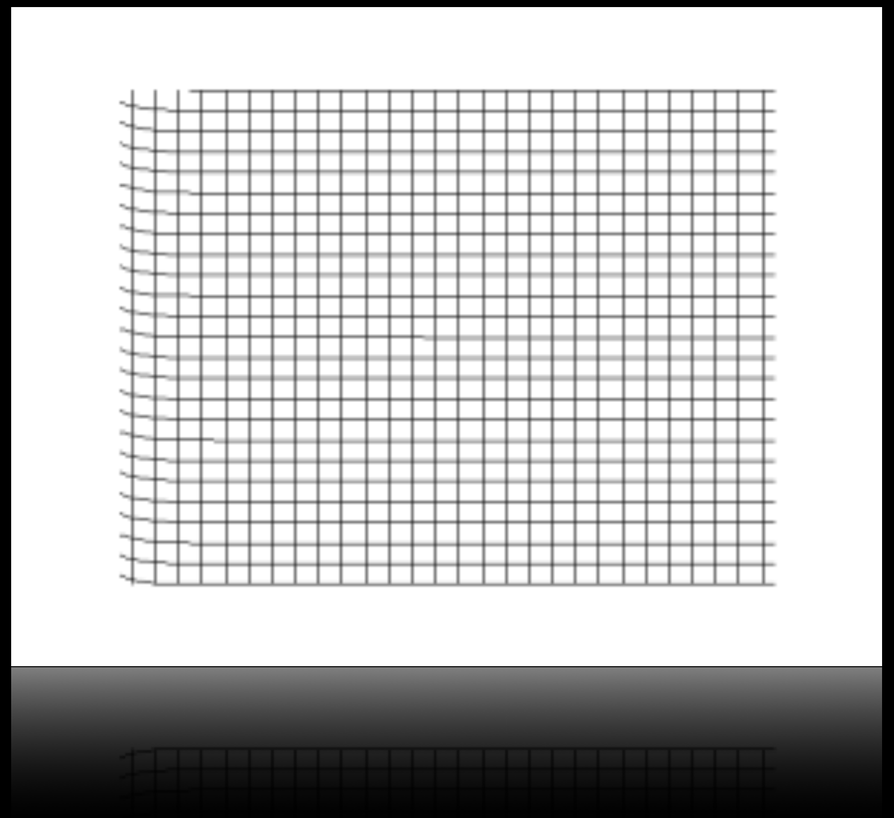
Earthquakes

- Primary Wave [P-wave]



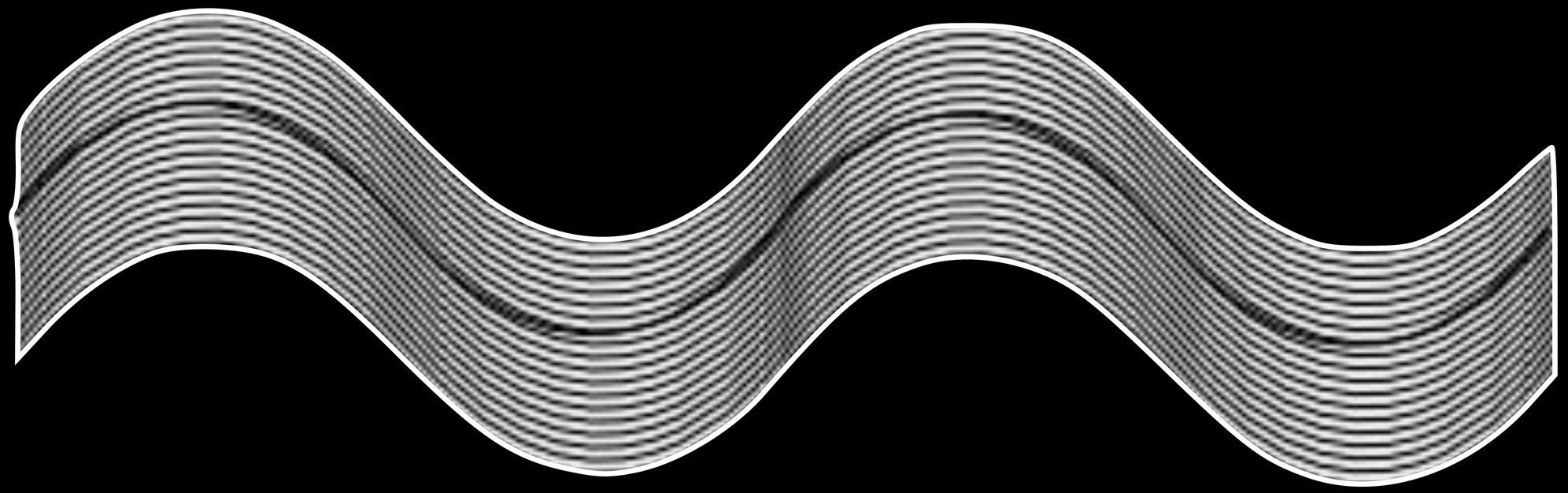
Earthquakes

- Secondary Wave [S-wave]
    - S-waves are the slower wave
    - Travels through solids only
    - Shear - particles travel in right angles to the direction of wave movement



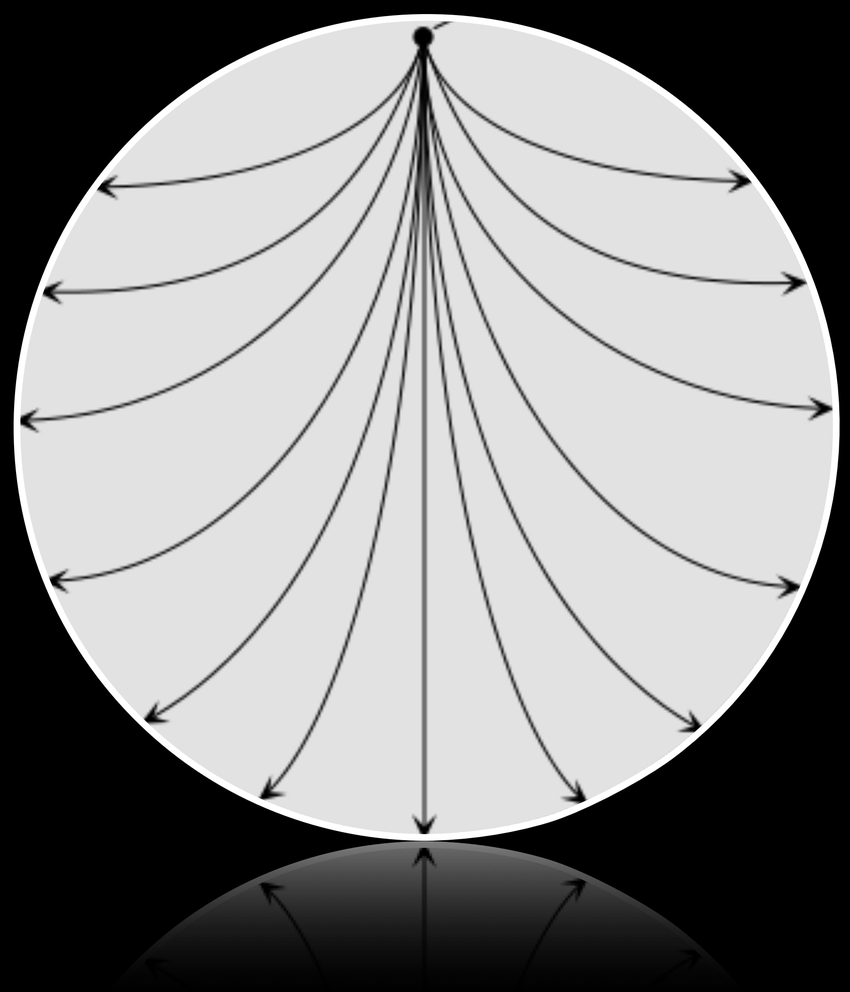
Earthquakes

- Secondary Wave



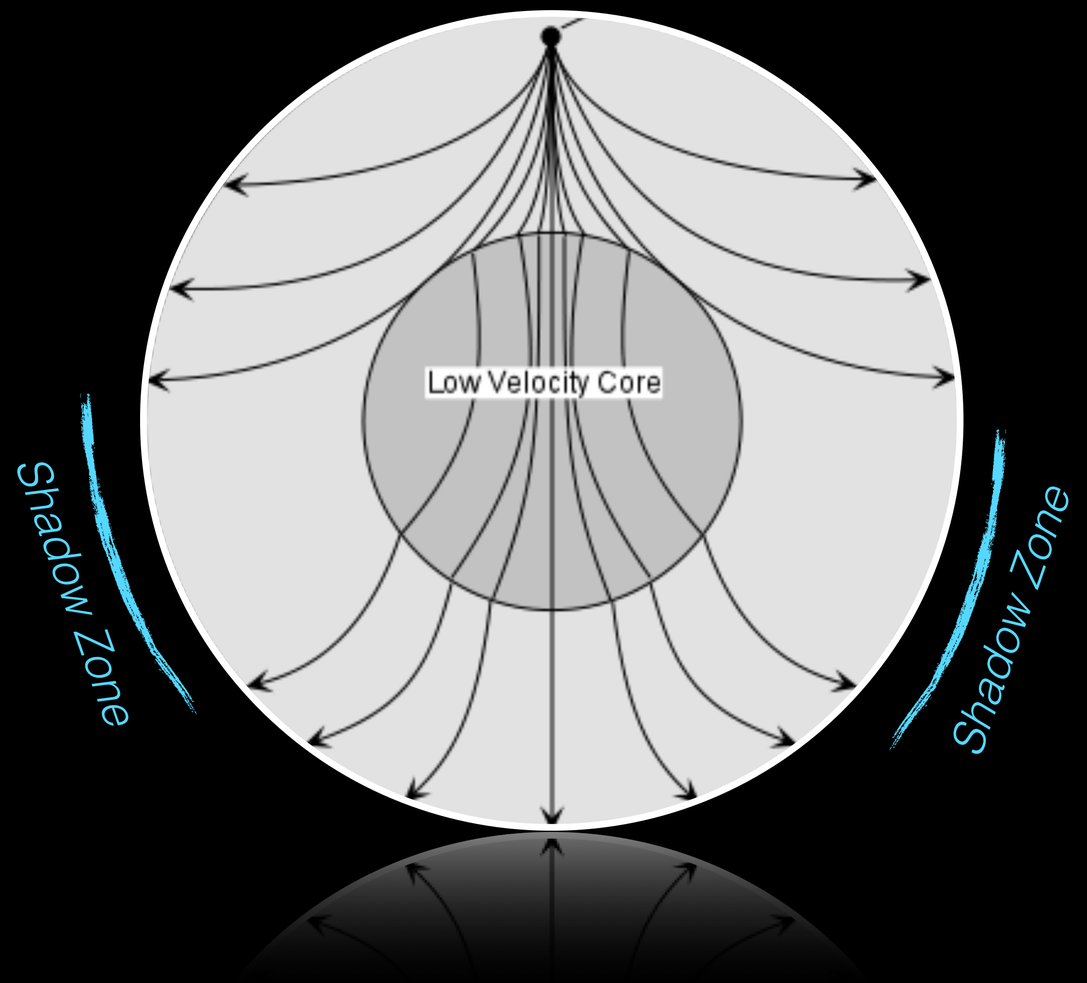
Earthquakes

- Seismic waves radiate away from the focus
- Shadow Zone - area in which seismic waves are not detected due to the liquid outer core



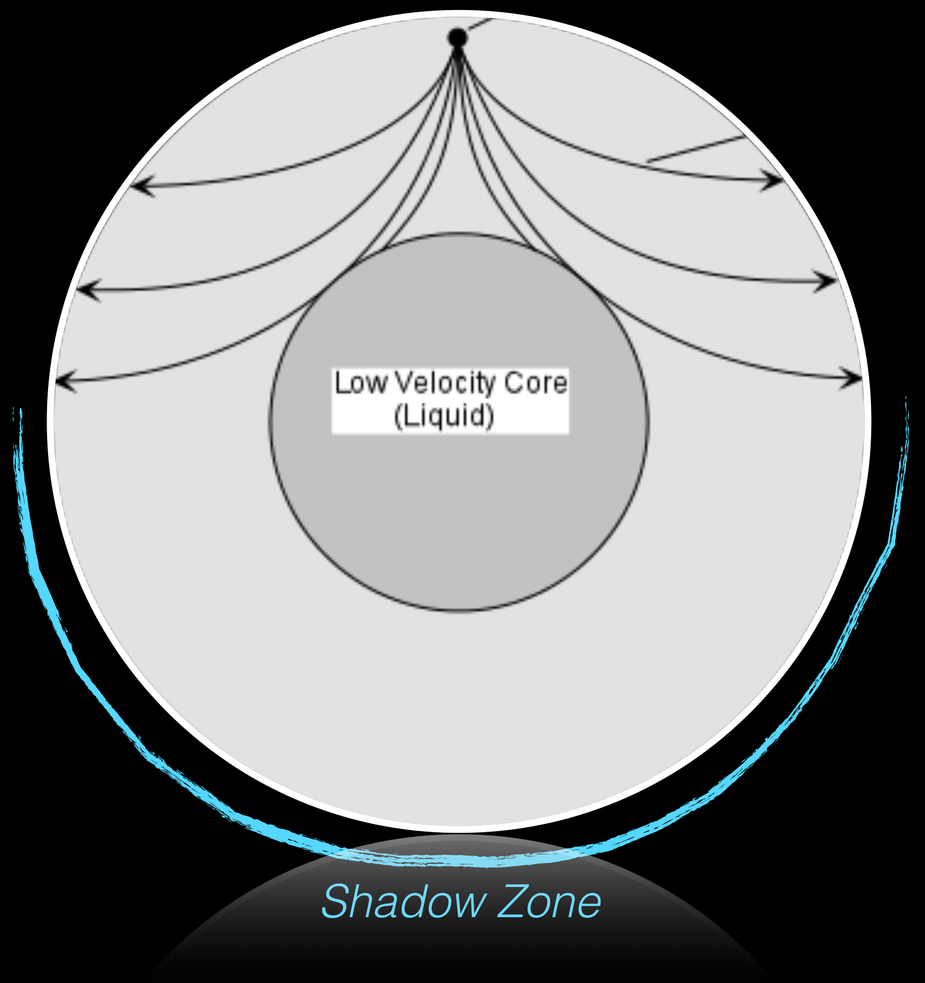
Earthquakes

- P-waves are refracted when they reach the liquid outer core



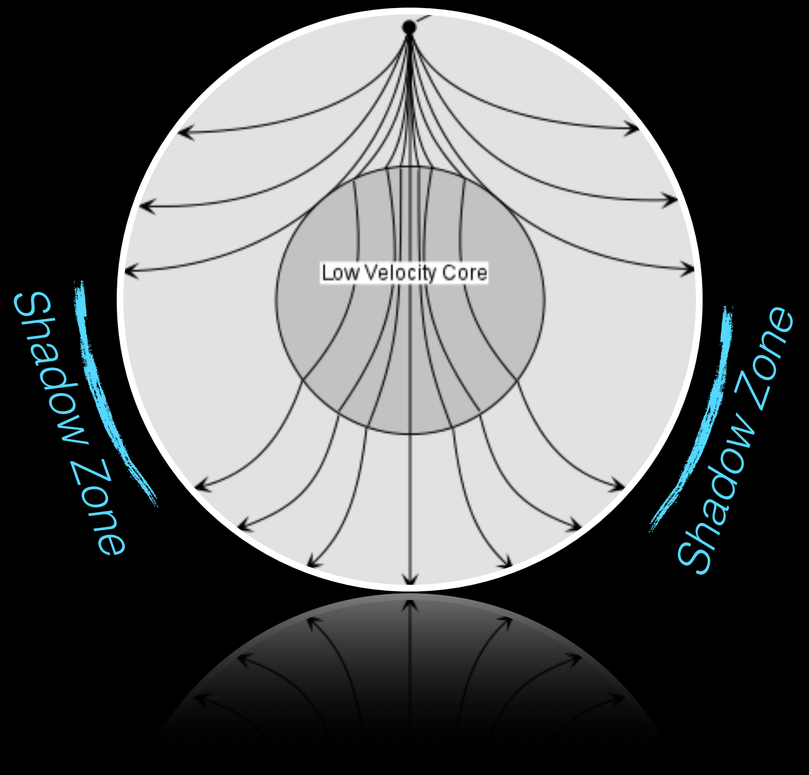
Earthquakes

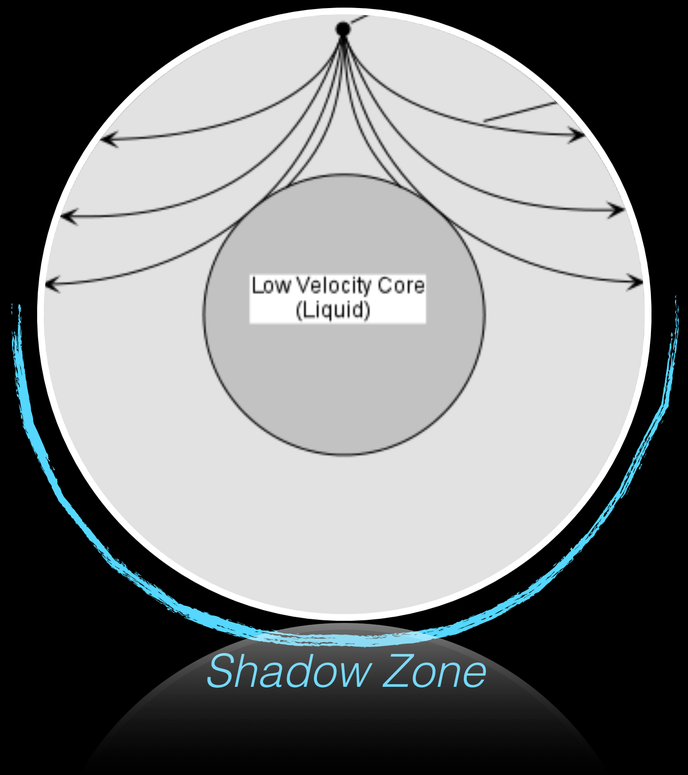
- S-waves are absorbed when they reach the outer core and are not transmitted through to the other side



Earthquakes

- Both the p-wave and s-wave are needed to determine the location of an earthquake's epicenter





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