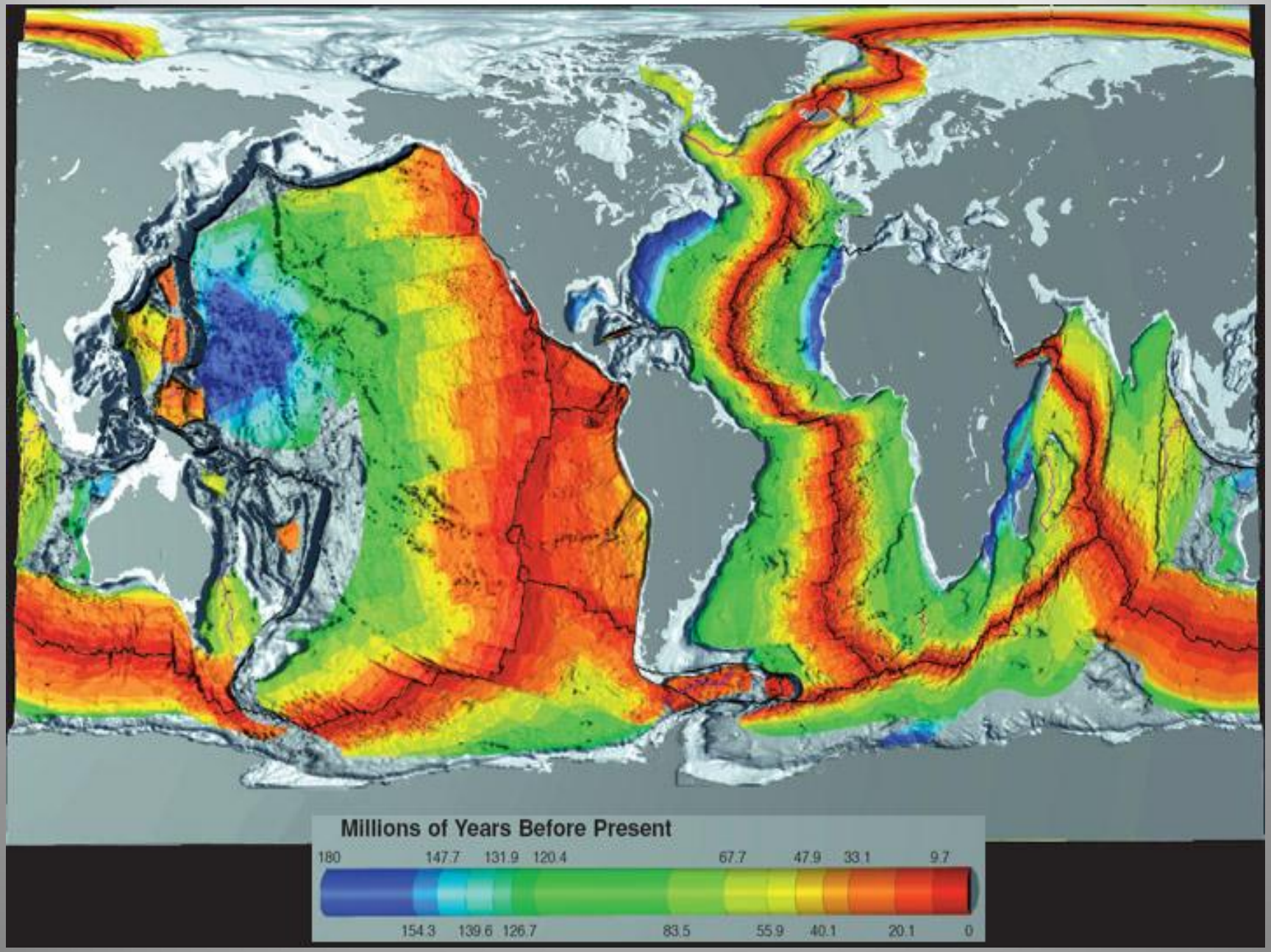
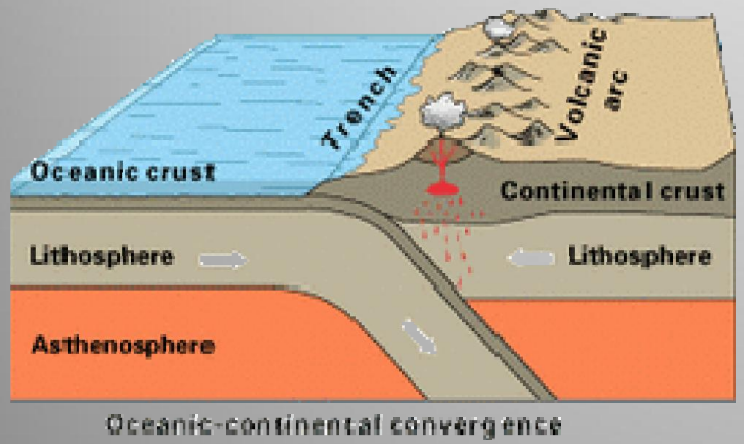
Plate Boundaries

Where two plates meet.

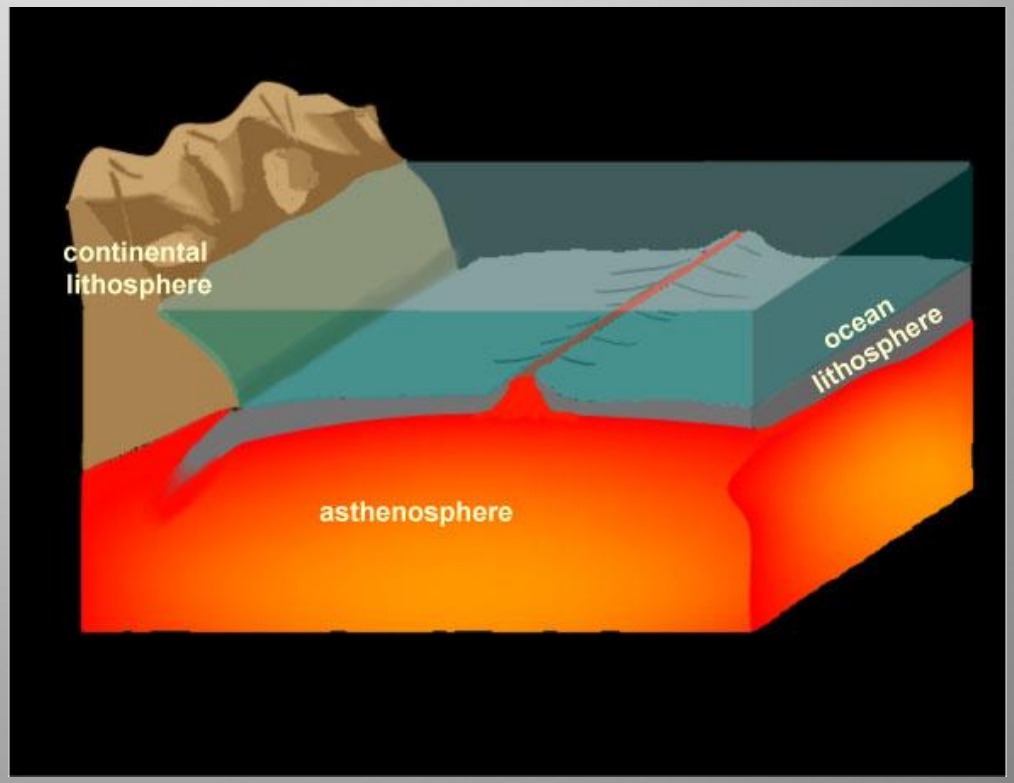
http://science.discovery.com/videos/100-greatest-discoveries-shorts-plate-tectonics.html


Millions of Years Before Present
180
147.7
131.9
120.4
67.7
47.9
33.1
9.7
154.3
139.6
126.7
83.5
55.9
40.1
20.1
0

- The lithosphere is broken into plates that “float” or “ride” on the asthenosphere.

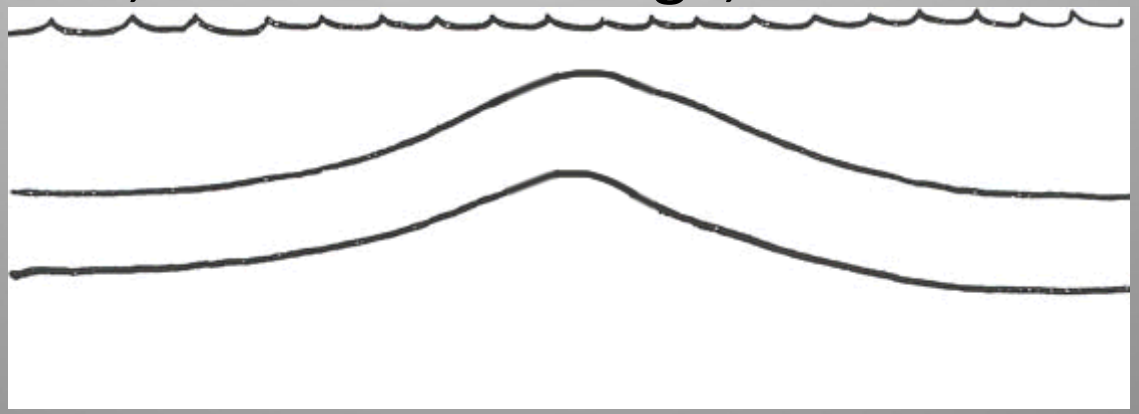


Oceanic-continental convergence

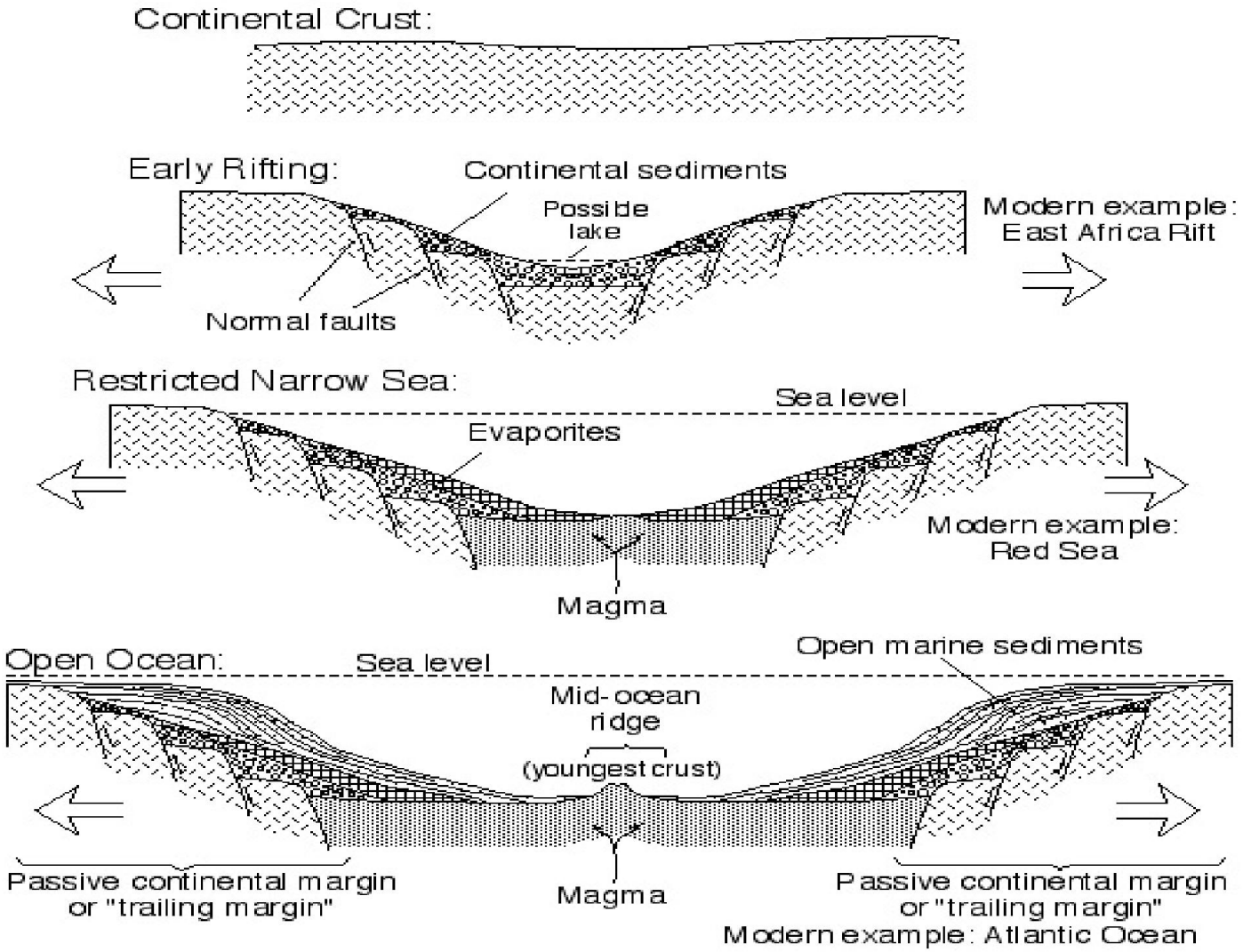


3 types of plate boundaries

- Divergent boundaries:
  - 2 plates moving away from each other
  - As the plates move apart, magma rises, fills in the space between the plates, and hardens
  - Mostly found on the ocean floor
  - Features: Ridges and Rifts
  - Ex. Red Sea, Mid-Atlantic Ridge, East African Rift Valley



Rifting and evolution of ocean basins from Divergent Plate Boundaries



LBR 2/1991
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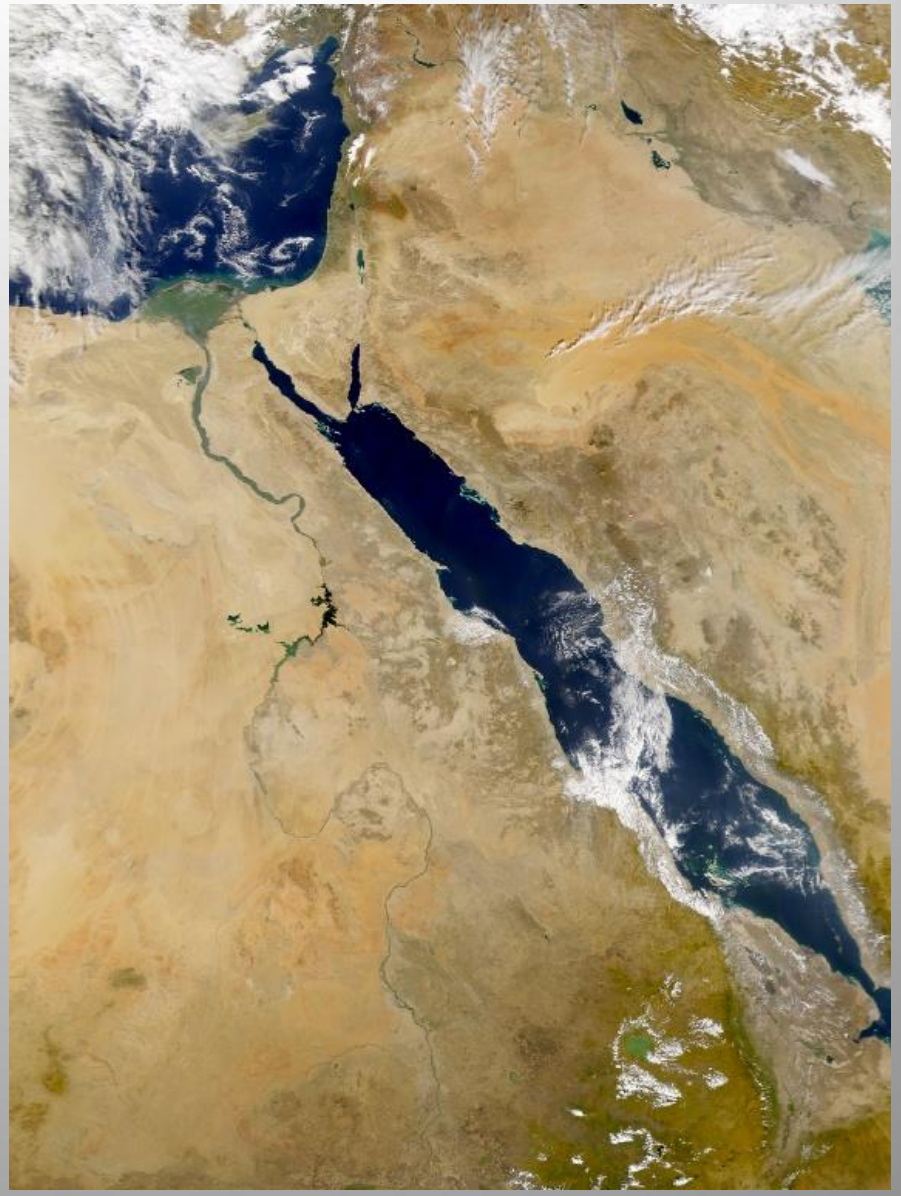
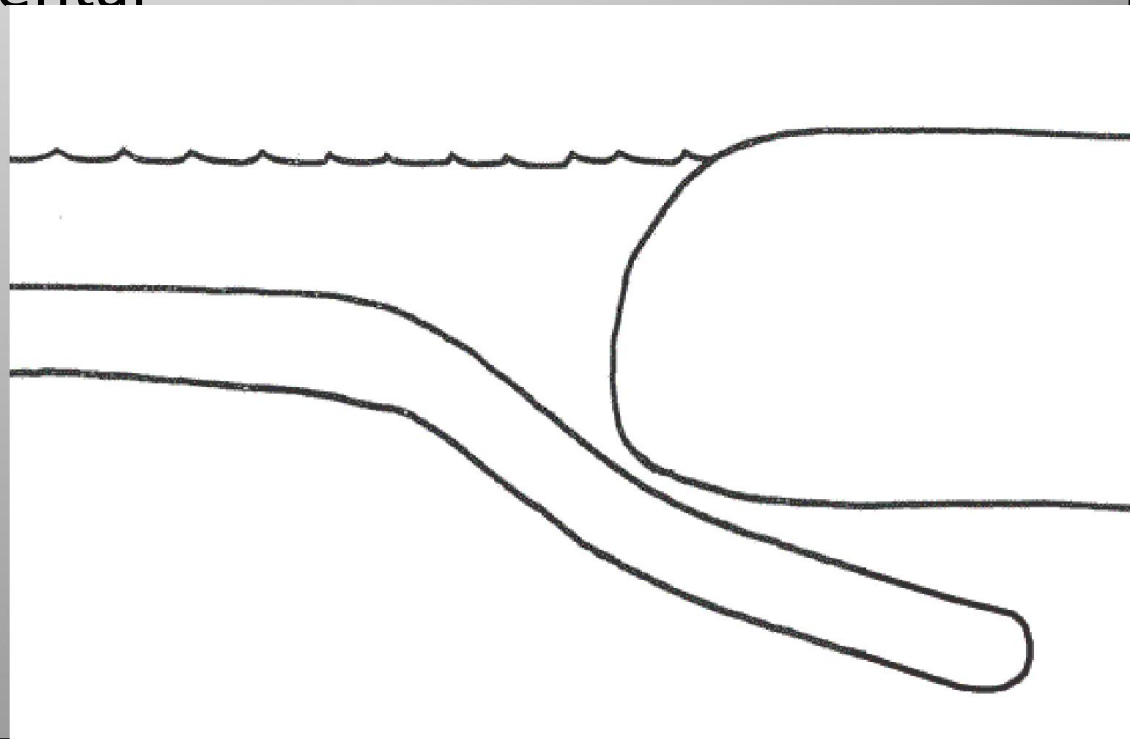


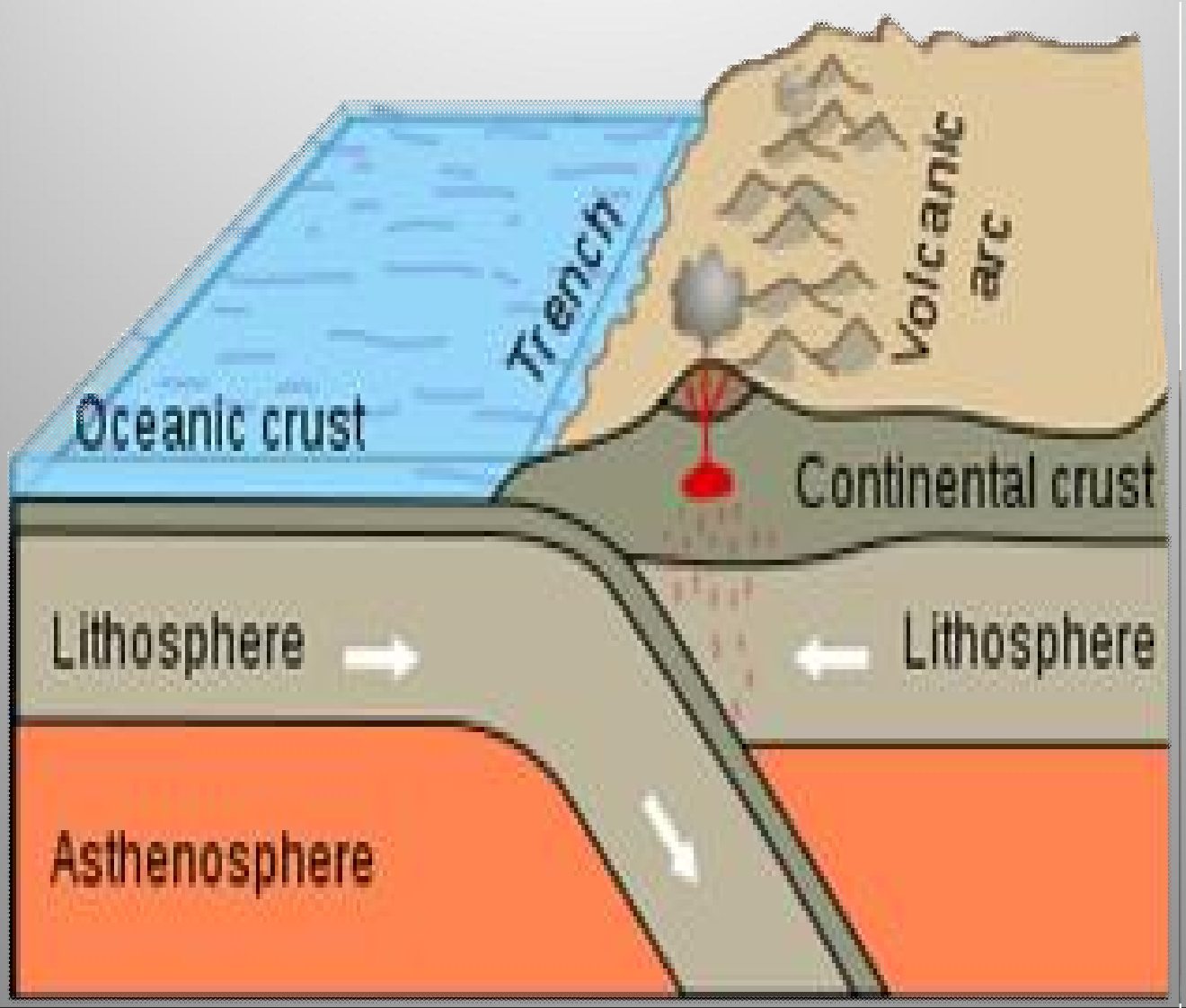
Convergent Boundary

- The collision of one plate with another; means to collide.
- Three types of collisions
  - Continental/oceanic
  - Continental/Continental
  - Oceanic/Oceanic



- Continental/Oceanic
  - Oceanic crust is denser so it is forced under continental crust
  - Subduction zone refers to the region where one plate moves under another
  - Oceanic always subducts under continental
  - Features: volcanoes on land and trenches offshore
  - EX. S. America/Nazca→ Andes Mtns. And Peru Trench

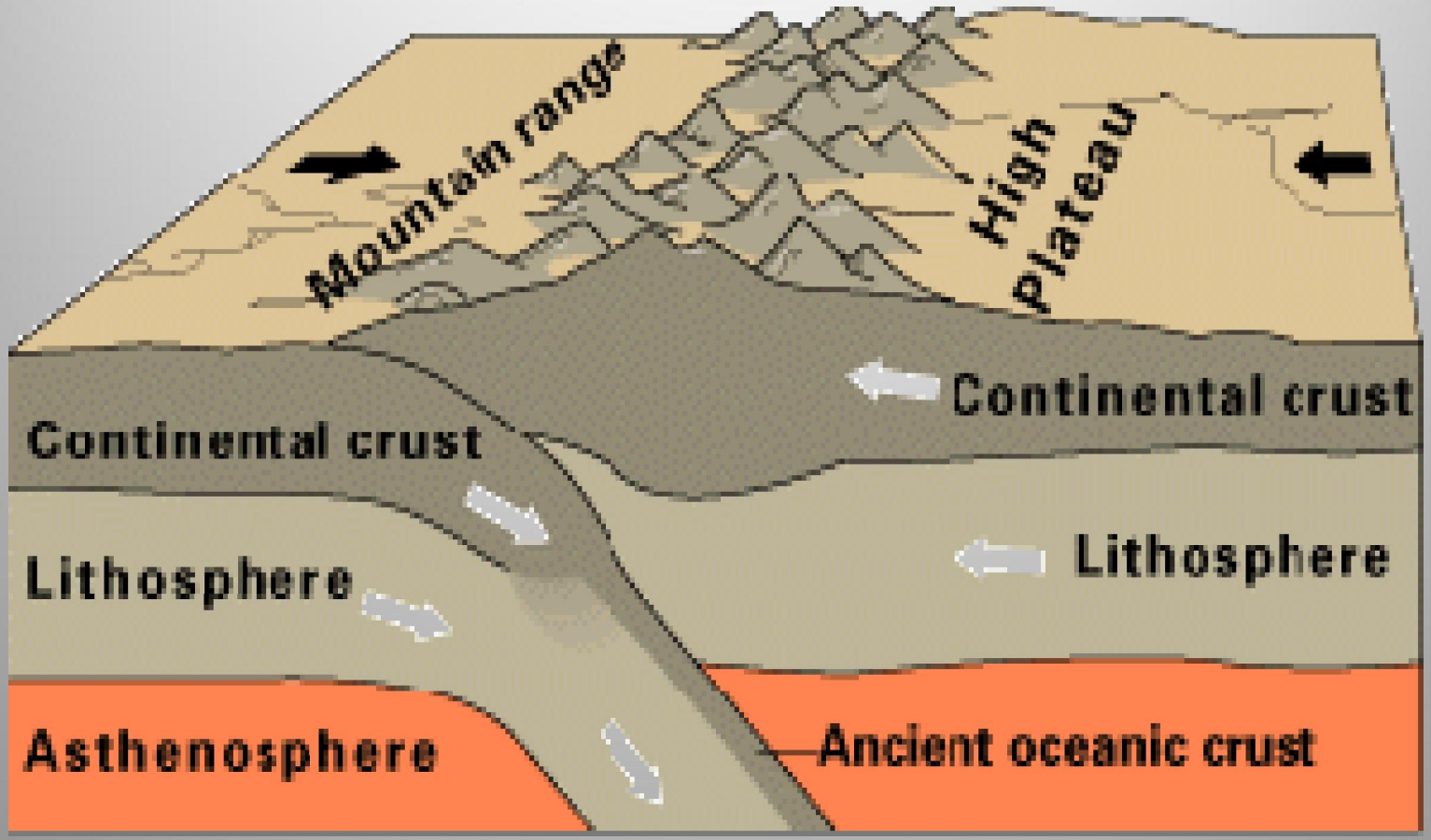
Continental/Oceanic Boundary



- Continental/continental
  - Colliding edges are crumpled and uplifted producing mountain ranges
  - Neither will subduct
  - Not volcanic
  - Ex. NC + Africa → Appalachian Mtns.

    India + Eurasia → Himalayas

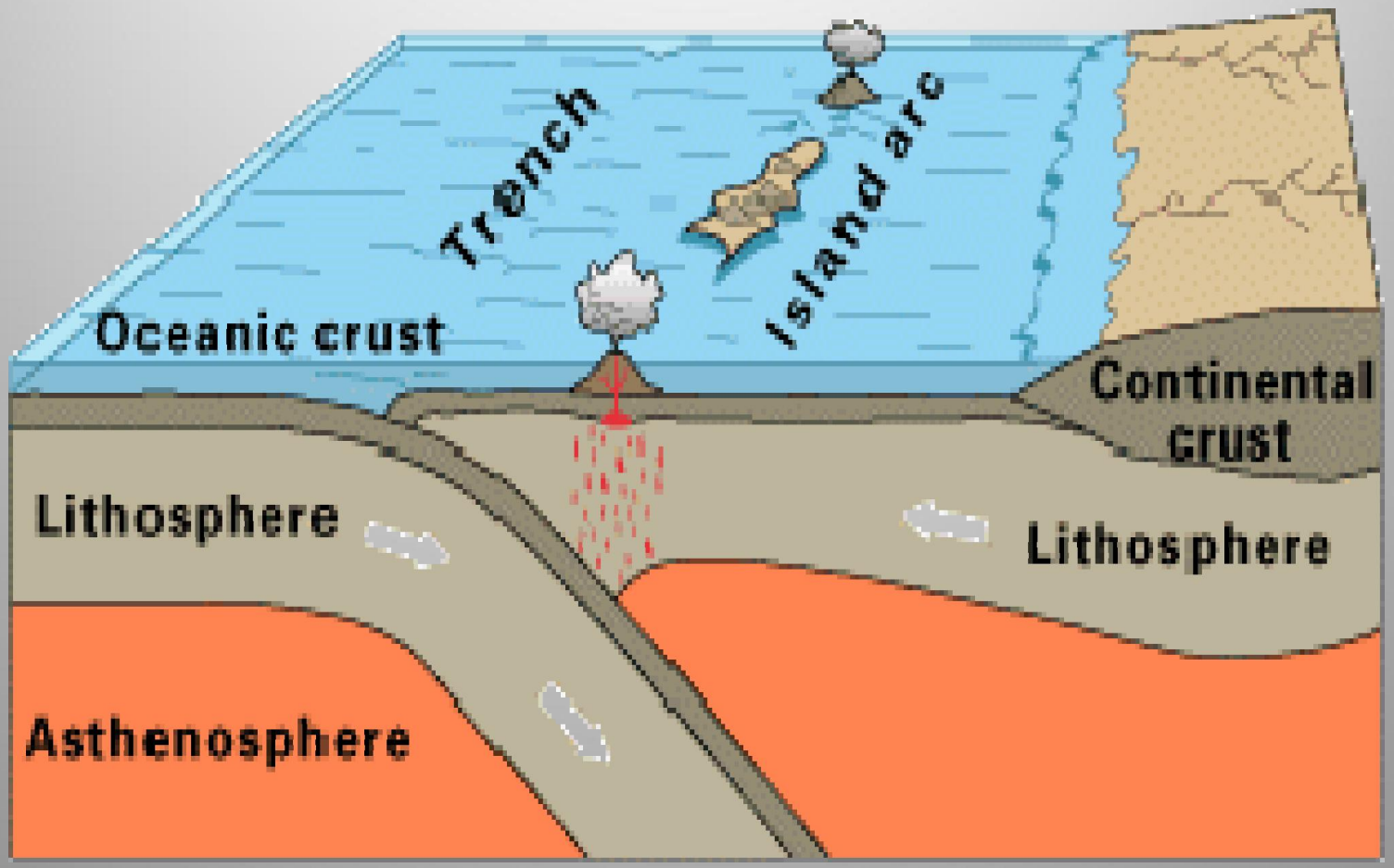
Continental/Continental Boundary



Continental-continental convergence

- Oceanic/Oceanic
  - One of the plates must subduct under the other
  - Features: trenches, volcanic island arcs
  - Ex. Japan, Philippines, West Indies

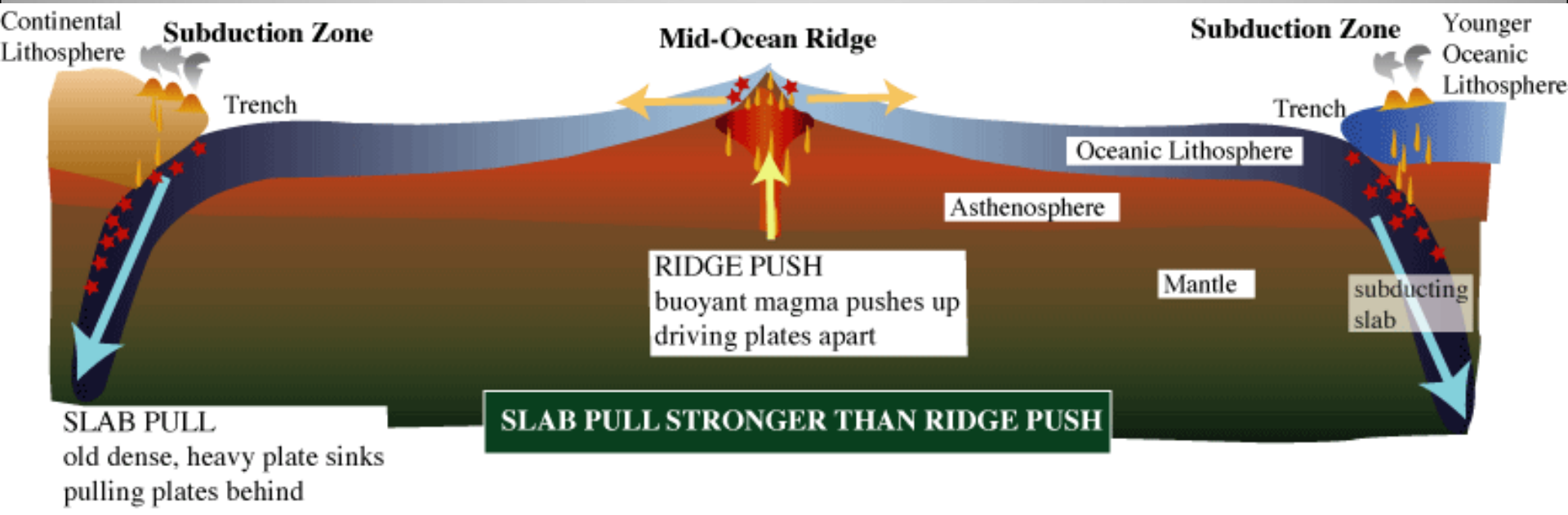
Oceanic/Oceanic Boundary



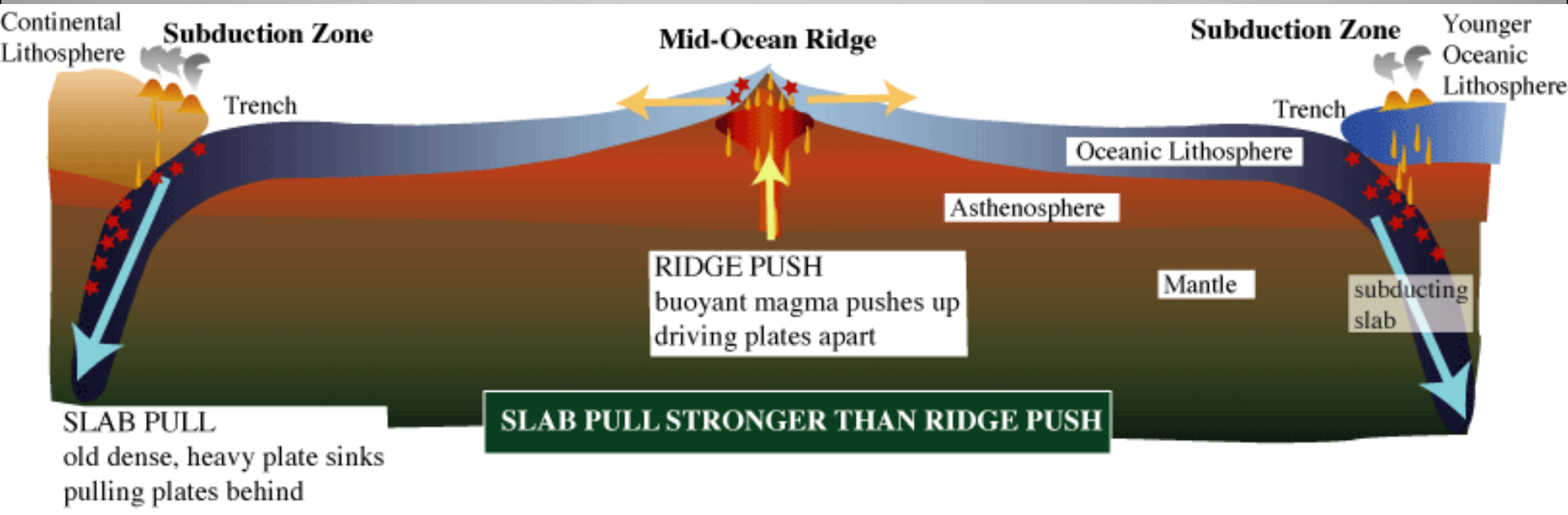
Oceanic-oceanic convergence

Ridge Push

- Ridge-push occurs when the weight of the ridge pushes the rest of the tectonic plate away from the ridge, often towards a subduction zone.



- At the subduction zone, “gravity-pull" (slab-pull) comes into effect.
- This is simply the weight of the tectonic plate being subducted (pulled) below the overlying plate dragging the rest of the plate along behind it.



Transform Fault Boundaries

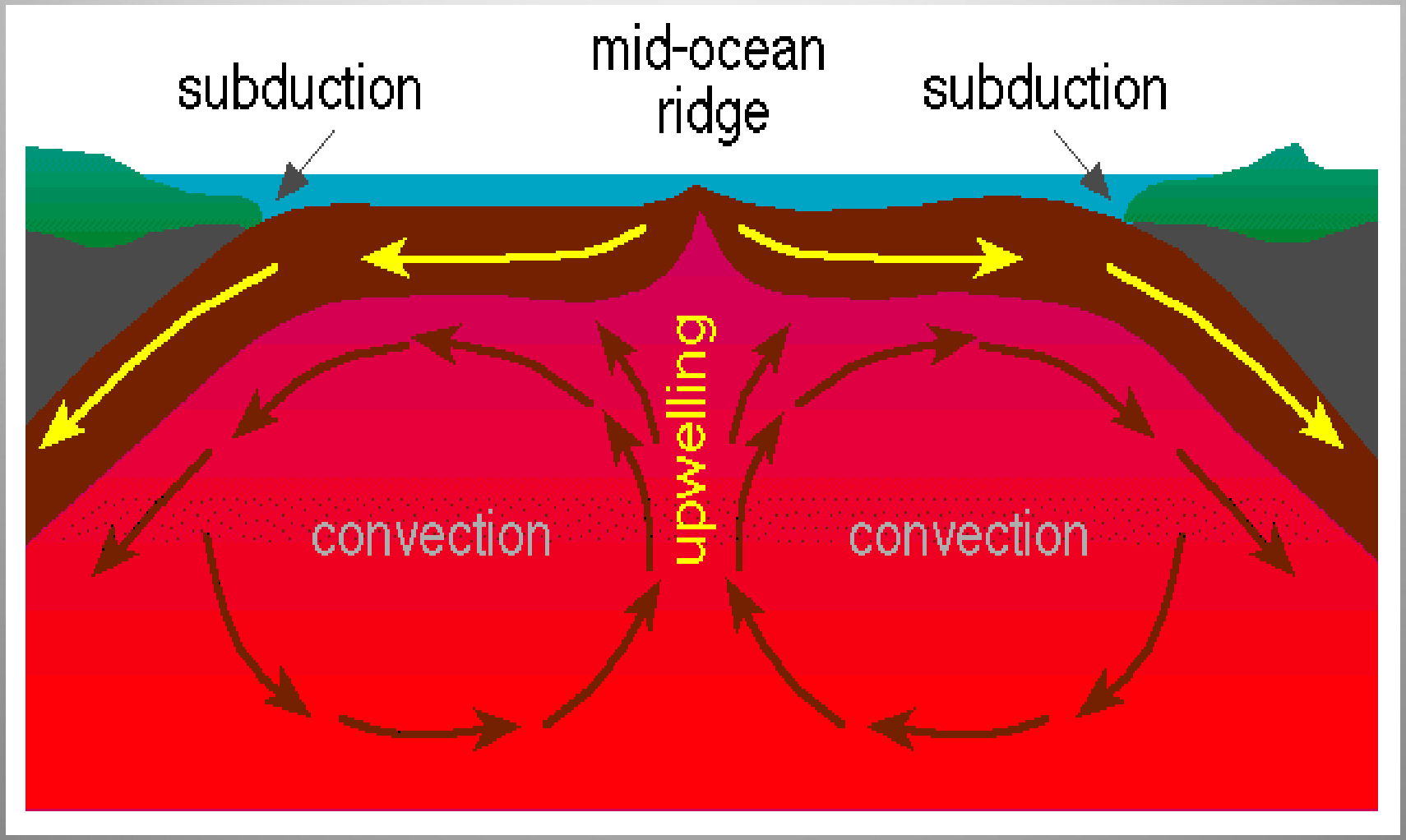
- 2 plates scrape past each other
- Features: Earthquakes, Strike/slip fault
- Ex. San Andreas Fault, also found as connectors of mid-ocean ridges

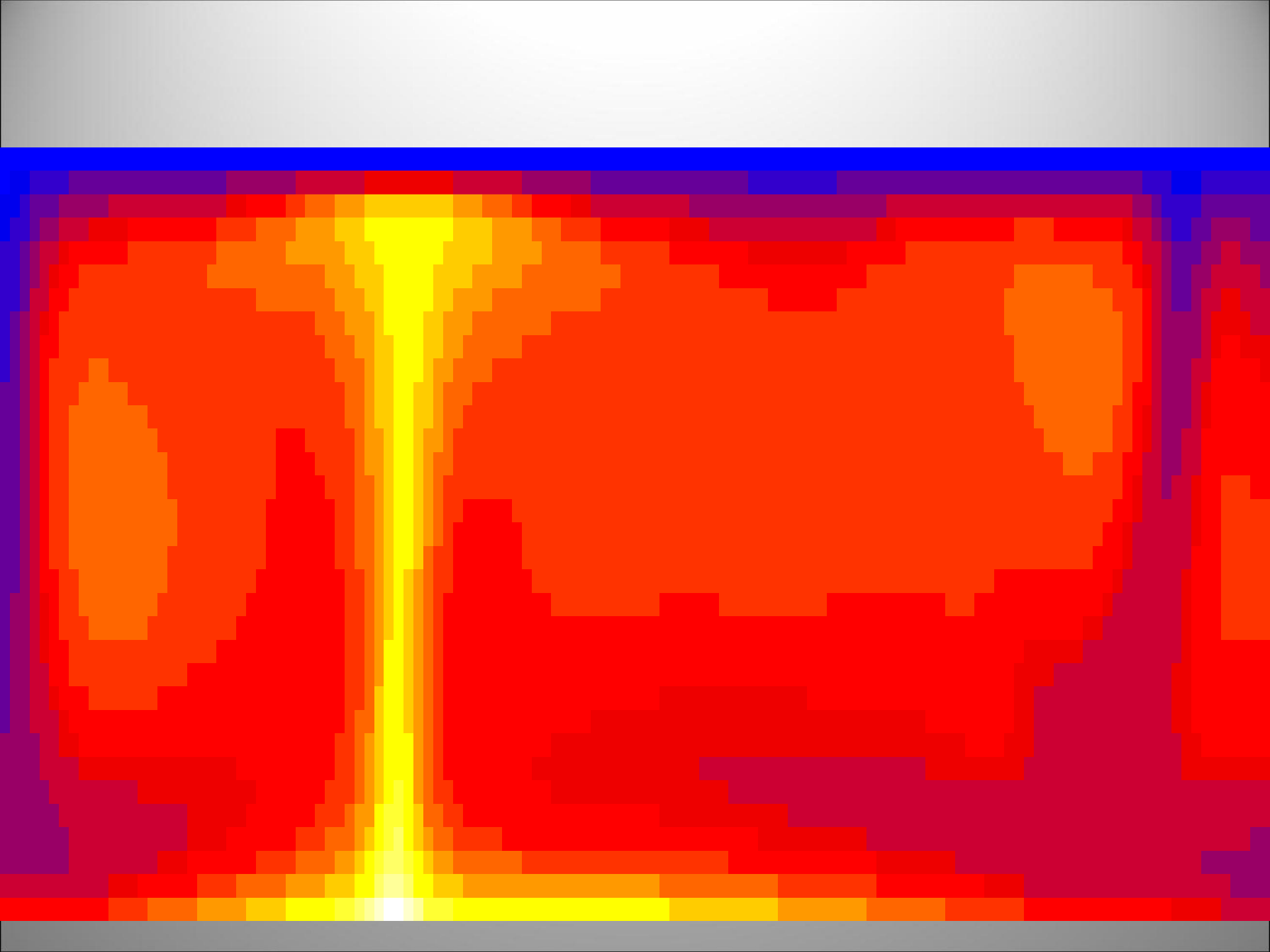
Transform Boundaries

What causes plates to move?

- Convection currents: cycle of hot material rising, cool material sinking.
  - Heat from the core causes magma to rise to the asthenosphere and move along the boundary of the asthenosphere and the lithosphere.
  - As the magma cools, it sinks toward the core.
  - This slow cyclic movement causes the plates to move like groceries on a conveyor belt.

Convection in the Mantle





Type of Boundary	Sketch of Boundary	Direction of movement	Description/ Features	Examples
Divergent				
Transform				
Convergent- C/C				
Convergent- O/O				
Convergent- C/O				