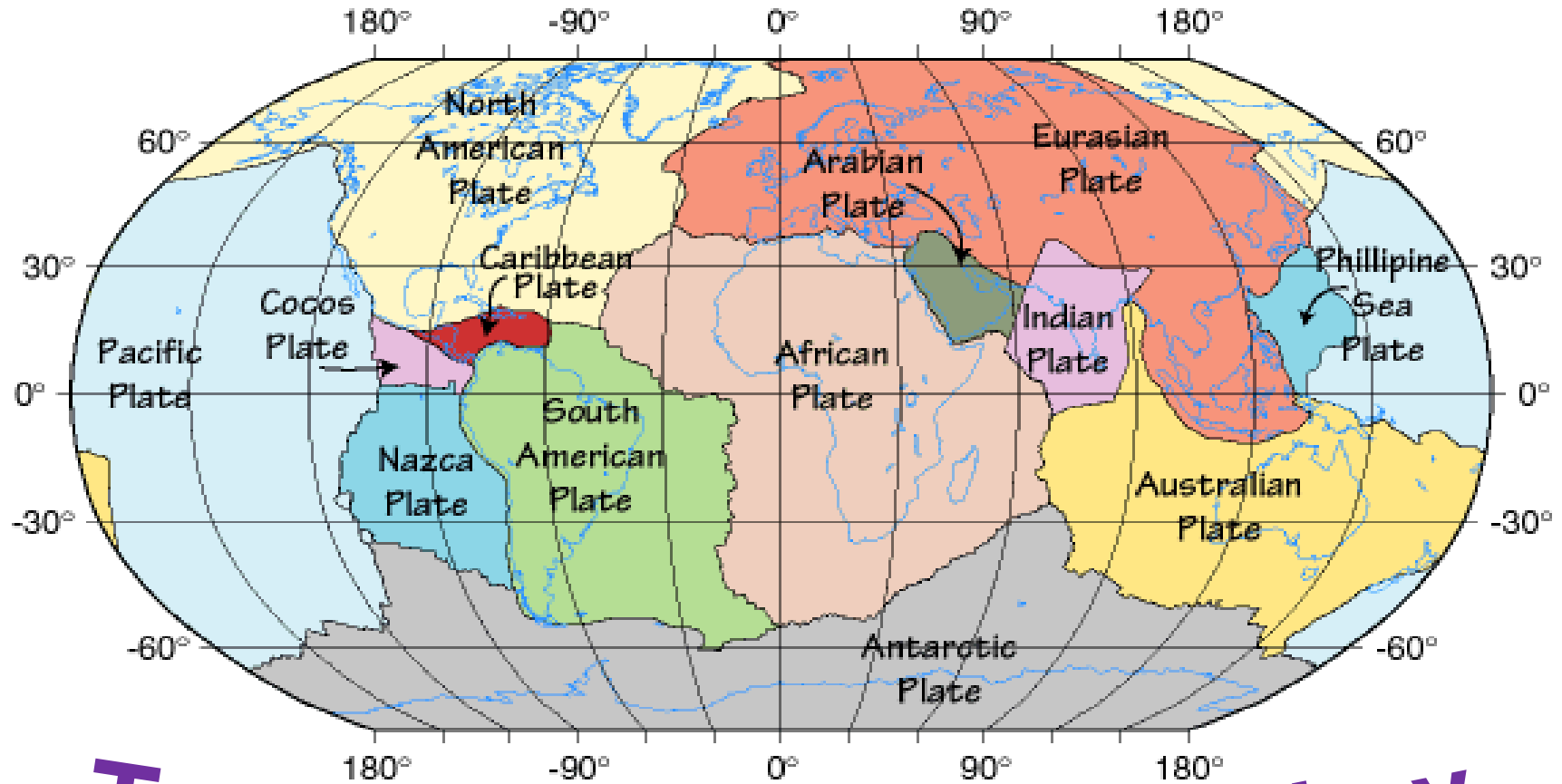


Lithosphere Part 2



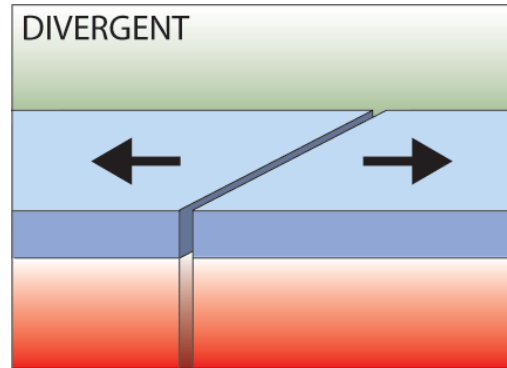
**Tectonic
Plates**

and

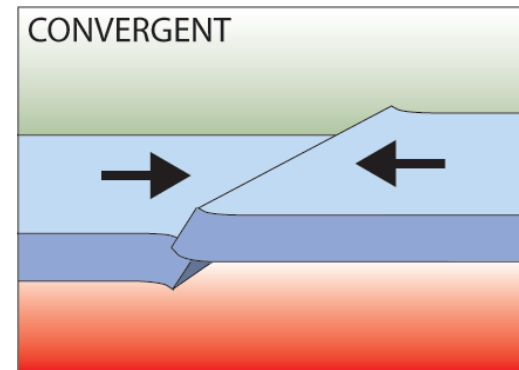
**How They
Move**

Three types of plate boundary

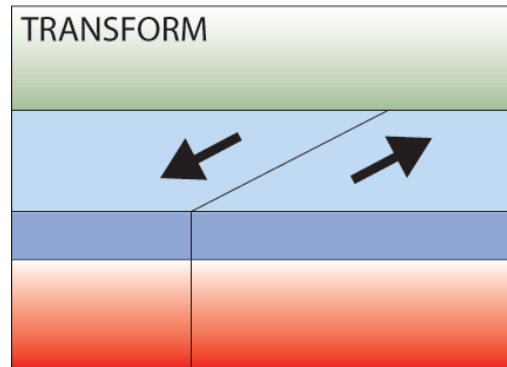
- **Divergent**



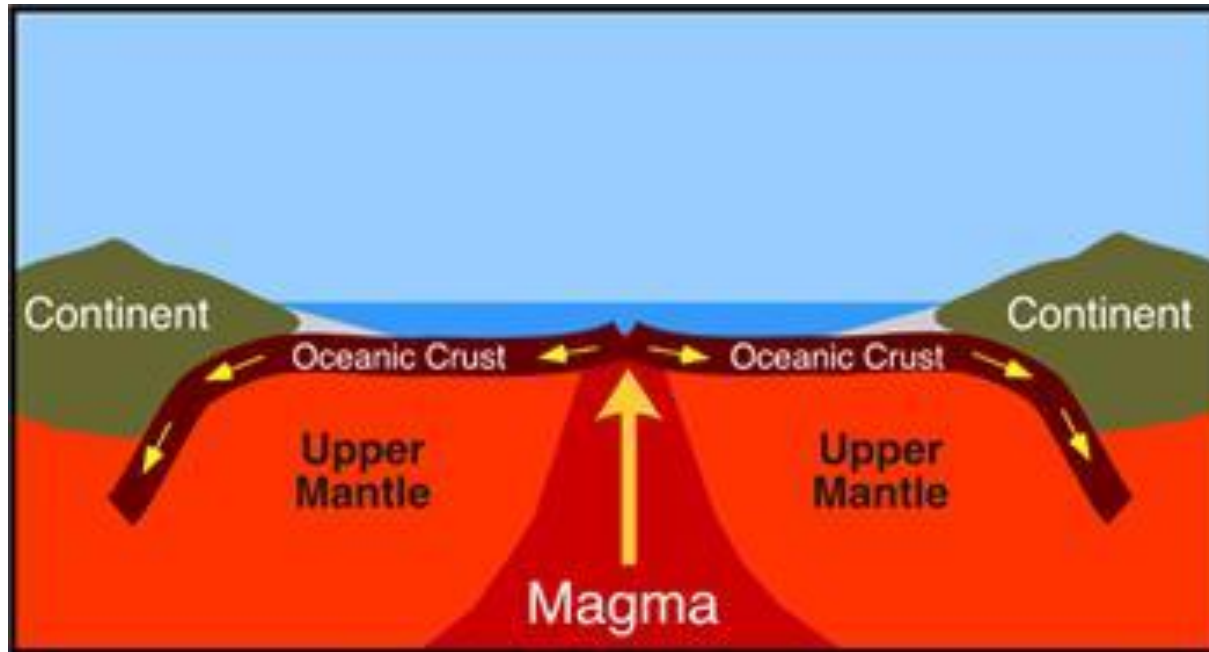
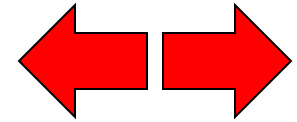
- **Convergent**



- **Transform**



Divergent Boundaries

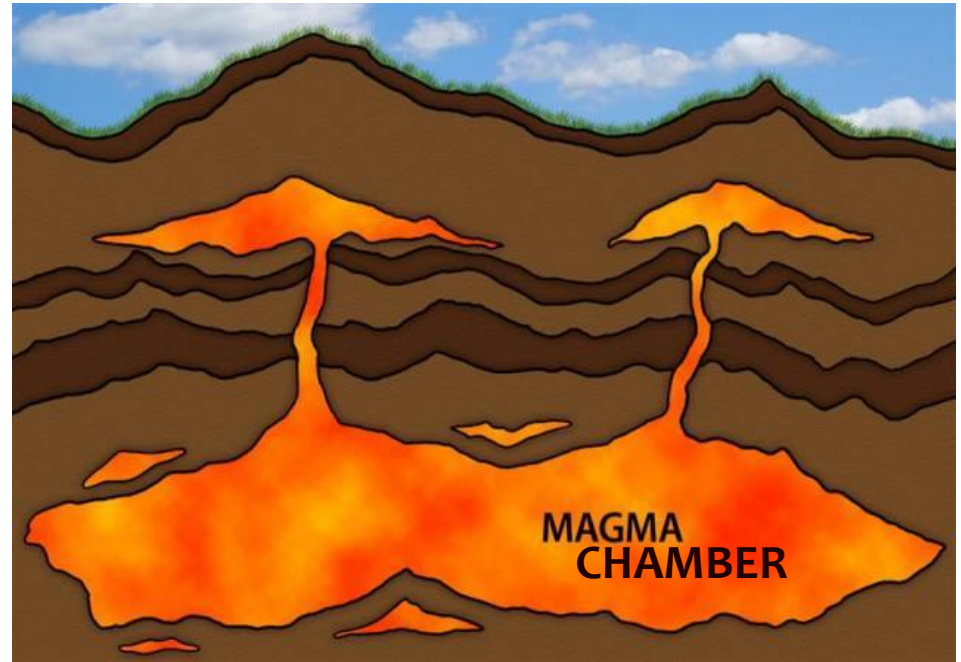
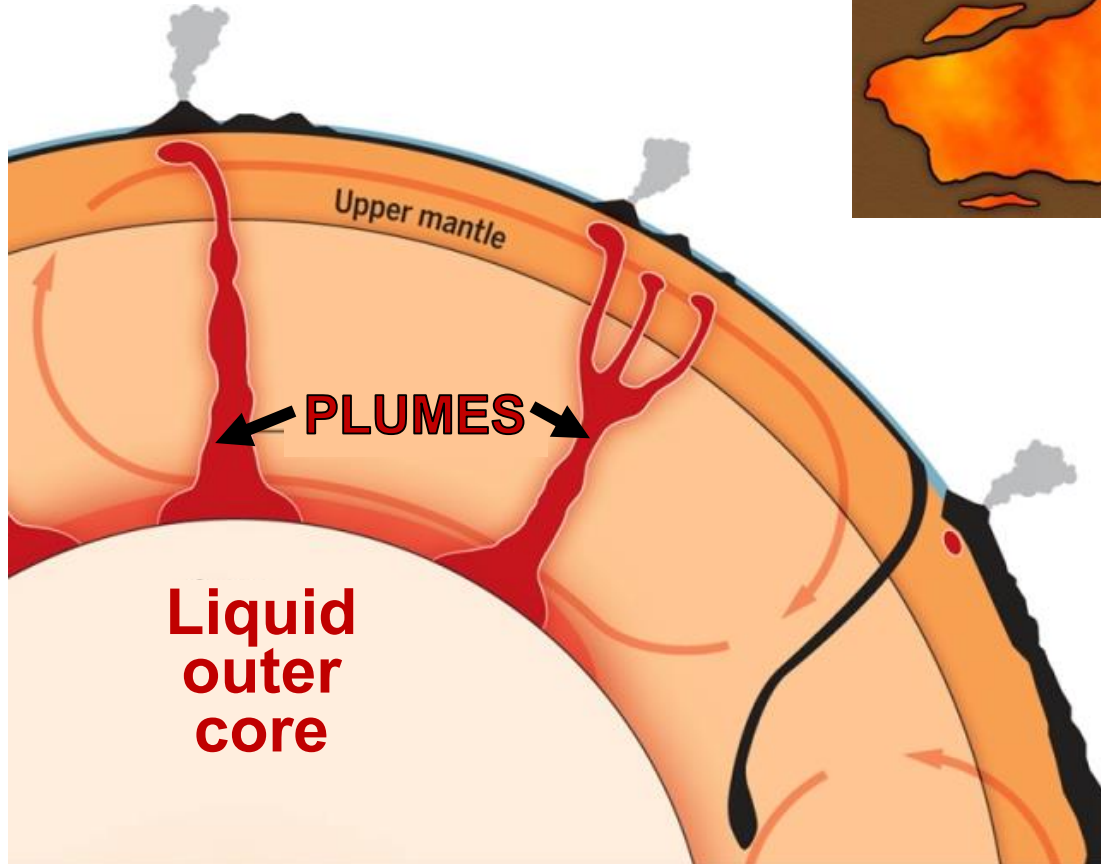


- Spreading ridges:
 - as plates **move apart**, new material is **erupted** to fill the gap
 - young crust is formed

**What is
magma
and where
does it come
from?**

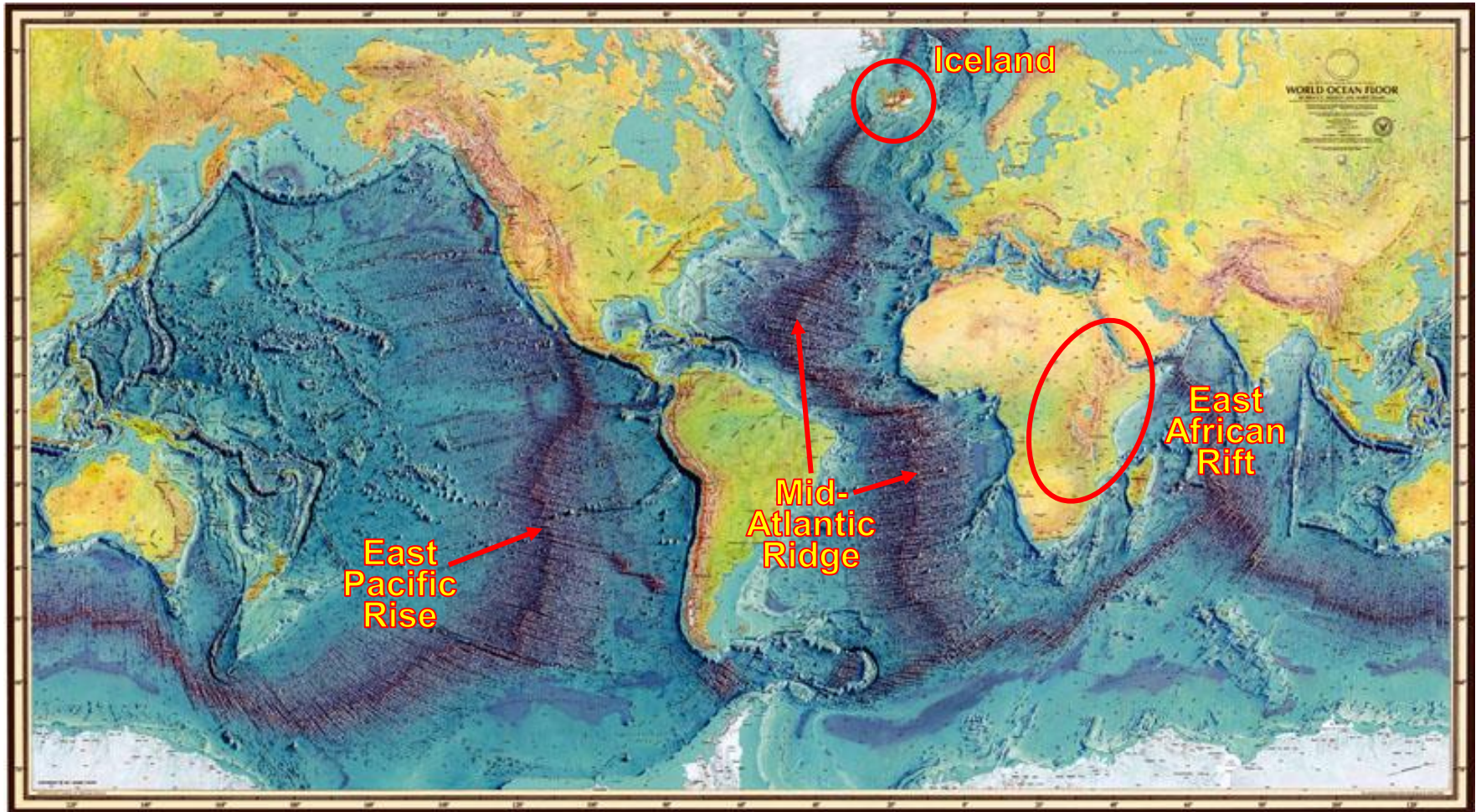
Magma

- Partially molten rock found in high temperature, low pressure environments beneath the Earth's surface.



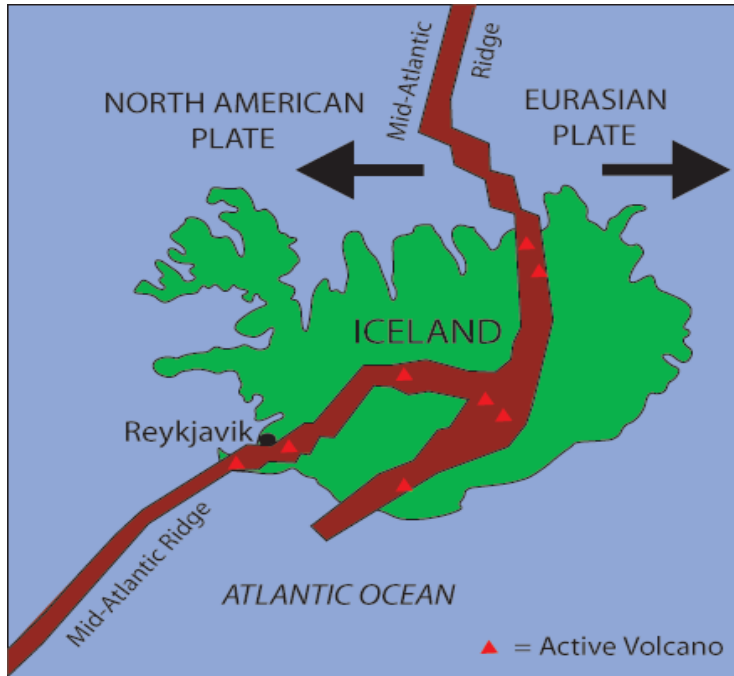
- Develops and collects in **magma chambers** usually within several miles of the Earth's surface.
- May also rise in **mantle plumes** directly from the outer core/mantle boundary.

World's Ocean Ridges and Continental Rifts



The ocean floor is not flat! It has well-pronounced **mountain ridges** running along the spreading plate boundaries.

Iceland: an example of continental drift

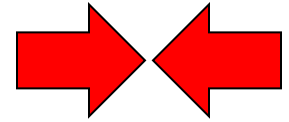


Iceland has a ***divergent plate boundary*** running through its middle.

In fact, the island exists because of this feature!



Convergent Boundaries

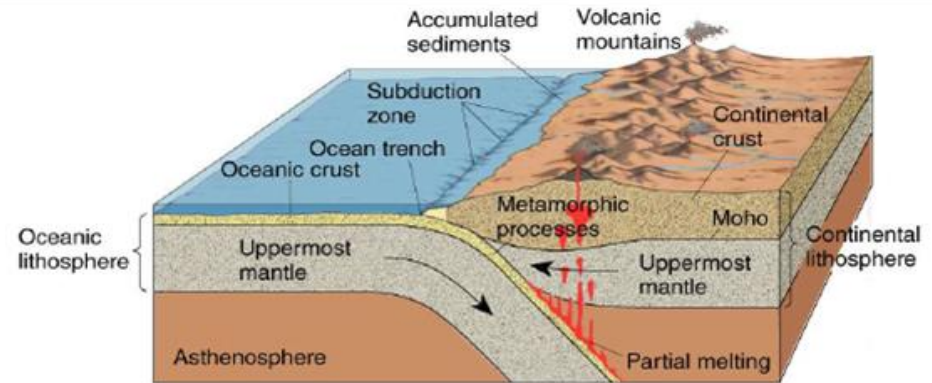


Three types:

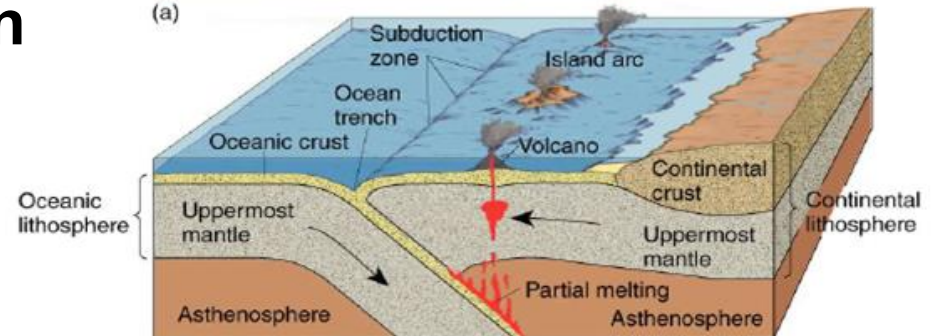
- a) **Continent-oceanic** crust collision
- b) **Ocean-ocean** collision
- c) **Continent-continent** collision

Convergent boundaries are also called destructive plate boundaries.

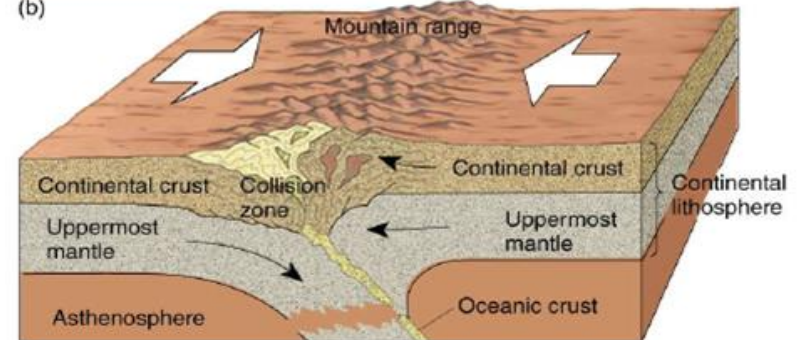
Why?



(a)

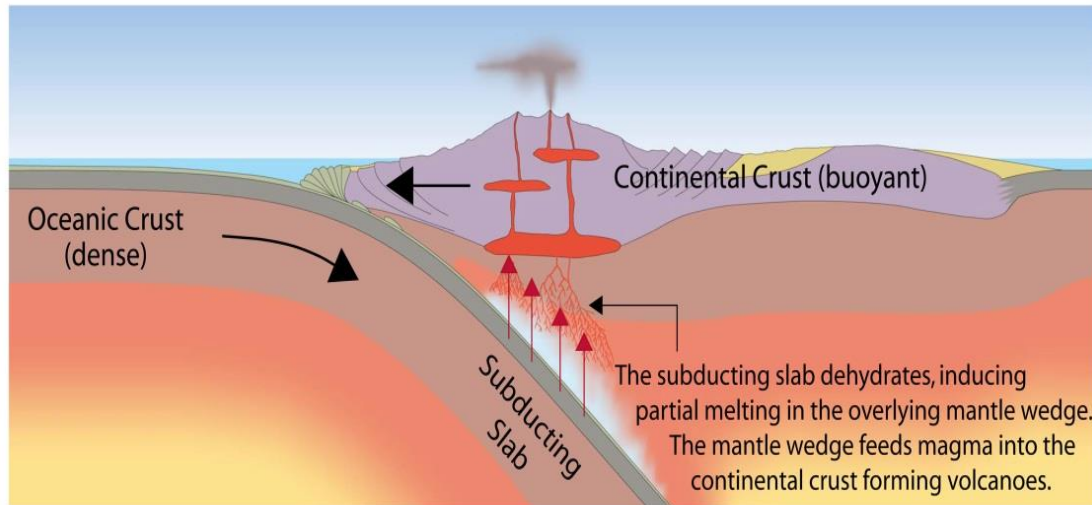


(b)



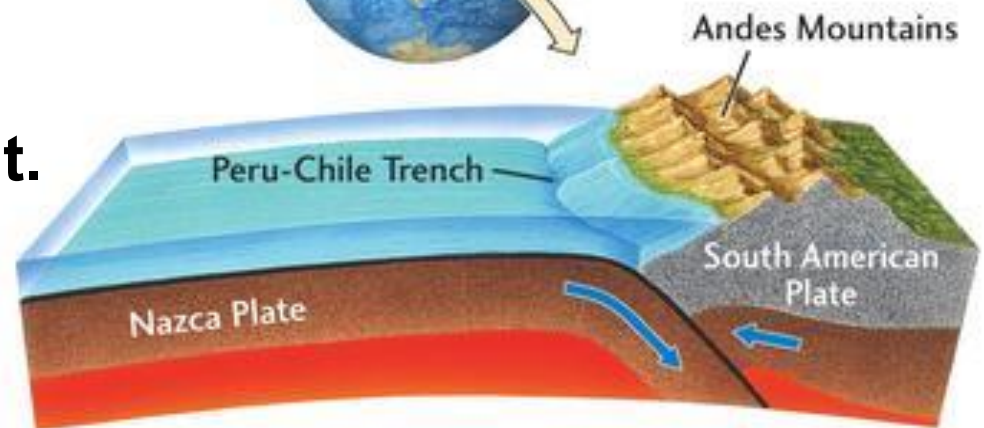
(c)

Continent-Oceanic Crust Collision



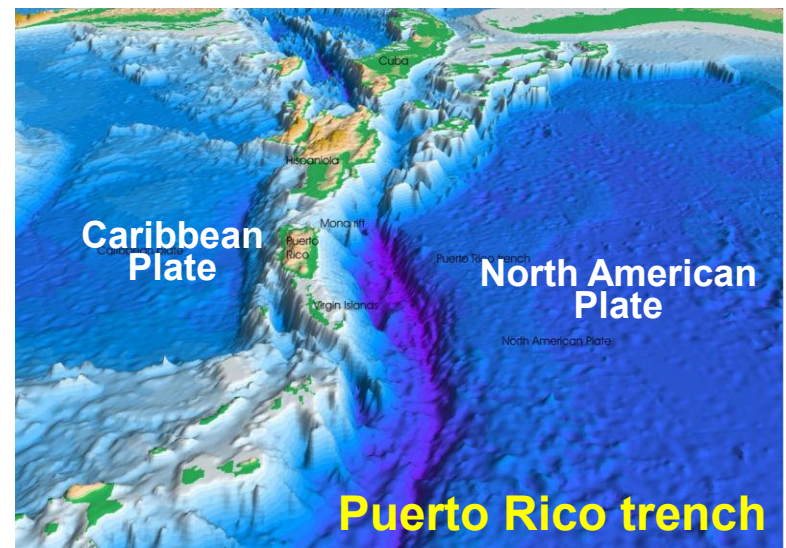
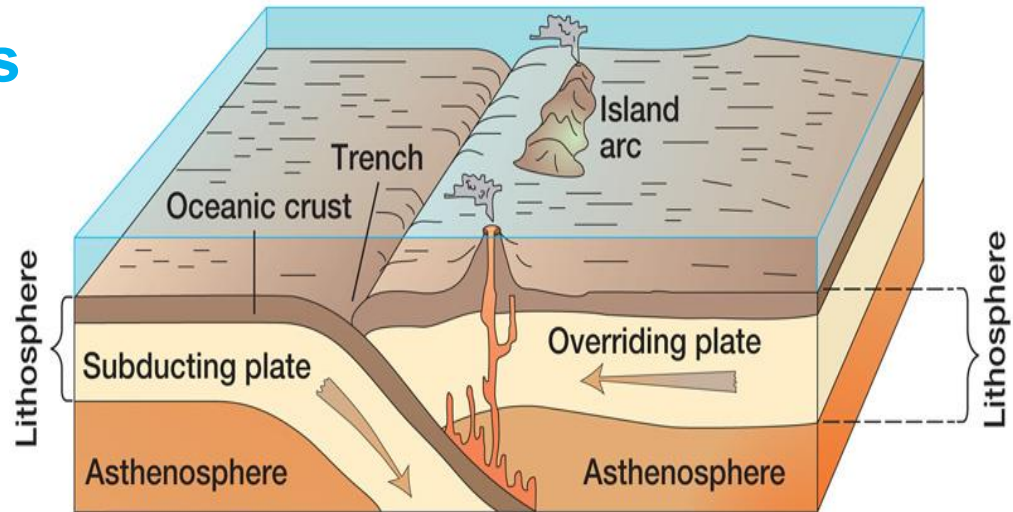
“Subduction” -
the *denser plate*
moves under the
less dense one

- **Oceanic** lithosphere subducts underneath the **continental**.
- As it subsides, oceanic lithosphere slab heats and induces mantle melt.
- This results in **volcanic** mountains formation (example: The Andes).



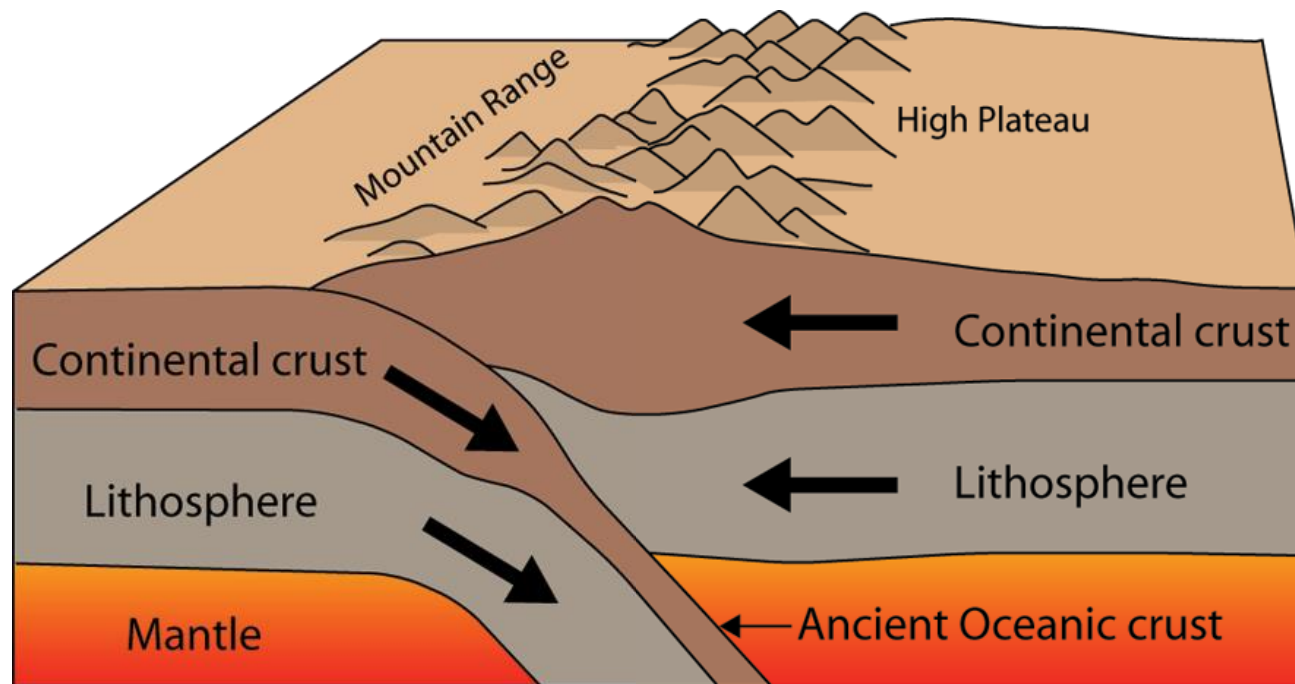
Ocean-Ocean Plate Collision

- When **two oceanic plates** collide, the **younger one runs over the older one** which causes it to sink into the mantle forming a subduction zone.
- The subducting plate is bent downward to form a **very deep depression** in the ocean floor called a trench.
- Volcanic island arc is usually formed fairly close to, but not right next to, the trench.
(ex: Mariana Islands, Aleutian Islands, Solomon Islands, Lesser Antilles)



Continent-Continent Collision

- **Plates push against each other**
the crust buckles and cracks, pushing up (and down into the mantle)

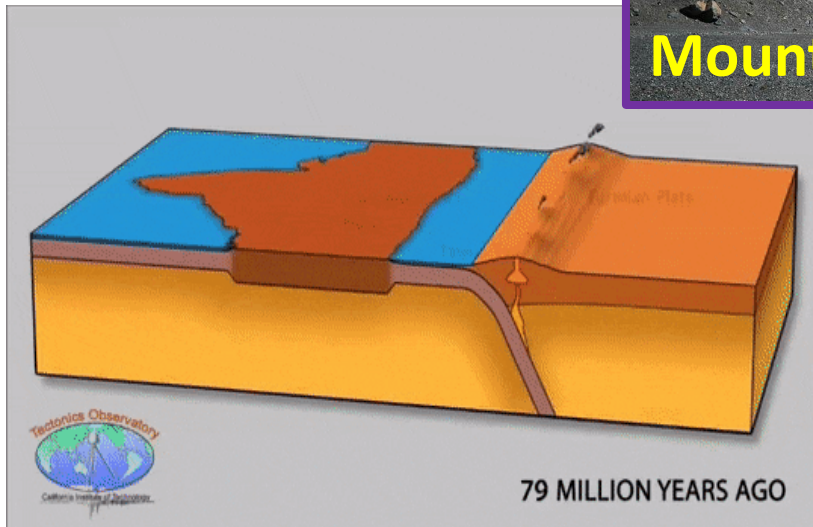


- **Forms mountains (European Alps, Himalayas) and high plateaus**

Himalayan Range is home to more than **one hundred mountains exceeding 7,200 m (23,600 feet)** in elevation, and **all the planet's peaks exceeding 8,000 m**, including the highest, **Mount Everest**.



Mount Everest



Currently standing at **8,848.86 m (29,031.7 ft)**
Mount Everest still *grows* **~4 mm/year!**

