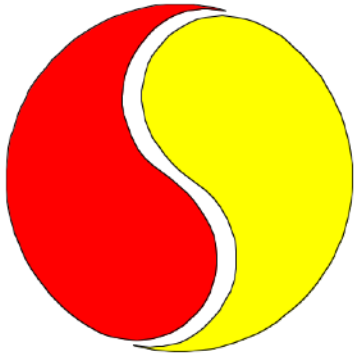
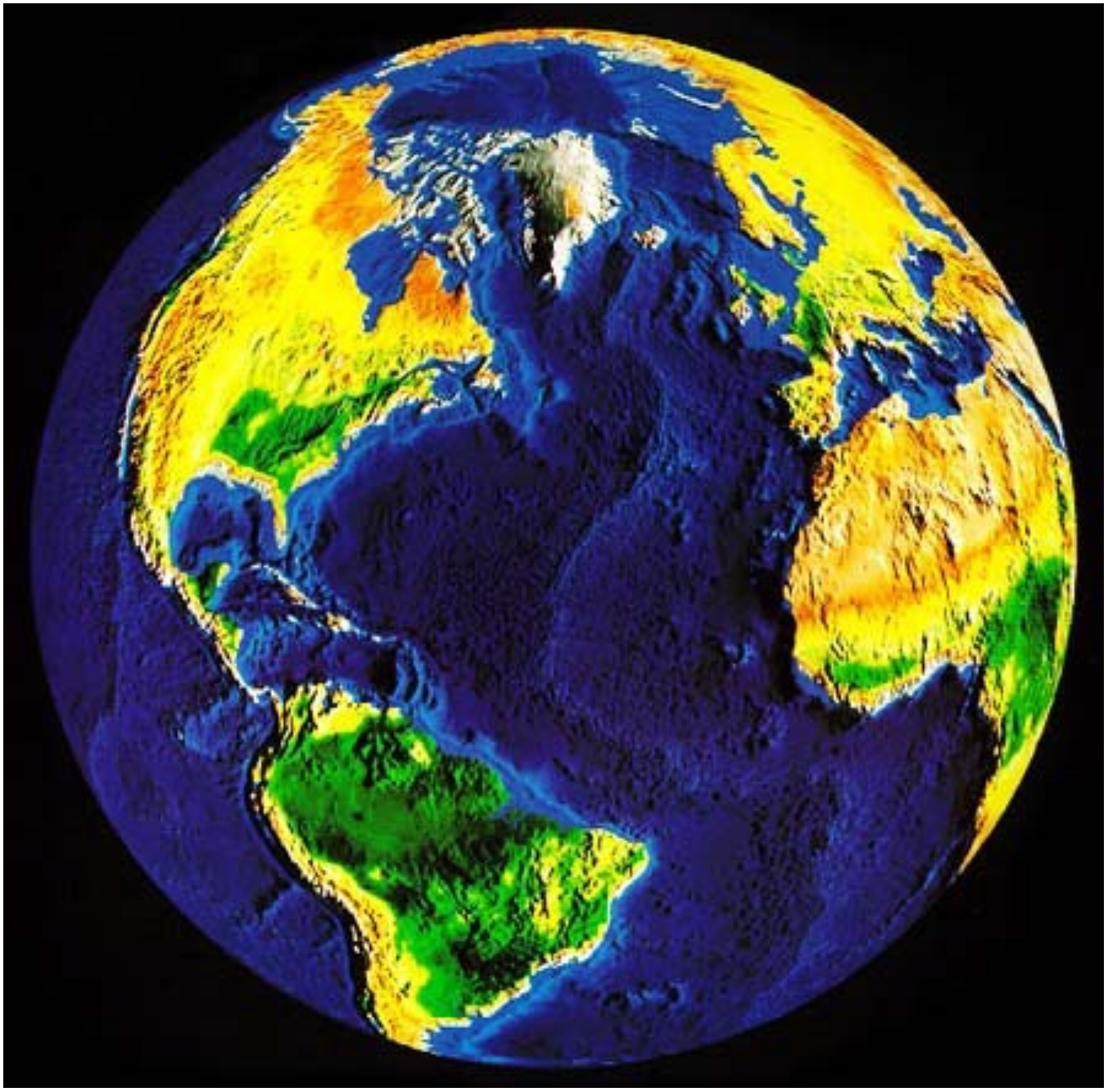
# Vashon Rocks!

By Steve Bergman
Vashon Teach-In 17 Oct 2020

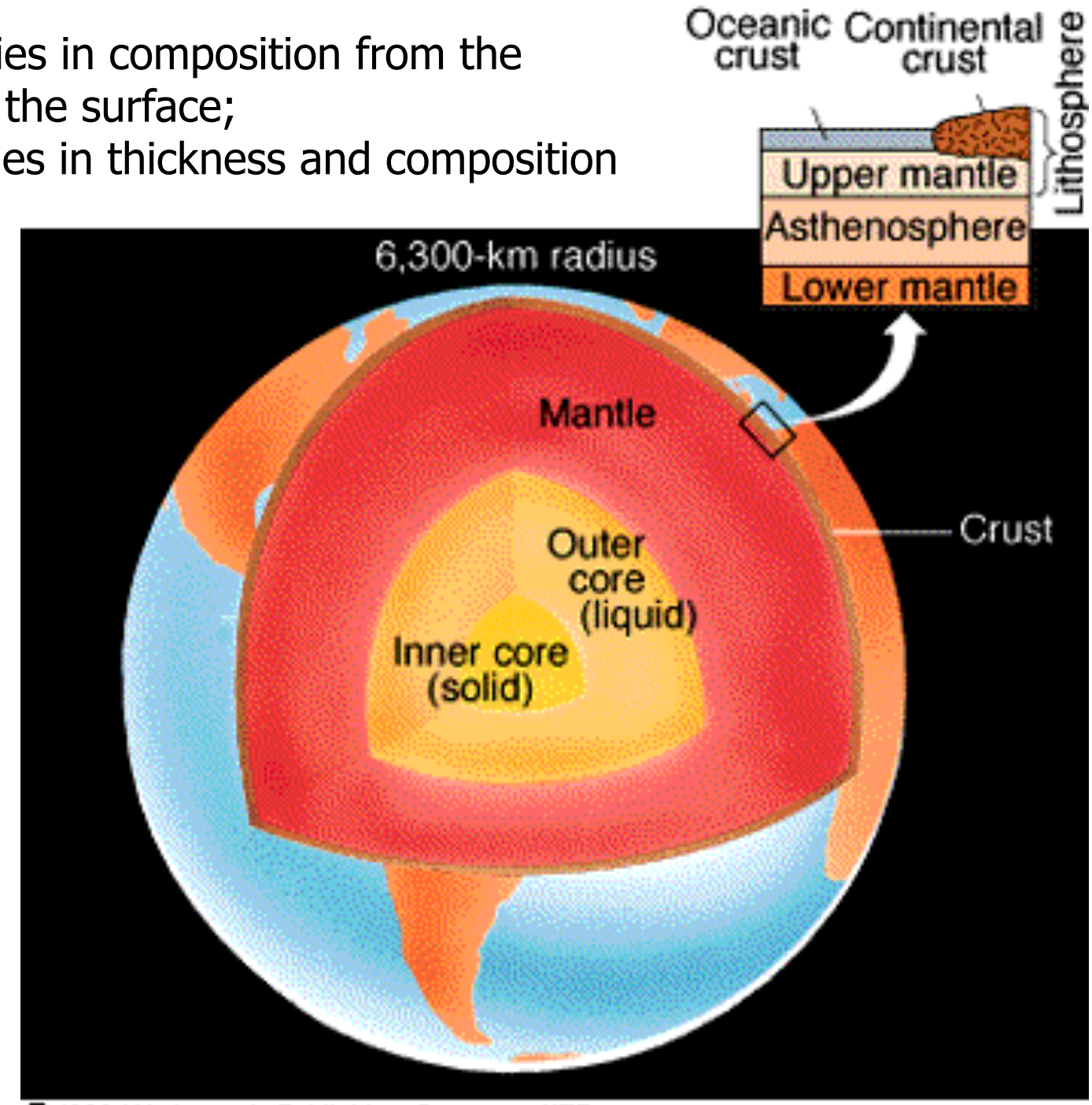
***Extra Slides***

Why does Earth have Oceans & Continents?

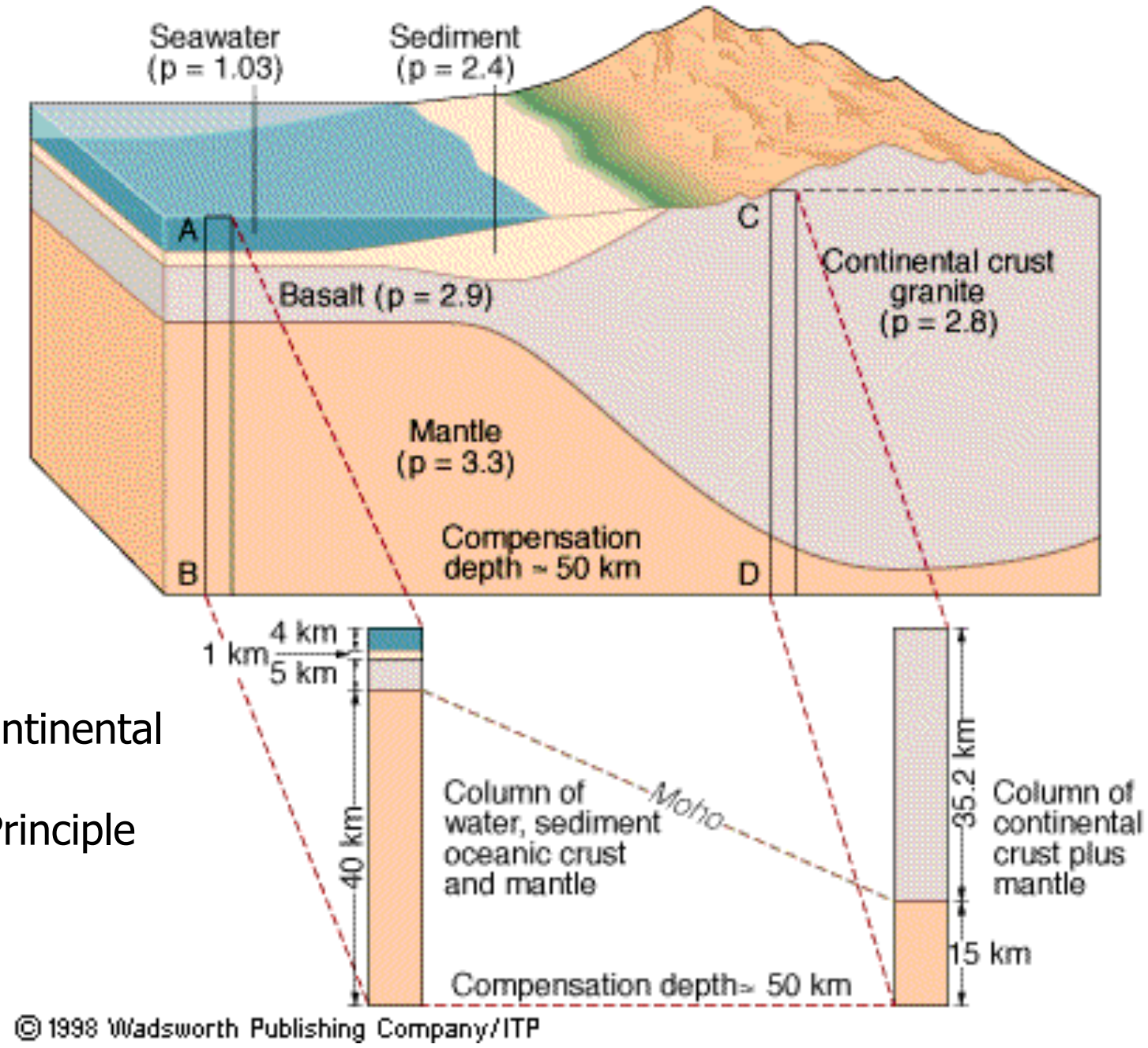




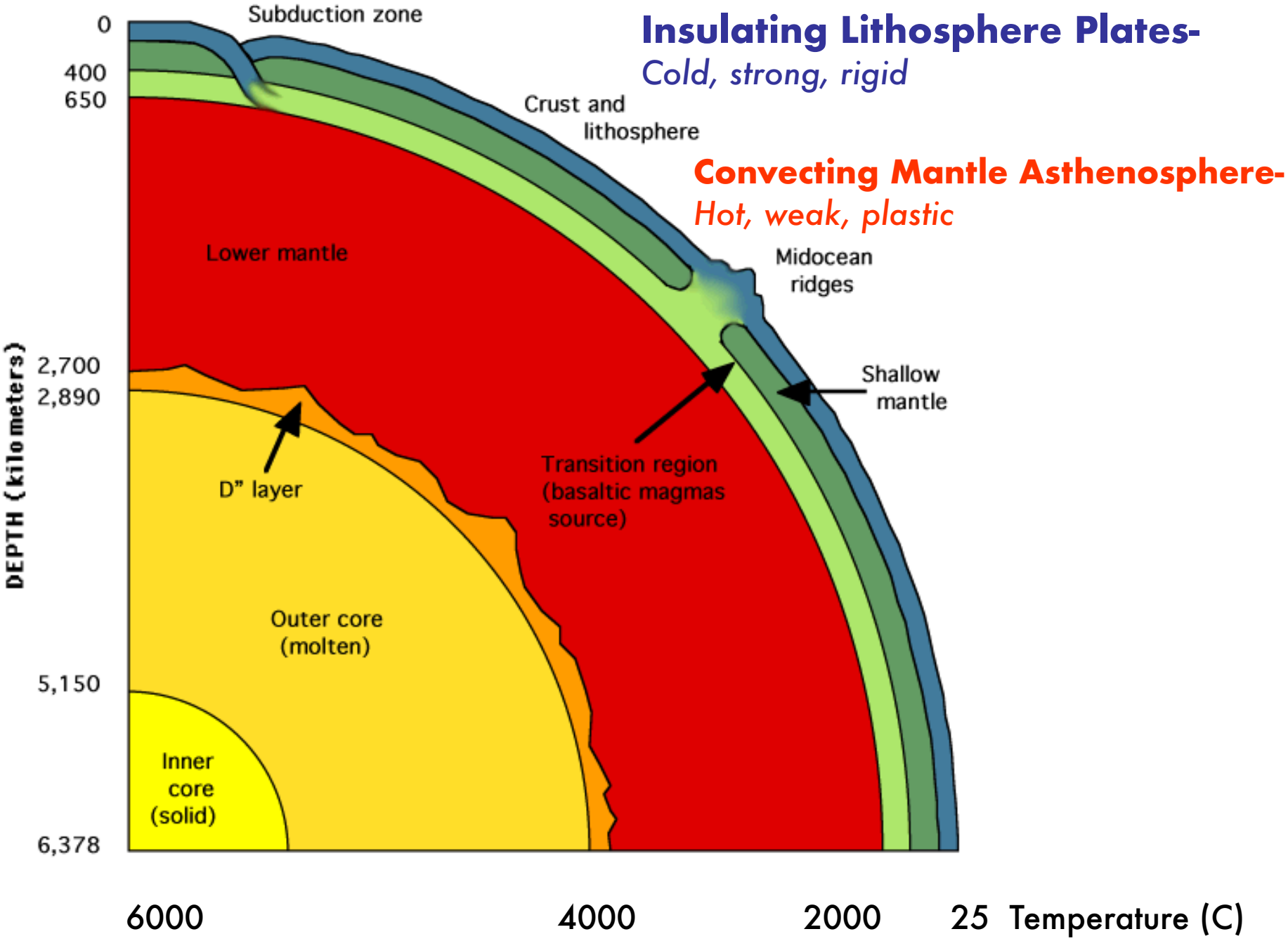
Earth varies in composition from the center to the surface;
Crust varies in thickness and composition

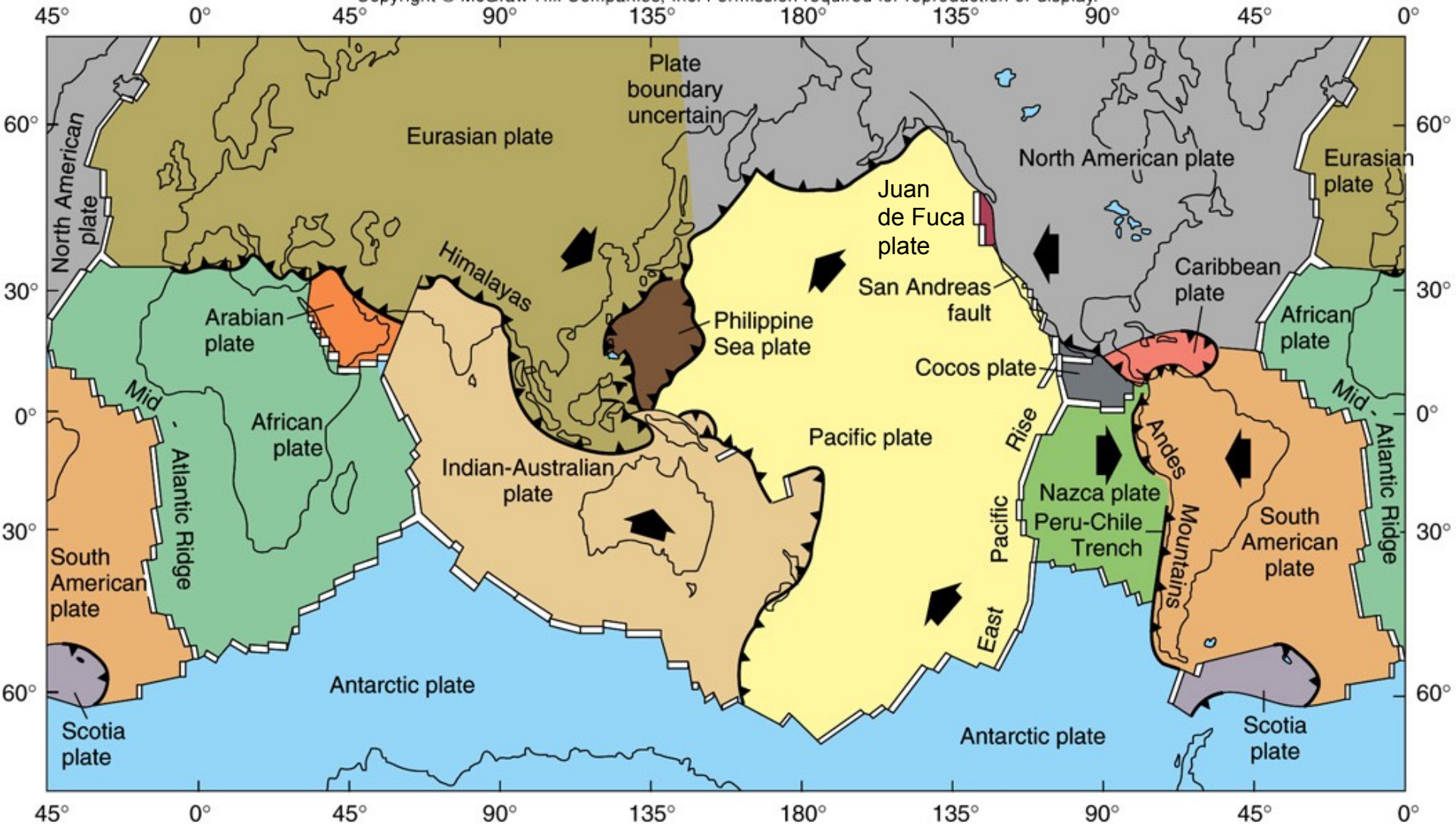


Oceanic crust is thinner and denser than Continental Crust (on average)



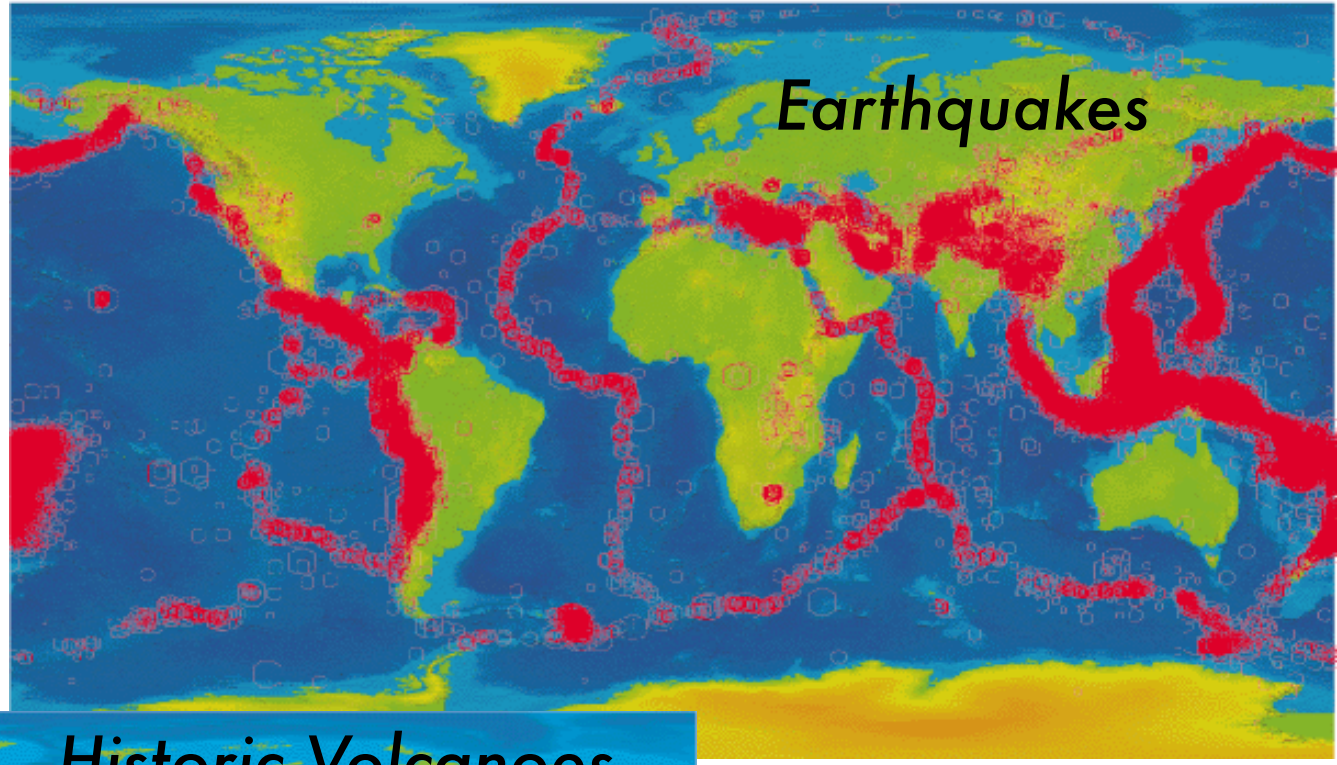

Oceanic & Continental Crust obey Archimedes Principle

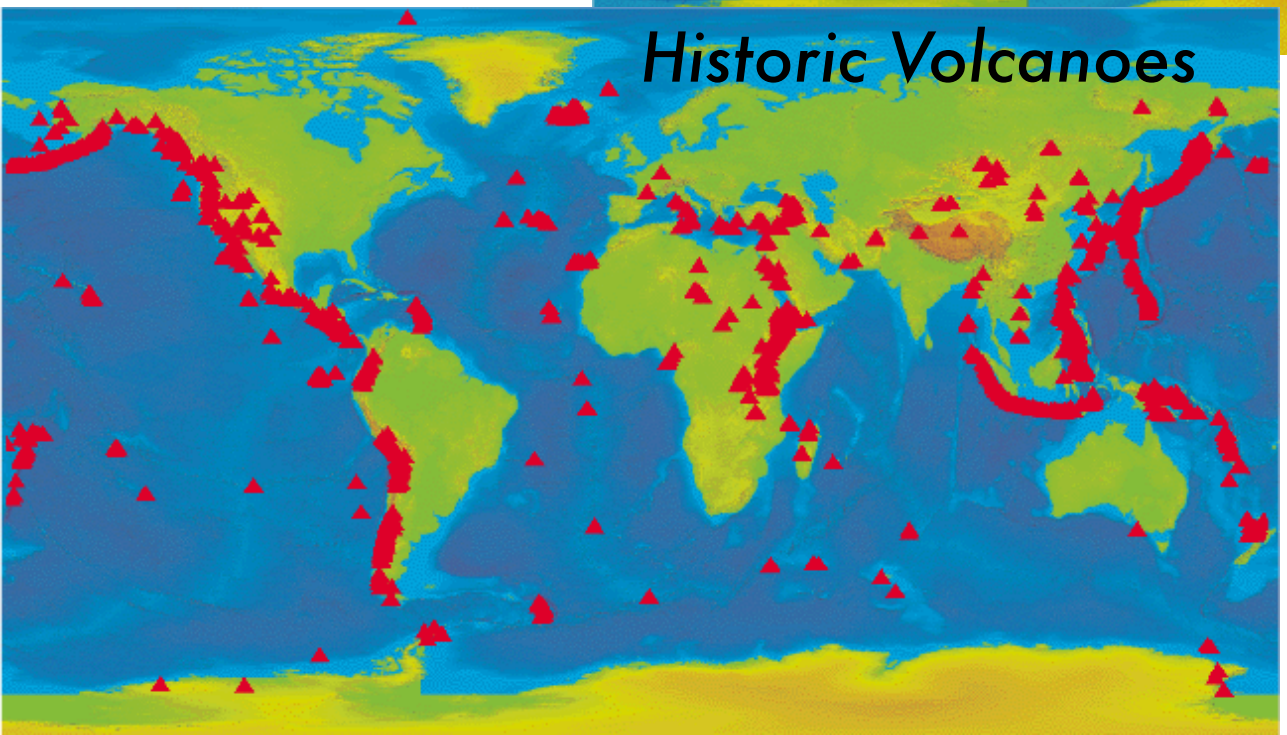

Insulating Lithosphere Plates-
Cold, strong, rigid
Convecting Mantle Asthenosphere-
Hot, weak, plastic
Subduction zone
Crust and lithosphere
Lower mantle
Midocean ridges
Shallow mantle
Transition region (basaltic magmas source)
D" layer
Outer core (molten)
Inner core (solid)
DEPTH (kilometers)
0
400
650
2,700
2,890
5,150
6,378
6000
4000
2000
25
Temperature (C)

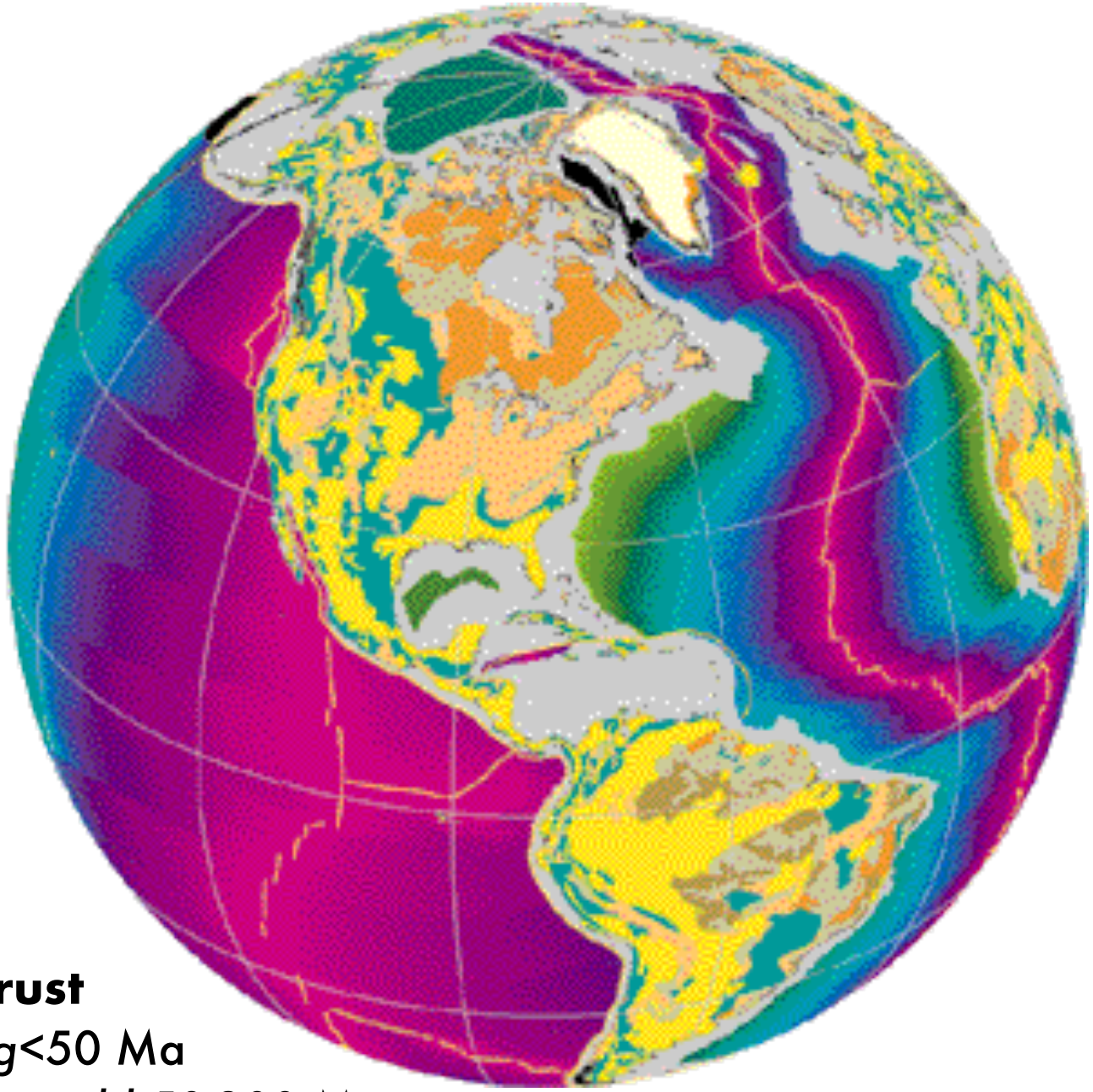



# 13 Major Plates & 3 Types of Plate Boundaries

Earthquakes & Volcanoes define plate boundaries





**Oceanic crust**

**red** - *young*<50 Ma

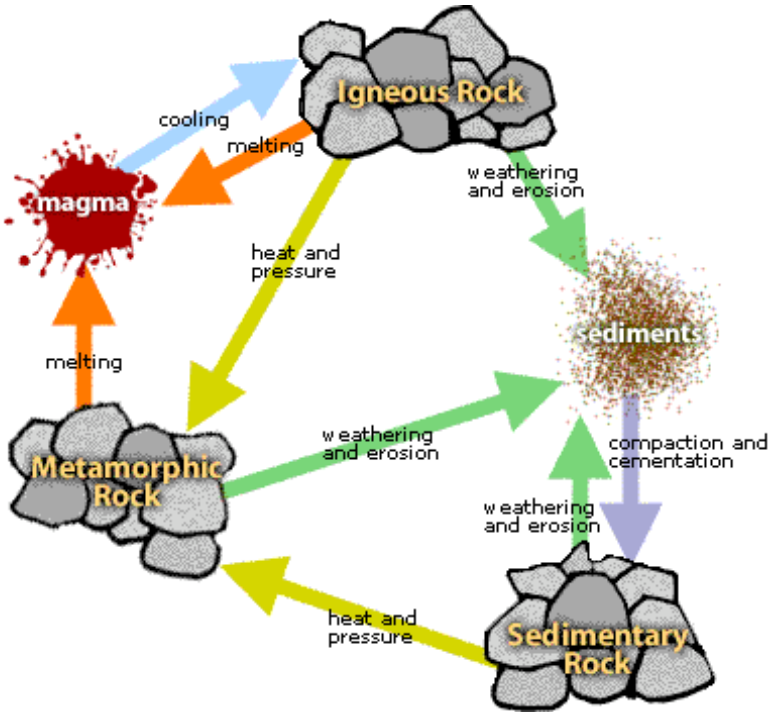
**blue-green** - *old* 50-200 Ma

# The Rock Cycle

Rocks are made of minerals; minerals are made of atoms (elements).

Rocks erode and are deposited (**sedimentary**), are buried, encounter conditions of higher temperatures and pressures and are recrystallized (**metamorphic**) or are melted and then cool (**igneous**).

This results in the formation of new minerals and new rocks, which then erode, etc., forming a continuous cycle.

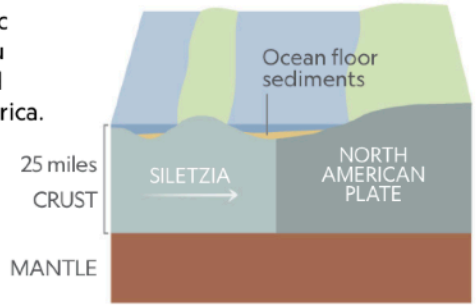


May 18, 1980
Mt. St. Helens Erupts
40 years ago (Monday)!

# Why is Mt. St. Helens Offset from the Cascade chain?

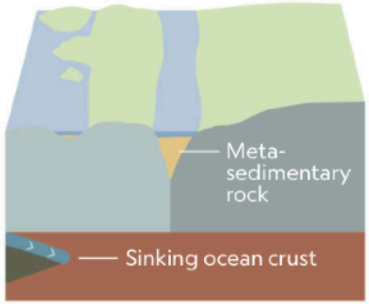
***62-56 million years ago***

Millions of years ago, tectonic plate collisions sent a plateau called Siletzia inching toward the west coast of North America.



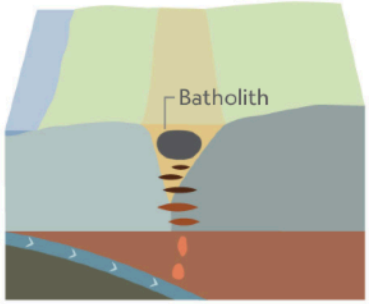

***50-44 mya***

As the ocean between the two landmasses closed, sediments from the seafloor were scraped into a heap beneath the surface and squeezed into stone. This process formed what's known as metasedimentary rock.

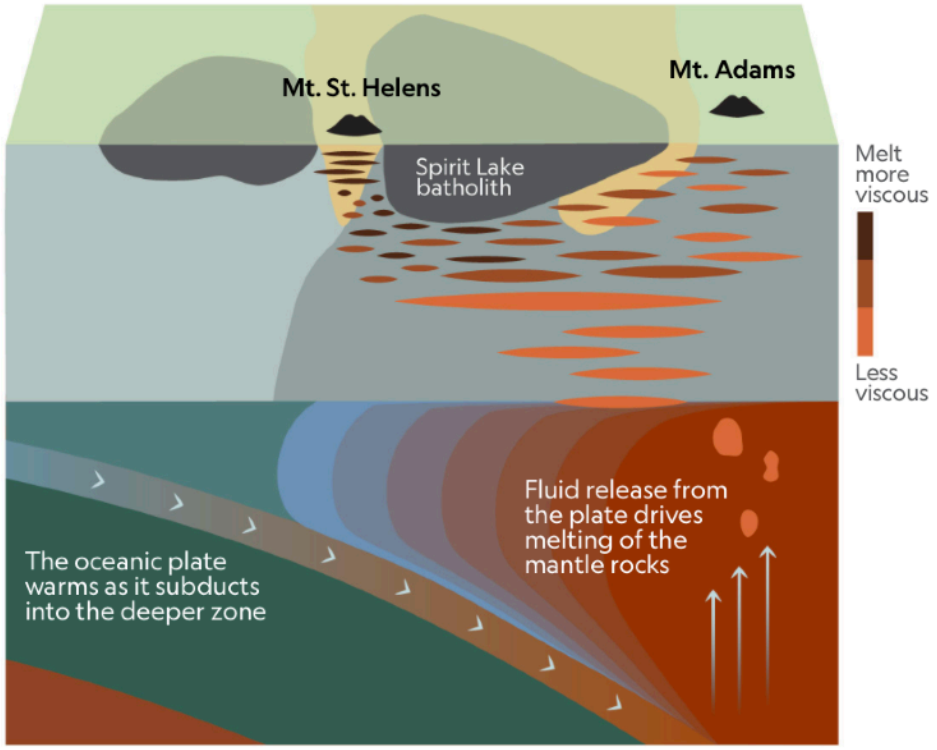



***28-18 mya***

The metasedimentary rock may have created a weak zone in the crust that helped molten rock rise to the surface. Some 20 million years ago, a massive slug of such melt pushed its way through, crystallizing and solidifying as a batholith.




***Present day***




Analyses of Mount St. Helens hint that today, the melt originates from a zone of partially molten rock to the east. The different properties of the Spirit Lake batholith and the surrounding metasedimentary rocks may alter the region's geologic stresses, guiding melt westward to the oddly offset volcano.

DIANA MARQUES, NG STAFF.
SOURCES: PAUL BEDROSIAN, USGS; ALAN LEVANDER, RICE UNIVERSITY

https://www.nationalgeographic.com/science/2020/05/mount-st-helens-isnt-where-should-be-scientists-may-finally-know-why/