

بخش 4

نظریه زمین ساخت صفحه ای

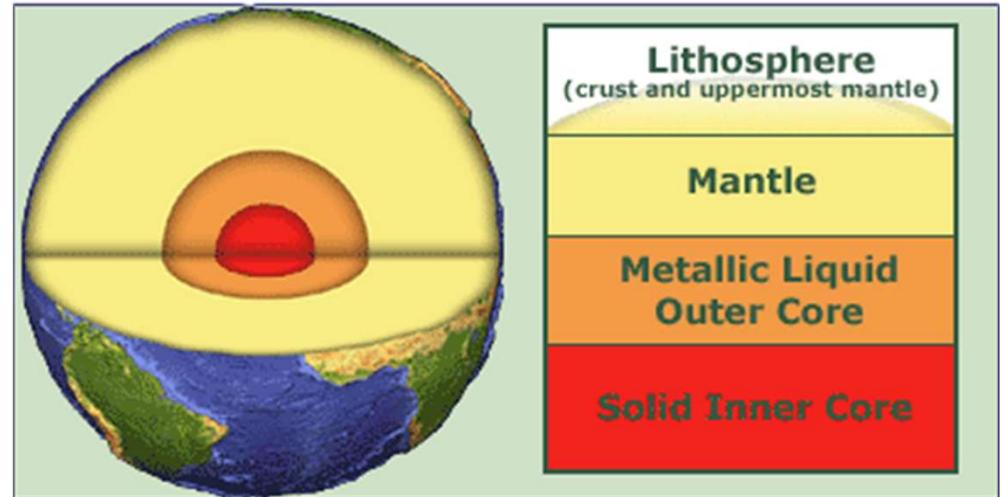
# The Theory of Plate Tectonics

## نظریه زمین ساخت صفحه ای

1. What is the theory of plate tectonics?
2. What are the three types of plate boundaries?

# صفحات چه هستند؟ What are Plates?

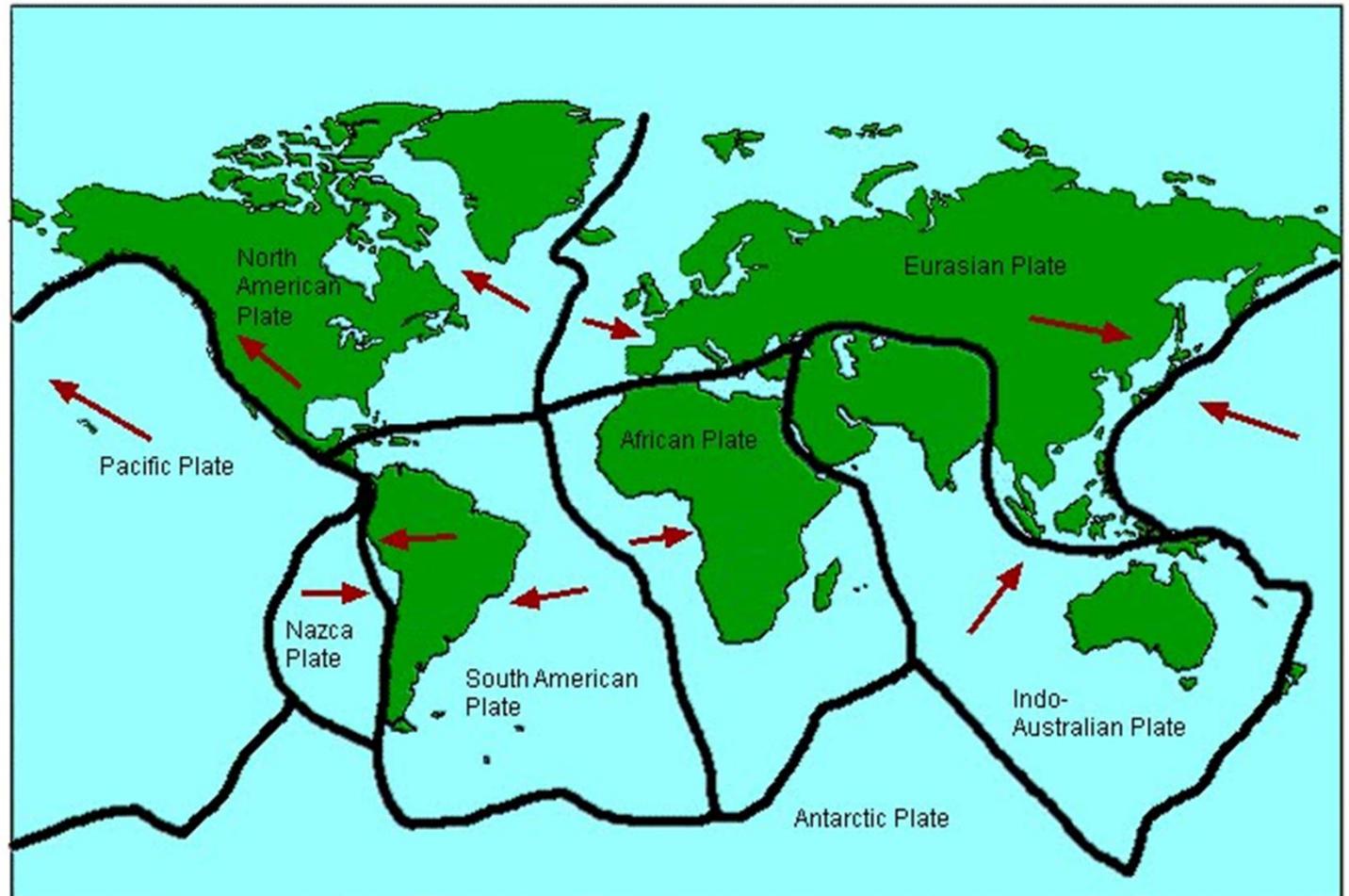
- The Earth's crust and upper mantle (Lithosphere) are broken into sections called plates



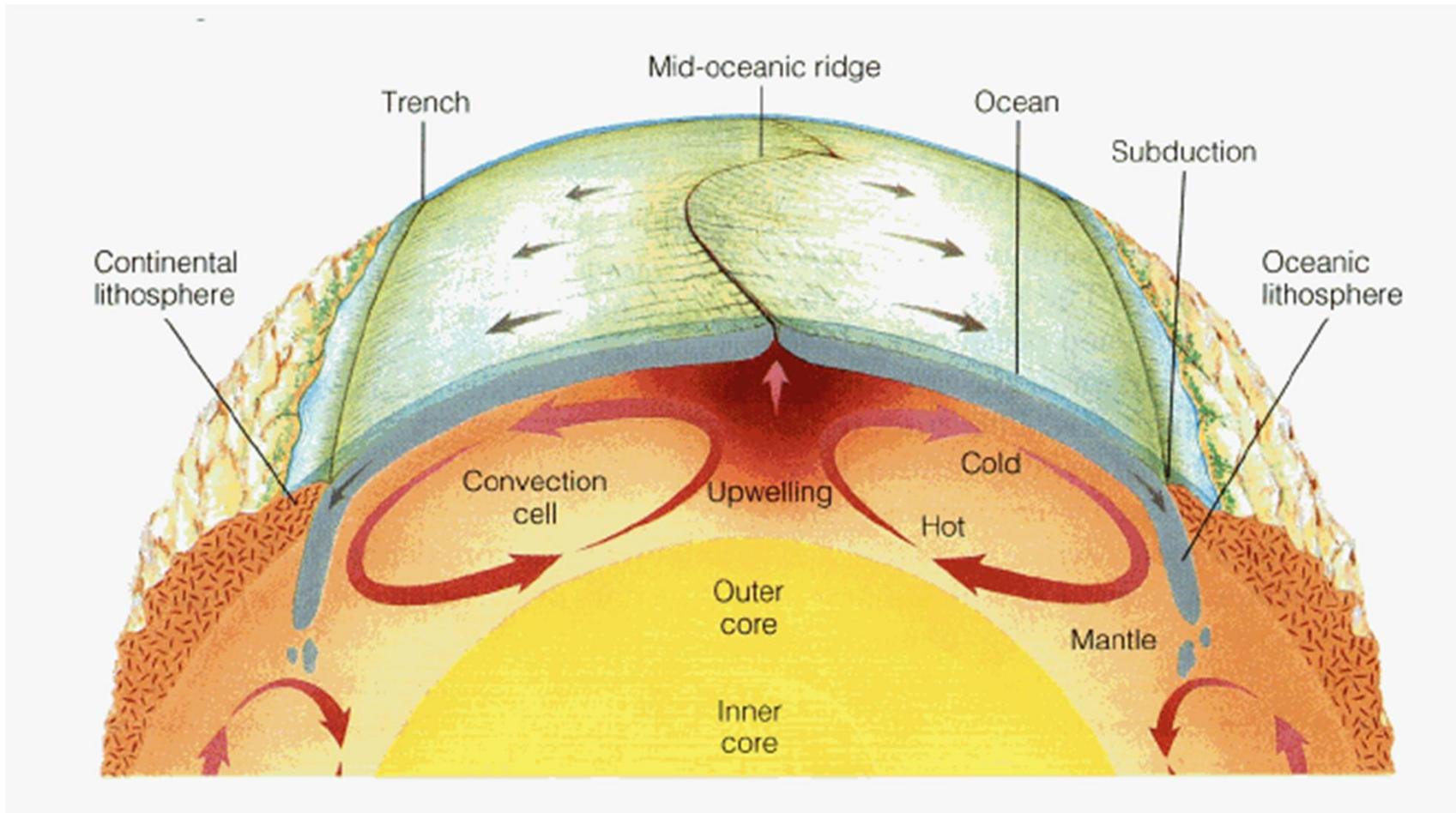
# What is the Theory of Plate Tectonics?

The theory that pieces of Earth's lithosphere are in constant motion, driven by convection currents in the mantle.

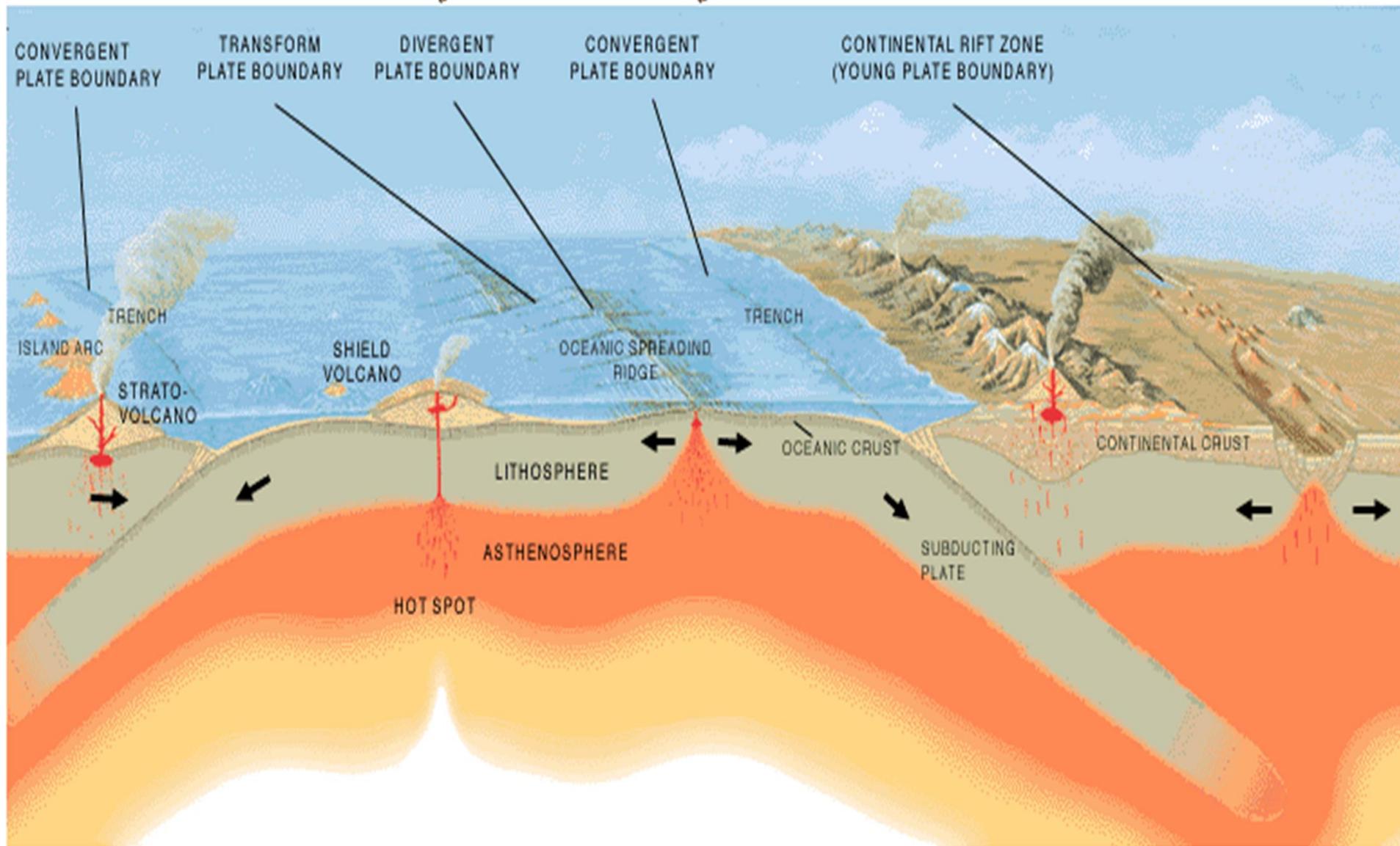
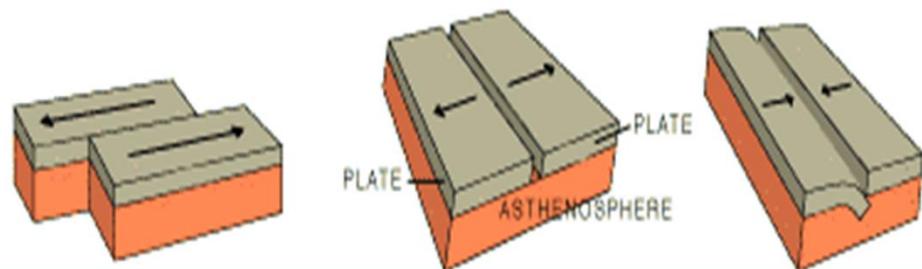
- Plates move slowly in different directions
- Cause different geologic events (like earthquake, volcano, etc.)



# What makes the plates move?



**Convection Currents in the mantle move the plates as the core heats the slowly-flowing asthenosphere (the elastic/plastic-like part of the mantle).**



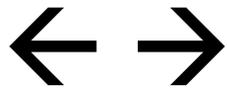
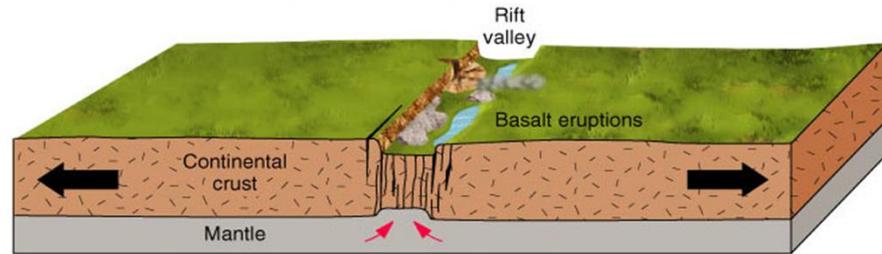
# What are the three types of boundaries?

- **Divergent Boundaries** مرزهای واگرا
- **Convergent Boundaries** مرزهای همگرا
- **Transform Boundaries** مرزهای ترانسفورم

A different type of plate movement occurs along each type of boundary.

# Divergent Boundaries مرز های واگرا

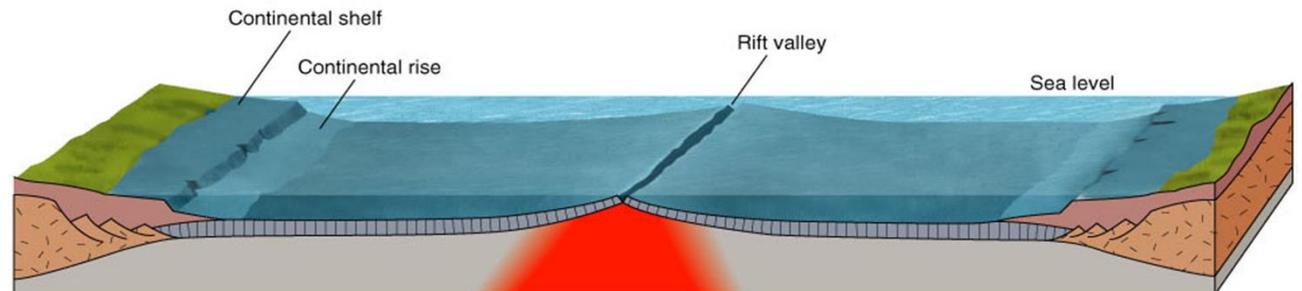
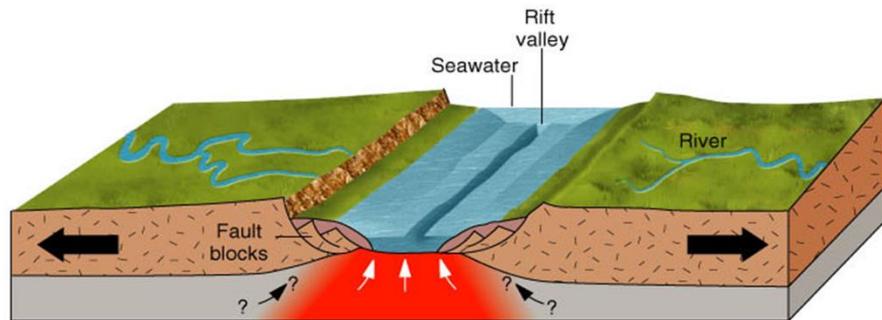
A plate boundary where two plates move away from each other.



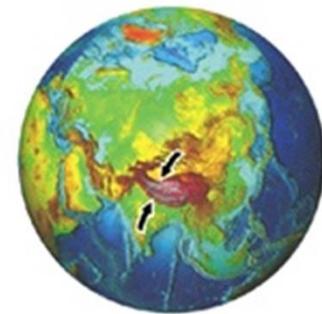
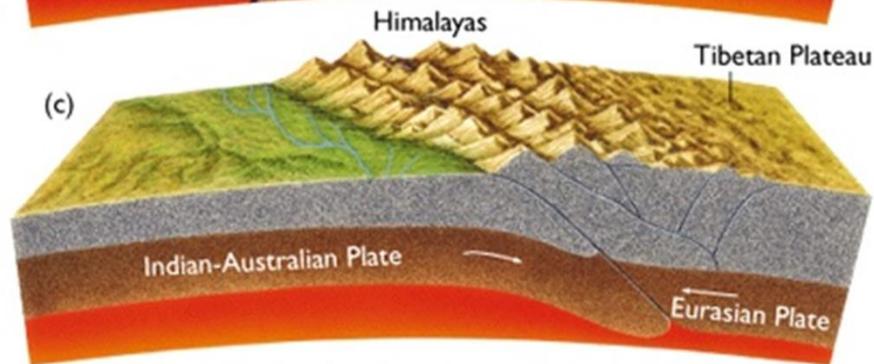
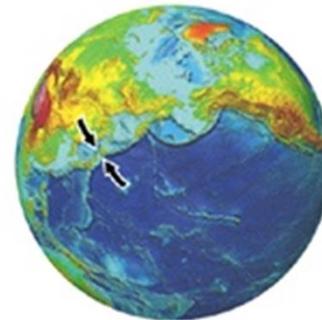
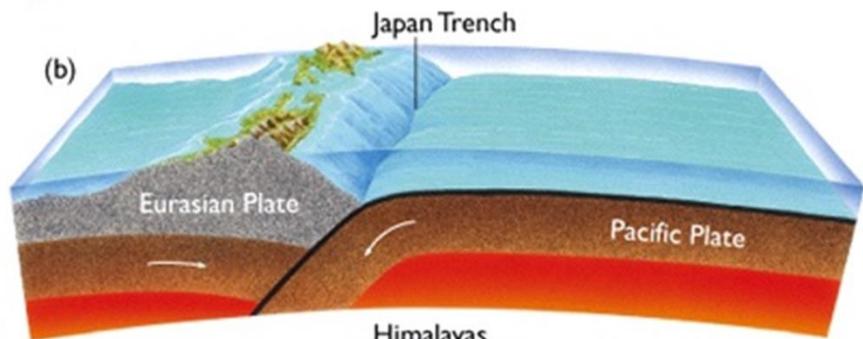
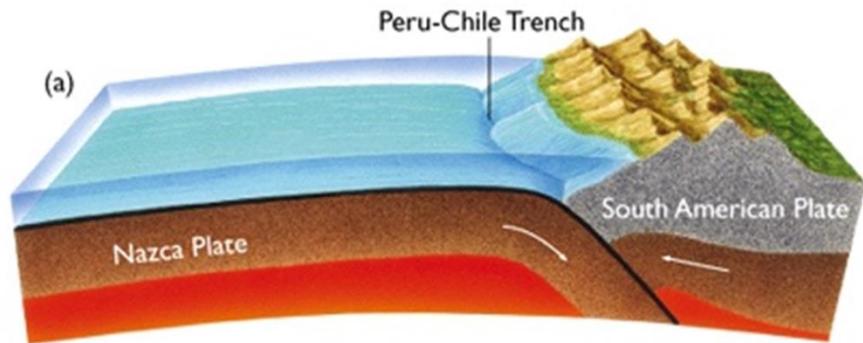
**RIFTING**

causes

**SEAFLOOR SPREADING**



# مرز های همگرا Convergent Boundaries



# There are 3 types of Convergent Boundaries...

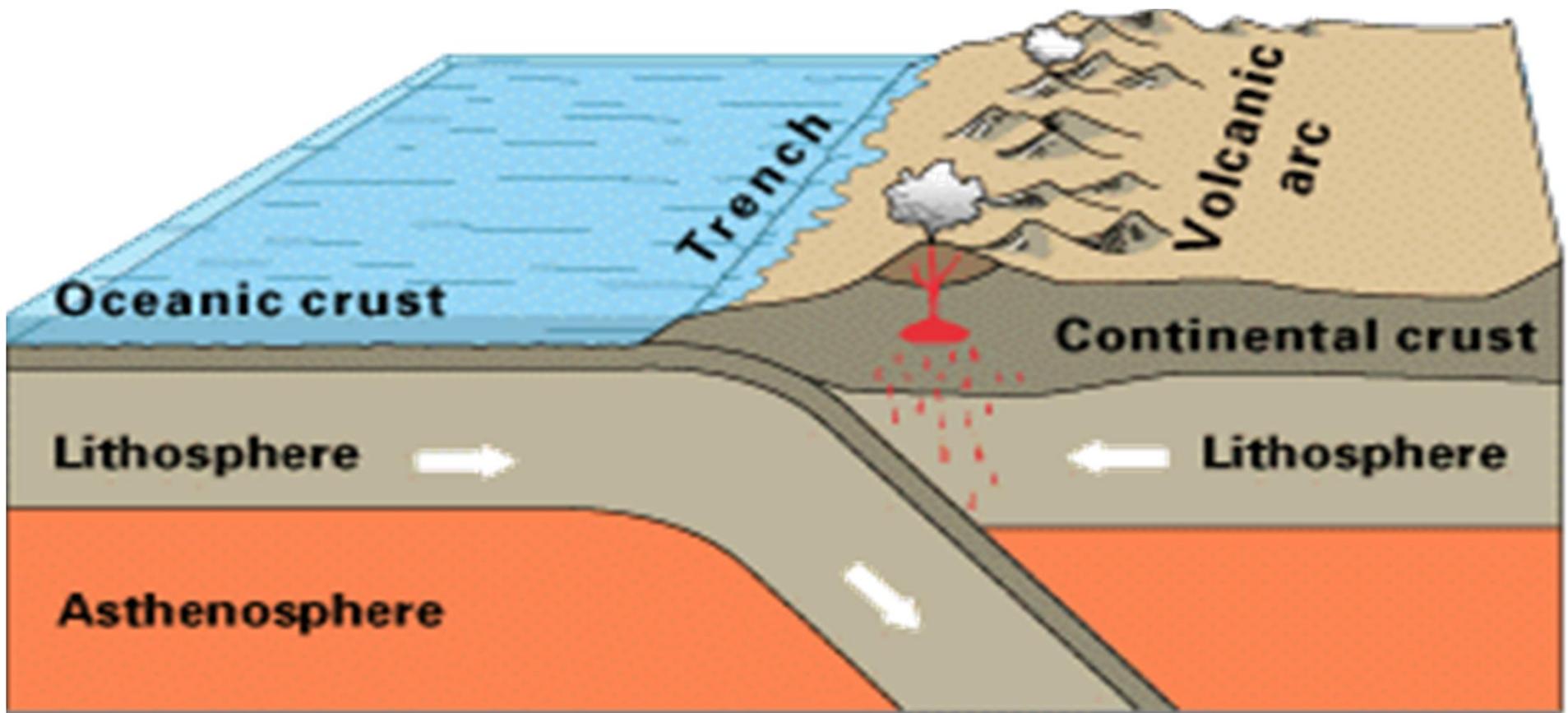
## Type 1

**Ocean plate** colliding with a less dense **continental plate**

**Subduction Zone:** The process by which oceanic crust sinks beneath a deep-ocean trench and back into the mantle at a convergent plate boundary.

# There are 3 types of Convergent Boundaries...

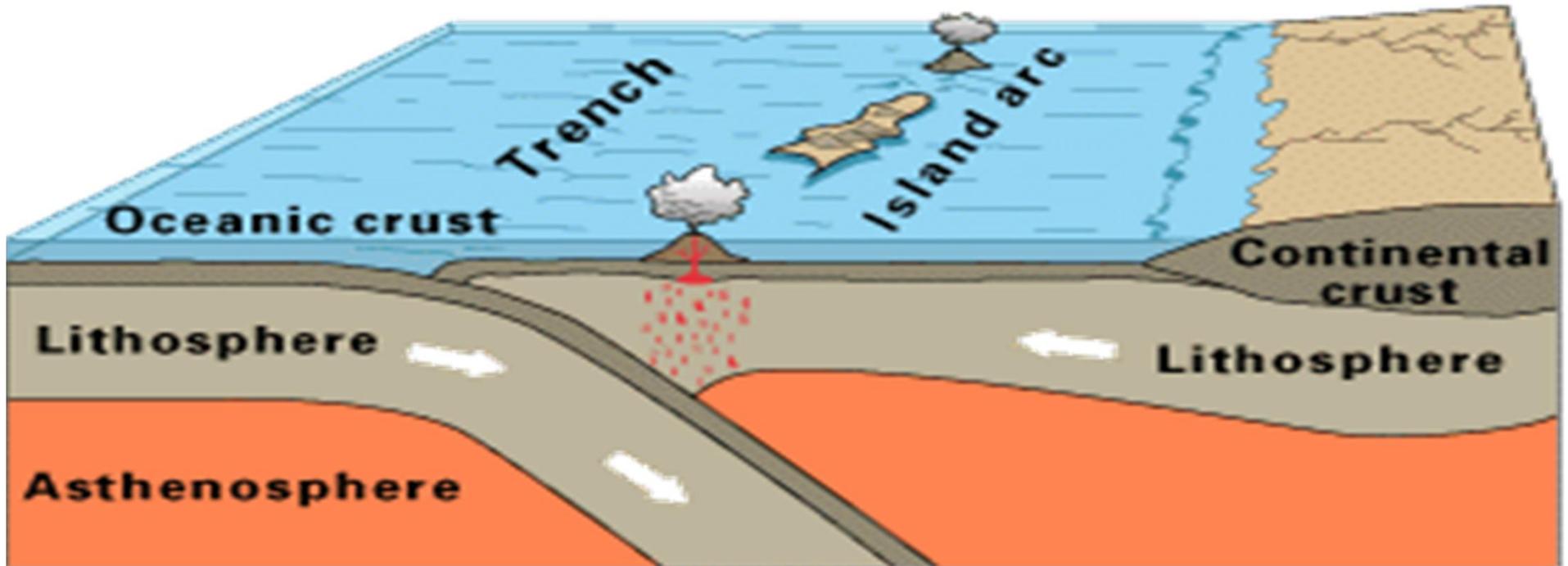
## Type 1



Oceanic-continental convergence

# Type 2

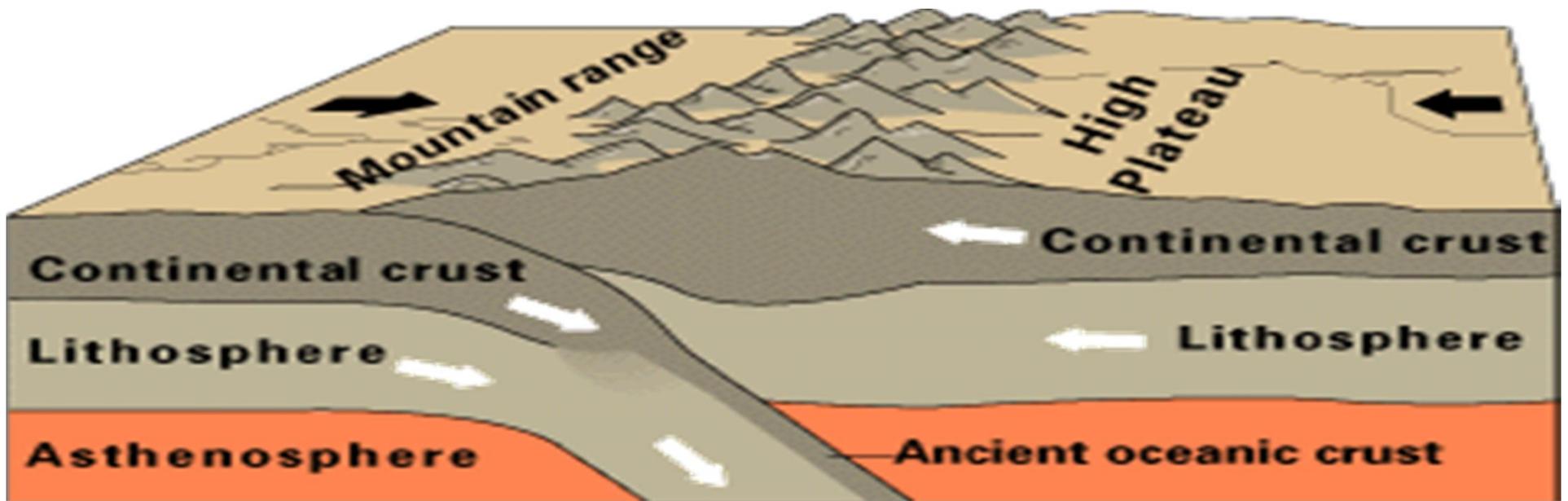
- **Ocean plate** colliding with another **ocean plate**
- The less dense plate slides under the more dense plate creating a **subduction zone** called a **TRENCH**



Oceanic-oceanic convergence

# Type 3

- A **continental plate** colliding with another **continental plate**
- Have **Collision Zones**:
  - A place where **folded** and **thrust faulted mountains** form.

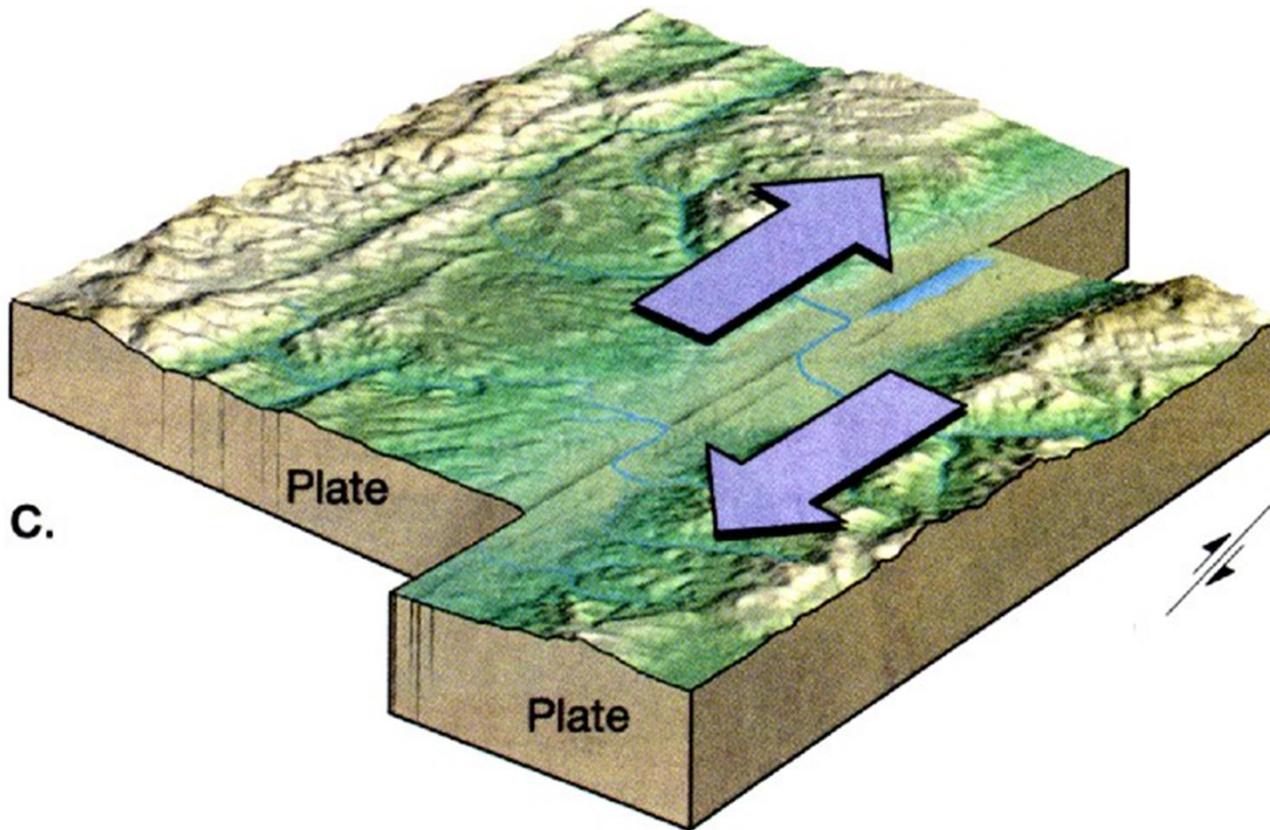


Continental-continental convergence

# Transform Boundaries

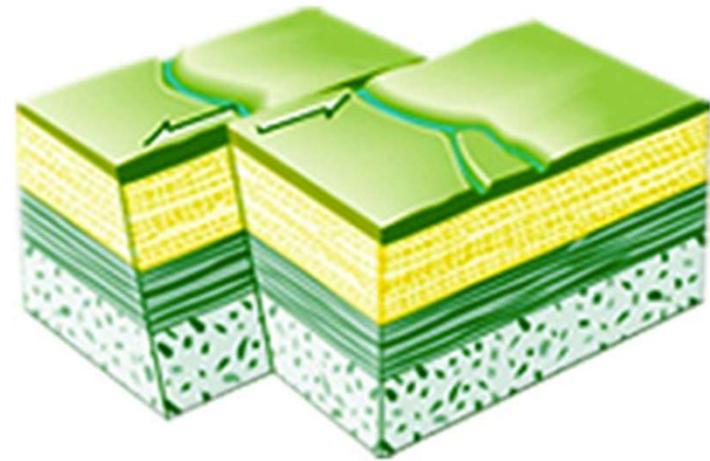
مرزهای گسلی ترانسفورم

A plate boundary where two plates move past each other in opposite direction.



# How is the rock broken at Transform Boundaries?

- Rock is pushed in two opposite directions (or sideways, but no rock is lost)

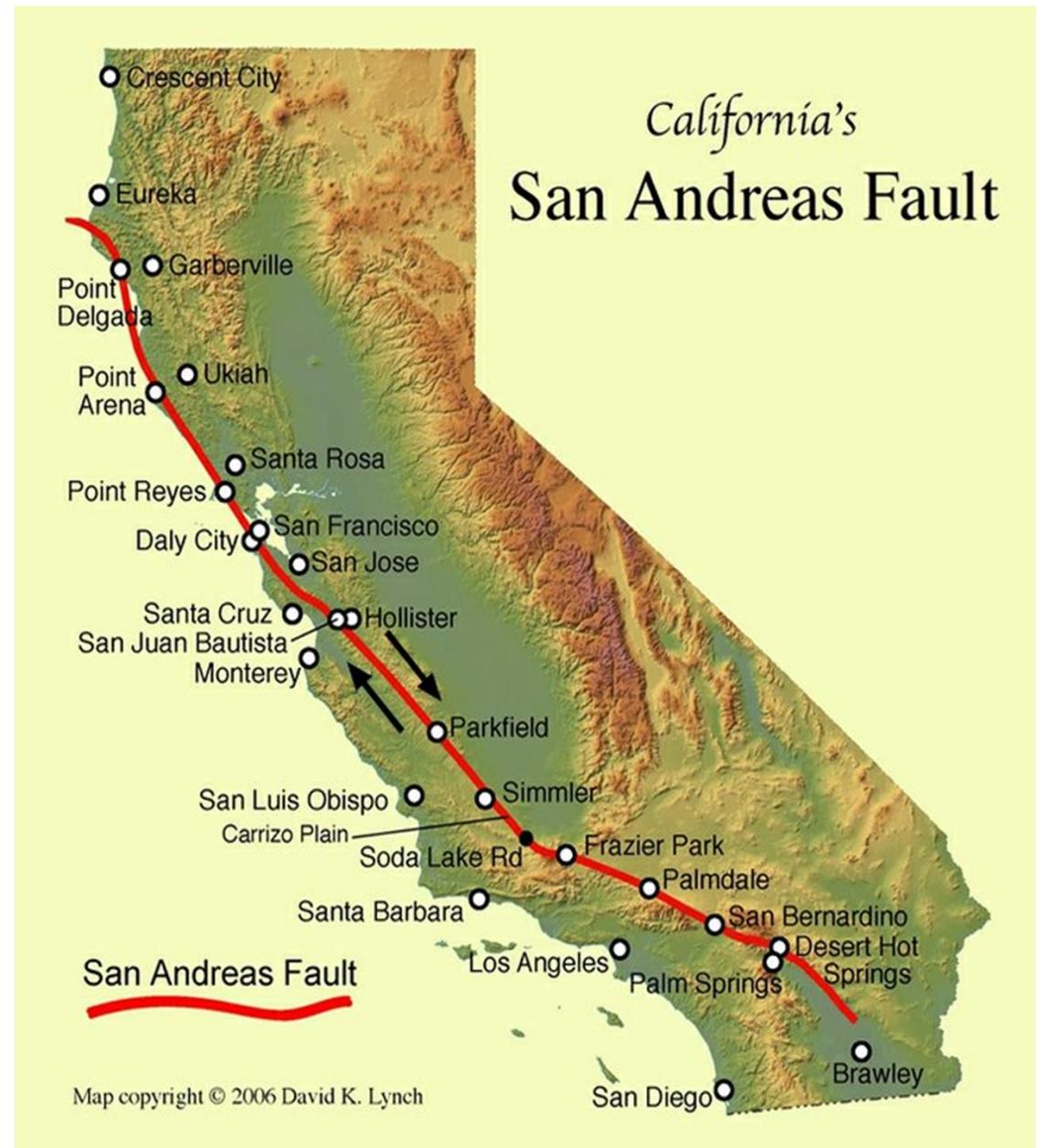


- This stress is called **SHEARING**

Transform Fault

# What happens next at Transform Boundaries?

- May cause **Earthquakes** when the rock snaps from the pressure.
- A famous fault @ a Transform Boundary is the *San Andreas Fault in California.*

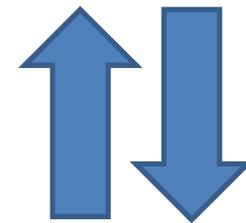
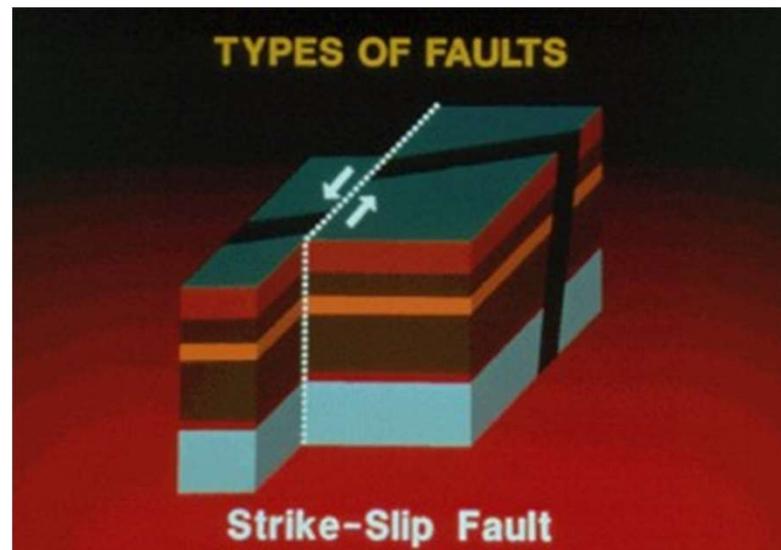


# San Andreas Fault, CA

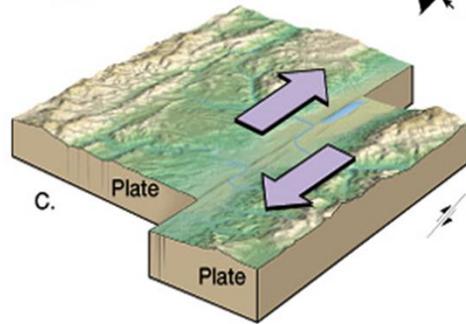
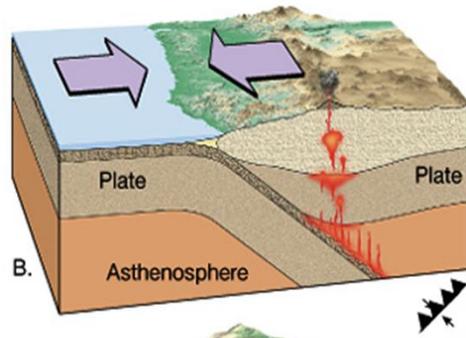
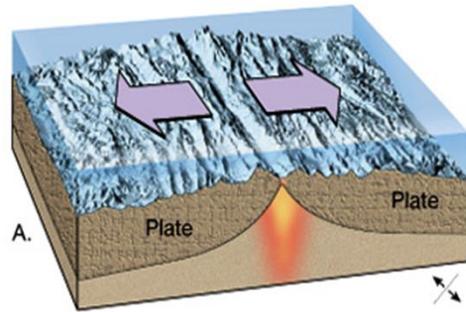


What happens when the rock is sheared (or “cut”) from the **Stress of Shearing**?

- A **STRIKE-SLIP FAULT**
- Rocks on each side of the fault slip past each other as they break.



# Plate Boundaries:



Can you match the boundary name correctly with its diagram?

A. \_\_\_\_\_

B. \_\_\_\_\_

C. \_\_\_\_\_

# Plate Boundaries:

- Correct Answers:

A. Divergent

B. Convergent

C. Transform

