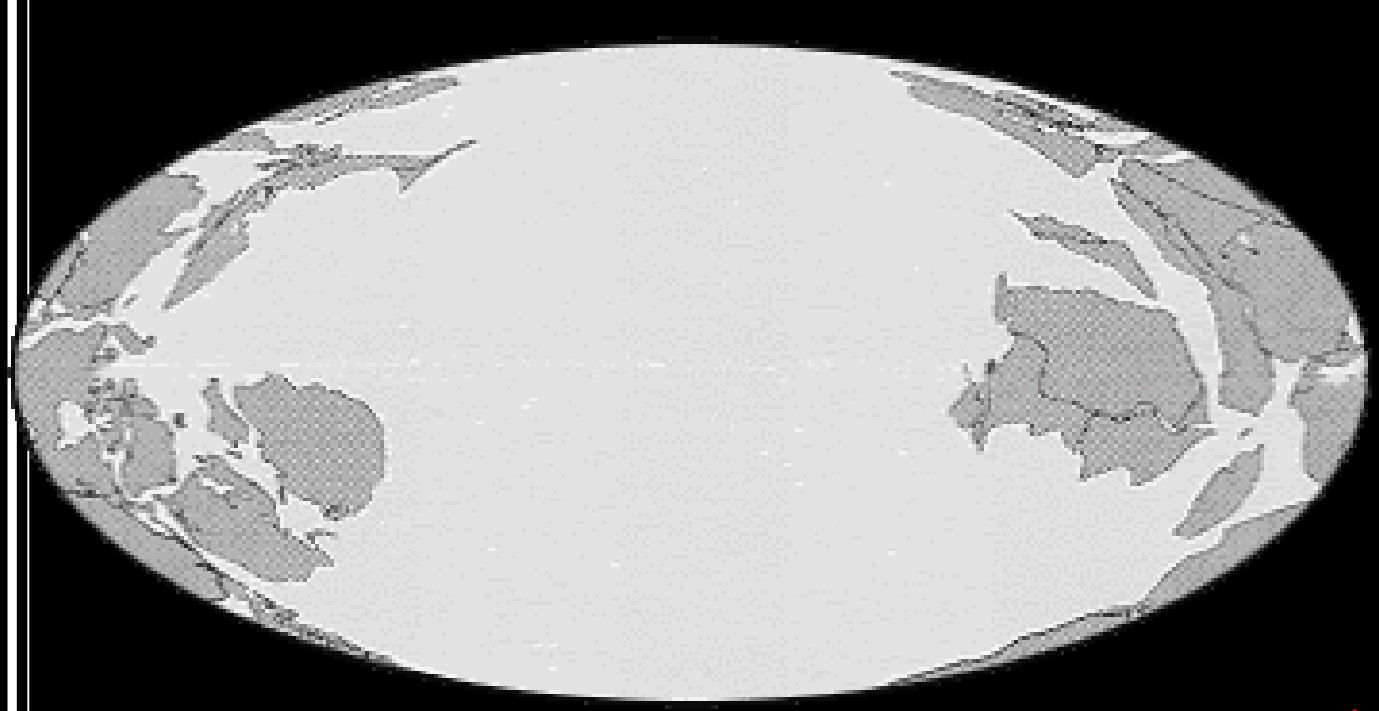
Theory of Plate Tectonics

Unit 2 - Ch 9

PANGAEA



Cenozoic

Mesozoic

Paleozoic

Precambrian

220-225 m.y.a

Continental Drift Hypothesis

ALFRED WEGENER **–**
Continents *broke apart* and *slowly* drifted away from one another

EVIDENCES

- 1. Apparent ***fit*** of ***continents***
- 2. Similar ***rocks*** on *different* continents


Africa
South America
Areas of plate overlap
Continental shelf

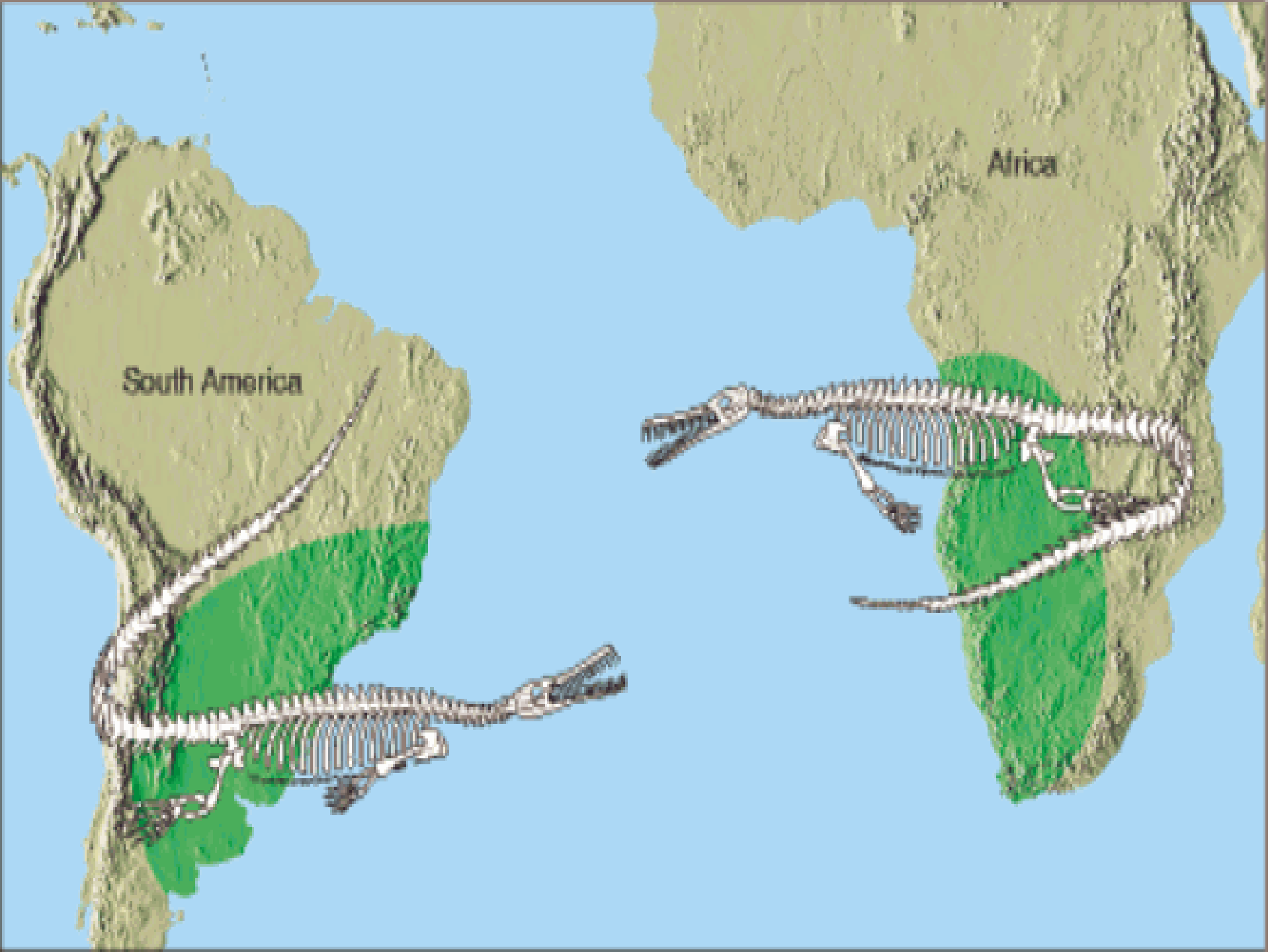
MOUNTAIN

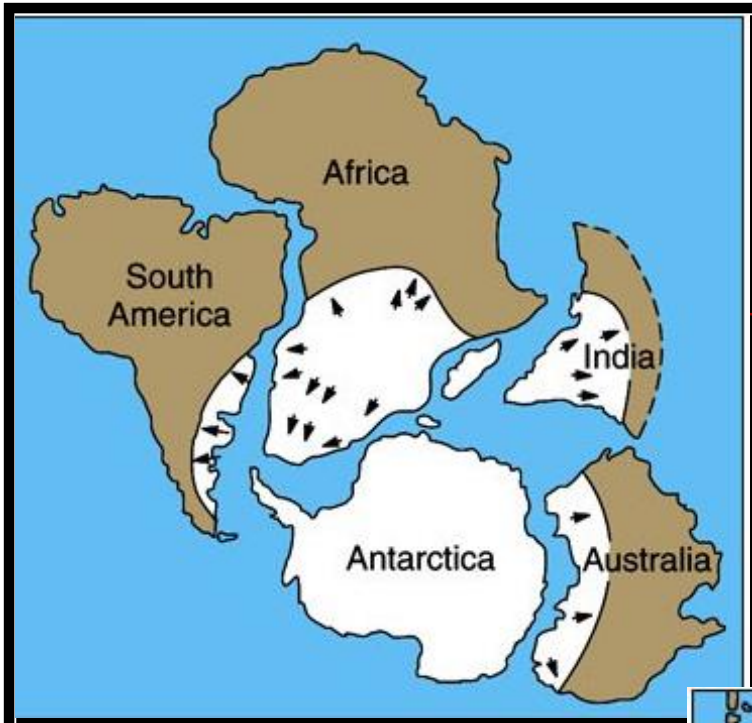
RANGES

EVIDENCES

- **3. Similar *fossils*** on ***different*** continents

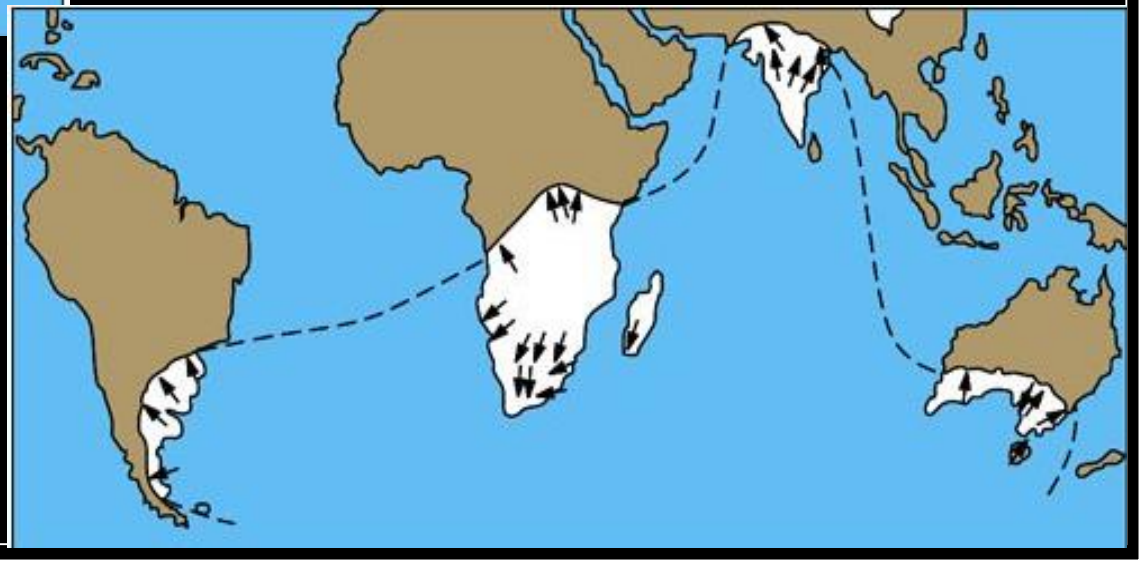
- **4. *Glacial deposits* – *equatorial*** continents


South America
Africa



GLACIAL

DEPOSITS



Wegener's Problem

- Could **NOT** explain ***HOW*** and ***WHY*** continents moved without ***fracturing***

Seafloor Spreading

HARRY HESS **– Explained *Mechanism* for Continental Drift via *mantle convection***

Plate Tectonics: The Unifying Theory

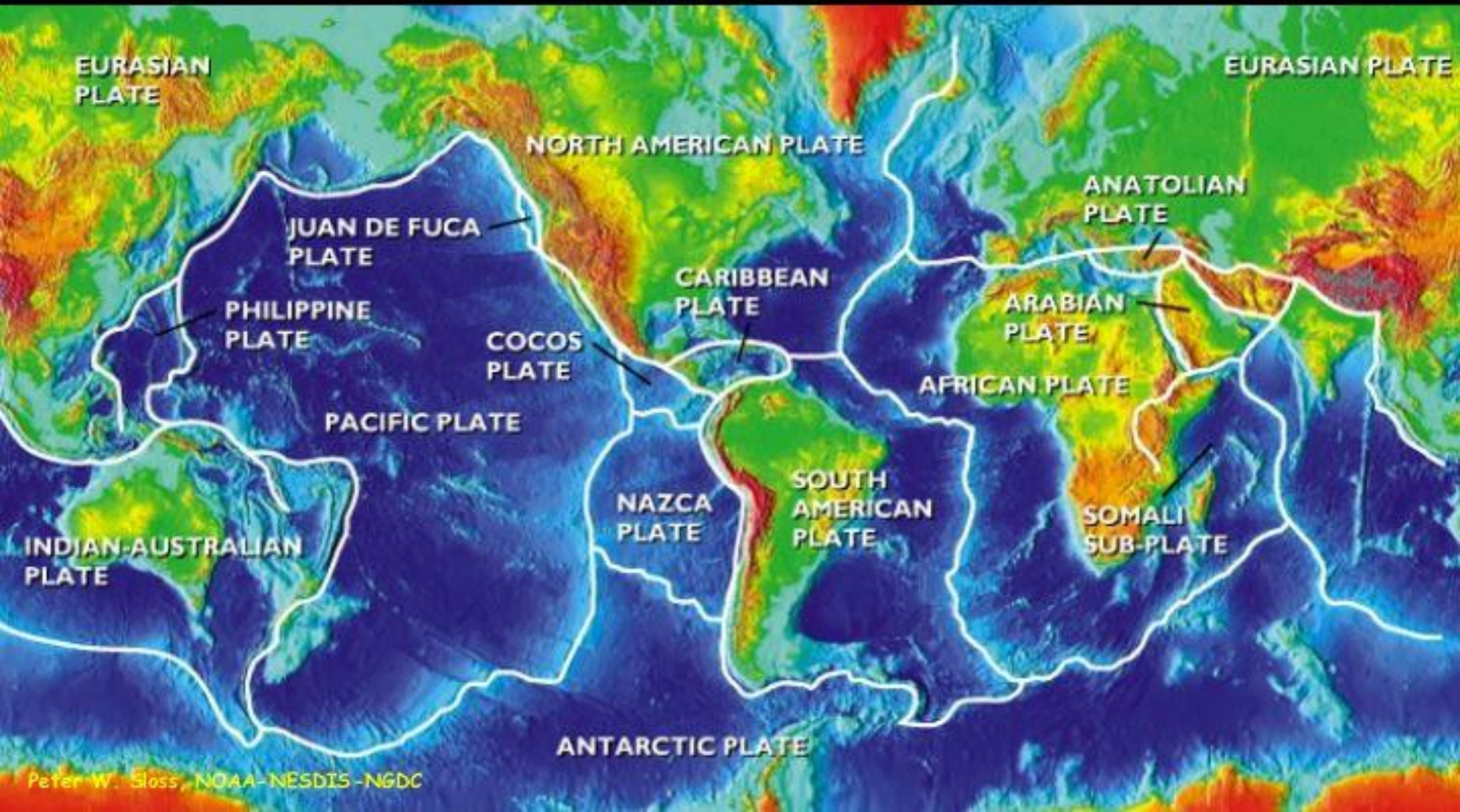
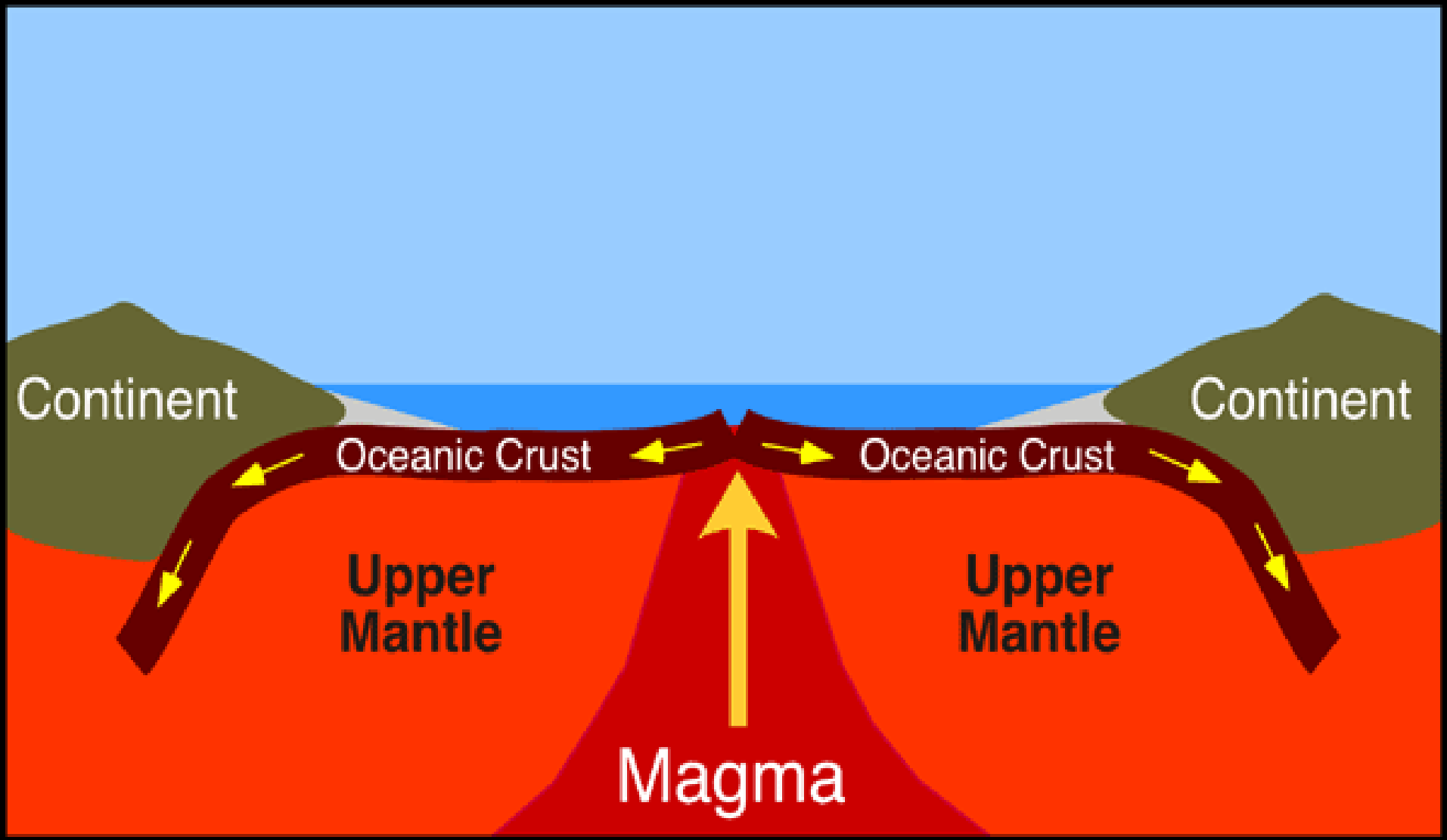
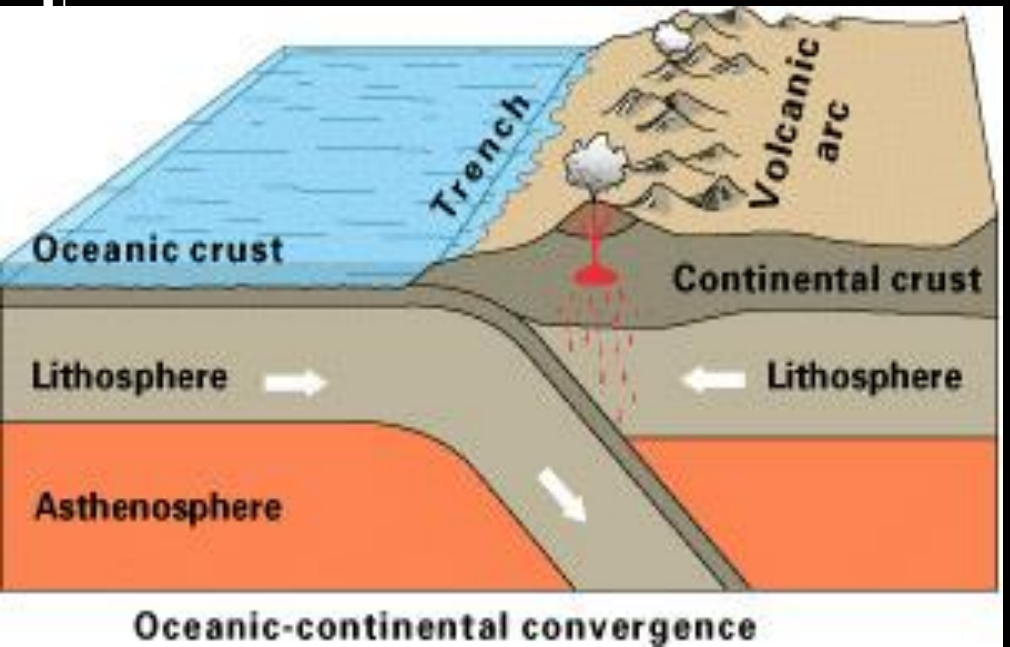


Plate Boundaries

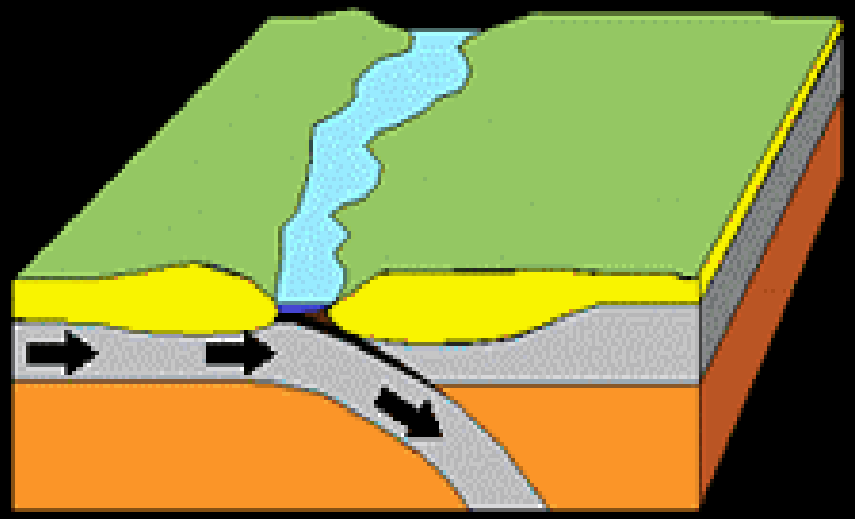


Convergent Boundaries

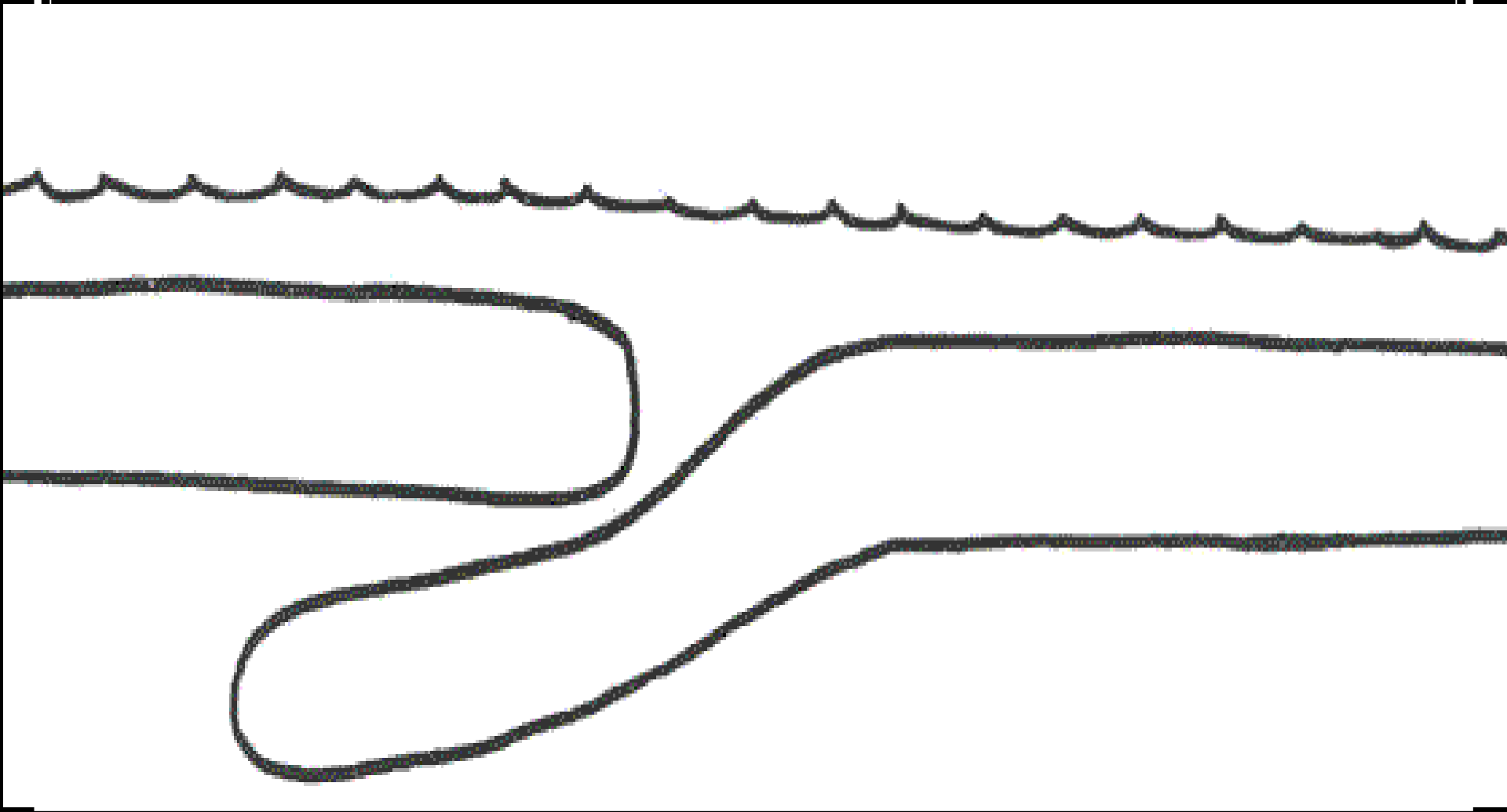
- ***Lithospheric*** plates moving ***toward*** each other



Oceanic-continental convergence

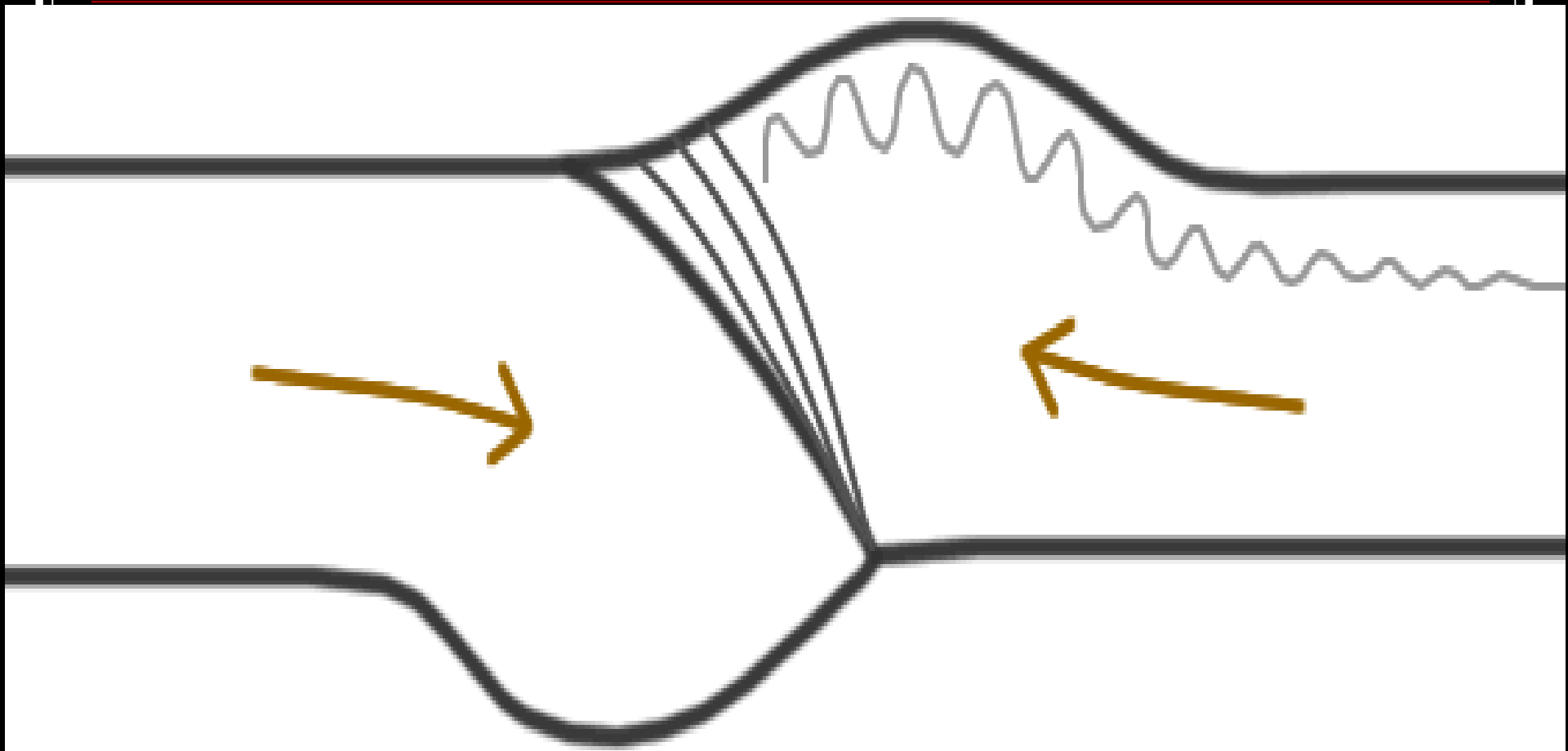


Conv Oceanic-Oceanic



Volcanic Island Arc

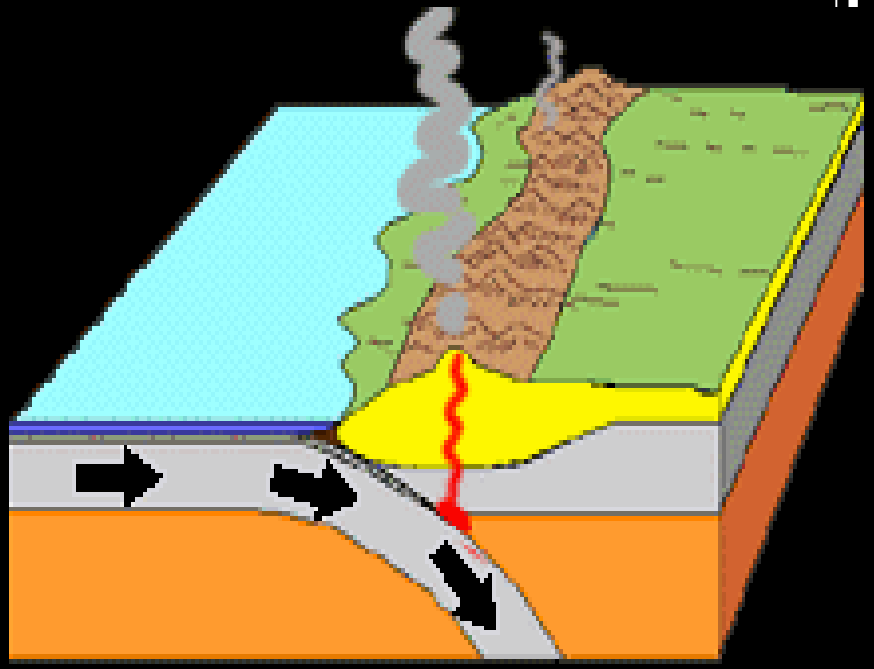
Conv Continental-Continental



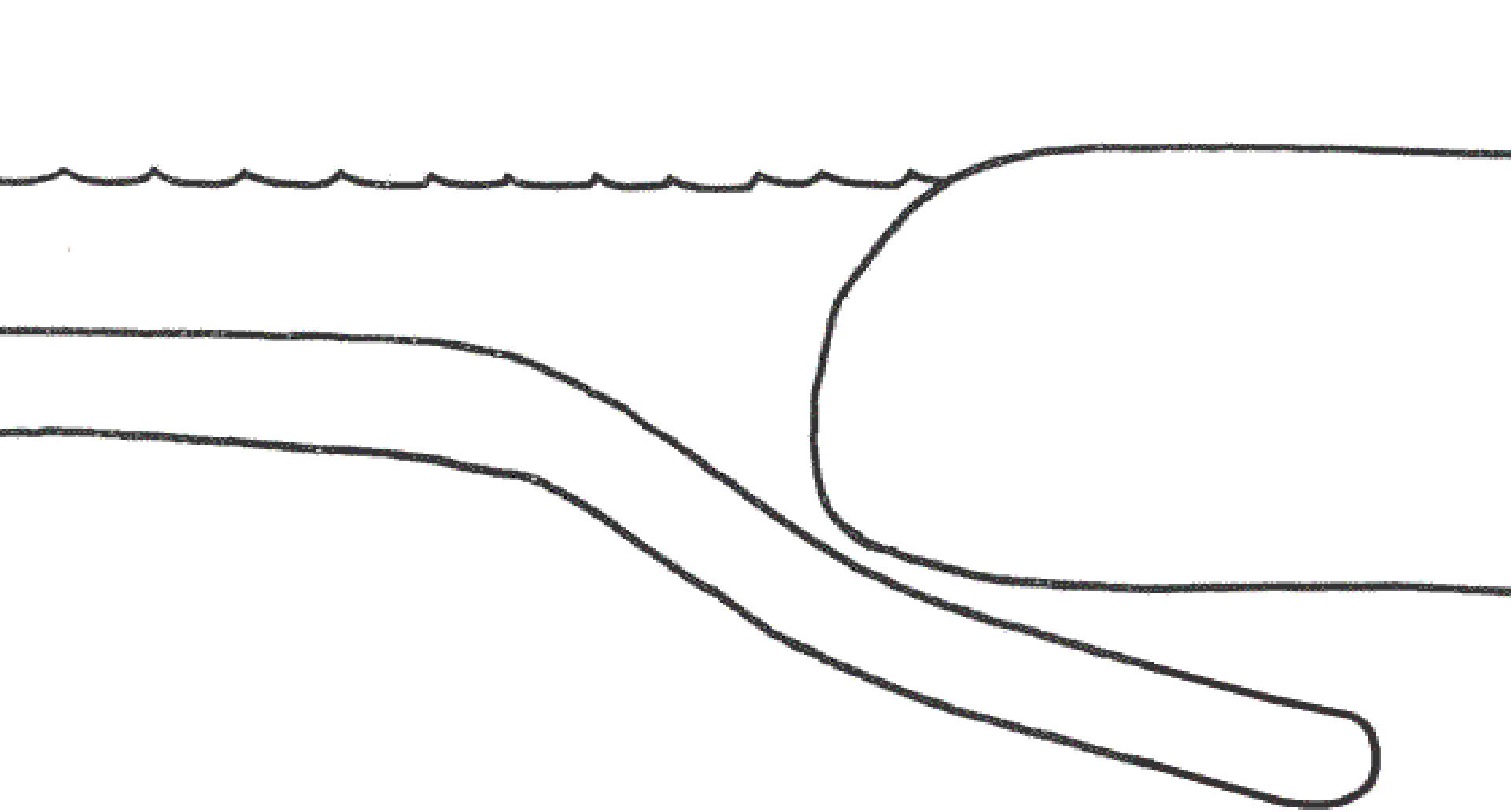
Mountain Ranges

Subduction Zone

- Does **NOT** occur at ***Conv Cont-Cont***
  - Cont. crust too **buoyant** ***(light)***



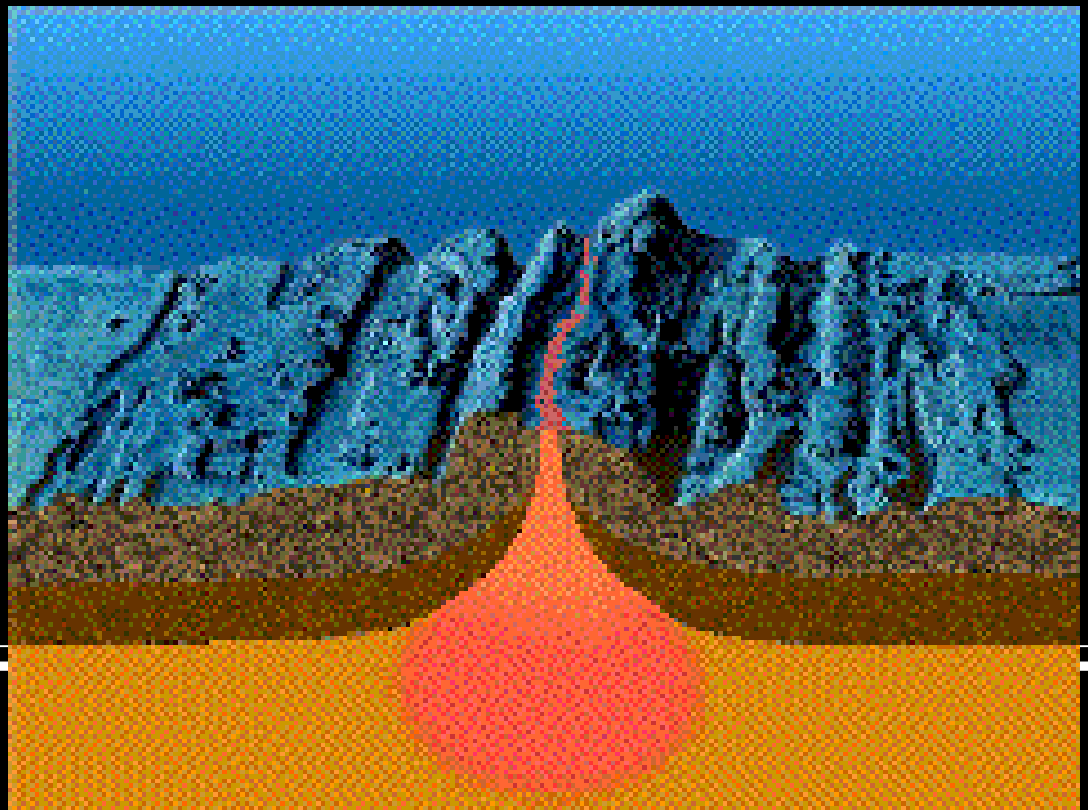
Conv Oceanic-Cont



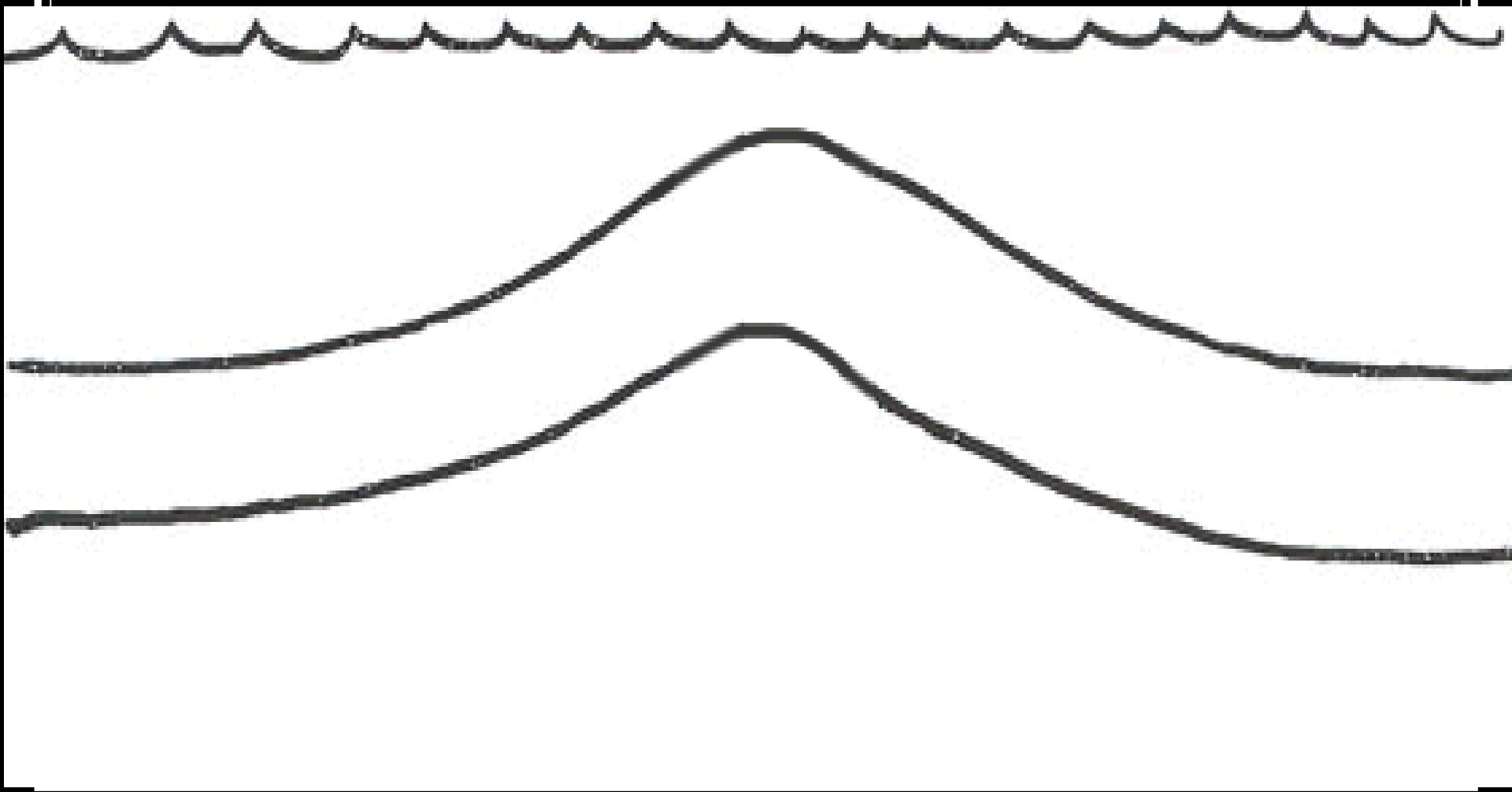
Subduction Zone; Trench ; Cont Volcano

Divergent **Boundaries**

- **Two** plates moving ***away*** from one another



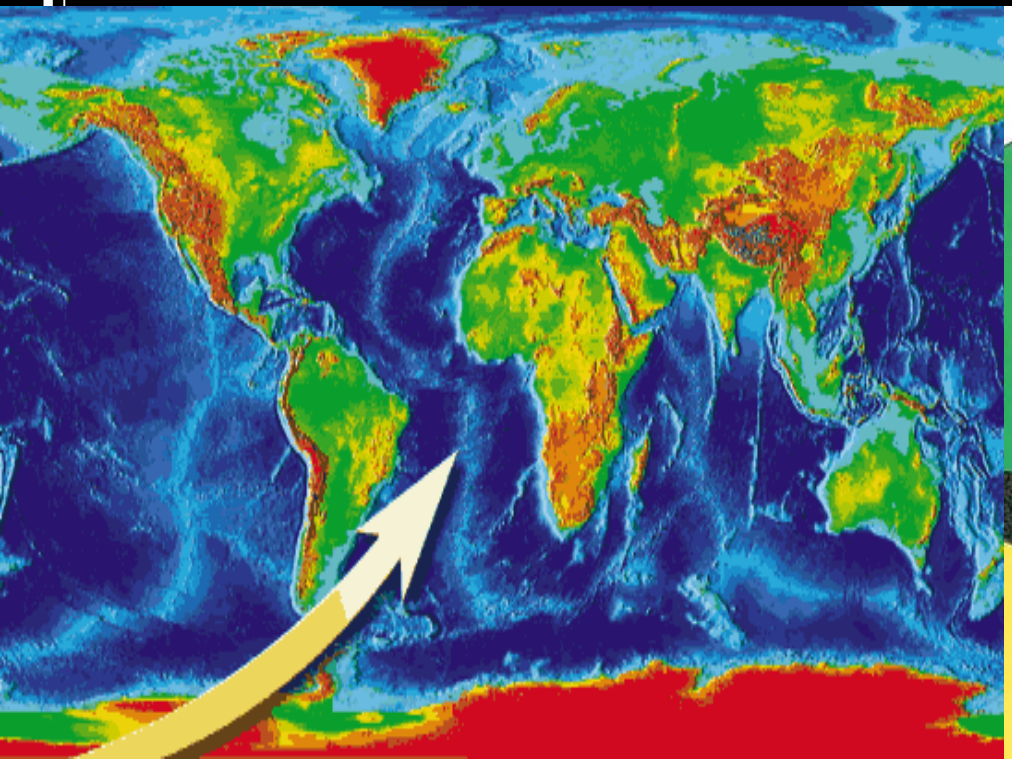
Div Oceanic-Oceanic

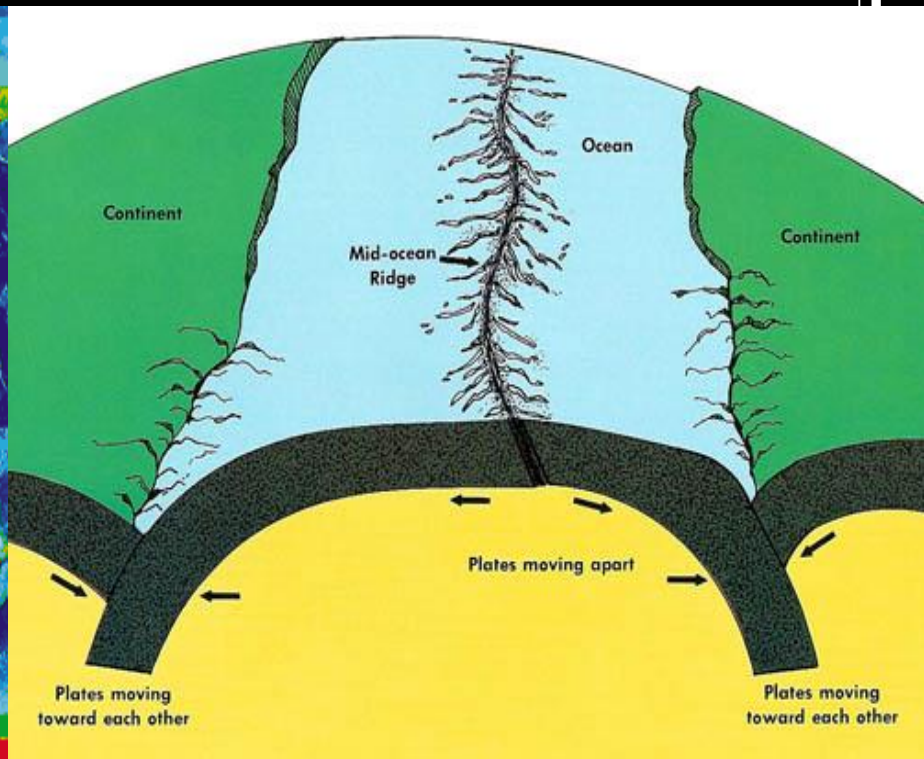


Mid-Ocean Ridges

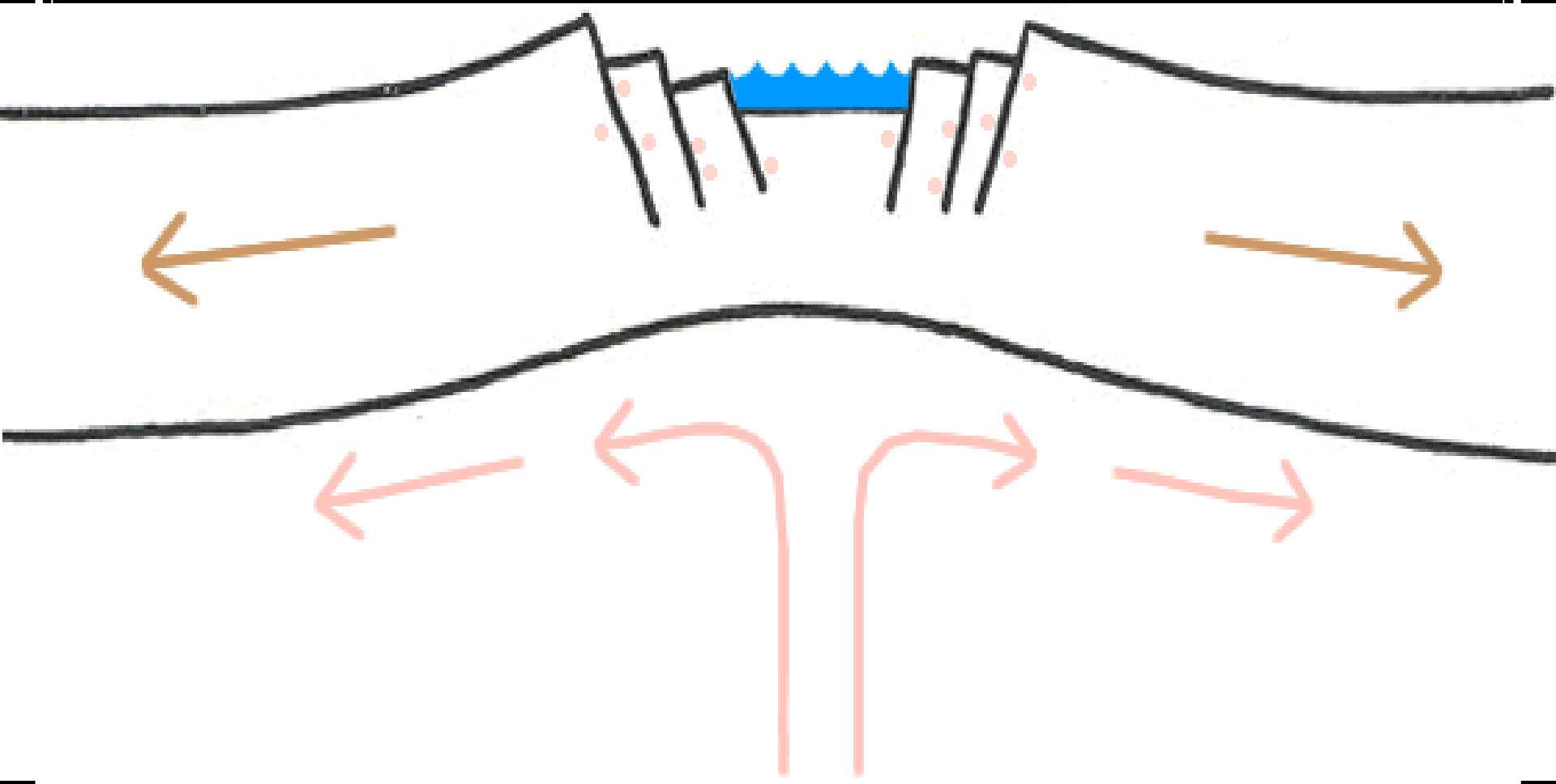
Mid-Ocean Ridges

- **Chain** of *underwater* **mountains**
  - ***Paleomagnetism*** **-** ***Young*** oceanic crust is **closest** to mid-ocean ridge ***center***





Div Cont-Cont

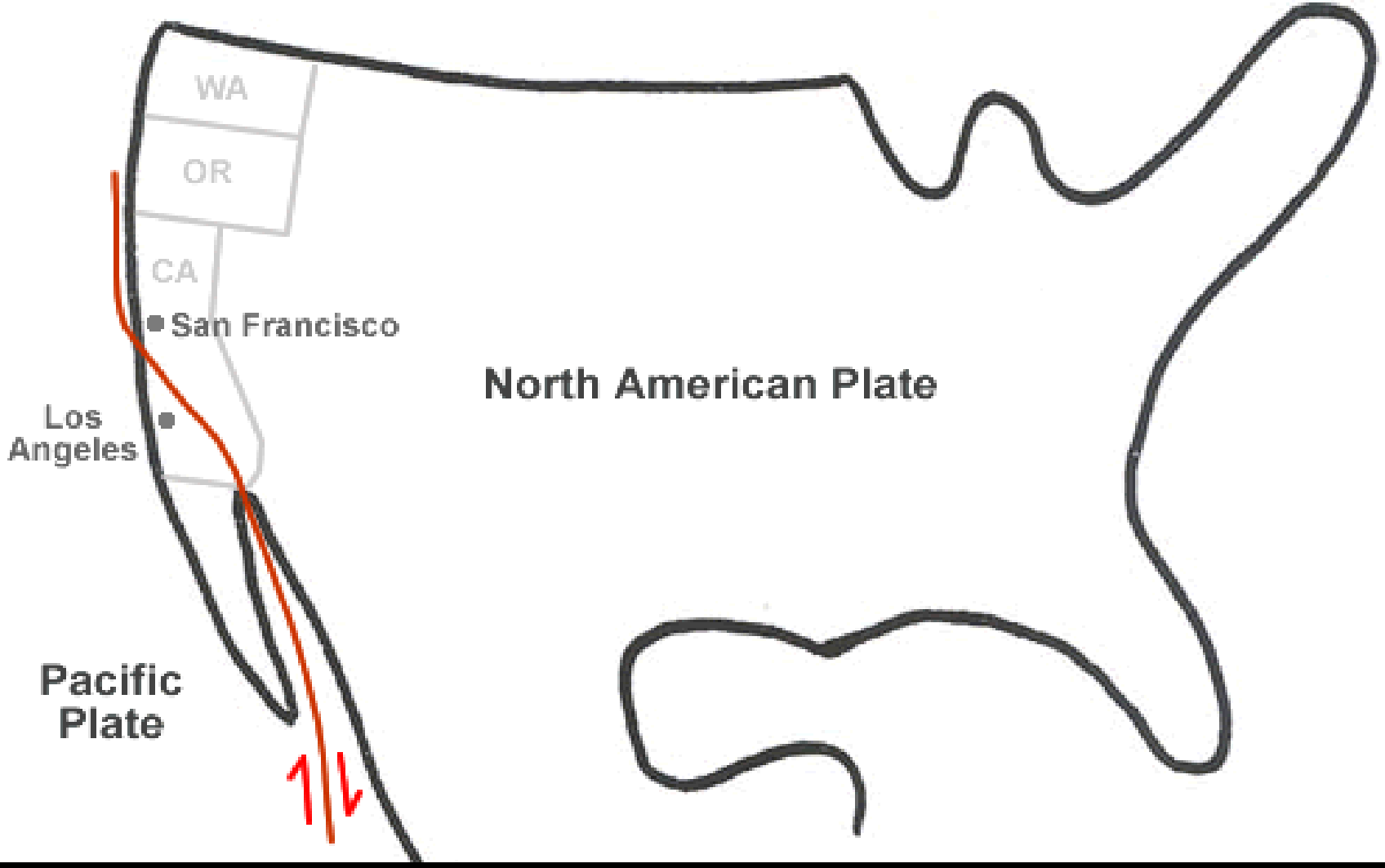


Rift Valley

Transform **Boundaries**

- **Two** plates ***horizontally pass*** each other
  - Does **NOT** destroy nor produce new ***lithosphere (crust)***

Transform Boundaries



Earthquake Fault Lines (San Andreas Fault)