

# Crustal Activity

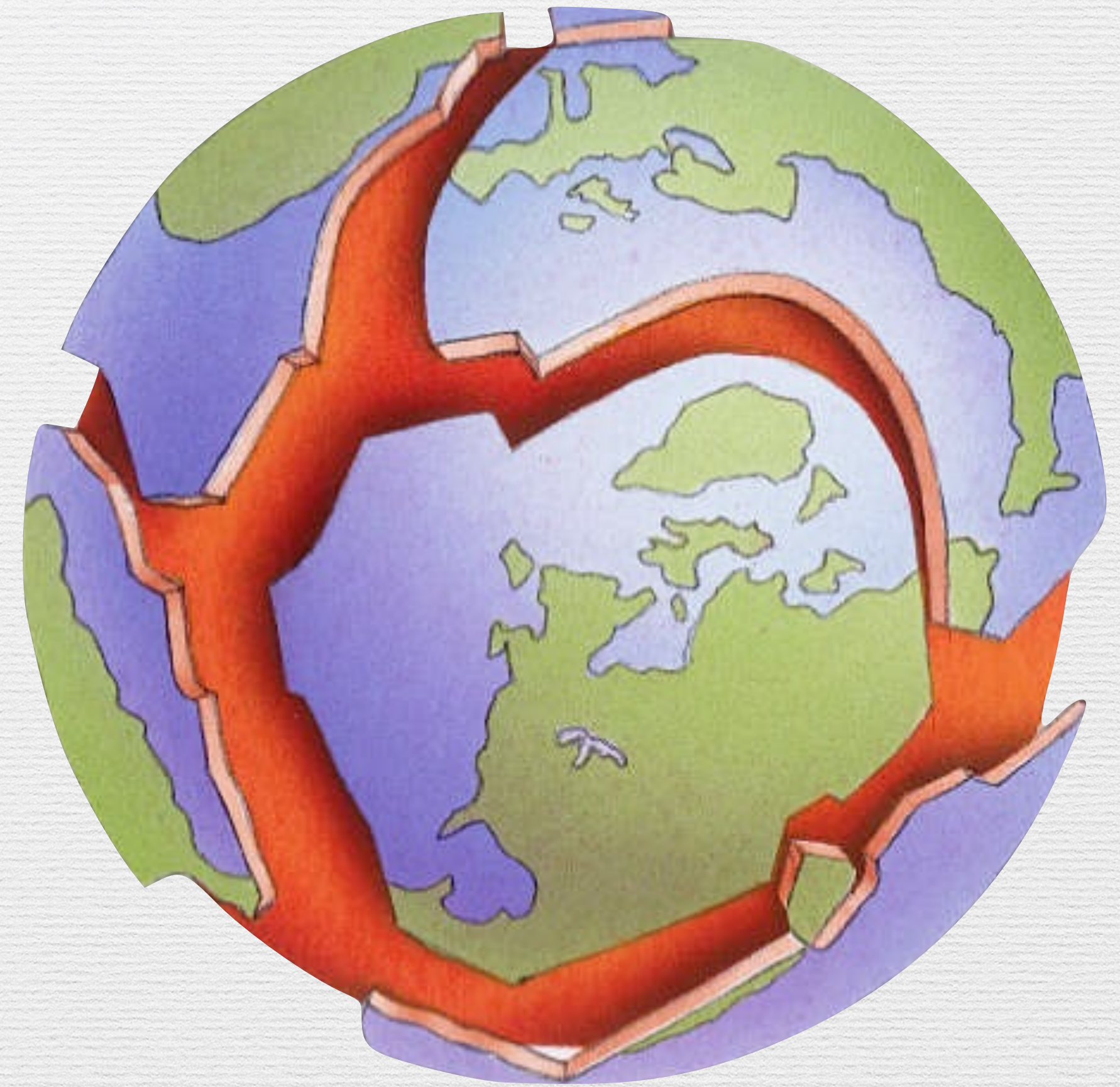
What are plate tectonics and how do they affect Earth?

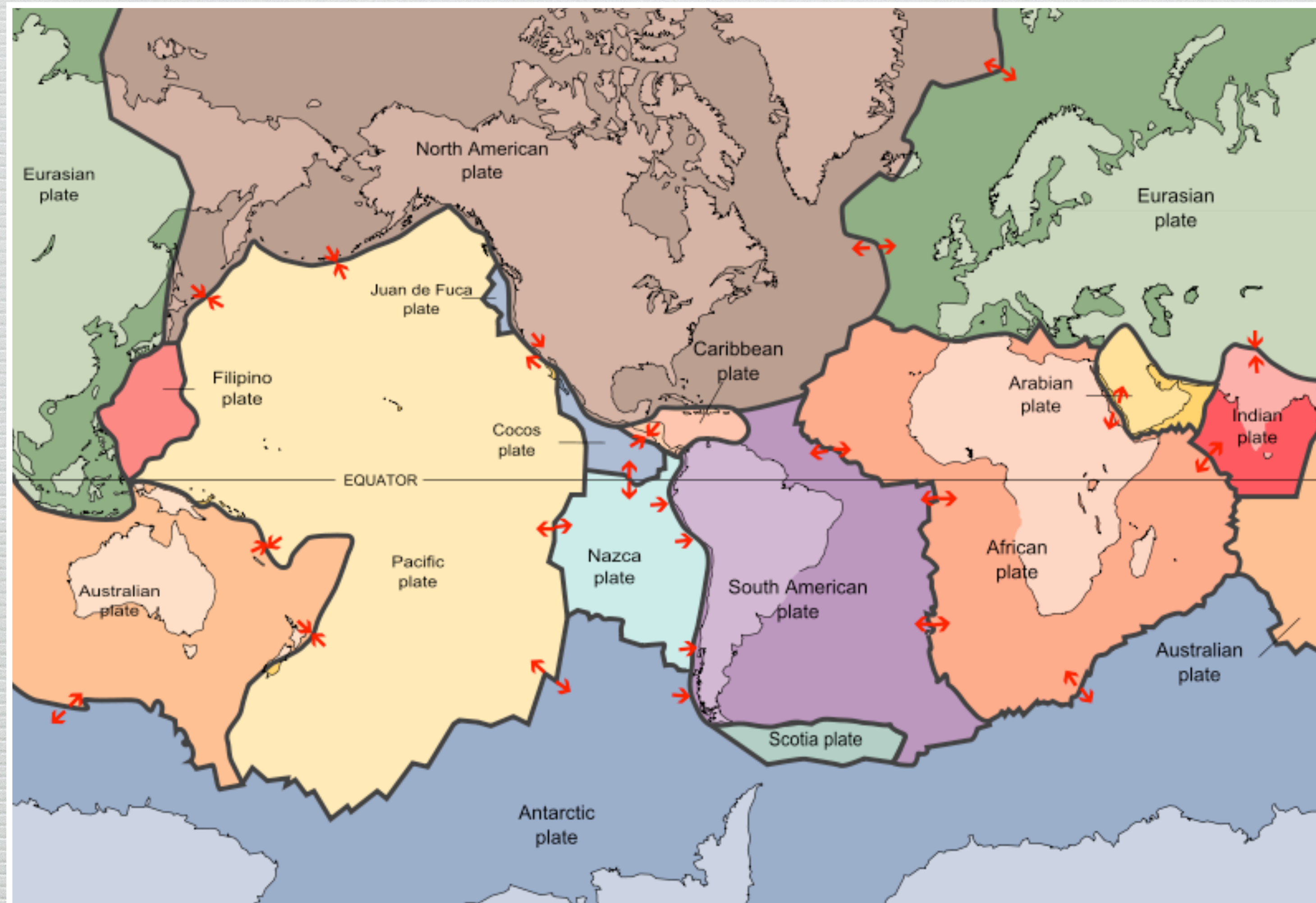
# Crustal Activity

- Plate Tectonics - the study of the formation and movements of plates
- Plates - section of the lithosphere that moves around
- Lithosphere - Earth's solid outer crust
- Asthenosphere - partially melted layer that flows slowly and is located below the lithosphere

# Crustal Activity

- Earth's surface consists of a dozen major plates and some minor ones
- The plates are moving at rates close to 10 cm/year

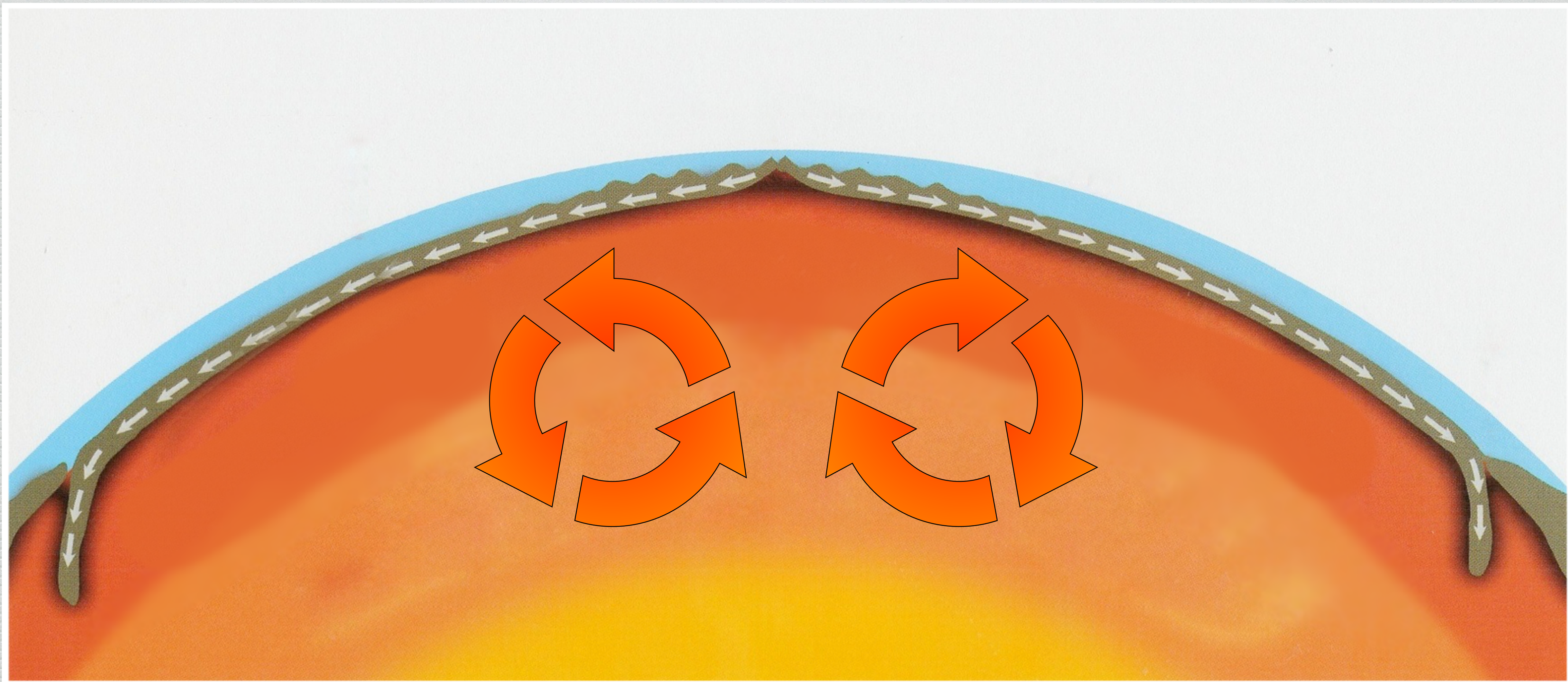




The Major Tectonic Plates

# Crustal Activity

- Convection Currents - driving force of plate movement
  - Magma heats up causing it to expand and rise
  - Magma cools down causing it to contract and sink
- The solid lithosphere is moving on top of the partially melted asthenosphere due to density differences



Convection Currents

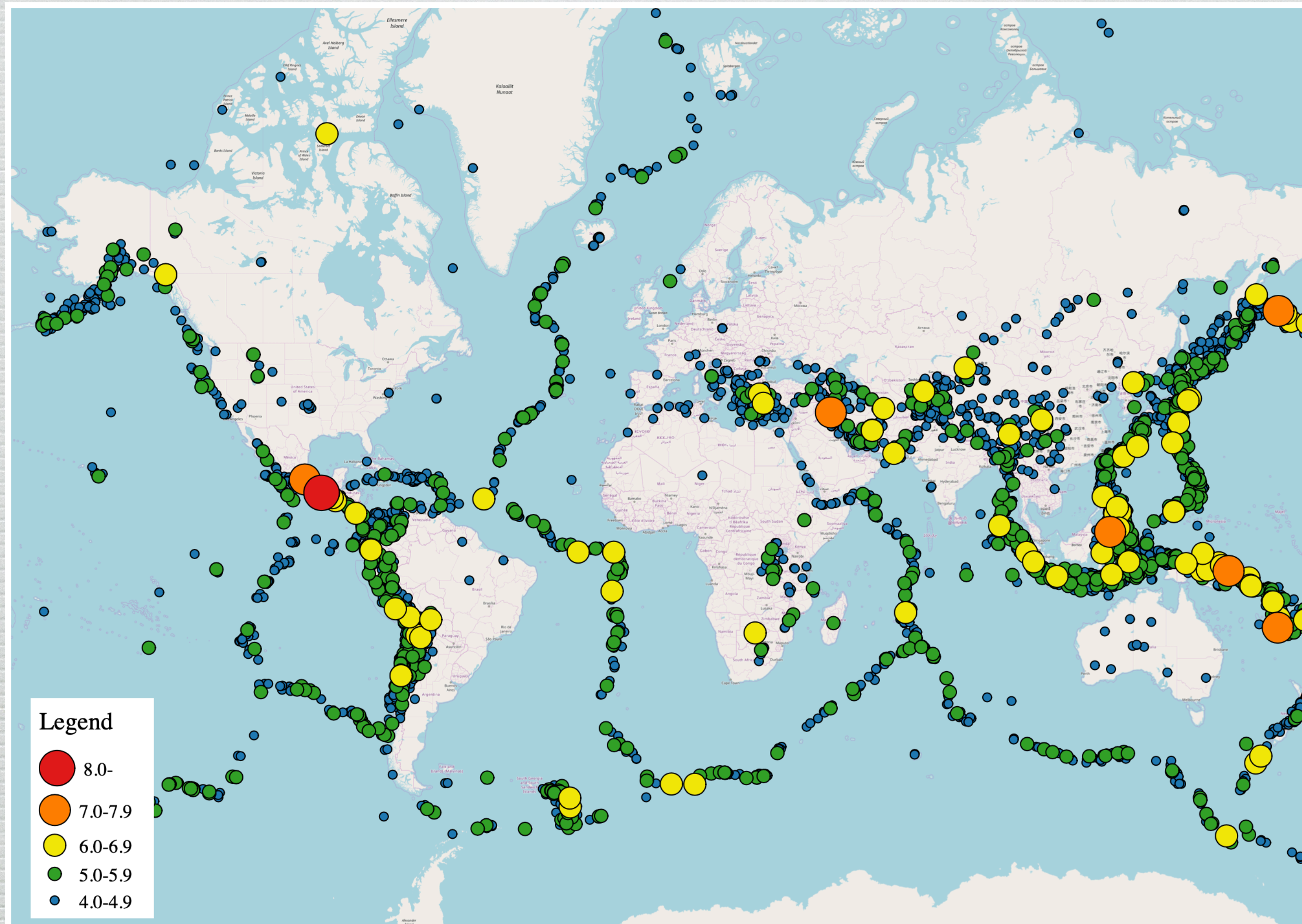
# Crustal Activity

- The idea of continental drift had been around since the early 1900's, but lacked enough scientific evidence to support the theory
- New advancements after World War II help provide the evidences needed to validate the Theory of Plate Tectonics

# Crustal Activity

- Evidence of Plate Tectonics
  1. Earthquakes - when scientists plotted the locations of earthquakes they realized that they do not occur at random location, but run along isolated belts outlining the plate boundaries





2017 Earthquake Locations



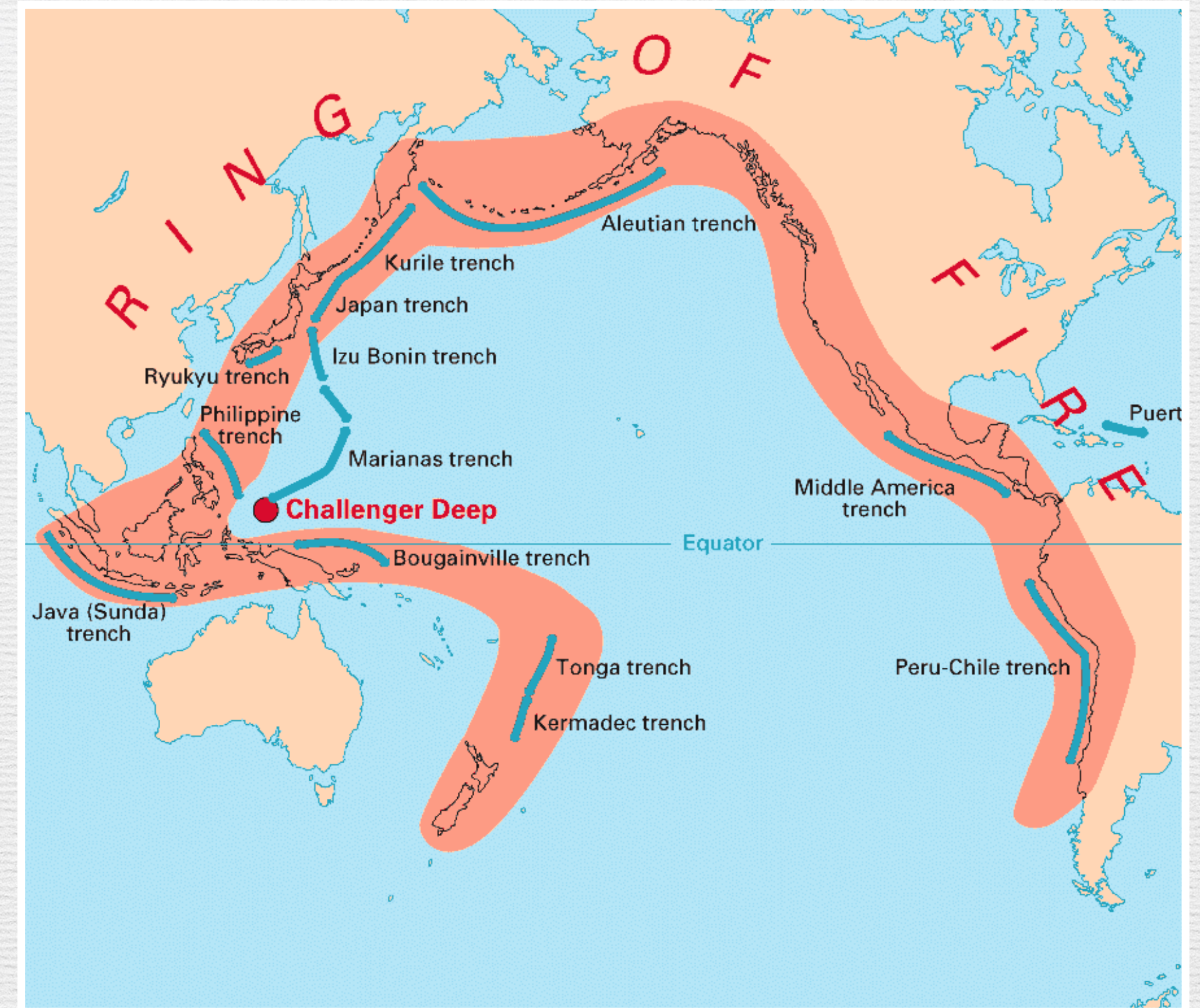
# Crustal Activity

- Evidence of Plate Tectonics [continued]
  2. Volcanic Evidences - occurs at plate boundaries where plates are interacting



# Crustal Activity

- Ring of Fire - isolated belt around the Pacific Ocean where 90% of the world's volcanoes exist



# Crustal Activity

- Evidence of Plate Tectonics [continued]
  3. Rock Evidence - horizontally deposited rock layers sometimes tilt and fold when plates interact





Tilted Rock Layers



Folded Rock Layers

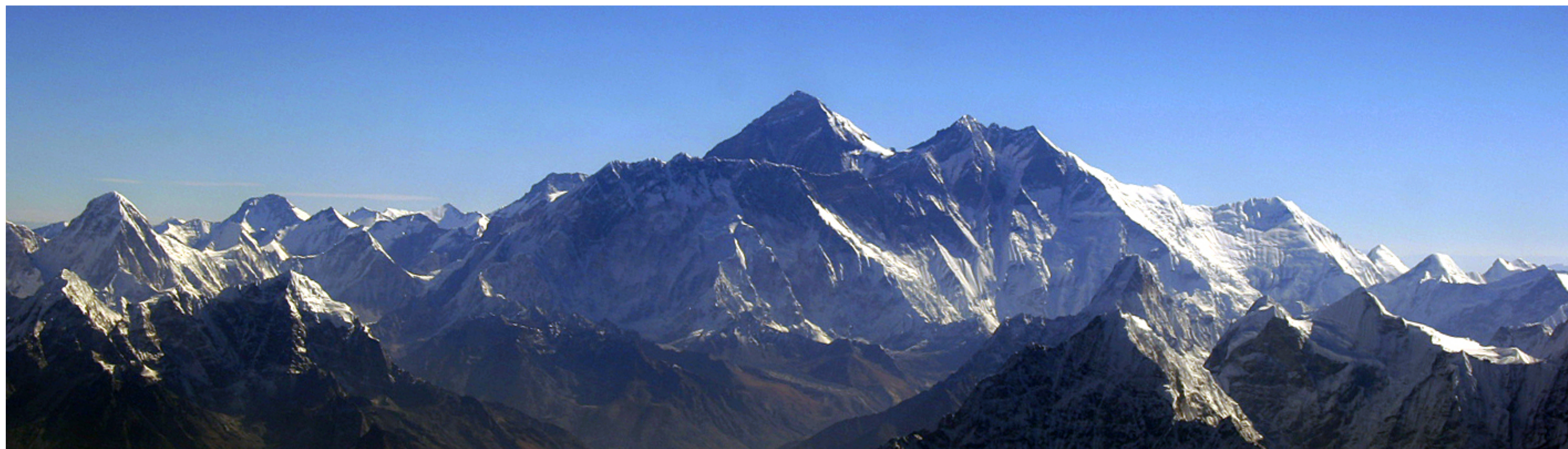


Folded Rock Layers



# Crustal Activity

- Evidence of Plate Tectonics [continued]
  4. Mountain Evidence - as plates collide they sometimes are pushed upward or downward





Himalayan Mountain Formation

# Crustal Activity

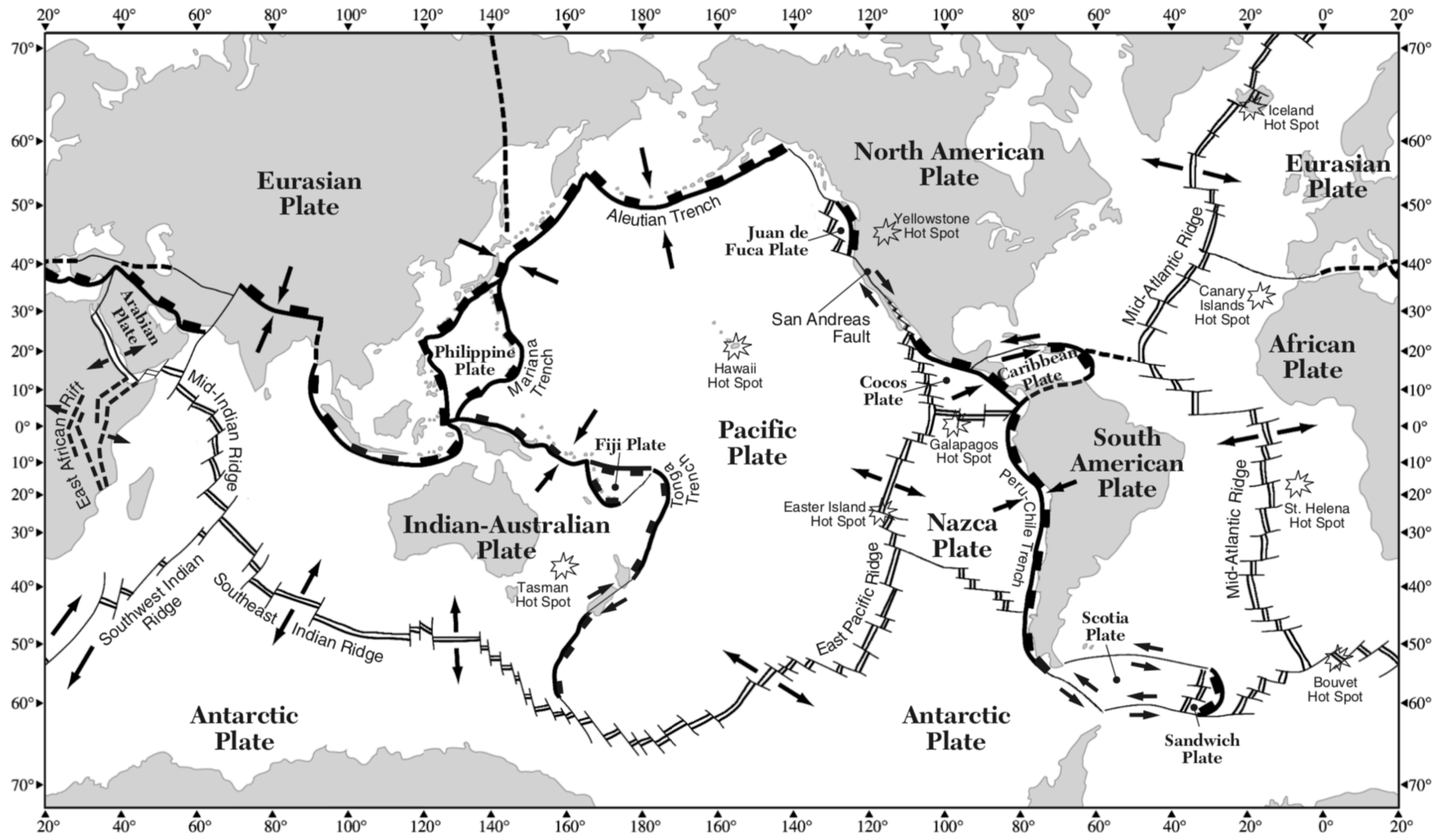
- Evidence of Plate Tectonics [continued]
  5. Fossil Evidence - fossilized shallow marine organisms can be found at high elevations in rock layers





Mount Diablo, CA

# Tectonic Plates



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