

PLATE TECTONICS



Discovery
HDSHOWCASE

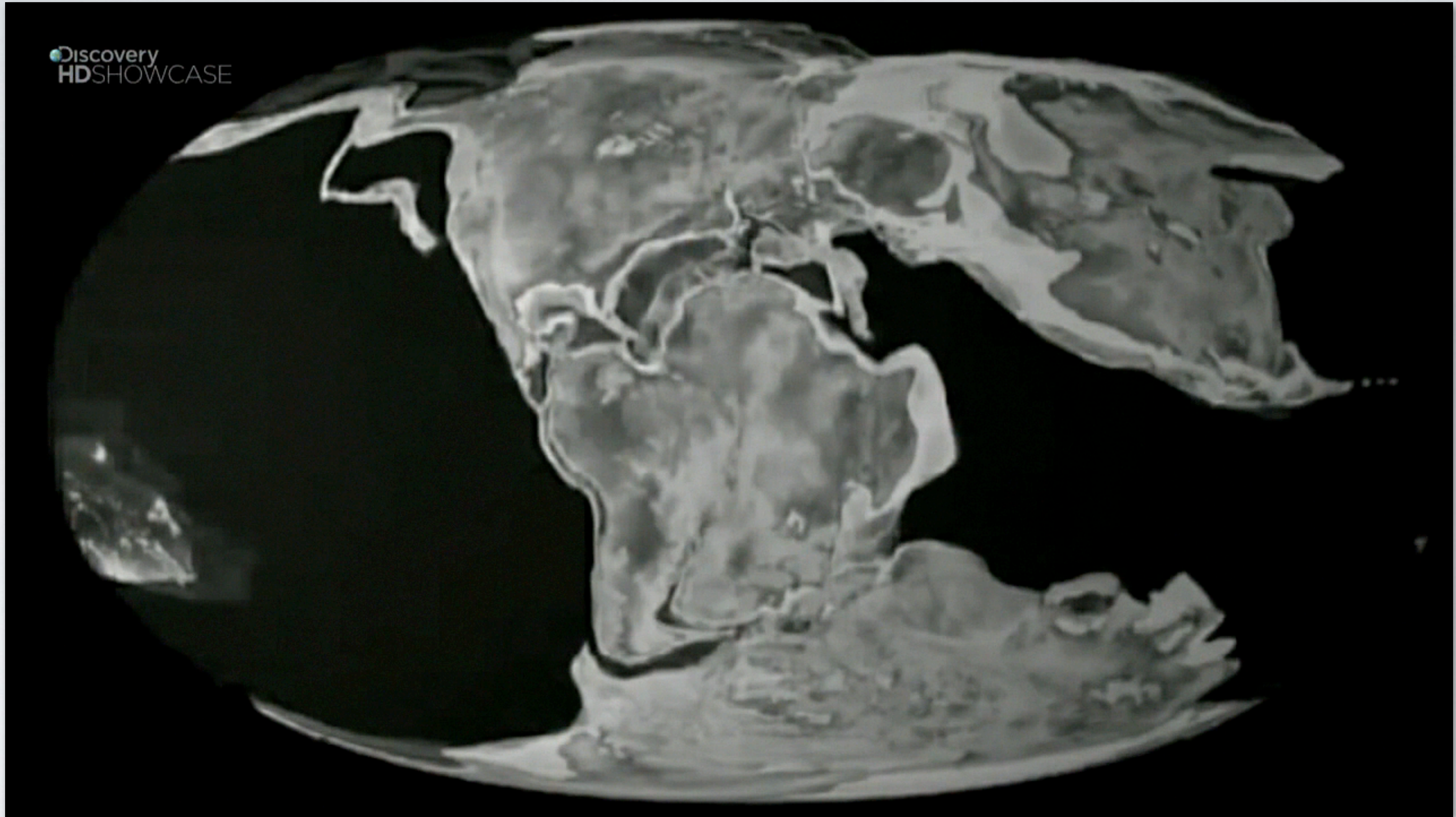


Plate Tectonics

PLATE TECTONICS

- Plate Tectonics - the study of the formation and movements of plates
- Earth's surface consists of a dozen major plates moving about 10 cm/year



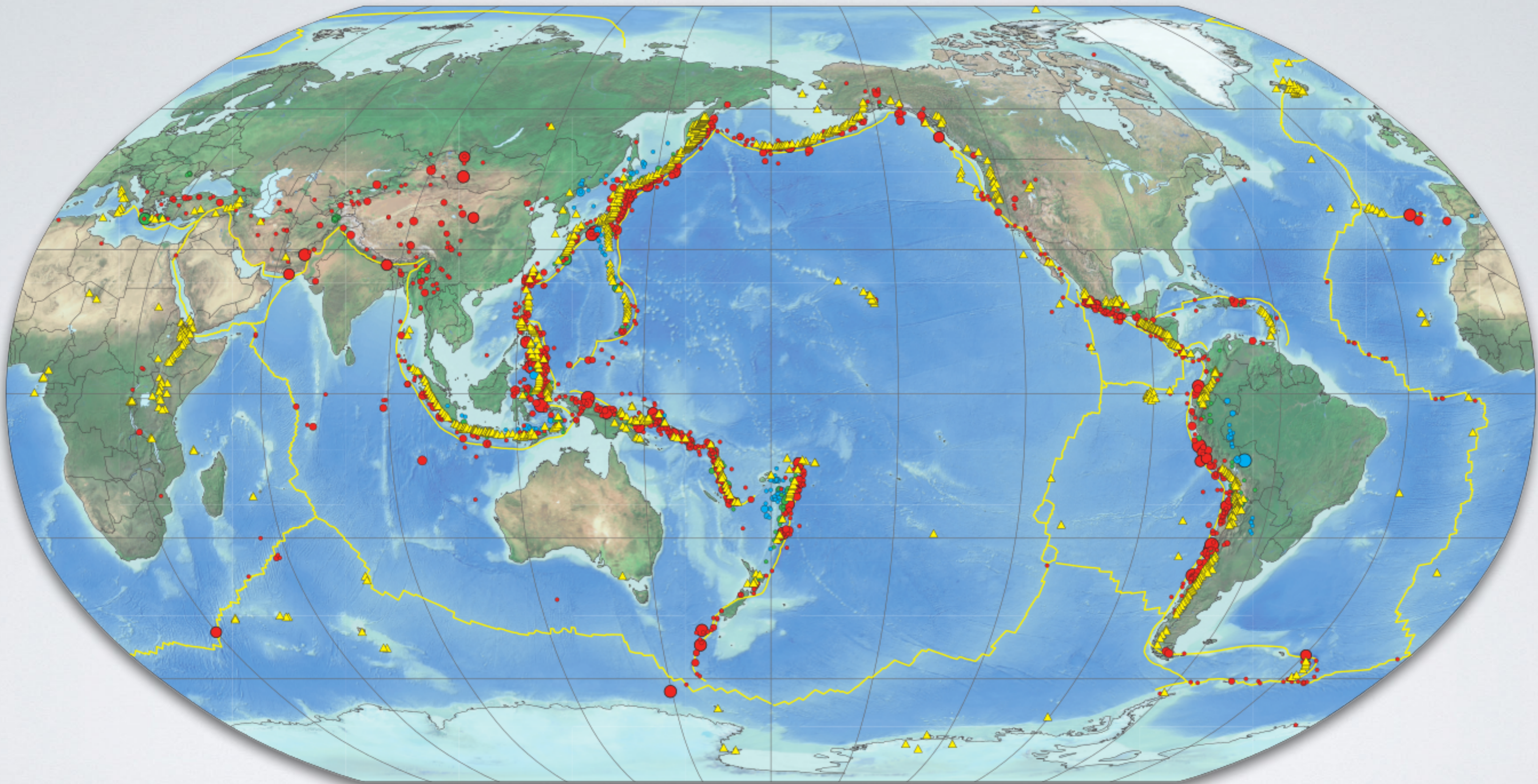
PLATE TECTONICS

- 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
 - Examples: sonar, seismometers, magnetometer

PLATE TECTONICS

- New Evidences Include:
 - Earthquake location data along plate boundaries



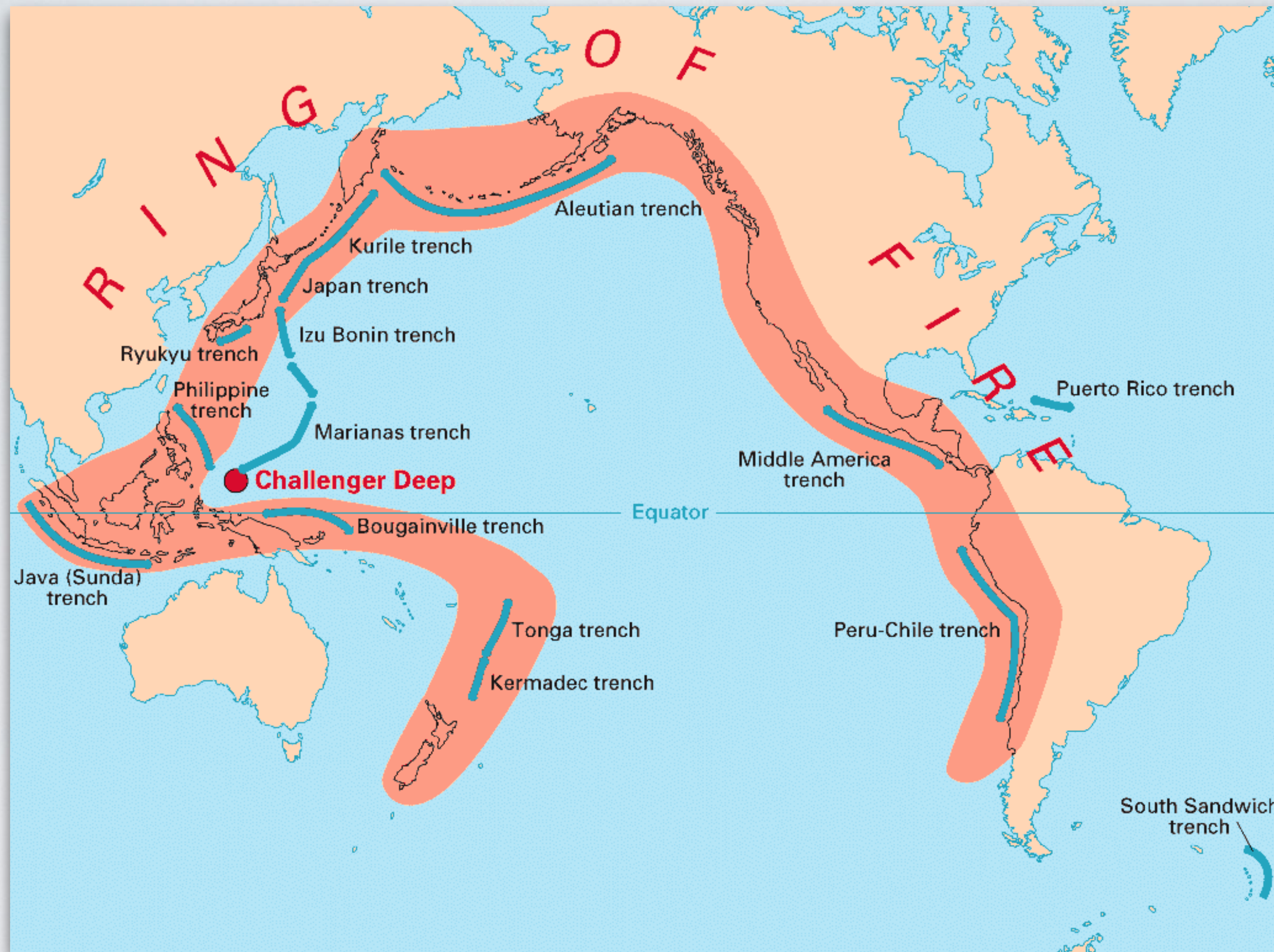


Earthquake Evidence

PLATE TECTONICS

- New Evidences Include: (continued)
 - Ring of Fire - isolated belt around the Pacific Ocean where 90% of the world's volcanoes exist



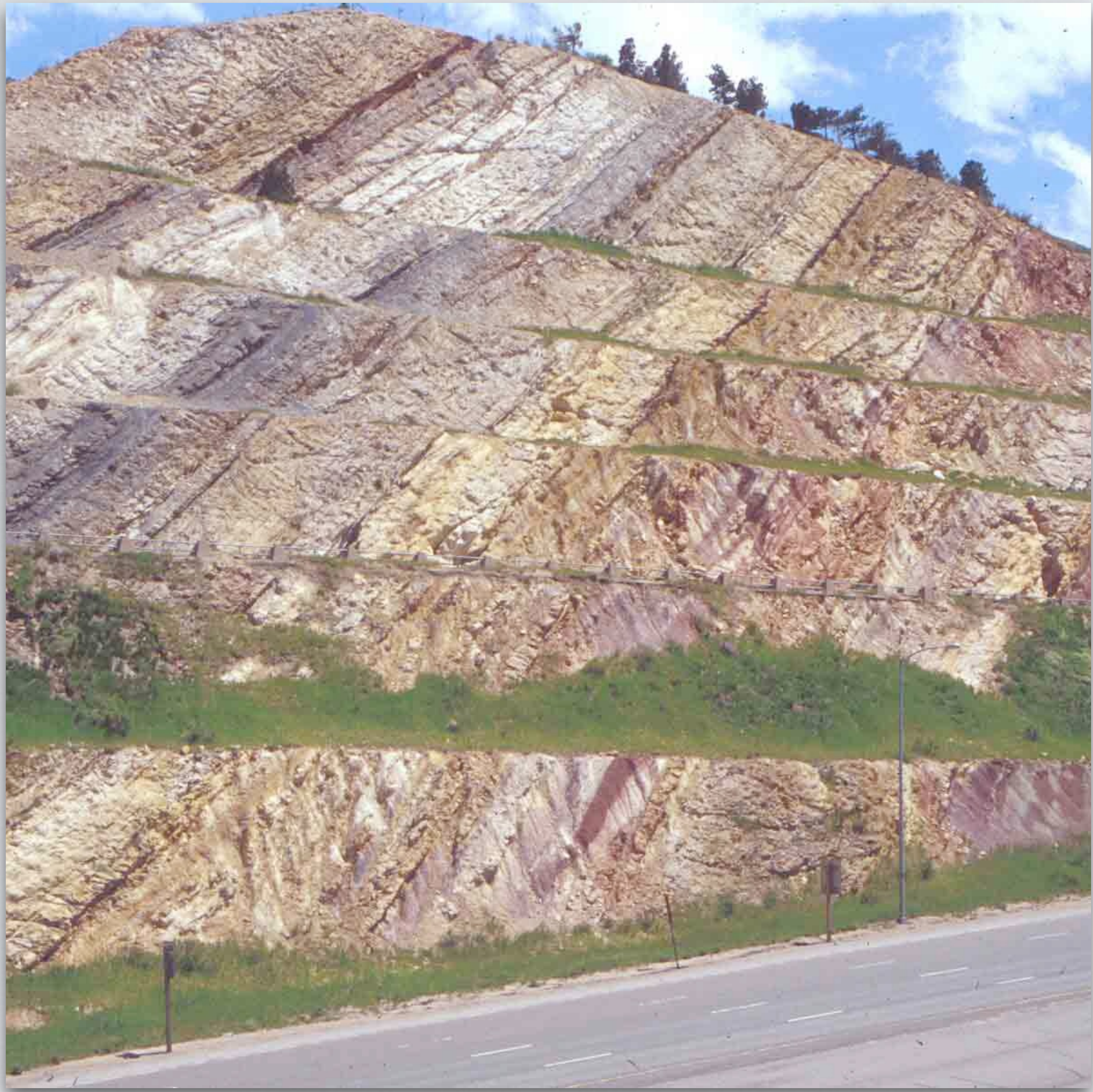


Ring of Fire

PLATE TECTONICS

- New Evidences Include: (continued)
 - Tilted and folded rock layers





Tilting and Folding

PLATE TECTONICS

- New Evidences Include: (continued)
 - Mountain building evidence and fossilized marine organisms can be found at these high altitudes





Himalayan Mountains

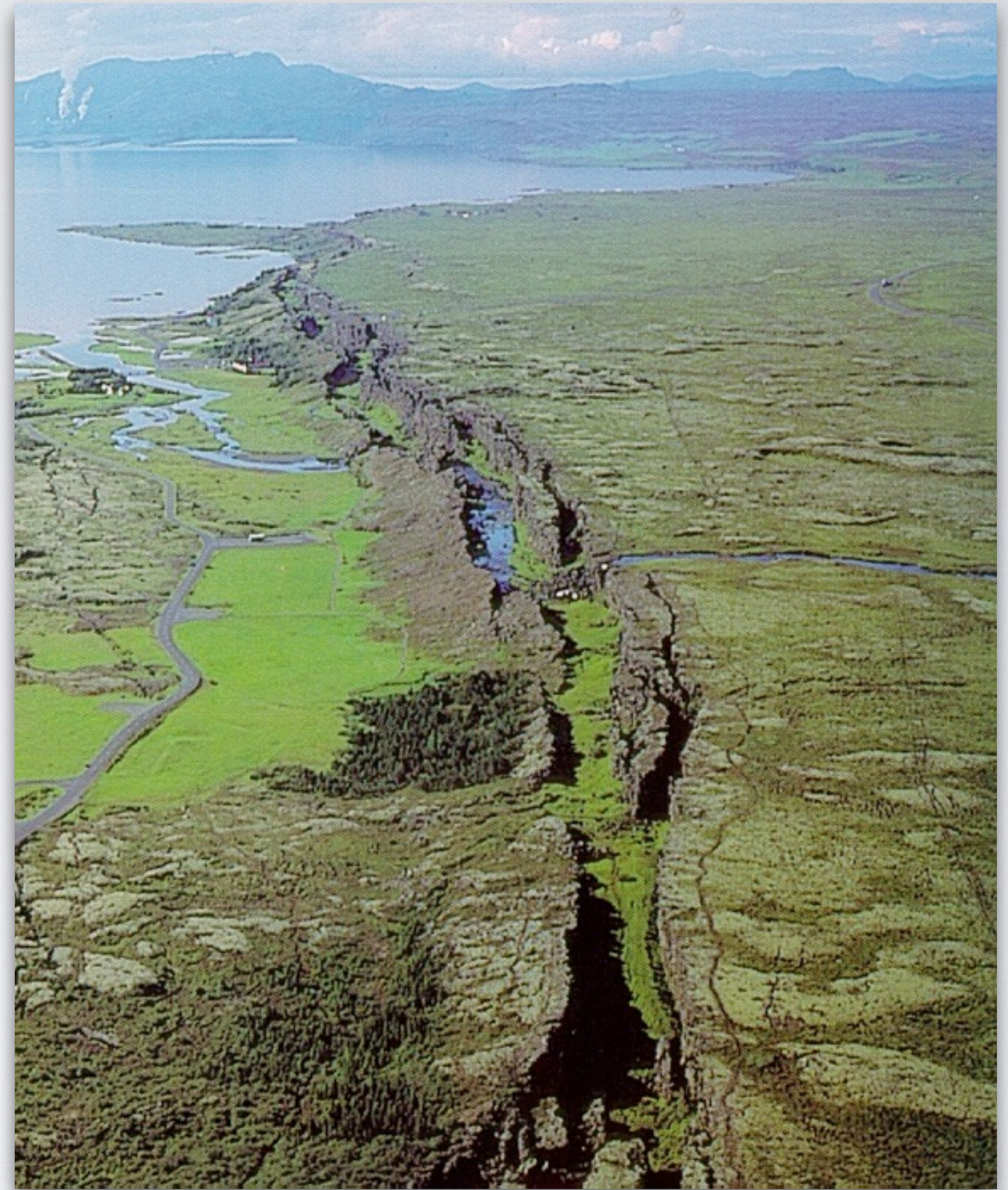
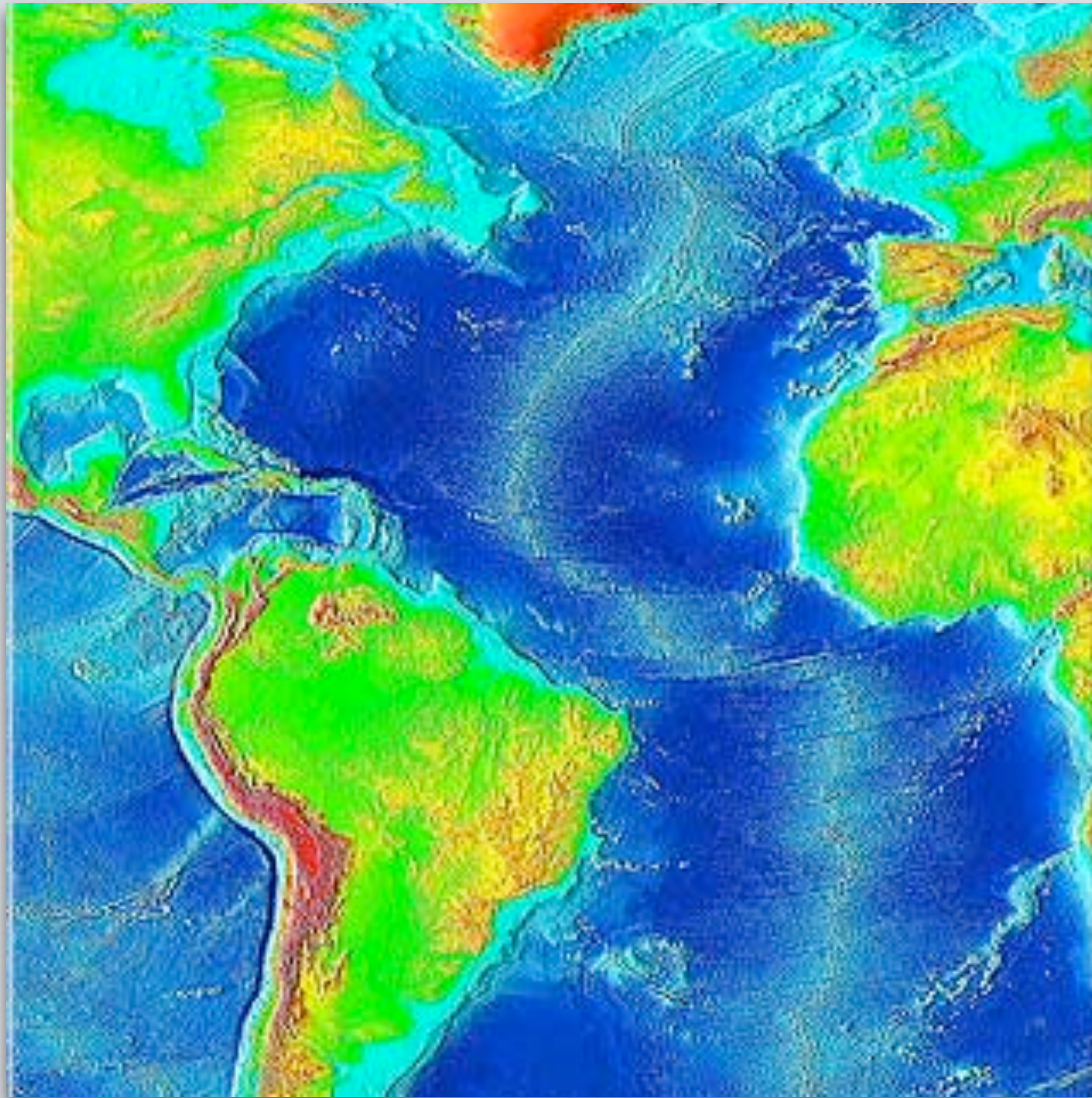
PLATE TECTONICS

- After the discover of all these new evidences scientist began to realize that the plates were interacting in three different types of motion:
 - Converging
 - Diverging
 - Transform



PLATE TECTONICS

- Perhaps the greatest discovery came when scientist discovered the mid-ocean ridge systems where the plates are moving apart
 - Found mainly under the ocean's surface except in Iceland
 - Seafloor Spreading - the process where ocean floor is extended when two plates move apart

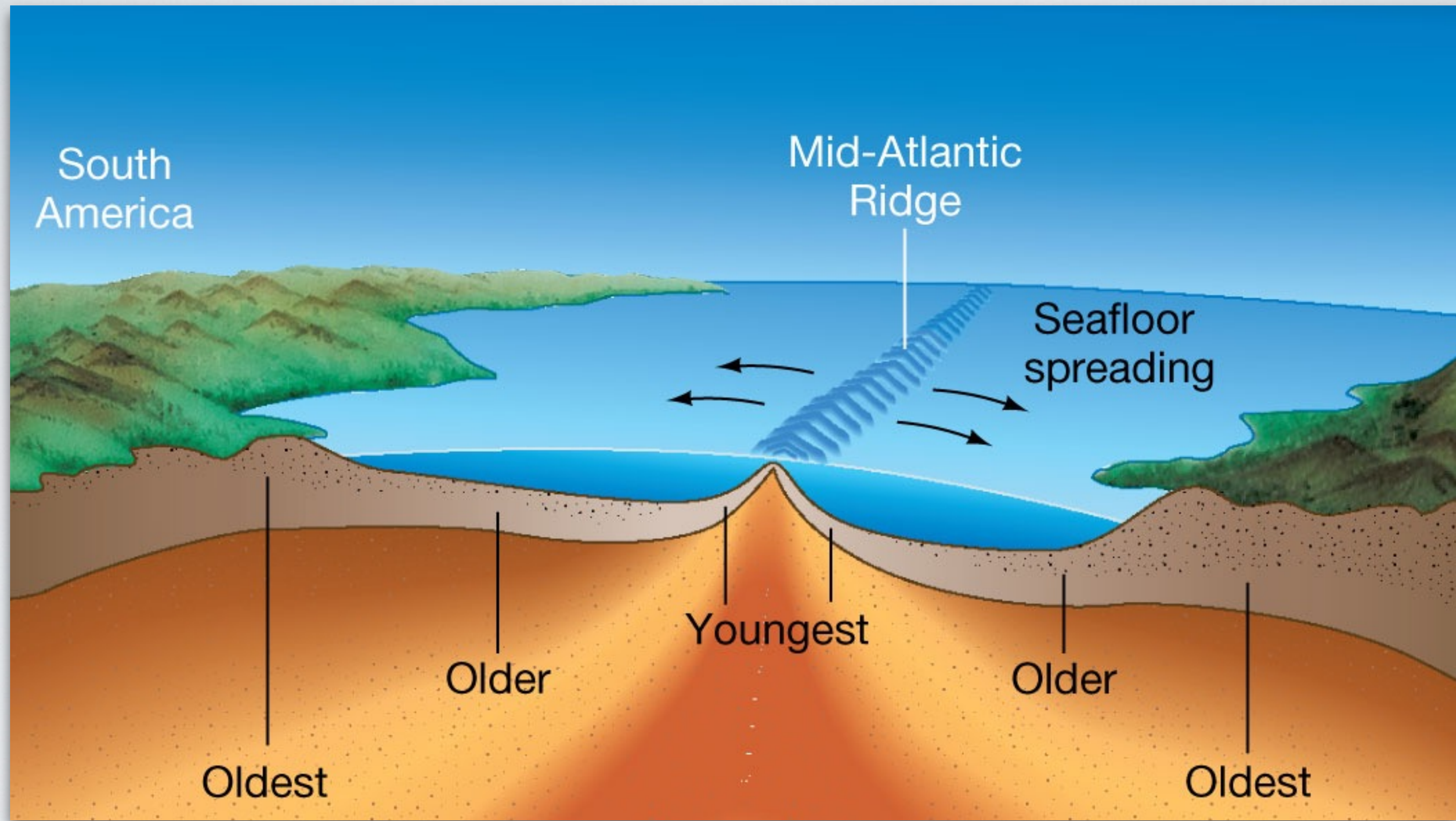


Mid-Ocean Ridges and Iceland

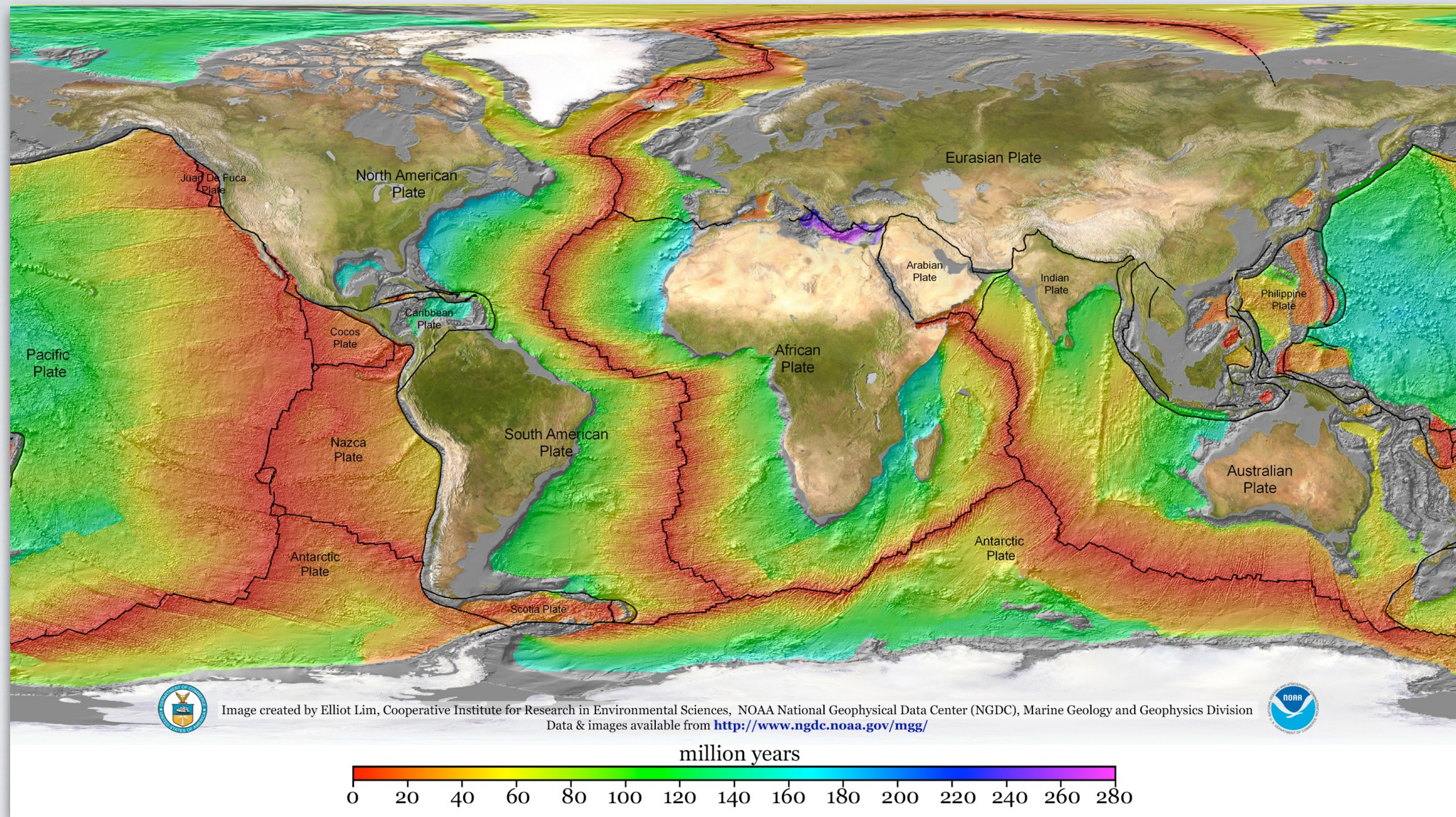
PLATE TECTONICS

- Evidence of Sea-floor Spreading:
 - I. Age of the seafloor gets progressively older away from the ridge





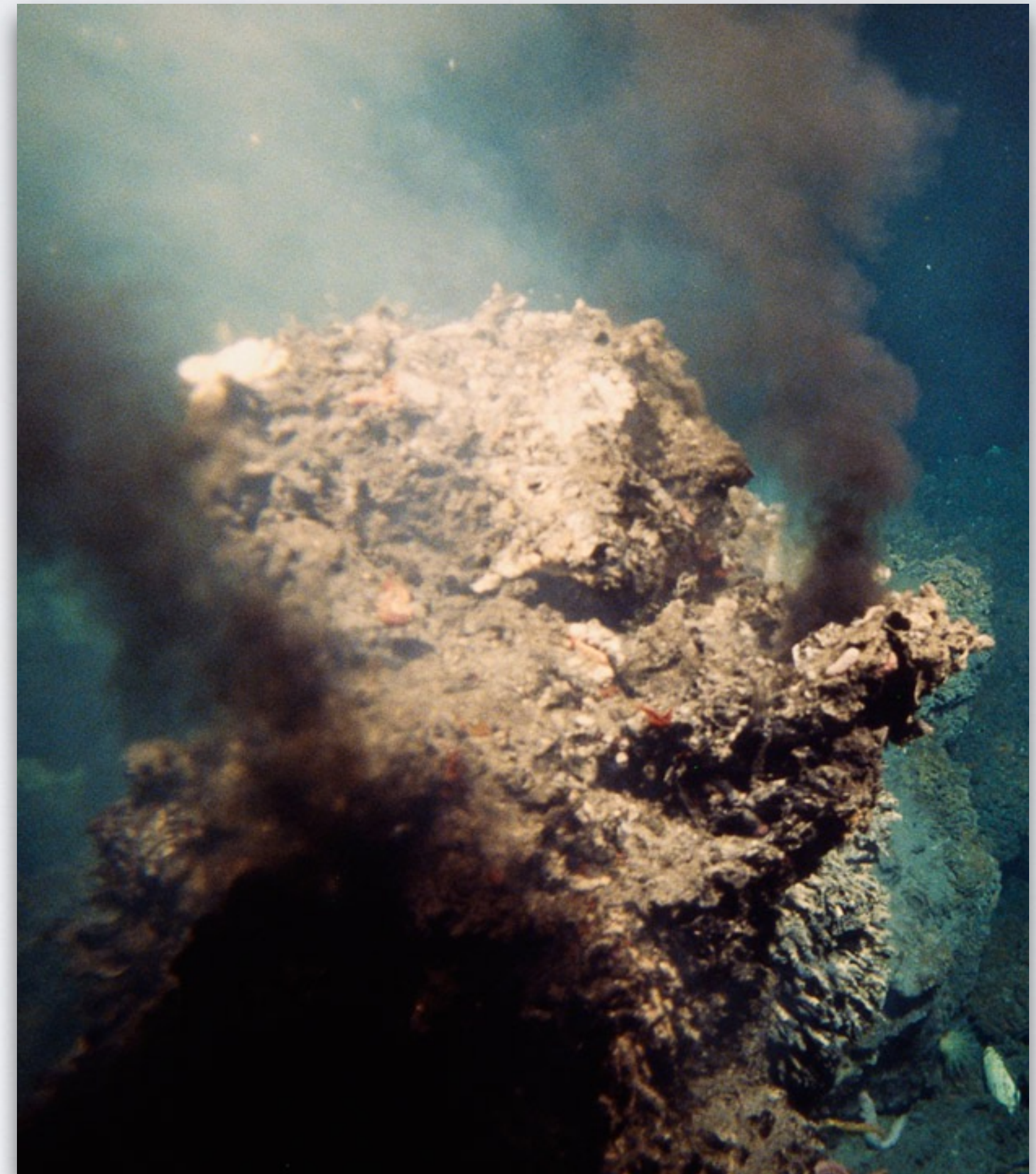
Age of the Sea floor



Age of the Seafloor

PLATE TECTONICS EARTH

- Not only was this the location of new crust formation, but the heat source at the mid-ocean ridges allowed for life to exist where it was once thought impossible





Giant Tube Worms

PLATE TECTONICS

- Evidence of Sea-floor Spreading: (continued)
 2. Reversed polarity in rock record away from the ridge

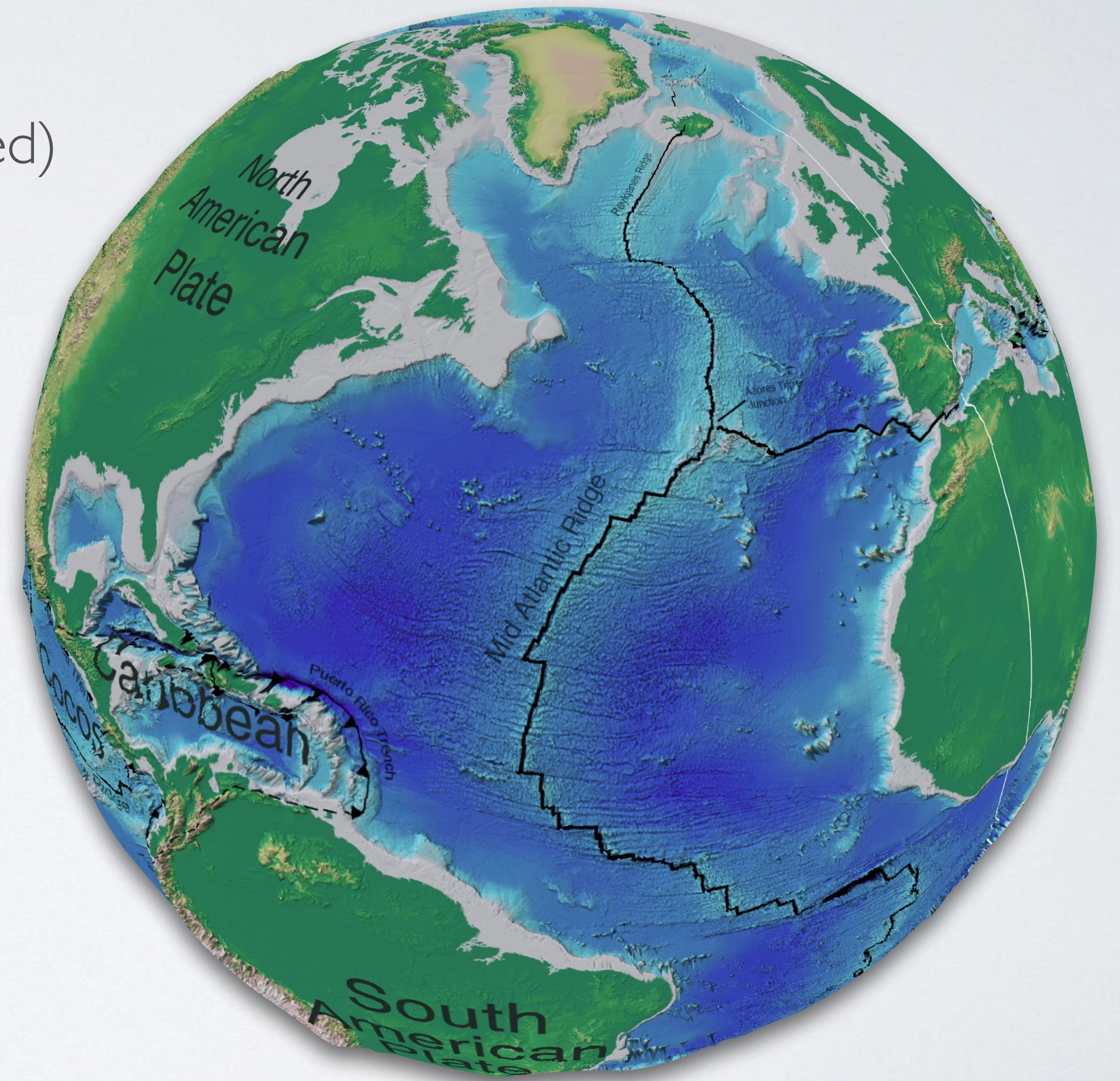
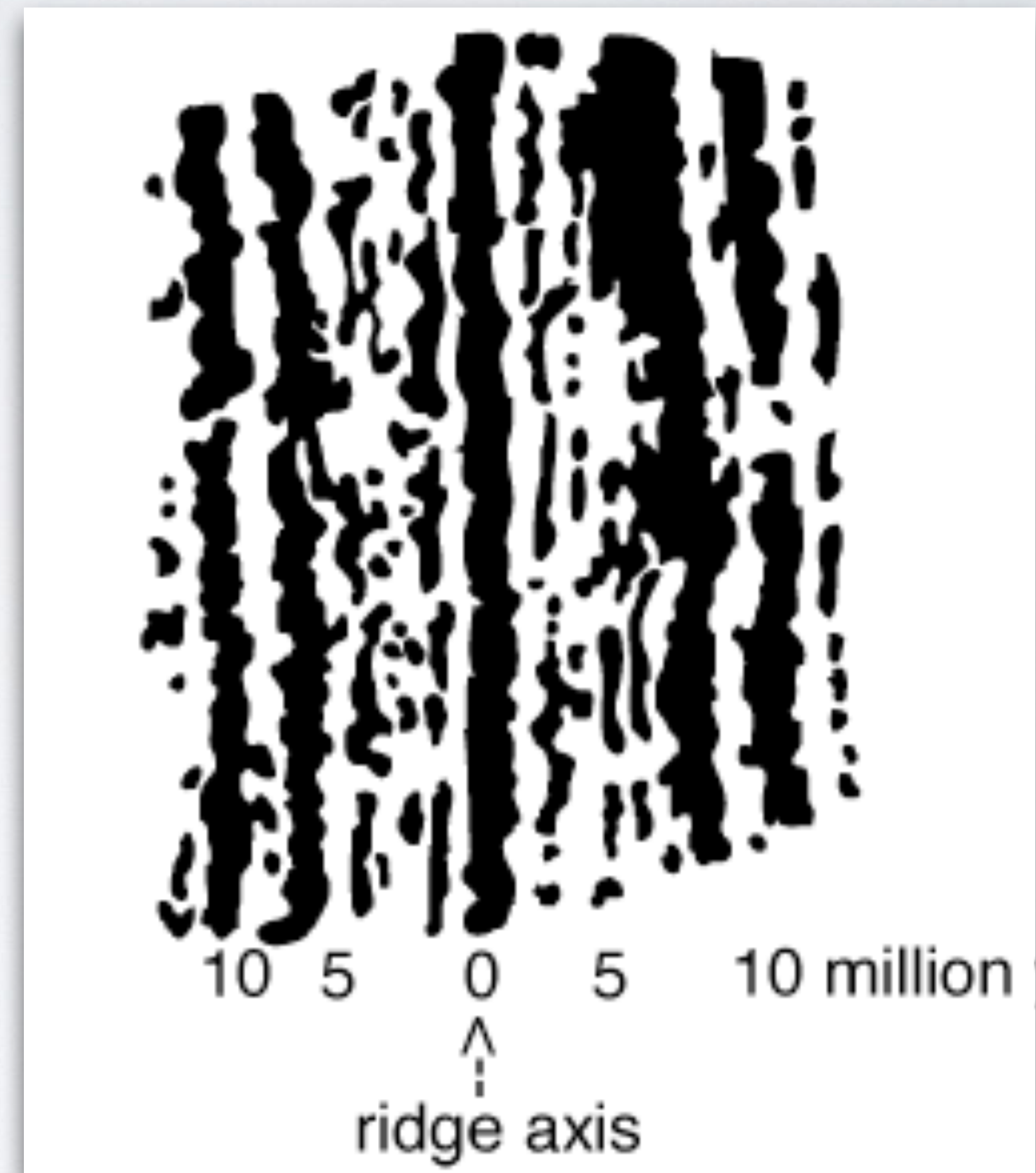
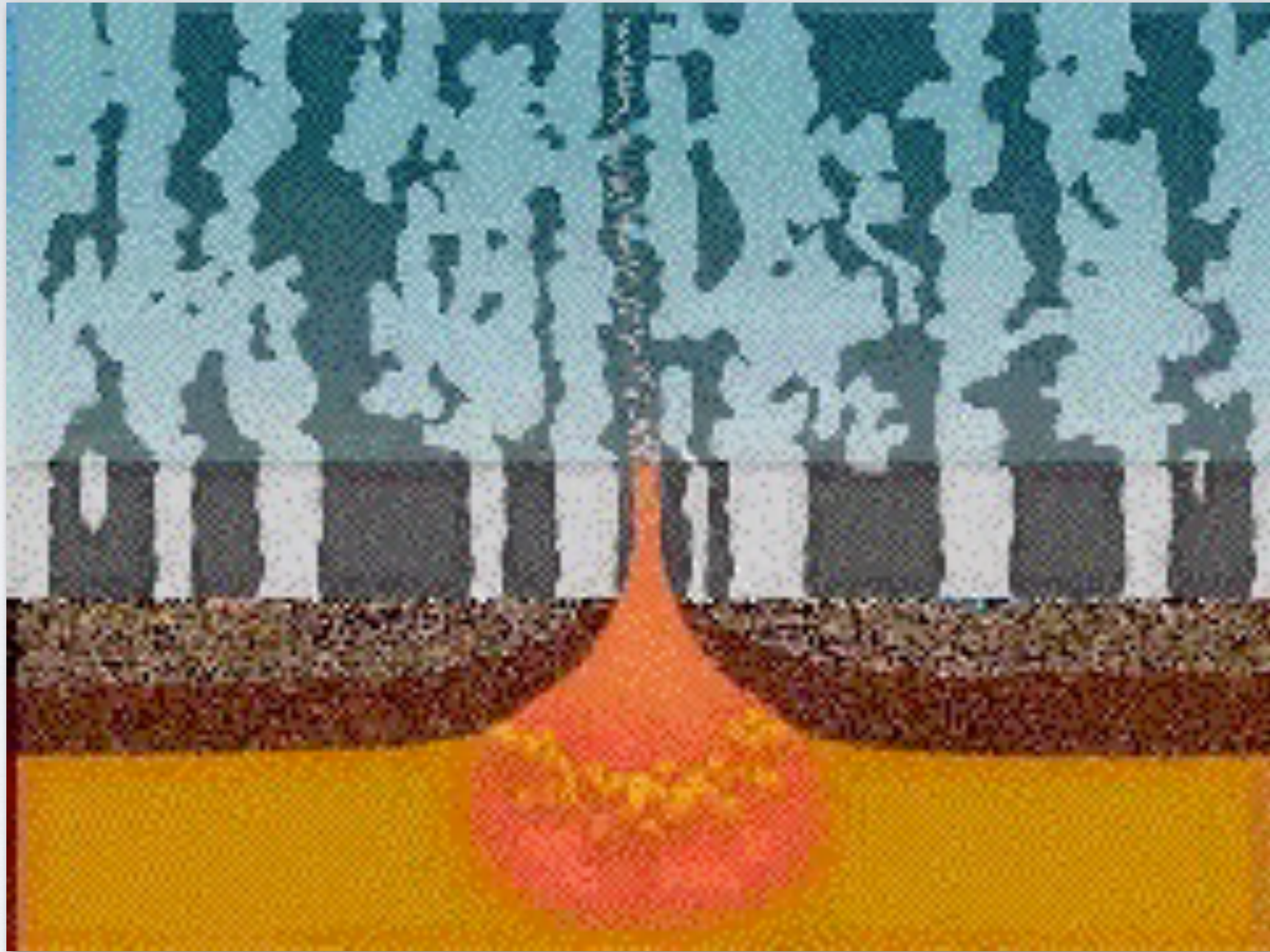


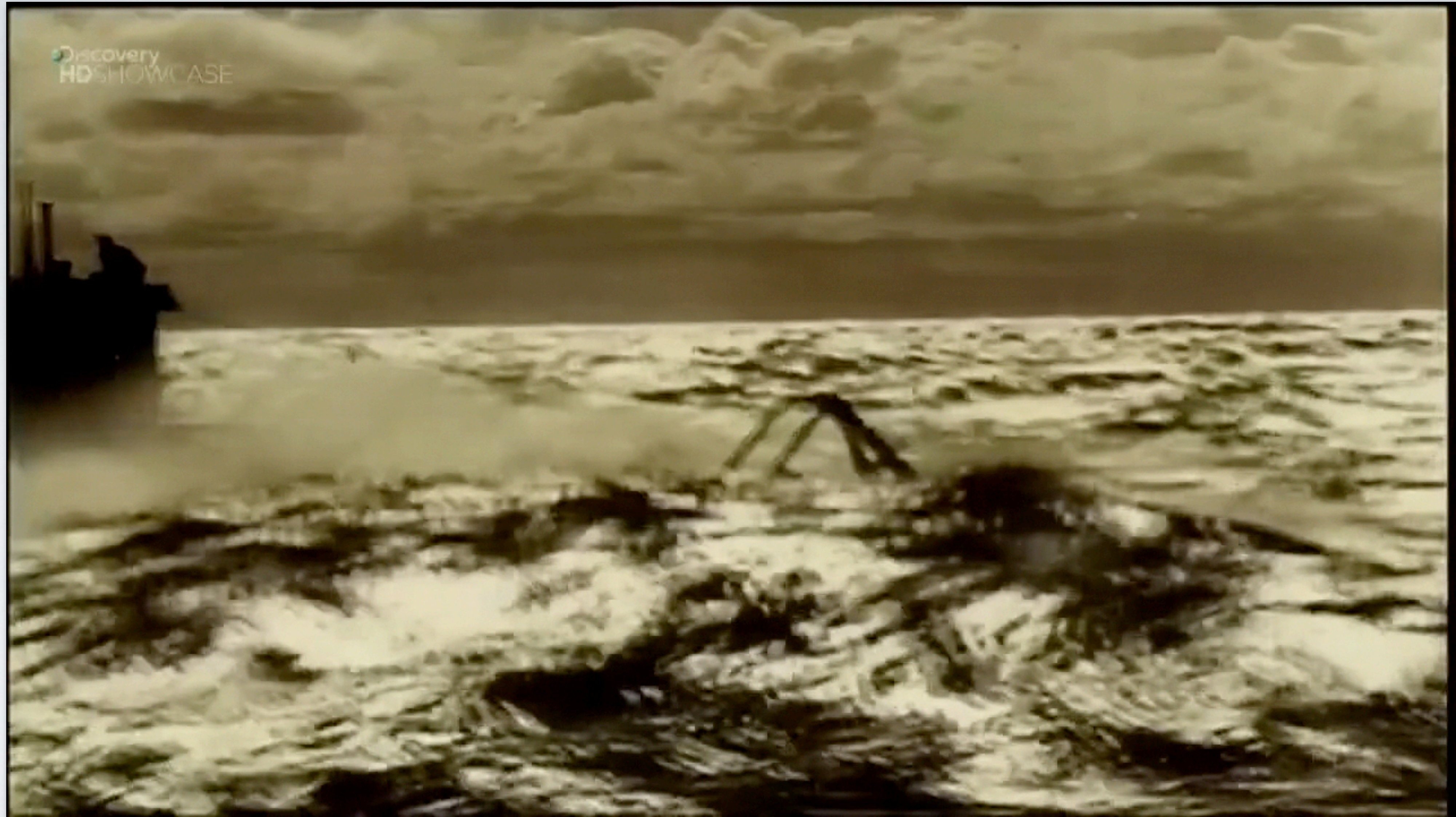
PLATE TECTONICS

- When a magnetometer surveyed the ocean floor a unique magnetic pattern emerged
- Stripes of normal and reversed polarity parallel the mid-ocean ridge flipping every 200,000 to 300,000 years





Reversed Polarity



Sea-floor Spreading

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