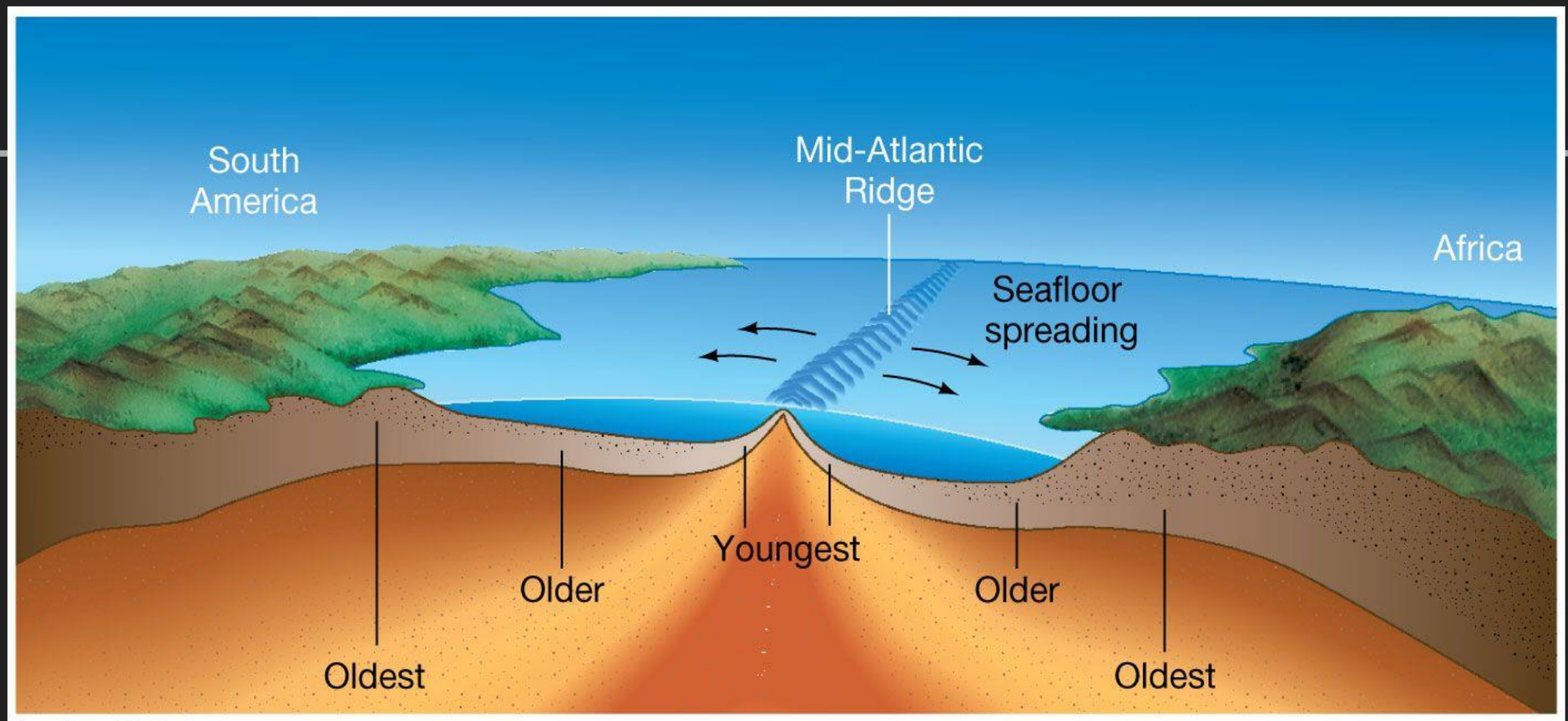
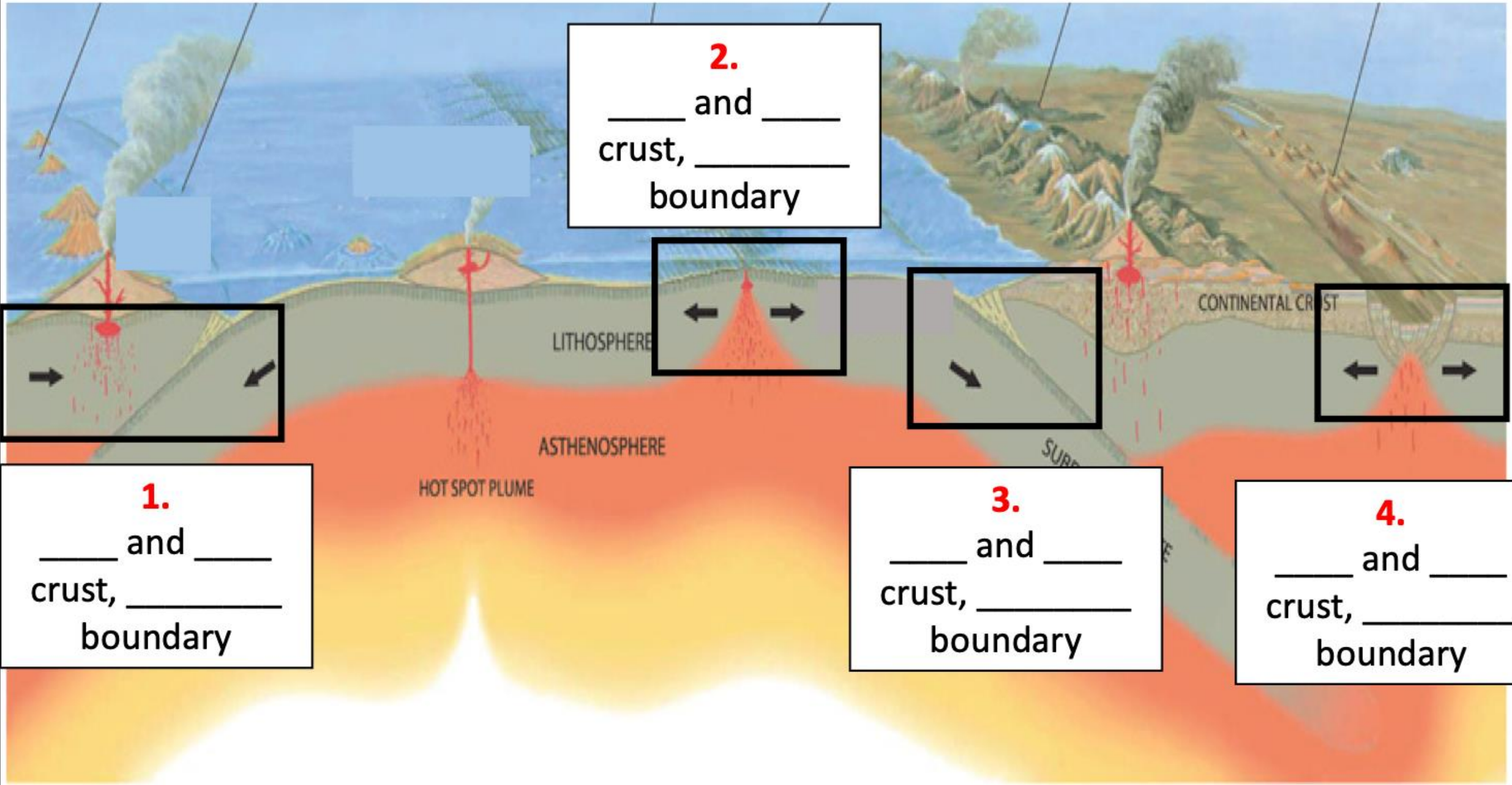
#12

SEA FLOOR SPREADING NOTES



Warm-up: fill in the blanks about the type of crust and plate boundaries



2.
_____ and _____
crust, _____
boundary

1.
_____ and _____
crust, _____
boundary

3.
_____ and _____
crust, _____
boundary

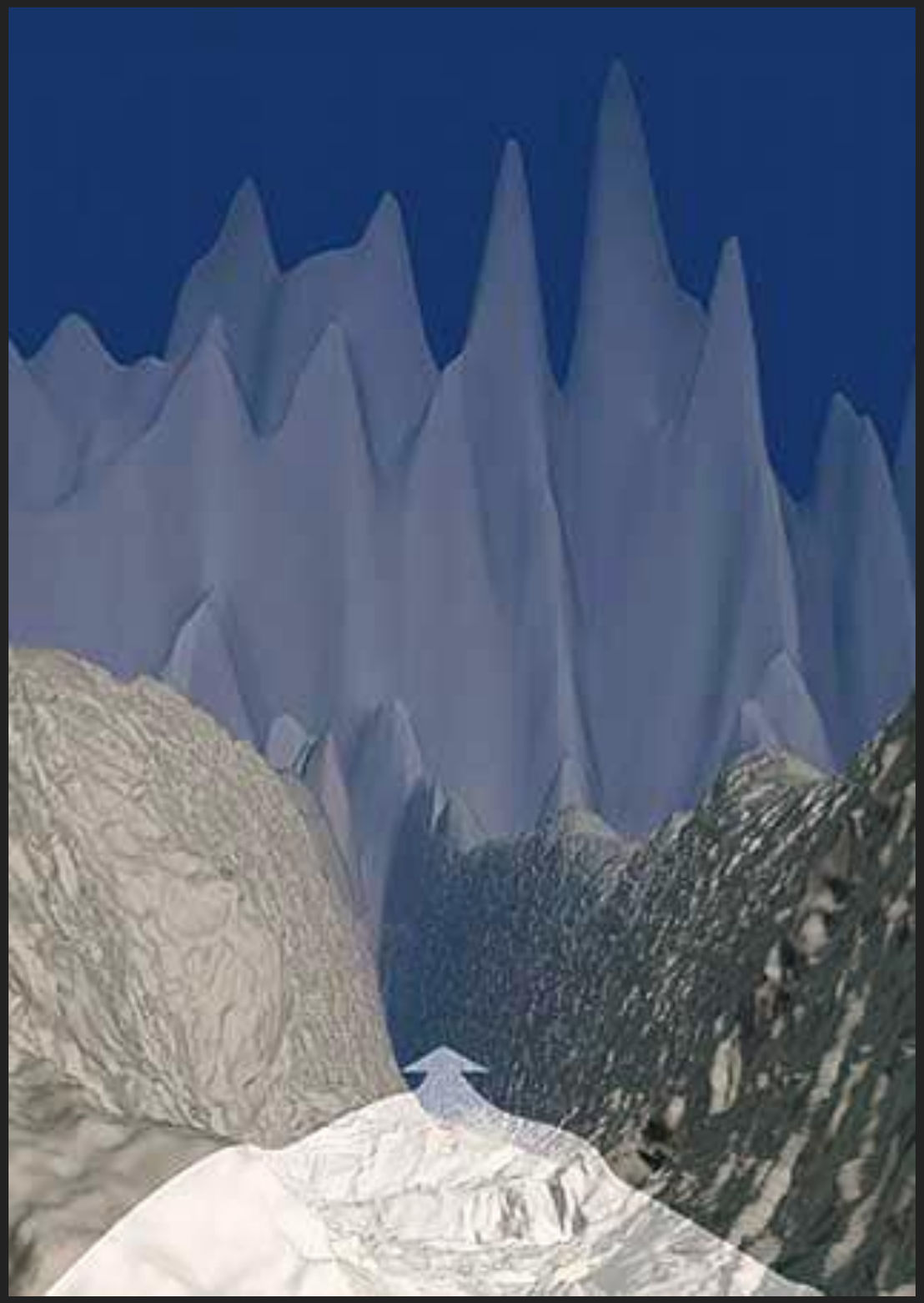
4.
_____ and _____
crust, _____
boundary

THE SEA FLOOR ISN'T FLAT....

In 1962 Henry Hess explored the ocean, he helped us discover that the sea floor was not not flat like we thought. In fact, it is covered with several underwater mountain ranges and volcanoes

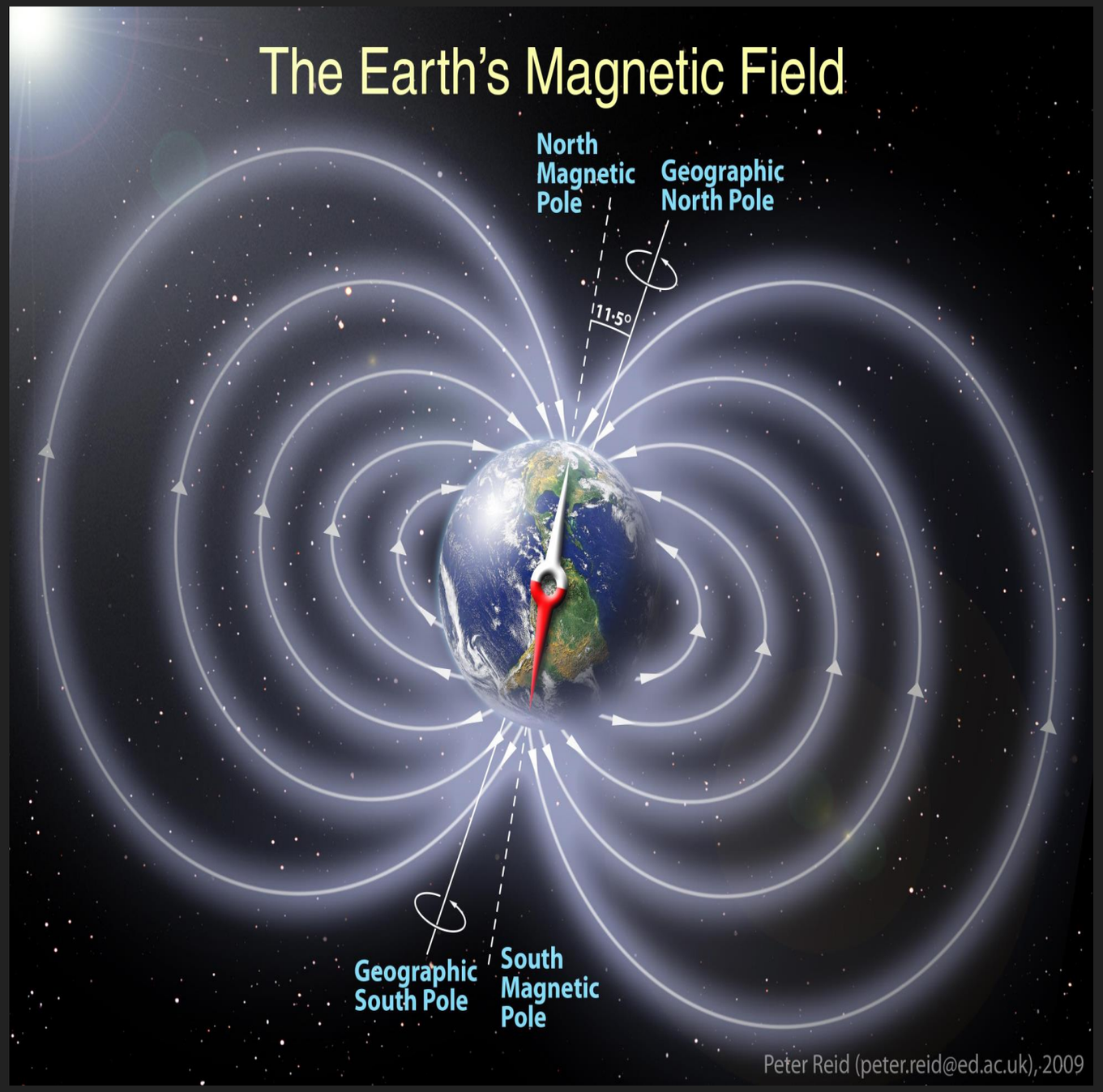
The ranges form over time from hot magma spewing out of volcanoes, cooling and hardening into new rock.

*The underwater mountain ranges are known as mid ocean ridges.



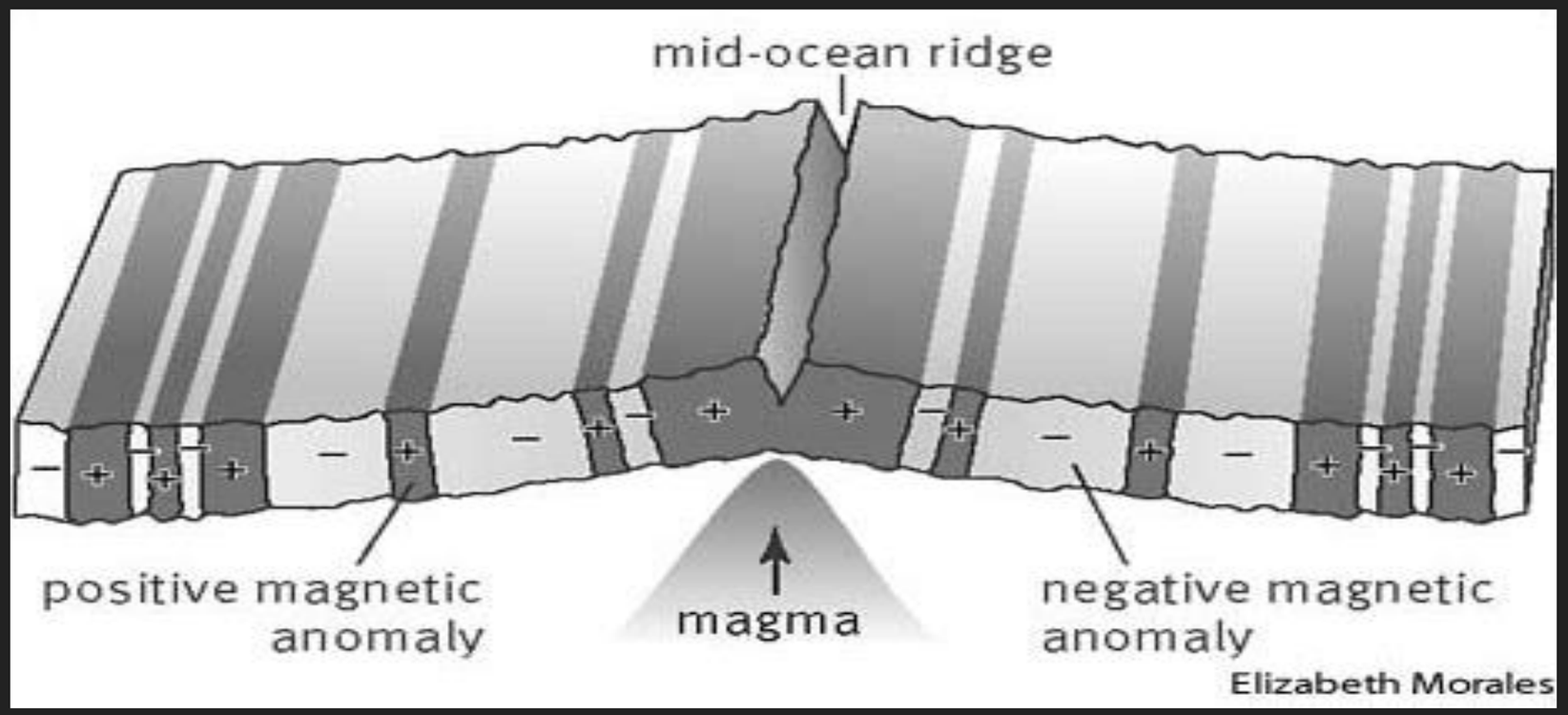
* DISCOVERY AT MID OCEAN RIDGES

- Mid ocean ridges occurs along divergent plate boundaries.
- New (younger) crust is found closest to the mid ocean ridges and gets older the further you move from the ridge
- As the magma on the sea floor cools and hardens by the mid ocean ridge, iron in the magma align in the direction based off the Earth's magnetic poles.



* MAGNETIC REVERSALS

- Scientist looked at the seafloor crust and found evidence that throughout Earth's history, the north and south magnetic poles have changed places several times
- A magnetic reversal occurs when Earth's magnetic field reverses, causing the iron in the magma to align in the opposite direction.
- The youngest rock records are located the closest to the mid ocean ridge and the oldest near the ocean trench



MAGNETIC REVERSALS VIDEOS

Magnetic field 100 greatest discoveries (2:34)

- https://youtu.be/igGsuDYxhEA

What happens when the poles reverse (3:02)

https://youtu.be/Ou1BiorYRNU

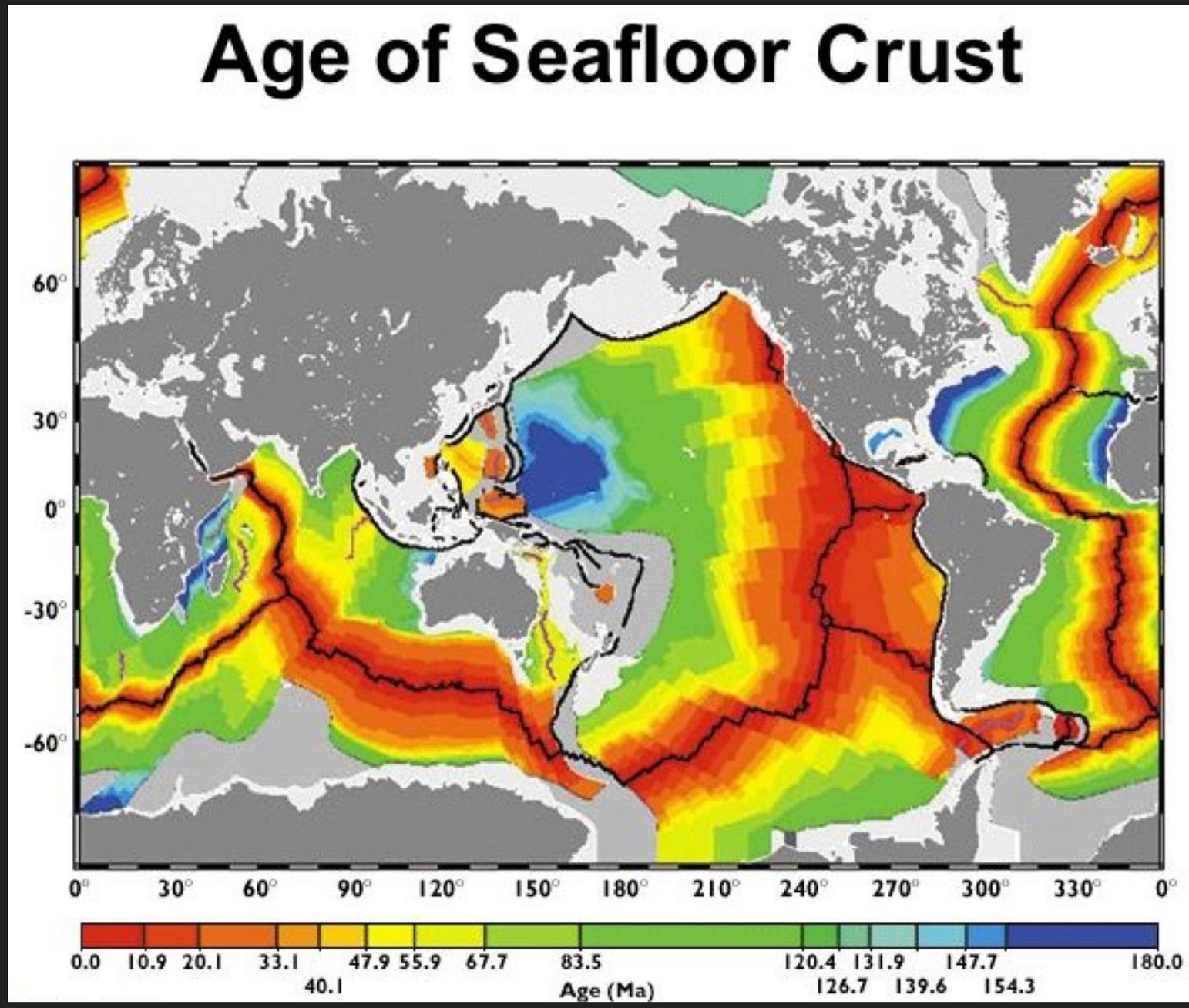
- Discovery ed video

WHERE DOES OLDER CRUST GO?

As new crust is being made near the mid ocean ridges, convection is responsible for moving the tectonic plates away from this area.

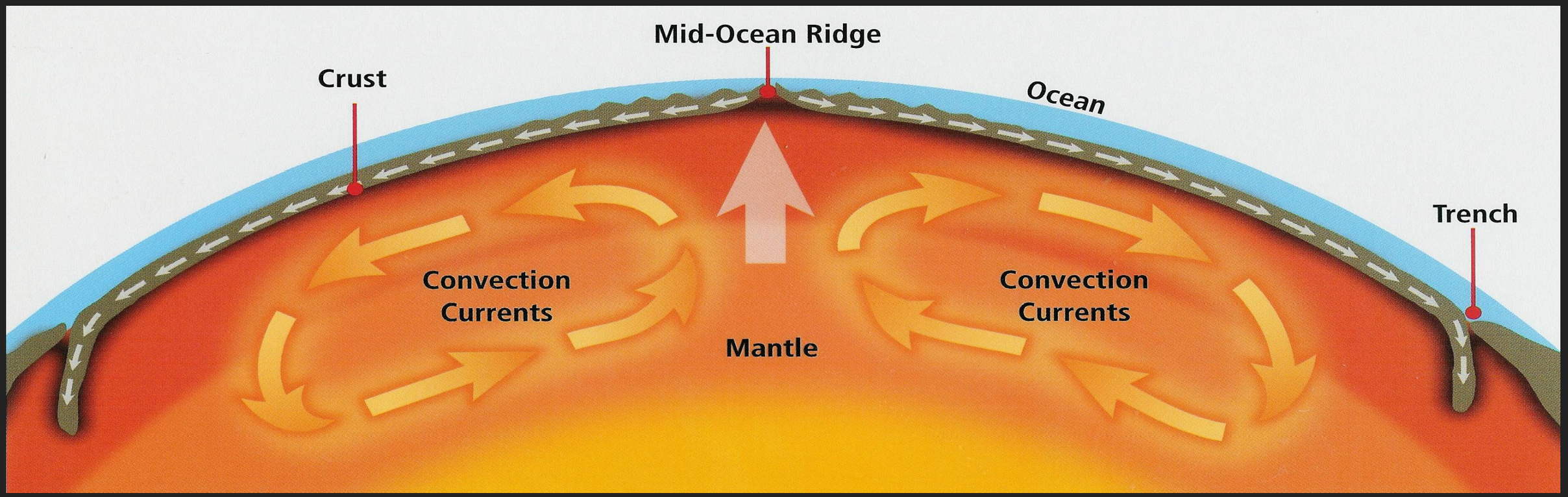
*The further you move from the ridge, the older the oceanic crust.

*Older crust is found near ocean trenches, also known as subduction zones



* HOW AND WHERE IS CRUST BEING DESTROYED?

A process called **<u>subduction</u>** takes place at the ocean trenches. Here, oceanic crust gets pushed beneath continental crust towards the mantle and melts. This process destroys oceanic crust.



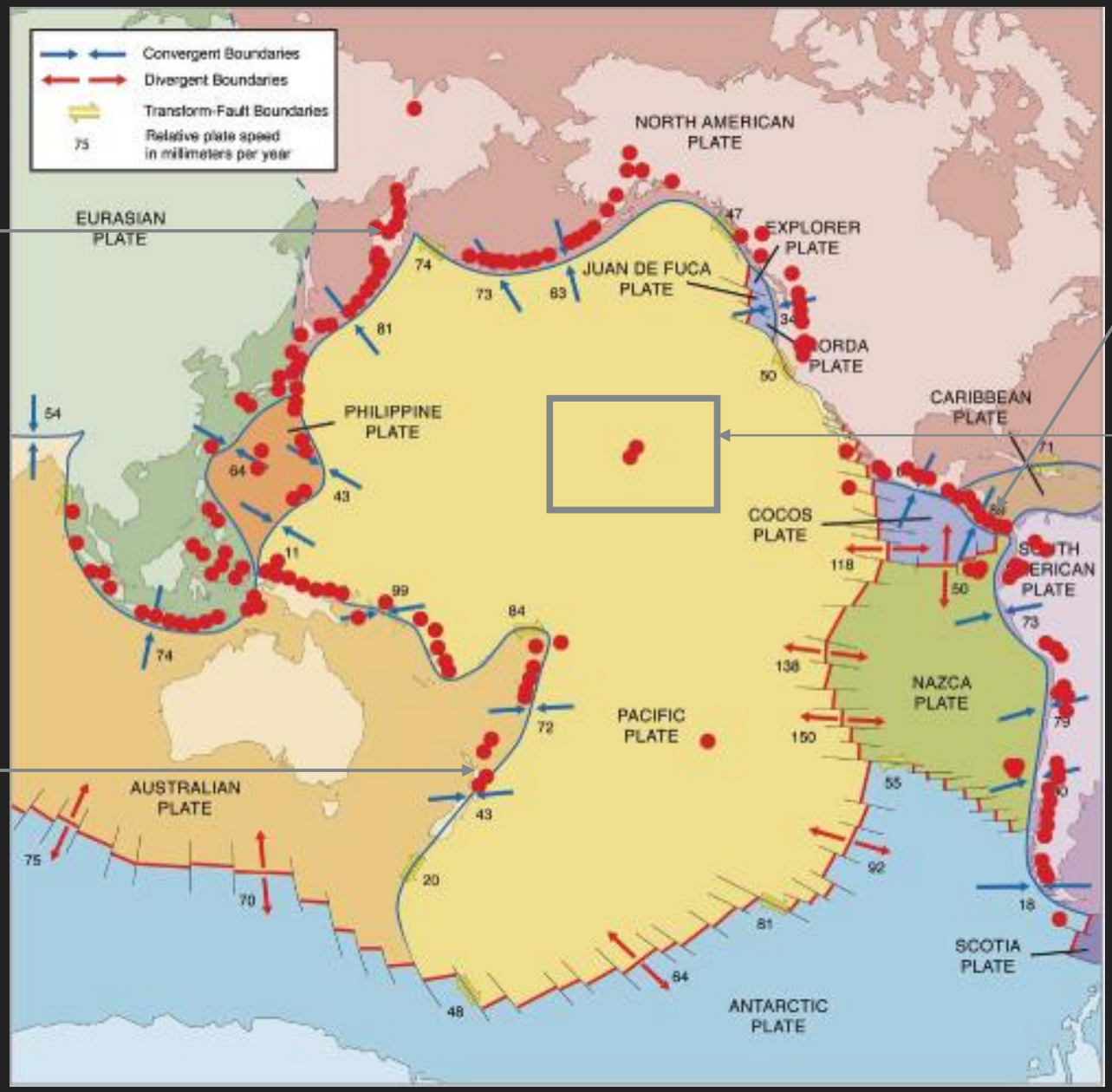
CONCEPT CHECK

Read textbook pages A16-17: Evidence from the Sea floor to answer the following:

A friend tells you that they read online that the earth is getting smaller. What can you tell them to prove that that the Earth's size is NOT changing

Write in complete sentences and tell the age of oceanic crust compared to continental crust

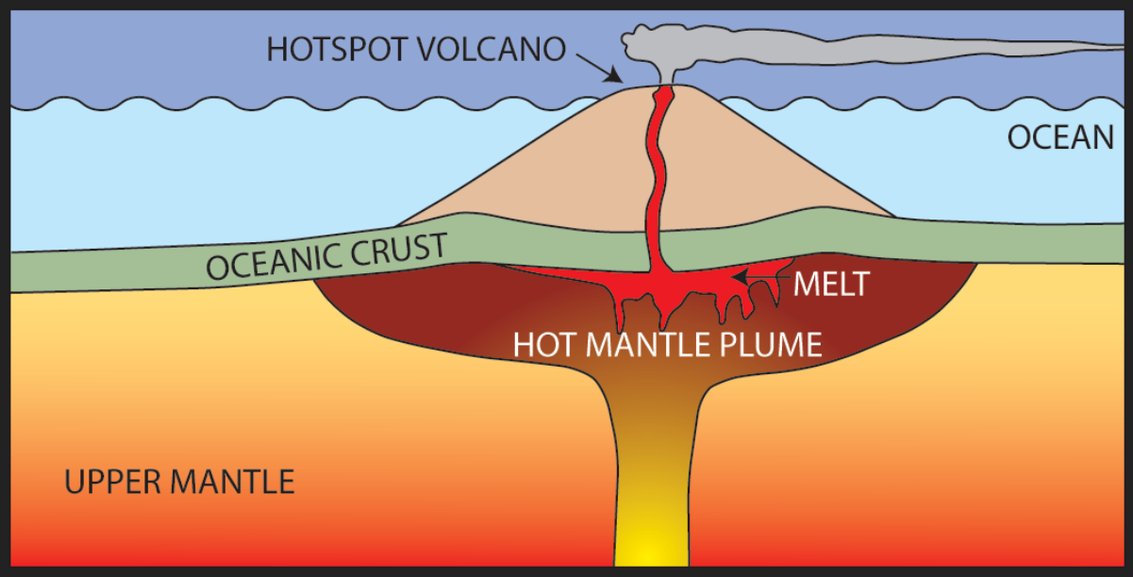
WHAT OTHER EVIDENCE PROVES TECTONIC PLATES ARE MOVING



Hotspot volcanoes

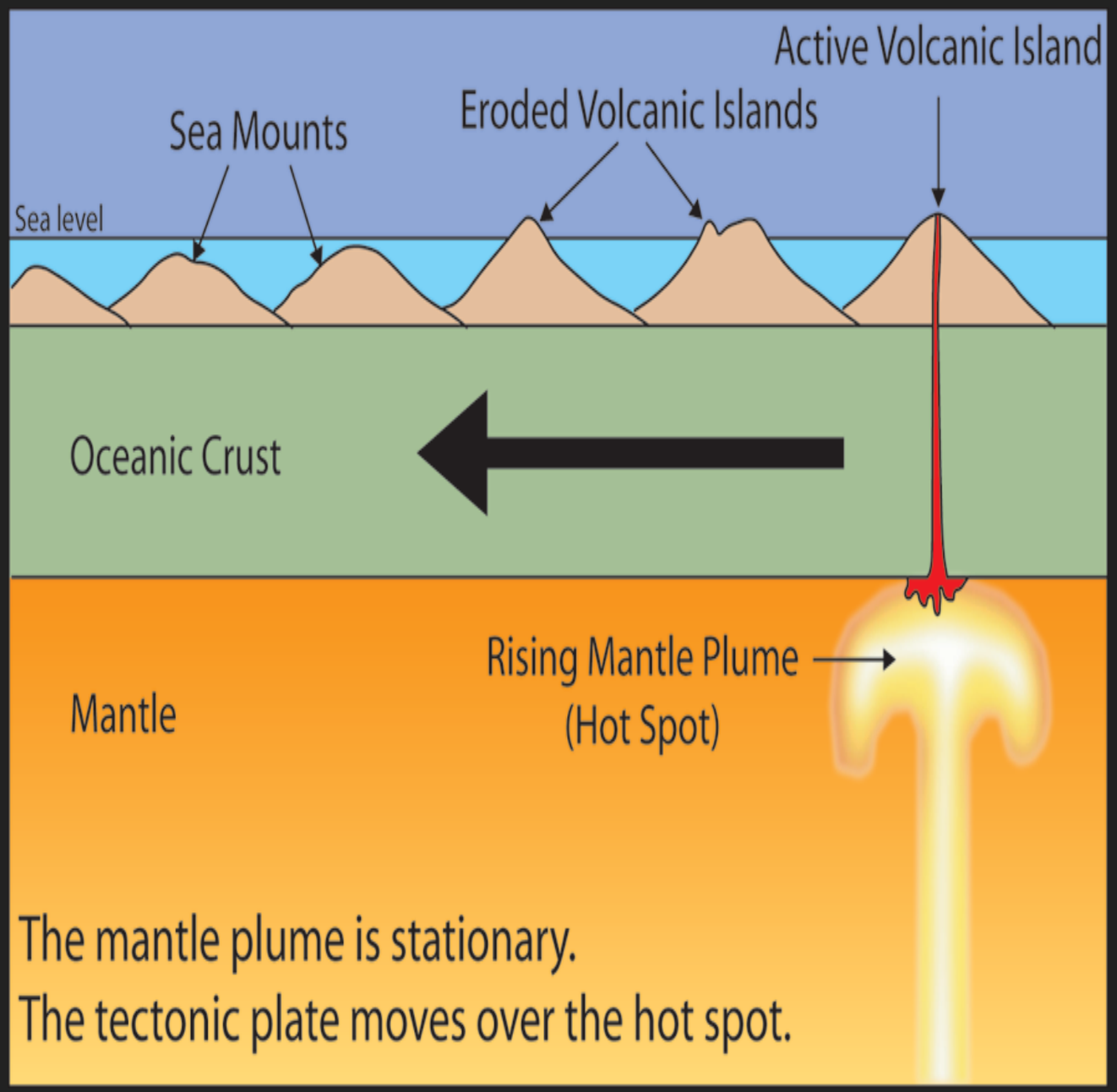
*What are Hotspot Volcanoes?

- A **hotspot** is a location on the Earth's surface that has experienced active volcanism for a long period of time.
- Hot mantle **plumes** are areas where magma collects and rises from the mantle to the surface inside tectonic plates.



The Hawaiian island chain are examples of hotspot volcanoes.

*UNDERWATER MOUNTAINS CHAINS



- Since tectonic plates are moving and a hotspot plume is not, volcanoes will eventually move off the plume and erode over time.
- The youngest and active volcano sits directly on top of the plume, while older volcanoes are located further away from the hotspot

EXTRA…

- https://www.regents-earthscience.com/dynamic-crust.html

WARM-UP/ CONCEPT CHECK

You are about to watch a spoof clip about some of the topics we learned about in class so far. Write about 3 different topics covered in the class that are portrayed in the clip.

https://www.youtube.com/watch?v=zocutif0cQY&t=14s

2:40