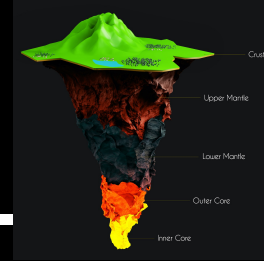
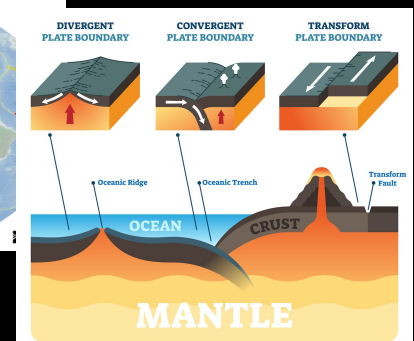
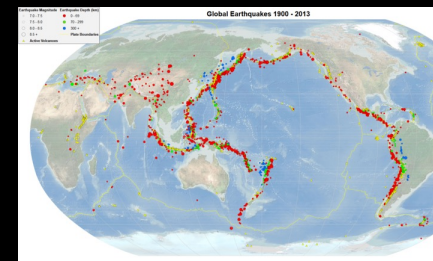
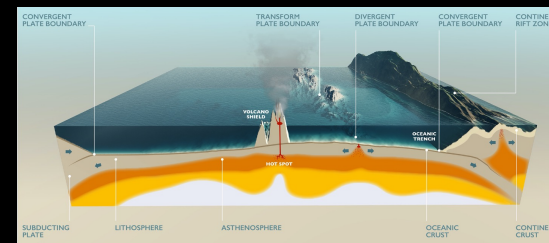
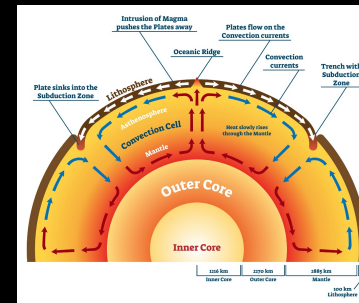


Tectonic Plates



- Earth's Layers
- The Plate Tectonic Theory
- Earth's Primary & Secondary Plates
- Continental Drift
- The Changing Earth
- Plate Boundaries
 - Divergent, Convergent, & Transform Boundary



Preview File

Please enjoy this preview of your Student Version of the presentation. Please note within this sample file:

- Some slides appear blank because they have been removed
- Student versions have portions of the text removed which is given in the teacher version and appear as _____ which the students are to fill in
- Other slides may have on them, this represents writing that has been removed on this sample

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Earth's Layers

CLICK THE VIDEO
IMAGE IN SLIDESHOW
MODE TO ACCESS THE
VIDEO.



■ Crust

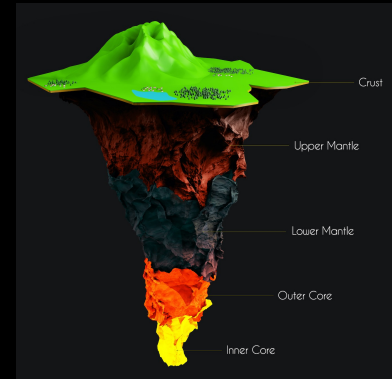
- _____
- Mostly a few to 40 kilometers (25 miles), up to 70 km (40 miles) in some places

■ Mantle

- _____
- From crust to 2900 km (1800 miles) beneath surface

■ Core

- From mantle to center of Earth
- _____
- Inner and outer core layers



The Plate Tectonic Theory:

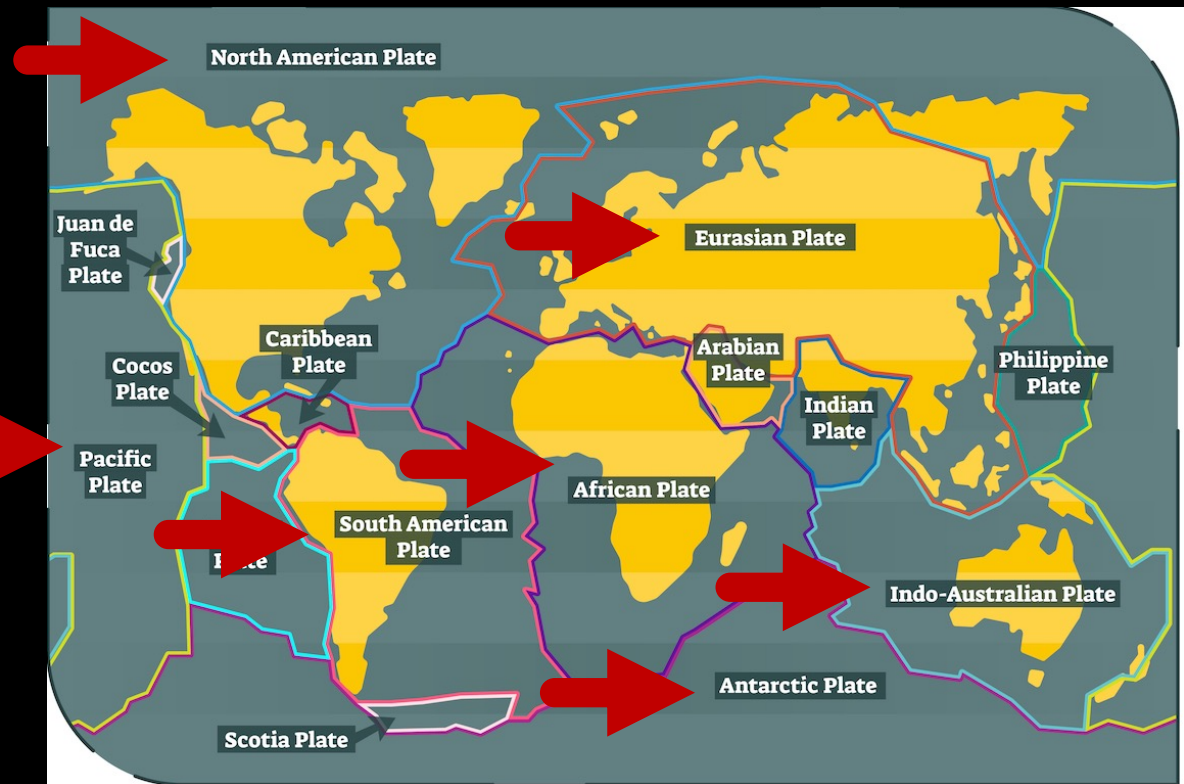
- The Lithosphere (upper mantle and crust) is broken up into what we call Tectonic Plates
- The plates float on top of the mantle
- _____
- _____
- And, dozens of tertiary plates... sometimes called Micro-plates



Earth's Primary Plates

Primary plates. These seven plates comprise the bulk of the seven continents and the Pacific Ocean.

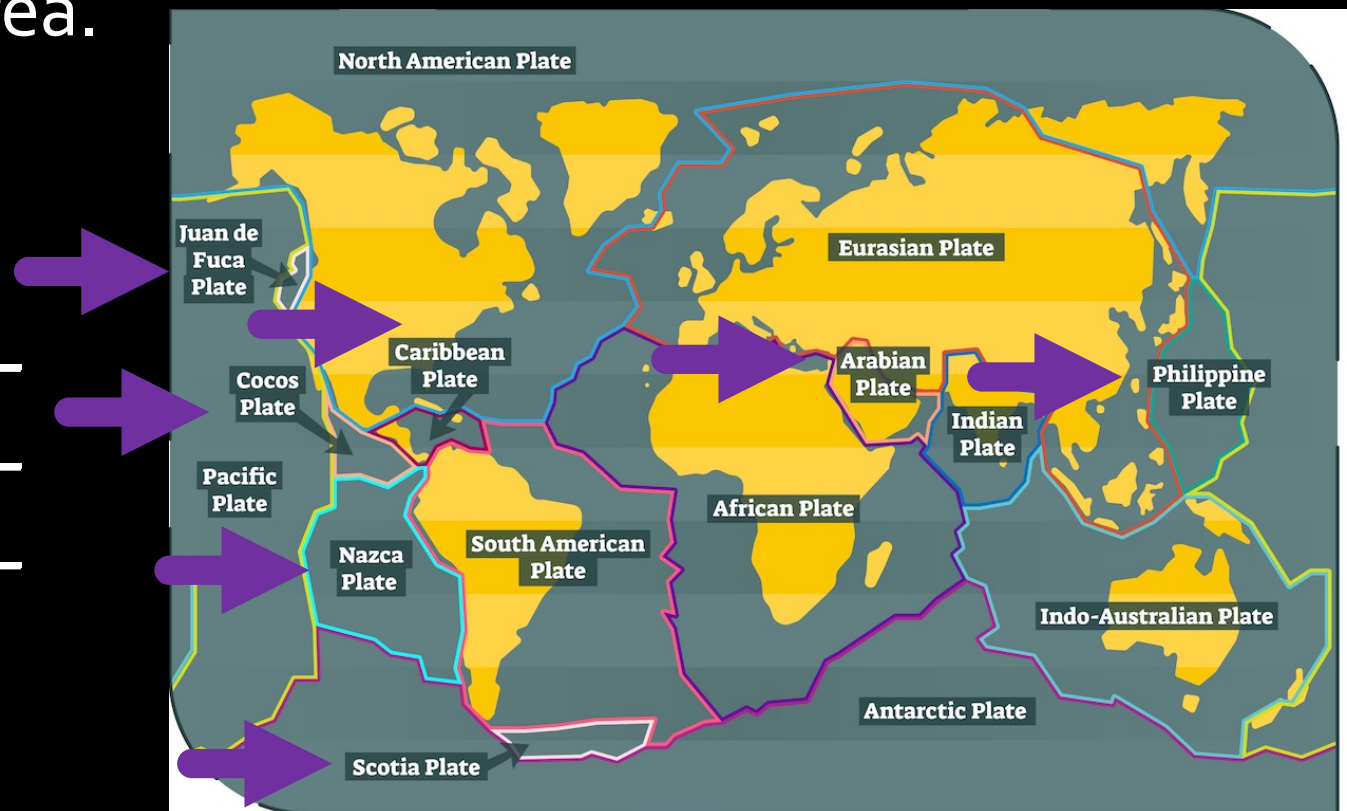
1. _____
2. Pacific
3. Eurasian
4. _____
5. Indo-Australian
6. _____
7. Antarctic



Earth's Secondary Plates

Secondary plates. These smaller plates are generally shown on major plate maps, with the exception of the Arabian and Indian plates because they do not comprise significant land area.

1. Arabian
2. Caribbean
3. _____
4. _____
5. _____
6. Philippine Sea
7. Scotia



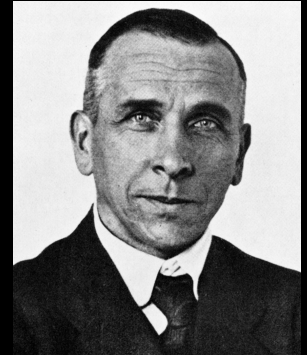
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Continental Drift

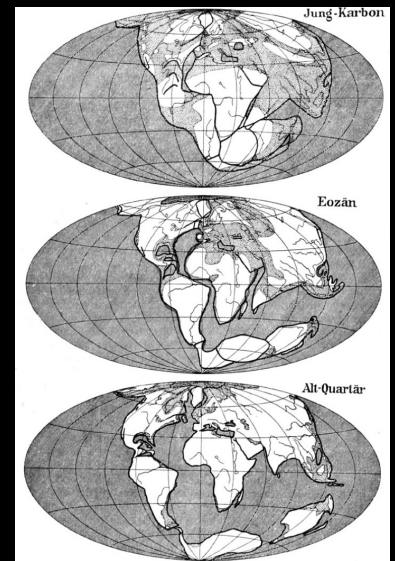


2

- _____
- _____
- He proposed the idea of Pangea, meaning "All Land" and wrote the book, *The Origin of Continents and Oceans*



Alfred Wegener



Original world maps created by Alfred Wegener showing Pangea and the continents drifting apart.

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Evidence: Shape

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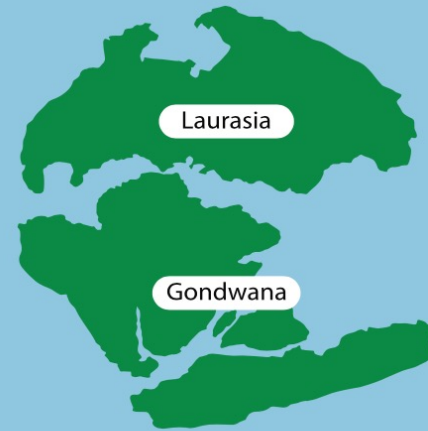
See how Africa fits
into the Americas?
This map shows how
everything was
together in the past.



Movement of the Plates



225 Million Years Ago



150 Million Years Ago



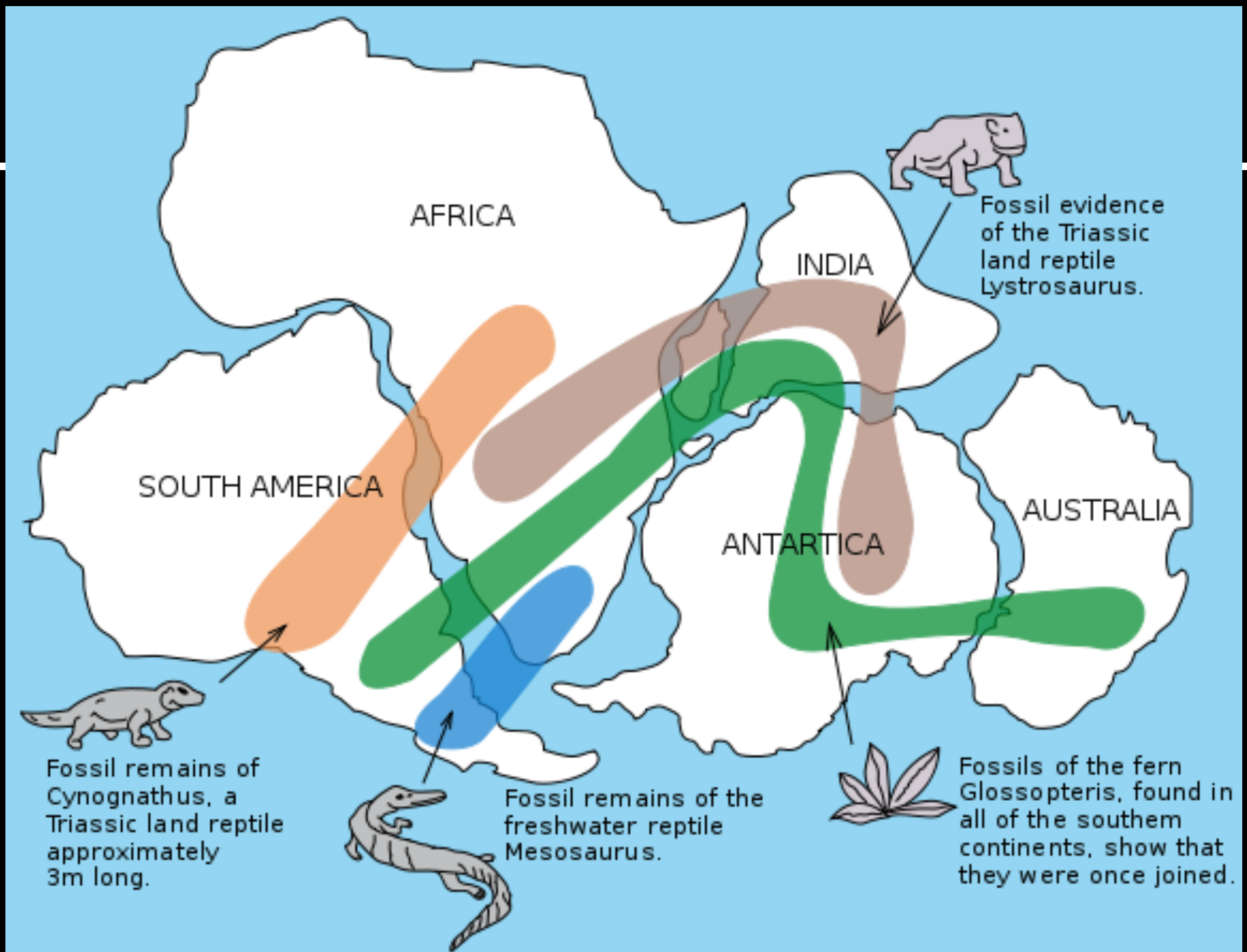
100 Million Years Ago



Today

Evidence: Fossils

- The fossils of many plants and animals have been found on different continents
- Clearly, they can't swim across the ocean... especially plants!
 - i.e., Cynognathus (a land animal) has bones on South America and Africa and they couldn't swim there
- _____



Evidence: Speed

- The best proof of continental drift... We can measure the speed at which land masses are moving





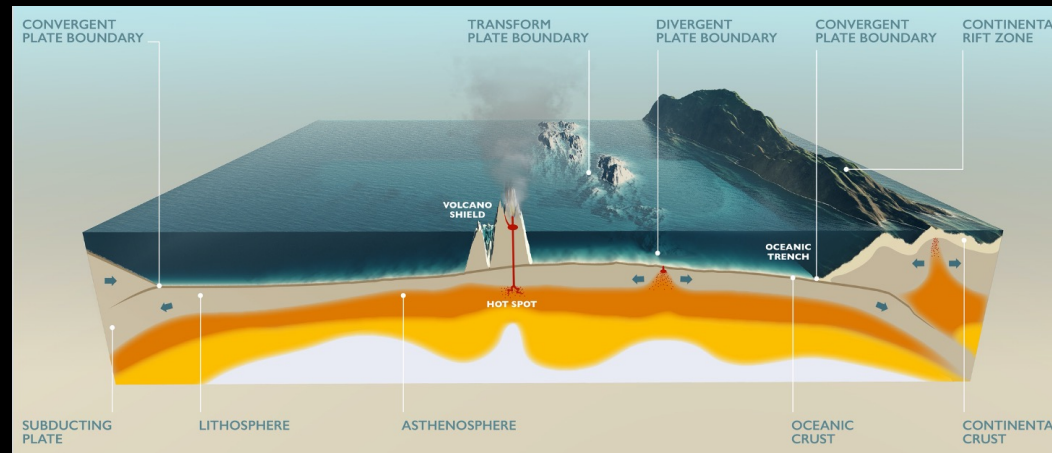
- This measurement is key in figuring how quickly heat is conducted through the mantle

The Changing Earth



5

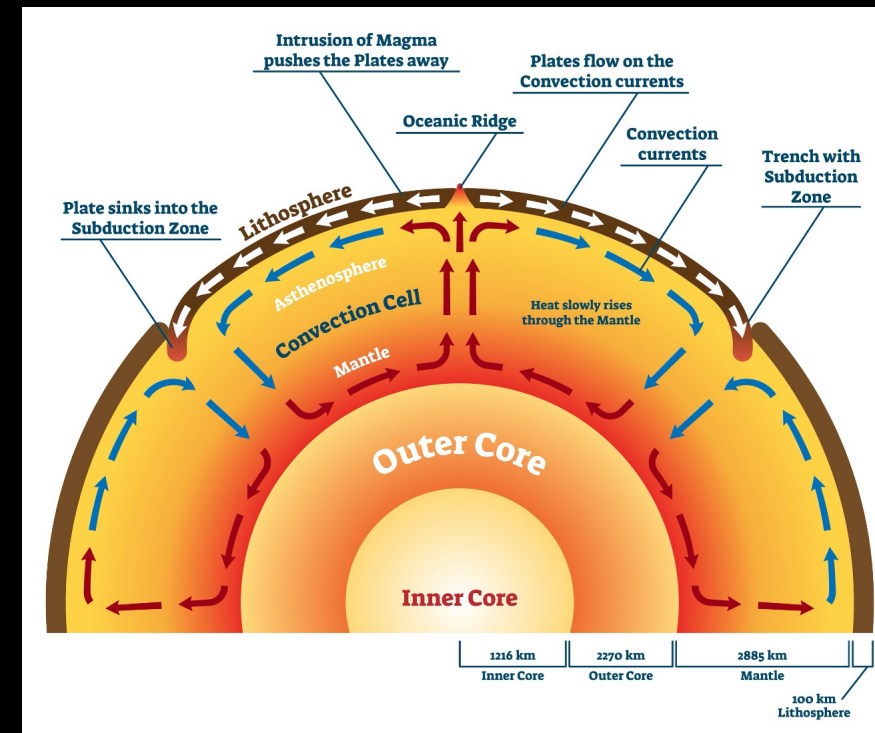
- The Earth is continually evolving, growing, and being destroyed
- _____
- _____
- Convection currents in the mantle are continuously bringing new material to the surface and creating new land



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The Changing Earth

- And, as the mantle flows (cm/year) it pushes the plates around the surface of the Earth
- _____
- And, at a rate of 2 – 5 cm/year, this process takes millions of years to see any noticeable difference

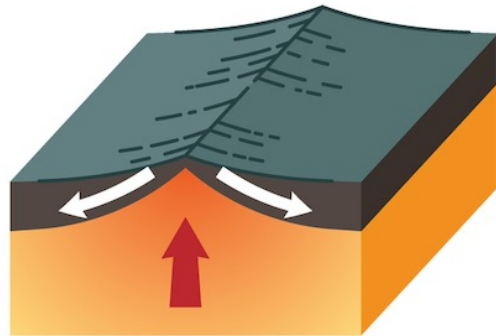


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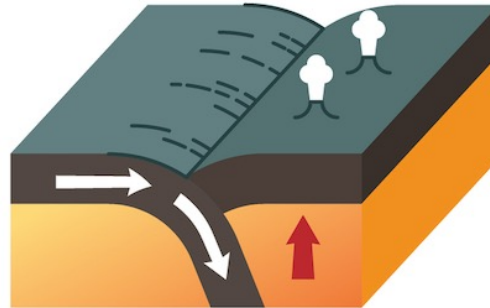
Plate Boundaries

- _____
- There are 3 type of boundaries:
 1. _____
 2. _____
 3. _____
- Each type of boundary leads to different types of land formations

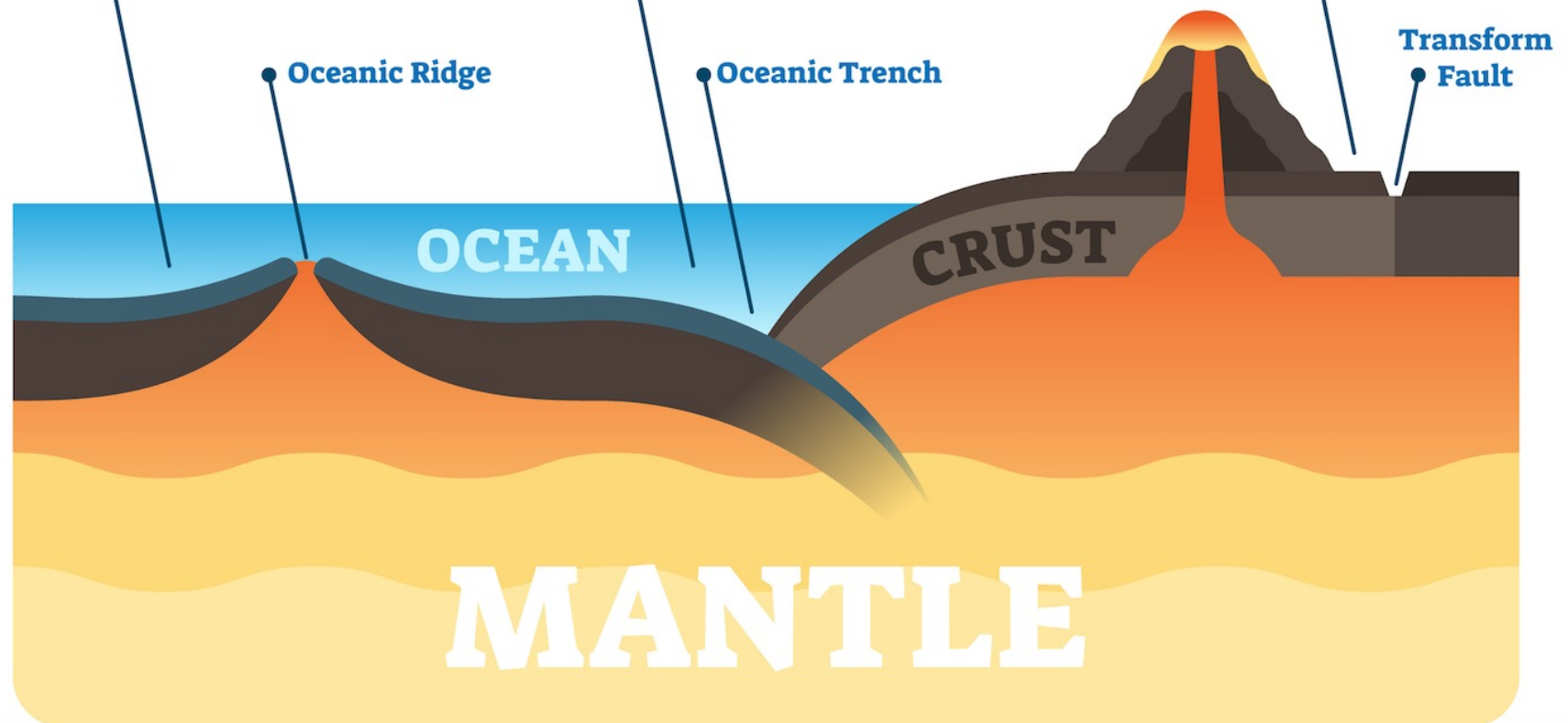
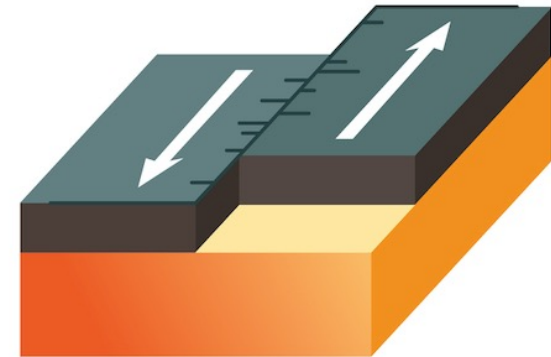
**DIVERGENT
PLATE BOUNDARY**



**CONVERGENT
PLATE BOUNDARY**

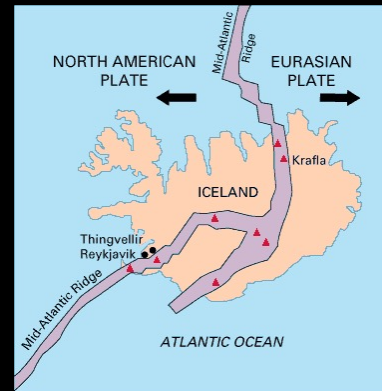


**TRANSFORM
PLATE BOUNDARY**

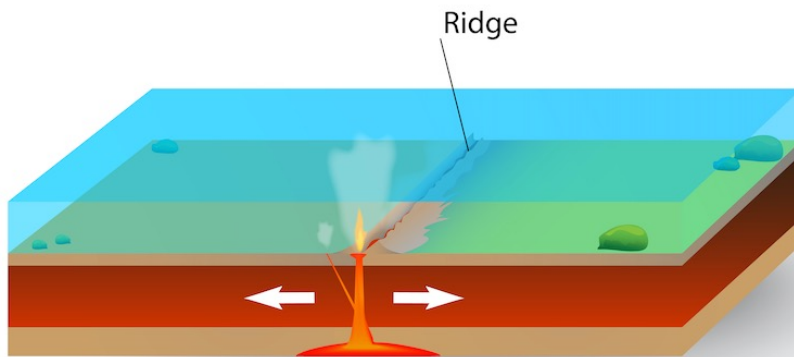


Divergent Boundaries

- These areas tend to be very thin since it is brand new and being spread out as it is created



Divergent
plate
boundary



Note: Iceland sits on a divergent boundary between the North American Plate and the Eurasian Plate. It is spreading at a rate of 2.5 cm/year

Mid-Atlantic Ridge



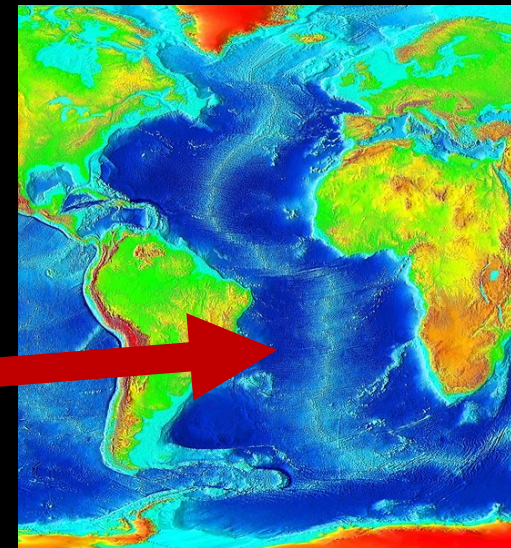
6

- The Mid-Atlantic Ridge is one of the longest divergent plate boundaries
- The boundary is located along the floor of the Atlantic Ocean

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7



The Mid-Atlantic ridge is the longest mountain range in the world!

Convergent Boundaries

- As plates move towards each other, one will usually go under the other

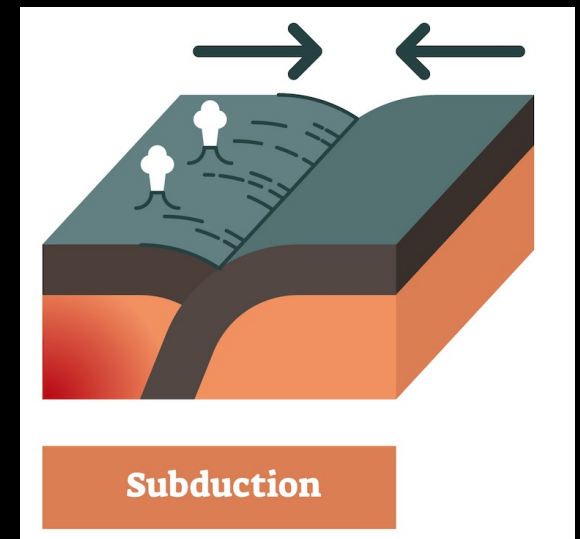
- _____

- The 3 types of convergent boundaries are:

1. _____

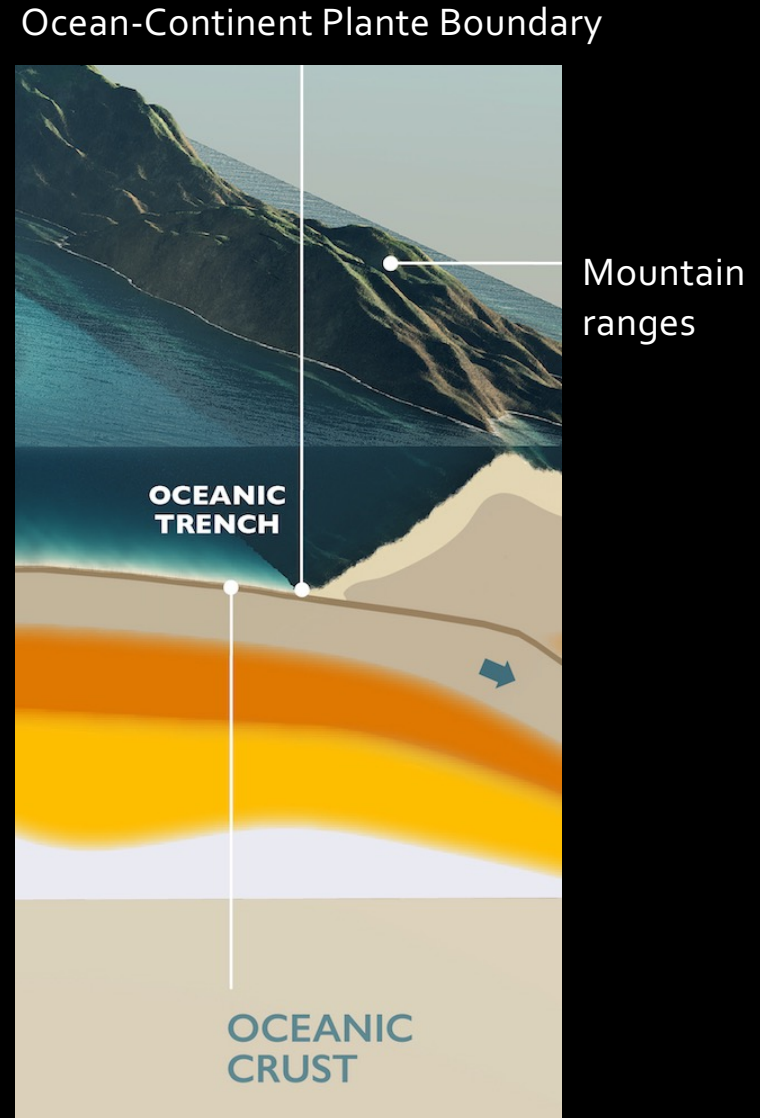
2. _____

3. _____



Ocean-Continent Convergence

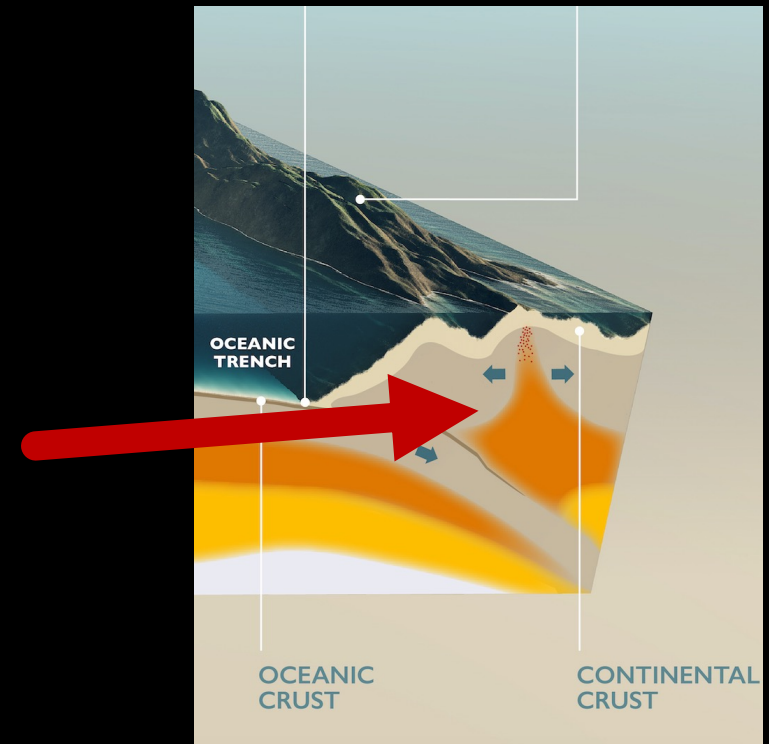
- _____
- As the ocean plate is pushed under the continent, a large ditch/valley is formed called a 'Trench'
- _____



Ocean-Continent Convergence

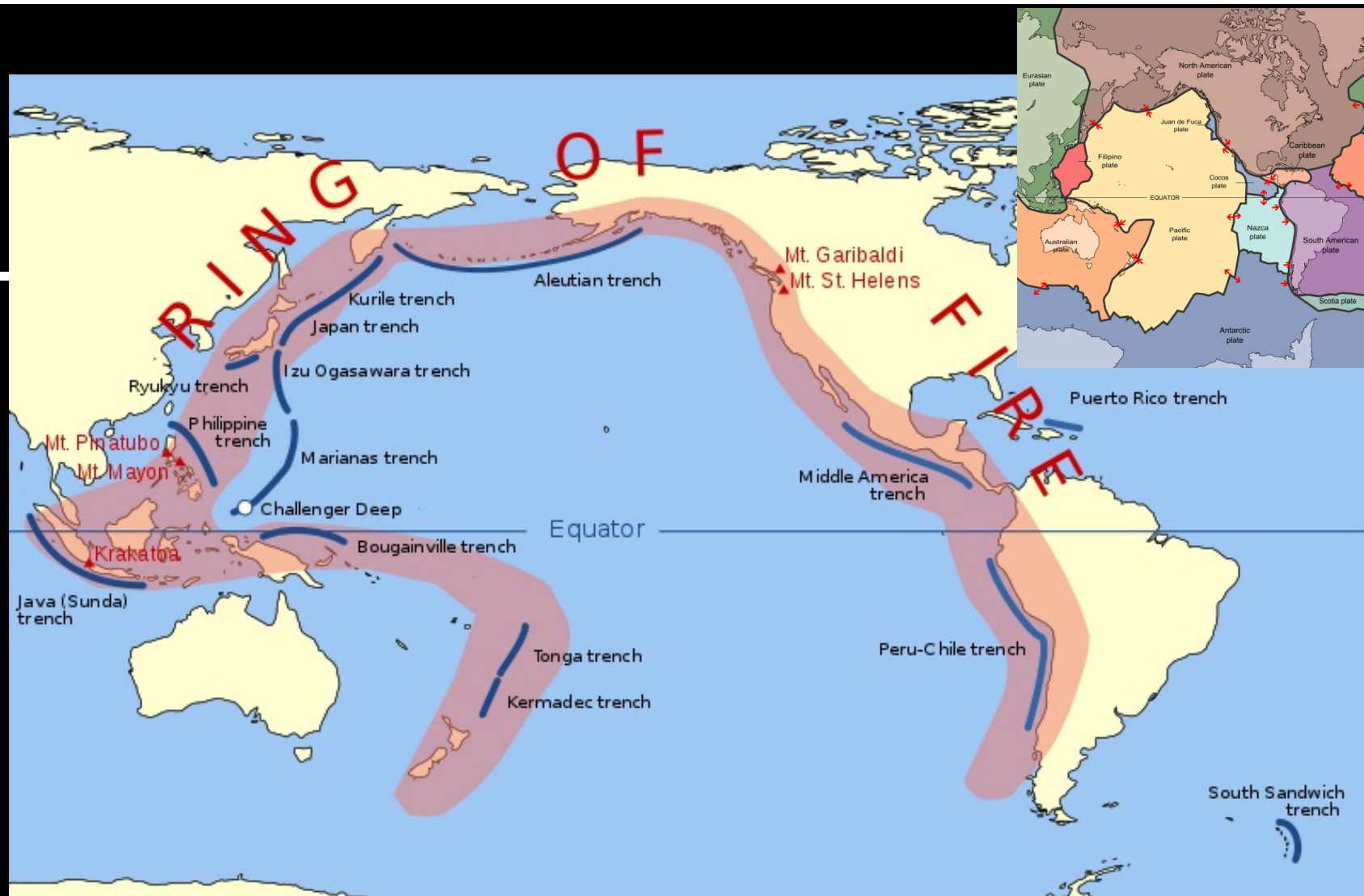


- This is where most of Earth's volcanoes will be born
- An example of this is The Pacific Ring of Fire



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The majority of Earth's active volcanoes are located around the Pacific plate where it subducts under the continental plates

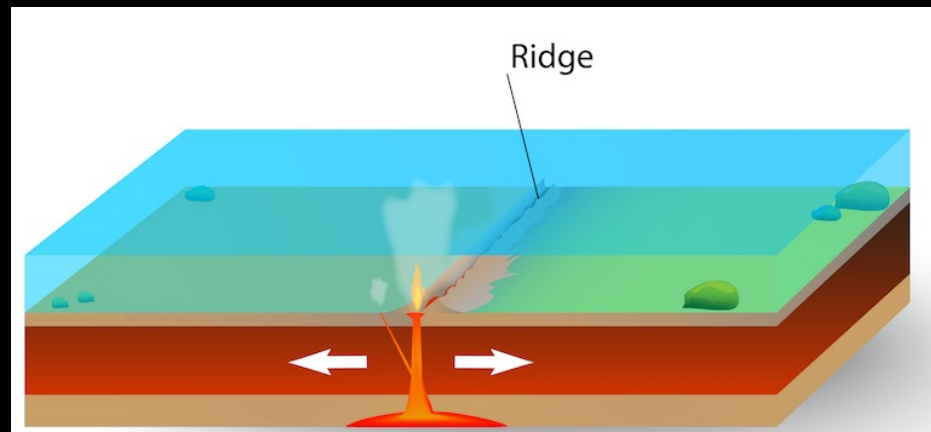
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The Result

- As the Earth moves, violent earthquakes are also created
- _____
- However, the mantle underneath is constantly moving (2-5 cm/year)
- _____
- The shift can be as much as a meter at a time in any direction

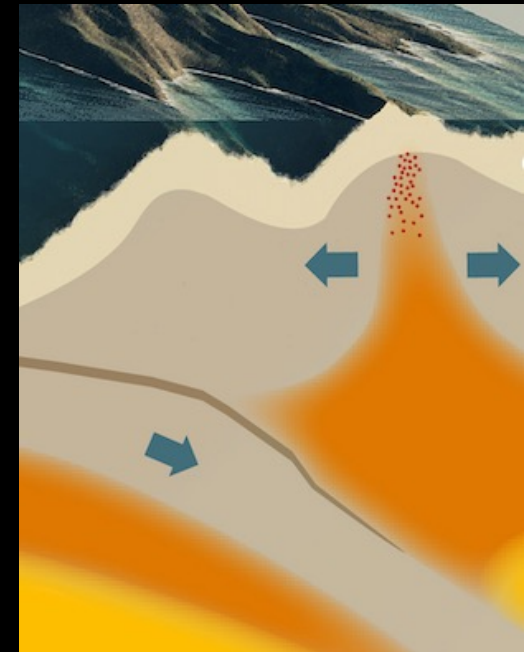
Ocean-Ocean Convergent Boundaries

- These work in similar manner to the Ocean continent boundaries
- But, because they are so thin, there is hardly enough land mass to push up into mountain ranges
- _____



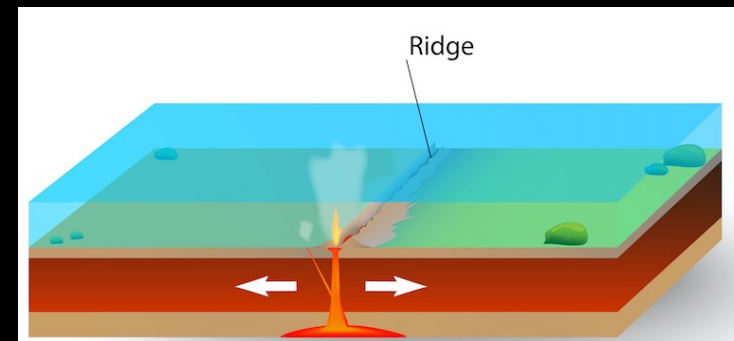
Ocean-Ocean Convergent Boundaries - Volcanoes

- The subducting plate is heated as it is forced deeper into the mantle, and at a depth of about 100 miles (150 km) the plate begins to melt
- Magma chambers are produced as a result of this melting
- _____



Ocean-Ocean Convergent Boundaries - Volcanoes

- _____
- Over time, these cones eventually are higher than the sea level
- This produces an island chain and with continued development, the islands grow larger, merge, and an elongated landmass is created
- Japan, the



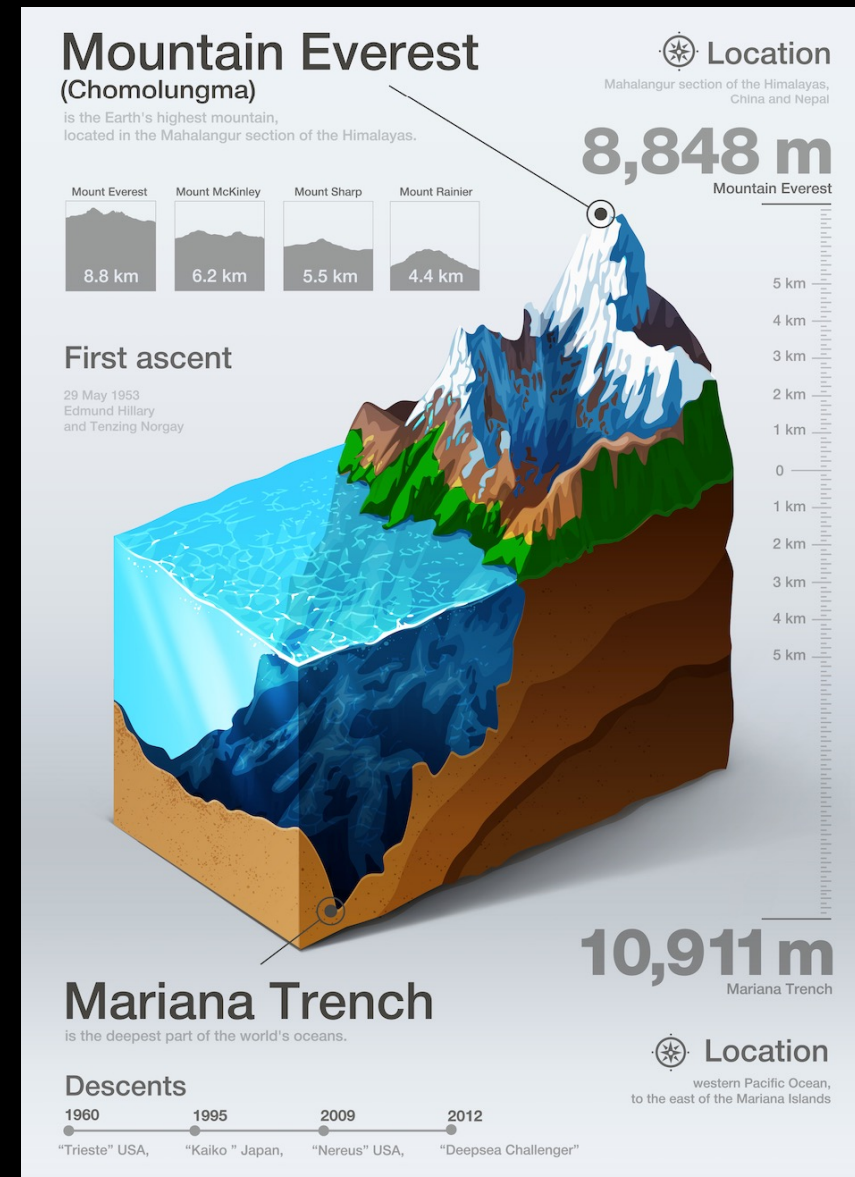
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The Mariana Trench



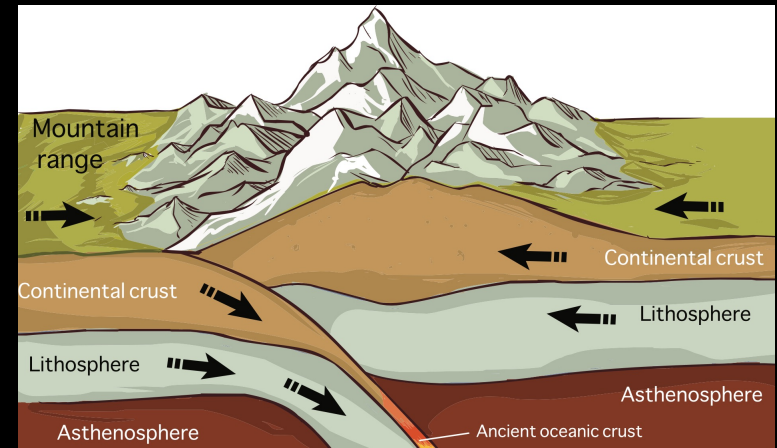
9

- _____
- _____
- Compare this to Mt. Everest... it's only 8.8 km tall
- You could fit Mt. Everest into the trench, and it would still not come up over the ocean



Continent-Continent Converging Plates

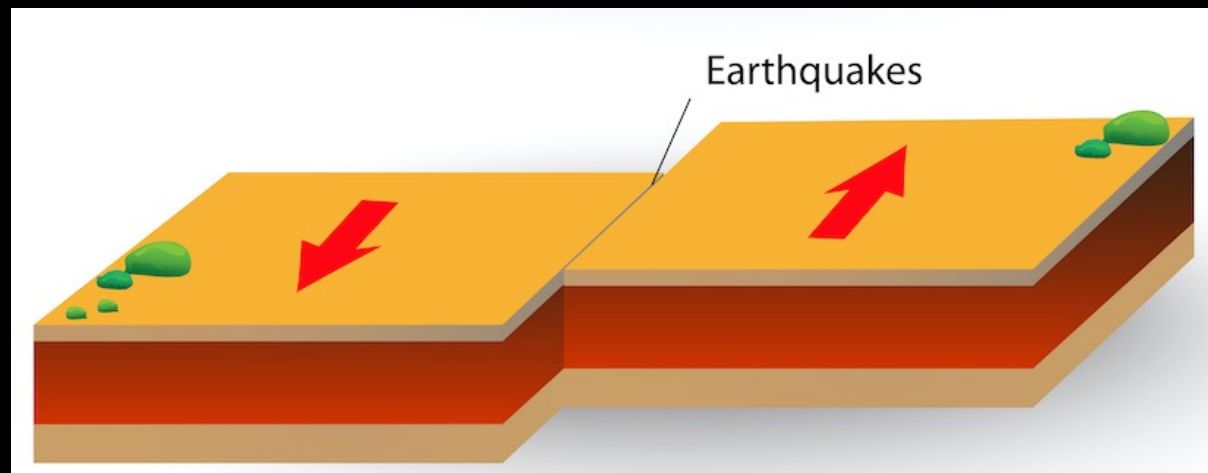
- If two continental plates come together, ...
- They are too thick and less dense than the ocean plates



The 6,000-kilometre-plus (3,700 mi) journey of the India landmass (Indian Plate) before its collision with Asia (Eurasian Plate) about 40 to 50 million years ago.

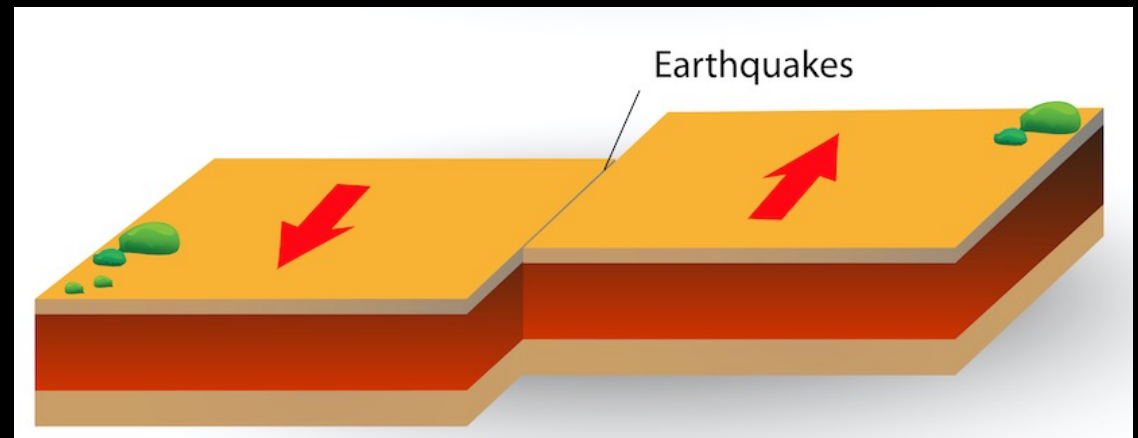
Transform Boundaries

- Sometimes called Transform-Fault Boundaries
- _____
- Since they are not pushing into each other, neither plate will subduct, and no mountain ranges will be created



Transform Boundaries

- A transform-fault boundary is like a giant crack in the crust of the Earth
- _____



Transform Boundaries



10

- One of the most famous fault lines is the San Andreas Fault that runs through California



North American Plate

Pacific Plate

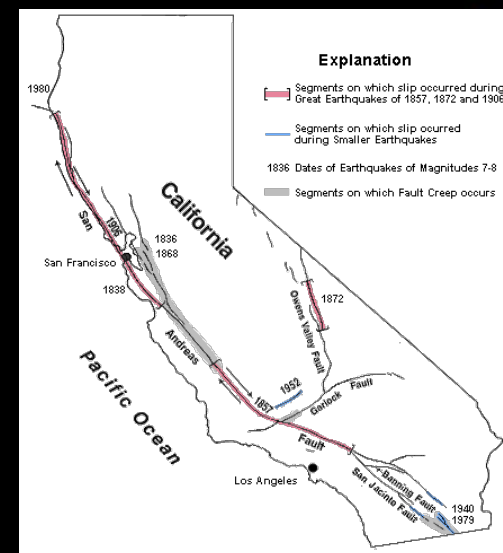
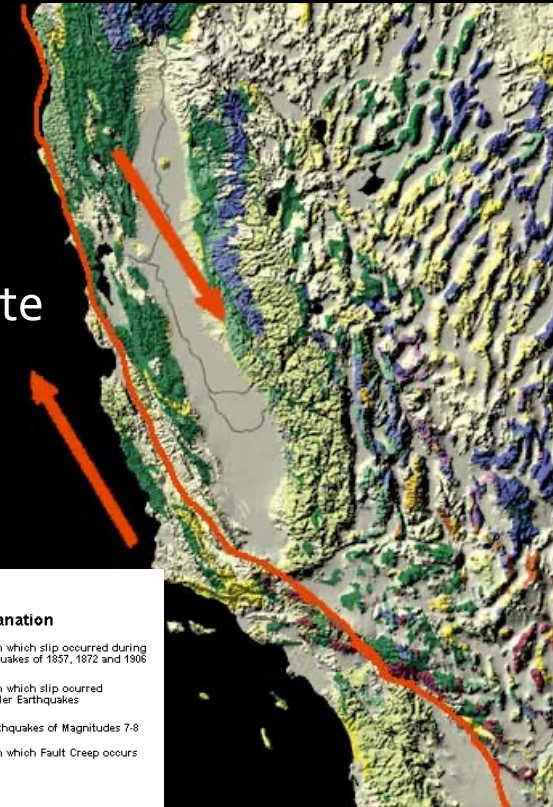


Plate Tectonics Overview



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