

Objective

To understand the three types of plate boundaries

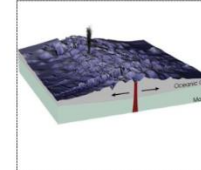
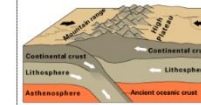
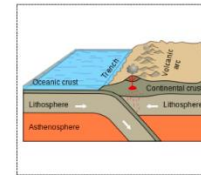
- Supplies Needed
 - The Theory of Plate Tectonics Notes (packet)
 - Earth's Plate Boundaries Table (packet)
 - Pictures of Plate Movement and Examples (packet)
 - Scissors
 - Highlighter
 - Pencil
 - Glue/tape

Interactions of Earth's Plates

Directions: Fill out the chart by completing the first column with a description of each type of plate boundary in your own words. Next, cut out the pictures of the plate movements and paste them in the appropriate row of each column. Last, cut out the real-image examples and paste them in the proper row. Paste completed table into your Science Interactive Notebook.

EARTH'S PLATE BOUNDARIES		
PLATE BOUNDARY	MOVEMENT OF PLATES	EXAMPLES
Transform Boundary		
Divergent Boundary		
Convergent Boundary (ocean-to-continent)		
Convergent Boundary (continent-to-continent)		

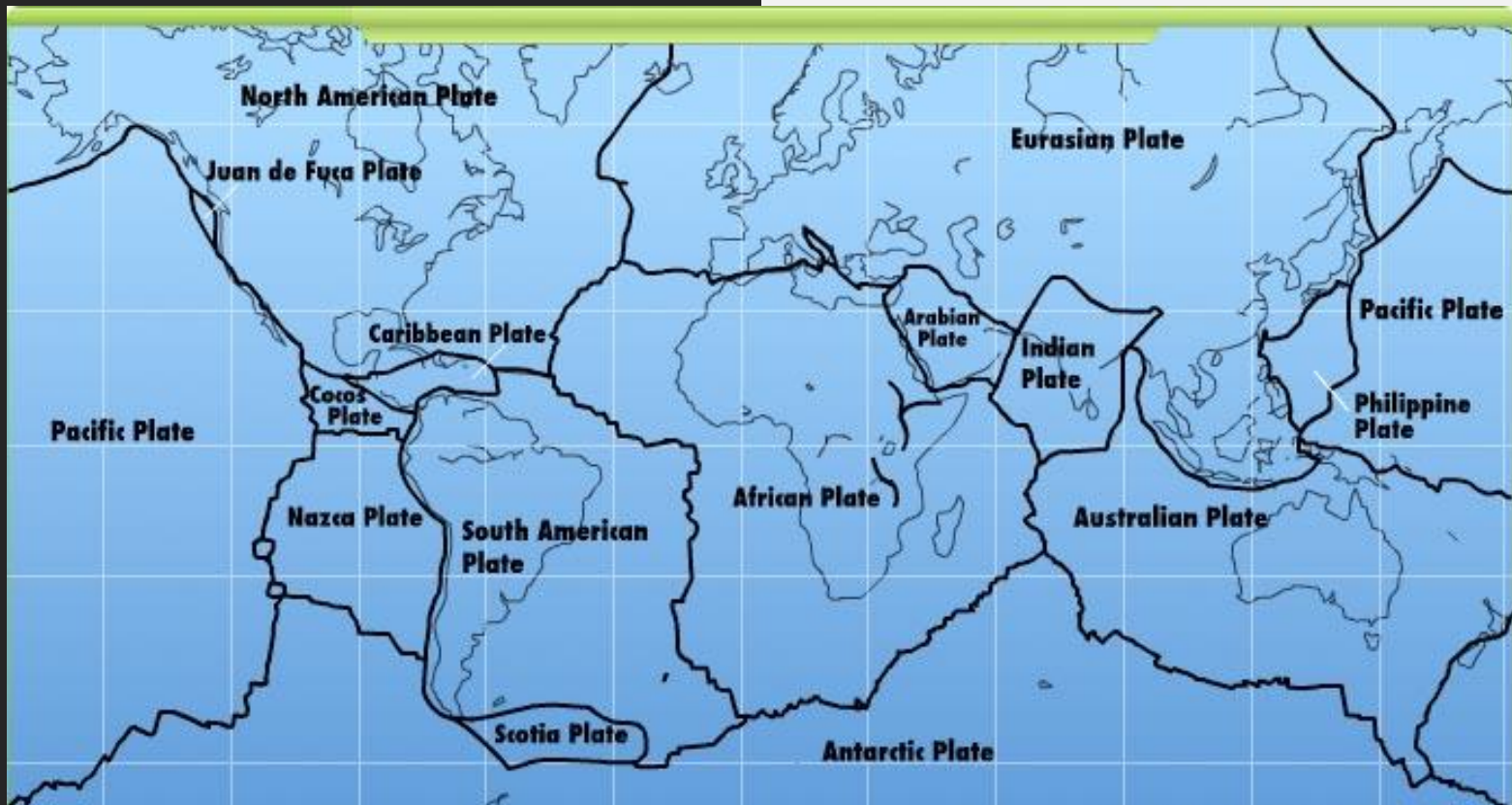
Plate Movements

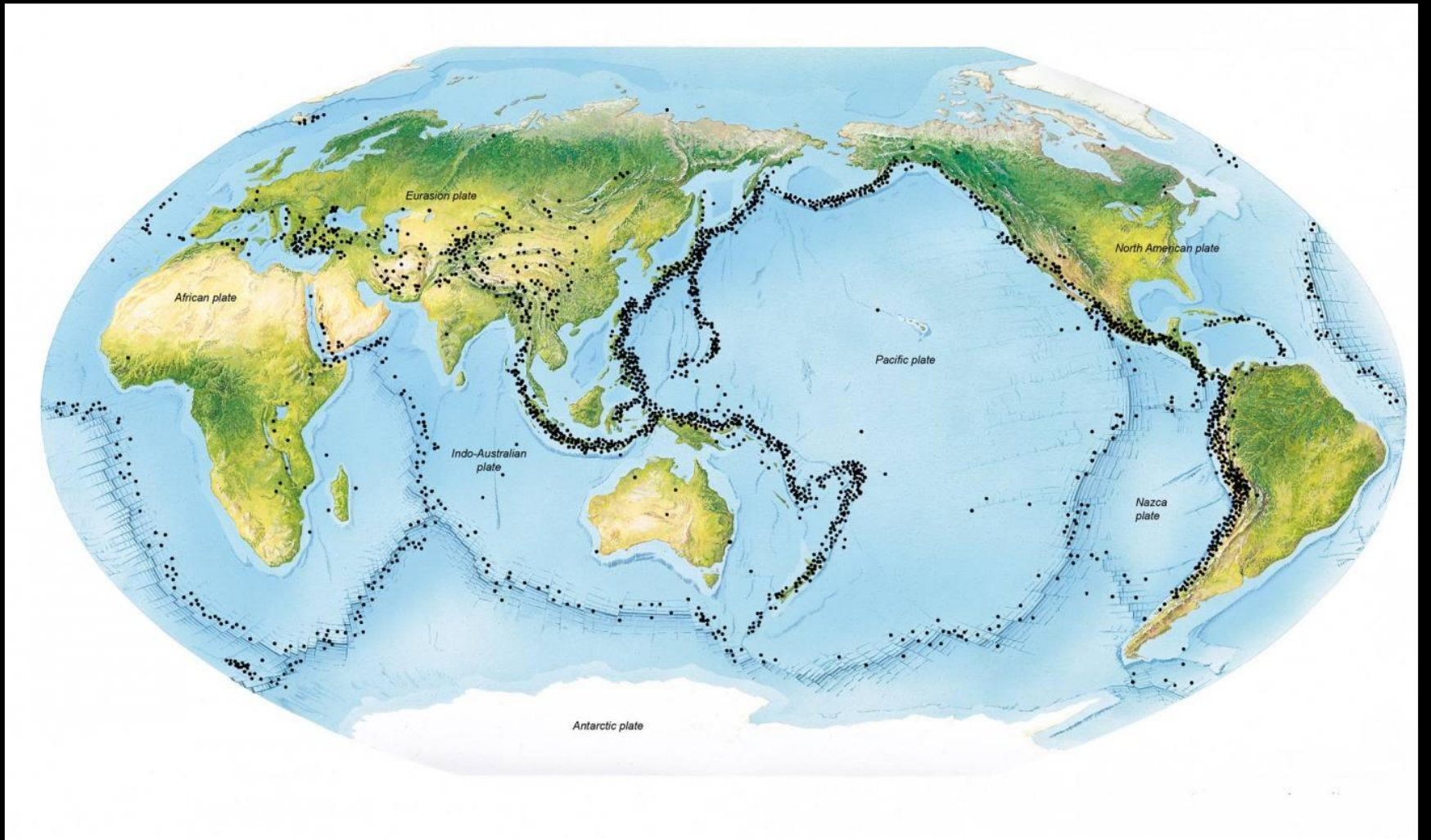


Examples

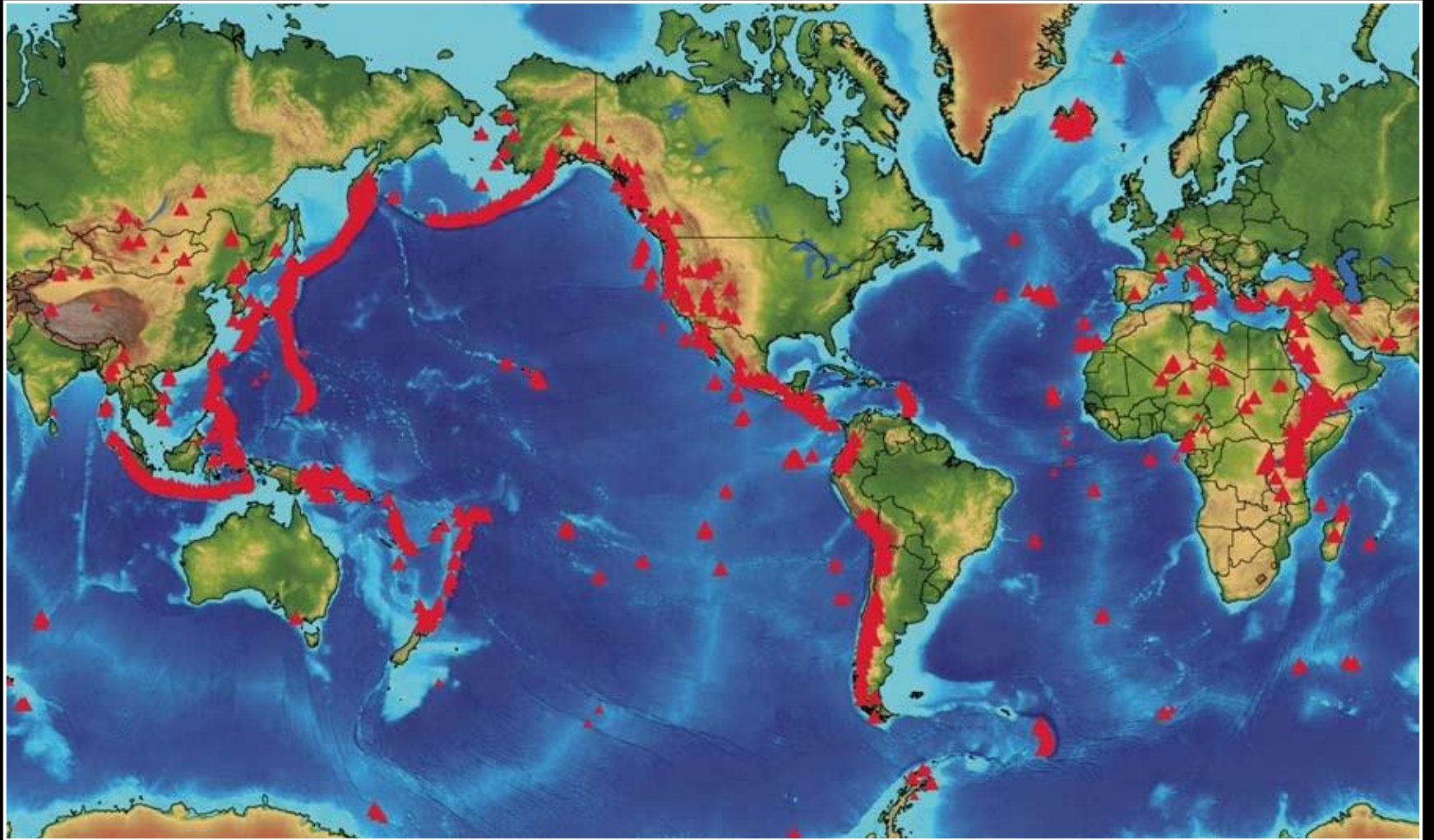


Plate Tectonics and Plate Boundaries





Earthquakes



Volcanoes

Question: What are the three types of plate boundaries?

The Theory of Plate Tectonics

J. Tuzo Willson (1965) was a Canadian scientist that proposed the lithosphere is broken into separate sections called **plates**.

Wilson combined information from **continental drift**, **sea-floor spreading** and **Earth's plates** into a single **scientific theory**, or a well-tested concept that explains a wide range of observations.

Theory of plate tectonics explains the formation, movement and subduction of Earth's plates.

Theory highlights:

- plates float on top of the asthenosphere
- convection currents rise in the asthenosphere and spread out beneath the lithosphere
- convection currents cause plates to move, producing changes in Earth's surface
- changes in Earth's surface include volcanoes, mountain ranges and deep ocean trenches

The edges of the plates meet at lines called **plate boundaries**.

When rocks slip past each other along these boundaries **faults**, or breaks in the Earth's crust occur. Three types of boundaries:

transform boundary - place where two plates slip past each other, moving in opposite directions (frequent Earthquakes)

divergent boundary - two plates move apart, or diverge; usually occur at the mid-ocean ridge

- **rift valley** - occurs when a deep valley is formed along a divergent boundary that develops on land

convergent boundary - place where two plates come together, or converge, causing a collision

- when two plates of oceanic crust collide, or when an oceanic plate collides with a continental plate, one plate is subducted beneath the other forming a trench; when two continental plates collide they form mountains

Types of Crustal Material

Oceanic Crust

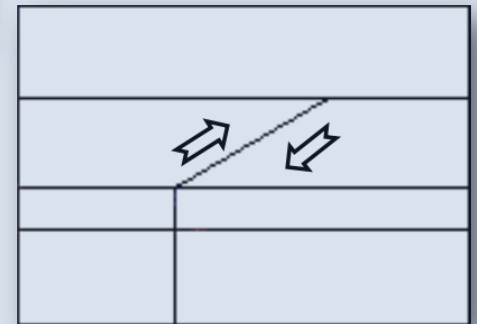
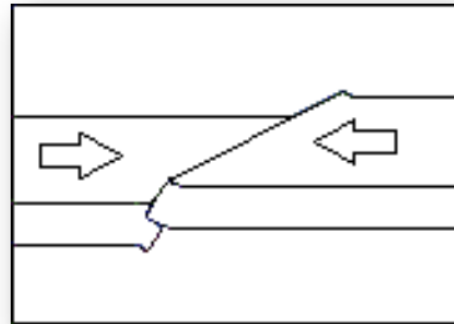
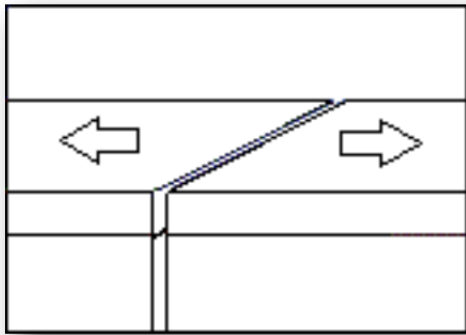
- Extrusive – Basalt
- thinner
- More Dense

Continental Crust

- Intrusive – Granite,
Sedimentary & Other
- Thicker
- Less Dense

Three Types of Plate Boundaries

- **Divergent**
 - Plates moving away from each other
- **Convergent**
 - Plates colliding head on
- **Transform**
 - Plates sliding past each other



Question: What are the three types of plate boundaries?

The Theory of Plate Tectonics

J. Tuzo Willson (1965) was a Canadian scientist that proposed the lithosphere is broken into separate sections called **plates**.

Wilson combined information from **continental drift**, **sea-floor spreading** and **Earth's plates** into a single **scientific theory**, or a well-tested concept that explains a wide range of observations.

Theory of plate tectonics explains the formation, movement and subduction of Earth's plates.

Theory highlights:

- plates float on top of the asthenosphere
- convection currents rise in the asthenosphere and spread out beneath the lithosphere
- convection currents cause plates to move, producing changes in Earth's surface
- changes in Earth's surface include volcanoes, mountain ranges and deep ocean trenches

The edges of the plates meet at lines called **plate boundaries**. When rocks slip past each other along these boundaries **faults**, or breaks in the Earth's crust occur. Three types of boundaries:

transform boundary - place where two plates slip past each other, moving in opposite directions (frequent Earthquakes)

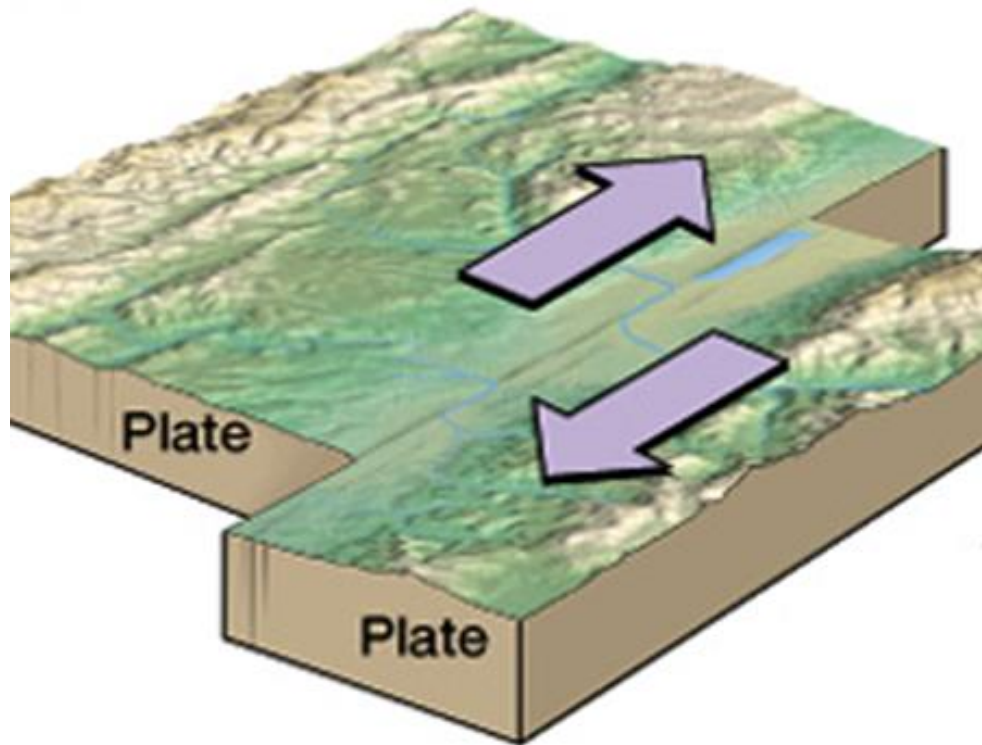
divergent boundary - two plates move apart, or diverge; usually occur at the mid-ocean ridge

- **rift valley** - occurs when a deep valley is formed along a divergent boundary that develops on land

convergent boundary - place where two plates come together, or converge, causing a collision

- when two plates of oceanic crust collide, or when an oceanic plate collides with a continental plate, one plate is subducted beneath the other forming a trench; when two continental plates collide they form mountains

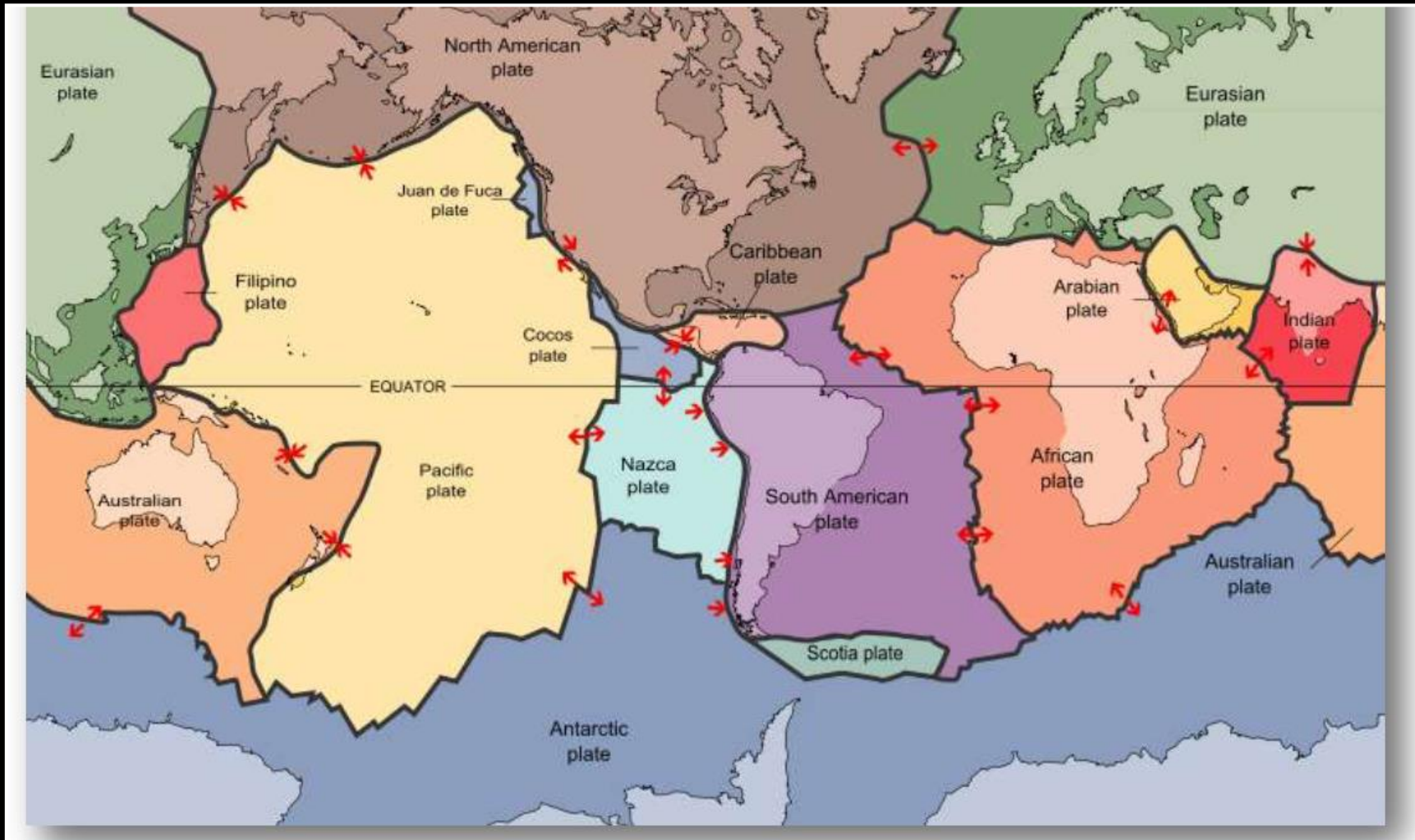
Transform Boundary



- Plates slide past one another
- Frequent earthquakes
- **Example:** San Andreas Fault

San Andreas Fault





Tectonic Plates

Question: What are the three types of plate boundaries?

The Theory of Plate Tectonics

J. Tuzo Willson (1965) was a Canadian scientist that proposed the lithosphere is broken into separate sections called **plates**.

Wilson combined information from **continental drift**, **sea-floor spreading** and **Earth's plates** into a single **scientific theory**, or a well-tested concept that explains a wide range of observations.

Theory of plate tectonics explains the formation, movement and subduction of Earth's plates.

Theory highlights:

- plates float on top of the asthenosphere
- convection currents rise in the asthenosphere and spread out beneath the lithosphere
- convection currents cause plates to move, producing changes in Earth's surface
- changes in Earth's surface include volcanoes, mountain ranges and deep ocean trenches

The edges of the plates meet at lines called **plate boundaries**.

When rocks slip past each other along these boundaries **faults**, or breaks in the Earth's crust occur. Three types of boundaries:

transform boundary - place where two plates slip past each other, moving in opposite directions (frequent Earthquakes)

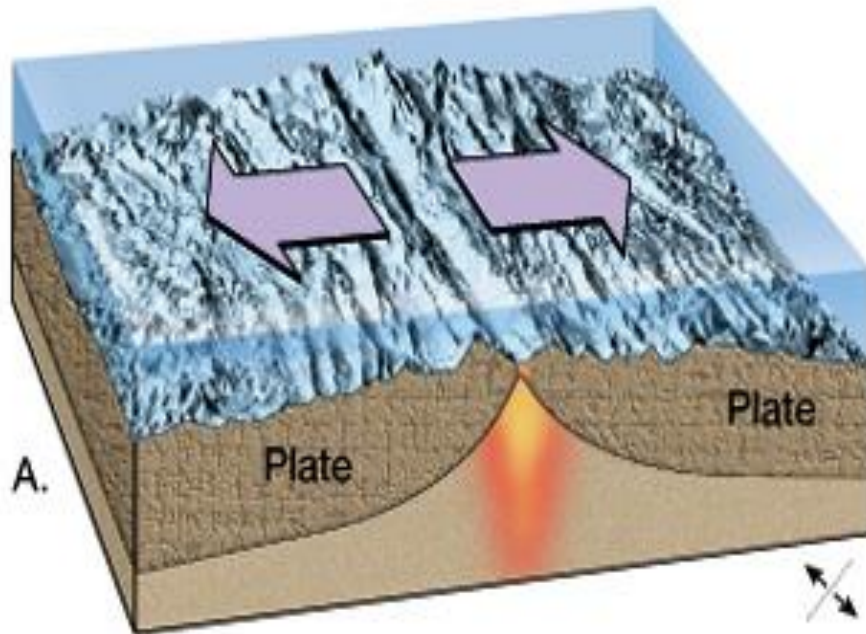
divergent boundary - two plates move apart, or diverge; usually occur at the mid-ocean ridge

- **rift valley** - occurs when a deep valley is formed along a divergent boundary that develops on land

convergent boundary - place where two plates come together, or converge, causing a collision

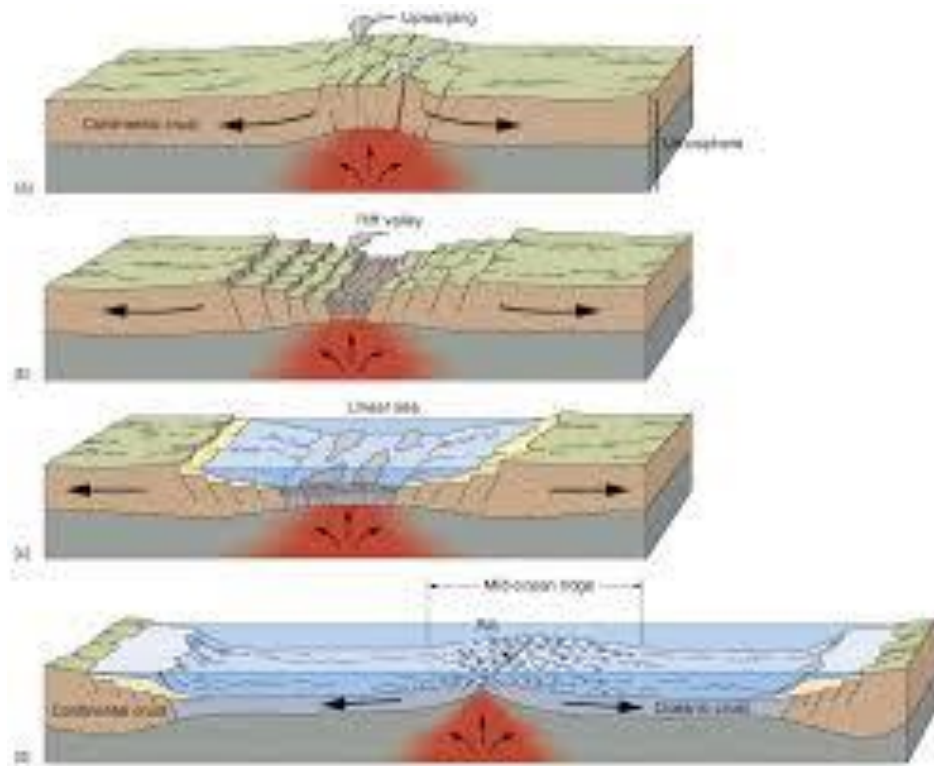
- when two plates of oceanic crust collide, or when an oceanic plate collides with a continental plate, one plate is subducted beneath the other forming a trench; when two continental plates collide they form mountains

Divergent Boundary Oceanic-Oceanic



- Mid-Ocean Ridge
- Two oceanic plates move in opposite directions
- Molten magma rises and creates new crust
- **Example:** Mid-Atlantic Ridge

Divergent Boundary Continental-Continental

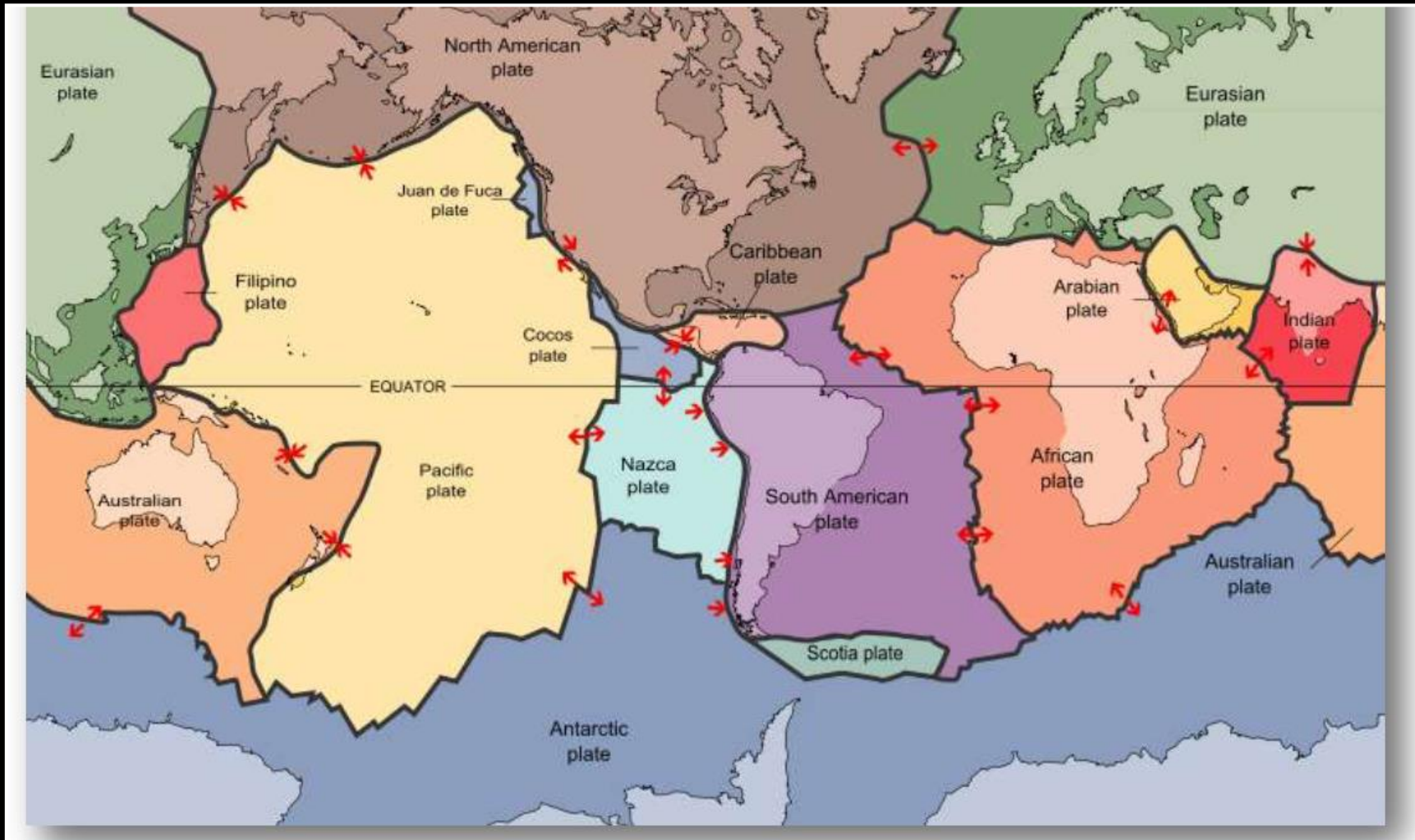


- Continental crust is being pulled in opposite directions
- Forms a Rift Valley
- Valley expands, fills in with water and becomes an ocean.
- **Example:** East African Rift Zone

East African Rift Zone



The East African Rift Valleys



Tectonic Plates

Question: What are the three types of plate boundaries?

The Theory of Plate Tectonics

J. Tuzo Willson (1965) was a Canadian scientist that proposed the lithosphere is broken into separate sections called **plates**.

Wilson combined information from **continental drift**, **sea-floor spreading** and **Earth's plates** into a single **scientific theory**, or a well-tested concept that explains a wide range of observations.

Theory of plate tectonics explains the formation, movement and subduction of Earth's plates.

Theory highlights:

- plates float on top of the asthenosphere
- convection currents rise in the asthenosphere and spread out beneath the lithosphere
- convection currents cause plates to move, producing changes in Earth's surface
- changes in Earth's surface include volcanoes, mountain ranges and deep ocean trenches

The edges of the plates meet at lines called **plate boundaries**. When rocks slip past each other along these boundaries **faults**, or breaks in the Earth's crust occur. Three types of boundaries:

transform boundary - place where two plates slip past each other, moving in opposite directions (frequent Earthquakes)

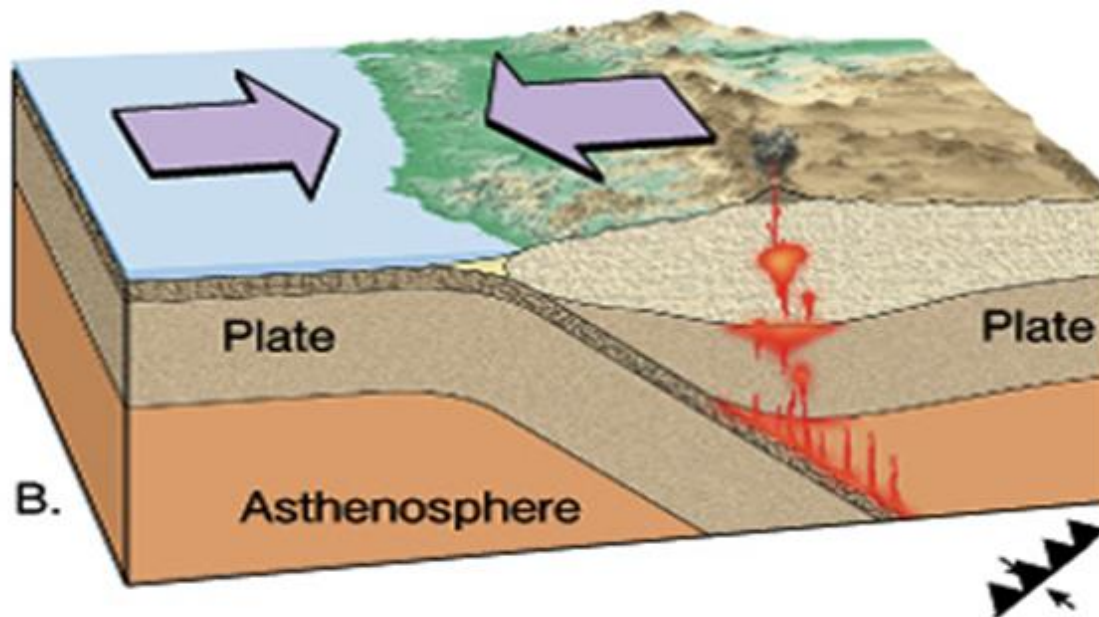
divergent boundary - two plates move apart, or diverge; usually occur at the mid-ocean ridge

- **rift valley** - occurs when a deep valley is formed along a divergent boundary that develops on land

convergent boundary - place where two plates come together, or converge, causing a collision

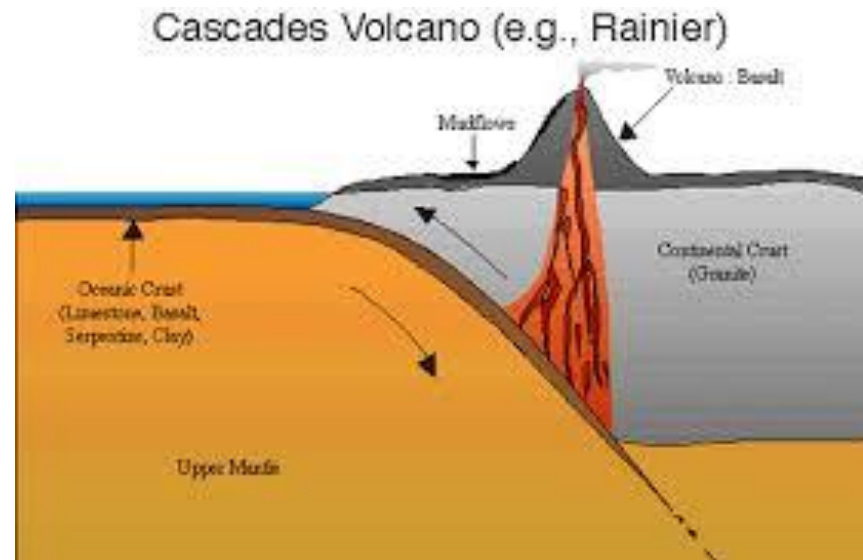
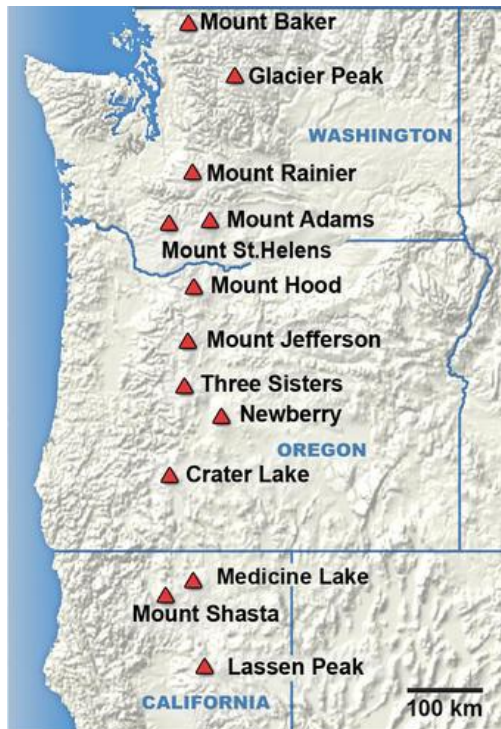
- when two plates of oceanic crust collide, or when an oceanic plate collides with a continental plate, one plate is subducted beneath the other forming a trench; when two continental plates collide they form mountains

Convergent Boundary Continental-Oceanic



- The denser Oceanic plate subducts under the less dense Continental plate
 - Earthquakes
- Subducting plate melts and hot magma rises
 - Volcanoes
- Example:
 - Pacific Northwest
 - Along much of the Ring of Fire

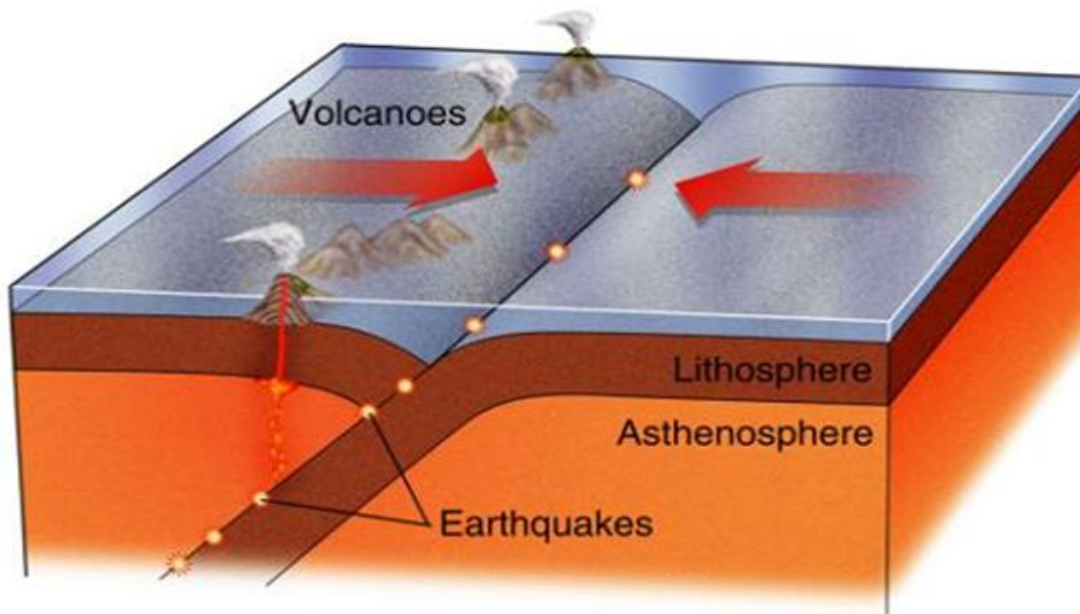
Cascade Range Oregon- Washington





Pacific Northwest

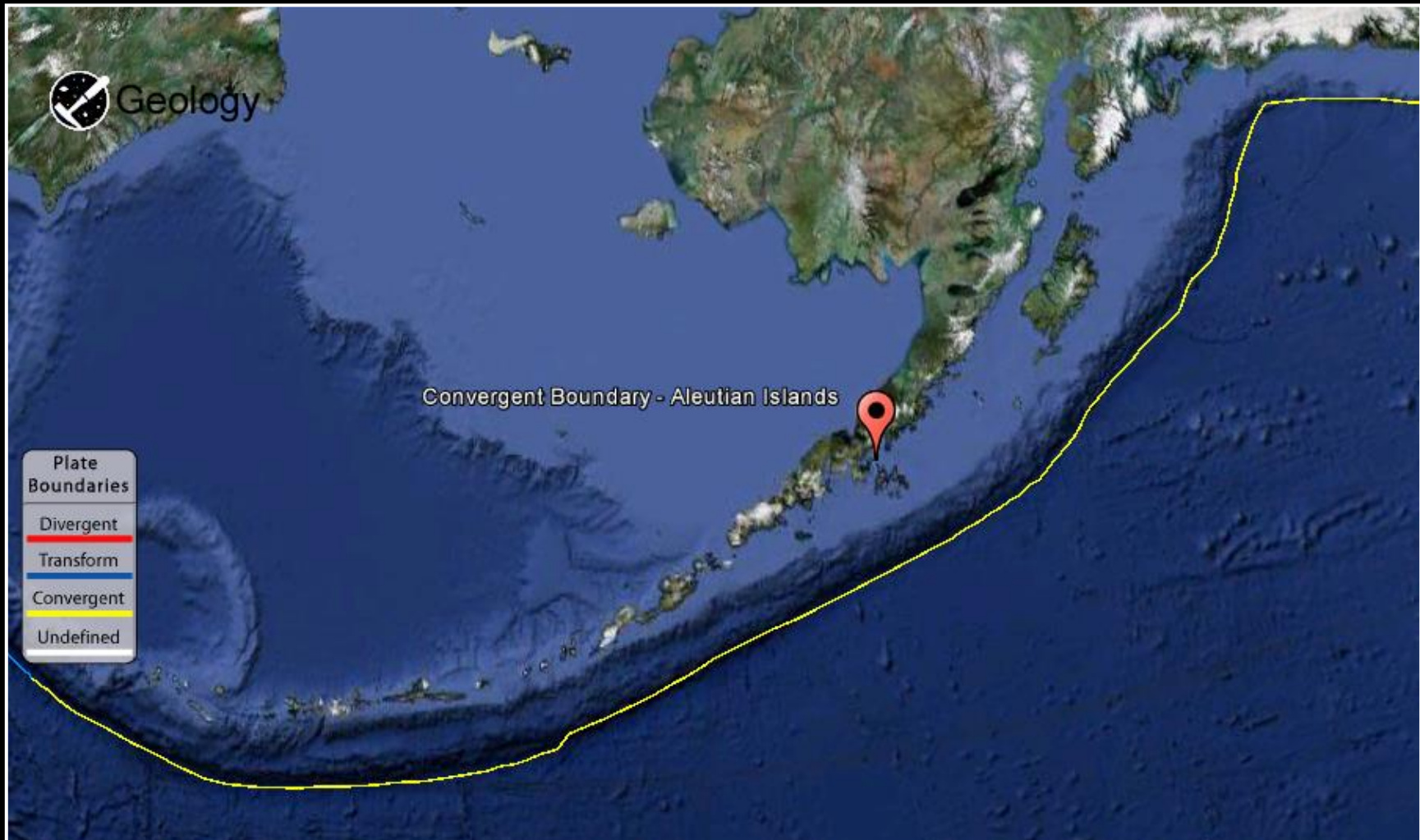
Convergent Boundary Oceanic-Oceanic



(b) Convergent boundary

Copyright © 2006 Pearson Prentice Hall, Inc.

- One oceanic plate subducts under the other
 - Earthquakes
- Subducting plate melts and hot magma rises
 - Volcanoes
- Trench
- **Example:** Aleutian Islands, Alaska

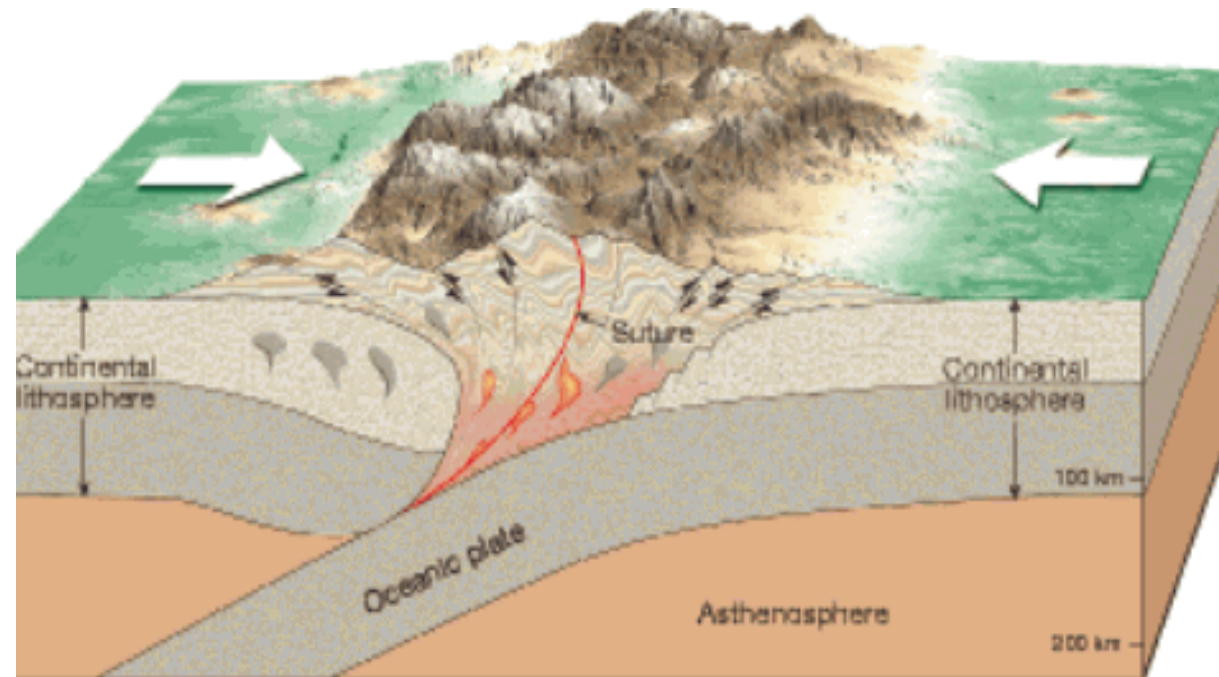


Aleutian Islands

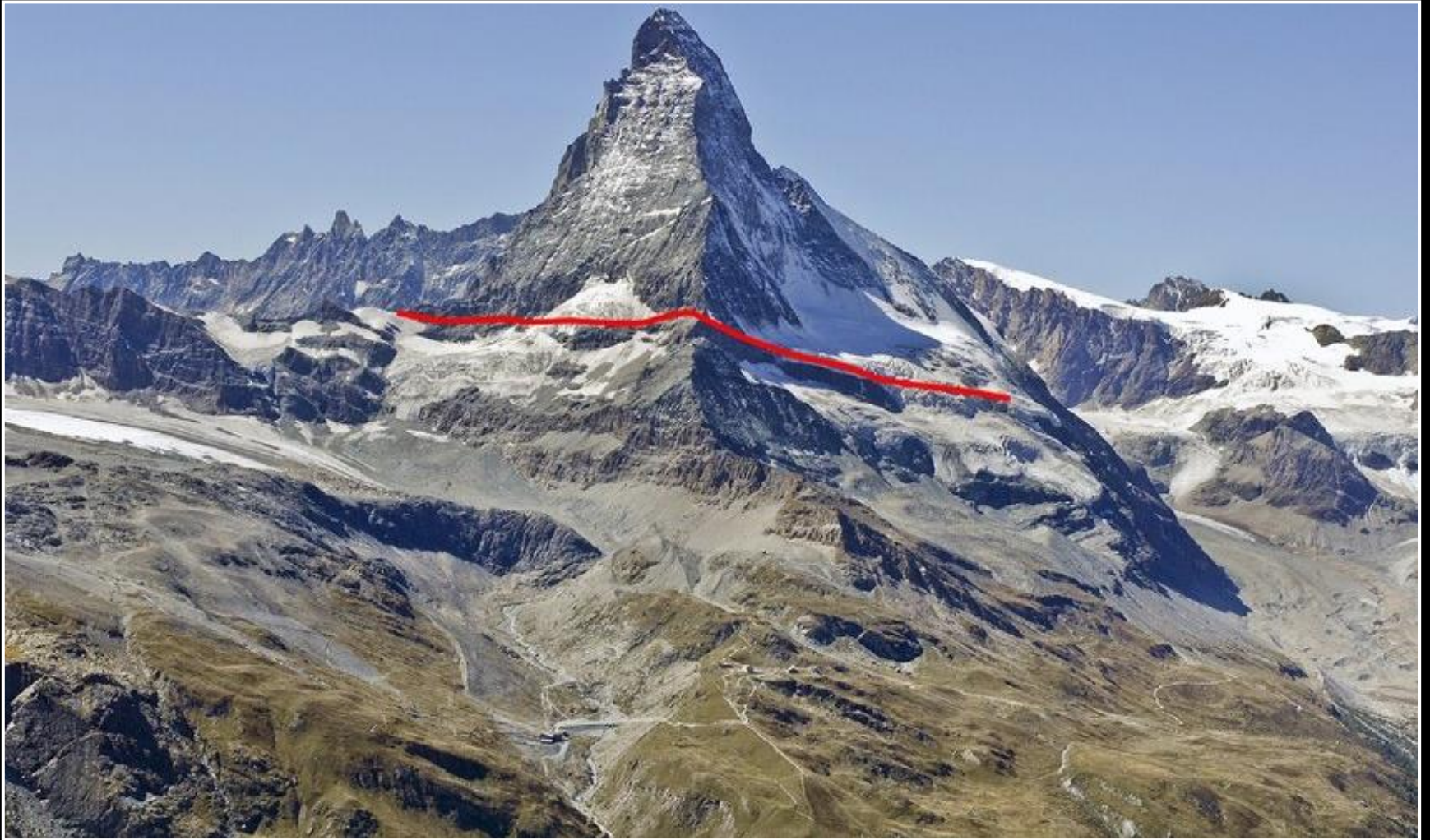


Aleutian Islands

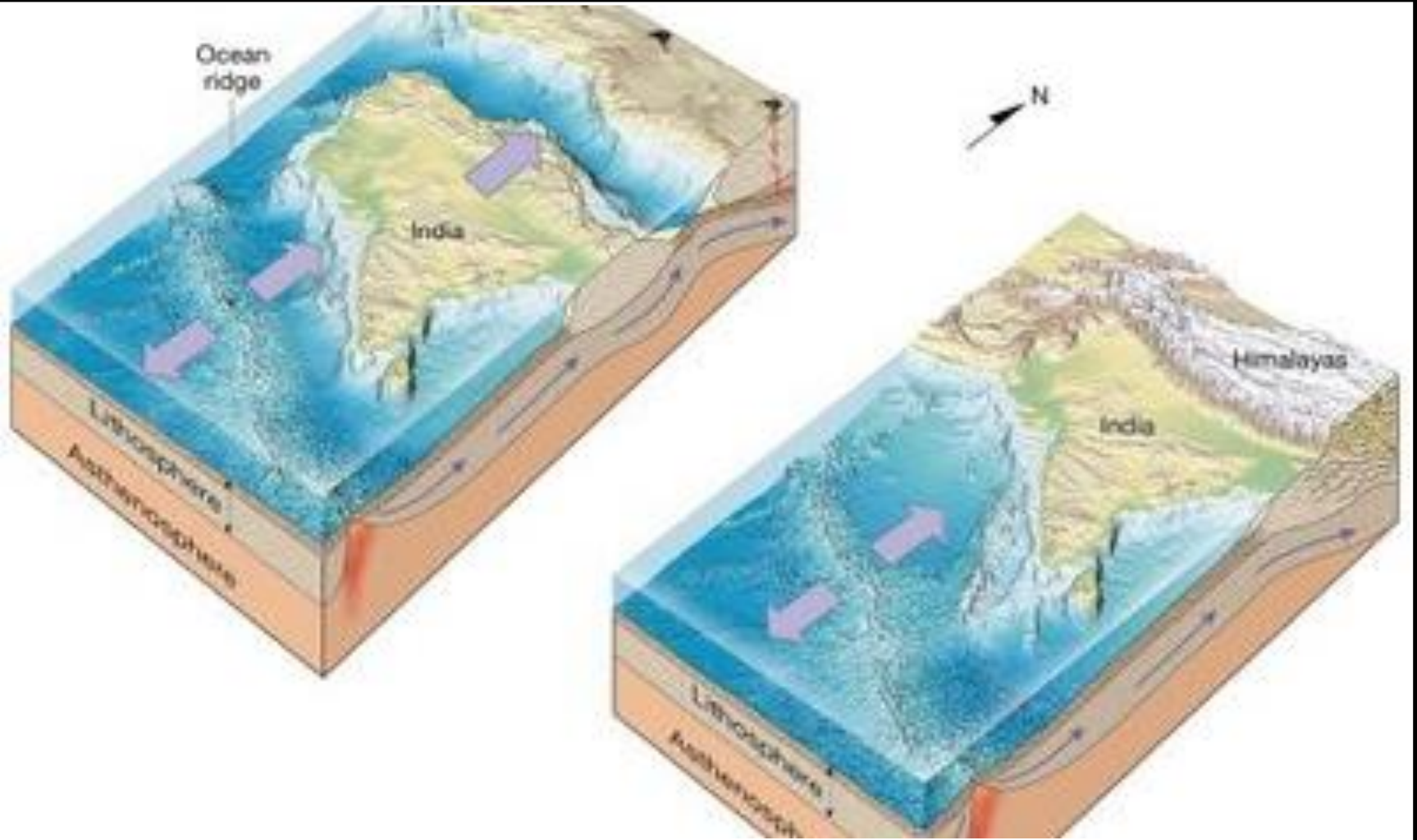
Convergent Continental-Continental



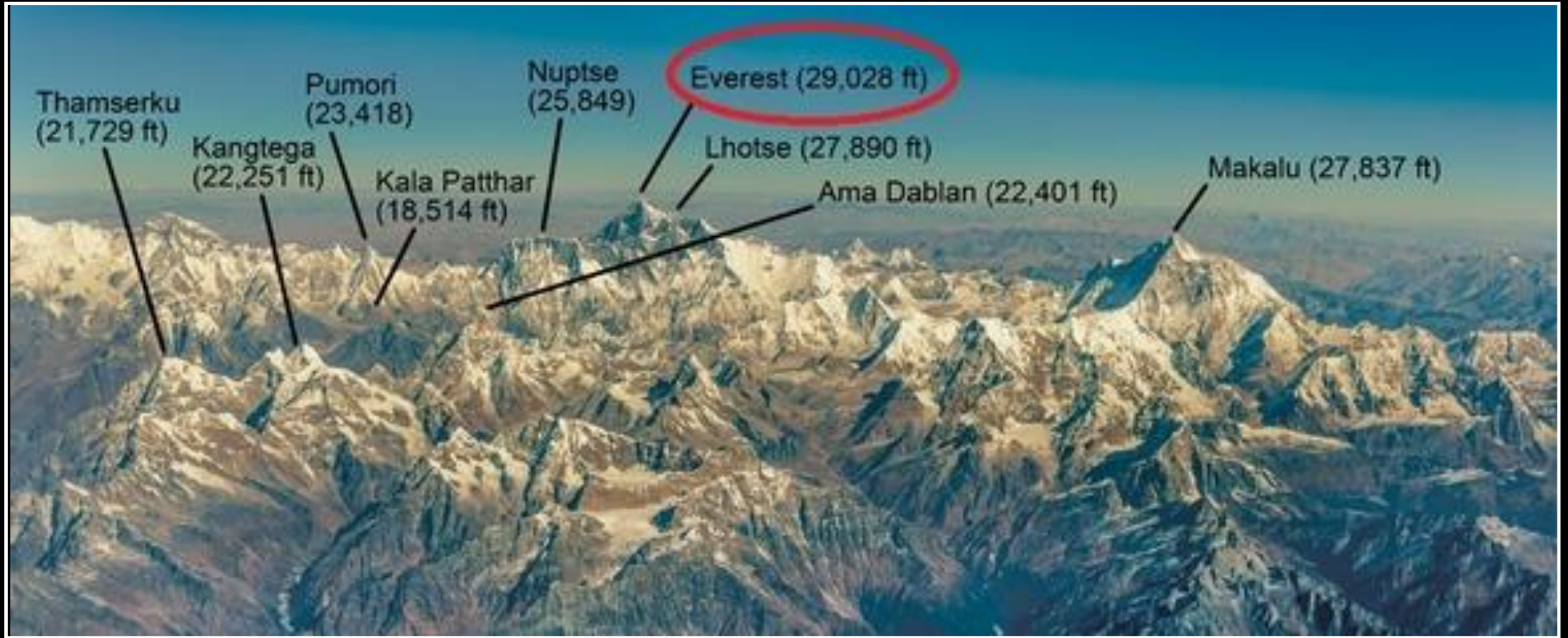
- Both plates are lower density continental crust
- Neither wants to subduct
- Collide and push upward
 - folding
- Forms high mountain ranges
- Some melting of plate and granitic intrusions form



Matterhorn, Swiss Alps - 14,692'
Formed 30 million years ago
Bottom = European Plate, Top = African Plate



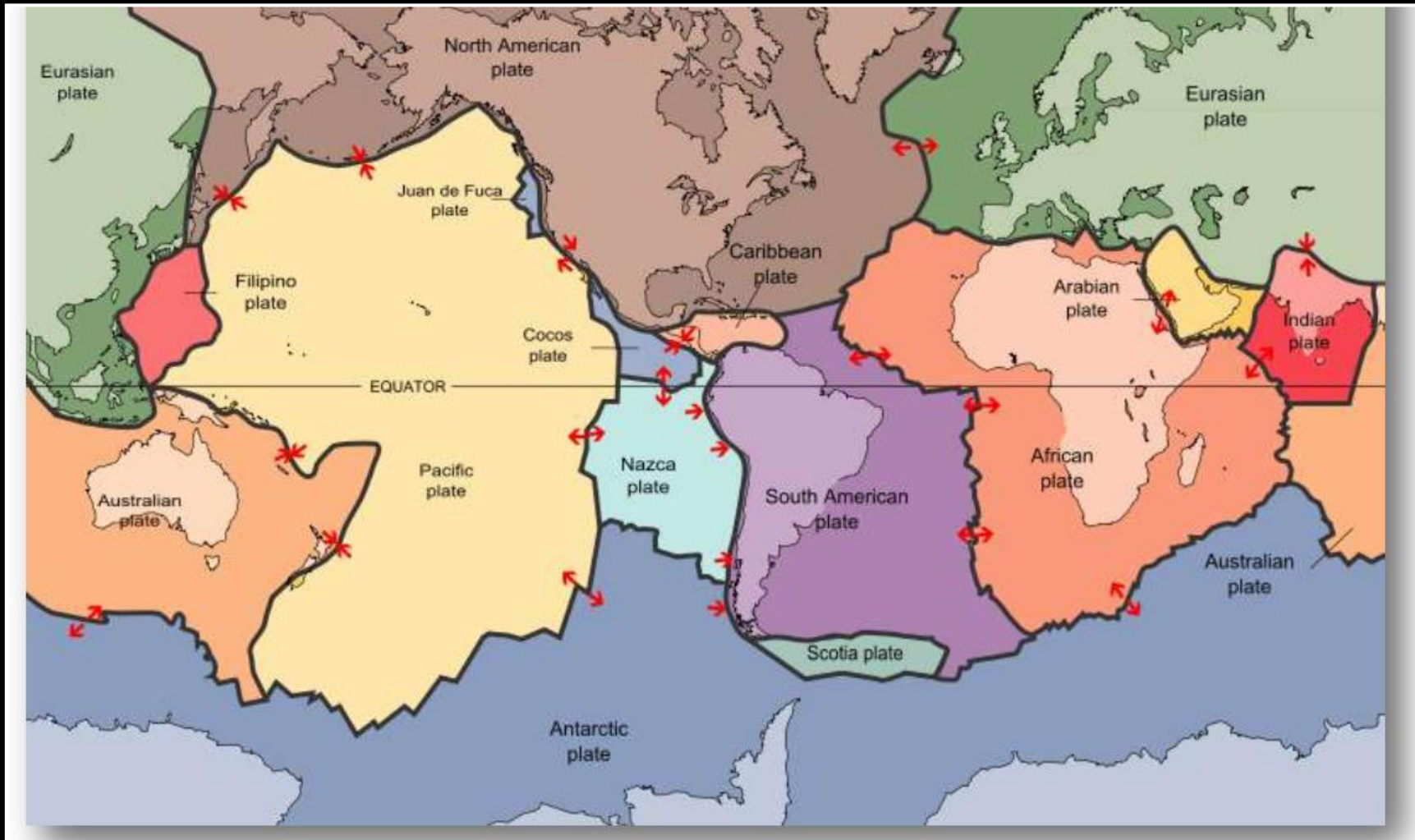
Continent-Continent Convergent Boundary
Example: Himalaya Mountains



Himalyas



Mt. Everest – 29,029'



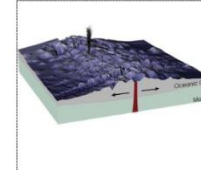
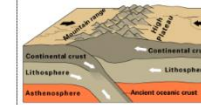
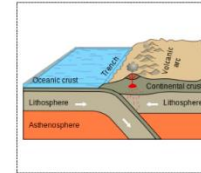
Tectonic Plates

Interactions of Earth's Plates

Directions: Fill out the chart by completing the first column with a description of each type of plate boundary in your own words. Next, cut out the pictures of the plate movements and paste them in the appropriate row of each column. Last, cut out the real-image examples and paste them in the proper row. Paste completed table into your Science Interactive Notebook.

EARTH'S PLATE BOUNDARIES		
PLATE BOUNDARY	MOVEMENT OF PLATES	EXAMPLES
Transform Boundary		
Divergent Boundary		
Convergent Boundary (ocean-to-continent)		
Convergent Boundary (continent-to-continent)		

Plate Movements



Examples

