Unit 2: Heat and Energy in the Earth's Systems

L12: Make it Move

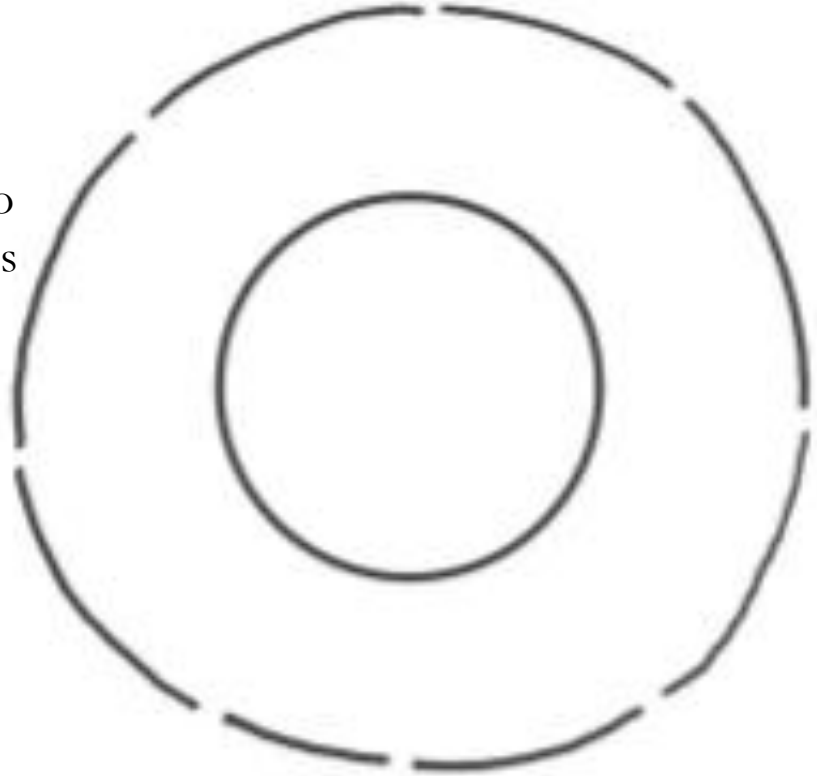
Guiding Question: Using the theory of plate tectonics, explain how the movement of plates results in observable features on Earth.

- Do Now (page 21):
  - How do you think two plates next to each other can move relative to each other?
  - What sort of phenomena or earth formation could you see there? (make predictions)

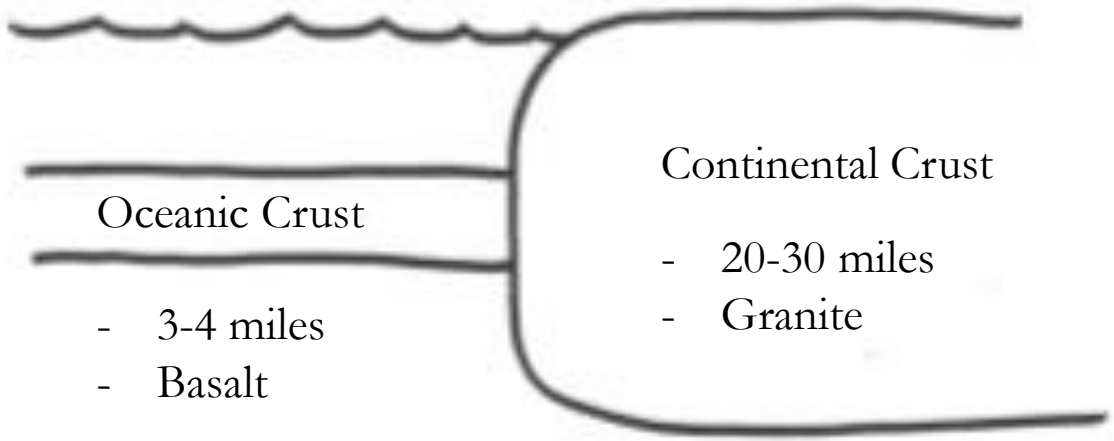
Lithospheric Plates

(AKA: tectonic plates)

regions of Earth's crust that are fractured into moving plates



Two Types of Crust



Oceanic Crust

- 3-4 miles
- Basalt

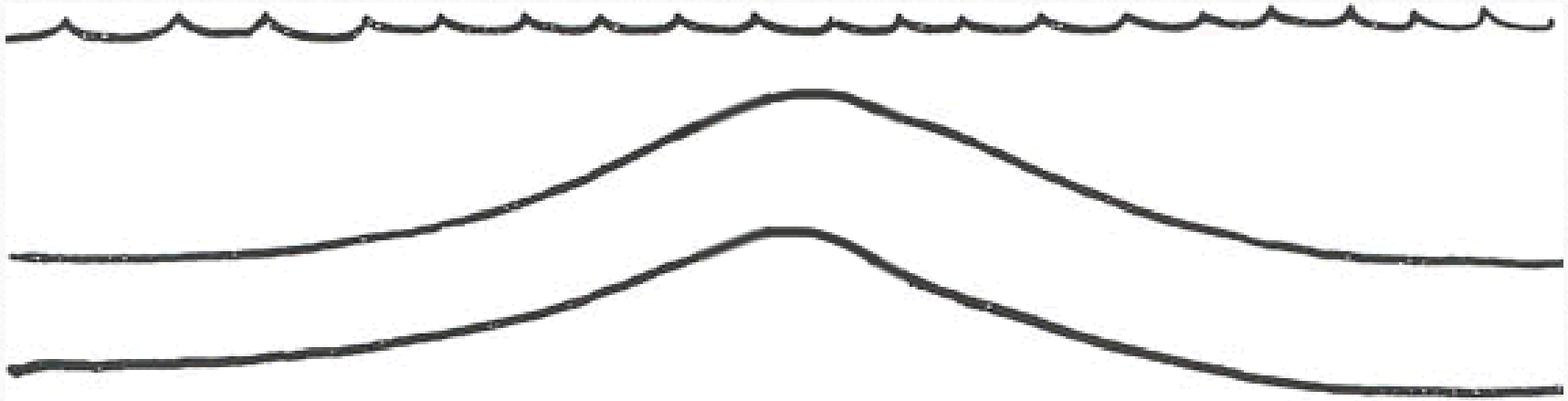
Continental Crust

- 20-30 miles
- Granite

http://geology.com/nsta/crust.gif

Divergent Boundary – Oceanic

Example: Mid-Atlantic Ridge



Effects:

- Submarine mountain range
- Volcanic activity
- Shallow earthquake activity
- Creation of new seafloor
- Widening ocean basin

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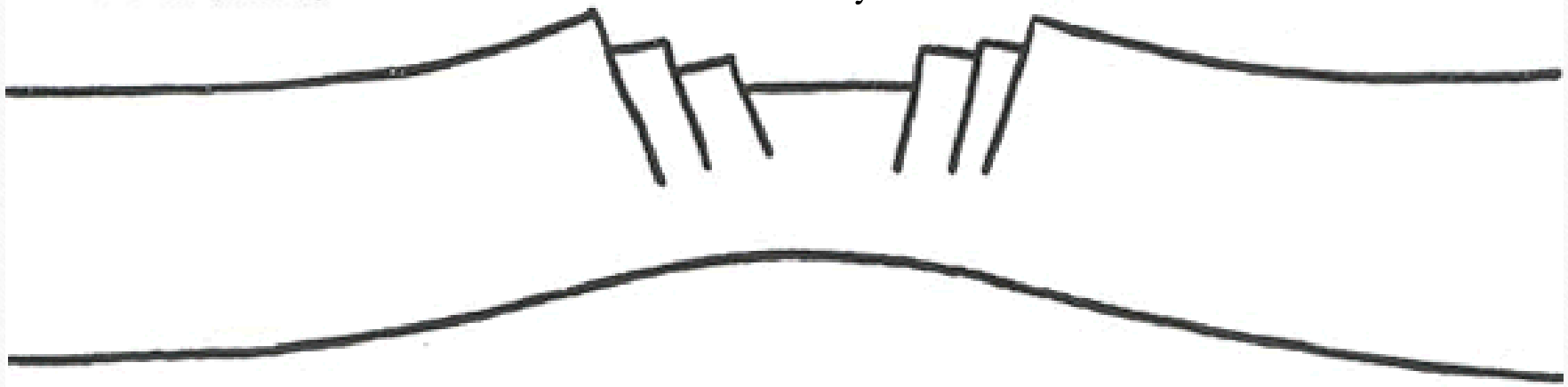
Divergent Boundary – Continental

Example: East African Rift Valley



Effects:

- Rift valley
- Normal faults
- Shallow earthquake activity
- Sometimes volcanic activity

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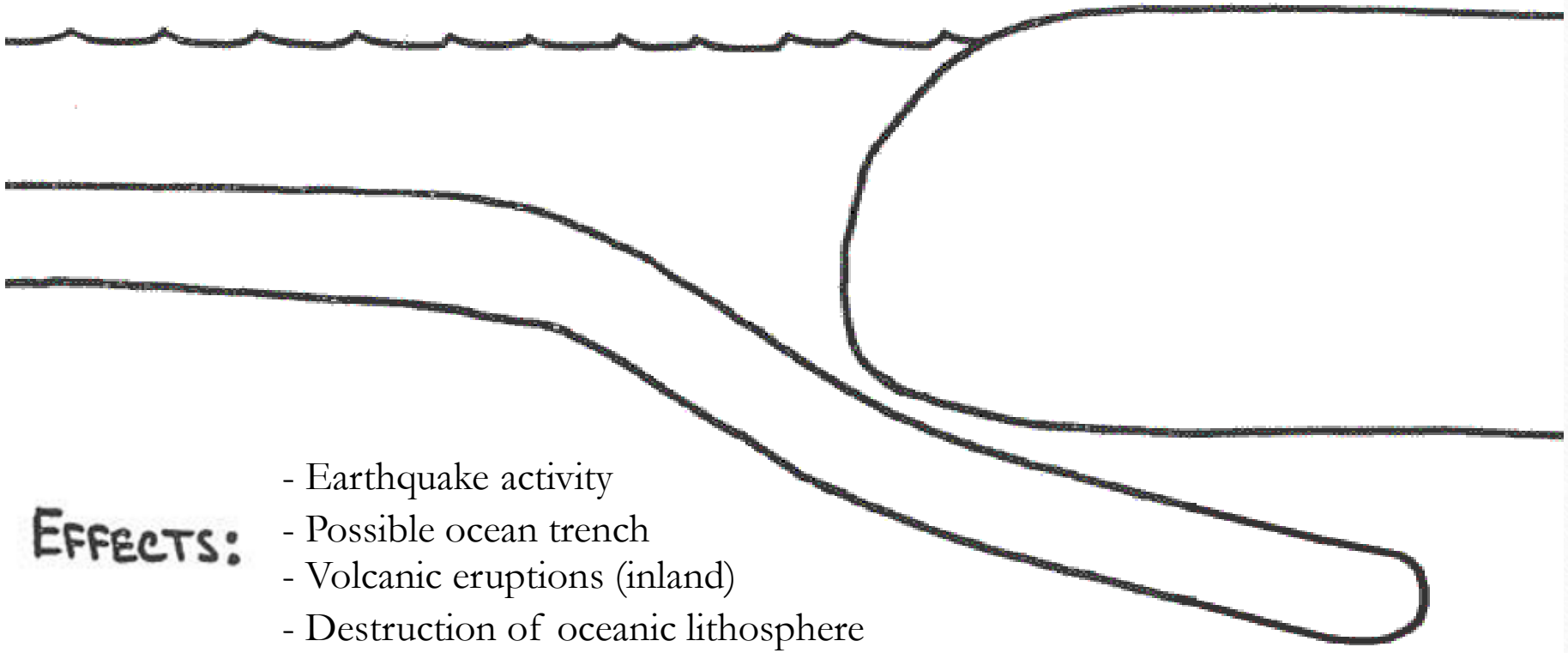
Convergent Boundary – Oceanic / Continental

Example: Washington-Oregon Coastline



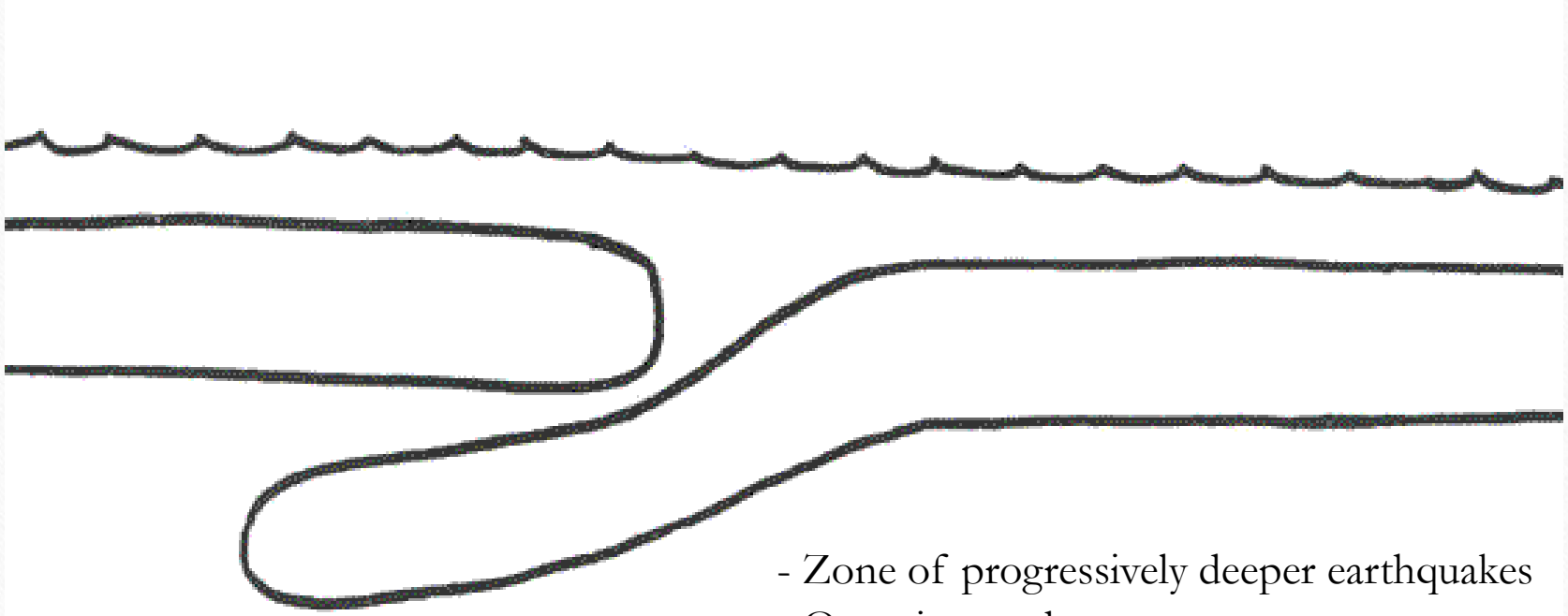
Effects:

- Earthquake activity
- Possible ocean trench
- Volcanic eruptions (inland)
- Destruction of oceanic lithosphere

http://geology.com/nsta/convergent-boundary-oceanic-continental.gif

Convergent Boundary – Oceanic | Oceanic

Example: Japan



Effects:

- Zone of progressively deeper earthquakes
- Oceanic trench
- Chain of volcanic islands
- Destruction of oceanic lithosphere

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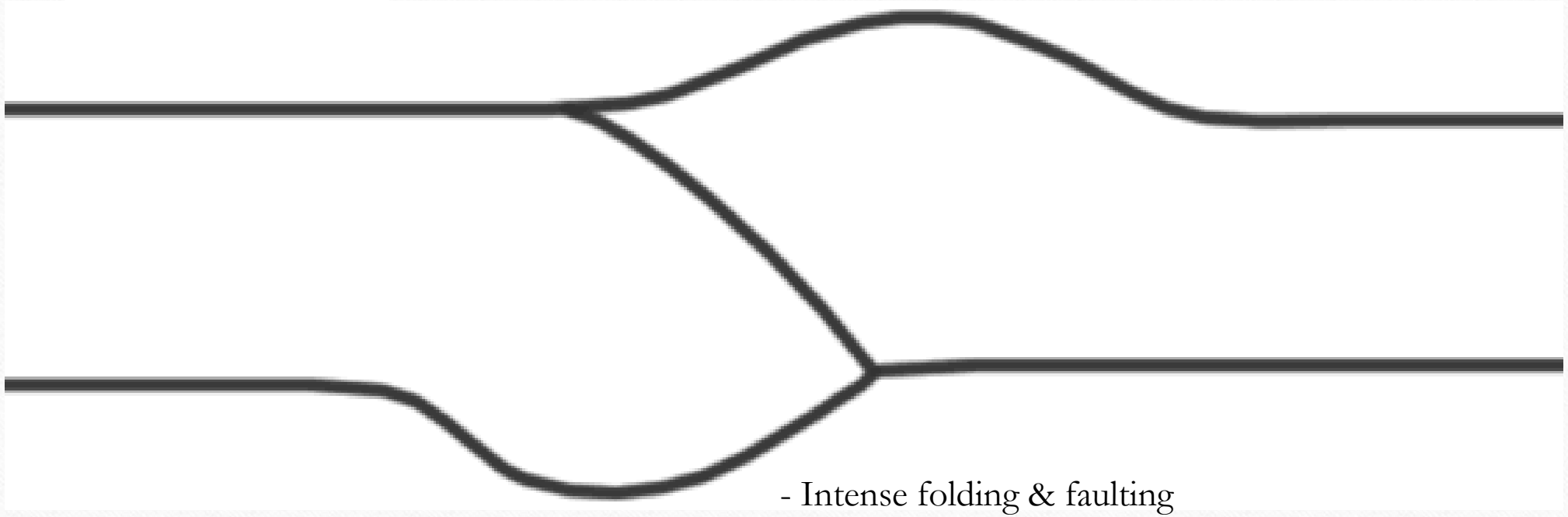
Convergent Boundary – Continent | Continent

Example: Himalaya Mountain Range



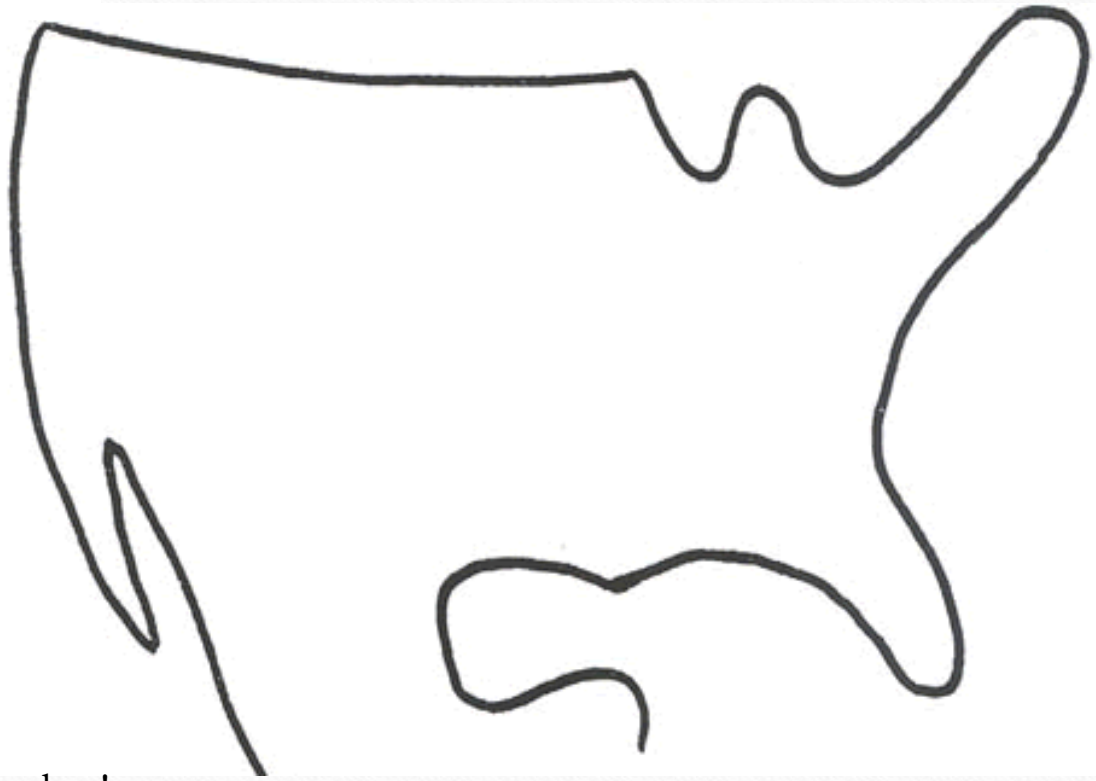
Effects:

- Intense folding & faulting
- Folded mountain range
- Shallow earthquake activity
- Shortening & thickening of plates within collision zone

http://geology.com/nsta/convergent-boundary.gif

Transform Boundary – Continental

Example: San Andreas Fault



Effects: - Earthquakes!

http://geology.com/nsta/transform-boundary.gif

Respond to Guiding Question

(bottom of page 24)

Using the theory of plate tectonics, explain how the movement of plates results in observable features on Earth.

Make It Move: Part 1

1. Smear a thick layer of frosting on your plate. Place two graham crackers on the frosting (with some space between).
2. Gently push down on the crackers and move them apart.
3. Diagram what you see at number 5 & answer questions 6 & 7.
4. Smooth the frosting. Place two new graham crackers on the frosting (**no** space between).
5. Gently slide the crackers past each other.
6. Diagram what you see at number 11 & answer questions 12 & 13.
7. Smooth the frosting. Place a **wet** graham cracker & a **dry** graham cracker on the frosting (with at least a pinky-width of space between).
8. Push the two crackers together.
9. Diagram what you see at number 18 & answer questions 19 & 20.

Exit Ticket

You thought about the limitations of this model.

Write your name on the piece of scratch paper.

Now, on your piece of paper, write down **one way** you could make this a better model.

Explain **how** this would make it a better model.

Closure

- Achieve 3000 “To Warn the People” due Friday, 10/27 at 11:59pm.