**What Geologic Evidence Supports The Existence Of Pangaea?**

**I. Introduction**

Scientists hypothesize that Earth’s seven continents were once connected as a single land mass, called a **supercontinent**. That land mass began to separate about 200 million years ago. Over time, the continents have slowly shifted to their present positions by movement that is called continental drift. **Alfred Wegener**, an early proponent of the theory of continental drift, named the former supercontinent **Pangaea**, meaning “all land”.

The shape of present-day continents (especially the way some continental coastlines could be fit together like pieces of a jigsaw puzzle) prompted Wegener to hypothesize about the existence of Pangaea. Wegener and other scientists discovered additional geologic evidence to support the existence of Pangaea.

Fossils of the reptile **Mesosaurus** have been found in South America and Africa. Because Mesosaurus lived in fresh water and land, it is improbable that it swam between the continents. This fact suggests that South America and Africa were once joined. Another fossil that supports the existence of Pangaea is **Glossopteris**, a fossil fern that once flourished in warm tropical climates. Glossopteris fossils have been found in Africa, Australia, India, South America, and Antarctica. It is improbable that Glossopteris could have originated independently in so many isolated locations lending weight to the theory that these continents were once connected and shared a similar climate.

**Rock structures** provide another clue to the existence of Pangaea. For example, parts of the Appalachian Mountains of the eastern United States are similar to mountains found in Greenland and western Europe. Furthermore, similar folded rock belts can be found on the southeastern coast of South America, as well as the southwestern coast of Africa. **Glacial deposits** and grooved bedrock in the southern parts of South America, Africa, India, and Australia suggest that these areas were once connected and covered by glaciers. Finally, **radiometric dating** has shown that rocks of a similar age can be found on the northwestern African coastline and near the center of South America’s eastern coastline.

In this virtual simulation you will use geologic evidence to reconstruct the former supercontinent Pangaea.

**II. Procedure**

1. Start the activity by going to the following website :

<http://www.glencoe.com/sites/common_assets/science/virtual_labs/ES11/ES11.html> .

2. Click the left and right arrows to see each of the seven continents.

3. Click the puzzle piece to see three versions of each continent. The different

versions appear in random order and represent the continents shape 250 million

years ago (*Pangaea starting to split*), 66 million years ago (*time of the dinosaur*

*extinction*), and today.

4. Determine which version shows the continents shape 250 million years ago and

click it.

5. Drag the continent to the place on the map where you think it was located 250

million years ago.

6. Examine the shape of another continent. Click the buttons in the “Legend” for

geologic clues. NOTE : During the existence of Pangaea, continents fit together

like pieces of a jigsaw puzzle. Also, geologic similarities were found in connected

areas.

7. Using information about the shape and geology of the continents, drag each of

the seven continents to the map to reconstruct Pangaea.

8. Click the “Check” button. If you dragged a continent from the wrong time

period or to the wrong location on the map, it will be highlighted yellow. Drag it

to the “Puzzle Box” and try again.

9. When all the continents of the correct age are in the correct location on the

map, click the “Present Day” button to see an animation of continental drift.

**III. Data**

1. Draw a picture of the continents and their location at the time of Pangaea.

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**IV. Analysis & Conclusions**

1. Which two continents have the best fit?

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2. Which continent is now part of Eurasia, but according to theory, was originally a

separate continent that moved northward into its present-day location?

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3. Why isn’t the fit perfect if the continents were once part of Pangaea?

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4. Scientists theorize that the continents are still drifting apart. What will be the eventual

position of North America with respect to Eurasia?

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5. How did the Atlantic Ocean form?

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6. If the continents were once connected, what might be similar about the coastlines

where they were connected?

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