Wegener's Puzzling Evidence

Plate Tectonics is a theory about the movement of continental plates across the earth. It states that the earth's crust is divided into several plates which slowly move over time as they glide over the hotter rock of the mantle. Alfred Wegener's evidence led to the acceptance of these gradual but inevitable changes to our earth. In this activity, you will study evidence and come up with your own conclusions about plate tectonics.

Suggested Ages: 6th – 8th Graders

Materials

- Printout of the puzzle pieces, scissors, glue or tape, crayons or markers (optional)

Guiding Questions

- Look at the Map of the World Today document. Do you think the world has always looked like this? Why or why not?
- What do you already know about plate tectonics? What is something new you learned while doing this activity?
- What evidence supports the theory of plate tectonics?
- Aside from geology, what are other ways we can study earth's gradual change over time?
- What do you need to formulate a hypothesis? How do we use evidence to support the hypothesis?
- What is important when presenting scientific information to other scientists? To the public?

Activity Instructions

- Read about Alfred Wegener and his scientific career: https://pubs.usgs.gov/gip/dynamic/wegener.html
- Print out the Puzzle Pieces document and, if wanted, the Hint for the Puzzle Pieces document.
- Study the evidence on the puzzle pieces. What kinds of fossils do you see? Consider how the animals move. Color each fossil type a different color using the Puzzle Piece Evidence.
- Study the land masses and how they might fit together. Label them.
- Cut out the land masses and arrange the puzzle pieces using the Puzzle Piece Evidence to support their arrangement.
- Tape or glue the final configuration together.
- Check the answer key (a separate PDF) to compare your answers to Wegener's.
- If your answers don't match, that's okay. What evidence did you use to come to your conclusions? Keep in mind that the ancient shoreline is vastly different from modern day because of sea level changes. Changes can be hard to reconstruct.

Extension - You might also enjoy this graham cracker plate tectonics activity: https://teach-bake-love.blogspot.com/2012/11/a-cool-lab-for-plate-tectonics.html

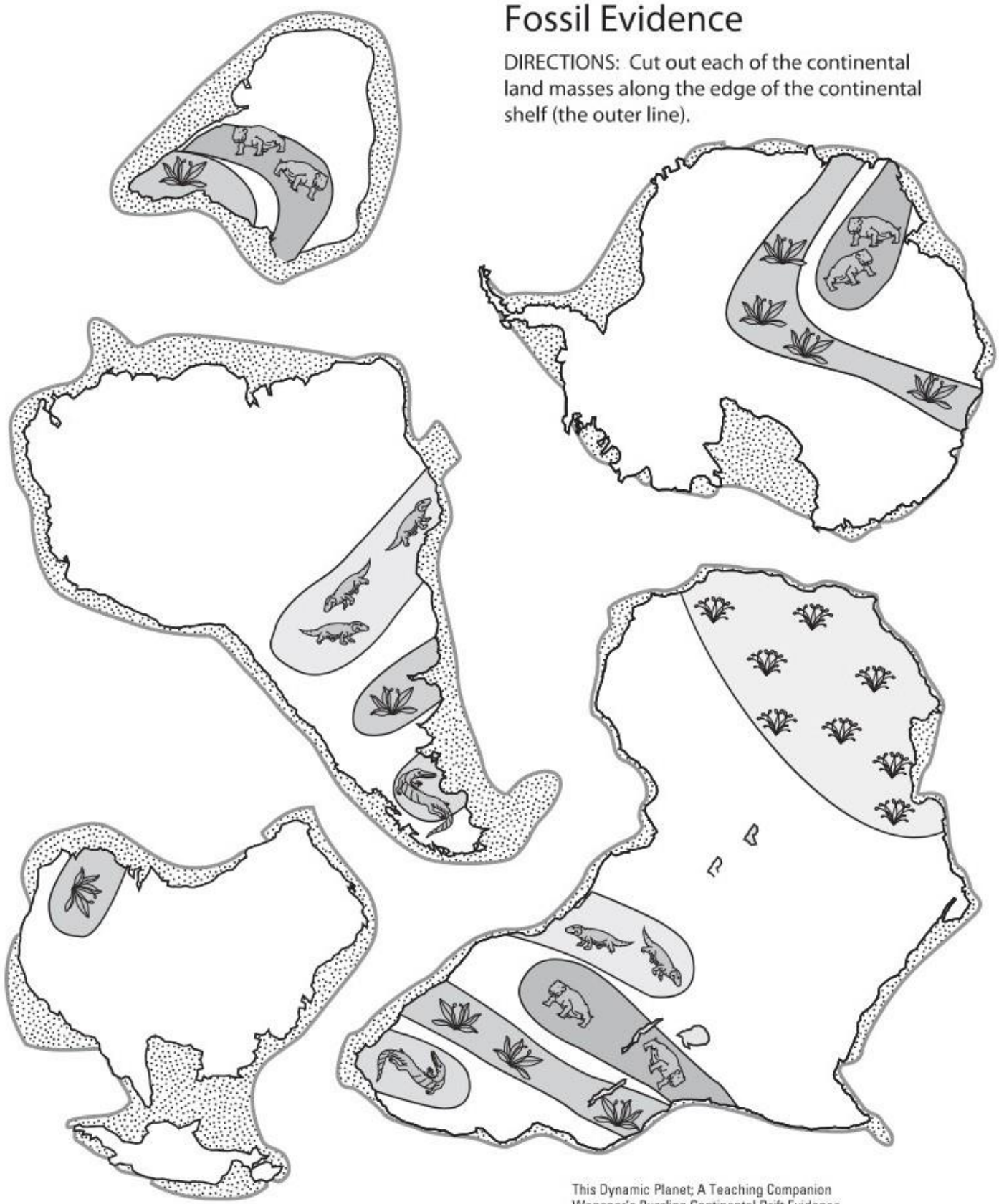
References- USGS "This Dynamic Planet: A Teaching Companion"
https://volcanoes.usgs.gov/vsc/file_mngr/file-139/This_Dynamic_Planet-Teaching_Companion_Packet.pdf

Puzzle Pieces

USGS

Fossil Evidence

DIRECTIONS: Cut out each of the continental land masses along the edge of the continental shelf (the outer line).

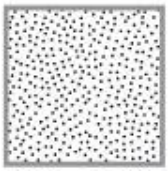


U.S. Department of the Interior
U.S. Geological Survey

This Dynamic Planet; A Teaching Companion
Wegener's Puzzling Continental Drift Evidence
U.S. Geological Survey, 2008
For updates see <http://volcanoes.usgs.gov/about/edu/dynamicplanet>

Hint for the Puzzle Pieces

Puzzle Piece Evidence



The continents is surrounded by the continental shelf (stippled pattern), which extends beyond the continent until there is a large change in slope.

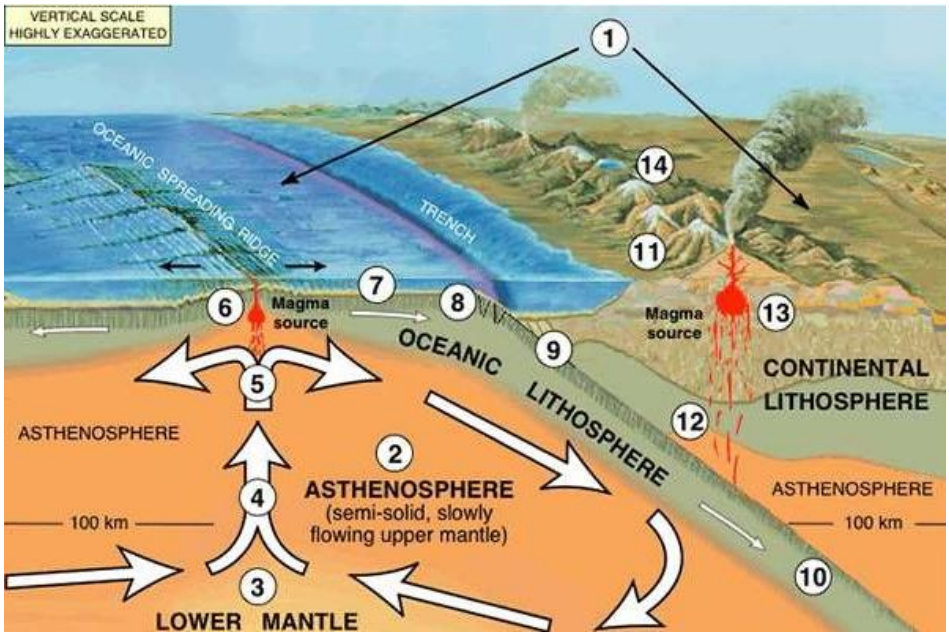
By about 300 million years ago, a unique community of plants had evolved known as the European flora. Fossils of these plants are found in Europe and other areas. Color the areas with these fossils yellow.

Fossils of the fern Glossopteris have been found in these locations . Color the areas with these fossils green.

Fossil remains of the half meter-long fresh or brackish water (reptile) Mesosaurus. Mesosaurs flourished in the early Mesozoic Era, about 240 million years ago. Mesosaurs had limbs for swimming, but could also walk on land. Other fossil evidence found in rocks along with Mesosaurs indicate that they lived in lakes and coastal bays or estuaries. Color the areas with these fossils blue.

Fossil remains of Cynognathus, a land reptile approximately 3 meters long that lived during the Early Mesozoic Era, about 230 million years ago. It was a weak swimmer. Color the areas with these fossils orange.

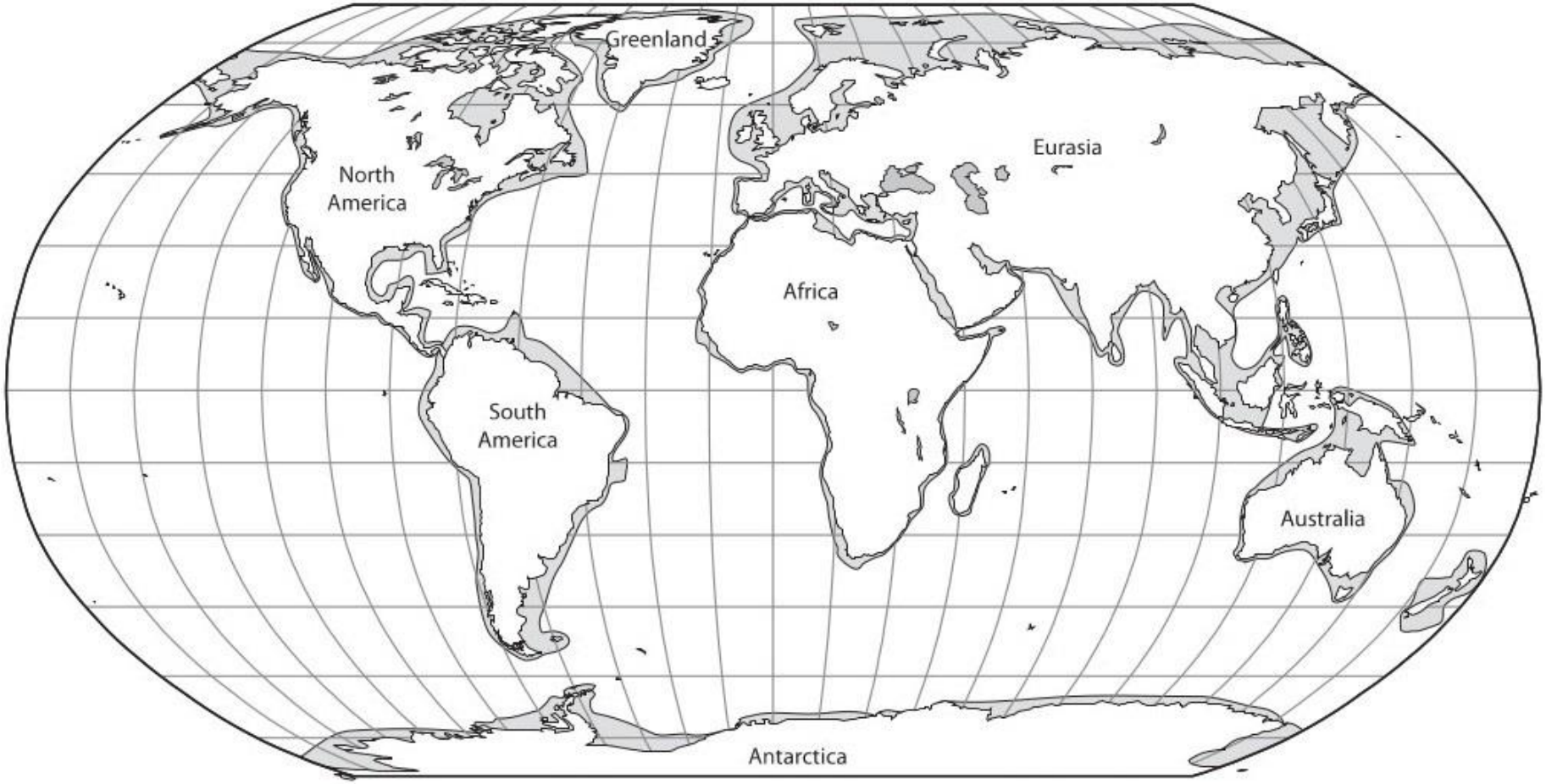
Fossil evidence of the Early Mesozoic, land-dwelling reptile Lystrosaurus. They reproduced by laying eggs on land. In addition, their anatomy suggests that these animals were probably very poor swimmers. Color the areas with these fossils brown.



USGS

The World Today

This map shows the continents as they appear today. Most of the continental land masses lie above sea level, but the true edges of the continents are not at the shoreline. The gray areas on this map show the relatively shallow water that covers the fringes of the continents. These sea-covered borders are known as CONTINENTAL SHELVES (gray areas). The margins of the continental shelves mark the true edges of the continents.



Map of the World Today

U.S. Department of the Interior
U.S. Geological Survey

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