
Continents Adrift



Topic: Evidence for continental drift

Objective: Students learn that Earth's crust consists of sections (plates) which gradually move, changing the shape and location of the landmasses.

Materials:

- copy of the Continent Puzzle Pieces (page 59) for groups of students
- transparency of Continent Puzzle Pieces
- large map showing the relative positions of South America and Africa at present
- transparencies of The Evidence for Continental Drift (pages 60 and 61)

Preparation:

Makes copies of the continent puzzle for groups of students. Cut out the continents and place each set in an envelope.

Procedure:

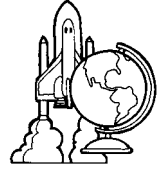
- Divide the students into small groups, and give each an envelope with the continent puzzle pieces.
- Tell them to place the continents where they are today and then see if they can fit them together as puzzle pieces.

Discussion:

- Tell the students the background information about Alfred Wegener (page 57) and his theory of continental drift.
- Use the transparency pieces to show how he thought Africa and South America fit together.
- Use the transparency The Evidence for Continental Drift to show the scientific data that has been collected and how it helps scientists know where the continents once were located.

Follow Up:

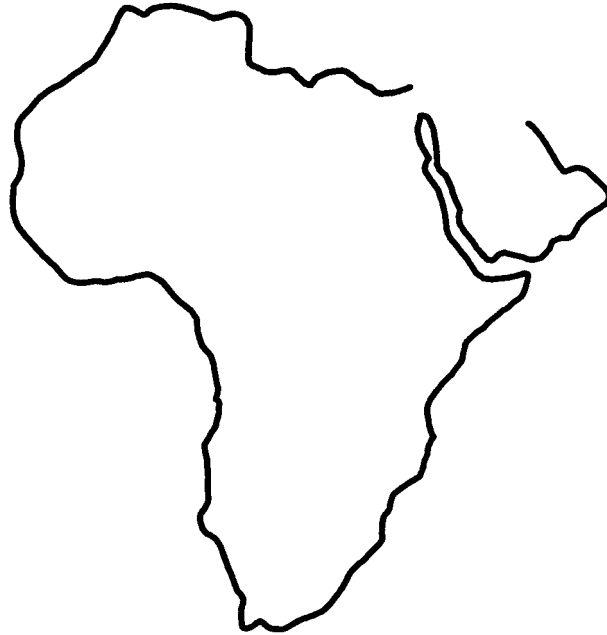
Have the students do the next activity which is to construct a flipbook showing Continental Drift.



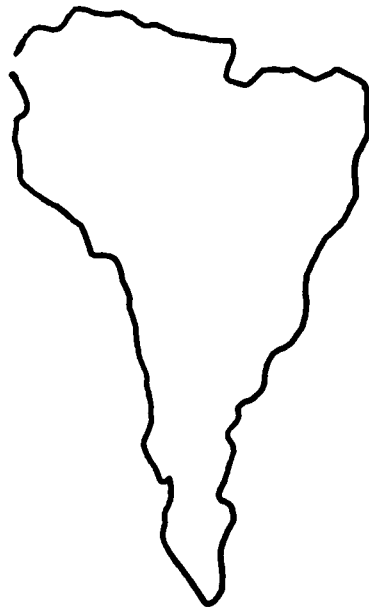
Continents Adrift *(cont.)*

Continent Puzzle Pieces

Africa



South America



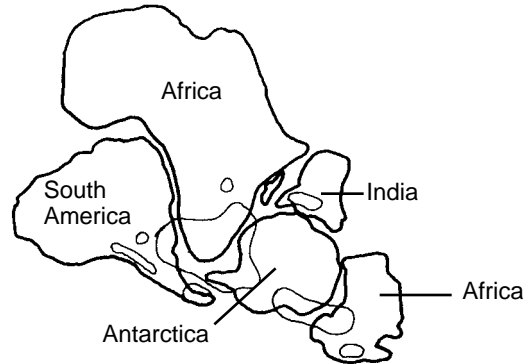


Continents Adrift (cont.)

The Evidence for Continental Drift

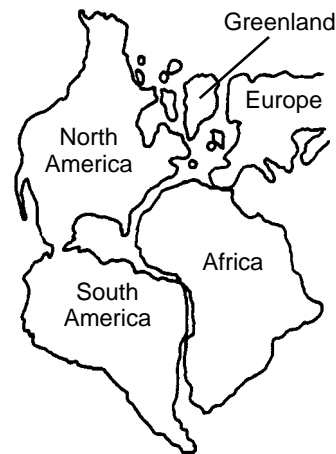
1 Climate

The climates on Earth depend upon location, colder near the Poles, wetter and warmer near the equator. Since the distance from the sun has been the same since life formed on Earth, and the axis has always tilted $23\frac{1}{2}^{\circ}$, climates should have remained the same. There is evidence of glacial scratches on rock layers and deposits found in parts of South America, Africa, India, Antarctica, and Australia. This leads scientists to believe they were grouped close together about 248–286 million years ago, and were located near the South Pole.



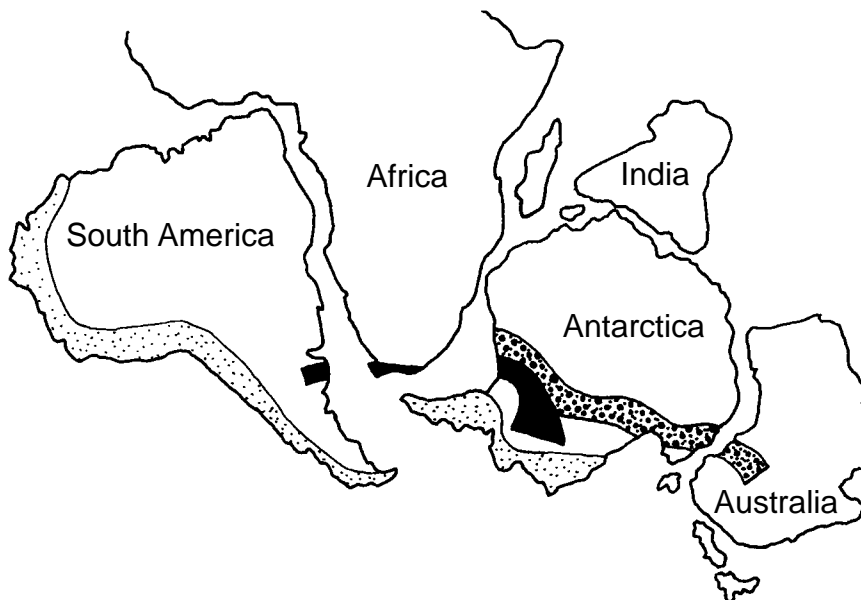
2 Geographical

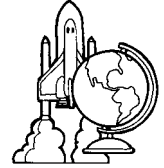
The continents of South America and Africa appear to fit together. Evidence shows that Central America was once closer to the North American continent. It would have fit into this puzzle of continents as well.



3 Geological

Old mountain zones of the same ages appear as belts crossing southern continents. When they are matched up, they show a different location of the continents from what we see today.





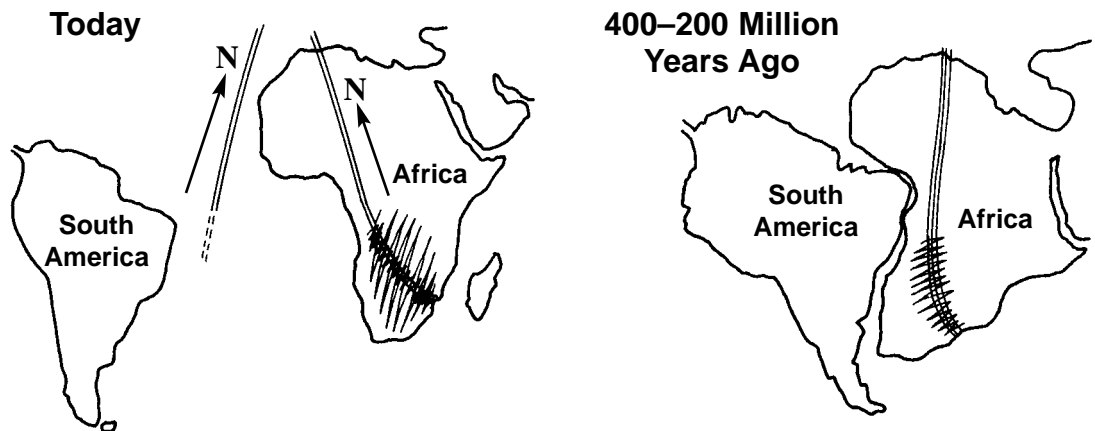
Continents Adrift (cont.)

The Evidence for Continental Drift (cont.)

4 Magnetic

All igneous rock contains some magnetic particles which are aligned with the north/south magnetic field of the Earth as they form. When the molten material cools and becomes solid, the direction of the magnetic material is set in that direction. Magnetite, a natural magnetic material, is often found in sedimentary rock layers. It is also set in the direction of the magnetic field when the sediments become rock. If these layers of rock are shifted, their magnetic particles continue to point in the original direction of the magnetic field at the time the rock solidified. Compass needles, which are really tiny magnets, will also dip at one end, depending upon where they are relative to the magnetic poles. At the Equator, the needle does not dip; as you move closer to the north or south magnetic poles, that end of the needle dips. This magnetic dip is also indicated by the magnetic particles solidified in rock and thus can indicate the latitude of the rock at the time of its formation.

Paleogeologists, scientists who study ancient rock layers, have examined rock specimens taken from the ocean floor and continent surfaces. When the direction of magnetized material in this rock is tested, it does not line up with the magnetic field of today. An example of this is rock specimens containing magnetic material taken from the Atlantic Ocean floor and Africa. Today these are widely separated areas, but 200–400 million years ago, when the rocks containing the magnetic material was just forming, they most likely were joined together.



5 Biological

The same fossils of land plants and animals has been found on continents which are widely separated today. When they were alive, these animals and plants could move between continents which are separated by oceans today.

