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The Great Continental Drift Mystery

Guide for Curriculum Unit 91.06.05
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Plate tectonics, the study of the movements and interactions of the lithospheric plates, has a history which shows how scientists work by studying one another's work, arguing, disagreeing, and proposing new hypotheses. It demonstrates the importance of researching a problem carefully and being open to new information. It is a wonderful example of interdisciplinary work among the various branches of science with paleontologists, climatologists, oceanographers, ecologists, biologists, and geologists all working to solve the same mystery: continental drift. It also reveals an important source of global change: changes that are reflected in the climate, land forms, and life forms.

We will begin with a brief introduction presenting some of the early history of the concept of continental drift. This will include the first ideas of landbridges connecting the various land masses. Then the work of Wegener and Dutoit will be looked at in more detail. We will use Wegener's clues to draw and assemble a partial map of Pangaea. Next we will look at some of the clues that have been found in support of the plate tectonic theory. Comparisons of strata on different continents, and looking at the specific kinds of sediments and how they form will tell us some things about climate and about movements in the region involving rifting or colliding of continents. Glaciation clues can tell us not only about climate but also possible alignment of early land masses and their geographic locations. Changes in global climate resulted in changes in the endemic plant and animal forms, all being influenced by the changes in geographic location of the moving continents. Paleomagnetism and the concept of magnetic reversals will be looked at in order to determine the earliest placement of the continents.

My students always respond well to ideas involving animals so I will use both living and fossil species of plants and animals extensively to show the "mystery" of biogeography as it relates to plate movement. We will look at fossils of dinosaurs and early Cenozoic mammals to maintain the interest level.

We will be doing a lot of drawing as we look at maps, draw maps, and draw in clues. Hopefully the students will be able to use some clues to figure out some maps of their own. A final exercise will be to look at some of the unsolved mysteries of animal distribution and try to come up with some of our own ideas. The unit must be very visual since so many of the words we will use are long and threatening. All the representative species will be drawn and colored; the maps will be constructed using continent outline tracings; and posters of geologic eras and periods will be drawn and hung along the wall for constant reference, with representative species listed, drawn, and colored.

(Recommended for Earth Science, grades 7-9)

Key Words

Ecology Environmental Science Global Change Geology Earth Continental Drift