Plate Tectonics and Continental Growth

Plate tectonics has affected the shapes of the continents as well as their positions. The ancestors of most modern continents were smaller. Processes associated with plate movements have added rock materials to the margins of the ancient continent cores. The shapes that are familiar today have formed gradually.

At the core of each continent is an expanse of ancient rock called the craton (KRAY-TAHN). Around 2.5 billion years ago, this core continental material stabilized. Before then, Earth’s surface was probably too hot and unstable for continents to form. One example of a craton is the North American craton, which is exposed at the surface in most of eastern Canada. Geologists call this part of the craton the Canadian Shield. Some of the rock materials found there are among the oldest ever dated and are estimated to have formed about 3.96 billion years ago. The remainder of the North American craton lies buried under a platform of sediments.

The North American craton shows the approximate shape of the continent one billion years ago. The remainder of North America has been added to the craton as the continent developed into its present dimensions.

Sources of Growth Material

Material that is added to continents can come from a number of sources, including deep-sea sediments, igneous rock, river sediments, and terranes.

Deep-Sea Sediments

Deep-sea sediments can be added to the edges of a continent when an oceanic plate plunges under a continental plate at a subduction boundary. Some of the sediments from the ocean floor may be scraped off and left behind as growth material on the edge of the continent.