
Appalachian reminiscences

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The Appalachian Orogen is the North American type example of a collisional geologic mountain belt. It has a long history of ideas and resulting models. Most were attempts to rationalize the formation of geologic mountains from a preceding special depositional regime or geosyncline. All were contrived to comply with a world of fixed continents and permanent oceans. With the advent of plate tectonics, a realization that continents drift and that oceans open and close to form geologic mountain belts is about as profound as geology gets.

The opening and closing of an ancient Iapetus Ocean is the model for the 1978 Tectonic Lithofacies Map of the Appalachian Orogen, originally developed in 1977. It evolved as a teaching aid, which explains its size and format. The map attempts to identify and delineate ancient continental margins, vestiges of oceans, and suspect terranes. These are early Paleozoic Zones whose outline is the map's first order message. For example, the ancient continental margin of eastern North America, or the local Humber Zone, has all the features of a rifted margin, from rifting, passive development, and finally destruction. The opposing continental margin and other outboard suspect terranes are less well known. The present North Atlantic Ocean is a model for Iapetus, although some would consider the modern North Atlantic as kinder, gentler, and probably less full of guile.

The 1978 Appalachian Map is now updated by a 2006 digital version that allows future modifications and mixing and matching of other data sets. For the most part, the new map follows the model of the former map. It has the latest subdivisions of early Paleozoic rocks, with much more emphasis on middle Paleozoic and later Paleozoic rocks. It also distinguishes plutonic rocks by age, as well as other useful features.

Maps are beautiful, fun, and informative. They represent the level of understanding at the time they are made. Maps are the way in which geologists communicate best and are therefore the dynamic force in the science. But unlike most maps and scientific publications that are heavily subsidized, the bottom line on the 1978 Tectonic Lithofacies Map of the Appalachian Orogen is that it made money.