

The Life Cycle of Continental Margins

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At the end of a Wilson Cycle derived from the opening and closing Paleo-North Atlantic (Iapetus) and the reopened Neo-North Atlantic Oceans, lasting for 200 to 250 million years, and in fact arranged westwards once around the globe (Rift/Mediterranean-Red Sea, Atlantic, Pacific, and collision/Himalayan states), continents from the northern and southern hemisphere collide with one of their (usually) three margins at the equator west of the Pacific. However, what happened to the remaining, yet uncollided margins? Does the Wilson Cycle only describe the history of oceans and continents but not that of margins?

The main sequence of the Cycle of Continental Margins progresses westwards three times around the globe as follows: passive margin styles: North Africa, northern South America, West Antarctica, East Australia, East India, East Africa, eastern South America, East Antarctica (Queen Maud Land), West Australia, West India, West Africa styles; mainly active margin styles: western South America/Andean, East Antarctica (Wilkes Land), North Australia/New Guinea, northern India/Himalayan/collision styles.

The sequence of plate tectonic settings through which a continental margin passes between rifting and collision can be established from the geological history of a single margin. It can also be derived from comparing a series of adjacent margins of an era. The future or past style of a specific margin always exists in a corresponding plate tectonic setting of the neighbouring continent to the west or east, respectively (e.g. the western margin of Africa will develop into an Andean style).