5.8: "Active" vs. "Passive" Continental Margins

"Active" vs. "Passive" Continental Margins

Continental margins typically fall into two classes: "active" and "passive."

An active continental margin is a coastal region that is characterized by mountain-building activity including earthquakes, volcanic activity, and tectonic motion resulting from movement of tectonic plates. Characteristics of active continental margins include:

• Found on mostly convergent plate boundaries
• Continental slope descends abruptly into a deep-ocean trench (no continental rise)
• Located primarily around the Pacific Ocean

The West Coast of the United States is an active margin that is characterized by rugged coastlines with narrow beaches and steep sea cliffs.

Passive continental margins occur where the transition between oceanic and continental crust which is not an active plate boundary. Examples of passive margins are the Atlantic and Gulf coastal regions which represent setting where thick accumulations of sedimentary materials have buried ancient rifted continental boundaries formed by the opening of the Atlantic Ocean basin. The Atlantic Coast of the United States is characterized by wide beaches, barrier islands, broad coastal plains (see features discussed below).
Emergent and Submergent Coasts

In some regions around the world, tectonic forces are pushing rocks up along coastal regions, mostly in regions associated with active continental margins. These areas are called emergent coasts and display features including sea cliffs and marine terraces (see below). Where sea level is rising faster than land is rising, or where coastal areas are sinking, it is called a submergent coast. Submergent coasts are associated with passive continental margins with wide coastal plains and continental shelves. Estuaries are associated with submergent coastlines formed when sea level rises and floods existing river valleys. Active margins can have both emergent and submergent coastlines in close proximity to each other.