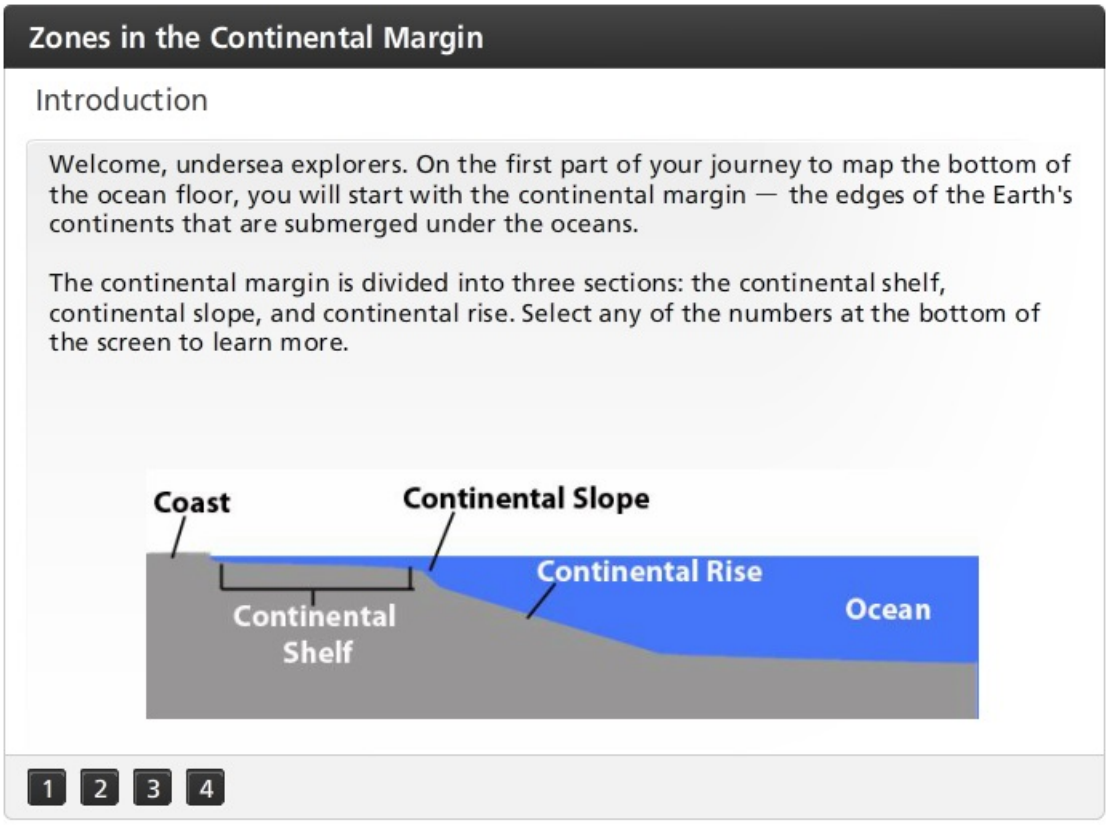
Module 4: Bathymetry
Topic 1 Content: Zones in the Continental Margin Notes



Welcome, undersea explorers. On the first part of your journey to map the bottom of the ocean floor, you will start with the continental margin — the edges of the Earth's continents that are submerged under the oceans.

The continental margin is divided into three sections: the continental shelf, continental slope, and continental rise. Select any of the numbers at the bottom of the screen to learn more.

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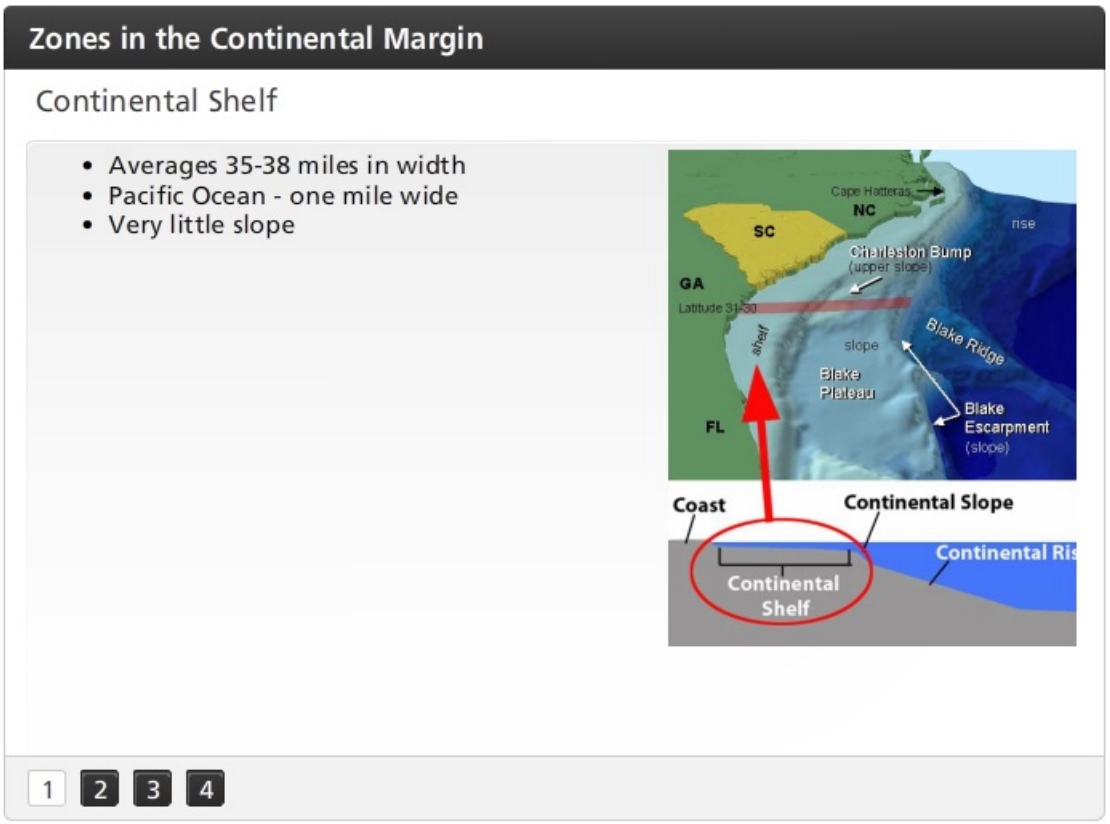

- Averages 35-38 miles in width
- Pacific Ocean - one mile wide
- Very little slope

Narration Script

As you enter the water from the beach, you will be walking on the continental shelf. Get ready for a long walk. In most oceans, this shelf is about 35-38 miles wide, but it varies widely. In the Arctic Ocean, the shelf averages around 600 miles wide, while in the Pacific Ocean, it's only about one mile wide.

As you explore the shelf, you will notice that it is relatively flat until you reach the shelf break where the continental slope begins. The shelf break has a somewhat steeper, more defined slope and is called the shelf break because it marks the point where the continental shelf ends and the continental slope begins.

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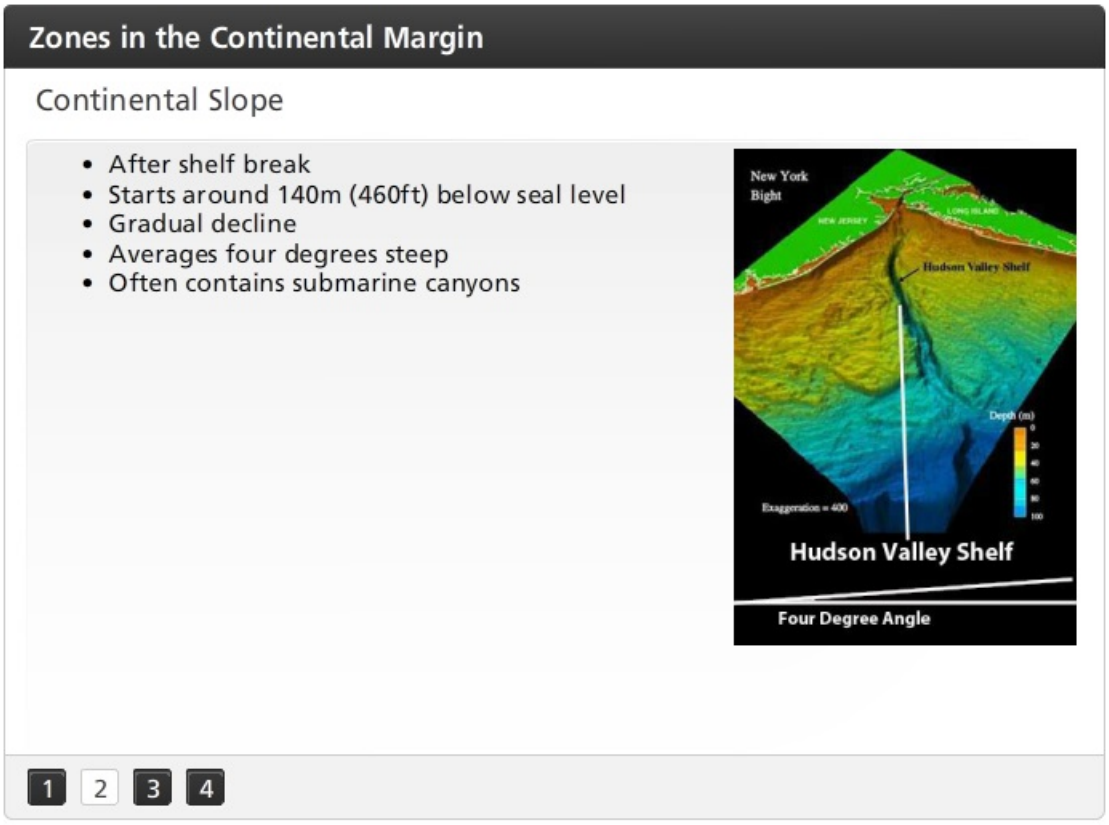

- After shelf break
- Starts around 140m (460ft) below seal level
- Gradual decline
- Averages four degrees steep
- Often contains submarine canyons

Narration Script

After you pass the shelf break, you come onto the continental slope. It is no ski slope though. Although steeper than the shelf, the continental slope only goes down at an angle of about four degrees, which is more of a very gradual decline than a steep slope.

There are some areas in the continental slope that are pretty steep, including giant submarine canyons. The Hudson Canyon off the coast of New York and New Jersey is larger and steeper than the Grand Canyon. This canyon has V-shaped walls, is very deep, and extremely steep!

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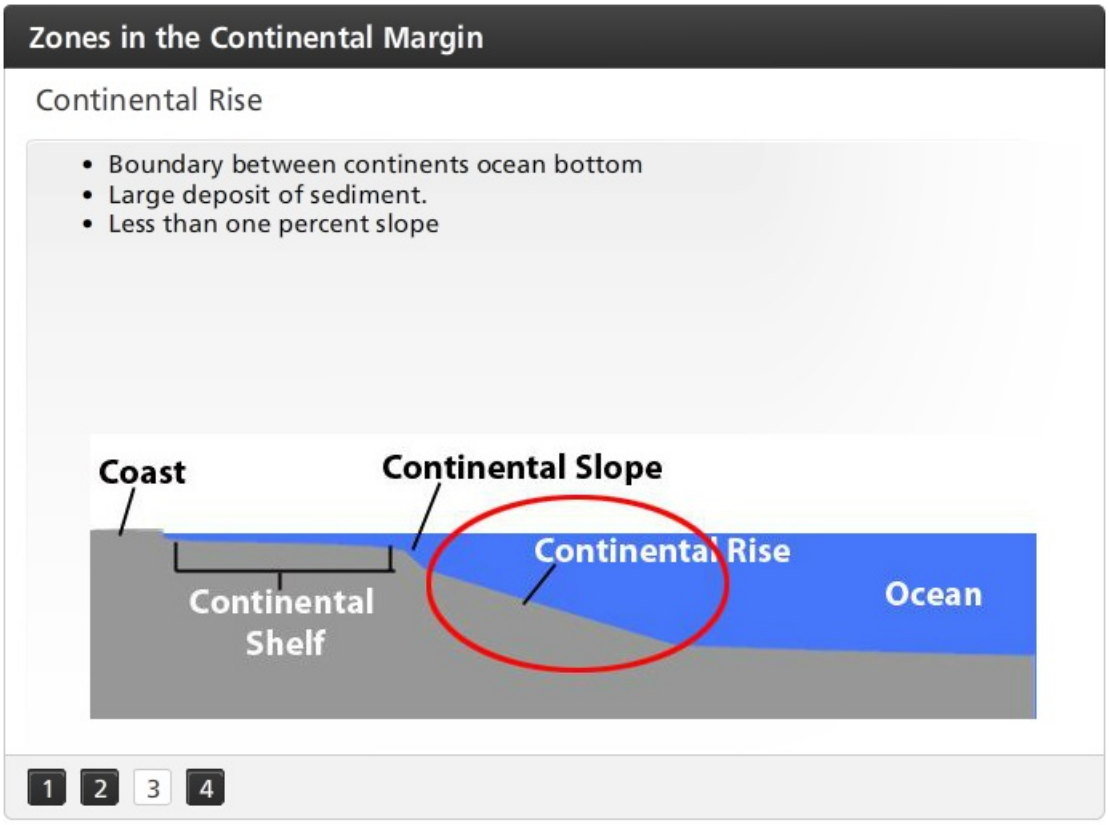

- Boundary between continents ocean bottom
- Large deposit of sediment.
- Less than one percent slope

Narration Script

The last step in your journey across the continental margin is the continental rise. This area forms the boundary between the continents and the bottom of the ocean. It is basically just a large deposit of sediment. How large? In some places, the sediments are thousands of meters thick! This rise is a very gentle slope of less than one degree in most places.

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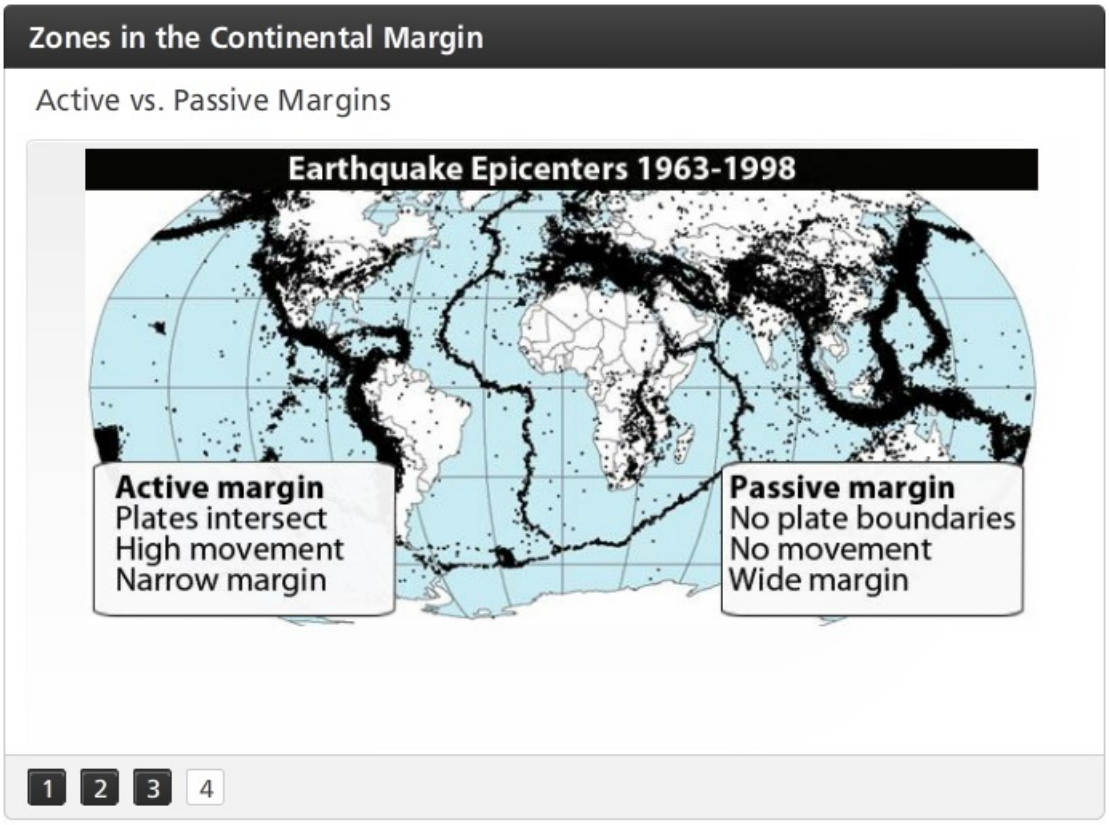

Narration Script

Earlier, you learned that the continental margin is much larger along the east coast of the United States than it is along the west. The edges of some continents, like the west coast of North America, are located on the boundary of two or more tectonic plates. Because the plates are in constant motion and pushing against one another which causes earthquakes, the continental margin in this region is called an active margin. The opposite is true for the east coast of the United States. Because it is located away from a plate boundary, it has no movement and is called a passive margin.

The biggest difference between and active and passive margin is the size of the continental margin. The passive margin has a much wider shelf, slope and rise, while the active margin is much narrower.

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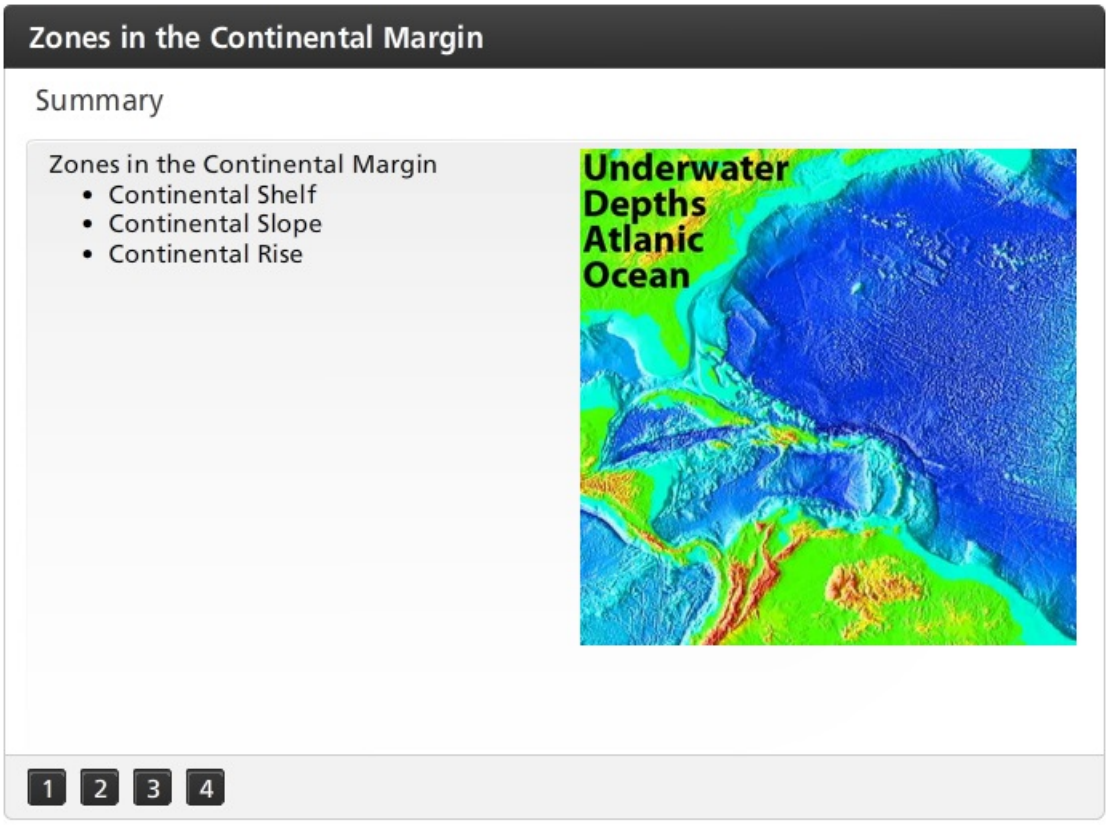

Zones in the Continental Margin
- Continental Shelf
- Continental Slope
- Continental Rise

Narration Script

Congratulations! You have reached the end of the continents and are ready to explore the ocean floor. Don't forget to take notes of your trip so that you have a map to find your way home!