

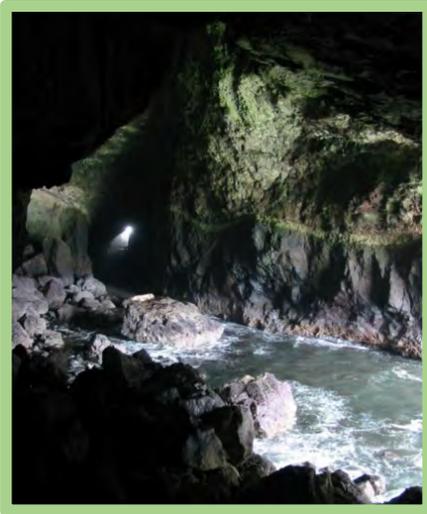
The Seashore

Chapter 5

Wind driven waves batter the land where the ocean and dry land meet. The waves are a powerful force wearing away rocks on the coast. Sandstones and chalk cliffs erode much more rapidly than basalt and granite rocks.

Formation of sea caves and sea arches

The pounding waves sometimes create sea caves in basalt rocks. The waves erode the softer rock that surrounds harder rocks in the headlands first. Two small caves form on either side of the headland. The caves slowly enlarge until they meet forming a single large cave through the headland. The waves continue to erode and enlarge the cave until it creates a sea arch.



The ocean has eroded the rocks forming a tunnel in the headland where a sea lion is sleeping. MLM

Sea stacks

The rocks at the top of the sea arch eventually weaken and fall into the ocean forming a sea stack. Birds, seals, and other marine life use sea stacks to raise their young. The rocks provide safety from many predators that cannot reach the rocks.

Beach sand and beach rocks

Open coastlines rarely have completely still waters near the shoreline so the weathered rock particles that fall to the ocean floor are small pieces of rocks and minerals.

Quartz and feldspar minerals are more resistant to erosion than iron minerals. The softer iron minerals in rocks breakup and form layers of mud far off shore while the quartz and feldspar minerals remain on the beaches as sand. White beaches on islands in the middle of the ocean have coral reefs off their coasts. Broken pieces of coral and seashells break apart forming the sand near tropical beaches.

Black sand beaches

Volcanic eruptions on some islands like Hawaii and Iceland form black sand beaches. Molten lava flowing out of a volcano into the ocean is cooled rapidly forming small shards of broken rock. Waves carry the shards of rock back onto nearby beaches where they cover the area with black sand.



Turtle resting on black
sand beach in Hawaii
MLM

Wind and rain reshape beaches

Once a beach is established it is constantly being reshaped by winds and water. The sands on the beaches are also constantly being reworked by the waves into smaller and smaller particles.

Comparing Sands

Activity 5

Introduction

Sand that collects on ocean beaches, river banks, and lake shores are small rocks and minerals that are sand-sized particles. The sands in the containers are from the island of Bermuda and a black sand beach in the Cascade Mountains. In this activity, you start a collect sand that is available near your home or you collect on a trip to the beach.



Sand samples from Bermuda and a Cascade mountain lake in Oregon.

Materials

- Samples of sand collected from rivers, lakeshores, beaches, etc.
- Plastic containers with lids
- Clear fingernail polish
- Small index cards

Directions

Begin saving plastic containers with lids for your sand collection.

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