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WIND AND WATER WONDERS

READING 1

This river changed the shape of the land around it.

Have you seen the world around you change quickly? Maybe you have seen a stormy sky, and then the Sun came out. Have you seen change happen slowly? It takes longer for the seasons to change. Water and wind change Earth. The changes can happen fast or slow. Can you think of any land near you that changed fast or slow?

Water

Water covers most of the Earth. You can see water in lakes and rivers. You also see water when it rains. Did you know that water moves soil? Movement of soil is called **erosion**. Erosion from water can change the shape of land. Over time, amazing things can form, such as **canyons**.

WIND AND WATER WONDERS

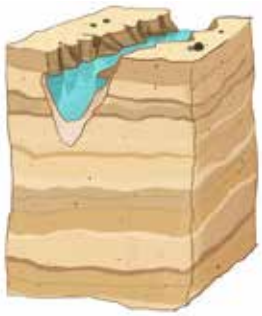
The Grand Canyon is famous. Do you know where it is?

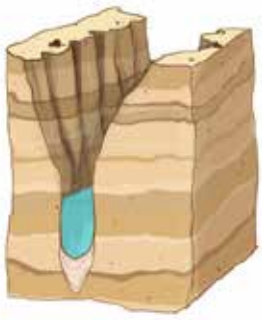
The Grand Canyon is in the southwest United States.

Most of the land in this place is very dry. But a river runs through it, down at the bottom. Why is the rest of the land dry? A **geologist** would answer that question. A geologist is a scientist who studies the Earth. The land slowly changed to look this way. Geologists know there used to be more water in this place. Sea animals with shells lived there. Back then the land was flat. Then the land rose, and the sea dried up. Shells found in the rock walls prove that.

Shells found in the rock layers mean the area was covered by water a long time ago.

Over time, the land kept rising. It rose high enough to reach a river. Have you seen a river? Does the water in a river look like it moves? Water moves even when it looks still! As water moves, it drags bits and pieces of the land with it. Over time, the river made a gap in the land. Water changed the shape of the land. No one could see every step take place. That's how slow the change happened. But you can clearly see the result. The gap will keep growing as long as the river is there. But we won't be able to tell if it changed today. It will change over time.





Flowing water washes away soil and can leave a gap.

Explorers ride mules.

FUN FACTS

The Grand Canyon is 446 kilometers (277 miles) long. That is about the size of Ohio from end to end.

The Grand Canyon is a little over 1,800 meters (1 mile) deep. That would be the height of 1,000 tall people!

People hike and ride mules through the Grand Canyon.

A MOUNTAIN BLOWS ITS TOP: PART 1

Then a strong **earthquake** made the bump break off. The change let hot gases explode! What do you see in the **eruption** picture? Are you surprised that it is not bright red **lava**? Rocks and minerals shot into the air. They broke into small pieces called **ash**. Ash can fall to the ground near the volcano. Wind can blow ash around too. Ash from this eruption was found in other states!

FUN FACT

Not all volcanoes are cone-shaped mountains. That is just one type.

A cloud of ash blasts toward the sky.

The major eruption happened in one day. But Mt. St. Helens was changed forever. Next you will find out what else changed!

A MOUNTAIN BLOWS ITS TOP: PART 2

Pieces of rock and trees from the blast went into Spirit Lake. The water depth changed. Fish could not live in the lake after it changed. People couldn't use it either.

Trees blown off the volcano landed in Spirit Lake. Clearing the lake took years.

It took some time for the area to improve. Plants slowly started to grow back. Then herds of animals could live there again. Some birds made homes in the tree stumps that remained. The lake cleared enough for fish to come back. But the whole area will never be the same.

Grass grows around the remains of trees. Elk herds live in the area again.

CREATIVE SOLUTIONS

People around the world face trouble due to water. Changes in the ocean floor can make large waves hit land. Water reaches where it normally would not. This happens in places like Japan and other islands south of Asia. Planning is important for living there. Homes can't be too close to the shore.

Remember how some places get heavy rain during the year? Countries in Asia have a rainy season. The rain makes **landslides** common in hilly places. Soil in some parts of Asia is young compared to the age of the planet. The young soil can change easily and slide because of the heavy rain.

Water can change the shape of islands.

Soil on a hill slides down to the water.

READING 6

WHAT'S UNDER OUR FEET?

Diamond Head State Monument, Hawaii

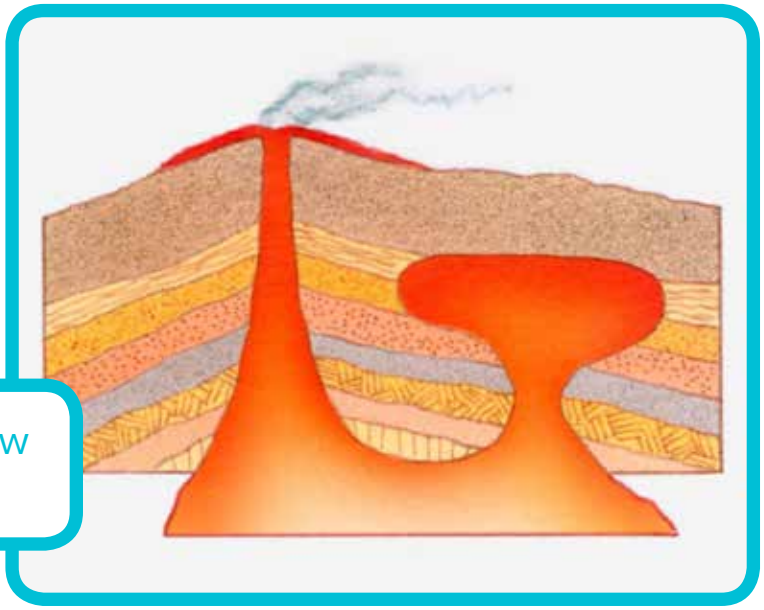
This canal runs though the city of Washington, DC.

You can see all kinds of things in the natural world. There are places where you might see rocks, trees, water, or lava. These are all on Earth's outer layer.

But what's inside the Earth? How can we know what's there if we can't see into the Earth? Scientists who work for the Smithsonian Museum of Natural History try to answer those questions. They want to know how Earth works. To do that, some study volcanoes.

They are called **volcanologists**. There are some volcanoes on land we can see. There are more under the ocean that we can't see. They may be hidden, but they tell us what is deep down in the Earth!

We can't go to the center of Earth. Think of it being behind a door you can't see though. You need a window to see the other side.



Magma is below Earth's surface.

Volcanoes are that window into Earth. We know what is down in the Earth from what comes out of a volcano. Rocks are one thing that comes out. These rocks have bits and pieces on them that came from a deeper layer. People who study volcanoes bring these rocks to us!

These rocks are volcanic.

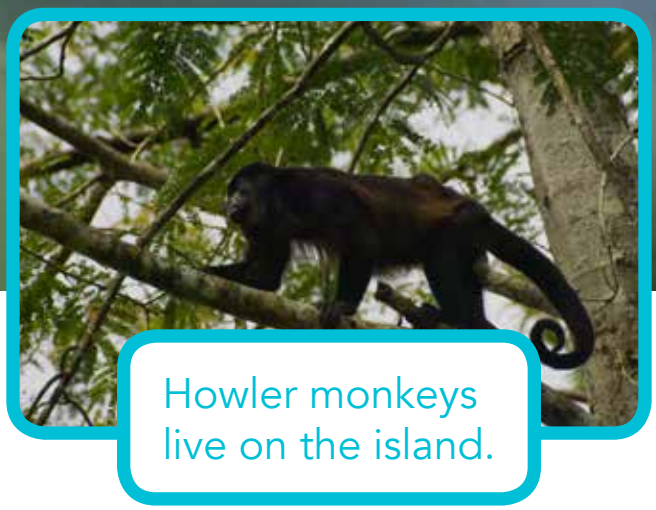
FUN FACT

The word "volcano" comes from the name of the Roman god of fire, Vulcan.

A FAMOUS SHORTCUT

A large island formed in Gatun Lake.

The passion flower grows on the island.



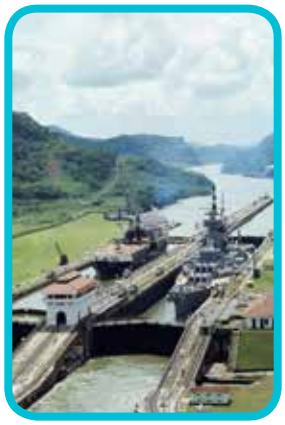
Howler monkeys live on the island.

There is one large island in the middle of the lake. It is called Barro Colorado Island.

Many plants and animals live there. They like the warm, moist area. The animals that live there are safe. People are not allowed to hunt there. But people can observe animals there. The Smithsonian runs a science center on the island. Scientists from around the world go there. They study the plant and animal life of the area.

GLOSSARY

ash: Small pieces of rocks and minerals blown out of a volcano.



canal: A man-made strip of water that allows boats to get to larger bodies of water.

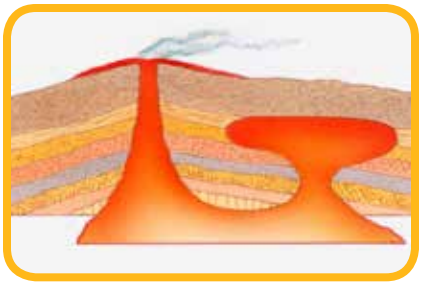
canyon: A deep valley with steep rock sides formed by water cutting into earth.

crater: The bowl-shaped area on top of a volcano.

landslide: Rock and soil that quickly move down a slope.

lava: hot rock that comes out of the Earth, cools, and hardens.

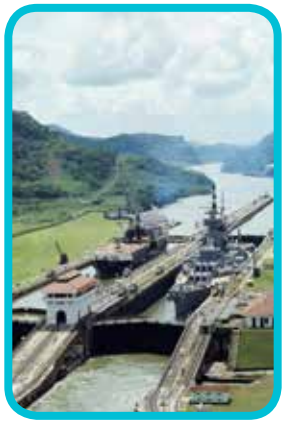
lava dome: A mound of thick lava that builds up around the vent.



magma: hot, liquid rock below Earth's surface.

GLOSARIO

ceniza: Pequeños trozos de rocas y minerales expulsados por un volcán.



canal: Una franja artificial de agua que permite a los barcos alcanzar cuerpos de agua más grandes.

cañón: Un valle profundo con paredes de rocas escarpadas formado por el agua cortando la tierra a través del tiempo.

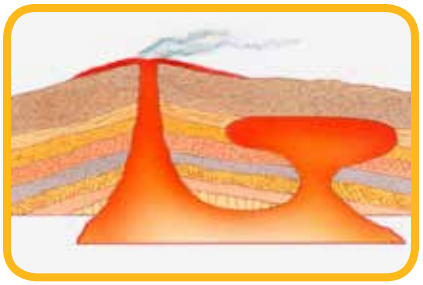
cráter: El área en forma de tazón en la cima de un volcán

GLOSARIO

deslizamiento de tierra: roca y suelo que baja rápidamente por una pendiente.

lava: roca caliente que sale de la Tierra, se enfría, y se endurece.

domo de lava: Un montículo de lava espesa que se acumula en el área de la chimenea del volcán.



magma: roca caliente líquida que se encuentra debajo de la superficie de la Tierra.