

## شكراً لتحميلك هذا الملف من موقع المناهج الإماراتية



## تجميعة صفحات الكتاب وفق الهيكل الوزاري انسباير

موقع المناهج ⇨ المناهج الإماراتية ⇨ الصف الخامس ⇨ علوم ⇨ الفصل الثاني ⇨ الملف

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## التواصل الاجتماعي بحسب الصف الخامس



## روابط مواد الصف الخامس على تلغرام

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## المزيد من الملفات بحسب الصف الخامس والمادة علوم في الفصل الثاني

<a href="#">نموذج الهيكل الوزاري بريدج المسار العام</a>	1
<a href="#">نموذج الهيكل الوزاري انسباير المسار العام</a>	2
<a href="#">مراجعة التقويم الثاني لوحدة التغيرات الفيزيائية والكيميائية متبوعة بالإجابات</a>	3
<a href="#">ملخص الدرس الثالث hydrosphere of Effect تأثير الغلاف المائي</a>	4
<a href="#">أوراق عمل الدرس الأول Geosphere the of Effects من</a>	5

# المزيد من الملفات بحسب الصف الخامس والمادة علوم في الفصل الثاني

[الوحدة الثالثة](#)

Ghaiathy Common school

Grade 5-Term 2

**Science/Inspire**

Teacher : Maysoon Ali

## VOCABULARY

Look for these words as you read:

glacier

groundwater

ice caps

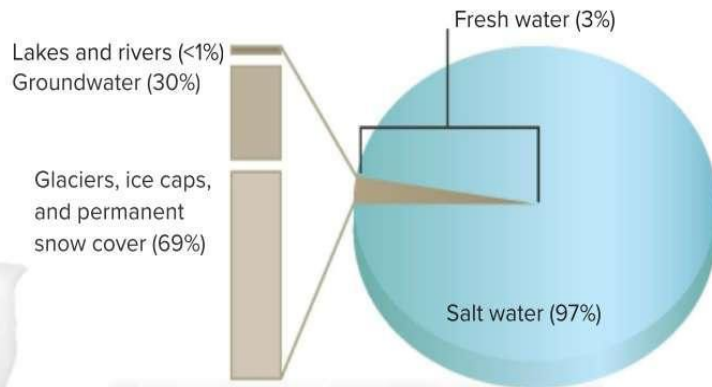
reservoir

storage

# Water on Earth

The water found on Earth makes up the hydrosphere. About 97 percent of Earth's surface water is salt water found in oceans. We cannot drink salt water or use it to grow crops. For those activities, we need fresh water.

Only about 3 percent of Earth's water is fresh water. Most of this fresh water is frozen in the form of permanent snow cover, glaciers, and ice caps. A **glacier** is a thick sheet of ice. A giant **ice cap** covers Antarctica—the continent at the South Pole. This frozen water accounts for about 69 percent of Earth's fresh water. Another 30 percent is groundwater. **Groundwater** is water stored in the cracks and spaces between particles of soil and underground rocks. Less than 1 percent is running water, such as rivers, and standing water, such as lakes. A tiny bit of Earth's water is found in the atmosphere as water vapor.



**GO ONLINE** Explore the simulation *Water Cycle*. Collaborate with a partner. Does all of the water in the ocean stay as water in the ocean?



# Freshwater Sources

**GO ONLINE** Watch the video *Groundwater* to learn more about how it is stored and used.

There are three main sources of usable fresh water.

**Groundwater** When water seeps into soil, it enters groundwater aquifers, or underground layers of rock or soil that water can pass through. As water flows through an aquifer, it eventually reaches a layer of rock that it cannot move through. Fresh water builds up on top of this rock. It can be reached by drilling or digging into the ground and pumping the water up through a well.

**Running Water** Many cities and towns are built next to sources of running water, such as streams or rivers. Thousands of fresh water rivers cross Earth's surface. Running water provides a source of fresh water for homes, farms, and businesses.

**Standing Water** Bodies of standing fresh water, such as lakes and reservoirs, are also sources of usable fresh water. A **reservoir** is an artificial lake built for storage of water. Reservoirs are usually made by building a dam on a river. Water is stored behind the dam and released when needed. **Storage** is the process of water being stored on Earth's surface, in the ground, or as a water feature.

**REVISIT** Revisit the Page Keeley Science Probe on page 5.





## VOCABULARY

Look for these words as you read:

**algal bloom**

**acid rain**

**conservation**

Zebra mussels can filter feed. They eat the good algae but release the organisms that contribute to the algal bloom back into the water intact.




# Humans Affect Water

People affect the environment every day. Sometimes these effects are negative and can harm the environment, such as pollution. Pollution is any harmful substance that affects Earth's resources.

Heavy rains can wash fertilizers used on farms and lawns into lakes, rivers, and streams. These fertilizers can negatively impact water quality and cause toxic kinds of algae to grow. This can result in something called an **algal bloom**, a sometimes harmful increase in the amount of algae found in water. Oil spills are another cause of water pollution. In 2010, the worst oil spill in United States history occurred when an oil rig in the Gulf of Mexico exploded, releasing 4.9 million barrels of oil into the gulf. That amount of oil could fill over 300 Olympic-sized pools!

Even though some human activities harm natural resources, there are many people who work hard to protect them. In 1974, the United States government passed a law to help protect our water. The Safe Drinking Water Act protects drinking water and water resources. Farmers are now using safer, more natural ways of controlling pests and providing nutrients to plants.



The green water is evidence of an algal bloom. Algal blooms can be harmful.

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NOAA/Department of Commerce. (inset)U.S. Fish & Wildlife Service/R. Griffiths

# Conservation

Earth does not have an unlimited supply of natural resources. Many resources are being used more quickly than nature can replace them. Humans can help slow the use of natural resources through conservation.

**Conservation** is the practice of using resources wisely. The “three Rs” guide people in how to conserve resources.

They are reduce, reuse, and recycle.

In terms of conserving water resources, reducing our usage means to use less water. This can mean taking shorter showers and turning the water off while we are brushing our teeth.

Reusing water resources means using it for something else or using it more than once. Rainwater can be collected to be used to water plants.

Recycling water is a complicated process that is done at water treatment facilities. Water that is collected through pipes in homes and offices can be recycled to be used again.

## Talk About It

How could you investigate the amount of water you use during daily activities? Talk about it with a partner.



 **GO ONLINE** Watch the video *Caring for Earth's Water* to learn about more ways to conserve water resources.

Use water-conserving showerheads and take shorter showers.



Do not leave water running when you are not using it.



If you use a dishwasher, use a water-saving model and do not run it unless it is full.



Fix leaking pipes or faucets.



Use a water-saving washing machine and wash full loads of clothes.



Grow plants that do not require frequent watering, and water your plants after dark so the water does not evaporate.





# Effects of Acid Rain on Ecosystems

**GO ONLINE** Explore *Effects of Acid Rain* to see more examples of how acid rain affects Earth.

**Acid rain** results when gases, such as sulfur dioxide and nitrogen oxide, are released into the atmosphere. A small portion of the gases that cause acid rain comes from natural sources such as volcanoes. Most of the gases come from burning fossil fuels. These gases react with water, oxygen, and other chemicals to form acids. These acids mix with water before falling as precipitation.

The effects of acid rain are seen mostly in water environments, such as streams, lakes, and marshes. It can be harmful to fish and other wildlife. If something harms one part of an ecosystem — one species of plant or animal, the soil, or the water — it can have an impact on everything else.

Some types of plants and animals can live in acidic waters. Others are acid-sensitive and will be lost as acid rain enters the ecosystem. Some acidic lakes have no fish. Even if a species of fish or animal can tolerate moderately acidic water, the animals or plants it eats might not.

Acid rain has destroyed this forest.



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1. What can be done to reduce or prevent further acid rain damage?

**Sample answer:** If we reduce the burning of fossil fuels or keep more of the chemicals that cause acid rain from going into the atmosphere, there will be less acid rain.



## VOCABULARY

Look for these words as you read:

deposition

erosion

floodplain

glacier

# Erosion and Deposition

The natural bridges were formed by erosion. **Erosion** is the process of weathered rock moving from one place to another. The process of eroded materials being dropped off in another place is **deposition**. Erosion and deposition work together to change the shape of the land.

## Erosion and Deposition by Running Water

As water runs downhill, it can wash away soil and erode rock. The water, soil, and rocks will eventually flow into a larger body of water, such as a river. Rivers with fast-moving water tend to follow straight paths. Fast-moving water has more energy. It can wash away larger amounts of heavier sediment. Rivers with slow-moving water tend to follow curved paths. Slow-moving water has less energy. It carries smaller particles of sediment.

The looping curves in this river are called meanders. Slow-moving water deposits sediment on the inside of a meander. Faster-moving water erodes sediment on the outside of meanders.

**GO ONLINE** Use the *Water Cycle and Weathering, Erosion, and Deposition* personal tutors to learn more about the effects of the hydrosphere.




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Rivers eventually flow into larger bodies of water, such as a lake or oceans. Since the water is no longer flowing downhill, it slows down. The sediment carried by the water is deposited on the bottom of the lake. Over time, this sediment builds up into a landform called a delta.

Rivers also deposit sediment when they flow out of a steep, narrow canyon. Here, the stream becomes wider and shallower. The water slows down as it spreads out. Sediment is deposited in a landform called an alluvial fan.

### **Talk About It**

Compare the images of the delta and alluvial fan with a partner.

 **GO ONLINE** Watch the video *Earth's Hydrosphere* to see ways the hydrosphere interacts with Earth's other systems.



When water that is carrying sediment enters a larger body of water, the sediment is dropped, forming a delta.



When a rushing river runs out of a narrow canyon, it slows down and becomes shallower. Sediment is dropped, causing an alluvial fan to form.

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(b)Pete Rijan/National Geographic RF/Getty Images



## Floods

Water runs over the ground in streams and rivers. Sometimes, water enters a river faster than the river can carry it away. When water collects on land that is normally dry, it is called a flood. Floods occur when a body of water overflows banks or beaches. A flood may also occur during a heavy rainfall. Natural wetlands can soak up water and reduce the chances of a flood. Draining wetlands or cutting down plants along a riverbank may make floods more likely.

Floodwaters carry and deposit sediments over the land. A **floodplain** is a place that floods easily when river water rises. Floods can cause damage by carrying mud into homes and streets. However, floods can also have a positive effect on natural systems. After a flood, new soil deposits on the land. The nutrients in this soil help plants grow.

## Hurricanes and Storm Surges

A hurricane is a very large, swirling storm that forms on the surface of tropical oceans. Strong winds, walls of clouds, and pounding rains are associated with these storms. When a hurricane moves toward a coast, winds and waves can force large amounts of water onshore. This event is called a storm surge. Flooding associated with storm surges and heavy rains can be severe.

A hurricane caused this flood along the Gulf Coast.

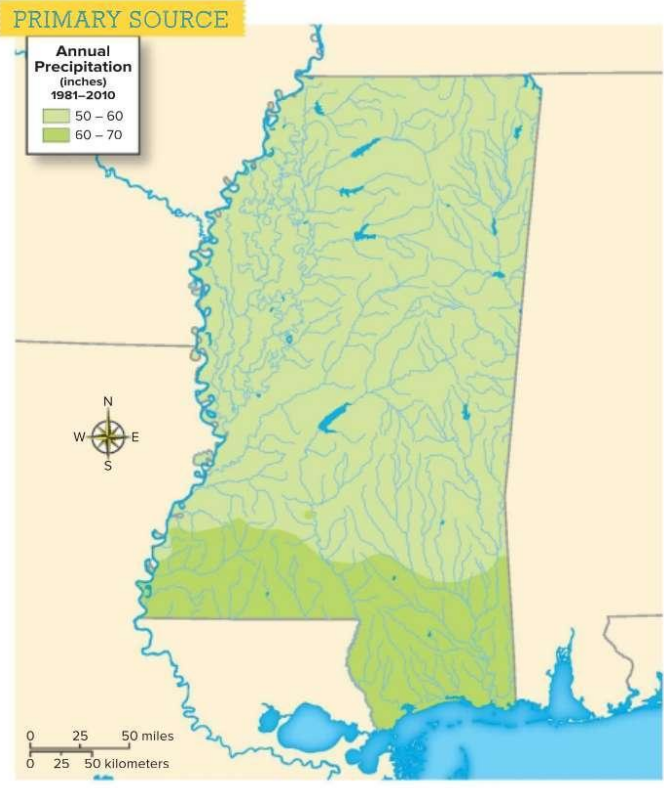


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**REVISIT** Revisit the Page Keeley Science Probe  
**PAGE KEELEY** on page 37.  
**SCIENCE**  
**PROBES**

# Mississippi Water Sources

Look at the map of different water sources in Mississippi.



1. What types of water sources do you see on the map?

Sample answer: There are lakes, rivers, \_\_\_\_\_  
and an ocean.

2. Is there a pattern of water sources and average annual precipitation?

Sample answer: There seems to be more rain \_\_\_\_\_  
in the southern part of the state, closer to the  
ocean.




# Volcanoes

Volcanoes form on land and on the ocean floor. You have learned that a volcano is an opening in Earth's crust. Volcanoes are located only at certain places on Earth's surface. Most volcanoes are found on the ocean floor.

However, volcanoes do not erupt at all continental boundaries. After collecting data about the directions in which parts of Earth slowly moved, scientists concluded that volcanoes tend to erupt where one plate is pushed under another plate. The plate melts under extreme heat and pressure as it is pushed down into the mantle. The melting forms magma, which pools in a chamber underneath the crust.

The magma may rest quietly for hundreds or thousands of years. Sometimes a crack forms above the lava chamber, or the pressure in the chamber becomes too strong to be held in by the rock above it. Then the magma rushes up toward Earth's surface.

An active volcano is one that is currently erupting or has recently erupted. A volcano that has not erupted for some time, but that scientists think may erupt in the future, is called a dormant volcano. A volcano that scientists think will not erupt again is an extinct volcano.

 **GO ONLINE** Explore *The Parts of a Volcano* to see how a volcano works.



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# Types of Soil

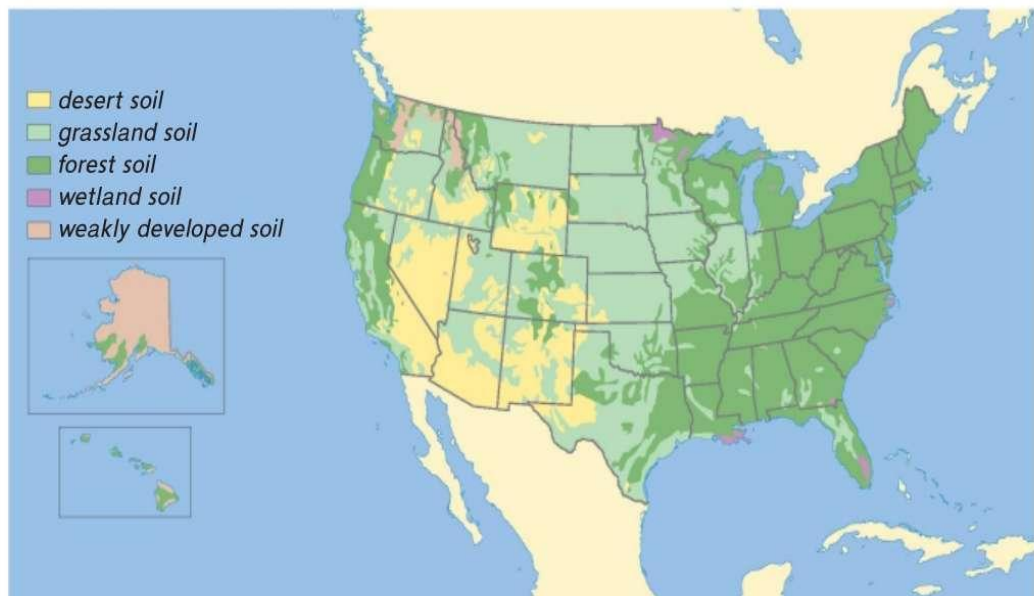
Each type of soil supports different plant and animal life. Most of the United States is covered by one of three types of soil: forest soil, desert soil, or grassland and prairie soil.

**Forest Soil** The soil in a forest has a thin layer of topsoil with little humus. Topsoil is home to many living things. Frequent rainfall carries minerals deep into the ground. Plants need long roots to reach these minerals. Much of the forest soil in the United States is in the Northeast and Southeast regions.

**Desert Soil** Desert soil is sandy and does not have much humus. However, desert soil is rich in minerals. Little rain falls to wash the minerals away. Animals can sometimes be raised in areas with desert soil. Crops can be grown only if water for the plants is piped to the area. Desert soil is found in the Southwestern region.

**Grassland and Prairie Soil** Grasslands and prairies are found between the Rocky Mountains and eastern forests. Crops, such as corn, wheat, and rye, grow on land from Texas to North Dakota. The soil is rich in humus, which provides nutrients for crops, and holds water so minerals are not washed deep into the ground.

## Soil Types in the United States



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**REVISIT** Revist the Page Keeley Science Probe on page 63.



## VOCABULARY

Look for these words as you read:

**air mass**

**climate**

**weather**

# Earth's Atmosphere

Recall what you explored about air masses. The temperature of the atmosphere can determine activity within it. Even though air in Earth's atmosphere looks empty, it contains matter. The air particles in the atmosphere have mass and weight. There are different layers in Earth's atmosphere, which vary in temperature.

**Weather** is the condition of the atmosphere at a given place and time. Weather can vary depending on the time of day, season, or location. Weather can involve different forms of precipitation. When water vapor in clouds cools, it condenses and falls to the ground as rain, hail, sleet, or snow.

A shelf cloud like this one is a good sign that a strong line of storms will be moving through the area.



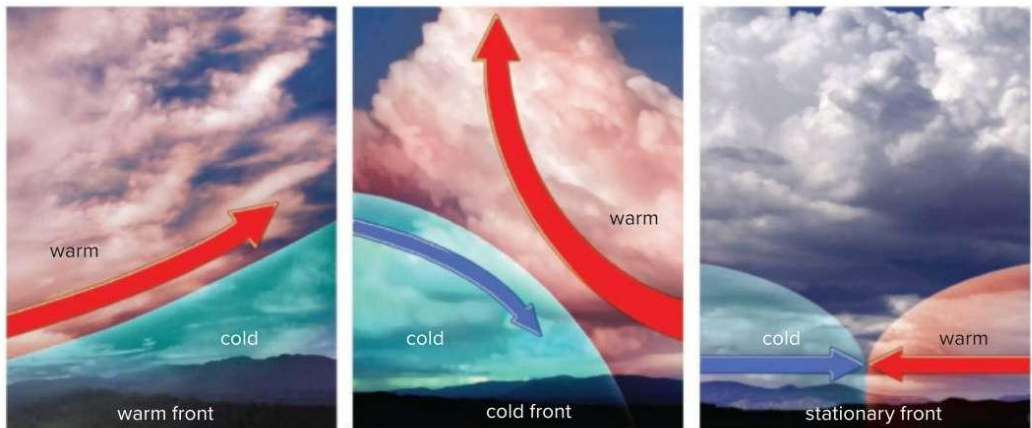
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The air mass that is passing over an area affects the weather in that area. An **air mass** is a large region of air that has a similar temperature and humidity. Depending on where they form, air masses can be cool, warm, dry, or humid.

When one air mass meets a different air mass, the meeting place is called a front. A front is the boundary between two air masses that have different temperatures. Along fronts, weather can change rapidly. Look at the diagram below to see the difference between three different types of fronts: warm fronts, cold fronts, and stationary fronts.

### Different Fronts



**Read a Diagram** The arrows in the diagram indicate temperature as well as the direction of movement. Red arrows indicate warm air movements. Blue arrows indicate cold air movements.

**Warm Fronts** A warm front forms when a warm air mass pushes into a cold air mass. The warm air goes up and over the cold air mass. It often brings light, steady rain.

**Cold Fronts** A cold front forms when a cold air mass pushes under a warm air mass, forcing the warm air quickly upward. It often brings stormy weather.

**Stationary Fronts** Sometimes rainy weather lasts for days. This is caused by a stationary front, which is a boundary between air masses that does not move.






**Tropical Storms** occur near the equator where the ocean is warm.

A tropical storm is considered a hurricane when winds get higher than 119 kilometers per hour (74 miles per hour). Hurricanes are dangerous storms, causing coastal flooding and severe wind damage. From space, a hurricane looks like a spiral of clouds with a hole in the center, called the “eye.” The fastest winds and heaviest rains occur next to the eye.

**Winter Storms** occur when a cold, dry air mass meets a warm, humid air mass. Snowstorms such as blizzards happen when snow or sleet occur with high winds and cold air temperatures. Ice storms occur when rain falls and the ground temperature is cold enough that ice forms on outside surfaces. Winter storms can cause power outages, so it is important to be prepared with supplies before a winter storm occurs.

 **GO ONLINE** Watch the video *Earth's Atmosphere* to learn more about the atmosphere's effects.

Some areas in the United States can experience heavy snowfall. The region around Lake Tahoe, California can see snow as early as September and as late as May.





## Three-Dimensional Thinking

City	Average Temperature in January	Average Snowfall in January
Albany, NY	-5°C (23°F)	45.7 cm (18 inches)
Tahoe City, CA	-2°C (29°F)	101.6 cm (40 inches)
Reno, NV	2°C (36°F)	15.2 cm (6 inches)

1. What can you interpret about the data in the chart?

- A. Albany, NY is cold in January with a lot of snow.
- B. Tahoe City, CA is cold in January with little snow.
- C. Reno, NV is cool in January with a lot of snow.

2. How is evaporation a cause of precipitation?

Sample answer: Water evaporates from Earth's surface. After forming a gas, the water vapor condenses around tiny particles of dust to form clouds. When enough water vapor is present, it grows heavier and it falls to Earth as precipitation in the form of rain, hail, sleet, or snow.