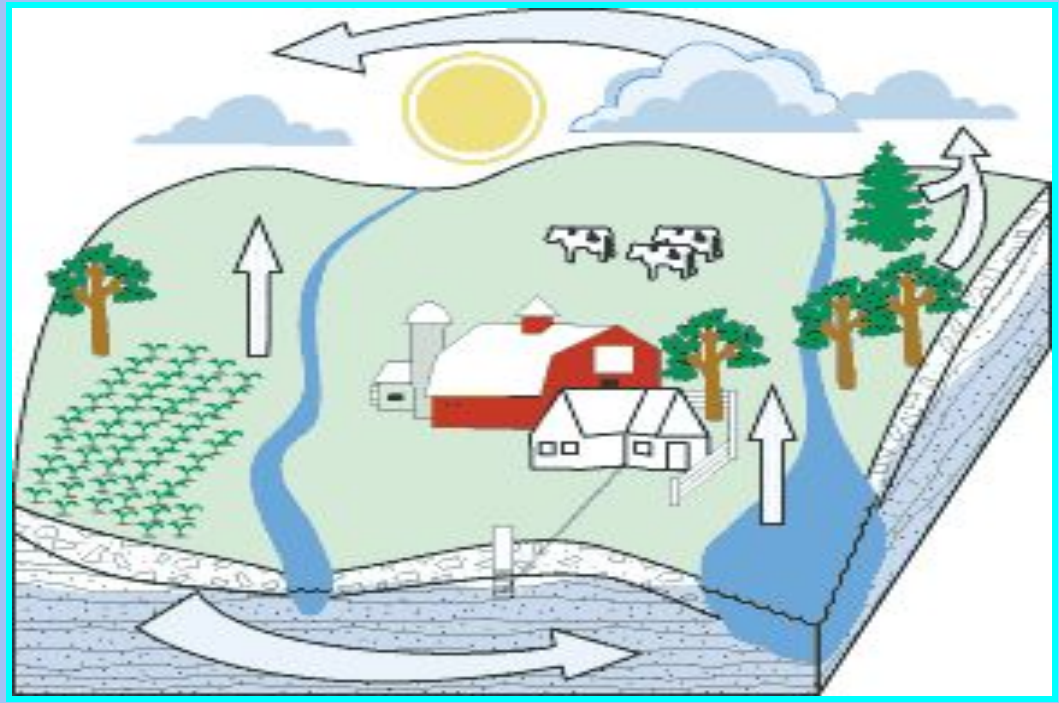
THE WATER CYCLE

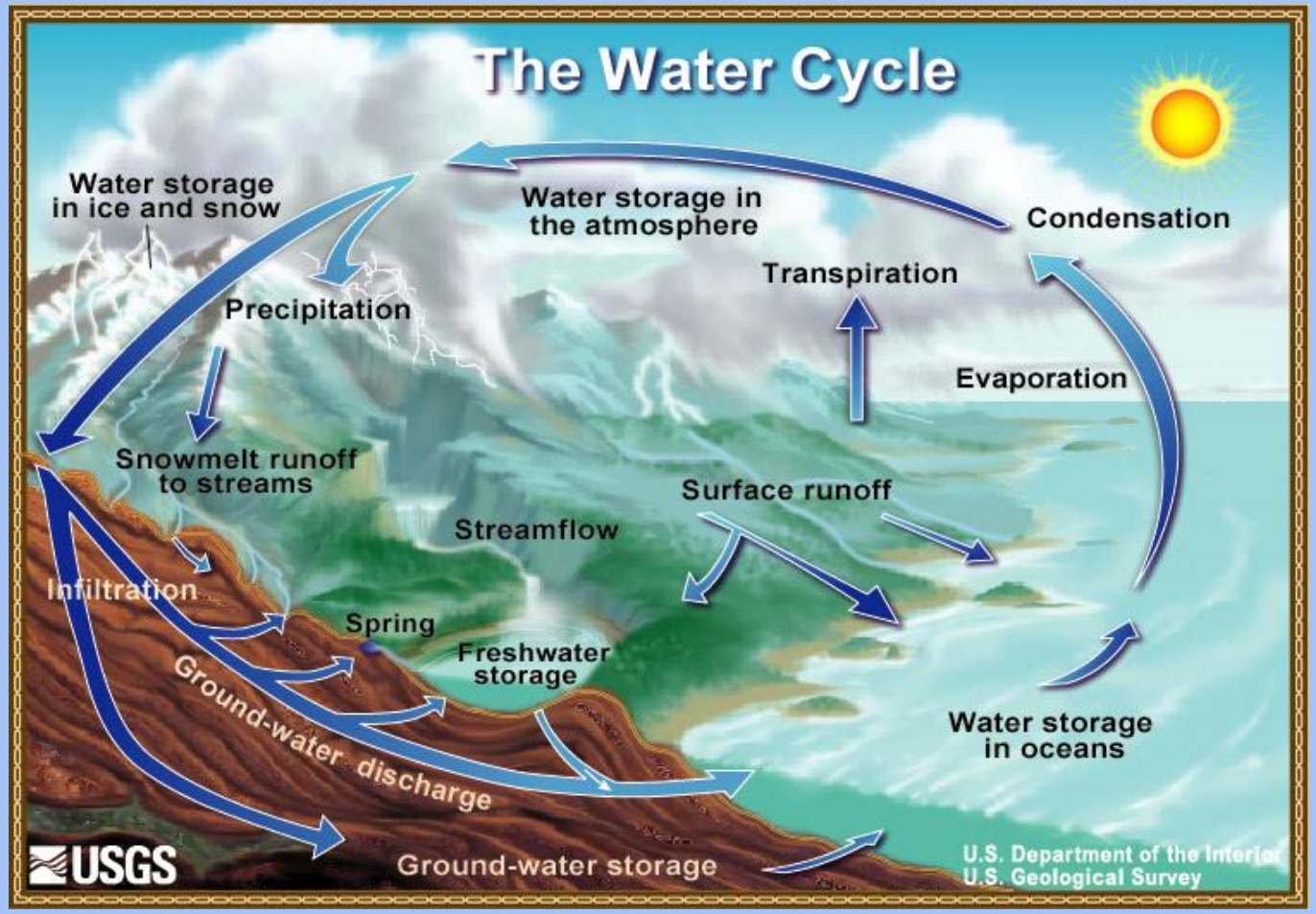


The Water Cycle

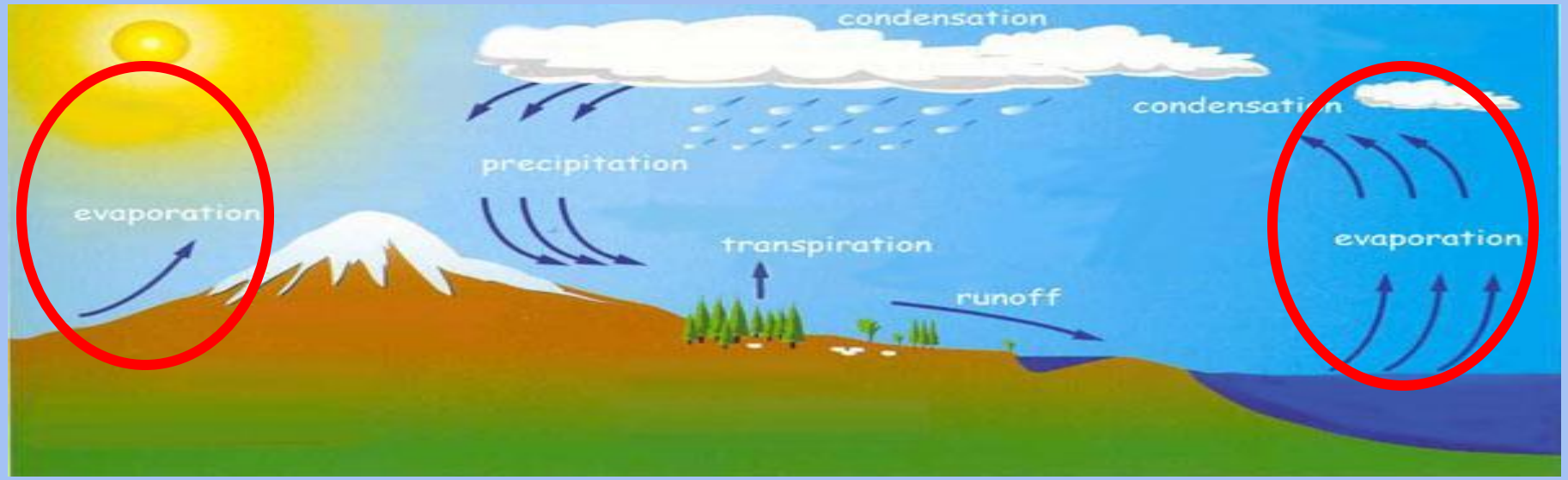
Water is constantly being cycled between the atmosphere, the ocean and land. This cycling is a very important process that helps sustain life on Earth.

Each part of the cycle drives the other parts.

- Water is naturally recycled through the water cycle.
- The water cycle is the continuous process by which water moves through the living and nonliving parts of the environment.
- The sun is the source of energy that drives the water cycle.
- In the water cycle, water moves from bodies of water, land, and living things on Earth's surface to the atmosphere and back to Earth's surface.

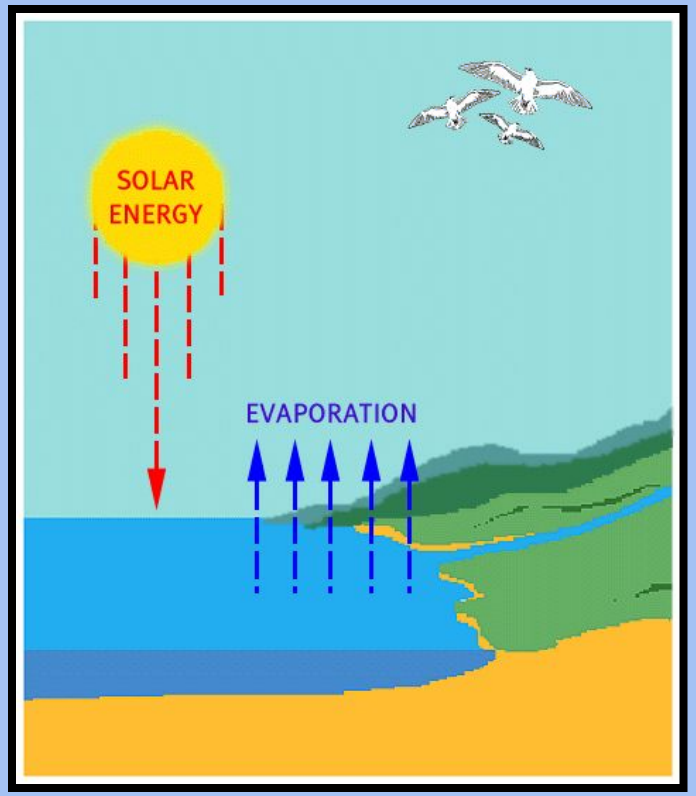

The Water Cycle
Water storage in ice and snow
Water storage in the atmosphere
Condensation
Transpiration
Precipitation
Evaporation
Snowmelt runoff to streams
Surface runoff
Streamflow
Infiltration
Spring
Freshwater storage
Ground-water discharge
Water storage in oceans
USGS
Ground-water storage
U.S. Department of the Interior
U.S. Geological Survey

The Water Cycle - Evaporation



Evaporation

Evaporation is the process where a liquid, in this case water, changes from its liquid state to a gaseous state.



Evaporation

Some of the water in the oceans and freshwater bodies, such as lakes and rivers, is warmed by the sun and evaporates.

The sun heats up liquid water and changes it to a gas by the process of evaporation. Water that evaporates from Earth's oceans, lakes, rivers, and moist soil rises up into the atmosphere.

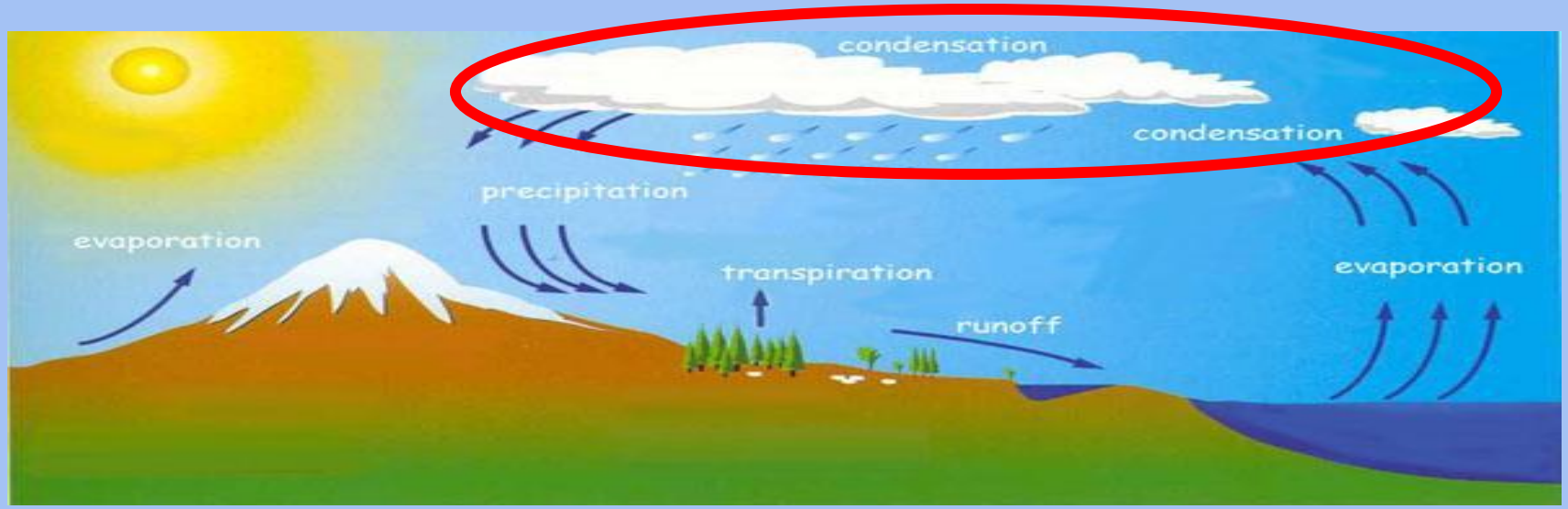
Evaporation

During the process of evaporation, impurities in the water are left behind. As a result, the water that goes into the atmosphere is cleaner than it was on Earth.

Summary

Evaporation is when water (in oceans or lakes) changes to a gas when heated.

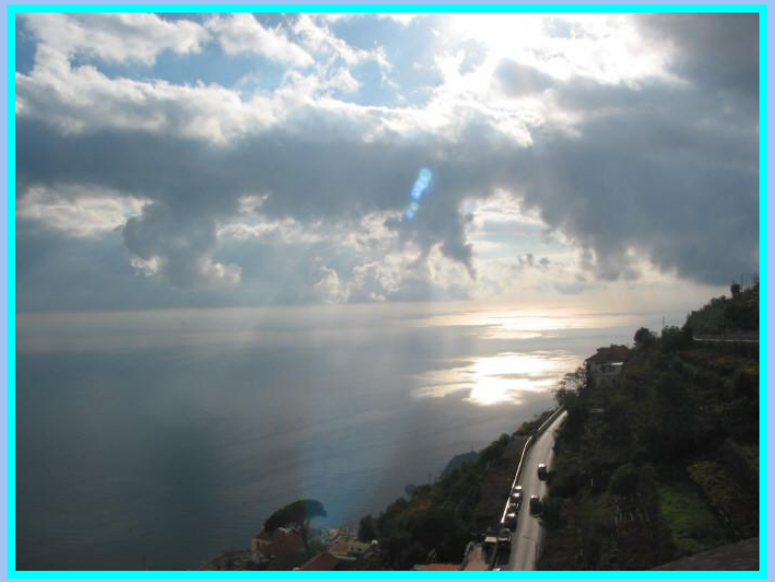
The Water Cycle - Condensation



As water (in the form of gas) rises higher in the atmosphere, it starts to cool and become a liquid again. This process is called condensation. When a large amount of water vapor condenses, it results in the formation of clouds.

Condensation

Condensation is the opposite of evaporation. Condensation occurs when a gas is changed into a liquid.



Condensation

When the water droplets formed from condensation are very small, they remain suspended in the atmosphere.

Condensation

These millions of droplets of suspended water form clouds in the sky or fog at ground level.

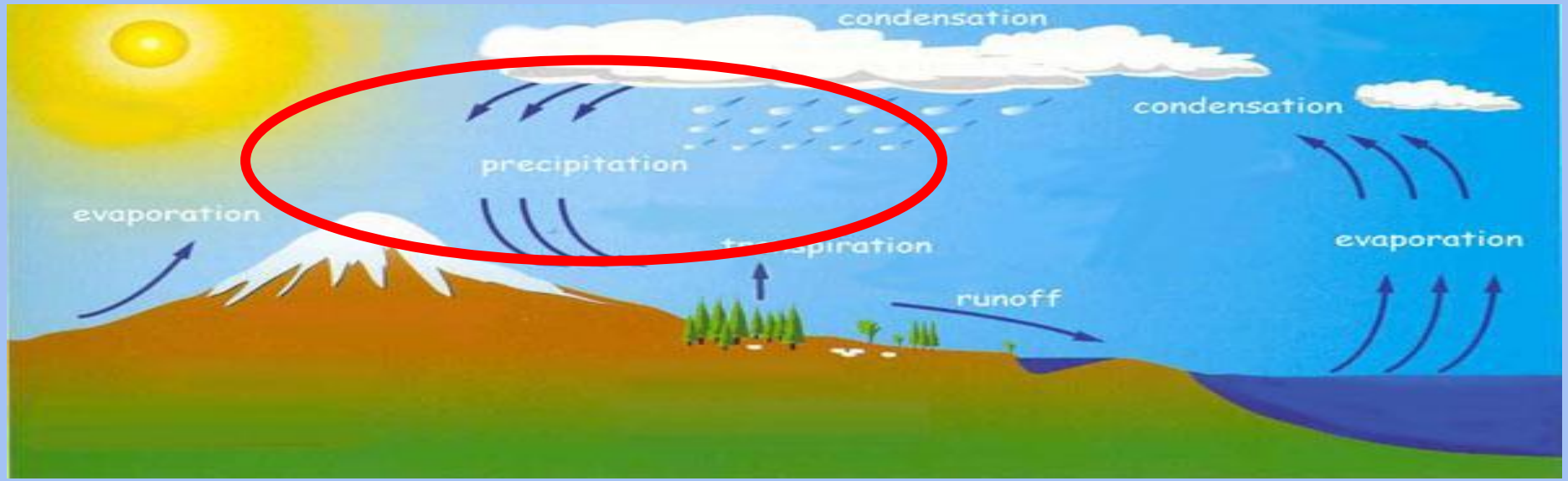
Summary

Condensation is the cooling of the water in the atmosphere, changing gas to a liquid

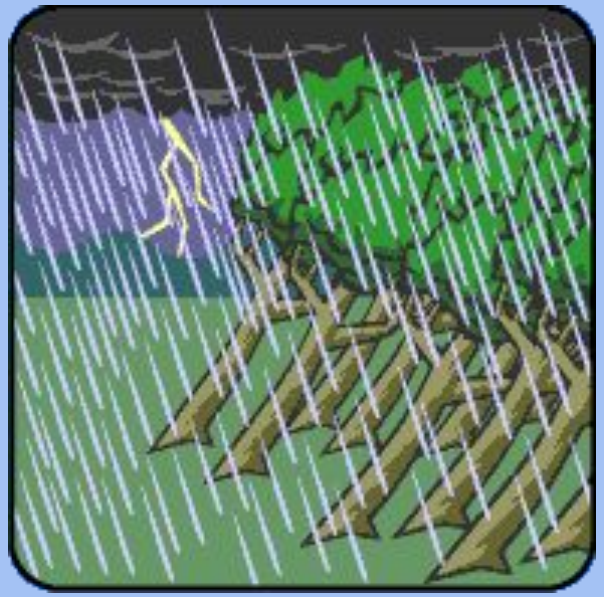
Left Side Activity

Illustrate the processes of evaporation and condensation

The Water Cycle - Precipitation



When the water in the clouds gets too heavy, the water falls back to the earth. This is called precipitation.



Precipitation

The solid or liquid <u>water</u> that falls from the air to the surface

- rain, snow, sleet, hail…

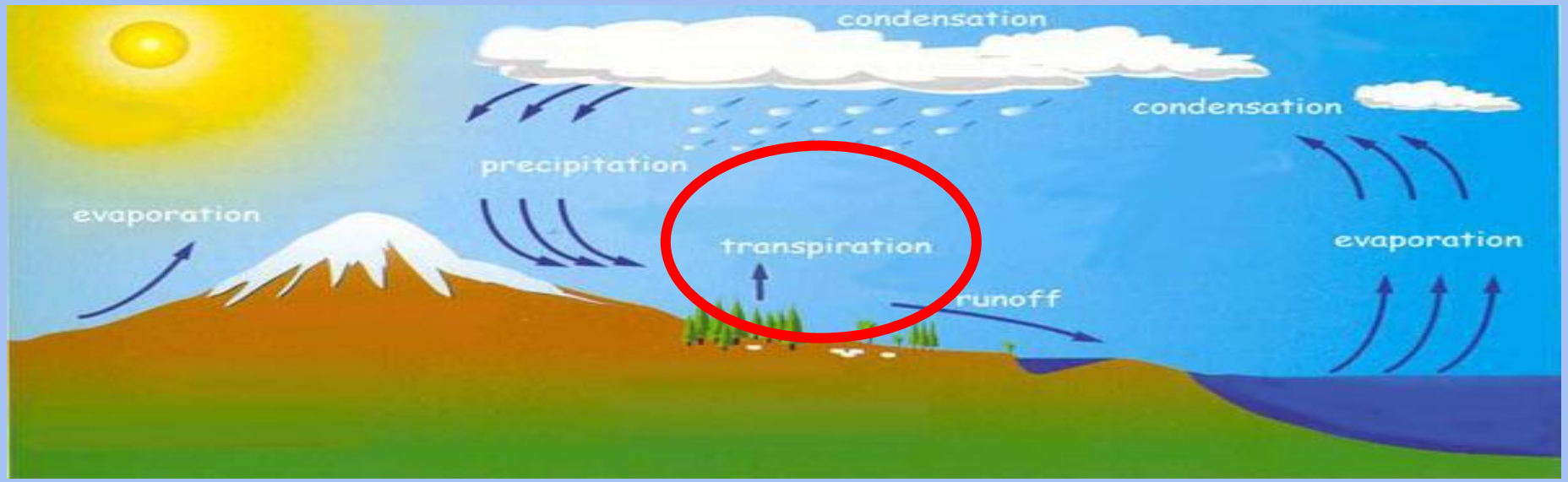
Precipitation

When the temperature and atmospheric pressure are right, the small droplets of water in clouds form larger droplets and precipitation occurs. The raindrops fall to Earth.

Summary

Precipitation is when water droplets fall from the atmosphere in the form of rain, sleet, snow, and hail.

The Water Cycle - Transpiration



Transpiration

This process of evaporation through plant leaves is called transpiration. In large forests, an enormous amount of water will transpire through leaves.

Transpiration

One final process is important in the water cycle. As plants absorb water from the soil, the water moves from the roots through the stems to the leaves.

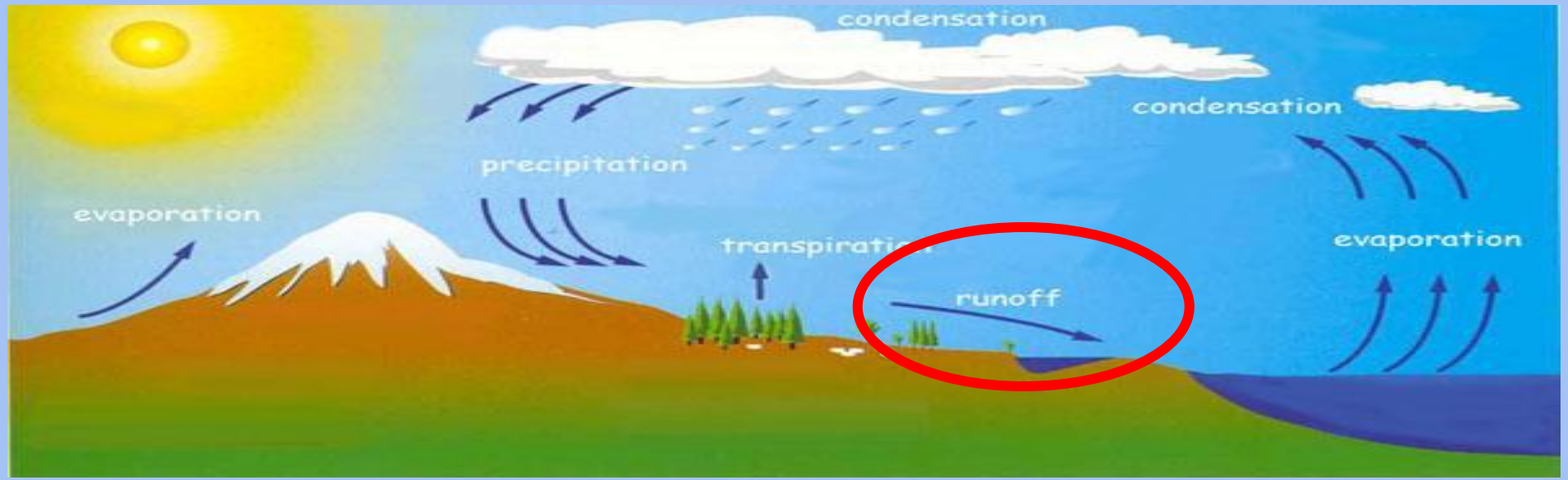
Transpiration

Once the water reaches the leaves, some of it evaporates from the leaves, adding to the amount of water vapor in the air.

Summary

Transpiration is the passage of water vapor from a plant to the atmosphere

The Water Cycle – Runoff



When rain falls on the land, some of the water is absorbed into the ground forming pockets of water called groundwater. Most groundwater eventually returns to the ocean. Other precipitation runs directly into streams or rivers. Water that collects in rivers, streams, and oceans is called runoff.

Surface Runoff

Much of the water that returns to Earth as precipitation runs off the surface of the land, and flows downhill into streams, rivers, ponds and lakes.

Surface Runoff

Surface runoff is an important part of the water cycle because, through surface runoff, much of the water returns again to the oceans, where a great deal of evaporation occurs.

Surface Runoff

Small streams flow into larger streams, then into rivers, and eventually the water flows into the ocean.

Summary

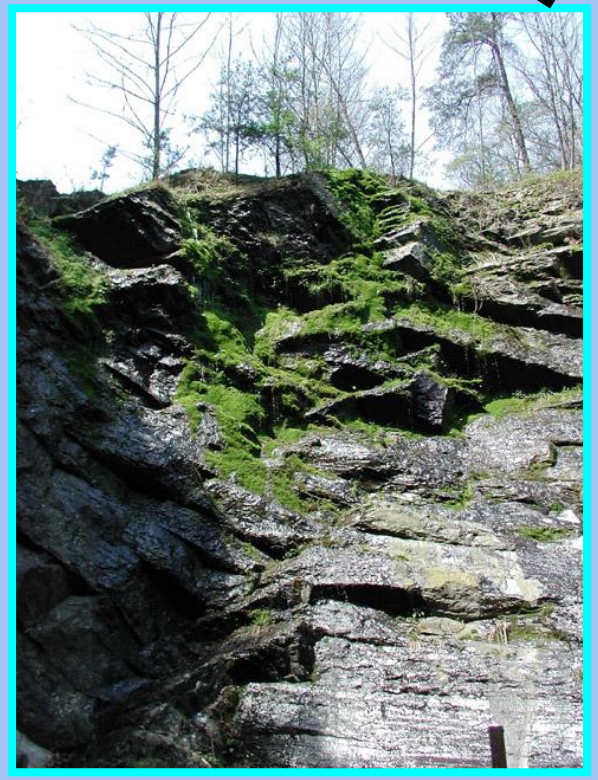
Runoff is rainfall that is not absorbed by soil and travels to the ocean.

Left Side Activity

Illustrate the processes of precipitation, transpiration, and runoff

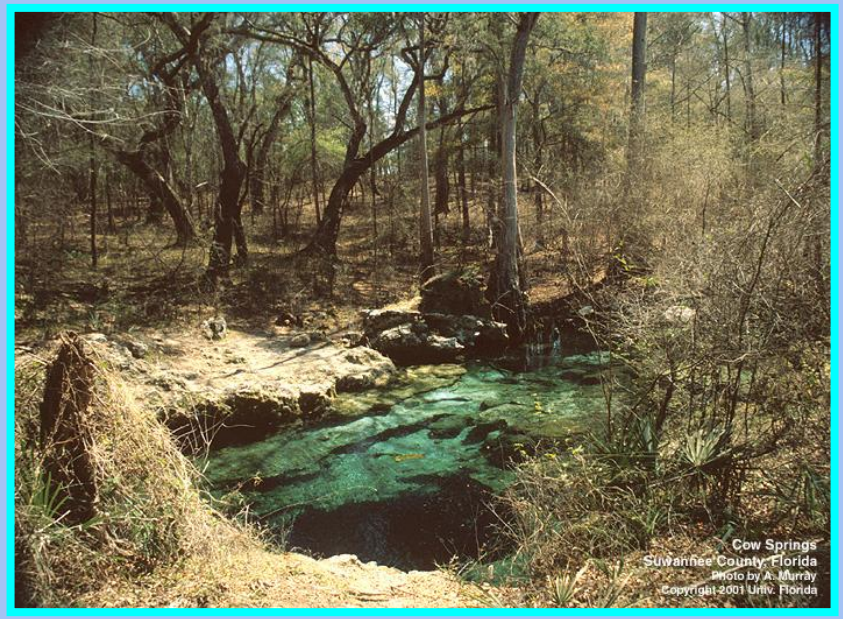
Percolation (Infiltration)

Percolation is an important process where rain water soaks into (infiltrates) the ground, into the soil and underlying rock layers.

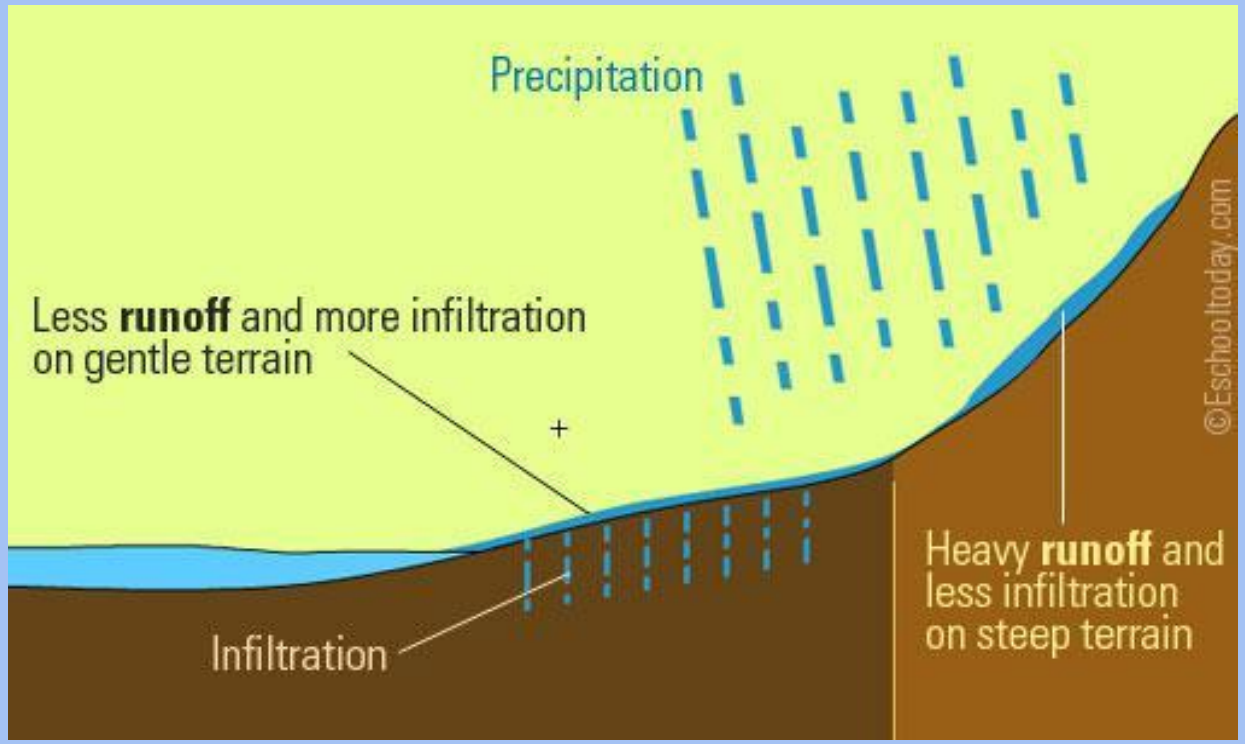


Percolation (Infiltration)

Some of this water ultimately returns to the surface at springs or in low spots downhill.



Percolation (Infiltration) & Surface Runoff



Percolation (Infiltration)

Some of the water percolates underground and is called groundwater.

Groundwater

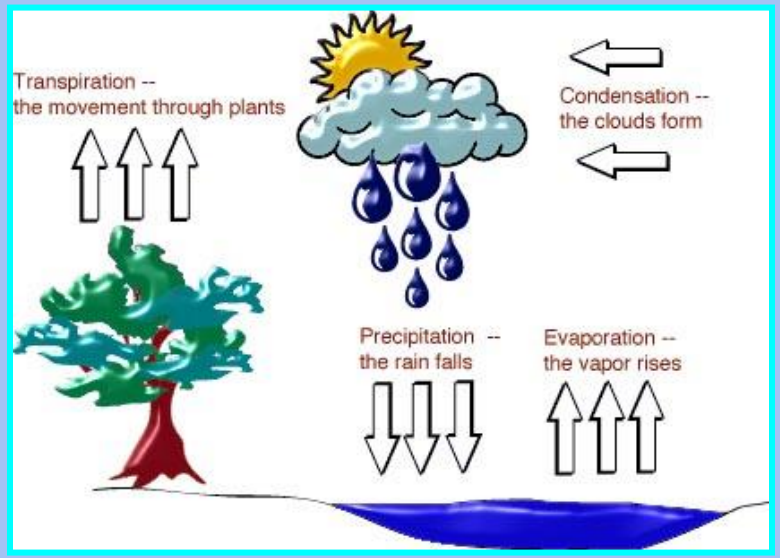
As the water moves through the soil and rock layers, many of the impurities in the water are filtered out. This filtering process helps clean the water.

Groundwater

Water moves into caves formed by carbonation, forming many other “Karst” features (underground streams, and sinkholes)

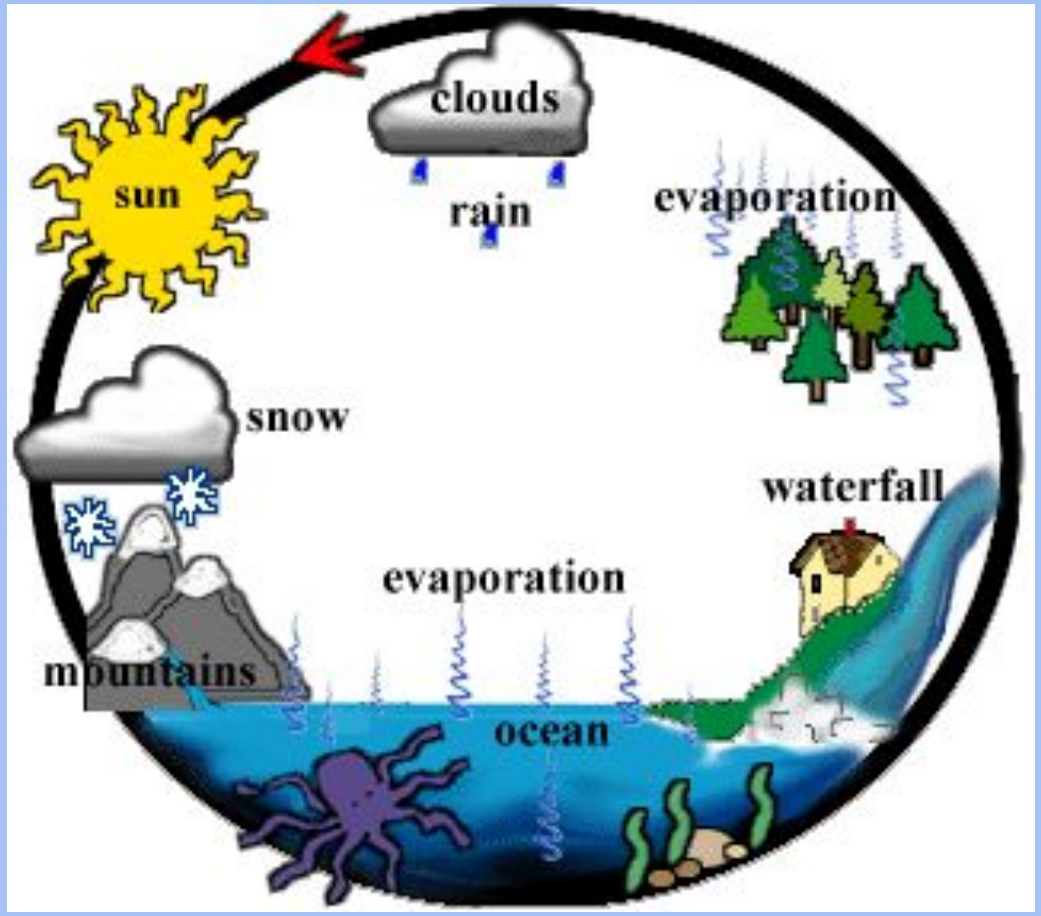
Evaporation

And we're back to Evaporation again! The endless cycle of water moving through our planet goes on and on and on…



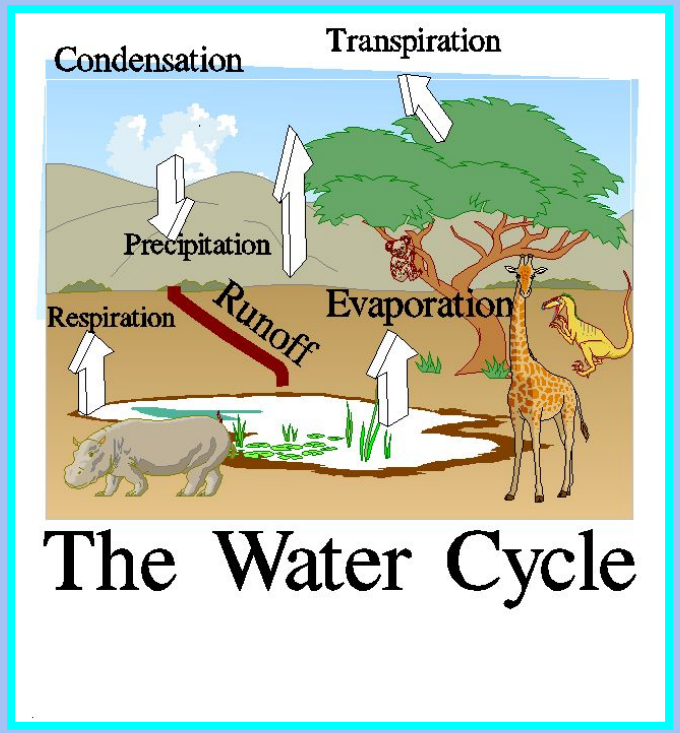
Left Side Activity

Illustrate the processes of percolation and infiltration


clouds
sun
rain
evaporation
snow
waterfall
evaporation
mountains
ocean

The Water Cycle

- Condensation transpiration, precipitation and all the others are part of **the water cycle**, a complex process that not only gives us water to drink and food to eat, but also the weather patterns that help grow our crops.



WATER

Water is an integral part of life on this planet.

THE END

BONUS QUESTIONS:

1. **Why is clean water important to you?**

2. **How does the water cycle contribute to clean water?**

http://perso.orange.fr/prof.danglais/animations/watercycle/watercycle.htm