

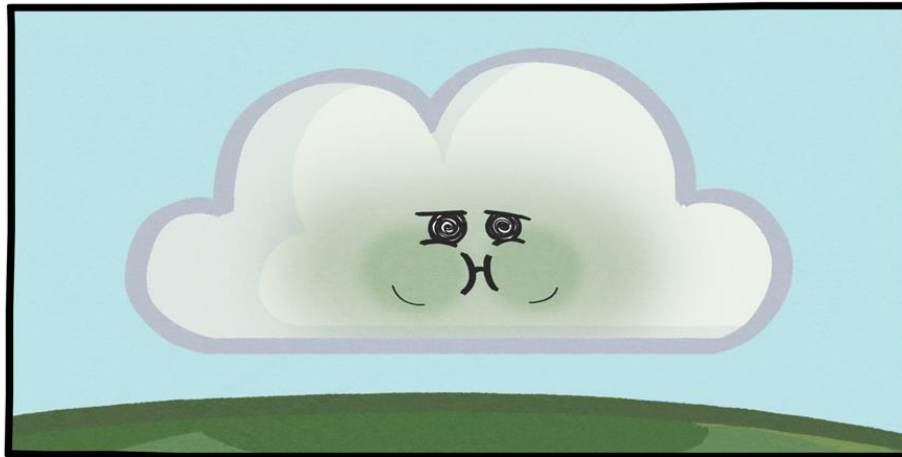
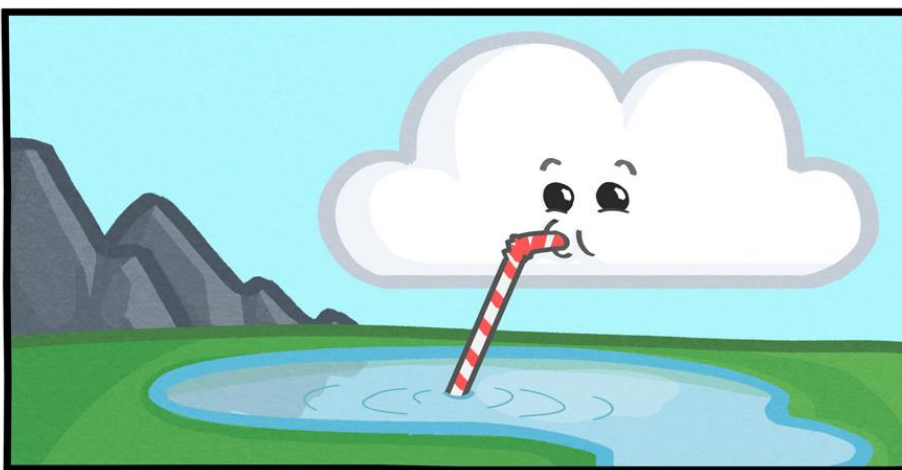
Bell Ringer

1. Most of the water on Earth can be found where?
2. Where can you find most of the *fresh* water on Earth?
3. Is ice more or less dense than liquid water?

The Water Cycle



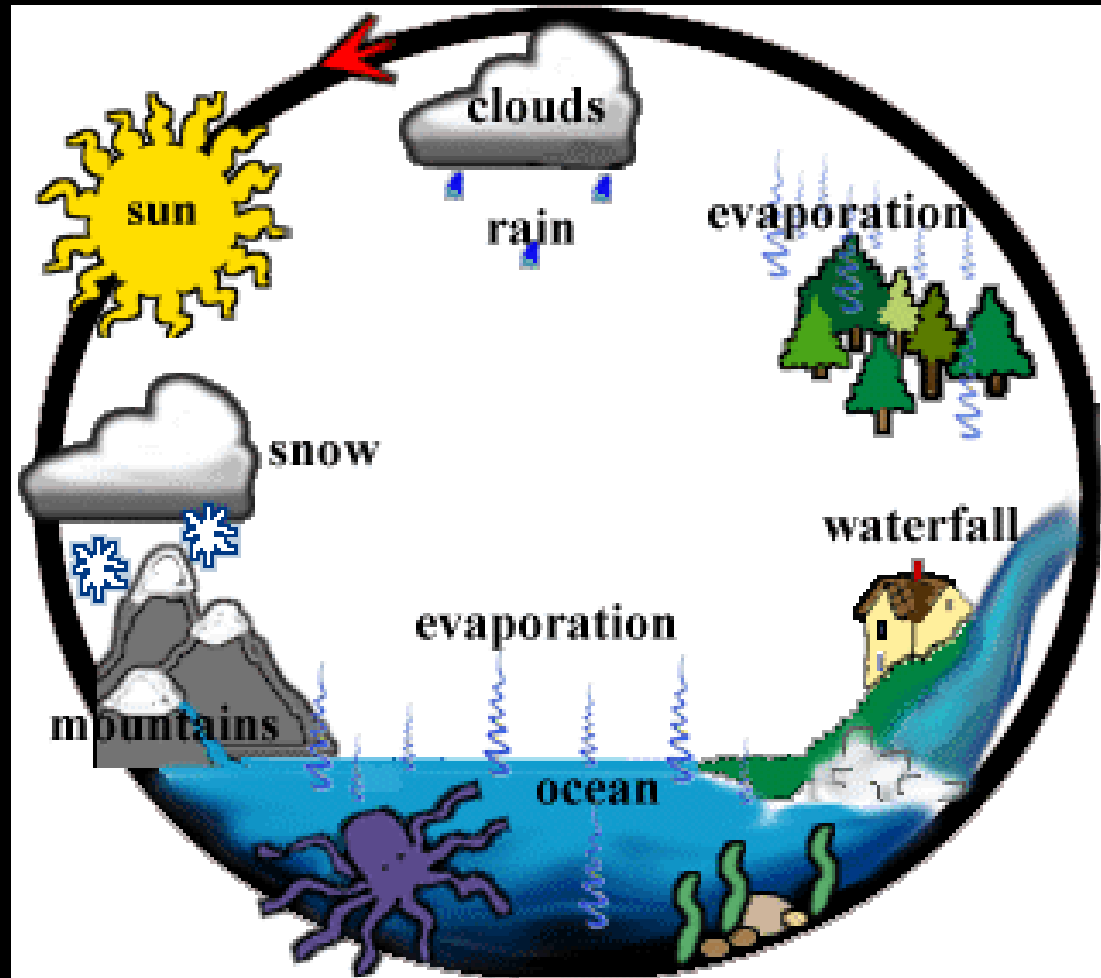
Image courtesy of NASA



Water has been around for billions of years



Water gets recycled over and over again





What is the Water Cycle?

Transpiration

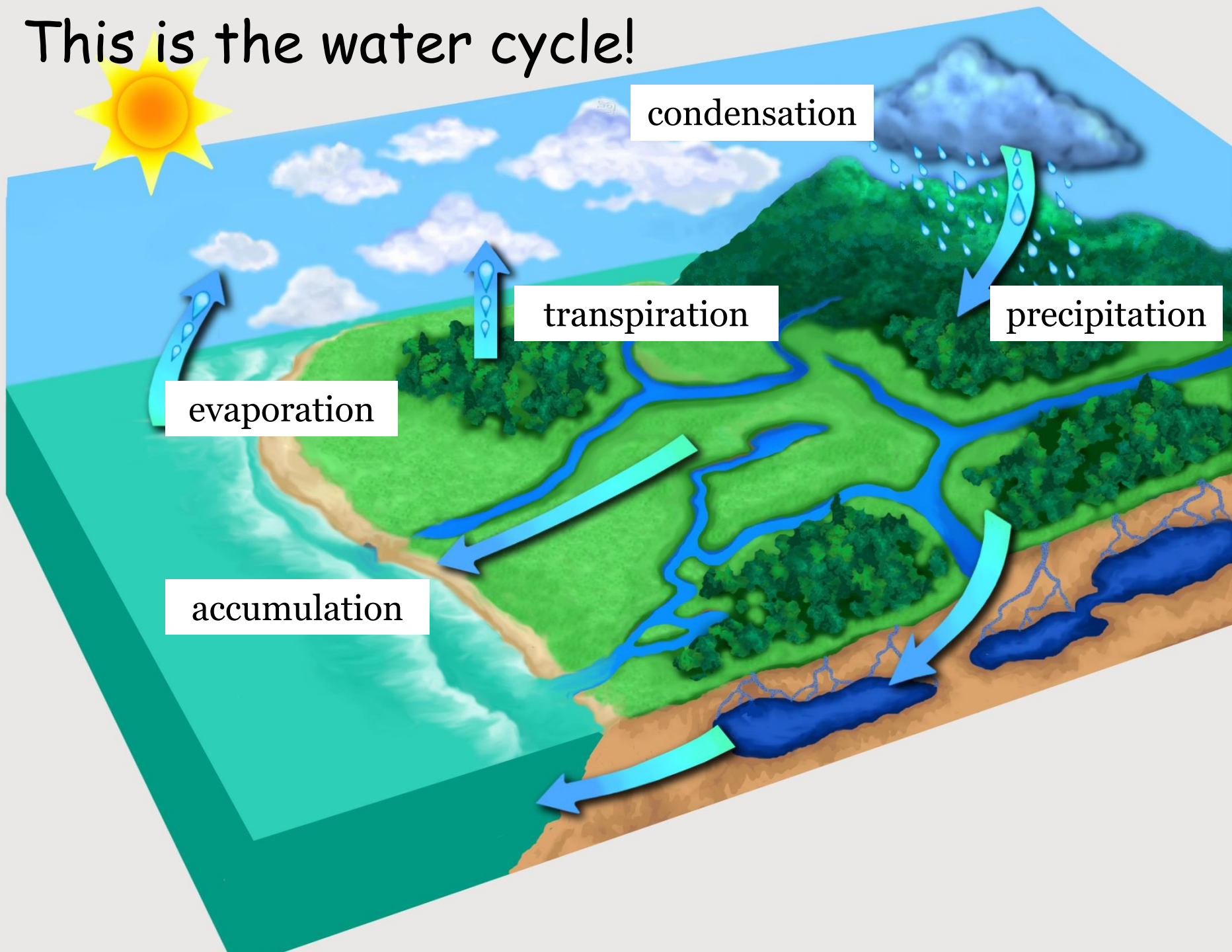
Evaporation

Condensation

Precipitation

Accumulation

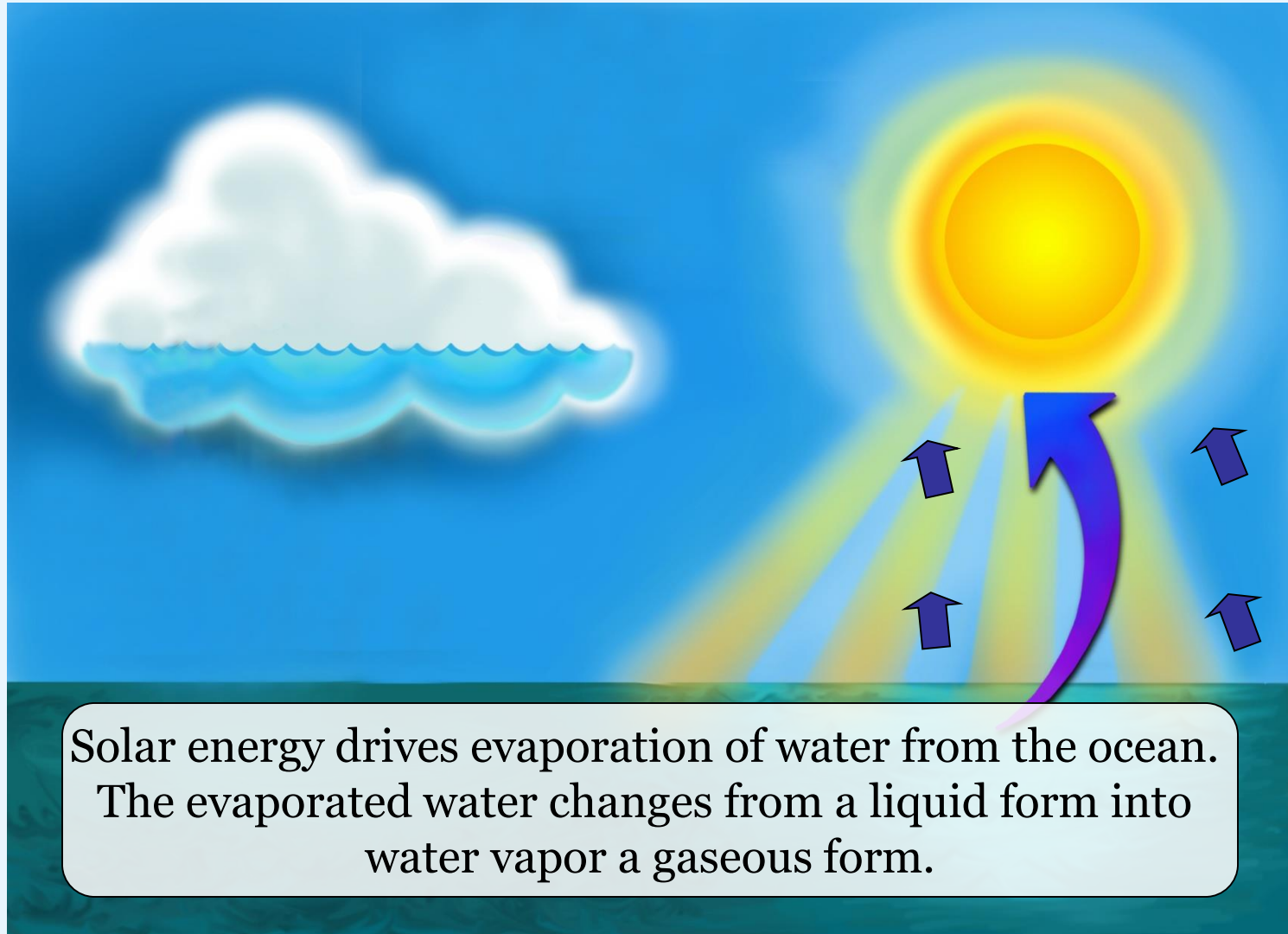
This is the water cycle!





“Evaporation”

The conversion of water from a liquid to a gas



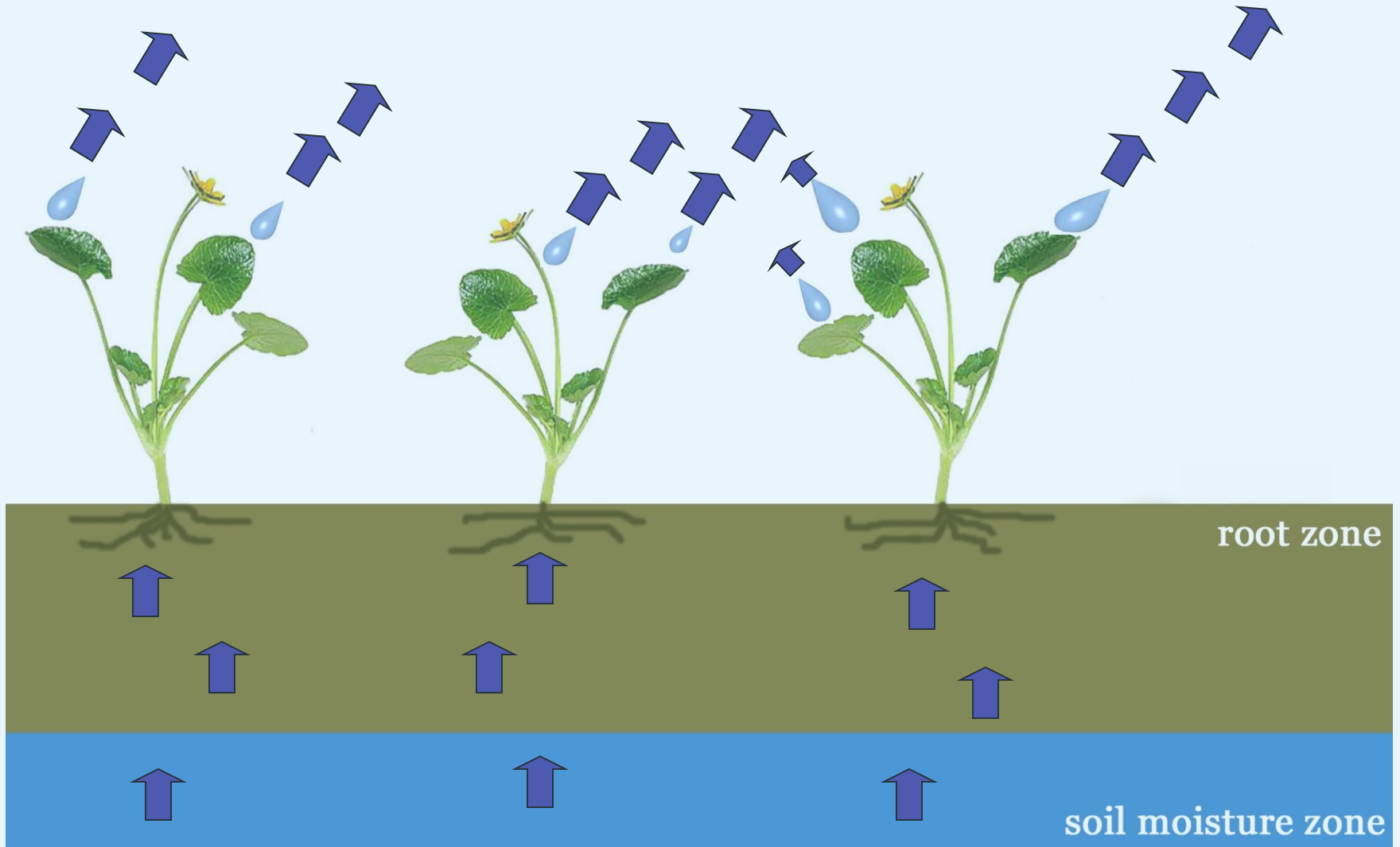
Solar energy drives evaporation of water from the ocean. The evaporated water changes from a liquid form into water vapor a gaseous form.

Water Evaporates

- Evaporation is the process by which molecules at the surface of a liquid absorb enough energy to change to the gaseous state.
- Water can evaporate from where?
 - Ocean
 - Lakes
 - Soil, puddles, and even from your skin
 - Plants
 - Eventually the water is given off through the leaves as water vapor in a process called **transpiration**

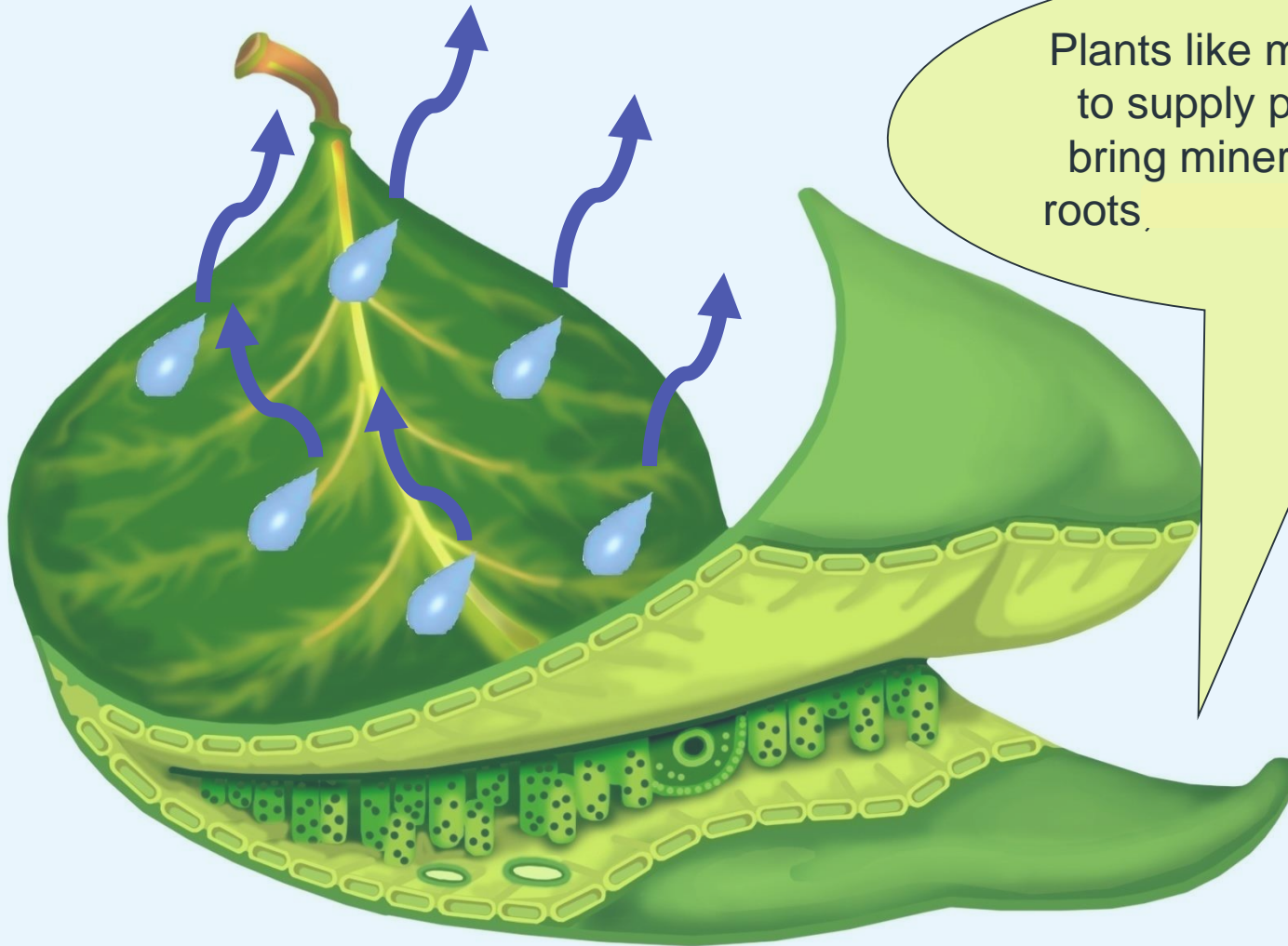
“Transpiration”

the evaporation of water from plants



“Transpiration”

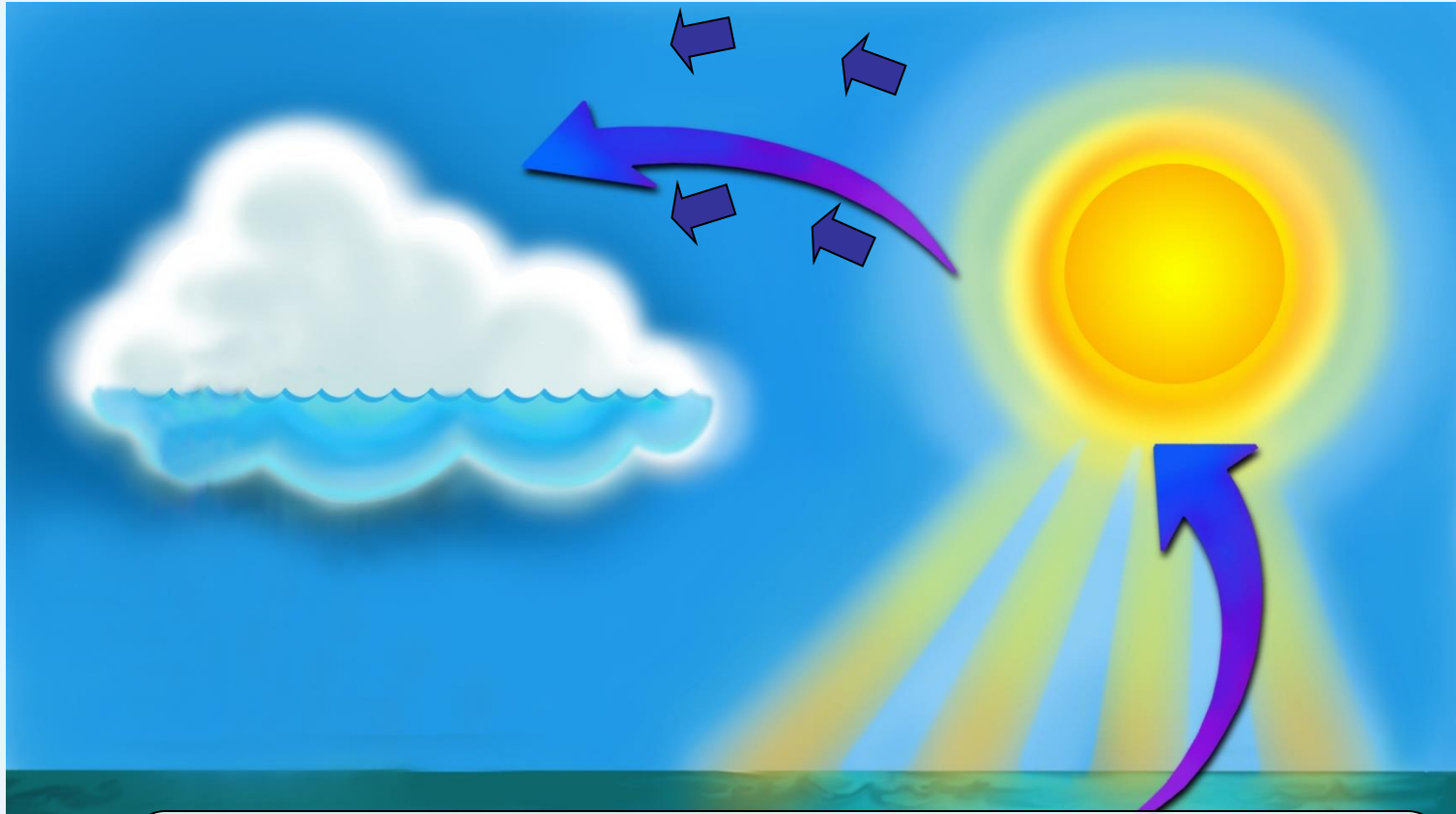
Do plants really sweat?



Plants like me release water to supply photosynthesis, bring minerals up from the roots.

“Condensation”

The transformation of water vapor back into liquid water by cooling



Evaporated water is warmed and rises into the air where it eventually cools and condenses to form clouds.

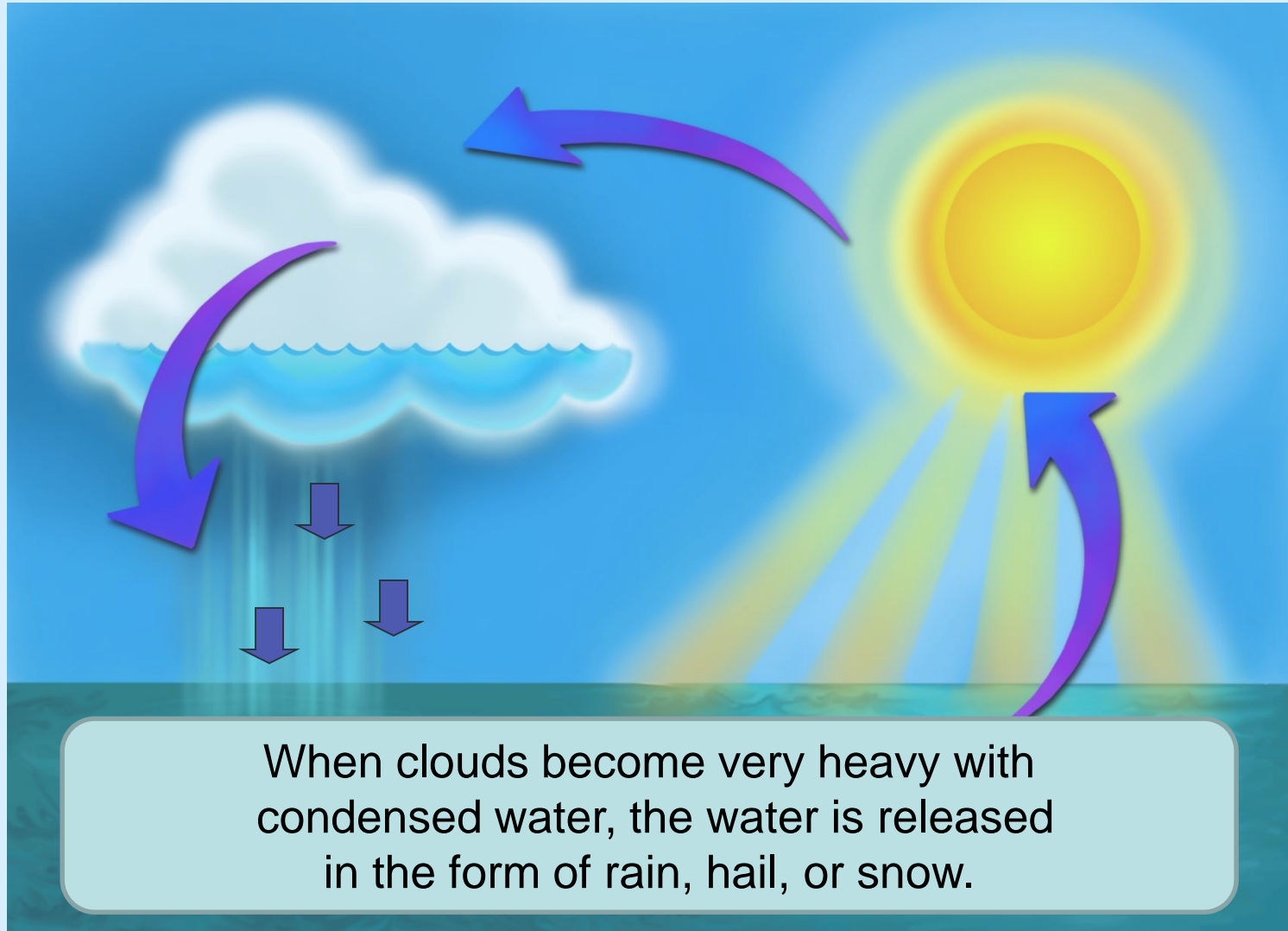
Clouds Form

- Water molecules find their way into the atmosphere,
 - warm air carries it upward.
- Higher up, air tends to become much colder.
- Cold air holds *less* water vapor than warm air.
- Some of the water vapor cools and condenses into liquid water.
- Condensed droplets of water clump together around tiny dust particles in the air, forming clouds



“Precipitation”

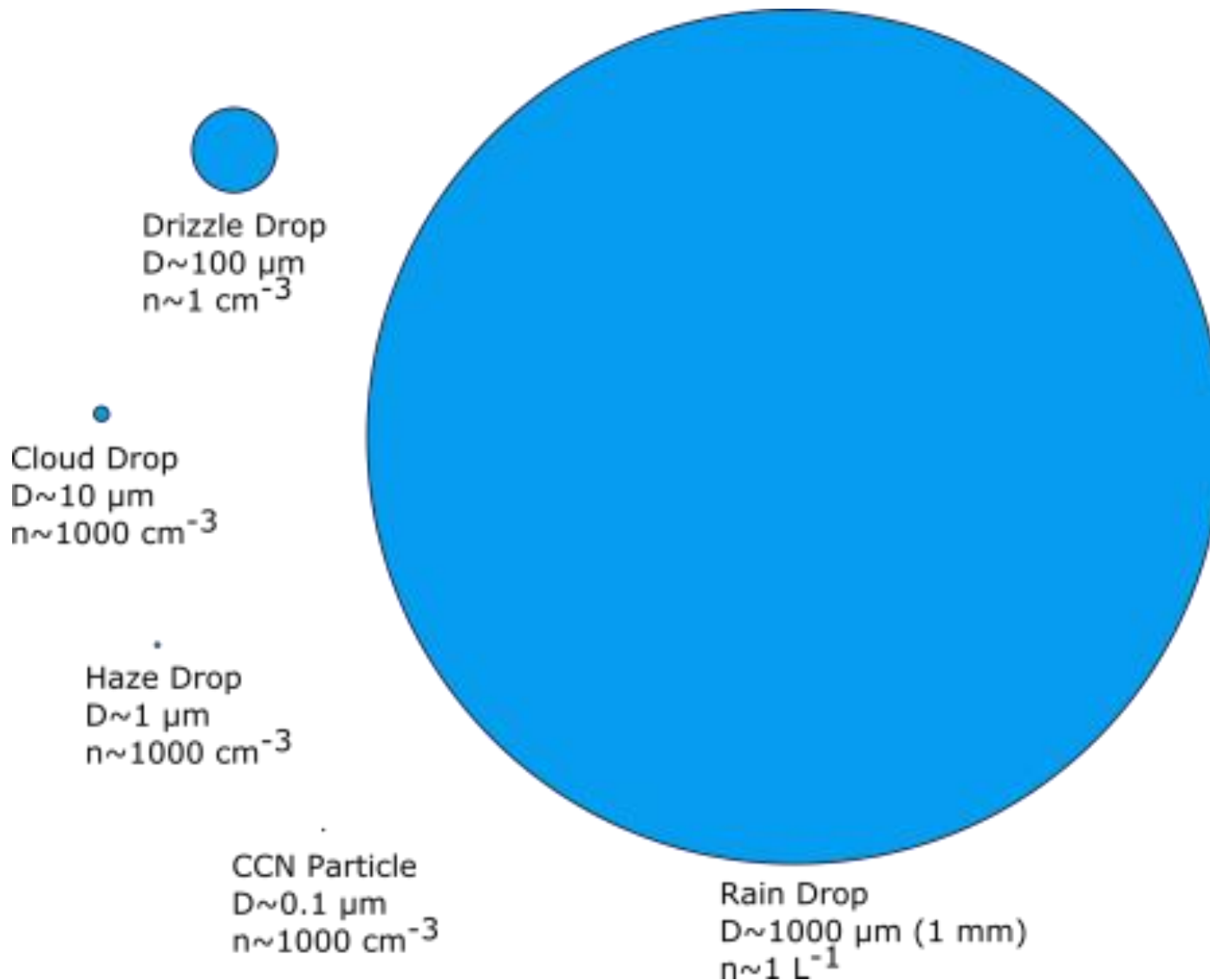
Rain, hail, or snow falling from the clouds due to the condensation of water



When clouds become very heavy with condensed water, the water is released in the form of rain, hail, or snow.

What makes the water droplets fall?



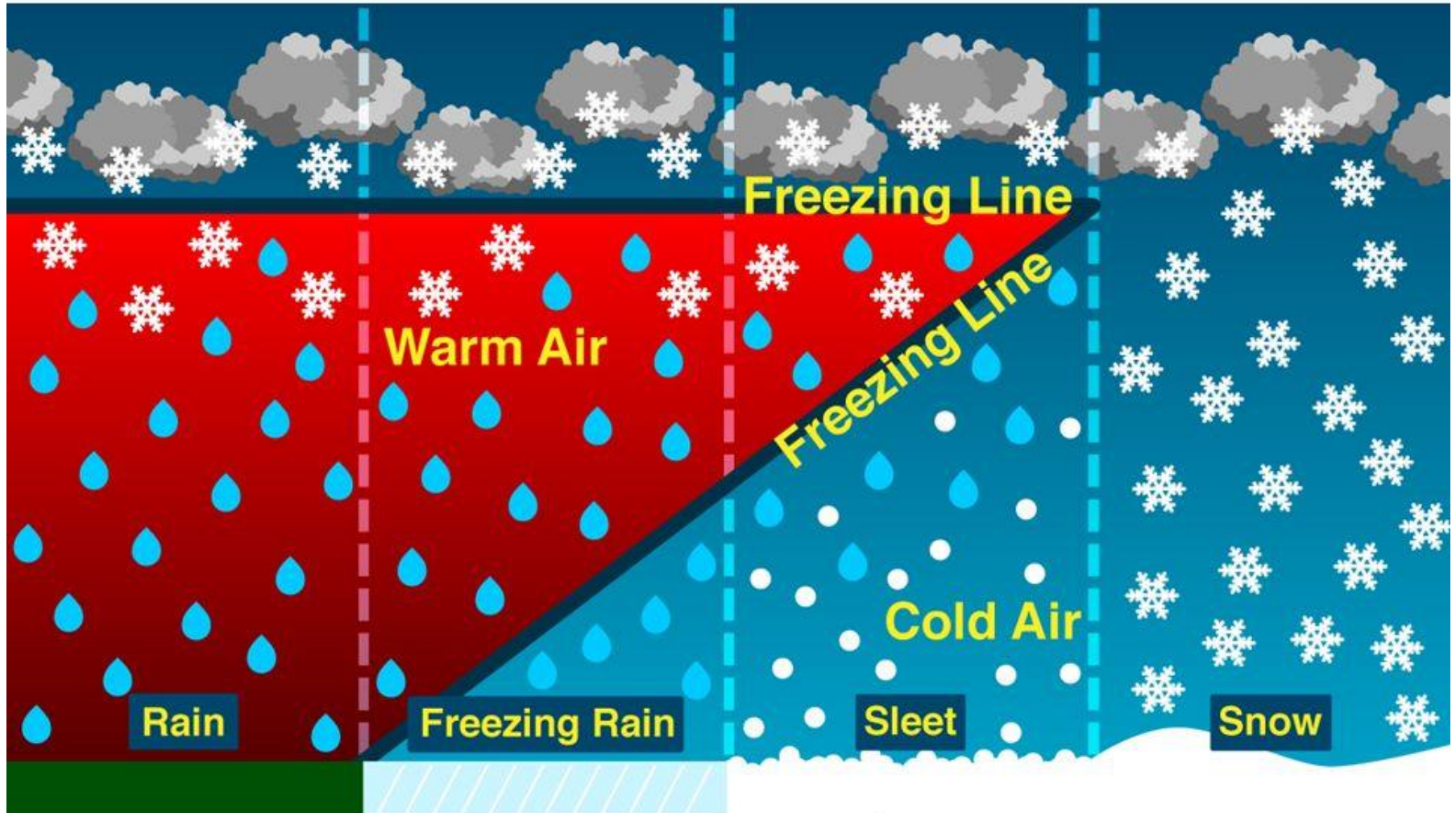


The tiny cloud droplets are big enough to be seen in large groups (like a cloud), but too small for gravity to overcome the rising air from the ground.

What causes different kinds of precipitation?

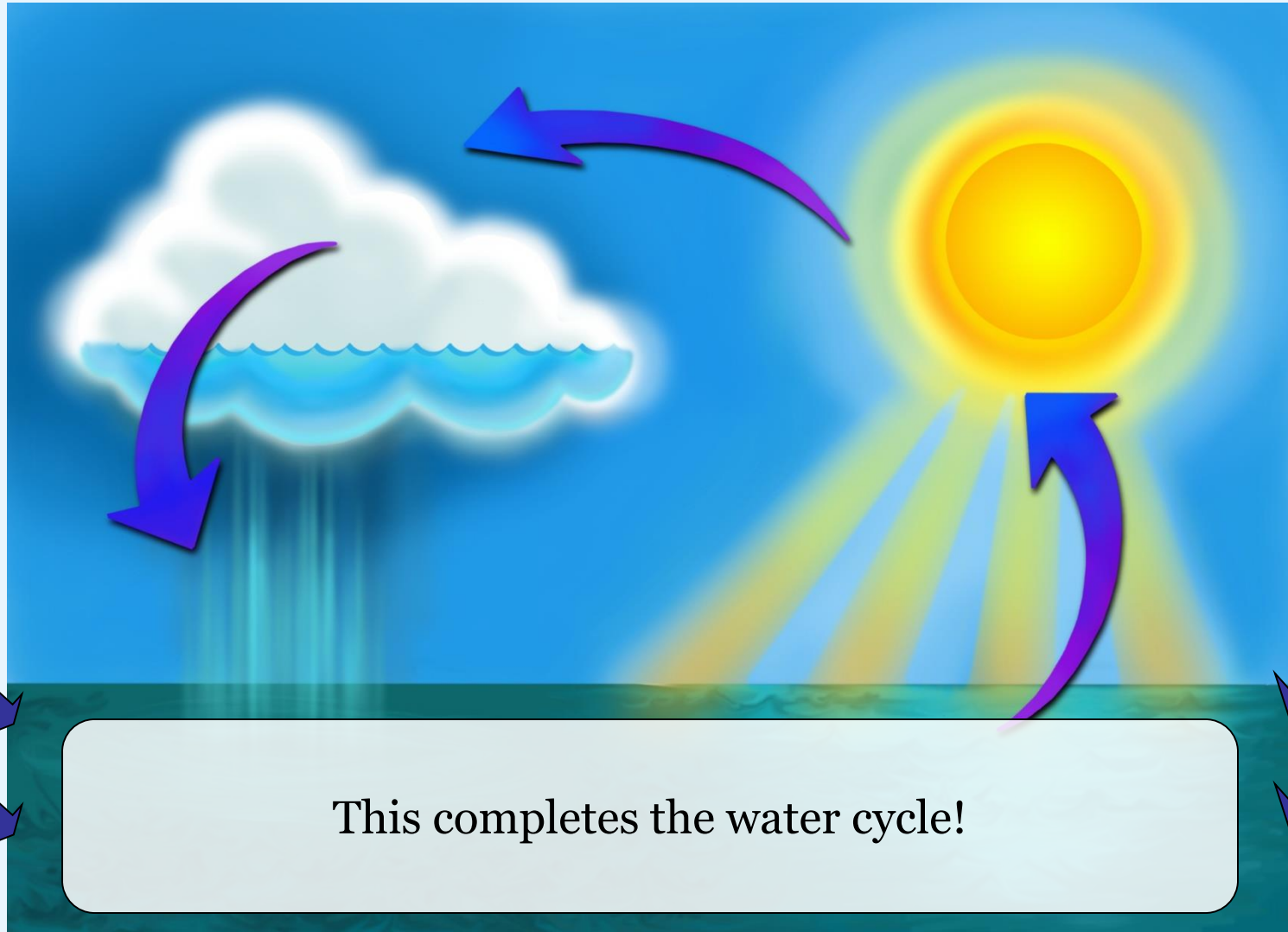


Water cycle



“Accumulation”

The collection of precipitation into rivers, lakes, and oceans.



This completes the water cycle!

Where does water accumulate?





Glaciers

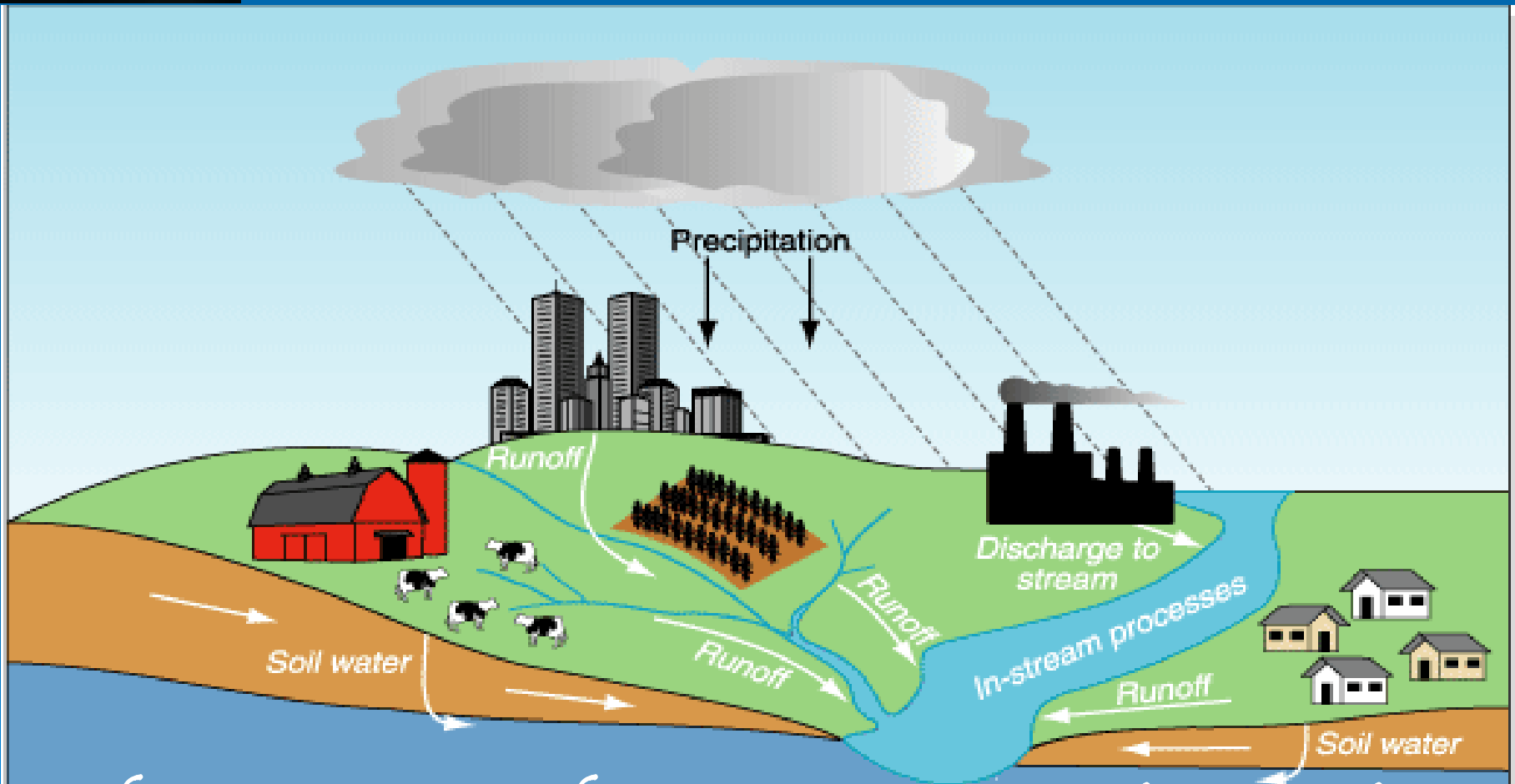


- GLACIERS
- Snow falls onto mountains and stays a long time (10s of 1,000s of years).
- When it finally melts, it provides water for streams and rivers.





Surface water



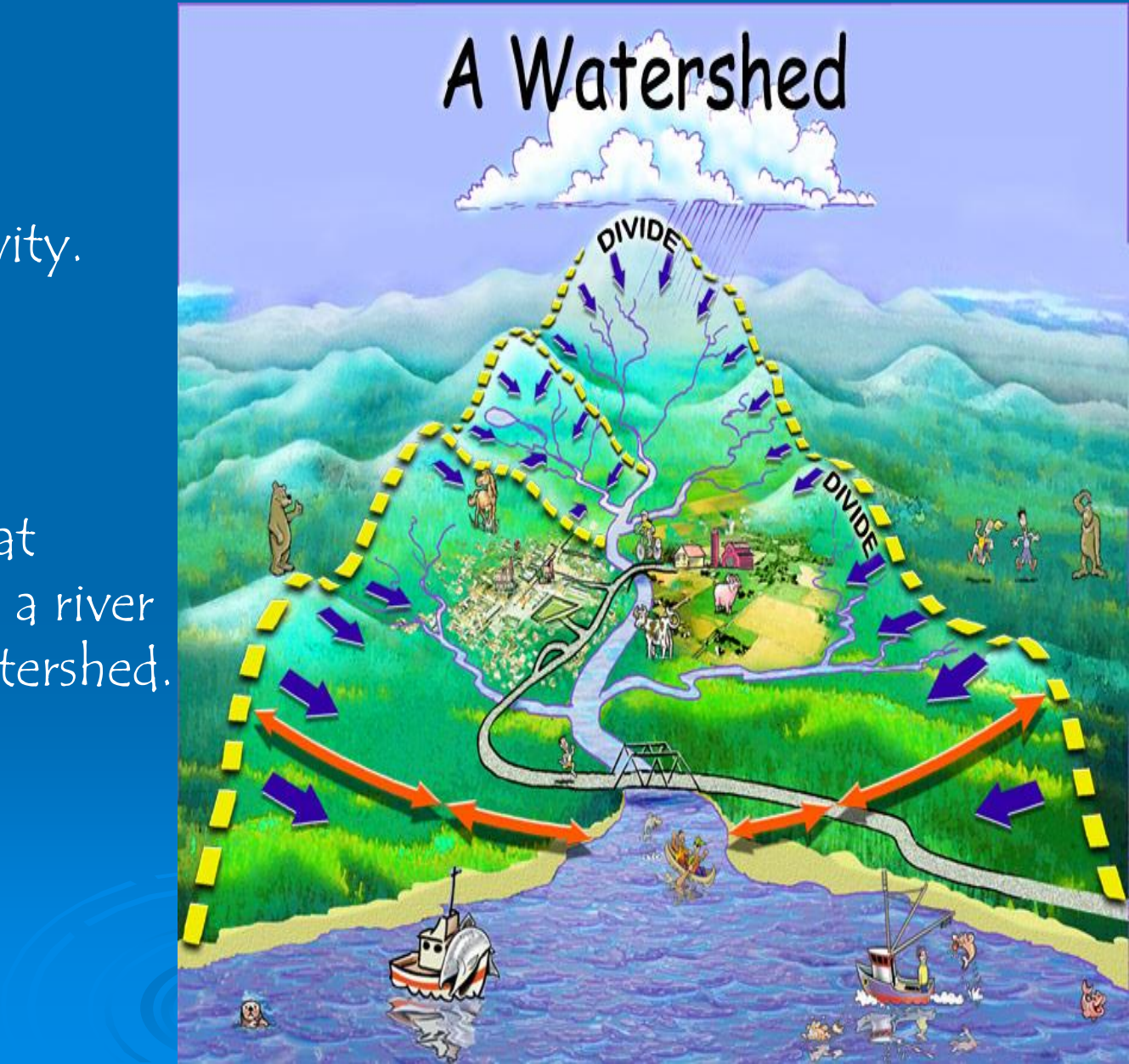
Surface water comes from precipitation and moves due to gravity.



Watershed

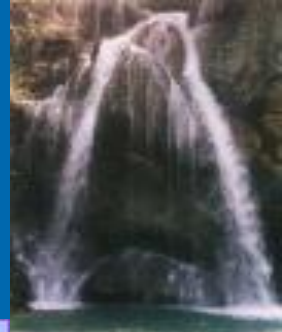
◇ Surface water runs downhill due to gravity.

◇ The area of land that contributes water to a river system is called a watershed.



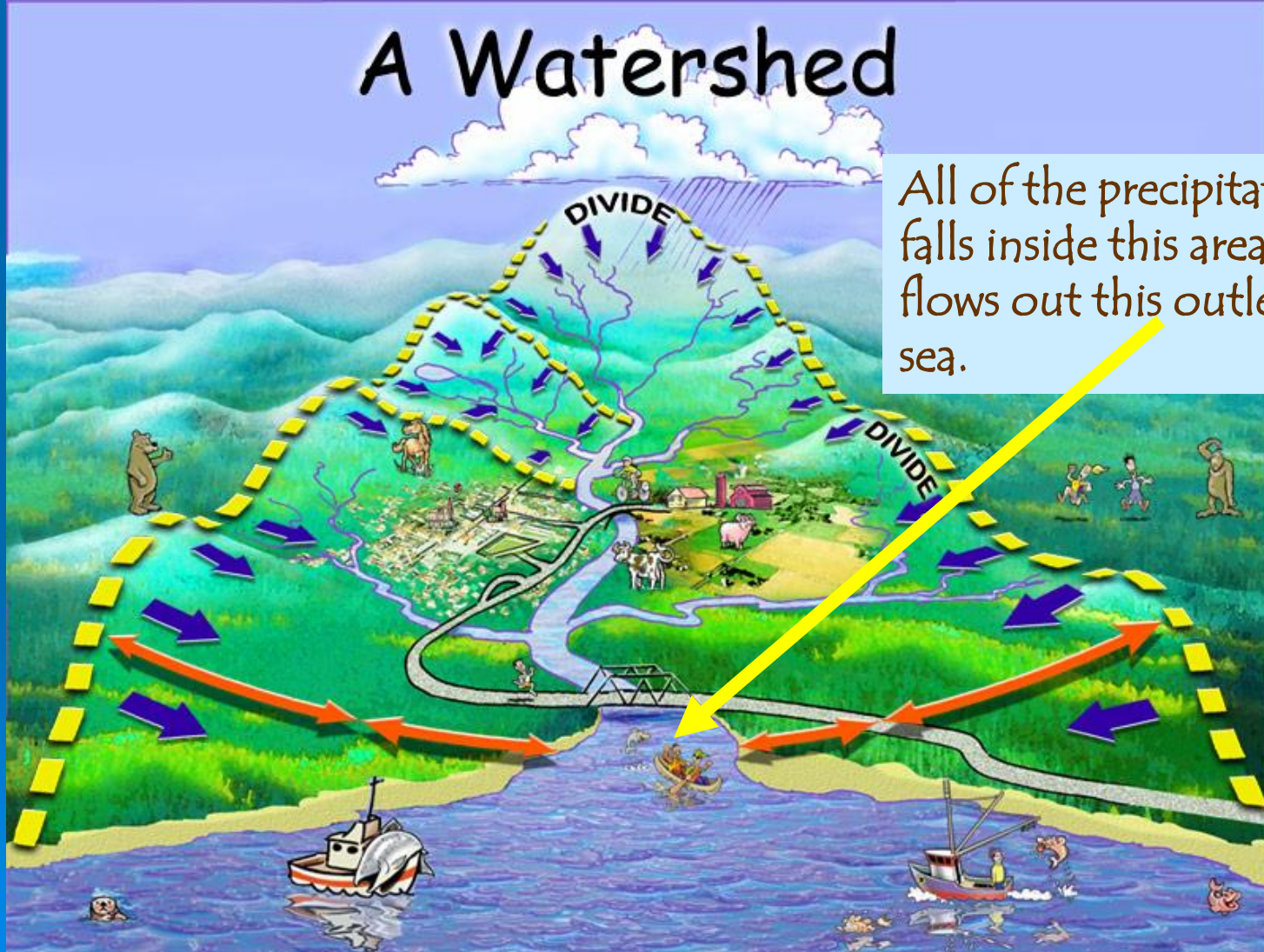


Watershed



A Watershed

All of the precipitation that falls inside this area, eventually flows out this outlet into the sea.



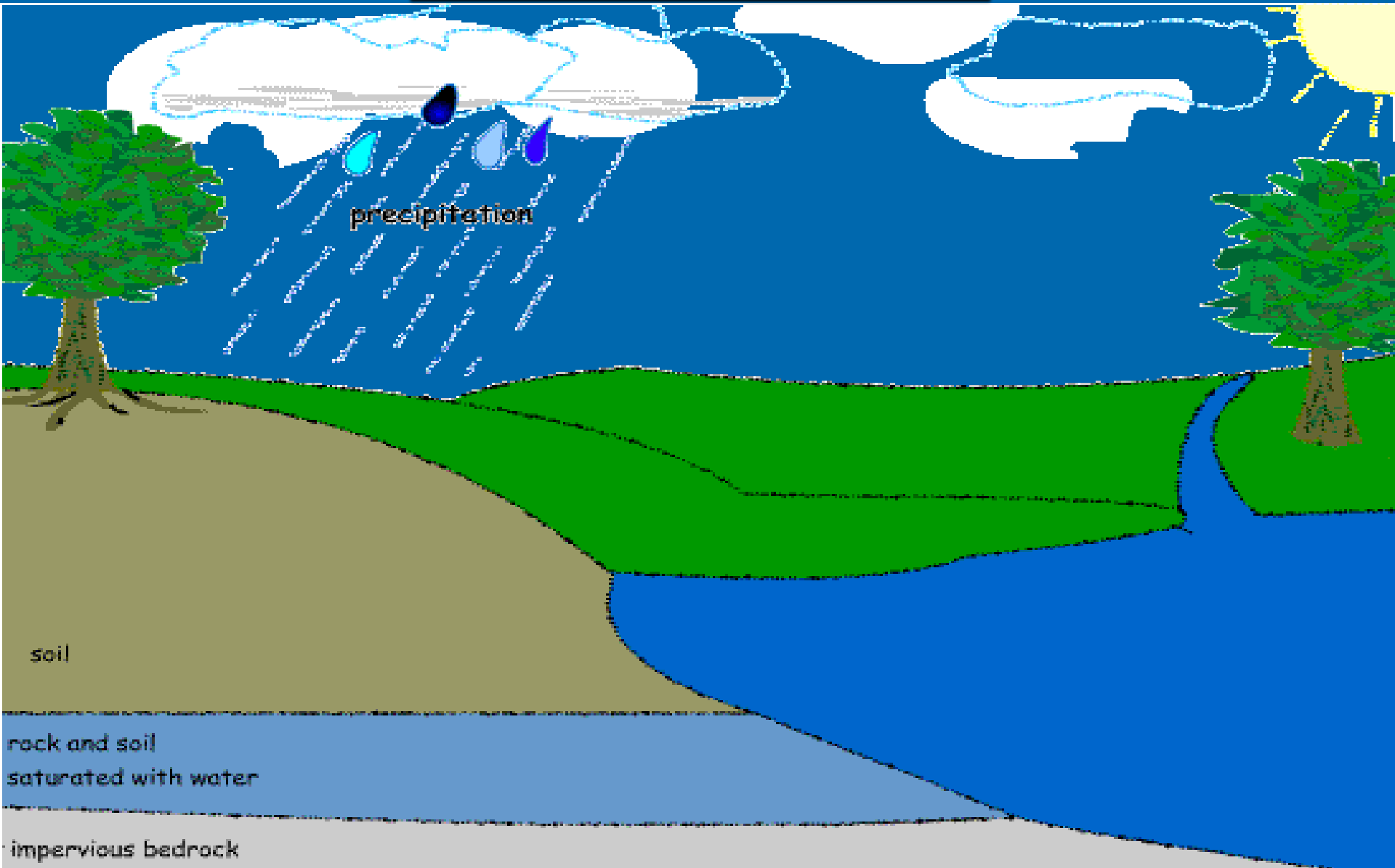
WATERSHEDS

Mississippi River Drainage Basin

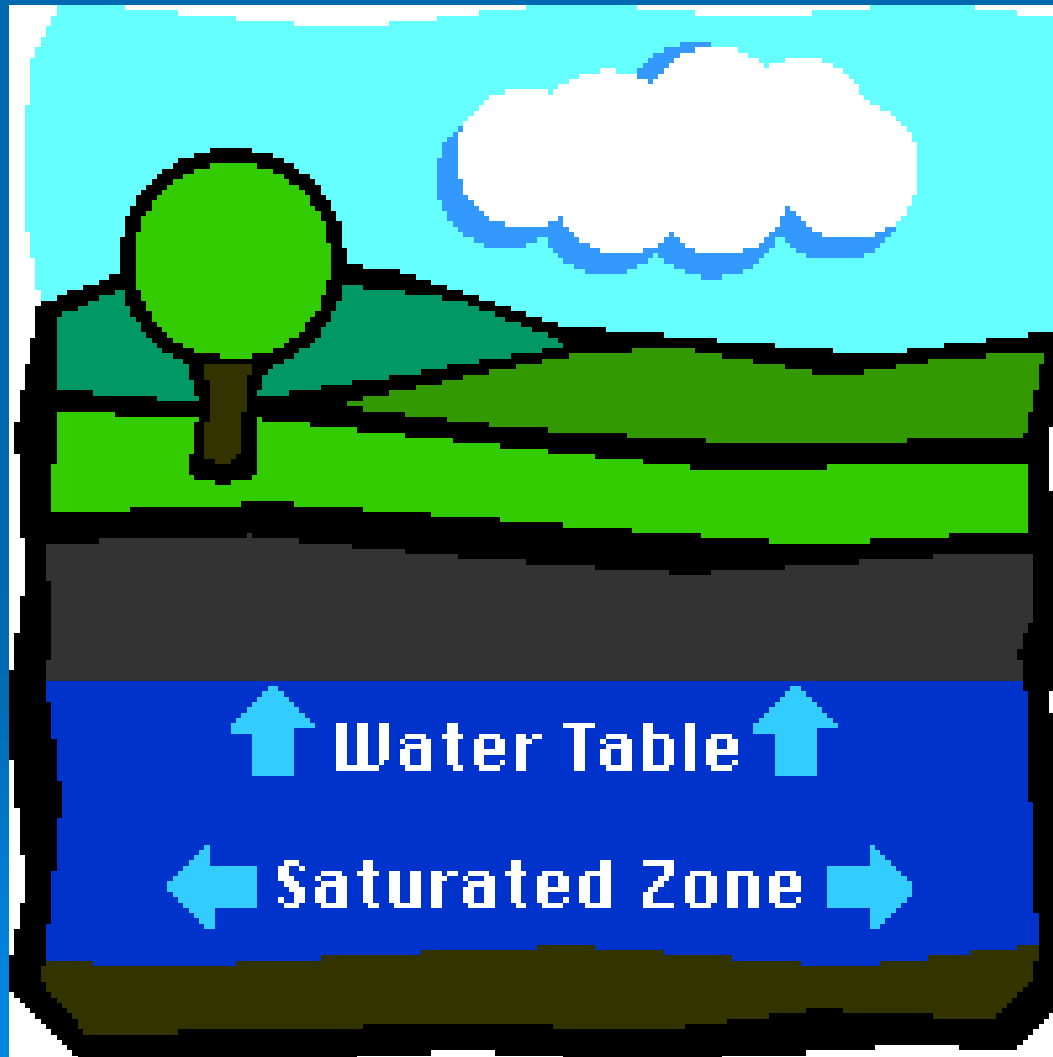


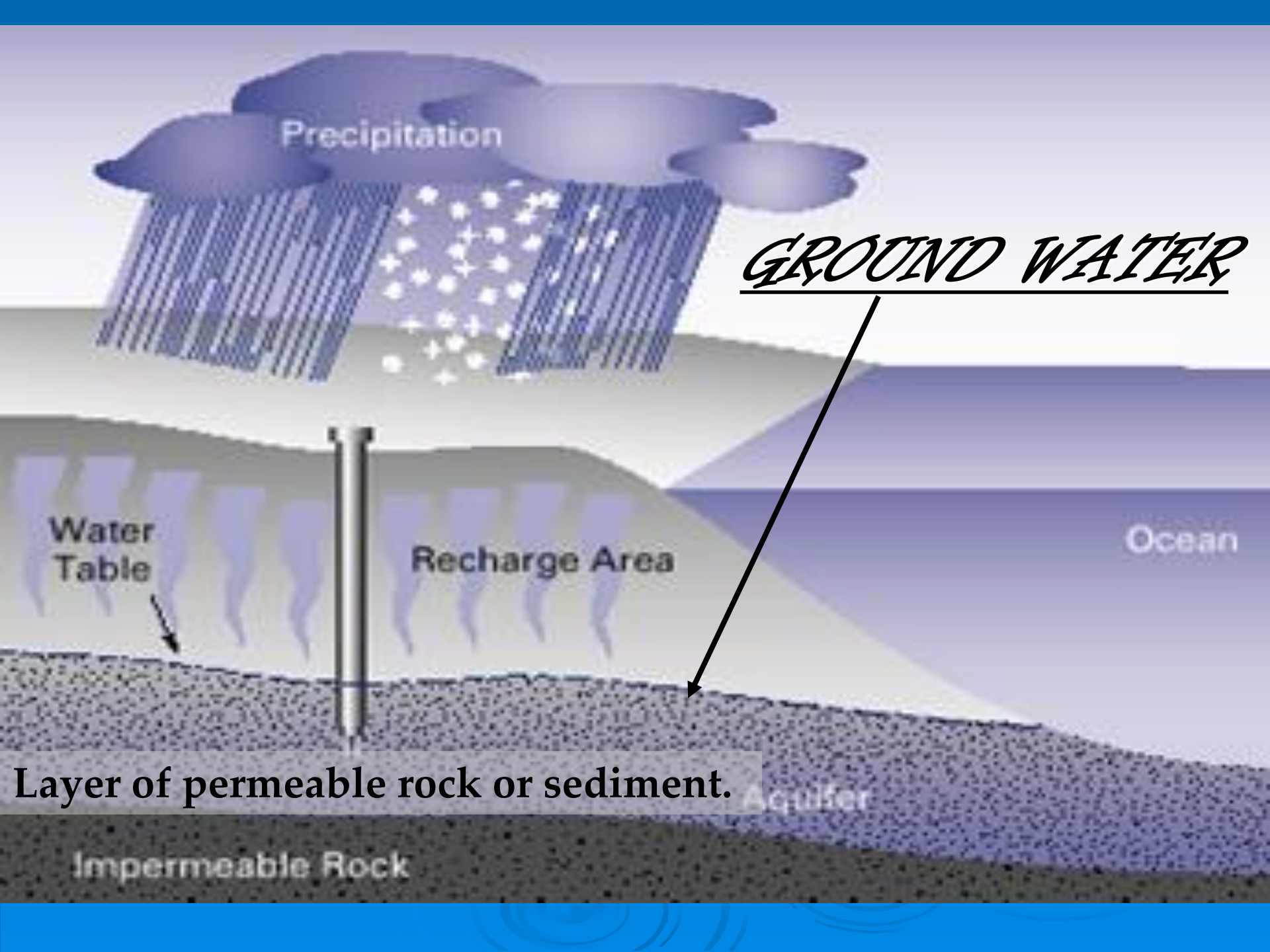
All of the precipitation that falls inside this area, eventually flows out this outlet into the sea.

Groundwater



Groundwater – water that soaks into the ground from rain or melted snow.





Precipitation

GROUND WATER

Water Table

Recharge Area

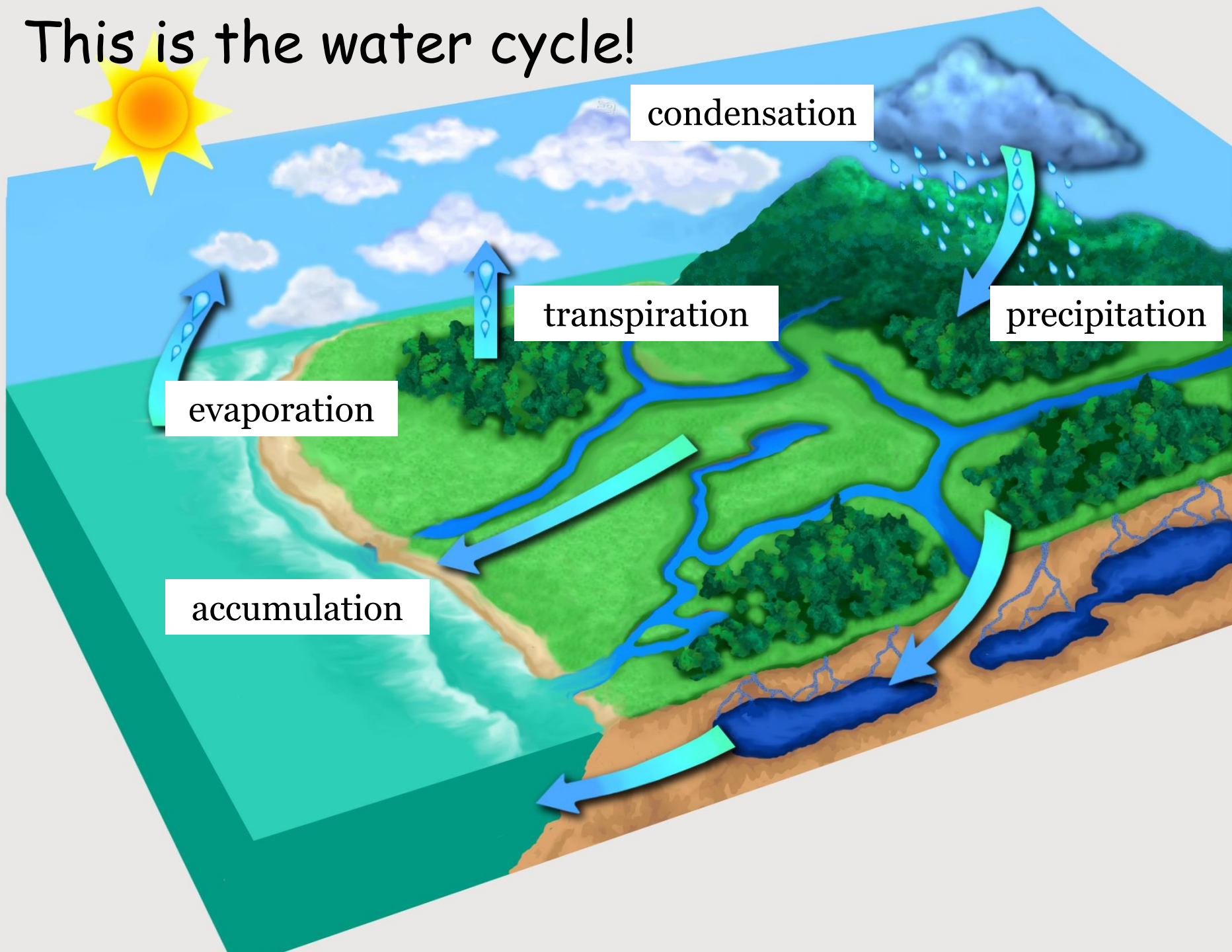
Ocean

Aquifer

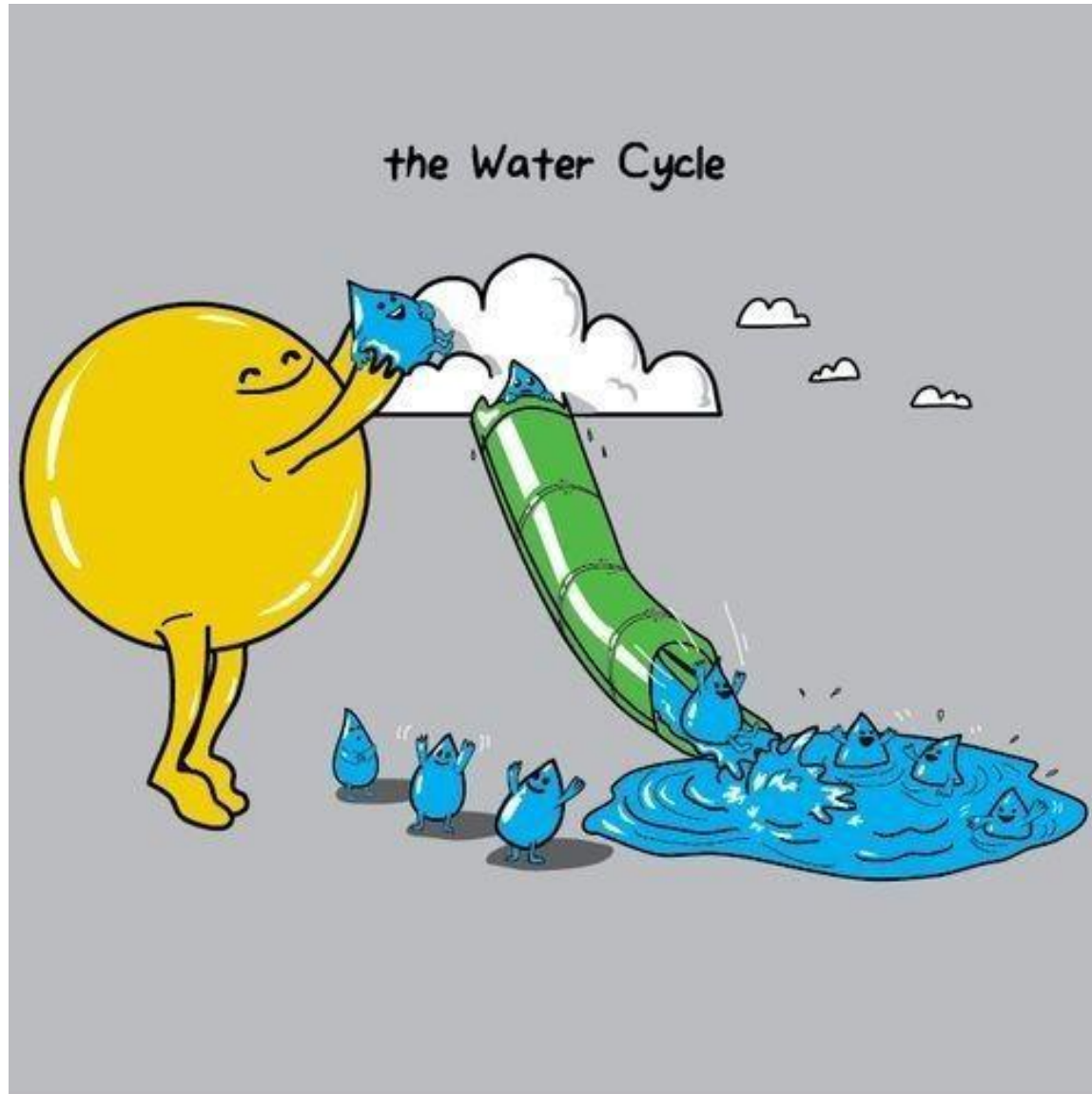
Impermeable Rock

Layer of permeable rock or sediment.

This is the water cycle!

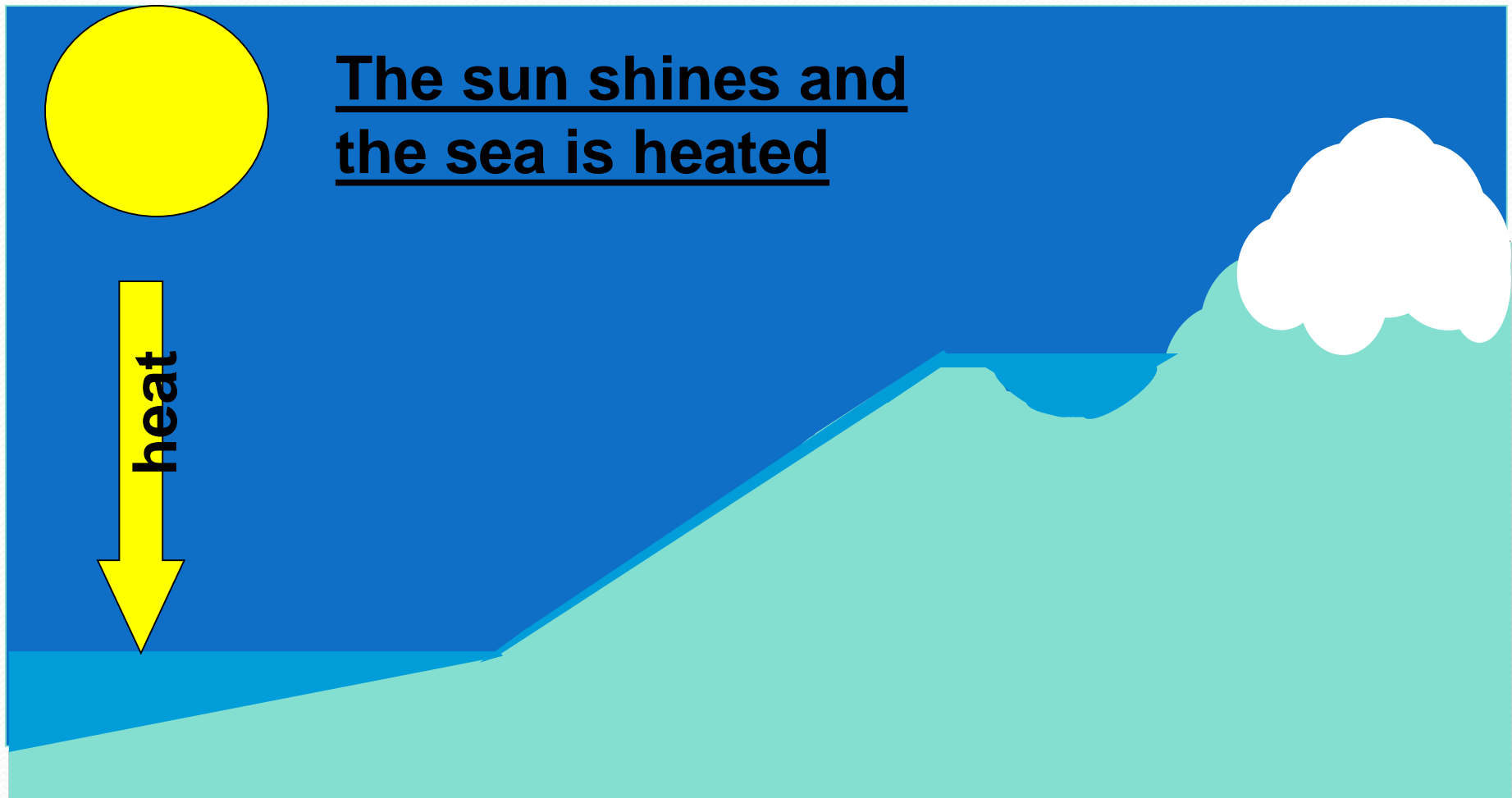


What drives all of this?



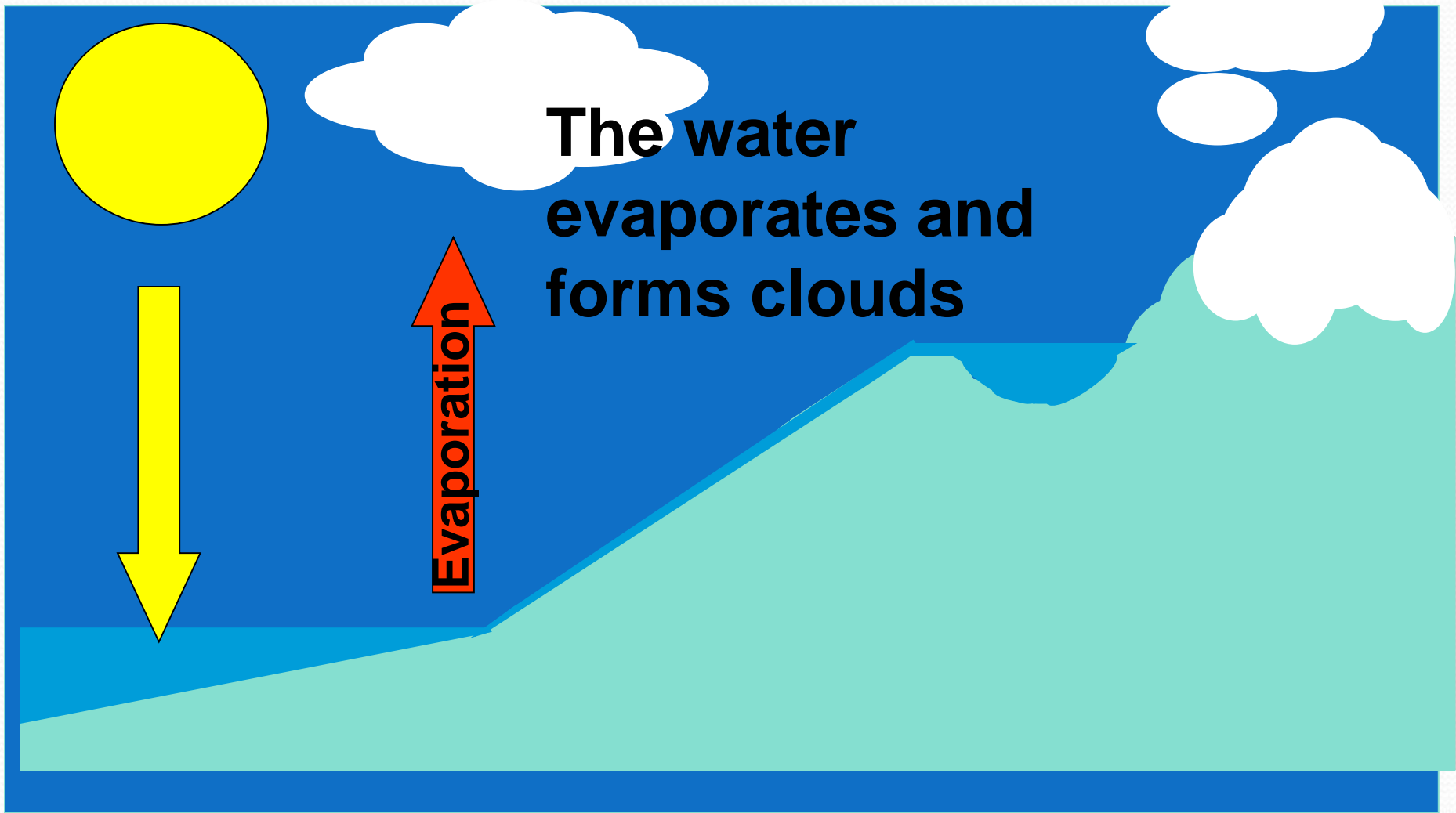
The Water Cycle

Water is constantly moving between sea, air and land



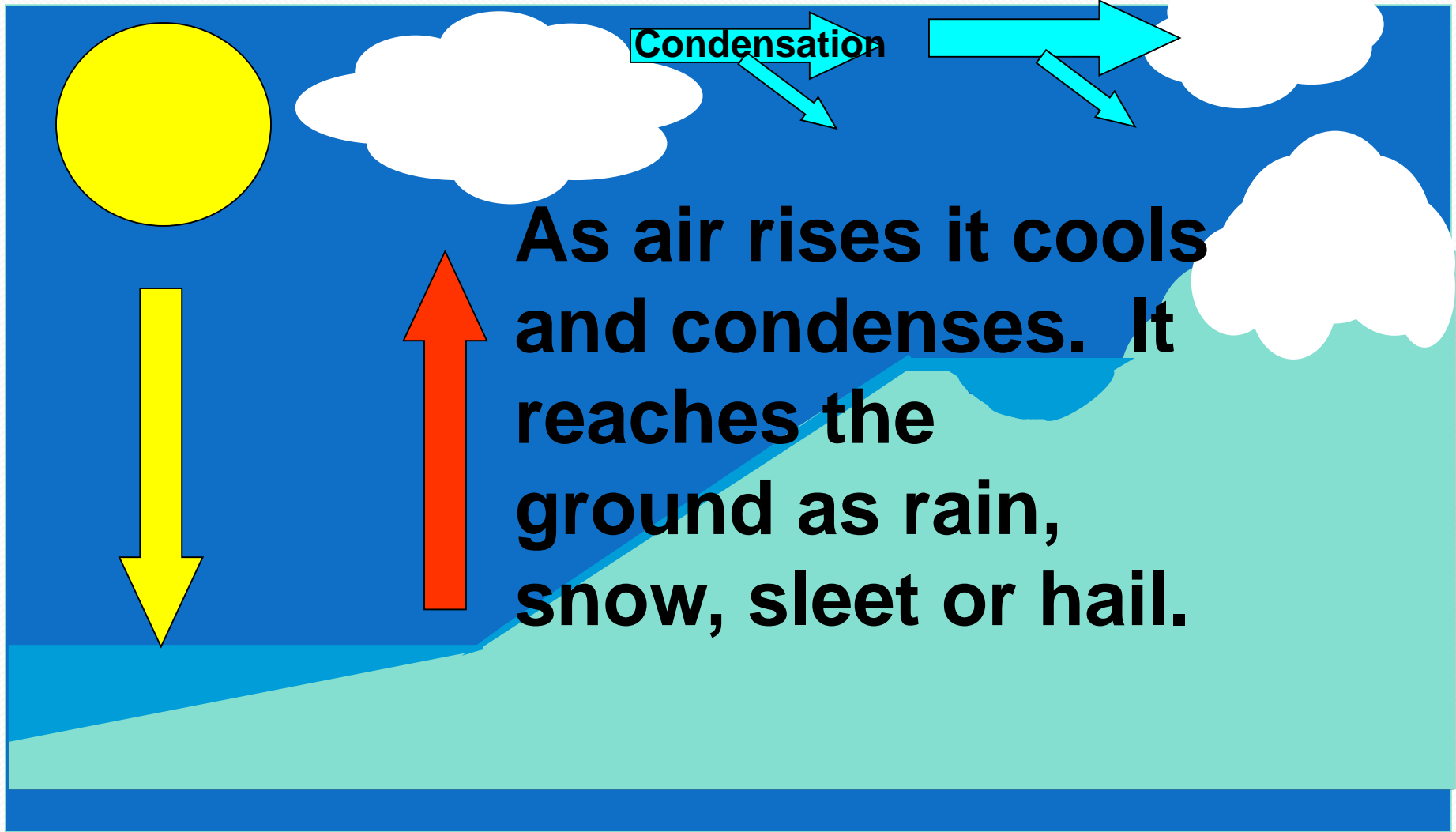
The Water Cycle

Water is constantly moving between sea, air and land



The Water Cycle

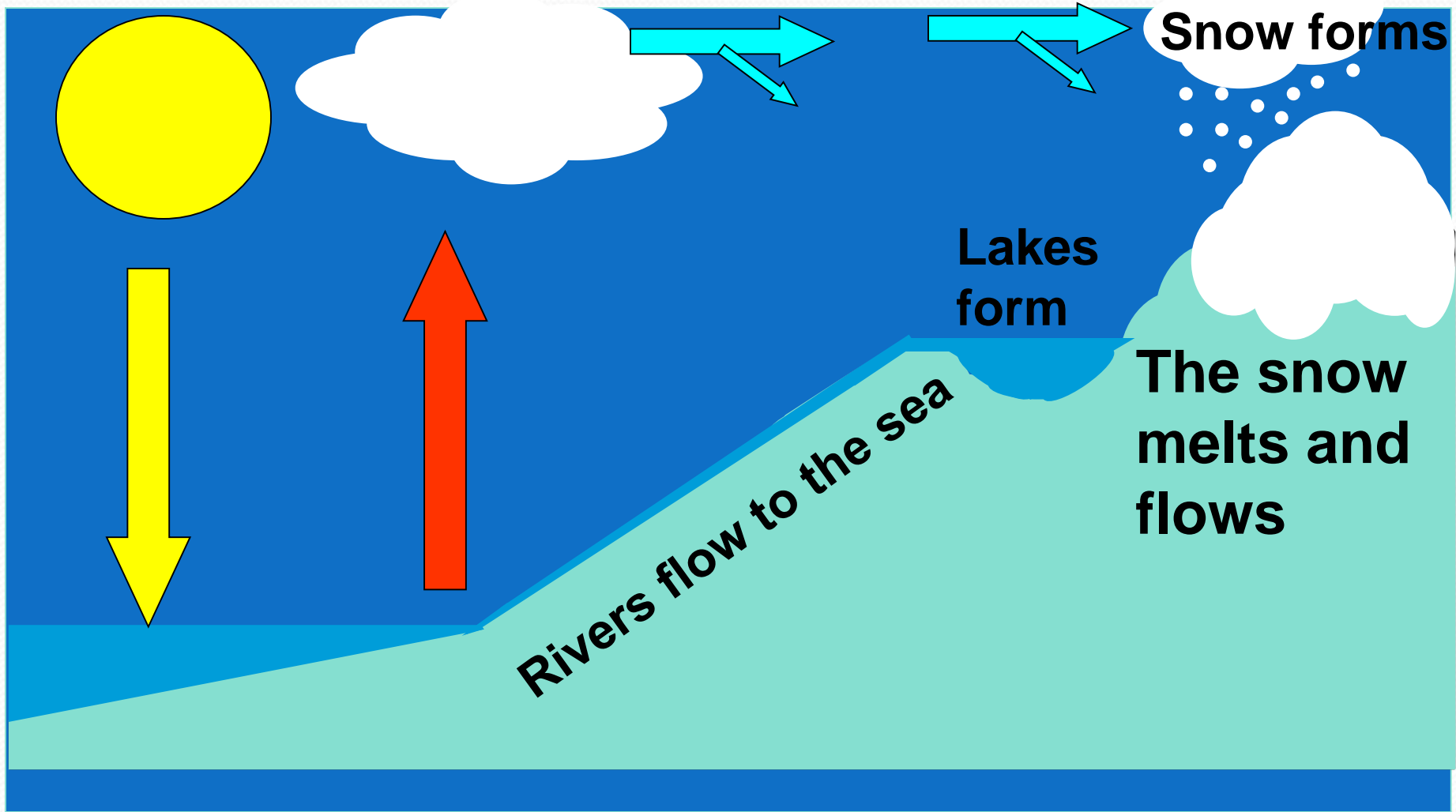
Water is constantly moving between sea, air and land



As air rises it cools and condenses. It reaches the ground as rain, snow, sleet or hail.

The Water Cycle

Water is constantly moving between sea, air and land



The Water Cycle

Water is constantly moving between sea, air and land



The Water Cycle is complete