



WHERE'S WATER?

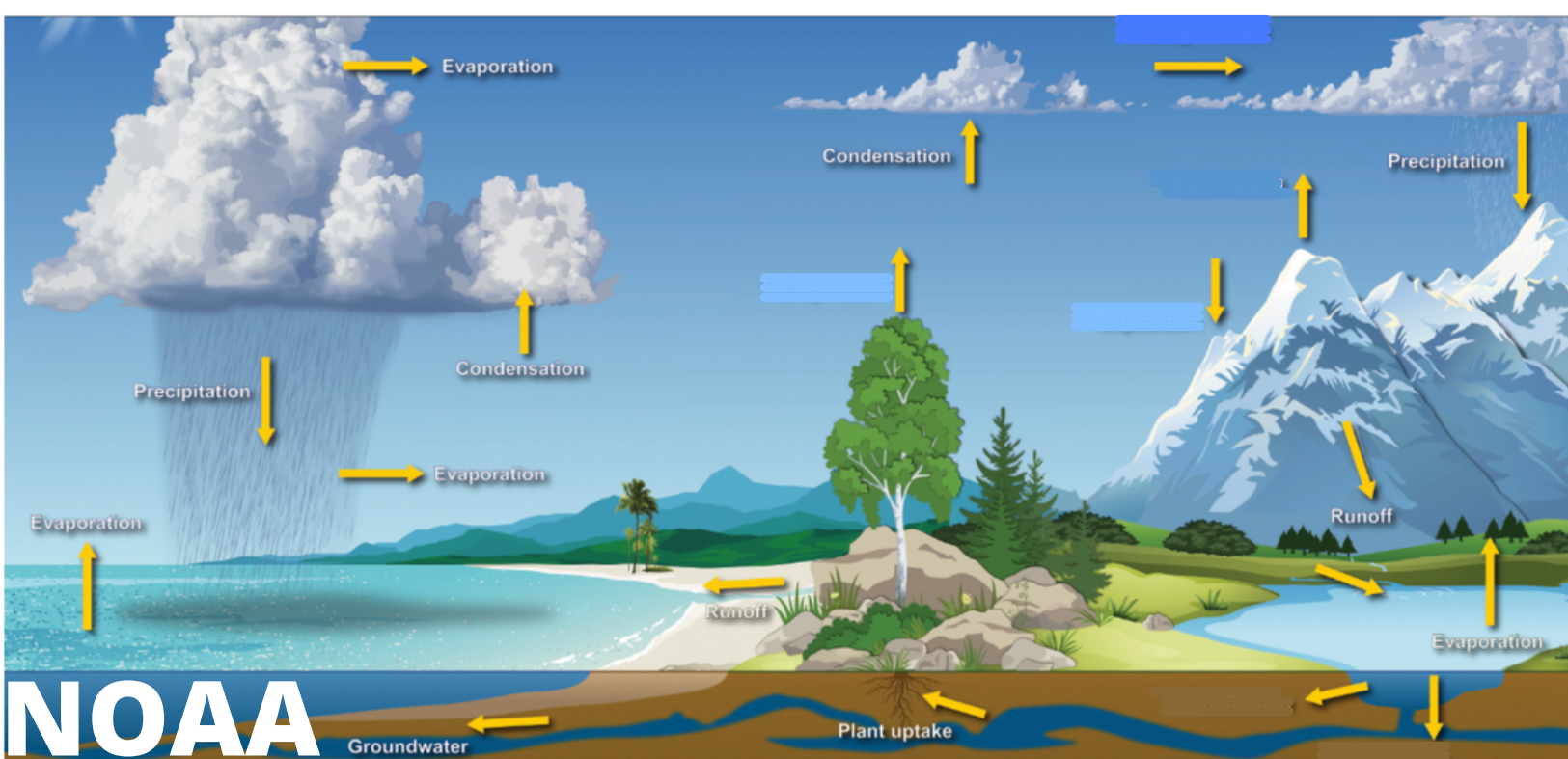


What is the water cycle?

Water is everywhere you go! Some sources of water you can see, like lakes, streams, ice, snow, and rain. There is also water that you cannot see. Some water is stored underground. This is why plants have roots! Many bottled water companies get their water from this water source. Another form of water you can not see with your eyes is water vapor. Water vapor is around you constantly! It is in the air you are breathing right now.

A water particle is continually cycling through different water sources and states. This cycling is what we call the water cycle. No water is created or destroyed during this process, meaning that the water you drink every day is made from the same water particles as the water the dinosaurs drank.

Here is a diagram of a water cycle:



Water Scavenger Hunt

Label the types of water sources (ex. lake, ocean) on the diagram! Then take a walk around your community and see what water sources you can find. Finally, draw a map of places where you found water below and label what you found! Try to create something similar to the diagram above with the water sources in your community. Even something like a puddle counts as a water source, so look carefully! Also, pay attention to the sky (what could clouds be?)! **When you find a water source, think about where it might have come from and where it might be going- try to find a breadcrumb trail of water this way!**

Cloud in a Bag

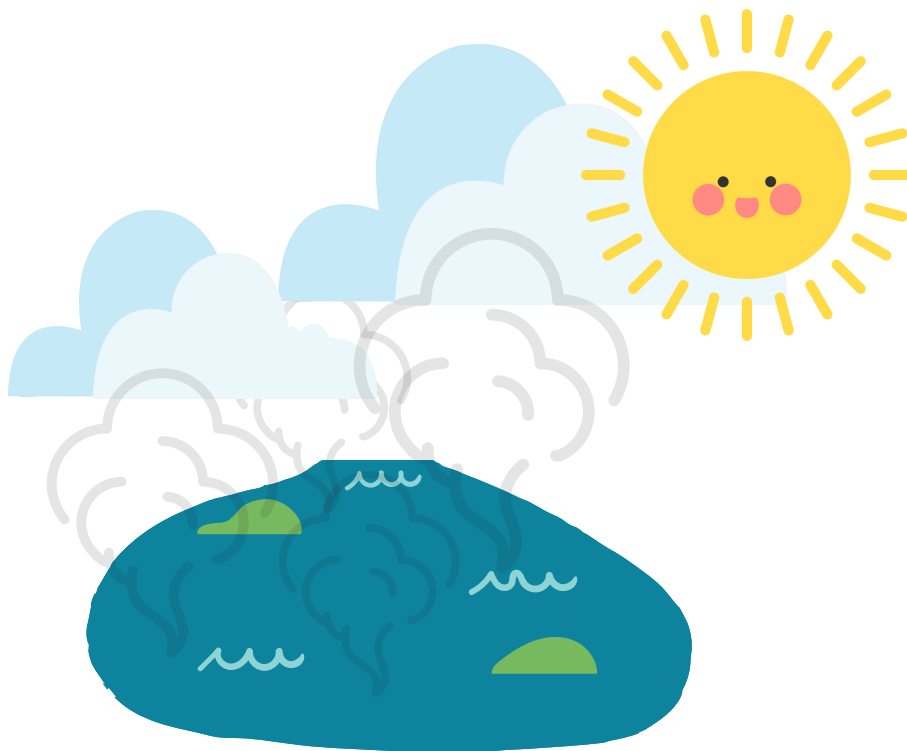
Water is not static! It is constantly on the move. Much of this movement occurs because water changes from a liquid to a gas (water vapor) and vice versa. In this experiment, you will get to witness the processes in which these changes happen!

Supplies:

- a clear plastic bag
- a handful of soil
- a spray bottle (helpful, but not necessary)
- tape (optional)

Instructions:

1. Add roughly a half-cup (one handful) of soil to the plastic bag.
2. Spray or very slowly add water to the soil in the bag. The soil should be moist, but not muddy.
3. Seal the bag very tightly! Then tape it or leave it next to a sunny window.
4. Check back in 2-3 hours and then periodically throughout the day.



What changes did you notice in the bag? Make a drawing of what happened and write a description about it.

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Water Cycling

You probably noticed the arrows on the water cycle diagram. They are there because water is constantly moving to and from different forms. This movement sometimes includes changing their state of matter. Evaporation is when water changes from a liquid to a gas (water vapor). Condensation is when gas (water vapor) changes into a liquid. Condensation is why we have clouds: water vapor cools down, turning into liquid droplets which clump together with other particles. Precipitation, like rain and snow, comes from clouds. Precipitation happens when so many water vapor particles clump together that the liquid droplets get heavy enough to fall out of the cloud. Depending on the temperature, these droplets will either fall as rain or snow.

With this new information, what was happening in the bag? Try to match what you saw with the processes of evaporation, condensation, and precipitation!

Now that you know about water cycling, go back to your map and label how water is moving between water sources! Try telling the "life cycle" of a water droplet by imaging what path it might take before ending up at the same water source.

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Humans and the Water Cycle

Water is an incredibly valuable natural resource. Up to 60% of the human body is water! Many vital organs are an even higher percentage of water: our brains and hearts are around 73% water, and the lungs are 83%. Even your bones are 31% water! This is why drinking water is so important.

However, humans use water for so much more! Water is also essential to creating and raising the plants and animals we consume. We would have nothing to eat without water.

Water also powers our homes. Hydroelectricity, electricity which comes from water, is created by dams. By controlling the flow of water from a higher area to a lower area, dams harness the power of gravity to generate electricity. This energy is sustainable because water will always continue to exist (remember how it is never created or destroyed? It just moves!) and because it does not create pollution in the energy-generating process.

Finally, we use water to process our waste (think about the water in your toilet bowl or the water in your shower). This water has to be treated before it can be released back into the water cycle.

Your Water Usage

Where does water come from in your house? Take a walk around your house and list below the different items that use water (be sure to check your kitchen, bathroom, and backyard!). Write down below where you found water and what it is being used for! Also consider where this water is coming from!

1.....

2.....

3.....

4.....

You use water every day. But have you ever considered how much water you use? This might seem like an unimportant question: water is all around us and we can reasonably expect that when we turn the faucet on, water will come out. Water seems like an unlimited resource. It is not, especially because freshwater, the water that we use, only makes up 3% of the world's water supply. The rest of the water is unusable to us and many other organisms because it is either seawater or ice. While no water is ever destroyed, it is important to balance where water is in the water cycle. Humans can waste water that they do not need, for example by leaving the faucet running or taking a very long shower, making water scarce in

environments like wetlands. When there is not enough water in wetlands or other ecosystems the animals in them suffer. Using water responsibly will become more and more important with each generation as the human population grows, which will increase the demand for the limited resource of fresh water.



Quantify Your Water

Time to think about your water usage! Below are some statistics about how much water different household items or appliances use. Think about your typical day. Write down how many times you do each of these things and then calculate approximately how many ***gallons*** of water you use in a day!

a glass of water = 1 cup

flushing the toilet = 6 gallons

a 10 minute shower = 25 gallons

using an outdoor sprinkler for one hour = 1,020 gallons

using the faucet for a minute = 2 gallons

a glass of milk = 49 gallons

an egg = 52 gallons

a burger = 660 gallons

a chicken breast = 116 gallons

a soda = 46 gallons

a salad = 21 gallons

Unit conversion:

1 gallon = 16 cups

Calculations:

total amount of water used in a day = _____