A Kid's Guide To The Water Cycle

When you look around the Earth at all the oceans, seas, and rivers, when you consider all the rain, snow, and sleet, it seems like water on this planet is limitless. The fact is, though, there is a limited amount of water. Why, then, has rain, snow, and sleet fallen for all of history? Well, think of it this way. When you put a cold glass of water outside on a warm day, drops of water appear on the outside of the glass. How did this happen? It wasn't magic; it was science. To learn more about this science, keep reading.

Evaporation:
Since we are talking about a cycle, there really is no beginning we can start from, so let's just start at evaporation. A good way to think about evaporation is to consider how many puddles there are after a storm. Especially on a hot day, when the sun comes out after a storm, many puddles disappear quickly. It doesn't actually disappear, though, it just changes form, from liquid to water vapor. This process actually removes heat from the environment, which is why sweat evaporating from your body cools you off. Changing from a liquid to a gas, water then travels up through the atmosphere, eventually changing back into a liquid through another process in the water cycle.

A practical use of evaporation, other than the natural cooling effect it has on your body, is that people can use it to separate salt from salt water. Think about this - if evaporation takes water from liquid to gas form, what would happen to salt water? Better yet, what would happen to muddy water? The water would be changed into vapor, leaving only the salt or dirt. In fact, the salt on your table may just have come from large "evaporation ponds." People use evaporation ponds by, as the water is evaporated and the water level goes down, harvesting the salt from the shore.

Condensation:
So now that our water has evaporated up out of the puddle, lake, stream, etc., what happens to it? Does it just keep going up and up and into outer space? Well, if you've ever seen rain you know that it comes back down to us, but how does it turn back into liquid water? Condensation is the process by which the water vapor from our evaporation section becomes liquid again.

Picture a cloud. Even though they look fluffy and comfortable, they're really just made of condensed water vapor. It's true! If you are ever on a plane that goes through the

clouds, water (not fluffy stuff) will form on the windows. This is because clouds occur when water droplets combine with each other when they rise into cooler air high up in the atmosphere. On clear days, the rate of evaporation is the same as the rate of condensation, so no clouds form. Clouds only occur when the air is so cool that the rate of evaporation slows (just think of how slowly snow evaporates) and the rate of condensation remains the same. Only then do clouds form.

Precipitation

Since condensation is the reformation of water vapor, what makes that water fall back down to Earth? Even though clouds are made of condensed water, the droplets are so small they are less dense than the air beneath them, meaning they weigh too little to fall. These droplets are so small, in fact, that it takes millions of them just to form a drop of water which weighs enough to fall. When enough of these drops form, they all fall in the form of rain, snow, hail, and sleet. Even though precipitation requires a few complicated processes to occur, over 121 trillion gallons of precipitation falls every year.

Collection

Now that water has fallen, all it has to do is be evaporated again, right? Well, partly. Eventually, the water will evaporate again. In fact, if we just look at the puddles from earlier, the water collected there will evaporate rather quickly after the precipitation stops falling. But the keyword in the last sentence was collected. The water needs to be collected, even if only for a short time, before it can evaporate again.

Water is collected in a few different ways. The most obvious and direct way is when water falls into water. In this case, the precipitation becomes part of that water supply and will over the course of time become vapor again. Water can also fall to Earth and become part of the “ground water.” This type of water is used by plants and can also run over the earth and make its way to water sources.