

Parts of the Water Cycle



PRECIPITATION

Precipitation is a big word for “water that falls from the sky.” Can you think of examples? Rain is the only type of water that will **precipitate** down to the Amazon rainforest.

From where will rain precipitate? (*clouds!*) But where does the water in the **Clouds** come from? (*comes into the air from plants, animals, and bodies of water*)



CONDENSATION

The humid air of the rainforest is holding almost as much water as it can take. This water—not a liquid, but a gas—is called water vapor. Can you see water vapor? (*Not often, but you can feel it in the form of humidity, notice steam on the bathroom mirror, spot fog and clouds outside*) California air is “dry” because it is not often full of water vapor, but Amazon air is “wet” like the air in the bathroom after you shower.

So, our habitat near the **Amazon River** is very humid. But when you climb up a mountain, the air gets chillier, right? The **Air**, when moving around, brings water vapor high up into the sky where it is quite cold. The **Clouds** will remind us by occasionally shivering, and complaining of the chill.

You can make liquid water so cold that it turns to ice (*freezing*). Likewise, you can make water vapor so cold that it turns into liquid water (*condensation*). This is what occurs in the cloud layer. Water vapor **condenses** into liquid water.



UPTAKE

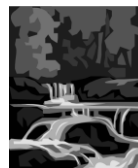
A raindrop’s fate will depend on where it lands. Some water might fall near the **Roots** of the great kapok trees that line the Amazon River. The roots **uptake** the drops for use by the plant. **Roots** are responsible for collecting drops that fall on the soil within their reach, and transporting them up the stem and to the leaves. Ever seen water flow up a paper towel, even when you only dip the corner in a spill?



TRANSPIRATION

Just as water spreads on a paper towel, water is pulled up to the leaves, where it is used in photosynthesis to make food using the energy from sunlight. The leaves also need carbon dioxide from the air. Plants take in carbon dioxide through small holes on the underside of their leaves.

In the rainforest, it also gets mighty warm sitting in the sun all day. What happens when we sit outside, and our body gets warm? (*Our skin sweats water out of its pores, which evaporates to become water vapor*). Likewise, plants lose water through small holes on the underside of their leaves. When plants need carbon dioxide from the air, they accidentally **transpire**, or lose water from these holes! The warm air outside captures this water in the form of vapor. **Kapok Tree Leaves** may fan their leaves as they capture air and lose water simultaneously.



RUNOFF

Although plants will catch a lot of the falling rain, some drops may land direct in the Amazon River, or fall on soil already soaked to the brim.

The **Amazon River** collects rain that falls nearby. This action will simulate **runoff**, the flow of rain over land to a river or stream. After collecting the drops, the water will flow until it reaches the **Atlantic Ocean**. This river flow starts in the high elevations of the Andes Mountains and ends at sea-level, so movement of water is always downhill.



ACCUMULATION & EVAPORATION

The water that runs down the river eventually reaches the **Atlantic Ocean**. Large bodies of water **accumulate**, or store up, water that will be recycled at a slower rate than that given off by transpiration.

Only water at the surface can be turned into water vapor, so the **Atlantic Ocean** may only **evaporate** sporadically using water drops at the water’s surface.

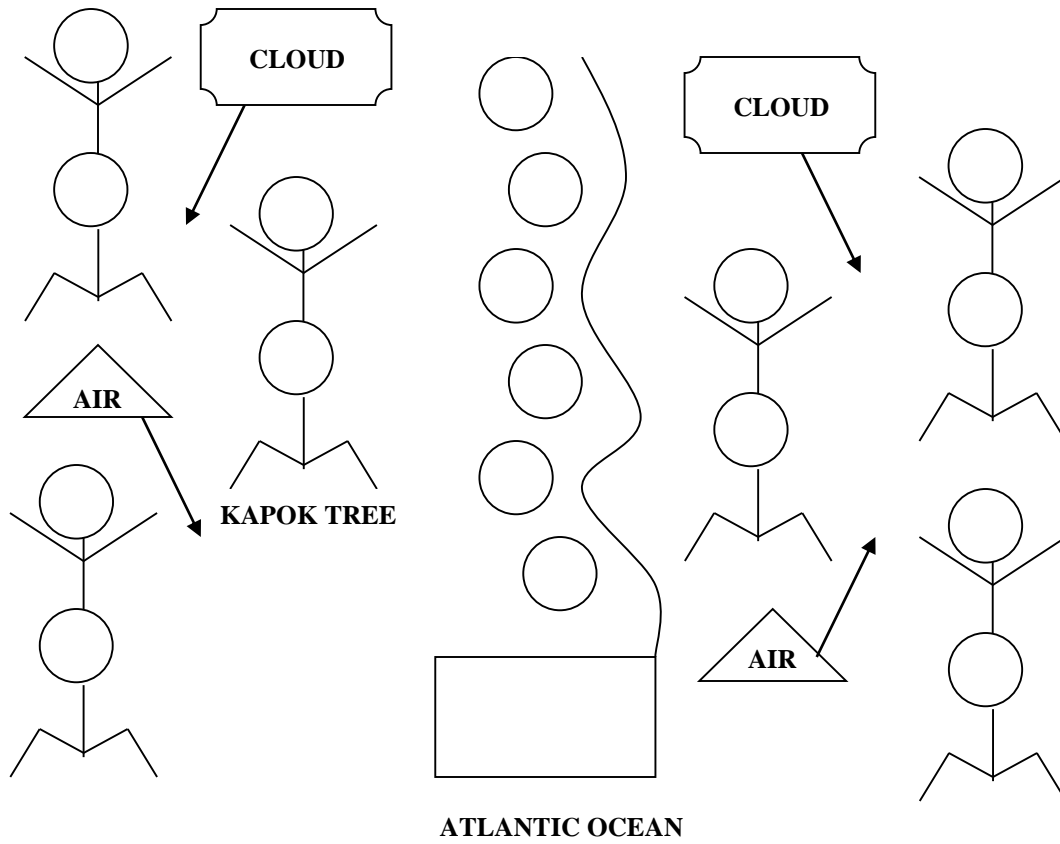


Table of Student Roles

NAME of ROLE (cycle process)	NO. of ACTORS	SCRIPT LINES	STAGE POSITION	PROPS or MOVEMENTS
CLOUDS (precipitation)	~2	It's cold up here! Pre-ci-pi-tate	Walks in a slow circle around the trees	High-fives <i>Air</i> when condensing; Drops rain throughout habitat
AIR (condensation, with clouds)	~2	I'll carry up that water. Condense!	Free to travel anywhere on stage to collect water vapor	Adds drops to "cloud bag" and high-fives to condense
ROOTS of the KAPOK TREE (uptake)	~6	My tree is thirsty! Aaah, water. Up you go!	Seated at <i>Leaves</i> feet, knees up to resemble roots	Pulls water from the soil and stretches the drops up to the leaves
LEAVES of the KAPOK TREE (transpiration)	~6	I need water and carbon dioxide to grow tall! Transpiiiire (long, quiet, refreshing)	Standing behind <i>Roots</i> with arms outstretched high	Takes water from the roots and transfers drops to <i>Air</i> passing by
AMAZON RIVER (runoff)	~6	Flow, flow, downhill	Seated in a row between the trees	Rocks back and forth, waves arms to mimic flow; Stretches to collect fallen drops, and pass down the line.
ATLANTIC OCEAN (accumulation and evaporation)	~2	Movement won't stop – I'll give a bit off the top! Evaporate! (sudden, and joyful)	Sitting cross-legged facing the <i>Amazon River</i>	Stores drops in "ocean bag"; May occasionally hold a few out for <i>Air</i> to collect