The Water Cycle
5th Grade

Natalie Anderson

Benchmark:

SLC 13: Students will identify organisms and pathways through which carbon, nitrogen and water are cycled.

Objectives:

Students will understand that the water on earth moves in a continuous cycle. They will be able to name and explain the stages of the water cycle.

Materials:

- Fisher Science Education CVS45140A Water Cycle Model
- 60-Watt light bulb
- Water
- Pitcher
- Salt
- Ice
- Towel

Initial Demonstration:

Three hours prior to the lesson, set up the water cycle model by adding salt water to the sea portion of the model. Then cover the base of the model with its clear plastic cover, making sure it is pushed down tightly against the base. Position the light above the ocean part of the model so it is at least 2 inches above the plastic cover (if it is too close it will melt the plastic cover!). Add and keep ice in the cloud portion of the model throughout the experiment. At the beginning of the class have small groups of students come up to the model and write down observations of the cycle.

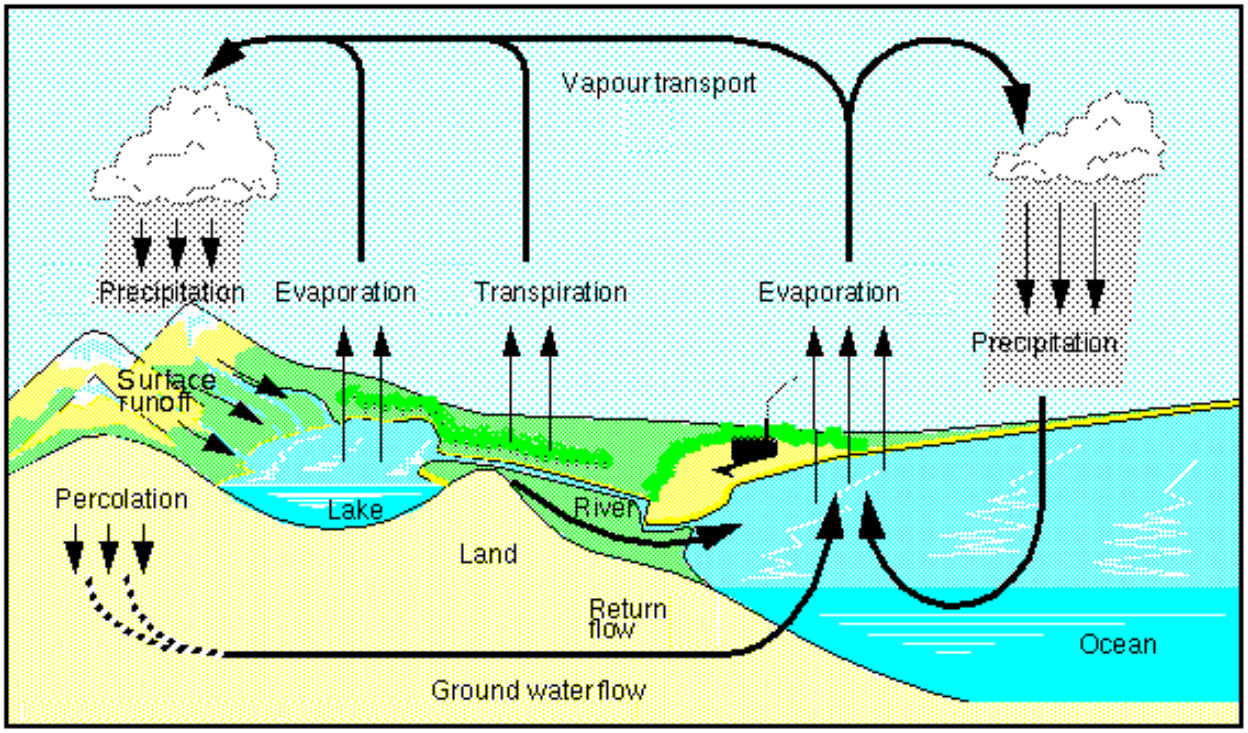
Target Observations:

- Water is evaporating from the "ocean" in the water cycle model as the hot light heats the water into a gas.
- Water is collecting in the "clouds" where the cold air/ice is
- When there is too much water on the "clouds," the water falls down to the "ground"
- The water that falls down collects in lakes and rivers and eventually goes back down to the ground.

Target Model:

-Water is evaporating from the ocean as the sun heats the liquid into a gas
-Water vapor (gas) condenses to form a liquid as it comes into contact with cool air
-Condensing water forms a cloud
-A saturated cloud begins to loose water through rain, which falls to earth and collects in streams, groundwater, lakes, etc.
-The water goes back to the ocean eventually through rivers and streams

-The amount of water on earth does not change with time, it just cycles from one part of the earth to another.



Courtesy Erich Roeckner, Max Planck Institute for Meteorology

Procedure:

- Introduce and define the words evaporation, condensation, transpiration, and precipitation. Make sure the class knows what they mean.
- Break the class up into pairs.
- Have each pair of student come up with a model of how water is able to cycle about the earth by drawing a picture and using the vocabulary terms.
- Once each pair has had sufficient time to discuss and draw/write, have each team come to the front of the room to present their ideas with the class.

Discussion/Summary:

- If there are differing opinions, have the teams justify how their model works using the "real" model at the front of the room.
- Discuss the models that correctly explain the water cycle. Point out each part on the "real" model.
- Ask why the water cycle is important to life on earth and what would happen if any of the steps were not present in the cycle.
- Where does water go after it rains?
- If I put a gallon of water in the water cycle model, how much water total will be there after 2 hours? Why?

Vocabulary:

Evaporation - the process by which liquid changes into vapor
Condensation - the process by which a gas or vapor changes to a liquid
Precipitation - any form of water that falls to the earth's surface (rain, snow, hail)
Transpiration - the emission of water vapor from the leaves of plants
Ground Water - water beneath the earth's surface that supplies wells and springs
Run-off - rainfall not absorbed by the soil

Target Revised Model:
-Water is evaporating from the ocean as the sun heats the liquid into a gas
-Water vapor (gas) condenses to form a liquid as it comes into contact with cool air
-Condensing water forms a cloud
-A saturated cloud begins to loose water through rain, which falls to earth and collects in streams, groundwater, lakes, etc.
-The water goes back to the ocean eventually through rivers and streams
-*The amount of water on earth does not change with time, it just cycles from one part of the earth to another*.