

## WHO IS IT FOR?

- ◆ Young Scientists . . .
- ◆ Evolving Mathematicians . . .
- ◆ Emerging Linguists . . .
- ◆ Sprouting Historians . . .
- ◆ Budding Artists . . .

**TARGETED LEVEL:**  
(Second Grade)

## THE CHALLENGE:

The students will . . .

- ⇒ be introduced to the water cycle.
- ⇒ Recognize the process of the water cycle.
- ⇒ Understand the importance of the water cycle.

## SAFETY ISSUES & CONCERNS:

- \* Students need to practice safety while working with the Water Cycle Simulator.

## WHAT'CHA NEED?

1. Computer lab and/or
2. Water Cycle Simulator

## TIME NEEDED FOR THE ADVENTURE:

Minimum of 45 minutes.



# The Wonder of Water



## Pre-Visit Activity

The hydrologic cycle, (hydro means water), is the process by which water is continually recycled. This cycle does not make water, it simply changes it from one form to another allowing it to be reused over and over again. It is a continuous process, so where the cycle ends is the very same place that it begins again! What this means is that the water that is in your glass today, or that you bathed with this morning, could be the same water that was used by ancient dinosaurs millions of years ago. It may have been a liquid, a solid or a gas but even then it was continually in motion and, to this day, continues to move all around the globe.

It is the sun's energy that powers this process. Energy in the form of light and heat cause water to evaporate (turning water from a liquid to a gas vapor) from oceans, rivers, lakes, ponds and even puddles. Warm air currents, which rise up from the Earth's surface, lift these vapors into the atmosphere. As the air currents reach the cooler layers of the atmosphere, the vapors condense (condensation) around and ultimately cling to fine particles of dust, pollen and even pollutants, in the air. When enough of the vapors have attached themselves to these tiny particles, clouds are formed. At this point, then, the vapors have returned to their previous state and have again formed a liquid. As the air continues to gain moisture, the droplets that have formed the clouds grow larger and larger. Eventually they will be too heavy to hold and the droplets will fall from the clouds as precipitation. This precipitation could be in the form of rain, sleet, snow or hail. The precipitation that is not immediately evaporated back into the air will fall onto the Earth's surface, adding to the surface water in ponds, streams, rivers, lakes, and oceans. Some of this water will also infiltrate the soil and become groundwater. Precipitation that is unable to infiltrate the Earth's surface will become runoff, which, in turn, will eventually drain into creeks, streams, and rivers. Plants also take part in this cycle through a process known as transpiration. Transpiration occurs when plants take in water through their roots and then release it again through their leaves. Often times, this last process will actually clean the water, removing contaminants and pollution, allowing it to be used again and again and again and again, hopefully without end.

Ground water is an important component of the water cycle. Half of the United States' clean drinking-water supply comes from ground water. Ground water is stored underground in sediments or rock layers called aquifers. Often ground water that is very near the surface will feed one body of water known as a wetland.

In this *Pre-Visit Activity*, the students will have the opportunity to interact with and investigate the water cycle.

## WORDS TO KNOW?

1. Hydrology
2. Hydrologic Cycle (water cycle)
3. Condensation
4. Precipitation
5. Infiltration
6. Runoff
7. Evapotranspiration
8. Ground Water
9. Atmosphere
10. Surface Water

## DID YOU KNOW?

Surface runoff is water from precipitation, melting snow or irrigation that runs off the land into surface water?

Both plants and animals respire?

Ground water is the water that lies within cracks and porous rock formations underground?

## EXTRA STUFF?

Related books/stories and on-line sources:

Alan S. Kesselheim, 1995, *Wow! The Wonders Of Wetlands*: St. Michaels, MD: Environmental Concerns Inc.

Michael J. Caduto, 1985, *Pond and Brook*. London: University Press of New England.

Boyd, Susan, Lynn Fuller and Reed Wulsin, 1984, *Groundwater: A Community Action Guide*. Washington, D.C.: Concern, Inc.

## TEKS

### CONNECTIONS:

Science TEKS - Second Grade:

2.10 (A) The student will describe and illustrate the water cycle.

2.10 (B) The student will identify uses of natural resources.

Denton ISD, Science S.P.O. – Second Grade:

S7.1 The student will describe and illustrate the water cycle and identify uses of natural resources.

## PROCEDURES:

*Ready, Set, Go . . .*

1. Experiment with evaporation, condensation and precipitation:

A. Allow the students to experiment with the water cycle by using a Water Cycle Simulator. A Water Cycle Simulator will allow the children to explore how the water cycle occurs in nature. With this model, students can see what actually causes rain to fall and evaporate and how a continuous water cycle is created.

OR

B. Take the students to the computer lab. Allow them to observe the animated Hydrologic Cycle produced by NASA:

[http://www.ghcc.msfc.nasa.gov/ghcc\\_home.html](http://www.ghcc.msfc.nasa.gov/ghcc_home.html)

## Assessment:

Teacher Observation

**The Bottom Line:** The students will learn about the water cycle and about the value of bodies of water as they relate to the water cycle.