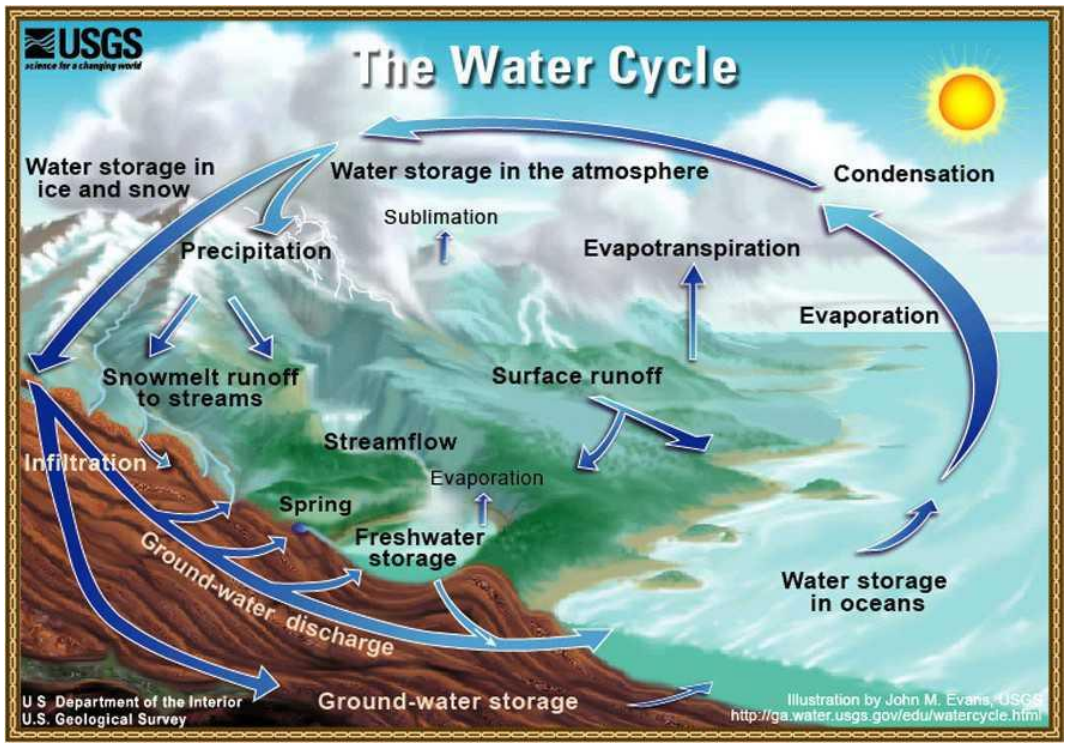
How the Water Cycle Impacts the Water Crisis

By now you are probably familiar with the water cycle and how water goes from precipitation through evaporation to condensation and back again. It all seems pretty straightforward, right?



Well, what happens when the water cycle breaks down or doesn't work quite so smoothly? For example, sometimes, water moves from precipitation to evaporation too quickly; or other times the precipitation sinks too deep into the ground and people need a little help getting to it. So how do people get the water they need when something goes wrong?

The Water Project tackles these types of situations all the time. Whatever the cause, we use our knowledge of the water cycle (and other sciences like geology!) to connect people to clean water in the best and most sustainable ways to improve their situations.

Let's take a closer look...

Precipitation

Precipitation refers to rain, sleet, snow and other forms of wet weather. In an eco-system where precipitation is consistent and the amounts are small, The Water Project might consider a rain catchment system to harvest rainwater and store it for people to use. For more information about our rain catchment projects you can go to: http://thewaterproject.org/rain_catchment.asp or if you want to see a real life example, click on: http://thewaterproject.org/nzatani.asp.

Percolation and Infiltration

Percolation and infiltration are the processes where water gets absorbed into the ground instead of going into a river. When the ground absorbs this water, the water goes down into aquifers to be stored. It is from these aquifers that wells pump out water.

It's not always so simple though; sometimes aquifers are close to the surface and wells can be dug by hand, but other times we have to drill several thousand feet deep in the ground. That's as tall as an upside down sky scraper like the Empire State Building.

Plus, if water stops being able to percolate and infiltrate the ground, then aquifers can dry up. This is often seen in a seasons of drought. When this happens wells no longer produce water and people have to travel to find a new water source. Sometimes a well can be worked on to extend it deeper to reach water, but this must be done with care, as extending wells may not always be sustainable. Our partners in the field work with trained geologists to ensure that such projects are in fact the best solution. To read more about how we repair wells in Sierra Leone click here: http://thewaterproject.org/wells_for_sierra_leone.asp or if you're interested in new wells, you can read more here: http://thewaterproject.org/digging-wells-in-africa-and-india-how-it-works.asp

Surface Run-off

Surface run-off means the precipitation that falls eventually ends up in rivers. Sometimes when rainwater is on its way to a river it can become contaminated or polluted with different things making it unsafe to drink; things like animal and human waste, chemicals from machinery, etc. This is why The Water Project takes such care to ensure that our projects include sanitation and hygiene training so that people learn how to avoid accidentally contaminating their water source with feces or other pollutants.

To read more about how we incorporate sanitation and hygiene training into our projects, click here: http://thewaterproject.org/water_project_detail.asp.

You may also want to have your students learn about the challenges of this type of work with our Hand Washing Hang Ups lesson found here: http://thewaterproject.org/resources/lesson-plans/hand-washing-hangups.php

Evaporation

Evaporation is the process where water moves from a liquid to a gas. This process can become a problem when it happens too fast, leaving areas without liquid water. Many of the climates in the developing world are much more arid (dry) than places in the developed world. This is especially true in parts of Africa where deserts are more prevalent. In fact, some parts of Kenya have whole riverbeds that are dry most of the year and only fill for a few days during very heavy rains. One clean water solution that is considered in these situations are weirs (also known as sand dams;); they trap the water flow in a river before it moves down river, creating pools and pockets of water trapped in sand that won't evaporate so quickly. By using this technology, people will have a reliable source of water from water they already had access to but which wasn't around all year. This solution can be used in place of having to drill a brand new well, or in addition to a new well. For more information on weirs you can look at http://thewaterproject.org/weir_sand_dam.asp or see a project in action at: http://thewaterproject.org/community/projects/kenya/asdf-sand-dam-project.

So What Are We Saying …

The Water Project doesn't "fix" the water cycle. We can't stop floods or make it rain in a drought. We can, however, use our partners' unique knowledge of their country's water challenges along with modern engineering to overcome situations where access to clean and safe water is limited by economic scarcity. You can join us in being part of the solution; consider inviting your class to join you in bringing clean water to those in need by taking the water challenge, http://thewaterproject.org/thewaterchallenge.asp, or starting another kind fundraiser http://thewaterproject.org/start-a-fundraiser.php. We can all do something, no matter how large or how small, to make a difference in the lives of those who suffer needlessly from a lack of clean water.