

The hydrological cycle essay

[Environment](#)



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The Water Cycle or Hydrological Cycle has to do with the Hydrosphere which consists of all the water on Earth (oceans, lakes, rivers, glaciers.) The Hydrosphere takes up 75% of the earth but only +- 1% of all the water on earth is actually participating in the cycle at any one time. The entire cycle is driven by the sun's energy. I will start with the evaporation process. To better understand this process I will look at the Kinetic Molecular Theory. This theory states that all molecules have energy.

Molecules gain kinetic energy through heat. The more heat, the faster the molecules move until they are moving so fast that the force between them breaks. This is what happens in the evaporation process, the liquid water is heated by the sun until the water's bonds break and water vapor is formed. The wind also speeds up this process. Condensation happens after evaporation. It happens when the water vapor from the evaporation process rises (since it is warmer than the surrounding air) and when it reaches a high altitude it cools and the water vapor condenses back into liquid water droplets. When there are enough water droplets in the atmosphere, clouds form. Precipitation comes next.

Precipitation happens when the collection of water droplets that make up the clouds become too heavy to stay up in the air and fall down to earth. When the conditions are very cold the water falls in the form of hail, sleet or snow. Once it has precipitated the water collects in lakes and rivers and makes its way back to the ocean. Runoff is when water returns to the ocean underground. From here the cycle starts all over again. The increases in CO₂ emissions have had multiple detrimental effects.

As the CO₂ keeps more heat from escaping from the earth the oceans begin warming up. This has an especially bad impact on the glaciers in the North and South Poles. Usually the glaciers would act like giant mirrors and reflect most of the heat, but when the water surrounding the glaciers begins to warm the glaciers begin to melt.

As more glaciers melt, more heat is absorbed by the ocean and this effect speeds up. The glaciers in the Himalayas feed rivers and springs which give 40% of all people on earth their drinking water. Soon there will be a shortage of water for these people. Ocean temperature also plays a major part in ocean currents. These currents depend on the cooling, heating and evaporation of ocean water and when these aspects are disrupted we are in danger of having these currents stop.

CO₂ emissions can also create acid rain. This happens when the moisture in the air mixes with fumes and chemicals let off by industries and other sources and precipitates. This water gets into the water cycle and ends up destroying animals and plants. It also makes water undrinkable for us humans. We have been seeing more and more frequent natural disasters, especially storms.

This is because the warmer the oceans, the stronger the storms. A few examples of these are Typhoon Nida in 2004 in the Philippines which reached 260 km/h and caused 31 fatalities and \$3. 1 million in damage, hurricane Ivan which also happened in 2004, reached category 5 (strongest category,) hit Grenada, Jamaica, Grand Cayman, and the western tip of Cuba and spawned 117 tornadoes. Ivan caused \$18 billion worth of damage.

Hurricane Jeanne was the deadliest hurricane in the huge amount of hurricanes in 2004.

Jeanne is blamed for at least 3, 006 deaths in Haiti, 2, 800 in Gonaives alone, which was nearly washed away by floods and mudslides. The storm also caused 7 deaths in Puerto Rico, 18 in the Dominican Republic and at least 4 in Florida, bringing the total number of deaths to at least 3, 025 and causing damage up to \$6. 8 billion in the US alone. All of these are linked to the rise in temperature of the ocean.

Five solutions we can implement to slow this impact on the water cycle are:•
More efficient electrical appliances• Higher mileage cars• Other transport efficiency• Renewable technology• Carbon capture sequestration