Name_____

Water Cycle Study Guide

Introduction

The water cycle refers to the movement of water above, on or below the earth's surface. Almost all the water on the earth has passed through the water cycle countless times. The water cycle consists of at least five stages: storage, evaporation, condensation, precipitation and runoff.

Storage

There is enough water on the earth (1.4 billion cu km) to cover the United States with water 92 miles (147 km) deep. Approximately 97% of this water is salty ocean water. However, when water evaporates from the earth it is free of salt. Fresh water, or salt free water, is stored in glaciers, lakes, rivers and as groundwater. Groundwater is found in spaces that exist between soil and rocks. The water table is the area in which all the spaces in a layer of rock and soil are filled.

Evaporation and Condensation

During evaporation, water changes to vapor and rises into the atmosphere as a gas. If evaporation did not replenish the atmosphere with moisture, the atmosphere would dry out in ten days. Water evaporation rates can increase due to temperature and sunlight intensity. When evaporated water cools it turns back into liquid water droplets. This is called condensation.

Precipitation

Precipitation occurs when evaporated water changes into ice crystals, which grow large and heavy enough to fall toward the earth's surface. Almost two-thirds of precipitation reevaporates into the atmosphere. The rest flows into rivers and oceans and will reevaporate later. Types of precipitation include rain, snow, ice pellets (sleet) and hail.

Types of Precipitation

Rain: Most raindrops begin as ice crystals (inside of clouds) before becoming snowflakes. As snowflakes fall towards the earth's surface, they enter layers of warm air and melt.
Snow: During cold weather, ice crystals and snowflakes do not melt before hitting the ground. A snowflake is formed when small ice crystals collide and stick to one another.
Ice pellets/sleet: Ice pellets are formed when rain falls into a cold layer of air near the ground and freezes.
Hail: Hail forms when ice crystals are suspended in violent layers of cool air during a thunderstorm. When these ice particles become large and heavy, they begin to fall as hailstones.

Runoff

Runoff is water (from rain and melted snow) that flows into streams and rivers. Stream and river water come from the water above and beneath the earth's surface. River and stream levels rise during and after periods of heavy rain or rapid snow and ice melting. Groundwater flows into rivers and streams through rocks and soil. When groundwater reaches streams and rivers, it supplies a water flow that changes very little from one day to another. During a long drought, however, the water table can be so low that streams and rivers will dry out.