

Key Concept Summaries

Water in the Atmosphere

How Does Water Move Through the Atmosphere?

The sun drives the movement of water through Earth's systems; this movement is called the **water cycle**. In the water cycle, water vapor enters the atmosphere by evaporation from the oceans and other bodies of water and leaves by condensation. Liquid water from lakes and puddles undergoes **evaporation**—that is, molecules of liquid water escape into the air after becoming water vapor.

Condensation is the reverse of evaporation; it is the process by which water vapor becomes liquid water. In the water cycle, precipitation falls to Earth where it runs off the surface or moves through the ground, flowing into lakes, streams, and the oceans. Water from these bodies of water evaporates, rises into the atmosphere, condenses into clouds. And the process starts all over again.

What Is Relative Humidity and How Is It Measured?

Humidity is a measure of the amount of water vapor in the air. The ability of air to hold water vapor depends on the air's temperature. Warm air can hold more water vapor than cool air. **Relative humidity** is the percentage of water vapor in the air as compared to the maximum amount of water vapor the air can hold at a particular temperature. For example, at 10°C, 1 cubic meter of air can hold at most 8 grams of water vapor. If the air had 4 grams of water vapor, the relative humidity would be 50 percent.

Relative humidity can be measured with an instrument called a psychrometer. A **psychrometer** has two thermometers, a wet-bulb thermometer, which is covered by a moist cloth, and a dry-bulb thermometer. When the psychrometer is "slung," or spun, air blows over both thermometers. Because the wet-bulb thermometer is cooled by evaporation, its reading drops. The relative humidity can be found by comparing the temperatures of the wet-bulb and dry-bulb thermometers.

On a separate sheet of paper, describe the water cycle.

