

The Water Cycle

Water on Earth is always changing! These changes happen because heat energy from the Sun affects the movements of water molecules. This heat energy causes molecules of liquid water from puddles, ponds, lakes, oceans, plants, trees, and even your skin to change state and evaporate into the air as molecules of water vapor. As these invisible water-vapor molecules move rapidly through the air, they're always ready to condense if they lose heat energy—like on a cool blade of grass in the early morning before the Sun warms it.



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These water-vapor molecules might also end up in the cooler air high in the sky. Massive clouds form when these molecules lose energy, slow down, and join together to form drops of liquid water on dust particles in the air. This is called *condensation*. Then, and only then, can water molecules in the liquid state fall from the sky as rain (or snow if it's cold enough). This is called *precipitation*.



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In some places during the winter, water molecules lose so much heat energy and slow down so much that they simply vibrate in place and form a solid-ice structure!



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Water moves all around Earth and its atmosphere. Water moves in a *cycle*, but not in a *circle*. Instead, it moves in all directions as it constantly changes back and forth from liquid to solid, from liquid to gas, from solid to liquid, and from gas to liquid. You never know where the molecules in a drop of liquid water are going to end up! Will they end up in an iceberg in Antarctica? Will they end up condensing to form clouds high in the sky above our school? Or will they end up floating around as water vapor in our classroom?

We don't know exactly where water molecules will go, but we do know that heat energy from the Sun will always keep them changing states and moving around as they gain and lose energy. The Sun provides the energy that powers the water cycle!