

WATER CYCLE THEORY: SYSTEMIC OVERVIEW

Evaporation

Solar energy breaks molecular bonds in liquid water, transitioning it into water vapor. Primary source: Oceans (approx. 86%).

Transpiration

The biological release of water vapor from plant stomata into the atmosphere. Essential for terrestrial humidity regulation.

Condensation

Thermal energy loss causes vapor to revert to liquid or ice. This process forms clouds and releases latent heat into the atmosphere.

Precipitation

Atmospheric moisture falls under gravity. Forms include rain, snow, sleet, and hail depending on vertical temperature profiles.

Infiltration

The downward movement of water through soil and rock layers to replenish groundwater aquifers and maintain soil moisture.

Surface Runoff

Flow of excess water over land surfaces toward stream channels, lakes, and oceans when soil reaches saturation capacity.

***The Driver:** This closed system is powered by solar radiation (heat) and gravitational force, ensuring the continuous mass transfer of water between the lithosphere, hydrosphere, and atmosphere.*