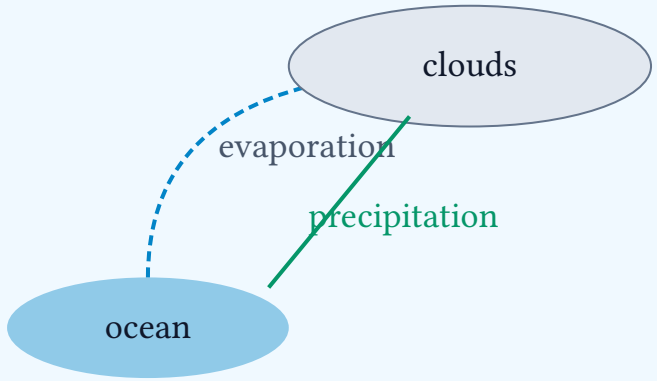
Science 10

Unit D: Energy flow in global systems

Hydrologic cycle and climate

Evaporation and condensation

- Evaporation requires energy and can cool the remaining liquid or surface.
- Condensation transfers energy to the surrounding air as water vapour becomes liquid.



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Phase changes move energy

- A phase change moves energy as well as water.
- Evaporation takes energy from the surface. Condensation releases energy to the surrounding air.
- Name the phase and the direction of the arrow before you talk about the climate effect.

Key terms

evaporation

Change from liquid to gas at a surface.

condensation

Change from gas to liquid.

precipitation

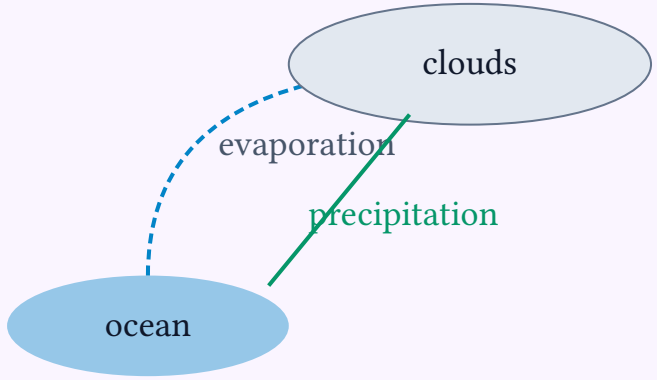
Water that falls from the atmosphere as rain, snow, sleet, or hail.

latent energy transfer

Energy absorbed or released during a phase change without temperature change during the transition.

Hydrologic cycle

- Sunlight evaporates water from oceans, soil, and organisms.
- Vapour travels, then returns as rain or snow.
- Rivers, groundwater, ice, and oceans hold water for very different lengths of time.
- Each change of state moves energy as well as water.



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Climate link

- Evaporation cools the surface that lost the water.
- Condensation warms the air around the new droplets.
- Vapour can travel a long way before that energy is released.
- The water molecules are matter. The warming and cooling are energy transfer.



Water and energy arrows

- Label a water-cycle diagram with matter movement and energy absorbed or released.
- A complete answer names the phases, points the arrows, and shows energy absorbed at evaporation and released at condensation.

Image credits

Tomascastelazo, Large cloud over Mexican landscape, CC BY-SA 4.0