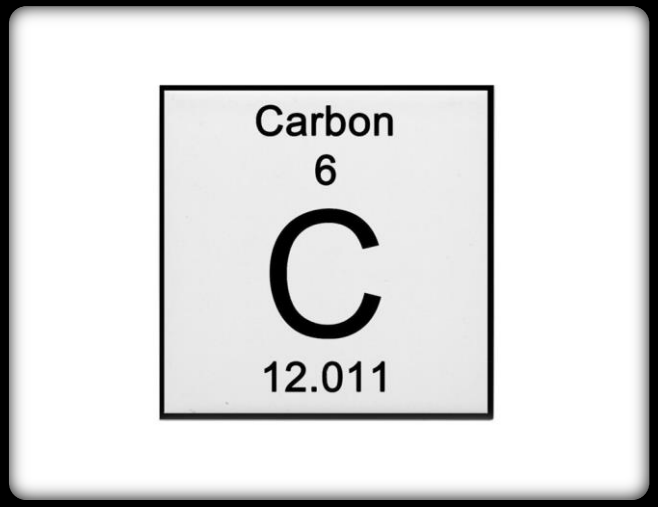
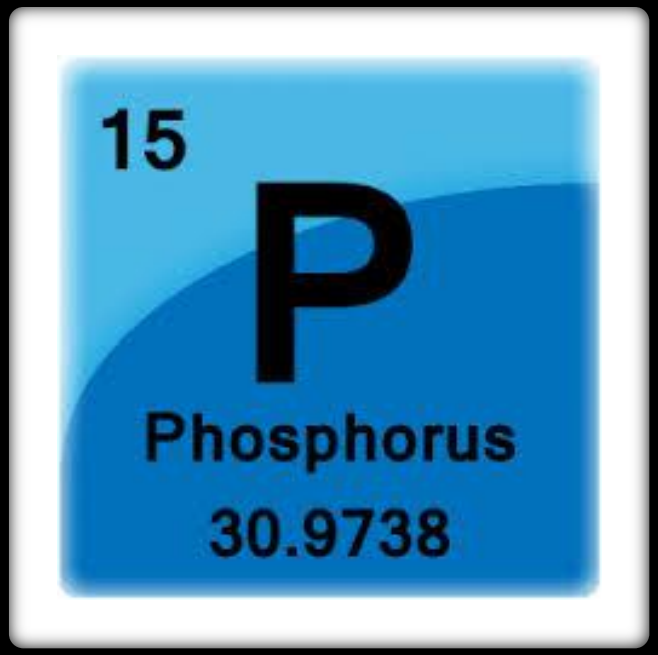
QUESTION OF THE DAY

Is water wet?





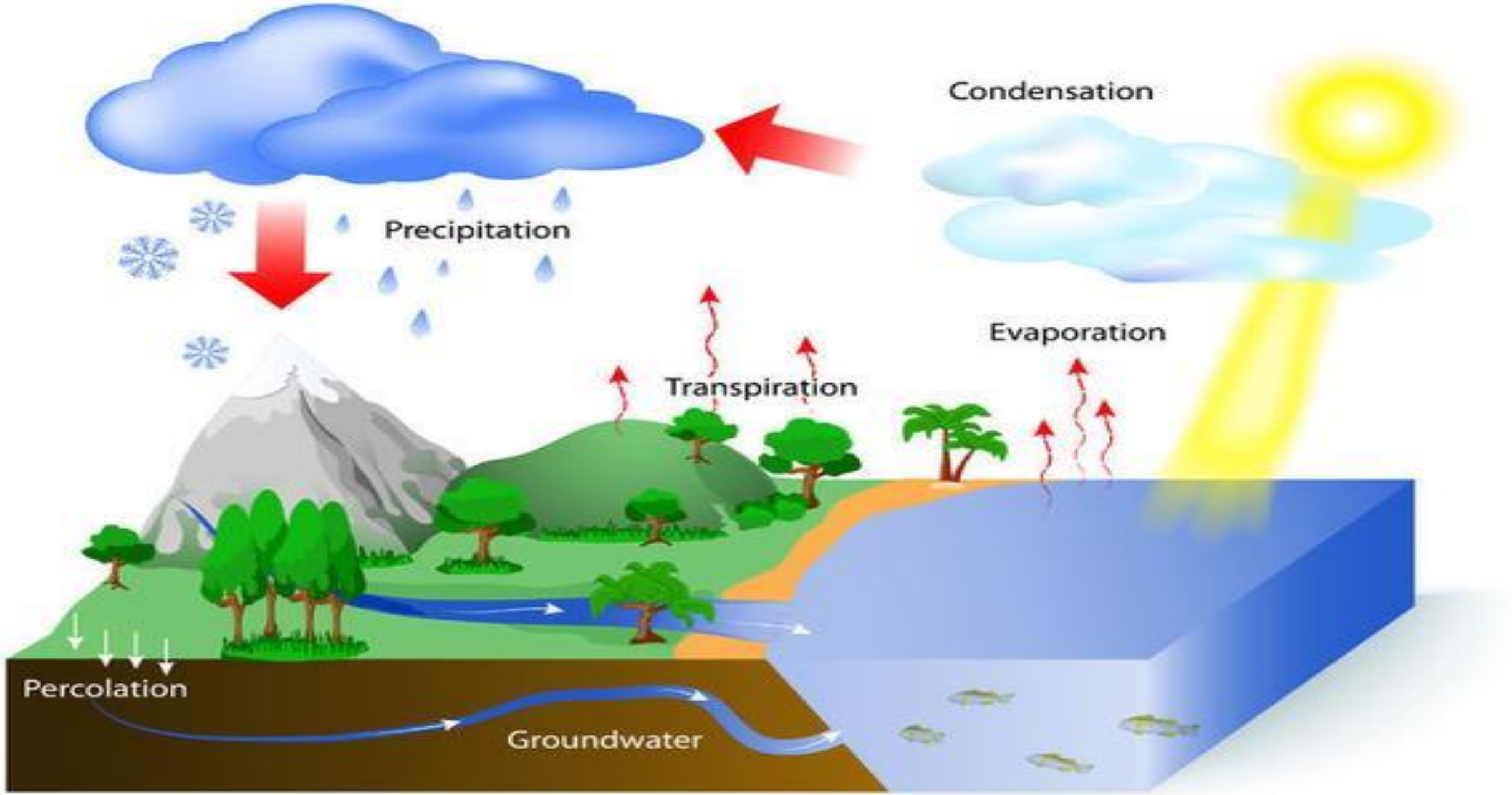
THE CYCLING OF MATTER

INTRODUCTION

- Organisms need water, minerals, and other compounds too
- Matter is recycled within and between the ecosystems
- Biological systems do not use up matter, they transform it:
  - Assembled into living tissue
  - Passed out of the body as waste products

THE WATER CYCLE

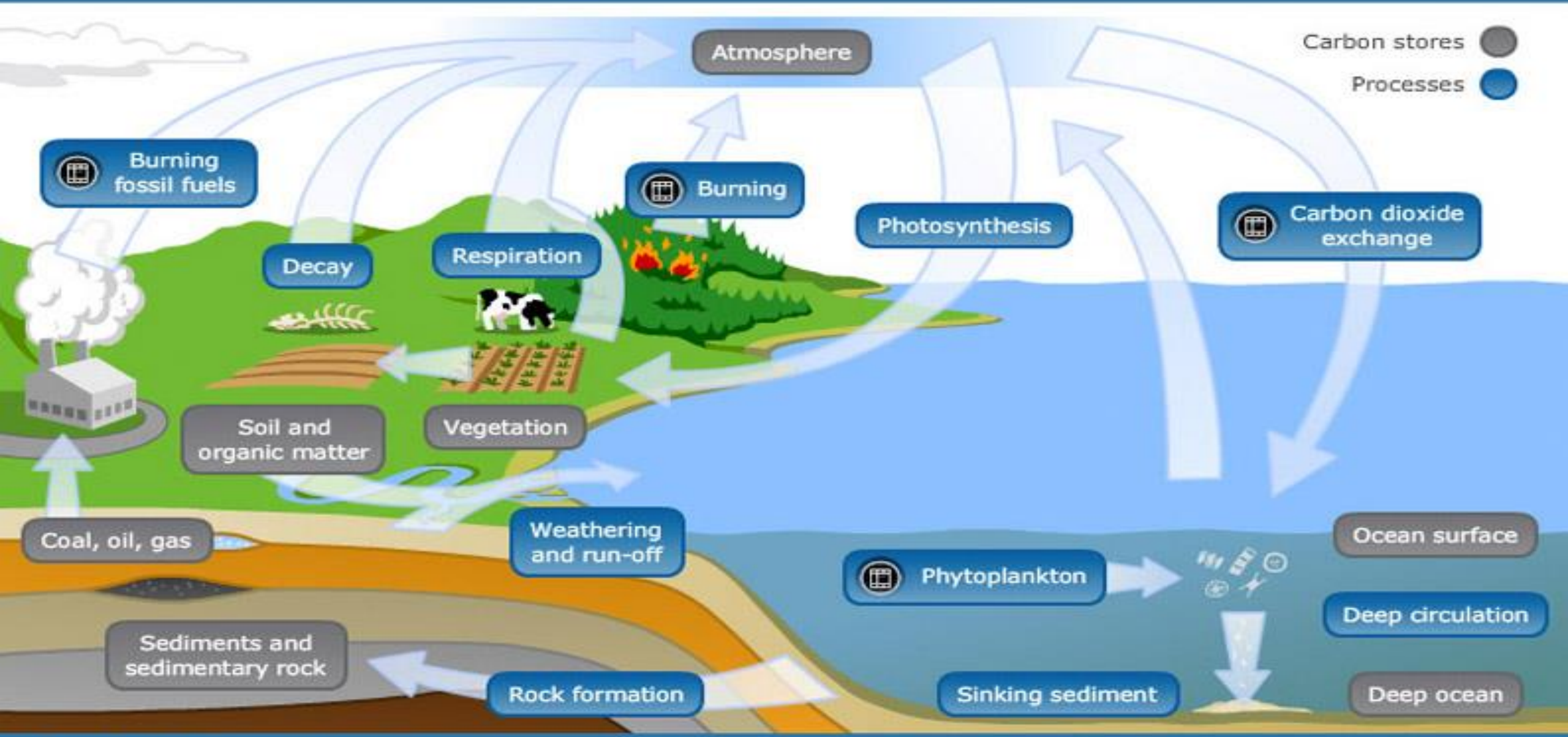
- All living things require water
- Water moves between the ocean, atmosphere, land, and organisms.
  - The water we drink may have once been elephant urine
- The steps of the water cycle include…
  - Evaporation
  - Transpiration
  - Condensation
  - Precipitation


Condensation
Precipitation
Evaporation
Transpiration
Percolation
Groundwater

THE CARBON CYCLE

- Carbon is an essential component of proteins, fats and carbohydrates.
- A process by which carbon is cycled between the atmosphere, land, water, and organisms.
- Short term cycles
  - Producers take in carbon dioxide for photosynthesis
  - When consumers eat producers, they absorb that carbon and release it during cellular respiration when exhaling
- Long term cycles (Carbon Sink)
  - Stored as carbonate in limestone
  - Stored in organisms as energy storage molecules such as fats and oils
  - Stored as fossil fuels
  - Oceans

CARBON CYCLE



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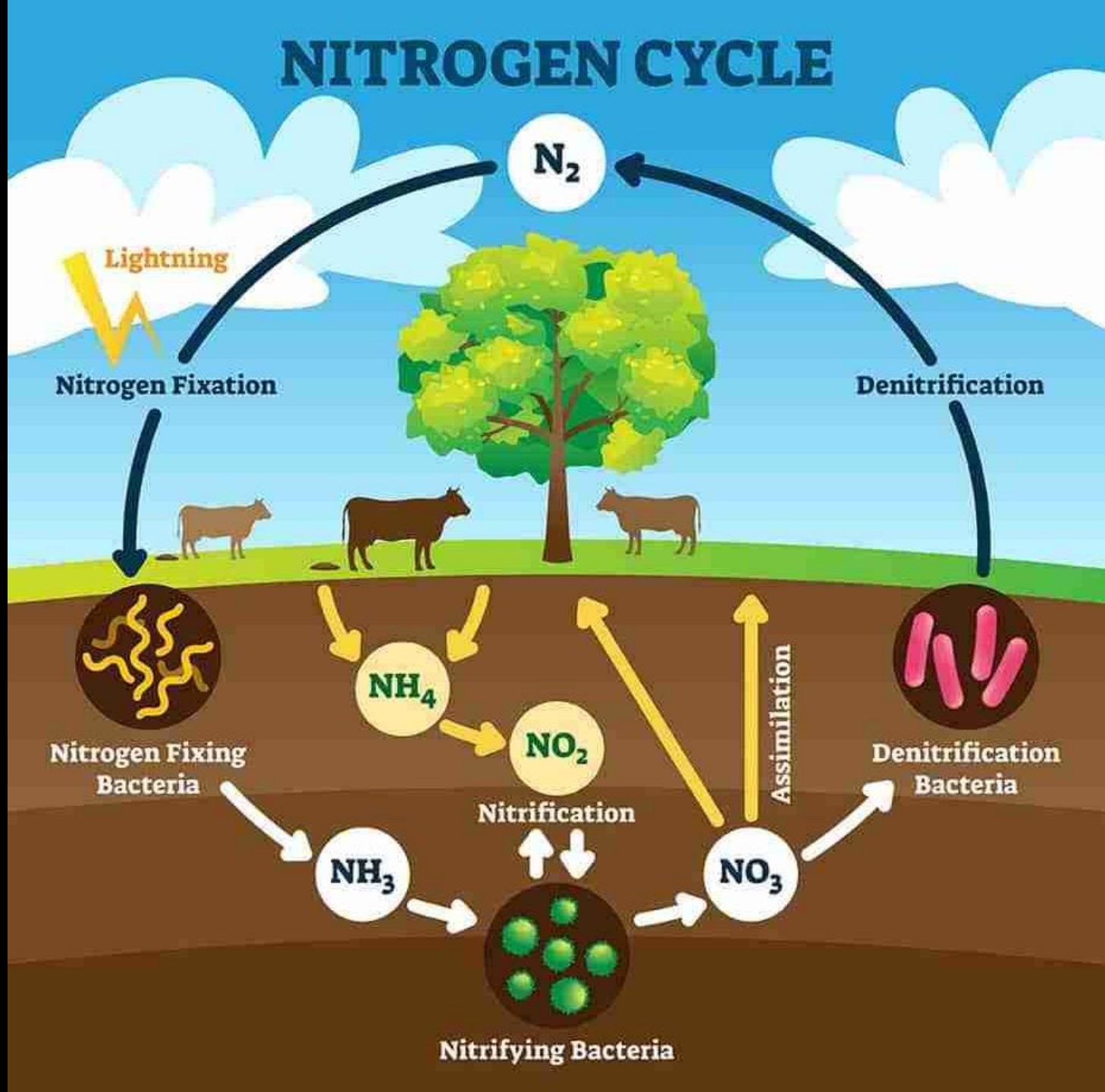
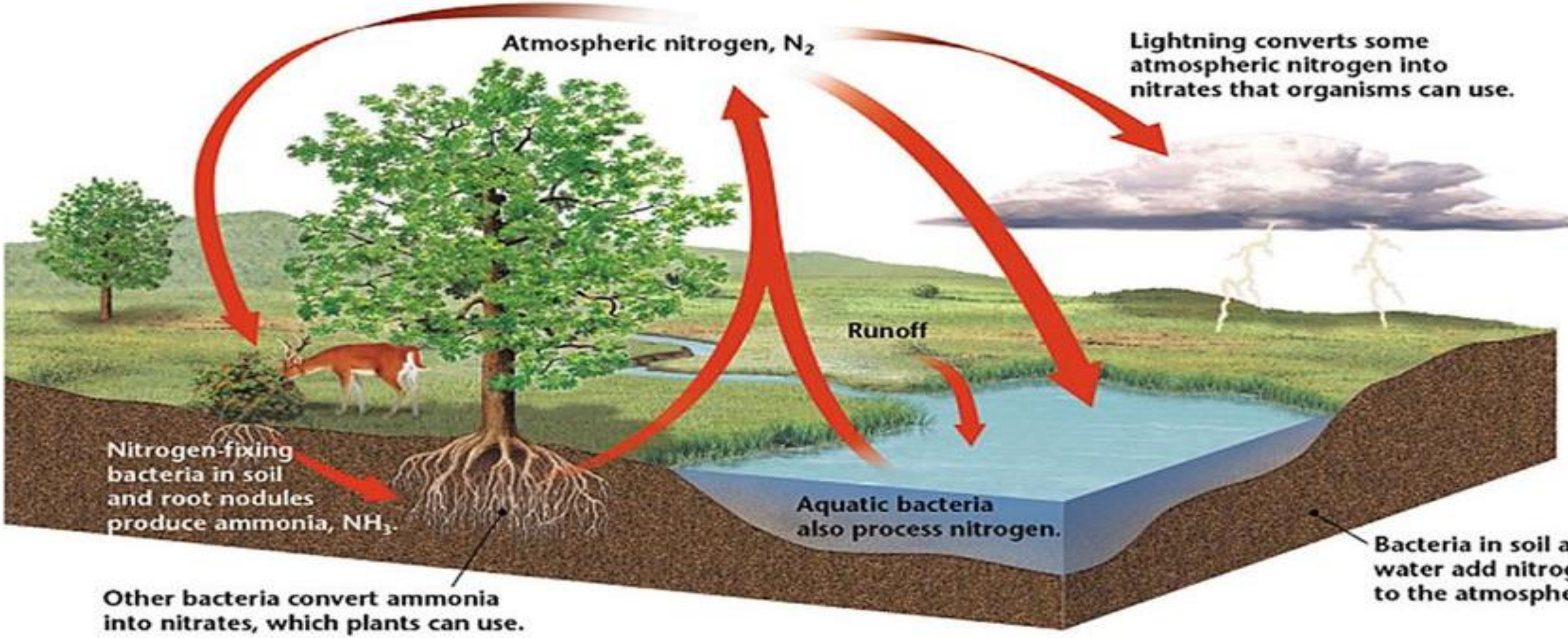
NITROGEN CYCLE AND NITROGEN FIXATION

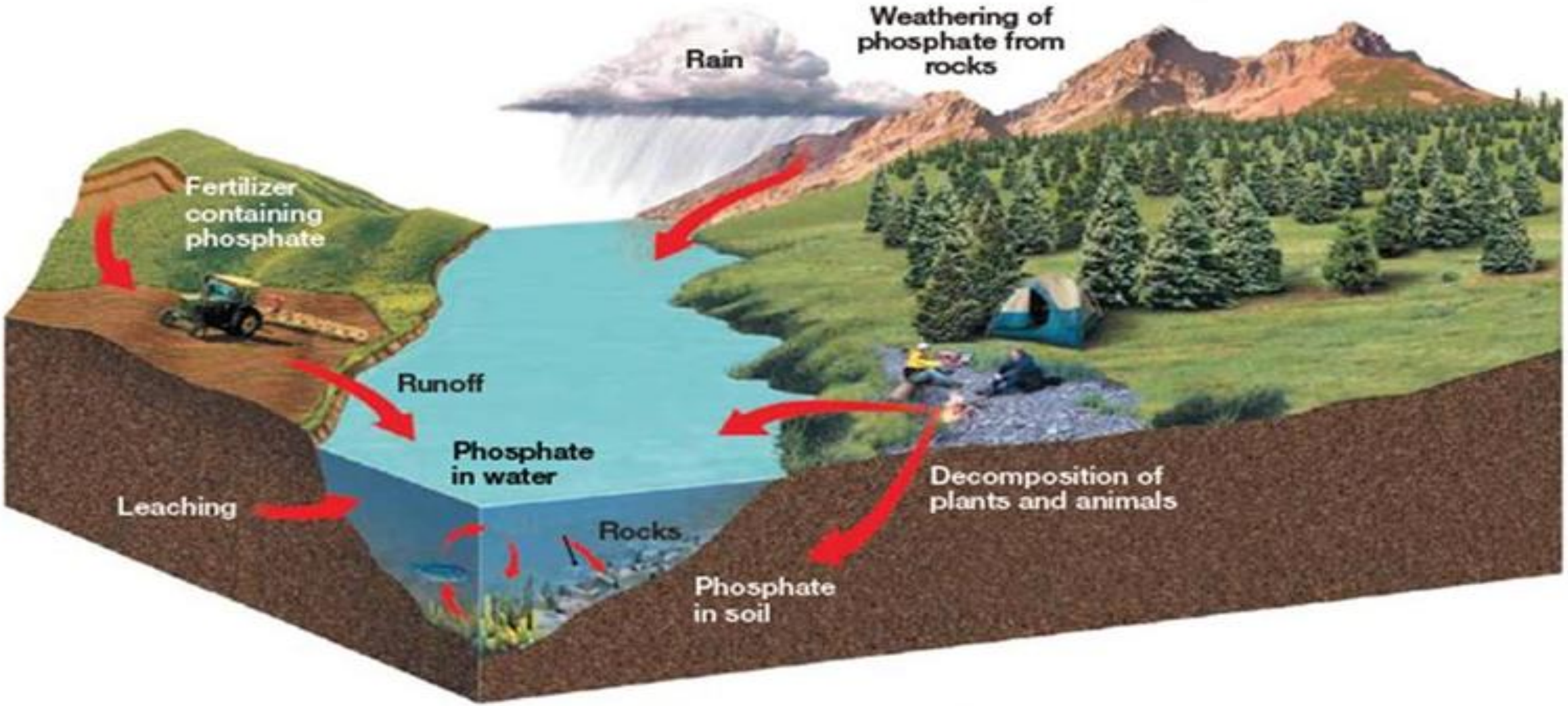
- All organisms need nitrogen to build proteins
- Nitrogen makes up 78% of the atmosphere, but most organisms cannot use atmospheric nitrogen (N_2)
- Nitrogen fixing bacteria are capable of converting atmospheric nitrogen (N2) into ammonia (NH_3).
- Other bacteria convert the ammonia (NH3) into nitrates (NO_3^-), which plants can use.
- Denitrification- the process when other bacteria convert nitrates into nitrogen gas



The Nitrogen Cycle



THE PHOSPHORUS CYCLE

- Phosphorus is essential to living organisms because it forms part of DNA and RNA
- Phosphorus moves through soil, water, and organisms.
  - This cycle does not include the atmosphere because phosphorus rarely occurs as a gas
- Phosphorus is released when rocks erode

The Phosphorus Cycle