Do Now

What happens to the extra nutrients you excrete?

Objectives

SWBAT explain why it is important for nutrients to cycle

by applying their knowledge of cycles

Nutrients Cycle

10/1/10

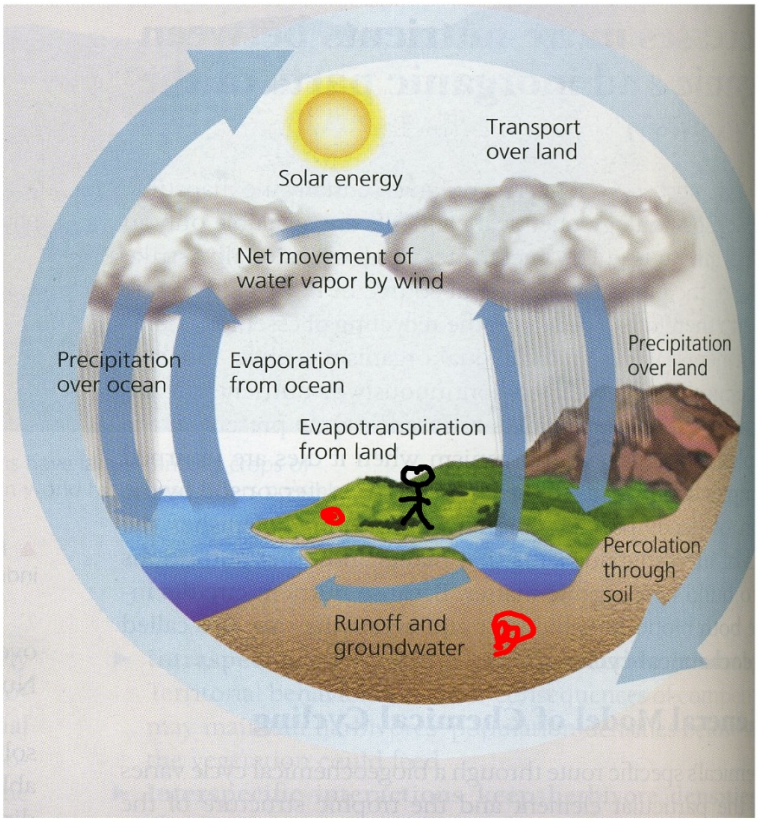
Cycles in Nature

The Water Cycle

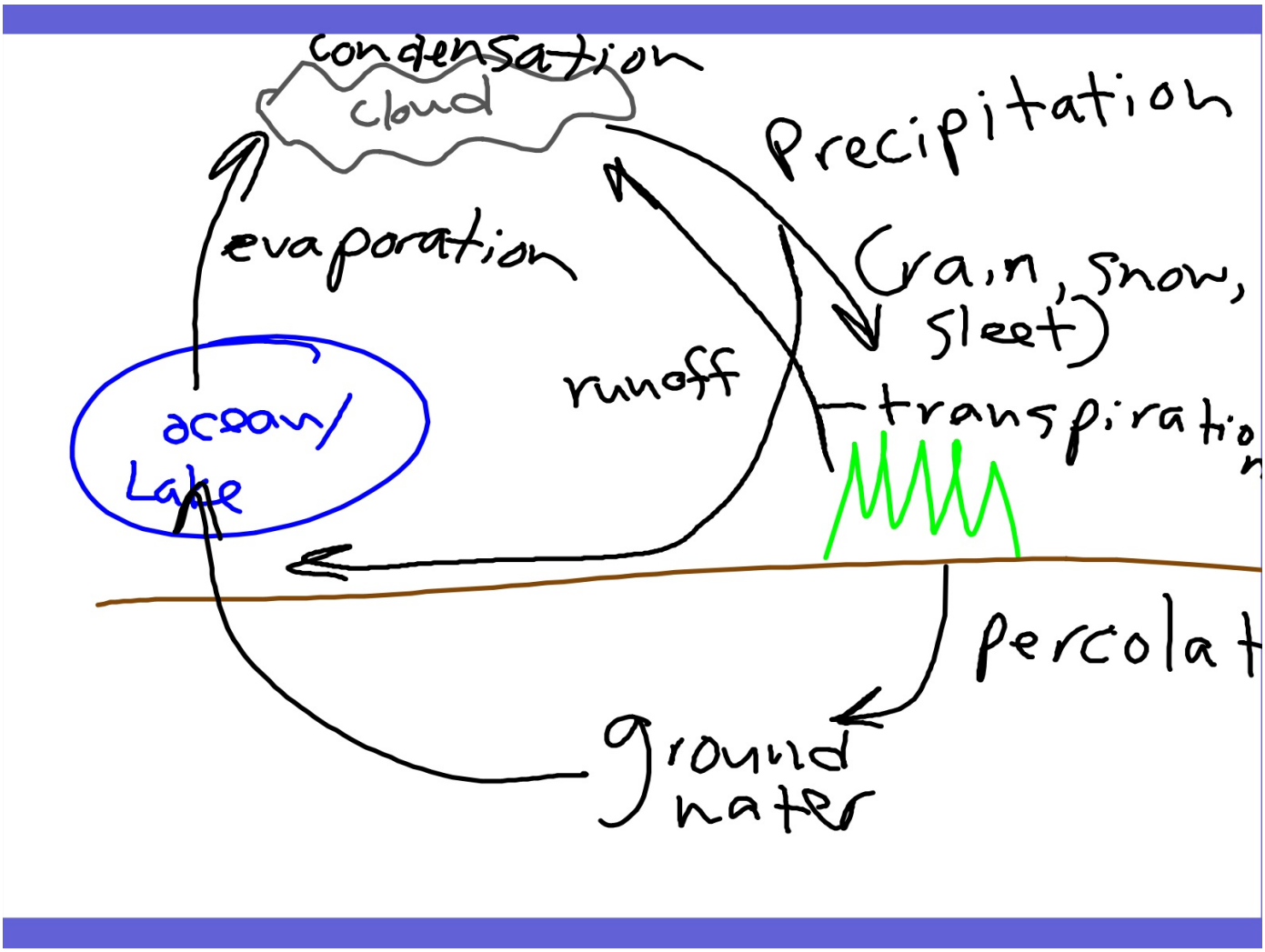
-life on Earth depends on water

-there are three processes that drive the cycle

1. **Evaporation**: (turning from liquid into vapor)
2. **Condensation**: (turning from vapor to liquid)
3. **Transpiration**: (water evaporating from plants into the air)



Think/Turn/Talk Where would we label "Condensation" in the above diagram?

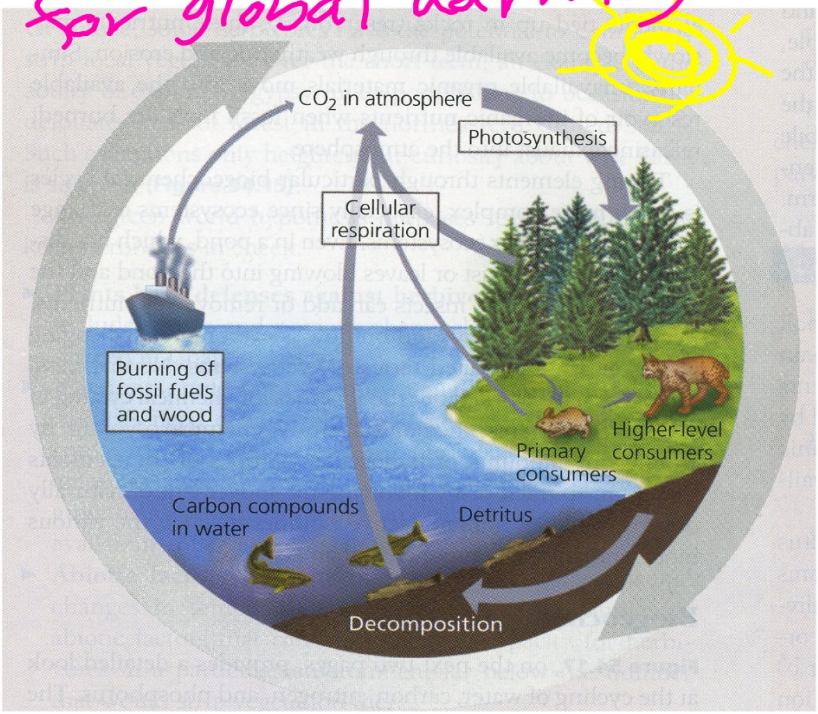

condensation
cloud
Precipitation
evaporation
(rain, snow,
sleet)
runoff
transpiration
ocean/
Lake
percolat
ground
water

Cycles in Nature

CO_2 is responsible for global warming

The Carbon Cycle

-all life on Earth is based on carbon
-carbon forms the framework for proteins, carbohydrates and lipids
-carbon cycle starts with autotrophs
-autotrophs turn sunlight into glucose ($C_6H_{12}O_6$)…a carbon based molecule
-heterotrophs eat the plants and release CO_2 back into the atmosphere



Cycles in Nature

The Nitrogen Cycle

-plants need nitrogen to survive

-nitrogen is one of the main ingredients in fertilizers

-plants can only use the type of Nitrogen found in soil NH_4^+

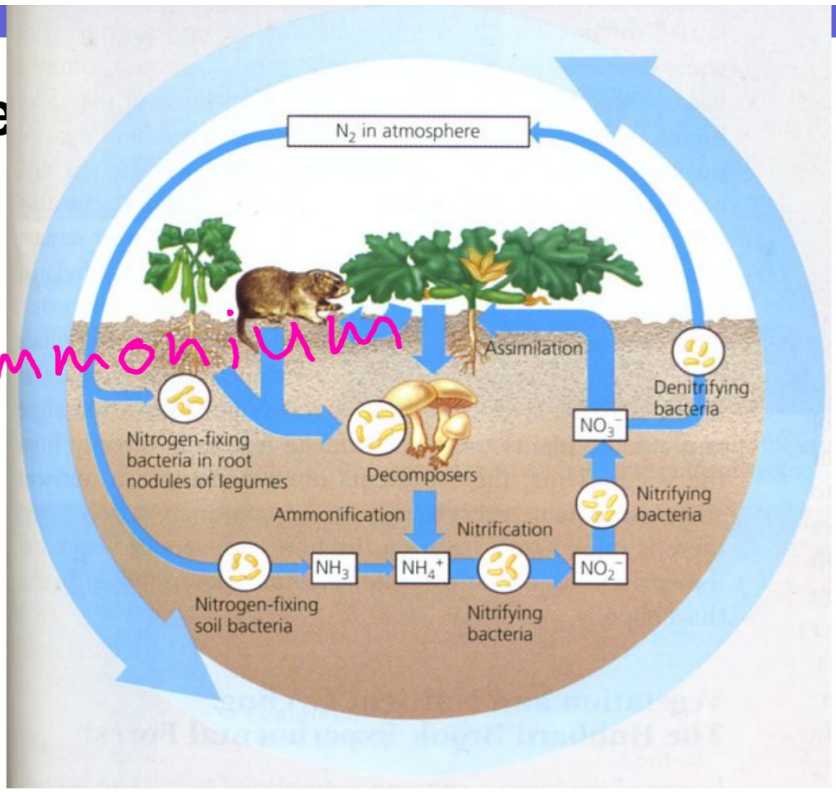
-almost all of the nitrogen that is in the soil got there because of different bacteria's in the soil

-only a tiny amount of nitrogen in the soil is from lightning

-these bacteria are able to take the N_2 from the air and turn it into NH_4^+ (ammonium) and then grow

-Animals need Nitrogen too

-Animals release excess nitrogen in urine



Ammonium

Think/Turn/Talk Imagine you have a veggie garden with two tomato plants. One plant always get's peed on by a dog. The second plant never gets any urine on it. Which will grow faster? Why?

Cycles in Nature

The Phosphorus Cycle

-plants also need phosphorus to survive

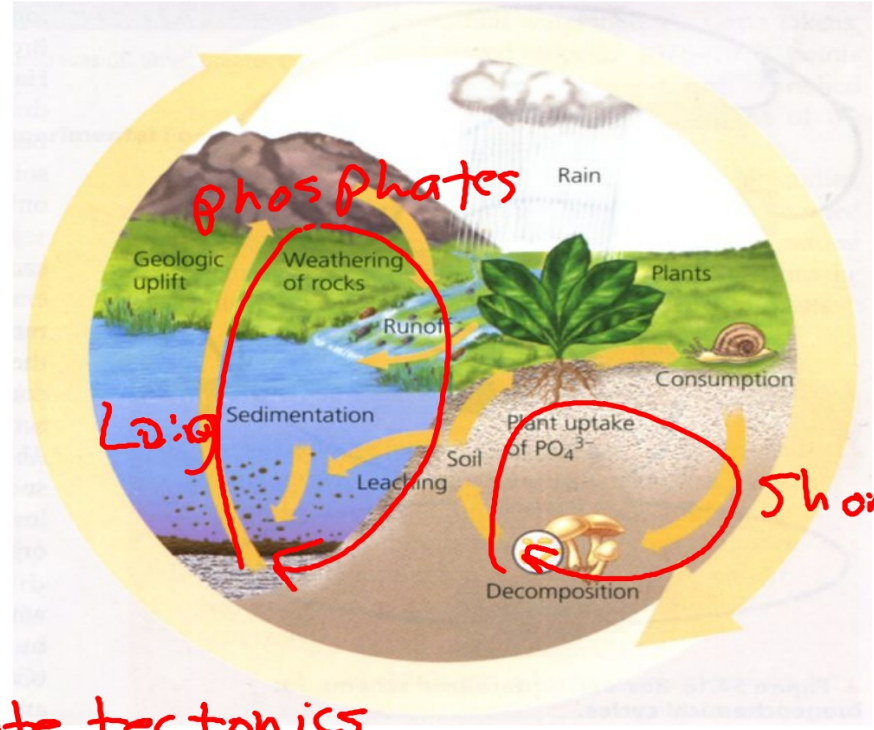
-phosphorus cycles in two ways

1. Short Term Cycle
-plants obtain phosphorus from the soil
-animals obtain phosphorus by eating plants (all plants contain phosphorus)
-plants/animals die…plants/animals decompose…phosphorus goes back into the soil

2. Long Term Cycle
-rocks containing phosphates are weathered (worn down over millions of years) and turned into sediment (sand)

-the sediment builds up at the bottom of the ocean/lake and turns into rock

-eventually, the environment will change, and the rock at the bottom of the water will become exposed to air…the process will begin again



Think/Turn/Talk If you live in a very hot dry area, which phosphorus cycle would be most affected?
-if the ecosystem above suddenly had no decomposers, what would happen?