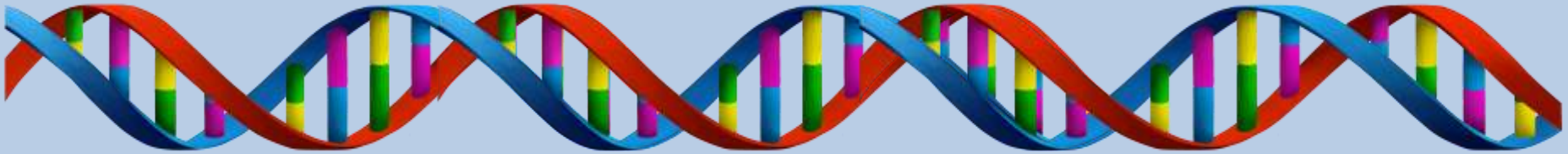
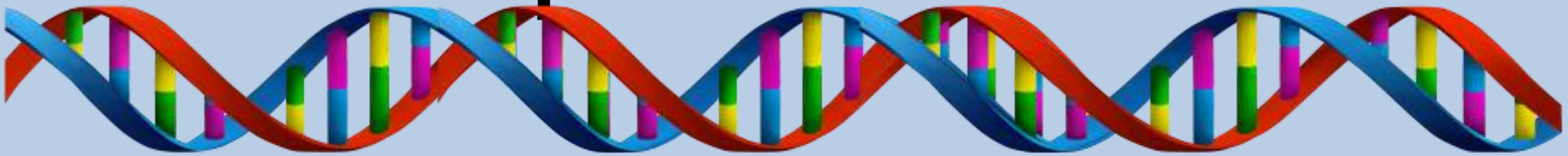
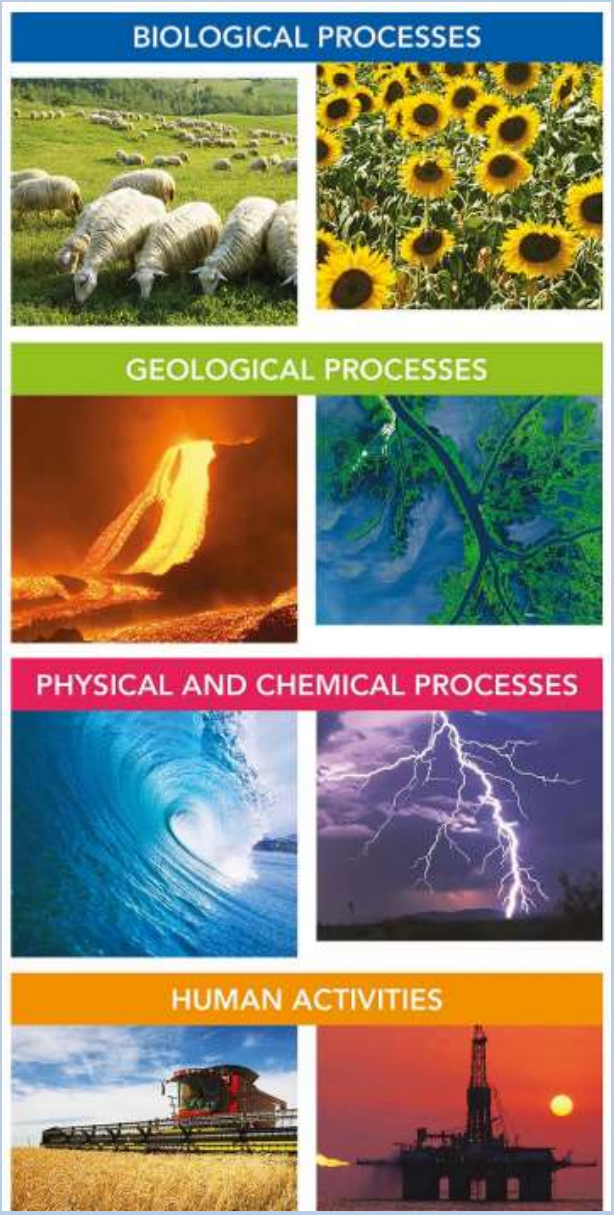


1. What sphere(s) does the water cycle pass through?
2. How is CO_2 removed from the atmosphere?
3. What is a biological process compared to a physical or chemical process?



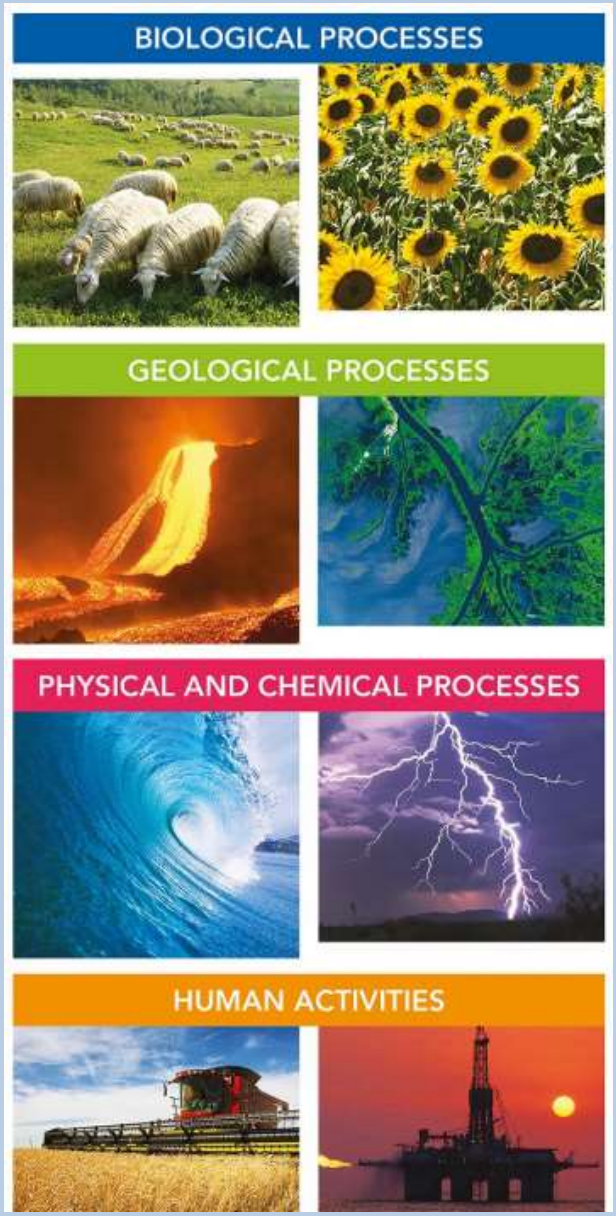
Matter Flow in Ecosystems

- **Biogeochemical cycles**



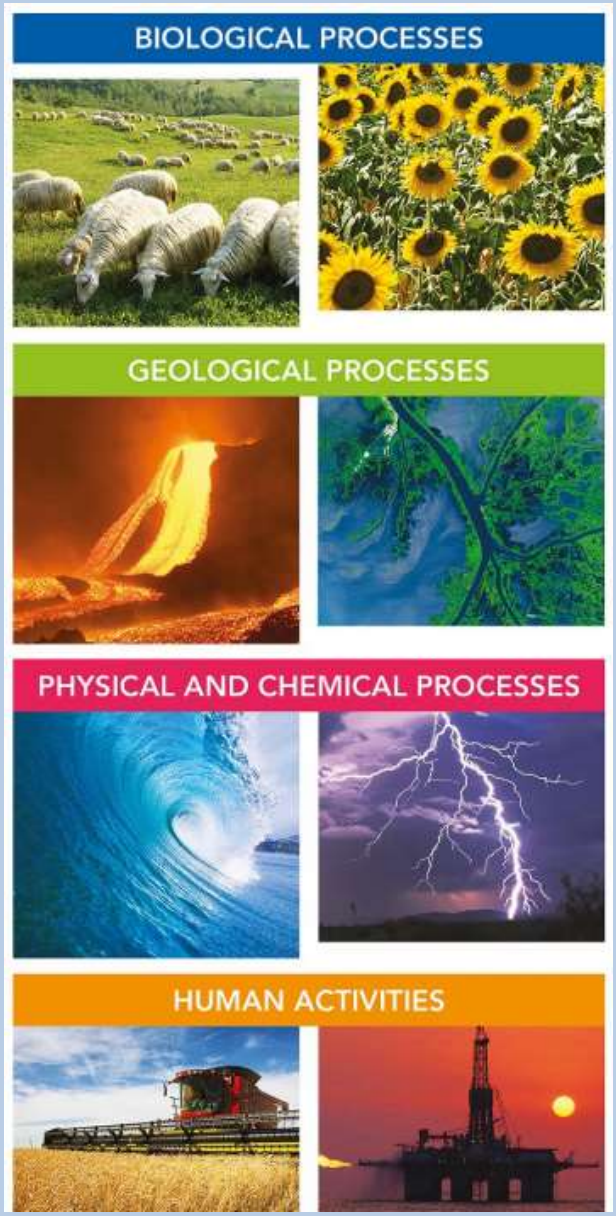
Matter Flow in Ecosystems

- Biological process: between organisms in the ecosystem
  - Photosynthesis
  - Respiration



Matter Flow in Ecosystems

- Physical process: changing states of matter
- Solid → Liquid → Gas
- Chemical process:
- Bonds rearranging to make new molecules



Logistics

- 1st period- quiz and interactivity assigned to you in your textbook for extra practice
- Come in during nest or after school if you need help!
- DUE Friday, 25th!

Logistics

- **Water and carbon cycles will be on page 20 in your notebook!**

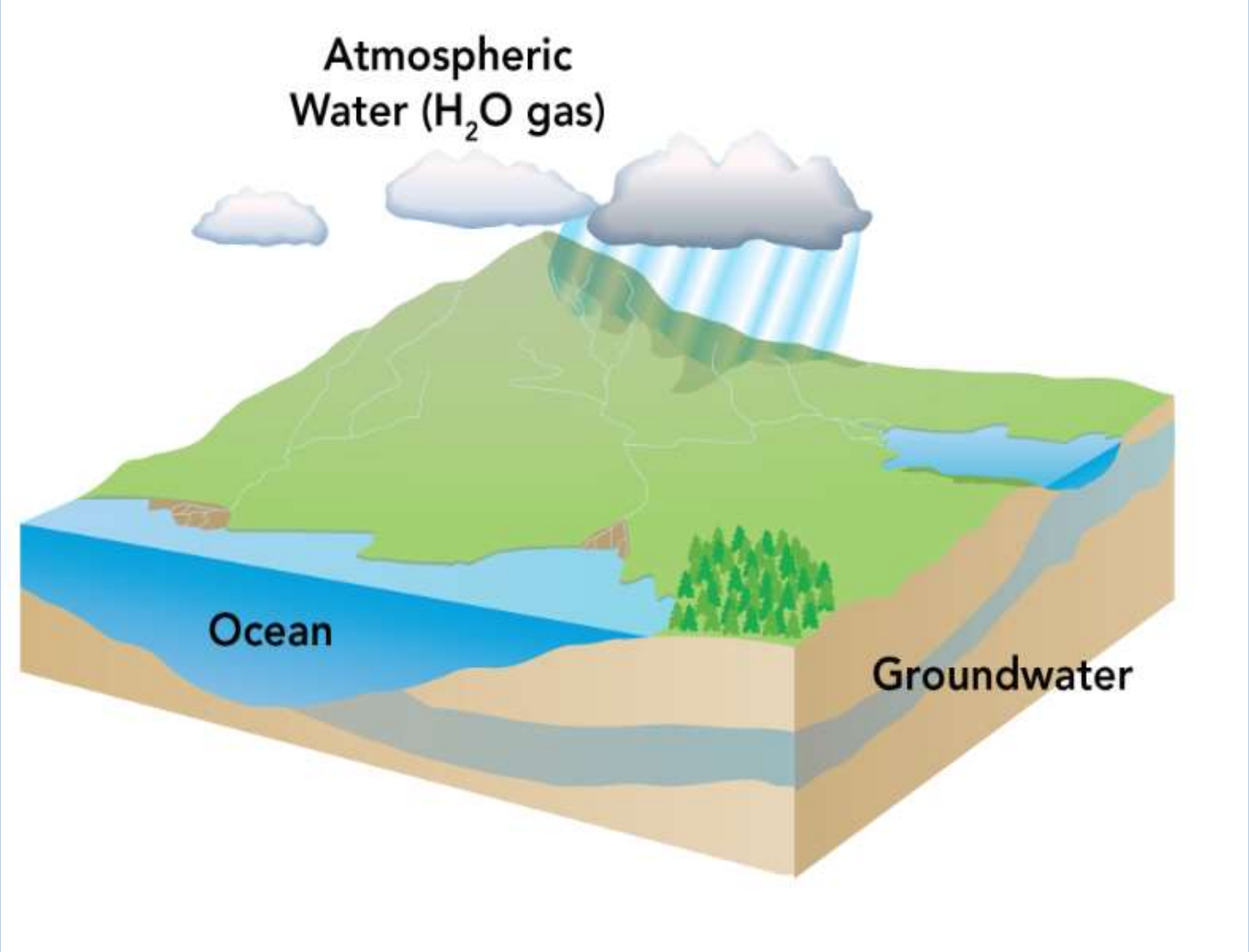
- **Nitrogen cycle will be on page 21 in your notebook!**

Hydrologic Cycle

- Draw arrows on the water cycle diagram to include:

- Evaporation
- Precipitation
- Run off
- Transpiration
- Condensation
- Seepage

Hydrologic Cycle



Hydrologic Cycle

1. Evaporation- water vapor enters the atmosphere from land or bodies of water
2. Transpiration- water vapor enters atmosphere from the leaves of plants
3. Condensation- Water vapor in clouds cools and form droplets

Hydrologic Cycle

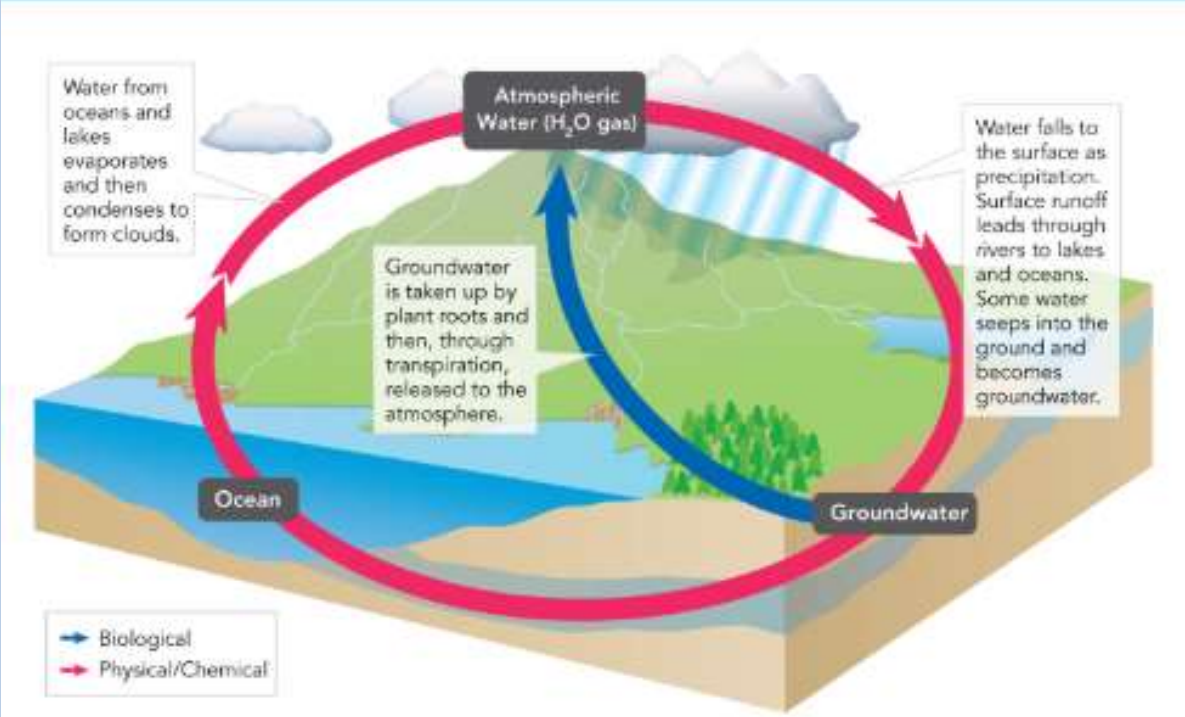
4. Precipitation- Water droplets fall to land
5. Runoff- Water flows over land and enters waterways
6. Seepage- Water is absorbed by soil and stored underground, where it can be pumped up, or seep into bodies of water

Hydrologic Cycle

- Biological vs physical/chemical process

Figure 4-9 The Water Cycle

This diagram shows the main processes involved in the water cycle. Scientists estimate that it can take a single water molecule as long as 4000 years to complete one cycle.



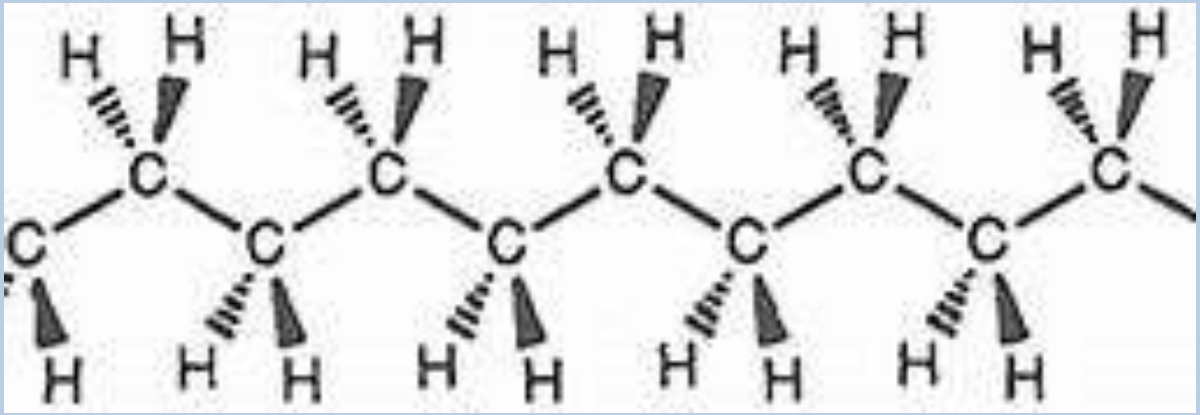
Carbon Cycle

- **Why is carbon important for life?**

Carbon Cycle

- Why is carbon important for life?

- Makes 4 bonds that form stable molecules
- Backbone

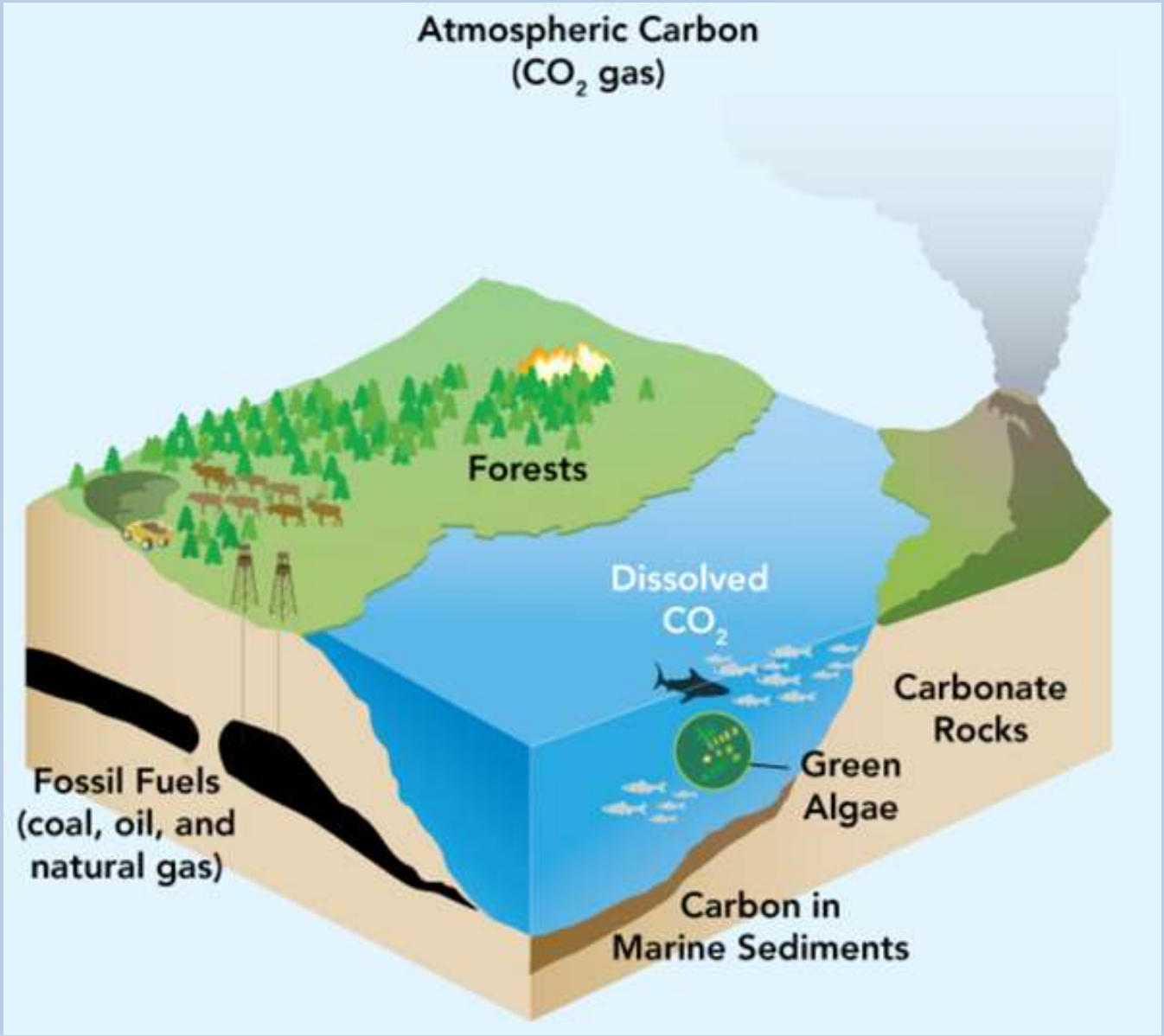


Carbon Cycle

- Processes:

- Photosynthesis
- Respiration
- Decomposition
- Fossilization
- Combustion

Carbon Cycle



Carbon Cycle

1. Photosynthesis: autotrophs remove CO_2 from atmosphere to create carbohydrates (glucose)
2. Heterotrophs eat autotrophs
3. Respiration: autotrophs and heterotrophs release CO_2 into the atmosphere

Carbon Cycle

4. Decomposition: decomposers break down organic matter and release CO_2
5. Fossilization: Over millions of years dead producers can be transformed into fossil fuels
6. Combustion: humans dig up and burn fossil fuels

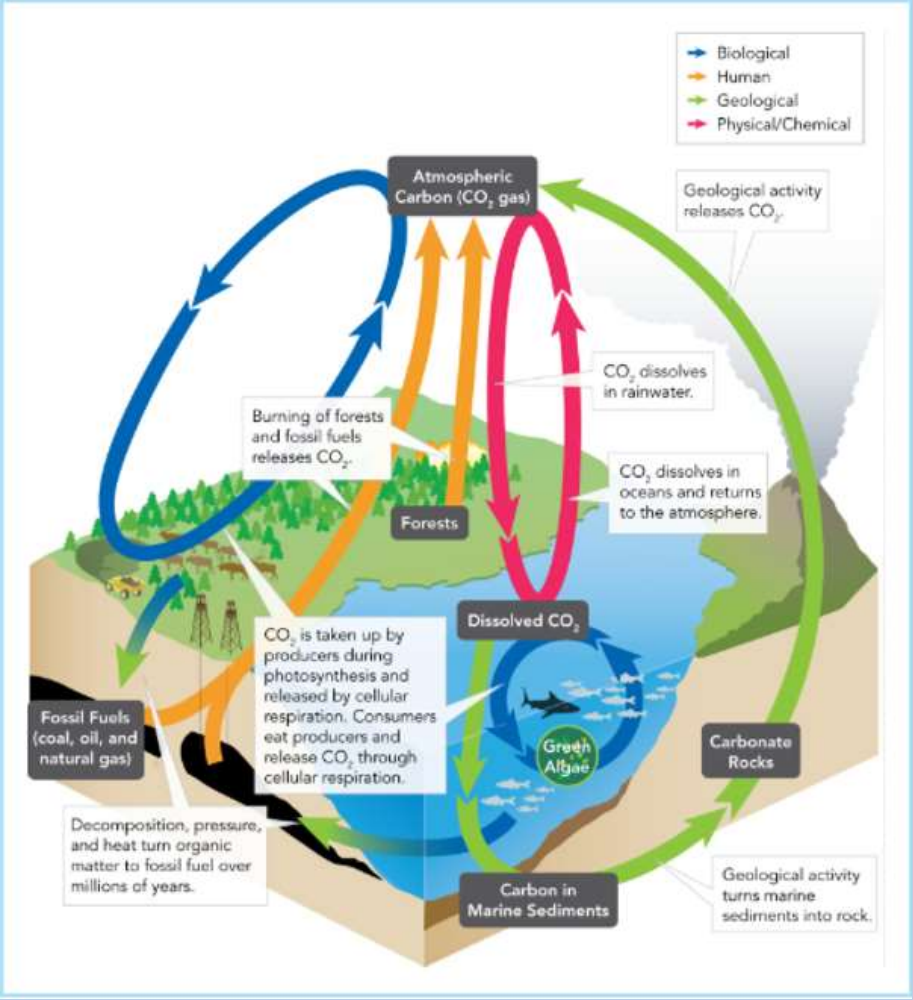
Carbon Cycle

7. Atmospheric CO_2 can dissolve into ocean
8. CO_2 can diffuse out of the ocean into the atmosphere
9. Dissolved CO_2 can be stored in sedimentary rock, which can be raised by tectonic forces, volcanic activity will release the stored CO_2

Carbon Cycle

Figure 4-11 The Carbon Cycle

Carbon is found in several large reservoirs. In the atmosphere, it can be found as carbon dioxide gas (CO_2); in the hydrosphere, as dissolved carbon dioxide; in the geosphere, in rocks and soil, and underground, as coal and petroleum, and calcium carbonate; and in the biosphere as organic matter.



Energy Flow in Ecosystems

- Today you will be modeling the carbon cycle at your lab stations
- You will draw your arrows directly onto the table between each photo
- Don't forget to label your processes!
- Get in groups no larger than FOUR and I will bring you chalk

Energy Flow in Ecosystems

- When you are finished answering your analysis questions go back to your seat so we can review