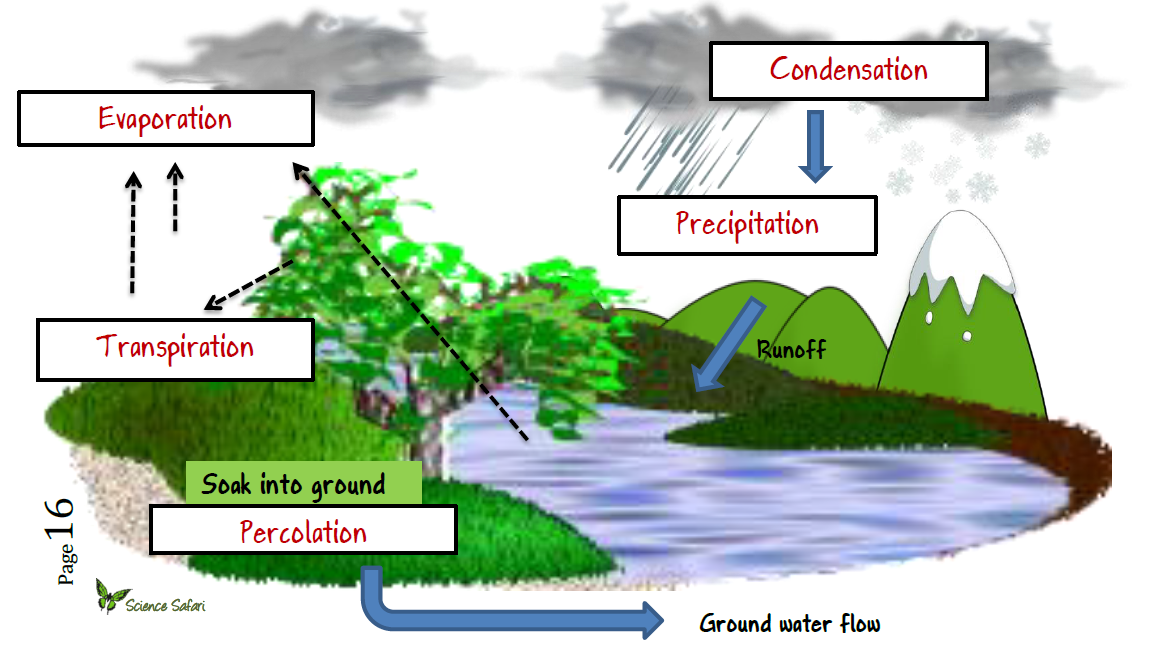
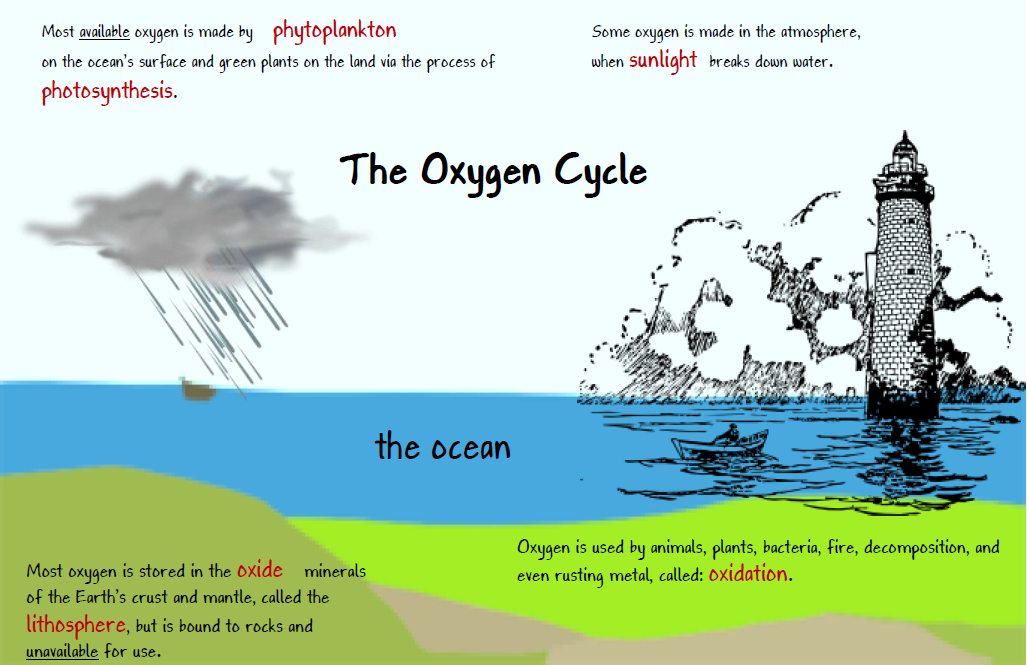
Cycles through the Ecosystem

Water Cycle

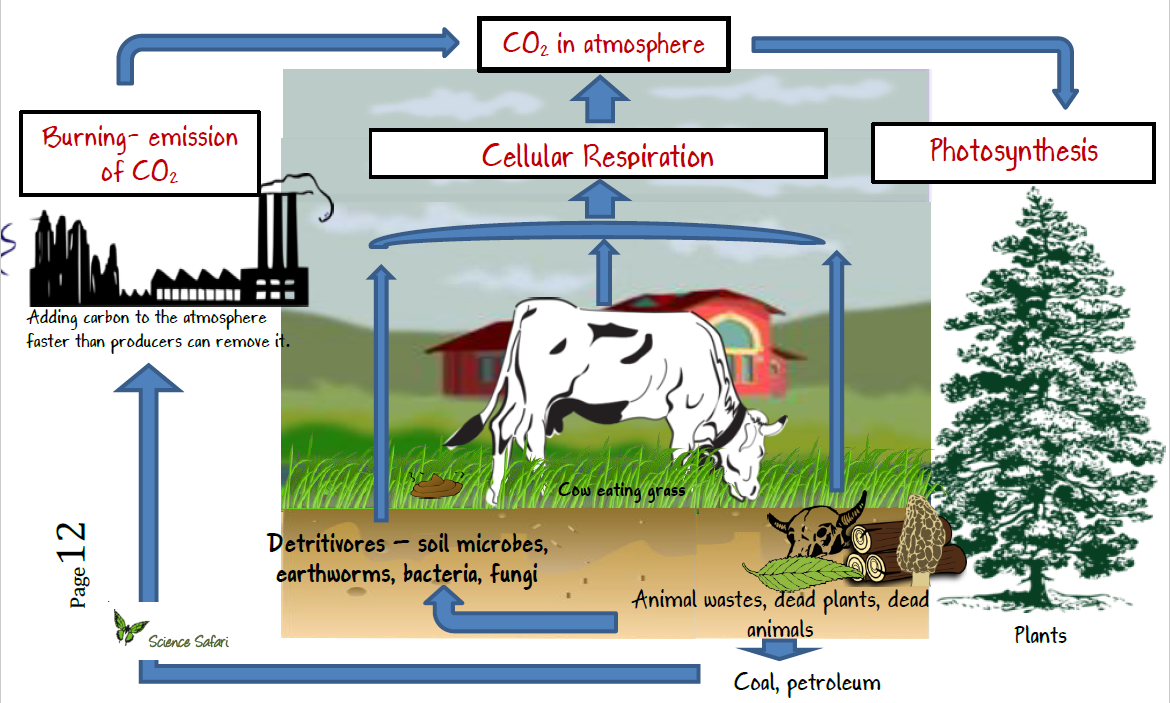
The water cycle is also called the **hydrologic** **cycle**. **Condensation** is the process that turns water vapor into liquid, which causes the formation of a cloud. After it rains, the water can either end up on land or in a **body of water, such as streams, lakes, and oceans**. When water evaporates from a leaf, this process is called **transpiration**. When water is heated in an ocean, the liquid water changes form and turns into **water** **vapor**. When water leaves a body of water after it is heated, the process is called **evaporation**. When water falls from the sky, the process is known as **precipitation**. When water hits land and is soaked into the ground, the water becomes **ground** **water**. The water cycle is a continual process, water passes from atmosphere to the Earth and back to the atmosphere.

Oxygen Cycle

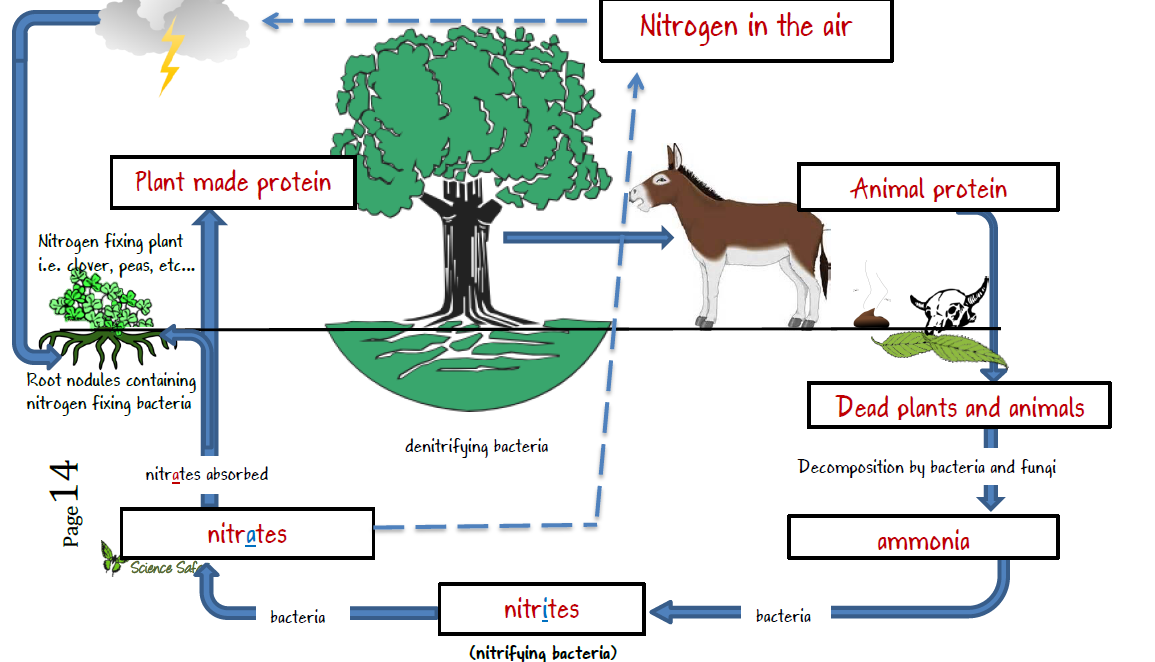
Plants release 430-470 billion tons of oxygen during the process of **photosynthesis**. Atmospheric oxygen in the form of **ozone** provides protection from harmful ultraviolet rays. Oxygen is found everywhere on Earth, from Earth’s **crust** (rocks) to the **ocean** where it is dissolved. Oxygen is vital for **respiration** by animals, a process which produces CO2 and water. Oxygen is also necessary for the decomposition of **waste** into other elements necessary for life.

The equation for cellular respiration is **C6H12O6 + 6O2 🡪6CO2 + 6H2O + energy.**

Carbon Cycle

Plants use CO2 in the process of **photosynthesis** to make **sugar** and oxygen. Animals use oxygen in the process of **respiration** and make more CO2. The **ocean** is the main regulator of CO2 in the atmosphere because CO2 dissolves easily in it. In the past, huge deposits of carbon were stored as dead plants and animals **decayed**. Today these deposits are burned as fossil fuels, which include oil, natural gas, and coal. More CO2 is released in the atmosphere today than in the past because of the **burning of fossil fuels**. Another natural source for CO2 is **methane**. Too much CO2 in the atmosphere may be responsible for the **greenhouse** effect.

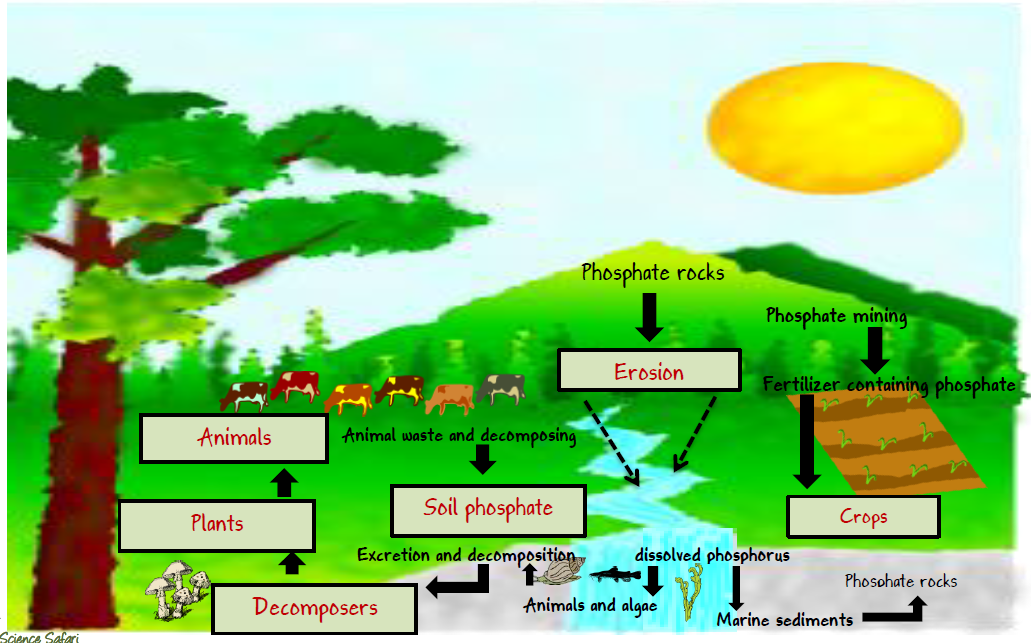
The equation for photosynthesis is **6CO2 + 6H2O+ light 🡪 C6H12O6 + 6O2**.

Nitrogen Cycle

Our atmosphere is **78%** nitrogen gas. Animals and plants cannot directly use all the nitrogen found in our **atmosphere**. Only special bacteria can directly use nitrogen in our atmosphere and “fix” it so other organisms can benefit. These bacteria are called nitrogen-**fixing bacteria**.

Higher organisms use nitrogen to make their **proteins**. Animal waste decay by the action of bacteria which create **ammonia** and **nitrate** products rich in nitrogen, and useful for plants to use again. **Denitrifying** bacteria in the soil can break down the ammonia into the gaseous form of nitrogen, which is not available for use by **plants** or animals. In another part of the cycle, animals eat plants containing nitrogen, which is again returned to the soil by animal **waste** or decaying **plants** and **animals**.

Phosphorus Cycle

Phosphorus is NOT found in the free state in nature, but is contained mostly in **rocks** and **minerals**. It is an essential nutrient for life, as it makes up important chemicals such as **DNA**. In the phosphorus cycle, phosphorus moves between the soil and plants, which are eaten by animals. The animals use phosphorus, and then their **waste** products help return the sulfur for the next generation of phosphorus in the soil. Some of the phosphorus in soils can be washed away into water **pollution**. Another source of phosphorus in water comes from man-made **basins**. Too much phosphorus in water leads to plant **overgrowth**, strangling all other life forms in the water. The use of too many phosphorus-rich fertilizers is bad for the environment **because agriculture runoff goes into aquatic ecosystems which cause plants to grow and overpopulate the** **water**. (Eutrophication)