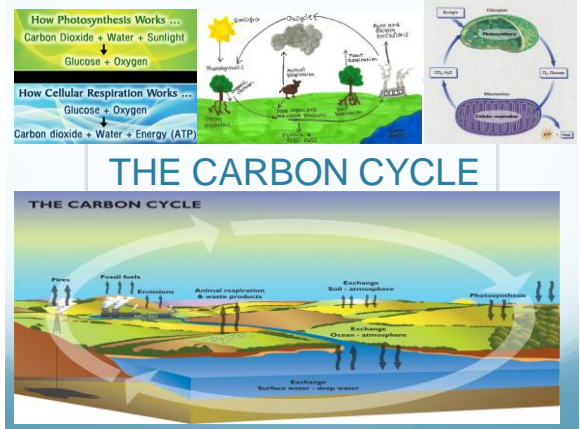
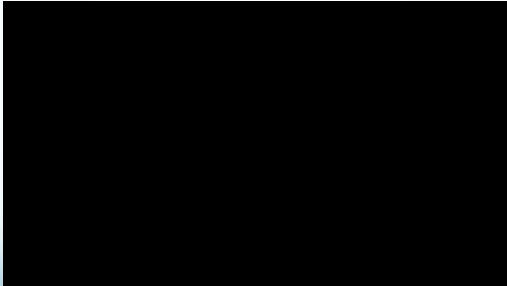


Is there a way to rebalance the ecosystem?



What Is Carbon?

- An **element**
- The basis of **life on earth**
- Present in plants, animals, rocks, oceans and the atmosphere

CARBON

6

C

Carbon
12.011

Glucose

Glucose metabolism

What is the Carbon Cycle?

- Carbon is cycled between the earth and the atmosphere through **living** and **non-living things**
- It travels through the **four** spheres of the **planet**.

Four parts of the Planet

- **Atmosphere**- the layer of **air** surrounding our planet
- **Hydrosphere**- All the rivers, lakes streams, and **oceans** on earth
- **Biosphere**- all **living things**
- **Lithosphere (geosphere)**- The **rock** or **sediment** layers of our planet

Plants Use Carbon Dioxide

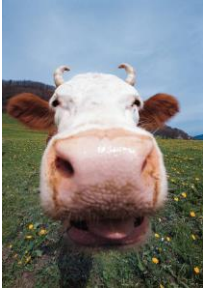
- Plants pull carbon dioxide (CO₂) from the atmosphere and use it to **make food (glucose)**
- The carbon becomes part of the living plant (**biosphere**)
- We know this process as **photosynthesis**

Note to Self...

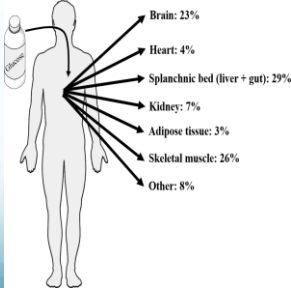
Carbon stored in the plants, represents the movement of carbon from the **abiotic (CO₂)** to **biotic** part of the ecosystem.

Animals Eat Plants

- When organisms consume plants, they take in the **carbon** and some of it becomes **part of their own bodies**.



Don't forget, we're animals too!



Decomposition of Plants and Animals

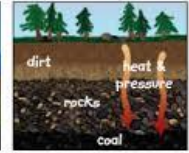
- When plants and animals die, most of their bodies are decomposed and **carbon atoms** are **returned to the atmosphere**.
- Some are not decomposed fully and end up in deposits underground as fossil fuels (**oil, coal, natural gas**).



Swamps with giant plants hundreds of millions of years ago covered the earth.



Water and dirt covered the plant remains 100 million years ago.



Rocks, dirt and sediment created pressure and heat to form coal deep in the ground.

Carbon Slowly Returns to Atmosphere

- Carbon found in rocks and underground deposits is released very slowly into the atmosphere through **weathering and erosion**.
- The result is that carbon on earth is found in some **active** pools and some relatively **inactive** pools, depending on the rate at which it cycles in and out.



Carbon in Oceans

- Carbon is also stored in the **ocean**.
- Carbon is found in the form of calcium carbonate (CaCO_3) in the **shells** of aquatic species.
- When animals die, carbon substances are deposited at the bottom of oceans.
- Oceans contain earth's **largest reservoir** of carbon.



Sources (Processes/Flux) How carbon moves

- Erupting volcanoes**
- Burning fossil fuel, trees and waste
- Respiration**
- Decomposition**
- Photosynthesis
- Weathering and erosion
- Rock cycle**

Sinks (Reservoir/Pool) How carbon stored

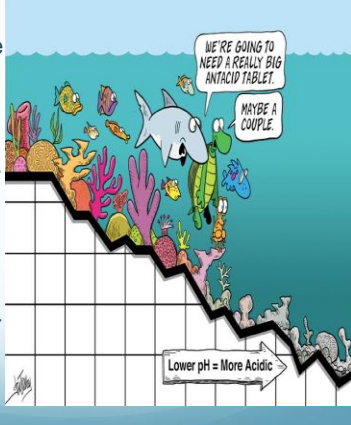
- Soil**
- Coal, oil, gas
- Sedimentary rock**
- Shellfish and coral
- Plants**
- Food webs** (carbon in organisms)
- Ocean surface, **deep currents, & sediments**

Human Impact

- The release of carbon in fossil fuels is **very slow**
- Burning** releases additional carbon into atmosphere — especially fossil fuels
- Increased carbon dioxide (which is a greenhouse gas) in atmosphere increases **global warming and climate change**
- Fewer plants mean less **CO₂ removed** from atmosphere



- The rate of calcium carbonate formation (found in shells) is dependent on the **acidity** of oceans.
- Climate change is making oceans **more acidic**, which may cause large problems for aquatic species with shells.



STOP