

A photograph of a forest scene. In the foreground, there is a large, weathered tree stump with a hollowed-out center, surrounded by fallen leaves and twigs. The background shows a dense forest of tall, thin trees with green foliage. The overall lighting is soft and natural.

NH Envirothon 2025

Carbon & Forests

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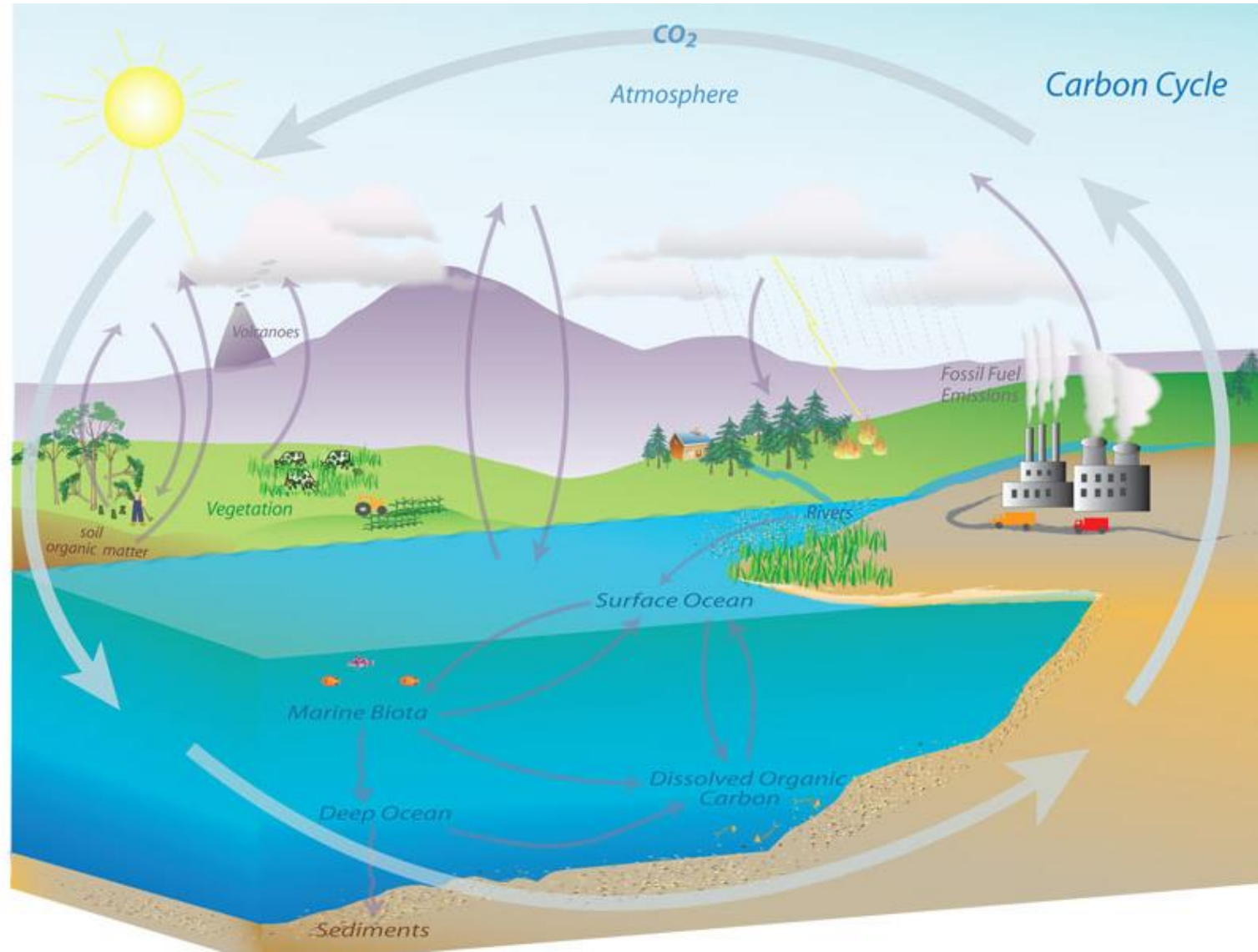
Questions

- Find a partner (2-3 max)
- Answer questions together
- One person writes down answers

Q1: What is Carbon (C)?

- Nonmetal Element
- Found in Nature in Pure form (Diamonds and Graphite)
- Part of Coal and Petroleum
- In bodies of all living things
- Carbon Dioxide (CO₂) formed from C and oxygen

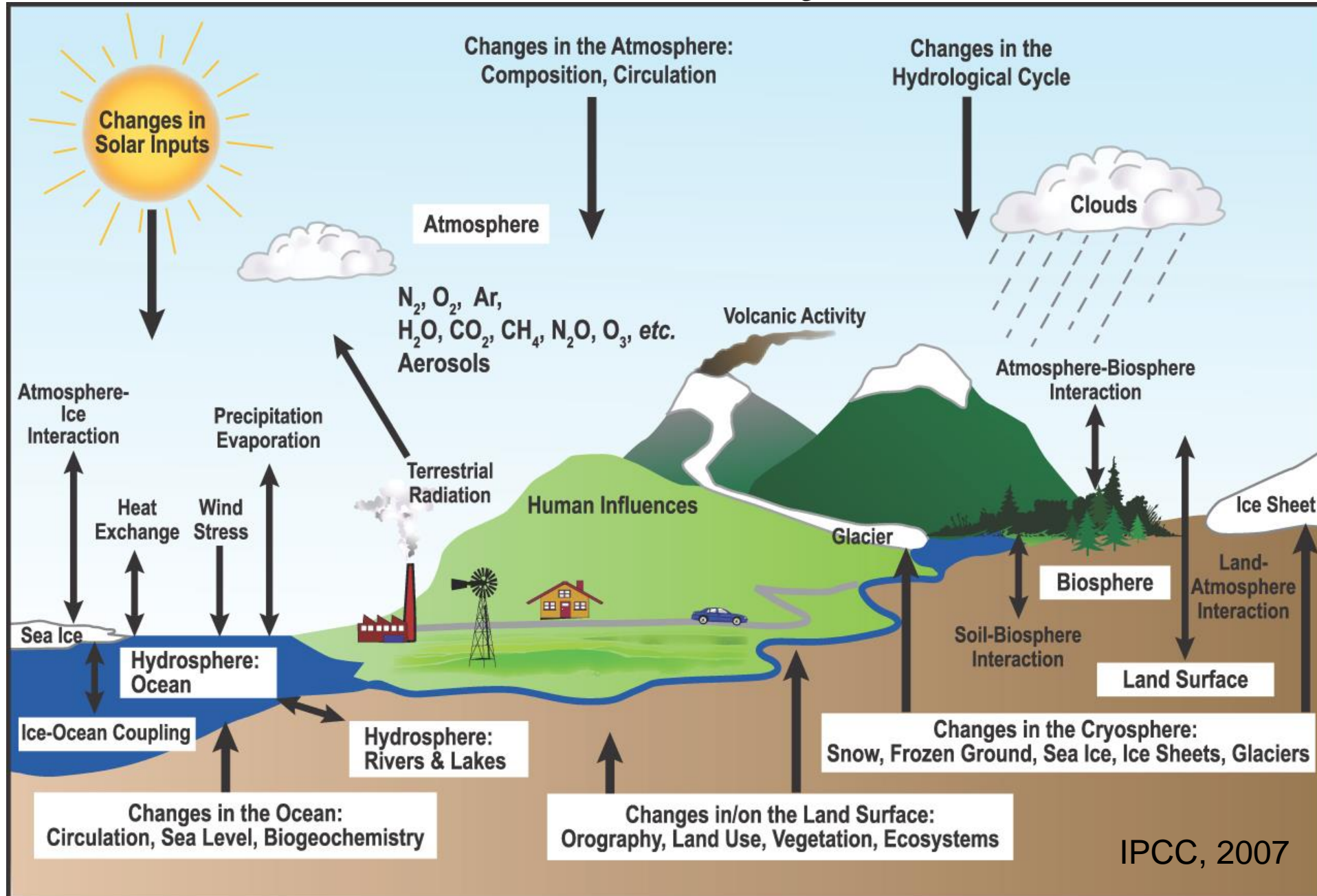
Global Carbon Cycle



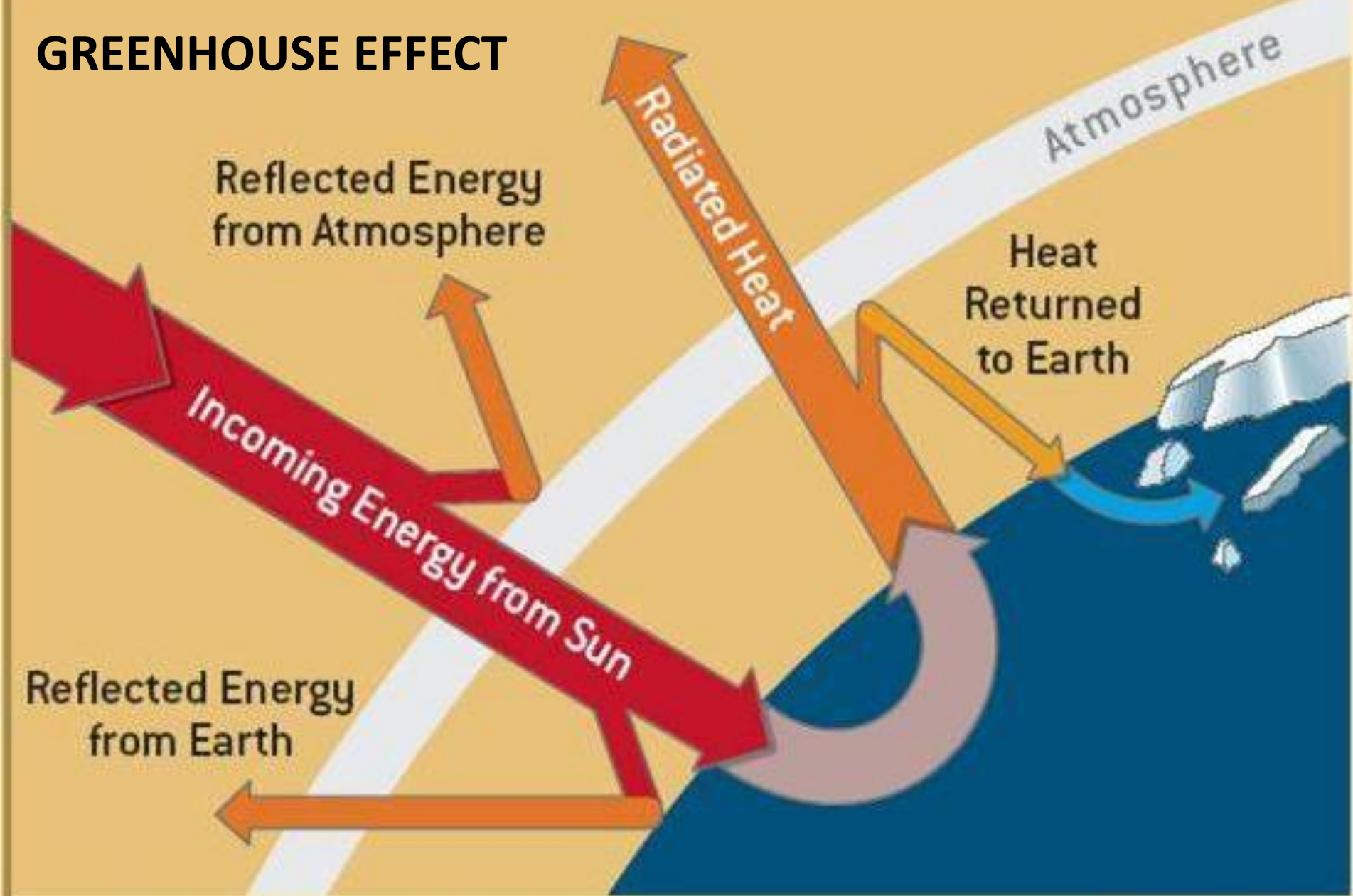
Carbon & Forests

Q2: How is Carbon and Climate Change related?

The Climate System



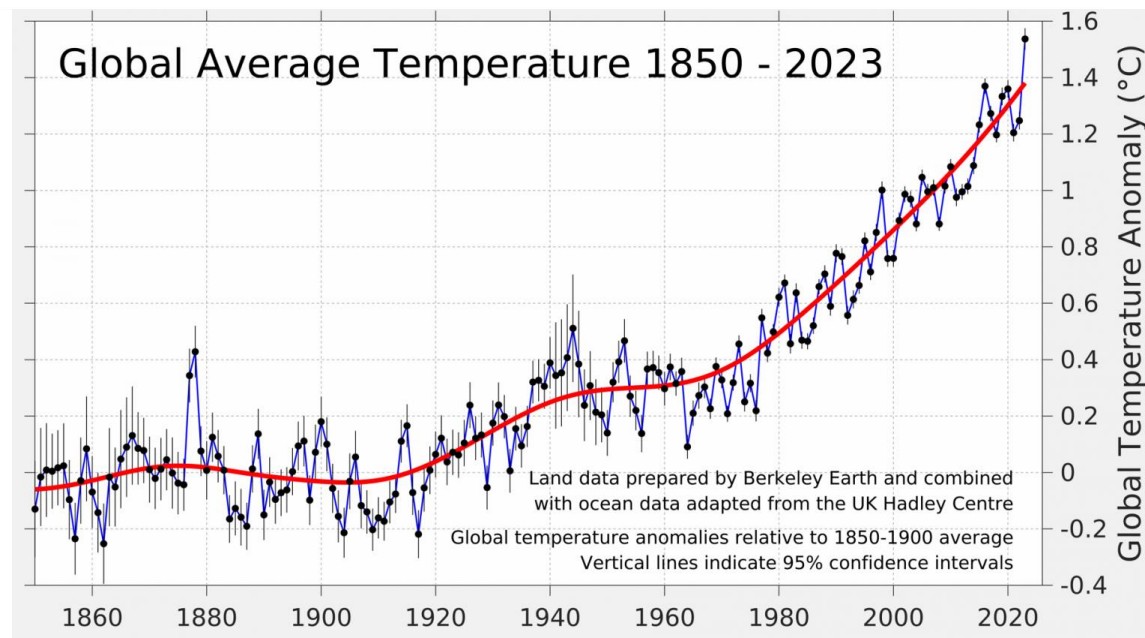
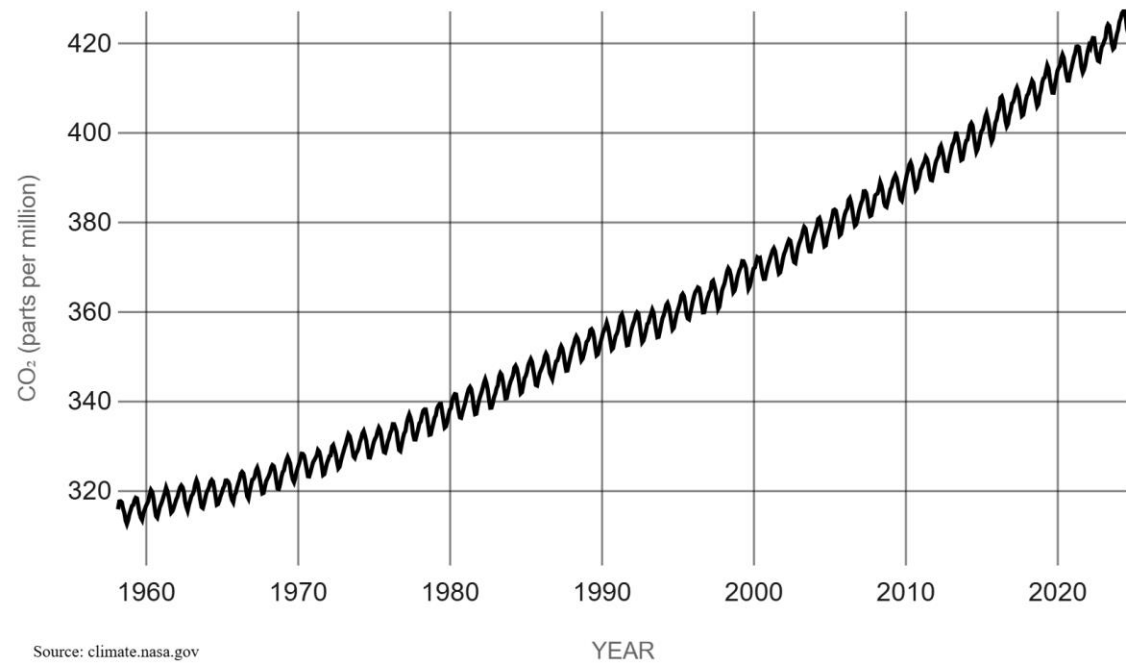
GREENHOUSE EFFECT



TOTAL INCOMING SOLAR ENERGY

340 W/m²

Carbon Dioxide Over Time



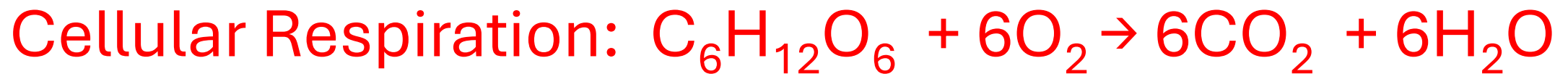
NOAA, 2024



Photosynthesis & Respiration



Carbon dioxide & water **combining** form carbohydrate and oxygen



Carbohydrate breaks down by adding oxygen to release carbon dioxide and water

Carbon & Forests



Q3: Where is the Carbon in this picture?

THE FOREST CARBON CYCLE

Trees take in CO₂ from the atmosphere and store some of the carbon in wood

CO₂ gets emitted back to the atmosphere from respiration, decomposition, and combustion

Carbon taken in by trees gets cycled around the forest and used by other organisms or converted to different forms

Carbon emissions

The rate at which carbon is released to the atmosphere. This occurs when wood decays or burns.

Think of this as the amount of money you withdraw from your bank account each month.

Carbon sequestration

The rate at which carbon from the air is taken in by trees and stored in wood and soil.

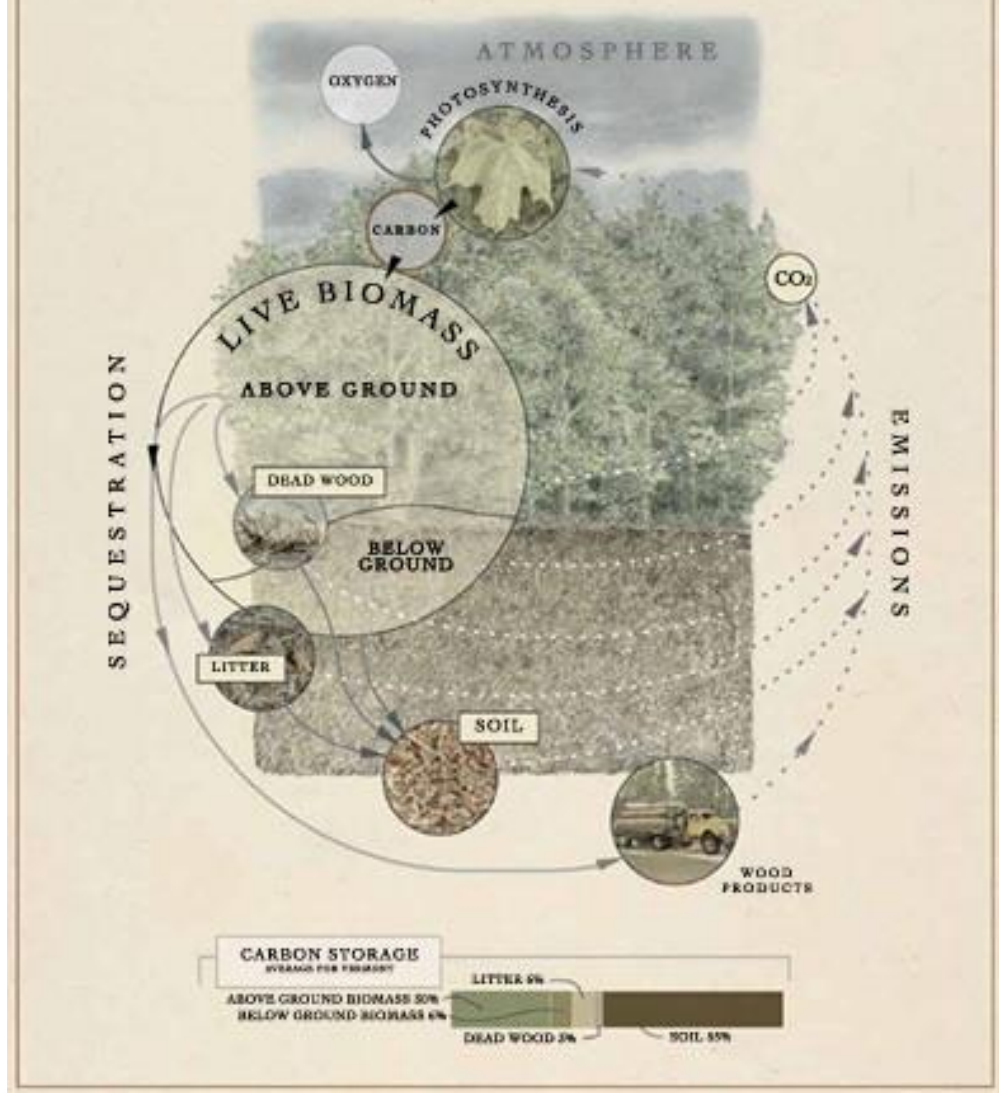
Think of this as the amount of money you deposit into your bank account each month.

Carbon storage

The total amount of carbon contained in a tree or a forest.

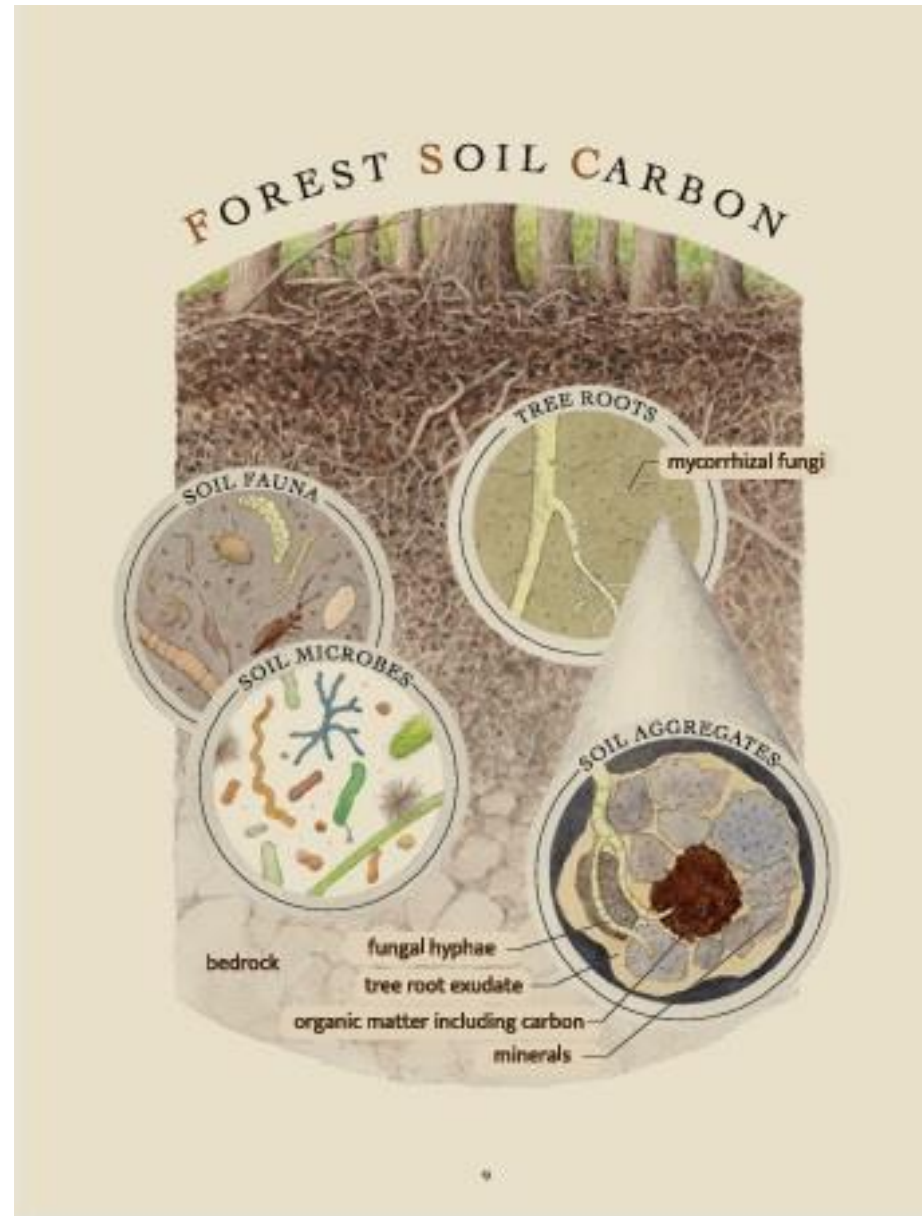
Think of this as the amount of money in your bank account. If sequestration (deposits) is larger than emissions (withdraws), your bank account increases in size.

FOREST CARBON CYCLE



Carbon in Forest Soil

Q4: How is Carbon stored in forest soil?
(Hint: can be living or dead!)



Most Carbon in Soils of the Northeast is **Organic Carbon** (Living Things)

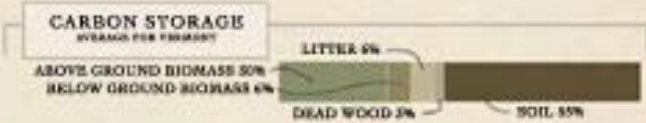
Carbon in Forest Soil

Q5: Why is it important to limit Carbon loss from forest soils?

Importance of Forest Soil Carbon

- Big part of Global Carbon Cycle
- Help regulate the Earth's climate
- Globally store four times as much **Carbon** than all above ground plant biomass
- Largest land-based Carbon pool on Earth

FOREST CARBON CYCLE



Q6: How can Climate Change Impact the **Forest Carbon Cycle**?

Climate Change & Forest Carbon Cycle

To mitigate climate change we have to keep Carbon Dioxide out of the atmosphere

- Warming Temperature = more decomposition of organic matter
- Extreme weather events lead to large scale disturbances
- Migration of insects and disease

Questions?

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Citations

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