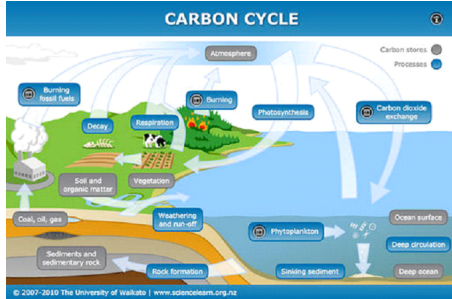


The Carbon Cycle

Carbon is THE element for living organisms.

Carbon is vital for survival because it is involved in both photosynthesis and respiration.



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There are other places where carbon can be stored:

1. Inorganic Reservoirs

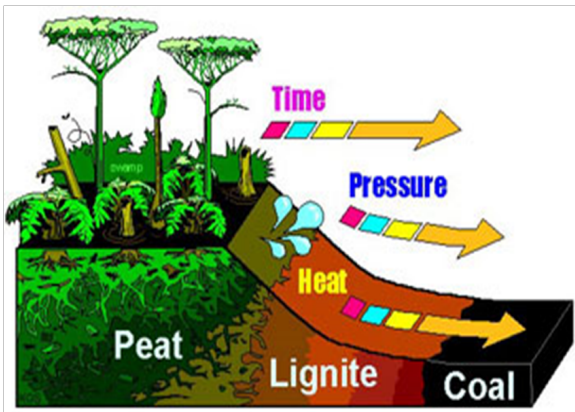
- carbon can be stored in the atmosphere for a period of time or it can be stored deep in our oceans.
- aquatic plants can make use of this carbon.
- large amounts of carbon are found in the Earth's crust, found in layers of rock, buried for long periods of time
- ex: limestone - has large amounts of carbon in it.

2. Organic Reservoirs

- carbon is found in the bodies of living things.
- when these things die, their bodies will decay.
- sometimes these decaying bodies get trapped in soil for long periods of time. After MANY years of pressure and heat build-up, this "dead material" changes to make oil, gas and coal.

Fossil Fuels

- most carbon is trapped for long periods of time until someday, some thing gets at it.....
- volcanoes
- drilling by man
- earthquakes
- acid rain



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Carbon found in → CO₂ C₆H₁₂O₆ (sugars)

But there is more to the carbon cycle than just this part - that's why it looks so complicated.....

.....because there are other ways carbon gets sent to the atmosphere to be a part of the carbon cycle.

Combustion

Burning (combustion) is another way

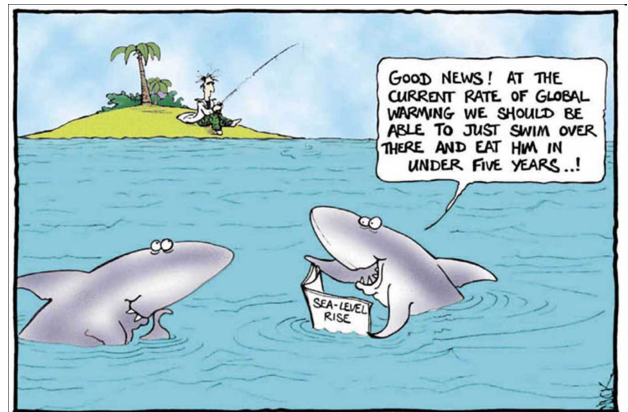
- the burning of wood or gas
- releases carbon dioxide into the atmosphere



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Human Impact on the Carbon Cycle

- Releasing carbon from organic reserves faster than it occurs naturally
- Increasing amounts of carbon in inorganic reserves (from combustion)



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The Nitrogen Cycle

- for life to function, nitrogen is needed
- nitrogen helps make proteins and DNA (deoxyribonucleic acid) found in our genes.
- even though the Earth's atmosphere is made up of 79% nitrogen, this nitrogen is HARD to get at and use because it is very stable.
- this nitrogen HAS to be converted to another form in order to be useful to organisms. This form is called:

Nitrates

There are 3 ways that Nitrogen can be converted into usable nitrates (nitrogen fixation):

1. Energy From Lightning Strikes

- lightning causes a chemical reaction in the atmosphere, chemically converting some nitrogen → nitrate.
- these nitrates dissolve in the rain, snow or any other type of precipitation.
- when this precipitation hits the ground, it sinks into the soil, carrying the nitrates with it.....the plants take these nitrates up in their roots.

2. Nitrogen-Fixing Bacteria

- bacteria on the roots of certain plants, such as peas, clover, beans, soy and peanuts can convert nitrogen into usable nitrates.
- these bacteria then take the nitrates they have made and trade it to the plants in exchange for sugars from the plant.
- these nitrogen-fixing bacteria are very efficient and they make more nitrates than the plant will EVER need. So these EXTRA nitrates get passed on into the soil. When the plant dies, extra nitrates get released as well.
- these nitrates are there for future plants to use when necessary.

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3. Decomposers

- other types of bacteria and organisms have the ability to break down nitrogen-containing wastes and by a process called nitrogen-fixation
- they break it down into ammonia - NH₃
- other bacteria then take this ammonia and convert it to nitrates (**nitrification**). The plants then take up these nitrates in their roots and continue to grow.
- this is the main reason why farmers use manure.

Denitrification - bacteria convert nitrates back into Nitrogen gas to be released in to atmosphere...completing the cycle

interesting fact

The color of your grass tells you how much nitrates are in your soil. A dark green lawn tells you that there are plenty of nitrates in your soil.

If your lawn is light green or has light green/yellow patches in it....time to add some fertilizer.

There is a plant that can get its nitrogen from a different source - this plant is famous in Newfoundland & Labrador.

The Pitcher Plant

They get their nitrogen by digesting trapped animals (mostly insects)



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The **Venus Flytrap** also gets its nitrogen this way.



<http://dsc.discovery.com/tv-shows/life/videos/venus-flytrap-catches-flies.htm>

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