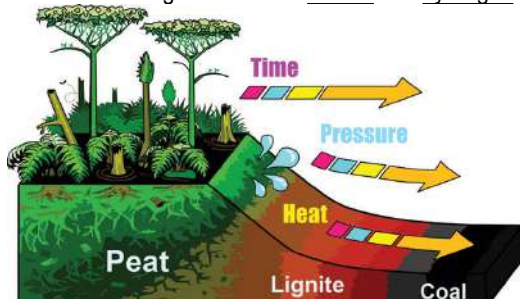


6th Grade Science Fact Sheet 1 – SOL 2-5

SOL 2: Energy Sources

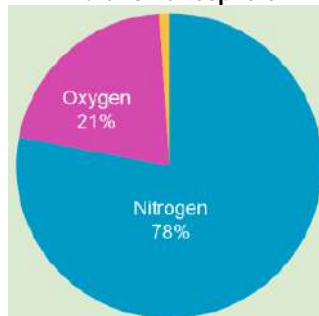
- Nonrenewable resources take a very long period of time to form.
 - Fossil fuels and nuclear power are nonrenewable.
- Fossil fuels include coal, petroleum, and natural gas.
 - Fossil fuels store solar energy from dead animals and plants from the ancient past.
- Fossil fuels contain large amounts of carbon and hydrogen.



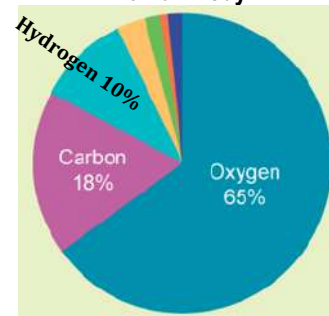
- Renewable resources can be replenished over relatively short periods of time.
- Examples of Renewable Resources: **Solar** (Sun), **Wind** (Spins turbines), **Hydropower** (Falling water to turn turbines in a dam), **Tidal power** (In and out motion of the tides), **Biofuels** (Wood, Corn Ethanol, Manure, Garbage), **Geothermal** (Earth's Heat)
- Electricity, Gasoline, and Hydrogen is used to store, move, and deliver energy in an easily usable form.
- Modern society is dependent on fossil fuels, but has been increasing their use of renewable resources.

SOL 4: Elements in Matter

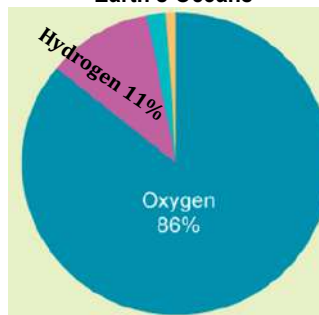
Earth's Atmosphere



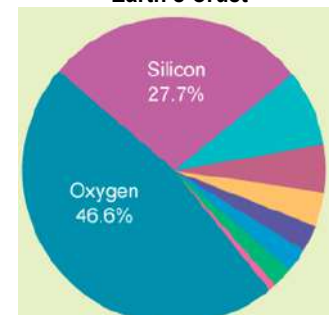
Human Body



Earth's Oceans



Earth's Crust



SOL 3: Solar Energy

Earth receives only a very small portion of the Sun's energy.

- Incoming radiation is in balance with energy that leaves the atmosphere. (Some reflected, some absorbed by Earth)
- The Sun's energy is responsible for powering the motion of the atmosphere (wind currents), ocean currents, and many processes on Earth's surface.
- Earth's surface is heated unequally. (More towards the equator)
- Excess carbon dioxide can trap solar energy and create a greenhouse effect.

Cyclic Rising and Falling Convection Currents:

- When air or water is heated, the molecules move faster and farther apart, reducing their density and causing them to rise.
- When air or water is cooled, the molecules move slower and closer together, increasing their density and causing them to sink.

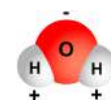
Cloud Formation:

- 1) Bodies of water absorb energy, causing the water to evaporate.
- 2) Rising warm, moist air cools and condenses to form tiny water droplets as clouds.

Thunderstorms form where the land or moist air is strongly heated.
Hurricanes form over warm water and are fed by the energy by it.

SOL 5: Properties of Water

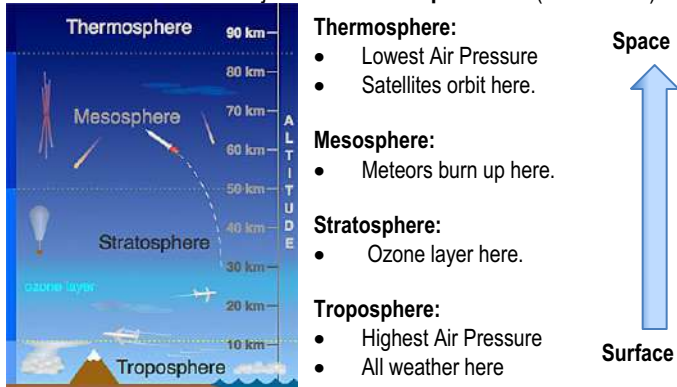
- The unique properties of water allow Earth to sustain life.
- Water molecules have a slightly negative and slightly positive side that attracts itself to other water molecules.
- Water is cohesive and sticks to other water molecules.
- Water is adhesive and sticks to other materials.
- Water is often called the universal solvent because a large number of substances will dissolve in water.
- Water is the only compound to exist as a solid, liquid, and gas.
- Water has a high surface tension.
- Water has a wide range in the liquid state. (0 to 100 Celsius)
- Solid water is less dense than liquid water,
- Saltwater makes up 97% of Earth's water, <1% is non-frozen fresh.
- Water can absorb large amounts of thermal energy, keeping areas near bodies of water milder in temperature.
 - Absorbing heat in the summer.
 - Releasing heat in the winter.
- Physical Weathering: water freezing and breaking rocks.
- Chemical Weathering: water and other minerals deteriorating rocks.



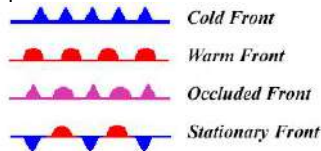
6th Grade Science Fact Sheet 2 – SOL 6-8

SOL 6: Earth's Atmosphere

- Air is a mixture of **nitrogen** (78%), **oxygen** (21%), water, carbon dioxide, and argon.
- Humidity** is the moisture in the air. (**psychrometer/hygrometer**)
- The force of air on objects is called **air pressure**. (**barometer**)



- Forest fires** and **volcanic eruptions** are two natural processes that affect Earth's atmosphere.
- Humans give off **greenhouse gases** that affect the atmosphere.
- Three major types of clouds are **cumulus** (cotton balls), **stratus** (flat blankets), and **cirrus** (thin, feathery). (**Nimbus** means rain)
- Ozone** (O_3) helps shield Earth from ultraviolet radiation.
- Differences in air pressure cause air to move in **fronts**. (H to L)



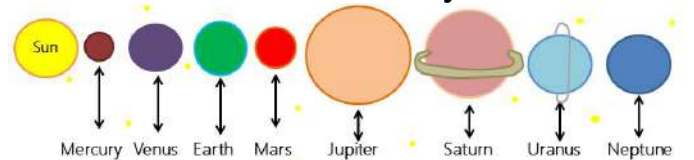
SOL 7: Watersheds

- The health of an ecosystem is directly related to **water quality**.
- Water quality** depends on pH, temperature, salinity, dissolved oxygen, turbidity, and macroinvertebrate organisms.
- A **watershed** is the land that water flows across on its way to a stream, lake, wetland, or other body of water.



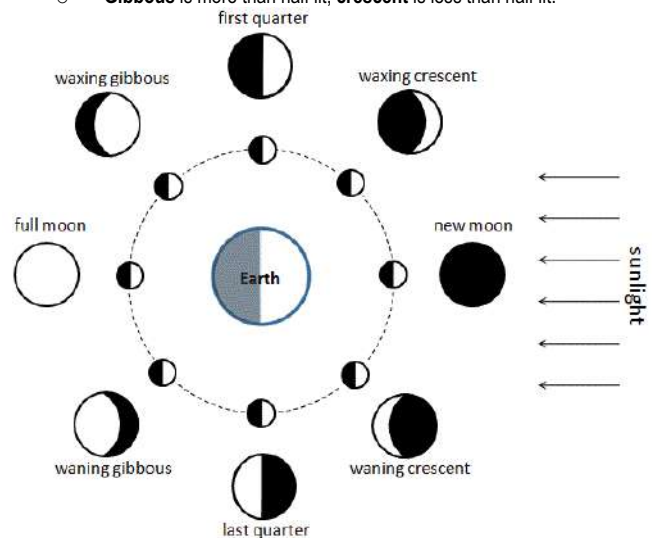
- River systems are made up of **tributaries** of smaller streams that join along their courses.
- Rivers and streams have wide, flat areas called **flood plains**, onto which water spills out at times of high flow.
- Wetlands** are zones between dry land and bodies of water.
- The **Chesapeake Bay** is an **estuary** where fresh and salt water meet and are mixed by tides.

SOL 8: The Solar System



My Very Educated Mother Just Served Us Nachos

- Inner Rocky Planets:** Mercury, Venus, Earth, Mars
 - Few moons (Earth/Mars) or no moons (Mercury/Venus)
 - No rings orbiting the planets.
- Asteroid Belt:** large rocks found between Mars and Jupiter.
- Outer Gas Giant Planets:** Jupiter, Saturn, Neptune, Pluto
 - All have many moons and rings orbiting the planets.
- Dwarf Planets** (Pluto) have not yet cleared their orbit of debris.
- Meteors:** rocks that burn up in Earth's atmosphere.
- Comets:** Chunks of ice and rock that orbit the Sun. (wispy tail)
- Gravity** is a force that keeps the planets in motion around the Sun.
- Planets **revolve** around the Sun and **rotate** (spin) on their axis.
- Earth's revolving around the Sun takes **365.25 days**. (1 year)
- Earth's rotation on its axis takes **24 hours** and causes **day** and **night**.
- The **phases of the moon** are caused by its position between the Earth and sun.
 - Waxing** means gaining light, **waning** means losing light.
 - Gibbous** is more than half lit, **crescent** is less than half lit.



- Earth has a protective **atmosphere** and **magnetic field** that help protect it from harmful solar radiation.
- Seasons** are caused by Earth's tilt (23.5) on its axis.
 - Hemisphere leaning towards the sun is **summer**.
 - Hemisphere leaning away from the sun is **winter**.
- Tides** are the result of gravitational pull of the moon and sun on the surface waters of Earth.
- The ideas of **Ptolemy**, **Aristotle**, **Copernicus**, and **Galileo** contributed to our understanding of the solar system.

