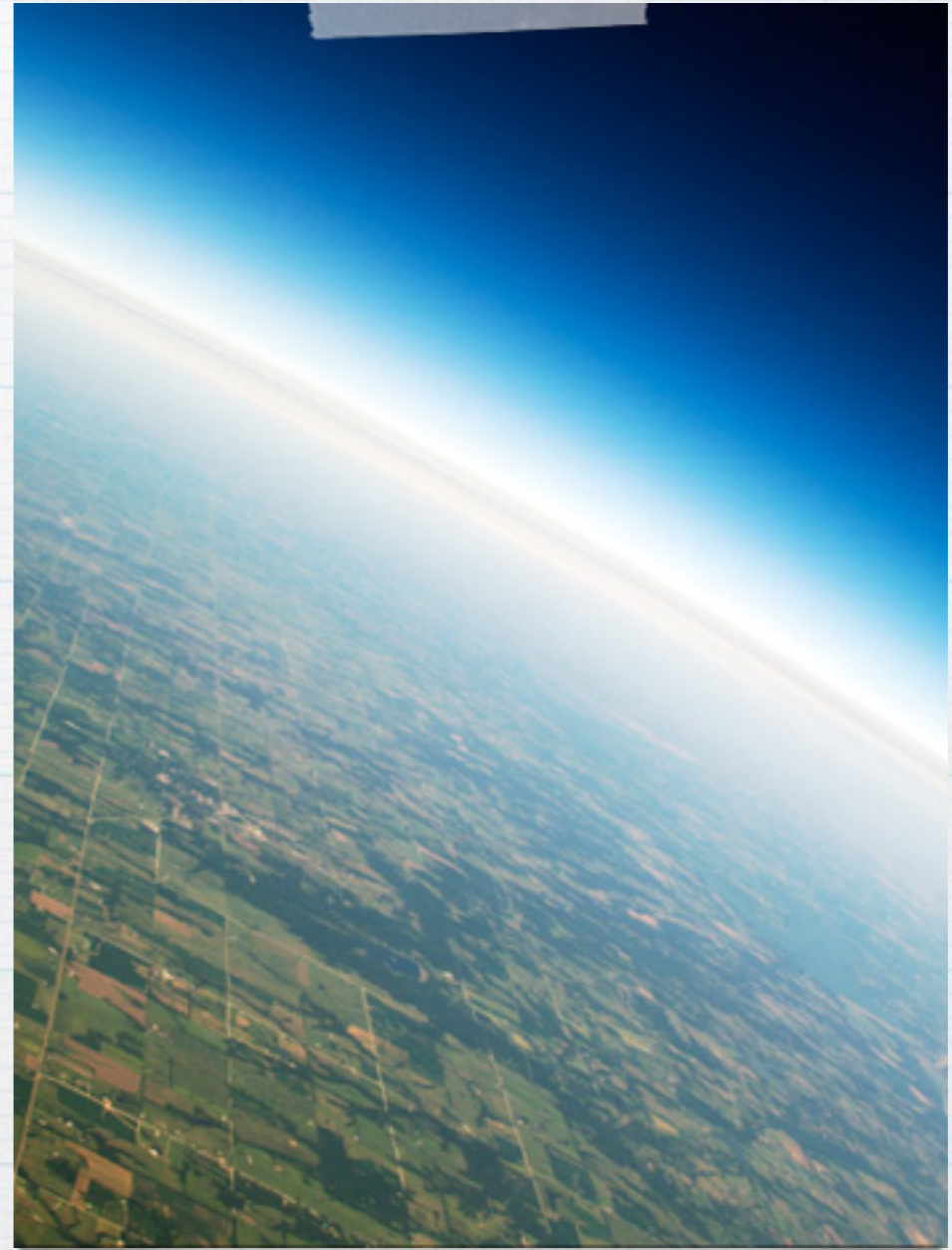


Weather

Concept 1. What are Characteristics of the atmosphere

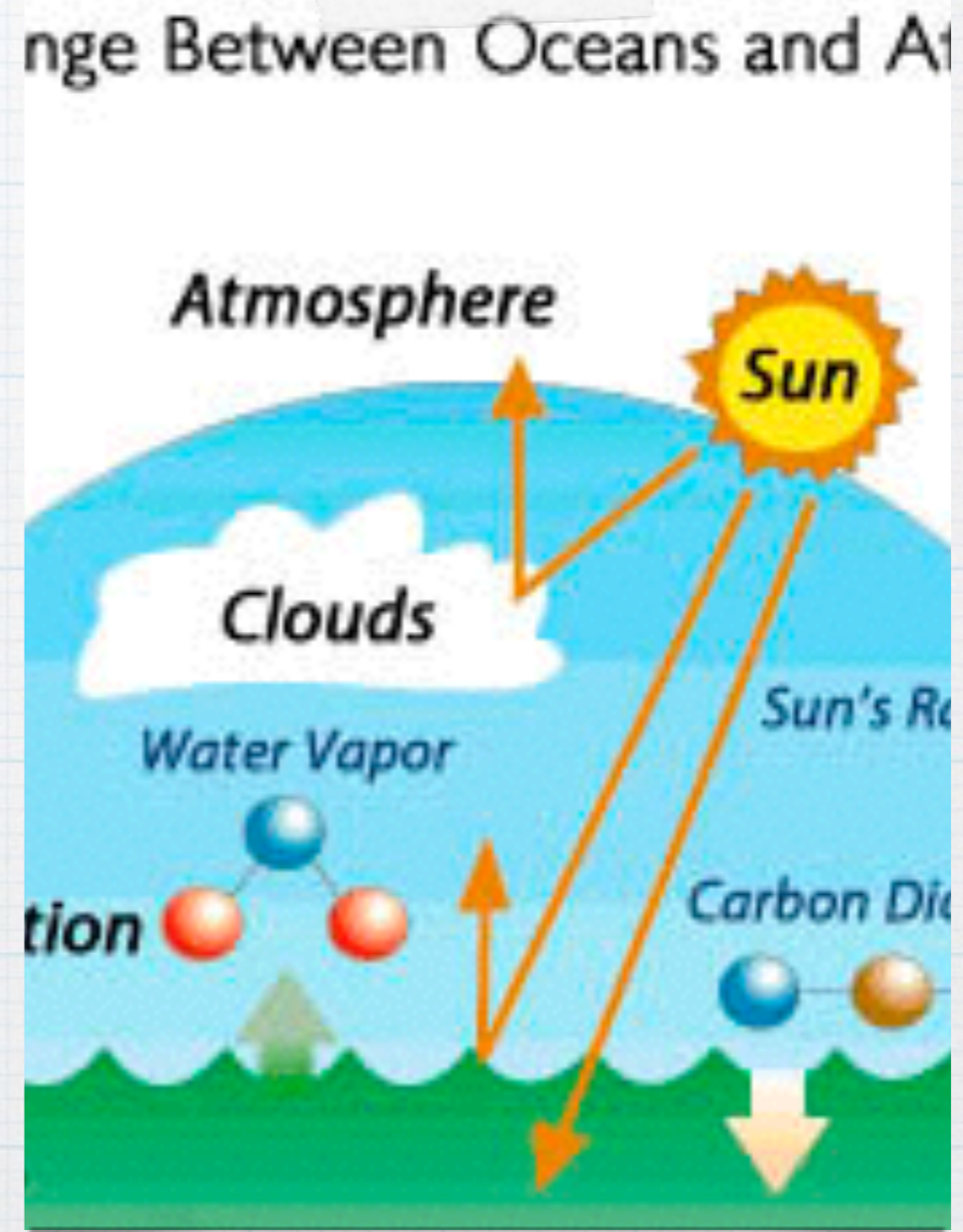
What is the atmosphere?

- * **Definition:** The atmosphere is a thin layer of gases surrounding Earth.



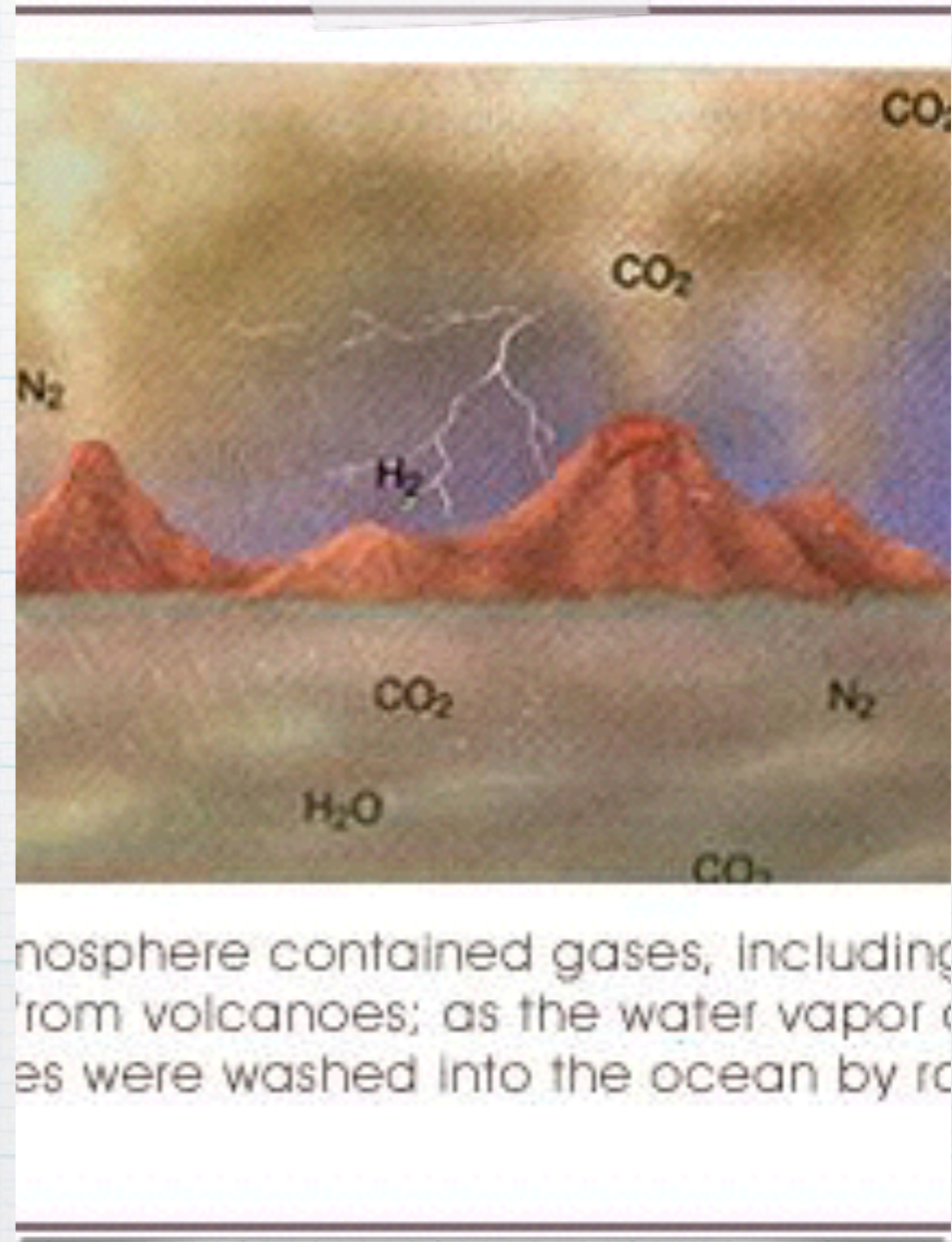
Why is the atmosphere important?

- * The atmosphere contains the oxygen, carbon dioxide, and water necessary for life.
- * The atmosphere acts like insulation, it help keeps temperatures within range to support life.
- * It also helps protect against radiation rays.



What are the origins of the Earth's Atmosphere?

- * As the earth and atmosphere cooled, water vapor condensed in to liquid.
- * Early life replaced carbon dioxide in the atmosphere with oxygen through photosynthesis.



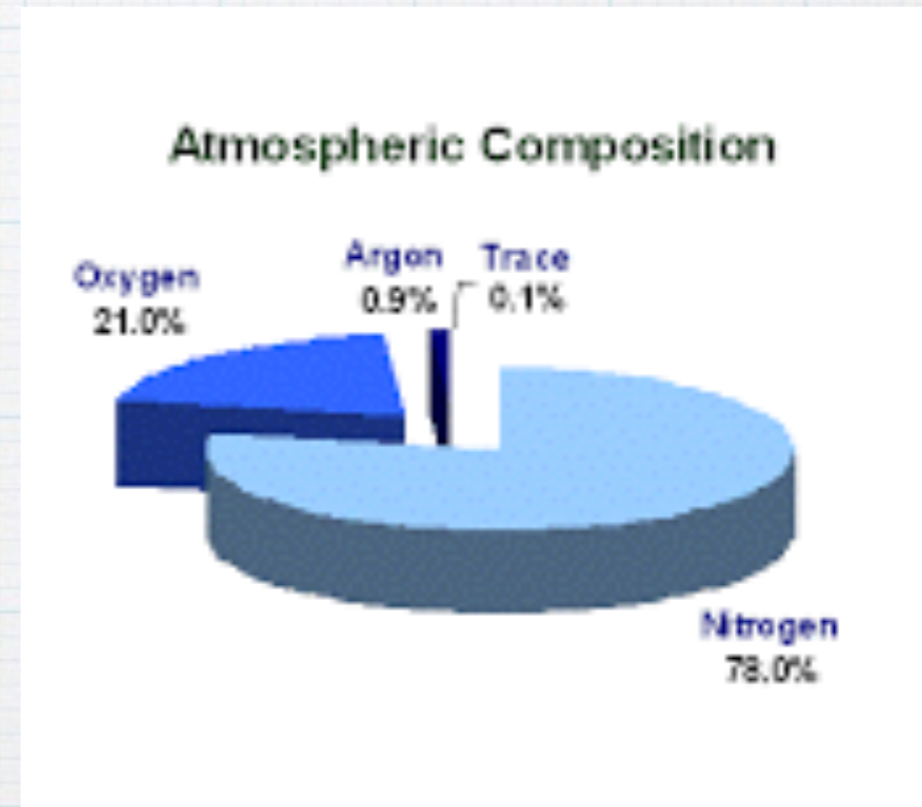
What is water vapor?

- * **Definition: Water in its gaseous form.**



What is the Composition of the Atmosphere?

- * The atmosphere is a mixture of gases that surrounds the earth.
- * Nitrogen composes 78%, Oxygen 21%, and 1% is Carbon Dioxide, Argon, Water Vapor, and other gases.

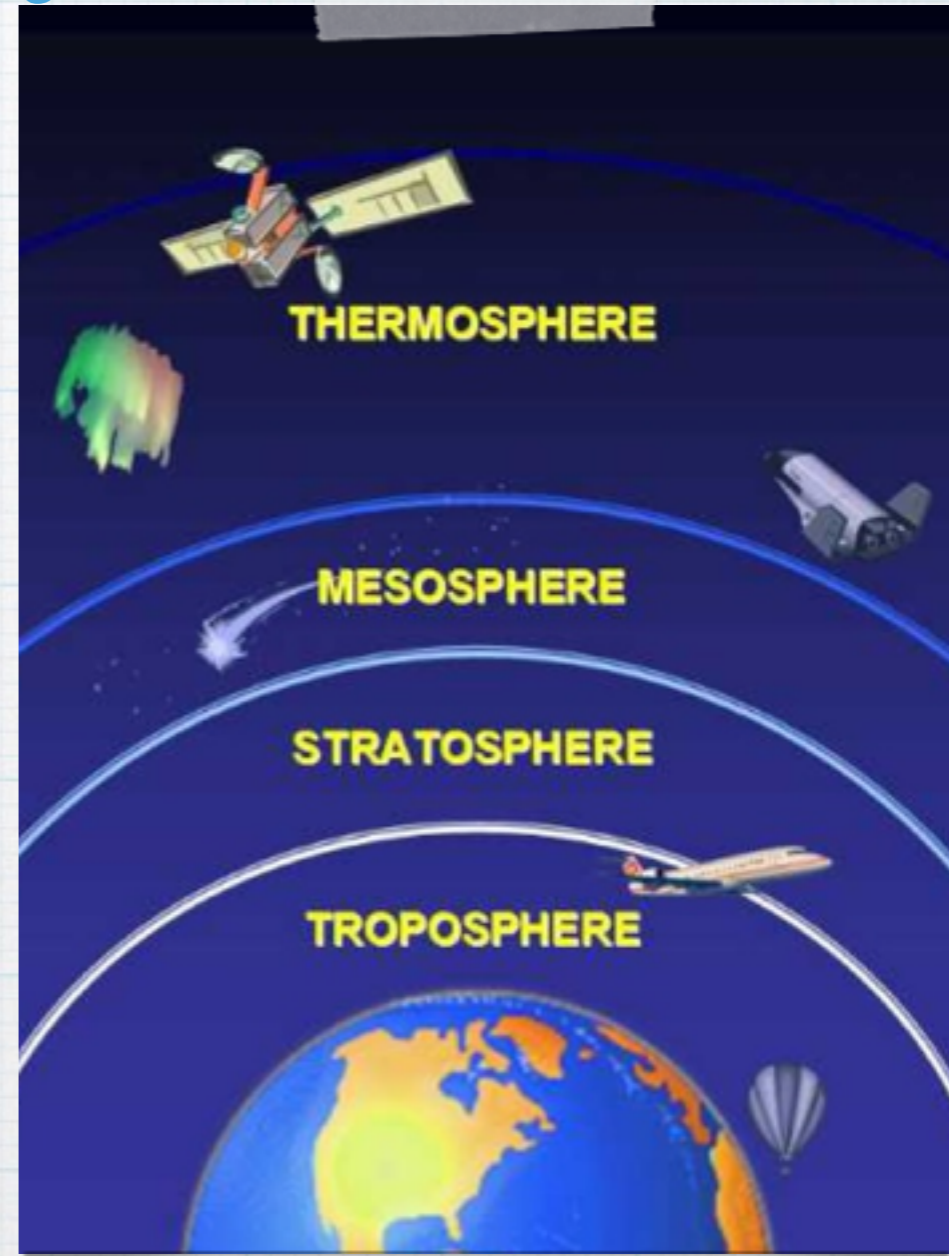


What solids and liquids are in the atmosphere?

- * Pollen, dust, and salt enter the air naturally
- * Soot enters the air through human activities (driving cars)
- * Water droplets are visible when they form clouds

What are the Layers of the atmosphere?

- * The atmosphere has several layers, each with distinct compositions of gases and temperatures.



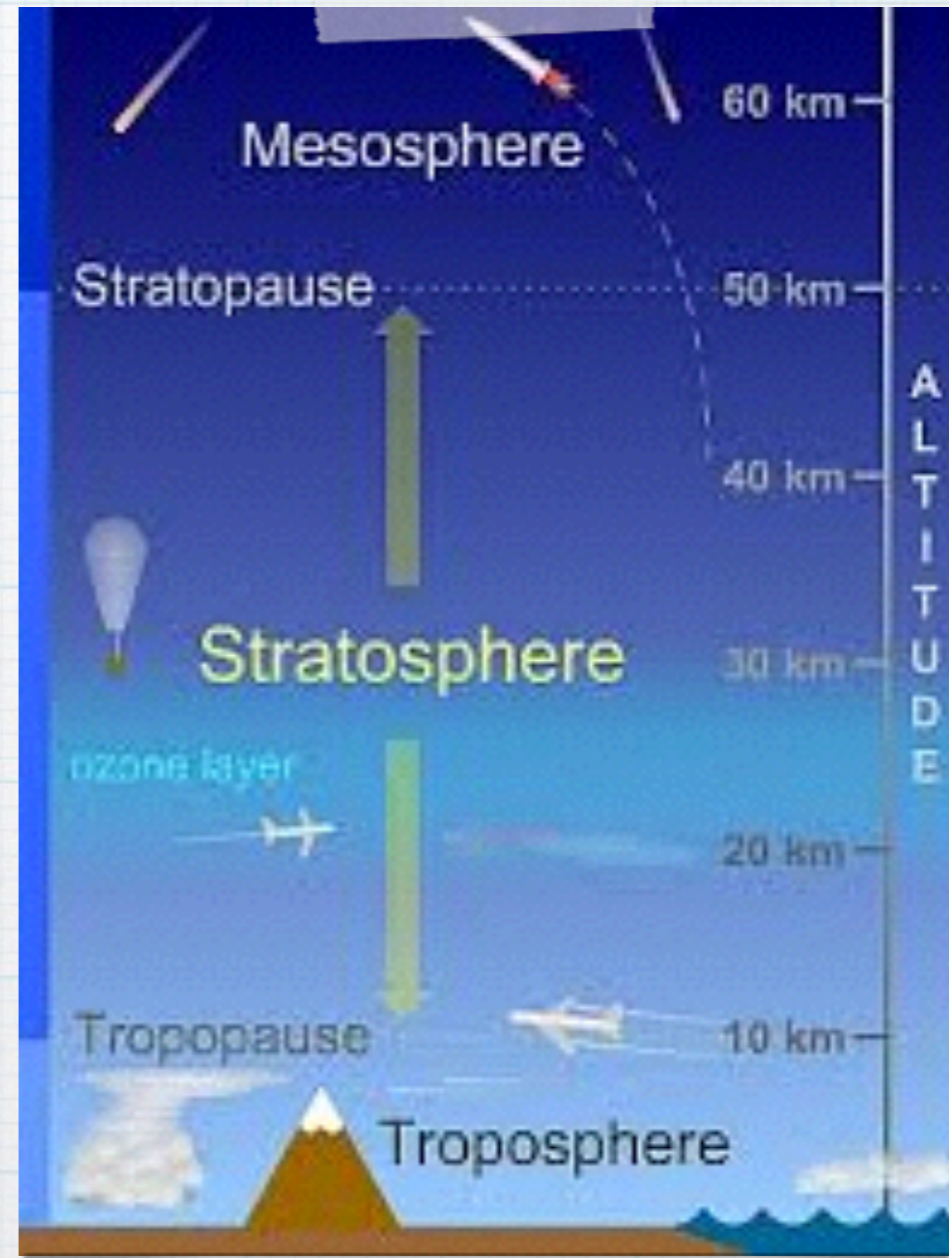
What is the Troposphere?

- * **Definition:** the atmospheric layer closest to Earth's surface. The temperature decreases as you move away from the earth. The heat that radiates through the troposphere causes weather.
- * extends from Earth's surface to altitudes between 8-15 km



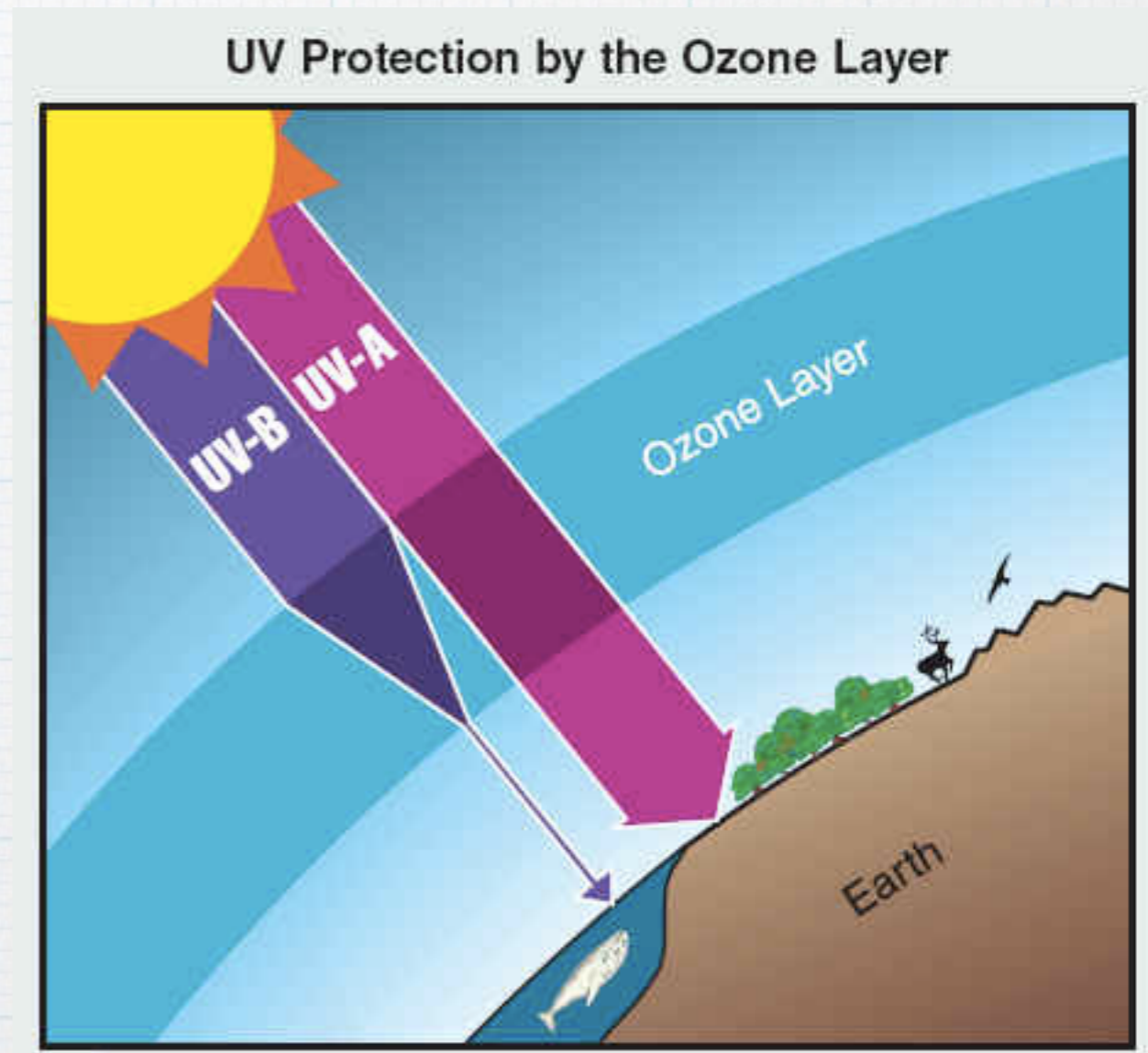
What is the Stratosphere?

- * **Definition:** The atmospheric layer above the troposphere. The upper half contains a high concentration of ozone gas. Stratosphere temperatures increase with altitude.
- * extends from 15 km-50 km above Earth's surface



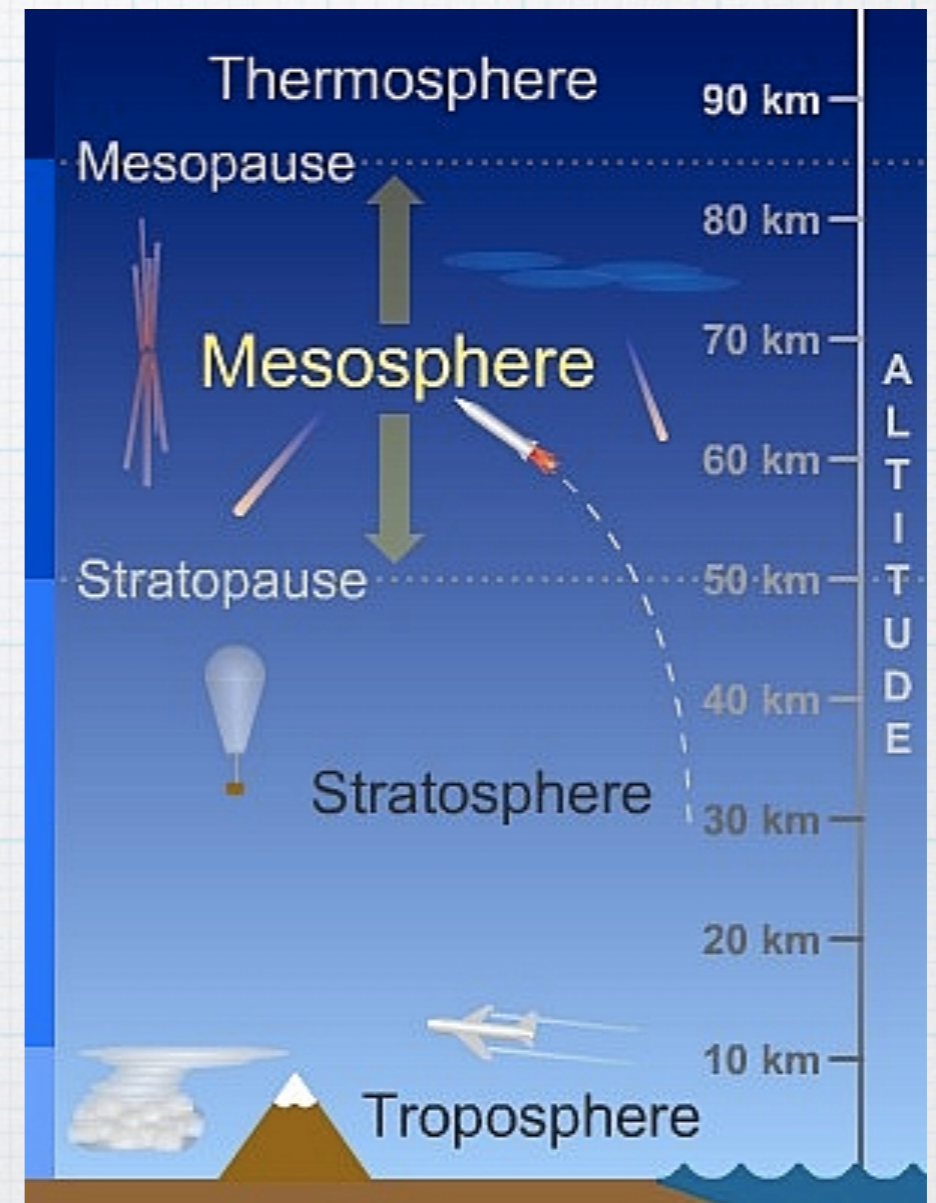
What is the Ozone Layer?

- * Ozone is made up of 3 oxygen atoms instead of 2 allowing it to absorb solar energy in the form of UV radiation.
- * This makes the ozone layer warmer and also protects us from harmful radiation.



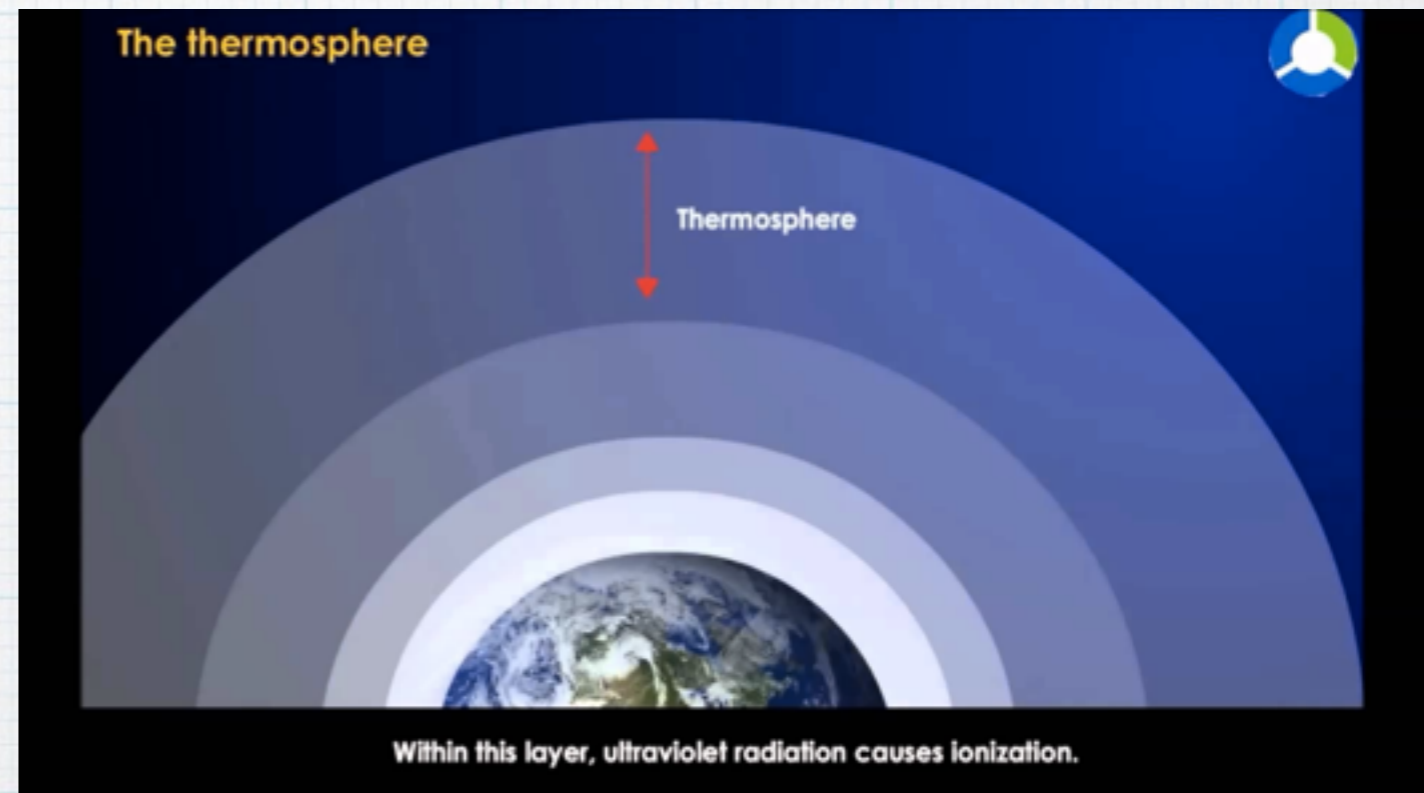
What is the Mesosphere?

- * The 3rd layer, extends from the stratosphere to about 85 km above the Earth's.
- * The coldest layer and windiest layer. Wind speeds can reach 200 mph.
- * Meteors burn up when they hit this layer.



What is the Thermosphere

- * Extends from mesosphere to more than 600 km above Earth.
- * Satellites & radio waves travel in this layer.



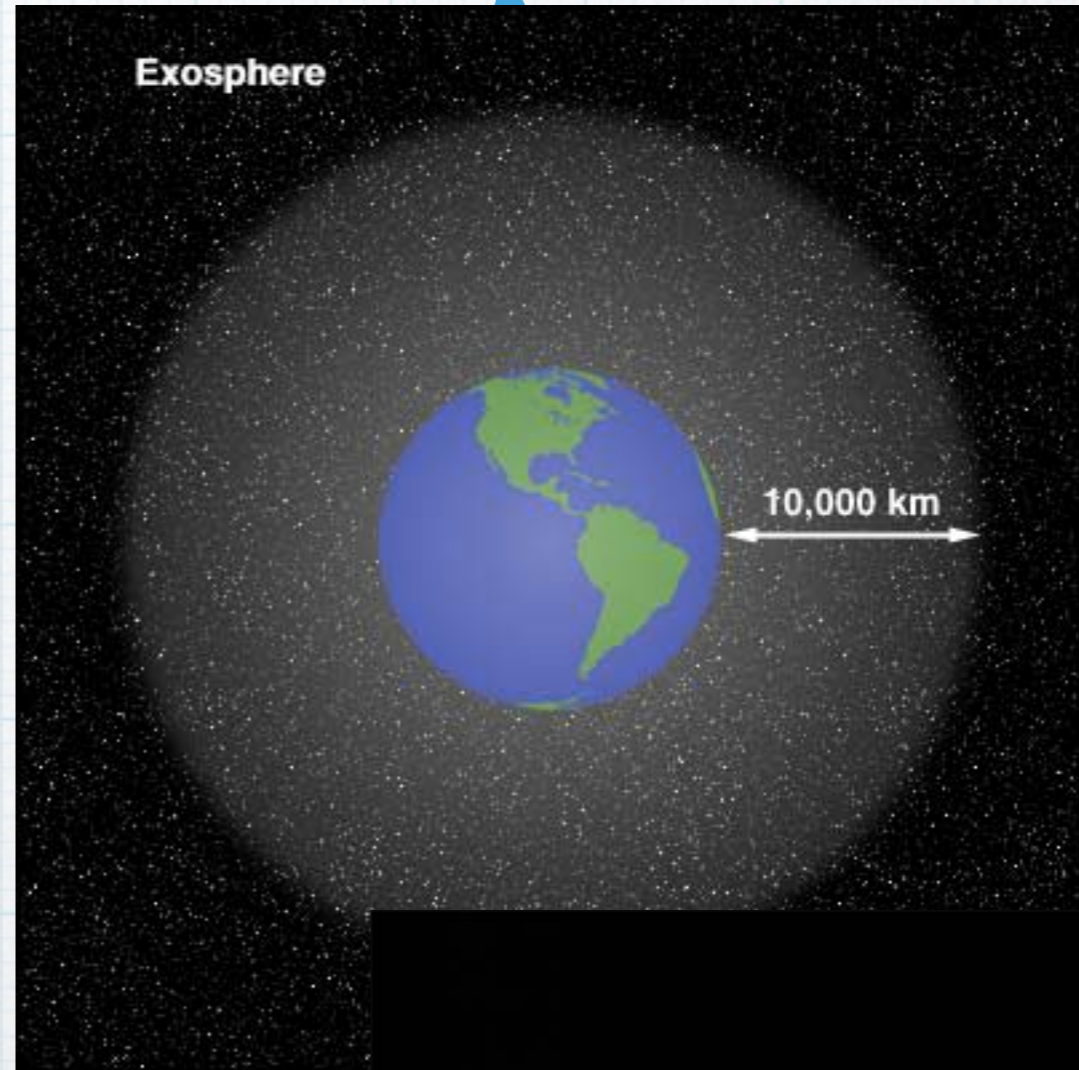
What is the Ionosphere?

- * **Definition:** A region within the mesosphere and thermosphere that contains ions. Auroras take place in the ionosphere.
- * **Contains electrically charged particles** due to absorption of ultraviolet radiation and X-rays that are given off by the sun.



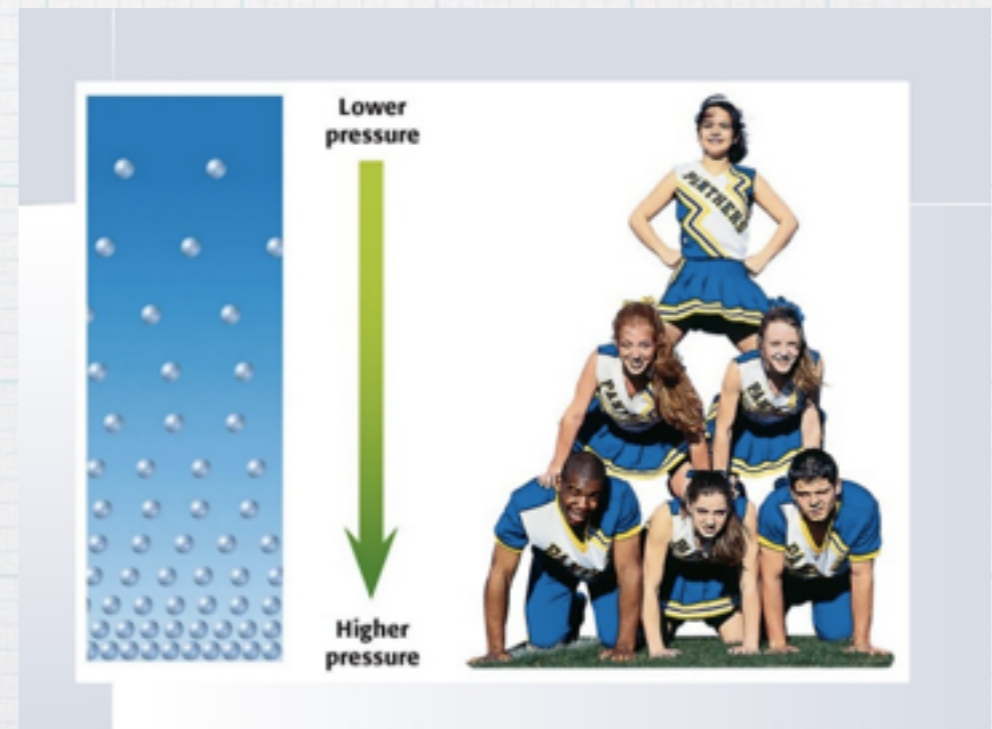
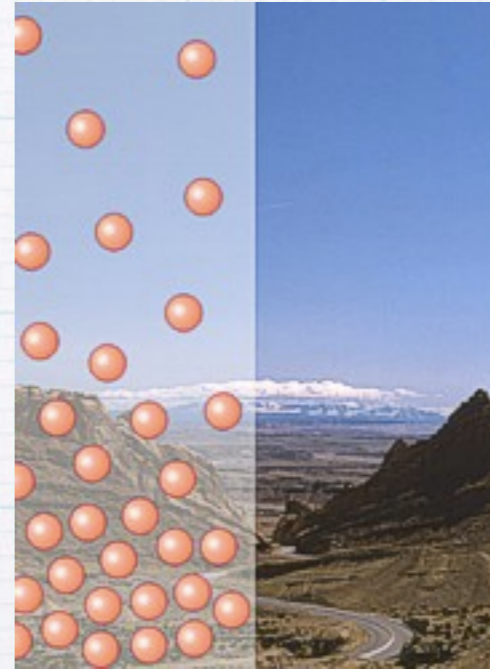
What is the Exosphere

- * The part of the thermosphere farthest from Earth's Surface. It is the boundary to outer space.
- * Air is extremely thin.
- * Satellites travel here because there is very little friction with air.



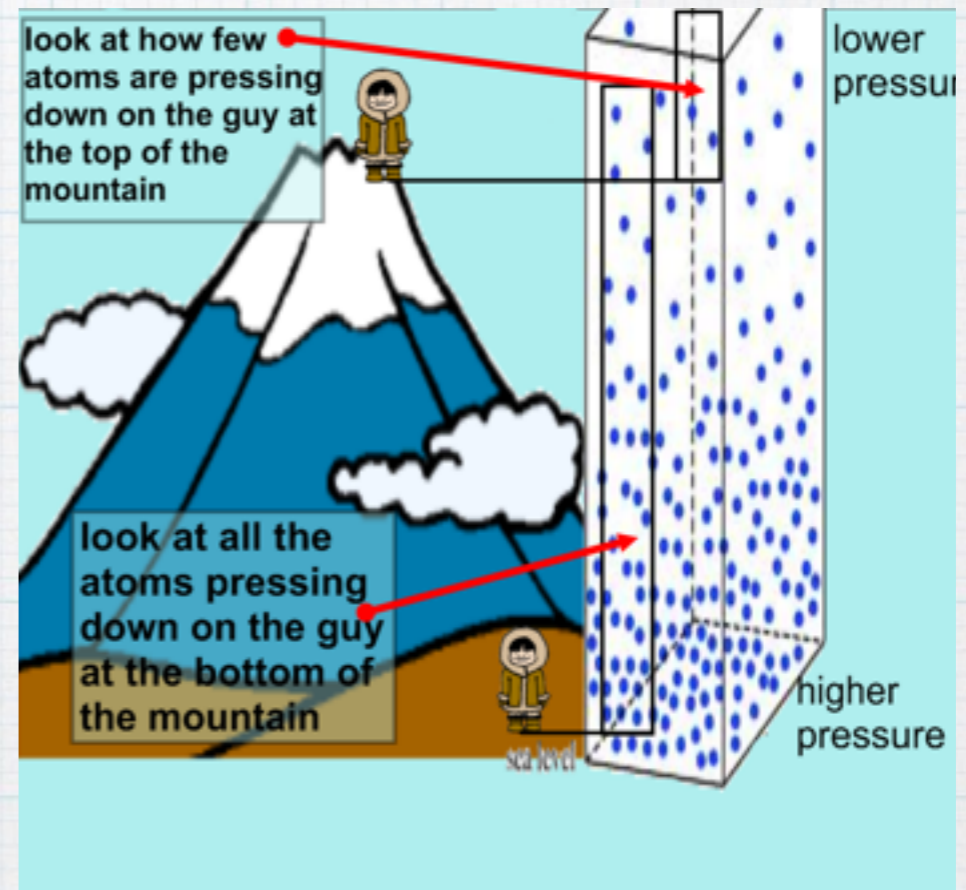
What is Air Pressure

- * The measure of the force which the air molecules push down on a surface.
- * Examples
- * Human pyramid: more people on the bottom, fewer on top. People on the bottom have more weight on them than the people on top.
- * You have 14.7 lbs of air pressing on every square inch of your body.



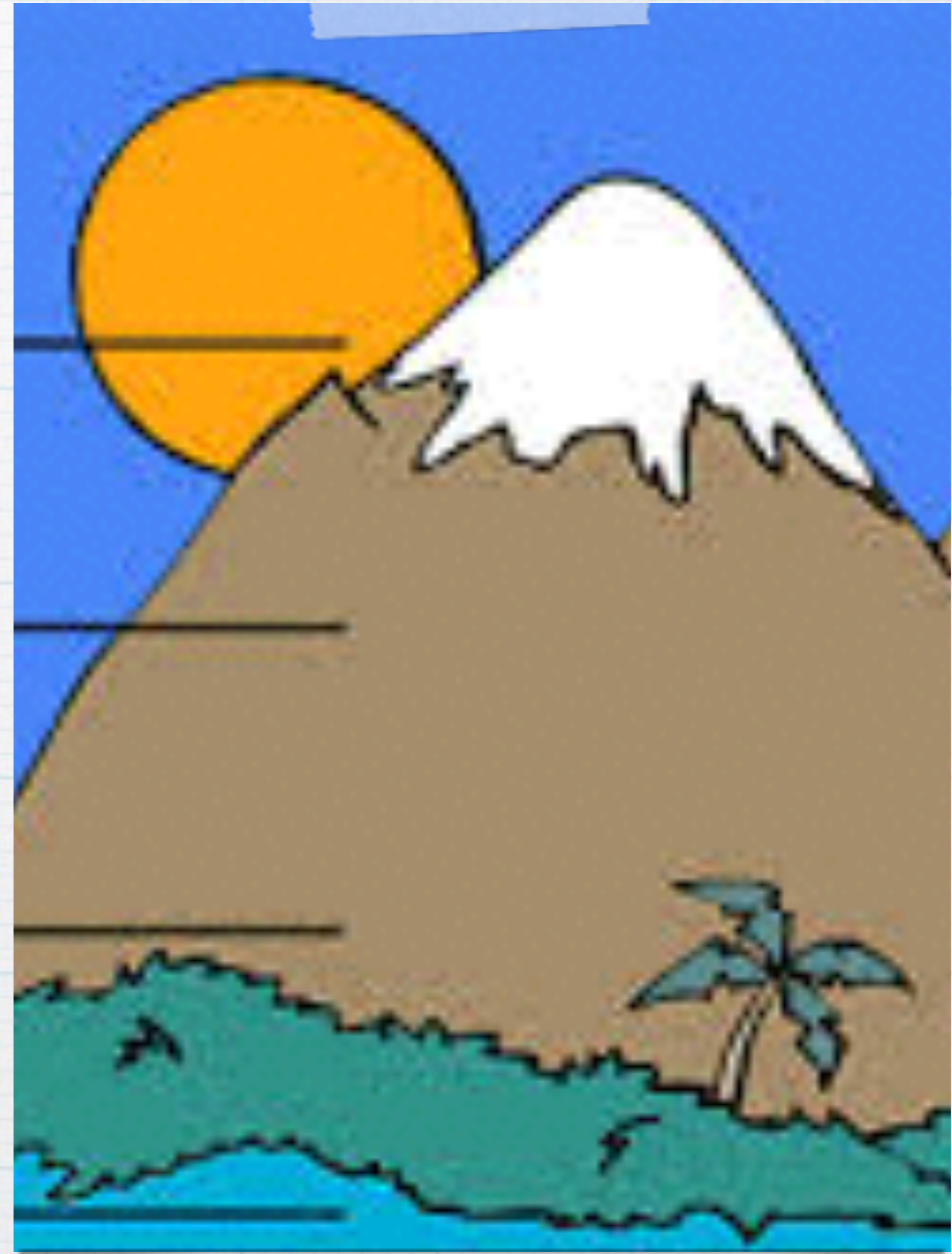
How are Air pressure and Altitude related?

- * As altitude increase, air pressure decreases. There are fewer gas molecules pushing down at higher altitudes.
- * Altitude is the height above the Earth's surface.



How are Air Temperature and Altitude Related?

- * As altitude increase temperature varies. Some layers have gases which absorb more thermal energy than others, such as the ozone layer.



Let's Review!

- * 1. _____ is a thin layer of gases surrounding Earth.
- * 2. the area of the stratosphere that helps protect Earth's Surface from harmful ultraviolet rays is the _____.
- * 3. Define Water vapor.
- * 4. Which atmospheric layer is closest to Earth?
- * 5. Identify two atmospheric layers in which temperature decreases as altitude increases.
- * 6. How is present day atmosphere compositions different from Early Earth's?
- * 7. Explain three ways the atmosphere is important to life on Earth.