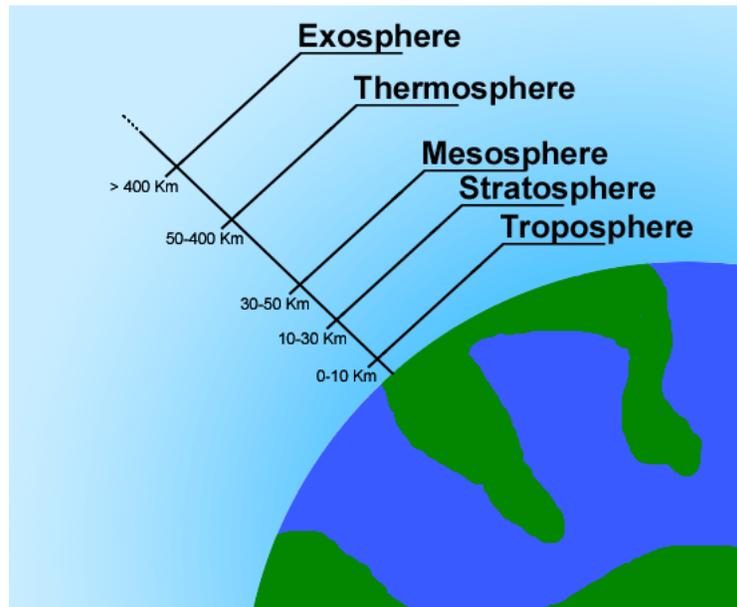


ATMOSPHERE

The earth is surrounded by five layers of air which without life could not exist. These layers combined make up the atmosphere.



Troposphere

This is the layer closest to the earth's surface and is the layer of air that we live in. It is about 10 kilometers thick and is the location where most weather and temperature changes occur.

Stratosphere

This is the layer of air above the troposphere and it rises to about 30 kilometers. The air in the stratosphere has little oxygen, there are no clouds, and it is very cold. About 90% of the earth's ozone resides in the stratosphere.

Mesosphere

This layer of the atmosphere rises to an altitude of about 80 kilometers. Part of this layer overlaps the upper part of the stratosphere. The temperature varies greatly in this layer, increasing from about 40-50 kilometers and dropping as the altitude increases.

Thermosphere

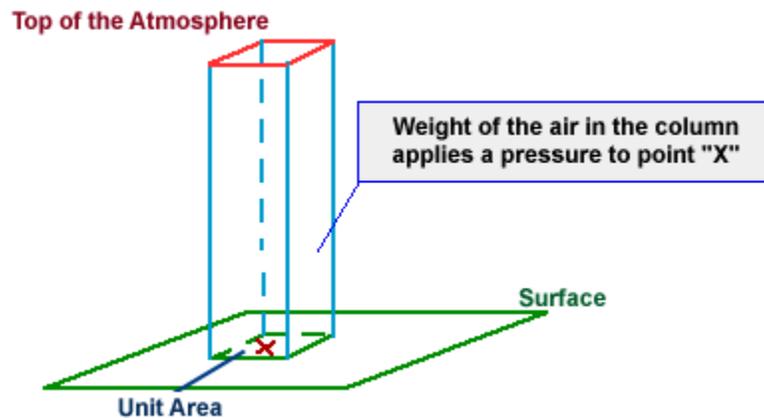
This layer rises to about 400 kilometers above the surface of the earth. The air in this layer is very thin and has little to no oxygen. Also found in this layer are electrically charged particles called ions which act like mirrors and reflect radio waves back to earth. This is one of the ways the National Weather Service is able to collect information on the weather.

Exosphere

Directly above the thermosphere is the exosphere which is commonly referred to as the outer region of the earth's atmosphere. This is also the layer in which space satellites orbit (circle) the earth. The outermost boundary of this region is not known. There is little matter in this region and it is nearly a perfect vacuum.

ATMOSPHERIC PRESSURE

Atmospheric pressure can be defined as the force per unit area exerted against a surface by the weight of the air above that surface.



Pressure is commonly measured in pounds per square inch (psi), for example, tire pressure is usually measured with an instrument that reads psi. As you increase in altitude, the pressure decreases because less air molecules are stacked on top. Also, as you descend deeper under water, the pressure increases, because more molecules (water & air) are stacked on top **of each other, creating more pressure.**

As altitude is increased, the external pressure on **a molecule of the** water is decreased. Therefore it takes less energy to **break** **boil water or change the state from liquid to vapor, releasing the bond on the water molecules.** **the water molecules.** Boiling an egg at high altitude takes less time and will require lower temperatures.

Please give the specifics of atmospheric pressure-14.2 # psi, what is 1 atmosphere, 2 atmospheres, pressure examples at higher elevations, pressures at depths in the oceans, as

CLOUDS

Clouds are visible aggregates of tiny water droplets and / or ice crystals suspended in the atmosphere and can exist in a variety of shapes and sizes. Some clouds are accompanied by precipitation: rain, snow, hail, sleet, even freezing rain.

Clouds are classified into a system that uses Latin words to describe the appearance of clouds as seen by an observer on the ground.

Latin Root	Translation
Cumulus	Heap
Stratus	Layer
Cirrus	Curl of hair
Nimbus	Rain

- Low-level clouds – form usually below 2,000 meters. Mostly composed of water droplets; ice and snow if temperatures are cold enough.
- Mid-level clouds – typically appear between 2,000 to 6,000 meters. They are composed primarily of water droplets because of their lower altitudes; however they can also be composed of ice crystals, if temperatures are cold enough.
- High-level clouds – form above 6,000 meters and are primarily composed of ice crystals. They are typically thin and white in appearance.
- Vertically developed clouds **are** formed through frontal lifting. These clouds can grow to height in excess of 12,000 meters. They also release large amounts of energy through the condensation of water vapor within the cloud.

Cloud chambers are used to create a cloud inside an enclosed container in order to see the visible trail of a charged particle's path by passing it through the cloud. These chambers are not related to weather, so be sure not to confuse the two.

Please list examples of clouds, such as cumulus, in the descriptions above.