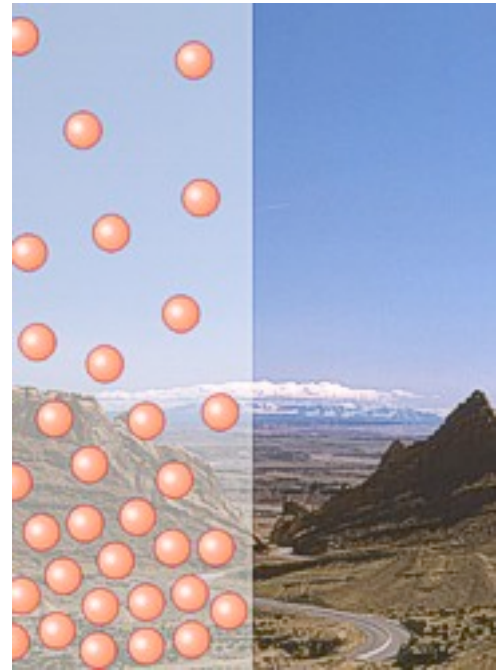


## Air Pressure

The atoms and molecules that make up the various layers in the atmosphere, despite their tiny size, actually exert some weight on us. We feel this weight as pressure.

Air pressure is simply the weight of air surrounding an object. The weight of air is directly related to the number of air molecules in a given area. Air pressure depends on the number of air molecules in a given space and how fast the molecules are moving. Near sea level, a box one inch on each side contains around 400 sextillion air molecules (400 followed by 21 zeros). The weight of all those molecules in one square inch is 14.7 pounds.

As elevation increases, the number of molecules decreases and the weight of air therefore is less, meaning a decrease in air pressure. In fact, while the atmosphere extends more than 15 miles (24 km) up, one half of the air molecules in the atmosphere are contained within the first 18,000 feet (5.6 km).



The two most common units in the United States to measure the pressure are "Inches of Mercury" and "Millibars". Inches of mercury refers to the height a column of mercury measured in hundredths of inches. This is what you will usually hear from the NOAA Weather Radio or from your favorite weather or news source. At sea level, standard air pressure in inches of mercury is 29.92. At sea level, standard air pressure in millibars is 1013.2. Weather maps showing the pressure at the surface are drawn using millibars.

Although the changes are usually too slow to observe directly, air pressure is almost always changing. This change in pressure is caused by changes in air density, and air density is related to temperature. Warm air is less dense than cooler air because the gas molecules in warm air have a greater velocity and are farther apart than in cooler air.

The most basic change in pressure is the twice daily rise and fall in due to the heating from the sun. Each day, around 4 a.m./p.m. the pressure is at its lowest and near its peak around 10 a.m./p.m. The magnitude of the daily cycle are greatest near the equator decreasing toward the poles.

On top of the daily fluctuations are the larger pressure changes as a result of the migrating weather systems. These weather systems are identified by the blue H's and red L's seen on weather maps. The H's represent the location of the area of highest pressure. The L's represent the position of the lowest pressure.

**How do changes in weather related to changes in pressure?**

The **FALL** of the barometer (decreasing pressure) signifies approaching bad weather

The **RISE** of the barometer (increasing pressure) signifies approaching good weather