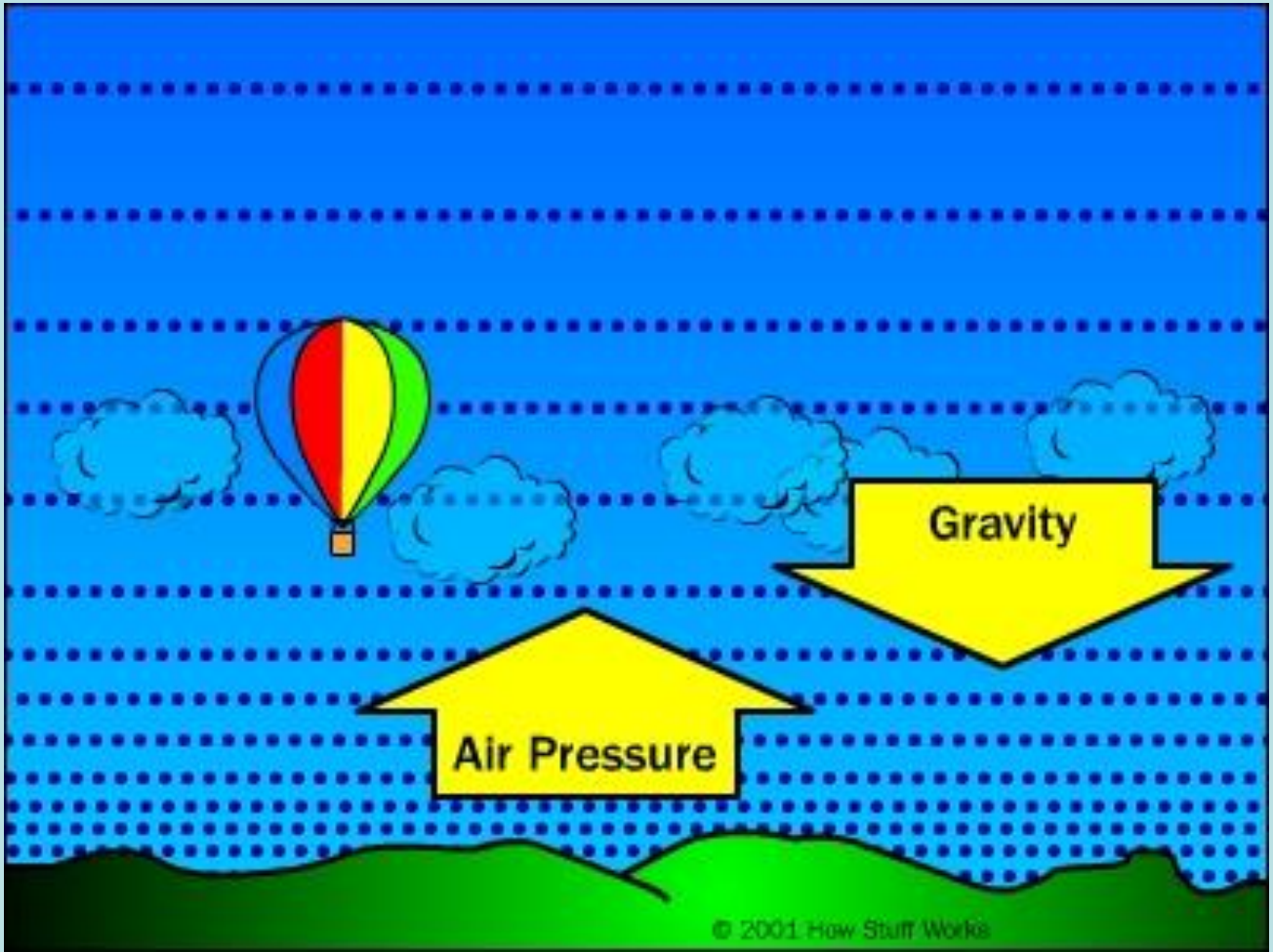
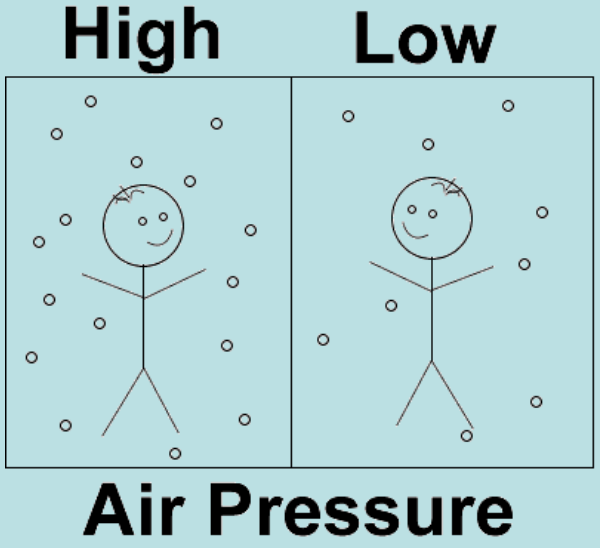
Air Pressure

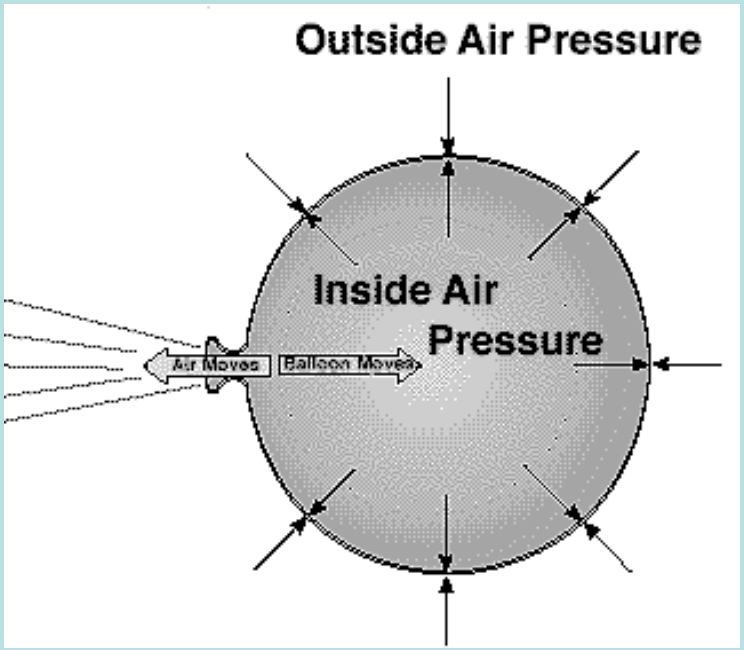
Can you feel it?



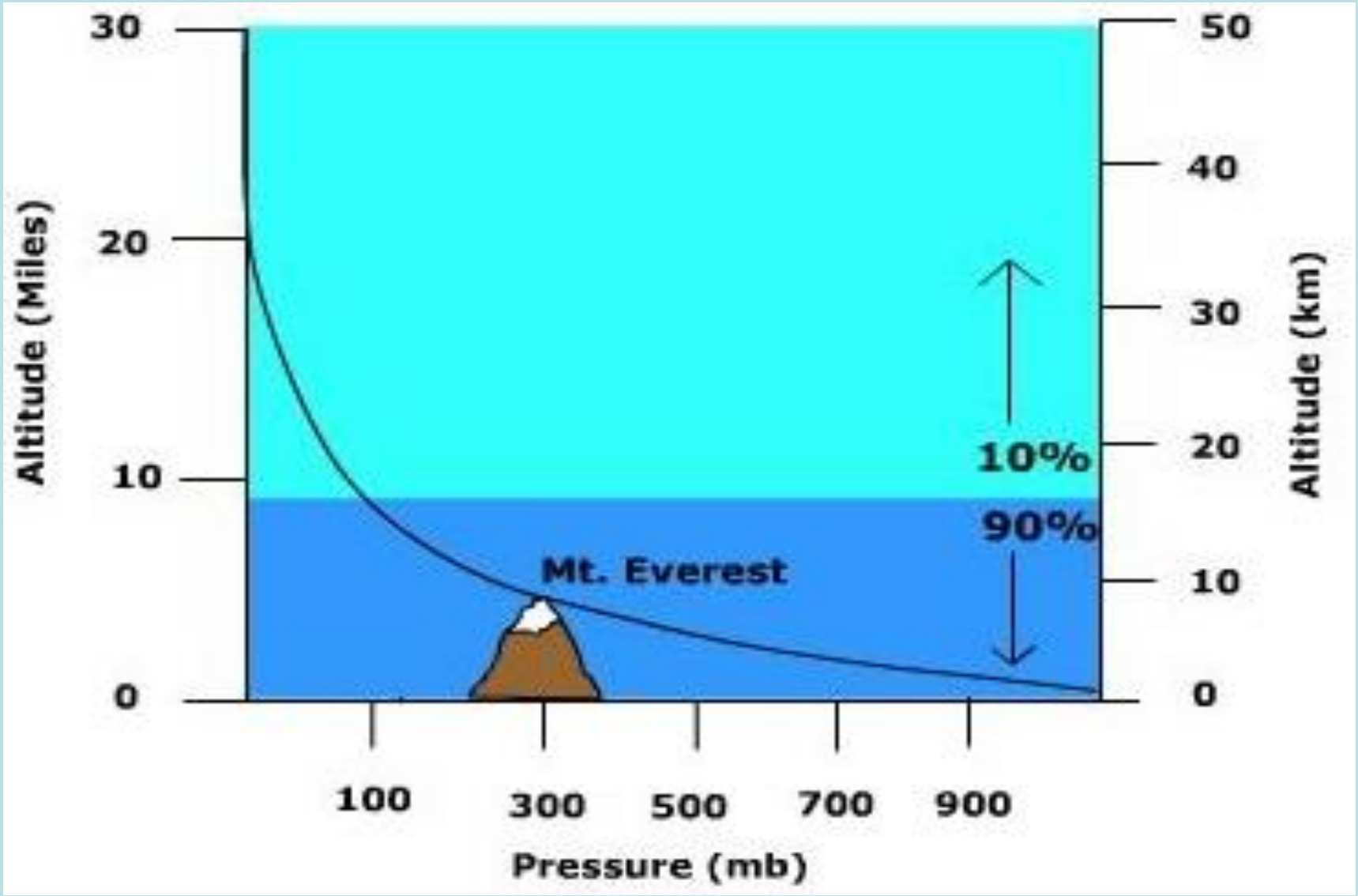
Air Pressure

- **Air pressure is the measure of the force with which air molecules push on a surface.**
- Air Pressure is **GREATEST** at the surface of Earth because ***there is more of the atmosphere above you to push down on you.***





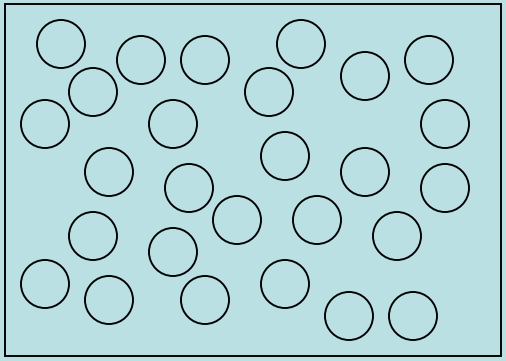
- As you **move UP** through the atmosphere, air pressure **decreases**.



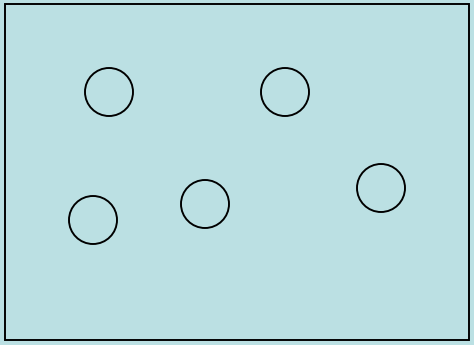
Air Pressure is dependant on **DENSITY**

- **More dense air** will have a **higher** **air pressure-** there are more air molecules in a given space to push down on you
- **Less dense air** will have a **lower** **air pressure-** there are fewer air molecules to push down on you.

More Dense= more particles to push down on you



Less Dense= fewer particles to push down on you

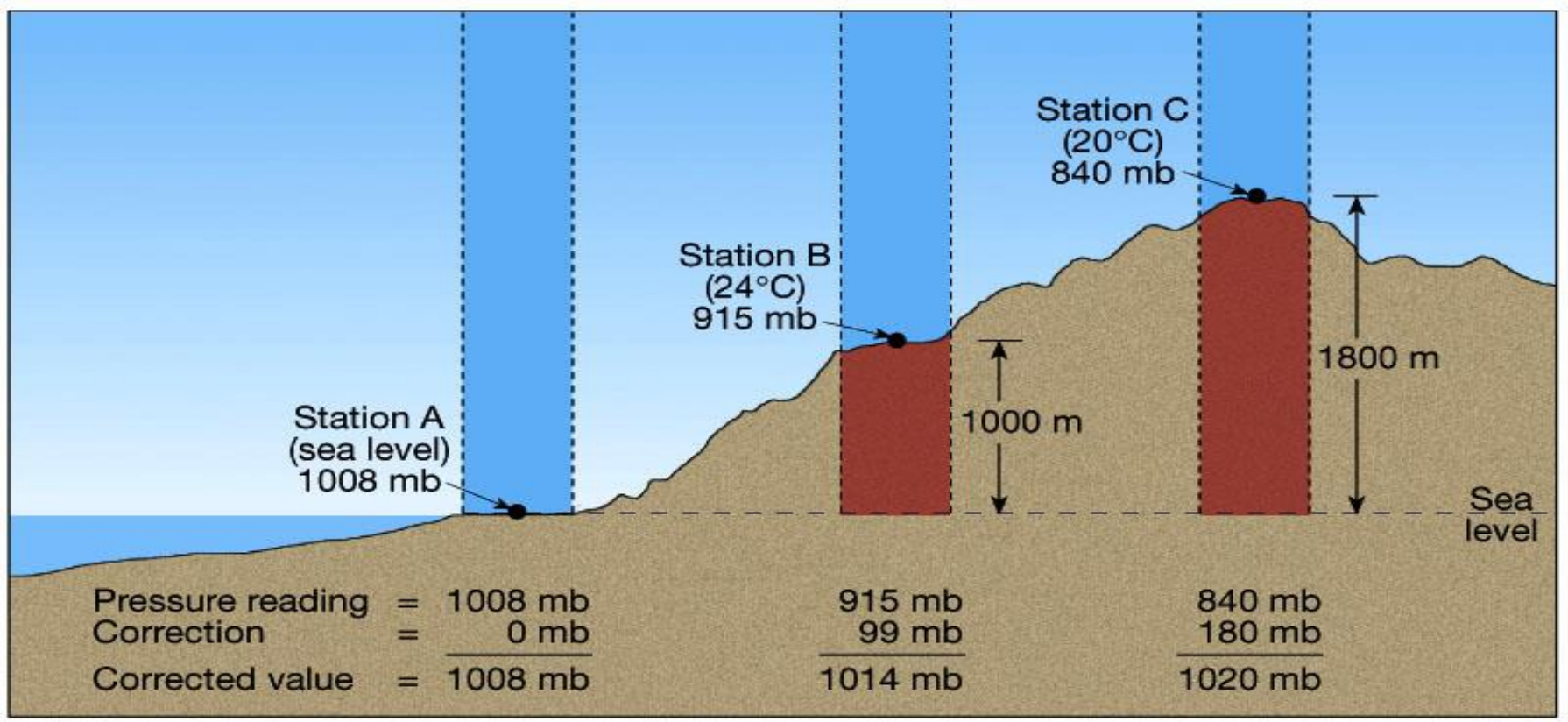


Air Pressure is affected by 3 factors

- **1- Elevation, or altitude**
- **2- Temperature**
- **3- Water content**

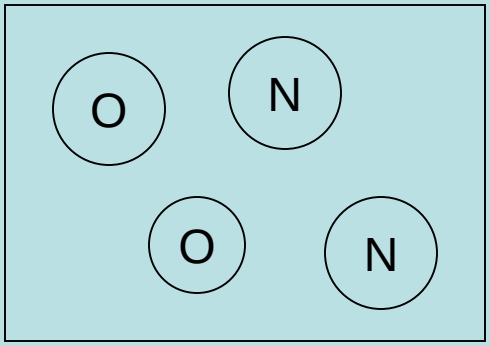
Impact of **Elevation** on Air Pressure

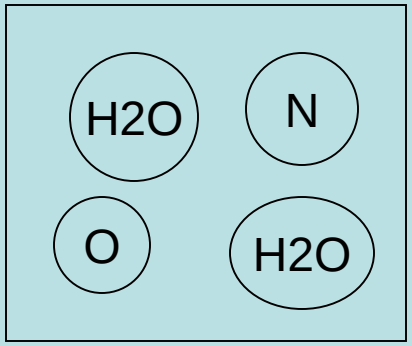
- As you move **up** through the atmosphere, air pressure **decreases**.
  - There are fewer air molecules above you to push down on you, so the force of the air will be less.



Impact of **Water Content**, or **humidity**, on Air Pressure

- Moist air is **less dense** than dry air, and therefore has a **lower** air pressure.
  - **A water molecule has less mass than other molecules that make up the air.** If you replace some of the air molecules with water molecules, the water lowers the density (and lowers the air pressure)



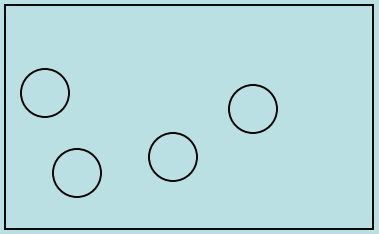


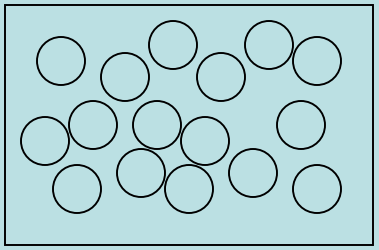
Weighs less since H2O is lighter than Nitrogen and Oxygen

Impact of **Temperature** on Air Pressure

- **Warm air** is **less dense** than **cold air**. Therefore, warm air has a **lower** air pressure and **cold air has a higher air pressure.**
  - **The molecules in warm air are moving fast and are spread farther apart**. Therefore there are fewer air molecules in a given area to push down on you.

Warm Air



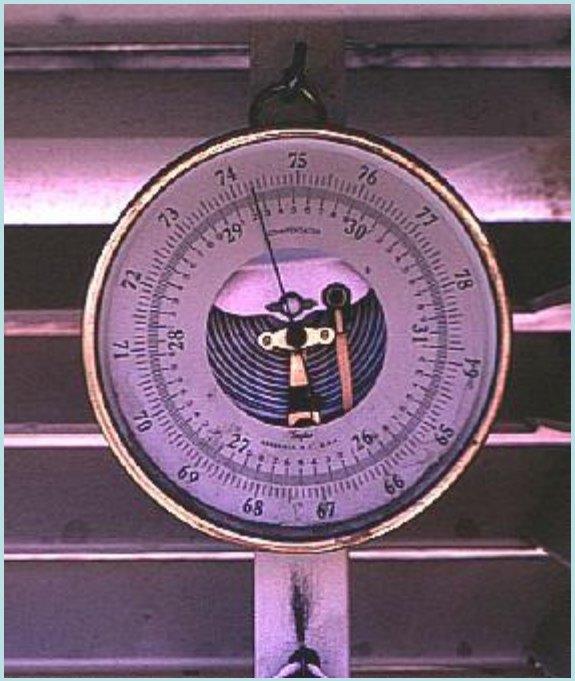


Cold Air

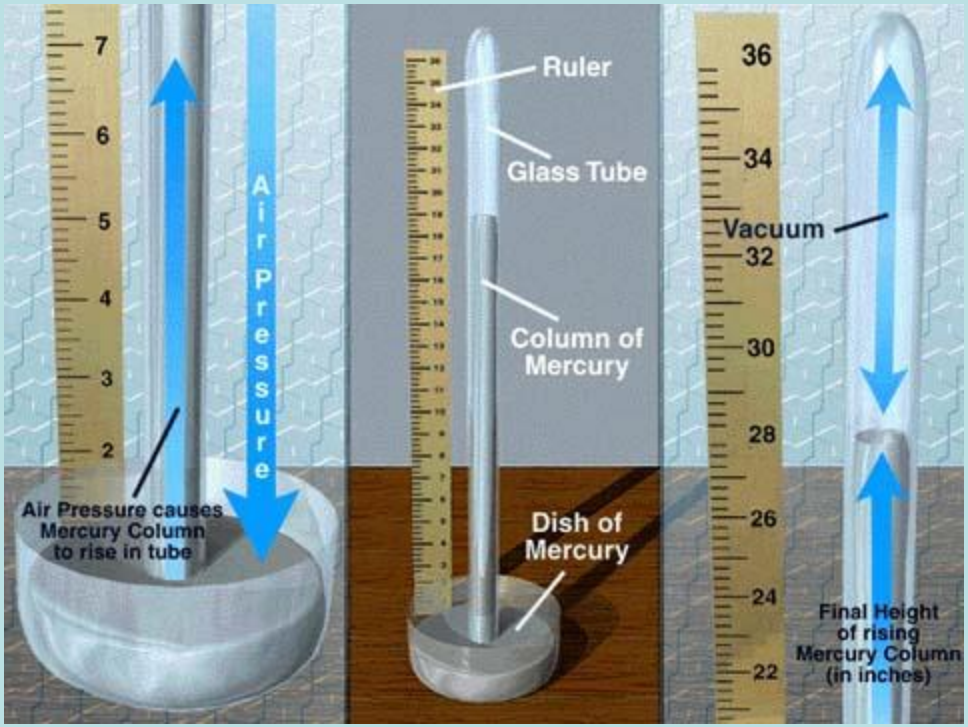
Barometer

- The piece of equipment used to measure **air pressure** is a **Barometer**

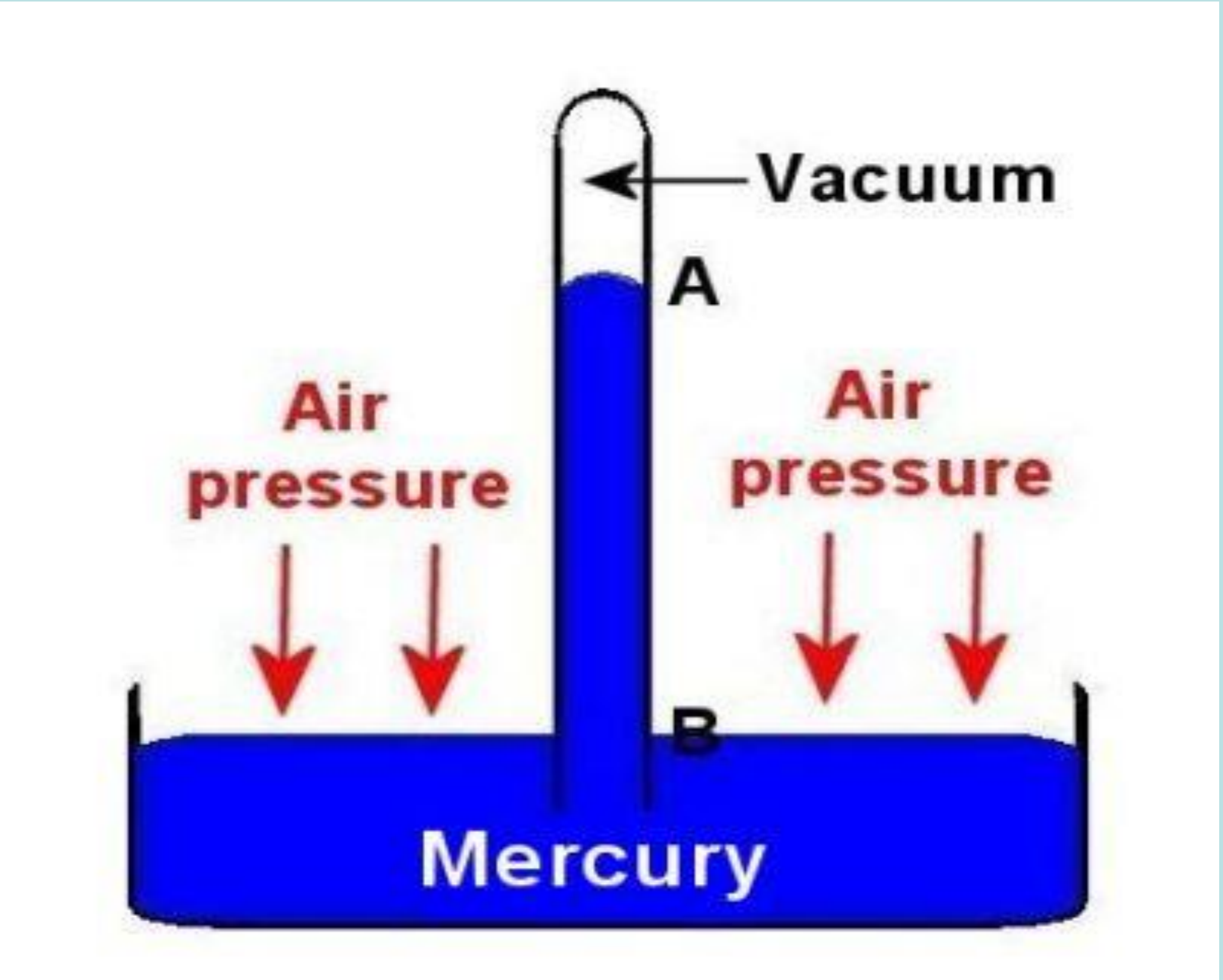
Aneroid Barometer



Mercury Barometer

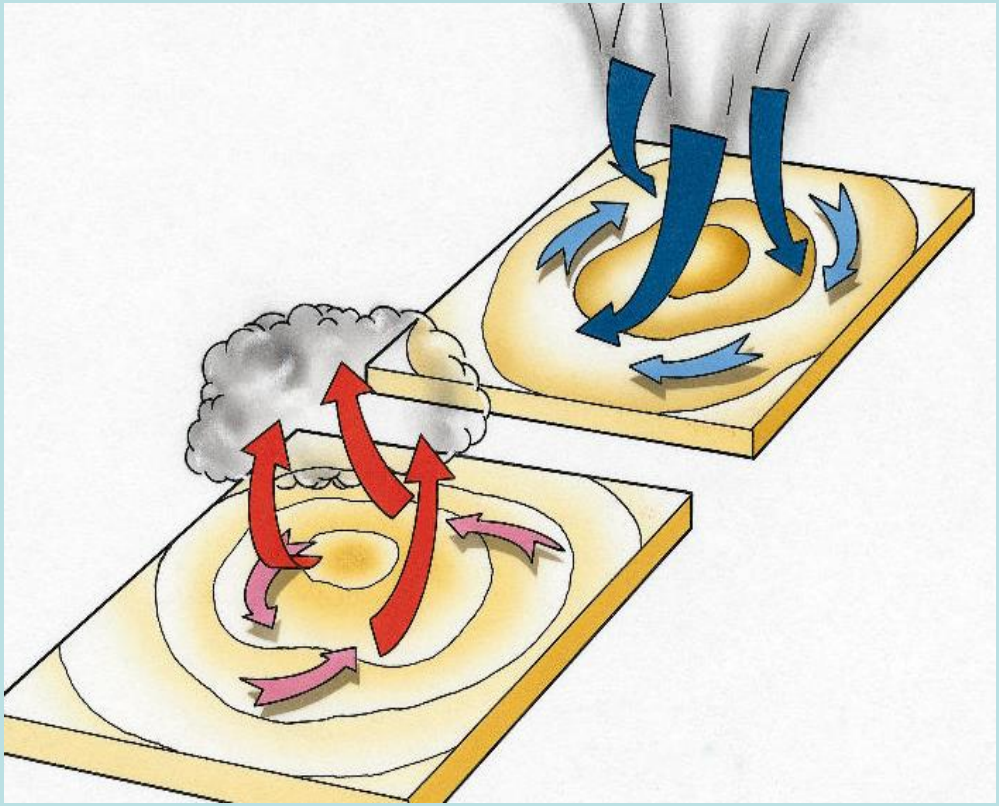


Mercury Barometer



Air Pressure Affects the Weather

- Air pressure in a weather system reflects the amount of **water** in the air, which affects the weather.



Low air pressure usually results in **Bad** weather: stormy, cloudy, overcast.

High air pressure usually results in **Good** weather: clear skies, no precipitation

Air Pressure on a Weather Map

- Areas of High and Low pressure on shown on a weather map with an H or an L.