

Weather and Climate



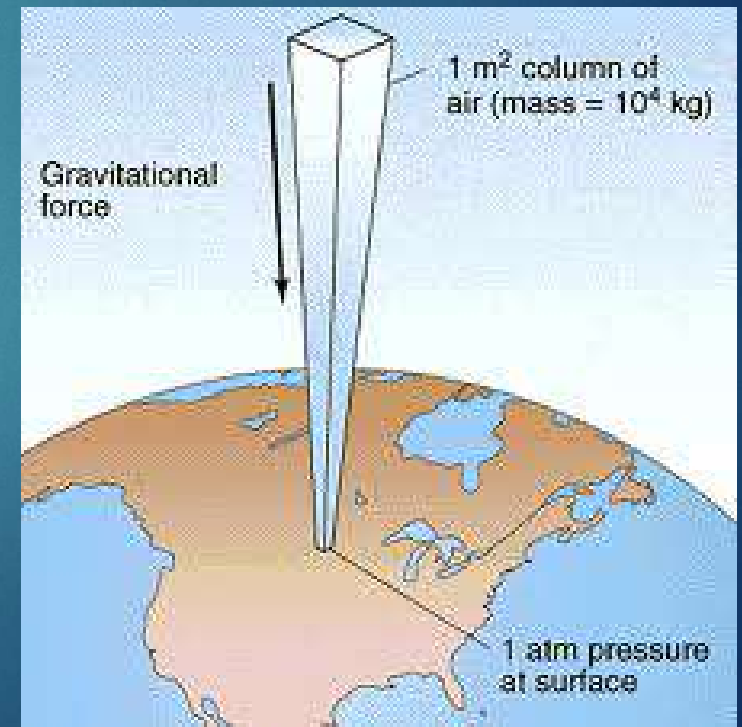
DENSITY

- ▶ The _____ of matter in an object
- ▶ The _____ of how mass something is divided by how much space it takes up

- ▶ Formula

- ▶ Density = _____ / _____

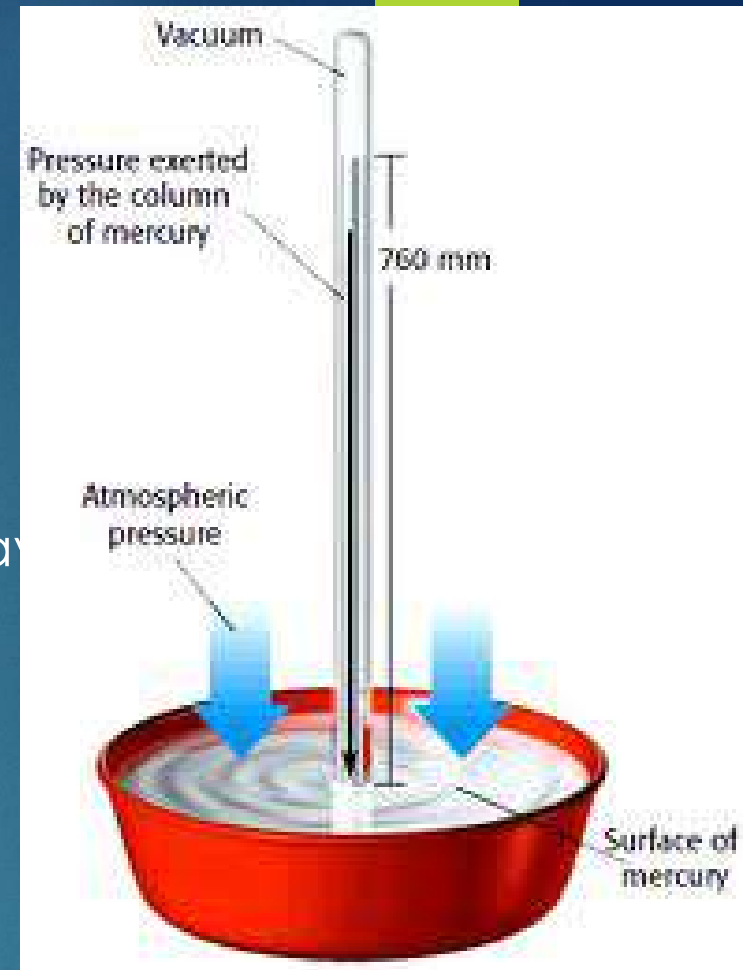
- ▶ DOES AIR HAVE MASS????



Atmospheric Pressure

- ▶ Measured by barometer
- ▶ _____ pressure = really means= how light or heavy the air is
- ▶ Low pressure = bad weather (_____)
- ▶ High pressure = nice weather (_____)

- ▶ *wet air is actually lighter than dry air (molecular weight of molecules)
- ▶ * warm air can hold more water than cold (never “humid” in the winter)



Effect of temperature on Air Pressure

- ▶ As temperature _____ pressure _____
- ▶ Hot air rises because the air _____ when it is warmed and becomes less dense.
- ▶ Hot air balloon



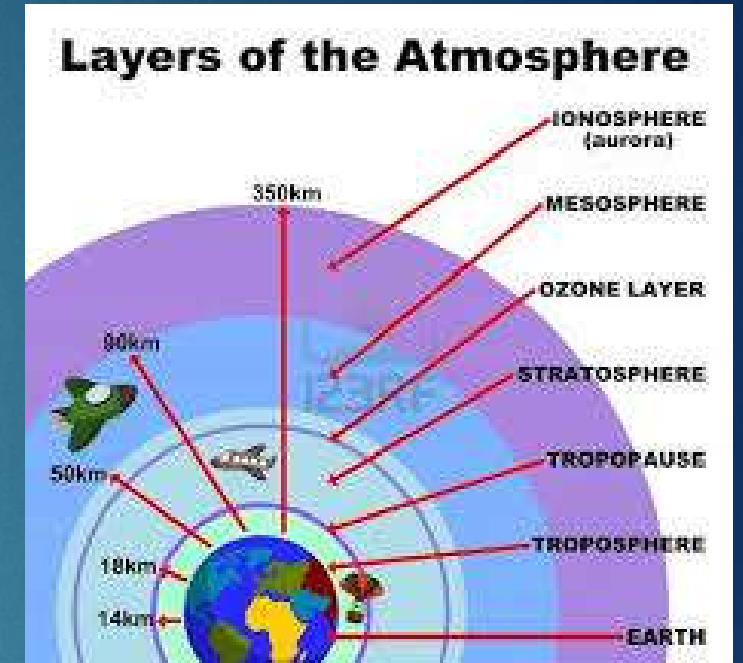
Effect of altitude on air pressure

- ▶ As you climb higher (go up in a plane, climb a mountain) the air molecules are more spread out/harder to breathe - _____
- ▶ Increase altitude ---decrease pressure



Effect of water vapor on pressure

- ▶ Wet air is actually less dense than dry air (molecular weight of elements in air)
- ▶ As _____ increases---- _____ decreases
- ▶ Only layer of atmosphere to have “weather” is the 1st one (troposphere) because it is the only one that has water vapor
- ▶ (side note – the aurora borealis take place in the IONOSPHERE)



WIND

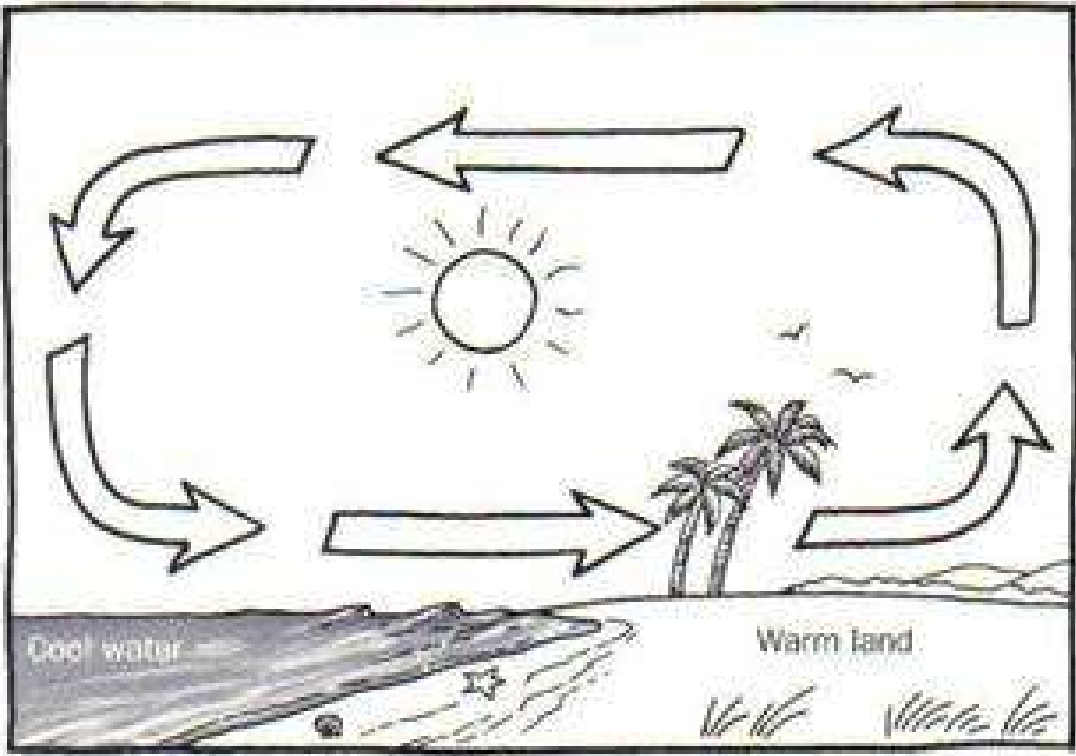
- ▶ Always wants to blow from _____ to _____ pressure
- ▶ The bigger the change in pressure that _____ the wind speed
- ▶ Always named for the direction it comes FROM, not where it is going to



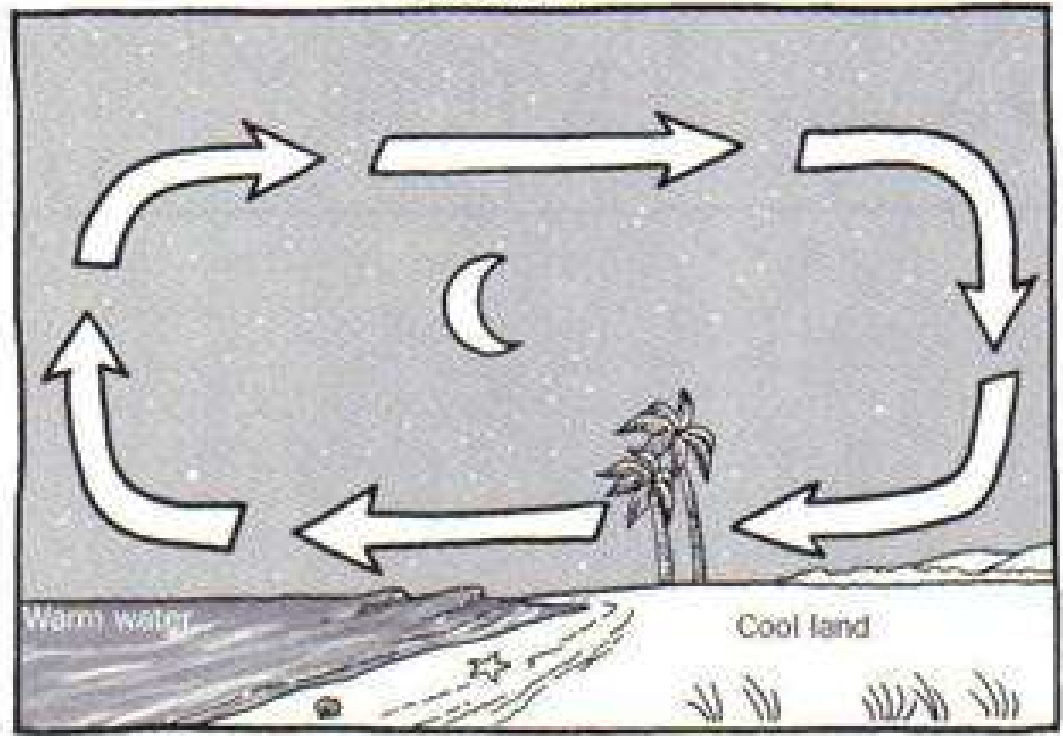
Wind speed is measured
using a ANEMOMETER

Land breezes VS Sea Breezes

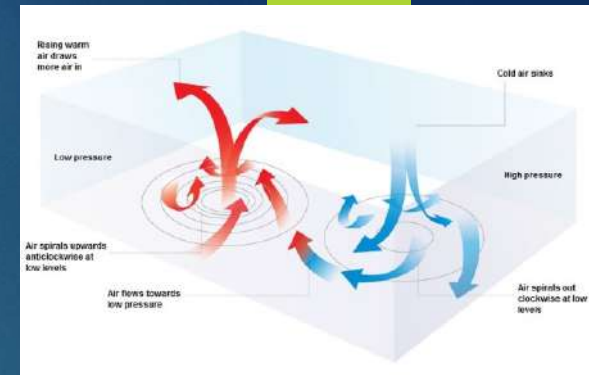
SEA BREEZE



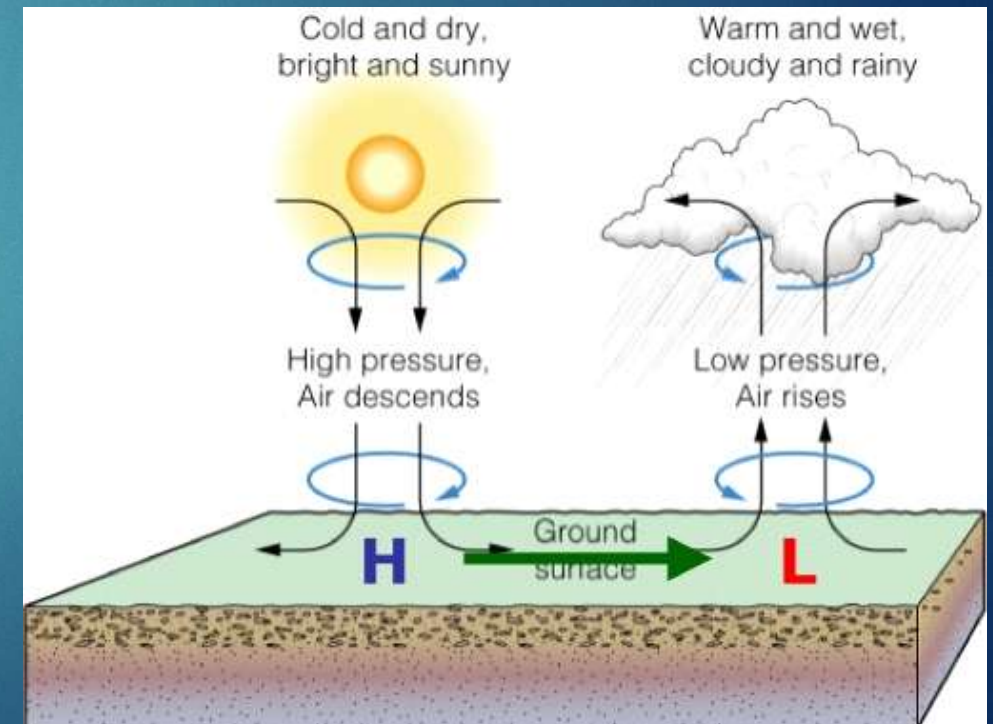
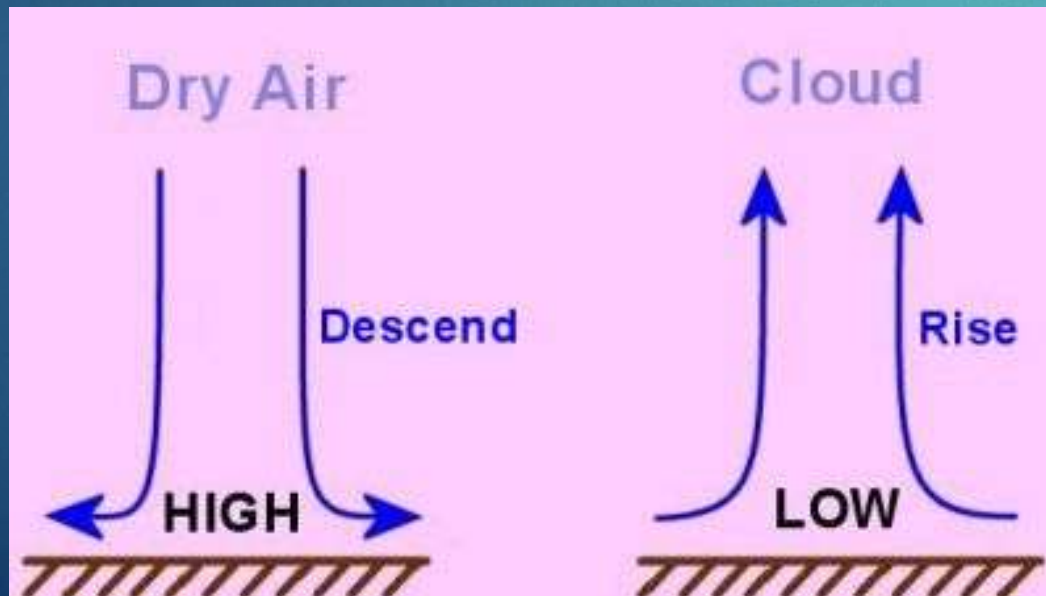
LAND BREEZE



High and Low pressure

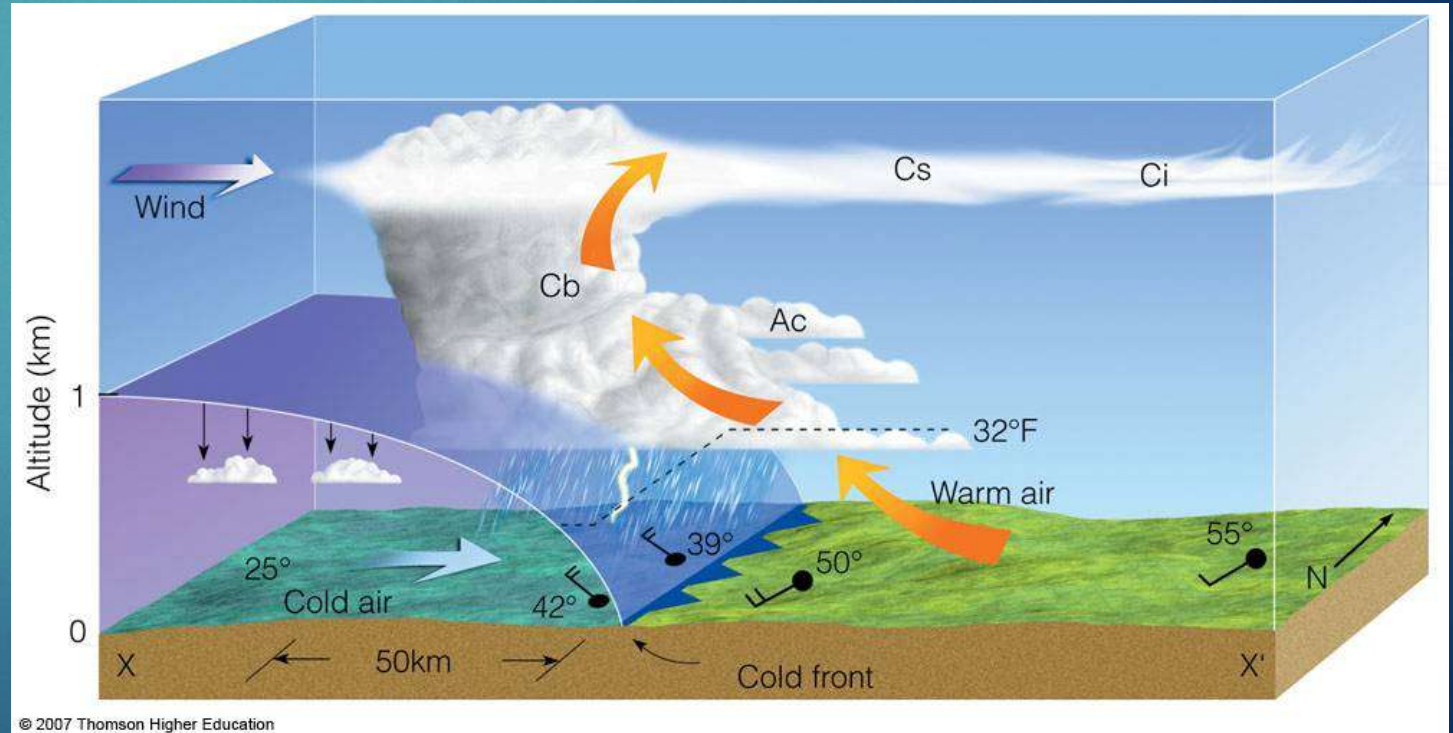


- ▶ Lows (cyclones) – pressure is lowest in the center so therefore winds blow inward
- ▶ Highs (anticyclones) – pressure is highest in the center so therefore winds blow outward



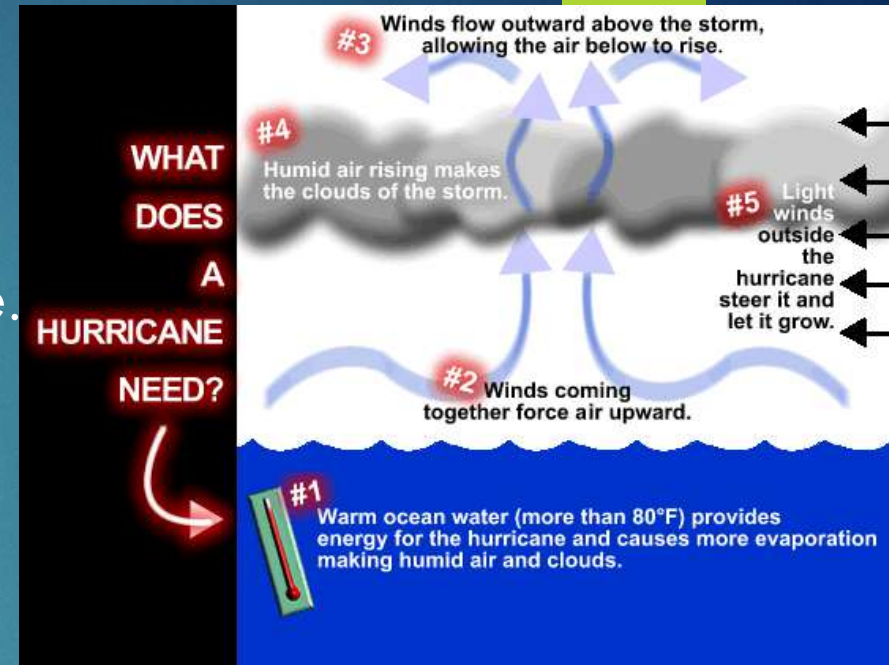
Fronts

- ▶ Where two air masses of different characteristics meet
- ▶ Most severe weather (storms) occur because two fronts have met one another
- ▶ _____ – the boundary of an advancing cold air mass
- ▶ _____ – the boundary of an advancing warm air mass



Severe Weather Events

- ▶ Hurricanes- warm oceans feed heavy winds and cause hurricanes. Winds can cause great damage.
-Must begin at _____
- ▶ Thunderstorms-rain clouds build electrical charges and cause electrical currents towards the grounds electrical charge (_____)
- ▶ Tornadoes- warm, moist air MEETS cool, dry air and cause a collision of air masses which lead to violent wind shifts and _____.



Climate (factors)

- ▶ Latitude
- ▶ Distance from large body of water
- ▶ Ocean currents
- ▶ Mountain ranges
- ▶ elevation

KEY TERMS

- ▶ Air pressure
- ▶ Barometer
- ▶ Density
- ▶ Altitude
- ▶ Atmosphere
- ▶ Water vapor
- ▶ Troposphere
- ▶ Land breeze
- ▶ Sea breeze
- ▶ Front
- ▶ Hurricane
- ▶ Tornado