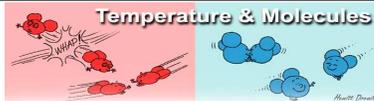
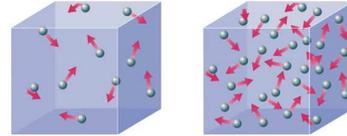


Heat Transfer & Wind Notes

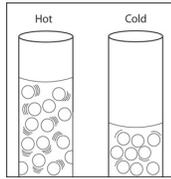
Temperature

- First, some definitions . . .
- **Thermal Energy:** the energy of heat
- **Kinetic Energy:** the energy of motion



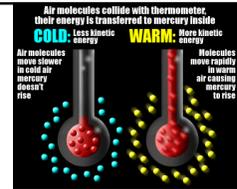
- What is **temperature**?
 - How hot or cold it is? (what does that mean?)

- **Temperature:** average amount of movement of a substance's particles (atoms/molecules)
 - **Heat:** particles are moving rapidly, expanding in volume
 - **Cold:** particles are moving slowly, contracting (shrinking) in volume

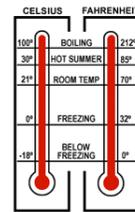


Temperature

- How is temperature measured?
 - Thermometer!

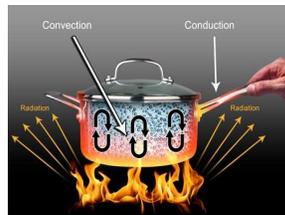


- Measurement Scales
 - Fahrenheit (used in weather reports)
 - water freezes at 32° F, water boils at 212° F
 - Celsius (used by scientists)
 - Water freezes at 0° C, water boils at 100° C
 - Kelvin (another scale used by scientists)



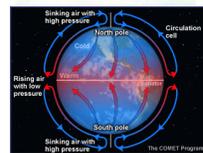
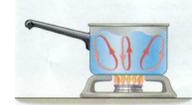
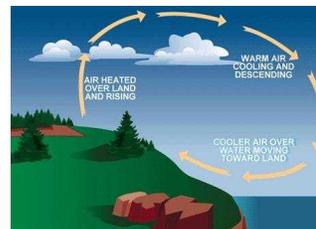
Heat Transfer

- Movement of heat is the movement of energy
- **Radiation:** direct transfer by electromagnetic waves
- **Conduction:** direct transfer from one substance to another
- **Convection:** transfer by movement of a fluid (air, water, magma)



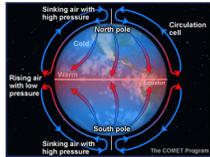
Heat Transfer in Troposphere

- **Convection Currents:** upward movement of warm fluid (air) and downward movement of cold fluid (air) in a cycle



Wind

- **Heat** changes **pressure** which causes movement in fluid (air)
- **Wind**: movement of air from areas of high pressure to low pressure, caused by unequal heating of Earth's surface



Wind

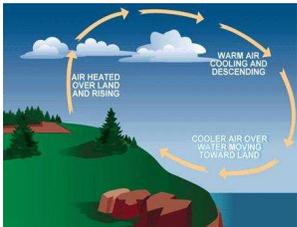
- **Anemometer**: used to measure wind speed



- **Wind-Chill Factor**: increased cooling by wind
 - Wind moving over your skin makes you feel cooler, but doesn't actually change temperature

Local Winds

- **Local Winds**: blow over short distances, caused by unequal heating of Earth's surface in a small area

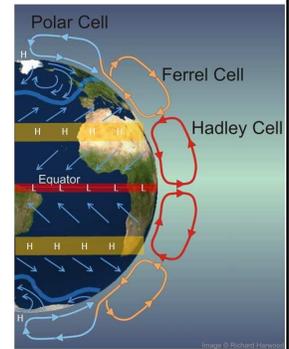


Land warms up faster than water

- **Sea Breeze**: wind blowing from ocean to the land during the day
- **Land Breeze**: wind blowing from land to the ocean during the night

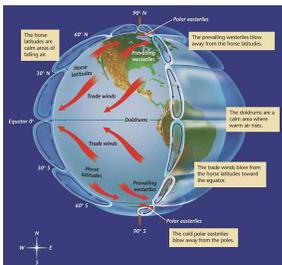
Global Winds

- **Global Convection Currents**: movements of air across the planet
- **Coriolis Effect**: Earth's rotation causes winds to curve
 - Northern hemisphere, to the right



Global Winds

- Turn to page 51 in textbook



- Draw Fig. 11 and label:
 - **Doldrums**: calm areas of rising air
 - **Horse latitudes**: calm areas of falling air
 - **Trade winds**: blow from horse latitudes to equator
 - **Westerlies**: blow from horse latitudes to the poles
 - **Easterlies**: blow away from the poles