Unit 6: Weather

*Chapters 15, 16 & 17 in Textbook*

Definitions to know:

**Meteorology** is the study of the atmosphere- including weather.
**Weather** is the condition of the atmosphere. It can change from time to time and place to place.
**Climate** is the type of weather an area has over a long period of time.

The layers of the atmosphere are separated by different temperature variations.

The atmospheric layers:



**Troposphere**

* We live in the troposphere.
* 0-18 km
* Gets colder as you go up.
* All weather occurs here
* "The Troublesphere”
* All water vapor in the atmosphere is here

**Stratosphere**

* Temperatures get warmer as you go up.
* Home of the Ozone layer.

**Mesosphere & Thermosphere**

* Upper layers of the atmosphere.
* The air is very thin here.

There are many atmospheric variables. These can all be measured, and change from moment to moment:

* Temperature
* Air Pressure
* Wind Speed and Direction
* Water content and humidity
* Cloud Cover
* Precipitation
* Others (dust, pollen, etc).

**Temperature** – the average kinetic energy of molecules. Heat enters the atmosphere through solar radiation.

What does that look like?

There are 3 ways to measure temperatures:

**Fahrenheit**

* Water freezes at 32°
* Water boils at 212 °

**Celsius**

* AKA Centigrade (100 levels)
* Water freezes at 0 °
* Water boils at 100 °
* Makes more sense and is easier to make a thermometer

**Kelvin**

* Same scale as Celsius but 0 means zero energy
* No degrees mark for Kelvin, just K.
* 0K means that all atomic vibrations stop – what would this mean?

**Converting Temperature**

To convert °C into °F: °F = (°C x1.8) + 32

To convert °F into °C: °C = (°F - 32) ÷ 1.8

To convert °C into Kelvin K = °C + 273.15

To convert K into °C: °C = K -273.15

**Food for thought:**

* Energy always go from high to low.
* There is no such thing as “cold”.
Cold is just an absence of heat.
* Ice doesn’t add cold to something.
It sucks the heat into it.
* Heat flows from hot to cold

**There are 3 ways to transfer heat:**

 **Radiation**

**Conduction**

**Convection**