Name: _____ Unit 3: Weather, Climate & The Atmosphere NOTES: 3.09

**FOCUS:** Factors Contributing to Climate

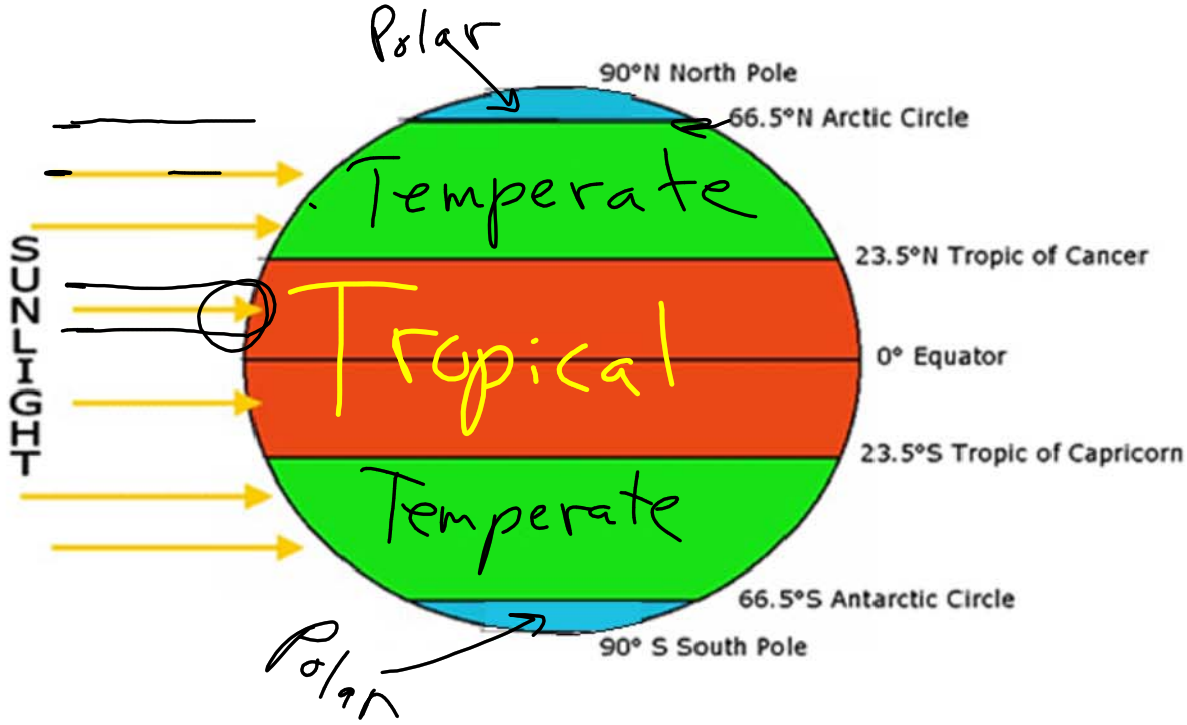
**ESSENTIAL QUESTION:** Can you describe the factors that contribute to determining the climate of an area?

**What is climate?**

- ***Climate is:*** The average weather conditions over many years in an area
- Most of the time, scientists use the two main factors of temperature and precipitation to describe an area's climate.

**What factors contribute to an area's climate?**

- The main factors that influence climate are latitude, elevation, proximity to major bodies of water and ocean currents.



Name: _____Unit 3: Weather, Climate & The Atmosphere NOTES: 3.09

- ***Latitude Climate Zones:***
  - Tropical Zone:
    - Found near the Equator, between 23.5°N and 23.5°S latitude.
    - Receives direct or nearly direct sunlight year-round = warm temperatures.
  - Polar Zone:
    - Found near the poles, between 66.5°N (Arctic Circle) and 90°N latitude (North Pole) & 66.5°S (Antarctic Circle) and 90°S latitude (South Pole).
    - Sun strikes at a shallow angle or not at all = cold temperatures.
  - Temperate Zone:
    - Found between the Tropical and Polar zones (23.5°N – 66.5°N and 23.5°S – 66.5°S).
    - Sun strikes more directly in the summer and at a ~~steep~~ shallow angle in the winter.
    - Results in four seasons that have a wide temperature range.

- ~~***Altitude:***~~ Elevation
  - In the troposphere, temperature decreases about 6.5C° for every 1 km increase in elevation.
  - Result = Highland areas everywhere have cool climates, no matter what their latitude.
  - Ex: Mount Kilimanjaro
    - Located in East Africa, but is covered with snow year-round.

Name: _____Unit 3: Weather, Climate & The Atmosphere NOTES: 3.09

- Summit temperature is usually 70F°, 39C° colder than base temperature.
- Elevation = 19,341 feet

- ***Distance from large bodies of water:***
  - Since water has a higher specific heat than land, water will heat up very slowly, but also cool down very slowly.
  - **Result:**
    - Marine climates have less extreme climates (mild winters and summers).
      - California, Western Europe, The Mediterranean
    - Continental climates have more extreme climates (cold winters and hot summers).
      - Ex: Central Canada, Siberia, Central U.S.

Name: _____ Unit 3: Weather, Climate & The Atmosphere NOTES: 3.09

- ***Ocean Currents:***
  - A ***current*** is: A large stream of water moving within the ocean in a regular pattern
  - Warm ocean currents move from the tropics toward the poles and warm the air above them.
    - **Result:** warmer than expected climate along the coast.
    - Ex: The Gulf Stream brings mild, humid air to Ireland and U.K., giving them a mild, wet climate despite their high latitude (same latitude as Canada and Russia).
  - Cold ocean currents move from the poles toward the tropics and cool the air above them.
    - **Result:** Cooler than expected climate along the coast.
    - Ex: The California Current brings cold air to California from the Gulf of Alaska, giving them a mild climate, despite their low latitude (same latitude as Florida, Georgia, Northern Africa and India).