Climate

- Weather is the condition of the Earth's atmosphere at a particular time and place.
- Climate is weather conditions in an area over a long period of time.
    - Climate determines that types of plants and animals that can survive, and it influences how people live.

The Sun and Climate

- Climate of an area is directly related to the amount of energy from the Sun (solar energy) that area receives.
- This amount depends on the latitude —*the angular distance in degrees north and south from the equator.*
    - Different latitudes receive different amounts of solar energy

Latitude and Climate

- Earth has 3 major types of climate zones.
- Each zone has a distinct temperatures that relates to its latitude.
- Regions closest to the equator receive more solar radiation and this effects their climate.

1. Temperate ***Zone***
    - Located between the tropical and polar zone (23.5° and 66.5° N + S)
    - Average temperature below 18 degrees C (64 degrees F) in the coldest month & above ____ degrees C (____ degrees F) in the warmest month
    - 5 Temperate Zone Subclimates:
        - Marine west coast, Steppe, Humid Continental, Humid Subtropical, and Mediterranean
    - Most of the United States are in this zone
2. Polar ***Zone***
    - Extends from 66.5° N + S to the poles of Earth
    - Solar radiation hit these zones at a low angle, spreading the energy over a large area.
    - Coldest Zone → temperatures rarely rise above 10 degrees C (50 degrees F)
    - 3 Polar Zone Subclimates:
        - Subartic, Tundra, and Polar Ice Cap

3. Tropical ***Zone***

- Latitude between 23.5°N + 23.5° S (equatorial region)
- Average monthly temperature of at least 18 degrees C (64 degrees F)
- Receive that most solar radiation (direct sun)
- Always hot, unless at a high elevation
- 3 Tropical Subclimates:
  - Rain Forest, Desert, Savanna

Large bodies of water

- Affects the climate by absorbing and letting off heat more slowly than the land around it
  - Water helps moderate the temperature of nearby land
  - Sudden or extreme temperature changes rarely take place on land near large bodies of water.

Ocean currents

- Movement of water in a certain direction.
- Surface Currents are on the surface of the ocean and are driven by winds.
- Warm currents flow from the equator and warm the coastal land in higher latitudes.
  - Gulf Stream – moves warm water from Gulf of Mexico toward Great Britain and Europe creating milder climates
- Cool currents flow back toward the equator and cool the air near the equator.

Mountains/Elevation

- Climate is always colder at the same latitude up in the mountains rather than at sea level.
  - Why? thinner, less heated air higher in the atmosphere.
  - Temperature decreases about 6.5°C - for every km you rise in elevation
- Rain Shadows: when mountains cause climate to be different from one side to the other.