**CLIMATE CHANGE & HUMAN IMPACT ON AIR**

**Weather & Climate**

* Weather and Climate **both** involve \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in temperature, precipitation, and other environmental factors.
* **Weather:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of Earth’s atmosphere.
  1. Examples: Rainy, Sunny, Hurricane, Breezy, 76⁰
* **Climate:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of temperature and precipitation
  1. Examples: Hot & humid in the summer with average of less than 5 inches of rain per month
  2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ conditions

**Factors that affect Climate**

1. Solar \_\_\_\_\_\_\_\_\_\_\_\_ trapped in the Biosphere
3. Transport of heat by \_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_

* **Solar Energy trapped in the Biosphere**

When sunlight hits the Earth, some of the energy is:

* + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ back into space
  + Absorbed and converted into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    1. Heat will either be lost to space or trapped in the biosphere.
  + This balance between the heat that is absorbed and the heat that is lost determines Earth’s average \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_!
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, & \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ trap heat.
    - These gases cause the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (trapping heat), without them the Earth would be too cold for survival!
* **Latitude and Solar Energy**
  + The distribution of heat from the sun is different depending on where you are!
  + Angles of Heating creates Climate Zones
    - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 🡪 Direct sunlight all year
    - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 🡪 Different amounts of sun and different seasons
    - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 🡪 Sunlight at a lower angle
* **Heat Transport in the Biosphere**
  + Heat movement creates wind and ocean currents, which transports moisture.
  + Warm air rises and cool air sinks 🡪 this constant movement creates \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + The same is true for ocean currents. The movement of water can warm or cool the air above the ocean, which affects weather patterns on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* **What is Ozone?**
  1. Ozone is a \_\_\_\_\_\_\_\_\_\_ found primarily in the outermost layer of the Earth’s atmosphere (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_).
     1. This layer shields the Earth from harmful \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that comes from the sun.
     2. Interestingly, ozone is also created by this ultraviolet radiation being absorbed.
     3. The amount of ozone in the atmosphere varies:
        1. by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ depending on the amount of sunlight (Tropical vs Polar).
        2. on daily \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Human Impact on Air**

* **What are Chloroflurocarbons (CFCs)?** 
  1. Chemicals manufactured by humans that make their way to the stratosphere and chemically \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ with ozone to destroy it
  2. Produced from \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, blowing agents for foams and packing materials, and from refrigerants.
* **Extraction and burning of fossil fuels 🡪** Releases carbon dioxide and methane (greenhouse gases) into the atmosphere:
  1. Transportation
  2. Electricity production
  3. Heating & cooling of buildings
  4. Industrial activity
* **Deforestation**
  1. When forests are **cut down**, not only does carbon absorption cease, but also the carbon stored in the **trees** is released into the atmosphere as CO2 if the wood is burned or even if it is left to rot after the deforestation process.
* **Methane** from **livestock** accounts for a huge portion of agricultural greenhouse gas emissions.