

Climatic Changes -- natural factors have changed Earth's climate many times during our planet's history

- Breaking up of Pangaea
 - When the continents broke up millions of years ago, some moved closer to the equator (= warmer climates) and some moved to higher latitudes (= colder climates)
- Particles in the atmosphere
 - Short-term changes in climate (Natural events like asteroid impacts and volcanic eruptions blocked sun's rays creating lower temperatures)

Repeating Patterns of Climate Change

- Sunspots -- Higher sunspot activity = higher energy
 - Increases and decreases in 11 yr. cycle
 - Global temps. changes are not dramatic but may affect rain patterns
- El Nino -- Ocean temps. are higher in tropical Pacific Ocean = changes in global weather patterns
- La Nina -- Ocean temps. are cooler = changes in global weather patterns
 - Alternates with El Nino
 - Both can lead to drought and flooding

Ice Ages -- A long period of cooling during which ice sheets spread beyond the polar regions

- Evidence indicates occurs approximately every 200 million years and lasts for millions of years
- Most recent was 2 million years ago

Greenhouse Effect -- Process by which gases in the atmosphere absorb and radiate energy as heat back to Earth

- Greenhouse gases → CO₂, water vapor, methane, and nitrous oxide
- Humans Release Greenhouse Gases By:
 1. Burning Fossil Fuels (like gasoline and coal)
 - Correlation between increased carbon dioxide levels and rising temperatures globally
 2. Deforestation
 - Mass removal of trees for farming, timber, and land development
 - Carbon sink turning into a carbon source
 - Trees no longer can remove carbon from the atmosphere (carbon sink) but instead may add carbon dioxide by burning the trees for removal (carbon source)

Climatic Changes Today

- Earth's temperature has increased about 0.6 degrees Celsius globally. This is known as global warming.
- Possible causes: CO₂ emissions increased by 20%
- Effects: glaciers melt, sea levels rise, flooding, more powerful and frequent storms, threaten survival of plant + animal species