

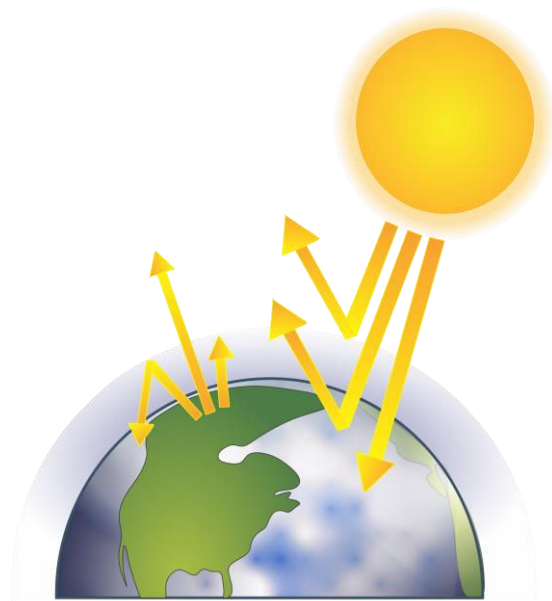
Weather & Climate

Section 5: Climate Cycles & Recent Climate Changes

Earth has experienced many climate changes in its history. Scientists use evidence from **ice cores**, or ice drilled from layers of glaciers, fossilized pollen, ocean sediments, and growth rings of trees, to gain information on past climates. Climates change in cycles, which can take longer than a lifetime to complete. Long-term **cycles** of change include ice ages and interglacials. **Ice ages** are long, cold periods lasting from hundreds to millions of years when glaciers cover much of the Earth. Glaciers advance during cold periods and retreat during **interglacials**, which are long, warm periods between ice ages.

In addition to long-term cycles, climate changes in **short-term cycles**, including seasons, El Nino, and monsoons. **Seasons** are short periods of climate change due to the amount of solar energy an area receives. These changes occur at different times of the year because Earth is tilted on an axis, and Earth's revolution around the sun causes the axis to point toward the sun sometimes and away from it at other times. **El Nino** is a rare climatic event, occurring every 3–8 years. This is when the trade winds weaken, reversing the typical pattern of high and low pressure across the Pacific Ocean. **Monsoons** are wind circulation patterns that change directions with the seasons. Temperature differences between land and the ocean cause monsoons.

Humans have significantly impacted climate change. The average temperature on Earth has been increasing for the past 100 years, often referred to as **global warming**. **Greenhouse gases** are gases in the atmosphere that absorb Earth's outgoing infrared radiation. Higher levels of greenhouse gases, which include carbon dioxide, create a more significant greenhouse effect. The burning of fossil fuels to heat homes and power automobiles has increased the amount of carbon dioxide that enters the atmosphere. In addition to burning fossil fuels, deforestation, or the large-scale cutting and burning of forests, also increases carbon dioxide in the atmosphere. Aerosols are tiny liquid or solid particles released from burning fossil fuels, which prevent the sun's energy from reaching Earth.



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Review:

1. What types of climate changes have occurred in Earth's history?
2. What is a monsoon?
3. Explain global warming.