



Climatic Changes

Objectives:

Explain what causes seasons

Describe how El Nino Affects climate

Explore possible causes of climatic change



Why
care?

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CLIMATE CHANGE

I. Earth's Seasons

Seasons - short periods of climate changes caused in changes in the amount of solar radiation an area receives

Tilt of Earth makes seasons happens slow
Straight or angled will make rain or snow
Leaves will fall and flowers will bloom
Winter, Spring, Summer, Fall in a loop



A. Seasonal Changes

In the tropics there is not much seasonal change because of the constant solar radiation near the equator.

They do experience dry and rainy seasons.

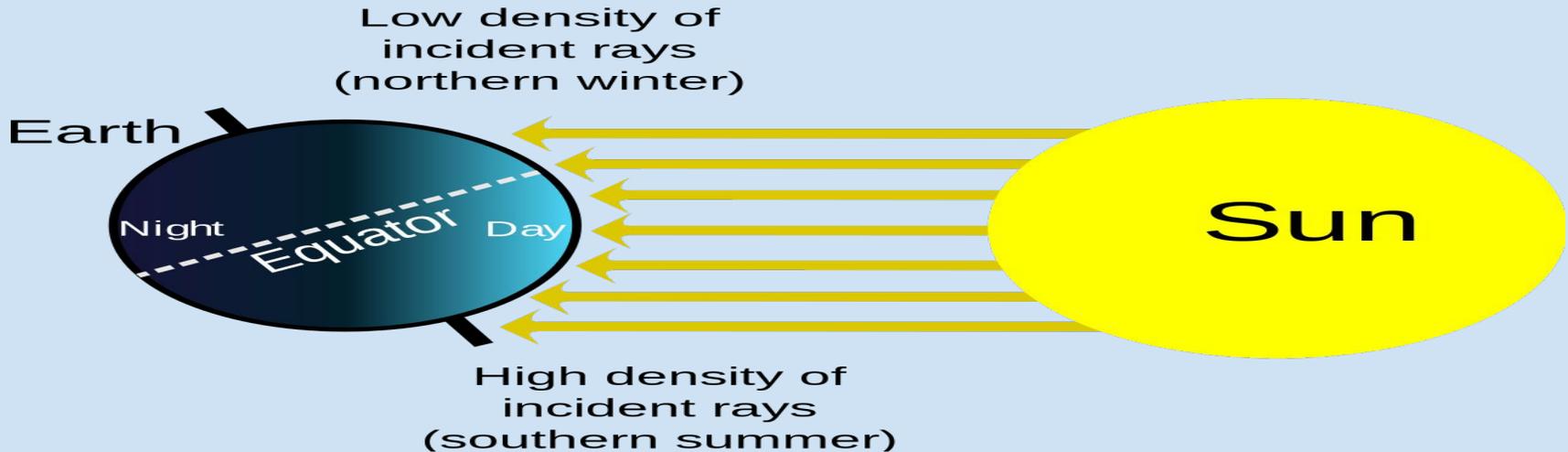
Middle latitudes, or temperate zones, have warm summers and cool winters. Spring and fall are usually mild.



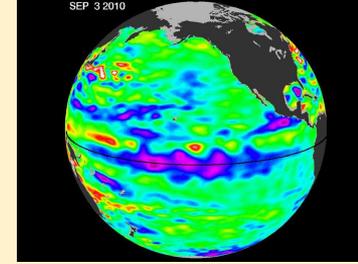
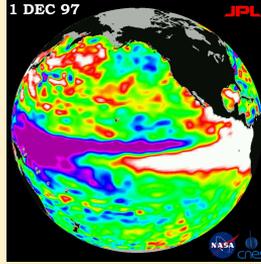
B. High Latitudes

Example: During the summer at the north pole, the sun doesn't set for nearly 6 months. During the same time, the sun never rises at the south pole.

At the equator days are about the same length all year long.



II. El Nino and La Nina

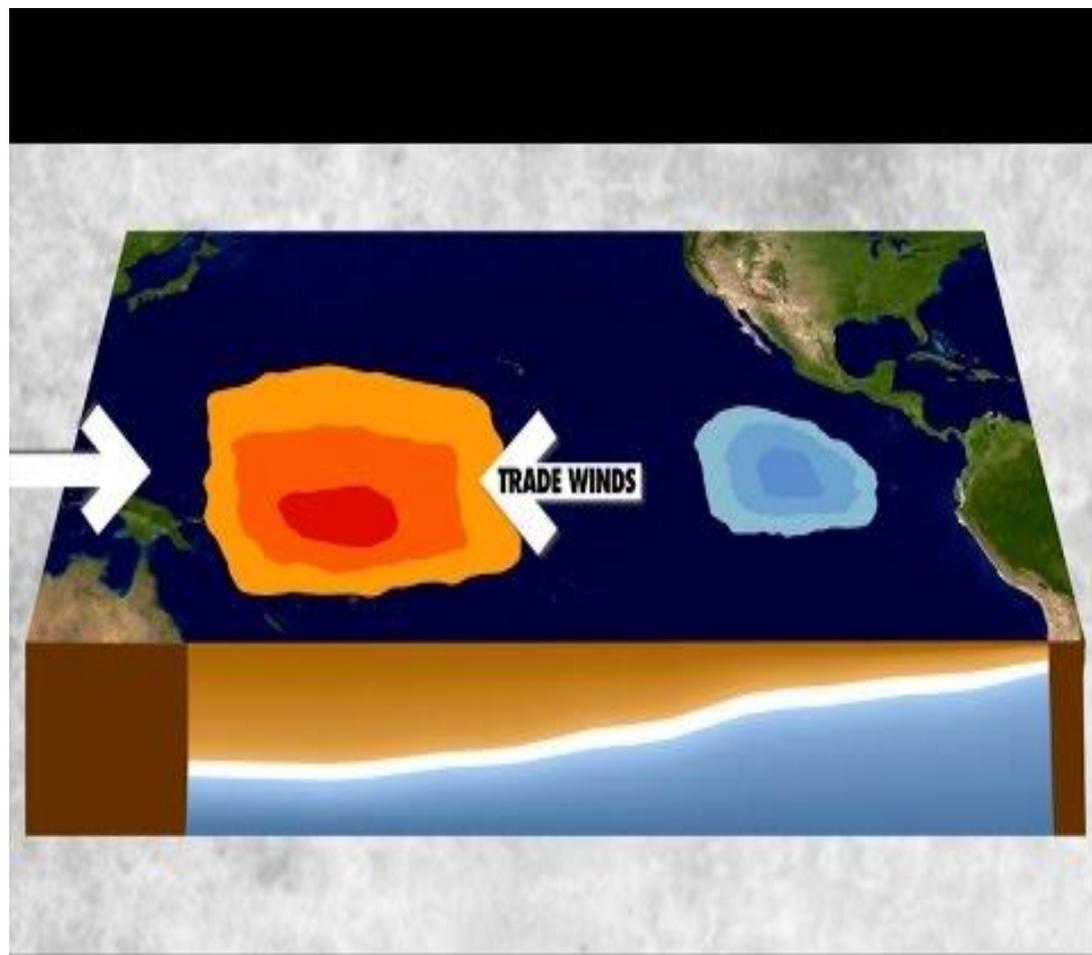


is a climatic event that involves the tropical Pacific Ocean and the atmosphere.

El Nino: Winds blowing west weaken and may even reverse. When this happens, warm waters in the western Pacific move eastward, preventing cold water from upwelling. Warm Pacific water farther west, toward Asia. Cold deep sea

La Nina: stronger winds push warm Pacific water farther west, toward Asia. Cold deep sea waters then well up strongly in the eastern Pacific, bringing cooler and often drier weather to many parts of the US.

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III. Climate Change

Warm weather plant fossils in colder regions indicate climate change

Ice Ages: When glaciers covered large amounts of Earth's surface



IV. What causes climatic change?

1. Atmospheric solids and liquids
2. Energy from the Sun
3. Earth's movement
4. Amount of Solar Energy
5. Crustal Plate Movement



A. Atmospheric Solids and Liquids

Particles can be added naturally - volcanic eruptions or by humans - pollution



In cities where there is more pollution can cause local climate change



B. Energy from the Sun

The amount of energy given off by the sun seems to be related to the presence of sunspots: dark spots on the surface of the sun.



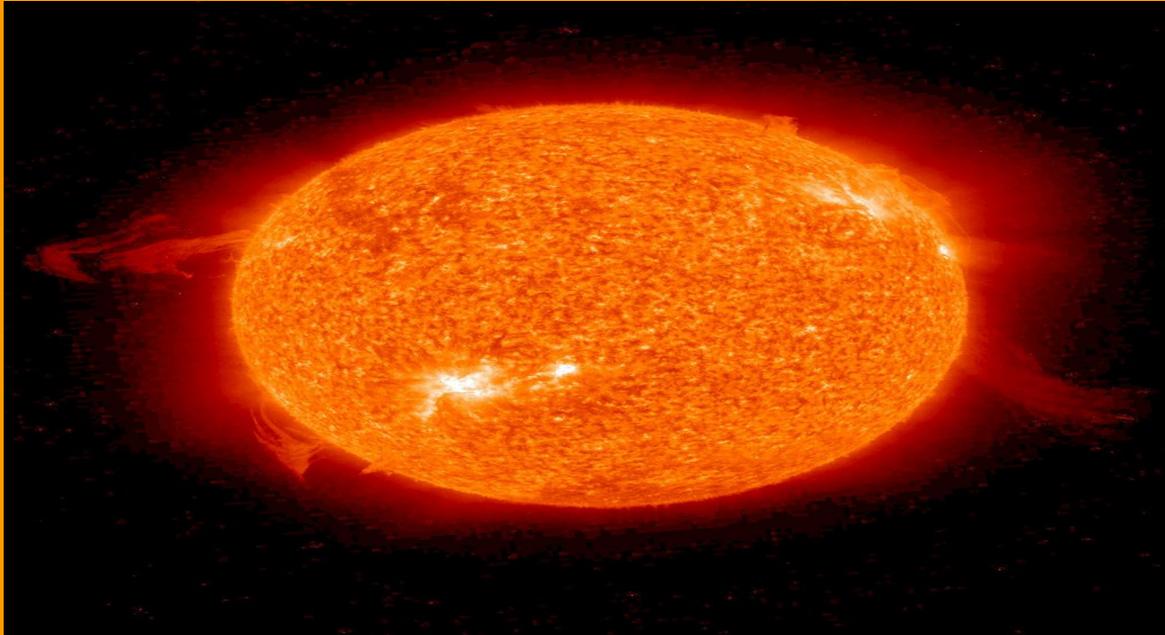
C. Earth movement

- Tilt of the earth
 - Currently the tilt of the earth is 23.5 degrees, but has varied 24.5 to 21.5 degrees.
- How the Earth spins
- The shape of the orbit



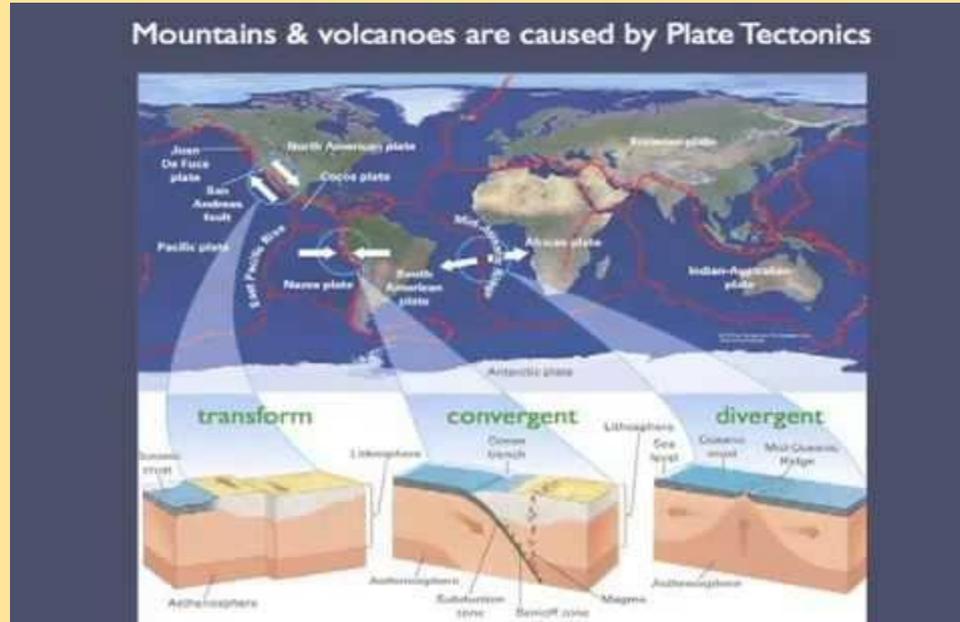
D. Amount of Solar Energy

Movements cause the amount of solar energy reaching different parts of Earth to vary over time.



E. Crustal Plate movement

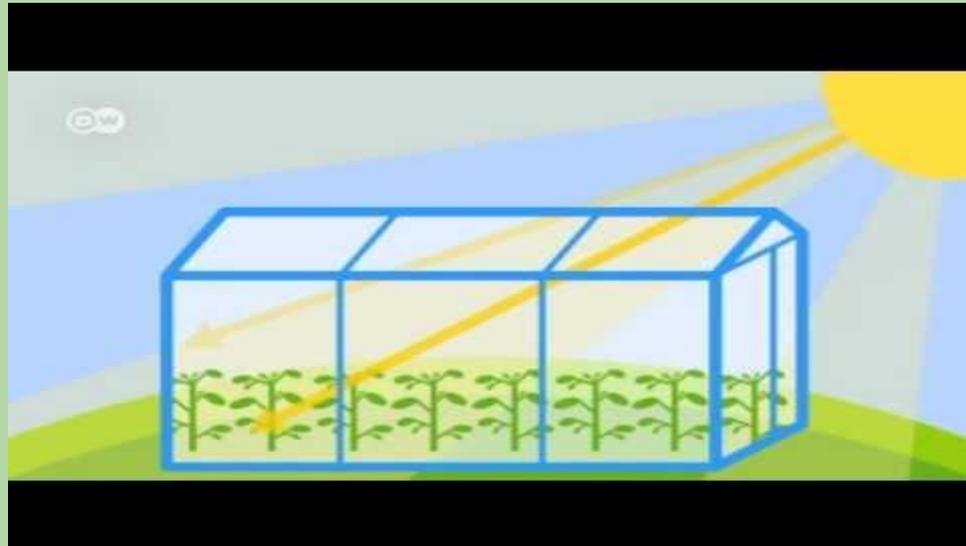
The movement of Earth's plates affect the transfer of heat on Earth, which in turn affects wind and precipitation patterns.



V. Climatic Changes Today

Greenhouse Effect

A natural heating process that occurs when certain gases in Earth's atmosphere trap heat.



VI. Global Warming

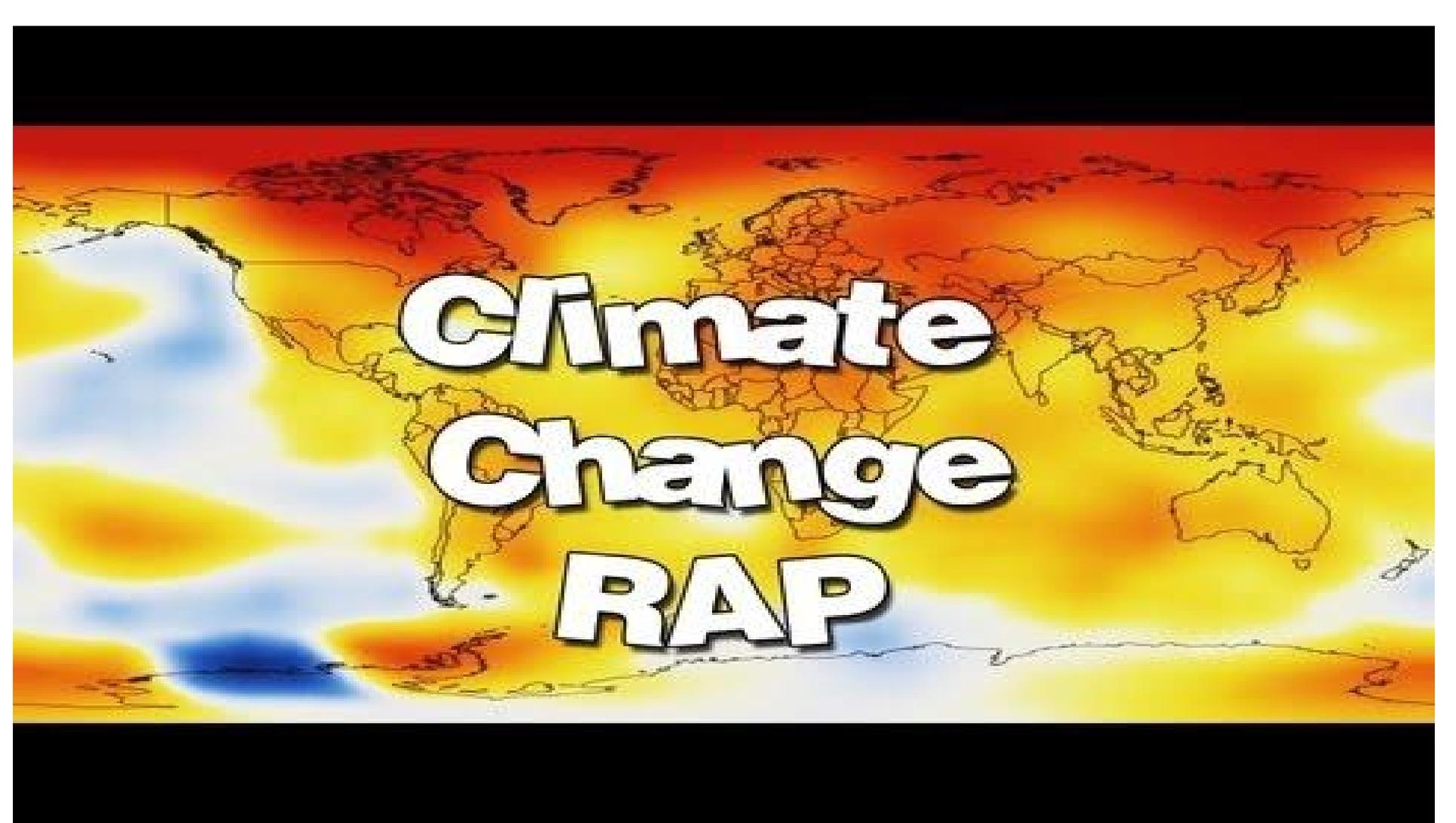
Over the past 100 years, the average global surface temperature on Earth has increased by .6 degrees.

Effects of increased temperature

- Glaciers melt causing water levels to rise





A world map with a heatmap overlay showing temperature anomalies. The colors range from blue (cooler) to red (warmer). The text "Climate Change RAP" is centered over the map.

**Climate
Change
RAP**

VII. Human Activities

- Burning Fossil Fuels
- Deforestation

This all increases the amount of carbon dioxide in the atmosphere - greenhouse gas



A. Burning Fossil Fuels

Carbon dioxide is created from the burning of natural gas, oil and coal.



B. Deforestation

Destroying and cutting down trees

Removing forests and trees removes the ability to remove carbon dioxide from the atmosphere





VIII. The Carbon Cycle

Carbon is constantly cycled among the atmosphere, oceans, solid earth, and biosphere.

