

Human Impacts on the Earth's Environment

Short-Term Climate Change

Normal Conditions

- On the equator, winds blow from east to west across the Pacific Ocean, creating low pressure above the western Pacific.
- Warm water rises from the western Pacific, which causes upwelling at the eastern Pacific near the western coast of South America.
- Upwelling brings cold, nutrient-rich waters up from the deep sea.

Study Tip

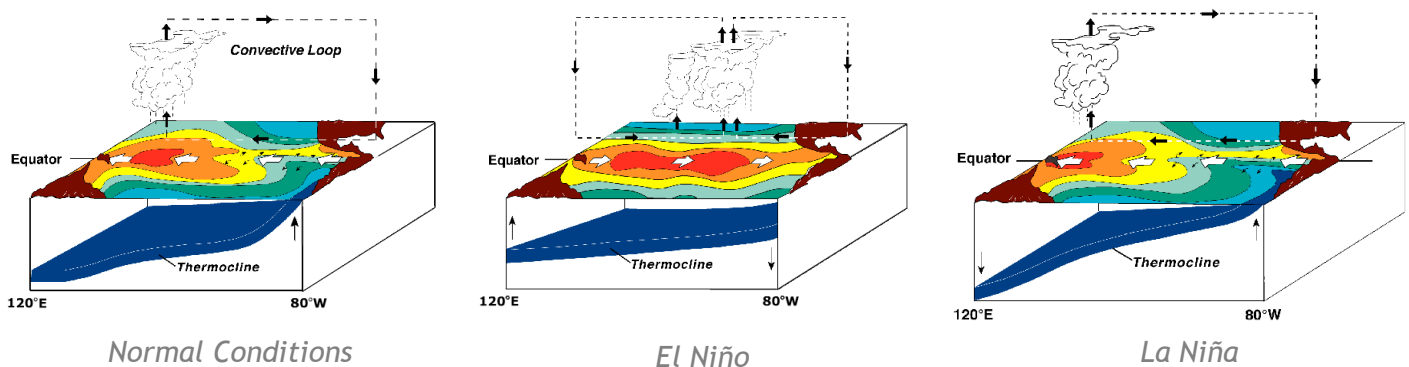
Climate change has its basis on water temperature fluctuations, with La Niña and El Niño conditions being the two extreme ends of the climate spectrum.

El Niño Conditions

- In an El Niño year, the water temperature is warmer than normal, causing trade winds to blow in the opposite direction.
- Warm water flows back to the eastern Pacific, and the upwelling stops.
- Nutrients are scarce, causing plankton and fish populations decline and disrupting the ecological cycle.
- Altering circulation patterns can change global climate patterns, but these short-term climate changes only last for one or two years.

La Niña Conditions

- In a La Niña year, the water temperature is colder than normal.
- The trade winds follow the same direction as normal conditions, but they are more extreme.



Concept Check

- What are the differences between El Niño and La Niña? How do they differ from normal water conditions?