

One Ocean, One Atmosphere, Many Effects

Earth's **climate** is shaped by the way **energy** moves through the ocean, the air, and the land. Even though the planet is one connected **system**, different places can experience very different weather and climate patterns. A climate pattern called **El Niño** shows how changes in one part of Earth can affect many places around the world.

Climate scientists study long-term weather patterns, not just what happens on one day. **Climate** includes average **temperature** and precipitation over many years. The main source

of **energy** that affects Earth's climate is the Sun. Solar energy warms Earth's surface, the oceans, and the air. The amount of energy an area receives and how that energy moves help determine its **temperature**.

Oceans play an important role in climate because water can store and move large amounts of **energy**. When ocean water warms or cools, it can change the **temperature** of the air above it. This shows that the ocean and atmosphere are closely connected parts of Earth's **system**.

El Niño is a climate pattern that occurs every few years when ocean temperatures in the Pacific Ocean change. During **El Niño** years, warmer ocean water affects how **energy** moves between the ocean and the atmosphere. Because these parts of Earth work together, changes in ocean temperature can affect wind patterns, air **temperature**, and precipitation around the world.

El Niño does not cause the same weather everywhere. Instead, it leads to different effects in different regions. During **El Niño** years, some places receive much more rain than usual, while others receive much less.

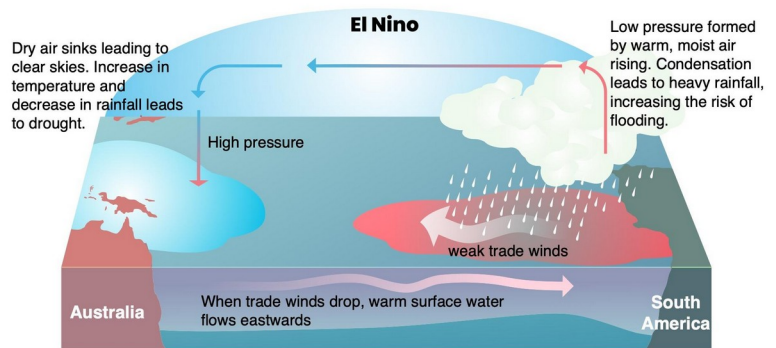
In **Pakistan**, **El Niño** can weaken the monsoon season. Instead of heavy rain, the region experiences hot, dry conditions. This lack of water can affect crops and make it harder for people to stay healthy.

In **Los Angeles**, **El Niño** often brings much more rain than usual. While rain is normally helpful, too much rain falling on dry, hilly land can cause **landslides**. These **landslides** can damage homes, block roads, and put people in danger.

In **Colombia**, **El Niño** can cause drought that affects rivers and streams. As water levels drop, shallow pools can form. These pools are good places for mosquitoes to breed. Because mosquitoes can carry malaria, **El Niño** years in Colombia are linked to increases in disease.

These examples show that Earth works as a connected **system**. The ocean, atmosphere, land, and living things all interact. A change in one part of the **system** can affect other parts, even in places far away.

Understanding **climate**, **energy**, and Earth's **system** helps people prepare for changes in weather and climate. By studying patterns like **El Niño**, scientists can explain why **temperature** and rainfall change. This knowledge helps communities plan ahead and reduce the impacts of floods, droughts, and other climate-related events.



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Vocabulary Matching Activity

Directions: Match each vocabulary word to the correct definition. Write the letter of the definition next to the word.

Vocabulary Words	Definitions
1. climate	A. A measure of how hot or cold something is
1. energy	B. A connected group of parts that work together
2. system	C. A climate pattern that occurs when ocean temperatures change and affect weather around the world
3. temperature	D. Large amounts of dirt and rock moving downhill, often after heavy rain
4. El Niño	E. The general weather patterns of a place over a long period of time
5. landslides	F. The ability to cause change or movement

Cloze Paragraph (Vocabulary in Context)

Directions: Use the words from the word bank to fill in the blanks. Each word is used **once**.

Word Bank

- climate
- energy
- system
- temperature
- El Niño
- landslides

Earth's _____ is shaped by how _____ from the Sun moves through the ocean, air, and land. The ocean and atmosphere work together as a connected _____. One climate pattern that shows this connection is called _____.

During _____ years, changes in ocean water affect air _____ and rainfall in different parts of the world. In some places, extra rain can cause _____ that damage homes and roads. These examples show how Earth's systems are connected and why understanding climate patterns is important.