



1. What happened to the water as you blew across its surface? What was different when you blew with less force and when you blew from the opposite direction? Explain how this is similar to what happens during an El Niño event.
2. What happened to the water as you blew across its surface? What was different when you blew with less force and when you blew from the opposite direction? Explain how this is similar to what happens during an El Niño event.
3. Blow as hard as you can across the surface of the water along the length of the pan. Next, blow with less force. Then, blow in the opposite direction.

Analysis

1. During El Niño, trade winds blowing across the Pacific Ocean from east to west slacken or even reverse. Surface waters move back toward the coast of Peru. Add warm water to a 9-in × 13-in baking pan until it is two-thirds full. Place the pan on a smooth countertop. Blow as hard as you can across the surface of the water along the length of the pan. Next, blow with less force. Then, blow in the opposite direction.

Procedure

Modeling El Niño

Mini LAB

California was plagued by large storms that produced pounding surf and shoreline erosion.



A severe drought struck Indonesia, contributing to forest fires.

Figure 9 A strong El Niño, like the one that occurred in 1998, can affect weather patterns around the world.

High Latitudes During the year, the high latitudes near the poles have great differences in temperature and number of daylight hours. As shown in **Figure 8**, during summer in the northern hemisphere, the north pole is tilted toward the Sun. During summer at the north pole, the Sun doesn't set for nearly six months. During that same time, the Sun never rises at the south pole. At the equator days are about the same length all year long.

El Niño and La Niña

El Niño (el NEEN yoh) is a climatic event that involves the tropical Pacific Ocean and the atmosphere. During normal years, strong trade winds that blow east to west along the equator push warm surface water toward the western Pacific Ocean. Cold, deep water then is forced up from below the coast of South America. During El Niño years, these winds weaken and sometimes reverse. The change in the winds allows warm, tropical water in the upper layers of the Pacific to flow back eastward to South America. Cold, deep water is no longer forced up from below. Ocean temperatures increase by 1°C to 7°C off the coast of Peru.

El Niño can affect weather patterns. It can alter the position and strength of one of the jet streams. This changes the atmospheric pressure off California and wind and precipitation patterns around the world. This can cause drought in Australia and Africa. This also affects monsoon rains in Indonesia and causes storms in California, as shown in **Figure 9**.

The opposite of El Niño is La Niña, shown in **Figure 10**. During La Niña, the winds blowing across the Pacific are stronger than normal, causing warm water to accumulate in the western Pacific. The water in the eastern Pacific near Peru is cooler than normal. La Niña may cause droughts in the southern United States and excess rainfall in the northwestern United States.

the summer
changes
change
an area
the Sun.
changing

lar radia-
h seasonal
and rainy
have warm
mild.

earth are

to the Sun?

