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How El Niño and La Niña Affect the Weather (<https://extramile.thehartford.com/home/el-nino-and-la-nina/>)

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It's likely you've heard your local TV weather forecaster refer to the effects of an El Niño or La Niña, but what exactly are they?

El Niño and La Niña are recurring weather patterns that can trigger damaging storms and droughts in the U.S. and around the world. Both the El Niño and El Niña phenomena alter surface temperatures in the tropical (equatorial) Pacific Ocean.

Understanding El Niño

During an El Niño, winds across the tropical Pacific weaken, notes Climate.gov (<https://www.climate.gov/news-features/understanding-climate/el-ni%C3%B1o-and-la-ni%C3%B1a-frequently-asked-questions>). As a result, ocean temperatures in the central and eastern tropical Pacific become warmer than average.

In case you're not familiar with the regions of the Pacific Ocean, the central tropical Pacific includes the Hawaiian Islands and French Polynesia, while the eastern tropical Pacific runs along the West Coast of the Americas, between the Baja Peninsula and Peru.

In the U.S., an El Niño pattern can bring warmer weather to both the Northwest and Northeast, while causing cooler temperatures to the South. El Niño can lead to more hurricanes in the eastern tropical Pacific, and fewer hurricanes along the East Coast.

The Southern U.S. from California to the Carolinas

(<https://weather.com/news/climate/news/strong-el-nino-noaa-update-september2015>) and parts of the East Coast may receive greater rainfall during an El Niño, and this can cause flooding. In contrast, parts of the Ohio Valley, Great Lakes Northwest, and the Northern Rockies may be drier than normal. The deserts of the Southwest, the Southern plains, and the Northern Gulf Coast can become cooler than average, while the Northern states become warmer.

How does La Niña differ from El Niño?

La Niña also affects temperatures in the tropical Pacific. Unlike El Niño, it brings strong winds that cause ocean waters to cool. This creates colder winters with more precipitation than normal in the Northern U.S. and warmer winter conditions in the South.

During a La Niña, Southern California can be drier than normal throughout the rainy season, which can contribute to drought conditions in the Southwest. The Ohio and Upper Mississippi River Valleys may experience a greater amount of rainfall than average. The Northeastern states tend to have more storms during a La Niña winter. In the Northwest, temperatures tend to drop and rainfall may increase.

A La Niña may reduce hurricane activity for states along the central and eastern tropical Pacific. However, this weather pattern tends to increase the number of hurricanes along the Atlantic coast. This can bring flooding and wind damage to states in the Southeast, reports Climate.gov (<https://www.climate.gov/news-features/blogs/enso/impacts-el-ni%C3%B1o-and-la-ni%C3%B1a-hurricane-season>).

How long do El Niños and La Niñas last?

Typically an El Niño will last roughly a year, while a La Niña weather pattern lasts nine to 12 months, according to AccuWeather (<https://www.accuweather.com/en/weather-news/la-nina/38971>).

“El Niño and La Niña are naturally occurring phenomena, essentially caused by the fact that the Earth is not heated evenly by the sun,” explained Dr. Lesley L. Smith, a research associate at the Cooperative Institute for Research in Environmental Sciences (<https://cires.colorado.edu/>) at the University of Colorado.

The exact location of warming or cooling in the Pacific depends on such things as winds and the movement of the water. “This all means El Niños and La Niñas are difficult to predict,” she said.

El Niño and La Niña events “are climate systems that we need to pay attention to,” said Eric Boldt, a meteorologist for the National Oceanic and Atmospheric Administration (NOAA). “They will give us an idea of how much precipitation or lack of precipitation will be in the forecast. El Niño and La Niña have long-term climate impacts.”

What is the history of El Niño and La Niña?

El Niño is Spanish for “the little boy” and La Niña means “the little girl.” The El Niño phenomenon was first recognized (<https://oceanservice.noaa.gov/facts/ninonina.html>) by fishermen off the coast of South America in the 1600s. They noticed that the warmer water affected the size of their catch. An El Niño reduces nutrients at the surface of the central and eastern tropical Pacific, and that means there are fewer fish to catch.

La Niña was named for the opposite weather pattern, which is a cooling of surface waters that provides a greater abundance of nutrients, and which makes for better fishing.

Here is a sampling of significant El Niño and La Niña events:

- Inside Science (<https://www.insidescience.org/news/historys-greatest-el-ni%C3%B1o-may-have-caused-severe-19th-century-famine>) reports that what may have been the largest El Niño ever identified likely contributed to record-breaking droughts and famines that are believed to have killed more than 50 million people worldwide from 1876 to 1878. Droughts preceded famines in Asia, Africa, and South America.
- The U.S. Dust Bowl drought of the 1930s is thought to have been caused by a decade of La Niña-like conditions (<https://www.nationalgeographic.org/encyclopedia/la-nina/>). The Dust Bowl was one of the worst environmental disasters of the 20th century. Millions of people were forced to leave barren farms on the Great Plains. About 500,000 people migrated to other states.
- A La Niña contributed to a drought in the U.S. Midwest in 1988. Believed to be one of the most severe droughts in history, it caused an estimated \$40 billion (<http://www.cnn.com/2000/NATURE/04/24/la.nina.drought.enn/>) in damages.
- The El Niño winter of 1997-1998 was one of the wettest on record (http://ggweather.com/enso/calif_flood.htm) across California. There was twice the normal amount of rainfall and resulted in some \$550 million in flood and storm damage statewide.

How important is it to have flood insurance?

As reported by the Insurance Information Institute (<https://www.iii.org/article/spotlight-on-flood-insurance>), flooding is the most common and costly natural disaster in the U.S., causing billions of dollars in economic losses each year.

If you live in a flood zone, sooner or later you will be affected by rising waters, says James Howard, a data scientist at Johns Hopkins University. Howard noted that standard homeowners insurance policies typically don't cover damage from flooding. If your home has flood damage and you don't have a policy from the National Flood Insurance Program (NFIP) (<https://www.fema.gov/national-flood-insurance-program>), "you have no financial recourse." However, it is important for people to realize that everyone lives in a flood zone, it is just a matter of whether the flood risk is low to moderate, or high. In fact, more than 20% of all flood claims (<https://www.fema.gov/disaster/4277/updates/basic-facts-about-national-flood-insurance-program>) come from properties outside high-risk flood zones.

The NFIP was created to make flood insurance affordable for homeowners, renters, and business owners. It provides up to \$250,000 in coverage for homes and \$100,000 for their contents.

It's a mistake to rely on the federal government for aid following floods or other natural disasters, Howard said. There is no guarantee that the Federal Emergency Management Agency (FEMA) will come to the rescue. "People are unaware of this," he said. "They think that if there is a substantial disaster, the federal government will come to their aid."

It's best to be prepared for possible flooding events, whether they're triggered by an El Niño or a La Niña. You can learn more about flood insurance (<https://www.thehartford.com/aarp/homeowners-insurance/flood-insurance>) by speaking with an insurance agent.

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