What does El Nino mean for the coming winter?

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El Niño, a weather phenomenon associated with warmer temperatures in the northern U.S. and wetter weather in the South, has arrived.

But that doesn't mean people in New England and other northern states should keep their snow shovels in storage, says Auroop Ganguly, co-director of Northeastern's Global Resilience Institute.

Temperature rise based on El Niño is an average that allows for fluctuations that could become more intense due to climate change, he says.

"In places like Boston or the Northeast in general, just because temperatures will be warmer in general doesn't mean we will not have one or two fairly intense snowstorms," Ganguly says. "You should always be prepared."

The National Oceanic and Atmospheric Administration says the weather phenomenon—which means "little boy" in Spanish—got its name from South American fishermen who first noticed periods of unusually warm water in the Pacific Ocean in the 1600s.

"The full name they used was El Niño de Navidad, because El Niño typically peaks around December," NOAA says.

El Niño can affect global weather significantly by causing a weakening of the trade winds that typically blow west over the equator and across the Pacific, and by causing the Pacific jet stream to move south, according to NOAA.

"Typically, moderate to strong El Niño conditions during the fall and winter result in wetter-than-average conditions from southern California to along the Gulf Coast and drier-than-average conditions in the Pacific Northwest and Ohio Valley," NOAA says.

And this year, El Niño is strong, Ganguly says.

During an El Niño pattern, winter means the chances for warmer-than-average temperatures across the northern states increase, while conditions in the Northeast will be wetter than in the West and Midwest, Ganguly says.

In Southern states, El Niño increases the chance of flooding and wild storms, he says.

El Niño and its opposing climate pattern—La Niña for "little girl," when Pacific waters are colder than normal—occur every two to seven years but not on a regular basis, according to NOAA. La Niña is associated with colder Pacific temperatures.

The weather patterns associated with the El Niño Southern Oscillation typically last nine to 12 months, are most noticeable in the fall and winter, and taper off in the spring, Ganguly says.

"El Niño causes many changes in weather patterns across the globe," Ganguly says.

"It has been called the 'seesaw' effect" for the way it causes floods in Peru and parts of South America and droughts in the Sahel section of Africa, he says. The Sahel extends from northern Senegal on the Atlantic Ocean into Sudan.

El Niño's weather patterns, though complex, change global atmospheric circulation in known ways.

A question that remains is how it interacts with climate change, Ganguly says. "The oceans are already warm. How does El Niño interact with that warming? I don't think we know that well yet."

Climate change is already making extremes more extreme at both ends

of the spectrum, Ganguly says. Cold snaps may become less frequent but more intense and longer lasting, for instance, he says.

There is some evidence to show that El Niño could amplify fluctuations, but that is still being debated, Ganguly says. He points to a March 2023 article in Time magazine that says the natural periodic temperature increases associated with El Niño—the last strong one was in 2015—are no excuse for abandoning efforts to combat climate change.

"Each El Niño signature is different and manifests itself in different ways," Ganguly says. "These are very interesting times, in the sense that we are learning a lot about how these things interact."

Provided by Northeastern University

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