

# Science Says: Jack Frost nipping at your nose ever later

October 27 2017, by Seth Borenstein

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This Monday, Oct. 23, 2017 file photo show fall colors beginning to show along Route 209 in Reilly Township, Schuylkill County, Pa. Across the United States, 2017's first freeze has been arriving further and further into the calendar, according to more than a century of measurements from weather stations nationwide. (David McKeown/Republican-Herald via AP)

Winter is coming ... later. And it's leaving ever earlier. Across the United States, the year's first freeze has been arriving further and further into the calendar, according to more than a century of measurements from weather stations nationwide.

Scientists say it is yet another sign of the changing climate, and that it has good and bad consequences for the nation. There could be more fruits and vegetables—and also more allergies and pests.

"I'm happy about it," said Karen Duncan of Streator, Illinois. Her flowers are in bloom because she's had no frost this year yet, just as she had none last year at this time either. On the other hand, she said just last week it was too hot and buggy to go out—in late October, near Chicago.

The trend of ever later first freezes appears to have started around 1980, according to an analysis by The Associated Press of data from [700 weather stations](#) across the U.S. going back to 1895 compiled by Ken Kunkel, a meteorologist at the National Oceanic and Atmospheric Administration's National Centers for Environmental Information.

To look for nationwide trends, Kunkel compared the first freeze from each of the 700 stations to the station's average for the 20th Century. Some parts of the country experience earlier or later freezes every year, but on average freezes are coming later.

The average first freeze over the last 10 years, from 2007 to 2016, is a week later than the average from 1971 to 1980, which is before Kunkel said the trend became noticeable.

This year, about 40 percent of the Lower 48 states have had a freeze as of Oct. 23, compared to 65 percent in a normal year, according to Jeff Masters, meteorology director of the private service Weather Underground.



This Tuesday, Oct. 24, 2017 photo provided by Margaret Primack shows her husband, Richard, in their home garden in Boston, still growing and productive. Richard, a Boston University biology professor, says in New England, many trees aren't changing colors as vibrantly as they normally do or used to because some take cues for when to turn from temperature. (Margaret Primack via AP)

Duncan's flowers should be dead by now. According to data from the weather station near her in Ottawa, Illinois, the average first freeze for the 20th century was Oct. 15. The normal from 1981 to 2010 based on NOAA computer simulations was Oct. 19. Since 2010, the average first freeze is on Oct. 26. Last year, the first freeze in Ottawa came on Nov. 12.

Last year was "way off the charts" nationwide, Kunkel said. The average first freeze was two weeks later than the 20th century average, and the last frost of spring was nine days earlier than normal.

Overall the United States freeze season of 2016 was more than a month shorter than the freeze season of 1916. It was most extreme in the Pacific Northwest. Oregon's freeze season was 61 days—two

months—shorter than normal.

Global warming has helped push the first frosts arrive later, Kunkel and other scientists said. Also at play, though, are natural short-term changes in air circulation patterns—but they too may be influenced by man-made climate change, they said.

This shrinking freeze season is what climate scientists have long predicted, said University of Oklahoma meteorology professor Jason Furtado.

A shorter freeze season means a longer growing season and less money spent on heat. But it also hurts some plants that require a certain amount of chill, such as Georgia peaches, said Theresa Crimmins, a University of Arizona ecologist. Crimmins is assistant director of the National Phenology Network . Phenology is the study of the seasons and how plants and animals adapt to timing changes.

Pests that attack trees and spread disease aren't being killed off as early as they normally would be, Crimmins said.

In New England, many trees aren't changing colors as vibrantly as they normally do or used to because some take cues for when to turn from temperature, said Boston University biology professor Richard Primack.



This Friday, Oct. 27, 2017 photo provided by Richard Primack shows tomatoes growing in his home garden in Boston. Primack says there are also lettuce, beans and many other vegetables growing in the garden, and he is still eating them for dinner. (Richard Primack via AP)

Clusters of late-emerging monarch butterflies are being found far further north than normal for this time of year, and are unlikely to survive their migration to Mexico.

Kevin Trenberth, a climate scientist at the National Center for

Atmospheric Research, said natural variability, especially an El Nino, made last year exceptional for an early [freeze](#), but "it represents the kind of conditions that will be more routine in a decade or two" because of man-made climate change.

"The long-term consequences are really negative," said Primack, because shorter winters and hotter temperatures are also expected to lead to rising seas that cause worse flooding during heavy storms.

In suburban Boston, Primack and his wife are still eating lettuce, tomatoes and green beans from their garden. And they are getting fresh figs off their backyard tree almost daily.

"These fig trees should be asleep," Primack said.

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AP data journalist Nicky Forster contributed to this story from New York.

Follow Seth Borenstein on Twitter at @borenbears . His work can be found here .

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