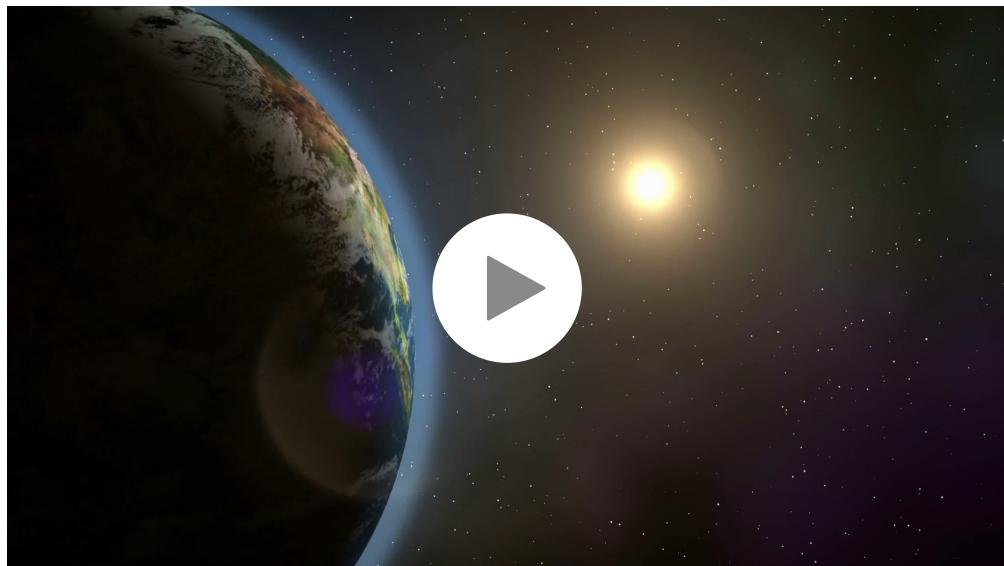


ASK ANDREW

Why the coldest time of year occurs when Earth is closest to the Sun

It's not the distance that's important, but rather the angle of the Sun that impacts Earth's temperature patterns.



Author: Andrew Stutze
Published: 9:12 AM CST January 4, 2023
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MOLINE, Ill. — Happy [Perihelion](#) Day! This little-known day marks the time when Earth's orbit is closest to the sun, with a mere 91,527,976 miles of separation between the two planets.

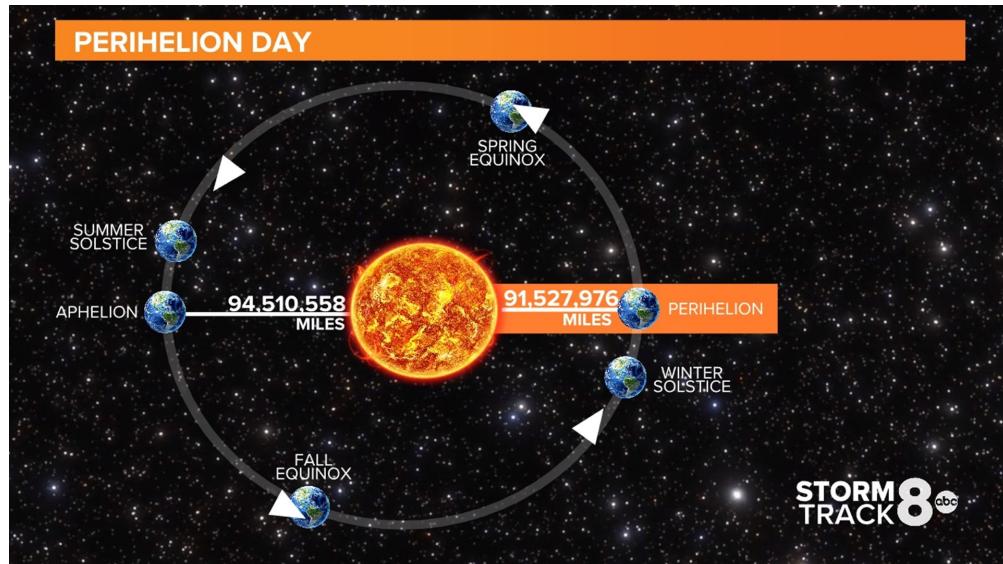
If Earth is closest to the Sun today, why is it still cold?

With a little common sense, one would assume that it would be during this time period when most of the planet would experience its warmest time of the year. That isn't the case here though, in the Quad Cities where temperatures remain at their lowest average point for the entire year.

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So, what gives? Why are we not experiencing our warmest time of the year now since the two planets are closer together? Let's dive in!



Credit: WQAD

The first documented person to measure the distance from the Earth to the sun was the Greek astronomer Aristarchus of Samos, who lived between 310 B.C. to 230 B.C. He used the phases of the moon to measure the sizes and distances of the sun and moon.

It's not the distance that matters, but rather the angle at which Earth is tilted that determines where the warmth will be located. That tilt is what results in the varying seasons we see in both the northern and southern hemispheres. Notice that the opposite occurs during the summer months here, called an aphelion, when the distance between the Earth and Sun is at its greatest point, more than 94 million miles.



Credit: WQAD

The Earth's axis tilts the northern hemisphere further away from the sun's strongest incoming energy during our winter season, as pictured above. Meanwhile, the opposite is true for the southern hemisphere, which is why our seasons are timed differently. While we observe winter here in the Quad Cities, areas in the southern hemisphere observe summer, and vice versa.

During our summer months, the axis is tilted again. This time, there is more direct energy from the sun being sent to the northern hemisphere and less to the southern hemisphere.

Have a question that you would like to ask for an upcoming "Ask Andrew" segment? Submit it, [here!](#)

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ASK ANDREW

Why a warmer winter doesn't mean we'll see more ice storms

Ice storms are driven by short-term temperature patterns with no direct link to longer-term patterns like El Nino or La Nina. Here's why they are hard to predict.



Author: Andrew Stutzke

Published: 11:13 AM CST November 15, 2023

Updated: 11:13 AM CST November 15, 2023



MOLINE, Ill — Earlier this week we discussed the increasing probability of seeing a 'Super El Niño' for the upcoming winter and spring seasons. We also discussed how that pattern usually

brings us a warmer-than-normal winter. Tim brought up this great question surrounding the pattern, asking, "With a warmer than normal winter we will see more ice storms?" Let's dig

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Is there a link between ice storms and long-term weather patterns?

In order to see if there is a direct relationship between El Niño and La Niña patterns and ice storms, I went back and looked at all of the ice storm warnings that have been issued by the National Weather Service office in the Quad Cities. This dates back to 2006. Here's what I found:

February 16, 2006 - Weak La Niña

January 12, 2007 - Weak El Niño

February 24, 2007 - Weak El Niño

December 1, 11, 2007 - Weak El Niño

December 18, 27, 2008 - Weak La Niña

January 20, 2010 - Strong La Niña

January 27, 2013 - Neutral

February 5, 7, 12, 2019 - Neutral

February 22, 2023 - La Niña

In total, four years featured La Niña conditions while three featured El Niño. Two were neutral. While it's a small dataset, you still can't deduce that one pattern favors more ice storms over another.

The timescale is much smaller

Ice storms require a unique setup, as unique as a severe weather type of setup in that you need a certain set of ingredients to come together at the right time. In most cases, you need a stretch of really cold weather with a couple of days featuring bitterly cold temperatures, enough to cool down surfaces like pavement, power lines, and tree limbs to well below freezing.

1 COLD AIR

SHALLOW LAYER OF COLD AIR NEAR THE GROUND

**2 WARM AIR**

LAYER OF WARM AIR ALOFT IN THE ATMOSPHERE

**3 RAIN**

LAYER OF WARM AIR ALOFT IN THE ATMOSPHERE



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Credit: WQAD

This needs to be followed by a rapid warming event that can support rain throughout much of the atmosphere up until it reaches the surface. As long as the surface/ground temperature can remain below freezing, a classic freezing rain event is likely. You can imagine how variable and difficult it is to get these conditions to line up. It is also more difficult to forecast, too!



Credit: WQAD

So, as of right now, there is no direct correlation to a warmer winter leading to more ice storms. Keeping an eye on the weather pattern and recognizing when the environment, especially temperatures are in the right alignment can make you more aware of when a potential ice storm may be brewing.

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