

- hybrid
- total
- annular
- partial

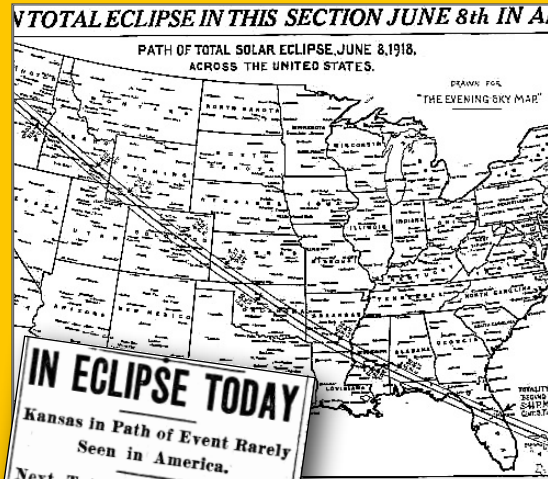
SOLAR ECLIPSE TYPES

Not all solar eclipses are created equal. Solar eclipses can be partial where the moon covers just a portion of the sun or total where the moon completely covers the sun.

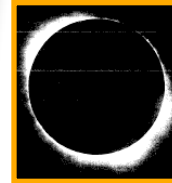
But there are two additional eclipse types that describe certain, not-quite-perfect eclipses. A hybrid eclipse occurs when the eclipse changes from total to partial—or vice versa—more than once during its journey across Earth. Think of it as a lamp being turned on and off repeatedly as the moon and sun chase each other playing hide-and-seek. An annular eclipse occurs when the moon passes directly between the sun and Earth—seemingly creating the perfect total eclipse—but the distance between the Earth and moon isn't exactly perfect that day and the moon's size isn't large enough to completely cover the sun thereby leaving a little sunlight peeking out at all times.

The total solar eclipse of 2017—the perfect kind of solar eclipse—will be the first total solar eclipse to pass coast-to-coast across the mainland United States since 1918. And then, on April 8, 2024, Makanda, Illinois will be visited by its second total solar eclipse in just seven years.

Why the big deal? On average, a total solar eclipse occurs at any one spot on Earth just three times every 1,000 years. Illinois hasn't witnessed a total solar eclipse since Aug. 7, 1869 (the 1918 eclipse didn't pass over Illinois). So anyone would be lucky to see just one in a lifetime, really.



IN ECLIPSE TODAY
 Kansas in Path of Event Rarely Seen in America.
 Next Total Eclipse Here Will Be in **2017**.
 Ninety per cent of the normal sunlight in Kansas will be shut off this afternoon between hours of 5:22 and 6:28 o'clock, when the moon will pass between the sun and the earth. In some parts of the country the eclipse will be total.
 The total eclipse of the sun takes place when the lunar shadow actually reaches the earth. While the moon



1918: OUR LAST COAST-TO-COAST TOTAL SOLAR ECLIPSE

When the total solar eclipse of Aug. 21, 2017 travels across the United States, it will be the first time in 99 years a coast-to-coast total solar eclipse has crossed over mainland America.

It was late in the afternoon June 8, 1918 when a total solar eclipse reached the Pacific shores of Washington State and swept across the U.S mainland toward Florida's Atlantic coast. News of the solar blackout made headlines everywhere. (In 1918 television and radio stations didn't yet exist. Social media simply meant talking of things.)

But scientists knew this day was going to be historic and many of them gathered at Oregon's naval observatory to record during the mere 89 seconds of total darkness what they hoped would be the best images ever captured of the sun's coronal flares.

MAKANDA

2017 & 2024

SOLAR ECLIPSE FACTS



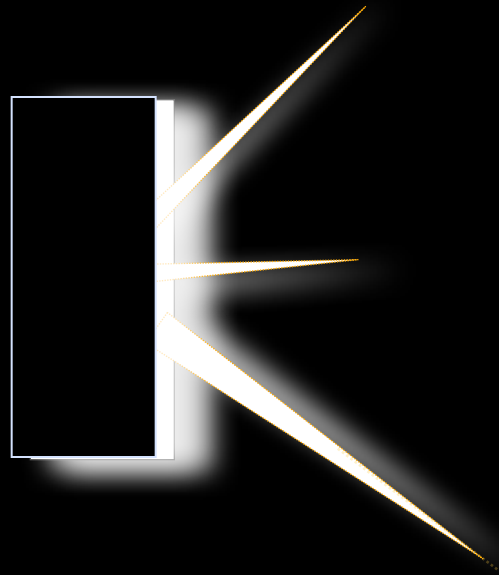
AUG. 21, 2017 & APRIL 8, 2024

The central path of a total solar eclipse will pass directly over Makanda, Illinois twice in just seven years—once in 2017 and again in 2024.

Nobody anywhere in Illinois will witness even one total solar eclipse again until 2099.

BE NOWHERE ELSE ON EARTH.





Totality: Why 100 percent is the it.

THE SUN IN THE HALL

Imagine you're in your dark bedroom, door closed snug, and all the lights are out. You dream.

You imagine the blazing sun is somehow out in the hallway just beyond the dark door.

Now a scientist comes along and cracks the door open just a fraction. Blinding white light instantly floods the room. The scientist points out the door is still nearly entirely closed.

Being under a solar eclipse that's even a fraction less than 100-percent total is something like that.

Whenever a total eclipse occurs on Earth, the place to be is where there is 100 percent totality, and not a fraction less.

2017 and 2024

IT'S RARE. EXTREMELY RARE.

When it comes to frequency, the mathematical odds of anyone witnessing a total solar eclipse exactly where they live on Earth works out to approximately three times every 1,000 years. In Makanda, Illinois, two total solar eclipses will pass directly overhead within just seven years—once in 2017 and again in 2024. The odds of this astronomical repetition occurring anywhere else on Earth? You do the math.

AUGUST 21, 2017 1:21 P.M.

Racing across Earth upwards of 1,200 m.p.h., the moon's 73-mile-wide shadow will reach America on Oregon's Pacific shoreline at 11:04 a.m. PST. By 11:52 a.m. CST, the shadow's front edge will reach Makanda, Illinois. Darkness will increase. Birds will roost. Street lights will blink on. Then, at 1:21 p.m. it happens. The moon will completely cover the sun above Makanda for 2 minutes and 41.6 seconds, the longest duration of the 2017 eclipse anywhere on Earth. The heat of August will cool. Night will occur in the afternoon, the black moon rimmed by streaming flares of the sun's usually invisible corona. There should be silence. Absolute awestruck silence is the best way to share this astonishing, epic transformation of the world as we know it. Even people with headphones will instantly decide to stop listening to whatever distracting noise they previously and foolishly thought they wanted for this moment.

APRIL 8, 2024 1:59 P.M.

On the morning of April 8, 2024, the second total solar eclipse to cut across America in just seven years will reach the U.S.-Mexico border community aptly named Radar Base, Texas (pop. 762). Here the eclipse begins its northeastern journey across the U.S. toward Maine. By 12:42 p.m. the front edge of the moon's shadow will reach Makanda, Illinois.

Makanda: America's Eclipse Crossroads

Darkness will increase until 1:59 p.m. when 100 percent totality is reached and the moon completely covers the sun for the second time in just seven years. One added bonus for this second Makanda eclipse: Totality will last more than 4 minutes—nearly twice as long as the 2017 eclipse. What's more, summer heat is not expected to be a risk. In fact, anyone discouraged by the prickly prospect of suffering outdoors in the heat and humidity of a southern Illinois August afternoon will rejoice at this second opportunity to repeat totality during



spring weather. But enjoy it while you can. The next total solar eclipse in Illinois won't be until September 14, 2099.

MAKANDA'S ECLIPSE ONLINE

Planning to visit America's eclipse crossroads? Local events, viewing parties and more will be updated at makandaeclipse2017.com.

Our thanks to Southern Illinois University-Carbondale's Physics Department for assistance and review in creating this document. We also thank international eclipse experts Xavier M. Jubier and Fred Espenak for their calculations included here.