



ECLIPSE EDITION

WOW!
When the Moon blocks the Sun during a total solar eclipse, temperatures can drop up to 15° F on Earth.



Images of the stages of a solar eclipse

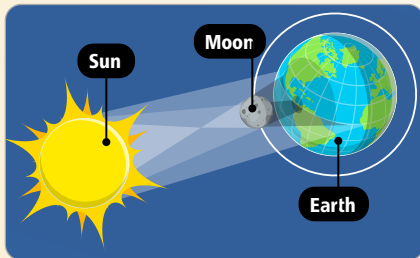
Rare total solar eclipse arrives

On April 8, people across parts of North America will be able to witness a rare event: a total eclipse of the Sun. This is the first total solar eclipse visible from this part of the world since August 2017. The most recent one before that took place in 1979.

What is a solar eclipse?

A solar eclipse occurs when the Moon moves between Earth and the Sun and its shadow appears to cover part or all of the Sun. The Moon passes between Earth and the Sun every month, but the three celestial bodies aren't usually lined up in a way that causes an eclipse. (Celestial means having to do with the sky.)

When the Moon covers only part of the Sun, it's called a partial solar eclipse. When the Moon and Sun are aligned so the Moon fully covers the Sun, it's called a total solar eclipse. During this event, the sky will gradually go entirely dark, as if it were dusk or dawn, and then it will brighten up again.



What are the stages of a total eclipse?

As the Moon begins passing over the Sun, the Sun will appear to be a crescent shape that gradually grows smaller. Wavy "shadow bands" will be visible on the ground or on the sides of buildings on Earth. Next, points of light known as Bailey's Beads will appear around the Moon's edges.

Once Bailey's Beads begin to disappear, the "diamond ring" stage will begin. The last visible light from the Sun's atmosphere will create a ring around the Moon, and one large bright spot—like a diamond set in a ring—will appear.

The last stage is called totality. That's when the Moon completely covers the Sun. Eclipse watchers may see a thin circle of pink around the Moon, which is called the chromosphere. They may also see the corona. These streams of glowing white light form a circle around the Moon, like a crown of light. The corona is, in fact, named for the Latin word for "crown."

Scientists suggest that people who are observing the eclipse also take a moment to look around them. They may notice that it seems

like the Sun is setting in all directions. Stars or planets may be brighter and more visible in the darkened sky. It may also be very quiet.

After totality, the stages will repeat themselves in reverse as the Moon crosses past the Sun and moves away.

How can people see the total solar eclipse this year?

How much of the eclipse people will be able to see depends on where they are located. To see the totality, viewers must be in a 115-mile-wide diagonal band across North America called the path of totality. Weather will also play a part. If skies are clear, people will be able to see more than if they are overcast. No matter where people are, it's very important for them to wear special eye protection when viewing the eclipse. Turn to our How To section on pages 24–25 for tips on safely watching the total solar eclipse, a map of the path of totality, and more.

When will the next one be?

The next total solar eclipse that will be visible in the contiguous United States (48 states not including Alaska or Hawaii) will be in 2044. The path of totality will touch parts of three states: Montana, South Dakota, and North Dakota.



Animals react when the Sun is hidden

During the total solar eclipse in 2017, scientists observed how different animals responded to the extraordinary event. They will do the same this year and are asking the public to help them gather information.

During the total eclipse in 2017, researchers observed 17 different species of animals at the Riverbanks Zoo in Columbia, South Carolina. When totality occurred and it got dark, most animals behaved as they typically do at night. For example, komodo dragons, gorillas, and giraffes tried to go indoors, where they sleep. Birds called tawny frogmouths, which are active at night, moved around more.

Many species also seemed anxious. A male gorilla charged

his exhibit's glass, and a group of giraffes huddled together and looked around constantly. Galapagos tortoises moved faster than usual and looked up at the sky, while a siamang (a type of ape) called out loudly. Other animals, like grizzly bears and sea lions, did not significantly change their behavior.



Giraffes reacted to the 2017 eclipse.

The 2017 researchers will observe some of the same species again this year. They also hope citizen scientists will help by participating in a program called Solar Eclipse Safari. Anyone can submit observations of zoo animals, house pets, or animals in the wild, like squirrels or deer, during the eclipse. You can find out more at SolarEclipseSafari.org.

During the last eclipse, birds changed their behavior.



DID YOU KNOW?
Honeybees searched for food less than usual during the 2017 total solar eclipse.

During the last eclipse, birds changed their behavior.



Chinese art of a dragon

When a dragon "ate" the Sun

Around the world, ancient cultures had many beliefs about the solar eclipse. Some honored it, but others said it was a bad sign. The word "eclipse" is from the Greek word for "abandonment." Greeks thought an eclipse meant the gods were angry and would abandon (leave) them.

In many cultures, people thought the Sun was being eaten, causing the sky to go dark. The Native American Choctaw people made loud noises to stop a black squirrel from eating the

Sun, while in China, people beat on drums to stop a dragon. One Hindu myth said an angry demon was trying to gobble up the Sun.

In some places, a solar eclipse is a time for peace and reflection. The Batammaliba people in the countries of Togo and Benin believed it was caused by a fight between the Sun and the Moon. To encourage peace, they settled old differences on Earth. In the US, some Navajo people honor the event by observing silence.



Device that turns eclipse into sound



The LightSound logo resembles the "diamond ring" stage of the eclipse.

Scientists have created a device called LightSound that converts light intensity into sound, enabling people who are blind or visually impaired to experience a solar eclipse by hearing it. The device emits a musical tone that grows deeper as the sunlight dims.

LightSound can be powered by a battery or laptop and can be heard through headphones or a speaker. About 750 devices have been distributed free of charge across the US. Instructions for building a LightSound device are also available online for free so anyone can make one.