



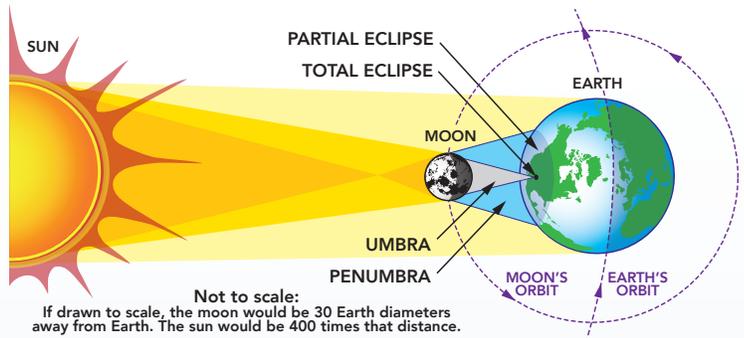
EXPERIENCE THE 2017 ECLIPSE ACROSS AMERICA THROUGH THE EYES OF NASA

<http://eclipse2017.nasa.gov>
MONDAY • AUGUST 21, 2017



TOTAL SOLAR ECLIPSE: Monday • August 21, 2017

This will be the first total solar eclipse visible in the continental United States in 38 years.



In this series of stills from 2013, the eclipse sequence runs from right to left. The center image shows totality; on either side are the 2nd contact (right) and 3rd contact (left) diamond rings that mark the beginning and end of totality respectively.



WHERE TO WATCH

Find a nice, clear spot with a good view of the sky.



HOW TO WATCH

You can see the sun and the eclipse with special eclipse glasses. **NEVER** look directly at the sun without appropriate eyewear. Regular sunglasses are not safe to view the eclipse. More: <http://eclipse2017.nasa.gov/safety>



HOW LONG WILL IT LAST

The total eclipse, when the sun is completely blocked by the moon, will last up to 2 minutes and 40 seconds, depending on your location.



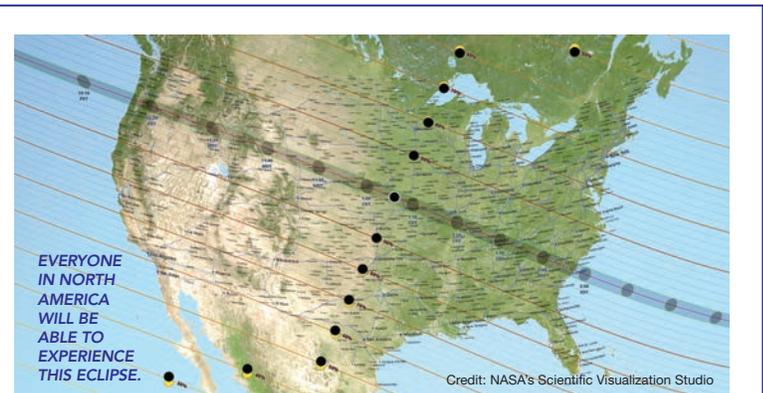
WHAT IS A SOLAR ECLIPSE?

A solar eclipse happens when the moon casts a shadow on Earth, fully or partially blocking the sun's light in some areas.

Observers within the path of totality will be able to see the sun's corona (weather permitting), like in the images above and left. Observers outside this path will see a partial eclipse.

THE NEXT ECLIPSE

After the 2017 solar eclipse, the next total solar eclipse visible over the continental United States will be on April 8, 2024.



This map shows the path of the moon's umbral shadow—in which the sun will be completely obscured by the moon—during the total solar eclipse of August 21, 2017. The lunar shadow enters the United States near Lincoln City, Oregon, at 9:05 a.m. PDT. Totality begins in Lincoln City, Oregon, at 10:16 a.m. PDT. The total eclipse will end in Charleston, South Carolina, at 2:48 p.m. EDT. The lunar shadow leaves the United States at 4:09 p.m. EDT. Outside this path, a partial solar eclipse will be visible throughout the continental U.S., and this map shows the fraction of the sun's area covered by the moon outside the path of totality.



How to View the 2017 Solar Eclipse Safely

A solar eclipse occurs when the moon blocks any part of the sun. On Monday, August 21, 2017, a solar eclipse will be visible (weather permitting) across all of North America. The whole continent will experience a partial eclipse lasting 2 to 3 hours. Halfway through the event, anyone within a roughly 70-mile-wide path from Oregon to South Carolina (<https://go.nasa.gov/2pC0lhe>) will experience a brief total eclipse, when the moon completely blocks the sun's bright face for up to 2 minutes 40 seconds, turning day into night and making visible the otherwise hidden solar corona — the sun's outer atmosphere — one of nature's most awesome sights. Bright stars and planets will become visible as well.



Credit: Rick Fienberg, TravelQuest International and Wilderness Travel

Looking directly at the sun is unsafe except during the brief total phase of a solar eclipse (“totality”), when the moon entirely blocks the sun's bright face, which will happen only within the narrow path of totality (<https://go.nasa.gov/2pC0lhe>).



The only safe way to look directly at the uneclipsed or partially eclipsed sun is through special-purpose solar filters, such as “eclipse glasses” (example shown at left) or hand-held solar viewers. Homemade filters or ordinary sunglasses, even very dark ones, are not safe for looking at the sun. To date four manufacturers have certified that their eclipse glasses and handheld solar viewers meet the ISO 12312-2 international standard for such products: Rainbow Symphony, American Paper Optics, Thousand Oaks Optical, and TSE 17.

- Always inspect your solar filter before use; if scratched or damaged, discard it. Read and follow any instructions printed on or packaged with the filter. Always supervise children using solar filters.
- Stand still and cover your eyes with your eclipse glasses or solar viewer before looking up at the bright sun. After glancing at the sun, turn away and remove your filter — do not remove it while looking at the sun.
- Do not look at the uneclipsed or partially eclipsed sun through an unfiltered camera, telescope, binoculars, or other optical device. Similarly, do not look at the sun through a camera, a telescope, binoculars, or any other optical device while using your eclipse glasses or hand-held solar viewer — the concentrated solar rays will damage the filter and enter your eye(s), causing serious injury. Seek expert advice from an astronomer before using a solar filter with a camera, a telescope, binoculars, or any other optical device.
- If you are within the path of totality (<https://go.nasa.gov/2pC0lhe>), remove your solar filter only when the moon completely covers the sun's bright face and it suddenly gets quite dark. Experience totality, then, as soon as the bright sun begins to reappear, replace your solar viewer to glance at the remaining partial phases.



An alternative method for safe viewing of the partially eclipsed sun is pinhole projection. For example, cross the outstretched, slightly open fingers of one hand over the outstretched, slightly open fingers of the other. With your back to the sun, look at your hands' shadow on the ground. The little spaces between your fingers will project a grid of small images on the ground, showing the sun as a crescent during the partial phases of the eclipse.

A solar eclipse is one of nature's grandest spectacles. By following these simple rules, you can safely enjoy the view and be rewarded with memories to last a lifetime. More information:

eclipse.aas.org

eclipse2017.nasa.gov



Solar Eclipse Eye Safety

Written by: [Kierstan Boyd](#)

Information provided by [American Astronomical Society](#)

Reviewed by: [Russell N Van Gelder MD PhD](#)

Mar. 06, 2017

A truly awe-inspiring event, a solar eclipse is when the moon blocks any part of the sun from our view. The bright face of the sun is covered gradually by the moon during a partial eclipse, lasting a few hours. During the brief period of a total eclipse when the moon fully covers the sun (only a couple of minutes), the light of day gives way to a deep twilight sky. The sun's outer atmosphere (called the solar corona) gradually appears, glowing like a halo around the moon in front of it. Bright stars and planets become more visible in the sky.

Watching a solar eclipse is a memorable experience, but looking directly at the sun can seriously damage your eyes. Staring at the sun for even a short time without wearing the right eye protection can damage your [retina](#) permanently. It can even cause blindness, called solar retinopathy.

There is only one safe way to look **directly** at the sun, whether during an eclipse or not: through special-purpose **solar filters**. These solar filters are used in "eclipse glasses" or in hand-held solar viewers. They must meet a very specific worldwide standard known as ISO 12312-2.

Keep in mind that **ordinary sunglasses, even very dark ones, or homemade filters are not safe for looking at the sun.**

Steps to follow for safely watching a solar eclipse:

- Carefully look at your solar filter or eclipse glasses before using them. If you see any scratches or damage, do not use them.
- Always read and follow all directions that come with the solar filter or eclipse glasses. Help children to be sure they use handheld solar viewers and eclipse glasses correctly.
- Before looking up at the bright sun, stand still and cover your eyes with your eclipse glasses or solar viewer. After glancing at the sun, turn away and remove your filter—do not remove it while looking at the sun.
- The only time that you can look at the sun without a solar viewer is during a total eclipse. When the moon completely covers the sun's bright face and it suddenly gets dark, you can remove your solar filter to watch this unique experience. Then, as soon as the bright sun begins to reappear very slightly, immediately use your solar viewer again to watch the remaining partial phase of the eclipse.
- Never look at the uneclipsed or partially eclipsed sun through an unfiltered camera, telescope, binoculars or other similar devices. This is important even if you are wearing eclipse glasses or holding a solar viewer at the same time. The intense solar rays coming through these devices will damage the solar filter and your eyes.
- Talk with an expert astronomer if you want to use a special solar filter with a camera, a telescope, binoculars or any other optical device.

For information about where to get the proper eyewear or handheld viewers, check out the [American Astronomical Society](#).