

A FIELD GUIDE to the 21 August 2017 TOTAL SOLAR ECLIPSE

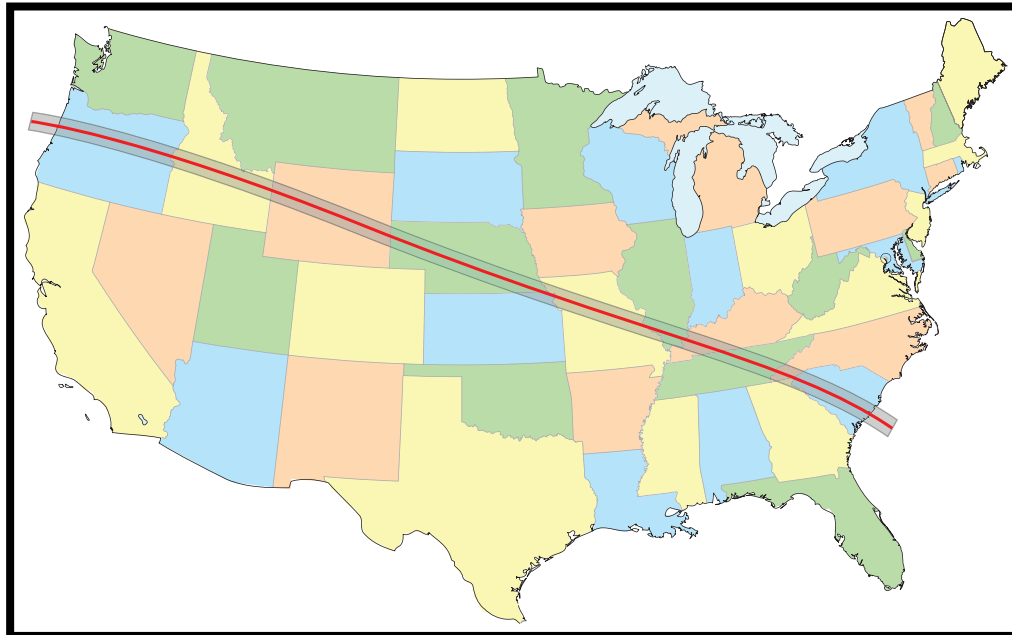
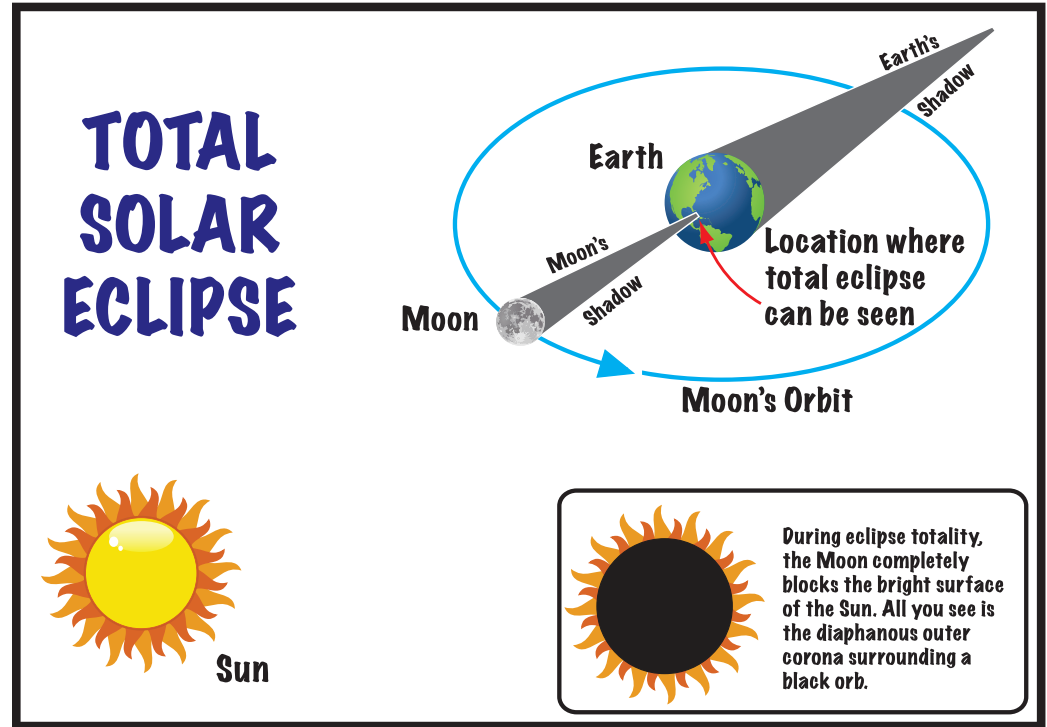
C I E R A

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What is a Total Solar Eclipse?

Everything the light of the Sun touches casts a shadow. You cast a shadow, trees cast a shadow, and the Earth and the Moon cast shadows. When planetary sized objects cast shadows into the solar system, other objects sometimes pass through those shadows, and when they do astronomers say there is an eclipse.

During a total solar eclipse, the Moon passes directly between the Sun and the Earth, casting its shadow on the Earth. As the Moon moves along its orbit, the shadow moves across the planet. If you are along the shadow's path, it will get dark for a few minutes as the Moon passes directly between you and the Sun.



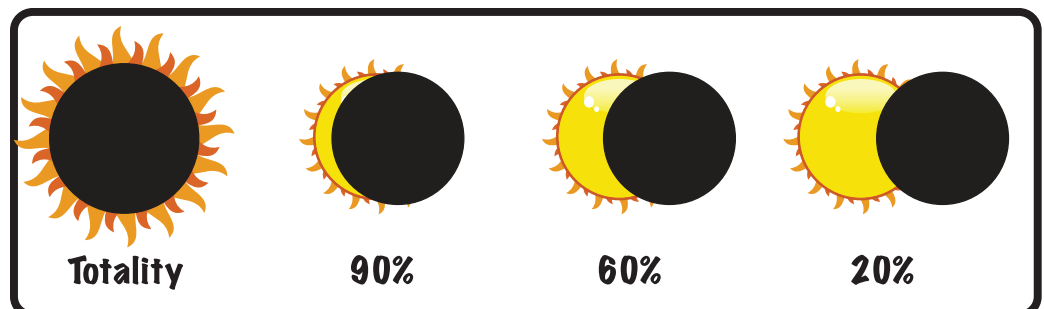
Eclipse Centerline

The Moon's shadow will come ashore in Oregon, and move southeast across the United States, heading into the Atlantic Ocean off the shore of South Carolina. The **centerline** is the path that is in the direct center of the Moon's shadow as it moves across the country. Stand on the centerline to get the maximum eclipse experience!

Anyone in the area roughly 35 miles north and south of the centerline (grey band in this map) is in the **path of totality** — the full shadow of the Moon passes over you, but the eclipse is shorter the farther from centerline you are.

How will the eclipse look?

Only in totality will the Sun be completely covered by the Moon. Everywhere else in the continental United States will see a **partial eclipse**. Nowhere in the US will see less than 60% coverage. Most of Canada and Mexico will see more than 40%, with only the extreme north and south seeing 20% coverage.



NEVER LOOK AT THE SUN DIRECTLY WITH YOUR NAKED EYE!

Only during totality will you be able to look at the eclipse with your naked eye.

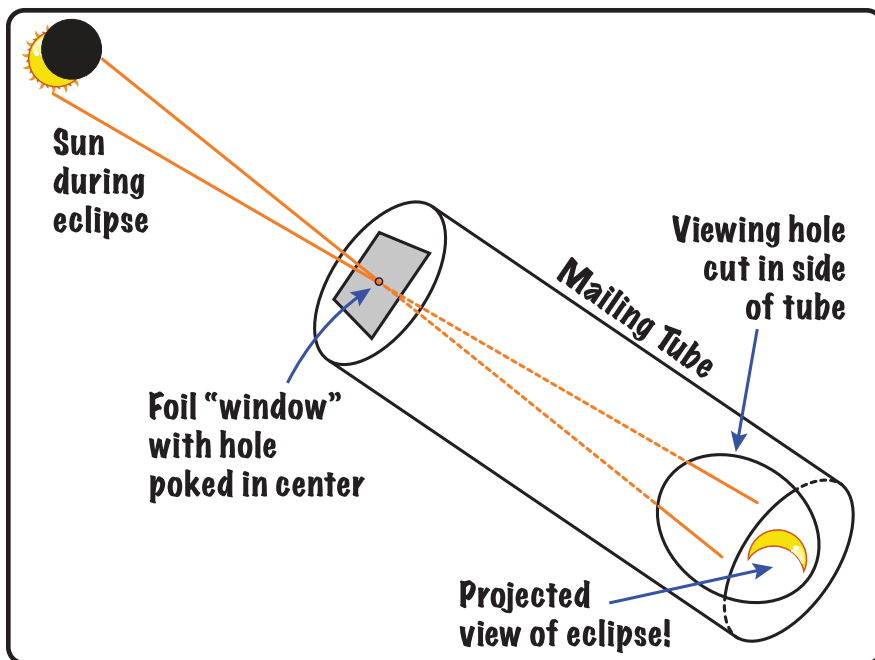
How to Watch the Eclipse 1: Projection

One of the easiest ways to see the eclipse is with **projection**.

If light from the eclipse passes through tiny hole poked in a thin sheet of paper or foil, it will make an image of the eclipse! You can make a projection viewer with a box or tube.

Cut a hole in one end, tape aluminum foil over the hole, and poke a hole in the foil with a sharp nail or push-pin. Tape paper on the inside of the box, opposite the hole. On the side in between, cut a hole big enough for you to look in and see the paper.

Point the foil at the Sun, and light will pass through the hole, making an image on the paper. The longer the box, the bigger the image and the easier it will be to see — try using a mailing tube!



How to Watch the Eclipse 2: Eclipse Glasses

You can purchase "Solar Eclipse Viewing Glasses" before the eclipse. These are paper glasses that have special solar filters over the eyeholes that stop harmful amounts of light from reaching your eye. The result is a dark view of the sky, but a clear view of the Sun's disk as it is being hidden behind the Moon. If you purchase some, make sure to buy them from a reputable dealer, like your local planetarium or science museum, or an online telescope dealer. Make sure you get your Solar Eclipse glasses early — supplies may run short as we get closer to the eclipse!



How to Watch the Eclipse 3: Happenstance

Anything with holes in it will project images of the eclipse when it is happening! Look at the dappled light streaming through trees, make cross-hatches with your fingers, or hold up a spaghetti colander or slotted spoon! Be creative, and make sure to take a picture!

WEBSITES

- <https://eclipse2017.nasa.gov>
- <http://www.eclipse2017.org>
- <https://www.greatamericaneclipse.com>

BOOKS

- *Your Guide to the 2017 Total Solar Eclipse* (Michael E. Bakich)
- *Sun Moon Earth: History of Solar Eclipses from Omens of Doom to Einstein and Exoplanets* (Tyler Nordgren)
- *The Big Eclipse* (Nancy Coffelt) [Children's Non-Fiction]
- *Every Soul A Star* (Wendy Mass) [Children's Fiction]

