The Great American Annular Eclipse of the Sun

Saturday, October 14, 2023

An Information Sheet by astronomers/educators Dennis Schatz & Andrew Fraknoi
Distributed courtesy of the National Science Teaching Association

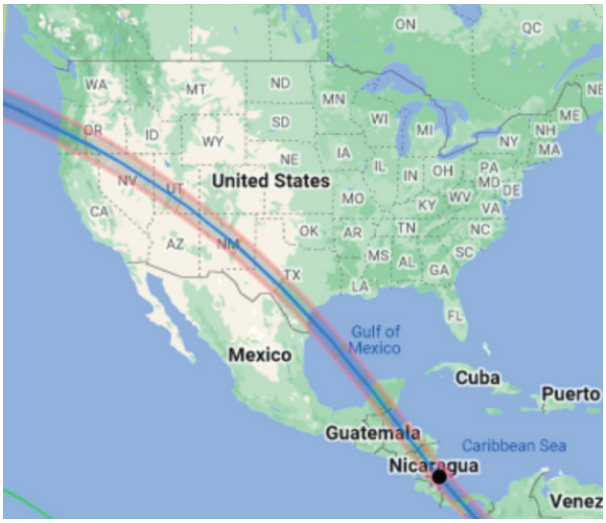
On Oct. 14, 2023, there will be a dramatic *annular* eclipse visible to people on a narrow path from Oregon going southeast to Texas (see map below). A partial eclipse of the Sun will be visible to everyone in North and Central America, with a bigger "bite" taken out of the Sun the closer you are to the path of the annular eclipse.

In this kind of eclipse, the Moon gets in front of the Sun, but it is too far away and, therefore, too small to cover it completely, leaving an annulus (or "ring of fire") around the dark disk of the Moon.

We talked about the annular eclipse in class, so your child should be able to tell you more about what to expect. On the next page is the information for what will happen in our location.

Most people in North America will see a partial eclipse.

Photo by Tomruren



The path of the annular eclipse. (Credit: Xavier Jubier)

Only those people in the narrow path of annularity will see the annular eclipse.

Photo by Kevin Baird

Your town	Partial Begins	Annular Begins (when applicable)	Eclipse Maximum	Annular Ends (when applicable)	Partial Ends

Source: SEAL Guide

Hopefully, the skies will be clear and you can get a great view of this rare astronomical event. There will also be a total eclipse visible in U.S. next April (Monday, April 8, 2024); information about that will be sent later in the school year.

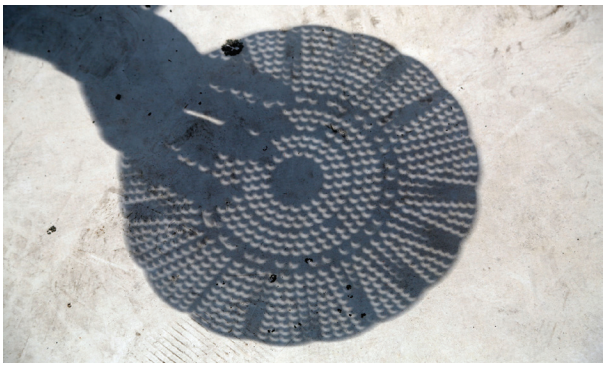
You can find out what will happen at other locations by going to: **www.timeanddate.com/eclipse/solar/2023-october-14**

There are many indirect ways to observe the eclipse, so having solar-viewing glasses is not required. Most homes already have the perfect pinhole projector to produce multiple images of the partially eclipsed Sun—a colander. To use it during the eclipse, stand with your back to the Sun and hold up a colander so that the Sun's light shines through it on the ground or a wall where there will be many tiny images of the eclipsed Sun in the colander's shadow.

Another easy method to observe the eclipse is to take two pieces of cardboard or thick paper. Put a pinhole in one (taking care to make a small, neat hole). Then, stand with your back to the Sun and let the Sun's light fall through the hole and onto the other sheet. You'll get a small but distinct image of the Sun. (A way to get a sharper pinhole is to cut a square out of the middle of one piece of cardboard, tape a sheet of aluminum foil over the hole, and put the pinhole in the foil instead of the cardboard.) The farther apart the two pieces of cardboard or paper, the larger the image of the Sun will be (but it will be a small image in any case).

Observing the Sun Safely

Because some part of the Sun will be showing throughout this eclipse, it will be important to use safe-viewing strategies to protect your eyes. It is never safe to look directly at the Sun. Regular sunglasses, swimming goggles, and most camera filters are NOT safe for looking directly at the Sun. You can observe the Sun indirectly using the ideas below. Or, you can safely protect your eyes with certified solar-viewing glasses from your library or another reliable institution (such as a local science museum or college/high-school science department). Make sure that on the back, in small print, they say that they are ISO 12312-2 certified.



NASA Image by Joy Ng

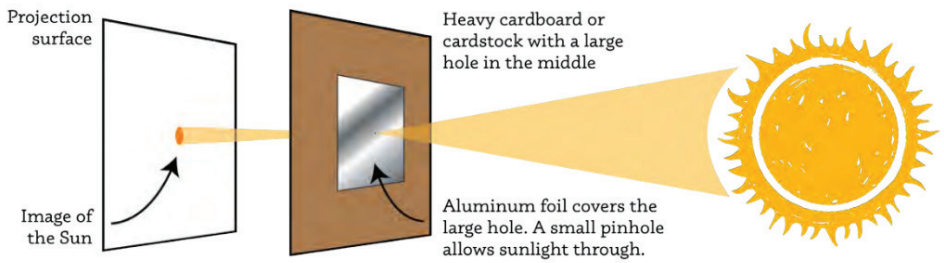


Image source: SEAL Guide, similar image is in Solar Science

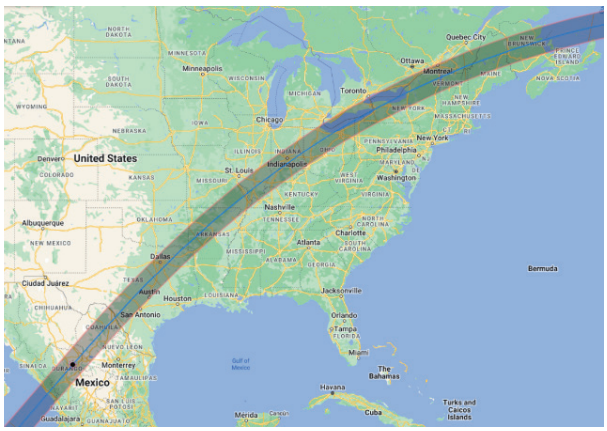
A North American Total Eclipse of the Sun

Monday, April 8, 2024

An Information Sheet by astronomers/educators Dennis Schatz & Andrew Fraknoi
Distributed courtesy of the National Science Teaching Association

On April 8, 2024, there will be a spectacular total eclipse of the Sun, visible on a narrow path that stretches from western Mexico through Texas, and then northeastward toward New York, New England and eastern Canada. In such a total eclipse, the Moon exactly covers the Sun, and our star's faint atmosphere (the *corona*) becomes visible. Everyone else in North and Central America will see a partial eclipse of the Sun, with a bigger "bite" taken out of the Sun the closer you are to the path of the total eclipse.

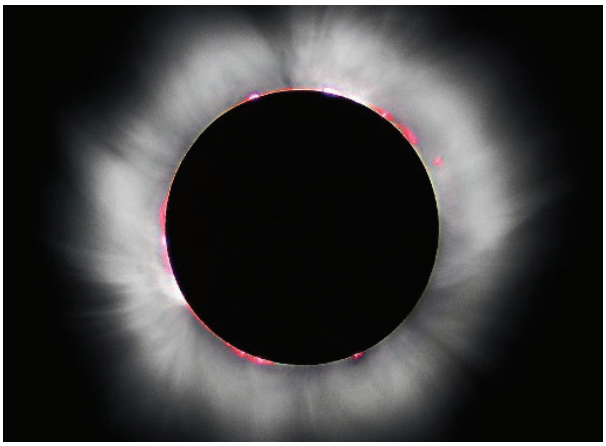
If you are on the path, when only a sliver of sunlight remains visible, your surroundings will begin to darken, as if the Sun were setting in the middle of the day. Temperatures will drop and birds will go to roost, thinking that night is coming. Finally, the Sun will be totally covered and the beautiful solar atmosphere (the corona) will become visible. Totality will last four minutes or less and then the Sun will slowly be uncovered.



The path of the total eclipse. (Credit: Xavier Jubier)

Most people in North America will see a partial eclipse.

Photo by Tomruren



Only those people in the narrow path of totality will see the total eclipse.

Photo by Luc Viatour

Your town	Partial Begins	Total Begins (when applicable)	Eclipse Maximum	Total Ends (when applicable)	Partial Ends

Source: SEAL Guide

We talked about the total eclipse in class, so your child should be able to tell you more about what to expect. At the top of this page is information for what will happen in your location. Hopefully, the skies will be clear and you can get a great view of this rare astronomical event. There will not be another total eclipse visible in the continental U.S. until 2045.

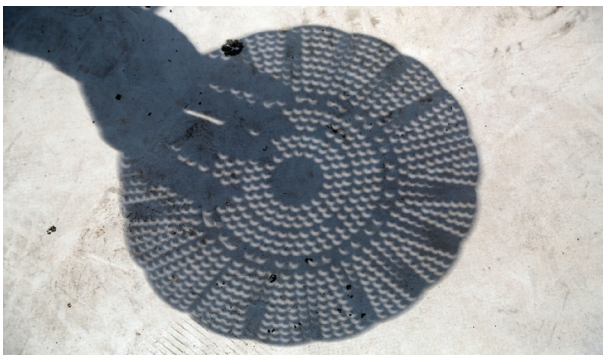
You can find out what will happen at other locations by going to: **www.timeanddate.com/eclipse/solar/2024-april-8**

There are many indirect ways to observe the eclipse, so having solar-viewing glasses is not required. Most homes already have the perfect pinhole projector to produce multiple images of the partially eclipsed Sun—a colander. To use it during the eclipse, stand with your back to the Sun and hold up a colander so that the Sun's light shines through it on the ground or a wall where there will be many tiny images of the eclipsed Sun in the Colander's shadow.

Another easy method to observe the eclipse is to take two pieces of cardboard or thick paper. Put a pinhole in one (taking care to make a small, neat hole). Then, stand with your back to the Sun and let the Sun's light fall through the hole and onto the other sheet. You'll get a small but distinct image of the Sun. (A way to get a sharper pinhole is to cut a square out of the middle of one piece of cardboard, tape a sheet of aluminum foil over the hole, and put the pinhole in the foil instead of the cardboard.) The farther apart the two pieces of cardboard or paper, the larger the image of the Sun will be (but it will be a small image in any case).

Observing the Sun Safely

Because some part of the Sun will be showing during most of this eclipse, it will be important to use safe-viewing strategies to protect your eyes. It is never safe to look directly at the Sun, except during the brief period of totality, when you can only see the faint solar corona by looking directly at the eclipsed Sun. Regular sunglasses, swimming goggles, and most camera filters are NOT safe for looking directly at the Sun. You can observe the Sun indirectly using the suggestions below. Or you can safely protect your eyes with certified solar-viewing glasses from your library or another reliable institution (such as a local science museum or college/high-school science department). Make sure that on the back, in small print, they say that they are ISO 12312-2 certified.



NASA Image by Joy Ng

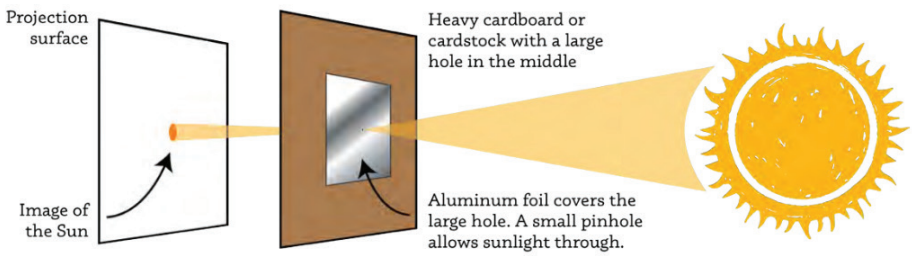


Image source: SEAL Guide, similar image is in Solar Science