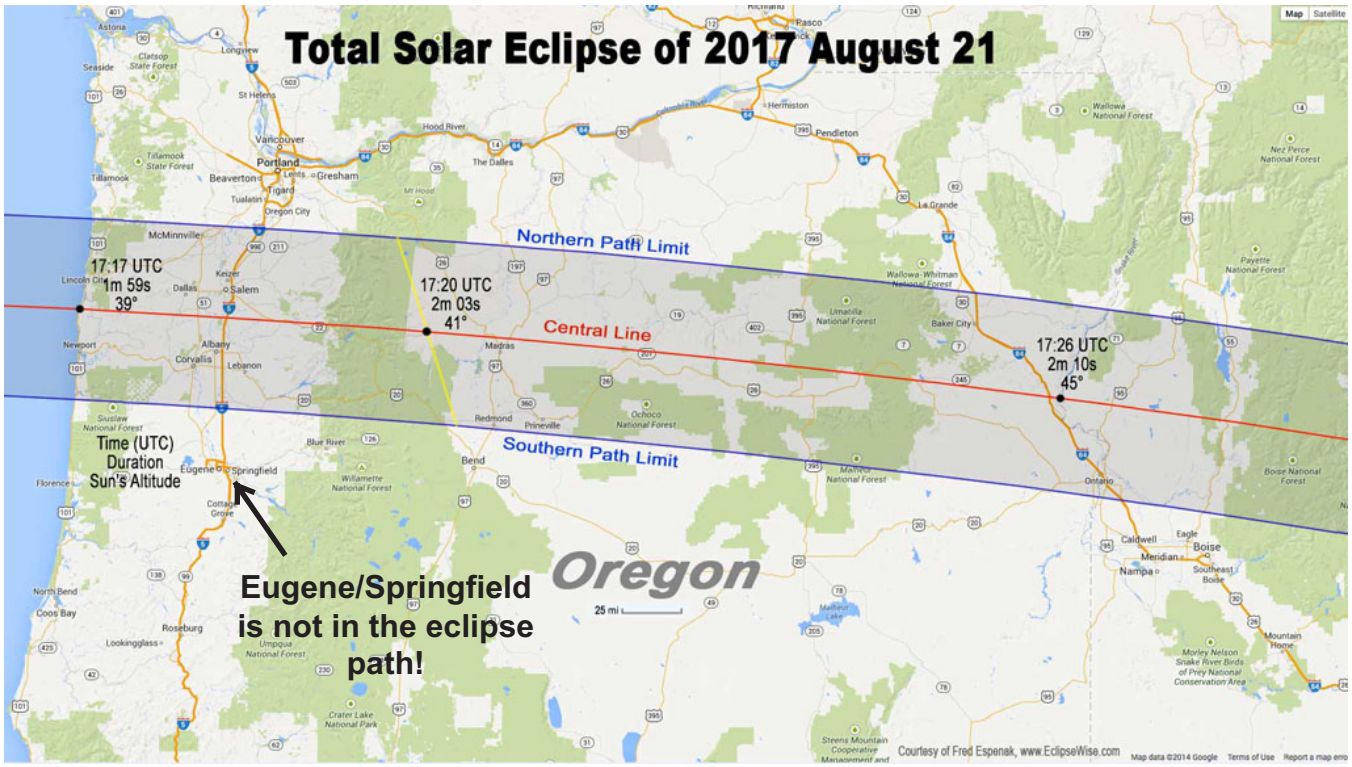
How to View the August 21 Total Solar Eclipse

On Monday, August 21, 2017, a total solar eclipse will cross the United states on a line from northern Oregon to South Carolina. People in the narrow (60-mile-wide) eclipse path will see the Moon completely block the Sun for up to two minutes, revealing the solar corona. The sky will darken, and stars and planets will become visible. This is a beautiful and rare phenomenon. Eugene/Springfield will witness a 99% eclipse, but that's nothing compared to totality. You should try to get into the eclipse path if at all possible.



You should also make sure you view the eclipse safely. The only time it is safe to look directly at the Sun is when it is completely eclipsed by the Moon. Even the partial phases of the eclipse can be dangerous to your eyes if viewed directly.

Sunglasses won't protect your eyes. Neither will smoked glass, exposed film, mylar foil, or any of the myriad other things you might read about on the Internet. While they may reduce the intensity of visible light, they may not filter out the infrared or ultraviolet, which can cause just as much damage without you even being aware of it until it's too late. The blindness will be permanent, so don't trust your vision to anything but an approved solar filter designed for the purpose of solar viewing.

Eclipse shades are designed for the purpose, are inexpensive, and provide a safe, comfortable view of the partial phases of the eclipse. It is safe to look directly at the Sun through eclipse shades. Number 14 welder's glass is also safe.

It is also safe to look at a projection of the Sun made by a pinhole. Poke a hole with a round toothpick in a piece of aluminum foil and hold the foil about five or six feet away from a white piece of paper. **Don't look through the pinhole.** Look instead at the white paper. The circular image you see in the shadow of the foil on the paper will be about half an inch across. As the eclipse proceeds, you will see the bite taken out of the Sun by the Moon, and you can watch that bite grow bigger and bigger until the Sun is completely eclipsed.

Pinhole images are small and dim. You can get a brighter, larger view by reflecting sunlight off a small mirror onto a white card or a light colored wall. Mask the mirror down to a half inch across or so. This will create a sort of pinhole that will project an image that looks pretty good from a dozen feet or so away. It will easily reveal the partial phases of the eclipse.

You can also project an image through a telescope or binoculars. Don't use a telescope or binoculars that you care about, as the Sun's intense heat can melt internal parts, and **never look through an unfiltered telescope or binoculars at the Sun**. Look only at the image projected onto a white screen. Images created in this fashion will be sharp enough to reveal sunspots if there are any on the Sun during the eclipse.

Never look through a telescope or binoculars while wearing eclipse shades, either. The concentrated sunlight will melt the shades and ruin your eyes. You can buy solar filters that go on the front of telescopes or binoculars, and these are the only safe way to look through those instruments at the Sun.

During totality it is safe to look directly at the Sun without eclipse shades. This is the only time it is safe to view the eclipse by naked eye. Put the shades back over your eyes the moment any portion of the Sun's disk is visible, but while the Sun is completely obscured by the Moon, it is safe to view the corona (the faint wispy outer atmosphere of the Sun) directly. This part of the eclipse will only last for a few seconds if you are on the edge of the eclipse path, up to two minutes if you are on the centerline of the eclipse. From Eugene/Springfield you will not see totality at all, and it will never be safe to view the Sun without proper solar filters.

Eclipses are once-in-a-lifetime experiences, well worth the trouble of viewing, but please view them safely!

Important times:

The eclipse starts at 9:04 a.m. The Sun will be 28° up in the east-southeast.
Totality begins at 10:15 – 10:20, depending on your location. The Sun will be 40° up in the east-southeast.
Totality will last from just a few seconds to 2 minutes, depending on your location.
The eclipse will end about 11:40 (2.5 hours from beginning to end).
The bright star Regulus will be 1.5° to the left of the Sun. Mars will be above the Sun, with Venus far above that (and very bright!) Mercury will be below the Sun.

For more information visit these websites:
https://eclipse2017.nasa.gov/safety
http://www.eclipse2017.org/eclipse2017_main.htm
https://www.greatamericaneclipse.com/