Solar Eclipse

in East Tennessee
August 21, 2017
A hand out from the SMAS
(Smoky Mountain Astronomical Society)

Once in a Life Time Event!

Unless you are willing to travel a great distance, this August 21 is a once in a life time chance to see a rare event, a total solar eclipse. On any given spot on the Earth, a total eclipse happens only about once every 375 years. (from: http://www.space.com/25644-total-solar-eclipses-frequency-explained.html) A total solar eclipse happens when the moon comes very nearly exactly between the sun and where you are on the surface of earth. Unlike a total lunar eclipse where the shadow of the earth covers the whole moon and everyone who can see the moon can see the eclipse, a solar eclipse is total only on a small region of the earth even at it's best. You must therefore be at the right spot at the right time to see this.
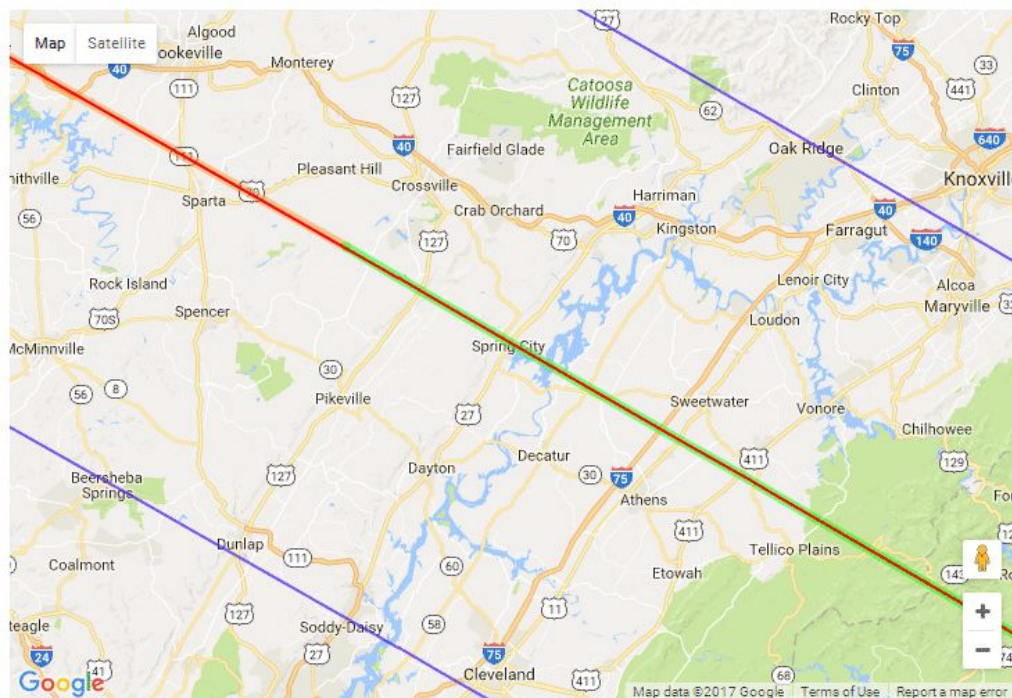
Where and When?

This summer on Monday, August the 21st, a total solar eclipse will slide across the Unites States from Oregon to South Carolina. Here in East Tennessee a prime spot to view will be from cities such a Tellico Plaines, Athens, Sweetwater, Madisonville, Vonore, Etowah, Decatur, Spring City, and all will be good to GREAT! For elsewhere check out: the zoom-able map from NASA at:
https://eclipse.gsfc.nasa.gov/SEgoogle/SEgoogle2001/
SE2017Aug21Tgoogle.html

https://en.wikipedia.org/wiki/File:An_EPIC_Eclipse.gif

Map centered on (latitude, longitude): (35.6747° N, 444.8515° W)
Cursor position (latitude, longitude): (35.6947° N, 84.8666° W)
Distance from last marker:

☑ Show marker on click   ☐ Large map
[Clear Markers]   [Eclipse Times in Popup]

Safety First and Last!
DO NOT LOOK AT THE SUN. Looking directly at the surface of the sun can cause permanent blindness. This danger is very present during the partial phases leading into and following after the actual total eclipse. Young children are especially vulnerable because they may not understand and remember to follow the directions not to look at the sun. Permanent damage occurs without feeling pain. Only special dark glasses allow you to safely look at the sun. Use your favorite search engine for "eclipse glasses" and you should find them in price ranges from about 1 dollar to over 20 dollars. Order now because they are likely to run out if you wait. During totality and only during totality you can view naked eye.
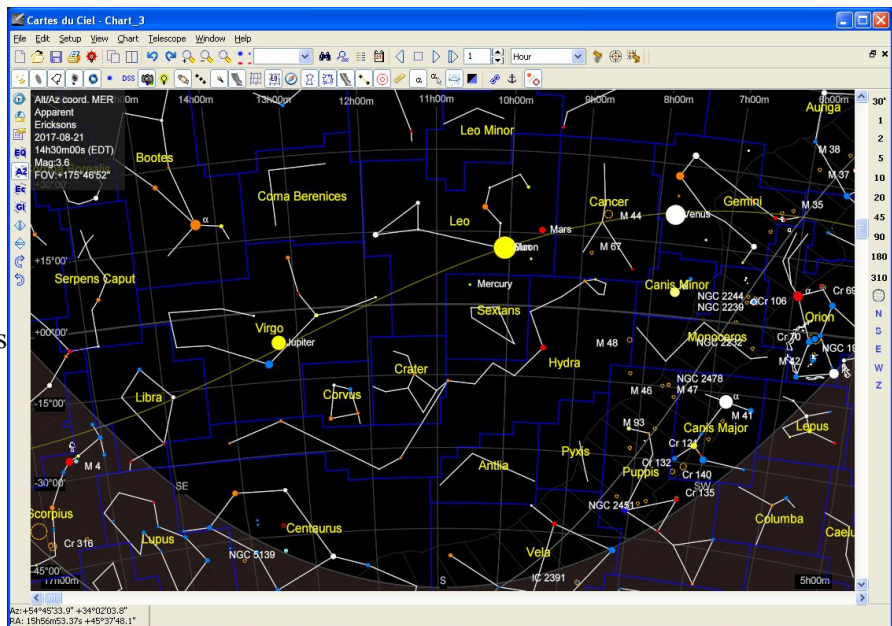
What do I need?
Eye protection is a must. Only during totality, when the moon completely covers the sun can you look with naked eyes. During the time leading up to and after totality when the sun is in partial eclipse you can only observe the sun with proper eye protection such as eclipse glasses or by an indirect method such solar projection telescope or as a pin hole camera. DO NOT USE A TELESCOPE WITH A FILTER IN THE EYE PIECE. Destroy such unsafe eye pieces that may have come with telescopes in years past.
Other things you may want. Lawn chair or ground blanket. Water, (it is August in Tennessee after all). Think ahead, there may be no bathroom facilities where you are. Snacks for you and to share with others. Radio, but not too loud. An when ever going where they may be crowds bring a good attitude.

How to View Your First Eclipse!
Experienced viewers say. "Do not try to photograph or other activities which might distract you during maximum of only 2 minutes and 30 seconds of this event." Look at the sky and enjoy.

You are looking at a part of the sky usually only seen at night in the winter. Facing south the sun is in Leo and just to the right of the sun is Mars and farther right is Venus. To the left and down, south ward, is Mercury and much farther left which is to the east will be Jupiter. Way to the west south west is the bright star Sirius in Canis Major (the big dog) who is following Orion the Hunter to the western horizon. Around north is the big dipper.

Simulated sky using Cartes du Ciel (Sky Charts)

The Corona!
During the eclipse you may see the planets, stars and you may see streams of gas called prominence just above the surface of the sun. Most spectacular of all will be the sun's corona, its atmosphere so to speak. It is millions of degrees hot and no one yet knows exactly why. If you are still in school, study hard in mathematics and science and …

Perhaps you can help figure that out.