

Program: The Great American Eclipse: Standing in the Shadow of the Moon

Speaker: Greg McCauley, Executive Director/CEO, Link Observatory Space Science Institute

Introduced by: Kurt Williams, Deputy Director/COO, Link Observatory Space Science Institute

Attendance: 124

Guests: Roger West, Steven Conger, Linda Nitka, Kris Elliott, Martha Helm, Dick Hansell, Pam Swaidner, Meaghan Fukunaga, Olympia Danbrowski, Sarah Roberts, Martyn Roberts, Gerry Bonner

Scribe: Jerry Kurlander

Editor: Bonnie Carter

Check out this NASA link: <https://svs.gsfc.nasa.gov/Gallery/suneclipse2017.html>

Eye safety information: <https://eclipse.gsfc.nasa.gov/SEhelp/safety2.html> Link

Observatory: <http://linkobservatory.org/>

On August 21st of this year the earth, sun and moon will line up to block the sun from view. This historic phenomenon will last 1 hour and 33 minutes as it moves coast to coast. This is being referred to as the Great American Eclipse. It is said to be the astronomical event of the century. This total eclipse of the sun is the first since 1776 where the path of totality lies completely in the United States and no other country. There is a 70-mile shadow path that will stretch diagonally through 12 states from Oregon to South Carolina.

The sun alone contains 99.8% of the total mass of the solar system. The temperature inside the sun can reach 15 million degrees Celsius. The sun's energy is generated in its core and it takes 170,000 years to reach the surface. It is from here that the light we see takes 8 minutes and 20 seconds to reach the earth. The sun is 400 times larger in diameter and 400 times farther away from earth than the moon. Because of this equal size-to-distance ratio, the sun and moon are the same apparent diameter in the sky. The blocking of the sun by the moon produces shadows on the earth referred to as the *penumbra* (partial shadow) and *umbra* (full shadow). The eclipse geometry is complicated by the fact that the moon's orbital plane is 5.9 degrees from the direct line of the sun. Because of the complex alignments a partial lunar eclipse will occur 14 days before the total solar eclipse of August 21, 2017.

From a global perspective solar eclipses occur frequently. During the 21st century there will be 224 solar eclipses worldwide. There will be 69 total eclipses visible from somewhere on the planet in the next 100 years, in addition to partial eclipses and annular eclipses.

In Indianapolis the eclipse will be partial, reaching 91% of totality. The eclipse will begin at 12:58 pm, Eastern Daylight Savings Time. It will reach the 91% maximum at 2:25 pm and end at 3:48 pm.

For the observer's safety, eclipse glasses should be utilized, **not** regular sunglasses. The Link Observatory Space Science Institute is sponsoring five buses to go to Hopkinsville, Kentucky, to experience the total eclipse. Totality will last there about 2 minutes and 40 seconds.

Mr. McCauley showed several videos beautifully displaying features of solar eclipses.



Greg McCauley with proper glasses



Greg after the eclipse