2017 Solar Eclipse

Prepare for the solar eclipse of Monday, August 21, 2017.

All of North America will see a partial solar eclipse, and a narrow swath from Oregon to South Carolina will experience a *total* solar eclipse. This will likely be the most observed celestial event in US history. Make your plans now.

Map courtesy of Michael Zeller, www.GreaterHarrisonCounty.com

Links

Great American Eclipse
http://www.greatamericaneclipse.com

Varied content features excellent maps by cartographer Michael Zeller and education content by Charles Fulton.

EclipseWise
http://eclipsewise.com

Predictions for eclipses from Fred Espenak, plus the valuable Eclipse Bulletin for 2024 solar eclipse.

Interactive Google Map
http://quake.fee.fr/mirror_pages/solar_eclipse/x5E_GoogleMap3.php?Ln=20240408

Thorough map includes limits profile for sites along centerline to predict Bailey's Beads, as well as an elevation profile to know the sun is above the site's horizon.

EclipseWise
http://eclipsewise.com

Climatology and weather predictions for celestial events.

How to View the 2017 Eclipse Safely
https://eclipse2017.nasa.gov/sites/default/files/pub/eclipse-safety_508.pdf

A solar eclipse is one of nature's grandest spectacles. By following these simple rules, you can safely enjoy the view and be rewarded with memories to last a lifetime.

Eclipses and Safety
http://www.exploratorium.edu/eclipse

The Exploratorium has short videos about eye safety and eclipse activities.

Sun Funnel
http://www.nightwise.org/#sun-funnel-v22y0

Make your own device for observing the sun safely for a group. Includes instructions, warnings, how-to video.

Rainbow Symphony
http://www.rainbowsymphony.com/eclipse-glasses

Safe solar eclipse glasses, eclipse viewers and solar filters that are ISO approved. For a list of other reputable vendors, see https://eclipse.aas.org/resources/solar-filters.

iPhone App: Totality
https://itunes.apple.com/us/app/totality-by-big-kid-science/id1199242622?mt=8

Simple eclipse app from Big Kid Science. Also available for Android at https://play.google.com/store/apps/details?id=com.germinateapps.totalityapp.

How To Photograph Eclipse
http://www.nfpa.com/Eclipse/Eclipse101/photo.htm

A guide from Mr. Eclipse himself, whose photos are on the USPS stamp with thermochromic ink.

Video: Observing the Sun Safely
https://youtu.be/4RSrSFlcdr5M

An authoritative talk about eye safety by Dr. Ralph Chou presented at University of Toronto for 2012 transit of Venus.

Eclipse2017
http://www.eclipse2017.org

Many diverse resources include "8 Seconds" essay and simulated eclipse flyover of USA.

ASP Universe in the Classroom
https://www.astrosociety.org/wp-content/uploads/2016/10/solar3.pdf

Eclipse lessons for educators follow the dynamic NGSS-based approach to instruction.

Tyler Nordgren
http://www.tylernordgren.com

Dr. Tyler Nordgren is the artist, astronomer, and night sky ambassador of the Space Art Travel Bureau. Buy his book Sun, Moon, Earth.

Night Sky Network Outreach Resources
http://bit.ly/NSNSolar

The NSN and Astronomical Society of the Pacific are creating and curating information for amateur astronomers and other informal educators to prepare communities off the path of totality.

NASA: Eclipse 2017
http://eclipse2017.nasa.gov

As only NASA can. Sparsch version at https://eclipse2017.nasa.gov/espanol.

Eclipse Podcasts
https://itunes.apple.com/us/podcast/1-800days-until-the-eclipse/id968037293

Over 100 iTunes podcasts dedicated to the 2017 eclipse, by Michael Balech.

American Eclipse USA
http://americaneclipseusa.com

Artist Jay Ryan explains eclipses with clear illustrations.

The Vanishing Sun - Eclipse Tales From Around the World

Multi-cultural eclipse folklales, including 11 audio recordings and one video recording which incorporated both subtitles and ASL sign interpretation. From Lunar and Planetary Institute.

Eclipse 2017: Education
https://www.facebook.com/eclipse2017/?hc=ts

Page for eclipse education on Facebook.

Handout: View Safely

For a list of reputable vendors, see https://eclipse.aas.org/resources/solar-filters.

Chuck's Eclipse Blog Posts

www.nightwise.org/blog/tag/solar%20eclipse

Eclipse Weather

National Weather Service

South Bend, IN

First Contact:	**12:57 PM**
Maximum Eclipse:	**2:22 PM**
Last Contact:	**3:44 PM**

Eclipse Flyover

Video courtesy of Eclipse2017.org

Interactive Google Map

Map by Xavier Jubier

Safe Viewing Summary

Video courtesy of Exploratorium:

Dr. Paul Doherty of the Exploratorium introduces four basic solar viewing techniques in video at http://www.exploratorium.edu/eclipse/video/safe-viewing-techniques. More Exploratorium videos are here.

Future Eclipses-USA

Map courtesy of Michael Zeller, www.GreaterHarrisonCounty.com

From the Mr. Eclipse Eclipse Primer:

"The last total solar eclipse visible from the continental U.S.A. occured on Feb. 26, 1979. A total solar eclipse was visible from Hawaii and Mexico on July 11, 1991. The next two total solar eclipses visible from the U.S.A. occur on Aug. 21, 2017 and **Apr. 8, 2024**."

Future Eclipses-Global

Future total solar eclipses are mapped by Michael Zeller and catalogued through 2100 by Fred Espenak, including:

- 2019 July 2
- 2020 December 14
- 2021 December 4
- **Apr. 8, 2024** (bisects USA)

Map courtesy of Michael Zeller, www.GreaterHarrisonCounty.com

Disclaimer:

Looking at the sun can be dangerous, but it can be done. Follow the safety precautions described in these links. I am not responsible for any injuries resulting from your observing the sun. You are responsible for your own safety.

When I said in 2004 and 2012 for observing the transit of Venus.

And **what they said** at eclipse2017.org: http://www.eclipse2017.org/eclipse2017_ayr%20safety.htm.

Eye Safety

Safe Viewing Techniques

http://www.exploratorium.edu/eclipse/safe-viewing-techniques

Paul Doherty of the Exploratorium introduces four techniques for viewing the sun: solar shades, #14 welding glass, pinhole projection, and optical projection.

Eye Safety Statement

http://eclipse2017.nasa.gov/safety

The American Astronomical Society, NASA, American Academy of Opthalmology, and others have released a definitive statement on eye safety with solar viewing instructions; also in PDF flyer version.

Hands On Sun Viewer

http://www.exploratorium.edu/eclipse/about-solar-eclipse-hands-safe-viewing-techniques

Paul Doherty makes a projected image of the sun with a hole in cardboard and with his hands crossed.

Sun Funnel

https://sites.google.com/site/nightwise/build_a_sun_funnel_v3.2.pdf

Make your own Sun Funnel, a telescope accessory that allows a group of people to observe a magnified image of the sun safely.

3D Printer Sun Funnel

https://youtu.be/Y7o2wdQ24

Video introduces the Sun Funnel with emphasis on the 3D printer version.

ToV 2012: Dr. Ralph Chou - Observing...

https://youtu.be/4RSrSFlcdr5M

Video is an authoritative talk about eye safety by Dr. Ralph Chou presented at University of Toronto for 2012 transit of Venus.

NASA Eclipse 101: Safety

http://eclipse2017.nasa.gov/safety

NASA eclipse website features eye safety under Eclipse 101. See one-page handout How To View The Eclipse Safely.

Spot Mirror Projection

http://www.nightwise.org/#Mirror-Projection-of-Sun#:~:Text=%2A%4A%0Q%20ie%7c1%20

Ken Miller shares an elegant and effective way to project an image of the sun using a simple mirror.

Make a Safe Solar Viewer

http://richardunit.people.cofc.edu/safe_solar_folder/index.html

Two types of make-your-own pinhole viewers are described, a simple one costing less than $1 and a more elaborate one for under $20. From College of Charleston.

Safety Page for Transit of Venus

http://media.wix.com/ugd/6cf6ef_cc91e158e17c4f0fb9c9a6a71b6dd3.pdf

Excerpts from my Eye Safety content for the 2012 transit of Venus, including six ways to look at the sun. Safety for 2004 transit of Venus is at http://media.wix.com/ugd/6cf6ef_06d1e62961b14fefb1eb9d0d62bae4.pdf

Sun Funnels

The Sun Funnel is a telescope accessory that allows a group of people to observe a magnified image of the sun safely.

Instructions to Build a Sun Funnel, updated for the 2017 eclipse by Rick Fienberg, includes images, tips, and precautions.

See video for introduction of 3D-printed version of the Sun Funnel. Additional tips are at my Sun Funnel page.

Try these .stl files for 3D-printing, courtesy of Asher Planetarium: https://www.dropbox.com/sh/jvodel4m9u3h6i/AACCc_ZNs3ZDCfhuqSzGKr3Ta?dl=0

Watch short video about Sun Funnels...

Circumstances for South Bend, IN

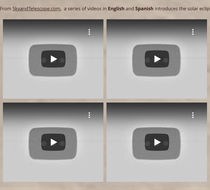
First Contact:	**12:57 PM**
Maximum Eclipse:	**2:22 PM**
Last Contact:	**3:44 PM**

Map courtesy of Xavier Jubier

Español

NASA's eclipse website is at https://eclipse2017.nasa.gov/espanol.

From SkyandTelescope.com, a series of videos in **English** and **Spanish** introduces the solar eclipse.



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