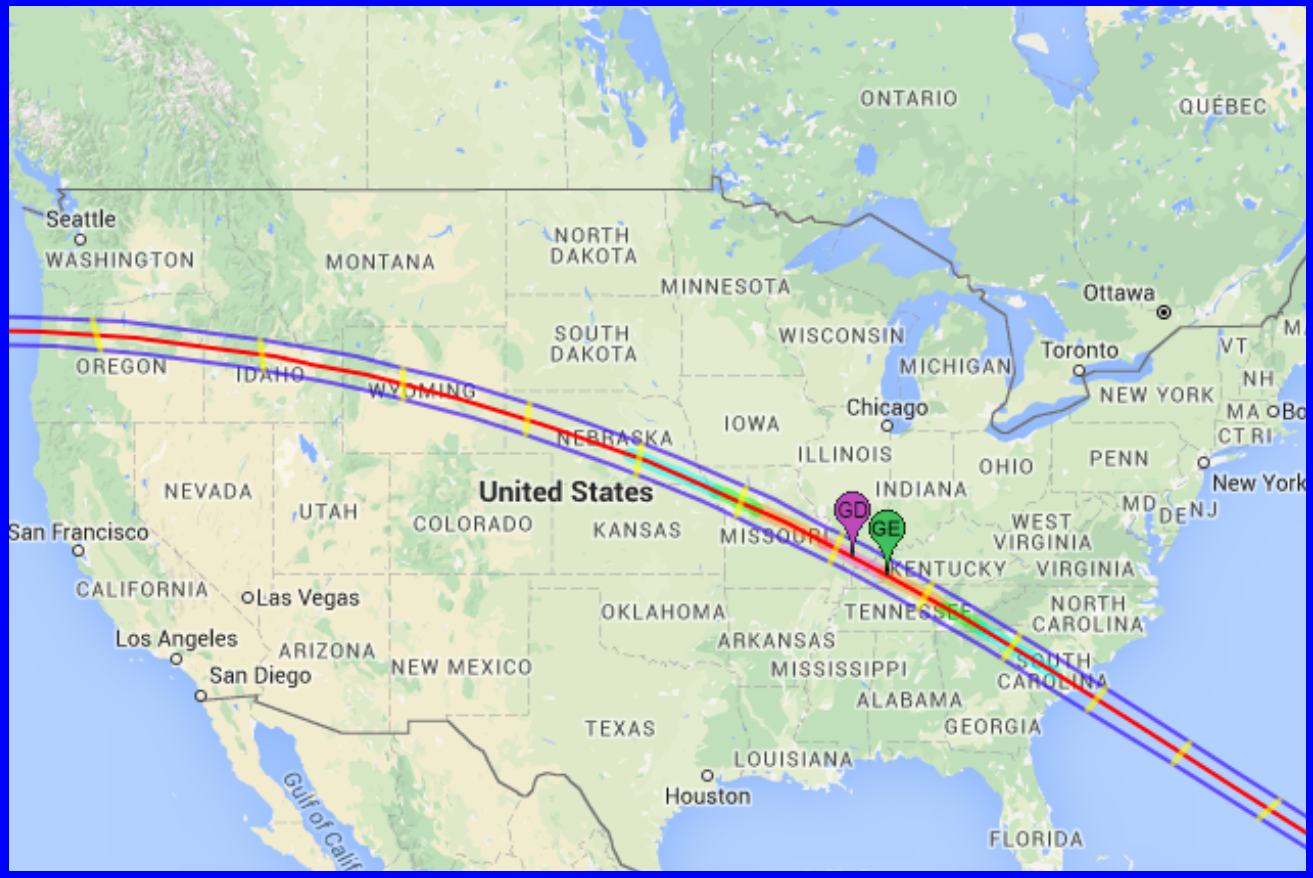
Eclipse Across America

August 21, 2017



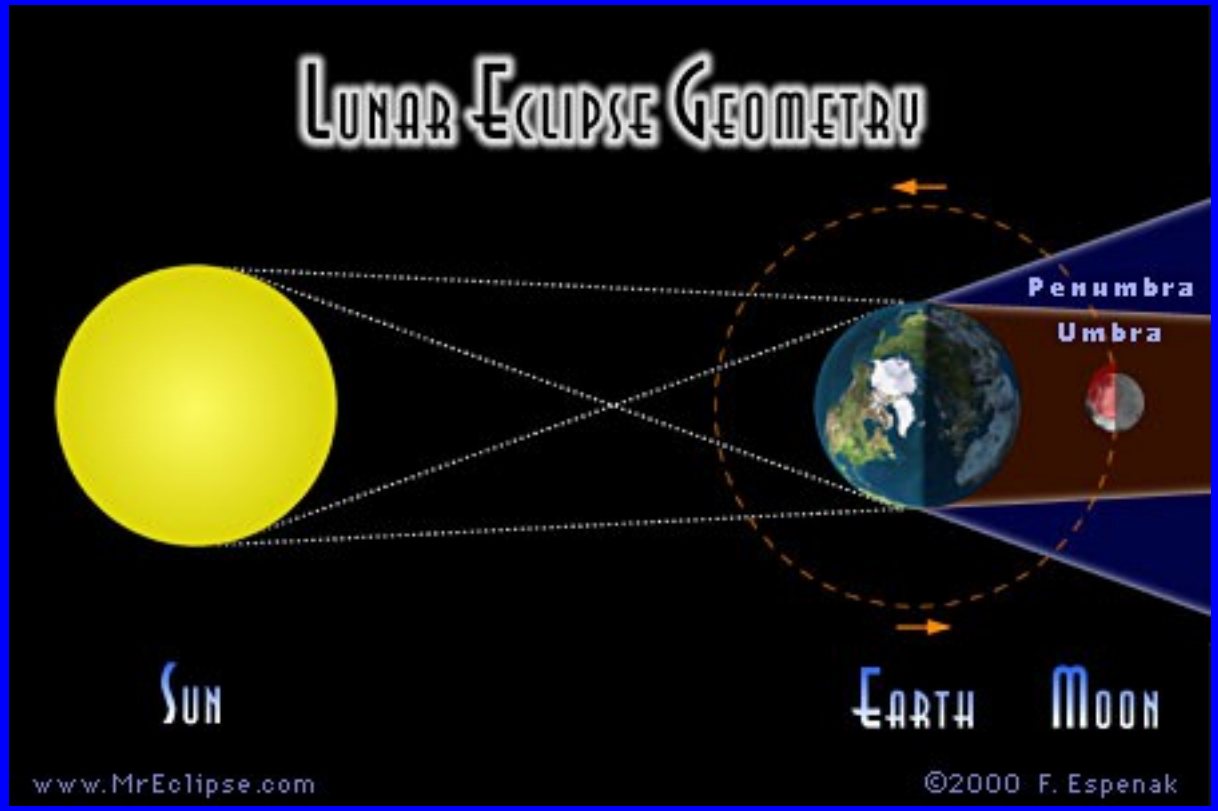
Close to Hopkinsville, Kentucky:

Start of partial eclipse	16:56 UT	11:56 a.m. CDT
Start of totality	18:24 UT	1:24 p.m. CDT
Maximum eclipse	18:25 UT	1:25 p.m. CDT
End of totality	18:26 UT	1:26 p.m. CDT
End of partial eclipse	19:51 UT	2:51 p.m. CDT

What is an Eclipse?

Lunar Eclipse

An eclipse happens when one object blocks light from falling onto another object. The shadow of the eclipsed object falls onto the other object.



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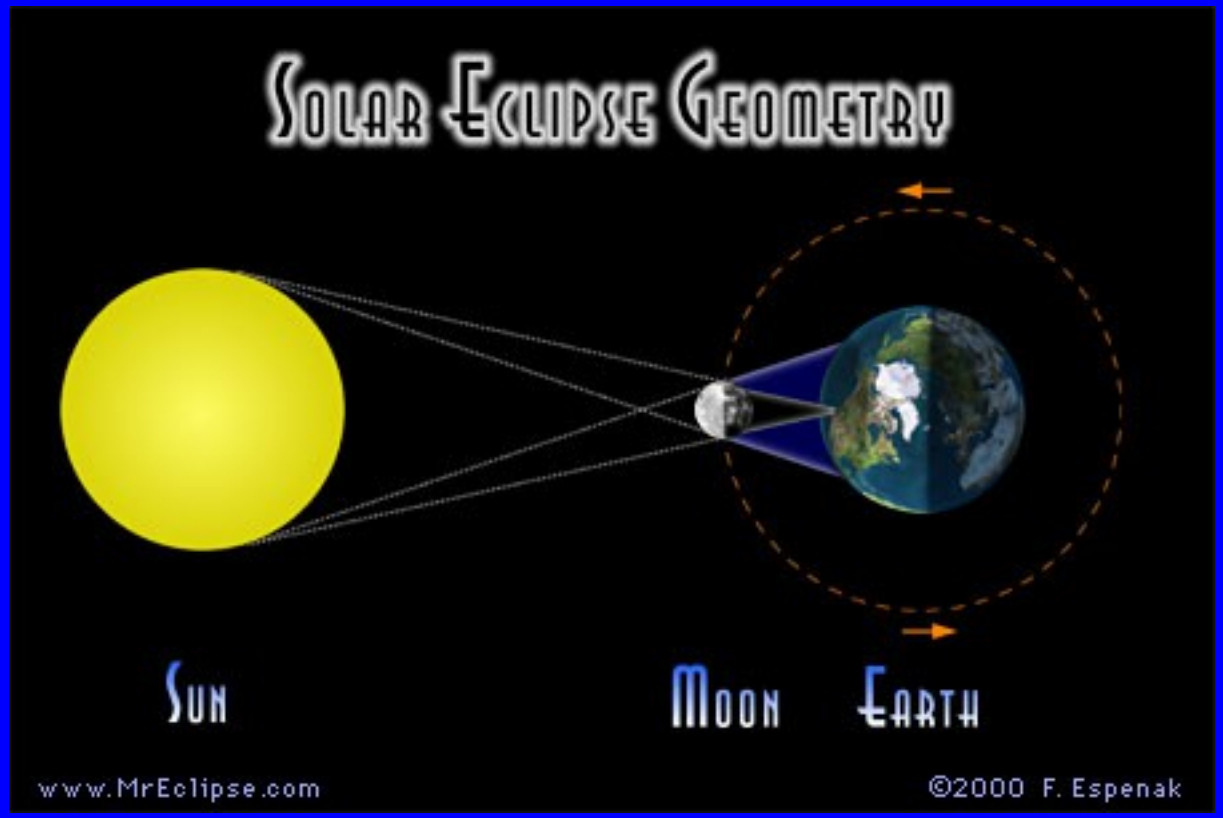
Solar Eclipses



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Why is this One Special?

The Last Total Eclipse to Touch the U.S.
Pacific Northwest
February 26, 1979

Covered by ABC News

https://www.youtube.com/watch?v=gAacZoIJUN0

June 18, 1908, a total solar eclipse bisected the U.S. from Washington State to Florida

What Can You Expect to See?

Zophia Edwards wide-angle view, from Jay Pasachoff's Eclipse 2013 page

Image Used With Permission

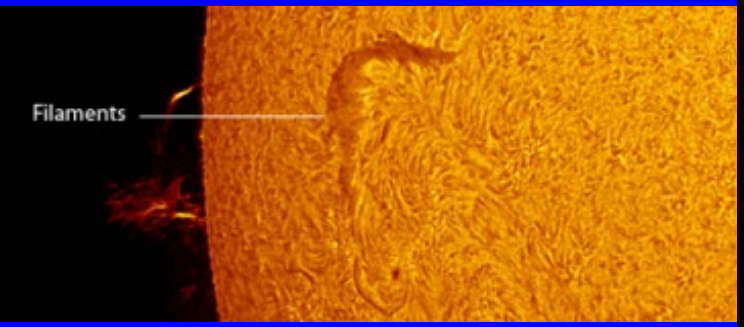
Dr. Jay Pasachoff, Williams College, has observed 63 eclipses

The Corona and Prominences

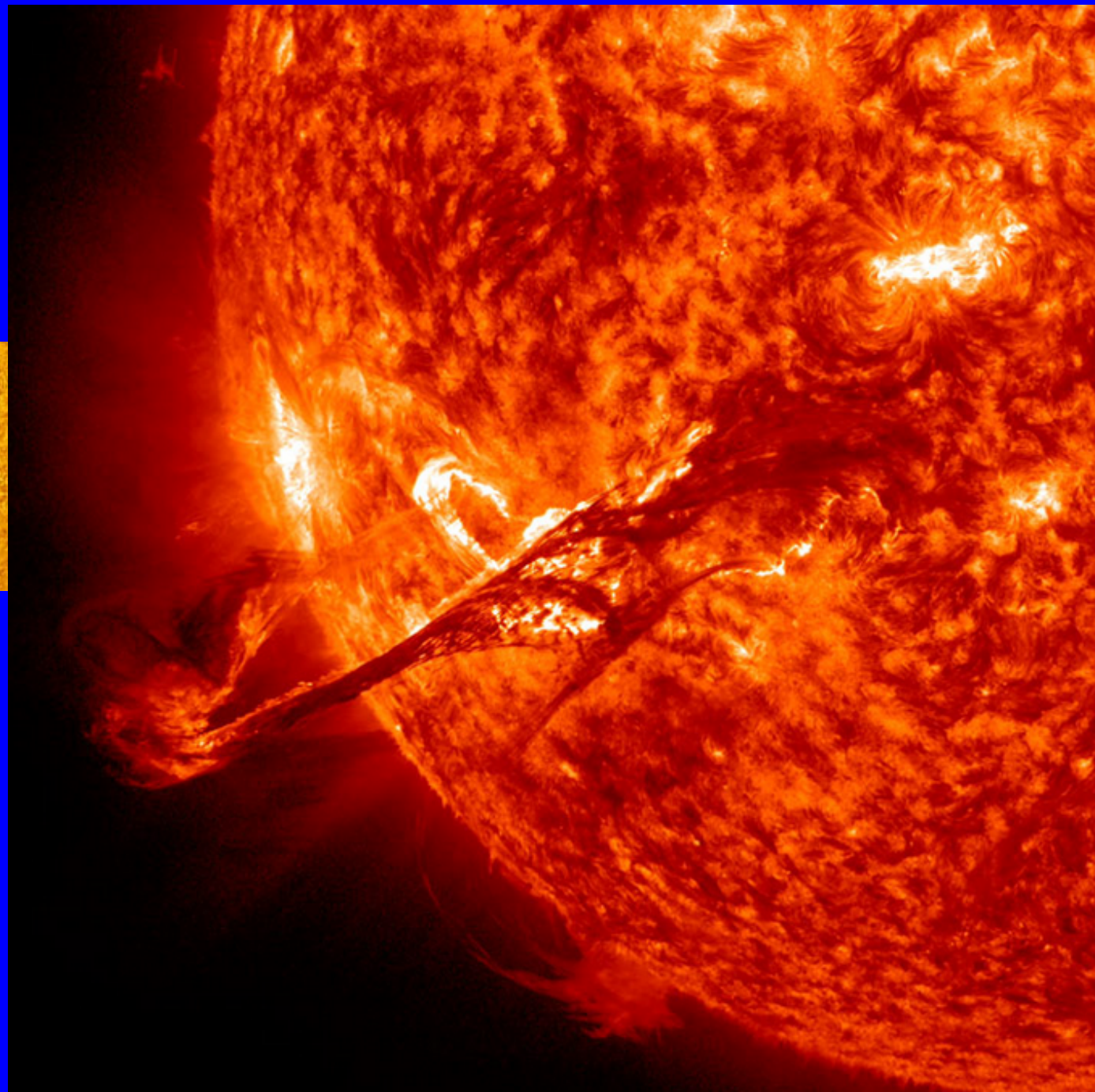
Rob Lucas, with Jay Pasachoff's 2013 Eclipse Expedition

Image Used With Permission

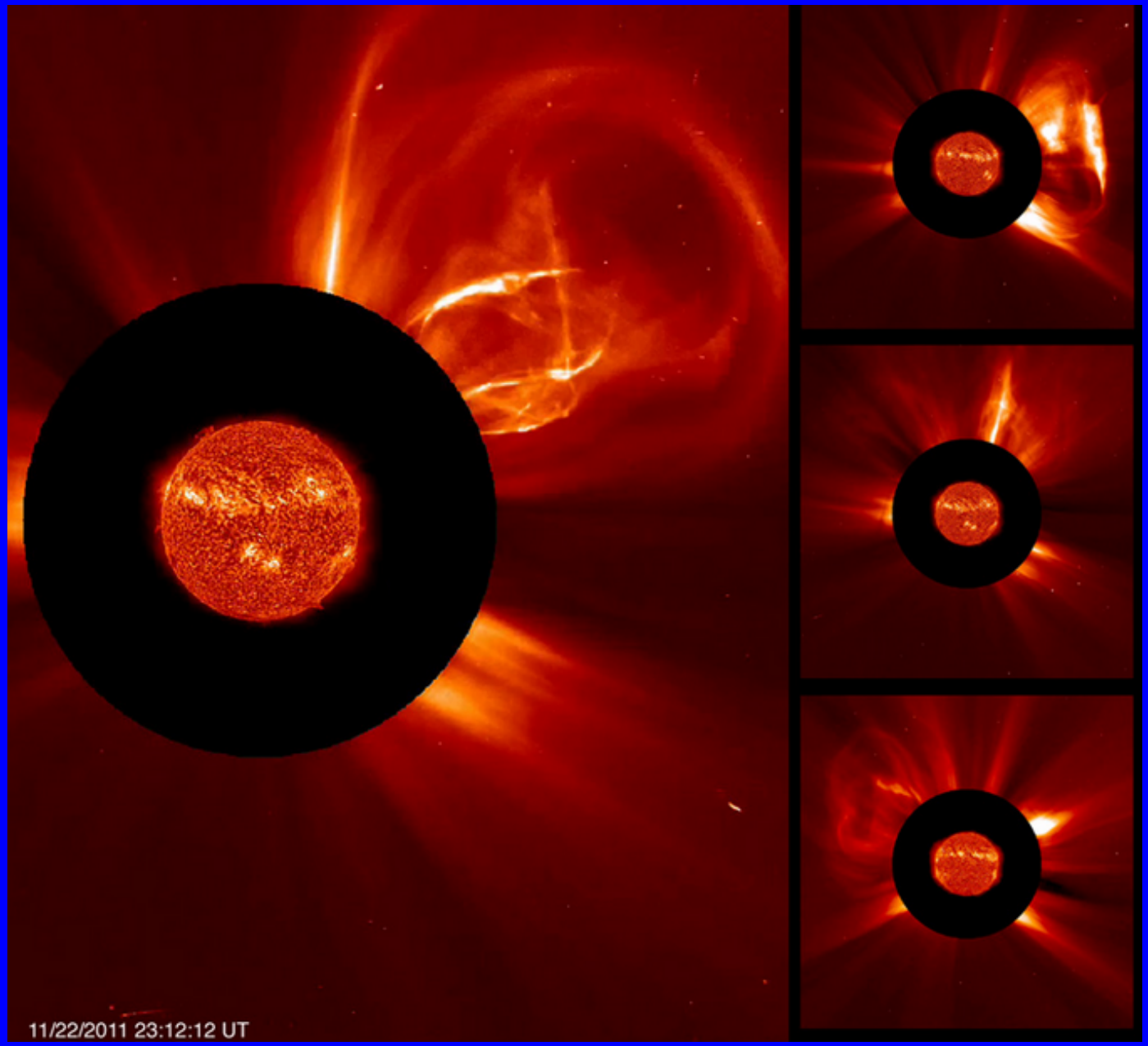
Filaments and Prominences in the Light of H-alpha (6562 Angstroms) and the Solar Dynamics Observatory's 304 Angstrom Filter



Movie!



SDO 304 Angstom Image Combined with the Solar Heliospheric Observer's (SOHO)Coronagraph

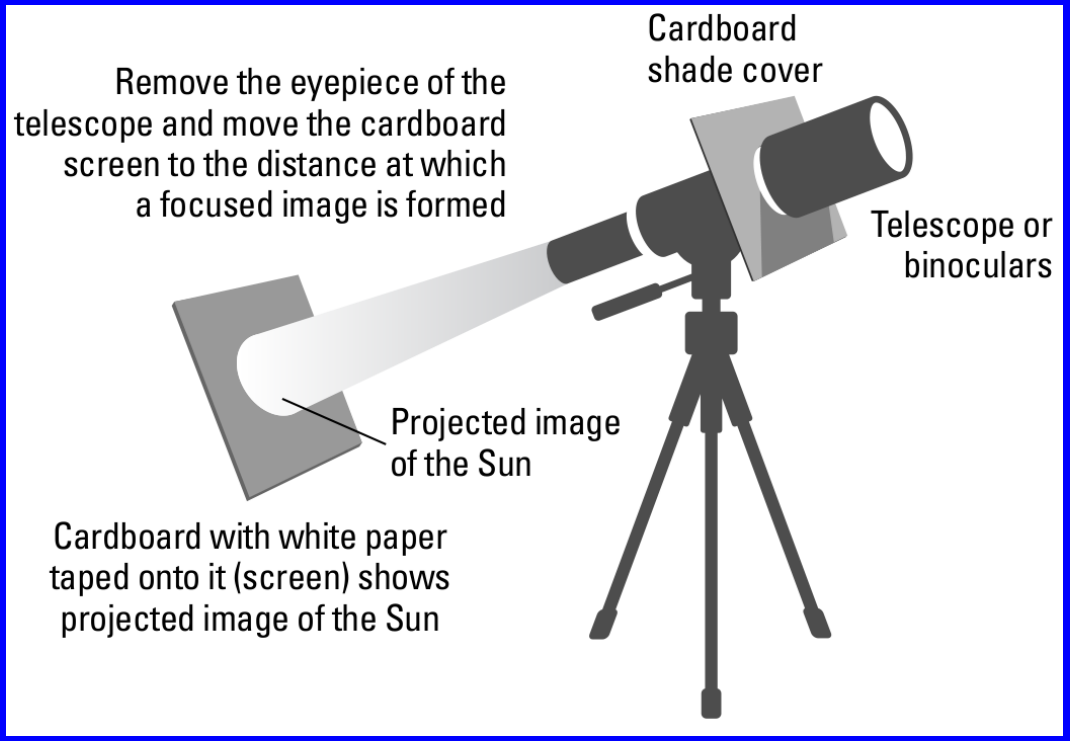


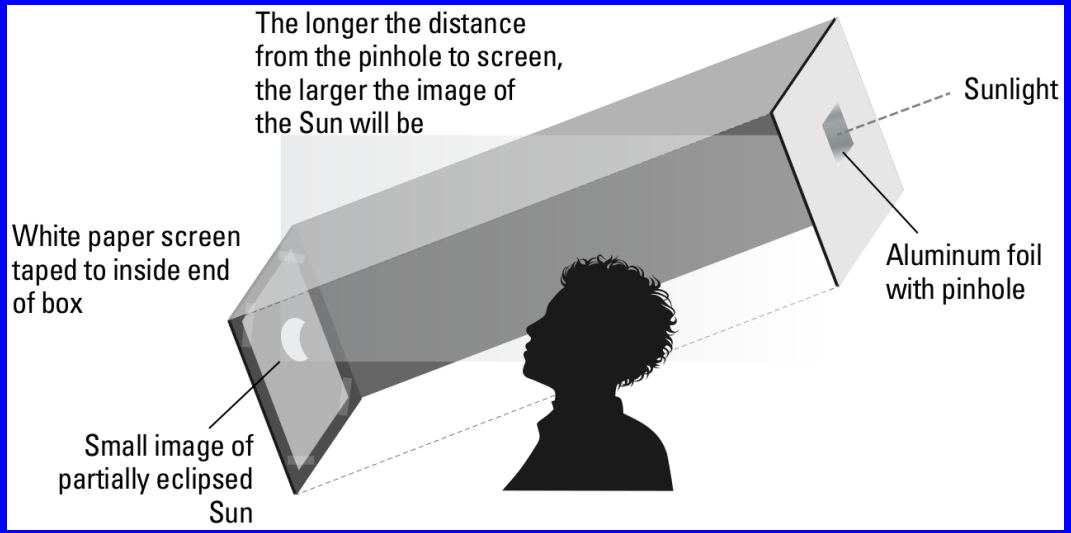
How to Safely Observe An Eclipse

No Special Rules for Lunar Eclipses

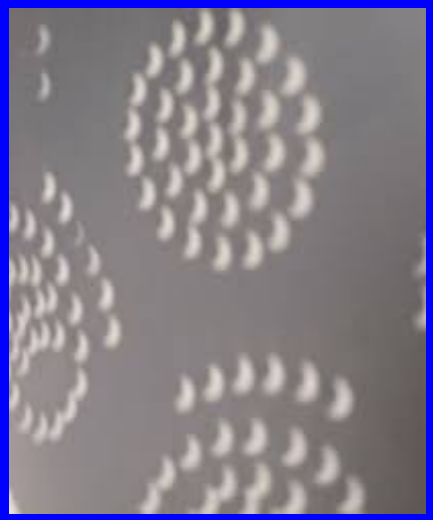
For Solar Eclipses:

- Projection
- Special Telescope Filters
- Eclipse Glasses
- Number 14 Welder's Glass

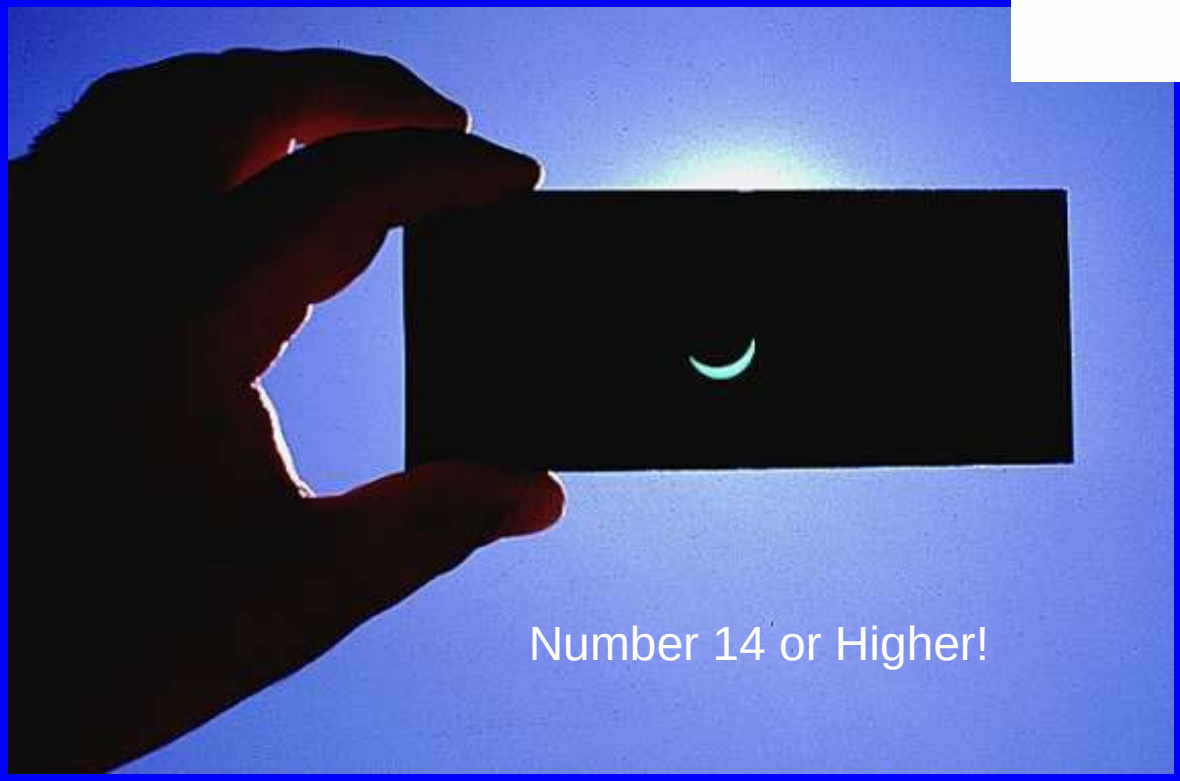




Use a Kitchen Colander For Partial Phases



Eclipse Glasses and Welder's Glass



Solar Filters for Telescopes

From DSCOVR: July 16, 2015
The Moon passed between Earth and satellite, showing us the back side of the Moon.
Note how dark it is.
The Moon's albedo is 12%.
Venus' albedo is 75%.

More Information

http://www.astrosociety.org/tov/Build_a_Sun_Funnel2.pdf

http://www.nasa.gov/offices/education/about/index.html

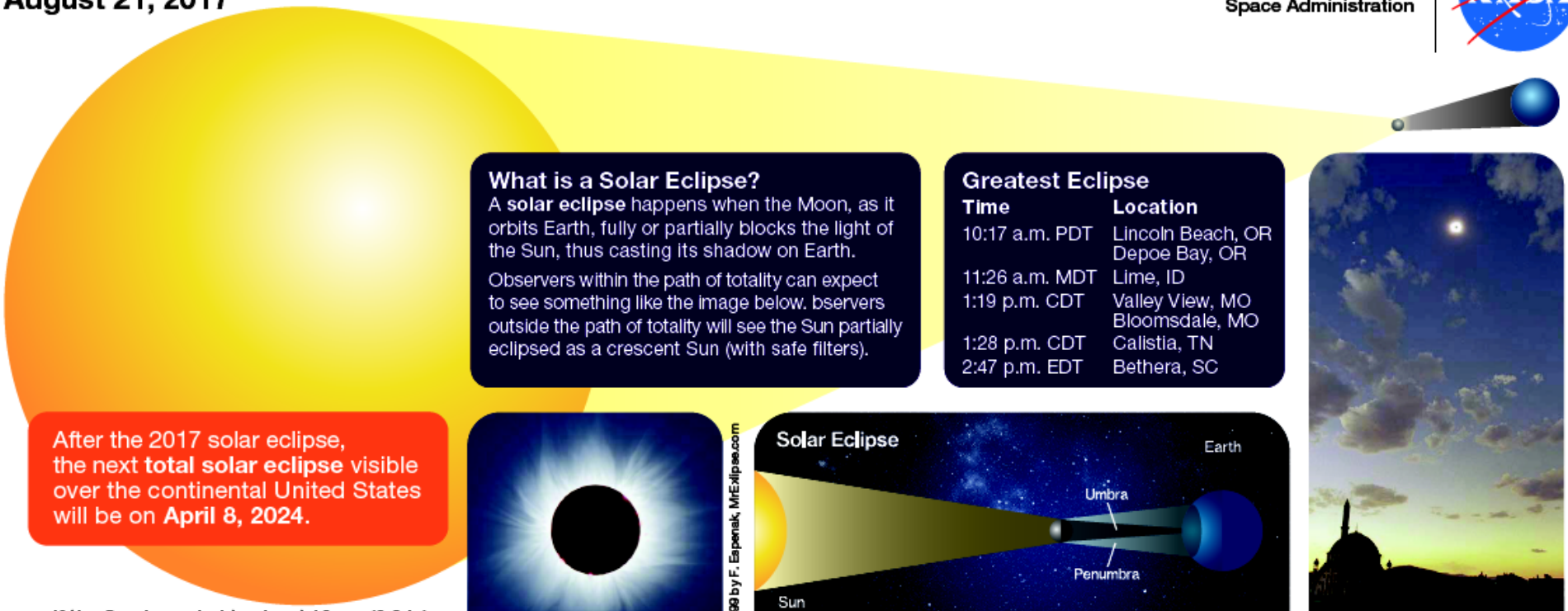
http://www.greatamericaneclipse.com/

http://eclipse.gsfc.nasa.gov/SEgoogle/SEgoogle2001/SE2017Aug21Tgoogle.html

Eclipse Across America

August 21, 2017

National Aeronautics and Space Administration



What is a Solar Eclipse?

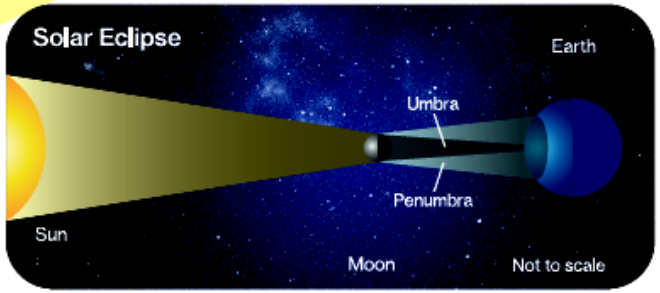
A **solar eclipse** happens when the Moon, as it orbits Earth, fully or partially blocks the light of the Sun, thus casting its shadow on Earth.

Observers within the path of totality can expect to see something like the image below. bservers outside the path of totality will see the Sun partially eclipsed as a crescent Sun (with safe filters).

Greatest Eclipse

Time	Location
10:17 a.m. PDT	Lincoln Beach, OR Depoe Bay, OR
11:26 a.m. MDT	Lime, ID
1:19 p.m. CDT	Valley View, MO Bloomsdale, MO
1:28 p.m. CDT	Calistia, TN
2:47 p.m. EDT	Bethera, SC

After the 2017 solar eclipse, the next **total solar eclipse** visible over the continental United States will be on **April 8, 2024**.



If the Sun is scaled to about 10 cm (3.9 In), Earth would be about 10 meters away (33 feet).

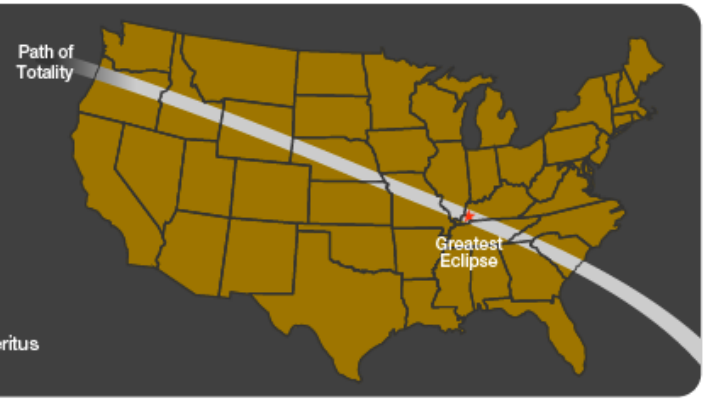
The predicted path of the August 21, 2017 solar eclipse

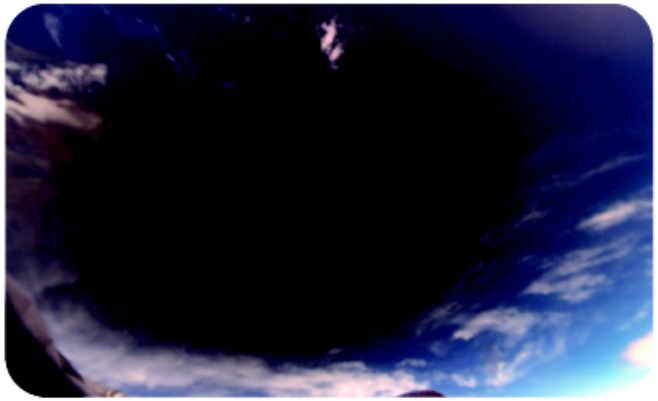
Duration of Greatest Eclipse:
2 min 40 sec
(18:25 UT=13:25 CDT or 1:25 p.m. CDT)

Location Greatest Eclipse:
36 deg 58 min N; 87 deg 40 min W
(between Princeton and Hopkinsville, KY)

Path Width: **approximately 115 km**

Eclipse Predictions by Fred Espenak, GSFC, NASA-emeritus





http://mail.colonial.net/~hkaiser/index.html

The NASA image above shows the Moon's umbral shadow as seen from the International Space Station during the total solar eclipse on 29 March 2006.

Never look directly at the Sun unless you have filters that you know are safe.

For more information: http://eclipse/gsfc.nasa.gov/SEhelp/safety.html

For more information about solar eclipses: http://eclipse.gsfc.nasa.gov/solar.html
http://eclipsewise.com/solar
http://eclipsewise.com/solar/SEnews/TSE2017/TSE2017.html
http://eclipse2017.nasa.gov/

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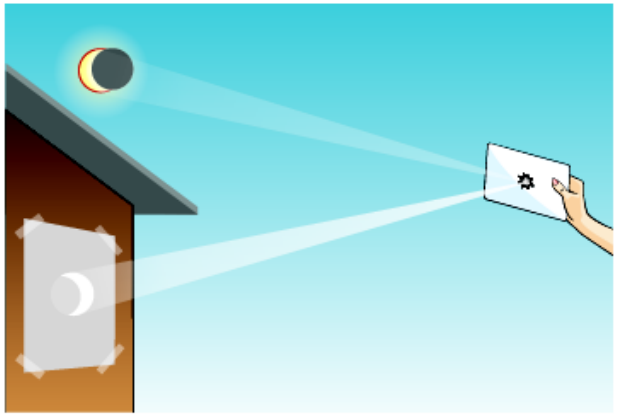
www.nasa.gov

FL-2016-10-122-MSFC G–248081

Safely Observing the Sun

WARNING: Never look directly at the Sun without proper eye protection. You can *seriously* injure your eyes.



Mirror in an Envelope

Slide a mirror into an envelope with a ragged hole cut into the front. Point the mirror toward the Sun so that an image is reflected onto a screen at least 5 meters (about 15 feet) away. The longer the distance, the larger the image.

Do not look at the mirror, only at the screen.

Local Area Eclipse Details

Location	% Covered	Start (CDT)	Max (CDT)	End (CDT)
Nashville, TN	100.0%	11:58AM	1:28PM	2:54PM
Totality begins 1:27PM • Totality ends 1:29PM				
Brentwood, TN	100.0%	11:58AM	1:28PM	2:54PM
Totality begins 1:28PM • Totality ends 1:29PM				
Franklin, TN	99.9	11:58AM	1:28PM	2:54PM
Fayetteville, TN	98.2	11:59	1:30	2:56
Ardmore, AL/TN	97.3	11:59	1:29	2:55
Florence, AL	95.9	11:57	1:28	2:54
Athens, AL	96.7	11:59	1:29	2:56
Decatur, AL	96.1	11:59	1:30	2:56
Hartselle, AL	95.8	11:59	1:30	2:56
Madison, AL	96.7	11:59	1:30	2:56
USSRC	96.8	11:59	1:30	2:56
Huntsville, AL	97.0	11:59	1:30	2:56
VBAS	97.1	12:00NOON	1:30	2:56
Arab, AL	96.0	12:00	1:31	2:57
Gurley, AL	97.1	12:00	1:31	2:57
Guntersville, AL	96.4	12:01	1:31	2:57
Scottsboro, AL	97.4	12:01	1:31	2:57
Bridgeport, AL	98.6	12:01	1:32	2:57

JAVA Script Solar Eclipse Explorer
http://eclipse.gsfc.nasa.gov/JSEX/JSEX-NA.html

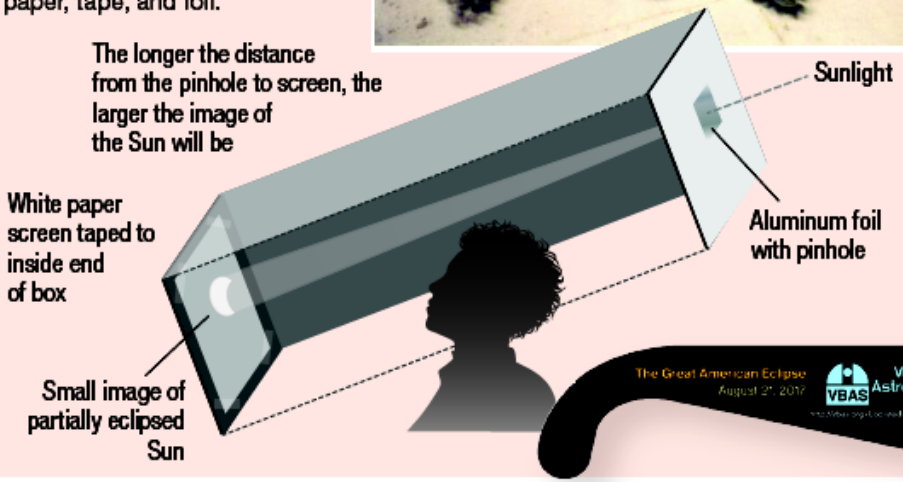
Strange Shadows!

Sunlight through trees produces projected crescents during partial phases.

Photograph (below) Copyright © Elisa J. Israel

Go Stick Your Head in a Box

You can make this simple "eclipse telescope" with some cardboard, paper, tape, and foil.



Sun Funnel

Make this device for your telescope with simple instructions at: www.astrosociety.org/tov/Build_a_Sun_Funnel.pdf

Cool in the Shades

Visit the Von Braun Astronomical Society (or your local astronomical society) and pick up a pair of these special Eclipse Sunglasses!

www.vbas.org

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Logistics for Hopkinsville

There are fifteen hotels listed on
http://www.kysolareclipse.com/places-to-stay-in-hopkinsville.htm
(includes Pennyrile State Park Lodge)

Hopkinsville Population:	33,000
Pennyrile State Park:	244

From an average of
Best Western, 37 rooms
Comfort Suites, 73 rooms
Holiday Inn, 101 rooms -> 70 rooms * 15 hotels * 4 people = 4220

Expect a **MINIMUM** of 33,000 + 244 + 4220

37,464 people